



### Restriction on the use of Hazardous Substances (RoHS)

At Tyco Electronics, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials.

Part numbers in this catalog are RoHS Compliant, unless marked otherwise. These products comply with European Union Directive 2002/95/EC, as amended 1 January 2006, that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

Note: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories. Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced at right.

### Getting the Information You Need

Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog
- Downloadable Technical Data
- Customer Information Presentation
- More detailed information regarding the definitions used above

So whatever your questions when it comes to RoHS, we have the answers at [www.tycoelectronics.com/leadfree](http://www.tycoelectronics.com/leadfree)

RoHS  
Customer  
Support  
Center 

## Table of Contents

### Introduction

AMP Soft Shell Pin and Socket Connectors provide a highly reliable and economic means of grouping multiple-lead connections in today's computer, computer/peripheral equipment, business machines, entertainment centers, appliances and other sophisticated commercial equipment. The electrical connector is an integral component in these applications. They also offer worldwide application approval because of their reliability and economy. Electrical functions have increased in complexity and new designs continually call for the maximum use of space. The Soft Shell Pin and Socket family of connectors offers the design and features to answer these modern industry requirements.

This catalog is organized by contact centerline spacing (High Density and Standard Density) to provide you with the basic information necessary to select the Soft Shell connector system best suited for your specific application. It contains general information to acquaint you with the complete family of connectors and application tooling.

Since your specific application will determine the degree of automatic, semiautomatic or manual application tooling required, complete specifications are covered on pages 201-204.

## Summary Chart

| Page No.                | Product Name                       | No. of Positions       | Centerline (in) mm                                        | Wire Size (AWG) | Wire Insulation Dia. Max. (in) mm | Current Rating Max (A)* | Voltage Rating Max.                                           | Operating Temp. Range (C) | UL94 Flammability Rating | Sealed Version Available | Approvals                                                                               |
|-------------------------|------------------------------------|------------------------|-----------------------------------------------------------|-----------------|-----------------------------------|-------------------------|---------------------------------------------------------------|---------------------------|--------------------------|--------------------------|-----------------------------------------------------------------------------------------|
| <b>High Density</b>     |                                    |                        |                                                           |                 |                                   |                         |                                                               |                           |                          |                          |                                                                                         |
| 9                       | 2.5 mm Signal Double Lock (SDL)    | 2-13                   | (.098) 2.50                                               | 26-20           | (.071) 1.80                       | 3                       | 50 VAC or VDC                                                 | -30° to +105°             | V-0                      | No                       | UL, CSA, VDE                                                                            |
| 17                      | Micro MATE-N-LOK 3 mm              | 2-24                   | (.118) 3.00                                               | 30-20           | (.060) 1.52                       | 5                       | 250 VAC                                                       | -40° to +105°             | V-0                      | No                       | UL, CSA, VDE                                                                            |
| 47                      | Grace Inertia Connectors (GIC) 3.5 | 2-6                    | (.137) 3.50                                               | 26-18           | (.106) 2.70                       | 7                       | 300 VAC                                                       | -30° to +105°             | V-0                      | No                       | UL, CSA                                                                                 |
| 51                      | .062 Commercial Pin & Socket       | 1-9                    | (.145) 3.68                                               | 30-18           | (.110) 2.79                       | 7                       | 250 VAC or VDC                                                | -55° to +105°             | V-2                      | No                       | UL, CSA                                                                                 |
| 57                      | Power Double Lock (PDL)            | 1-12<br>3-12<br>2<br>2 | (.156) 3.96<br>(.256) 6.50<br>(.312) 7.92<br>(.512) 13.00 | 26-16           | (.122) 3.10                       | 10                      | 300 VAC (3.96 WTW, 6.5 WTB and 7.92 WTB)<br>50 VAC (3.96 WTB) | -30° to +105°             | V-0                      | No                       | UL, CSA, VDE                                                                            |
| 79                      | Mini-Universal MATE-N-LOK          | 1-24                   | (.163) 4.14                                               | 30-16           | (.126) 3.20                       | 9.5                     | 600 VAC or VDC                                                | -55° to +105°             | V-0 & V-2                | Yes                      | UL, CSA, VDE (250 V Max.)                                                               |
| 93                      | Mini-Universal MATE-N-LOK 2        | 2-24                   | (.163) 4.14                                               | 30-16           | (.126) 3.20                       | 10.5                    | 600 VAC or VDC                                                | -55° to +105°             | V-0 & V-2                | No                       | UL, CSA, VDE                                                                            |
| 103                     | MR (Miniature Rectangular)         | 2-36                   | (.165) 4.20                                               | 26-18           | (.115) 2.92                       | 9                       | 250 VAC                                                       | -55° to +85°              | V-0                      | No                       | UL, CSA                                                                                 |
| 113                     | 4.2 mm PE Series                   | 2-24                   | (.165) 4.20                                               | 26-18           | (.094) 2.39                       | 9                       | 600 VAC                                                       | -40° to +105°             | V-0 & V-2                | No                       | UL, CSA                                                                                 |
| 119                     | AMP-DUAC                           | 2-24                   | (.165) 4.20                                               | 26-18           | (.130) 3.30                       | 9                       | 600 VAC                                                       | -55° to +105°             | V-2                      | No                       | UL, CSA                                                                                 |
| <b>Standard Density</b> |                                    |                        |                                                           |                 |                                   |                         |                                                               |                           |                          |                          |                                                                                         |
| 129                     | 5.0 mm Power Key Connectors (PKC)  | 2-6                    | (.197) 5.00                                               | 24-16           | (.122) 3.10                       | 10                      | 300 VAC                                                       | -30° to +105°             | V-0                      | No                       | UL, CSA                                                                                 |
| 137                     | .093 Commercial Pin & Socket       | 1-15                   | (.198) 5.03                                               | 14-24           | (.180) 4.57                       | 13                      | 250 VAC or VDC                                                | -55° to +105°             | V-2                      | No                       | UL, CSA                                                                                 |
| 145                     | Commercial MATE-N-LOK              | 1-16                   | (.200) 5.08                                               | 30-14           | (.130) 3.30                       | 19                      | 250 VAC                                                       | -55° to +105°             | V-2                      | No                       | UL, CSA                                                                                 |
| 159                     | .140 MATE-N-LOK                    | 2-9                    | (.240) 6.10                                               | 20-10           | (.180) 4.57                       | 28                      | 600 VAC or VDC                                                | -55° to +105°             | V-2                      | No                       | UL, CSA                                                                                 |
| 163                     | Universal MATE-N-LOK               | 1-15                   | (.250) 6.35                                               | 30-10           | (.200) 5.08                       | 19                      | 600 VAC or VDC                                                | -55° to +105°**           | V-0 & V-2                | Yes                      | UL, CSA, designed and tested to meet VDE 380 V requirements, except 6 Position Circular |
| 183                     | Universal MATE-N-LOK II            | 2-15                   | (.250) 6.35                                               | 30-10           | (.200) 5.08                       | 19                      | 600 VAC or VDC                                                | -55° to +105°             | V-0                      | No                       | UL, CSA, VDE                                                                            |
| 197                     | .156 MATE-N-LOK                    | 3-4                    | (.390) 9.91                                               | 20-10           | (.185) 4.70                       | 32.5                    | 600 VAC                                                       | -55° to +105°             | V-2                      | No                       | UL                                                                                      |

\*Current Rating is application dependent

\*\* 125°C Available

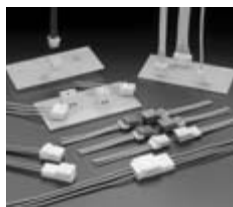
## Table of Contents (Continued)

### High Density

#### Need more information?

Call Technical Support at a local number listed on the inside back cover.

Technical Support is staffed with specialists well versed in Tyco Electronics products.



### 2.5 mm Signal Double Lock (2.5 SDL) Connectors .....9-16

|                                                                              |    |
|------------------------------------------------------------------------------|----|
| Product Facts .....                                                          | 9  |
| Performance Characteristics .....                                            | 9  |
| Quick Reference Chart for Mating Part Numbers and Future Product Plans ..... | 10 |
| Mating Configurations (Wire-To-Wire and Wire-To-Board) .....                 | 11 |
| Contacts and Double Lock Plates .....                                        | 12 |
| Plug Housings .....                                                          | 13 |
| Cap Housings .....                                                           | 14 |
| Headers, PC Board, Vertical: Standard-Profile .....                          | 15 |
| High-Profile .....                                                           | 16 |

### Micro MATE-N-LOK 3 mm Connector System .....17-46

|                                     |       |
|-------------------------------------|-------|
| Product Facts .....                 | 17    |
| Performance Characteristics .....   | 17-18 |
| Connector Application .....         | 19-21 |
| Contacts .....                      | 22    |
| Receptacle Housings .....           | 23-24 |
| Plug Housings .....                 | 25-28 |
| Vertical Header Assemblies .....    | 29-36 |
| Right-Angle Header Assemblies ..... | 37-46 |

### Grace Inertia Connectors (GIC), 3.5 .....47-50

|                                       |       |
|---------------------------------------|-------|
| Product Facts .....                   | 47    |
| Performance Characteristics .....     | 47    |
| Contacts and Double Lock Plates ..... | 48    |
| Housings: Plug and Cap .....          | 49-50 |

### .062 [1.57] Commercial Pin and Socket Connectors .....51-55

|                                             |       |
|---------------------------------------------|-------|
| Product Facts .....                         | 51    |
| Performance Characteristics .....           | 51-52 |
| Contacts .....                              | 53    |
| Housings: Free-Hanging or Panel Mount ..... | 54-55 |
| Recommended Panel Cutouts .....             | 55    |

### Power Double Lock (PDL) Connectors .....57-78

|                                                                  |       |
|------------------------------------------------------------------|-------|
| Product Facts .....                                              | 57    |
| Performance Characteristics .....                                | 57    |
| Quick Reference Chart for Mating Part Numbers .....              | 58    |
| Contacts .....                                                   | 59    |
| Housings: Free-Hanging Plug (3.96 mm centerline) .....           | 60-62 |
| Free-Hanging Cap (3.96 mm centerline) .....                      | 63-64 |
| Panel Mount Cap (3.96 mm centerline) .....                       | 65-68 |
| Double Lock Plates (3.96 mm centerline) .....                    | 69    |
| Tab Headers, PC Board, Vertical: 3.96 mm centerline .....        | 70-72 |
| 7.92 mm centerline .....                                         | 72    |
| Housings: Free-Hanging Plug (6.5 mm centerline) .....            | 73-74 |
| Double Lock Plates (6.5 mm centerline) .....                     | 75    |
| Tab Headers, PC Board, Vertical: 6.5 and 13 mm centerlines ..... | 76-78 |



Produced under a Quality  
Management System  
certified to ISO 9001

ACTION PIN, AMP, AMP-DUAC,  
AMP-O-ELECTRIC, AMPOMATOR,  
AMP-O-MATIC, CERTI-CRIMP,  
FASTON, MATE-N-LOK,  
PRO-CRIMPER and TYCO  
are trademarks.

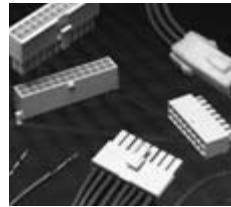
Kapton is a trademark of E.I. du Pont de  
Nemours and Company.

MOLEX Mini-Fit and Mini-Fit Jr. are  
trademarks of Molex, Incorporated.

Other products, logos, and Company  
names mentioned herein may be trade-  
marks of their respective owners.

## Table of Contents (Continued)

### High Density (Continued)



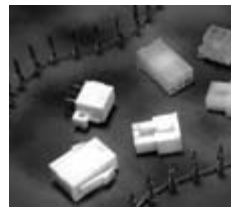
|                                                               |              |
|---------------------------------------------------------------|--------------|
| <b>Mini-Universal MATE-N-LOK Connectors .....</b>             | <b>79-92</b> |
| Product Facts.....                                            | 79           |
| Performance Characteristics.....                              | 79-80        |
| Mating Combinations.....                                      | 81           |
| Contacts, Keying Plug, Wire Seal and Test Probe Contact ..... | 82           |
| Housings: Free-Hanging or Panel Mount.....                    | 83-84        |
| Hermaphroditic Free-Hanging .....                             | 85           |
| Headers, PC Board: Vertical Pin and Blindmate .....           | 86-87        |
| Right-Angle Pin .....                                         | 88           |
| Recommended PC Board Hole Layouts .....                       | 89           |
| Plug or Cap Housing Strain Reliefs.....                       | 90           |
| Splash-Proof Seals .....                                      | 91-92        |



|                                                     |               |
|-----------------------------------------------------|---------------|
| <b>Mini-Universal MATE-N-LOK 2 Connectors .....</b> | <b>93-102</b> |
| Product Facts.....                                  | 93            |
| Performance Characteristics.....                    | 93-94         |
| Contacts and Keying Plug .....                      | 94-95         |
| Housings: Free-Hanging .....                        | 95-96         |
| Headers, PC Board: Vertical Pin and Blindmate ..... | 97-98         |
| Right-Angle Pin .....                               | 99            |
| Recommended PC Board Hole Layouts .....             | 100           |
| Mating Combinations .....                           | 101           |



|                                                            |                |
|------------------------------------------------------------|----------------|
| <b>(MR) Miniature Rectangular Connectors .....</b>         | <b>103-112</b> |
| Product Facts.....                                         | 103            |
| Performance Characteristics.....                           | 103-104        |
| Mating Combinations .....                                  | 105            |
| Contacts and Keying Plug .....                             | 106            |
| Housings: Free-Hanging or Panel Mount.....                 | 107-108        |
| Recommended Panel Cutouts.....                             | 109            |
| Strain Reliefs, Adapting Grommets and Commoning Bars ..... | 110            |
| Headers, PC Board: Vertical Pin.....                       | 111-112        |
| Recommended PC Board Hole Layouts.....                     | 111-112        |



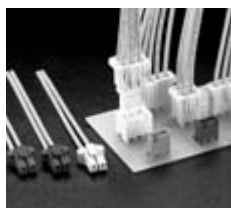
|                                                       |                |
|-------------------------------------------------------|----------------|
| <b>4.2 mm PE Series Connectors .....</b>              | <b>113-118</b> |
| Product Facts .....                                   | 113            |
| Performance Characteristics .....                     | 113            |
| Contacts .....                                        | 114            |
| Housings (Single Row): Panel Mount Plug.....          | 114            |
| Free-Hanging Plug .....                               | 114            |
| Receptacle .....                                      | 114            |
| Housings (Double Row): Panel Mount Plug .....         | 115            |
| Free-Hanging Plug.....                                | 115            |
| Receptacle .....                                      | 115            |
| Pin Headers, PC Board: Vertical and Right-Angle ..... | 116            |
| Blind Mate Headers .....                              | 117            |



|                                                                  |                |
|------------------------------------------------------------------|----------------|
| <b>AMP-DUAC Connectors.....</b>                                  | <b>119-128</b> |
| Product Facts .....                                              | 119            |
| Performance Characteristics .....                                | 119            |
| Receptacle Housings and Female Contacts.....                     | 120            |
| Plug Housings and Male Contacts.....                             | 121            |
| Headers, PC Board: Vertical .....                                | 122-127        |
| Right-Angle.....                                                 | 127            |
| Strain Relief, 6 Position (for Receptacle or Plug Housing) ..... | 120-121        |

## Table of Contents (Continued)

### Standard Density



|                                                    |                |
|----------------------------------------------------|----------------|
| <b>5.0 mm Power Key Connectors (5.0 PKC).....</b>  | <b>129-136</b> |
| Product Facts .....                                | 129            |
| Performance Characteristics .....                  | 129            |
| Quick Reference Chart for Mating Part Numbers..... | 130            |
| Contacts and Double Lock Plates .....              | 131            |
| Plug Housings: 1 Row .....                         | 132            |
| 2 Row .....                                        | 133            |
| Headers, PC Board, Vertical: 1 Row.....            | 134            |
| 2 Row.....                                         | 135            |



|                                                               |                |
|---------------------------------------------------------------|----------------|
| <b>.093 [2.36] Commercial Pin and Socket Connectors .....</b> | <b>137-144</b> |
| Product Facts.....                                            | 137            |
| Performance Characteristics.....                              | 137-138        |
| Contacts .....                                                | 139            |
| Housings: Free-Hanging or Panel Mount.....                    | 140-143        |



|                                                                |                |
|----------------------------------------------------------------|----------------|
| <b>Commercial MATE-N-LOK Connectors .....</b>                  | <b>145-158</b> |
| Product Facts.....                                             | 145            |
| Performance Characteristics.....                               | 145-146        |
| Mating Combinations.....                                       | 147-148        |
| Contacts, Commoning Tabs and Keying Plug.....                  | 149-150        |
| Housings: Free-Hanging.....                                    | 151            |
| Positive Lock .....                                            | 152            |
| Panel Mount .....                                              | 153            |
| Flange Mount and Motor Mount.....                              | 154            |
| Headers, PC Board: Vertical Pin .....                          | 155            |
| Surface Mount Right-Angle Pin and Vertical Socket .....        | 156            |
| Right-Angle Pin .....                                          | 157            |
| Insulation Displacement Connectors (IDC) and Dust Covers ..... | 157            |
| Right-Angle Pin Headers with Fix Belt.....                     | 158            |



|                                         |                |
|-----------------------------------------|----------------|
| <b>.140 MATE-N-LOK Connectors .....</b> | <b>159-162</b> |
| Product Facts.....                      | 159            |
| Performance Characteristics .....       | 159            |
| Contacts .....                          | 160            |
| Housings: Free-Hanging.....             | 160            |
| Panel Mount.....                        | 161            |

## Table of Contents (Continued)

### Standard Density (Continued)



|                                                                  |                |
|------------------------------------------------------------------|----------------|
| <b>Universal MATE-N-LOK Connectors .....</b>                     | <b>163-182</b> |
| Product Facts.....                                               | 163            |
| Performance Characteristics.....                                 | 163-164        |
| Mating Combinations .....                                        | 165            |
| Contacts .....                                                   | 166-167        |
| Housings: Free-Hanging or Panel Mount .....                      | 168            |
| Cap Housing Panel Cutouts, Keying Plugs and                      |                |
| Plug Housing Strain Reliefs.....                                 | 169            |
| Plug or Cap Housing Strain Reliefs and Cap Housing Adapters..... | 170            |
| Flanged Cap Housings with Twist and Lock Feature.....            | 171            |
| Sealed Bulkhead Connectors.....                                  | 172-173        |
| Splash-Proof Seals.....                                          | 174            |
| Contacts (used with Splash-Proof Seals) .....                    | 175            |
| Headers, PC Board: Vertical Pin .....                            | 176            |
| Vertical Socket.....                                             | 177            |
| Recommended PC Board Hole Layouts .....                          | 178            |
| PC Board Vertical Pin Headers with ACTION PIN Contacts .....     | 178            |
| Right-Angle Pin and Socket.....                                  | 179            |
| Test Connectors.....                                             | 179            |
| Circular Connectors .....                                        | 180-181        |
| Universal MATE-N-LOK Connectors — Available in Colors .....      | 182            |



|                                                              |                |
|--------------------------------------------------------------|----------------|
| <b>Universal MATE-N-LOK II Connectors .....</b>              | <b>183-196</b> |
| Product Facts.....                                           | 183            |
| Performance Characteristics.....                             | 183-184        |
| Mating Combinations .....                                    | 185            |
| Contacts .....                                               | 186            |
| Housing Kits: Free-Hanging or Panel Mount .....              | 187-188        |
| Housing Components: Free-Hanging or Panel Mount .....        | 189            |
| Plug or Cap Housing Strain Reliefs and Keying Plug.....      | 190            |
| Headers, PC Board: Vertical Pin .....                        | 191            |
| Vertical Socket.....                                         | 192            |
| Recommended PC Board Hole Layouts .....                      | 193            |
| PC Board Vertical Pin Headers with ACTION PIN Contacts ..... | 193            |
| Right-Angle Pin and Socket.....                              | 194            |
| High Current Contacts .....                                  | 195            |
| High Current Vertical Pin Headers .....                      | 196            |



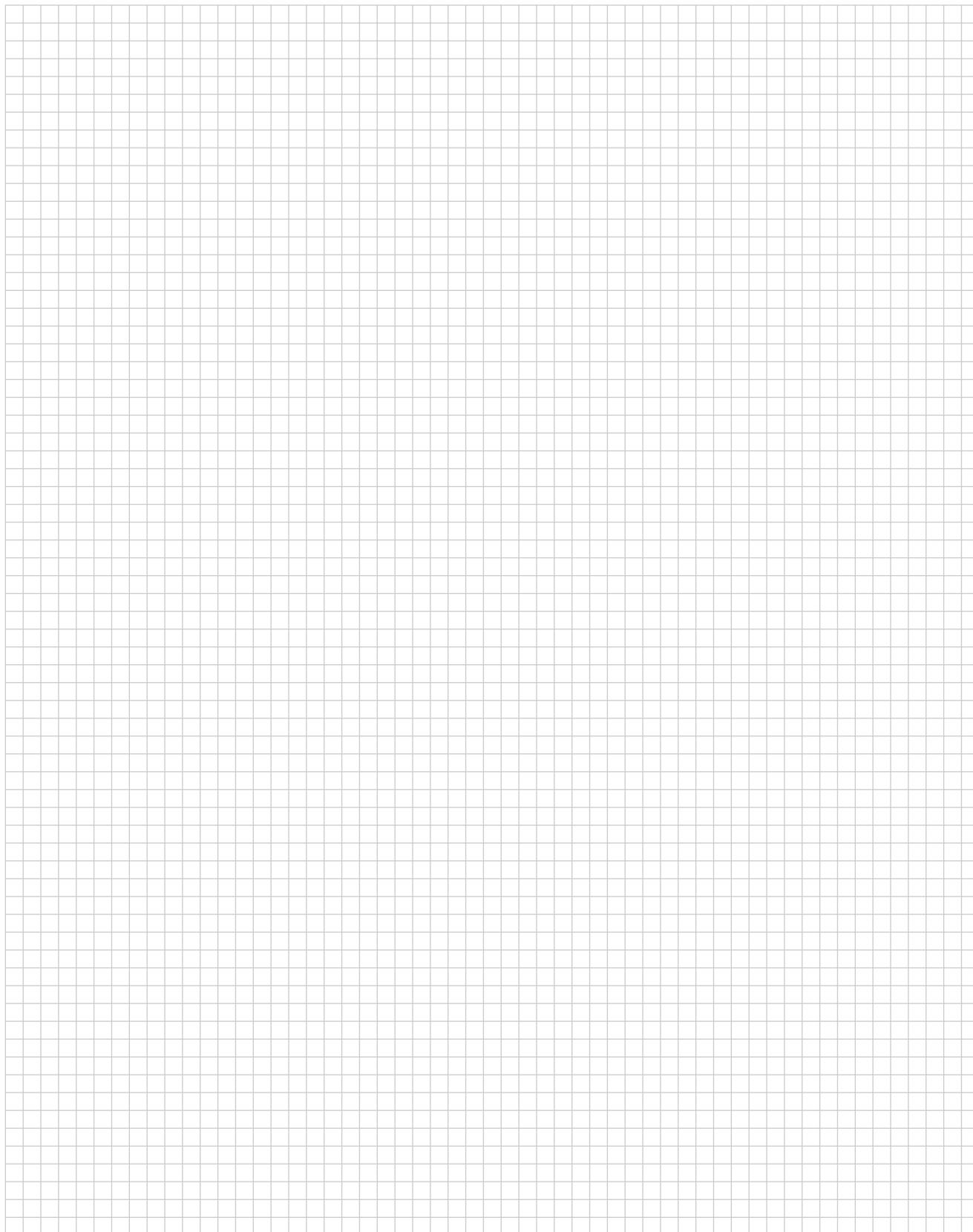
|                                         |                |
|-----------------------------------------|----------------|
| <b>.156 MATE-N-LOK Connectors .....</b> | <b>197-198</b> |
| Product Facts.....                      | 197            |
| Contacts .....                          | 197            |
| Housings: Free-Hanging.....             | 198            |
| Panel Mount .....                       | 198            |

|                                                                   |         |
|-------------------------------------------------------------------|---------|
| Technical Documents .....                                         | 199-200 |
| Application Tooling .....                                         | 201-204 |
| Applicator Options .....                                          | 205-207 |
| Product Feature Comparisons.....                                  | 208-209 |
| Non-Compliant to RoHS Compliant Part Number Cross Reference ..... | 210-214 |
| Part Number Index .....                                           | 215-220 |
| Tooling Part Number Index .....                                   | 221     |
| Global Contacts .....                                             | 223     |

---

## Engineering Notes

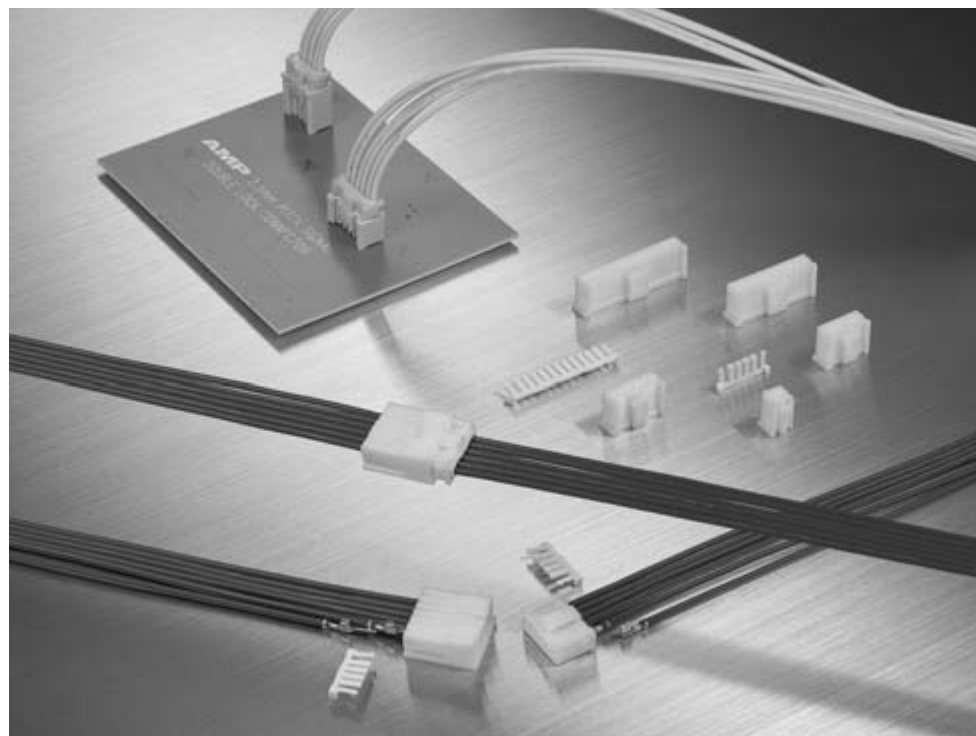
---



## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Board and Wire-to-Wire)

### Product Facts

- Connector for signal circuits with one row of contacts on 2.5 mm centerline
- Wire-to-board and wire-to-wire connectors, consisting of plug and cap housings for wire termination and PC board-mount post headers
- Mounted to plug and cap housings for wire application, double lock plate provides for positive loading of contacts in the housing. It also helps contacts mate completely
- Double lock plate is contained within the plug and cap housing completely, which provides neat overall appearance
- Accepts 26-20 AWG wire (e.g. UL 1007, 1061, 1571, etc.) with insulation diameters of up to 1.8 mm
- PC board-mount post header is available in two styles: standard profile and high profile
- High-profile post header has locking feature at location fit to resin coating, which is applied onto the board for waterproof protection as in home appliances. It does not hamper mating and locking of post header with plug housing
- Locking structure is inner-lock type and has a clean surface
- Solder tail section of post header is provided with kinks to retain the header firmly on PC board during soldering
- Radial tape-mounted version of post header is also available that is applicable to radial mounting machines
- Recognized under the Component Program  of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association,  File No. LR7189
- VDE Approved, File No.  B 04 11 39175013



2.5 mm Signal Double Lock Connectors (2.5 SDL) are 2.5 mm centerline, compact, one-row connectors for signal circuits.

With contacts on 2.5 mm centerline, both wire-to-wire and wire-to-board connectors are available.

The connectors consist of plug and cap housings for wire termination, double lock plates for plug and cap housings, crimp snap-in contacts, and a PC board-mount post header. A double lock plate is available for both plug and wire-to-wire cap housing to provide for positive loading. It helps prevent contacts from coming off or mating halfway. The plate is contained within the plug and cap housing completely. The plug and cap housing can be used without a double lock plate.

The connector accepts 26-20 AWG wire (e.g. UL 1007, 1061, 1571, etc.) with insu-

lation diameters of up to 1.8 mm.

The PC board-mount post header is available in two styles: standard profile and high profile.

The high-profile type connectors can be used for home appliances, which require waterproof protection. It does not hamper mating and locking of the post header with the plug housing, even if the board has resin coating on it.

The locking structure is inner-lock type and has a clean surface.

The solder tail of the loose-piece post header has kinks to secure the connector on the PC board until it is soldered.

Radial tape-mounted version of post header is also available and this is applicable to radial mounting machines.

### Performance Characteristics

**Voltage Rating**—50 VAC/DC

**Current Rating**—3 A

**Overall Resistance**—  
10 mΩ max. (initial)  
20 mΩ max. (final)

**Insulation Resistance**—  
500 Ω (500 VDC)

**Dielectric Withstanding Voltage**—  
1,100 VAC, one minute

**Contact Resistance**—20 mΩ max.

**Operating Temperature**—  
-30° ~ +105°C  
(The upper limit includes temperature rise from power carrying)

**Applicable Wire**—26-20 AWG (UL 1007, 1061, 1571)

**Wire Insulation Range**—  
0.93~1.8 mm

**PC Board Thickness**—1.6 mm

### Technical Documents

#### Product Specification

108-5459

#### Application Specification

114-5203

**Note:** Dimensions shown are metric.

## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

### Quick Reference Chart for Mating Part Numbers

| No. of Pos. | Plug Connector Part No.<br>(Wire Side) |                   | Mating Connectors (PC Board Mount & Wire Side) |                   |                        |                   |
|-------------|----------------------------------------|-------------------|------------------------------------------------|-------------------|------------------------|-------------------|
|             | Housing                                | Double Lock Plate | Post Header Part No.                           |                   | Cap Connector Part No. |                   |
|             |                                        |                   | Standard-Profile Type*                         | High-Profile Type | Cap Housing            | Double Lock Plate |
| 2           | 917686-1                               | 917698-1          | 917780-1                                       | 917722-1          | 316086-1               | 917698-1          |
| 3           | 917687-1                               | 917699-1          | 917781-1                                       | 917723-1          | 316087-1               | 917699-1          |
| 4           | 917688-1                               | 917700-1          | 917782-1                                       | 917724-1          | 316088-1               | 917700-1          |
| 5           | 917689-1                               | 917701-1          | 917783-1                                       | 917725-1          | 316089-1               | 917701-1          |
| 6           | 917690-1                               | 917702-1          | 917784-1                                       | 917726-1          | 316090-1               | 917702-1          |
| 7           | 917691-1                               | 917703-1          | 917785-1                                       | 917727-1          | 316091-1               | 917703-1          |
| 8           | 917692-1                               | 917704-1          | 917786-1                                       | 917728-1          | 316092-1               | 917704-1          |
| 9           | 917693-1                               | 917705-1          | 917787-1                                       | 917729-1          | —                      | 917705-1          |
| 10          | 917694-1                               | 917706-1          | 917788-1                                       | 917730-1          | 316094-1               | 917706-1          |
| 11          | 917695-1                               | 917707-1          | 917789-1                                       | 917731-1          | —                      | 917707-1          |
| 12          | 917696-1                               | 917708-1          | 917790-1                                       | 917732-1          | —                      | 917708-1          |
| 13          | 917697-1                               | 917709-1          | 917791-1                                       | 917733-1          | —                      | 917709-1          |

\*Included in Standard-Profile Post Header line are Radial Tape-Mounted version (2 to 8 positions).  
Refer to appropriate description in the catalog.

**Note:** All part numbers are RoHS Compliant.

### Product Family List (Including Production Plans)

| Description                                        |                       |                     | Number of Positions |   |   |   |   |   |   |   |    |    |    |    |
|----------------------------------------------------|-----------------------|---------------------|---------------------|---|---|---|---|---|---|---|----|----|----|----|
|                                                    |                       |                     | 2                   | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Plug Housing                                       |                       |                     | ●                   | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  |
| Vertical Board Mount Post Header                   | Standard-Profile Type | Loose Piece         | ●                   | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  |
|                                                    |                       | Radial Tape-Mounted | ●                   | ● | ● | ● | ● | ● | ● | — | —  | —  | —  | —  |
|                                                    | High-Profile Type     | Loose Piece         | ●                   | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  |
|                                                    |                       | Radial Tape-Mounted | ●                   | ● | ● | ● | ● | ● | ● | — | —  | —  | —  | —  |
| Cap Housing                                        |                       |                     | ●                   | ● | ● | ● | ● | ● | ● | ○ | ●  | ○  | ○  | ○  |
| Double Lock Plate                                  |                       |                     | ●                   | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  |
| Horizontal Board Mount Post Header                 |                       |                     | ○                   | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○  | ○  | ○  | ○  |
| Horizontal Mount Post Header (Radial Tape-Mounted) |                       |                     | ○                   | ○ | ○ | ○ | ○ | ○ | ○ | — | —  | —  | —  | —  |

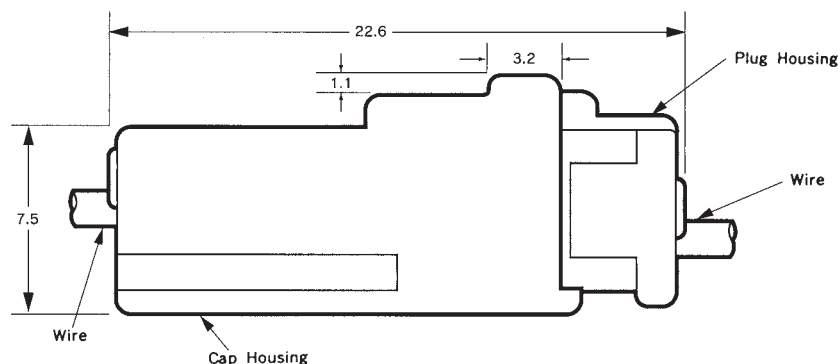
**Note:** ● indicates products currently available; ○ indicates products planned for production.

**Note:** Dimensions shown are metric.

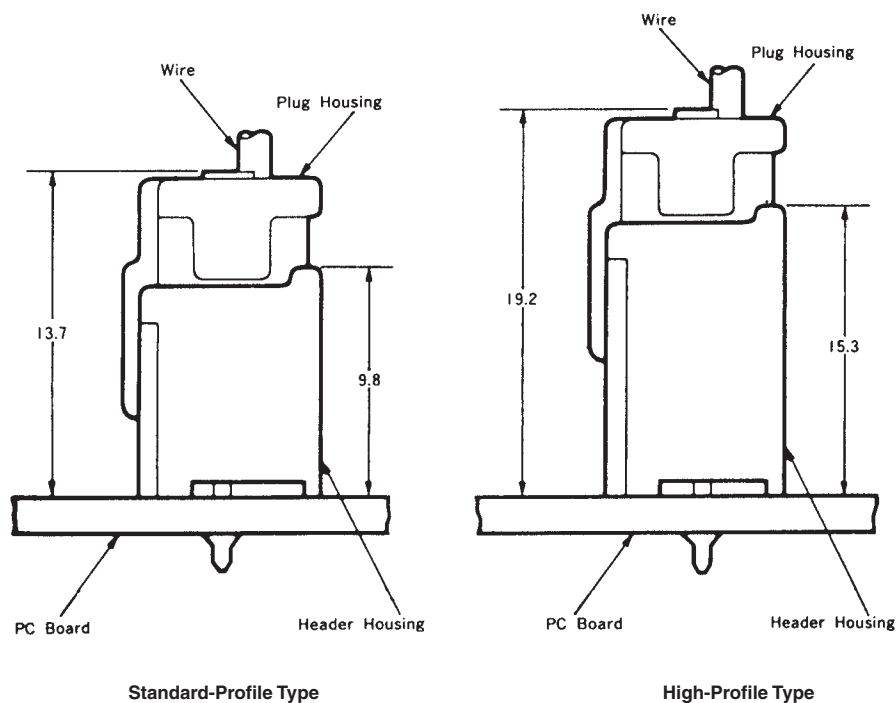
## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

### Mating Configurations

#### Wire-to-Wire Connections



#### Wire-to-PC Board Connections



**Note:** Dimensions shown are metric.

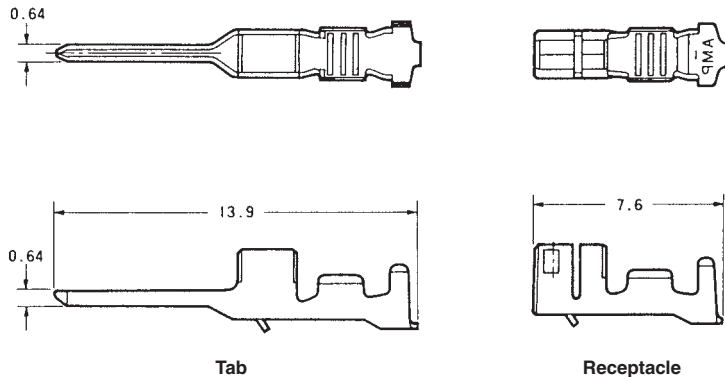
## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

### Contacts

#### Material and Finish

Pre-tinned phosphor bronze  
(0.2 mm thick)

Receptacle for Plug Housing,  
Tab for Cap Housing



| Wire Range |                 | Wire Ins.<br>Dia. | Contact Part Number |             |            |             | Applicator<br>Part Number |
|------------|-----------------|-------------------|---------------------|-------------|------------|-------------|---------------------------|
| AWG        | mm <sup>2</sup> |                   | Tab                 |             | Receptacle |             |                           |
|            |                 |                   | Strip Form          | Loose Piece | Strip Form | Loose Piece |                           |
| 26-22      | 0.12–0.35       | 0.93–1.50         | 917765-1            | 316399-1    | 917684-1   | 316401-1    | *                         |
| 22-20      | 0.30–0.53       | 1.40–1.80         | 917764-1            | 316398-1    | 917683-1   | 316400-1    | *                         |

Hand Tool Part No.: for 26-22 AWG = 234604-1 (Instruction Sheet 411-5736)  
22-20 AWG = 234603-1 (Instruction Sheet 411-5735)

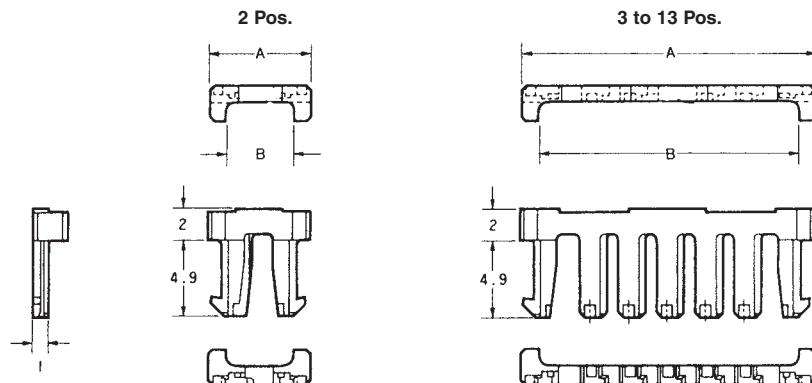
Extraction Tool Part No.: 234605-1 (Instruction Sheet 411-5737)

\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Number.

### Double Lock Plates

#### Material

UL94V-0, 6/6 Nylon, glass filled,  
natural color



| No. of Pos. | Dimensions of Double Lock Plate |      | Double Lock Plate<br>Part Number | Applicable Housing Part Number |          |
|-------------|---------------------------------|------|----------------------------------|--------------------------------|----------|
|             | A                               | B    |                                  | Plug                           | Cap      |
| 2           | 06.5                            | 04.3 | 917698-1                         | 917686-1                       | 316086-1 |
| 3           | 09.0                            | 06.8 | 917699-1                         | 917687-1                       | 316087-1 |
| 4           | 11.5                            | 09.3 | 917700-1                         | 917688-1                       | 316088-1 |
| 5           | 14.0                            | 11.8 | 917701-1                         | 917689-1                       | 316089-1 |
| 6           | 16.5                            | 14.3 | 917702-1                         | 917690-1                       | 316090-1 |
| 7           | 19.0                            | 16.8 | 917703-1                         | 917691-1                       | 316091-1 |
| 8           | 21.5                            | 19.3 | 917704-1                         | 917692-1                       | 316092-1 |
| 9           | 24.0                            | 21.8 | 917705-1                         | 917693-1                       | —        |
| 10          | 26.5                            | 24.3 | 917706-1                         | 917694-1                       | 316094-1 |
| 11          | 29.0                            | 26.8 | 917707-1                         | 917695-1                       | —        |
| 12          | 31.5                            | 29.3 | 917708-1                         | 917696-1                       | —        |
| 13          | 34.0                            | 31.8 | 917709-1                         | 917697-1                       | —        |

Extraction Tool Part No. for Double Lock Plate: 234605-1 (Instruction Sheet 411-5737)

**Note:** All part numbers are RoHS Compliant.

**Note:** Dimensions shown are metric.

## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

### Plug Housings (For Receptacle Contacts)

#### 2 to 13 Positions

#### Material

UL94V-0, 6/6 Nylon, color (see chart)

#### Related Product Data

##### Receptacle Contact Part No.

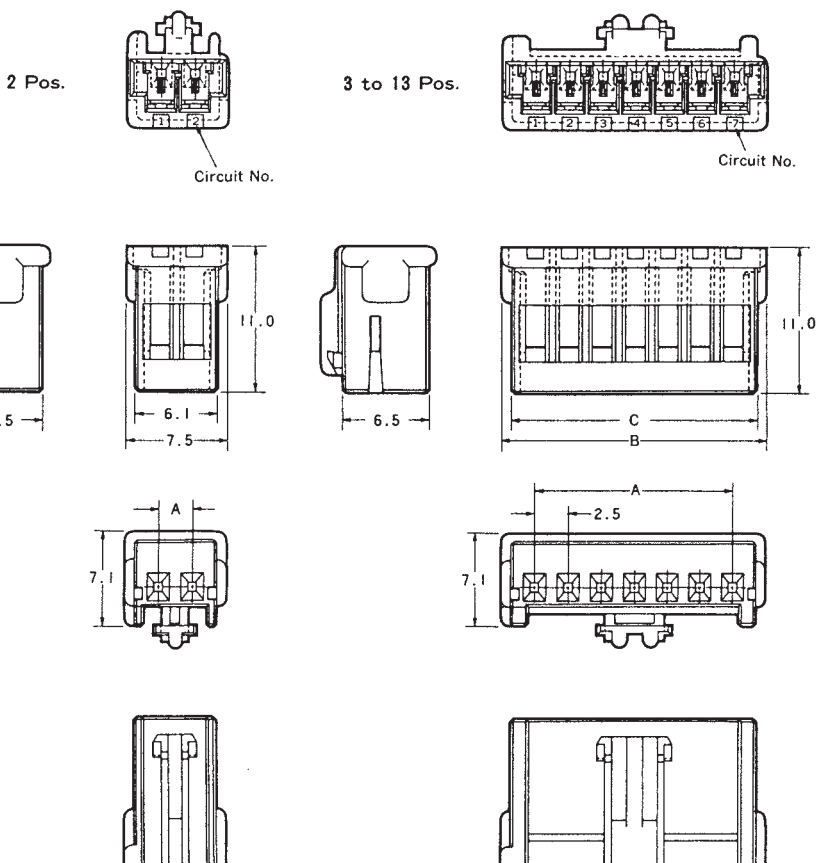
917684-1 (26-22 AWG)

917683-1 (22-20 AWG)

Double Lock Plate—page 12

Mating Cap Housings—page 14

Mating Post Headers—pages 15-16



| No. of Pos. | Dimensions |      |      | Plug Housing Part Number |          |          |          |          |          |
|-------------|------------|------|------|--------------------------|----------|----------|----------|----------|----------|
|             | A          | B    | C    | Natural                  | Red      | Yellow   | Green    | Blue     | Black    |
| 2           | 02.5       | 07.5 | 06.1 | 917686-1                 | 917686-2 | 917686-4 | 917686-5 | 917686-6 | 917686-9 |
| 3           | 05.0       | 10.0 | 08.6 | 917687-1                 | 917687-2 | 917687-4 | —        | 917687-6 | 917687-9 |
| 4           | 07.5       | 12.5 | 11.1 | 917688-1                 | 917688-2 | 917688-4 | —        | —        | 917688-9 |
| 5           | 10.0       | 15.0 | 13.6 | 917689-1                 | 917689-2 | —        | —        | 917689-6 | —        |
| 6           | 12.5       | 17.5 | 16.1 | 917690-1                 | 917690-2 | 917690-4 | —        | 917690-6 | 917690-9 |
| 7           | 15.0       | 20.0 | 18.6 | 917691-1                 | 917691-2 | 917691-4 | —        | —        | 917691-9 |
| 8           | 17.5       | 22.5 | 21.1 | 917692-1                 | —        | —        | —        | 917692-6 | —        |
| 9           | 20.0       | 25.0 | 23.6 | 917693-1                 | 917693-2 | 917693-4 | —        | —        | —        |
| 10          | 22.5       | 27.5 | 26.1 | 917694-1                 | —        | 917694-4 | —        | —        | —        |
| 11          | 25.0       | 30.0 | 28.6 | 917695-1                 | —        | —        | —        | —        | —        |
| 12          | 27.5       | 32.5 | 31.1 | 917696-1                 | 917696-2 | —        | —        | —        | —        |
| 13          | 30.0       | 35.0 | 33.6 | 917697-1                 | 917697-2 | —        | —        | —        | —        |

**Note:** All part numbers are RoHS Compliant.

## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Wire)

### Cap Housings (For Tab Contacts)

#### 2 to 10 Positions

#### Material

UL94V-0, 6/6 Nylon, color (see chart)

#### Related Product Data

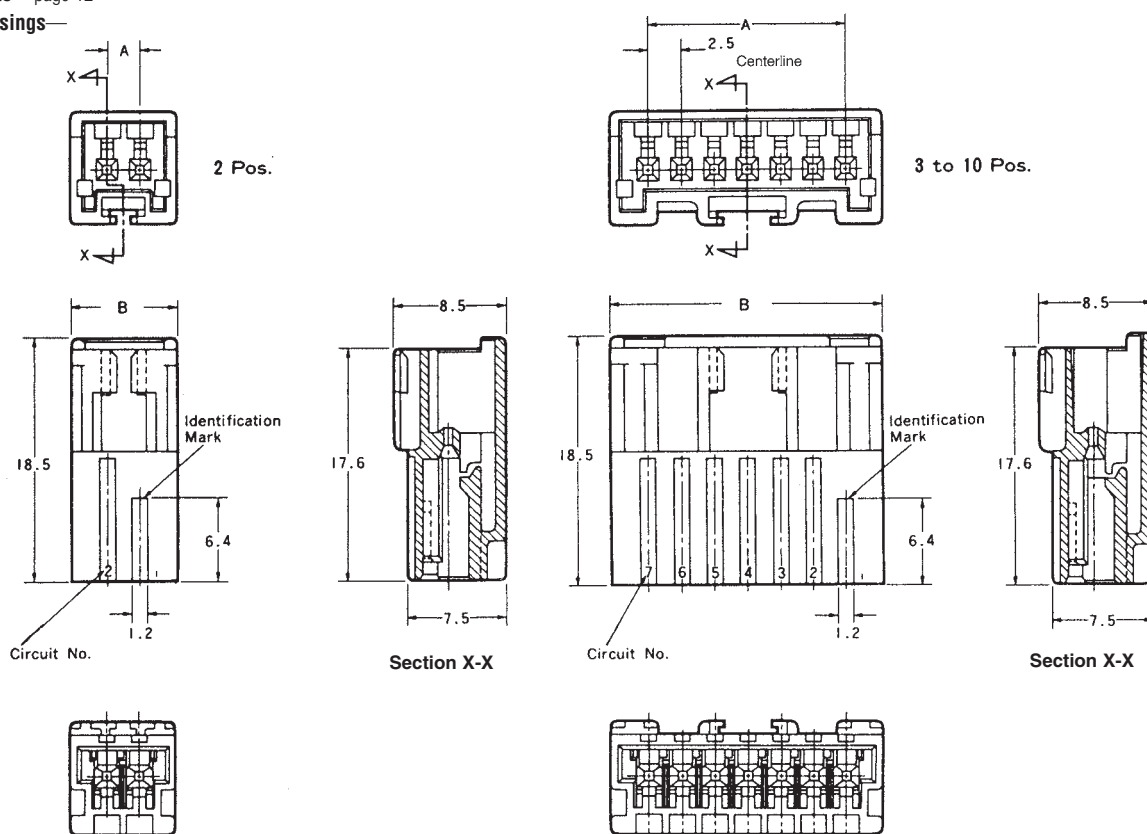
##### Tab Contact Part No.

917765-1 (26-22 AWG)

917764-1 (22-20 AWG)

##### Double Lock Plate—page 12

##### Mating Plug Housings— page 13



| No. of Pos. | Dimensions |      | Cap Housing Part Number |          |          |          |          |
|-------------|------------|------|-------------------------|----------|----------|----------|----------|
|             | A          | B    | Natural                 | Red      | Yellow   | Blue     | Black    |
| 2           | 02.5       | 08.1 | 316086-1                | 316086-2 | 316086-4 | 316086-6 | 316086-9 |
| 3           | 05.0       | 10.6 | 316087-1                | —        | 316087-4 | —        | 316087-9 |
| 4           | 07.5       | 13.1 | 316088-1                | 316088-2 | 306088-4 | —        | 316088-9 |
| 5           | 10.0       | 15.6 | 316089-1                | 316089-2 | —        | —        | —        |
| 6           | 12.5       | 18.1 | 316090-1                | —        | —        | —        | —        |
| 7           | 15.0       | 20.6 | 316091-1                | —        | —        | —        | 316091-9 |
| 8           | 17.5       | 23.1 | 316092-1                | —        | —        | —        | —        |
| 10          | 22.5       | 28.1 | 316094-1                | —        | 316094-4 | —        | —        |

**Note:** All part numbers are RoHS Compliant.

**Note:** Dimensions shown are metric.



## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Wire) (Continued)

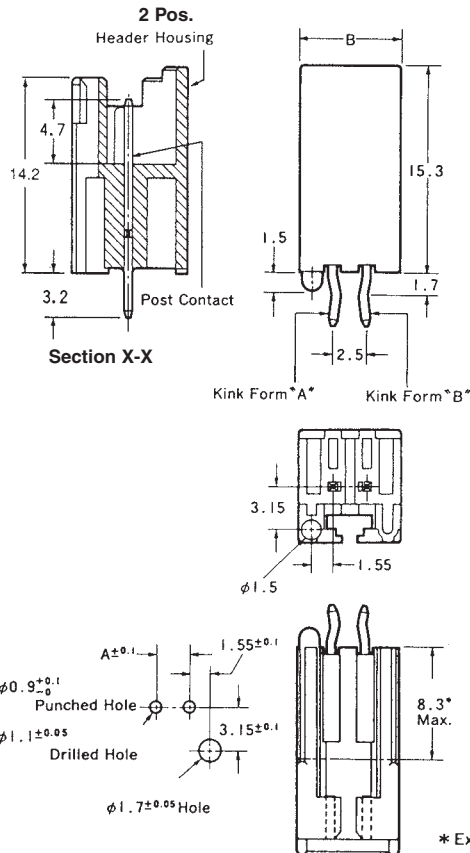
### Vertical Post Headers (For PC Board Mount)

#### High-Profile Type

#### Material and Finish

**Header Housing**—UL94V-0, 6/6  
Nylon, glass filled, color (see chart)

**Post Contact**—Pre-tinned copper  
alloy

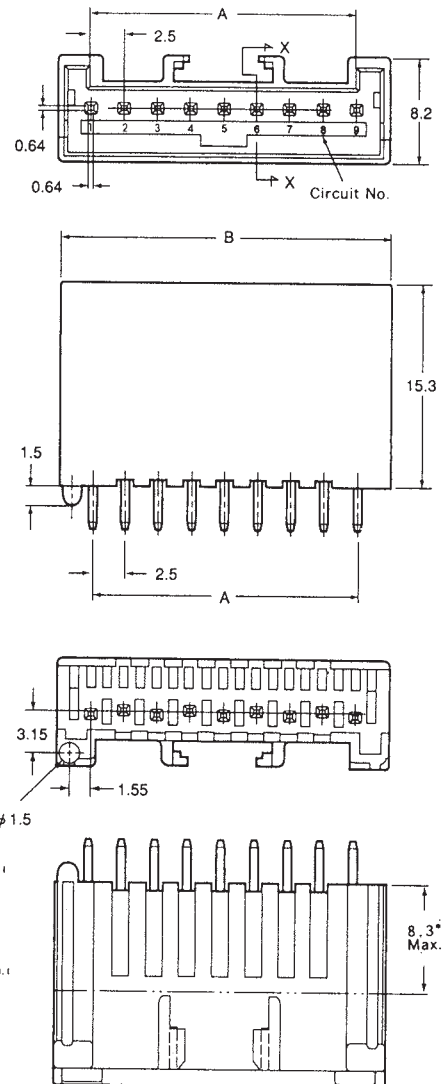
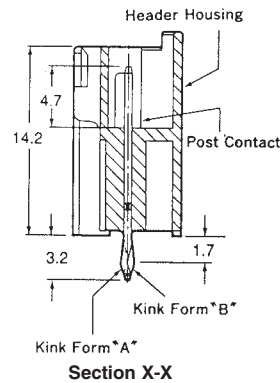


### Related Product Data

Mating Plug Housings—page 13

#### 3 to 13 Pos.

Designs of 5 pos. to 8 pos. header housings are slightly different, please request the drawings.



**Note:** Dimensions shown are metric.

| No.<br>of<br>Pos. | Dimensions |      | Post Header Part Number |                         |                         |                         |                         |                         |          | Radial Tape-<br>Mounted | (Qty.) |
|-------------------|------------|------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|----------|-------------------------|--------|
|                   |            |      | Loose Piece             |                         |                         |                         |                         |                         |          |                         |        |
|                   | A          | B    | Natural                 | Red                     | Yellow                  | Green                   | Blue                    | Black                   |          |                         |        |
| 2                 | 02.5       | 07.5 | □-917722-1 <sup>1</sup> | □-917722-2 <sup>1</sup> | □-917722-4 <sup>1</sup> | □-917722-5 <sup>1</sup> | □-917722-6 <sup>1</sup> | □-917722-9 <sup>1</sup> | 316221-1 | (900) <sup>2</sup>      |        |
| 3                 | 05.0       | 10.0 | □-917723-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | 316222-1 | (900)                   |        |
| 4                 | 07.5       | 12.5 | □-917724-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | 316223-1 | (450)                   |        |
| 5                 | 10.0       | 15.0 | □-917725-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | 316224-1 | (450)                   |        |
| 6                 | 12.5       | 17.5 | □-917726-1 <sup>1</sup> | —                       | □-917726-4 <sup>1</sup> | —                       | □-917726-6 <sup>1</sup> | —                       | 316225-1 | (450)                   |        |
| 7                 | 15.0       | 20.0 | □-917727-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | 316226-1 | (450)                   |        |
| 8                 | 17.5       | 22.5 | □-917728-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | 316227-1 | (450)                   |        |
| 9                 | 20.0       | 25.0 | □-917729-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | —        |                         |        |
| 10                | 22.5       | 27.5 | □-917730-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | —        |                         |        |
| 11                | 25.0       | 30.0 | □-917731-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | —        |                         |        |
| 12                | 27.5       | 32.5 | □-917732-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | —        |                         |        |
| 13                | 30.0       | 35.0 | □-917733-1 <sup>1</sup> | —                       | —                       | —                       | —                       | —                       | —        |                         |        |

\*1 Leave the □ blank, meaning it is with the boss. Enter 2 meaning it is without the boss.

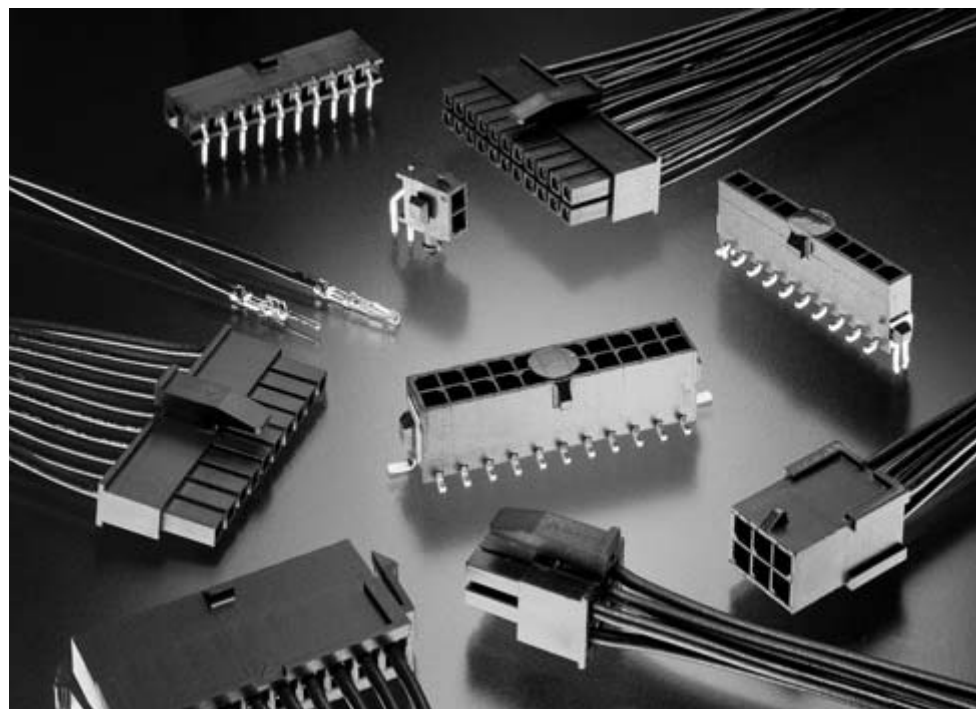
\*2 The red housing 316221-2 and the yellow housing 316221-4 and the green housing 316221-5 and the blue housing 316221-6 and the black housing 316221-9 are also available.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System

### Product Facts

- Wire-to-wire and wire-to-board pin and receptacle connector system
- Contacts are on 3 mm [.118] centerline spacing
- 2-12 contact positions – single row
- 2-24 contact positions – dual row
- Panel mount or free-hanging wire-to-wire configurations
- Dual beam contact design for reliable interconnection
- Contacts accept 24-20 [0.2-0.6] and 30-26 [0.05-0.15] AWG wire with insulation diameter of .060 [1.52] maximum
- Contacts available in strip form or loose piece
- Pcb mount pin header assemblies in both vertical and right-angle styles
- Surface mount or through-hole pcb pin header attachment
- Pcb headers are IR reflow process compatible
- Recognized under the Component Program of Underwriters Laboratories Inc.  to US and Canadian Standards, File No. E28476
- Passed Tests for VDE under Registration Number 40005280/Continuous Surveillance 



The Micro MATE-N-LOK 3 mm Connector System is a wire-to-wire and wire-to-board connector system with contacts on a 3 mm [.118] centerline. Both single-row and dual-row configurations are available. Crimp, snap-in pin and receptacle contacts are used to terminate 24-20 [0.2-0.6] and 30-26 [0.05-0.15] AWG wire. Plug and receptacle housings allow wire-to-wire and wire-to-panel configurations.

Header assemblies for wire-to-board interconnections include vertical and right-angle components. These IR reflow process compatible headers are available in through-hole and surface mount configurations.

Typical uses of the Micro MATE-N-LOK 3 mm Connector System include the appliance, instrumentation, industrial machinery, home equipment, and security system industries.

### Technical Documents

#### Application Specification

114-13000 Micro MATE-N-LOK Connectors

#### Product Specification

108-1836 3 mm Micro MATE-N-LOK Connector

### Performance Characteristics

**Voltage Rating**—250 vac

**Current Rating**—5 amp max. on 20 AWG wire

**Contact Resistance**—20 milliohms max. final

**Dielectric Withstanding Voltage**—1500 VAC

**Insulation Resistance**—1000 megohms min.

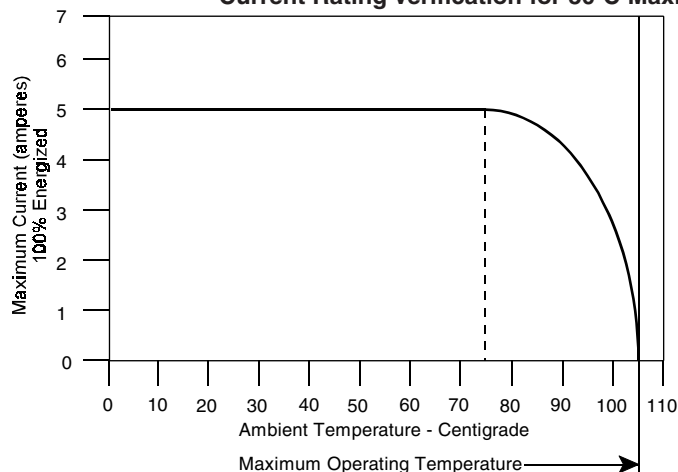
**Operating Temperature**—-40°C to +105°C

**Mating Force**—1.5lb [6.67N] max per contact

## Micro MATE-N-LOK 3 mm Connector System (Continued)

|                                                                                                              |       |
|--------------------------------------------------------------------------------------------------------------|-------|
| <b>Connector Application</b> . . . . .                                                                       | 19-21 |
| Crimp, Snap-In Contacts . . . . .                                                                            | 22    |
| <b>Receptacle Housings</b> . . . . .                                                                         |       |
| Single Row . . . . .                                                                                         | 23    |
| Dual Row . . . . .                                                                                           | 24    |
| <b>Plug Housings</b> . . . . .                                                                               |       |
| Single Row, Free-Hanging . . . . .                                                                           | 25    |
| Single Row, Panel Mount . . . . .                                                                            | 26    |
| Dual Row, Free-Hanging . . . . .                                                                             | 27    |
| Dual Row, Panel Mount . . . . .                                                                              | 28    |
| <b>Vertical Header Assemblies</b> . . . . .                                                                  |       |
| Single Row, Through-Hole, with Retention Feature<br>on Solder Tail and Polarization Feature to PCB . . . . . | 29    |
| Single Row, Through-Hole, with Metal Through-Hole Hold-down . . . . .                                        | 30    |
| Single Row, Surface Mount, with Metal Through-Hole Hold-down . . . . .                                       | 31    |
| Single Row, Surface Mount, with Surface Mount Hold-down . . . . .                                            | 32    |
| Dual Row, Through-Hole, with Retention Feature on Solder Tail . . . . .                                      | 33    |
| Dual Row, Through-Hole, with Retention Feature<br>on Solder Tail and Metal Through-Hole Hold-down . . . . .  | 34    |
| Dual Row, Surface Mount, with Metal Through-Hole Hold-down . . . . .                                         | 35    |
| Dual Row, Surface Mount, with Surface Mount Hold-down . . . . .                                              | 36    |
| <b>Right-Angle Header Assemblies</b> . . . . .                                                               |       |
| Single Row, Through-Hole, with Metal Through-Hole Hold-down . . . . .                                        | 37    |
| Single Row, Through-Hole, with Plastic Boardlock . . . . .                                                   | 38    |
| Single Row, Surface Mount, with Metal Through-Hole Hold-down . . . . .                                       | 39    |
| Single Row, Surface Mount, with Surface Mount Hold-down . . . . .                                            | 40    |
| Single Row, Surface Mount, with Plastic Boardlock . . . . .                                                  | 41    |
| Dual Row, Through-Hole, with Metal Through-Hole Hold-down . . . . .                                          | 42    |
| Dual Row, Through-Hole, with Plastic Boardlock . . . . .                                                     | 43    |
| Dual Row, Surface Mount, with Metal Through-Hole Hold-down . . . . .                                         | 44    |
| Dual Row, Surface Mount, with Plastic Boardlock . . . . .                                                    | 45    |
| Dual Row, Surface Mount, with Surface Mount Hold-down . . . . .                                              | 46    |

Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized



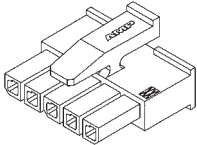
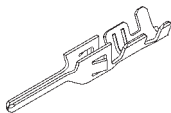
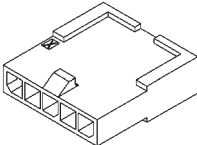
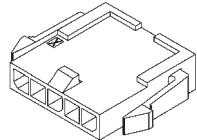
| Number of<br>Circuit Positions | Multiplication Factor |      |
|--------------------------------|-----------------------|------|
|                                | Wire Size (AWG)       |      |
| 2 to 6                         | 28                    | 20   |
|                                | 0.40                  | 1    |
| 8 to 20                        | 0.40                  | 0.85 |
|                                | 0.36                  | 0.85 |
| 22 to 24                       | 0.36                  | 0.85 |
|                                | 0.36                  | 0.85 |

To determine acceptable current carrying capacity for connector size and wire gage indicated, use the Multiplication Factor from the chart above and multiply it times the Base rated Current at the maximum ambient operating temperature shown in the current rating figure.

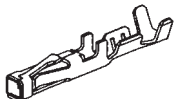
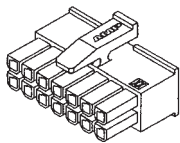
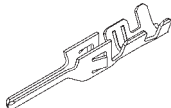
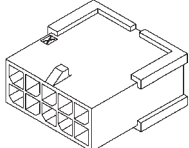
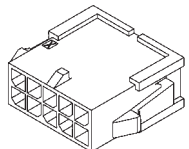
## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Connector Application — Wire-to-Wire and Wire-to-Panel

#### Single Row

| Receptacle                                                                                                                                      |                                                                                                                | Plug                                                                                                                                              |                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact                                                                                                                                         | Housing                                                                                                        | Contact                                                                                                                                           | Housing                                                                                                                                                                                                                                                            |
|  <p>794606-□, 794607-□,<br/>794610-□, 794611-□<br/>Page 22</p> |  <p>1445022-□<br/>Page 23</p> |  <p>794608-□, 794609-□,<br/>794612-□, 794613-□<br/>Page 22</p> |  <p>Free-Hanging<br/>1445049-□<br/>Page 25</p>  <p>Panel Mount<br/>1445048-□<br/>Page 26</p> |

#### Dual Row

| Receptacle                                                                                                                                        |                                                                                                                 | Plug                                                                                                                                                |                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact                                                                                                                                           | Housing                                                                                                         | Contact                                                                                                                                             | Housing                                                                                                                                                                                                                                                              |
|  <p>794606-□, 794607-□,<br/>794610-□, 794611-□<br/>Page 22</p> |  <p>794617-□<br/>Page 24</p> |  <p>794608-□, 794609-□,<br/>794612-□, 794613-□<br/>Page 22</p> |  <p>Free-Hanging<br/>794616-□<br/>Page 27</p>  <p>Panel Mount<br/>794615-□<br/>Page 28</p> |

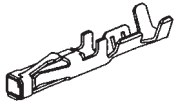
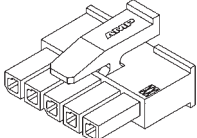
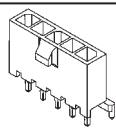
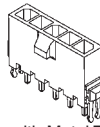
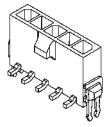
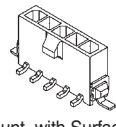
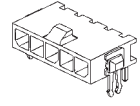
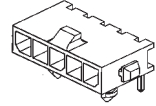
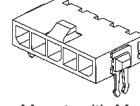
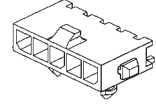
High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Connector Application — Wire-to-PCB

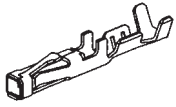
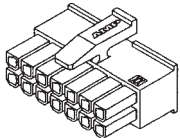
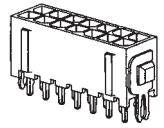
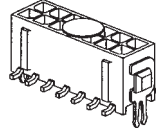
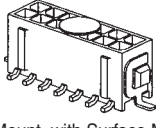
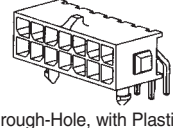
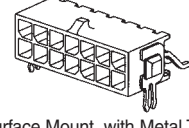
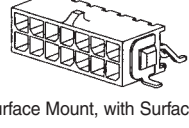
#### Single Row

| Receptacle                                                                                                                                      |                                                                                                                |                                                                                      | Header                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact                                                                                                                                         | Housing                                                                                                        |                                                                                      |                                                                                                                                                                                                                                       |
|  <p>794606-□, 794607-□,<br/>794610-□, 794611-□<br/>Page 22</p> |  <p>1445022-□<br/>Page 23</p> |  |  <p>Vertical Through-Hole, with Retention Feature on Solder Tail and Polarization Feature to PCB<br/>1445050-□, 1445084-□, 1445093-□ (Page 29)</p> |
|                                                                                                                                                 |                                                                                                                |                                                                                      |  <p>Vertical Through-Hole, with Metal Through-Hole Hold-down<br/>1445051-□, 1445085-□, 1445094-□ (Page 30)</p>                                     |
|                                                                                                                                                 |                                                                                                                |                                                                                      |  <p>Vertical Surface Mount, with Metal Through-Hole Hold-down<br/>1445052-□, 1445086-□, 1445095-□ (Page 31)</p>                                    |
|                                                                                                                                                 |                                                                                                                |                                                                                      |  <p>Vertical Surface Mount, with Surface Mount Hold-down<br/>1445053-□, 1445087-□, 1445096-□ (Page 32)</p>                                        |
|                                                                                                                                                 |                                                                                                                |                                                                                      |  <p>Right-angle, Through-Hole, with Metal Through-Hole Hold-down<br/>1445054-□, 1445088-□, 1445097-□ (Page 37)</p>                               |
|                                                                                                                                                 |                                                                                                                |                                                                                      |  <p>Right-angle, Through-Hole, with Plastic Boardlock<br/>1445055-□, 1445089-□, 1445098-□ (Page 38)</p>                                          |
|                                                                                                                                                 |                                                                                                                |                                                                                      |  <p>Right-angle, Surface Mount, with Metal Through-Hole Hold-down<br/>1445056-□, 1445090-□, 1445099-□ (Page 39)</p>                              |
|                                                                                                                                                 |                                                                                                                |                                                                                      |  <p>Right-angle, Surface Mount, with Surface Mount Hold-down<br/>1445057-□, 1445091-□, 1445100-□ (Page 40)</p>                                   |
|                                                                                                                                                 |                                                                                                                |                                                                                      |  <p>Right-angle, Surface Mount, and Plastic Boardlock<br/>1445058-□, 1445092-□, 1445101-□ (Page 41)</p>                                          |
|                                                                                                                                                 |                                                                                                                |                                                                                      |                                                                                                                                                                                                                                       |

## Micro MATE-N-LOK 3 mm Connector System (Continued)

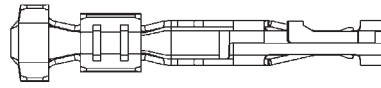
### Connector Application — Wire-to-PCB

#### Dual Row

| Receptacle                                                                                                                                      |                                                                                                               |                                                                                      | Header                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact                                                                                                                                         | Housing                                                                                                       |                                                                                      |                                                                                                                                                                                                                                                                                          |
|  <p>794606-□, 794607-□,<br/>794610-□, 794611-□<br/>Page 22</p> |  <p>794617-□<br/>Page 24</p> |  |  <p>Vertical Through-Hole, with Retention Feature on Solder-tail and Optional Metal Through-Hole Hold-down<br/>794630-□, 794631-□, 794632-□, (Page 33)<br/>794680-□, 794681-□, 794682-□ (Page 34)</p> |
|                                                                                                                                                 |                                                                                                               |                                                                                      |  <p>Vertical Surface Mount, with Metal Through-Hole Hold-down<br/>794633-□, 794634-□, 794635-□ (Page 35)</p>                                                                                          |
|                                                                                                                                                 |                                                                                                               |                                                                                      |  <p>Vertical Surface Mount, with Surface Mount Hold-down<br/>794636-□, 794637-□, 794638-□ (Page 36)</p>                                                                                               |
|                                                                                                                                                 |                                                                                                               |                                                                                      |  <p>Right-angle, Through-Hole, with Metal Through-Hole Hold-down<br/>794677-□, 794678-□, 794679-□ (Page 42)</p>                                                                                      |
|                                                                                                                                                 |                                                                                                               |                                                                                      |  <p>Right-angle, Through-Hole, with Plastic Boardlock<br/>794618-□, 794619-□, 794620-□ (Page 43)</p>                                                                                                |
|                                                                                                                                                 |                                                                                                               |                                                                                      |  <p>Right-angle, Surface Mount, with Metal Through-Hole Hold-down<br/>794624-□, 794625-□, 794626-□ (Page 44)</p>                                                                                    |
|                                                                                                                                                 |                                                                                                               |                                                                                      |  <p>Right-angle, Surface Mount, with Plastic Boardlock<br/>794621-□, 794622-□, 794623-□ (Page 45)</p>                                                                                               |
|                                                                                                                                                 |                                                                                                               |                                                                                      |  <p>Right-angle, Surface Mount, with Surface Mount Hold-down<br/>794627-□, 794628-□, 794629-□ (Page 46)</p>                                                                                         |

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Crimp, Snap-In Contacts



#### Material and Finish

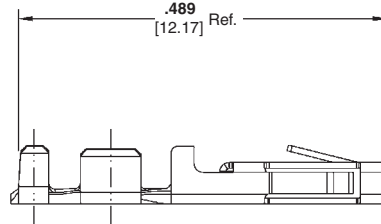
**Receptacle** — Phosphor Bronze

**Plug** — Brass

**Plating A** — .000100 (.000254) minimum bright tin entire stock over .000050 (.000127) minimum nickel entire stock

**Plating B** — .000015 (.000038) minimum gold in localized gold plate area. .000100 (.000254) minimum bright tin in localized tin plate area, both over .000050 (.000127) minimum nickel on entire stock

**Plating C** — .000030 (.000076) minimum gold in localized gold plate area. .000100 (.000254) minimum bright tin in localized tin plate area, both over .000050 (.000127) minimum nickel on entire stock

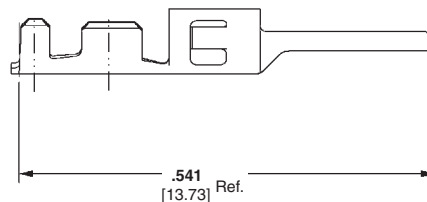
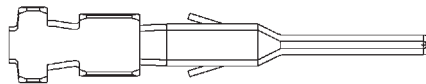


#### Receptacle Contacts

| Wire Size Range<br>AWG [mm <sup>2</sup> ] | Ins. Dia. Range          | Finish    | Contact Part Numbers |             | Tooling Part Numbers |           |
|-------------------------------------------|--------------------------|-----------|----------------------|-------------|----------------------|-----------|
|                                           |                          |           | Strip Form           | Loose Piece | Applicator           | Hand Tool |
| 20-24<br>0.50 - 0.20                      | .035 - .060<br>0.89-1.52 | Plating A | 794606-1             | 794610-1    | 680893-□*            | 91501-1   |
|                                           |                          | Plating B | 1-794606-1           | 1-794610-1  |                      |           |
|                                           |                          | Plating C | 1-794606-2           | 1-794610-2  |                      |           |
| 26-30<br>0.12 - 0.05                      | .035 - .060<br>0.89-1.52 | Plating A | 794607-1             | 794611-1    | 680894-□*            | 91502-1   |
|                                           |                          | Plating B | 1-794607-1           | 1-794611-1  |                      |           |
|                                           |                          | Plating C | 1-794607-2           | 1-794611-2  |                      |           |

\*1=AMPOMATOR CLS Machine, 2=AMP-O-LECTRIC Model K Terminator, 3=AMP-O-LECTRIC Model G Terminator

**Note:** All part numbers are RoHS Compliant.



#### Plug Contacts

| Wire Size Range<br>AWG [mm <sup>2</sup> ] | Ins. Dia. Range          | Finish    | Contact Part Numbers |             | Tooling Part Numbers |           |
|-------------------------------------------|--------------------------|-----------|----------------------|-------------|----------------------|-----------|
|                                           |                          |           | Strip Form           | Loose Piece | Applicator           | Hand Tool |
| 20-24<br>0.50 - 0.20                      | .035 - .060<br>0.89-1.52 | Plating A | 1-794608-0           | 1-794612-0  | 1385194-□*           | 91501-1   |
|                                           |                          | Plating B | 1-794608-1           | 1-794612-1  |                      |           |
|                                           |                          | Plating C | 1-794608-2           | 1-794612-2  |                      |           |
| 26-30<br>0.12 - 0.05                      | .035 - .060<br>0.89-1.52 | Plating A | 1-794609-0           | 1-794613-0  | 1385377-□*           | 91502-1   |
|                                           |                          | Plating B | 1-794609-1           | 1-794613-1  |                      |           |
|                                           |                          | Plating C | 1-794609-2           | 1-794613-2  |                      |           |

\*1=AMPOMATOR CLS Machine, 2=AMP-O-LECTRIC Model K Terminator, 3=AMP-O-LECTRIC Model G Terminator

**Note:** All part numbers are RoHS Compliant.

#### Related Product Data

##### Connectors used with:

Receptacle Contacts used with Receptacle Housings — pages 23-24

Plug Contacts used with Plug Housings — pages 25-28

**Application Tooling** — pages 201-204

#### Contact Extraction Tools

Part Number 843996-6 for Receptacle Contacts Part Number 1586344-1 for Plug Contacts

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Receptacle Housings

#### Single Row

#### Material

Nylon, Black  
Flammability Rating—UL 94V-0

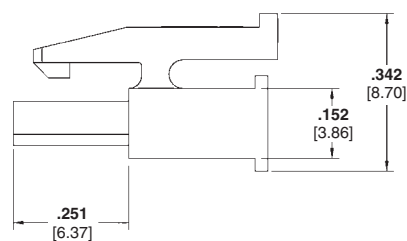
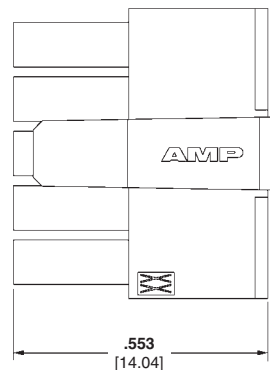
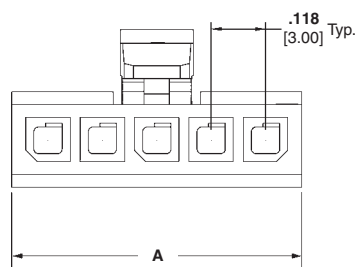
#### Related Product Data

##### Contacts:

Receptacle Contacts—page 22

#### Mateable Housings and Headers:

Single Row Plug Housings—  
pages 25-26  
Single Row Vertical Pin Header  
Assemblies—pages 29-32  
Single Row Right-Angle Pin Header  
Assemblies—pages 37-41



| Number of Circuits | Dimension A    | Part Numbers |
|--------------------|----------------|--------------|
| 2                  | .276<br>7.00   | 1445022-2    |
| 3                  | .394<br>10.00  | 1445022-3    |
| 4                  | .512<br>13.00  | 1445022-4    |
| 5                  | .630<br>16.00  | 1445022-5    |
| 6                  | .748<br>19.00  | 1445022-6    |
| 7                  | .866<br>22.00  | 1445022-7    |
| 8                  | .984<br>25.00  | 1445022-8    |
| 9                  | 1.102<br>28.00 | 1445022-9    |
| 10                 | 1.220<br>31.00 | 1-1445022-0  |
| 11                 | 1.339<br>34.00 | 1-1445022-1  |
| 12                 | 1.457<br>37.00 | 1-1445022-2  |

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Receptacle Housings (Continued)

#### Dual Row

#### Material

Nylon, Black  
Flammability Rating—UL 94V-0

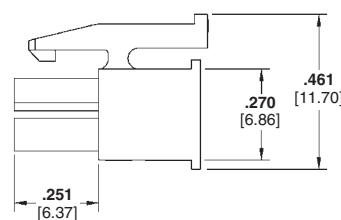
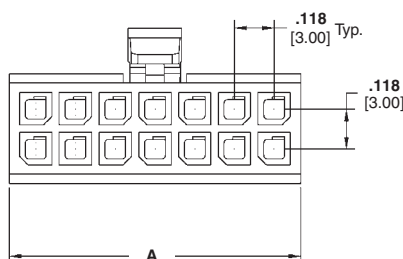
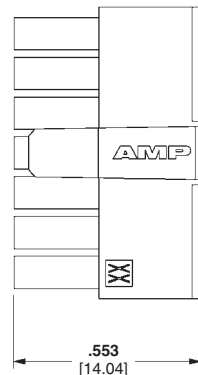
#### Related Product Data

##### Contacts:

Receptacle Contacts—page 22

#### Mateable Housings and Headers:

Dual Row Plug Housings—pages 27-28  
Dual Row Vertical Pin Header Assemblies—pages 33-36  
Dual Row Right-Angle Pin Header Assemblies—pages 42-46



| Number of Circuits | Dimension A    | Part Numbers |
|--------------------|----------------|--------------|
| 2                  | .157<br>4.00   | 794617-2     |
| 4                  | .276<br>7.00   | 794617-4     |
| 6                  | .394<br>10.00  | 794617-6     |
| 8                  | .512<br>13.00  | 794617-8     |
| 10                 | .630<br>16.00  | 1-794617-0   |
| 12                 | .748<br>19.00  | 1-794617-2   |
| 14                 | .866<br>22.00  | 1-794617-4   |
| 16                 | .984<br>25.00  | 1-794617-6   |
| 18                 | 1.102<br>28.00 | 1-794617-8   |
| 20                 | 1.220<br>31.00 | 2-794617-0   |
| 22                 | 1.339<br>34.00 | 2-794617-2   |
| 24                 | 1.457<br>37.00 | 2-794617-4   |

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Plug Housings

#### Single Row, Free-Hanging

#### Material

Nylon, Black  
Flammability Rating—UL 94V-0

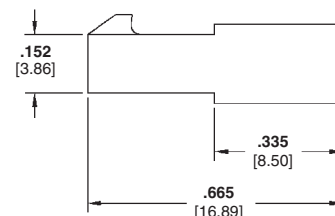
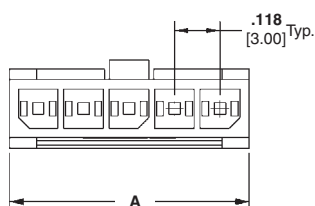
#### Related Product Data

##### Contacts:

Plug Contacts—page 22

##### Mateable Housings:

Single Row Receptacle Housings—  
page 23



| Number of Circuits | Dimension A    | Part Numbers |
|--------------------|----------------|--------------|
| 2                  | .270<br>6.85   | 1445049-2    |
| 3                  | .388<br>9.85   | 1445049-3    |
| 4                  | .506<br>12.85  | 1445049-4    |
| 5                  | .624<br>15.85  | 1445049-5    |
| 6                  | .742<br>18.85  | 1445049-6    |
| 7                  | .860<br>21.85  | 1445049-7    |
| 8                  | .978<br>24.85  | 1445049-8    |
| 9                  | 1.096<br>27.85 | 1445049-9    |
| 10                 | 1.215<br>30.85 | 1-1445049-0  |
| 11                 | 1.333<br>33.85 | 1-1445049-1  |
| 12                 | 1.451<br>36.85 | 1-1445049-2  |

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Plug Housings (Continued)

#### Single Row, Panel Mount

#### Material

Nylon, Black  
Flammability Rating—UL 94V-0

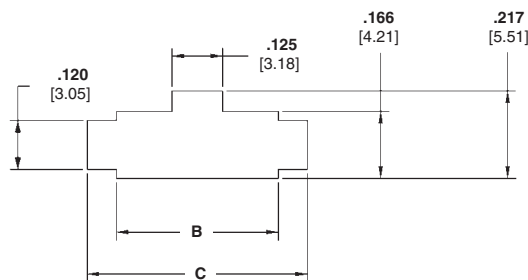
#### Related Product Data

##### Contacts:

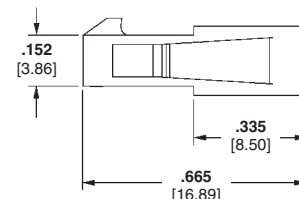
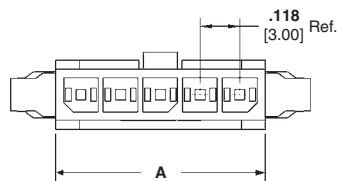
Plug Contacts—page 22

##### Mateable Housings:

Single Row Receptacle Housings—  
page 23



Recommended Panel Cutout\*



| Number<br>of Circuits | Dimensions     |                |                | Part<br>Numbers |
|-----------------------|----------------|----------------|----------------|-----------------|
|                       | A              | B              | C              |                 |
| 2                     | .270<br>6.85   | .283<br>7.20   | .428<br>10.88  | 1445048-2       |
| 3                     | .388<br>9.85   | .402<br>10.20  | .546<br>13.88  | 1445048-3       |
| 4                     | .506<br>12.85  | .520<br>13.20  | .665<br>16.88  | 1445048-4       |
| 5                     | .624<br>15.85  | .638<br>16.20  | .783<br>19.88  | 1445048-5       |
| 6                     | .742<br>18.85  | .756<br>19.20  | .901<br>22.88  | 1445048-6       |
| 7                     | .860<br>21.85  | .874<br>22.20  | 1.019<br>25.88 | 1445048-7       |
| 8                     | .978<br>24.85  | .992<br>25.20  | 1.137<br>28.88 | 1445048-8       |
| 9                     | 1.096<br>27.85 | 1.110<br>28.20 | 1.255<br>31.88 | 1445048-9       |
| 10                    | 1.215<br>30.85 | 1.228<br>31.20 | 1.373<br>34.88 | 1-1445048-0     |
| 11                    | 1.333<br>33.85 | 1.346<br>34.20 | 1.491<br>37.88 | 1-1445048-1     |
| 12                    | 1.451<br>36.85 | 1.465<br>37.20 | 1.609<br>40.88 | 1-1445048-2     |

\*Recommended panel thickness .062-.091 [1.57-2.30]. Always consult customer drawing for panel cutout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Plug Housings (Continued)

#### Dual Row, Free-Hanging

#### Material

Nylon, Black

Flammability Rating—UL 94V-0

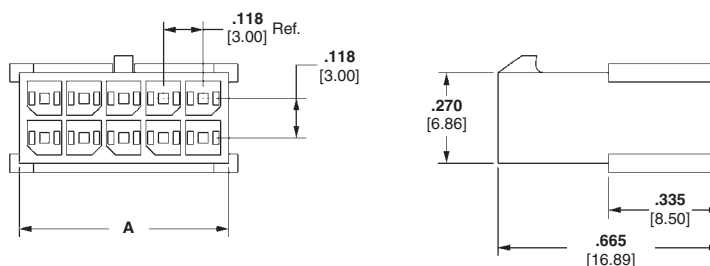
#### Related Product Data

##### Contacts:

Plug Contacts—page 22

##### Mateable Housings:

Dual Row Receptacle Housings—  
page 24



| Number of Circuits | Dimension A    | Part Numbers |
|--------------------|----------------|--------------|
| 2                  | .157<br>3.85   | 794616-2     |
| 4                  | .276<br>6.85   | 794616-4     |
| 6                  | .394<br>9.85   | 794616-6     |
| 8                  | .512<br>12.85  | 794616-8     |
| 10                 | .630<br>15.85  | 1-794616-0   |
| 12                 | .748<br>18.85  | 1-794616-2   |
| 14                 | .866<br>21.85  | 1-794616-4   |
| 16                 | .984<br>24.85  | 1-794616-6   |
| 18                 | 1.102<br>27.85 | 1-794616-8   |
| 20                 | 1.220<br>30.85 | 2-794616-0   |
| 22                 | 1.339<br>33.85 | 2-794616-2   |
| 24                 | 1.457<br>36.85 | 2-794616-4   |

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Plug Housings (Continued)

#### Dual Row, Panel Mount

#### Material

Nylon, Black  
Flammability Rating—UL 94V-0

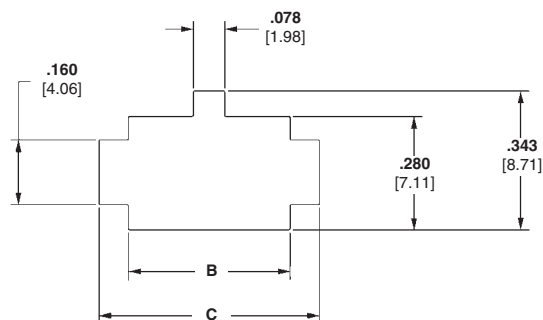
#### Related Product Data

##### Contacts:

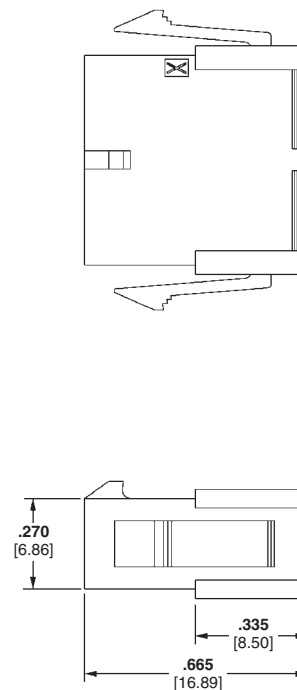
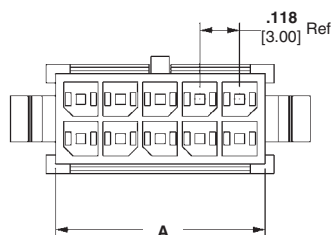
Plug Contacts—page 22

##### Mateable Housings:

Dual Row Receptacle Housings—  
page 24



Recommended Panel Cutout\*



| Number<br>of Circuits | Dimensions     |                |                | Part<br>Numbers |
|-----------------------|----------------|----------------|----------------|-----------------|
|                       | A              | B              | C              |                 |
| 2                     | .157<br>3.85   | .165<br>4.20   | .310<br>7.88   | 794615-2        |
| 4                     | .276<br>6.85   | .285<br>7.20   | .428<br>10.88  | 794615-4        |
| 6                     | .394<br>9.85   | .402<br>10.20  | .546<br>13.88  | 794615-6        |
| 8                     | .512<br>12.85  | .520<br>13.20  | .665<br>16.88  | 794615-8        |
| 10                    | .630<br>15.85  | .638<br>16.20  | .783<br>19.88  | 1-794615-0      |
| 12                    | .748<br>18.85  | .756<br>19.20  | .901<br>22.88  | 1-794615-2      |
| 14                    | .866<br>21.85  | .874<br>22.20  | 1.019<br>25.88 | 1-794615-4      |
| 16                    | .984<br>24.85  | .992<br>25.20  | 1.137<br>28.88 | 1-794615-6      |
| 18                    | 1.102<br>27.85 | 1.110<br>28.20 | 1.255<br>31.88 | 1-794615-8      |
| 20                    | 1.220<br>30.85 | 1.228<br>31.20 | 1.373<br>34.88 | 2-794615-0      |
| 22                    | 1.339<br>33.85 | 1.346<br>34.20 | 1.491<br>37.88 | 2-794615-2      |
| 24                    | 1.457<br>36.85 | 1.469<br>37.20 | 1.609<br>40.88 | 2-794615-4      |

\*Recommended panel thickness .062-.091 [1.57-2.30]. Always consult customer drawing for panel cutout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Vertical Header Assemblies

**Single Row, Through-Hole, with Retention Feature on Solder Tail and Polarization Feature to PCB**

#### Material and Finish

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

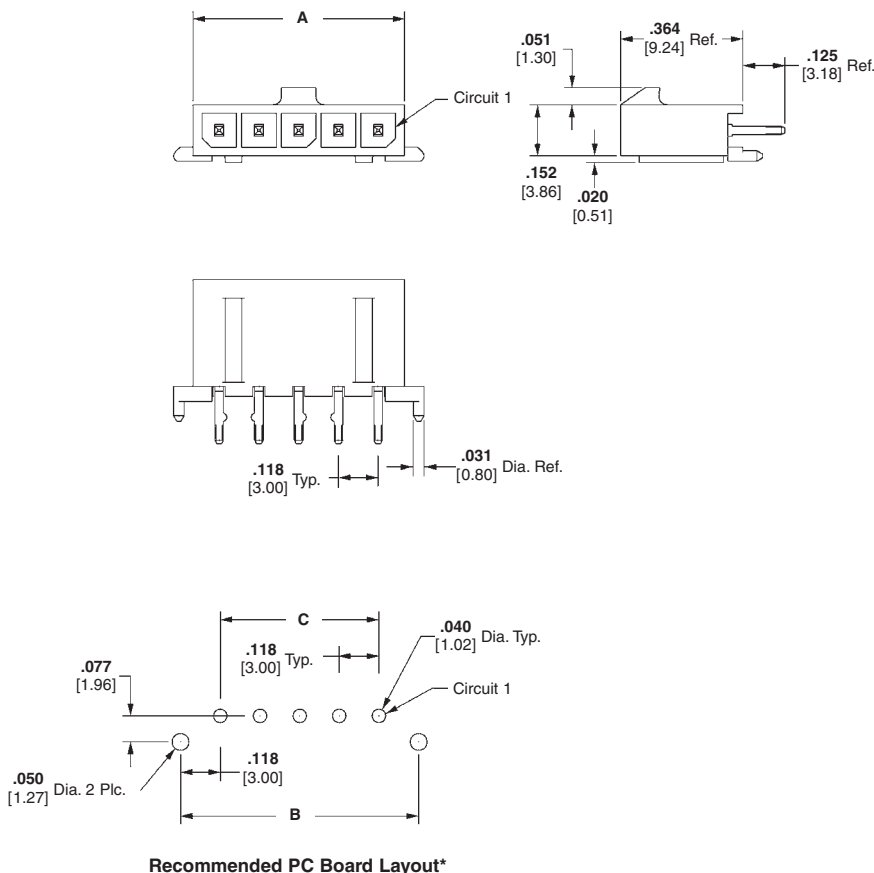
**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Single Row Receptacle Housings—  
page 23



Recommended PC Board Layout\*

| Number of Circuits | Dimensions     |                |                | Header Part Numbers |             |             | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|-------------|-------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B   | Plating C   |                                           |
| 2                  | .276<br>7.00   | .360<br>9.14   | .118<br>3.00   | 2-1445050-2         | 2-1445084-2 | 2-1445093-2 | 1445022-2                                 |
| 3                  | .394<br>10.00  | .478<br>12.14  | .236<br>6.00   | 2-1445050-3         | 2-1445084-3 | 2-1445093-3 | 1445022-3                                 |
| 4                  | .512<br>13.00  | .596<br>15.14  | .354<br>9.00   | 2-1445050-4         | 2-1445084-4 | 2-1445093-4 | 1445022-4                                 |
| 5                  | .630<br>16.00  | .714<br>18.14  | .472<br>12.00  | 2-1445050-5         | 2-1445084-5 | 2-1445093-5 | 1445022-5                                 |
| 6                  | .748<br>19.00  | .832<br>21.14  | .591<br>15.00  | 2-1445050-6         | 2-1445084-6 | 2-1445093-6 | 1445022-6                                 |
| 7                  | .866<br>22.00  | .950<br>24.14  | .709<br>18.00  | 2-1445050-7         | 2-1445084-7 | 2-1445093-7 | 1445022-7                                 |
| 8                  | .984<br>25.00  | 1.069<br>27.14 | .827<br>21.00  | 2-1445050-8         | 2-1445084-8 | 2-1445093-8 | 1445022-8                                 |
| 9                  | 1.102<br>28.00 | 1.187<br>30.14 | .945<br>24.00  | 2-1445050-9         | 2-1445084-9 | 3-1445093-9 | 1445022-9                                 |
| 10                 | 1.220<br>31.00 | 1.304<br>33.14 | 1.063<br>27.00 | 3-1445050-0         | 3-1445084-0 | 3-1445093-0 | 1-1445022-0                               |
| 11                 | 1.339<br>34.00 | 1.423<br>36.14 | 1.181<br>30.00 | 3-1445050-1         | 3-1445084-1 | 3-1445093-1 | 1-1445022-1                               |
| 12                 | 1.457<br>37.00 | 1.541<br>39.14 | 1.299<br>33.00 | 3-1445050-2         | 3-1445084-2 | 3-1445093-2 | 1-1445022-2                               |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Vertical Header Assemblies

(Continued)

#### Single Row, Through-Hole, with Metal Through-Hole Hold-down

#### Material and Finish

**Housing** — High Temperature Nylon,  
Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin  
over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

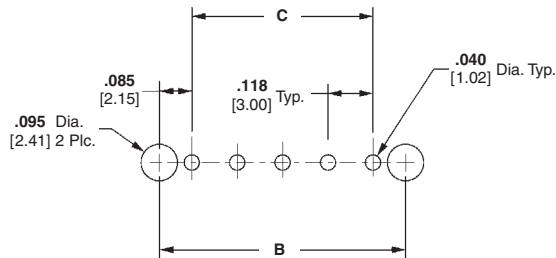
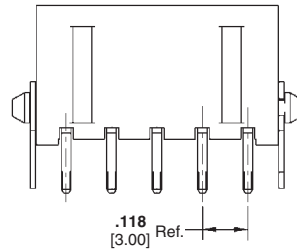
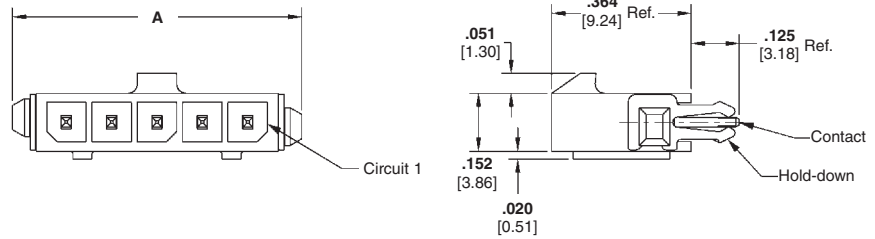
**Plating C** — .000030 [0.00076] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

**Hold-downs** — Phosphor Bronze,  
.000100 [0.00254] min. tin over  
.000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Single Row Receptacle Housing —  
page 23



Recommended PC Board Layout\*

| Number of<br>Circuits | Dimensions     |                |                | Header Part Numbers |             |             | Mates with<br>Receptacle Housing<br>Part Number |
|-----------------------|----------------|----------------|----------------|---------------------|-------------|-------------|-------------------------------------------------|
|                       | A              | B              | C              | Plating A           | Plating B   | Plating C   |                                                 |
| 2                     | .399<br>10.14  | .293<br>7.43   | .118<br>3.00   | 2-1445051-2         | 2-1445085-2 | 2-1445094-2 | 1445022-2                                       |
| 3                     | .517<br>13.14  | .411<br>10.43  | .236<br>6.00   | 2-1445051-3         | 2-1445085-3 | 2-1445094-3 | 1445022-3                                       |
| 4                     | .635<br>16.14  | .529<br>13.43  | .354<br>9.00   | 2-1445051-4         | 2-1445085-4 | 2-1445094-4 | 1445022-4                                       |
| 5                     | .754<br>19.14  | .647<br>16.43  | .472<br>12.00  | 2-1445051-5         | 2-1445085-5 | 2-1445094-5 | 1445022-5                                       |
| 6                     | .871<br>22.14  | .765<br>19.43  | .591<br>15.00  | 2-1445051-6         | 2-1445085-6 | 2-1445094-6 | 1445022-6                                       |
| 7                     | .990<br>25.14  | .883<br>22.43  | .709<br>18.00  | 2-1445051-7         | 2-1445085-7 | 2-1445094-7 | 1445022-7                                       |
| 8                     | 1.108<br>28.14 | 1.001<br>25.43 | .827<br>21.00  | 2-1445051-8         | 2-1445085-8 | 2-1445094-8 | 1445022-8                                       |
| 9                     | 1.226<br>31.14 | 1.119<br>28.43 | .945<br>24.00  | 2-1445051-9         | 2-1445085-9 | 2-1445094-9 | 1445022-9                                       |
| 10                    | 1.344<br>34.14 | 1.237<br>31.43 | 1.063<br>27.00 | 3-1445051-0         | 3-1445085-0 | 3-1445094-0 | 1-1445022-0                                     |
| 11                    | 1.462<br>37.14 | 1.356<br>34.43 | 1.181<br>30.00 | 3-1445051-1         | 3-1445085-1 | 3-1445094-1 | 1-1445022-1                                     |
| 12                    | 1.580<br>40.14 | 1.474<br>37.43 | 1.299<br>33.00 | 3-1445051-2         | 3-1445085-2 | 3-1445094-2 | 1-1445022-2                                     |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Vertical Header Assemblies

(Continued)

#### Single Row, Surface Mount, with Metal Through-Hole Hold-down

#### Material and Finish

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

#### Contacts—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

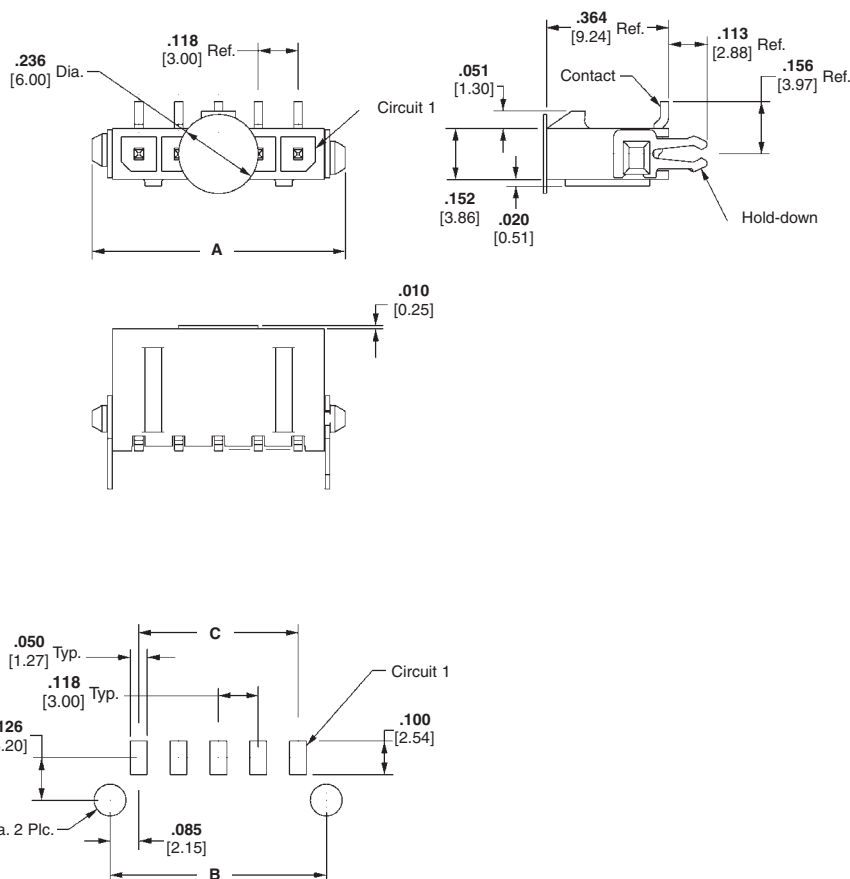
**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Single Row Receptacle Housing—page 23



Recommended PC Board Layout\*

| Number of Circuits | Dimensions     |                |                | Header Part Numbers |             |             | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|-------------|-------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B   | Plating C   |                                           |
| 2                  | .394<br>10.00  | .293<br>7.43   | .118<br>3.00   | 2-1445052-2         | 2-1445086-2 | 2-1445095-2 | 1445022-2                                 |
| 3                  | .512<br>13.00  | .411<br>10.43  | .236<br>6.00   | 2-1445052-3         | 2-1445086-3 | 2-1445095-3 | 1445022-3                                 |
| 4                  | .630<br>16.00  | .529<br>13.43  | .354<br>9.00   | 2-1445052-4         | 2-1445086-4 | 2-1445095-4 | 1445022-4                                 |
| 5                  | .748<br>19.00  | .647<br>16.43  | .472<br>12.00  | 2-1445052-5         | 2-1445086-5 | 2-1445095-5 | 1445022-5                                 |
| 6                  | .866<br>22.00  | .765<br>19.43  | .591<br>15.00  | 2-1445052-6         | 2-1445086-6 | 2-1445095-6 | 1445022-6                                 |
| 7                  | .984<br>25.00  | .883<br>22.43  | .709<br>18.00  | 2-1445052-7         | 2-1445086-7 | 2-1445095-7 | 1445022-7                                 |
| 8                  | 1.102<br>28.00 | 1.001<br>25.43 | .827<br>21.00  | 2-1445052-8         | 2-1445086-8 | 2-1445095-8 | 1445022-8                                 |
| 9                  | 1.220<br>31.00 | 1.119<br>28.43 | .945<br>24.00  | 2-1445052-9         | 2-1445086-9 | 2-1445095-9 | 1445022-9                                 |
| 10                 | 1.339<br>34.00 | 1.237<br>31.43 | 1.063<br>27.00 | 3-1445052-0         | 3-1445086-0 | 3-1445095-0 | 1-1445022-0                               |
| 11                 | 1.457<br>37.00 | 1.356<br>34.43 | 1.181<br>30.00 | 3-1445052-1         | 3-1445086-1 | 3-1445095-1 | 1-1445022-1                               |
| 12                 | 1.575<br>40.00 | 1.474<br>37.43 | 1.299<br>33.00 | 3-1445052-2         | 3-1445086-2 | 3-1445095-2 | 1-1445022-2                               |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Vertical Header Assemblies

(Continued)

#### Single Row, Surface Mount, with Surface Mount Hold-down

#### Material and Finish

**Housing**—High Temperature Nylon,  
Black

**Flammability Rating**—UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin  
over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

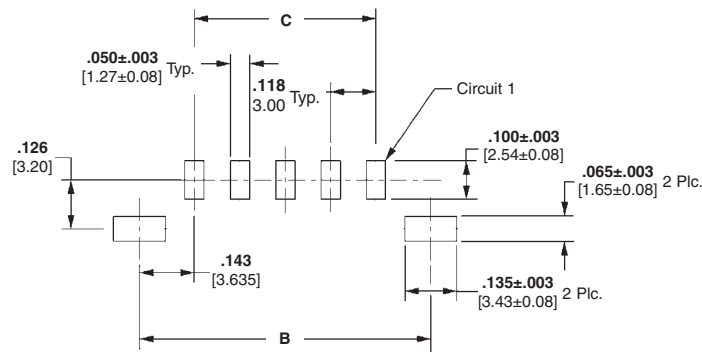
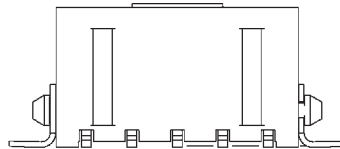
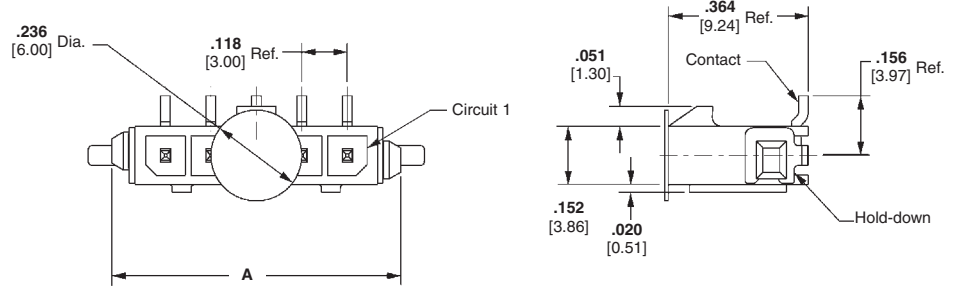
**Plating C**—.000030 [0.00076] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

**Hold-downs**—Phosphor Bronze,  
.000100 [0.00254] min. tin over  
.000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Single Row Receptacle Housing—  
page 23



Recommended PC Board Layout\*

| Number of<br>Circuits | Dimensions     |                |                | Header Part Numbers |             |             | Mates with<br>Receptacle Housing<br>Part Number |
|-----------------------|----------------|----------------|----------------|---------------------|-------------|-------------|-------------------------------------------------|
|                       | A              | B              | C              | Plating A           | Plating B   | Plating C   |                                                 |
| 2                     | .394<br>10.00  | .410<br>10.41  | .118<br>3.00   | 2-1445053-2         | 2-1445087-2 | 2-1445096-2 | 1445022-2                                       |
| 3                     | .512<br>13.00  | .528<br>13.41  | .236<br>6.00   | 2-1445053-3         | 2-1445087-3 | 2-1445096-3 | 1445022-3                                       |
| 4                     | .630<br>16.00  | .646<br>16.41  | .354<br>9.00   | 2-1445053-4         | 2-1445087-4 | 2-1445096-4 | 1445022-4                                       |
| 5                     | .748<br>19.00  | .765<br>19.41  | .472<br>12.00  | 2-1445053-5         | 2-1445087-5 | 2-1445096-5 | 1445022-5                                       |
| 6                     | .866<br>22.00  | .882<br>22.41  | .591<br>15.00  | 2-1445053-6         | 2-1445087-6 | 2-1445096-6 | 1445022-6                                       |
| 7                     | .984<br>25.00  | 1.001<br>25.41 | .709<br>18.00  | 2-1445053-7         | 2-1445087-7 | 2-1445096-7 | 1445022-7                                       |
| 8                     | 1.102<br>28.00 | 1.119<br>28.41 | .827<br>21.00  | 2-1445053-8         | 2-1445087-8 | 2-1445096-8 | 1445022-8                                       |
| 9                     | 1.220<br>31.00 | 1.237<br>31.41 | .945<br>24.00  | 2-1445053-9         | 2-1445087-9 | 2-1445096-9 | 1445022-9                                       |
| 10                    | 1.339<br>34.00 | 1.355<br>34.41 | 1.063<br>27.00 | 3-1445053-0         | 3-1445087-0 | 3-1445096-0 | 1-1445022-0                                     |
| 11                    | 1.457<br>37.00 | 1.473<br>37.41 | 1.181<br>30.00 | 3-1445053-1         | 3-1445087-1 | 3-1445096-1 | 1-1445022-1                                     |
| 12                    | 1.575<br>40.00 | 1.591<br>40.41 | 1.299<br>33.00 | 3-1445053-2         | 3-1445087-2 | 3-1445096-2 | 1-1445022-2                                     |

\*Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Vertical Header Assemblies

(Continued)

**Dual Row, Through-Hole,  
with Retention Feature  
on Solder Tail**

### Material and Finish

**Housing** — High Temperature Nylon,  
Black

**Flammability Rating** — UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin  
over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

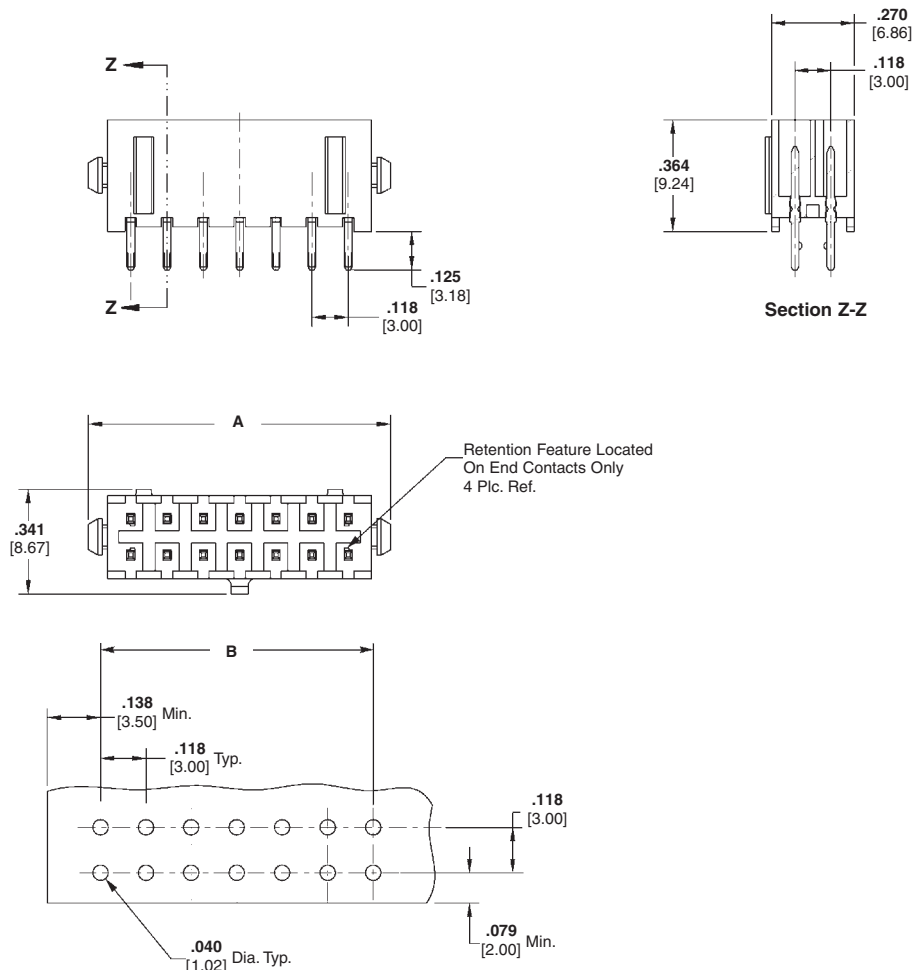
**Plating C**—.000030 [0.00076] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

**Hold-downs**—Phosphor Bronze,  
.000100 [0.00254] min. tin over  
.000050 [0.00127] min. nickel

### Related Product Data

#### Mateable Housings:

Dual Row Receptacle Housing—page 24



Recommended PC Board Layout\*

| Number of<br>Circuits | Dimensions     |                | Header Part Numbers |            |            | Mates with<br>Receptacle Housing<br>Part Number |
|-----------------------|----------------|----------------|---------------------|------------|------------|-------------------------------------------------|
|                       | A              | B              | Plating A           | Plating B  | Plating C  |                                                 |
| 2                     | .276<br>7.00   | —              | 3-794630-2          | 3-794631-2 | 3-794632-2 | 794617-2                                        |
| 4                     | .394<br>10.00  | .118<br>3.00   | 3-794630-4          | 3-794631-4 | 3-794632-4 | 794617-4                                        |
| 6                     | .512<br>13.00  | .236<br>6.00   | 3-794630-6          | 3-794631-6 | 3-794632-6 | 794617-6                                        |
| 8                     | .630<br>16.00  | .354<br>9.00   | 3-794630-8          | 3-794631-8 | 3-794632-8 | 794617-8                                        |
| 10                    | .748<br>19.00  | .472<br>12.00  | 4-794630-0          | 4-794631-0 | 4-794632-0 | 1-794617-0                                      |
| 12                    | .866<br>22.00  | .591<br>15.00  | 4-794630-2          | 4-794631-2 | 4-794632-2 | 1-794617-2                                      |
| 14                    | .984<br>25.00  | .709<br>18.00  | 4-794630-4          | 4-794631-4 | 4-794632-4 | 1-794617-4                                      |
| 16                    | 1.102<br>28.00 | .827<br>21.00  | 4-794630-6          | 4-794631-6 | 4-794632-6 | 1-794617-6                                      |
| 18                    | 1.220<br>31.00 | .945<br>24.00  | 4-794630-8          | 4-794631-8 | 4-794632-8 | 1-794617-8                                      |
| 20                    | 1.339<br>34.00 | 1.063<br>27.00 | 5-794630-0          | 5-794631-0 | 5-794632-0 | 2-794617-0                                      |
| 22                    | 1.457<br>37.00 | 1.181<br>30.00 | 5-794630-2          | 5-794631-2 | 5-794632-2 | 2-794617-2                                      |
| 24                    | 1.575<br>40.00 | 1.299<br>33.00 | 5-794630-4          | 5-794631-4 | 5-794632-4 | 2-794617-4                                      |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Vertical Header Assemblies

(Continued)

**Dual Row, Through-Hole, with Retention Feature on Soldertail and Metal Through-Hole Hold-down**

#### Material and Finish

**Housing**—High Temperature Nylon, Black

**Flammability Rating**—UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

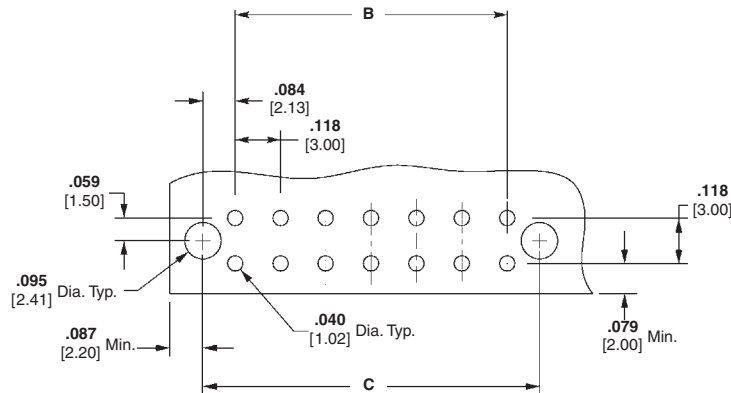
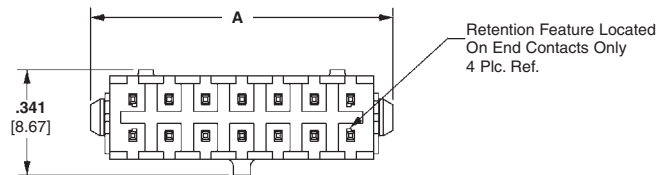
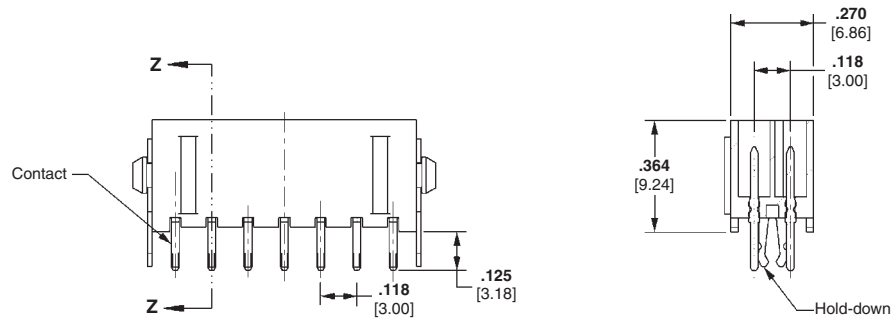
**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Dual Row Receptacle Housing—page 24



Recommended PC Board Layout\*

| Number of Circuits | Dimensions     |                |                | Header Part Numbers |            |            | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|------------|------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B  | Plating C  |                                           |
| 2                  | .276<br>7.00   | —              | .169<br>4.30   | 3-794680-2          | 3-794681-2 | 3-794682-2 | 794617-2                                  |
| 4                  | .394<br>10.00  | .118<br>3.00   | .287<br>7.30   | 3-794680-4          | 3-794681-4 | 3-794682-4 | 794617-4                                  |
| 6                  | .512<br>13.00  | .236<br>6.00   | .406<br>10.30  | 3-794680-6          | 3-794681-6 | 3-794682-6 | 794617-6                                  |
| 8                  | .630<br>16.00  | .354<br>9.00   | .524<br>13.30  | 3-794680-8          | 3-794681-8 | 3-794682-8 | 794617-8                                  |
| 10                 | .748<br>19.00  | .472<br>12.00  | .642<br>16.30  | 4-794680-0          | 4-794681-0 | 4-794682-0 | 1-794617-0                                |
| 12                 | .866<br>22.00  | .591<br>15.00  | .760<br>19.30  | 4-794680-2          | 4-794681-2 | 4-794682-2 | 1-794617-2                                |
| 14                 | .984<br>25.00  | .709<br>18.00  | .878<br>22.30  | 4-794680-4          | 4-794681-4 | 4-794682-4 | 1-794617-4                                |
| 16                 | 1.102<br>28.00 | .827<br>21.00  | .996<br>25.30  | 4-794680-6          | 4-794681-6 | 4-794682-6 | 1-794617-6                                |
| 18                 | 1.220<br>31.00 | .945<br>24.00  | 1.114<br>28.30 | 4-794680-8          | 4-794681-8 | 4-794682-8 | 1-794617-8                                |
| 20                 | 1.339<br>34.00 | 1.063<br>27.00 | 1.232<br>31.30 | 5-794680-0          | 5-794681-0 | 5-794682-0 | 2-794617-0                                |
| 22                 | 1.457<br>37.00 | 1.181<br>30.00 | 1.350<br>34.30 | 5-794680-2          | 5-794681-2 | 5-794682-2 | 2-794617-2                                |
| 24                 | 1.575<br>40.00 | 1.299<br>33.00 | 1.469<br>37.30 | 5-794680-4          | 5-794681-4 | 5-794682-4 | 2-794617-4                                |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Vertical Header Assemblies

(Continued)

#### Dual Row, Surface Mount, with Metal Through-Hole Hold-down

#### Material and Finish

**Housing**—High Temperature Nylon,  
Black

**Flammability Rating**—UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin  
over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

**Plating C**—.000030 [0.00076] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

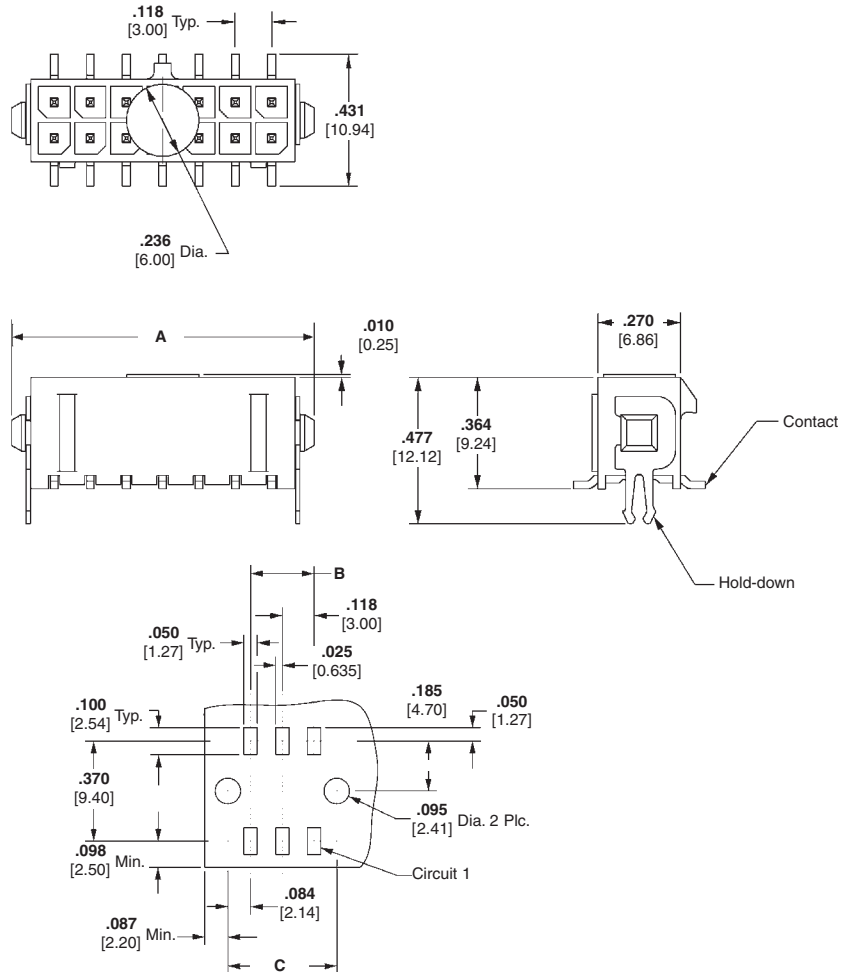
**Hold-downs**—Phosphor Bronze,  
.000100 [0.00254] min. tin over  
.000050 [0.00127] min. nickel

**Pick-up Button**—Kapton

#### Related Product Data

#### Mateable Housings:

Dual Row Receptacle Housing—page 24



Recommended PC Board Layout\*

| Number of<br>Circuits | Dimensions     |                |                | Header Part Numbers |            |            | Mates with<br>Receptacle Housing<br>Part Number |
|-----------------------|----------------|----------------|----------------|---------------------|------------|------------|-------------------------------------------------|
|                       | A              | B              | C              | Plating A           | Plating B  | Plating C  |                                                 |
| 2                     | .276<br>7.00   | —              | .169<br>4.30   | 3-794633-2          | 3-794634-2 | 3-794635-2 | 794617-2                                        |
| 4                     | .394<br>10.00  | .118<br>3.00   | .287<br>7.30   | 3-794633-4          | 3-794634-4 | 3-794635-4 | 794617-4                                        |
| 6                     | .512<br>13.00  | .236<br>6.00   | .406<br>10.30  | 3-794633-6          | 3-794634-6 | 3-794635-6 | 794617-6                                        |
| 8                     | .630<br>16.00  | .354<br>9.00   | .524<br>13.30  | 3-794633-8          | 3-794634-8 | 3-794635-8 | 794617-8                                        |
| 10                    | .748<br>19.00  | .472<br>12.00  | .642<br>16.30  | 4-794633-0          | 4-794634-0 | 4-794635-0 | 1-794617-0                                      |
| 12                    | .866<br>22.00  | .591<br>15.00  | .760<br>19.30  | 4-794633-2          | 4-794634-2 | 4-794635-2 | 1-794617-2                                      |
| 14                    | .984<br>25.00  | .709<br>18.00  | .878<br>22.30  | 4-794633-4          | 4-794634-4 | 4-794635-4 | 1-794617-4                                      |
| 16                    | 1.10<br>28.00  | 2.827<br>21.00 | .996<br>25.30  | 4-794633-6          | 4-794634-6 | 4-794635-6 | 1-794617-6                                      |
| 18                    | 1.220<br>31.00 | 0.945<br>24.00 | 1.114<br>28.30 | 4-794633-8          | 4-794634-8 | 4-794635-8 | 1-794617-8                                      |
| 20                    | 1.339<br>34.00 | 1.063<br>27.00 | 1.232<br>31.30 | 5-794633-0          | 5-794634-0 | 5-794635-0 | 2-794617-0                                      |
| 22                    | 1.457<br>37.00 | 1.181<br>30.00 | 1.350<br>34.30 | 5-794633-2          | 5-794634-2 | 5-794635-2 | 2-794617-2                                      |
| 24                    | 1.575<br>40.00 | 1.299<br>33.00 | 1.469<br>37.30 | 5-794633-4          | 5-794634-4 | 5-794635-4 | 2-794617-4                                      |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Vertical Header Assemblies

(Continued)

#### Dual Row, Surface Mount, with Surface Mount Hold-down

#### Material and Finish

**Housing** — High Temperature Nylon,  
Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin  
over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

**Plating C** — .000030 [0.00076] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

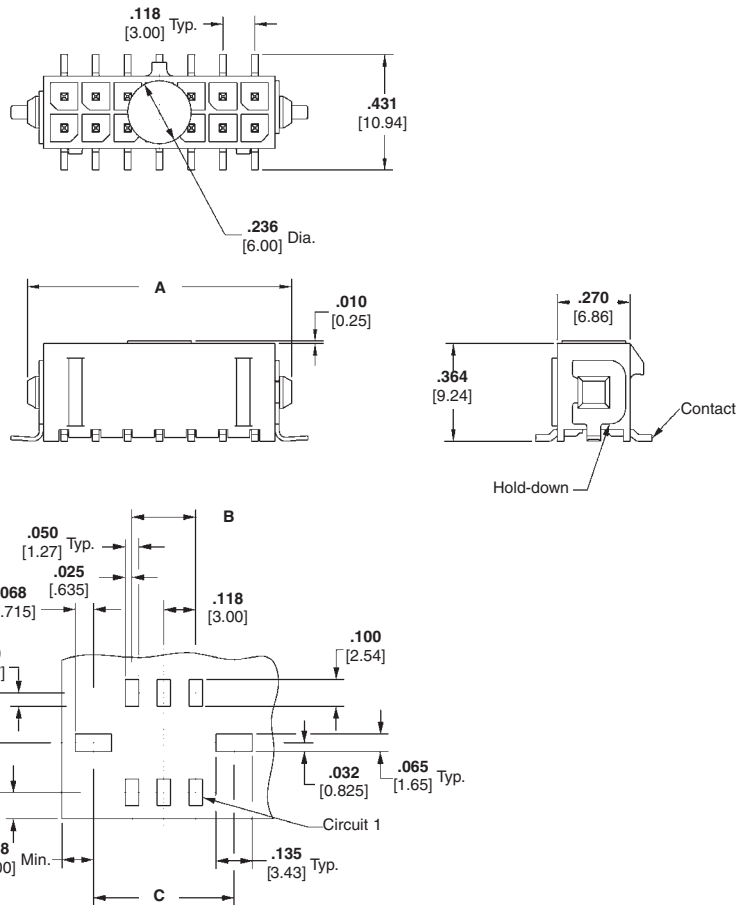
**Hold-downs** — Phosphor Bronze,  
.000100 [0.00254] min. tin over  
.000050 [0.00127] min. nickel

**Pick-up Button** — Kapton

#### Related Product Data

#### Mateable Housings:

Dual Row Receptacle Housing—page 24



Recommended PC Board Layout\*

| Number of<br>Circuits | Dimensions     |                |                | Header Part Numbers |            |            | Mates with<br>Receptacle Housing<br>Part Number |
|-----------------------|----------------|----------------|----------------|---------------------|------------|------------|-------------------------------------------------|
|                       | A              | B              | C              | Plating A           | Plating B  | Plating C  |                                                 |
| 2                     | .276<br>7.00   | —              | .286<br>7.27   | 3-794636-2          | 3-794637-2 | 3-794638-2 | 794617-2                                        |
| 4                     | .394<br>10.00  | .118<br>3.00   | .404<br>10.27  | 3-794636-4          | 3-794637-4 | 3-794638-4 | 794617-4                                        |
| 6                     | .512<br>13.00  | .236<br>6.00   | .522<br>13.27  | 3-794636-6          | 3-794637-6 | 3-794638-6 | 794617-6                                        |
| 8                     | .630<br>16.00  | .354<br>9.00   | .640<br>16.27  | 3-794636-8          | 3-794637-8 | 3-794638-8 | 794617-8                                        |
| 10                    | .748<br>19.00  | .472<br>12.00  | .758<br>19.27  | 4-794636-0          | 4-794637-0 | 4-794638-0 | 1-794617-0                                      |
| 12                    | .866<br>22.00  | .591<br>15.00  | .876<br>22.27  | 4-794636-2          | 4-794637-2 | 4-794638-2 | 1-794617-2                                      |
| 14                    | .984<br>25.00  | .709<br>18.00  | .994<br>25.27  | 4-794636-4          | 4-794637-4 | 4-794638-4 | 1-794617-4                                      |
| 16                    | 1.102<br>28.00 | .827<br>21.00  | 1.112<br>28.27 | 4-794636-6          | 4-794637-6 | 4-794638-6 | 1-794617-6                                      |
| 18                    | 1.220<br>31.00 | .945<br>24.00  | 1.230<br>31.27 | 4-794636-8          | 4-794637-8 | 4-794638-8 | 1-794617-8                                      |
| 20                    | 1.339<br>34.00 | 1.063<br>27.00 | 1.349<br>34.27 | 5-794636-0          | 5-794637-0 | 5-794638-0 | 2-794617-0                                      |
| 22                    | 1.457<br>37.00 | 1.181<br>30.00 | 1.467<br>37.27 | 5-794636-2          | 5-794637-2 | 5-794638-2 | 2-794617-2                                      |
| 24                    | 1.575<br>40.00 | 1.299<br>33.00 | 1.585<br>40.27 | 5-794636-4          | 5-794637-4 | 5-794638-4 | 2-794617-4                                      |

\*Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies

#### Single Row, Through-Hole, with Metal Through-Hole Hold-down

#### Material and Finish

**Housing**—High Temperature Nylon, Black

**Flammability Rating**—UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

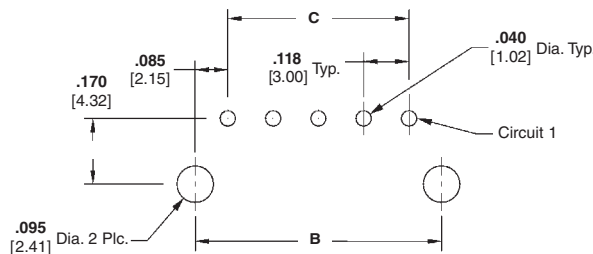
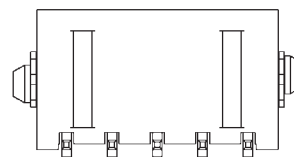
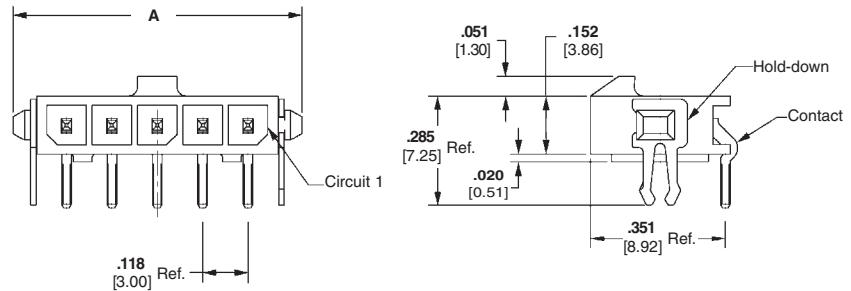
**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Single Row Receptacle Housing—  
page 23



Recommended PC Board Layout\*

| Number of Circuits | Dimensions     |                |                | Header Part Numbers |             |             | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|-------------|-------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B   | Plating C   |                                           |
| 2                  | .399<br>10.14  | .293<br>7.43   | .118<br>3.00   | 2-1445054-2         | 2-1445088-2 | 2-1445097-2 | 1445022-2                                 |
| 3                  | .517<br>13.14  | .411<br>10.43  | .236<br>6.00   | 2-1445054-3         | 2-1445088-3 | 2-1445097-3 | 1445022-3                                 |
| 4                  | .635<br>16.14  | .529<br>13.43  | .354<br>9.00   | 2-1445054-4         | 2-1445088-4 | 2-1445097-4 | 1445022-4                                 |
| 5                  | .754<br>19.14  | .647<br>16.43  | .472<br>12.00  | 2-1445054-5         | 2-1445088-5 | 2-1445097-5 | 1445022-5                                 |
| 6                  | .871<br>22.14  | .765<br>19.43  | .591<br>15.00  | 2-1445054-6         | 2-1445088-6 | 2-1445097-6 | 1445022-6                                 |
| 7                  | .990<br>25.14  | .883<br>22.43  | .709<br>18.00  | 2-1445054-7         | 2-1445088-7 | 2-1445097-7 | 1445022-7                                 |
| 8                  | 1.108<br>28.14 | 1.001<br>25.43 | .827<br>21.00  | 2-1445054-8         | 2-1445088-8 | 2-1445097-8 | 1445022-8                                 |
| 9                  | 1.226<br>31.14 | 1.119<br>28.43 | .945<br>24.00  | 2-1445054-9         | 2-1445088-9 | 2-1445097-9 | 1445022-9                                 |
| 10                 | 1.344<br>34.14 | 1.237<br>31.43 | 1.063<br>27.00 | 3-1445054-0         | 3-1445088-0 | 3-1445097-0 | 1-1445022-0                               |
| 11                 | 1.462<br>37.14 | 1.356<br>34.43 | 1.181<br>30.00 | 3-1445054-1         | 3-1445088-1 | 3-1445097-1 | 1-1445022-1                               |
| 12                 | 1.580<br>40.14 | 1.474<br>37.43 | 1.299<br>33.00 | 3-1445054-2         | 3-1445088-2 | 3-1445097-2 | 1-1445022-2                               |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies (Continued)

#### Single Row, Through-Hole, with Plastic Boardlock

#### Material and Finish

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

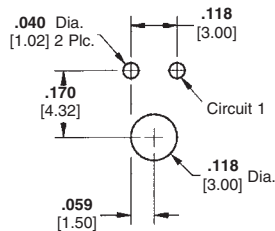
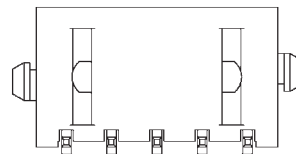
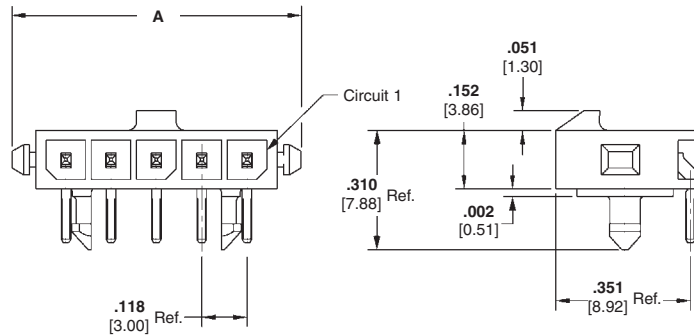
**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

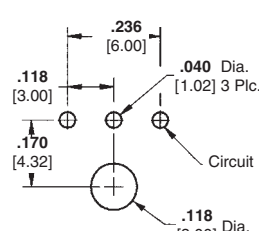
#### Related Product Data

##### Mateable Housings:

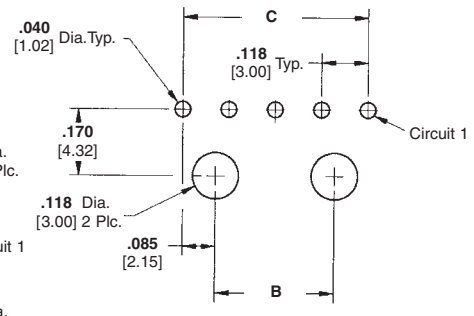
Single Row Receptacle Housing — page 23



Recommended PC Board Layout  
2 Position\*



Recommended PC Board Layout  
3 Position\*



Recommended PC Board Layout  
4-12 Position\*

| Number of<br>Circuits | Dimensions     |                |                | Header Part Numbers |             |             | Mates with<br>Receptacle Housing<br>Part Number |
|-----------------------|----------------|----------------|----------------|---------------------|-------------|-------------|-------------------------------------------------|
|                       | A              | B              | C              | Plating A           | Plating B   | Plating C   |                                                 |
| 2                     | .399<br>10.14  | —              | —              | 2-1445055-2         | 2-1445089-2 | 2-1445098-2 | 1445022-2                                       |
| 3                     | .517<br>13.14  | —              | —              | 2-1445055-3         | 2-1445089-3 | 2-1445098-3 | 1445022-3                                       |
| 4                     | .635<br>16.14  | .185<br>4.70   | .354<br>9.00   | 2-1445055-4         | 2-1445089-4 | 2-1445098-4 | 1445022-4                                       |
| 5                     | .754<br>19.14  | .303<br>7.70   | .472<br>12.00  | 2-1445055-5         | 2-1445089-5 | 2-1445098-5 | 1445022-5                                       |
| 6                     | .871<br>22.14  | .421<br>10.70  | .591<br>15.00  | 2-1445055-6         | 2-1445089-6 | 2-1445098-6 | 1445022-6                                       |
| 7                     | .990<br>25.14  | .539<br>13.70  | .709<br>18.00  | 2-1445055-7         | 2-1445089-7 | 2-1445098-7 | 1445022-7                                       |
| 8                     | 1.108<br>28.14 | .657<br>16.70  | .827<br>21.00  | 2-1445055-8         | 2-1445089-8 | 2-1445098-8 | 1445022-8                                       |
| 9                     | 1.226<br>31.14 | .775<br>19.70  | .945<br>24.00  | 2-1445055-9         | 2-1445089-9 | 2-1445098-9 | 1445022-9                                       |
| 10                    | 1.344<br>34.14 | .894<br>22.70  | 1.063<br>27.00 | 3-1445055-0         | 3-1445089-0 | 3-1445098-0 | 1-1445022-0                                     |
| 11                    | 1.462<br>37.14 | 1.012<br>25.70 | 1.181<br>30.00 | 3-1445055-1         | 3-1445089-1 | 3-1445098-1 | 1-1445022-1                                     |
| 12                    | 1.580<br>40.14 | 1.300<br>28.70 | 1.299<br>33.00 | 3-1445055-2         | 3-1445089-2 | 3-1445098-2 | 1-1445022-2                                     |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies (Continued)

#### Single Row, Surface Mount, with Metal Through-Hole Hold-down

#### Material and Finish

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

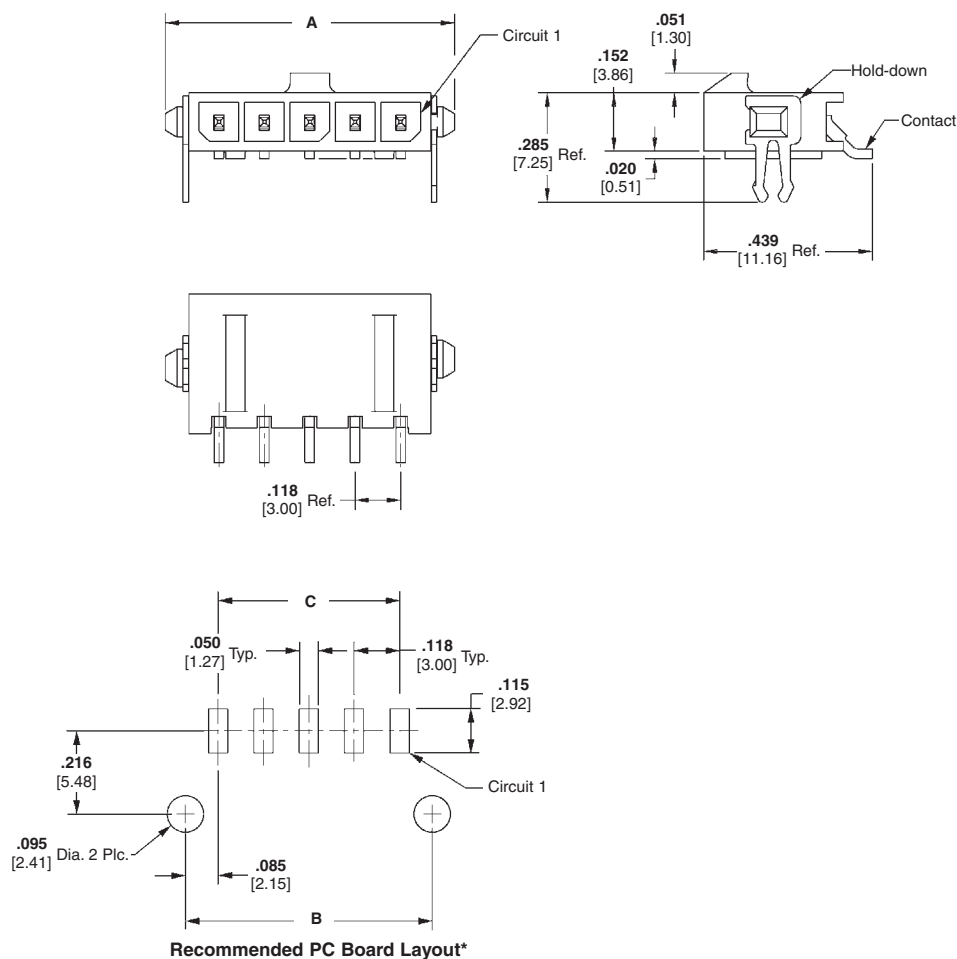
**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs** — Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Single Row Receptacle Housing —  
page 23



| Number of Circuits | Dimensions     |                |                | Header Part Numbers |             |             | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|-------------|-------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B   | Plating C   |                                           |
| 2                  | .394<br>10.00  | .293<br>7.43   | .118<br>3.00   | 2-1445056-2         | 2-1445090-2 | 2-1445099-2 | 1445022-2                                 |
| 3                  | .512<br>13.00  | .411<br>10.43  | .236<br>6.00   | 2-1445056-3         | 2-1445090-3 | 2-1445099-3 | 1445022-3                                 |
| 4                  | .630<br>16.00  | .529<br>13.43  | .354<br>9.00   | 2-1445056-4         | 2-1445090-4 | 2-1445099-4 | 1445022-4                                 |
| 5                  | .748<br>19.00  | .647<br>16.43  | .472<br>12.00  | 2-1445056-5         | 2-1445090-5 | 2-1445099-5 | 1445022-5                                 |
| 6                  | .866<br>22.00  | .765<br>19.43  | .591<br>15.00  | 2-1445056-6         | 2-1445090-6 | 2-1445099-6 | 1445022-6                                 |
| 7                  | .984<br>25.00  | .883<br>22.43  | .709<br>18.00  | 2-1445056-7         | 2-1445090-7 | 2-1445099-7 | 1445022-7                                 |
| 8                  | 1.102<br>28.00 | 1.001<br>25.43 | .827<br>21.00  | 2-1445056-8         | 2-1445090-8 | 2-1445099-8 | 1445022-8                                 |
| 9                  | 1.220<br>31.00 | 1.119<br>28.43 | .945<br>24.00  | 2-1445056-9         | 2-1445090-9 | 2-1445099-9 | 1445022-9                                 |
| 10                 | 1.339<br>34.00 | 1.237<br>31.43 | 1.063<br>27.00 | 3-1445056-0         | 3-1445090-0 | 3-1445099-0 | 1-1445022-0                               |
| 11                 | 1.457<br>37.00 | 1.356<br>34.43 | 1.181<br>30.00 | 3-1445056-1         | 3-1445090-1 | 3-1445099-1 | 1-1445022-1                               |
| 12                 | 1.575<br>40.00 | 1.474<br>37.43 | 1.299<br>33.00 | 3-1445056-2         | 3-1445090-2 | 3-1445099-2 | 1-1445022-2                               |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies (Continued)

#### Single Row, Surface Mount, with Surface Mount Hold-down

#### Material and Finish

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

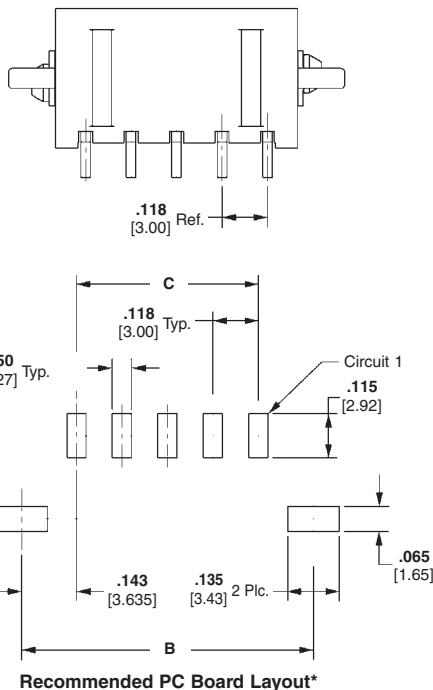
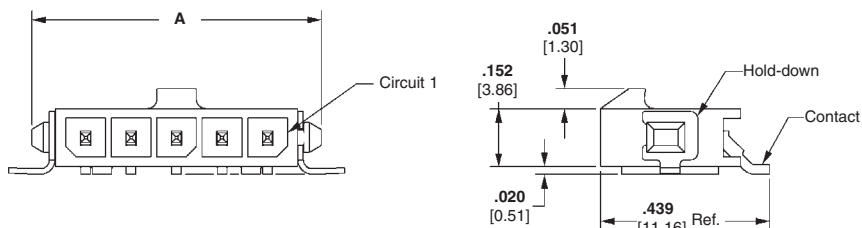
**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs** — Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Single Row Receptacle Housing — page 23



| Number of Circuits | Dimensions     |                |                | Header Part Numbers |             |             | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|-------------|-------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B   | Plating C   |                                           |
| 2                  | .394<br>10.00  | .410<br>10.41  | .118<br>3.00   | 2-1445057-2         | 2-1445091-2 | 2-1445100-2 | 1445022-2                                 |
| 3                  | .512<br>13.00  | .528<br>13.41  | .236<br>6.00   | 2-1445057-3         | 2-1445091-3 | 2-1445100-3 | 1445022-3                                 |
| 4                  | .630<br>16.00  | .646<br>16.41  | .354<br>9.00   | 2-1445057-4         | 2-1445091-4 | 2-1445100-4 | 1445022-4                                 |
| 5                  | .748<br>19.00  | .764<br>19.41  | .472<br>12.00  | 2-1445057-5         | 2-1445091-5 | 2-1445100-5 | 1445022-5                                 |
| 6                  | .866<br>22.00  | .882<br>22.41  | .591<br>15.00  | 2-1445057-6         | 2-1445091-6 | 2-1445100-6 | 1445022-6                                 |
| 7                  | .984<br>25.00  | 1.000<br>25.41 | .709<br>18.00  | 2-1445057-7         | 2-1445091-7 | 2-1445100-7 | 1445022-7                                 |
| 8                  | 1.102<br>28.00 | 1.119<br>28.41 | .827<br>21.00  | 2-1445057-8         | 2-1445091-8 | 2-1445100-8 | 1445022-8                                 |
| 9                  | 1.220<br>31.00 | 1.237<br>31.41 | .945<br>24.00  | 2-1445057-9         | 2-1445091-9 | 2-1445100-9 | 1445022-9                                 |
| 10                 | 1.339<br>34.00 | 1.355<br>34.41 | 1.063<br>27.00 | 3-1445057-0         | 3-1445091-0 | 3-1445100-0 | 1-1445022-0                               |
| 11                 | 1.457<br>37.00 | 1.472<br>37.41 | 1.181<br>30.00 | 3-1445057-1         | 3-1445091-1 | 3-1445100-1 | 1-1445022-1                               |
| 12                 | 1.575<br>40.00 | 1.591<br>40.41 | 1.299<br>33.00 | 3-1445057-2         | 3-1445091-2 | 3-1445100-2 | 1-1445022-2                               |

\*Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies (Continued)

#### Single Row, Surface Mount, with Plastic Boardlock

#### Material and Finish

**Housing**—High Temperature Nylon, Black

**Flammability Rating**—UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

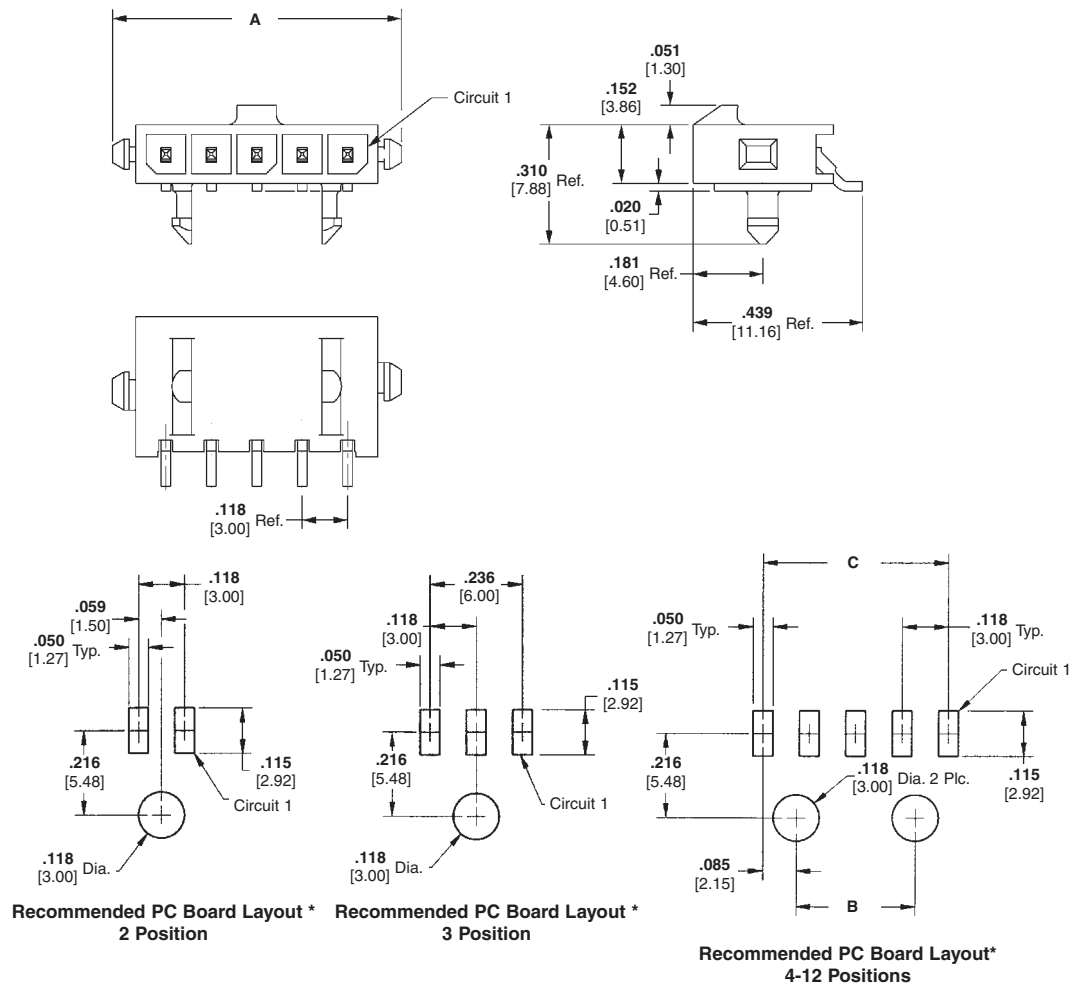
**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Single Row Receptacle Housing—page 23



| Number of Circuits | Dimensions     |                |                | Header Part Numbers |             |             | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|-------------|-------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B   | Plating C   |                                           |
| 2                  | .394<br>10.00  | —              | —              | 2-1445058-2         | 2-1445092-2 | 2-1445101-2 | 1445022-2                                 |
| 3                  | .512<br>13.00  | —              | —              | 2-1445058-3         | 2-1445092-3 | 2-1445101-3 | 1445022-3                                 |
| 4                  | .630<br>16.00  | .185<br>4.70   | .354<br>9.00   | 2-1445058-4         | 2-1445092-4 | 2-1445101-4 | 1445022-4                                 |
| 5                  | .748<br>19.00  | .303<br>7.70   | .472<br>12.00  | 2-1445058-5         | 2-1445092-5 | 2-1445101-5 | 1445022-5                                 |
| 6                  | .866<br>22.00  | .421<br>10.70  | .591<br>15.00  | 2-1445058-6         | 2-1445092-6 | 2-1445101-6 | 1445022-6                                 |
| 7                  | .984<br>25.00  | .539<br>13.70  | .709<br>18.00  | 2-1445058-7         | 2-1445092-7 | 2-1445101-7 | 1445022-7                                 |
| 8                  | 1.102<br>28.00 | .657<br>16.70  | .827<br>21.00  | 2-1445058-8         | 2-1445092-8 | 2-1445101-8 | 1445022-8                                 |
| 9                  | 1.220<br>31.00 | .776<br>19.70  | .945<br>24.00  | 2-1445058-9         | 2-1445092-9 | 2-1445101-9 | 1445022-9                                 |
| 10                 | 1.339<br>34.00 | .894<br>22.70  | 1.063<br>27.00 | 3-1445058-0         | 3-1445092-0 | 3-1445101-0 | 1-1445022-0                               |
| 11                 | 1.457<br>37.00 | 1.012<br>25.70 | 1.181<br>30.00 | 3-1445058-1         | 3-1445092-1 | 3-1445101-1 | 1-1445022-1                               |
| 12                 | 1.575<br>40.00 | 1.130<br>28.70 | 1.299<br>33.00 | 3-1445058-2         | 3-1445092-2 | 3-1445101-2 | 1-1445022-2                               |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies (Continued)

#### Dual Row, Through-Hole, with Metal Through-Hole Hold-down

#### Material and Finish

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

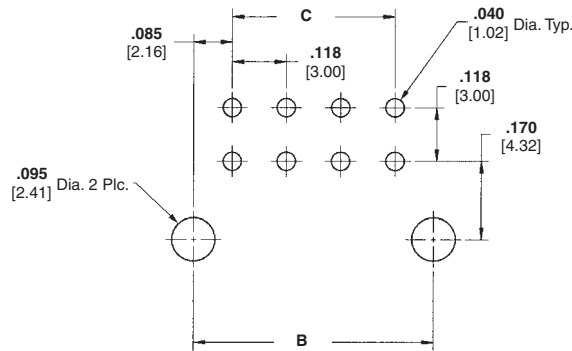
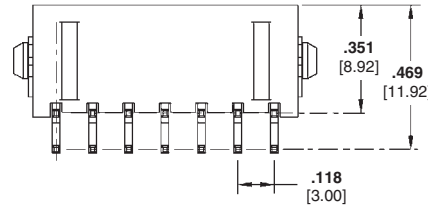
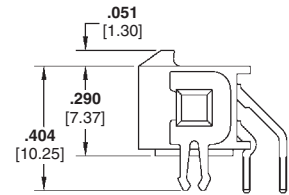
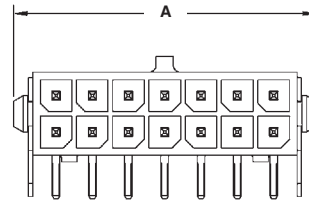
**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs** — Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Dual Row Receptacle Housing—page 24



Recommended PC Board Layout\*

| Number of Circuits | Dimensions     |                |                | Header Part Numbers |            |            | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|------------|------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B  | Plating C  |                                           |
| 2                  | .276<br>7.00   | .169<br>4.30   | —              | 3-794677-2          | 3-794678-2 | 3-794679-2 | 794617-2                                  |
| 4                  | .394<br>10.00  | .287<br>7.30   | .118<br>3.00   | 3-794677-4          | 3-794678-4 | 3-794679-4 | 794617-4                                  |
| 6                  | .512<br>13.00  | .406<br>10.30  | .236<br>6.00   | 3-794677-6          | 3-794678-6 | 3-794679-6 | 794617-6                                  |
| 8                  | .630<br>16.00  | .524<br>13.30  | .354<br>9.00   | 3-794677-8          | 3-794678-8 | 3-794679-8 | 794617-8                                  |
| 10                 | .748<br>19.00  | .642<br>16.30  | .472<br>12.00  | 4-794677-0          | 4-794678-0 | 4-794679-0 | 1-794617-0                                |
| 12                 | .866<br>22.00  | .760<br>19.30  | .591<br>15.00  | 4-794677-2          | 4-794678-2 | 4-794679-2 | 1-794617-2                                |
| 14                 | .984<br>25.00  | .878<br>22.30  | .709<br>18.00  | 4-794677-4          | 4-794678-4 | 4-794679-4 | 1-794617-4                                |
| 16                 | 1.102<br>28.00 | .996<br>25.30  | .827<br>21.00  | 4-794677-6          | 4-794678-6 | 4-794679-6 | 1-794617-6                                |
| 18                 | 1.220<br>31.00 | 1.114<br>28.30 | .945<br>24.00  | 4-794677-8          | 4-794678-8 | 4-794679-8 | 1-794617-8                                |
| 20                 | 1.339<br>34.00 | 1.232<br>31.30 | 1.063<br>27.00 | 5-794677-0          | 5-794678-0 | 5-794679-0 | 2-794617-0                                |
| 22                 | 1.457<br>37.00 | 1.350<br>34.30 | 1.181<br>30.00 | 5-794677-2          | 5-794678-2 | 5-794679-2 | 2-794617-2                                |
| 24                 | 1.575<br>40.00 | 1.469<br>37.30 | 1.299<br>33.00 | 5-794677-4          | 5-794678-4 | 5-794679-4 | 2-794617-4                                |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies (Continued)

#### Dual Row, Through-Hole, with Plastic Boardlock

#### Material and Finish

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

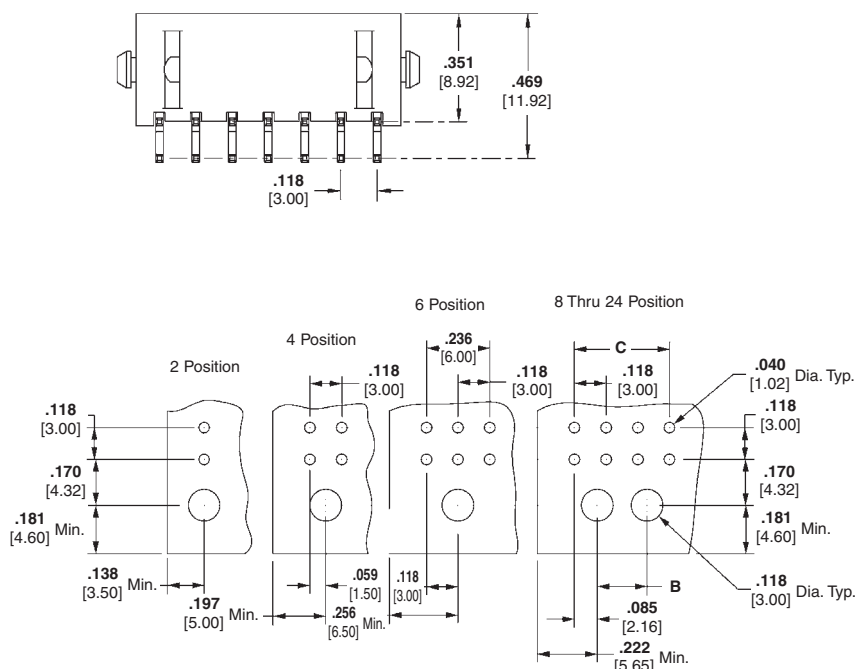
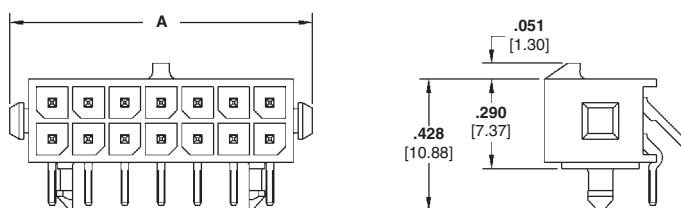
**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

#### Related Product Data

##### Mateable Housings:

Dual Row Receptacle Housing—page 24



Recommended PC Board Layout\*

| Number of Circuits | Dimensions     |                |                | Header Part Numbers |            |            | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|------------|------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B  | Plating C  |                                           |
| 2                  | .276<br>7.00   | —              | —              | 3-794618-2          | 3-794619-2 | 3-794620-2 | 794617-2                                  |
| 4                  | .394<br>10.00  | —              | .118<br>3.00   | 3-794618-4          | 3-794619-4 | 3-794620-4 | 794617-4                                  |
| 6                  | .512<br>13.00  | —              | .236<br>6.00   | 3-794618-6          | 3-794619-6 | 3-794620-6 | 794617-6                                  |
| 8                  | .630<br>16.00  | .185<br>4.70   | .354<br>9.00   | 3-794618-8          | 3-794619-8 | 3-794620-8 | 794617-8                                  |
| 10                 | .748<br>19.00  | .303<br>7.70   | .472<br>12.00  | 4-794618-0          | 4-794619-0 | 4-794620-0 | 1-794617-0                                |
| 12                 | .866<br>22.00  | .421<br>10.70  | .591<br>15.00  | 4-794618-2          | 4-794619-2 | 4-794620-2 | 1-794617-2                                |
| 14                 | .984<br>25.00  | .539<br>13.70  | .709<br>18.00  | 4-794618-4          | 4-794619-4 | 4-794620-4 | 1-794617-4                                |
| 16                 | 1.102<br>28.00 | .657<br>16.70  | .827<br>21.00  | 4-794618-6          | 4-794619-6 | 4-794620-6 | 1-794617-6                                |
| 18                 | 1.220<br>31.00 | .776<br>19.70  | .945<br>24.00  | 4-794618-8          | 4-794619-8 | 4-794620-8 | 1-794617-8                                |
| 20                 | 1.339<br>34.00 | .894<br>22.70  | 1.063<br>27.00 | 5-794618-0          | 5-794619-0 | 5-794620-0 | 2-794617-0                                |
| 22                 | 1.457<br>37.00 | 1.012<br>25.70 | 1.181<br>30.00 | 5-794618-2          | 5-794619-2 | 5-794620-2 | 2-794617-2                                |
| 24                 | 1.575<br>40.00 | 1.130<br>28.70 | 1.299<br>33.00 | 5-794618-4          | 5-794619-4 | 5-794620-4 | 2-794617-4                                |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies (Continued)

#### Dual Row, Surface Mount, with Metal Through-Hole Hold-down

#### Material and Finish

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

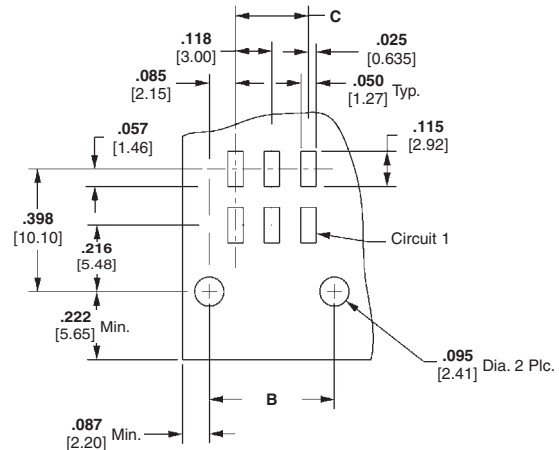
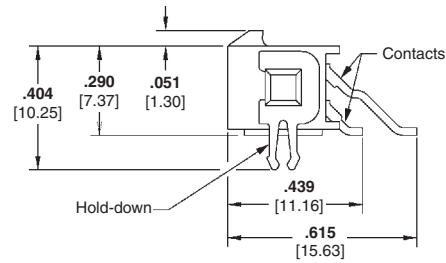
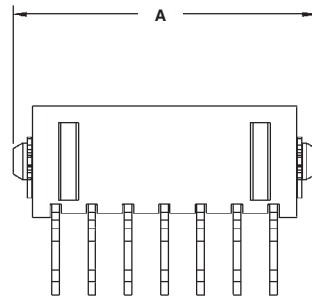
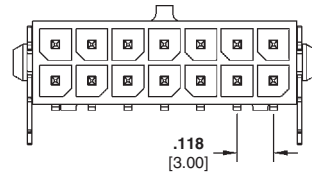
**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs** — Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel



Recommended PC Board Layout\*

### Related Product Data

#### Mateable Housings:

Dual Row Receptacle Housing—page 24

| Number of Circuits | Dimensions     |                |                | Header Part Numbers |            |            | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|------------|------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B  | Plating C  |                                           |
| 2                  | .276<br>7.00   | .169<br>4.30   | —              | 3-794624-2          | 3-794625-2 | 3-794626-2 | 794617-2                                  |
| 4                  | .394<br>10.00  | .287<br>7.30   | .118<br>3.00   | 3-794624-4          | 3-794625-4 | 3-794626-4 | 794617-4                                  |
| 6                  | .512<br>13.00  | .406<br>10.30  | .236<br>6.00   | 3-794624-6          | 3-794625-6 | 3-794626-6 | 794617-6                                  |
| 8                  | .630<br>16.00  | .524<br>13.30  | .354<br>9.00   | 3-794624-8          | 3-794625-8 | 3-794626-8 | 794617-8                                  |
| 10                 | .748<br>19.00  | .642<br>16.30  | .472<br>12.00  | 4-794624-0          | 4-794625-0 | 4-794626-0 | 1-794617-0                                |
| 12                 | .866<br>22.00  | .760<br>19.30  | .591<br>15.00  | 4-794624-2          | 4-794625-2 | 4-794626-2 | 1-794617-2                                |
| 14                 | .984<br>25.00  | .878<br>22.30  | .709<br>18.00  | 4-794624-4          | 4-794625-4 | 4-794626-4 | 1-794617-4                                |
| 16                 | 1.102<br>28.00 | .996<br>25.30  | .827<br>21.00  | 4-794624-6          | 4-794625-6 | 4-794626-6 | 1-794617-6                                |
| 18                 | 1.220<br>31.00 | 1.114<br>28.30 | .945<br>24.00  | 4-794624-8          | 4-794625-8 | 4-794626-8 | 1-794617-8                                |
| 20                 | 1.339<br>34.00 | 1.232<br>31.30 | 1.063<br>27.00 | 5-794624-0          | 5-794625-0 | 5-794626-0 | 2-794617-0                                |
| 22                 | 1.457<br>37.00 | 1.350<br>34.30 | 1.181<br>30.00 | 5-794624-2          | 5-794625-2 | 5-794626-2 | 2-794617-2                                |
| 24                 | 1.575<br>40.00 | 1.469<br>37.30 | 1.299<br>33.00 | 5-794624-4          | 5-794625-4 | 5-794626-4 | 2-794617-4                                |

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies (Continued) Dual Row, Surface Mount, with Plastic Boardlock

#### Material and Finish

**Housing** — High Temperature Nylon,  
Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin  
over .000050 [0.00127] min. nickel

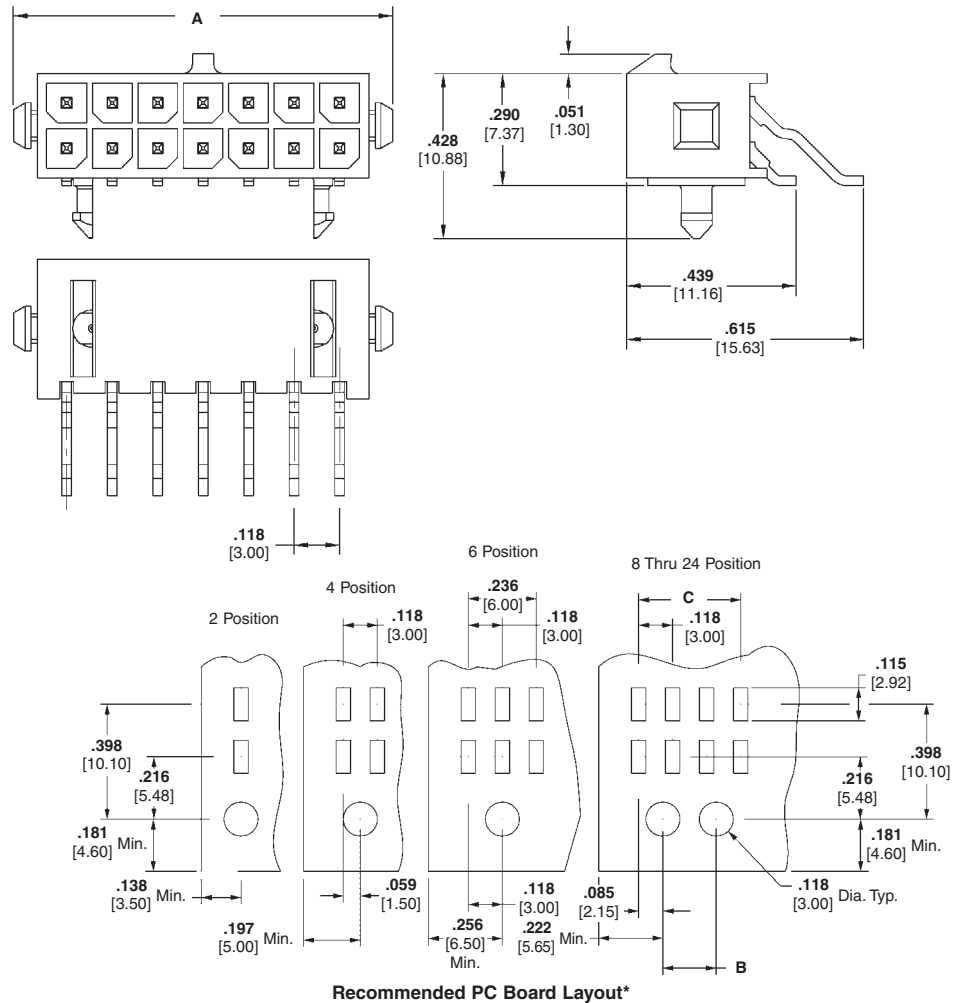
**Plating B** — .000015 [0.00038] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

**Plating C** — .000030 [0.00076] gold in  
mating area, .000100 [0.00254] min. tin  
in solder area, with entire contact  
underplated .000050 [0.00127] min.  
nickel

#### Related Product Data

##### Mateable Housings:

Dual Row Receptacle Housing—page 24



Recommended PC Board Layout\*

| Number of<br>Circuits | Dimensions     |                |                | Header Part Numbers |            |            | Mates with<br>Receptacle Housing<br>Part Number |
|-----------------------|----------------|----------------|----------------|---------------------|------------|------------|-------------------------------------------------|
|                       | A              | B              | C              | Plating A           | Plating B  | Plating C  |                                                 |
| 2                     | .276<br>7.00   | —              | —              | 3-794621-2          | 3-794622-2 | 3-794623-2 | 794617-2                                        |
| 4                     | .394<br>10.00  | —              | .118<br>3.00   | 3-794621-4          | 3-794622-4 | 3-794623-4 | 794617-4                                        |
| 6                     | .512<br>13.00  | —              | .236<br>6.00   | 3-794621-6          | 3-794622-6 | 3-794623-6 | 794617-6                                        |
| 8                     | .630<br>16.00  | .185<br>4.70   | .354<br>9.00   | 3-794621-8          | 3-794622-8 | 3-794623-8 | 794617-8                                        |
| 10                    | .748<br>19.00  | .303<br>7.70   | .472<br>12.00  | 4-794621-0          | 4-794622-0 | 4-794623-0 | 1-794617-0                                      |
| 12                    | .866<br>22.00  | .421<br>10.70  | .591<br>15.00  | 4-794621-2          | 4-794622-2 | 4-794623-2 | 1-794617-2                                      |
| 14                    | .984<br>25.00  | .539<br>13.70  | .709<br>18.00  | 4-794621-4          | 4-794622-4 | 4-794623-4 | 1-794617-4                                      |
| 16                    | 1.102<br>28.00 | .657<br>16.70  | .827<br>21.00  | 4-794621-6          | 4-794622-6 | 4-794623-6 | 1-794617-6                                      |
| 18                    | 1.220<br>31.00 | .776<br>19.70  | .945<br>24.00  | 4-794621-8          | 4-794622-8 | 4-794623-8 | 1-794617-8                                      |
| 20                    | 1.339<br>34.00 | .894<br>22.70  | 1.063<br>27.00 | 5-794621-0          | 5-794622-0 | 5-794623-0 | 2-794617-0                                      |
| 22                    | 1.457<br>37.00 | 1.012<br>25.70 | 1.181<br>30.00 | 5-794621-2          | 5-794622-2 | 5-794623-2 | 2-794617-2                                      |
| 24                    | 1.575<br>40.00 | 1.130<br>28.70 | 1.299<br>33.00 | 5-794621-4          | 5-794622-4 | 5-794623-4 | 2-794617-4                                      |

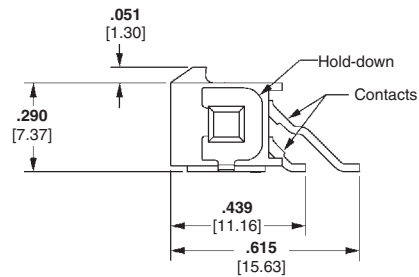
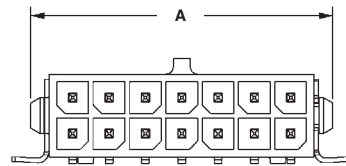
\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Micro MATE-N-LOK 3 mm Connector System (Continued)

### Right-Angle Header Assemblies (Continued)

#### Dual Row, Surface Mount, with Surface Mount Hold-down



### Material and Finish

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

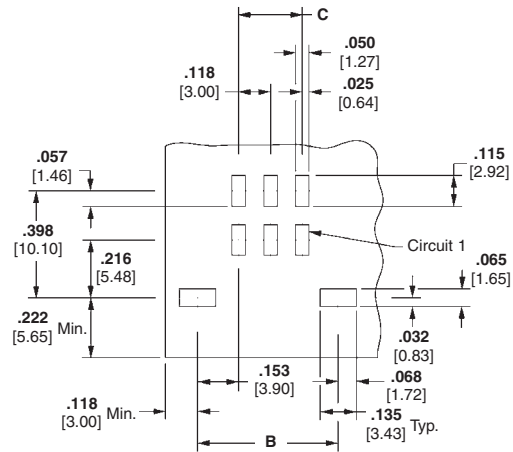
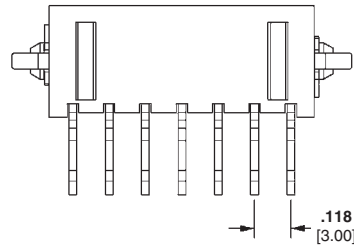
**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs** — Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel



**Recommended PC Board Layout\***

### Related Product Data

#### Mateable Housings:

Dual Row Receptacle Housing—page 24

| Number of Circuits | Dimensions     |                |                | Header Part Numbers |            |            | Mates with Receptacle Housing Part Number |
|--------------------|----------------|----------------|----------------|---------------------|------------|------------|-------------------------------------------|
|                    | A              | B              | C              | Plating A           | Plating B  | Plating C  |                                           |
| 2                  | .276<br>7.00   | .276<br>7.27   | —              | 3-794627-2          | 3-794628-2 | 3-794629-2 | 794617-2                                  |
| 4                  | .394<br>10.00  | .394<br>10.27  | .118<br>3.00   | 3-794627-4          | 3-794628-4 | 3-794629-4 | 794617-4                                  |
| 6                  | .512<br>13.00  | .512<br>13.27  | .236<br>6.00   | 3-794627-6          | 3-794628-6 | 3-794629-6 | 794617-6                                  |
| 8                  | .630<br>16.00  | .630<br>16.27  | .354<br>9.00   | 3-794627-8          | 3-794628-8 | 3-794629-8 | 794617-8                                  |
| 10                 | .748<br>19.00  | .748<br>19.27  | .472<br>12.00  | 4-794627-0          | 4-794628-0 | 4-794629-0 | 1-794617-0                                |
| 12                 | .866<br>22.00  | .866<br>22.27  | .591<br>15.00  | 4-794627-2          | 4-794628-2 | 4-794629-2 | 1-794617-2                                |
| 14                 | .984<br>25.00  | .984<br>25.27  | .709<br>18.00  | 4-794627-4          | 4-794628-4 | 4-794629-4 | 1-794617-4                                |
| 16                 | 1.102<br>28.00 | 1.102<br>28.27 | .827<br>21.00  | 4-794627-6          | 4-794628-6 | 4-794629-6 | 1-794617-6                                |
| 18                 | 1.220<br>31.00 | 1.220<br>31.27 | .945<br>24.00  | 4-794627-8          | 4-794628-8 | 4-794629-8 | 1-794617-8                                |
| 20                 | 1.339<br>34.00 | 1.339<br>34.27 | 1.063<br>27.00 | 5-794627-0          | 5-794628-0 | 5-794629-0 | 2-794617-0                                |
| 22                 | 1.457<br>37.00 | 1.457<br>37.27 | 1.181<br>30.00 | 5-794627-2          | 5-794628-2 | 5-794629-2 | 2-794617-2                                |
| 24                 | 1.575<br>40.00 | 1.575<br>40.27 | 1.299<br>33.00 | 5-794627-4          | 5-794628-4 | 5-794629-4 | 2-794617-4                                |

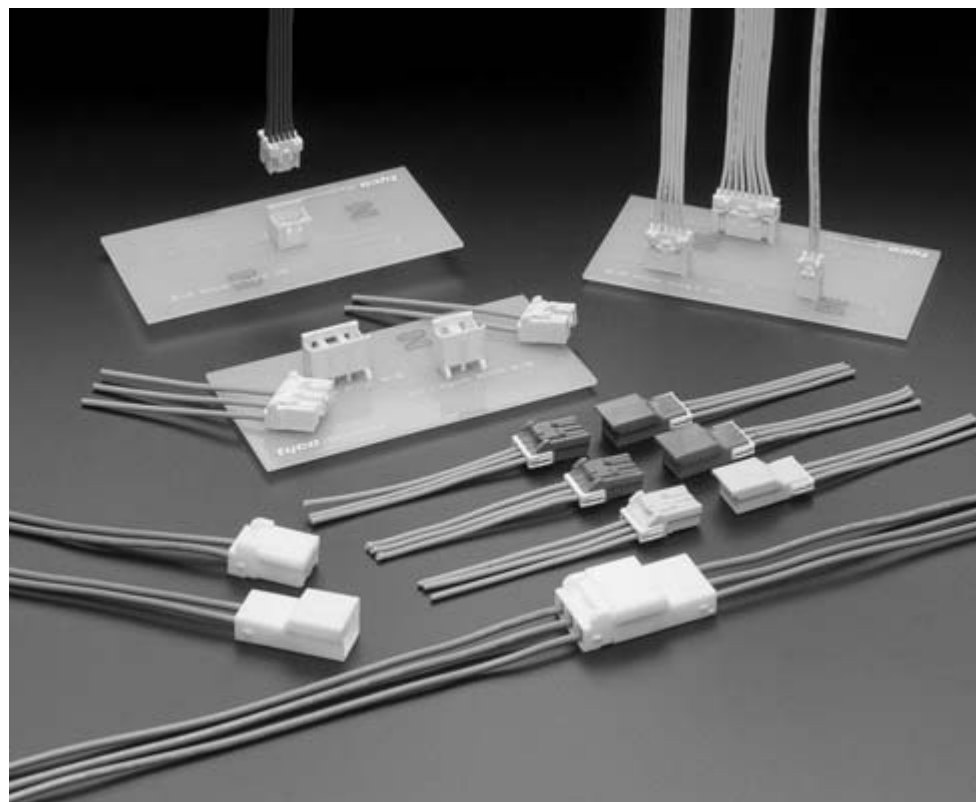
\*Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

## Grace Inertia Connectors (GIC), 3.5 mm Centerline (Wire-to-Wire Connectors)

### Product Facts

- Small wire-to-wire connectors (3.5 mm centerline) can handle 18 AWG wire
- Locking mechanism helps prevent connectors from being disconnected during movement or transportation
- Four kinds of keying per color-coded housing
- Improved housing shape offers easier mating
- Complies with lead free requirements
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. E28476



### Performance Characteristics

**Voltage Rating**—300 VAC  
**Current Rating**—7 A (max.)  
**Centerline**—3.5 mm  
**Applicable Wire**—26 to 18 AWG  
**Temperature Rating**—  
 -30°C to 105°C

This connector employs the inertia locking mechanism, which simultaneously locks when mated to help prevent mismating. It is widely used for large-sized household electric appliances, such as refrigerators, washing machines, or dispensers. Depending on the working environment, a locking sound is difficult to confirm during mating of a connector. However, this connector supports secure mating operation even in such a working environment.

### Material and Finish

**Housing**—6/6 Nylon UL94V-0  
 (CTI 600 V or more)  
**Terminal**—Pre-tin Copper alloy

### Technical Documents

**Product Specification**  
 108-5810  
**Application Specification**  
 114-5306

High Density

Grace Inertia Connectors  
.137 [3.50] Centerline

**Note:** All dimensions shown are metric.

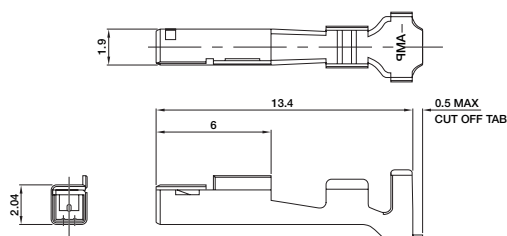
## Grace Inertia Connectors (GIC), 3.5 mm Centerline (Wire-to-Wire Connectors) (Continued)

### Contacts

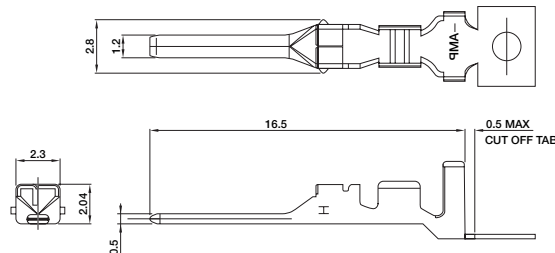
#### Material and Finish

Pre-tinned Copper Alloy

#### Receptacle Contact (For Plug Housing)



#### Tab Contact (For Cap Housing)



| Wire Range |                 | Insulation Dia.<br>mm | Contact Part Number |           | Tool Part Number      |                       |
|------------|-----------------|-----------------------|---------------------|-----------|-----------------------|-----------------------|
| AWG        | mm <sup>2</sup> |                       | Receptacle          | Tab       | Terminator/Applicator | CERTI-CRIMP Hand Tool |
| 26-22      | 0.13-0.34       | 1.3-2.0               | 1612334-1           | 1612335-1 | **                    | —                     |
| 22-18      | 0.3-0.9         | 1.5-2.7               | 1565079-1           | 1565080-1 | **                    | 1596277-1             |

\*Cut the contact carrier strip when using a hand tool.

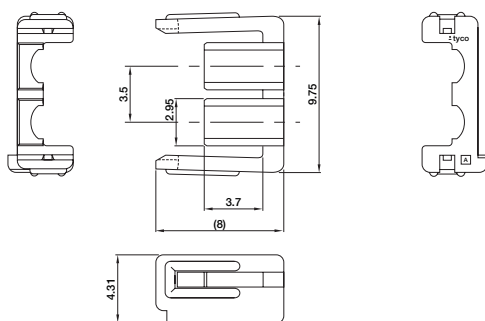
\*\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Terminator or Applicator Part Numbers.

### Double Lock Plates

#### Material

6/6 Nylon glass filled (UL94V-0)

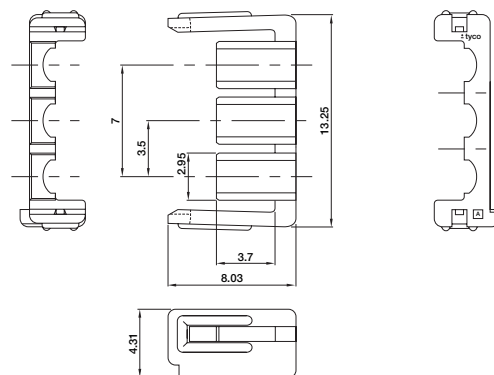
#### 2 Position



P/N 1565089-1

\*Two four-positions are used.

#### 3 Position



P/N 1565090-1

\*Two six-positions are used.

**Note:** All dimensions shown are metric.

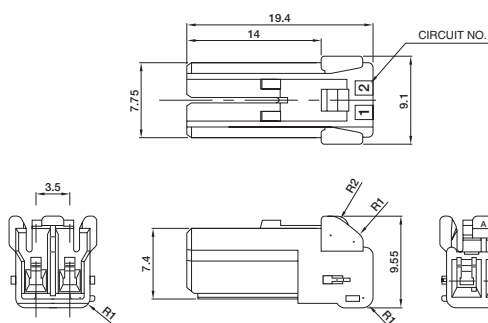
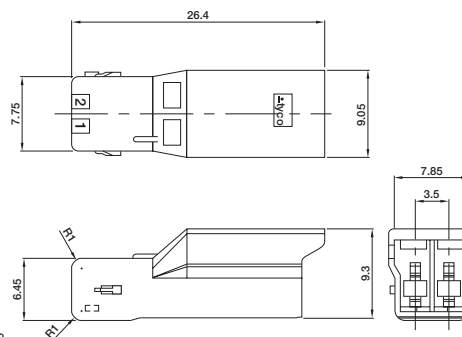
**Note:** All part numbers are RoHS Compliant.

## Grace Inertia Connectors (GIC), 3.5 mm Centerline (Wire-to-Wire Connectors) (Continued)

### 2 Position

#### Material

6/6 Nylon, UL94V-0 (CTI 600 V or more)

**Plug Housing** (For Receptacles)

**Cap Housing** (For Tabs)


#### Related Product Data

Receptacle and Tab Contacts—page 48

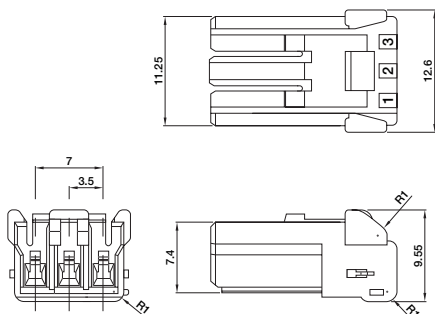
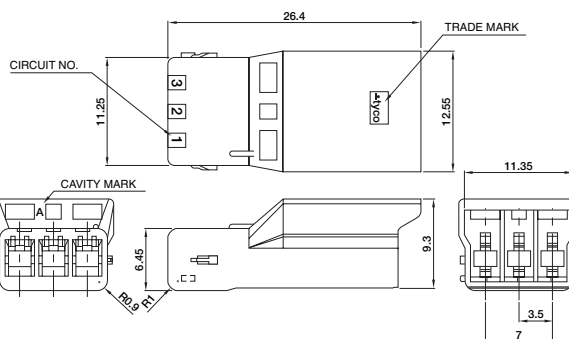
Double Lock Plate—page 48

| Color   | Keying | Part Number  |             |
|---------|--------|--------------|-------------|
|         |        | Plug Housing | Cap Housing |
| Natural | A      | 1565081-1    | 1565085-1   |
| Red     | B      | 1-1565081-2  | 1-1565085-2 |
| Blue    | C      | 2-1565081-3  | 2-1565085-3 |
| Yellow  | D      | 3-1565081-4  | 3-1565085-4 |

### 3 Position

#### Material

6/6 Nylon, UL94V-0 (CTI 600 V or more)

**Plug Housing** (For Receptacles)

**Cap Housing** (For Tabs)


| Color   | Keying | Part Number  |             |
|---------|--------|--------------|-------------|
|         |        | Plug Housing | Cap Housing |
| Natural | A      | 1565082-1    | 1565086-1   |
| Red     | B      | 1-1565082-2  | 1-1565086-2 |
| Blue    | C      | 2-1565082-3  | 2-1565086-3 |
| Yellow  | D      | 3-1565082-4  | 3-1565086-4 |

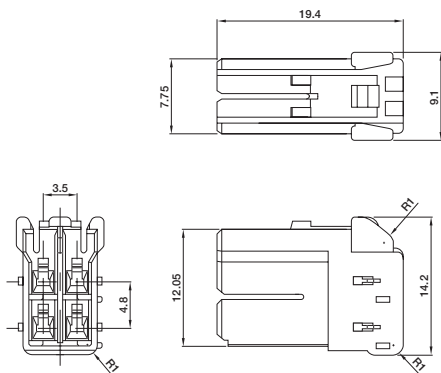
**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

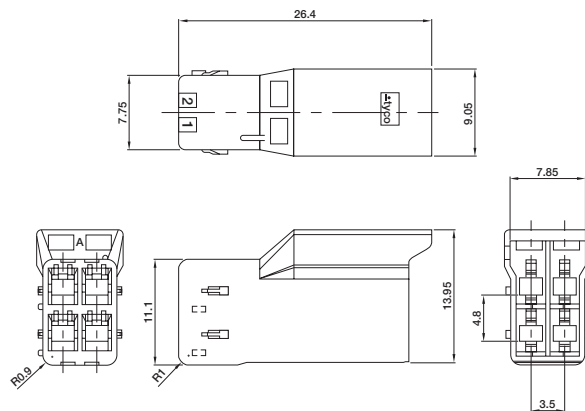
## Grace Inertia Connectors (GIC), 3.5 mm Centerline (Wire-to-Wire Connectors) (Continued)

### 4 Position

Plug Housing (For Receptacles)



Cap Housing (For Tabs)



#### Material

6/6 Nylon, UL94V-0 (CTI 600 V or more)

#### Related Product Data

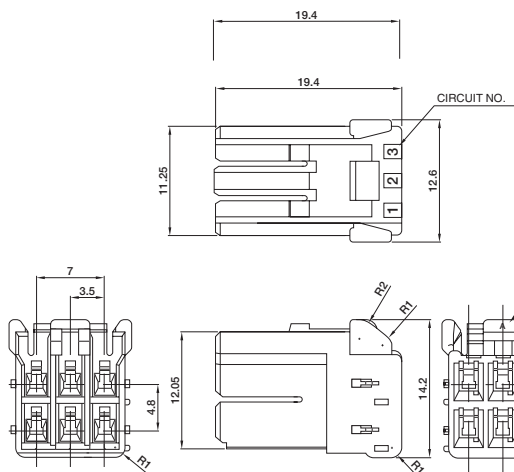
Receptacle and Tab Contacts—page 48

Double Lock Plate—page 48

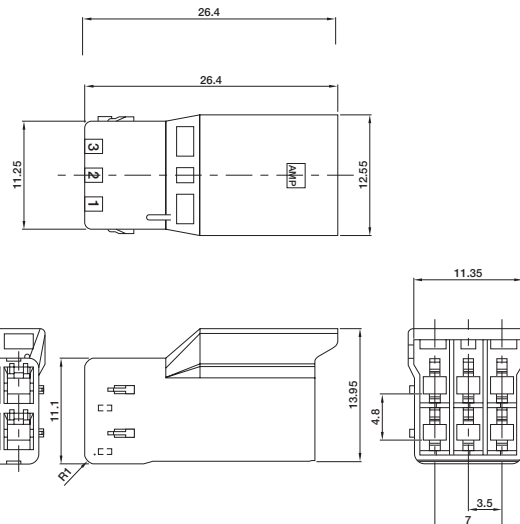
| Color   | Keying | Part Number  |             |
|---------|--------|--------------|-------------|
|         |        | Plug Housing | Cap Housing |
| Natural | A      | 1565083-1    | 1565087-1   |
| Red     | B      | 1-1565083-2  | 1-1565087-2 |
| Blue    | C      | 2-1565083-3  | 2-1565087-3 |
| Yellow  | D      | 3-1565083-4  | 3-1565087-4 |

### 6 Position

Plug Housing (For Receptacles)



Cap Housing (For Tabs)



#### Material

6/6 Nylon, UL94V-0 (CTI 600 V or more)

| Color   | Keying | Part Number  |             |
|---------|--------|--------------|-------------|
|         |        | Plug Housing | Cap Housing |
| Natural | A      | 1565084-1    | 1565088-1   |
| Red     | B      | 1-1565084-2  | 1-1565088-2 |
| Blue    | C      | 2-1565084-3  | 2-1565088-3 |
| Yellow  | D      | 3-1565084-4  | 3-1565088-4 |

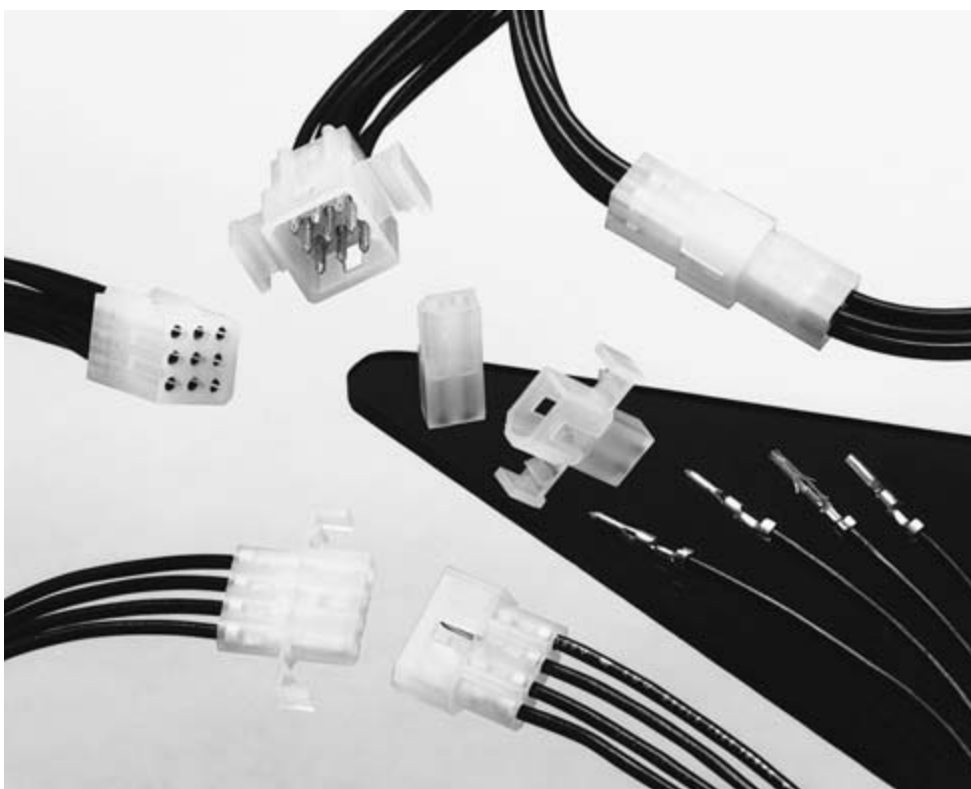
**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## **.062 [1.57] Commercial Pin and Socket Connectors**

### **Product Facts**

- Polarized
- Cavity identification
- Low contact-mating force
- Dual locking lances
- Detent and positive locking
- Contacts available in brass and phosphor bronze with tin and gold plating
- Panel mount and free-hanging styles
- "F" crimp contacts
- Applicator and hand tool available
- Economical commercial-grade connectors
- Compatible with high-speed application machinery and most other manufacturers' soft shells
- Wire range 30 to 18 AWG [0.05 to 0.9 mm<sup>2</sup>]
- Accepts wires with insulation diameters as large as .110 [2.79]
- Housings available in 1 to 9 positions
- **.062 plug and receptacle housings accept pin or socket contacts. The preferred convention is to use socket contacts with receptacle housings**
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189



### **Performance Characteristics**

The .062 Commercial Pin and Socket Connectors performance characteristics found on pages 51-52 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Durability**—10 mating cycles

**Dielectric Withstanding Voltage**—1.0 kVAC

**Insulation Resistance**—1000 megohms min. initial

**Voltage Rating**—250 V AC or DC

**Connector Mating**—2.5 lb. [11.1 N] max. per contact

**Connector Unmating**—0.3 lb. [1.3 N] min. per contact

**Contact Insertion Force**—4.0 lb. [17.8 N] max. per contact

**Contact Retention**—7 lb. [31.1 N] min.

15 lb. [66.6 N] min. for contacts 770983-1 and 794380-1

### **Technical Documents**

#### **Product Specification**

108-1037 .062 Commercial Pin and Socket Connectors

#### **Application Specification**

114-1013 .062 Commercial Pin and Socket Connectors

## .062 [1.57] Commercial Pin and Socket Connectors (Continued)

### Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of .062 Commercial Pin and Socket connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

### Related Product Data

**Product Specification** —  
108-1037

**Application Specification** —  
114-1013

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### .062 Commercial Pin and Socket Connectors Calculated Current Table

| Number of<br>Circuits | Wire Gauge |      |      |      |
|-----------------------|------------|------|------|------|
|                       | 18         | 20   | 22   | 24   |
| 2                     | 7.00       | 6.00 | 5.00 | 4.00 |
| 3                     | 7.00       | 6.00 | 5.00 | 4.00 |
| 4                     | 6.00       | 6.00 | 5.00 | 4.00 |
| 4                     | 6.00       | 5.00 | 4.00 | 3.00 |
| 6                     | 6.00       | 5.00 | 4.00 | 3.00 |
| 9                     | 5.00       | 4.00 | 4.00 | 3.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|-----|-------------------|-----|-------------------|
| 30  | 2.6               | 18  | 9.4               |
| 28  | 3.2               | 16  | 11.3              |
| 26  | 4.1               | 14  | 13.7              |
| 24  | 5.1               | 12  | 16.4              |
| 20  | 7.8               | 10  | 19.3              |

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

### Termination Resistance/Contact Crimp Tensile Force

| Wire Size |                 | Termination Resistance |                                   | Contact Crimp Tensile Force |      |
|-----------|-----------------|------------------------|-----------------------------------|-----------------------------|------|
| AWG       | mm <sup>2</sup> | Test Current (Amps)    | Resistance Milliohms (Max. Init.) | Force (Min.)                |      |
|           |                 |                        |                                   | lbs.                        | N    |
| 24        | 0.2             | 1.5                    | 3.50                              | 10                          | 44.5 |
| 22        | 0.3–0.4         | 3.0                    | 3.50                              | 10                          | 44.5 |
| 20        | 0.5–0.6         | 4.5                    | 3.00                              | 13                          | 57.8 |
| 18        | 0.8–0.9         | 6.0                    | 3.00                              | 14                          | 62.3 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

## **.062 [1.57] Commercial Pin and Socket Connectors** (Continued)

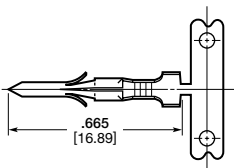
### Contacts

Pin Diameter .062 [1.57]

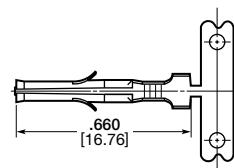
### Material

.008 [0.20] Stock Thickness

Pin and socket contacts can be used in either plug or receptacle housings. It is preferred to use socket contacts in receptacle housings.



Pin



Socket

### Related Product Data

**Performance Characteristics**—  
pages 51-52

**Housings**—pages 54-55

**Panel Cutouts**—page 55

**Technical Documents**—pages 51  
and 199-200

**Application Tooling**—pages 201-204

**Product Specification**—  
108-1037-1

| Wire Size |                 | Ins. Dia.              | Material & Finish                    | Contact Part Numbers  |              |                       |              | HDM Applicator Part No.                                                 | Hand Tool Part No. |
|-----------|-----------------|------------------------|--------------------------------------|-----------------------|--------------|-----------------------|--------------|-------------------------------------------------------------------------|--------------------|
| AWG       | mm <sup>2</sup> |                        |                                      | Pin                   |              | Socket                |              |                                                                         |                    |
|           |                 |                        |                                      | Strip Form            | Loose Pieces | Strip Form            | Loose Pieces |                                                                         |                    |
| 30-24     | 0.05-0.2        | .060<br>1.52 Max.      | Brass Pre-tin                        | 640391-1              | 794018-1     | 640392-1              | 794019-1     | 466686-1 <sup>3</sup><br>466686-2 <sup>3</sup><br>466686-3 <sup>3</sup> | 90870-1            |
|           |                 |                        | Brass, Select Gold <sup>1</sup>      | 640391-5 <sup>1</sup> | —            | 640392-5 <sup>1</sup> | —            |                                                                         |                    |
|           |                 |                        | Phos. Brz., Pre-tin                  | —                     | —            | 640392-2              | —            |                                                                         |                    |
|           |                 |                        | Brass Pre-tin                        | 350629-1              | 794017-1     | 350628-1              | 794016-1     |                                                                         |                    |
| 24-18     | 0.2-0.9         | .050-.110<br>1.27-2.79 | Brass Pre-tin                        | 770983-14             | —            | 794380-14             | —            | 687996-1 <sup>3</sup><br>687996-2 <sup>3</sup><br>687996-3 <sup>3</sup> | 90869-1            |
|           |                 |                        | Phos. Brz., Pre-tin                  | 350629-8              | —            | 350628-2              | —            |                                                                         |                    |
|           |                 |                        | Brass, Select Gold <sup>1</sup>      | 350629-5 <sup>1</sup> | —            | 350628-5 <sup>1</sup> | —            |                                                                         |                    |
|           |                 |                        | Phos. Brz., Select Gold <sup>1</sup> | —                     | —            | 350628-6 <sup>1</sup> | —            |                                                                         |                    |
|           |                 |                        | Brass Pre-tin                        | 770983-14             | —            | 794103-12             | —            |                                                                         |                    |

<sup>1</sup>Select Gold—.000030 [.000762] min. in mating area over .000050 [.00127] nickel.

<sup>2</sup>Lanceless Socket for Overmolding.

<sup>3</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

<sup>4</sup>Contact Retention 15 lbs. [66.6 N] min.

**Note:** Phosphor bronze contacts should be used in high-temperature/humidity cycling applications.

**Note:** All part numbers are RoHS Compliant.



**Contact Insertion Tool**  
(for Pins and Sockets)  
Part No. 91002-1  
IS 408-7347



**Contact Extraction Tool**  
Part No. 318831-1  
IS 408-4370

## **.062 [1.57] Commercial Pin and Socket Connectors** (Continued)

### Housings

#### Free-Hanging or Panel Mount

.145 [3.68] Centerline spacing

#### Material

Housing—Nylon, natural color

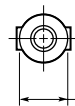
Flammability Rating—UL94V-2

#### Related Product Data

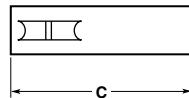
Contacts—page 53

Product Specification—  
108-1037

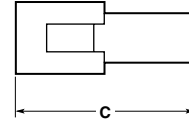
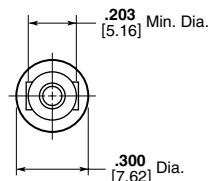
### 1 Circuit



.200  
[5.08] Max. Dia.

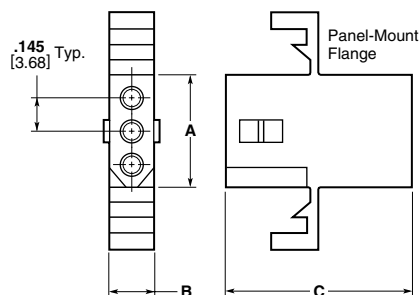


Receptacle

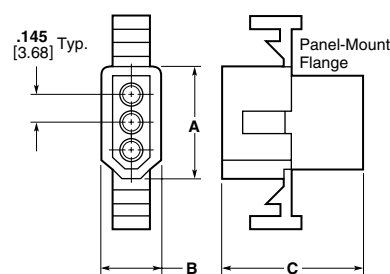


Plug

### 2, 3, and 4 Circuit, In-Line



Receptacle



Plug

| No. of<br>Circuits | Dimensions    |               |               |               |               |               | Receptacle Part Numbers |                                   | Plug Part Numbers |                  |
|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------------------|-----------------------------------|-------------------|------------------|
|                    | Receptacle    |               |               | Plug          |               |               | Panel<br>Mount          | Free-<br>Hanging                  | Panel<br>Mount    | Free-<br>Hanging |
|                    | A             | B             | C             | A             | B             | C             |                         |                                   |                   |                  |
| 1                  | —             | —             | .785<br>19.94 | —             | —             | .750<br>19.05 | —                       | 770277-1                          | —                 | 770278-1         |
| 2                  | .340<br>8.64  | .199<br>5.05  | .820<br>20.83 | .440<br>11.18 | .300<br>7.62  | .780<br>19.81 | 770343-1                | 770342-1<br>770419-1 <sup>1</sup> | 770341-1          | 770340-1         |
| 3                  | .490<br>12.45 | .199<br>5.05  | .785<br>19.94 | .590<br>14.99 | .300<br>7.62  | .750<br>19.05 | 770326-1                | 770333-1                          | 770332-1          | 770331-1         |
| 4<br>(In-Line)     | .635<br>16.13 | .199<br>5.05  | .785<br>19.94 | .733<br>18.62 | .300<br>7.62  | .750<br>19.05 | 770335-1                | 770274-1                          | 770334-1          | 770275-1         |
| 4<br>(Matrix)      | .345<br>8.76  | .345<br>8.76  | .878<br>22.30 | .445<br>11.30 | .445<br>11.30 | .868<br>22.04 | 770441-1                | 770442-1                          | 770443-1          | 770433-1         |
| 6                  | .345<br>8.76  | .495<br>12.57 | .785<br>19.94 | .445<br>11.30 | .600<br>15.24 | .750<br>19.05 | 770354-1                | 770356-1                          | 770353-1          | 770355-1         |
| 9                  | .490<br>12.45 | .495<br>12.57 | .790<br>20.07 | .590<br>14.99 | .600<br>15.24 | .750<br>19.05 | 770427-1                | 770429-1                          | 770426-1          | 770428-1         |

<sup>1</sup>Positive Lock

**Note:** All part numbers are RoHS Compliant.

## .062 [1.57] Commercial Pin and Socket Connectors (Continued)

### Housings

#### Free-Hanging or Panel Mount

.145 [3.68] Centerline spacing

#### Material

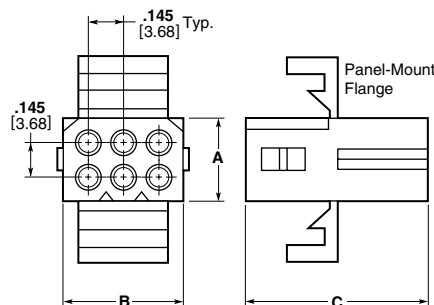
Housing—Nylon, natural color

Flammability Rating—UL94V-2

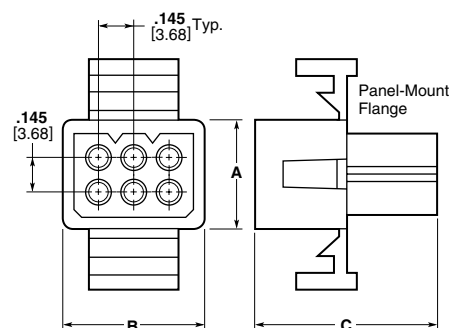
#### Related Product Data

Contacts—page 53

### 4, 6, and 9 Circuit, Matrix



Receptacle



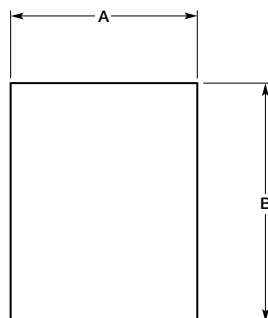
Plug

### Recommended Panel Cutouts

Maximum panel thickness is .060 [1.52].

#### Related Product Data

Product Specification—108-1037



| No. of Circuits | Panel Cutout Dimensions |               |               |               |
|-----------------|-------------------------|---------------|---------------|---------------|
|                 | Receptacle              |               | Plug          |               |
|                 | A                       | B             | A             | B             |
| 2               | .265<br>6.73            | .505<br>12.83 | .318<br>8.08  | .609<br>15.47 |
| 3               | .265<br>6.73            | .650<br>16.51 | .318<br>8.08  | .754<br>19.15 |
| 4<br>(In-Line)  | .260<br>6.60            | .785<br>19.94 | .312<br>7.92  | .865<br>21.97 |
| 4<br>(Matrix)   | .400<br>10.16           | .506<br>12.85 | .465<br>11.81 | .615<br>15.62 |
| 6               | .505<br>12.83           | .552<br>14.02 | .607<br>15.42 | .615<br>15.62 |
| 9               | .552<br>14.02           | .650<br>16.51 | .615<br>15.62 | .752<br>19.10 |

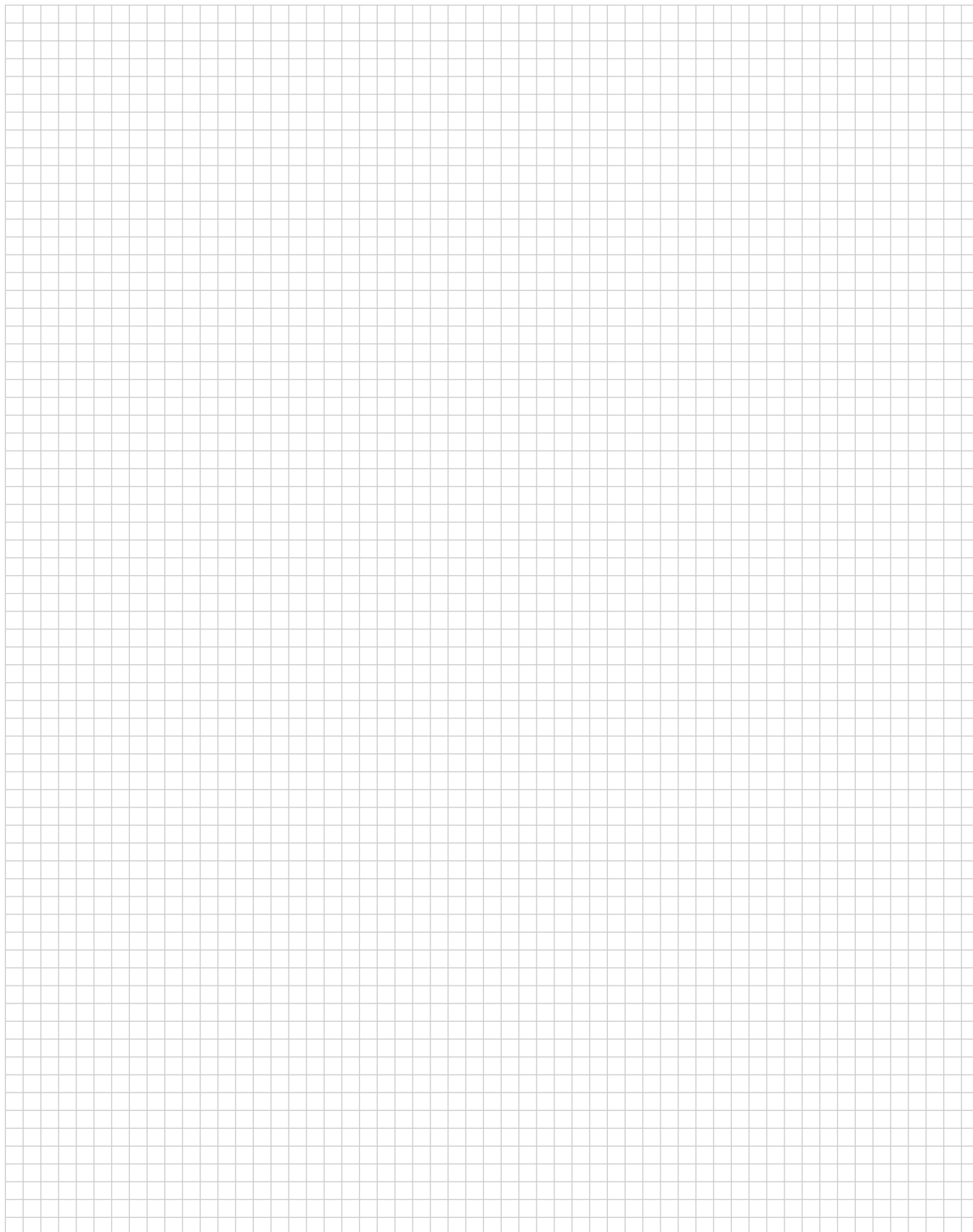
**Note:** The panel should be punched so that the housing enters in the same direction as the punch.

**Note:** All part numbers are RoHS Compliant.

---

**Engineering Notes**

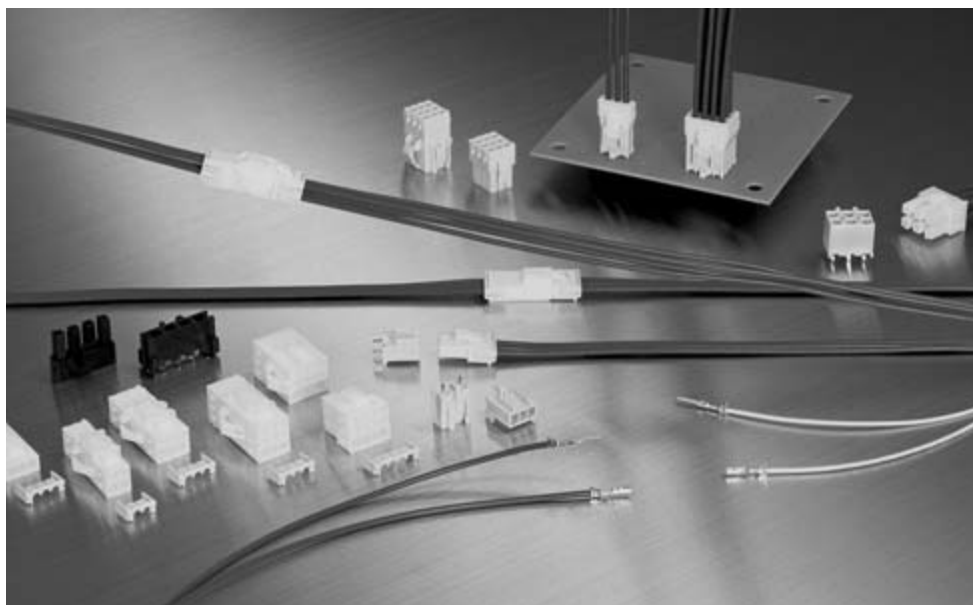
---



## Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)

### Product Facts

- Power circuit connectors of compact design
- Uses double lock plate on the wire side that helps prevent partial mating of contacts
- Double lock plate compatible with high-count positions of more than 3 rows
- Tab and receptacle contacts resist scooping of contacts at mating / unmating
- Locking of plug to cap housings and plug to board-mounted headers made by the semi-inner locking system that helps preclude the possibility of disengagement by external pressure
- Both wire-to-wire and wire-to-board applications available from the same Series lineup
- Board-mounted header compatible with resin coating, causing no hindrance with the plug locking function
- Design complies with a range of safety standards
- The housing lance design provides no lance on contacts and helps prevent entanglement of contacts with one another
- Fully polarized
- The following contact centerline by row centerline arrangements available:
  - For wire-to-wire application:  
3.96 mm x 4.6 mm
  - For wire-to-board application:  
3.96 mm x 4.6 mm  
7.92 mm x 4.6 mm  
6.5 mm x 6.5 mm
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR7189
- VDE Approved, File No. B 04 11 39175010



Power Double Lock Connectors are compact connectors designed for use in power circuit applications and are ideally suited for wiring in refrigerators, air conditioners, washing machines, gas equipment, copying machines and automatic vending machines. These connectors can be used alone by inserting wire-terminated crimp snap-in contacts into the housing. However, to achieve more positive contact mounting, plug and cap housings can be equipped with a double lock plate that helps to completely insert contacts. There are three contact centerline spacings available: 3.96 mm, 6.5 mm and 7.92 mm. Of these, the 7.92 mm centerline contact arrangement is for 2-position board-mounted headers. The mating wire-mounted plug connector uses the second circuit of the 3-position 3.96 mm centerline housing with no contact loaded. Available with the 3.96 mm centerline contact arrangement are wire-mounted plug housings and the mating wire-mounted cap housings (for free-hanging and panel mounted

applications) and board-mounted tab headers.

The 6.5 mm centerline contact arrangement is used in wire-mounted plug housings and the mating board-mounted tab headers. The plug housings are loaded with receptacle contacts and the cap housings with tab contacts. The tab headers for board mounting are preloaded with solder-dipping tab contacts with tail.

Contacts accept two wire size ranges: 28-22 AWG (with insulation outer diameter of 1.3 to 2.0 mm) and 20-18 AWG (with insulation outer diameter of 2.0 to 3.1 mm).

The tab header for board mounting has a locking mechanism where it is compatible with resin coating that is applied to the board for waterproof.

It is designed to work with the plug locking function.

The solder tail section of tab contact has kink feature.

Interacting with the mounting boss with kink feature, the solder tab secures the header on the board firmly during soldering.

The double lock plate is compatible with high-count positions of more than 3 rows. Also, the housing lance design of this connector, featuring no lance on contacts, makes handling of the connector very easy, as there is minimal entanglement of contacts with one another.

### Performance Characteristics

**Voltage Rating**—300 VAC (for 3.96 mm wire-to-wire, 6.5 mm wire-to-board and 7.92 mm wire-to-board applications)  
50 VAC (for 3.96 mm wire-to-board application)

**Current Rating**—10A max. (Using 16 AWG wire on 2-position connector)

**Fine Rating**—1 mV, 1µA min.

**Operating Temperature**—  
-30° ~ +105°C

### Technical Documents

#### Product Specifications

108-5410  
108-5439 (SMT)

#### Application Specification

114-5175

#### Instruction Sheet

411-5638

High Density

Power Double Lock (PDL) Connectors  
.156 [3.96], .256 [6.50], .312 [7.92] and .512 [13.00] Centerlines

## Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

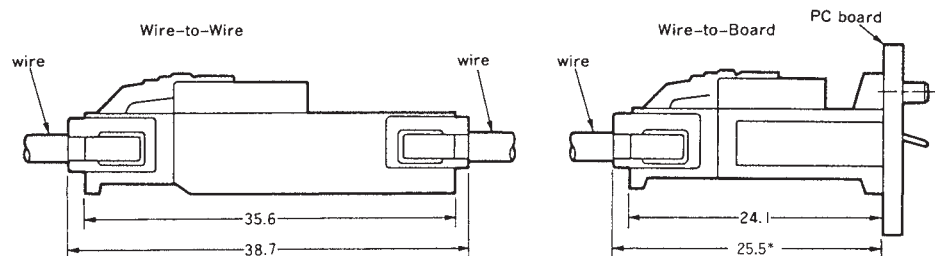
### Quick Reference Chart for Mating Part Numbers

### Quick Reference Chart

| Plug Connector (Wire Side)       |                  |                                          | Mating Connectors (Wire and PC Board Mount Side) |                                                                                                          |                                          |
|----------------------------------|------------------|------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------|
| No. of Pos.                      | Housing Part No. | Part No. of Applicable Double Lock Plate | No. of Pos.                                      | Part No. of Cap Housing and Tab Header                                                                   | Part No. of Applicable Double Lock Plate |
| ■ 3.96 mm and 7.92 mm Centerline |                  |                                          |                                                  |                                                                                                          |                                          |
| 1                                | 316768-□         | 316770-1x1                               | 1                                                | 316769-□ (Free-Hanging)<br>179463-□ (Free-Hanging)                                                       | 316770-1x1                               |
| 2                                | 177898-□         | 177918-1x1                               | 2                                                | 177906-□ (Panel Mount)<br>179838-□ (PC Board Mount)                                                      | 177918-1x1                               |
| 3                                | 177899-□         | 177919-1x1                               | 3                                                | 179464-□ (Free-Hanging)<br>177907-□ (Panel Mount)<br>179839-□ (PC Board Mount)                           | 177919-1x1                               |
| 4 (1 Row)                        | 316501-□         | 177920-1x1                               | 2                                                | 179844-□ (PC Board Mount 7.92 mm Centerline)                                                             | —                                        |
| 4 (2 Rows)                       | 177900-□         | 177918-1x2                               | 4                                                | 316502-□ (Panel Mount)<br>179465-□ (Free-Hanging)<br>177908-□ (Panel Mount)<br>179840-□ (PC Board Mount) | 177920-1x1                               |
| 6                                | 177901-□         | 177919-1x2                               | 4                                                | 179466-□ (Free-Hanging)<br>177909-□ (Panel Mount)<br>179841-□ (PC Board Mount)                           | 177918-1x2                               |
| 8                                | 177902-□         | 177920-1x2                               | 6                                                | 179467-□ (Free-Hanging)<br>917845-□ (PC Board Mount)                                                     | 177919-1x2                               |
| 9                                | 177903-□         | 177919-1x3                               | 8                                                | 177911-□ (Panel Mount)                                                                                   | —                                        |
| 10                               | 177904-□         | 177921-1x2                               | 8                                                | 177912-□ (Panel Mount)                                                                                   | 177920-1x2                               |
| 12                               | 177905-□         | 177920-1x3                               | 9                                                | 177913-□ (Panel Mount)                                                                                   | 177921-1x2                               |
|                                  |                  |                                          | 10                                               | 177913-□ (Panel Mount)                                                                                   | 177920-1x3                               |
|                                  |                  |                                          | 12                                               | 179843-□ (PC Board Mount)                                                                                | —                                        |
| ■ 6.5 mm and 13.0 mm Centerline  |                  |                                          |                                                  |                                                                                                          |                                          |
| 3                                | 179938-□         | 316062-1x1                               | 3                                                | 179846-□ (PC Board Mount)<br>179944-□ (PC Board Mount/SMT)                                               | —                                        |
| 4 (1 Row)                        | 179939-□         | 316063-1x1                               | 2                                                | 917745-□ (PC Board Mount 13 mm Centerline)                                                               | —                                        |
| 4 (2 Rows)                       | 179861-□         | 316061-1x2                               | 4                                                | 179847-□ (PC Board Mount)<br>179945-□ (PC Board Mount/SMT)<br>179848-□ (PC Board Mount)                  | —                                        |
| 6                                | 179862-□         | 316062-1x2                               | 6                                                | 179849-□ (PC Board Mount)                                                                                | —                                        |
| 12                               | 917354-□         | 353891-1x2                               | 12                                               | 917353-□ (PC Board Mount)                                                                                | —                                        |

\*For details on 6.5 mm and 13.0 mm Centerline products, contact Technical Support

**Note:** All part numbers are RoHS Compliant.



**Note:** All dimensions shown are metric.

## Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

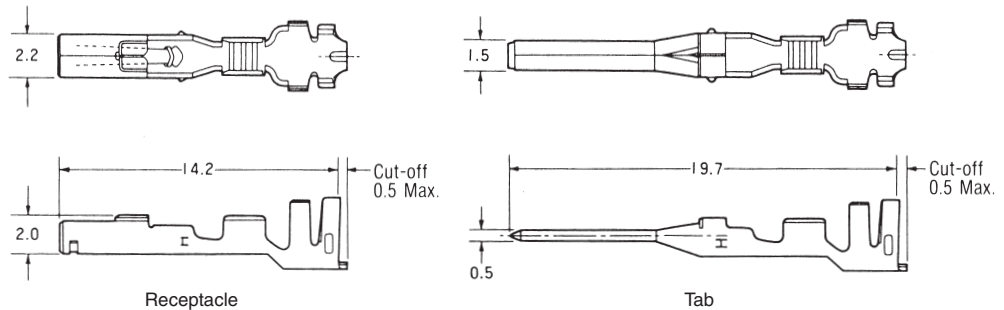
### Contacts and Product Composition

#### Contacts

##### Material and Finish

Pre-tinned copper alloy

Receptacle for Plug Housing,  
Tab for Cap Housing



| Wire Range |                 | Ins. Dia.<br>(Note) | Contact Part No. |                |               |                | CERTI-CRIMP II<br>Hand Tool<br>Part No. |
|------------|-----------------|---------------------|------------------|----------------|---------------|----------------|-----------------------------------------|
| AWG        | mm <sup>2</sup> |                     | Receptacle       |                | Tab           |                |                                         |
|            |                 |                     | Strip<br>Form    | Loose<br>Piece | Strip<br>Form | Loose<br>Piece |                                         |
| 26-22      | 0.14~0.34       | 1.30~2.00           | 177914-1         | 179592-1       | 177916-1      | 179594-1       | 91567-1                                 |
|            |                 |                     | 177914-2*        | 179592-2*      |               |                |                                         |
| 20-16      | 0.51~1.38       | 2.00~3.10           | 177915-1         | 179593-1       | 177917-1      | 179595-1       | 91569-1                                 |
|            |                 |                     | 177915-2*        | 179593-2*      |               |                |                                         |

**Note:** Maximum diameter is 2.8 mm when Double Lock Plate is used.

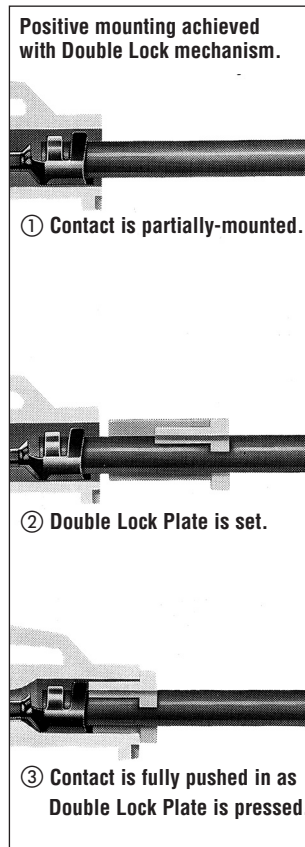
\*Part Number suffix -2 represents high contact pressure type.

Extraction Tool P/N : 234912-1 (For receptacle contact)

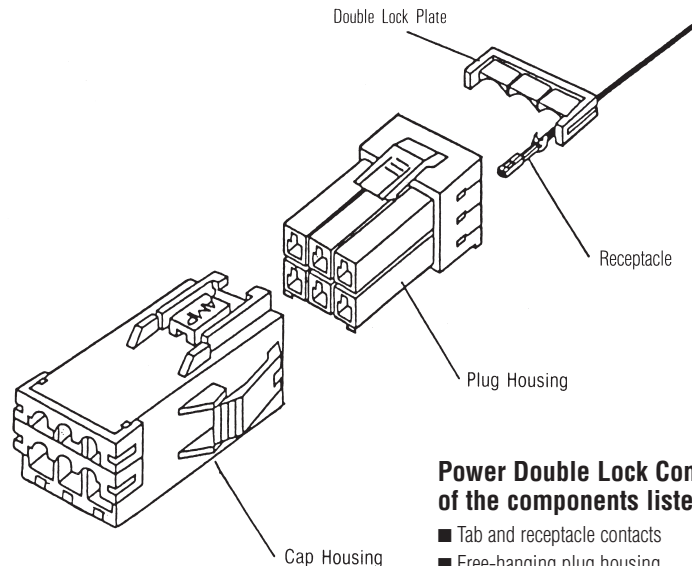
234914-1 (For tab contact)

**Note:** Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Number.

High Density  
Power Double Lock (PDL) Connectors  
.156 [3.96], .256 [6.50], .312 [7.92] and .512 [13.00] Centerlines



### Product Composition



**Power Double Lock Connector is composed of the components listed below:**

- Tab and receptacle contacts
- Free-hanging plug housing
- Free-hanging cap housing
- Panel mount cap housing
- PC Board-mount tab header
- Double Lock Plate

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)**

**3.96 mm Centerline Free-Hanging Plug Housing**

**1 Circuit**

**Wire-to-Wire**

**Material**—UL94V-0, 6/6 Nylon

**Part Number**

316768-1 (Natural)  
316768-2 (Red)  
316768-4 (Yellow)  
316768-6 (Blue)  
316768-9 (Black)

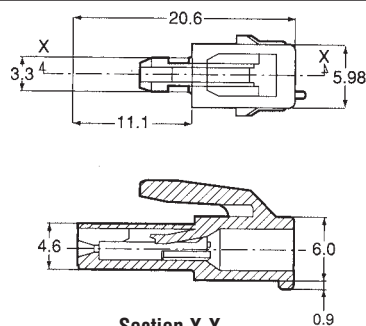
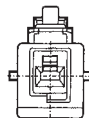
**Related Product Data**

**Receptacle Contacts**—page 59

**Mating Cap Housings**

(Free-Hanging)—pages 63-64

**Double Lock Plate**—page 69



**Section X-X**

**2 Circuits**

**Wire-to-Board and Wire-to-Wire**

**Material**—UL94V-0, 6/6 Nylon

**Part Number**

177898-1 (Natural)  
177898-2 (Red)  
177898-4 (Yellow)  
177898-6 (Blue)  
177898-9 (Black)

**Related Product Data**

**Receptacle Contacts**—page 59

**Mating Cap Housings**

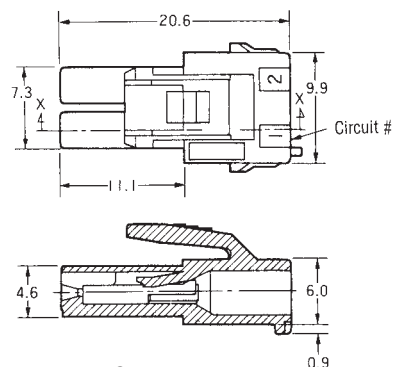
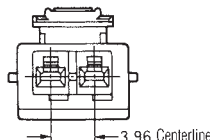
(Free-Hanging)—pages 63-64

(Panel Mount)—pages 65-68

**Double Lock Plate**—page 69

**Mating Tab Headers**

pages 70-72



**Section X-X**

**3 Circuits**

**Wire-to-Board and Wire-to-Wire**

**Material**—UL94V-0, 6/6 Nylon

**Part Number**

177899-1 (Natural)  
177899-2 (Red)  
177899-4 (Yellow)  
177899-6 (Blue)  
177899-9 (Black)

**Related Product Data**

**Receptacle Contacts**—page 59

**Mating Cap Housings**

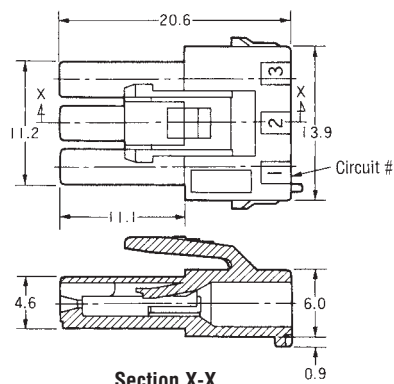
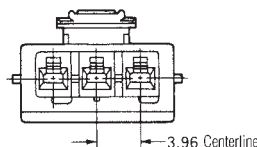
(Free-Hanging)—pages 63-64

(Panel Mount)—pages 65-68

**Double Lock Plate**—page 69

**Mating Tab Headers**

pages 70-72 and  
(2 circuit, 7.92 mm  
centerline)—page 72



**Section X-X**

**4 Circuits (1 Row)**

**Wire-to-Wire**

**Material**—UL94V-0, 6/6 Nylon

**Part Number**

316501-1 (Natural)  
316501-4 (Yellow)  
316501-6 (Blue)

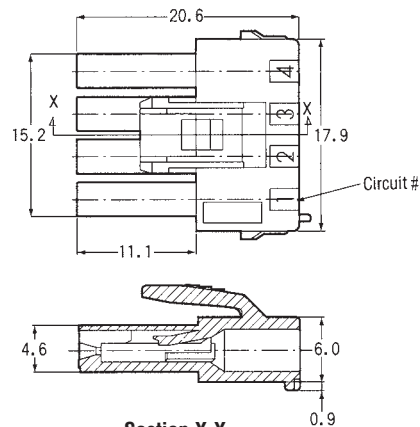
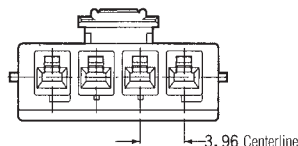
**Related Product Data**

**Receptacle Contacts**—page 59

**Mating Cap Housings**

(Panel Mount)—pages 65-68

**Double Lock Plate**—page 69



**Section X-X**

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)**

**3.96 mm Centerline Free-Hanging Plug Housing**

**4 Circuits (2 Rows)**

Wire-to-Board and Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

177900-1 (Natural)  
177900-4 (Yellow)  
177900-6 (Blue)

**Lock Type II**

3-177900-1 (Natural)

**Related Product Data**

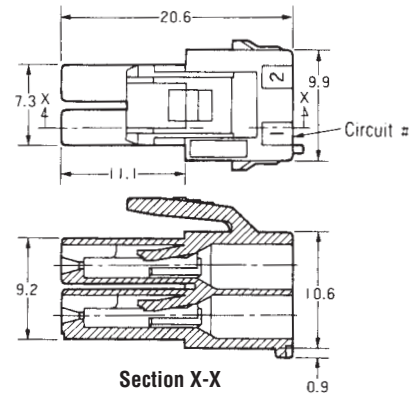
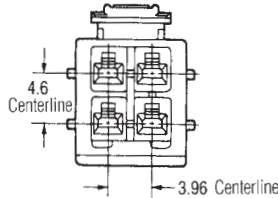
**Receptacle Contacts**—page 59

**Mating Cap Housings**

(Free-Hanging)—pages 63-64  
(Panel Mount)—pages 65-68

**Double Lock Plate**—page 69

**Mating Tab Headers**—  
pages 70-72



**6 Circuits**

Wire-to-Board and Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

177901-1 (Natural)  
177901-4 (Yellow)  
177901-6 (Blue)

**Lock Type II**

3-177901-1 (Natural)

**Related Product Data**

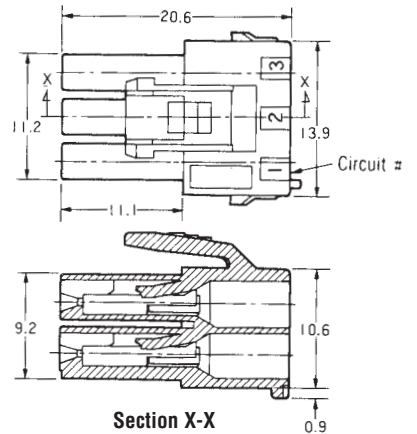
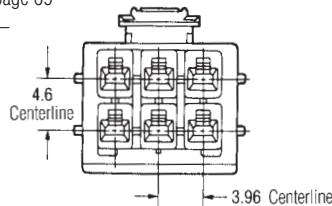
**Receptacle Contacts**—page 59

**Mating Cap Housings**

(Free-Hanging)—pages 63-64  
(Panel Mount)—pages 65-68

**Double Lock Plate**—page 69

**Mating Tab Headers**—  
pages 70-72



**8 Circuits**

Wire-to-Board and Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

177902-1 (Natural)  
177902-4 (Yellow)  
177902-6 (Blue)

**Lock Type II**

3-177902-1 (Natural)

**Related Product Data**

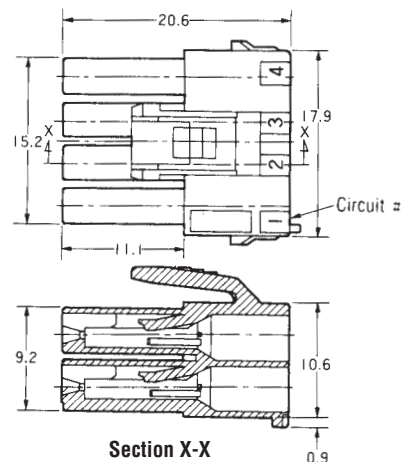
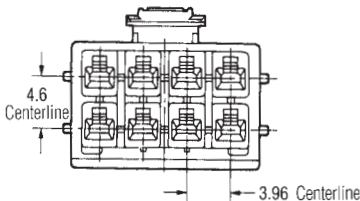
**Receptacle Contacts**—page 59

**Mating Cap Housings**

(Free-Hanging)—pages 63-64

**Double Lock Plate**—page 69

**Mating Tab Headers**—pages 70-72



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

### 3.96 mm Centerline Free-Hanging Plug Housing

#### 9 Circuits

##### Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

177903-1 (Natural)  
177903-4 (Yellow)  
177903-6 (Blue)

##### Lock Type II

3-177903-1 (Natural)

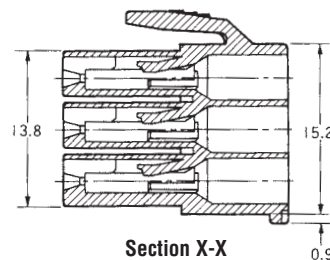
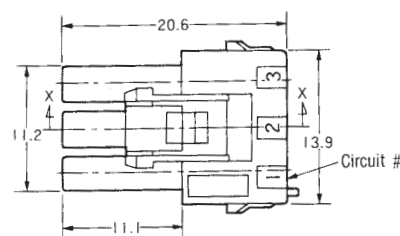
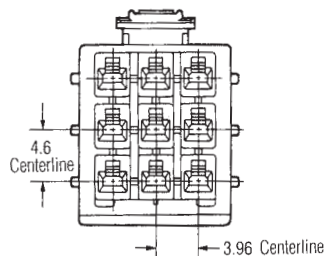
##### Related Product Data

Receptacle Contacts—page 59

##### Mating Cap Housings

(Panel Mount)—pages 65-68

Double Lock Plate—page 69



#### 10 Circuits

##### Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

177904-1 (Natural)  
177904-4 (Yellow)  
177904-6 (Blue)

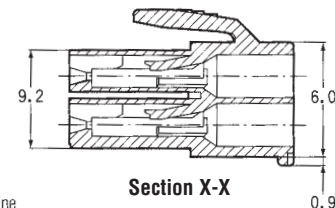
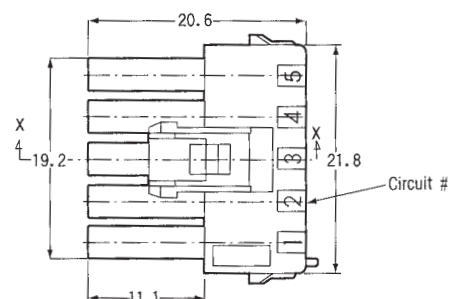
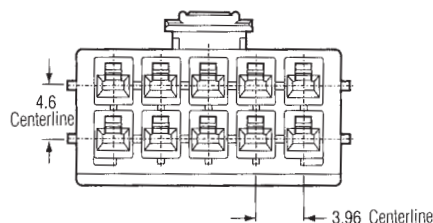
##### Related Product Data

Receptacle Contacts—page 59

##### Mating Cap Housings

(Panel Mount)—pages 65-68

Double Lock Plate—page 69



#### 12 Circuits

##### Wire-to-Board and Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

177905-1 (Natural)  
177905-4 (Yellow)  
177905-6 (Blue)

##### Related Product Data

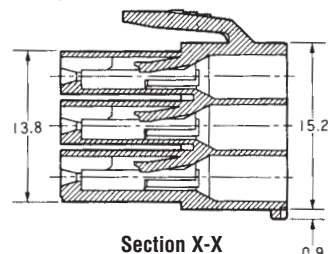
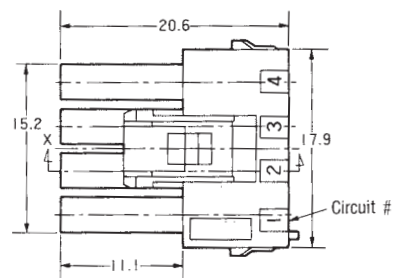
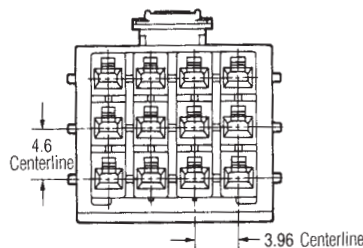
Receptacle Contacts—page 59

##### Mating Cap Housings

(Panel Mount)—pages 65-68

Double Lock Plate—page 69

Mating Tab Headers—pages 70-72



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Wire)

### 3.96 mm Centerline Free-Hanging Cap Housing

#### 1 Circuit

##### Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

316769-1 (Natural)  
316769-2 (Red)  
316769-4 (Yellow)  
316769-6 (Blue)  
316769-9 (Black)

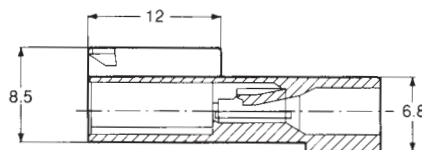
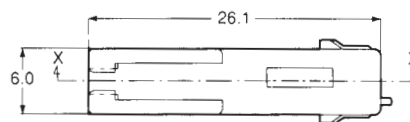
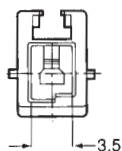
##### Related Product Data

**Tab Contacts**—page 59

**Mating Plug Housings**

(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



Section X-X

#### 2 Circuits

##### Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

179463-1 (Natural)  
179463-2 (Red)  
179463-4 (Yellow)  
179463-6 (Blue)  
179463-9 (Black)

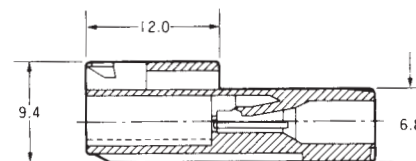
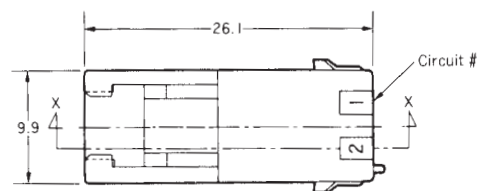
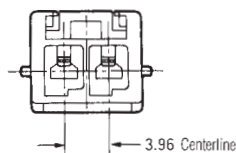
##### Related Product Data

**Tab Contacts**—page 59

**Mating Plug Housings**

(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



Section X-X

#### 3 Circuits

##### Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

179464-1 (Natural)  
179464-2 (Red)  
179464-4 (Yellow)  
179464-6 (Blue)  
179464-9 (Black)

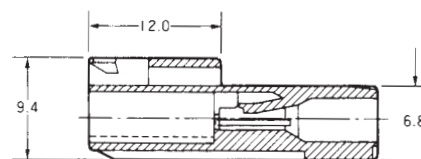
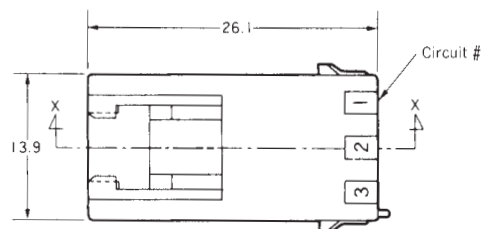
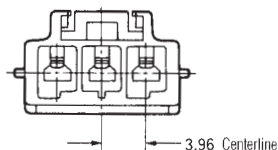
##### Related Product Data

**Tab Contacts**—page 59

**Mating Plug Housings**

(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



Section X-X

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Wire) (Continued)

### 3.96 mm Centerline Free-Hanging Cap Housing

#### 4 Circuits (2 Rows)

##### Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

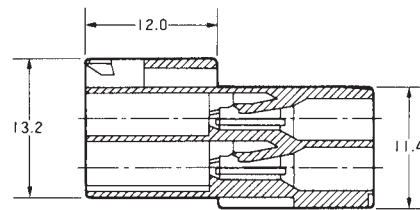
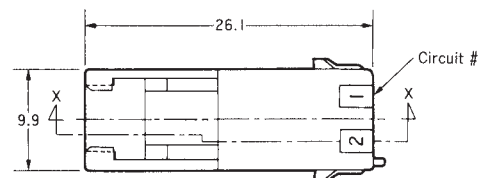
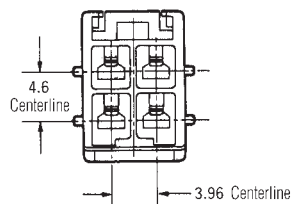
179465-1 (Natural)  
179465-4 (Yellow)  
179465-6 (Blue)

##### Related Product Data

**Tab Contacts**—page 59

**Mating Plug Housings**  
(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



Section X-X

#### 6 Circuits

##### Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

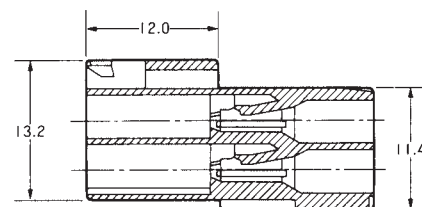
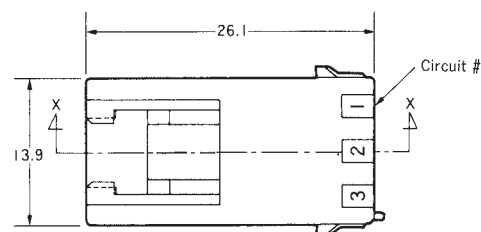
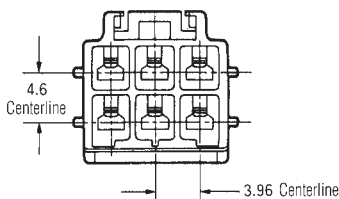
179466-1 (Natural)  
179466-4 (Yellow)  
179466-6 (Blue)

##### Related Product Data

**Tab Contacts**—page 59

**Mating Plug Housings**  
(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



Section X-X

#### 8 Circuits

##### Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

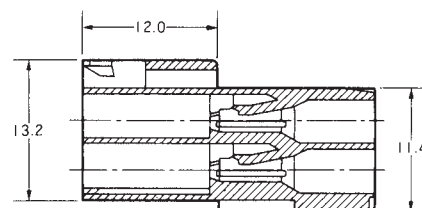
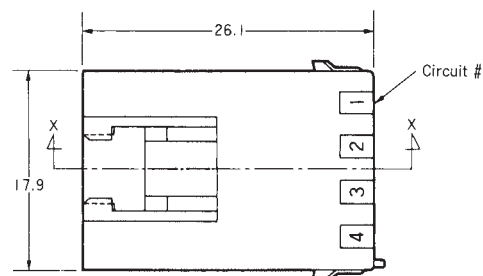
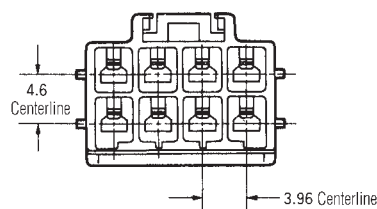
179467-1 (Natural)  
179467-4 (Yellow)  
179467-6 (Blue)

##### Related Product Data

**Tab Contacts**—page 59

**Mating Plug Housings**  
(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



Section X-X

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Wire)** (Continued)

**3.96 mm Centerline Panel Mount Cap Housing**

**2 Circuits**

**Wire-to-Wire**

**Material**—UL94V-0, 6/6 Nylon

**Part Number**

177906-1 (Natural)  
177906-2 (Red)  
177906-4 (Yellow)  
177906-6 (Blue)  
177906-9 (Black)

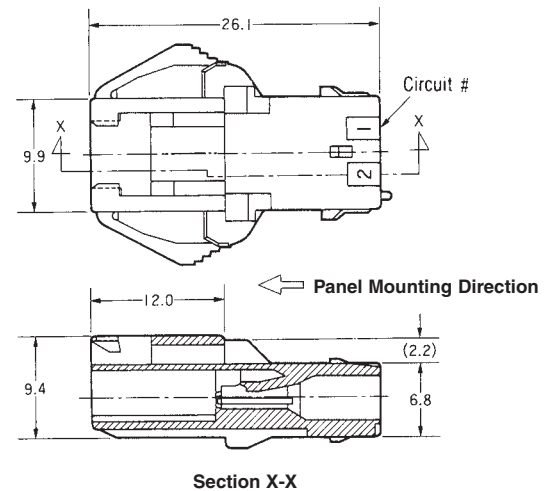
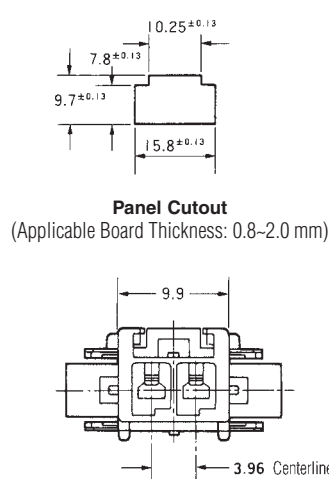
**Related Product Data**

**Tab Contacts**—page 59

**Mating Plug Housings**

(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



**3 Circuits**

**Wire-to-Wire**

**Material**—UL94V-0, 6/6 Nylon

**Part Number**

177907-1 (Natural)  
177907-2 (Red)  
177907-4 (Yellow)  
177907-6 (Blue)  
177907-9 (Black)

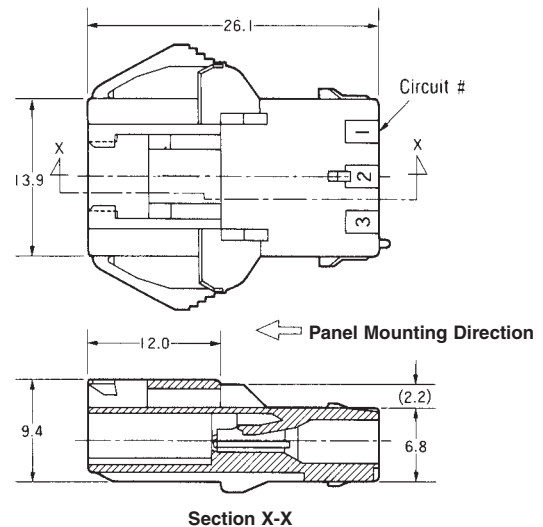
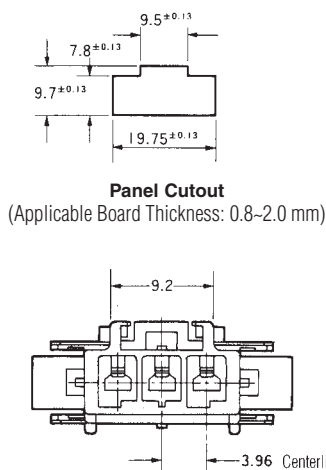
**Related Product Data**

**Tab Contacts**—page 59

**Mating Plug Housings**

(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



**4 Circuits (1 Row)**

**Wire-to-Wire**

**Material**—UL94V-0, 6/6 Nylon

**Part Number**

316502-1 (Natural)  
316502-4 (Yellow)  
316502-6 (Blue)

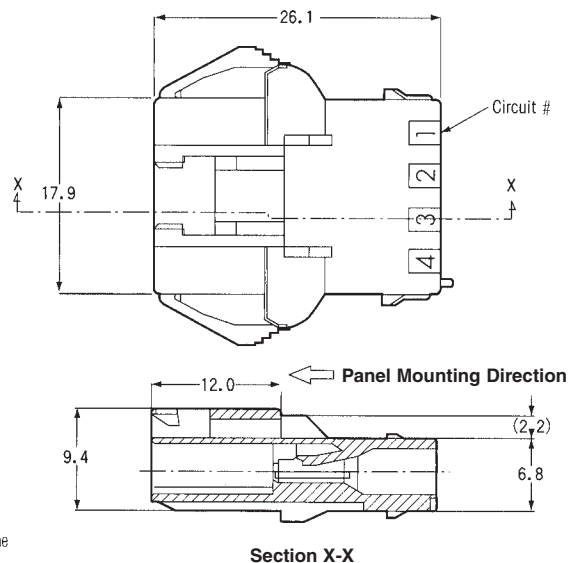
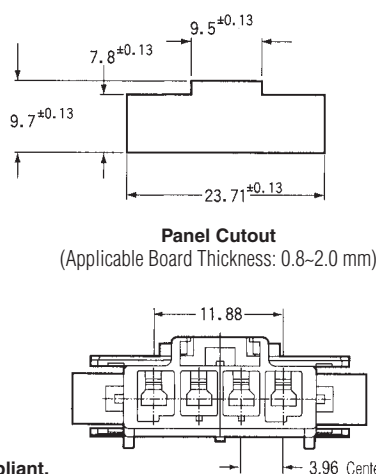
**Related Product Data**

**Tab Contacts**—page 59

**Mating Plug Housings**

(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Wire) (Continued)

### 3.96 mm Centerline Panel Mount Cap Housing

#### 4 Circuits (2 Rows)

Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

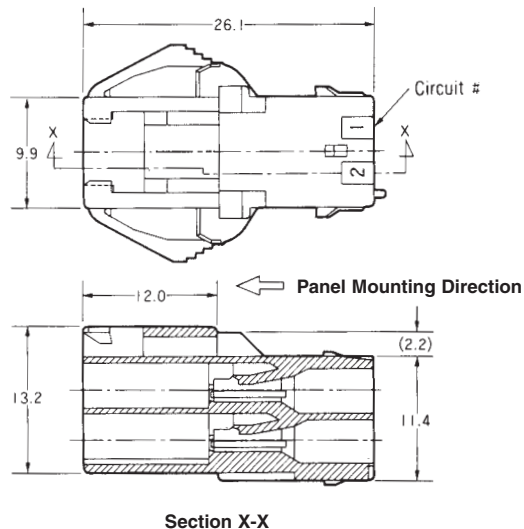
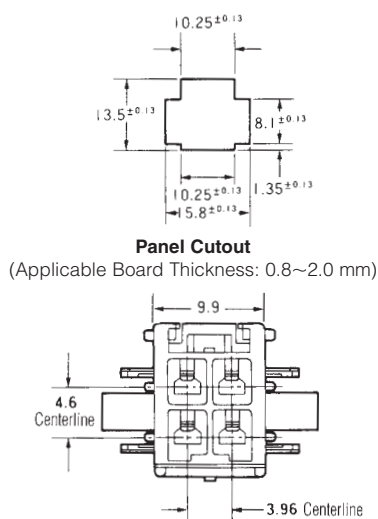
177908-1 (Natural)  
177908-4 (Yellow)  
177908-6 (Blue)

##### Related Product Data

Tab Contacts—page 59

Mating Plug Housings  
(Free-Hanging)—pages 60-62

Double Lock Plate—page 69



#### 6 Circuits

Wire-to-Wire

##### Material

UL94V-0, 6/6 Nylon

##### Part Number

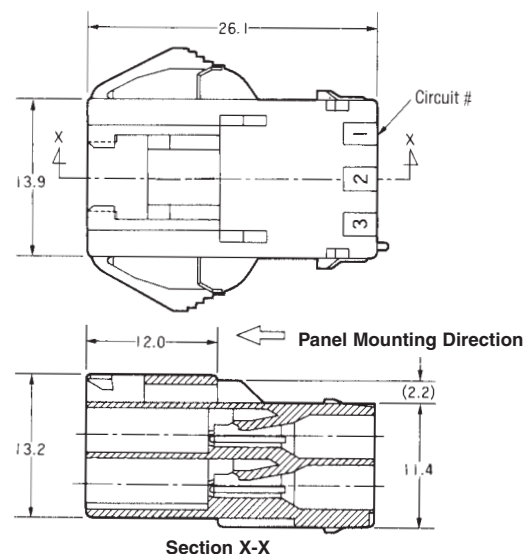
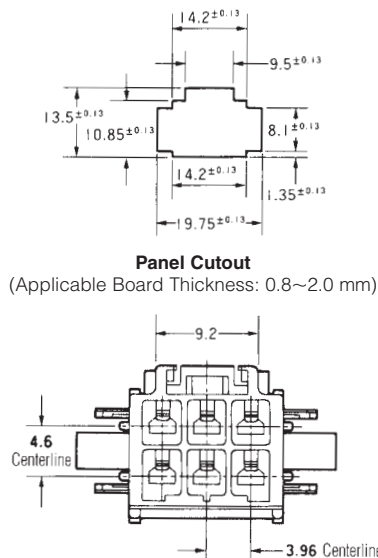
177909-1 (Natural)  
177909-4 (Yellow)  
177909-6 (Blue)

##### Related Product Data

Tab Contacts—page 59

Mating Plug Housings  
(Free-Hanging)—pages 60-62

Double Lock Plate—page 69



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Wire)** (Continued)

**3.96 mm Centerline Panel Mount Cap Housing**

**9 Circuits**

**Wire-to-Wire**

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

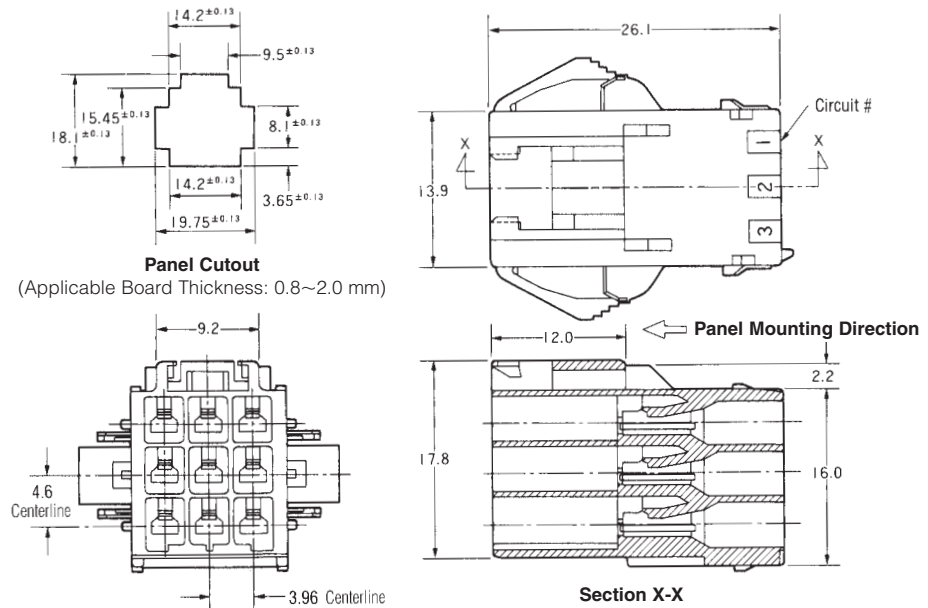
177911-1 (Natural)  
177911-4 (Yellow)  
177911-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 59

**Mating Plug Housings**  
(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



**For 10 Circuits**

**Wire-to-Wire**

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

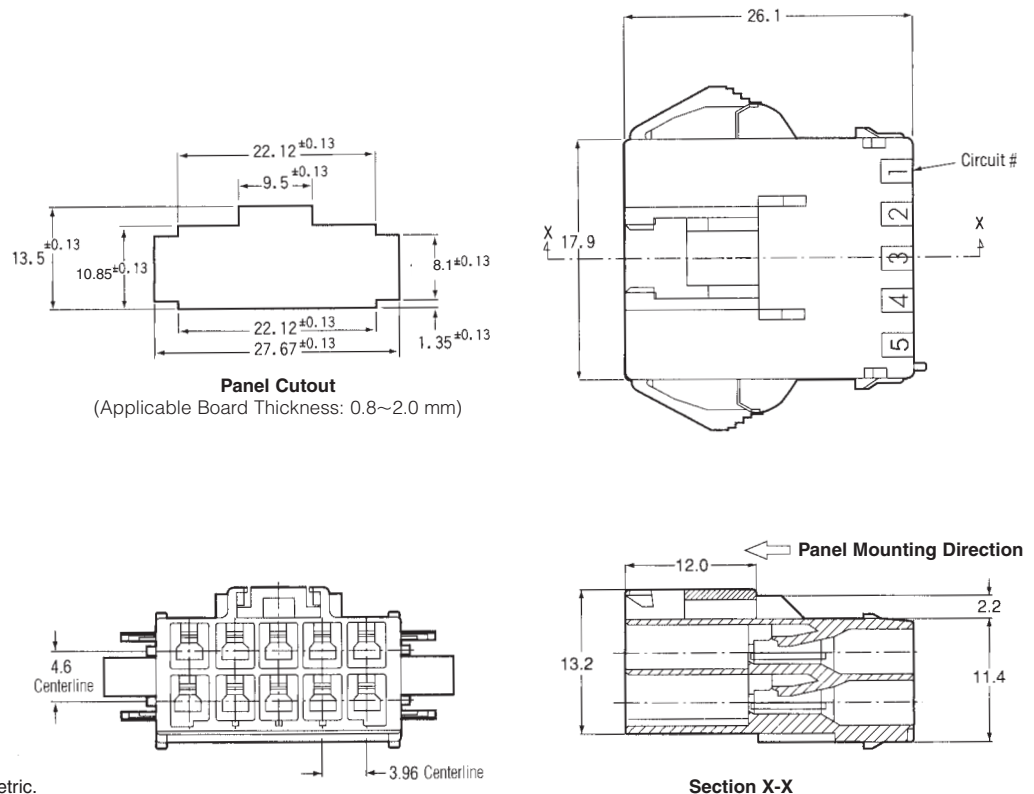
177912-1 (Natural)  
177912-4 (Yellow)  
177912-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 59

**Mating Plug Housings**  
(Free-Hanging)—pages 60-62

**Double Lock Plate**—page 69



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Wire) (Continued)

### 3.96 mm Centerline Panel Mount Cap Housing

#### 12 Circuits

#### Wire-to-Wire

#### Material

UL94V-0, 6/6 Nylon

#### Part Number

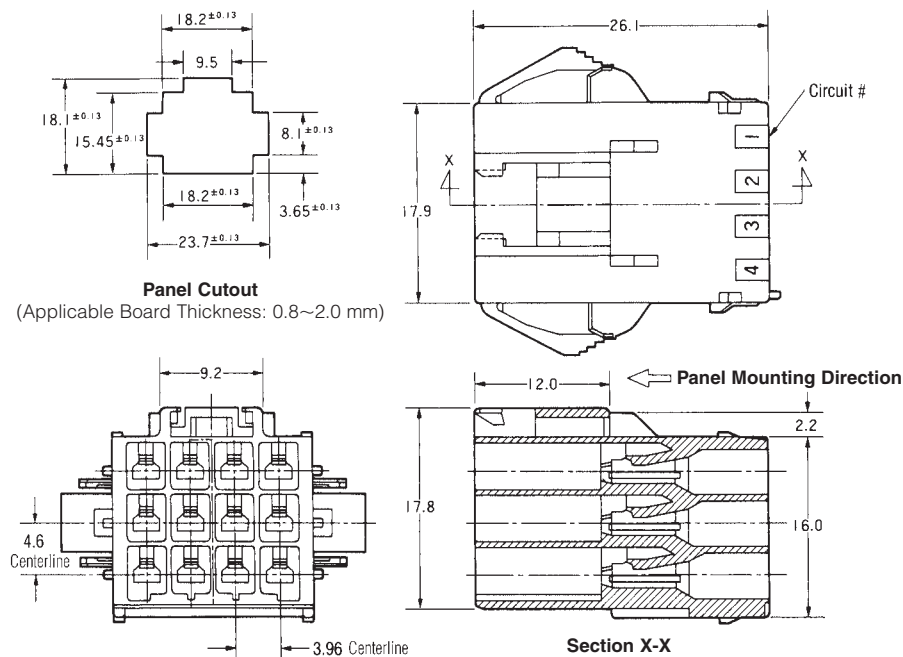
177913-1 (Natural)  
177913-4 (Yellow)  
177913-6 (Blue)

#### Related Product Data

Tab Contacts—page 59

Mating Plug Housings  
(Free-Hanging)—pages 60-62

Double Lock Plate—page 69



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)

### 3.96 mm Centerline Double-Lock Plates

#### Double Lock Plates

##### Material

UL94V-0, glass filled 6/6 Nylon,  
natural color

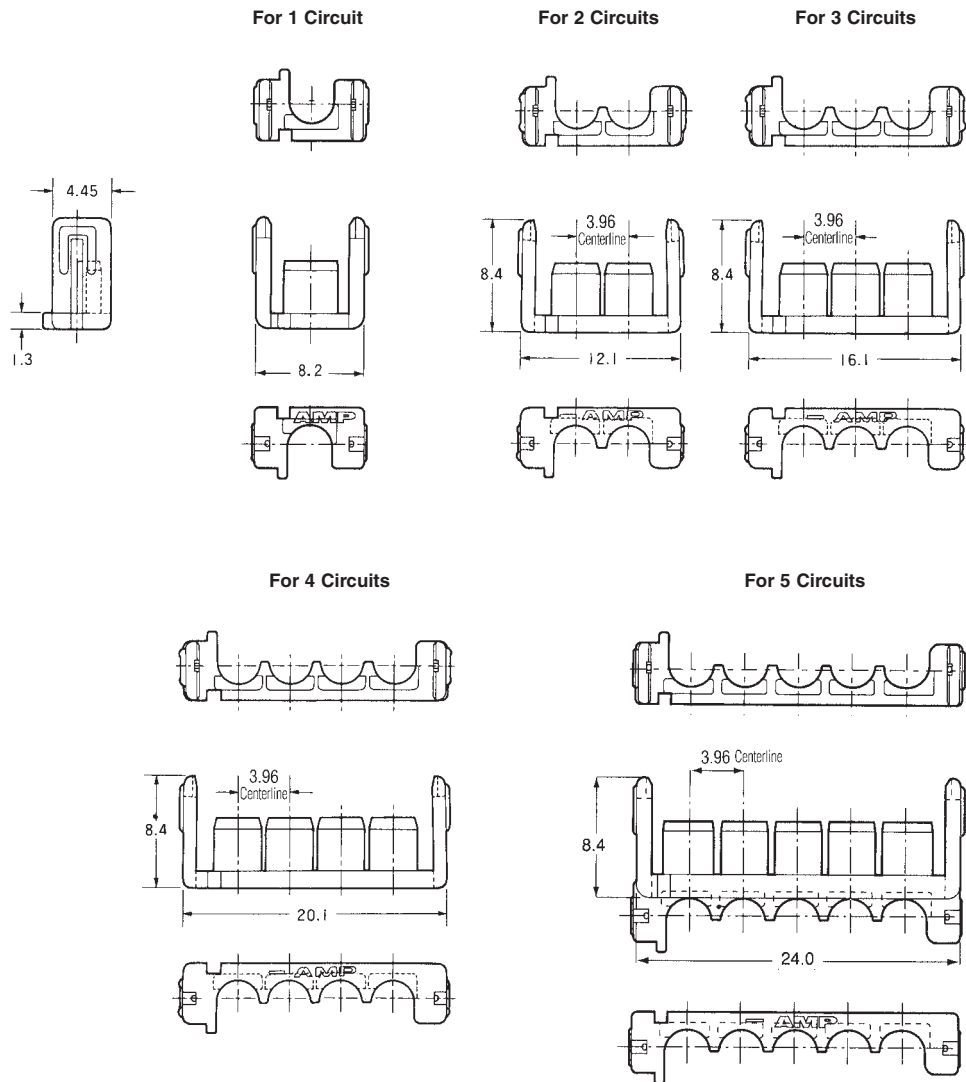
##### Part Number

316770-1 (1 Pos.)  
177918-1 (2 Pos.)  
177919-1 (3 Pos.)  
177920-1 (4 Pos.)  
177921-1 (5 Pos.)

##### Related Product Data

**Plug Housings**—pages 60-62

**Cap Housings**—pages 63-68



| No. of Pos. | Applicable Housing Part No. |              |             | Double Lock Plate |               |
|-------------|-----------------------------|--------------|-------------|-------------------|---------------|
|             | Plug Housing                | Cap Housing  |             | Part Number       | Required Qty. |
|             |                             | Free-Hanging | Panel Mount |                   |               |
| 1           | 316768-□                    | 316769-□     | —           | 316770-1 (1 Pos.) | 1             |
| 2           | 177898-□                    | 179463-□     | 177906-□    | 177918-1 (2 Pos.) | 1             |
| 3           | 177899-□                    | 179464-□     | 177907-□    | 177919-1 (3 Pos.) | 1             |
| 4 (1 Row)   | 316501-□                    | —            | 316502-□    | 177920-1 (4 Pos.) | 1             |
| 4 (2 Rows)  | 177900-□                    | 179465-□     | 177908-□    | 177918-1 (2 Pos.) | 2             |
| 6           | 177901-□                    | 179466-□     | 177909-□    | 177919-1 (3 Pos.) | 2             |
| 8           | 177902-□                    | 179467-□     | —           | 177920-1 (4 Pos.) | 2             |
| 9           | 177903-□                    | —            | 177911-□    | 177919-1 (3 Pos.) | 3             |
| 10          | 177904-□                    | —            | 177912-□    | 177921-1 (5 Pos.) | 2             |
| 12          | 177905-□                    | —            | 177913-□    | 177920-1 (4 Pos.) | 3             |

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board)

### 3.96 mm Centerline for PC Board Mount Tab Header, Vertical

#### 2 Circuits

##### Wire-to-Board

##### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

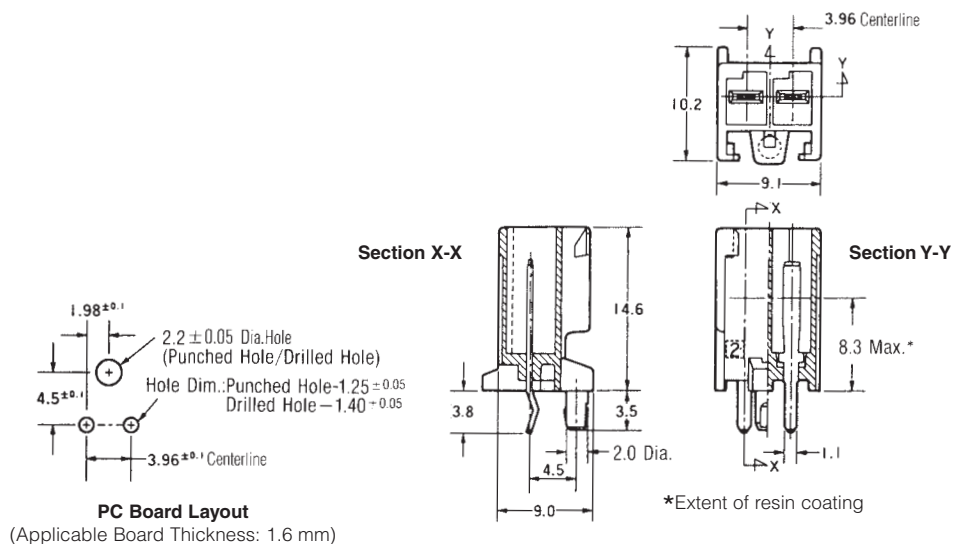
##### Part Number

179838-1 (Natural)  
179838-2 (Red)  
179838-4 (Yellow)  
179838-6 (Blue)  
179838-9 (Black)

**Tube** (53 ea.)—316299-□

##### Related Product Data

**Mating Plug Housing**  
(Free-Hanging)—pages 60-62



#### 3 Circuits

##### Wire-to-Board

##### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

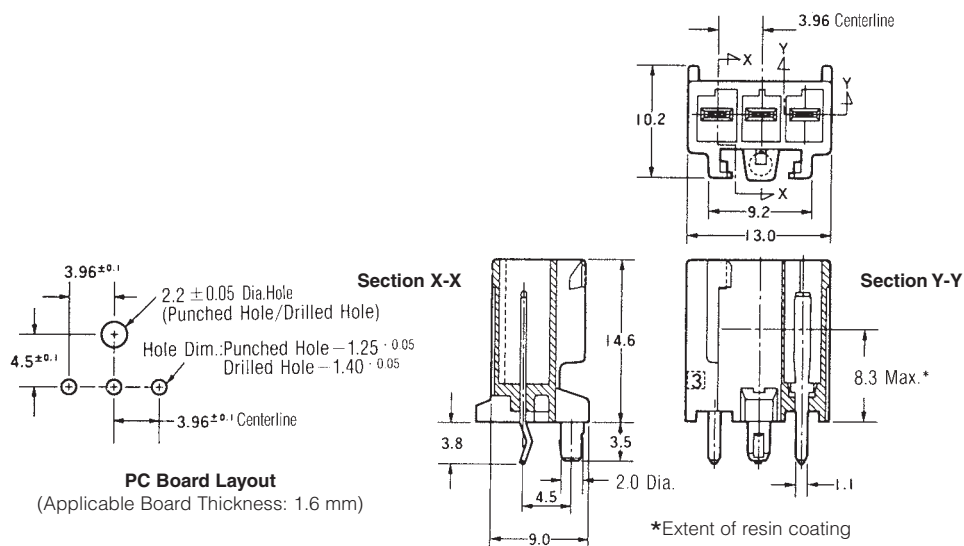
**Contact**—Copper alloy, Tin plated

##### Part Number

179839-1 (Natural)  
179839-2 (Red)  
179839-4 (Yellow)  
179839-6 (Blue)  
179839-9 (Black)

##### Related Product Data

**Mating Plug Housing**  
(Free-Hanging)—pages 60-62



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board) (Continued)**

**3.96 mm Centerline for PC Board Mount Tab Header, Vertical (Continued)**

**4 Circuits (2 Rows)**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled  
6/6 Nylon.

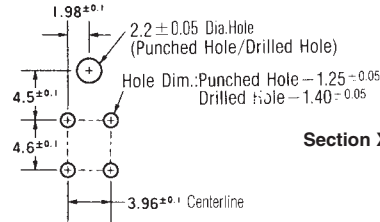
**Contact**—Copper alloy, Tin plated

**Part Number**

179840-1 (Natural)  
179840-4 (Yellow)  
179840-6 (Blue)

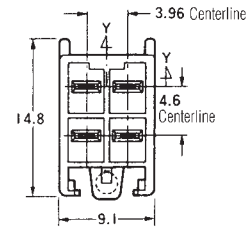
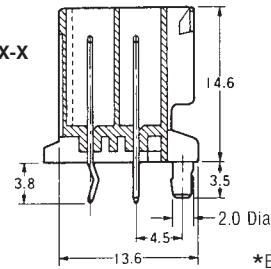
**Related Product Data**

**Mating Plug Housings**  
(Free-Hanging)—pages 60-62

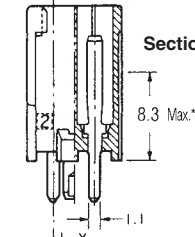


**PC Board Layout**  
(Applicable Board Thickness: 1.6 mm)

Section X-X



Section Y-Y



\*Extent of resin coating

**6 Circuits**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled  
6/6 Nylon.

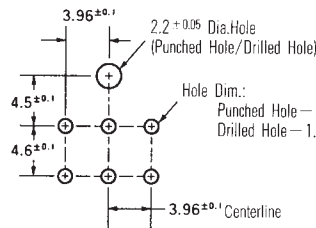
**Contact**—Copper alloy, Tin plated

**Part Number**

179841-1 (Natural)  
179841-4 (Yellow)  
179841-6 (Blue)

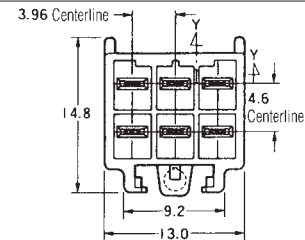
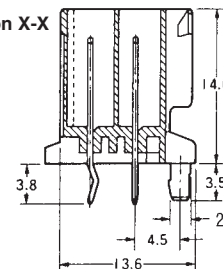
**Related Product Data**

**Mating Plug Housings**  
(Free-Hanging)—pages 60-62

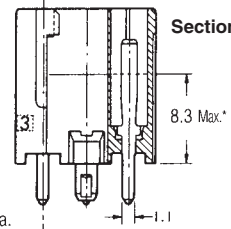


**PC Board Layout**  
(Applicable Board Thickness: 1.6 mm)

Section X-X



Section Y-Y



\*Extent of resin coating

**8 Circuits**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled  
6/6 Nylon.

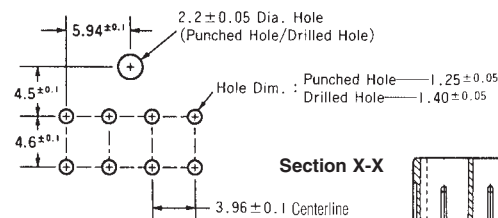
**Contact**—Copper alloy, Tin plated

**Part Number**

917845-1 (Natural)  
917845-4 (Yellow)  
917845-6 (Blue)

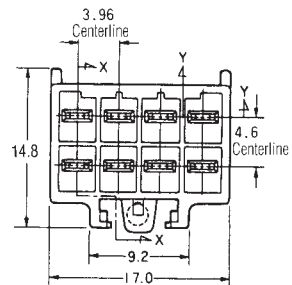
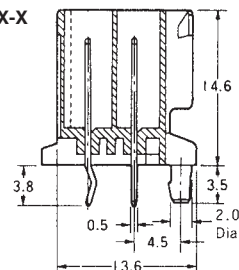
**Related Product Data**

**Mating Plug Housings**  
(Free-Hanging)—pages 60-62

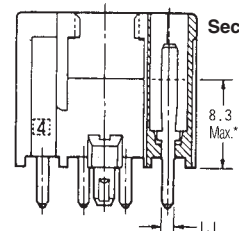


**PC Board Layout**  
(Applicable Board Thickness: 1.6 mm)

Section X-X



Section Y-Y



\*Extent of resin coating

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board) (Continued)

### 3.96 mm Centerline for PC Board Mount Tab Header, Vertical

#### 12 Circuits Wire-to-Board

##### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

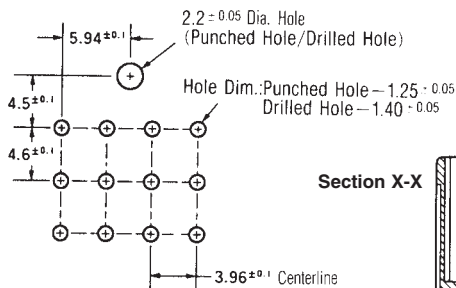
**Contact**—Copper alloy, Tin plated

##### Part Number

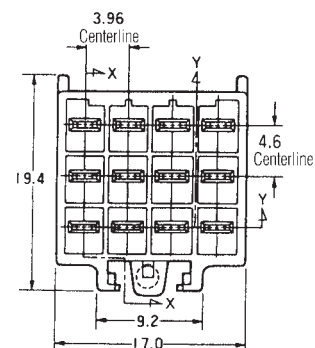
179843-1 (Natural)  
179843-4 (Yellow)  
179843-6 (Blue)

##### Related Product Data

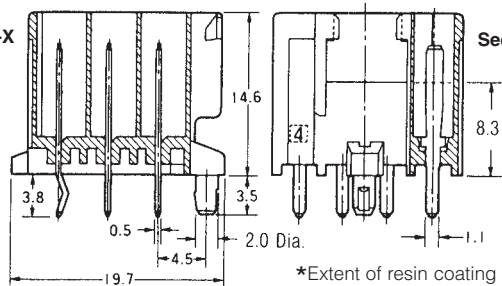
**Mating Plug Housings**  
(Free-Hanging)—pages 60-62



**PC Board Layout**  
(Applicable Board Thickness: 1.6 mm)



**Section X-X**



**Section Y-Y**

### 3.96 mm Centerline (2 Pos. = 7.92 mm Centerline) for PC Board Mount Tab Header, Vertical

#### 2 Circuits Wire-to-Board

##### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

##### Part Number

With kink

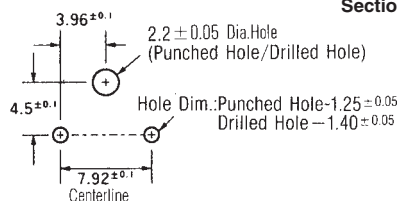
179844-1 (Natural)  
179844-2 (Red)  
179844-4 (Yellow)  
179844-6 (Blue)  
179844-9 (Black)

Without kink

9-179844-1 (Natural)  
9-179844-6 (Blue)

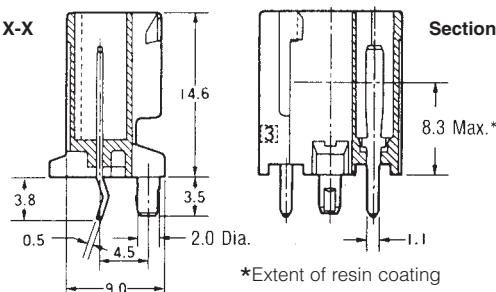
##### Related Product Data

**Mating 3-Circuit Plug Housings**  
(Free-Hanging)—page 60



**PC Board Layout**  
(Applicable Board Thickness: 1.6 mm)

**Section X-X**



**Section Y-Y**

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board) (Continued)

### 6.5 mm Centerline Free-Hanging Plug Housing

#### 3 Circuits

##### Wire-to-Board

##### Material

UL 94V-0, 6/6 Nylon

##### Part Number

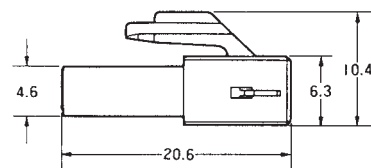
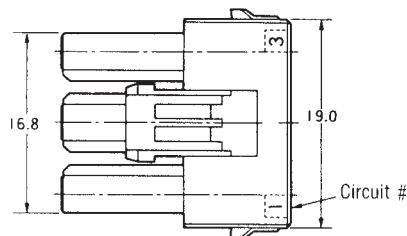
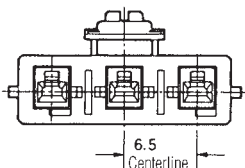
179938-1 (Natural)  
179938-2 (Red)  
179938-4 (Yellow)  
179938-6 (Blue)  
179938-9 (Black)

##### Related Product Data

**Receptacle Contacts**—page 59

**Double Lock Plate**—page 75

**Mating Tab Headers**—pages 76-78



### 4 Circuits (1 Row)

##### Wire-to-Board

##### Material

UL 94V-0, 6/6 Nylon

##### Part Number

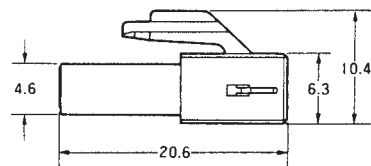
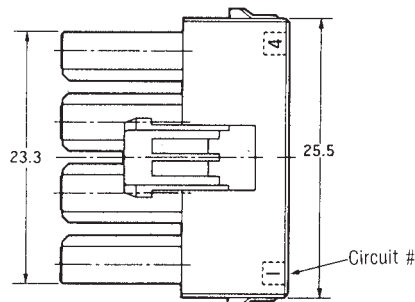
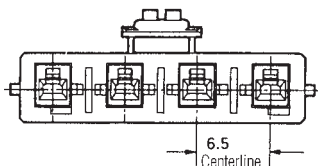
179939-1 (Natural)  
179939-4 (Yellow)  
179939-6 (Blue)  
179939-9 (Black)

##### Related Product Data

**Receptacle Contacts**—page 59

**Double Lock Plate**—page 75

**Mating Tab Headers**—pages 76-78



### 4 Circuits (2 Rows)

##### Wire-to-Board

##### Material

UL 94V-0, 6/6 Nylon

##### Part Number

Housing Lock Type A  
179861-1 (Natural)  
179861-4 (Yellow)  
179861-6 (Blue)

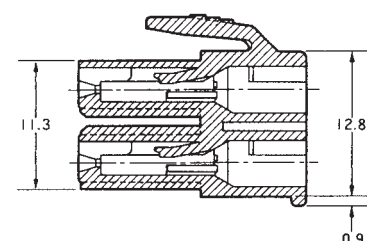
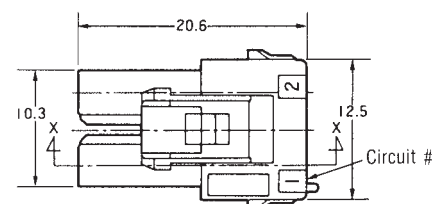
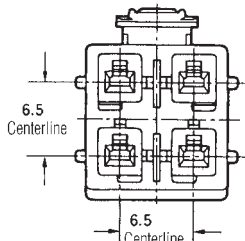
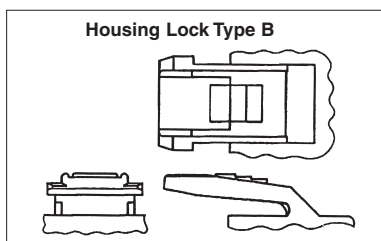
Housing Lock Type B  
2-179861-1 (Natural)  
2-179861-4 (Yellow)  
2-179861-6 (Blue)

##### Related Product Data

**Receptacle Contacts**—page 59

**Double Lock Plate**—page 75

**Mating Tab Headers**—pages 76-78



Section X-X

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board) (Continued)

### 6.5 mm Centerline Free-Hanging Plug Housing

#### 6 Circuits

##### Wire-to-Board

##### Material

UL 94V-0, 6/6 Nylon

##### Part Number

Housing Lock Type A  
179862-1 (Natural)  
179862-4 (Yellow)  
179862-6 (Blue)

##### Housing Lock Type B

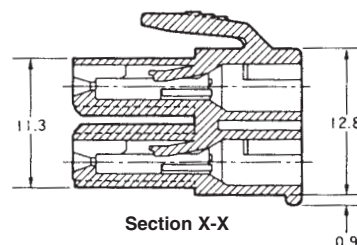
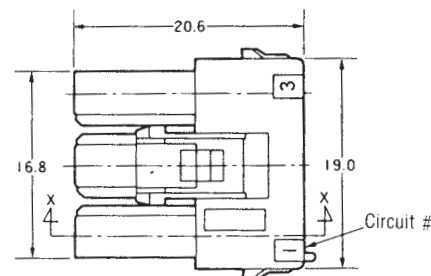
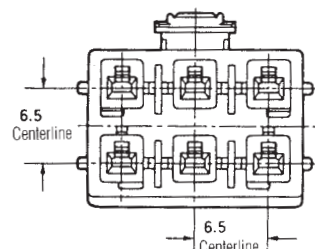
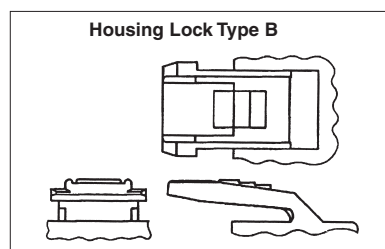
2-179862-1 (Natural)  
2-179862-4 (Yellow)  
2-179862-6 (Blue)

##### Related Product Data

**Receptacle Contacts**—page 59

**Double Lock Plate**—page 75

**Mating Tab Headers**—pages 76-78



#### 12 Circuits

##### Wire-to-Board

##### Material

UL 94V-0, 6/6 Nylon.

##### Part Number

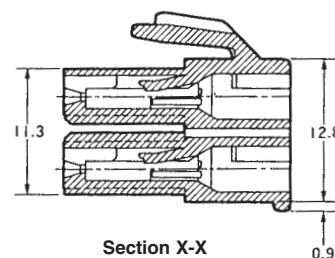
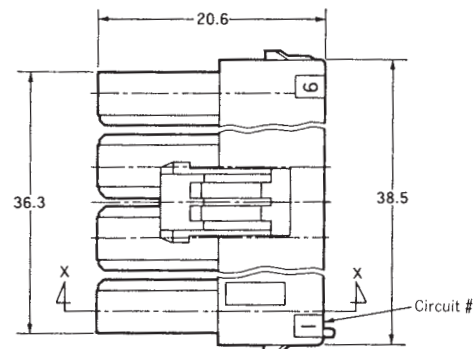
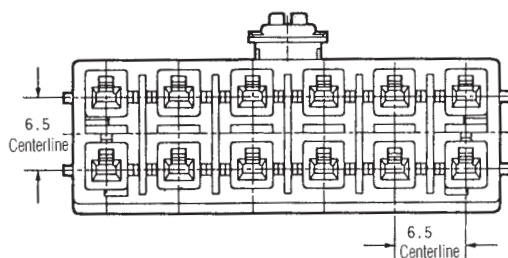
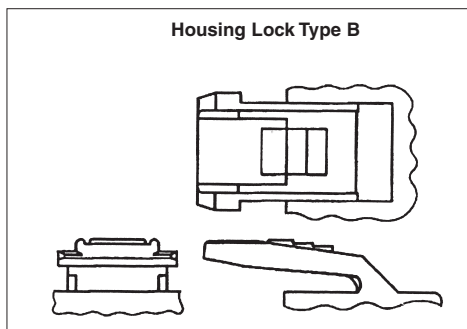
Housing Lock Type A  
917354-1 (Natural)  
Housing Lock Type B  
2-917354-1 (Natural)

##### Related Product Data

**Receptacle Contacts**—page 59

**Double Lock Plate**—page 75

**Mating Tab Headers**—pages 76-78



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board) (Continued)

### 6.5 mm Centerline Double-Lock Plates

#### Material

UL94V-0, glass filled  
6/6 Nylon, natural color

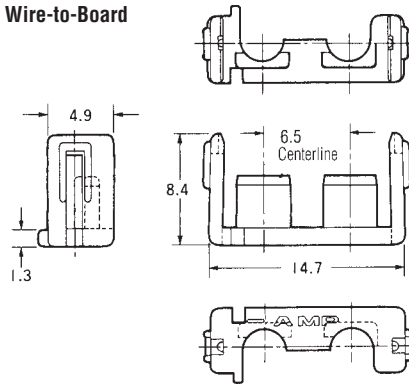
#### Part Number

316061-1 (2-Circuits)  
316062-1 (3-Circuits)  
316063-1 (4-Circuits)  
353891-1 (6-Circuits)

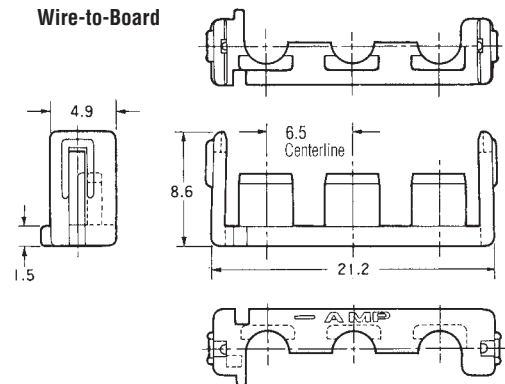
#### Related Product Data

**Plug Housings**  
(Free-Hanging)—pages 73-74

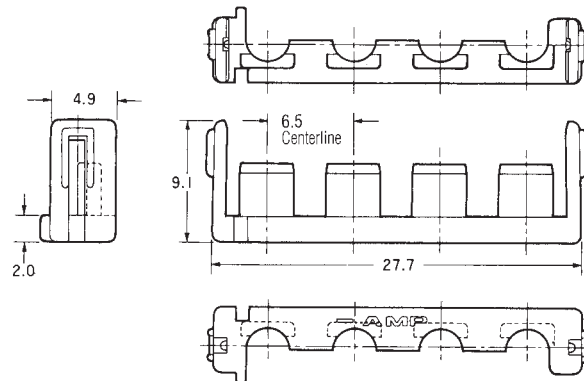
#### For 2 Circuits Wire-to-Board



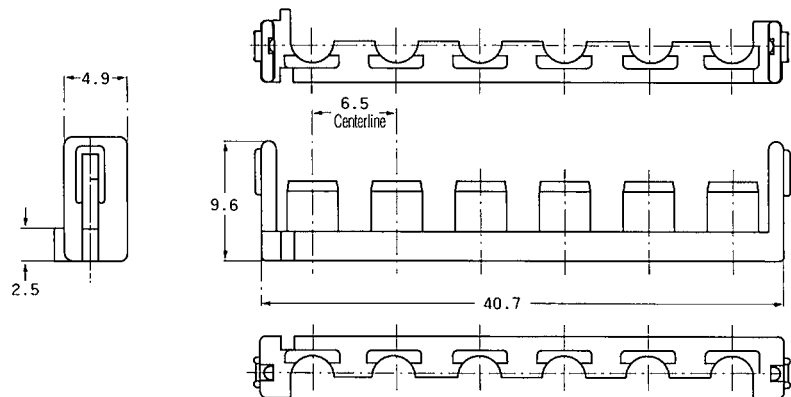
#### For 3 Circuits Wire-to-Board



#### For 4 Circuits Wire-to-Board



#### For 6 Circuits Wire-to-Board



| No. of Pos. | Applicable Plug Housing Part No. | Double Lock Plate |               |
|-------------|----------------------------------|-------------------|---------------|
|             |                                  | Part Number       | Required Qty. |
| 3           | 179938-□                         | 316062-1          | 1             |
| 4 (1 Row)   | 179939-□                         | 316063-1          | 1             |
| 4 (2 Rows)  | 179861-□                         | 316061-1          | 2             |
| 6           | 179862-□                         | 316062-1          | 2             |
| 12          | 917354-□                         | 353891-1          | 2             |

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board) (Continued)

### 6.5 mm Centerline (2 Pos.=13 mm Centerline) PC Board Mount Tab Header, Vertical

#### 3 Circuits

##### Wire-to-Board

##### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

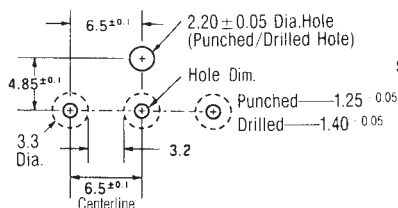
##### Part Number

179846-1 (Natural)  
179846-4 (Yellow)  
179846-6 (Blue)

##### Related Product Data

##### Mating Plug Housings

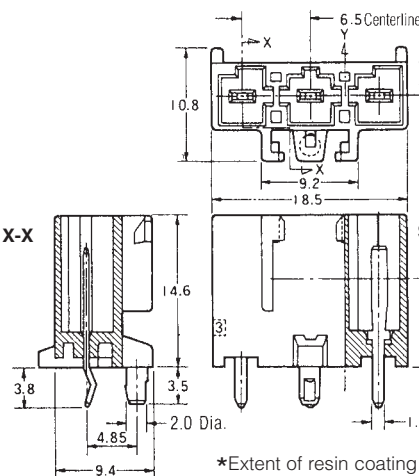
(Free-Hanging)—pages 73-74



**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)

**Section X-X**



\*Extent of resin coating

#### 2 Circuits

##### (13 mm Centerline)

##### Wire-to-Board

##### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

##### Part Number

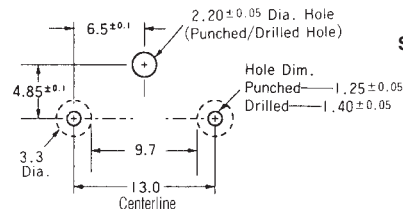
917745-1 (Natural)  
917745-4 (Yellow)  
917745-6 (Blue)

Tube (26 ea.)—917746-□

##### Related Product Data

##### Mating 3-Circuit Plug Housings

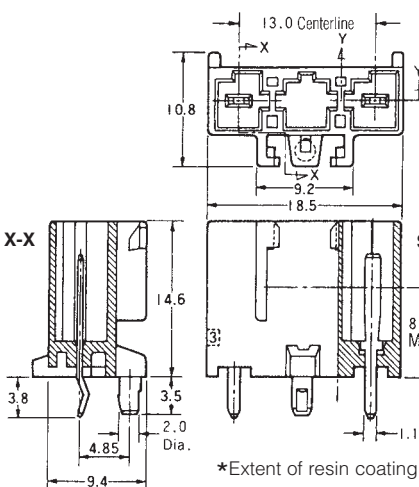
(Free-Hanging)—page 73



**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)

**Section X-X**



\*Extent of resin coating

#### 4 Circuits (1 Row)

##### Wire-to-Board

##### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

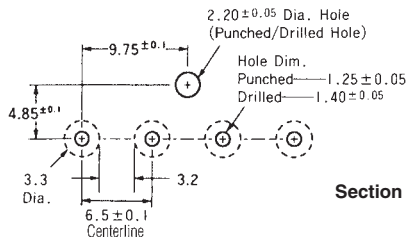
##### Part Number

179847-1 (Natural)  
179847-4 (Yellow)  
179847-6 (Blue)

##### Related Product Data

##### Mating Plug Housings

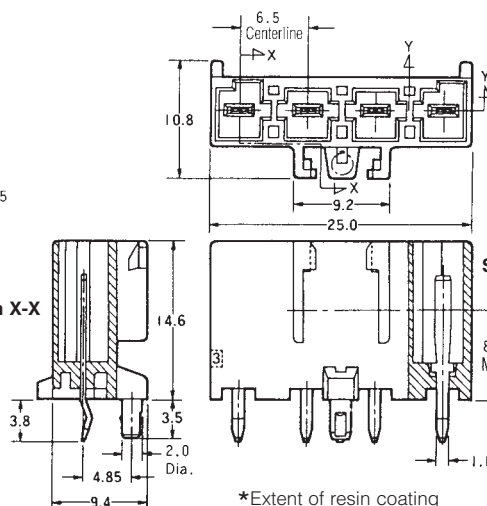
(Free-Hanging)—pages 73-74



**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)

**Section X-X**



\*Extent of resin coating

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board) (Continued)

### 6.5 mm Centerline PC Board Mount Tab Header, Vertical

#### 4 Circuits (2 Rows)

##### Wire-to-Board

##### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

##### Part Number

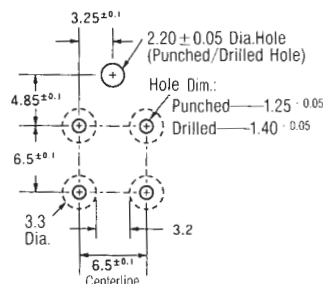
179848-1 (Natural)  
179848-4 (Yellow)  
179848-6 (Blue)

Tube (40 ea.)—917747-□

##### Related Product Data

##### Mating Plug Housings

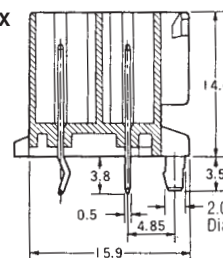
(Free-Hanging)—pages 73-74



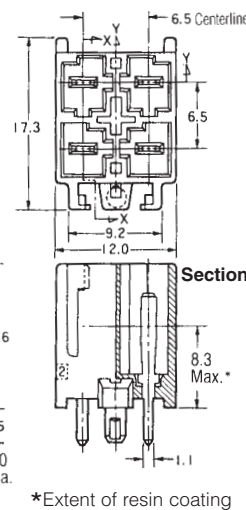
**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)

**Section X-X**



**Section Y-Y**



#### 6 Circuits

##### Wire-to-Board

##### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

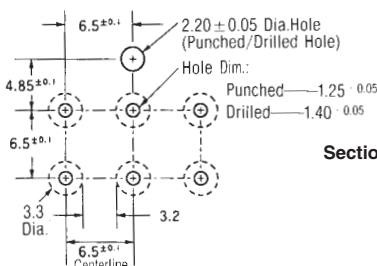
##### Part Number

179849-1 (Natural)  
179849-4 (Yellow)  
179849-6 (Blue)

##### Related Product Data

##### Mating Plug Housings

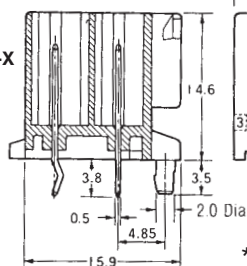
(Free-Hanging)—pages 73-74



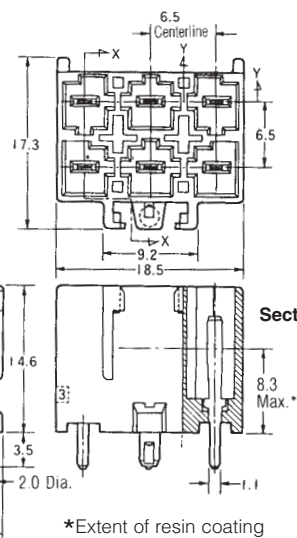
**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)

**Section X-X**



**Section Y-Y**



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Power Double Lock (PDL) Connectors (Wire-to-Board) (Continued)

### 6.5 mm Centerline PC Board Mount Tab Header, Vertical

#### 12 Circuits

#### Wire-to-Board

#### Material and Finish

**Housing**—UL 94V-0,  
glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

#### Part Number

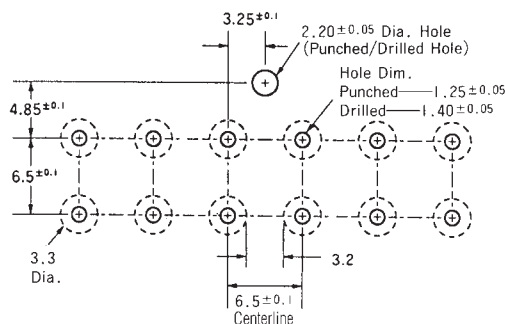
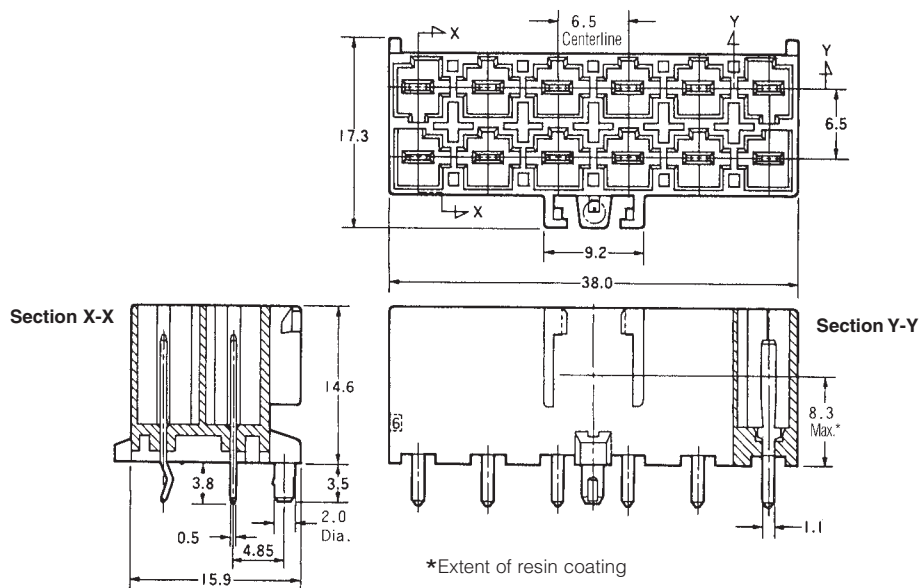
With Boss, With kink  
917353-1 (Natural)

Without Boss, Without kink  
3-917353-1 (Natural)

#### Related Product Data

#### Mating Plug Housings

(Free-Hanging)—pages 73-74



#### PC Board Layout

(Applicable Board Thickness: 1.6 mm)

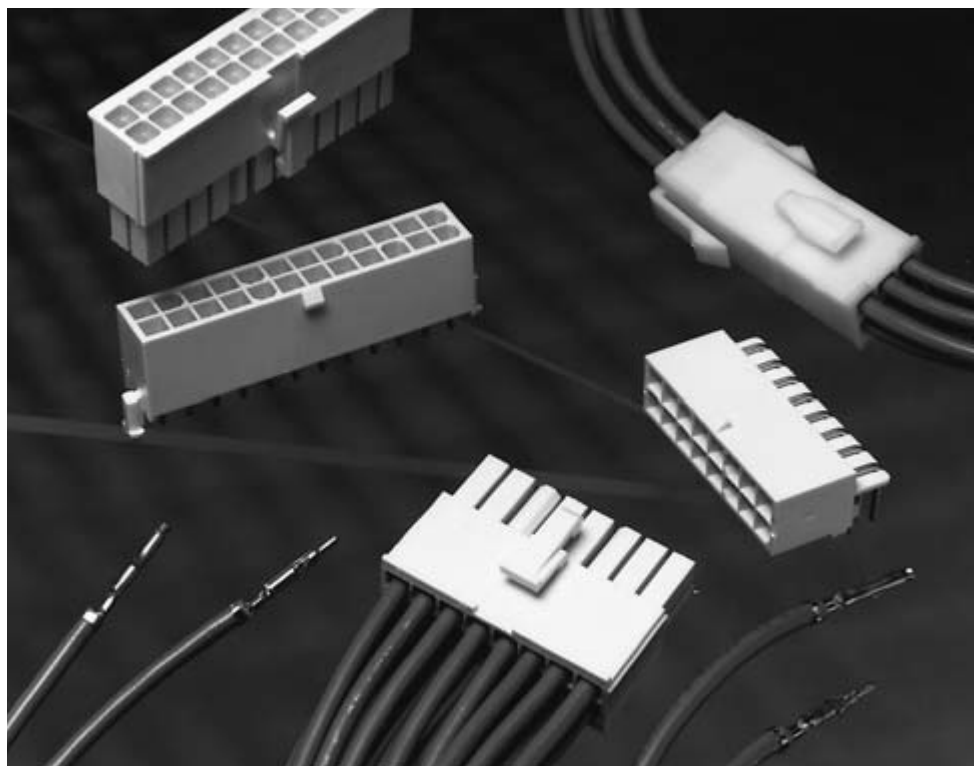
**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Mini-Universal MATE-N-LOK Connectors

### Product Facts

- Compact, durable housings
- Pins and sockets can be accommodated in the same housings
- Contacts fully protected in the housings. Both pins and sockets can be used on the power supply wiring
- Fully polarized to provide proper plug-to-cap mating incorporating a positive locking mechanism to help prevent accidental disengagement of mated connectors. Also facilitates panel mounting
- Free-hanging or panel mount
- Housings available in 1, 2, 3, 4, 6, 9, 12 and 15 circuit configuration for wire-to-wire connection
- Connectors can be mounted to .031-.079 [0.79-2.00] thick panels
- Printed circuit board pin headers are available in 2 thru 24 circuit vertical and right-angle configurations
- Hermaphroditic housings available in 2, 3 and 4 circuits for free-hanging applications
- Low insertion/extraction forces
- Contacts accept wire size range 30-16 AWG [.05-1.2 mm<sup>2</sup>]
- Test probe contacts available
- .163 [4.14] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189
- Passed test by VDE under their Registration Number 3476/Continuous Surveillance



### Performance Characteristics

The Mini-Universal MATE-N-LOK Connector performance characteristics found on pages 79-80 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Low Level Termination Resistance**  
20 milliohms max. total resistance between wire crimps of a mated pin and socket

**Dielectric Withstanding Voltage**—  
1.5 KVAC between adjacent circuits

**Insulation Resistance**—  
1000 megohms minimum between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Contact Retention**—8 lb. min. per contact

**Durability**—20 cycles, mating and unmating

### Technical Documents

#### Product Specifications

- 108-1542 Mini-Universal MATE-N-LOK Connectors
- 108-1543 Mini-Universal MATE-N-LOK Headers
- 108-5151 Mini-Universal MATE-N-LOK Connectors (UL94V-2)
- 108-5138 Mini-Universal MATE-N-LOK Connectors (UL94V-0)

#### Application Specification

- 114-16017 Mini-Universal MATE-N-LOK Connectors

#### Instruction Sheets

- 408-3234 Mini-Universal MATE-N-LOK Connectors
- 411-5105 Mini-Universal MATE-N-LOK Connectors

## Mini-Universal MATE-N-LOK Connectors (Continued)

### Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Mini-Universal MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

Mini-Universal MATE-N-LOK connectors also will withstand the following tests:

**Housing Panel Retention**—  
26 lb. min.

**Housing Lock Strength**—9 lb. min.

**Thermal Shock**—-55°C to +105°C

**Temperature-Humidity Cycling**—  
25°C to 65°C at 95 RH

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops,  
50 G half-sine at 11 milliseconds

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### Mini-Universal MATE-N-LOK Connectors — Calculated Current Table

| Number of Circuits | Wire AWG |      |      |      |      |      |
|--------------------|----------|------|------|------|------|------|
|                    | 16       | 18   | 20   | 22   | 24   | 30   |
| 2                  | 9.50     | 9.00 | 7.50 | 6.00 | 5.00 | 3.00 |
| 3                  | 8.50     | 8.00 | 7.00 | 5.50 | 4.50 | 3.00 |
| 4                  | 8.00     | 7.00 | 6.00 | 5.00 | 4.50 | 2.50 |
| 6                  | 7.00     | 6.50 | 5.50 | 4.50 | 4.00 | 2.50 |
| 9                  | 6.00     | 5.50 | 4.50 | 4.00 | 3.50 | 2.00 |
| 12                 | 6.00     | 5.50 | 4.50 | 3.50 | 3.00 | 2.00 |
| 15                 | 5.50     | 5.00 | 4.00 | 3.50 | 3.00 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit, for fully loaded housings being 100% energized. **Note:** All combinations above were not tested and this chart contains interpolated and extrapolated values.

#### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|-----|-------------------|-----|-------------------|
| 30  | 2.6               | 18  | 9.4               |
| 28  | 3.2               | 16  | 11.3              |
| 26  | 4.1               | 14  | 13.7              |
| 24  | 5.1               | 12  | 16.4              |
| 20  | 7.8               | 10  | 19.3              |

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

#### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

#### Termination Resistance/Contact Crimp Tensile Force

| Wire Size |                 | Termination Resistance |                                   | Contact Crimp Tensile Force |    |
|-----------|-----------------|------------------------|-----------------------------------|-----------------------------|----|
| AWG       | mm <sup>2</sup> | Test Current (Amps)    | Resistance Milliohms (Max. Init.) | Force (Min.)                |    |
|           |                 |                        |                                   | lbs.                        | N  |
| 30        | .05             | —                      | —                                 | —                           | —  |
| 28        | .08             | —                      | —                                 | —                           | —  |
| 26        | .12             | —                      | —                                 | 4                           | 18 |
| 24        | .2              | —                      | —                                 | 7                           | 31 |
| 22        | .3              | —                      | —                                 | 11                          | 49 |
| 20        | .5              | —                      | —                                 | 13                          | 58 |
| 18        | .8              | —                      | —                                 | 15                          | 67 |
| 16        | 1.2             | —                      | —                                 | 18                          | 80 |

## Mini-Universal MATE-N-LOK Connectors (Continued)

### Mini-Universal MATE-N-LOK Connector Mating Combinations

| Connector Part Number |                     |          |                                    |                                   | Mating Connector Part Number |                  |                              |            |                             |
|-----------------------|---------------------|----------|------------------------------------|-----------------------------------|------------------------------|------------------|------------------------------|------------|-----------------------------|
| Number of Circuits    | Flammability Rating | Style    | Plug <sup>1</sup> Housing Part No. | Cap <sup>1</sup> Housing Part No. | PC Board Pin Headers         |                  |                              |            | Right-Angle With Board Lock |
|                       |                     |          |                                    |                                   | Plating                      | With Drain Holes | Vertical Without Drain Holes | Blindmate  |                             |
| 1                     | UL94V-2             | In-Line  | 172335-1                           | 172327-14                         | —                            | —                | —                            | —          | —                           |
|                       | UL94V-0             | In-Line  | 172164-1                           | 172156-14                         | Tin <sup>6</sup>             | —                | —                            | —          | 1-794374-0                  |
|                       |                     |          |                                    |                                   | Duplex <sup>5</sup>          | —                | —                            | —          | 1-794374-1                  |
| 2                     |                     |          | 172336-1                           | 172328-12                         | —                            | —                | —                            | —          | —                           |
|                       |                     |          | 172807-13                          | 172343-14                         | —                            | —                | —                            | —          | —                           |
|                       |                     |          | 173956-13                          | 172807-13                         | —                            | —                | —                            | —          | —                           |
|                       |                     |          |                                    | 173956-13                         | —                            | —                | —                            | —          | —                           |
|                       | UL94V-0             | In-Line  | 172165-1                           | 172157-12                         | Tin <sup>6</sup>             | 1-770166-0       | 1-770872-0                   | —          | 1-770966-0                  |
|                       |                     |          | 794894-17                          | 172233-14                         | Duplex <sup>5</sup>          | 1-770166-1       | 1-770872-1                   | —          | 1-770966-1                  |
| 3                     |                     |          | 172808-13                          | 794896-12,7                       | Tin/Duplex                   | 1-770166-1       | 1-770872-1                   | —          | 1-770966-1                  |
|                       |                     |          | 172337-1                           | 172808-13                         | —                            | —                | —                            | —          | —                           |
|                       |                     |          | 173957-13                          | 172329-12                         | Tin                          | —                | —                            | —          | —                           |
|                       |                     |          |                                    | 172344-14                         | Duplex <sup>5</sup>          | —                | —                            | —          | —                           |
|                       | UL94V-0             | In-Line  | 172166-1                           | 173957-13                         | —                            | —                | —                            | —          | —                           |
|                       |                     |          | 172809-13                          | 172158-12                         | Tin                          | 1-770170-0       | 1-770873-0                   | —          | 1-770967-0                  |
| 4                     |                     |          | 172338-1                           | 172234-14                         | Duplex <sup>5</sup>          | 1-770170-1       | 1-770873-1                   | —          | 1-770967-1                  |
|                       |                     |          | 173958-13                          | 172809-13                         | —                            | —                | —                            | —          | —                           |
|                       |                     |          |                                    | 172330-12                         | —                            | —                | —                            | —          | —                           |
|                       |                     |          |                                    | 173958-13                         | —                            | —                | —                            | —          | —                           |
|                       | UL94V-0             | Dual Row | 172167-1                           | 172159-12                         | Tin                          | 1-770174-0       | 1-770874-0                   | 1-794325-0 | 1-770968-0                  |
|                       |                     |          | 794805-17                          | 172159-12                         | Duplex <sup>5</sup>          | 1-770174-1       | 1-770874-1                   | 1-794325-1 | 1-770968-1                  |
| 6                     |                     |          | 172339-1                           | 794939-12,7                       | Tin/Duplex                   | 1-770174-1       | 1-770874-1                   | —          | 1-770968-1                  |
|                       |                     |          |                                    | 172331-12                         | —                            | —                | —                            | —          | —                           |
|                       | UL94V-0             | Dual Row | 172168-1                           | 172160-12                         | Tin                          | 1-770178-0       | 1-770875-0                   | 1-794326-0 | 1-770969-0                  |
|                       |                     |          | 794895-17                          | 172160-12                         | Duplex <sup>5</sup>          | 1-770178-1       | 1-770875-1                   | 1-794326-1 | 1-770969-1                  |
|                       |                     |          |                                    | 794940-12,7                       | Tin/Duplex                   | 1-770178-1       | 1-770875-1                   | —          | 1-770969-1                  |
|                       |                     |          |                                    |                                   | Tin                          | 1-794065-0       | 1-794073-0                   | 1-794327-0 | 1-770970-0                  |
| 8                     |                     |          | 770579-1                           | —                                 | Duplex <sup>5</sup>          | 1-794065-1       | 1-794073-1                   | 1-794327-1 | 1-770970-1                  |
|                       |                     |          | 794821-17                          | 794941-12,7                       | Tin/Duplex                   | 1-794065-1       | 1-794073-1                   | —          | 1-770970-1                  |
|                       | UL94V-2             | Matrix   | 172340-1                           | 172332-12                         | —                            | —                | —                            | —          | —                           |
|                       |                     |          |                                    |                                   | Tin                          | 1-770182-0       | 1-770876-0                   | 1-794432-0 | —                           |
|                       | UL94V-0             | Matrix   | 172169-1                           | 172161-12                         | Duplex <sup>5</sup>          | 1-770182-1       | 1-770876-1                   | 1-794432-1 | —                           |
|                       |                     |          |                                    |                                   | Tin                          | 1-770743-0       | 1-770858-0                   | 1-794328-0 | 1-770971-0                  |
| 10                    |                     |          | 770580-1                           | —                                 | Duplex <sup>5</sup>          | 1-770743-1       | 1-770858-1                   | 1-794328-1 | 1-770971-1                  |
|                       |                     |          | 794781-17                          | 794942-12,7                       | Tin/Duplex                   | 1-770743-1       | 1-770858-1                   | —          | 1-770971-1                  |
|                       | UL94V-2             | Matrix   | 172341-1                           | 172333-12                         | —                            | —                | —                            | —          | —                           |
|                       |                     |          |                                    |                                   | Tin                          | 1-770186-0       | 1-794040-0                   | 1-794329-0 | —                           |
|                       |                     |          |                                    |                                   | Duplex <sup>5</sup>          | 1-770186-1       | 1-794040-1                   | 1-794329-1 | —                           |
|                       | UL94V-0             | Matrix   | 172170-1                           | 172162-12                         | Tin                          | 1-794066-0       | 1-770621-0                   | —          | 1-770972-0                  |
| 12                    |                     |          | 770581-1                           | —                                 | Duplex <sup>5</sup>          | 1-794066-1       | 1-770621-1                   | —          | 1-770972-1                  |
|                       |                     |          |                                    |                                   | Tin                          | 1-794067-0       | 1-794074-0                   | —          | 1-770973-0                  |
|                       | UL94V-0             | Dual Row | 770582-1                           | —                                 | Duplex <sup>5</sup>          | 1-794067-1       | 1-794074-1                   | —          | 1-770973-1                  |
|                       |                     |          |                                    |                                   | —                            | —                | —                            | —          | —                           |
|                       | UL94V-2             | Matrix   | 172342-1                           | 172334-12                         | Tin                          | 1-770190-0       | 1-770859-0                   | 1-794330-0 | —                           |
|                       | UL94V-0             | Matrix   | 172171-1                           | 172163-12                         | Duplex <sup>5</sup>          | 1-770190-1       | 1-770859-1                   | 1-794330-1 | —                           |
| 16                    |                     |          |                                    |                                   | Tin                          | 1-794068-0       | 1-794075-0                   | —          | 1-770974-0                  |
|                       |                     |          |                                    |                                   | Duplex <sup>5</sup>          | 1-794068-1       | 1-794075-1                   | —          | 1-770974-1                  |
|                       |                     |          |                                    |                                   | Tin                          | 1-794069-0       | 1-794076-0                   | —          | 1-794105-0                  |
|                       |                     |          |                                    |                                   | Duplex <sup>5</sup>          | 1-794069-1       | 1-794076-1                   | —          | 1-794105-1                  |
|                       |                     |          |                                    |                                   | Tin                          | 1-794070-0       | 1-794077-0                   | —          | 1-794106-0                  |
|                       |                     |          |                                    |                                   | Duplex <sup>5</sup>          | 1-794070-1       | 1-794077-1                   | —          | 1-794106-1                  |
| 20                    |                     |          |                                    |                                   | Tin                          | 1-794071-0       | 1-794078-0                   | —          | 1-794107-0                  |
|                       |                     |          |                                    |                                   | Duplex <sup>5</sup>          | 1-794071-1       | 1-794078-1                   | —          | 1-794107-1                  |
|                       |                     |          |                                    |                                   | Tin                          | 1-794072-0       | 1-794079-0                   | —          | 1-794108-0                  |
|                       |                     |          |                                    |                                   | Duplex <sup>5</sup>          | 1-794072-1       | 1-794079-1                   | —          | 1-794108-1                  |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
| 22                    |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
| 24                    |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |
|                       |                     |          |                                    |                                   |                              |                  |                              |            |                             |

<sup>1</sup>Mini-Universal MATE-N-LOK plug and cap housings accept pin or socket contacts. Use the appropriate contacts in the plug housing as required by the mating connector. All **Plugs** are **free-hanging** and **Caps** are **free-hanging** or **panel mount**, unless otherwise noted.

<sup>2</sup>Panel mount only.

<sup>3</sup>Hermaphroditic: Mates to itself.

<sup>4</sup>Free-hanging only.

<sup>5</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>6</sup>Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.

<sup>7</sup>For Splash-Proof Sealing.

**Note: All part numbers are RoHS Compliant.**

## Mini-Universal MATE-N-LOK Connectors (Continued)

### Contacts

Pin diameter .039 [0.99]

### Material

Brass or Phosphor bronze

Stock Thickness .008 [0.20]

These contacts are to be used in Mini-Universal MATE-N-LOK Plug or Cap housings only.

### Related Product Data

#### Product Specifications

108-1542 Mini-Universal MATE-N-LOK Connectors

108-1543 Mini-Universal MATE-N-LOK Headers

#### Application Specification

114-16017 Mini-Universal MATE-N-LOK Connectors

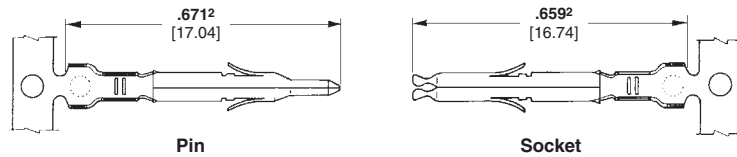
#### Performance Characteristics—

pages 79-80

Housings — pages 83-85

Technical Documents—pages 79 and 199-200

Application Tooling—pages 201-204



| Wire Size<br>Range<br>AWG [mm²]             | Ins. Dia.<br>Range                                 | Material<br>and Finish          | Contact Part Numbers    |                 |                         |                 | HDM<br>Applicator<br>Part No. | Hand<br>Tool<br>Part No. |
|---------------------------------------------|----------------------------------------------------|---------------------------------|-------------------------|-----------------|-------------------------|-----------------|-------------------------------|--------------------------|
|                                             |                                                    |                                 | Pin                     |                 | Socket                  |                 |                               |                          |
|                                             |                                                    |                                 | Strip<br>Form           | Loose<br>Pieces | Strip<br>Form           | Loose<br>Pieces |                               |                          |
| 30-26<br>[.05-.12]                          | .035-.050<br>.889-1.27                             | Brass, Pre-tin                  | 770835-1                | 794059-1        | 770834-1                | 794058-1        | 567418-1 <sup>3</sup>         | 90717-2                  |
|                                             |                                                    | Phos. Brz., Pre-tin             | —                       | —               | 770834-4                | —               | 567418-2 <sup>3</sup>         |                          |
|                                             |                                                    | Brass, Duplex <sup>1</sup>      | 1-770835-0              | 1-794059-0      | 1-770834-0              | 1-794058-0      | 567418-3 <sup>3</sup>         |                          |
|                                             |                                                    | Phos. Brz., Duplex <sup>1</sup> | —                       | —               | 1-770834-1              | —               |                               |                          |
| 26-22<br>[.12-.3]                           | .047-.069<br>1.19-1.75                             | Brass, Pre-tin                  | 770901-1                | 770985-1        | 770902-1                | 770986-1        | 567066-3 <sup>4</sup>         | 91529-1                  |
|                                             |                                                    | Phos. Brz., Pre-tin             | —                       | —               | 1-770902-4              | —               | 567066-4 <sup>4</sup>         |                          |
|                                             |                                                    | Brass, Duplex <sup>1</sup>      | 1-770901-0              | 1-770985-0      | 1-770902-0              | 1-770986-0      | 567066-5 <sup>4</sup>         |                          |
|                                             |                                                    | Phos. Brz., Duplex <sup>1</sup> | —                       | —               | 1-770902-1              | —               |                               |                          |
| 22-18<br>[.3-.8]<br>or<br>22 x (2)<br>[.3]  | .059-.094<br>1.50-2.39<br>or<br>.067 x (2)<br>3.38 | Brass, Pre-tin                  | 770903-1                | 770987-1        | 770904-1                | 770988-1        | 567067-1 <sup>3</sup>         | 91522-1                  |
|                                             |                                                    | Phos. Brz., Pre-tin             | —                       | —               | 770904-4                | —               | 567067-2 <sup>3</sup>         |                          |
|                                             |                                                    | Brass, Duplex <sup>1</sup>      | 1-770903-0              | 1-770987-0      | 1-770904-0              | 1-770988-0      | 567067-3 <sup>3</sup>         |                          |
|                                             |                                                    | Phos. Brz., Duplex <sup>1</sup> | —                       | —               | 1-770904-1              | —               |                               |                          |
| 20-16<br>[.5-1.2]<br>or<br>20 x (2)<br>[.5] | .079-.126<br>2.01-3.20<br>or<br>.075 x (2)<br>1.91 | Brass, Pre-tin                  | 794406-12               | 171638-12       | 794407-12               | 171639-12       | 680582-2 <sup>3</sup>         | 91536-1                  |
|                                             |                                                    | Phos. Brz., Pre-tin             | —                       | —               | 794407-42               | —               | 680582-3 <sup>3</sup>         |                          |
|                                             |                                                    | Brass, Duplex <sup>1</sup>      | 1-794406-0 <sup>2</sup> | —               | 1-794407-0 <sup>2</sup> | —               |                               |                          |
|                                             |                                                    | Phos. Brz., Duplex <sup>1</sup> | —                       | —               | 1-794407-12             | —               |                               |                          |

<sup>1</sup> Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000100 [.00254] min. tin in crimping area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup> .671 [17.04] and .659 [16.74] dimensions are .689 [17.50] for indicated part numbers.

<sup>3</sup> HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-ELECTRIC Model G Machine. See pages 201-204 for further information.

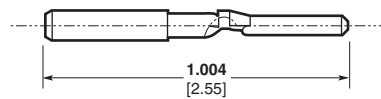
<sup>4</sup> HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -5 is used on AMP-O-ELECTRIC Model G Machine. See pages 201-204 for further information.

**Note:** All part numbers are RoHS Compliant.

### Keying Plug

### Material

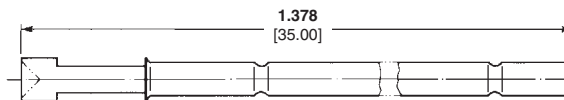
UL94V-0 Nylon, white color


Part Number  
174670-1

### Test Probe Contact

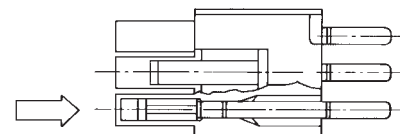
### Material and Finish

Phosphor bronze, nickel plated


Part Number  
172971-1

#### Notes:

- The test probe is inserted into the housing in the same direction as indicated by the **arrow** shown to the right.
- The test probe can be used in the Cap or Plug Housing.
- Test probes are supplied unassembled.


Contact Extraction Tool  
No. 189727-1  
IS 408-4118

Contact Insertion Tool  
(For inserting contacts applied to small diameter wire)  
No. 91002-1  
IS 408-7347

## Mini-Universal MATE-N-LOK Connectors (Continued)

### Housings

#### Free-Hanging or Panel Mount

.163 [4.14] Centerline spacing

#### Related Product Data

##### Product Specifications

108-1542 Mini-Universal MATE-N-LOK Connectors

108-1543 Mini-Universal MATE-N-LOK Headers

108-5151 Mini-Universal MATE-N-LOK Connectors (UL94V-2)

108-5138 Mini-Universal MATE-N-LOK Connectors (UL94V-0)

**Performance Characteristics**—  
pages 79-80

**Contacts** — page 82

**Keying Plug** — page 82

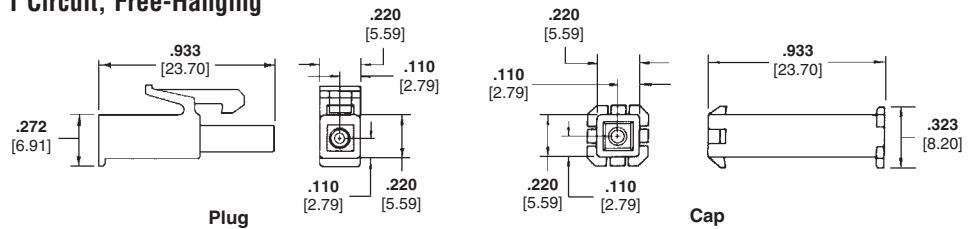
**Test Probe Contact** — page 82

**Panel Cutout Recommendations**—  
page 85

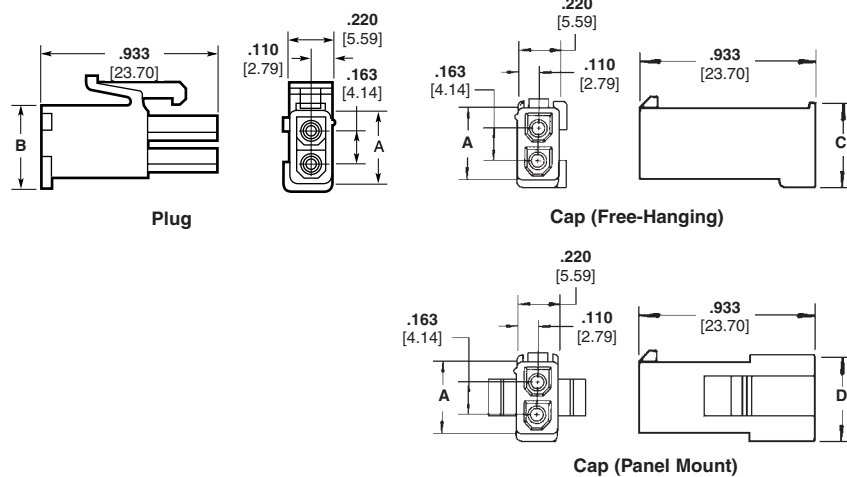
**Technical Documents**— pages 79  
and 199-200

**Mating Headers** — pages 86-88

### 1 Circuit, Free-Hanging



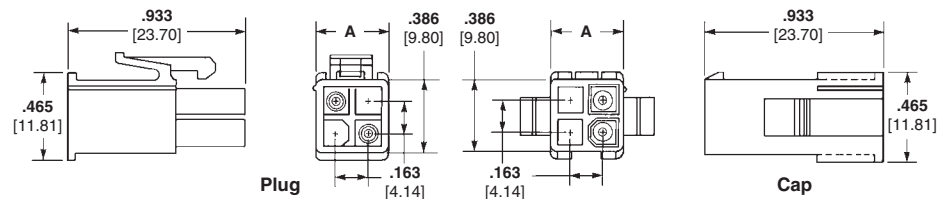
### 2 and 3 Circuit, In-Line



| Number of Circuits | Dimensions    |               |               |               | Housing Part Numbers <sup>1</sup> |             |              |                              |             |              |
|--------------------|---------------|---------------|---------------|---------------|-----------------------------------|-------------|--------------|------------------------------|-------------|--------------|
|                    |               |               |               |               | UL94V-0 Nylon, White Color        |             |              | UL94V-2 Nylon, Natural Color |             |              |
|                    |               |               |               |               | Cap                               |             |              | Cap                          |             |              |
|                    | A             | B             | C             | D             | Plug                              | Panel Mount | Free-Hanging | Plug                         | Panel Mount | Free-Hanging |
| 1                  | —             | —             | —             | —             | 172164-1                          | —           | 172156-1     | 172335-1                     | —           | 172327-1     |
| 2                  | .386<br>9.80  | .425<br>10.79 | .488<br>12.39 | .464<br>11.78 | 172165-1                          | 172157-1    | 172233-1     | 172336-1                     | 172328-1    | 172343-1     |
| 3                  | .551<br>14.00 | .591<br>15.01 | .654<br>16.61 | .630<br>16.00 | 172166-1                          | 172158-1    | 172234-1     | 172337-1                     | 172329-1    | 172344-1     |

Note: All part numbers are RoHS Compliant.

### 4 and 6 Circuit, Dual Row



| Number of Circuits | A Dim.        | Housing Part Numbers <sup>1</sup> |          |                              |          |
|--------------------|---------------|-----------------------------------|----------|------------------------------|----------|
|                    |               | UL94V-0 Nylon, White Color        |          | UL94V-2 Nylon, Natural Color |          |
|                    |               | Plug                              | Cap      | Plug                         | Cap      |
| 4                  | .386<br>9.80  | 172167-1                          | 172159-1 | 172338-1                     | 172330-1 |
| 6                  | .551<br>14.00 | 172168-1                          | 172160-1 | 172339-1                     | 172331-1 |

<sup>1</sup>Housing part numbers shown in both charts (above) are also available in other colors: Red, Green, Blue, Black. To order connectors in these colors use the appropriate dash numbers as follows: Red 1-XXXXXX-2, Green 1-XXXXXX-5, Blue 1-XXXXXX-6, Black 1-XXXXXX-9

Note: All part numbers are RoHS Compliant.

## Mini-Universal MATE-N-LOK Connectors (Continued)

### Housings

.163 [4.14] Centerline spacing

### Related Product Data

#### Product Specifications

- 108-1542 Mini-Universal MATE-N-LOK Connectors
- 108-1543 Mini-Universal MATE-N-LOK Headers
- 108-5151 Mini-Universal MATE-N-LOK Connectors (UL94V-2)
- 108-5138 Mini-Universal MATE-N-LOK Connectors (UL94V-0)

#### Performance Characteristics— pages 79-80

**Contacts** — page 82

**Keying Plug** — page 82

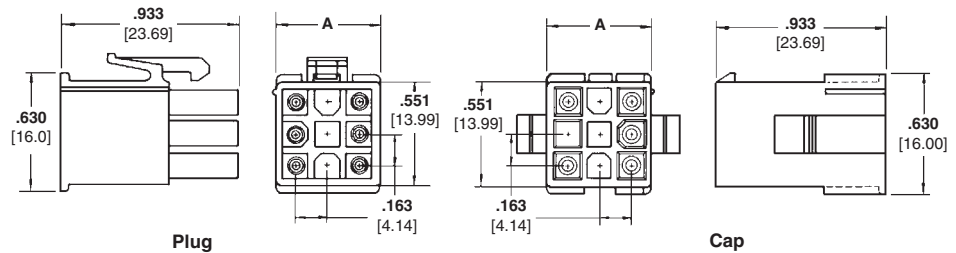
**Test Probe Contact** — page 82

**Panel Cutout Recommendations—**  
page 85

**Technical Documents**—pages 79  
and 199-200

**Mating Headers** — pages 86-88

### 9, 12 and 15 Circuit, Free-Hanging or Panel Mount, Matrix

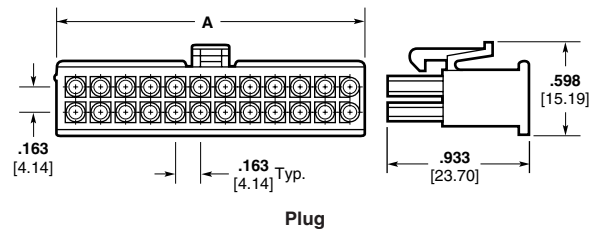


| Number of Circuits | A Dim.        | Housing Part Numbers <sup>1</sup> |                                  |                                 |                                  |
|--------------------|---------------|-----------------------------------|----------------------------------|---------------------------------|----------------------------------|
|                    |               | UL94V-0 Nylon, White Color Plug   | UL94V-2 Nylon, Natural Color Cap | UL94V-0 Nylon, White Color Plug | UL94V-2 Nylon, Natural Color Cap |
| 9                  | .551<br>13.99 | 172169-1                          | 172161-1                         | 172340-1                        | 172332-1                         |
| 12                 | .716<br>18.19 | 172170-1                          | 172162-1                         | 172341-1                        | 172333-1                         |
| 15                 | .882<br>22.40 | 172171-1                          | 172163-1                         | 172342-1                        | 172334-1                         |

<sup>1</sup>Housing part numbers shown in chart are also available in other colors: Red, Green, Blue, Black. To order connectors in these colors use the appropriate dash numbers as follows: Red 1-XXXXXX-2, Green 1-XXXXXX-5, Blue 1-XXXXXX-6, Black 1-XXXXXX-9

**Note:** All part numbers are RoHS Compliant.

### 8 thru 24 Circuit, Free-Hanging, Dual Row



| Number of Circuits | A Dim.      | Part Number<br>UL94V-0 Nylon, White Color Plug |
|--------------------|-------------|------------------------------------------------|
| 8                  | .714 18.14  | 770579-1                                       |
| 10                 | .877 22.28  | 770580-1                                       |
| 12                 | 1.040 26.42 | 770581-1                                       |
| 14                 | 1.203 30.56 | 770582-1                                       |
| 16                 | 1.366 34.70 | 770583-1                                       |
| 18                 | 1.529 38.84 | 770584-1                                       |
| 20                 | 1.692 42.98 | 770585-1                                       |
| 22                 | 1.855 47.12 | 770586-1                                       |
| 24                 | 2.018 51.26 | 770587-1                                       |

**Note:** All part numbers are RoHS Compliant.

## Mini-Universal MATE-N-LOK Connectors (Continued)

### Housings Hermaphroditic Free-Hanging

### 2, 3 and 4 Circuit

#### Related Product Data

##### Product Specifications

108-1542 Mini-Universal MATE-N-LOK Connectors

108-1543 Mini-Universal MATE-N-LOK Headers

108-5151 Mini-Universal MATE-N-LOK Connectors (UL94V-2)

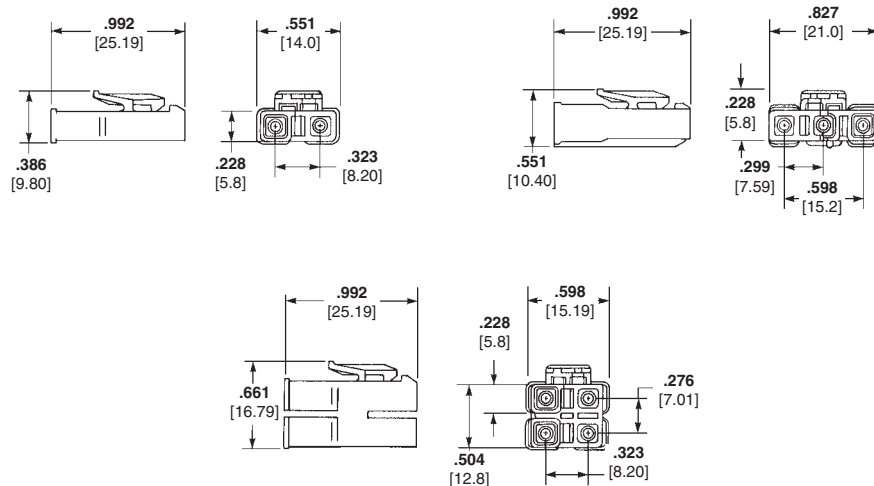
108-5138 Mini-Universal MATE-N-LOK Connectors (UL94V-0)

**Performance Characteristics**—  
pages 79-80

**Contacts** — page 82

**Cap Housings** — pages 83-85

**Technical Documents**— pages 79  
and 199-200



| Number of Circuits | Part Numbers                 |                            |
|--------------------|------------------------------|----------------------------|
|                    | UL94V-2 Nylon, Natural Color | UL94V-0 Nylon, White Color |
| 2                  | 172807-1                     | 173956-1                   |
| 3                  | 172808-1                     | 173957-1                   |
| 4                  | 172809-1                     | 173958-1                   |

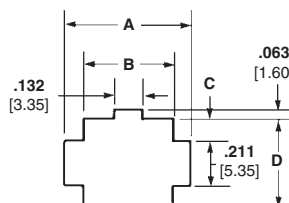
**Note:** Housing mates to itself; 2 required per wire-to-wire connection.

**Note:** All part numbers are RoHS Compliant.

### Recommended Cap Housing Panel Cutouts

View is from cap entry side

Recommended Panel  
Thickness .031—.079 [.79 – 2.01]



| Number of Circuits | Dimensions     |               |              |               |
|--------------------|----------------|---------------|--------------|---------------|
|                    | A              | B             | C            | D             |
| 2                  | .421<br>10.69  | .242<br>6.15  | .098<br>2.49 | .407<br>10.3  |
| 3                  | .421<br>10.69  | .242<br>6.15  | .181<br>4.60 | .573<br>14.55 |
| 4                  | .587<br>14.91  | .407<br>10.34 | .098<br>2.49 | .407<br>10.3  |
| 6                  | .752<br>19.10  | .573<br>14.55 | .098<br>2.49 | .407<br>10.3  |
| 9                  | .752<br>19.10  | .573<br>14.55 | .181<br>4.60 | .573<br>14.55 |
| 12                 | .917<br>23.29  | .738<br>18.75 | .181<br>4.60 | .573<br>14.55 |
| 15                 | 1.080<br>27.43 | .904<br>22.96 | .181<br>4.60 | .573<br>14.55 |



## Mini-Universal MATE-N-LOK Connectors (Continued)

### Vertical PC Board Blindmate Pin Headers

.163 [4.14] Centerline spacing

#### Material

**Housing** — Nylon, white

**Flammability Rating** — UL94V-0

**Contacts** — Brass  
Solder tail diameter .039 [1.00]

### Related Product Data

#### Product Specifications

108-1693 Mini-Universal MATE-N-LOK 2  
Connectors

108-1694 Mini-Universal MATE-N-LOK 2  
Headers

**Performance Characteristics** —  
pages 79-80

**Recommended PC Board Hole  
Layouts** — page 89

**Technical Documents** — pages 79  
and 199-200

### Mating Connectors

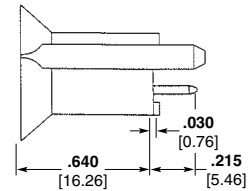
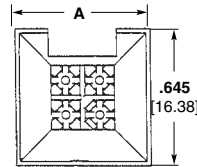
#### Mini-Universal MATE-N-LOK

Plug Housings — pages 83-85

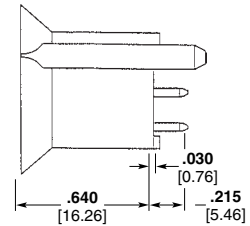
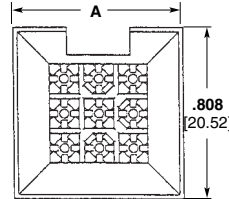
#### Mini-Universal MATE-N-LOK 2

Plug Housings — pages 95-96

### 4, 6, 8 and 10 Circuit, Dual Row



### 9, 12 and 15 Circuit, Matrix



| Number of<br>Circuits | Style    | A<br>Dim.      | Pin<br>Finish       | Pin Header Part Numbers<br>With Drain Holes | Mates with Plug Housing<br>Part Number<br>(Using Socket Contacts) |                                |
|-----------------------|----------|----------------|---------------------|---------------------------------------------|-------------------------------------------------------------------|--------------------------------|
|                       |          |                |                     |                                             | Mini-Universal<br>MATE-N-LOK                                      | Mini-Universal<br>MATE-N-LOK 2 |
| 4                     | Dual Row | .645<br>16.38  | Tin <sup>1</sup>    | 1-794325-0                                  | 172167-1                                                          | 794188-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794325-1                                  |                                                                   |                                |
| 6                     | Dual Row | .808<br>20.52  | Tin <sup>1</sup>    | 1-794326-0                                  | 172168-1                                                          | 794190-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794326-1                                  |                                                                   |                                |
| 8                     | Dual Row | .971<br>24.66  | Tin <sup>1</sup>    | 1-794327-0                                  | 770579-1                                                          | 794192-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794327-1                                  |                                                                   |                                |
| 9                     | Matrix   | .808<br>20.52  | Tin <sup>1</sup>    | 1-794432-0                                  | 172169-1                                                          | 794194-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794432-1                                  |                                                                   |                                |
| 10                    | Dual Row | 1.134<br>28.80 | Tin <sup>1</sup>    | 1-794328-0                                  | 770580-1                                                          | 794196-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794328-1                                  |                                                                   |                                |
| 12                    | Matrix   | .971<br>24.66  | Tin <sup>1</sup>    | 1-794329-0                                  | 172170-1                                                          | 794200-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794329-1                                  |                                                                   |                                |
| 15                    | Matrix   | 1.134<br>28.80 | Tin <sup>1</sup>    | 1-794330-0                                  | 172171-1                                                          | 794204-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794330-1                                  |                                                                   |                                |

<sup>1</sup> Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup> Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

High Density

Mini-Universal MATE-N-LOK Connectors  
.163 [4.14] Centerline



## Mini-Universal MATE-N-LOK Connectors (Continued)

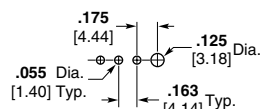
### Recommended PC Board Hole Layouts for Vertical and Blindmate Headers

.062 [1.57] thick board, tolerances  
non-accumulative

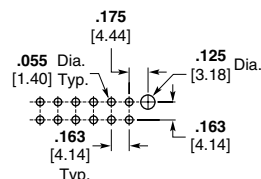
#### Related Product Data

Vertical Headers—pages 86-87

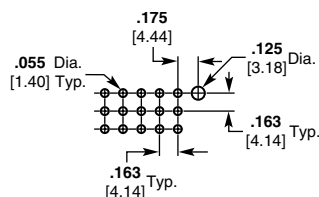
#### 2 and 3 Circuit, In-Line



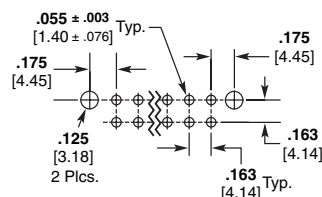
#### 4, 6, 8, 10 and 12 Circuit, Dual Row



#### 9, 12 and 15 Circuit, Matrix



#### 14, 16, 18, 20, 22 and 24 Circuit, Dual Row



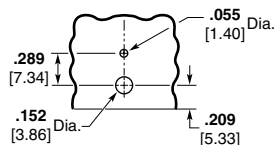
### Recommended PC Board Hole Layouts for Right- Angle Headers

.062 [1.57] thick board, tolerances  
non-accumulative

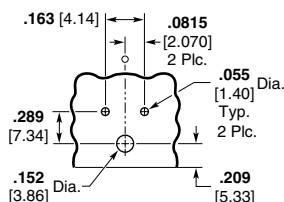
#### Related Product Data

Right-Angle Headers—page 88

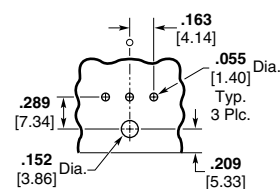
#### 1 Circuit



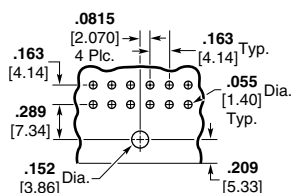
#### 2 Circuit, In-Line



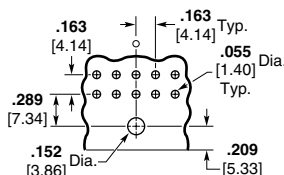
#### 3 Circuit, In-Line



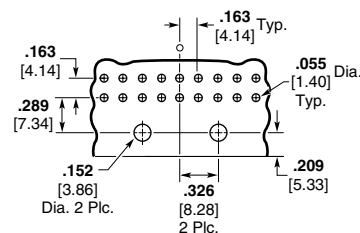
#### 4, 8 and 12 Circuit, Dual Row



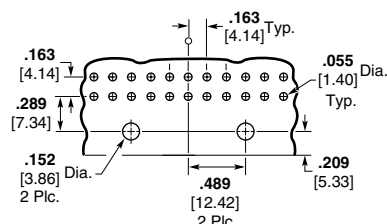
#### 6 and 10 Circuit, Dual Row



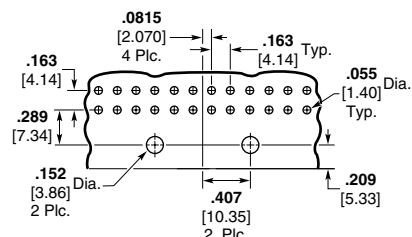
#### 14 and 18 Circuit, Dual Row



#### 22 Circuit, Dual Row



#### 16, 20 and 24 Circuit, Dual Row



## Mini-Universal MATE-N-LOK Connectors (Continued)

### Strain Reliefs for Plug or Cap Housings

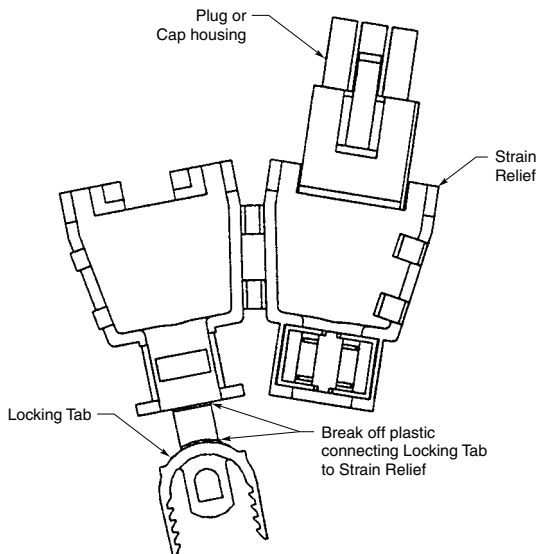
#### 6 and 8 Circuit

#### Related Product Data

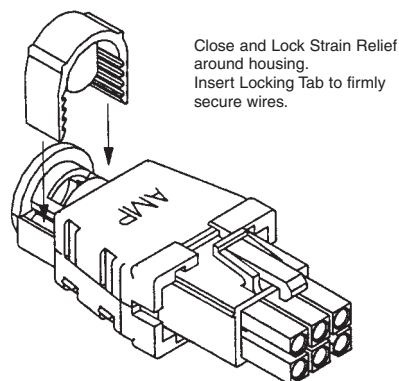
**Housings**—pages 83-85

**Technical Documents**—pages 79 and 199-200

These Strain Reliefs may also be used with AMP-DUAC Receptacle housings on page 120.



**Step 1**



**Step 2**

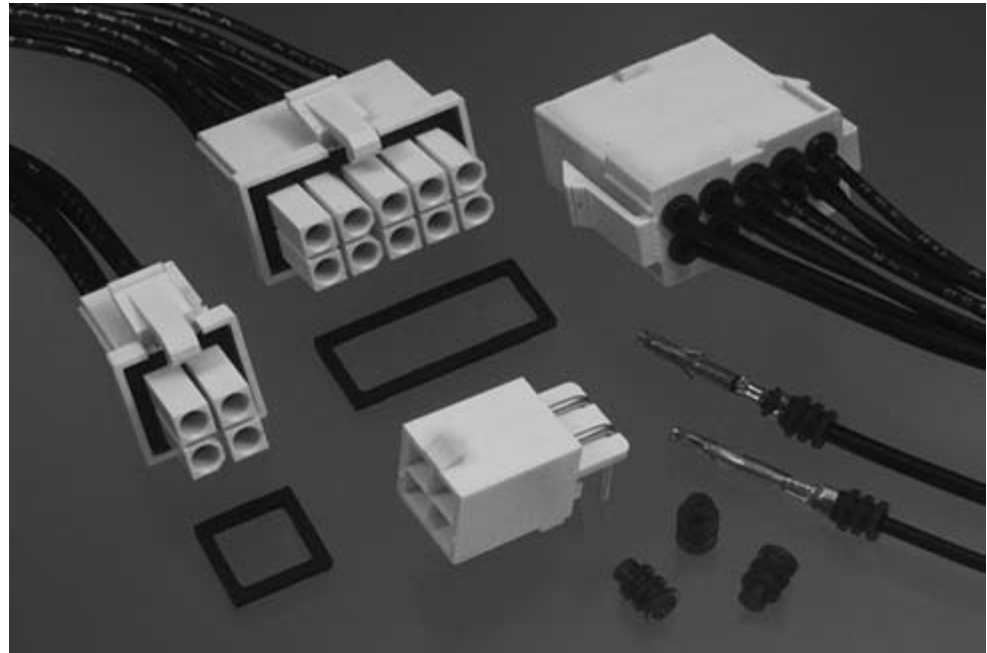
| Style    | Number of Circuits | A Dim.        | Wire Bundle Dia. Range | Part Numbers               |
|----------|--------------------|---------------|------------------------|----------------------------|
|          |                    |               |                        | UL94V-0 Nylon, White Color |
| Dual Row | 6                  | .920<br>23.36 | .165-.220<br>4.19-5.59 | 794423-1                   |
|          | 8                  | .920<br>23.36 | .180-.245<br>4.57-6.22 | 794370-1                   |

**Note:** All part numbers are RoHS Compliant.

## Mini-Universal MATE-N-LOK Sealed Connector System

### Product Facts — Sealed Connector System

- Splash-proof design allows use in areas where high humidity, intermittent liquid splashing or foam-in applications require a sealed connector for improved electrical performance
- Wire-to-wire and wire-to-board
- Dual row, 2 to 10 positions (even only) and 16 positions
- Mates with all standard Mini-Universal MATE-N-LOK connector housings and pin headers (except Blindmate)
- Positive, polarized keyed and latched orientation to ease application
- Utilizes proven Mini-Universal MATE-N-LOK contacts with existing application tooling
- Tested to Sealing Level of IP56 and IP57 per IEC 60529
- Primarily used in Appliance, Vending and HVAC applications
- Compact, durable housings
- Pins and sockets can be accommodated in the same housings
- Contacts fully protected in the housings. Both pins and sockets can be used on the power supply wiring
- Fully polarized to provide proper plug-to-cap mating incorporating a positive locking mechanism to help prevent accidental disengagement of mated connectors. Also facilitates panel mounting
- Free-hanging or panel mount
- Connectors can be mounted to .031-.079 [0.79-2.00] thick panels
- With seals, contacts accept wire size range 26-18 AWG [.12-.8 mm<sup>2</sup>] with insulation diameter of .040-.083 [1.02-2.11]
- .163 [4.14] centerline spacing
- Not for interrupting current



### Performance Characteristics

The Mini-Universal MATE-N-LOK Connector performance characteristics found on pages 91-92 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

#### Low Level Termination Resistance

20 milliohms max. total resistance between wire crimps of a mated pin and socket

**Dielectric Withstanding Voltage**—1.5 KVAC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Contact Retention**—8 lb. min. per contact

**Durability**—20 cycles, mating and unmating

### Technical Documents

#### Product Specifications

- 108-1542-2 Mini-Universal MATE-N-LOK Splash-Proof Seals
- 108-1542 Mini-Universal MATE-N-LOK Connectors
- 108-1543 Mini-Universal MATE-N-LOK Headers

#### Application Specification

- 114-13089 Mini-Universal MATE-N-LOK Sealed Connector

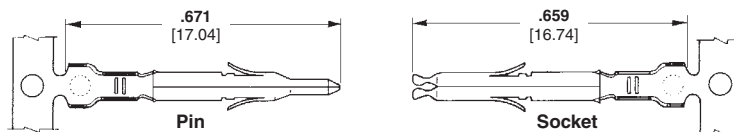
#### Instruction Sheets

- 408-3234 Mini-Universal MATE-N-LOK Connectors
- 411-5105 Mini-Universal MATE-N-LOK Connectors

## Mini-Universal MATE-N-LOK Sealed Connector System (Continued)

### Contacts

Pin diameter .039 [0.99]



| Wire Size<br>Range<br>AWG [mm²] | Ins. Dia.<br>Range     | Material<br>and Finish     | Contact Part Numbers (for use with Single Wire Seals) |                |               |                | HDM<br>Applicator<br>Part No. | Hand<br>Tool<br>Part No. |
|---------------------------------|------------------------|----------------------------|-------------------------------------------------------|----------------|---------------|----------------|-------------------------------|--------------------------|
|                                 |                        |                            | Pin                                                   |                | Socket        |                |                               |                          |
|                                 |                        |                            | Strip<br>Form                                         | Loose<br>Piece | Strip<br>Form | Loose<br>Piece |                               |                          |
| 26-22<br>[.12-.3]               | .040-.060<br>1.02-1.52 | Brass, Pre-tin             | 770901-1                                              | 770985-1       | 770902-1      | 770986-1       | 567066-3 <sup>3</sup>         | 91529-1                  |
|                                 |                        | Brass, Duplex <sup>1</sup> | 1-770901-0                                            | 1-770985-0     | 1-770902-0    | 1-770986-0     | 567066-4 <sup>3</sup>         |                          |
|                                 |                        |                            |                                                       |                |               |                | 567066-5 <sup>3</sup>         |                          |
| 22-18<br>[.3-.8]                | .050-.083<br>1.27-2.11 | Brass, Pre-tin             | 770903-1                                              | 770987-1       | 770904-1      | 770988-1       | 567067-1 <sup>2</sup>         | 91522-1                  |
|                                 |                        | Brass, Duplex <sup>1</sup> | 1-770903-0                                            | 1-770987-0     | 1-770904-0    | 1-770988-0     | 567067-2 <sup>2</sup>         |                          |
|                                 |                        |                            |                                                       |                |               |                | 567067-3 <sup>2</sup>         |                          |

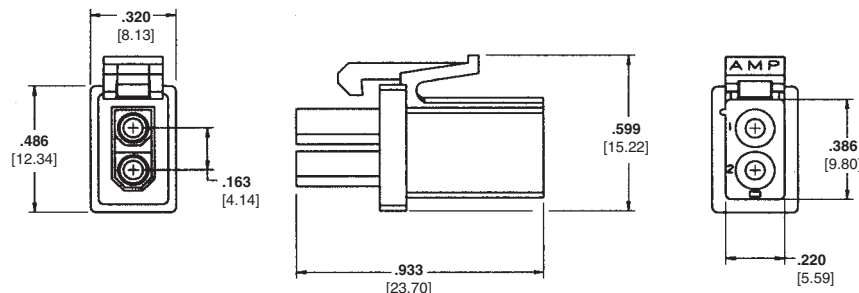
<sup>1</sup> Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000100 [.00254] min. tin in crimping area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup> HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-ELECTRIC Model K Machine, -3 is used on AMP-O-ELECTRIC Model G Machine. See pages 201-204 for further information.

<sup>3</sup> HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-ELECTRIC Model K Machine, -5 is used on AMP-O-ELECTRIC Model G Machine. See pages 201-204 for further information.

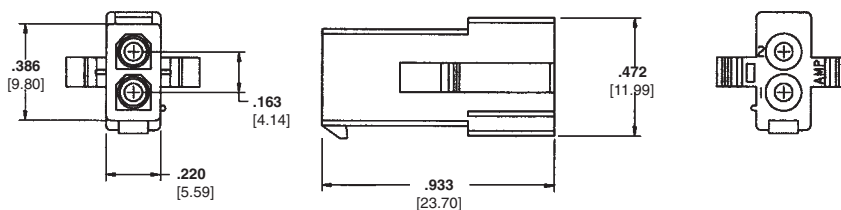
### Plug

Part Number 794894-1  
(2 position shown)



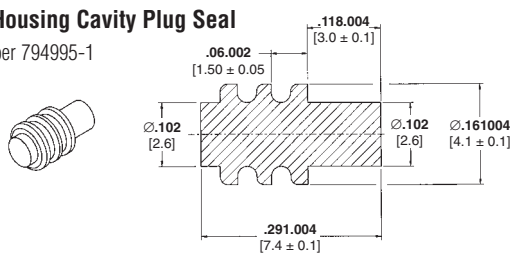
### Cap

Part Number 794896-1  
(2 position shown)



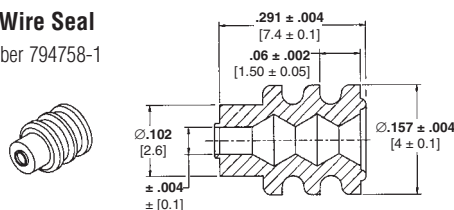
### Single Housing Cavity Plug Seal

Part Number 794995-1



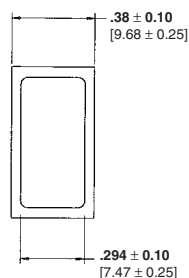
### Single Wire Seal

Part Number 794758-1



Note: Ganged Wire Seals are available; contact Technical Support.

### Interface Seals



| No. of<br>Positions | Part Numbers         |                     |                    |
|---------------------|----------------------|---------------------|--------------------|
|                     | Plug*<br>for sealing | Cap*<br>for sealing | Interface<br>Seals |
| 2                   | 794894-1             | 794896-1            | 794772-2           |
| 4                   | 794805-1             | 794939-1            | 794772-4           |
| 6                   | 794895-1             | 794940-1            | 794772-6           |
| 8                   | 794821-1             | 794941-1            | 794772-8           |
| 10                  | 794781-1             | 794942-1            | 1-794772-0         |
| 16                  | 794824-1             | 1586404-1           | 1-1586362-6        |

\*Nylon, UL 94V-0, white

Note: One Interface Seal required per mated assembly.

Note: All part numbers are RoHS Compliant.

### Related Product Data

Mating Mini-Universal  
MATE-N-LOK 2 Connectors

Cap Housings — pages 95-96

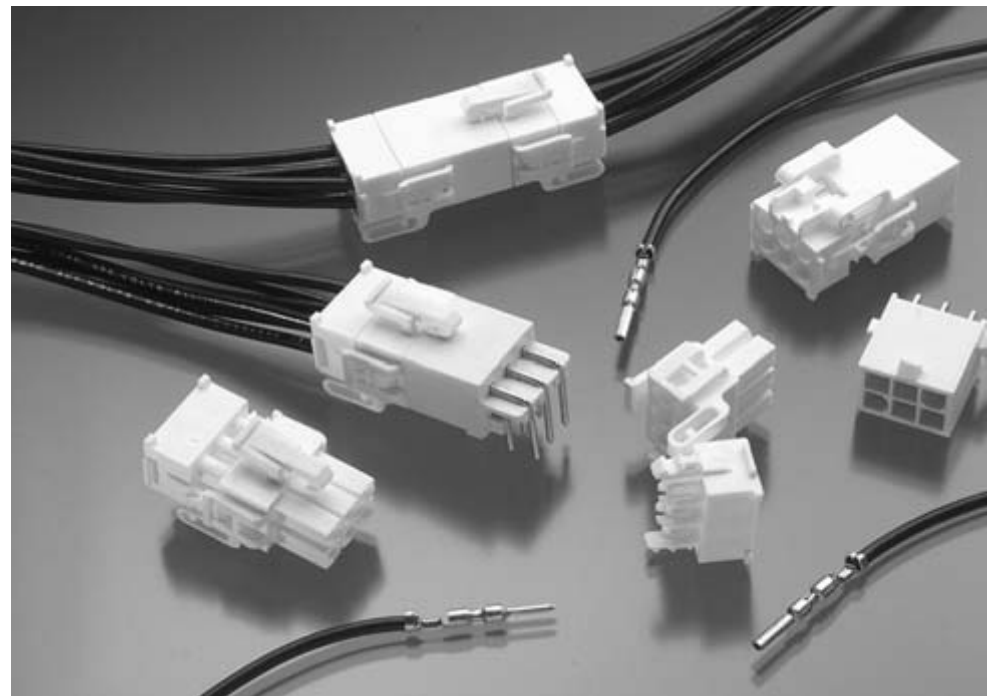
Vertical Pin Headers — page 97

- Wire-to-wire
- Wire-to-board, right-angle and vertical

## Mini-Universal MATE-N-LOK 2 Connectors

### Product Facts

- One molded piece, secondary locking plug and cap housing assemblies
- Three-point stabilization to provide better terminal position
- Fully polarized to provide proper plug-to-cap mating
- Lanceless contacts for tangle-free handling
- Toolless contact removal
- Tin or duplex gold plated contacts
- Available in 2 through 24 circuit sizes wire-to-wire and wire-to-board
- Mates with standard Mini-Universal MATE-N-LOK headers and connectors
- Contacts available in strip and loose piece
- Polarized housings available in UL 94V-0 or UL 94V-2 flammability rated material
- Mini-Universal MATE-N-LOK 2 pins and sockets can be intermixed in Mini-Universal MATE-N-LOK 2 housings
- Mini-Universal MATE-N-LOK 2 pins and sockets can **not** be used in standard Mini-Universal MATE-N-LOK housings
- Contacts accept wire size range 30-16 AWG [.05-1.2 mm<sup>2</sup>]
- .163 [4.14] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc. to US and Canadian Standards, File No. E28476
- Recognized by VDE under Registration Number 118488



### Performance Characteristics

The Mini-Universal MATE-N-LOK 2 Connector performance characteristics found on pages 93-94 are based on free-hanging connectors, loaded with contacts crimped on stranded wire.

#### Low Level Termination Resistance

20 milliohms max. total resistance between wire crimps of a mated pin and socket

#### Dielectric Withstanding Voltage

1500 V AC or DC between adjacent circuits at sea level

#### Insulation Resistance—

100 megohms minimum between adjacent circuits

#### Voltage Rating—600 V AC or DC

**Contact Retention**—15 lb. min. per contact

**Durability**—25 cycles, mating and unmating

**Current Rating**—up to 10.5 amps per circuit; 2 position

**Mating Force**—2.5 lb. max. per circuit

**Unmating Force**—0.25 lb. minimum per circuit

| Wire Size |                 | Termination Resistance |                                   | Contact Crimp Tensile Force |    |
|-----------|-----------------|------------------------|-----------------------------------|-----------------------------|----|
| AWG       | mm <sup>2</sup> | Test Current (Amps)    | Resistance Milliohms (Max. Init.) | Force (Min.) lbs.           | N  |
| 30        | .05             | —                      | —                                 | —                           | —  |
| 28        | .08             | —                      | —                                 | —                           | —  |
| 26        | .12             | —                      | —                                 | 4                           | 18 |
| 24        | .2              | —                      | —                                 | —                           | —  |
| 22        | .3              | —                      | —                                 | 11                          | 49 |
| 20        | .5              | —                      | —                                 | 13                          | 58 |
| 18        | .8              | —                      | —                                 | 15                          | 67 |
| 16        | 1.2             | —                      | —                                 | 18                          | 80 |

### Technical Documents

#### Product Specifications

108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

#### Application Specification

114-1111 Mini-Universal MATE-N-LOK 2 Connectors

#### Instruction Sheet

408-3393 Mini-Universal MATE-N-LOK 2 Connectors

Mini-Universal MATE-N-LOK 2 connectors also will withstand the following tests:

**Housing Lock Strength**—6 lb. min.

**Thermal Shock**—-55°C to +105°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G half-sine at 11 milliseconds

## Mini-Universal MATE-N-LOK 2 Connectors (Continued)

### Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Mini-Universal MATE-N-LOK 2 connectors is limited by the maximum operating temperature of the housings which is 105°C (gold) or 85°C (tin) including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

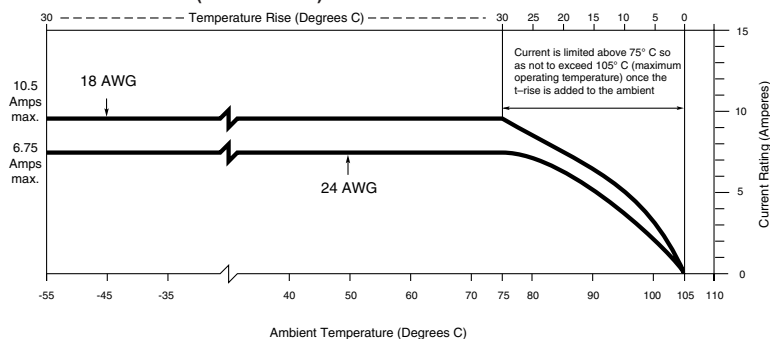
**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

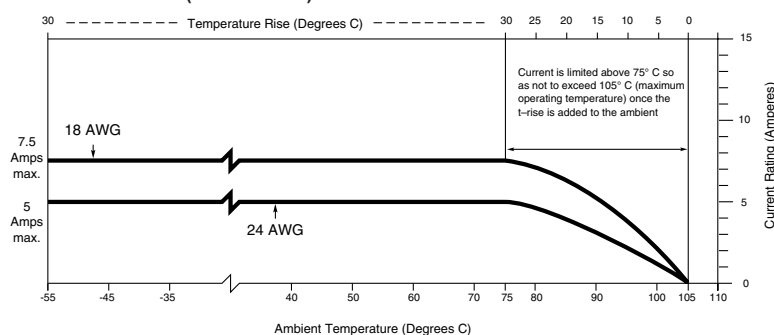
**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### 2 Circuit Connector (Wire-to-Wire)



#### 6 Circuit Connector (Wire-to-Wire)



### Contacts

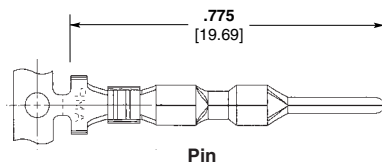
Pin diameter .039 [0.99]

### Material

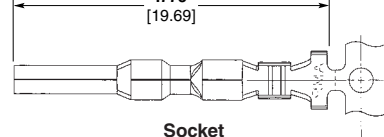
Brass

Stock Thickness .010 [0.25]

These contacts can be used in either Mini-Universal MATE-N-LOK 2 Plug or Cap housings **only**.



Pin



Socket

**Not to be used with Mini-Universal MATE-N-LOK Connectors**

### Related Product Data

#### Product Specifications

108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

#### Application Specification

114-1111 Mini-Universal MATE-N-LOK 2 Connectors

**Performance Characteristics**—pages 93-94

**Housings**—pages 95-96

**Technical Documents**—pages 93 and 199-200

| Wire Size Range<br>AWG [mm²] | Ins. Dia. Range        | Finish             | Contact Part Numbers   |                        |                        |                        | HDM Applicator Part No.             | Hand Tool Part No. |
|------------------------------|------------------------|--------------------|------------------------|------------------------|------------------------|------------------------|-------------------------------------|--------------------|
|                              |                        |                    | Pin                    |                        | Socket                 |                        |                                     |                    |
|                              |                        |                    | Strip Form             | Loose Piece            | Strip Form             | Loose Piece            |                                     |                    |
| 30-26<br>[.05-.12]           | .035-.050<br>.889-1.27 | Pre-tin<br>Duplex¹ | 794216-1<br>1-794216-0 | 794224-1<br>1-794224-0 | 794217-1<br>1-794217-0 | 794225-1<br>1-794225-0 | 567418-12<br>567418-22<br>567418-32 | 90717-2            |
| 26-22<br>[.12-.3]            | .047-.069<br>1.19-1.75 | Pre-tin<br>Duplex¹ | 794218-1<br>1-794218-0 | 794226-1<br>1-794226-0 | 794219-1<br>1-794219-0 | 794227-1<br>1-794227-0 | 567066-33<br>567066-43<br>567066-53 | 91529-1            |
| 22-18<br>[.3-.8]             | .059-.094<br>1.50-2.39 | Pre-tin<br>Duplex¹ | 794220-1<br>1-794220-0 | 794228-1<br>1-794228-0 | 794221-1<br>1-794221-0 | 794229-1<br>1-794229-0 | 680854-12<br>680854-22<br>680854-32 | 91522-1            |
| 20-16<br>[.5-1.2]            | .079-.126<br>2.01-3.20 | Pre-tin<br>Duplex¹ | 794222-1<br>1-794222-0 | 794230-1<br>1-794230-0 | 794223-1<br>1-794223-0 | 794231-1<br>1-794231-0 | 680582-22<br>680582-32              | 91594-1            |

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area and .000100 [.00254] min. tin in crimping area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-ELECTRIC Model K Machine, -3 is used on AMP-O-ELECTRIC Model G Machine.

<sup>3</sup>HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-ELECTRIC Model K Machine, -5 is used on AMP-O-ELECTRIC Model G Machine. See pages 201-204 for further information.

**Note: All part numbers are RoHS Compliant.**

## Mini-Universal MATE-N-LOK 2 Connectors (Continued)

### Housings

#### Free-Hanging

.163 [4.14] Centerline spacing

#### Related Product Data

##### Product Specifications

108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

##### Performance Characteristics—

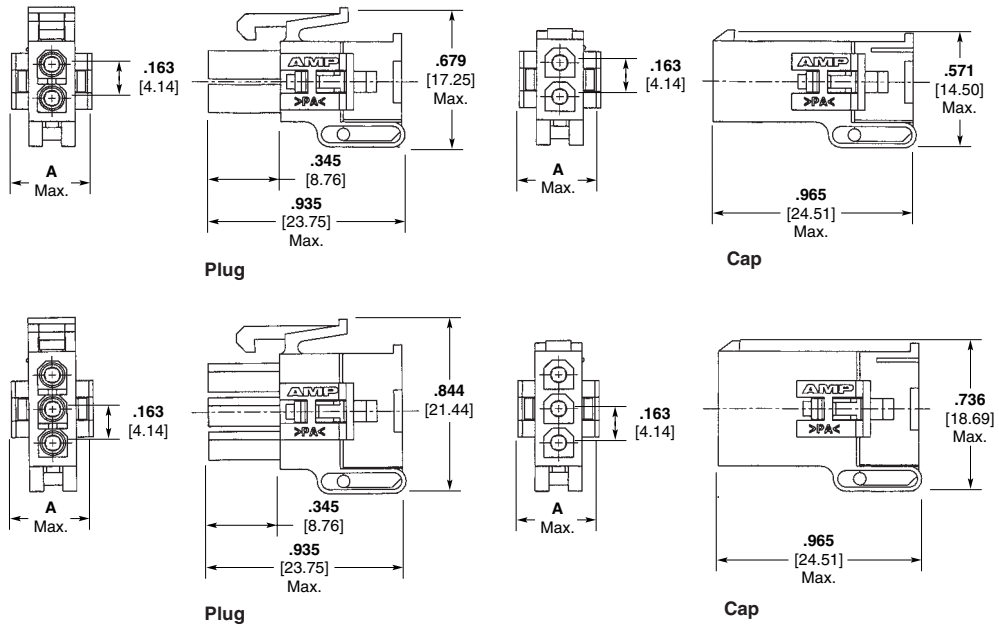
pages 93-94

**Contacts** — page 94

**Technical Documents** — pages 93 and 199-200

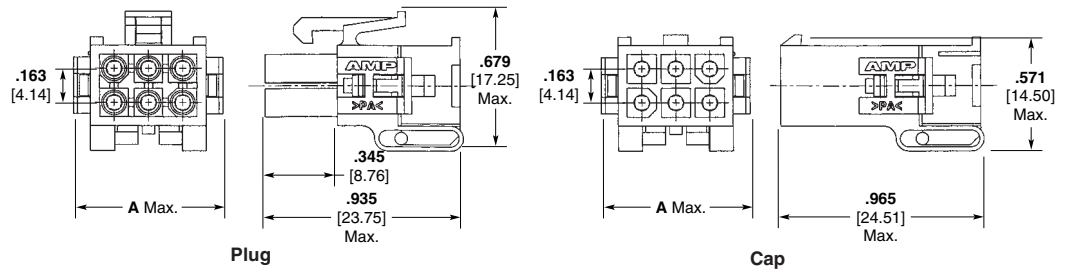
**Mating Headers** — pages 97-99

### 2 and 3 Circuit, In-Line



| Number of Circuits | A Dimension   | Housing Part Numbers       |          |                              |          |
|--------------------|---------------|----------------------------|----------|------------------------------|----------|
|                    |               | UL94V-0 Nylon, White Color |          | UL94V-2 Nylon, Natural Color |          |
|                    |               | Plug                       | Cap      | Plug                         | Cap      |
| 2                  | .405<br>10.29 | 794184-1                   | 794185-1 | 794237-1                     | 794238-1 |
| 3                  | .405<br>10.29 | 794186-1                   | 794187-1 | 794239-1                     | 794240-1 |

### 4 and 6 Circuit, Dual Row

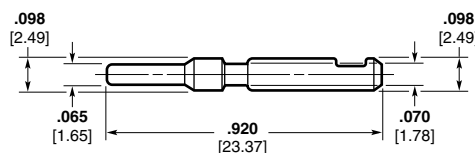


| Number of Circuits | A Dimension   | Housing Part Numbers       |          |                              |          |
|--------------------|---------------|----------------------------|----------|------------------------------|----------|
|                    |               | UL94V-0 Nylon, White Color |          | UL94V-2 Nylon, Natural Color |          |
|                    |               | Plug                       | Cap      | Plug                         | Cap      |
| 4                  | .571<br>14.50 | 794188-1                   | 794189-1 | 794241-1                     | 794242-1 |
| 6                  | .736<br>18.70 | 794190-1                   | 794191-1 | 794243-1                     | 794244-1 |

### Keying Plug

#### Material

UL94V-0 Nylon, white color



Part Number 794369-1

**Note:** All part numbers are RoHS Compliant.

## Mini-Universal MATE-N-LOK 2 Connectors (Continued)

### Housings Free-Hanging

.163 [4.14] Centerline spacing

#### Related Product Data

##### Product Specifications

108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

##### Performance Characteristics— pages 93-94

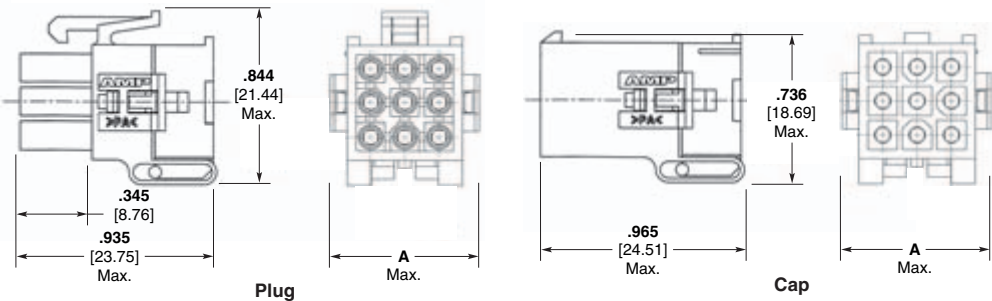
Contacts—page 94

Keying Plug—page 95

Technical Documents—pages 93  
and 199-200

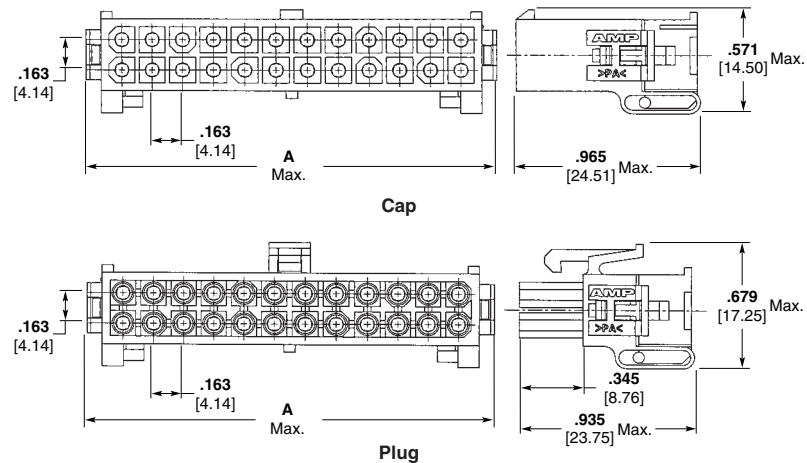
Mating Headers—pages 97-99

### 9, 12 and 15 Circuit, Matrix



| Number of Circuits | A Dimension    | Housing Part Numbers       |          |                              |          |
|--------------------|----------------|----------------------------|----------|------------------------------|----------|
|                    |                | UL94V-0 Nylon, White Color |          | UL94V-2 Nylon, Natural Color |          |
|                    |                | Plug                       | Cap      | Plug                         | Cap      |
| 9                  | .736<br>18.69  | 794194-1                   | 794195-1 | 794247-1                     | 794248-1 |
| 12                 | .901<br>22.89  | 794200-1                   | 794201-1 | 794253-1                     | 794254-1 |
| 15                 | 1.067<br>27.10 | 794204-1                   | 794205-1 | 794257-1                     | 794258-1 |

### 8 through 24 Circuit, Dual Row



| Number of Circuits | A Dimension    | Housing Part Numbers       |          |                              |          |
|--------------------|----------------|----------------------------|----------|------------------------------|----------|
|                    |                | UL94V-0 Nylon, White Color |          | UL94V-2 Nylon, Natural Color |          |
|                    |                | Plug                       | Cap      | Plug                         | Cap      |
| 8                  | .899<br>22.84  | 794192-1                   | 794193-1 | 794245-1                     | 794246-1 |
| 10                 | 1.062<br>26.98 | 794196-1                   | 794197-1 | 794249-1                     | 794250-1 |
| 12                 | 1.225<br>31.12 | 794198-1                   | 794199-1 | 794251-1                     | 794252-1 |
| 14                 | 1.388<br>35.26 | 794202-1                   | 794203-1 | 794255-1                     | 794256-1 |
| 16                 | 1.551<br>39.40 | 794206-1                   | 794207-1 | 794259-1                     | 794260-1 |
| 18                 | 1.714<br>43.54 | 794208-1                   | 794209-1 | 794261-1                     | 794262-1 |
| 20                 | 1.877<br>47.68 | 794210-1                   | 794211-1 | 794263-1                     | 794264-1 |
| 22                 | 2.040<br>51.82 | 794212-1                   | 794213-1 | 794265-1                     | 794266-1 |
| 24                 | 2.203<br>55.96 | 794214-1                   | 794215-1 | 794267-1                     | 794268-1 |

**Note:** All part numbers are RoHS Compliant.



## Mini-Universal MATE-N-LOK 2 Connectors (Continued)

### Vertical PC Board Blindmate Pin Headers

.163 [4.14] Centerline spacing

#### Material

Housing—Nylon, white

Flammability Rating—UL94V-0

Contacts—Brass

Solder tail diameter .039 [1.00]

#### Related Product Data

##### Product Specifications

108-1693 Mini-Universal MATE-N-LOK 2  
Connectors

108-1694 Mini-Universal MATE-N-LOK 2  
Headers

Performance Characteristics—  
pages 93-94

##### Recommended PC Board Hole

Layout—page 100

Technical Documents—pages 93  
and 199-200

#### Mating Connectors

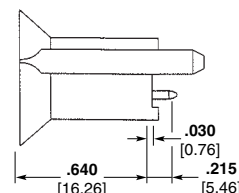
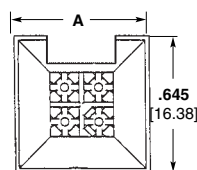
##### Mini-Universal MATE-N-LOK 2

Plug Housings—pages 95-96

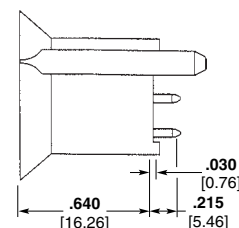
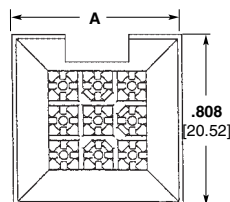
##### Mini-Universal MATE-N-LOK

Plug Housings—pages 83-85

### 4, 6, 8 and 10 Circuit, Dual Row



### 9, 12 and 15 Circuit, Matrix



| Number of<br>Circuits | Style    | A<br>Dim.      | Pin<br>Finish       | Pin Header Part Numbers<br>with Drain Holes | Mates with Plug Housing<br>Part Number<br>(Using Socket Contacts) |                                |
|-----------------------|----------|----------------|---------------------|---------------------------------------------|-------------------------------------------------------------------|--------------------------------|
|                       |          |                |                     |                                             | Mini-Universal<br>MATE-N-LOK                                      | Mini-Universal<br>MATE-N-LOK 2 |
| 4                     | Dual Row | .645<br>16.38  | Tin <sup>1</sup>    | 1-794325-0                                  | 172167-1                                                          | 794188-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794325-1                                  |                                                                   |                                |
| 6                     | Dual Row | .808<br>20.52  | Tin <sup>1</sup>    | 1-794326-0                                  | 172168-1                                                          | 794190-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794326-1                                  |                                                                   |                                |
| 8                     | Dual Row | .971<br>24.66  | Tin <sup>1</sup>    | 1-794327-0                                  | 770579-1                                                          | 794192-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794327-1                                  |                                                                   |                                |
| 9                     | Matrix   | .808<br>20.52  | Tin <sup>1</sup>    | 1-794432-0                                  | 172169-1                                                          | 794194-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794432-1                                  |                                                                   |                                |
| 10                    | Dual Row | 1.134<br>28.80 | Tin <sup>1</sup>    | 1-794328-0                                  | 770580-1                                                          | 794196-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794328-1                                  |                                                                   |                                |
| 12                    | Matrix   | .971<br>24.66  | Tin <sup>1</sup>    | 1-794329-0                                  | 172170-1                                                          | 794200-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794329-1                                  |                                                                   |                                |
| 15                    | Matrix   | 1.134<br>28.80 | Tin <sup>1</sup>    | 1-794330-0                                  | 172171-1                                                          | 794204-1                       |
|                       |          |                | Duplex <sup>2</sup> | 1-794330-1                                  |                                                                   |                                |

<sup>1</sup>Tin Finish—Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.



## Mini-Universal MATE-N-LOK 2 Connectors (Continued)

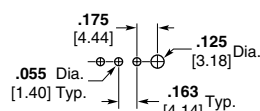
### Recommended PC Board Hole Layouts for Vertical and Blindmate Headers

.062 [1.57] thick board, tolerances  
non-accumulative

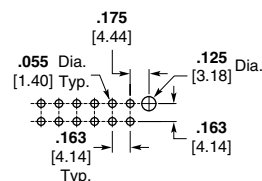
#### Related Product Data

Vertical Headers—pages 97-98

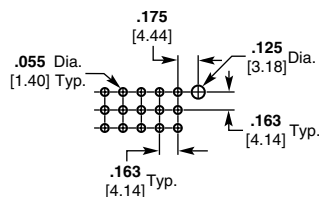
### 2 and 3 Circuit, In-Line



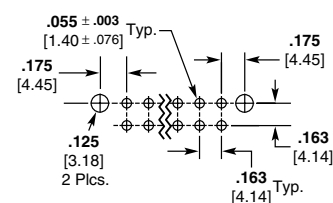
### 4, 6, 8, 10 and 12 Circuit, Dual Row



### 9, 12 and 15 Circuit, Matrix



### 14, 16, 18, 20, 22 and 24 Circuit, Dual Row



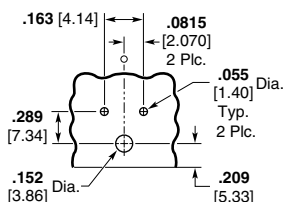
### Recommended PC Board Hole Layouts for Right- Angle Headers

.062 [1.57] thick board, tolerances  
non-accumulative

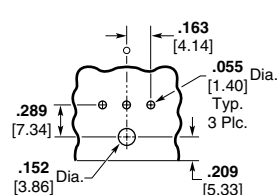
#### Related Product Data

Right-Angle Headers—page 99

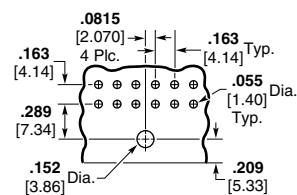
### 2 Circuit



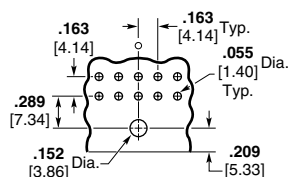
### 3 Circuit



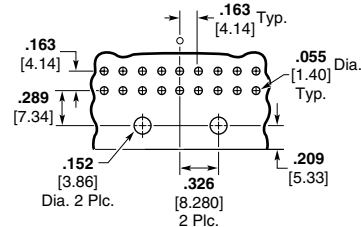
### 4, 8 and 12 Circuit



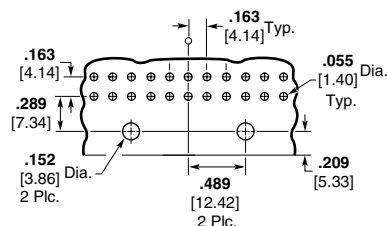
### 6 and 10 Circuit



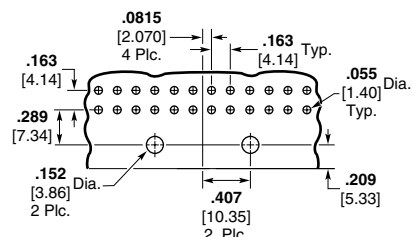
### 14 and 18 Circuit



### 22 Circuit



### 16, 20 and 24 Circuit

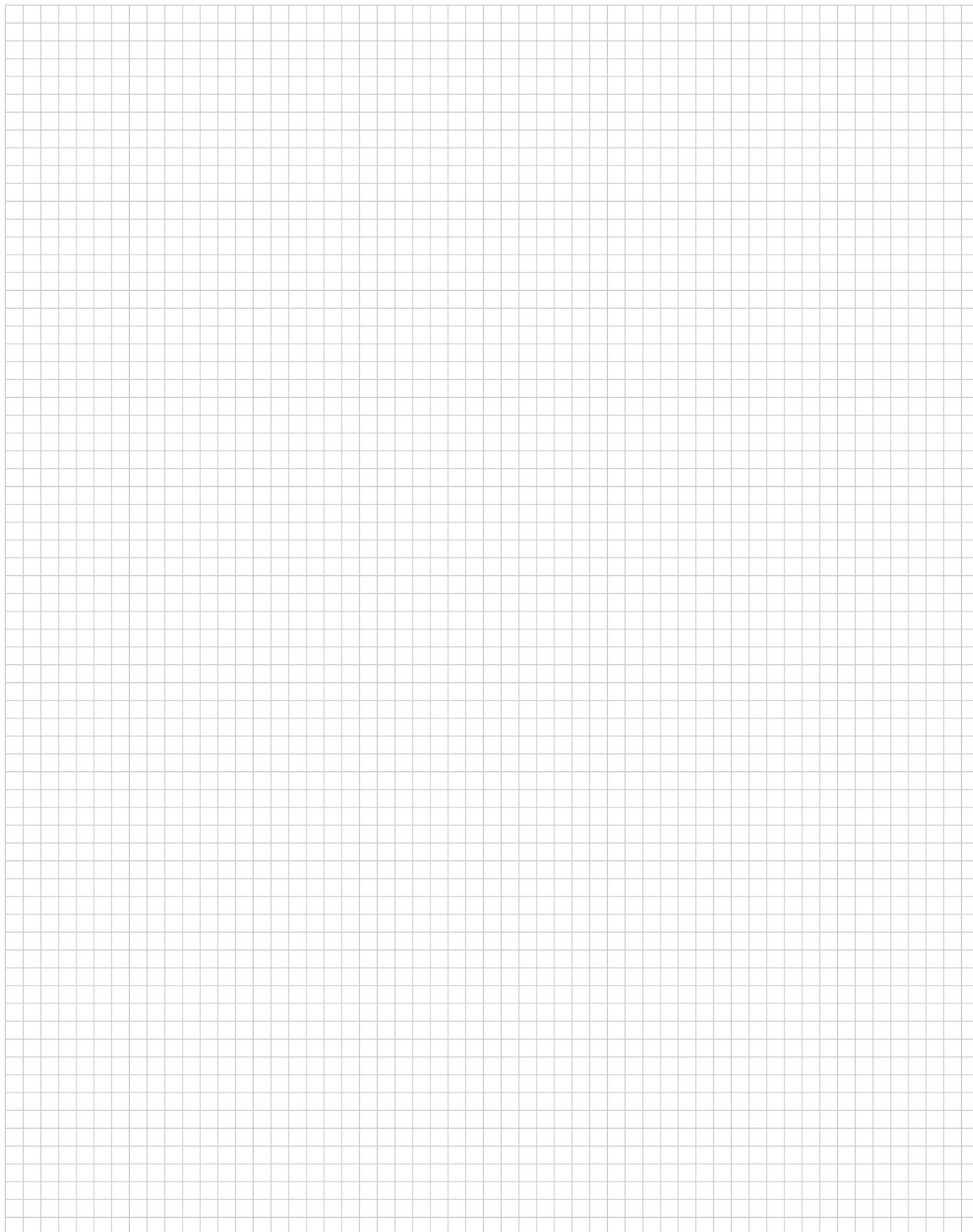




---

## Engineering Notes

---



## (MR) Miniature Rectangular Connectors

### Product Facts

- Housings positively lock to help prevent accidental disengagement
- Either cap or plug housing can be mounted in same rectangular panel cutout without additional hardware
- UL94V-0 housings
- Plug and cap design includes molded-in polarizing feature for proper mating
- Numbered cavities for easy circuit identification
- Egg crate design of plug half fully encloses socket contacts, reducing shock hazard
- Molded skirt extension on cap protects pin contacts
- Strain reliefs for 6 through 36 positions are available
- Choice of tin or gold plated contacts
- Not for interrupting current
- Socket solder tail contacts available for hot side PC Board mounting
- High density achieved through .165 [4.19] contact centerline spacing
- Extraction tool removes both pins and sockets
- Contacts accept 26-18 AWG [.12-.8 mm<sup>2</sup>] wire sizes and insulation diameters of .025-.115 [.635-2.92]
- Same applicator crimps pins and sockets
- Vertical PC Board pin headers are available
- Pin header standoffs on housings at board interface facilitates gas venting and cooling during soldering
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189



### Performance Characteristics

The Miniature Rectangular Connector performance characteristics found on pages 103-104 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**  
2.5 KVAC between adjacent circuits

**Insulation Resistance**—  
1500 megohms minimum initial between adjacent circuits

**Voltage Rating**—250 V AC

**Connector Mating**—  
Split Pin—1.0 lb. max. per circuit

**Connector Unmating**—  
Split Pin—.25 lb. min. per circuit

**Contact Insertion Force**—  
1.75 lb. max. per contact

**Contact Retention**—10 lb. min.  
per contact

**Durability**—25 cycles, mating and unmating

### Technical Documents

#### Product Specifications

108-1022 (MR) Miniature Rectangular Connectors

108-1078 (MR) Miniature Rectangular Headers

#### Application Specification

114-1014 (MR) Miniature Rectangular Contacts

#### Instruction Sheet

408-3231 Pin, Socket, Housing, Contacts, and Accessories

## (MR) Miniature Rectangular Connectors (Continued)

### Performance Characteristics

(Continued)

**Maximum Current**—Maximum current rating of Miniature Rectangular connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

Miniature Rectangular connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 10 milliseconds

**Housing Panel Retention**—50 lb. min.

**Housing Lock Strength**—20 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire MR Calculated Current Table

| Number of Circuits | Wire Gauge |      |      |      |      |
|--------------------|------------|------|------|------|------|
|                    | 18         | 20   | 22   | 24   | 26   |
| 2                  | 9.00       | 8.00 | 6.50 | 5.50 | 5.00 |
| 3                  | 8.50       | 7.00 | 6.00 | 5.00 | 4.50 |
| 4                  | 7.00       | 6.50 | 5.50 | 5.00 | 4.00 |
| 6                  | 6.00       | 6.00 | 5.00 | 4.00 | 4.00 |
| 9                  | 5.00       | 5.00 | 4.00 | 4.00 | 3.50 |
| 12                 | 4.50       | 4.50 | 4.00 | 3.50 | 3.00 |
| 15                 | 4.50       | 4.00 | 3.50 | 3.00 | 2.50 |
| 20                 | 4.00       | 4.00 | 3.50 | 3.00 | 2.50 |
| 24                 | 4.00       | 3.50 | 3.00 | 2.50 | 2.00 |
| 36                 | 3.50       | 3.00 | 2.50 | 2.00 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested and this chart contains interpolated and extrapolated values.

#### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|-----|-------------------|-----|-------------------|
| 30  | 2.6               | 18  | 9.4               |
| 28  | 3.2               | 16  | 11.3              |
| 26  | 4.1               | 14  | 13.7              |
| 24  | 5.1               | 12  | 16.4              |
| 20  | 7.8               | 10  | 19.3              |

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

#### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The charted values are only a tool for connector selection and will require the customer to fully test their application.

#### Termination Resistance/Contact Crimp Tensile Force

| Wire Size |                 | Termination Resistance |                                   | Contact Crimp Tensile Force |     |
|-----------|-----------------|------------------------|-----------------------------------|-----------------------------|-----|
| AWG       | mm <sup>2</sup> | Test Current (Amps)    | Resistance Milliohms (Max. Init.) | Force (Min.) lbs.           | N   |
| 26        | .12             | 1                      | 5.00                              | 5                           | 22  |
| 24        | .2              | 1.5                    | 5.00                              | 8                           | 36  |
| 22        | .3              | 3                      | 4.50                              | 14                          | 62  |
| 20        | .5              | 4.5                    | 4.00                              | 14                          | 62  |
| 18        | .8              | 6                      | 4.00                              | 30                          | 133 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

#### Related Product Data

##### Product Specifications

108-1022 (MR) Miniature Rectangular Connectors

108-1078 (MR) Miniature Rectangular Headers

## (MR) Miniature Rectangular Connectors (Continued)

### (MR) Miniature Rectangular Connector Mating Combinations

| Connector Part Number |                     |         |                            | Mating Connector Part Number   |                               |            |            |
|-----------------------|---------------------|---------|----------------------------|--------------------------------|-------------------------------|------------|------------|
| Number of Circuits    | Flammability Rating | Style   | Pin Housing (Cap) Part No. | Socket Housing (Plug) Part No. | PC Board Vertical Pin Headers |            |            |
|                       |                     |         |                            |                                | Plating                       | .062 Board | .120 Board |
| 2                     | UL94V-0             | In-Line | 1-640507-0                 | 1-640517-0                     | Tin                           | 640497-1   | 640497-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640497-2 | 2-640497-4 |
| 3                     | UL94V-0             | In-Line | 1-640508-0                 | 1-640518-0                     | Tin                           | 640498-1   | 640498-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640498-2 | 2-640498-4 |
| 4                     | UL94V-0             | Matrix  | 1-640509-0                 | 1-640519-0                     | Tin                           | 640499-1   | 640499-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640499-2 | 2-640499-4 |
| 6                     | UL94V-0             | Matrix  | 1-640510-0                 | 1-640520-0                     | Tin                           | 640500-1   | 640500-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640500-2 | 2-640500-4 |
| 9                     | UL94V-0             | Matrix  | 1-640511-0                 | 1-640521-0                     | Tin                           | 640501-1   | 640501-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640501-2 | 2-640501-4 |
| 12                    | UL94V-0             | Matrix  | 1-640512-0                 | 1-640522-0                     | Tin                           | 640502-1   | 640502-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640502-2 | 2-640502-4 |
| 15                    | UL94V-0             | Matrix  | 1-640513-0                 | 1-640523-0                     | Tin                           | 640503-1   | 640503-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640503-2 | 2-640503-4 |
| 20                    | UL94V-0             | Matrix  | 1-640514-0                 | 1-640524-0                     | Tin                           | 640504-1   | 640504-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640504-2 | 2-640504-4 |
| 24                    | UL94V-0             | Matrix  | 1-640515-0                 | 1-640525-0                     | Tin                           | 640505-1   | 640505-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640505-2 | 2-640505-4 |
| 36                    | UL94V-0             | Matrix  | 1-640516-0                 | 1-640526-0                     | Tin                           | 640506-1   | 640506-3   |
|                       |                     |         |                            |                                | Duplex <sup>1</sup>           | 2-640506-2 | 2-640506-4 |

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.



## (MR) Miniature Rectangular Connectors (Continued)

### Housings

#### Free-Hanging or Panel Mount

.165 [4.19] Centerline spacing

### Material

Nylon, Natural (Color—Brick Red)

Flammability Rating—UL94V-0

### Related Product Data

#### Product Specification

108-1022 (MR) Miniature Rectangular Connectors

Performance Characteristics—  
pages 103-104

Panel Cutout Recommendations—  
page 109

Contacts—page 106

Keying Plug—page 106

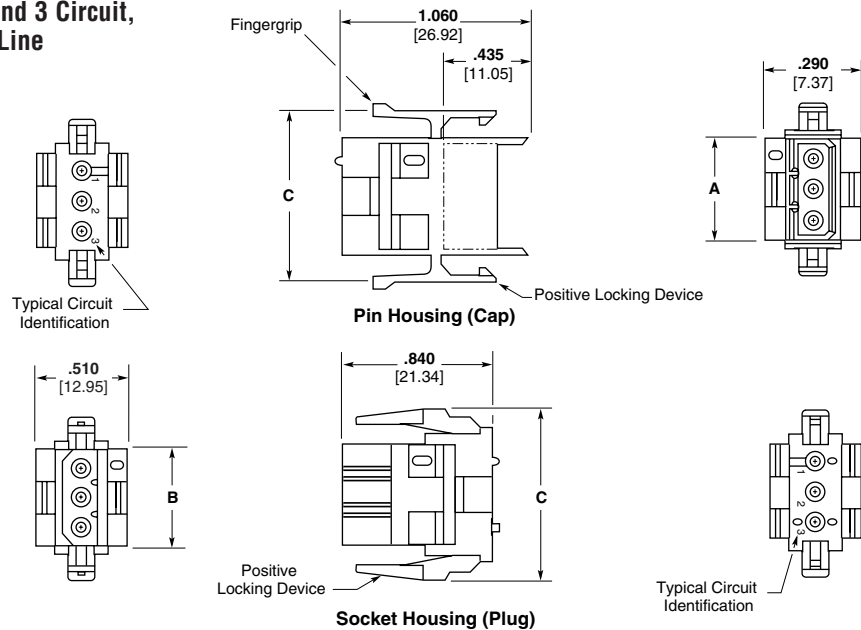
Strain Reliefs—page 110

Commoning Bars—page 110

Technical Documents—pages 103  
and 199-200

Mating Headers—pages 111-112

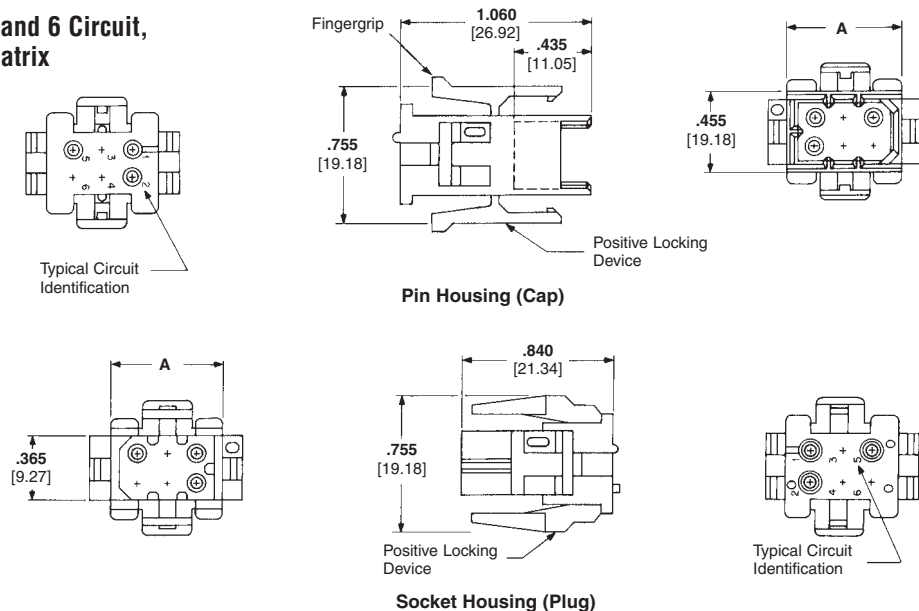
### 2 and 3 Circuit, In-Line



| Number of<br>Circuits | Dimensions    |               |               | Part Numbers      |                       |
|-----------------------|---------------|---------------|---------------|-------------------|-----------------------|
|                       | A             | B             | C             | Pin Housing (Cap) | Socket Housing (Plug) |
| 2                     | .455<br>11.56 | .365<br>9.27  | .755<br>19.18 | 1-640507-0        | 1-640517-0            |
| 3                     | .620<br>15.75 | .530<br>13.46 | .920<br>23.37 | 1-640508-0        | 1-640518-0            |

**Note:** All part numbers are RoHS Compliant.

### 4 and 6 Circuit, Matrix



| Number of<br>Circuits | A<br>Dim.     | Part Numbers      |                       |
|-----------------------|---------------|-------------------|-----------------------|
|                       |               | Pin Housing (Cap) | Socket Housing (Plug) |
| 4                     | .455<br>11.56 | 1-640509-0        | 1-640519-0            |
| 6                     | .620<br>15.75 | 1-640510-0        | 1-640520-0            |

**Note:** All part numbers are RoHS Compliant.

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

## (MR) Miniature Rectangular Connectors (Continued)

### Housings

#### Free-Hanging or Panel Mount

.165 [4.19] Centerline spacing

### Material

Nylon, Natural (Color—Brick Red)

Flammability Rating—UL94V-0

### Related Product Data

#### Product Specification

108-1022 (MR) Miniature Rectangular Connectors

Performance Characteristics—  
pages 103-104

Panel Cutout Recommendations—  
page 109

Contacts—page 106

Keying Plug—page 106

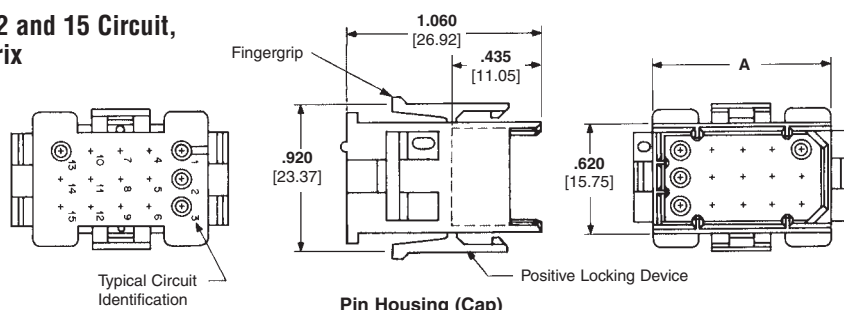
Strain Reliefs—page 110

Commoning Bars—page 110

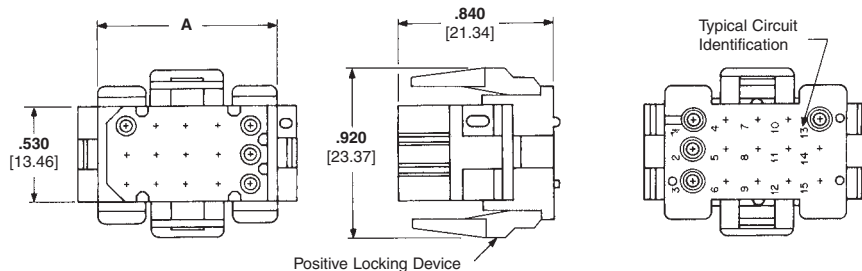
Technical Documents—pages 103  
and 199-200

Mating Headers—pages 111-112

### 9, 12 and 15 Circuit, Matrix

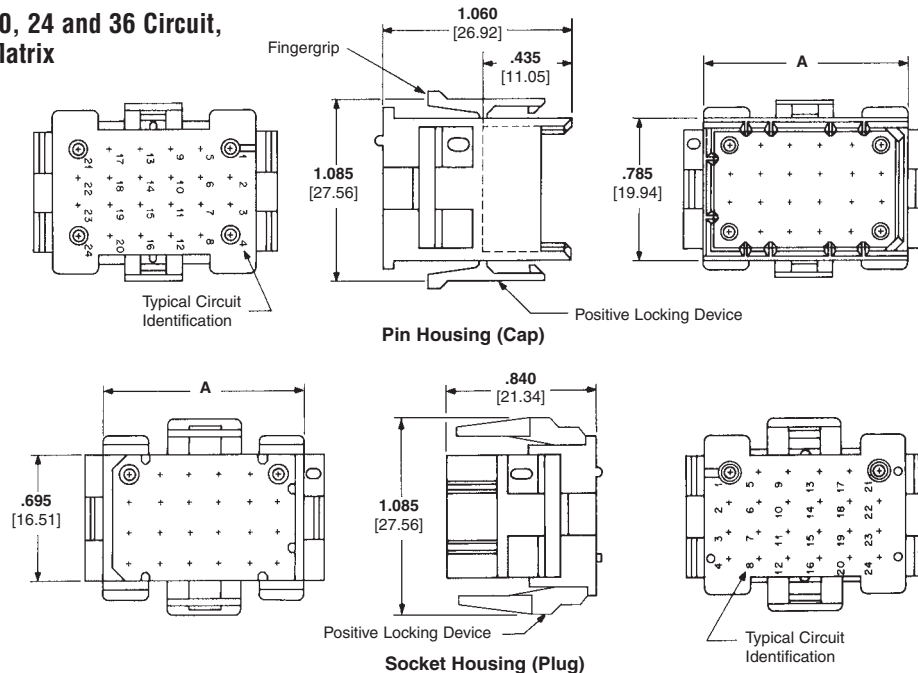


Pin Housing (Cap)



Socket Housing (Plug)

### 20, 24 and 36 Circuit, Matrix



Pin Housing (Cap)

Socket Housing (Plug)

| Number of<br>Circuits | A<br>Dim.     | Part Numbers      |                       |
|-----------------------|---------------|-------------------|-----------------------|
|                       |               | Pin Housing (Cap) | Socket Housing (Plug) |
| 9                     | .620 [15.75]  | 1-640511-0        | 1-640521-0            |
| 12                    | .785 [19.94]  | 1-640512-0        | 1-640522-0            |
| 15                    | .950 [24.13]  | 1-640513-0        | 1-640523-0            |
| 20                    | .950 [24.13]  | 1-640514-0        | 1-640524-0            |
| 24                    | 1.115 [28.32] | 1-640515-0        | 1-640525-0            |
| 36                    | 1.610 [40.89] | 1-640516-0        | 1-640526-0            |

**Note:** All part numbers are RoHS Compliant.

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

## (MR) Miniature Rectangular Connectors (Continued)

### Recommended Panel Cutouts for Pin and Socket Housings

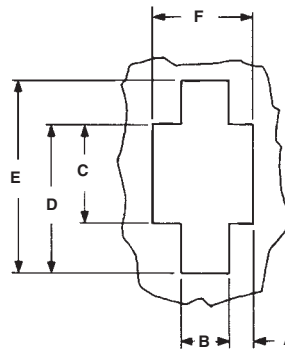
#### Related Product Data

##### Product Specification

108-1022 (MR) Miniature Rectangular  
Connectors

**Housings**—pages 107-108

**Technical Documents**—pages 103  
and 199-200



View is from housing entry side

Panel Thickness .068 [1.75] Max.

| Number of<br>Circuits | Panel Cutout Dimensions |               |               |               |                |                |
|-----------------------|-------------------------|---------------|---------------|---------------|----------------|----------------|
|                       | A                       | B             | C             | D             | E              | F              |
| 2                     | .105<br>2.67            | .220<br>5.59  | .475<br>12.07 | .630<br>16.00 | .785<br>19.94  | .430<br>10.92  |
| 3                     | .105<br>2.67            | .220<br>5.59  | .640<br>16.26 | .795<br>20.19 | .950<br>24.13  | .430<br>10.92  |
| 4                     | .157<br>3.99            | .280<br>5.28  | .475<br>12.07 | .630<br>16.00 | .785<br>19.94  | .595<br>15.11  |
| 6                     | .208<br>5.28            | .345<br>8.76  | .475<br>12.07 | .630<br>16.00 | .785<br>19.94  | .760<br>19.30  |
| 9                     | .208<br>5.28            | .345<br>8.76  | .640<br>16.26 | .795<br>20.19 | .950<br>24.13  | .760<br>19.30  |
| 12                    | .225<br>5.72            | .475<br>12.07 | .640<br>16.26 | .795<br>20.19 | .950<br>24.13  | .925<br>23.50  |
| 15                    | .308<br>7.82            | .475<br>12.07 | .640<br>16.26 | .795<br>20.19 | .950<br>24.13  | 1.090<br>27.69 |
| 20                    | .308<br>7.82            | .475<br>12.07 | .805<br>20.45 | .960<br>24.38 | 1.115<br>28.32 | 1.090<br>27.69 |
| 24                    | .390<br>9.91            | .475<br>12.07 | .805<br>20.45 | .960<br>24.38 | 1.115<br>28.32 | 1.255<br>31.88 |
| 36                    | .625<br>15.86           | .500<br>12.70 | .800<br>20.32 | .950<br>24.13 | 1.100<br>27.94 | 1.750<br>44.45 |

#### Notes:

1. When mounted in a .060 [1.52] thick panel, the cap's mating end extends .800 [20.32] beyond the panel front; wire end extends .220 [55.88] from the panel rear. Plug mating end extends .580 [14.73] beyond the panel front; wire end extends .220 [55.88] from the panel rear.
2. The panel should be punched so that the housing enters the panel in the same direction as the punch for ease of assembly.

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline



## (MR) Miniature Rectangular Connectors (Continued)

### PC Board Vertical Pin Headers

.165 [4.19] Centerline spacing

#### Material

**Housing**—Nylon, Natural (Color—  
Brick Red)

**Flammability Rating**—UL94V-0

**Contacts**—Phosphor bronze  
Solder tail diameter .040 [1.02]

#### Related Product Data

##### Product Specification

108-1078 (MR) Miniature Rectangular  
Headers

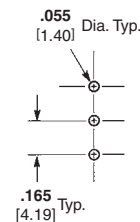
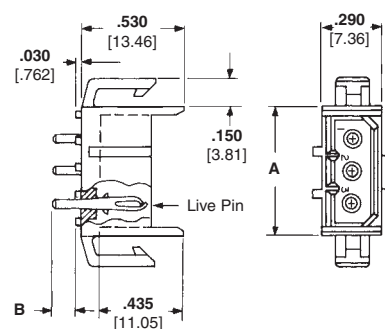
**Dimensions A and B**—page 112

**Performance Characteristics**—  
pages 103-104

**Technical Documents**—pages 103  
and 199-200

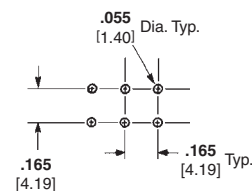
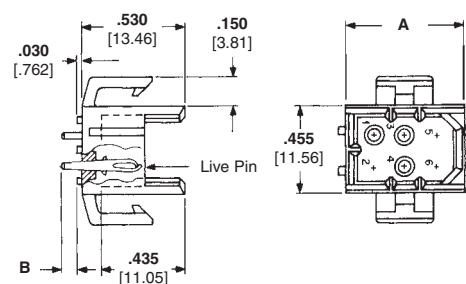
**Mating Socket Housings**—pages  
107-108

### 2 and 3 Circuit, In-Line



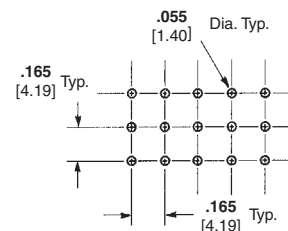
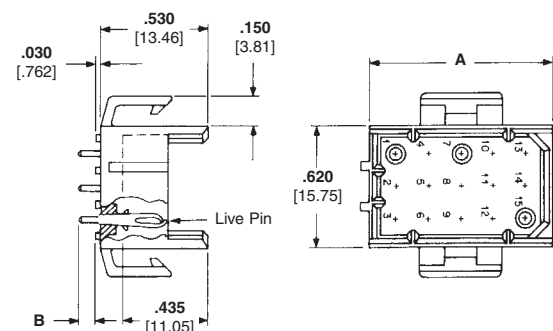
Recommended PC Board Hole Layout

### 4 and 6 Circuit, Matrix



Recommended PC Board Hole Layout

### 9, 12 and 15 Circuit, Matrix



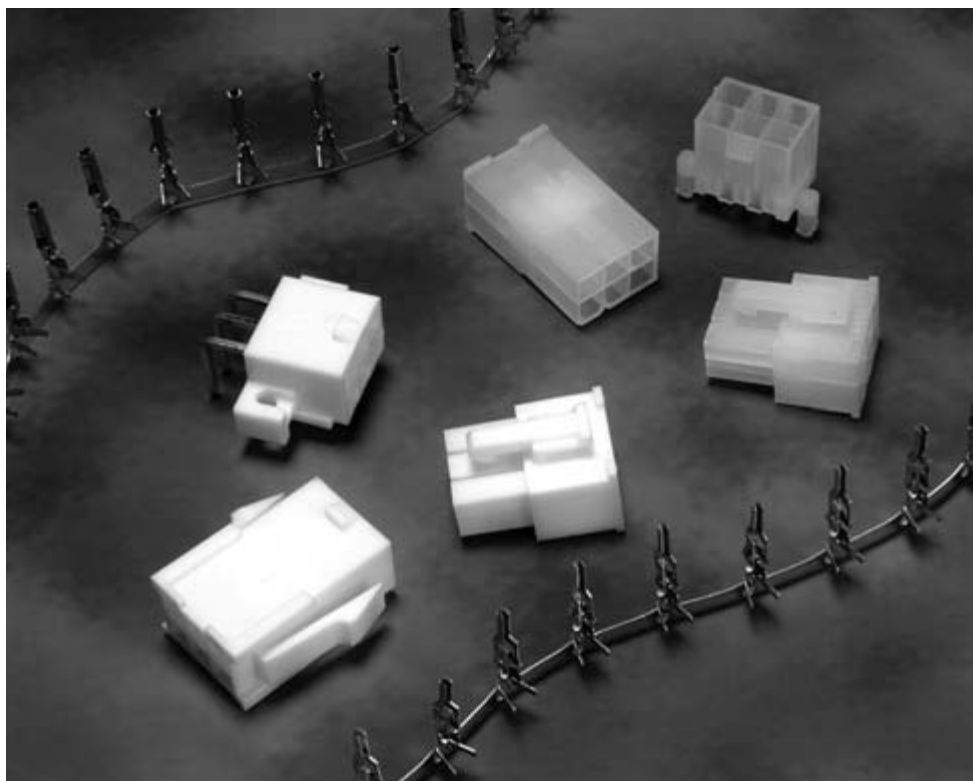
Recommended PC Board Hole Layout



## 4.2 mm PE Series Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel)

### Product Facts

- Low cost, wire-to-wire, wire-to-board and wire-to-panel connectors with 4.2 mm centerline
- Easy mate and unmate with positive latch design
- Single row, 3-5 positions: receptacles, panel mount or free-hanging plugs
- Double row, 2-24 positions (even only): receptacles, panel mount or free-hanging plugs, and vertical or right-angle pin headers
- Available in UL 94V-2 or UL 94V-0 flammability rated nylon
- Products are lead free to help promote a cleaner environment
- Intermateable and interchangeable with Molex Mini-Fit, Jr. and intermateable AMP-DUAC connectors
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. 208567
- Certified by Canadian Standards Association, File No. E28476
- Tyco Electronics Design For Environment (DFE) Standard 230-5



### Performance Characteristics

#### Electrical

**Voltage**—600 VAC

**Current**—9 amps max. in 2-position applications

**Dielectric Withstanding Voltage**—1500 VAC min.

**Insulation Resistance**—1000 megohms min.

**Operating Temperature**— $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$  [ $-40^{\circ}\text{F}$  to  $+221^{\circ}\text{F}$ ]

#### Mechanical

**Connector Mating**—1.55 lb. [6.90 N] max. per circuit

**Connector Unmating**—.11 lb. [.49 N] min. per circuit

**Contact Retention**—4.88 lb. [21.71 N] min. per contact

**Durability**—50 cycles, mating and unmating

### Material and Finish

**Housings**—Nylon, UL 94V-2 and UL 94V-0

**Contacts**—Brass or Phos. Bronze with tin plating (Lead-Free) or gold plating

### Applications

- Computer motherboards/power supplies
- Harness assemblies used in the Vending, Gaming and Appliance Industries
- Car alarm systems
- Heating systems

High Density

4.2 mm PE Series Connector System  
.165 [4.20] Centerline

## 4.2 mm PE Series Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel) (Continued)

### Contacts

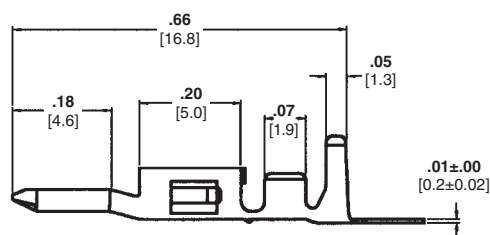
| Wire Range<br>(AWG) | Material &<br>Finish | Pin        |             | Socket     |             | Applicator<br>Part Number <sup>1</sup> | PRO-CRIMPER III<br>Hand Tool<br>Part Number |
|---------------------|----------------------|------------|-------------|------------|-------------|----------------------------------------|---------------------------------------------|
|                     |                      | Strip Form | Loose Piece | Strip Form | Loose Piece |                                        |                                             |
| 26-22               | Brass, Pre-Tin       | 794957-1   | 1586316-1   | 794958-1   | 1586317-1   | 1385448-X                              | 91387-1                                     |
|                     | Phos. Brz., Pre-Tin  | 794957-3   | 1586316-3   | 794958-3   | 1586317-3   |                                        |                                             |
|                     | Brass, Gold          | 794957-2   | 1586316-2   | 794958-2   | 1586317-2   |                                        |                                             |
|                     | Phos. Brz., Gold     | 794957-4   | 1586316-4   | 794958-4   | 1586317-4   |                                        |                                             |
| 22-18               | Brass, Pre-Tin       | 794955-1   | 1586314-1   | 794956-1   | 1586315-1   | 1385817-X                              | 91388-1                                     |
|                     | Phos. Brz., Pre-Tin  | 794955-3   | 1586314-3   | 794956-3   | 1586315-3   |                                        |                                             |
|                     | Brass, Gold          | 794955-2   | 1586314-2   | 794956-2   | 1586315-2   |                                        |                                             |
|                     | Phos. Brz., Gold     | 794955-4   | 1586314-4   | 794956-4   | 1586315-4   |                                        |                                             |

Extraction Tool Part Number 1586343-1

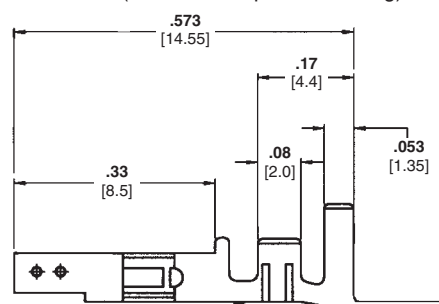
<sup>1</sup> For applicator and machine part numbers, contact Technical Support.

**Note: All part numbers are RoHS Compliant.**

Pin — (used in Plug Housing)



Socket — (used in Receptacle Housing)



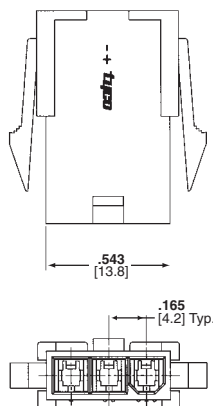
### Housings — Single Row

| No. of<br>Positions | UL 94V-2 Housings   |                      |                       | UL 94V-0 Housings   |                      |                       |
|---------------------|---------------------|----------------------|-----------------------|---------------------|----------------------|-----------------------|
|                     | Panel Mount<br>Plug | Free-Hanging<br>Plug | Receptacle<br>Housing | Panel Mount<br>Plug | Free-Hanging<br>Plug | Receptacle<br>Housing |
| 3*                  | 1586101-3           | 1586103-3            | 1586105-3             | 1586102-3           | 1586104-3            | 1586106-3             |
| 4                   | 1586022-4           | 1586024-4            | 1586026-4             | 1586023-4           | 1586025-4            | 1586027-4             |
| 5                   | 1586022-5           | 1586024-5            | 1586026-5             | 1586023-5           | 1586025-5            | 1586027-5             |

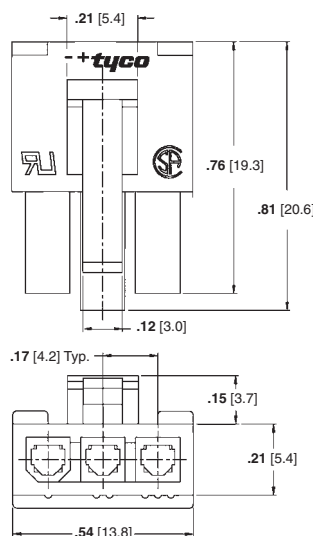
\*Note: 3 position housings are First Mate/Last Break.

**Note: All part numbers are RoHS Compliant.**

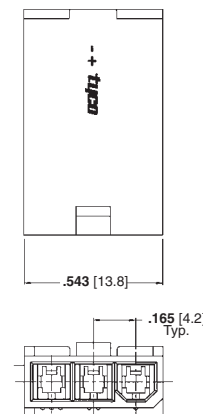
Panel Mount Plug Housing



Receptacle Housing



Free-Hanging Plug Housing



## 4.2 mm PE Series Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel) (Continued)

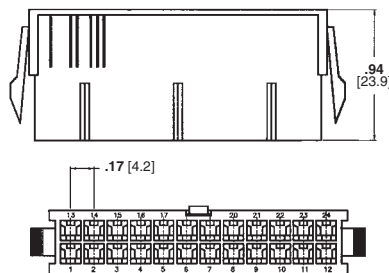
### Housings — Double Row

| No. of Positions | UL 94V-2 Housings |                   |                    | UL 94V-0 Housings |                   |                    |
|------------------|-------------------|-------------------|--------------------|-------------------|-------------------|--------------------|
|                  | Panel Mount Plug  | Free-Hanging Plug | Receptacle Housing | Panel Mount Plug  | Free-Hanging Plug | Receptacle Housing |
| 2                | 794953-2          | 1586000-2         | 794954-2           | 1586018-2         | 1586017-2         | 1586019-2          |
| 4                | 794953-4          | 1586000-4         | 794954-4           | 1586018-4         | 1586017-4         | 1586019-4          |
| 6                | 794953-6          | 1586000-6         | 794954-6           | 1586018-6         | 1586017-6         | 1586019-6          |
| 8                | 794953-8          | 1586000-8         | 794954-8           | 1586018-8         | 1586017-8         | 1586019-8          |
| 10               | 1-794953-0        | 1-1586000-0       | 1-794954-0         | 1-1586018-0       | 1-1586017-0       | 1-1586019-0        |
| 12               | 1-794953-2        | 1-1586000-2       | 1-794954-2         | 1-1586018-2       | 1-1586017-2       | 1-1586019-2        |
| 14               | 1-794953-4        | 1-1586000-4       | 1-794954-4         | 1-1586018-4       | 1-1586017-4       | 1-1586019-4        |
| 16               | 1-794953-6        | 1-1586000-6       | 1-794954-6         | 1-1586018-6       | 1-1586017-6       | 1-1586019-6        |
| 18               | 1-794953-8        | 1-1586000-8       | 1-794954-8         | 1-1586018-8       | 1-1586017-8       | 1-1586019-8        |
| 20               | 2-794953-0        | 2-1586000-0       | 2-794954-0         | 2-1586018-0       | 2-1586017-0       | 2-1586019-0        |
| 22               | 2-794953-2        | 2-1586000-2       | 2-794954-2         | 2-1586018-2       | 2-1586017-2       | 2-1586019-2        |
| 24               | 2-794953-4        | 2-1586000-4       | 2-794954-4         | 2-1586018-4       | 2-1586017-4       | 2-1586019-4        |

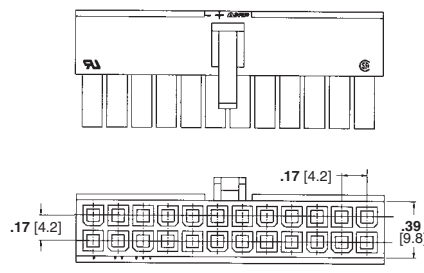
**Note:** Plug housings accept pin contacts and receptacle housings accept socket contacts on page 114.

**Note:** All part numbers are RoHS Compliant.

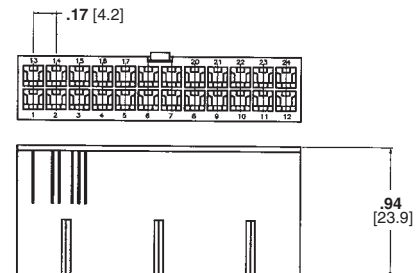
**Panel Mount Plug Housing**



**Receptacle Housing**



**Free-Hanging Plug Housing**



High Density

4.2 mm PE Series Connector System  
.165 [4.20] Centerline

## 4.2 mm PE Series Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel) (Continued)

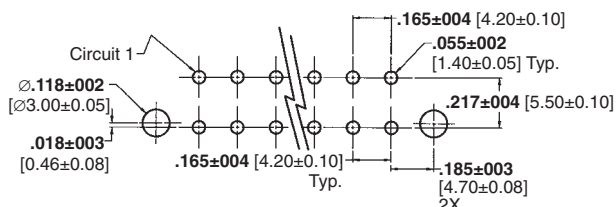
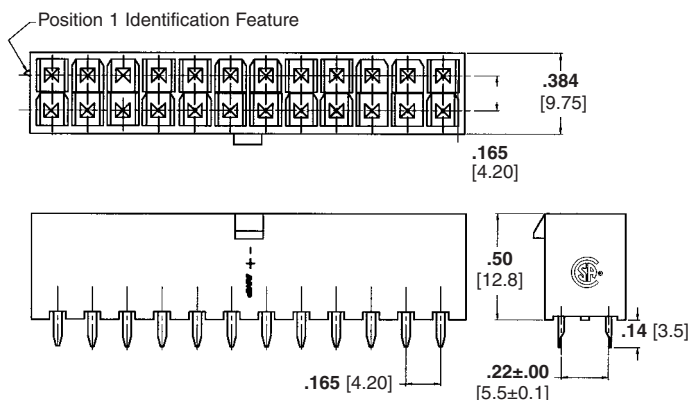
### Pin Headers

| No. of Positions | UL 94V-2 Pin Headers |             |             |             | UL 94V-0 Pin Headers |             |             |             |
|------------------|----------------------|-------------|-------------|-------------|----------------------|-------------|-------------|-------------|
|                  | Vertical             |             | Right-Angle |             | Vertical             |             | Right-Angle |             |
|                  | w/o Pegs             | w/Pegs      | w/o Pegs    | Screw Mount | w/o Pegs             | w/Pegs      | w/o Pegs    | Screw Mount |
| 2                | 1586037-2            | 1586039-2   | 1586041-2   | 1586043-2   | 1586038-2            | 1586040-2   | 1586042-2   | 1586044-2   |
| 4                | 1586037-4            | 1586039-4   | 1586041-4   | 1586043-4   | 1586038-4            | 1586040-4   | 1586042-4   | 1586044-4   |
| 6                | 1586037-6            | 1586039-6   | 1586041-6   | 1586043-6   | 1586038-6            | 1586040-6   | 1586042-6   | 1586044-6   |
| 8                | 1586037-8            | 1586039-8   | 1586041-8   | 1586043-8   | 1586038-8            | 1586040-8   | 1586042-8   | 1586044-8   |
| 10               | 1-1586037-0          | 1-1586039-0 | 1-1586041-0 | 1-1586043-0 | 1-1586038-0          | 1-1586040-0 | 1-1586042-0 | 1-1586044-0 |
| 12               | 1-1586037-2          | 1-1586039-2 | 1-1586041-2 | 1-1586043-2 | 1-1586038-2          | 1-1586040-2 | 1-1586042-2 | 1-1586044-2 |
| 14               | 1-1586037-4          | 1-1586039-4 | 1-1586041-4 | 1-1586043-4 | 1-1586038-4          | 1-1586040-4 | 1-1586042-4 | 1-1586044-4 |
| 16               | 1-1586037-6          | 1-1586039-6 | 1-1586041-6 | 1-1586043-6 | 1-1586038-6          | 1-1586040-6 | 1-1586042-6 | 1-1586044-6 |
| 18               | 1-1586037-8          | 1-1586039-8 | 1-1586041-8 | 1-1586043-8 | 1-1586038-8          | 1-1586040-8 | 1-1586042-8 | 1-1586044-8 |
| 20               | 2-1586037-0          | 2-1586039-0 | 2-1586041-0 | 2-1586043-0 | 2-1586038-0          | 2-1586040-0 | 2-1586042-0 | 2-1586044-0 |
| 22               | 2-1586037-2          | 2-1586039-2 | 2-1586041-2 | 2-1586043-2 | 2-1586038-2          | 2-1586040-2 | 2-1586042-2 | 2-1586044-2 |
| 24               | 2-1586037-4          | 2-1586039-4 | 2-1586041-4 | 2-1586043-4 | 2-1586038-4          | 2-1586040-4 | 2-1586042-4 | 2-1586044-4 |

Note: All Headers have Brass, Tin-Plated contacts.

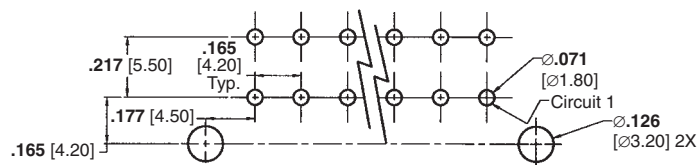
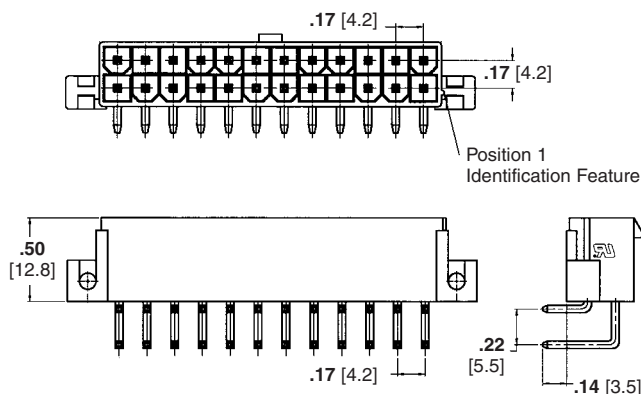
Note: All part numbers are RoHS Compliant.

#### Vertical Pin Headers (Part No. 1586037 shown w/o pegs)



PCB Layout: Component Side (shown with pegs)  
Recommended Board Thickness .070 [1.78]

#### Right-Angle Pin Headers (Part No. 1586043 Screw Mount)



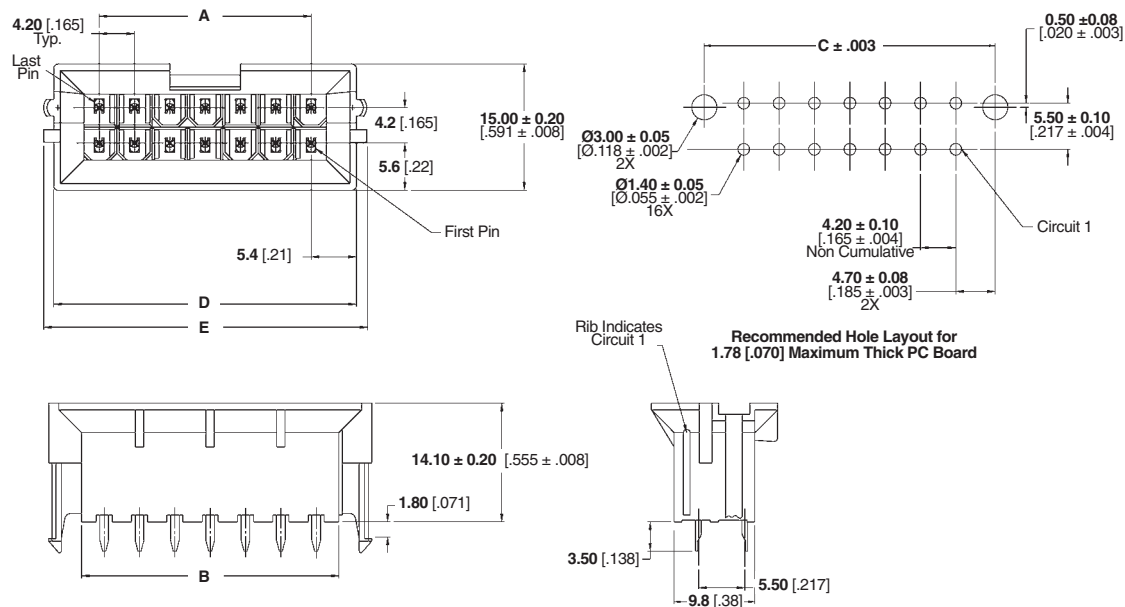
PCB Layout: Component Side (screw mount shown)  
Recommended Board Thickness .063 [1.60]

## 4.2 mm PE Series Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel) (Continued)

### Blindmate Headers

| No. of Pos. | Dimensions     |                |                |                |                | UL 94V-2 Housings |                     | UL 94V-0 Housings |                     |
|-------------|----------------|----------------|----------------|----------------|----------------|-------------------|---------------------|-------------------|---------------------|
|             | A              | B              | C              | D              | E              | With Drain Holes  | Without Drain Holes | With Drain Holes  | Without Drain Holes |
| 2           | —              | 5.4<br>[0.21]  | 9.4<br>[0.37]  | 10.8<br>[0.43] | 13.2<br>[0.52] | 1586585-2         | 1586586-2           | 1586587-2         | 1586588-2           |
| 4           | 4.2<br>[0.17]  | 9.6<br>[0.38]  | 13.6<br>[0.54] | 15.0<br>[0.59] | 17.4<br>[0.69] | 1586585-4         | 1586586-4           | 1586587-4         | 1586588-4           |
| 6           | 8.4<br>[0.33]  | 13.8<br>[0.54] | 17.8<br>[0.70] | 19.2<br>[0.76] | 21.6<br>[0.85] | 1586585-6         | 1586586-6           | 1586587-6         | 1586588-6           |
| 8           | 12.6<br>[0.50] | 18.0<br>[0.71] | 22.0<br>[0.87] | 23.4<br>[0.92] | 25.8<br>[1.02] | 1586585-8         | 1586586-8           | 1586587-8         | 1586588-8           |
| 10          | 16.8<br>[0.66] | 22.2<br>[0.87] | 26.2<br>[1.03] | 27.6<br>[1.09] | 30.0<br>[1.18] | 1-1586585-0       | 1-1586586-0         | 1-1586587-0       | 1-1586588-0         |
| 12          | 21.0<br>[0.83] | 26.4<br>[1.04] | 30.4<br>[1.20] | 31.8<br>[1.25] | 34.2<br>[1.35] | 1-1586585-2       | 1-1586586-2         | 1-1586587-2       | 1-1586588-2         |
| 14          | 25.2<br>[0.99] | 30.6<br>[1.20] | 34.6<br>[1.36] | 36.0<br>[1.42] | 38.4<br>[1.51] | 1-1586585-4       | 1-1586586-4         | 1-1586587-4       | 1-1586588-4         |
| 16          | 29.4<br>[1.58] | 34.8<br>[1.37] | 38.8<br>[1.53] | 40.2<br>[1.58] | 42.6<br>[1.69] | 1-1586585-6       | 1-1586586-6         | 1-1586587-6       | 1-1586588-6         |
| 18          | 33.6<br>[1.32] | 39.0<br>[1.54] | 43.0<br>[1.69] | 44.4<br>[1.75] | 46.8<br>[1.84] | 1-1586585-8       | 1-1586586-8         | 1-1586587-8       | 1-1586588-8         |
| 20          | 37.8<br>[1.49] | 43.2<br>[1.70] | 47.2<br>[1.86] | 48.6<br>[1.91] | 51.0<br>[2.01] | 2-1586585-0       | 2-1586586-0         | 2-1586587-0       | 2-1586588-0         |
| 22          | 42.0<br>[1.65] | 47.4<br>[1.87] | 51.4<br>[2.02] | 52.0<br>[2.08] | 55.2<br>[2.17] | 2-1586585-2       | 2-1586586-2         | 2-1586587-2       | 2-1586588-2         |
| 24          | 46.2<br>[1.82] | 51.6<br>[2.03] | 55.6<br>[2.19] | 57.0<br>[2.24] | 59.4<br>[2.32] | 2-1586585-4       | 2-1586586-4         | 2-1586587-4       | 2-1586588-4         |

Note: All part numbers are RoHS Compliant.



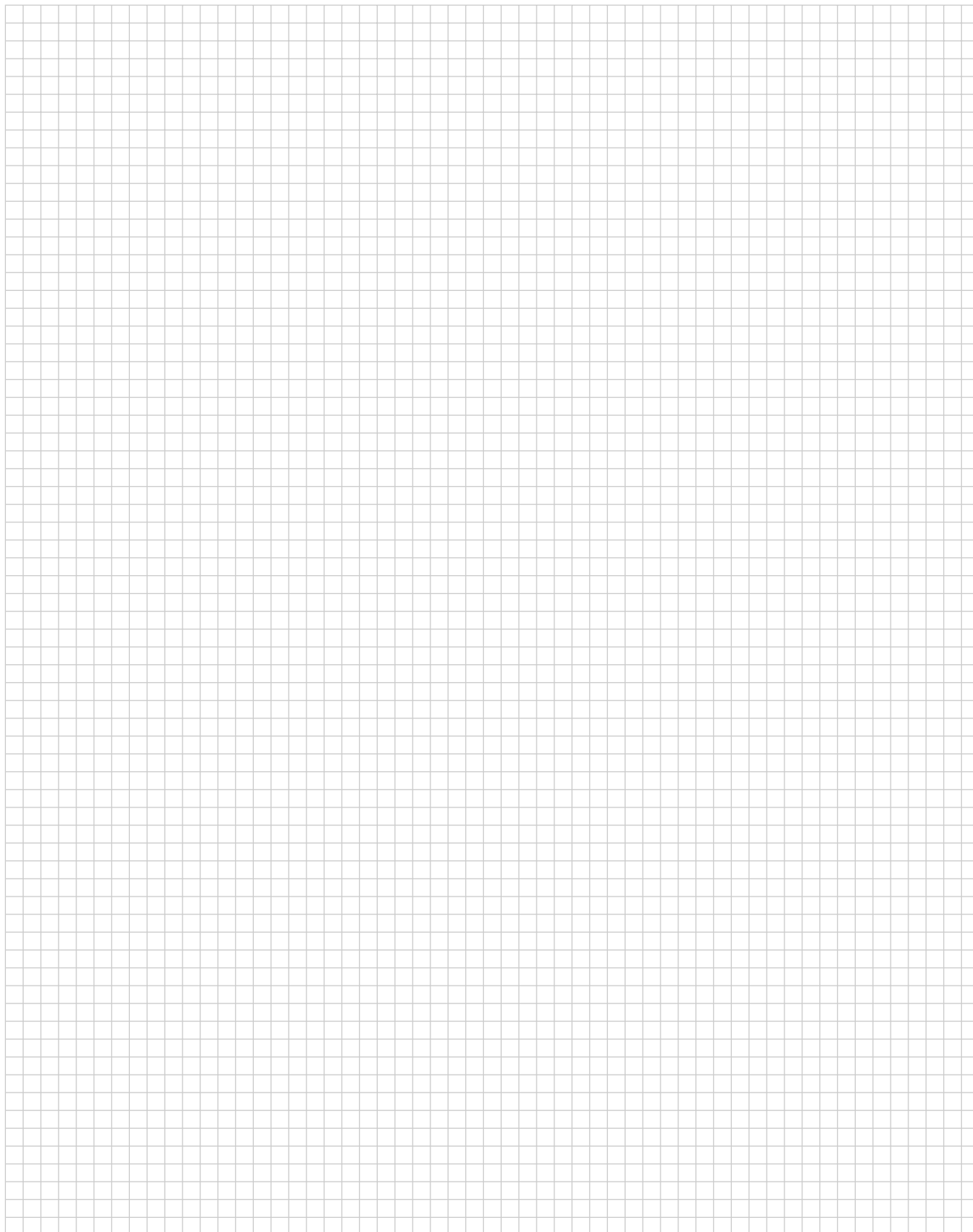
High Density

4.2 mm PE Series Connector System  
.165 [4.20] Centerline

---

**Engineering Notes**

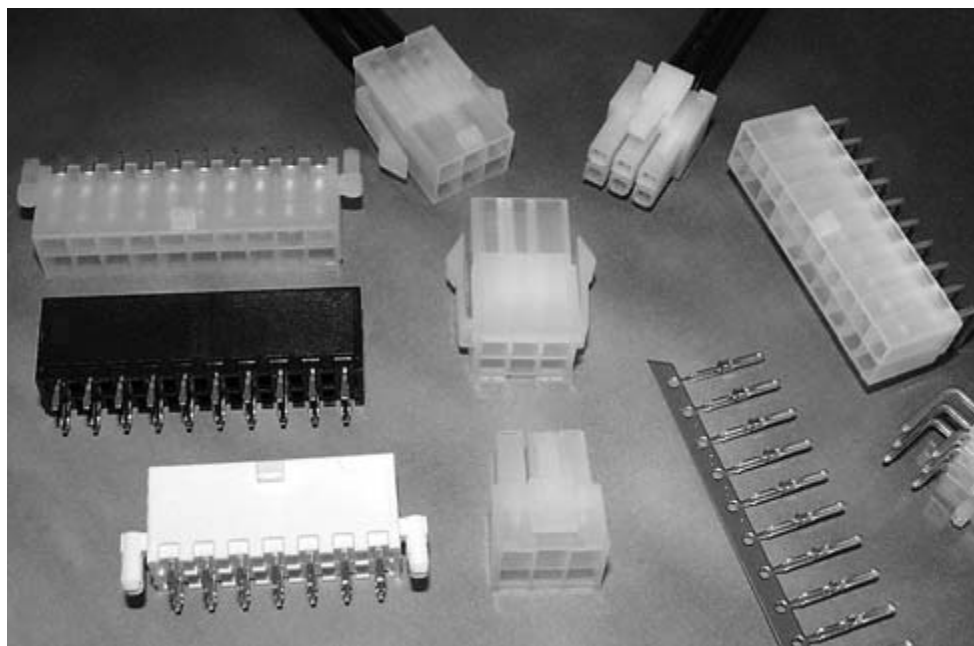
---



## AMP-DUAC Connectors

### Product Facts

- Wire-to-board and wire-to-wire connector system
- Free-hanging or panel mount plug housings
- Vertical header with or without mounting pegs and with or without drain holes
- Selective loading available on vertical headers
- 4.2 mm x 4.2 mm centerline
- Male and female contacts designed for 26-22 AWG and 22-18 AWG wire
- Receptacle housings accept female contacts with less orientation than competitive product
- Right-angle headers
- Designed for power applications
- Positive latch feature helps prevent disconnection
- AMP-DUAC (dual action) receptacle contacts
- Anti-stubbing contact design
- Polarized housings
- Intermateable with Molex Mini-Fit Jr. connectors
- Recognized under Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR7189



AMP-DUAC Connectors, for power or signal applications, belong to the broad family of Tyco Electronics Soft Shell connectors.

The dual action design of the female receptacle contact provides for low insertion force, yet maintains high-performance current capacity. To help meet your production requirements, semiautomatic bench machines and hand tools are available for strip and loose piece contacts, respectively.

High density, 4.2 mm x 4.2 mm [.165 x .165] centerline, dual-row receptacle housings mate with plug housings (free-hanging or panel mount) or pc board headers (vertical or right-angle). Selective contact loading is available for vertical headers.

All housings are polarized for easier mating and locking latches help maintain reliable connections.

AMP-DUAC wire-to-board, wire-to-panel, and wire-to-wire connectors are intermateable with Molex Mini-Fit Jr. series connectors.

### Technical Documents

**Product Specifications**  
108-1699—Headers  
108-19099—Receptacles  
**Application Specification**  
114-19048—Use of Receptacles  
**Qualification Test Report**  
501-434  
501-576

### Performance Data

**Voltage Rating**—600 VAC  
**Current Rating**—9 amps maximum in 2 position applications  
**Low Level Resistance**—10 megohms max.  
**Dielectric Withstanding Voltage**—1500 VAC/min.  
**Insulation Resistance**—1000 megohms minimum  
**Operating Temperature**—-55°C to +105°C [-67°F to +221°F]

### Need more information?

Call Technical Support.

Technical Support is staffed with specialists well versed in Tyco Electronics products. They can provide you with:

- Technical support
- Catalogs
- Technical Documents
- Product Samples
- Tyco Electronics Authorized Distributor Locations

## AMP-DUAC Connectors (Continued)

### Receptacle Housings

### 2-24 Position Housings

Accept female contacts.

#### Material

**Housings**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

#### Related Product Data

**Mate with**—Vertical headers (pages 122-127), right-angle headers (page 122) and plug housings (page 121).

**Contacts**—See below.

**Strain Relief**—See below and page 121.

**Technical Documents**—pages 119 and 199-200

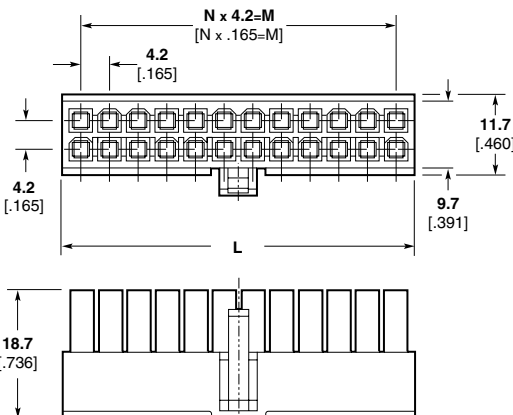


### Strain Relief, 6 Position Part Number 1375618-1

Used with plug or receptacle housings.

**Wire Bundle Range**—4.19-5.59  
[.165-.220]

**Material**—Nylon,  
UL 94V-2, Natural color



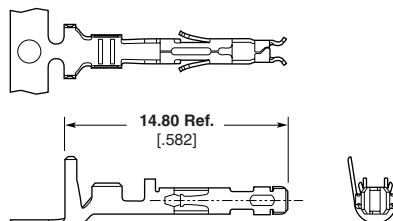
| Number of Positions | Dimensions    |               |    | Part Number      |                |
|---------------------|---------------|---------------|----|------------------|----------------|
|                     | L             | M             | N  | UL 94V-2 Natural | UL 94V-0 White |
| 2                   | 5.5<br>.216   | —             | 1  | 106527-2         | 794657-2       |
| 4                   | 9.7<br>.381   | 4.2<br>.165   | 1  | 106527-4         | 794657-4       |
| 6                   | 13.9<br>.547  | 8.4<br>.330   | 2  | 106527-6         | 794657-6       |
| 8                   | 18.1<br>.712  | 12.6<br>.496  | 3  | 106527-8         | 794657-8       |
| 10                  | 22.3<br>.877  | 16.8<br>.661  | 4  | 1-106527-0       | 1-794657-0     |
| 12                  | 26.5<br>1.043 | 21.0<br>.826  | 5  | 1-106527-2       | 1-794657-2     |
| 14                  | 30.7<br>1.208 | 25.2<br>.992  | 6  | 1-106527-4       | 1-794657-4     |
| 16                  | 34.9<br>1.374 | 29.4<br>1.157 | 7  | 1-106527-6       | 1-794657-6     |
| 18                  | 39.1<br>1.539 | 33.6<br>1.322 | 8  | 1-106527-8       | 1-794657-8     |
| 20                  | 43.3<br>1.704 | 37.8<br>1.488 | 9  | 2-106527-0       | 2-794657-0     |
| 22                  | 47.5<br>1.870 | 42.0<br>1.653 | 10 | 2-106527-2       | 2-794657-2     |
| 24                  | 51.7<br>2.035 | 46.2<br>1.818 | 11 | 2-106527-4       | 2-794657-4     |

### Female Contacts

Used in receptacle housings.

**Material**—Phos. Bronze

**Application Tooling**—See chart and pages 201-204



#### Technical Documents

##### Product Specifications

108-1699 AMP-DUAC Header  
108-19099 AMP-DUAC Receptacle

##### Application Specification

114-19048 AMP-DUAC Receptacle Contact

| Wire Size Range<br>AWG [mm <sup>2</sup> ] | Ins. Dia. Range        | Plating | Part Number |             | Applicator Part Number           |                                          |                                   |
|-------------------------------------------|------------------------|---------|-------------|-------------|----------------------------------|------------------------------------------|-----------------------------------|
|                                           |                        |         | Strip Form  | Loose Piece | for AMP-O-ELECTRIC Bench Machine | for AMP-O-MATIC Stripper/Crimper Machine | CERTI-CRIMP Hand Tool Part Number |
| 22-18<br>[.3-.8]                          | 1.5-2.4<br>.059-.094   | Tin     | 106529-2    | 1-106529-2  | 680308-□*                        | 567959-1                                 | 734202-2                          |
|                                           |                        | Gold    | 1-794138-3  | 1-794141-3  |                                  |                                          |                                   |
| 26-22<br>[.12-.3]                         | 1.3-1.75<br>.047-.069  | Tin     | 106528-2    | 1-106528-2  | 680307-□*                        | 567960-1                                 | —                                 |
|                                           |                        | Gold    | 1-794139-3  | 1-794142-3  |                                  |                                          |                                   |
| 2@18<br>[.8]                              | 3.3 Total Max.<br>.130 | Tin     | 794418-1    | 794421-1    | 680350-□*                        | —                                        | 90714-1                           |
|                                           |                        | Gold    | 1-794140-3  | 1-794143-3  |                                  |                                          |                                   |

Extraction Tool Part Number 188688-1

\*Part Number suffix "-2" indicates Applicator for Model K Machine and "-3" for Model G Machine.

**Note:** All part numbers are RoHS Compliant.

## AMP-DUAC Connectors (Continued)

### Plug Housings

#### 2-24 Position Housings

Accept male contacts.

#### Material

**Housings**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

#### Related Product Data

**Mate with**—Receptacle housings  
(page 120)

**Contacts**—See below.

**Strain Relief**—See below.

**Technical Documents**—pages 119  
and 199-200

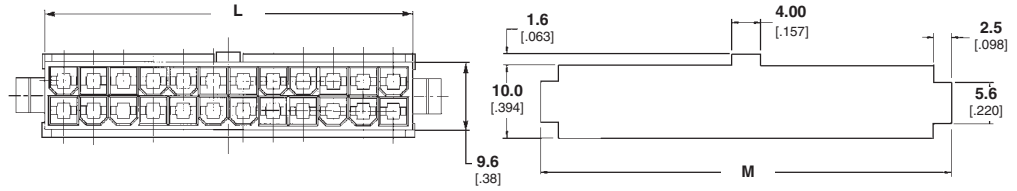


#### Strain Relief, 6 Position Part Number 1375618-1

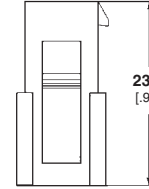
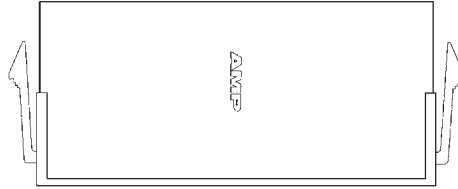
Used with plug or receptacle housings.

**Wire Bundle Range**—4.19-5.59  
[.165-.220]

**Material**—Nylon,  
UL 94V-2, Natural color



**Recommended Cutout  
for 2.00 [.079] Max. Thick Panel**



| Number of<br>Positions | Dimensions    |               | Part Number       |             |                 |             |
|------------------------|---------------|---------------|-------------------|-------------|-----------------|-------------|
|                        |               |               | UL 94V-2, Natural |             | UL 94V-0, White |             |
|                        | L             | M             | Free-Hanging      | Panel Mount | Free-Hanging    | Panel Mount |
| 2                      | 5.4<br>.213   | 10.8<br>.425  | 794542-2          | 794550-2    | *794594-2       | *794598-2   |
| 4                      | 9.6<br>.378   | 15.0<br>.591  | 794542-4          | 794550-4    | *794594-4       | *794598-4   |
| 6                      | 13.8<br>.543  | 19.2<br>.756  | 794542-6          | 794550-6    | *794594-6       | *794598-6   |
| 8                      | 18.0<br>.709  | 23.4<br>.921  | 794542-8          | 794550-8    | *794594-8       | *794598-8   |
| 10                     | 22.2<br>.874  | 27.6<br>1.087 | 1-794542-0        | 1-794550-0  | *1-794594-0     | *1-794598-0 |
| 12                     | 26.4<br>1.039 | 31.8<br>1.252 | 1-794542-2        | 1-794550-2  | *1-794594-2     | *1-794598-2 |
| 14                     | 30.6<br>.205  | 36.0<br>1.417 | 1-794542-4        | 1-794550-4  | *1-794594-4     | *1-794598-4 |
| 16                     | 34.8<br>1.370 | 40.2<br>1.583 | 1-794542-6        | 1-794550-6  | *1-794594-6     | *1-794598-6 |
| 18                     | 39.0<br>1.535 | 44.4<br>1.748 | 1-794542-8        | 1-794550-8  | *1-794594-8     | *1-794598-8 |
| 20                     | 43.2<br>1.701 | 48.6<br>1.913 | 2-794542-0        | 2-794550-0  | *2-794594-0     | *2-794598-0 |
| 22                     | 47.4<br>1.866 | 52.8<br>2.079 | 2-794542-2        | 2-794550-2  | *2-794594-2     | *2-794598-2 |
| 24                     | 51.6<br>2.032 | 57.0<br>2.244 | 2-794542-4        | 2-794550-4  | *2-794594-4     | *2-794598-4 |

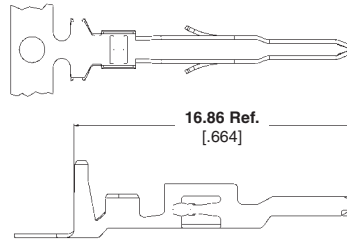
\*Call for availability.

### Male Contacts

Used in plug housings.

**Material**—Phos. Bronze

**Application Tooling**—See chart and  
pages 201-204



| Wire Size<br>Range<br>AWG [mm <sup>2</sup> ] | Ins. Dia.<br>Range    | Plating     | Part Number          |               | Applicator Part Number                |                                                |                                         |
|----------------------------------------------|-----------------------|-------------|----------------------|---------------|---------------------------------------|------------------------------------------------|-----------------------------------------|
|                                              |                       |             | Strip Form           | Loose Piece   | for<br>AMP-O-LECTRIC<br>Bench Machine | for AMP-O-MATIC<br>Stripper/Crimper<br>Machine | CERTI-CRIMP<br>Hand Tool<br>Part Number |
| 22-18<br>[.3-.8]                             | 1.5-2.4<br>.059-.094  | Tin<br>Gold | 794576-1<br>794576-4 | 794577-1<br>— | 680308-□*                             | 567959-1                                       | 734202-2                                |
| 26-22<br>[.12-.3]                            | 1.3-1.75<br>.047-.069 | Tin<br>Gold | 794578-1<br>794578-4 | 794579-1<br>— | 680307-□*                             | 567960-1                                       | —                                       |

\*Part Number suffix "-2" indicates Applicator for Model K Machine and "-3" for Model G Machine.

**Note:** All part numbers are RoHS Compliant.

## AMP-DUAC Connectors (Continued)

### Vertical Header Assemblies

#### 2, 4 and 6 Position, with and without Pegs and with and without Drain Holes

##### Material and Finish

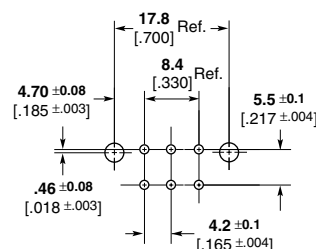
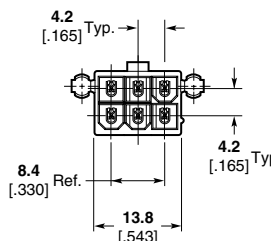
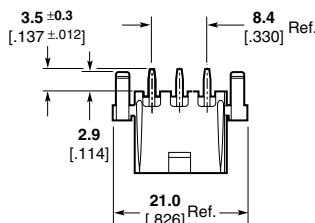
**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

##### Related Product Data

**Mate with**—Receptacle housings (page 120).

**Technical Documents**—pages 119 and 199-200



Recommended PC Board Layout

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 2                   | N        | N           | Tin     | 1586491-2         | 1586495-2       |
|                     | N        | N           | 30 Gold | 1586492-2         | 1586496-2       |
|                     | Y        | N           | Tin     | 1586489-2         | 1586493-2       |
|                     | Y        | N           | 30 Gold | 1586490-2         | 1586494-2       |
|                     | N        | Y           | Tin     | 1-794349-1        | 1-794543-1      |
|                     | N        | Y           | 30 Gold | 1-794349-2        | 1-794543-2      |
|                     | Y        | Y           | Tin     | 1-794302-1        | 1-794540-1      |
|                     | Y        | Y           | 30 Gold | 1-794302-2        | 1-794540-2      |
| 4                   | Y        | N           | Tin     | 1586489-4         | 1586493-4       |
|                     | Y        | N           | 30 Gold | 1586490-4         | 1586494-4       |
|                     | N        | N           | Tin     | 1586491-4         | 1586495-4       |
|                     | N        | N           | 30 Gold | 1586492-4         | 1586496-4       |
|                     | Y        | Y           | Tin     | 1-794303-1        | 1-794466-1      |
|                     | Y        | Y           | 30 Gold | 1-794303-2        | 1-794466-2      |
|                     | N        | Y           | Tin     | 1-794350-1        | 1-794484-1      |
|                     | N        | Y           | 30 Gold | 1-794350-2        | 1-794484-2      |
| 6                   | Y        | Y           | Tin     | 1-794304-1        | 1-794467-1      |
|                     | Y        | Y           | 30 Gold | 1-794304-2        | 1-794467-2      |
|                     | N        | Y           | Tin     | 1-794351-1        | 1-794485-1      |
|                     | N        | Y           | 30 Gold | 1-794351-2        | 1-794485-2      |
|                     | Y        | N           | Tin     | 1586489-6         | 1586493-6       |
|                     | Y        | N           | 30 Gold | 1586490-6         | 1586494-6       |
|                     | N        | N           | Tin     | 1586491-6         | 1586495-6       |
|                     | N        | N           | 30 Gold | 1586492-6         | 1586496-6       |

**Note:** All part numbers are RoHS Compliant.

## AMP-DUAC Connectors (Continued)

### Vertical Header Assemblies

(Continued)

#### 8 and 10 Position, with and without Pegs and with and without Drain Holes

#### Material and Finish

**Housing**—Nylon

UL 94V-2, Natural color

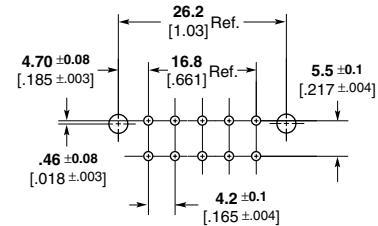
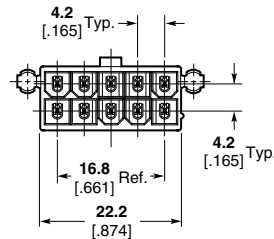
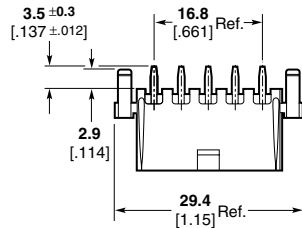
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

#### Related Product Data

**Mate with**—Receptacle housings (page 120).

**Technical Documents**—pages 119 and 199-200



Recommended PC Board Layout

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 8                   | Y        | N           | Tin     | 1586489-8         | 1586493-8       |
|                     | Y        | N           | 30 Gold | 1586490-8         | 1586494-8       |
|                     | N        | N           | Tin     | 1586491-8         | 1586495-8       |
|                     | N        | N           | 30 Gold | 1586492-8         | 1586496-8       |
|                     | Y        | Y           | Tin     | 1-794305-1        | 1-794468-1      |
|                     | Y        | Y           | 30 Gold | 1-794305-2        | 1-794468-2      |
|                     | N        | Y           | Tin     | 1-794352-1        | 1-794486-1      |
|                     | N        | Y           | 30 Gold | 1-794352-2        | 1-794486-2      |
| 10                  | Y        | N           | Tin     | 1-1586489-0       | 1-1586493-0     |
|                     | Y        | N           | 30 Gold | 1-1586490-0       | 1-1586494-0     |
|                     | N        | N           | Tin     | 1-1586491-0       | 1-1586495-0     |
|                     | N        | N           | 30 Gold | 1-1586492-0       | 1-1586496-0     |
|                     | Y        | Y           | Tin     | 1-794306-1        | 1-794469-1      |
|                     | Y        | Y           | 30 Gold | 1-794306-2        | 1-794469-2      |
|                     | N        | Y           | Tin     | 1-794353-1        | 1-794487-1      |
|                     | N        | Y           | 30 Gold | 1-794353-2        | 1-794487-2      |

**Note:** All part numbers are RoHS Compliant.

High Density

AMP-DUAC Connectors  
.165 [.420] Centerline

## AMP-DUAC Connectors (Continued)

### Vertical Header Assemblies (Continued)

#### 12 Position, with and without Pegs and with and without Drain Holes

#### Material and Finish

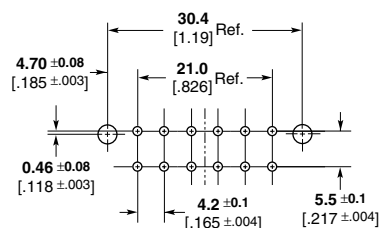
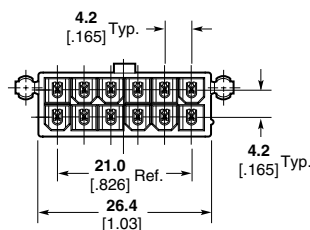
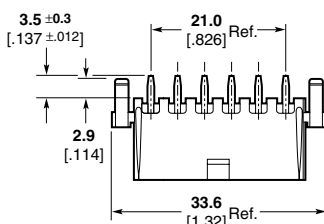
**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

#### Related Product Data

**Mate with**—Receptacle housings  
(page 120).

**Technical Documents**—pages 119  
and 199-200



Recommended PC Board Layout

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 12                  | Y        | N           | Tin     | 1-1586489-2       | 1-1586493-2     |
|                     | Y        | N           | 30 Gold | 1-1586490-2       | 1-1586494-2     |
|                     | N        | N           | Tin     | 1-1586491-2       | 1-1586495-2     |
|                     | N        | N           | 30 Gold | 1-1586492-2       | 1-1586496-2     |
|                     | Y        | Y           | Tin     | 1-794307-1        | 1-794470-1      |
|                     | Y        | Y           | 30 Gold | 1-794307-2        | 1-794470-2      |
|                     | N        | Y           | Tin     | 1-794354-1        | 1-794488-1      |
|                     | N        | Y           | 30 Gold | 1-794354-2        | 1-794488-2      |

#### 14 Position, with and without Pegs and with and without Drain Holes

#### Material and Finish

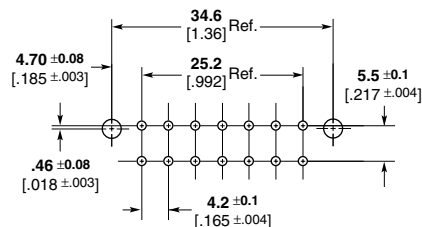
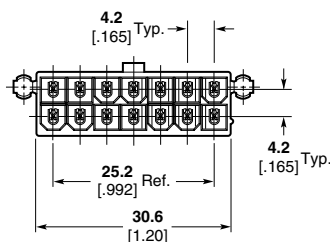
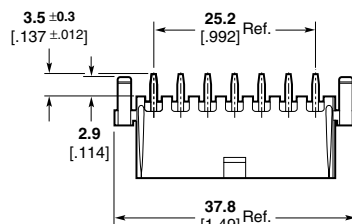
**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

#### Related Product Data

**Mate with**—Receptacle housings  
(page 120).

**Technical Documents**—pages 119  
and 199-200



Recommended PC Board Layout

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 14                  | Y        | N           | Tin     | 1-1586489-4       | 1-1586493-4     |
|                     | Y        | N           | 30 Gold | 1-1586490-4       | 1-1586494-4     |
|                     | N        | N           | Tin     | 1-1586491-4       | 1-1586495-4     |
|                     | N        | N           | 30 Gold | 1-1586492-4       | 1-1586496-4     |
|                     | Y        | Y           | Tin     | 1-794308-1        | 1-794453-1      |
|                     | Y        | Y           | 30 Gold | 1-794308-2        | 1-794453-2      |
|                     | N        | Y           | Tin     | 1-794355-1        | 1-794489-1      |
|                     | N        | Y           | 30 Gold | 1-794355-2        | 1-794489-2      |

**Note:** All part numbers are RoHS Compliant.

## AMP-DUAC Connectors (Continued)

### Vertical Header Assemblies (Continued)

#### 16 Position, with and without Pegs and with and without Drain Holes

##### Material and Finish

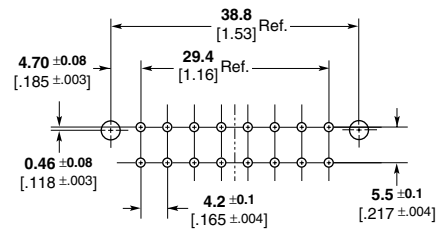
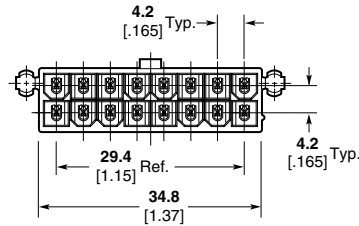
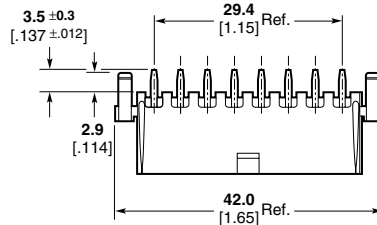
**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

##### Related Product Data

**Mate with**—Receptacle housings  
(page 120).

**Technical Documents**—pages 119  
and 199-200



Recommended PC Board Layout

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 16                  | Y        | N           | Tin     | 1-1586489-6       | 1-1586493-6     |
|                     | Y        | N           | 30 Gold | 1-1586490-6       | 1-1586494-6     |
|                     | N        | N           | Tin     | 1-1586491-6       | 1-1586495-6     |
|                     | N        | N           | 30 Gold | 1-1586492-6       | 1-1586496-6     |
|                     | Y        | Y           | Tin     | 1-794309-1        | 1-794429-1      |
|                     | Y        | Y           | 30 Gold | 1-794309-2        | 1-794429-2      |
|                     | N        | Y           | Tin     | 1-794356-1        | 1-794490-1      |
|                     | N        | Y           | 30 Gold | 1-794356-2        | 1-794490-2      |

#### 18 Position, with and without Pegs and with and without Drain Holes

##### Material and Finish

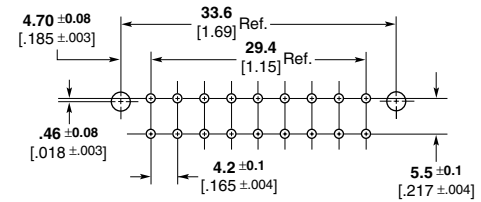
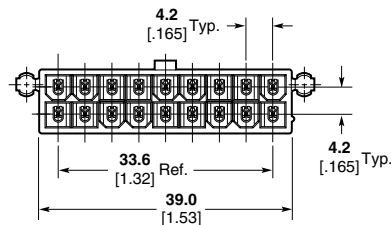
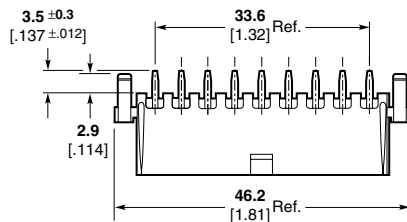
**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

##### Related Product Data

**Mate with**—Receptacle housings  
(page 120).

**Technical Documents**—pages 119  
and 199-200



Recommended PC Board Layout

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 18                  | Y        | N           | Tin     | 1-1586489-8       | 1-1586493-8     |
|                     | Y        | N           | 30 Gold | 1-1586490-8       | 1-1586494-8     |
|                     | N        | N           | Tin     | 1-1586491-8       | 1-1586495-8     |
|                     | N        | N           | 30 Gold | 1-1586492-8       | 1-1586496-8     |
|                     | Y        | Y           | Tin     | 1-794310-1        | 1-794454-1      |
|                     | Y        | Y           | 30 Gold | 1-794310-2        | 1-794454-2      |
|                     | N        | Y           | Tin     | 1-794357-1        | 1-794491-1      |
|                     | N        | Y           | 30 Gold | 1-794357-2        | 1-794491-2      |

**Note:** All part numbers are RoHS Compliant.

## AMP-DUAC Connectors (Continued)

### Vertical Header Assemblies (Continued)

#### 20 Position, with and without Pegs and with and without Drain Holes

#### Material and Finish

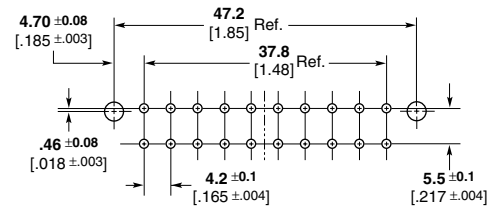
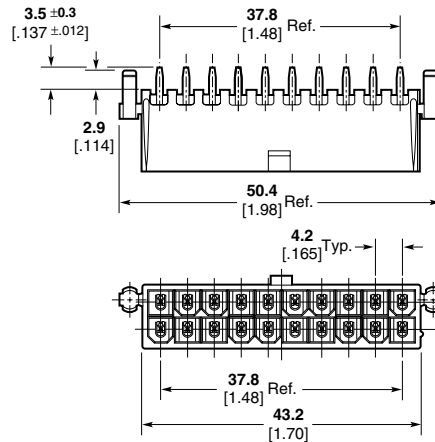
**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

#### Related Product Data

**Mate with**—Receptacle housings  
(page 120).

**Technical Documents**—pages 119  
and 199-200



Recommended PC Board Layout

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 20                  | Y        | N           | Tin     | 2-1586489-0       | 2-1586493-0     |
|                     | Y        | N           | 30 Gold | 2-1586490-0       | 2-1586494-0     |
|                     | N        | N           | Tin     | 2-1586491-0       | 2-1586495-0     |
|                     | N        | N           | 30 Gold | 2-1586492-0       | 2-1586496-0     |
|                     | Y        | Y           | Tin     | 1-794311-1        | 1-794455-1      |
|                     | Y        | Y           | 30 Gold | 1-794311-2        | 1-794455-2      |
|                     | N        | Y           | Tin     | 1-794358-1        | 1-794492-1      |
|                     | N        | Y           | 30 Gold | 1-794358-2        | 1-794492-2      |

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number     |
|---------------------|----------|-------------|---------|-----------------|
|                     |          |             |         | UL 94V-0, Black |
| 20                  | N        | N           | Tin     | 1-794415-1      |
|                     | N        | N           | 30 Gold | 1-794415-2      |

### High Temperature Headers

IR Reflow compatible, UL 94V-0,  
Black color

#### 22 Position, with and without Pegs and with and without Drain Holes

#### Material and Finish

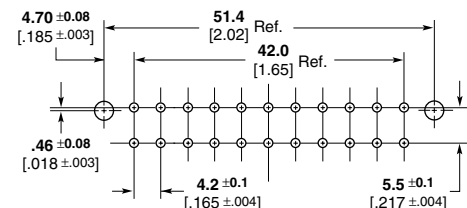
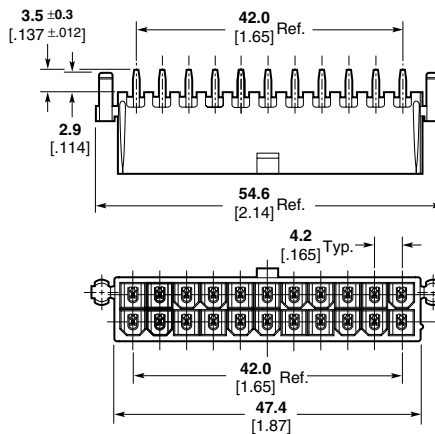
**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

#### Related Product Data

**Mate with**—Receptacle housings  
(page 120).

**Technical Documents**—pages 119  
and 199-200



Recommended PC Board Layout

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 22                  | Y        | N           | Tin     | 2-1586489-2       | 2-1586493-2     |
|                     | Y        | N           | 30 Gold | 2-1586490-2       | 2-1586494-2     |
|                     | N        | N           | Tin     | 2-1586491-2       | 2-1586495-2     |
|                     | N        | N           | 30 Gold | 2-1586492-2       | 2-1586496-2     |
|                     | Y        | Y           | Tin     | 1-794312-1        | 1-794471-1      |
|                     | Y        | Y           | 30 Gold | 1-794312-2        | 1-794471-2      |
|                     | N        | Y           | Tin     | 1-794359-1        | 1-794493-1      |
|                     | N        | Y           | 30 Gold | 1-794359-2        | 1-794493-2      |

**Note:** All part numbers are RoHS Compliant.

## AMP-DUAC Connectors (Continued)

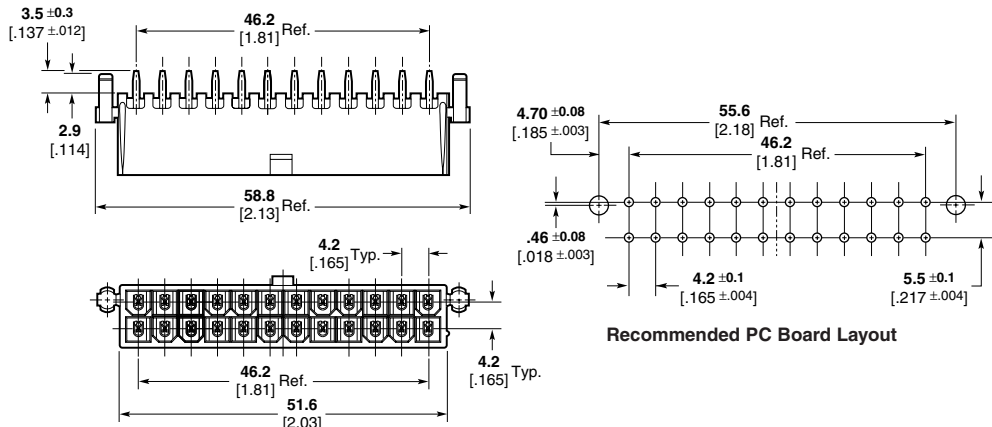
### Vertical Header Assemblies (Continued)

#### 24 Position, with and without Pegs and with and without Drain Holes

#### Material and Finish

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy



#### Related Product Data

**Mate with**—Receptacle housings  
(page 120).

**Technical Documents**—pages 119  
and 199-200

| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 24                  | Y        | N           | Tin     | 2-1586489-4       | 2-1586493-4     |
|                     | Y        | N           | 30 Gold | 2-1586490-4       | 2-1586494-4     |
|                     | N        | N           | Tin     | 2-1586491-4       | 2-1586495-4     |
|                     | N        | N           | 30 Gold | 2-1586492-4       | 2-1586496-4     |
|                     | Y        | Y           | Tin     | 794313-3          | 1-794472-1      |
|                     | Y        | Y           | 30 Gold | 794313-4          | 1-794472-2      |
|                     | N        | Y           | Tin     | 1-794360-1        | 1-794494-1      |
|                     | N        | Y           | 30 Gold | 1-794360-2        | 1-794494-2      |

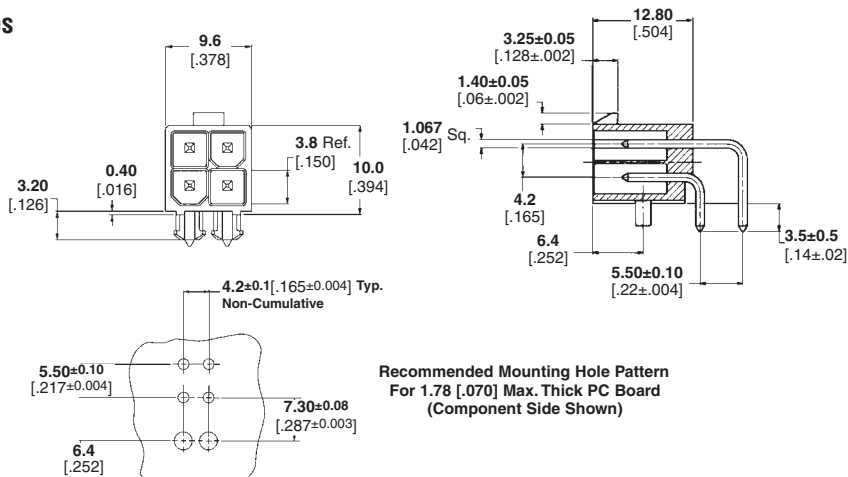
### Right-Angle Header Assemblies

#### 2-24 Position, with Pegs and without Drain Holes

#### Material and Finish

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—Copper alloy



Recommended Mounting Hole Pattern  
For 1.78 [.070] Max. Thick PC Board  
(Component Side Shown)

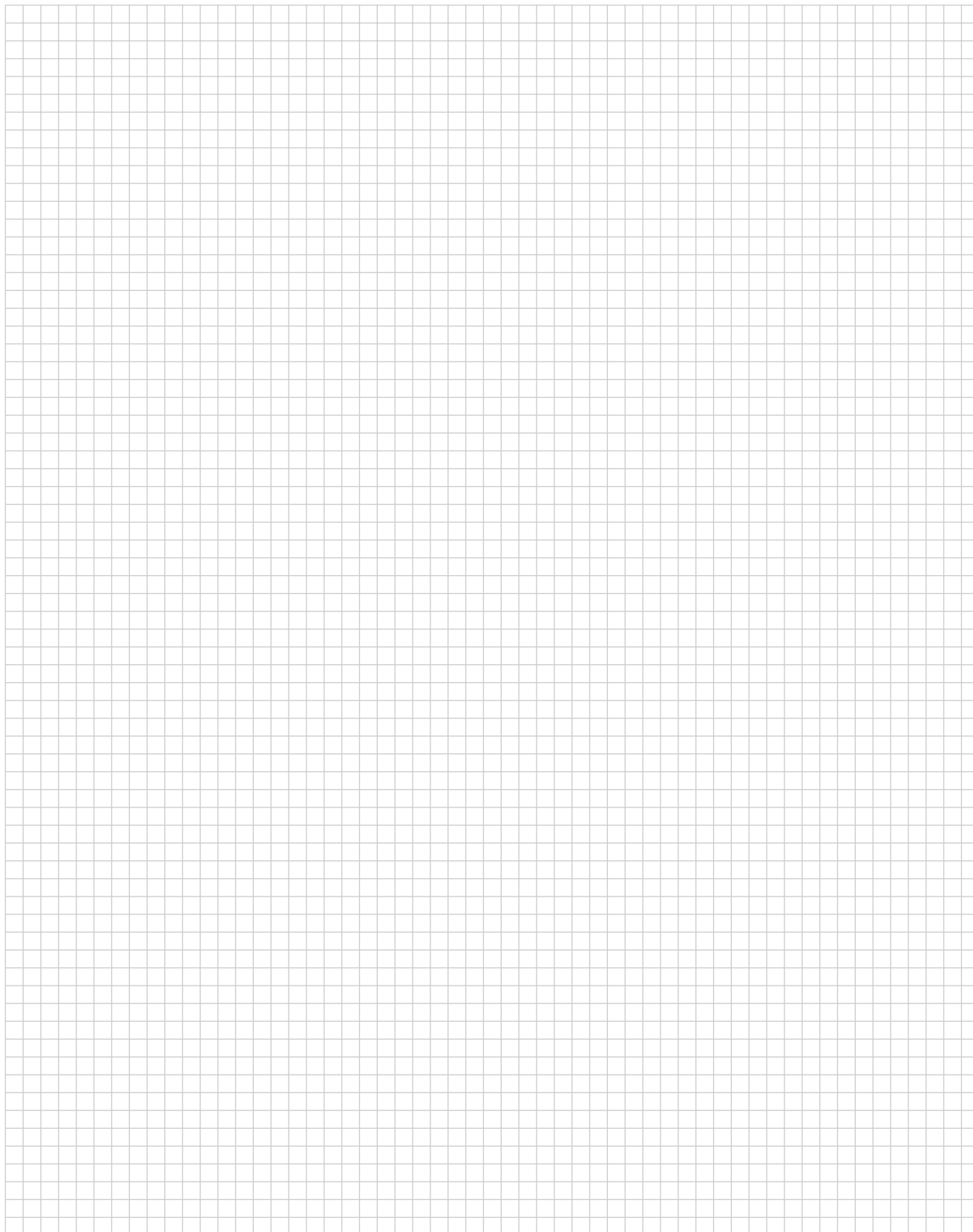
| Number of Positions | PCB Pegs | Drain Holes | Plating | Part Number       |                 |
|---------------------|----------|-------------|---------|-------------------|-----------------|
|                     |          |             |         | UL 94V-2, Natural | UL 94V-0, White |
| 2                   | Y        | N           | Tin     | 1-794507-1        | 1-794526-1      |
| 4                   | Y        | N           | Tin     | 1-794508-1        | 1-794527-1      |
| 6                   | Y        | N           | Tin     | 1-794448-1        | 1-794528-1      |
| 8                   | Y        | N           | Tin     | 1-794509-1        | 1-794529-1      |
| 10                  | Y        | N           | Tin     | 1-794510-1        | 1-794530-1      |
| 12                  | Y        | N           | Tin     | 1-794511-1        | 1-794531-1      |
| 14                  | Y        | N           | Tin     | 1-794512-1        | 1-794532-1      |
| 16                  | Y        | N           | Tin     | 1-794513-1        | 1-794533-1      |
| 18                  | Y        | N           | Tin     | 1-794514-1        | 1-794588-1      |
| 20                  | Y        | N           | Tin     | 1-794449-1        | 1-794534-1      |
| 22                  | Y        | N           | Tin     | 1-794515-1        | 1-794589-1      |
| 24                  | Y        | N           | Tin     | 1-794516-1        | 1-794590-1      |

**Note:** All part numbers are RoHS Compliant.

---

**Engineering Notes**

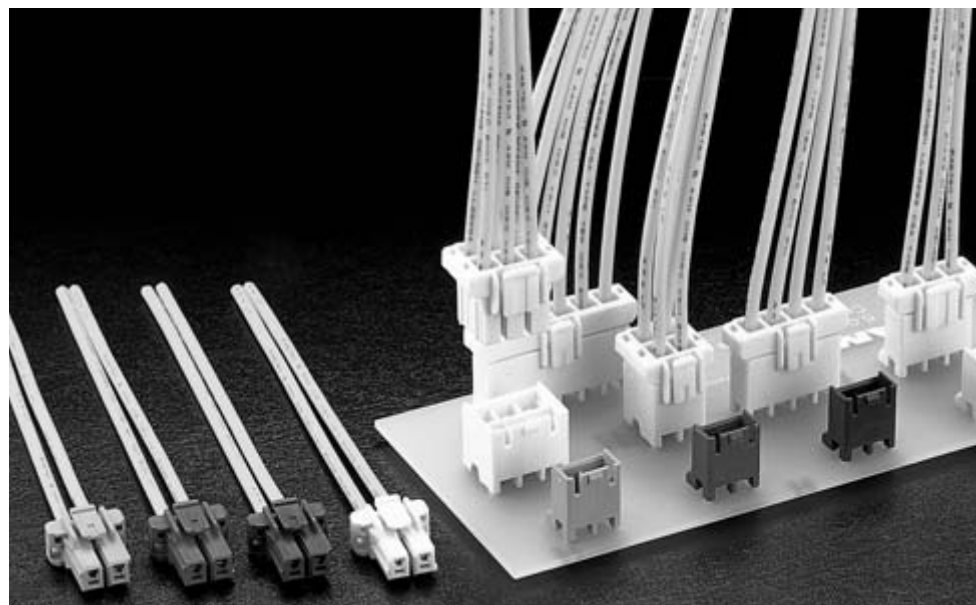
---



## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)

### Product Facts

- Compact design with 19.4 mm mated height
- Power circuit connector with 5.0 mm contact centerline
- Wire-to-board connectors consisting of plug housings for wires and PCB header assemblies
- With a clear clicking sound, contact insertions can be made easier. The double lock plate provides for complete loading of contacts
- Locking levers are surrounded by walls, which protect levers and prevent tangling with wires
- Connector is designed to release bubbles created by the process of potting (PC board coating)
- Housing lances also help prevent tangling of wired contacts
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR7189 



5.0 mm Power Key Connectors are for power circuits of home appliances, especially targeting gas appliances. The connector features four kinds of keying per housing.

Only color-coding of housings limited the efficiency of blind mating where you could not see connectors. However, the new keying mechanism not only improves assembly efficiency but also helps prevent mismatching.

Part numbers involved can be reduced so that purchasing and stock level control can be made simpler.

### Performance Characteristics

**Voltage Rating**—300 VAC<sup>1</sup>

**Current Rating**—10A max.<sup>2</sup>

**Operating Temperature**—  
-30°C ~ +105°C

**Applicable Wire**—24-16 AWG

**Applicable PC Board Thickness**—  
1.6 mm

<sup>1</sup> Excludes header type round space. Usable for 150 VAC applications when the round dimensions are 3 mm or less.

<sup>2</sup> Specified values vary according to the number of contacts and the wire used. The 10 A maximum value applies to 16 AWG wire used with 2 contacts.

### Technical Documents

**Product Specification**

108-5699

**Application Specification**

114-5292

Standard Density

5.0 mm Power Key Connectors  
.197 [5.00] Centerline

## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

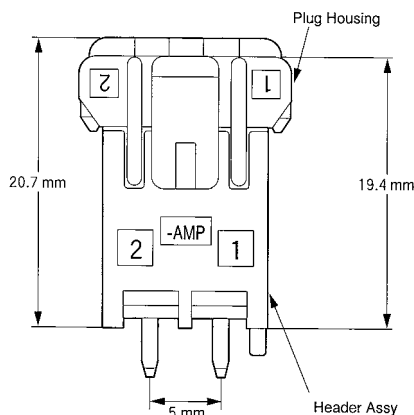
### Quick Reference Chart for Mating Part Numbers

| No. of Pos. | Plug Housing         |             | Applicable<br>Double Lock Plate<br>Part Number | Mating Header Assy. |             |
|-------------|----------------------|-------------|------------------------------------------------|---------------------|-------------|
|             | Type of Keying/Color | Part Number |                                                | Part Number         |             |
| 2           | Type A/Natural       | 1376388-1   | 1376394-1                                      | 1376382-1           |             |
|             | Type B/Red           | 1-1376388-2 | 1376394-1                                      | 1-1376382-2         |             |
|             | Type C/Blue          | 2-1376388-3 | 1376294-1                                      | 2-1376382-3         |             |
|             | Type D/Yellow        | 3-1376388-4 | 1376394-1                                      | 3-1376382-4         |             |
| 3           | Type A/Natural       | 1376389-1   | 1376395-1                                      | 1376383-1           | 1376421-1   |
|             | Type B/Red           | 1-1376389-2 | 1376395-1                                      | 1-1376383-2         | 1-1376421-2 |
|             | Type C/Blue          | 2-1376389-3 | 1376395-1                                      | 2-1376383-3         | 2-1376421-3 |
|             | Type D/Yellow        | 3-1376389-4 | 1376395-1                                      | 3-1376383-4         | 3-1376421-4 |
| 4           | Type A/Natural       | 1376390-1   | 1376396-1                                      | 1376384-1           |             |
|             | Type B/Red           | 1-1376390-2 | 1376396-1                                      | 1-1376384-2         |             |
|             | Type C/Blue          | 2-1376390-3 | 1376396-1                                      | 2-1376384-3         |             |
|             | Type D/Yellow        | 3-1376390-4 | 1376396-1                                      | 3-1376384-4         |             |
| 6           | Type A/Natural       | 1376391-1   | 1376397-1                                      | 1376385-1           |             |
|             | Type B/Red           | 1-1376391-2 | 1376397-1                                      | 1-1376385-2         |             |
|             | Type C/Blue          | 2-1376391-3 | 1376397-1                                      | 2-1376385-3         |             |
|             | Type D/Yellow        | 3-1376391-4 | 1376397-1                                      | 3-1376385-4         |             |
| 2 Row       |                      |             |                                                |                     |             |
| 4           | Type A/Natural       | 1376392-1   | 1376394-1                                      | 1376386-1           |             |
|             | Type B/Red           | 1-1376392-2 | 1376394-1                                      | 1-1376386-2         |             |
|             | Type C/Blue          | 2-1376392-3 | 1376394-1                                      | 2-1376386-3         |             |
|             | Type D/Yellow        | 3-1376392-4 | 1376394-1                                      | 3-1376386-4         |             |
| 6           | Type A/Natural       | 1376393-1   | 1376395-1                                      | 1376387-1           |             |
|             | Type B/Red           | 1-1376393-2 | 1376395-1                                      | 1-1376387-2         |             |
|             | Type C/Blue          | 2-1376393-3 | 1376395-1                                      | 2-1376387-3         |             |
|             | Type D/Yellow        | 3-1376393-4 | 1376395-1                                      | 3-1376387-4         |             |

\*Included in Header Assy. line are Tube Stick version. Refer to the appropriate description in the catalog.

**Note:** All part numbers are RoHS Compliant.

### Mating Configurations

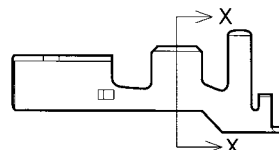
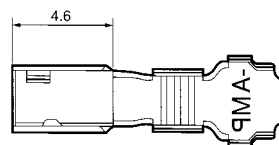


**Note:** Dimensions shown are metric.

## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

### Receptacle Contacts

**Material and Finish**  
Pre-tinned Copper Alloy



| Wire Range |                 | Wire Ins. Dia. | Receptacle Contact Part No. | Applicator Part No. |
|------------|-----------------|----------------|-----------------------------|---------------------|
| AWG        | mm <sup>2</sup> |                |                             |                     |
| 24~20      | 0.22~0.53       | 1.89~2.7       | 1376348-1 (Strip Form)      | *                   |
| 20~16      | 0.5~1.25        | 2.0~3.1        | 1376347-1 (Strip Form)      | *                   |

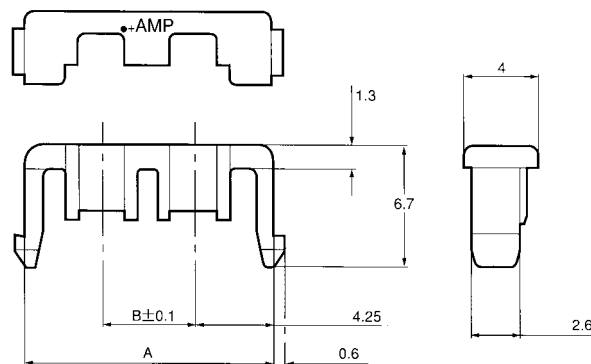
\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Number.

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

### Double Lock Plates

**Material and Finish**  
UL94V-0, 6/6 Nylon, glass filled, Black



| No. of Pos. | Dimensions (Double Lock Plate) |    | Double Lock Plate Part No. | Applicable Plug Part No. |             |
|-------------|--------------------------------|----|----------------------------|--------------------------|-------------|
|             | A                              | B  |                            |                          |             |
| 2           | 13.5                           | 5  | 1376394-1                  | □-1376388-□              | □-1376392-□ |
| 3           | 18.5                           | 10 | 1376395-1                  | □-1376389-□              | □-1376393-□ |
| 4           | 23.5                           | 15 | 1376396-1                  | □-1376390-□              |             |
| 6           | 33.5                           | 25 | 1376397-1                  | □-1376391-□              |             |

\* Contact the Tooling Assistance Center (TAC) for Applicator Part Number.

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

### Plug Housings (For Receptacle Contacts)

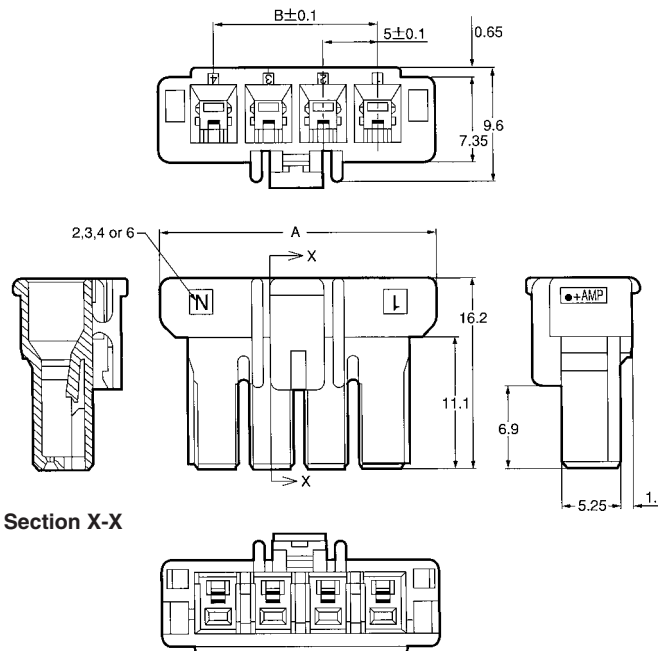
**Material and Finish**  
Housing—6/6 Nylon, glass filled

### Related Product Data

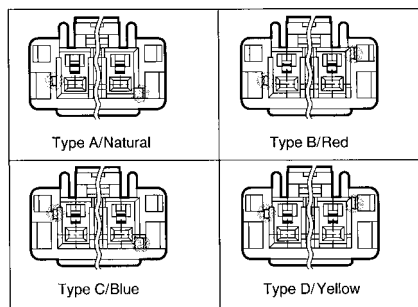
Receptacle Contacts—page 131

Double Lock Plates—page 131

Mating Headers—page 134



### Type of Keying/Color



| No. of Pos. | Dimensions |    | Plug Housing Part No. |             |             |               | Applicable Double Lock Plate Part Number | Mating Header Assy. Part Number |
|-------------|------------|----|-----------------------|-------------|-------------|---------------|------------------------------------------|---------------------------------|
|             |            |    | Type of Keying/Color  |             |             |               |                                          |                                 |
|             | A          | B  | Type A Natural        | Type B Red  | Type C Blue | Type D Yellow |                                          |                                 |
| 2           | 15         | —  | 1376388-1             | 1-1376388-2 | 2-1376388-3 | 3-1376388-4   | 1376394-1                                | □-1376382-□                     |
| 3           | 20         | 10 | 1376389-1             | 1-1376389-2 | 2-1376389-3 | 3-1376389-4   | 1376395-1                                | □-1376383-□<br>□-1376421-□      |
| 4           | 25         | 15 | 1376390-1             | 1-1376390-2 | 2-1376390-3 | 3-1376390-4   | 1376396-1                                | □-1376384-□                     |
| 6           | 35         | 25 | 1376391-1             | 1-1376391-2 | 2-1376391-3 | 3-1376391-4   | 1376397-1                                | □-1376385-□                     |

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

### Plug Housing (2 Rows) (For Receptacle Contacts)

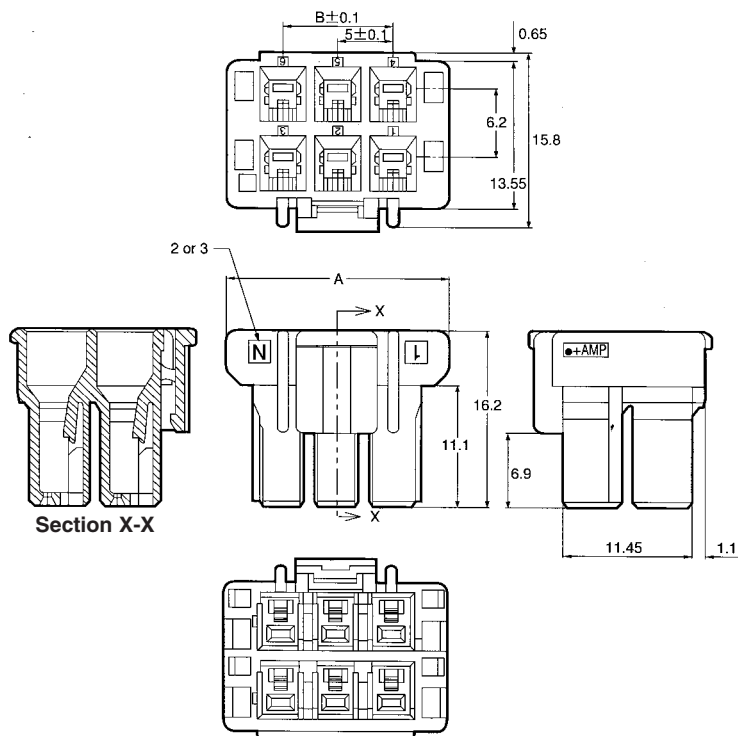
**Material and Finish**  
**Housing**—6/6 Nylon, glass filled

#### Related Product Data

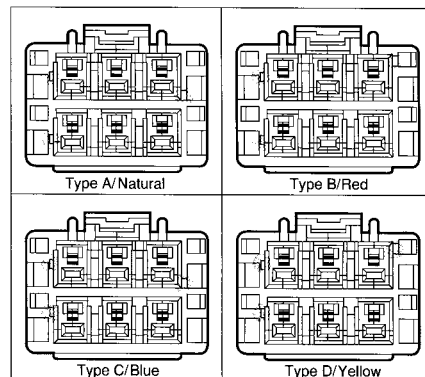
**Receptacle Contacts**—page 131

**Double Lock Plates**—page 131

**Mating Headers**—page 135



#### Type of Keying/Color



| No. of Pos. | Dimensions |    | Plug Housing Part No. |             |             |               | Applicable Double Lock Plate Part Number | Mating Header Assy. Part Number |
|-------------|------------|----|-----------------------|-------------|-------------|---------------|------------------------------------------|---------------------------------|
|             |            |    | Type of Keying/Color  |             |             |               |                                          |                                 |
|             | A          | B  | Type A Natural        | Type B Red  | Type C Blue | Type D Yellow |                                          |                                 |
| 4           | 15         | —  | 1376392-1             | 1-1376392-2 | 2-1376392-3 | 3-1376392-4   | 1376394-1                                | □-1376386-□                     |
| 6           | 20         | 10 | 1376393-1             | 1-1376393-2 | 2-1376393-3 | 3-1376393-4   | 1376395-1                                | □-1376387-□                     |

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

### Vertical Header Assembly

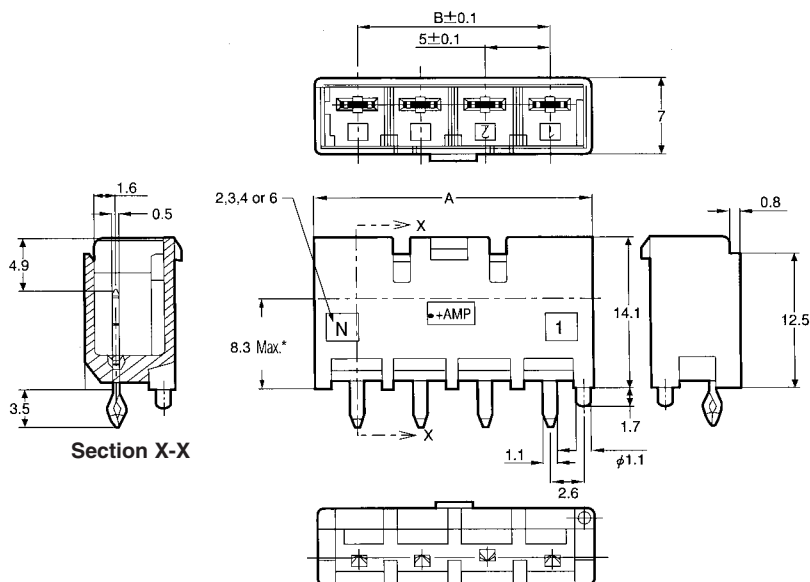
#### Material and Finish

**Housing**—6/6 Nylon, glass filled

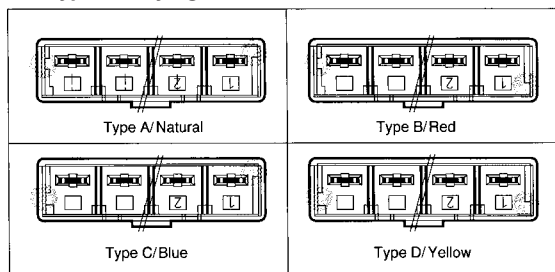
**Tab Contacts**—Copper Alloy, Tin plated

#### Related Product Data

**Mating Plug Housings**—page 132



#### Type of Keying/Color



| No. of Pos. | Dimensions |    | Loose Piece<br>Tube (Qty.) | Vertical Header Assy. Part No. |                  |                  |                  | Mating Plug Housing Part Number |
|-------------|------------|----|----------------------------|--------------------------------|------------------|------------------|------------------|---------------------------------|
|             |            |    |                            | Type of Keying/Color           |                  |                  |                  |                                 |
|             | A          | B  | Type A Natural             | Type B Red                     | Type C Blue      | Type D Yellow    |                  |                                 |
| 2           | 11.6       | —  | L.P                        | 1376382-1                      | 1-1376382-2      | 2-1376382-3      | 3-1376382-4      | □-1376388-□                     |
|             |            |    | Tube                       | 1376437-1 (40)                 | 1-1376437-2 (40) | 2-1376437-3 (40) | 3-1376437-4 (40) |                                 |
| 3           | 16.6       | 10 | L.P                        | 1376383-1                      | 1-1376383-2      | 2-1376383-3      | 3-1376383-4      | □-1376389-□                     |
|             |            |    | Tube                       | 1376439-1 (25)                 | 1-1376439-2 (25) | 2-1376439-3 (25) | 3-1376439-4 (25) |                                 |
| 4           | 21.6       | 15 | L.P                        | 1376384-1                      | 1-1376384-2      | 2-1376384-3      | 3-1376384-4      | □-1376390-□                     |
|             |            |    | Tube                       | 1376440-1 (20)                 | 1-1376440-2 (20) | 2-1376440-3 (20) | 3-1376440-4 (20) |                                 |
| 6           | 31.6       | 25 | L.P                        | 1376385-1                      | 1-1376385-2      | 2-1376385-3      | 3-1376385-4      | □-1376391-□                     |
|             |            |    | Tube                       | 1376441-1 (15)                 | 1-1376441-2 (15) | 2-1376441-3 (15) | 3-1376441-4 (15) |                                 |
| 2*          | 16.6       | 10 | L.P                        | 1376421-1                      | 1-1376421-2      | 2-1376421-3      | 3-1376421-4      | □-1376389-□                     |
|             |            |    | Tube                       | 1376444-1 (25)                 | 1-1376444-2 (25) | 2-1376444-3 (25) | 3-1376444-4 (25) |                                 |

\*10 mm centerline

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

### Vertical Header Assembly (2 Rows)

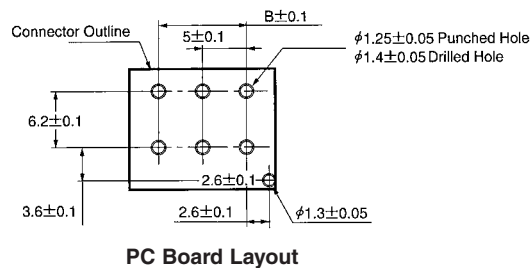
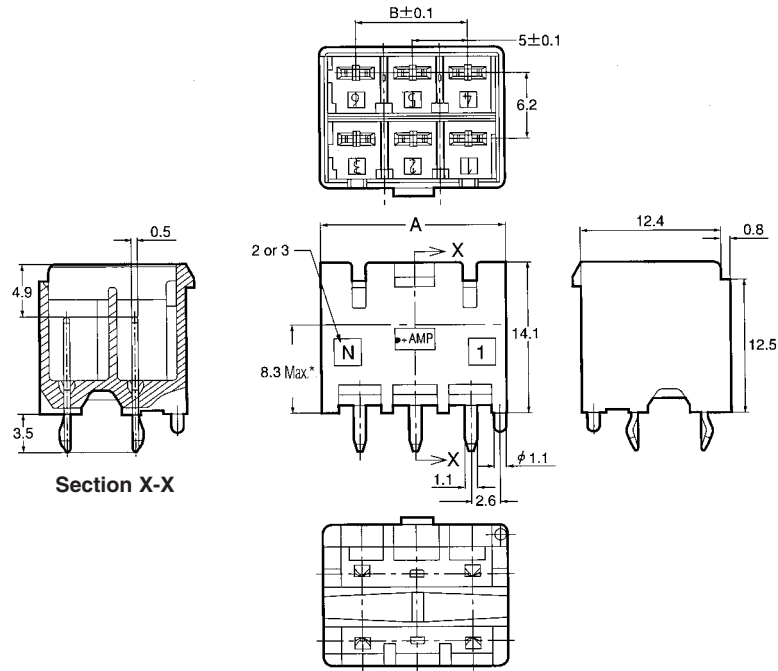
#### Material and Finish

**Housing**—6/6 Nylon, glass filled

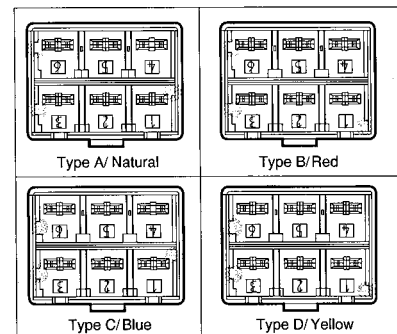
**Tab Contacts**—Copper Alloy, Tin plated

#### Related Product Data

**Mating Plug Housings**—page 133



#### Type of Keying/Color



| No. of<br>Pos. | Dimensions |    | Loose Piece    | Vertical Header Assy. Part No. |                  |                  |                  | Mating<br>Plug Housing<br>Part Number |
|----------------|------------|----|----------------|--------------------------------|------------------|------------------|------------------|---------------------------------------|
|                | A          | B  | Tube<br>(Qty.) | Type of Keying/Color           |                  |                  |                  |                                       |
|                |            |    |                | Type A<br>Natural              | Type B<br>Red    | Type C<br>Blue   | Type D<br>Yellow |                                       |
| 4              | 11.6       | —  | L.P            | 1376386-1                      | 1-1376386-2      | 2-1376386-3      | 3-1376386-4      | □-1376392-□                           |
|                |            |    | Tube           | 1376442-1 (40)                 | 1-1376442-2 (40) | 2-1376442-3 (40) | 3-1376442-4 (40) |                                       |
| 6              | 16.6       | 10 | L.P            | 1376387-1                      | 1-1376387-2      | 2-1376387-3      | 3-1376387-4      | □-1376393-□                           |
|                |            |    | Tube           | 1376443-1 (25)                 | 1-1376443-2 (25) | 2-1376443-3 (25) | 3-1376443-4 (25) |                                       |

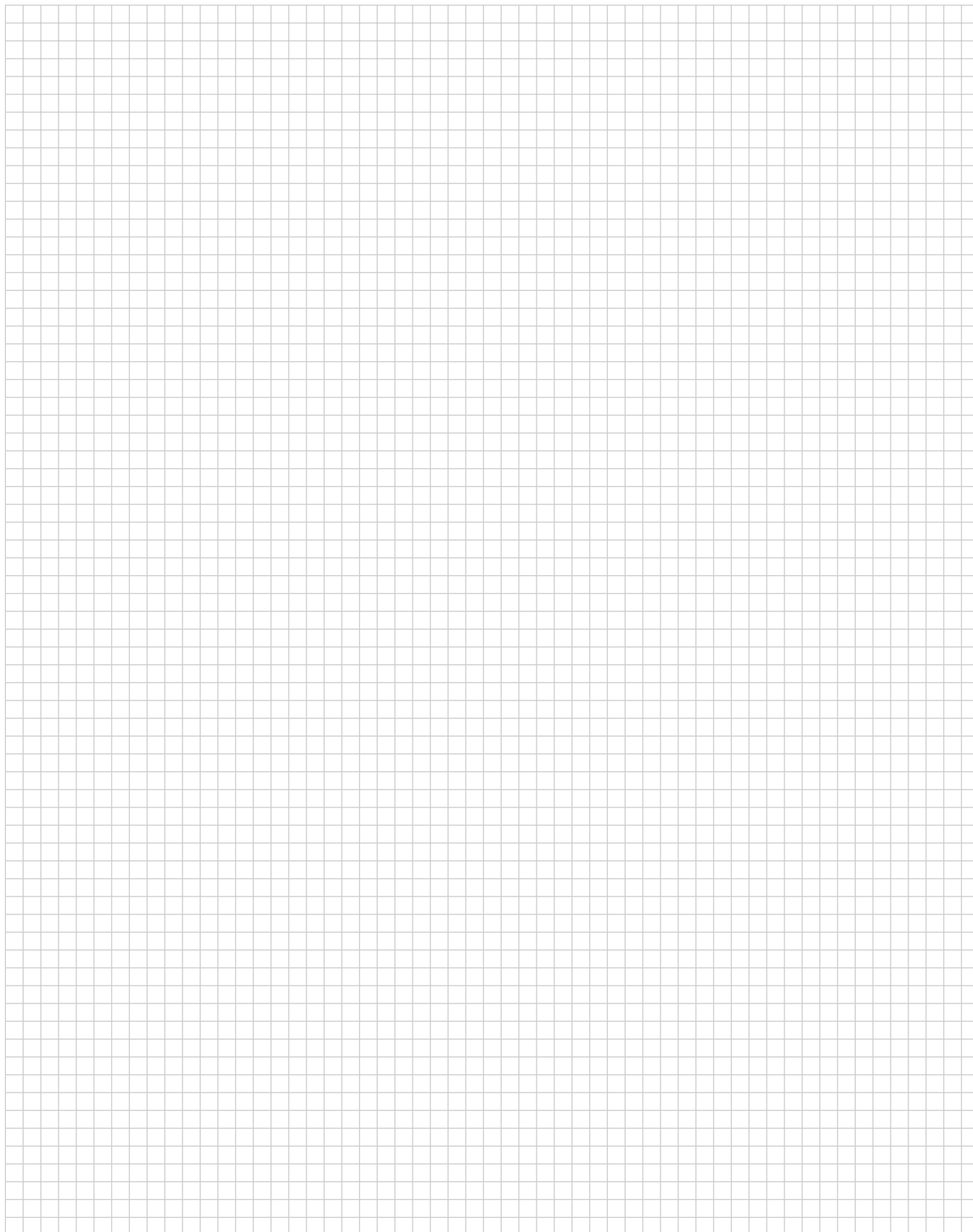
**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

---

**Engineering Notes**

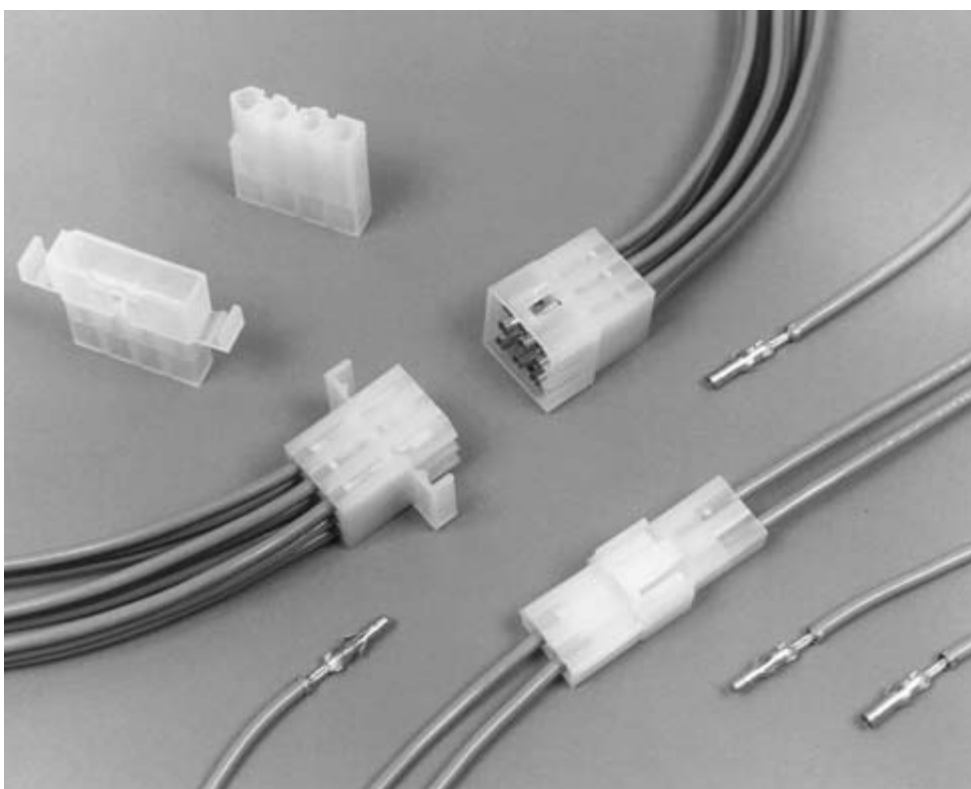
---



## .093 [2.36] Commercial Pin and Socket Connectors

### Product Facts

- Polarized
- Cavity identification
- Low contact-mating force
- Dual locking lances
- Detent and positive locking
- Contacts available in brass and phosphor bronze with tin and gold plating
- Panel mounting and free-hanging styles
- "F" crimp contacts
- Applicator and hand tool available
- Economical commercial-grade connectors
- Compatible with high-speed application machinery and competitive soft shells
- Wire range 24 to 14 AWG [0.2 to 2 mm<sup>2</sup>]
- Accepts wires with insulation diameters as large as .180 [4.57]
- Housings available in 1 to 15 positions
- .093 plug and receptacle housings accept pin or socket contacts. **The preferred convention is to use socket contacts with receptacle housings**
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 



### Performance Characteristics

The .093 Commercial Pin and Socket Connectors performance characteristics found on pages 137-138 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Thermal Shock**—-55°C to +105°C

**Temperature-Humidity Cycling**—+25°C to +65°C at 90–95% RH

**Corrosion**—48 hr. at 5% salt concentration

**Vibration**—10-55-10 cycles per minute at .06 [1.52] total excursion

**Physical Shock**—18 shocks, 50 Gs sawtooth in 11 milliseconds

**Durability**—50 mating cycles

**Dielectric Withstanding Voltage**—1.0 kVAC

**Insulation Resistance**—1000 megohms min. initial

**Voltage Rating**—250 V AC or DC

**Connector Mating**—2.5 lb. [11.1 N] max. per contact

**Connector Unmating**—1.5 lb. [6.7 N] min. per contact

**Contact Retention**—10 lb. [44.5 N] min.

### Technical Documents

**Application Specification**  
114-49000 .093 Commercial Pin and Socket Connectors

**Product Specification**  
108-1038 .093 Commercial Pin and Socket Connectors

## .093 [2.36] Commercial Pin and Socket Connectors (Continued)

### Performance Characteristics (continued)

**Maximum Current**—Maximum current rating of .093 Commercial Pin and Socket Connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

### Related Product Data

**Product Specification** — 108-1038

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### .093 Commercial Pin and Socket Connectors — Calculated Current Table

| Number of Circuits | Wire AWG |       |       |      |      |      |
|--------------------|----------|-------|-------|------|------|------|
|                    | 14       | 16    | 18    | 20   | 22   | 24   |
| 2                  | 13.00    | 12.00 | 11.00 | 8.00 | 6.00 | 6.00 |
| 3                  | 13.00    | 11.00 | 10.00 | 8.00 | 6.00 | 5.00 |
| 4 In-Line          | 11.00    | 10.00 | 9.00  | 7.00 | 5.00 | 4.00 |
| 4 Matrix           | 11.00    | 10.00 | 9.00  | 7.00 | 5.00 | 4.00 |
| 5                  | 10.00    | 9.00  | 8.00  | 6.00 | 5.00 | 4.00 |
| 6                  | 10.00    | 9.00  | 8.00  | 6.00 | 4.00 | 4.00 |
| 9                  | 9.00     | 7.00  | 6.00  | 5.00 | 4.00 | 3.00 |
| 12                 | 8.00     | 7.00  | 6.00  | 4.00 | 3.00 | 3.00 |
| 15                 | 7.00     | 6.00  | 5.00  | 4.00 | 3.00 | 3.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested and this chart contains interpolated and extrapolated values.

### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|-----|-------------------|-----|-------------------|
| 30  | 2.6               | 18  | 9.4               |
| 28  | 3.2               | 16  | 11.3              |
| 26  | 4.1               | 14  | 13.7              |
| 24  | 5.1               | 12  | 16.4              |
| 20  | 7.8               | 10  | 19.3              |

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

### Termination Resistance/Contact Crimp Tensile Force

| Wire Size |                 | Termination Resistance |                                   | Contact Crimp Tensile Force |       |
|-----------|-----------------|------------------------|-----------------------------------|-----------------------------|-------|
| AWG       | mm <sup>2</sup> | Test Current (Amps)    | Resistance Milliohms (Max. Init.) | Force (Min.)                |       |
|           |                 |                        |                                   | lbs.                        | N     |
| 24        | 0.2             | 2.0                    | 4.0                               | 8                           | 35.6  |
| 22        | 0.3–0.4         | 3.0                    | 4.0                               | 10                          | 44.5  |
| 20        | 0.5–0.6         | 4.5                    | 4.0                               | 15                          | 66.7  |
| 18        | 0.8–0.9         | 6.0                    | 3.5                               | 25                          | 111.2 |
| 16        | 1.25–1.4        | 8.0                    | 3.5                               | 25                          | 111.2 |
| 14        | 2               | 10.0                   | 3.0                               | 30                          | 133.4 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

## .093 [2.36] Commercial Pin and Socket Connectors (Continued)

### Contacts

Pin Diameter .093 [2.36]

### Material

.010 [0.25] Stock Thickness

Pin and socket contacts can be used in either plug or receptacle housings.

### Related Product Data

**Product Specification** — 108-1038

**Application Specification**

114-49000

**Performance Characteristics** —  
pages 137-138

### Housings

.198 [5.03] Centerline—pages 140-141

.250 [6.35] Centerline—pages 142-143

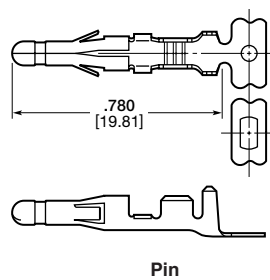
### Panel Cutouts

.198 [5.03] Centerline Housings—  
page 141

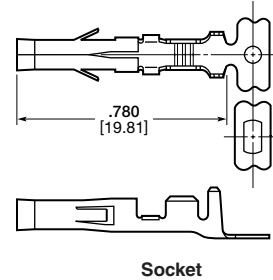
.250 [6.35] Centerline Housings—  
page 142

**Technical Documents**—pages 137  
and 199-200

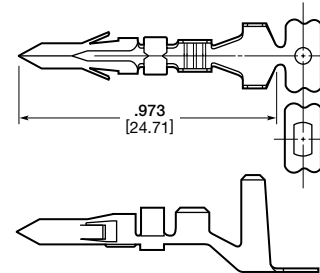
**Application Tooling**—pages 201-204



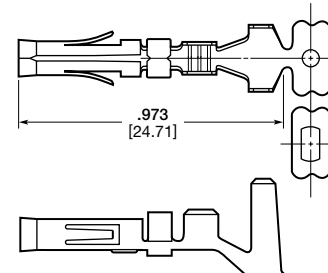
Pin



Socket



Pin  
Part No. 770385-1



Socket  
Part No. 770383-1



Contact Insertion Tool  
(For Pins and Sockets)  
Part No. 91002-1  
IS 408-7347



Contact Extraction Tool  
Part No. 318837-1  
IS 408-4375

| Wire Size                |                               | Ins. Dia.                  | Material & Finish               | Contact Part Numbers  |                       |                       |                       | HDM Applicator Part No.                                                 | Hand Tool Part No. |
|--------------------------|-------------------------------|----------------------------|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------------------------------------------|--------------------|
| AWG                      | mm <sup>2</sup>               |                            |                                 | Pin                   |                       | Socket                |                       |                                                                         |                    |
|                          |                               |                            |                                 | Strip Form            | Loose Piece           | Strip Form            | Loose Piece           |                                                                         |                    |
| 24-18                    | 0.2-0.9                       | .110<br>2.79               | Brass, Pre-tin                  | 350418-1              | 770147-1              | 350417-1              | 770146-1              | 466656-15                                                               | 90872-1            |
|                          |                               |                            | Brass, Gold <sup>2</sup>        | —                     | —                     | 350417-3 <sup>2</sup> | 770146-3 <sup>2</sup> | 466656-25                                                               |                    |
|                          |                               |                            | Brass Select Gold <sup>1</sup>  | 350418-5 <sup>1</sup> | 770147-5 <sup>1</sup> | 350417-5 <sup>1</sup> | 770146-5 <sup>1</sup> | 466656-35                                                               |                    |
| 20-14                    | 0.6-2                         | .140<br>3.56               | Brass, Pre-tin                  | 350416-1              | 770145-1              | 350415-1              | 770144-1              | 466878-15                                                               | 90871-1            |
|                          |                               |                            | Brass, Select Gold <sup>1</sup> | 350416-5 <sup>1</sup> | 770145-5 <sup>1</sup> | 350415-5 <sup>1</sup> | 770144-5 <sup>1</sup> | 466878-25                                                               |                    |
|                          |                               |                            | Phos. Brz., Pre-tin             | —                     | —                     | 350415-6              | 770144-6              | 466878-35                                                               |                    |
|                          |                               | .180<br>4.57               | Brass, Pre-tin                  | 770530-1 <sup>4</sup> | —                     | 770529-1 <sup>4</sup> | —                     | 567337-3 <sup>6</sup><br>567337-4 <sup>6</sup><br>567337-6 <sup>6</sup> | —                  |
| 18-14<br>or<br>2<br>(18) | 0.8-2<br>or<br>2<br>(0.8-0.9) | .180<br>4.57<br>(per wire) | Brass, Pre-tin                  | 770385-1 <sup>3</sup> | —                     | —                     | —                     | 567273-27<br>567273-37                                                  | —                  |
|                          |                               |                            | Phos. Brz., Pre-tin             | —                     | —                     | 770383-1 <sup>3</sup> | —                     | 567273-47                                                               |                    |

<sup>1</sup>Select Gold — .000030 [.000762] min gold in mating area over .000050 [.00127] min nickel.

<sup>2</sup>Gold — .000030 [.000762] min gold in mating area, overall gold flash over .000050 [.00127] min nickel.

<sup>3</sup>These contacts have a .0125 [.318] stock thickness and accept two wires, each with maximum .180 [4.57] insulation diameters. They can be used only with the following housing part numbers: 770364-1, 770365-1, 770450-1, 770451-1, 770452-1, and 770453-1 (see page 143).

<sup>4</sup>Contact length is .875 [22.23]

<sup>5</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

<sup>6</sup>HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -6 is used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

<sup>7</sup>HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

**Note:** Phosphor bronze contacts should be used in high-temperature/humidity cycling applications.

**Note:** All part numbers are RoHS Compliant.

## **.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

### Housings

#### Free-Hanging or Panel Mount

.198 [5.03] Centerline spacing

#### Material

**Housing**—Nylon, natural color

**Flammability Rating**—

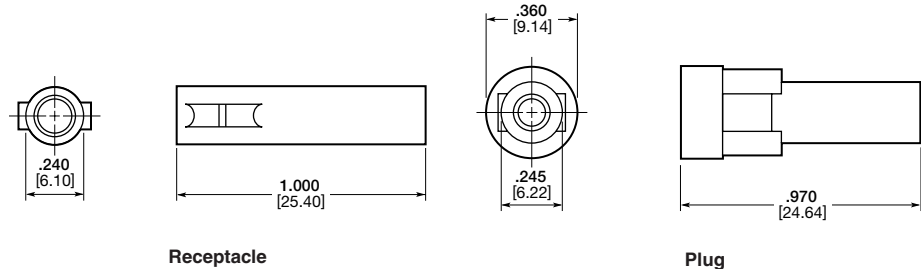
UL94-V-2

### Related Product Data

**Contacts**—page 139

**Product Specification**—108-1038

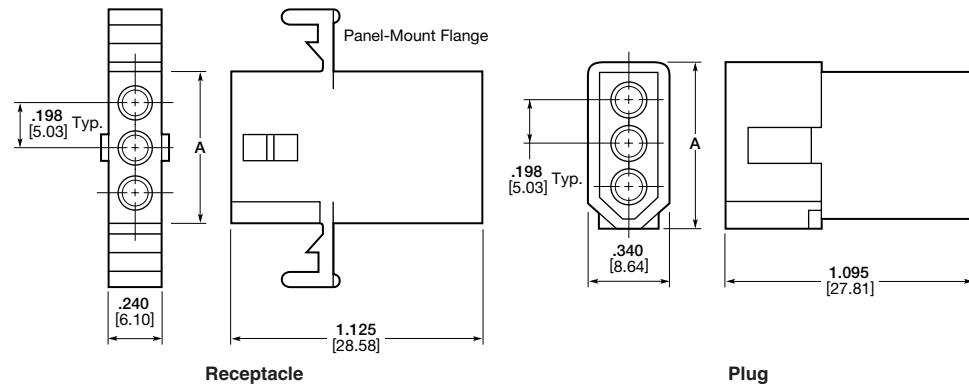
### 1 Circuit



Receptacle

Plug

### 2, 3, and 4 Circuit, In-Line



Receptacle

Plug

| No. of<br>Circuits | A Dimension    |                | Receptacle Part Numbers |                 |                    |                            | Plug Part Numbers     |              |
|--------------------|----------------|----------------|-------------------------|-----------------|--------------------|----------------------------|-----------------------|--------------|
|                    | Receptacle     | Plug           | Panel Mount             |                 | Free-Hanging       |                            | Panel Mount           | Free-Hanging |
|                    |                |                | Without<br>Detents      | With<br>Detents | Without<br>Detents | With<br>Detents            |                       |              |
| 1                  | —              | —              | —                       | —               | —                  | 770063-1                   | —                     | 770064-1     |
| 2                  | .540<br>13.72  | .640<br>16.26  | —                       | 770066-11,5     | —                  | 770065-11,5<br>7702661,3,5 | 770068-11             | 770069-11    |
| 3                  | .670<br>17.02  | .770<br>19.56  | —                       | 770071-1        | —                  | 770070-1<br>770264-13      | 770073-1              | 770074-1     |
| 4<br>(In-Line)     | .870<br>22.10  | .970<br>24.64  | —                       | 770076-1        | —                  | 770075-1                   | 770077-1              | 770078-1     |
| 4<br>(Matrix)      | .443<br>11.25  | .540<br>13.71  | —                       | —               | —                  | 770843-1                   | —                     | 770842-1     |
| 5                  | 1.070<br>27.18 | 1.170<br>29.72 | —                       | —               | —                  | 770083-1<br>794015-13      | —                     | 770084-1     |
| 6<br>(In-Line)     | 1.268<br>32.21 | 1.378<br>35.00 | —                       | —               | —                  | 770782-14                  | —                     | 770892-14    |
| 6<br>(Matrix)      | .435<br>11.05  | .535<br>13.59  | 770085-1                | 770087-1        | 770088-1           | 770086-1                   | 770089-1              | 770090-1     |
| 9                  | .670<br>17.02  | .770<br>19.56  | 770091-1                | 770093-1        | 770094-1           | 770092-1                   | 770095-12<br>770108-1 | 770096-1     |
| 12                 | .870<br>22.10  | .970<br>24.64  | 770097-1                | 770099-1        | 770100-1           | 770098-1                   | 770101-1              | 770102-1     |
| 15                 | 1.070<br>27.18 | 1.170<br>29.72 | 770103-1                | —               | 770105-1           | —                          | 770106-1              | 770107-1     |

<sup>1</sup>1.248 [6.30] centerline.

<sup>2</sup>Mounting ears at wire end.

<sup>3</sup>Tool removable.

<sup>4</sup>Positive lock.

<sup>5</sup>600 V AC or DC

**Note:** All part numbers are RoHS Compliant.

## **.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

### Housings

#### Free-Hanging or Panel Mount

.198 [5.03] Centerline spacing

#### Material

**Housing**—Nylon, natural color

**Flammability Rating**—

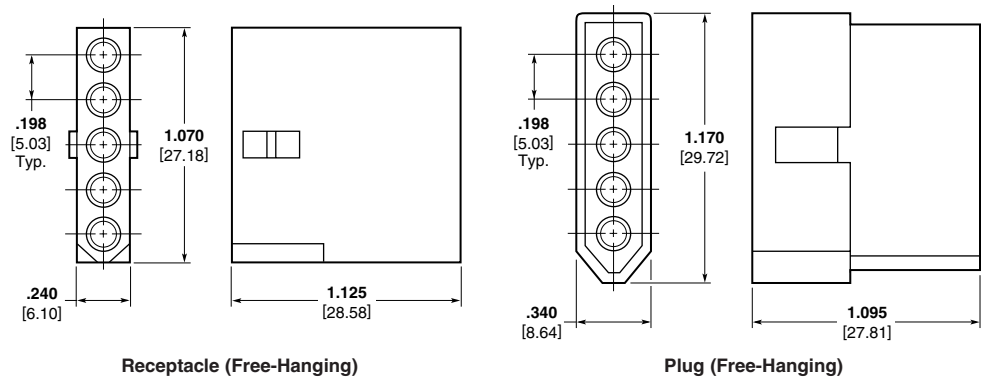
UL94V-2

#### Related Product Data

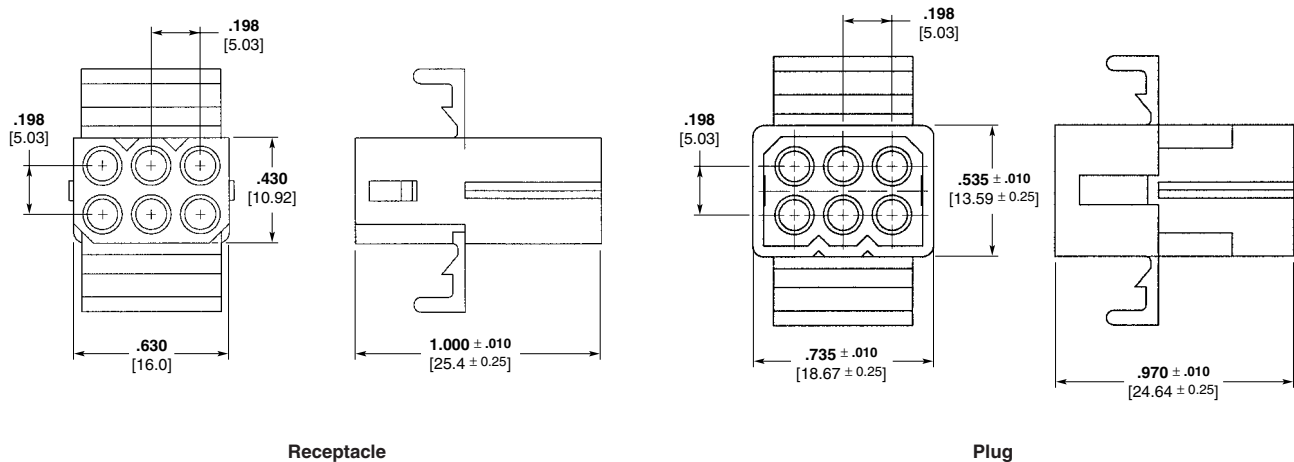
**Contacts**—page 139

**Product Specification**—108-1038

### 5 Circuit, In-Line

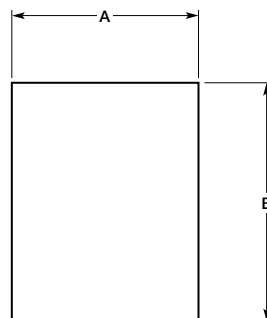


### 4, 6, 9, 12, and 15 Circuit, Matrix



### Recommended Panel Cutouts

Maximum panel thickness is .090 [2.29].



| No. of Circuits | Panel Cutout Dimensions |                |               |                |
|-----------------|-------------------------|----------------|---------------|----------------|
|                 | Receptacle              |                | Plug          |                |
|                 | A                       | B              | A             | B              |
| 2               | .312<br>7.92            | .725<br>18.42  | .375<br>9.53  | .800<br>20.32  |
| 3               | .312<br>7.92            | .840<br>21.34  | .375<br>9.53  | .933<br>23.70  |
| 4<br>(In-Line)  | .312<br>7.92            | 1.038<br>26.37 | .375<br>9.53  | 1.131<br>28.73 |
| 6               | .600<br>15.24           | .718<br>18.24  | .695<br>17.65 | .750<br>19.05  |
| 9               | .725<br>18.42           | .828<br>21.03  | .660<br>16.76 | .937<br>23.80  |
| 12              | .725<br>18.42           | 1.050<br>26.67 | .760<br>19.30 | 1.155<br>29.34 |
| 15              | .655<br>16.64           | 1.240<br>31.50 | .760<br>19.30 | 1.343<br>34.11 |

**Note:** The panel should be punched so that the housing enters in the same direction as the punch.

## **.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

### Housings

#### Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

#### Material

**Housing**—Nylon, natural color

**Flammability Rating**—

UL94V-2

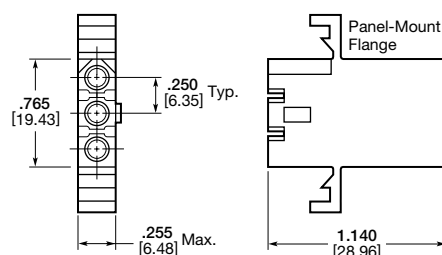
**Voltage Rating**—600 V AC or DC

#### Related Product Data

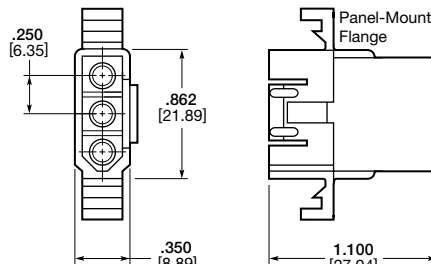
**Contacts**—page 139

**Product Specification**—108-1038

### 3 Circuit, In-Line

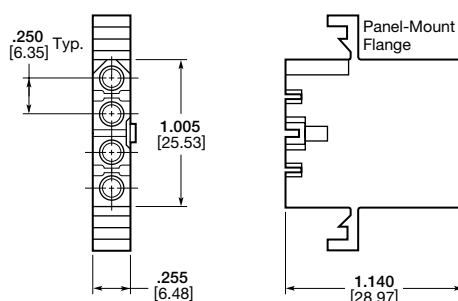


Receptacle

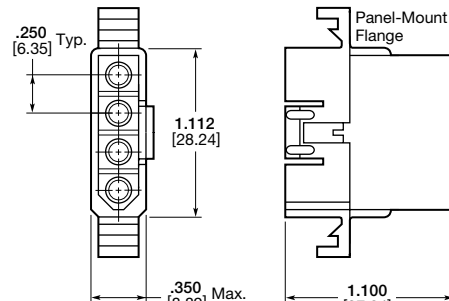


Plug

### 4 Circuit, In-Line

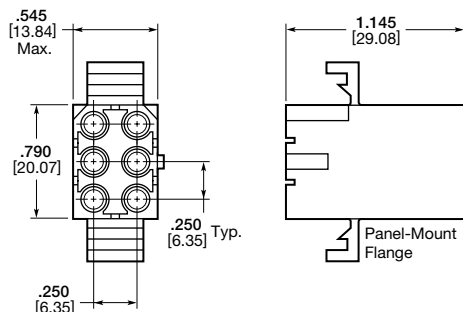


Receptacle

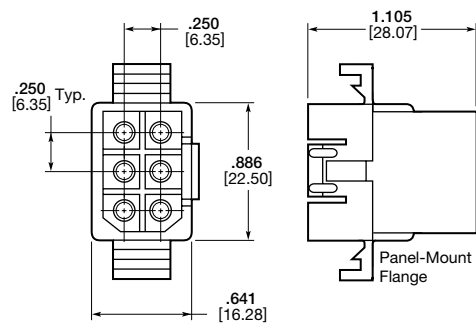


Plug

### 6 Circuit, Matrix



Receptacle

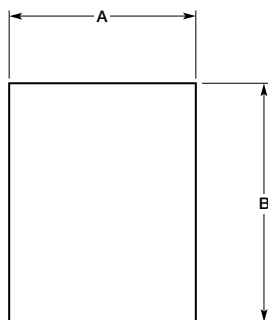


Plug

### Recommended Panel Cutouts

Maximum panel thickness is .062 [1.57].

**Note:** The panel should be punched so that the housing enters in the same direction as the punch.



| No. of Circuits | Receptacle Part Numbers           |              | Plug Part Numbers |              |
|-----------------|-----------------------------------|--------------|-------------------|--------------|
|                 | Panel Mount                       | Free-Hanging | Panel Mount       | Free-Hanging |
| 3               | 770269-1<br>770771-1 <sup>1</sup> | 770339-1     | 770338-1          | 770276-1     |
| 4               | 770329-1                          | 770337-1     | 770330-1          | 770336-1     |
| 6               | 770372-1                          | 770360-1     | 770373-1          | 770361-1     |

<sup>1</sup>Pre-bent mounting ears.

| No. of Circuits | Panel Cutout Dimensions |                |               |                |
|-----------------|-------------------------|----------------|---------------|----------------|
|                 | Receptacle              |                | Plug          |                |
|                 | A                       | B              | A             | B              |
| 3               | .310<br>7.87            | .920<br>23.37  | .365<br>9.27  | 1.022<br>25.96 |
| 4               | .310<br>7.87            | 1.168<br>29.67 | .365<br>9.27  | 1.270<br>32.26 |
| 6               | .608<br>15.44           | .946<br>24.03  | .658<br>16.71 | 1.048<br>26.62 |

**Note:** All part numbers are RoHS Compliant.

## **.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

### Housings

#### Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

#### Material

**Housing**—Nylon, natural color

**Flammability Rating**—

UL94V-2

**Voltage Rating**—600 V AC or DC

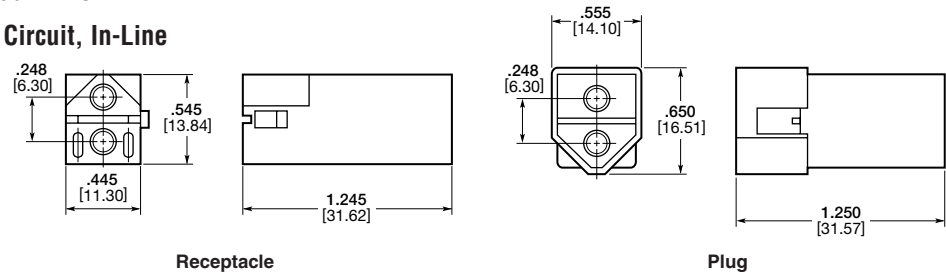
### Related Product Data

**Contacts**—page 139

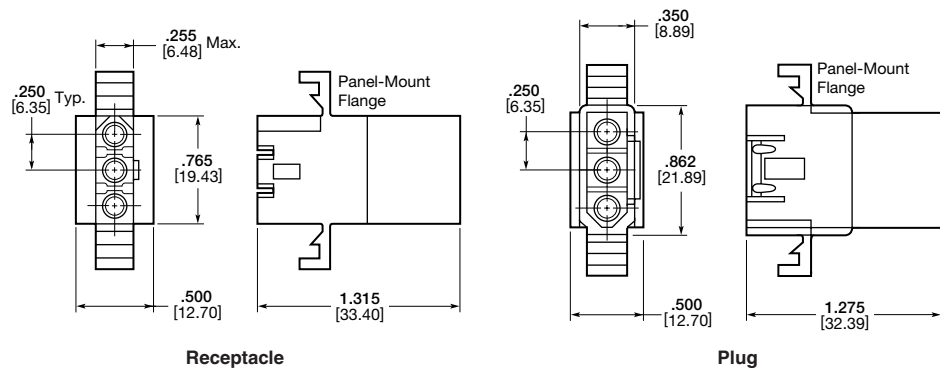
**Product Specification**—108-1038

### Dual Wire

#### 2 Circuit, In-Line



#### 3 Circuit, In-Line



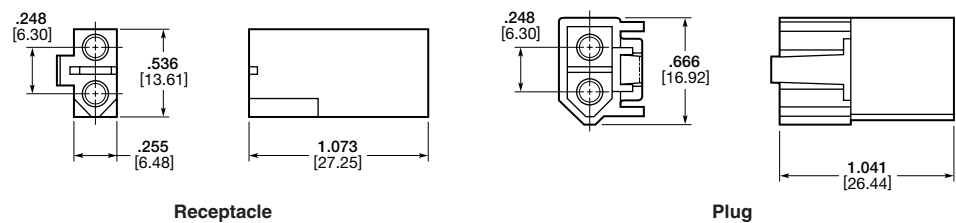
| No. of Circuits | Receptacle Part Numbers |                       | Plug Part Numbers     |                       |
|-----------------|-------------------------|-----------------------|-----------------------|-----------------------|
|                 | Panel Mount             | Free-Hanging          | Panel Mount           | Free-Hanging          |
| 2               | —                       | 770364-1 <sup>1</sup> | —                     | 770365-1 <sup>1</sup> |
| 3               | 770453-1 <sup>2</sup>   | 770451-1              | 770452-1 <sup>2</sup> | 770450-1              |

<sup>1</sup>1.248 [6.30] centerline.

<sup>2</sup>See panel cutout dimensions on page 58.

### Positive Lock

#### 2, 3 and 4 Circuit, In-Line



| No. of Circuits | Receptacle Part Numbers | Plug Part Numbers     |
|-----------------|-------------------------|-----------------------|
|                 | Free-Hanging            | Free-Hanging          |
| 2               | 770424-1 <sup>1</sup>   | 770425-1 <sup>1</sup> |
| 3               | 770785-1                | 770783-1              |
| 4               | 770784-1                | 770810-1              |

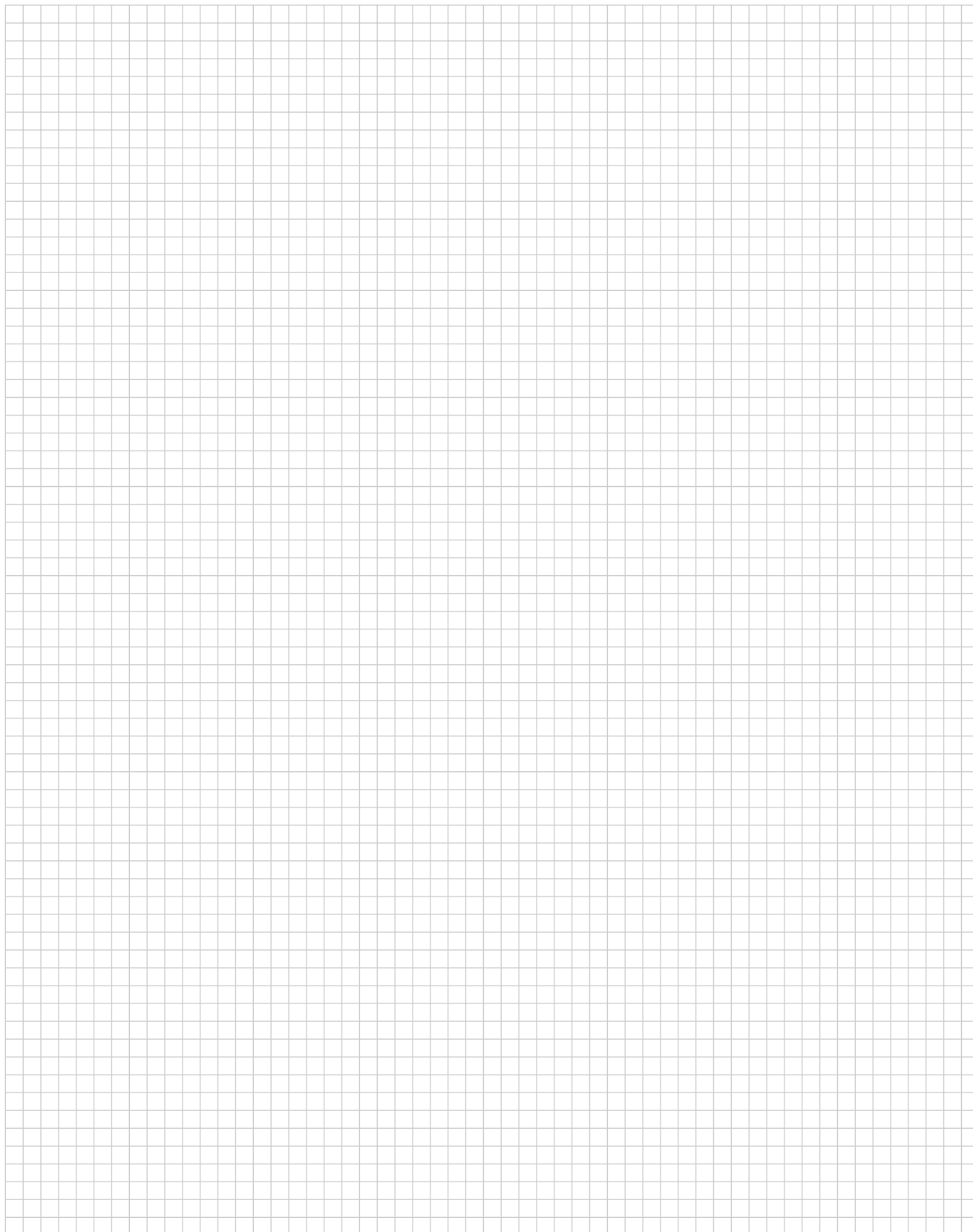
<sup>1</sup>1.248 [6.30] centerline.

**Note:** All part numbers are RoHS Compliant.

---

**Engineering Notes**

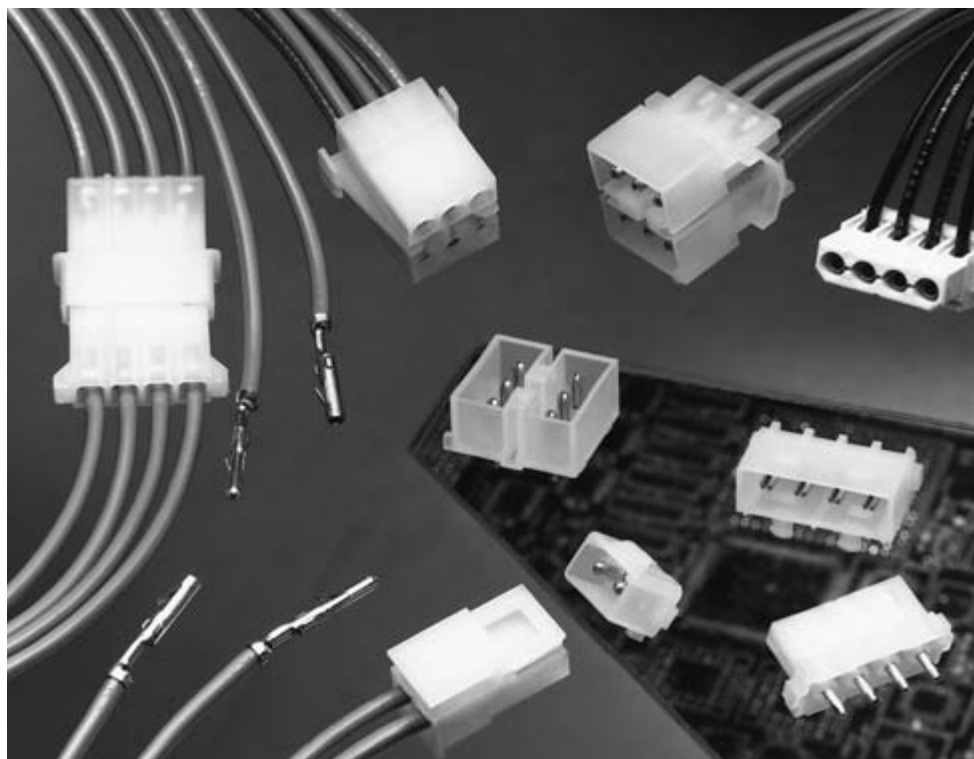
---



## Commercial MATE-N-LOK Connectors

### Product Facts

- Fully polarized nylon housings
- Easy cavity identification
- Locking devices are integral part of design. Connector halves will hold together under severe conditions of vibration and shock
- Built-in contact stabilization and self-aligning features
- Hot side egg-crate design for safety
- Precision molded to exacting tolerances
- Contacts accept a wire size range of 30-14 AWG [.05-2.0 mm<sup>2</sup>]
- Keying plug available
- "Clean" design contact—no sharp projections to impede insertion or damage housings
- Low insertion/extraction forces
- Contacts available in pre-tin or gold over nickel plated to fit the application requirements
- Wire-to-PC Board capability using pin or socket headers
- Solderability—Headers meet MIL-STD 202 method 208
- Four circuit PC Board-to-PC Board capability available by mating vertical socket header with either vertical, right-angle or surface mount pin header
- Four circuit insulation displacement connector (IDC) available
- Ultraviolet (UV) stable housings available in 1, 2 and 3 circuit
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189A



### Performance Characteristics

The Commercial MATE-N-LOK Connector performance characteristics found on pages 145-146 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—1.5 KVAC between adjacent circuits

**Insulation Resistance**—500 megohms minimum initial between adjacent circuits

**Voltage Rating**—250 V AC or DC

**Connector Mating**—4 lb. max. per circuit

**Connector Unmating**—0.7 lb. min. per circuit

**Contact Retention**—15 lb. min. per contact

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specifications

- 108-1000 Commercial MATE-N-LOK Connectors
- 108-1077 Commercial MATE-N-LOK PC Board Headers
- 108-49000 IDC Connectors

#### Application Specifications

- 114-1012 Commercial MATE-N-LOK Contacts
- 114-49001 IDC Connectors

#### Instruction Sheets

- 408-7209, 408-7166, 408-7200, 408-7201, 408-7215, 408-3186, 408-7300

## Commercial MATE-N-LOK Connectors (Continued)

### Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Commercial MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

Commercial MATE-N-LOK connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 11 milliseconds

**Housing Panel Mount Retention**—40 lb. min. 3 and 4 circuit  
65 lb. min. 6, 9, 12, and 15 circuit

**Housing Lock Strength with Positive Locking Devices Engaged**—25 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

### Related Product Data

#### Product Specifications

108-1000 Commercial MATE-N-LOK Connectors  
108-1077 Commercial MATE-N-LOK PC Board Headers

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### Motor Mount Calculated Current Table

| Number of<br>Circuits | Wire Gauge |       |      |      |      |      |      |
|-----------------------|------------|-------|------|------|------|------|------|
|                       | 14         | 16    | 18   | 20   | 22   | 24   | 30   |
| 6                     | 13.00      | 10.50 | 9.50 | 7.50 | 6.00 | 5.00 | 2.50 |
| 8                     | 12.00      | 9.50  | 8.50 | 7.00 | 5.50 | 4.50 | 2.50 |
| 10                    | 11.00      | 9.00  | 8.00 | 6.50 | 5.00 | 4.50 | 2.00 |
| 12                    | 10.50      | 8.50  | 7.50 | 6.00 | 5.00 | 4.00 | 2.00 |
| 16                    | 9.50       | 8.00  | 7.00 | 5.50 | 4.50 | 3.50 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

#### Calculated Current Table

| Number of<br>Circuits | Wire Gauge |       |       |       |      |      |      |
|-----------------------|------------|-------|-------|-------|------|------|------|
|                       | 14         | 16    | 18    | 20    | 22   | 24   | 30   |
| 1                     | 19.00      | 15.50 | 14.00 | 11.00 | 9.00 | 7.50 | 4.00 |
| 2                     | 18.00      | 14.50 | 13.00 | 10.50 | 8.50 | 7.00 | 4.00 |
| 3                     | 16.00      | 13.00 | 12.00 | 9.50  | 7.50 | 6.50 | 3.50 |
| 4                     | 15.00      | 12.50 | 11.00 | 9.00  | 7.00 | 6.00 | 3.00 |
| 6 Matrix              | 13.00      | 10.50 | 9.50  | 7.50  | 6.00 | 5.00 | 3.00 |
| 8                     | 12.50      | 10.50 | 9.00  | 7.50  | 6.00 | 5.00 | 2.50 |
| 9                     | 11.00      | 9.00  | 8.00  | 6.50  | 5.50 | 4.50 | 2.50 |
| 10                    | 12.00      | 9.50  | 8.50  | 7.00  | 5.50 | 4.50 | 2.50 |
| 12                    | 10.50      | 8.50  | 7.50  | 6.00  | 5.00 | 4.00 | 2.00 |
| 15                    | 9.50       | 8.00  | 7.00  | 5.50  | 4.50 | 4.00 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

#### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

#### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|-----|-------------------|-----|-------------------|
| 30  | 2.6               | 18  | 9.4               |
| 28  | 3.2               | 16  | 11.3              |
| 26  | 4.1               | 14  | 13.7              |
| 24  | 5.1               | 12  | 16.4              |
| 20  | 7.8               | 10  | 19.3              |

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

#### Termination Resistance/Contact Crimp Tensile Force

| Wire Size |                 | Termination Resistance |                                   | Contact Crimp Tensile Force |     |
|-----------|-----------------|------------------------|-----------------------------------|-----------------------------|-----|
| AWG       | mm <sup>2</sup> | Test Current (Amps)    | Resistance Milliohms (Max. Init.) | Force (Min.) lbs.           | N   |
| 30        | .05             | .50                    | 4.00                              | 2                           | 9   |
| 28        | .08             | .75                    | 3.50                              | 3                           | 13  |
| 26        | .12             | 1.00                   | 3.50                              | 7                           | 31  |
| 24        | .2              | 1.5                    | 3.50                              | 10                          | 44  |
| 22        | .3              | 3                      | 3.50                              | 15                          | 67  |
| 20        | .5              | 4.5                    | 3.00                              | 20                          | 89  |
| 18        | .8              | 6                      | 3.00                              | 30                          | 133 |
| 16        | 1.2             | 8                      | 2.75                              | 30                          | 133 |
| 14        | 2.0             | 10                     | 2.75                              | 35                          | 156 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.



## Commercial MATE-N-LOK Connectors (Continued)

| Connector Part Number |                                         |                    |                  | Mating Connector Part Number |                     |                                   |     |                                 |                        |           |               |            |                          |
|-----------------------|-----------------------------------------|--------------------|------------------|------------------------------|---------------------|-----------------------------------|-----|---------------------------------|------------------------|-----------|---------------|------------|--------------------------|
| Flammability Rating   | Connector Type                          | Connector Part No. | Housing Part No. | Housing Type                 | Plating             | Socket Connectors                 |     |                                 | PC Board Pin Headers   |           |               |            |                          |
|                       |                                         |                    |                  |                              |                     | Insulation Displacement Connector | AWG | PC Board Vertical Socket Header | Vertical Standard Tail | Long Tail | Surface Mount | Standard   | Right-Angle W/Fixed Belt |
| UL94V-2               | Socket Housing Positive Lock            | 1-480772-0         | —                | —                            | Pre-tin             | —                                 | —   | —                               | 350543-1               | 350544-1  | —             | —          | —                        |
|                       |                                         |                    |                  |                              | Duplex <sup>1</sup> | —                                 | —   | —                               | 1586534-2              | 1586536-2 | —             | —          | —                        |
|                       | Socket Housing Detent Lock              | 1-480424-0         | 1-480426-0       | Pin                          | Pre-tin             | —                                 | —   | —                               | 350211-1               | 350424-1  | 770829-1      | 641737-1   | 174804-1                 |
|                       |                                         |                    |                  |                              |                     |                                   |     |                                 | 770328-13              |           |               | 770846-1   | 174804-2                 |
|                       |                                         |                    |                  |                              |                     |                                   |     |                                 | 1-770328-14            |           |               |            | 174804-3                 |
|                       |                                         |                    |                  |                              | Duplex <sup>1</sup> | —                                 | —   | —                               | 1586515-2              | 1586525-2 | —             | —          | —                        |
|                       | Pin Housing Detent Lock                 | 1-480426-0         | 1-480424-0       | Socket                       | Pre-tin             | 770156-2                          | 22  | 770997-1                        | —                      | —         | —             | —          | —                        |
|                       |                                         |                    |                  |                              |                     | 770156-3                          | 18  | 794287-12                       | —                      | —         | —             | —          | —                        |
|                       |                                         |                    |                  |                              |                     | 770156-4                          | 20  |                                 | —                      | —         | —             | —          | —                        |
|                       |                                         |                    |                  |                              |                     | 770156-5                          | 16  |                                 | —                      | —         | —             | —          | —                        |
| UL94V-0               | Pin Housing Detent Lock High Temp       | 3-480426-0         | 3-480425-0       | Socket High Temp             | —                   | —                                 | —   | —                               | —                      | —         | —             | —          | —                        |
|                       | Socket Header                           | 770997-1           | 1-480426-0       | Pin                          | Pre-tin             | —                                 | —   | —                               | 350211-1               | 350424-1  | 770829-1      | 641737-1   | 174804-1                 |
|                       |                                         |                    |                  |                              |                     |                                   |     |                                 |                        |           |               | 770846-1   | 174804-2                 |
|                       |                                         |                    |                  |                              |                     |                                   |     |                                 |                        |           |               |            | 174804-3                 |
|                       | Insulation Displacement Connector (IDC) | 770156-2           | 1-480426-0       | Pin                          | Pre-tin             | —                                 | —   | —                               | 350211-1               | 350424-1  | 770829-1      | 641737-1   | 174804-1                 |
|                       |                                         | 770156-3           |                  |                              |                     |                                   |     |                                 |                        |           |               | 770846-1   | 174804-2                 |
|                       |                                         | 770156-4           |                  |                              |                     |                                   |     |                                 |                        |           |               |            | 174804-3                 |
|                       |                                         | 770156-5           |                  |                              |                     |                                   |     |                                 |                        |           |               |            |                          |
|                       |                                         |                    |                  |                              | Duplex <sup>1</sup> | —                                 | —   | —                               | 1586515-2              | 1586525-2 | —             | —          | —                        |
|                       | Socket Housing                          | 770827-1           | 794132-1         | Pin                          | Pre-tin             | —                                 | —   | —                               | —                      | —         | —             | 1-641737-1 | —                        |
| UL94V-0               | Insulation Displacement Connector (IDC) | 794036-1           | 794132-1         | —                            | Pre-tin             | —                                 | —   | —                               | —                      | —         | —             | 1-641737-1 | —                        |
|                       |                                         | 794036-2           |                  |                              |                     |                                   |     |                                 |                        |           |               |            |                          |
|                       |                                         | 794036-3           |                  |                              |                     |                                   |     |                                 |                        |           |               |            |                          |
|                       |                                         | 794036-4           |                  |                              |                     |                                   |     |                                 |                        |           |               |            |                          |
| UL94V-0               | Right-Angle Pin Header                  | 1-641737-1         | 770827-1         | Socket                       | Pre-tin             | 794036-1                          | 18  | —                               | 794236-1               | —         | —             | —          | —                        |
|                       |                                         |                    |                  |                              |                     | 794036-2                          | 20  | —                               |                        |           |               |            |                          |
|                       |                                         |                    |                  |                              |                     | 794036-3                          | 22  | —                               |                        |           |               |            |                          |
|                       |                                         |                    |                  |                              |                     | 794036-4                          | 16  | —                               |                        |           |               |            |                          |

**PM: Panel Mount**<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over. 000050 [.00127] min. nickel underplate on entire contact.<sup>2</sup>Surface Mount Compatible.<sup>3</sup>With Drainholes<sup>4</sup>Tube Loaded**Note: All part numbers are RoHS Compliant.**



## Commercial MATE-N-LOK Connectors (Continued)

### Contacts

Pin diameter .084 [2.13]  
Stock thickness .012 [.305]  
These contacts are to be used in Commercial MATE-N-LOK housings only.

### Related Product Data

#### Product Specification

108-1000 Commercial MATE-N-LOK Connectors

#### Application Specification

114-1012 Commercial MATE-N-LOK Contacts

**Performance Characteristics**—pages 145-146

**Housings**—pages 151-153

**Technical Documents**—pages 145 and 199-200

**Application Tooling**—pages 201-204

### PC Board Contacts



Pin

Socket

| Type of Contact | L Dim.           |                  | Material & Finish   | Part Numbers       |                       |
|-----------------|------------------|------------------|---------------------|--------------------|-----------------------|
|                 | Pin              | Socket           |                     | Pin<br>Loose Piece | Socket<br>Loose Piece |
| PC Board        | 1.110<br>[28.19] | 1.010<br>[25.65] | Phos. Brz., Pre-tin | 61518-11           | 61320-11              |
|                 | 1.210<br>[30.73] | 1.110<br>[28.19] | Phos. Brz., Pre-tin | 350074-12          | 350073-12             |

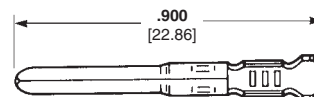
<sup>1</sup>For .062 [1.57] max. board thickness—Board hole size .057 [1.45]

<sup>2</sup>For .125 [3.14] max. board thickness—Board hole size .057 [1.45]

### Grounding Pin

(.095 [2.41] longer than standard pin)

(Mate first, break last, not for interrupting current)



| Wire Size Range<br>AWG [mm <sup>2</sup> ] | Ins. Dia.<br>Range     | Material & Finish | Contact Part Numbers |             | HDM<br>Applicator<br>Part No.       | Hand Tool<br>Part No. |
|-------------------------------------------|------------------------|-------------------|----------------------|-------------|-------------------------------------|-----------------------|
|                                           |                        |                   | Strip Form           | Loose Piece |                                     |                       |
| 24-18<br>[.2-.8]                          | .060-.100<br>1.52-2.54 | Brass, Pre-tin    | 61527-2              | —           | 466320-11<br>466320-21<br>466320-41 | 91512-1               |

<sup>1</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine; -3, -4, or -6 is used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

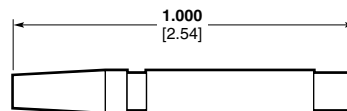
### Keying Plug

IS 408-7582

### Material

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2



Part Number  
200821-1

Note: Keying plug snaps into socket housing

**Note:** All part numbers are RoHS Compliant.

## Commercial MATE-N-LOK Connectors (Continued)

### Housings

#### Free-Hanging

.200 [5.08] Centerline spacing

#### Material

Housing—Nylon, natural color

Flammability Rating—UL94V-2

#### Related Product Data

##### Product Specification

108-1000 Commercial MATE-N-LOK Connectors

Performance Characteristics—  
pages 145-146

Contacts—pages 149-150

Commoning Tabs—page 149

Keying Plug—page 150

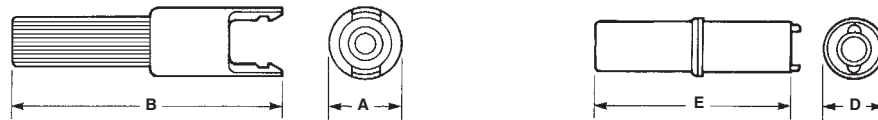
Technical Documents—pages 145  
and 199-200

Mating Pin Headers—pages 155-158

Mating Socket Header—page 156

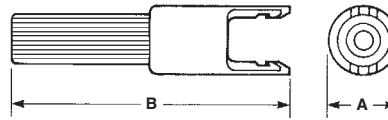
Mating IDC—page 157

### 1 Circuit



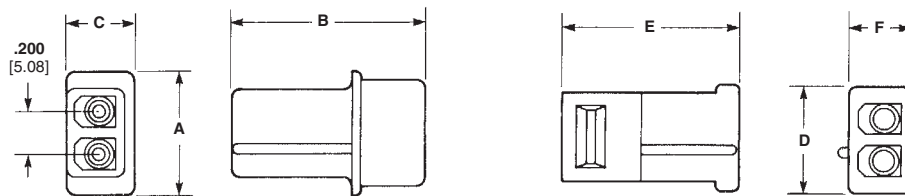
Pin Housing (Cap) Detent Lock

Socket Housing (Plug)



Pin Housing (Cap) Positive Lock

### 2, 3 and 4 Circuit, In-Line



Pin Housing (Cap)

Socket Housing (Plug)

| Number of<br>Circuits | Dimensions     |                |              |                |               |              | Part Numbers                |                           |
|-----------------------|----------------|----------------|--------------|----------------|---------------|--------------|-----------------------------|---------------------------|
|                       | A              | B              | C            | D              | E             | F            | Pin Housing (Cap)           | Socket Housing (Plug)     |
| 1                     | .300<br>7.62   | 1.200<br>30.48 | —            | .260<br>6.60   | .870<br>22.10 | —            | 1-480350-0 <sup>1</sup>     | 1-480349-0                |
|                       | .300<br>7.62   | 1.240<br>31.49 | —            | .260<br>6.60   | .870<br>22.10 | —            | 1-480351-0 <sup>2</sup>     | 1-480349-0                |
|                       | .300<br>7.62   | 1.325<br>33.65 | —            | .260<br>6.60   | .995<br>25.27 | —            | 1-480401-0 <sup>1,3</sup>   | 1-480400-0 <sup>3</sup>   |
| 2                     | .610<br>15.49  | .930<br>23.62  | .330<br>8.38 | .530<br>13.46  | .860<br>21.84 | .295<br>7.49 | 1-480319-0 <sup>1,5</sup>   | 1-480318-0 <sup>5</sup>   |
|                       | .610<br>15.49  | .930<br>23.62  | .330<br>8.38 | .530<br>13.46  | .860<br>21.84 | .295<br>7.49 | 1-480498-1 <sup>1,3,5</sup> | 1-480393-1 <sup>3,5</sup> |
|                       | .810<br>20.57  | .930<br>23.62  | .325<br>8.25 | .825<br>20.95  | .850<br>21.60 | .290<br>7.37 | 1-480305-0 <sup>1,5</sup>   | 1-480303-0 <sup>5</sup>   |
| 3                     | .810<br>20.57  | .930<br>23.62  | .325<br>8.25 | .825<br>20.95  | .850<br>21.60 | .290<br>7.37 | 1-480387-0 <sup>1,3,5</sup> | 1-480388-0 <sup>3,5</sup> |
|                       | 1.010<br>25.65 | .930<br>23.62  | .330<br>8.38 | 1.030<br>26.16 | .850<br>21.60 | .310<br>7.88 | 1-480426-0 <sup>1,5,6</sup> | 1-480424-0 <sup>5,6</sup> |
|                       | —              | —              | —            | 1.030<br>26.16 | .850<br>21.60 | .310<br>7.88 | 794132-14,5,6               | 770827-14,5,6             |

<sup>1</sup>Detent lock

<sup>2</sup>Positive lock

<sup>3</sup>UV Stable black color

<sup>4</sup>Housing Material UL94V-0 rated

<sup>5</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

<sup>6</sup>Used by the disk drive industry.

**Note:** All part numbers are RoHS Compliant.

## Commercial MATE-N-LOK Connectors (Continued)

### Housings Free-Hanging, Positive Lock

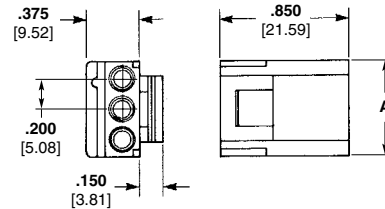
#### Material

Housing—Nylon, natural color

Flammability Rating—UL94V-2

### 2, 3, and 4 Circuit, In-Line

.200 [5.08] Centerline spacing

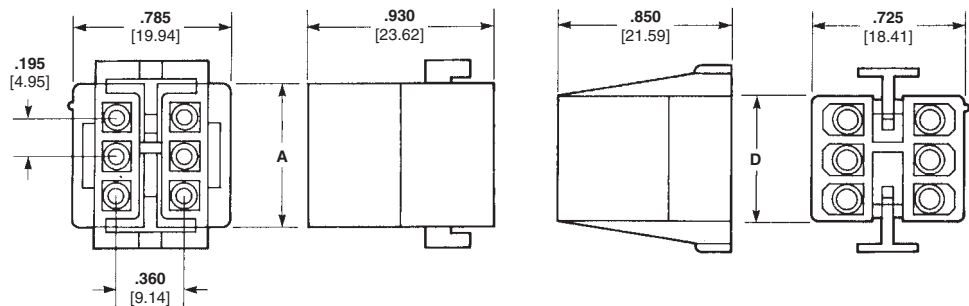


Socket Housing (Plug)

| Number of Circuits | A Dim.        | Part Numbers            |                                           |                        |
|--------------------|---------------|-------------------------|-------------------------------------------|------------------------|
|                    |               | Socket Housing (Plug)   | Mates with Pin Headers                    | Mates with Cap Housing |
| 2                  | .435<br>11.04 | 1-480720-0              | 350539, 350540                            | 794012-1               |
| 3                  | .630<br>16.00 | 1-480721-0              | 350541                                    | —                      |
| 4                  | .830<br>21.09 | 1-480722-0 <sup>1</sup> | 350543 <sup>1</sup> , 350544 <sup>1</sup> | —                      |

<sup>1</sup>Used by the disk drive industry.

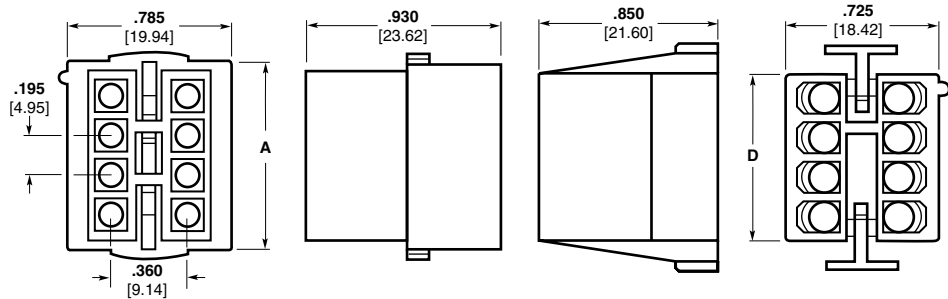
### 6 Circuit, Dual Row



Pin Housing (Cap)

Socket Housing (Plug)

### 8 and 10 Circuit, Dual Row



Pin Housing (Cap)

Socket Housing (Plug)

#### Related Product Data

##### Product Specification

108-1000 Commercial MATE-N-LOK Connectors

Performance Characteristics—pages 145-146

Contacts—pages 149-150

Commoning Tabs—page 149

Keying Plug—page 150

Technical Documents—pages 145 and 199-200

Mating Headers—pages 155-158

| Number of Circuits | Dimensions     |                | Part Numbers      |                         |
|--------------------|----------------|----------------|-------------------|-------------------------|
|                    | A              | D              | Pin Housing (Cap) | Socket Housing (Plug)   |
| 6                  | .705<br>17.91  | .610<br>15.49  | 1-480340-0        | 1-480270-0 <sup>1</sup> |
| 8                  | .900<br>22.86  | .805<br>20.44  | 1-480345-0        | 1-480283-0 <sup>1</sup> |
| 10                 | 1.095<br>27.81 | 1.000<br>25.40 | 1-480339-0        | 1-480285-0 <sup>1</sup> |

<sup>1</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

**Note:** All part numbers are RoHS Compliant.

## Commercial MATE-N-LOK Connectors (Continued)

### Housings

#### Panel Mount, Positive Lock

#### Material

Housing—Nylon, natural color

Flammability Rating—UL94V-2

#### Related Product Data

##### Product Specification

108-1000 Commercial MATE-N-LOK Connectors

Performance Characteristics—  
pages 145-146

Contacts—pages 149-150

Commoning Tabs—page 149

Keying Plug—page 150

Technical Documents—pages 145  
and 199-200

Mating Socket Headers—page 156

Mating IDC—page 157

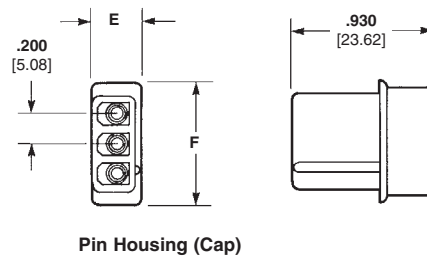
### Recommended Panel Cutout for Panel Mount Socket Housing

View is from socket housing entry  
side

#### Mounting Information

1. Recommended panel thickness—.025-.065 [.635-1.65].
2. Both locking legs are to be squeezed together and the housing is to be inserted "straight-in", as opposed to a rocking manner.
3. The panel should be punched so that the housing enters the panel in the same direction as the punch.
4. The panel must not have any material (paint, porcelain, etc.) applied in the mounting hole area that would decrease the retention of the housing in the panel.
5. If the two items above are not complied with, the "A" dimension should be reduced .020 [5.08] for proper retention.

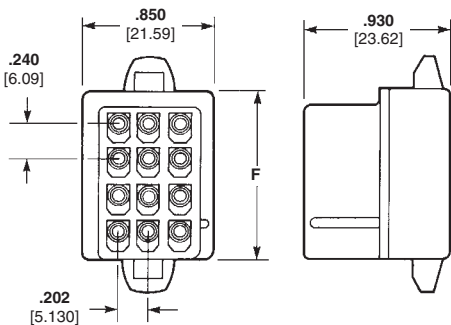
### 3 and 4 Circuit, In-Line



Pin Housing (Cap)

Socket Housing (Plug)

### 6, 9, 12 and 15 Circuit, Matrix



Pin Housing (Cap)

Socket Housing (Plug)

| Number of<br>Circuits | Dimensions   |                |                | Part Numbers                                             |                                                      |
|-----------------------|--------------|----------------|----------------|----------------------------------------------------------|------------------------------------------------------|
|                       | E            | F              | G              | Pin Housing (Cap)                                        | Socket Housing (Plug)                                |
| 3                     | .325<br>8.26 | .810<br>20.57  | .630<br>16.00  | 1-480305-0 <sup>2</sup>                                  | 1-480304-0                                           |
| 4                     | .330<br>8.38 | 1.010<br>25.65 | .825<br>20.96  | 1-480426-0 <sup>2,4</sup><br>3-480426-0 <sup>1,2,4</sup> | 1-480425-0 <sup>4</sup><br>3-480425-0 <sup>1,4</sup> |
| 6                     | —            | .665<br>16.89  | .555<br>14.10  | 1-480276-0 <sup>3</sup>                                  | 1-480273-0                                           |
| 9                     | —            | .905<br>22.99  | .795<br>20.19  | 1-480277-0 <sup>3</sup>                                  | 1-480274-0                                           |
| 12                    | —            | 1.145<br>29.08 | 1.045<br>26.54 | 1-480278-0 <sup>3</sup>                                  | 1-480275-0                                           |
| 15                    | —            | 1.382<br>35.10 | 1.280<br>32.51 | 1-480324-0 <sup>3</sup>                                  | 1-480323-0                                           |

<sup>1</sup>Housing material has 125°C temperature rating

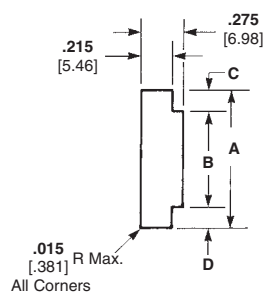
<sup>2</sup>Detent lock

<sup>3</sup>Positive lock

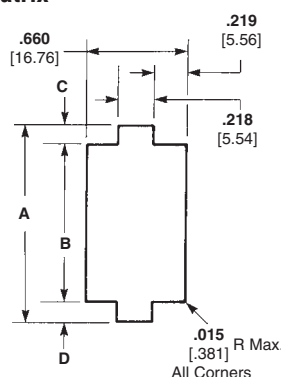
<sup>4</sup>Used by disk drive industry

Note: All part numbers are RoHS Compliant.

### 3 and 4 Circuit, In-Line



### 6, 9, 12 and 15 Circuit, Matrix

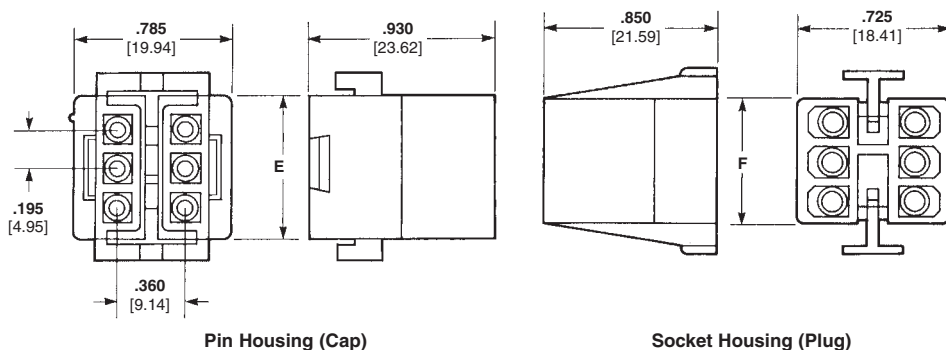


| Number<br>Circuits | Dimensions     |                            |
|--------------------|----------------|----------------------------|
|                    | A              | B                          |
| 3                  | .890<br>22.61  | .645-.635<br>16.38-16.13   |
| 4                  | 1.100<br>27.94 | .845-.835<br>21.46-21.21   |
| 6                  | .840<br>21.34  | .575-.570<br>14.61-14.48   |
| 9                  | 1.075<br>27.31 | .815-.810<br>20.70-20.57   |
| 12                 | 1.320<br>33.53 | 1.055-1.050<br>26.80-26.67 |
| 15                 | 1.550<br>39.37 | 1.290-1.285<br>32.77-32.64 |

Note: Dimensions "C" and "D" are to be equal.

## Commercial MATE-N-LOK Connectors (Continued)

### Motor Mount, Positive Lock 6, 8, 10, 12 and 16 Circuit, Dual Row



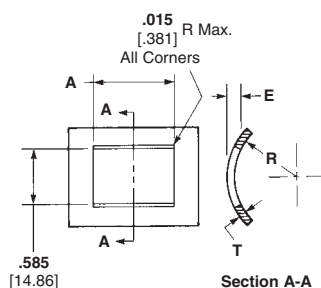
| Number of Circuits           | Dimensions     |                | Part Numbers      |                         |
|------------------------------|----------------|----------------|-------------------|-------------------------|
|                              | E              | F              | Pin Housing (Cap) | Socket Housing (Plug)   |
| UL94V-2 Nylon, Natural Color |                |                |                   |                         |
| 6                            | .705<br>17.90  | .610<br>15.49  | 1-480271-0        | 1-480270-0 <sup>1</sup> |
| 8                            | .900<br>22.86  | .805<br>20.45  | 1-480284-0        | 1-480283-0 <sup>1</sup> |
| 10                           | 1.095<br>27.81 | 1.000<br>25.4  | 1-480286-0        | 1-480285-0 <sup>1</sup> |
| 12                           | 1.290<br>32.77 | 1.195<br>30.35 | 1-480288-0        | 1-480287-0              |
| 16                           | 1.680<br>42.67 | 1.585<br>40.26 | 1-480439-0        | 1-480438-0              |

<sup>1</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

**Note:** All part numbers are RoHS Compliant.

### Recommended Panel Cutout for Motor Mount Pin Housing

View is from pin housing entry side.



**Note:** Motor mount housings may be used in flat panels

| Number of Circuits | A Dim.         |
|--------------------|----------------|
| 6                  | .715<br>18.16  |
| 8                  | .910<br>23.11  |
| 10                 | 1.105<br>28.07 |
| 12                 | 1.300<br>33.02 |
| 16                 | 1.690<br>42.93 |

#### Mounting Information

1. Recommended panel thickness "E" is .040-.100 [1.02-2.54] and is dependent on "T" and "R".
2. The pin housing must be inserted in a rocking manner.
3. The panel must be punched so that the housing enters the panel in the same direction as the punch.

## Commercial MATE-N-LOK Connectors (Continued)

### PC Board Vertical Pin Headers

#### Material

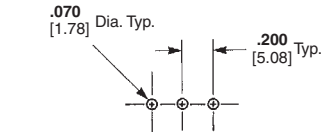
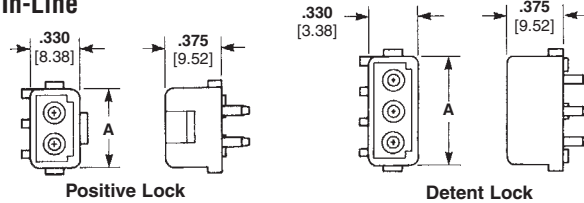
**Housing**—Nylon, natural color  
**Flammability Rating**—UL94V-2  
**Contacts**—Phosphor bronze  
 Solder tail diameter .062 [1.57]

#### Related Product Data

**Product Specifications**  
 108-1077 Commercial MATE-N-LOK  
 PC Board Headers

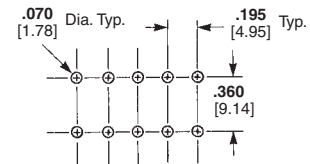
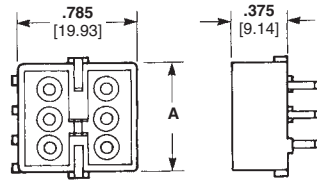
**Performance Characteristics**—  
 pages 145-146  
**Technical Documents**—pages 145  
 and 199-200  
**Mating Socket Housings**—  
 pages 151-154  
**Mating Socket Headers**—page 156  
**Mating IDC**—page 157

### 2, 3, and 4 Circuit, In-Line



Recommended PC Board Hole Layout  
Mounting Dimensions

### 6, 8, 10, 12 and 16 Circuit, Dual Row



Recommended PC Board Hole Layout  
Mounting Dimensions

| Number of<br>Circuits | A<br>Dim.      | Type<br>Lock | Finish              | Part Numbers                  |                           | Mates with<br>Socket Housing<br>Part Number |
|-----------------------|----------------|--------------|---------------------|-------------------------------|---------------------------|---------------------------------------------|
|                       |                |              |                     | Standard <sup>2</sup><br>Tail | Long <sup>3</sup><br>Tail |                                             |
| 2                     | .515<br>13.09  | Positive     | Pre-tin             | 350539-1                      | 350540-1                  | 1-480720-0                                  |
|                       |                |              | Duplex <sup>1</sup> | 1586530-2                     | —                         |                                             |
|                       |                | Detent       | Pre-tin             | 350209-1                      | 350422-1                  | 1-480318-0                                  |
|                       |                |              | Duplex <sup>1</sup> | 1586512-2                     | —                         |                                             |
| 3                     | .715<br>18.17  | Positive     | Pre-tin             | 350541-1                      | 350542-1                  | 1-480721-0                                  |
|                       |                |              | Duplex <sup>1</sup> | 1586532-2                     | —                         |                                             |
|                       |                | Detent       | Pre-tin             | 350210-1                      | 350423-1                  | 1-480303-0                                  |
|                       |                |              | Duplex <sup>1</sup> | 1586514-2                     | —                         |                                             |
| 4                     | .915<br>23.24  | Positive     | Pre-tin             | 350543-1 <sup>5</sup>         | 350544-1 <sup>5</sup>     | 1-480722-0 <sup>5</sup>                     |
|                       |                |              | Duplex <sup>1</sup> | 1586534-2 <sup>5</sup>        | 1586536-2 <sup>5</sup>    |                                             |
|                       |                | Detent       | Pre-tin             | 350211-1 <sup>5</sup>         | 350424-1 <sup>5</sup>     | 1-480424-0 <sup>4,5</sup>                   |
|                       |                |              |                     | 794236-1 <sup>5,8</sup>       |                           |                                             |
|                       |                |              | Post-tin            | 1586627-1 <sup>5,6</sup>      |                           |                                             |
|                       |                |              |                     | 1-1586627-1 <sup>5,6,7</sup>  |                           |                                             |
| 6                     | .705<br>17.91  | Positive     | Pre-tin             | 1-380999-0                    | 350425-1                  | 1-480270-0                                  |
|                       |                |              | Duplex <sup>1</sup> | 2-1586546-0                   | 1586526-2                 |                                             |
| 8                     | .900<br>22.86  | Positive     | Pre-tin             | 350212-1                      | 350426-1                  | 1-480283-0                                  |
|                       |                |              | Duplex <sup>1</sup> | 1586518-2                     | 1586528-2                 |                                             |
| 10                    | 1.095<br>27.81 | Positive     | Pre-tin             | 1-380991-0                    | 350219-1                  | 1-480285-0                                  |
|                       |                |              | Duplex <sup>1</sup> | 2-1586544-0                   | —                         |                                             |
| 12                    | 1.290<br>32.77 | Positive     | Pre-tin             | 350213-1                      | 350220-1                  | 1-480287-0                                  |
|                       |                |              | Duplex <sup>1</sup> | 1586520-2                     | 1586524-2                 |                                             |
| 16                    | 1.680<br>42.68 | Positive     | Pre-tin             | 350214-1                      | 350427-1                  | 1-480438-0                                  |
|                       |                |              | Duplex <sup>1</sup> | 1586522-2                     | 1586529-2                 |                                             |

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use standard tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use long tail for .125 [3.18] thick PC Board.

<sup>4</sup>Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).

<sup>5</sup>Used by the disk drive industry.

<sup>6</sup>With drain holes.

<sup>7</sup>Tube loaded.

<sup>8</sup>Housing material UL94V-0 rated.

**Note:** All part numbers are RoHS Compliant.

## Commercial MATE-N-LOK Connectors (Continued)

### PC Board Surface Mount Right-Angle Pin Header

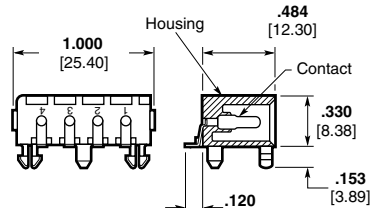
#### Material and Finish

**Housing**—Nylon, black color

**Flammability Rating**—UL94V-2

**Contact**—Phosphor bronze, pre-tin  
Solder tail width .052 [1.32]

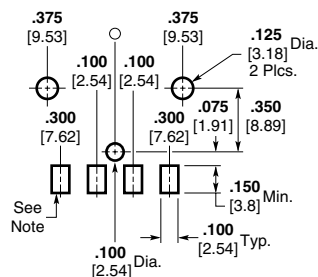
#### 4 Circuit, In-Line



**Part Number**  
770829-1

#### Notes:

1. Mating parts include socket housings, a vertical PC Board socket header below and the insulation displacement connectors (IDC).
2. Used by the disk drive industry.



**Note:** .010 [.25] min. thick solder paste,  
63/27 tin

#### Recommended PC Board Layout

.062 [1.57] thick PC Board

### PC Board Vertical Socket Headers

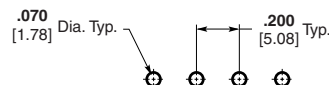
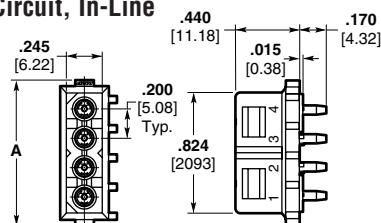
#### Material

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2

**Contacts**—Phosphor bronze  
Solder tail diameter .062 [1.57]

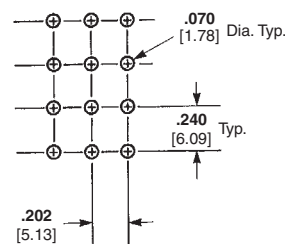
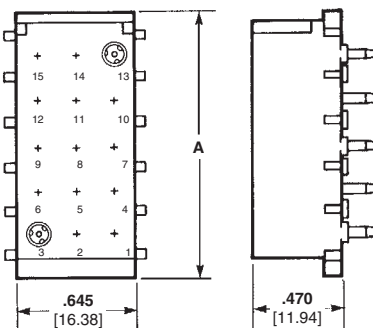
#### 4 Circuit, In-Line



#### Recommended PC Board Hole Layout

.062 [1.57] thick PC Board

### 6, 9, 12 and 15 Circuit, Matrix



#### Recommended PC Board Hole Layout

.062 [1.57] thick PC Board

#### Related Product Data

##### Product Specifications

108-1077 Commercial MATE-N-LOK  
PC Board Headers

**Performance Characteristics**—  
pages 145-146

**Technical Documents**—pages 145  
and 199-200

**Mating Pin Housings**—pages 151-154

**Mating Pin Headers**—pages 155-158

**Mating Socket Housings**—  
pages 151-154

**Mating Socket Header**—page 156

**Mating IDC**—page 157

| Number of<br>Circuits | A<br>Dim.      | Finish              | Part Numbers               |                        | Mates with<br>Pin Housing<br>Part Number |
|-----------------------|----------------|---------------------|----------------------------|------------------------|------------------------------------------|
|                       |                |                     | Standard Tail <sup>5</sup> | Long Tail <sup>6</sup> |                                          |
| 4                     | 1.000<br>25.40 | Pre-tin             | 770997-1 <sup>3</sup>      | —                      | 1-480426-02.3                            |
|                       |                |                     | 794285-13.7                | —                      |                                          |
|                       |                |                     | 794287-13.4,8              | —                      |                                          |
| 6                     | .720<br>18.29  | Pre-tin             | 350641-1                   | 350576-1               | 1-480276-0                               |
|                       |                | Duplex <sup>1</sup> | 1586539-2                  | —                      |                                          |
| 9                     | .960<br>24.39  | Pre-tin             | 350642-1                   | 350577-1               | 1-480277-0                               |
| 12                    | 1.200<br>30.49 | Pre-tin             | 350643-1                   | 350578-1               | 1-480278-0                               |
| 15                    | 1.440<br>36.58 | Pre-tin             | 350644-1                   | 350579-1               | 1-480324-0                               |

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Other mating connectors include vertical, right-angle and surface mount PC Board pin headers.

<sup>3</sup>Used by the disk drive industry.

<sup>4</sup>Surface mount compatible.

<sup>5</sup>Use standard tail for .062 [1.57] thick PC Board.

<sup>6</sup>Use long tail for .125 [3.18] thick PC Board.

<sup>7</sup>Low Mating Force

<sup>8</sup>High Temperature

**Note:** All part numbers are RoHS Compliant.



## Commercial MATE-N-LOK Connectors (Continued)

### PC Board Right-Angle Pin Header with Fix Belt

#### Material

**Housing** — Thermoplastic

**Flammability Rating** — UL94V-2

**Contacts** — Copper Alloy

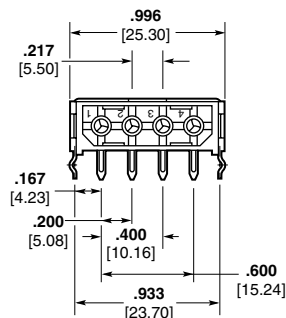
#### Related Product Data

Used by the disk drive industry

#### Product Specification

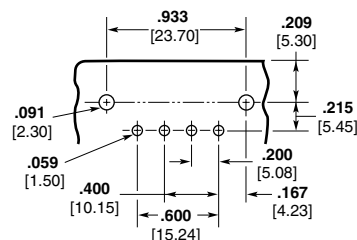
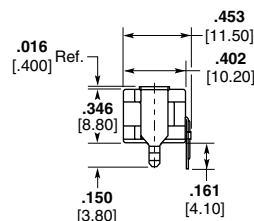
108-5155

### 4 Circuit, In-Line



**Part No. 174552-1**

**Notes:** Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

### PC Board Right-Angle Pin Headers with Fix Belt Reverse Polarization

#### Material and Finish

**Housing** — Nylon

**Flammability Rating** — UL94V-2

**Contacts** — Tin plated, Copper alloy

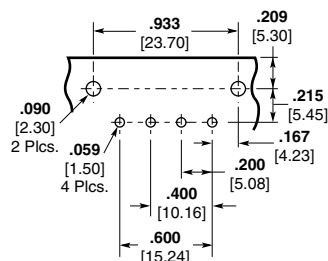
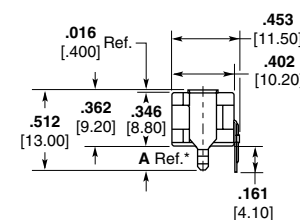
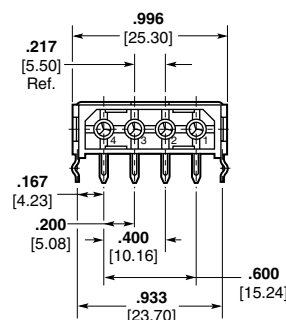
#### Related Product Data

Used by the disk drive industry

#### Product Specification

108-5155

### 4 Circuit, In-Line



**Part No. 174804\***

**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

**Notes:** Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).

**Note:** All part numbers are RoHS Compliant.

| Part No. | A Dim. *     | Description             |
|----------|--------------|-------------------------|
| 174804-1 | .150<br>3.80 | Long Clamp<br>with Kink |
| 174804-2 | .150<br>3.80 | Clamp<br>without Kink   |
| 174804-3 | .116<br>2.95 | Short Clamp             |

## **.140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline**

### Product Facts

- Available in 2, 3 and 9 circuit configurations for panel mounting; 4 and 9 circuit configurations for free-hanging applications
- Standard natural nylon housings
- Housings fully polarized
- Contacts fully protected in housings
- Contacts accept wire size range 20-10 AWG [.5-5.0 mm<sup>2</sup>] with insulation diameters from .100 [2.54] to .180 [4.57]
- Low insertion/extraction forces
- Dual locking lances provide optimum contact stability
- Extraction tool removes both pins and sockets
- Contacts are on .240 [6.09] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189A



### Performance Characteristics

The .140 MATE-N-LOK Connector performance characteristics found on this page are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstand Voltage**—3.0 KVAC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Connector Mating**—4.5 lb. max. per circuit

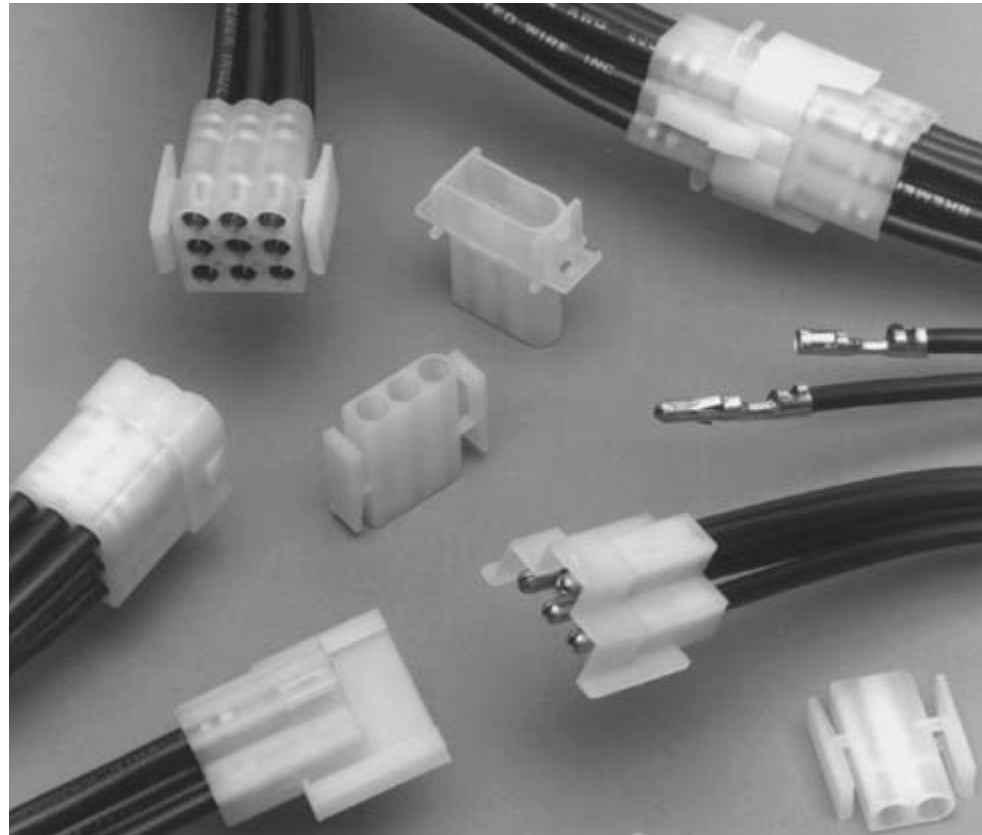
**Connector Unmating**—8 lb. min. per circuit

**Contact Retention**—30 lb. min.

**Durability**—25 cycles, mating and unmating

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH



**Maximum Current**—Maximum current rating of .140 MATE-N-LOK Connectors is limited by the maximum operating temperature of the housings which is 105°C and the temperature rise of the contacts which is 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

### Technical Documents

#### Product Specification

108-1032 .140 Diameter  
MATE-N-LOK Connectors

#### Application Specification

114-1007 .140 Diameter  
MATE-N-LOK Contacts

| Wire Size |                 | Termination Resistance |                                   | Contact Crimp Tensile Force |     |
|-----------|-----------------|------------------------|-----------------------------------|-----------------------------|-----|
| AWG       | mm <sup>2</sup> | Test Current (Amps)    | Resistance Milliohms (Max. Init.) | lbs.                        | N   |
| 20        | .5              | 4.5                    | 3.0                               | 20                          | 89  |
| 18        | .8              | 6                      | 2.5                               | 30                          | 133 |
| 16        | 1.2             | 8                      | 2.5                               | 45                          | 200 |
| 14        | 2.0             | 10                     | 2.0                               | 50                          | 222 |
| 12        | 3.0             | 12                     | 1.5                               | 60                          | 267 |
| 10        | 5.0             | 14                     | 1.5                               | 65                          | 289 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### .140 MATE-N-LOK Connector Calculated Current Table

| Number of Circuits | Wire AWG |       |       |       |       |       |
|--------------------|----------|-------|-------|-------|-------|-------|
|                    | 10       | 12    | 14    | 16    | 18    | 20    |
| 2                  | 28.00    | 23.00 | 18.50 | 15.00 | 13.50 | 10.50 |
| 3                  | 25.00    | 21.00 | 17.00 | 13.50 | 12.00 | 9.50  |
| 9                  | 18.50    | 15.00 | 12.00 | 10.00 | 9.00  | 7.00  |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

### Minimum Wire Lengths for T-Rise vs. Current Testing

**Note:** If wire lengths used are less than those listed, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

## **.140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline** (Continued)

### Contacts

Pin diameter .140 [3.57]  
Stock thickness .014 [.357]

### Related Product Data

#### Product Specification

108-1032 .140 Diameter  
MATE-N-LOK Connectors

#### Application Specification

114-1007 .140 Diameter  
MATE-N-LOK Contacts

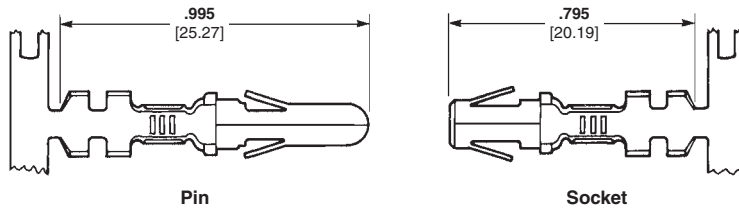
**Performance Characteristics**—  
page 159

**Keying Plug**—none

**Housings**—pages 160-161

**Technical Documents**—pages 159  
and 199-200

**Application Tooling**—pages 201-204



Pin

Socket

| Wire Size<br>Range<br>AWG [mm²] | Ins. Dia.<br>Range    | Material & Finish   | Contact Part Numbers |             |            |             | HDM<br>Applicator<br>Part No. | Hand Tool<br>Part No. |
|---------------------------------|-----------------------|---------------------|----------------------|-------------|------------|-------------|-------------------------------|-----------------------|
|                                 |                       |                     | Pin                  |             | Socket     |             |                               |                       |
|                                 |                       |                     | Strip Form           | Loose Piece | Strip Form | Loose Piece |                               |                       |
| 20-14<br>[.5-2.0]               | .100-.180<br>2.54-4.5 | Brass, pre-tin      | 61627-1              | 350389-1    | 61626-1    | 350388-1    | 567306-1                      | 90247-1               |
|                                 |                       | Phos. Brz., pre-tin | 61627-2              | —           | 61626-2    | —           | 567306-2<br>567306-3          |                       |
| 14-10<br>[2.0-5.0]              | .100-.180<br>2.54-4.5 | Brass, pre-tin      | 350201-1             | 350391-1    | 350200-1   | 350390-1    | 567309-1                      |                       |
|                                 |                       | Phos. Brz., pre-tin | 350201-2             | 350391-2    | 350200-2   | 350390-2    | 567309-2<br>567309-3          |                       |

<sup>1</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

<sup>2</sup>Hand Tool No. **69710-1** uses die set No. **58374-1** for 14-12 AWG and No. **58373-1** for 10 AWG.



**Contact Extraction Tool**  
Part No. 318845-1  
IS 408-4378

### Housings

#### Free-Hanging

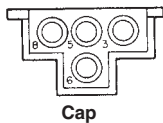
.240 [6.09] Centerline spacing

#### Material

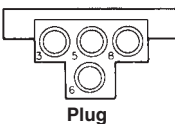
Nylon, natural color

**Flammability Rating**—UL94V-2

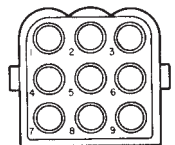
**Cavity Identification**  
(Rear View)



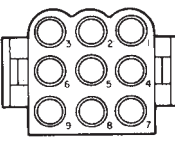
Cap



Plug

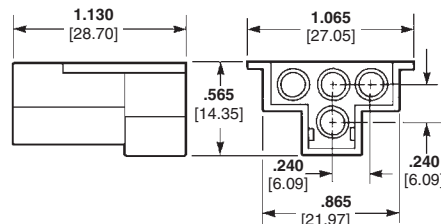


Cap

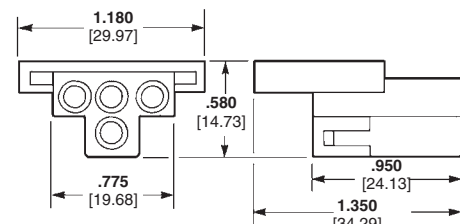


Plug

### 4 Circuit

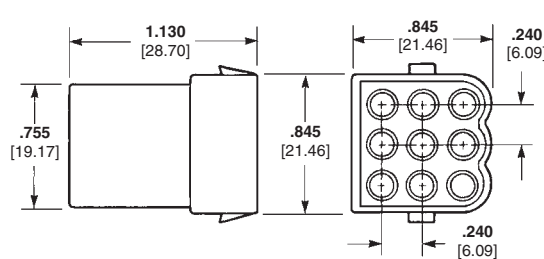


**Pin Housing (Cap)**  
Part No. 1-480512-0  
Part No. 794700-1 (Black Color High Temp.)

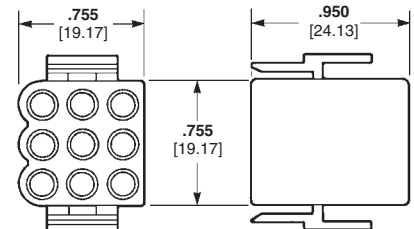


**Socket Housing (Plug)**  
Part No. 1-480510-0

### 9 Circuit, Matrix



**Pin Housing (Cap)**  
Part No. 1-480586-0



**Socket Housing (Plug)**  
Part No. 1-480585-0

**Note:** All part numbers are RoHS Compliant.

## .140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline (Continued)

### Housings

#### Panel Mount

.240 [6.09] Centerline spacing

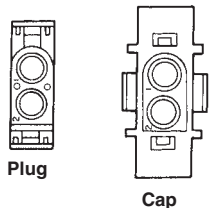
#### Material

Housing—Nylon, natural color

Flammability Rating—UL94V-2

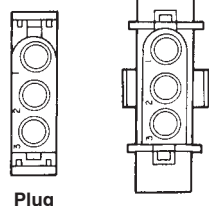
#### Cavity Identification

(Rear View)



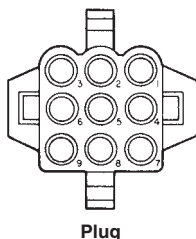
Plug

Cap

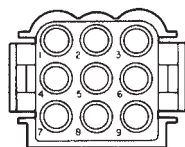


Plug

Cap



Plug



Cap

### Related Product Data

#### Product Specification

108-1032 .140 Diameter  
MATE-N-LOK Connectors

#### Application Specification

114-1007 .140 Diameter  
MATE-N-LOK Contacts

#### Performance Characteristics—

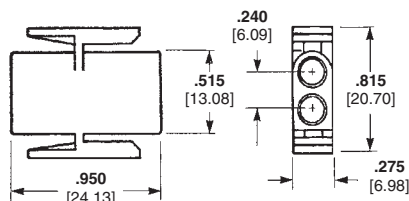
page 159

Keying Plug—none

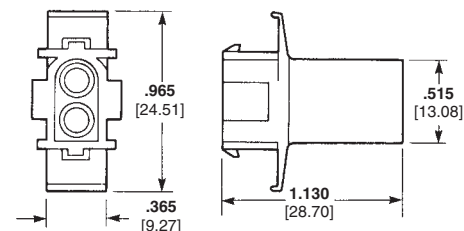
Contacts—page 160

Technical Documents—pages 159  
and 199-200

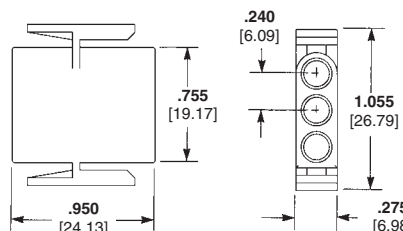
### 2 and 3 Circuit, In-Line



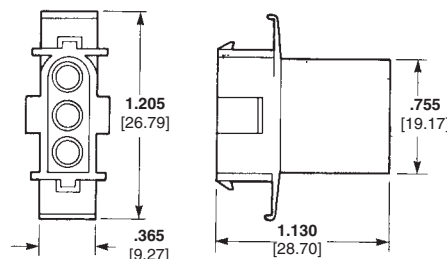
Socket Housing (Plug)  
Part No. 1-350344-0  
Part No. 794699-1 (Black Color High Temp.)



Pin Housing (Cap)  
Part No. 1-350345-0

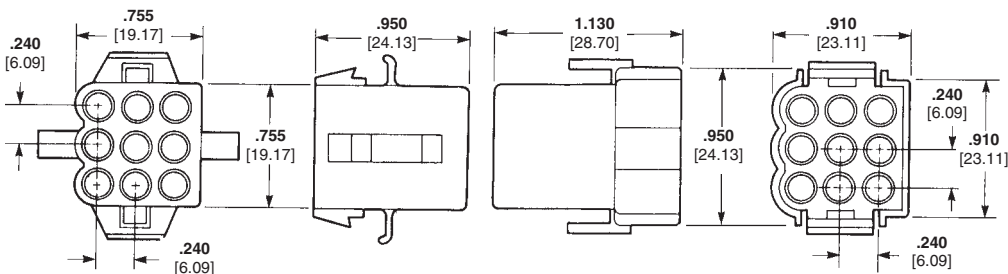


Socket Housing (Plug)  
Part No. 1-350346-0



Pin Housing (Cap)  
Part No. 1-350347-0  
Part No. 794061-1 (Black Color High Temp.)

### 9 Circuit, Matrix



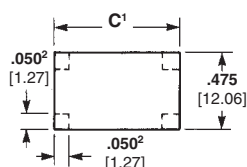
Socket Housing (Plug)  
Part No. 1-480672-0

Pin Housing (Cap)  
Part No. 1-480673-0  
Part No. 794683-1 (Black Color High Temp.)

### Recommended Panel Cutouts

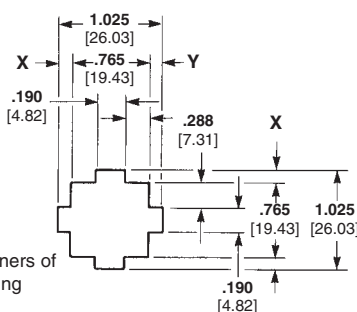
View is from housing entry side

#### 2 and 3 Circuit



12 Circuit-.725 [18.42]  
3 Circuit-.965 [24.51]  
2.050 x .050 [1.27-1.27] tabs in corners of  
outlet are optional to reduce housing  
float in panel.

#### 9 Circuit



#### Notes:

1. Panel thickness .040-.070 [1.02-1.78].
2. "X" and "Y" dimensions must be within .005 [1.27] of each other.
3. Panel should be punched so that the housing enters the panel in the same direction as the punch for ease of assembly.

Standard Density

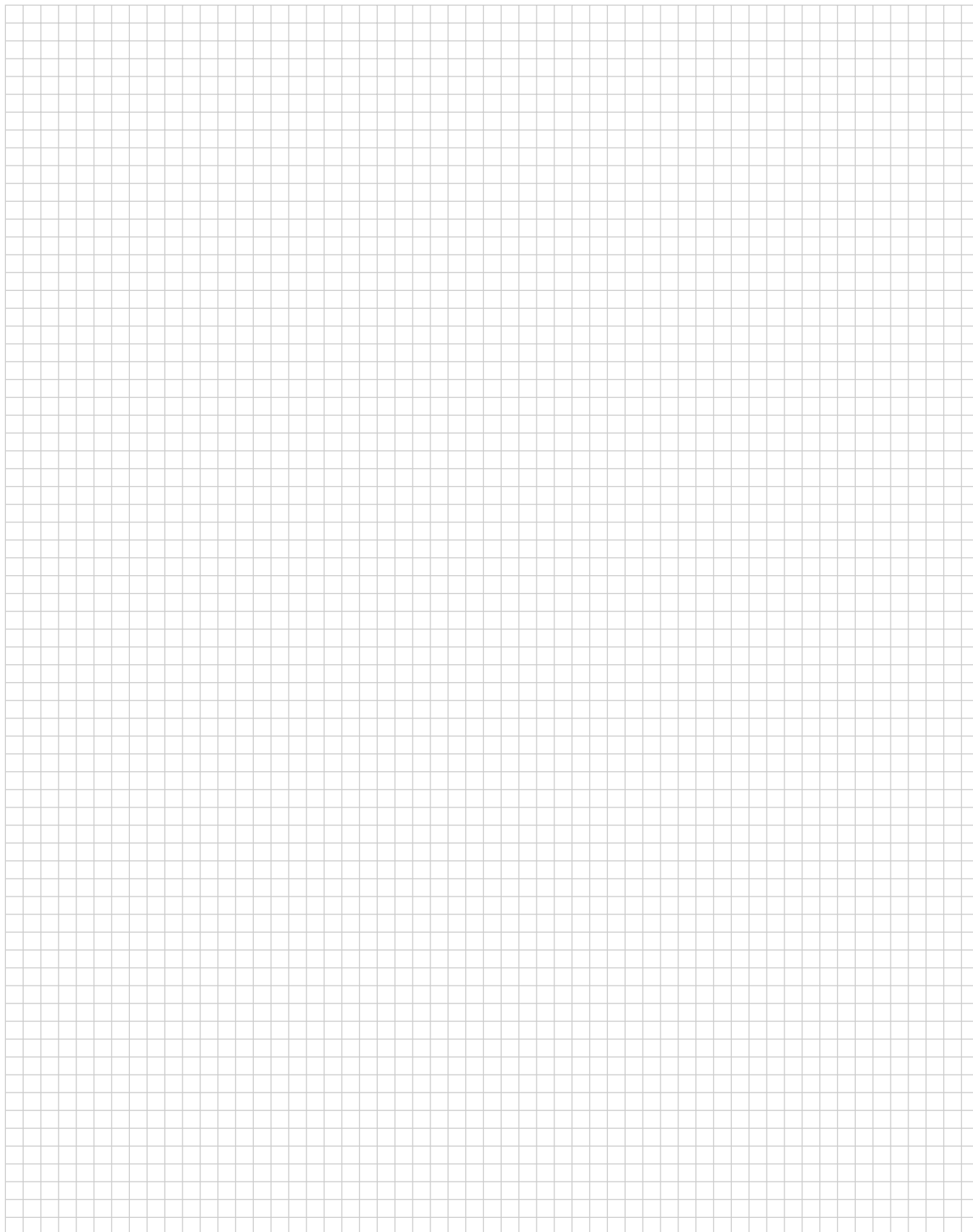
.140 MATE-N-LOK Connectors (Large Insulation)  
.240 [6.10] Centerline

**Note:** All part numbers are RoHS Compliant.

---

**Engineering Notes**

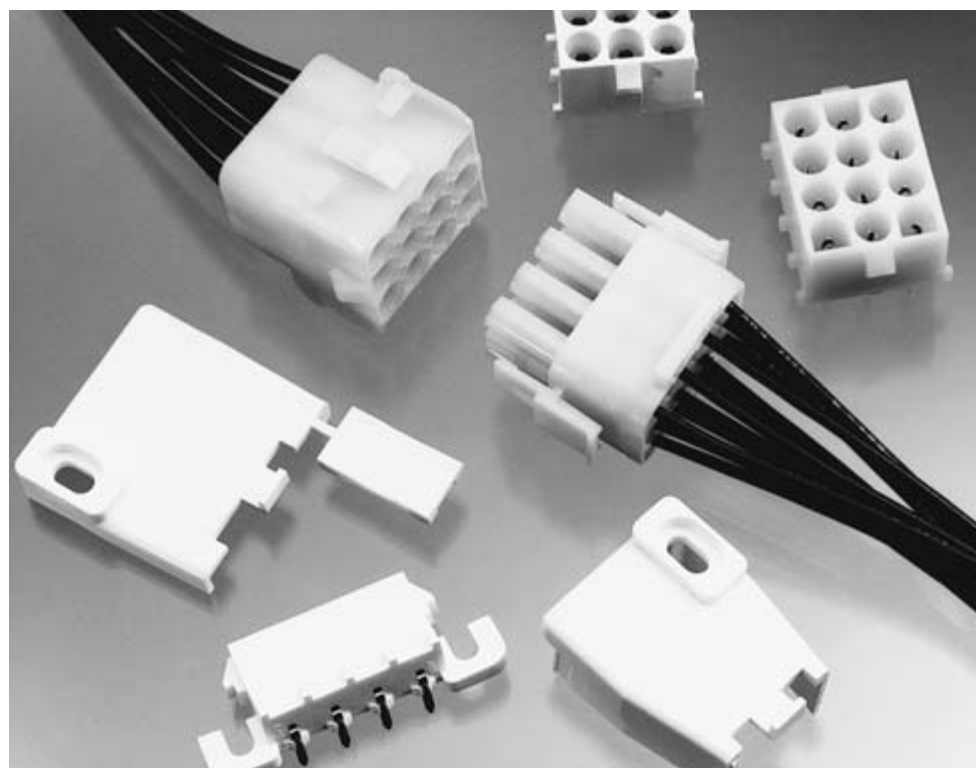
---



## Universal MATE-N-LOK Connectors

### Product Facts

- Pins and sockets can be intermixed in the same housing
- Positive polarization
- Rear cavity identification
- Contacts completely enclosed in housings
- Positive locking housings
- Insulation capability to .200 [5.08] diameter
- Removable, crimp snap-in contacts
- Low contact mating force
- Contacts accept 30-10 AWG [.05-5.0 mm<sup>2</sup>] wire sizes
- Contacts available with pre-tin or gold plating
- Dual locking lances provide optimum contact stability
- Panel mount or free-hanging
- Mate with Universal MATE-N-LOK II Housings
- Available in UL 94V-0 flame retardant material. Meets the material requirements of table 25.1 of U.L. Standard 1410 (television receivers and video products)
- Not for interrupting current
- Harness to PC Board capability using pin or socket headers
- Pin and socket headers are available in both vertical and right-angle style
- Solderability—headers meet MIL-STD 202 Method 208
- Contacts are on .250 [6.35] centerline spacing
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 
- Passed test by VDE under their Registration Number 3980/Continuous Surveillance 



### Performance Characteristics

The Universal MATE-N-LOK Connector performance characteristics found on pages 163-164 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—5.0 KVAC or 5.0 KVDC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Contact Insertion Force**—5.0 lb. max. per contact

**Contact Retention**—15 lb. min. per contact

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specifications

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK PC Board Headers

#### Application Specification

114-1010 Universal MATE-N-LOK Contacts

#### Instruction Sheet

408-7714 Plug, Cap, Headers, Pin, Socket and Accessories

## Universal MATE-N-LOK Connectors (Continued)

### Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Universal MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 125°C for 94V-2 housings and 120°C for 94V-0 housings including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

#### Printed Wiring Board Conductor

**Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current carrying capacity and heat dissipation.

Universal MATE-N-LOK connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 10 milliseconds

**Housing Panel Retention**—75 lb. min.

**Housing Lock Strength**—30 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

### Related Product Data

#### Product Specifications

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK Headers

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### Calculated Current Table

| Number of Circuits | Wire Gauge |       |       |       |       |       |      |      |      |      |
|--------------------|------------|-------|-------|-------|-------|-------|------|------|------|------|
|                    | 10         | 12    | 14    | 16    | 18    | 20    | 22   | 24   | 26   | 30   |
| 2                  | 19.00      | 18.00 | 17.00 | 14.50 | 13.00 | 10.00 | 8.00 | 6.50 | 5.50 | 3.50 |
| 3                  | 17.50      | 16.50 | 15.50 | 13.00 | 12.00 | 9.00  | 7.50 | 6.00 | 5.00 | 3.00 |
| 4                  | 16.50      | 15.50 | 15.00 | 12.50 | 11.00 | 8.50  | 7.00 | 5.50 | 4.50 | 3.00 |
| 5                  | 16.00      | 15.00 | 14.00 | 12.00 | 10.50 | 8.00  | 6.50 | 5.50 | 4.50 | 3.00 |
| 6 In-Line          | 15.50      | 14.50 | 13.50 | 11.50 | 10.00 | 8.00  | 6.50 | 5.00 | 4.00 | 2.50 |
| 6 Matrix           | 15.00      | 14.00 | 13.00 | 11.00 | 9.50  | 7.50  | 6.00 | 5.00 | 4.00 | 2.50 |
| 8                  | 14.50      | 14.00 | 13.00 | 10.50 | 9.50  | 7.50  | 6.00 | 5.00 | 4.00 | 2.50 |
| 9                  | 13.50      | 12.50 | 11.50 | 9.50  | 8.50  | 6.50  | 5.50 | 4.50 | 3.50 | 2.00 |
| 10                 | 14.00      | 13.00 | 12.50 | 10.00 | 9.00  | 7.00  | 5.50 | 4.50 | 3.50 | 2.50 |
| 12                 | 12.50      | 12.00 | 11.00 | 9.00  | 8.00  | 6.00  | 5.00 | 4.00 | 3.00 | 2.00 |
| 15                 | 12.00      | 11.50 | 10.00 | 8.50  | 7.50  | 6.00  | 4.50 | 4.00 | 3.00 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|-----|-------------------|-----|-------------------|
| 30  | 2.6               | 18  | 9.4               |
| 28  | 3.2               | 16  | 11.3              |
| 26  | 4.1               | 14  | 13.7              |
| 24  | 5.1               | 12  | 16.4              |
| 20  | 7.8               | 10  | 19.3              |

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

### Termination Resistance/Contact Crimp Tensile Force

| Wire Size |                 | Termination Resistance |                                   | Contact Crimp Tensile Force |     |
|-----------|-----------------|------------------------|-----------------------------------|-----------------------------|-----|
| AWG       | mm <sup>2</sup> | Test Current (Amps)    | Resistance Milliohms (Max. Init.) | Force (Min.) lbs.           | N   |
| 30        | .05             | —                      | —                                 | 2                           | 9   |
| 28        | .08             | —                      | —                                 | 3                           | 13  |
| 26        | .12             | —                      | —                                 | 6                           | 27  |
| 24        | .2              | 1.5                    | 3.50                              | 8                           | 36  |
| 22        | .3              | 3                      | 3.50                              | 14                          | 62  |
| 20        | .5              | 4.5                    | 3.00                              | 14                          | 62  |
| 18        | .8              | 6                      | 3.00                              | 30                          | 133 |
| 16        | 1.2             | 8                      | 2.75                              | 45                          | 200 |
| 14        | 2.0             | 10                     | 2.75                              | 50                          | 222 |
| 12        | 3.0             | —                      | —                                 | 60                          | 267 |
| 10        | 5.0             | —                      | —                                 | 70                          | 311 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.





## Universal MATE-N-LOK Connectors (Continued)

### Contacts

Split pin diameter .086 [2.18]  
Stock thickness .012 [.305]  
These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

### Related Product Data

#### Product Specification

108-1031 Universal MATE-N-LOK Connectors

#### Application Specification

114-1010 Universal MATE-N-LOK Contacts

#### Performance Characteristics—

pages 163-164

#### Technical Documents—

pages 163 and 199-200

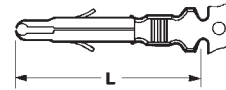
#### Application Tooling—

pages 201-204

#### Housings—

page 168

### Split Pins



| Wire Size Range<br>AWG [mm²]          | Ins. Dia.<br>Range            | L<br>Dim.            | Material & Finish               | Contact Part Number |             | HDM<br>Applicator<br>Part No. | Hand Tool<br>Part No. |
|---------------------------------------|-------------------------------|----------------------|---------------------------------|---------------------|-------------|-------------------------------|-----------------------|
|                                       |                               |                      |                                 | Strip Form          | Loose Piece |                               |                       |
| 24-18<br>[.2-.8]                      | <b>.040-.100</b><br>1.02-2.54 | <b>.790</b><br>20.06 | Brass, Pre-tin                  | 350699-1            | 350706-1    | 466320-1 <sup>3</sup>         | 91510-1               |
|                                       |                               |                      | Brass, Gold <sup>1</sup>        | 350699-2            | 350706-2    | 466320-2 <sup>3</sup>         |                       |
|                                       |                               |                      | Brass, Select Gold <sup>2</sup> | 350699-7            | 350706-7    | 466320-4 <sup>3</sup>         |                       |
| 20-14<br>[.5-2.0]                     | <b>.060-.130</b><br>1.52-3.30 | <b>.790</b><br>20.06 | Brass, Pre-tin                  | 350687-1            | 350705-1    | 687763-1 <sup>3</sup>         | 91500-1               |
|                                       |                               |                      | Brass, Gold <sup>1</sup>        | 350687-2            | 350705-2    | 687763-2 <sup>3</sup>         |                       |
|                                       |                               |                      | Brass, Select Gold <sup>2</sup> | 350687-7            | 350705-7    | 687763-6 <sup>3</sup>         |                       |
| 20-14<br>[.5-2.0]<br>or<br>2 @ 18 [8] | <b>.130-.200</b><br>3.30-5.08 | <b>.810</b><br>20.57 | Brass, Pre-tin                  | 350700-1            | 350707-1    | 687926-1 <sup>3</sup>         | 91508-14<br>91506-14  |
|                                       |                               |                      | Brass, Gold <sup>1</sup>        | 350700-2            | 350707-2    | 687926-2 <sup>3</sup>         |                       |
|                                       |                               |                      | Brass, Select Gold <sup>2</sup> | 350700-7            | 350707-7    | 687926-6 <sup>3</sup>         |                       |

<sup>1</sup>Gold Finish—Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Select Gold Finish—Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>3</sup>HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

<sup>4</sup>Hand Tool No. **91508-1** for wire size 20-18 AWG. Hand Tool No. **91506-1** for wire size 16-14 AWG.

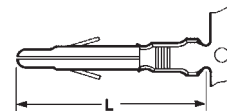
#### Notes:

1. Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.
2. Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.

### Grounding Pins

(.100 [2.54] longer than standard pin)

(Mate first, break last, not for interrupting current)



| Wire Size Range<br>AWG [mm²] | Ins. Dia.<br>Range                   | L<br>Dim.            | Material & Finish   | Contact Part Number |             | HDM<br>Applicator<br>Part No.                                           | Hand Tool<br>Part No. |
|------------------------------|--------------------------------------|----------------------|---------------------|---------------------|-------------|-------------------------------------------------------------------------|-----------------------|
|                              |                                      |                      |                     | Strip Form          | Loose Piece |                                                                         |                       |
| 24-18<br>[.2-.8]             | <b>.060-.130</b><br>1.52-3.30        | <b>.890</b><br>22.60 | Brass, Pre-tin      | 770210-1            | —           | 567216-2 <sup>2</sup><br>567216-3 <sup>2</sup>                          | —                     |
| 20-14<br>[.5-2.0]            | <b>.060-.130</b><br>1.52-3.30        | <b>.890</b><br>22.60 | Brass, Pre-tin      | 350654-1            | 350669-1    | 687763-1 <sup>2</sup><br>687763-2 <sup>2</sup><br>687763-6 <sup>2</sup> | 91500-1               |
| 12-10<br>[3.0-5.0]           | <b>.200 max.<sup>1</sup></b><br>5.08 | <b>.910</b><br>23.11 | Phos. Brz., Pre-tin | 770234-3            | —           | 466597-1 <sup>2</sup><br>466597-2 <sup>2</sup><br>466597-3 <sup>2</sup> | —                     |

<sup>1</sup>There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.

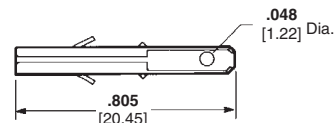
<sup>2</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

### Programmable Connector Contact

(Socket with 110 Series Special FASTON Tab)

#### Material and Finish

Brass, pre-tin



**Part Number**  
**350877-1**

**Note:** This contact will accept a 110 Series FASTON Receptacle—Part No. **350871-1** (strip form) allowing simple field wiring or wiring changes.

**Note:** All part numbers are RoHS Compliant.

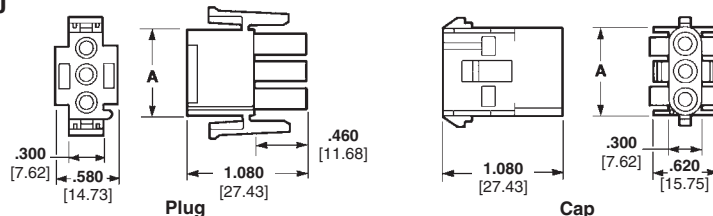
## Universal MATE-N-LOK Connectors (Continued)

### Housings

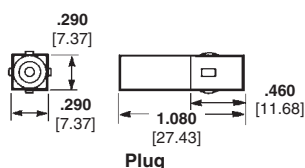
#### Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

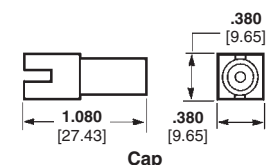
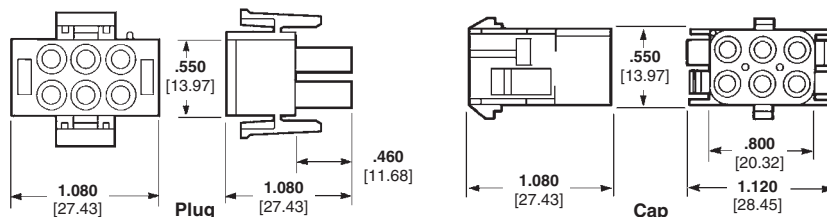
### 2, 3, 4, 5, 6, 8 and 10 Circuit, In-Line



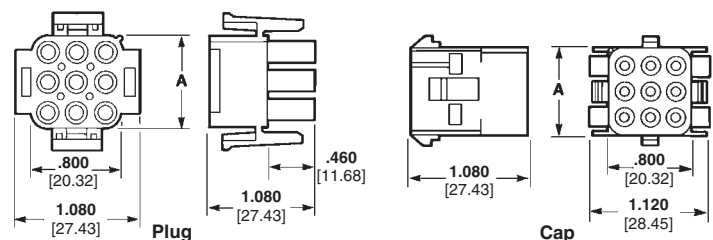
### 1 Circuit, Free-Hanging



### 6 Circuit, Matrix



### 9, 12 and 15 Circuit, Matrix



### Related Product Data

#### Product Specification

108-1031 Universal MATE-N-LOK Connectors

#### Performance Characteristics—

pages 163-164

**Contacts**—pages 166-167

**Panel Cutout**
**Recommendations**—page 169

**Keying Plug**—page 169

**Strain Reliefs**—pages 169-170

**Technical Documents**—pages 163 and 199-200

**Mating Headers**—pages 176-177 and 179

#### Other Mating Connectors

Universal MATE-N-LOK II Housings—pages 187-188

**Note:** See charts on page 182 to order Plug and Cap Housings in colors.

| Number of Circuits | A Dim.         | Housing Part Numbers                      |                         |                            |                       |
|--------------------|----------------|-------------------------------------------|-------------------------|----------------------------|-----------------------|
|                    |                | UL94V-2 Nylon, Natural Color <sup>2</sup> |                         | UL94V-0 Nylon <sup>3</sup> |                       |
|                    |                | Plug                                      | Cap                     | Plug                       | Cap                   |
| 1                  | —              | 1-350867-0                                | 770421-1                | 350865-1                   | 350866-1              |
| 2                  | .550<br>13.97  | 1-480698-0 <sup>1</sup>                   | 1-480699-0 <sup>1</sup> | 350777-1 <sup>1</sup>      | 350778-1 <sup>1</sup> |
| 3                  | .800<br>20.32  | 1-480700-0 <sup>1</sup>                   | 1-480701-0 <sup>1</sup> | 350766-1 <sup>1</sup>      | 350767-1 <sup>1</sup> |
| 4                  | 1.050<br>26.67 | 1-480702-0 <sup>1</sup>                   | 1-480703-0 <sup>1</sup> | 350779-1 <sup>1</sup>      | 350780-1 <sup>1</sup> |
| 5                  | 1.300<br>33.02 | 1-480763-0 <sup>1</sup>                   | 1-480764-0 <sup>1</sup> | 350809-1 <sup>1</sup>      | 350810-1 <sup>1</sup> |
| 6                  | 1.550<br>39.37 | 640585-1 <sup>1</sup>                     | 926307-1 <sup>1</sup>   | 640581-1 <sup>1</sup>      | 926307-3 <sup>1</sup> |
|                    |                | 1-480704-0<br>794096-1 <sup>4</sup>       | 1-480705-0              | 350715-1                   | 350781-1              |
| 8                  | 2.050<br>52.07 | 640586-1 <sup>1</sup>                     | 926308-1 <sup>1</sup>   | 640582-1 <sup>1</sup>      | 926308-3 <sup>1</sup> |
| 9                  | .800<br>20.32  | 1-480706-0                                | 1-480707-0              | 350720-1                   | 350782-1              |
| 10                 | 2.550<br>64.77 | 926302-1 <sup>1</sup>                     | 926309-1 <sup>1</sup>   | 926302-3 <sup>1</sup>      | 926309-3 <sup>1</sup> |
| 12                 | 1.050<br>26.67 | 1-480708-0                                | 1-480709-0              | 350735-1                   | 350783-1              |
| 15                 | 1.300<br>33.02 | 1-480710-0                                | 1-480711-0              | 350736-1                   | 350784-1              |

<sup>1</sup>In-Line style.

<sup>2</sup>Housing material has 125°C temperature rating.

<sup>3</sup>Housing material has 120°C temperature rating.

<sup>4</sup>Tool Removable.

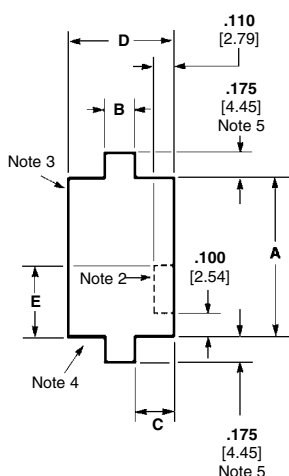
**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Connectors (Continued)

### Recommended Cap Housing Panel Cutouts

View is from cap entry side

Refer to Application Specification  
114-1010



| Style   | Number of Circuits | Dimensions     |               |              |                |              |
|---------|--------------------|----------------|---------------|--------------|----------------|--------------|
|         |                    | A              | B             | C            | D              | E            |
| In-Line | 2                  | .565<br>14.35  | .340<br>8.64  | .095<br>2.41 | .530<br>13.46  | .250<br>6.35 |
|         | 3                  | .815<br>20.70  | .340<br>8.64  | .095<br>2.41 | .530<br>13.46  | .250<br>6.35 |
|         | 4                  | 1.065<br>27.05 | .340<br>8.64  | .095<br>2.41 | .530<br>13.46  | .250<br>6.35 |
|         | 5                  | 1.315<br>33.40 | .340<br>8.64  | .095<br>2.41 | .530<br>13.46  | .250<br>6.35 |
|         | 6                  | 1.567<br>39.80 | .154<br>3.91  | .189<br>4.80 | .531<br>13.49  | .394<br>10.0 |
|         | 8                  | 2.067<br>52.50 | .154<br>3.91  | .189<br>4.80 | .531<br>13.49  | .394<br>10.0 |
|         | 10                 | 2.567<br>65.20 | .154<br>3.91  | .189<br>4.80 | .530<br>13.46  | .394<br>10.0 |
|         | 6                  | .565<br>14.35  | .480<br>12.19 | .275<br>6.99 | 1.030<br>26.16 | .250<br>6.35 |
|         | 9                  | .815<br>20.70  | .480<br>12.19 | .275<br>6.99 | 1.030<br>26.16 | .250<br>6.35 |
|         | 12                 | 1.065<br>27.05 | .480<br>12.19 | .275<br>6.99 | 1.030<br>26.16 | .350<br>8.89 |
| Matrix  | 15                 | 1.315<br>33.40 | .480<br>12.19 | .275<br>6.99 | 1.030<br>26.16 | .350<br>8.89 |

#### Notes:

1. Recommended panel thickness — .030-.090 [.762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit Matrix housings.
4. Circuit #1 location when using panel keying with 2, 3, 4, 5, 6, 8 and 10 circuit In-Line housings.
5. .175 [4.45] dimension is .125 [3.18] for 6, 8 and 10 circuit In-Line housings.

### Keying Plugs

IS 408-3320



#### Part Numbers

UL94V-2 Nylon material, natural color — 1-640415-1

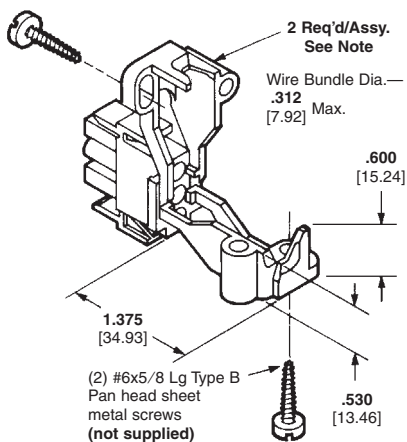
UL94V-0 Nylon material — 1-640415-0

Note: Keying plug snaps into plug or cap housing

### Plug Housing Strain Reliefs

IS 408-3320

#### 2, 3, 4, 5, 6 and 8 Circuit, In-Line

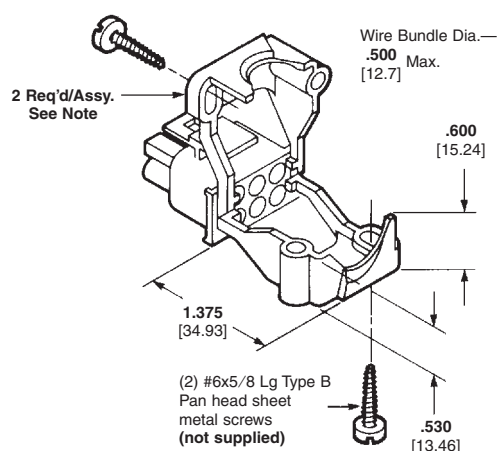


#### Part Numbers

UL94V-2 Nylon material, natural color — 1-350589-0

UL94V-0 Nylon material — 350811-1

#### 6, 9, 12 and 15 Circuit, Matrix



#### Part Numbers

UL94V-2 Nylon material, natural color — 1-350590-0

UL94V-0 Nylon material — 350812-1

Note: Strain relief part number represents one half of a strain relief. Two strain reliefs required per housing.

Note: All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Connectors (Continued)

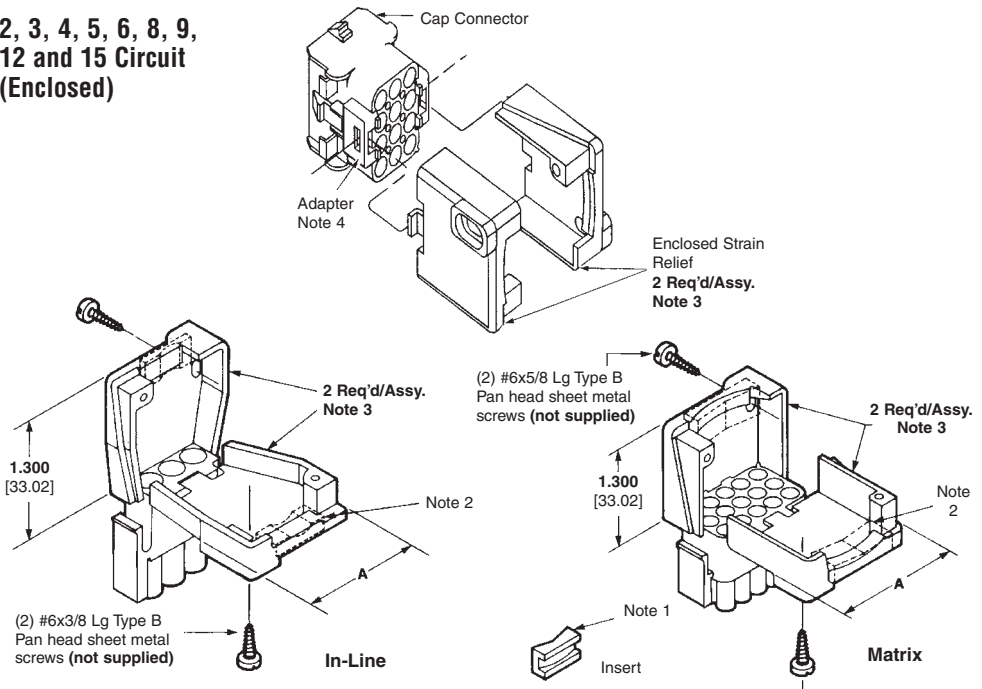
### Plug or Cap Housing Strain Reliefs

IS 408-3320

#### Related Product Data

Housings—page 168  
Technical Documents—pages 163  
and 199-200

**2, 3, 4, 5, 6, 8, 9,  
12 and 15 Circuit  
(Enclosed)**

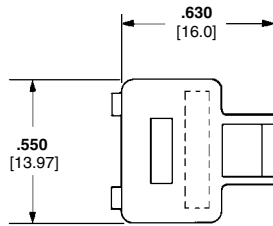


### Cap Housing Adapters

These adapters are designed to anchor the cap housing strain reliefs to the housings and prevent the strain relief halves from "drawing in" when the screws are being torqued down to clamp the cable.

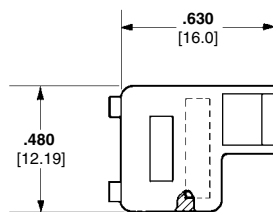
IS 408-3320

**For All Positions Except 2, 6  
and 8 Circuit Cap Housings**



UL94V-2 Nylon material,  
natural color—**641777-1**  
UL94V-0 Nylon material—  
**641778-1**

**For 2 In-Line and 6 Matrix  
Circuit Cap Housings Only**



UL94V-2 Nylon material,  
natural color—**643182-1**  
UL94V-0 Nylon material—  
**643182-2**

| Style   | Number of<br>Circuits | A<br>Dim.      | Insert<br>Supplied | Single Wire<br>Dia. Range | Wire Bundle<br>Dia. Range | Part Numbers                    |               |
|---------|-----------------------|----------------|--------------------|---------------------------|---------------------------|---------------------------------|---------------|
|         |                       |                |                    |                           |                           | UL94V-2 Nylon,<br>Natural Color | UL94V-0 Nylon |
| In-Line | 2                     | .960<br>24.38  | Yes                | .040-.190<br>1.02-4.83    | —                         | 1-640719-0                      | 640713-1      |
|         |                       |                | No                 | —                         | .200-.350<br>5.08-8.89    | 1-640719-1                      | 640713-2      |
|         | 3                     | 1.140<br>28.96 | Yes                | .040-.190<br>1.02-4.83    | —                         | 1-640720-0                      | 640714-1      |
|         |                       |                | No                 | —                         | .200-.350<br>5.08-8.89    | 641763-1                        | 641945-1      |
|         | 4                     | 1.325<br>33.65 | Yes                | .040-.190<br>1.02-4.83    | —                         | 641775-1                        | 641776-1      |
|         |                       |                | No                 | —                         | .200-.350<br>5.08-8.89    | 641775-2                        | 641776-2      |
|         | 5                     | 1.530<br>38.86 | Yes                | .040-.190<br>1.02-4.83    | —                         | 643030-3                        | 643030-1      |
|         |                       |                | No                 | —                         | .200-.350<br>5.08-8.89    | 643030-2                        | 643030-4      |
|         | 6<br>Note 5           | 1.780<br>45.21 | Yes                | .040-.190<br>1.02-4.83    | —                         | 643585-1                        | 643313-1      |
|         |                       |                | No                 | —                         | .200-.350<br>5.08-8.89    | 643585-2                        | 643313-2      |
| Matrix  | 8<br>Note 5           | 2.280<br>56.08 | Yes                | .040-.190<br>1.02-4.83    | —                         | —                               | 643314-1      |
|         |                       |                | No                 | —                         | .200-.350<br>5.08-8.89    | —                               | 643314-2      |
|         | 6                     | 1.030<br>26.16 | Yes                | —                         | .120-.650<br>3.05-16.51   | 1-640721-0                      | 640715-1      |
|         | 9                     | 1.030<br>26.16 | Yes                | —                         | .120-.650<br>3.05-16.51   | 1-640722-0                      | 640716-1      |
|         | 12                    | 1.280<br>32.51 | Yes                | —                         | .150-.750<br>3.81-19.05   | 1-640723-0                      | 640717-1      |
|         | 15                    | 1.530<br>38.86 | Yes                | —                         | .200-.850<br>5.08-21.59   | 1-640724-0                      | 640718-1      |

#### Notes:

1. Cable clamping insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. Strain relief part number represents one-half of a strain relief. Two strain reliefs required per housing.
4. Must use cap housing adapters when attaching strain reliefs to a cap housing. Two adapters required per housing.
5. Strain reliefs for 6 and 8 circuit In-Line fits plug housings only.

**Note:** All part numbers are RoHS Compliant.

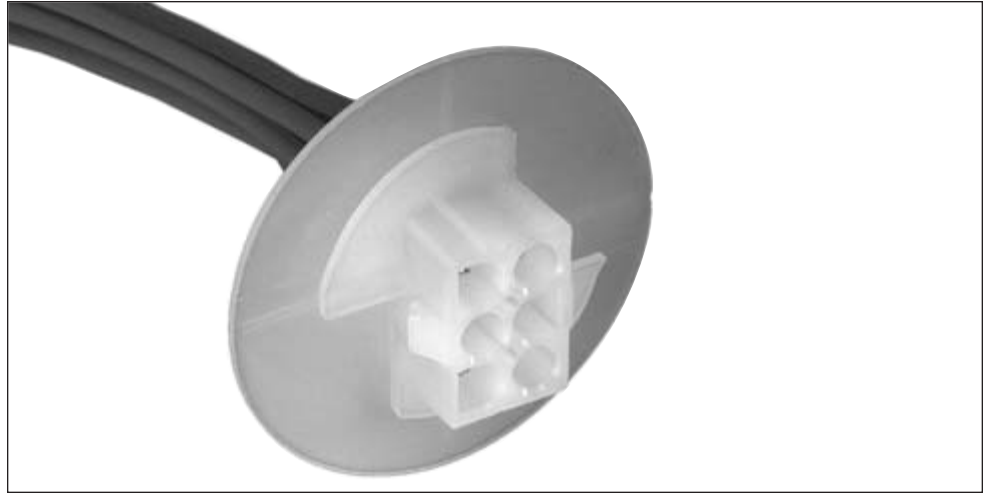
Standard Density

Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline

## Universal MATE-N-LOK Flanged Cap Housings with Twist and Lock Feature

### Product Facts

- Available in a 6, 9, and 12 circuit design
- Designed for household appliances where a bulkhead connector system is needed in conjunction with foam-in insulation
- Mates with standard Universal MATE-N-LOK plug housings (page 168)
- Accepts Universal MATE-N-LOK pin and socket contacts (page 167)
- Designed to utilize the Splash Proof/Sealed Universal MATE-N-LOK seals for additional sealing protection (pages 174-175)



### Material and Finish

**Housing**—Nylon, UL 94V-0 or UL 94V-2 rated

**Contacts**—Phosphor Bronze or Brass

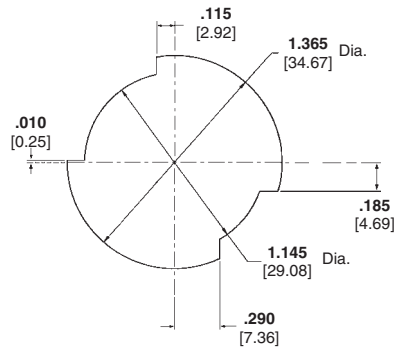
**Plating**—Pre-tin or Gold

### Related Product Data

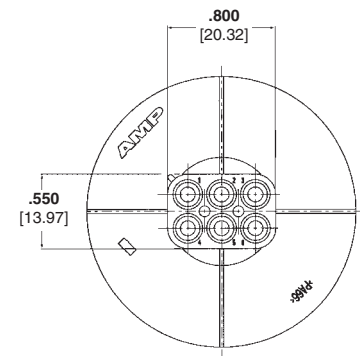
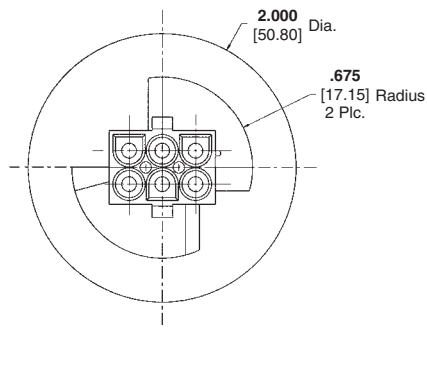
**Contacts**—pages 166-167

**Plug Housings**—page 168

**Seals**—page 174



**Recommended Panel Cutout  
(for 6 and 9 Pos. Housings)**



### Notes:

1. Recommended Panel Thickness: 0.76-2.29 [.030-.090]
2. Panel must be punched so that the housing enters the panel in the same direction as the punch.
3. Asymmetrical panel cutout provides polarization for Pin 1 location.

| Number of<br>Circuits | Cap Housing Part Numbers |          |
|-----------------------|--------------------------|----------|
|                       | UL 94V-0                 | UL 94V-2 |
| 6                     | 794760-1                 | 794714-1 |
| 9                     | 794761-1                 | 794715-1 |
| 12                    | 794762-1                 | 794716-1 |

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Sealed Bulkhead Connectors

### Product Facts

- Bulkhead mount Universal MATE-N-LOK connector that facilitates sealed panel mounting and works with existing Universal MATE-N-LOK seals to provide a fully-sealed interconnection system
- Available in 4, 6, 9 and 12 positions
- Sealed, flange mount design
- Mates to standard Universal MATE-N-LOK plug housings
- Accepts standard Universal MATE-N-LOK contacts
- Works with standard Universal MATE-N-LOK connector interface and wire seals
- Anti-rotation feature aids installation
- Rear mount flange design enables use in wire harnesses
- Pins and sockets can be intermixed in the same housing
- UL Recognized, File No. E28476
- CSA Certified, File No. 1030930



### Applications

- Vending Machines
- Industrial Machinery
- Lighting
- HVAC Equipment



### Performance Characteristics

**Dielectric Withstanding Voltage**—5.0 KVAC or 5.0 KVDC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specification

108-1031 Universal MATE-N-LOK Connectors

#### Application Specification

114-1010 Universal MATE-N-LOK Contacts

#### Instruction Sheet

408-10017 Universal MATE-N-LOK Bulkhead Connectors

## Universal MATE-N-LOK Sealed Bulkhead Connectors (Continued)

### Connector Housings

#### Material and Finish

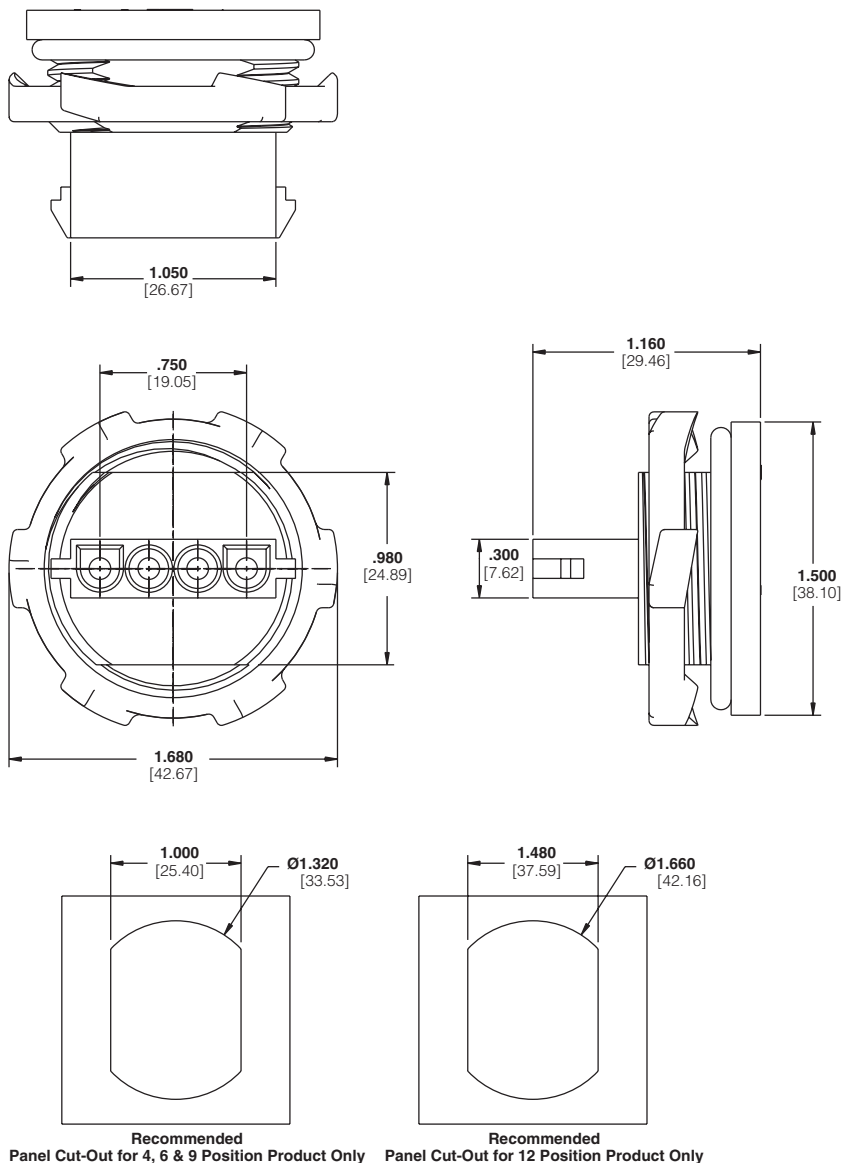
**Housing**—Nylon, UL 94V-0 rated

**Contacts**—Brass with pre-tin or gold plating

**O-ring Seal**—Neoprene

**Locking Nut**—Steel, zinc plated

### 4 Position Connector Housing (shown)



| No. of Pos. | Style   | Housing Part Number |
|-------------|---------|---------------------|
| 4           | In Line | 1604256-1           |
| 6           | Matrix  | 1604210-1           |
| 9           | Matrix  | 1604254-1           |
| 12          | Matrix  | 1604941-1           |

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Sealed Connectors

### Splash Proof Seals

#### Product Facts

- Economical splash proof/immersion sealed connector system
- No design changes to existing Universal MATE-N-LOK product
- Existing applications utilizing Universal MATE-N-LOK connectors can be upgraded to a splash proof system
- Utilizes two wire seals and one interface seal
- Wire range is 20-14 AWG [.5-2.0] with insulation diameter range .060-.130 [1.52-3.30]
- .110-.130 [2.79-3.30] insulation diameter passed European IP sealing level 5/6 + 7 (swirling dust/immersion to 1 meter for 30 minutes)
- .060-.110 [1.52-2.79] insulation diameter passed European IP sealing level 5/5 + 7 (swirling dust/heavy seas)
- Universal MATE-N-LOK II keying plug can be used to seal unused circuits
- Primary application is for wire-to-wire; wire-to-board application must use a closed bottom header

#### Material

Silicone rubber, blue color

#### Technical Documents

##### Product Specification

108-1031-1 Splash Proof Seal, Universal MATE-N-LOK Connectors

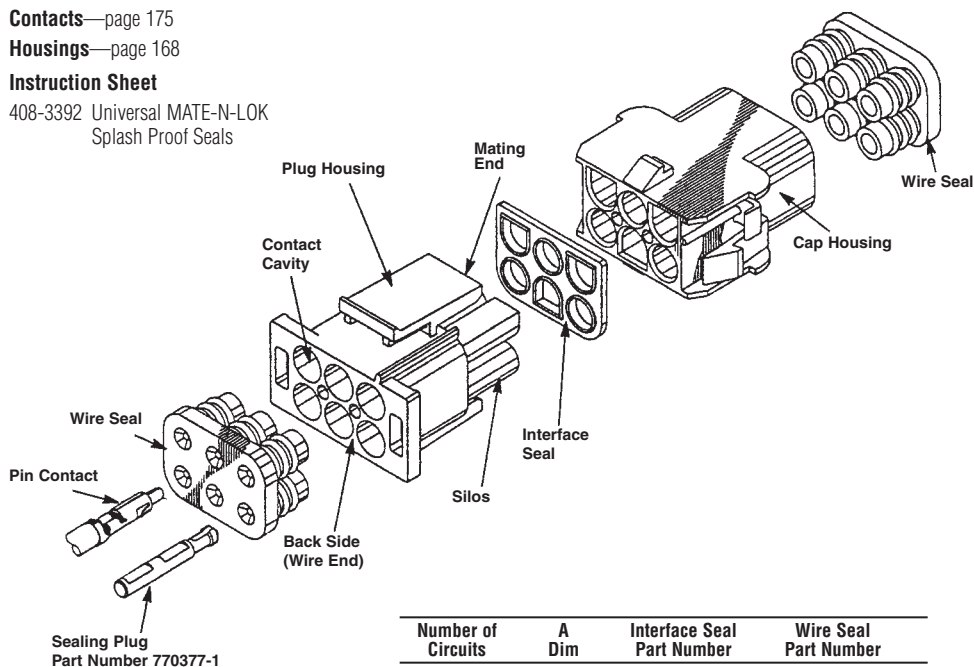
Contacts—page 175

Housings—page 168

##### Instruction Sheet

408-3392 Universal MATE-N-LOK Splash Proof Seals

**Note:** For proper use of this product, customer should make sure that Instruction Sheet 408-3392 is available for review.

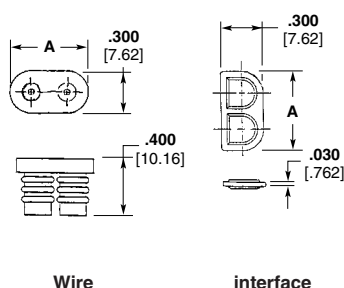


| Number of Circuits | A Dim | Interface Seal Part Number | Wire Seal Part Number |
|--------------------|-------|----------------------------|-----------------------|
| 2                  | .550  | 794269-1                   | 794270-1              |
| 3                  | .800  | 794271-1                   | 794272-1              |
| 4                  | 1.050 | 794273-1                   | 794274-1              |
| 6                  | —     | 794275-1                   | 794276-1              |
| 9                  | .800  | 794277-1                   | 794278-1              |
| 12                 | 1.050 | 794279-1                   | 794280-1              |
| 15                 | 1.300 | 794281-1                   | 794282-1              |

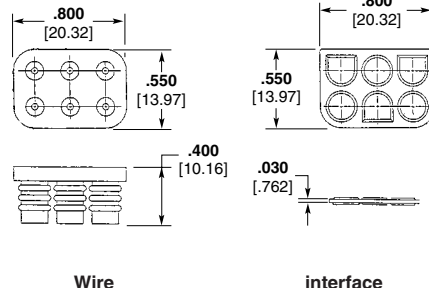
**Note:** One interface seal and two wire seals required per mated assembly.

**Note:** All part numbers are RoHS Compliant.

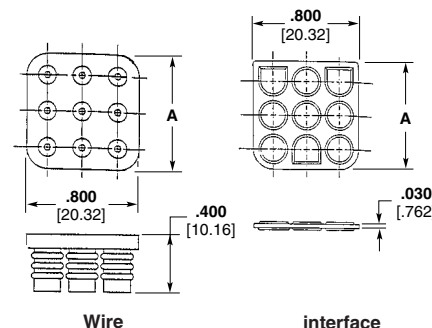
#### 2, 3, 4 Circuit, In-Line



#### 6 Circuit, Matrix



#### 9, 12, and 15 Circuit, Matrix



## Universal MATE-N-LOK Sealed Connectors (Continued)

### Contacts (used with Splash Proof Seals)

Solid pin diameter .084 [2.13]

Split pin diameter .086 [2.18]

Stock thickness .012 [.305] unless otherwise noted.

These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

### Related Product Data

#### Product Specification

108-1031 Universal MATE-N-LOK Connectors

#### Application Specification

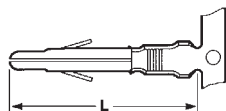
114-1010 Universal MATE-N-LOK Contacts

#### Performance Characteristics—

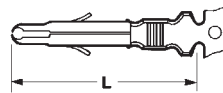
pages 163-164

**Technical Documents**—pages 163 and 199-200

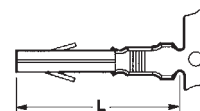
**Application Tooling**—pages 201-204

**Housings**—page 168


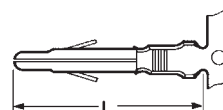
Solid Pin



Split Pin



Socket



Grounding Pin

(100 [2.54] longer than standard pin)

(Mate first, break last, not for interrupting current)

| Wire Size<br>Range<br>AWG [mm²] | Ins. Dia.<br>Range     | L Dim.              |               | Material & Finish        | Style          | Contact Part Numbers |             |            |             | HDM<br>Applicator<br>Part No.       | Hand Tool<br>Part No. |
|---------------------------------|------------------------|---------------------|---------------|--------------------------|----------------|----------------------|-------------|------------|-------------|-------------------------------------|-----------------------|
|                                 |                        | Pin                 | Socket        |                          |                | Pin                  |             | Socket     |             |                                     |                       |
|                                 |                        |                     |               |                          |                | Strip Form           | Loose Piece | Strip Form | Loose Piece |                                     |                       |
| 20-14<br>[.5-2.0]               | .060-.130<br>1.52-3.30 | .790<br>20.06       | .760<br>19.30 | Brass, Pre-tin           | Solid          | 350218-1             | 350547-1    | 350536-1   | 350550-1    | 687763-1³<br>687763-2³<br>687763-6³ | 91500-1               |
|                                 |                        |                     |               | Brass, Gold¹             |                | 350218-2             | 350547-2    | 350536-2   | 350550-2    |                                     |                       |
|                                 |                        |                     |               | Brass, Select Gold²      |                | 350218-7             | 350547-7    | 350536-7   | 350550-7    |                                     |                       |
|                                 |                        |                     |               | Phos. Brz., Pre-tin      |                | 350218-3             | 350547-3    | 350536-3   | 350550-3    |                                     |                       |
|                                 |                        |                     |               | Phos. Brz., Select Gold² |                | 350218-6             | 350547-6    | 350536-6   | 350550-6    |                                     |                       |
|                                 |                        |                     |               | Brass, Pre-tin           |                | 350687-1             | 350705-1    | —          | —           |                                     |                       |
|                                 |                        | Brass, Gold¹        | Split         | 350687-2                 | 350705-2       | —                    | —           |            |             |                                     |                       |
|                                 |                        | Brass, Select Gold² |               | 350687-7                 | 350705-7       | —                    | —           |            |             |                                     |                       |
|                                 |                        | .890<br>22.60       |               | —                        | Brass, Pre-Tin | Grounding            | 350654-1    | 350669-1   |             |                                     |                       |

<sup>1</sup>Gold Finish—Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Select Gold Finish—Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>3</sup>HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

#### Notes:

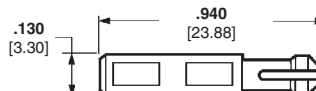
1. Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.

2. Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.

3. 18-24 AWG contacts (page 166) can be used with splash proof seals if insulation diameter range is .060-.100 [1.52-2.54].

### Universal MATE-N-LOK II Keying Plug/Splash Proof Sealing Plug

IS 408-3392

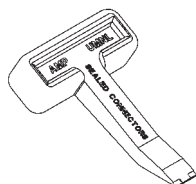


Part Number

UL94V-0 Nylon material—770377-1

### Related Product Data

**Housings**—page 168

**Technical Documents**—pages 163 and 199-200

Seal Latch Tool  
Part No. 794381-1  
IS 408-3392

Contact Extraction Tool  
Part No. 318851-1  
IS 408-4371

Contact Insertion Tool (For inserting contacts applied to small diameter wire)  
Part No. 91002-1  
IS 408-7347

**Note:** All part numbers are RoHS Compliant.





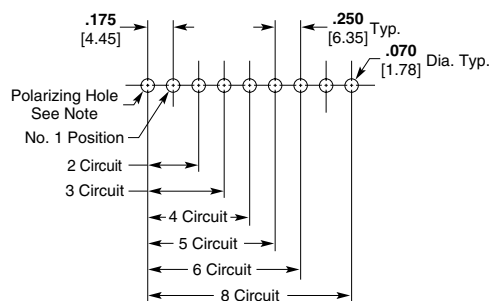
## Universal MATE-N-LOK Connectors (Continued)

### Recommended PC Board Hole Layouts for Pin and Socket Vertical Headers

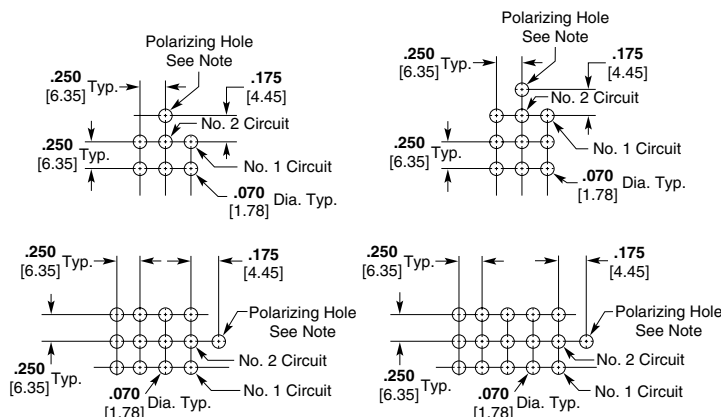
#### Related Product Data

Vertical Headers—pages 176-177

### 2, 3, 4, 5, 6 and 8 Circuit, In-Line



### 6, 9, 12 and 15 Circuit, Matrix



**Note:** Polarizing hole .070 [1.78] Dia. required for polarized headers only.

### PC Board Vertical Pin Headers with ACTION PIN Contacts

#### Material and Finish

Housing—PBT, black

Flammability Rating—UL94V-0

Contacts—Copper alloy, plated with tin over nickel on entire contact

#### Related Product Data

Performance Characteristics—pages 163-164

Technical Documents—pages 163 and 199-200

#### Product Specification

108-5222 ACTION PIN Universal MATE-N-LOK Header Assembly

#### Mating Connectors

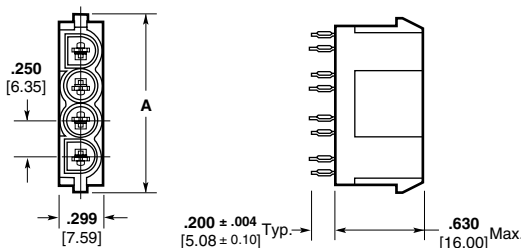
##### Universal MATE-N-LOK

Plug Housings—page 168

##### Universal MATE-N-LOK II

Plug Housings—pages 187-188

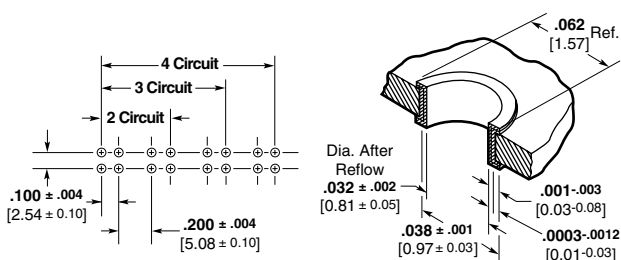
**Note:** Header Housings on pages 176-179 are available in colors listed on page 182. Call Technical Support for exact Part Numbers.



| Number of Circuits | A Dim.         | Part Number | Mates with Plug Housing Part Number (Using Socket Contacts) |                         |
|--------------------|----------------|-------------|-------------------------------------------------------------|-------------------------|
|                    |                |             | Universal MATE-N-LOK                                        | Universal MATE-N-LOK II |
| 2                  | .750<br>19.05  | 173924-1    | 1-480698-0<br>350777-1                                      | 770017-1                |
| 3                  | 1.000<br>25.40 | 173925-1    | 1-480700-0<br>350766-1                                      | 770018-1                |
| 4                  | 1.250<br>31.75 | 173926-1    | 1-480702-0<br>350779-1                                      | 770019-1                |

**Note:** Install in PC Board with arbor tool.

**Note:** All part numbers are RoHS Compliant.



#### Recommended PC Board Hole Layout

#### PC Board Hole Dimensions

## Universal MATE-N-LOK Connectors (Continued)

### PC Board Right-Angle Pin and Socket Headers

.250 [6.35] Centerline spacing

#### Material

**Housing**—Nylon

**Contacts**—Phosphor bronze

Solder tail width .052 [1.32]

#### Related Product Data

##### Product Specification

108-1053 Universal MATE-N-LOK  
PC Board Headers

#### Performance Characteristics—

pages 163-164

**Technical Documents**—pages 163  
and 199-200

### Mating Connectors

#### Universal MATE-N-LOK

Plug Housings—page 168

#### Universal MATE-N-LOK II

Plug Housings—pages 187-188

**Note:** Header Housings on pages 176-179 are available in **colors** listed on page 182. Call Technical Support for exact Part Numbers.

### Test Connectors (with spring loaded contacts)

#### Material

**Housing**—Nylon

**Flammability Rating**—UL94V-0

#### Related Product Data

**Mating Connectors**—Housings and headers having the same number of circuits. The housings can have pin or socket contacts, or a combination of both.

**Mating Housings**—page 168

**Mating Headers**—pages 176-179

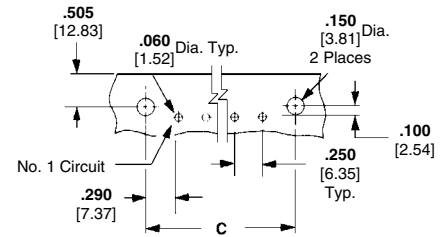
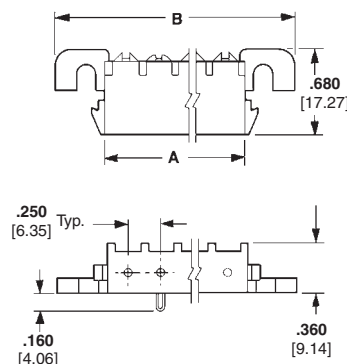
#### Other Mating Connectors

Universal MATE-N-LOK II Housings—pages 187-188

#### Notes:

- Test probes have 5 amp maximum current rating, 1,000,000 cycles.
- Test Connector housings are of the same configuration as standard housings. Refer to page 23 for dimensional specifications.

### 2, 3, 4, 5, 6 and 8 Circuit, In-line



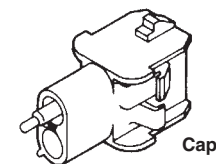
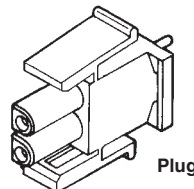
Use 6-32 UNC Pan Head Screw  
3/8 [9.53] long for mounting  
(Not Supplied)

**Recommended PC Board Hole Layout**  
.062 [1.57] Board Thickness

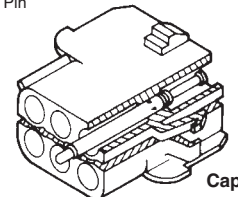
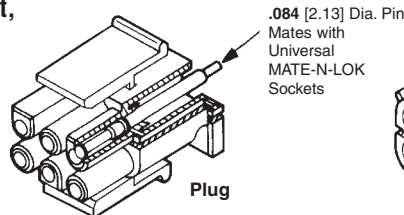
| No. of<br>Circuits | Dimensions     |                |                | Contact<br>Finish   | Right-Angle Header Part Numbers |          |               |                       |            |                         |                            |
|--------------------|----------------|----------------|----------------|---------------------|---------------------------------|----------|---------------|-----------------------|------------|-------------------------|----------------------------|
|                    |                |                |                |                     | UL94V-2                         |          |               | UL94V-0               |            |                         |                            |
|                    | A              | B              | C              |                     | Pin                             | Socket   | Mates<br>with | Pin                   | Socket     | Mates with              |                            |
|                    |                |                |                |                     |                                 |          |               |                       |            | Universal<br>MATE-N-LOK | Universal<br>MATE-N-LOK II |
| 2                  | .550<br>13.97  | 1.245<br>31.62 | .830<br>21.08  | Pre-tin             | —                               | —        | —             | 1-350942-0            | 643226-1   | 350777-1                | 770017-1                   |
|                    |                |                |                | Duplex <sup>1</sup> | —                               | —        | —             | 770994-1 <sup>2</sup> | —          |                         |                            |
| 3                  | .800<br>20.32  | 1.495<br>37.97 | 1.080<br>27.43 | Pre-tin             | —                               | —        | —             | 1-350943-0            | 643228-1   | 350766-1                | 770018-1                   |
|                    |                |                |                | Duplex <sup>1</sup> | —                               | —        | —             | 3-350943-0            | 3-643228-0 |                         |                            |
| 4                  | 1.050<br>26.67 | 1.745<br>44.32 | 1.330<br>33.78 | Pre-tin             | 1-350948-0                      | —        | 1-480702-0    | 1-350944-0            | 643230-1   | 350779-1                | 770019-1                   |
|                    |                |                |                | Duplex <sup>1</sup> | —                               | —        |               | 3-350944-0            | 3-643230-0 |                         |                            |
| 5                  | 1.300<br>33.02 | 1.995<br>50.67 | 1.580<br>40.13 | Pre-tin             | 1-350949-0                      | —        | 1-480763-0    | 1-350945-0            | 643232-1   | 350809-1                | 770016-1                   |
|                    |                |                |                | Duplex <sup>1</sup> | —                               | —        |               | 3-350945-0            | 3-643232-0 |                         |                            |
| 6                  | 1.550<br>39.37 | 2.245<br>57.02 | 1.830<br>46.48 | Pre-tin             | 640587-1                        | 643235-1 | 640585-1      | 640583-1              | 643234-1   | 640581-1                | —                          |
|                    |                |                |                | Duplex <sup>1</sup> | —                               |          |               | 640583-3              | 3-643234-0 |                         |                            |
| 8                  | 2.050<br>52.07 | 2.745<br>69.72 | 2.330<br>59.18 | Pre-tin             | —                               | 643237-1 | 640586-1      | 640584-1              | 643236-1   | 640582-1                | —                          |
|                    |                |                |                | Duplex <sup>1</sup> | —                               |          |               | 640584-3              | 3-643236-0 |                         |                            |

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact. <sup>2</sup>Black in color.

### 2, 3, 4 and 5 Circuit, In-Line



### 6, 9, 12 and 15 Circuit, Matrix



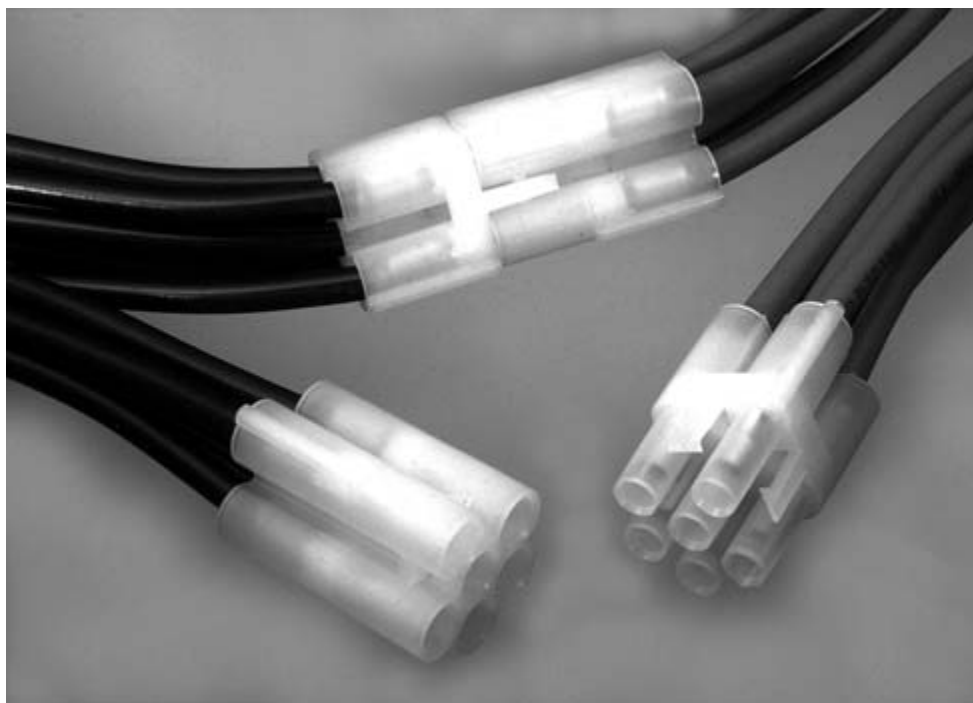
| Number of Circuits | Part Numbers |            |
|--------------------|--------------|------------|
|                    | Plug         | Cap        |
| 2                  | 350848-2     | 350849-2   |
| 3                  | 350848-3     | 350849-3   |
| 4                  | 350848-4     | 350849-4   |
| 5                  | 350848-5     | 350849-5   |
| 6                  | 350848-6     | 350849-6   |
| 9                  | 350848-9     | 350849-9   |
| 12                 | 1-350848-2   | 1-350849-2 |
| 15                 | 1-350848-5   | 1-350849-5 |

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Circular Connectors

### Product Facts

- Unique product designed to accommodate the specific needs of the lighting industry
- Circular design allows the connector to pass through 7/8 inch knock-out holes in electrical fixtures and boxes
- 6-position accommodates most major electrical industry requirements
- Universal MATE-N-LOK connector centerline spacing maintains UL and CSA approvals
- Uses standard Universal MATE-N-LOK contacts and application tooling
- Positive polarized housing helps prevent incorrect mating
- UL Recognized, File No. E28476
- CSA Certified, File No. LR7189



### Applications

- Primary applications are in the Lighting, Vending, and Appliance industries
- Applications where use of a completed harness that will pass through a 7/8 inch knock-out is required
- Provides the capability to quickly disconnect individual fixtures from sensitive environmental areas and perform maintenance at other sites
- Not for interrupting current

### Performance Characteristics

**Voltage**—600 V AC or DC

**Current**—20 amps maximum per UL-1977 (6 position, fully energized)

**Dielectric Withstanding Voltage**—5 KVAC or KVDC

**Insulation Resistance**—1000 M $\Omega$  max. between adjacent circuits

**Durability**—50 cycles mating and unmating

**Contact Retention**—15 lb. minimum per contact

### Technical Documents

#### Product Specification

108-2069 Universal MATE-N-LOK Circular Connector

#### Application Specification

114-1010 Universal MATE-N-LOK Connectors

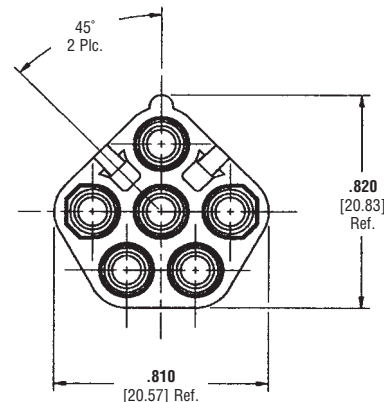
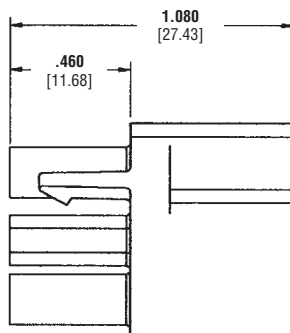
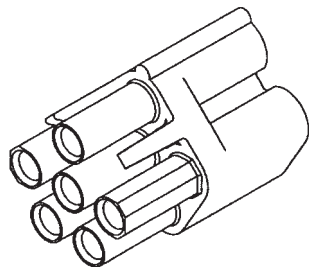
Standard Density

Universal MATE-N-LOK Circular Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK Circular Connectors (Continued)**

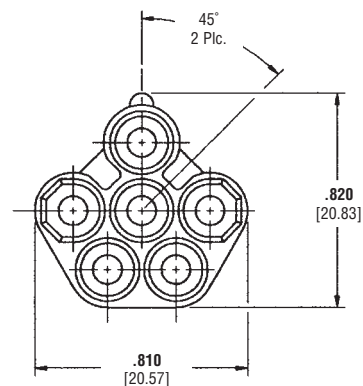
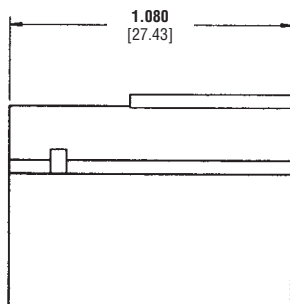
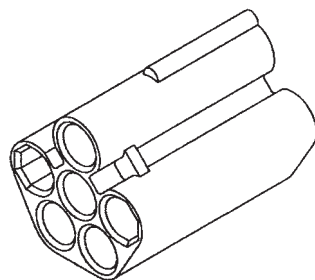
**Plug**

Part No. 794911-1



**Cap**

Part No. 794912-1



**Material and Finish**

**Housings**—Nylon, UL 94V-2 rated

**Related Product Data**

**Contacts**—pages 166-167

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Connectors — Available in Colors

**Note:** See corresponding Universal MATE-N-LOK Plug and Cap Housing Base Part Numbers on page 168.

Header Housings on pages 176-179 are also available in **colors**. Call Technical Support for exact Part Numbers.

| Base Part Number | No. of Circuits | Housing | Material |
|------------------|-----------------|---------|----------|
| 480698           | 2               | Plug    | V-2      |
| 480699           | 2               | Cap     | V-2      |
| 480700           | 3               | Plug    | V-2      |
| 480701           | 3               | Cap     | V-2      |
| 480702           | 4               | Plug    | V-2      |
| 480703           | 4               | Cap     | V-2      |
| 480763*          | 5               | Plug*   | V-2      |
| 480764*          | 5               | Cap*    | V-2      |
| 480704           | 6               | Plug    | V-2      |
| 480705           | 6               | Cap     | V-2      |
| 480706           | 9               | Plug    | V-2      |
| 480707           | 9               | Cap     | V-2      |
| 480708           | 12              | Plug    | V-2      |
| 480709           | 12              | Cap     | V-2      |
| 480710           | 15              | Plug    | V-2      |
| 480711           | 15              | Cap     | V-2      |
| 350777           | 2               | Plug    | V-0      |
| 350778           | 2               | Cap     | V-0      |
| 350766           | 3               | Plug    | V-0      |
| 350767           | 3               | Cap     | V-0      |
| 350799           | 4               | Plug    | V-0      |
| 350780           | 4               | Cap     | V-0      |
| 350809           | 5               | Plug    | V-0      |
| 350810           | 5               | Cap     | V-0      |
| 350715           | 6               | Plug    | V-0      |
| 350781           | 6               | Cap     | V-0      |
| 350720           | 9               | Plug    | V-0      |
| 350782           | 9               | Cap     | V-0      |
| 350735           | 12              | Plug    | V-0      |
| 350783           | 12              | Cap     | V-0      |
| 350736           | 15              | Plug    | V-0      |
| 350784           | 15              | Cap     | V-0      |

| Dash Number | Color   |
|-------------|---------|
| 1-xxxxxx-0  | Natural |
| 1-xxxxxx-1  | Brown   |
| 1-xxxxxx-2  | Red     |
| 1-xxxxxx-3  | Orange  |
| 1-xxxxxx-4  | Yellow  |
| 1-xxxxxx-5  | Green   |
| 1-xxxxxx-6  | Blue    |
| 1-xxxxxx-8  | Gray    |
| 1-xxxxxx-9  | Black   |

**\* Special for Base  
Part Numbers 480763 and  
480764**

| Dash Number | Color   |
|-------------|---------|
| xxxxxx-1    | Natural |
| 1-xxxxxx-1  | Brown   |
| 1-xxxxxx-2  | Red     |
| 1-xxxxxx-3  | Orange  |
| 1-xxxxxx-4  | Yellow  |
| 1-xxxxxx-5  | Green   |
| 1-xxxxxx-6  | Blue    |
| 1-xxxxxx-8  | Gray    |
| 1-xxxxxx-9  | Black   |

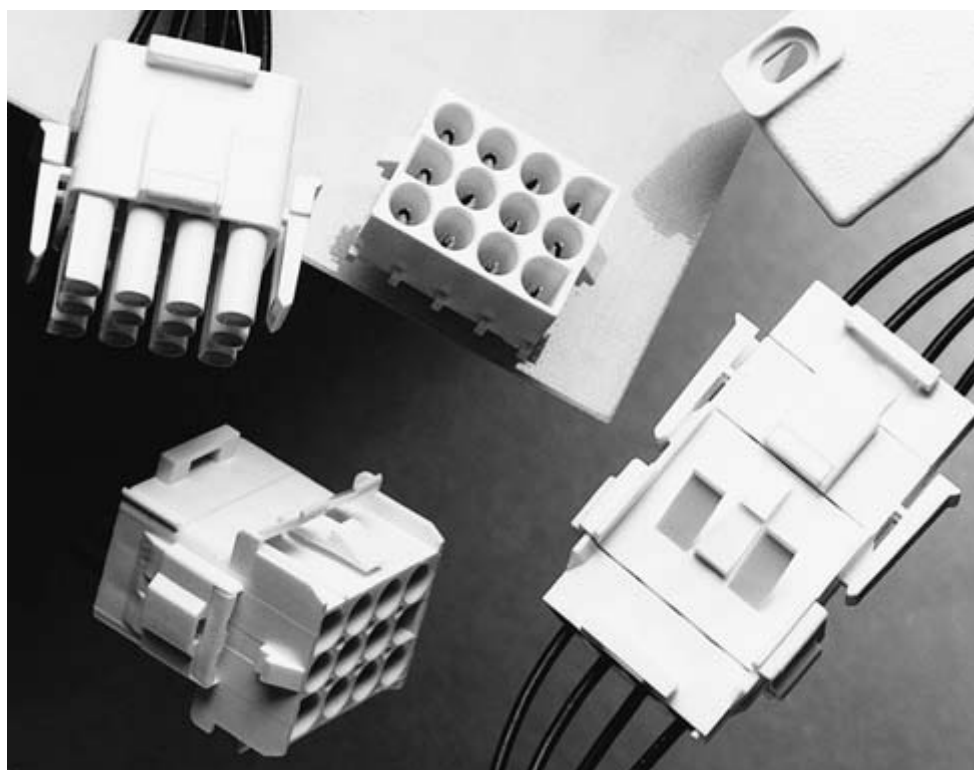
Standard Density

Universal MATE-N-LOK Connectors — Available in Colors  
.250 [6.35] Centerline

## Universal MATE-N-LOK II Connectors

### Product Facts

- High reliability
- For use where repair or replacement would be difficult
- Pins and sockets can be intermixed in the same housing
- Available in 2 through 15 circuit sizes for free-hanging or panel mount wire-to-wire connection
- Mate with standard Universal MATE-N-LOK Housings and PC Board Headers
- Uses standard Universal MATE-N-LOK panel cutouts and strain reliefs
- Polarized housings available in UL94V-0 flammability rated material
- Enclosed contacts for shock protection
- F-Crimp terminals accept 30-10 AWG [.05-5.0 mm<sup>2</sup>] wire sizes
- Contacts available in strip and loose form
- Lanceless contacts for tangle-free handling
- Insulation capability to .200 [5.08] diameter
- Connector design provides for complete contact insertion
- Three-point stabilization precisely controls contact alignment, minimizing stubbing
- Tin or duplex gold plated contacts
- Contacts are on .250 [6.35] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189
- Passed test by VDE under their Registration Number 3980/Continuous Surveillance



### Performance Characteristics

The Universal MATE-N-LOK II Connector performance characteristics found on pages 183-184 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—5.0 KV AC or DC between adjacent circuits initially

**Insulation Resistance**—1000 megohms minimum between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Connector Mating**—Split Pin—1.5 lb. max. per circuit

**Connector Unmating**—Split Pin—.5 lb. min. per circuit

**Contact Insertion Force**—3.0 lb. max. per contact unassembled

**Contact Retention**—35 lb. min. per contact

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specification

108-1090 Universal MATE-N-LOK II Connectors

#### Application Specification

114-1043 Universal MATE-N-LOK II Connectors

#### Instruction Sheet

408-3200 Housing, Contacts and Accessories

## Universal MATE-N-LOK II Connectors (Continued)

### Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Universal MATE-N-LOK II connectors is limited by the maximum operating temperature of the housings which is 120°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

Universal MATE-N-LOK II connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 g sawtooth at 10 milliseconds

**Housing Panel Retention**—75 lb. min.

**Housing Lock Strength**—35 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### Calculated Current Table

| Number of Circuits | Wire Gauge |       |       |       |       |       |      |      |      |      |
|--------------------|------------|-------|-------|-------|-------|-------|------|------|------|------|
|                    | 10         | 12    | 14    | 16    | 18    | 20    | 22   | 24   | 26   | 30   |
| 2                  | 19.00      | 18.00 | 17.00 | 14.50 | 13.00 | 10.00 | 8.00 | 6.50 | 5.50 | 3.50 |
| 3                  | 17.50      | 16.50 | 15.50 | 13.00 | 12.00 | 9.00  | 7.50 | 6.00 | 5.00 | 3.00 |
| 4                  | 16.50      | 15.50 | 15.00 | 12.50 | 11.00 | 8.50  | 7.00 | 5.50 | 4.50 | 3.00 |
| 5                  | 16.00      | 15.00 | 14.00 | 12.00 | 10.50 | 8.00  | 6.50 | 5.50 | 4.50 | 3.00 |
| 6 Matrix           | 15.00      | 14.00 | 13.00 | 11.00 | 9.50  | 7.50  | 6.00 | 5.00 | 4.00 | 2.50 |
| 8                  | 14.50      | 14.00 | 13.00 | 10.50 | 9.50  | 7.50  | 6.00 | 5.00 | 4.00 | 2.50 |
| 9                  | 13.50      | 12.50 | 11.50 | 9.50  | 8.50  | 6.50  | 5.50 | 4.50 | 3.50 | 2.00 |
| 10                 | 14.00      | 13.00 | 12.50 | 10.00 | 9.00  | 7.00  | 5.50 | 4.50 | 3.50 | 2.50 |
| 12                 | 12.50      | 12.00 | 11.00 | 9.00  | 8.00  | 6.00  | 5.00 | 4.00 | 3.00 | 2.00 |
| 15                 | 12.00      | 11.50 | 10.00 | 8.50  | 7.50  | 6.00  | 4.50 | 4.00 | 3.00 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

#### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|-----|-------------------|-----|-------------------|
| 30  | 2.6               | 18  | 9.4               |
| 28  | 3.2               | 16  | 11.3              |
| 26  | 4.1               | 14  | 13.7              |
| 24  | 5.1               | 12  | 16.4              |
| 20  | 7.8               | 10  | 19.3              |

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

#### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

#### Termination Resistance/Contact Crimp Tensile Force

| Wire Size |                 | Termination Resistance |                                   | Contact Crimp Tensile Force |     |
|-----------|-----------------|------------------------|-----------------------------------|-----------------------------|-----|
| AWG       | mm <sup>2</sup> | Test Current (Amps)    | Resistance Milliohms (Max. Init.) | Force (Min.) lbs.           | N   |
| 30        | .05             | —                      | —                                 | 1.5                         | 7   |
| 28        | .08             | —                      | —                                 | 3                           | 13  |
| 26        | .12             | —                      | —                                 | 5                           | 22  |
| 24        | .2              | 1.5                    | 3.50                              | 7                           | 31  |
| 22        | .3              | 3                      | 3.50                              | 12                          | 53  |
| 20        | .5              | 4.5                    | 3.00                              | 17                          | 66  |
| 18        | .8              | 6                      | 3.00                              | 30                          | 133 |
| 16        | 1.2             | 8                      | 2.75                              | 45                          | 200 |
| 14        | 2.0             | 10                     | 2.75                              | 50                          | 222 |
| 12        | 3.0             | —                      | —                                 | 60                          | 267 |
| 10        | 5.0             | —                      | —                                 | 70                          | 311 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

### Related Product Data

#### Product Specification

108-1090 Universal MATE-N-LOK II Connectors

## Universal MATE-N-LOK II Connectors (Continued)

### Universal MATE-N-LOK II Connector Mating Combinations

| Connector Part Number |                     |         |                                   | Mating Connector Part Number     |                     |                           |                         |           |                              |                         |           |
|-----------------------|---------------------|---------|-----------------------------------|----------------------------------|---------------------|---------------------------|-------------------------|-----------|------------------------------|-------------------------|-----------|
| Number of Circuits    | Flammability Rating | Style   | Plug Kit Part Number <sup>2</sup> | Cap Kit Part Number <sup>2</sup> | Plating             | PC Board Headers          |                         |           |                              |                         |           |
|                       |                     |         |                                   |                                  |                     | Vertical Pin <sup>2</sup> |                         |           | Vertical Socket <sup>2</sup> |                         |           |
|                       |                     |         |                                   |                                  |                     | Standard Tail             | Standard Tail Polarized | Long Tail | Standard Tail                | Standard Tail Polarized | Long Tail |
| 2                     | UL94V-0             | In-Line | 770017-1                          | 770024-1                         | Pre-tin             | 350786-1                  | 641964-1                | 350787-1  | 350824-1                     | 643412-1                | 350831-1  |
|                       |                     |         |                                   |                                  | Duplex <sup>1</sup> | 350786-3                  | 641964-3                | 350787-3  | 350824-4                     | 643412-3                | —         |
| 3                     | UL94V-0             | In-Line | 770018-1                          | 770025-1                         | Pre-tin             | 350789-1                  | 641966-1                | 350790-1  | 350825-1                     | 643414-1                | 350832-1  |
|                       |                     |         |                                   |                                  | Duplex <sup>1</sup> | 350789-3                  | —                       | 350790-3  | 350825-4                     | 643414-3                | 350832-4  |
| 4                     | UL94V-0             | In-Line | 770019-1                          | 770026-1                         | Pre-tin             | 350792-1                  | 641968-1                | 350793-1  | 350826-1                     | 643416-1                | 350833-1  |
|                       |                     |         |                                   |                                  | Duplex <sup>1</sup> | 350792-3                  | —                       | 350793-3  | 350826-4                     | —                       | 350833-4  |
| 5                     | UL94V-0             | In-Line | 770016-1                          | —                                | Pre-tin             | 640900-1                  | 643406-1                | —         | 640901-1                     | —                       | —         |
|                       |                     |         |                                   |                                  | Duplex <sup>1</sup> | 640900-3                  | —                       | —         | 640901-3                     | —                       | —         |
| 6                     | UL94V-0             | Matrix  | 770020-1                          | 770027-1                         | Pre-tin             | 350711-1                  | 641970-1                | 350732-1  | 350827-1                     | 643424-1                | 350834-1  |
|                       |                     |         |                                   |                                  | Duplex <sup>1</sup> | 350711-4                  | 641970-3                | 350732-4  | 350827-4                     | 643424-3                | 350834-4  |
| 9                     | UL94V-0             | Matrix  | 770021-1                          | 770028-1                         | Pre-tin             | 350712-1                  | 641972-1                | 350742-1  | 350828-1                     | 643426-1                | 350835-1  |
|                       |                     |         |                                   |                                  | Duplex <sup>1</sup> | 350712-4                  | 641972-3                | 350742-4  | 350828-4                     | 643426-3                | 350835-4  |
| 12                    | UL94V-0             | Matrix  | 770022-1                          | 770029-1                         | Pre-tin             | 350713-1                  | 641974-1                | 350737-1  | 350829-1                     | 643428-1                | 350836-1  |
|                       |                     |         |                                   |                                  | Duplex <sup>1</sup> | 350713-4                  | 641974-3                | 350737-4  | 350829-4                     | —                       | 350836-4  |
| 15                    | UL94V-0             | Matrix  | 770023-1                          | 770030-1                         | Pre-tin             | 350714-1                  | 641976-1                | 350738-1  | 350830-1                     | 643430-1                | 350837-1  |
|                       |                     |         |                                   |                                  | Duplex <sup>1</sup> | 350714-4                  | 641976-4                | 350738-4  | 350830-4                     | —                       | 350837-4  |

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Universal MATE-N-LOK II Plug and Cap housings accept pin or socket contacts. Use the appropriate contacts in the Plug housing as required by the mating component.

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK II Connectors (Continued)

### Contacts

Split pin diameter .086 [2.18]  
Stock thickness .012 [.305]  
These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings.

### Related Product Data

#### Product Specification

108-1090 Universal MATE-N-LOK II Connectors

#### Application Specification

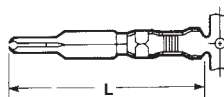
114-1043 Universal MATE-N-LOK II Contacts

#### Performance Characteristics—pages 183-184

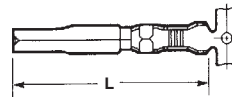
Housings—pages 187-188

Technical Documents—pages 183 and 199-200

Application Tooling—pages 201-204



Pin



Socket

| Wire Size<br>Range<br>AWG [mm²] | Ins. Dia.<br>Range             | L Dim.         |               | Material & Finish              | Contact Part Numbers |                |               |                | HDM<br>Applicator<br>Part No.                                           | Hand Tool<br>Part No. |
|---------------------------------|--------------------------------|----------------|---------------|--------------------------------|----------------------|----------------|---------------|----------------|-------------------------------------------------------------------------|-----------------------|
|                                 |                                | Pin            | Socket        |                                | Pin                  |                | Socket        |                |                                                                         |                       |
|                                 |                                |                |               |                                | Strip<br>Form        | Loose<br>Piece | Strip<br>Form | Loose<br>Piece |                                                                         |                       |
| 30-26<br>[.05-.12]              | .032-.057<br>.813-1.45         | 1.005<br>25.53 | .980<br>24.90 | Phos. Brz. Gold <sup>1</sup>   | 770011-6             | 770512-6       | 770012-6      | 770416-6       | 567252-1 <sup>6</sup><br>567252-4 <sup>6</sup>                          | 58439-1               |
| 24-18<br>[.2-.8]                | .040-.100<br>1.02-2.54         | 1.005<br>25.53 | .980<br>24.90 | Brass. Pre-tin                 | 770009-1             | 770252-1       | —             | —              | 567214-1 <sup>6</sup><br>567214-2 <sup>6</sup><br>567214-4 <sup>6</sup> | 91510-1               |
|                                 |                                |                |               | Brass. Duplex <sup>2</sup>     | 1-770009-0           | 1-770252-0     | —             | —              |                                                                         |                       |
|                                 |                                |                |               | Phos. Brz. Pre-tin             | —                    | —              | 770010-3      | 770253-3       |                                                                         |                       |
|                                 |                                |                |               | Phos. Brz. Duplex <sup>2</sup> | —                    | —              | 1-770010-0    | 1-770253-0     |                                                                         |                       |
| 20-14<br>[.5-2.0]               | .060-.130<br>1.52-3.30         | 1.005<br>25.53 | .980<br>24.90 | Brass. Pre-tin                 | 770007-1             | 770250-1       | —             | —              | 567213-1 <sup>6</sup><br>567213-2 <sup>6</sup><br>567213-4 <sup>6</sup> | 91500-1               |
|                                 |                                |                |               | Brass. Duplex <sup>2</sup>     | 1-770007-0           | 1-770250-0     | —             | —              |                                                                         |                       |
|                                 |                                |                |               | Phos. Brz. Pre-tin             | —                    | —              | 770008-3      | 770251-3       |                                                                         |                       |
|                                 |                                |                |               | Phos. Brz. Duplex <sup>2</sup> | —                    | —              | 1-770008-0    | 1-770251-0     |                                                                         |                       |
|                                 | .130-.200<br>3.30-5.08         | .995<br>25.27  | .970<br>24.63 | Brass. Pre-tin                 | 770005-1             | 770248-1       | —             | —              | 567212-1 <sup>6</sup><br>567212-2 <sup>6</sup><br>567212-4 <sup>6</sup> | 91508-14<br>91506-14  |
|                                 |                                |                |               | Brass. Duplex <sup>2</sup>     | 1-770005-0           | 1-770248-0     | —             | —              |                                                                         |                       |
|                                 |                                |                |               | Phos. Brz. Pre-tin             | —                    | —              | 770006-3      | 770249-3       |                                                                         |                       |
|                                 |                                |                |               | Phos. Brz. Duplex <sup>2</sup> | 1-770005-1           | —              | 1-770006-0    | 1-770249-0     |                                                                         |                       |
| 12-10<br>[3.0-5.0]              | .200 max. <sup>3</sup><br>5.08 | 1.005<br>25.53 | .980<br>24.90 | Phos. Brz. Pre-tin             | 770003-3             | 770246-3       | 770004-3      | 770247-3       | 567211-1 <sup>6</sup><br>567211-2 <sup>6</sup><br>567211-4 <sup>6</sup> | 69710-15              |
|                                 |                                |                |               | Phos. Brz. Duplex <sup>2</sup> | 1-770003-0           | 1-770246-0     | 1-770004-0    | 1-770247-0     |                                                                         |                       |

<sup>1</sup>Gold Finish—Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>3</sup>There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing. Use of strain relief is recommended with these contacts.

<sup>4</sup>Use Hand Tool No. 91508-1 for 20–18 AWG and No. 91506-1 for 16–14 AWG.

<sup>5</sup>Hand Tool No. 69710-1 uses die set No. 58380-1 for 12 AWG and No. 58380-2 for 10 AWG.

<sup>6</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.

### Grounding Pin

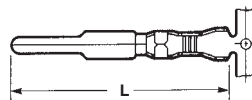
(Mate first, break last, not for interrupting current)

Solid pin diameter .084 [2.13]

.100 [2.54] longer than standard pin

Stock thickness .012 [.304]

These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings only.



| Wire Size Range<br>AWG [mm <sup>2</sup> ] | Ins. Dia.<br>Range     | L Dim.         | Material & Finish          | Contact Part Numbers |             | HDM<br>Applicator<br>Part No.                                           | Hand Tool<br>Part No.                        |
|-------------------------------------------|------------------------|----------------|----------------------------|----------------------|-------------|-------------------------------------------------------------------------|----------------------------------------------|
|                                           |                        |                |                            | Strip Form           | Loose Piece |                                                                         |                                              |
| 20-14<br>[.5-2.0]                         | .060-.130<br>1.52-3.30 | 1.105<br>25.53 | Brass. Pre-tin             | 770193-1             | 770254-1    | 567213-1 <sup>3</sup><br>567213-2 <sup>3</sup><br>567213-4 <sup>3</sup> | 91500-1                                      |
|                                           |                        |                | Brass. Duplex <sup>1</sup> | 1-770193-0           | 1-770254-0  |                                                                         |                                              |
|                                           | .130-.200<br>3.30-5.08 | 1.085<br>27.56 | Brass. Pre-tin             | 770194-1             | 770255-1    | 567212-1 <sup>3</sup><br>567212-2 <sup>3</sup><br>567212-4 <sup>3</sup> | 91508-1 <sup>2</sup><br>91506-1 <sup>2</sup> |
|                                           |                        |                | Brass. Duplex <sup>1</sup> | 1-770194-0           | 1-770255-0  |                                                                         |                                              |

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Hand Tool No. 91508-1 for 20–18 AWG and No. 91506-1 for 16–14 AWG.

<sup>3</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 201-204 for further information.



**Latch Disengaging Tool**  
Part No. 58382-1  
IS 408-9436



**Contact Extraction Tool**  
(For extracting contacts crimped  
on 24 AWG or smaller wire)  
Part No. 318851-1  
IS 408-4371



**Contact Insertion Tool**  
(For inserting contacts applied to small diameter wire)  
Part No. 91002-1  
IS 408-7347

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK II Connectors (Continued)

### Housing Kits

#### Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

**Material** — Nylon

**Flammability Rating** — UL 94V-0

### Related Product Data

#### Product Specification

108-1090 Universal MATE-N-LOK II  
Connectors

**Performance Characteristics** —  
pages 183-184

**Contacts** — page 186

**Panel Cutout Recommendations** —  
page 189

**Keying Plug** — page 190

**Strain Reliefs** — page 190

**Kit Components** — page 189

**Technical Documents** — pages 183  
and 199-200

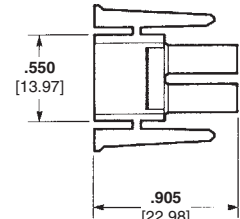
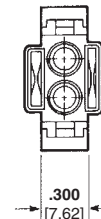
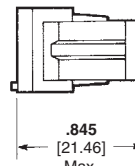
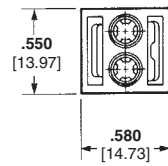
### Other Mating Connectors

Universal MATE-N-LOK Housings —  
page 168

Universal MATE-N-LOK Headers —  
pages 176-177 and 179

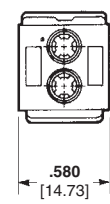
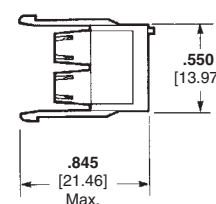
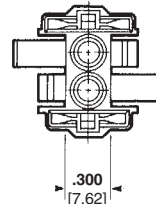
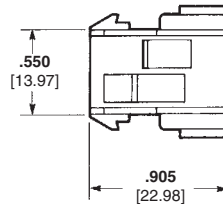
Universal MATE-N-LOK Test  
Connectors — page 179

### 2 Circuit, In-line



Plug Rear

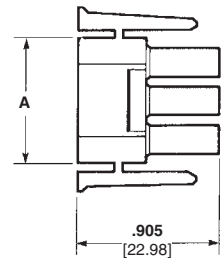
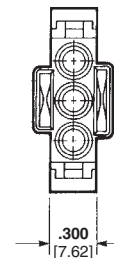
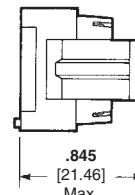
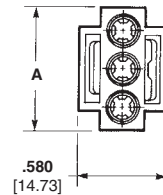
Plug Front



Cap Front

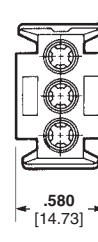
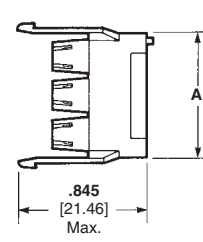
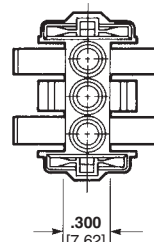
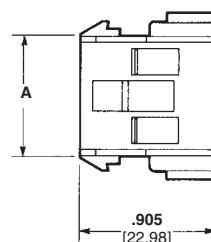
Cap Rear

### 3, 4 and 5 Circuit, In-Line



Plug Rear

Plug Front



Cap Front

Cap Rear

| Number<br>of<br>Circuits | A<br>Dim.      | Kit Part Numbers<br>(Includes Front and Rear) |          |
|--------------------------|----------------|-----------------------------------------------|----------|
|                          |                | Plug                                          | Cap      |
| 2                        | —              | 770017-1                                      | 770024-1 |
| 3                        | .800<br>20.32  | 770018-1                                      | 770025-1 |
| 4                        | 1.050<br>26.67 | 770019-1                                      | 770026-1 |
| 5                        | 1.300<br>33.02 | 770016-14                                     | —        |

#### Notes:

1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 189.
3. Packaging: Bulk — 250 each component per poly bag/box.
4. Mates with standard Universal MATE-N-LOK cap housing P/N 350810-1 and 640900-X or 640901-X Vertical headers.

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK II Connectors (Continued)

### Housing Kits

#### Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

**Material** — Nylon

**Flammability Rating** — UL 94V-0

### Related Product Data

#### Product Specification

108-1090 Universal MATE-N-LOK II  
Connectors

#### Performance Characteristics

pages 183-184

**Contacts** — page 186

**Panel Cutout Recommendations** —  
page 189

**Keying Plug** — page 190

**Strain Reliefs** — page 190

**Kit Components** — page 189

**Technical Documents** — pages 183  
and 199-200

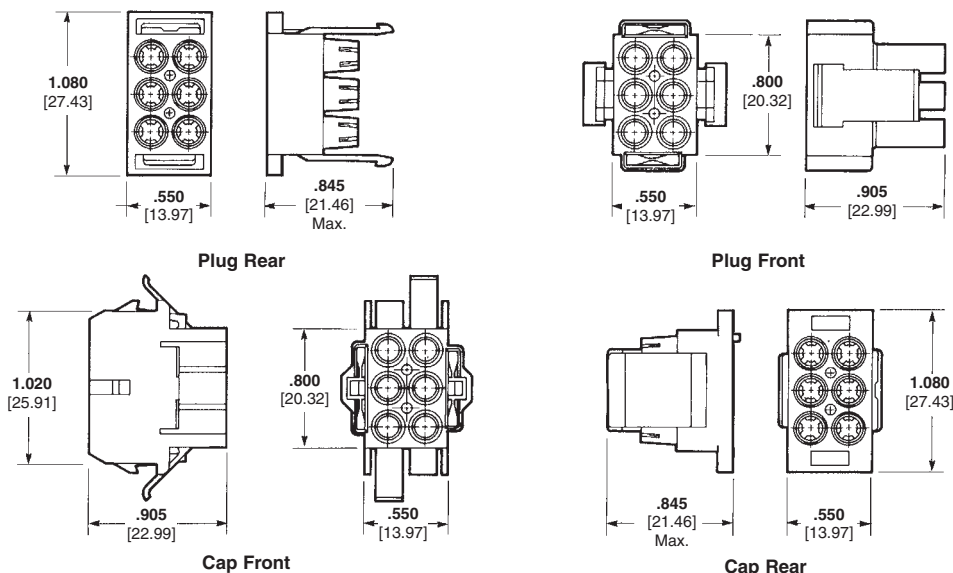
### Other Mating Connectors

Universal MATE-N-LOK Housings —  
page 168

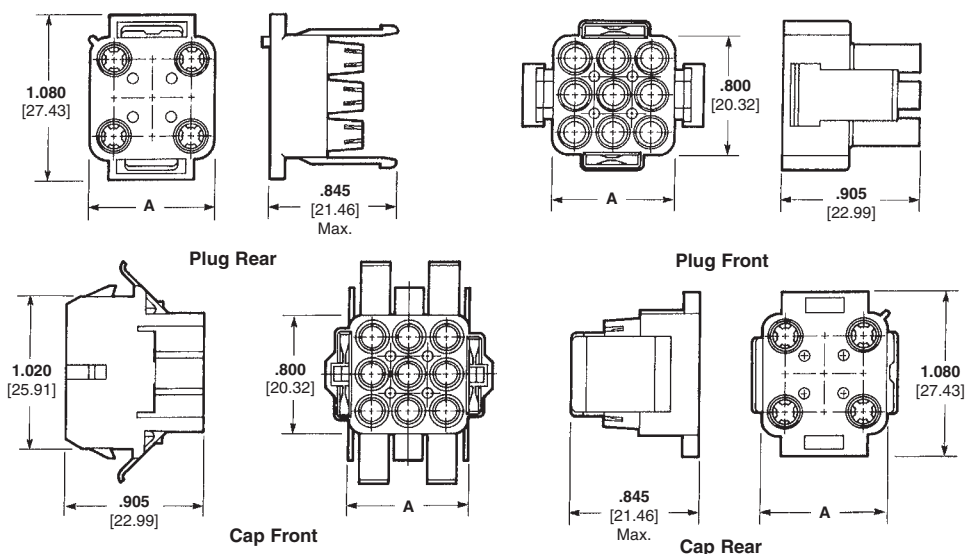
Universal MATE-N-LOK Headers —  
pages 176-177 and 179

Universal MATE-N-LOK Test  
Connectors — page 179

### 6 Circuit, Matrix



### 9, 12 and 15 Circuit, Matrix



| Number<br>of<br>Circuits | A<br>Dim.      | Kit Part Numbers<br>(Includes Front and Rear) |          |
|--------------------------|----------------|-----------------------------------------------|----------|
|                          |                | Plug                                          | Cap      |
| 6                        | —              | 770020-1                                      | 770027-1 |
| 9                        | .800<br>20.32  | 770021-1                                      | 770028-1 |
| 12                       | 1.050<br>26.67 | 770022-1                                      | 770029-1 |
| 15                       | 1.300<br>33.02 | 770023-1                                      | 770030-1 |

#### Notes:

1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 189.
3. Packaging: Bulk — 250 each component per poly bag/box.

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK II Connectors (Continued)

### Housing Components Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

Material — Nylon

Flammability Rating — UL 94V-0

### Related Product Data

#### Product Specification

108-1090 Universal MATE-N-LOK II Connectors

Performance Characteristics —  
pages 183-184

Contacts — page 186

Illustrations and Dimensions —  
pages 187-188

Panel Cutout Recommendations —  
page 189

Keying Plug — page 190

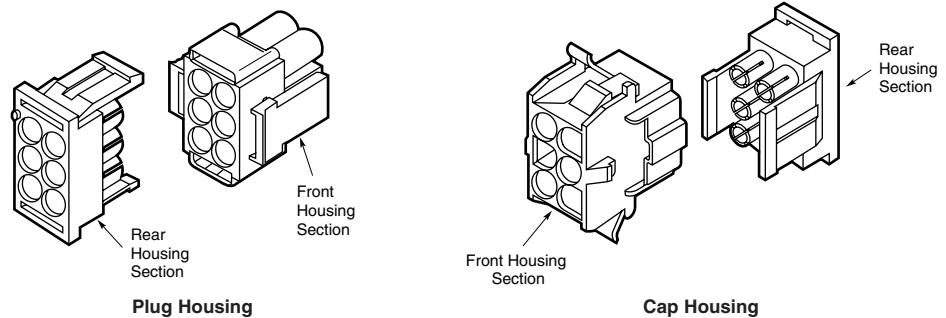
Strain Reliefs — page 190

Technical Documents — pages 183  
and 199-200

### Other Mating Connectors

Universal MATE-N-LOK Connectors —  
page 168

Universal MATE-N-LOK Headers —  
pages 176-177 and 179

Universal MATE-N-LOK Test  
Connectors — page 179


| Number of Circuits | Kit Component Part Numbers |            |           |          |           |          |
|--------------------|----------------------------|------------|-----------|----------|-----------|----------|
|                    | Kit                        | Plug Front | Plug Rear | Kit      | Cap Front | Cap Rear |
| 2                  | 770017-1                   | 770031-1   | 770032-1  | 770024-1 | 770045-1  | 770046-1 |
| 3                  | 770018-1                   | 770033-1   | 770034-1  | 770025-1 | 770047-1  | 770048-1 |
| 4                  | 770019-1                   | 770035-1   | 770036-1  | 770026-1 | 770049-1  | 770050-1 |
| 5                  | 770016-1                   | 770319-1   | 770320-1  | —        | —         | —        |
| 6                  | 770020-1                   | 770037-1   | 770038-1  | 770027-1 | 770051-1  | 770052-1 |
| 9                  | 770021-1                   | 770039-1   | 770040-1  | 770028-1 | 770053-1  | 770054-1 |
| 12                 | 770022-1                   | 770041-1   | 770042-1  | 770029-1 | 770055-1  | 770056-1 |
| 15                 | 770023-1                   | 770043-1   | 770044-1  | 770030-1 | 770057-1  | 770058-1 |

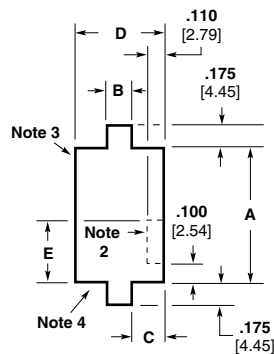
#### Notes:

1. Kits consist of a front and rear component.
2. Kit components can be purchased separately.

**Note:** All part numbers are RoHS Compliant.

### Recommended Cap Housing Panel Cutouts

View is from cap entry side

Refer to Application Specification  
114-1043


| Number of Circuits | Dimensions     |               |              |                |              |
|--------------------|----------------|---------------|--------------|----------------|--------------|
|                    | A              | B             | C            | D              | E            |
| 2                  | .565<br>14.35  | .340<br>8.63  | .095<br>2.41 | .530<br>13.46  | .250<br>6.35 |
| 3                  | .815<br>20.70  | .340<br>8.63  | .095<br>2.41 | .530<br>13.46  | .250<br>6.35 |
| 4                  | 1.065<br>27.05 | .340<br>8.63  | .095<br>2.41 | .530<br>13.46  | .250<br>6.35 |
| 6                  | .565<br>14.35  | .480<br>12.19 | .275<br>6.99 | 1.030<br>26.16 | .250<br>6.35 |
| 9                  | .815<br>20.70  | .480<br>12.19 | .275<br>6.99 | 1.030<br>26.16 | .250<br>6.35 |
| 12                 | 1.065<br>27.05 | .480<br>12.19 | .275<br>6.99 | 1.030<br>26.16 | .350<br>8.89 |
| 15                 | 1.315<br>33.40 | .480<br>12.19 | .275<br>6.99 | 1.030<br>26.16 | .350<br>8.89 |

#### Notes:

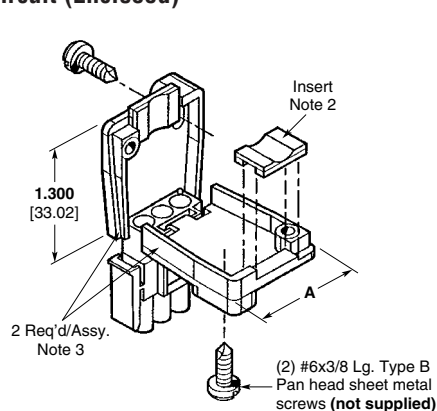
1. Recommended panel thickness — .030-.090 [.762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit housings.
4. Circuit #1 location when using panel keying with 2, 3, and 4 circuit housings.

## Universal MATE-N-LOK II Connectors (Continued)

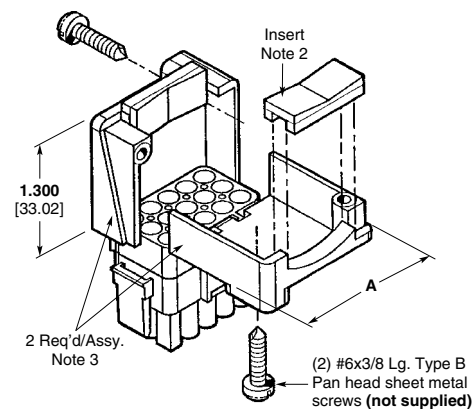
**Plug or  
Cap Housing  
Strain Reliefs**  
IS 408-3320

**Material** — Nylon  
**Flammability Rating** — UL 94V-0

**2, 3, 4, 5, 6, 9, 12 and 15  
Circuit (Enclosed)**



**In-Line**



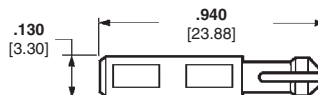
**Matrix**

| Style   | Number of Circuits | A Dim.         | Insert Supplied | Single Wire Dia. Range     | Wire Bundle Dia. Range      | Strain Relief Part Numbers |
|---------|--------------------|----------------|-----------------|----------------------------|-----------------------------|----------------------------|
| In-Line | 2                  | .960<br>24.38  | Yes             | .040 – .190<br>1.02 – 4.83 | —                           | 640713-1                   |
|         |                    |                | No              | —                          | .200 – .350<br>5.08 – 8.89  | 640713-2                   |
|         | 3                  | 1.140<br>28.96 | Yes             | .040 – .190<br>1.02 – 4.83 | —                           | 640714-1                   |
|         |                    |                | No              | —                          | .200 – .350<br>5.08 – 8.89  | 641945-1                   |
|         | 4                  | 1.340<br>34.04 | Yes             | .040 – .190<br>1.02 – 4.83 | —                           | 641776-1                   |
|         |                    |                | No              | —                          | .200 – .350<br>5.08 – 8.89  | 641776-2                   |
| Matrix  | 5                  | 1.530<br>38.86 | Yes             | .040 – .190<br>1.02 – 4.83 | —                           | 643030-1                   |
|         |                    |                | No              | —                          | .200 – .350<br>5.08 – 8.89  | 643030-4                   |
|         | 6                  | 1.030<br>26.16 | Yes             | —                          | .120 – .650<br>3.05 – 16.51 | 640715-1                   |
|         | 9                  | 1.030<br>26.16 | Yes             | —                          | .120 – .650<br>3.05 – 16.51 | 640716-1                   |
|         | 12                 | 1.280<br>32.51 | Yes             | —                          | .150 – .750<br>3.81 – 19.05 | 640717-1                   |
|         | 15                 | 1.530<br>38.86 | Yes             | —                          | .200 – .850<br>5.08 – 21.59 | 640718-1                   |

**Notes:**

1. Insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. Strain relief part number represents one-half of a strain relief. Two of a part number are required for one connector.

**Keying Plug**  
IS 408-3200



### Related Product Data

**Housings** — pages 187-188  
**Technical Documents** — pages 183 and 199-200

**Part Number**  
UL94V-0 Nylon material — **770377-1**

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Headers for UMNL II Connectors

### PC Board Vertical Pin Headers

.250 [6.35] Centerline spacing

#### Material

Housing — Nylon

Flammability Rating — UL94V-0

Contacts — Phosphor bronze

Solder tail diameter .062 [1.57]

#### Related Product Data

##### Product Specification

108-1053 Universal MATE-N-LOK  
PC Board Headers

Performance Characteristics —  
pages 183-184

Recommended PC Board Hole  
Layout — page 193

Technical Documents — pages 183  
and 199-200

#### Mating Connectors

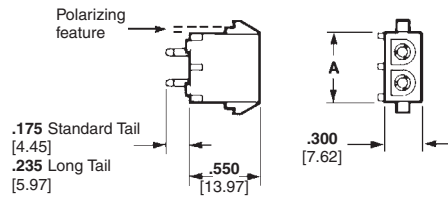
##### Universal MATE-N-LOK II

Plug Housings — pages 187-188

##### Universal MATE-N-LOK

Plug Housings — page 168

### 2, 3, 4 and 5 Circuit, In-Line



| Number of Circuits | A Dim.         | Pin Finish          | Pin Header Part Numbers    |                                      |                        | Mates with Plug Housing Part Number (Using Socket Contacts) |                      |
|--------------------|----------------|---------------------|----------------------------|--------------------------------------|------------------------|-------------------------------------------------------------|----------------------|
|                    |                |                     | Standard Tail <sup>2</sup> | Standard Tail Polarized <sup>2</sup> | Long Tail <sup>3</sup> | Universal MATE-N-LOK II                                     | Universal MATE-N-LOK |
| 2                  | .550<br>13.97  | Pre-tin             | 350786-1                   | 641964-1<br>1-641964-14              | 350787-1               | 770017-1                                                    | 350777-1             |
|                    |                | Duplex <sup>1</sup> | 350786-3                   | 641964-3                             | 350787-3               |                                                             |                      |
| 3                  | .800<br>20.32  | Pre-tin             | 350789-1                   | 641966-1<br>1-641966-14              | 350790-1               | 770018-1                                                    | 350766-1             |
|                    |                | Duplex <sup>1</sup> | 350789-3                   | —                                    | 350790-3               |                                                             |                      |
| 4                  | 1.050<br>26.67 | Pre-tin             | 350792-1                   | 641968-1                             | 350793-1               | 770019-1                                                    | 350779-1             |
|                    |                | Duplex <sup>1</sup> | 350792-3                   | —                                    | 350793-3               |                                                             |                      |
| 5                  | 1.300<br>33.02 | Pre-tin             | 640900-1                   | 643406-1                             | —                      | 770016-1                                                    | 350809-1             |
|                    |                | Duplex <sup>1</sup> | 640900-3                   | —                                    | —                      |                                                             |                      |

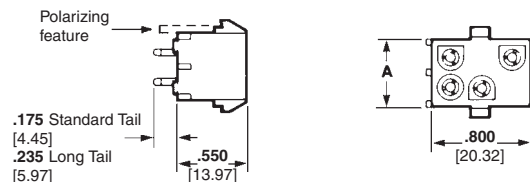
<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

<sup>4</sup>Black in color.

### 6, 9, 12 and 15 Circuit, Matrix



| Number of Circuits | A Dim.         | Pin Finish          | Pin Header Part Numbers    |                                      |                        | Mates with Plug Housing Part Number (Using Socket Contacts) |                      |
|--------------------|----------------|---------------------|----------------------------|--------------------------------------|------------------------|-------------------------------------------------------------|----------------------|
|                    |                |                     | Standard Tail <sup>2</sup> | Standard Tail Polarized <sup>2</sup> | Long Tail <sup>3</sup> | Universal MATE-N-LOK II                                     | Universal MATE-N-LOK |
| 6                  | .550<br>13.97  | Pre-tin             | 350711-1                   | 641970-1                             | 350732-1               | 770020-1                                                    | 350715-1             |
|                    |                | Duplex <sup>1</sup> | 350711-4                   | 641970-3                             | 350732-4               |                                                             |                      |
| 9                  | .800<br>20.32  | Pre-tin             | 350712-1                   | 641972-1<br>1-641972-14              | 350742-1               | 770021-1                                                    | 350720-1             |
|                    |                | Duplex <sup>1</sup> | 350712-4                   | 641972-3                             | 350742-4               |                                                             |                      |
| 12                 | 1.050<br>26.67 | Pre-tin             | 350713-1                   | 641974-1<br>1-641974-14              | 350737-1               | 770022-1                                                    | 350735-1             |
|                    |                | Duplex <sup>1</sup> | 350713-4                   | 641974-3                             | 350737-4               |                                                             |                      |
| 15                 | 1.300<br>33.02 | Pre-tin             | 350714-1                   | 641976-1                             | 350738-1               | 770023-1                                                    | 350736-1             |
|                    |                | Duplex <sup>1</sup> | 350714-4                   | 641976-4                             | 350738-4               |                                                             |                      |

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

<sup>4</sup>Black in color.

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline

## Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

### PC Board Vertical Socket Headers

.250 [6.35] Centerline spacing

#### Material

Housing — Nylon

Flammability Rating — UL94V-0

Contacts — Phosphor bronze

Solder tail diameter .062 [1.57]

#### Related Product Data

##### Product Specification

108-1053 Universal MATE-N-LOK  
PC Board Headers

Performance Characteristics —  
pages 183-184

Recommended PC Board Hole  
Layout — page 193

Technical Documents — pages 183  
and 199-200

#### Mating Connectors

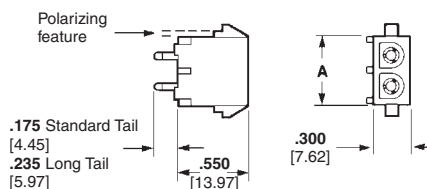
##### Universal MATE-N-LOK II

Plug Housings — pages 187-188

##### Universal MATE-N-LOK

Plug Housings — page 168

### 2, 3, 4 and 5 Circuit, In-Line



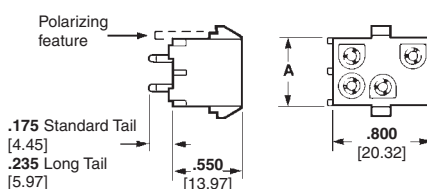
| Number of Circuits | A Dim.         | Socket Finish       | Socket Header Part Numbers |                                      |                        | Mates with Plug Housing Part Number (Using Pin Contacts) |                      |
|--------------------|----------------|---------------------|----------------------------|--------------------------------------|------------------------|----------------------------------------------------------|----------------------|
|                    |                |                     | Standard Tail <sup>1</sup> | Standard Tail Polarized <sup>2</sup> | Long Tail <sup>3</sup> | Universal MATE-N-LOK II                                  | Universal MATE-N-LOK |
| 2                  | .550<br>13.97  | Pre-tin             | 350824-1                   | 643412-1                             | 350831-1               | 770017-1                                                 | 350777-1             |
|                    |                | Duplex <sup>1</sup> | 350824-4                   | 643412-3                             | —                      |                                                          |                      |
| 3                  | .800<br>20.32  | Pre-tin             | 350825-1                   | 643414-1                             | 350832-1               | 770018-1                                                 | 350766-1             |
|                    |                | Duplex <sup>1</sup> | 350825-4                   | 643414-3                             | 350832-4               |                                                          |                      |
| 4                  | 1.050<br>26.67 | Pre-tin             | 350826-1                   | 643416-1                             | 350833-1               | 770019-1                                                 | 350779-1             |
|                    |                | Duplex <sup>1</sup> | 350826-4                   | —                                    | 350833-4               |                                                          |                      |
| 5                  | 1.300<br>33.02 | Pre-tin             | 640901-1                   | —                                    | —                      | 770016-1                                                 | 350809-1             |
|                    |                | Duplex <sup>1</sup> | 640901-3                   | —                                    | —                      |                                                          |                      |

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

### 6, 9, 12 and 15 Circuit, Matrix



| Number of Circuits | A Dim.         | Socket Finish       | Socket Header Part Numbers |                                      |                        | Mates with Plug Housing Part Number (Using Pin Contacts) |                      |
|--------------------|----------------|---------------------|----------------------------|--------------------------------------|------------------------|----------------------------------------------------------|----------------------|
|                    |                |                     | Standard Tail <sup>1</sup> | Standard Tail Polarized <sup>2</sup> | Long Tail <sup>3</sup> | Universal MATE-N-LOK II                                  | Universal MATE-N-LOK |
| 6                  | .550<br>13.97  | Pre-tin             | 350827-1                   | 643424-1                             | 350834-1               | 770020-1                                                 | 350715-1             |
|                    |                | Duplex <sup>1</sup> | 350827-4                   | 643424-3                             | 350834-4               |                                                          |                      |
| 9                  | .800<br>20.32  | Pre-tin             | 350828-1                   | 643426-1                             | 350835-1               | 770021-1                                                 | 350720-1             |
|                    |                | Duplex <sup>1</sup> | 350828-4                   | 643426-3                             | 350835-4               |                                                          |                      |
| 12                 | 1.050<br>26.67 | Pre-tin             | 350829-1                   | 643428-1                             | 350836-1               | 770022-1                                                 | 350735-1             |
|                    |                | Duplex <sup>1</sup> | 350829-4                   | —                                    | 350836-4               |                                                          |                      |
| 15                 | 1.300<br>33.02 | Pre-tin             | 350830-1                   | 643430-1                             | 350837-1               | 770023-1                                                 | 350736-1             |
|                    |                | Duplex <sup>1</sup> | 350830-4                   | —                                    | 350837-4               |                                                          |                      |

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

**Note:** All part numbers are RoHS Compliant.

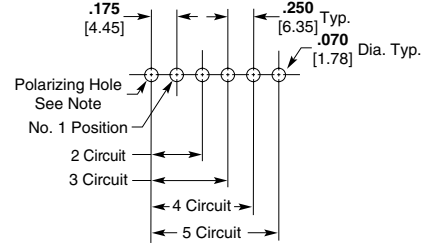
## Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

### Recommended PC Board Hole Layouts for Pin and Socket Vertical Headers

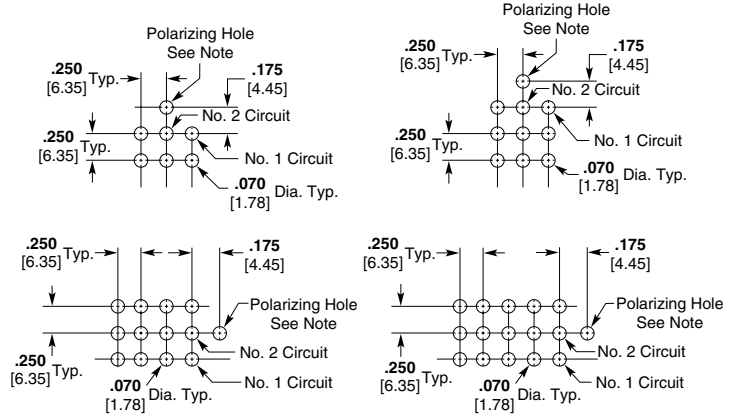
#### Related Product Data

Vertical Headers — pages 191-192

### 2, 3, 4 and 5 Circuit, In-Line



### 6, 9, 12 and 15 Circuit, Matrix



Note: Polarizing hole .070 [1.78] Dia. required for polarized headers only.

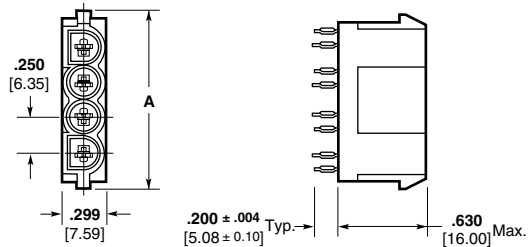
### PC Board Vertical Pin Headers with ACTION PIN Contacts

#### Material and Finish

Housing — PBT, black

Flammability Rating — UL94V-0

Contacts — Copper alloy, plated with tin over nickel on entire contact



#### Related Product Data

Performance Characteristics —  
pages 183-184

Technical Documents — pages 183  
and 199-200

#### Product Specification

108-5222 ACTION PIN Universal  
MATE-N-LOK Header  
Assembly

#### Mating Connectors

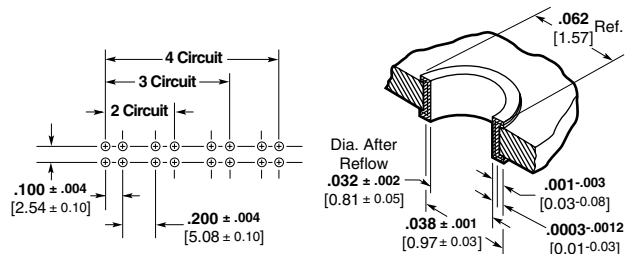
Universal MATE-N-LOK II  
Plug Housings — pages 187-188

Universal MATE-N-LOK  
Plug Housings — page 168

| Number of<br>Circuits | A Dim.         | Part Number | Mates with Plug Housing<br>Part Number (Using Socket Contacts) |                         |
|-----------------------|----------------|-------------|----------------------------------------------------------------|-------------------------|
|                       |                |             | Universal<br>MATE-N-LOK II                                     | Universal<br>MATE-N-LOK |
| 2                     | .750<br>19.05  | 173924-1*   | 770017-1                                                       | 350777-1                |
| 3                     | 1.000<br>25.40 | 173925-1*   | 770018-1                                                       | 350766-1                |
| 4                     | 1.250<br>31.75 | 173926-1*   | 770019-1                                                       | 350779-1                |

\*Install in PC Board with arbor tool.

Note: All part numbers are RoHS Compliant.



Recommended PC Board Hole Layout

PC Board Hole Dimensions

## Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

### PC Board Right-Angle Pin and Socket Headers

.250 [6.35] Centerline spacing

#### Material

Housing — Nylon

Flammability Rating — UL 94V-0

Contacts — Phosphor bronze

Solder tail width .052 [1.32]

#### Related Product Data

##### Product Specification

108-1053 Universal MATE-N-LOK  
PC Board Headers

##### Performance Characteristics —

pages 183-184

Technical Documents — pages 183  
and 199-200

#### Mating Connectors

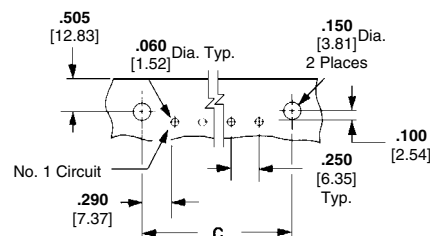
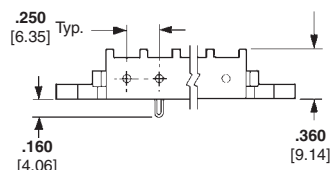
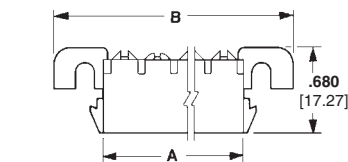
##### Universal MATE-N-LOK II

Plug Housings — pages 187-188

##### Universal MATE-N-LOK

Plug Housings — page 168

### 2, 3, 4 and 5 Circuit, In-line



Use 6-32 UNC Pan Head Screw  
3/8 [9.53] long for mounting  
(Not Supplied)

Recommended PC Board Hole Layout  
.062 [1.57] Board Thickness

| Number of<br>Circuits | Dimensions |       |       | Contact<br>Finish   | Part Numbers       |            |                            |                         |
|-----------------------|------------|-------|-------|---------------------|--------------------|------------|----------------------------|-------------------------|
|                       | A          | B     | C     |                     | Right-Angle Header |            | Mates with Plug Housing    |                         |
|                       |            |       |       |                     | Pin                | Socket     | Universal<br>MATE-N-LOK II | Universal<br>MATE-N-LOK |
| 2                     | .550       | 1.245 | .830  | Pre-tin             | 1-350942-0         | 643226-1   | 770017-1                   | 350777-1                |
|                       | 13.97      | 31.62 | 21.08 | Duplex <sup>1</sup> | 3-350942-0         | —          |                            |                         |
| 3                     | .800       | 1.495 | 1.080 | Pre-tin             | 1-350943-0         | 643228-1   | 770018-1                   | 350766-1                |
|                       | 20.32      | 37.97 | 27.43 | Duplex <sup>1</sup> | 3-350943-0         | 3-643228-0 |                            |                         |
| 4                     | 1.050      | 1.745 | 1.330 | Pre-tin             | 1-350944-0         | 643230-1   | 770019-1                   | 350779-1                |
|                       | 26.67      | 44.32 | 33.78 | Duplex <sup>1</sup> | 3-350944-0         | 3-643230-0 |                            |                         |
| 5                     | 1.300      | 1.995 | 1.580 | Pre-tin             | 1-350945-0         | 643232-1   | 770016-1                   | 350809-1                |
|                       | 33.02      | 50.67 | 40.13 | Duplex <sup>1</sup> | 3-350945-0         | 3-643232-0 |                            |                         |

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

### High Current Contacts

The Louvertac bands have the versatility of being designed into contact dimensions used in existing AMP connectors.

Universal MATE-N-LOK II High Current contacts have been designed to fit into an existing Universal MATE-N-LOK II housing. An initial T-Rise test of a fully energized 4 circuit connector with 10 gage wires has shown a 31 amp capability per line with a 30° T-rise.

### Cable-to-Cable

#### Material

**Body** — Copper Alloy

**Louvertac Band** — Beryllium Copper

**Finish** — Silver

Contact Extraction Tool No. 318851-1

Latch Disengaging Tool No. 58382-1

■ **Recognized under the Component Program of Underwriters Laboratories Inc.,** File No. E28476

■ **Certified by Canadian Standards Association,** File No. LR7189

■ **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**

**Design Objective** — 108-1583

**Application Specification** — 114-16021

### Cable-to-Right-Angle Board

#### Material

**Housing** — UL 94V-0 Nylon

**Contact Body** — Copper Alloy

**Louvertac Band** — Beryllium Copper

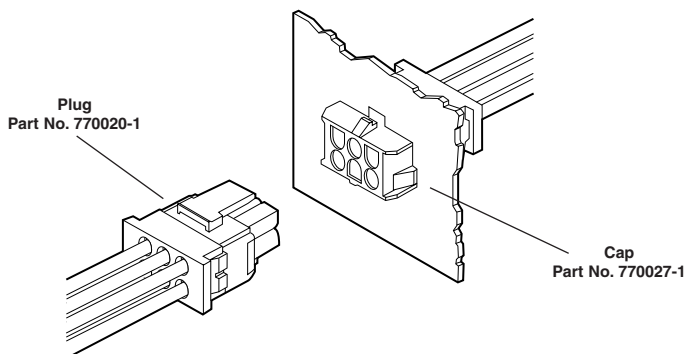
**Finish** — Silver

■ **Recognized under the Component Program of Underwriters Laboratories Inc.,** File No. E28476

■ **Certified by Canadian Standards Association,** File No. LR7189

■ **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**

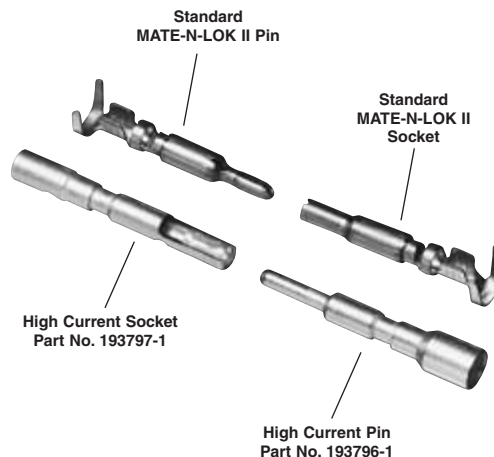
**Design Objective** — 108-1594



### Contacts

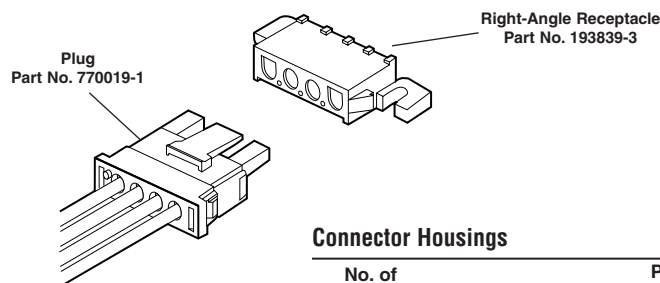
| Wire Size<br>AWG | Contact Part Numbers |          | Crimp Tools                                                                              |
|------------------|----------------------|----------|------------------------------------------------------------------------------------------|
|                  | Pin                  | Socket   |                                                                                          |
| 10               | 193796-1             | 193797-1 | Daniels<br>Hand Tool #M310 or AMP P/N 356114-1<br>Positioner #TP1013 or AMP P/N 356337-1 |
| 12-14            | 193841-1             | 193842-1 |                                                                                          |

**Note:** High Current contacts are **not** intermateable with any other Universal MATE-N-LOK contact.



### Connector Housings

| No. of<br>Circuits | Kit Part Numbers |          |
|--------------------|------------------|----------|
|                    | Plug             | Cap      |
| 2                  | 770017-1         | 770024-1 |
| 3                  | 770018-1         | 770025-1 |
| 4                  | 770019-1         | 770026-1 |
| 5                  | 770016-1         | —        |
| 6                  | 770020-1         | 770027-1 |
| 9                  | 770021-1         | 770028-1 |
| 12                 | 770022-1         | 770029-1 |
| 15                 | 770023-1         | 770030-1 |



### Connector Housings

| No. of<br>Circuits | Part Numbers  |                         |
|--------------------|---------------|-------------------------|
|                    | Socket Header | Mates with Plug Housing |
| 2                  | 193839-1      | 770017-1                |
| 3                  | 193839-2      | 770018-1                |
| 4                  | 193839-3      | 770019-1                |
| 5                  | 193839-4      | 770016-1                |

**Notes:** 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.  
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.  
3. Additional information on contacts is available in AMP Precision Pin and Socket Contacts Catalog 65910.

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline

## Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

### High Current Vertical Pin Headers

High Current Universal MATE-N-LOK II Vertical Pin Headers are designed to accept Universal MATE-N-LOK II Plugs with High Current Socket contacts. All housings are polarized in order to allow proper circuit board placement. Eight versions are available from 2 circuit to 15 circuits.

#### Material

**Housing**—UL 94V-0 Nylon

**Contacts**—Copper Alloy

**Finish**—Silver

■ Recognized under the  
Component Program of  
Underwriters  
Laboratories Inc.,  
File No. E28476



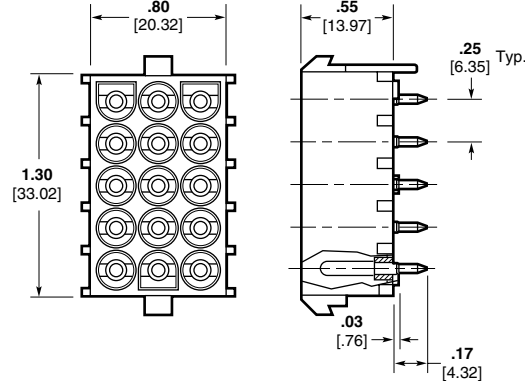
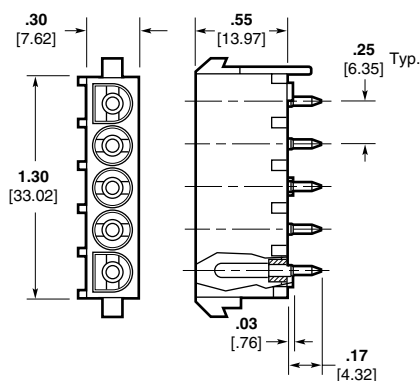
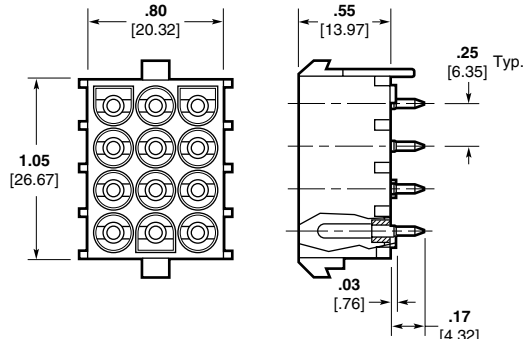
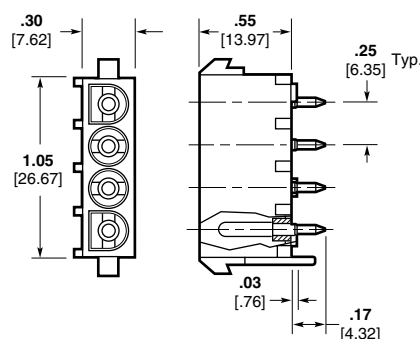
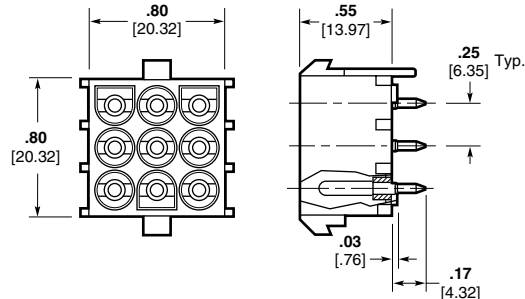
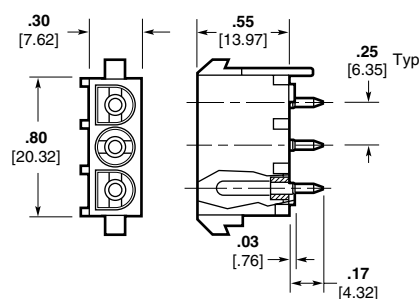
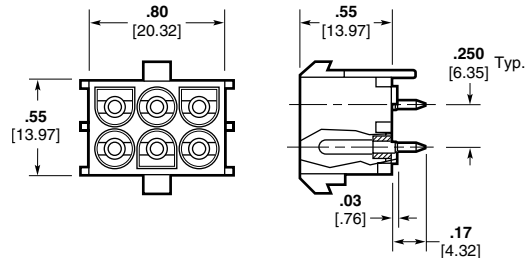
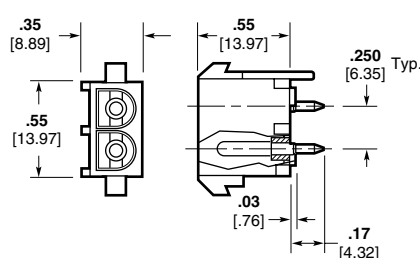
■ Certified by Canadian  
Standards  
Association,  
File No. LR7189



■ Passed test by VDE under  
their Registration Number  
3980/Continuous  
Surveillance



**Design Objective**—108-1594



**Notes:** 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.  
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.

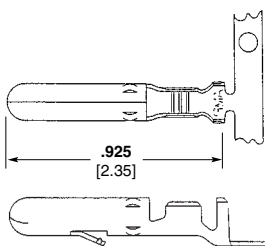
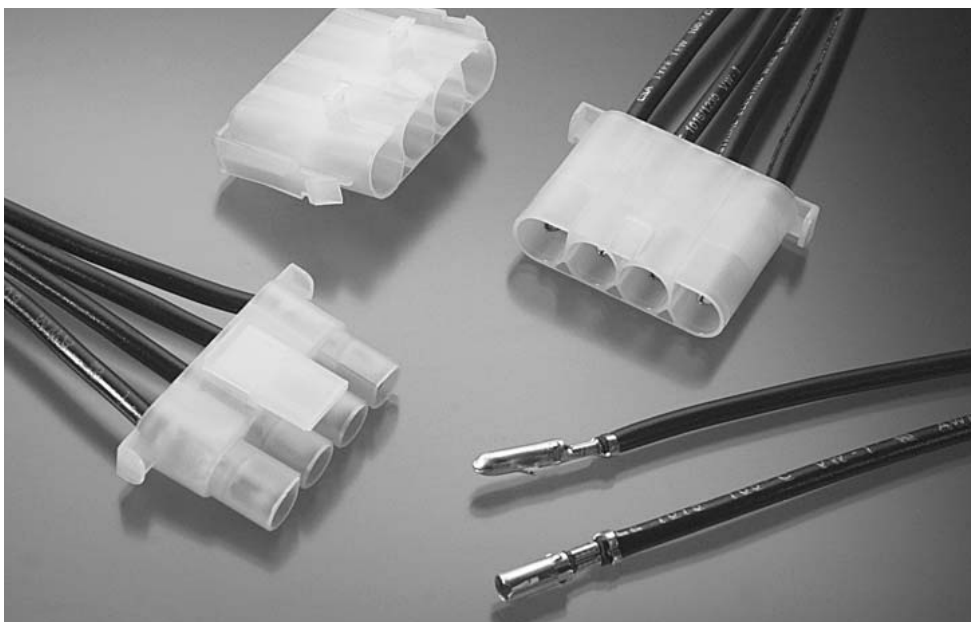
Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline

## .156 MATE-N-LOK Connectors

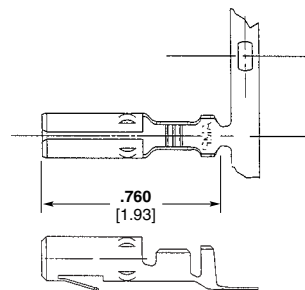
### Product Facts

- Positive polarized nylon housings
- Panel mount or free-hanging
- Numbered cavities for easy circuit identification
- Removable, crimp snap-in contacts
- Contacts accept 20-10 AWG wire sizes
- Pin contacts are used in cap housings, socket contacts are used in plug housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476



Pin

Used in Caps



Socket

Used in Plugs

### Contacts

Pin diameter .156 [3.96]

### Material and Finish

#### Contacts—

Brass, Pre-tin plated  
Stock thickness .018 [.457]

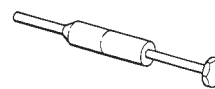
| Wire Size<br>Range<br>AWG [mm²] | Ins. Dia.<br>Range | Contact Part Number |             |            |             | HDM1<br>Applicator<br>Part No.   | Hand Tool<br>Part No. |
|---------------------------------|--------------------|---------------------|-------------|------------|-------------|----------------------------------|-----------------------|
|                                 |                    | Pin                 |             | Socket     |             |                                  |                       |
|                                 |                    | Strip Form          | Loose Piece | Strip Form | Loose Piece |                                  |                       |
| 20-14<br>[.5-2.0]               | .125 max.          | 61086-1             | 61251-1     | 61085-1    | 61250-1     | 466462-1<br>466462-2<br>466462-3 | 58631-1               |
| 12-10<br>[3.0-6.0]              | .185 max.          | 61234-1             | 61253-1     | 61233-1    | 61252-1     | 687765-2<br>687765-3             | 58632-1               |

<sup>1</sup>To be used with appropriate application machine. See pages 201-204 for further information.

**Note:** All part numbers are RoHS Compliant.



Insertion Tool  
Part No. 91002-1  
(IS 408-7347)



Extraction Tool  
Part No. 691458-1 (Pins)  
Part No. 691458-2 (Sockets)  
(IS 408-4322)

Standard Density

.156 MATE-N-LOK Connectors  
.390 [9.91] Centerline

## **.156 MATE-N-LOK Connectors** (Continued)

### **Housings**

#### **Free-Hanging or Panel Mount**

#### **Related Product Data**

**Contacts**—page 197

#### **Product Specification**

108-8002

#### **Application Specification**

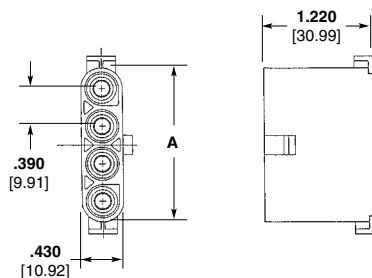
114-1109

### **Material**

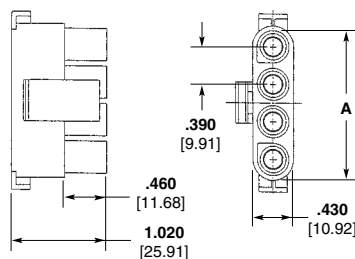
#### **Housings**—

Nylon, Natural Color

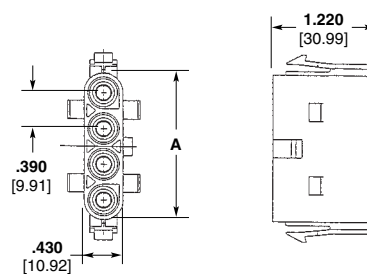
Flammability Rating—UL94V-2



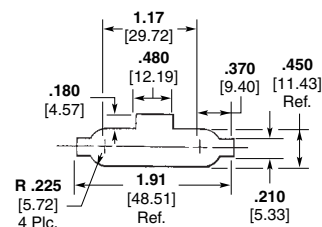
**Pin Housing (Cap)**  
**Free-Hanging**  
**Part Number 794117-1**



**Socket Housing (Plug)**  
**Part Number 794116-1**



**Pin Housing (Cap)**  
**Panel Mount**  
**Part Number 794118-1**



**Panel Mount Cutout**

**Note:** Panel must be punched in the same direction as the housing will be inserted.

| Number of Circuits | A Dim.        | Plug     | Cap          |             |
|--------------------|---------------|----------|--------------|-------------|
|                    |               |          | Free-Hanging | Panel Mount |
| 3                  | .048<br>1.210 | 794412-1 | 794413-1     | —           |
| 4                  | .063<br>1.600 | 794116-1 | 794117-1     | 794118-1    |

**Note:** All part numbers are RoHS Compliant.

## Technical Documents

### Related Product Data

#### Connectors

**2.5 mm Signal Double Lock (SDL)**—  
pages 9-16

**Micro MATE-N-LOK 3 mm**—  
pages 17-46

**Grace Inertia Connectors  
(GIC) 3.5**—pages 47-50

**.062 Commercial Pin and  
Socket**—pages 51-55

**Power Double Lock (PDL)**—  
pages 57-78

**Mini Universal MATE-N-LOK**—  
pages 79-92

**Mini Universal MATE-N-LOK 2**—  
pages 93-102

**(MR) Miniature Rectangular**—  
pages 103-112

**4.2 mm PE Series**—pages 113-118

**AMP-DUAC**—pages 119-128

**5.0 mm Power Key Connectors  
(PKC)**—pages 129-136

**.093 Commercial Pin and  
Socket**—pages 137-144

**Commercial MATE-N-LOK**—  
pages 145-158

**.140 MATE-N-LOK**—pages 159-162

**Universal MATE-N-LOK**—  
pages 163-182

**Universal MATE-N-LOK II**—  
pages 183-196

**.156 MATE-N-LOK**—pages 197-198

Various technical documents are available for your use:

**Product Specifications** describe technical performance characteristics and verification tests.

They are intended for the Design, Component and Quality Engineer.

|            |                                                              |
|------------|--------------------------------------------------------------|
| 108-1000   | Commercial MATE-N-LOK Connectors                             |
| 108-1022   | (MR) Miniature Rectangular Connectors                        |
| 108-1031   | Universal MATE-N-LOK Connectors                              |
| 108-1031-1 | Splash Proof Seal, Universal MATE-N-LOK Connectors           |
| 108-1032   | .140 Diameter MATE-N-LOK Pin and Socket Connectors           |
| 108-1037   | .062 Commercial Pin and Socket Connectors                    |
| 108-1037-1 | .062 Commercial Pin and Socket Contacts                      |
| 108-1038   | .093 Commercial Pin and Socket Connector                     |
| 108-1053   | Universal MATE-N-LOK Printed Circuit Board Headers           |
| 108-1077   | Commercial MATE-N-LOK Printed Circuit Board Headers          |
| 108-1078   | (MR) Miniature Rectangular Printed Circuit Board Headers     |
| 108-1090   | Universal MATE-N-LOK II Connectors                           |
| 108-1542   | Mini-Universal MATE-N-LOK Connectors                         |
| 108-1542-2 | Splash Proof Seals for Mini-Universal MATE-N-LOK Connectors  |
| 108-1543   | Mini-Universal MATE-N-LOK Headers                            |
| 108-1594   | Universal MATE-N-LOK Headers with High Current Contacts      |
| 108-1693   | Mini-Universal MATE-N-LOK II Connectors                      |
| 108-1694   | Mini-Universal MATE-N-LOK II Headers                         |
| 108-1699   | AMP-DUAC Headers                                             |
| 108-1836   | Micro MATE-N-LOK 3 mm Connectors                             |
| 108-2069   | Universal MATE-N-LOK Circular Connector                      |
| 108-5138   | Mini-Universal MATE-N-LOK Connectors (UL 94V-0)              |
| 108-5151   | Mini-Universal MATE-N-LOK Connectors (UL 94V-2)              |
| 108-5155   | Commercial MATE-N-LOK Pin Header Assembly                    |
| 108-5222   | Universal MATE-N-LOK Headers with ACTION PIN Contacts        |
| 108-5410   | Power Double Lock (PDL) Connectors                           |
| 108-5439   | Power Double Lock (PDL) Connectors (SMT)                     |
| 108-5459   | 2.5 mm Signal Double Lock (SDL) Connectors                   |
| 108-5699   | 5.0 mm Power Key Connectors (PKC)                            |
| 108-5810   | Grace Inertia Connectors (GIC) 3.5                           |
| 108-8002   | .156 Diameter MATE-N-LOK Connectors                          |
| 108-19099  | AMP-DUAC Receptacles                                         |
| 108-49000  | Commercial MATE-N-LOK IDC Insulation Displacement Connectors |

**Application Specifications** describe requirements for using the product in its intended application and/or crimping information. They are intended for the Packaging and Design Engineer and the Machine Setup Person.

|           |                                                                             |
|-----------|-----------------------------------------------------------------------------|
| 114-1007  | .140 Diameter MATE-N-LOK Contacts                                           |
| 114-1010  | Universal MATE-N-LOK Connectors                                             |
| 114-1012  | Commercial MATE-N-LOK Contacts                                              |
| 114-1013  | .062 Commercial Pin and Socket Connectors                                   |
| 114-1014  | (MR) Miniature Rectangular Contacts                                         |
| 114-1043  | Universal MATE-N-LOK II Connectors ( housings, contacts and strain reliefs) |
| 114-1109  | .156 Diameter MATE-N-LOK Connectors                                         |
| 114-1111  | Mini-Universal MATE-N-LOK 2 Connectors                                      |
| 114-5175  | Power Double Lock (PDL) Connectors                                          |
| 114-5203  | 2.5 mm Signal Double Lock (SDL) Connectors                                  |
| 114-5292  | 5.0 mm Power Key Connectors (PKC)                                           |
| 114-5306  | Grace Inertia Connectors (GIC) 3.5                                          |
| 114-6067  | AMP-DUAC Crimping Contacts                                                  |
| 114-13000 | Micro MATE-N-LOK 3 mm Connectors                                            |

## Technical Documents (Continued)

### Application Specifications (Continued)

|           |                                                              |
|-----------|--------------------------------------------------------------|
| 114-13089 | Mini-Universal MATE-N-LOK Sealed Connectors                  |
| 114-16017 | Mini-Universal MATE-N-LOK Connectors                         |
| 114-19048 | AMP-DUAC Receptacles (Use of)                                |
| 114-49000 | .093 Commercial Pin and Socket Connectors                    |
| 114-49001 | Commercial MATE-N-LOK IDC Insulation Displacement Connectors |

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

|           |                                                                                                |
|-----------|------------------------------------------------------------------------------------------------|
| 408-3186  | Terminating Head (PN 231894-1) (Commercial MATE-N-LOK IDC Connector)                           |
| 408-3200  | Universal MATE-N-LOK II Connectors (Housings, Contacts and Accessories)                        |
| 408-3231  | (MR) Miniature Rectangular Connectors (Pin Housing, Socket Housing, Contacts, and Accessories) |
| 408-3234  | Mini-Universal MATE-N-LOK Connectors                                                           |
| 408-3320  | Universal MATE-N-LOK Strain Relief Assembly and Keying Plug                                    |
| 408-3392  | Universal MATE-N-LOK Splash Proof Seals                                                        |
| 408-3393  | Mini-Universal MATE-N-LOK 2 Connectors                                                         |
| 408-4118  | Contact Extraction Tool (PN 189727-1)                                                          |
| 408-4322  | Contact Extraction Tools [PN 691458-1 (Pins) and 691458-2 (Sockets)]                           |
| 408-4370  | Contact Extraction Tool (PN 318831-1)                                                          |
| 408-4371  | Contact Extraction Tool (PN 318851-1)                                                          |
| 408-4375  | Contact Extraction Tool (PN 318837-1)                                                          |
| 408-4378  | Extraction Tool (PN 318845-1)                                                                  |
| 408-6790  | Hand Tool Handle (PN 58074-1)                                                                  |
| 408-7158  | Contact Extraction Tools [PN 1-305183-1 (Pins) and 1-305183-2 (Sockets)]                       |
| 408-7166  | Commercial MATE-N-LOK Panel Mount Connector                                                    |
| 408-7200  | Commercial MATE-N-LOK Free-Hanging Connector                                                   |
| 408-7201  | Commercial MATE-N-LOK Detent Engagement Connectors, 2 and 3 circuit                            |
| 408-7209  | Commercial MATE-N-LOK Commoning Tabs                                                           |
| 408-7211  | Pin and Socket Extraction Tool (PN 465644-1)                                                   |
| 408-7215  | Commercial MATE-N-LOK Single Circuit Connector                                                 |
| 408-7300  | MATE-N-LOK Contact and Housing Selection Charts                                                |
| 408-7347  | Contact Insertion Tool (PN 91002-1)                                                            |
| 408-7582  | Commercial MATE-N-LOK Keying Plug                                                              |
| 408-7714  | Universal MATE-N-LOK Connectors                                                                |
| 408-7763  | Power Unit (PN 91112-2)                                                                        |
| 408-7984  | Contact Insertion Tool (PN 455830-1)                                                           |
| 408-9330  | Head (PN 231920-2) (Used with Arbor Tool PN 91085-2)                                           |
| 408-9436  | Latch Disengaging Tool (PN 58382-1)                                                            |
| 408-9570  | Contact Extraction Tool (PN 455822-2)                                                          |
| 408-10003 | Contact Retention Test Tool (PN 1586700-1)                                                     |
| 408-10017 | Universal MATE-N-LOK Sealed Bulkhead Connectors                                                |
| 411-5105  | Mini-Universal MATE-N-LOK Connectors                                                           |
| 411-5638  | Power Double Lock (PDL) Connectors                                                             |

## Application Tooling

### Semiautomatic Machines

#### AMP-O-LECTRIC Model "G" Terminating Machines, 354500-1, -9, -11



Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience and safety. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

##### Specifications

**Width**—18.7-25.3 [475-643] depending on applicator type

**Depth**—21.5-28.1 [546-713] depending on applicator type

**Height**—20 [508]

**Weight**—240 lb [110 kg]

**Electrical**—120 or 220 VAC, 50 or 60 Hz

**Air**—90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m³/s] when required with air-feed applicators

**Wire Range**—26-10 AWG [0.12-6 mm²] solid or stranded, depending on product applied

For more information, request Catalog **65828**, Catalog **82275** [Crimp Quality Monitor (CQM)].

#### AMP-O-MATIC Stripper-Crimper Machine, 854040-3, -4



Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the front of the machines without special tools. Available with crimp quality monitoring.

##### Specifications

**Width**—14 [355]

**Depth**—18 [457]

**Height**—33 [838] without reel

**Weight**—150 lb [68 kg]

**Electrical**—120 VAC, 50 or 60 Hz, .5 A

**Air**—80-100 psi [5.52-6.90 bar], 3.5 scfm [0.00165 m³/s]

**Wire Range**—32-14 AWG [0.03-2 mm²]

For more information, request Catalog **65004**.

#### AMP 3K/40 and AMP 5K/40 Terminators



As value oriented terminators, the AMP 3K/40 and AMP 5K/40 are designed for customers that require the increased output and quality of a semi-automatic machine at a competitive price. By incorporating the most commonly requested features as standard and offering a long list of optional equipment, these terminators offer flexibility to meet the specific needs of various applications at the lowest possible cost.

#### Optional Stripping Module for the AMP 3K/40, AMP 5K/40 and AMP-O-LECTRIC Model G Terminators



The combination of the Stripping Module with the AMP-O-LECTRIC Model G Terminator or the AMP 3K/40, 5K/40 provides an economical, proficient method of stripping wire and crimping terminals on the same machine. Wires are stripped moments before crimping, meaning there is virtually no chance of damaging wire conductors during handling or storage. Once the wire is fed into the start sensor the Stripping Module does the rest, improving placement accuracy.

For more information, request Catalog **1309085**.

#### Crimp Quality Monitor



This system measures the crimp height of each termination as it is made. It also evaluates the quality of each crimp. If a crimp is questionable, the monitor alerts the operator with both visual and audible alarms. It also features ports for printing and networking. For use with AMP-O-LECTRIC Model "G" and AMP-O-MATIC Stripper-

Crimper Machines, the monitor is mounted to the machine. For use with AMPOMATOR CLS IV+ Machines, it is integrated into the machine's operating system, with the displays appearing on the machine's touch screen.

For more information, request Catalog **82275**.

**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

## Application Tooling (Continued)

### Automatic Machines

#### AMPOMATOR System III Leadmaker



The AMPOMATOR System III Leadmaker is designed for the demands of low-volume/high-mix manufacturing and precision quality. This leadmaker combines the best wire processing capabilities with

new technologies in terminal feeding and machine set-up found in the System III Applicator to offer significant advantages for higher throughput and efficiencies. Request Catalog 1654956-5.

#### AMPOMATOR CLS IV+ Lead-Making Machines, 356500-1, -2



#### System III Applicator



The System III Applicator introduces several new technologies into the applicator including a precision servo-electric motorized feeding system, a built-in data module for storing terminal crimp and

set-up information, a precision fit round ram, and a newly designed terminal depressor. It still utilizes the proven quality of the HD-M crimper and anvil tooling.

Fully-automatic machines that measure, cut, strip and terminate single leads. Microprocessor-controlled, and programmed and operated using an easy-to-follow, menu-driven touchscreen. Features include direct-drive terminating units with precision crimp height adjustment, fully programmable setups, wire runout and splice detection, and motorized pre-feed with wire straightener. Crimp quality monitoring is also available.

#### Specifications

**Width**—159 [4 039]

**Depth**—68 [1 730]

**Height**—90 [2 285] min., with 24 [610] dia. reel

**Weight**—2 000 lb [907 kg]

**Electrical**—220 VAC, 50 or 60 Hz, 1 Ø, 20 A with neutral and ground

**Air**—90 psi [6.21 bar], 15 scfm [0.00708 m³/s] sustained

**Wire Range**—26-10 AWG [0.12-6 mm²] stranded, 26-16 AWG [0.12-1.4 mm²] solid

**Lead Lengths**—3-90 [76.2-2 286], 90-1 000 [2 286-25 400] with long lead conveyors

For more information, request Catalog 124324.

#### EDGE Electronic Applicator Counter



The new, versatile EDGE applicator counter tracks wearable tool usage for the most effective maintenance planning. The completely electronic counter, with clear LCD display, indicates cycles since installation. By performing maintenance at measured intervals with pre-set

limits, operators avoid breakdowns and rejects caused by tool wear or mis-adjustment.

For more information, request Catalog 1773385.

## Application Tooling (Continued)

### Applicator Styles

#### End- and Side-Feed Heavy-Duty Miniature (HDM) Applicators



- Handle a wide variety of products
- Used with both semi- and fully-automatic machines
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes

#### Stripper-Crimper (SCA) Applicators



- For use with AMP-O-MATIC Stripper-Crimper Machines
- Terminate a wide variety of open-barrel products
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes
- CQM applicators are available

#### Crimp Quality Monitor (CQM) Applicators



- Same basic features as regular HDM and SCA applicators
- Recommended for use with machines featuring manual or automatic precision-adjust
- Use two built-in sensors to provide the Crimp Quality Monitor with data to measure crimp height, and evaluate the quality of each crimp

### Applicator and Hand Tool Selection Guide

#### Related Product Data

##### Contacts

- 2.5 mm Signal Double Lock (SDL)—page 12
- Micro MATE-N-LOK 3 mm—page 22
- Grace Inertia Connectors (GIC) 3.5—page 48
- .062 Commercial Pin and Socket—page 53
- Power Double Lock (PDL)—page 59
- Mini Universal MATE-N-LOK—page 82
- Mini Universal MATE-N-LOK 2—pages 94-95
- (MR) Miniature Rectangular—page 106
- 4.2 mm PE Series—page 114
- AMP-DUAC—pages 120-121
- 5.0 mm Power Key Connectors (PKC)—page 131
- .093 Commercial Pin and Socket—page 139
- Commercial MATE-N-LOK—pages 149-150
- .140 MATE-N-LOK—page 160
- Universal MATE-N-LOK—pages 166-167
- Universal MATE-N-LOK II—page 186
- .156 MATE-N-LOK—page 197

| Density  | Product Line                       | Applicators |   |   | Hand Tools |   |
|----------|------------------------------------|-------------|---|---|------------|---|
|          |                                    | A           | B | C | D          | E |
| High     | 2.5 mm Signal Double Lock (SDL)    | *           | * | * | X          | - |
|          | Micro MATE-N-LOK 3 mm              | X           | X | X | X          | - |
|          | Grace Inertia Connectors (GIC) 3.5 | *           | * | * | X          | - |
|          | .062 Commercial Pin and Socket     | X           | X | X | -          | X |
|          | Power Double Lock (PDL)            | *           | * | * | X          | - |
|          | Mini-Universal MATE-N-LOK          | X           | X | X | X          | X |
|          | Sealed Mini-Universal MATE-N-LOK   | X           | X | X | X          | - |
|          | Mini-Universal MATE-N-LOK 2        | X           | X | X | X          | X |
|          | (MR) Miniature Rectangular         | X           | X | X | X          | - |
|          | 4.2 mm PE Series                   | X           | - | - | -          | X |
| Standard | AMP-DUAC                           | X           | X | - | X          | - |
|          | 5.0 mm Power Key Connectors (PKC)  | *           | * | * | X          | - |
|          | .093 Commercial Pin and Socket     | X           | X | X | -          | X |
|          | Commercial MATE-N-LOK              | X           | X | X | X          | X |
|          | .140 MATE-N-LOK                    | X           | X | X | X          | - |
|          | Universal MATE-N-LOK               | X           | X | X | X          | X |
|          | Universal MATE-N-LOK II            | X           | X | X | X          | X |
|          | .156 MATE-N-LOK                    | X           | - | - | X          | - |

A—Heavy Duty Miniature (HDM) Applicators

B—Stripper-Crimper Applicators (SCA)

C—Crimp Quality Monitor (CQM) Applicators

D—CERTI-CRIMP Hand Tool

E—PRO-CRIMPER III Commercial Hand Tool

\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.

### Mechanical Hand Tools

#### CERTI-CRIMP II Straight Action Hand Tools (SAHT) 91501-1, 91502-1



Premium grade hand tools. Feature ratchet control to provide complete crimp cycle. Die sets close in a straight line. Include a contact locator and wire stop, plus an insulation crimp

adjustment lever, when applicable. Approximate weight 1.3 lb [0.59 kg] For more information, request Catalog **65780**.

**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

## Application Tooling (Continued)

### Hand Tools

#### Related Product Data

##### Contacts

**2.5 mm Signal Double Lock (SDL)**—page 12  
**Micro MATE-N-LOK 3 mm**—page 22  
**Grace Inertia Connectors (GIC) 3.5**—page 48  
**.062 Commercial Pin and Socket**—page 53  
**Power Double Lock (PDL)**—page 59  
**Mini Universal MATE-N-LOK**—page 82  
**Mini Universal MATE-N-LOK 2**—pages 94-95  
**(MR) Miniature Rectangular**—page 106  
**4.2 mm PE Series**—page 114  
**AMP-DUAC**—pages 120-121  
**5.0 mm Power Key Connectors (PKC)**—page 131  
**.093 Commercial Pin and Socket**—page 139  
**Commercial MATE-N-LOK**—pages 149-150  
**.140 MATE-N-LOK**—page 160  
**Universal MATE-N-LOK**—pages 166-167  
**Universal MATE-N-LOK II**—page 186  
**.156 MATE-N-LOK**—page 197

### CERTI-CRIMP II Hand Tool



Catalog 65780

### PRO-CRIMPER III Hand Tool



Catalog 82276

| Features                               | CERTI-CRIMP Hand Tool | PRO-CRIMPER III Hand Tool |
|----------------------------------------|-----------------------|---------------------------|
| Field Repair/Prototyping               | X                     | X                         |
| OEM Applications/Low Volume Production | X                     | —                         |
| Ratchet Control                        | X                     | X                         |
| Brush/Bellmouth Control                | X                     | X                         |
| Precision Crimp Height Control         | X                     | X                         |
| Little/No Operator Training            | X                     | —                         |
| Insulation Adjustment                  | X                     | —                         |
| Repairable                             | X                     | —                         |

| Density  | Product Line                                                   | CERTI-CRIMP Hand Tool |                   | PRO-CRIMPER III Hand Tool |                   |
|----------|----------------------------------------------------------------|-----------------------|-------------------|---------------------------|-------------------|
|          |                                                                | Part Number           | Instruction Sheet | Part Number               | Instruction Sheet |
| High     | 2.5 mm Signal Double Lock (SDL)                                | 234603-1              | 411-5735          | —                         | —                 |
|          |                                                                | 234604-1              | 411-5736          | —                         | —                 |
|          | Micro MATE-N-LOK 3 mm                                          | 91501-1               | 408-8547          | —                         | —                 |
|          |                                                                | 91502-1               | 408-8547          | —                         | —                 |
|          | Grace Inertia Connectors (GIC) 3.5                             | 1596277-1             | 411-78101         | —                         | —                 |
|          |                                                                | —                     | —                 | 90870-1                   | 408-9965          |
|          | .062 Commercial Pin & Socket                                   | —                     | —                 | 90869-1                   | 408-9964          |
|          |                                                                | 91567-1               | 408-8547          | —                         | —                 |
|          | Power Double Lock (PDL)                                        | 91569-1               | 408-8547          | —                         | —                 |
|          |                                                                | 91529-1               | 408-8547          | 90758-1                   | 408-9938          |
|          | Mini-Universal MATE-N-LOK and Sealed Mini-Universal MATE-N-LOK | 91522-1               | 408-8547          | 90759-1                   | 408-9962          |
|          |                                                                | 91594-1               | 408-8547          | 90760-1                   | 408-9963          |
|          | Mini-Universal MATE-N-LOK 2                                    | 90717-2               | 408-4443          | —                         | —                 |
|          |                                                                | 91529-1               | 408-8547          | —                         | —                 |
|          | (MR) Miniature Rectangular                                     | 91522-1               | 408-8547          | —                         | —                 |
|          |                                                                | 91594-1               | 408-8547          | —                         | —                 |
|          | 4.2 mm PE Series                                               | 90717-2               | 408-4443          | —                         | —                 |
|          |                                                                | 91534-1               | 408-8547          | 58514-1                   | 408-9973          |
|          | AMP-DUAC                                                       | 91526-1               | 408-8547          | 58514-1                   | 408-9973          |
|          |                                                                | 90714-1               | 408-4385          | 91387-1                   | 408-8917          |
| Standard | 5.0 mm Power Key Connectors (PKC)                              | 734202-2              | —                 | 91388-1                   | 408-8918          |
|          |                                                                | —                     | —                 | —                         | —                 |
|          | .093 Commercial Pin & Socket                                   | —                     | —                 | 90872-1                   | 408-9967          |
|          |                                                                | —                     | —                 | 90871-1                   | 408-9966          |
|          | Commercial MATE-N-LOK                                          | 91515-1               | 408-8547          | —                         | —                 |
|          |                                                                | 91512-1               | 408-8547          | 90574-1                   | 408-9886          |
|          | .140 MATE-N-LOK                                                | 91504-1               | 408-8547          | 90575-1                   | 408-9887          |
|          |                                                                | 91552-1               | 408-8547          | —                         | —                 |
|          | Universal MATE-N-LOK and Universal MATE-N-LOK II               | 69710-1 <sup>1</sup>  | 408-2095          | —                         | —                 |
|          |                                                                | 58373-1 <sup>2</sup>  | 408-9442          | —                         | —                 |
|          | .156 MATE-N-LOK                                                | 58374-1 <sup>2</sup>  | 408-9442          | —                         | —                 |
|          |                                                                | 58439-1               | 408-9591          | —                         | —                 |
|          | Universal MATE-N-LOK and Universal MATE-N-LOK II               | 91510-1               | 408-8547          | 90548-1                   | 408-9885          |
|          |                                                                | 91500-1               | 408-8547          | 90546-1                   | 408-9883          |
|          | .156 MATE-N-LOK                                                | 91508-1               | 408-8547          | 90547-1                   | 408-9884          |
|          |                                                                | 91506-1               | 408-8547          | 90547-1                   | 408-9884          |
|          | .156 MATE-N-LOK                                                | 69710-1 <sup>1</sup>  | 408-2095          | —                         | —                 |
|          |                                                                | 58380-1 <sup>2</sup>  | 408-9433          | —                         | —                 |
|          | .156 MATE-N-LOK                                                | 58380-2 <sup>2</sup>  | 408-9433          | —                         | —                 |
|          |                                                                | 58631-1               | 408-4341          | —                         | —                 |
|          | .156 MATE-N-LOK                                                | 58632-1               | 408-4340          | —                         | —                 |
|          |                                                                | —                     | —                 | —                         | —                 |

<sup>1</sup>Hand tool requires die set.

<sup>2</sup>Die set.

**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

## Applicator Options

|                                          | Strip Form Contact Part Number |            | Heavy-Duty Miniature Applicator Part Numbers |                               |                                                                                        |                                              |
|------------------------------------------|--------------------------------|------------|----------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------|
|                                          |                                |            | Used on Bench Top Terminators                |                               | Used on Automatic Leadmaking Equipment (AMPOMATOR CLS Machine with T or G Terminators) | Used on AMP-O-MATIC Stripper-Crimper Machine |
|                                          | Pin                            | Socket     | AMP-O-LECTRIC Model K Machine                | AMP-O-LECTRIC Model G Machine |                                                                                        |                                              |
| 2.5 mm Signal Double Lock (SDL) Contacts | 917764-1                       | 917683-1   | *                                            | *                             | *                                                                                      | *                                            |
|                                          | 917765-1                       | 917684-1   | *                                            | *                             | *                                                                                      | *                                            |
| Micro MATE-N-LOK 3 mm Connector System   | 1-794608-0                     | —          |                                              |                               |                                                                                        |                                              |
|                                          | 1-794608-1                     | —          | 1385194-2                                    | 1385194-3                     | 1385194-1                                                                              | —                                            |
|                                          | 1-794608-2                     | —          |                                              |                               |                                                                                        |                                              |
|                                          | 1-794609-0                     | —          |                                              |                               |                                                                                        |                                              |
|                                          | 1-794609-1                     | —          | 1385377-2                                    | 1385377-3                     | 1385377-1                                                                              | —                                            |
|                                          | 1-794609-2                     | —          |                                              |                               |                                                                                        |                                              |
|                                          | —                              | 794606-1   |                                              |                               |                                                                                        |                                              |
|                                          | —                              | 1-794606-1 | 680893-2                                     | 680893-3                      | 680893-1                                                                               | —                                            |
|                                          | —                              | 1-794606-2 |                                              |                               |                                                                                        |                                              |
|                                          | —                              | 794607-1   |                                              |                               |                                                                                        |                                              |
|                                          | —                              | 1-794607-1 | 680894-2                                     | 680894-3                      | 680894-1                                                                               | —                                            |
|                                          | —                              | 1-794607-2 |                                              |                               |                                                                                        |                                              |
| Grace Inertia Connectors (GIC) 3.5       | 1565080-1                      | 1565079-1  | *                                            | *                             | *                                                                                      | *                                            |
|                                          | 1612335-1                      | 1612334-1  | *                                            | *                             | *                                                                                      | *                                            |
| .062 Commercial Pin and Socket Contacts  | 640391-1                       | 640392-1   |                                              |                               |                                                                                        |                                              |
|                                          | 640391-5                       | 640392-5   |                                              |                               |                                                                                        |                                              |
|                                          | —                              | 640392-2   | 466686-2                                     | 466686-3                      | 466686-1                                                                               | 466955-1                                     |
|                                          | —                              | 794046-1   |                                              |                               |                                                                                        |                                              |
|                                          | 350629-1                       | 350628-1   |                                              |                               |                                                                                        |                                              |
|                                          | —                              | 350628-2   |                                              |                               |                                                                                        |                                              |
|                                          | 350629-5                       | 350628-5   | 687996-2                                     | 687996-3                      | 687996-1                                                                               | —                                            |
|                                          | —                              | 350628-6   |                                              |                               |                                                                                        |                                              |
| Power Double Lock (PDL)                  | —                              | 794103-1   |                                              |                               |                                                                                        |                                              |
|                                          | 177916-1                       | 177914-1   | *                                            | *                             | *                                                                                      | *                                            |
|                                          | —                              | 177914-2†  | *                                            | *                             | *                                                                                      | *                                            |
|                                          | 177917-1                       | 177915-1   | *                                            | *                             | *                                                                                      | *                                            |
|                                          | —                              | 177915-2†  | *                                            | *                             | *                                                                                      | *                                            |
|                                          | † High contact pressure type.  |            |                                              |                               |                                                                                        |                                              |
| Mini-Universal MATE-N-LOK Contacts       | 770835-1                       | 770834-1   |                                              |                               |                                                                                        |                                              |
|                                          | 1-770835-0                     | 1-770834-0 |                                              |                               |                                                                                        |                                              |
|                                          | 770901-1                       | 770902-1   |                                              |                               |                                                                                        |                                              |
|                                          | 1-770901-0                     | 1-770902-0 | 567066-4                                     | 567066-5                      | 567066-3                                                                               | 466990-2                                     |
|                                          | 770903-1                       | 770904-1   |                                              |                               |                                                                                        |                                              |
|                                          | 1-770903-0                     | 1-770904-0 | 567067-2                                     | 567067-3                      | 567067-1                                                                               | 466986-1                                     |
|                                          | 171636-1                       | 171637-1   |                                              |                               |                                                                                        |                                              |
| Mini-Universal MATE-N-LOK 2 Contacts     | —                              | 171637-3   | 680582                                       | 567251-1                      | 680582                                                                                 | 567902-1                                     |
|                                          | 794216-1                       | 794217-1   |                                              |                               |                                                                                        |                                              |
|                                          | 1-794216-0                     | 1-794217-0 | 567418-2                                     | 567418-3                      | 567418-1                                                                               | —                                            |
|                                          | 794218-1                       | 794219-1   |                                              |                               |                                                                                        |                                              |
|                                          | 1-794218-0                     | 1-794219-0 | 567066-4                                     | 567066-5                      | 567066-3                                                                               | 466990-2                                     |
|                                          | 794220-1                       | 794221-1   |                                              |                               |                                                                                        |                                              |
|                                          | 1-794220-0                     | 1-794221-0 | 680854-2                                     | 680854-3                      | 680854-1                                                                               | 466986-1                                     |
|                                          | 794222-1                       | 794223-1   |                                              |                               |                                                                                        |                                              |
| (MR) Miniature Rectangular Contacts      | 1-794222-0                     | 1-794223-0 | 680582-2                                     | 680582-3                      | —                                                                                      | 567902-1                                     |
|                                          | 350968-1                       | 794000-1   |                                              |                               |                                                                                        |                                              |
|                                          | 350968-2                       | 794000-2   | 466352-2                                     | 466352-3                      | 466352-1                                                                               | —                                            |
|                                          | 350967-1                       | 641294-1   |                                              |                               |                                                                                        |                                              |
|                                          | 350967-2                       | 641294-2   | 466351-2                                     | 466351-4                      | 466351-1                                                                               | 466913-1                                     |
|                                          | 350969-1                       | —          |                                              |                               |                                                                                        |                                              |
|                                          | 350969-2                       | —          | 466351-2                                     | 466351-4                      | 466351-1                                                                               | 466913-1                                     |

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.

\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.

**Note:** All part numbers are RoHS Compliant.

## Applicator Options (Continued)

|                                            | Strip Form Contact<br>Part Number |            | Heavy-Duty Miniature Applicator Part Numbers |                                  |                                                                                              |                                                    |
|--------------------------------------------|-----------------------------------|------------|----------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------|
|                                            |                                   |            | Used on Bench Top Terminators                |                                  | Used on Automatic Leadmaking<br>Equipment (AMPOMATOR CLS<br>Machine with T or G Terminators) | Used on<br>AMP-O-MATIC<br>Stripper-Crimper Machine |
|                                            | Pin                               | Socket     | AMP-O-LECTRIC<br>Model K Machine             | AMP-O-LECTRIC<br>Model G Machine |                                                                                              |                                                    |
| 4.2 mm PE Series                           | 794955-1                          | 794956-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | 794955-2                          | 794956-2   |                                              |                                  |                                                                                              |                                                    |
|                                            | 794955-3                          | 794956-3   | 1385817-2                                    | 1385817-3                        | 1385817-1                                                                                    | —                                                  |
|                                            | 794955-4                          | 794956-4   |                                              |                                  |                                                                                              |                                                    |
| AMP-DUAC                                   | 794957-1                          | 794958-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | 794957-2                          | 794958-2   |                                              |                                  |                                                                                              |                                                    |
|                                            | 794957-3                          | 794958-3   | 1385448-2                                    | 1385448-3                        | 1385448-1                                                                                    | —                                                  |
|                                            | 794957-4                          | 794958-4   |                                              |                                  |                                                                                              |                                                    |
|                                            | 794576-1                          | 106529-2   |                                              |                                  |                                                                                              |                                                    |
|                                            |                                   | 1-794138-3 | 680308-2                                     | 680308-3                         | —                                                                                            | 567959-1                                           |
|                                            | 794578-1                          | 106528-2   |                                              |                                  |                                                                                              |                                                    |
|                                            |                                   | 1-794139-3 | 680307-2                                     | 680307-3                         | —                                                                                            | 567960-1                                           |
| 5.0 mm Power Key<br>Connectors (PKC)       | —                                 | 1-794140-3 |                                              |                                  |                                                                                              |                                                    |
|                                            |                                   | 794418-1   | 680350-2                                     | 680350-3                         | —                                                                                            | —                                                  |
|                                            | —                                 | 1376347-1  | *                                            | *                                | *                                                                                            | *                                                  |
|                                            | —                                 | 1376348-1  | *                                            | *                                | *                                                                                            | *                                                  |
| .093 Commercial Pin<br>and Socket Contacts | 350418-1                          | 350417-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | —                                 | 350417-3   | 466656-2                                     | 466656-3                         | 466656-1                                                                                     | 466922-1                                           |
|                                            | 350418-5                          | 350417-5   |                                              |                                  |                                                                                              |                                                    |
|                                            | 350416-1                          | 350415-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | 350416-5                          | 350415-5   | 466878-2                                     | 466878-3                         | 466878-1                                                                                     | 466959-1                                           |
|                                            | 770530-1                          | 770529-1   | 567337-4                                     | 567337-6                         | 567337-3                                                                                     | —                                                  |
|                                            | 770385-1                          | 770383-1   | 567273-2                                     | 567273-4                         | 567273-3                                                                                     | —                                                  |
|                                            | —                                 | —          |                                              |                                  |                                                                                              |                                                    |
| Commercial<br>MATE-N-LOK<br>Contacts       | 350079-1                          | 350078-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | 350079-4                          | 350078-4   | 466426-2                                     | 466426-3                         | 466426-1                                                                                     | —                                                  |
|                                            | 350079-5                          | 350078-5   |                                              |                                  |                                                                                              |                                                    |
|                                            | 61116-1                           | 61314-1    |                                              |                                  |                                                                                              |                                                    |
|                                            | 61116-4                           | 61314-4    |                                              |                                  |                                                                                              |                                                    |
|                                            | 61116-5                           | 61314-5    | 466320-2                                     | 466320-4                         | 466320-1                                                                                     | 466917-1                                           |
|                                            | 61116-6                           | 61314-6    |                                              |                                  |                                                                                              |                                                    |
|                                            | 61116-7                           | 61314-7    |                                              |                                  |                                                                                              |                                                    |
|                                            | 61118-1                           | 61117-1    |                                              |                                  |                                                                                              |                                                    |
|                                            | 61118-4                           | 61117-4    |                                              |                                  |                                                                                              |                                                    |
|                                            | 61118-5                           | 61117-5    | 687763-2                                     | 687763-6                         | 687763-1                                                                                     | 466920-1                                           |
|                                            | 61118-6                           | 61117-6    |                                              |                                  |                                                                                              |                                                    |
|                                            | 61118-7                           | 61117-7    |                                              |                                  |                                                                                              |                                                    |
|                                            | 350558-1                          | 350557-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | 350558-4                          | 350557-4   | 687898-2                                     | 687898-4                         | 687898-1                                                                                     | —                                                  |
|                                            | 61527-2                           | —          | 466320-2                                     | 466320-4                         | 466320-1                                                                                     | 466917-1                                           |
| .140 MATE-N-LOK<br>Contacts                | 61627-1                           | 61626-1    |                                              |                                  |                                                                                              |                                                    |
|                                            | 61627-2                           | 61626-2    | 567306-2                                     | 567306-3                         | 567306-1                                                                                     | —                                                  |
|                                            | 350201-1                          | 350200-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | 350201-2                          | 350200-2   | 567309-2                                     | 567309-3                         | 567309-1                                                                                     | —                                                  |
| Universal<br>MATE-N-LOK<br>Contacts        | 350924-1                          | 350925-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | 350924-6                          | 350925-6   | 466616-2                                     | 466616-3                         | —                                                                                            | —                                                  |
|                                            | 350561-1                          | 350851-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | —                                 | 350570-1   |                                              |                                  |                                                                                              |                                                    |
|                                            | 350561-2                          | 350851-2   |                                              |                                  |                                                                                              |                                                    |
|                                            | —                                 | 350570-2   |                                              |                                  |                                                                                              |                                                    |
|                                            | 350561-7                          | 350851-7   | 466320-2                                     | 466320-4                         | 466320-1                                                                                     | 466917-1                                           |
|                                            | —                                 | 350570-7   |                                              |                                  |                                                                                              |                                                    |
|                                            | 350561-3                          | 350570-3   |                                              |                                  |                                                                                              |                                                    |
|                                            | —                                 | 350570-6   |                                              |                                  |                                                                                              |                                                    |

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.

\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.

**Note:** All part numbers are RoHS Compliant.

## Applicator Options (Continued)

### Universal MATE-N-LOK Contacts (Continued)

### Universal MATE-N-LOK II Contacts

### .156 MATE-N-LOK Contacts

| Strip Form Contact<br>Part Number |            | Heavy-Duty Miniature Applicator Part Numbers |                                  |                                                                                              |                                                    |
|-----------------------------------|------------|----------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------|
|                                   |            | Used on Bench Top Terminators                |                                  | Used on Automatic Leadmaking<br>Equipment (AMPOMATOR CLS<br>Machine with T or G Terminators) | Used on<br>AMP-O-MATIC<br>Stripper-Crimper Machine |
|                                   |            | AMP-O-LECTRIC<br>Model K Machine             | AMP-O-LECTRIC<br>Model G Machine |                                                                                              |                                                    |
| Pin                               | Socket     |                                              |                                  |                                                                                              |                                                    |
| 350218-1                          | 350536-1   |                                              |                                  |                                                                                              |                                                    |
| 350218-2                          | 350536-2   |                                              |                                  |                                                                                              |                                                    |
| 350218-7                          | 350536-7   | 687763-2                                     | 687763-6                         | 687763-1                                                                                     | 466920-1                                           |
| 350218-3                          | 350536-3   |                                              |                                  |                                                                                              |                                                    |
| 350218-6                          | 350536-6   |                                              |                                  |                                                                                              |                                                    |
| 350538-1                          | 350537-1   |                                              |                                  |                                                                                              |                                                    |
| 350538-2                          | 350537-2   |                                              |                                  |                                                                                              |                                                    |
| 350538-7                          | 350537-7   | 687926-2                                     | 687926-6                         | 687926-1                                                                                     | 466989-1                                           |
| 350538-3                          | 350537-3   |                                              |                                  |                                                                                              |                                                    |
| 350538-6                          | 350537-6   |                                              |                                  |                                                                                              |                                                    |
| 350873-1                          | 350874-1   |                                              |                                  |                                                                                              |                                                    |
| 350873-3                          | 350874-3   | 466588-2                                     | 466588-3                         | 466588-1                                                                                     | —                                                  |
| 350922-3                          | 350923-3   |                                              |                                  |                                                                                              |                                                    |
| 350922-6                          | 350923-6   | 466597-2                                     | 466597-3                         | 466597-1                                                                                     | —                                                  |
| 350922-4                          | 350923-4   |                                              |                                  |                                                                                              |                                                    |
| 350699-1                          | —          |                                              |                                  |                                                                                              |                                                    |
| 350699-2                          | —          | 466320-2                                     | 466320-4                         | 466320-1                                                                                     | 466917-1                                           |
| 350699-7                          | —          |                                              |                                  |                                                                                              |                                                    |
| 350687-1                          | —          |                                              |                                  |                                                                                              |                                                    |
| 350687-2                          | —          | 687763-2                                     | 687763-6                         | 687763-1                                                                                     | 466920-1                                           |
| 350687-7                          | —          |                                              |                                  |                                                                                              |                                                    |
| 350700-1                          | —          |                                              |                                  |                                                                                              |                                                    |
| 350700-2                          | —          | 687926-2                                     | 687926-6                         | 687926-1                                                                                     | 466989-1                                           |
| 350700-7                          | —          |                                              |                                  |                                                                                              |                                                    |
| 770210-1                          | —          | 567216-2                                     | 567216-3                         | 567216-1                                                                                     |                                                    |
| 350654-1                          | —          | 687763-2                                     | 687763-6                         | 687763-1                                                                                     | 466920-1                                           |
| 770234-3                          | —          | 466597-2                                     | 466597-3                         | 466597-1                                                                                     |                                                    |
| 770011-6                          | 770012-6   | —                                            | 567252-4                         | 567252-1                                                                                     | —                                                  |
| 770009-1                          | —          |                                              |                                  |                                                                                              |                                                    |
| 1-770009-0                        | —          |                                              |                                  |                                                                                              |                                                    |
| —                                 | 770010-3   | —                                            | 567214-4                         | 567214-1                                                                                     | 567914-1                                           |
| —                                 | 1-770010-0 |                                              |                                  |                                                                                              |                                                    |
| 770007-1                          | —          |                                              |                                  |                                                                                              |                                                    |
| 1-770007-0                        | —          |                                              |                                  |                                                                                              |                                                    |
| —                                 | 770008-3   | —                                            | 567213-4                         | 567213-1                                                                                     | 567913-1                                           |
| —                                 | 1-770008-0 |                                              |                                  |                                                                                              |                                                    |
| 770005-1                          | —          |                                              |                                  |                                                                                              |                                                    |
| 1-770005-0                        | —          |                                              |                                  |                                                                                              |                                                    |
| —                                 | 770006-3   | —                                            | 567212-4                         | 567212-1                                                                                     | —                                                  |
| 1-770005-1                        | 1-770006-0 |                                              |                                  |                                                                                              |                                                    |
| 770003-3                          | 770004-3   |                                              |                                  |                                                                                              |                                                    |
| 1-770003-0                        | 1-770004-0 | —                                            | 567211-4                         | 567211-1                                                                                     | —                                                  |
| 770193-1                          | —          |                                              |                                  |                                                                                              |                                                    |
| 1-770193-0                        | —          | —                                            | 567213-4                         | 567213-1                                                                                     | 567913-1                                           |
| 770194-1                          | —          |                                              |                                  |                                                                                              |                                                    |
| 1-770194-0                        | —          | —                                            | 567212-4                         | 567212-1                                                                                     | —                                                  |
| 61086-1                           | 61085-1    | 466462-1                                     | 466462-3                         | 466462-1                                                                                     | —                                                  |
| 61234-1                           | 61233-1    | 687765-2                                     | 687765-2                         | —                                                                                            | —                                                  |

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.

\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.

**Note:** All part numbers are RoHS Compliant.

## Product Feature Comparisons

| High Density                         | 2.5 mm<br>Signal<br>Double<br>Lock (SDL) | Micro<br>MATE-N-LOK<br>3 mm | Grace<br>Inertia<br>Connectors<br>(GIC) 3.5 | .062<br>Commercial<br>Pin &<br>Socket | Power<br>Double<br>Lock<br>(PDL)                         | Mini-<br>Universal<br>MATE-N-LOK | Sealed<br>Mini-<br>Universal<br>MATE-N-LOK | Mini-<br>Universal<br>MATE-N-LOK 2 | (MR)<br>Miniature<br>Rectangular | 4.2 mm<br>PE AMP-DUAC<br>Series |                |
|--------------------------------------|------------------------------------------|-----------------------------|---------------------------------------------|---------------------------------------|----------------------------------------------------------|----------------------------------|--------------------------------------------|------------------------------------|----------------------------------|---------------------------------|----------------|
| Wire AWG —                           |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| Maximum                              | 20                                       | 20                          | 18                                          | 18                                    | 16                                                       | 16                               | 18                                         | 16                                 | 18                               | 18                              | 18             |
| Minimum                              | 26                                       | 30                          | 26                                          | 30                                    | 26                                                       | 30                               | 26                                         | 30                                 | 26                               | 26                              | 26             |
| Current Rating —                     |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| 10 AWG Wire                          | —                                        |                             | —                                           |                                       | —                                                        |                                  |                                            |                                    |                                  | —                               | —              |
| 14 AWG Wire                          | —                                        | —                           | —                                           | —                                     | —                                                        | —                                | —                                          | —                                  | —                                | —                               | —              |
| 16 AWG Wire                          | —                                        |                             | —                                           |                                       | 10                                                       |                                  |                                            |                                    |                                  | —                               | —              |
| 18 AWG Wire                          | —                                        | **                          | 7                                           | 17                                    | —                                                        | 9                                | 9                                          | 10.5                               | 6                                | 9                               | 9              |
| 20 AWG Wire                          | 3                                        |                             | —                                           |                                       | —                                                        |                                  |                                            |                                    |                                  | —                               | —              |
| Max. Operating Voltage<br>(AC or DC) | 50                                       | 250                         | 300                                         | 250                                   | 300                                                      | 600                              | 600                                        | 600                                | 250                              | 600                             | 600            |
| Flammability Rating —                |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| UL 94V-0                             | Yes                                      | Yes                         | Yes                                         | No                                    | Yes                                                      | Yes                              | Yes                                        | Yes                                | Yes                              | Yes                             | Yes            |
| UL 94V-2                             | No                                       | No                          | No                                          | Yes                                   | No                                                       | Yes*                             | No                                         | Yes                                | No                               | Yes                             | Yes            |
| Approvals —                          |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| UL                                   | Yes                                      | Yes                         | Yes                                         | Yes                                   | Yes                                                      | Yes                              | Yes                                        | Submitted                          | Yes                              | Yes                             | Yes            |
| CSA                                  | Yes                                      | Yes                         | Yes                                         | Yes                                   | Yes                                                      | Yes                              | Yes                                        | Submitted                          | Yes                              | Yes                             | Yes            |
| VDE                                  | Yes                                      | Yes                         | —                                           | No                                    | Yes                                                      | Yes                              | Yes                                        | Submitted                          | No                               | —                               | No             |
| Contact Material —                   |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| Brass                                | No                                       | Yes                         | Yes                                         | Yes                                   | Yes                                                      | Yes                              | Yes                                        | Yes                                | No                               | Yes                             | —              |
| Phos. Bronze                         | Yes                                      | Yes                         | No                                          | Yes                                   | No                                                       | Yes                              | Yes                                        | No                                 | Yes                              | Yes                             | Yes            |
| Plating Finish —                     |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| Tin Plating                          | Yes                                      | Yes                         | Yes                                         | Yes                                   | Yes                                                      | Yes                              | Yes                                        | Yes                                | Yes                              | Yes                             | Yes            |
| Gold Plating                         | No                                       | Yes                         | No                                          | Yes                                   | No                                                       | Yes                              | Yes                                        | Yes                                | Yes                              | Yes                             | Yes            |
| Centerline Spacing —                 | .098<br>[2.50]                           | .118<br>[3.00]              | .137<br>[3.50]                              | .145<br>[3.68]                        | .156 [3.96]<br>256 [6.50]<br>.312 [7.92]<br>.512 [13.00] | .163<br>[4.14]                   | .163<br>[4.14]                             | .163<br>[4.14]                     | .165<br>[4.20]                   | .165<br>[4.20]                  | .165<br>[4.20] |
| Housings —                           |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| Panel Mount                          | No                                       | Yes                         | No                                          | Yes                                   | Yes                                                      | Yes                              | Yes                                        | No                                 | Yes                              | Yes                             | Yes            |
| Free-Hanging                         | Yes                                      | Yes                         | Yes                                         | Yes                                   | Yes                                                      | Yes                              | No                                         | Yes                                | Yes                              | Yes                             | Yes            |
| Secondary Locking Latches            | Yes                                      | No                          | Yes                                         | No                                    | Yes                                                      | No                               | No                                         | Yes                                | No                               | Yes                             | Yes            |
| Contact Position Control             | Yes                                      | No                          | No                                          | No                                    | No                                                       | No                               | No                                         | Yes                                | No                               | No                              | Yes            |
| In-Line Config.                      | Yes                                      | Yes                         | Yes                                         | Yes                                   | Yes                                                      | Yes                              | No                                         | Yes                                | Yes                              | Yes                             | Yes            |
| Dual Row Config.                     | No                                       | Yes                         | Yes                                         | No                                    | Yes                                                      | Yes                              | Yes                                        | Yes                                | No                               | Yes                             | Yes            |
| Matrix Config.                       | No                                       | No                          | No                                          | Yes                                   | Yes                                                      | Yes                              | No                                         | Yes                                | Yes                              | No                              | No             |
| Accessories —                        |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| Strain Relief                        | No                                       | No                          | Yes                                         | No                                    | Yes                                                      | Yes                              | No                                         | No                                 | Yes                              | No                              | Yes            |
| Keying Plug                          | No                                       | No                          | No                                          | No                                    | No                                                       | Yes                              | Yes                                        | Yes                                | Yes                              | No                              | No             |
| Seals                                | No                                       | No                          | No                                          | No                                    | No                                                       | Yes                              | Yes                                        | No                                 | No                               | No                              | No             |
| Headers —                            |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| Vertical                             | Yes                                      | Yes                         | No                                          | No                                    | Yes                                                      | Yes                              | Yes                                        | Mini-Universal<br>MATE-N-LOK       | Yes                              | Yes                             | Yes            |
| Blindmate                            | No                                       | No                          | No                                          | No                                    | No                                                       | Yes                              | Yes                                        | Mini-Universal<br>MATE-N-LOK       | No                               | Yes                             | No             |
| Right-Angle                          | Planned                                  | Yes                         | No                                          | No                                    | No                                                       | Yes                              | Yes                                        | Mini-Universal<br>MATE-N-LOK       | No                               | Yes                             | Yes            |
| Positions —                          |                                          |                             |                                             |                                       |                                                          |                                  |                                            |                                    |                                  |                                 |                |
| Minimum                              | 2                                        | 2                           | 2                                           | 1                                     | 1                                                        | 1                                | 2                                          | 2                                  | 2                                | 2                               | 2              |
| Maximum                              | 13                                       | 24                          | 6                                           | 9                                     | 12                                                       | 24                               | 10                                         | 24                                 | 36                               | 24                              | 24             |

\* Wire-to-Wire Only.  
\*\* 5 A on 20 AWG\*

## Product Feature Comparisons (Continued)

| Standard Density                  | 5.0 mm<br>Power Key<br>Connectors (PKC) | .093<br>Commercial<br>Pin & Socket        | Commercial<br>MATE-N-LOK                                              | .140<br>MATE-N-LOK | Universal<br>MATE-N-LOK | Universal<br>MATE-N-LOK II | .156<br>MATE-N-LOK |
|-----------------------------------|-----------------------------------------|-------------------------------------------|-----------------------------------------------------------------------|--------------------|-------------------------|----------------------------|--------------------|
| <b>Wire AWG—</b>                  |                                         |                                           |                                                                       |                    |                         |                            |                    |
| Maximum                           | 16                                      | 14                                        | 14                                                                    | 10                 | 10                      | 10                         | 10                 |
| Minimum                           | 24                                      | 24                                        | 30                                                                    | 20                 | 30                      | 30                         | 20                 |
| <b>Current Rating —</b>           |                                         |                                           |                                                                       |                    |                         |                            |                    |
| 10 AWG Wire                       | —                                       | —                                         | —                                                                     | 28                 | —                       | —                          | 32.5               |
| 14 AWG Wire                       | —                                       | 19                                        | 13                                                                    | —                  | 15                      | 19                         | —                  |
| 16 AWG Wire                       | 10                                      | —                                         | —                                                                     | —                  | —                       | —                          | —                  |
| 18 AWG Wire                       | —                                       | —                                         | —                                                                     | —                  | —                       | —                          | —                  |
| 20 AWG Wire                       | —                                       | —                                         | —                                                                     | —                  | —                       | —                          | —                  |
| Max. Operating Voltage (AC or DC) | 300                                     | 250                                       | 250                                                                   | 600                | 600                     | 600                        | 600                |
| <b>Flammability Rating —</b>      |                                         |                                           |                                                                       |                    |                         |                            |                    |
| UL 94V-0                          | Yes                                     | No                                        | Yes                                                                   | No                 | Yes                     | Yes                        | No                 |
| UL 94V-2                          | No                                      | Yes                                       | Yes                                                                   | Yes                | Yes                     | No                         | Yes                |
| <b>Approvals —</b>                |                                         |                                           |                                                                       |                    |                         |                            |                    |
| UL                                | Yes                                     | Yes                                       | Yes                                                                   | Yes                | Yes                     | Yes                        | Yes                |
| CSA                               | Yes                                     | Yes                                       | Yes                                                                   | Yes                | Yes                     | Yes                        | No                 |
| VDE                               | No                                      | No                                        | No                                                                    | No                 | Yes                     | Yes                        | No                 |
| <b>Contact Material —</b>         |                                         |                                           |                                                                       |                    |                         |                            |                    |
| Brass                             | Yes                                     | Yes                                       | Yes                                                                   | Yes                | Yes                     | Yes                        | Yes                |
| Phos. Bronze                      | No                                      | Yes                                       | Yes                                                                   | Yes                | Yes                     | Yes                        | No                 |
| <b>Plating Finish —</b>           |                                         |                                           |                                                                       |                    |                         |                            |                    |
| Tin Plating                       | Yes                                     | Yes                                       | Yes                                                                   | Yes                | Yes                     | Yes                        | Yes                |
| Gold Plating                      | No                                      | Yes                                       | Yes                                                                   | No                 | Yes                     | Yes                        | No                 |
| <b>Centerline Spacing —</b>       |                                         |                                           |                                                                       |                    |                         |                            |                    |
|                                   | .197 [5.00]                             | .198 [5.03]<br>.250 [6.35]<br>.248 [6.30] | .200 [5.08]<br>.240 [6.10] x .202 [5.13]<br>.195 [4.95] x .360 [9.14] | .240 [6.10]        | .250 [6.35]             | .250 [6.35]                | .390 [9.91]        |
| <b>Housings —</b>                 |                                         |                                           |                                                                       |                    |                         |                            |                    |
| Panel Mount                       | No                                      | Yes                                       | Yes                                                                   | Yes                | Yes                     | Yes                        | Yes                |
| Free-Hanging                      | No                                      | Yes                                       | Yes                                                                   | Yes                | Yes                     | Yes                        | Yes                |
| Secondary Locking Latches         | Yes                                     | No                                        | No                                                                    | Yes                | No                      | Yes                        | Yes                |
| Contact Position Control          | No                                      | No                                        | No                                                                    | No                 | No                      | Yes                        | No                 |
| In-Line Config.                   | Yes                                     | Yes                                       | Yes                                                                   | Yes                | Yes                     | Yes                        | Yes                |
| Dual Row Config.                  | Yes                                     | No                                        | Yes                                                                   | No                 | No                      | No                         | No                 |
| Matrix Config.                    | No                                      | Yes                                       | Yes                                                                   | Yes                | Yes                     | Yes                        | No                 |
| <b>Accessories —</b>              |                                         |                                           |                                                                       |                    |                         |                            |                    |
| Strain Relief                     | Yes                                     | No                                        | No                                                                    | No                 | Yes                     | Universal<br>MATE-N-LOK    | No                 |
| Keying Plug                       | No                                      | No                                        | Yes                                                                   | No                 | Yes                     | Yes                        | No                 |
| Seals                             | No                                      | No                                        | No                                                                    | No                 | Yes                     | No                         | No                 |
| <b>Headers —</b>                  |                                         |                                           |                                                                       |                    |                         |                            |                    |
| Vertical                          | Yes                                     | No                                        | Yes                                                                   | No                 | Yes                     | Universal<br>MATE-N-LOK    | No                 |
| Blindmate                         | No                                      | No                                        | No                                                                    | No                 | No                      | No                         | No                 |
| Right-Angle                       | No                                      | No                                        | Yes                                                                   | No                 | Yes                     | Universal<br>MATE-N-LOK    | No                 |
| <b>Positions —</b>                |                                         |                                           |                                                                       |                    |                         |                            |                    |
| Minimum                           | 2                                       | 1                                         | 1                                                                     | 2                  | 1                       | 2                          | 3                  |
| Maximum                           | 6                                       | 15                                        | 16                                                                    | 9                  | 15                      | 15                         | 4                  |

\* Wire-to-Wire Only.

\*\* 5 A on 20 AWG\*







## Non-Compliant to RoHS Compliant Part Number Cross Reference (Continued)

| Non-Compliant Part Number | RoHS Compliant Part Number | Non-Compliant Part Number | RoHS Compliant Part Number | Non-Compliant Part Number | RoHS Compliant Part Number | Non-Compliant Part Number | RoHS Compliant Part Number |
|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
| 1-794665-8                | 1-1586492-8                | 2-794677-0                | 5-794677-0                 | 2-794682-2                | 5-794682-2                 | 1445055-5                 | 2-1445055-5                |
| 2-794665-0                | 2-1586492-0                | 2-794677-2                | 5-794677-2                 | 2-794682-4                | 5-794682-4                 | 1445055-6                 | 2-1445055-6                |
| 2-794665-2                | 2-1586492-2                | 2-794677-4                | 5-794677-4                 | 794704-1                  | 1586542-1                  | 1445055-7                 | 2-1445055-7                |
| 2-794665-4                | 2-1586492-4                | 794678-2                  | 3-794678-2                 | 1445050-2                 | 2-1445050-2                | 1445055-8                 | 2-1445055-8                |
| 794666-2                  | 1586493-2                  | 794678-4                  | 3-794678-4                 | 1445050-3                 | 2-1445050-3                | 1445055-9                 | 2-1445055-9                |
| 794666-4                  | 1586493-4                  | 794678-6                  | 3-794678-6                 | 1445050-4                 | 2-1445050-4                | 1-1445055-0               | 3-1445055-0                |
| 794666-6                  | 1586493-6                  | 794678-8                  | 3-794678-8                 | 1445050-5                 | 2-1445050-5                | 1-1445055-1               | 3-1445055-1                |
| 794666-8                  | 1586493-8                  | 1-794678-0                | 4-794678-0                 | 1445050-6                 | 2-1445050-6                | 1-1445055-2               | 3-1445055-2                |
| 1-794666-0                | 1-1586493-0                | 1-794678-2                | 4-794678-2                 | 1445050-7                 | 2-1445050-7                | 1445056-2                 | 2-1445056-2                |
| 1-794666-2                | 1-1586493-2                | 1-794678-4                | 4-794678-4                 | 1445050-8                 | 2-1445050-8                | 1445056-3                 | 2-1445056-3                |
| 1-794666-4                | 1-1586493-4                | 1-794678-6                | 4-794678-6                 | 1445050-9                 | 2-1445050-9                | 1445056-4                 | 2-1445056-4                |
| 1-794666-6                | 1-1586493-6                | 1-794678-8                | 4-794678-8                 | 1-1445050-0               | 3-1445050-0                | 1445056-5                 | 2-1445056-5                |
| 1-794666-8                | 1-1586493-8                | 2-794678-0                | 5-794678-0                 | 1-1445050-1               | 3-1445050-1                | 1445056-6                 | 2-1445056-6                |
| 2-794666-0                | 2-1586493-0                | 2-794678-2                | 5-794678-2                 | 1-1445050-2               | 3-1445050-2                | 1445056-7                 | 2-1445056-7                |
| 2-794666-2                | 2-1586493-2                | 2-794678-4                | 5-794678-4                 | 1445051-2                 | 2-1445051-2                | 1445056-8                 | 2-1445056-8                |
| 2-794666-4                | 2-1586493-4                | 794679-2                  | 3-794679-2                 | 1445051-3                 | 2-1445051-3                | 1445056-9                 | 2-1445056-9                |
| 794667-2                  | 1586494-2                  | 794679-4                  | 3-794679-4                 | 1445051-4                 | 2-1445051-4                | 1-1445056-0               | 3-1445056-0                |
| 794667-4                  | 1586494-4                  | 794679-6                  | 3-794679-6                 | 1445051-5                 | 2-1445051-5                | 1-1445056-1               | 3-1445056-1                |
| 794667-6                  | 1586494-6                  | 794679-8                  | 3-794679-8                 | 1445051-6                 | 2-1445051-6                | 1-1445056-2               | 3-1445056-2                |
| 794667-8                  | 1586494-8                  | 1-794679-0                | 4-794679-0                 | 1445051-7                 | 2-1445051-7                | 1445057-2                 | 2-1445057-2                |
| 1-794667-0                | 1-1586494-0                | 1-794679-2                | 4-794679-2                 | 1445051-8                 | 2-1445051-8                | 1445057-3                 | 2-1445057-3                |
| 1-794667-2                | 1-1586494-2                | 1-794679-4                | 4-794679-4                 | 1445051-9                 | 2-1445051-9                | 1445057-4                 | 2-1445057-4                |
| 1-794667-4                | 1-1586494-4                | 1-794679-6                | 4-794679-6                 | 1-1445051-0               | 3-1445051-0                | 1445057-5                 | 2-1445057-5                |
| 1-794667-6                | 1-1586494-6                | 1-794679-8                | 4-794679-8                 | 1-1445051-1               | 3-1445051-1                | 1445057-6                 | 2-1445057-6                |
| 1-794667-8                | 1-1586494-8                | 2-794679-0                | 5-794679-0                 | 1-1445051-2               | 3-1445051-2                | 1445057-7                 | 2-1445057-7                |
| 2-794667-0                | 2-1586494-0                | 2-794679-2                | 5-794679-2                 | 1445052-2                 | 2-1445052-2                | 1445057-8                 | 2-1445057-8                |
| 2-794667-2                | 2-1586494-2                | 2-794679-4                | 5-794679-4                 | 1445052-3                 | 2-1445052-3                | 1445057-9                 | 2-1445057-9                |
| 2-794667-4                | 2-1586494-4                | 794680-2                  | 3-794680-2                 | 1445052-4                 | 2-1445052-4                | 1-1445057-0               | 3-1445057-0                |
| 794668-2                  | 1586495-2                  | 794680-4                  | 3-794680-4                 | 1445052-5                 | 2-1445052-5                | 1-1445057-1               | 3-1445057-1                |
| 794668-4                  | 1586495-4                  | 794680-6                  | 3-794680-6                 | 1445052-6                 | 2-1445052-6                | 1-1445057-2               | 3-1445057-2                |
| 794668-6                  | 1586495-6                  | 794680-8                  | 3-794680-8                 | 1445052-7                 | 2-1445052-7                | 1445058-2                 | 2-1445058-2                |
| 794668-8                  | 1586495-8                  | 1-794680-0                | 4-794680-0                 | 1445052-8                 | 2-1445052-8                | 1445058-3                 | 2-1445058-3                |
| 1-794668-0                | 1-1586495-0                | 1-794680-2                | 4-794680-2                 | 1445052-9                 | 2-1445052-9                | 1445058-4                 | 2-1445058-4                |
| 1-794668-2                | 1-1586495-2                | 1-794680-4                | 4-794680-4                 | 1-1445052-0               | 3-1445052-0                | 1445058-5                 | 2-1445058-5                |
| 1-794668-4                | 1-1586495-4                | 1-794680-6                | 4-794680-6                 | 1-1445052-1               | 3-1445052-1                | 1445058-6                 | 2-1445058-6                |
| 1-794668-6                | 1-1586495-6                | 1-794680-8                | 4-794680-8                 | 1-1445052-2               | 3-1445052-2                | 1445058-7                 | 2-1445058-7                |
| 1-794668-8                | 1-1586495-8                | 2-794680-0                | 5-794680-0                 | 1445053-2                 | 2-1445053-2                | 1445058-8                 | 2-1445058-8                |
| 2-794668-0                | 2-1586495-0                | 2-794680-2                | 5-794680-2                 | 1445053-3                 | 2-1445053-3                | 1445058-9                 | 2-1445058-9                |
| 2-794668-2                | 2-1586495-2                | 2-794680-4                | 5-794680-4                 | 1445053-4                 | 2-1445053-4                | 1-1445058-0               | 3-1445058-0                |
| 2-794668-4                | 2-1586495-4                | 794681-2                  | 3-794681-2                 | 1445053-5                 | 2-1445053-5                | 1-1445058-1               | 3-1445058-1                |
| 794669-2                  | 1586496-2                  | 794681-4                  | 3-794681-4                 | 1445053-6                 | 2-1445053-6                | 1-1445058-2               | 3-1445058-2                |
| 794669-4                  | 1586496-4                  | 794681-6                  | 3-794681-6                 | 1445053-7                 | 2-1445053-7                | 1445084-2                 | 2-1445084-2                |
| 794669-6                  | 1586496-6                  | 794681-8                  | 3-794681-8                 | 1445053-8                 | 2-1445053-8                | 1445084-3                 | 2-1445084-3                |
| 794669-8                  | 1586496-8                  | 1-794681-0                | 4-794681-0                 | 1445053-9                 | 2-1445053-9                | 1445084-4                 | 2-1445084-4                |
| 1-794669-0                | 1-1586496-0                | 1-794681-2                | 4-794681-2                 | 1-1445053-0               | 3-1445053-0                | 1445084-5                 | 2-1445084-5                |
| 1-794669-2                | 1-1586496-2                | 1-794681-4                | 4-794681-4                 | 1-1445053-1               | 3-1445053-1                | 1445084-6                 | 2-1445084-6                |
| 1-794669-4                | 1-1586496-4                | 1-794681-6                | 4-794681-6                 | 1-1445053-2               | 3-1445053-2                | 1445084-7                 | 2-1445084-7                |
| 1-794669-6                | 1-1586496-6                | 1-794681-8                | 4-794681-8                 | 1445054-2                 | 2-1445054-2                | 1445084-8                 | 2-1445084-8                |
| 1-794669-8                | 1-1586496-8                | 2-794681-0                | 5-794681-0                 | 1445054-3                 | 2-1445054-3                | 1445084-9                 | 2-1445084-9                |
| 2-794669-0                | 2-1586496-0                | 2-794681-2                | 5-794681-2                 | 1445054-4                 | 2-1445054-4                | 1-1445084-0               | 3-1445084-0                |
| 2-794669-2                | 2-1586496-2                | 2-794681-4                | 5-794681-4                 | 1445054-5                 | 2-1445054-5                | 1-1445084-1               | 3-1445084-1                |
| 2-794669-4                | 2-1586496-4                | 794682-2                  | 3-794682-2                 | 1445054-6                 | 2-1445054-6                | 1-1445084-2               | 3-1445084-2                |
| 794677-2                  | 3-794677-2                 | 794682-4                  | 3-794682-4                 | 1445054-7                 | 2-1445054-7                | 1445085-2                 | 2-1445085-2                |
| 794677-4                  | 3-794677-4                 | 794682-6                  | 3-794682-6                 | 1445054-8                 | 2-1445054-8                | 1445085-3                 | 2-1445085-3                |
| 794677-6                  | 3-794677-6                 | 794682-8                  | 3-794682-8                 | 1445054-9                 | 2-1445054-9                | 1445085-4                 | 2-1445085-4                |
| 794677-8                  | 3-794677-8                 | 1-794682-0                | 4-794682-0                 | 1-1445054-0               | 3-1445054-0                | 1445085-5                 | 2-1445085-5                |
| 1-794677-0                | 4-794677-0                 | 1-794682-2                | 4-794682-2                 | 1-1445054-1               | 3-1445054-1                | 1445085-6                 | 2-1445085-6                |
| 1-794677-2                | 4-794677-2                 | 1-794682-4                | 4-794682-4                 | 1-1445054-2               | 3-1445054-2                | 1445085-7                 | 2-1445085-7                |
| 1-794677-4                | 4-794677-4                 | 1-794682-6                | 4-794682-6                 | 1445055-2                 | 2-1445055-2                | 1445085-8                 | 2-1445085-8                |
| 1-794677-6                | 4-794677-6                 | 1-794682-8                | 4-794682-8                 | 1445055-3                 | 2-1445055-3                | 1445085-9                 | 2-1445085-9                |
| 1-794677-8                | 4-794677-8                 | 2-794682-0                | 5-794682-0                 | 1445055-4                 | 2-1445055-4                | 1-1445085-0               | 3-1445085-0                |

## Non-Compliant to RoHS Compliant Part Number Cross Reference (Continued)

| Non-Compliant Part Number | RoHS Compliant Part Number |
|---------------------------|----------------------------|
| 1-1445085-1               | 3-1445085-1                |
| 1-1445085-2               | 3-1445085-2                |
| 1445086-2                 | 2-1445086-2                |
| 1445086-3                 | 2-1445086-3                |
| 1445086-4                 | 2-1445086-4                |
| 1445086-5                 | 2-1445086-5                |
| 1445086-6                 | 2-1445086-6                |
| 1445086-7                 | 2-1445086-7                |
| 1445086-8                 | 2-1445086-8                |
| 1445086-9                 | 2-1445086-9                |
| 1-1445086-0               | 3-1445086-0                |
| 1-1445086-1               | 3-1445086-1                |
| 1-1445086-2               | 3-1445086-2                |
| 1445087-2                 | 2-1445087-2                |
| 1445087-3                 | 2-1445087-3                |
| 1445087-4                 | 2-1445087-4                |
| 1445087-5                 | 2-1445087-5                |
| 1445087-6                 | 2-1445087-6                |
| 1445087-7                 | 2-1445087-7                |
| 1445087-8                 | 2-1445087-8                |
| 1445087-9                 | 2-1445087-9                |
| 1-1445087-0               | 3-1445087-0                |
| 1-1445087-1               | 3-1445087-1                |
| 1-1445087-2               | 3-1445087-2                |
| 1445088-2                 | 2-1445088-2                |
| 1445088-3                 | 2-1445088-3                |
| 1445088-4                 | 2-1445088-4                |
| 1445088-5                 | 2-1445088-5                |
| 1445088-6                 | 2-1445088-6                |
| 1445088-7                 | 2-1445088-7                |
| 1445088-8                 | 2-1445088-8                |
| 1445088-9                 | 2-1445088-9                |
| 1-1445088-0               | 3-1445088-0                |
| 1-1445088-1               | 3-1445088-1                |
| 1-1445088-2               | 3-1445088-2                |
| 1445089-2                 | 2-1445089-2                |
| 1445089-3                 | 2-1445089-3                |
| 1445089-4                 | 2-1445089-4                |
| 1445089-5                 | 2-1445089-5                |
| 1445089-6                 | 2-1445089-6                |
| 1445089-7                 | 2-1445089-7                |
| 1445089-8                 | 2-1445089-8                |
| 1445089-9                 | 2-1445089-9                |
| 1-1445089-0               | 3-1445089-0                |
| 1-1445089-1               | 3-1445089-1                |

| Non-Compliant Part Number | RoHS Compliant Part Number |
|---------------------------|----------------------------|
| 1-1445089-2               | 3-1445089-2                |
| 1445090-2                 | 2-1445090-2                |
| 1445090-3                 | 2-1445090-3                |
| 1445090-4                 | 2-1445090-4                |
| 1445090-5                 | 2-1445090-5                |
| 1445090-6                 | 2-1445090-6                |
| 1445090-7                 | 2-1445090-7                |
| 1445090-8                 | 2-1445090-8                |
| 1445090-9                 | 2-1445090-9                |
| 1-1445090-0               | 3-1445090-0                |
| 1-1445090-1               | 3-1445090-1                |
| 1-1445090-2               | 3-1445090-2                |
| 1445091-2                 | 2-1445091-2                |
| 1445091-3                 | 2-1445091-3                |
| 1445091-4                 | 2-1445091-4                |
| 1445091-5                 | 2-1445091-5                |
| 1445091-6                 | 2-1445091-6                |
| 1445091-7                 | 2-1445091-7                |
| 1445091-8                 | 2-1445091-8                |
| 1445091-9                 | 2-1445091-9                |
| 1-1445091-0               | 3-1445091-0                |
| 1-1445091-1               | 3-1445091-1                |
| 1-1445091-2               | 3-1445091-2                |
| 1445092-2                 | 2-1445092-2                |
| 1445092-3                 | 2-1445092-3                |
| 1445092-4                 | 2-1445092-4                |
| 1445092-5                 | 2-1445092-5                |
| 1445092-6                 | 2-1445092-6                |
| 1445092-7                 | 2-1445092-7                |
| 1445092-8                 | 2-1445092-8                |
| 1445092-9                 | 2-1445092-9                |
| 1-1445092-0               | 3-1445092-0                |
| 1-1445092-1               | 3-1445092-1                |
| 1-1445092-2               | 3-1445092-2                |
| 1445093-2                 | 2-1445093-2                |
| 1445093-3                 | 2-1445093-3                |
| 1445093-4                 | 2-1445093-4                |
| 1445093-5                 | 2-1445093-5                |
| 1445093-6                 | 2-1445093-6                |
| 1445093-7                 | 2-1445093-7                |
| 1445093-8                 | 2-1445093-8                |
| 1445093-9                 | 2-1445093-9                |
| 1-1445093-0               | 3-1445093-0                |
| 1-1445093-1               | 3-1445093-1                |
| 1-1445093-2               | 3-1445093-2                |

| Non-Compliant Part Number | RoHS Compliant Part Number |
|---------------------------|----------------------------|
| 1445094-2                 | 2-1445094-2                |
| 1445094-3                 | 2-1445094-3                |
| 1445094-4                 | 2-1445094-4                |
| 1445094-5                 | 2-1445094-5                |
| 1445094-6                 | 2-1445094-6                |
| 1445094-7                 | 2-1445094-7                |
| 1445094-8                 | 2-1445094-8                |
| 1445094-9                 | 2-1445094-9                |
| 1-1445094-0               | 3-1445094-0                |
| 1-1445094-1               | 3-1445094-1                |
| 1-1445094-2               | 3-1445094-2                |
| 1445095-2                 | 2-1445095-2                |
| 1445095-3                 | 2-1445095-3                |
| 1445095-4                 | 2-1445095-4                |
| 1445095-5                 | 2-1445095-5                |
| 1445095-6                 | 2-1445095-6                |
| 1445095-7                 | 2-1445095-7                |
| 1445095-8                 | 2-1445095-8                |
| 1445095-9                 | 2-1445095-9                |
| 1-1445095-0               | 3-1445095-0                |
| 1-1445095-1               | 3-1445095-1                |
| 1-1445095-2               | 3-1445095-2                |
| 1445096-2                 | 2-1445096-2                |
| 1445096-3                 | 2-1445096-3                |
| 1445096-4                 | 2-1445096-4                |
| 1445096-5                 | 2-1445096-5                |
| 1445096-6                 | 2-1445096-6                |
| 1445096-7                 | 2-1445096-7                |
| 1445096-8                 | 2-1445096-8                |
| 1445096-9                 | 2-1445096-9                |
| 1-1445096-0               | 3-1445096-0                |
| 1-1445096-1               | 3-1445096-1                |
| 1-1445096-2               | 3-1445096-2                |
| 1445097-2                 | 2-1445097-2                |
| 1445097-3                 | 2-1445097-3                |
| 1445097-4                 | 2-1445097-4                |
| 1445097-5                 | 2-1445097-5                |
| 1445097-6                 | 2-1445097-6                |
| 1445097-7                 | 2-1445097-7                |
| 1445097-8                 | 2-1445097-8                |
| 1445097-9                 | 2-1445097-9                |
| 1-1445097-0               | 3-1445097-0                |
| 1-1445097-1               | 3-1445097-1                |
| 1-1445097-2               | 3-1445097-2                |
| 1445098-2                 | 2-1445098-2                |

| Non-Compliant Part Number | RoHS Compliant Part Number |
|---------------------------|----------------------------|
| 1445098-3                 | 2-1445098-3                |
| 1445098-4                 | 2-1445098-4                |
| 1445098-5                 | 2-1445098-5                |
| 1445098-6                 | 2-1445098-6                |
| 1445098-7                 | 2-1445098-7                |
| 1445098-8                 | 2-1445098-8                |
| 1445098-9                 | 2-1445098-9                |
| 1-1445098-0               | 3-1445098-0                |
| 1-1445098-1               | 3-1445098-1                |
| 1-1445098-2               | 3-1445098-2                |
| 1445099-2                 | 2-1445099-2                |
| 1445099-3                 | 2-1445099-3                |
| 1445099-4                 | 2-1445099-4                |
| 1445099-5                 | 2-1445099-5                |
| 1445099-6                 | 2-1445099-6                |
| 1445099-7                 | 2-1445099-7                |
| 1445099-8                 | 2-1445099-8                |
| 1445099-9                 | 2-1445099-9                |
| 1-1445099-0               | 3-1445099-0                |
| 1-1445099-1               | 3-1445099-1                |
| 1-1445099-2               | 3-1445099-2                |
| 1445100-2                 | 2-1445100-2                |
| 1445100-3                 | 2-1445100-3                |
| 1445100-4                 | 2-1445100-4                |
| 1445100-5                 | 2-1445100-5                |
| 1445100-6                 | 2-1445100-6                |
| 1445100-7                 | 2-1445100-7                |
| 1445100-8                 | 2-1445100-8                |
| 1445100-9                 | 2-1445100-9                |
| 1-1445100-0               | 3-1445100-0                |
| 1-1445100-1               | 3-1445100-1                |
| 1-1445100-2               | 3-1445100-2                |
| 1445101-2                 | 2-1445101-2                |
| 1445101-3                 | 2-1445101-3                |
| 1445101-4                 | 2-1445101-4                |
| 1445101-5                 | 2-1445101-5                |
| 1445101-6                 | 2-1445101-6                |
| 1445101-7                 | 2-1445101-7                |
| 1445101-8                 | 2-1445101-8                |
| 1445101-9                 | 2-1445101-9                |
| 1-1445101-0               | 3-1445101-0                |
| 1-1445101-1               | 3-1445101-1                |
| 1-1445101-2               | 3-1445101-2                |

## Part Number Index

**Note:** This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

| Part No. | Page                   |
|----------|------------------------|
| 60617    | 149                    |
| 60618    | 149                    |
| 60619    | 149                    |
| 60620    | 149                    |
| 60842    | 149                    |
| 60843    | 149                    |
| 61085    | 197, 207               |
| 61086    | 197, 207               |
| 61116    | 149, 206               |
| 61117    | 149, 206               |
| 61118    | 149, 206               |
| 61173    | 149                    |
| 61174    | 149                    |
| 61233    | 197, 207               |
| 61234    | 197, 207               |
| 61250    | 197                    |
| 61251    | 197                    |
| 61252    | 197                    |
| 61253    | 197                    |
| 61314    | 149, 206               |
| 61320    | 150                    |
| 61518    | 150                    |
| 61527    | 150, 206               |
| 61626    | 160, 206               |
| 61627    | 160, 206               |
| 106527   | 120                    |
| 106528   | 120, 206               |
| 106529   | 120, 206               |
| 171636   | 205                    |
| 171637   | 205                    |
| 171638   | 82                     |
| 171639   | 82                     |
| 172156   | 81, 83                 |
| 172157   | 81, 83                 |
| 172158   | 81, 83                 |
| 172159   | 81, 83                 |
| 172160   | 81, 83                 |
| 172161   | 81, 84                 |
| 172162   | 81, 84                 |
| 172163   | 81, 84                 |
| 172164   | 81, 83, 88             |
| 172165   | 81, 83, 86, 88, 97, 99 |
| 172166   | 81, 83, 86, 88, 97, 99 |
| 172167   | 81, 83, 86-88, 97-99   |
| 172168   | 81, 83, 86-88, 97-99   |
| 172169   | 81, 84, 86-87, 97-98   |
| 172170   | 81, 84, 86-87, 97-98   |
| 172171   | 81, 84, 86-87, 97-98   |
| 172233   | 81, 83                 |
| 172234   | 81, 83                 |
| 172327   | 81, 83                 |
| 172328   | 81, 83                 |
| 172329   | 81, 83                 |
| 172330   | 81, 83                 |
| 172331   | 81, 83                 |
| 172332   | 81, 84                 |
| 172333   | 81, 84                 |

| Part No. | Page       |
|----------|------------|
| 172334   | 81, 84     |
| 172335   | 81, 83     |
| 172336   | 81, 83     |
| 172337   | 81, 83     |
| 172338   | 81, 83     |
| 172339   | 81, 83     |
| 172340   | 81, 84     |
| 172341   | 81, 84     |
| 172342   | 81, 84     |
| 172343   | 81, 83     |
| 172344   | 81, 83     |
| 172807   | 81, 85     |
| 172808   | 81, 85     |
| 172809   | 81, 85     |
| 172971   | 82         |
| 173924   | 178, 193   |
| 173925   | 178, 193   |
| 173926   | 178, 193   |
| 173956   | 81         |
| 173957   | 81, 85     |
| 173958   | 81         |
| 174552   | 148, 158   |
| 174670   | 82         |
| 174804   | 148, 158   |
| 177898   | 58, 60, 69 |
| 177899   | 58, 60, 69 |
| 177900   | 58, 61, 69 |
| 177901   | 58, 61, 69 |
| 177902   | 58, 61, 69 |
| 177903   | 58, 62, 69 |
| 177904   | 58, 62, 69 |
| 177905   | 58, 62, 69 |
| 177906   | 58, 65, 69 |
| 177907   | 58, 65, 69 |
| 177908   | 58, 66, 69 |
| 177909   | 58, 66, 69 |
| 177911   | 58, 67, 69 |
| 177912   | 58, 67, 69 |
| 177913   | 58, 68-69  |
| 177914   | 59, 205    |
| 177915   | 59, 205    |
| 177916   | 59, 205    |
| 177917   | 59, 205    |
| 177918   | 58, 69     |
| 177919   | 58, 69     |
| 177920   | 58, 69     |
| 177921   | 58, 69     |
| 179463   | 58, 63, 69 |
| 179464   | 58, 63, 69 |
| 179465   | 58, 64, 69 |
| 179466   | 58, 64, 69 |
| 179467   | 58, 64, 69 |
| 179592   | 59         |
| 179593   | 59         |
| 179594   | 59         |
| 179595   | 59         |
| 179838   | 58, 70     |
| 179839   | 58, 70     |
| 179840   | 58, 71     |
| 179841   | 58, 71     |
| 179843   | 58, 72     |
| 179844   | 58, 72     |

| Part No. | Page       |
|----------|------------|
| 179846   | 58, 76     |
| 179847   | 58, 76     |
| 179848   | 58, 77     |
| 179849   | 58, 77     |
| 179861   | 58, 73, 75 |
| 179862   | 58, 74-75  |
| 179938   | 58, 73, 75 |
| 179939   | 58, 73, 75 |
| 179944   | 58         |
| 179945   | 58         |
| 193796   | 195        |
| 193797   | 195        |
| 193839   | 195        |
| 193841   | 195        |
| 193842   | 195        |
| 194002   | 196        |
| 194009   | 196        |
| 194010   | 196        |
| 194012   | 196        |
| 194013   | 196        |
| 194014   | 196        |
| 194017   | 196        |
| 194018   | 196        |
| 200821   | 150        |
| 306088   | 14         |
| 316061   | 58, 75     |
| 316062   | 58, 75     |
| 316063   | 58, 75     |
| 316086   | 10, 12, 14 |
| 316087   | 10, 12, 14 |
| 316088   | 10, 12, 14 |
| 316089   | 10, 12, 14 |
| 316090   | 10, 12, 14 |
| 316091   | 10, 12, 14 |
| 316092   | 10, 12, 14 |
| 316094   | 10, 12, 14 |
| 316221   | 16         |
| 316222   | 16         |
| 316223   | 16         |
| 316224   | 16         |
| 316225   | 16         |
| 316226   | 16         |
| 316227   | 16         |
| 316299   | 70         |
| 316398   | 12         |
| 316399   | 12         |
| 316400   | 12         |
| 316401   | 12         |
| 316501   | 58, 60, 69 |
| 316502   | 58, 65, 69 |
| 316768   | 58, 60, 69 |
| 316769   | 58, 63, 69 |
| 316770   | 58, 69     |
| 350020   | 110        |
| 350021   | 110        |
| 350022   | 110        |
| 350073   | 150        |
| 350074   | 150        |
| 350078   | 149, 206   |
| 350079   | 149, 206   |
| 350200   | 160, 206   |
| 350201   | 160, 206   |

| Part No. | Page          |
|----------|---------------|
| 350209   | 147, 155      |
| 350210   | 147, 155      |
| 350211   | 148, 155, 157 |
| 350212   | 147, 155      |
| 350213   | 147, 155      |
| 350214   | 147, 155      |
| 350218   | 166, 175, 207 |
| 350219   | 147, 155      |
| 350220   | 147, 155      |
| 350344   | 161           |
| 350345   | 161           |
| 350346   | 161           |
| 350347   | 161           |
| 350373   | 110           |
| 350374   | 110           |
| 350375   | 110           |
| 350376   | 110           |
| 350377   | 110           |
| 350378   | 110           |
| 350379   | 110           |
| 350380   | 110           |
| 350388   | 160           |
| 350389   | 160           |
| 350390   | 160           |
| 350391   | 160           |
| 350415   | 139, 206      |
| 350416   | 139, 206      |
| 350417   | 139, 206      |
| 350418   | 139, 206      |
| 350422   | 147, 155      |
| 350423   | 147, 155      |
| 350424   | 148, 155, 157 |
| 350425   | 147, 155      |
| 350426   | 147, 155      |
| 350427   | 147, 155      |
| 350428   | 165, 176      |
| 350429   | 165, 176      |
| 350430   | 165, 176      |
| 350431   | 165, 176      |
| 350432   | 165, 176      |
| 350433   | 165, 176      |
| 350434   | 165, 176      |
| 350444   | 149           |
| 350522   | 110           |
| 350523   | 110           |
| 350524   | 110           |
| 350536   | 166, 175, 207 |
| 350537   | 166, 207      |
| 350538   | 166, 207      |
| 350539   | 147, 152, 155 |
| 350540   | 147, 152, 155 |
| 350541   | 147, 152, 155 |
| 350542   | 147, 155      |
| 350543   | 148, 152, 155 |
| 350544   | 148, 152, 155 |
| 350547   | 166, 175      |
| 350550   | 166, 175      |
| 350551   | 166           |
| 350552   | 166           |
| 350557   | 149, 206      |
| 350558   | 149, 206      |
| 350561   | 166, 206      |

## Part Number Index (Continued)

| Part No. | Page                       |
|----------|----------------------------|
| 350570   | 166, 206                   |
| 350576   | 147, 156                   |
| 350577   | 147, 156                   |
| 350578   | 147, 156                   |
| 350579   | 147, 156                   |
| 350582   | 165, 176                   |
| 350583   | 165, 176                   |
| 350584   | 165, 176                   |
| 350585   | 165, 176                   |
| 350586   | 165, 176                   |
| 350587   | 165, 176                   |
| 350588   | 165, 176                   |
| 350589   | 169                        |
| 350590   | 169                        |
| 350591   | 106                        |
| 350628   | 53, 205                    |
| 350629   | 53, 205                    |
| 350638   | 149                        |
| 350639   | 149                        |
| 350641   | 147, 156                   |
| 350642   | 147, 156                   |
| 350643   | 147, 156                   |
| 350644   | 147, 156                   |
| 350654   | 167, 175, 207              |
| 350669   | 167, 175                   |
| 350687   | 167, 175, 207              |
| 350689   | 166                        |
| 350690   | 166                        |
| 350699   | 167, 207                   |
| 350700   | 167, 207                   |
| 350705   | 167, 175                   |
| 350706   | 167                        |
| 350707   | 167                        |
| 350711   | 165, 176, 185, 191         |
| 350712   | 165, 176, 185, 191         |
| 350713   | 165, 176, 185, 191         |
| 350714   | 165, 176, 185, 191         |
| 350715   | 165, 168, 176-177, 191-192 |
| 350720   | 165, 168, 176-177, 191-192 |
| 350732   | 165, 176, 185, 191         |
| 350735   | 165, 168, 176-177, 191-192 |
| 350736   | 165, 168, 176-177, 191-192 |
| 350737   | 165, 176, 185, 191         |
| 350738   | 165, 176, 185, 191         |
| 350742   | 165, 176, 185, 191         |
| 350759   | 165, 177                   |
| 350760   | 165, 177                   |
| 350761   | 165, 177                   |
| 350762   | 165, 177                   |
| 350763   | 165, 177                   |
| 350764   | 165, 177                   |
| 350765   | 165, 177                   |
| 350766   | 165, 168, 176-179, 191-194 |

| Part No. | Page                                 |
|----------|--------------------------------------|
| 350767   | 165, 168                             |
| 350777   | 165, 168, 176-179, 191-194           |
| 350778   | 165, 168                             |
| 350779   | 165, 168, 176-179, 191-194           |
| 350780   | 165, 168                             |
| 350781   | 165, 168                             |
| 350782   | 165, 168                             |
| 350783   | 165, 168                             |
| 350784   | 165, 168                             |
| 350786   | 165, 176, 185, 191                   |
| 350787   | 165, 176, 185, 191                   |
| 350789   | 165, 176, 185, 191                   |
| 350790   | 165, 176, 185, 191                   |
| 350792   | 165, 176, 185, 191                   |
| 350793   | 165, 176, 185, 191                   |
| 350809   | 165, 168, 176-177, 179, 191-192, 194 |
| 350810   | 165, 168, 187                        |
| 350811   | 169                                  |
| 350812   | 169                                  |
| 350824   | 165, 177, 185, 192                   |
| 350825   | 165, 177, 185, 192                   |
| 350826   | 165, 177, 185, 192                   |
| 350827   | 165, 177, 185, 192                   |
| 350828   | 165, 177, 185, 192                   |
| 350829   | 165, 177, 185, 192                   |
| 350830   | 165, 177, 185, 192                   |
| 350831   | 165, 177, 185, 192                   |
| 350832   | 165, 177, 185, 192                   |
| 350833   | 165, 177, 185, 192                   |
| 350834   | 165, 177, 185, 192                   |
| 350835   | 165, 177, 185, 192                   |
| 350836   | 165, 177, 185, 192                   |
| 350837   | 165, 177, 185, 192                   |
| 350838   | 106                                  |
| 350848   | 179                                  |
| 350849   | 179                                  |
| 350851   | 166, 206                             |
| 350865   | 165, 168                             |
| 350866   | 165, 168                             |
| 350867   | 165, 168                             |
| 350871   | 167                                  |
| 350873   | 166, 207                             |
| 350874   | 166, 207                             |
| 350877   | 167                                  |
| 350918   | 166                                  |
| 350919   | 166                                  |

| Part No. | Page               |
|----------|--------------------|
| 350922   | 166, 207           |
| 350923   | 166, 207           |
| 350924   | 166, 206           |
| 350925   | 166, 206           |
| 350942   | 165, 179, 185, 194 |
| 350943   | 165, 179, 185, 194 |
| 350944   | 165, 179, 185, 194 |
| 350945   | 165, 179, 185, 194 |
| 350948   | 165, 179           |
| 350949   | 165, 179           |
| 350967   | 106, 205           |
| 350968   | 106, 205           |
| 350969   | 106, 205           |
| 350986   | 165, 177           |
| 350987   | 165, 177           |
| 350988   | 165, 177           |
| 350989   | 165, 177           |
| 350990   | 165, 177           |
| 350991   | 165, 177           |
| 350992   | 165, 177           |
| 353891   | 58, 75             |
| 380935   | 110                |
| 380936   | 110                |
| 380937   | 110                |
| 380991   | 147, 155           |
| 380999   | 147, 155           |
| 480270   | 147, 152, 154-155  |
| 480271   | 147, 154           |
| 480273   | 147, 153           |
| 480274   | 147, 153           |
| 480275   | 147, 153           |
| 480276   | 147, 153, 156      |
| 480277   | 147, 153, 156      |
| 480278   | 147, 153, 156      |
| 480283   | 147, 152, 154-155  |
| 480284   | 147, 154           |
| 480285   | 147, 152, 154-155  |
| 480286   | 147, 154           |
| 480287   | 147, 154-155       |
| 480288   | 147, 154           |
| 480303   | 147, 151, 155, 157 |
| 480304   | 147, 153           |
| 480305   | 147, 151, 153      |
| 480318   | 147, 151, 155, 157 |
| 480319   | 147, 151           |
| 480323   | 147, 153           |
| 480324   | 147, 153, 156      |
| 480339   | 147, 152           |
| 480340   | 147, 152           |
| 480345   | 147, 152           |
| 480349   | 147, 151           |
| 480350   | 147, 151           |
| 480351   | 147, 151           |
| 480387   | 147, 151           |
| 480388   | 147, 151           |
| 480393   | 147, 151           |
| 480400   | 147, 151           |
| 480401   | 147, 151           |

| Part No. | Page                   |
|----------|------------------------|
| 480424   | 148, 151, 155, 157-158 |
| 480425   | 148, 153               |
| 480426   | 148, 151, 153, 156-157 |
| 480438   | 147, 154-155           |
| 480439   | 147, 154               |
| 480498   | 147, 151               |
| 480510   | 160                    |
| 480512   | 160                    |
| 480585   | 160                    |
| 480586   | 160                    |
| 480594   | 110                    |
| 480634   | 110                    |
| 480672   | 161                    |
| 480673   | 161                    |
| 480698   | 165, 168, 176-178      |
| 480699   | 165, 168               |
| 480700   | 165, 168, 176-178      |
| 480701   | 165, 168               |
| 480702   | 165, 168, 176-179      |
| 480703   | 165, 168               |
| 480704   | 165, 168, 176-177      |
| 480705   | 165, 168               |
| 480706   | 165, 168, 176-177      |
| 480707   | 165, 168               |
| 480708   | 165, 168, 176-177      |
| 480709   | 165, 168               |
| 480710   | 165, 168, 176-177      |
| 480711   | 165, 168               |
| 480720   | 147, 152, 155          |
| 480721   | 147, 152, 155          |
| 480722   | 152, 155               |
| 480763   | 165, 168, 176-177, 179 |
| 480764   | 165, 168               |
| 480772   | 148                    |
| 640309   | 166                    |
| 640310   | 166                    |
| 640347   | 166                    |
| 640391   | 53, 205                |
| 640392   | 53, 205                |
| 640415   | 169                    |
| 640466   | 165, 176               |
| 640467   | 165, 177               |
| 640497   | 105, 112               |
| 640498   | 105, 112               |
| 640499   | 105, 112               |
| 640500   | 105, 112               |
| 640501   | 105, 112               |
| 640502   | 105, 112               |
| 640503   | 105, 112               |
| 640504   | 105, 112               |
| 640505   | 105, 112               |
| 640506   | 105, 112               |
| 640507   | 105, 107               |
| 640508   | 105, 107               |
| 640509   | 105, 107               |
| 640510   | 105, 107               |
| 640511   | 105, 108               |
| 640512   | 105, 108               |
| 640513   | 105, 108               |
| 640514   | 105, 108               |

## Part Number Index (Continued)

| Part No. | Page                       |
|----------|----------------------------|
| 640515   | 105, 108                   |
| 640516   | 105, 108                   |
| 640517   | 105, 107, 112              |
| 640518   | 105, 107, 112              |
| 640519   | 105, 107, 112              |
| 640520   | 105, 107, 112              |
| 640521   | 105, 108, 112              |
| 640522   | 105, 108, 112              |
| 640523   | 105, 108, 112              |
| 640524   | 105, 108, 112              |
| 640525   | 105, 108, 112              |
| 640526   | 105, 108, 112              |
| 640545   | 106                        |
| 640579   | 106                        |
| 640580   | 106                        |
| 640581   | 165, 168,<br>176-177, 179  |
| 640582   | 165, 168, 176, 179         |
| 640583   | 165, 179                   |
| 640584   | 165, 179                   |
| 640585   | 165, 168, 176, 179         |
| 640586   | 165, 168, 176, 179         |
| 640587   | 165, 179                   |
| 640713   | 170, 190                   |
| 640714   | 170, 190                   |
| 640715   | 170, 190                   |
| 640716   | 170, 190                   |
| 640717   | 170, 190                   |
| 640718   | 170, 190                   |
| 640719   | 170                        |
| 640720   | 170                        |
| 640721   | 170                        |
| 640722   | 170                        |
| 640723   | 170                        |
| 640724   | 170                        |
| 640900   | 165, 176, 185,<br>187, 191 |
| 640901   | 165, 177, 185,<br>187, 192 |
| 641083   | 165                        |
| 641084   | 165                        |
| 641294   | 106, 205                   |
| 641300   | 106                        |
| 641737   | 148, 157                   |
| 641763   | 170                        |
| 641764   | 165                        |
| 641765   | 165                        |
| 641766   | 165                        |
| 641767   | 165                        |
| 641768   | 165                        |
| 641769   | 165                        |
| 641770   | 165                        |
| 641771   | 165                        |
| 641775   | 170                        |
| 641776   | 170, 190                   |
| 641777   | 170                        |
| 641778   | 170                        |
| 641825   | 165, 176                   |
| 641828   | 165, 176                   |
| 641831   | 165, 176                   |
| 641832   | 165, 176                   |
| 641945   | 170, 190                   |
| 641963   | 165, 176                   |

| Part No. | Page                  |
|----------|-----------------------|
| 641964   | 165, 176,<br>185, 191 |
| 641965   | 165, 176              |
| 641966   | 165, 176, 185, 191    |
| 641967   | 165, 176              |
| 641968   | 165, 176, 185, 191    |
| 641969   | 165, 176              |
| 641970   | 165, 176,<br>185, 191 |
| 641971   | 165, 176              |
| 641972   | 165, 176,<br>185, 191 |
| 641973   | 165, 176              |
| 641974   | 165, 176,<br>185, 191 |
| 641975   | 165, 176              |
| 641976   | 165, 176,<br>185, 191 |
| 643030   | 170, 190              |
| 643182   | 170                   |
| 643226   | 165, 179, 185, 194    |
| 643228   | 165, 179,<br>185, 194 |
| 643230   | 165, 179,<br>185, 194 |
| 643232   | 165, 179,<br>185, 194 |
| 643234   | 165, 179              |
| 643235   | 179                   |
| 643236   | 165, 179              |
| 643237   | 179                   |
| 643313   | 170                   |
| 643314   | 170                   |
| 643405   | 165, 176              |
| 643406   | 165, 176, 185, 191    |
| 643407   | 165, 176              |
| 643408   | 165, 176              |
| 643410   | 165, 176              |
| 643411   | 165, 177              |
| 643412   | 165, 177,<br>185, 192 |
| 643413   | 165, 177              |
| 643414   | 165, 177,<br>185, 192 |
| 643415   | 165, 177              |
| 643416   | 165, 177, 185, 192    |
| 643423   | 165, 177              |
| 643424   | 165, 177,<br>185, 192 |
| 643425   | 165, 177              |
| 643426   | 165, 177,<br>185, 192 |
| 643428   | 165, 177, 185, 192    |
| 643429   | 165, 177              |
| 643430   | 165, 177, 185, 192    |
| 643488   | 147, 157              |
| 643585   | 170                   |
| 643749   | 176                   |
| 770003   | 186, 207              |
| 770004   | 186, 207              |
| 770005   | 186, 207              |
| 770006   | 186, 207              |
| 770007   | 186, 207              |
| 770008   | 186, 207              |
| 770009   | 186, 207              |

| Part No. | Page                                             |
|----------|--------------------------------------------------|
| 770010   | 186, 207                                         |
| 770011   | 186, 207                                         |
| 770012   | 186, 207                                         |
| 770016   | 176-177, 179, 185,<br>187, 189, 191-192, 194-195 |
| 770017   | 176-179, 185,<br>187, 189, 191-195               |
| 770018   | 176-179, 185,<br>187, 189, 191-195               |
| 770019   | 176-179, 185,<br>187, 189, 191-195               |
| 770020   | 176-177, 185,<br>188-189, 191-192, 195           |
| 770021   | 176-177, 185,<br>188-189, 191-192, 195           |
| 770022   | 176-177, 185,<br>188-189, 191-192, 195           |
| 770023   | 176-177, 185,<br>188-189, 191-192, 195           |
| 770024   | 185, 187, 189, 195                               |
| 770025   | 185, 187, 189, 195                               |
| 770026   | 185, 187, 189, 195                               |
| 770027   | 185, 188-189, 195                                |
| 770028   | 185, 188-189, 195                                |
| 770029   | 185, 188-189, 195                                |
| 770030   | 185, 188-189, 195                                |
| 770031   | 189                                              |
| 770032   | 189                                              |
| 770033   | 189                                              |
| 770034   | 189                                              |
| 770035   | 189                                              |
| 770036   | 189                                              |
| 770037   | 189                                              |
| 770038   | 189                                              |
| 770039   | 189                                              |
| 770040   | 189                                              |
| 770041   | 189                                              |
| 770042   | 189                                              |
| 770043   | 189                                              |
| 770044   | 189                                              |
| 770045   | 189                                              |
| 770046   | 189                                              |
| 770047   | 189                                              |
| 770048   | 189                                              |
| 770049   | 189                                              |
| 770050   | 189                                              |
| 770051   | 189                                              |
| 770052   | 189                                              |
| 770053   | 189                                              |
| 770054   | 189                                              |
| 770055   | 189                                              |
| 770056   | 189                                              |
| 770057   | 189                                              |
| 770058   | 189                                              |
| 770063   | 140                                              |
| 770064   | 140                                              |
| 770065   | 140                                              |
| 770066   | 140                                              |
| 770068   | 140                                              |
| 770069   | 140                                              |
| 770070   | 140                                              |
| 770071   | 140                                              |
| 770073   | 140                                              |
| 770074   | 140                                              |

| Part No. | Page            |
|----------|-----------------|
| 770075   | 140             |
| 770076   | 140             |
| 770077   | 140             |
| 770078   | 140             |
| 770083   | 140             |
| 770084   | 140             |
| 770085   | 140             |
| 770086   | 140             |
| 770087   | 140             |
| 770088   | 140             |
| 770089   | 140             |
| 770090   | 140             |
| 770091   | 140             |
| 770092   | 140             |
| 770093   | 140             |
| 770094   | 140             |
| 770095   | 140             |
| 770096   | 140             |
| 770097   | 140             |
| 770098   | 140             |
| 770099   | 140             |
| 770100   | 140             |
| 770101   | 140             |
| 770102   | 140             |
| 770103   | 140             |
| 770105   | 140             |
| 770106   | 140             |
| 770107   | 140             |
| 770108   | 140             |
| 770113   | 165             |
| 770114   | 165             |
| 770143   | 165, 176        |
| 770144   | 139             |
| 770145   | 139             |
| 770146   | 139             |
| 770147   | 139             |
| 770156   | 148, 157        |
| 770166   | 81, 86, 97, 101 |
| 770170   | 81, 86, 97, 101 |
| 770174   | 81, 86, 97, 101 |
| 770178   | 81, 86, 97, 101 |
| 770182   | 81, 86, 97, 101 |
| 770186   | 81, 86, 97, 101 |
| 770190   | 81, 86, 97, 101 |
| 770193   | 186, 207        |
| 770194   | 186, 207        |
| 770208   | 165             |
| 770209   | 165             |
| 770210   | 167, 207        |
| 770232   | 157             |
| 770233   | 157             |
| 770234   | 167, 207        |
| 770246   | 186             |
| 770247   | 186             |
| 770248   | 186             |
| 770249   | 186             |
| 770250   | 186             |
| 770251   | 186             |
| 770252   | 186             |
| 770253   | 186             |
| 770254   | 186             |
| 770255   | 186             |

## Part Number Index (Continued)

| Part No. | Page     | Part No. | Page                   | Part No. | Page                    | Part No. | Page                   |
|----------|----------|----------|------------------------|----------|-------------------------|----------|------------------------|
| 770262   | 165, 177 | 770529   | 139, 206               | 794018   | 53                      | 794206   | 86, 88, 96-97, 99, 101 |
| 770264   | 140      | 770530   | 139, 206               | 794019   | 53                      | 794207   | 96, 101                |
| 770266   | 140      | 770579   | 81, 84, 86-88, 97-99   | 794036   | 148, 157                | 794208   | 86, 88, 96-97, 99, 101 |
| 770269   | 142      | 770580   | 81, 84, 86-88, 97-99   | 794040   | 81, 86, 97, 101         | 794209   | 96, 101                |
| 770272   | 176      | 770581   | 81, 84, 86, 88, 97, 99 | 794046   | 53, 205                 | 794210   | 86, 88, 96-97, 99, 101 |
| 770274   | 54       | 770582   | 81, 84, 86, 88, 97, 99 | 794058   | 82                      | 794211   | 96, 101                |
| 770275   | 54       | 770583   | 81, 84, 86, 88, 97, 99 | 794059   | 82                      | 794212   | 86, 88, 96-97, 99, 101 |
| 770276   | 142      | 770584   | 81, 84, 86, 88, 97, 99 | 794061   | 161                     | 794213   | 96, 101                |
| 770277   | 54       | 770585   | 81, 84, 86, 88, 97, 99 | 794065   | 81, 86, 97, 101         | 794214   | 86, 88, 96-97, 99, 101 |
| 770278   | 54       | 770586   | 81, 84, 86, 88, 97, 99 | 794066   | 81, 86, 97, 101         | 794215   | 96, 101                |
| 770319   | 189      | 770587   | 81, 84, 86, 88, 97, 99 | 794067   | 81, 86, 97, 101         | 794216   | 94, 205                |
| 770320   | 189      | 770621   | 81, 86, 97, 101        | 794068   | 81, 86, 97, 101         | 794217   | 94, 205                |
| 770326   | 54       | 770672   | 166                    | 794069   | 81, 86, 97, 101         | 794218   | 94, 205                |
| 770328   | 148      | 770673   | 166                    | 794070   | 81, 86, 97, 101         | 794219   | 94, 205                |
| 770329   | 142      | 770743   | 81, 86, 97, 101        | 794071   | 81, 86, 97, 101         | 794220   | 94, 205                |
| 770330   | 142      | 770771   | 142                    | 794072   | 81, 86, 97, 101         | 794221   | 94, 205                |
| 770331   | 54       | 770782   | 140                    | 794073   | 81, 86, 97, 101         | 794222   | 94, 205                |
| 770332   | 54       | 770783   | 143                    | 794074   | 81, 86, 97, 101         | 794223   | 94, 205                |
| 770333   | 54       | 770784   | 143                    | 794075   | 81, 86, 97, 101         | 794224   | 94                     |
| 770334   | 54       | 770785   | 143                    | 794076   | 81, 86, 97, 101         | 794225   | 94                     |
| 770335   | 54       | 770810   | 143                    | 794077   | 81, 86, 97, 101         | 794226   | 94                     |
| 770336   | 142      | 770827   | 148, 151, 157          | 794078   | 81, 86, 97, 101         | 794227   | 94                     |
| 770337   | 142      | 770829   | 148, 156-157           | 794079   | 81, 86, 97, 101         | 794228   | 94                     |
| 770338   | 142      | 770834   | 82, 205                | 794096   | 165, 168                | 794229   | 94                     |
| 770339   | 142      | 770835   | 82, 205                | 794103   | 53, 205                 | 794230   | 94                     |
| 770340   | 54       | 770842   | 140                    | 794105   | 81, 88, 99, 101         | 794231   | 94                     |
| 770341   | 54       | 770843   | 140                    | 794106   | 81, 88, 99, 101         | 794236   | 148, 155               |
| 770342   | 54       | 770846   | 148, 157               | 794107   | 81, 88, 99, 101         | 794237   | 95, 101                |
| 770343   | 54       | 770858   | 81, 86, 97, 101        | 794108   | 81, 88, 99, 101         | 794238   | 95, 101                |
| 770351   | 176      | 770859   | 81, 86, 97, 101        | 794116   | 198                     | 794239   | 95, 101                |
| 770353   | 54       | 770872   | 81, 86, 97, 101        | 794117   | 198                     | 794240   | 95, 101                |
| 770354   | 54       | 770873   | 81, 86, 97, 101        | 794118   | 198                     | 794241   | 95, 101                |
| 770355   | 54       | 770874   | 81, 86, 97, 101        | 794120   | 147, 157                | 794242   | 95, 101                |
| 770356   | 54       | 770875   | 81, 86, 97, 101        | 794132   | 148, 151                | 794243   | 95, 101                |
| 770360   | 142      | 770876   | 81, 86, 97, 101        | 794138   | 120, 206                | 794244   | 95, 101                |
| 770361   | 142      | 770892   | 140                    | 794139   | 120, 206                | 794245   | 96, 101                |
| 770364   | 139, 143 | 770901   | 82, 92, 205            | 794140   | 120, 206                | 794246   | 96, 101                |
| 770365   | 139, 143 | 770902   | 82, 92, 205            | 794141   | 120                     | 794247   | 96, 101                |
| 770372   | 142      | 770903   | 82, 92, 205            | 794142   | 120                     | 794248   | 96, 101                |
| 770373   | 142      | 770904   | 82, 92, 205            | 794143   | 120                     | 794249   | 96, 101                |
| 770377   | 175, 190 | 770966   | 81, 88, 99, 101        | 794184   | 86, 88, 95, 97, 99, 101 | 794250   | 96, 101                |
| 770383   | 139, 206 | 770967   | 81, 88, 99, 101        | 794185   | 95, 101                 | 794251   | 96, 101                |
| 770385   | 139, 206 | 770968   | 81, 88, 99, 101        | 794186   | 86, 88, 95, 97, 99, 101 | 794252   | 96, 101                |
| 770416   | 186      | 770969   | 81, 88, 99, 101        | 794187   | 95, 101                 | 794253   | 96, 101                |
| 770419   | 54       | 770970   | 81, 88, 99, 101        | 794188   | 86-88, 95, 97-99, 101   | 794254   | 96, 101                |
| 770421   | 165, 168 | 770971   | 81, 88, 99, 101        | 794189   | 95, 101                 | 794255   | 96, 101                |
| 770424   | 143      | 770972   | 81, 88, 99, 101        | 794190   | 86-88, 95, 97-99, 101   | 794256   | 96, 101                |
| 770425   | 143      | 770973   | 81, 88, 99, 101        | 794191   | 95, 101                 | 794257   | 96, 101                |
| 770426   | 54       | 770974   | 81, 88, 99, 101        | 794192   | 86-88, 96-99, 101       | 794258   | 96, 101                |
| 770427   | 54       | 770983   | 51, 53                 | 794193   | 96, 101                 | 794259   | 96, 101                |
| 770428   | 54       | 770985   | 82, 92                 | 794194   | 86-87, 96-98, 101       | 794260   | 96, 101                |
| 770429   | 54       | 770986   | 82, 92                 | 794195   | 96, 101                 | 794261   | 96, 101                |
| 770433   | 54       | 770987   | 82, 92                 | 794196   | 86-88, 96-99, 101       | 794262   | 96, 101                |
| 770441   | 54       | 770988   | 82, 92                 | 794197   | 96, 101                 | 794263   | 96, 101                |
| 770442   | 54       | 770994   | 179                    | 794198   | 86, 88, 96-97, 99, 101  | 794264   | 96, 101                |
| 770443   | 54       | 770997   | 148, 156               | 794199   | 96, 101                 | 794265   | 96, 101                |
| 770450   | 139, 143 | 794000   | 106, 205               | 794200   | 86-87, 96-98, 101       | 794266   | 96, 101                |
| 770451   | 139, 143 | 794001   | 106                    | 794201   | 96, 101                 | 794267   | 96, 101                |
| 770452   | 139, 143 | 794012   | 147, 152               | 794202   | 86, 88, 96-97, 99, 101  | 794268   | 96, 101                |
| 770453   | 139, 143 | 794015   | 140                    | 794203   | 96, 101                 | 794269   | 174                    |
| 770512   | 186      | 794016   | 53                     | 794204   | 86-87, 96-98, 101       | 794270   | 174                    |
| 770526   | 148      | 794017   | 53                     | 794205   | 96, 101                 | 794271   | 174                    |

## Part Number Index (Continued)

| Part No. | Page            | Part No. | Page                        | Part No. | Page       | Part No. | Page        |
|----------|-----------------|----------|-----------------------------|----------|------------|----------|-------------|
| 794272   | 174             | 794466   | 122                         | 794618   | 21, 43     | 917684   | 12-13, 205  |
| 794273   | 174             | 794467   | 122                         | 794619   | 21, 43     | 917686   | 10, 12-13   |
| 794274   | 174             | 794468   | 123                         | 794620   | 21, 43     | 917687   | 10, 12-13   |
| 794275   | 174             | 794469   | 123                         | 794621   | 21, 45     | 917688   | 10, 12-13   |
| 794276   | 174             | 794470   | 124                         | 794622   | 21, 45     | 917689   | 10, 12-13   |
| 794277   | 174             | 794471   | 126                         | 794623   | 21, 45     | 917690   | 10, 12-13   |
| 794278   | 174             | 794472   | 127                         | 794624   | 21, 44     | 917691   | 10, 12-13   |
| 794279   | 174             | 794484   | 122                         | 794625   | 21, 44     | 917692   | 10, 12-13   |
| 794280   | 174             | 794485   | 122                         | 794626   | 21, 44     | 917693   | 10, 12-13   |
| 794281   | 174             | 794486   | 123                         | 794627   | 21, 46     | 917694   | 10, 12-13   |
| 794282   | 174             | 794487   | 123                         | 794628   | 21, 46     | 917695   | 10, 12-13   |
| 794285   | 156             | 794488   | 124                         | 794629   | 21, 46     | 917696   | 10, 12-13   |
| 794287   | 148, 156        | 794489   | 124                         | 794630   | 21, 33     | 917697   | 10, 12-13   |
| 794302   | 122             | 794490   | 125                         | 794631   | 21, 33     | 917698   | 10, 12      |
| 794303   | 122             | 794491   | 125                         | 794632   | 21, 33     | 917699   | 10, 12      |
| 794304   | 122             | 794492   | 126                         | 794633   | 21, 35     | 917700   | 10, 12      |
| 794305   | 123             | 794493   | 126                         | 794634   | 21, 35     | 917701   | 10, 12      |
| 794306   | 123             | 794494   | 127                         | 794635   | 21, 35     | 917702   | 10, 12      |
| 794307   | 124             | 794507   | 127                         | 794636   | 21, 36     | 917703   | 10, 12      |
| 794308   | 124             | 794508   | 127                         | 794637   | 21, 36     | 917704   | 10, 12      |
| 794309   | 125             | 794509   | 127                         | 794638   | 21, 36     | 917705   | 10, 12      |
| 794310   | 125             | 794510   | 127                         | 794657   | 120        | 917706   | 10, 12      |
| 794311   | 126             | 794511   | 127                         | 794677   | 21, 42     | 917707   | 10, 12      |
| 794312   | 126             | 794512   | 127                         | 794678   | 21, 42     | 917708   | 10, 12      |
| 794313   | 127             | 794513   | 127                         | 794679   | 21, 42     | 917709   | 10, 12      |
| 794325   | 81, 87, 98, 101 | 794514   | 127                         | 794680   | 21, 34     | 917722   | 10, 16      |
| 794326   | 81, 87, 98, 101 | 794515   | 127                         | 794681   | 21, 34     | 917723   | 10, 16      |
| 794327   | 81, 87, 98, 101 | 794516   | 127                         | 794682   | 21, 34     | 917724   | 10, 16      |
| 794328   | 81, 87, 98, 101 | 794526   | 127                         | 794683   | 161        | 917725   | 10, 16      |
| 794329   | 81, 87, 98, 101 | 794527   | 127                         | 794699   | 161        | 917726   | 10, 16      |
| 794330   | 81, 87, 98, 101 | 794528   | 127                         | 794700   | 160        | 917727   | 10, 16      |
| 794349   | 122             | 794529   | 127                         | 794714   | 171        | 917728   | 10, 16      |
| 794350   | 122             | 794530   | 127                         | 794715   | 171        | 917729   | 10, 16      |
| 794351   | 122             | 794531   | 127                         | 794716   | 171        | 917730   | 10, 16      |
| 794352   | 123             | 794532   | 127                         | 794758   | 92         | 917731   | 10, 16      |
| 794353   | 123             | 794533   | 127                         | 794760   | 171        | 917732   | 10, 16      |
| 794354   | 124             | 794534   | 127                         | 794761   | 171        | 917733   | 10, 16      |
| 794355   | 124             | 794540   | 122                         | 794762   | 171        | 917745   | 58, 76      |
| 794356   | 125             | 794542   | 121                         | 794772   | 92         | 917746   | 76          |
| 794357   | 125             | 794543   | 122                         | 794781   | 81, 92     | 917747   | 77          |
| 794358   | 126             | 794550   | 121                         | 794805   | 81, 92     | 917764   | 12, 14, 205 |
| 794359   | 126             | 794576   | 121, 206                    | 794821   | 81, 92     | 917765   | 12, 14, 205 |
| 794360   | 127             | 794577   | 121                         | 794824   | 92         | 917780   | 10, 15      |
| 794369   | 95              | 794578   | 121, 206                    | 794894   | 81, 92     | 917781   | 10, 15      |
| 794370   | 90              | 794579   | 121                         | 794895   | 81, 92     | 917782   | 10, 15      |
| 794374   | 81, 88          | 794588   | 127                         | 794896   | 81, 92     | 917783   | 10, 15      |
| 794380   | 51, 53          | 794589   | 127                         | 794911   | 181        | 917784   | 10, 15      |
| 794406   | 82              | 794590   | 127                         | 794912   | 181        | 917785   | 10, 15      |
| 794407   | 82              | 794594   | 121                         | 794939   | 81, 92     | 917786   | 10, 15      |
| 794412   | 198             | 794598   | 121                         | 794940   | 81, 92     | 917787   | 10, 15      |
| 794413   | 198             | 794606   | 19-22, 205                  | 794941   | 81, 92     | 917788   | 10, 15      |
| 794415   | 126             | 794607   | 19-22, 205                  | 794942   | 81, 92     | 917789   | 10, 15      |
| 794418   | 120, 206        | 794608   | 19, 22, 205                 | 794953   | 115        | 917790   | 10, 15      |
| 794421   | 120             | 794609   | 19, 22, 205                 | 794954   | 115        | 917791   | 10, 15      |
| 794423   | 90              | 794610   | 19-22                       | 794955   | 114, 206   | 917845   | 58, 71      |
| 794429   | 125             | 794611   | 19-22                       | 794956   | 114, 206   | 917894   | 15          |
| 794432   | 81, 87, 98, 101 | 794612   | 19, 22                      | 794957   | 114, 206   | 917895   | 15          |
| 794448   | 127             | 794613   | 19, 22                      | 794958   | 114, 206   | 917896   | 15          |
| 794449   | 127             | 794615   | 19, 28                      | 794995   | 92         | 917897   | 15          |
| 794453   | 124             | 794616   | 19, 27                      | 917353   | 58, 78     | 917898   | 15          |
| 794454   | 125             | 794617   | 19, 21, 24,<br>33-36, 42-46 | 917354   | 58, 74-75  | 917899   | 15          |
| 794455   | 126             |          |                             | 917683   | 12-13, 205 | 917900   | 15          |

## Part Number Index (Continued)

| Part No. | Page                       | Part No. | Page    | Part No. | Page    | Part No. | Page     |
|----------|----------------------------|----------|---------|----------|---------|----------|----------|
| 926302   | 165, 168                   | 1445049  | 19, 25  | 1565086  | 49      | 1586491  | 122-127  |
| 926307   | 165, 168                   | 1445050  | 20, 29  | 1565087  | 50      | 1586492  | 122-127  |
| 926308   | 165, 168                   | 1445051  | 20, 30  | 1565088  | 50      | 1586493  | 122-127  |
| 926309   | 165, 168                   | 1445052  | 20, 31  | 1586000  | 115     | 1586494  | 122-127  |
| 1375618  | 120-121                    | 1445053  | 20, 32  | 1586017  | 115     | 1586495  | 122-127  |
| 1376294  | 130                        | 1445054  | 20, 37  | 1586018  | 115     | 1586496  | 122-127  |
| 1376347  | 131, 206                   | 1445055  | 20, 38  | 1586019  | 115     | 1586512  | 147, 155 |
| 1376348  | 131, 206                   | 1445056  | 20, 39  | 1586022  | 114     | 1586514  | 147, 155 |
| 1376382  | 130, 132, 134              | 1445057  | 20, 40  | 1586023  | 114     | 1586515  | 148, 155 |
| 1376383  | 130, 132, 134              | 1445058  | 20, 41  | 1586024  | 114     | 1586518  | 147, 155 |
| 1376384  | 130, 132, 134              | 1445084  | 20, 29  | 1586025  | 114     | 1586520  | 147, 155 |
| 1376385  | 130, 132, 134              | 1445085  | 20, 30  | 1586026  | 114     | 1586522  | 147, 155 |
| 1376386  | 130, 133, 135              | 1445086  | 20, 31  | 1586027  | 114     | 1586524  | 147, 155 |
| 1376387  | 130, 133, 135              | 1445087  | 20, 32  | 1586037  | 116     | 1586525  | 148, 155 |
| 1376388  | 130-132, 134               | 1445088  | 20, 37  | 1586038  | 116     | 1586526  | 147, 155 |
| 1376389  | 130-132, 134               | 1445089  | 20, 38  | 1586039  | 116     | 1586528  | 147, 155 |
| 1376390  | 130-132, 134               | 1445090  | 20, 39  | 1586040  | 116     | 1586529  | 147, 155 |
| 1376391  | 130-132, 134               | 1445091  | 20, 40  | 1586041  | 116     | 1586530  | 147, 155 |
| 1376392  | 130-131, 133, 135          | 1445092  | 20, 41  | 1586042  | 116     | 1586532  | 147, 155 |
| 1376393  | 130-131, 133, 135          | 1445093  | 20, 29  | 1586043  | 116     | 1586534  | 148, 155 |
| 1376394  | 130-133                    | 1445094  | 20, 30  | 1586044  | 116     | 1586536  | 148, 155 |
| 1376395  | 130-133                    | 1445095  | 20, 31  | 1586101  | 114     | 1586539  | 156      |
| 1376396  | 130-132                    | 1445096  | 20, 32  | 1586102  | 114     | 1586544  | 147, 155 |
| 1376397  | 130-132                    | 1445097  | 20, 37  | 1586103  | 114     | 1586546  | 147, 155 |
| 1376421  | 130, 132, 134              | 1445098  | 20, 38  | 1586104  | 114     | 1586585  | 117      |
| 1376437  | 134                        | 1445099  | 20, 39  | 1586105  | 114     | 1586586  | 117      |
| 1376439  | 134                        | 1445100  | 20, 40  | 1586106  | 114     | 1586587  | 117      |
| 1376440  | 134                        | 1445101  | 20, 41  | 1586314  | 114     | 1586588  | 117      |
| 1376441  | 134                        | 1565079  | 48, 205 | 1586315  | 114     | 1586627  | 155      |
| 1376442  | 135                        | 1565080  | 48, 205 | 1586316  | 114     | 1604210  | 173      |
| 1376443  | 135                        | 1565081  | 49      | 1586317  | 114     | 1604254  | 173      |
| 1376444  | 134                        | 1565082  | 49      | 1586362  | 92      | 1604256  | 173      |
| 1445022  | 19-20, 23,<br>29-32, 37-41 | 1565083  | 50      | 1586404  | 92      | 1604941  | 173      |
| 1445048  | 19, 26                     | 1565084  | 50      | 1586489  | 122-127 | 1612334  | 48, 205  |
|          |                            | 1565085  | 49      | 1586490  | 122-127 | 1612335  | 48, 205  |

## Tooling Part Number Index

| Part No. | Page                                 |
|----------|--------------------------------------|
| 58074    | 157, 200                             |
| 58373    | 160, 204                             |
| 58374    | 160, 204                             |
| 58380    | 166, 186, 204                        |
| 58382    | 186, 195, 200                        |
| 58439    | 166, 186, 204                        |
| 58514    | 204                                  |
| 58631    | 197, 204                             |
| 58632    | 197, 204                             |
| 65780    | 203-204                              |
| 69710    | 160, 166, 186, 204                   |
| 82276    | 204                                  |
| 90247    | 160                                  |
| 90546    | 204                                  |
| 90547    | 204                                  |
| 90548    | 204                                  |
| 90574    | 204                                  |
| 90575    | 204                                  |
| 90714    | 120, 204                             |
| 90717    | 82, 94, 204                          |
| 90758    | 204                                  |
| 90759    | 204                                  |
| 90760    | 204                                  |
| 90869    | 53, 204                              |
| 90870    | 53, 204                              |
| 90871    | 139, 204                             |
| 90872    | 139, 204                             |
| 91002    | 53, 82, 139, 166, 175, 186, 197, 200 |
| 91085    | 157, 200                             |
| 91112    | 157, 200                             |
| 91387    | 114, 204                             |
| 91388    | 114, 204                             |
| 91500    | 166-167, 175, 186, 204               |
| 91501    | 22, 203-204                          |

| Part No. | Page                    |
|----------|-------------------------|
| 91502    | 22, 203-204             |
| 91504    | 149, 204                |
| 91506    | 166-167, 186, 204       |
| 91508    | 166-167, 186, 204       |
| 91510    | 166-167, 186, 204       |
| 91512    | 149-150, 204            |
| 91515    | 149, 204                |
| 91522    | 82, 92, 94, 204         |
| 91526    | 106, 204                |
| 91528    | 149                     |
| 91529    | 82, 92, 94, 204         |
| 91534    | 106, 204                |
| 91536    | 82                      |
| 91552    | 204                     |
| 91567    | 59, 204                 |
| 91569    | 59, 204                 |
| 91594    | 94, 204                 |
| 188688   | 120                     |
| 189727   | 82, 200                 |
| 231894   | 157, 200                |
| 231920   | 157, 200                |
| 234603   | 12, 204                 |
| 234604   | 12, 204                 |
| 234605   | 12                      |
| 234912   | 59                      |
| 234914   | 59                      |
| 305183   | 149, 200                |
| 318831   | 53, 200                 |
| 318837   | 139, 200                |
| 318845   | 160, 200                |
| 318851   | 166, 175, 186, 195, 200 |
| 354500   | 201                     |
| 356114   | 195                     |
| 356337   | 195                     |
| 356500   | 202                     |

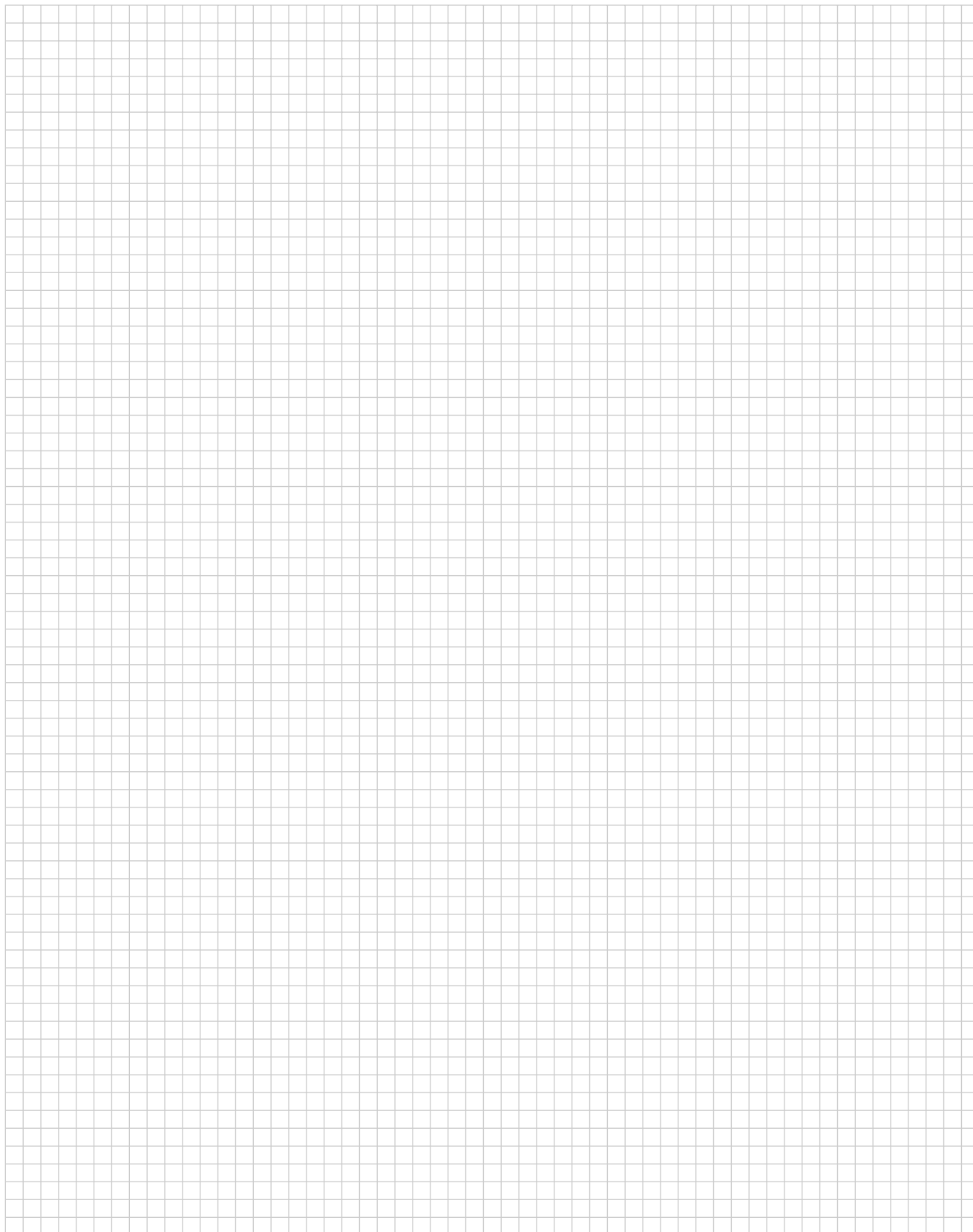
| Part No. | Page                      |
|----------|---------------------------|
| 455822   | 106, 200                  |
| 455830   | 106, 149, 200             |
| 457306   | 110                       |
| 465644   | 149, 200                  |
| 466320   | 149-150, 166-167, 206-207 |
| 466351   | 106, 205                  |
| 466352   | 106, 205                  |
| 466426   | 149, 206                  |
| 466462   | 197, 207                  |
| 466588   | 166, 207                  |
| 466597   | 166-167, 207              |
| 466616   | 166, 206                  |
| 466656   | 139, 206                  |
| 466686   | 53, 205                   |
| 466878   | 139, 206                  |
| 466913   | 205                       |
| 466917   | 206-207                   |
| 466920   | 206-207                   |
| 466922   | 206                       |
| 466955   | 205                       |
| 466959   | 206                       |
| 466986   | 205                       |
| 466989   | 207                       |
| 466990   | 205                       |
| 567066   | 82, 92, 94, 205           |
| 567067   | 82, 92, 205               |
| 567211   | 186, 207                  |
| 567212   | 186, 207                  |
| 567213   | 186, 207                  |
| 567214   | 186, 207                  |
| 567216   | 167, 207                  |
| 567251   | 205                       |
| 567252   | 186, 207                  |
| 567273   | 139, 206                  |
| 567306   | 160, 206                  |

| Part No. | Page                       |
|----------|----------------------------|
| 567309   | 160, 206                   |
| 567337   | 139, 206                   |
| 567418   | 82, 94, 205                |
| 567902   | 205                        |
| 567913   | 207                        |
| 567914   | 207                        |
| 567959   | 120-121, 206               |
| 567960   | 120-121, 206               |
| 587309   | 206                        |
| 680307   | 120-121, 206               |
| 680308   | 120-121, 206               |
| 680350   | 120, 206                   |
| 680582   | 82, 94, 205                |
| 680854   | 94, 205                    |
| 680893   | 22, 205                    |
| 680894   | 22, 205                    |
| 687763   | 149, 166-167, 175, 206-207 |
| 687765   | 197, 207                   |
| 687898   | 149, 206                   |
| 687926   | 166-167, 207               |
| 687996   | 53, 205                    |
| 691458   | 197, 200                   |
| 794381   | 175                        |
| 843996   | 22                         |
| 854040   | 201                        |
| 1385194  | 22, 205                    |
| 1385377  | 22, 205                    |
| 1385448  | 114, 206                   |
| 1385817  | 114, 206                   |
| 1586343  | 114                        |
| 1586344  | 22                         |
| 1586700  | 166, 200                   |
| 1596277  | 48, 204                    |

---

**Engineering Notes**

---



## Americas

**Argentina** – Buenos Aires  
Phone: +54-11-4733-2200  
Fax: +54-11-4733-2211

**Brasil** – São Paulo  
Phone: +55-11-3611-1311  
Fax: +55-11-3611-0397

**Canada** – Toronto  
Phone: +905-475-6222  
Fax: +905-474-5520  
**Product Information Center:**  
**(Technical Support)**  
Phone: +905-470-4425  
Fax: +905-474-5525

**Colombia** – Bogota  
Phone: +57-1-231-9398  
Fax: +57-1-660-0206

**Mexico** – Mexico City  
Phone: +52-55-1106-0800  
+01-800-733-8926  
Fax: +52-55-1106-0901

**United States** – Harrisburg, PA  
Phone: +717-564-0100  
Fax: +717-986-7575  
**Product Information Center:**  
**(Technical Support)**  
Phone: +800-522-6752  
Fax: +717-986-7575

**For Latin/South American Countries not shown**  
Phone: +54-11-4733-2015  
Fax: +54-11-4733-2083

## Asia/Pacific

**Australia** – Sydney  
Phone: +61-2-9554-2600  
Fax: +61-2-9502-2556  
**Product Information Center:**  
**(Technical Support)**  
Phone: +61-2-9840-8200  
Fax: +61-2-9634-6188

**India** – Bangalore  
Phone: +91-80-285-40800  
Fax: +91-80-285-40820

**Indonesia** – Jakarta  
Phone: +65-6482-0311  
Fax: +65-6482-1012

**Japan** – Tokyo  
Phone: +81-44-844-8111  
Fax: +81-44-812-3207  
**Product Information Center:**  
**(Technical Support)**  
Phone: +81-44-844-8013  
Fax: +81-44-812-3200

**Korea** – Seoul  
Phone: +82-2-3415-4500  
Fax: +82-2-3486-3810

**Malaysia** – Kuala Lumpur  
Phone: +60-3-78053055  
Fax: +60-3-78053066

**New Zealand** – Auckland  
Phone: +64-9-634-4580  
Fax: +64-9-634-4586

**Philippines** – Makati City  
Phone: +632-848-0171  
Fax: +632-867-8661

**People's Republic of China**  
Hong Kong  
Phone: +852-2735-1628  
Fax: +852-2735-0243

Shanghai  
Phone: +86-21-2407-1588  
Fax: +86-21-2407-1599

Taiwan – Taipei  
Phone: +886-2-8768-2788  
Fax: +886-2-8768-2268

**Singapore** – Singapore  
Phone: +65-6482-0311  
Fax: +65-6482-1012

**Thailand** – Bangkok  
Phone: +66-2-955-0500  
Fax: +66-2-955-0505

**Vietnam and Indochina** – Ho Chi Minh City  
Phone: +84-8 930-5546  
Fax: +84-8 930-3443

## Europe/Middle East/Africa

**Austria** – Vienna  
Phone: +43-1 90 5 60-0  
Fax: +43-1 90 5 60-1333

**Belgium** – Kessel-Lo  
Phone: +32-16-35-23-00  
Fax: +32-16-35-23-52

**Bulgaria** – Sofia  
Phone: +359-2-971-2152  
Fax: +359-2-971-2153

**Czech Republic** – Kurim  
Phone: +420-5-41-162-111  
Fax: +420-5-41-162-223

**Denmark** – Glostrup  
Phone: +45-43-480-452  
Fax: +45-43-441-414

**Egypt** – Cairo  
Phone: +20-2-29 04 281  
Fax: +20-2-41 92 334

**Estonia** – Tartu  
Phone: +372-5138-274  
Fax: +372-7400-779

**Finland** – Helsinki  
Phone: +358-95-12-34-20  
Fax: +358-95-12-34-250

**France** – Cergy-Pontoise  
Phone: +33-1-3420-8888  
Fax: +33-1-3420-8600  
**Product Information Center:**  
**(Technical Support)**  
Phone: +33-1-3420-8943  
Fax: +33-1-3420-8623

**Germany** – Bensheim  
Phone: +49-6251-133-0  
Fax: +49-6251-133-1600  
**Product Information Center:**  
**(Technical Support)**  
Phone: +49-6251-133-1999  
Fax: +49-6251-133-1988

**Germany** – Langen  
Phone: +49-6103-709-0  
Fax: +49-6103-709-1223

**Germany** – Speyer  
Phone: +49-6232-30-0  
Fax: +49-6232-30-2243

**Germany - HTS Division** – Neunkirchen  
Phone: +49-2247-305-0  
Fax: +49-2247-305-122

**Greece** – Athens  
Phone: +30-210-9370-396/397  
Fax: +30-210-9370-655

**Hungary** – Budapest  
Phone: +36-1-289-1000  
Fax: +36-1-289-1010

**Ireland** – Dublin  
Phone: +353-1-820-3000  
Fax: +353-1-820-9790

**Israel** – Yokneam  
Phone: +972-4-959-0508  
Fax: +972-4-959-0506

**Italy** – Collegno (Torino)  
Phone: +39-011-4012-111  
Fax: +39-011-4031116

**Lithuania** – Vilnius  
Phone: +370-5-2131-402  
Fax: +370-5-2131-403

**Netherlands** – 's-Hertogenbosch  
Phone: +31-73-624-62-46  
Fax: +31-73-621-23-65  
**Product Information Center:**  
**(Technical Support)**  
Phone: +31-73-6246-999  
Fax: +31-73-6246-998

**Norway** – Nesbru  
Phone: +47-66-77-8886  
Fax: +47-66-77-8855

**Poland** – Warsaw  
Phone: +48-22-45-76-700  
Fax: +48-22-45-76-720

**Romania** – Bucharest  
Phone: +40-21-311-3479/3596  
Fax: +40-21-312-0574

**Russia** – Moscow  
Phone: +7-495-926-5506/07/08/09  
Fax: +7-495-926-5505

**Russia** – St. Petersburg  
Phone: +7-812-718-8192  
Fax: +7-812-718-8193

**Slovenia** – Ljubljana  
Phone: +386-1561-3270  
Fax: +386-1561-3240

**South Africa** – Port Elizabeth  
Phone: +2741-503-4500  
Fax: +2741-581-0440

**Spain** – Barcelona  
Phone: +34-93-291-0330  
Fax: +34-93-201-7879  
**Product Information Center:**  
**(Technical Support):**  
Phone: +34-93-291-0330  
Fax: +34-93-200-3779

**Sweden** – Upplands Väsby  
Phone: +46-8-50-72-50-00  
Fax: +46-8-50-72-50-01

**Switzerland** – Steinach  
Phone: +41-71-447-0447  
Fax: +41-71-447-0444

**Turkey** – Istanbul  
Phone: +90-212-281-8181/2/3  
Fax: +90-212-281-8184

**Ukraine** – Kiev  
Phone: +380-044-206-2265  
Fax: +380-044-206-2264

**United Kingdom** – Swindon  
Phone: +44-8706-080-208  
Fax: +44-1793-572-516  
**Product Information Center:**  
**(Technical Support)**  
Freephone GB: 0800-267-666  
Phone: +44-8706-080-208  
Fax: +44-208-420-8081

**For Middle East/African Countries Not Shown**  
Phone: +33-1-3420-8866  
Fax: +33-1-3420-8300

**Tyco Electronics Corporation**  
Harrisburg, PA

[tycoelectronics.com](http://tycoelectronics.com)

82181-7.5M-LUG-FP-2-07-2-0G3B

