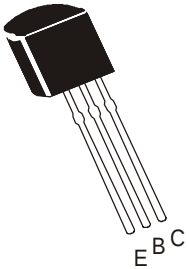


## PNP SILICON PLANAR EPITAXIAL TRANSISTORS

**PN2907**  
**PN2907A**

**TO-92**  
**Plastic Package**



### Complementary Silicon Transistors for Switching and Linear Applications.

#### ABSOLUTE MAXIMUM RATINGS(Ta=25 ° C unless specified otherwise)

| DESCRIPTION                                      | SYMBOL         | PN2907      | PN2907A | UNITS   |
|--------------------------------------------------|----------------|-------------|---------|---------|
| Collector Emitter Voltage                        | $V_{CEO}$      | 40          | 60      | V       |
| Collector Base Voltage                           | $V_{CBO}$      | 60          | 60      | V       |
| Emitter Base Voltage                             | $V_{EBO}$      | 5           | 5       | V       |
| Collector Current Continuous                     | $I_C$          | 600         |         | mA      |
| Power Dissipation@ Ta=25 ° C                     | $P_D$          | 625         |         | mW      |
| Derate Above 25 ° C                              |                | 5.0         |         | mW/ ° C |
| Power Dissipation@ Tc=25 ° C                     | $P_D$          | 1.5         |         | W       |
| Derate Above 25 ° C                              |                | 12          |         | mW/ ° C |
| Operating And Storage Junction Temperature Range | $T_j, T_{stg}$ | -55 to +150 |         | ° C     |

#### THERMAL RESISTANCE

|                     |               |      |       |
|---------------------|---------------|------|-------|
| Junction to ambient | $R_{th(j-a)}$ | 200  | ° C/W |
| Junction to case    | $R_{th(j-c)}$ | 83.3 | ° C/W |

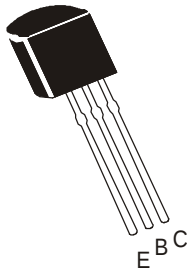
#### ELECTRICAL CHARACTERISTICS (Ta=25 ° C Unless Specified Otherwise)

| DESCRIPTION               | SYMBOL     | TEST CONDITION            | PN2907  | PN2907A | UNITS   |
|---------------------------|------------|---------------------------|---------|---------|---------|
| Collector Emitter Voltage | $BV_{CEO}$ | $I_C=10mA, I_B=0$         | >40     | >60     | V       |
| Collector Base Voltage    | $BV_{CBO}$ | $I_C=10\mu A, I_E=0$      | >60     | >60     | V       |
| Emitter Base Voltage      | $BV_{EBO}$ | $I_E=10\mu A, I_C=0$      | >5      | >5      | V       |
| Collector Cut off Current | $I_{CBO}$  | $V_{CB}=50V, I_E=0$       | <20     | <10     | nA      |
| Ta= 150 ° C               |            |                           |         |         |         |
|                           |            | $V_{CB}=50V, I_E=0$       | <20     | <10     | $\mu A$ |
|                           | $I_{CEX}$  | $V_{CE}=30V, V_{EB}=0.5V$ | <50     | <50     | nA      |
|                           | $I_{CEO}$  | $V_{CE}=10V, I_B=0$       | <10     | <10     | nA      |
| Emitter Cut off Current   | $I_{EBO}$  | $V_{EB}=3V, I_C=0$        | <10     | <10     | nA      |
| Base Cut off Current      | $I_{BEX}$  | $V_{CE}=30V, V_{EB}=0.5V$ | <50     | <50     | nA      |
| DC Current Gain           | $h_{FE}$   | $V_{CE}=10V, I_C=0.1mA$   | >35     | >75     |         |
|                           |            | $V_{CE}=10V, I_C=1mA$     | >50     | >100    |         |
|                           |            | $V_{CE}=10V, I_C=10mA$    | >75     | >100    |         |
|                           |            | $V_{CE}=10V^*, I_C=150mA$ | 100-300 | 100-300 |         |
|                           |            | $V_{CE}=10V^*, I_C=500mA$ | >30     | >50     |         |

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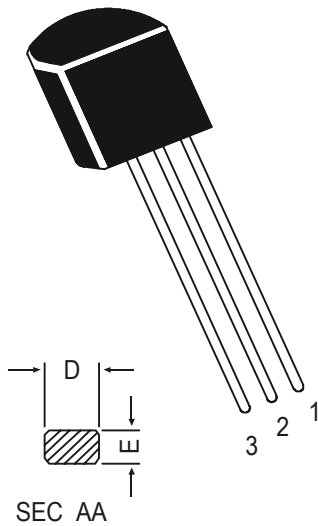
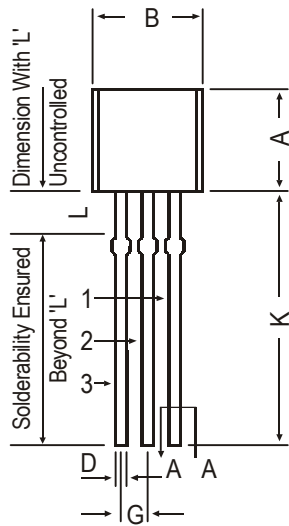
## ELECTRICAL CHARACTERISTICS (Ta=25 ° C Unless Specified Otherwise)

| DESCRIPTION                          | SYMBOL          | TEST CONDITION                       | PN2907 | PN2907A | UNITS |
|--------------------------------------|-----------------|--------------------------------------|--------|---------|-------|
| Collector Emitter Saturation Voltage | $V_{CE(sat)}^*$ | $I_C=150mA, I_B=15mA$                | <0.4   | <0.4    | V     |
|                                      |                 | $I_C=500mA, I_B= 50mA$               | <1.6   | <1.6    | V     |
| Base Emitter Saturation Voltage      | $V_{BE(sat)}^*$ | $I_C=150mA, I_B=15mA$                | <1.3   | <1.3    | V     |
|                                      |                 | $I_C=500mA, I_B= 50mA$               | <2.6   | <2.6    | V     |
| DYNAMIC CHARACTERISTICS              |                 |                                      |        |         |       |
| Transition Frequency                 | $f_T$           | $I_C=50mA, V_{CE}=20V$<br>$f=100MHz$ | >200   | >200    | MHz   |
| Output Capacitance                   | $C_{ob}$        | $I_E=0, V_{CB}=10V, f=1MHz$          | <8     | <8      | pF    |
| Input Capacitance                    | $C_{ib}$        | $I_C=0, V_{EB}=2V, f=1MHz$           | <30    | <30     | pF    |
| SWITCHING CHARCTERISTICS             |                 |                                      |        |         |       |
| Delay Time                           | $t_d$           |                                      | <10    | <10     | ns    |
| Rise Time                            | $t_r$           | $I_C =150mA, I_{B1}= 15mA$           | <40    | <40     | ns    |
| Turn on Time                         | $t_{on}$        | $V_{CC} =30V$                        | <50    | <50     | ns    |
| Storage Time                         | $t_s$           |                                      | <80    | <80     | ns    |
| Fall Time                            | $t_f$           | $I_C =150mA, I_{B1}=15mA$            | <30    | <30     | ns    |
| Turn off Time                        | $t_f$           | $I_{B2}=15mA, V_{CC} =6V$            | <110   | <110    | ns    |

**\*Pulse Condition: = Width  $\leq$  300us, Duty Cycle  $\leq$  1%.**

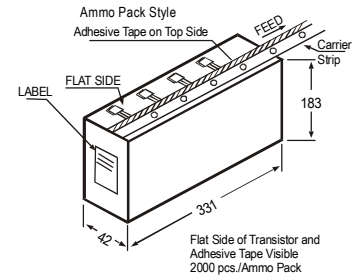
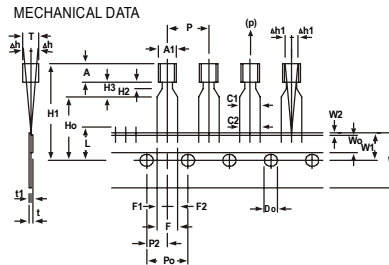
## TO-92 Plastic Package

### TO-92 Transistors on Tape and Ammo Pack



| DIM | MIN.  | MAX.  |
|-----|-------|-------|
| A   | 4.32  | 5.33  |
| B   | 4.45  | 5.20  |
| C   | 3.18  | 4.19  |
| D   | 0.41  | 0.55  |
| E   | 0.35  | 0.50  |
| F   | 5 DEG |       |
| G   | 1.14  | 1.40  |
| H   | 1.14  | 1.53  |
| K   | 12.70 | —     |
| L   | 1.982 | 2.082 |

All dimensions in mm.



| ITEM                                 | SYMBOL  | SPECIFICATION |       |      |                        | REMARKS                                |
|--------------------------------------|---------|---------------|-------|------|------------------------|----------------------------------------|
|                                      |         | MIN.          | NOM.  | MAX. | TOL.                   |                                        |
| BODY WIDTH                           | A1      | 4.0           |       | 4.8  |                        | CUMULATIVE PITCH ERROR 1.0 mm/20 PITCH |
| BODY HEIGHT                          | A       | 4.8           |       | 5.2  |                        |                                        |
| BODY THICKNESS                       | T       | 3.9           |       | 4.2  |                        |                                        |
| PITCH OF COMPONENT                   | P       | 12.7          |       |      | %%P1                   |                                        |
| FEED HOLE PITCH                      | Po      | 12.7          |       |      | %%P0.3                 | TO BE MEASURED AT BOTTOM OF CLINCH     |
| FEED HOLE CENTRE TO COMPONENT CENTRE | P2      | 6.35          |       |      | %%P0.4<br>+0.6<br>-0.2 |                                        |
| DISTANCE BETWEEN OUTER LEADS         | F       | 5.08          |       |      |                        |                                        |
| COMPONENT ALIGNMENT SIDE VIEW        | Δh      | 0             |       | 1.0  |                        |                                        |
| COMPONENT ALIGNMENT FRONT VIEW       | Δh1     | 0             |       | 1.3  |                        | AT TOP OF BODY                         |
| TAPE WIDTH                           | W       | 18            |       |      | %%P0.5                 | t1 0.3 - 0.6                           |
| HOLD-DOWN TAPE WIDTH                 | Wo      | 6             |       |      | %%P0.2                 |                                        |
| HOLE POSITION                        | W1      | 9             |       |      | +0.7<br>-0.5           |                                        |
| HOLD-DOWN TAPE POSITION              | W2      | 0.5           |       |      | %%P0.2<br>%%P0.5       |                                        |
| LEAD WIRE CLINCH HEIGHT              | Ho      | 16            |       |      |                        |                                        |
| COMPONENT HEIGHT                     | H1      |               | 23.25 |      |                        |                                        |
| LENGTH OF SNIPPED LEADS              | L       |               | 11.0  |      |                        |                                        |
| FEED HOLE DIAMETER                   | Do      | 4             |       |      | %%P0.2                 |                                        |
| TOTAL TAPE THICKNESS                 | t       |               | 1.2   |      |                        |                                        |
| LEAD - TO - LEAD DISTANCE            | F1, F2  | 2.54          |       |      | +0.4, -0.1             |                                        |
| STAND OFF                            | H2      | 0.45          |       | 1.45 |                        |                                        |
| CLINCH HEIGHT                        | H3      |               |       | 3.0  |                        |                                        |
| LEAD PARALLELISM                     | C1 - C2 |               |       | 0.22 |                        |                                        |
| PULL - OUT FORCE                     | (P)     | 6N            |       |      |                        |                                        |

#### NOTES

1. MAXIMUM ALIGNMENT DEVIATION BETWEEN LEADS NOT TO BE GREATER THAN 0.2 mm.
2. MAXIMUM NON-CUMULATIVE VARIATION BETWEEN TAPE FEED HOLES SHALL NOT EXCEED 1 mm IN 20 PITCHES.
3. HOLDDOWN TAPE NOT TO EXCEED BEYOND THE EDGE(S) OF CARRIER TAPE AND THERE SHALL BE NO EXPOSURE OF ADHESIVE.
4. NO MORE THAN 3 CONSECUTIVE MISSING COMPONENTS IS PERMITTED.
5. A TAPE TRAILER, HAVING AT LEAST THREE FEED HOLES IS REQUIRED AFTER THE LAST COMPONENT.
6. SPLICES SHALL NOT INTERFERE WITH THE SPROCKET FEED HOLES.

## Packing Detail

| PACKAGE    | STANDARD PACK |                | INNER CARTON BOX  |     | OUTER CARTON BOX  |     |          |
|------------|---------------|----------------|-------------------|-----|-------------------|-----|----------|
|            | Details       | Net Weight/Qty | Size              | Qty | Size              | Qty | Gr Wt    |
| TO-92 Bulk | 1K/polybag    | 200 gm/1K pcs  | 3" x 7.5" x 7.5"  | 5K  | 17" x 15" x 13.5" | 80K | 23 kgs   |
| TO-92 T&A  | 2K/ammo box   | 645 gm/2K pcs  | 12.5" x 8" x 1.8" | 2K  | 17" x 15" x 13.5" | 32K | 12.5 kgs |

### **Disclaimer**

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