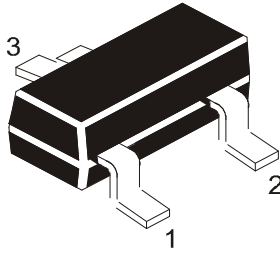


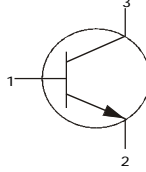
NPN SILICON PLANAR EPITAXIAL TRANSISTORS

BC846, BC847, BC848



PIN CONFIGURATION (NPN)

1 = BASE
2 = EMITTER
3 = COLLECTOR



SOT-23

Formed SMD Package

For Lead Free Parts, Device Part #
will be Prefixed with "T"

Marking

BC846 =1D
BC846A=1A
BC846B=1B
BC847 =1H
BC847A=1E
BC847B=1F
BC847C=1G
BC848 =1M
BC848A=1J
BC848B=1K
BC848C=1L

For use in Driver Stages of Audio Amplifier in Thick and Thin-film Hybrid Circuits

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless specified otherwise)

| DESCRIPTION | SYMBOL | BC846 | BC847 | BC848 | UNITS |
|---------------------------------------------------|-------------|--------------|-------|-------|------------------|
| Collector Base Voltage | V_{CBO} | 80 | 50 | 30 | V |
| Collector Emitter Voltage ($V_{BE}=0V$) | V_{CES} | 80 | 50 | 30 | V |
| Collector Emitter Voltage | V_{CEO} | 65 | 45 | 30 | V |
| Emitter Base Voltage | V_{EBO} | 6 | 6 | 5 | V |
| Collector Current (DC) | I_C | 100 | | | mA |
| Collector Current - Peak | I_{CM} | 200 | | | mA |
| Emitter Current - Peak | $-I_{EM}$ | 200 | | | mA |
| Base Current - Peak | I_{BM} | 200 | | | mA |
| Power Dissipation upto $T_{amb}=25^\circ\text{C}$ | P_{tot}^* | 250 | | | mW |
| Storage Temperature | T_{stg} | - 55 to +150 | | | $^\circ\text{C}$ |
| Junction Temperature | T_j | 150 | | | $^\circ\text{C}$ |

THERMAL RESISTANCE

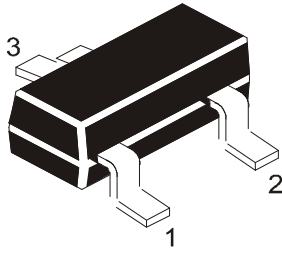
| | | | |
|--------------------------|-----------------|-----|-----|
| From junction to ambient | $R_{th(j-a)}^*$ | 500 | K/W |
|--------------------------|-----------------|-----|-----|

**Mounted on a ceramic substrate of 8mm x 10 mm x 0.7mm

BC846_848Rev_2 170407E

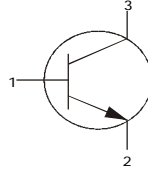
NPN SILICON PLANAR EPITAXIAL TRANSISTORS

BC846, BC847, BC848



PIN CONFIGURATION (NPN)

1 = BASE
2 = EMITTER
3 = COLLECTOR



SOT-23

Formed SMD Package

For Lead Free Parts, Device Part #
will be Prefixed with "T"

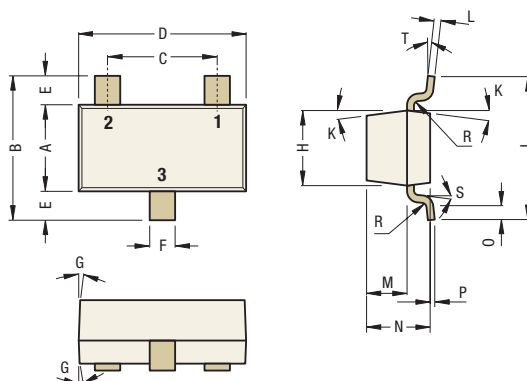
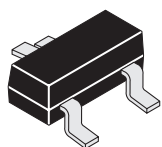
ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless specified otherwise)

| DESCRIPTION | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNITS |
|--------------------------------------|---------------------|------------------------------------------------------|------|-----|------|---------------|
| Collector Cut off Current | I_{CBO} | $V_{CB}=30\text{V}, I_E=0$ | | | 15 | nA |
| | | $V_{CB}=30\text{V}, I_E=0, T_j=150^\circ\text{C}$ | | | 5 | μA |
| Base Emitter on Voltage | $V_{BE(on)}^*$ | $I_C=2\text{mA}, V_{CE}=5\text{V}$ | 0.58 | | 0.70 | V |
| | | $I_C=10\text{mA}, V_{CE}=5\text{V}$ | | | 0.77 | |
| Collector Emitter Saturation Voltage | $V_{CE(Sat)}$ | $I_C=10\text{mA}, I_B=0.5\text{mA}$ | | | 0.25 | V |
| | | $I_C=100\text{mA}, I_B=5\text{mA}$ | | | 0.60 | |
| Base Emitter Saturation Voltage | $V_{BE(Sat)}^{***}$ | $I_C=10\text{mA}, I_B=0.5\text{mA}$ | | 0.7 | | V |
| | | $I_C=100\text{mA}, I_B=5\text{mA}$ | | 0.9 | | |
| DC Current Gain | h_{FE} | $I_C=10\mu\text{A}, V_{CE}=5\text{V}$ | | | | |
| | | BC846A/BC847A/BC848A | | 90 | | |
| | | BC846B/BC847B/BC848B | | 150 | | |
| | | BC847C/BC848C | | 270 | | |
| | | $I_C=2\text{mA}, V_{CE}=5\text{V}$ | | | | |
| | | BC846 | 110 | | 450 | |
| | | BC847/BC848 | 110 | | 800 | |
| | | BC846A/BC847A/BC848A | 110 | | 220 | |
| Collector Capacitance | C_c | $I_E=0, V_{CB}=10\text{V}, f=1\text{MHz}$ | | 2.5 | | pF |
| | | | | | | |
| Transition Frequency | f_T | $I_C=10\text{mA}, V_{CE}=5\text{V}, f=100\text{MHz}$ | 100 | | | MHz |
| Noise Figure | NF | $I_C=0.2\text{mA}, V_{CE}=5\text{V}$ | | | 10 | dB |
| | | $R_s=2\text{k}\Omega, f=1\text{KHz}, B=200\text{Hz}$ | | | | |

* $V_{BE(on)}$ decreases by about 2mV/K with increasing temperature.

*** $V_{BE(sat)}$ decreases by about 1.7mV/K with increasing temperature.

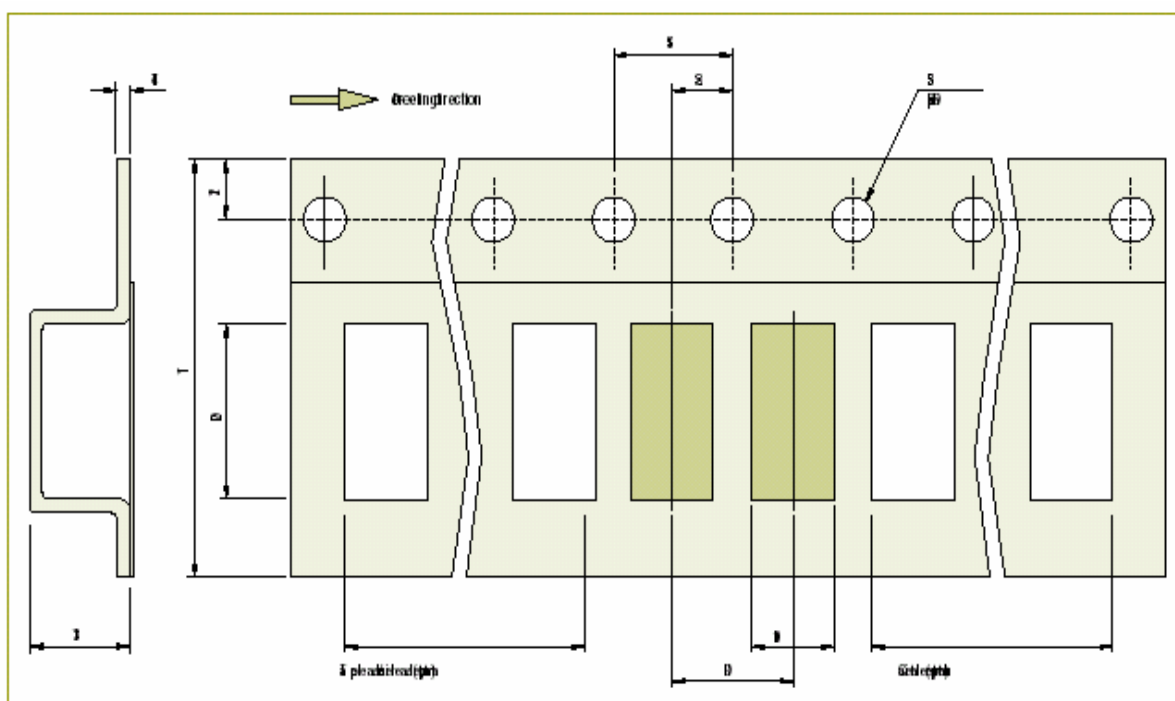
BC846_848Rev_2 170407E

SOT-23
Formed SMD Package
SOT-23
SMD Plastic Package


| DIM | Min | Max |
|-----|------|------|
| A | 1.20 | 1.40 |
| B | 2.10 | 2.64 |
| C | 1.85 | 1.95 |
| D | 2.80 | 3.04 |
| E | 0.54 | 0.67 |
| F | 0.30 | 0.50 |
| G | 3° | |
| H | — | 1.30 |
| J | 2.10 | 2.64 |

| DIM | Min | Max |
|-----|------|------|
| K | 7° | |
| L | 0.08 | 0.20 |
| M | 0.58 | 0.62 |
| N | 0.70 | 1.02 |
| O | 0.21 | — |
| P | 0.02 | 0.15 |
| R | — | 0.08 |
| S | 2° | 8° |
| T | 2° | 10° |

Pin Configuration Pin 1: Base Pin 2: Emitter Pin 3: Collector

Packaging Tape Specifications for SMD Packages

SMD Tape Specifications (8-12 mm)

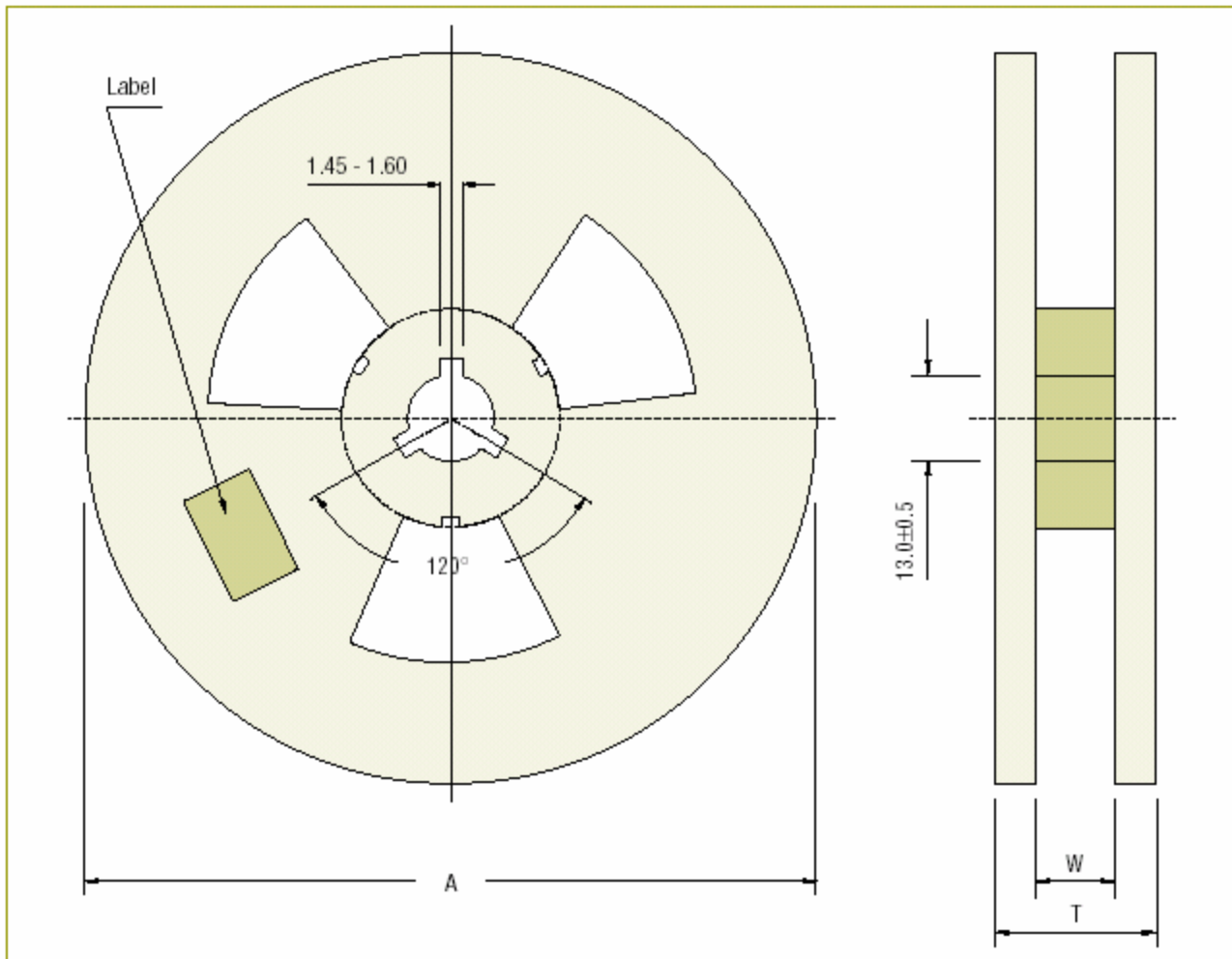
| Device | D1 | D2 | D3 | T1 | T2 | T3 | T4 | S1 | S2 | S3 |
|--------|---------|---------|---------|---------|----------|------|------|---------|---------|---------|
| | | | | | | Max | Max | | | Dia |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| SOT-23 | 3.2±0.1 | 2.8±0.1 | 4.0±0.1 | 8.0±0.2 | 1.75±0.1 | 1.60 | 0.35 | 4.0±0.1 | 2.0±0.1 | 1.5±0.1 |

Packaging Specifications ...

T & A: Tape and Ammo Pack; T & R: Tape and Reel; Bulk: Loose in Poly Bags; Tube: Tube and Carton; K: 1,000

| Package / Case Type | Packaging Type | Std. Packing | Inner Carton | | | Outer Carton | | |
|---------------------|----------------|--------------|--------------|------------------------|----------------------|--------------|------------------------|----------------------|
| | | Qty | Qty | Size L x W x H (cm) | Gross Weight (Kg) | Qty | Size L x W x H (cm) | Gross Weight (Kg) |
| SOT-23 | T & R | 3,000 | 15K | 19 x 19 x 8 | 0.6 | 51K | 23 x 23 x 23 | 2.2 |
| | T & R | 3,000 | 15K | 19 x 19 x 8 | 0.6 | 408K | 48 x 48 x 51 | 20.2 |
| | T & R | 10,000 | 50K | 35.5 x 35.5 x 8.9 | 2.4 | 350K | 48 x 48 x 51 | 19.2 |

Reel Specifications for SMD Packages



Reel Specifications

| Package | Tape | Reel Dia. | Devices | Inside | Reel |
|---------|-------|-----------|----------|-----------|-----------|
| | Width | | per Reel | Thickness | Thickness |
| | | A - Max | and MOQ | W | T - Max |
| SOT-23 | 8 | 180 | 3,000 | 8.4±2 | 14.4 |
| | 8 | 330 | 10,000 | 8.4±2 | 14.4 |

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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