

SOT-23 Formed SMD Package

**BC846 BC847
BC848**

SILICON PLANAR EPITAXIAL TRANSISTORS

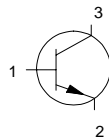
General purpose N-P-N transistors

Marking

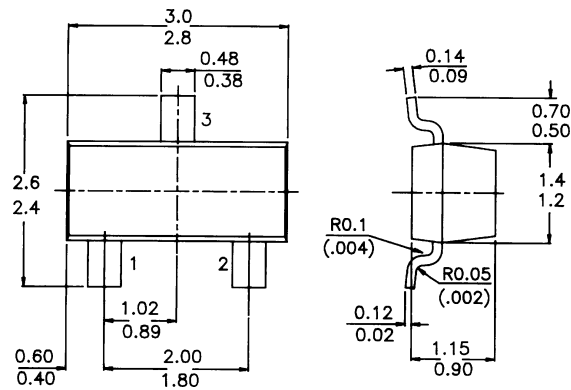
- BC846 = 1D
- BC846A = 1A
- BC846B = 1B
- BC847 = 1H
- BC847A = 1E
- BC847B = 1F
- BC847C = 1G
- BC848 = 1M
- BC848A = 1J
- BC848B = 1K
- BC848C = 1L

Pin configuration

- 1 = BASE
- 2 = EMITTER
- 3 = COLLECTOR



**PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm**



ABSOLUTE MAXIMUM RATINGS

| | | BC846 | BC847 | BC848 |
|--|----------------|--------------|--------------|----------------|
| Collector-emitter voltage ($V_{BE} = 0$) | V_{CES} max. | 80 | 50 | 30 V |
| Collector-emitter voltage (open base) | V_{CE0} max. | 65 | 45 | 30 V |
| Collector current (peak value) | I_{CM} max. | 200 | 200 | 200 mA |
| Total power dissipation up to $T_{amb} = 25^\circ C$ | P_{tot} max. | 250 | 250 | 250 mW |
| Junction temperature | T_j max. | 150 | 150 | 150 $^\circ C$ |
| Small-signal current gain | h_{fe} | > 125 | 125 | 125 |
| $I_C = 2$ mA; $V_{CE} = 5$ V; $f = 1$ kHz | h_{fe} | < 500 | 900 | 900 |
| Transition frequency at $f = 100$ MHz | f_T | > 100 | > 100 | > 100 MHz |
| $I_C = 10$ mA; $V_{CE} = 5$ V | | | | |
| Noise figure at $R_S = 2$ kW | F typ. | 2 | 2 | 2 dB |
| $I_C = 200$ mA; $V_{CE} = 5$ V | | | | |
| $f = 1$ kHz; $B = 200$ Hz | | | | |

**BC846 BC847
BC848**

RATINGS (at $T_A = 25^\circ\text{C}$ unless otherwise specified)

Limiting values

| | BC846 BC847 BC848 | | |
|--|--------------------------|----|-------------------------------|
| Collector-base voltage (open emitter) | V_{CBO} max. | 80 | 50 30 V |
| Collector-emitter voltage ($V_{BE} = 0$) | V_{CES} max. | 80 | 50 30 V |
| Collector-emitter voltage (open base) | V_{CEO} max. | 65 | 45 30 V |
| Emitter-base voltage (open collector) | V_{EBO} max. | 6 | 6 5 V |
| Collector current (d.c.) | I_C max. | | 100 mA |
| Collector current (peak value) | I_{CM} max. | | 200 mA |
| Emitter current (peak value) | $-I_{EM}$ max. | | 200 mA |
| Base current (peak value) | I_{BM} max. | | 200 mA |
| Total power dissipation* | | | |
| up to T_{amb} : 25°C | P_{tot} max. | | 250 mW |
| Storage temperature | T_{stg} | | -55 to + 150 $^\circ\text{C}$ |
| Junction temperature | T_j max. | | 150 $^\circ\text{C}$ |

THERMAL RESISTANCE

From junction to ambient

$$R_{th\ j-a} = 500\ \text{K/W}$$

CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise specified

Collector cut-off current

$$I_E = 0; V_{CB} = 30\ \text{V}$$

$$I_{CBO} < 15\ \text{nA}$$

$$I_E = 0; V_{CB} = 30\ \text{V}; T_j = 150^\circ\text{C}$$

$$I_{CBO} < 5\ \text{mA}$$

Base-emitter voltage

$$I_C = 2\ \text{mA}; V_{CE} = 5\ \text{V}$$

$$V_{BE} \text{ typ. } 660\ \text{mV}$$

$$580\ \text{to } 700\ \text{mV}$$

$$I_C = 10\ \text{mA}; V_{CE} = 5\ \text{V}$$

$$V_{BE} < 770\ \text{mV}$$

Saturation voltage

$$I_C = 10\ \text{mA}; I_B = 0,5\ \text{mA}$$

$$V_{CEsat} \text{ typ. } 90\ \text{mV}$$

$$< 250\ \text{mV}$$

$$V_{BEsat} \text{ typ. } 700\ \text{mV}$$

$$I_C = 100\ \text{mA}; I_B = 5\ \text{mA}$$

$$V_{CEsat} \text{ typ. } 200\ \text{mV}$$

$$< 600\ \text{mV}$$

$$V_{BEsat} \text{ typ. } 900\ \text{mV}$$

Collector capacitance at $f = 1\ \text{MHz}$

$$I_E = I_c = 0; V_{CB} = 10\ \text{V}$$

$$C_c \text{ typ. } 2,5\ \text{pF}$$

Transition frequency at $f = 100\ \text{MHz}$

$$I_C = 10\ \text{mA}; V_{CE} = 5\ \text{V}$$

$$f_T > 100\ \text{MHz}$$

Noise figure at $R_S = 2\ \text{K}\Omega$

$$I_C = 200\ \text{mA}; V_{CE} = 5\ \text{V};$$

$$f = 1\ \text{kHz}; B = 200\ \text{Hz}$$

$$\text{typ. } 2\ \text{dB}$$

$$F < 10\ \text{dB}$$

**BC846 BC847
BC848**

| | | BC846 | BC847 BC848 | BC846A BC847A BC848A | BC846B BC847B BC848B | BC847C BC848C |
|--|----------------------|-------|----------------|----------------------------|----------------------------|------------------|
| <i>DC current gain</i> | | | | | | |
| $I_C = 10 \text{ mA}; V_{CE} = 5 \text{ V}$ | h_{FE} <i>typ.</i> | | | 90 | 150 | 270 |
| $I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$ | h_{FE} > | 110 | 110 | 110 | 200 | 420 |
| | <i>typ.</i> | | | 180 | 290 | 520 |
| | < | 450 | 800 | 220 | 450 | 800 |
| <i>Small signal current gain at $f = 1 \text{ kHz}$</i> | h_{fe} | | | | | |
| $I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$ | > | 125 | 125 | | | |
| | < | 500 | 900 | | | |

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete 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 is 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 Discrete 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).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



CDIL is a registered Trademark of
Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.
Telephone + 91-11-579 6150 Fax + 91-11-579 9569, 579 5290
e-mail sales@cdil.com www.cdil.com