

SOT-23 Formed SMD Package

**BC846 BC847
BC848**

SILICON PLANAR EPITAXIAL TRANSISTORS

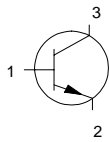
General purpose N-P-N transistors

Marking

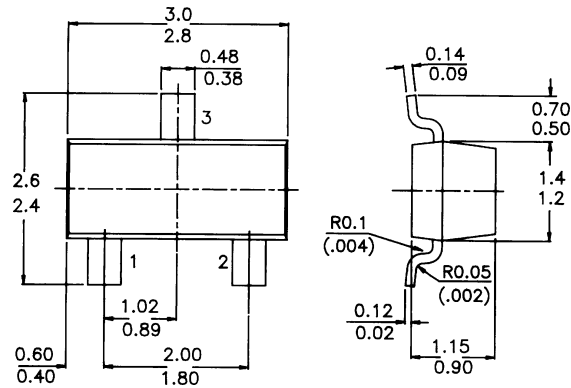
- BC846 = 1D
- BC846A = 1A
- BC846B = 1B
- BC847 = 1H
- BC847A = 1E
- BC847B = 1F
- BC847C = 1G
- BC848 = 1M
- BC848A = 1J
- BC848B = 1K
- BC848C = 1L

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				

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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 $f = 1\ \text{MHz}$

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

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

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			

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