

SOT-23 Formed SMD Package

BC846 BC847 BC848

SILICON PLANAR EPITAXIAL TRANSISTORS

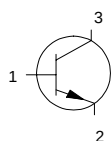
General purpose N-P-N transistors

Marking

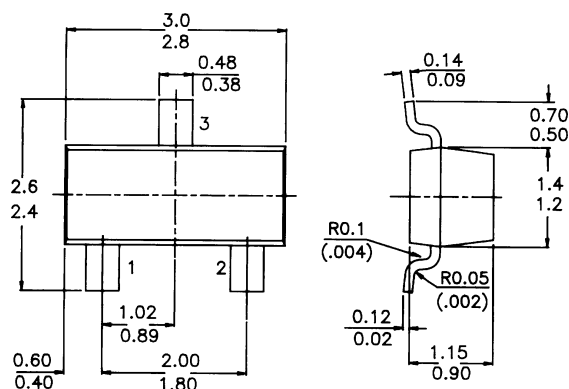
BC846 = 1D
BC846A = 1A
BC846B = 1B
BC847 = 1H
BC847A = 1E
BC847B = 1F
BC847C = 1G
BC848 = 1M
BC848A = 1J
BC848B = 1K
BC848C = 1L

Pin configuration

1 = BASE
2 = EMITTER
3 = COLLECTOR



PACKAGE OUTLINE DETAILS ALL DIMENSIONS IN mm



ABSOLUTE MAXIMUM RATINGS

Collector-emitter voltage ($V_{BE} = 0$)
Collector-emitter voltage (open base)
Collector current (peak value)
Total power dissipation up
to $T_{amb} = 25^\circ\text{C}$
Junction temperature
Small-signal current gain

$I_C = 2\text{ mA}$; $V_{CE} = 5\text{ V}$; $f = 1\text{ kHz}$

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

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

Noise figure at $R_S = 2\text{ kW}$

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

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

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V_{CES}	max.	80	50	30 V
V_{CE0}	max.	65	45	30 V
I_{CM}	max.	200	200	200 mA
P_{tot}	max.	250	250	250 mW
T_j	max.	150	150	150 °C
h_{fe}	>	125	125	125
	<	500	900	900
f_T	>	100	> 100	> 100 MHz
F	typ.	2	2	2 dB

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

Limiting values

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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

$$R_{th\ j-a} = 500\ \text{KW}$$

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 $R_S = 2\ \text{KW}$

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

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

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

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

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				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}	typ.				90	150	270
$I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$								
	h_{FE}	>	110	110	110	200	420	
		typ.			180	290	520	
		<	450	800	220	450	800	
<i>Small signal current gain at $f = 1 \text{ kHz}$</i>								
$I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$	h_{fe}	>	125	125				
		<	500	900				

Disclaimer

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