

**SOT-23 Formed SMD Package**

**BC846 BC847  
BC848**

**SILICON PLANAR EPITAXIAL TRANSISTORS**

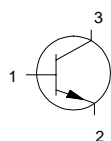
General purpose N-P-N transistors

**Marking**

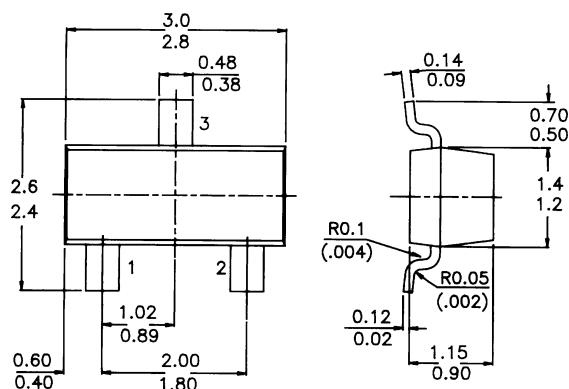
BC846 = 1D  
BC846A = 1A  
BC846B = 1B  
BC847 = 1H  
BC847A = 1E  
BC847B = 1F  
BC847C = 1G  
BC848 = 1M  
BC848A = 1J  
BC848B = 1K  
BC848C = 1L

**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  $R_S = 2\text{ kW}$   
 $I_C = 200\text{ mA}$ ;  $V_{CE} = 5\text{ V}$   
 $f = 1\text{ kHz}$ ;  $B = 200\text{ Hz}$

		BC846	BC847	BC848
$V_{CES}$	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 $^\circ\text{C}$
$h_{fe}$	>	125	125	125
	<	500	900	900
$f_T$	>	100	> 100	> 100 MHz
$F$	typ.	2	2	2 dB

**BC846 BC847  
BC848**

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

Limiting values

		<b>BC846 BC847 BC848</b>		
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 $T_{amb}: 25^\circ\text{C}$	$P_{tot}$ 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 <math>f = 1 \text{ kHz}</math></i>	$h_{fe}$						
$I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$		>	125	125			
		<	500	900			

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