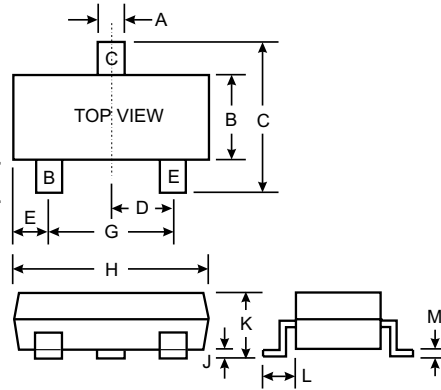


### Features

- Ideally Suited for Automatic Insertion
- Complementary PNP Types Available (BC856-BC858)
- For Switching and AF Amplifier Applications

### Mechanical Data

- Case: SOT-23, Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Pin Connections and Marking Codes (See Table & Diagram)
- Approx. Weight: 0.008 grams
- Mounting Position: Any



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.19	1.40
C	2.10	2.50
D	0.89	1.05
E	0.45	0.61
G	1.78	2.05
H	2.65	3.05
J	0.013	0.15
K	0.89	1.10
L	0.45	0.61
M	0.076	0.178
All Dimensions in mm		

Marking Code (Note 2)			
Type	Marking	Type	Marking
BC846A	1A, K1Q	BC847C	1G, K1M
BC846B	1B, K1R	BC848A	1J, K1J, K1E, K1Q
BC847A	1E, K1E, K1Q	BC848B	1K, K1K, K1F, K1R
BC847B	1F, K1F, K1R	BC848C	1L, K1L, K1M

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB0}$	80 50 30	V
Collector-Emitter Voltage	$V_{CE0}$	65 45 30	V
Emitter-Base Voltage	$V_{EB0}$	6.0 5.0	V
Collector Current	$I_C$	100	mA
Peak Collector Current	$I_{CM}$	200	mA
Peak Emitter Current	$I_{EM}$	200	mA
Power Dissipation at $T_S = 50^\circ\text{C}$ (Note 1)	$P_d$	310	mW
Operating and Storage Temperature Range	$T_j, T_{STG}$	-65 to +150	$^\circ\text{C}$

- Notes: 1. Package mounted on ceramic substrate 0.7mm x 2.5cm<sup>2</sup> area.  
2. Current gain subgroup "C" is not available for BC846.

**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Collector-Base Breakdown Voltage (Note 3)	BC846 BC847 BC848 $V_{(BR)CBO}$	80 50 30	— — —	— — —	V	$I_C = 10\mu\text{A}, I_B = 0$	
Collector-Emitter Breakdown Voltage (Note 3)	BC846 BC847 BC848 $V_{(BR)CEO}$	65 45 30	— — —	— — —	V	$I_C = 10\text{mA}, I_B = 0$	
Emitter-Base Breakdown Voltage (Note 3)	BC846, BC847 BC848 $V_{(BR)EBO}$	6 5	—	—	V	$I_E = 1\mu\text{A}, I_C = 0$	
H-Parameters							
Small Signal Current Gain	Current Gain Group A B C $h_{fe}$	— — —	220 330 600	— — —	— — —	$V_{CE} = 5.0\text{V}, I_C = 2.0\text{mA}, f = 1.0\text{kHz}$	
Input Impedance	Current Gain Group A B C $h_{ie}$	— — —	2.7 4.5 8.7	— — —	$k\Omega$ $k\Omega$ $k\Omega$		
Output Admittance	Current Gain Group A B C $h_{oe}$	— — —	18 30 60	— — —	$\mu\text{S}$ $\mu\text{S}$ $\mu\text{S}$		
Reverse Voltage Transfer Ratio	A B C $h_{re}$	— — —	$1.5 \times 10^{-4}$ $2 \times 10^{-4}$ $3 \times 10^{-4}$	— — —	— — —		
DC Current Gain	Current Gain Group A B C $h_{FE}$	110 200 420	180 290 520	220 450 800	—		$V_{CE} = 5.0\text{V}, I_C = 2.0\text{mA}$
Thermal Resistance, Junction to Substrate Backside	$R_{\theta S}$	—	—	320	$^\circ\text{C/W}$		Note 1
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	—	—	400	$^\circ\text{C/W}$		Note 1
Collector-Emitter Saturation Voltage (Note 3)	$V_{CE(SAT)}$	—	90 200	250 600	mV	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$ $I_C = 100\text{mA}, I_B = 5.0\text{mA}$	
Base-Emitter Saturation Voltage (Note 3)	$V_{BE(SAT)}$	—	700 900	—	mV	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$ $I_C = 100\text{mA}, I_B = 5.0\text{mA}$	
Base-Emitter Voltage (Note 3)	$V_{BE(ON)}$	580 —	660 —	700 770	mV	$V_{CE} = 5.0\text{V}, I_C = 2.0\text{mA}$ $V_{CE} = 5.0\text{V}, I_C = 10\text{mA}$	
Collector-Cutoff Current (Note 3)	BC846 BC847 BC848 $I_{CES}$ $I_{CBO}$	— — — — —	— — — — —	15 15 15 15 5.0	nA nA nA nA $\mu\text{A}$	$V_{CE} = 80\text{V}$ $V_{CE} = 50\text{V}$ $V_{CE} = 30\text{V}$ $V_{CB} = 40\text{V}$ $V_{CB} = 30\text{V}, T_A = 150^\circ\text{C}$	
Gain Bandwidth Product	$f_T$	100	300	—	MHz	$V_{CE} = 5.0\text{V}, I_C = 10\text{mA}, f = 100\text{MHz}$	
Collector-Base Capacitance	$C_{CBO}$	—	3.0	—	pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}$	
Noise Figure	NF	—	2	10	dB	$V_{CE} = 5\text{V}, I_C = 200\mu\text{A}, R_S = 2.0k\Omega, f = 1.0\text{kHz}, \Delta f = 200\text{Hz}$	

- Notes:
1. Package mounted on ceramic substrate 0.7mm x 2.5cm<sup>2</sup> area.
  2. Current gain subgroup "C" is not available for BC846.
  3. Short duration pulse test to minimize self-heating effect.