



Micro Commercial Components
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BC846A THRU BC848C

NPN Small Signal Transistor 310mW

Features

- Ideally Suited for Automatic Insertion
- 150°C Junction Temperature
- For Switching and AF Amplifier Applications

Mechanical Data

- Case: SOT-23, Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Weight: 0.008 grams (approx.)

Marking Code (Note 2)

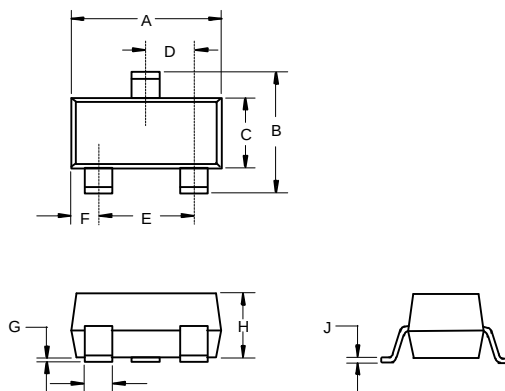
Type	Marking	Type	Marking
BC846A	1A	BC847C	1G
BC846B	1B	BC848A	1J
BC847A	1E	BC848B	1K
BC847B	1F	BC848C	1L

Maximum Ratings @ 25°C Unless Otherwise Specified

Charateristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
		50	
		30	
Collector-Emitter Voltage	V_{CEO}	65	V
		45	
		30	
Emitter-Base Voltage	V_{EBO}	6.0	V
		5.0	
Collector Current	I_C	100	mA
Peak Collector Current	I_{CM}	200	mA
Peak Emitter Current	I_{EM}	200	mA
Power Dissipation@ $T_s=50^\circ\text{C}$ (Note1)	P_d	310	mW
Operating & Storage Temperature	T_j, T_{STG}	-55~150	°C

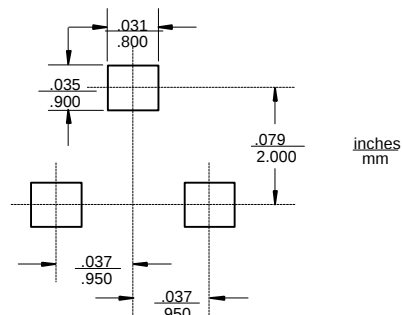
- Note:**
1. Package mounted on ceramic substrate
0.7mm X 2.5cm² area.
 2. Current gain subgroup "C" is not available
for BC846.

SOT-23



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.098	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

Suggested Solder Pad Layout



BC846A thru BC848C



Electrical Characteristics @ T_A = 25°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	$I_C = 10\mu A, I_B = 0$
Collector-Emitter Breakdown Voltage (Note 3)	BC846 BC847 BC848	$V_{(BR)CEO}$	65 45 30	— — —	— — —	V	$I_C = 10mA, I_B = 0$
Emitter-Base Breakdown Voltage (Note 3)	BC846 BC847 BC848	$V_{(BR)EBO}$	6 5	—	—	V	$I_E = 1\mu A, I_C = 0$
H-Parameters							
Small Signal Current Gain	Current Gain Group A	h_{fe}	—	220	—	—	$V_{CE} = 5.0V, I_C = 2.0mA,$ $f = 1.0kHz$
	B	h_{fe}	—	330	—	—	
	C	h_{fe}	—	600	—	—	
Input Impedance	Current Gain Group A	h_{ie}	—	2.7	—	$k\Omega$	
	B	h_{ie}	—	4.5	—	$k\Omega$	
	C	h_{ie}	—	8.7	—	$k\Omega$	
Output Admittance	Current Gain Group A	h_{oe}	—	18	—	μS	
	B	h_{oe}	—	30	—	μS	
	C	h_{oe}	—	60	—	μS	
Reverse Voltage Transfer Ratio	A	h_{re}	—	1.5×10^{-4}	—	—	
Current Gain Group	B	h_{re}	—	2×10^{-4}	—	—	
	C	h_{re}	—	3×10^{-4}	—	—	
DC Current Gain	Current Gain Group A B (Note 3) C	—	110 200 420	180 290 520	220 450 800	—	$V_{CE} = 5.0V, I_C = 2.0mA$
Thermal Resistance, Junction to Substrate Backside		$R_{\theta S}$	—	—	320	$^{\circ}C/W$	Note 1
Thermal Resistance, Junction to Ambient Air		$R_{\theta JA}$	—	—	400	$^{\circ}C/W$	Note 1
Collector-Emitter Saturation Voltage (Note 3)		$V_{CE(SAT)}$	—	90 200	250 600	mV	$I_C = 10mA, I_B = 0.5mA$ $I_C = 100mA, I_B = 5.0mA$
Base-Emitter Saturation Voltage (Note 3)		$V_{BE(SAT)}$	—	700 900	—	mV	$I_C = 10mA, I_B = 0.5mA$ $I_C = 100mA, I_B = 5.0mA$
Base-Emitter Voltage (Note 3)		$V_{BE(ON)}$	580 —	660 —	700 770	mV	$V_{CE} = 5.0V, I_C = 2.0mA$ $V_{CE} = 5.0V, I_C = 10mA$
Collector-Cutoff Current (Note 3)	BC846 BC847 BC848	I_{CES} I_{CES} I_{CES} I_{CBO} I_{CBO}	— — — — —	— — — — —	15 15 15 15 5.0	nA nA nA nA μA	$V_{CE} = 80V$ $V_{CE} = 50V$ $V_{CE} = 30V$ $V_{CB} = 40V$ $V_{CB} = 30V, T_A = 150^{\circ}C$
Gain Bandwidth Product		f_T	100	300	—	MHz	$V_{CE} = 5.0V, I_C = 10mA,$ $f = 100MHz$
Collector-Base Capacitance		C_{CBO}	—	3.0	—	pF	$V_{CB} = 10V, f = 1.0MHz$
Noise Figure		NF	—	2	10	dB	$V_{CE} = 5V, I_C = 200\mu A,$ $R_S = 2.0k\Omega,$ $f = 1.0kHz, \Delta f = 200Hz$

- Notes:
1. Package mounted on ceramic substrate 0.7mm x 2.5cm² area.
 2. Current gain subgroup "C" is not available for BC846.
 3. Short duration pulse test to minimize self-heating effect.