



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	BC846 BC847 BC848	V_{CBO}	V	
				80
				50
Collector-Emitter Voltage	BC846 BC847 BC848	V_{CEO}	V	
				65
				45
Emitter-Base Voltage	BC846,BC847 BC848	V_{EBO}	V	
				6.0
				5.0
Collector Current	I_C	100	mA	
Peak Collector Current	I_{CM}	200	mA	
Peak Emitter Current	I_{EM}	200	mA	
Power Dissipation @ $T_s=50^\circ\text{C}$ (Note 1)	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 = 10μA, 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 = 1μA, 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	kΩ	
	B	h _{ie}	—	4.5	kΩ	
	C	h _{ie}	—	8.7	kΩ	
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}	—	1.5x10 ⁻⁴	—	
Current Gain Group	B	h _{re}	—	2x10 ⁻⁴	—	
	C	h _{re}	—	3x10 ⁻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 _{θS}	—	—	320	°C/W	Note 1
Thermal Resistance, Junction to Ambient Air	R _{θJA}	—	—	400	°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°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 = 200μA, R _S = 2.0kΩ, f = 1.0kHz, Δf = 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.