



Micro Commercial Components  
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# BC856A THRU BC858C

## PNP 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
BC856A	3A	BC857C	3G
BC856B	3B	BC858A	3J
BC857A	3E	BC858B	3K
BC857B	3F	BC858C	3L

### Maximum Ratings @ 25°C Unless Otherwise Specified

Charateristic	Symbol	Value	Unit
Collector-Base Voltage	BC856	-80	V
	BC857	-50	
	BC858	-30	
Collector-Emitter Voltage	BC856	-65	V
	BC857	-45	
	BC858	-30	
Emitter-Base Voltage	$V_{EBO}$	-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 @ $T_s=50^\circ\text{C}$ (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 2.5cm<sup>2</sup> area.
  2. Current gain subgroup "C" is not available for BC856

### 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

inches  
mm

# BC856A thru BC858C



## Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 3)	BC856 BC857 BC858	V <sub>(BR)CBO</sub>	-80 -50 -30	— — —	— — —	V	I <sub>C</sub> = 10μA, I <sub>B</sub> = 0
Collector-Emitter Breakdown Voltage (Note 3)	BC856 BC857 BC858	V <sub>(BR)CEO</sub>	-65 -45 -30	— — —	— — —	V	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage (Note 3)		V <sub>(BR)EBO</sub>	-5	—	—	V	I <sub>E</sub> = 1μA, I <sub>C</sub> = 0
H-Parameters							
Small Signal Current Gain	Current Gain Group A B C	h <sub>fe</sub> h <sub>fe</sub> h <sub>fe</sub>	— — —	200 330 600	— — —	— — —	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA, f = 1.0kHz
Input Impedance	Current Gain Group A B C	h <sub>ie</sub> h <sub>ie</sub> h <sub>ie</sub>	— — —	2.7 4.5 8.7	— — —	kΩ kΩ kΩ	
Output Admittance	Current Gain Group A B C	h <sub>oe</sub> h <sub>oe</sub> h <sub>oe</sub>	— — —	18 30 60	— — —	μS μS μS	
Reverse Voltage Transfer Ratio	Current Gain Group A B C	h <sub>re</sub> h <sub>re</sub> h <sub>re</sub>	— — —	1.5x10 <sup>-4</sup> 2x10 <sup>-4</sup> 3x10 <sup>-4</sup>	— — —	— — —	
DC Current Gain (Note 3)	Current Gain Group A B C	h <sub>FE</sub>	125 220 420	180 290 520	250 475 800	—	
Thermal Resistance, Junction to Substrate Backside		R <sub>θJSB</sub>	—	—	320	°C/W	
Thermal Resistance, Junction to Ambient		R <sub>θJA</sub>	—	—	400	°C/W	Note 1
Collector-Emitter Saturation Voltage (Note 3)		V <sub>CE(SAT)</sub>	—	-75 -250	-300 -650	mV	I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA I <sub>C</sub> = -100mA, I <sub>B</sub> = -5.0mA
Base-Emitter Saturation Voltage (Note 3)		V <sub>BE(SAT)</sub>	—	-700 -850	—	mV	I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA I <sub>C</sub> = -100mA, I <sub>B</sub> = -5.0mA
Base-Emitter Voltage (Note 3)		V <sub>BE(ON)</sub>	-600 —	-650 —	-750 -820	mV	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -10mA
Collector-Cutoff Current (Note 3)	BC856 BC857 BC858	I <sub>CES</sub> I <sub>CES</sub> I <sub>CES</sub> I <sub>CBO</sub> I <sub>CBO</sub>	— — — — —	— — — — —	-15 -15 -15 -15 -4.0	nA nA nA nA μA	V <sub>CE</sub> = -80V V <sub>CE</sub> = -50V V <sub>CE</sub> = -30V V <sub>CB</sub> = -30V V <sub>CB</sub> = -30V, T <sub>A</sub> = 150°C
Gain Bandwidth Product		f <sub>T</sub>	100	200	—	MHz	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -10mA, f = 100MHz
Collector-Base Capacitance		C <sub>CBO</sub>	—	3	—	pF	V <sub>CB</sub> = -10V, f = 1.0MHz
Noise Figure		NF	—	2	10	dB	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = 200μA, R <sub>S</sub> = 2kΩ, f = 1kHz, Δf = 200Hz

- 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 BC856.
  3. Short duration pulse test to minimize self-heating effect.