BC856A - BC858C

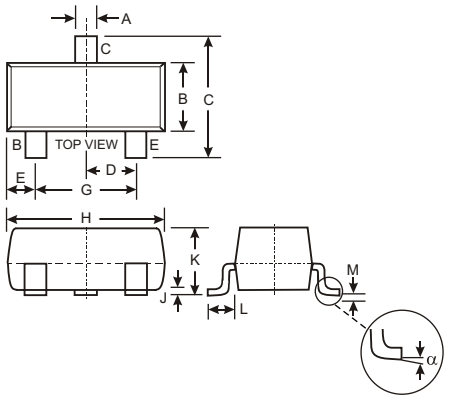
PNP SURFACE MOUNT SMALL SIGNAL TRANSISTOR

Features

- Ideally Suited for Automatic Insertion
- Complementary NPN Types Available (BC846-BC848)
- For Switching and AF Amplifier Applications

Mechanical Data

- Case: SOT-23, Molded Plastic
- Case material - UL Flammability Rating Classification 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Pin Connections: See Diagram
- Marking Codes (See Table Below & Diagram on Page 3)
- Ordering & Date Code Information: See Page 3
- Approx. Weight: 0.008 grams



SOT-23		
Dim	**Min**	**Max**
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.85	0.80
α	0°	8°
All Dimensions in mm		

Marking Code (Note 2)			
Type	**Marking**	**Type**	**Marking**
BC856A	3A, K3A	BC857C	3G, K3G
BC856B	3B, K3B	BC858A	3J, K3J, K3A, K3V
BC857A	3E, K3V, K3A	BC858B	3K, K3K, K3B, K3W
BC857B	3F, K3W, K3B	BC858C	3L, K3L, K3G

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Collector-Base Voltage	BC856 BC857 BC858	V_{CBO}	-80 -50 -30	V
Collector-Emitter Voltage	BC856 BC857 BC858	V_{CEO}	-65 -45 -30	V
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 (Note 1)		P_d	300	mW
Thermal Resistance, Junction to Ambient (Note 1)		$R_{\theta JA}$	417	°C/W
Operating and Storage Temperature Range		T_j, T_{STG}	-65 to +150	°C

Notes: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
2. Current gain subgroup “C” is not available for BC856.

Electrical Characteristics @ T_A =25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 3)	BC856	$V_{(BR)CBO}$	-80	—	—	V	I_C = 10μA, I_B = 0
	BC857		-50	—	—		
	BC858		-30	—	—		
Collector-Emitter Breakdown Voltage (Note 3)	BC856	$V_{(BR)CEO}$	-65	—	—	V	I_C = 10mA, I_B = 0
	BC857		-45	—	—		
	BC858		-30	—	—		
Emitter-Base Breakdown Voltage (Note 3)		$V_{(BR)EBO}$	-5	—	—	V	I_E = 1μA, I_C = 0
H-Parameters							
Small Signal Current Gain	Current Gain Group A	h_{fe}	—	200	—	—	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	Current Gain Group A	h_{re}	—	$1.5x10^{-4}$	—	—	
	B	h_{re}	—	$2x10^{-4}$	—	—	
	C	h_{re}	—	$3x10^{-4}$	—	—	
DC Current Gain (Note 3)	Current Gain Group A	h_{FE}	125	180	250	—	V_{CE} = -5.0V, I_C = -2.0mA
	B		220	290	475		
	C		420	520	800		
Collector-Emitter Saturation Voltage (Note 3)		$V_{CE(SAT)}$	—	-75	-300	mV	I_C = -10mA, I_B = -0.5mA
				-250	-650		I_C = -100mA, I_B = -5.0mA
Base-Emitter Saturation Voltage (Note 3)		$V_{BE(SAT)}$	—	-700	—	mV	I_C = -10mA, I_B = -0.5mA
			—	-850			I_C = -100mA, I_B = -5.0mA
Base-Emitter Voltage (Note 3)		$V_{BE(ON)}$	-600	-650	-750	mV	V_{CE} = -5.0V, I_C = -2.0mA
			—	—	-820		V_{CE} = -5.0V, I_C = -10mA
Collector-Cutoff Current (Note 3)	BC856	I_{CES}	—	—	-15	nA	V_{CE} = -80V
	BC857	I_{CES}	—	—	-15	nA	V_{CE} = -50V
	BC858	I_{CES}	—	—	-15	nA	V_{CE} = -30V
		I_{CBO}	—	—	-15	nA	V_{CB} = -30V
		I_{CBO}	—	—	-4.0	μA	V_{CB} = -30V, T_A = 150°C
Gain Bandwidth Product		f_T	100	200	—	MHz	V_{CE} = -5.0V, I_C = -10mA, f = 100MHz
Collector-Base Capacitance		C_{CBO}	—	3	—	pF	V_{CB} = -10V, f = 1.0MHz
Noise Figure		NF	—	2	10	dB	V_{CE} = -5.0V, I_C = 200μA, R_S = 2kΩ, f = 1kHz, Δf = 200Hz

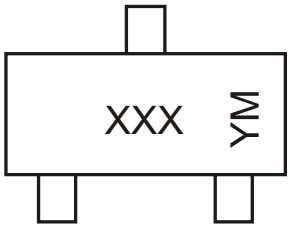
Notes: 3. Short duration pulse test used to minimize self-heating effect.

Ordering Information (Note 4)

Device	Packaging	Shipping
BC85xx-7*	SOT-23	3000/Tape & Reel

Notes: 4. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.
*xx = device type, e.g. BC856A-7.

Marking Information



XXX = Product Type Marking Code (See Page 1), e.g. K3A = BC856A
YM = Date Code Marking
Y = Year ex: N = 2002
M = Month ex: 9 = September

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004
Code	J	K	L	M	N	P	R

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

littlediode
COMPONENTS FOR ALL

Littlediode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

LittleDiode.com

Looking forward to providing you with the best possible service.