BC856A - BC858C

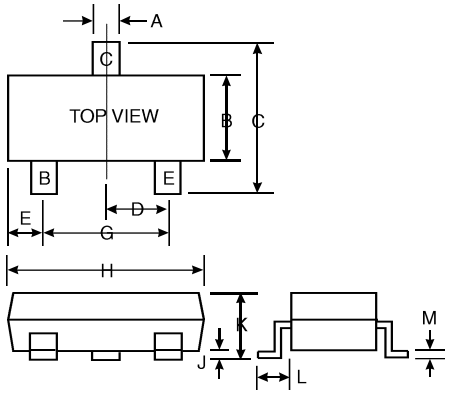
PNP SURFACE MOUNT SMALL SIGNAL TRANSISTOR

Features

- Epitaxial Die Construction
- Ideally Suited for Automatic Insertion
- 310 mW Power Dissipation
- Complementary NPN Types Available (BC846-BC848)
- 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			
Type	Marking	Type	Marking
BC856A	3A	BC857C	3G
BC856B	3B	BC858A	3J
BC857A	3E	BC858B	3K
BC857B	3F	BC858C	3L

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 at T_{SB} = 50°C (Note 1)		P_d	310	mW
Operating and Storage Temperature Range		T_j, T_{STG}	-65 to +150	°C

Notes: 1. Device mounted on ceramic substrate 0.7mm x 2.5cm² area

Electrical Characteristics @ T_A =25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
h-Parameters (Note 2)							
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}	1.6	2.7	4.5	k	
	B	h_{ie}	3.2	4.5	8.5	k	
	C	h_{ie}	6.0	8.7	15	k	
Output Admittance	Current Gain Group A	h_{oe}	—	18	30	µS	
	B	h_{oe}	—	30	60	µS	
	C	h_{oe}	—	60	110	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 2)	Current Gain Group A	h_{FE}	—	90	—	—	V_{CE} = -5.0V, I_C = -10µA
	B		—	150	—		
	C		—	270	—		
	Current Gain Group A		110	180	220		V_{CE} = -5.0V, I_C = -2.0mA
	B		200	290	450		
	C		420	520	800		
Thermal Resistance, Junction to Substrate Backside		R_{JSB}	—	—	320	K/W	Note 1
Thermal Resistance, Junction to Ambient		R_{JA}	—	—	400	K/W	Note 1
Collector-Emitter Saturation Voltage		$-V_{CE(SAT)}$	—	90	300	mV	I_C = -10mA, I_B = -0.5mA
				250	650		I_C = -100mA, I_B = -5.0mA
Base-Emitter Saturation Voltage		$-V_{BE(SAT)}$	—	700	—	mV	I_C = -10mA, I_B = -0.5mA
			—	900			I_C = -100mA, I_B = -5.0mA
Base-Emitter Voltage		-VBE	600	660	750	mV	V_{CE} = -5.0V, I_C = -2.0mA
			—	—	800		V_{CE} =-5.0V, I_C = -10mA
Collector-Emitter Cutoff Current	BC856	$-I_{CES}$	—	0.2	15	nA	V_{CE} = -80V
	BC857	$-I_{CES}$		0.2	15	nA	V_{CE} = -50V
	BC858	$-I_{CES}$		0.2	15	nA	V_{CE} = -30V
	BC856	$-I_{CES}$		—	4.0	µA	V_{CE} = -80V, T_j = 125°C
	BC857	$-I_{CES}$		—	4.0	µA	V_{CE} = -50V, T_j = 125°C
	BC858	$-I_{CES}$		—	4.0	µA	V_{CE} = -30V, T_j = 125°C
		$-I_{CBO}$		—	15	nA	V_{CB} = -30V
		$-I_{CBO}$		—	5.0	µA	V_{CB} = -30V, T_j = 150°C
Gain Bandwidth Product		f_T	—	150	—	MHz	V_{CE} = -5.0V, I_C = -10mA, f = 100MHz
Collector-Base Capacitance		C_{CBO}	—	—	6.0	pF	V_{CB} = -10V, f = 1.0MHz
Noise Figure		NF	—	2.0	10	dB	V_{CE} = -5.0V, I_C = 200µA, R_G = 2ko, f = 1kHz, f = 200Hz

Notes: 1. Device mounted on ceramic substrate 0.7mm x 2.5cm² area.
2. Current gain subgroup “C” is not available for BC856.

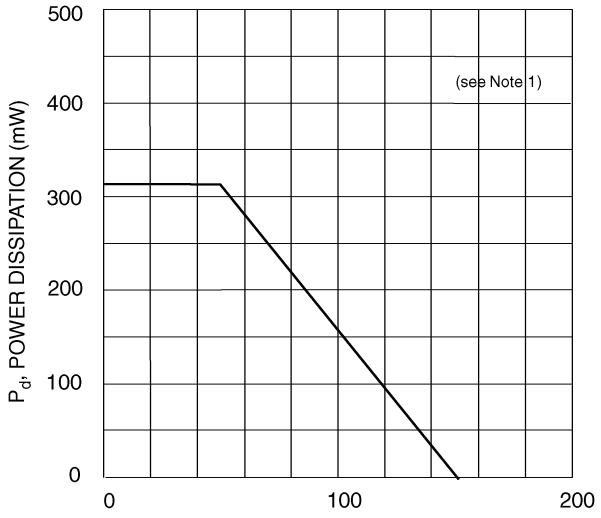


Fig. 1, Power Derating Curve

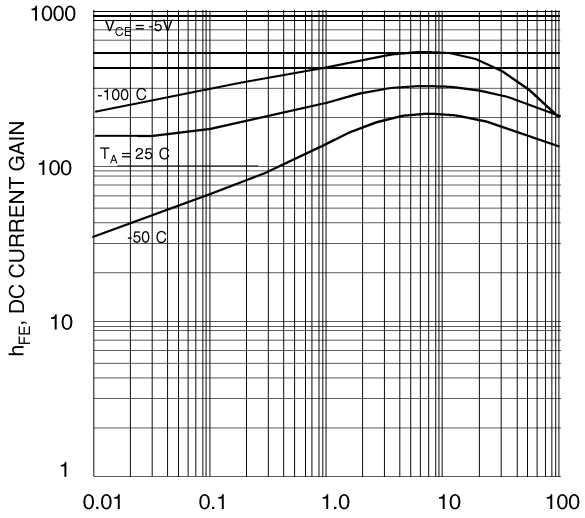


Fig. 2, DC Current Gain vs Collector Current

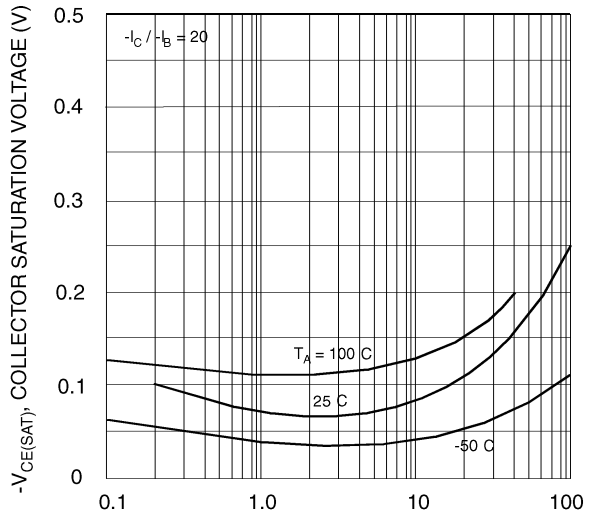


Fig. 3, Collector Saturation Voltage vs Collector Current

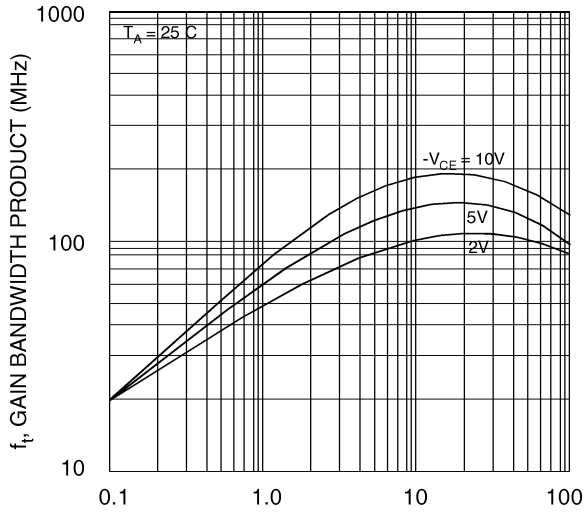


Fig. 4, Gain Bandwidth Product vs Collector Current

Notes: 1. Device mounted on ceramic substrate 0.7mm x 2.5cm² area