

Features

- For Switching and AF Amplifier Applications
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

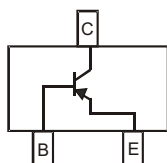
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 320°C/W Junction to Solder-point (Note1)
- Thermal Resistance: 403°C/W Junction to Ambient (Note1)

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-45	V
Emitter-Base Voltage	V_{EBO}	-5	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

Note: 1. Package Mounted 1.0*1.0mm Pad Layout 1oz Copper That is On a Single-sided FR4 PCB.

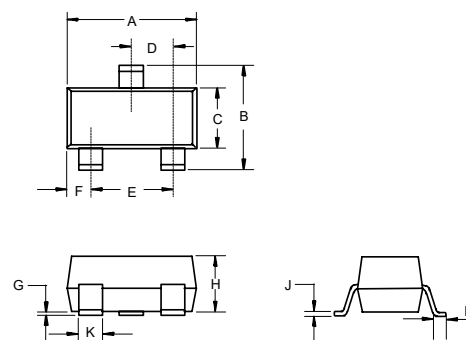
Part Number	BC857A	BC857B	BC857C
Marking	3E	3F	3G

Internal Structure



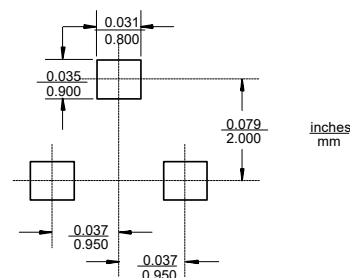
PNP Small Signal Transistor

SOT-23



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.014	0.020	0.35	0.51	
L	0.007	0.020	0.20	0.50	

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

Parameter		Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage ^(Note2)		V _{(BR)CBO}	-50			V	I _C =-10μA, I _E =0
Collector-Emitter Breakdown Voltage ^(Note2)		V _{(BR)CEO}	-45			V	I _C =-10mA, I _B =0
Emitter-Base Breakdown Voltage ^(Note2)		V _{(BR)EBO}	-5			V	I _E =-1μA, I _C =0
Collector-Cutoff Current ^(Note2)		I _{CES}			-15	nA	V _{CE} =-50V
		I _{CBO}			-15	nA	V _{CB} =-30V
					-4	μA	V _{CB} =-30V, T _A =150°C
DC Current Gain ^(Note2)	BC857 A	h _{FE}	125	180	250		V _{CE} =-5Vdc, I _C =-2mA
	BC857 B		220	290	475		
	BC857 C		420	520	800		
Small Signal Current Gain	BC857 A	h _{fe}		200			V _{CE} =-5V I _C =-2mA f=1KHz
	BC857 B			330			
	BC857 C			600			
Input Impedance	BC857 A	h _{ie}		2.7		KΩ	
	BC857 B			4.5			
	BC857 C			8.7			
Output Admittance	BC857 A	h _{oe}		18		μS	
	BC857 B			30			
	BC857 C			60			
Reverse Voltage Transfer Ratio	BC857 A	h _{re}		1.5x10 ⁻⁴			
	BC857 B			2x10 ⁻⁴			
	BC857 C			3x10 ⁻⁴			
Collector-Emitter Saturation Voltage ^(Note2)		V _{CE(sat)}		-75	-300	mV	I _C =-10mA, I _B =-0.5mA
				-250	-650	mV	I _C =-100mA, I _B =-5mA
Base-Emitter Saturation Voltage ^(Note2)		V _{BE(sat)}		-700		mV	I _C =-10mA, I _B =-0.5mA
				-850		mV	I _C =-100mA, I _B =-5mA
Base-Emitter Voltage ^(Note2)		V _{BE}	-600	-650	-750	mV	V _{CE} =-5V, I _C =-2mA
					-820	mV	V _{CE} =-5V, I _C =-10mA
Current Gain-Bandwidth Product		f _T	100	200		MHz	V _{CE} =-5V, I _C =-10mA, f=100MHz
Collector-Base Capacitance		C _{CBO}		3		pF	V _{CB} =-10V, f=1MHz
Noise Figure		NF		2	10	dB	V _{CE} =-5V, I _C =-200μA R _S =2KΩ, f=1KHz, Δf=200Hz

Note: 2. Short Duration Pulse Test to Minimize Self-heating Effect.

Curve Characteristics

Fig. 1 - Static Characteristics

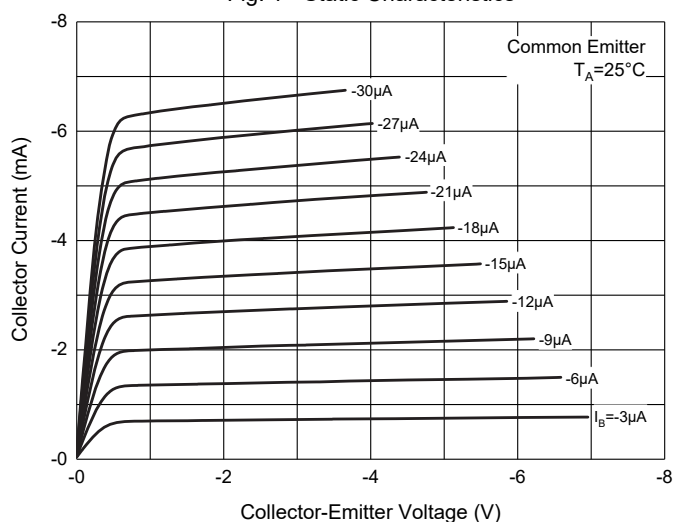


Fig. 2 - DC Current Gain Characteristics

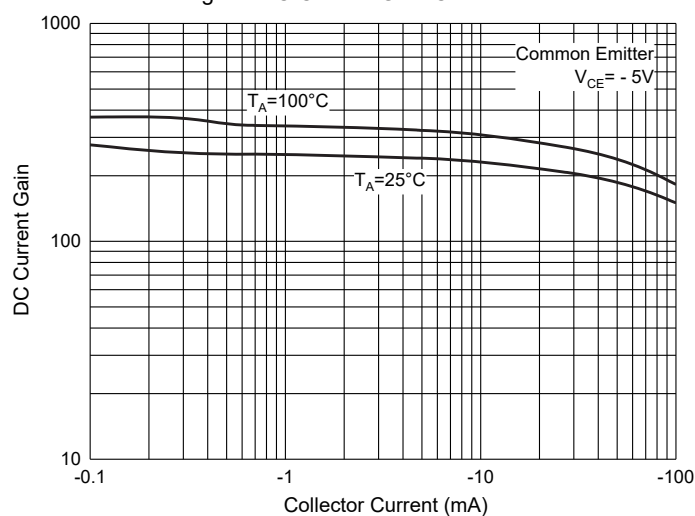


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

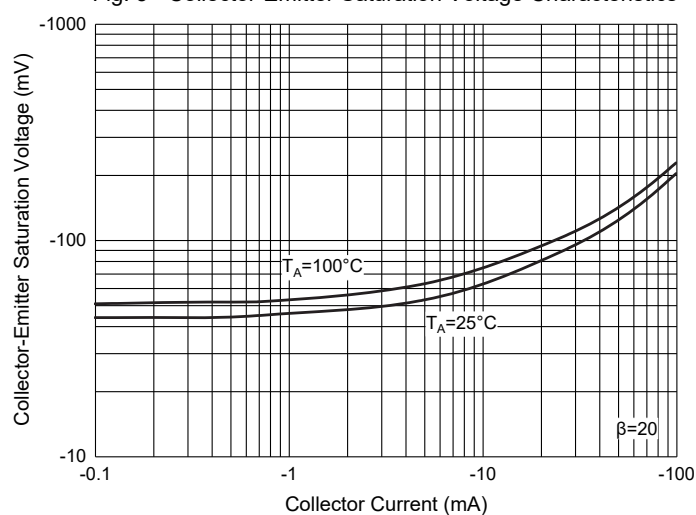


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

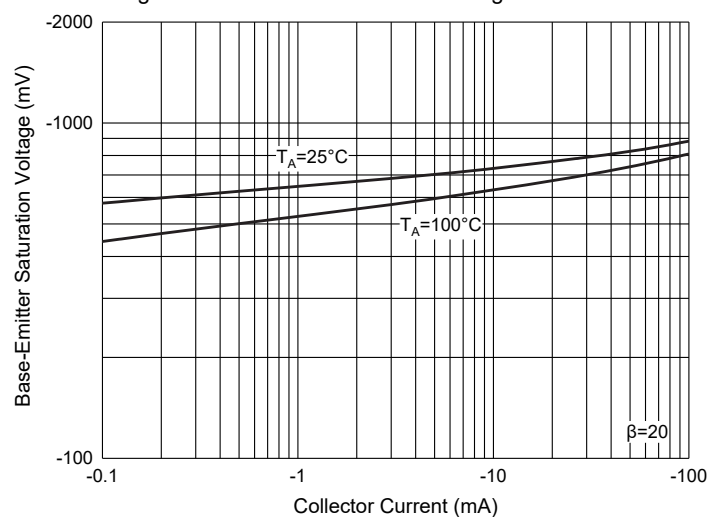


Fig. 5 - Base-Emitter Voltage Characteristics

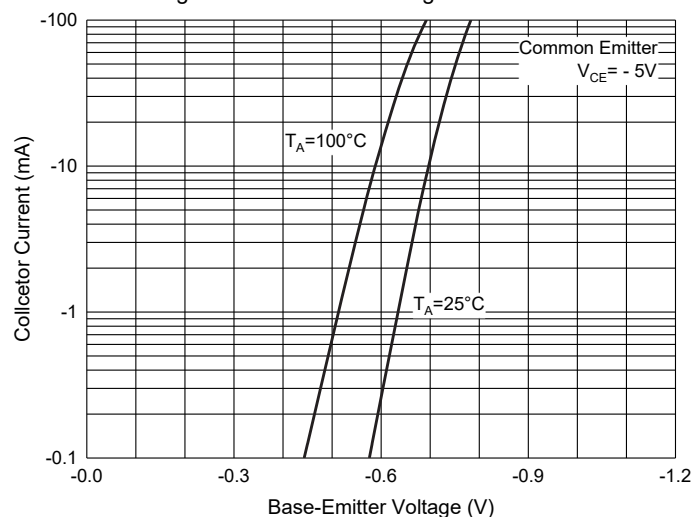
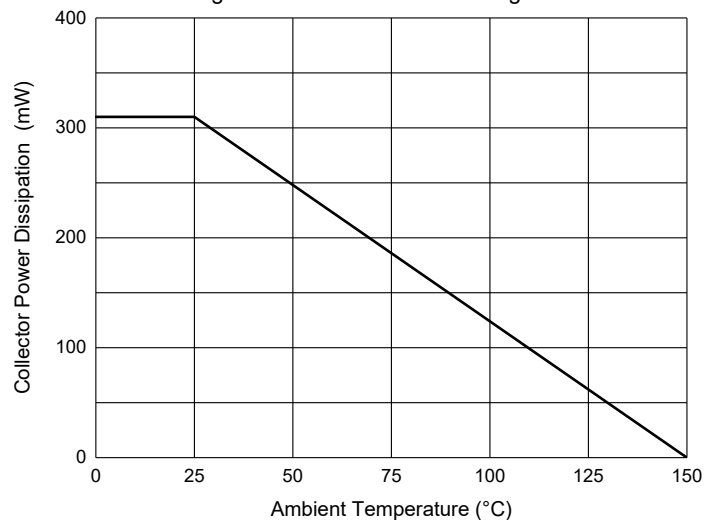


Fig. 6 - Collector Power Derating Curve



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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