

Features

- Halogen Free. "Green" Device (Note 1)
- AEC-Q101 Qualified
- For Switching and AF Amplifier Applications
- 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 (Note2)
- Thermal Resistance: 403°C/W Junction to Ambient (Note2)

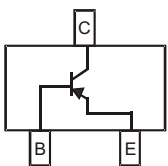
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-45	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-100	mA
Peak Collector Current	I_{CM}	-200	mA
Peak Emitter Current	I_{EM}	-200	mA
Power Dissipation $T_S=50^\circ\text{C}$ (Note2)	P_D	310	mW

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

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

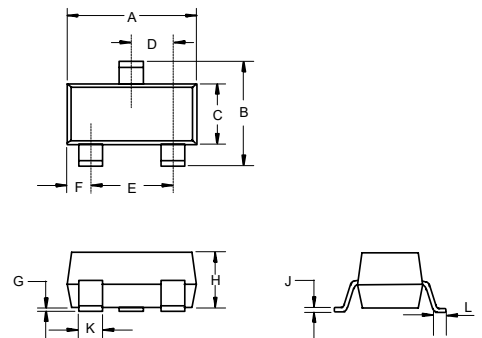
Part Number	BC857AHE3	BC857BHE3	BC857CHE3
Marking	3E	3F	3G

Internal Structure



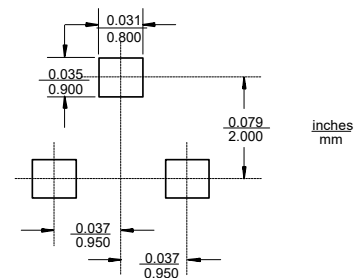
PNP Small Signal Transistor

SOT-23



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 ^(Note3)		$V_{(BR)CBO}$	-50			V	$I_C=-10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage ^(Note3)		$V_{(BR)CEO}$	-45			V	$I_C=-10mA, I_B=0$
Emitter-Base Breakdown Voltage ^(Note3)		$V_{(BR)EBO}$	-5			V	$I_E=-1\mu A, I_C=0$
Collector-Cutoff Current ^(Note3)		I_{CES}			-15	nA	$V_{CE}=-50V$
		I_{CBO}			-15	nA	$V_{CB}=-30V$
					-4	μA	$V_{CB}=-30V, T_A=150^\circ C$
DC Current Gain ^(Note3)	BC857AHE3	h_{FE}	125	180	250		$V_{CE}=-5Vdc, I_C=-2mA$
	BC857BHE3		220	290	475		
	BC857CHE3		420	520	800		
Small Signal Current Gain	BC857AHE3	h_{fe}		200			$V_{CE}=-5V$ $I_C=-2mA$ $f=1KHz$
	BC857BHE3			330			
	BC857CHE3			600			
Input Impedance	BC857AHE3	h_{ie}		2.7		K Ω	
	BC857BHE3			4.5			
	BC857CHE3			8.7			
Output Admittance	BC857AHE3	h_{oe}		18		μS	
	BC857BHE3			30			
	BC857CHE3			60			
Reverse Voltage Transfer Ratio	BC857AHE3	h_{re}		1.5×10^{-4}			
	BC857BHE3			2×10^{-4}			
	BC857CHE3			3×10^{-4}			
Collector-Emitter Saturation Voltage ^(Note3)		$V_{CE(sat)}$		-75	-300	mV	$I_C=-10mA, I_B=-0.5mA$
					-250	-650	mV
Base-Emitter Saturation Voltage ^(Note3)		$V_{BE(sat)}$		-700		mV	$I_C=-10mA, I_B=-0.5mA$
					-850		mV
Base-Emitter Voltage ^(Note3)		V_{BE}	-600	-650	-750	mV	$V_{CE}=-5V, I_C=-2mA$
					-820		mV
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	$V_{CE}=-5V, I_C=-200\mu A$ $R_S=2K\Omega, f=1KHz, \Delta f=200Hz$

Note: 3. Short Duration Pulse Test to Minimize Self-heating Effect.

Curve Characteristics

Fig. 1 - Static Characteristics

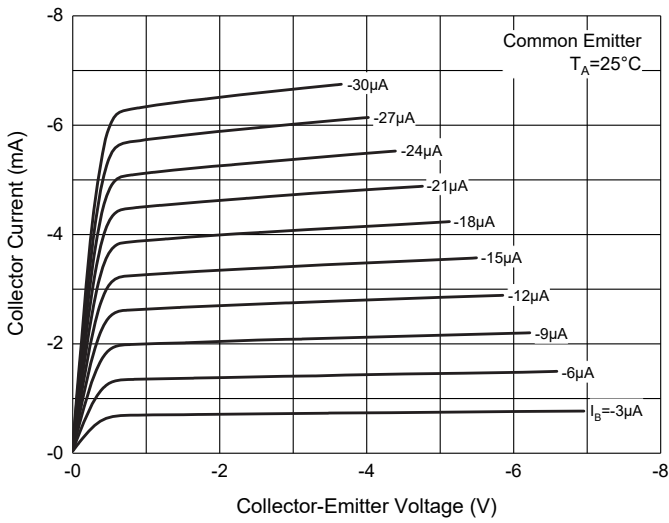


Fig. 2 - DC Current Gain Characteristics

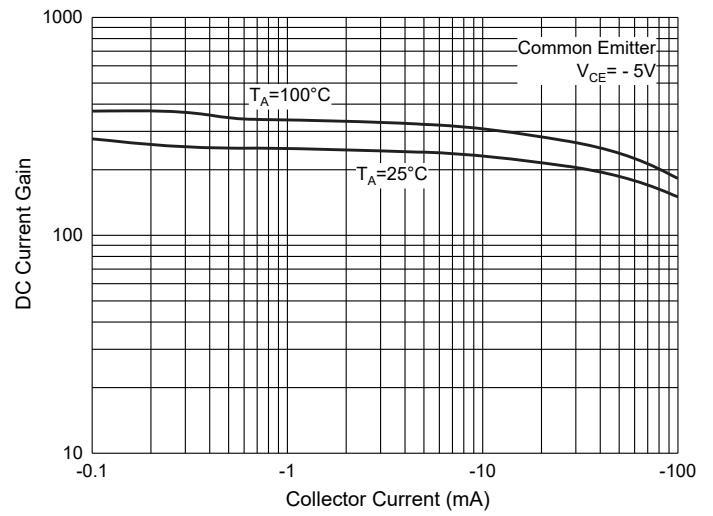


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

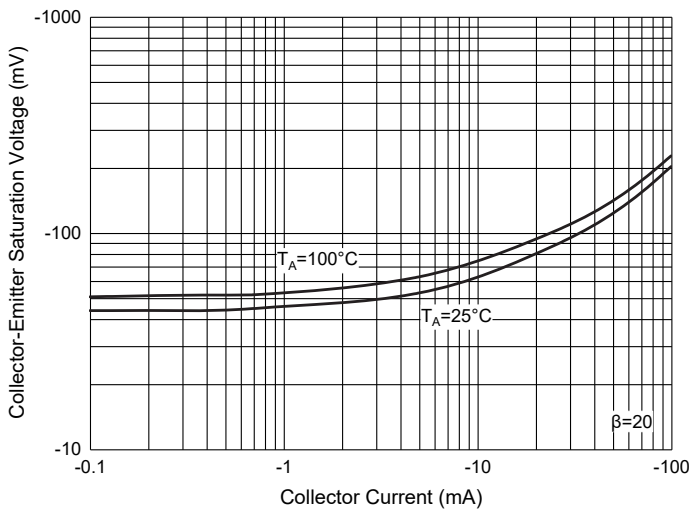


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

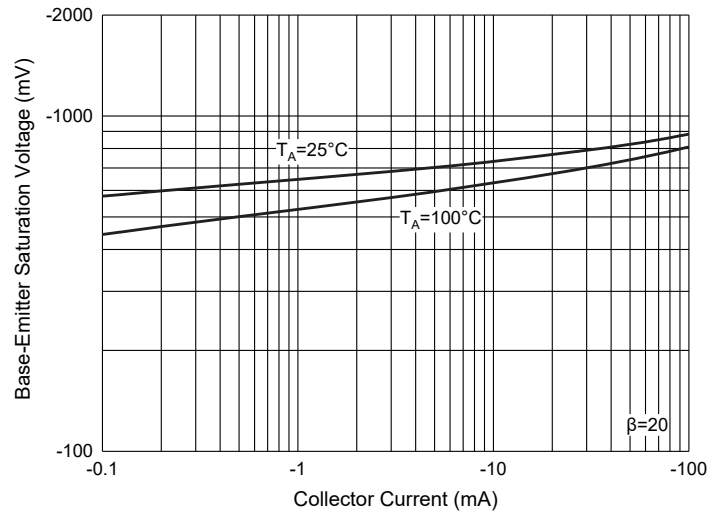


Fig. 5 - Base-Emitter Voltage Characteristics

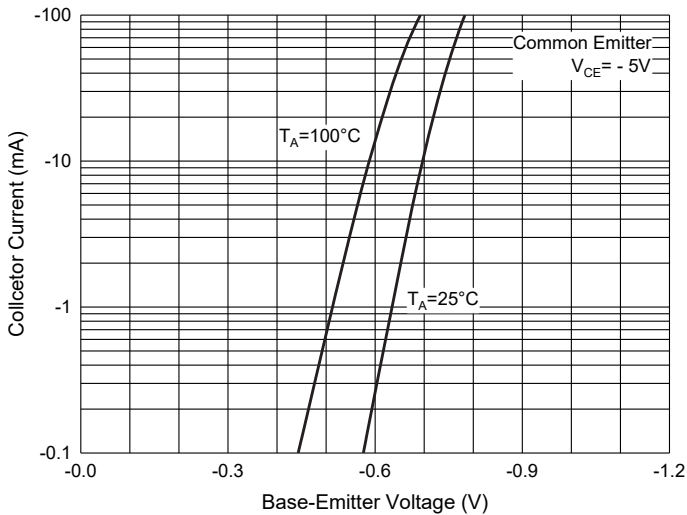
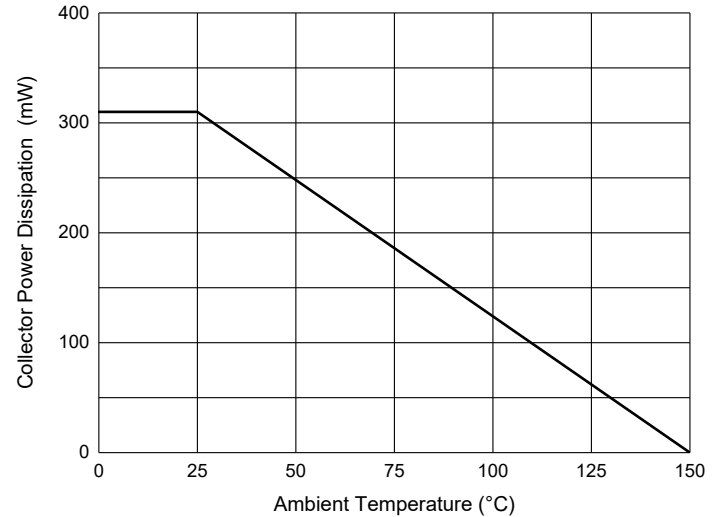


Fig. 6 - Collector Power Derating Curve



Ordering Information

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

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