

**Features**

- Halogen Free. "Green" Device (Note 1)
- AEC-Q101 Qualified
- 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)

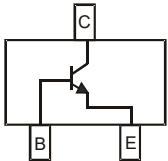
**Maximum Ratings @ 25°C Unless Otherwise Specified**

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Maximum Thermal Resistance: 556°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$		V
BC846AHE3-846BHE3		80	
BC847AHE3-847CHE3		50	
BC848AHE3-848CHE3		30	
Collector-Emitter Voltage	$V_{CEO}$		V
BC846AHE3-846BHE3		65	
BC847AHE3-847CHE3		45	
BC848AHE3-848CHE3		30	
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	100	mA
Collector Power Dissipation	$P_C$	225	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.

**Internal Structure**

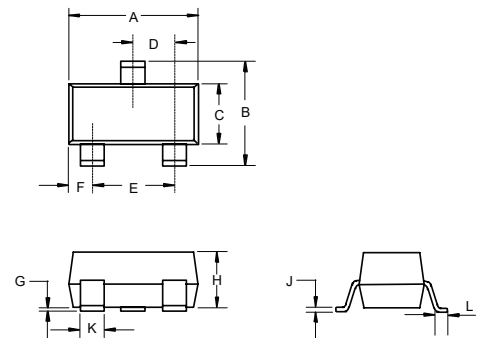


**Marking:**

BC846AHE3:1A; BC846BHE3:1B;  
BC847AHE3:1E; BC847BHE3:1F; BC847CHE3:1G;  
BC848AHE3:1J; BC848BHE3:1K; BC848CHE3:1L;

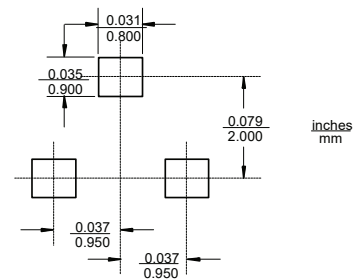
**NPN  
Plastic-Encapsulate  
Transistors**

**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 @  $T_A=25^\circ\text{C}$  Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage BC846AHE3-BC846BHE3 BC847AHE3-BC847CHE3 BC848AHE3-BC848CHE3	$V_{(BR)CBO}$	80 50 30			V	$I_C=10\mu\text{A}, I_E=0$
Collector-Emitter Breakdown Voltage BC846AHE3-BC846BHE3 BC847AHE3-BC847CHE3 BC848AHE3-BC848CHE3	$V_{(BR)CEO}$	65 45 30			V	$I_C=10\text{mA}, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	$I_E=10\mu\text{A}, I_C=0$
Collector Cut-off Current BC846AHE3-BC846BHE3 BC847AHE3-BC847CHE3 BC848AHE3-BC848CHE3	$I_{CBO}$			0.1	$\mu\text{A}$	$V_{CB}=70\text{V}, I_E=0$ $V_{CB}=50\text{V}, I_E=0$ $V_{CB}=30\text{V}, I_E=0$
Emitter Cutoff Current BC846AHE3-BC846BHE3 BC847AHE3-BC847CHE3 BC848AHE3-BC848CHE3	$I_{CEO}$			0.1	$\mu\text{A}$	$V_{CE}=60\text{V}, I_B=0$ $V_{CE}=45\text{V}, I_B=0$ $V_{CE}=30\text{V}, I_B=0$
Emitter Cutoff Current	$I_{EBO}$			0.1	$\mu\text{A}$	$V_{EB}=5\text{V}, I_C=0$
DC Current Gain BC846AHE3-BC848AHE3 BC846BHE3-BC848BHE3 BC847CHE3-BC848CHE3	$h_{FE}$	110 200 420		220 450 800		$V_{CE}=5\text{V}, I_C=2\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.25	V	$I_C=10\text{mA}, I_B=0.5\text{mA}$
				0.5	V	$I_C=100\text{mA}, I_B=5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.7		V	$I_C=10\text{mA}, I_B=0.5\text{mA}$
			0.9	1.1	V	$I_C=100\text{mA}, I_B=5\text{mA}$
Transition Frequency	$f_T$	100			MHz	$V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$
Collector Output Capacitance	$C_{ob}$			4.5	pF	$V_{CB}=10\text{V}, I_E=0, f=0.1\text{MHz}$

**Curve Characteristics**

Fig. 1 - Static Characteristics

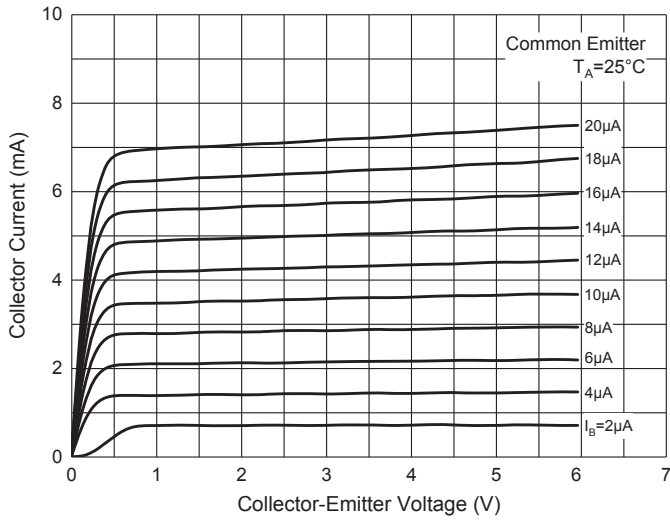


Fig. 2 - DC Current Gain Characteristics

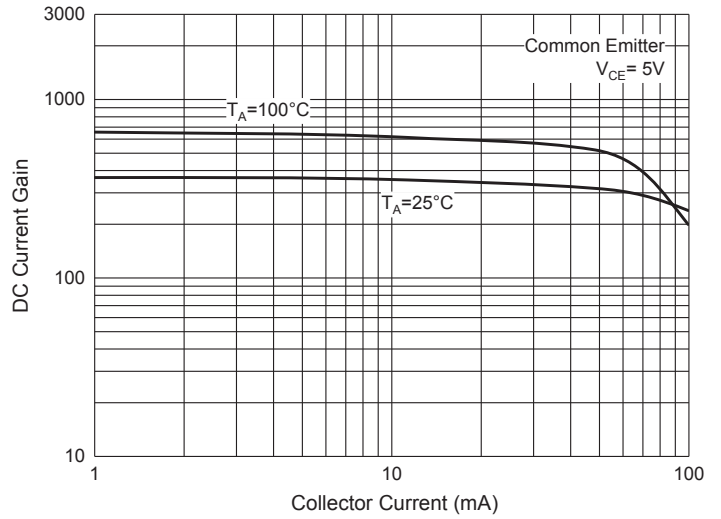


Fig. 3 - Base-Emitter Saturation Voltage Characteristics

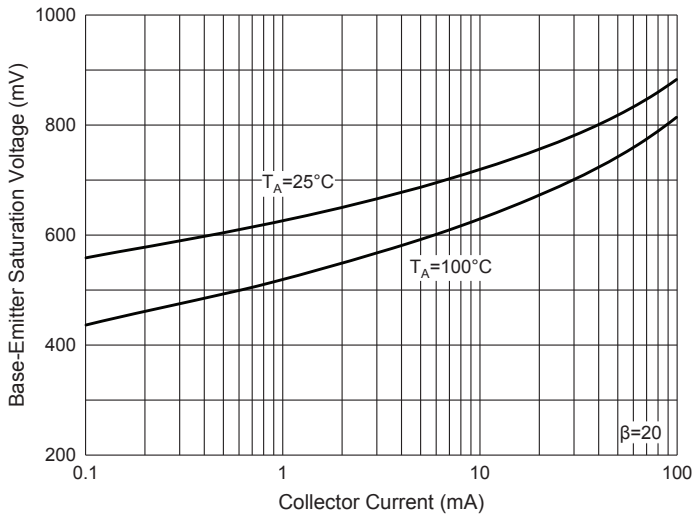


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

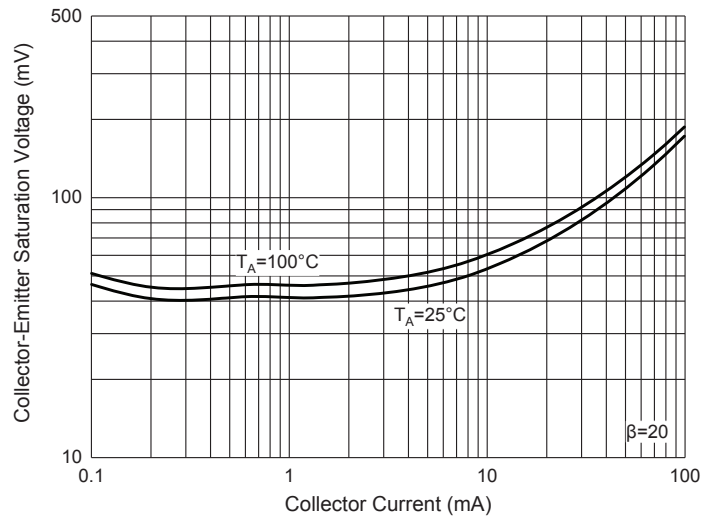


Fig. 5 - Base-Emitter Voltage Characteristics

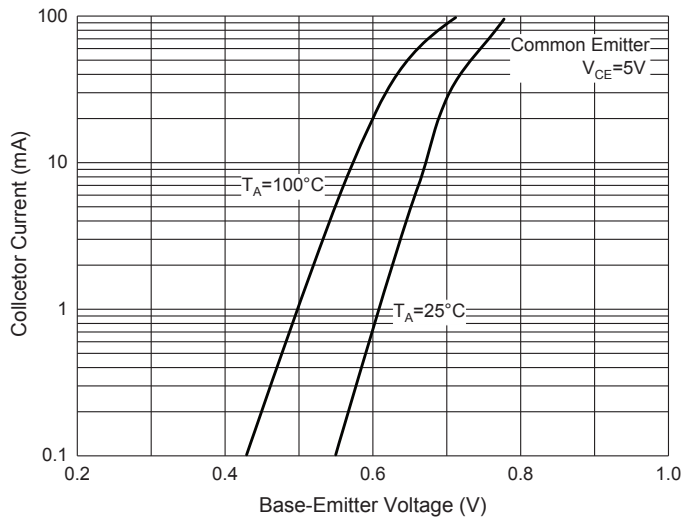


Fig. 6 - Collector Power Derating Curve

