

Features

- Ideally Suited for Automatic Insertion
- Copper Lead Frame with Better Heat Dissipation
- For Switching and AF Amplifier Applications
- Epitaxial Planar Die Construction
- Halogen Free. "Green" Device (Note 1)
- 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

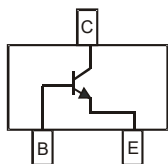
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 250°C/W Junction to Ambient
- Thermal Resistance: 70°C/W Junction to Soldering Point

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	500	mA
Peak Collector Current	I_{CM}	1000	mA
Power Dissipation ^(Note 2)	P_D	500	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.

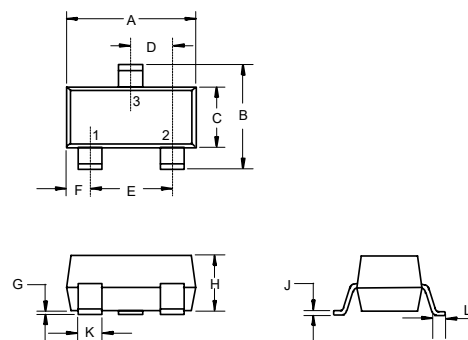
2. Device Mounted on Ceramic Substrate 0.7mm X 2.5cm² area.

Internal Structure



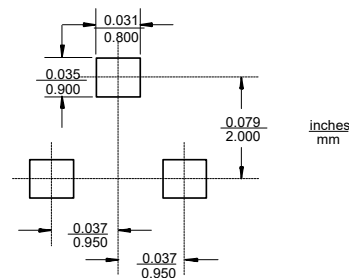
NPN Small Signal Transistor

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	0.012	0.020	0.30	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	$V_{(BR)CBO}$	50			V	$I_C=10\mu\text{A}, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	45			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-Base Cutoff Current	I_{CBO}			0.1	μA	$V_{CB}=45\text{V}, I_E=0$
Emitter-Base Cutoff Current	I_{EBO}			0.1	μA	$V_{EB}=4\text{V}, I_C=0$
DC Current Gain	$h_{FE(1)}$	100		600		$V_{CE}=1\text{V}, I_C=100\text{mA}$
	$h_{FE(2)}$	40				$V_{CE}=1\text{V}, I_C=500\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.7	V	$I_C=500\text{mA}, I_B=50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1.2	V	$I_C=500\text{mA}, I_B=50\text{mA}$
Base-Emitter Voltage	V_{BE}			1.2	V	$V_{CE}=1\text{V}, I_C=300\text{mA}$
Transition Frequency	f_T	100			MHz	$I_C=10\text{mA}, V_{CE}=5\text{V}, f=100\text{MHz}$
Collector Output Capacitance	C_{ob}		10		pF	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$

Classification of $h_{FE(1)}$

Rank	BC817K-16	BC817K-25	BC817K-40
Range	100-250	160-400	250-600
Marking	6A	6B	6C

Curve Characteristics

Fig. 1 - Static Characteristics

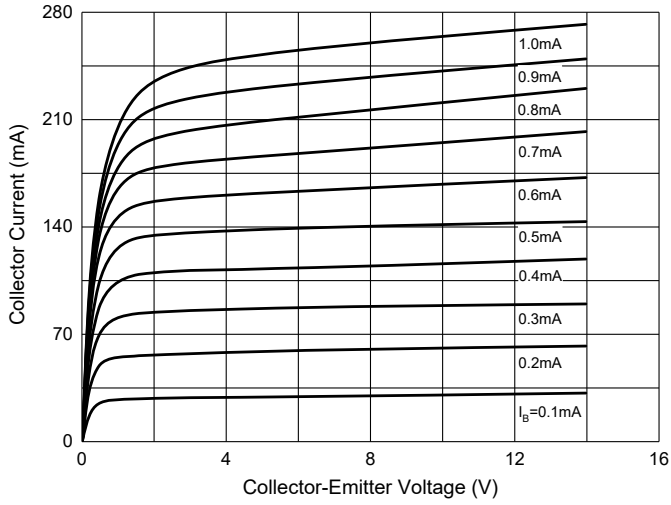


Fig. 2 - DC Current Gain Characteristics

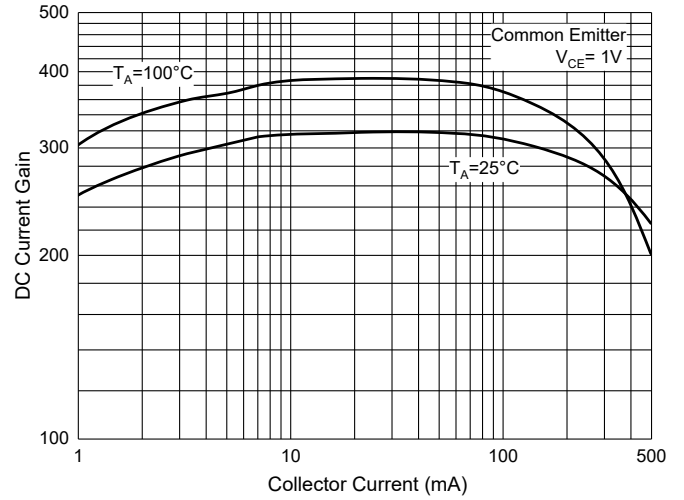


Fig. 3 - Base-Emitter Saturation Voltage Characteristics

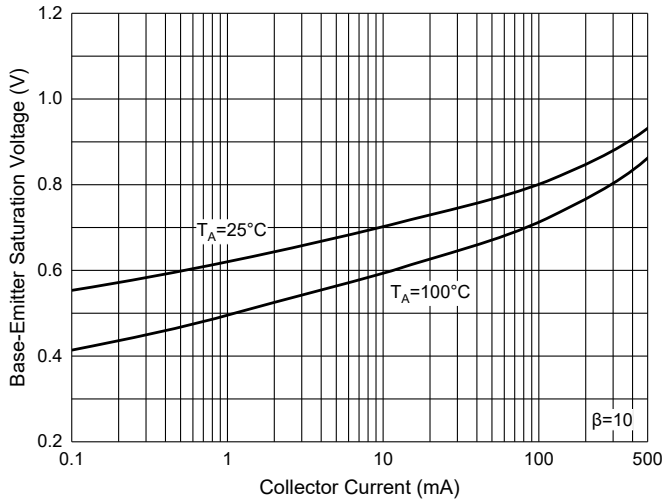


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

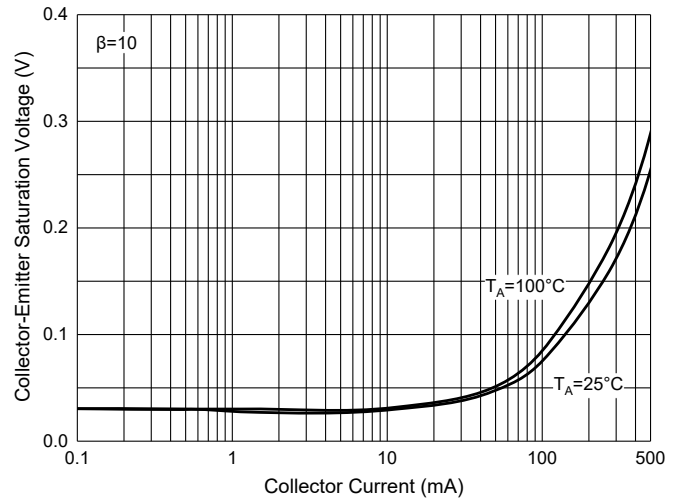


Fig. 5 - Base-Emitter Voltage Characteristics

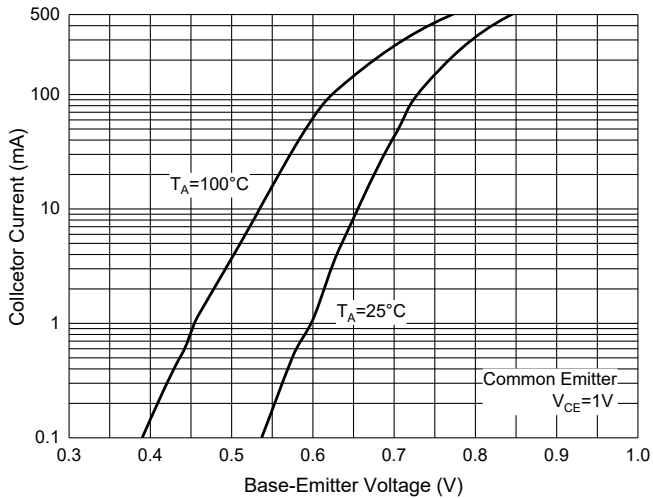
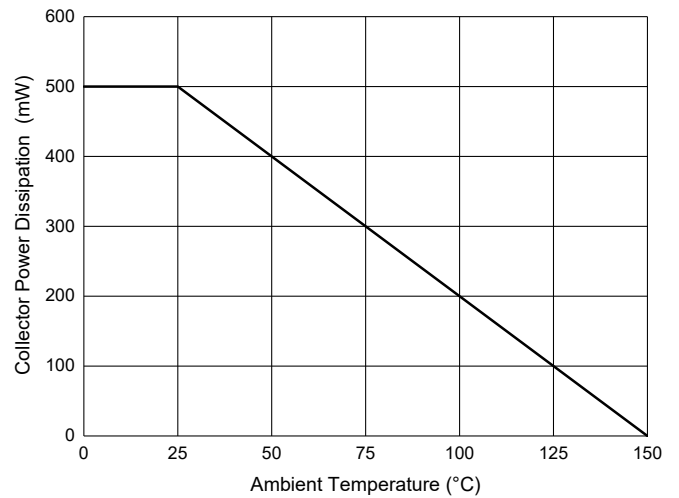


Fig. 6 - Collector Power Derating Curve



Ordering Information

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

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