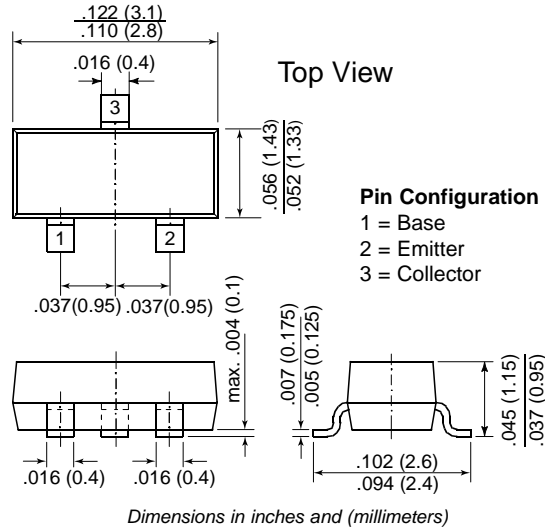
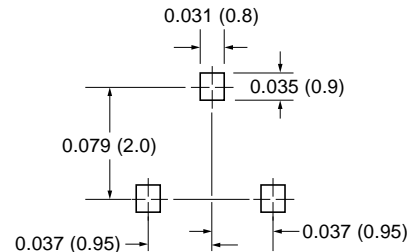




**TO-236AB (SOT-23)**



**Mounting Pad Layout**



Type	Marking
BC817-16	6A
-25	6B
-40	6C
BC818-16	6E
-25	6F
-40	6G

### Mechanical Data

**Case:** SOT-23 Plastic Package

**Weight:** approx. 0.008g

**Packaging Codes/Options:**

E8/10K per 13" reel (8mm tape), 30K/box

E9/3K per 7" reel (8mm tape), 30K/box

### Features

- NPN Silicon Epitaxial Planar Transistors for switching, AF driver and amplifier applications.
- Especially suited for automatic insertion in thick and thin-film circuits.
- These transistors are subdivided into three groups -16, -25, and -40 according to their current gain.
- As complementary types, the PNP transistors BC807 and BC808 are recommended.

### Maximum Ratings and Thermal Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage (base shorted) BC817 BC818	V <sub>CES</sub>	50 30	V
Collector-Emitter Voltage (base open) BC817 BC818	V <sub>CEO</sub>	45 25	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Collector Current	I <sub>C</sub>	800	mA
Peak Collector Current	I <sub>CM</sub>	1000	mA
Peak Base Current	I <sub>BM</sub>	200	mA
Peak Emitter Current	-I <sub>EM</sub>	1000	mA
Power Dissipation at T <sub>SB</sub> = 50 °C	P <sub>tot</sub>	310 <sup>(1)</sup>	mW
Thermal Resistance Junction to Ambient Air	R <sub>θJA</sub>	450 <sup>(1)</sup>	°C/W
Thermal Resistance Junction to Substrate Backside	R <sub>θSB</sub>	320 <sup>(1)</sup>	°C/W
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>S</sub>	-65 to +150	°C

**Note:** (1) Device on fiberglass substrate, see layout on third page.

## Small Signal Transistors (NPN)

## Electrical Characteristics (T<sub>J</sub> = 25°C unless otherwise noted)

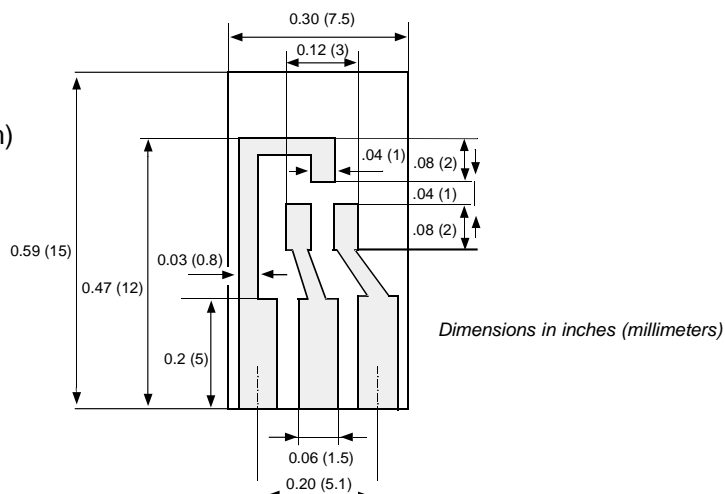
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
DC Current Gain						
Current Gain Group-16	hFE	VCE = 1V, IC = 100mA	100	—	250	—
-25			160	—	400	—
-40			250	—	600	—
	hFE	VCE = 1V, IC = 500mA	40	—	—	—
Collector Saturation Voltage	VCEsat	IC = 500mA, IB = 50mA	—	—	0.7	V
Base Saturation Voltage	VBEsat	IC = 500mA, IB = 50mA	—	—	1.3	V
Base-Emitter Voltage	VBEon	VCE = 1V, IC = 500mA	—	—	1.2	V
Collector-Base Cutoff Current	ICBO	VCB = 20V VCB = 20V, TJ = 150°C	— —	— —	100 5	nA μA
Emitter-Base Cutoff Current	IEBO	VEB = 4V	—	—	100	nA
Gain-Bandwidth Product	fT	VCE = 5V, IC = 10mA f = 50MHz	—	100	—	MHz
Collector-Base Capacitance	CCBO	VCB = 10V, f = 1MHz	—	12	—	pF

**Note:**

(1) Device on fiberglass substrate, see layout below.

### Layout for R<sub>θJA</sub> test

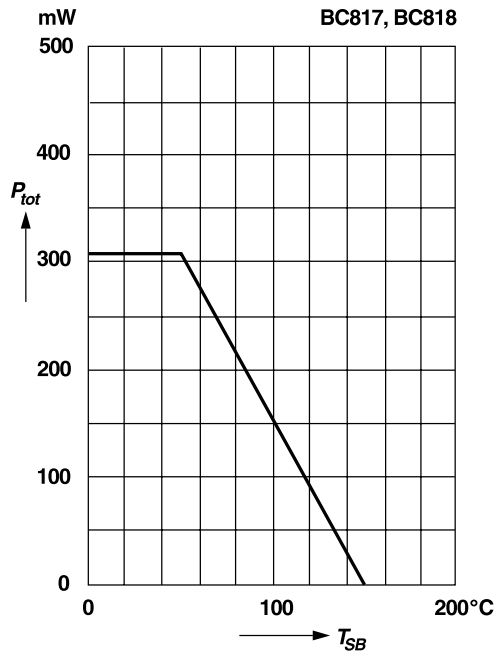
Thickness: Fiberglass 0.059 in. (1.5 mm)  
Copper leads 0.012 in. (0.3 mm)



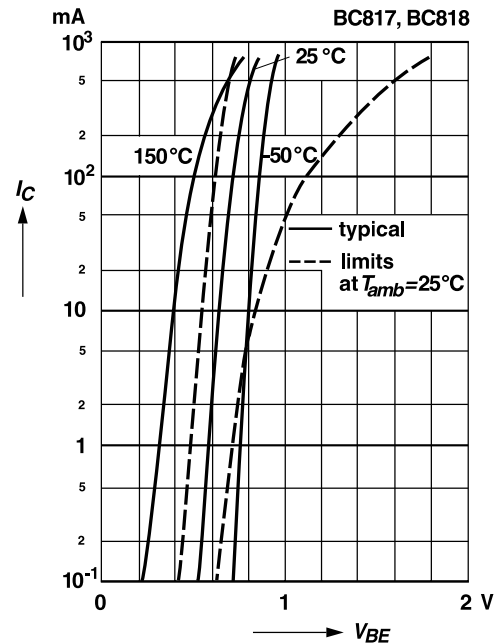
## Small Signal Transistors (NPN)

### Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

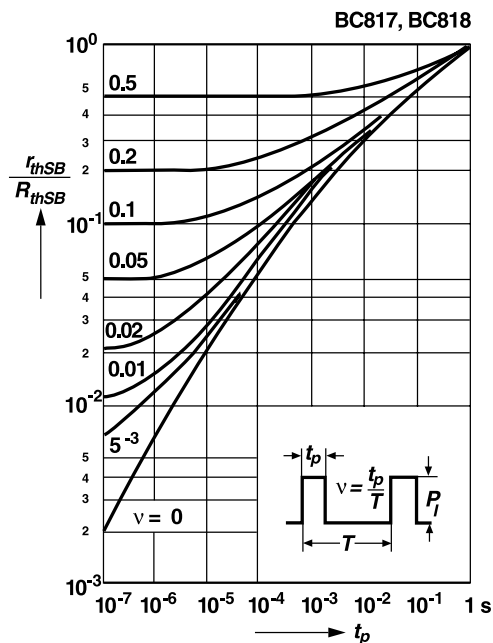
**Admissible power dissipation  
versus temperature of substrate backside**  
Device on fiberglass substrate, see layout



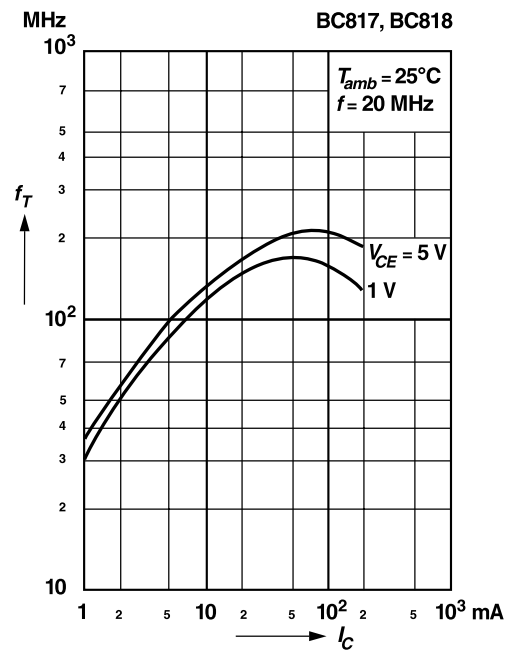
**Collector current  
versus base-emitter voltage**



**Pulse thermal resistance  
versus pulse duration (normalized)**  
Device on fiberglass substrate, see layout



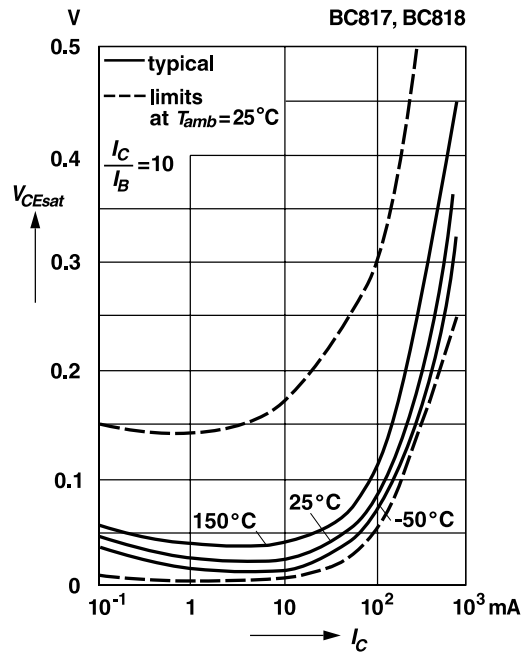
**Gain-bandwidth product  
versus collector current**



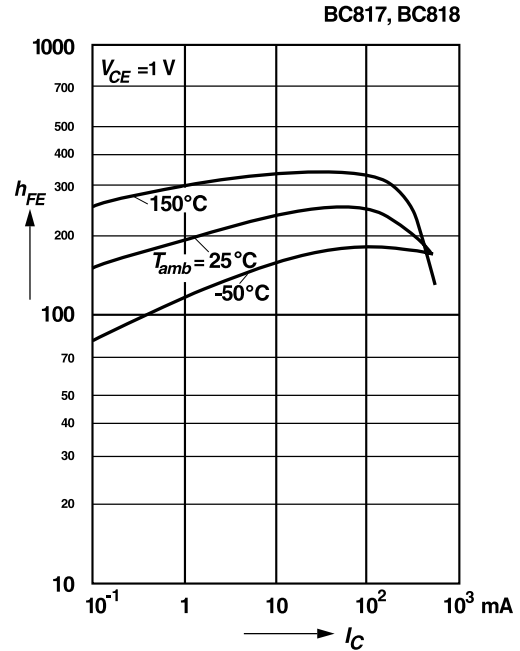
## Small Signal Transistors (NPN)

### Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

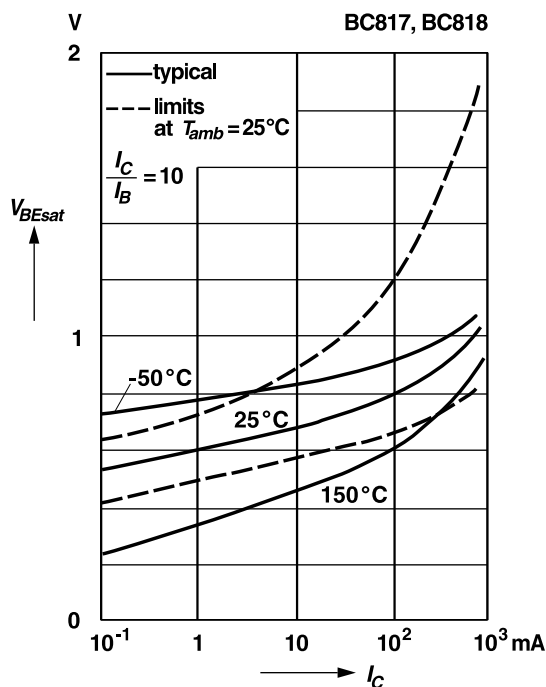
Collector saturation voltage  
versus collector current



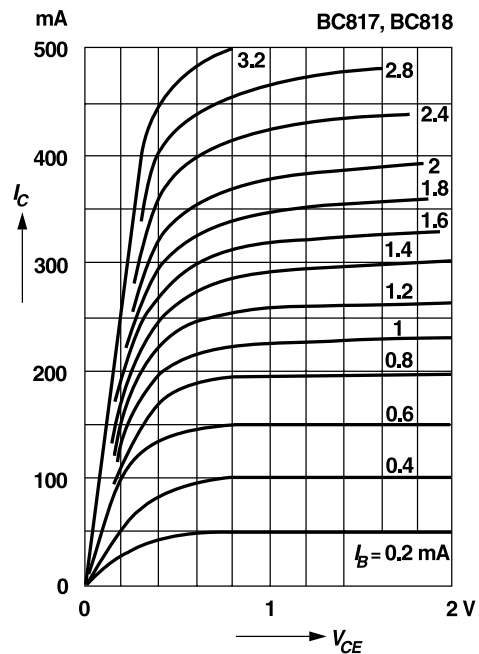
DC current gain  
versus collector current



Base saturation voltage  
versus collector current



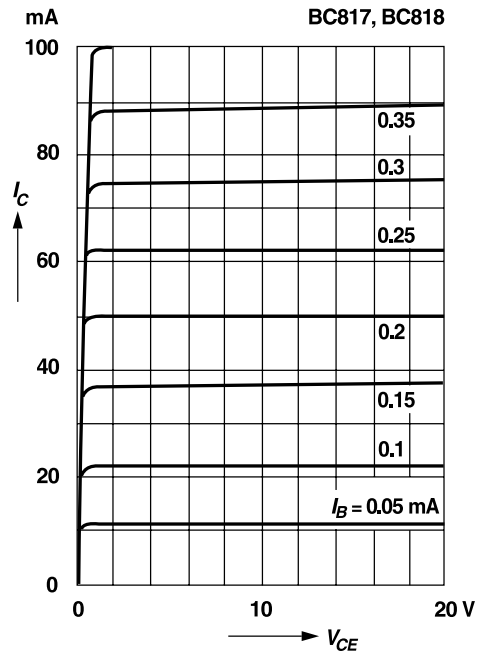
Common emitter  
collector characteristics



## Small Signal Transistors (NPN)

### Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Common emitter  
collector characteristics



Common emitter  
collector characteristics

