



# BC817-16 / -25 / -40

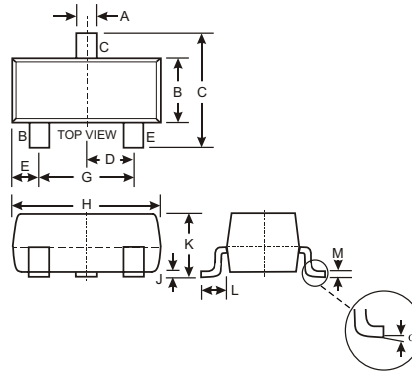
## NPN SURFACE MOUNT SMALL SIGNAL TRANSISTOR

### Features

- Ideally Suited for Automatic Insertion
- Epitaxial Planar Die Construction
- For Switching, AF Driver and Amplifier Applications
- Complementary PNP Types Available (BC807)

### Mechanical Data

- Case: SOT-23, Molded Plastic
- Case material - UL Flammability Rating Classification 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Pin Connections: See Diagram
- Marking (See Page 3): BC817-16 6A, K6A  
BC817-25 6B, K6B  
BC817-40 6C, K6C
- Ordering & Date Code Information: See Page 3
- Approx. Weight: 0.008 grams



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.85	0.80
$\alpha$	0°	8°
All Dimensions in mm		

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	45	V
Emitter-Base Voltage	$V_{EBO}$	5.0	V
Collector Current	$I_C$	800	mA
Peak Collector Current	$I_{CM}$	1000	mA
Peak Emitter Current	$I_{EM}$	1000	mA
Power Dissipation at $T_{SB} = 50^\circ\text{C}$ (Note 1)	$P_d$	310	mW
Thermal Resistance, Junction to Substrate Backside (Note 1)	$R_{\theta SB}$	320	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient Air (Note 1)	$R_{\theta JA}$	403	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_j, T_{STG}$	-65 to +150	$^\circ\text{C}$

### Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic (Note 2)	Symbol	Min	Max	Unit	Test Condition
DC Current Gain	$h_{FE}$	100	250	—	$V_{CE} = 1.0\text{V}, I_C = 100\text{mA}$
		160	400		
		250	600		
		60	—		
Current Gain Group -16		100	—	—	$V_{CE} = 1.0\text{V}, I_C = 300\text{mA}$
Current Gain Group -25		100	—		
Current Gain Group -40		170	—		
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	0.7	V	$I_C = 500\text{mA}, I_B = 50\text{mA}$
Base-Emitter Voltage	$V_{BE}$	—	1.2	V	$V_{CE} = 1.0\text{V}, I_C = 300\text{mA}$
Collector-Emitter Cutoff Current	$I_{CES}$	—	100	nA	$V_{CE} = 45\text{V}$
			5.0	$\mu\text{A}$	$V_{CE} = 25\text{V}, T_j = 150^\circ\text{C}$
Emitter-Base Cutoff Current	$I_{EBO}$	—	100	nA	$V_{EB} = 4.0\text{V}$
Gain Bandwidth Product	$f_T$	100	—	MHz	$V_{CE} = 5.0\text{V}, I_C = 10\text{mA}, f = 50\text{MHz}$
Collector-Base Capacitance	$C_{CBO}$	—	12	pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}$

- Notes: 1. Device mounted on Ceramic Substrate 0.7mm; 2.5cm<sup>2</sup> area.  
2. Short duration pulse test used to minimize self-heating effect.

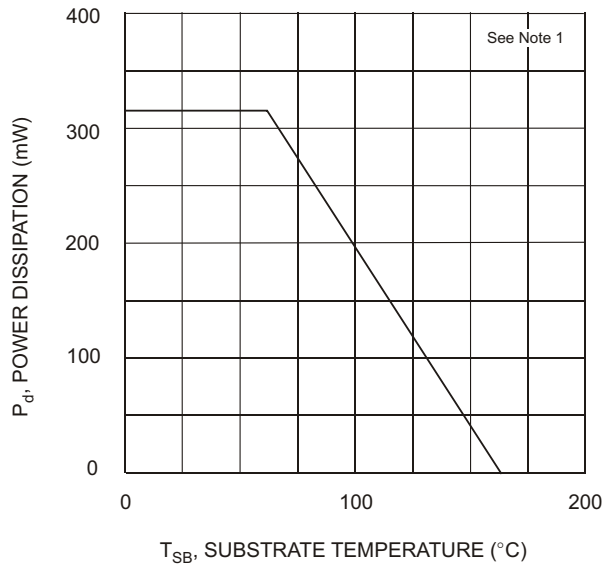


Fig. 1, Power Derating Curve

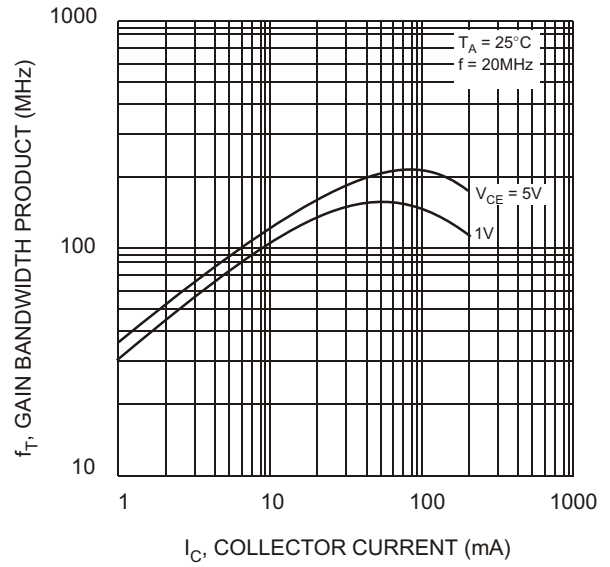


Fig. 2, Gain-Bandwidth Product vs Collector Current

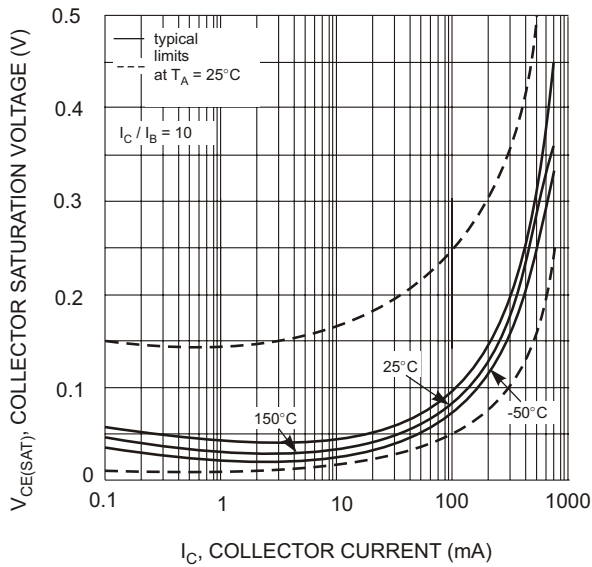


Fig. 3, Collector Sat. Voltage vs Collector Current

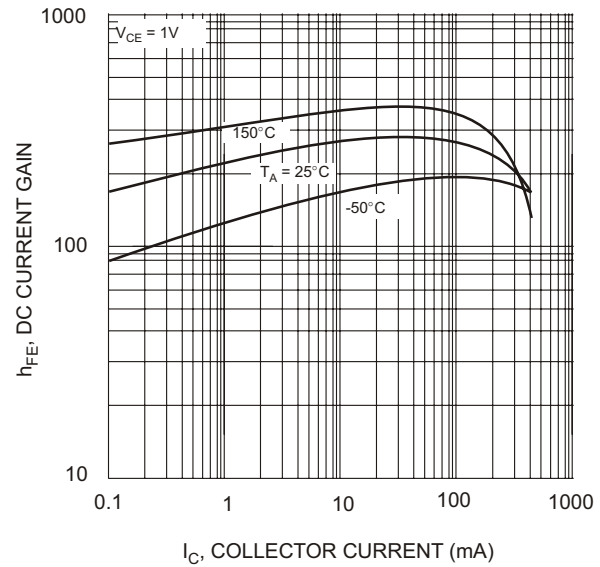


Fig. 4, DC Current Gain vs Collector Current

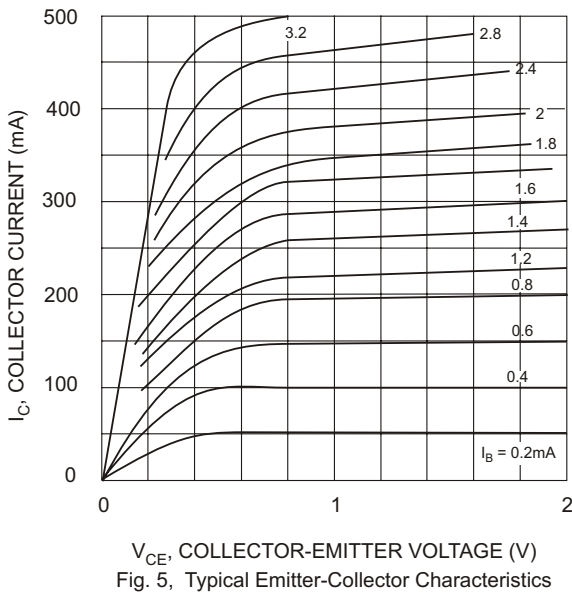


Fig. 5, Typical Emitter-Collector Characteristics

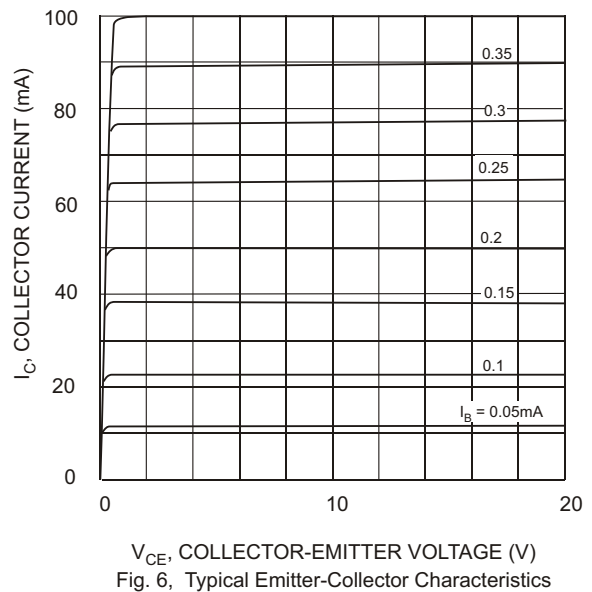


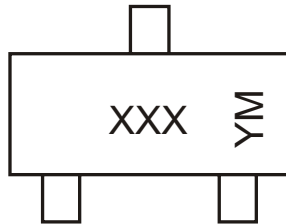
Fig. 6, Typical Emitter-Collector Characteristics

## Ordering Information (Note 3)

Device*	Packaging	Shipping
BC817-xx-7	SOT-23	3000/Tape & Reel

Notes: 3. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.  
\* xx = gain group, e.g. BC817-16-7.

## Marking Information



XXX = Product Type Marking Code (See Page 1), e.g. K6A = BC817-16  
YM = Date Code Marking  
Y = Year ex: N = 2002  
M = Month ex: 9 = September

### Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004
Code	J	K	L	M	N	P	R

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D