BC817-16 / -25 / -40

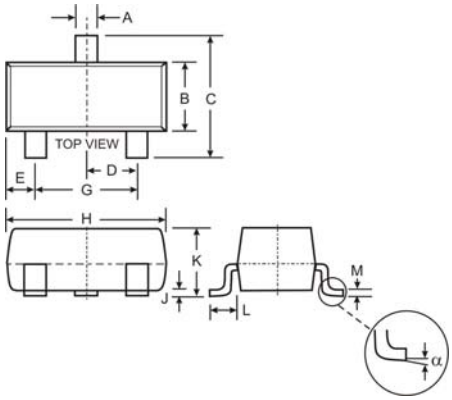
NPN SURFACE MOUNT SMALL SIGNAL TRANSISTOR

Features

- Ideally Suited for Automatic Insertion
- Epitaxial Planar Die Construction
- For Switching, AF Driver and Amplifier Applications
- Complementary PNP Types Available (BC807)
- **Lead Free/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Pin Connections: See Diagram
- Marking (See Page 3): BC817-16 K6A
  BC817-25 K6B
  BC817-40 K6C
- Ordering & Date Code Information: See Page 3
- Weight: 0.008 grams (approximate)



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	0.085	0.180
α	0°	8°
All Dimensions in mm		

Maximum Ratings @T_A = 25°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°C (Note 1)	P_d	310	mW
Thermal Resistance, Junction to Substrate Backside (Note 1)	$R_{\theta SB}$	320	°C/W
Thermal Resistance, Junction to Ambient Air (Note 1)	$R_{\theta JA}$	403	°C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-65 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

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

Notes: 1. Device mounted on Ceramic Substrate 0.7mm; 2.5cm^2 area.
2. Short duration pulse test used to minimize self-heating effect.
3. No purposefully added lead.

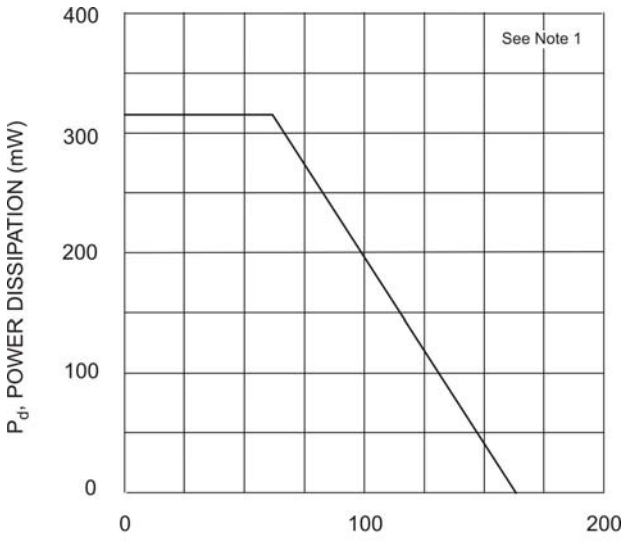


Fig. 1, Power Derating Curve

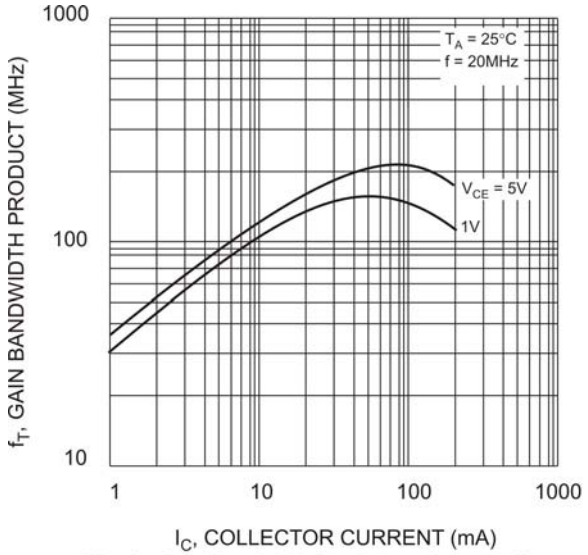


Fig. 2, Gain-Bandwidth Product vs Collector Current

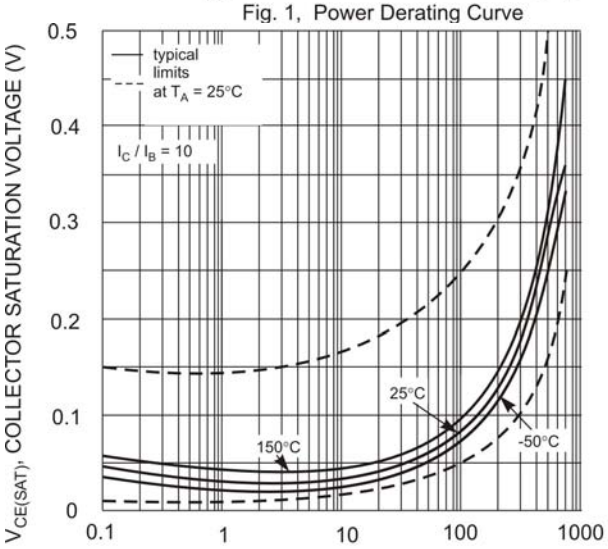


Fig. 3, Collector Sat. Voltage vs Collector Current

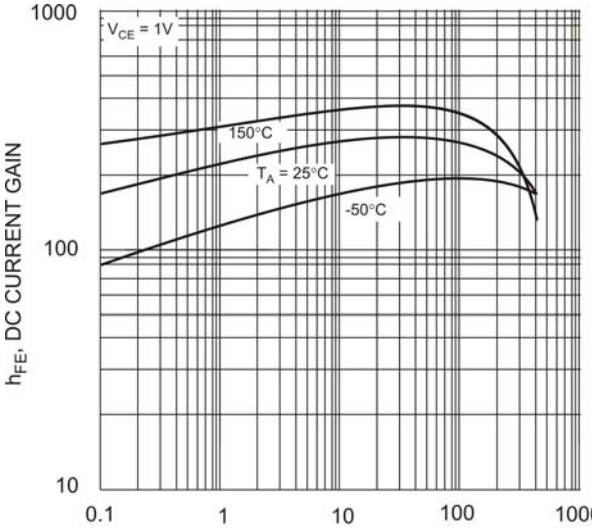


Fig. 4, DC Current Gain vs Collector Current

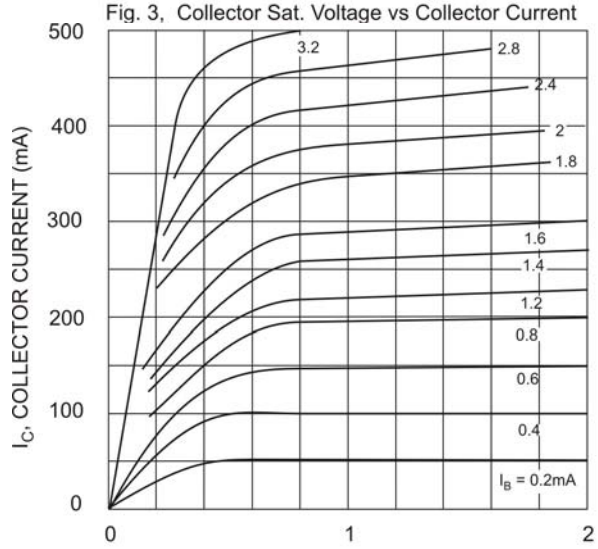


Fig. 5, Typical Emitter-Collector Characteristics

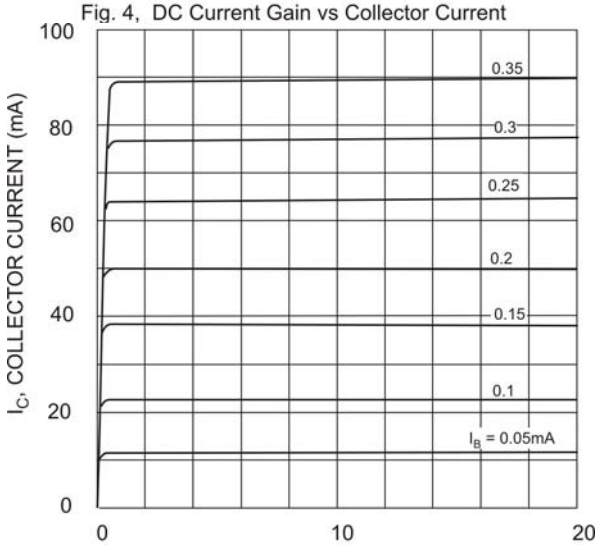


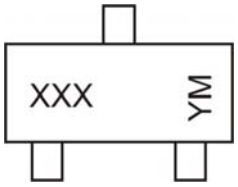
Fig. 6, Typical Emitter-Collector Characteristics

Ordering Information (Note 4)

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

Notes: 4. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf. * xx = gain group, e.g. BC817-16-7-F.

Marking Information



XXX = Product Type Marking Code (See Page 1), e.g.
K6A = BC817-16
YM = Date Code Marking
Y = Year ex: T = 2006
M = Month ex: 9 = September

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z

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