BC817-16W / -25W / -40W

NPN SURFACE MOUNT SMALL SIGNAL TRANSISTOR

Features

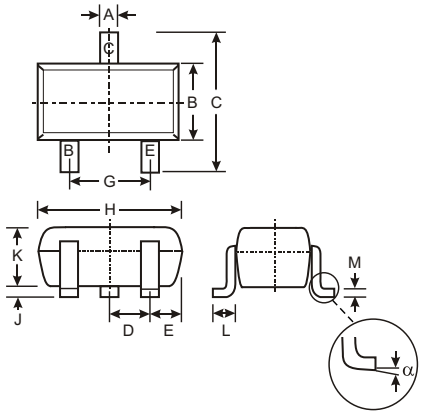
- Ideally Suited for Automatic Insertion
- Epitaxial Planar Die Construction
- For Switching, AF Driver and Amplifier Applications
- Complementary PNP Types Available (BC807-xxW)
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish – Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Pin Connections: See Diagram
- Marking:

P/N	Marking
BC817-16W	K6A
BC817-25W	K6B
BC817-40W	K6C

- Ordering & Date Code Information: See Page 3
- Approximate Weight: 0.006 grams



SOT-323		
Dim	**Min**	**Max**
A	0.25	0.40
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.18
	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	500	mA
Peak Collector Current	I_{CM}	1000	mA
Peak Emitter Current	I_{EM}	1000	mA
Power Dissipation at T_{SB} = 50°C (Note 3)	P_d	200	mW
Thermal Resistance, Junction to Ambient Air (Note 3)	R_{JA}	625	°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 4)		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 5.0	nA µA	V_{CE} = 45V 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. No purposefully added lead.
2. Diodes Inc's "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
4. Short duration pulse test used to minimize self-heating effect.

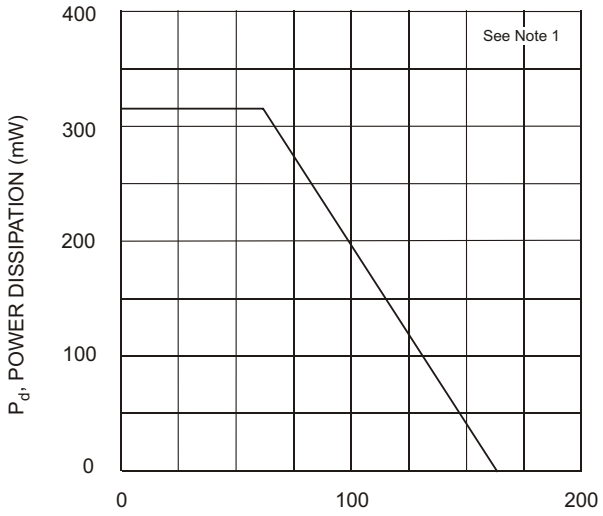


Fig. 1, Power Derating Curve

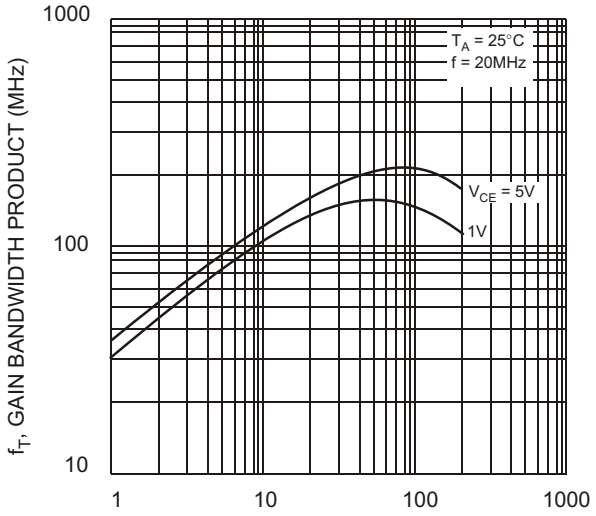


Fig. 2, Gain-Bandwidth Product vs Collector Current

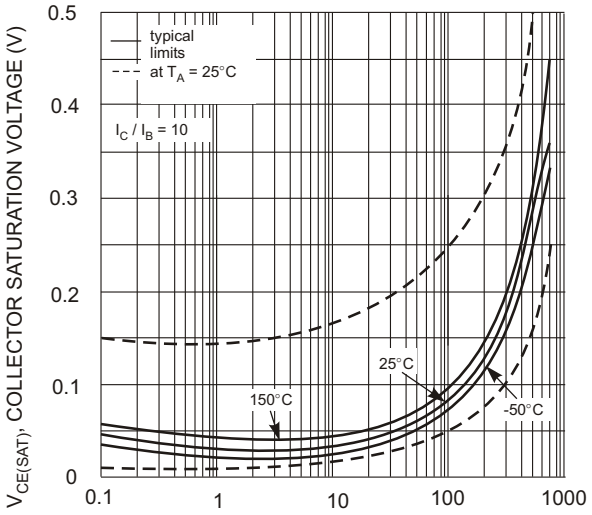


Fig. 3, Collector Sat. Voltage vs Collector Current

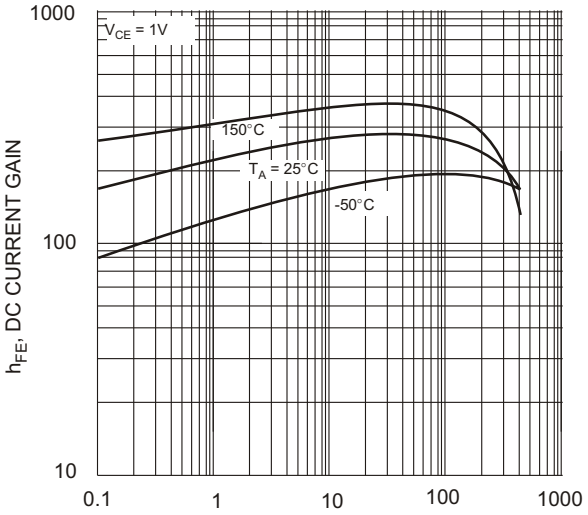


Fig. 4, DC Current Gain vs Collector Current

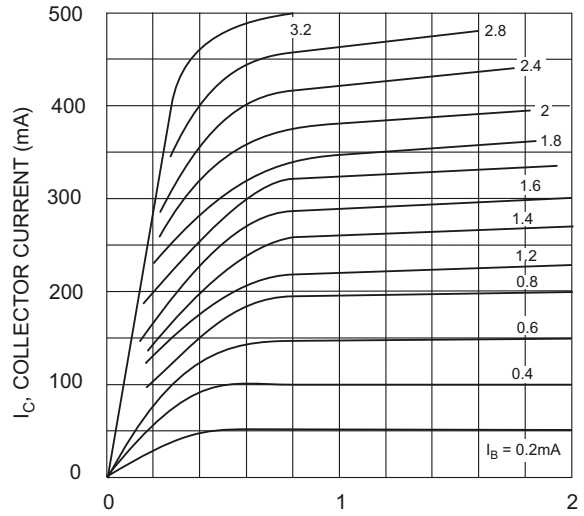


Fig. 5, Typical Emitter-Collector Characteristics

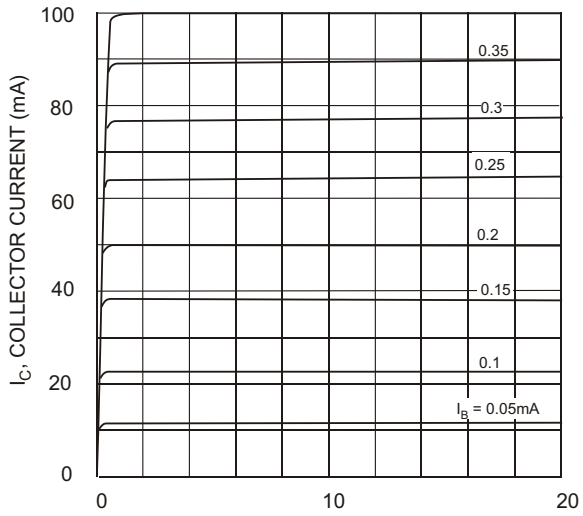


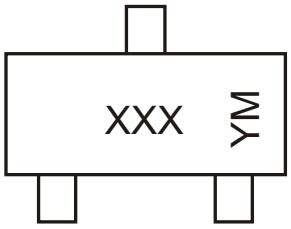
Fig. 6, Typical Emitter-Collector Characteristics

Ordering Information (Note 5)

Device*	Packaging	Shipping
BC817-xxW-7	SOT-323	3000/Tape & Reel

Notes: 5. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.
* xx = gain group, e.g. BC817-16W-7.

Marking Information



XXX = Product Type Marking Code (See Page 1), e.g. K6A = BC817-16
YM = Date Code Marking
Y = Year ex: S = 2005
M = Month ex: 9 = September

Date Code Key

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	R	S	T	U	V	W	X	Y	Z

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