



# 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							
Α	0.25	0.40							
В	1.15 1.35								
С	2.00	2.20							
D	0.65 N	ominal							
E	0.30 0.40								
G	1.20	1.40							
Н	1.80	2.20							
J	0.0	0.10							
K	0.90	1.00							
L	0.25	0.40							
М	M 0.10 0.1								
0 8									
All Din	ensions	in mm							

#### @T<sub>A</sub> = 25°C unless otherwise specified **Maximum Ratings**

Characteristic	Symbol	Value	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	45	V
Emitter-Base Voltage	V <sub>EBO</sub>	5.0	V
Collector Current	Ic	500	mA
Peak Collector Current	Ісм	1000	mA
Peak Emitter Current	I <sub>EM</sub>	1000	mA
Power Dissipation at T <sub>SB</sub> = 50°C (Note 3)	Pd	200	mW
Thermal Resistance, Junction to Ambient Air (Note 3)	R JA	625	°C/W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-65 to +150	°C

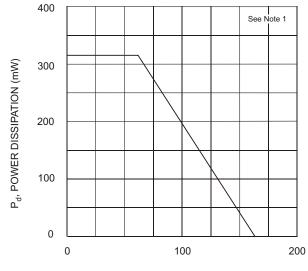
# Electrical Characteristics @TA = 25°C unless otherwise specified

Characte	ristic (Note 4)	Symbol	Min	Max	Unit	Test Condition
DC Current Gain	Current Gain Group -16 -25 -40 Current Gain Group -16 -25 -40	h <sub>FE</sub>	100 160 250 60 100 170	250 400 600 — —	_	$V_{CE} = 1.0V, I_{C} = 100mA$ $V_{CE} = 1.0V, I_{C} = 300mA$
Collector-Emitter Saturation Voltage			_	0.7	V	$I_C = 500 \text{mA}, I_B = 50 \text{mA}$
Base-Emitter Voltage	V <sub>BE</sub>	_	1.2	V	V <sub>CE</sub> = 1.0V, I <sub>C</sub> = 300mA	
Collector-Emitter Cutoff Cu	ırrent	ICES	_	100 5.0	nΑ μΑ	V <sub>CE</sub> = 45V V <sub>CE</sub> = 25V, T <sub>j</sub> = 150°C
Emitter-Base Cutoff Currer	nt	I <sub>EBO</sub>	_	100	nA	V <sub>EB</sub> = 4.0V
Gain Bandwidth Product			100	_	MHz	V <sub>CE</sub> = 5.0V, I <sub>C</sub> = 10mA, f = 50MHz
Collector-Base Capacitano	C <sub>CBO</sub>	_	12	pF	V <sub>CB</sub> = 10V, f = 1.0MHz	

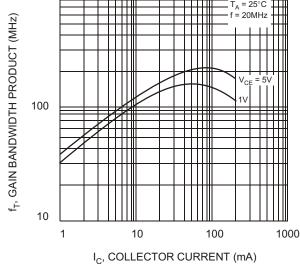
Notes:

- 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.



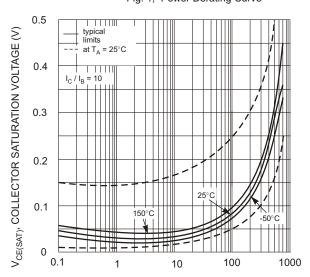


 $T_{SB}$ , SUBSTRATE TEMPERATURE (°C) Fig. 1, Power Derating Curve

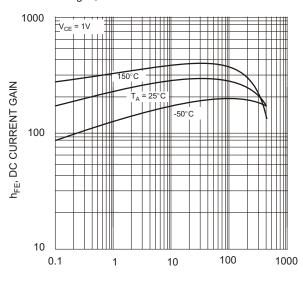


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Fig. 2, Gain-Bandwidth Product vs Collector Current



I<sub>C</sub>, COLLECTOR CURRENT (mA)
Fig. 3, Collector Sat. Voltage vs Collector Current



I<sub>C</sub>, COLLECTOR CURRENT (mA)
Fig. 4, DC Current Gain vs Collector Current

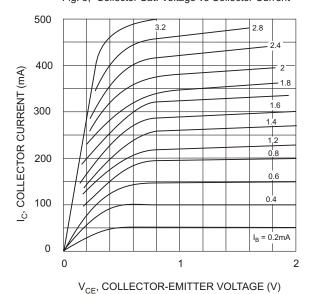
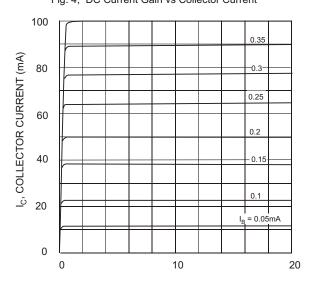


Fig. 5, Typical Emitter-Collector Characteristics



V<sub>CE</sub>, COLLECTOR-EMITTER VOLTAGE (V) Fig. 6, Typical Emitter-Collector Characteristics



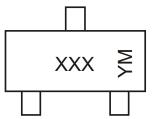
# Ordering Information (Note 5)

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	Т	U	V	W	X	Υ	Z

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D

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