



45V NPN SMALL SIGNAL TRANSISTOR IN SOT23

Features

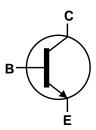
- Ideally Suited for Automatic Insertion
- Epitaxial Planar Die Construction
- Complementary PNP Types: BC807-xxW
- For switching and AF Amplifier Applications
- Totally Lead-Free & Fully RoHS Compliant (Note 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

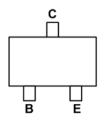
- Case: SOT323
- Case Material: molded plastic, "Green" molding compound UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 ³
- Weight 0.006 grams (approximate)











Top View Pin-Out

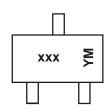
Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BC817-16W-7	K6A	7	8	3,000
BC817-25W-7	K6B	7	8	3,000
BC817-40W-7	K6C	7	8	3,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



xxx = Product Type Marking Code (Please see Ordering Information) YM = Date Code Marking Y or \overline{Y} = Year (ex: A = 2013) M or \overline{M} = Month (ex: 9 = September)

Date Code Key

Year	2010	20	011	2012	2	013	2014		2015	2016		2017
Code	X		Y	Z		A	В		С	D		E
				•								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec



Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	50	V
Collector-Emitter Voltage	V _{CEO}	45	V
Emitter-Base Voltage	V _{EBO}	5	V
Continuous Collector Current	Ic	500	mA
Peak Collector Current	I _{CM}	1.0	Α
Peak Base Current	I _{BM}	200	mA

Thermal Characteristics (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	
Power Dissipation	(Note 5)	PD	200	mW
Thermal Resistance, Junction to Ambient	(Note 5)	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J ,T _{STG}	-65 to +150	°C	

ESD Ratings (Note 6)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	С

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characte	Characteristic		Min	Тур	Max	Unit	Test Condition
Collector-Emitter Breakdown Volta	age (Note 7)	BV_CEO	45	_	_	V	I _C = 10mA
Emitter-Base Breakdown Voltage		BV _{EBO}	5	_	_	V	I _C = 100μA
Collector-Emitter Cutoff Current		I _{CES}	_	_	100 5.0	nΑ μΑ	V _{CE} = 45V V _{CE} = 25V, T _J = +150°C
Collector-Base Cutoff Current		I _{CBO}		_	100 5.0	nΑ μΑ	V _{CE} = 20V V _{CE} = 20V, T _J = +150°C
Emitter-Base Cutoff Current		I _{EBO}	1	_	100	nA	V _{EB} = 5V
	BC817-16W BC817-25W BC817-40W		100 160 250		250 400 600		I _C = 100mA, V _{CE} = 1.0V
DC Current Gain (Note 7)	BC817-16W BC817-25W BC817-40W	- h _{FE}	60 100 170	_	_	_	I _C = 300mA, V _{CE} = 1.0V
Collector-Emitter Saturation Volta	ge (Note 7)	$V_{CE(SAT)}$		_	700	mV	$I_C = 500 \text{mA}, I_B = 50 \text{mA}$
Base-Emitter Voltage (Note 7)		V_{BE}	_	_	1200	mV	$I_C = 300 \text{mA}, V_{CE} = 1.0 \text{V}$
Gain Bandwidth Product		f⊤	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: 5. For a device mounted on minimum recommended pad layout 1oz copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.

^{6.} Refer to JEDEC specification JESD22-A114 and JESD22-A115.

^{7.} Measured under pulsed conditions. Pulse width \leq 300µs. Duty cycle \leq 2%.



Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

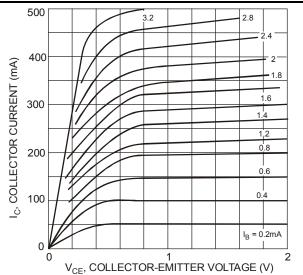


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

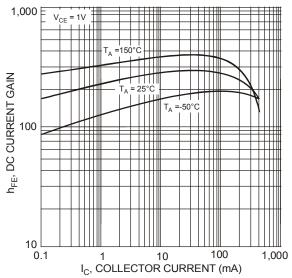


Figure 3 Typical DC Current Gain vs. Collector Current

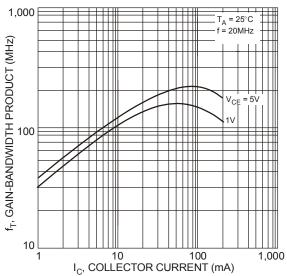


Figure 5 Typical Gain-Bandwidth Product vs. Collector Current

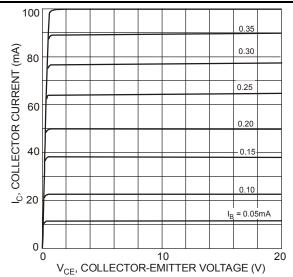


Figure 2 Typical Collector Current vs. Collector-Emitter Voltage

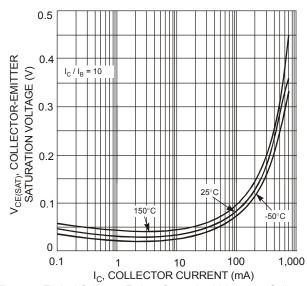
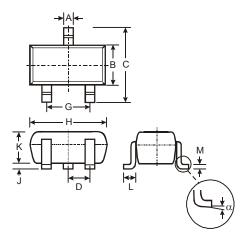


Figure 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current



Package Outline Dimensions

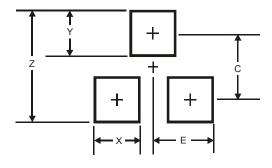
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



	SOT323					
Dim	Min	Max	Тур			
Α	0.25	0.40	0.30			
В	1.15	1.35	1.30			
С	2.00	2.20	2.10			
D	1	1	0.65			
G	1.20	1.40	1.30			
Н	1.80	2.20	2.15			
J	0.0	0.10	0.05			
K	0.90	1.00	1.00			
L	0.25	0.40	0.30			
М	0.10	0.18	0.11			
α	0°	8°	-			
All	Dimens	ions in	mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
Z	2.8
Х	0.7
Y	0.9
С	1.9
E	1.0



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