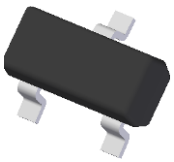
Features

- Ideally Suited for Automatic Insertion
- Epitaxial Planar Die Construction
- Complementary NPN Types Available (BC817)
- For switching and AF Amplifier Applications
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

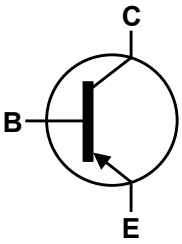
Mechanical Data

- Case: SOT23
- 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 e3
- Weight 0.008 grams (approximate)

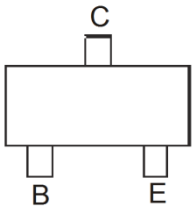
SOT23



Top View



Device Symbol



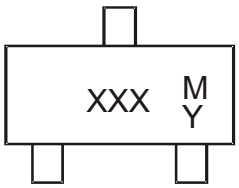
Top View
Pin-Out

Ordering Information (Notes 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BC807-16-7-F	AEC-Q101	K5A	7	8	3,000
BC807-25-7-F	AEC-Q101	K5B	7	8	3,000
BC807-40-7-F	AEC-Q101	K5C	7	8	3,000
BC807-40-13-F	AEC-Q101	K5C	13	8	10,000
BC807-40Q-7-F	Automotive	K5C	7	8	3,000
BC807-40Q-13-F	Automotive	K5C	13	8	10,000

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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



XXX = Product Type Marking Code (See table above)
YM = Date Code Marking
Y = Year ex: X = 2010
M = Month ex: 9 = September

Date Code Key

Year	2010	2011	2012	2013	2014	2015	2016	2017
Code	X	Y	Z	A	B	C	D	E

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

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}	-5.0	V
Continuous Collector Current	I_C	-0.5	A
Peak Collector Current	I_{CM}	-1.0	A
Peak Base Current	I_{BM}	-200	mA

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

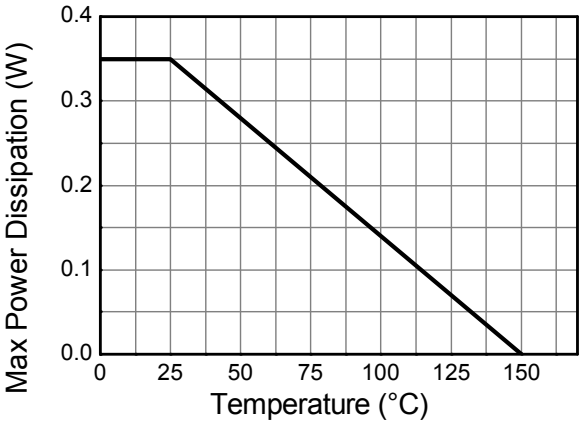
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P_D	310	mW
	(Note 7)		350	
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	403	°C/W
	(Note 7)		357	
Thermal Resistance, Junction to Leads	(Note 8)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to +150	°C

ESD Ratings (Note 9)

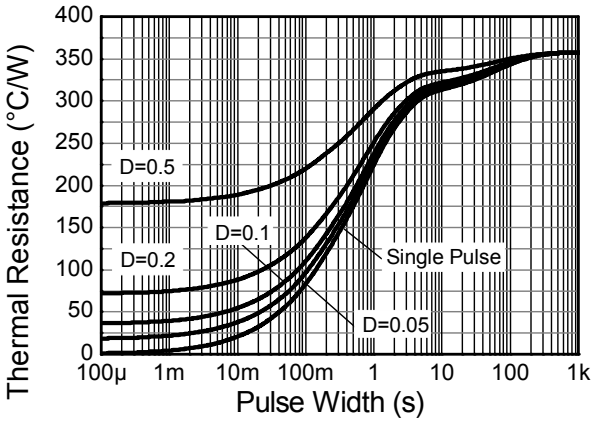
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

Notes:
6. For the device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper in still air condition; device measured when operating in steady state condition.
7. Same as Note 6, except the device is mounted on 15mm X 15mm FR4 PCB.
8. Thermal resistance from junction to solder-point (at the end of the leads).
9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

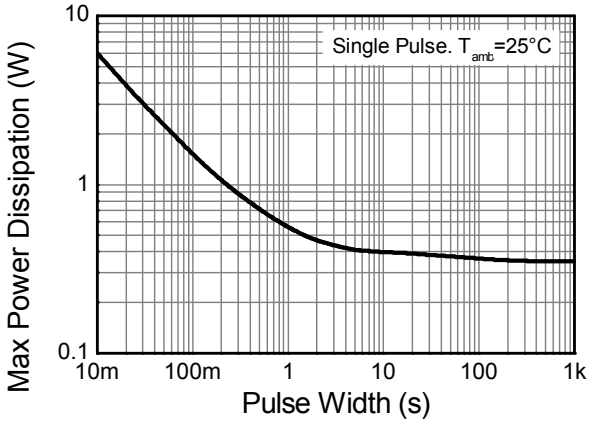
Thermal Characteristics and Derating Information



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV_{CBO}	-50	—	—	V	I_C = -100μA
Collector-Emitter Breakdown Voltage		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	nA μA	V_{CE} = -45V V_{CE} = -25V, T_J = +150°C
Emitter-Base Cutoff Current		I_{EBO}	—	—	-100	nA	V_{EB} = -5.0V
DC Current Gain (Note 10)	BC807-16 BC807-25 BC807-40	h_{FE}	100 160 250	—	250 400 600	—	V_{CE} = -1.0V, I_C = -100mA
	BC807-16 BC807-25 BC807-40		60 100 170		—		V_{CE} = -1.0V, I_C = -300mA
Collector-Emitter Saturation Voltage (Note 10)		$V_{CE(SAT)}$	—	—	-0.7	V	I_C = -500mA, I_B = -50mA
Base-Emitter Voltage (Note 10)		V_{BE}	—	—	-1.2	V	V_{CE} = -1.0V, I_C = -300mA
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

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%

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

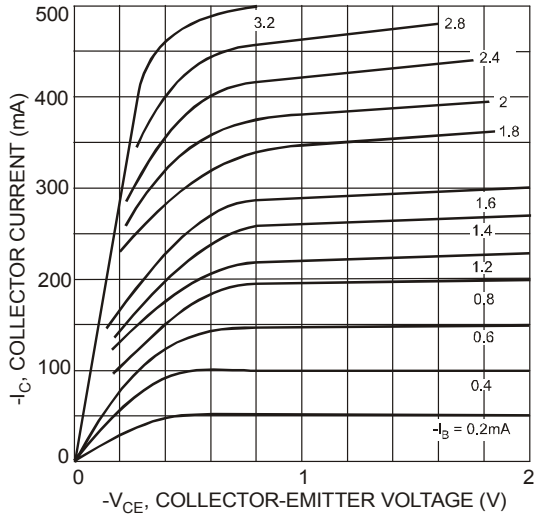


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

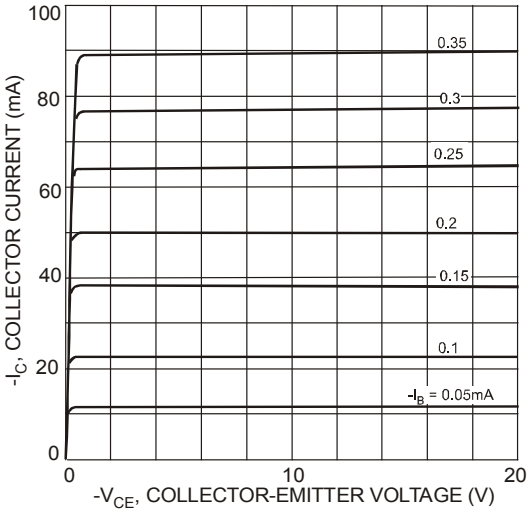


Figure 2 Typical Collector Current vs. Collector-Emitter Voltage

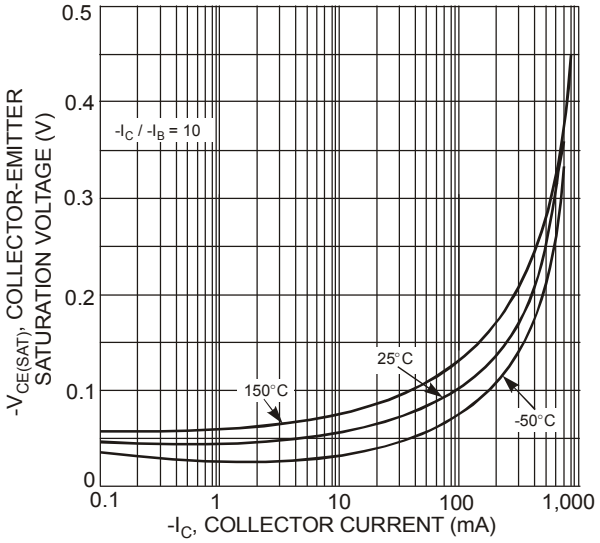


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

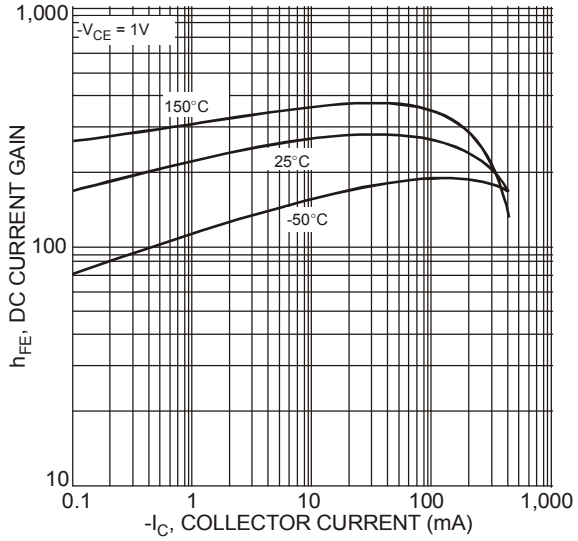


Figure 4 Typical DC Current Gain vs. Collector Current

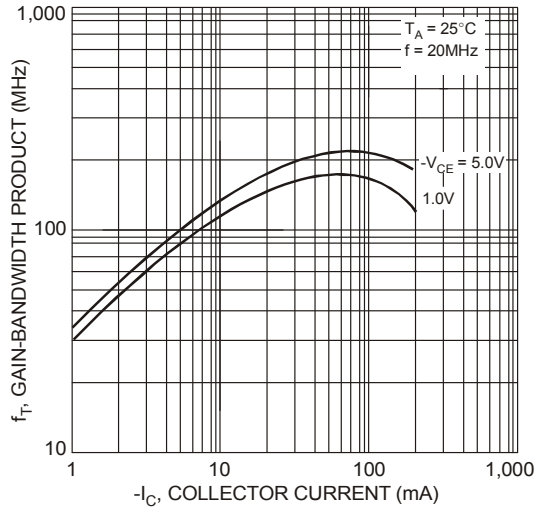
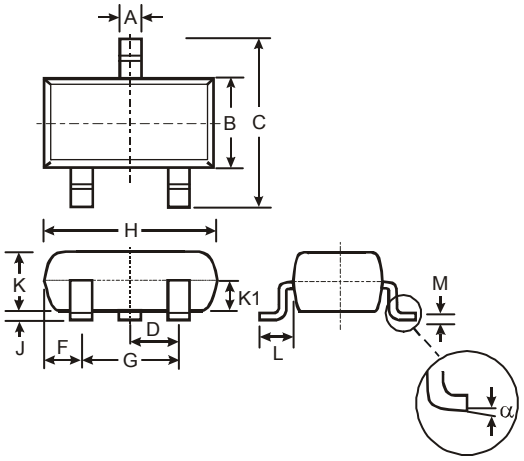


Figure 5 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

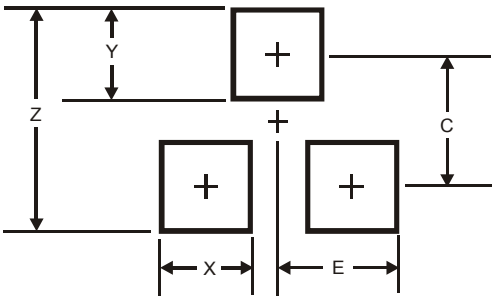
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions 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	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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