

## Features

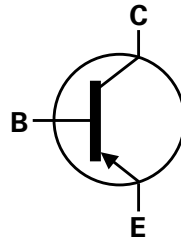
- Ideally Suited for Automatic Insertion
- Epitaxial Planar Die Construction
- Complementary NPN Types Available ([BC817-16W/-25W/-40W](#))
- For Switching and AF Amplifier Applications
- **Totally Lead-Free & Fully RoHS Compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Mechanical Data

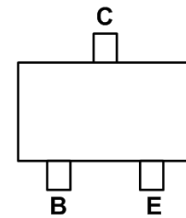
- Package: SOT323
- Package Material: Molded Plastic, "Green" Molding Compound  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 Ⓢ
- Weight: 0.006 grams (Approximate)



Top View



Device Symbol



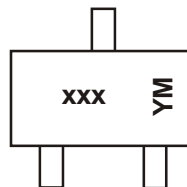
Top View Pinout

## Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
BC807-16W-7	SOT323	K5A	7	8	3,000	Reel
BC807-25W-7	SOT323	K5B	7	8	3,000	Reel
BC807-40W-7	SOT323	K5C	7	8	3,000	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



xxx = Product Type Marking Code  
(Please see Ordering Information)  
YM = Date Code Marking  
Y or  $\bar{Y}$  = Year (ex: N = 2026)  
M or  $\bar{M}$  = Month (ex: 9 = September)

### Date Code Key

Year	2010	-	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Code	X	-	N	P	R	S	T	U	V	W	X	Y

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

**Absolute Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB0}$	-50	V
Collector-Emitter Voltage	$V_{CEO}$	-45	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Continuous Collector Current	$I_C$	-500	mA
Peak Collector Current	$I_{CM}$	-1.0	A
Peak Base Current	$I_{BM}$	-200	mA

**Thermal Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	200	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JC}$	151	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ\text{C}$

**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	C

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Collector-Emitter Breakdown Voltage (Note 7)	$BV_{CEO}$	-45	—	—	V	$I_C = -10\text{mA}$	
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-6	—	—	V	$I_C = -100\mu\text{A}$	
Collector-Emitter Cutoff Current	$I_{CES}$	—	—	-100 -5	nA $\mu\text{A}$	$V_{CE} = -45\text{V}$ $V_{CE} = -25\text{V}, T_J = +150^\circ\text{C}$	
Collector-Base Cutoff Current	$I_{CB0}$	—	—	-100 -5	nA $\mu\text{A}$	$V_{CB} = -20\text{V}$ $V_{CB} = -20\text{V}, T_J = +150^\circ\text{C}$	
Emitter-Base Cutoff Current	$I_{EBO}$	—	—	-100	nA	$V_{EB} = -5\text{V}$	
DC Current Gain (Note 7)	$h_{FE}$	BC807-16W-7	100	—	250	—	$I_C = -100\text{mA}, V_{CE} = -1.0\text{V}$
		BC807-25W-7	160	—	400		
		BC807-40W-7	250	—	600		
		BC807-16W-7	60	—	—		$I_C = -300\text{mA}, V_{CE} = -1.0\text{V}$
		BC807-25W-7	100	—	—		
		BC807-40W-7	170	—	—		
Collector-Emitter Saturation Voltage (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	$f_T$	100	—	—	MHz	$V_{CE} = -5.0\text{V}, I_C = -10\text{mA}, f = 50\text{MHz}$	
Collector-Base Capacitance	$C_{CB0}$	—	—	12	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}$	

- 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  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

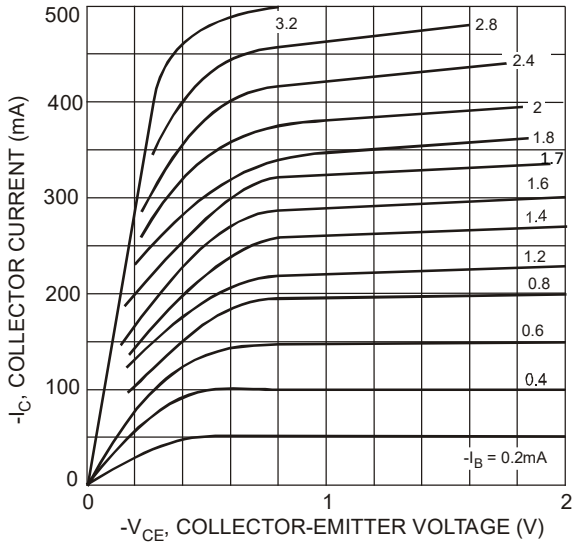


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

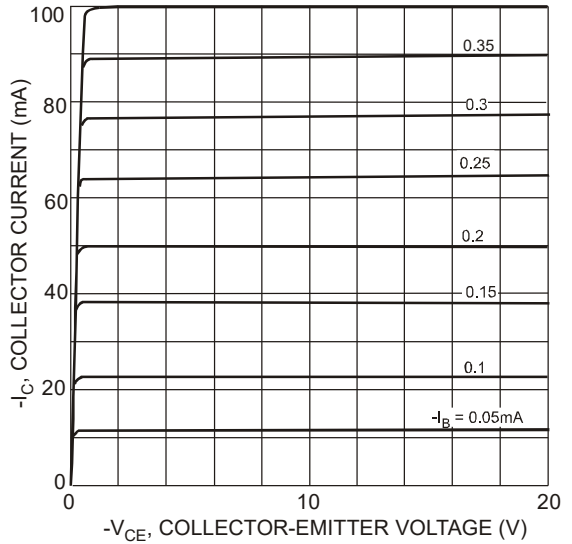


Figure 2 Typical Collector Current vs. Collector-Emitter Voltage

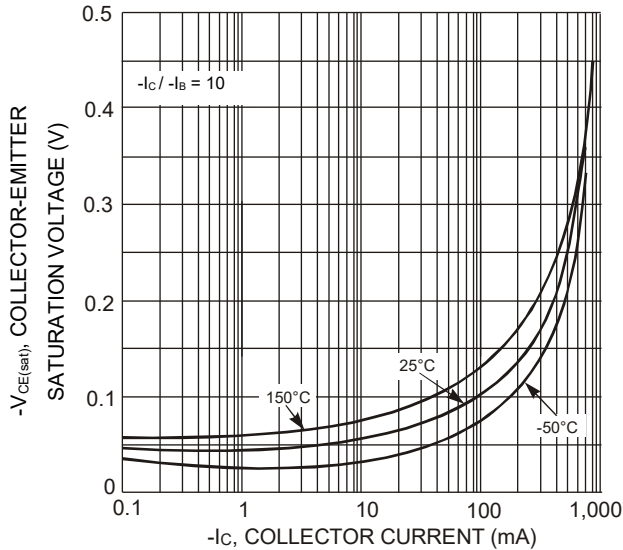


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

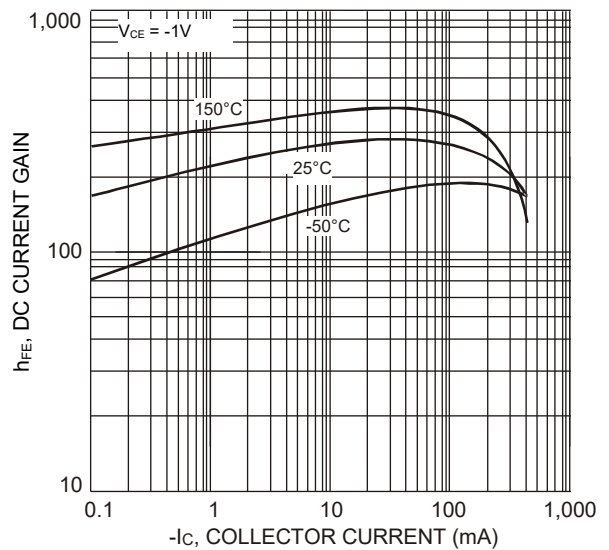


Figure 4 Typical DC Current Gain vs. Collector Current

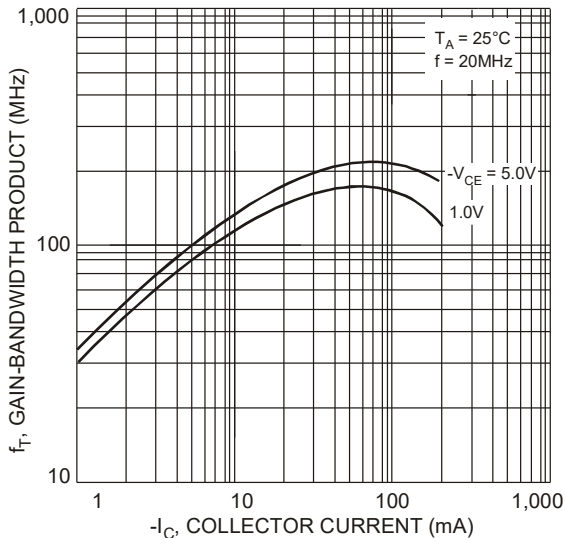
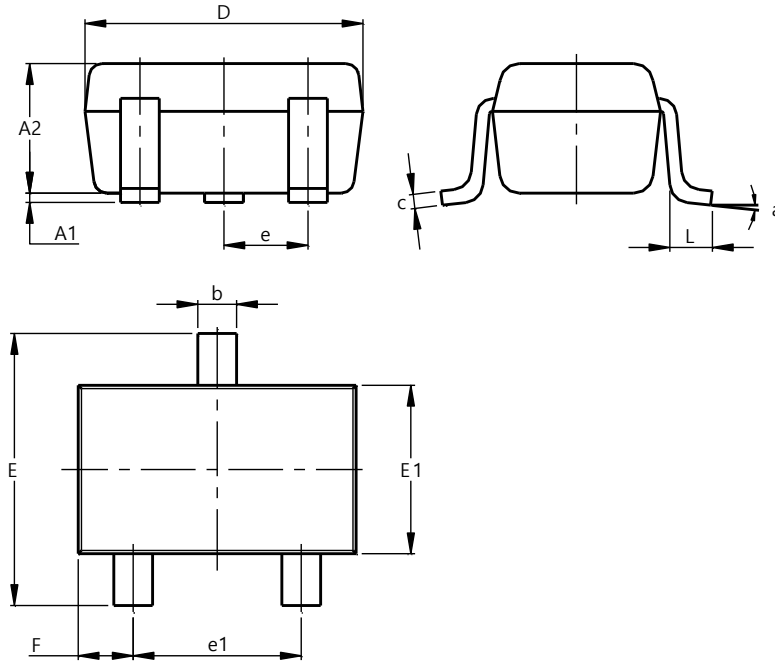


Figure 5 Typical Gain-Bandwidth Product vs. Collector Current

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT323

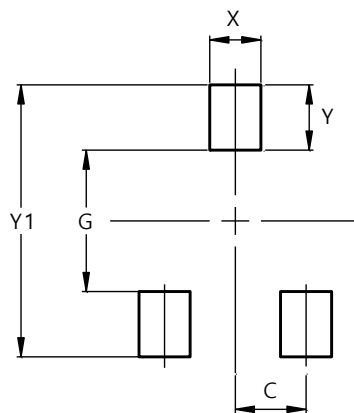


SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500

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