



YOUSHANG SEMICONDUCTOR

**设计研发新型功率器件**

**各类小信号开关**

**中低压及高压大电流等场效应管**

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## Features

- Ideally Suited for Automatic Insertion
- Epitaxial Planar Die Construction
- Complementary NPN Types Available (BC817-xxW)
- For Switching and AF Amplifier Applications

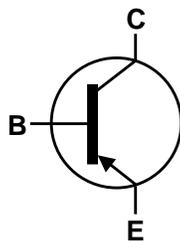
## Mechanical Data

- 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 ③
- Weight 0.006 grams (approximate)

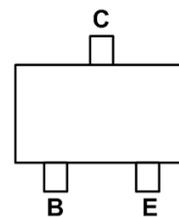
SOT323



Top View



Device Symbol



Top View  
Pin-Out

**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	$^\circ\text{C/W}$
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	$I_{CBO}$	—	—	-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:
- 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.
  - Refer to JEDEC specification JESD22-A114 and JESD22-A115.
  - 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.)

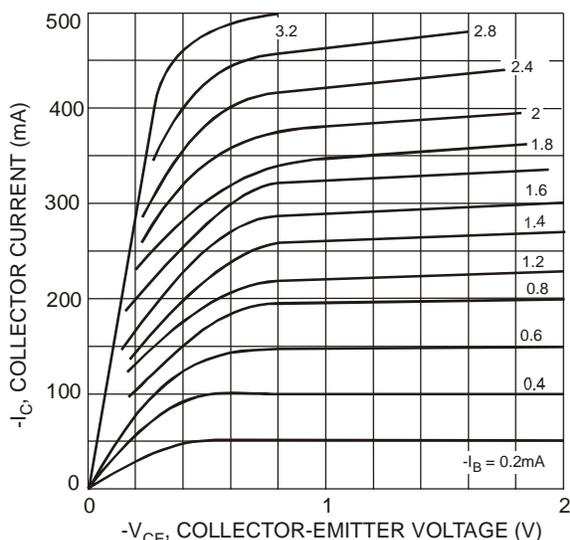


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

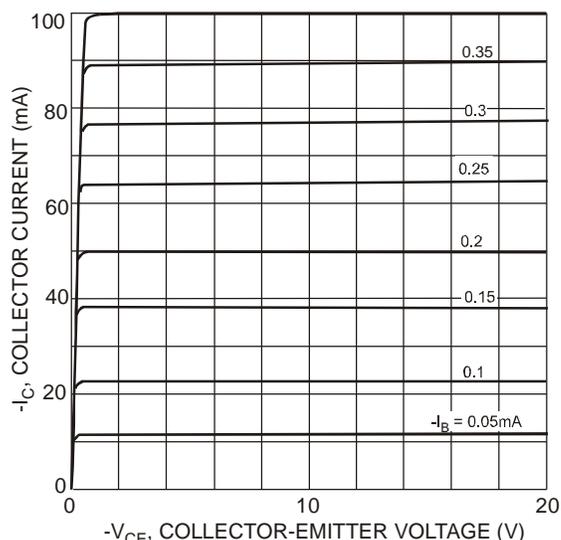


Figure 2 Typical Collector Current vs. Collector-Emitter Voltage

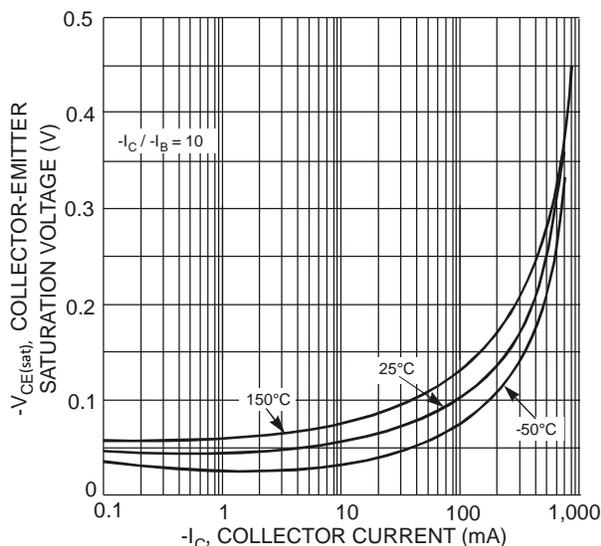


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

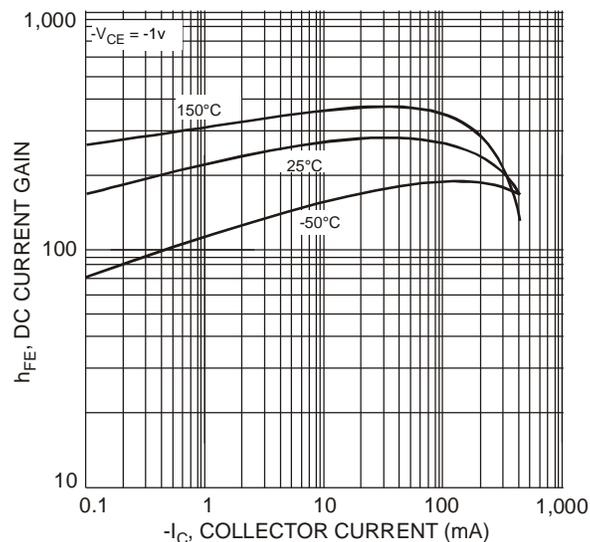


Figure 4 Typical DC Current Gain vs. Collector Current

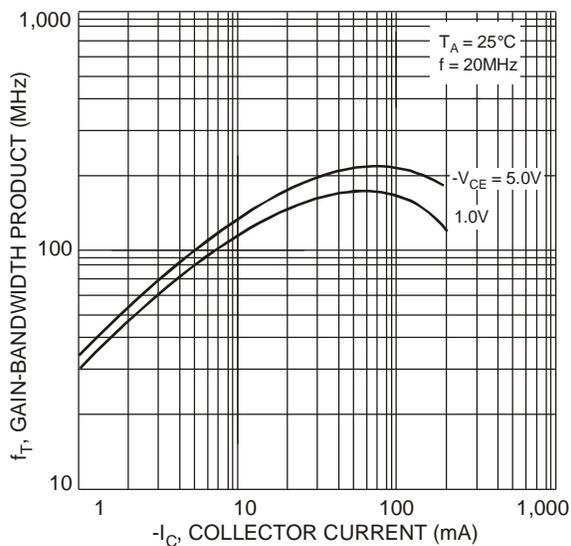
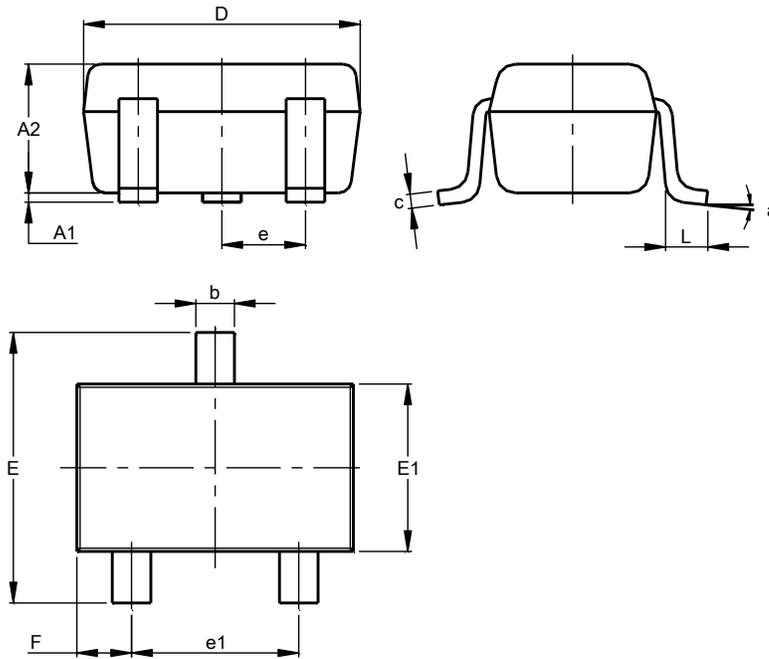


Figure 5 Typical Gain-Bandwidth Product vs. Collector Current

## Package Outline Dimensions

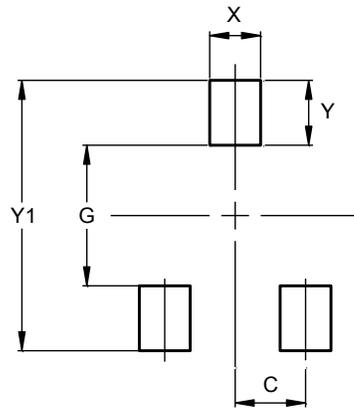
SOT323



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

SOT323



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