优尚

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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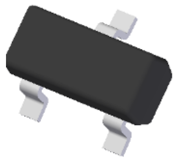
Features

- Ideally Suited for Automatic Insertion
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (BC807)
- For switching and AF Amplifier Applications

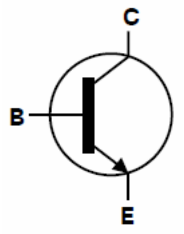
Mechanical Data

- 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 ⓔ3
- Weight 0.008 grams (Approximate)

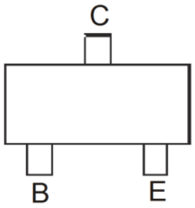
SOT23



Top View



Device Symbol



Top View
Pin-Out

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}	5.0	V
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.)

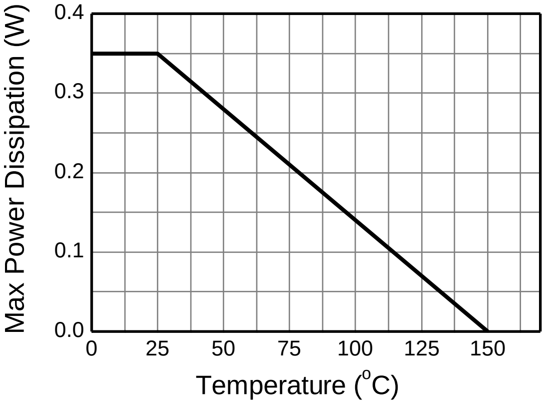
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	310	mW
	(Note 6)		350	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	403	°C/W
	(Note 6)		357	
Thermal Resistance, Junction to Leads	(Note 7)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-65 to +150	°C

ESD Ratings (Note 8)

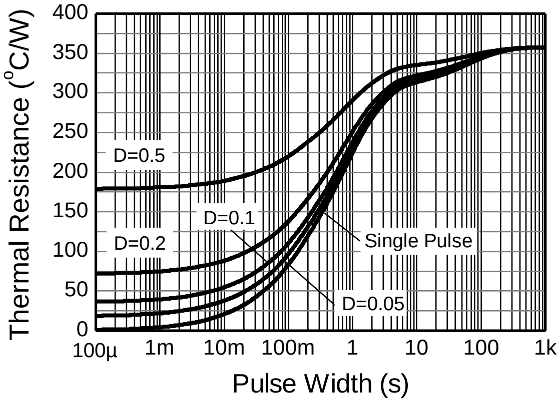
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
5. For a device mounted on minimum recommended pad layout FR-4 PCB with high coverage of single sided 1oz copper; device is measured under still air conditions whilst operating in a steady-state.
6. Same as Note 5, except mounted on 15mm x 15mm 1oz copper.
7. Thermal resistance from junction to solder-point (at the end of the collector lead).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

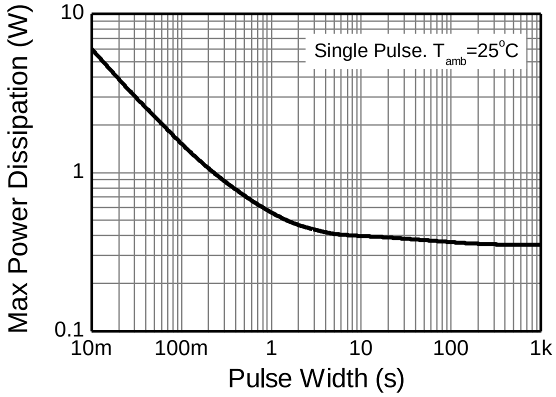
Thermal Characteristics and Derating Information



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 Cut-Off Current		I_{CES}	—	—	100 5.0	nA µA	V_{CE} = 45V V_{CE} = 25V, T_J = +150°C
Emitter-Base Cut-Off Current		I_{EBO}	—	—	100	nA	V_{EB} = 5.0V
DC Current Gain (Note 9)	NK-BC817-16 NK-BC817-25 NK-BC817-40	h_{FE}	100 160 250	—	250 400 600	—	V_{CE} = 1.0V, I_C = 100mA
	NK-BC817-16 NK-BC817-25 NK-BC817-40		60 100 170		—		V_{CE} = 1.0V, I_C = 300mA
Collector-Emitter Saturation Voltage (Note 9)		$V_{CE(SAT)}$	—	—	0.7	V	I_C = 500mA, I_B = 50mA
Base-Emitter Voltage (Note 9)		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: 9. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

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

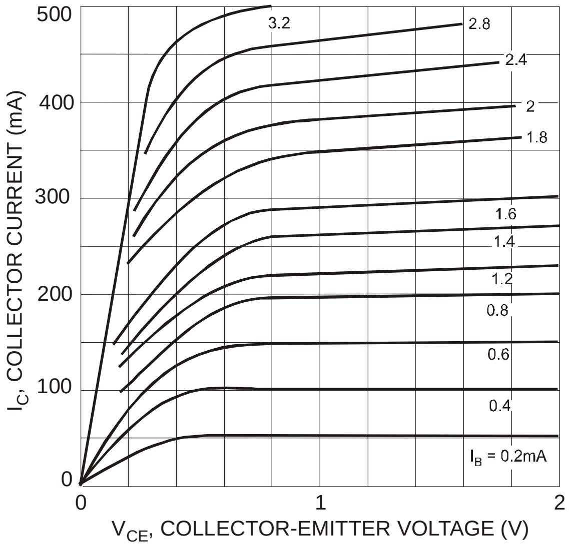


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

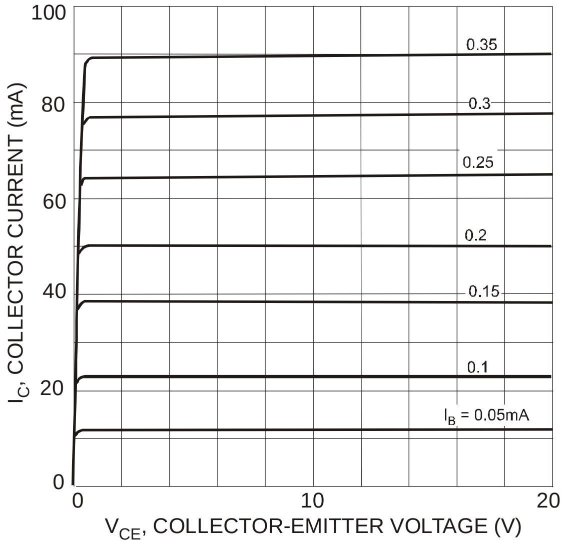


Figure 2 Typical Collector Current vs. Collector-Emitter Voltage

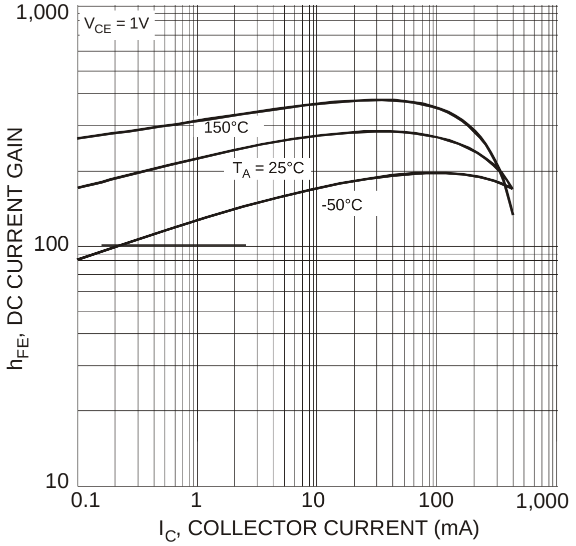


Figure 3 Typical DC Current Gain vs. Collector Current

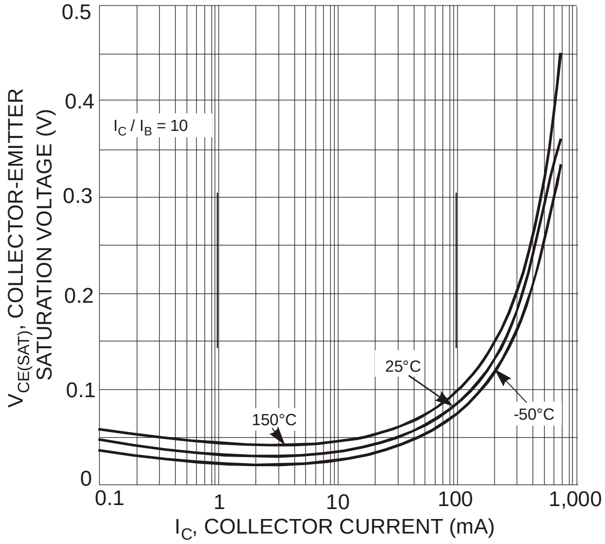


Figure 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

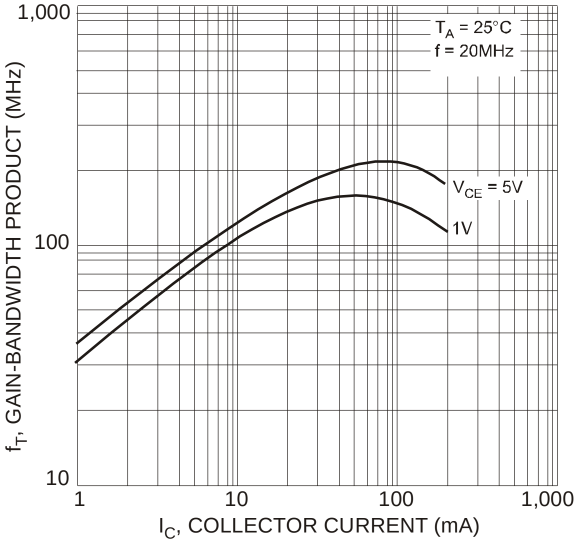
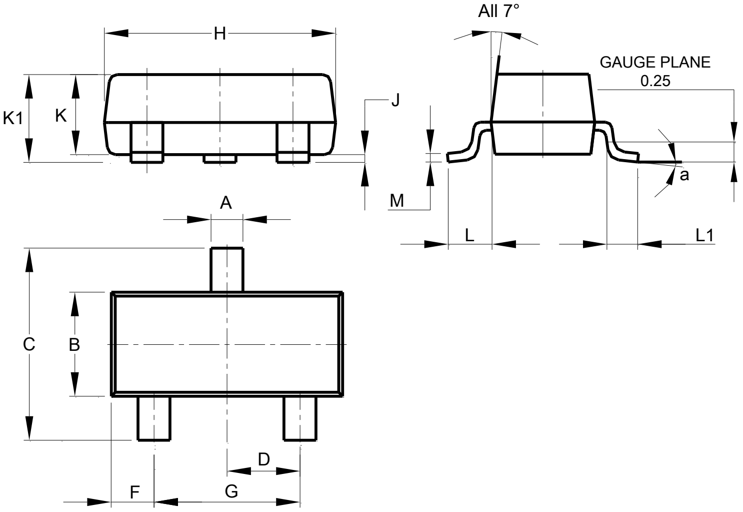


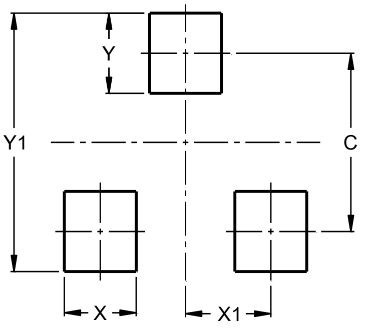
Figure 5 Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions



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	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9