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

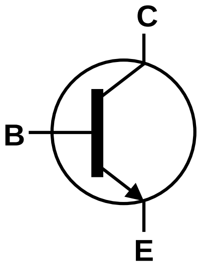
- BV_{CEO} > 40V
- I_C = 2A high Continuous Collector Current
- I_{CM} = 3A Peak Pulse Current
- Low Saturation Voltage 180mV Max @ I_C = 1A
- $R_{CE(SAT)}$ = 60mΩ at 0.5A for a Low Equivalent On-Resistance
- 730mW Power Dissipation
- Complimentary PNP Type: NK-ZXTP5240F

Mechanical Data

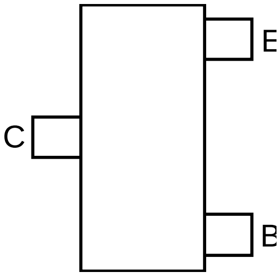
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.008 grams (Approximate)

SOT23

Top View



Device Symbol



Top View
Pin Configuration

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Collector Current	I_{CM}	3	A
Continuous Collector Current	I_C	2	A
Peak Base Current	I_{BM}	0.3	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	730	mW
Power Dissipation (Note 6)	P_D	600	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	171	°C/W
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	209	°C/W
Thermal Resistance, Junction to Lead (Note 7)	$R_{\theta JL}$	75	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

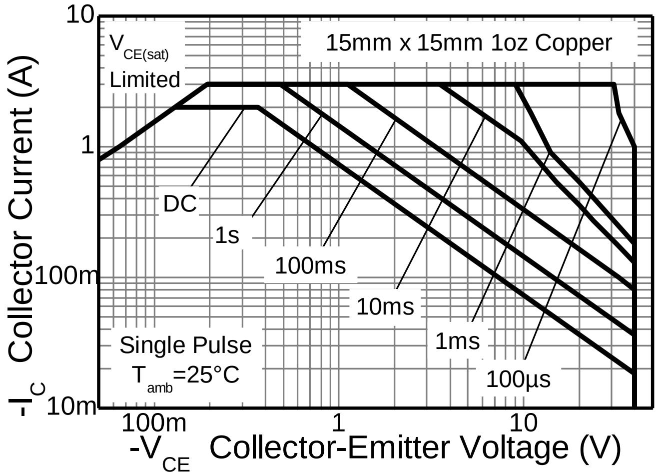
ESD Ratings (Note 8)

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

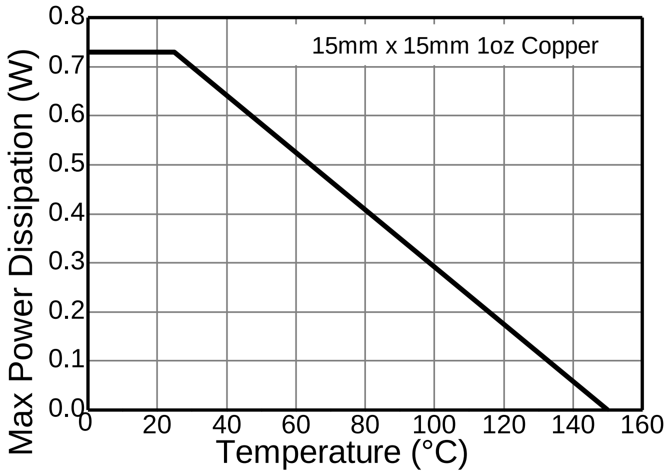
Notes:

5. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Same as note (5), except the device is mounted on minimum recommended pad layout.
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.

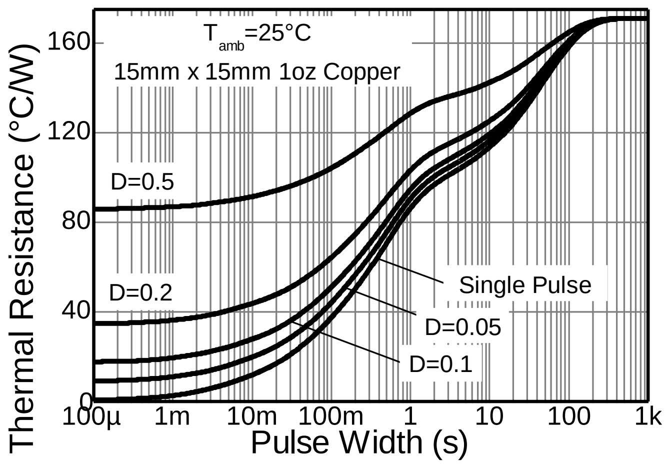
Thermal Characteristics and Derating Information



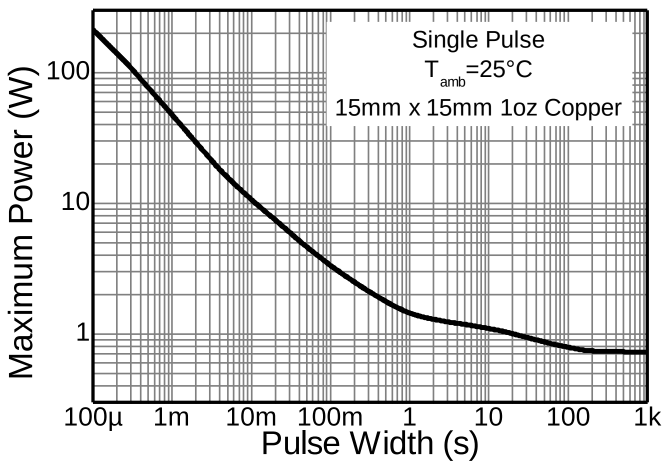
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	40	—	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	40	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	I_E = 100µA
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	V_{CB} = 30V, I_E = 0
		—	—	50	µA	V_{CB} = 30V, I_E = 0, T_A = +150°C
Emitter-Base Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 4V, I_C = 0
ON CHARACTERISTICS (Note 8)						
DC Current Gain	h_{FE}	350	—	—	—	V_{CE} = 2V, I_C = 0.1A
		300	—	—		V_{CE} = 2V, I_C = 0.5A
		300	—	—		V_{CE} = 2V, I_C = 1A
		150	—	—		V_{CE} = 2V, I_C = 2A
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	70	mV	I_C = 100mA, I_B = 1mA
		—	30	100		I_C = 500mA, I_B = 50mA
		—	—	180		I_C = 750mA, I_B = 15mA
		—	—	180		I_C = 1A, I_B = 50mA
		—	—	320		I_C = 2A, I_B = 200mA
Equivalent On-Resistance	$R_{CE(SAT)}$	—	60	200	mΩ	I_C = 500mA, I_B = 50mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	1.1	V	I_C = 2A, I_B = 200mA
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	—	—	0.75	V	V_{CE} = 2V, I_C = 100mA
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	V_{CE} = 10V, I_C = 100mA, f = 100MHz
Output Capacitance	C_{OB}	—	—	20	pF	V_{CB} = 10V, f = 1MHz
Turn-On Time	t_{ON}	—	43	—	ns	I_C =500mA, V_{CC}=10V,
Turn-Off Time	t_{OFF}	—	363	—	ns	I_{B1} = -I_{B2} = 50mA

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

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

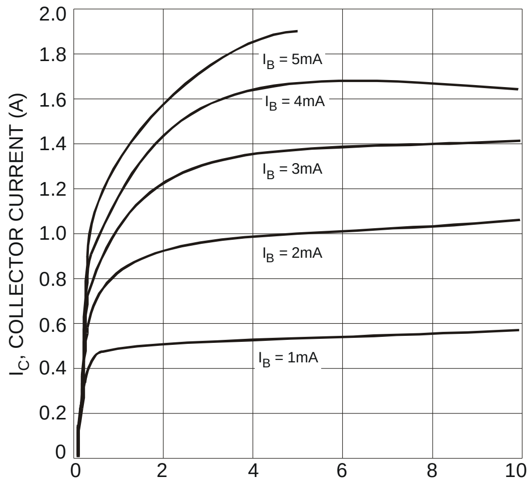


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

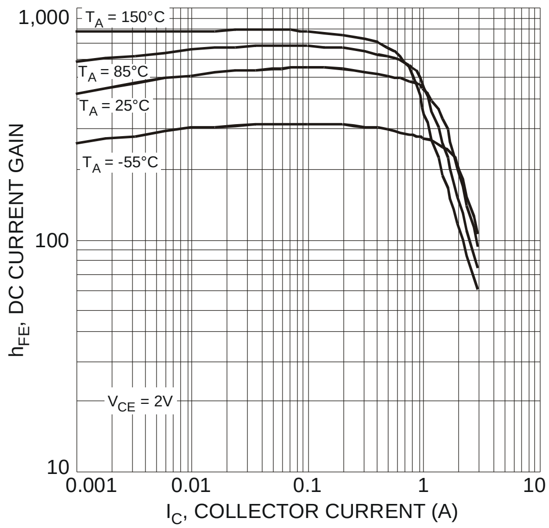


Fig. 3 Typical DC Current Gain vs. Collector Current

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

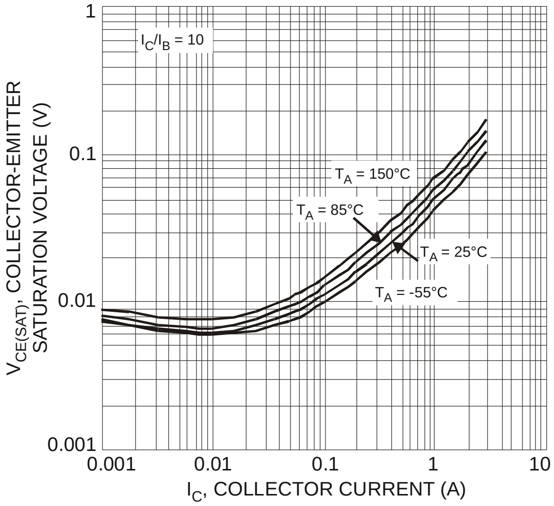


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

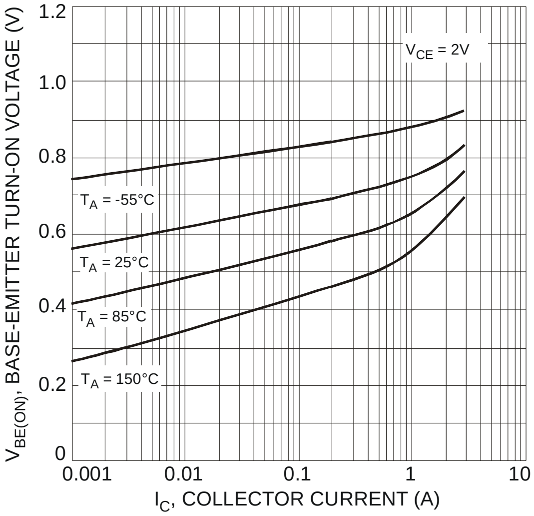


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

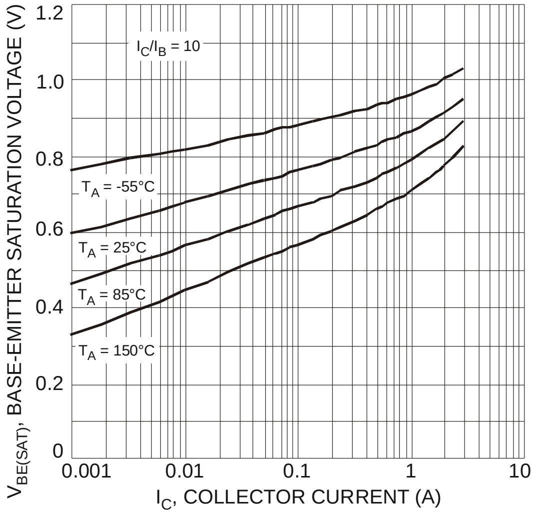


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

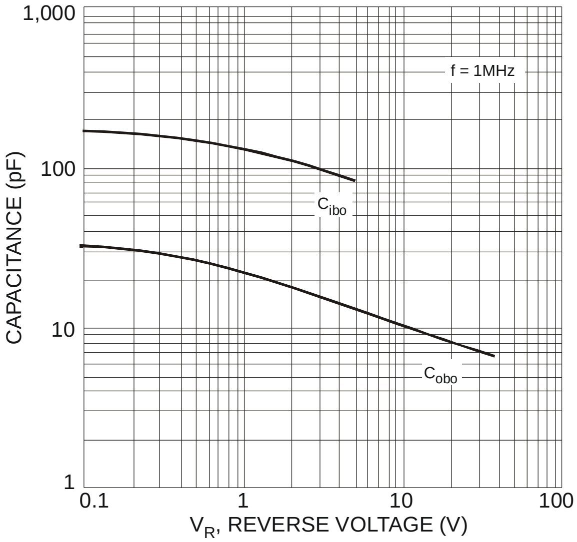


Fig. 7 Typical Capacitance Characteristics

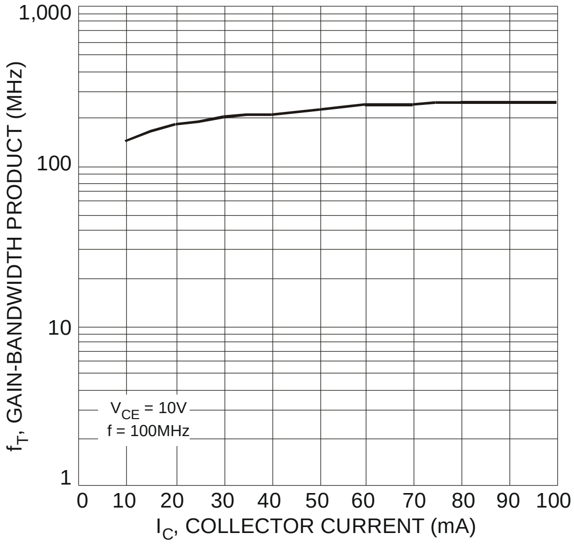
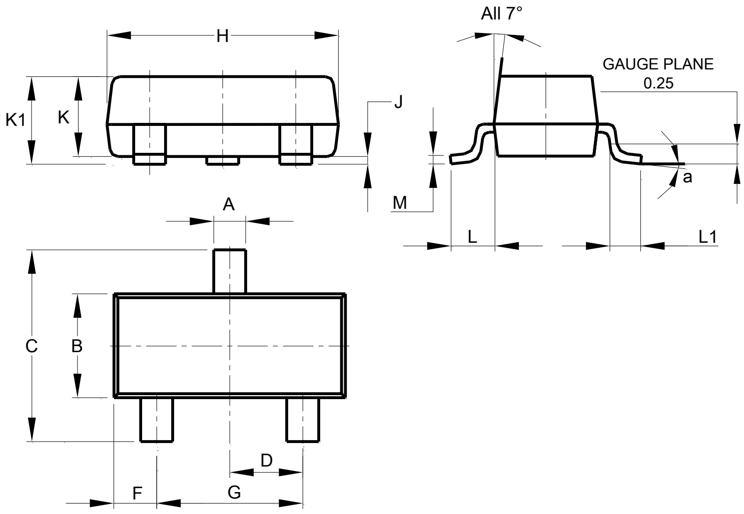


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

SOT23



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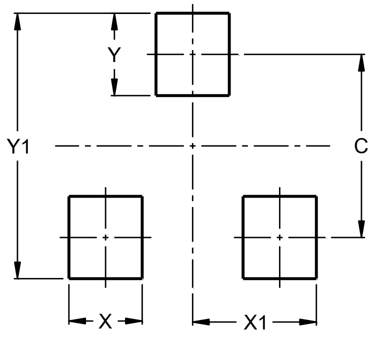
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT23



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