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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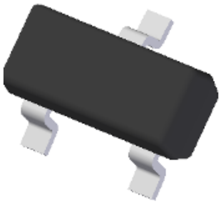
Features

- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching

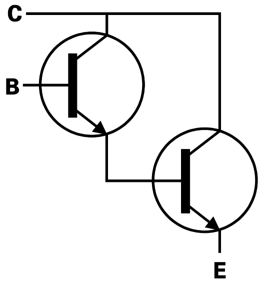
Mechanical Data

- Package: SOT23
- Package Material: Molded Plastic “Green” Compound
  UL Flammability 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)

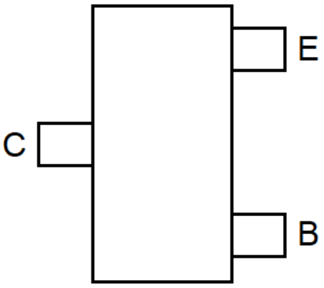
SOT23



Top View



Device Symbol



Top View
Pin-Out

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}	12	V
Collector Current	I_C	500	mA
Peak Collector Current	I_{CM}	1	A

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
Thermal Resistance, Junction to Case	(Note 5)	$R_{\theta JC}$	120	°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 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. Same as note (5), except the device is mounted on 15mm x 15mm 1oz copper.
7. Thermal resistance from junction to solder-point (at the end of the leads).
8. Refer to JEDEC specification JESD22-A114, JESD22-A115 and JES-022-C101.

Thermal Characteristics and Derating Information

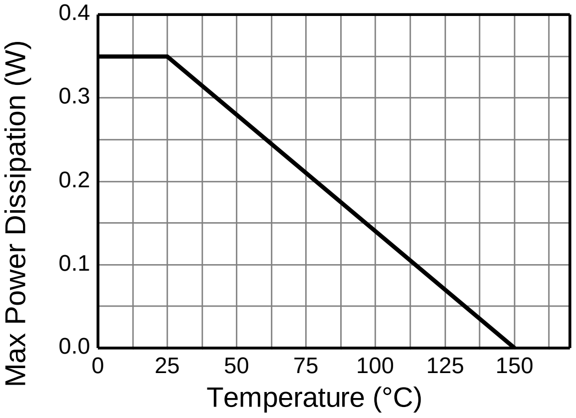


Figure 1. Derating Curve

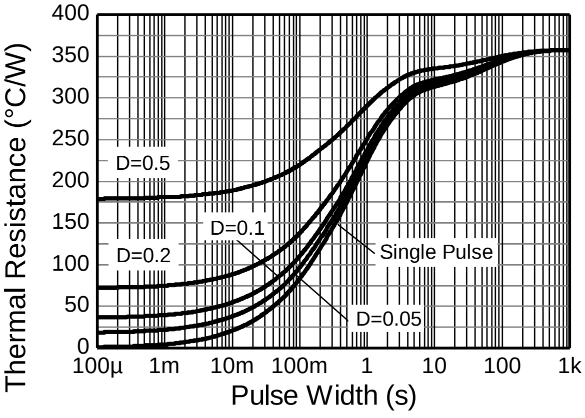


Figure 2. Transient Thermal Impedance

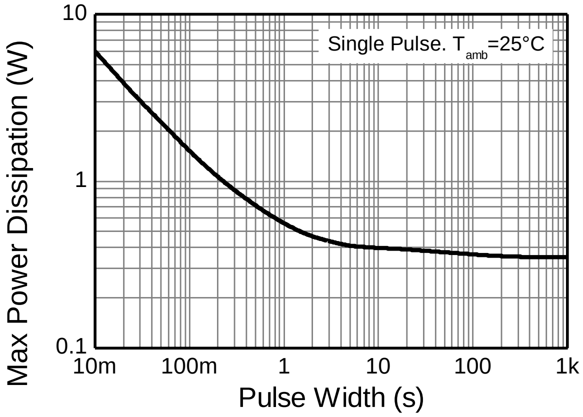


Figure 3. Pulse Power Dissipation

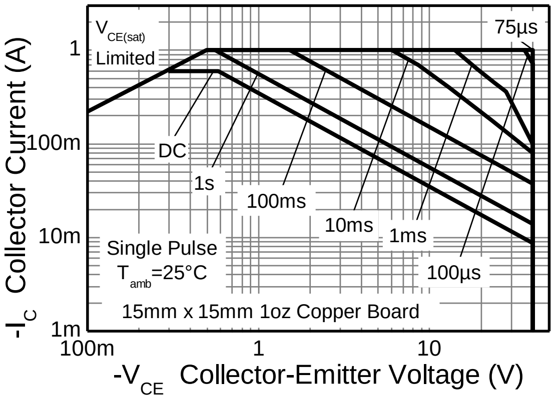


Figure 4. Safe Operating Area

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	40	170	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	40	66	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	12	17	—	V	I_E = 100μA
Collector Cutoff Current	I_{CBO}	—	1	50	nA	V_{CB} = 30V
Collector Cutoff Current	I_{CES}	—	0.03	1	μA	V_{CE} = 25V
Emitter Cutoff Current	I_{EBO}	—	1	50	nA	V_{EB} = 10V
ON CHARACTERISTICS (Note 9)						
DC Current Gain	h_{FE}	10,000 20,000 14,000	— 100,000 —	100,000 200,000 140,000	—	I_C = 10mA, V_{CE} = 5V I_C = 100mA, V_{CE} = 5V I_C = 500mA, V_{CE} = 5V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	0.68 0.87	1.2 1.5	V	I_C = 50mA, I_B = 0.5mA I_C = 500mA, I_B = 0.5mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	1.55	2	V	I_C = 500mA, I_B = 0.5mA
Base-Emitter On Voltage	$V_{BE(on)}$	—	1.25	1.75	V	I_C = 50mA, V_{CE} = 5V

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

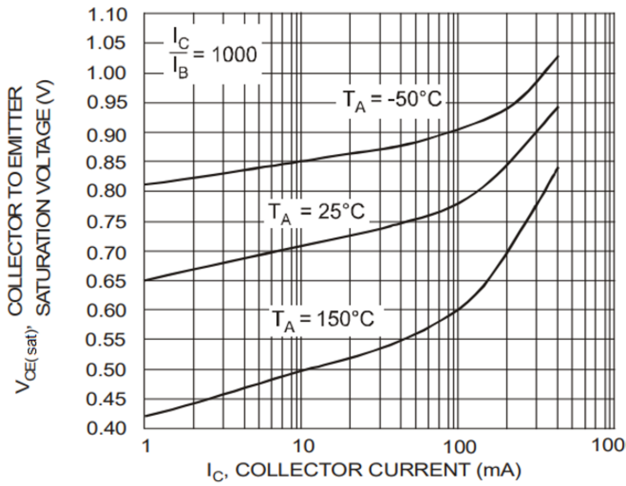


Fig. 5, Collector Emitter Saturation Voltage vs. Collector Current

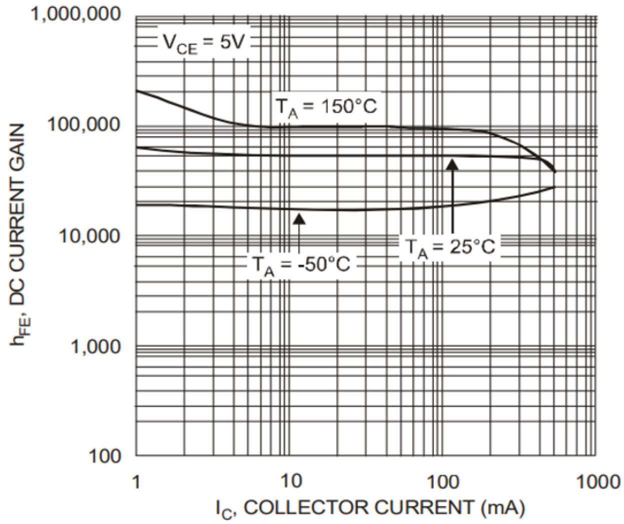


Fig. 6, DC Current Gain vs Collector Current

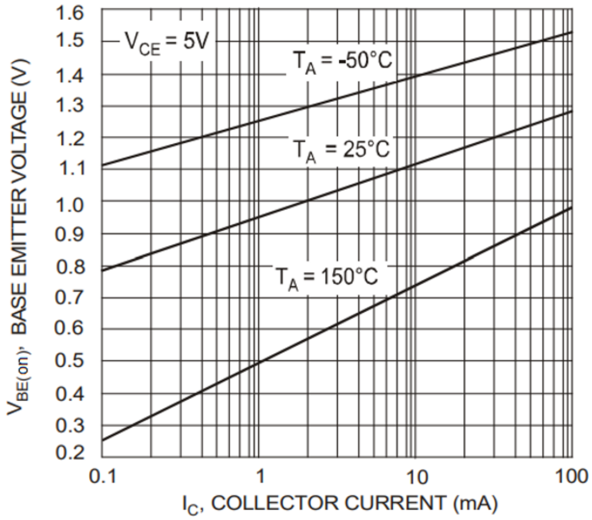


Fig. 7, Base Emitter Voltage vs. Collector Current

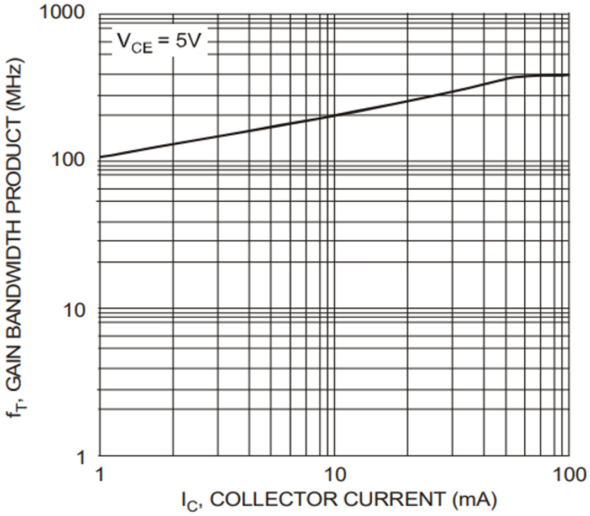
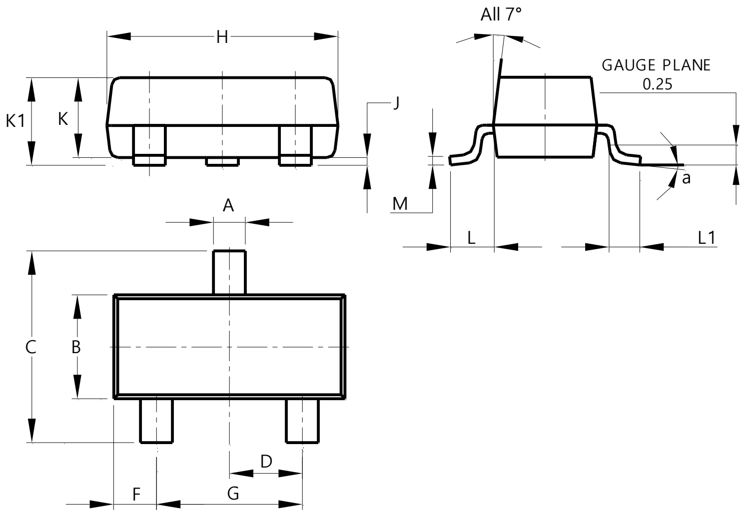


Fig. 8, Gain Bandwidth Product vs Collector Current

Package Outline Dimensions

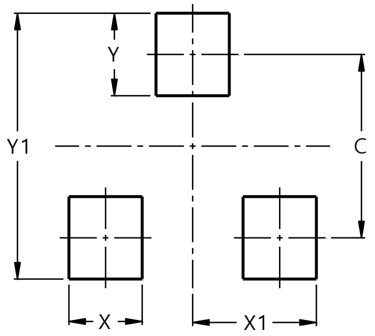
SOT23



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

SOT23



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