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

- $BV_{CEO} > 150V$
- $I_C = 1A$ High Continuous Current
- Low Saturation Voltage $V_{CE(sat)} < 300mV$ @ 0.5A

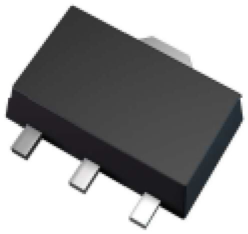
Application

- Low loss power switching

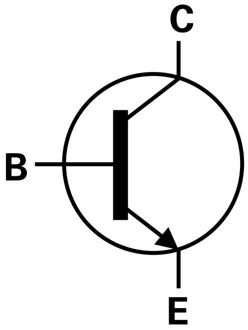
Mechanical Data

- Package: SOT89
- Package Material: Molded Plastic, “Green” Molding 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: 0.052 grams (Approximate)

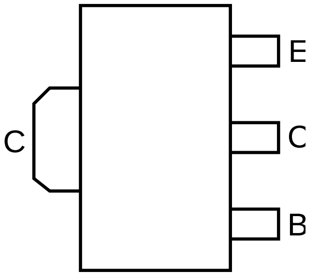
SOT89



Top View



Device Symbol



Top View
Pinout

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	170	V
Collector-Emitter Voltage	V_{CEO}	150	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current	I_{CM}	2	A
Continuous Base Current	I_B	200	mA

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

Characteristic	Symbol	Value	Unit
Collector Power Dissipation	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Leads (Note 7)	$R_{\theta JL}$	10.01	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

Notes: 6. For the device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
7. Thermal resistance from junction to solder-point (on the exposed collector pad).

Thermal Characteristics and Derating Information

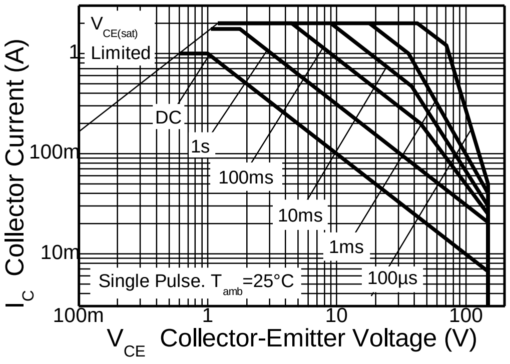


Figure 1. Safe Operating Area

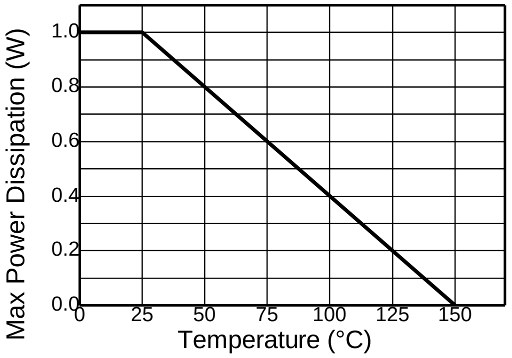


Figure 2. Derating Curve

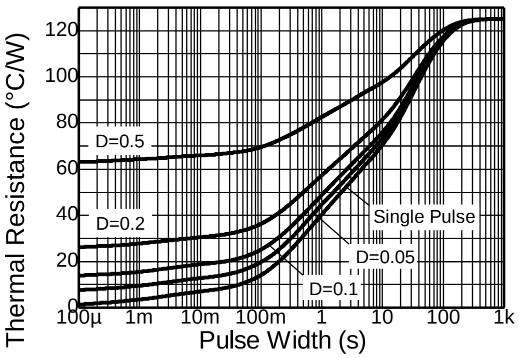


Figure 3. Transient Thermal Impedance

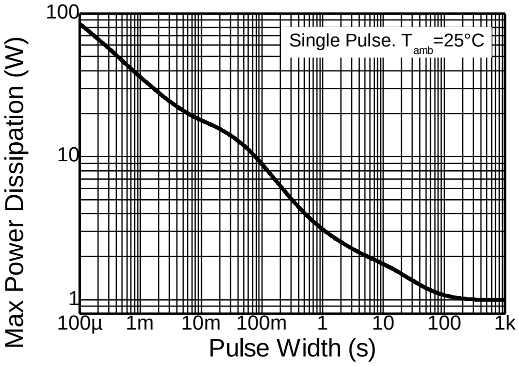


Figure 4. Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	170	—	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	150	—	—	V	I_C = 1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	—	—	V	I_E = 100µA
Collector Cutoff Current	I_{CBO}	—	—	100	nA	V_{CB} = 150V
Emitter Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 5.6V
Emitter Cutoff Current	I_{CES}	—	—	100	nA	V_{CE} = 150V
DC Current Transfer Static Ratio (Note 8)	h_{FE}	100 100 50 10	— — — —	— 300 — —	—	I_C = 1mA, V_{CE} = 10V I_C = 250mA, V_{CE} = 10V I_C = 500mA, V_{CE} = 10V I_C = 1A, V_{CE} = 10V
Collector-Emitter Saturation Voltage (Note 8)	$V_{CE(sat)}$	— —	— —	0.2 0.3	V	I_C = 250mA, I_B = 25mA I_C = 500mA, I_B = 50mA
Base-Emitter Saturation Voltage (Note 8)	$V_{BE(sat)}$	—	—	1.0	V	I_C = 500mA, I_B = 50mA
Base-Emitter Turn-On Voltage (Note 8)	$V_{BE(on)}$	—	—	1.0	V	I_C = 500mA, V_{CE} = 10V
Transitional Frequency	f_T	100	—	—	MHz	I_C = 50mA, V_{CE} = 10V f = 100MHz
Output Capacitance	C_{obo}	—	—	10	pF	V_{CB} = 10V, f = 1MHz

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

Typical Electrical Characteristics

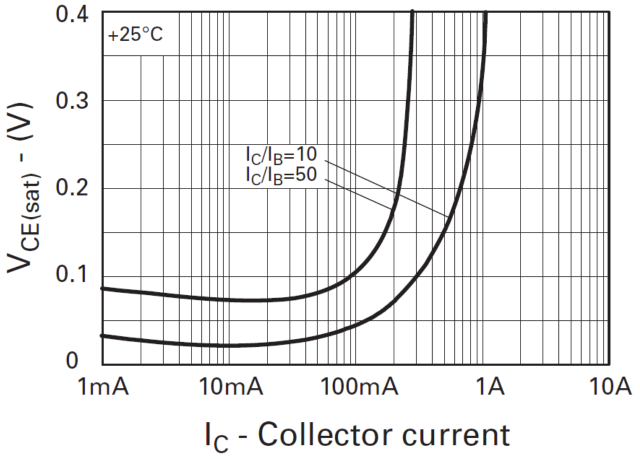


Figure 5. $V_{CE(sat)}$ vs. I_C

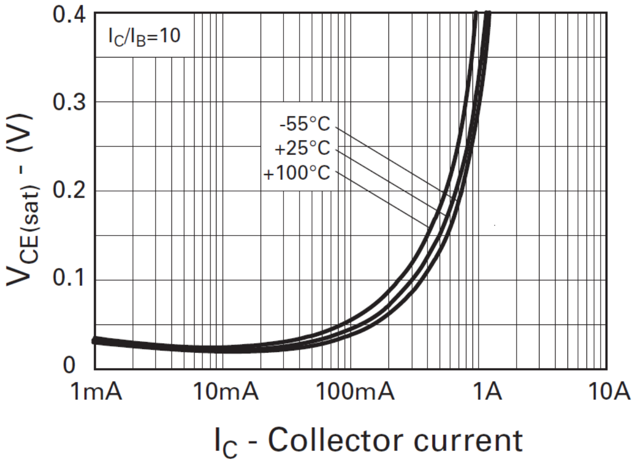


Figure 6. $V_{CE(sat)}$ vs. I_C

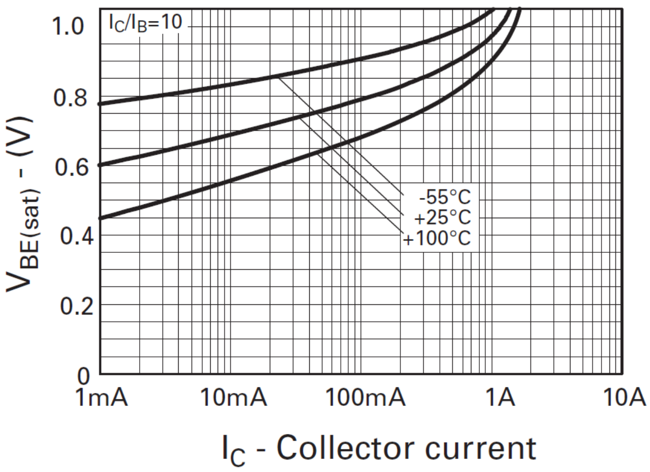


Figure 7. $V_{BE(sat)}$ vs. I_C

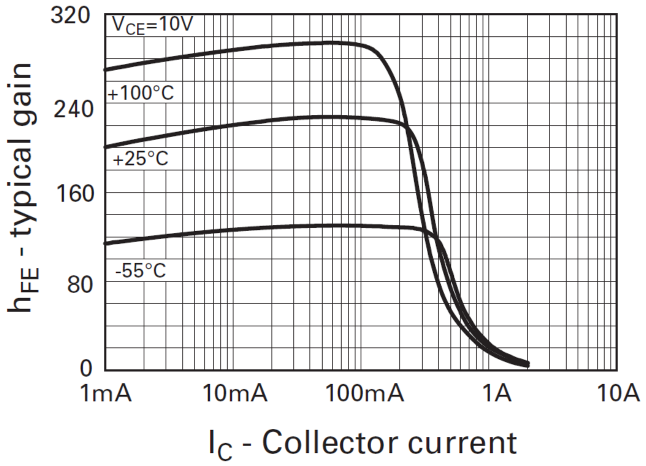


Figure 8. h_{FE} vs. I_C

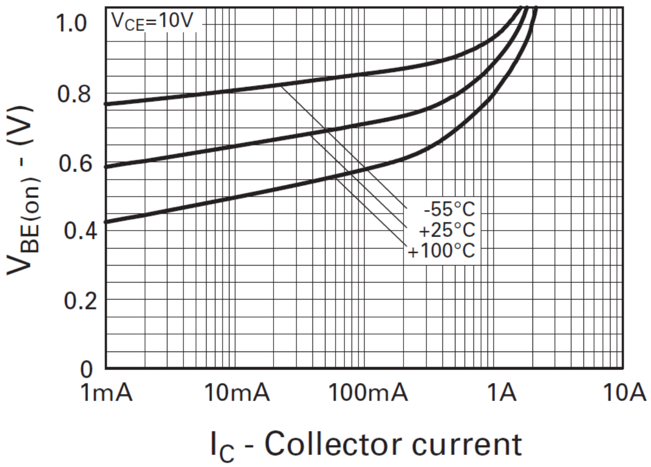
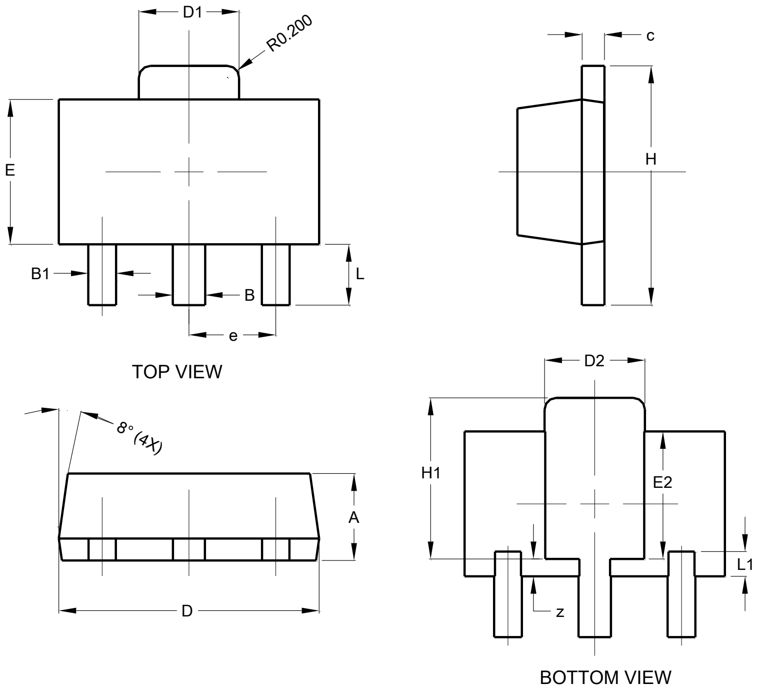


Figure 9. $V_{BE(on)}$ vs. I_C

Package Outline Dimensions

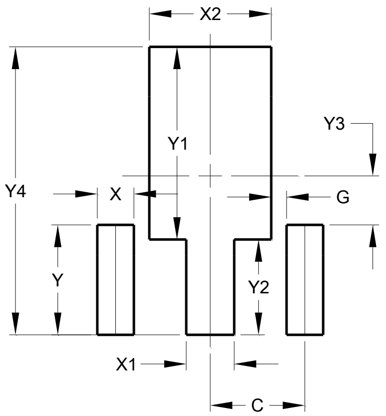
SOT89



SOT89			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

Suggested Pad Layout

SOT89



Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530

Note: 9. For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.