



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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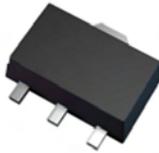
## Features

- $BV_{CEO} > 80V$
- High current gain
- Max Continuous Current  $I_C = 500mA$
- Fast switching

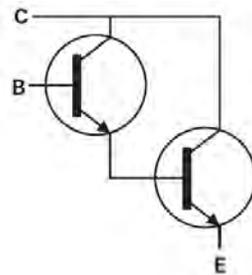
## Mechanical Data

- Case: SOT89
- Moisture Sensitivity: Level 1 per J-STD-020
- UL Flammability Rating 94V-0
- Terminals: Matte Tin Finish
- Weight: 0.052 grams (Approximate)

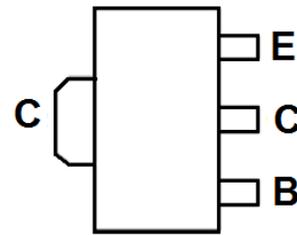
SOT89



Top View



Device symbol



Top View  
Pin-out

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

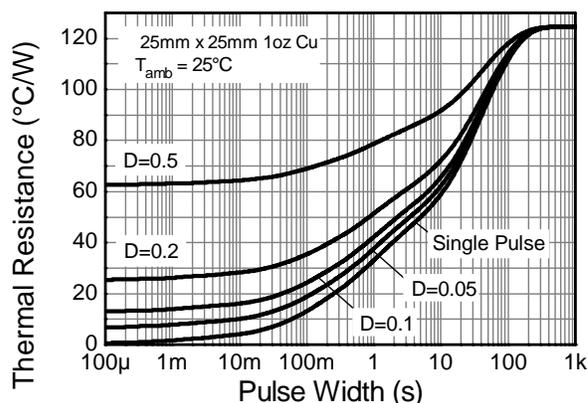
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	90	V
Collector-Emitter Voltage	$V_{CEO}$	80	V
Emitter-Base Voltage	$V_{EBO}$	10	V
Continuous Collector Current	$I_C$	500	mA
Peak Pulse Current	$I_{CM}$	1.5	A
Base Current	$I_B$	100	mA

### Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

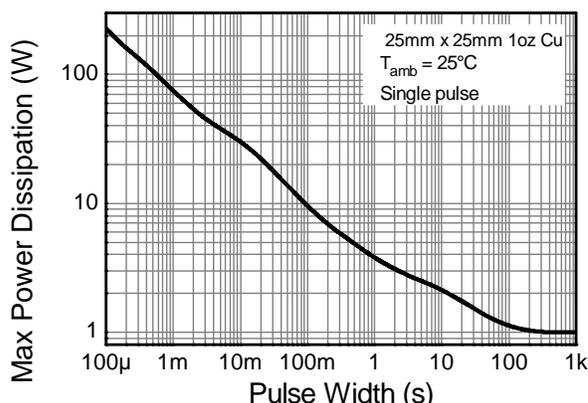
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	$P_D$	1	W
Thermal Resistance, Junction to Ambient (Note 4)	$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Leads (Note 5)	$R_{\theta JL}$	8.66	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
4. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
  5. Thermal resistance from junction to solder-point (on the exposed collector pad).

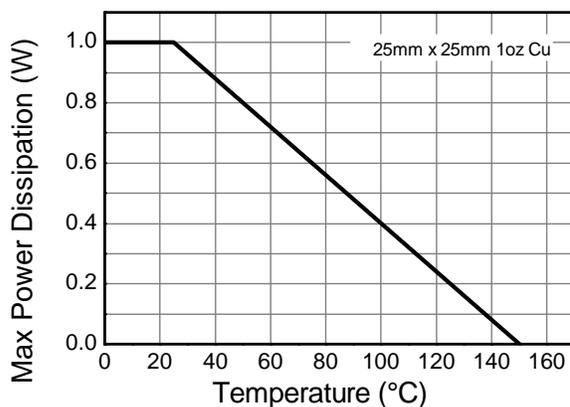
### Thermal Characteristics



**Transient Thermal Impedance**



**Pulse Power Dissipation**



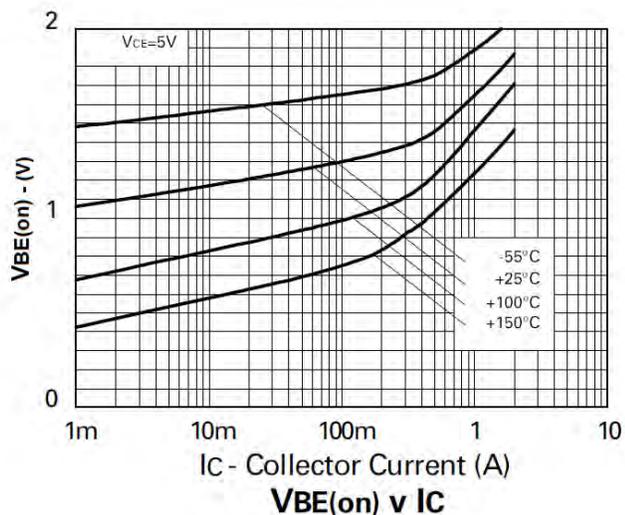
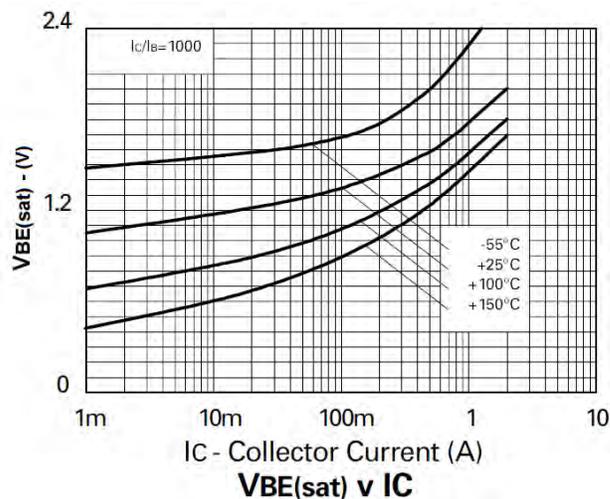
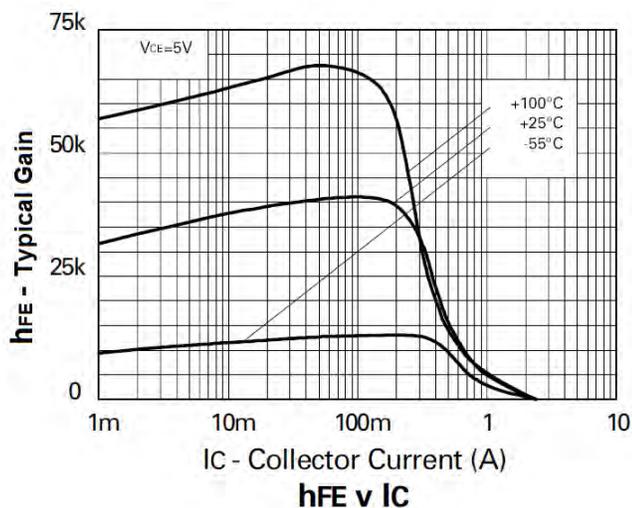
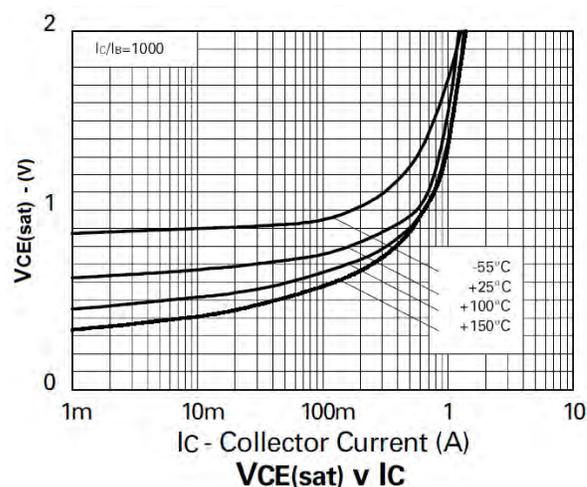
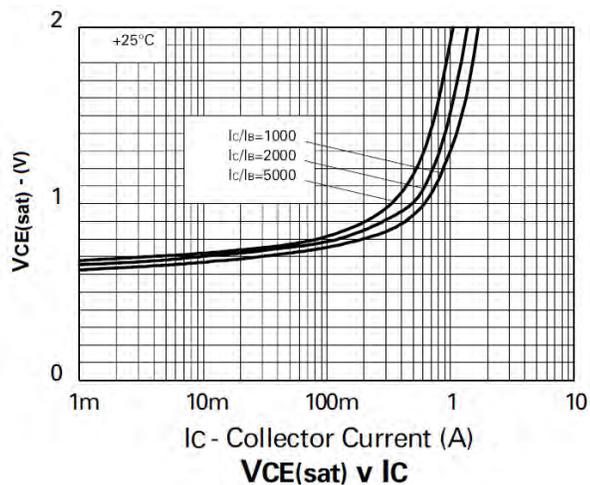
**Derating Curve**

**Electrical Characteristics** @ $T_A = 25^{\circ}\text{C}$  unless otherwise specified

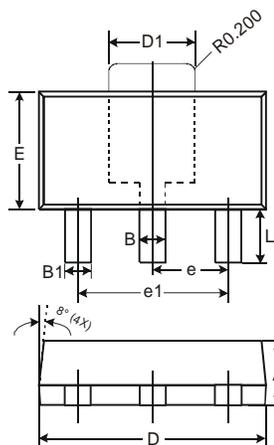
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	90	-	-	V	$I_C = 10\mu\text{A}$
Collector-Emitter Breakdown Voltage (Notes 6)	$BV_{CEO}$	80	-	-	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	10	-	-	V	$I_E = 10\mu\text{A}$
Collector Cutoff Current	$I_{CES}$	-	-	10	$\mu\text{A}$	$V_{CE} = 80\text{V}$
Emitter Cutoff Current	$I_{EBO}$	-	-	10	$\mu\text{A}$	$V_{EB} = 8\text{V}$
DC current transfer Static ratio (Notes 6)	$h_{FE}$	1000 2000	-	-		$I_C = 150\text{mA}, V_{CE} = 10\text{V}$ $I_C = 500\text{mA}, V_{CE} = 10\text{V}$
Collector-Emitter Saturation Voltage (Notes 6)	$V_{CE(sat)}$	-	-	1.3 1.3	V	$I_C = 500\text{mA}, I_B = 0.5\text{mA}$ $I_C = 500\text{mA}, I_B = 0.5\text{mA}, T_J = 150^{\circ}\text{C}$
Base-Emitter Saturation Voltage (Notes 6)	$V_{BE(sat)}$	-	-	1.9	V	$I_C = 500\text{mA}, I_B = 0.5\text{mA}$
Turn On Time	$t_{ON}$	-	0.4	-	$\mu\text{s}$	$I_C = 500\text{mA},$ $I_{B(on)} = I_{B(off)} = 0.5\text{mA}$
Turn Off Time	$t_{OFF}$		1.5			

 Notes: 6. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

### Typical Electrical Characteristics

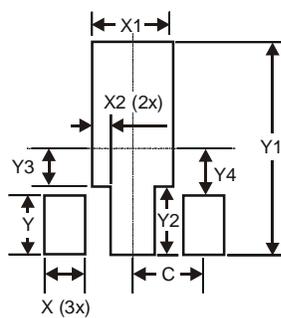


## Package Outline Dimensions



SOT89		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.43
D	4.40	4.60
D1	1.52	1.83
E	2.29	2.60
e	1.50 Typ	
e1	3.00 Typ	
H	3.94	4.25
L	0.89	1.20
All Dimensions in mm		

## Suggested Pad Layout



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500