



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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企业微信二维码



企业QQ二维码

Features

- $BV_{CEO} > -400V$
- $I_C = -0.5A$ Continuous Collector Current
- $I_{CM} = 1A$ Peak Pulse Current
- High Gain Holds up $h_{FE} \geq 140 @ I_C = -100mA$

Mechanical Data

- Case: SOT89
- Case 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 
- Weight: 0.05 grams (Approximate)

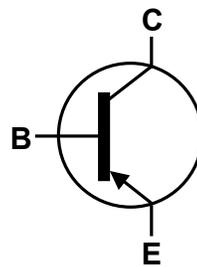
Applications

- High Voltage Switching

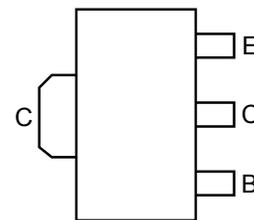
SOT89



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 _{CB0}	-400	V
Collector-Emitter Voltage	V _{CEO}	-400	V
Emitter-Base Voltage	V _{EB0}	-7	V
Continuous Collector Current	I _C	-0.5	A
Peak Pulse Current	I _{CM}	-1	A
Base Current	I _B	-250	mA

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

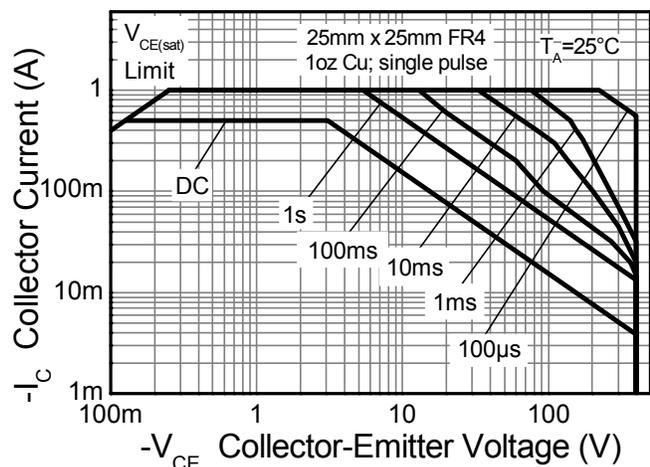
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	1.5	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	83	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R _{θJL}	10.4	°C/W
Operating and Storage Temperature Range	T _L , T _{STG}	-55 to +150	°C

ESD Ratings (Note 7)

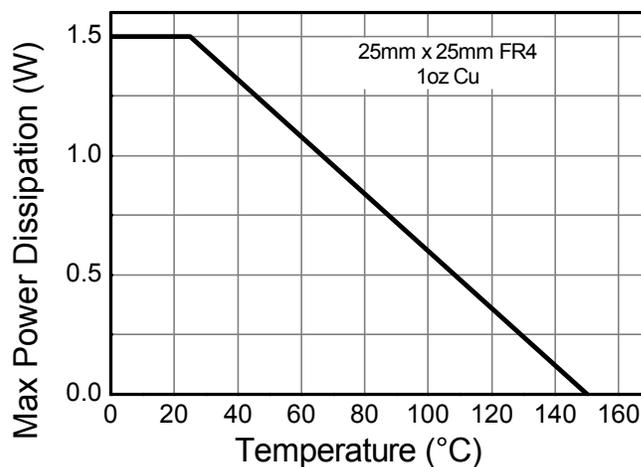
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with the exposed collector pad on 25mm x 25mm 1oz copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Thermal resistance from junction to solder-point (on the exposed collector pad).
 7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

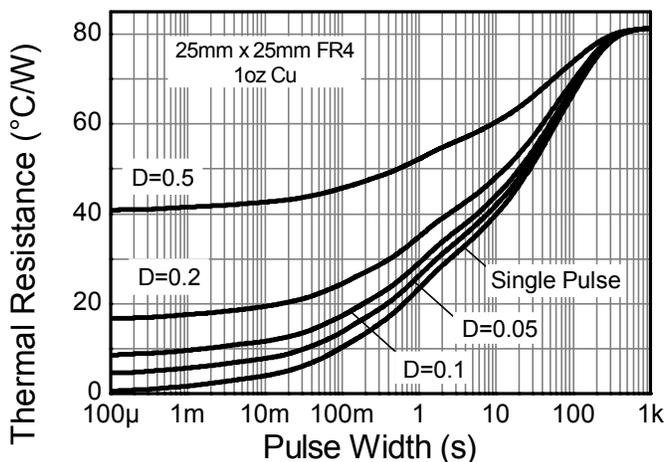
Normal Characteristics and Derating information



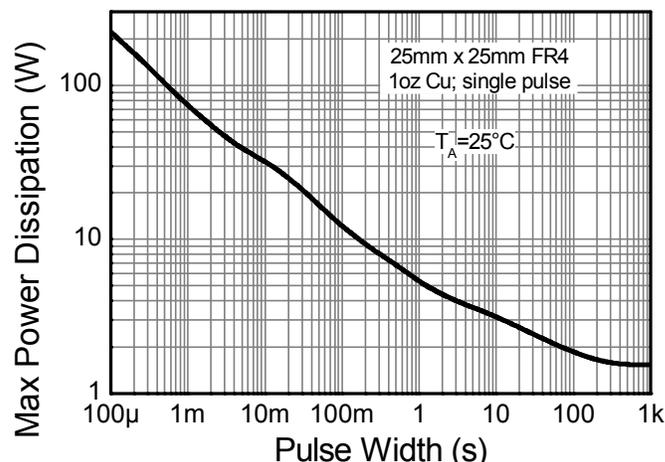
Safe Operating Area



Derating Curve



Transient Thermal Impedance



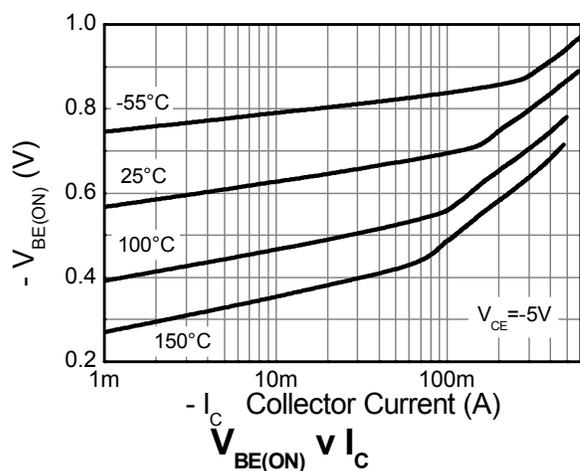
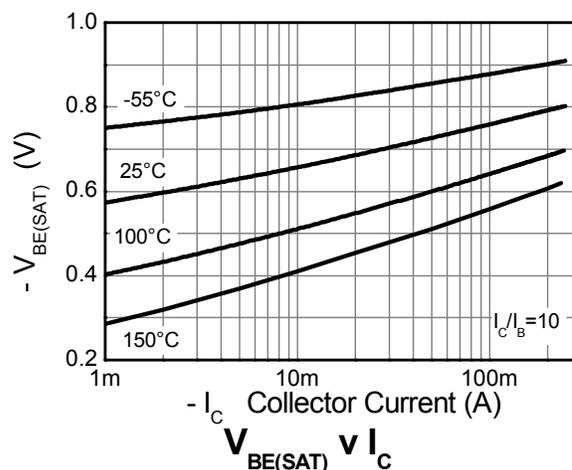
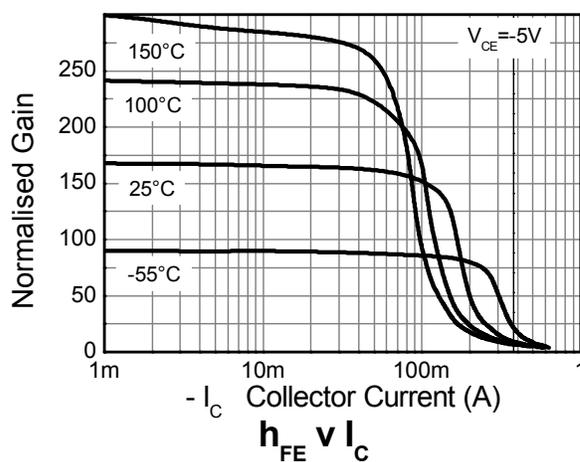
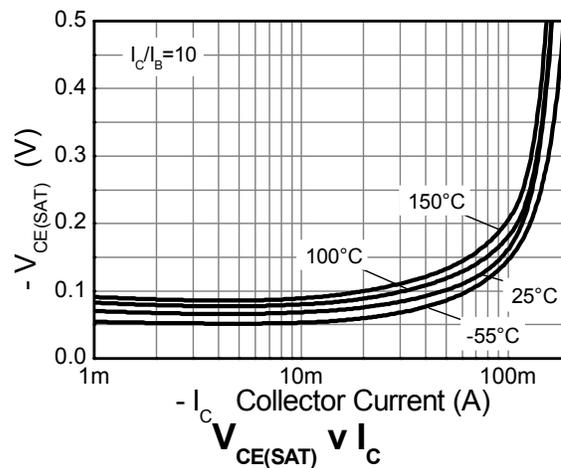
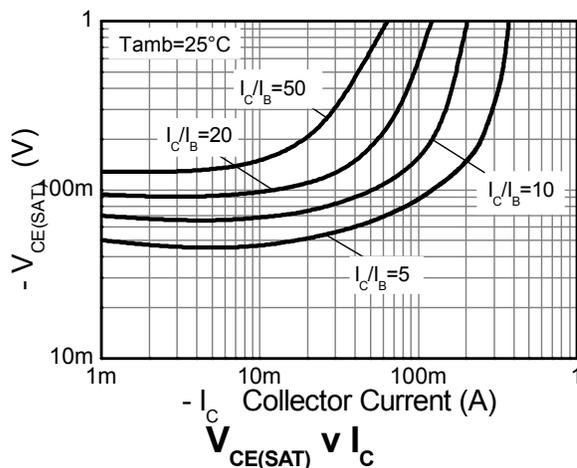
Pulse Power Dissipation

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

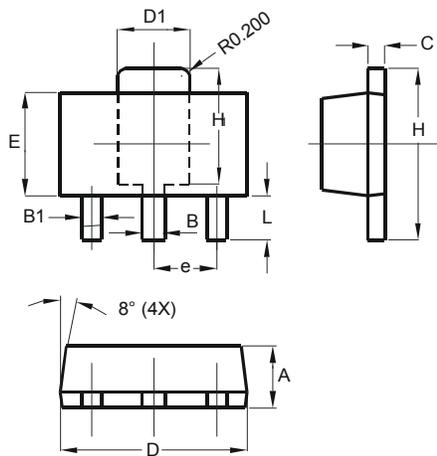
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-400	-	-	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	-400	-	-	V	$I_C = -1\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-	-	V	$I_E = -100\mu\text{A}$
Collector-Emitter Cut-off Current	I_{CES}	-	-	-100	nA	$V_{CE} = -320\text{V}$
Collector Cut-off Current	I_{CBO}	-	-	-100	nA	$V_{CB} = -320\text{V}$
Emitter Cut-off Current	I_{EBO}	-	-	-100	nA	$V_{EB} = -6\text{V}$
Static Forward Current Transfer Ratio (Note 8)	h_{FE}	140 140	-	450 400	-	$I_C = -20\text{mA}, V_{CE} = -5\text{V}$ $I_C = -100\text{mA}, V_{CE} = -5\text{V}$
Collector-Emitter saturation Voltage (Note 8)	$V_{CE(sat)}$	-	-	-250 -400	mV	$I_C = -100\text{mA}, I_B = -10\text{mA}$ $I_C = -200\text{mA}, I_B = -40\text{mA}$
Base-Emitter saturation Voltage (Note 8)	$V_{BE(sat)}$	-	-0.75	-0.9	V	$I_C = -100\text{mA}, I_B = -10\text{mA}$
Base-Emitter Turn-On Current (Note 8)	$V_{BE(on)}$	-	-	-0.8	V	$I_C = -200\text{mA}, V_{CE} = -10\text{V}$
Transition frequency	f_T	-	75	-	MHz	$I_C = -50\text{mA}, V_{CE} = -5\text{V},$ $f = 50\text{MHz}$
Collector Output Capacitance	C_{obo}	-	19	-	pF	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$
Delay Time	$t_{(d)}$	-	89	-	ns	$V_{CC} = -200\text{V}, I_C = -100\text{mA},$ $I_{B1} = -10\text{mA}, I_{B2} = 20\text{mA}$
Rise Time	$t_{(r)}$	-	111	-	ns	
Storage Time	$t_{(s)}$	-	2165	-	ns	
Fall Time	$t_{(f)}$	-	185	-	ns	

 Note: 8. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$

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

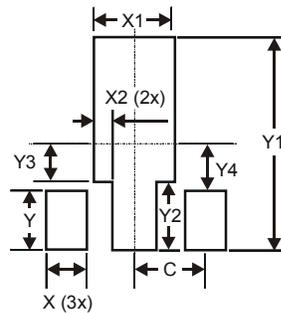


Package Outline Dimensions



SOT89		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
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

Note: 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.