



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

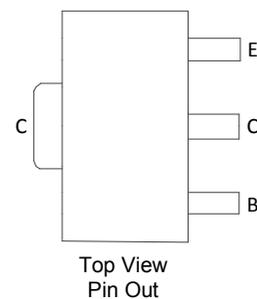
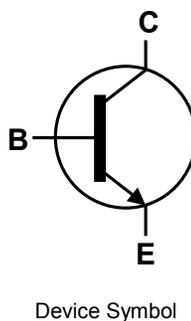
- $BV_{CEO} = 400V$
- Low Saturation Voltage  $V_{CE(sat)} < 200mV @ 100mA$
- $I_C = 0.5A$  High Continuous Current

## 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  $\text{E3}$
- Weight: 0.05 grams (Approximate)

## Application

- Telephone dialer circuits
- Hook switches for modems
- Predrivers within HID lamp ballasts
- (SLIC) Subscriber Line Interface Cards



### Absolute Maximum Ratings (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB0}$	400	V
Collector-Emitter Voltage	$V_{CEO}$	400	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Continuous Collector Current	$I_C$	500	mA
Peak Pulse Collector Current (single pulse)	$I_{CM}$	1	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	1	W
Power Dissipation (Note 6)	$P_D$	5.7	W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

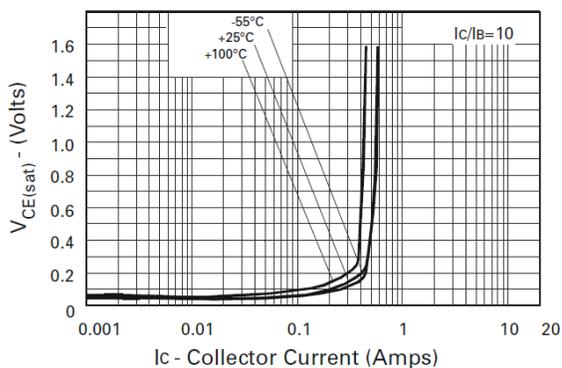
- Notes:
5. For a device surface mounted on 15mm x 15mm x 0.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; device measured when operating in steady state condition.
  6. Same as note (5), except the device is mounted on 40mm x 40mm x 0.6mm single sided 1oz weight copper.

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

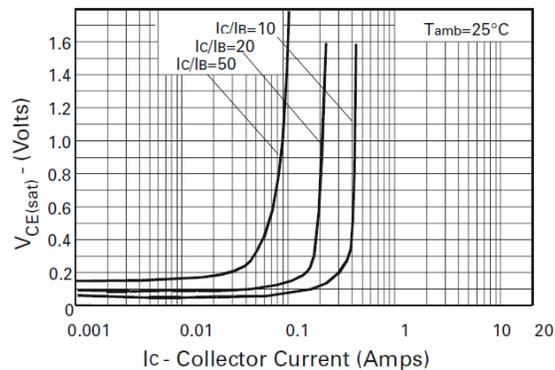
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CB0}$	400	480	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 7)	$BV_{CEO}$	400	465	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	5	7.8	—	V	$I_E = 100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$	—	—	0.1	$\mu\text{A}$	$V_{CB} = 320\text{V}$
Collector Emitter Cut-Off Current	$I_{CES}$	—	—	0.1	$\mu\text{A}$	$V_{CE} = 320\text{V}$
Emitter Cut-Off Current	$I_{EBO}$	—	—	0.1	$\mu\text{A}$	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage (Note 7)	$V_{CE(sat)}$	—	—	165 125 200	mV	$I_C = 20\text{mA}, I_B = 1\text{mA}$ $I_C = 50\text{mA}, I_B = 0.5\text{mA}$ $I_C = 100\text{mA}, I_B = 10\text{mA}$
Base-Emitter Saturation Voltage (Note 7)	$V_{BE(sat)}$	—	750	850	mV	$I_C = 100\text{mA}, I_B = 10\text{mA}$
Base-Emitter Turn-On Voltage (Note 7)	$V_{BE(on)}$	—	700	850	mV	$I_C = 100\text{mA}, V_{CE} = 5\text{V}$
DC Current Gain (Note 7)	$h_{FE}$	85 100 55 35	150 170 130 90	—	—	$I_C = 1\text{mA}, V_{CE} = 5\text{V}$ $I_C = 10\text{mA}, V_{CE} = 10\text{V}$ $I_C = 100\text{mA}, V_{CE} = 5\text{V}$ $I_C = 200\text{mA}, V_{CE} = 10\text{V}$
Transitional frequency	$f_T$	50	—	—	MHz	$I_C = 20\text{mA}, V_{CE} = 20\text{V}$ $f = 20\text{MHz}$
Output Capacitance	$C_{obo}$	—	—	10	pF	$V_{CB} = 20\text{V}, f = 1\text{MHz}$
Switching Time	$t_{on}$	—	130	—	ns	$I_C = 100\text{mA}, V_{CC} = 100\text{V},$ $I_{B1} = 10\text{mA}, I_{B2} = -20\text{mA}$
	$t_{off}$	—	3300	—		

- Note: 7. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

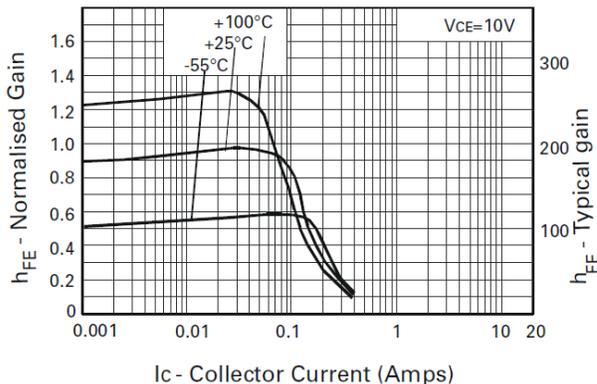
**Typical Electrical Characteristics** (@  $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



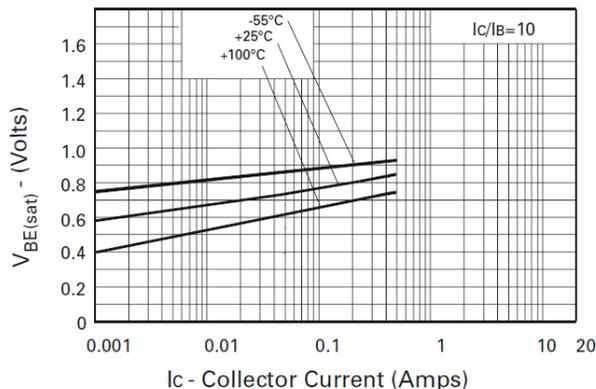
**$V_{CE(sat)}$  v  $I_C$**



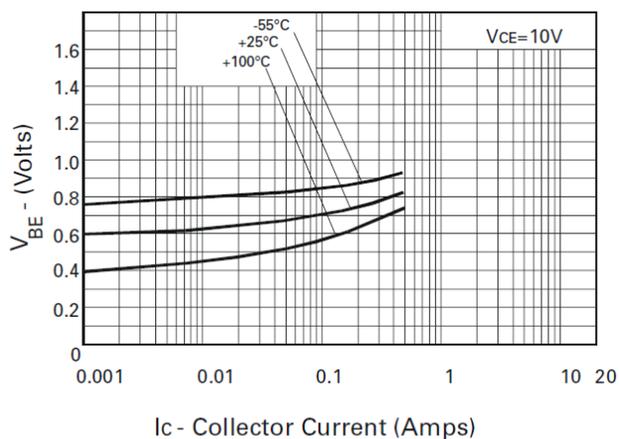
**$V_{CE(sat)}$  v  $I_C$**



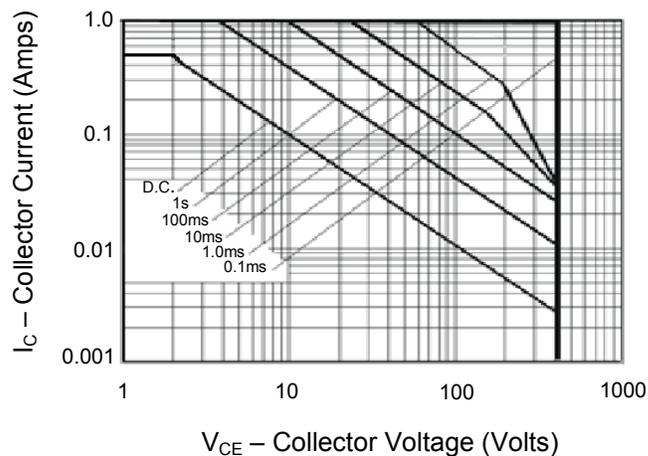
**$h_{FE}$  v  $I_C$**



**$V_{BE(sat)}$  v  $I_C$**



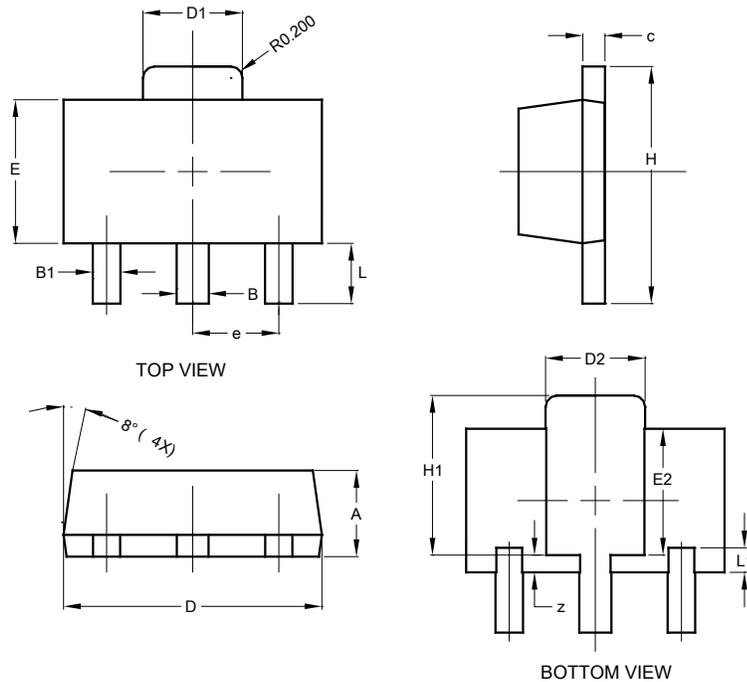
**$V_{BE(on)}$  v  $I_C$**



**Safe Operating Area**

### Package Outline Dimensions

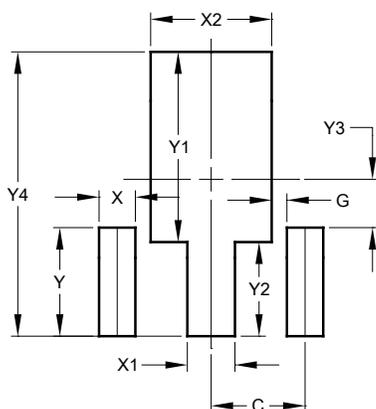
SOT89



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