



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



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Features

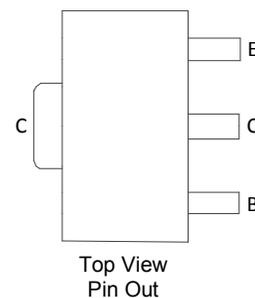
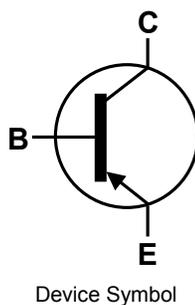
- $BV_{CEO} > -140V$
- $I_C = -3A$ High Continuous Current
- Low Saturation Voltage $V_{CE(sat)} < -75mV @ -0.5A$
- $R_{sat} = 85m\Omega$ for a Low Equivalent On-Resistance

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 ③
- Weight: 0.05 grams (Approximate)

Application

- Motor driving
- Line switching
- High side switches
- Subscriber line interference cards (SLIC)



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

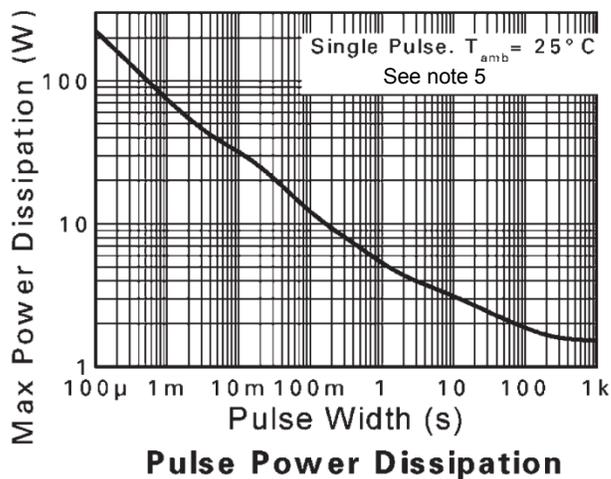
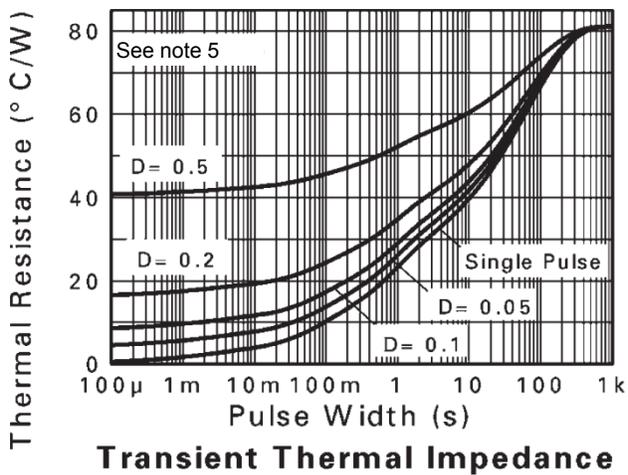
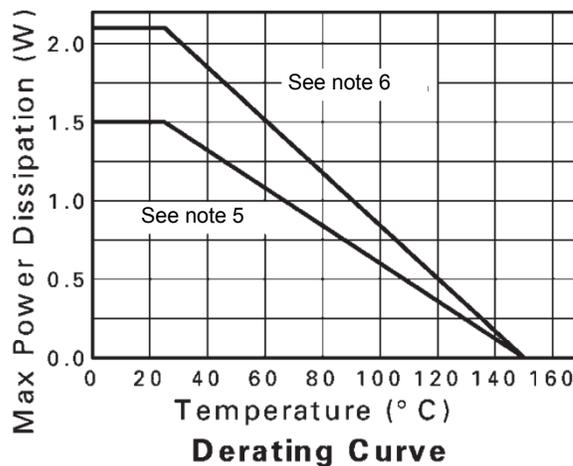
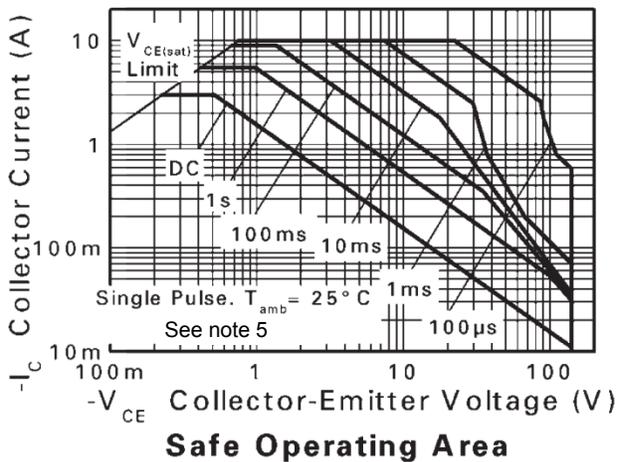
| Characteristic | Symbol | Value | Unit |
|------------------------------|-----------|-------|------|
| Collector-Base Voltage | V_{CB0} | -180 | V |
| Collector-Emitter Voltage | V_{CEO} | -140 | V |
| Emitter-Base Voltage | V_{EBO} | -7 | V |
| Continuous Collector Current | I_C | -3 | A |
| Peak Pulse Current | I_{CM} | -10 | A |

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

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|---------------------------|
| Power Dissipation (Note 5) Linear Derating Factor | P_D | 1.5 12 | W mW/ $^\circ\text{C}$ |
| Power Dissipation (Note 6) Linear Derating Factor | P_D | 2.1 16.8 | W mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient (Note 5) | $R_{\theta JA}$ | 83 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Ambient (Note 6) | $R_{\theta JA}$ | 60 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

- Notes:
5. For a device surface mounted on 25mm x 25mm x 1.6mm 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 50mm x 50mm x 1.6mm single sided 1oz weight copper.

Thermal Characteristics and Derating Information

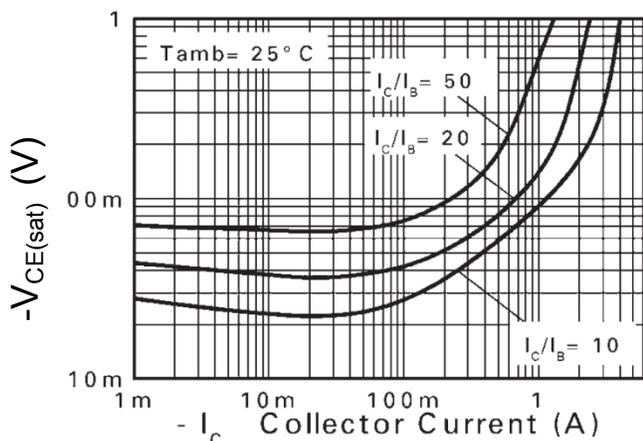


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

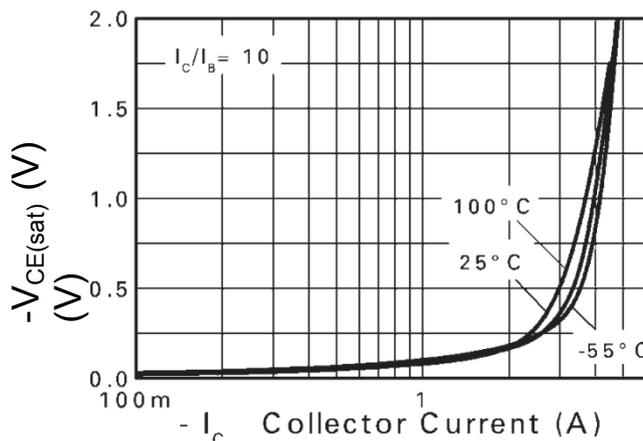
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|---------------------------------------|-----------------------|---------------------------|----------------------------|---------------------|---|
| Collector-Base Breakdown Voltage | BV_{CBO} | -180 | -200 | — | V | $I_C = -100\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage | BV_{CER} | -180 | -200 | — | V | $I_C = -1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$ |
| Collector- Emitter Breakdown Voltage (Note 7) | BV_{CEO} | -140 | -160 | — | V | $I_E = -10\text{mA}$ |
| Emitter-Base Breakdown Voltage | BV_{EBO} | -7.0 | -8.0 | — | V | $I_E = -100\mu\text{A}$ |
| Collector Cutoff Current | I_{CBO} | — | -1 | -20 | nA μA | $V_{CB} = -150\text{V}$ $V_{CB} = -150\text{V}$, $T_A = +100^\circ\text{C}$ |
| Collector Cutoff Current | I_{CER} $R \leq 1\text{k}\Omega$ | — | -1 | -20 | nA μA | $V_{CB} = -150\text{V}$ $V_{CB} = -150\text{V}$, $T_A = +100^\circ\text{C}$ |
| Emitter Cutoff Current | I_{EBO} | — | -1 | -10 | nA | $V_{EB} = -6\text{V}$ |
| Collector-Emitter Saturation Voltage (Note 7) | $V_{CE(sat)}$ | — | -37 -50 -80 -255 | -60 -75 -115 -330 | mV | $I_C = -0.1\text{A}$, $I_B = -5\text{mA}$ $I_C = -0.5\text{A}$, $I_B = -50\text{mA}$ $I_C = -1\text{A}$, $I_B = -100\text{mA}$ $I_C = -3\text{A}$, $I_B = -300\text{mA}$ |
| Base-Emitter Saturation Voltage (Note 7) | $V_{BE(sat)}$ | — | -970 | -1010 | mV | $I_C = -3\text{A}$, $I_B = -300\text{mA}$ |
| Base-Emitter Turn-On Voltage (Note 7) | $V_{BE(on)}$ | — | -800 | -900 | mV | $I_C = -3\text{A}$, $V_{CE} = -5\text{V}$ |
| Static forward current transfer ratio (Note 7) | h_{FE} | 100 100 45 — | 255 200 100 5 | — 300 — — | — | $I_C = -10\text{mA}$, $V_{CE} = -5\text{V}$ $I_C = -1\text{A}$, $V_{CE} = -5\text{V}$ $I_C = -3\text{A}$, $V_{CE} = -5\text{V}$ $I_C = -10\text{A}$, $V_{CE} = -5\text{V}$ |
| Transitional Frequency | f_T | — | 120 | — | MHz | $I_C = -100\text{mA}$, $V_{CE} = -10\text{V}$, $f = 50\text{MHz}$ |
| Output Capacitance | C_{obo} | — | 33 | — | pF | $V_{CB} = -10\text{V}$, $f = 1\text{MHz}$ |
| Switching Time | t_{on} | — | 42 | — | ns | $I_C = -1\text{A}$, $V_{CC} = -50\text{V}$, $I_{B1} = -I_{B2} = -100\text{mA}$ |
| | t_{off} | — | 636 | — | | |

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

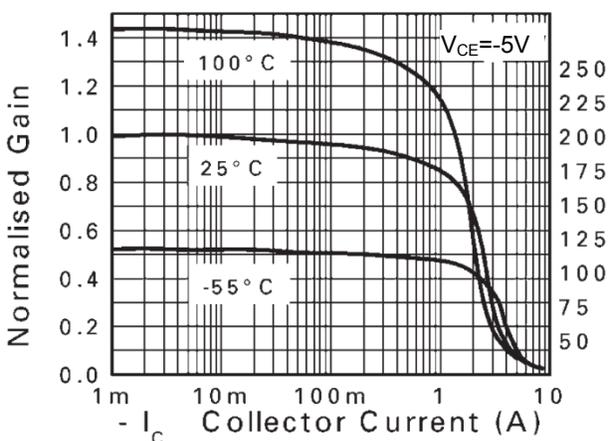
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



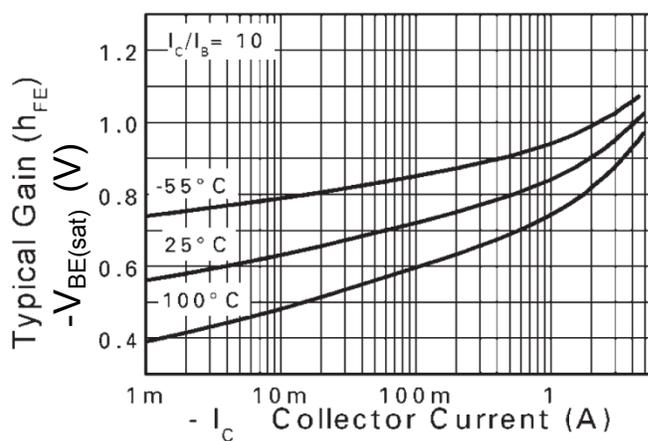
$V_{CE(sat)}$ v I_C



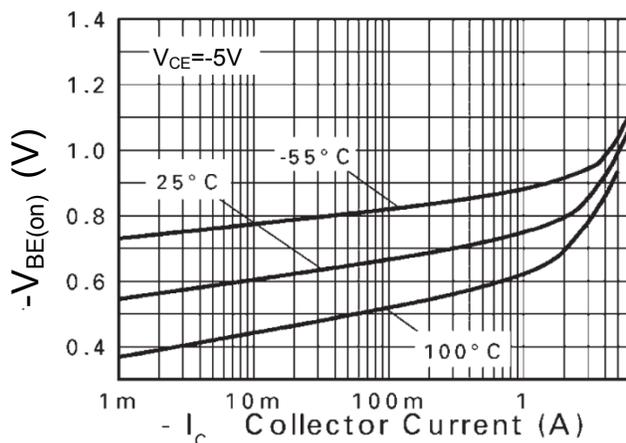
$V_{CE(sat)}$ v I_C



h_{FE} v I_C



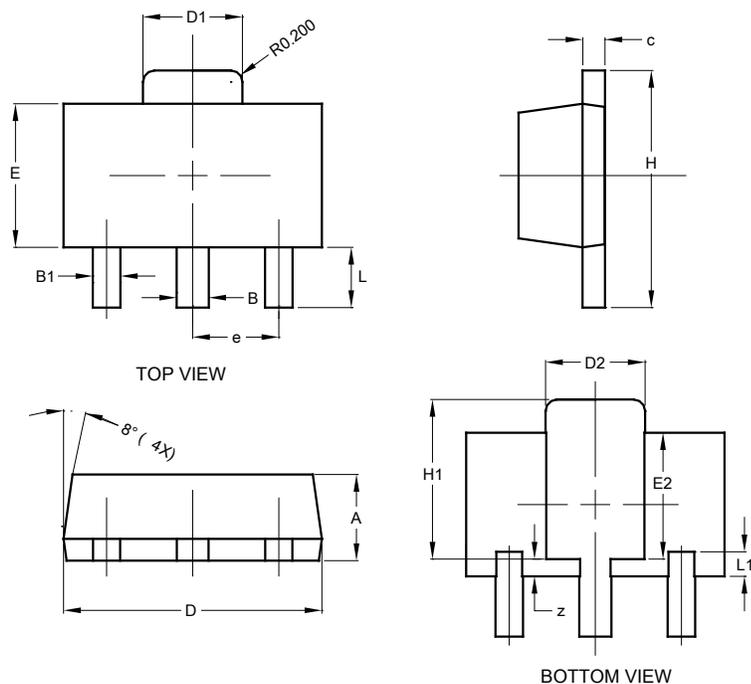
$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C

Package Outline Dimensions

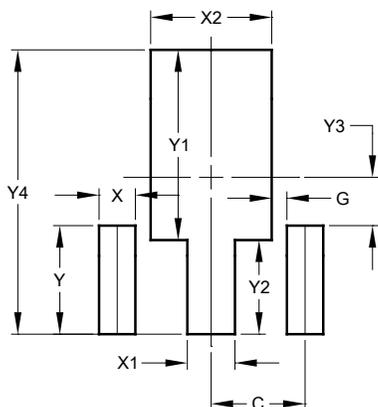
SOT89



| 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 |