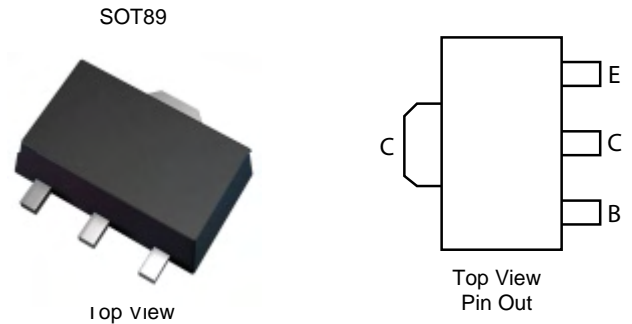


60V PNP LOW SATURATION MEDIUM POWER TRANSISTOR

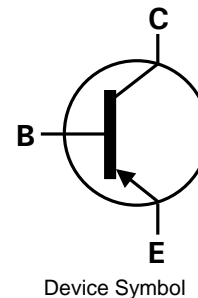
Features

- $V_{CE0} > -60V$
- $I_C = -4.3A$ high continuous current
- $R_{SAT} = 32m\Omega$ for a low equivalent On-Resistance
- Low saturation voltage $V_{CE(sat)} < -65mV @ I_C = -1A$
- h_{FE} specified up to -10A for high current gain hold up
- Complementary NPN type: PBSS304NX
- **Lead-Free Finish; RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **PPAP capable (Note 4)**



Application

- Emergency lighting circuits
- Motor driving (including DC fans)
- Backlight inverters
- Power switches
- Gate driving MOSFETs and IGBTs



Mechanical Data

- Case: SOT89
- Case material: molded plastic. "Green" molding compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.05 grams (Approximate)

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

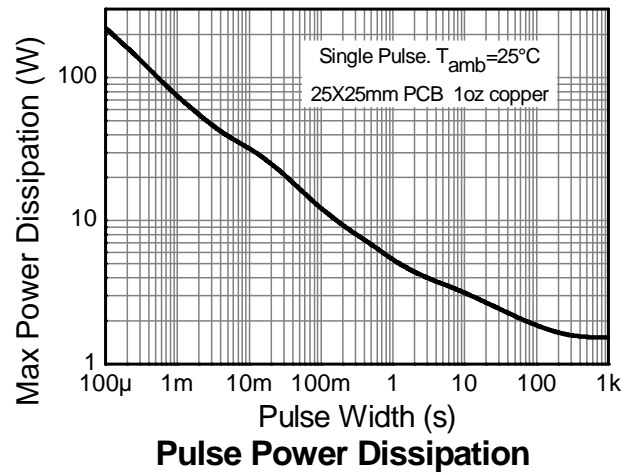
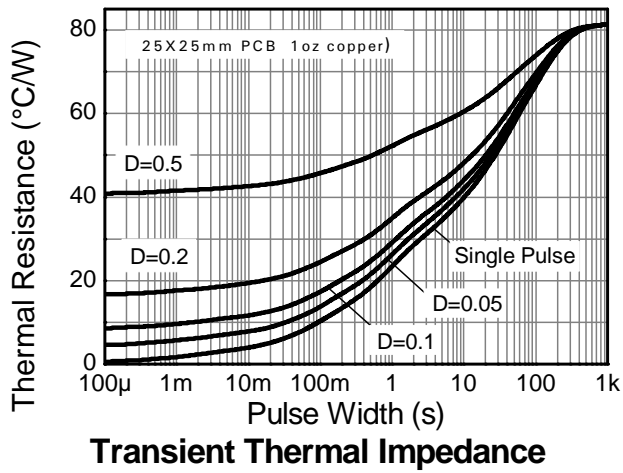
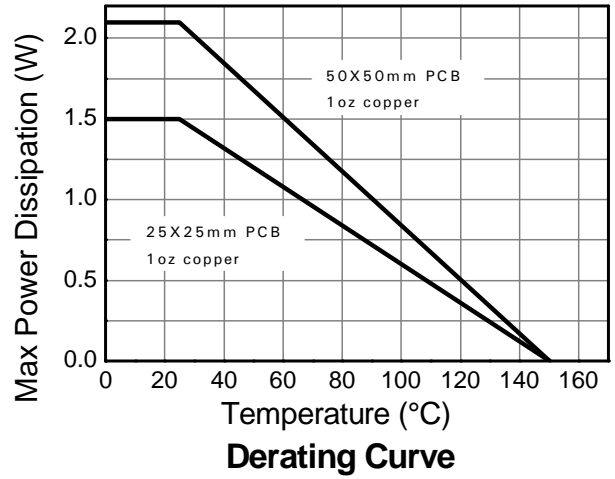
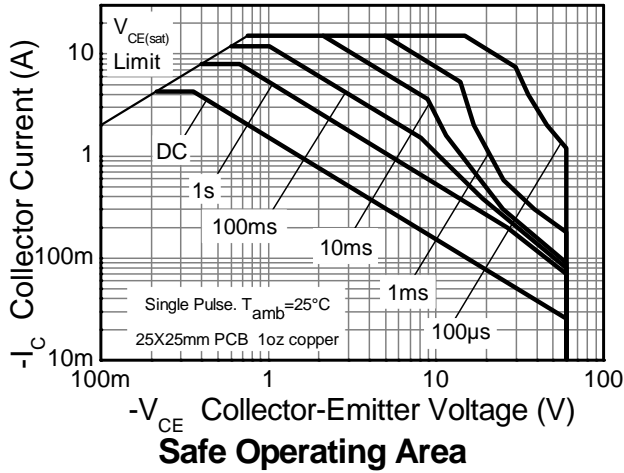
| Characteristic | Symbol | Value | Unit |
|------------------------------|-----------|-------|------|
| Collector-Base Voltage | V_{CBO} | -100 | V |
| Collector-Emitter Voltage | V_{CEO} | -60 | V |
| Emitter-Base Voltage | V_{EBO} | -7 | V |
| Continuous Collector Current | I_C | -4.3 | A |
| Peak Pulse Current | I_{CM} | -15 | A |

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

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|----------------|
| Power Dissipation (Note 6) | P_D | 1.5 | W |
| Linear derating factor | | 12 | mW/ $^\circ C$ |
| Power Dissipation (Note 7) | P_D | 2.1 | W |
| Linear derating factor | | 16.8 | mW/ $^\circ C$ |
| Thermal Resistance, Junction to Ambient (Note 6) | $R_{\theta JA}$ | 83 | $^\circ C/W$ |
| Thermal Resistance, Junction to Ambient (Note 7) | $R_{\theta JA}$ | 60 | $^\circ C/W$ |
| Thermal Resistance, Junction to Leads (Note 8) | $R_{\theta JL}$ | 3.23 | $^\circ C/W$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ C$ |

- Notes:
6. 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.
 7. Same as note (6), except the device is mounted on 50mm X 50mm single sided 1oz weight copper.
 8. Thermal resistance from junction to solder-point (on the exposed collector pad).

Thermal Characteristics and Derating Information

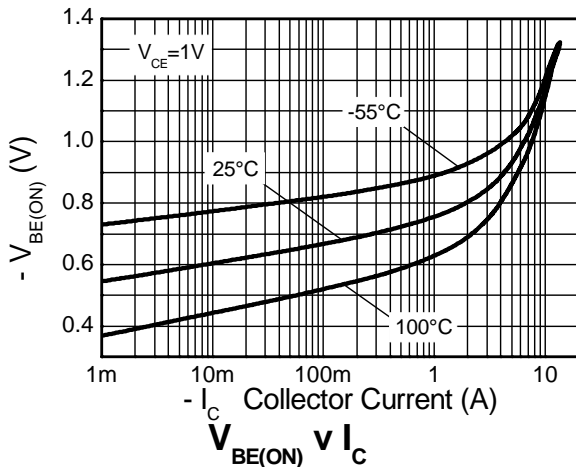
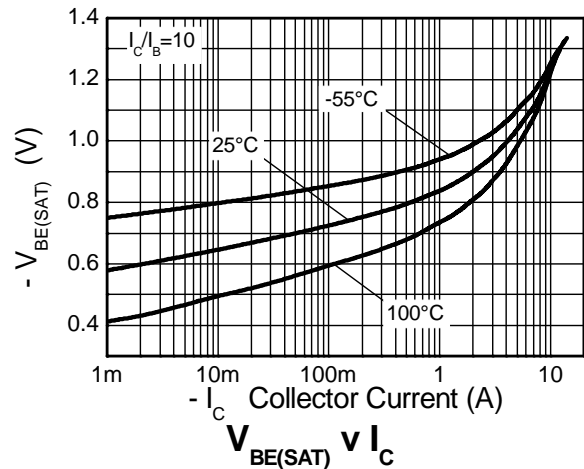
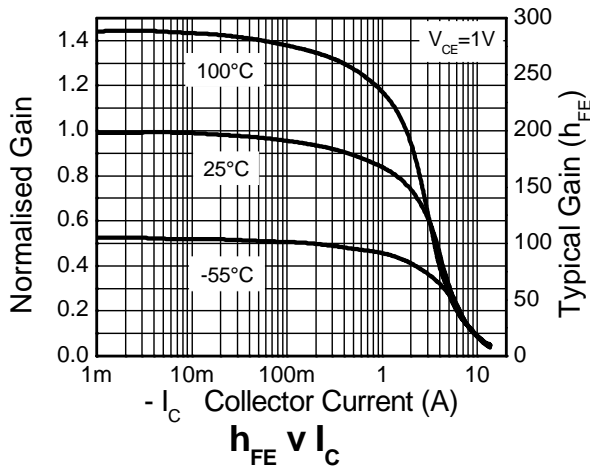
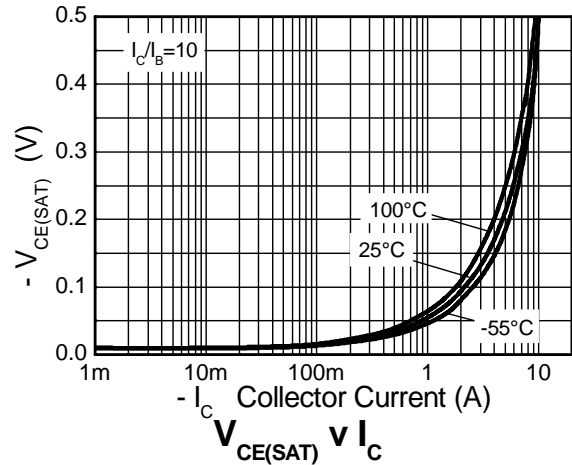
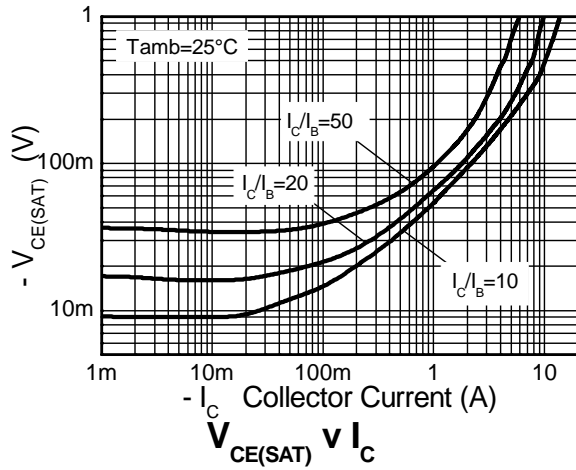


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|-----------------------------|------------------------|---------------------------|----------------------------|----------|--|
| Collector-Base Breakdown Voltage | BV _{CBO} | -100 | -120 | - | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage (Notes 9) | BV _{CER} | -100 | -120 | - | V | I _C = -1μA, R _B ≤ 1kΩ |
| Collector-Emitter Breakdown Voltage (Notes 9) | BV _{CEO} | -60 | -80 | - | V | I _C = -10mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | -7 | -8.1 | - | V | I _E = -100μA |
| Collector Cutoff Current | I _{CBO} | - | < -1 | -20 -500 | nA nA | V _{CB} = -80V V _{CB} = -80V, T _A = +100°C |
| Collector Cutoff Current | I _{CER} R ≤ 1kΩ | - | < -1 | -20 -500 | nA nA | V _{CB} = -80V V _{CB} = -80V, T _A = +100°C |
| Emitter Cutoff Current | I _{EBO} | - | < -1 | -10 | nA | V _{EB} = -6V |
| DC current transfer Static ratio (Notes 9) | h _{FE} | 100 100 45 10 | 250 200 90 25 | 300 | | I _C = -10mA, V _{CE} = -1V I _C = -2A, V _{CE} = -1V I _C = -5A, V _{CE} = -1V I _C = -10A, V _{CE} = -1V |
| Collector-Emitter Saturation Voltage (Notes 9) | V _{CE(sat)} | - | -14 -50 -75 -160 | -20 -65 -110 -215 | mV | I _C = -100mA, I _B = -10mA I _C = -1A, I _B = -100mA I _C = -2A, I _B = -200mA I _C = -5A, I _B = -500mA |
| Base-Emitter Saturation Voltage (Notes 9) | V _{BE(sat)} | - | -950 | -1050 | mV | I _C = -5A, I _B = -500mA |
| Base-Emitter Turn-on Voltage (Notes 9) | V _{BE(on)} | - | -840 | -950 | mV | I _C = -5A, V _{CE} = -1V |
| Transitional Frequency (Notes 9) | f _T | - | 120 | - | MHz | I _C = -100mA, V _{CE} = -10V, f = 50MHz |
| Output capacitance | C _{obo} | - | 48 | - | pF | V _{CB} = -10V, f = 1MHz, |
| Switching Time | t _{ON} | - | 39 | - | ns | V _{CC} = -10V, I _C = -1A, I _{B1} = I _{B2} = -100mA |
| | t _{OFF} | - | 370 | - | | |

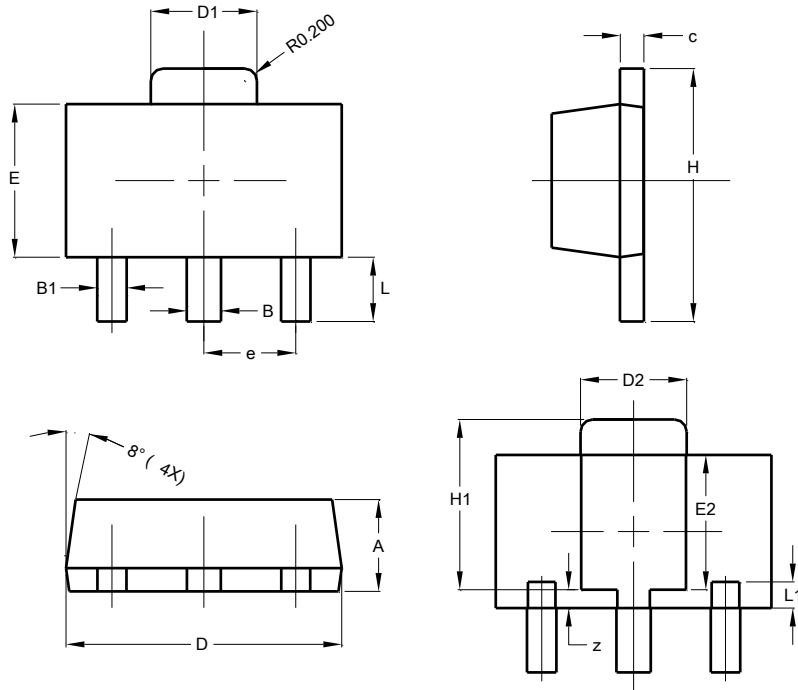
Notes: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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



Package Outline Dimensions

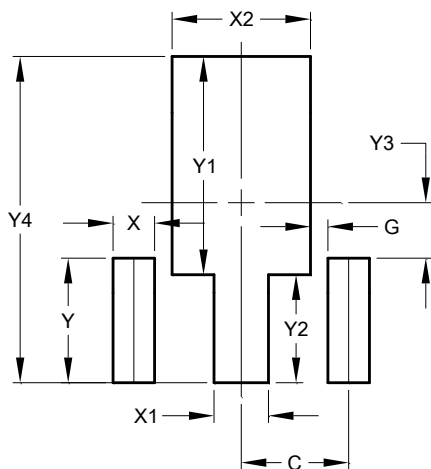
SOT89



| 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 |