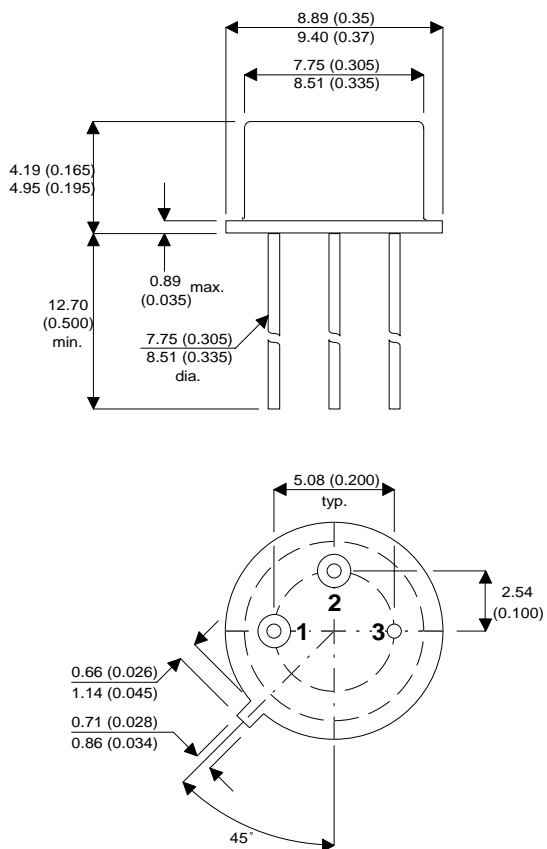


MECHANICAL DATA

Dimensions in mm (inches)



**SILICON EPITAXIAL
NPN TRANSISTOR**

FEATURES

General purpose power transistor for switching and linear applications in a hermetic TO-39 package.

TO-39 PACKAGE

PIN 1 – Emitter PIN 2 – Base PIN 3 – Collector

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

| | | |
|----------------|--|------------------------------|
| V_{CBO} | Collector – Base Voltage | 80V |
| $V_{CER(sus)}$ | Collector – Emitter Sustaining Voltage $R_{BE} = 100\Omega$ | 80V |
| $V_{CEO(sus)}$ | Collector – Emitter Sustaining Voltage | 65V |
| V_{EBO} | Emitter – Base Voltage | 5V |
| I_C | Continuous Collector Current | 3.5A |
| I_B | Continuous Collector Current | 1A |
| P_D | Total Device Dissipation $T_A = 25^\circ\text{C}$ | 10W |
| | Derate above 25°C | 0.057W/ $^\circ\text{C}$ |
| P_D | Total Device Dissipation $T_C = 25^\circ\text{C}$ | 1W |
| | Derate above 25°C | 0.0057W/ $^\circ\text{C}$ |
| T_J, T_{STG} | Operating Junction and Storage Temperature Range | -65 to +200 $^\circ\text{C}$ |
| T_L | Lead temperature, $\geq 1/32''$ (0.8mm) from seating plane for 10 s max. | 230 $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise stated)

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--|---|------|------|------|--------------------|
| I_{CER} Collector Cut-off Current | $V_{CE} = 65V$ | | | 10 | μA |
| | $R_{BE} = 100\Omega$ $T_C = 150^\circ\text{C}$ | | | 1 | mA |
| I_{CEX} Collector Cut-off Current | $V_{CE} = 75V$ $V_{BE} = -1.5V$ | | | 10 | μA |
| | $R_{BE} = 100\Omega$ $T_C = 150^\circ\text{C}$ | | | 1 | mA |
| I_{CEO} Collector Cut-off Current | $V_{CE} = 50V$ $I_B = 0$ | | | 100 | μA |
| I_{EBO} Emitter Cut-off Current | $V_{BE} = -5V$ $I_C = 0$ | | | 10 | μA |
| h_{FE}^* DC Current Gain | $V_{CE} = 2V$ $I_C = 1A$ | 20 | | 100 | — |
| | $V_{CE} = 2V$ $I_C = 3.2A$ | 4 | | | |
| $V_{CEO(sus)}^*$ Collector – Emitter Sustaining Voltage ¹ | $I_C = 100\text{mA}$ $I_B = 0$ | 65 | | | V |
| $V_{CER(sus)}^*$ Collector – Emitter Sustaining Voltage ¹ | $I_C = 100\text{mA}$ $R_{BE} = 100\Omega$ | 80 | | | |
| V_{BE} Base – Emitter Voltage | $V_{CE} = 2V$ $I_C = 1A$ | | | 1.5 | V |
| $V_{CE(sat)}$ Collector – Emitter Saturation Voltage ² | $I_C = 1A$ $I_B = 100\text{mA}$ | | | 0.5 | |
| $ h_{fe} $ Small Signal Common – Emitter Current Gain | $V_{CE} = -2V$ $I_C = 100\text{mA}$ $f = 200\text{kHz}$ | 5 | | 20 | — |
| h_{fe} Small Signal Common – Emitter Current Gain | $V_{CE} = 2V$ $I_C = 100\text{mA}$ $f = 1\text{kHz}$ | 25 | | | — |
| t_{ON} Turn-on Time | $V_{CE} = 30V$ $I_C = 1A$ $I_{B1} = I_{B2} = 100\text{mA}$ | | | 5 | μs |
| t_{OFF} Turn-off Time | | | | 15 | |
| $R_{\theta JC}$ Thermal Resistance Junction – Case | | | | 17.5 | $^\circ\text{C/W}$ |
| $R_{\theta JA}$ Thermal Resistance Junction – Ambient | | | | 17.5 | |

NOTES

* Pulse Test: $t_p = 300\mu\text{s}$, $\delta = 1.8\%$.

- 1) These tests *MUST NOT* be measured on a curve tracer.
- 2) Measured $\frac{1}{4}$ " (6.35 mm) from case. Lead resistance is critical in this test.
- 3) Measured at a frequency where $|h_{fe}|$ is decreasing at approximately 6dB per octave.