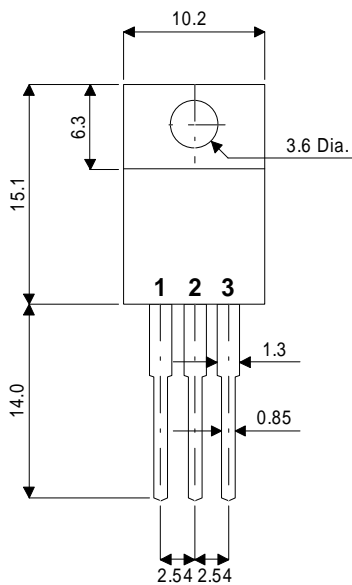


MECHANICAL DATA

Dimensions in mm



ISOLATED TO220

Pin 1 – Base Pin 2 – Collector Pin 3 – Emitter

**ADVANCED
DISTRIBUTED BASE DESIGN
HIGH VOLTAGE
HIGH SPEED NPN
SILICON POWER TRANSISTOR**

Designed for use in
electronic ballast applications

- SEMEFAB DESIGNED AND DIFFUSED DIE
- HIGH VOLTAGE
- FAST SWITCHING
- HIGH ENERGY RATING
- MILITARY AND HI-REL VERSIONS AVAILABLE IN METAL AND CERAMIC SURFACE MOUNT PACKAGES

FEATURES

- Multi-base for efficient energy distribution across the chip resulting in significantly improved switching and energy ratings across full temperature range.
- Ion implant and high accuracy masking for tight control of characteristics from batch to batch.
- Triple Guard Rings for improved control of high voltages.

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

| | | |
|-------------|---|---------------|
| V_{CBO} | Collector – Base Voltage | 800V |
| V_{CEO} | Collector – Emitter Voltage ($I_B = 0$) | 400V |
| V_{EBO} | Emitter – Base Voltage ($I_C = 0$) | 10V |
| I_C | Continuous Collector Current | 5A |
| $I_{C(PK)}$ | Peak Collector Current | 8A |
| I_B | Base Current | 3A |
| P_{tot} | Total Dissipation at $T_{case} = 25^{\circ}C$ | 70W |
| T_{stg} | Operating and Storage Temperature Range | -55 to +150°C |

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

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit | | |
|-----------------------------------|--|-------------------------------|--------------------------------------|--------------------------------------|---------------|-----|---|
| ELECTRICAL CHARACTERISTICS | | | | | | | |
| $V_{\text{CEO(sus)}}$ | Collector – Emitter Sustaining Voltage | $I_{\text{C}} = 10\text{mA}$ | 400 | | V | | |
| $V_{\text{(BR)CBO}}$ | Collector – Base Breakdown Voltage | $I_{\text{C}} = 1\text{mA}$ | 800 | | | | |
| $V_{\text{(BR)EBO}}$ | Emitter – Base Breakdown Voltage | $I_{\text{E}} = 1\text{mA}$ | 10 | | | | |
| I_{CBO} | Collector – Base Cut-Off Current | $V_{\text{CB}} = 800\text{V}$ | | 10 | μA | | |
| | | | $T_{\text{C}} = 125^{\circ}\text{C}$ | 100 | | | |
| I_{CEO} | Collector – Emitter Cut-Off Current | $I_{\text{B}} = 0$ | $V_{\text{CE}} = 400\text{V}$ | 100 | μA | | |
| I_{EBO} | Emitter Cut-Off Current | $V_{\text{EB}} = 9\text{V}$ | $I_{\text{C}} = 0$ | | 10 | | |
| | | | | $T_{\text{C}} = 125^{\circ}\text{C}$ | 100 | | |
| h_{FE}^* | DC Current Gain | $I_{\text{C}} = 0.1\text{A}$ | $V_{\text{CE}} = 5\text{V}$ | 20 | 30 | — | |
| | | $I_{\text{C}} = 1\text{A}$ | $V_{\text{CE}} = 5\text{V}$ | 15 | 45 | | |
| | | $I_{\text{C}} = 2\text{A}$ | $V_{\text{CE}} = 1\text{V}$ | 5 | 10 | | |
| $V_{\text{CE(sat)}}^*$ | Collector – Emitter Saturation Voltage | $I_{\text{C}} = 100\text{mA}$ | $I_{\text{B}} = 20\text{mA}$ | | 0.05 | 0.1 | V |
| | | $I_{\text{C}} = 1\text{A}$ | $I_{\text{B}} = 0.2\text{A}$ | | 0.1 | 0.3 | |
| | | $I_{\text{C}} = 2\text{A}$ | $I_{\text{B}} = 0.4\text{A}$ | | 0.3 | 0.4 | |
| $V_{\text{BE(sat)}}^*$ | Base – Emitter Saturation Voltage | $I_{\text{C}} = 1\text{A}$ | $I_{\text{B}} = 0.2\text{A}$ | | 0.8 | 1.0 | V |
| | | $I_{\text{C}} = 2\text{A}$ | $I_{\text{B}} = 0.4\text{A}$ | | 0.9 | 1.1 | |
| DYNAMIC CHARACTERISTICS | | | | | | | |
| f_{t} | Transition Frequency | $I_{\text{C}} = 0.2\text{A}$ | $V_{\text{CE}} = 4\text{V}$ | | 20 | MHz | |
| C_{ob} | Output Capacitance | $V_{\text{CB}} = 20\text{V}$ | $f = 1\text{MHz}$ | | 25 | pF | |

* Pulse test $t_{\text{p}} = 300\mu\text{s}$, $\delta < 2\%$