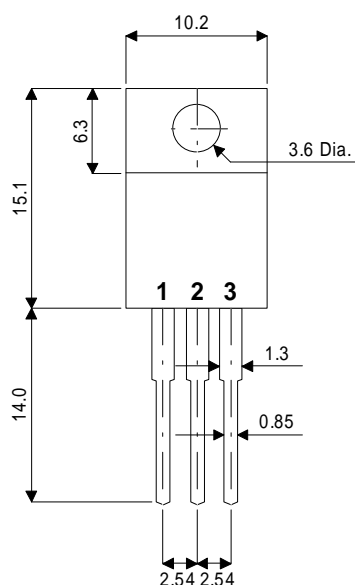


MECHANICAL DATA

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

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 | 8A |
| $I_{C(PK)}$ | Peak Collector Current | 12A |
| I_B | Base Current | 4A |
| P_{tot} | Total Dissipation at $T_{case} = 25^{\circ}C$ | 45W |
| T_{stg} | Operating and Storage Temperature Range | -55 to +150°C |

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

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit | | |
|-----------------------------------|--|-----------------|----------------------|----------------------|---------|-----|----|
| ELECTRICAL CHARACTERISTICS | | | | | | | |
| $V_{CEO(sus)}$ | Collector – Emitter Sustaining Voltage | $I_C = 10mA$ | 400 | | V | | |
| $V_{(BR)CBO}$ | Collector – Base Breakdown Voltage | $I_C = 1mA$ | 800 | | | | |
| $V_{(BR)EBO}$ | Emitter – Base Breakdown Voltage | $I_E = 1mA$ | 10 | | | | |
| I_{CBO} | Collector – Base Cut-Off Current | $V_{CB} = 800V$ | | 10 | μA | | |
| | | | $T_C = 125^{\circ}C$ | 100 | | | |
| I_{CEO} | Collector – Emitter Cut-Off Current | $I_B = 0$ | $V_{CE} = 400V$ | 100 | μA | | |
| I_{EBO} | Emitter Cut-Off Current | $V_{EB} = 9V$ | $I_C = 0$ | | 10 | | |
| | | | | $T_C = 125^{\circ}C$ | 100 | | |
| h_{FE}^* | DC Current Gain | $I_C = 100mA$ | $V_{CE} = 5V$ | 20 | 30 | — | |
| | | $I_C = 1A$ | $V_{CE} = 5V$ | 15 | 25 | | 45 |
| | | $I_C = 3A$ | $V_{CE} = 1V$ | 9 | 15 | | |
| | | | $T_C = 125^{\circ}C$ | 5 | | | |
| $V_{CE(sat)}^*$ | Collector – Emitter Saturation Voltage | $I_C = 100mA$ | $I_B = 20mA$ | | 0.05 | 0.1 | V |
| | | $I_C = 1A$ | $I_B = 0.2A$ | | 0.1 | 0.2 | |
| | | $I_C = 2A$ | $I_B = 0.4A$ | | 0.15 | 0.3 | |
| | | $I_C = 3A$ | $I_B = 0.6A$ | | 0.3 | 0.5 | |
| $V_{BE(sat)}^*$ | Base – Emitter Saturation Voltage | $I_C = 1A$ | $I_B = 0.2A$ | | 0.8 | 1.0 | V |
| | | $I_C = 2A$ | $I_B = 0.4A$ | | 0.9 | 1.1 | |
| | | $I_C = 3A$ | $I_B = 0.6A$ | | 0.95 | 1.2 | |
| DYNAMIC CHARACTERISTICS | | | | | | | |
| f_t | Transition Frequency | $I_C = 0.2A$ | $V_{CE} = 4V$ | | 20 | MHz | |
| C_{ob} | Output Capacitance | $V_{CB} = 20V$ | $f = 1MHz$ | | 40 | pF | |

* Pulse test $t_p = 300\mu s$, $\delta < 2\%$