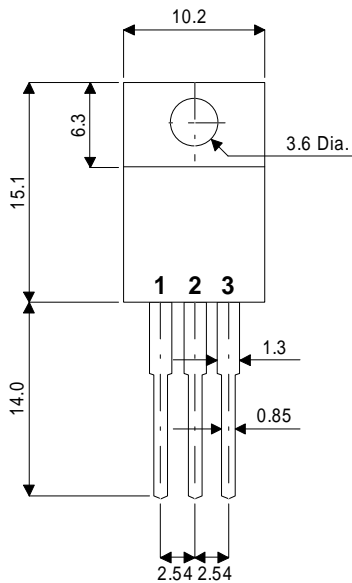


**MECHANICAL DATA**  
Dimensions in mm



**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 $T_{case} = 25^{\circ}C$ | 30W           |
| $T_{stg}$   | 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          |     |   |
|-----------------------------------|--|-------------------------------|--------------------------------------|--------------------------------------|---------------|-----|---|
| <b>ELECTRICAL CHARACTERISTICS</b> |  |                               |                                      |                                      |               |     |   |
| $V_{\text{CEO(sus)}}$             | 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                                   |                                      |               |     |   |
| $I_{\text{CBO}}$                  | Collector – Base Cut-Off Current       | $V_{\text{CB}} = 800\text{V}$ |                                      | 10                                   | $\mu\text{A}$ |     |   |
|                                   |  |                               | $T_{\text{C}} = 125^{\circ}\text{C}$ | 100                                  |               |     |   |
| $I_{\text{CEO}}$                  | Collector – Emitter Cut-Off Current    | $I_{\text{B}} = 0$            | $V_{\text{CE}} = 400\text{V}$        | 100                                  | $\mu\text{A}$ |     |   |
| $I_{\text{EBO}}$                  | Emitter Cut-Off Current                | $V_{\text{EB}} = 9\text{V}$   | $I_{\text{C}} = 0$                   |                                      | 10            |     |   |
|                                   |  |                               |                                      | $T_{\text{C}} = 125^{\circ}\text{C}$ | 100           |     |   |
| $h_{\text{FE}}^*$                 | 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 |   |
| <b>DYNAMIC CHARACTERISTICS</b>    |  |                               |                                      |                                      |               |     |   |
| $f_{\text{t}}$                    | Transition Frequency                   | $I_{\text{C}} = 0.2\text{A}$  | $V_{\text{CE}} = 4\text{V}$          |                                      | 20            | MHz |   |
| $C_{\text{ob}}$                   | Output Capacitance                     | $V_{\text{CB}} = 20\text{V}$  | $f = 1\text{MHz}$                    |                                      | 25            | pF  |   |

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