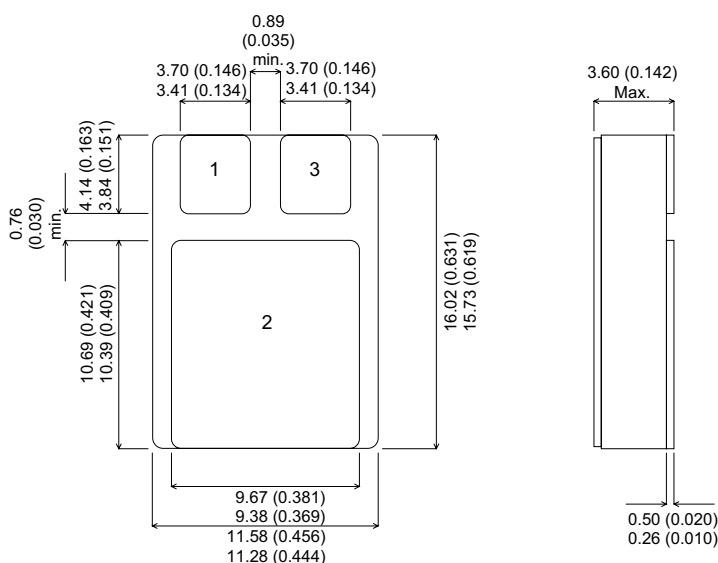


MECHANICAL DATA

Dimensions in mm



SMD1

Pad 1 – Base Pad 2 – Collector Pad 3 – Emitter

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

- CERAMIC SURFACE MOUNT PACKAGE
- FULL MIL/AEROSPACE TEMPERATURE RANGE
- SCREENING OPTIONS FOR MILITARY AND SPACE APPLICATIONS
- SEMEFAB DESIGNED AND DIFFUSED DIE
- HIGH VOLTAGE ($V_{CBO} = 800V$)
- FAST SWITCHING ($t_f = 100ns$)
- HIGH ENERGY RATING

FEATURES

- Multi-Base design for efficient energy distribution across the chip.
- 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 | 500V |
| V_{CEO} | Collector – Emitter Voltage ($I_B = 0$) | 250V |
| V_{EBO} | Emitter – Base Voltage ($I_C = 0$) | 10V |
| I_C | Collector Current | 12A |
| $I_{C(PK)}$ | Peak Collector Current | 20A |
| I_B | Base Current | 3A |
| P_D | Power Dissipation | 60W |
| R_{θ} | Thermal Impedance (when mounted on thermally conducting PCB) | $3.0^{\circ}C/W$ |
| T_j | Maximum Junction Temperature | $200^{\circ}C$ |
| T_{stg} | Storage Temperature Range | -55 to $+200^{\circ}C$ |

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

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------------|---|------|------|------|---------|
| $V_{CEO(sus)*}$ | Collector - Emitter sustaining voltage $I_C = 100mA$ | 250 | | | V |
| $V_{(BR)CBO*}$ | Collector - Base breakdown voltage $I_C = 1mA$ | 500 | | | V |
| $V_{(BR)EBO*}$ | Emitter - Base breakdown voltage $I_B = 1mA$ $I_C = 0$ | 10 | | | V |
| I_{CEO*} | Collector cut-off current $I_B = 0$ $V_{CE} = 250V$ | | | 100 | μA |
| I_{CBO*} | Collector - Base cut-off current $I_E = 0$ $V_{CB} = 500V$ $T_C = 125^{\circ}C$ | | | 10 | μA |
| | | | | 100 | |
| I_{EBO*} | Emitter cut-off current $I_C = 0$ $V_{EB} = 5V$ $T_C = 125^{\circ}C$ | | | 10 | μA |
| | | | | 100 | |
| $V_{CE(sat)*}$ | Collector - Emitter saturation voltage $I_C = 100mA$ $I_B = 10mA$ | | 0.05 | 0.1 | V |
| | $I_C = 2A$ $I_B = 200mA$ | | 0.15 | 0.3 | |
| | $I_C = 5A$ $I_B = 500mA$ | | 0.3 | 0.6 | |
| $V_{BE(sat)*}$ | Base - Emitter saturation voltage $I_C = 2A$ $I_B = 200mA$ | | 0.8 | 1.1 | V |
| | $I_C = 5A$ $I_B = 500mA$ | | 0.9 | 1.2 | |
| $V_{BE(on)*}$ | Base - Emitter saturation voltage $I_C = 1A$ $V_{CE} = 4V$ | | 0.8 | 1.0 | V |
| h_{FE*} | DC Current gain $I_C = 100mA$ $V_{CE} = 4V$ | 20 | 45 | | — |
| | $I_C = 2A$ $V_{CE} = 4V$ | 20 | 40 | | |
| | $I_C = 5A$ $V_{CE} = 4V$ | 20 | | | |

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

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

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------|--|------|------|------|------|
| f_T | Transition frequency $I_C = 100mA$ $V_{CE} = 4V$ $f = 10MHz$ | | 20 | | MHz |
| C_{ob} | Output capacitance $V_{CB} = 20V$ $I_E = 0$ $f = 1.0MHz$ | | 200 | | pF |