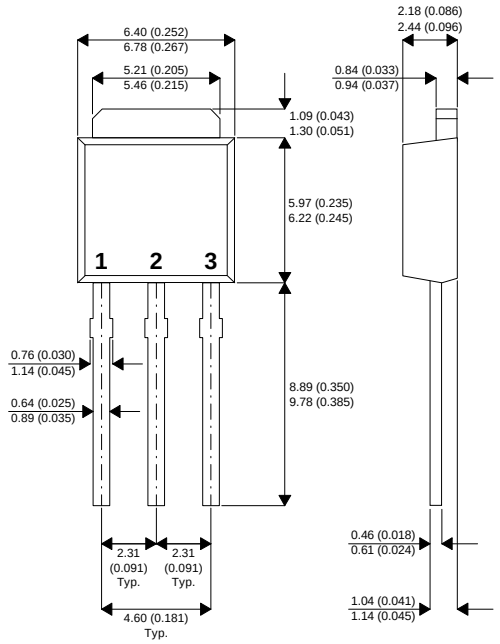
# BUL63B

# 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**

**MECHANICAL DATA**
Dimensions in mm




**I-PAK(TO251)**

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

## 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°C unless otherwise stated)

| | | |
|---|---|---|
| $V_{CBO}$ | Collector – Base Voltage($I_E$=0) | 500V |
| $V_{CEO}$ | Collector – Emitter Voltage ($I_B$ = 0) | 250V |
| $V_{EBO}$ | Emitter – Base Voltage ($I_C$ = 0) | 10V |
| $I_C$ | Continuous Collector Current | 12A |
| $I_{C(PK)}$ | Peak Collector Current | 24A |
| $I_B$ | Base Current | 6A |
| $P_{tot}$ | Total Dissipation at $T_{case}$ = 25°C | 25W |
| $T_{stg}$ | Operating and Storage Temperature Range | –55 to +150°C |

SEME LAB

# BUL63B

## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25°C unless otherwise stated)

| | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| | **ELECTRICAL CHARACTERISTICS** | | | | | | |
| $V_{CEO(sus)}$ | Collector – Emitter Sustaining Voltage | $I_C$ = 10mA | | 250 | | | V |
| $V_{(BR)CBO}$ | Collector – Base Breakdown Voltage | $I_C$ = 1mA | | 500 | | | V |
| $V_{(BR)EBO}$ | Emitter – Base Breakdown Voltage | $I_E$ = 1mA | | 10 | | | V |
| $I_{CBO}$ | Collector – Base Cut–Off Current | $V_{CB}$ = 500V | | | | 10 | µA |
| | | | $T_C$ = 125°C | | | 100 | µA |
| $I_{CEO}$ | Collector – Emitter Cut–Off Current | $I_B$ = 0 | $V_{CE}$ = 240V | | | 100 | µA |
| $I_{EBO}$ | Emitter Cut–Off Current | $V_{EB}$ = 9V | | | | 10 | µA |
| | | $I_C$ = 0 | $T_C$ = 125°C | | | 100 | µA |
| $h_{FE*}$ | DC Current Gain | $I_C$ = 0.1A | $V_{CE}$ = 5V | 20 | 30 | | — |
| | | $I_C$ = 1A | $V_{CE}$ = 5V | 25 | 50 | | — |
| | | $I_C$ = 7A | $V_{CE}$ = 1V | 5 | 9 | | — |
| | | | $T_C$ = 125°C | 4 | 8 | | — |
| $V_{CE(sat)*}$ | Collector – Emitter Saturation Voltage | $I_C$ = 1A | $I_B$ = 0.2A | | .07 | 0.1 | V |
| | | $I_C$ = 4A | $I_B$ = 0.8A | | 0.2 | 0.5 | V |
| | | $I_C$ = 7A | $I_B$ = 1.4A | | 0.4 | 0.8 | V |
| $V_{BE(sat)*}$ | Base – Emitter Saturation Voltage | $I_C$ = 4A | $I_B$ = 0.8A | | 0.9 | 1.1 | V |
| | | $I_C$ = 7A | $I_B$ = 1.4A | | 1.1 | 1.4 | V |
| | **DYNAMIC CHARACTERISTICS** | | | | | | |
| $f_t$ | Transition Frequency | $I_C$ = 0.2A | $V_{CE}$ = 4V | | 20 | | MHz |
| $C_{ob}$ | Output Capacitance | $V_{CB}$ = 10V | f = 1MHz | | 70 | | pF |

* Pulse test $t_p$ = 300µs , δ < 2%

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