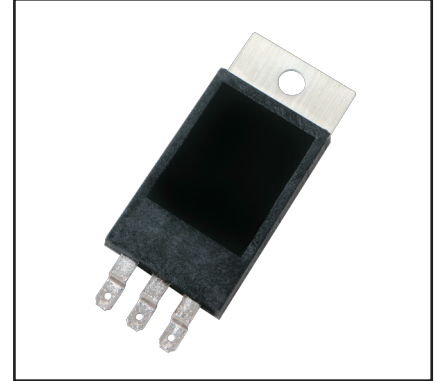
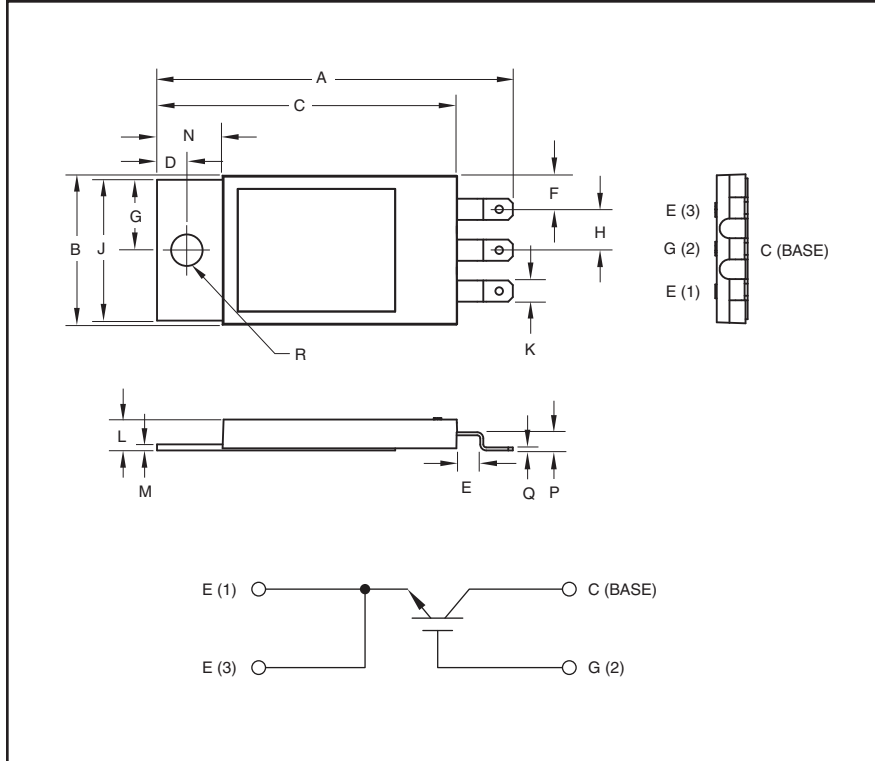


HV Single Discrete IGBT 60 Amperes/4500 Volts



Description:

Powerex Single Non-isolated Discrete is designed specially for customer high voltage switching and pulse power applications.

Features:

- Low Drive Requirement
- Low $V_{CE(sat)}$
- Molybdenum Mounting Plate

Outline Drawing and Circuit Diagram

| Dimensions | Inches | Millimeters |
|------------|--------|-------------|
| A | 2.35 | 59.7 |
| B | 0.98 | 25.0 |
| C | 1.98 | 50.3 |
| D | 0.197 | 5.0 |
| E | 0.22 | 5.5 |
| F | 0.22 | 5.6 |
| G | 0.465 | 11.8 |
| H | 0.27 | 6.9 |

| Dimensions | Inches | Millimeters |
|------------|------------|-------------|
| J | 0.93 | 23.6 |
| K | 0.14 | 3.6 |
| L | 0.20 | 5.2 |
| M | 0.40 | 1.0 |
| N | 0.43 | 11.0 |
| P | 0.20 | 0.5 |
| Q | 0.12 | 3.0 |
| R | 0.208 Dia. | 5.3 Dia. |

QIS4506002
HV Single Discrete IGBT
 60 Amperes/4500 Volts

Maximum Ratings, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

| Ratings | Symbol | QIS4506002 | Units |
|--|-----------|------------|------------------|
| Collector Emitter Voltage | V_{CES} | 4500 | Volts |
| Gate Emitter Voltage | V_{GES} | ± 20 | Volts |
| Collector Current (DC, $T_C = 127^\circ\text{C}$) | I_C | 60 | Amperes |
| Peak Collector Current (Pulsed) | I_{CM} | 120* | Amperes |
| Junction Temperature | T_j | -55 to 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 to 125 | $^\circ\text{C}$ |
| Mounting Torque, M5 Mounting Screws | — | 30 | in-lb |
| Weight (Typical) | — | 20 | Grams |

Static Electrical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------------------------|---------------|---|------|------|-------|---------------|
| Collector Cutoff Current | I_{CES} | $V_{CE} = V_{CES}, V_{GE} = 0V$ | — | — | 1.0 | mA |
| Gate Leakage Current | I_{GES} | $V_{GE} = V_{GES}, V_{CE} = 0V$ | — | — | 0.5 | μA |
| Gate-Emitter Threshold Voltage | $V_{GE(th)}$ | $I_C = 7\text{mA}, V_{CE} = 10V$ | 4.5 | 6.0 | 7.5 | Volts |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 60\text{A}, V_{GE} = 15V, T_j = 25^\circ\text{C}$ | — | 3.0 | 3.9** | Volts |
| | | $I_C = 60\text{A}, V_{GE} = 15V, T_j = 125^\circ\text{C}$ | — | 3.6 | — | Volts |
| Total Gate Charge | Q_G | $V_{CC} = 2250V, I_C = 60\text{A}, V_{GE} = 15V$ | — | 450 | — | nC |

Dynamic Electrical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|------------------------------|---------------------|--|------|------|------|---------------|
| Input Capacitance | C_{ies} | | — | 9.0 | — | nF |
| Output Capacitance | C_{oes} | $V_{GE} = 0V, V_{CE} = 10V$ | — | 0.65 | — | nF |
| Reverse Transfer Capacitance | C_{res} | | — | 0.2 | — | nF |
| Resistive | Turn-on Delay Time | $V_{CC} = 2250V,$ $I_C = 60\text{A},$ | — | — | 2.4 | μs |
| | Rise Time | | | | | |
| Switching | Turn-off Delay Time | $V_{GE1} = V_{GE2} = 15V,$ $R_G = 120\Omega$ | — | — | 6.0 | μs |
| | Fall Time | | | | | |
| Turn-on Switching Energy | E_{on} | $T_j = 125^\circ\text{C}, I_C = 60\text{A}, V_{CC} = 2250V,$ | — | 250 | — | mJ/P |
| Turn-off switching Energy | E_{off} | $V_{GE} = \pm 15V, R_G = 120\Omega, L_S = 180\text{nH}$ | — | 170 | — | mJ/P |

Thermal and Mechanical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------------------------|---------------|-----------------------------------|------|------|------|--------------------|
| Thermal Resistance, Junction to Case | $R_{th(j-c)}$ | IGBT | — | 0.10 | TBD | $^\circ\text{C/W}$ |
| Thermal Resistance, Case to Sink | $R_{th(c-s)}$ | $\lambda_{grease} = 1\text{W/mK}$ | — | 0.10 | — | $^\circ\text{C/W}$ |
| Thermal Grease Applied | | | | | | |

* Pulse width and repetition rate should be such that device junction temperature (T_j) does not exceed device rating.
 ** Pulse width and repetition rate should be such that device junction temperature rise is negligible.

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