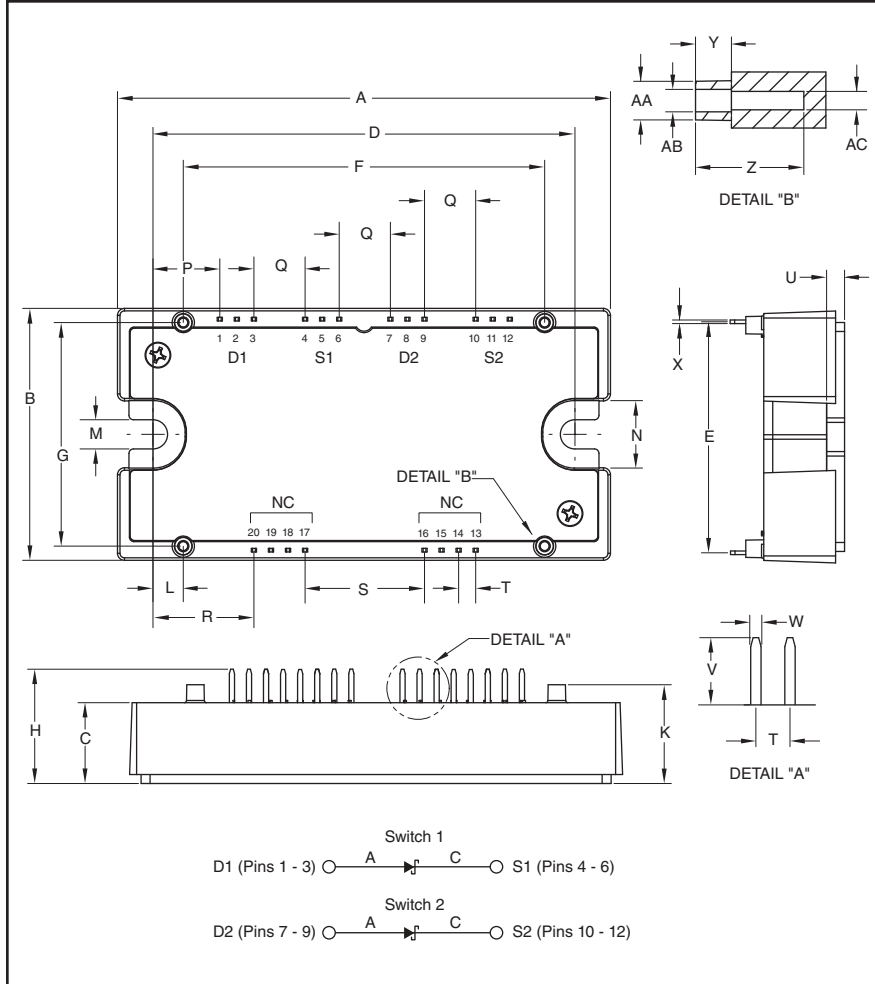


Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
www.pwr.com

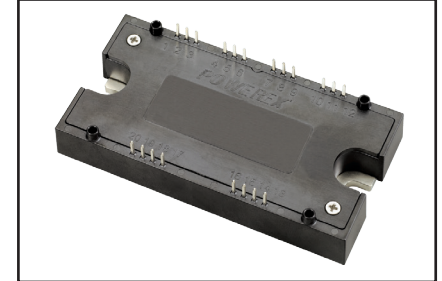
Split Dual SiC Super Fast Diode Module 100 Amperes/1200 Volts



Outline Drawing and Circuit Diagram

| Dimensions | Inches | Millimeters |
|------------|-----------|-------------|
| A | 4.32 | 109.8 |
| B | 2.21 | 56.1 |
| C | 0.71 | 18.0 |
| D | 3.70±0.02 | 94.0±0.5 |
| E | 2.026 | 51.46 |
| F | 3.17 | 80.5 |
| G | 1.96 | 49.8 |
| H | 1.00 | 25.5 |
| K | 0.87 | 22.0 |
| L | 0.266 | 6.75 |
| M | 0.26 | 6.5 |
| N | 0.59 | 15.0 |
| P | 0.586 | 14.89 |

| Dimensions | Inches | Millimeters |
|------------|-----------|-------------|
| Q | 0.449 | 11.40 |
| R | 0.885 | 22.49 |
| S | 1.047 | 26.6 |
| T | 0.15 | 3.80 |
| U | 0.16 | 4.0 |
| V | 0.30 | 7.5 |
| W | 0.045 | 1.15 |
| X | 0.03 | 0.8 |
| Y | 0.16 | 4.0 |
| Z | 0.47 | 12.1 |
| AA | 0.17 Dia. | 4.3 Dia. |
| AB | 0.10 Dia. | 2.5 Dia. |
| AC | 0.08 Dia. | 2.1 Dia. |



Description:

Powerex Super Fast Recovery Dual Diode Modules are designed for use in applications requiring fast switching. The modules are isolated for easy mounting with other components on common heatsinks.

Features:

- Super Fast Switching Time
- RoHS Compliant
- Isolated Mounting
- Copper Baseplate
- Low Thermal Impedance
- 2500V Isolating Voltage
- Zero Reverse Recovery

Applications:

- Free Wheeling
- Welding and Plasma Cutting Machine

QRD1210004
Split Dual SiC Super Fast Diode Module
 100 Amperes/1200 Volts

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

| Ratings | Symbol | QRD1210004 | Units |
|---|------------------|-----------------|------------------------|
| Repetitive Peak Reverse Blocking Voltage | V_{RRM} | 1200 | Volts |
| Non-Repetitive Peak Reverse Blocking Voltage | V_{RSM} | $V_{RRM} + 100$ | Volts |
| DC Current, $T_C = 80\text{ }^\circ\text{C}$ (Resistive load) | $I_F(\text{DC})$ | 100 | Amperes |
| Peak Half Cycle Non-repetitive Surge Current ($t = 8.3\text{mS}$, 100% V_{RRM} Reapplied) | I_{FSM} | TBD | Amperes |
| I^2t for Fusing for One Cycle ($t = 8.3\text{mS}$, 100% V_{RRM} Reapplied) | I^2t | TBD | A^2sec |
| Operating Junction Temperature | T_j | -40 to 175 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40 to 150 | $^\circ\text{C}$ |
| Maximum Mounting Torque, M6 Mounting Screw | — | 40 | in-lb |
| Module Weight (Typical) | — | 270 | Grams |
| V Isolation (60 Hz, Circuit to Base, All Terminals Shorted, $t = 1\text{ sec}$) | V_{RMS} | 2500 | Volts |

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

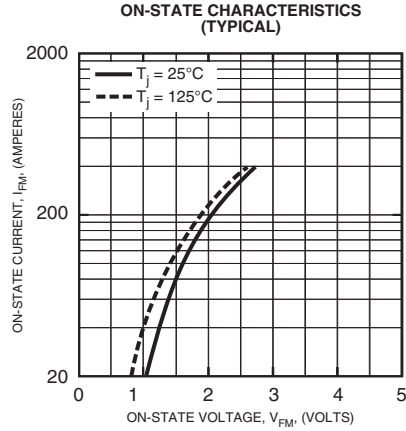
| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|-------------------------|-----------|---|------|------|------|-------|
| Reverse Leakage Current | I_{RRM} | $T_j = 25\text{ }^\circ\text{C}$, Rated V_{RRM} | — | — | 1.0 | mA |
| | | $T_j = 175\text{ }^\circ\text{C}$, Rated V_{RRM} | — | — | 2.0 | mA |
| On-State Voltage | V_{FM} | $T_j = 25\text{ }^\circ\text{C}$, $I_F = 100\text{A}$ | — | 1.5 | 1.8 | Volts |
| | | $T_j = 175\text{ }^\circ\text{C}$, $I_F = 100\text{A}$ | — | 2.2 | 3.0 | Volts |

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

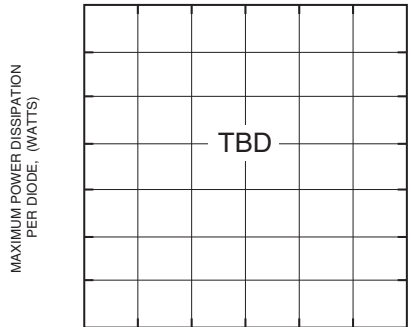
| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|---|-----------------|-----------------|------|------|------|--------------------|
| Thermal Resistance, Junction to Case* | $R_{th(j-c)}$ Q | Per Diode | — | — | 0.26 | $^\circ\text{C/W}$ |
| Contact Thermal Resistance, Case to Sink (Lubricated)* | $R_{th(c-s)}$ | Per Module | — | — | 0.04 | $^\circ\text{C/W}$ |

* T_C , T_j measured point is just under the chip.

QRD1210004
Split Dual SiC Super Fast Diode Module
 100 Amperes/1200 Volts

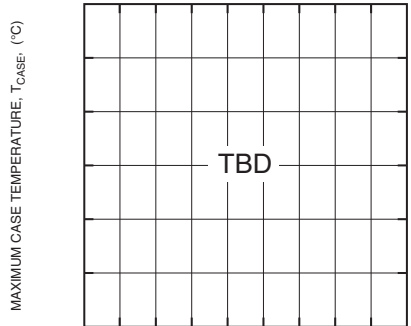


MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)

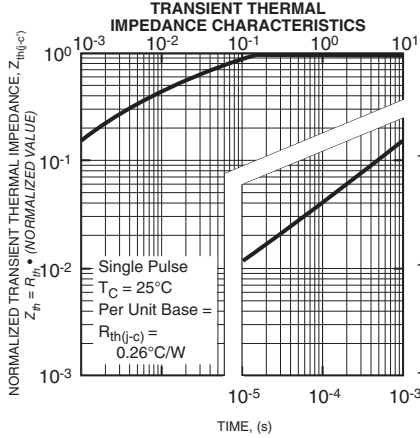


AVERAGE ON-STATE CURRENT, $I_{F(av)}$, (AMPERES)

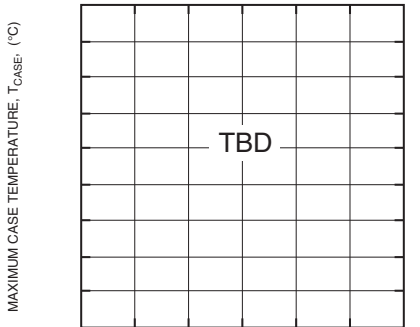
MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



AVERAGE ON-STATE CURRENT, $I_{F(av)}$, (AMPERES)

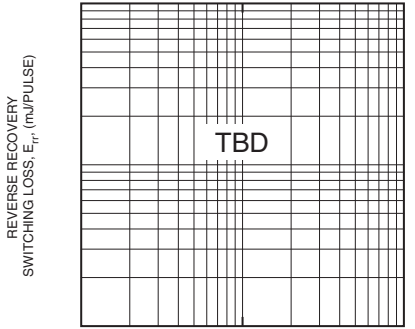


MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



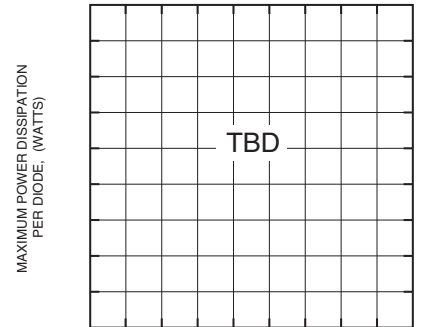
AVERAGE ON-STATE CURRENT, $I_{F(av)}$, (AMPERES)

REVERSE RECOVERY SWITCHING LOSS (TYPICAL)



ON-STATE CURRENT, I_{FM} , (AMPERES)

MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



AVERAGE ON-STATE CURRENT, $I_{F(av)}$, (AMPERES)