

QRS1440T30
Fast Recovery Diode Module

Description:

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

Features:

- Fast Recovery Time
- Isolated Mounting
- Metal Baseplate
- Low Thermal Impedance
- 3000 V isolating voltage

Applications:

- Switching Power Supplies
- Inverters
- Choppers
- Welding Power Supplies
- Free Wheeling Diode
- High Frequency Rectifiers

| Dimensions | Inches | Millimeters |
|------------|------------|-------------|
| A | 3.70 | 94.0 |
| B | 1.34 | 34.0 |
| C | 1.18 | 30.0 |
| D | 3.15 | 80.0 |
| E | 0.50 | 12.7 |
| F | 0.28 | 7.0 |
| G | 0.67 | 17.0 |
| H | 1.81 | 46.0 |
| J | 0.91 | 23.0 |
| K | M6X1.0 | M6X1.0 |
| L | 0.32 | 8.0 |
| M | 0.256 Dia. | 6.5 Dia. |
| N | 0.47 | 12.0 |

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

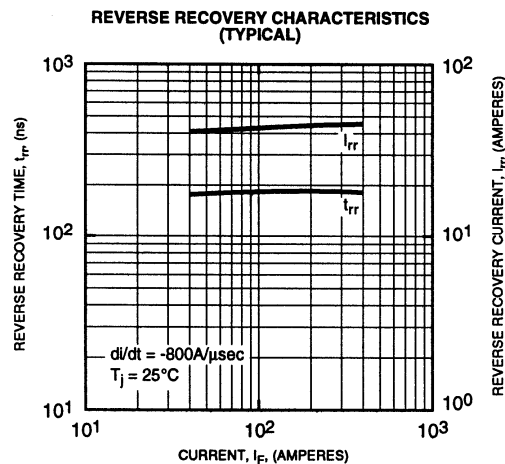
| Characteristics | Conditions | Symbol | QRS1440T30 | Units |
|--|--|-------------|-----------------|------------------------|
| Repetitive Peak Reverse Blocking Voltage | - | V_{RRM} | 1400 | Volts |
| Non-Repetitive Peak Reverse Blocking Voltage | - | V_{RSM} | $V_{RRM} + 100$ | Volts |
| Average Forward Current | 180° Conduction, $T_c=80^\circ\text{C}$ | $I_{F(AV)}$ | 169 | Amperes |
| | 180° Conduction, $T_c=25^\circ\text{C}$ | | 249 | Amperes |
| Peak Half Cycle Non-Repetitive Surge Current | $t = 8.3\text{mS}$, 100% V_{RRM} Reapplied | I_{FSM} | 2670 | Amperes |
| I^2t for Fusing for One Cycle | $t = 8.3\text{mS}$, 100% V_{RRM} Reapplied | I^2t | 29700 | A^2sec |
| Operating Junction Temperature | - | T_J | -40 to 150 | $^\circ\text{C}$ |
| Storage Temperature | - | T_{STG} | -40 to 150 | $^\circ\text{C}$ |
| Maximum Mounting Torque, M6 Mounting Screw | - | - | 26 | In.-lb. |
| Maximum Terminal Torque, M6 Terminal Screw | - | - | 26 | In.-lb. |
| Module Weight (Typical) | - | - | 220 | Grams |
| V Isolation | 60 Hz, circuit to base, all terminals shorted, $t = 1 \text{ sec}$ | V_{RMS} | 3000 | Volts |

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

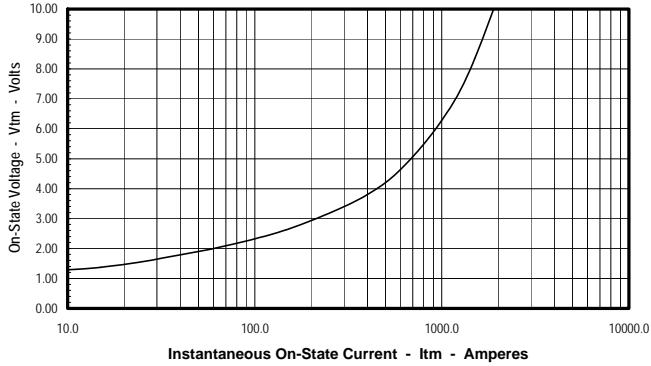
| Characteristics | Symbol | Min. | Typ. | Max. | Units |
|---|-----------------|------|------|------|-----------------------|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | - | - | 0.09 | $^\circ\text{C/Watt}$ |
| Thermal Resistance, Case to Sink Lubricated | $R_{\theta CS}$ | - | - | 0.04 | $^\circ\text{C/Watt}$ |

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

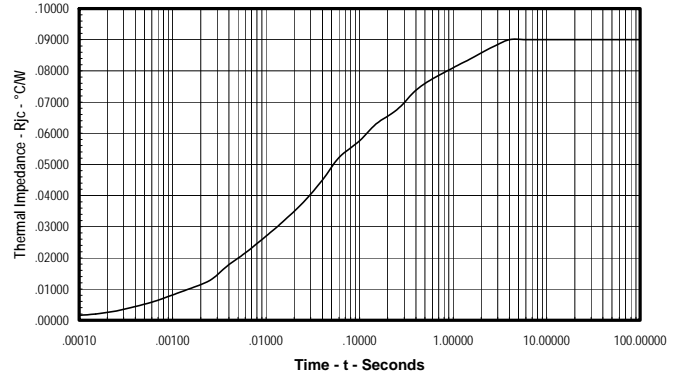
| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|------------------------------|-----------|--|------|------|------|---------------|
| Peak Reverse Leakage Current | I_{RRM} | Rated V_{RRM} | - | - | 2 | mA |
| Peak On-State Voltage | V_{FM} | $I_F=400\text{A}$ | - | - | 3.8 | Volts |
| Reverse Recovery Time | t_{rr} | $I_F = 400\text{A}$, $di/dt = -800\text{A}/\mu\text{s}$ | - | - | 300 | ns |
| Reverse Recovery Charge | Q_{rr} | $I_F=400\text{A}$, $di/dt = -800\text{A}/\mu\text{s}$ | - | 4.0 | - | μC |



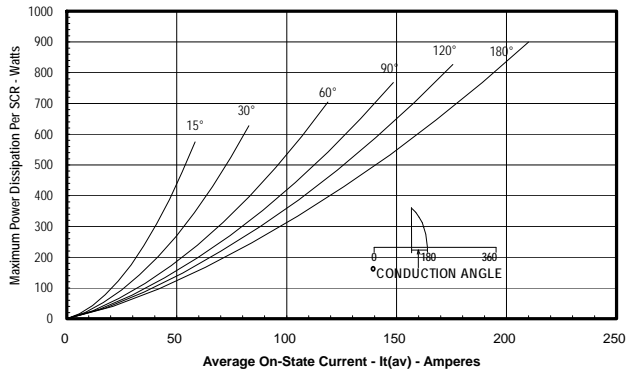
Maximum On-State Forward Voltage Drop
($T_j = 150^\circ\text{C}$)



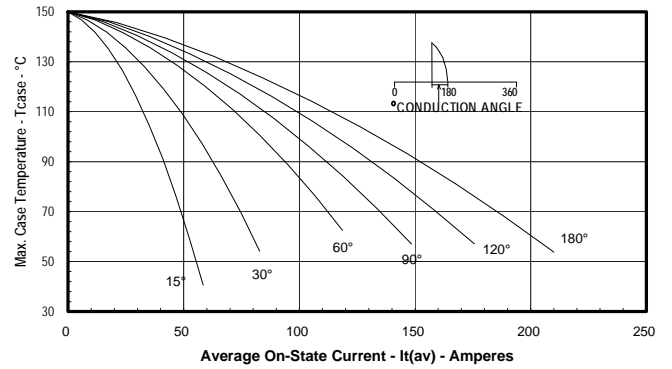
Maximum Transient Thermal Impedance
(Junction to Case)



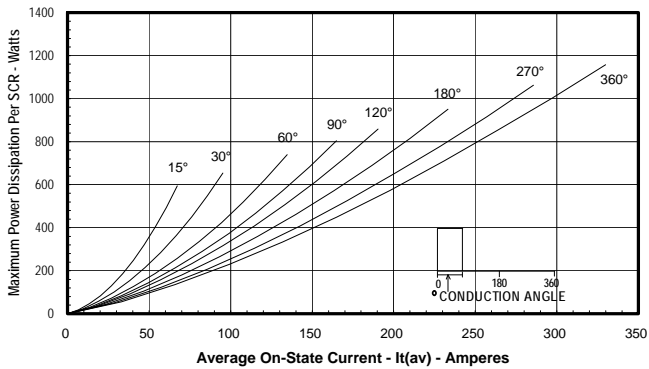
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

