

**QRS1420T30**  
**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**

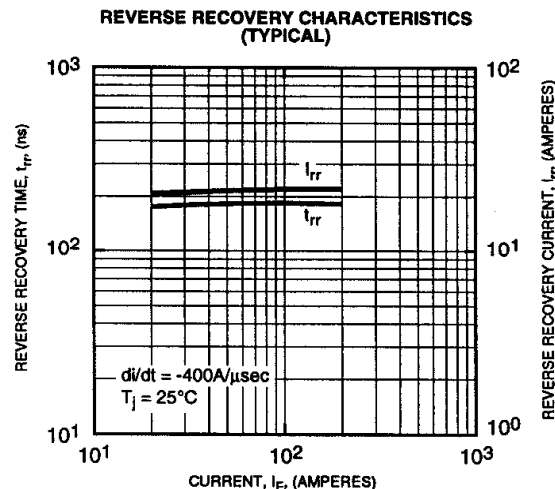
Characteristics	Conditions	Symbol	QRS1420T30	Units
Repetitive Peak Reverse Blocking Voltage	-	$V_{RRM}$	1400	Volts
Non-Repetitive Peak Reverse Blocking Voltage	-	$V_{RSM}$	$V_{RRM} + 100$	Volts
Average Forward Current	180° Conduction, $T_c=80^\circ\text{C}$	$I_{F(AV)}$	84	Amperes
	180° Conduction, $T_c=25^\circ\text{C}$		123	Amperes
Peak Half Cycle Non-Repetitive Surge Current	$t = 8.3\text{mS}$ , 100% $V_{RRM}$ Reapplied	$I_{FSM}$	1330	Amperes
$I^2t$ for Fusing for One Cycle	$t = 8.3\text{mS}$ , 100% $V_{RRM}$ Reapplied	$I^2t$	7400	$\text{A}^2\text{sec}$
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**

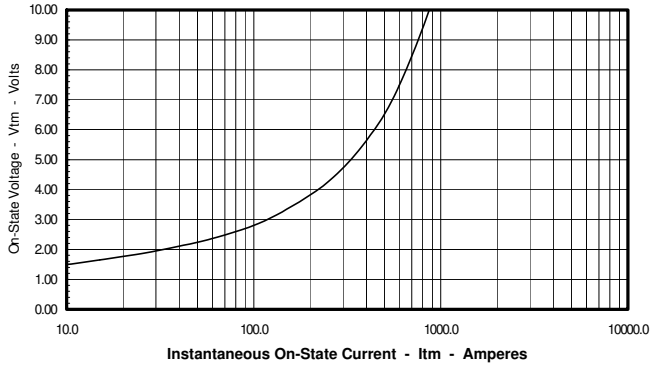
Characteristics	Symbol		Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per Diode	-	-	0.18	$^\circ\text{C/Watt}$
Thermal Resistance, Case to Sink Lubricated	$R_{\theta CS}$	Per Module	-	-	0.04	$^\circ\text{C/Watt}$

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

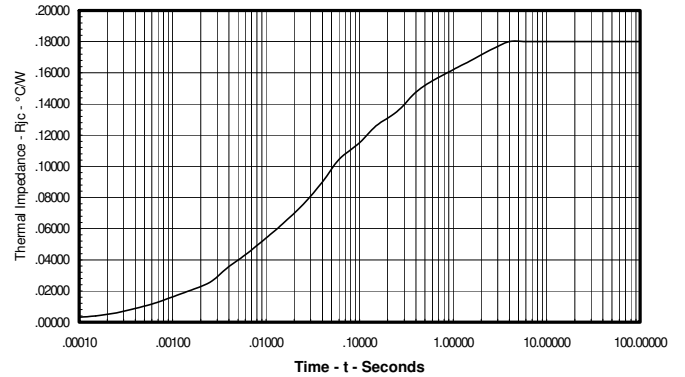
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max	Units
Peak Reverse Leakage Current	$I_{RRM}$	$T_J = 150^\circ\text{C}$ , Rated $V_{RRM}$	-	-	1	mA
Peak On-State Voltage	$V_{FM}$	$I_F=200\text{A}$	-	-	3.8	Volts
Reverse Recovery Time	$t_{rr}$	$I_F = 200\text{A}$ , $di/dt = -400\text{A}/\mu\text{s}$	-	-	300	ns
Reverse Recovery Charge	$Q_{rr}$	$I_F=200\text{A}$ , $di/dt = -400\text{A}/\mu\text{s}$	-	2.0	-	$\mu\text{C}$



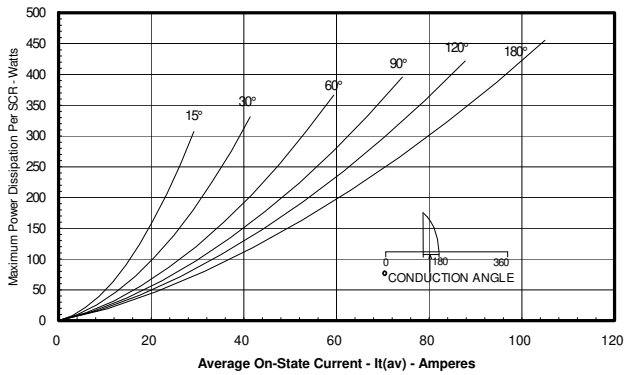
**Maximum On-State Forward Voltage Drop**  
( $T_J = 150^\circ\text{C}$ )



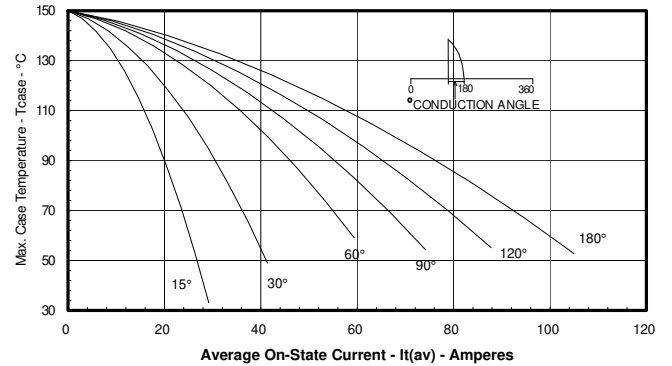
**Maximum Transient Thermal Impedance**  
(Junction to Case)



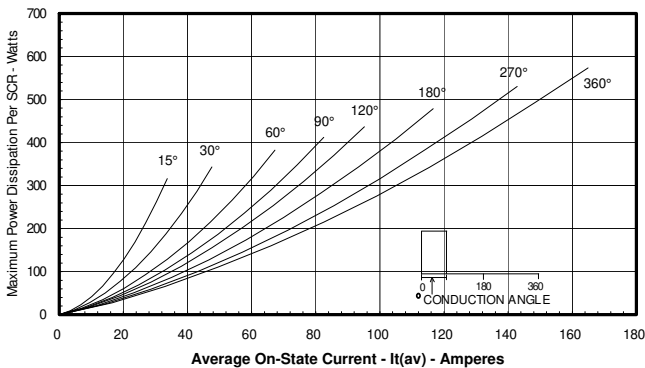
**Maximum On-State Power Dissipation**  
(Sinusoidal Waveform)



**Maximum Allowable Case Temperature**  
(Sinusoidal Waveform)



**Maximum On-State Power Dissipation**  
(Rectangular Waveform)



**Maximum Allowable Case Temperature**  
(Rectangular Waveform)

