

### Description:

Powerex Single Fast Recovery Diode Module features fast switching is specially designed for customer for easy mounting with other components on a common heatsink.

### Features:

- Fast Recovery Time  $t_{rr} = 150$  ns Max.
- 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

Dim	Inches	Millimeters
A	4.21	107.0
B	3.661±0.01	93.0±0.25
C	2.44	62.0
D	1.89±0.01	48.0±0.25
E	1.42 Max.	36.0 Max.
G	1.18	30.0
H	1.14	29.0
K	0.94	24.0

Dim	Inches	Millimeters
L	0.93	23.5
N	0.69	17.5
P	0.63	16.0
R	0.43	11.0
T	0.28	7.0
U	0.12	3.0
V	0.26 Dia.	6.5 Dia.
W	M6 Metric	M6

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

Characteristics	Conditions	Symbol	QRS061K001	Units
Repetitive Peak Reverse Blocking Voltage	-	$V_{RRM}$	600	Volts
Non-Repetitive Peak Reverse Blocking Voltage	-	$V_{RSM}$	$V_{RRM} + 100$	Volts
Average Forward Current	180°Conduction, $T_c=80^\circ\text{C}$	$I_{F(AV)}$	420	Amperes
	180°Conduction, $T_c=25^\circ\text{C}$	$I_{F(AV)}$	627	Amperes
Peak Half Cycle Non-Repetitive Surge Current*	$t = 8.3\text{mS}$ , 100% $V_{RRM}$ Reapplied	$I_{FSM}$	8350	Amperes
$I^2t$ for Fusing for One Cycle	$t = 8.3\text{mS}$ , 100% $V_{RRM}$ Reapplied	$I^2t$	290	$\text{kA}^2\text{sec}$
Operating Junction Temperature	-	$T_J$	-40 to 150	$^\circ\text{C}$
Storage Temperature	-	$T_{STG}$	-40 to 125	$^\circ\text{C}$
Maximum Mounting Torque, M6 Mounting Screw	-	-	26	In.-lb.
Maximum Terminal Torque, M6 Terminal Screw	-	-	26	In.-lb.
Module Weight (Typical)	-	-	400	Grams
V Isolation	60 Hz, circuit to base, all terminals shorted, $t = 1 \text{ sec}$	$V_{RMS}$	3000	Volts

\* Pulse width and repetition rate should be such that the device junction temperature ( $T_J$ ) doesn't exceed  $T_J(\text{max})$  ratings

**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*	$V_{FM}$	$I_F=1000\text{A}$	-	2.0	2.8	Volts
		$I_F=600\text{A}$	-	1.65	-	
Reverse Recovery Time	$t_{rr}$	$I_F = 1000\text{A}$ , $di/dt = -2000\text{A}/\mu\text{s}$	-	-	150	ns
Reverse Recovery Charge	$Q_{rr}$	$I_F = 1000\text{A}$ , $di/dt = -2000\text{A}/\mu\text{s}$	-	3.0	-	$\mu\text{C}$

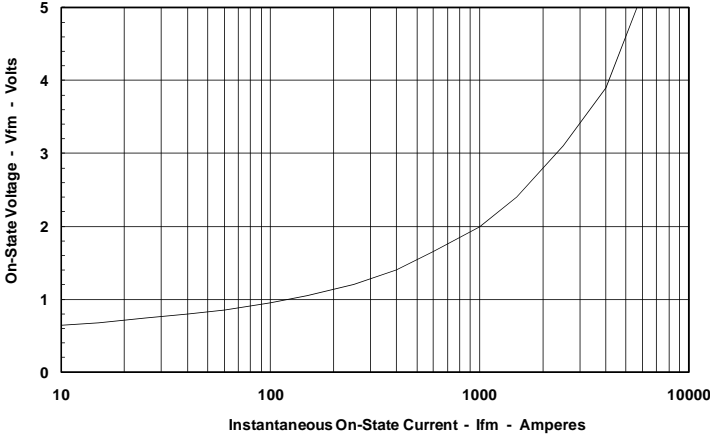
\* Pulse width and repetition rate should be such that the device junction temperature ( $T_J$ ) doesn't exceed  $T_J(\text{max})$  ratings

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

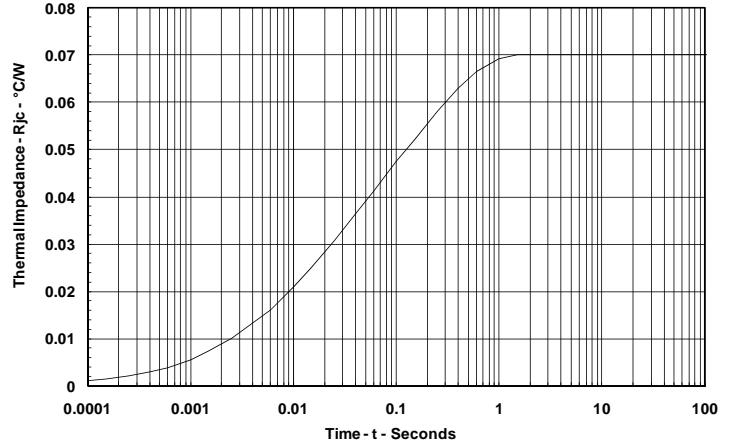
Characteristics	Symbol		Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per Diode	-	-	0.07	$^\circ\text{C}/\text{Watt}$
Contact Thermal Resistance	$R_{\theta CS}$	Per Module, Thermal Grease Applied	-	-	0.04	$^\circ\text{C}/\text{Watt}$

**600 Volts Fast Recovery Diode Module**  
**1000 Amps Free Wheeling**  
**420 Amps Average**

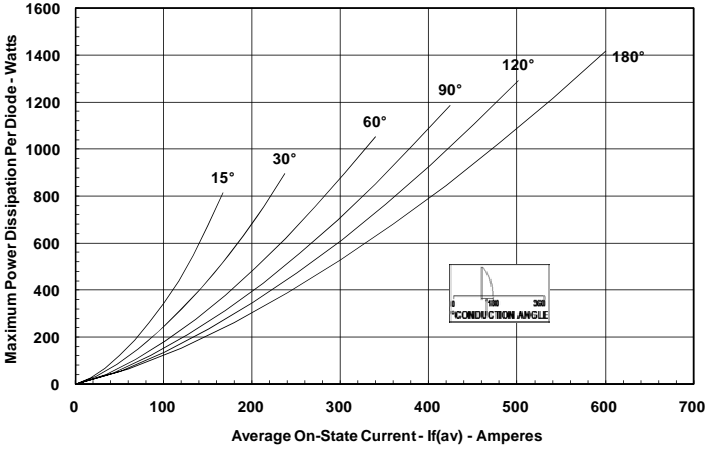
**Maximum On-State Forward Voltage Drop**  
( $T_j = 150^\circ\text{C}$ )



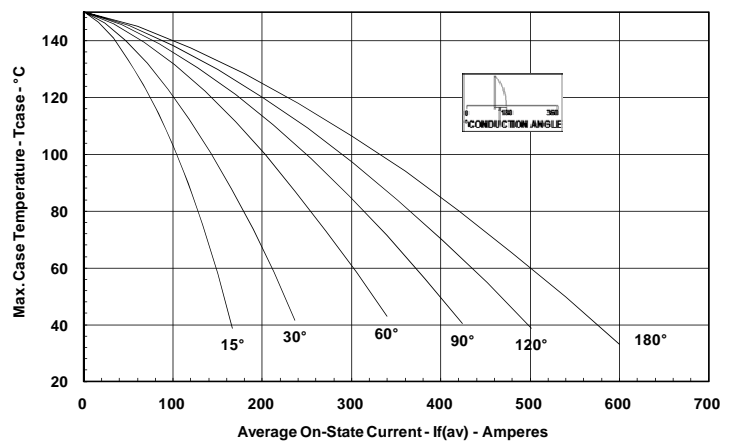
**Maximum Transient Thermal Impedance**  
(Junction to Case)



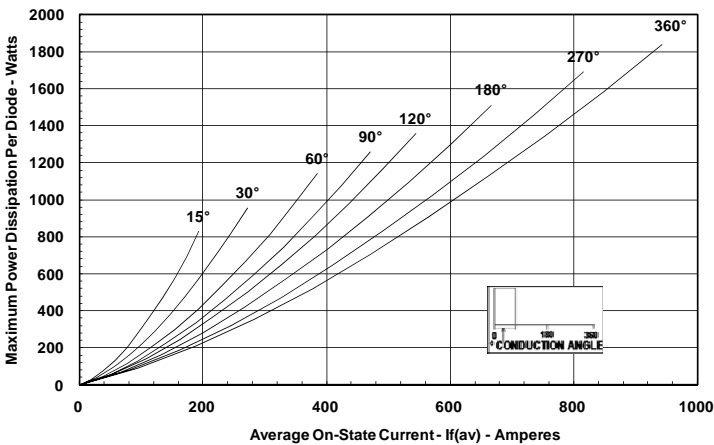
**Maximum On-State Power Dissipation**  
(Sinusoidal Waveform)



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



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



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

