

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	kA^2sec
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	-	μC

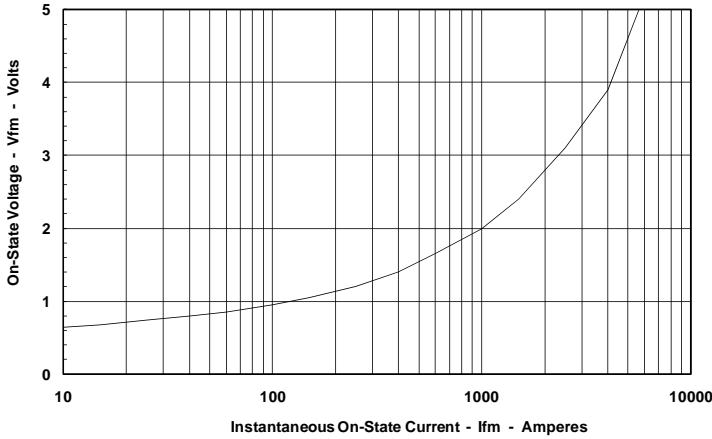
* Pulse width and repetition rate should be such that the device junction temperature (T_J) doesn't exceed $T_J(\text{max})$ ratings

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

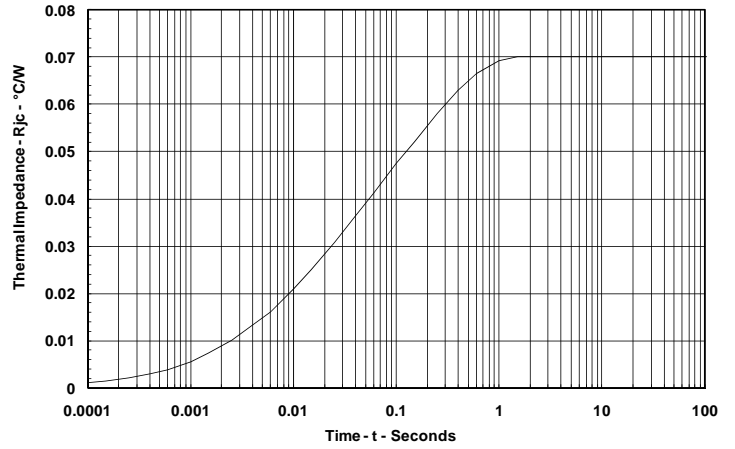
Characteristics	Symbol		Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per Diode	-	-	0.07	$^\circ\text{C}/\text{Watt}$
Contact Thermal Resistance	$R_{\theta CS}$	Per Module, Thermal Grease Applied	-	-	0.04	$^\circ\text{C}/\text{Watt}$

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

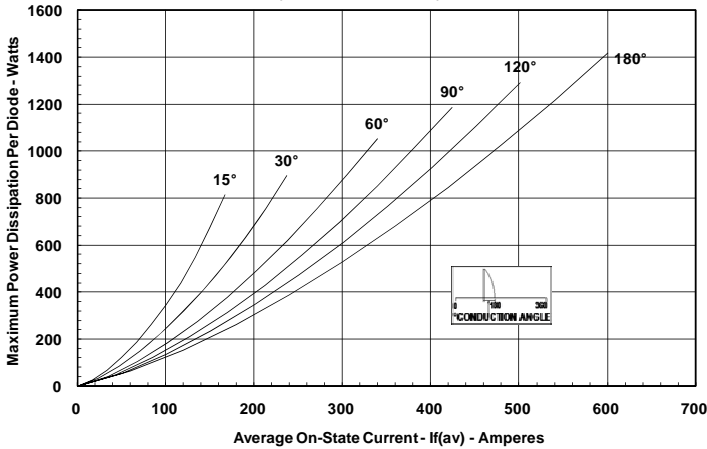
Maximum On-State Forward Voltage Drop
($T_j = 150^\circ\text{C}$)



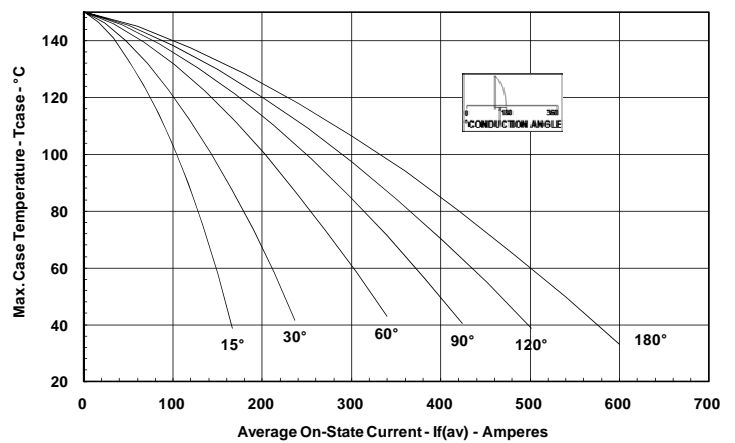
Maximum Transient Thermal Impedance
(Junction to Case)



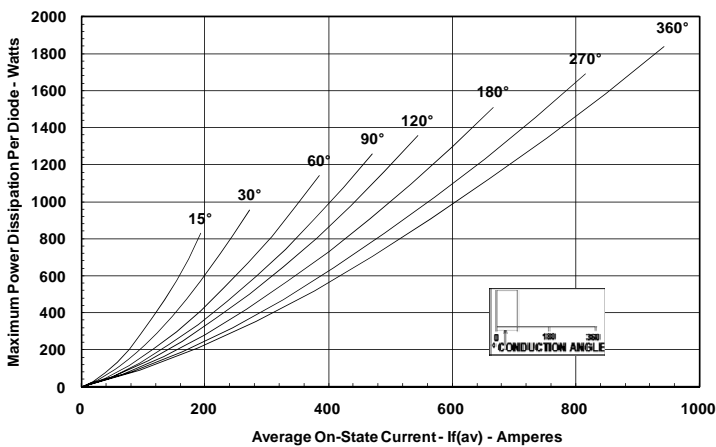
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

