

**QRS0680T30**  
**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
- Copper 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
B	1.34	34
C	1.18	30
D	3.15	80
E	0.67	17
F	0.28	6.99
G	0.67	17.1
H	1.82	46
J	0.91	23
K	M6X1.0	M6X1.0
L	DIA 0.276	DIA. 7.0

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

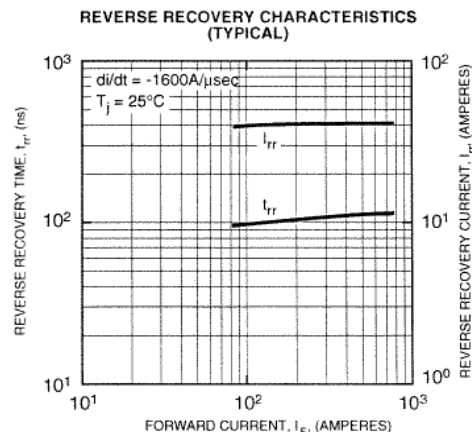
Characteristics	Conditions	Symbol	QRS0680T30	Units
Repetitive Peak Reverse Blocking Voltage	-	$V_{RRM}$	600	Volts
Non-Repetitive Peak Reverse Blocking Voltage	-	$V_{RSM}$	$V_{RRM} + 100$	Volts
Average Forward Current	180° Conduction, $T_c=80^\circ\text{C}$	$I_{F(AV)}$	267	Amperes
	180° Conduction, $T_c=25^\circ\text{C}$	$I_{F(AV)}$	392	Amperes
Peak Half Cycle Non-Repetitive Surge Current	$t = 8.3\text{mS}$ , 100% $V_{RRM}$ Reapplied	$I_{FSM}$	4800	Amperes
$I^2t$ for Fusing for One Cycle	$t = 8.3\text{mS}$ , 100% $V_{RRM}$ Reapplied	$I^2t$	96000	$\text{A}^2\text{sec}$
Operating Junction Temperature	-	$T_J$	-55 to 150	$^\circ\text{C}$
Storage Temperature	-	$T_{STG}$	-55 to 125	$^\circ\text{C}$
Maximum Mounting Torque	-	-	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

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

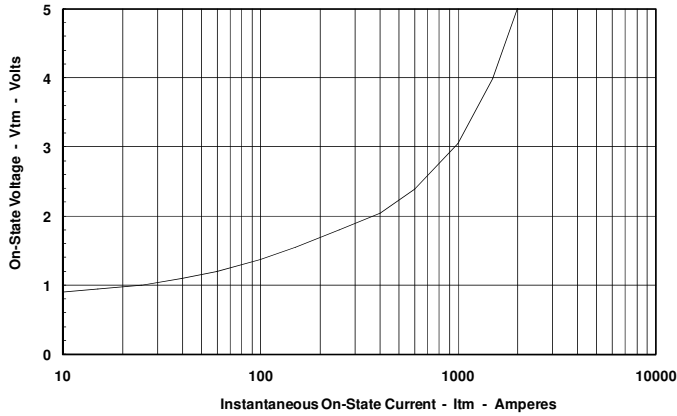
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Peak Reverse Leakage Current	$I_{RRM}$	Rated $V_{RRM}$	-	-	2	mA
Peak On-State Voltage	$V_{FM}$	$I_F=800\text{A}$	-	2.0	2.8	Volts
		$I_F=600\text{A}$	-	1.7	-	
Reverse Recovery Time	$t_{rr}$	$I_F = 800\text{A}$ , $di/dt = -1600\text{A}/\mu\text{s}$	-	-	110	ns
Reverse Recovery Charge	$Q_{rr}$	$I_F = 800\text{A}$ , $di/dt = -1600\text{A}/\mu\text{s}$	-	2.16	-	$\mu\text{C}$

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

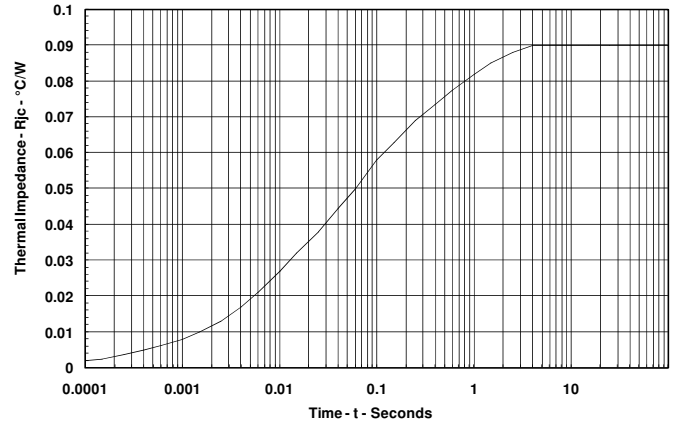
Characteristics	Symbol	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	-	-	0.09	$^\circ\text{C}/\text{Watt}$
Thermal Resistance, Case to Sink Lubricated	$R_{\theta CS}$	-	-	0.04	$^\circ\text{C}/\text{Watt}$



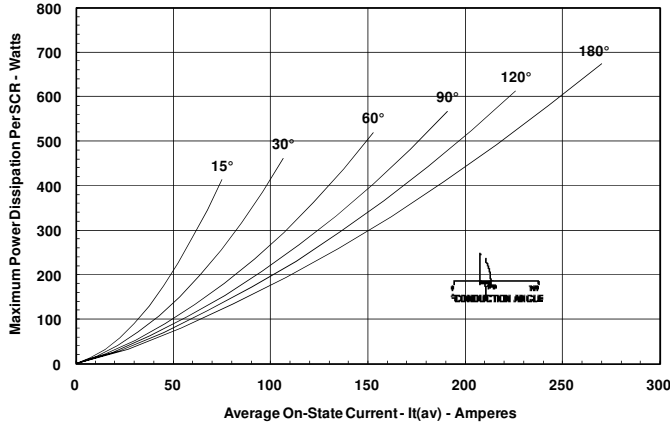
**Maximum On-State Forward Voltage Drop**  
( $T_J = 150^\circ\text{C}$ )



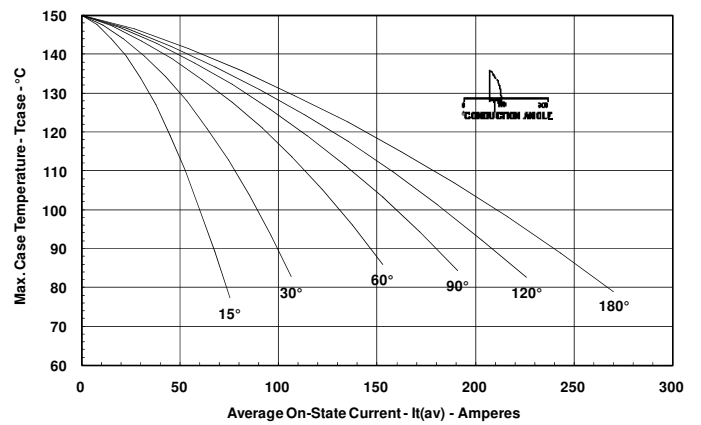
**Maximum Transient Thermal Impedance**  
(Junction to Case)



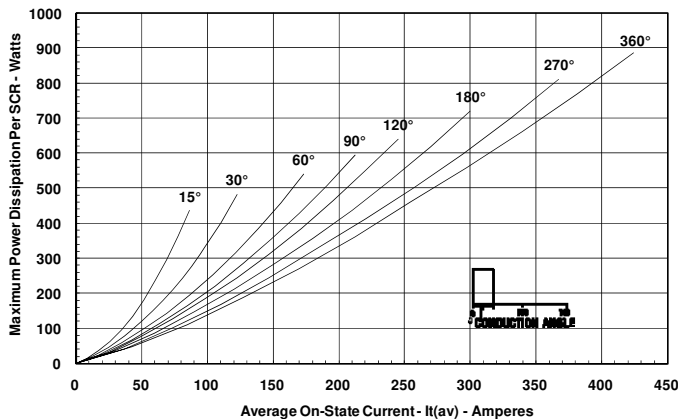
**Maximum On-State Power Dissipation**  
(Sinusoidal Waveform)



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



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



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

