

Powerex General Purpose Rectifier Diodes are designed with high blocking voltage capability and low forward voltage drop to minimize conduction losses. These are packaged in hermetic, ceramic Pow-R-Disc packages which can be mounted using commercially available clamps and heatsinks or fully assembled to a variety of air or water cooled heat exchangers.

### FEATURES:

- Low On-State Voltage
- Hermetic Ceramic Package
- Excellent Surge and  $I^2t$  Ratings

### APPLICATIONS:

- DC Power Supplies

### ORDERING INFORMATION

Select the complete 12 digit Part Number using the table below.

EXAMPLE: R7S02215XXOO is a 2200V-1550A General Purpose Diode with a typical reverse recovery time of 25 $\mu$ s.

PART	Voltage Rating $V_{DRM}$ - $V_{RRM}$	Voltage Code	Current Rating $I_{tavg}$	Current Code	Reverse Recovery $t_{RR}$	Lead Code
R7S0	2400	24	1550	15	XX	OO
	2200	22				
	2000	20			25 $\mu$ s typical	

Revised: 4/6/2006

**Absolute Maximum Ratings**

Characteristic	Symbol	Rating	Units
Repetitive Peak Reverse Voltage	$V_{RRM}$	2400	Volts
Average On-State Current, $T_C=90\text{ }^\circ\text{C}$	$I_{F(Avg.)}$	1550	A
RMS On-State Current, $T_C=90\text{ }^\circ\text{C}$	$I_{F(RMS)}$	2435	A
Average On-State Current, $T_C=55\text{ }^\circ\text{C}$	$I_{F(Avg.)}$	1830	A
RMS On-State Current, $T_C=55\text{ }^\circ\text{C}$	$I_{F(RMS)}$	2875	A
Peak 1 Cycle Surge Current <sup>†</sup> , 60Hz, $V_R=0.6*V_{RRM}$	$I_{FSM}$	8,162	A
Fuse Coordination $I^2t$ , 60Hz	$I^2t$	2.78E+05	$A^2s$
Peak 1 Cycle Surge Current <sup>†</sup> , 60Hz, $V_R=0V$	$I_{FSM}$	10,600	A
Fuse Coordination $I^2t$ , 50Hz	$I^2t$	4.68E+05	$A^2s$
Peak 3 Cycle Surge Current, 60Hz, $V_R=0V$	$I_{FSM}$	8,056	A
Peak 10 Cycle Surge Current, 60Hz, $V_R=0V$	$I_{FSM}$	5,936	A
Operating Temperature	$T_j$	-40 to+200	$^\circ\text{C}$
Storage Temperature	$T_{Stg.}$	-50 to+200	$^\circ\text{C}$
Approximate Weight		0.25	lb
		0.11	Kg
Mounting Force		2000-2400	lbs
		8.9 - 10.6	Knewtons

<sup>†</sup> Per NEMA Std. RS-282

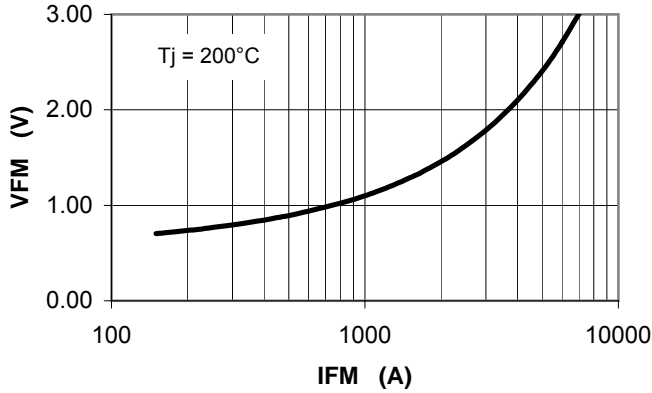
**Electrical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Reverse Leakage Current	I <sub>RRM</sub>	T <sub>j</sub> =200°C, V <sub>RRM</sub> =Rated			150	ma
Peak On-State Voltage	V <sub>FM</sub>	T <sub>j</sub> =25°C, I <sub>FM</sub> =1500A			1.35	V
V <sub>FM</sub> Model, Low Level	V <sub>0</sub>	T <sub>j</sub> =200°C			0.754	V
V <sub>FM</sub> = V <sub>0</sub> + r•I <sub>FM</sub>	r	15% I <sub>FM</sub> - π•I <sub>FM</sub>			0.336	mΩ
V <sub>FM</sub> Model, High Level	V <sub>0</sub>	T <sub>j</sub> =200°C			0.946	V
V <sub>FM</sub> = V <sub>0</sub> + r•I <sub>FM</sub>	r	π•I <sub>FM</sub> - I <sub>FSM</sub>			0.292	mΩ
V <sub>FM</sub> Model, 4-Term	A	T <sub>j</sub> =200°C			0.449	
V <sub>FM</sub> = A + B•Ln(I <sub>FM</sub> ) +	B	15% I <sub>FM</sub> - I <sub>FSM</sub>			0.0256	
C•(I <sub>FM</sub> ) + D•(I <sub>FM</sub> ) <sup>1/2</sup>	C				2.454E-04	
	D				0.00726	
Reverse Recovery Time	t <sub>RR</sub>	T <sub>j</sub> =25°C, I <sub>FM</sub> =1500A di <sub>R</sub> /dt = 25 A/μs		25		μs

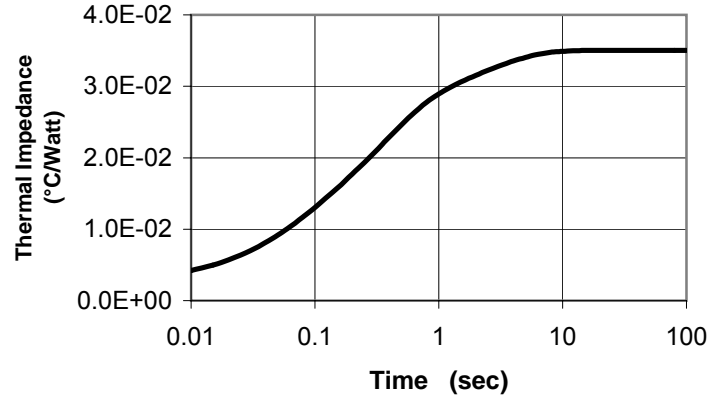
**Thermal Characteristics**

Characteristic	Symbol	Test Conditions	Rating			Units	
			min	typ	max		
Thermal Resistance							
Junction to Case	Rθ <sub>jc</sub>	Double side cooled		0.03	0.035	°C/Watt	
Case to Sink	Rθ <sub>cs</sub>	Double side cooled		0.018	0.02	°C/Watt	
Thermal Impedance Model	Zθ <sub>jc</sub>	Double side cooled					
Zθ <sub>jc</sub> (t) = Σ(A(N)•(1-exp(-t/Tau(N))))		where:	N =	1	2	3	4
			A(N) =	2.54E-03	6.39E-03	1.82E-02	7.91E-03
			Tau(N) =	7.99E-04	5.29E-02	3.30E-01	2.39E+00

**Maximum On-State Voltage Drop**

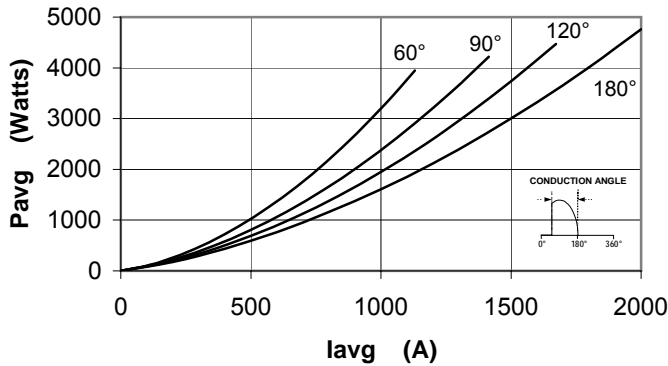


**MAXIMUM TRANSIENT THERMAL IMPEDANCE**



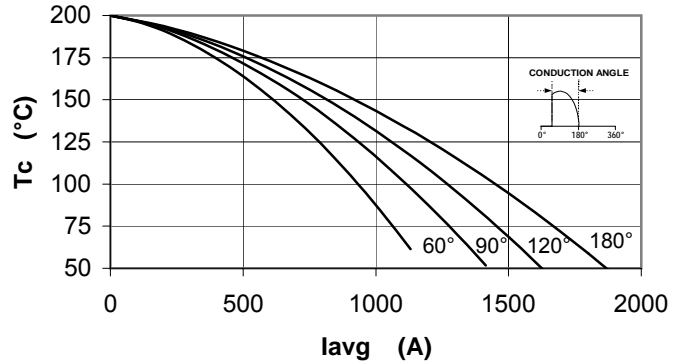
**Maximum On-State Power Dissipation**

Sinusoidal



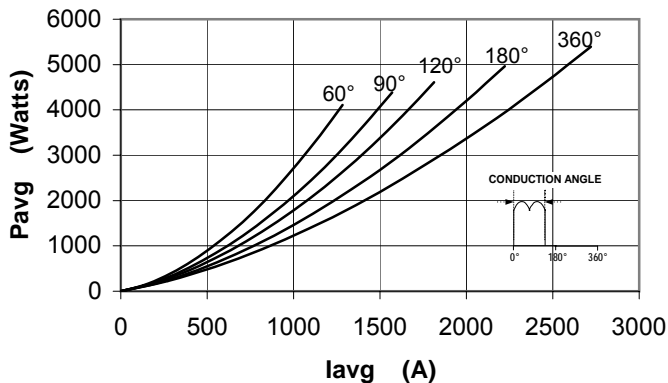
**Maximum Allowable Case Temperature**

Sinusoidal Waveform



**Maximum On-State Power Dissipation**

Square Waveform



**Maximum Allowable Case Temperature**

Square Waveform

