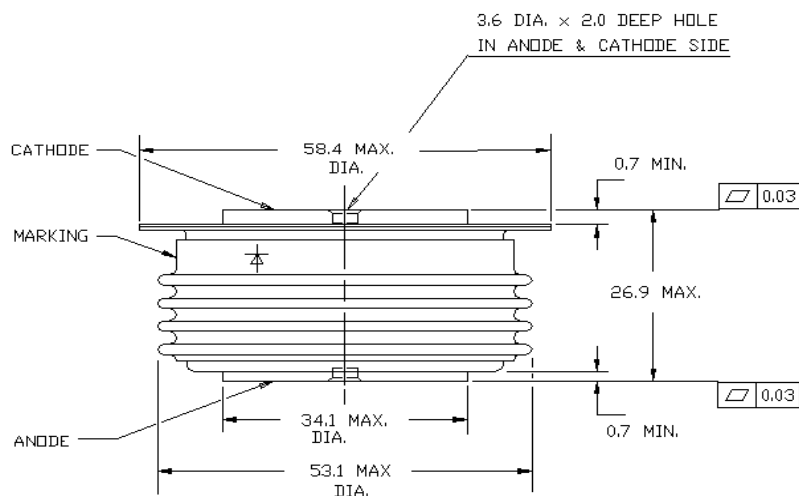




ALL DIMENSIONS IN MM.



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
- Input Rectifiers

ORDERING INFORMATION

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

EXAMPLE: R8206506XXOO is a 6500V-600A General Purpose Diode with a typical reverse recovery time of 30 μ s.

PART	Voltage Rating V_{RRM}	Voltage Code	Current Rating I_{avg}	Current Code	Reverse Recovery t_{RR}	Lead Code
R820	6500	65	600A	06	XX	OO
	6200	62				
	6000	60			30 μ s typical	
	5500	55				



R820__06XX

GENERAL PURPOSE RECTIFIER DIODE

Powerex, Inc., 173 Pavilion Lane, Youngwood, PA 15697-1800

www.pwr.com

(724)925-7272

600 Amperes 6500 Volts

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Reverse Voltage	V_{RRM}	5500 -6500	Volts
Average On-State Current, $T_C=95^{\circ}C$	$I_{F(Avg.)}$	600	A
RMS On - State Current, $T_C=95^{\circ}C$	$I_{F(RMS)}$	942	A
Average On-State Current, $T_C=55^{\circ}C$	$I_{F(Avg.)}$	832	A
RMS On - State Current, $T_C=55^{\circ}C$	$I_{F(RMS)}$	1307	A
Peak One Cycle Surge Current, 60Hz, $V_R=0V$	I_{FSM}	7,040	A
Fuse Coordination I^2t , 60Hz	I^2t	2.07E+05	A ² s
Peak One Cycle Surge Current, 50Hz, $V_R=0V$	I_{FSM}	6,870	A
Fuse Coordination I^2t , 50Hz	I^2t	2.36E+05	A ² s
Operating Temperature	T_j	-40 to+150	$^{\circ}C$
Storage Temperature	$T_{Stg.}$	-50 to+190	$^{\circ}C$
Approximate Weight		0.5	lb
		0.23	Kg
Mounting Force		3,000 - 3,500	lbs
		13.3 - 15.5	Knewtons

Information presented is based upon manufacturers testing and projected capabilities.
This information is subject to change without notice. The manufacturer makes no claim
as to suitability for use, reliability, capability or future availability of this product.

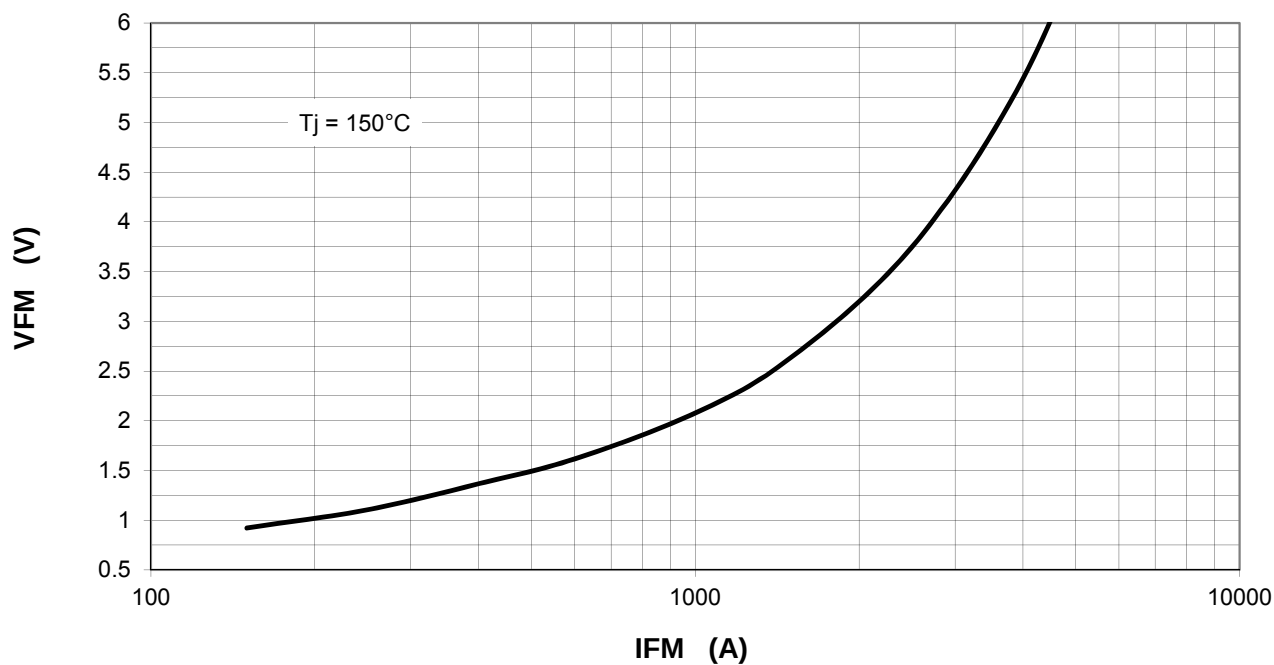
Electrical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Reverse Leakage Current	I_{RRM}	Tj=150°C, V_{RRM} =Rated		50	100	ma
Peak On-State Voltage	V_{FM}	Tj=150°C, I_{FM} = 800 A			1.85	V
V_{FM} Model, Low Level	V_0	Tj=150°C			0.78	V
$V_{FM} = V_0 + r \cdot I_{FM}$	r	15% $I_{FM} - \pi \cdot I_{FM}$			1.27	mΩ
V_{FM} Model, High Level	V_0	Tj=150°C			0.89	V
$V_{FM} = V_0 + r \cdot I_{FM}$	r	$\pi \cdot I_{FM} - I_{FSM}$			1.14	mΩ
V_{FM} Model, 4-Term	A	Tj=150°C			-0.411	
$V_{FM} = A + B \cdot \ln(I_{FM}) +$	B	15% $I_{FM} - I_{FSM}$			2.94E-01	
$C \cdot (I_{FM}) + D \cdot (I_{FM})^{1/2}$	C				1.25E-03	
	D				-2.52E-02	
Reverse Recovery Time	t_{RR}	Tj=25°C, I_{FM} =400A $di_R/dt = 25 \text{ A}/\mu\text{s}$		30		μs

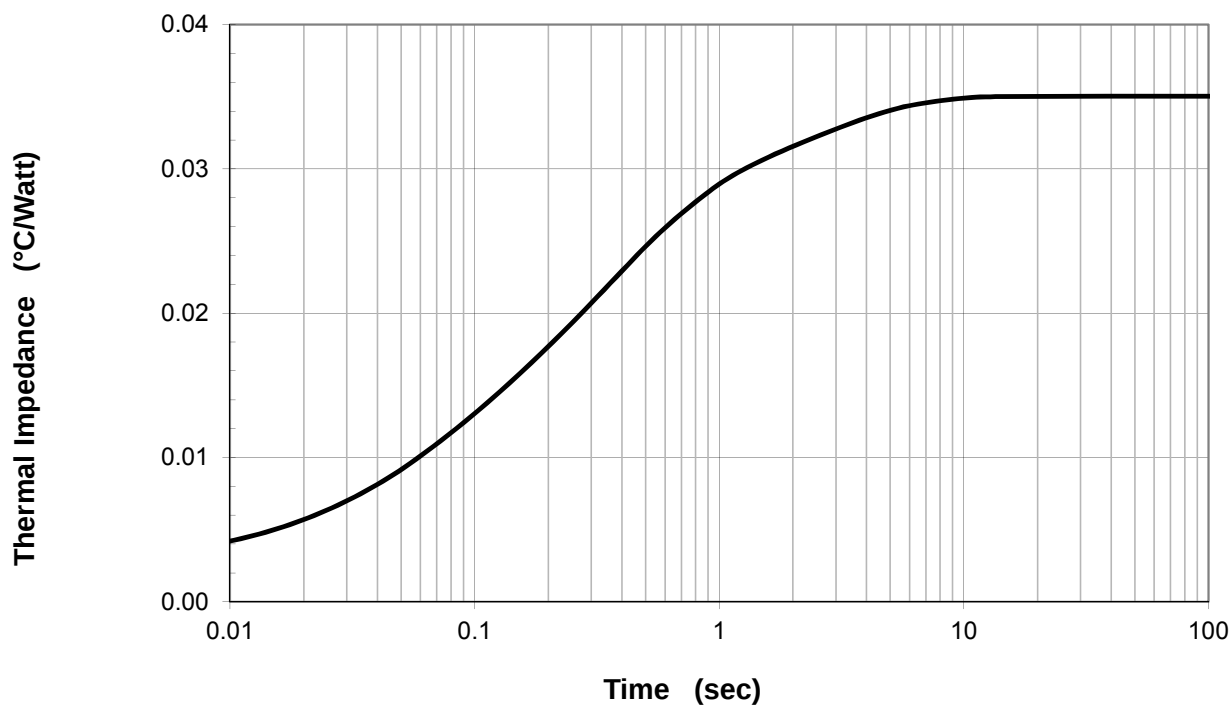
Thermal Characteristics

Characteristic	Symbol	Test Conditions	min	Rating typ	max	Units	
Thermal Resistance							
Junction to Case	$R\theta_{jc}$	Double side cooled			0.035	°C/Watt	
	$R\theta_{jc}$	Cathode side cooled			0.068	°C/Watt	
	$R\theta_{jc}$	Anode side cooled			0.072	°C/Watt	
Case to Sink	$R\theta_{cs}$	Double side cooled			0.015	°C/Watt	
Thermal Impedance Model							
$Z\theta_{jc}(t) = \Sigma(A(N) \cdot (1 - \exp(-t/Tau(N))))$	$Z\theta_{jc}$	Double side cooled					
		where:	N =	1	2	3	4
			A(N) =	2.536E-03	6.394E-03	1.818E-02	7.915E-03
			Tau(N) =	7.988E-04	5.286E-02	3.296E-01	2.391E+00

Maximum On-State Voltage Drop

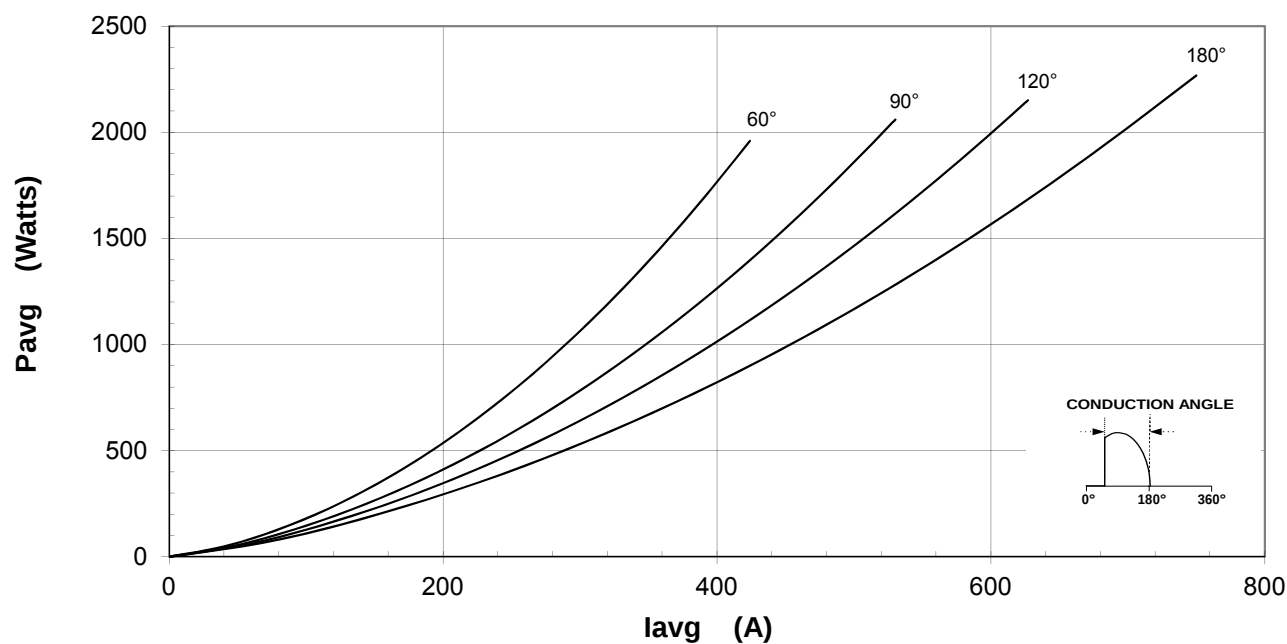


MAXIMUM TRANSIENT THERMAL IMPEDANCE



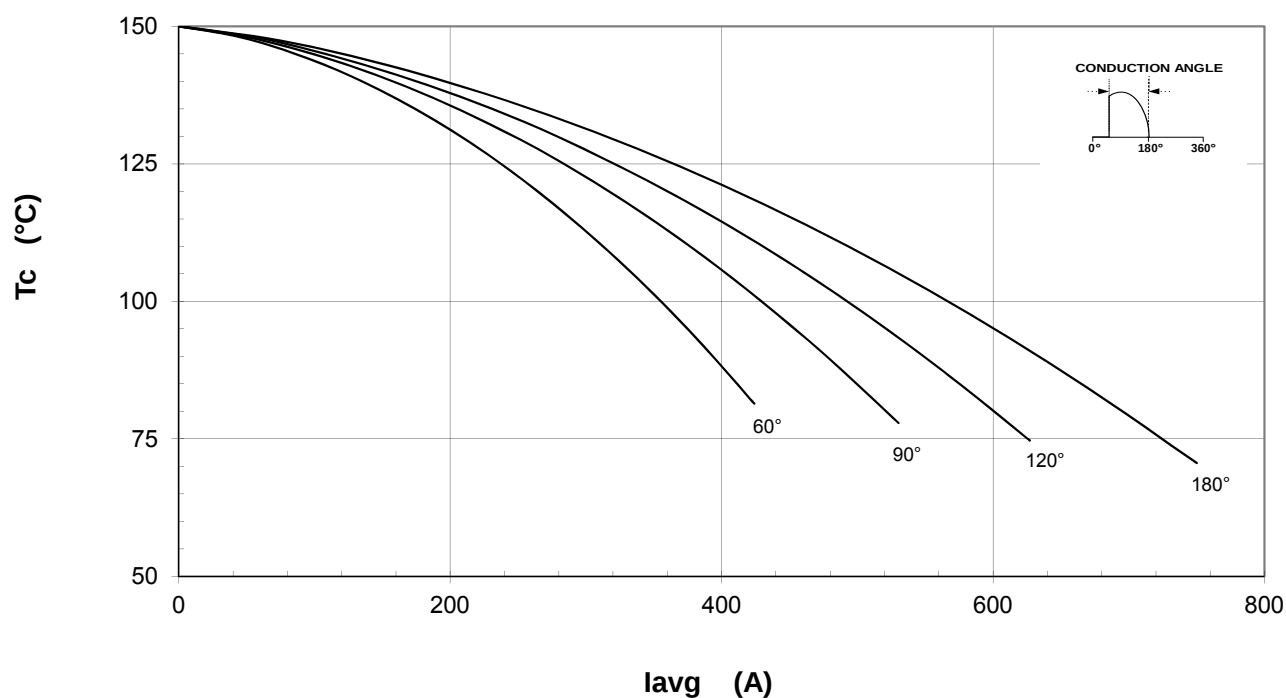
Maximum On-State Power Dissipation

Sinusoidal Waveform



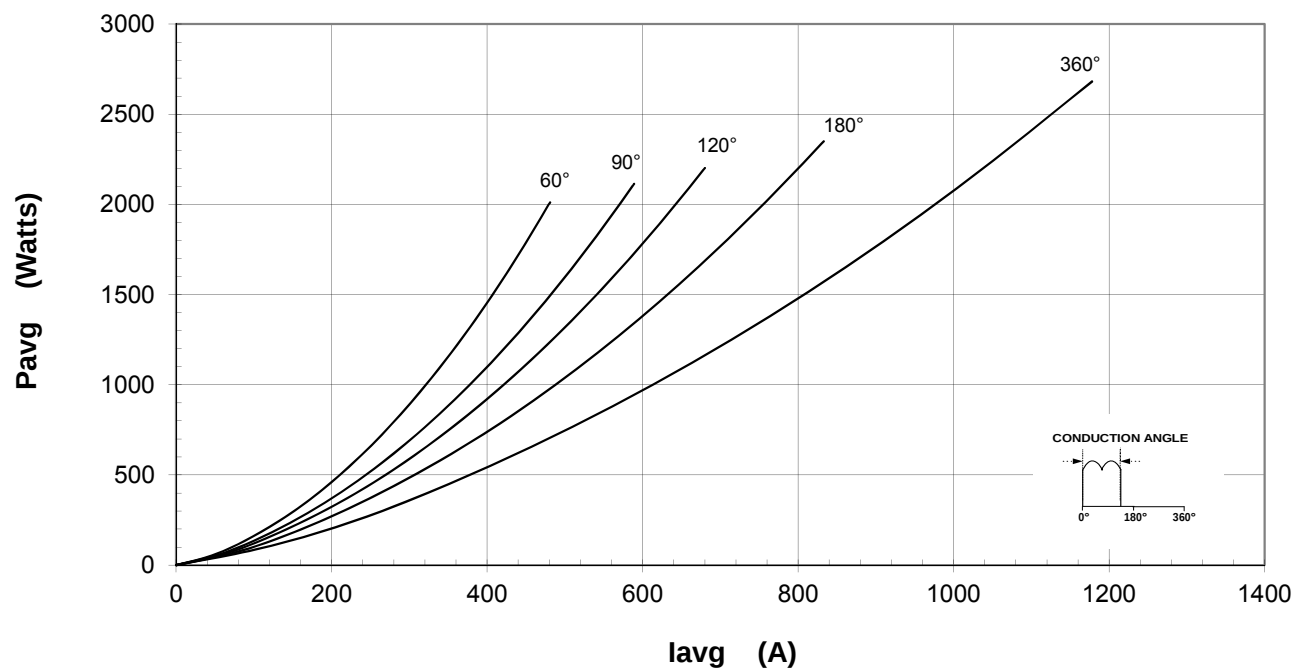
Maximum Allowable Case Temperature

Sinusoidal Waveform



Maximum On-State Power Dissipation

Square Waveform



Maximum Allowable Case Temperature

Square Waveform

