

Powerex General Purpose Rectifier Diodes are designed with high locking 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
- Plating Supplies

ORDERING INFORMATION

Select the complete 12 digit Part Number using the table below.
 EXAMPLE: RBK84540XXOO is a 4500V-4000A General Purpose Diode with a typical reverse recovery time of 30 μ s.

PART	Voltage Rating $V_{DRM}-V_{RRM}$	Voltage Code	Current Rating I_{tavg}	Current Code	Reverse Recovery t_{RR}	Lead Code
RBK8	4500	45	4000	40	XX	OO
	4400	44				
	4200	42			30 μ s typical	
	4000	40				

Revised: 10/15/2007

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Reverse Voltage	V_{RRM}	4500	Volts
Average On-State Current, $T_C=80^\circ\text{C}$	$I_{F(Avg.)}$	4000	A
RMS On-State Current, $T_C=80^\circ\text{C}$	$I_{F(RMS)}$	6283	A
Average On-State Current, $T_C=55^\circ\text{C}$	$I_{F(Avg.)}$	4600	A
RMS On-State Current, $T_C=55^\circ\text{C}$	$I_{F(RMS)}$	7226	A
Peak One Cycle Surge Current, 60Hz, $V_R=0.6*V_{RRM}$	I_{FSM}	53,700	A
Fuse Coordination I^2t , 60Hz	I^2t	1.20E+07	A^2s
Peak One Cycle Surge Current, 50Hz, $V_R=0V$	I_{FSM}	65,514	A
Fuse Coordination I^2t , 50Hz	I^2t	1.79E+07	A^2s
Operating Temperature	T_j	-40 to+175	$^\circ\text{C}$
Storage Temperature	$T_{Stg.}$	-50 to+200	$^\circ\text{C}$
Approximate Weight		2.5	lb
		1.13	Kg
Mounting Force		6,000 - 10,000	lbs
		26.6 - 44.4	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.

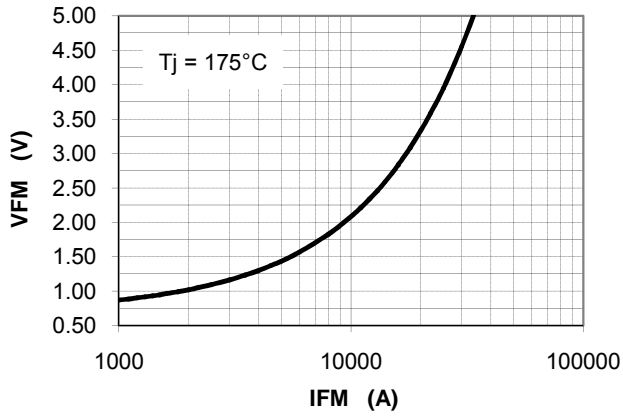
Electrical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Reverse Leakage Current	I_{RRM}	Tj=175°C, V_{RRM} =Rated		100	150	ma
Peak On-State Voltage	V_{FM}	Tj=25°C, I_{FM} =3000A			1.17	V
V_{FM} Model, Low Level	V_0	Tj=175°C			0.75	V
$V_{FM} = V_0 + r \cdot I_{FM}$	r	15% $I_{FM} - \pi \cdot I_{FM}$			0.133	mΩ
V_{FM} Model, High Level	V_0	Tj=175°C			0.88	V
$V_{FM} = V_0 + r \cdot I_{FM}$	r	$\pi \cdot I_{FM} - I_{FSM}$			0.122	mΩ
V_{FM} Model, 4-Term	A	Tj=175°C			0.597	
$V_{FM} = A + B \cdot \ln(I_{FM}) +$	B	15% $I_{FM} - I_{FSM}$			0.0131	
$C \cdot (I_{FM}) + D \cdot (I_{FM})^{1/2}$	C				1.153E-04	
	D				0.00212	
Reverse Recovery Time	t_{RR}	Tj=25°C, I_{FM} =2000A $di_R/dt = 25 \text{ A}/\mu\text{s}$		30		μs

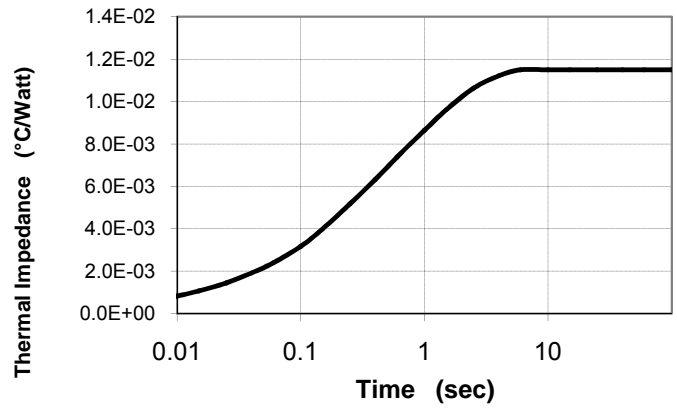
Thermal Characteristics

Characteristic	Symbol	Test Conditions	Rating			Units	
			min	typ	max		
Thermal Resistance							
Junction to Case	$R\theta_{jc}$	Double side cooled		0.010	0.0115	°C/Watt	
Case to Sink	$R\theta_{cs}$	Double side cooled		0.0015	0.002	°C/Watt	
Thermal Impedance Model	$Z\theta_{jc}$	Double side cooled					
$Z\theta_{jc}(t) = \sum(A(N) \cdot (1 - \exp(-t/\text{Tau}(N))))$		where:	N =	1	2	3	4
			A(N) =	1.020E-05	8.786E-04	4.154E-03	6.431E-03
			Tau(N) =	5.860E-04	1.409E-02	1.814E-01	1.208E+00

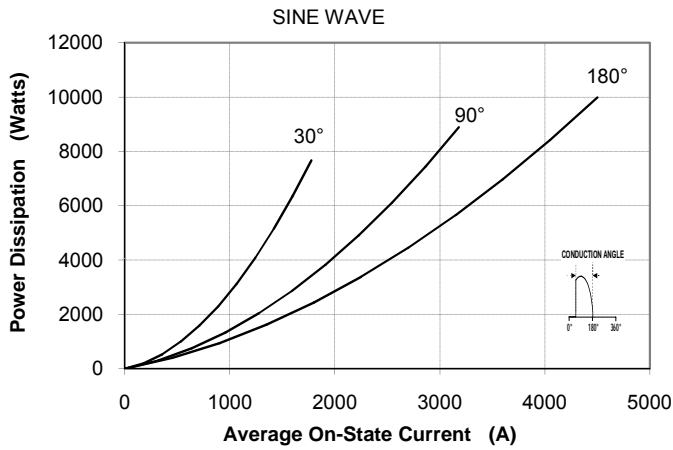
Maximum On-State Voltage Drop



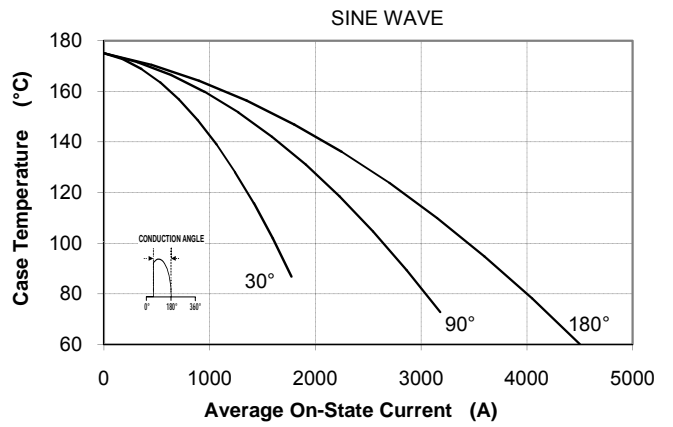
MAXIMUM TRANSIENT THERMAL IMPEDANCE



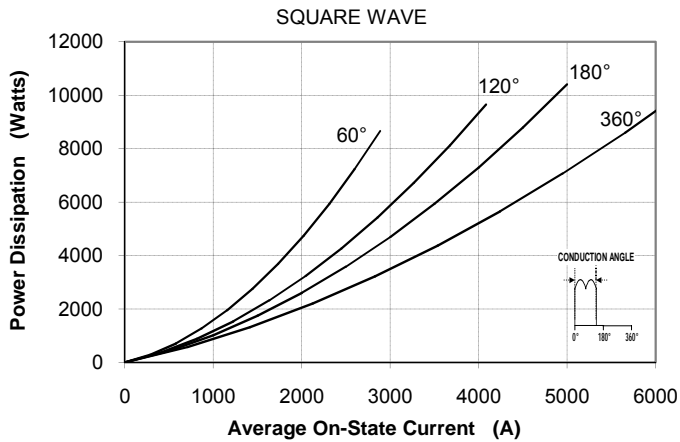
Maximum On-State Power Dissipation



Maximum Allowable Case Temperature



Maximum On-State Power Dissipation



Maximum Allowable Case Temperature

