

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
- Plating Supplies

ORDERING INFORMATION

Select the complete 12 digit Part Number using the table below.
EXAMPLE: RDK86040XXOO is a 6000V-4000A General Purpose Diode with a typical reverse recovery time of 25 μ s.

PART	Voltage Rating $V_{DRM}-V_{RRM}$	Voltage Code	Current Rating I_{tag}	Current Code	Reverse Recovery t_{RR}	Lead Code
RDS8	6000V	60	4000A	40	XX	OO
	5600V	56				
	5200V	52			25 μ s typical	
	4800V	48				

Revised:

4/7/2003

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Reverse Voltage	V_{RRM}	6000	Volts
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	$V_{RRM} + 100$	Volts
Average On-State Current, $T_C 68^\circ\text{C}$	$I_{F(Avg.)}$	4000	A
RMS On - State Current, $T_C 68^\circ\text{C}$	$I_{F(RMS)}$	6283	A
Peak One Cycle Surge Current, 60Hz, $V_R=V_{RRM}$	I_{FSM}	60,000	A
Fuse Coordination I^2t , 60Hz	I^2t	1.50E+07	A ² s
Peak One Cycle Surge Current, 50Hz, $V_R=0V$	I_{FSM}	55,500	A
Fuse Coordination I^2t , 50Hz	I^2t	1.28E+07	A ² s
Operating Temperature	T_j	-40 to+150	°C
Storage Temperature	$T_{Stg.}$	-50 to+190	°C
Approximate Weight		6.5	lb
		2.95	Kg
Mounting Force		16,000 - 20,000	lbs
		71.2 - 89.0	Knewtons

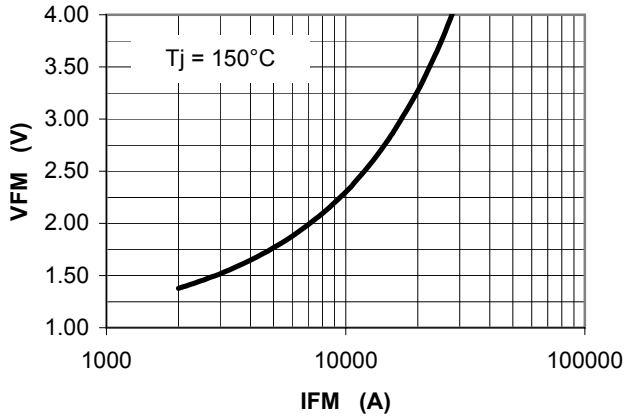
Electrical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Reverse Leakage Current	I_{RRM}	Tj=150°C, V_{RRM} =Rated		150	300	ma
Peak On-State Voltage	V_{FM}	Tj=150°C, I_{FM} = 4000 A			1.65	V
V_{FM} Model, Low Level	V_0	Tj=150°C			1.13	V
$V_{FM} = V_0 + r \cdot I_{FM}$	r	15% $I_{FM} - \pi \cdot I_{FM}$			1.17E-04	Ω
V_{FM} Model, High Level	V_0	Tj=150°C			1.44	V
$V_{FM} = V_0 + r \cdot I_{FM}$	r	$\pi \cdot I_{FM} - I_{FSM}$			9.12E-05	Ω
V_{FM} Model, 4-Term	A	Tj=150°C			0.220	
$V_{FM} = A + B \cdot \ln(I_{FM}) +$	B	15% $I_{FM} - I_{FSM}$			1.25E-01	
$C \cdot (I_{FM}) + D \cdot (I_{FM})^{1/2}$	C				8.50E-05	
	D				8.00E-04	
Reverse Recovery Time	t_{RR}	Tj=25°C, I_{FM} =400A $di_R/dt = 25 A/\mu s$		25		μs

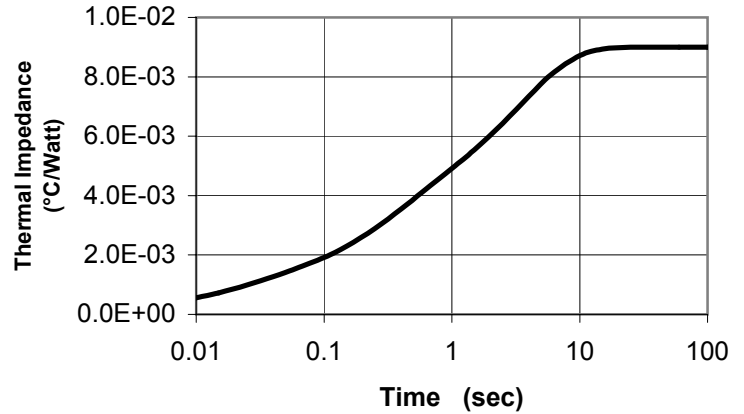
Thermal Characteristics

Characteristic	Symbol	Test Conditions	Rating			Units	
			min	typ	max		
Thermal Resistance							
Junction to Case	$R\theta_{jc}$	Double side cooled		0.0075	0.0090	°C/Watt	
Case to Sink	$R\theta_{cs}$	Double side cooled		0.001	0.0015	°C/Watt	
Thermal Impedance Model	$Z\theta_{jc}$	Double side cooled					
$Z\theta_{jc}(t) = \Sigma(A(N) \cdot (1 - \exp(-t/\text{Tau}(N))))$ where:							
			N =	1	2	3	4
			A(N) =	1.426E-04	9.077E-04	2.600E-03	5.350E-03
			Tau(N) =	2.622E-03	2.313E-02	3.049E-01	3.396E+00

Maximum On-State Voltage Drop

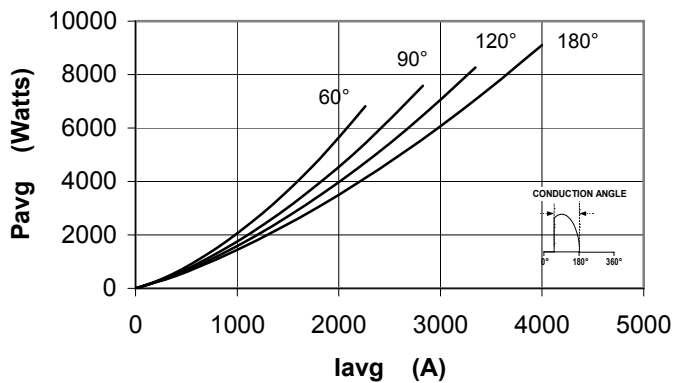


MAXIMUM TRANSIENT THERMAL IMPEDANCE



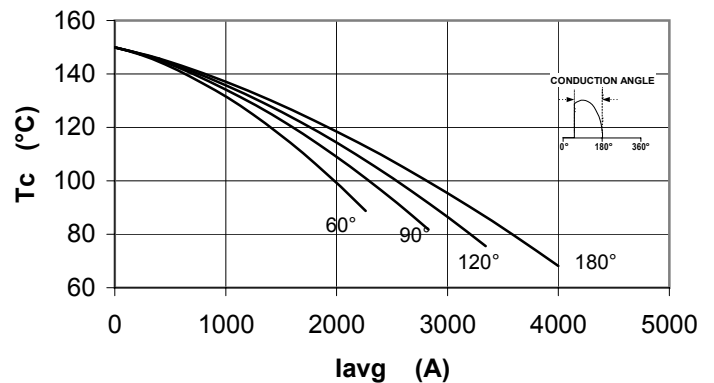
Maximum On-State Power Dissipation

Sinusoidal



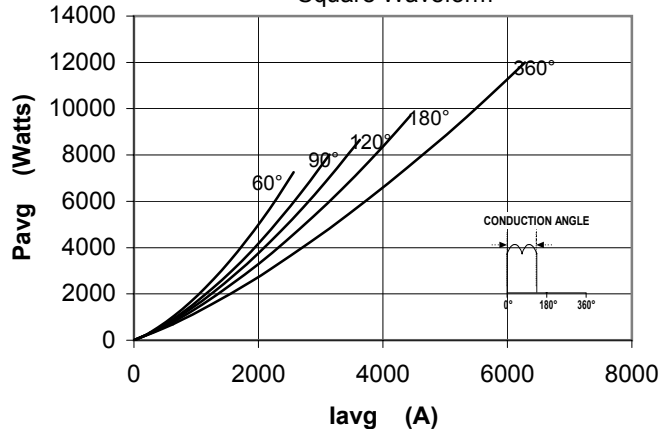
Maximum Allowable Case Temperature

Sinusoidal Waveform



Maximum On-State Power Dissipation

Square Waveform



Maximum Allowable Case Temperature

Square Waveform

