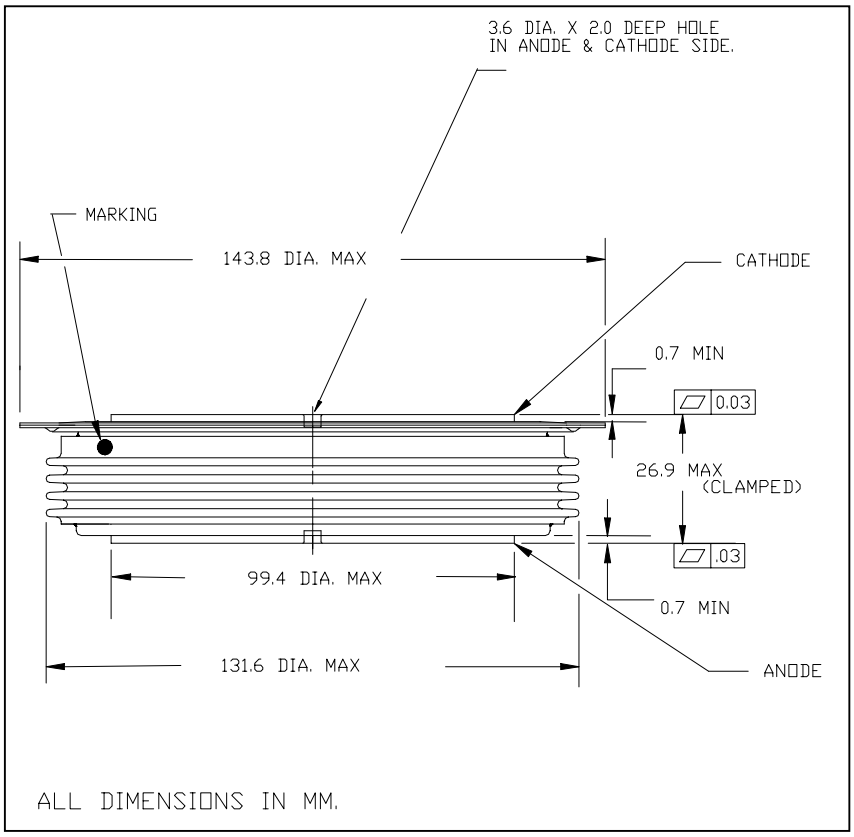
PRELIMINARY

RDS8__10XX

GENERAL PURPOSE RECTIFIER DIODE

Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724)925-7272

10,000 Amperes 1200 Volts



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: RDS81210XXOO is a 1200V 10,000A General Purpose Diode with a typical reverse recovery time of 25µs.

PART	Voltage Rating	Voltage Code	Current Rating	Current Code	Reverse Recovery	Lead Code
	V_{DRM}-V_{RRM}		I_{tavg}		t_{RR}	
RDS8	1200V	**12**	10000A	**10**	**XX**	**OO**
	1000V	**10**				
	800V	**80**			25µs typical	
	600V	**60**				

Revised: 5/01/2009

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Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Reverse Voltage	V_{RRM}	1200	Volts
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	V_{RRM} + 100	Volts
Average On-State Current, T_C=90°C	$I_{F(Avg.)}$	10000	A
RMS On-State Current, T_C=90°C	$I_{F(RMS)}$	15708	A
Peak One Cycle Surge Current, 60Hz, V_R=V_{RRM}	I_{FSM}	120,000	A
Fuse Coordination I^2t, 60Hz	I^2t	6.00E+07	A^2s
Peak One Cycle Surge Current, 50Hz, V_R=0V	I_{FSM}	111,000	A
Fuse Coordination I^2t, 50Hz	I^2t	5.13E+07	A^2s
Operating Temperature	Tj	-40 to+175	°C
Storage Temperature	$T_{Stg.}$	-50 to+200	°C
Approximate Weight		6.5	lb
		2.95	Kg
Mounting Force		16,000 - 20,000	lbs
		71.2 - 89.0	Knewtons

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Electrical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating min	Rating typ	Rating max	Units
Repetitive Peak Reverse Leakage Current	I_{RRM}	Tj=175°C, V_{RRM}=Rated		150	300	ma
Peak On-State Voltage	V_{FM}	Tj=175°C, I_{FM}=4000A			0.75	V
V_{FM} Model, Low Level	V_0	Tj=175°C			0.642	V
$VFM = V_O + r \bullet I_{FM}$	r	15% I_{FM} - π•I_{FM}			2.28E-05	Ω
V_{FM} Model, High Level	V_0	Tj=175°C			0.911	V
$VFM = V_O + r \bullet I_{FM}$	r	π•I_{FM} - I_{FSM}			1.20E-05	Ω
V_{FM} Model, 4-Term	A	Tj=175°C			0.410	
V_{FM}= A + B•Ln(I_{FM}) +	B	15%I_{FM} - I_{FSM}			0.011	
C•(I_{FM}) + D•(I_{FM})^{½}	C				4.00E-06	
	D				0.00358	
Reverse Recovery Time	t_{RR}	Tj=25°C, I_{FM}=400A di_R/dt = 25 A/µs		25		µs

Thermal Characteristics

Characteristic	Symbol	Test Conditions	Rating min	Rating typ	Rating max	Units
Thermal Resistance						
Junction to Case	$R\Theta_{jc}$	Double side cooled		0.007	0.0075	°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				

$$Z\Theta_{jc}(t) = \Sigma(A(N) \bullet (1-\exp(-t/Tau(N))))$$

where:

N =	1	2	3	4
A(N) =	1.426E-04	9.077E-04	2.373E-03	4.080E-03
Tau(N) =	2.622E-03	2.313E-02	3.049E-01	3.600E+00

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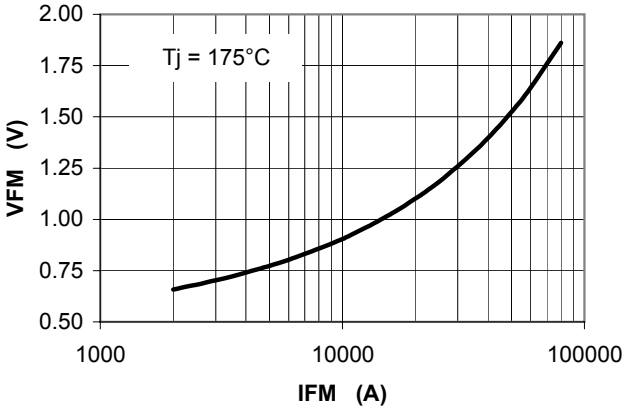
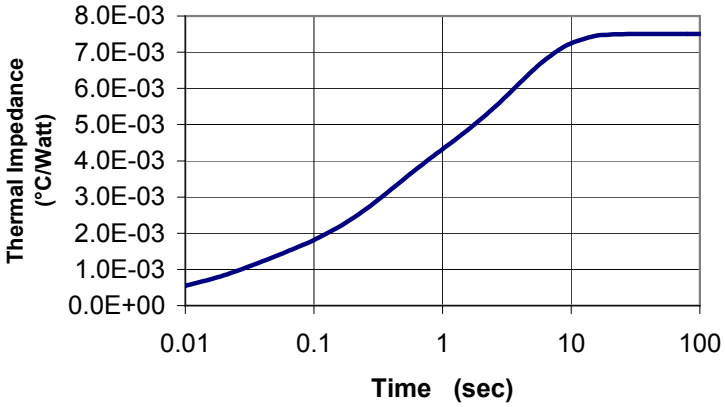
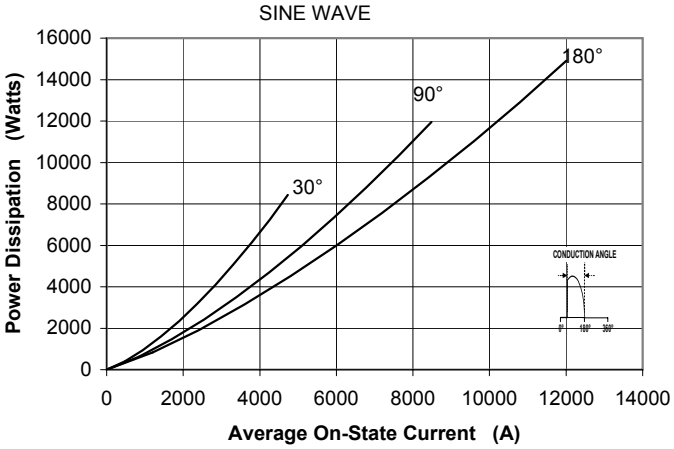
Maximum On-State Voltage Drop



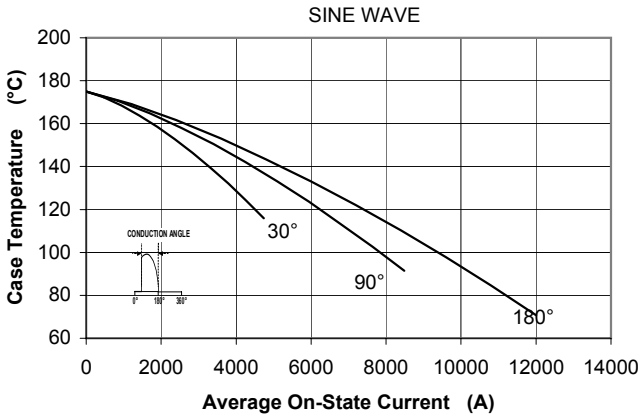
MAXIMUM TRANSIENT THERMAL IMPEDANCE



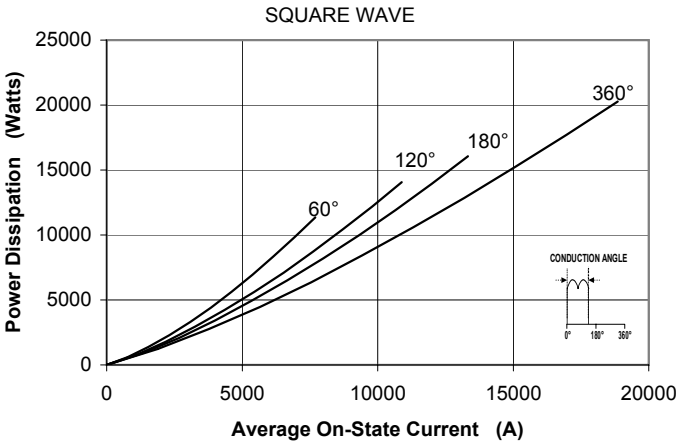
Maximum On-State Power Dissipation



Maximum Allowable Case Temperature



Maximum On-State Power Dissipation



Maximum Allowable Case Temperature