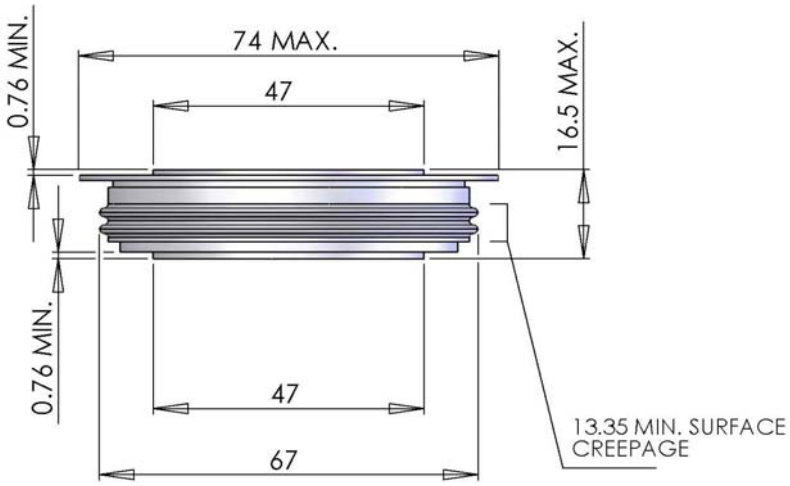
R9S0__30XX

GENERAL PURPOSE RECTIFIER DIODE

Powerex, Inc., 173 Pavilion Ln, Youngwood, Pa 15697-1800 (724)925-7272 WWW.PWRX.COM

3000 Amperes 2600 Volts



Powerex General Purpose, Low Profile Rectifier Diode 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: R9S02630XXOO is a 2600V-3000A 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}	
R9S0	2600V	**26**	3000A	**30**	**XX**	**OO**
	2400V	**24**				
	2200V	**22**			25µs typical	
	2000V	**20**				
	1800V	**18**				

Revised: 8/16/2007

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Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Reverse Voltage	V_{RRM}	2600	Volts
Average On-State Current, T_C= 115 °C	$I_{F(Avg.)}$	3000	A
RMS On-State Current, T_C= 115 °C	$I_{F(RMS)}$	4712	A
Average On-State Current, T_C= 85 °C	$I_{F(Avg.)}$	3935	A
RMS On-State Current, T_C= 85 °C	$I_{F(RMS)}$	6181	A
Peak One Cycle Surge Current†, 60Hz, V_R=V_{RRM}	I_{FSM}	22,000	A
Fuse Coordination I^2t, 60Hz	I^2t	2.02E+06	A^2s
Peak One Cycle Surge Current†, 60Hz, V_R=0V	I_{FSM}	28,600	A
Fuse Coordination I^2t, 50Hz	I^2t	3.41E+06	A^2s
Peak 3 Cycle Surge Current, 60Hz, V_R=0V	I_{FSM}	25,080	A
Peak 10 Cycle Surge Current, 60Hz, V_R=0V	I_{FSM}	20,130	A
Operating Temperature	Tj	-40 to+175	°C
Storage Temperature	$T_{Stg.}$	-50 to+200	°C
Approximate Weight		0.6	lb
		0.27	Kg
Mounting Force		5500-6000	lbs
		24.5 - 26.7	Knewtons

† Per NEMA Std. RS-282

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			75	ma
Peak On-State Voltage	V_{FM}	Tj=25°C, I_{FM}=1500A			1.10	V
V_{FM} Model, Low Level	V_0	Tj=175°C			0.912	V
$VFM = V_O + r \bullet I_{FM}$	r	15% I_{FM} - π•I_{FM}			8.85E-02	mΩ
V_{FM} Model, High Level	V_0	Tj=175°C			1.059	V
$VFM = V_O + r \bullet I_{FM}$	r	π•I_{FM} - I_{FSM}			6.32E-02	mΩ
V_{FM} Model, 4-Term	A	Tj=175°C			0.652	
$V_{FM}= A + B \bullet Ln(I_{FM}) +$	B	15%I_{FM} - I_{FSM}			0.0381	
$C \bullet (I_{FM}) + D \bullet (I_{FM})^{½}$	C				5.730E-05	
	D				0.00111	
Reverse Recovery Time	t_{RR}	Tj=25°C, I_{FM}=1500A di_R/dt = 25 A/µs		25		µs

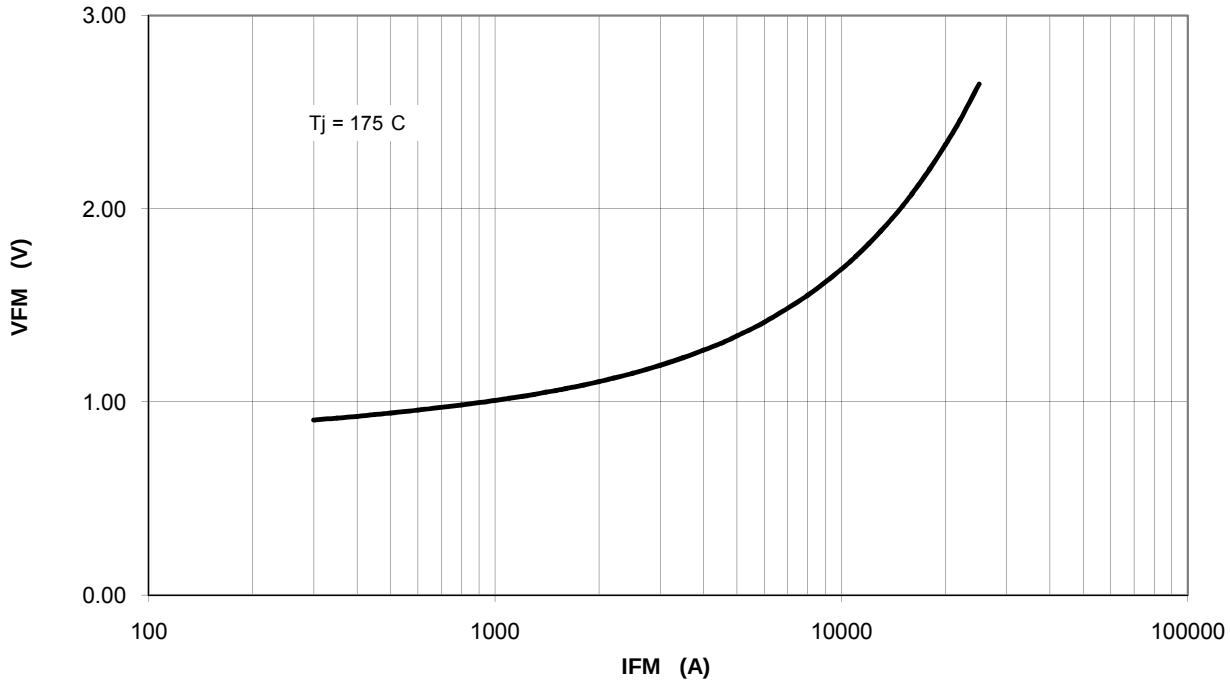
Thermal Characteristics

Characteristic	Symbol	Test Conditions	Rating min	Rating typ	Rating max	Units
Thermal Resistance						
Junction to Case	$R\Theta_{jc}$	Double side cooled		0.012	0.0145	°C/Watt
Case to Sink	$R\Theta_{cs}$	Double side cooled		0.004	0.006	°C/Watt
Thermal Impedance Model	$Z\Theta_{jc}$	Double side cooled				

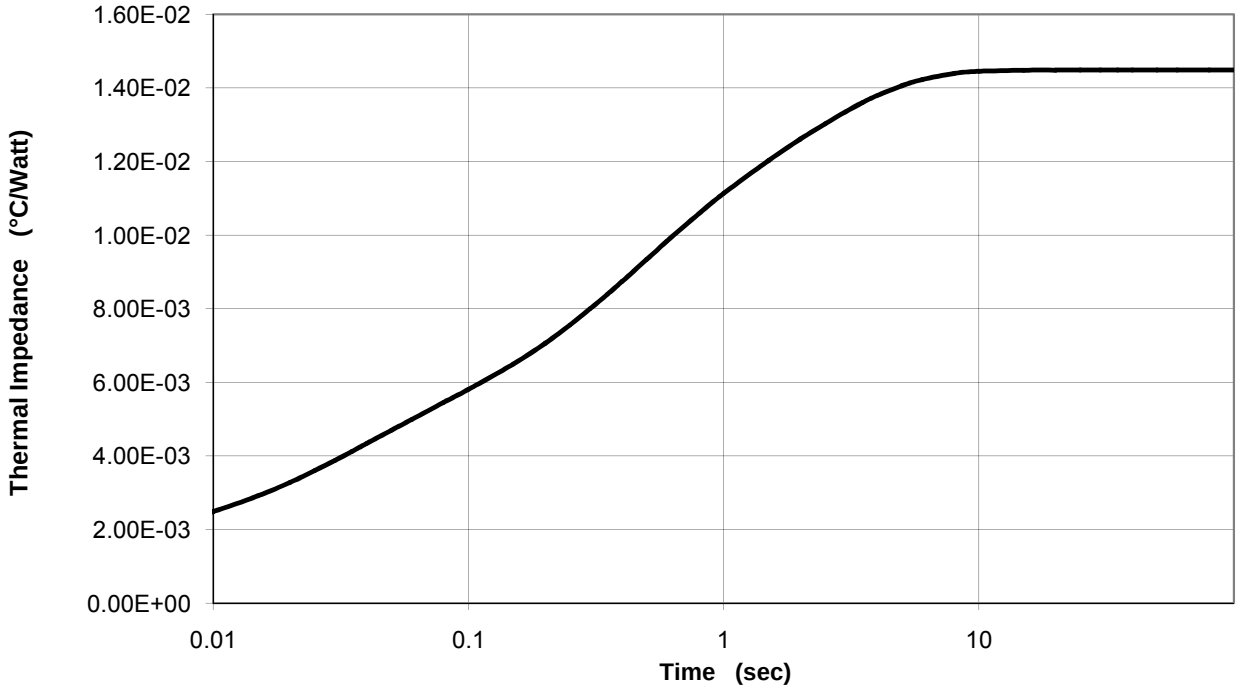
$$Z\Theta_{jc}(t) = \Sigma(A(N) \bullet (1-\exp(-t/Tau(N))))$$ where:

N =	1	2	3	4
A(N) =	1.418E-03	2.968E-03	6.066E-03	9.527E-03
Tau(N) =	5.947E-05	2.762E-02	4.011E-01	4.012E+00

Maximum On-State Voltage Drop

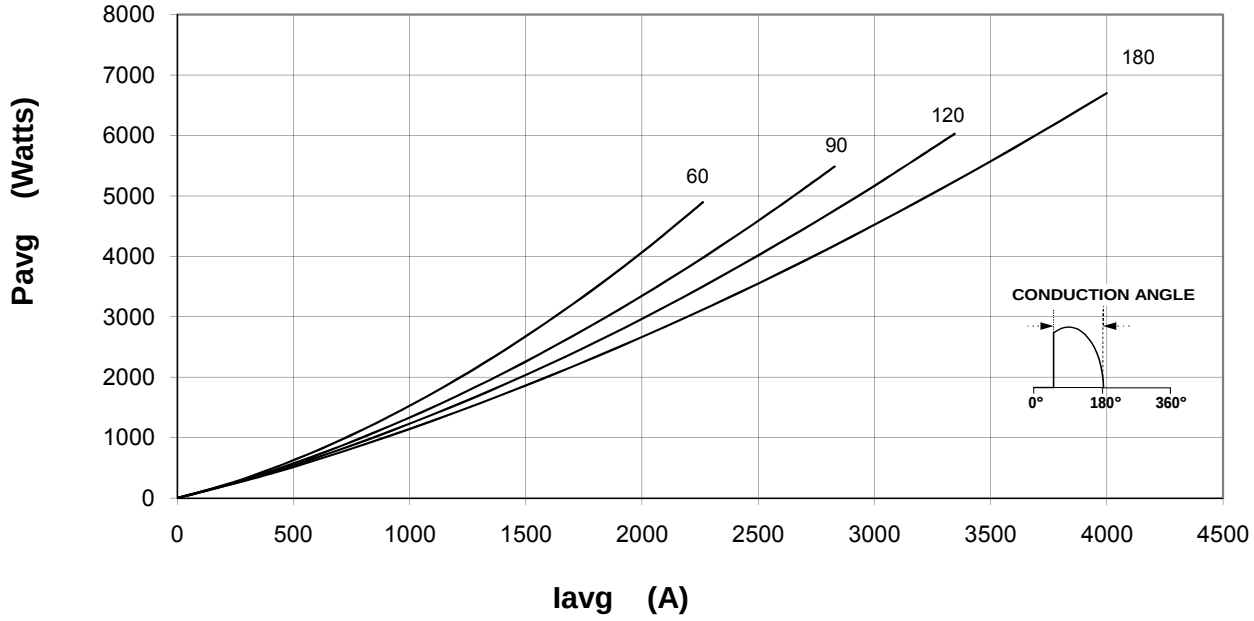


MAXIMUM TRANSIENT THERMAL IMPEDANCE



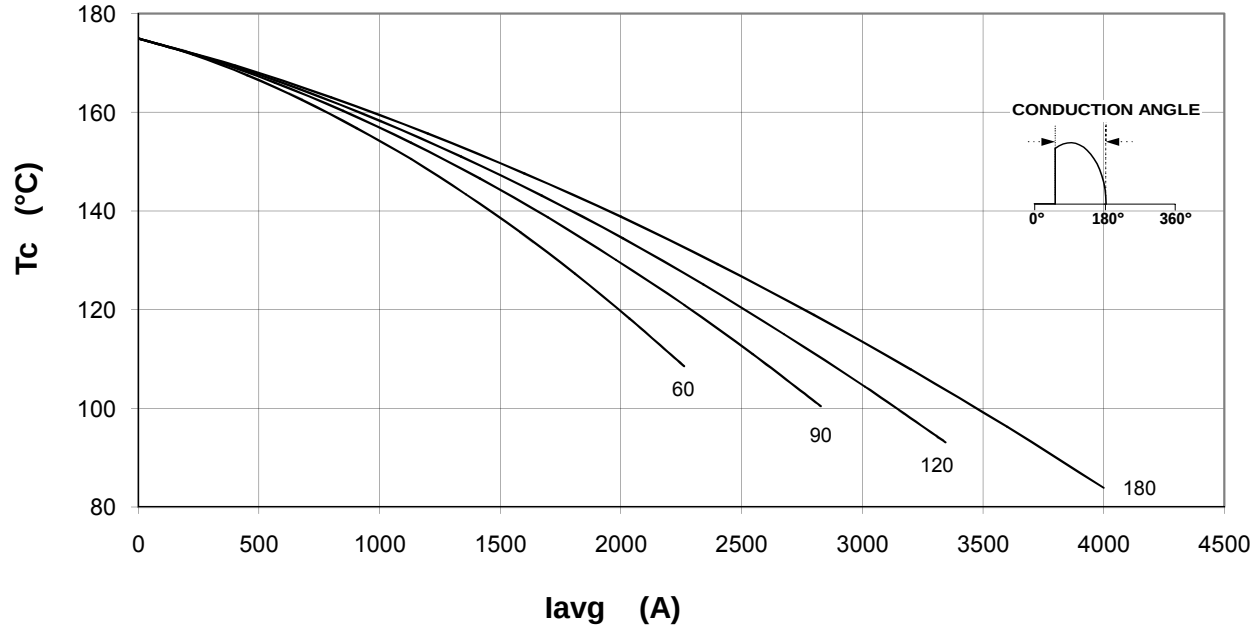
Maximum On-State Power Dissipation

Sinusoidal Waveform

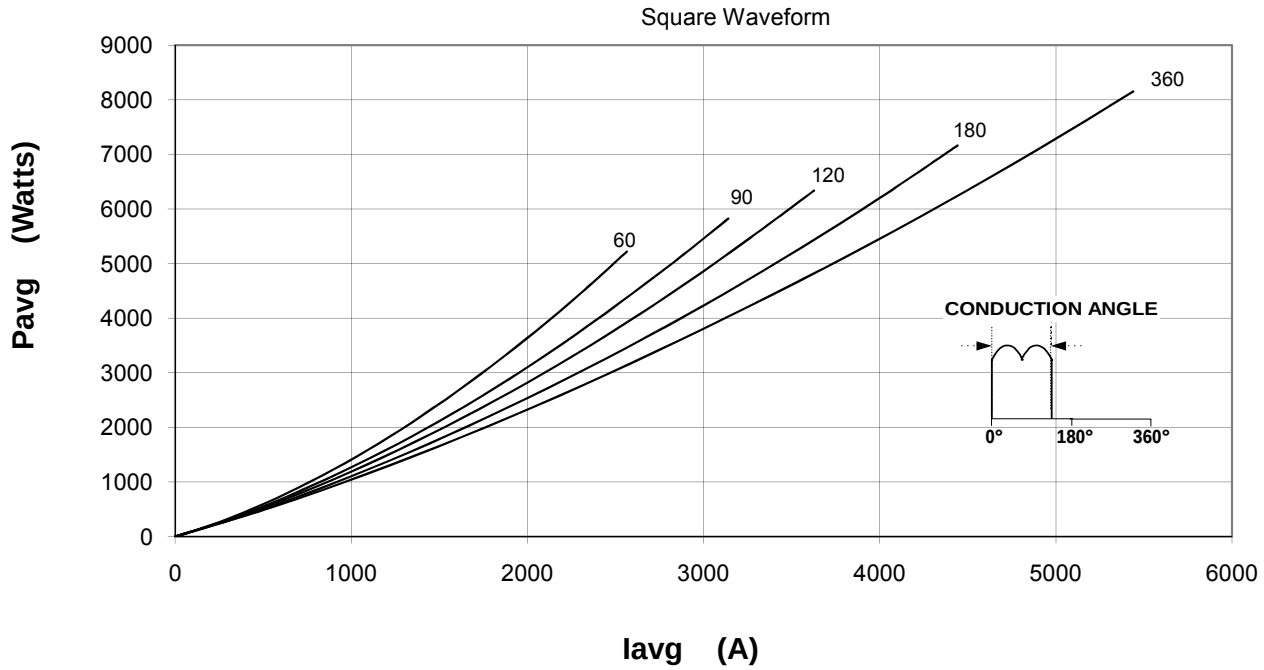


Maximum Allowable Case Temperature

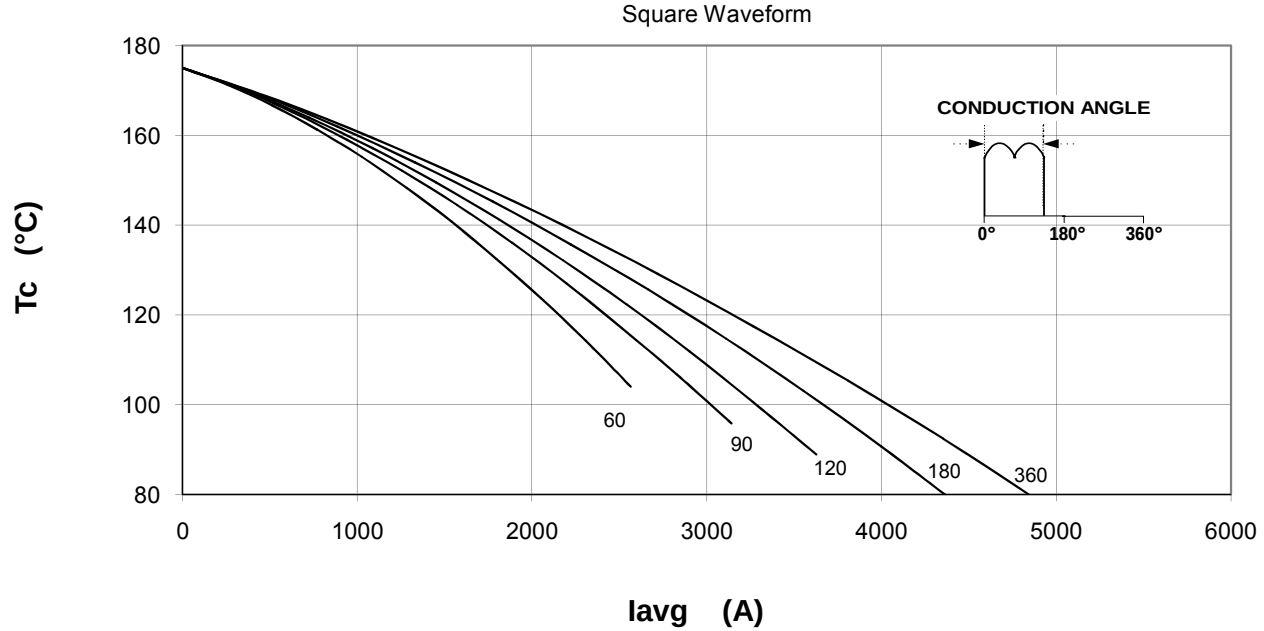
Sinusoidal Waveform



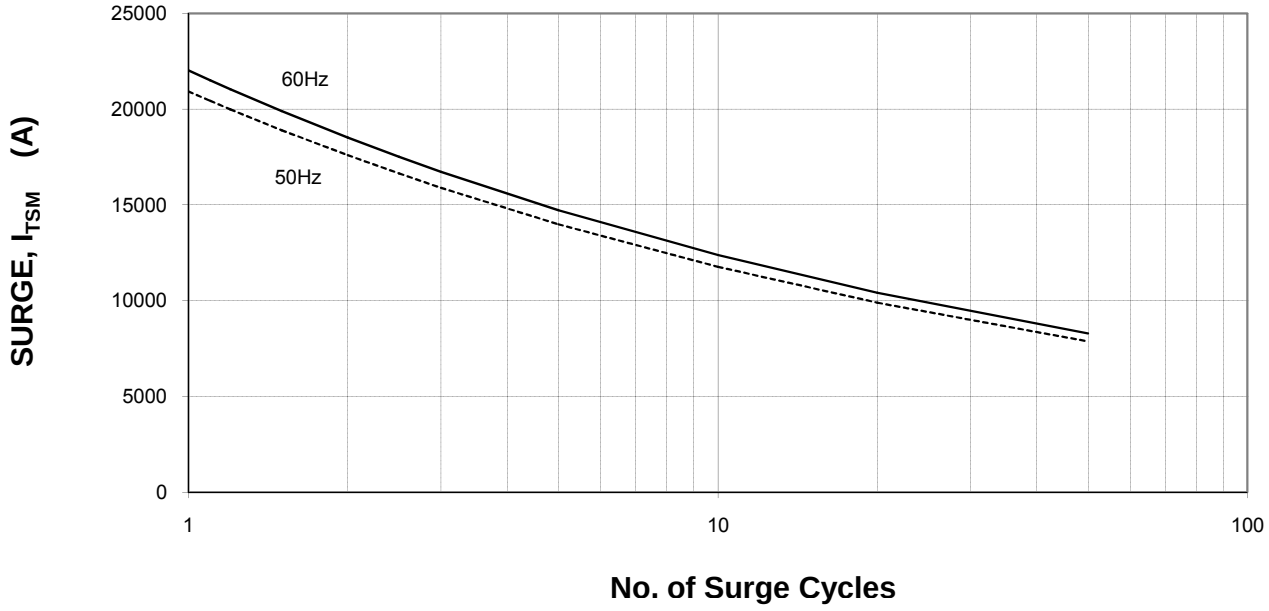
Maximum On-State Power Dissipation



Maximum Allowable Case Temperature



MULTI-CYCLE SURGE



SUB-CYCLE SURGE -- I^2t