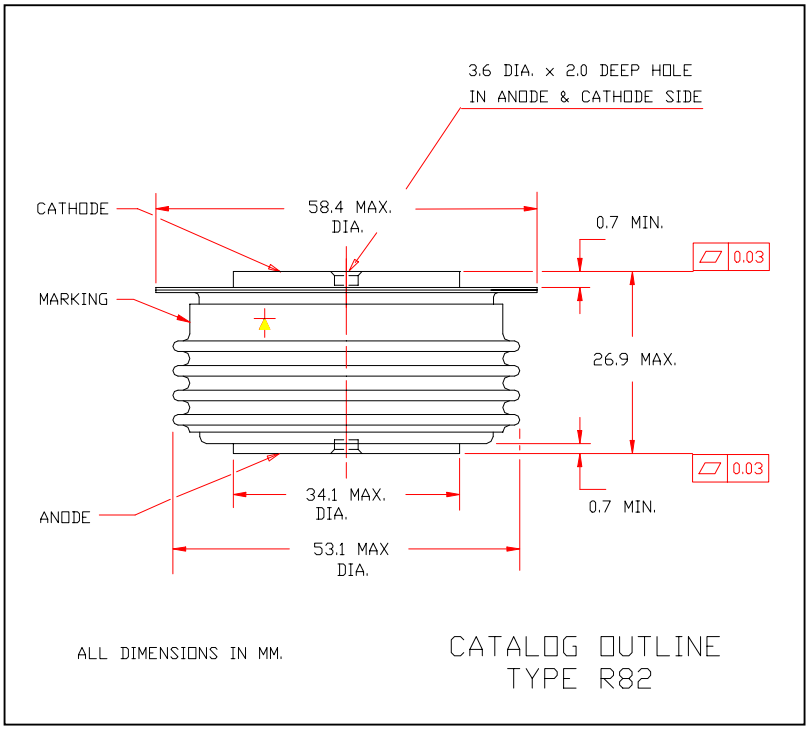
R820__16XX

GENERAL PURPOSE RECTIFIER DIODE

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

1600 Amperes 2600 Volts



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: R8202616XXOO is a 2600V-1600A 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}	
R820	2600V	**26**	1600A	**16**	**XX**	**OO**
	2400V	**24**				
	2200V	**22**			25µs typical	
	2000V	**20**				

Revised: 9/30/2003

Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724)925-7272
1600 Amperes 2600 Volts

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Reverse Voltage	V_{RRM}	2600	Volts
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	V_{RRM} + 100	Volts
Average On-State Current, T_C= 82°C	$I_{F(Avg.)}$	1600	A
RMS On - State Current, T_C= 82°C	$I_{F(RMS)}$	2513	A
Peak One Cycle Surge Current, 60Hz, V_R=V_{RRM}	I_{FSM}	14,000	A
Fuse Coordination I^2t, 60Hz	I^2t	8.17E+05	A^2s
Peak One Cycle Surge Current, 50Hz, V_R=0V	I_{FSM}	12,950	A
Fuse Coordination I^2t, 50Hz	I^2t	6.99E+05	A^2s
Operating Temperature	Tj	-40 to+175	°C
Storage Temperature	$T_{Stg.}$	-50 to+190	°C
Approximate Weight		0.5	lb
		0.23	Kg
Mounting Force		3,000 - 3,500	lbs
		13.3 - 15.5	Knewtons

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

1600 Amperes 2600 Volts

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		50	75	ma
Peak On-State Voltage	V_{FM}	Tj=25°C, I_{FM}= 1500 A			1.20	V
V_{FM} Model, Low Level	V_0	Tj=175°C			0.68	V
VFM = V_O + r•I_{FM}	r	15% I_{FM} - π•I_{FM}			2.47E-04	Ω
V_{FM} Model, High Level	V_0	Tj=175°C			0.85	V
VFM = V_O + r•I_{FM}	r	π•I_{FM} - I_{FSM}			2.13E-04	Ω
V_{FM} Model, 4-Term	A	Tj=175°C			0.327	
V_{FM}= A + B•Ln(I_{FM}) +	B	15%I_{FM} - I_{FSM}			5.68E-02	
C•(I_{FM}) + D•(I_{FM})^{½}	C				2.11E-04	
	D				2.21E-04	
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		0.03	0.035	°C/Watt
Case to Sink	$R\Theta_{cs}$	Double side cooled		0.012	0.015	°C/Watt
Thermal Impedance Model	$Z\Theta_{jc}$	Double side cooled				

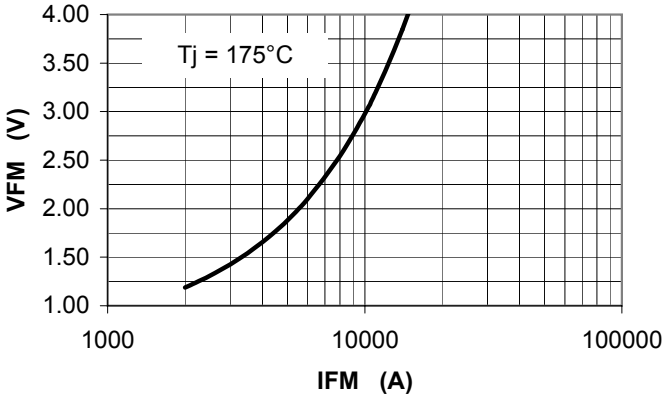
$$Z\Theta_{jc}(t) = \Sigma(A(N)\bullet(1-\exp(-t/Tau(N))))$$

where:

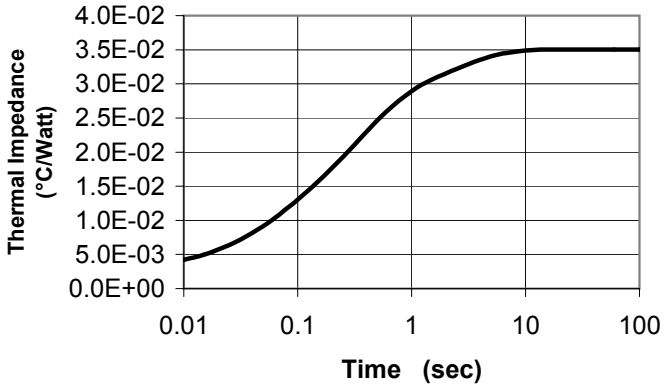
N =	1	2	3	4
A(N) =	2.536E-03	6.394E-03	1.818E-02	7.915E-03
Tau(N) =	7.988E-04	5.286E-02	3.296E-01	2.391E+00

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

Maximum On-State Voltage Drop

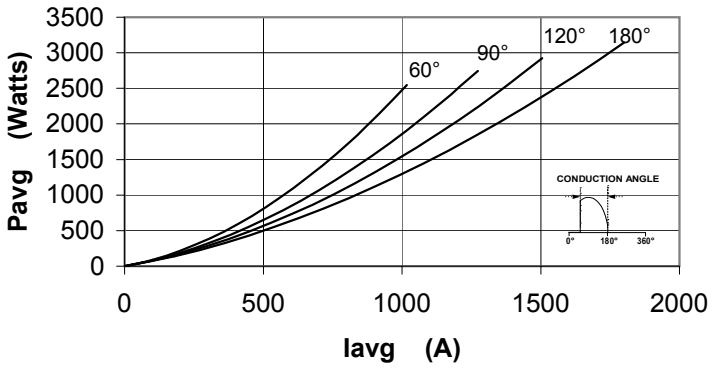


MAXIMUM TRANSIENT THERMAL IMPEDANCE



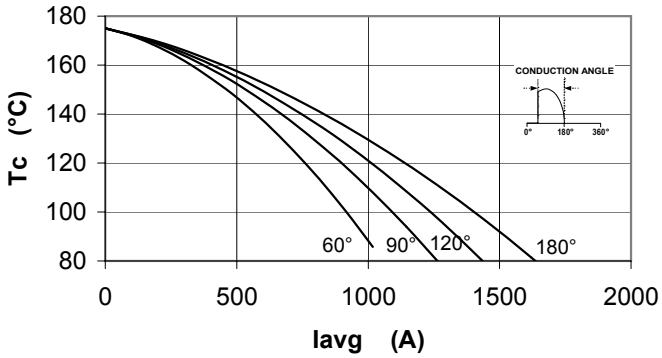
Maximum On-State Power Dissipation

Sinusoidal



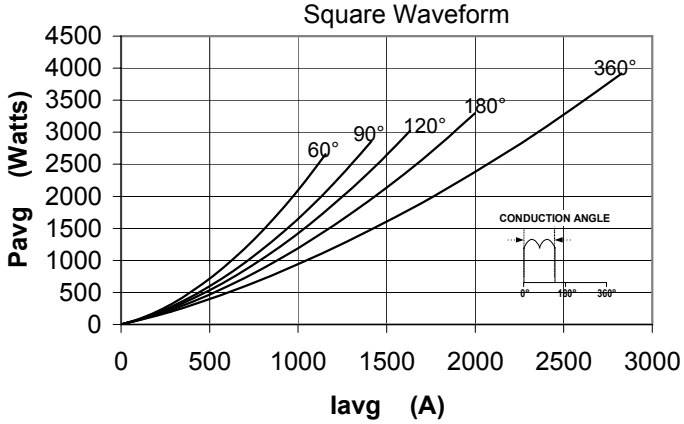
Maximum Allowable Case Temperature

Sinusoidal Waveform



Maximum On-State Power Dissipation

Square Waveform



Maximum Allowable Case Temperature

Square Waveform