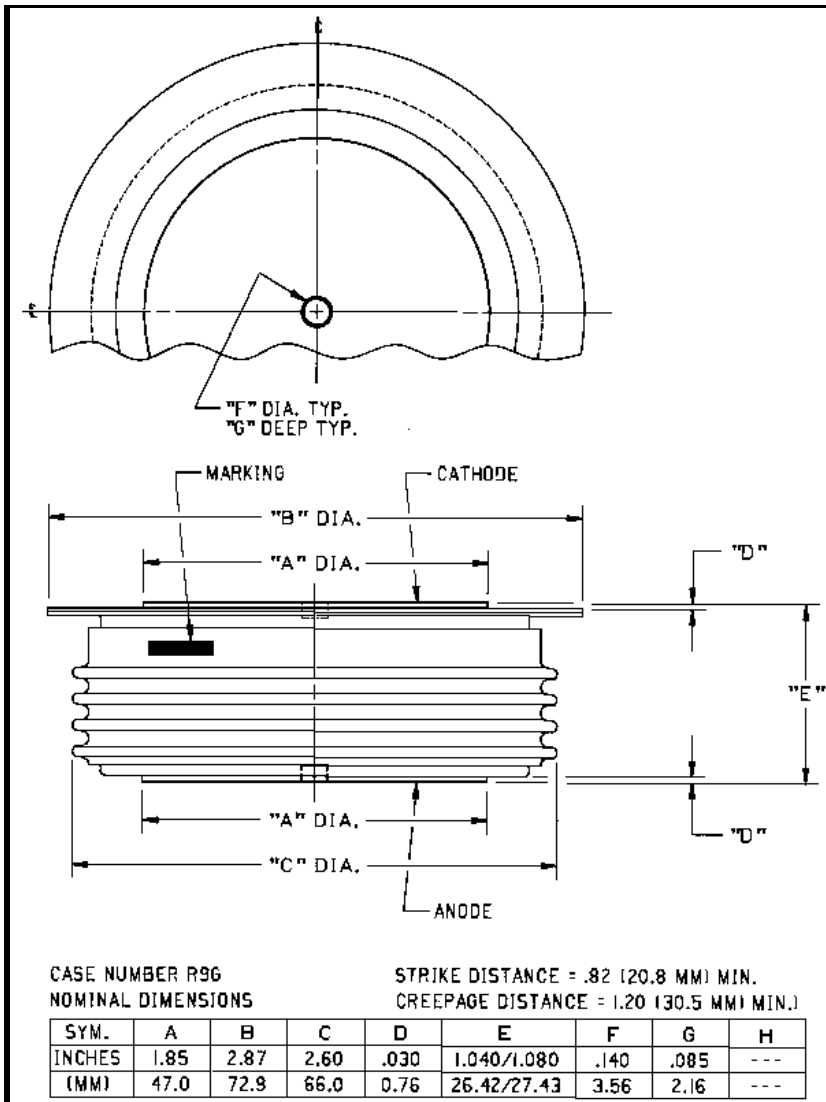


Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697-1800 (724) 925 7272

## Rectifier Diode 1800 Amperes/Up to 3200 Volts

### Description:

Powerex General Purpose Rectifiers are designed with high blocking voltage capability with low forward on-state voltage to minimize conduction losses. These are all-diffused, hermetic Pow-R-Disc devices which can be mounted using commercially available clamps and heatsinks..



### Features:

- Low On-State Voltage
- Low Thermal Impedance
- Hermetic Packaging
- Excellent Surge and I<sup>2</sup>t Ratings

### Applications:

- Power Supplies
- Motor Control
- Free Wheeling Diode

### Ordering Information

Select the complete 10 digit device part number from the table below.

Type	Voltage V <sub>RRM</sub>	Current I <sub>T(av)</sub>	Recovery Time t <sub>rr</sub>
R9G0	12	18	XX
	through		
	32		
	1200 V	1800 A	25 μs typical
	through		
	3200 V		

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**R9G0**
**Rectifier Diode**

1800 Amperes / Up to 3200 Volts

**Absolute Maximum Ratings**

	Conditions	Symbol		Units
Repetitive Peak Reverse Blocking Voltage		$V_{RRM}$	up to 3200	V
Non-Repetitive Peak Reverse Blocking Voltage		$V_{RSM}$	$V_{RRM} + 100$	V
RMS Forward Current		$I_{F(RMS)}$	2825	A
Average Forward Current	180° Conduction, $T_C=110^{\circ}\text{C}$	$I_{F(AV)}$	1800	A
Peak Half Cycle Non-Repetitive Surge Current	$t = 8.3\text{mS}$ , 100% $V_{RRM}$ reapplied	$I_{FSM}$	21,500	A
Peak Half Cycle Non-Repetitive Surge Current	$t = 10\text{mS}$ , 100% $V_{RRM}$ reapplied	$I_{FSM}$	19,600	A
$I^2t$ for Fusing for One Cycle		$I^2t$	$1.925 \times 10^6$	$\text{A}^2\text{-sec}$
$I^2t$ of Package	$t = 8.3\text{mS}$	$I^2t$	$90 \times 10^6$	$\text{A}^2\text{-sec}$
Operating Junction Temperature		$T_J$	-40 to +175	$^{\circ}\text{C}$
Storage Temperature		$T_{stg}$	-40 to +190	$^{\circ}\text{C}$
Mounting Force	--	--	5000 to 6000	lb.
			2270 to 2700	kg
Module Weight, Typical	--	--	454	g
			1.0	lbs

**R9G0**

**Rectifier Diode**

1800 Amperes / Up to 3200 Volts

**Electrical and Thermal Characteristics, T<sub>J</sub>=25°C unless otherwise specified**

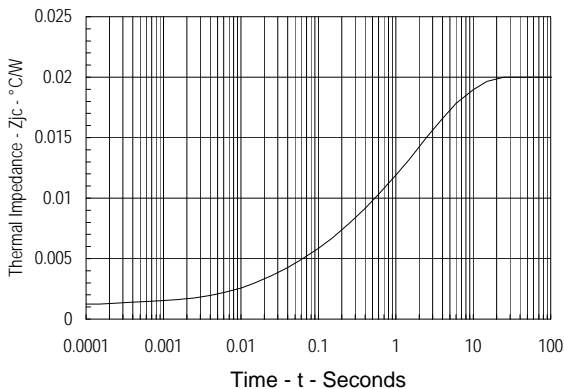
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max	Units
Peak Reverse Leakage Current	I <sub>RRM</sub>	T <sub>J</sub> =175°C, Rated V <sub>RRM</sub>			150	mA
Peak On-State Voltage	V <sub>FM</sub>	T <sub>J</sub> =25°C, I <sub>FM</sub> =1500A			1.20	V
Threshold Voltage, Low-level	V <sub>(TO)1</sub>	T <sub>J</sub> = 175°C, I = 15%I <sub>F(AV)</sub> to P <sub>I<sub>F(AV)</sub></sub>			.814	V
Slope Resistance, Low-level	r <sub>T1</sub>				.224	mΩ
Threshold Voltage, High-level	V <sub>(TO)2</sub>	T <sub>J</sub> = 175°C, I = P <sub>I<sub>F(AV)</sub></sub> to I <sub>FSM</sub>			1.03	V
Slope Resistance, High-level	r <sub>T2</sub>				.198	mΩ
V <sub>FM</sub> Coefficients, Full Range		T <sub>J</sub> = 175°C, I = 15%I <sub>F(AV)</sub> to I <sub>FSM</sub>		A = 2.06 B = -0.232 C = 0.000130 D = 0.0179		
						V <sub>FM</sub> =A + B Ln (I <sub>FM</sub> ) + C I <sub>FM</sub> + D v(I <sub>FM</sub> )
Maximum Reverse Recovery Current	I <sub>R(Rec)</sub>	T <sub>J</sub> = 175°C, di/dt = -1 A/μs T <sub>J</sub> = 175°C, di/dt = -10A/μs			70 250	A A
Typical Reverse Recovery Time	t <sub>rr</sub>	T <sub>C</sub> = 25°C, I <sub>FM</sub> = 1500 A di <sub>R</sub> /dt = 25 A/μsec, t <sub>p</sub> = 190 μsec			25	μsec

**Thermal Characteristics**

Characteristics	Symbol	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	R <sub>TJC</sub>	-----	-----	0.02	°C/W
Thermal Resistance, Case to Sink Lubricated	R <sub>TCS</sub>	-----	-----	0.0075	°C/W

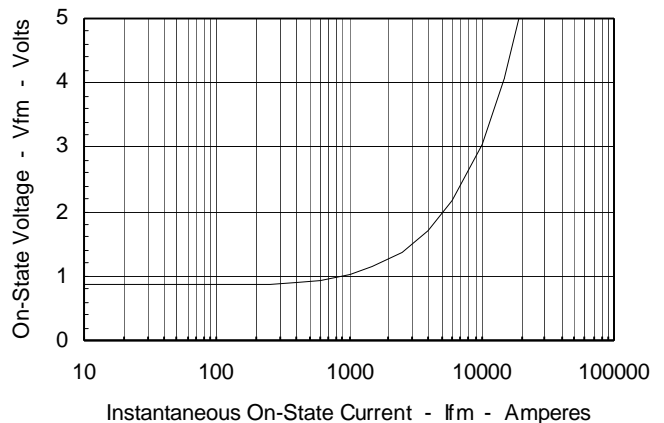
**Maximum Transient Thermal Impedance**

(Junction to Case)



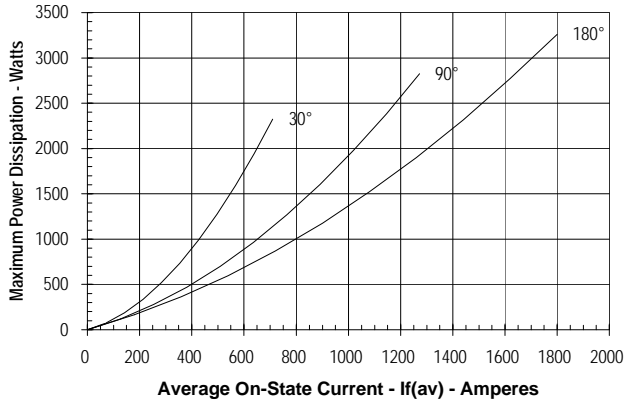
**Maximum On-State Forward Voltage Drop**

(T<sub>J</sub> = 175 °C)



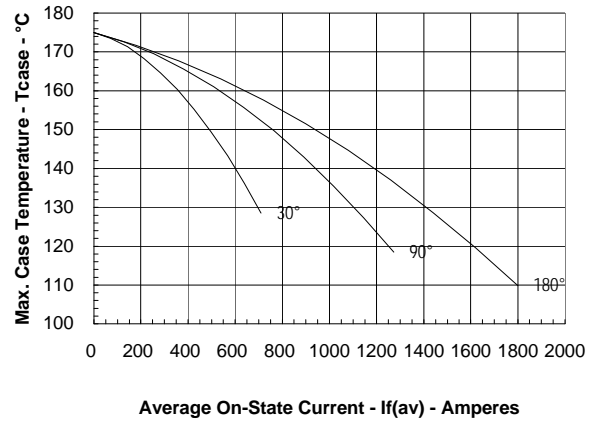
**Maximum On-State Power Dissipation**

(Sinusoidal Waveform)



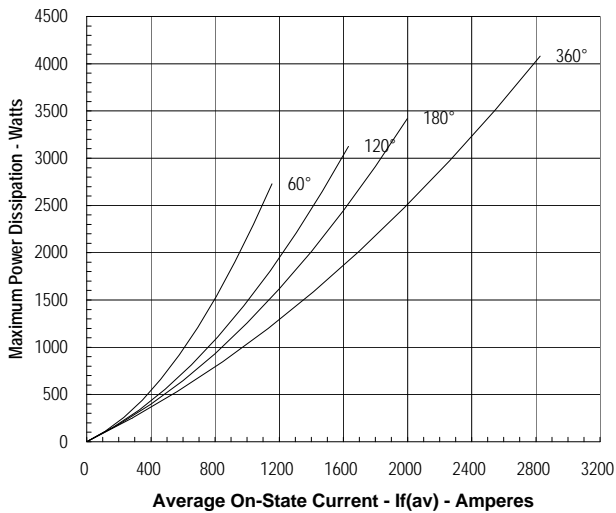
**Maximum Allowable Case Temperature**

(Sinusoidal Waveform)



**Maximum On-State Power Dissipation**

(Rectangular Waveform)



**Maximum Allowable Case Temperature**

(Rectangular Waveform)

