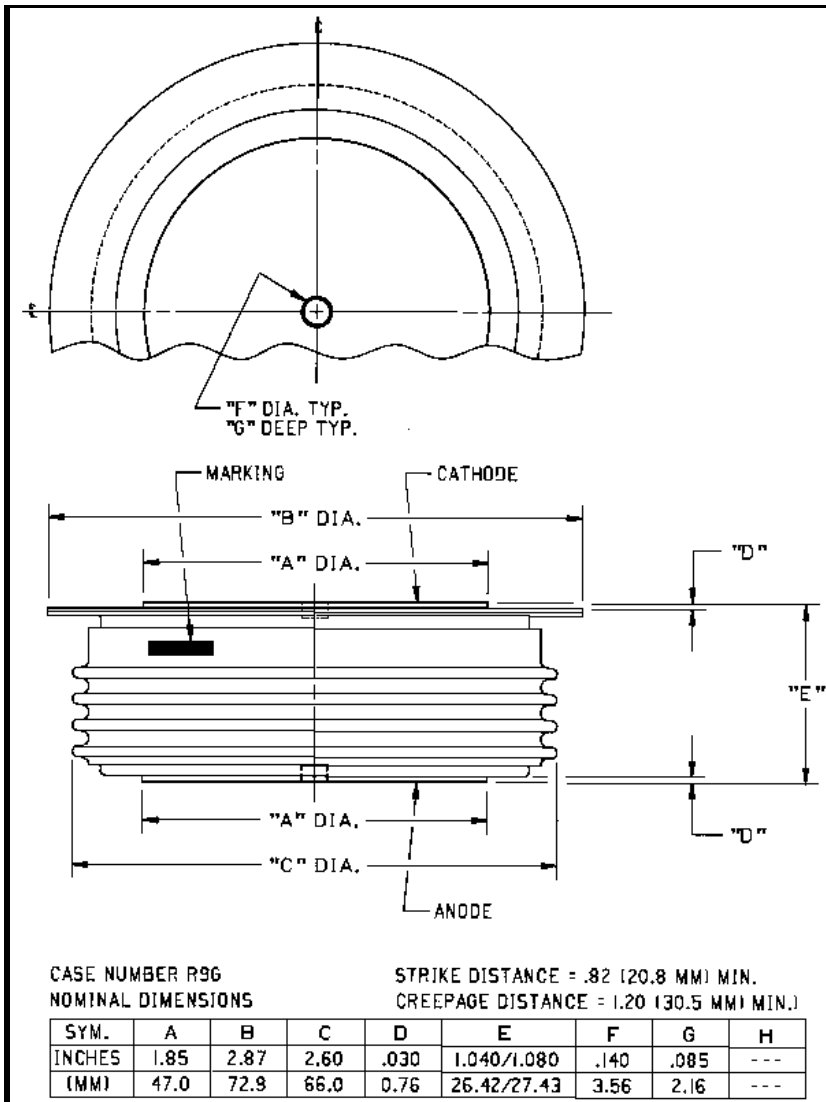


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925 7272

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 I²t 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 _{R_{RRM}}	Current I _{T(av)}	Recovery Time t _{rr}
R9G0	12	16	XX
	through		
	32		
	1200 V	1600 A	25 μs typical
	through		
	3200 V		

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R9G0
Rectifier Diode

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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	1.925×10^6	$\text{A}^2\text{-sec}$
I^2t of Package	$t = 8.3\text{mS}$	I^2t	90×10^6	$\text{A}^2\text{-sec}$
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

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R9G0

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Electrical and Thermal Characteristics, T_J=25°C unless otherwise specified

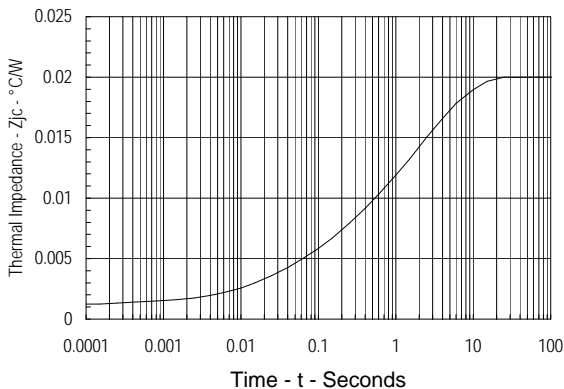
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max	Units
Peak Reverse Leakage Current	I _{RRM}	T _J =175°C, Rated V _{RRM}			150	mA
Peak On-State Voltage	V _{FM}	T _J =25°C, I _{FM} =1500A			1.20	V
Threshold Voltage, Low-level	V _{(TO)1}	T _J = 175°C, I = 15%I _{F(AV)} to P I _{F(AV)}			.814	V
Slope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

Thermal Characteristics

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

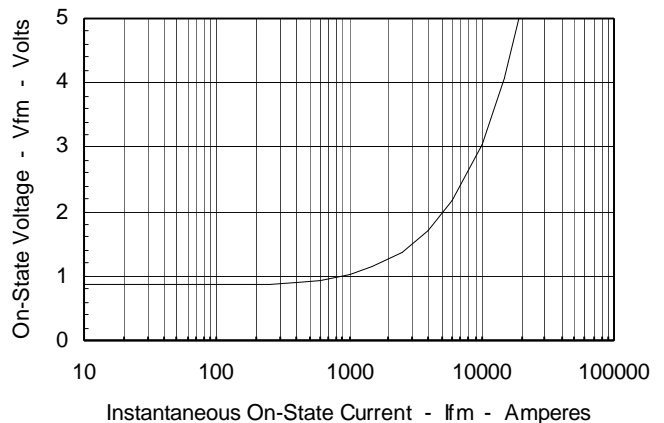
Maximum Transient Thermal Impedance

(Junction to Case)



Maximum On-State Forward Voltage Drop

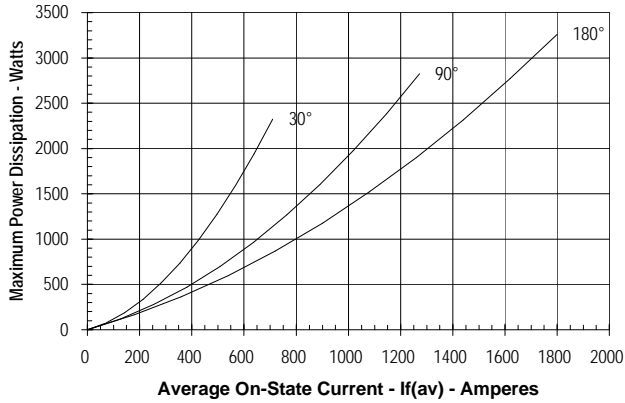
(T_J = 175 °C)



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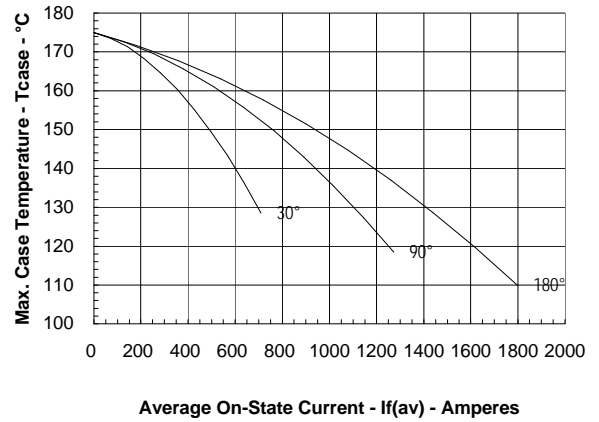
Maximum On-State Power Dissipation

(Sinusoidal Waveform)



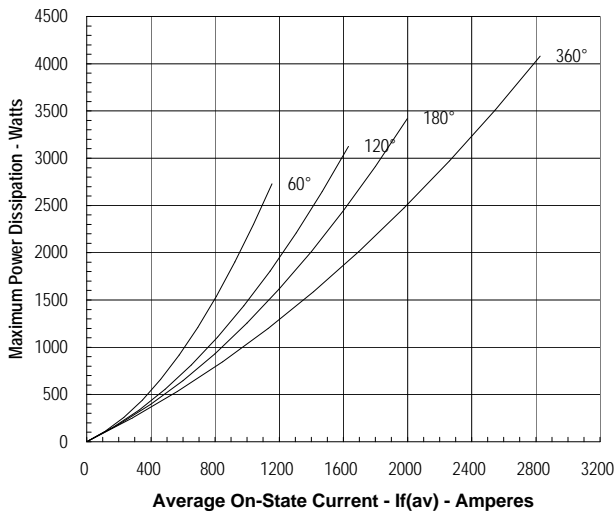
Maximum Allowable Case Temperature

(Sinusoidal Waveform)



Maximum On-State Power Dissipation

(Rectangular Waveform)



Maximum Allowable Case Temperature

(Rectangular Waveform)

