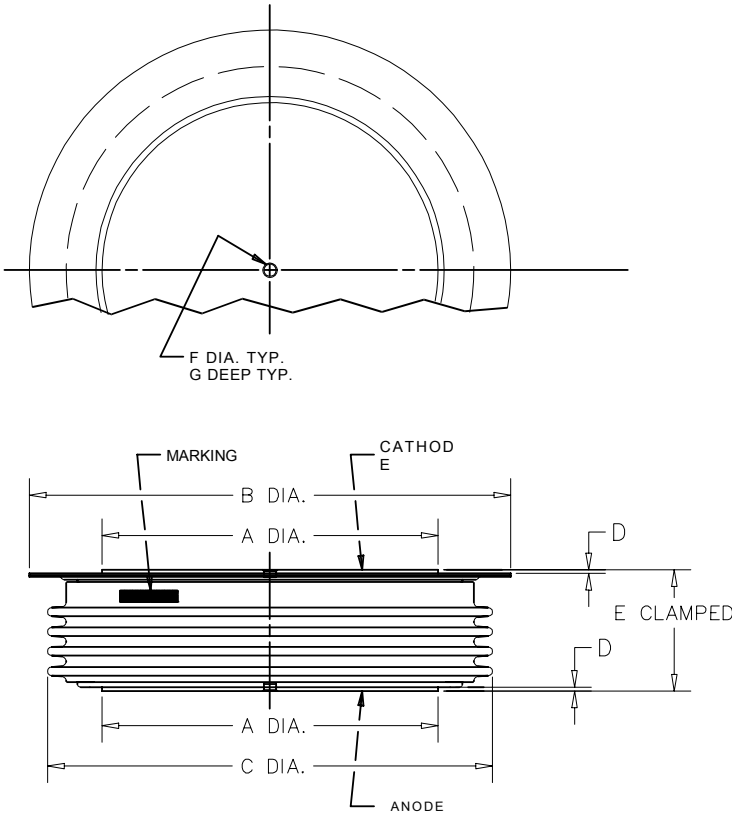




CASE NUMBER RDK
NOMINAL DIMENSIONS

STRIKE DISTANCE = 1.24 INCH / 31.5 MM MIN.
CREEPAGE DISTANCE = 1.64 INCH / 41.6 MM MIN.

SYM.	A	B	C	D	E	F	G
INCHES	3.91	5.66	5.18	.030	1.400/1.470	.140	.070
MM	99.3	144	132	0.76	35.5/37.4	3.56	1.78

ALL DIMENSIONS ARE REFERENCE



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

ORDERING INFORMATION

Select the complete 12 digit Part Number using the table below.
EXAMPLE: RDK86040XXOO is a 6000V-4000A General Purpose Diode with a typical reverse recovery time of 25 μ s.

PART	Voltage Rating $V_{DRM}-V_{RRM}$	Voltage Code	Current Rating I_{TAVG}	Current Code	Reverse Recovery t_{RR}	Lead Code
RDS8	6000V	60	4000A	40	XX	OO
	5600V	56				
	5200V	52			25 μ s typical	
	4800V	48				

APPLICATIONS:

- DC Power Supplies
- Input Rectifiers
- Plating Supplies

Revised:

4/7/2003



PRELIMINARY

RDK8__40XX
GENERAL PURPOSE RECTIFIER DIODE

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

4000 Amperes 6000 Volts

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Reverse Voltage	V_{RRM}	6000	Volts
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	$V_{RRM} + 100$	Volts
Average On-State Current, $T_C 68^\circ\text{C}$	$I_{F(Avg.)}$	4000	A
RMS On - State Current, $T_C 68^\circ\text{C}$	$I_{F(RMS)}$	6283	A
Peak One Cycle Surge Current, 60Hz, $V_R = V_{RRM}$	I_{FSM}	60,000	A
Fuse Coordination I^2t , 60Hz	I^2t	1.50E+07	A ² s
Peak One Cycle Surge Current, 50Hz, $V_R = 0V$	I_{FSM}	55,500	A
Fuse Coordination I^2t , 50Hz	I^2t	1.28E+07	A ² s
Operating Temperature	T_j	-40 to+150	°C
Storage Temperature	$T_{Stg.}$	-50 to+190	°C
Approximate Weight		6.5	lb
		2.95	Kg
Mounting Force		16,000 - 20,000	lbs
		71.2 - 89.0	Knewtons

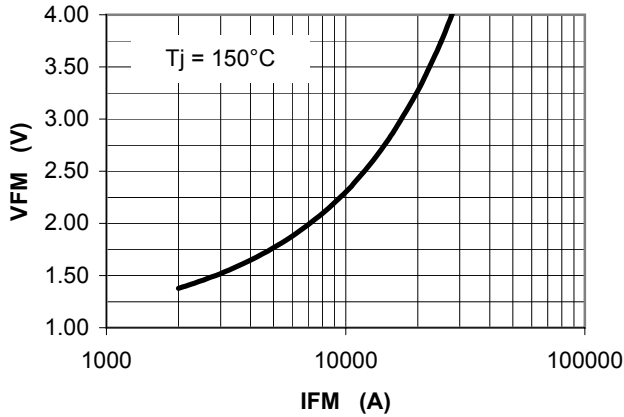
Electrical Characteristics, $T_j=25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Reverse Leakage Current	I_{RRM}	$T_j=150^\circ\text{C}$, $V_{RRM}=\text{Rated}$		150	300	ma
Peak On-State Voltage	V_{FM}	$T_j=150^\circ\text{C}$, $I_{FM}=4000\text{ A}$			1.65	V
V_{FM} Model, Low Level	V_0	$T_j=150^\circ\text{C}$			1.13	V
$V_{FM} = V_0 + r \cdot I_{FM}$	r	$15\% I_{FM} - \pi \cdot I_{FM}$			1.17E-04	Ω
V_{FM} Model, High Level	V_0	$T_j=150^\circ\text{C}$			1.44	V
$V_{FM} = V_0 + r \cdot I_{FM}$	r	$\pi \cdot I_{FM} - I_{FSM}$			9.12E-05	Ω
V_{FM} Model, 4-Term	A	$T_j=150^\circ\text{C}$			0.220	
$V_{FM} = A + B \cdot \ln(I_{FM}) +$	B	$15\% I_{FM} - I_{FSM}$			1.25E-01	
$C \cdot (I_{FM}) + D \cdot (I_{FM})^{1/2}$	C				8.50E-05	
	D				8.00E-04	
Reverse Recovery Time	t_{RR}	$T_j=25^\circ\text{C}$, $I_{FM}=400\text{A}$ $di_R/dt = 25\text{ A}/\mu\text{s}$		25		μs

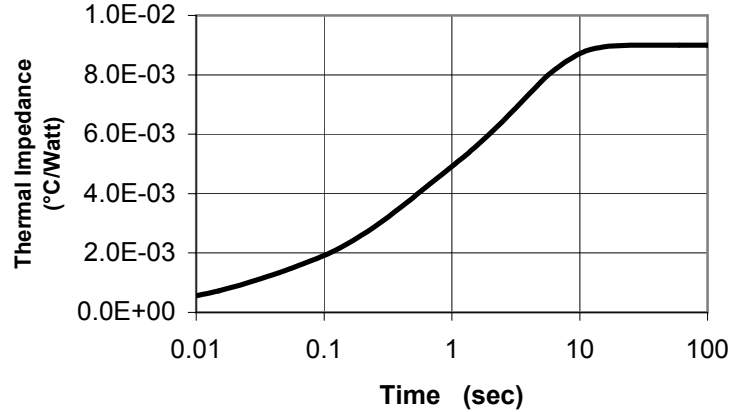
Thermal Characteristics

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Thermal Resistance						
Junction to Case	$R\theta_{jc}$	Double side cooled		0.0075	0.0090	$^\circ\text{C}/\text{Watt}$
Case to Sink	$R\theta_{cs}$	Double side cooled		0.001	0.0015	$^\circ\text{C}/\text{Watt}$
Thermal Impedance Model	$Z\theta_{jc}$	Double side cooled				
$Z\theta_{jc}(t) = \sum(A(N) \cdot (1 - \exp(-t/\text{Tau}(N))))$						
where: N = 1 2 3 4						
A(N) = 1.426E-04 9.077E-04 2.600E-03 5.350E-03						
Tau(N) = 2.622E-03 2.313E-02 3.049E-01 3.396E+00						

Maximum On-State Voltage Drop

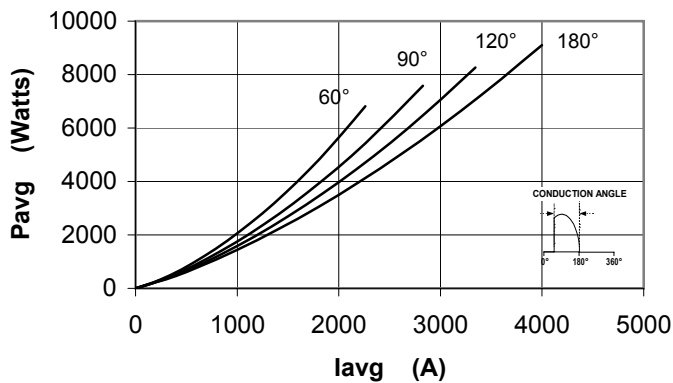


MAXIMUM TRANSIENT THERMAL IMPEDANCE



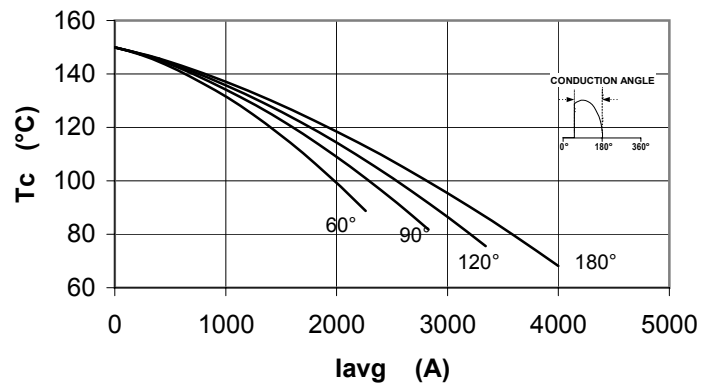
Maximum On-State Power Dissipation

Sinusoidal



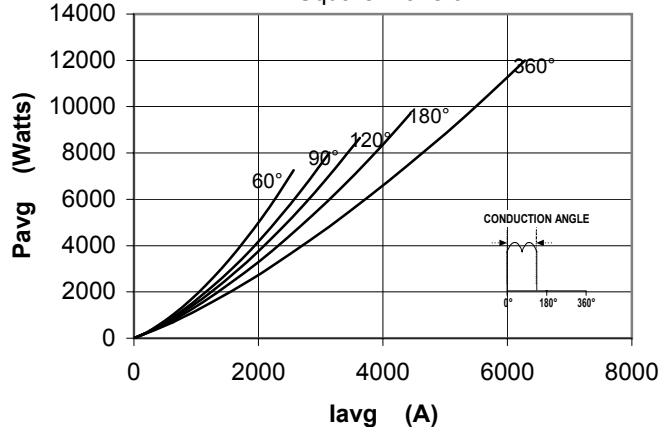
Maximum Allowable Case Temperature

Sinusoidal Waveform



Maximum On-State Power Dissipation

Square Waveform



Maximum Allowable Case Temperature

Square Waveform

