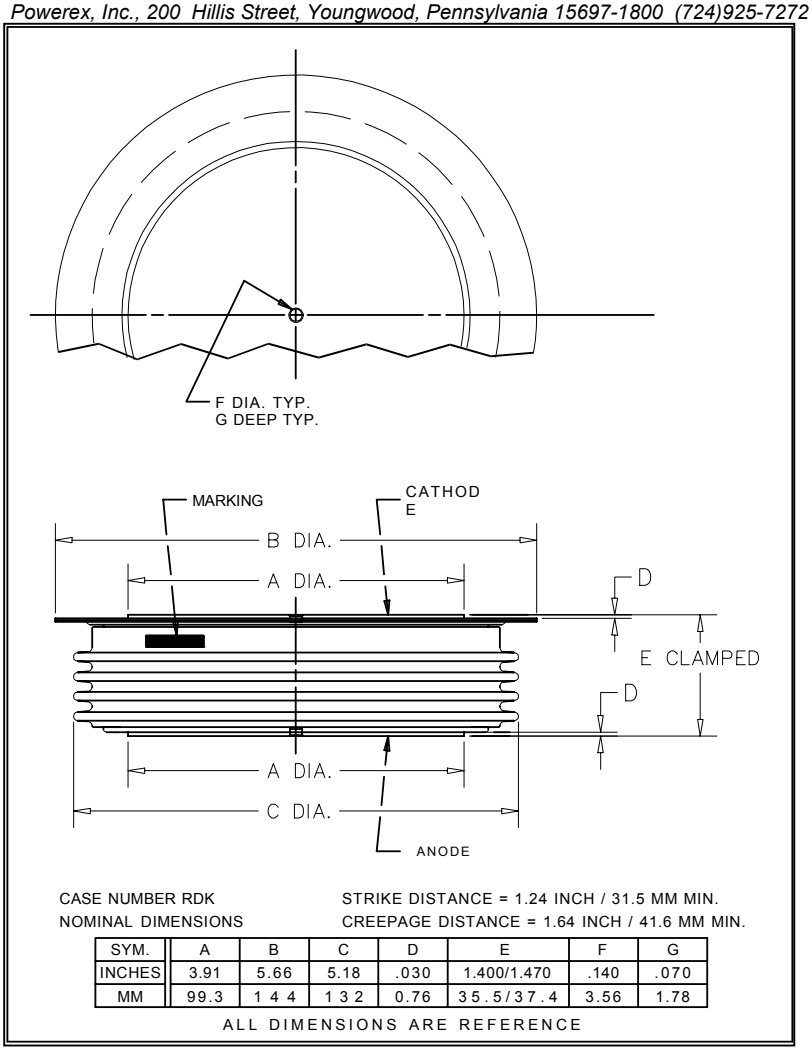
RDK8__40XX

GENERAL PURPOSE RECTIFIER DIODE

PRELIMINARY

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

4000 Amperes 6000 Volts



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 locking 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: RDK86040XXOO is a 6000V-4000A 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}	
RDS8	6000V	**60**	4000A	**40**	**XX**	**OO**
	5600V	**56**				
	5200V	**52**			25µs typical	
	4800V	**48**				

Revised: 4/7/2003

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°C	$I_{F(Avg.)}$	4000	A
RMS On - State Current, T_C 68°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^2s
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^2s
Operating Temperature	Tj	-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

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

4000 Amperes 6000 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=150°C, V_{RRM}=Rated		150	300	ma
Peak On-State Voltage	V_{FM}	Tj=150°C, I_{FM}= 4000 A			1.65	V
V_{FM} Model, Low Level	V_0	Tj=150°C			1.13	V
VFM = V_O + r•I_{FM}	r	15% I_{FM} - π•I_{FM}			1.17E-04	Ω
V_{FM} Model, High Level	V_0	Tj=150°C			1.44	V
VFM = V_O + r•I_{FM}	r	π•I_{FM} - I_{FSM}			9.12E-05	Ω
V_{FM} Model, 4-Term	A	Tj=150°C			0.220	
V_{FM}= A + B•Ln(I_{FM}) +	B	15%I_{FM} - I_{FSM}			1.25E-01	
C•(I_{FM}) + D•(I_{FM})^{½}	C				8.50E-05	
	D				8.00E-04	
Reverse Recovery Time	t_{RR}	Tj=25°C, I_{FM}=400A di_R/dt = 25 A/µs		25		µs

Thermal Characteristics

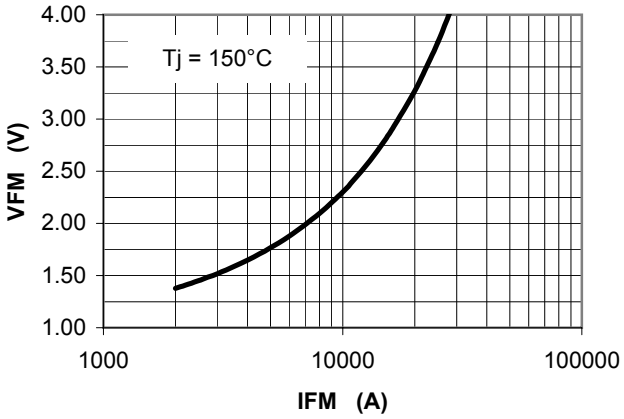
Characteristic	Symbol	Test Conditions	Rating min	Rating typ	Rating max	Units
Thermal Resistance						
Junction to Case	$R\Theta_{jc}$	Double side cooled		0.0075	0.0090	°C/Watt
Case to Sink	$R\Theta_{cs}$	Double side cooled		0.001	0.0015	°C/Watt
Thermal Impedance Model	$Z\Theta_{jc}$	Double side cooled				

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

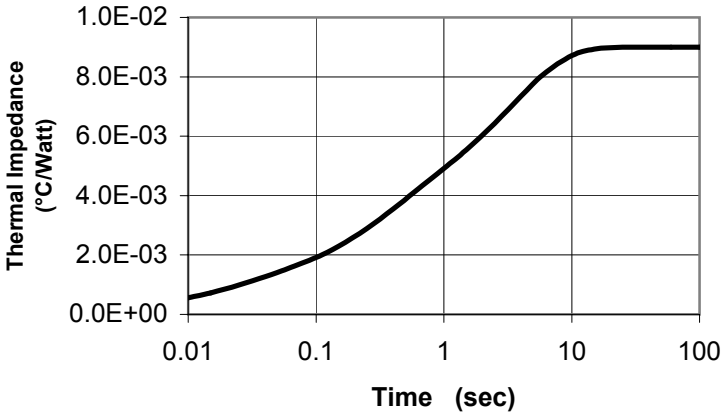
N =	1	2	3	4
A(N) =	1.426E-04	9.077E-04	2.600E-03	5.350E-03
Tau(N) =	2.622E-03	2.313E-02	3.049E-01	3.396E+00

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

Maximum On-State Voltage Drop

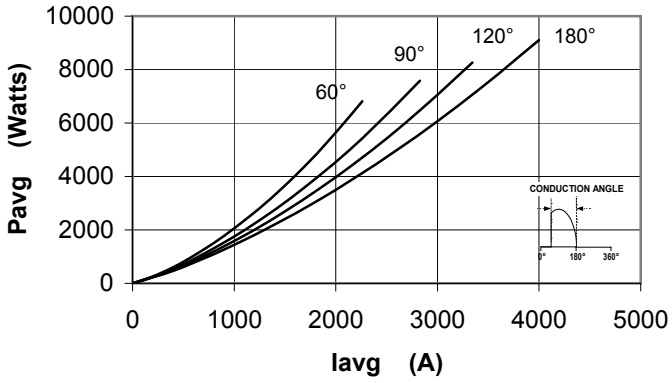


MAXIMUM TRANSIENT THERMAL IMPEDANCE



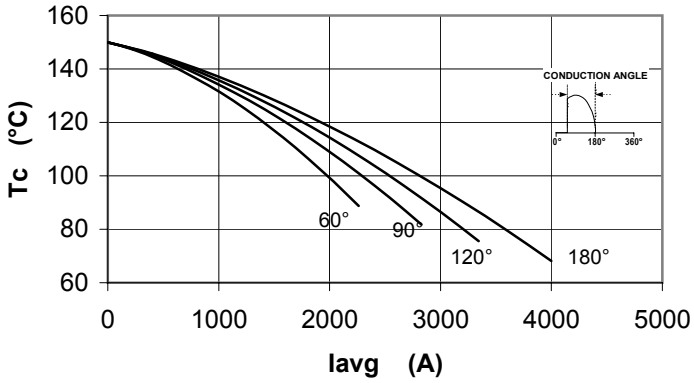
Maximum On-State Power Dissipation

Sinusoidal



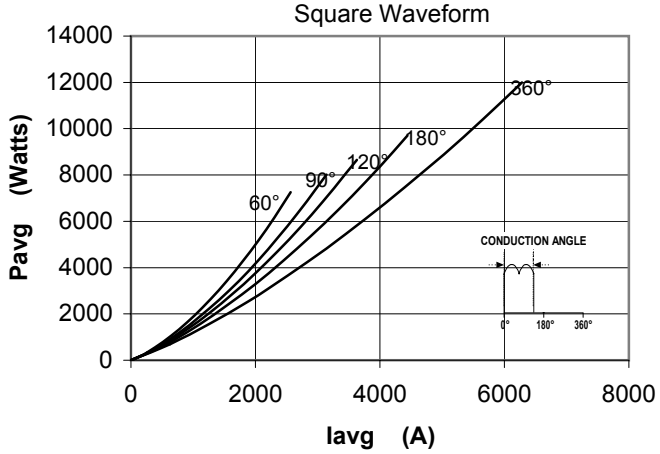
Maximum Allowable Case Temperature

Sinusoidal Waveform



Maximum On-State Power Dissipation

Square Waveform



Maximum Allowable Case Temperature

Square Waveform