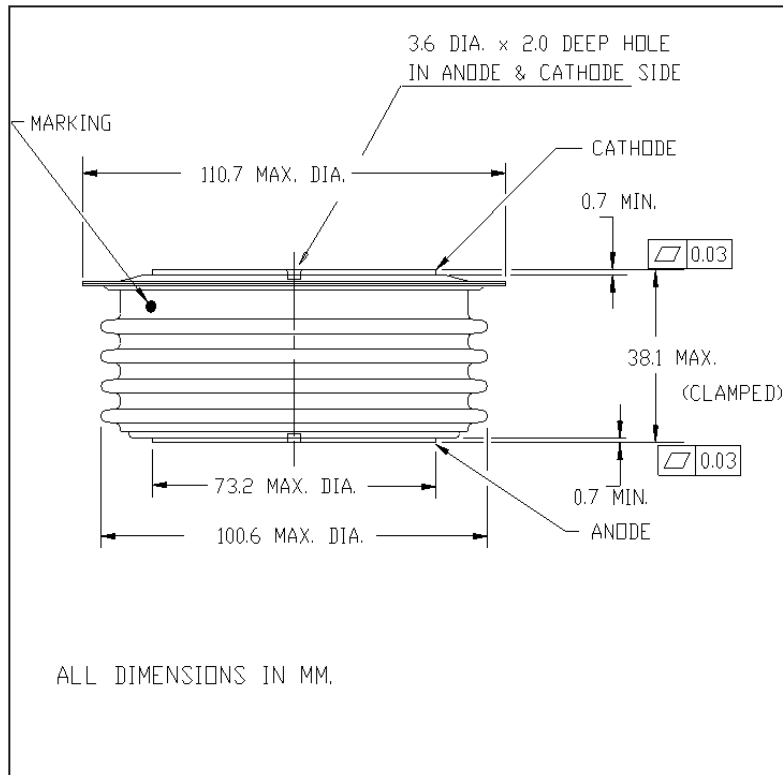


Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
www.pwr.com

General Purpose Rectifier
5000 Amperes Average
2400 Volts



RBK8_50XX
General Purpose Rectifier Diode
5000 Amperes / 2400 Volts

Ordering Information:

Select the complete twelve-digit part number from the table below.
Example: RBK82456XXOO is a 2400V, 5000 Ampere General Purpose Diode with a typical reverse recovery time of 25 μ C.

Type	Voltage Rating $V_{DRM} - V_{RRM}$	Voltage Code	Current Rating I_{TAV}	Current Code	Reverse Recovery t_{rr}	Lead Code
RBK8	2400	24	5000	50	XX 25 μ s Typical	OO No Leads
	2200	22				
	2000	20				
	1800	18				

Description:

Powerex General Purpose Rectifier Diodes are designed with high blocking voltage capability and low forward voltage drop to minimize conduction losses. The hermetic ceramic Pow-R-Disc packages 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

**RBK8 50XX**

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

General Purpose Rectifier
5000 Amperes Average
2400 Volts

Absolute Maximum Ratings

Characteristics	Conditions	Symbol	Units
Non-Repetitive Transient Peak Reverse Voltage		V_{RSM}	$V_{RRM} + 200V$
Average On-State Current	180° Conduction, $T_C=80^{\circ}C$, 60 Hz	$I_{F(AV)}$	7854 A
RMS On-State Current	180° Conduction, $T_C=80^{\circ}C$, 60 Hz	$I_{F(RMS)}$	5000 A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, $T_J = T_{Jmax}$	I_{FSM}	63,700 A
	50 Hz, 0V reapplied, $T_J = T_{Jmax}$	I_{FSM}	87,100 A
I^2t for Fusing for One Cycle	60 Hz, 100% V_{RRM} reapplied, $T_J = T_{Jmax}$	I^2t	$1.69 \times 10^{-7} A^2 sec$
	50 Hz, 0V reapplied, $T_J = T_{Jmax}$	I^2t	$3.80 \times 10^{-7} A^2 sec$
Operating Temperature		T_J	-40 to +175 °C
Storage Temperature		T_{stg}	-50 to +200 °C
Approximate Weight			1.6 kg
			3.5 lb
Mounting Force			6000 – 10,000 lbs
			26.6 - 44.4 kN

Information presented is based upon manufacturers testing and projected capabilities.
This information is subject to change without notice.
The manufacturer makes no claim as to the suitability of use, reliability, capability,
or future availability of this product.

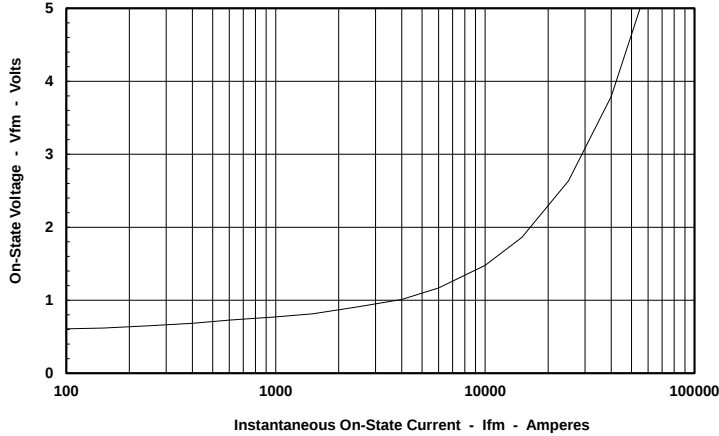
Electrical Characteristics, $T_J=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	I _{RRM}	T _J = 175°C , V _R = V _{RRM}		100	150	mA
Peak On-State Voltage	V _{FM}	T _J = 175°C, I _{FM} = 3000 A			0.95	V
Threshold Voltage, Low-level	V _{(TO)1}	T _J = 175°C, I = 15%I _{F(AV)} to ⅡI _{F(AV)}			0.68	V
Slope Resistance, Low-level	r _{T1}				0.08	mΩ
Threshold Voltage, High-level	V _{(TO)2}	T _J = 175°C, I = ⅡI _{F(AV)} to I _{FSM}			0.87	V
Slope Resistance, High-level	r _{T2}				0.07	mΩ
V _{TM} Coefficients		T _J = 175°C, I = 15%I _{F(AV)} to I _{FSM}		A =	0.8682	
				B =	-0.0377	
				C =	6.98E-05	
				D =	0.00298	
V _{FM} = A+ B*Ln(I) +C*I + D*Sqrt(I)						
Reverse Recovery Time	t _{RR}	T _J = 25°C, I _{FM} = 400 A, di _R /dt = 25 A/μs		25		μs

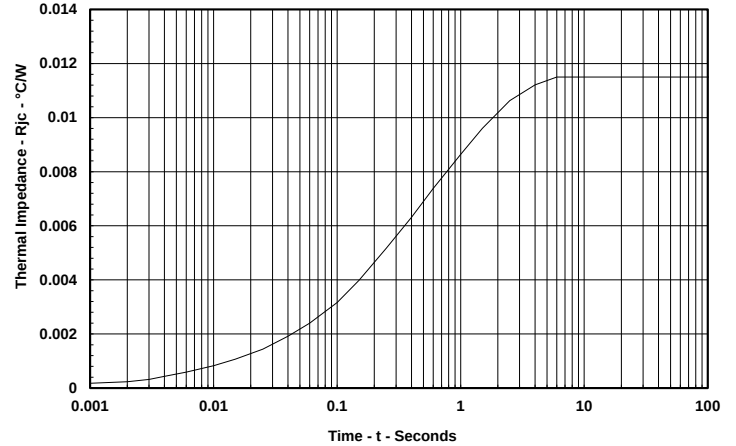
Thermal Characteristics

Characteristics	Symbol		Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{\theta J-C}$	Double side cooled	0.010	0.0115	$^\circ\text{C}/\text{W}$
Thermal Resistance, Case to Sink	$R_{\theta C-S}$	Double side cooled	0.0015	0.002	$^\circ\text{C}/\text{W}$
Thermal Impedance Coefficients	$Z_{\theta J-C}$	$Z_{\theta J-C} = K_1 (1 - \exp(-t/t_1))$	$K_1 = 1.220\text{E-}04$	$t_1 = 5.860\text{E-}04$	
		$+ K_2 (1 - \exp(-t/t_2))$	$K_2 = 8.786\text{E-}04$	$t_2 = 1.409\text{E-}02$	
		$+ K_3 (1 - \exp(-t/t_3))$	$K_3 = 4.154\text{E-}03$	$t_3 = 1.814\text{E-}01$	
		$+ K_4 (1 - \exp(-t/t_4))$	$K_4 = 6.843\text{E-}03$	$t_4 = 1.208$	

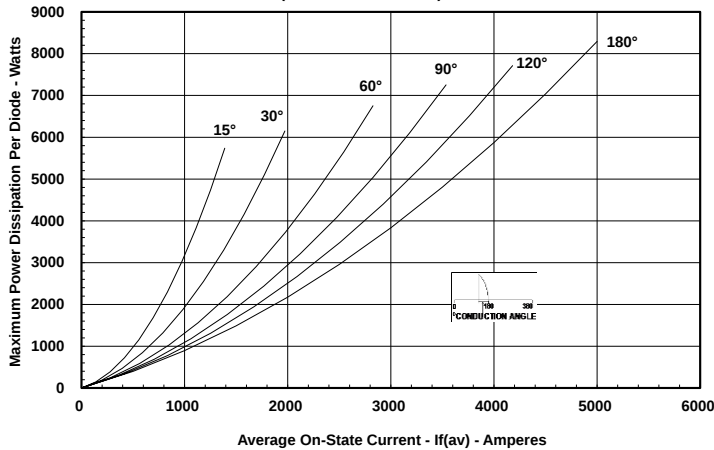
Maximum On-State Forward Voltage Drop
($T_j = 175^\circ\text{C}$)



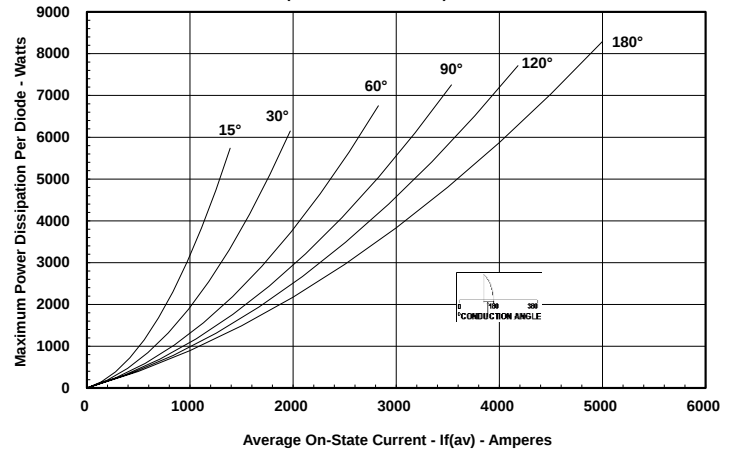
Maximum Transient Thermal Impedance
(Junction to Case)



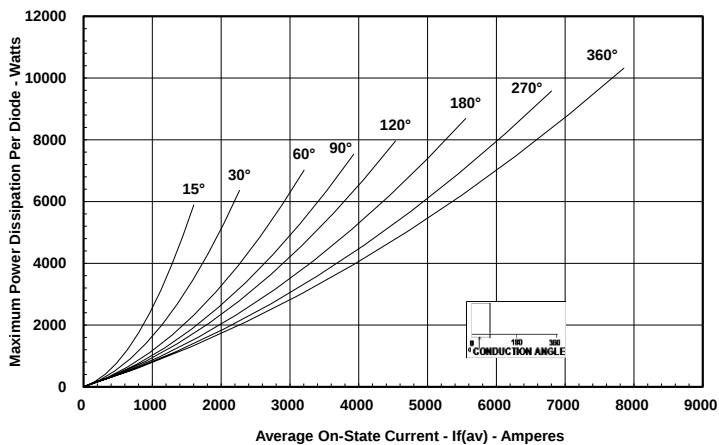
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

