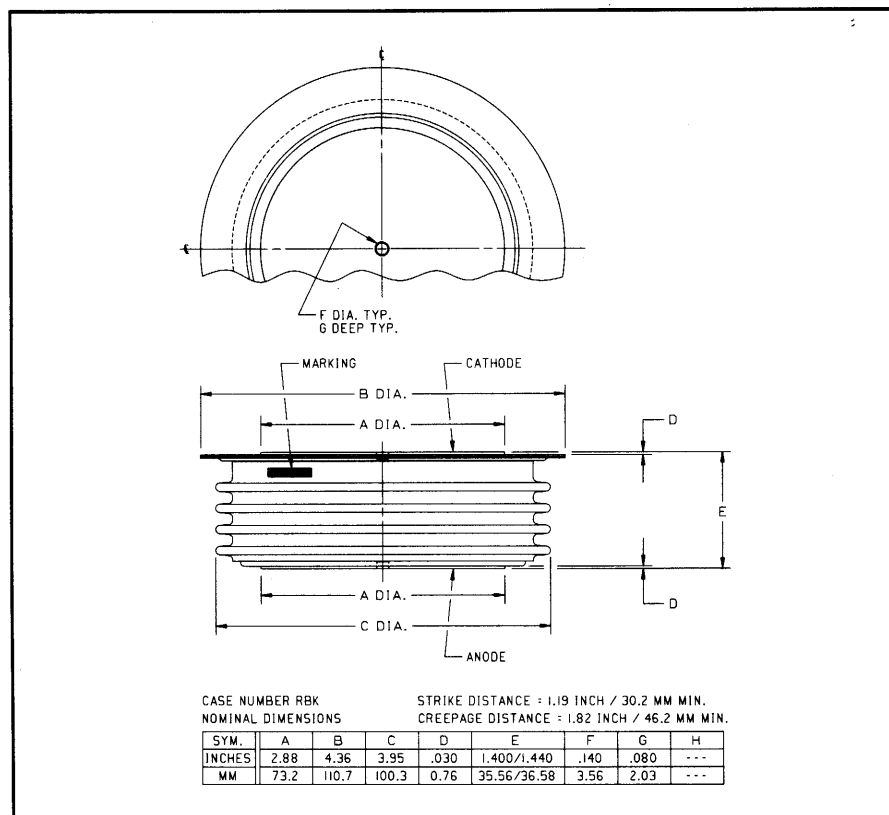
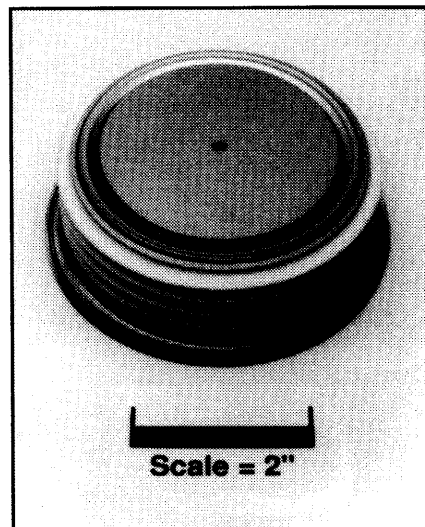


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

**High Power
General Purpose
Rectifier**
4000 Amperes Average
3200 Volts



RBK8 4000A (Outline Drawing)



RBK8 4000A
High Power
General Purpose Rectifier
4000 Amperes Average, 3200 Volts

Ordering Information:

Select the complete 8 digit part number you desire from the table below.

Type	Voltage	Current	Typical Recovery Time
	V_{RRM} (Volts)	$I_T(av)$ (A)	t_{rr} (μ sec)
RBK8	24 28 32	40	XX
	2400V 2800V 3200V	4000A	25 μ sec

Description:

Powerex High Power Rectifiers are designed for use in applications requiring reliable general purpose rectification of high currents.

Features:

- ☐ Low Forward Voltage
- ☐ Low Thermal Impedance
- ☐ Hermetic Packaging
- ☐ Excellent Surge and I^2t Ratings

Applications:

- ☐ Power Supplies
- ☐ AC and DC Motor Control
- ☐ VAR Generators



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RBK8 4000A

High Power General Purpose Rectifier
4000 Amperes Average, 3200 Volts

Absolute Maximum Ratings

Characteristics	Symbol	RBK8 4000A	Units
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	$V_{RRM} + 200V$	Volts
RMS Forward Current, $T_C = 82^\circ C$	$I_{F(rms)}$	6280	Amperes
Average Current 180° Sine Wave, $T_C = 82^\circ C$	$I_{F(av)}$	4000	Amperes
RMS Forward Current, $T_C = 55^\circ C$	$I_{F(rms)}$	7615	Amperes
Average Current 180° Sine Wave, $T_C = 55^\circ C$	$I_{F(av)}$	4850	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 60Hz	I_{fsm}	50000	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 50Hz	I_{fsm}	45600	Amperes
I^2t (for Fusing) for One Cycle, 60Hz	I^2t	10.4×10^6	A^2sec
Operating Temperature	T_j	-40 to +160°C	°C
Storage Temperature	T_{stg}	-40 to +175°C	°C
Approximate Weight		3.5	lb.
		1.6	kg
Mounting Force		6000 to 10000	lb.
		26.6 to 44.4	kN



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RBK8 4000A

High Power General Purpose Rectifier
4000 Amperes Average, 3200 Volts

Electrical Characteristics, $T_j = 25^\circ\text{C}$ Unless Otherwise Specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Peak Reverse Leakage Current	I_{RRM}	$T_j = 160^\circ\text{C}$, $V_R = V_{RRM}$			100	mA
Forward Voltage Drop	V_{FM}	$I_{FM} = 3000\text{A}$, Duty Cycle $< 0.1\%$			1.15	Volts
Threshold Voltage, Low-level	$V_{(TO)1}$	$T_j = 160^\circ\text{C}$, $I = 15\%$, $I_{T(av)}$ to $\pi I_{T(av)}$			0.69989	Volts
Slope Resistance, Low-level	r_{T1}				0.09373	m Ω
Threshold Voltage, High-level	$V_{(TO)2}$	$T_j = 160^\circ\text{C}$, $I = \pi I_{T(av)}$ to I_{TSM}			0.81274	Volts
Slope Resistance, High-level	r_{T2}				0.08419	m Ω
V_{TM} Coefficients, Low-level		$T_j = 160^\circ\text{C}$, $I = 15\%$ $I_{T(av)}$ to $\pi I_{T(av)}$			$A_1 = 0.28047$ $B_1 = 0.0599$ $C_1 = 8.147\text{E-}05$ $D_1 = 7.566\text{E-}05$	
V_{TM} Coefficients, High-level		$T_j = 160^\circ\text{C}$, $I = \pi I_{T(av)}$ to I_{TSM}			$A_2 = 0.28738$ $B_2 = 0.05892$ $C_2 = 8.145\text{E-}05$ $D_2 = 3.1\text{E-}05$	
Typical Reverse Recovery Time	t_{rr}	$T_C = 25^\circ\text{C}$, $I_{FM} = 1500\text{A}$, $di_R/dt = 25\text{A}/\mu\text{sec}$		25		μsec

Thermal Characteristics

Maximum Thermal Resistance, Double Sided Cooling

Junction-to-Case	$R_{\theta(j-c)}$	0.0115	$^\circ\text{C/W}$
Case-to-Sink	$R_{\theta(c-s)}$	0.002	$^\circ\text{C/W}$

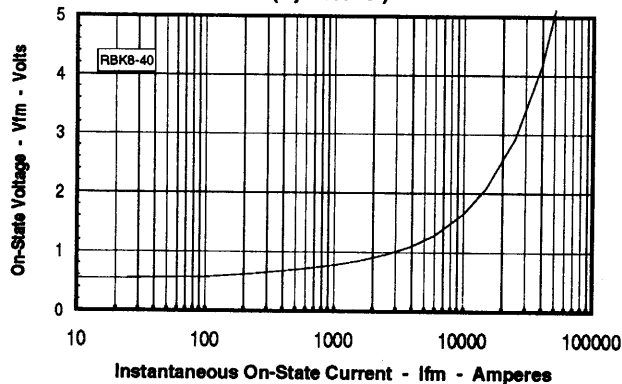
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RBK8 4000A

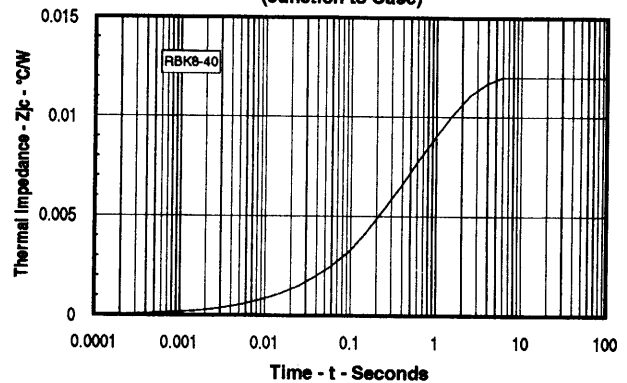
High Power General Purpose Rectifier

4000 Amperes Average, 3200 Volts

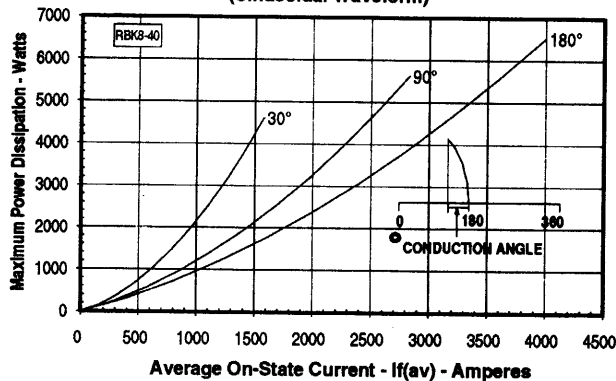
Maximum On-State Forward Voltage Drop
($T_J = 160^\circ\text{C}$)



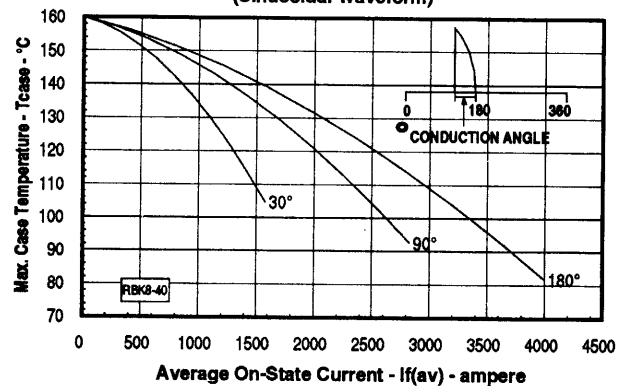
Maximum Transient Thermal Impedance
(Junction to Case)



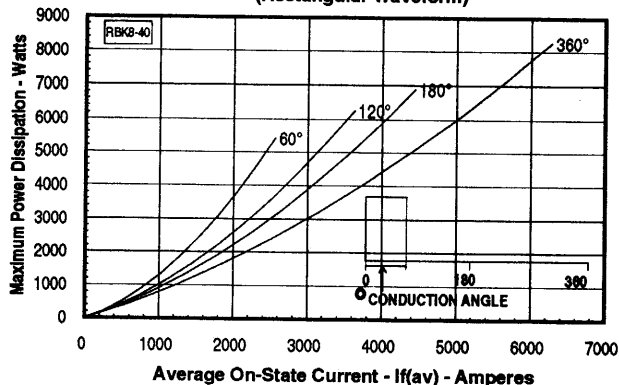
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

