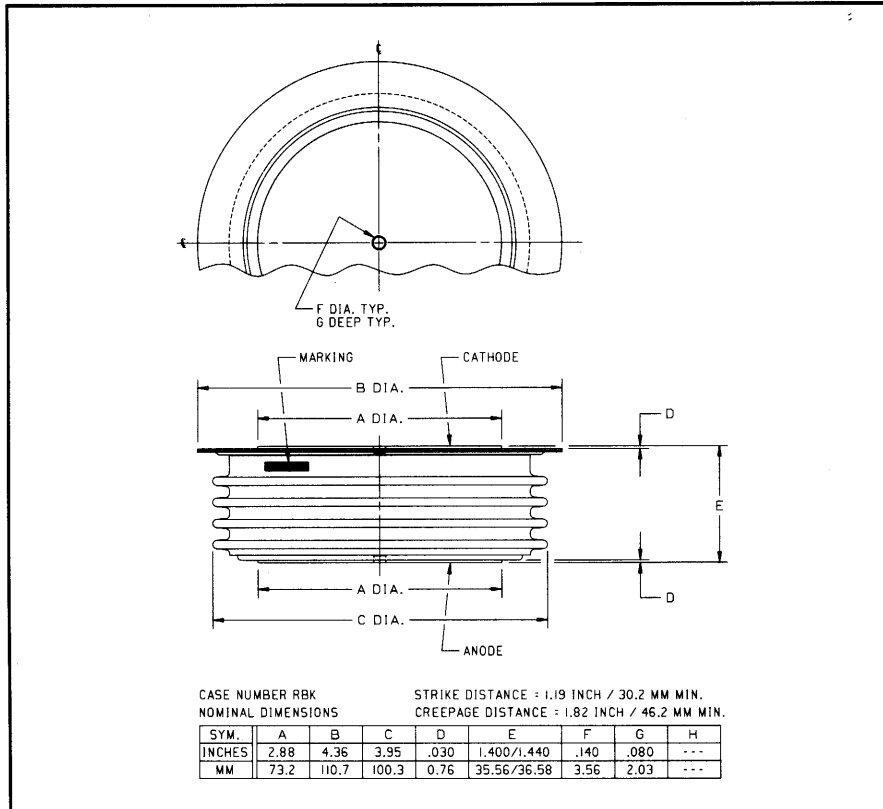
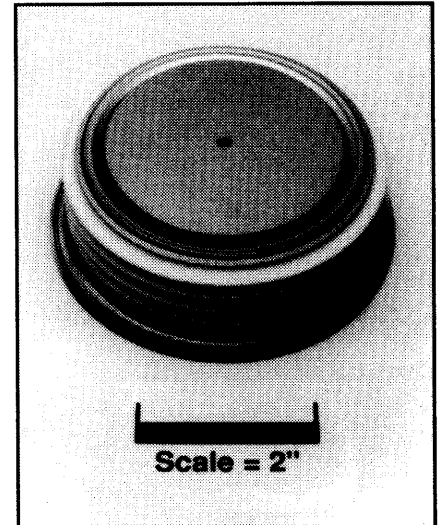


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
 Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

**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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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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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} | $I_{FM} = 3000\text{A}, \text{Duty Cycle} < 0.1\%$ | | | 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

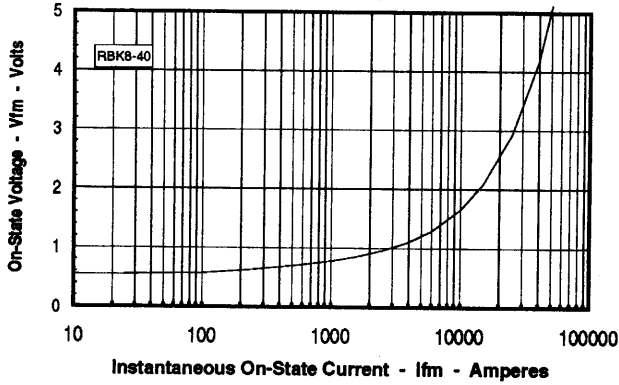
| | | | | | | |
|--|-------------------|--|--|--|--------|---------------------------|
| Maximum Thermal Resistance, Double Sided Cooling | | | | | | |
| Junction-to-Case | $R_{\theta(j-c)}$ | | | | 0.0115 | $^\circ\text{C}/\text{W}$ |
| Case-to-Sink | $R_{\theta(c-s)}$ | | | | 0.002 | $^\circ\text{C}/\text{W}$ |



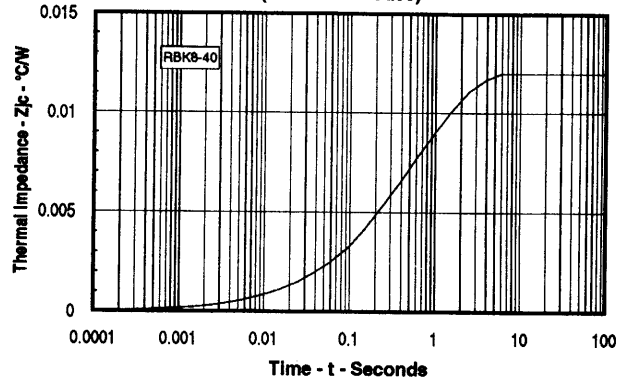
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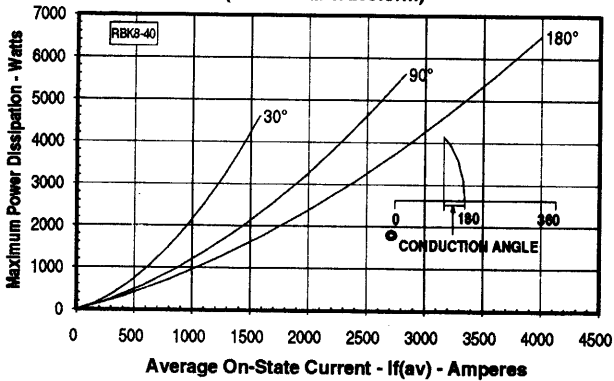
Maximum On-State Forward Voltage Drop
 ($T_J = 160^\circ\text{C}$)



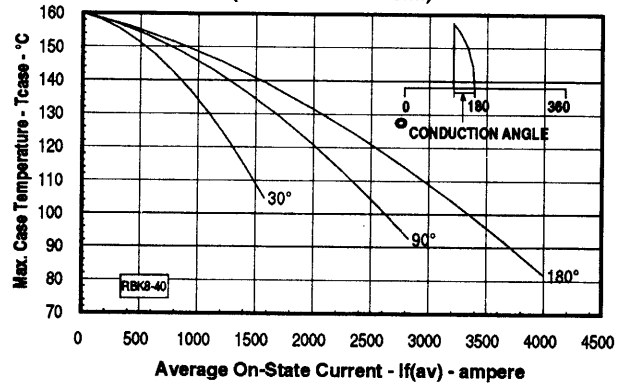
Maximum Transient Thermal Impedance
 (Junction to Case)



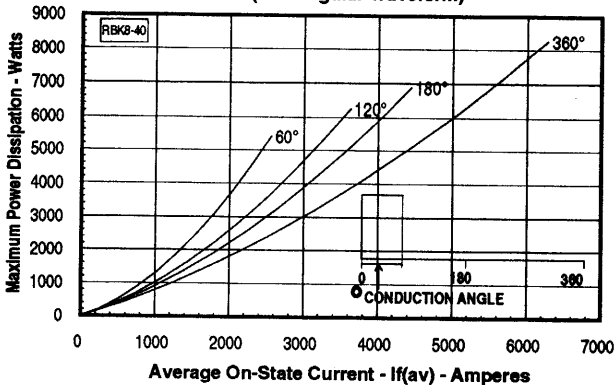
Maximum On-State Power Dissipation
 (Sinusoidal Waveform)



Maximum Allowable Case Temperature
 (Sinusoidal Waveform)



Maximum On-State Power Dissipation
 (Rectangular Waveform)



Maximum Allowable Case Temperature
 (Rectangular Waveform)

