

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

### ORDERING INFORMATION

Select the complete 10 digit Part Number using the table below.  
EXAMPLE: RBS83245XX is a 3200V-4500A General Purpose Diode with a typical reverse recovery time of 25 $\mu$ s.

| PART        | Voltage Rating<br>$V_{DRM}-V_{RRM}$ | Voltage Code | Current Rating<br>$I_{tavg}$ | Current Code | Reverse Recovery<br>$t_{RR}$ | Lead Code |
|-------------|-------------------------------------|--------------|------------------------------|--------------|------------------------------|-----------|
| <b>RBS8</b> | 3200V                               | <b>32</b>    | 4500A                        | <b>45</b>    | <b>XX</b>                    |           |
|             | 3000V                               | <b>30</b>    |                              |              |                              |           |
|             | 2600V                               | <b>26</b>    |                              |              | 25 $\mu$ s typical           |           |
|             | 2400V                               | <b>24</b>    |                              |              |                              |           |
|             | 2200V                               | <b>22</b>    |                              |              |                              |           |

**Absolute Maximum Ratings**

| Characteristic                                      | Symbol        | Rating          | Units                |
|---|---------------|-----------------|----------------------|
| Repetitive Peak Reverse Voltage                     | $V_{RRM}$     | 3200            | Volts                |
| Non-repetitive Transient Peak Reverse Voltage       | $V_{RSM}$     | $V_{RRM} + 100$ | Volts                |
| Average On-State Current, $T_C=94^\circ\text{C}$    | $I_{F(Avg.)}$ | 4500            | A                    |
| RMS On-State Current, $T_C=94^\circ\text{C}$        | $I_{F(RMS)}$  | 7069            | A                    |
| Peak One Cycle Surge Current, 60Hz, $V_R=V_{RRM}$   | $I_{FSM}$     | 67,500          | A                    |
| Fuse Coordination $I^2t$ , 60Hz                     | $I^2t$        | 1.90E+07        | $\text{A}^2\text{s}$ |
| Peak One Cycle Surge Current, 50Hz, $V_R=0\text{V}$ | $I_{FSM}$     | 62,438          | A                    |
| Fuse Coordination $I^2t$ , 50Hz                     | $I^2t$        | 1.95E+07        | $\text{A}^2\text{s}$ |
| Peak 3 Cycle Surge Current, 60Hz, $V_R=0\text{V}$   | $I_{FSM}$     | 76,950          | A                    |
| Peak 10 Cycle Surge Current, 60Hz, $V_R=0\text{V}$  | $I_{FSM}$     | 61,763          | A                    |
| Operating Temperature                               | $T_j$         | -40 to+175      | $^\circ\text{C}$     |
| Storage Temperature                                 | $T_{Stg.}$    | -50 to+200      | $^\circ\text{C}$     |
| Approximate Weight                                  |               | 2.5             | lb                   |
|   |               | 1.13            | Kg                   |
| Mounting Force                                      |               | 6,000 - 10,000  | lbs                  |
|   |               | 26.6 - 44.4     | Knewtons             |

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 suitability for use, reliability, capability or future availability of this product.

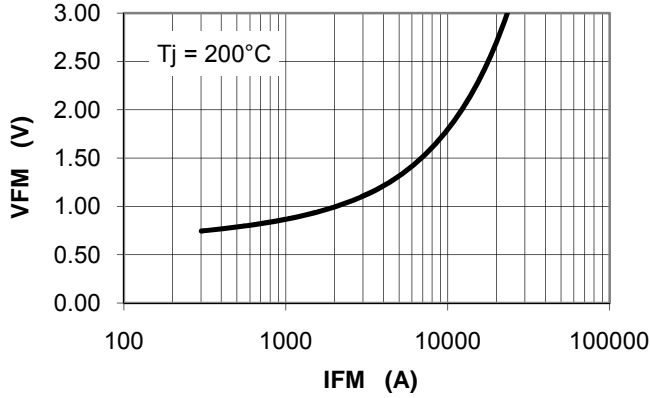
**Electrical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

| Characteristic   | Symbol           | Test Conditions   | Rating |     |          | Units |
|--|------------------|---|--------|-----|----------|-------|
|  |                  |   | min    | typ | max      |       |
| Repetitive Peak Reverse Leakage Current                    | I <sub>RRM</sub> | T <sub>j</sub> =175°C, V <sub>RRM</sub> =Rated                                |        |     | 125      | ma    |
| Peak On-State Voltage                                      | V <sub>FM</sub>  | T <sub>j</sub> =175°C, I <sub>FM</sub> =2000A                                 |        |     | 1.00     | V     |
| V <sub>FM</sub> Model, Low Level                           | V <sub>0</sub>   | T <sub>j</sub> =175°C   |        |     | 0.786    | V     |
| V <sub>FM</sub> = V <sub>0</sub> + r•I <sub>FM</sub>       | r                | 15% I <sub>FM</sub> - π•I <sub>FM</sub>                                       |        |     | 9.97E-05 | Ω     |
| V <sub>FM</sub> Model, High Level                          | V <sub>0</sub>   | T <sub>j</sub> =175°C   |        |     | 0.972    | V     |
| V <sub>FM</sub> = V <sub>0</sub> + r•I <sub>FM</sub>       | r                | π•I <sub>FM</sub> - I <sub>FSM</sub>  |        |     | 8.63E-05 | Ω     |
| V <sub>FM</sub> Model, 4-Term                              | A                | T <sub>j</sub> =175°C   |        |     | 0.510    |       |
| V <sub>FM</sub> = A + B•Ln(I <sub>FM</sub> ) +             | B                | 15% I <sub>FM</sub> - I <sub>FSM</sub>  |        |     | 3.10E-02 |       |
| C•(I <sub>FM</sub> ) + D•(I <sub>FM</sub> ) <sup>1/2</sup> | C                |   |        |     | 8.00E-05 |       |
|  | D                |   |        |     | 2.00E-03 |       |
| Reverse Recovery Time                                      | t <sub>RR</sub>  | T <sub>j</sub> =25°C, I <sub>FM</sub> =1500A<br>di <sub>R</sub> /dt = 25 A/μs |        | 25  |          | μs    |

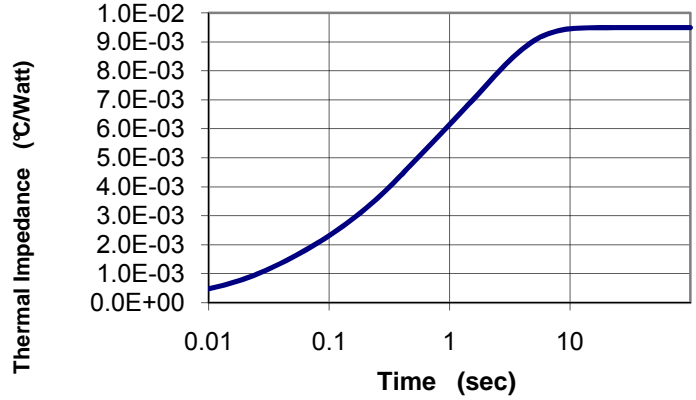
**Thermal Characteristics**

| Characteristic   | Symbol                      | Test Conditions    | Rating   |          |          | Units    |          |
|--|-----------------------------|--------------------|----------|----------|----------|----------|----------|
|  |                             |                    | min      | typ      | max      |          |          |
| Thermal Resistance   |                             |                    |          |          |          |          |          |
| Junction to Case   | R <sub>Θ<sub>jc</sub></sub> | Double side cooled |          | 0.0085   | 0.0095   | °C/Watt  |          |
| Case to Sink   | R <sub>Θ<sub>cs</sub></sub> | Double side cooled |          | 0.0015   | 0.002    | °C/Watt  |          |
| Thermal Impedance Model                                      | Z <sub>Θ<sub>jc</sub></sub> | Double side cooled |          |          |          |          |          |
| Z <sub>Θ<sub>jc</sub></sub> (t) = Σ(A(N)•(1-exp(-t/Tau(N)))) |                             | where:             | N =      | 1        | 2        | 3        | 4        |
|  |                             |                    | A(N) =   | 5.22E-05 | 1.19E-03 | 2.91E-03 | 5.35E-03 |
|  |                             |                    | Tau(N) = | 2.65E-06 | 3.43E-02 | 2.74E-01 | 2.03E+00 |

#### Maximum On-State Voltage Drop

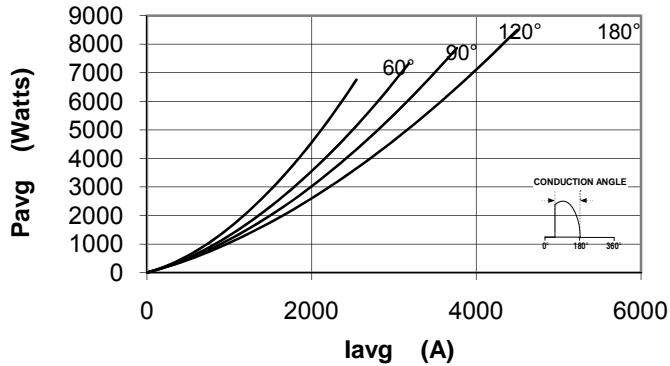


#### MAXIMUM TRANSIENT THERMAL IMPEDANCE



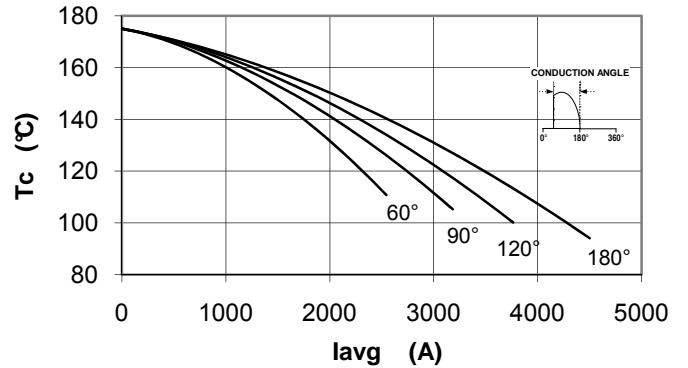
#### Maximum On-State Power Dissipation

Sinusoidal



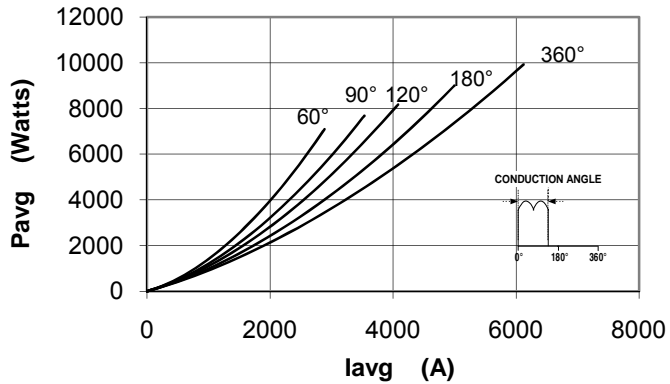
#### Maximum Allowable Case Temperature

Sinusoidal Waveform



#### Maximum On-State Power Dissipation

Square Waveform



#### Maximum Allowable Case Temperature

Square Waveform

