

## 5A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER POWERMITE®3

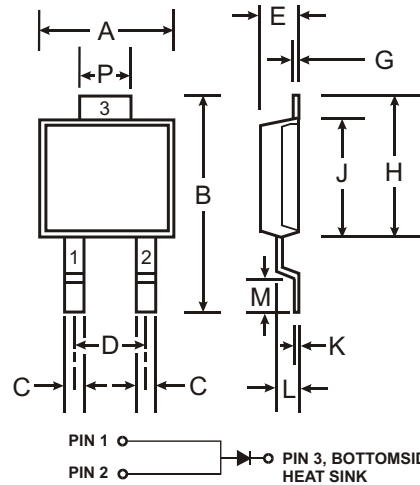
NOT RECOMMENDED FOR NEW DESIGNS  
USE PDS5100

### Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- High Reverse Breakdown Voltage
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications

### Mechanical Data

- Case: POWERMITE®3
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Marking: See Page 3
- Ordering Information: See Page 3
- Weight: 0.072 grams (approximate)



| POWERMITE®3          |          |      |
|----------------------|----------|------|
| Dim                  | Min      | Max  |
| A                    | 4.03     | 4.09 |
| B                    | 6.40     | 6.61 |
| C                    | .864     | .914 |
| D                    | 1.83 NOM |      |
| E                    | 1.10     | 1.14 |
| G                    | .173     | .203 |
| H                    | 5.01     | 5.17 |
| J                    | 4.37     | 4.43 |
| K                    | .173     | .203 |
| L                    | .71      | .77  |
| M                    | .36      | .46  |
| P                    | 1.73     | 1.83 |
| All Dimensions in mm |          |      |

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

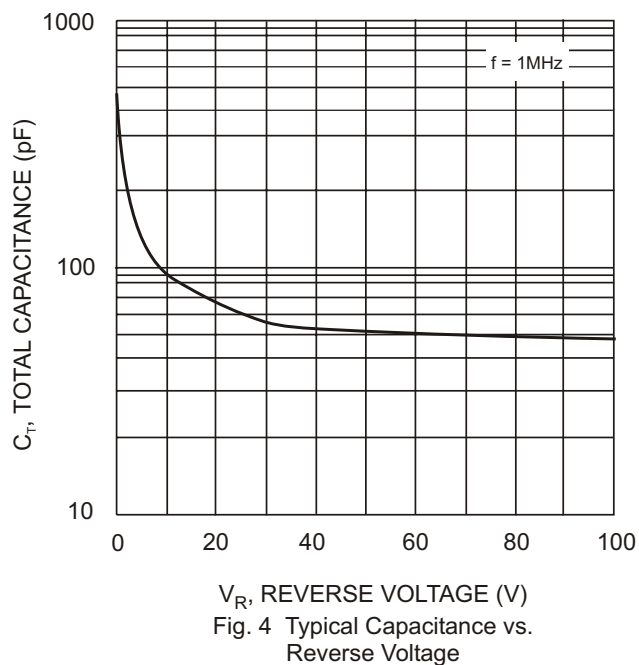
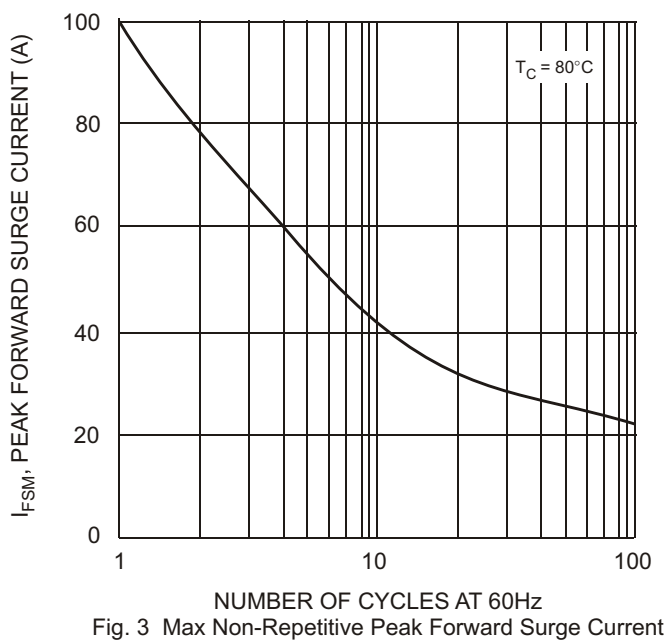
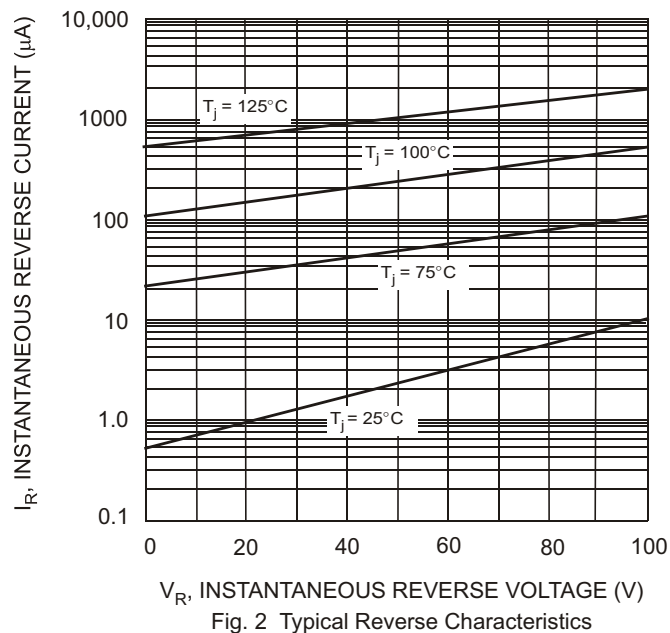
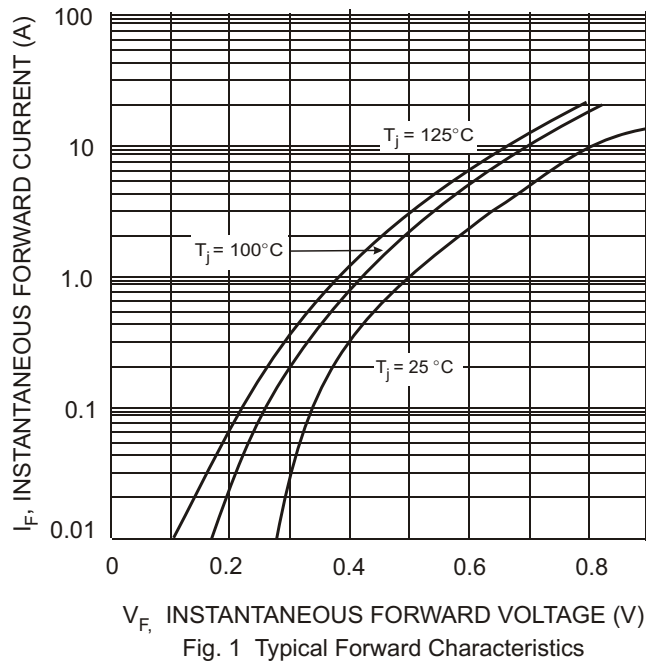
Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| Characteristic   | Symbol   | Value       | Unit |
|--|--|-------------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage   | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>R</sub> | 100         | V    |
| RMS Reverse Voltage  | V <sub>R(RMS)</sub>                                    | 70          | V    |
| Average Rectified Output Current (See also figure 5)   | I <sub>O</sub>   | 5           | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single half sine-wave Superimposed on Rated Load<br>@ T <sub>C</sub> = 80°C | I <sub>FSM</sub>                                       | 100         | A    |
| Typical Thermal Resistance Junction to Case  | R <sub>θJC</sub>                                       | 1.2         | °C/W |
| Typical Thermal Resistance Junction to Soldering Point   | R <sub>θJS</sub>                                       | 2.7         | °C/W |
| Operating Temperature Range  | T <sub>j</sub>   | -65 to +125 | °C   |
| Storage Temperature Range  | T <sub>STG</sub>                                       | -65 to +150 | °C   |

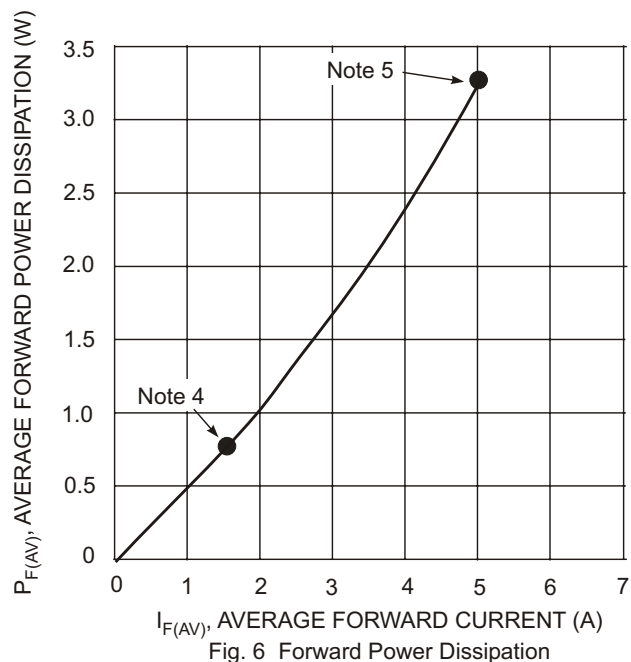
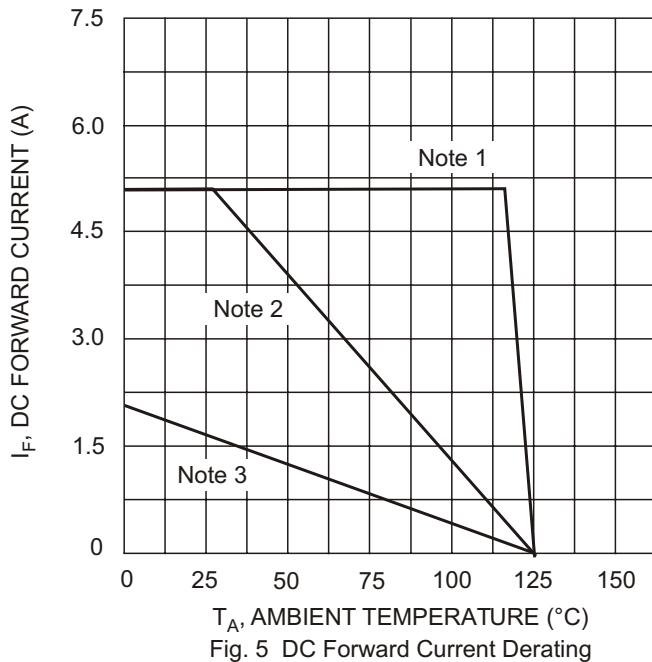
### Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                     | Symbol             | Min | Typ                          | Max                          | Unit | Test Condition   |
|------------------------------------|--------------------|-----|------------------------------|------------------------------|------|--|
| Reverse Breakdown Voltage (Note 1) | V <sub>(BR)R</sub> | 100 | —                            | —                            | V    | I <sub>R</sub> = 0.2mA   |
| Forward Voltage                    | V <sub>F</sub>     | —   | 0.75<br>0.58<br>0.84<br>0.67 | 0.81<br>0.64<br>0.90<br>0.73 | V    | I <sub>F</sub> = 5A, T <sub>j</sub> = 25°C<br>I <sub>F</sub> = 5A, T <sub>j</sub> = 125°C<br>I <sub>F</sub> = 10A, T <sub>j</sub> = 25°C<br>I <sub>F</sub> = 10A, T <sub>j</sub> = 125°C |
| Peak Reverse Current (Note 1)      | I <sub>R</sub>     | —   | 0.015<br>2                   | 0.2<br>100                   | mA   | T <sub>j</sub> = 25°C, V <sub>R</sub> = 100V<br>T <sub>j</sub> = 125°C, V <sub>R</sub> = 100V  |

Notes: 1. Short duration test pulse used to minimize self-heating effect.



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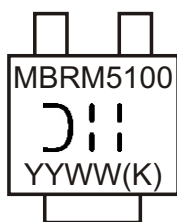
- Notes:
1.  $T_A = T_{\text{SOLDERING POINT}}$ ,  $R_{\theta JS} = 2.7^\circ\text{C/W}$ ,  $R_{\theta SA} = 0^\circ\text{C/W}$ .
  2. Device mounted on GETEK substrate, 2"x2", 2 oz. copper, double-sided, cathode pad dimensions 0.75" x 1.0", anode pad dimensions 0.25" x 1.0".  $R_{\theta JA}$  in range of 20-40°C/W.
  3. Device mounted on FR-4 substrate, 2"x2", 2 oz. copper, single-sided, pad layout as per Diodes Inc. suggested pad layout document AP02001 which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.  $R_{\theta JA}$  in range of 100-140°C/W.
  4. Maximum power dissipation when the device is mounted in accordance to the conditions described in Note 3.
  5. Maximum power dissipation when the device is mounted in accordance to the conditions described in Note 2.

## Ordering Information (Note 6)

| Device      | Packaging   | Shipping         |
|-------------|-------------|------------------|
| MBRM5100-13 | POWERMITE®3 | 5000/Tape & Reel |

Notes: 6. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



MBRM5100 = Product type marking code  
DII = Manufacturers' code marking  
YYWW = Date code marking  
YY = Last digit of year ex: 02 for 2002  
WW = Week code 01 to 52  
(K) = Factory Designator

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POWERMITE is a registered trademark of Microsemi Corporation.