

## 3A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER POWERMITE 3

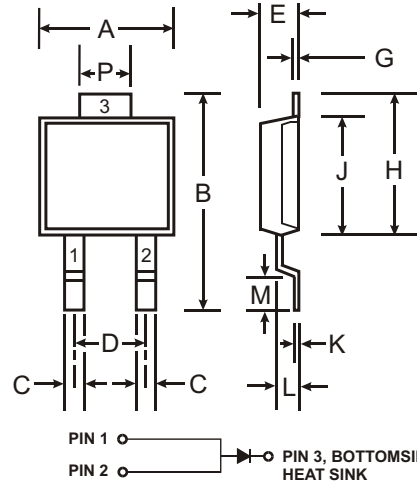
### Features

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  
**Lead Free Finish, RoHS Compliant Version (Note 2)**

### 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  
 Lead Free Plating (Matte Tin Finish). <sup>3</sup>  
 Polarity: See Diagram  
 Marking: See Page 3  
 Ordering Information: See Page 3  
 Weight: 0.072 grams (approximate)

**NOT RECOMMENDED FOR NEW DESIGNS**  
**USE PDS3100**



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		

Note: Pins 1 & 2 must be electrically connected at the printed circuit board.

### 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 Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	100	V
RMS Reverse Voltage	V <sub>R(RMS)</sub>	70	V
Average Rectified Output Current (Also see Figure 5)	I <sub>O</sub>	3	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load @ T <sub>C</sub> = 90°C	I <sub>FSM</sub>	50	A
Typical Thermal Resistance Junction to Soldering Point	R <sub>JS</sub>	3.5	C/W
Typical Thermal Resistance Junction to Case	R <sub>JC</sub>	1.6	C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +125	C
Storage Temperature Range	T <sub>STG</sub>	-55 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>		0.72 0.60 0.80 0.69	0.76	V	I <sub>F</sub> = 3A, T <sub>J</sub> = 25 C I <sub>F</sub> = 3A, T <sub>J</sub> = 100 C I <sub>F</sub> = 6A, T <sub>J</sub> = 25 C I <sub>F</sub> = 6A, T <sub>J</sub> = 100 C
Reverse Current (Note 1)	I <sub>R</sub>		3 0.35	100 20	A mA	T <sub>J</sub> = 25 C, V <sub>R</sub> = 100V T <sub>J</sub> = 100 C, V <sub>R</sub> = 100V
Total Capacitance	C <sub>T</sub>		100		pF	f = 1.0MHz, V <sub>R</sub> = 4.0V DC

Notes: 1. Short duration test pulse used to minimize self-heating effect.  
 2. RoHS revision 13.2.2003. High Temperature Solder Exemption Applied see EU Directive Annex Note 7.

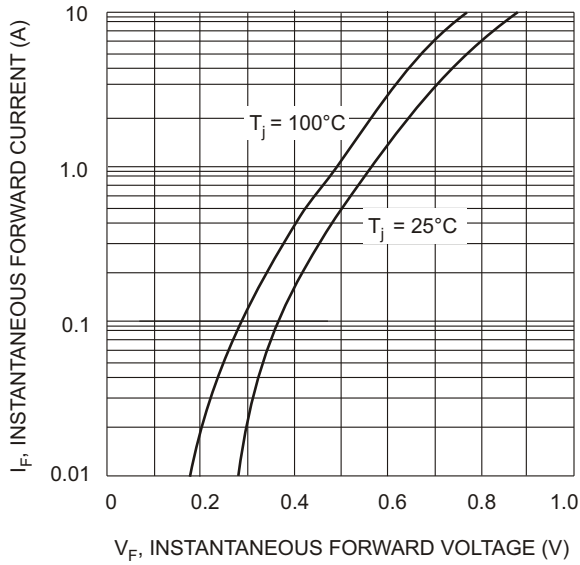


Fig. 1 Typical Forward Characteristics

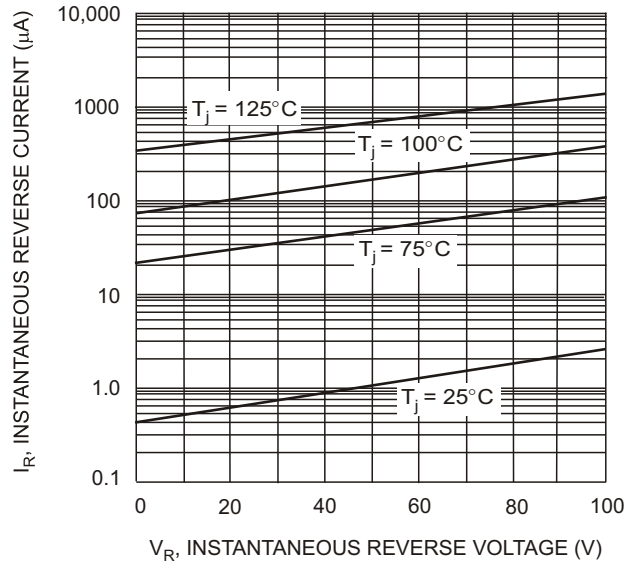


Fig. 2 Typical Reverse Characteristics

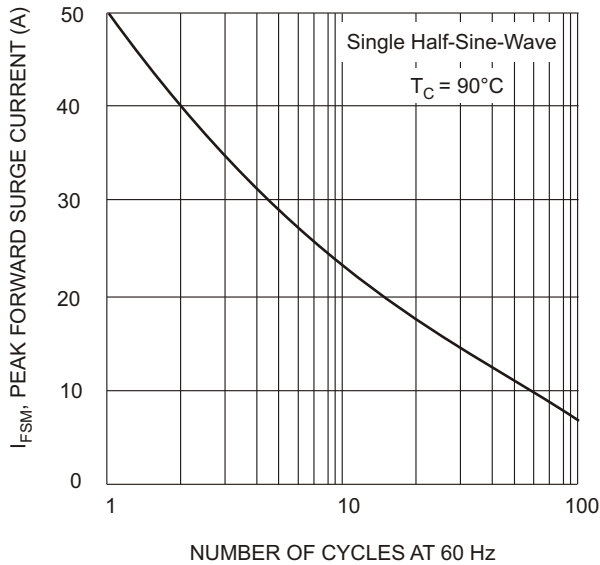


Fig. 3 Max Non-Repetitive Peak Forward Surge Current

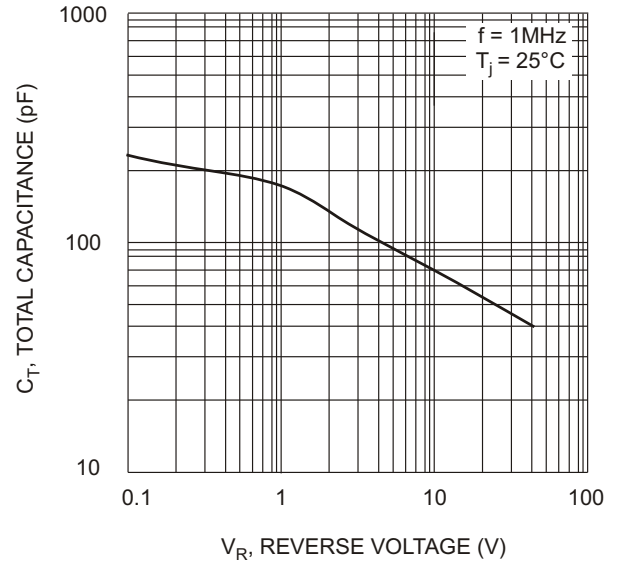
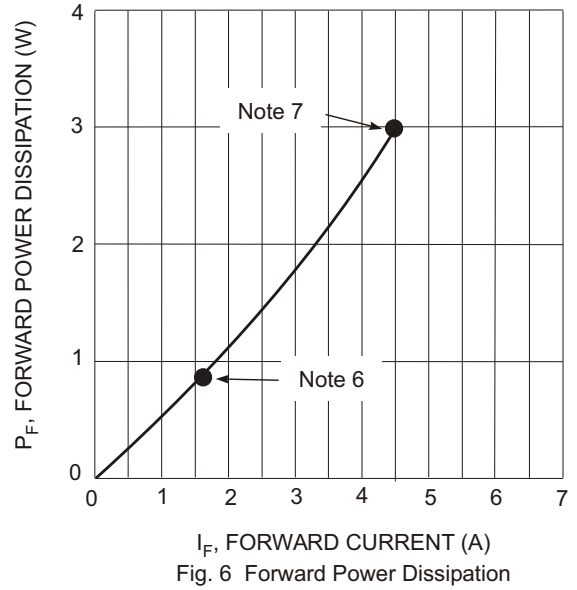
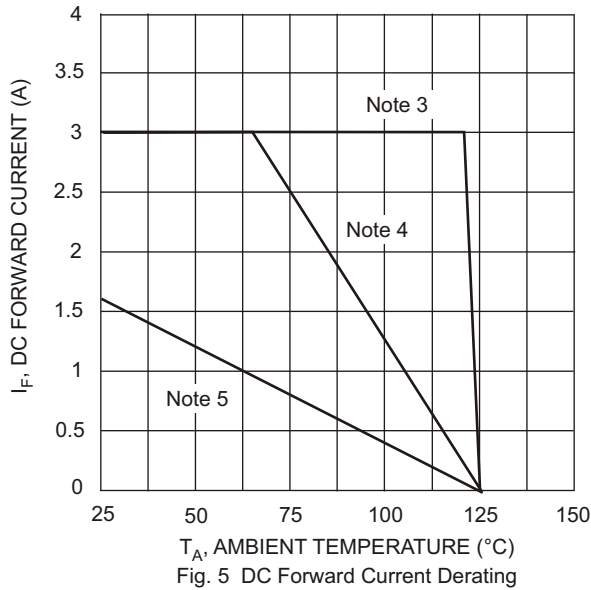


Fig. 4 Typical Total Capacitance vs. Reverse Voltage

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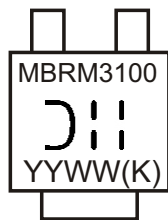


**Ordering Information** (Note 8)

Device	Packaging	Shipping
MBRM3100-13-F	POWERMITE 3	5000/Tape & Reel

- Notes:
- $T_A = T_{SOLDERING\ POINT}$ ,  $R_{JS} = 3.5\ C/W$ ,  $R_{SA} = 0\ C/W$ .
  - 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".  $R_{JA}$  in range of 30-35°C/W.
  - 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>.  $R_{JA}$  in range of 115-125°C/W.
  - Maximum power dissipation when the device is mounted in accordance to the conditions described in Note 4.
  - Maximum power dissipation when the device is mounted in accordance to the conditions described in Note 3.
  - For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



MBRM3100 = Product type marking code  
 ⌋|| = 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.

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