



# MBRM5100

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

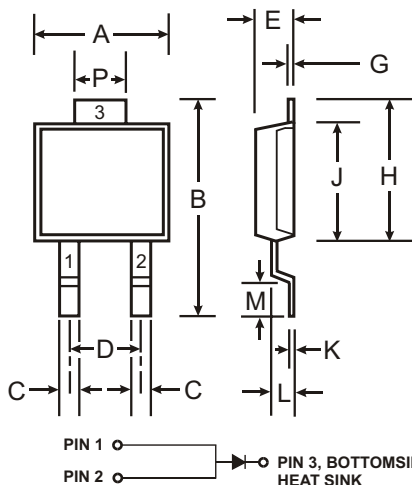
NEW PRODUCT

### 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
- Plastic Material: UL Flammability Classification Rating 94V-0

### Mechanical Data

- Case: POWERMITE®3 Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Marking: See sheet 3
- Weight: 0.072 grams (approx.)



POWERMITE®3		
Dim	Min	Max
A	4.03	4.09
B	6.40	6.61
C	.889 NOM	
D	1.83 NOM	
E	1.10	1.14
G	.178 NOM	
H	5.01	5.17
J	4.37	4.43
K	.178 NOM	
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 (See also figure 5)	I <sub>O</sub>	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load (JEDEC Method) @ 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 (Note 1)	V <sub>FM</sub>	—	0.75 0.58 0.84 0.67	0.81 0.64 0.90 0.73	V	I <sub>F</sub> = 5A, T <sub>j</sub> = 25°C I <sub>F</sub> = 5A, T <sub>j</sub> = 125°C I <sub>F</sub> = 10A, T <sub>j</sub> = 25°C I <sub>F</sub> = 10A, T <sub>j</sub> = 125°C
Peak Reverse Current (Note 1)	I <sub>RM</sub>	—	0.015 2	0.2 100	mA	T <sub>j</sub> = 25°C, V <sub>R</sub> = 100V T <sub>j</sub> = 125°C, V <sub>R</sub> = 100V

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

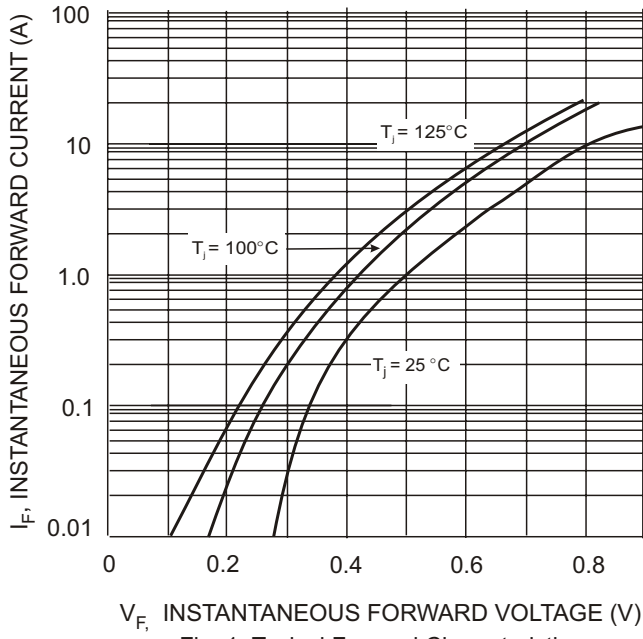


Fig. 1 Typical Forward Characteristics

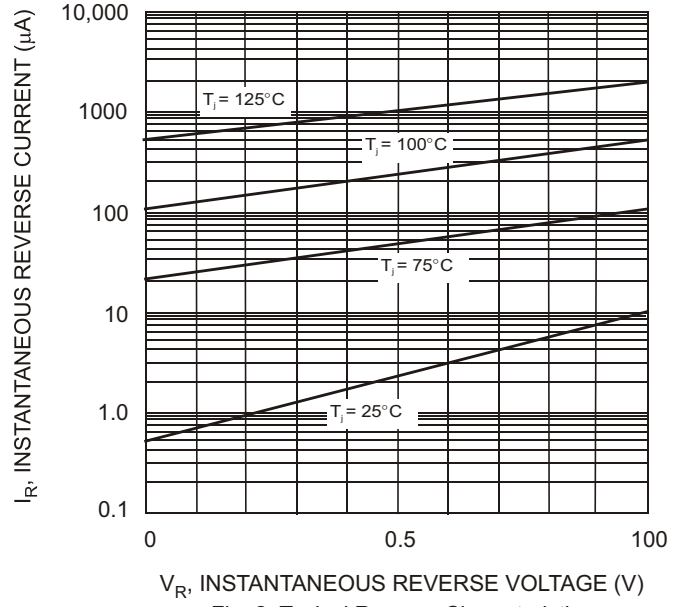


Fig. 2 Typical Reverse Characteristics

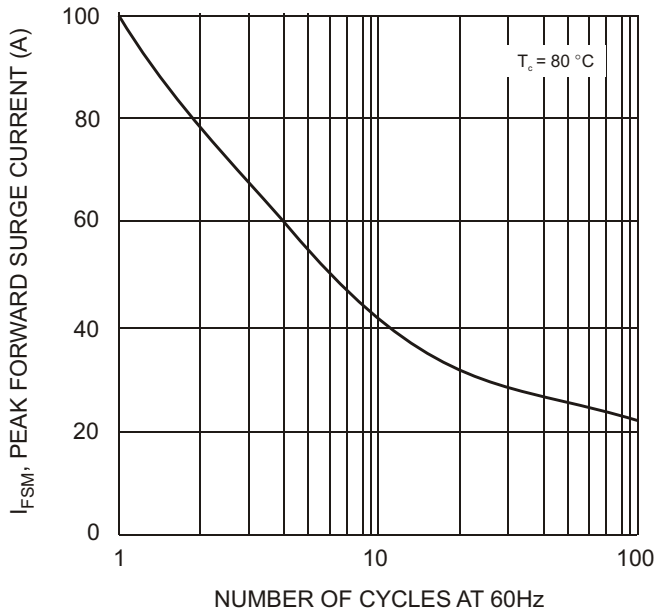


Fig. 3 Max Non-Repetitive Peak forward Surge Current

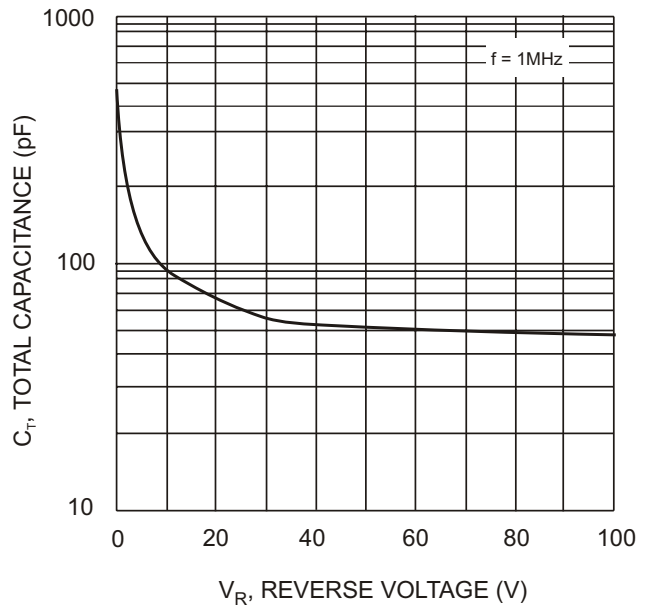
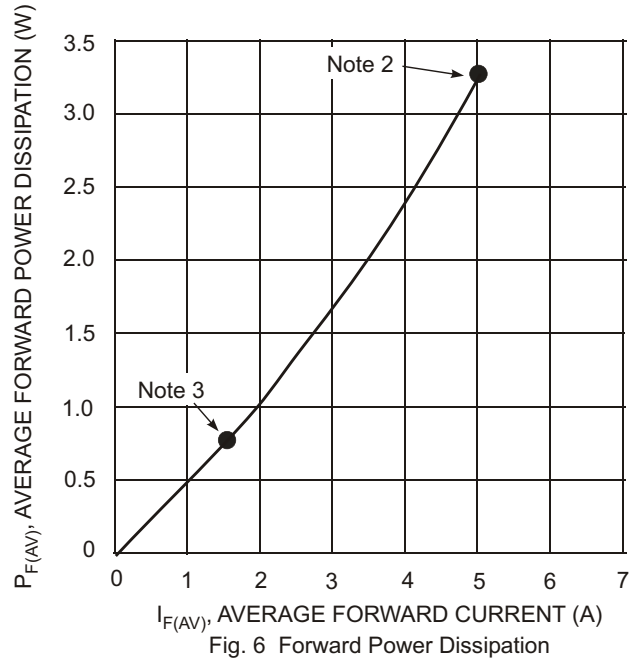
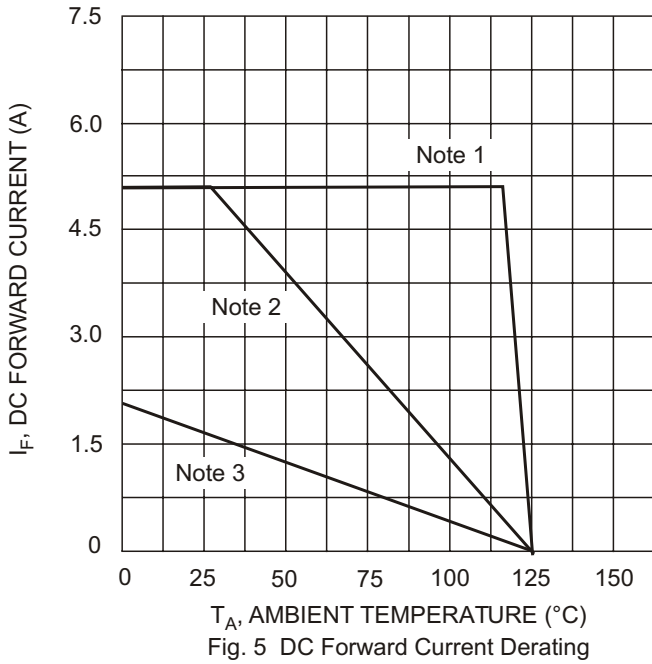


Fig. 4 Typical Capacitance vs. Reverse Voltage



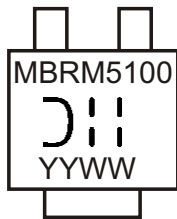
- Notes:
1.  $T_A = T_{\text{SOLDERING POINT}}$ ,  $R_{\theta JS} = 2.7^\circ\text{C/W}$ ,  $R_{\theta SA} = 0^\circ\text{C/W}$ .
  2. Device mounted on GETEK substrate, 2"x2", 2 oz. copper, double-sided, cathode pad dimensions 0.75" x 1.0", anode pad dimensions 0.25" x 1.0".  $R_{\theta JA}$  in range 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.

### Ordering Information (Note 4)

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

- Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

### Marking Information



MBRM5100 = Product type marking code  
 ☺|| = Manufacturers' code marking  
 YYWW = Date code marking  
 YY = Last digit of year ex: 2 for 2002  
 WW = Week code 01 to 52

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