



**THE DATASHEET OF  
MBRM3100-13**

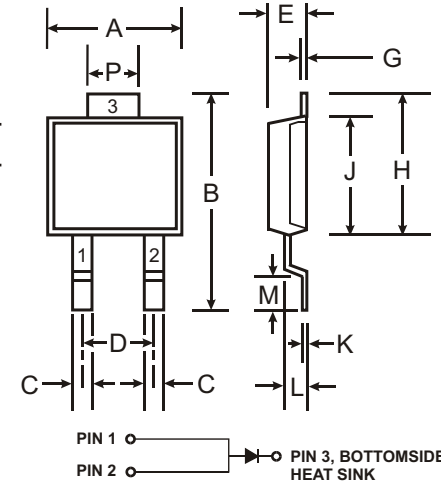


### Features

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



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

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 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 (JEDEC Method) @ T <sub>C</sub> = 90°C	I <sub>FSM</sub>	50	A
Typical Thermal Resistance Junction to Soldering Point	R <sub>θJS</sub>	3.5	°C/W
Typical Thermal Resistance Junction to Case	R <sub>θJC</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 (Note 1)	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	μA 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.

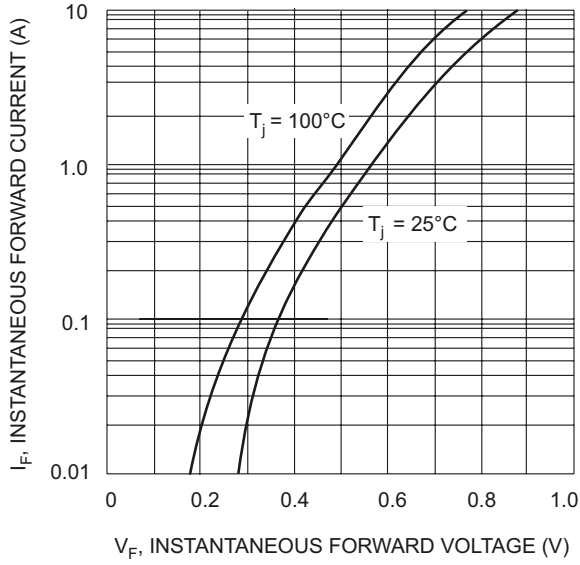


Fig. 1 Typical Forward Characteristics

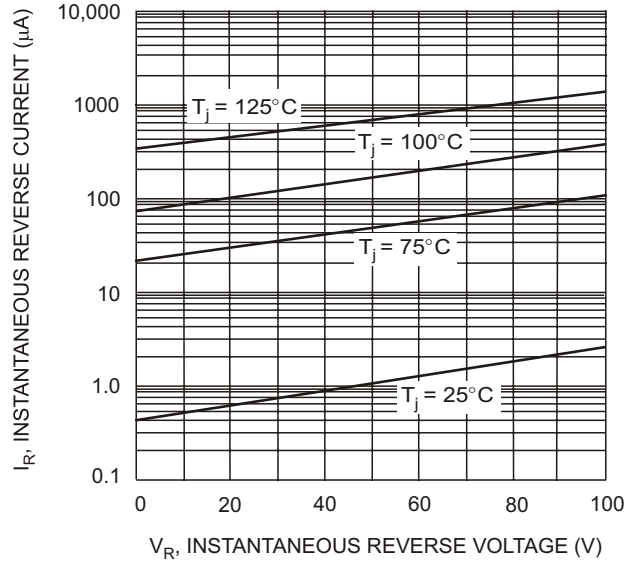


Fig. 2 Typical Reverse Characteristics

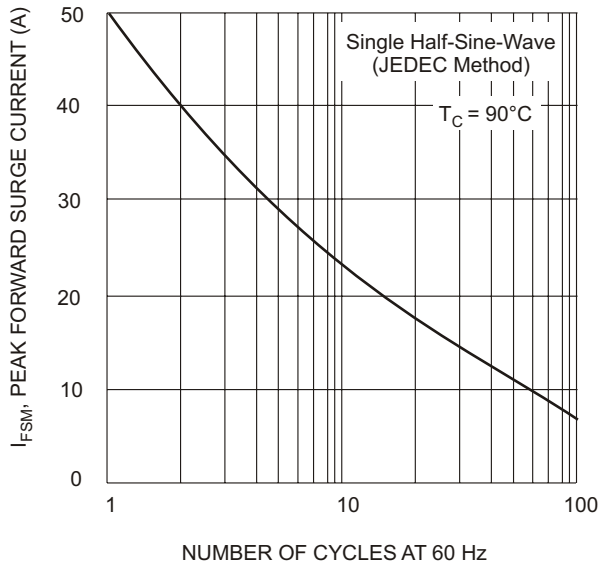


Fig. 3 Max Non-Repetitive Peak Fwd Surge Current

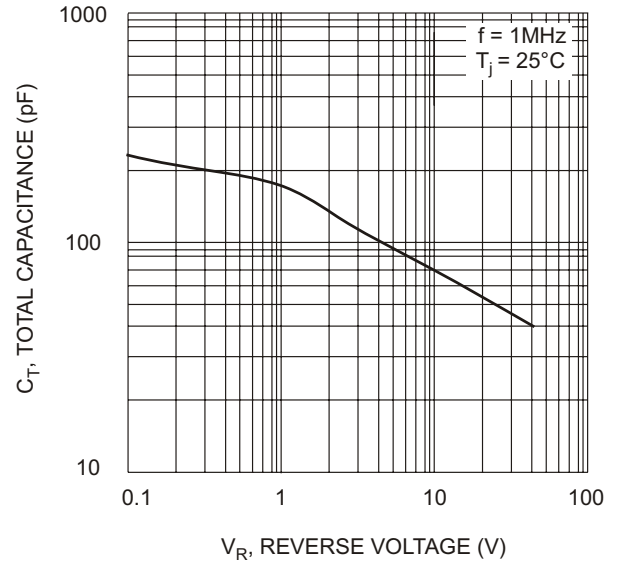
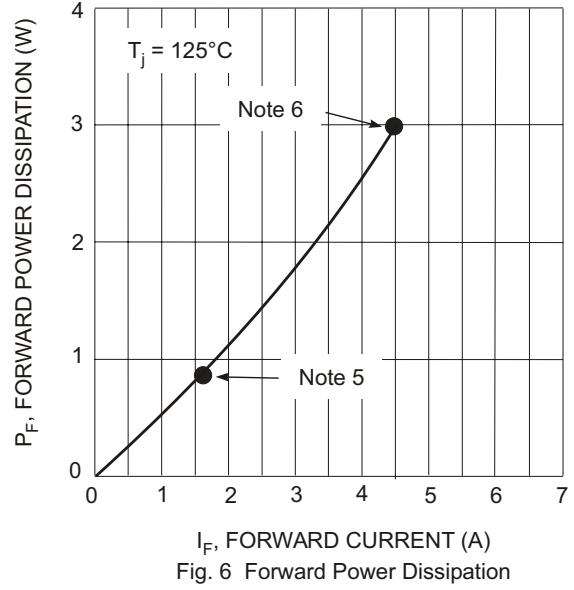
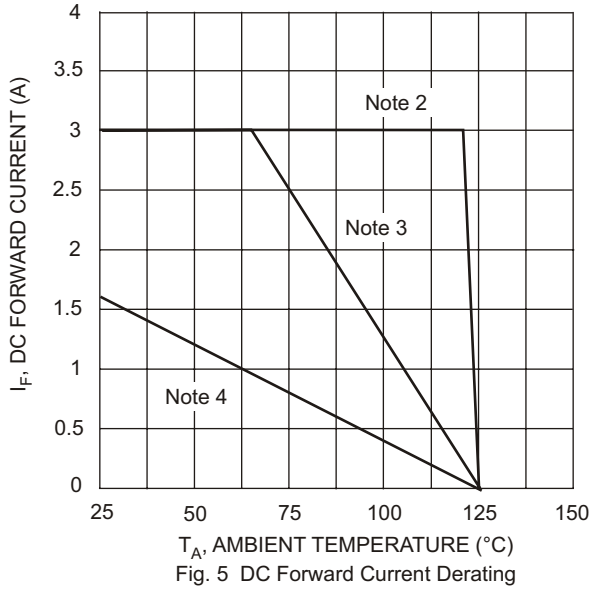


Fig. 4 Typical Total Capacitance vs. Reverse Voltage

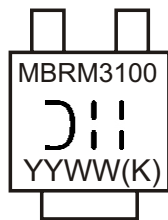



**Ordering Information** (Note 7)

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

- Notes:
- $T_A = T_{SOLDERING\ POINT}$ ,  $R_{\theta JS} = 3.5^\circ C/W$ ,  $R_{\theta SA} = 0^\circ C/W$ .
  - 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".  $R_{\theta JA}$  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>.  $R_{\theta JA}$  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

POWERMITE is a registered trademark of Microsemi Corporation.

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