# MBRM1H100T3G

## Surface Mount Schottky Power Rectifier

### POWERMITE®
### Power Surface Mount Package

The Schottky Powermite® employs the Schottky Barrier principle with a barrier metal and epitaxial construction that produces optimal forward voltage drop−reverse current tradeoff. The advanced packaging techniques provide for a highly efficient micro miniature, space saving surface mount Rectifier. With its unique heatsink design, the Powermite® has the same thermal performance as the SMA while being 50% smaller in footprint area. Because of its small size, it is ideal for use in portable and battery powered products such as cellular and cordless phones, chargers, notebook computers, printers, PDAs and PCMCIA cards. Typical applications are AC−DC and DC−DC converters, reverse battery protection, and “ORing” of multiple supply voltages and any other application where performance and size are critical.

**Features**

- Low Profile − Maximum Height of 1.1 mm
- Small Footprint − Footprint Area of 8.45 mm$^2$
- Low $V_F$ Provides Higher Efficiency and Extends Battery Life
- Supplied in 12 mm Tape and Reel
- Low Thermal Resistance with Direct Thermal Path of Die on Exposed Cathode Heat Sink
- This is a Pb−Free Device

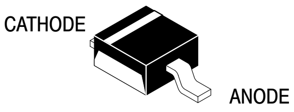
**Mechanical Characteristics:**

- Powermite® is JEDEC Registered as D0−216AA
- Case: Molded Epoxy
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Weight: 16.3 mg (Approximately)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Maximum for 10 Seconds

**ON Semiconductor®**

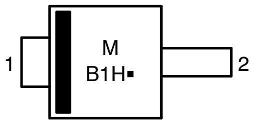
**http://onsemi.com**

**SCHOTTKY BARRIER RECTIFIER**
**1.0 AMPERES, 100 VOLTS**



**POWERMITE**
**CASE 457**
**PLASTIC**

**MARKING DIAGRAM**



| | | |
|---|---|---|
| M | = | Date Code |
| B1H | = | Device Code |
| ▪ | = | Pb−Free Package |

**ORDERING INFORMATION**

| Device | Package | Shipping† |
|---|---|---|
| MBRM1H100T3G | Powermite<br>(Pb−Free) | 12000/Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

## MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 100 | V |
| Average Rectified Forward Current<br>($T_L$ = 168°C) | $I_O$ | 1.0 | A |
| Non−Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$ | 50 | A |
| Storage and Operating Junction Temperature Range (Note 1) | $T_{stg}$, $T_J$ | −65 to +175 | °C |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction−to−Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

## THERMAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Thermal Resistance, Junction−to−Lead (Note 2) | $\Psi_{JCL}$ | 12 | °C/W |
| Thermal Resistance, Junction−to−Ambient (Note 2) | $R_{\theta JA}$ | 75 | °C/W |
| Thermal Resistance, Junction−to−Ambient (Note 3) | $R_{\theta JA}$ | 260 | °C/W |

## ELECTRICAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Maximum Instantaneous Forward Voltage (Note 4) | $V_F$ | | V |
| ($I_F$ = 1.0 A, $T_J$ = 25°C) | | 0.76 | |
| ($I_F$ = 2.0 A, $T_J$ = 25°C) | | 0.84 | |
| ($I_F$ = 1.0 A, $T_J$ = 125°C) | | 0.61 | |
| ($I_F$ = 2.0 A, $T_J$ = 125°C) | | 0.68 | |
| Maximum Instantaneous Reverse Current (Note 4) | $I_R$ | | |
| (Rated dc Voltage, $T_J$ = 25°C) | | 20 | μA |
| (Rated dc Voltage, $T_J$ = 125°C) | | 1.0 | mA |

2. Mounted with 700 $mm^2$ copper pad size (Approximately 1 $in^2$) 1 oz FR4 Board.
3. Mounted with pad size approximately 20 $mm^2$ copper, 1 oz FR4 Board.
4. Pulse Test: Pulse Width ≤ 380 μs, Duty Cycle ≤ 2.0%.

## TYPICAL CHARACTERISTICS

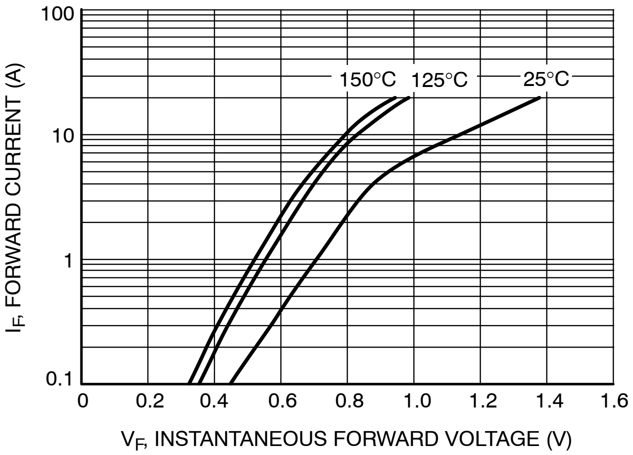


**Figure 1. Typical Forward Voltage**

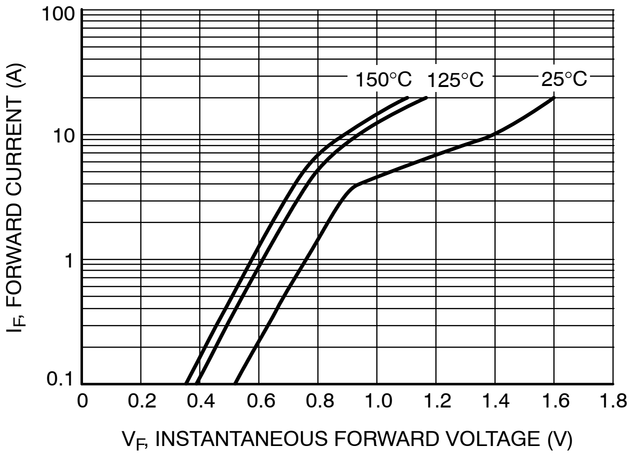


**Figure 2. Maximum Forward Voltage**

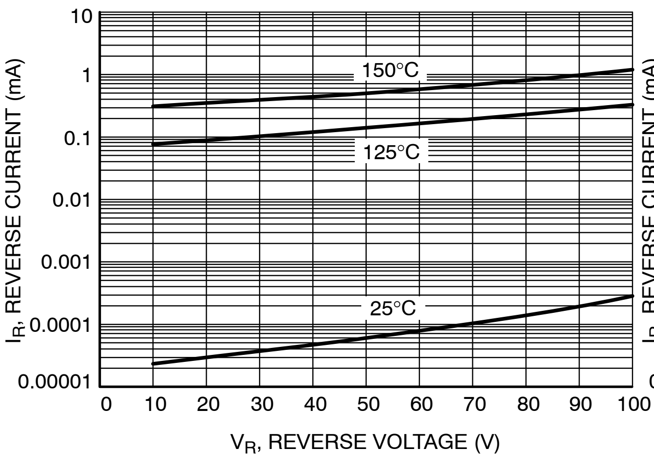


**Figure 3. Typical Reverse Current**

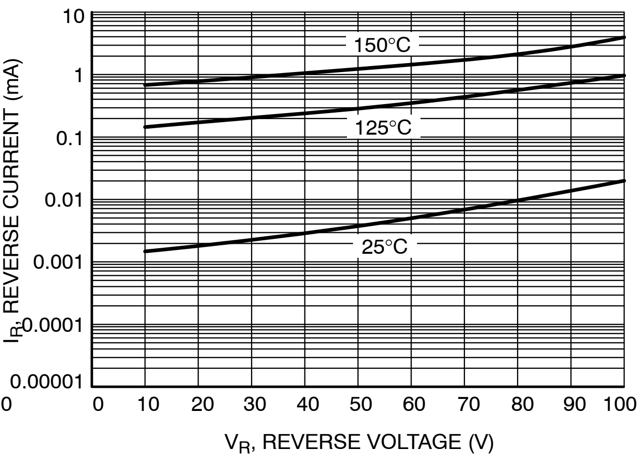


**Figure 4. Maximum Reverse Current**

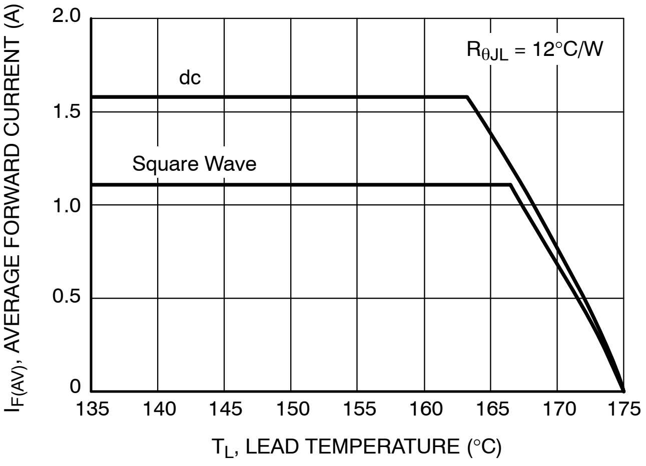


**Figure 5. Current Derating**

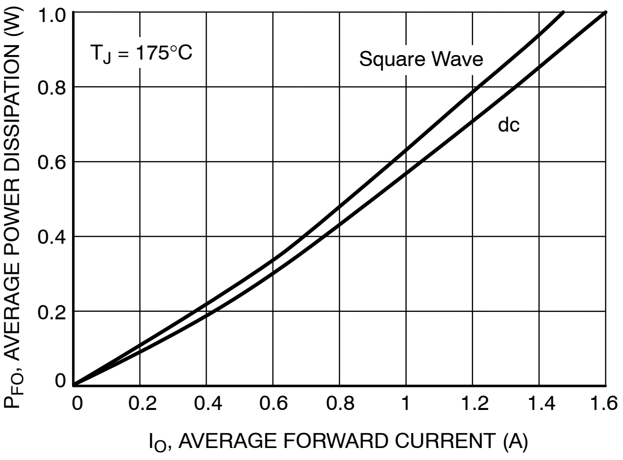


**Figure 6. Forward Power Dissipation**

## TYPICAL CHARACTERISTICS

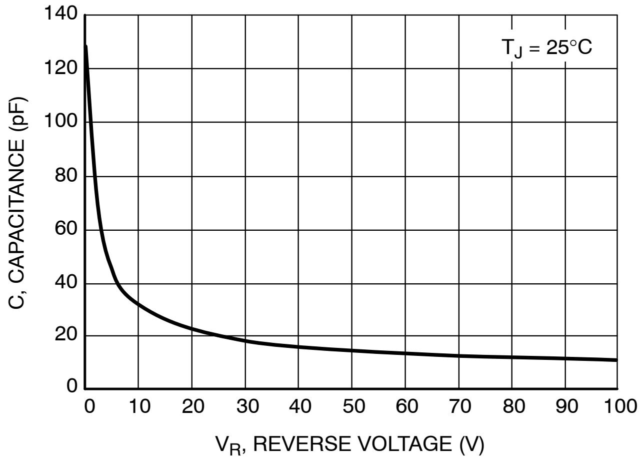


**Figure 7. Capacitance**

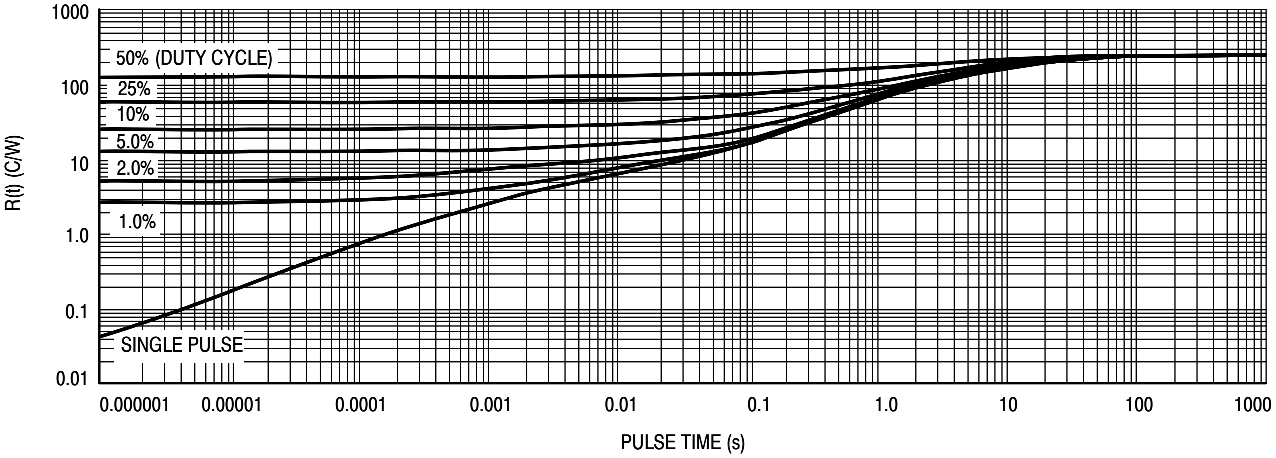


**Figure 8. Thermal Response, Junction−to−Ambient (20 mm$^2$ pad)**

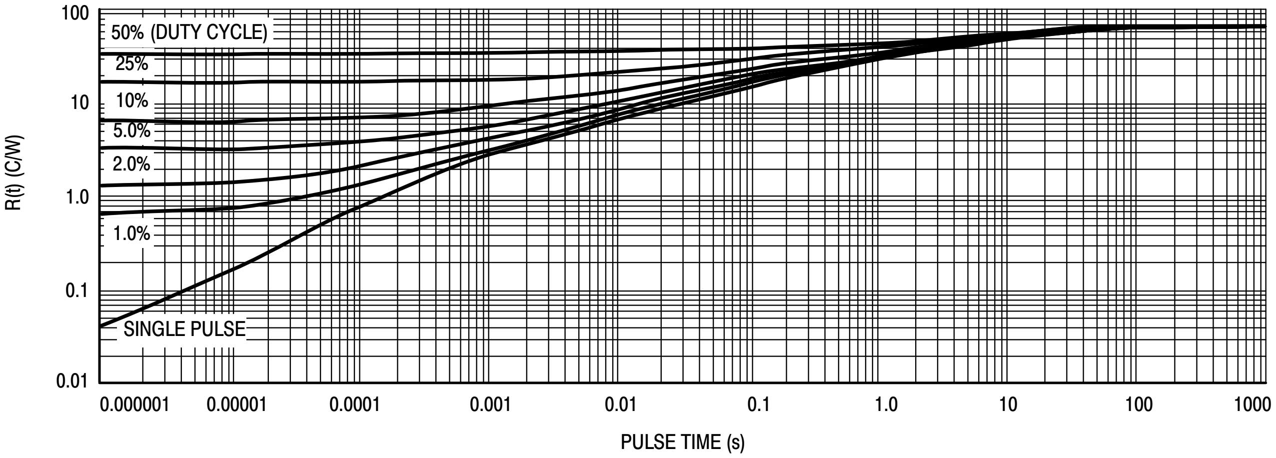
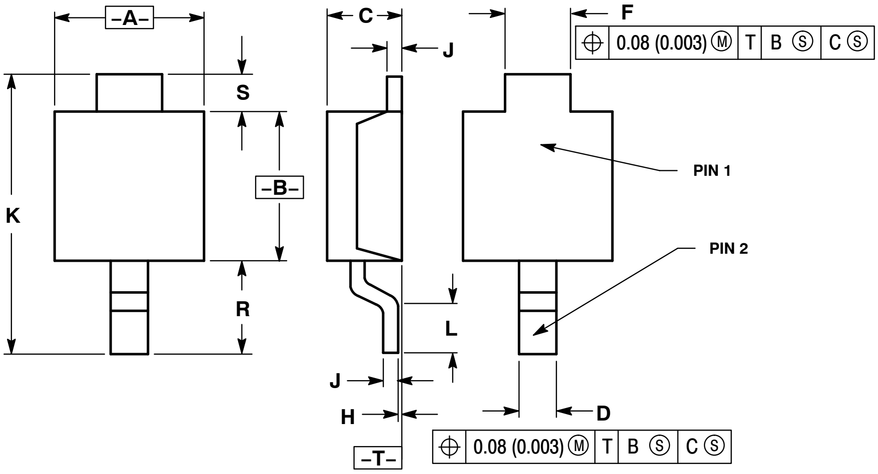


**Figure 9. Thermal Response, Junction−to−Ambient (1 in$^2$ pad)**

## PACKAGE DIMENSIONS

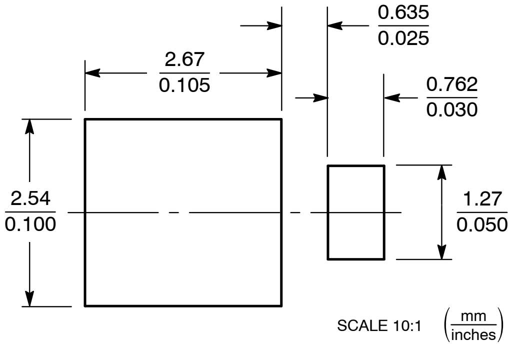
### POWERMITE
CASE 457−04
ISSUE E



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.

| | MILLIMETERS | | INCHES | |
|---|---|---|---|---|
| **DIM** | **MIN** | **MAX** | **MIN** | **MAX** |
| **A** | 1.75 | 2.05 | 0.069 | 0.081 |
| **B** | 1.75 | 2.18 | 0.069 | 0.086 |
| **C** | 0.85 | 1.15 | 0.033 | 0.045 |
| **D** | 0.40 | 0.69 | 0.016 | 0.027 |
| **F** | 0.70 | 1.00 | 0.028 | 0.039 |
| **H** | −0.05 | +0.10 | −0.002 | +0.004 |
| **J** | 0.10 | 0.25 | 0.004 | 0.010 |
| **K** | 3.60 | 3.90 | 0.142 | 0.154 |
| **L** | 0.50 | 0.80 | 0.020 | 0.031 |
| **R** | 1.20 | 1.50 | 0.047 | 0.059 |
| **S** | 0.50 REF | | 0.019 REF | |

### SOLDERING FOOTPRINT*



*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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