# MBRM2H100T3G, NRVBM2H100T3G

# 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
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- This is a Pb−Free Device

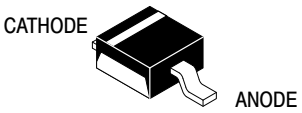
### Mechanical Characteristics:

- 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®**

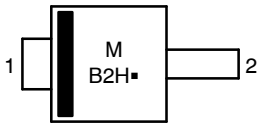
**http://onsemi.com**

**SCHOTTKY BARRIER RECTIFIER 2.0 AMPERES, 100 VOLTS**




**POWERMITE**
**CASE 457**

### MARKING DIAGRAM




M = Date Code
B2H = Device Code
▪ = Pb−Free Package

### ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| MBRM2H100T3G | Powermite (Pb−Free) | 12000/Tape & Reel |
| NRVBM2H100T3G | Powermite (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 ($T_L$ = 160°C) | $I_O$ | 2.0 | A |
| Non−Repetitive Peak Surge Current (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 those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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)<br>($I_F$ = 1.0 A, $T_J$ = 25°C)<br>($I_F$ = 2.0 A, $T_J$ = 25°C)<br>($I_F$ = 1.0 A, $T_J$ = 125°C)<br>($I_F$ = 2.0 A, $T_J$ = 125°C) | $V_F$ | <br>0.76<br>0.84<br>0.61<br>0.68 | V |
| Maximum Instantaneous Reverse Current (Note 4)<br>(Rated dc Voltage, $T_J$ = 25°C)<br>(Rated dc Voltage, $T_J$ = 125°C) | $I_R$ | <br>20<br>1.0 | <br>μA<br>mA |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

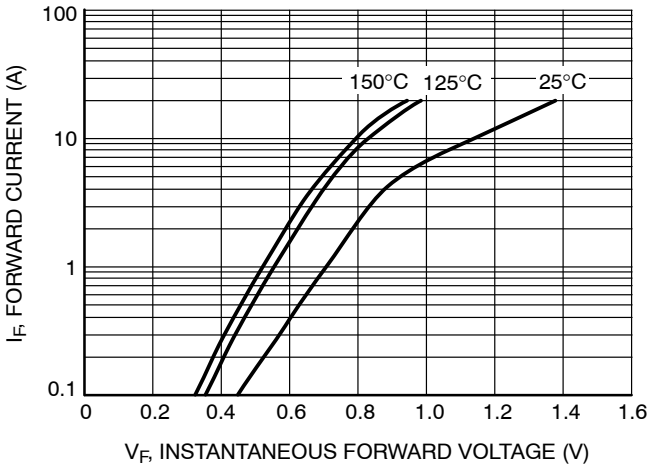



**Figure 1. Typical Forward Voltage**

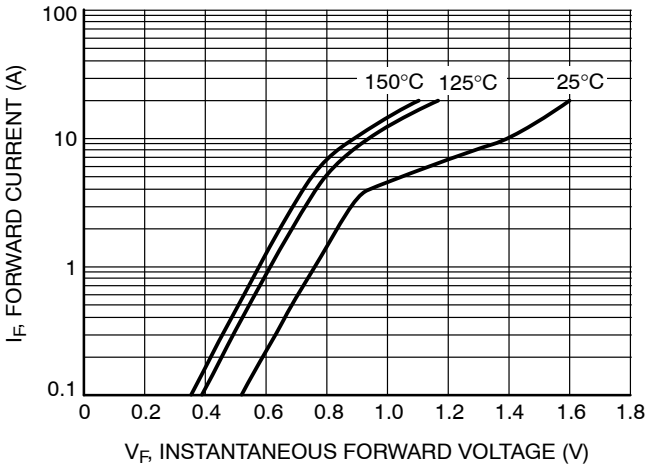



**Figure 2. Maximum Forward Voltage**

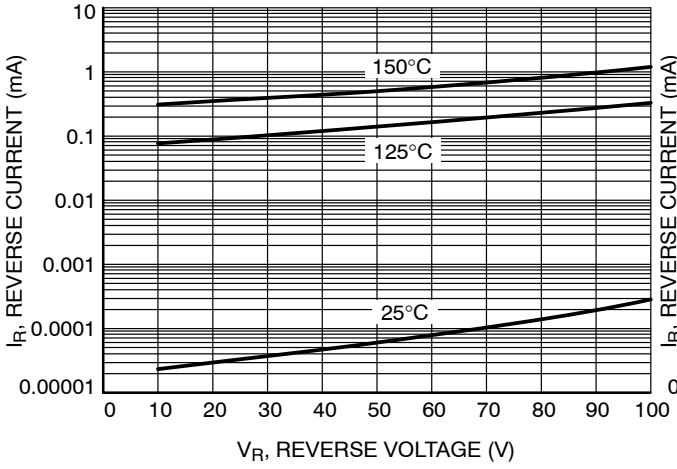



**Figure 3. Typical Reverse Current**

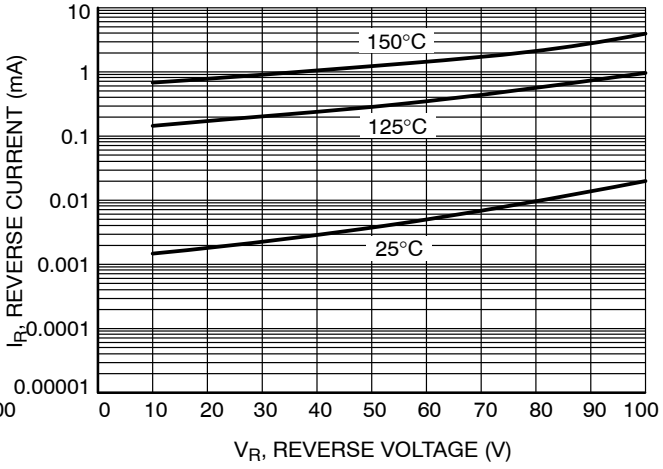



**Figure 4. Maximum Reverse Current**

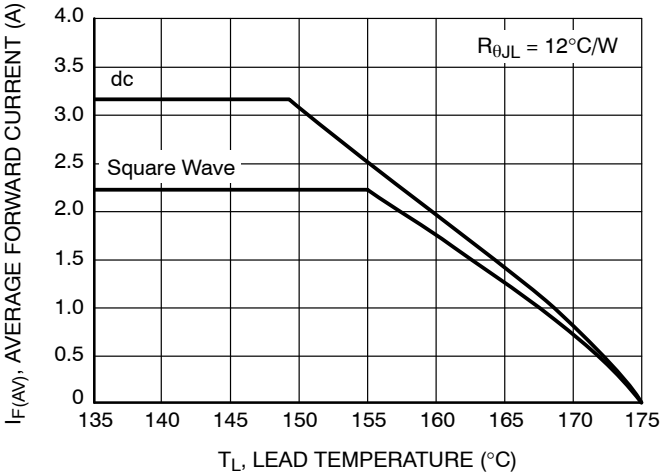



**Figure 5. Current Derating**

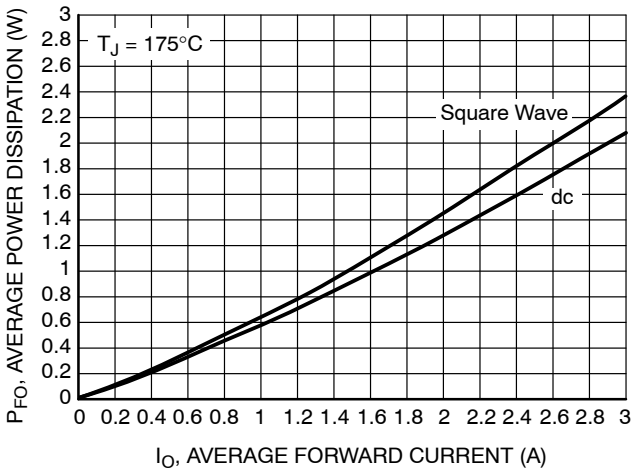



**Figure 6. Forward Power Dissipation**

## TYPICAL CHARACTERISTICS

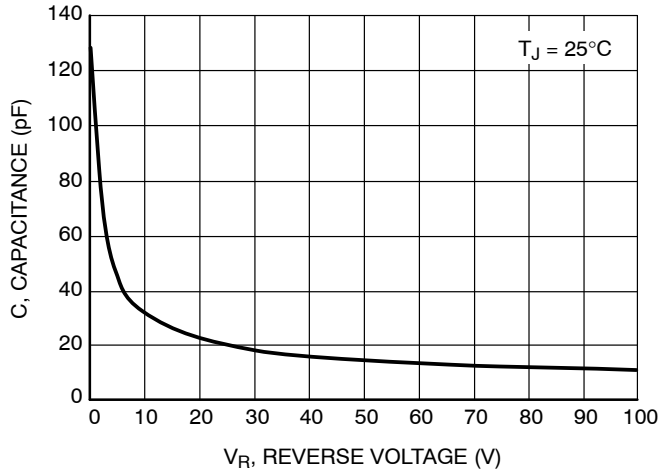



**Figure 7. Capacitance**

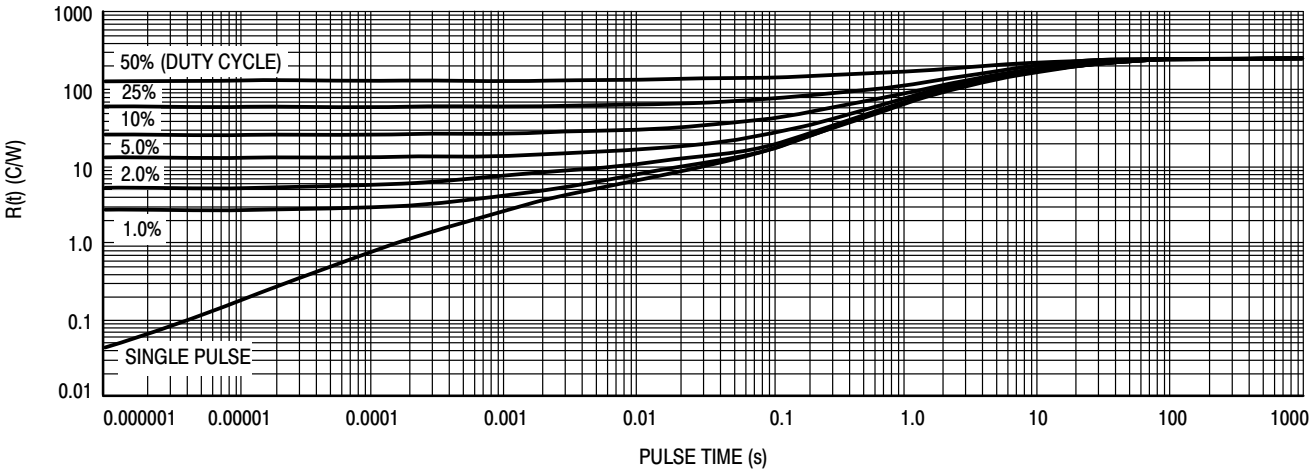



**Figure 8. Thermal Response, Junction−to−Ambient (20 mm$^2$ pad)**

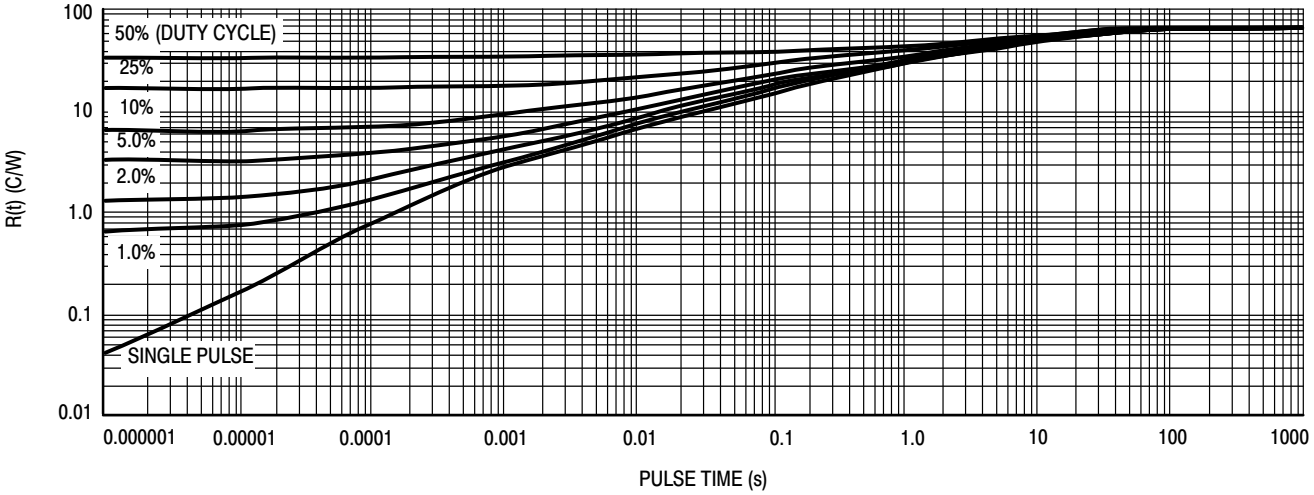
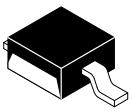



**Figure 9. Thermal Response, Junction−to−Ambient (1 in$^2$ pad)**

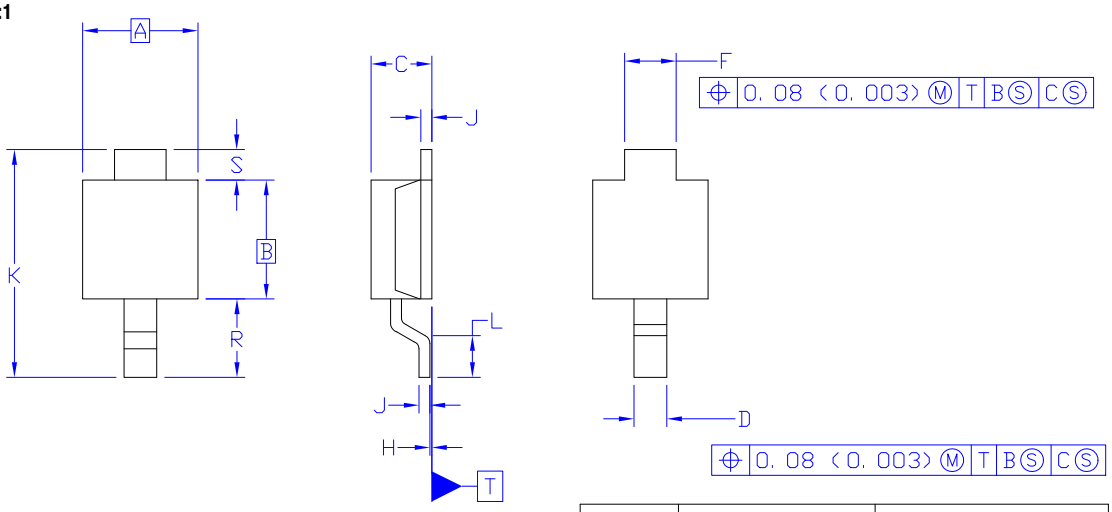
# MECHANICAL CASE OUTLINE
## PACKAGE DIMENSIONS

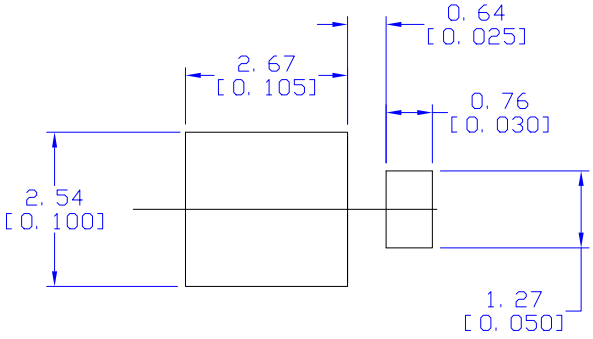
**POWERMITE**
CASE 457
ISSUE G

DATE 12 JAN 2022



**SCALE 4:1**



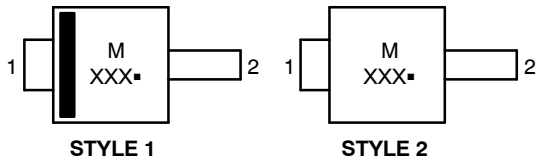

RECOMMENDED
MOUNTING FOOTPRINT

| DIM | MILLIMETERS | | INCHES | |
|---|---|---|---|---|
| | 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 | |

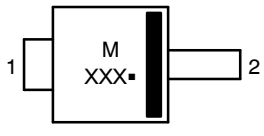
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM THE TERMINAL TIP.

**GENERIC**
**MARKING DIAGRAMS***




**STYLE 1** **STYLE 2**




**STYLE 3**

XXX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:
PIN 1. CATHODE
2. ANODE

STYLE 2:
PIN 1. ANODE OR CATHODE
2. CATHODE OR ANODE
(BI−DIRECTIONAL)

STYLE 3:
PIN 1. ANODE
2. CATHODE

| | | |
|---|---|---|
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| **DESCRIPTION:** | **POWERMITE** | **PAGE 1 OF 1** |

## PUBLICATION ORDERING INFORMATION

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