

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 mm²
- 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:

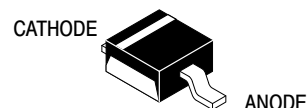
- Powermite® is JEDEC Registered as D0–216AA
- Case: Molded Epoxy
- Epoxy Meets UL 94 V–0 @ 0.125 in
- Weight: 16.3 mg (Approximately)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Maximum for 10 Seconds



ON Semiconductor®

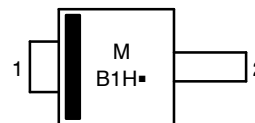
<http://onsemi.com>

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 (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.

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MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 100 | V |
| Average Rectified Forward Current ($T_L = 168^\circ\text{C}$) | I_O | 1.0 | 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 | $^\circ\text{C}$ |

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.

- 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) | Ψ_{JCL} | 12 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 75 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 3) | $R_{\theta JA}$ | 260 | $^\circ\text{C}/\text{W}$ |

ELECTRICAL CHARACTERISTICS

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

- Mounted with 700 mm² copper pad size (Approximately 1 in²) 1 oz FR4 Board.
- Mounted with pad size approximately 20 mm² copper, 1 oz FR4 Board.
- Pulse Test: Pulse Width $\leq 380 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

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TYPICAL CHARACTERISTICS

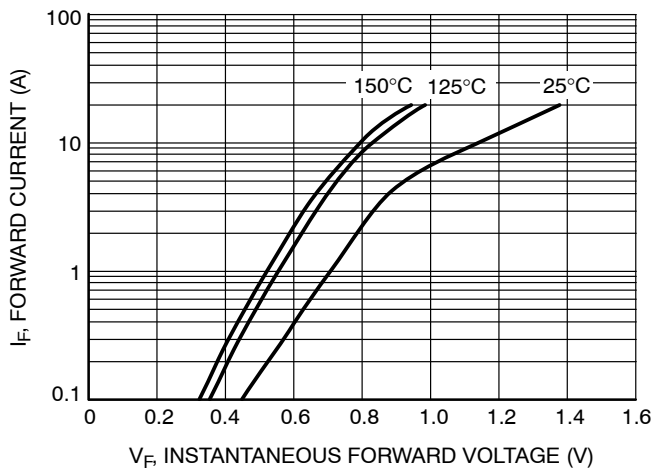


Figure 1. Typical Forward Voltage

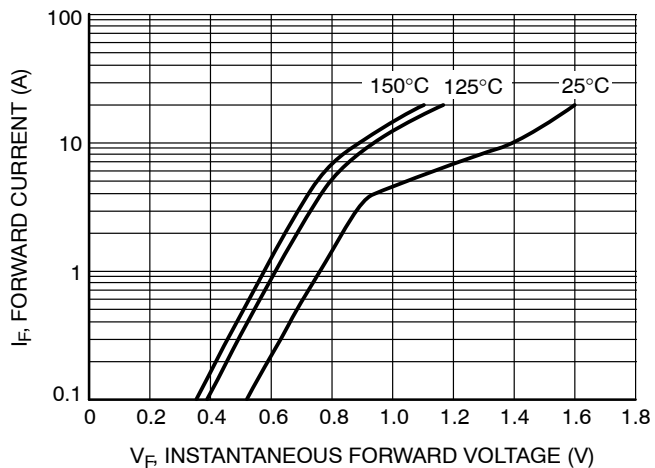


Figure 2. Maximum Forward Voltage

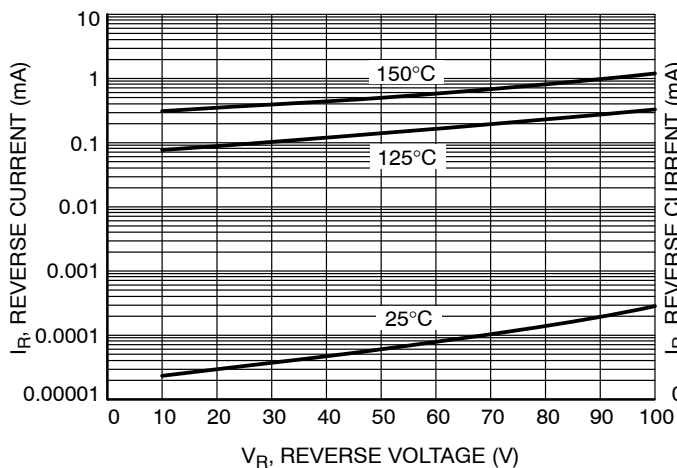


Figure 3. Typical Reverse Current

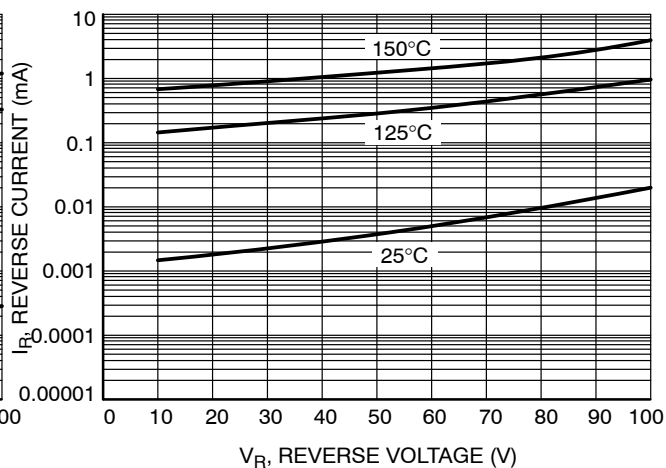


Figure 4. Maximum Reverse Current

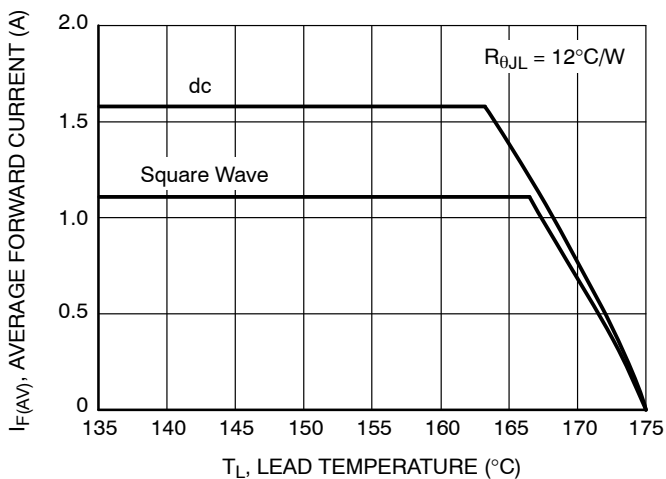


Figure 5. Current Derating

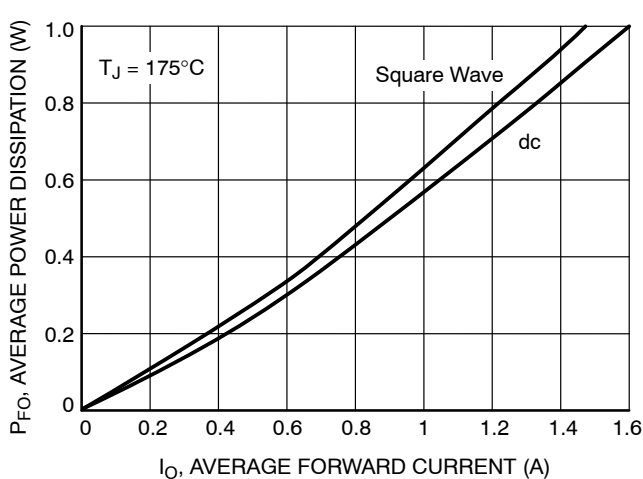


Figure 6. Forward Power Dissipation

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TYPICAL CHARACTERISTICS

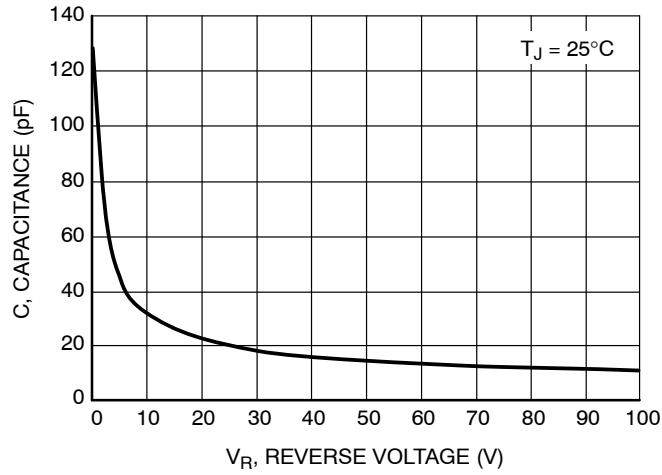


Figure 7. Capacitance

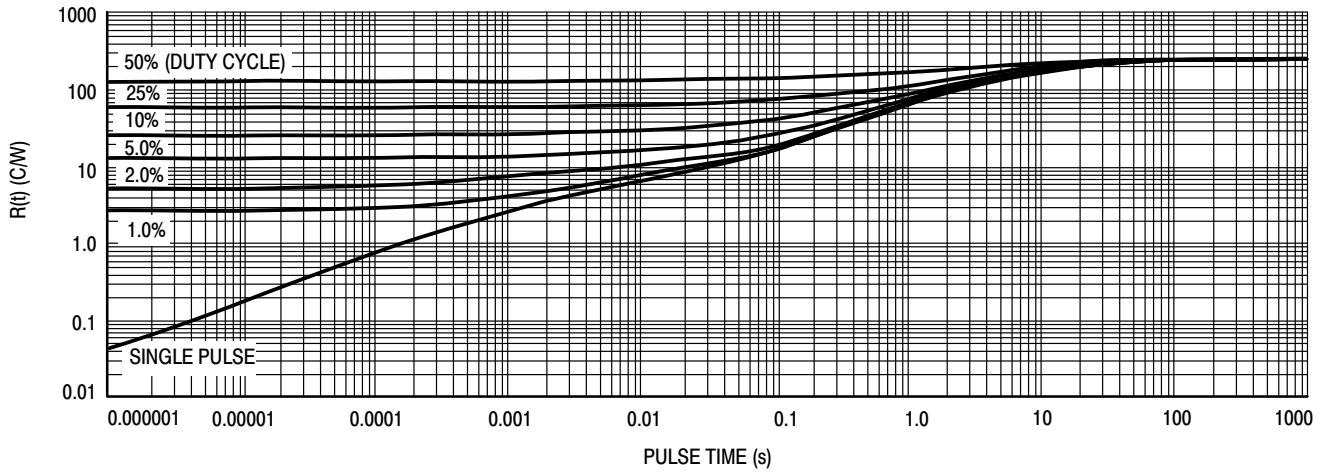


Figure 8. Thermal Response, Junction-to-Ambient (20 mm² pad)

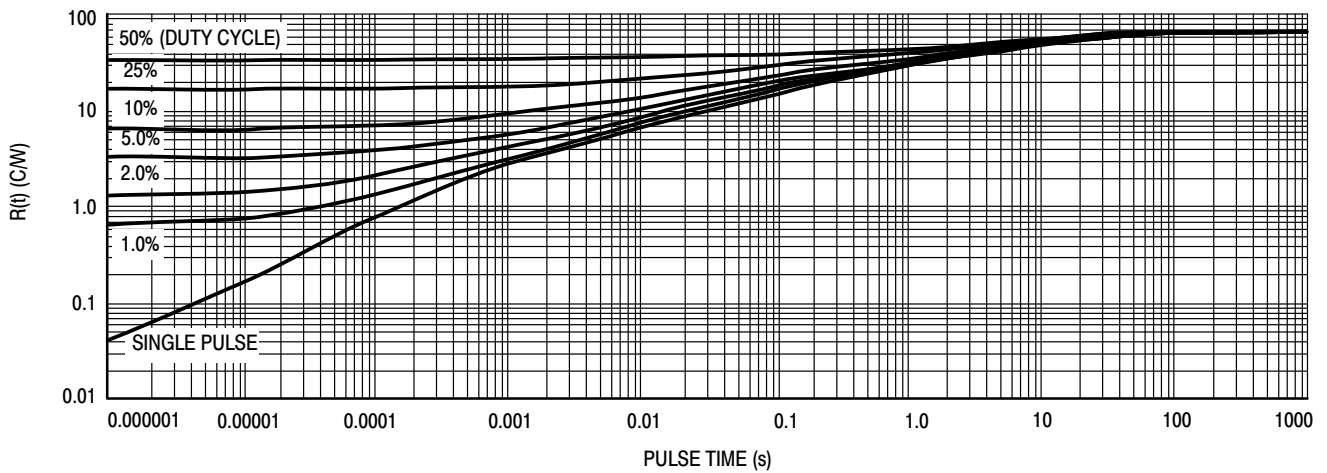
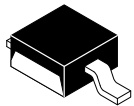


Figure 9. Thermal Response, Junction-to-Ambient (1 in² pad)

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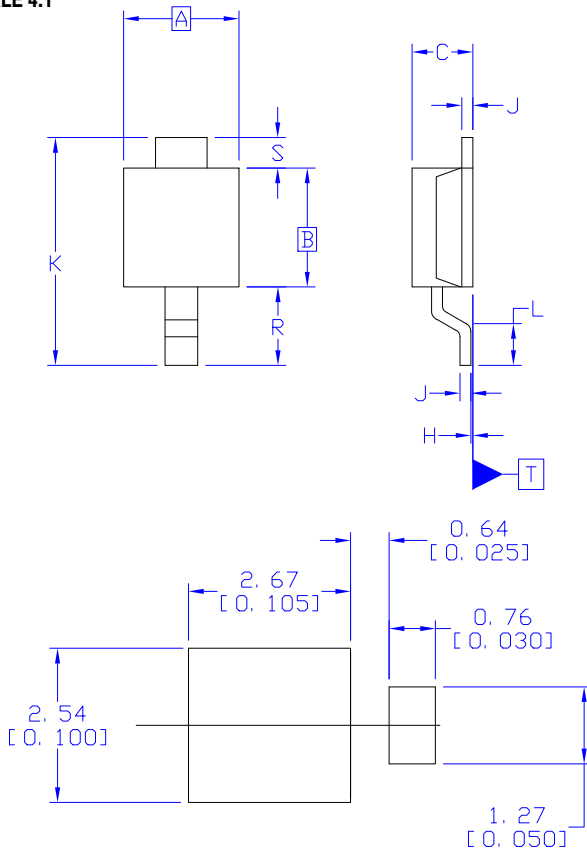
MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



SCALE 4:1

POWERMITE CASE 457 ISSUE G

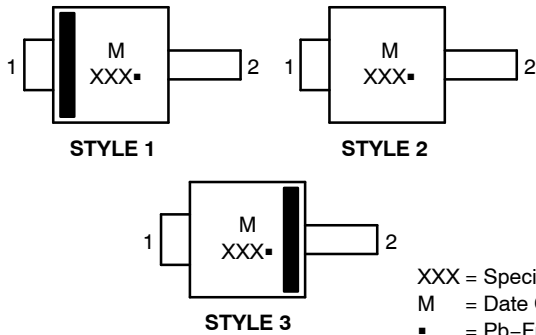
DATE 12 JAN 2022



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 | |

GENERIC MARKING DIAGRAMS*



XXX = Specific Device Code
M = Date Code
■ = Pb-Free Package

NOTES:

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

STYLE 1:

- CATHODE
- ANODE

STYLE 2:

- ANODE OR CATHODE
- CATHODE OR ANODE (BI-DIRECTIONAL)

STYLE 3:

- ANODE
- CATHODE

*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.

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

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