Surface Mount Schottky Power Rectifier

POWERMITE®
Power Surface Mount Package

MBRM1H100T3G

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.

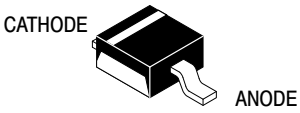
Features

- 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:

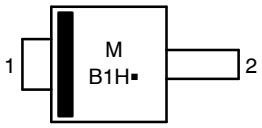
- Powermite® is JEDEC Registered as D0−216AA
- Case: Molded Epoxy
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Weight: 16.3 mg (Approximately)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Maximum for 10 Seconds

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 Specification Brochure, BRD8011/D.

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MAXIMUM RATINGS

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

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

ELECTRICAL CHARACTERISTICS

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

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TYPICAL CHARACTERISTICS

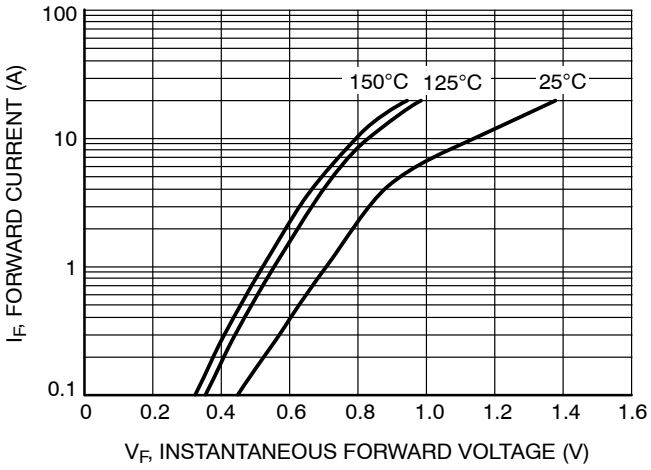


Figure 1. Typical Forward Voltage

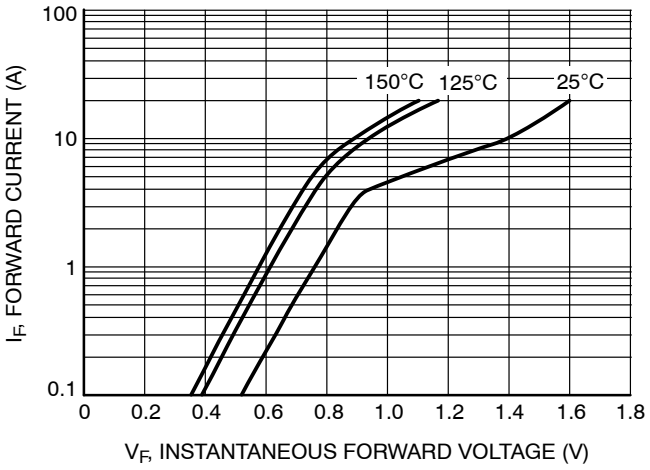


Figure 2. Maximum Forward Voltage

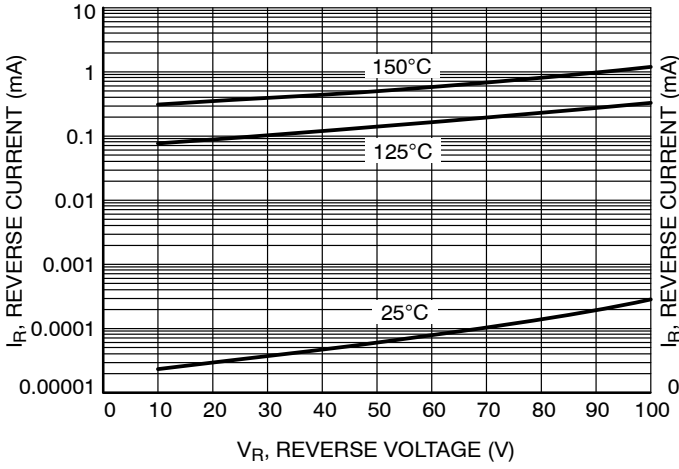


Figure 3. Typical Reverse Current

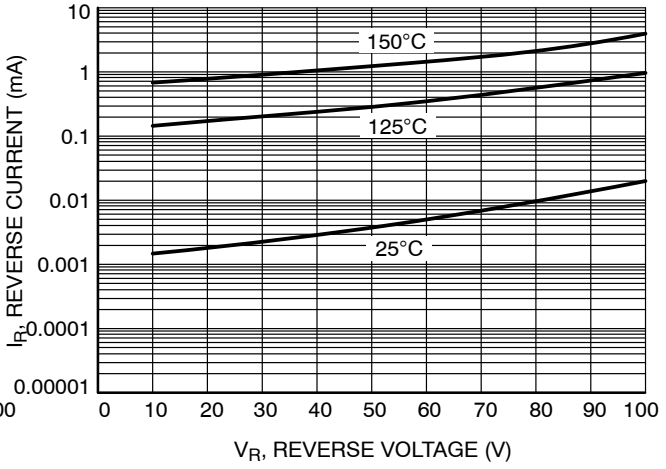


Figure 4. Maximum Reverse Current

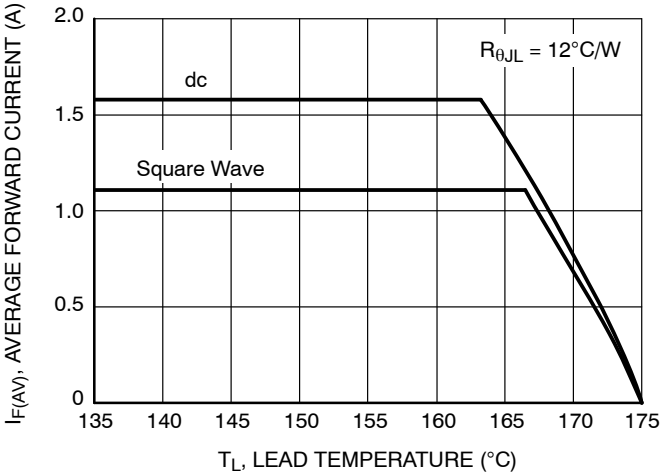


Figure 5. Current Derating

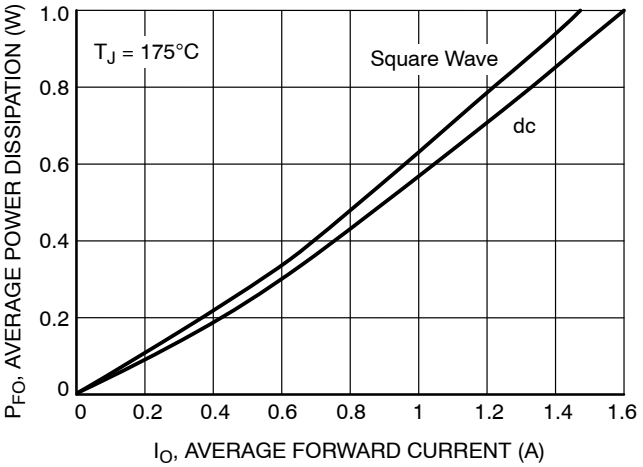


Figure 6. Forward Power Dissipation

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TYPICAL CHARACTERISTICS (continued)

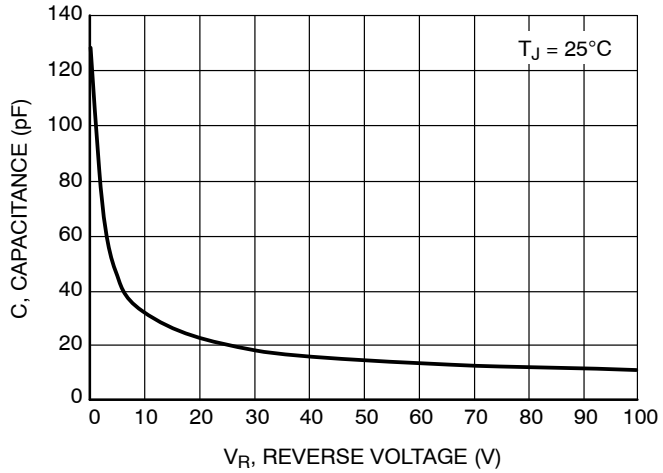


Figure 7. Capacitance

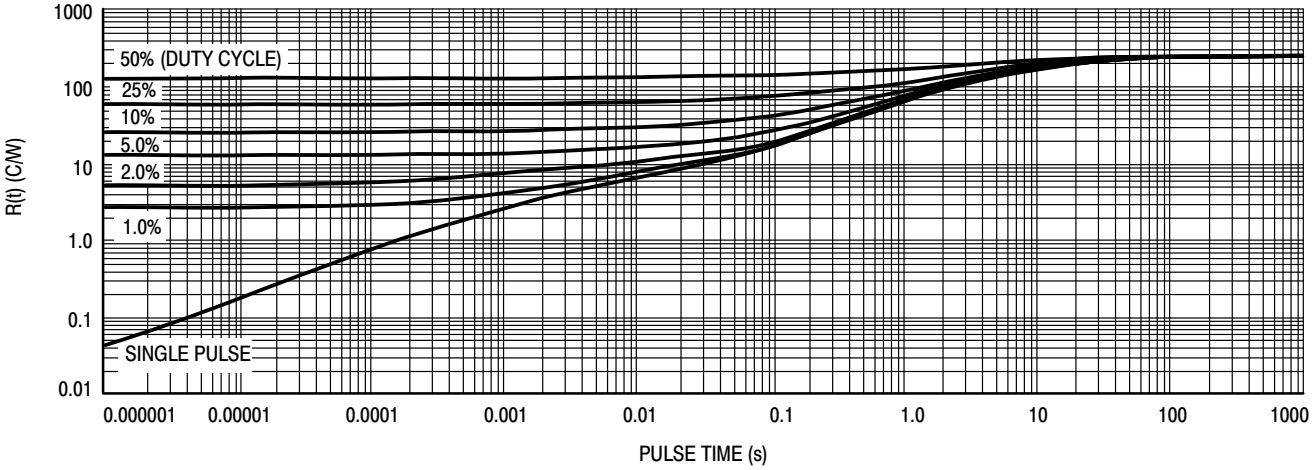


Figure 8. Thermal Response, Junction−to−Ambient (20 mm^2 pad)

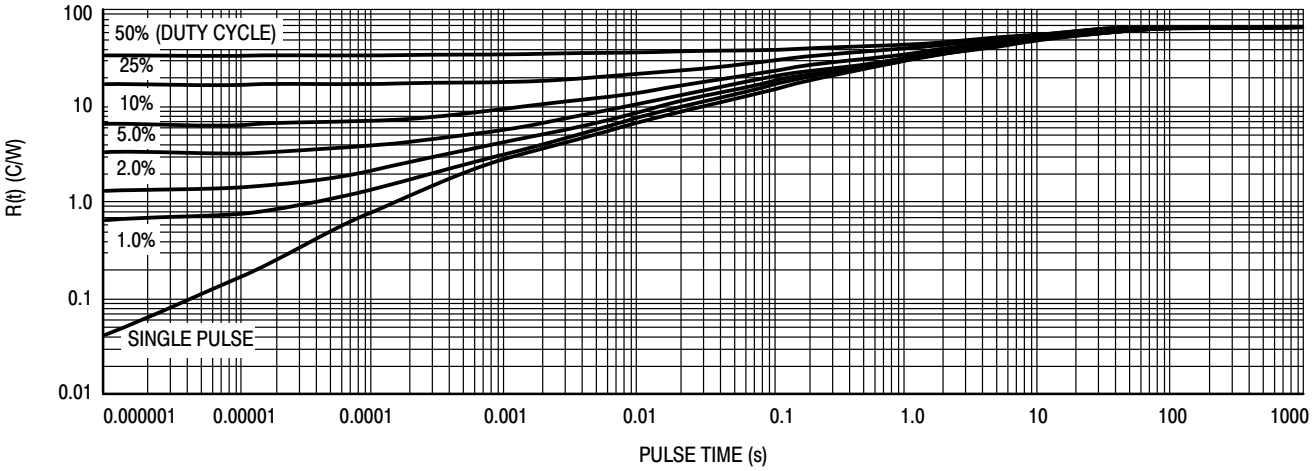


Figure 9. Thermal Response, Junction−to−Ambient (1 in^2 pad)

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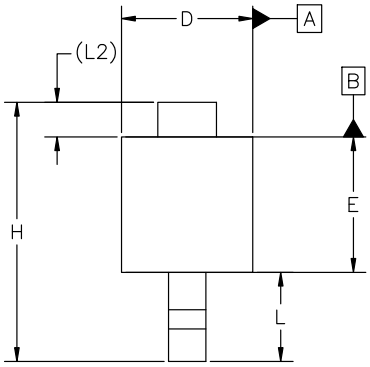
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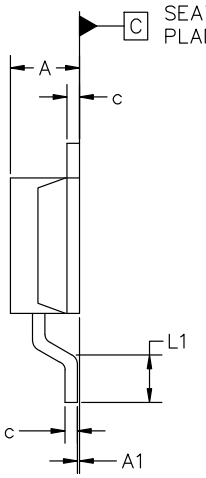


POWERMITE 1.90x1.96x1.00
CASE 457
ISSUE H

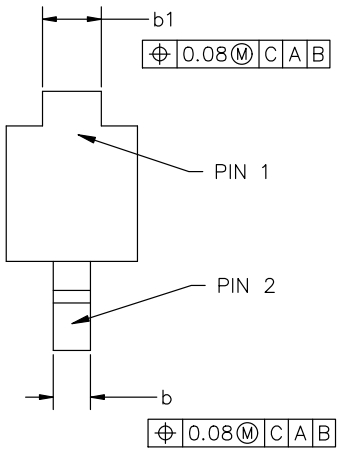
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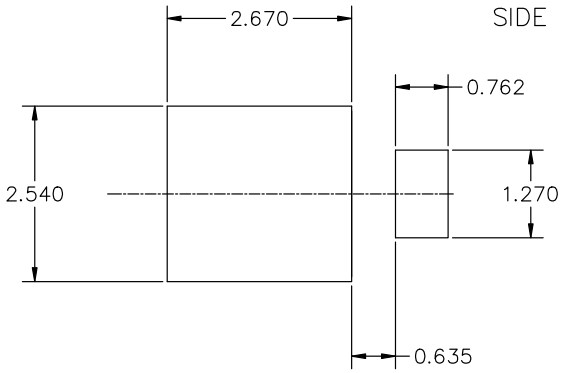
TOP VIEW



SIDE VIEW



BOTTOM VIEW



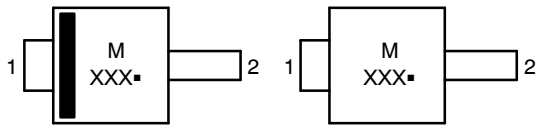
RECOMMENDED MOUNTING FOOTPRINT

*For additional information on our Pb−Free Strategy and Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

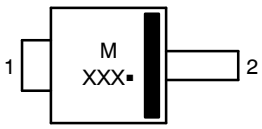
MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.85	1.00	1.15
A1	0.00	0.05	0.10
b	0.40	0.55	0.69
b1	0.70	0.85	1.00
c	0.10	0.18	0.25
D	1.75	1.90	2.05
E	1.75	1.96	2.18
H	3.60	3.75	3.90
L	1.20	1.35	1.50
L1	0.50	0.65	0.80
L2	0.50 REF		

NOTES:
1. DIMENSIONING AND TOLERANCING AS PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

GENERIC MARKING DIAGRAMS*



STYLE 1 **STYLE 2**



STYLE 3

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

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

*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 1.90x1.96x1.00**		**PAGE 1 OF 1**

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