

# MBR2H200SF

## Surface Mount Schottky Power Rectifier

### Plastic SOD-123FL Package

This device uses the Schottky Barrier principle with a large area metal-to-silicon power diode. Ideally suited for low voltage, high frequency rectification or as free wheeling and polarity protection diodes in surface mount applications where compact size and weight are critical to the system. 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

- Guardring for Stress Protection
- Low Forward Voltage
- Epoxy Meets UL 94 V-0
- Package Designed for Optimal Automated Board Assembly
- These are Pb-Free Devices

#### Mechanical Characteristics

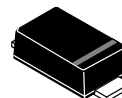
- Reel Options: MBR2H200SFT3G = 10,000 per 13 in reel/8 mm tape
- Device Marking: L2J
- Polarity Designator: Cathode Band
- Weight: 11.7 mg (approximately)
- Case: Epoxy, Molded
- Lead Finish: 100% Matte Sn (Tin)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL 1 Requirements



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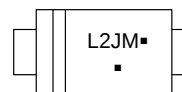
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### SCHOTTKY BARRIER RECTIFIER 2.0 AMPERES 200 VOLTS



SOD-123FL  
CASE 498

#### MARKING DIAGRAM



L2J = Specific Device Code  
M = Date Code  
■ = Pb-Free Package  
(Note: Microdot may be in either location)

#### ORDERING INFORMATION

| Device        | Package              | Shipping <sup>†</sup>  |
|---------------|----------------------|------------------------|
| MBR2H200SFT1G | SOD-123<br>(Pb-Free) | 3000 / Tape &<br>Reel  |
| MBR2H200SFT3G | SOD-123<br>(Pb-Free) | 10000 / Tape &<br>Reel |

<sup>†</sup>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.

# MBR2H200SF

## 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>$V_R$ | 200         | V                |
| Average Rectified Forward Current<br>( $T_L = 108^\circ\text{C}$ )                                          | $I_O$                           | 2.0         | A                |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz, $T_C = 105^\circ\text{C}$ )          | $I_{FRM}$                       | 4.0         | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 30          | A                |
| Storage and Operating Junction Temperature Range (Note 1)                                                   | $T_{stg}, T_J$                  | -55 to +150 | $^\circ\text{C}$ |

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)    | $\Psi_{JCL}$    | 23    | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 85    | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 3) | $R_{\theta JA}$ | 330   | $^\circ\text{C/W}$ |

## ELECTRICAL CHARACTERISTICS

| Characteristic                                                                                                                                                                                                                                                               | Symbol | Value                        | Unit                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------|---------------------|
| Maximum Instantaneous Forward Voltage (Note 4)<br>( $I_F = 1.0\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br>( $I_F = 2.0\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br>( $I_F = 1.0\text{ A}$ , $T_J = 125^\circ\text{C}$ )<br>( $I_F = 2.0\text{ A}$ , $T_J = 125^\circ\text{C}$ ) | $V_F$  | 0.86<br>0.94<br>0.71<br>0.78 | V                   |
| Maximum Instantaneous Reverse Current (Note 4)<br>(Rated dc Voltage, $T_J = 25^\circ\text{C}$ )<br>(Rated dc Voltage, $T_J = 125^\circ\text{C}$ )                                                                                                                            | $I_R$  | 200<br>2                     | $\mu\text{A}$<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<sup>2</sup> copper pad size (Approximately 1 in<sup>2</sup>) 1 oz FR4 Board.
3. Mounted with pad size approximately 20 mm<sup>2</sup> copper, 1 oz FR4 Board.
4. Pulse Test: Pulse Width  $\leq 380\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

TYPICAL CHARACTERISTICS

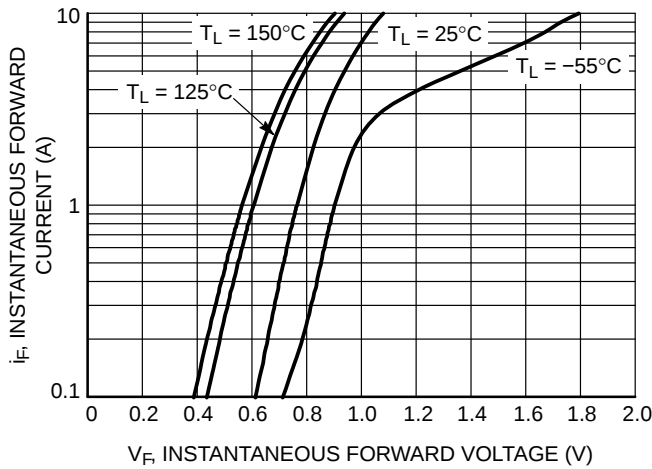


Figure 1. Typical Instantaneous Forward Characteristics

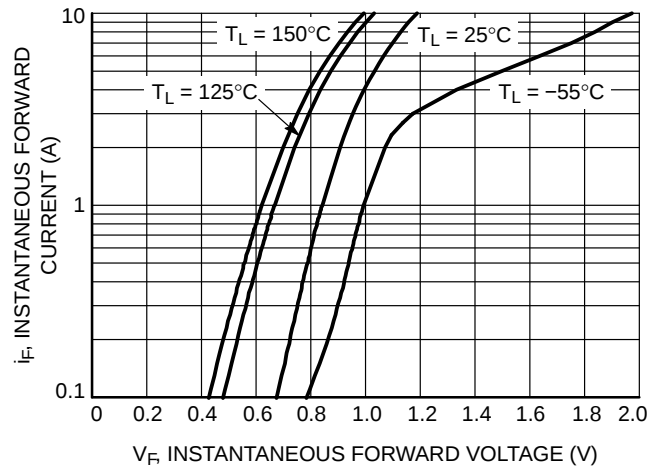


Figure 2. Maximum Instantaneous Forward Characteristics

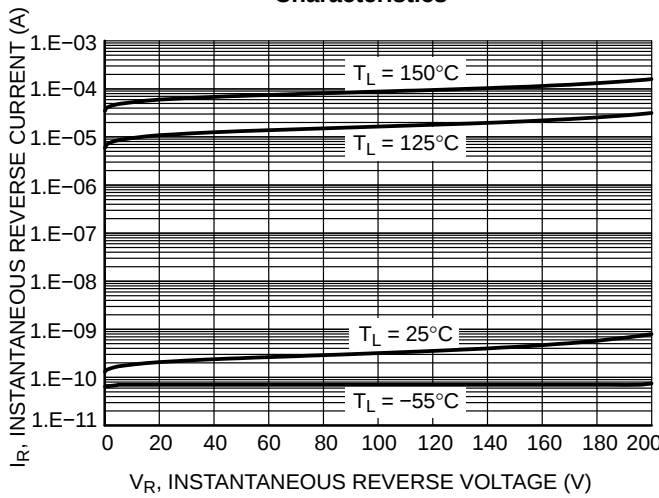


Figure 3. Typical Reverse Characteristics

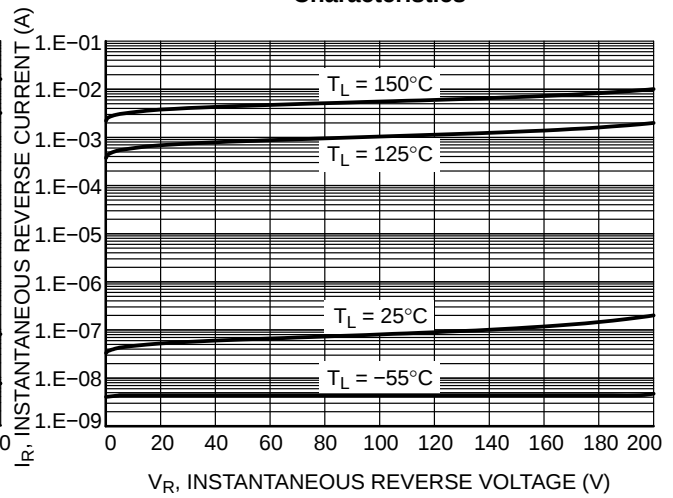


Figure 4. Maximum Reverse Characteristics

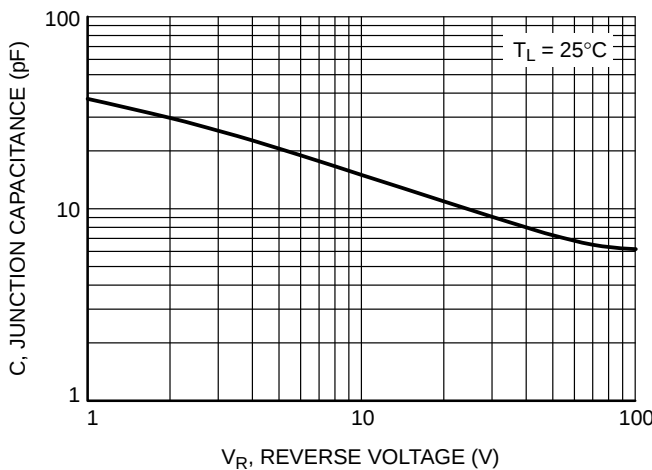


Figure 5. Typical Junction Capacitance

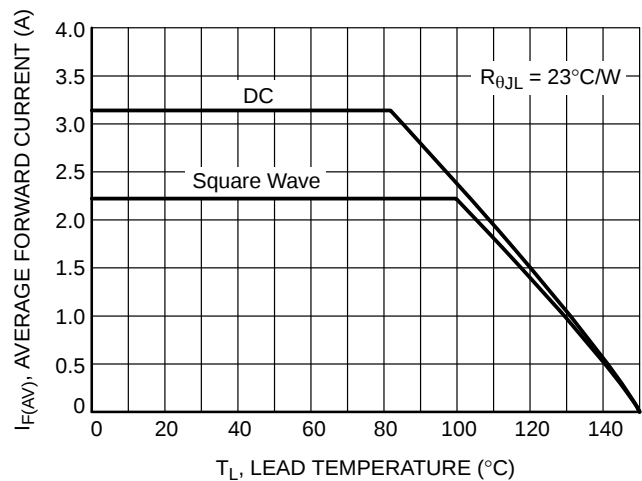


Figure 6. Current Derating per Diode

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## TYPICAL CHARACTERISTICS

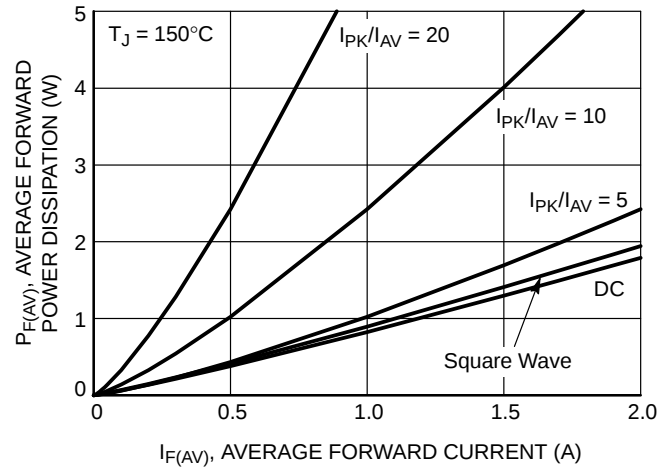


Figure 7. Forward Power Dissipation

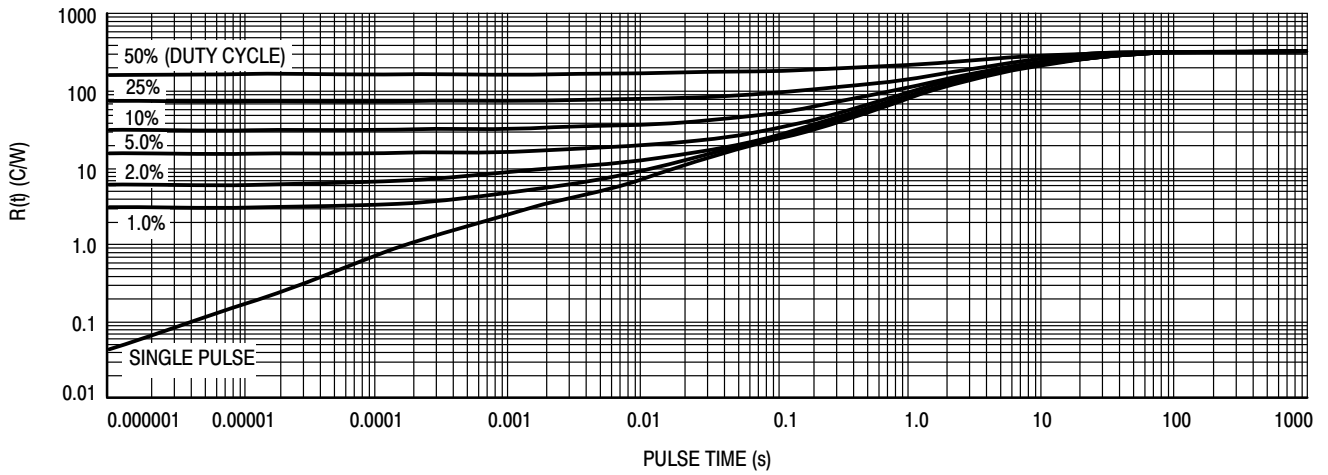


Figure 8. Thermal Response, Junction-to-Ambient (20 mm<sup>2</sup> pad)

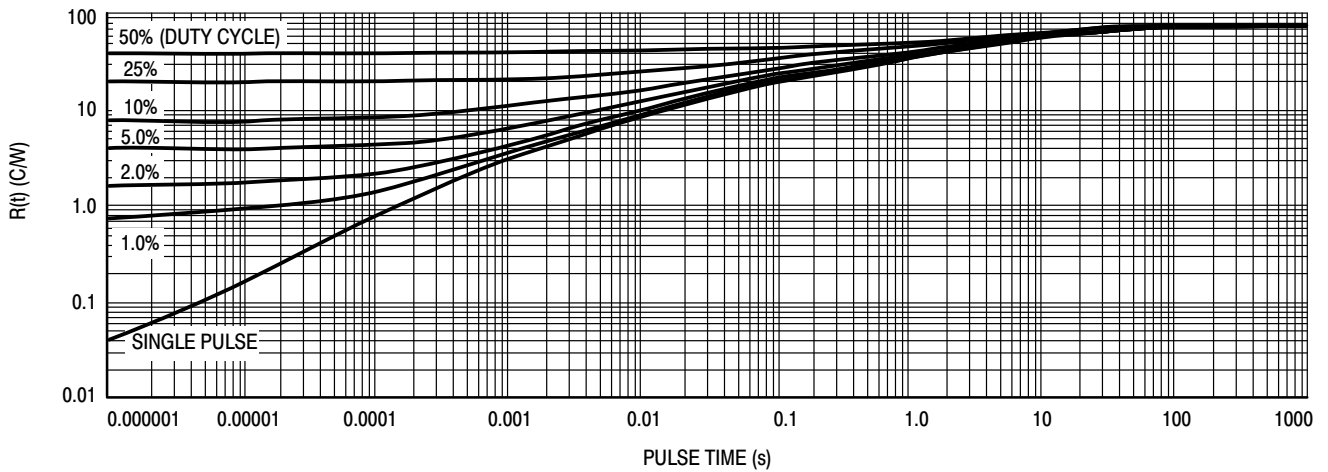
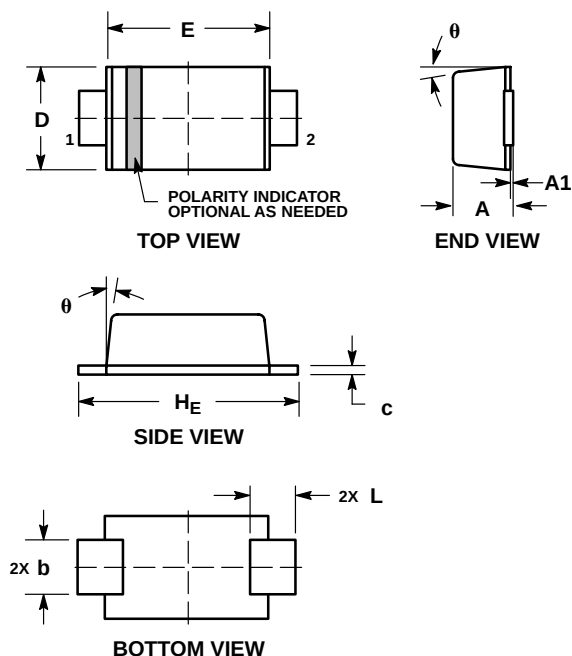


Figure 9. Thermal Response, Junction-to-Ambient (1 in<sup>2</sup> pad)

# MBR2H200SF

## PACKAGE DIMENSIONS

SOD-123FL  
CASE 498  
ISSUE D

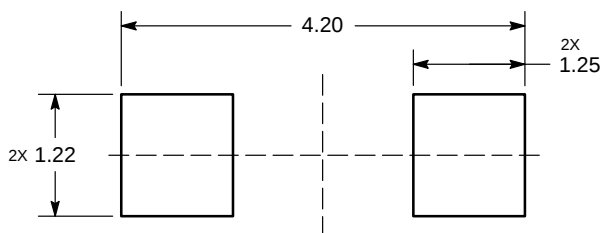


### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH.
4. DIMENSIONS D AND J ARE TO BE MEASURED ON FLAT SECTION OF THE LEAD: BETWEEN 0.10 AND 0.25 MM FROM THE LEAD TIP.

| DIM      | MILLIMETERS |      |      | INCHES |       |       |
|----------|-------------|------|------|--------|-------|-------|
|          | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A        | 0.90        | 0.95 | 0.98 | 0.035  | 0.037 | 0.039 |
| A1       | 0.00        | 0.05 | 0.10 | 0.000  | 0.002 | 0.004 |
| b        | 0.70        | 0.90 | 1.10 | 0.028  | 0.035 | 0.043 |
| c        | 0.10        | 0.15 | 0.20 | 0.004  | 0.006 | 0.008 |
| D        | 1.50        | 1.65 | 1.80 | 0.059  | 0.065 | 0.071 |
| E        | 2.50        | 2.70 | 2.90 | 0.098  | 0.106 | 0.114 |
| L        | 0.55        | 0.75 | 0.95 | 0.022  | 0.030 | 0.037 |
| HE       | 3.40        | 3.60 | 3.80 | 0.134  | 0.142 | 0.150 |
| $\theta$ | 0°          | —    | 8°   | 0°     | —     | 8°    |

### RECOMMENDED SOLDERING FOOTPRINT\*



DIMENSIONS: MILLIMETERS

\*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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