

# MBRAF3200, NRVBAF3200

## Surface Mount Schottky Power Rectifier

This device employs the Schottky Barrier principle in a large area metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlay contact. 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.

### Features

- Small Compact Surface Mountable Package with J-Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Very High Blocking Voltage – 200 V
- 150°C Operating Junction Temperature
- Guard-Ring for Stress Protection
- NRVB 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

- Case: Epoxy, Molded, Epoxy Meets UL 94, V-0
- Weight: 95 mg (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Cathode Polarity Band
- Device Meets MSL 1 Requirements
- ESD Ratings: Machine Model = A  
Human Body Model = 1B

### 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>( $T_L = 100^\circ\text{C}$ )                                             | $I_{F(AV)}$                     | 3.0         | A    |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions<br>Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 100         | A    |
| Operating Junction Temperature                                                                                 | $T_J$                           | -65 to +150 | °C   |

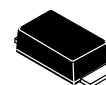
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



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### SCHOTTKY BARRIER RECTIFIER 3.0 AMPERE 200 VOLTS



SMA-FL  
CASE 403AA  
STYLE 6

### MARKING DIAGRAM



RAC = Specific Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package

### ORDERING INFORMATION

| Device        | Package             | Shipping <sup>†</sup> |
|---------------|---------------------|-----------------------|
| MBRAF3200T3G  | SMA-FL<br>(Pb-Free) | 5000 / Tape & Reel    |
| NRVBAF3200T3G | SMA-FL<br>(Pb-Free) | 5000 / Tape & 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.

# THERMAL CHARACTERISTICS

| Characteristic                                   | Symbol          | Value | Unit          |
|--------------------------------------------------|-----------------|-------|---------------|
| Thermal Resistance, Junction-to-Lead (Note 1)    | $R_{\theta JL}$ | 25    | $^{\circ}C/W$ |
| Thermal Resistance, Junction-to-Ambient (Note 1) | $R_{\theta JA}$ | 90    | $^{\circ}C/W$ |

1. 1 inch square pad size (1 × 0.5 inch) for each lead on FR4 board.

# ELECTRICAL CHARACTERISTICS

| Characteristic                                                                                                                                                                                        | Symbol | Value                | Unit     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------|----------|
| Maximum Instantaneous Forward Voltage (Note 2)<br>( $I_F = 3.0\text{ A}$ , $T_J = 25^{\circ}C$ )<br>( $I_F = 4.0\text{ A}$ , $T_J = 25^{\circ}C$ )<br>( $I_F = 3.0\text{ A}$ , $T_J = 150^{\circ}C$ ) | $V_F$  | 0.84<br>0.86<br>0.62 | V        |
| Maximum Instantaneous Reverse Current (Note 2)<br>(Rated dc Voltage, $T_J = 25^{\circ}C$ )<br>(Rated dc Voltage, $T_J = 150^{\circ}C$ )                                                               | $I_R$  | 1.0<br>6.0           | mA<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. Pulse Test: Pulse Width = 300  $\mu$ s, Duty Cycle  $\leq$  2.0%.

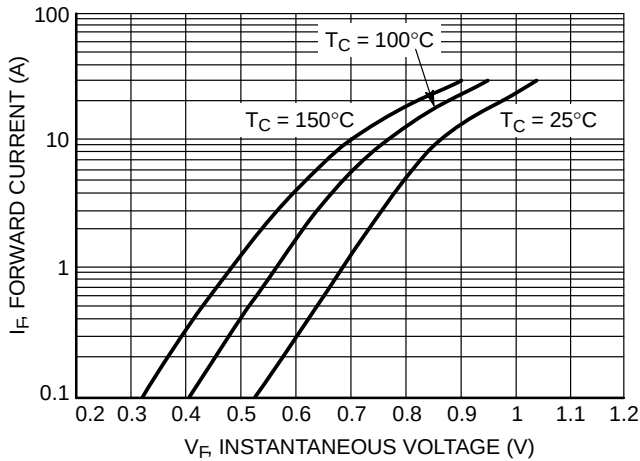


Figure 1. Typical Forward Voltage

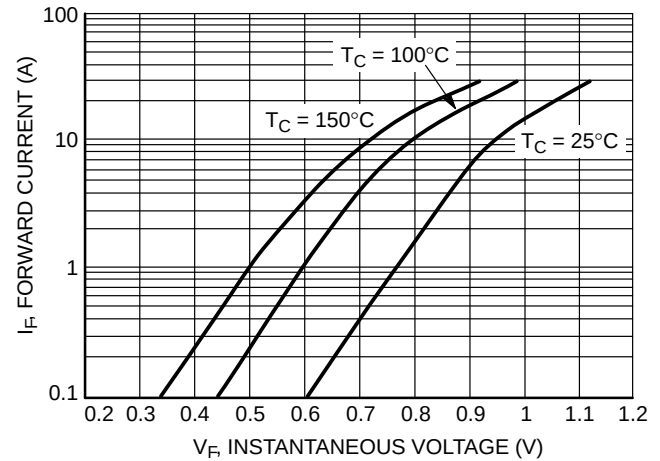


Figure 2. Maximum Forward Voltage

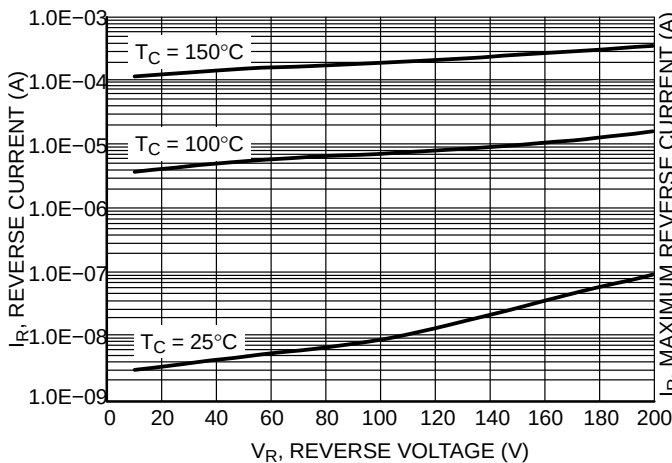


Figure 3. Typical Reverse Current

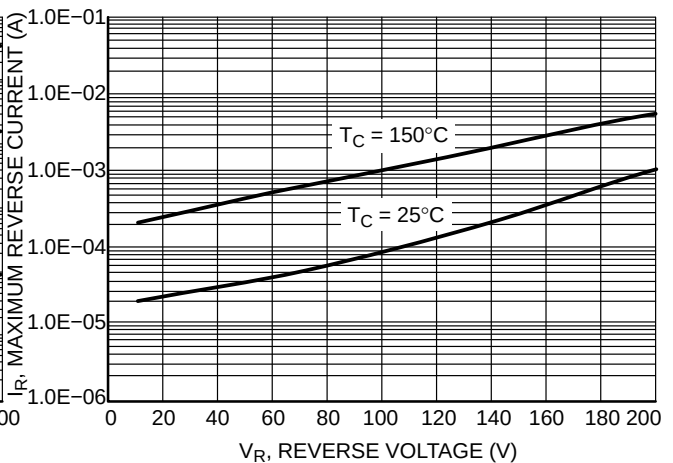


Figure 4. Maximum Reverse Current

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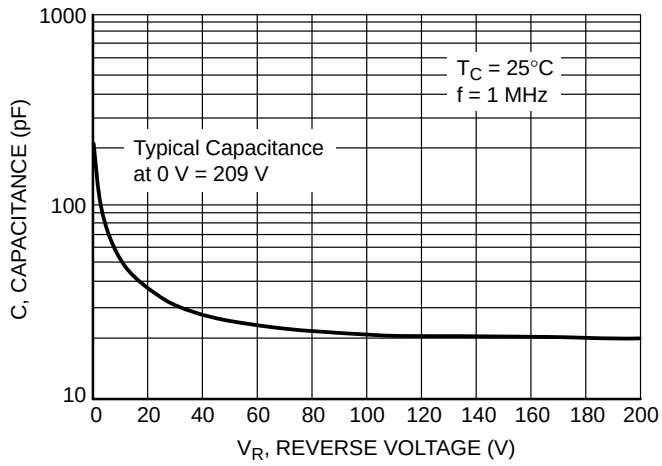


Figure 5. Typical Capacitance

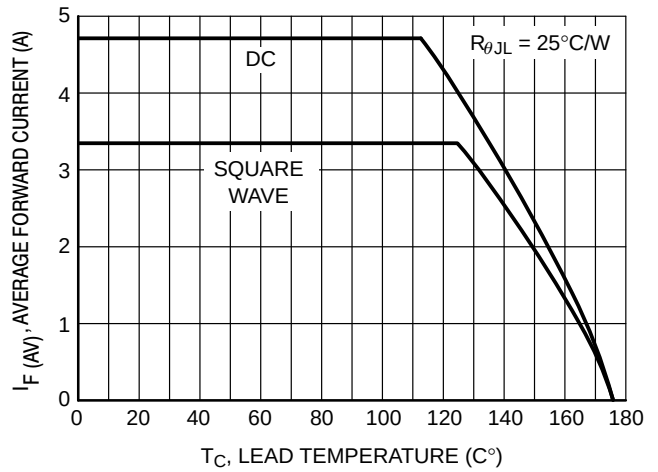


Figure 6. Current Derating

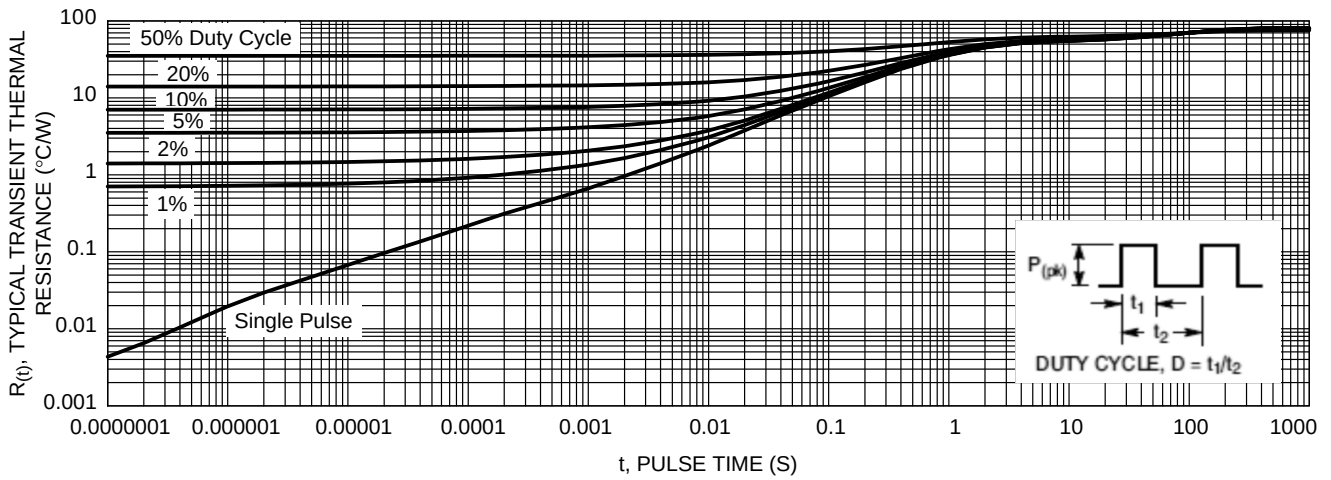
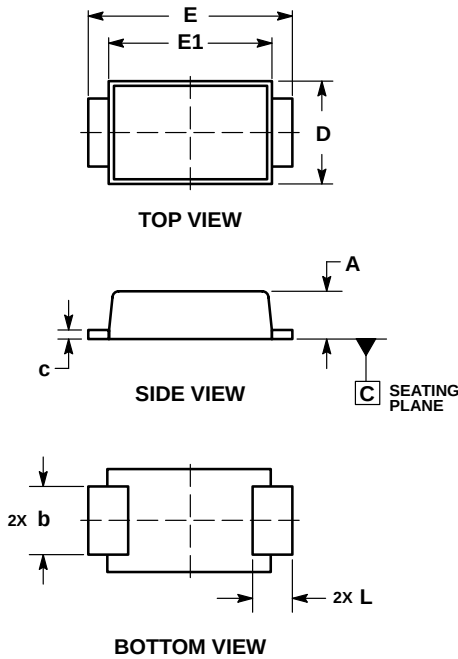


Figure 7. Typical Transient Thermal Response, Junction-to-Ambient

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## PACKAGE DIMENSIONS

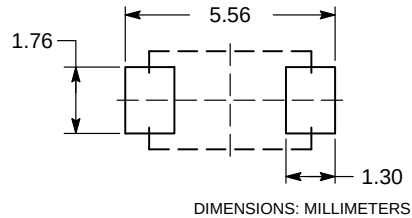
### SMA-FL CASE 403AA ISSUE A



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 0.90        | 1.10 |
| b   | 1.25        | 1.65 |
| c   | 0.15        | 0.30 |
| D   | 2.40        | 2.80 |
| E   | 4.80        | 5.40 |
| E1  | 4.00        | 4.60 |
| L   | 0.70        | 1.10 |

### RECOMMENDED SOLDER FOOTPRINT\*



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

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