

# MRS1504T3G, NRVS1504T3G

## Surface Mount Standard Recovery Power Rectifier

### SMB Power Surface Mount Package

Features mesa epitaxial construction with glass passivation. Ideally suited for high frequency switching power supplies; free wheeling diodes and polarity protection diodes.

#### Features

- Compact Package with J-Bend Leads Ideal for Automated Handling
- Stable, High Temperature, Glass Passivated Junction
- AEC-Q101 Qualified and PPAP Capable
- NRVS Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- All Packages are Pb-Free\*

#### Mechanical Characteristics:

- Case: Molded Epoxy
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 95 mg (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Maximum Temperature of 260°C / 10 Seconds for Soldering
- Polarity: Notch and/or Band in Plastic Body Indicates Cathode Lead
- ESD Ratings:
  - ◆ Machine Model = C
  - ◆ Human Body Model = 3A



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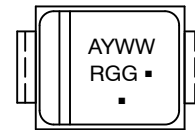
<http://onsemi.com>

### STANDARD RECOVERY RECTIFIER 1.5 AMPERES, 400 VOLTS



SMB  
CASE 403A  
PLASTIC

#### MARKING DIAGRAM



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

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

| Device      | Package          | Shipping <sup>†</sup>  |
|-------------|------------------|------------------------|
| MRS1504T3G  | SMB<br>(Pb-Free) | 2,500 /<br>Tape & Reel |
| NRVS1504T3G | SMB<br>(Pb-Free) | 2,500 /<br>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 Specifications Brochure, BRD8011/D.

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

# MRS1504T3G, NRV51504T3G

## 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>$V_R$ | 400        | V                |
| Average Rectified Forward Current<br>(At Rated $V_R$ , $T_I = 118^\circ\text{C}$ )                           | $I_O$                           | 1.5        | A                |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz, $T_I = 118^\circ\text{C}$ )           | $I_{FRM}$                       | 3.0        | A                |
| Non-Repetitive Peak Surge Current<br>(Surge applied at rated load conditions, halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 50         | A                |
| Storage/Operating Case Temperature Range   | $T_{stg}$ , $T_C$               | -55 to 150 | $^\circ\text{C}$ |
| Operating Temperature Range  | $T_J$                           | -55 to 150 | $^\circ\text{C}$ |

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.

## THERMAL CHARACTERISTICS

| Rating  | Symbol    | Value | Unit                      |
|---|-----------|-------|---------------------------|
| Thermal Resistance, Junction-to-Lead (Note 1)                       | $R_{tjl}$ | 18    | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Ambient (on 1" sq. Cu. PCB pattern) | $R_{tja}$ | 79    | $^\circ\text{C}/\text{W}$ |

1. Minimum pad size.

## ELECTRICAL CHARACTERISTICS

| Rating  | Symbol | $T_J = 25^\circ\text{C}$ | $T_J = 100^\circ\text{C}$ | Unit          |
|---|--------|--------------------------|---------------------------|---------------|
| Maximum Instantaneous Forward Voltage (Note 2), see Figure 2<br>( $I_F = 1.5\text{ A}$ )<br>( $I_F = 2.25\text{ A}$ ) | $V_F$  | 1.04<br>1.10             | 0.96<br>1.02              | V             |
| Maximum Instantaneous Reverse Current, see Figure 4<br>( $V_R = 400\text{ V}$ )<br>( $V_R = 200\text{ V}$ )           | $I_R$  | 1.0<br>0.5               | 340<br>180                | $\mu\text{A}$ |

2. Pulse Test: Pulse Width  $\leq 250\ \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

# MRS1504T3G, NRVS1504T3G

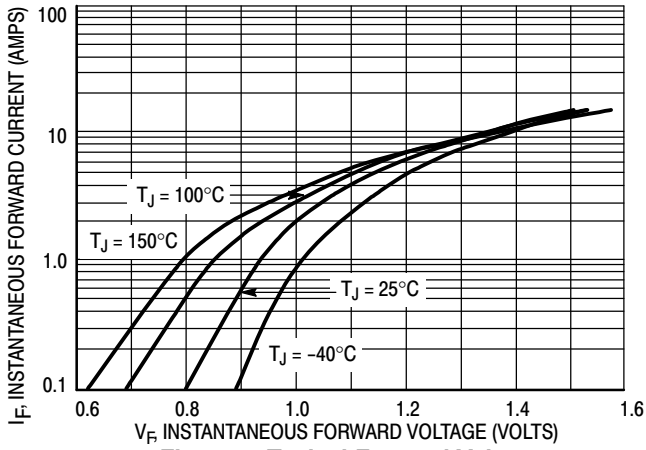


Figure 1. Typical Forward Voltage

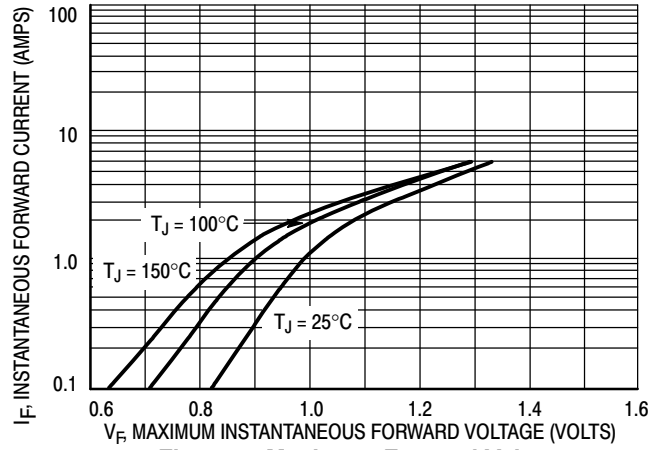


Figure 2. Maximum Forward Voltage

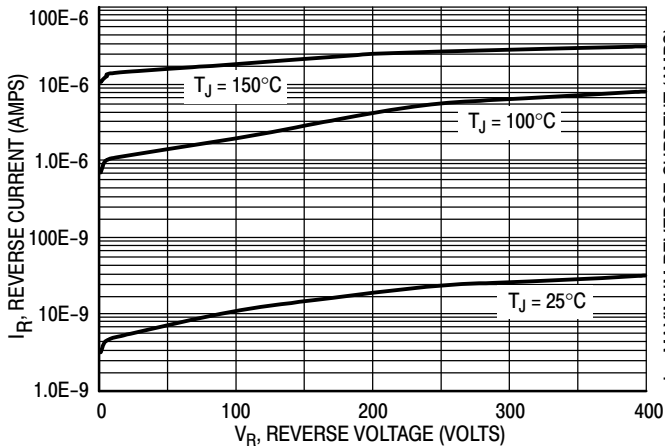


Figure 3. Typical Reverse Current

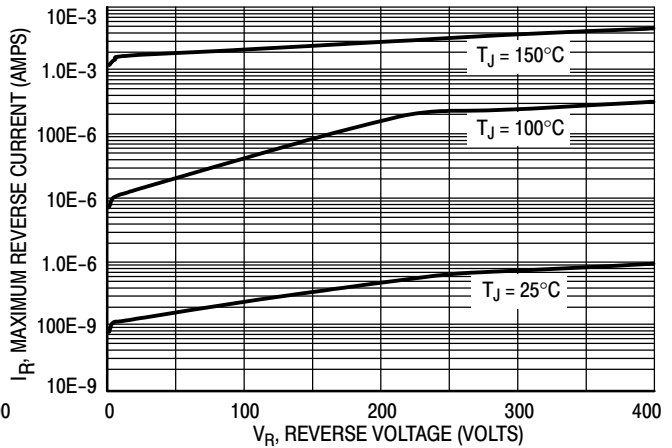


Figure 4. Maximum Reverse Current

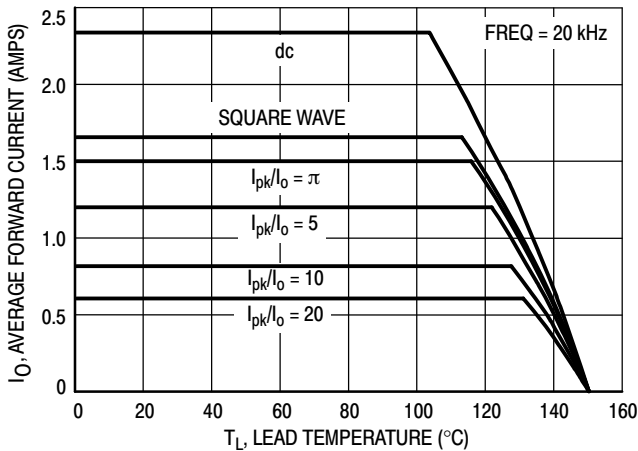


Figure 5. Current Derating

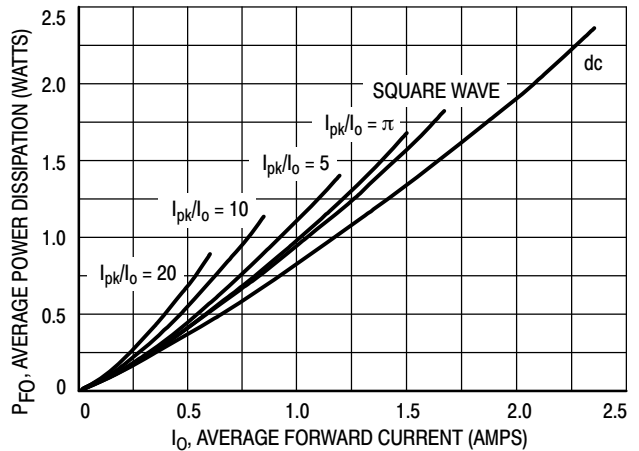


Figure 6. Forward Power Dissipation

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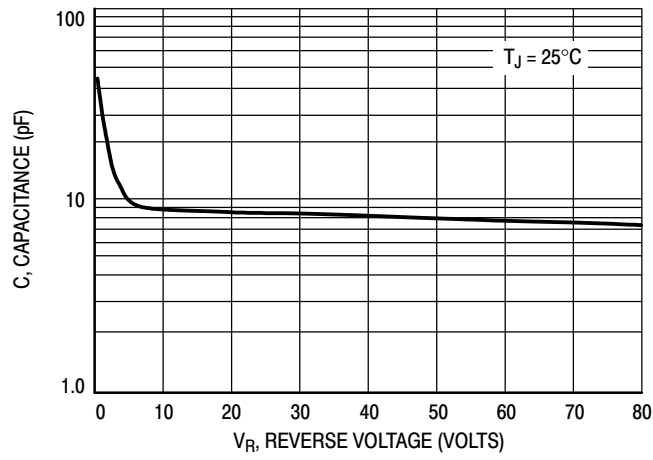


Figure 7. Capacitance

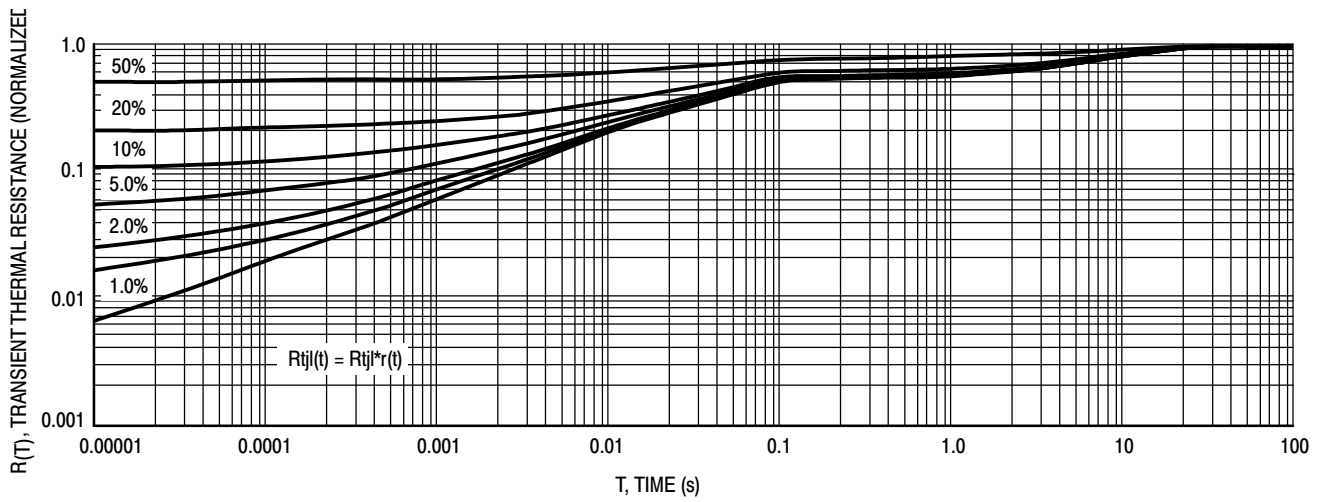


Figure 8. Thermal Response, Junction-to-Lead

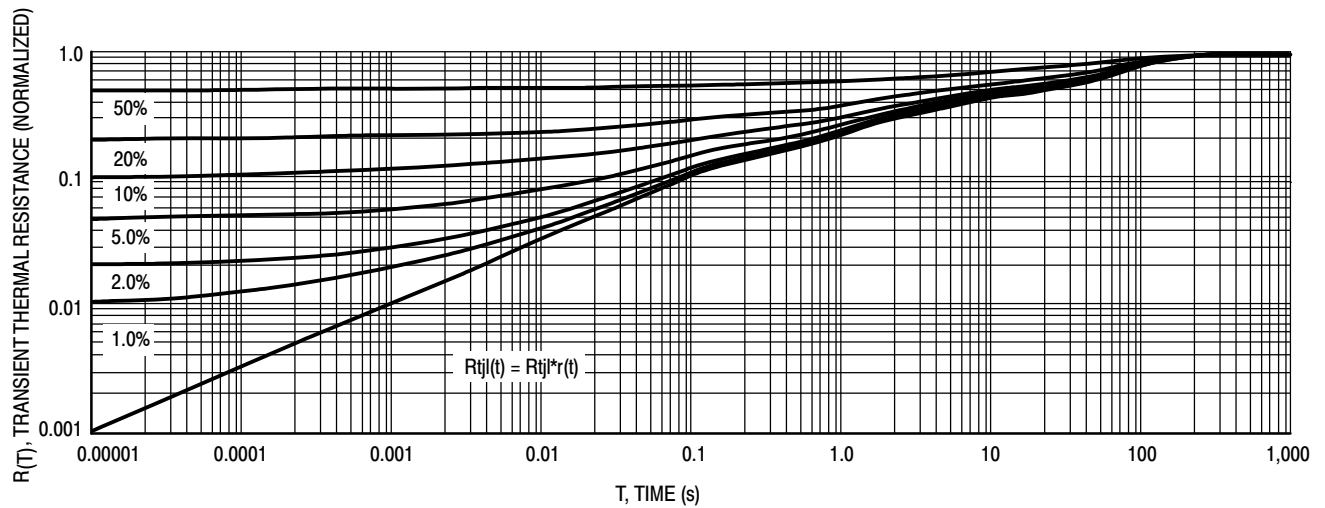


Figure 9. Thermal Response, Junction-to-Ambient

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

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SCALE 1:1

Polarity Band



SCALE 1:1

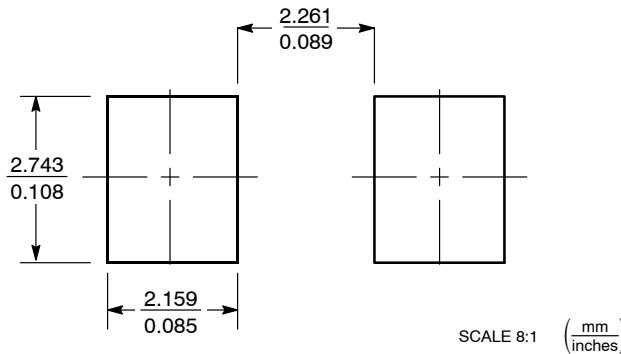
Non-Polarity Band

**SMB**  
CASE 403A-03  
ISSUE J

DATE 19 JUL 2012



**SOLDERING FOOTPRINT\***



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

- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION b SHALL BE MEASURED WITHIN DIMENSION L1.

| DIM | MILLIMETERS |      |      | INCHES    |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | 1.95        | 2.30 | 2.47 | 0.077     | 0.091 | 0.097 |
| A1  | 0.05        | 0.10 | 0.20 | 0.002     | 0.004 | 0.008 |
| b   | 1.96        | 2.03 | 2.20 | 0.077     | 0.080 | 0.087 |
| c   | 0.15        | 0.23 | 0.31 | 0.006     | 0.009 | 0.012 |
| D   | 3.30        | 3.56 | 3.95 | 0.130     | 0.140 | 0.156 |
| E   | 4.06        | 4.32 | 4.60 | 0.160     | 0.170 | 0.181 |
| HE  | 5.21        | 5.44 | 5.60 | 0.205     | 0.214 | 0.220 |
| L   | 0.76        | 1.02 | 1.60 | 0.030     | 0.040 | 0.063 |
| L1  | 0.51 REF    |      |      | 0.020 REF |       |       |

**GENERIC MARKING DIAGRAM\***



- XXXXX = Specific Device Code
  - A = Assembly Location
  - Y = Year
  - WW = Work Week
  - = Pb-Free Package
- (Note: Microdot may be in either location)

\*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.

|                         |                    |  |
|-------------------------|--------------------|--|
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