

# Surface Mount Schottky Power Rectifier

## MBRAF1540T3G, NRVBAF1540T3G

### SCHOTTKY BARRIER RECTIFIER 1.5 AMPERE 40 VOLTS

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

- Low Profile Package for Space Constrained Applications
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- 150°C Operating Junction Temperature
- Guard-Ring for Stress Protection
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These are Pb-Free and Halide-Free Devices

#### 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 = C  
Human Body Model = 3B

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	40	V
Average Rectified Forward Current (At Rated $V_R$ , $T_C = 100^\circ\text{C}$ )	$I_O$	1.5	A
Peak Repetitive Forward Current (At Rated $V_R$ , Square Wave, 100 kHz, $T_C = 130^\circ\text{C}$ )	$I_{FRM}$	3.0	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	40	A
Storage/Operating Case Temperature	$T_{stg}, T_C$	-55 to +150	°C
Operating Junction Temperature	$T_J$	-55 to +150	°C
Voltage Rate of Change (Rated $V_R$ , $T_J = 25^\circ\text{C}$ )	dv/dt	10,000	V/ $\mu\text{s}$

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.



SMA-FL  
CASE 403AA  
STYLE 6

#### MARKING DIAGRAM



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

#### ORDERING INFORMATION

Device	Package	Shipping†
NRVBAF1540T3G	SMA-FL (Pb-Free)	5000 / Tape & Reel

#### DISCONTINUED (Note 1)

MBRAF1540T3G	SMA-FL (Pb-Free)	5000 / Tape & Reel
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†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.

1. **DISCONTINUED:** This device is not recommended for new design. Please contact your **onsemi** representative for information. The most current information on this device may be available on [www.onsemi.com](http://www.onsemi.com).

# MBRAF1540T3G, NRVBAF1540T3G

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction-to-Lead (Note 2)	$R_{\theta JL}$	25	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	90	

2. 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board.

## ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value		Unit
		$T_J = 25^{\circ}C$	$T_J = 125^{\circ}C$	
Maximum Instantaneous Forward Voltage (Note 3)  see Figure 2  ( $i_F = 1.5 A$ ) ( $i_F = 3.0 A$ )	$v_F$			V
		0.46 0.54	0.39 0.54	
Maximum Instantaneous Reverse Current (Note 3)  see Figure 4  ( $V_R = 40 V$ ) ( $V_R = 20 V$ )	$I_R$			mA
		0.8 0.1	5.7 1.6	

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.

3. Pulse Test: Pulse Width  $\leq 250 \mu s$ , Duty Cycle  $\leq 2.0\%$ .

# MBRAF1540T3G, NRVBAF1540T3G

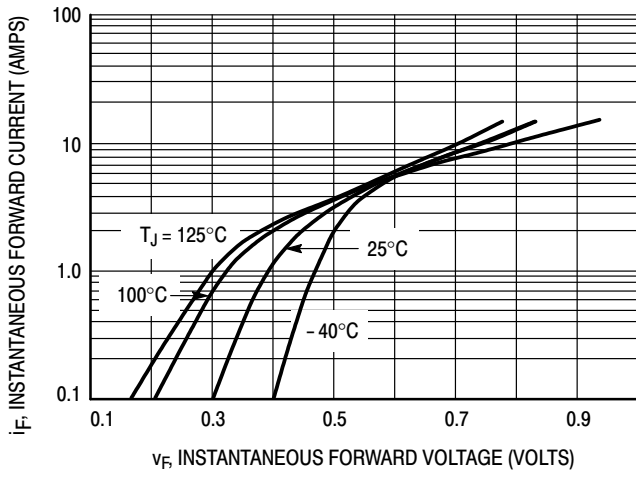


Figure 1. Typical Forward Voltage

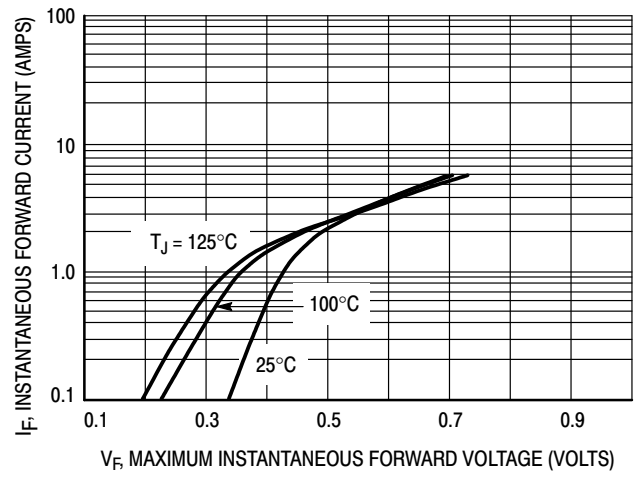


Figure 2. Maximum Forward Voltage

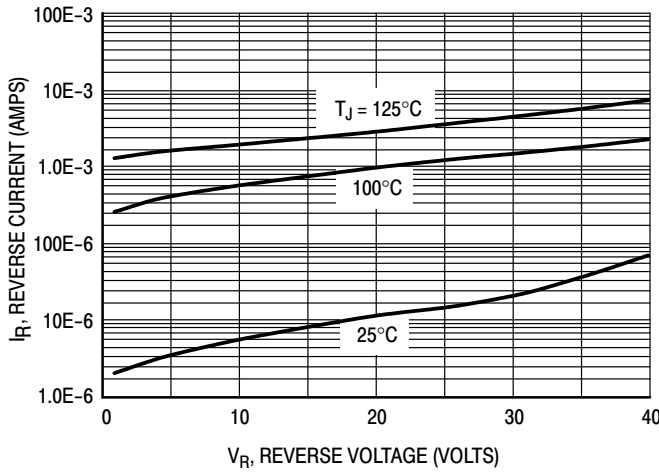


Figure 3. Typical Reverse Current

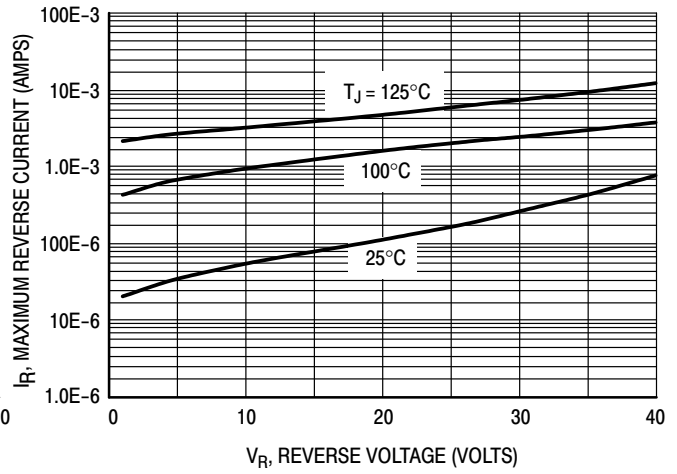


Figure 4. Maximum Reverse Current

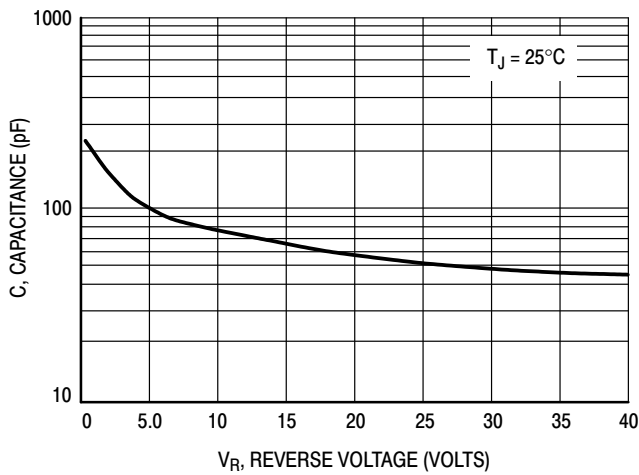


Figure 5. Capacitance

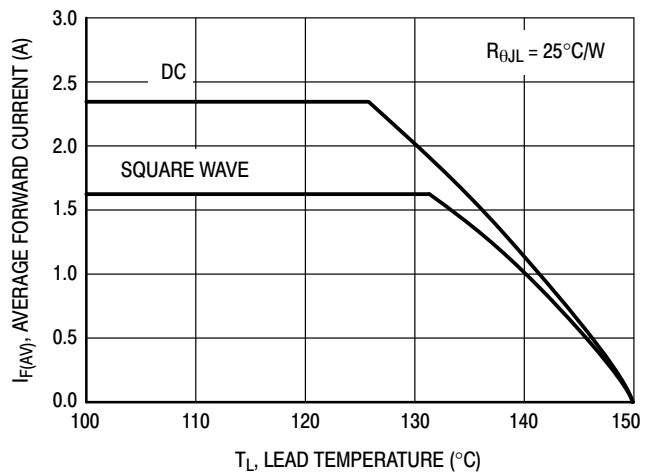


Figure 6. Current Derating

# MBRAF1540T3G, NRVBAF1540T3G

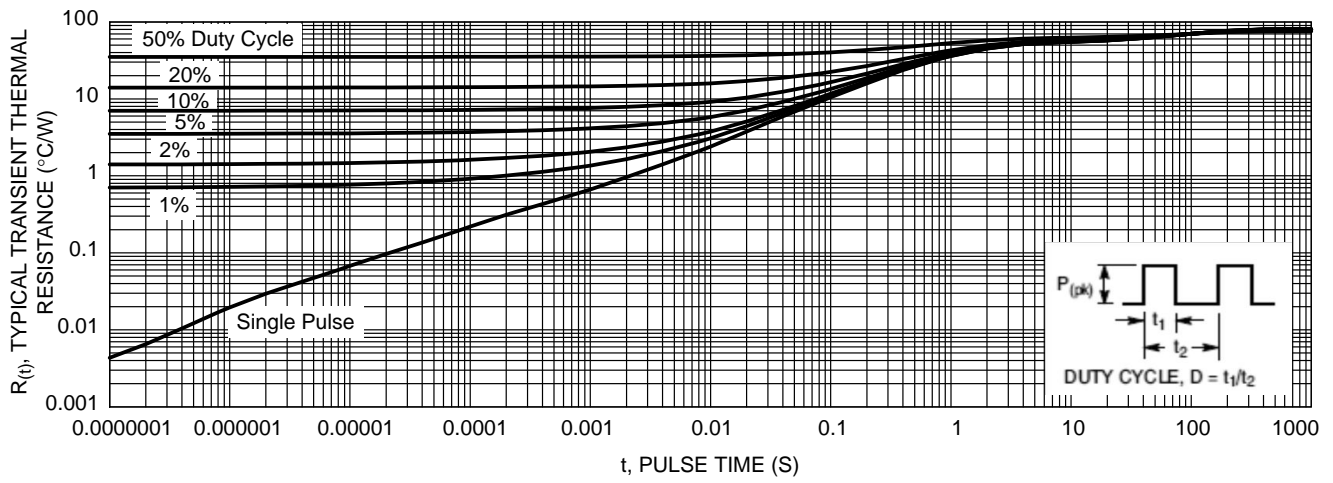
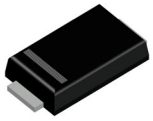


Figure 7. Typical Transient Thermal Response, Junction-to-Ambient

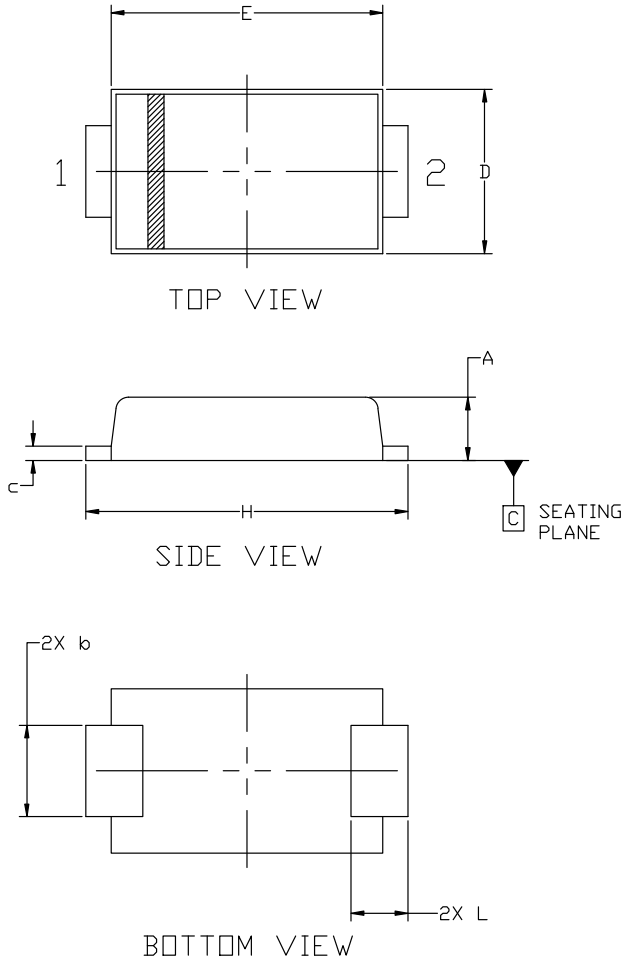
# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS



**SMA 2.60x4.30x1.00**  
**CASE 403AA**  
**ISSUE A**

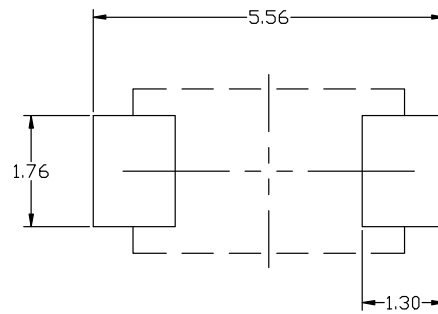
DATE 18 JAN 2024



**NOTES:**

1. DIMENSIONING AND TOLERANCING AS PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. FL

MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.90	1.00	1.10
b	1.25	1.45	1.65
c	0.15	0.225	0.30
D	2.40	2.60	2.80
E	4.00	4.30	4.60
H	4.80	5.10	5.40
L	0.70	0.90	1.10



**RECOMMENDED MOUNTING 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.

**GENERIC MARKING DIAGRAM\***



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

\*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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