

# NTSAF345, NRVTSAF345

## Trench-based Schottky Rectifier

### Features

- Fine Lithography Trench-based Schottky Technology for Very Low Forward Voltage and Low Leakage
- Fast Switching with Exceptional Temperature Stability
- Low Power Loss and Lower Operating Temperature
- Higher Efficiency for Achieving Regulatory Compliance
- High Surge Capability
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### Typical Applications

- Switching Power Supplies including Tablet Adapters, and Flat Panel Display
- High Frequency and DC-DC Converters
- Freewheeling and OR-ing diodes
- Reverse Battery Protection
- Instrumentation

### Mechanical Characteristics:

- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94-0 @ 0.125 in.
- 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
- Weight: 95 mg (Approximately)



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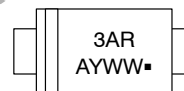
[www.onsemi.com](http://www.onsemi.com)

**TRENCH SCHOTTKY  
RECTIFIER  
3.0 AMPERE  
45 VOLTS**



**SMA-FL  
CASE 403AA  
STYLE 6**

### MARKING DIAGRAM



3AR = Specific Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package

### ORDERING INFORMATION

| Device        | Package             | Shipping†             |
|---------------|---------------------|-----------------------|
| NTSAF345T3G   | SMA-FL<br>(Pb-Free) | 5000 / Tape &<br>Reel |
| NRVTSAF345T3G | SMA-FL<br>(Pb-Free) | 5000 / Tape &<br>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.

## 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>$V_R$ | 45          | V                |
| Average Rectified Forward Current<br>( $T_L = 112^\circ\text{C}$ )                                          | $I_O$                           | 3.0         | A                |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz) $T_L = 103^\circ\text{C}$            | $I_{FRM}$                       | 6.0         | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 100         | A                |
| Storage Temperature Range                                                                                   | $T_{stg}$                       | -65 to +150 | $^\circ\text{C}$ |
| Operating Junction Temperature (Note 1)                                                                     | $T_J$                           | -65 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)    | $\Psi_{JCL}$    | 25    | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 90    | $^\circ\text{C/W}$ |

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

## ELECTRICAL CHARACTERISTICS

| Rating                                                                                                                                            | Symbol | Typ          | Max          | Unit                |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------|--------------|---------------------|
| Instantaneous Forward Voltage (Note 3)<br>( $I_F = 3\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br>( $I_F = 3\text{ A}$ , $T_J = 125^\circ\text{C}$ ) | $V_F$  | 0.482<br>0.4 | 0.63<br>0.55 | V                   |
| Instantaneous Reverse Current (Note 3)<br>(Rated dc Voltage, $T_J = 25^\circ\text{C}$ )<br>(Rated dc Voltage, $T_J = 125^\circ\text{C}$ )         | $I_R$  | 1.75<br>1.45 | 7.5<br>3     | $\mu\text{A}$<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.

3. Pulse Test: Pulse Width  $\leq 380\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

TYPICAL CHARACTERISTICS

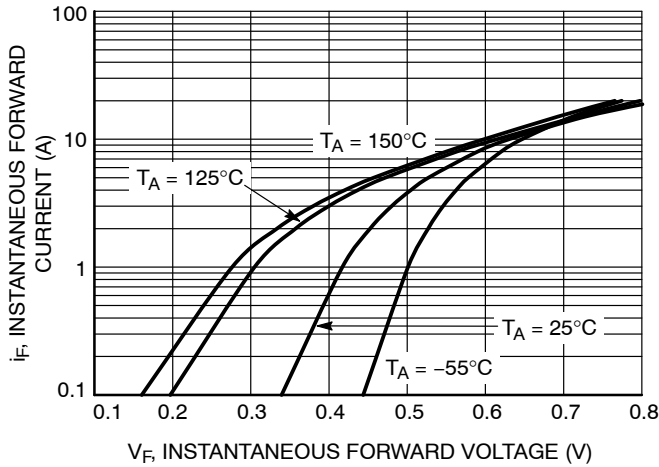


Figure 1. Typical Instantaneous Forward Characteristics

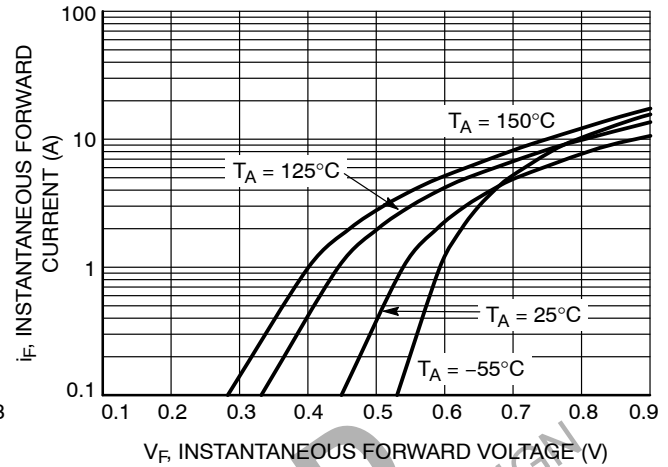


Figure 2. Maximum Instantaneous Forward Characteristics

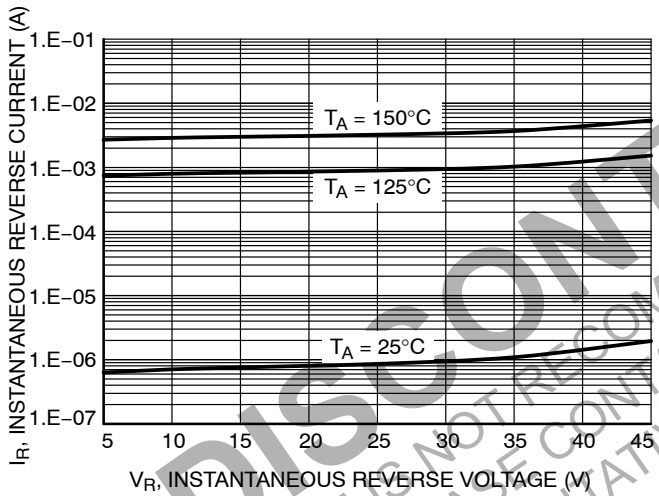


Figure 3. Typical Reverse Characteristics

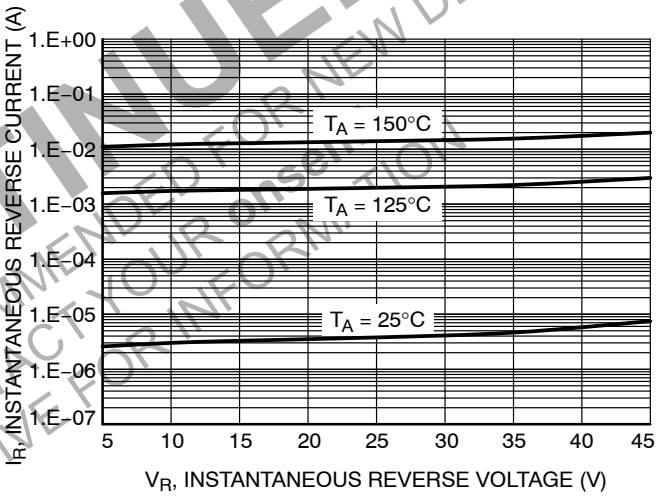


Figure 4. Maximum Reverse Characteristics

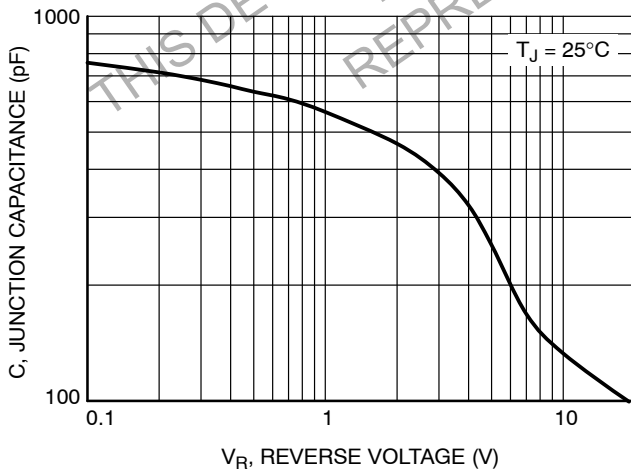


Figure 5. Typical Junction Capacitance

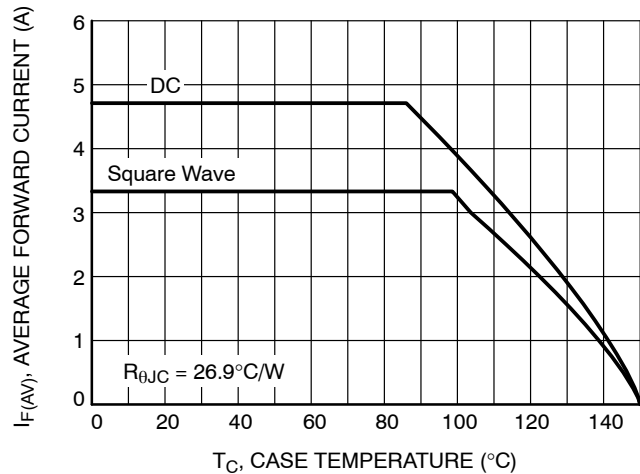


Figure 6. Current Derating per Device

TYPICAL CHARACTERISTICS

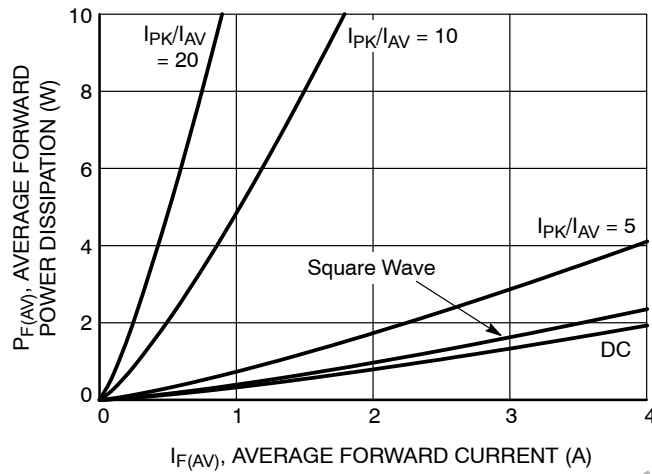


Figure 7. Forward Power Dissipation

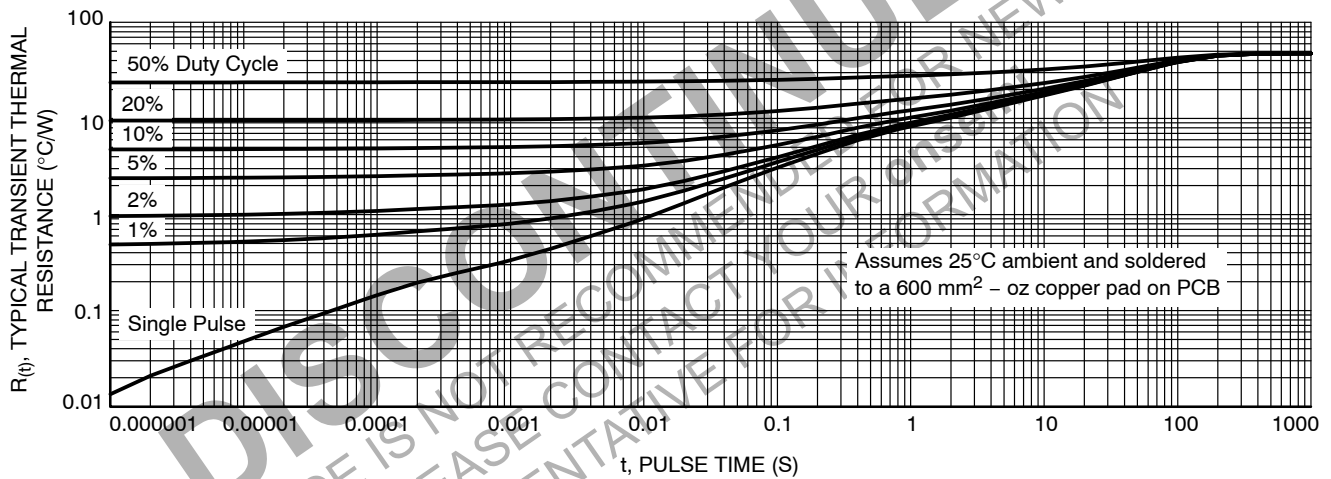


Figure 8. Typical Thermal Characteristics

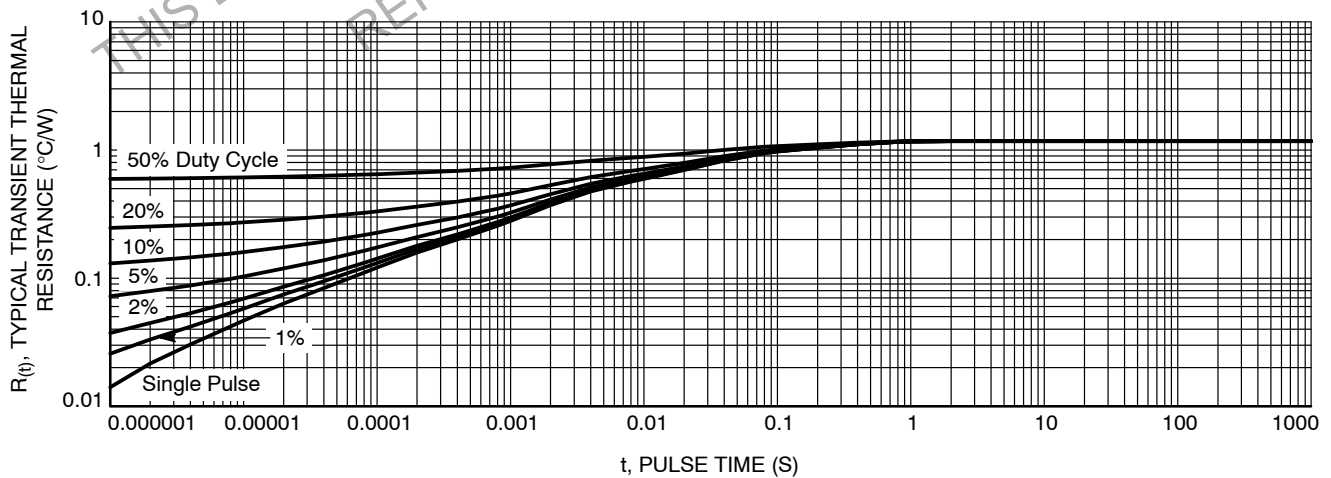


Figure 9. Typical Transient Thermal Response Characteristics, Junction-to-Case



**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, SOLDERM/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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