## 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
- These are Pb-Free and Halide-Free Devices

#### **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)
- Cathode Polarity Band



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# TRENCH SCHOTTKY RECTIFIER 5.0 AMPERE 45 VOLTS



SMA-FL CASE 403AA STYLE 6

#### **MARKING DIAGRAM**



5AR = Specific Device Code A = Assembly Location

Y = Year WW = Work Week ■ = Pb-Free Package

#### **ORDERING INFORMATION**

| Device      | Package             | Shipping <sup>†</sup> |
|-------------|---------------------|-----------------------|
| NTSAF545T3G | SMA-FL<br>(Pb-Free) | 5000 / Tape & 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 <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>R</sub> | 45          | V    |
| Average Rectified Forward Current (T <sub>L</sub> = 90°C)   | I <sub>O</sub>   | 5.0         | Α    |
| Peak Repetitive Forward Current<br>(Rated V <sub>R</sub> , Square Wave, 20 kHz) T <sub>L</sub> = 72°C       | I <sub>FRM</sub>                                       | 10          | Α    |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | I <sub>FSM</sub>                                       | 100         | Α    |
| Storage Temperature Range   | T <sub>stg</sub>                                       | -65 to +150 | °C   |
| Operating Junction Temperature (Note 1)   | TJ   | -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. 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    | °C/W |
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 90    | °C/W |

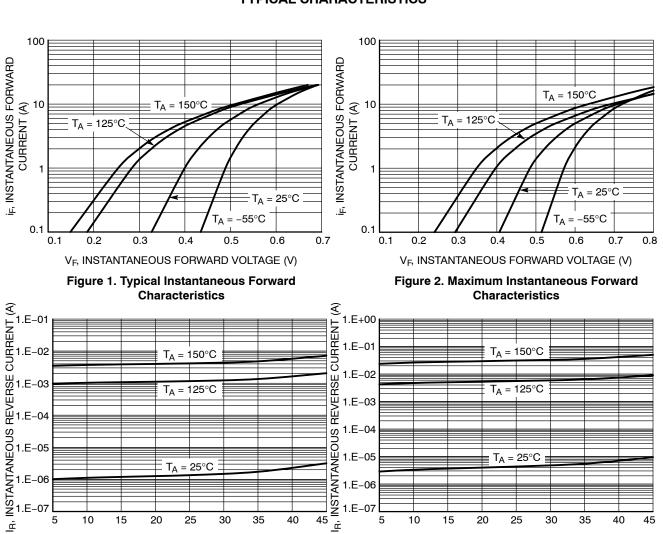
<sup>2. 1</sup> inch square pad size (1  $\times$  0.5 inch) for each lead on FR4 board.

#### **ELECTRICAL CHARACTERISTICS**

| Rating  | Symbol         | Тур           | Max         | Unit     |
|---|----------------|---------------|-------------|----------|
| Instantaneous Forward Voltage (Note 3) ( $I_F = 5 \text{ A}, T_J = 25^{\circ}\text{C}$ ) ( $I_F = 5 \text{ A}, T_J = 125^{\circ}\text{C}$ ) | V <sub>F</sub> | 0.485<br>0.41 | 0.6<br>0.55 | V        |
| Instantaneous Reverse Current (Note 3) (Rated dc Voltage, T <sub>J</sub> = 25°C) (Rated dc Voltage, T <sub>J</sub> = 125°C)                 | I <sub>R</sub> | 3.5<br>2.5    | 9.5<br>9    | μA<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  $\mu$ s, Duty Cycle  $\leq$  2.0%.

#### **TYPICAL CHARACTERISTICS**

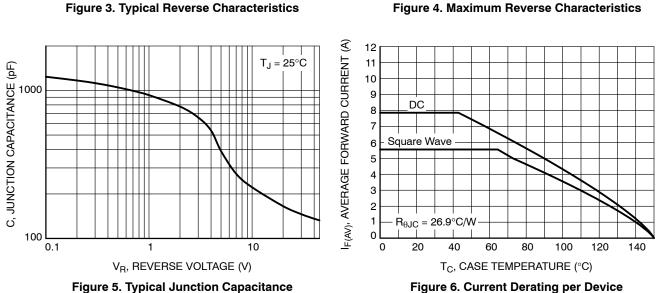


 $T_A = 25^{\circ}C$ 

V<sub>R</sub>, INSTANTANEOUS REVERSE VOLTAGE (V)

V<sub>R</sub>, INSTANTANEOUS REVERSE VOLTAGE (V)

 $T_A = 25^{\circ}C$ 



#### **TYPICAL CHARACTERISTICS**

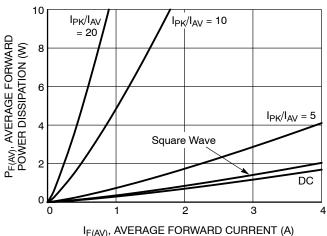


Figure 7. Forward Power Dissipation

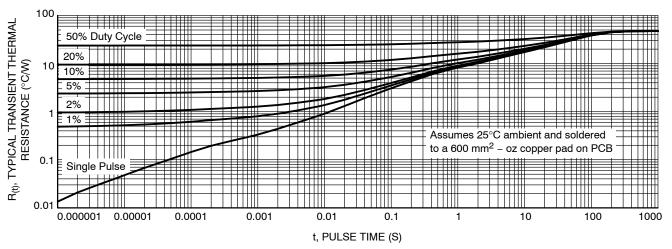


Figure 8. Typical Thermal Characteristics

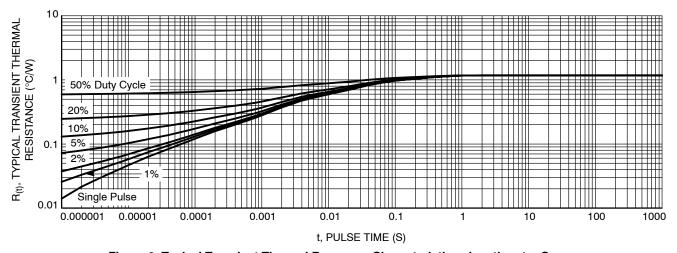


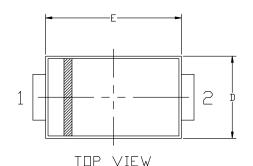
Figure 9. Typical Transient Thermal Response Characteristics, Junction-to-Case

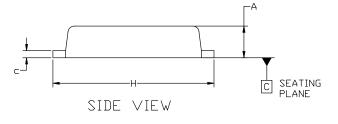


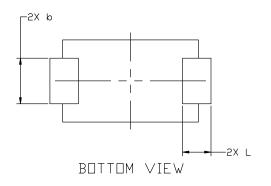


#### SMA 2.60x4.30x1.00 CASE 403AA ISSUE A

**DATE 18 JAN 2024** 



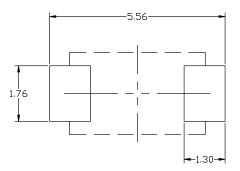




#### NOTES:

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

| MILLIMETERS |      |       |      |  |
|-------------|------|-------|------|--|
| DIM         | MIN  | NDM   | MAX  |  |
| Α           | 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 |  |
| Н           | 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 DN Semiconductor Soldering and Mounting Techniques Reference manual, SDLDERRM/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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