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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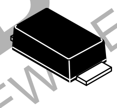
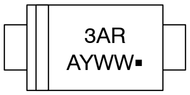
TRENCH SCHOTTKY
RECTIFIER
3.0 AMPERE
45 VOLTS



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 (Pb−Free)	5000 / Tape & Reel
NRVTSAF345T3G	SMA−FL (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 Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	45	V
Average Rectified Forward Current (T_L = 112°C)	I_O	3.0	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20 kHz) T_L = 103°C	I_{FRM}	6.0	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	100	A
Storage Temperature Range	T_{stg}	−65 to +150	°C
Operating Junction Temperature (Note 1)	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.

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)	Ψ_{JCL}	25	°C/W
Thermal Resistance, Junction−to−Ambient (Note 2)	$R_{\theta JA}$	90	°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)	V_F			V
(I_F = 3 A, T_J = 25°C)		0.482	0.63	
(I_F = 3 A, T_J = 125°C)		0.4	0.55	
Instantaneous Reverse Current (Note 3)	I_R			
(Rated dc Voltage, T_J = 25°C)		1.75	7.5	μA
(Rated dc Voltage, T_J = 125°C)		1.45	3	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 ≤ 380 μs, Duty Cycle ≤ 2.0%.

TYPICAL CHARACTERISTICS

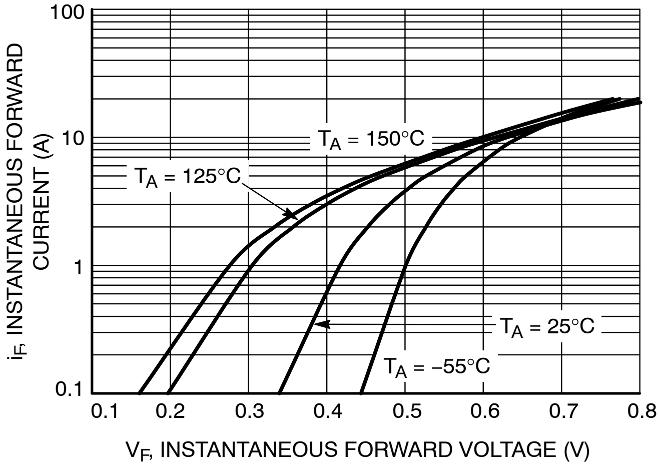


Figure 1. Typical Instantaneous Forward Characteristics

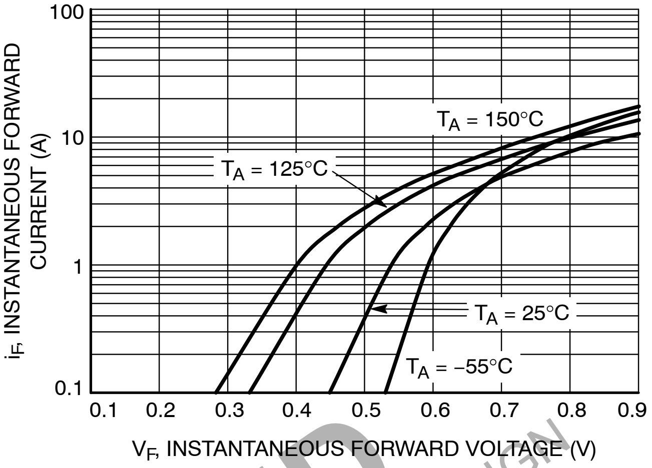


Figure 2. Maximum Instantaneous Forward Characteristics

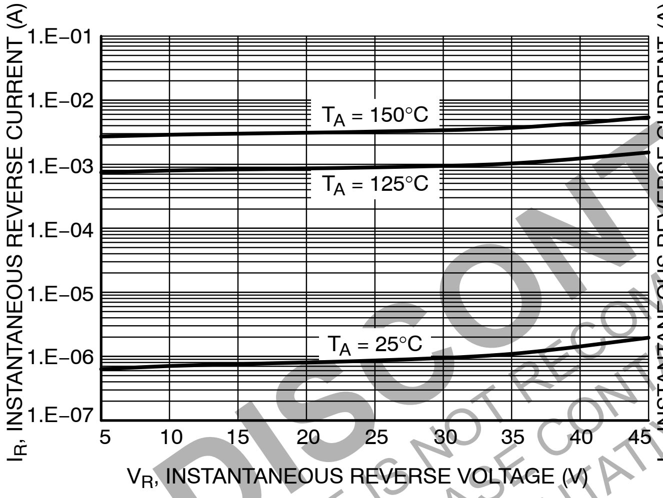


Figure 3. Typical Reverse Characteristics

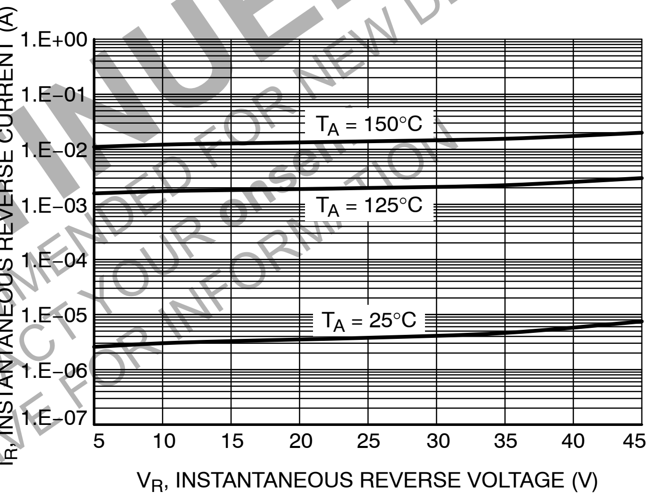


Figure 4. Maximum Reverse Characteristics

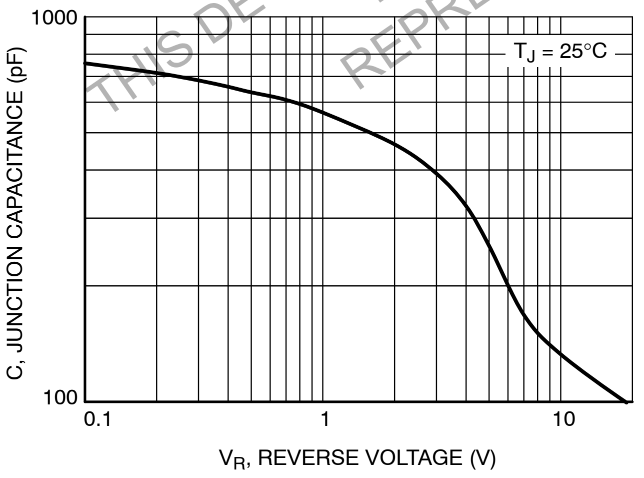


Figure 5. Typical Junction Capacitance

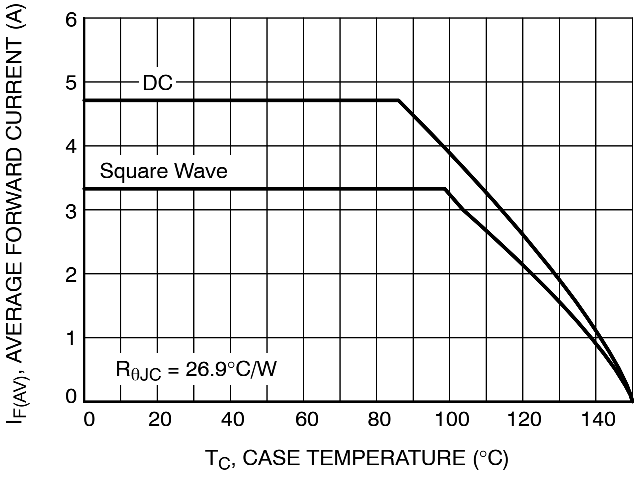


Figure 6. Current Derating per Device

TYPICAL CHARACTERISTICS

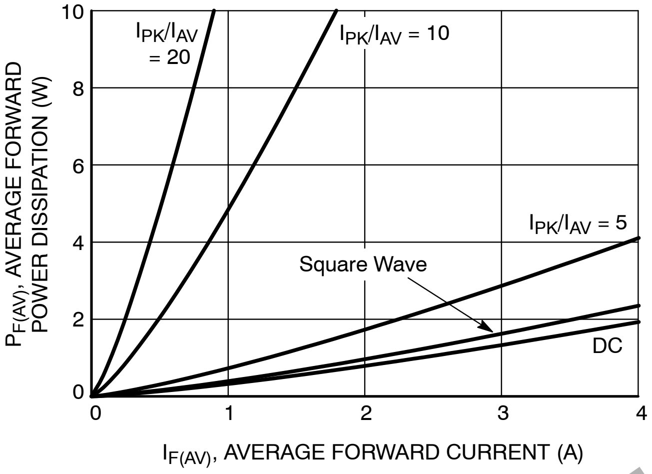


Figure 7. Forward Power Dissipation

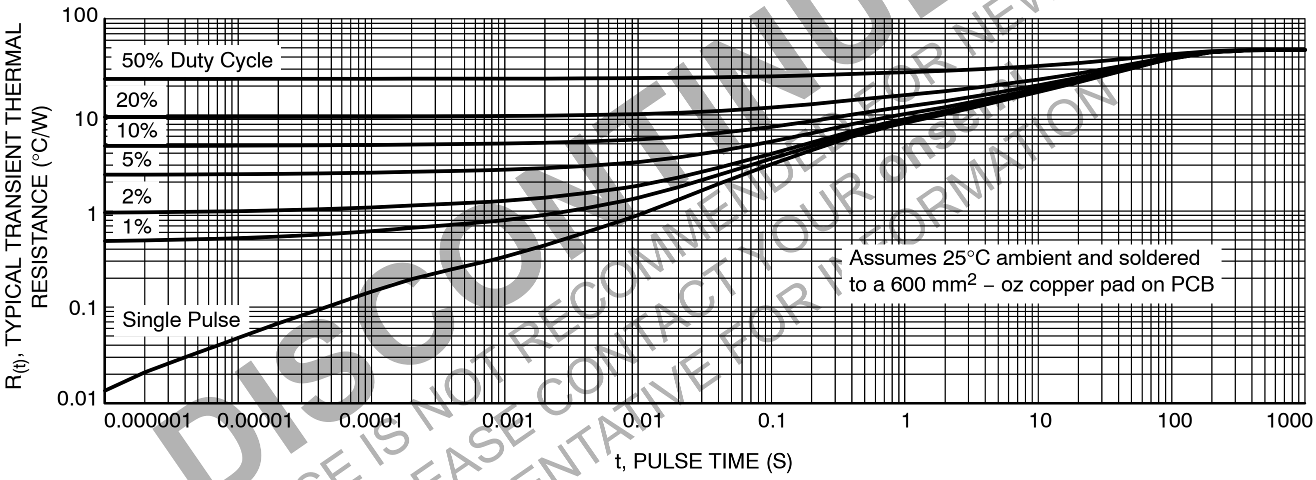


Figure 8. Typical Thermal Characteristics

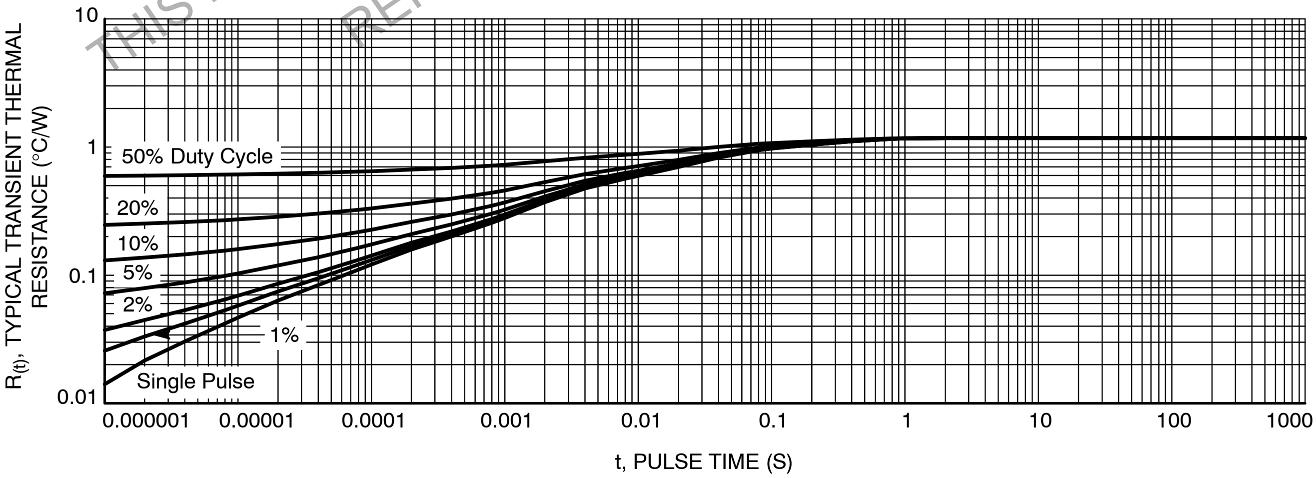
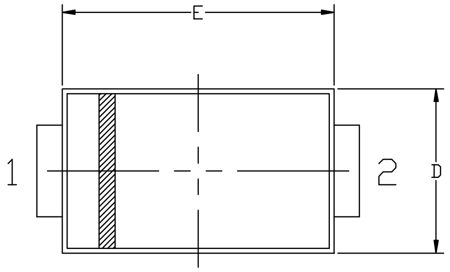


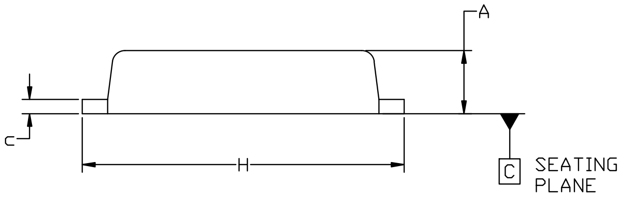
Figure 9. Typical Transient Thermal Response Characteristics, Junction−to−Case

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

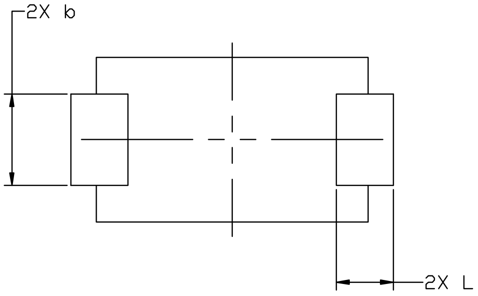
DATE 18 JAN 2024



TOP VIEW



SIDE VIEW

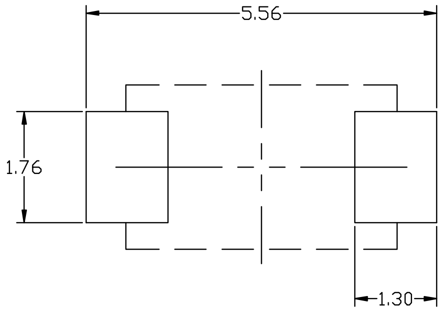


BOTTOM VIEW

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 th e 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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