

# NRVTS5100ETFS

## Trench Surface Mount Schottky Rectifier

This  $\mu$ 8FL flat lead Trench Schottky rectifier provides fast switching performance with soft recovery in a compact thermally efficient package. Its compact footprint makes it ideally suited to portable and automotive applications where board space is at a premium. Its low profile makes it a good option for flat panel display and other applications with limited vertical clearance. The device offers low leakage over temperature making it a good match for applications requiring low quiescent current.

### Features

- Fast Soft Switching for Reduced EMI and Higher Efficiency
- Low Profile – Maximum Height of 1.1 mm
- Small Footprint – Footprint Area of 13.5 mm<sup>2</sup>
- 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

### Mechanical Characteristics:

- Case: Molded Epoxy
- Epoxy Meets UL 94 V–0 @ 0.125 in
- Weight: 95 mg (Approximately)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Maximum for 10 Seconds
- MSL 1

### Applications

- Switching Power Supplies including Mini–adapters and Displays
- Instrumentation
- Engine Control Recirculation Diodes
- Freewheeling Diode Where Space is at a Premium



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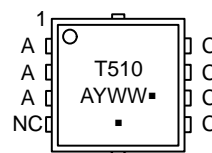
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## TRENCH SCHOTTKY RECTIFIER 5.0 AMPERE 100 VOLTS



**WDFN8  
( $\mu$ 8FL)  
CASE 511AB  
FLAT LEAD**

### MARKING DIAGRAM



T510 = Specific Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb–Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping†
NRVTS5100ETFSTAG	WDFN8 (Pb–Free)	1500 / Tape & Reel
NRVTS5100ETFSWFTAG		
NRVTS5100ETFSTWG	WDFN8 (Pb–Free)	5000 / Tape & Reel
NRVTS5100ETFSWFTWG		

†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.

# NRVTS5100ETFS

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	100	V
Average Rectified Forward Current ( $T_L = TBD^{\circ}C$ )	$I_O$	5.0	A
Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20 kHz) $T_L = 161^{\circ}C$	$I_{FRM}$	5.6	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	80	A
Storage Temperature Range	$T_{stg}$	-65 to +175	$^{\circ}C$
Operating Junction Temperature	$T_J$	-65 to +175	$^{\circ}C$

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.

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction-to-Tab (Note 1)	$\Psi_{JCT}$	3.3	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	50.2	$^{\circ}C/W$

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

## ELECTRICAL CHARACTERISTICS

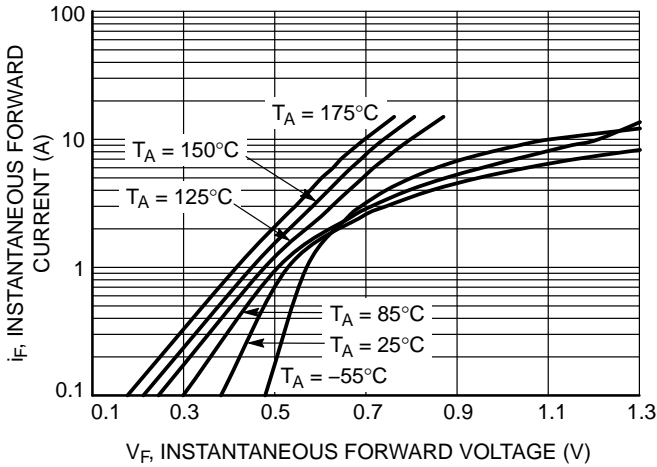
Characteristic	Symbol	Typ	Max	Unit
Instantaneous Forward Voltage (Note 1) ( $i_F = 5$ Amps, $T_J = 25^{\circ}C$ )	$V_F$	0.95	1.00	V
( $i_F = 5$ Amps, $T_J = 125^{\circ}C$ )		0.70	0.80	
Reverse Current (Note 1) (Rated dc Voltage, $T_J = 25^{\circ}C$ ) (Rated dc Voltage, $T_J = 125^{\circ}C$ )	$i_R$	1.50 1.29	50 7.5	$\mu A$ mA
Diode Capacitance (Rated dc Voltage, $T_J = 25^{\circ}C$ , $f = 1$ MHz)	$C_d$	26.5		pF

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.

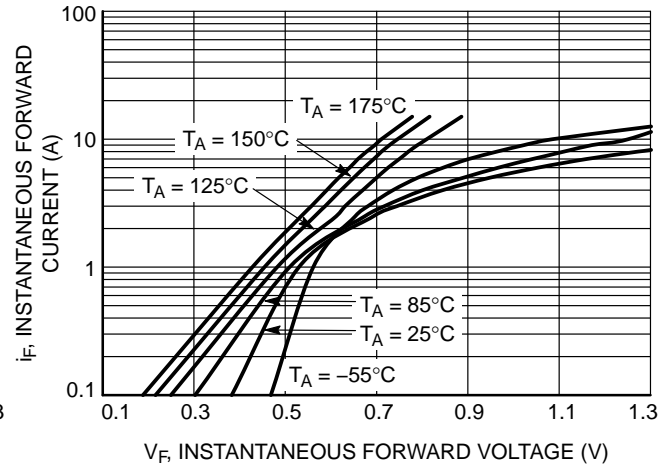
1. Pulse Test: Pulse Width = 300  $\mu s$ , Duty Cycle  $\leq 2.0\%$ .

# NRVTS5100ETFS

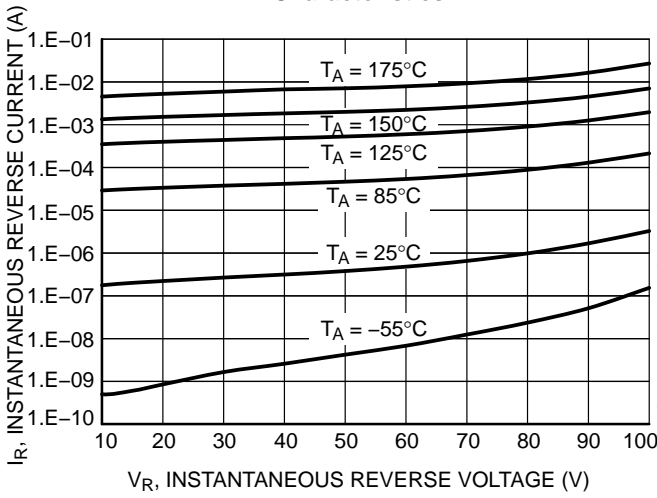
## TYPICAL CHARACTERISTICS



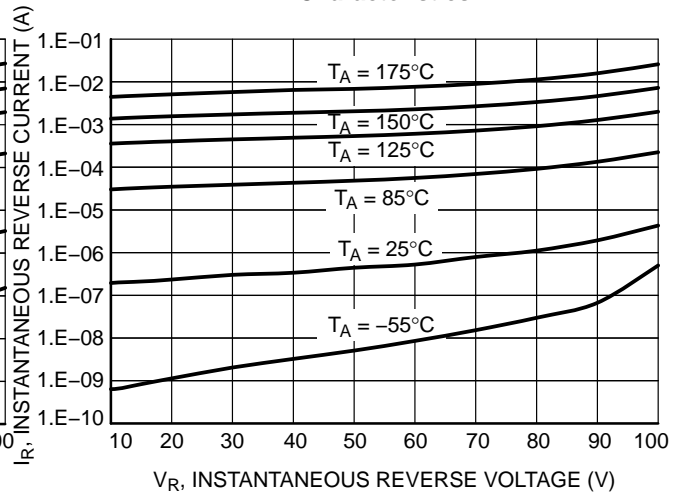
**Figure 1. Typical Instantaneous Forward Characteristics**



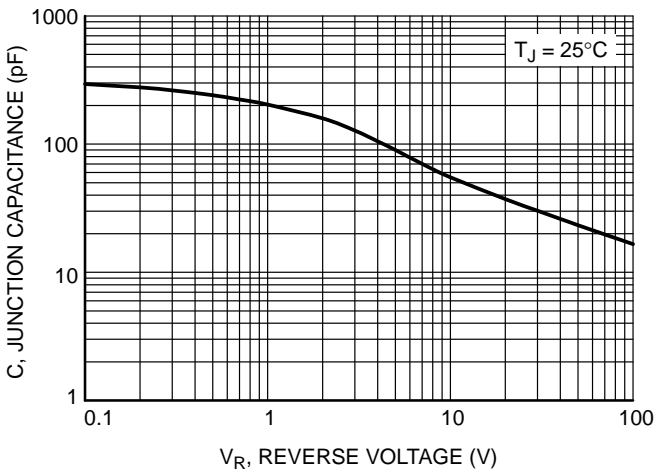
**Figure 2. Maximum Instantaneous Forward Characteristics**



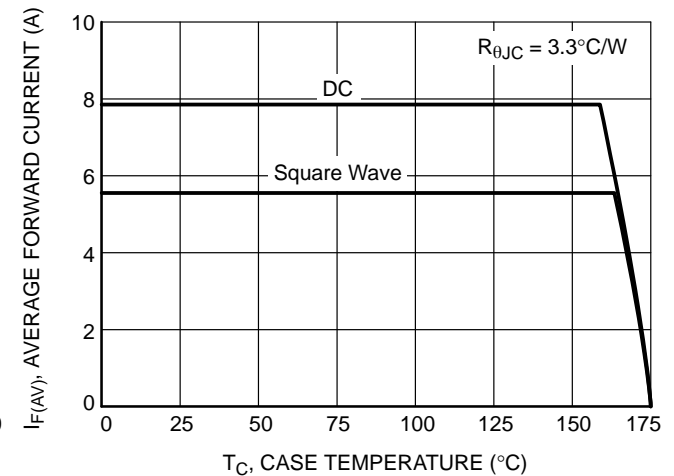
**Figure 3. Typical Reverse Characteristics**



**Figure 4. Maximum Reverse Characteristics**



**Figure 5. Typical Junction Capacitance**



**Figure 6. Current Derating per Diode**

# NRVTS5100ETFS

## TYPICAL CHARACTERISTICS

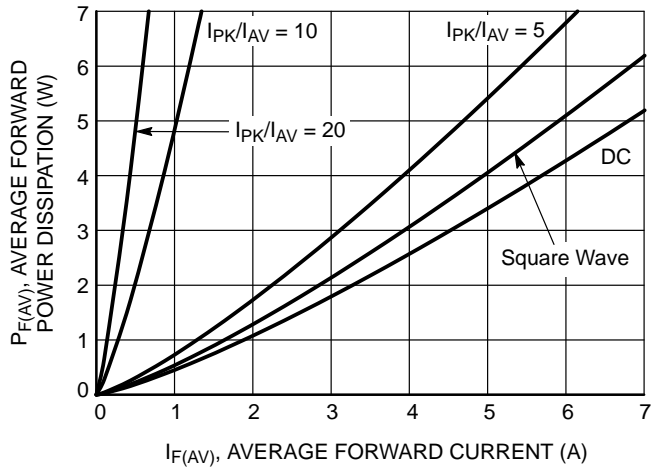


Figure 7. Forward Power Dissipation

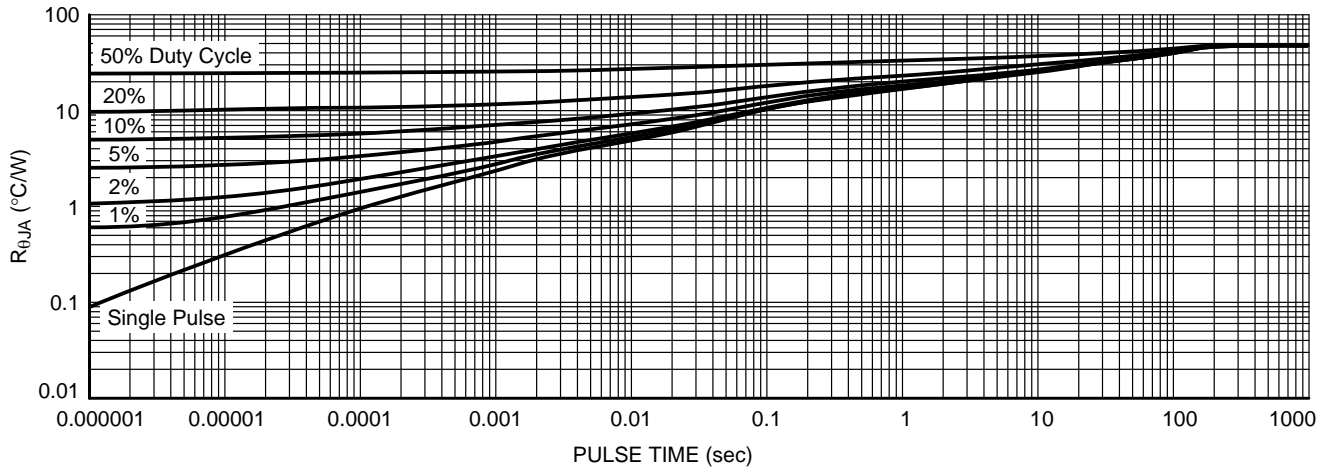


Figure 8. Thermal Characteristics

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

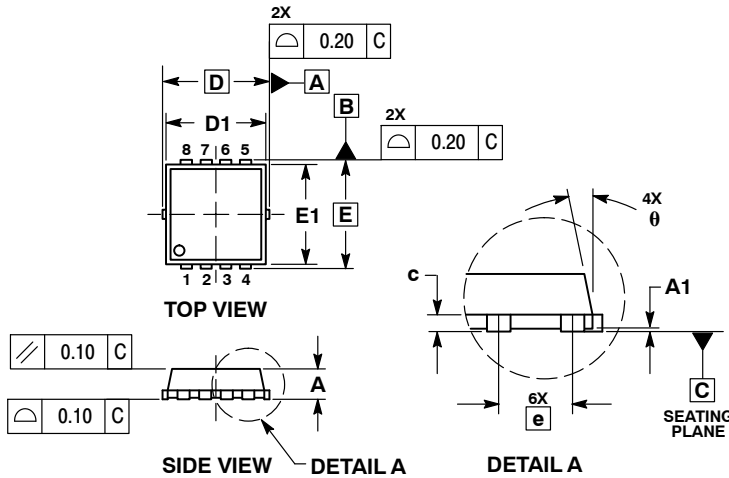
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SCALE 2:1

### WDFN8 3.3x3.3, 0.65P CASE 511AB ISSUE D

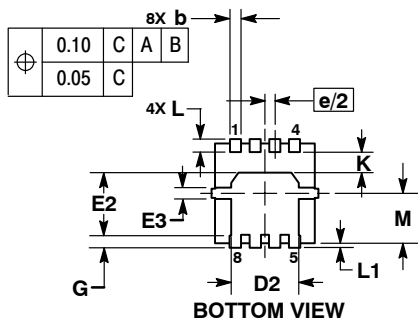
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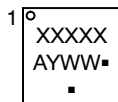
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031
A1	0.00	---	0.05	0.000	---	0.002
b	0.23	0.30	0.40	0.009	0.012	0.016
c	0.15	0.20	0.25	0.006	0.008	0.010
D	3.30 BSC			0.130 BSC		
D1	2.95	3.05	3.15	0.116	0.120	0.124
D2	1.98	2.11	2.24	0.078	0.083	0.088
E	3.30 BSC			0.130 BSC		
E1	2.95	3.05	3.15	0.116	0.120	0.124
E2	1.47	1.60	1.73	0.058	0.063	0.068
E3	0.23	0.30	0.40	0.009	0.012	0.016
e	0.65 BSC			0.026 BSC		
G	0.30	0.41	0.51	0.012	0.016	0.020
K	0.65	0.80	0.95	0.026	0.032	0.037
L	0.30	0.43	0.56	0.012	0.017	0.022
L1	0.06	0.13	0.20	0.002	0.005	0.008
M	1.40	1.50	1.60	0.055	0.059	0.063
θ	0°	---	12°	0°	---	12°

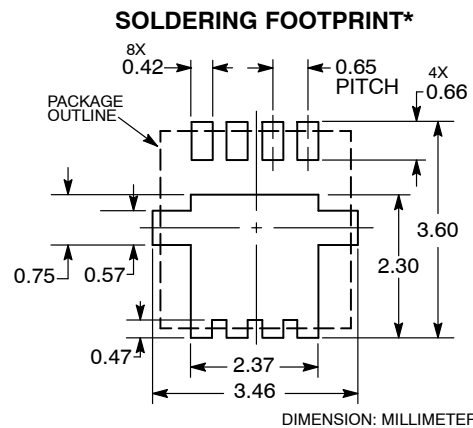


#### GENERIC MARKING DIAGRAM\*



- XXXXX = 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.



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

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