

# NRVTS8120EMFS

## Very Low Leakage 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
- Low Thermal Resistance
- 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 Notebook / Netbook Adapters, ATX and Flat Panel Display
- High Frequency and DC-DC Converters
- Freewheeling and OR-ing Diodes
- Reverse Battery Protection
- LED Lighting
- 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

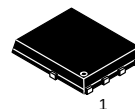


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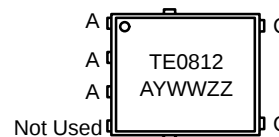
### TRENCH SCHOTTKY RECTIFIERS 8 AMPERES 120 VOLTS

1,2,3  5,6



SO-8 FLAT LEAD  
CASE 488AA  
STYLE 2

### MARKING DIAGRAM



TE0812 = Specific Device Code  
A = Assembly Location  
Y = Year  
W = Work Week  
ZZ = Lot Traceability

### ORDERING INFORMATION

| Device           | Package              | Shipping†             |
|------------------|----------------------|-----------------------|
| NRVTS8120EMFST1G | SO-8 FL<br>(Pb-Free) | 1500 /<br>Tape & Reel |
| NRVTS8120EMFST3G | SO-8 FL<br>(Pb-Free) | 5000 /<br>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.

# NRVTS8120EMFS

## 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>$V_R$ | 120         | V                |
| Average Rectified Forward Current<br>(Rated $V_R$ , $T_C = 163^\circ\text{C}$ )                             | $I_{F(AV)}$                     | 8.0         | A                |
| Peak Repetitive Forward Current,<br>(Rated $V_R$ , Square Wave, 20 kHz, $T_C = 161^\circ\text{C}$ )         | $I_{FRM}$                       | 16          | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 150         | A                |
| Storage Temperature Range                                                                                   | $T_{stg}$                       | -65 to +175 | $^\circ\text{C}$ |
| Operating Junction Temperature                                                                              | $T_J$                           | -55 to +175 | $^\circ\text{C}$ |

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.

## THERMAL CHARACTERISTICS

| Characteristic                                                                                                            | Symbol          | Typ | Max | Unit               |
|---------------------------------------------------------------------------------------------------------------------------|-----------------|-----|-----|--------------------|
| Thermal Resistance, Junction-to-Lead, Steady State<br>(Assumes 600 mm <sup>2</sup> 1 oz. copper bond pad, on a FR4 board) | $R_{\theta JC}$ | –   | 2.7 | $^\circ\text{C/W}$ |

## ELECTRICAL CHARACTERISTICS

| Rating                                                                                                                                                                                                                                                           | Symbol | Typ                                  | Max                        | Unit                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------|----------------------------|------------------------------------------------|
| Instantaneous Forward Voltage (Note 1)<br>( $I_F = 4\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br>( $I_F = 8\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br><br>( $I_F = 4\text{ A}$ , $T_J = 125^\circ\text{C}$ )<br>( $I_F = 8\text{ A}$ , $T_J = 125^\circ\text{C}$ ) | $V_F$  | 0.648<br>0.826<br><br>0.542<br>0.613 | –<br>0.88<br><br>–<br>0.65 | V                                              |
| Instantaneous Reverse Current (Note 1)<br>( $V_R = 90\text{ V}$ , $T_J = 25^\circ\text{C}$ )<br>(Rated dc Voltage, $T_J = 25^\circ\text{C}$ )<br><br>( $V_R = 90\text{ V}$ , $T_J = 125^\circ\text{C}$ )<br>(Rated dc Voltage, $T_J = 125^\circ\text{C}$ )       | $I_R$  | 1.3<br>3.70<br><br>1.4<br>2.4        | –<br>50<br><br>–<br>10     | $\mu\text{A}$<br>$\mu\text{A}$<br><br>mA<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.

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

TYPICAL CHARACTERISTICS

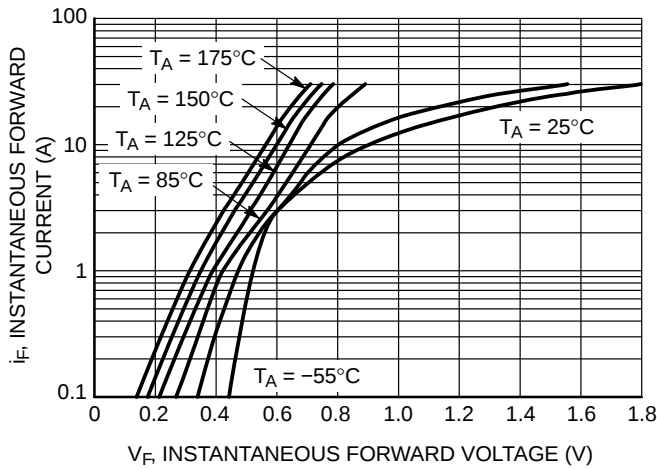


Figure 1. Typical Instantaneous Forward Characteristics

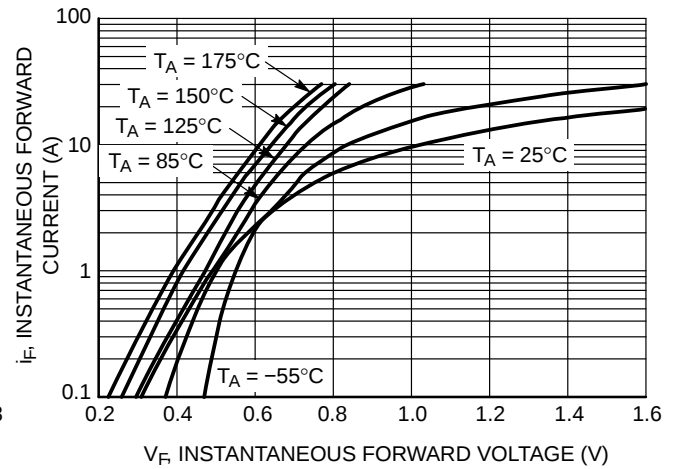


Figure 2. Maximum Instantaneous Forward Characteristics

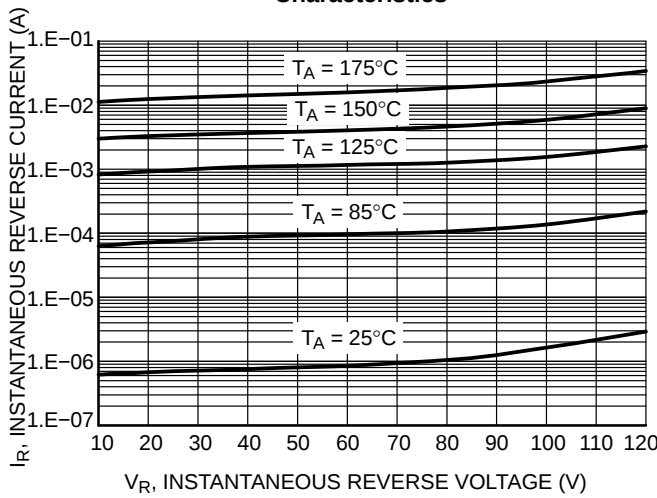


Figure 3. Typical Reverse Characteristics

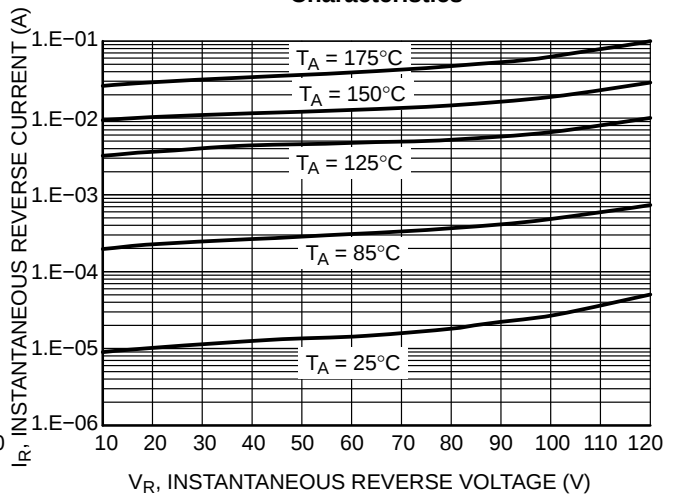


Figure 4. Maximum Reverse Characteristics

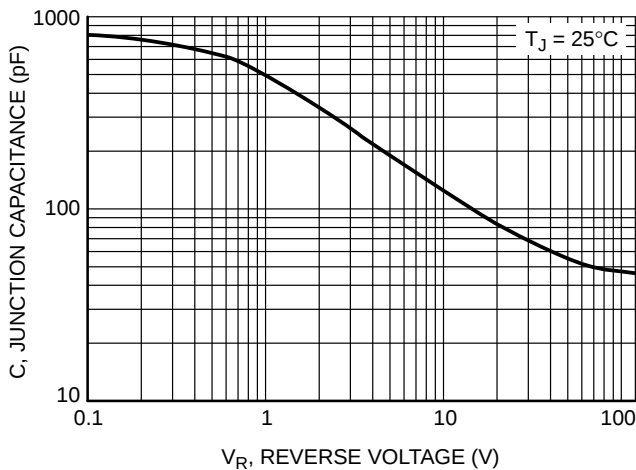


Figure 5. Typical Junction Capacitance

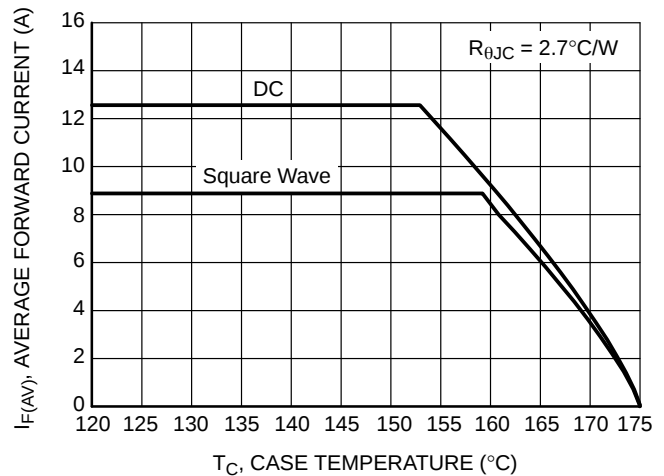


Figure 6. Current Derating per Device

TYPICAL CHARACTERISTICS

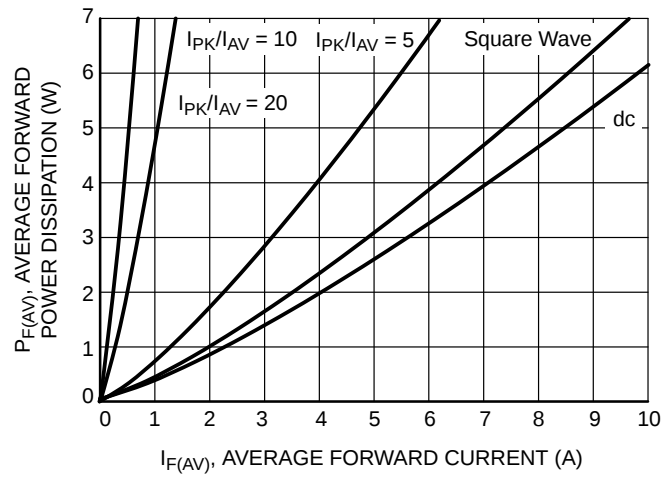


Figure 7. Forward Power Dissipation

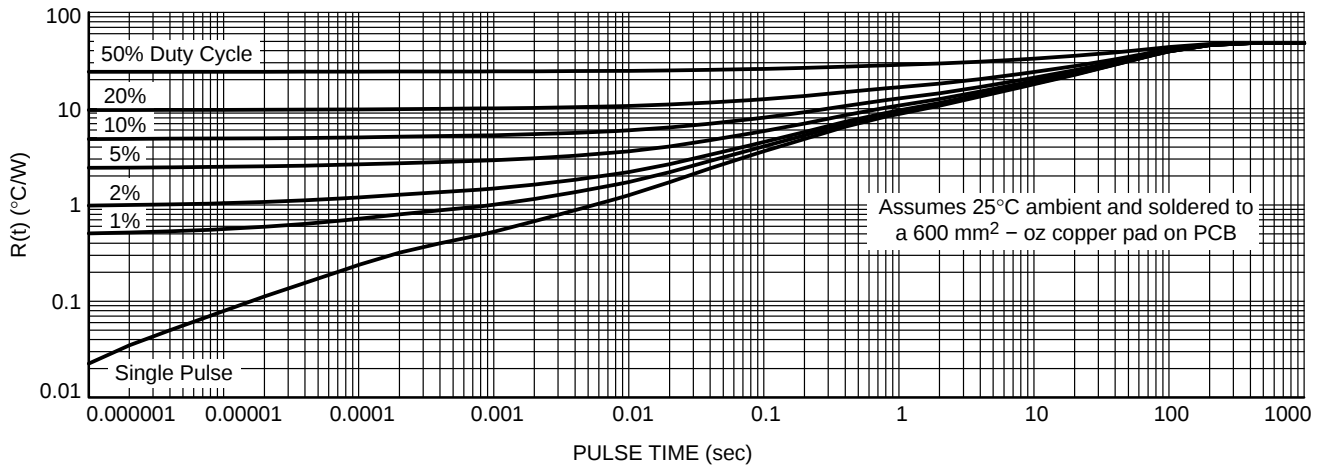


Figure 8. Typical Thermal Characteristics, Junction-to-Ambient

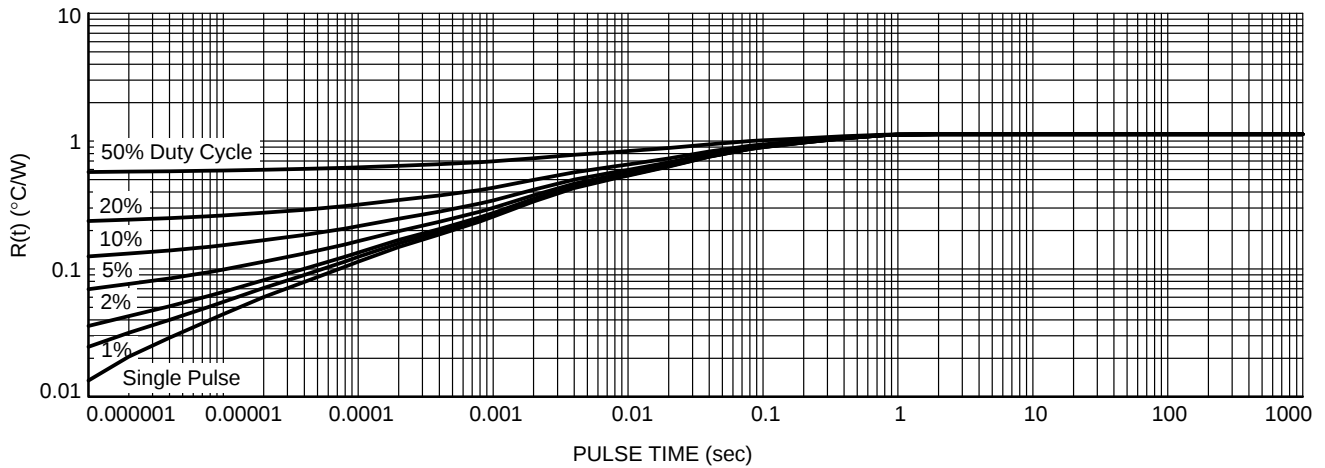


Figure 9. Typical Transient Thermal Response Characteristics, Junction-to-Case





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Электрон  
Связь**

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