

# NTS12120MFS, NRVTS12120MFS

## Very Low Forward Voltage 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 are Pb-Free and Halide-Free Devices

### 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

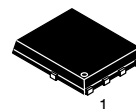


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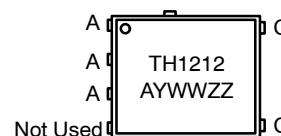
## TRENCH SCHOTTKY RECTIFIERS 12 AMPERES 120 VOLTS

1,2,3  5,6



SO-8 FLAT LEAD  
CASE 488AA  
STYLE 2

### MARKING DIAGRAM



TH1212 = Specific Device Code  
A = Assembly Location  
Y = Year  
W = Work Week  
ZZ = Lot Traceability

### ORDERING INFORMATION

| Device           | Package              | Shipping†             |
|------------------|----------------------|-----------------------|
| NTS12120MFST1G   | SO-8 FL<br>(Pb-Free) | 1500 /<br>Tape & Reel |
| NTS12120MFST3G   | SO-8 FL<br>(Pb-Free) | 5000 /<br>Tape & Reel |
| NRVTS12120MFST1G | SO-8 FL<br>(Pb-Free) | 1500 /<br>Tape & Reel |
| NRVTS12120MFST3G | 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.

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## 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 $V_R$ , $T_C = 138^\circ\text{C}$ )                             | $I_{F(AV)}$                     | 12          | A                |
| Peak Repetitive Forward Current,<br>(Rated $V_R$ , Square Wave, 20 kHz, $T_C = 136^\circ\text{C}$ )         | $I_{FRM}$                       | 24          | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 200         | A                |
| Storage Temperature Range                                                                                   | $T_{stg}$                       | -65 to +150 | $^\circ\text{C}$ |
| Operating Junction Temperature                                                                              | $T_J$                           | -55 to +150 | $^\circ\text{C}$ |
| Unclamped Inductive Switching Energy (10 mH Inductor, Non-repetitive)                                       | $E_{AS}$                        | 100         | mJ               |
| ESD Rating (Human Body Model)                                                                               |                                 | 3B          |                  |
| ESD Rating (Machine Model)                                                                                  |                                 | M4          |                  |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

## THERMAL CHARACTERISTICS

| Characteristic                                                                                                            | Symbol          | Typ | Max | Unit               |
|---------------------------------------------------------------------------------------------------------------------------|-----------------|-----|-----|--------------------|
| Thermal Resistance, Junction-to-Case, Steady State<br>(Assumes 600 mm <sup>2</sup> 1 oz. copper bond pad, on a FR4 board) | $R_{\theta JC}$ | 2.0 | –   | $^\circ\text{C/W}$ |

## ELECTRICAL CHARACTERISTICS

| Rating                                                                                                                                                                                                                                                             | Symbol | Typ                                 | Max                        | Unit                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------|----------------------------|------------------------------------------------|
| Instantaneous Forward Voltage (Note 1)<br>( $I_F = 6\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br>( $I_F = 12\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br><br>( $I_F = 6\text{ A}$ , $T_J = 125^\circ\text{C}$ )<br>( $I_F = 12\text{ A}$ , $T_J = 125^\circ\text{C}$ ) | $V_F$  | 0.587<br>0.63<br><br>0.510<br>0.587 | –<br>0.83<br><br>–<br>0.68 | 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, $T_J = 125^\circ\text{C}$ )         | $I_R$  | 3.4<br>14.5<br><br>3.5<br>9.2       | –<br>75<br><br>–<br>40     | $\mu\text{A}$<br>$\mu\text{A}$<br><br>mA<br>mA |

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

TYPICAL CHARACTERISTICS

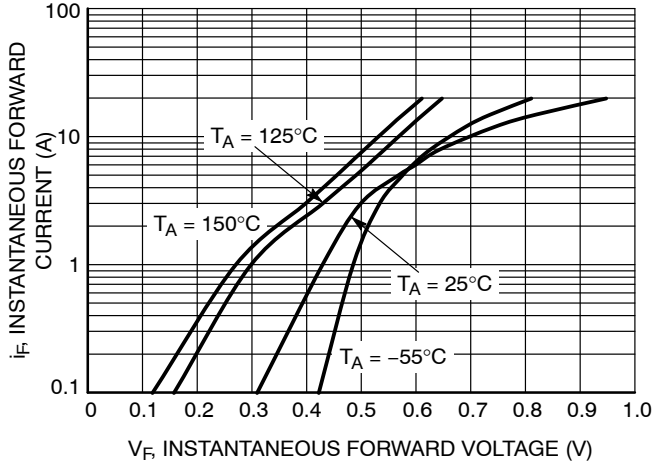


Figure 1. Typical Instantaneous Forward Characteristics

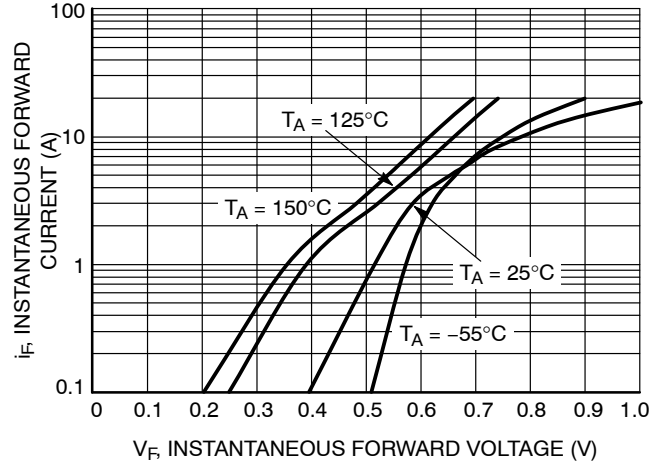


Figure 2. Maximum Instantaneous Forward Characteristics

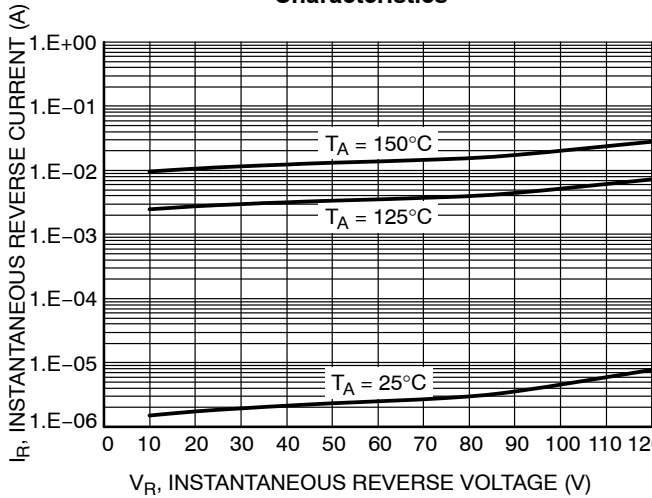


Figure 3. Typical Reverse Characteristics

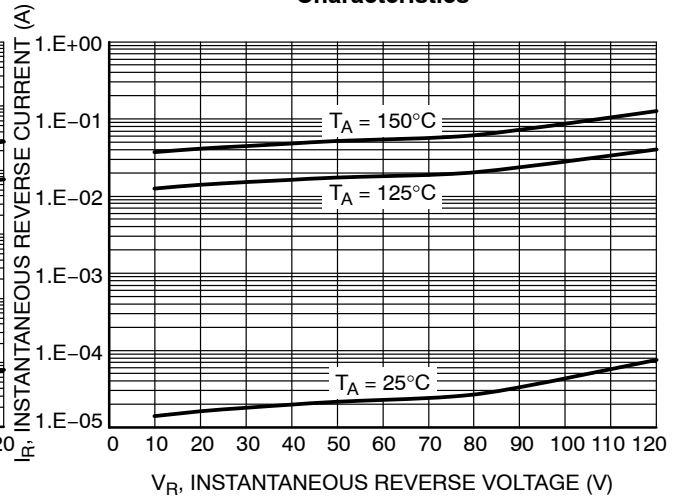


Figure 4. Maximum Reverse Characteristics

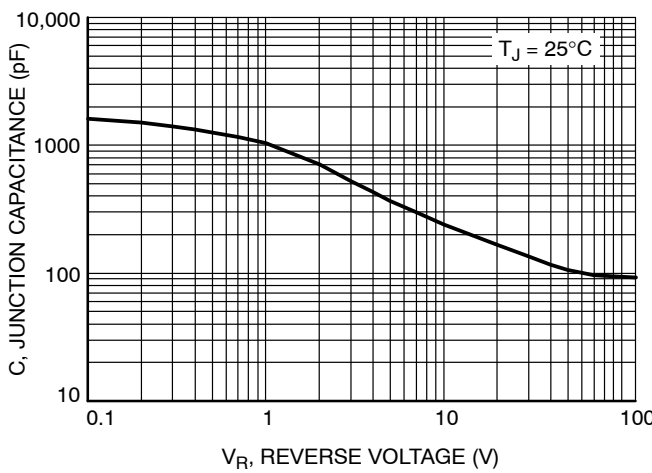


Figure 5. Typical Junction Capacitance

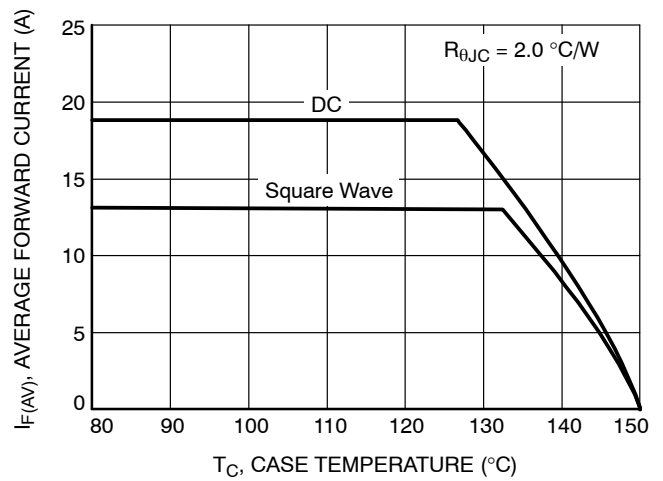


Figure 6. Current Derating

TYPICAL CHARACTERISTICS

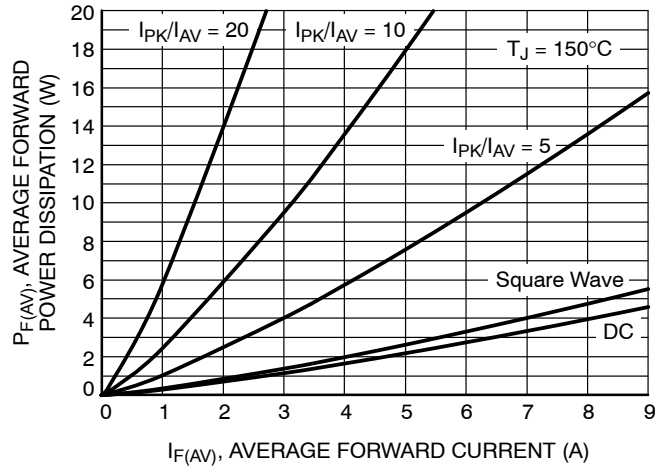


Figure 7. Forward Power Dissipation

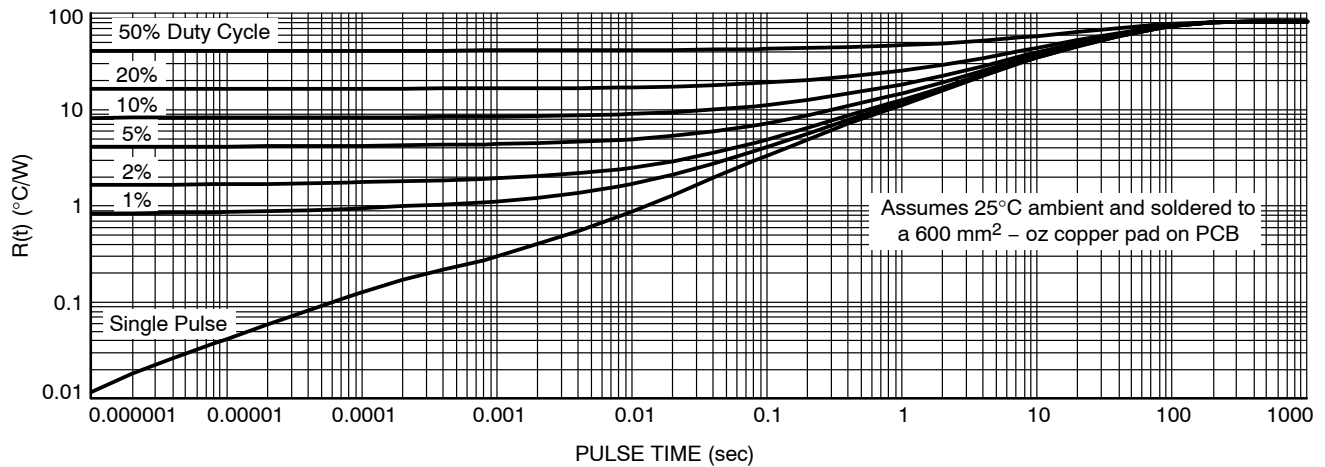


Figure 8. Thermal Characteristics

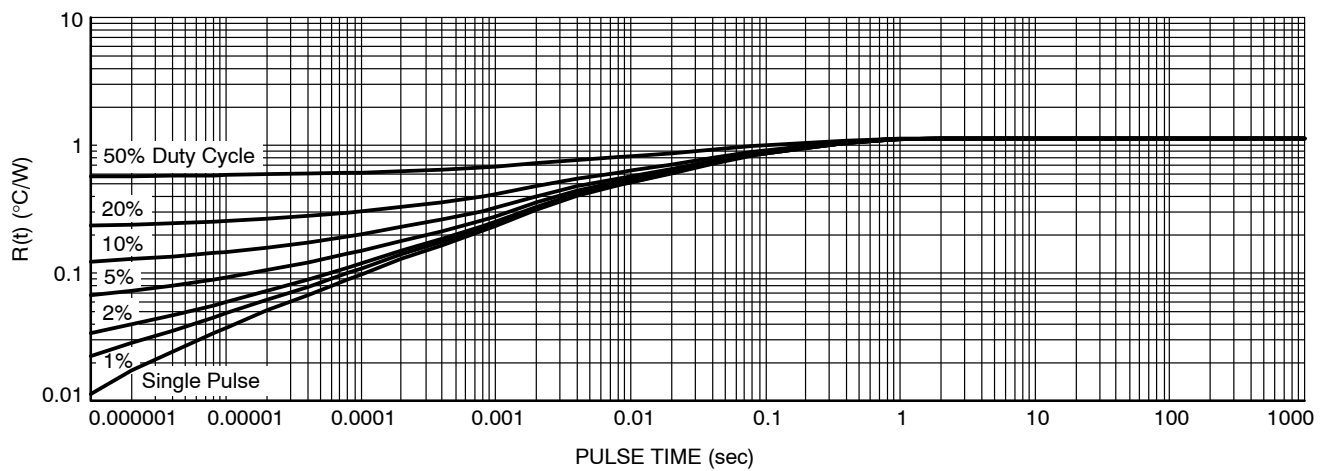


Figure 9. Typical Transient Thermal Response Characteristics, Junction-to-Case





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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