

NRTST40H100CT

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
- These are Pb-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
- Instrumentation

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94-0 @ 0.125 in
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 sec

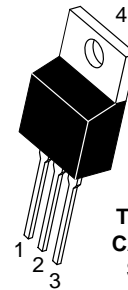
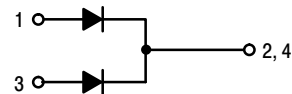


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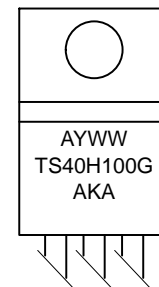
VERY LOW FORWARD VOLT- AGE, SCHOTTKY BARRIER RECTIFIERS 40 AMPERES, 100 VOLTS

PIN CONNECTIONS



TO-220AB
CASE 221A
STYLE 6

MARKING DIAGRAM



TO-220AB

A = Assembly Location
Y = Year
WW = Work Week
AKA = Polarity Designator
G = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

NRTST40H100CT

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 (Rated V_R , $T_C = 118^\circ\text{C}$) (Rated V_R , $T_C = 131^\circ\text{C}$) | $I_{F(AV)}$ Per device Per diode | 40 20 | A |
| Peak Repetitive Forward Current (Rated V_R , Square Wave, 20 kHz, $T_C = 113^\circ\text{C}$) (Rated V_R , Square Wave, 20 kHz, $T_C = 128^\circ\text{C}$) | I_{FRM} Per device Per diode | 80 40 | A |
| Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz) | I_{FSM} | 250 | A |
| Operating Junction Temperature | T_J | -55 to +150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

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

| Rating | Symbol | NRTST40H100CTG | Unit |
|---|------------------------------------|----------------|--|
| Maximum Thermal Resistance per Device (Note 1) Junction-to-Case Junction-to-Ambient | $R_{\theta JC}$ $R_{\theta JA}$ | 1.0 69.3 | $^\circ\text{C/W}$ $^\circ\text{C/W}$ |

1. Assumes 150 mm² 1 oz. copper band pad, on a FR4 board.

ELECTRICAL CHARACTERISTICS (Per Leg unless otherwise noted)

| Rating | Symbol | Typ | Max | Unit |
|--|--------|----------------------------------|----------------------------|--|
| Maximum Instantaneous Forward Voltage (Note 2) ($I_F = 10\text{ A}$, $T_J = 25^\circ\text{C}$) ($I_F = 20\text{ A}$, $T_J = 25^\circ\text{C}$) ($I_F = 10\text{ A}$, $T_J = 125^\circ\text{C}$) ($I_F = 20\text{ A}$, $T_J = 125^\circ\text{C}$) | V_F | 0.58 0.73 0.53 0.65 | - 0.76 - 0.68 | V |
| Maximum Instantaneous Reverse Current (Note 2) ($V_R = 70\text{ V}$, $T_J = 25^\circ\text{C}$) ($V_R = 70\text{ V}$, $T_J = 125^\circ\text{C}$) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) (Rated dc Voltage, $T_J = 125^\circ\text{C}$) | I_R | 4 4 16 11 | - - 50 30 | μA mA μA mA |
| Diode Capacitance (Rated dc Voltage, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$) | C_d | 147 | - | 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.

2. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

ORDERING INFORMATION

| Device | Package | Shipping |
|----------------|-----------------------|-----------------|
| NRTST40H100CTG | TO-220AB (Pb-Free) | 50 Units / Rail |

NRTST40H100CT

TYPICAL CHARACTERISTICS

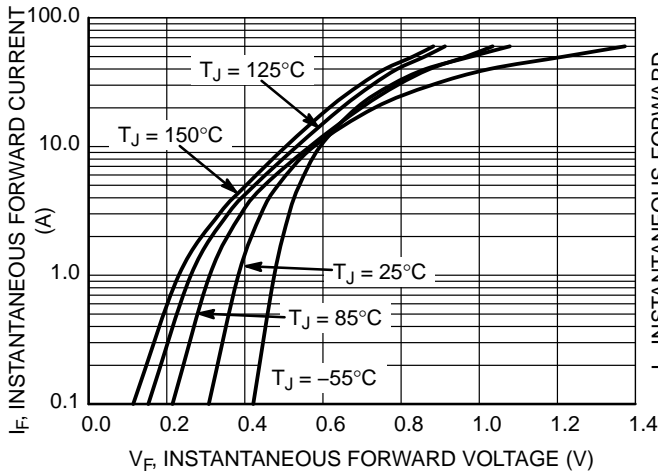


Figure 1. Typical Instantaneous Forward Characteristics

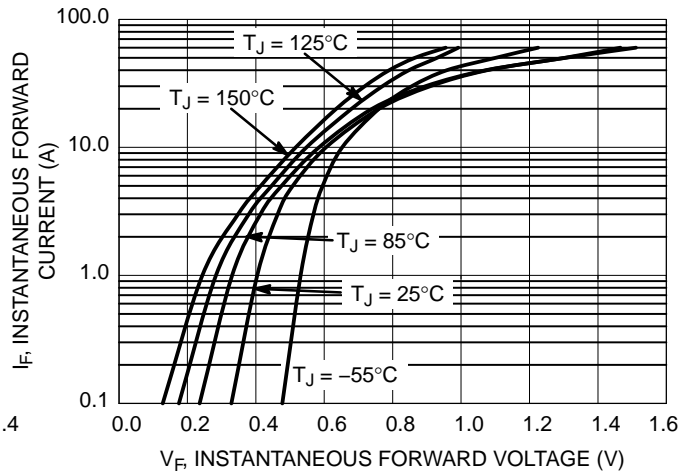


Figure 2. Maximum Instantaneous Forward Characteristics

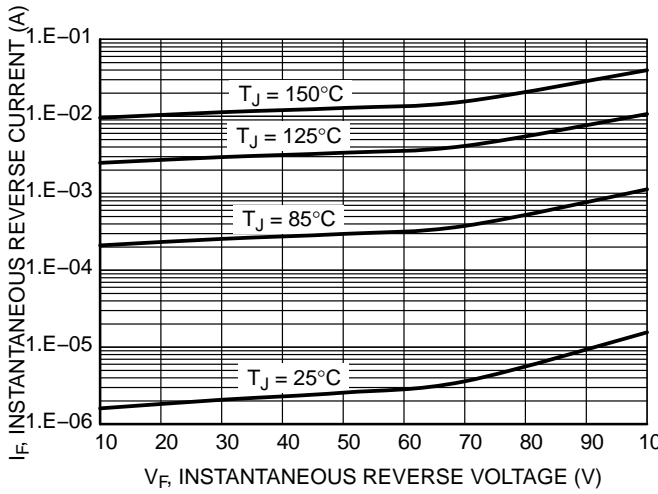


Figure 3. Typical Reverse Characteristics

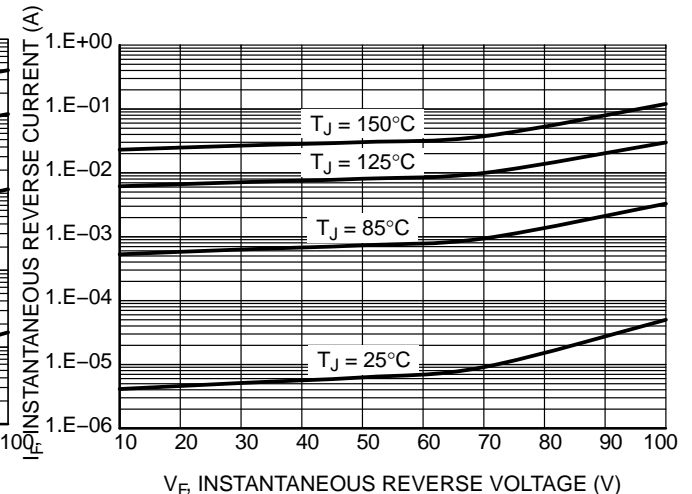


Figure 4. Maximum Reverse Characteristics

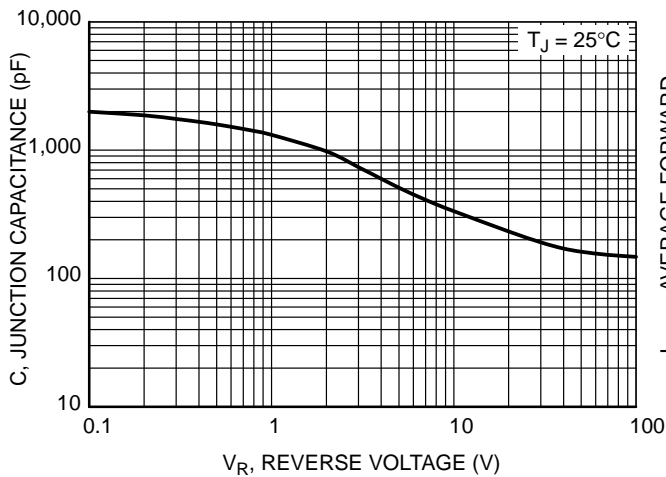


Figure 5. Typical Junction Capacitance

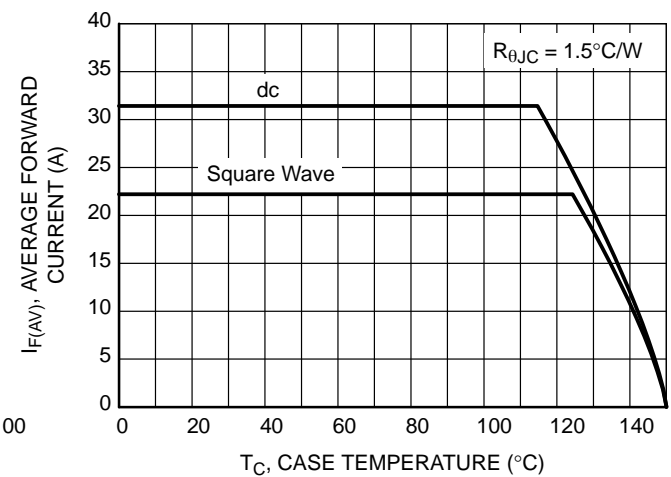


Figure 6. Current Derating per Leg

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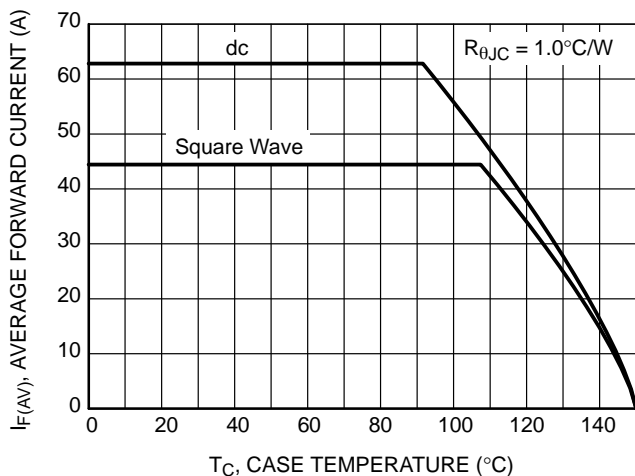


Figure 7. Current Derating, Device

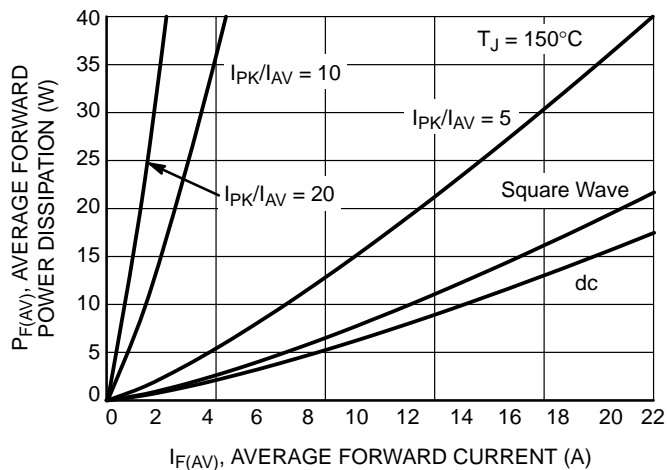


Figure 8. Forward Power Dissipation

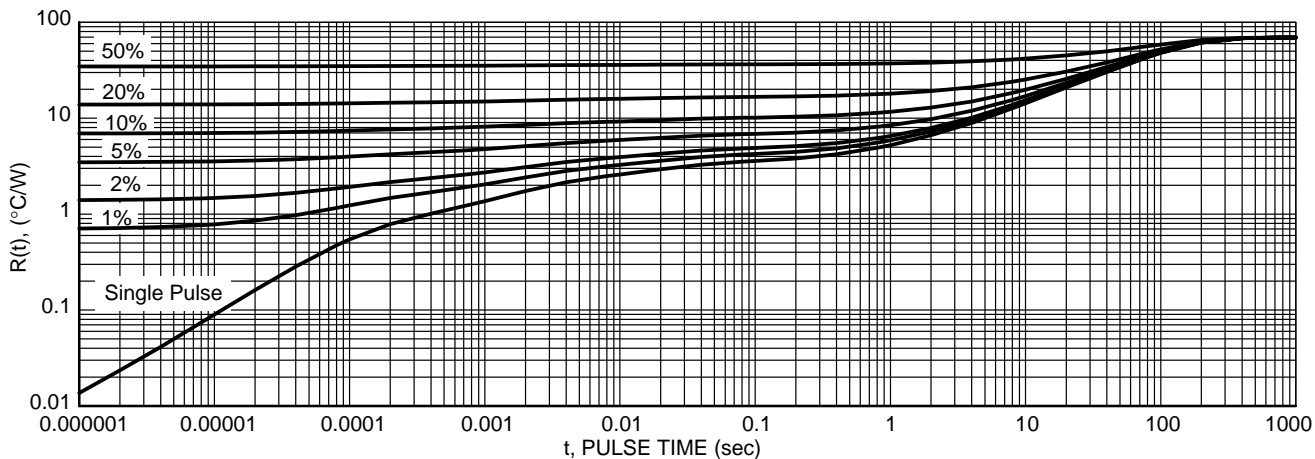


Figure 9. Typical Transient Thermal Response

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