

# NTST40H120CTG

## 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

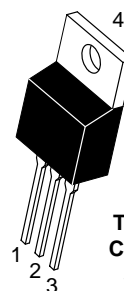
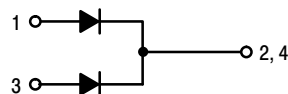


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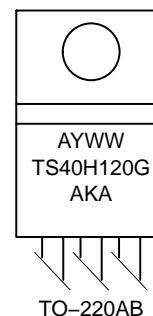
## VERY LOW FORWARD VOLT- AGE, SCHOTTKY BARRIER RECTIFIERS 40 AMPERES, 120 VOLTS

### PIN CONNECTIONS



TO-220AB  
CASE 221A  
STYLE 6

### MARKING DIAGRAM



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

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

# NTST40H120CTG

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	120	V
Average Rectified Forward Current (Rated $V_R$ , $T_C = 124^\circ\text{C}$ ) (Rated $V_R$ , $T_C = 132^\circ\text{C}$ )	$I_{F(AV)}$ Per device Per diode	40 20	A
Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 119^\circ\text{C}$ ) (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 130^\circ\text{C}$ )	$I_{FRM}$ 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	$T_J$	-40 to +150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 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	NTST40H120CTG	Unit
Maximum Thermal Resistance per Device Junction-to-Case Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$	0.81 70	$^\circ\text{C/W}$ $^\circ\text{C/W}$

## ELECTRICAL CHARACTERISTICS (Per Leg unless otherwise noted)

Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1) ( $I_F = 5\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 10\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 20\text{ A}$ , $T_J = 25^\circ\text{C}$ )  ( $I_F = 5\text{ A}$ , $T_J = 125^\circ\text{C}$ ) ( $I_F = 10\text{ A}$ , $T_J = 125^\circ\text{C}$ ) ( $I_F = 20\text{ A}$ , $T_J = 125^\circ\text{C}$ )	$V_F$	0.52 0.65 0.85  0.46 0.55 0.66	– – 0.91  – – 0.69	V
Maximum Instantaneous Reverse Current (Note 1) ( $V_R = 90\text{ V}$ , $T_J = 25^\circ\text{C}$ ) ( $V_R = 90\text{ V}$ , $T_J = 125^\circ\text{C}$ )  (Rated dc Voltage, $T_J = 25^\circ\text{C}$ ) (Rated dc Voltage, $T_J = 125^\circ\text{C}$ )	$I_R$	6 7  – 20	– –  65 42	$\mu\text{A}$ mA  $\mu\text{A}$ 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

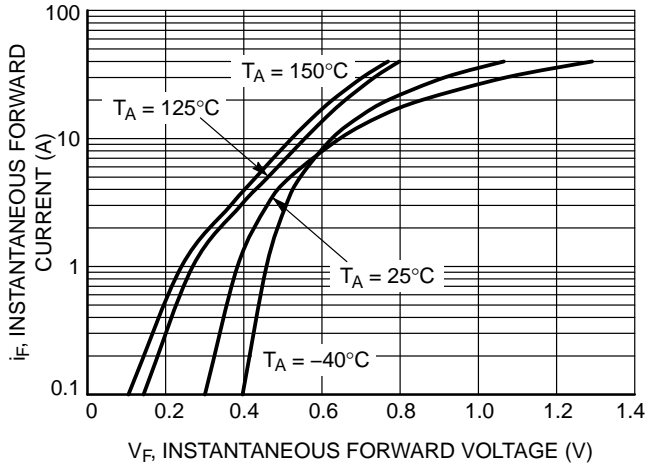


Figure 1. Typical Instantaneous Forward Characteristics

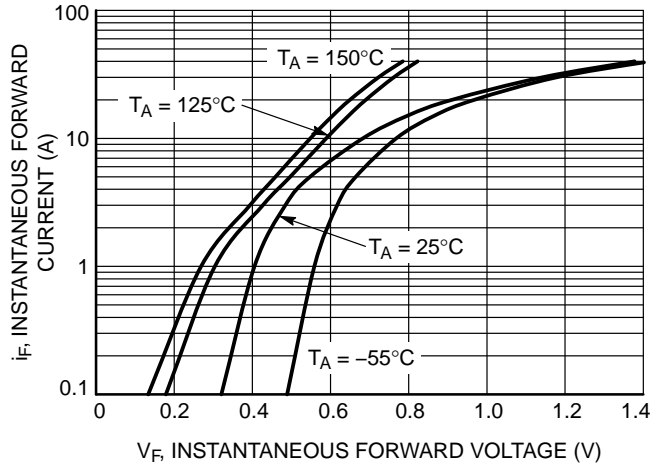


Figure 2. Maximum Instantaneous Forward Characteristics

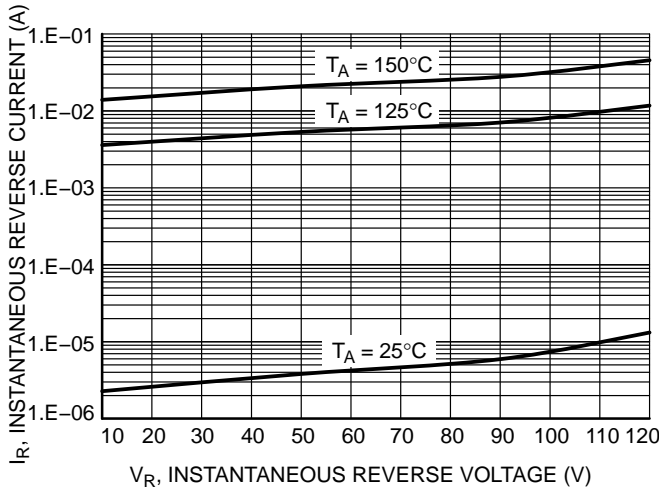


Figure 3. Typical Reverse Characteristics

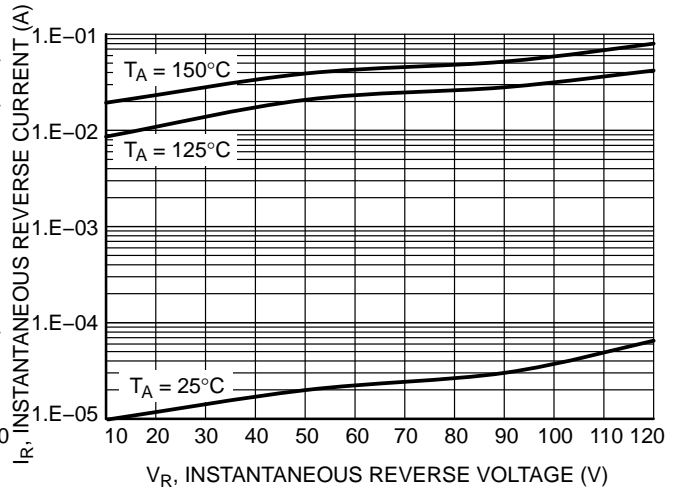


Figure 4. Maximum Reverse Characteristics

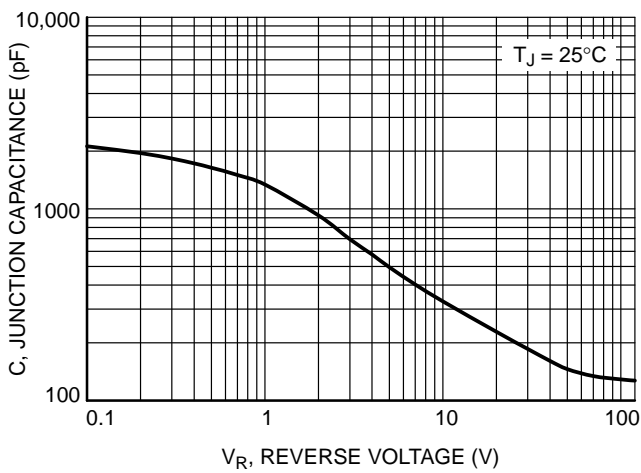


Figure 5. Typical Junction Capacitance

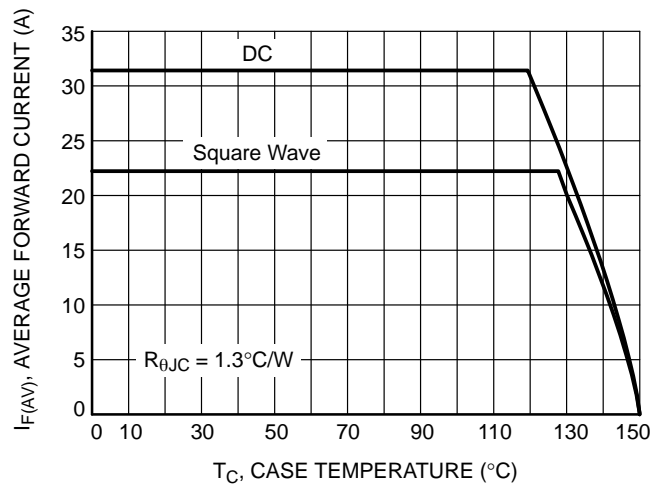


Figure 6. Current Derating per Diode

# NTST40H120CTG

## TYPICAL CHARACTERISTICS

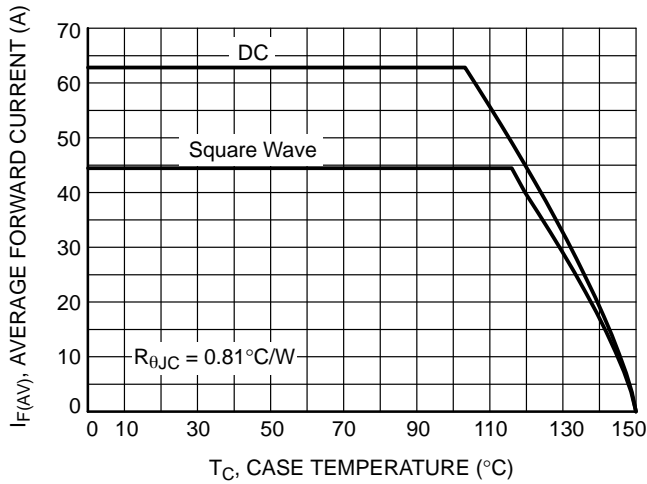


Figure 7. Current Derating per Device

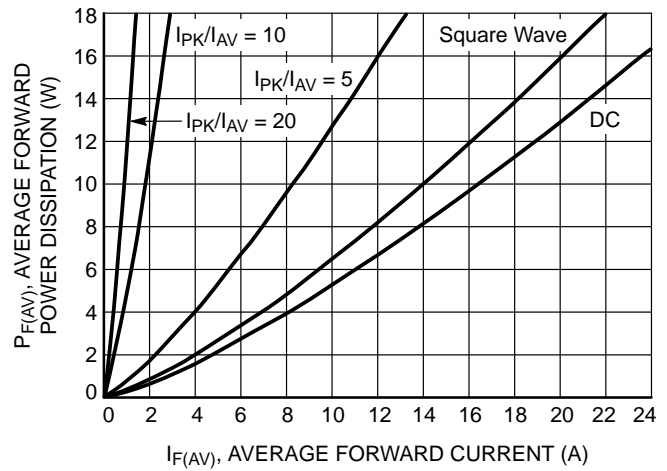


Figure 8. Forward Power Dissipation

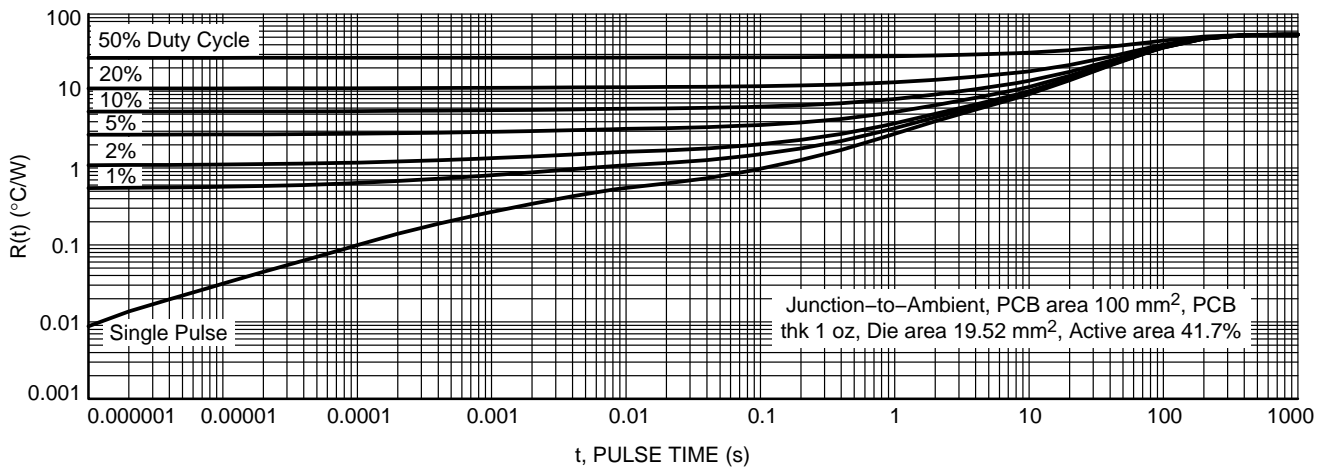


Figure 9. Thermal Characteristics

## ORDERING INFORMATION

Device	Package	Shipping
NTST40H120CTG	TO-220AB (Pb-Free)	50 Units / Rail

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