NTST40H120ECTG

Very Low Leakage Trench-based Schottky Rectifier

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VERY LOW LEAKAGE, SCHOTTKY BARRIER RECTIFIERS 40 AMPERES, 120 VOLTS

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

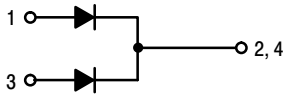
Typical Applications

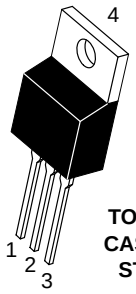
- Switching Power Supplies including Notebook / Netbook Adapters, ATX and Flat Panel Display
- High Frequency and DC−DC Converters
- Freewheeling and OR−ing diodes
- Reverse Battery Protection
- Instrumentation

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

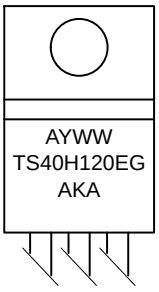
PIN CONNECTIONS





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 in the package dimensions section on page 4 of this data sheet.

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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°C) (Rated V_R, T_C = 134°C)	 Per device Per diode	$I_{F(AV)}$	 40 20	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20 kHz, T_C = 120°C) (Rated V_R, Square Wave, 20 kHz, T_C = 130°C)	 Per device Per diode	I_{FRM}	 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	°C
Storage Temperature		T_{stg}	−40 to +150	°C
Voltage Rate of Change (Rated V_R)		dV/dt	36	V/ns

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	NTST40H120ECTG	Unit
Maximum Thermal Resistance per Device Junction−to−Case Junction−to−Ambient	 $R_{\theta JC}$ $R_{\theta JA}$	 0.81 70	 °C/W °C/W

ELECTRICAL CHARACTERISTICS (Per Leg unless otherwise noted)

Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1) (I_F = 5 A, T_J = 25°C) (I_F = 10 A, T_J = 25°C) (I_F = 20 A, T_J = 25°C) (I_F = 5 A, T_J = 125°C) (I_F = 10 A, T_J = 125°C) (I_F = 20 A, T_J = 125°C)	v_F	 0.54 0.67 0.84 0.47 0.56 0.66	 − − 0.93 − − 0.7	V
Maximum Instantaneous Reverse Current (Note 1) (V_R = 90 V, T_J = 25°C) (V_R = 90 V, T_J = 125°C) (Rated dc Voltage, T_J = 25°C) (Rated dc Voltage, T_J = 125°C)	I_R	 3 5 − 7	 − − 25 28	 μA mA μA 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 μs, Duty Cycle ≤ 2.0%

TYPICAL CHARACTERISTICS

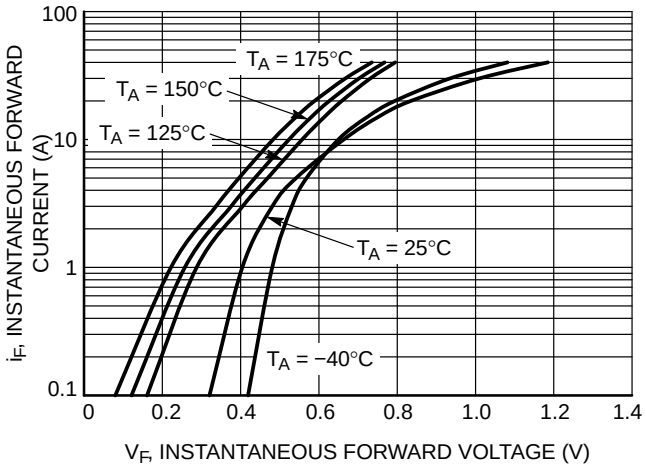


Figure 1. Typical Instantaneous Forward Characteristics

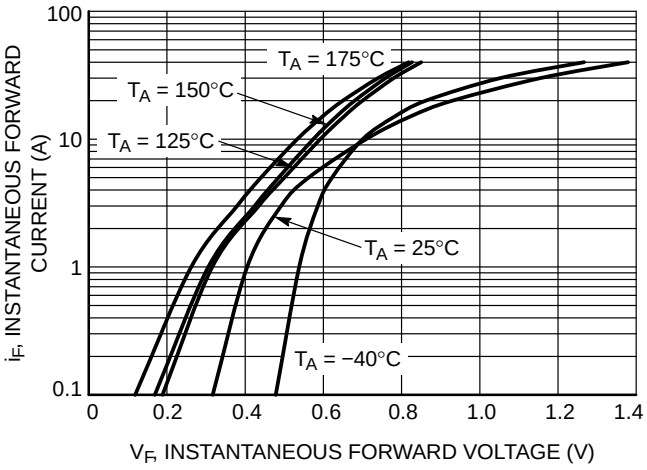


Figure 2. Maximum Instantaneous Forward Characteristics

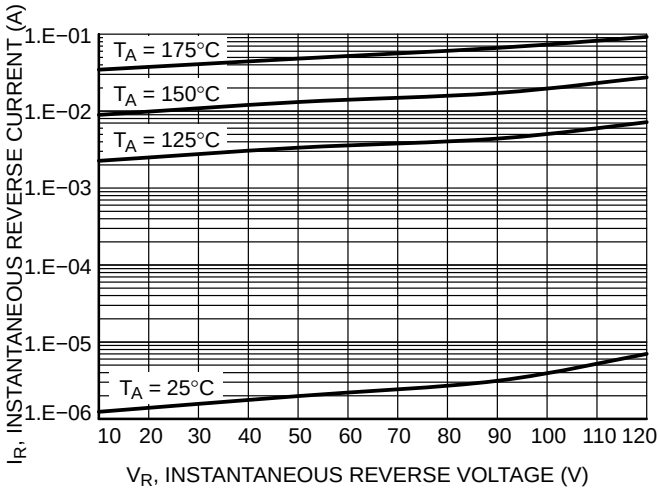


Figure 3. Typical Reverse Characteristics

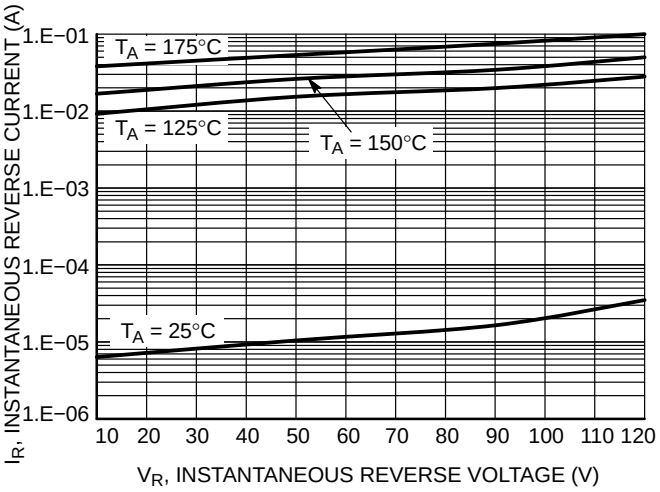


Figure 4. Maximum Reverse Characteristics

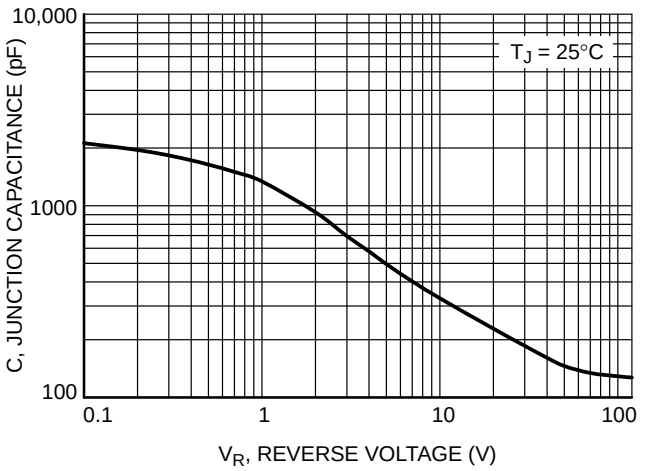


Figure 5. Typical Junction Capacitance

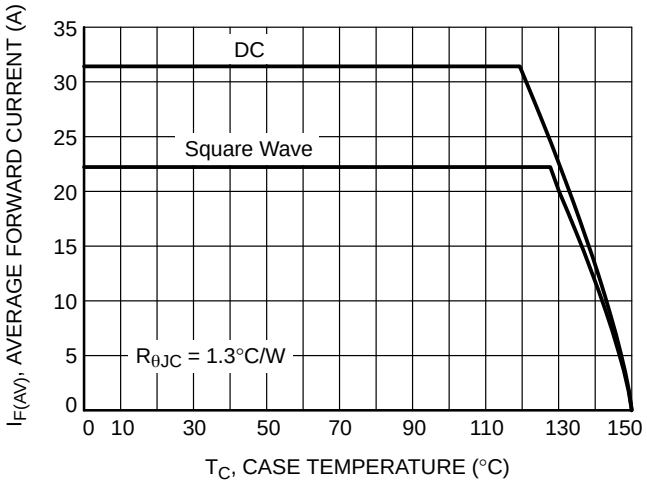


Figure 6. Current Derating per Diode

TYPICAL CHARACTERISTICS

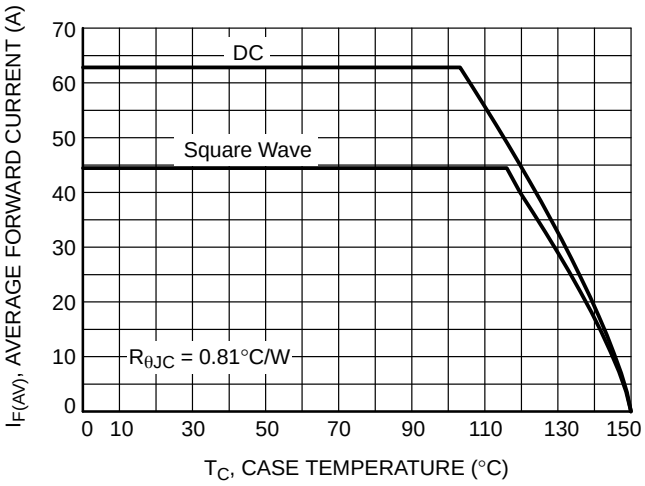


Figure 7. Current Derating per Device

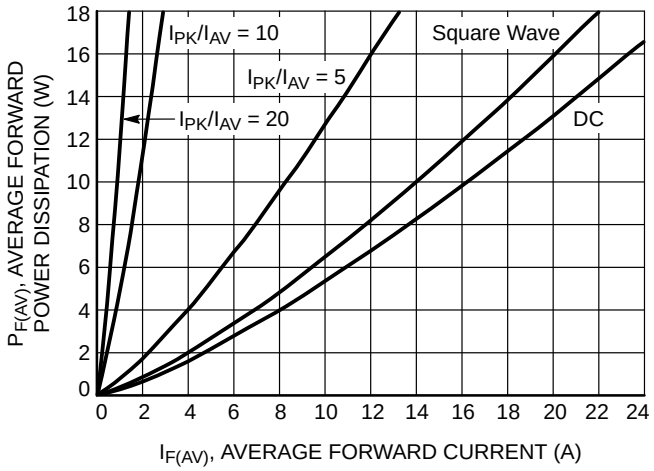


Figure 8. Forward Power Dissipation

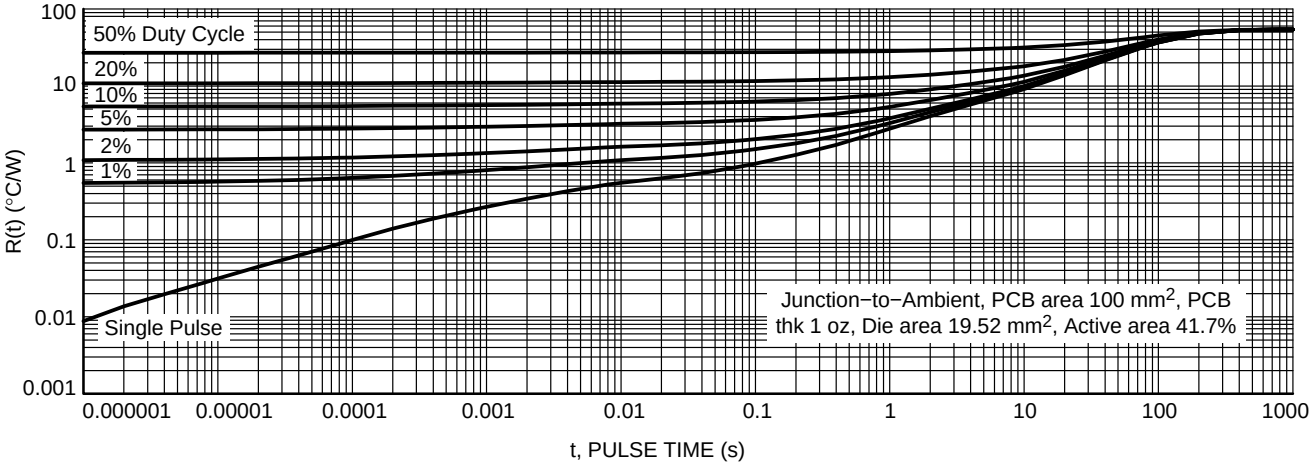


Figure 9. Thermal Characteristics

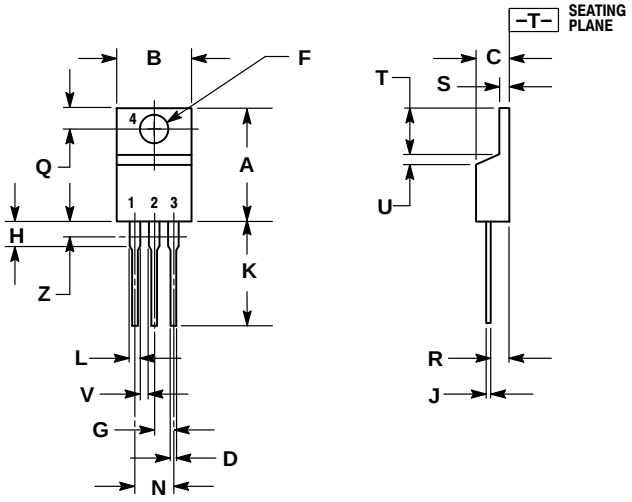
ORDERING INFORMATION

Device	Package	Shipping
NTST40H120ECTG	TO−220AB (Pb−Free)	50 Units / Rail

NTST40H120ECTG

PACKAGE DIMENSIONS

TO−220
CASE 221A−09
ISSUE AF



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.025	0.36	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

STYLE 6:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

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