

# NTST30100SG

## Very Low Forward Voltage Trench-based Schottky Rectifier

Exceptionally Low  $V_F = 0.39\text{ V}$  at  $I_F = 5\text{ A}$

### 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
- This is a Pb-Free Device

### 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
- Weight (Approximately): 1.9 grams
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 sec

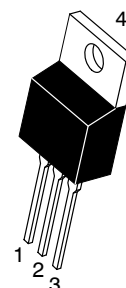
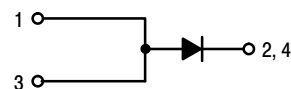


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<http://onsemi.com>

**VERY LOW FORWARD  
VOLTAGE, LOW LEAKAGE  
SCHOTTKY BARRIER  
RECTIFIERS  
30 AMPERES, 100 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 2 of this data sheet.

**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 $V_R$ , $T_C = 105^\circ\text{C}$ )	$I_{F(AV)}$	30	A
Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 95^\circ\text{C}$ )	$I_{FRM}$	60	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	$T_{stg}$	-65 to +175	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	dv/dt	10,000	V/ $\mu\text{s}$

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**

Rating	Symbol	Value	Unit
Maximum Thermal Resistance Junction-to-Case Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$	2.0 70	$^\circ\text{C/W}$ $^\circ\text{C/W}$

**ELECTRICAL CHARACTERISTICS**

Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1) ( $I_F = 5\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 10\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 30\text{ A}$ , $T_J = 25^\circ\text{C}$ )  ( $I_F = 5\text{ A}$ , $T_J = 125^\circ\text{C}$ ) ( $I_F = 10\text{ A}$ , $T_J = 125^\circ\text{C}$ ) ( $I_F = 30\text{ A}$ , $T_J = 125^\circ\text{C}$ )	$V_F$	0.47 0.55 0.84  0.39 0.51 0.7	- - 0.95  - - 0.78	V
Maximum Instantaneous Reverse Current (Note 1) ( $V_R = 70\text{ V}$ , $T_J = 25^\circ\text{C}$ ) ( $V_R = 70\text{ V}$ , $T_J = 125^\circ\text{C}$ )  (Rated dc Voltage, $T_J = 25^\circ\text{C}$ ) (Rated dc Voltage, $T_J = 125^\circ\text{C}$ )	$I_R$	27 11  70 23	   1000 45	$\mu\text{A}$ mA  $\mu\text{A}$ mA

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

**ORDERING INFORMATION**

Device	Package	Shipping
NTST30100SG	TO-220AB (Pb-Free)	50 Units / Rail

TYPICAL CHARACTERISTICS

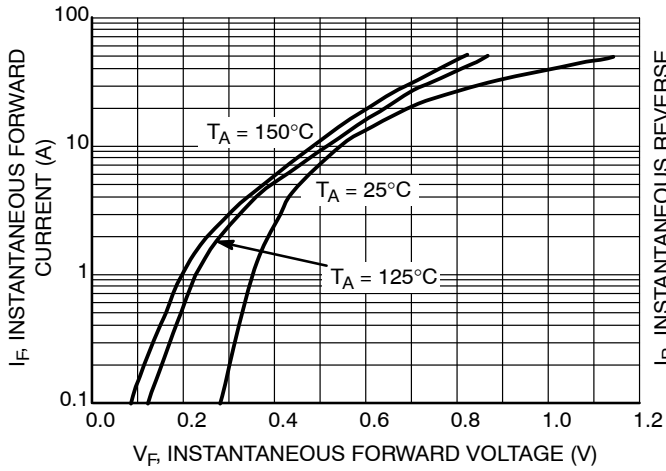


Figure 1. Typical Instantaneous Forward Characteristics

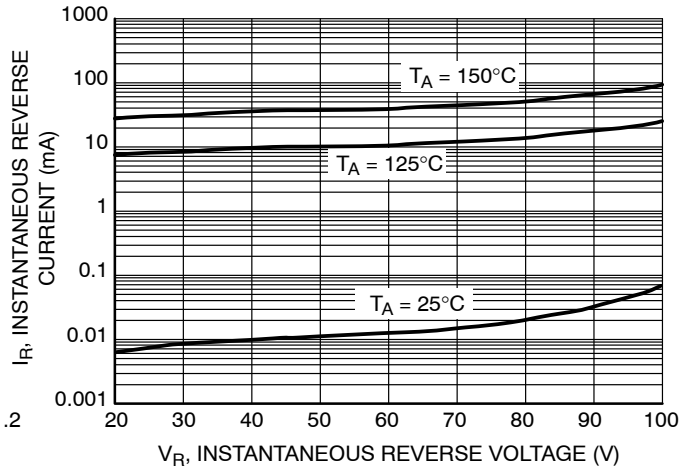


Figure 2. Typical Reverse Characteristics

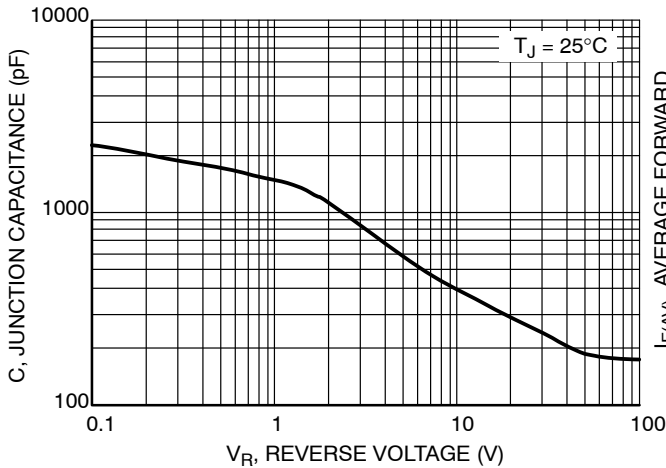


Figure 3. Typical Junction Capacitance

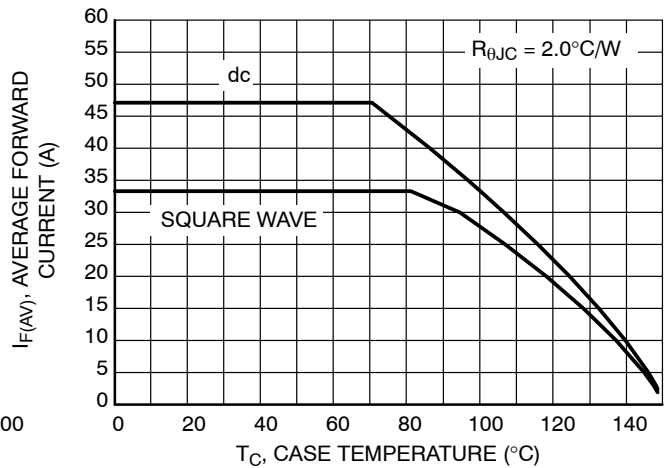


Figure 4. Current Derating, Case

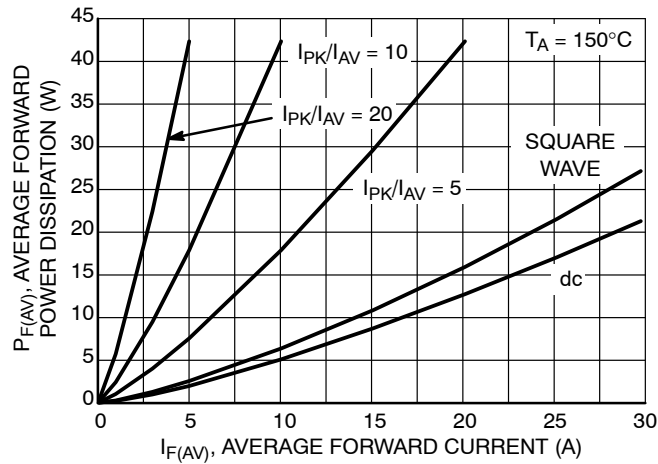


Figure 5. Forward Power Dissipation

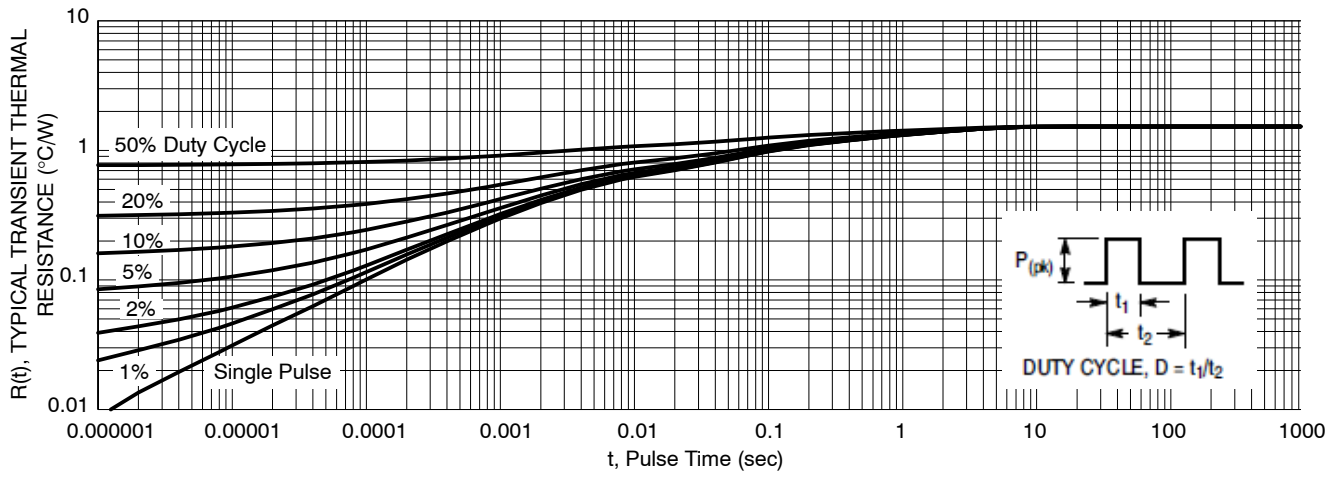
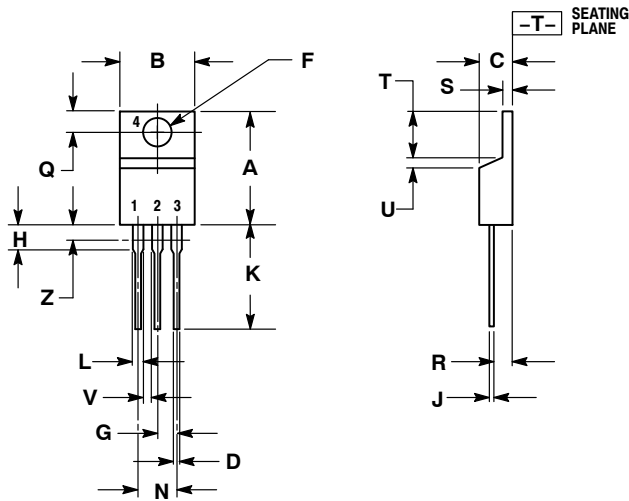


Figure 6. Typical Transient Thermal Response, Junction-to-Case

# NTST30100SG

## 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.

DIM	INCHES		MILLIMETERS	
	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:

1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

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