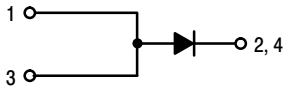
NTSV30100SG

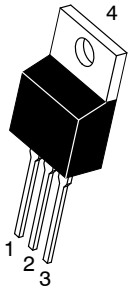
Very Low Forward Voltage Trench-based Schottky Rectifier

Exceptionally Low V_F = 0.41 V at I_F = 5 A

ON Semiconductor®

http://onsemi.com





TO−220AB
CASE 221A
STYLE 3

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 Devices are Pb−Free, Halide Free and are RoHS Compliant

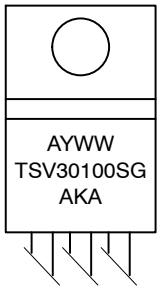
Typical Applications

- 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

MARKING DIAGRAM



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

ORDERING INFORMATION

Device	Package	Shipping†
NTSV30100SG	TO−220 (Pb−Free/ Halide−Free)	50 Units/Rail

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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°C)	$I_{F(AV)}$	30	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20 kHz, T_C = 95°C)	I_{FRM}	60	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	100	A
Operating Junction Temperature	T_J	−40 to +150	°C
Storage Temperature	T_{stg}	−65 to +175	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/μs

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	°C/W °C/W

ELECTRICAL CHARACTERISTICS

Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1)	v_F			V
(I_F = 5 A, T_J = 25°C)		0.47	–	
(I_F = 10 A, T_J = 25°C)		0.57	–	
(I_F = 30 A, T_J = 25°C)		0.915	1.1	
(I_F = 5 A, T_J = 125°C)		0.41	–	
(I_F = 10 A, T_J = 125°C)		0.54	–	
(I_F = 30 A, T_J = 125°C)		0.78	0.85	
Maximum Instantaneous Reverse Current (Note 1)	I_R			
(V_R = 70 V, T_J = 25°C)		12		μA
(V_R = 70 V, T_J = 125°C)		11		mA
(Rated dc Voltage, T_J = 25°C)		55	1000	μA
(Rated dc Voltage, T_J = 125°C)		27	60	mA

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%

TYPICAL CHARACTERISTICS

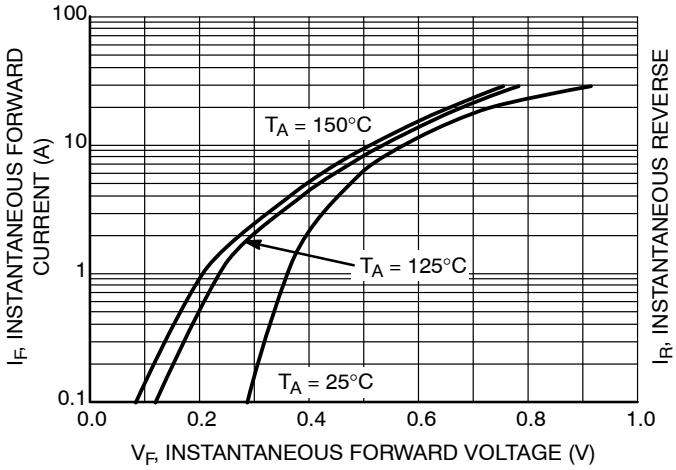


Figure 1. Typical Instantaneous Forward Characteristics

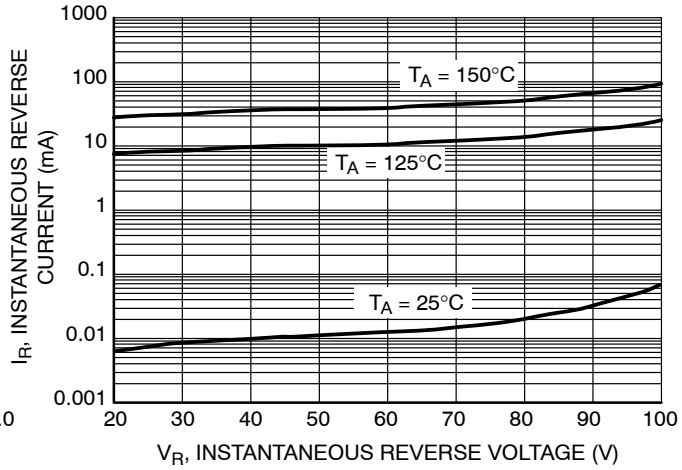


Figure 2. Typical Reverse Characteristics

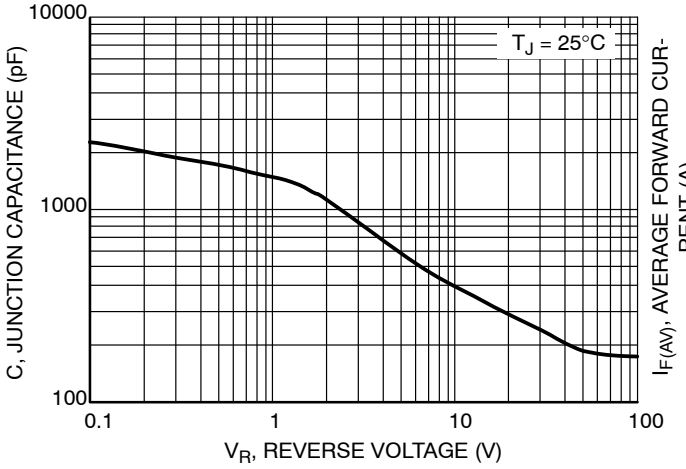


Figure 3. Typical Junction Capacitance

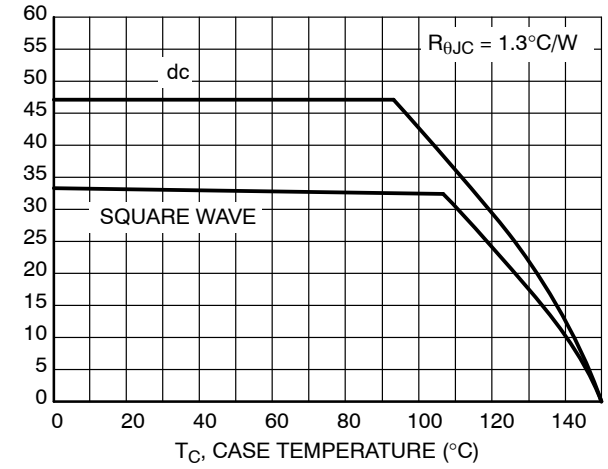


Figure 4. Current Derating, Case

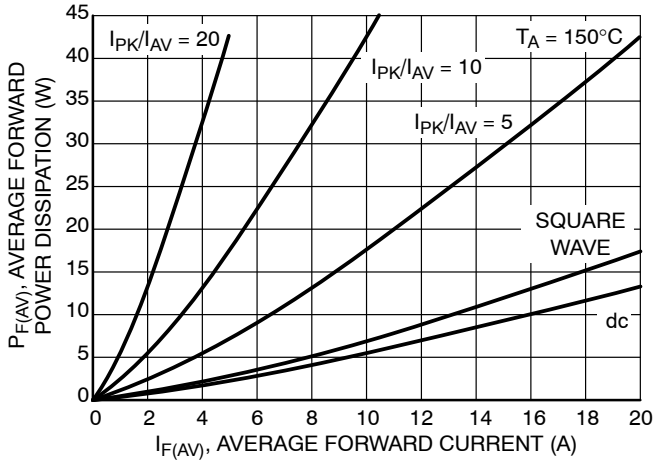


Figure 5. Forward Power Dissipation

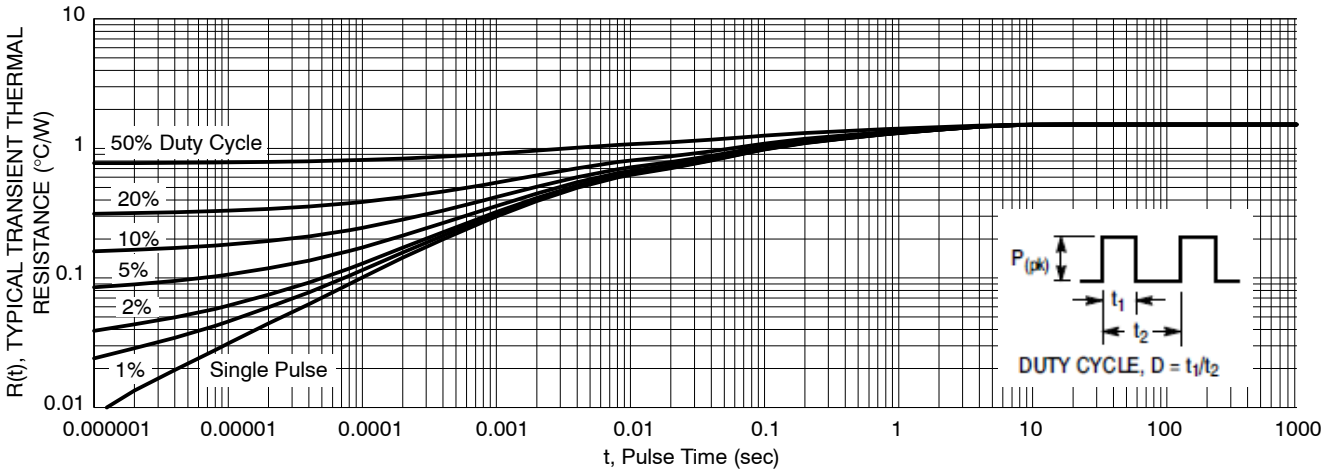
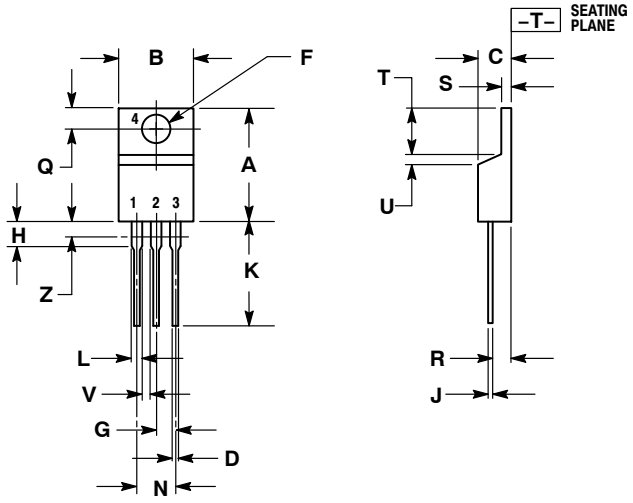


Figure 6. Typical Transient Thermal Response, Junction−to−Case

PACKAGE DIMENSIONS

TO−220
CASE 221A−09
ISSUE AG



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	0.036	0.64	0.91
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
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 3:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

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