NTST30100SG, NTSB30100S-1G

Very Low Forward Voltage Trench-based Schottky Rectifier

Exceptionally Low V_F = 0.39 V at I_F = 5 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
- These are Pb−Free Devices

Typical Applications

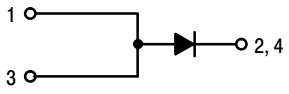
- Switching Power Supplies including Notebook/Netbook Adapters, ATX and Flat Panel Display
- High Frequency and DC−DC Converters
- Freewheeling and OR−ing Diodes
- Reverse Battery Protection
- Instrumentation

Mechanical Characteristics

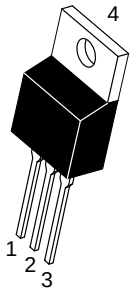
- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94−0 @ 0.125 in
- Weight (Approximately): 1.9 Grams
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 sec

ON Semiconductor®

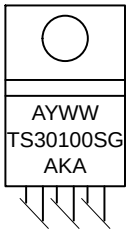
http://onsemi.com

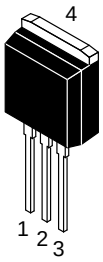


MARKING DIAGRAMS

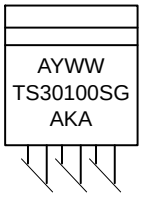


TO−220
CASE 221A
STYLE 6





I^2PAK (TO−262)
CASE 418D
STYLE 3



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

ORDERING INFORMATION

Device	Package	Shipping†
NTST30100SG	TO−220 (Pb−Free)	50 Units/Rail
NTSB30100S−1G	TO−262 (Pb−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}	250	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 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	Value	Unit
Maximum Thermal Resistance Junction−to−Case Junction−to−Ambient	 $R_{\theta JC}$ $R_{\theta JA}$	 2.0 70	°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)		0.55	−	
(I_F = 30 A, T_J = 25°C)		0.84	0.95	
(I_F = 5 A, T_J = 125°C)		0.39	−	
(I_F = 10 A, T_J = 125°C)		0.51	−	
(I_F = 30 A, T_J = 125°C)		0.7	0.78	
Maximum Instantaneous Reverse Current (Note 1)	I_R			
(V_R = 70 V, T_J = 25°C)		27		μA
(V_R = 70 V, T_J = 125°C)		11		mA
(Rated dc Voltage, T_J = 25°C)		70	1000	μA
(Rated dc Voltage, T_J = 125°C)		23	45	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

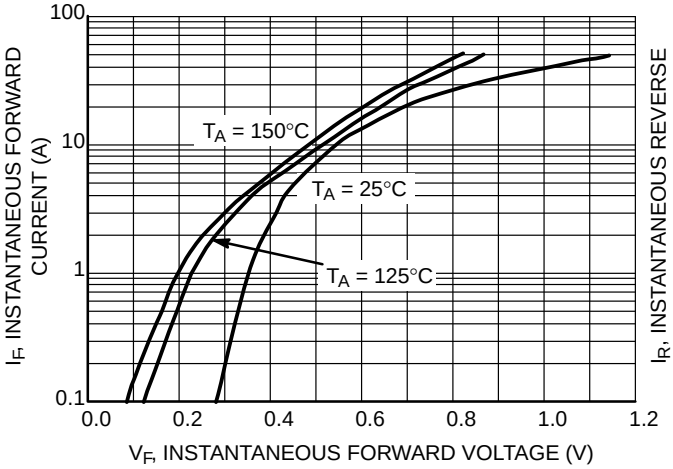


Figure 1. Typical Instantaneous Forward Characteristics

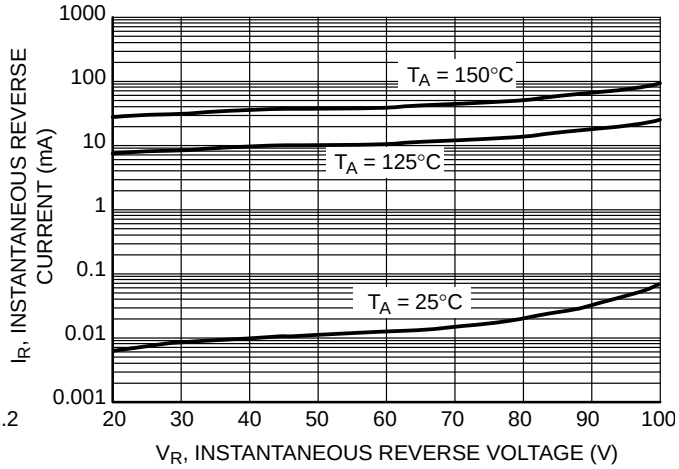


Figure 2. Typical Reverse Characteristics

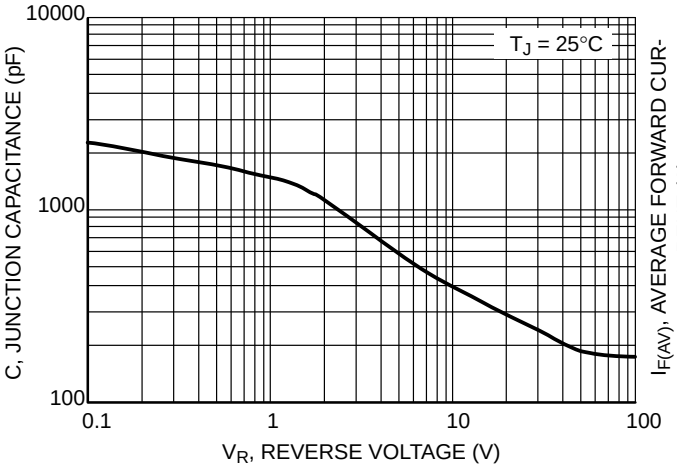


Figure 3. Typical Junction Capacitance

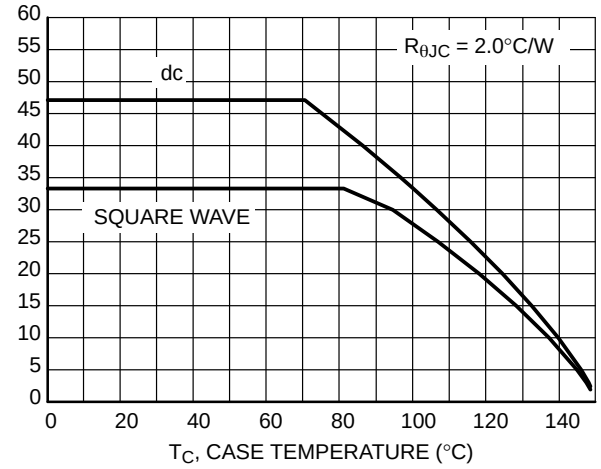


Figure 4. Current Derating, Case

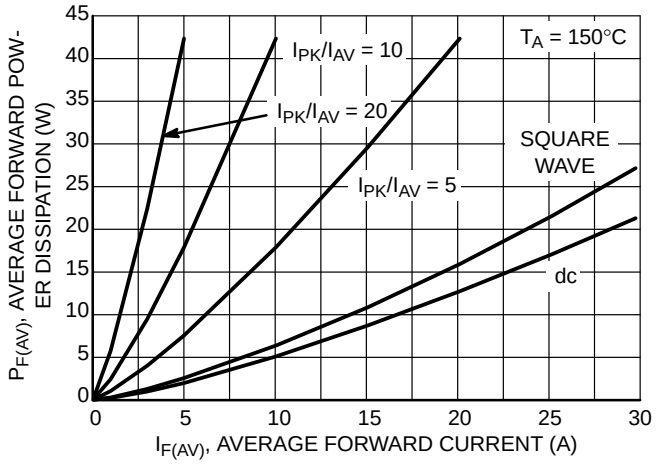


Figure 5. Forward Power Dissipation

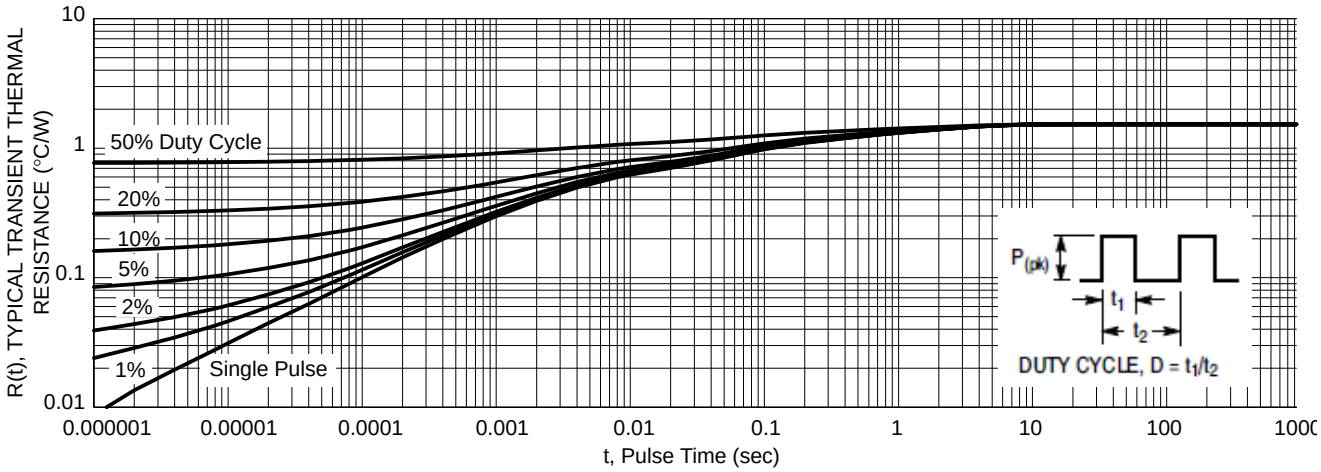
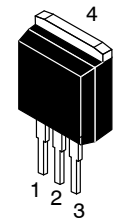


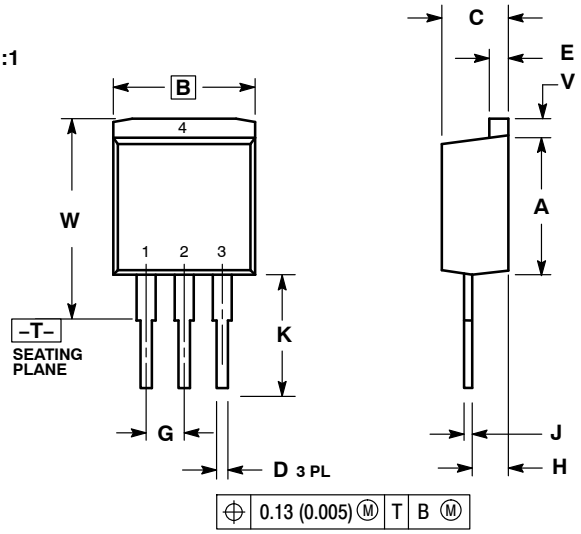
Figure 6. Typical Transient Thermal Response, Junction−to−Case

D2PAK, 3−LEAD, STRAIGHT
CASE 418
ISSUE J

DATE 08 OCT 2003



SCALE 1:1



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 418−01 THRU −04 OBSOLETE, NEW STANDARD 418−05.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.340	0.380	8.64	9.65
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.83
D	0.020	0.035	0.51	0.89
E	0.045	0.055	1.14	1.40
G	0.100 BSC		2.54 BSC	
H	0.080	0.110	2.03	2.79
J	0.018	0.025	0.46	0.64
K	0.285	0.305	7.493	7.747
V	0.045	0.055	1.14	1.40
W	0.525	0.545	13.335	13.843

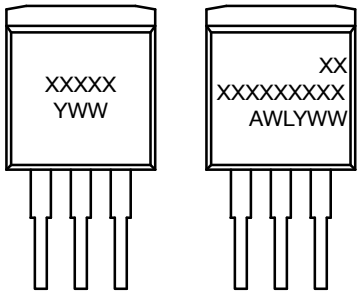
STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 2:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

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

STYLE 4:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

GENERIC MARKING DIAGRAMS*



Discrete IC

XXXX = Specific Device Code
A = Assembly Location
WL = Wafer Lot
Y = Year
WW = Work Week

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

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