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Very Low Forward Voltage Trench-based Schottky Rectifier

Exceptionally Low $V_F = 0.42$ 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
- Pb-Free and Halide-Free Packages are Available

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

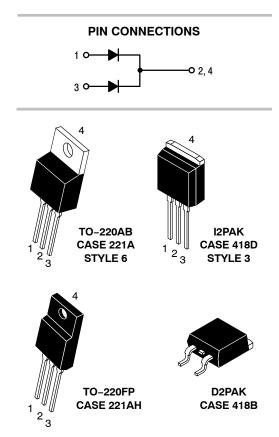
- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94-0 @ 0.125 in
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 sec



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VERY LOW FORWARD VOLT-AGE, LOW LEAKAGE SCHOT-TKY BARRIER RECTIFIERS 30 AMPERES, 100 VOLTS



ORDERING INFORMATION

See detailed ordering and shipping information on page 5 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 = 125°C)	Per device Per diode	I _{F(AV)}	30 15	A
Peak Repetitive Forward Current (Rated V_R , Square Wave, 20 kHz, T_C = 120°C)	Per device Per diode	I _{FRM}	60 30	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)		I _{FSM}	160	A
Operating Junction Temperature		TJ	-40 to +150	°C
Storage Temperature		T _{stg}	-40 to +150	°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.

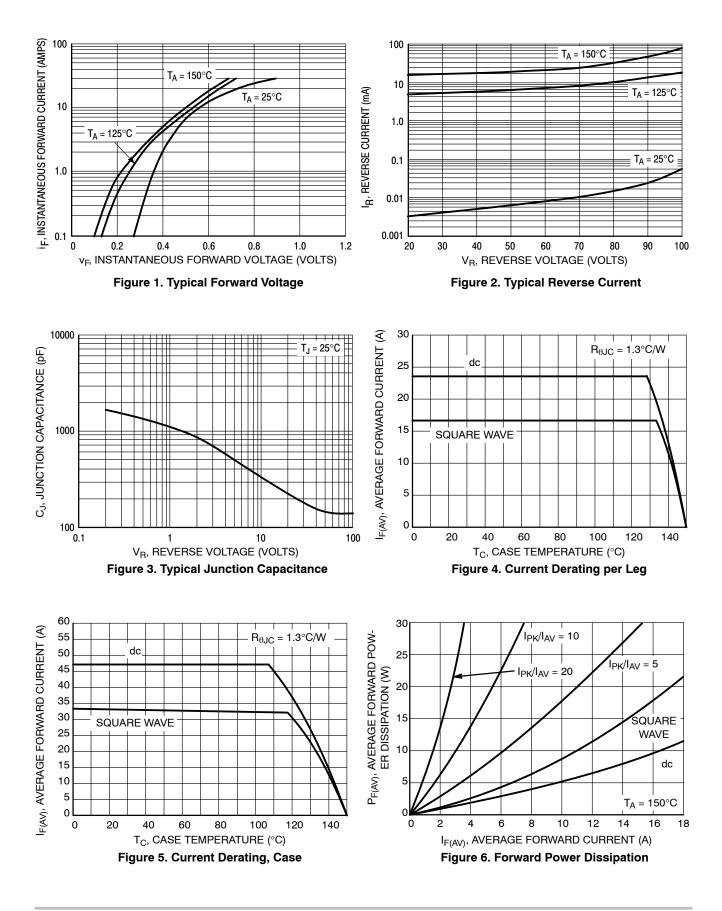
THERMAL CHARACTERISTICS

Rating	Symbol	NTST30U100CTG, NTSB30U100CT-1G	NTSB30U100CTG	NTSJ30U100CTG	Unit
Maximum Thermal Resistance per Diode Junction-to-Case Junction-to-Ambient	$R_{ heta JC} \ R_{ heta JA}$	2.5 70	0.93 46.5	3.81 105	°C/W °C/W

ELECTRICAL CHARACTERISTICS (Per Leg unless otherwise noted)

Rating	Symbol	Тур	Max	Unit
	VF	0.47 0.52 0.66	- - 0.80	V
$(I_F = 5 A, T_J = 125^{\circ}C)$ $(I_F = 7.5 A, T_J = 125^{\circ}C)$ $(I_F = 15 A, T_J = 125^{\circ}C)$		0.42 0.48 0.60	- - 0.65	
Maximum Instantaneous Reverse Current (Note 1) ($V_R = 70 \text{ V}, T_J = 25^{\circ}\text{C}$) ($V_R = 70 \text{ V}, T_J = 125^{\circ}\text{C}$)	I _R	15 12		μA mA
(Rated dc Voltage, $T_J = 25^{\circ}C$) (Rated dc Voltage, $T_J = 125^{\circ}C$)		65 32	675 60	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 = $300 \ \mu$ s, Duty Cycle $\leq 2.0\%$



TYPICAL CHARACTERISITICS

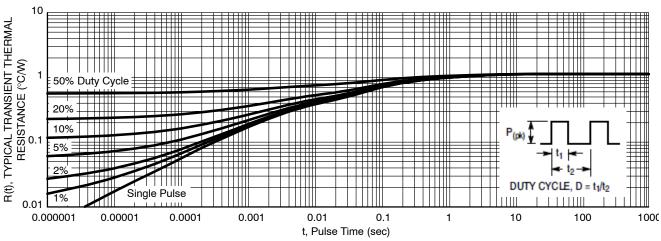


Figure 7. Typical Transient Thermal Response, Junction-to-Case for NTST30U100CT and NTSB30U100CT-1G

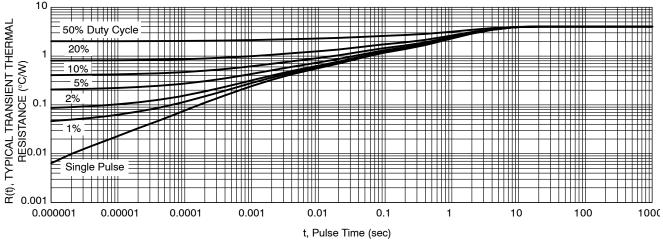
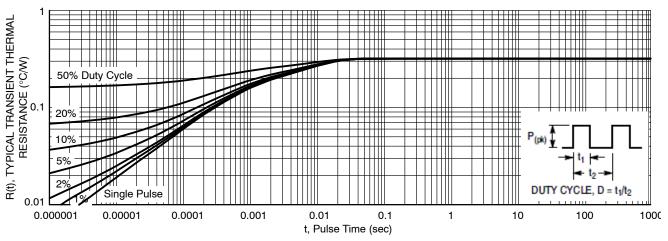


Figure 8. Typical Transient Thermal Response, Junction-to-Case for NTSJ30U100CTG



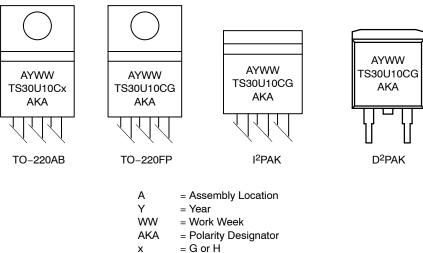


TYPICAL CHARACTERISITICS

ORDERING INFORMATION

Device	Package	Shipping [†]
ITST30U100CTG TO-220AB (Pb-Free)		50 Units / Rail
NTST30U100CTH	TO-220AB (Halide-Free)	50 Units / Rail
NTSB30U100CT-1G	l ² PAK (Pb–Free)	50 Units / Rail
NTSJ30U100CTG	TO-220FP (Halide-Free)	50 Units / Rail
NTSB30U100CTG	D ² PAK (Pb–Free)	50 Units / Rail
NTSB30U100CTT4G	D ² PAK (Pb–Free)	800 / Tape & Reel

+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.



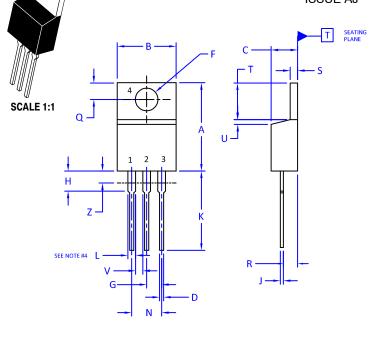
MARKING DIAGRAMS

- = G or H
- G = Pb-Free Package
- н = Halide-Free Package

DATE 05 NOV 2019



TO-220 CASE 221A-09 ISSUE AJ



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 2009.

2. CONTROLLING DIMENSION: INCHES

3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

4. MAX WIDTH FOR F102 DEVICE = 1.35MM

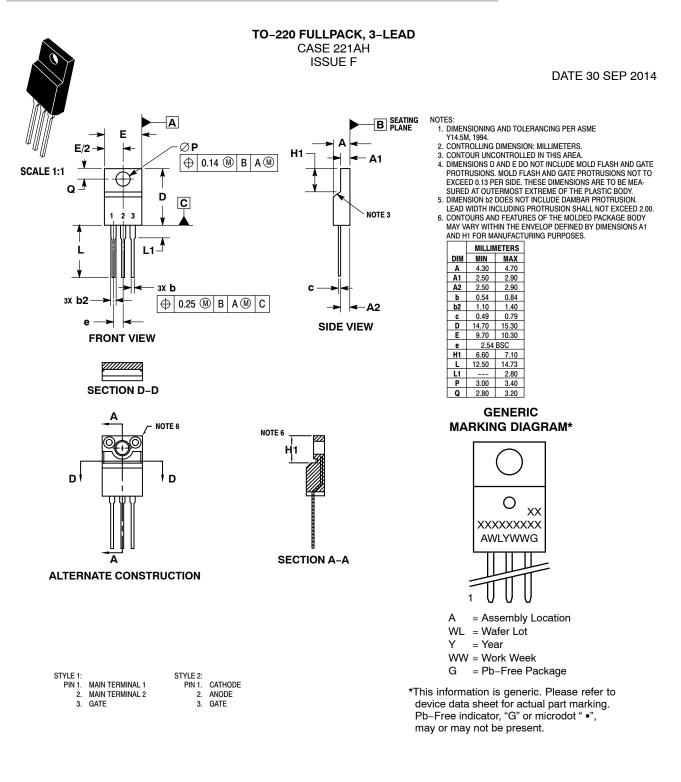
	INCH	IES	MILLIME	ETERS
DIM	MIN.	MAX.	MIN.	MAX.
А	0.570	0.620	14.48	15.75
В	0.380	0.415	9.66	10.53
С	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
F	0.142	0.161	3.60	4.09
G	0.095	0.105	2.42	2.66
Н	0.110	0.161	2.80	4.10
J	0.014	0.024	0.36	0.61
К	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
Ν	0.190	0.210	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	1.41
Т	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 1: PIN 1. 2. 3. 4.	EMITTER	STYLE 2: PIN 1. 2. 3. 4.	COLLECTOR	2. 3.	CATHODE ANODE GATE ANODE	STYLE 4: PIN 1. 2. 3. 4.	MAIN TERMINAL 1 MAIN TERMINAL 2 GATE MAIN TERMINAL 2
2.	SOURCE	2. 3.	ANODE CATHODE ANODE CATHODE	2. 3.	CATHODE ANODE CATHODE ANODE	2. 3.	CATHODE ANODE EXTERNAL TRIP/DELAY ANODE
STYLE 9: PIN 1. 2. 3. 4.	EMITTER	2. 3.	GATE SOURCE	2. 3.	DRAIN SOURCE GATE SOURCE	STYLE 12 PIN 1. 2. 3. 4.	MAIN TERMINAL 1 MAIN TERMINAL 2

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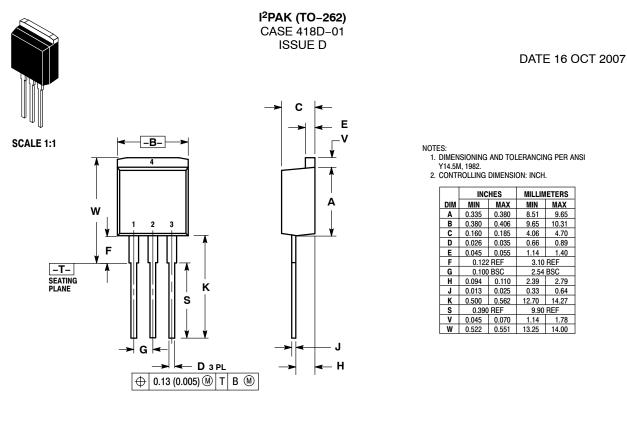




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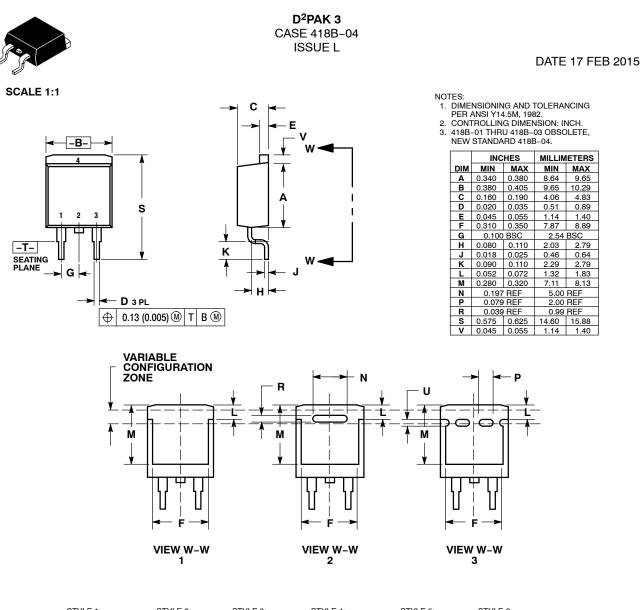




STYLE 1:	STYLE 2:	STYLE 3:	STYLE 4:
PIN 1. BASE	PIN 1. GATE	PIN 1. ANODE	PIN 1. GATE
2. COLLECTOR	2. DRAIN	2. CATHODE	2. COLLECTOR
3. EMITTER	3. SOURCE	3. ANODE	3. EMITTER
 COLLECTOR 	4. DRAIN	4. CATHODE	4. COLLECTOR

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STYLE 1:	STYLE 2:	STYLE 3:	STYLE 4:	STYLE 5:	STYLE 6:
PIN 1. BASE	PIN 1. GATE	PIN 1. ANODE	PIN 1. GATE	PIN 1. CATHODE	PIN 1. NO CONNECT
2. COLLECTOR	2. DRAIN	2. CATHODE	2. COLLECTOR	2. ANODE	2. CATHODE
3. EMITTER	SOURCE	ANODE	3. EMITTER	3. CATHODE	3. ANODE
4. COLLECTOR	4. DRAIN	4. CATHODE	4. COLLECTOR	4. ANODE	4. CATHODE

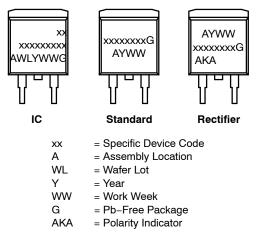
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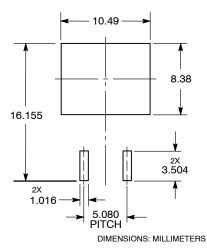
DATE 17 FEB 2015

GENERIC MARKING DIAGRAM*



*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.

SOLDERING FOOTPRINT*



*For additional information on our Pb–Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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