Very Low Forward Voltage Trench-based Schottky Rectifier

Exceptionally Low $V_F = 0.455 \text{ V}$ 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 Package

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

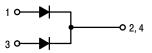
- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94-0 @ 0.125 in
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 sec

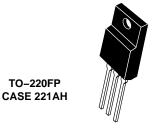


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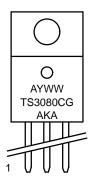
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PIN CONNECTIONS





MARKING DIAGRAMS



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	80	V
Average Rectified Forward Current (Rated V _R , T _C = 115°C)	Per device Per diode	I _{F(AV)}	30 15	A
Peak Repetitive Forward Current (Rated V _R , Square Wave, 20 kHz, T _C = 110°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	А
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	Value	Unit
Maximum Thermal Resistance (insertion mounted to 1 oz FR4 Board)	Junction-to-Case	$R_{\theta JC}$	4.0	°C/W
(insertion mounted to 1 oz FR4 Board)	Junction-to-Ambient	$R_{\theta JA}$	105	°C/W

^{1.} Junction-to-Case, using large Heatsink attached to device.

ELECTRICAL CHARACTERISTICS (Per Leg unless otherwise noted)

Rating	Symbol	Тур	Max	Unit
Maximum Instantaneous Forward Voltage (Note 3)	V _F			V
$(I_F = 5 \text{ A}, T_J = 25^{\circ}\text{C})$		0.516	_	
$(I_F = 7.5 \text{ A}, T_J = 25^{\circ}\text{C})$ $(I_F = 15 \text{ A}, T_J = 25^{\circ}\text{C})$		0.576 0.734	0.85	
(I _F = 5 A, T _J = 125°C)		0.455	_	
$(I_F = 7.5 \text{ A}, T_J = 125^{\circ}\text{C})$		0.522	_	
(I _F = 15 A, T _J = 125°C)		0.627	0.68	
Maximum Instantaneous Reverse Current (Note 3) (Rated dc Voltage, T _J = 25°C)	I _R	20	700	μΑ
(Rated dc Voltage, $T_J = 125^{\circ}C$)		8	30	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.

ORDERING INFORMATION

Device	Package	Shipping
NTSJ3080CTG	TO-220FB (Pb-Free)	50 Units / Rail

^{2.} Junction-to-Ambient, using with no Heatsink.

^{3.} Pulse Test: Pulse Width = 300 μ s, Duty Cycle $\leq 2.0\%$

TYPICAL CHARACTERISITICS

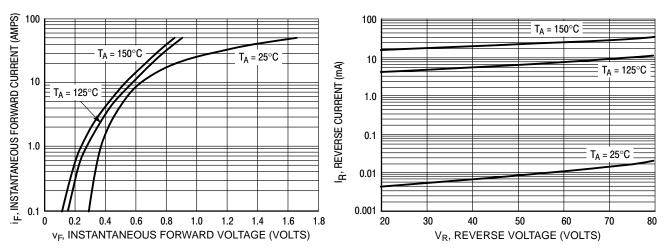


Figure 1. Typical Forward Voltage

Figure 2. Typical Reverse Current

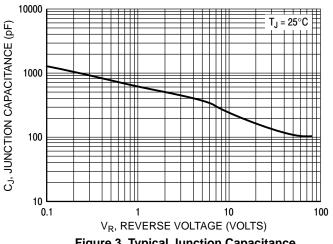


Figure 3. Typical Junction Capacitance

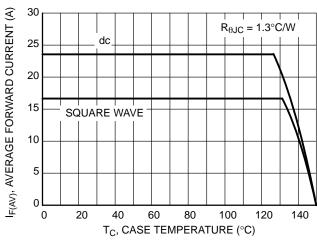


Figure 4. Current Derating per Leg

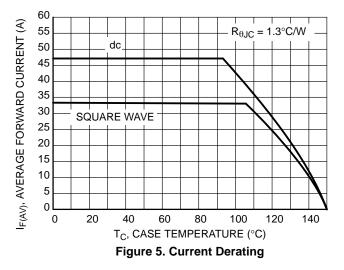


Figure 6. Forward Power Dissipation

TYPICAL CHARACTERISITICS

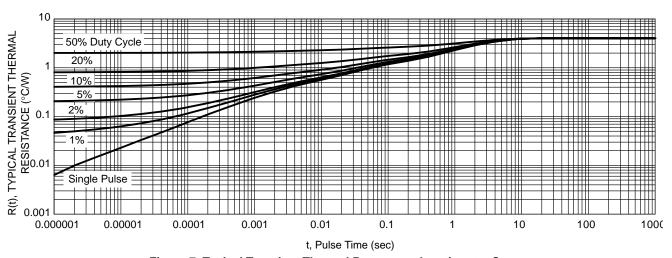
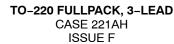
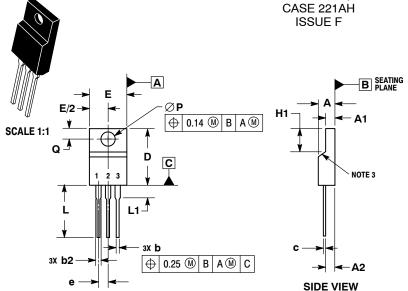
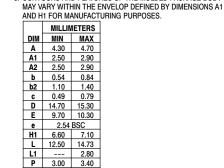


Figure 7. Typical Transient Thermal Response, Junction-to-Case



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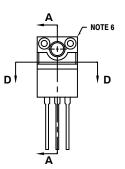


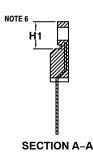


NOTES:

SECTION D-D

FRONT VIEW





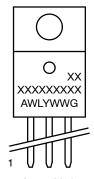
ALTERNATE CONSTRUCTION

GENERIC MARKING DIAGRAM*

 DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994. 2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR UNCONTROLLED IN THIS AREA.

3. CONTOUR UNCONTROLLED IN THIS AREA.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH AND GATE PROTRUSIONS. MOLD FLASH AND GATE PROTRUSIONS NOT TO EXCEED 0.13 PER SIDE. THESE DIMENSIONS ARE TO BE MEASURED AT OUTERMOST EXTREME OF THE PLASTIC BODY.
5. DIMENSION b2 DOES NOT INCLUDE DAMBAR PROTRUSION. LEAD WIDTH INCLUDING PROTRUSION SHALL NOT EXCEED 2.00.
6. CONTOURS AND FEATURES OF THE MOLDED PACKAGE BODY.

MAY VARY WITHIN THE ENVEL OR DEFINED BY UNIENSIONS A1



= Assembly Location

WL = Wafer Lot

= Year

WW = Work Week

G = Pb-Free Package

*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.

STYLE 1:		STYLE 2:	
PIN 1.	MAIN TERMINAL 1	PIN 1.	CATHODE
2.	MAIN TERMINAL 2	2.	ANODE
3.	GATE	3.	GATE

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DESCRIPTION	TO-220 FULL PACK 3-1 FA	ΔD	PAGE 1 OF 1

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