

# NTSJ30U80CTG

## Very Low Forward Voltage Trench-based Schottky Rectifier

Exceptionally Low  $V_F = 0.42\text{ V}$  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

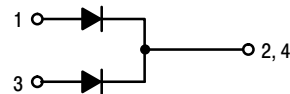


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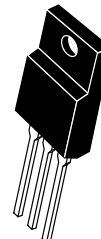
[www.onsemi.com](http://www.onsemi.com)

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

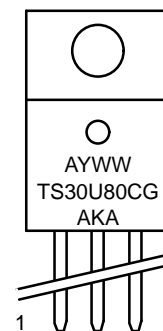
### PIN CONNECTIONS



TO-220FP  
CASE 221AH



### 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.

# NTSJ30U80CTG

## 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 $V_R$ , $T_C = 125^\circ\text{C}$ )	$I_{F(AV)}$	30 15	A
Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 120^\circ\text{C}$ )	$I_{FRM}$	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	$T_J$	-40 to +150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 to +150	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	dv/dt	10,000	V/ $\mu\text{s}$

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	$^\circ\text{C/W}$
	Junction-to-Ambient	$R_{\theta JA}$	105	$^\circ\text{C/W}$

1. Junction-to-Case, using large Heatsink attached to device.
2. Junction-to-Ambient, using with no Heatsink.

## ELECTRICAL CHARACTERISTICS (Per Leg unless otherwise noted)

Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 3) ( $I_F = 5\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 7.5\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 15\text{ A}$ , $T_J = 25^\circ\text{C}$ )  ( $I_F = 5\text{ A}$ , $T_J = 125^\circ\text{C}$ ) ( $I_F = 7.5\text{ A}$ , $T_J = 125^\circ\text{C}$ ) ( $I_F = 15\text{ A}$ , $T_J = 125^\circ\text{C}$ )	$V_F$	0.47 0.52 0.66  0.42 0.48 0.60	- - 0.80  - - 0.65	V
Maximum Instantaneous Reverse Current (Note 3) (Rated dc Voltage, $T_J = 25^\circ\text{C}$ ) (Rated dc Voltage, $T_J = 125^\circ\text{C}$ )	$I_R$	15 10	200 35	$\mu\text{A}$ 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.

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

## ORDERING INFORMATION

Device	Package	Shipping
NTSJ30U80CTG	TO-220FP (Pb-Free)	50 Units / Rail

# NTSJ30U80CTG

## TYPICAL CHARACTERISTICS

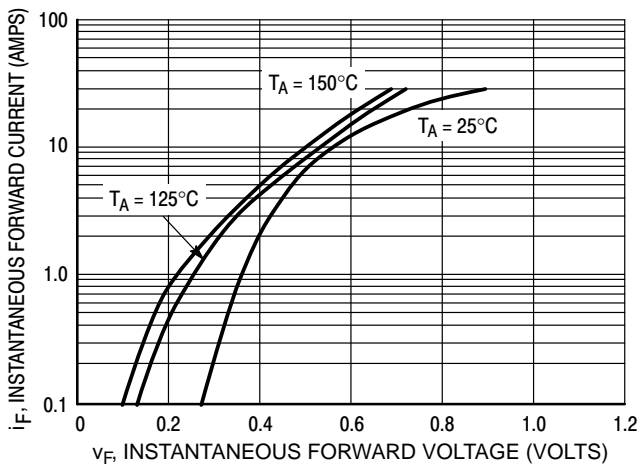


Figure 1. Typical Forward Voltage

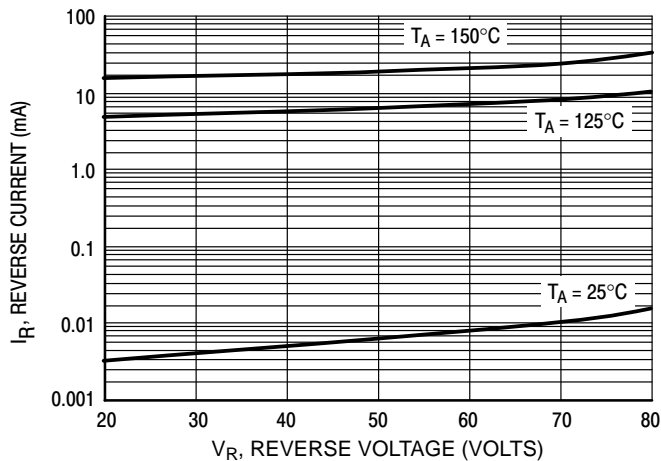


Figure 2. Typical Reverse Current

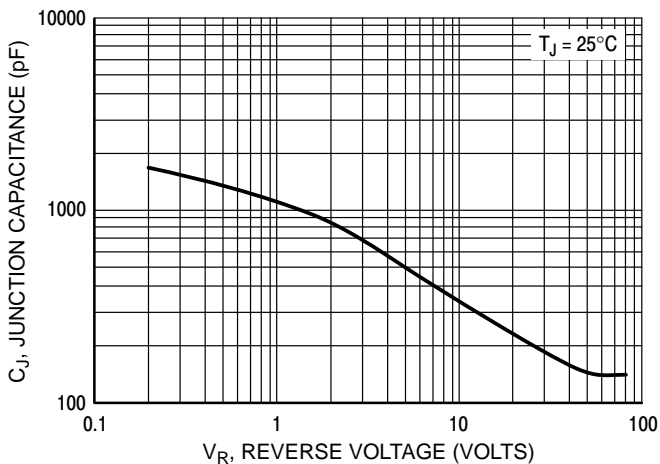


Figure 3. Typical Junction Capacitance

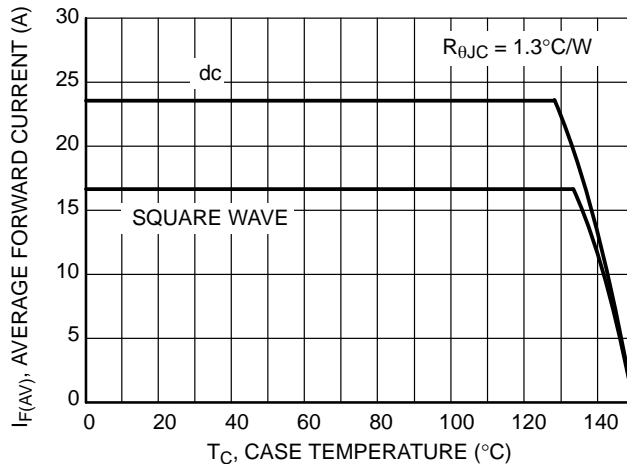


Figure 4. Current Derating per Leg

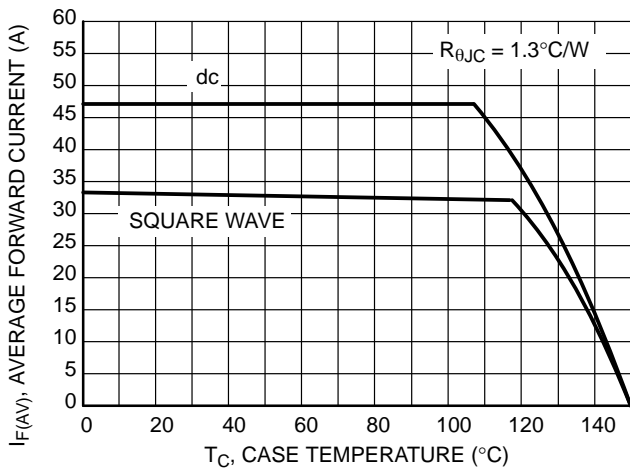


Figure 5. Current Derating, Case

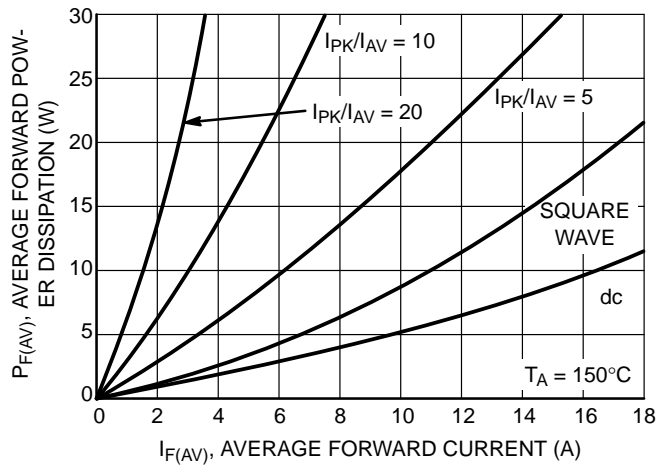


Figure 6. Forward Power Dissipation

# NTSJ30U80CTG

## TYPICAL CHARACTERISTICS

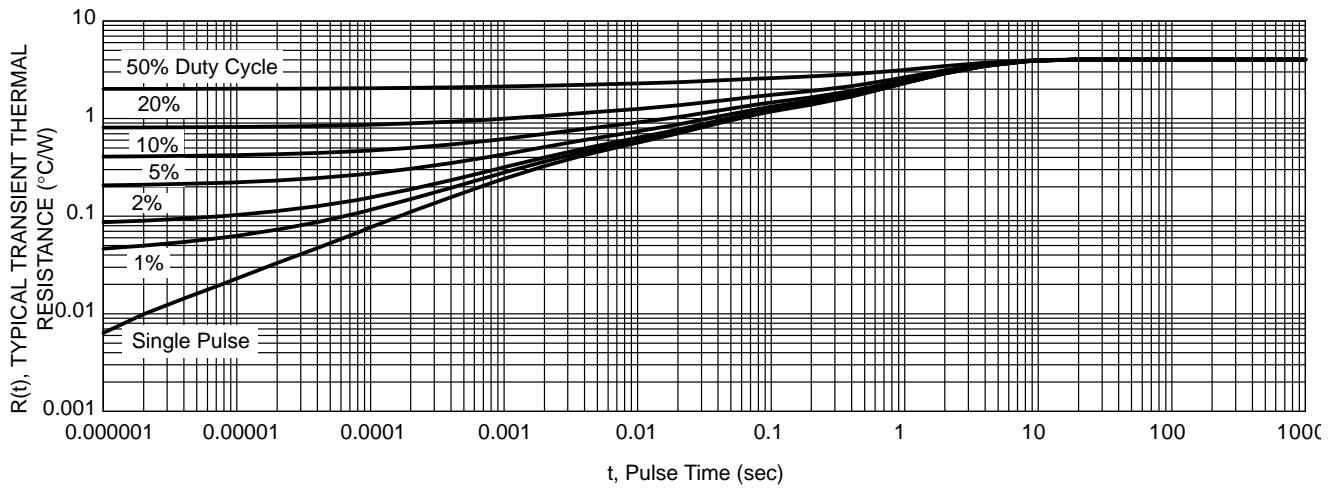


Figure 7. Typical Transient Thermal Response, Junction-to-Case

# MECHANICAL CASE OUTLINE

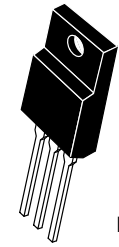
## PACKAGE DIMENSIONS

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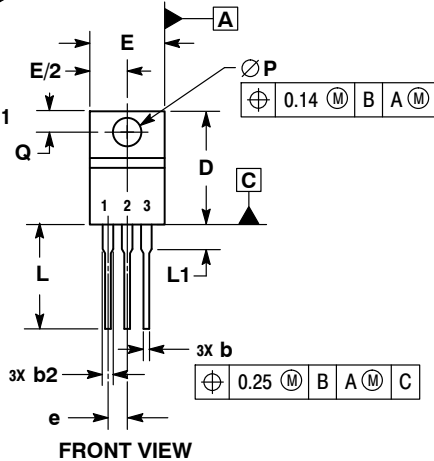


### TO-220 FULLPACK, 3-LEAD CASE 221AH ISSUE F

DATE 30 SEP 2014



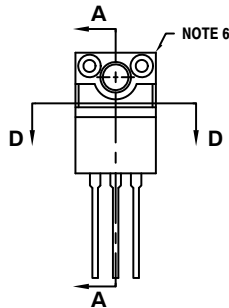
SCALE 1:1



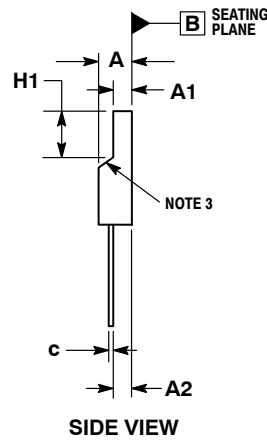
FRONT VIEW



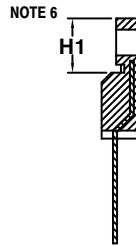
SECTION D-D



ALTERNATE CONSTRUCTION



SIDE VIEW



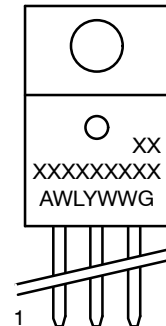
SECTION A-A

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
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 ENVELOPE DEFINED BY DIMENSIONS A1 AND H1 FOR MANUFACTURING PURPOSES.

MILLIMETERS		
DIM	MIN	MAX
A	4.30	4.70
A1	2.50	2.90
A2	2.50	2.90
b	0.54	0.84
b2	1.10	1.40
c	0.49	0.79
D	14.70	15.30
E	9.70	10.30
e	2.54 BSC	
H1	6.60	7.10
L	12.50	14.73
L1	---	2.80
P	3.00	3.40
Q	2.80	3.20

#### GENERIC MARKING DIAGRAM\*



- A = Assembly Location
- WL = Wafer Lot
- Y = 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:

1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE

STYLE 2:

1. CATHODE
2. ANODE
3. GATE

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