# NTSV3080CT

# Very Low Forward Voltage Trench-based Schottky Rectifier

## Exceptionally Low $V_F$ = 0.471 V at $I_F$ = 5 A

**ON Semiconductor®**

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### 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, Halogen Free/BFR Free and are RoHS Compliant

### Typical Applications

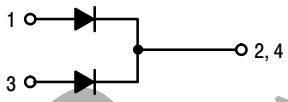
- Switching Power Supplies including Notebook / Netbook Adapters, ATX and Flat Panel Display
- High Frequency and DC−DC Converters
- Freewheeling and OR−ing diodes
- Reverse Battery Protection
- Instrumentation

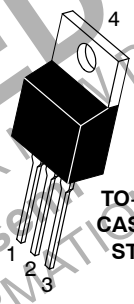
### Mechanical Characteristics

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



### PIN CONNECTIONS




**TO−220AB**
**CASE 221A**
**STYLE 6**

### MARKING DIAGRAM


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

### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

## MAXIMUM RATINGS

| Rating | | Symbol | Value | Unit |
|---|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 80 | V |
| Average Rectified Forward Current<br>(Rated $V_R$, $T_C$ = 115°C) | Per device<br>Per diode | $I_{F(AV)}$ | <br>30<br>15 | A |
| Peak Repetitive Forward Current<br>(Rated $V_R$, Square Wave, 20 kHz, $T_C$ = 110°C) | Per device<br>Per diode | $I_{FRM}$ | <br>60<br>30 | A |
| Nonrepetitive Peak Surge Current<br>(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 | | $T_{stg}$ | −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 | Junction−to−Case<br>Junction−to−Ambient | $R_{\theta JC}$<br>$R_{\theta JA}$ | 2.0<br>70 | °C/W<br>°C/W |

## ELECTRICAL CHARACTERISTICS (Per Leg unless otherwise noted)

| Rating | Symbol | Typ | Max | Unit |
|---|---|---|---|---|
| Maximum Instantaneous Forward Voltage (Note 1) | $v_F$ | | | V |
| ($I_F$ = 5 A, $T_J$ = 25°C) | | 0.509 | – | |
| ($I_F$ = 7.5 A, $T_J$ = 25°C) | | 0.575 | – | |
| ($I_F$ = 15 A, $T_J$ = 25°C) | | 0.751 | 1.05 | |
| ($I_F$ = 5 A, $T_J$ = 125°C) | | 0.471 | – | |
| ($I_F$ = 7.5 A, $T_J$ = 125°C) | | 0.539 | – | |
| ($I_F$ = 15 A, $T_J$ = 125°C) | | 0.662 | 0.82 | |
| Maximum Instantaneous Reverse Current (Note 1) | $I_R$ | | | |
| (Rated dc Voltage, $T_J$ = 25°C) | | 30 | 700 | μA |
| (Rated dc Voltage, $T_J$ = 125°C) | | 20 | 35 | 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%

## ORDERING INFORMATION

| Device | Package | Shipping |
|---|---|---|
| NTSV3080CTG | TO−220AB<br>(Pb−Free/Halide Free) | 50 Units / Rail |

## TYPICAL CHARACTERISTICS

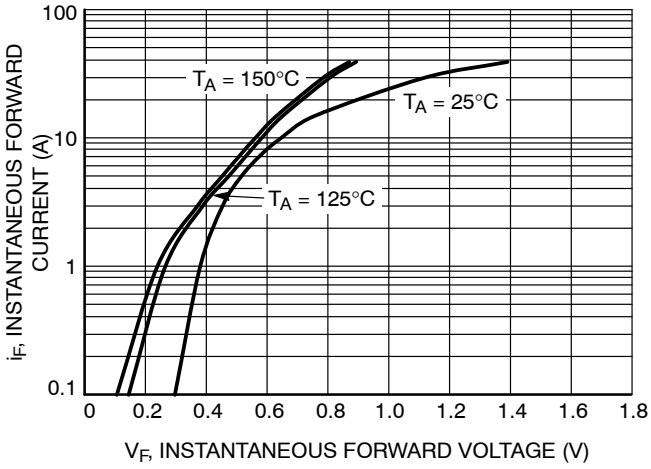



**Figure 1. Typical Instantaneous Forward Characteristics**

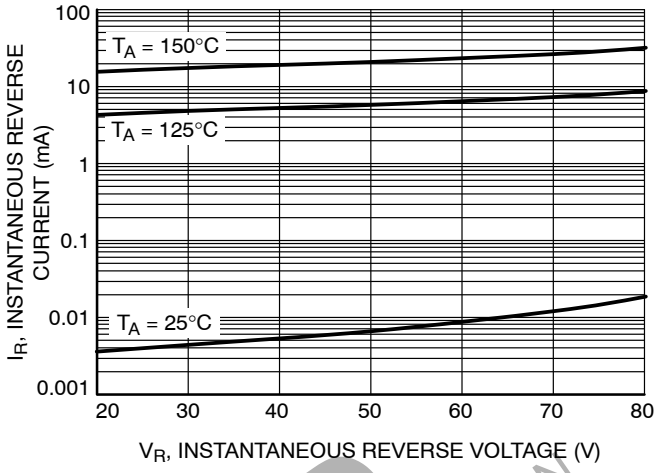



**Figure 2. Typical Reverse Characteristics**

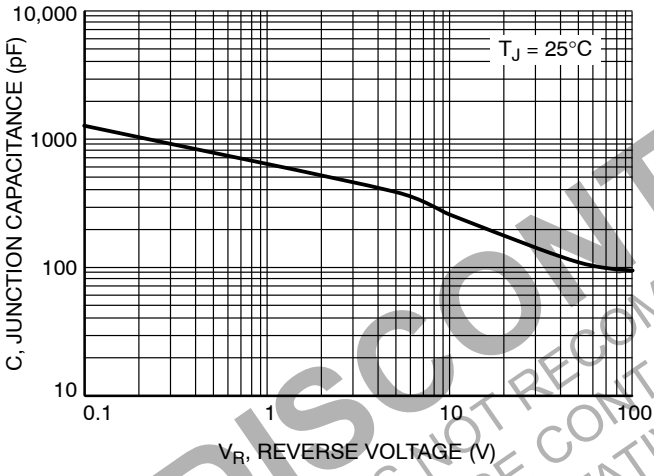



**Figure 3. Typical Junction Capacitance**

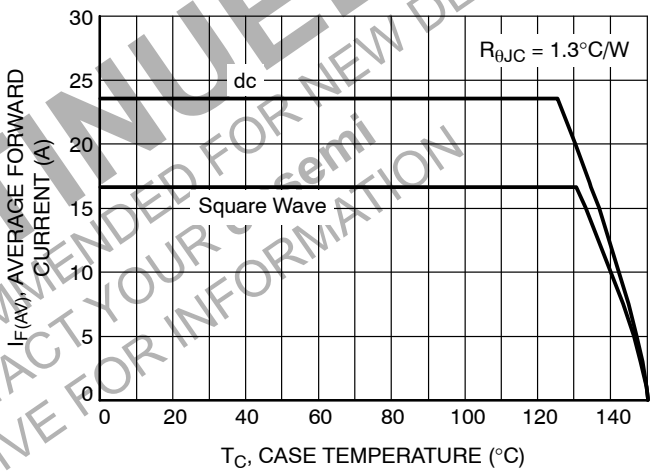



**Figure 4. Current Derating per Leg**

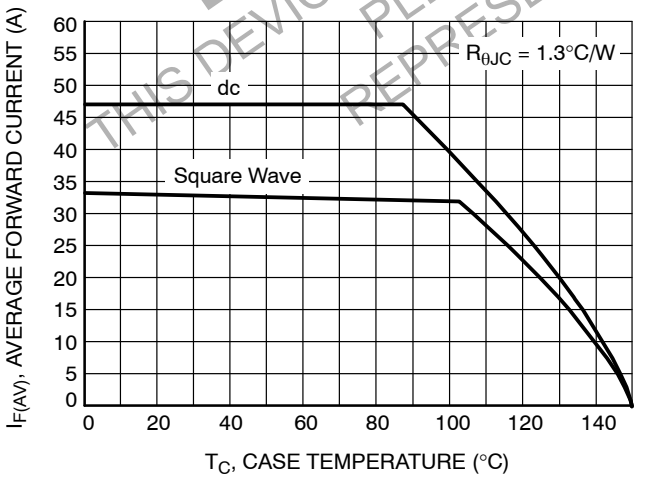



**Figure 5. Current Derating**

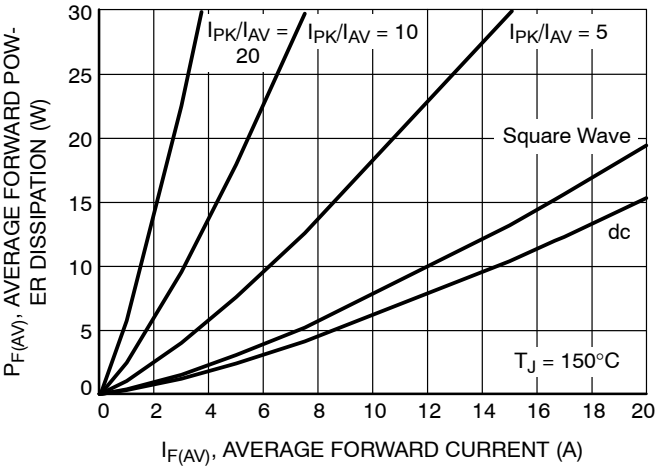



**Figure 6. Forward Power Dissipation**

## TYPICAL CHARACTERISTICS

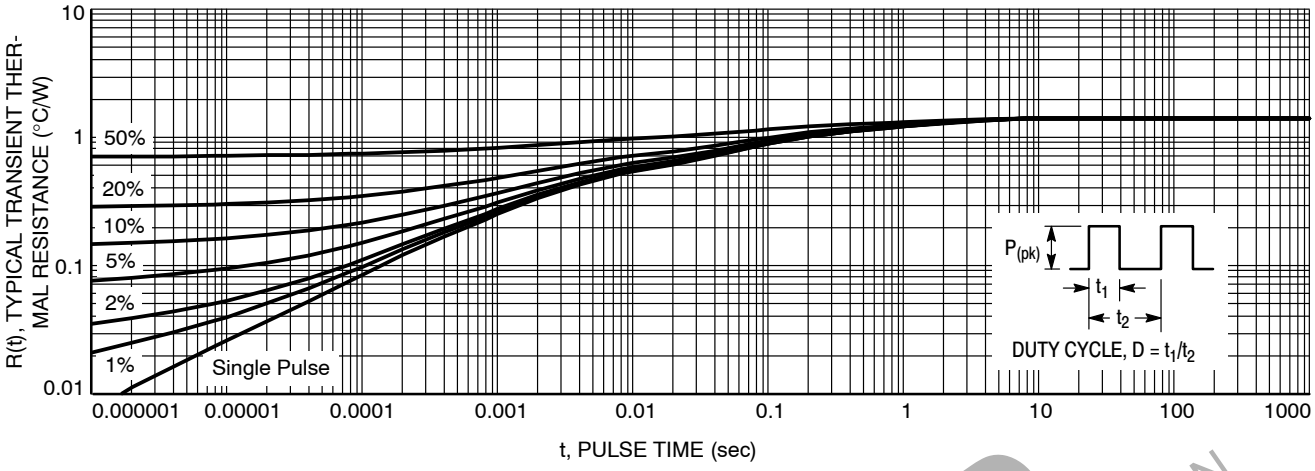
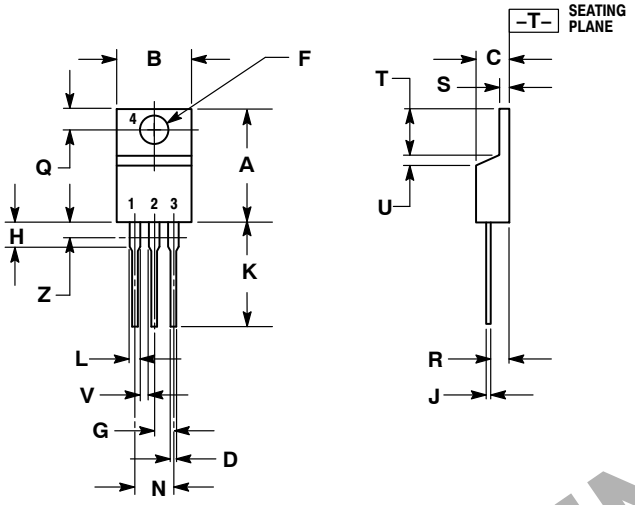



**Figure 7. Typical Transient Thermal Response**

## PACKAGE DIMENSIONS

**TO−220**
CASE 221A−09
ISSUE AH




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 | 0.415 | 9.66 | 10.53 |
| C | 0.160 | 0.190 | 4.07 | 4.83 |
| D | 0.025 | 0.038 | 0.64 | 0.96 |
| 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 | 0.024 | 0.36 | 0.61 |
| 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 6:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

## ADDITIONAL INFORMATION

**TECHNICAL PUBLICATIONS**:
**Technical Library:** www.onsemi.com/design/resources/technical−documentation
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