# Very Low Forward Voltage Trench-based Schottky Rectifier

Exceptionally Low  $V_F = 0.557 \text{ V}$  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 Device is Pb–Free, Halogen Free/BFR Free and is 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**

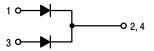
- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94-0 @ 0.125 in
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 sec

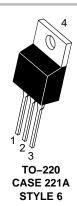


# ON Semiconductor®

http://onsemi.com

#### **PIN CONNECTIONS**





#### **MARKING DIAGRAM**



A = Assembly Location

Y = Year
WW = Work Week
AKA = Polarity Designator
x = G or H

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

#### **ORDERING INFORMATION**

Device	Package	Shipping
NTSV20120CTG	TO-220 (Pb-Free)	50 Units / Rail

#### **MAXIMUM RATINGS**

Rating		Value	Unit	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	120	V	
Average Rectified Forward Current (Rated V <sub>R</sub> , T <sub>C</sub> = 115°C) Per Device Per Diode	I <sub>F(AV)</sub>	20 10	А	
Peak Repetitive Forward Current (Rated V <sub>R</sub> , Square Wave, 20 kHz, T <sub>C</sub> = 110°C) Per Device Per Diode		40 20	A	
Non-repetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)		100	А	
Operating Junction Temperature		-40 to +150	°C	
Storage Temperature	T <sub>stg</sub>	-40 to +150	°C	
Voltage Rate of Change (Rated V <sub>R</sub> )	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	$R_{ heta JC} \ R_{ heta JA}$	2.0 70	°C/W

## **ELECTRICAL CHARACTERISTICS** (Per Leg unless otherwise noted)

Rating	Symbol	Тур	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1) (I <sub>F</sub> = 5 A, T <sub>J</sub> = 25°C) (I <sub>F</sub> = 10 A, T <sub>J</sub> = 25°C)	VF	0.654 0.874	- 1.12	V
$(I_F = 5 \text{ A}, T_J = 125^{\circ}\text{C})$ $(I_F = 5 \text{ A}, T_J = 125^{\circ}\text{C})$ $(I_F = 10 \text{ A}, T_J = 125^{\circ}\text{C})$		0.557 0.650	- 0.86	
Maximum Instantaneous Reverse Current (Note 1) $(V_R = 90 \text{ V}, T_J = 25^{\circ}\text{C})$ $(V_R = 90 \text{ V}, T_J = 125^{\circ}\text{C})$	I <sub>R</sub>	5.8 4.9		μA mA
(Rated dc Voltage, $T_J = 25^{\circ}C$ ) (Rated dc Voltage, $T_J = 125^{\circ}C$ )		16.1 8.9	700 100	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 CHARACTERISTICS

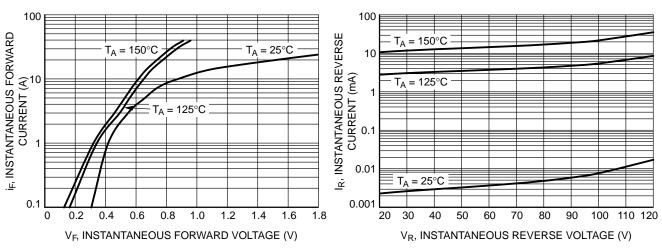


Figure 1. Typical Instantaneous Forward Characteristics

Figure 2. Typical Reverse Characteristics

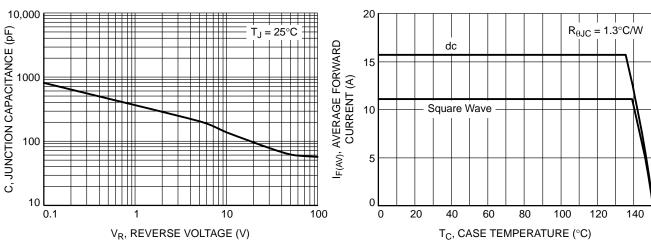


Figure 3. Typical Junction Capacitance

Figure 4. Current Derating per Leg

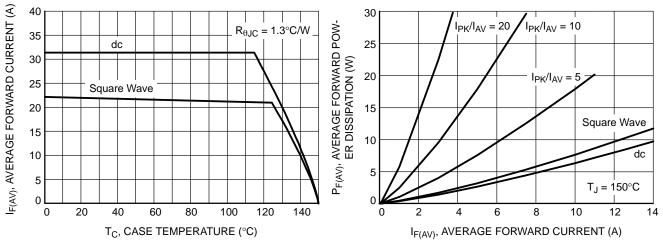


Figure 5. Current Derating

Figure 6. Forward Power Dissipation

# **TYPICAL CHARACTERISTICS**

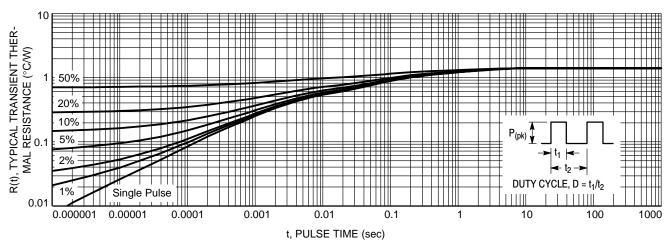


Figure 7. Typical Transient Thermal Response

onsemi, Onsemi, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "onsemi" or its affiliates and/or subsidiaries in the United States and/or other countries. onsemi owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of onsemi's product/patent coverage may be accessed at <a href="www.onsemi.com/site/pdf/Patent-Marking.pdf">www.onsemi.com/site/pdf/Patent-Marking.pdf</a>. Onsemi reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and onsemi makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using onsemi products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by onsemi. "Typical" parameters which may be provided in onsemi data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. onsemi does not convey any license under any of its intellectual property rights nor the rights of others. onsemi products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA class 3 medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase

#### ADDITIONAL INFORMATION

**TECHNICAL PUBLICATIONS:** 

 $\textbf{Technical Library:} \ \underline{www.onsemi.com/design/resources/technical-documentation}$ 

onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at

www.onsemi.com/support/sales