# 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**

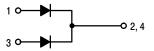
- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94-0 @ 0.125 in
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 sec



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#### **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 $V_R$ , $T_C$ = 115°C)  Per Device  Per Diode	I <sub>F(AV)</sub>	20 10	A	
Peak Repetitive Forward Current (Rated V <sub>R</sub> , Square Wave, 20 kHz, T <sub>C</sub> = 110°C) Per Device Per Diode	I <sub>FRM</sub>	40 20	A	
Non-repetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I <sub>FSM</sub>	100	А	
Operating Junction Temperature	TJ	-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
$(I_F = 5 A, T_J = 125^{\circ}C)$ $(I_F = 10 A, T_J = 125^{\circ}C)$		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 <sub>J</sub> = 25°C) (Rated dc Voltage, T <sub>J</sub> = 125°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

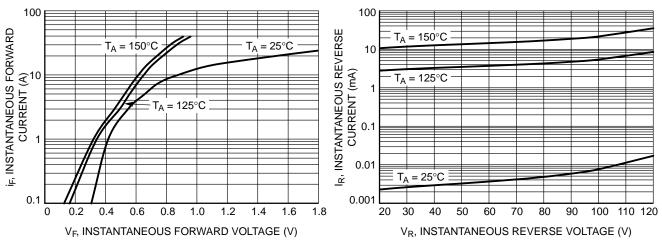


Figure 1. Typical Instantaneous Forward Characteristics

Figure 2. Typical Reverse Characteristics

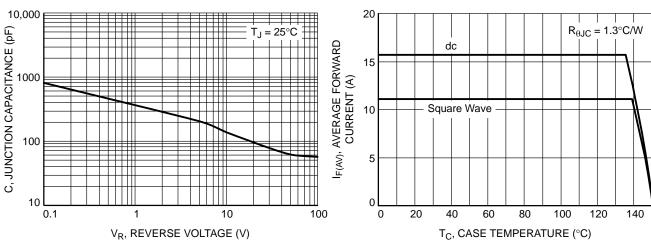


Figure 3. Typical Junction Capacitance

Figure 4. Current Derating per Leg

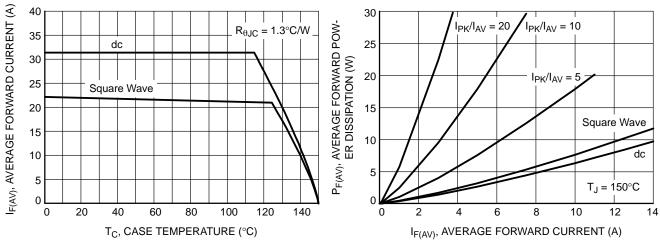


Figure 5. Current Derating

Figure 6. Forward Power Dissipation

# **TYPICAL CHARACTERISTICS**

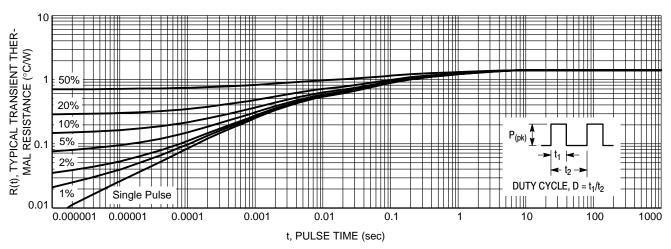


Figure 7. Typical Transient Thermal Response

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