## Exceptionally Low Forward Voltage Trench-based Schottky Rectifier

#### **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 are Pb-Free and Halide-Free Devices

#### **Typical Applications**

- Switching Power Supplies including Wireless, Smartphone and Notebook Adapters
- 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.
- Lead Finish: 100% Matte Sn (Tin)
- Lead and Mounting SurfaceTemperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL 1 Requirements



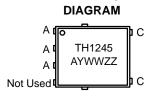
#### ON Semiconductor®

http://onsemi.com

## SCHOTTKY BARRIER RECTIFIERS 12 AMPERES 45 VOLTS







**MARKING** 

TH1245 = Specific Device Code A = Assembly Location

Y = Year
W = Work Week
ZZ = Lot Traceability

#### **ORDERING INFORMATION**

Device	Package	Shipping†
NTS1245MFST1G	SO-8 FL (Pb-Free)	1500 / Tape & Reel
NTS1245MFST3G	SO-8 FL (Pb-Free)	5000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

#### **MAXIMUM RATINGS**

Rating	Symbol	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>	45	V
Average Rectified Forward Current (Rated V <sub>R</sub> , T <sub>C</sub> = 142°C)	I <sub>F(AV)</sub>	12	А
Peak Repetitive Forward Current, (Rated V <sub>R</sub> , Square Wave, 20 kHz, T <sub>C</sub> = 140°C)	I <sub>FRM</sub>	24	А
Non–Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I <sub>FSM</sub>	210	А
Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C
Operating Junction Temperature	TJ	-55 to +150	°C
Unclamped Inductive Switching Energy (10 mH Inductor, Non-repetitive)	E <sub>AS</sub>	100	mJ
ESD Rating (Human Body Model)		3B	
ESD Rating (Machine Model)		M4	

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

Characteristic	Symbol	Тур	Max	Unit
Thermal Resistance, Junction-to-Case, Steady State (Assumes 600 mm <sup>2</sup> 1 oz. copper bond pad, on a FR4 board)	$R_{\theta JC}$	1.8	ı	°C/W

#### **ELECTRICAL CHARACTERISTICS**

Instantaneous Forward Voltage (Note 1) ( $i_F = 6.0 \text{ Amps}, T_J = 25^{\circ}\text{C}$ ) ( $i_F = 12 \text{ Amps}, T_J = 25^{\circ}\text{C}$ )	V <sub>F</sub>	0.42 0.48	- 0.57	٧
$(i_F = 6.0 \text{ Amps}, T_J = 125^{\circ}\text{C})$ $(i_F = 12 \text{ Amps}, T_J = 125^{\circ}\text{C})$		0.32 0.40	– 0.51	
Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_J = 25^{\circ}C$ ) (Rated dc Voltage, $T_J = 125^{\circ}C$ )	i <sub>R</sub>	- 15	120 45	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**

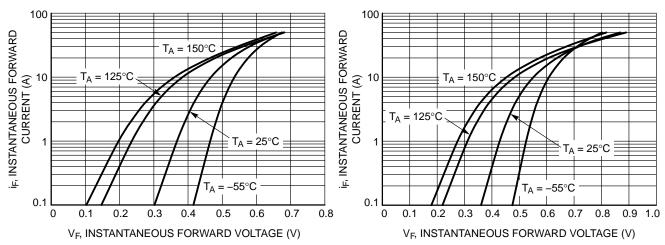


Figure 1. Typical Instantaneous Forward Characteristics

Figure 2. Maximum Instantaneous Forward Characteristics

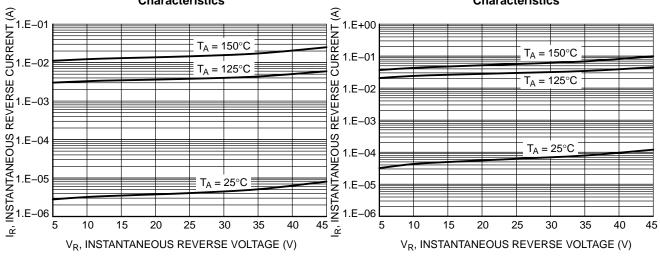


Figure 3. Typical Reverse Characteristics

Figure 4. Maximum Reverse Characteristics

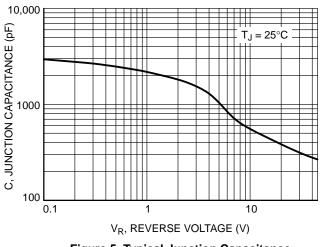


Figure 5. Typical Junction Capacitance

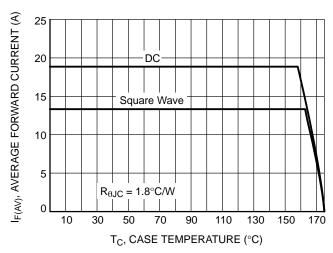


Figure 6. Current Derating per Device

#### **TYPICAL CHARACTERISTICS**

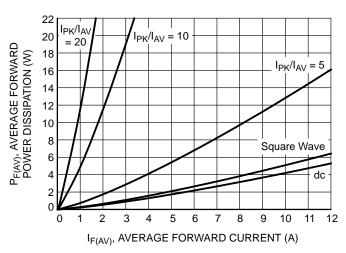
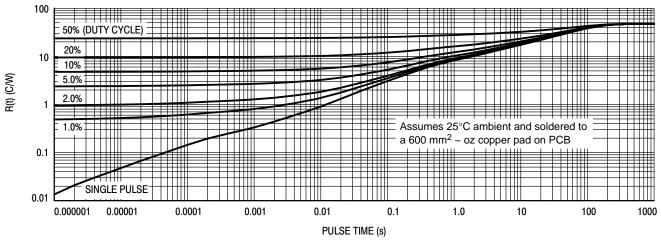


Figure 7. Forward Power Dissipation



**Figure 8. Typical Thermal Characteristics** 

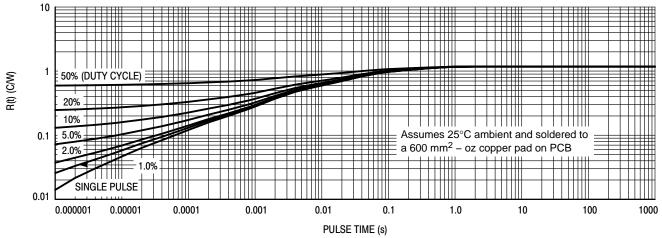
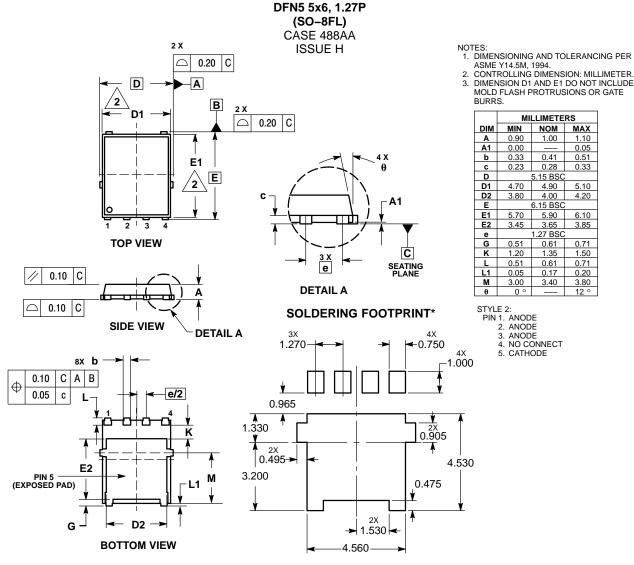


Figure 9. Typical Transient Thermal Response Characteristics, Junction-to-Case

#### PACKAGE DIMENSIONS



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor and the (III) are registered trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries. SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC 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. "Typical" parameters which may be provided in SCILLC date seets 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. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

#### **PUBLICATION ORDERING INFORMATION**

#### LITERATURE FULFILLMENT

Literature Distribution Center for ON Semiconductor P.O. Box 5163, Denver, Colorado 80217 USA Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada

Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free

Europe, Middle East and Africa Technical Support: Phone: 421 33 790 2910

Japan Customer Focus Center Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative

# AMEYA360 Components Supply Platform

## **Authorized Distribution Brand:**

























## Website:

Welcome to visit www.ameya360.com

### Contact Us:

## > Address:

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd Minhang District, Shanghai , China

### > Sales:

Direct +86 (21) 6401-6692

Email amall@ameya360.com

QQ 800077892

Skype ameyasales1 ameyasales2

## Customer Service :

Email service@ameya360.com

## Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com