

NUP8028MN

Low Capacitance Transient Voltage Suppressor Array

This integrated transient voltage suppressor device (TVS) is designed for applications requiring transient overvoltage protection. It is intended for use in sensitive equipment such as computers, printers, business machines, communication systems, medical equipment, and other applications. Its integrated design provides very effective and reliable protection for eight separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Features

- Low Capacitance
- Low Leakage Current < 1 μ A @ 3 V
- ESD Ratings:
 - ♦ IEC61000-4-2, 18 kV (Contact)
 - ♦ IEC61000-4-2, 30 kV (Air)
 - ♦ Machine Model = Class C, 400 V
 - ♦ Human Body Model = Class 3B, 8 kV
- DFN Package, 1.6 x 1.6 mm
- Moisture Sensitivity Level 1
- This is a Pb-Free Device

Benefits

- Provides Protection for ESD Industry Standards: IEC 61000, HBM
- Protects the Line Against Transient Voltage Conditions in Either Direction
- Minimize Power Consumption of the System
- Minimize PCB Board Space

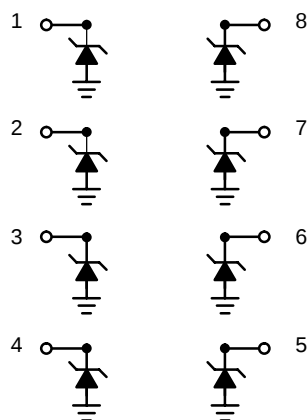
Applications

- ESD Protection for Data Lines
- Wireless Phones
- Handheld Products
- Notebook Computers
- LCD Displays

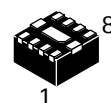


ON Semiconductor®

<http://onsemi.com>

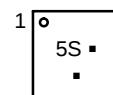


(Top View)



DFN8
CASE 506AK

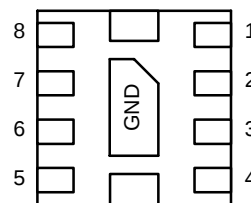
MARKING DIAGRAM



5S = Specific Device Code
M = Date Code
■ = Pb-Free Package

(Note: Microdot may be in either location)

PIN CONNECTIONS



(Bottom View)

ORDERING INFORMATION

Device	Package	Shipping†
NUP8028MNT1G	DFN8 (Pb-Free)	3000 / Tape & Reel

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

NUP8028MN

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
ESD Discharge IEC61000-4-2 Air Discharge Contact Discharge	V_{PP}	15 8.0	kV
Peak Power Dissipation (8 x 20 μ S @ $T_A = 25^\circ\text{C}$)	P_{pk} (Note 1)	20	W
Operating Temperature Range	T_{OP}	-40 to 85	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$
Maximum Lead Temperature for Soldering Purposes (1.8 in from case for 10 seconds)	T_L	260	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Nonrepetitive current per Figure 4.

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Reverse Working Voltage	V_{RWM}				3.0	V
Breakdown Voltage	V_{BR}	$I_R = 1.0\text{ mA}$	5.3	5.6	5.9	V
Leakage Current	I_R	$V_{RWM} = 3.3\text{ V}$		0.01	1.0	μA
Clamping Voltage	V_c	$I_{PP} = 1.6\text{ A}$			13	V
Capacitance	C_d	$f = 1\text{ MHz}, V_R = 0\text{ V}$		13	17	pF
Capacitance	C_d	$f = 1\text{ MHz}, V_R = 3.0\text{ V}$		7.0	11.5	pF

TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$ unless otherwise specified)

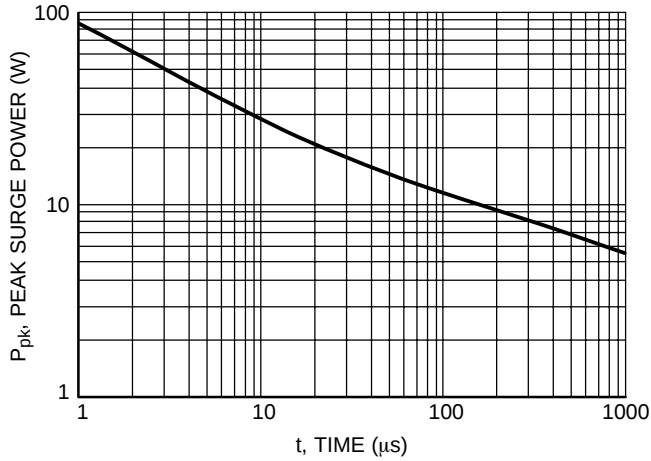


Figure 1. Pulse Width

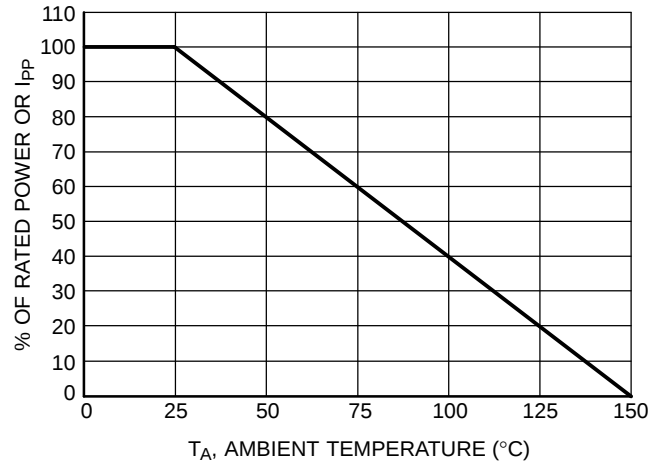


Figure 2. Power Derating Curve

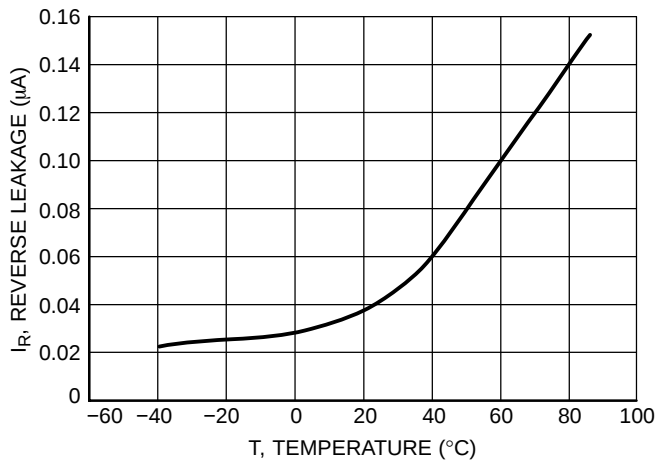


Figure 3. Reverse Leakage versus Temperature

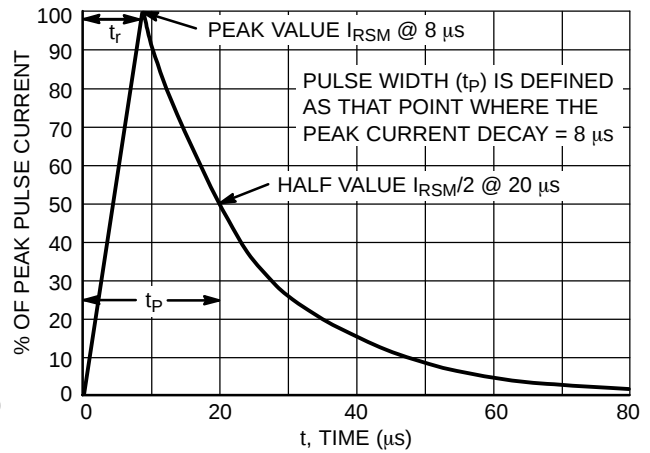


Figure 4. $8 \times 20 \mu\text{s}$ Pulse Waveform

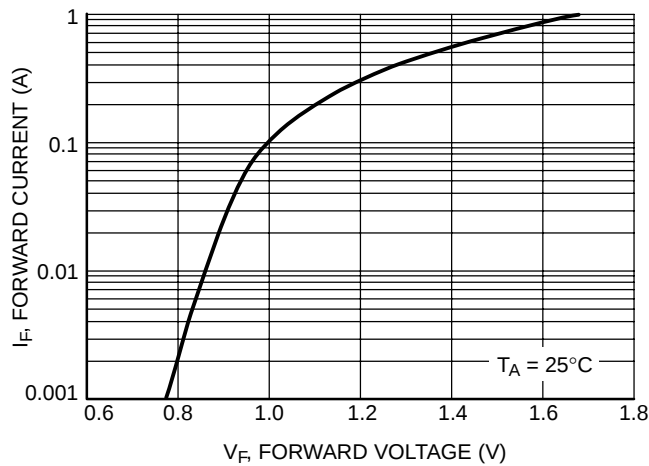


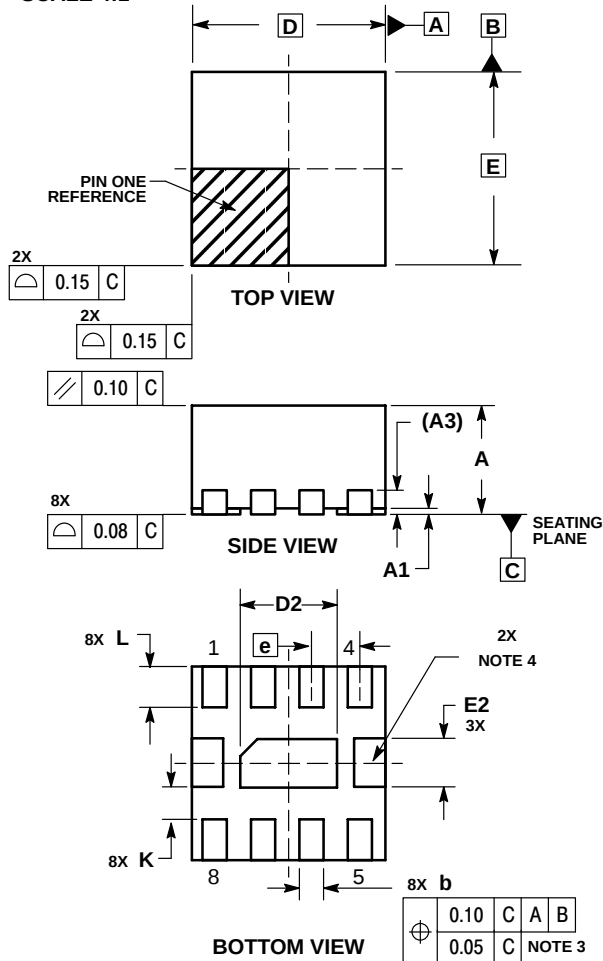
Figure 5. Forward Voltage



SCALE 4:1

DFN8
CASE 506AK
ISSUE C

DATE 30 SEP 2005

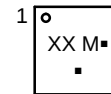


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.
4. EXPOSED PADS CONNECTED TO DIE FLAG, USED AS TEST CONTACTS.

MILLIMETERS		
DIM	MIN	MAX
A	0.80	1.00
A1	0.00	0.05
A3	0.20	REF
b	0.15	0.25
D	1.60	BSC
D2	0.70	0.90
E	1.60	BSC
E2	0.30	0.50
e	0.40	BSC
K	0.20	---
L	0.20	0.40

GENERIC
MARKING DIAGRAM*



X = Specific Device Code

M = Date Code

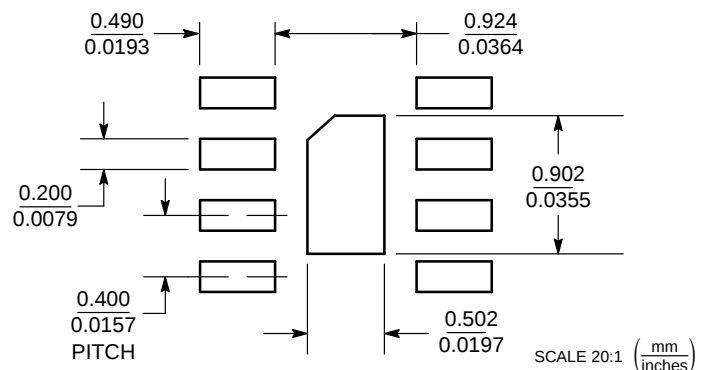
■ = Pb-Free Package

(Note: Microdot may be in either location)

*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.

SOLDERING FOOTPRINT*



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

DOCUMENT NUMBER:	98AON20130D	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	DFN8 1.6*1.6 MM 0.4 MM LEAD PITCH	PAGE 1 OF 1

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the 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. onsemi does not convey any license under its patent rights nor the rights of others.

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 www.onsemi.com/site/pdf/Patent-Marking.pdf. **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 or 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 or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: 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