NUP45V6P5 Series

Product Preview

Low Capacitance Quad Array for ESD Protection

These integrated transient voltage suppressor devices (TVS) are designed for applications requiring transient overvoltage protection. They are intended to be used in sensitive equipment such as wireless headsets, PDAs, digital cameras, computers, printers, communication systems, medical equipment, and other applications. Their integrated design provides very effective and reliable protection for four separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Features

- ESD Protection: IEC61000−4−2: Level 4
  MILSTD 883C − Method 3015−6: Class 3
- Four Separate Unidirectional Configurations for Protection
- Low Leakage Current < 1 μA @ 3 V
- Small SOT−953 SMT Package
- Low Capacitance
- These are Pb−Free Devices

Benefits

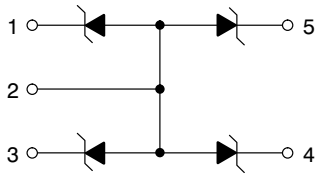
- Provides Protection for ESD Industry Standards: IEC 61000, HBM
- Protects Four Lines Against Transient Voltage Conditions
- Minimize Power Consumption of the System
- Minimize PCB Board Space

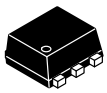
Typical Applications

- Cellular and Portable Electronics
- Serial and Parallel Ports
- Microprocessor Based Equipment
- Notebooks, Desktops, Servers

ON Semiconductor®

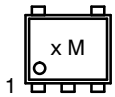
http://onsemi.com





SOT−953
CASE 526AB

MARKING DIAGRAM



x = Specific Device Code
M = Date Code
G or ▪ = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping†
NUP45V6P5T5G	SOT−953 (Pb−Free)	8000 / Tape & Reel
NUP46V8P5T5G	SOT−953 (Pb−Free)	8000 / Tape & Reel
NUP412VP5T5G	SOT−953 (Pb−Free)	8000 / Tape & Reel

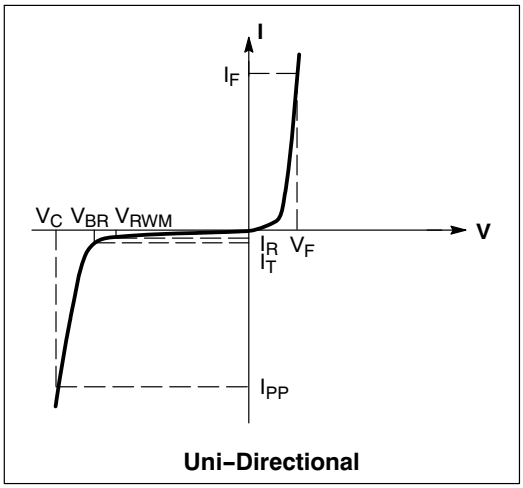
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise noted)

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
ΘV_{BR}	Maximum Temperature Coefficient of V_{BR}
I_F	Forward Current
V_F	Forward Voltage @ I_F
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
I_{ZK}	Reverse Current
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}



Uni−Directional

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Value	Unit
Peak Power Dissipation (8 X 20 μs @ T_A = 25°C) (Note 1) NUP45V6P5 NUP46V8P5 NUP412VP5	P_{PK}	 14 20 65	W
Thermal Resistance Junction−to−Ambient Above 25°C, Derate	$R_{\theta JA}$	560 4.5	°C/W mW/°C
Maximum Junction Temperature	T_{Jmax}	150	°C
Operating Junction and Storage Temperature Range	T_J T_{stg}	−55 to +150	°C
Lead Solder Temperature (10 seconds duration)	T_L	260	°C
Human Body Model (HBM) Machine Model (MM) IEC61000−4−2 Air (ESD) IEC61000−4−2 Contact (ESD)	ESD	8000 400 15000 8000	V

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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Device	Device Marking	Breakdown Voltage V_{BR} @ 1 mA (Volts)			Leakage Current I_{RM} @ V_{RM}		Typ Capacitance @ 0 V Bias (pF) (Note 2)		Typ Capacitance @ 3 V Bias (pF) (Note 2)	
		Min	Nom	Max	V_{RWM}	I_{RWM} (μA)	Typ	Max	Typ	Max
NUP45V6P5	5	5.3	5.6	5.9	3.0	1.0	13	17	7.0	11.5
NUP46V8P5	6	6.47	6.8	7.14	4.3	1.0	12	15	6.7	9.5
NUP412VP5 (Note 3)	2	11.4	12	12.7	9.0	0.5	6.5	10	3.5	5.0

1. Non−repetitive current per Figure 1.
2. Capacitance of one diode at f = 1 MHz, V_R = 0 V, T_A = 25°C.
3. V_{BR} at 5 mA.

TYPICAL ELECTRICAL CHARACTERISTICS

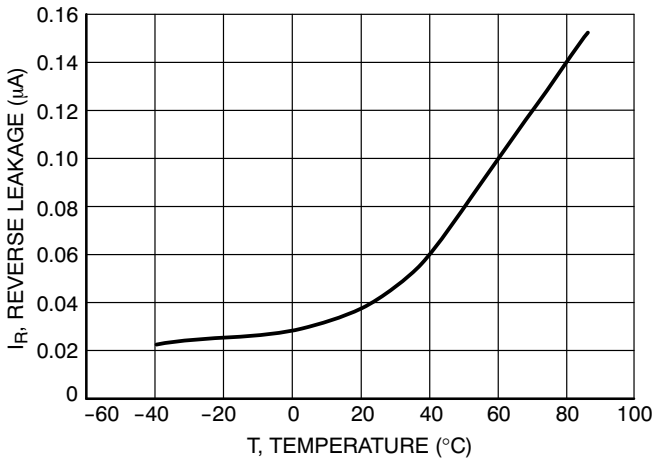


Figure 1. Reverse Leakage versus Temperature

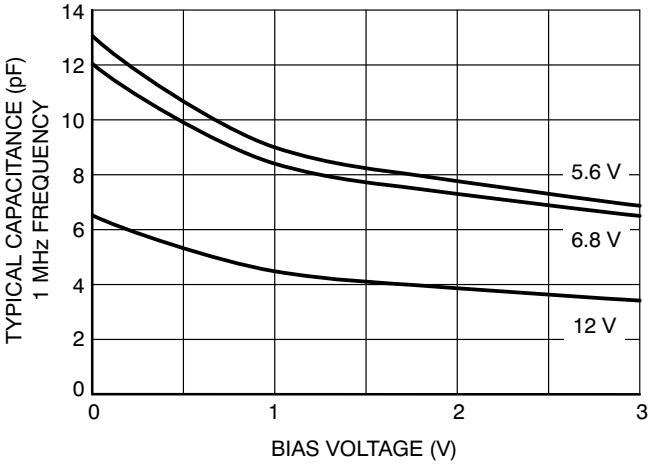


Figure 2. Capacitance

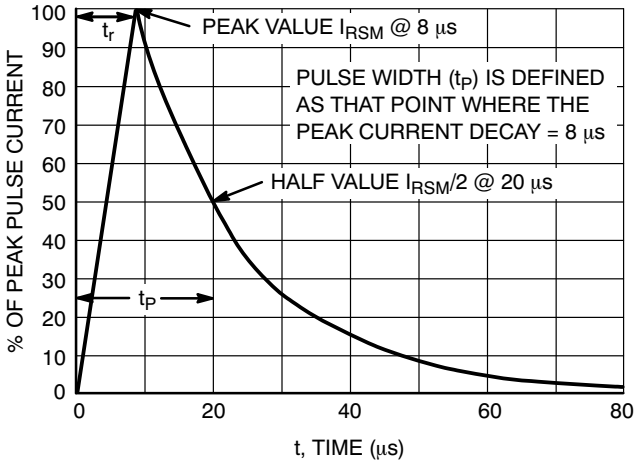


Figure 3. 8 × 20 μs Pulse Waveform

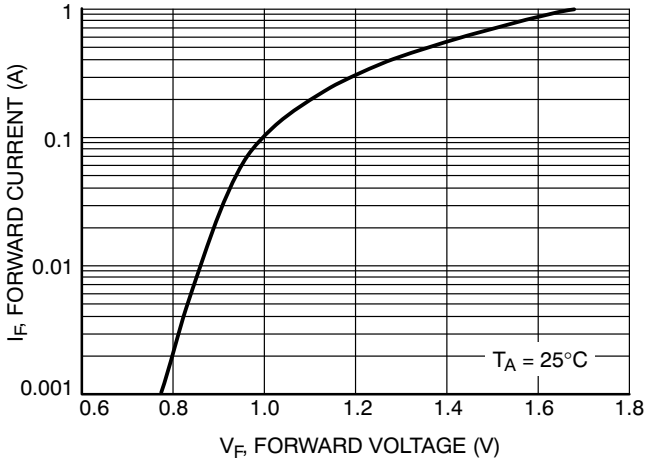
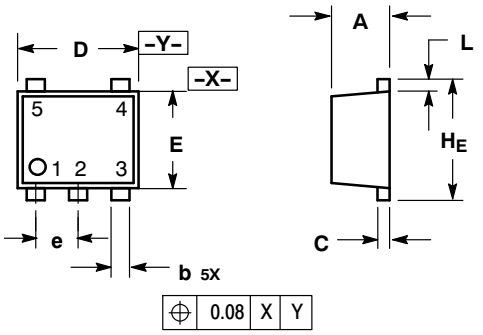


Figure 4. Forward Voltage

NUP45V6P5 Series

PACKAGE DIMENSIONS

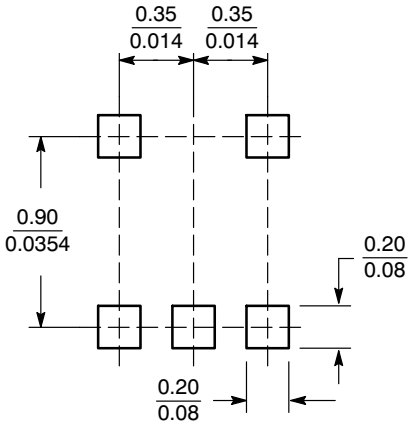
SOT−953
CASE 527AB−01
ISSUE O



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.44	0.48	0.50	0.017	0.019	0.020
b	0.10	0.15	0.20	0.0039	0.0059	0.0079
C	0.05	0.10	0.15	0.002	0.004	0.006
D	0.95	1.00	1.05	0.037	0.039	0.041
E	0.75	0.80	0.85	0.03	0.032	0.034
e	0.35 BSC			0.014 BSC		
L	0.05	0.10	0.15	0.0019	0.0039	0.0059
H_E	0.95	1.00	1.05	0.037	0.039	0.041

SOLDERING FOOTPRINT*



SCALE 20:1 $\left(\frac{mm}{inches}\right)$

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

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 USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81−3−5773−3850

ON Semiconductor Website: **www.onsemi.com**

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

For additional information, please contact your local Sales Representative

NUP45V6P5/D