NUP4016

Ultra-Low Capacitance Diode-TVS Array for High Speed Data Line Protection

The NUP4016P5 transient voltage suppressor is designed to protect high speed data lines from ESD. Ultra−low capacitance and high level of ESD protection makes this device well suited for use in USB 2.0 applications.

Features

- Ultra−Low Capacitance (0.5 pF Typical Between I/O Lines and Ground)
- ESD Rating of Class 3B (Exceeding 8 kV) per Human Body model and Class C (Exceeding 400 V) per Machine Model
- Protection for the Following IEC Standards:
  IEC 61000−4−2 15 kV (contact)
- UL Flammability Rating of 94 V−0
- This is a Pb−Free Device

Typical Applications

- High Speed Communication Line Protection
- USB 2.0 High Speed Data Line and Power Line Protection
- Monitors and Flat Panel Displays
- MP3
- Gigabit Ethernet

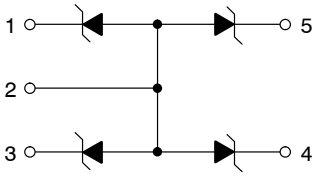
MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

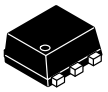
Rating	Symbol	Value	Unit
Operating Junction Temperature Range	T_J	−40 to +125	°C
Storage Temperature Range	T_{stg}	−55 to +150	°C
Lead Solder Temperature − Maximum (10 Seconds)	T_L	260	°C
Human Body Model (HBM) Machine Model (MM) IEC 61000−4−2 Contact (ESD)	ESD	16000 400 15000	V

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.

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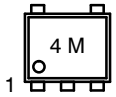
http://onsemi.com





SOT−953
CASE 527AE

MARKING DIAGRAM



4 = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
NUP4016P5T5G	SOT−953 (Pb−Free)	4000/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.

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ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	(Note 1)			5.0	V
Breakdown Voltage	V_{BR}	I_T = 1 mA, (Note 2)	6.0			V
Reverse Leakage Current	I_R	V_{RWM} = 5 V			1.0	μA
Junction Capacitance	C_J	V_R = 0 V, f = 1 MHz between I/O Pins and GND		0.5	0.8	pF
Junction Capacitance	C_J	V_R = 0 V, f = 1 MHz between I/O Pins		0.3	0.5	pF

1. TVS devices are normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal or greater than the DC or continuous peak operating voltage level.
2. V_{BR} is measured at pulse test current I_T.

TYPICAL PERFORMANCE CURVES

(T_J = 25°C unless otherwise noted)

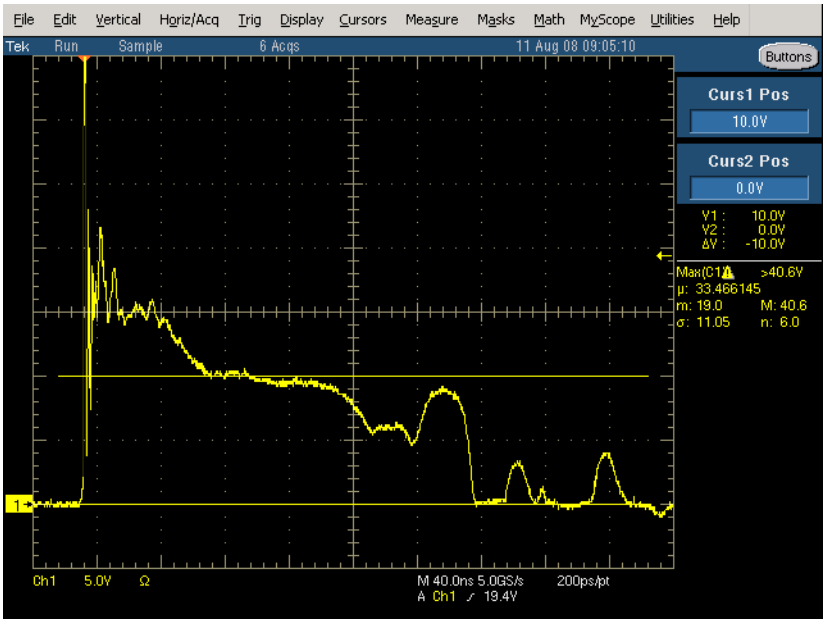
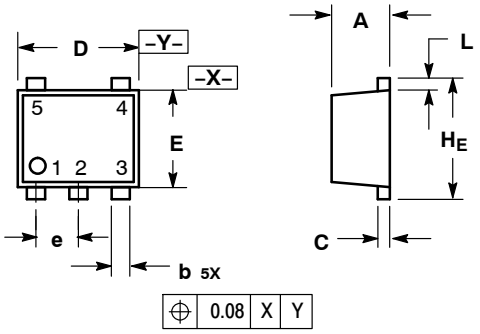


Figure 1. ESD Clamping Voltage Screenshot (8 kV Contact per IEC610000−4−2)

PACKAGE DIMENSIONS

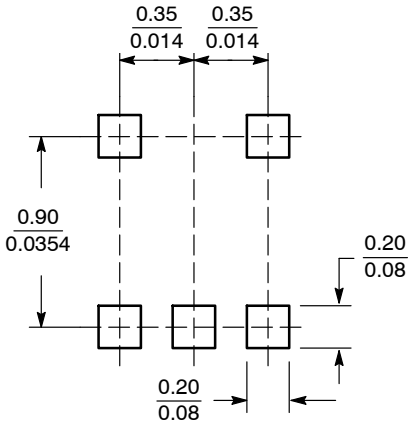
SOT−953
CASE 527AE−01
ISSUE O



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	0.34	0.37	0.40			
b	0.10	0.15	0.20	0.004	0.006	0.008
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	0.002	0.004	0.006
H_E	0.95	1.00	1.05	0.037	0.039	0.041

SOLDERING FOOTPRINT*



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

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

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