ESD1014, SZESD1014

Low Capacitance ESD Protection Array for High Speed Data Lines Protection

The ESD1014 transient voltage suppressor is designed to protect high speed data lines from ESD, EFT, and lightning.

Features

- Low Capacitance (6 pF Maximum Between I/O Lines and GND)
- 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 (ESD) Level 4 − 30 kV (Contact)
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- This is a Pb−Free Device

Typical Applications

- High Speed Communication Line Protection
- USB 1.1 and 2.0 Power and Data Line Protection
- Digital Video Interface (DVI)
- Monitors and Flat Panel Displays
- T1/E1 and T3/E3
- 10/100/1000 Ethernet Protection
- Gigabit Ethernet Protection

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

Rating	Symbol	Value	Unit
Peak Power Dissipation	P_{pk}	450	W
Maximum Peak Pulse Current 8 x 20 μS @ T_A = 25°C	I_{PP}	30	A
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 30000	V

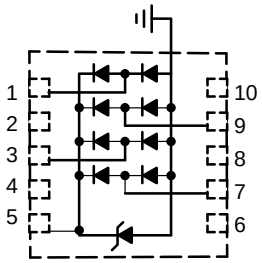
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ON Semiconductor®

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LOW CAPACITANCE DIODE TVS ARRAY

PIN CONFIGURATION AND SCHEMATIC





UDFN10
CASE 517AN

MARKING DIAGRAM



1014	= Specific Device Code
A	= Assembly Location
Y	= Year
W	= Work Week
▪	= Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping†
ESD1014MUTAG	UDFN10 (Pb−Free)	3000 / Tape & Reel
SZESD1014MUTAG	UDFN10 (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 Specification Brochure, BRD8011/D.

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	(Note 1)			3.3	V
Breakdown Voltage	V_{BR}	I_T=1 mA, (Note 2)	5.0	5.3		V
Reverse Leakage Current	I_R	V_{RWM} = 3.3 V			5.0	μA
Clamping Voltage	V_C	I_{PP} = 1 A, pin 5 to GND			6.2	V
Clamping Voltage	V_C	I_{PP} = 1 A			7.5	V
Clamping Voltage	V_C	I_{PP} = 10 A			9.0	V
Clamping Voltage	V_C	I_{PP} = 25 A			11	V
Maximum Peak Pulse Current	I_{PP}	8x20 μs Waveform			30	A
Junction Capacitance	C_J	V_R = 0 V, f=1 MHz between I/O Pins and GND		3.8	5.0	pF
Junction Capacitance	C_J	V_R = 0 V, f=1 MHz between I/O Pins		1.5	3.0	pF

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. 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)

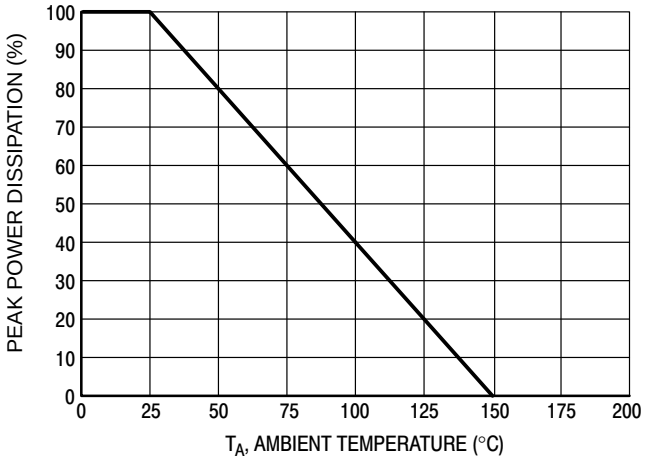


Figure 1. Pulse Derating Curve

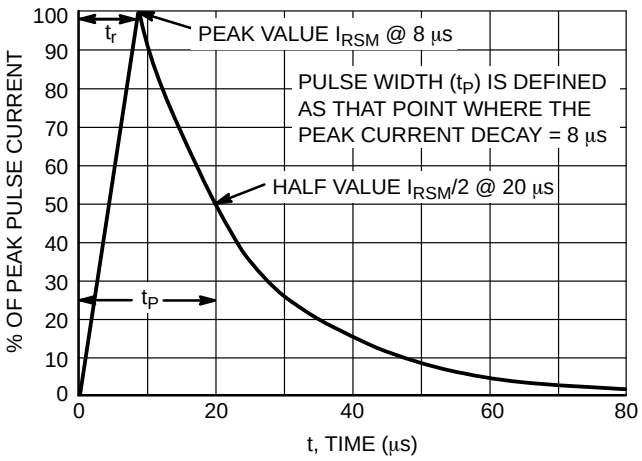
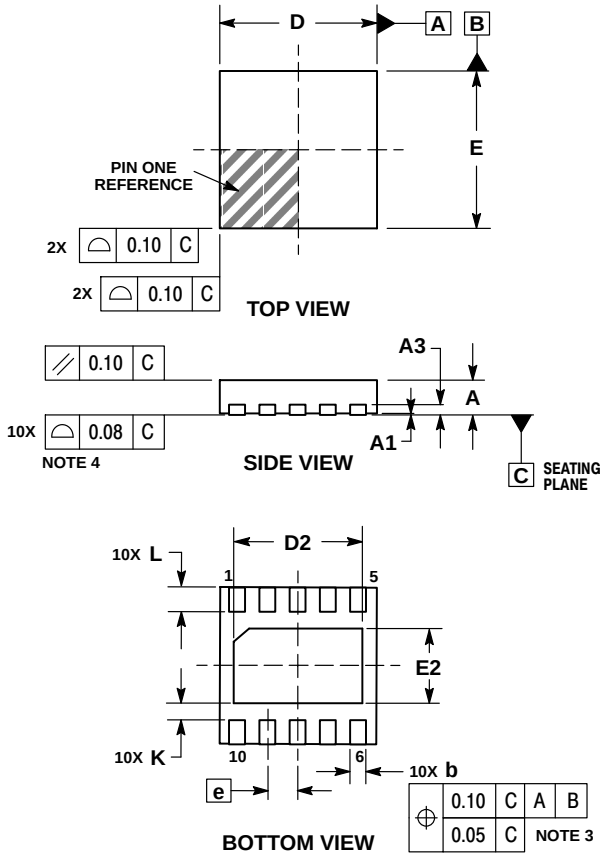


Figure 2. 8 × 20 μs Pulse Waveform

PACKAGE DIMENSIONS

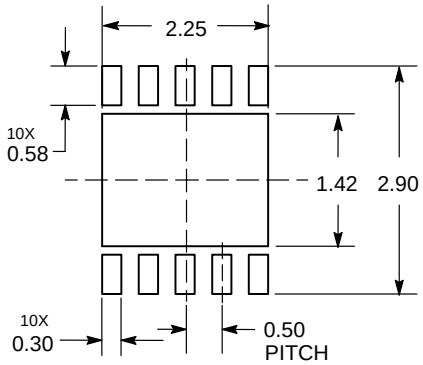
UDFN10 2.6x2.6, 0.5P
CASE 517AN
ISSUE B



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.127 REF	
b	0.20	0.30
D	2.60 BSC	
D2	2.00	2.25
E	2.60 BSC	
E2	1.11	1.36
e	0.50 BSC	
K	0.20	---
L	0.30	0.40

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*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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