

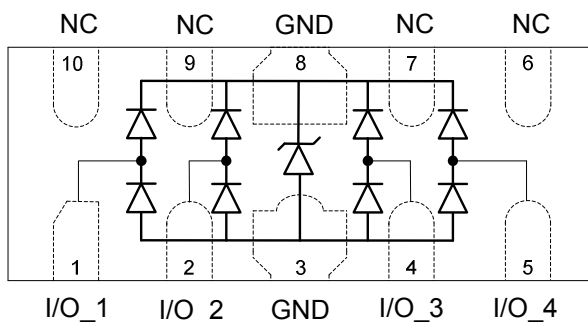
## Description

The ST0324D25 is an ultra low capacitance TVS array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The ST0324D25 has a ultra-low capacitance with a typical value at 0.6pF, and complies with the IEC 61000-4-2 (ESD) standard with  $\pm 15\text{kV}$  air and  $\pm 8\text{kV}$  contact discharge. It is assembled into a 10-pin 2.5x1.0x0.5mm lead-free DFN package. The flow through style package allows for easy PCB layout and matched trace lengths necessary to maintain consistent impedance between high speed differential lines such as USB 3.0 and HDMI. The small size, ultra-low capacitance and high ESD surge protection make ST0324D25 an ideal choice to protect HDMI, MDDI, USB 3.0 and other high speed ports.

## Features

- Ultra low capacitance: 0.6pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Low operating voltage: 3.3V
- Low clamping voltage
- Up to 4 lines protects
- Leadless flow-through package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test  
Air discharge:  $\pm 20\text{kV}$   
Contact discharge:  $\pm 20\text{kV}$
  - IEC61000-4-4 (EFT) 40A (5/50ns)
  - IEC61000-4-5 (Lightning) 5A (8/20 $\mu\text{s}$ )
- RoHS Compliant

## PIN Identification and Configuration



Circuit and Pin Schematic

## Mechanical Characteristics

- Package: DFN2510-10 (2.5x1.0x0.5mm)
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

## Applications

- HDMI 1.3 & 1.4, USB 2.0 & 3.0 and MDDI ports
- Monitors and flat panel displays
- Set-top box and Digital TV
- Video graphics cards
- Digital Video Interface (DVI)
- Notebook Computers
- PCI Express and Serial SATA Ports

## Ordering Information

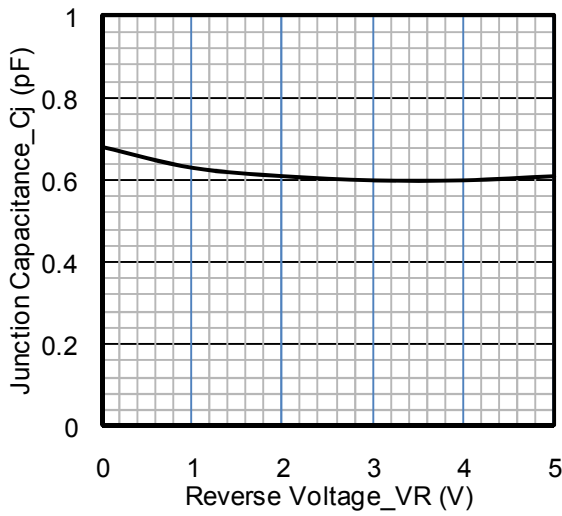
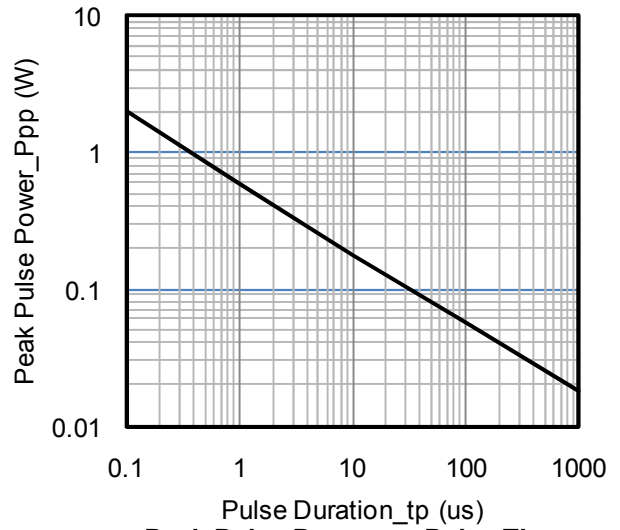
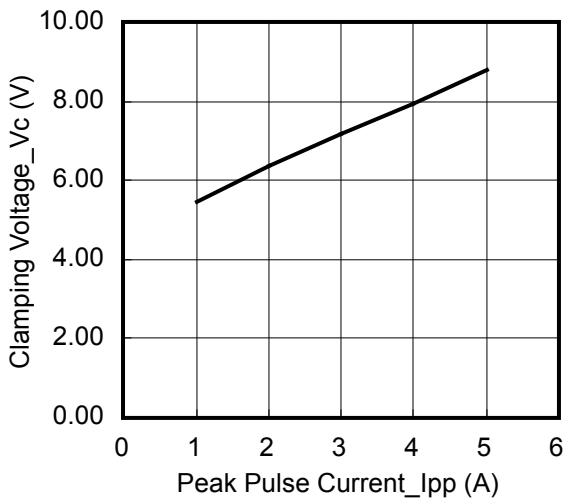
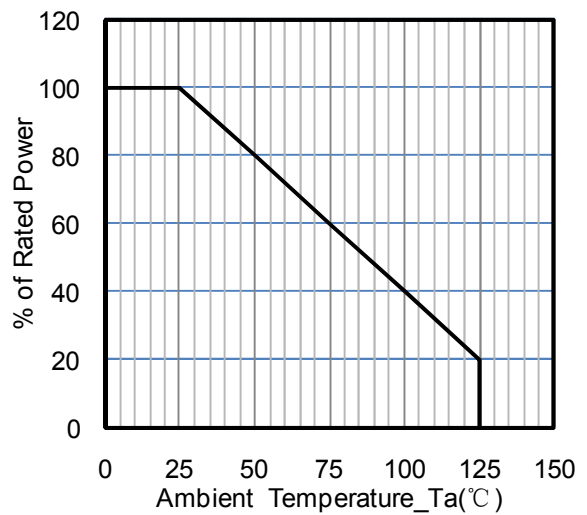
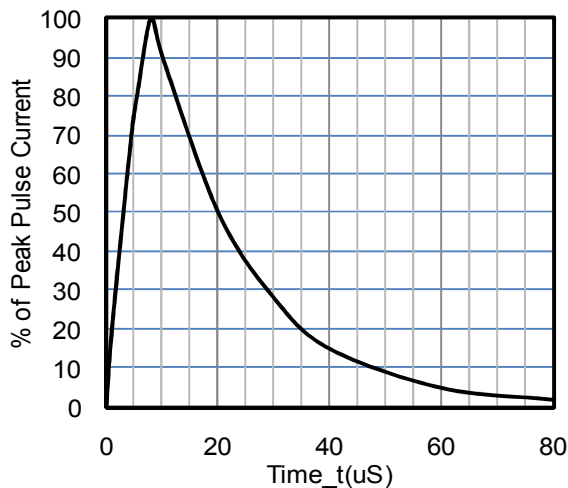
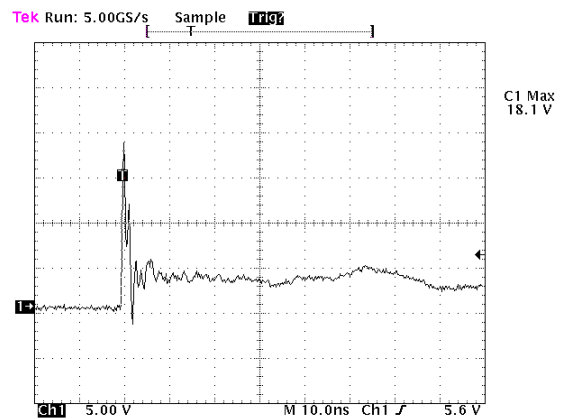
Part Number	Packaging	Reel Size
ST0324D25	3000/Tape & Reel	7 inch

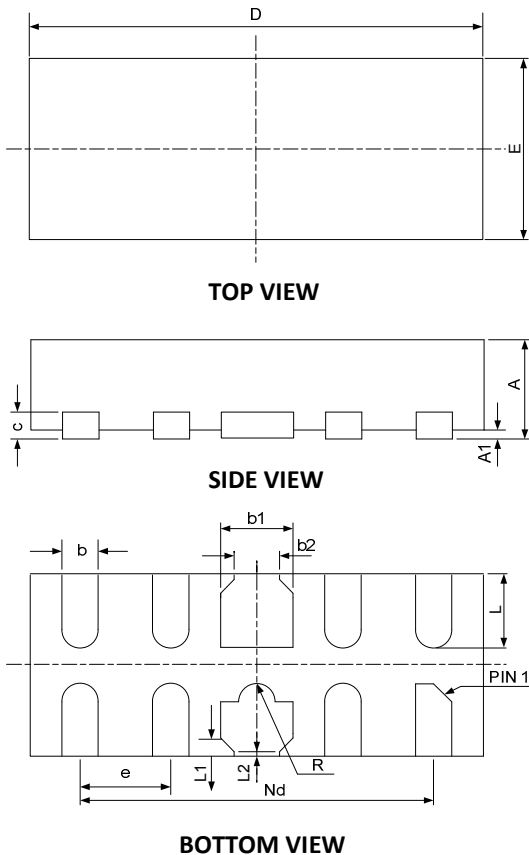
**Absolute Maximum Ratings (TA=25°C unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	50	W
Peak Pulse Current (8/20μs)	IPP	5	A
ESD per IEC 61000-4-2 (Air)	VESD	±20	kV
ESD per IEC 61000-4-2 (Contact)		±20	
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-55 to +150	°C

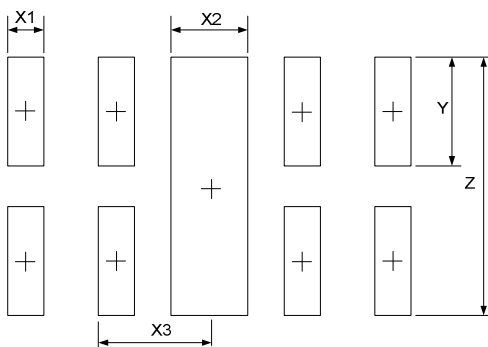
**Electrical Characteristics (TA=25°C unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			3.3	V	Any I/O pin to ground
Punch-Through Voltage	VPT	3.5			V	IT = 2μA, any I/O pin to ground
Snap-Back Voltage	VSB	2.8			V	IT = 50mA, any I/O pin to ground
Reverse Leakage Current	IR			0.5	μA	VRWM = 3.3V, any I/O pin to ground
Clamping Voltage	VC			6.5	V	IPP = 1A (8 x 20μs pulse), any I/O pin to ground
Clamping Voltage	VC			10	V	IPP = 5A (8 x 20μs pulse), any I/O pin to ground
Junction Capacitance	CJ		0.6	0.65	pF	VR = 0V, f = 1MHz, between I/O pins

**Typical Performance Characteristics (TA=25°C unless otherwise specified)**

**Junction Capacitance vs. Reverse Voltage**

**Peak Pulse Power vs. Pulse Time**

**Clamping Voltage vs. Peak Pulse Current**

**Power Derating Curve**

**8 X 20uS Pulse Waveform**

**ESD Clamping Voltage**
**8 kV Contact per IEC61000-4-2**

**DFN2510-10 Package Outline Drawing**


SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.15	0.20	0.25	0.006	0.008	0.010
b1	0.35	0.40	0.45	0.014	0.016	0.018
b2	0.20	0.25	0.30	0.008	0.010	0.012
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.45	2.50	2.55	0.098	0.100	0.102
e	0.50BSC			0.020BSC		
Nd	2.00BSC			0.080BSC		
E	0.95	1.00	1.05	0.038	0.040	0.042
L	0.35	0.40	0.45	0.014	0.016	0.018
L1	0.075REF			0.003REF		
L2	0.050REF			0.002REF		
h	0.08	0.12	0.15	0.003	0.005	0.006
R	0.05	0.10	0.15	0.002	0.004	0.006

**Suggested Land Pattern**


SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X1	0.200	0.008
X2	0.400	0.016
X3	0.500	0.020
Y	0.600	0.024
Z	1.400	0.056

**Contact Information**

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