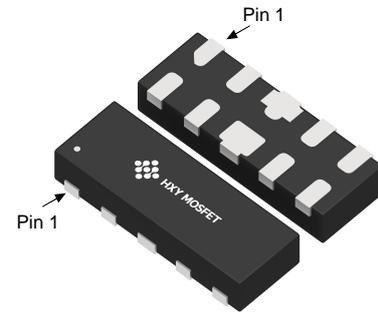




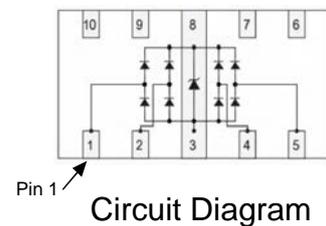
## Discription

CTLTVS5-4 arrays are ultra low capacitance ESD protection devices designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients)

The CTLTVS5-4 have a typical capacitance of only 0.30pF between I/O pins. This allows it to be used on circuits operating in excess of 3GHz without signal attenuation. They may be used to meet the ESD immunity requirements of IEC 61000-4-2, while the CTLTVS5-4 will protect four lines. The CTLTVS5-4 is in a 10-pin DFN2510-10L package. PCB layout by allowing the traces to run straight through the device. The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port™, MDDI, and eSATA interfaces.



DFN2510-10L



Circuit Diagram

## Features

- ★ Protects 4 I/O Lines
- ★ Low Working Voltage: 5 V
- ★ Low Clamping Voltage < 1 ns
- ★ Low Capacitance: 0.55pF (I/O to I/O)
- ★ Response time is typically
- ★ EC61000-4-2 (ESD) ±15 kV (air), ±8 kV (contact)
- ★ IEC61000-4-5 (Surge) 4 A (I/O to GND)
- ★ Pb-Free, RoHS compliant

## Applications

- ★ High Definition Multi-Media Interface (HDMI)
- ★ Digital Visual Interface (DVI)
- ★ DisplayPort™ Interface
- ★ MDDI Ports
- ★ PCI Express
- ★ SATA and eSATA Interface
- ★ USB3.0 and USB2.0 up to 480Mb/s
- ★ IEEE1394 up to 3.2 Gb/s
- ★ Ethernet port: 10/100/1000 Mb/s



### Ordering information

Product ID	Pack	Qty(PCS)
CTLTVS5-4	DFN2510-10L	3000

### Absolute Ratings(Tamb = 25°C)

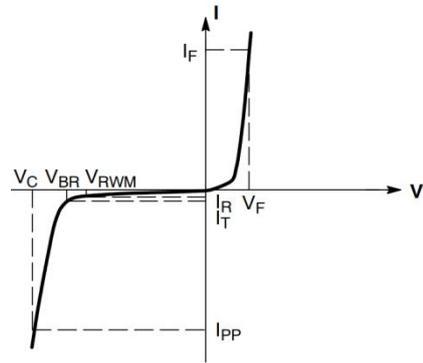
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	150	W
ESD per IEC61000-4-2 (Air) ESD per IEC61000-4-2 (Contact)	V <sub>ESD</sub>	± 15 ± 8	KV
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

### Electrical Characteristics (Ta= 25°C)

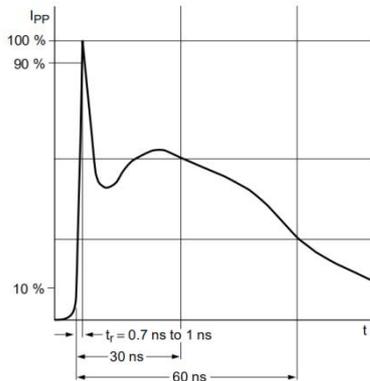
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>	--	--	5	V	
Breakdown Voltage	V <sub>BR</sub>	6.0	--	--	V	I <sub>T</sub> =1mA
Leakage Current I <sub>Leak</sub>	I <sub>R</sub>	--	--	1.0	uA	V <sub>RWM</sub> =5V
Clamping Voltage (I/O-GND)	V <sub>C</sub>	--	8.5	22	V	I <sub>PP</sub> =4A, T <sub>p</sub> =8/20μs
Junction Capacitance (I/O to GND)	C <sub>J</sub>	--	0.5	0.7	pF	V <sub>R</sub> =0V, f=1MHz
Junction Capacitance (I/O to I/O)	C <sub>J</sub>	--	0.3	0.4	pF	V <sub>R</sub> =0V, f=1MHz



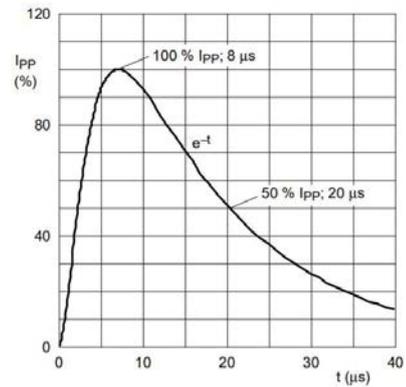
Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$
$P_{pk}$	Peak Power Dissipation
C	Max. Capacitance @ $V_R = 0$ and $f = 1.0$ MHz



## Typical Characteristics



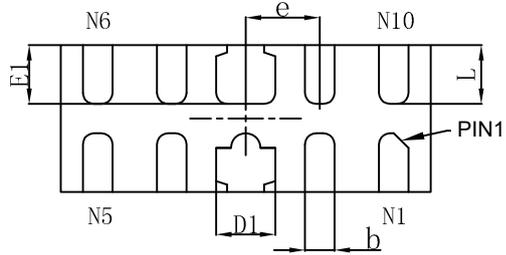
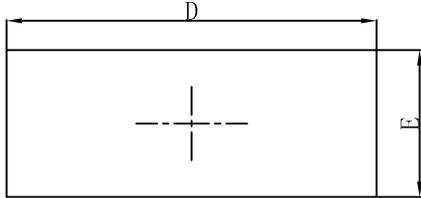
IEC61000-4-2 Waveform



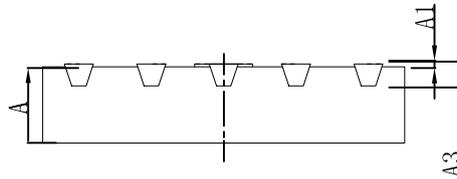
8/20  $\mu$ s Pulse Waveform



### Outline And Dimensions



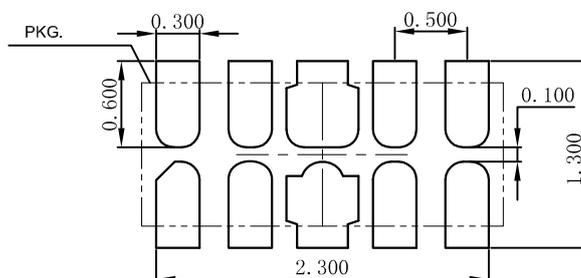
**Bottom View**



**Side View**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.017	0.022
A1	0.000	0.050	0.000	0.002
A3	0.152REF.		0.006REF.	
D	2.450	2.550	0.096	0.100
E	0.950	1.050	0.037	0.041
D1	0.350	0.450	0.014	0.018
E1	0.350	0.450	0.014	0.018
b	0.150	0.250	0.006	0.010
e	0.500TYP.		0.020TYP.	
L				

### Soldering Footprint





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