

## Description

The XE10NLC5VU TVS diode is designed to protect high speed data interfaces. It has been specifically designed protect sensitive electronic components which are connected to data and transmission lines from overvoltage caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and CDE (Cable Discharge Events).

The XE10NLC5VU incorporates eight low capacitance steering diodes and a TVS diode in a single package. It is in a DFN2510-10L package and will protect four high-speed lines. The typical capacitance between I/O pins is only 0.3pF which allows it to be used on circuits operating in excess of 3 GHz without signal attenuation. It may be used to provide ESD protection up to  $\pm 20\text{kV}$  Contact and  $\pm 25\text{kV}$  air discharge according to IEC61000-4-2 , and withstand peak pulse current up to 40A(5/50ns) according to IEC61000-4-4 ,5A (8/20 us) according to IEC61000-4-5.

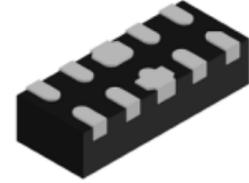
## Features

- ◆ Working voltage: 5V
- ◆ Protect four I/O lines
- ◆ 100 Watts peak pulse power ( $t_p=8/20\mu\text{s}$ )
- ◆ Transient protection for data lines to IEC 61000-4-2 (ESD)  $\pm 25\text{kV}$  (air),  $\pm 20\text{kV}$  (contact)
- IEC 61000-4-4 (EFT)40A (8/20 $\mu\text{s}$ )
- IEC 61000-4-5 (Surge)5A (8/20 $\mu\text{s}$ )
- ◆ Low capacitance
- ◆ Low clamping voltage
- ◆ Low leakage current
- ◆ Solid-state silicon-avalanche technology

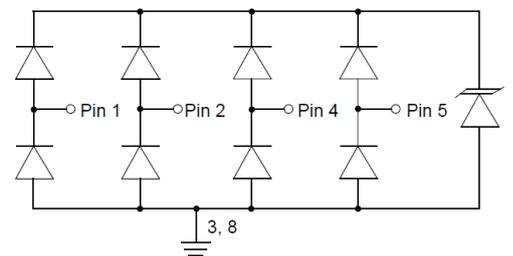
## Applications

- ◆ High Definition Multi-Media Interface(HDMI)
- ◆ Unified Display Interface(UDI)
- ◆ Digital Visual Interface (DVI)
- ◆ MDDI Ports
- ◆ PCI Express
- ◆ Serial ATA

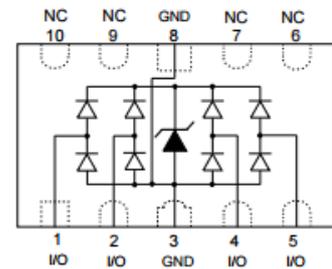
<http://www.xihangsemi.com>



**DFN2510-10L**



**Circuit Diagram**



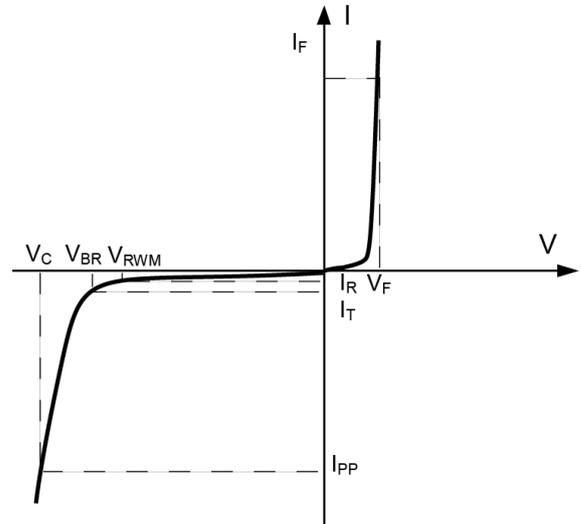
**Marking**

## Order Information

Device	Package	Shipping
XE10NLC5VU	DFN2510-10L	3000/Tape&Reel

**Definitions of electrical characteristics**

Symbol	Parameter
$V_{RWM}$	Reverse Stand-off Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Reverse Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_{PP}$	Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$
$C_j$	Junction Capacitance
$I_{PP}$	Peak Pulse Current



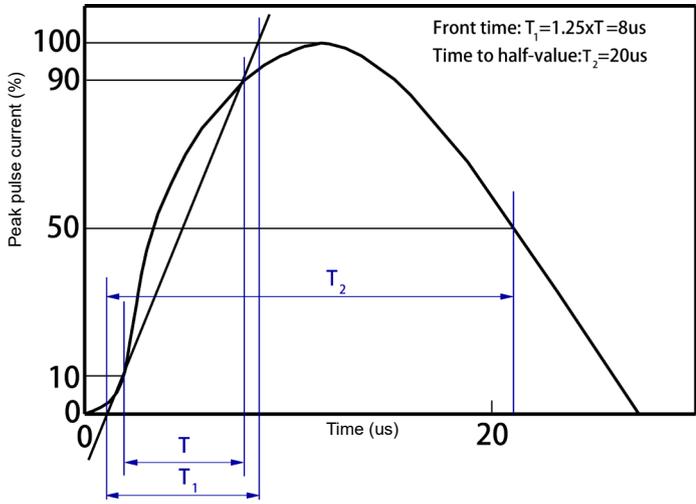
**Absolute Maximum Rating**

Rating	Symbol	Value	Units
Peak Pulse Power ( $t_P = 8/20\mu S$ )	$P_{PK}$	75	W
Peak Pulse Current ( $t_P = 8/20\mu S$ )	$I_{pp}$	5	A
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 25$	kV
ESD according to IEC61000-4-2 contact discharge		$\pm 20$	kV
Lead Soldering Temperature	$T_L$	260 (10 sec)	$^{\circ}C$
Operating Temperature	$T_{OP}$	-55 to +125	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55 to +150	$^{\circ}C$

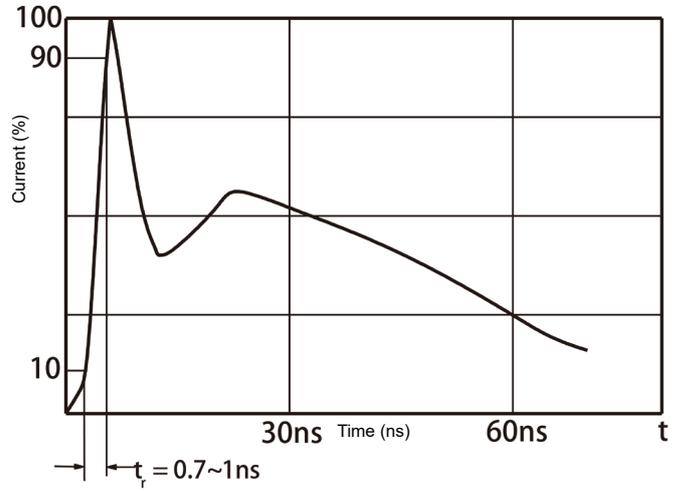
**Electrical Characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	$V_{RWM}$	Any I/O pin to ground			5.0	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$ Any I/O pin to ground	6.0			V
Reverse Leakage Current	$I_R$	$V_{RWM}=5V, T=25^\circ C$ Any I/O pin to ground			1.0	$\mu A$
Forward voltage	$V_F$	$I_T=15mA$ Ground to any I/O pin			1.15	V
Clamping Voltage	$V_C$	$I_{PP}=1A \quad t_P = 8/20\mu s$ Any I/O pin to ground		9.5	11	V
		$I_{PP}=5A \quad t_P = 8/20\mu s$ Any I/O pin to ground		12.5	15	V
Junction Capacitance	$C_{I/O - GND}$	$V_R=0V, f=1MHz$ Any I/O pin to ground			0.8	pF
	$C_{I/O - I/O}$	$V_R=0V, f=1MHz,$ Between I/O pins		0.3	0.4	pF

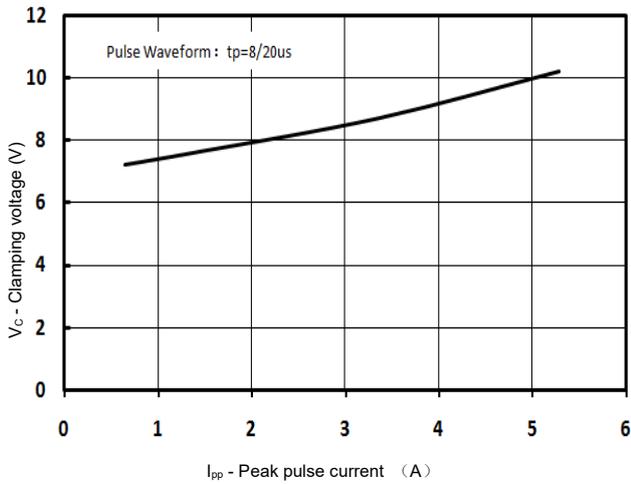
**Typical Characteristics (Ta=25°C, unless otherwise noted)**



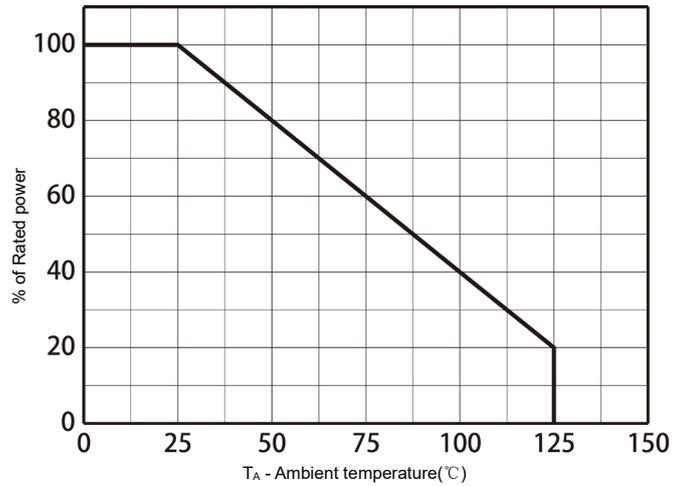
**8/20 us waveform per IEC61000-4-5**



**Contact discharge current waveform per IEC61000-4-2**

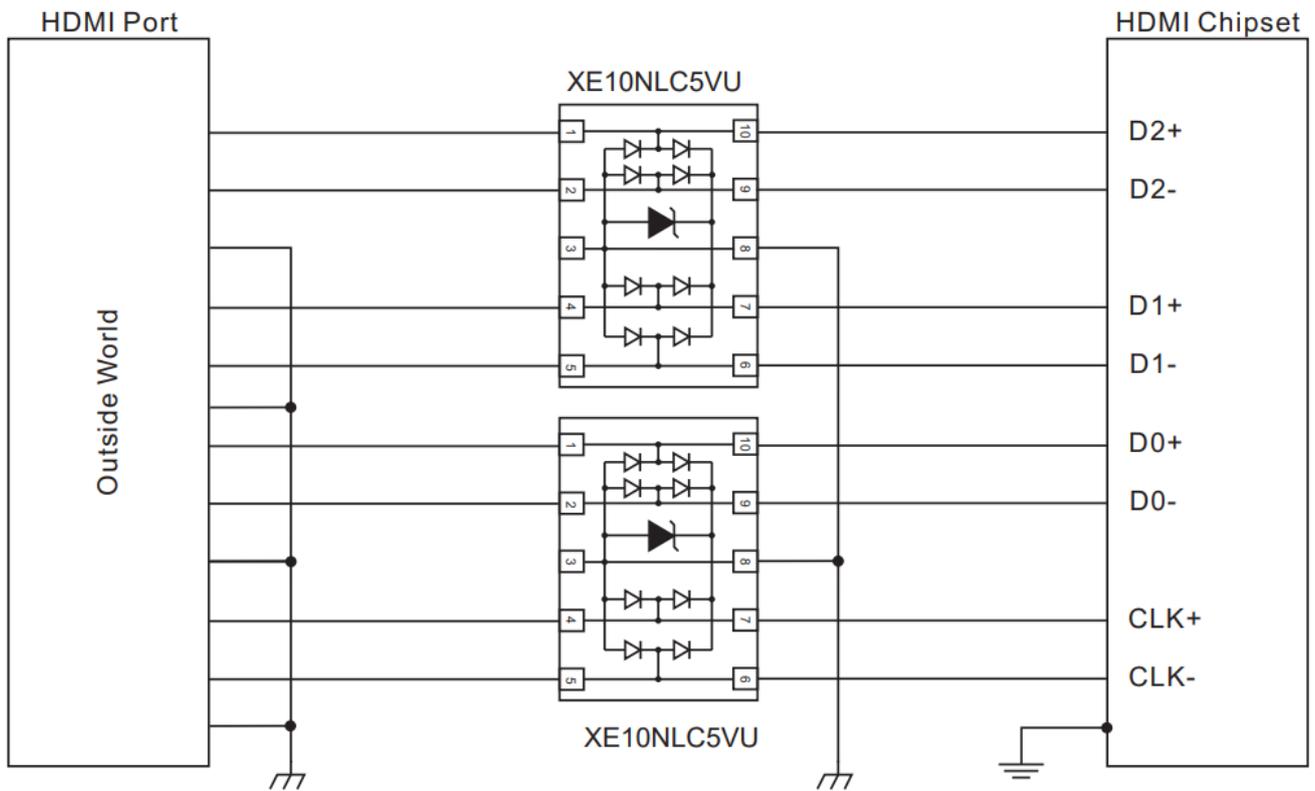


**Clamping Voltage vs. Peak pulse current**

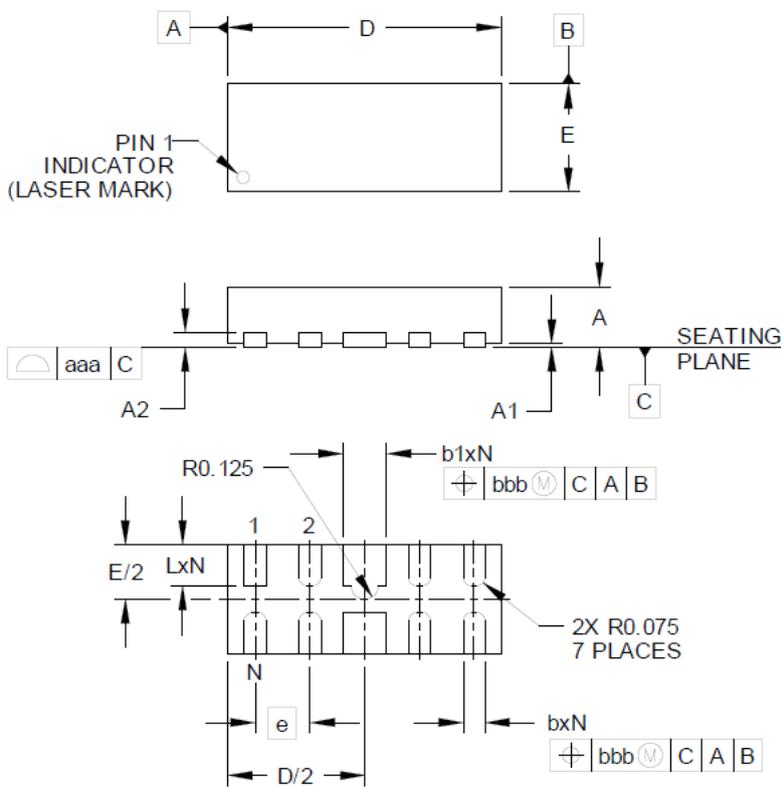


**Power derating vs. Ambient temperature**

### Application Information

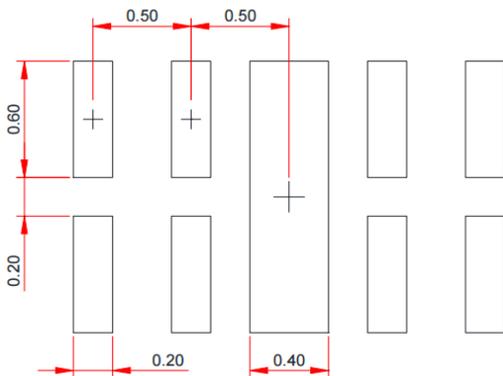


### Package Outline Dimensions (DFN2510-10L)



DIM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.020	.023	.026	0.50	0.58	0.65
A1	0.00	.001	.002	0.00	0.03	0.05
A2	(.005)			(0.13)		
b	.006	.008	.010	0.15	0.20	0.25
b1	.014	.016	.018	0.35	0.40	0.45
D	.094	.098	.102	2.40	2.50	2.60
E	.035	.039	.043	0.90	1.00	1.10
e	.020 BSC			0.50 BSC		
L	.012	.015	.017	0.30	0.38	0.425
N	10			10		
aaa	.003			0.08		
bbb	.004			0.10		

### Recommend Land Pattern (Unit: mm)



Note:  
This recommended land pattern is for reference purpose only.

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