

## Transient Voltage Suppressors for ESD Protection

### ULC3324P10

#### Description

The ULC3324P10 is ultra low capacitance TVS arrays 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 over-voltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

#### Feature

- ◆ 45 Watts Peak Pulse Power per Line ( $t_p=8/20\mu s$ )
- ◆ Protects Four I/O lines
- ◆ Low clamping voltage
- ◆ Working voltages : 3.3V
- ◆ Low leakage current
- ◆ IEC61000-4-4 (EFT) 40A (5/50  $\mu s$ )
- ◆ IEC61000-4-5 (LIGHTING) 3A (8/20  $\mu s$ )
- ◆ IEC61000-4-2(ESD):  $\pm 17kV$  (air discharge)  
 $\pm 15kV$  (contact discharge);

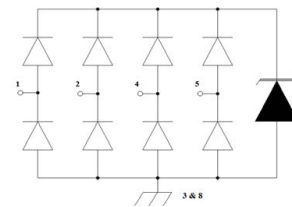
#### Applications

- ◆ USB 3.0 / USB 3.1 Interfaces
- ◆ HDMI 1.4 / HDMI 2.0 Interfaces
- ◆ Video Graphics Cards
- ◆ Notebooks, Desktops, and Servers
- ◆ Portable Instrumentation
- ◆ Industrial Controls
- ◆ Peripherals

DFN2510P10



#### Functional Diagram



#### Mechanical Data

- ◆ DFN2510P10 Package
- ◆ Molding Compound Flammability Rating : UL 94V-O
- ◆ Weight 15 Milligrams (Approximate)
- ◆ Quantity Per Reel : 3,000pcs
- ◆ Reel Size : 7 inch
- ◆ Lead Finish : Lead Free

#### Mechanical Characteristics

Symbol	Parameter	Value	Units
$P_{pp}$	Peak Pulse Power ( $t_p=8/20\mu s$ waveform)	45	Watts
$T_J$	Operating Junction Temperature Range	-40 to +125	$^{\circ}C$
$T_{STG}$	Storage Temperature Range	-55 to +150	$^{\circ}C$
$T_L$	Lead Soldering Temperature	260 (10 sec.)	$^{\circ}C$

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### Electrical Characteristics (@ 25°C Unless Otherwise Specified)

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Reverse Working Voltage	$V_{RWM}$	--	--	--	3.3	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	4.0	--	--	V
Reverse Leakage Current	$I_R$	$V_{RWM}=5V$ ; $T=25^\circ C$	--	--	1	$\mu A$
Positive Clamping Voltage	$V_C$	$I_{PP}=1A$ , $T_P=8/20\mu S$ ;	--	--	6.2	V
		$I_{PP}=3A$ , $T_P=8/20\mu S$ ;	--	--	15	
Junction capacitance	$C_J$	$V_R=0V$ , $f=1MHz$	--	0.5	--	pF

### Characteristic Curves

Fig1. 8/20 $\mu s$  Pulse Waveform

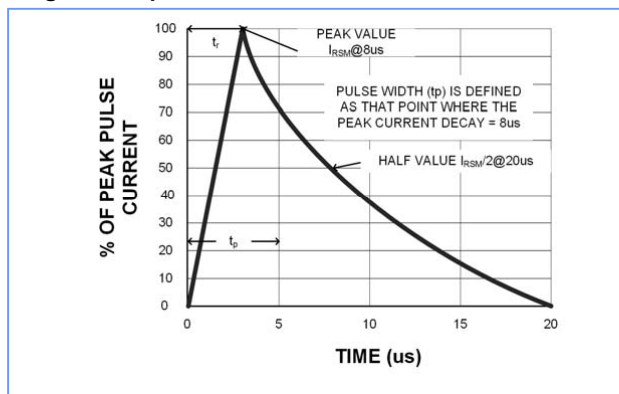


Fig3. Clamping Voltage vs. Peak Pulse Current (tp=8/20 $\mu s$ )

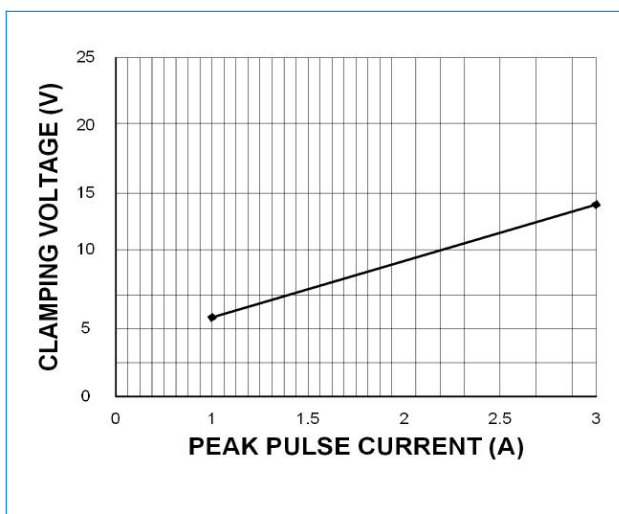


Fig2. Power Derating Curve

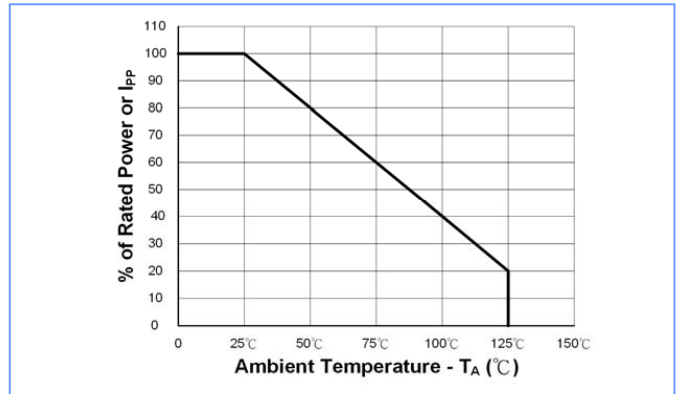
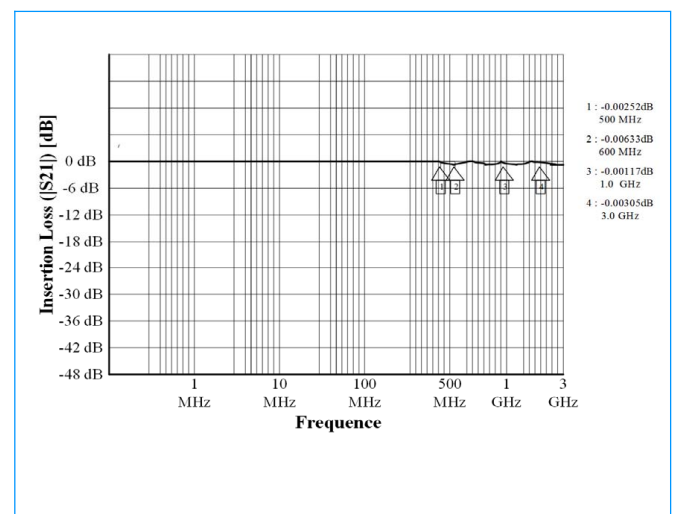


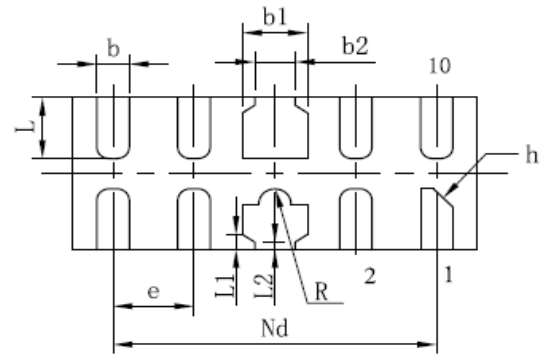
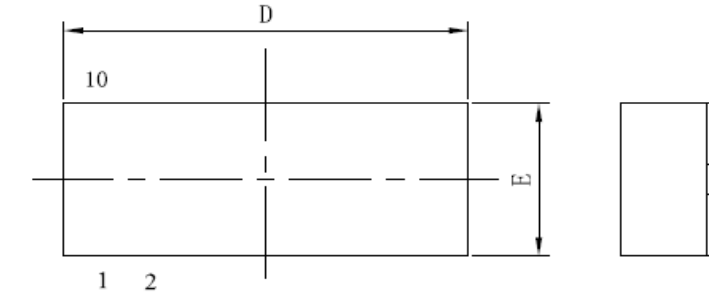
Fig4. Insection Loss (S21)



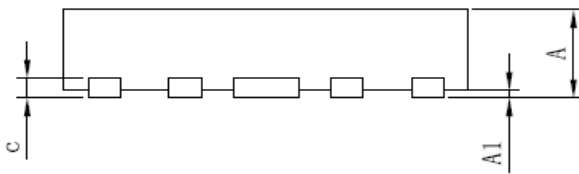
## Transient Voltage Suppressors for ESD Protection

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### DFN2510P10 Package Outline & Dimensions

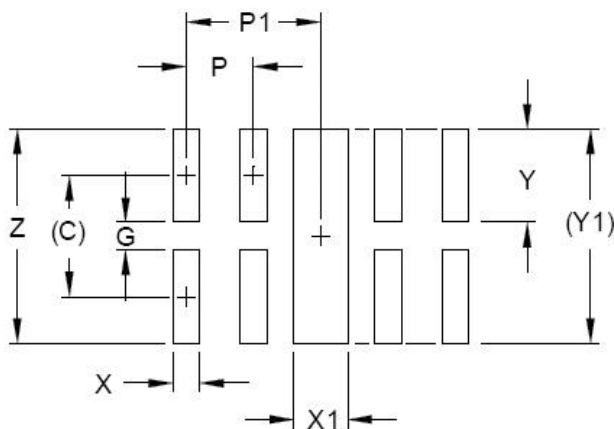


BOTTOM VIEW



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	—	0.02	0.05
b	0.15	0.20	0.25
b1	0.35	0.40	0.45
b2	0.20	0.25	0.30
c	0.10	0.15	0.20
D	2.45	2.50	2.55
e	0.50BSC		
Nd	2.00BSC		
E	0.95	1.00	1.05
L	0.35	0.40	0.45
L1	0.075REF		
L2	0.05REF		
h	0.08	0.12	0.15
R	0.05	0.10	0.15
L/P載體尺寸 (mil)	22X30		

### \* SOLDERING FOOTPRINT



DIM	DIMENSIONS	
	INCHES	MILLIMETERS
C	(.034)	(0.875)
G	.008	0.20
P	.020	0.50
P1	.039	1.00
X	.008	0.20
X1	.016	0.40
Y	.027	0.675
Y1	(.061)	(1.55)
Z	.061	1.55