

## Ultra Low Capacitance ESD Protection Array

### DESCRIPTION

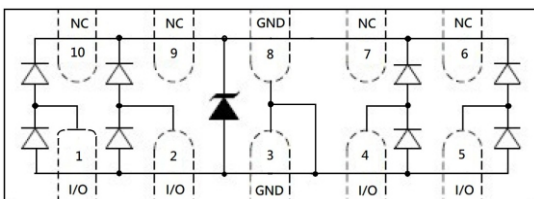
ESD3324P is an ultra-low capacitance Transient Voltage Suppressor (TVS) designed to protection for high-speed data interfaces. With typical capacitance of 0.2pF (I/O to I/O) only, ESD3324P is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4( $\pm 15\text{KV}$  air,  $\pm 8\text{KV}$  contact discharge), IEC61000-4-4 (electrical fast transient-EFT) (40A, 5/50ns), very fast charged device model (CDM)ESD and cable discharge event (CDE),etc.

ESD3324P uses ultra-small DFN2510 package. Each ESD3324P device can protect four high-speed data lines. The combined features of ultra-low capacitance, ultra-small size and high ESD robustness make ESD3324P ideal for high-speed data ports and high-frequency lines (e.g., HDMI & DVI) applications. The low clamping voltage of the ESD3324P guarantees a minimum stress on the protected IC.

### ORDERING INFORMATION

- ✧ Device: ESD3324P
- ✧ Package: DFN2510
- ✧ Marking: 3324P
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

### PIN CONFIGURATION



### FEATURES

- ✧ Transient protection for high-speed data lines  
IEC61000-4-2(ESD)  $\pm 20\text{KV}$ (Contact)  
 $\pm 25\text{KV}$ (Air)
- IEC61000-4-4(EFT)40A(5/50ns)  
Cable Discharge Event(CDE)
- ✧ Package optimized for high-speed lines
- ✧ Ultra-small package(2.5mm\*1.0mm\*0.55mm)
- ✧ Protects four data lines
- ✧ Low capacitance: 0.2pF (I/O to I/O)
- ✧ Low leakage current
- ✧ Low clamping voltage
- ✧ Each I/O pin can withstand over 1000 ESD strikes for  $\pm 8\text{KV}$  contact discharge

### MACHANICAL DATA

- ✧ DFN2510 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Terminal: Matte tin plated.
- ✧ High temperature soldering guaranteed:  
 $260^{\circ}\text{C}/10\text{s}$
- ✧ Packaging: Tape and Reel
- ✧ Reel size: 7 inch

### APPLICATIONS

- ✧ Serial ATA
- ✧ PCI Express
- ✧ MDDI Ports
- ✧ USB 2.0/3.0 Power and Data Line Protection
- ✧ Display Ports
- ✧ High Definition Multi-Media Interface (HDMI)
- ✧ Digital Visual Interface (DVI)

### CIRCUIT DIAGRAM



### ABSOLUTE MAXIMUM RATING

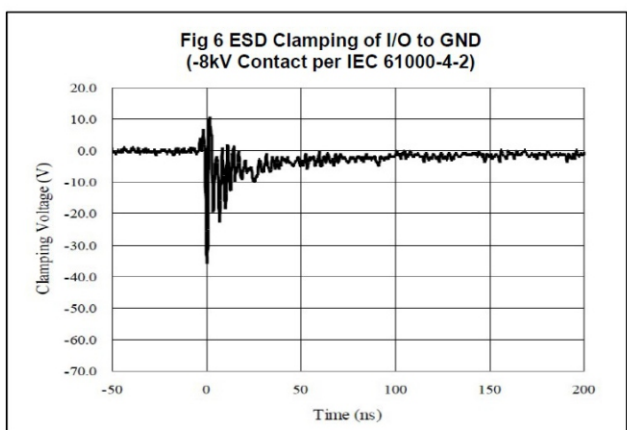
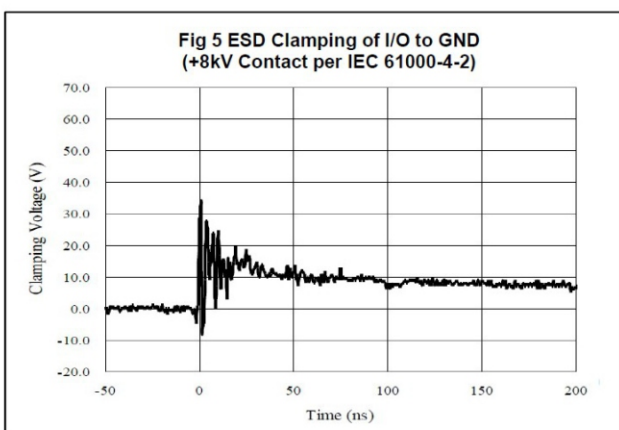
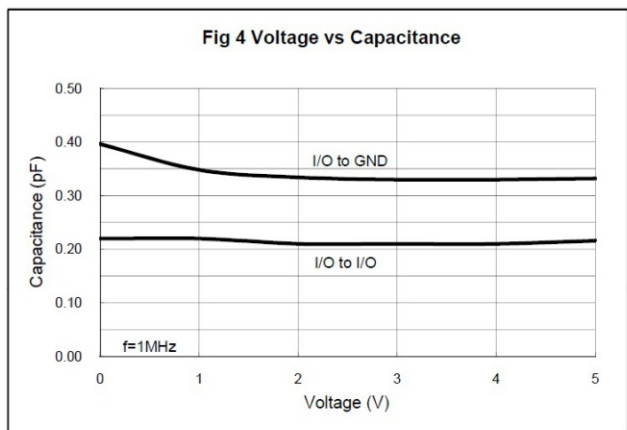
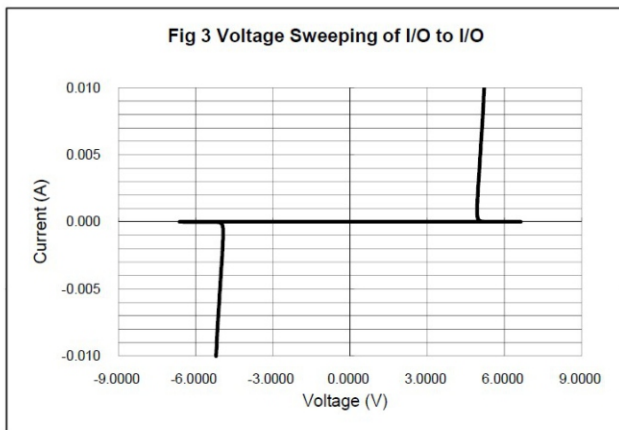
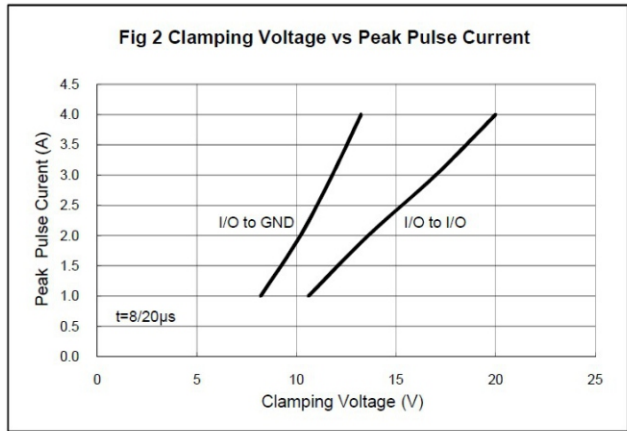
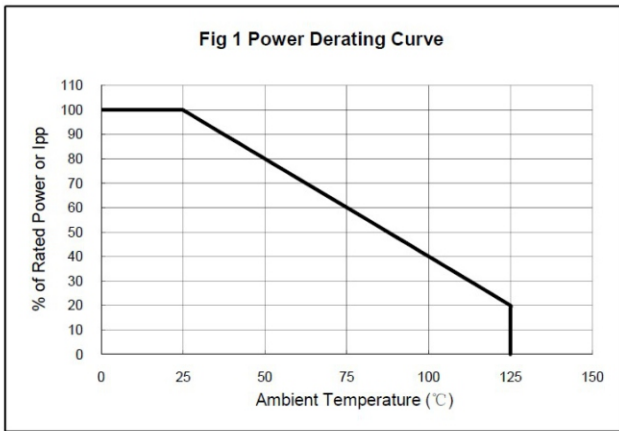
Symbol	Parameter	Value	Units
$P_{PP}$	Peak Pulse Power (8/20 $\mu$ s)	56	W
$V_{ESD}$	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$\pm 25$ $\pm 20$	kV
$T_{OPT}$	Operating Temperature	-55/+125	$^{\circ}$ C
$T_{STG}$	Storage Temperature	-55/+150	$^{\circ}$ C

### ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}$ C)

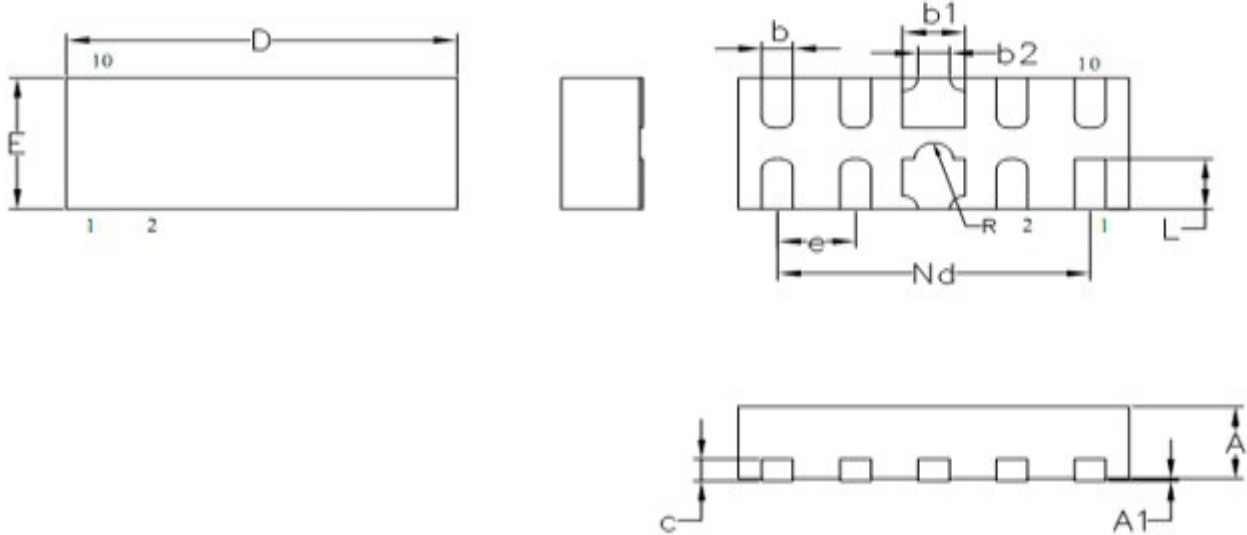
Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage	Any I/O pin to GND			3.3	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1\text{mA}$ Any I/O pin to GND	4.2			V
$I_R$	Reverse Leakage Current	$V_{RWM} = 3.3\text{V}$ Any I/O pin to GND			1.0	$\mu$ A
$V_C$	Clamping Voltage	$I_{PP} = 1\text{A}$ , $t_p = 8/20\mu\text{s}$ Any I/O pin to GND			10	V
		$I_{PP} = 4\text{A}$ , $t_p = 8/20\mu\text{s}$ Any I/O pin to GND			14	V
$C_{ESD}$	Parasitic Capacitance	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ Between I/O and GND		0.4	0.5	pF
$C_{ESD}$	Parasitic Capacitance	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ Between I/O and I/O		0.2	0.3	pF

Note: I/O pins are pin 1,2,4,5, GND pins are pin 3,8.

## ELECTRICAL CHARACTERISTICS CURVE



### DFN2510 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions (mm)		
	Min.	Nom.	Max.
D	2.45	2.50	2.55
E	0.95	1.00	1.05
b1	0.35	0.40	0.45
b2	0.20REF		
b	0.15	0.20	0.25
L	0.33	0.38	0.43
Nd	2.00BSC		
e	0.50BSC		
R	0.10	0.125	0.15
A	0.45	0.50	0.55
c	0.15REF		
A1	0.00	-	0.05