

## Ultra Low Capacitance ESD Protection Array

### DESCRIPTION

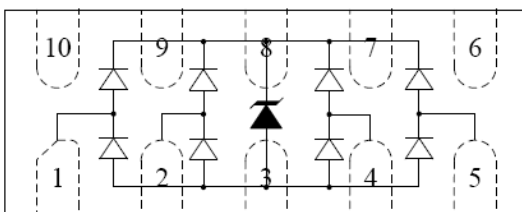
TEP3324D is an ultra-low capacitance Transient Voltage Suppressor (TVS) designed to protection for high-speed data interfaces. With typical capacitance of 0.2pF (I/O to I/O) only, TEP3324D is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4(±15KV air, ±8KV 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.

TEP3324D uses ultra-small DFN2510 package. Each TEP3324D device can protect four high-speed data lines. The combined features of ultra-low capacitance, ultra-small size and high ESD robustness make TEP3324D ideal for high-speed data ports and high-frequency lines (e.g., HDMI & DVI) applications. The low clamping voltage of the TEP3324D guarantees a minimum stress on the protected IC.

### ORDERING INFORMATION

- ✧ Device: TEP3324D
- ✧ Package: DFN2510
- ✧ Marking: 3324P
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

### PIN CONFIGURATION



### FEATURES

- ✧ Transient protection for high-speed data lines
  - IEC 61000-4-2(ESD) ±25KV(Air)
  - ±20KV(Contact)
  - IEC 61000-4-4(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 ±8KV contact discharge

### MACHANICAL DATA

- ✧ DFN2510 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Terminal: Matte tin plated.
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed:260°C/10s
- ✧ Reel size: 7 inch
- ✧ Halogen free
- ✧ P/N suffix V means AEC-Q101 qualified, e.g:TEP3324DV

### APPLICATIONS

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

### PACKAGE OUTLINE



## ABSOLUTE MAXIMUM RATING

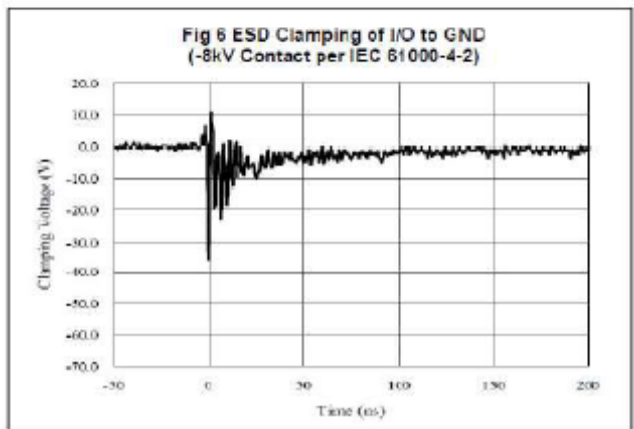
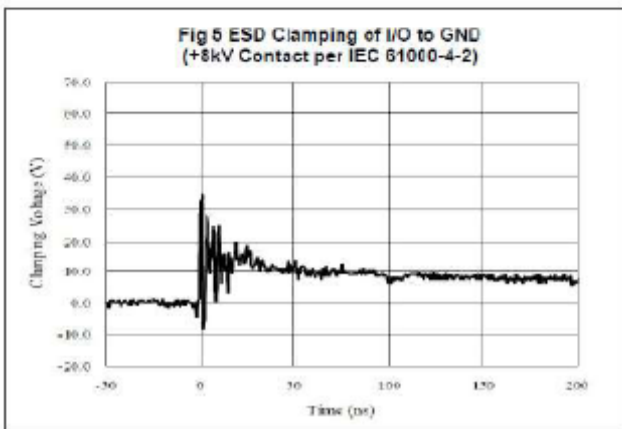
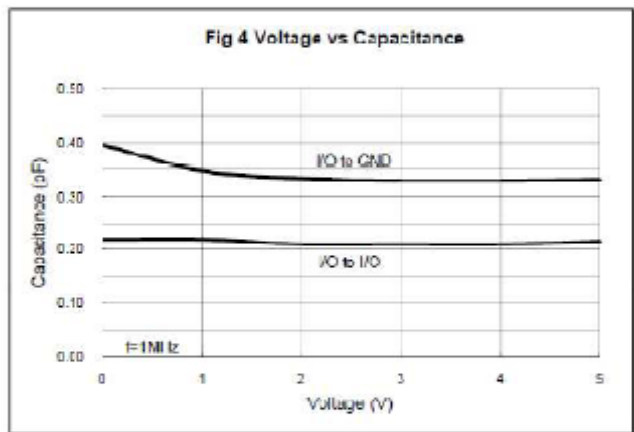
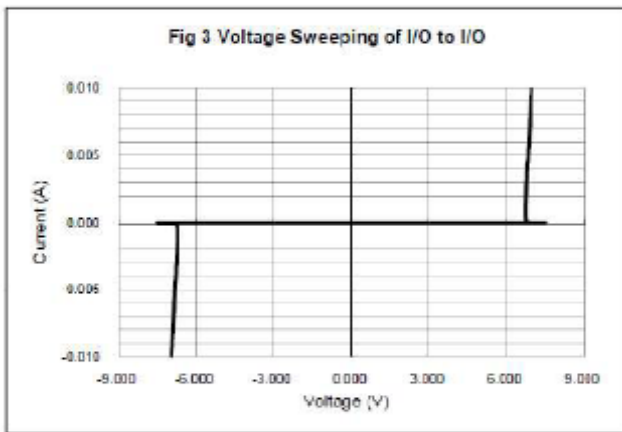
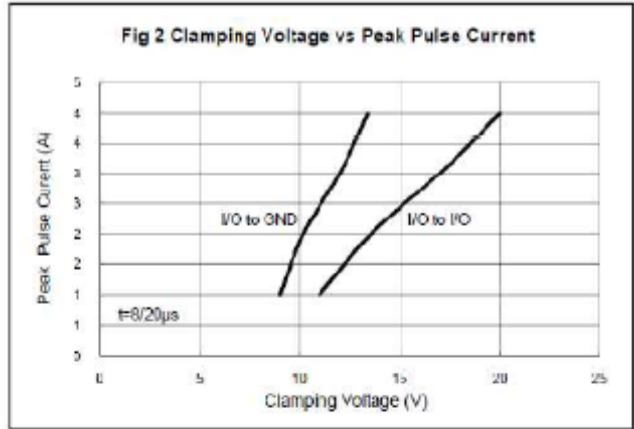
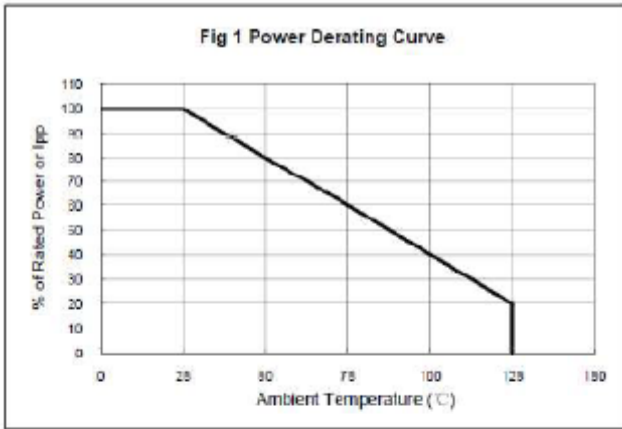
Symbol	Parameter	Value	Units
$P_{PP}$	Peak Pulse Power (8/20 $\mu$ s)	56	W
$V_{ESD}$	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$\pm 25$ $\pm 20$	kV
$T_{OPT}$	Operating Temperature	-55/+125	$^{\circ}$ C
$T_{STG}$	Storage Temperature	-55/+150	$^{\circ}$ C

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

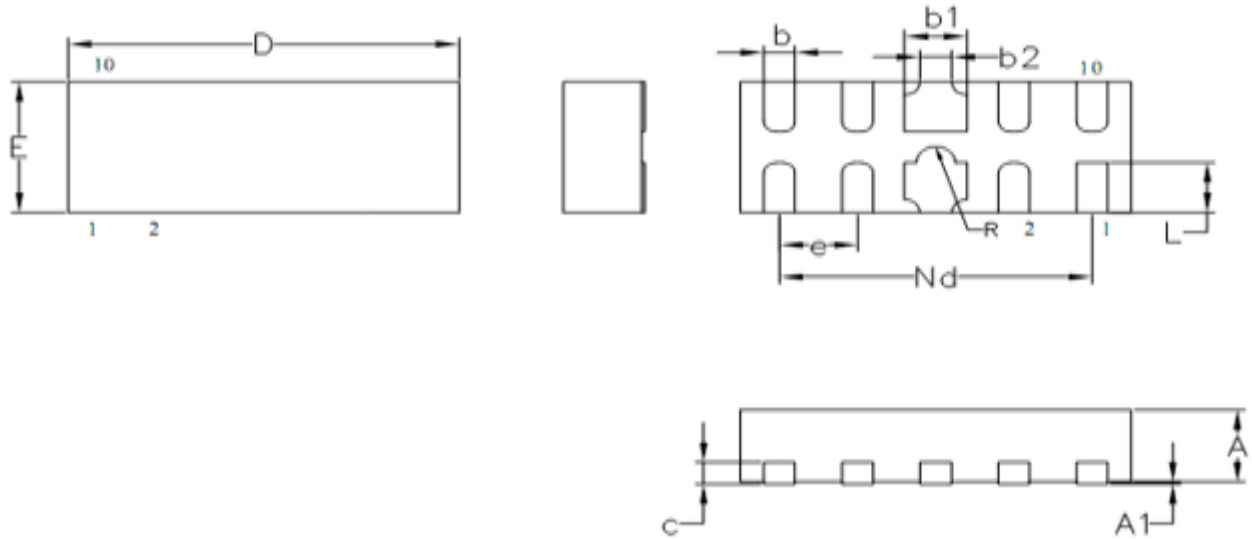
Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage	Any I/O pin to GND			3.3	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1\text{mA}$ Any I/O pin to GND	4.2			V
$I_R$	Reverse Leakage Current	$V_{RWM} = 3.3\text{V}$ Any I/O pin to GND			1.0	$\mu$ A
$V_C$	Clamping Voltage	$I_{PP} = 1\text{A}$ , $t_p = 8/20\mu\text{s}$ 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.

## RATING AND CHARACTERISTICS CURVES (TEP3324D)



## 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

## DISCLAIMER NOTICE

Rectron Inc reserves the right to make changes without notice to any product specification herein, to make corrections, modifications, enhancements or other changes. Rectron Inc or anyone on its behalf assumes no responsibility or liability for any errors or inaccuracies. Data sheet specifications and its information contained are intended to provide a product description only. "Typical" parameters which may be included on RECTRON data sheets and/ or specifications can and do vary in different applications and actual performance may vary over time. Rectron Inc does not assume any liability arising out of the application or use of any product or circuit.

Rectron products are not designed, intended or authorized for use in medical, life-saving implant or other applications intended for life-sustaining or other related applications where a failure or malfunction of component or circuitry may directly or indirectly cause injury or threaten a life without expressed written approval of Rectron Inc. Customers using or selling Rectron components for use in such applications do so at their own risk and shall agree to fully indemnify Rectron Inc and its subsidiaries harmless against all claims, damages and expenditures.