

Ultra Low Capacitance TVS/ESD Protection Diode

DESCRIPTION

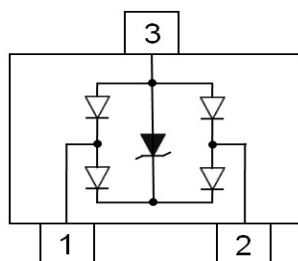
TEP0502TWL is an ultra-low capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.2pF (I/O to I/O) only, TEP0502TWL is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 ($\pm 8\text{kV}$ contact, $\pm 15\text{kV}$ air discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), very fast charged device model (CDM) ESD and cable discharge event (CDE) etc.

TEP0502TWL uses small SOT-323 package. Each TEP0502TWL device can protect two high-speed data lines. The combined features of low capacitance, small size and high ESD robustness make TEP0502TWL ideal for high-speed data port and high-frequency line applications. The low clamping voltage of the TEP0502TWL guarantees a minimum stress on the protected IC.

ORDERING INFORMATION

- ✧ Device: TEP0502TWL
- ✧ Package: SOT-323
- ✧ Marking: 52L
- ✧ Material: Halogen free and RoHS compliant
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

PIN CONFIGURATION



FEATURES

- ✧ Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) $\pm 8\text{kV}$ (Contact)
 $\pm 15\text{kV}$ (Air)
IEC 61000-4-4 (EFT) 40A (5/50 ns)
Cable Discharge Event (CDE)
- ✧ Small package (2.275mm \times 2.1mm \times 1.0mm)
- ✧ Protects two data lines
- ✧ Low capacitance: 0.2pF Typical (I/O-I/O)
- ✧ Low leakage current
- ✧ Low clamping voltage

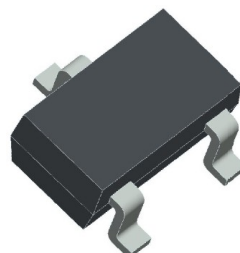
MACHANICAL DATA

- ✧ SOT-323 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed:
260 $^{\circ}\text{C}$ /10s
- ✧ Reel size: 7 inch

APPLICATIONS

- ✧ Serial ATA
- ✧ Desktops, Servers and Notebooks
- ✧ PCI Express
- ✧ MDDI Ports
- ✧ USB Data Line Protection
- ✧ Display Ports
- ✧ Digital Visual Interfaces (DVI)

PACKAGE OUTLINE



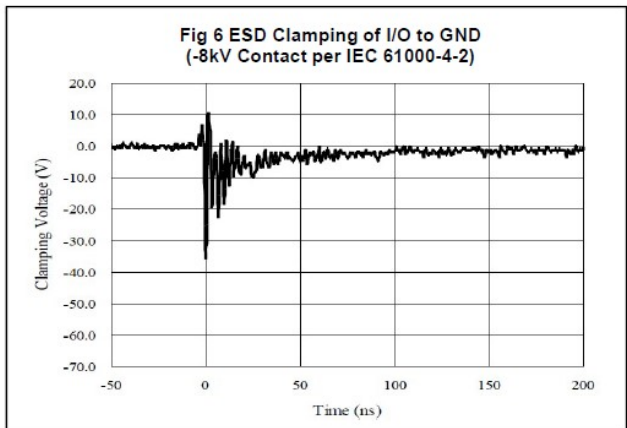
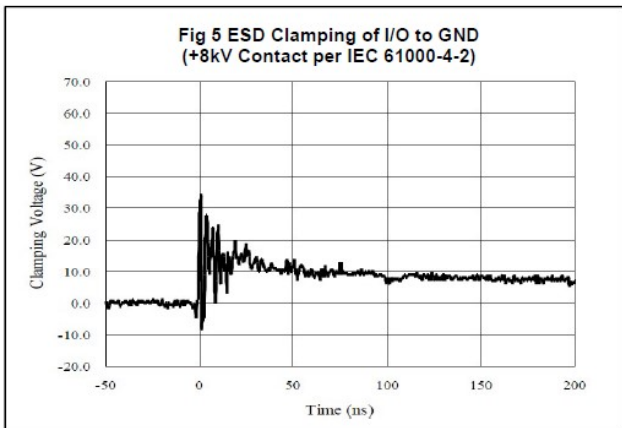
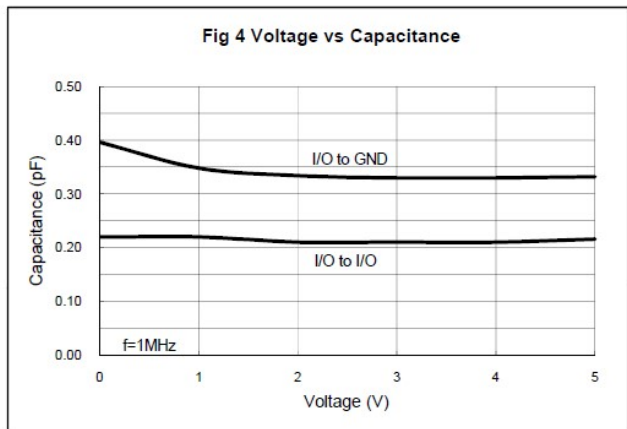
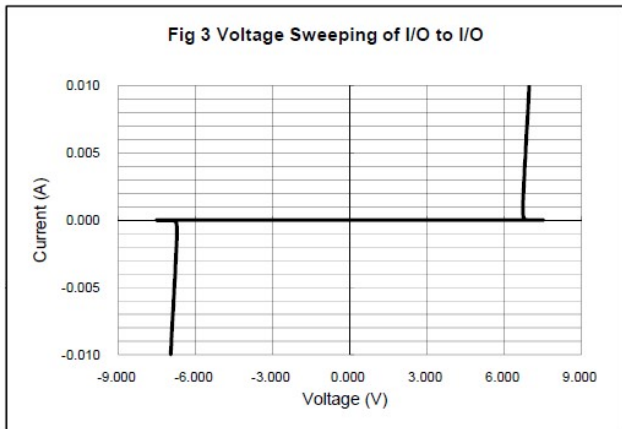
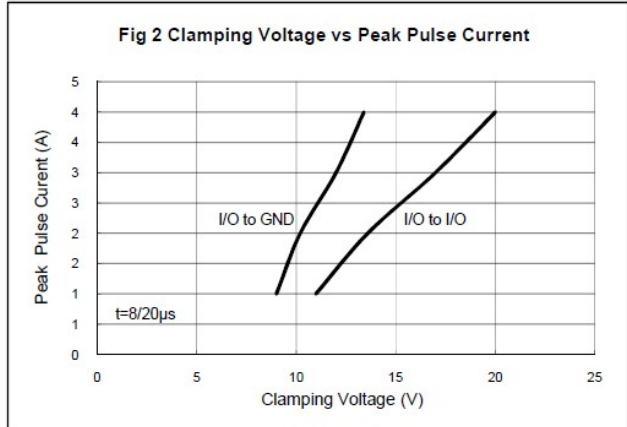
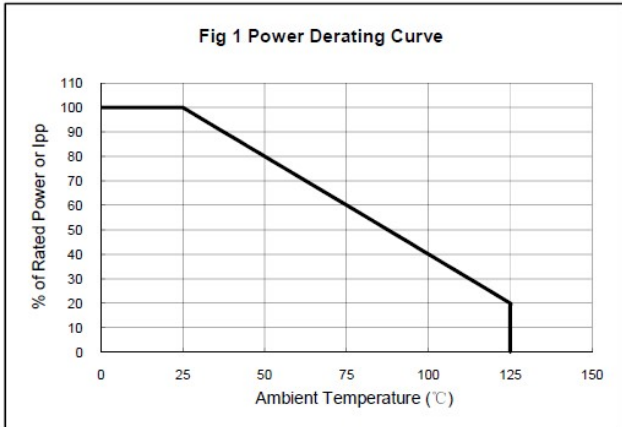
ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20 μ s)	60	W
V_{ESD}	ESD per IEC 61000-4-2 (Contact) ESD per IEC 61000-4-2 (Air)	± 20 ± 25	kV
T_{OPT}	Operating Temperature	-55/+125	$^{\circ}$ C
T_{STG}	Storage Temperature	-55/+150	$^{\circ}$ C

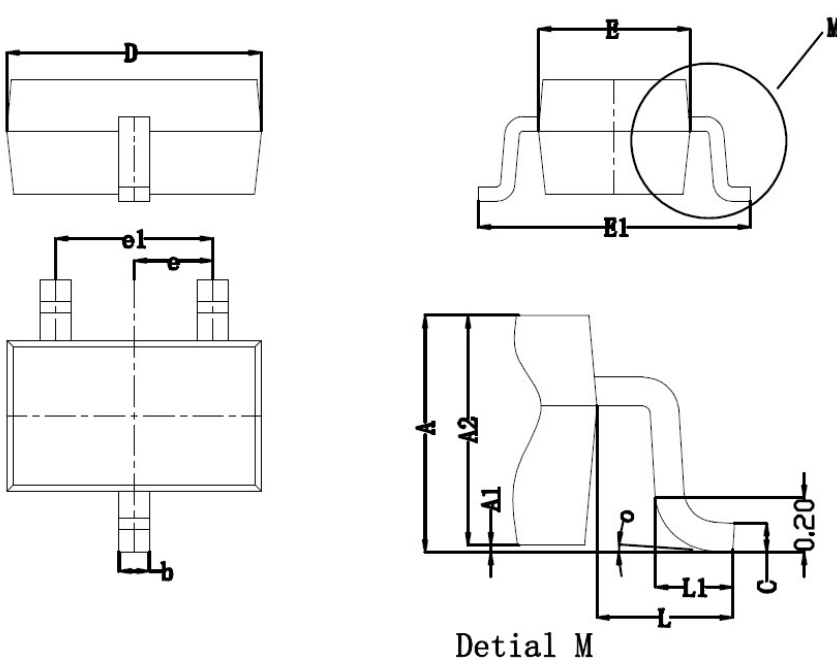
ELECTRICAL CHARACTERISTICS (Tamb=25 $^{\circ}$ C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	I/O to GND			5.0	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 1\text{mA}$ Between I/O and GND	6.0			V
I_R	Reverse Leakage Current	$V_{RWM} = 5\text{V}$ Between I/O and GND			100	nA
V_C	Clamping Voltage	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$ Between I/O and GND			10	V
		$I_{PP} = 4\text{A}$, $t_p = 8/20\mu\text{s}$ Between I/O and GND			15	V
V_F	Forward Voltage	$I_T = 10\text{mA}$ Between I/O and GND			1.2	V
C_T	Total Capacitance	$V_R = 0\text{V}$, $f = 1\text{MHz}$ Between I/O and GND		0.4		pF
		$V_R = 0\text{V}$, $f = 1\text{MHz}$ Between I/O and I/O		0.2		pF

RATING AND CHARACTERISTICS CURVES (TEP0502TWL)



SOT-323 PACKAGE OUTLINE DIMENSIONS



Symbol	Dim in mm		
	Min	Nom	Max
A	0.900	1.000	1.100
A1	0.000	0.050	0.100
A2	0.900	0.950	1.000
b	0.200	0.300	0.400
c	0.080	0.115	0.150
D	1.900	2.050	2.200
E	1.150	1.250	1.350
E1	2.000	2.200	2.400
e	0.650TYP		
e1	1.200	1.300	1.400
L	0.525REF		
L1	0.260	0.360	0.460
o	0°	4°	8°

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