

Ultra Low Capacitance TVS/ESD Protection Diode

DESCRIPTION

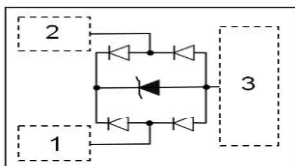
ESD0502L is an ultra-low capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.25pF (I/O to I/O) only, ESD0502L is designed to protect parasitic-sensitive systems against over-voltage and 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), 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.

ESD0502L uses small DFN1006-3L package. Each ESD0502L device can protect two high-speed data lines. The combined features of low capacitance, small size and high ESD robustness make ESD0502L ideal for high-speed data port and high-frequency line applications. The low clamping voltage of the ESD0502L guarantees a minimum stress on the protected IC.

ORDERING INFORMATION

- ✧ Device: ESD0502L
- ✧ Package: DFN1006-3L
- ✧ Marking: 52L
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 10,000pcs

PIN CONFIGURATION



FEATURES

- ✧ Transient protection for high-speed data lines
 - IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (Air)
 - $\pm 8\text{kV}$ (Contact)
 - IEC 61000-4-4 (EFT) 40A (5/50 ns)
 - Cable Discharge Event (CDE)
- ✧ Small package (1.0mm×0.6mm×0.5mm)
- ✧ Protects two data lines
- ✧ Low capacitance: 0.2pF Typical (I/O-I/O)
- ✧ Low leakage current
- ✧ Low clamping voltage

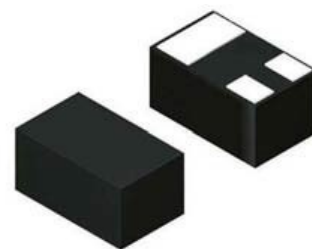
MACHANICAL DATA

- ✧ DFN1006-3L package
- ✧ Flammability Rating: UL 94V-0
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed: 260/10s
- ✧ 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



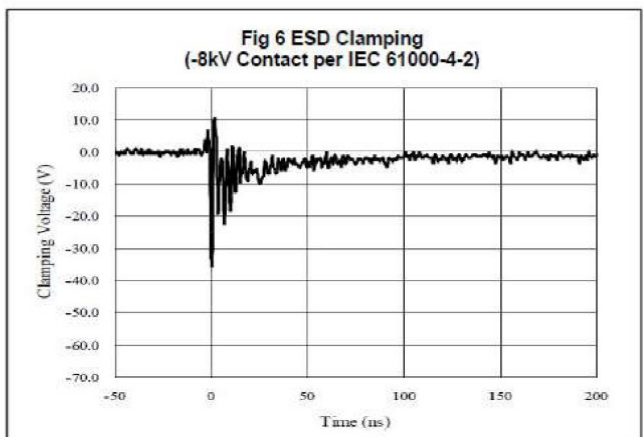
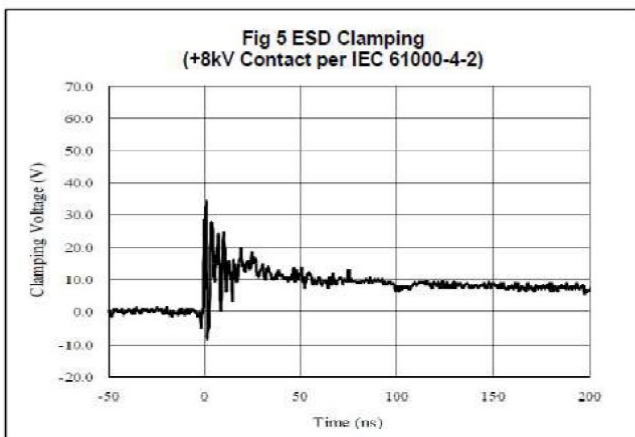
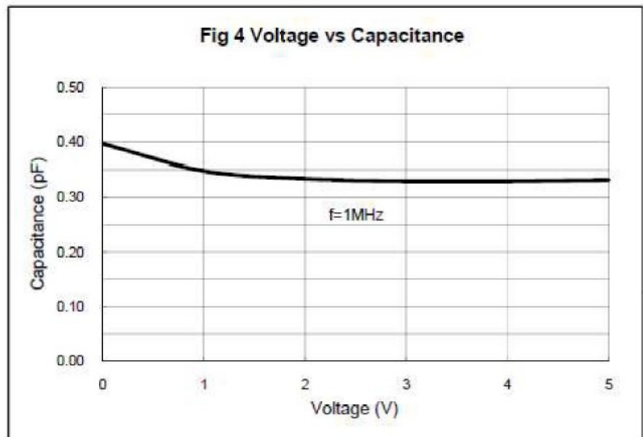
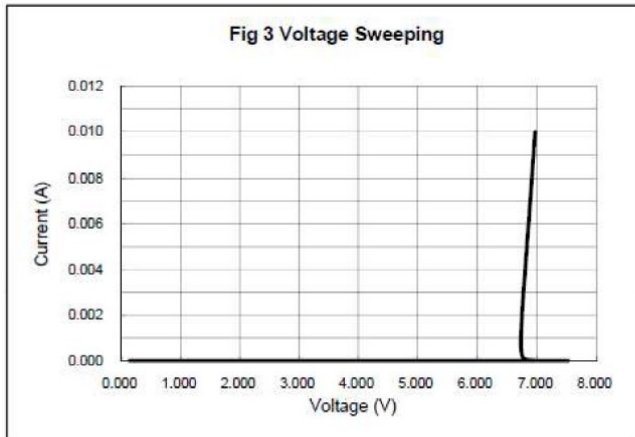
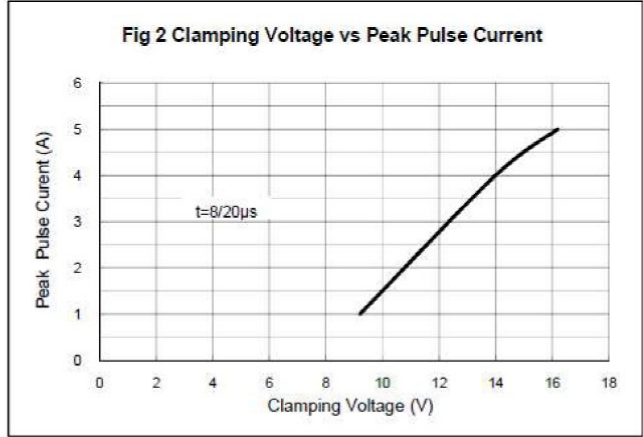
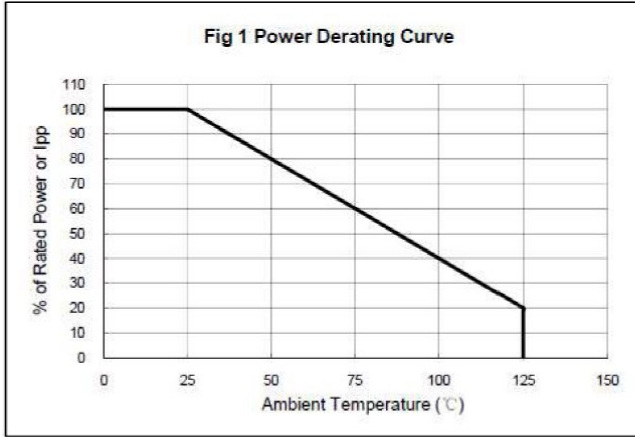
ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
P _{PP}	Peak Pulse Power (8/20μs)	60	W
V _{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±20 ±20	kV
T _{OPT}	Operating Temperature	-55/+125	°C
T _{STG}	Storage Temperature	-55/+150	°C

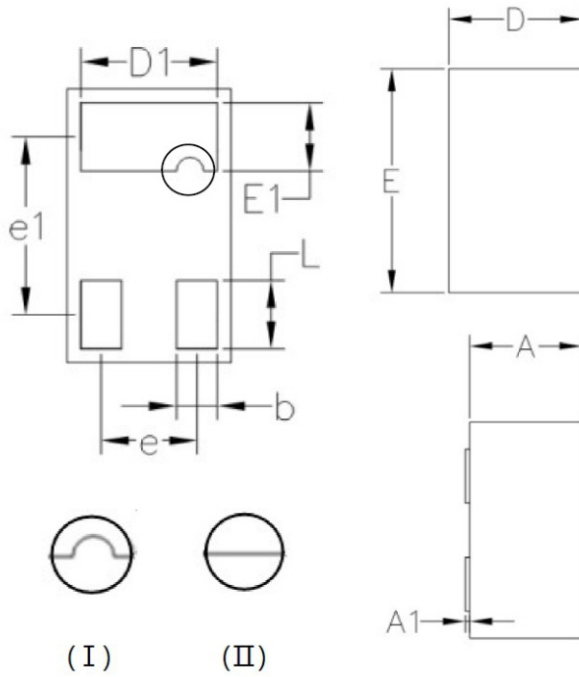
ELECTRICAL CHARACTERISTICS (T_{amb}=25°C)

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 = 1mA Between I/O and GND	6.0			V
I _R	Reverse Leakage Current	V _{RWM} = 5V Between I/O and GND			100	nA
V _C	Clamping Voltage	I _{PP} = 1A, t _p = 8/20μs Between I/O and GND			10	V
		I _{PP} = 4A, t _p = 8/20μs Between I/O and GND			15	V
V _F	Forward Voltage	I _T = 10mA Between I/O and GND			1.2	V
C _T	Total Capacitance	V _R = 0V, f = 1MHz Between I/O and GND		0.4	0.6	pF
		V _R = 0V, f = 1MHz Between I/O and I/O		0.2	0.3	pF

ELECTRICAL CHARACTERISTICS CURVE



DFN1006-3L PACKAGE OUTLINE DIMENSIONS



SYMBOL	DIMENSIONS IN MM		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	--	0.05
D	0.55	0.60	0.65
E	0.95	1.00	1.05
D1	0.45	0.50	0.55
E1	0.20	0.25	0.30
L	0.20	0.25	0.30
b	0.10	0.15	0.20
e	0.35BSC		
e1	0.65BSC		