

## Ultra Low Capacitance ESD Protection Diode

### DESCRIPTION

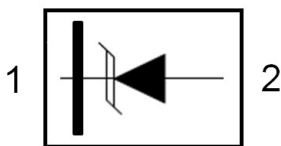
GESD0501L is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.4pF, GESD0501L is designed to protect parasitic-sensitive systems against over-voltage and over-current transient 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.

GESD0501L uses ultra-small DFN1006 package. Each GESD0501L device can protect one high-speed data line. It offers system designers flexibility to protect single data line where space is a premium concern. The combined features of low capacitance, ultra-small size and high ESD robustness make GESD0501L ideal for high-speed data port and high-frequency line applications, such as cellular phones and HD visual devices.

### ORDERING INFORMATION

- ✧ Device: GESD0501L
- ✧ Package: DFN1006
- ✧ Marking: 5L
- ✧ 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)
- ✧ Package optimized for high-speed lines
- ✧ Ultra-small package (1.0mm×0.6mm×0.5mm)
- ✧ Protects one data, control line
- ✧ Low capacitance: 0.4pF (Typical)
- ✧ Low leakage current
- ✧ Low clamping voltage

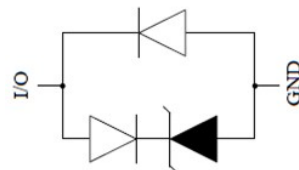
### MACHANICAL DATA

- ✧ DFN1006 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed:  $260^{\circ}\text{C}/10\text{s}$
- ✧ Reel size: 7 inch

### APPLICATIONS

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

### CIRCUIT DIAGRAM



## Ultra Low Capacitance ESD Protection Diode

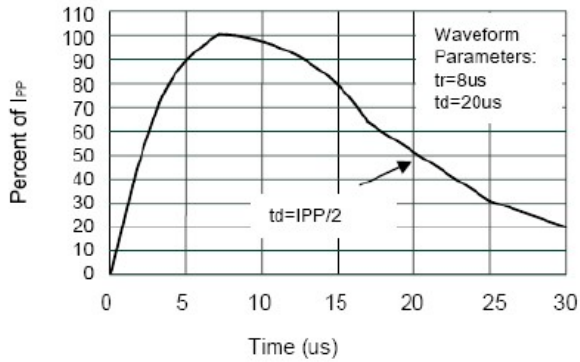
### ABSOLUTE MAXIMUM RATING

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

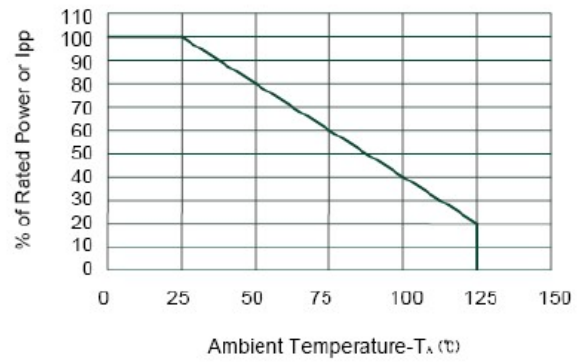
### ELECTRICAL CHARACTERISTICS (Tamb=25 $^{\circ}$ C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage				5.0	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	6.0			V
$I_R$	Reverse Leakage Current	$V_{RWM} = 5\text{V}$			100	nA
$V_C$	Clamping Voltage	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			10	V
		$I_{PP} = 4\text{A}, t_p = 8/20\mu\text{s}$			15	V
$C_J$	Junction Capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$		0.4	0.5	pF

### ELECTRICAL CHARACTERISTICS CURVE

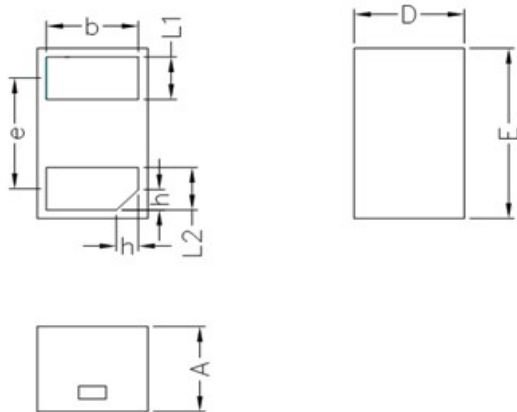


Pulse Waveform



Power Derating Curve

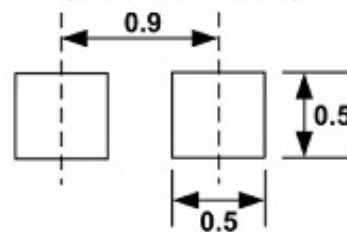
### DFN1006 PACKAGE OUTLINE DIMENSIONS



Unit: mm

	MIN	NOM	MAX
D	0.55	0.60	0.65
E	0.95	1.00	1.05
L1	0.20	0.25	0.30
L2	0.20	0.25	0.30
b	0.45	0.50	0.55
e	0.65BSC		
A	0.45	0.50	0.55
h	0.07	0.12	0.17

Dimension: Millimeter  
(Stencil thickness: 0.1)



Soldering Footprint