GESD0801S

Ultra Low Capacitance TVS/ESD Protection Diode

DESCRIPTION

GESD0801S is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.35pF only, GESD0801S 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), 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.

GESD0801S uses ultra-small DFN1006 package. Each GESD0801S 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 GESD0801S ideal for high-speed data port and high-frequency line (e.g., USB 2.0 & antenna line) applications, such as cellular phones and HD visual devices.

FEATURES

✧Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) ±15kV (Air)
±8kV (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×0.4mm)
✧Protects one data, control or power line
✧Low capacitance: 0.35pF (Typical)
✧Low leakage current: 10nA @ VRWM (Typical)
✧Low clamping voltage

MACHANICAL DATA

✧DFN1006 package
✧Flammability Rating: UL 94V-0
✧Packaging: Tape and Reel
✧High temperature soldering guaranted:260℃/10s
✧Reel size: 7 inch
✧MSL1

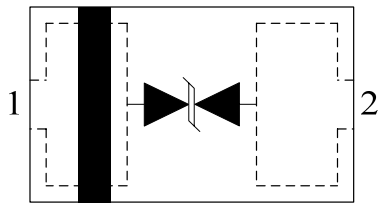
ORDERING INFORMATION

✧Device: GESD0801S
✧Package: DFN1006
✧Marking: S
✧Material: Halogen free
✧Packing: Tape & Reel
✧Quantity per reel: 10,000pcs

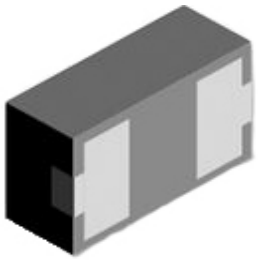
APPLICATIONS

✧Serial ATA
✧Desktops, Servers and Notebooks
✧Cellular Phones
✧MDDI Ports
✧USB2.0 Power and Data Line Protection
✧Display Ports
✧Digital Visual Interfaces (DVI)

PIN CONFIGURATION



PACKAGE OUTLINE



ABSOLUTE MAXIMUM RATING

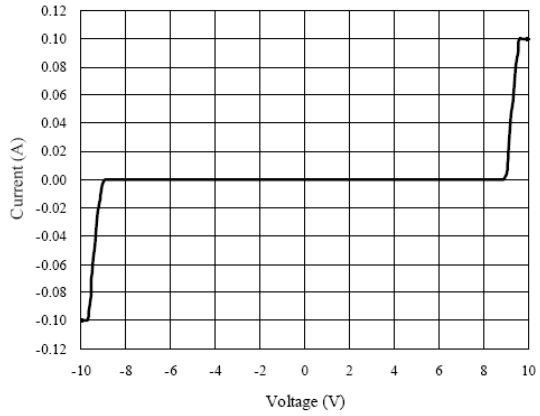
Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±17 ±12	kV
T_{OPT}	Operating Temperature	-55/+125	°C
T_{STG}	Storage Temperature	-55/+150	°C

ELECTRICAL CHARACTERISTICS (Tamb=25°C)

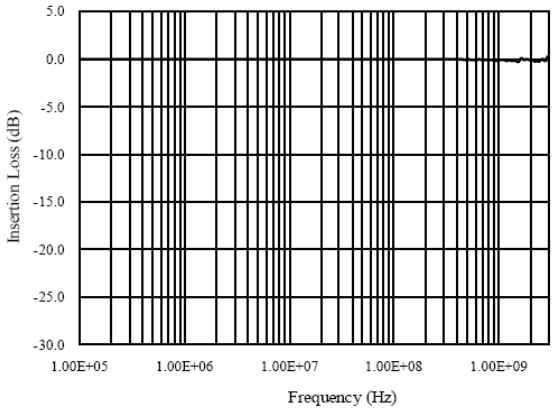
Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage				5.0	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA	6.0	8.8	11	V
I_R	Reverse Leakage Current	V_{RWM} = 5V		0.01	1.0	μA
V_{C1}	Clamping Voltage 1	I_{PP} = 1A, t_p = 8/20μs			12	V
V_{C2}	Clamping Voltage 2	I_{PP} = 2A, t_p = 8/20μs			14	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz		0.35	0.50	pF

ELECTRICAL CHARACTERISTICS CURVE

Voltage Sweeping of I/O to I/O

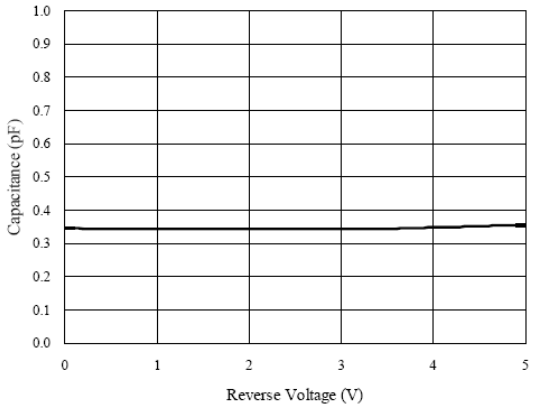


Insertion Loss S21 of I/O to I/O

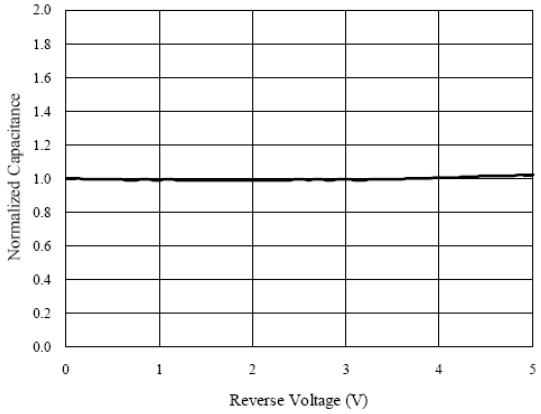


Capacitance *vs.* Voltage of I/O to I/O (f = 1MHz)

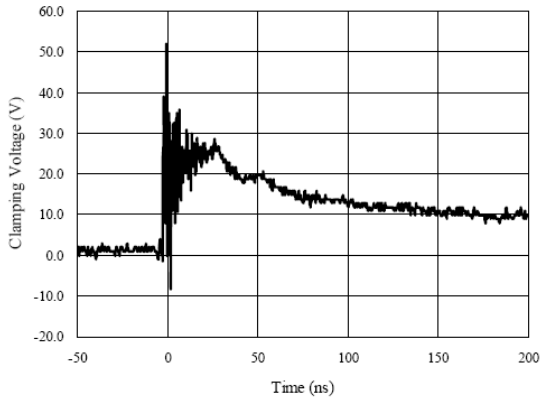
Capacitance *vs.* Reverse Voltage



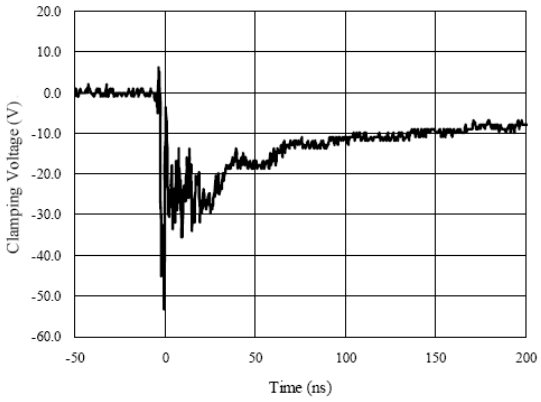
Normalized Capacitance *vs.* Reverse Voltage



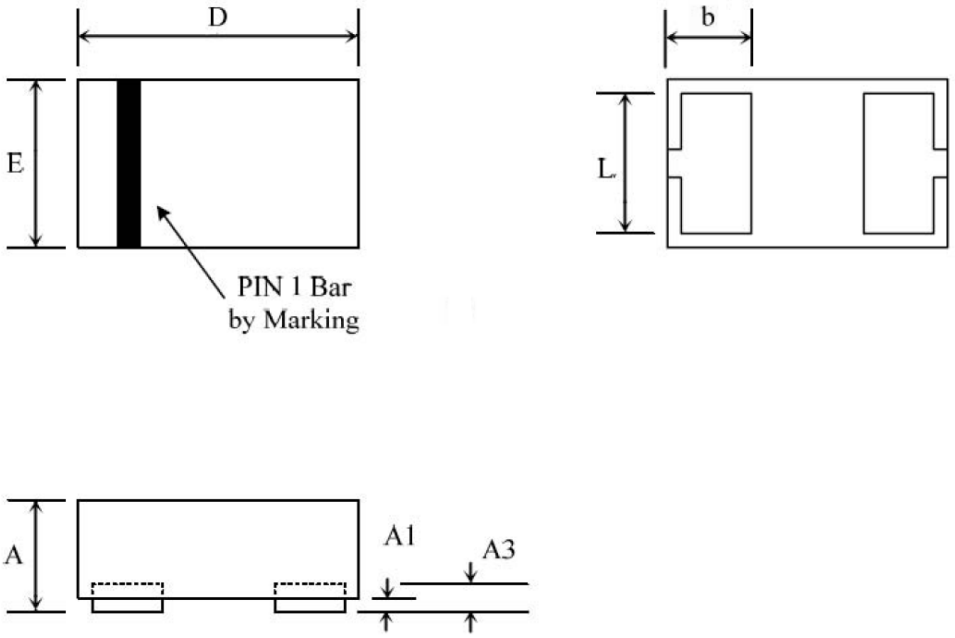
ESD Clamping of I/O to I/O (+8kV Contact per IEC 61000-4-2)



ESD Clamping of I/O to I/O (-8kV Contact per IEC 61000-4-2)



DFN1006 PACKAGE OUTLINE DIMENSIONS



Package Dimensions (Controlling dimensions are in millimeters)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Minimum	Maximum	Minimum	Maximum
A	0.400	0.550	0.016	0.022
A1	0.000	0.050	0.000	0.002
A3	0.125 REF		0.005 REF	
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
L	0.450	0.550	0.018	0.022
b	0.250	0.400	0.100	0.016