GESD0809V

Low Capacitance TVS Protection

DESCRIPTION

GESD0809V is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 3.5pF only, GESD0809V 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.

Each GESD0809V device can protect four high-speed data lines. The combined features of low capacitance, small size and high ESD robustness make GESD0809V ideal for high-speed data ports and high-frequency lines (e.g., USB2.0) applications. The low clamping voltage of the GESD0809V guarantees a minimum stress on the protected IC.

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
- ✧Small package (2.9mm × 2.8mm × 1.4mm)
- ✧Protects four data lines
- ✧Low capacitance: 3.5pF Typical @ 0V
- ✧Low leakage current: 0.1μA @ VRWM (Typical)
- ✧Low clamping voltage
- ✧Each I/O pin can withstand over 1000 ESD strikes for ±8kV contact discharge

MACHANICAL DATA

- ✧SOT-23-6L package
- ✧Flammability Rating: UL 94V-0
- ✧Terminal: Matte tin plated.
- ✧Packaging: Tape and Reel
- ✧High temperature soldering guaranted:260℃/10s
- ✧Reel size: 7 inch

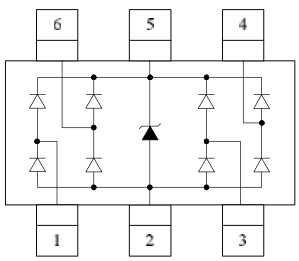
ORDERING INFORMATION

- ✧Device: GESD0809V
- ✧Package: SOT-23-6L
- ✧Marking: S514P or 9V YWW (Date code)
- ✧Material: Halogen free
- ✧Packing: Tape & Reel
- ✧Quantity per reel: 3,000pcs

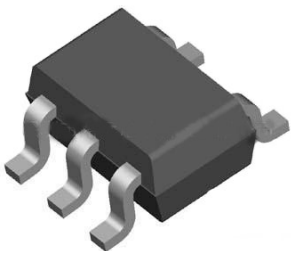
APPLICATIONS

- ✧USB2.0 Power and Data Line Protection
- ✧Digital Visual Interfaces (DVI)
- ✧10/100/1000M Ethernet Interfaces
- ✧Desktops, Servers and Notebooks
- ✧SIM Ports
- ✧Monitors and Flat Panel Displays
- ✧Video Graphics Cards

PIN CONFIGURATION



PACKAGE OUTLINE



ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20μs)	300	W
I_{PP}	Peak Pulse Current (8/20μs)	12	A
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

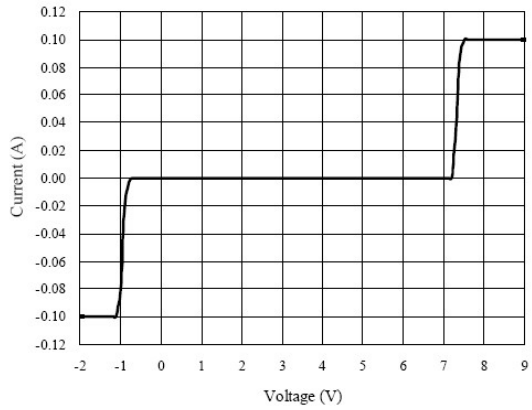
ELECTRICAL CHARACTERISTICS (Tamb=25°C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	Any I/O pin to GND			5.0	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA Any I/O pin to GND	6.0	7.0	9.0	V
I_R	Reverse Leakage Current	V_{RWM} = 5V Any I/O pin to GND		0.1	1.0	μA
V_F	Diode Forward Voltage	I_F = 15mA			1.2	V
V_{C1}	Clamping Voltage 1	I_{PP} = 1A, t_p = 8/20μs Any I/O pin to GND			12	V
V_{C2}	Clamping Voltage 2	I_{PP} = 5, t_p = 8/20μs Any I/O pin to GND			17	V
C_{J1}	Junction Capacitance 1	V_R = 0V, f = 1MHz Between I/O pins		1.5	2.5	pF
C_{J2}	Junction Capacitance 2	V_R = 0V, f = 1MHz Any I/O pin to GND		3.5	5.0	pF

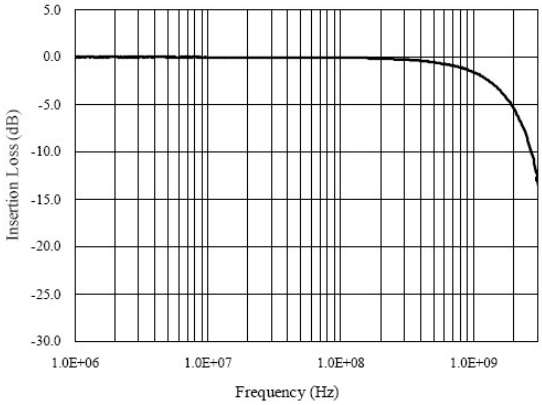
Note: I/O pins are pin 1,3,4,6.

ELECTRICAL CHARACTERISTICS CURVE

Voltage Sweeping of I/O to GND

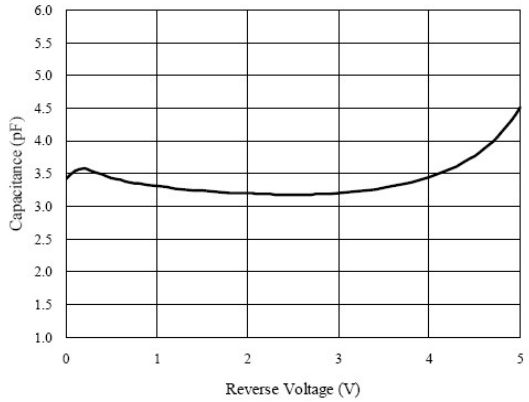


Insertion Loss S21 of I/O to GND

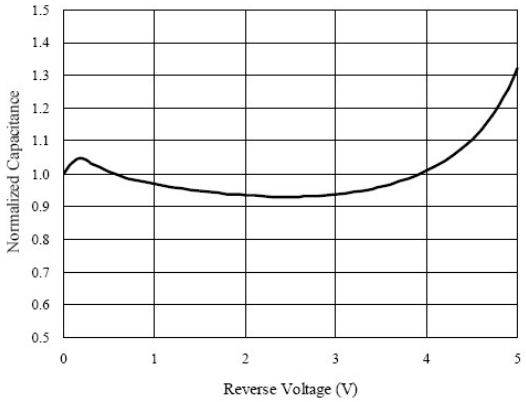


Capacitance *vs.* Voltage of I/O to GND (f = 1MHz)

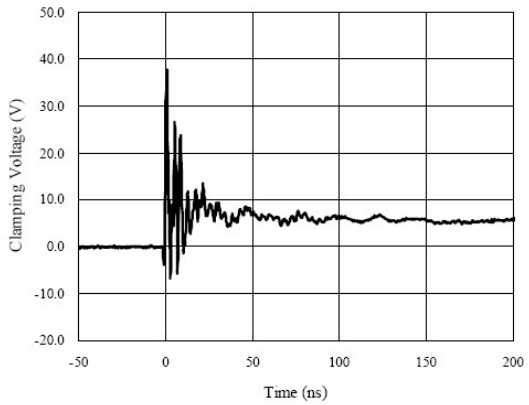
Capacitance *vs.* Reverse Voltage



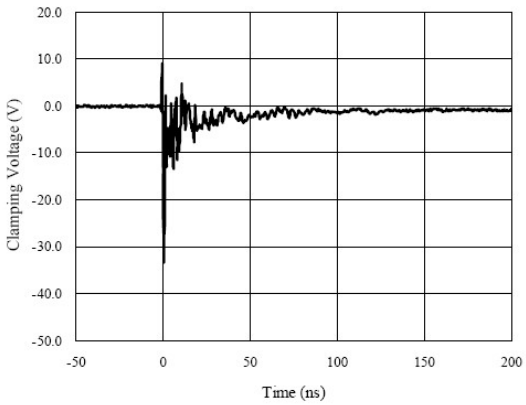
Normalized Capacitance *vs.* Reverse Voltage



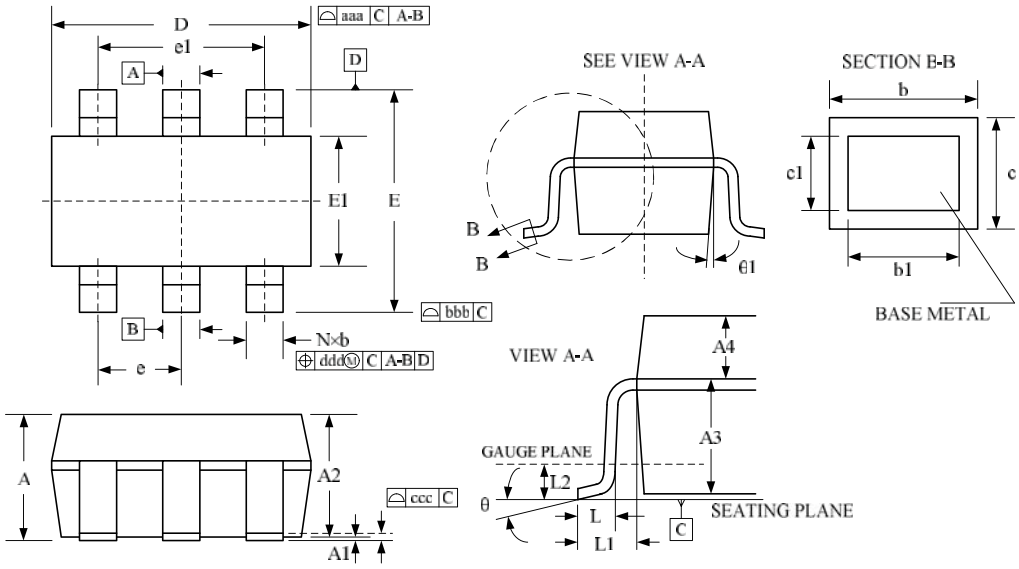
ESD Clamping of I/O to GND (+8kV Contact per IEC 61000-4-2)



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



SOT-23-6L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions (mm)			Dimensions (Inches)		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
A	—	—	1.450	—	—	0.057
A1	0.000	—	0.150	0.000	—	0.006
A2	0.900	1.200	1.300	0.035	0.047	0.012
A3	0.637	0.787	0.837	0.025	0.031	0.033
A4	0.263	0.413	0.463	0.010	0.016	0.018
b	0.300	—	0.500	0.012	—	0.020
b1	0.300	0.400	0.450	0.012	0.016	0.018
c	0.080	—	0.220	0.003	—	0.009
c1	0.080	0.130	0.200	0.003	0.005	0.008
D	2.90 BSC			0.114 BSC		
e	1.90 BSC			0.075 BSC		
E	2.80 BSC			0.110 BSC		
E1	1.60 BSC			0.063 BSC		
L	0.300	0.450	0.600	0.012	0.018	0.024
L1	0.600 REF			0.024 REF		
L2	0.250 BSC			0.010 BSC		
θ	0°	4°	8°	0°	4°	8°
θ1	5°	10°	15°	5°	10°	15°
aaa	0.150			0.006		
bbb	0.200			0.008		
ccc	0.100			0.004		
ddd	0.100			0.004		