GESD0504ECL

Ultra Low Capacitance ESD Protection Array

DESCRIPTION

GESD0504ECL is an ultra-low capacitance ESD Protection Array designed to protection for high-speed data interfaces. With typical capacitance of 0.2pF (I/O to I/O) only, GESD0504ECL 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 (±8KV contact, ±15KV air discharge), IEC61000-4-4 (electrical fast transient-EFT) (40A, 5/50ns), very fast charged device model (CDM) ESD and cable discharge event (CDE) etc.

GESD0504ECL uses ultra-small DFN1308-5L package. Each GESD0504ECL device can protect four high-speed data lines. The combined features of ultra-low capacitance, ultra-small size and high ESD robustness make GESD0504ECL ideal for high-speed data ports and high-frequency lines (e.g., HDMI &DVI) applications. The low clamping voltage of the GESD0504ECL guarantees a minimum stress on the protected IC.

FEATURES

✧Transient protection for high-speed data lines
IEC 61000-4-2(ESD) ±20KV(Contact)
±25KV(Air)
IEC 61000-4-4(EFT) 40A(5/50ns)
Cable Discharge Event (CDE)
✧Package optimized for high-speed lines
✧Ultra-small package (1.3mm*0.8mm*0.5mm)
✧Protects four data lines
✧Low capacitance: 0.2pF (I/O to I/O)
✧Low leakage current
✧Low clamping voltage

MACHANICAL DATA

✧DFN1308-5L package
✧Flammability Rating: UL 94V-0
✧Packaging: Tape and Reel
✧High temperature soldering guaranteed: 260℃/10s
✧Reel size: 7 inch

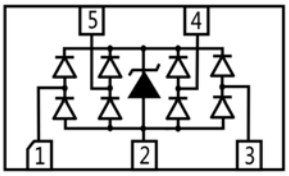
ORDERING INFORMATION

✧Device: GESD0504ECL
✧Package: DFN1308-5L
✧Marking: 0504
✧Material: Halogen free and RoHS compliant
✧Packing: Tape & Reel
✧Quantity per reel: 10,000pcs

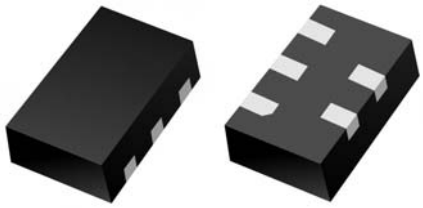
APPLICATIONS

✧Serial ATA
✧PCI Express
✧Desktops, Servers and Notebooks
✧MDDI Ports
✧USB 2.0/3.0 Power and Data Line Protection
✧High Definition Multi-Media Interface (HDMI)
✧Digital Visual Interface (DVI)

CIRCUIT DIAGRAM



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 (Contact) ESD per IEC 61000-4-2 (Air)	±20 ±25	kV
T_{OPT}	Operating Temperature	-55/+125	°C
T_{STG}	Storage Temperature	-55/+150	°C
T_L	Lead Soldering Temperature	260 (10 sec.)	°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		9.0	V
I_R	Reverse Leakage Current	V_{RWM} = 5V Any I/O pin to GND			1.0	μA
V_C	Clamping Voltage	I_{PP} = 1A, t_p = 8/20μs Any I/O pin to GND			10	V
V_C	Clamping Voltage	I_{PP} = 4A, t_p = 8/20μs Any I/O pin to GND			15	V
V_{CTLP}	TLP Clamping Voltage	I_{PP} = 8A IEC61000-4-2 Level 2 equivalent (±4kV Contact, ±8kV Air) Between I/O and GND		16		V
		I_{PP} = 16A IEC61000-4-2 Level 4 equivalent (±8kV Contact, ±16kV Air) Between I/O and GND		23		V
C_{ESD}	Parasitic Capacitance	V_R = 0V, f = 1MHz Between I/O and GND		0.4	0.5	pF
C_{ESD}	Parasitic Capacitance	V_R = 0V, f = 1MHz Between I/O and I/O		0.2	0.3	pF

Note: I/O are pin 1,3,4,5, GND is pin2.

ELECTRICAL CHARACTERISTICS CURVE

Fig 1 Power Derating Curve

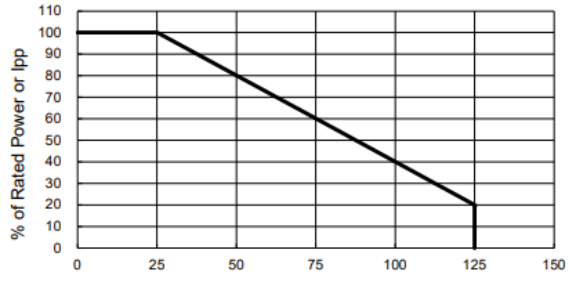


Fig 2 Peak Pulse Power vs Pulse Time

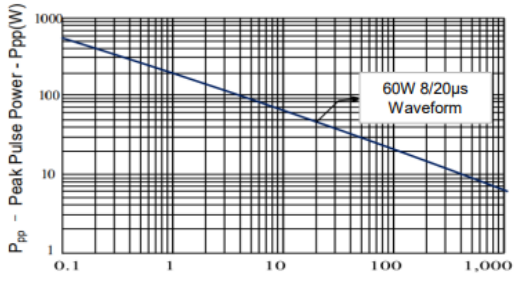


Fig 3 Voltage Sweeping of I/O to I/O

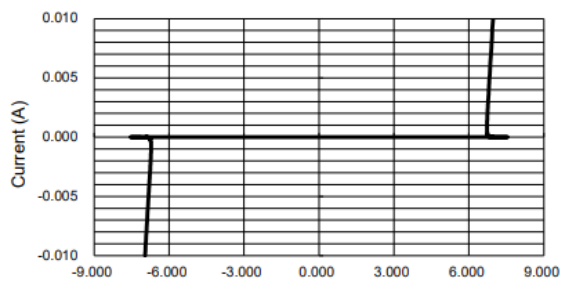


Fig 4 Voltage vs Capacitance

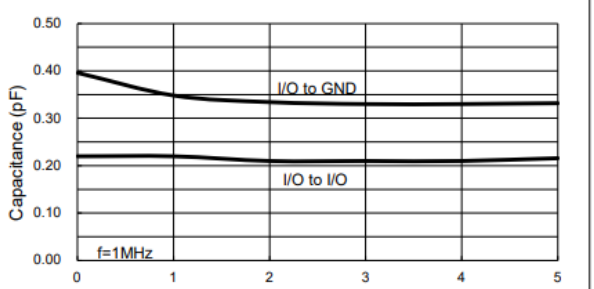


Fig 5 Clamping Voltage vs Peak Pulse Current

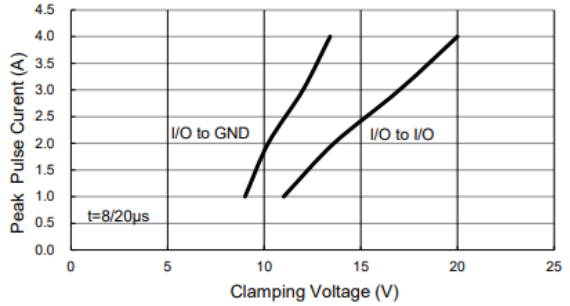
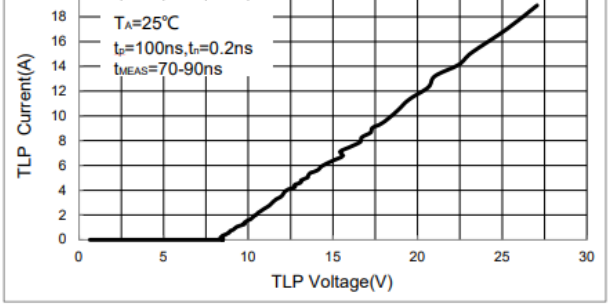
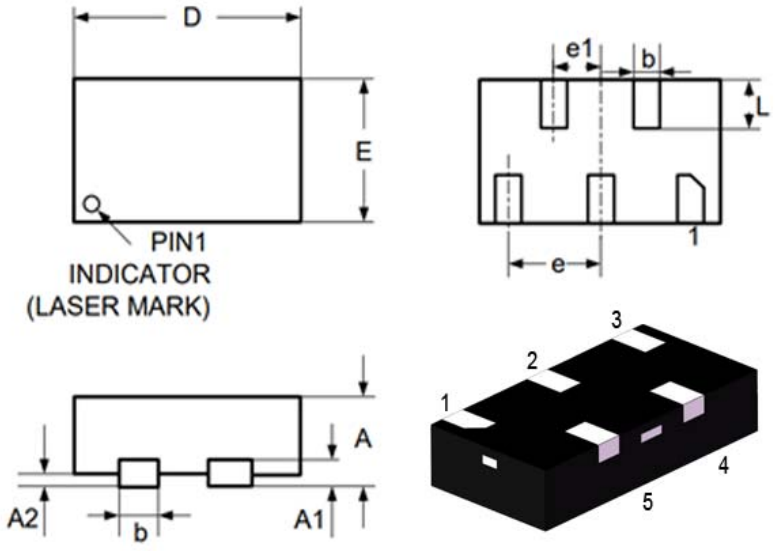


Fig 6 Transmission Line Pulsing (TLP) Measurement



DFN1308-5L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions (mm)		
	Min.	Nom.	Max.
D	1.20	1.30	1.40
E	0.70	0.80	0.90
L	0.20	0.22	0.25
b	0.13		0.23
e		0.45	
e1		0.25	
A	0.45	0.50	0.55
A1		0.15	
A2	0.00		0.05