



ESD0512T5L

Ultra Low Capacitance ESD Protection Array

DESCRIPTION

ESD0512T5L is an ultra-low capacitance ESD Protection Array with typical capacitance of 0.20pF (I/O to I/O) only, ESD0512T5L 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), IEC61000-4-4 (electrical fast transient-EFT) (40A, 5/50ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

ESD0512T5L uses small SOT-563 package. Each ESD0512T5L device can protect two high-speed data lines and one Vcc line. The combined features of ultra-low capacitance, small size and high ESD robustness make ESD0512T5L ideal for high-speed data ports and high-frequency lines (e.g., HDMI & DVI) applications. The low clamping voltage of the ESD0512T5L guarantees a minimum stress on the protected IC.

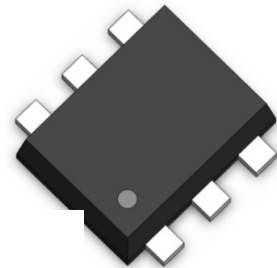
FEATURES

- ✧ Transient protection for high-speed data lines
IEC 61000-4-2(ESD) $\pm 20\text{KV}$ (Contact)
IEC 61000-4-2(ESD) $\pm 25\text{KV}$ (Air)
- ✧ Package optimized for high-speed lines
- ✧ Small package(2.9mm*2.8mm*1.1mm)
- ✧ Protects two data lines and one Vcc line
- ✧ Low capacitance: 0.20pF (I/O to I/O)
- ✧ Low leakage current
- ✧ Low clamping voltage
- ✧ Each I/O pin can withstand over 1000 ESD strikes
for $\pm 8\text{KV}$ contact discharge

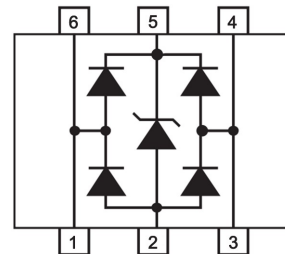
APPLICATIONS

- ✧ Serial ATA
- ✧ MDDI Ports
- ✧ USB 2.0/3.0 Power and Data Line Protection
- ✧ Display Ports
- ✧ High Definition Multi-Media Interface (HDMI)
- ✧ Digital Visual Interface (DVI)

PACKAGE OUTLINE



PIN CONFIGURATION



ORDERING INFORMATION

- ✧ Device: ESD0512T5L
- ✧ Package: SOT-563
- ✧ Marking: F
- ✧ Material: Halogen free and RoHS compliant
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

MACHANICAL DATA

- ✧ SOT-563 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Terminal: Matte tin plated.
- ✧ High temperature soldering guaranteed:
 $260^{\circ}\text{C}/10\text{s}$
- ✧ Packaging: Tape and Reel
- ✧ Reel size: 7 inch



ESD0512T5L

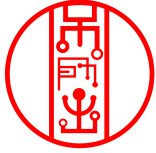
ABSOLUTE MAXIMUM RATING

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

ELECTRICAL CHARACTERISTICS (T_{amb}=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
		I _{PP} = 4A, t _p = 8/20μs Any I/O pin to GND			15	V
		I _{PP} = 8A, t _p = 8/20μs Vcc pin to GND			15	V
C _{ESD}	Parasitic Capacitance	V _R = 0V, f = 1MHz Between I/O and I/O		0.20	0.30	pF
		V _R = 0V, f = 1MHz Between I/O and GND		0.45	0.50	pF
		V _R = 0V, f = 1MHz Between Vcc and GND		0.80		pF

Note: I/O Pins are Pin 1,3,4,6. Pin 5 is Vcc. Pin 2 is GND.



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ELECTRICAL CHARACTERISTICS CURVE

Fig 1 Power Derating Curve

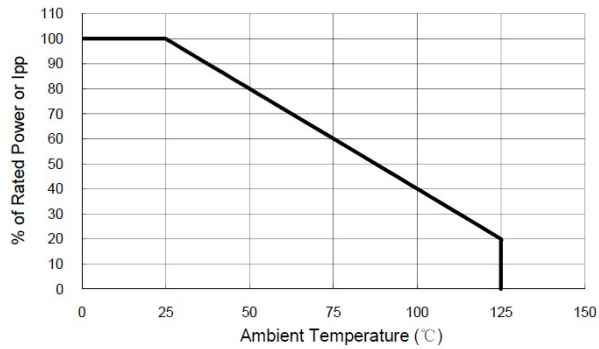


Fig 2 Clamping Voltage vs Peak Pulse Current

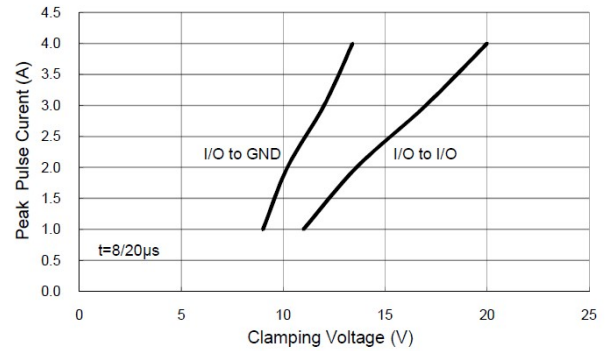


Fig 3 Voltage Sweeping of I/O to I/O

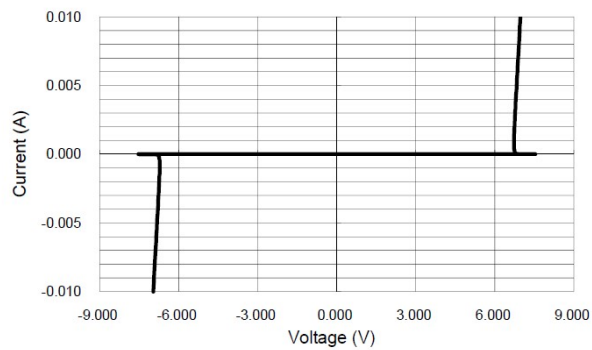


Fig 4 Voltage vs Capacitance

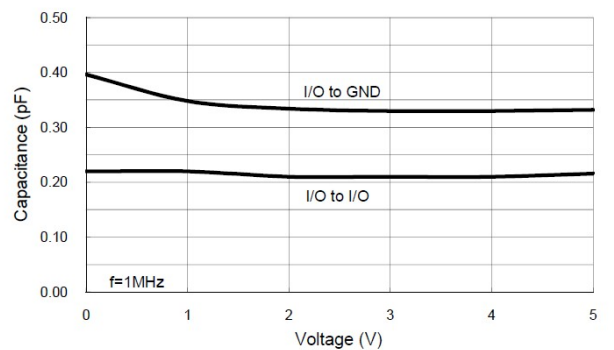


Fig 5 ESD Clamping of I/O to GND
(+8kV Contact per IEC 61000-4-2)

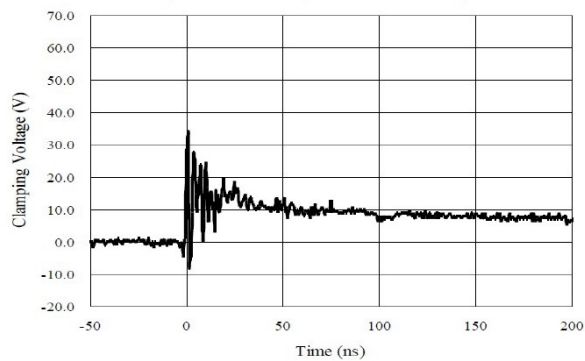
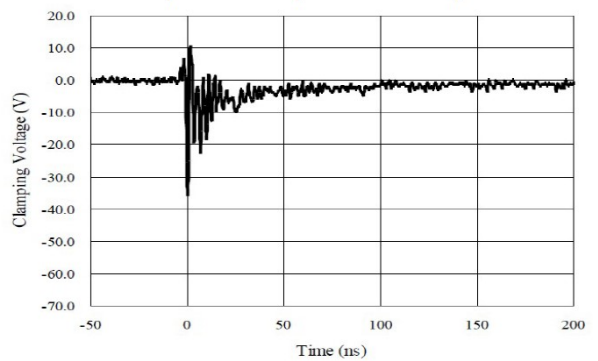
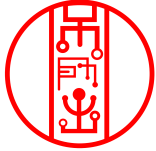


Fig 6 ESD Clamping of I/O to GND
(-8kV Contact per IEC 61000-4-2)

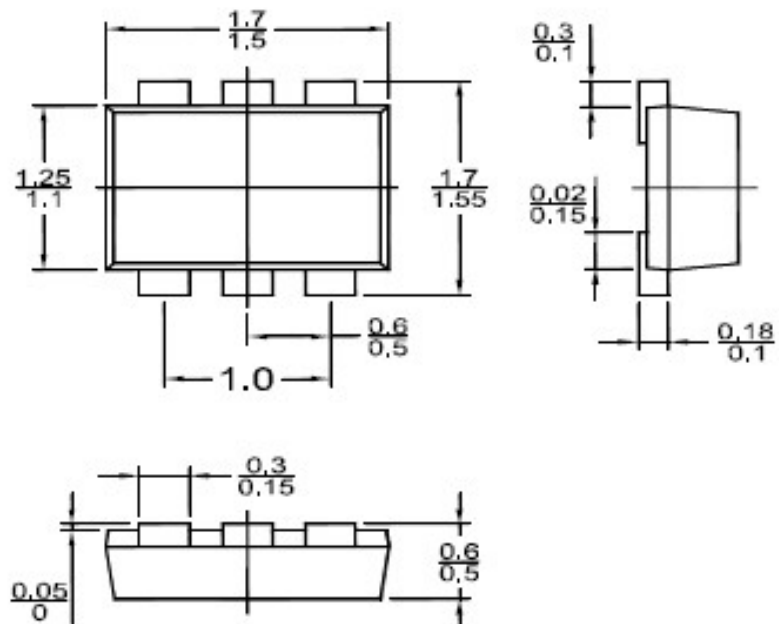




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SOT-563 PACKAGE OUTLINE DIMENSIONS

Package Outline Dimensions (Units: mm)



Recommended Soldering Footprint

