



ESD0522P

Ultra Low Capacitance ESD Protection Array

DESCRIPTION

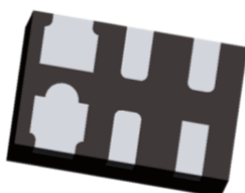
ESD0522P is an ultra-low capacitance Transient Voltage Suppressor (TVS) designed to protection for high-speed data interfaces. With typical capacitance of 0.2pF (I/O to I/O) only, ESD0522P is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies 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.

ESD0522P uses ultra-small DFN1610-6L package. Each ESD0522P device can protect two high-speed data lines. The combined features of ultra-low capacitance, ultra-small size and high ESD robustness makes ESD0522P ideal for high-speed data ports and high-frequency lines (e.g., HDMI & DVI) applications. The low clamping voltage of the ESD0522P guarantees a minimum stress on the protected IC.

ORDERING INFORMATION

- ✧ Device: ESD0522P
- ✧ Package: DFN1610-6L
- ✧ Marking: 0522P
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

PACKAGE OUTLINE



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(5/50ns)
Cable Discharge Event(CDE)
- ✧ Package optimized for high-speed lines
- ✧ Protects two I/O lines
- ✧ Ultra Low capacitance:0.2pf (typical between I/O channel)
- ✧ Low operating and clamping voltages

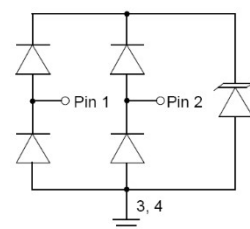
MACHANICAL DATA

- ✧ DFN1610-6L package
- ✧ Flammability Rating: UL 94V-0
- ✧ Terminal: Matte tin plated.
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranted: $260^{\circ}\text{C}/10\text{s}$
- ✧ Reel size: 7 inch

APPLICATIONS

- ✧ High Definition Multi-Media Interface (HDMI)
- ✧ USB 1.1/2.0/3.0/OTG
- ✧ IEEE 1394 Firewire Ports
- ✧ Projection TV Monitors and Flat Panel Displays
- ✧ Notebook Computers
- ✧ Set Top Box

CIRCUIT DIAGRAM





ESD0522P

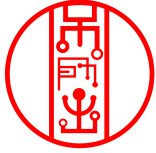
ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20 μ s)	60	W
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	± 30 ± 20	kV
T_{OPT}	Operating Temperature	-55/+125	$^{\circ}$ C
T_{STG}	Storage Temperature	-55/+150	$^{\circ}$ C

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}$ 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	$I_T = 1\text{mA}$ Any I/O pin to GND	6.0			V
I_R	Reverse Leakage Current	$V_{RWM} = 5\text{V}$ Any I/O pin to GND			100	nA
V_F	Diode Forward Voltage	$I_F = 15\text{mA}$ Any I/O pin to GND			1.2	V
V_C	Clamping Voltage	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$ Any I/O pin to GND			10	V
		$I_{PP} = 4\text{A}$, $t_p = 8/20\mu\text{s}$ Any I/O pin to GND			15	V
C_{ESD}	Capacitance	$V_R = 0\text{V}$, $f = 1\text{MHz}$ Between I/O and GND		0.4	0.6	pF
C_{ESD}	Capacitance	$V_R = 0\text{V}$, $f = 1\text{MHz}$ Between I/O and I/O		0.2	0.3	pF

Note: I/O pins are pin 1 and 2, GND pins are pin 3 and 4.



ELECTRICAL CHARACTERISTICS CURVE

Fig 1 Power Derating Curve

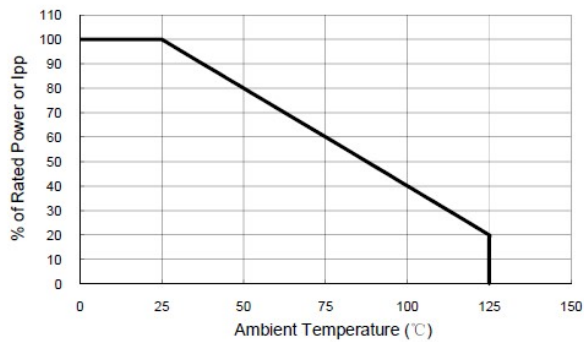


Fig 2 Clamping Voltage vs Peak Pulse Current

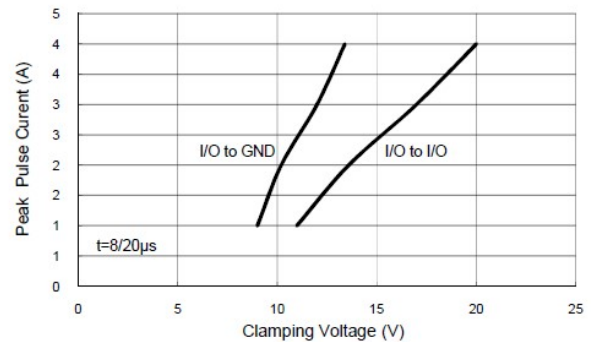


Fig 3 Voltage Sweeping of I/O to I/O

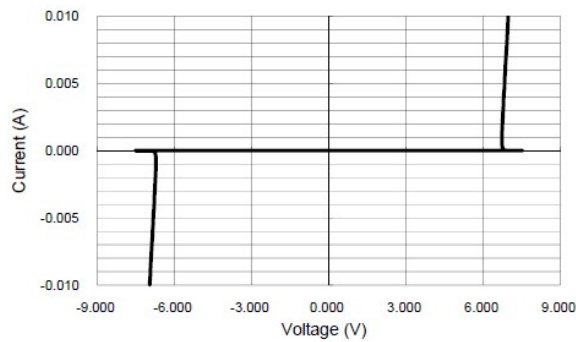


Fig 4 Voltage vs Capacitance

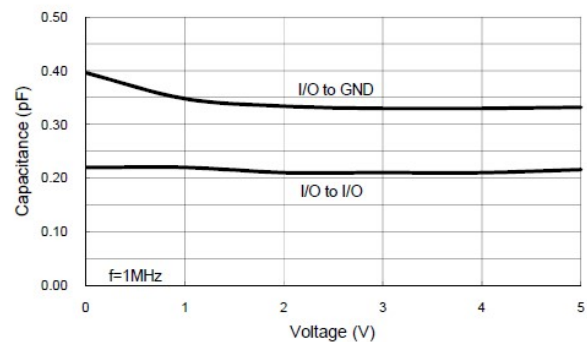


Fig 5 ESD Clamping of I/O to GND
(+8kV Contact per IEC 61000-4-2)

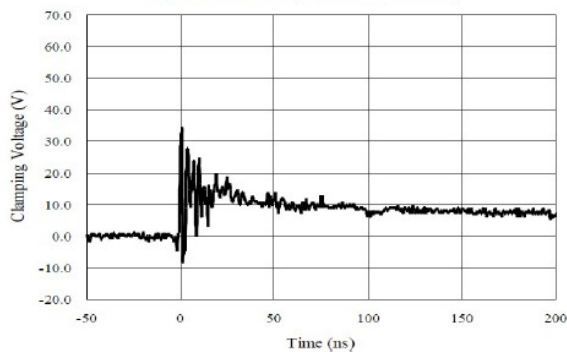
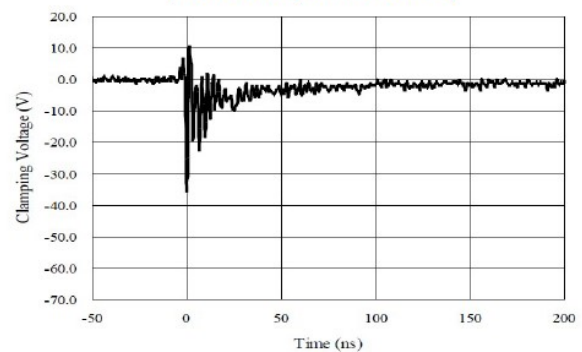
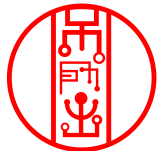


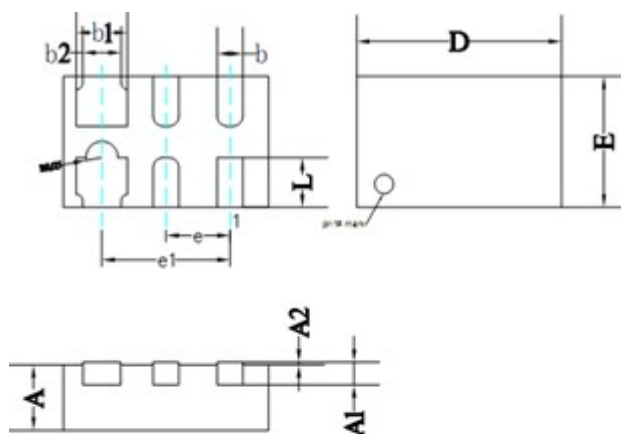
Fig 6 ESD Clamping of I/O to GND
(-8kV Contact per IEC 61000-4-2)





ESD0522P

DFN1610-6L PACKAGE OUTLINE DIMENSIONS



ALL DIMENSIONS IN MM

	MIN	NOM	MAX
D	1.55	1.60	1.65
E	0.95	1.00	1.05
L	0.33	0.38	0.43
b	0.15	0.20	0.25
b1	0.35	0.40	0.45
b2	0.25	0.30	0.35
e	0.50BSC		
e1	1.00BSC		
A	0.45	0.50	0.55
A1	0.15REF		
A2	0.00	—	0.05