4 Channel Ultra-Low Capacitance ESD Protection Diode

1. Features

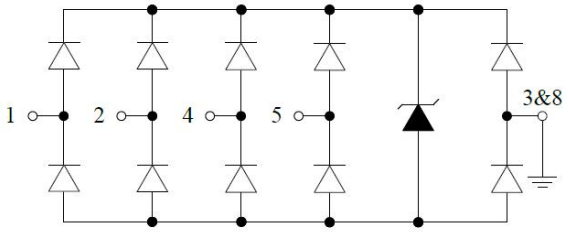
- Ultra-Low capacitance:0.5pF(typ.)
- Reverse stand-off voltage:3.3V
- IEC 61000-4-2 (Air): ±30KV
  IEC 61000-4-2 (Contact): ±30KV

2. Pin Description

3. Applications

- USB2.0 & 3.0 & 3.1
- HDMI 1.3, 1.4 and 2.0
- Display Ports
- Serial ATA
- PCI Express
- Desktops, Servers and Notebooks
- Digital Visual Interfaces (DVI)
- MDDI Ports

4. Schematic Diagram



Top View

5. Order Information

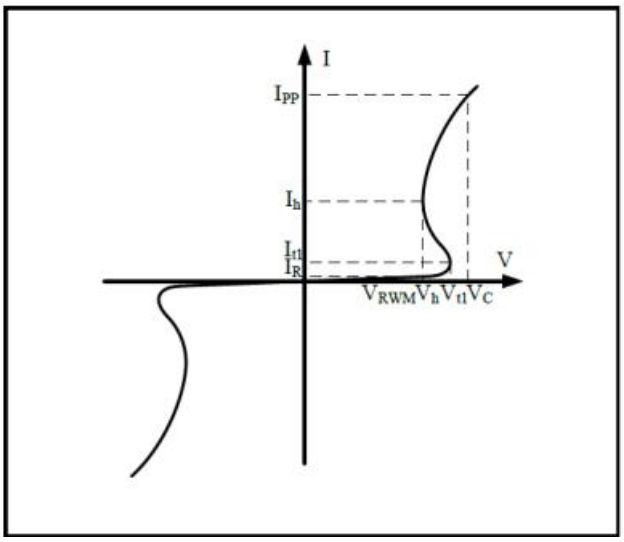
Type	Package	Size (mm)	Delivery Form	Delivery Quantity
ZST641U05S	DFN2510	2.50x1.00x0.50	7” T&R	3,000

6. Limiting Values(T_A = 25 °C, unless otherwise specified)

Symbol	Parameter	Conditions	Min	Max	Unit
V_{ESD}	Electrostatic Discharge Voltage	IEC 61000-4-2; Contact Discharge	-	±30	KV
		IEC 61000-4-2; Air Discharge	-	±30	KV
I_{PPM}	Rated Peak Pulse Current	t_P = 8/20 μs	-	6	A
P_{PK}	Peak Pulse Power	t_P = 8/20 μs	-	56	W
T_A	Ambient Temperature Range	-	-40	125	℃
T_{stg}	Storage Temperature Range	-	-55	150	℃

7. Electrical Characteristics(T_A = 25 °C unless otherwise specified)

Symbol	Parameter
V_{RWM}	Reverse Working Voltage
I_R	Reverse Leakage Current
V_{t1}	Triggering Voltage @ I_{t1}
I_{t1}	Test Current for Triggering Voltage
V_h	Holding Voltage
I_h	Holding Current
V_C	Clamping Voltage
I_{PP}	Peak Pulse Current
C_{ESD}	Parasitic Capacitance
f	Small Signal Frequency



Symbol	Test Conditions	Min	Typ.	Max	Unit
V_{RWM}	Pin-1,-2,-4,-5 to pin-3,-8,T=25℃	-3.3	-	3.3	V
I_R	V_{RWM} = 3.3V; T_A = 25 °C	-	0.01	1	μA
V_h	I_h = 100mA	3.3	-	7.5	V
V_C	I_{PP} = 6A, t_P=8/20us	-	8.0	-	V
	I_{PP} =16A, t_P=10/100ns	-	8.5	-	V
R_{DYN}	t_p=10/100ns	-	0.25	-	Ω
C_{ESD}	Pin-1,-2,-4,-5 to pin-3,-8,V_R = 0V, f = 1 MHz	-	0.5	-	pF

8. Typical Characteristics

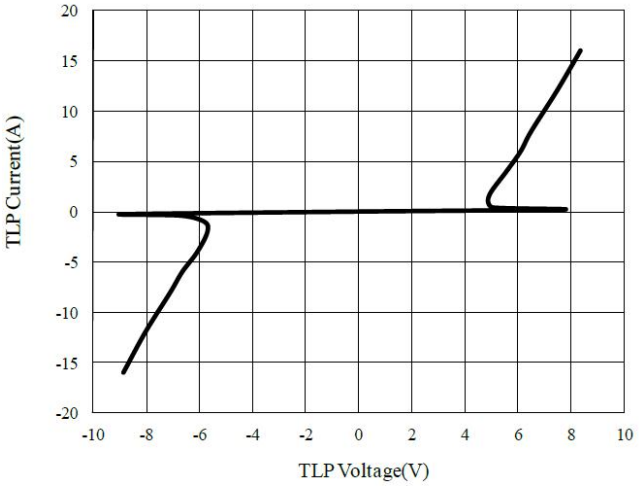


Fig.1 TLP Testing of I/O to GND

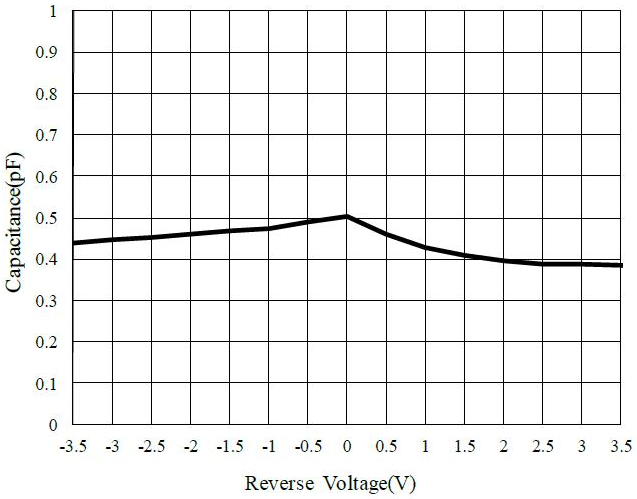


Fig.2 Capacitance vs. Voltage of I/O to GND

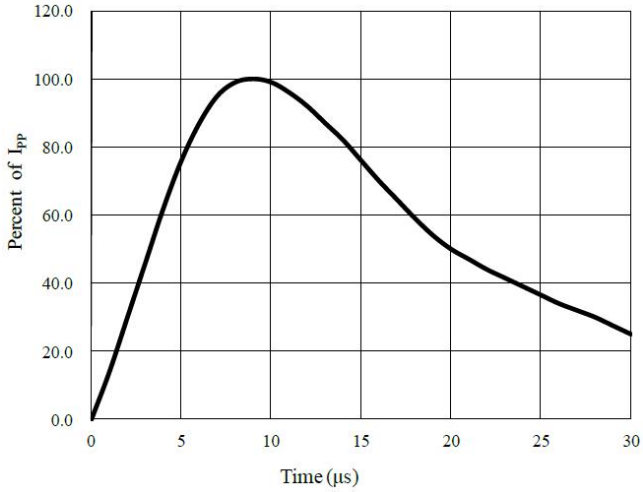


Fig.3 Pulse Waveform

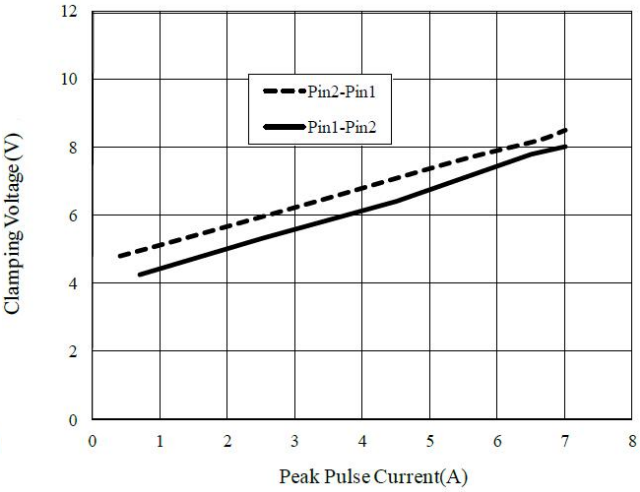


Fig.4 Clamping Voltage vs. Peak Pulse Current

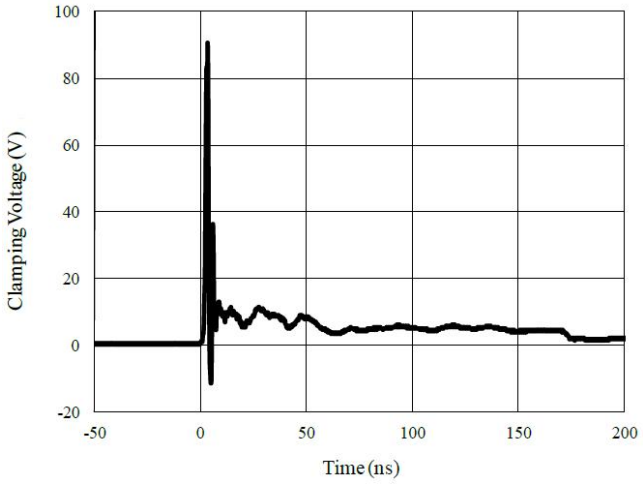


Fig.5 ESD Clamping of I/O to GND
（+8kV Contact per IEC 61000-4-2)

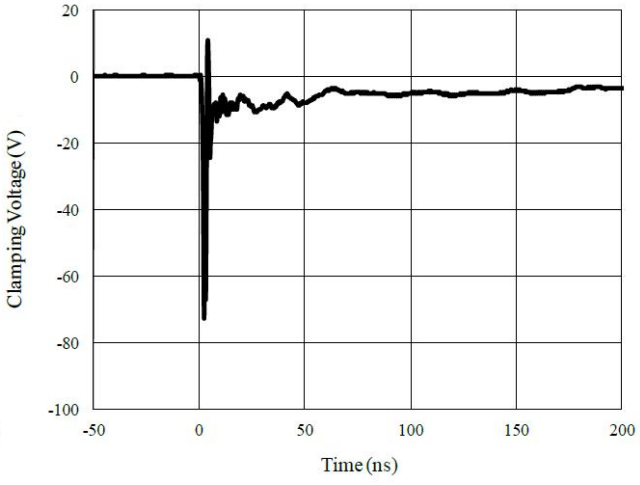
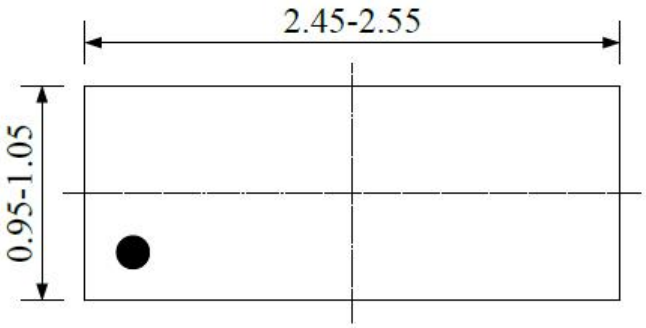


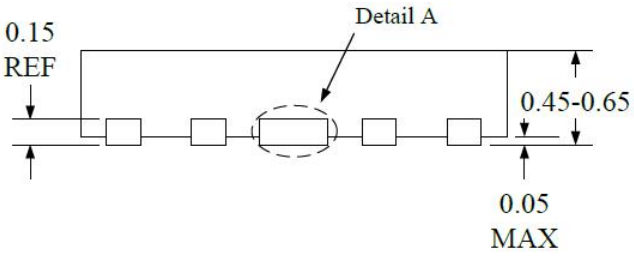
Fig.6 ESD Clamping of I/O to GND
（-8kV Contact per IEC 61000-4-2)

9. Package Dimension

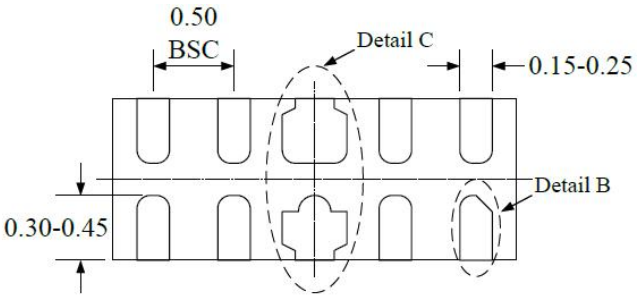
DFN2510 Package Outline



TOP VIEW



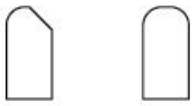
SIDE VIEW



BOTTOM VIEW

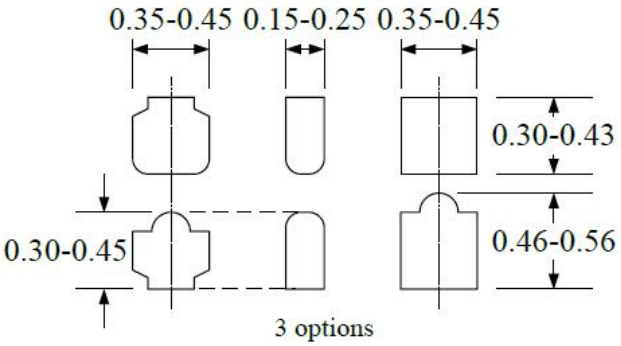
2 options

Detail A



2 options

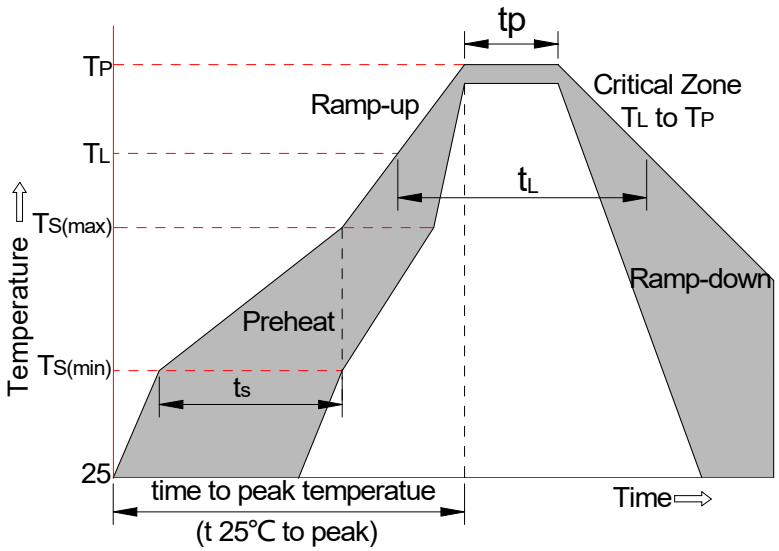
Detail B



Detail C

Package Dimensions (Controlling dimensions are in millimeters)

10. Soldering Parameters



Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
xTime 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C