

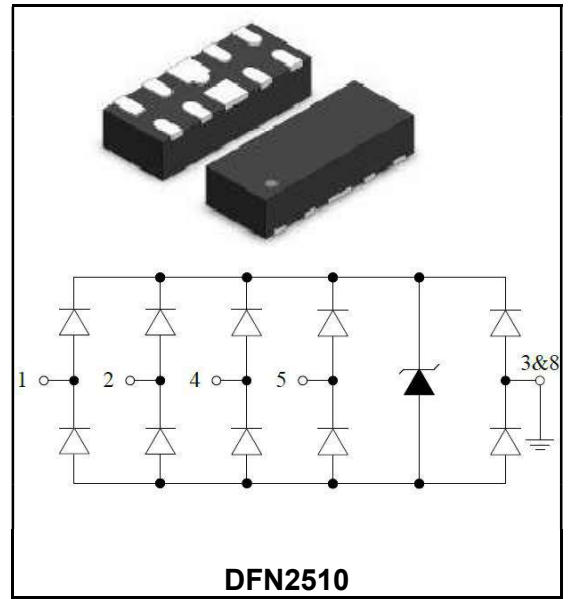
**4 Channel Ultra-low Capacitance  
ESD Protection Diode**

**Features**

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

**Application**

- ◆ 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



**Order Information**

Part Number	Package	Marking	Size (mm)	Delivery Form	Delivery Quantity
ESD2510D3V3	DFN2510	03.	2.50X1.00X0.50	7" T&R	3000PCS/Tape

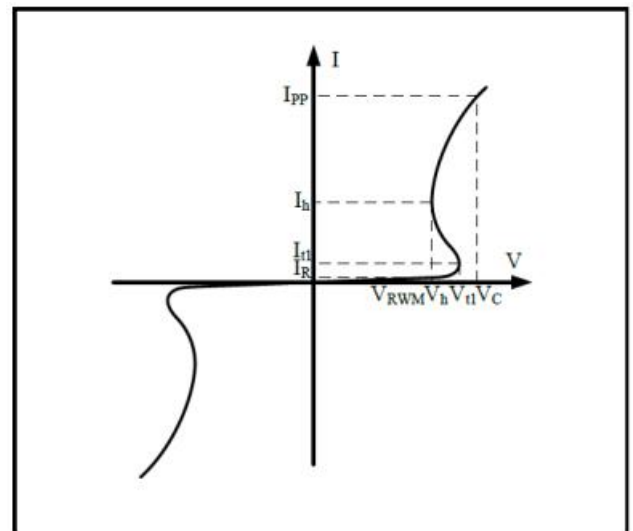
**Limiting Values(TA = 25 °C, unless otherwise specified)**

Symbol	Parameter	Conditions	Min	Max	Unit
VESD	Electrostatic Discharge Voltage	IEC 61000-4-2; Contact Discharge	-	±30	kV
		IEC 61000-4-2; Air Discharge	-	±30	kV
IPPM	Rated Peak Pulse Current	tP = 8/20 μs	-	7	A
PPK	Peak Pulse Power	tP = 8/20 μs	-	56	W
TA	Operating Temperature Range	-	-40	125	°C
Tstg	Storage Temperature Range	-	-55	150	°C

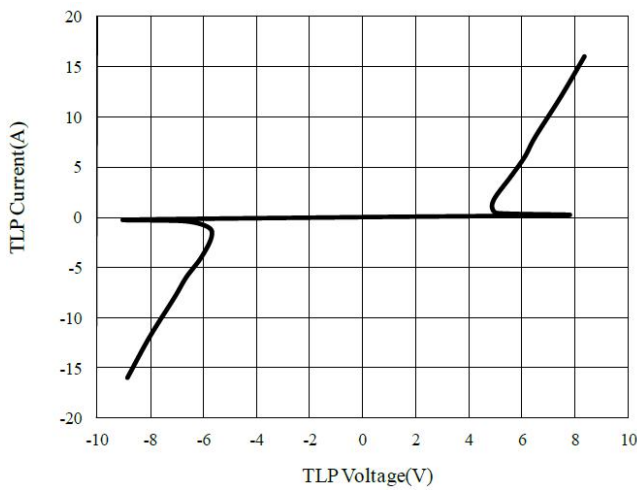
**Electrical Characteristics(TA = 25 °C unless otherwise specified)**

Symbol	Test Conditions	Min	Typ.	Max	Unit
$V_{RWM}$	Pin-1,-2,-4,-5 to pin-3,-8,T=25°C	-3.3	-	3.3	V
$I_R$	$V_{RWM} = 3.3V$ ; TA = 25 °C	-	0.01	1	uA
$V_h$	$I_h = 100mA$	3.3	-	6.0	V
$V_C$	$I_{PP} = 7A$ , $t_p=8/20us$	-	8.0	-	V
	$I_{PP} = 16A$ , $t_p=10/100ns$	-	8.5	-	V
$R_{DYN}$	$t_p=10/100ns$	-	0.25	-	$\Omega$
$C_{ESD}$	Pin-1,-2,-4,-5 to pin-3,-8, $V_R = 0V$ , , $f = 1 MHz$	-	0.5	-	pF

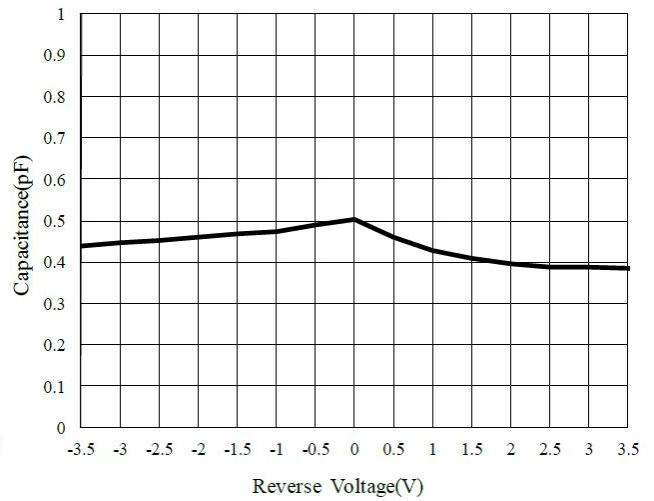
Symbol	Parameter
$V_{RWM}$	Reverse Working Voltage
$I_R$	Reverse Leakage Current
$V_{t1}$	Triggering Voltage @ $I_{t1}$
$I_{t1}$	Test Current for Triggering Voltage
$V_h$	Holding Voltage
$I_h$	Holding Voltage
$V_C$	Clamping Voltage
$I_{PP}$	Peak Pulse Current
$C_{ESD}$	Parasitic Capacitance
$f$	Small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



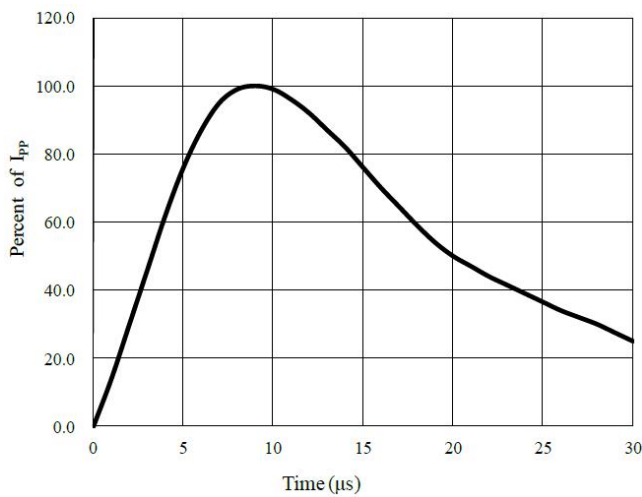
Typical Characteristics



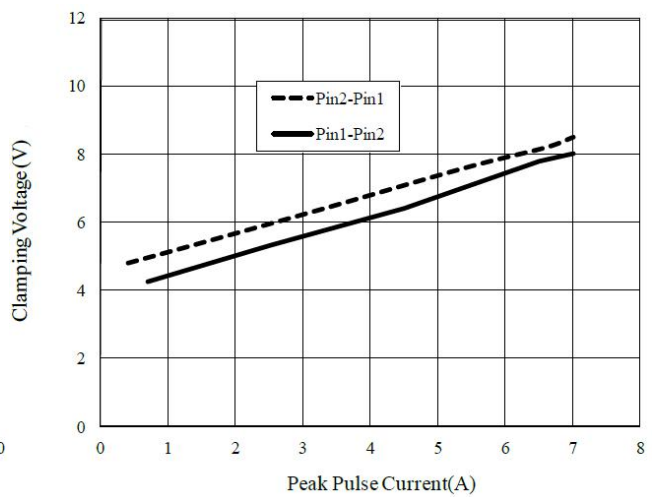
**Fig.1 TLP Testing of I/O to GND**



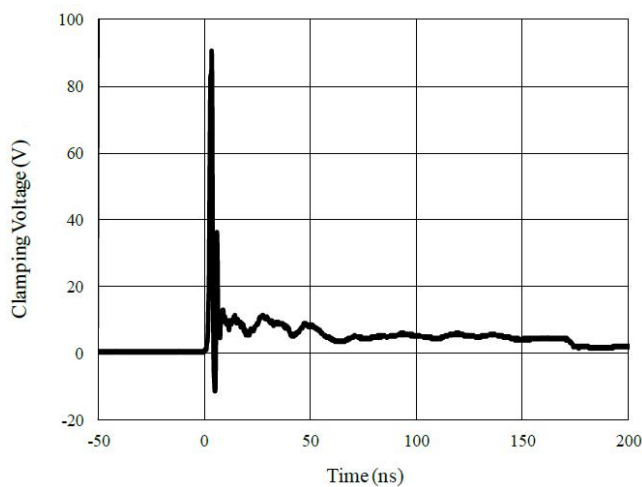
**Fig.2 Capacitance vs. Voltage of I/O to GND**



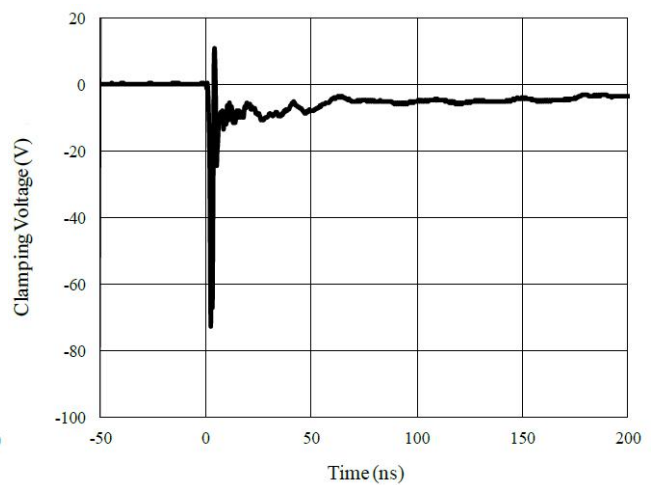
**Fig.3 Pulse Waveform**



**Fig.4 Clamping Voltage vs. Peak Pulse Current**



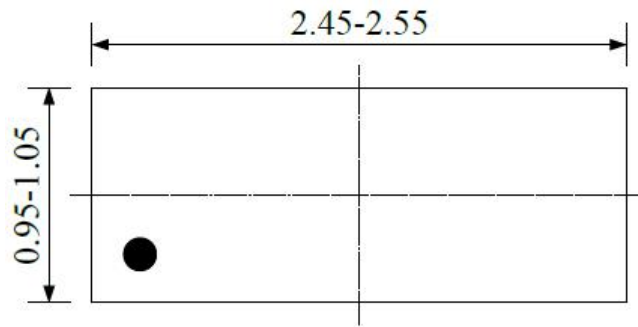
**Fig.5 ESD Clamping of I/O to GND  
( +8kV Contact per IEC 61000-4-2)**



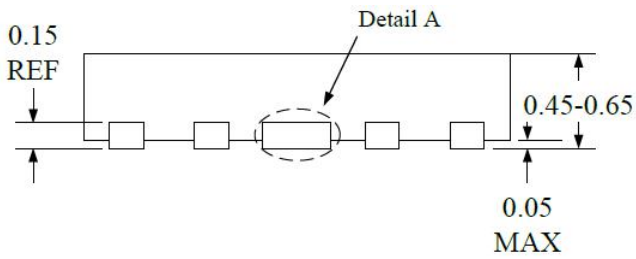
**Fig.6 ESD Clamping of I/O to GND  
( -8kV Contact per IEC 61000-4-2)**

Package Dimension

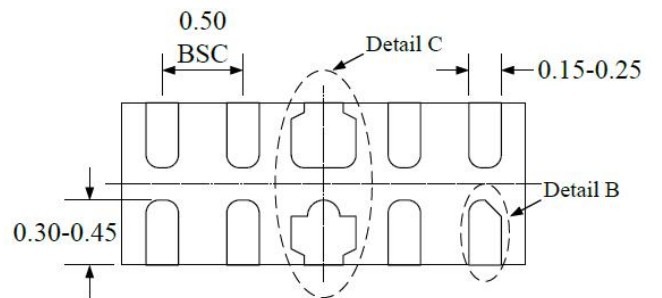
DFN2510 Package Outline



TOP VIEW



SIDE VIEW



BOTTOM VIEW



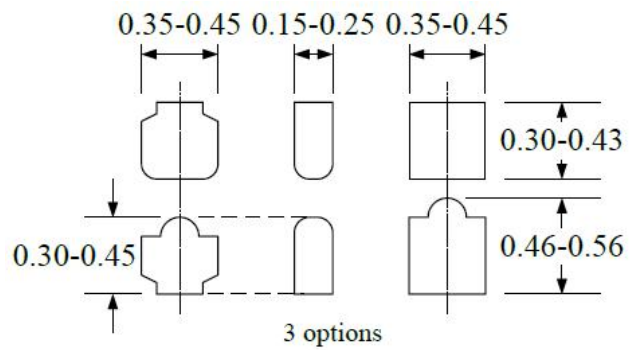
2 options

Detail A



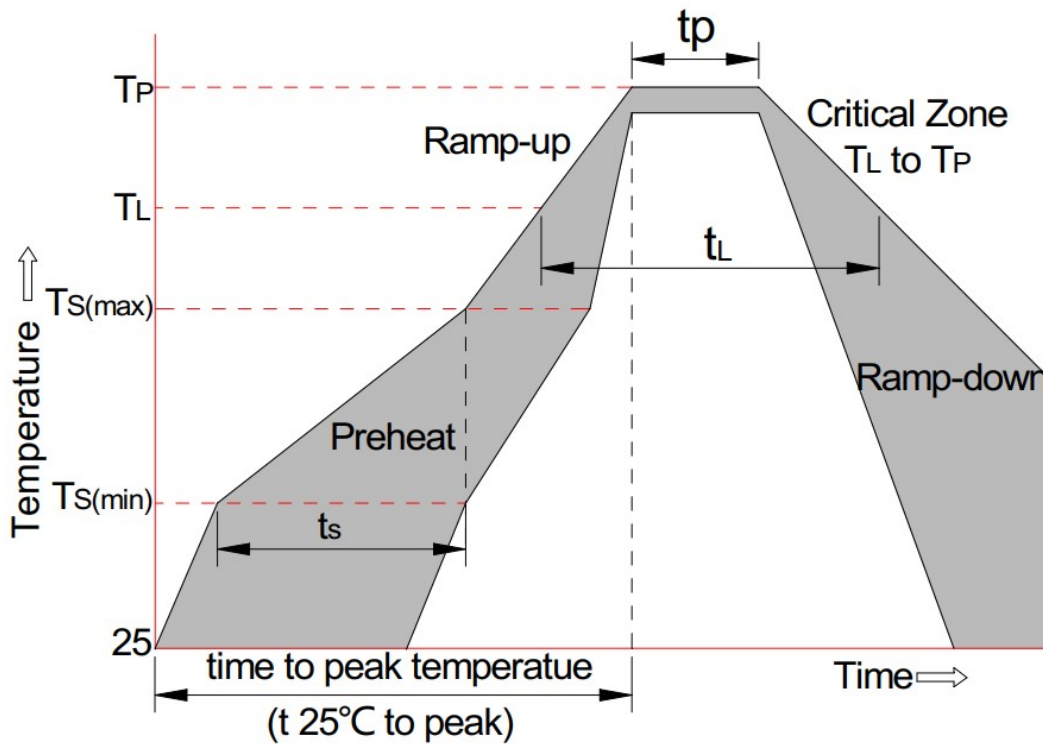
2 options

Detail B



Detail C

Package Dimensions (Controlling dimensions are in millimeters)



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) ( $t_s$ )	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