Transient Voltage Suppressor

DFN2510-10L

Marking Code	
ESD2510D3V3B	32**

FEATURES

- Solid-state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- Low capacitance (Cj=0.3pF typ. IO-IO)
- IEC 61000-4-2 ±20kV (contact discharge) ±25kV (air discharge)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 6A (8/20μs)

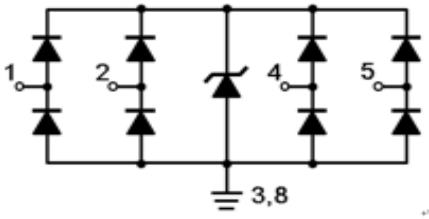
APPLICATIONS

- 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

MECHANICAL DATA

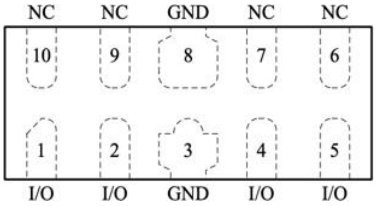
- Case: DFN2510-10L
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel
- RoHS/WEEE Compliant

Circuit Diagram



4-Line Protection

Schematic& PIN Configuration



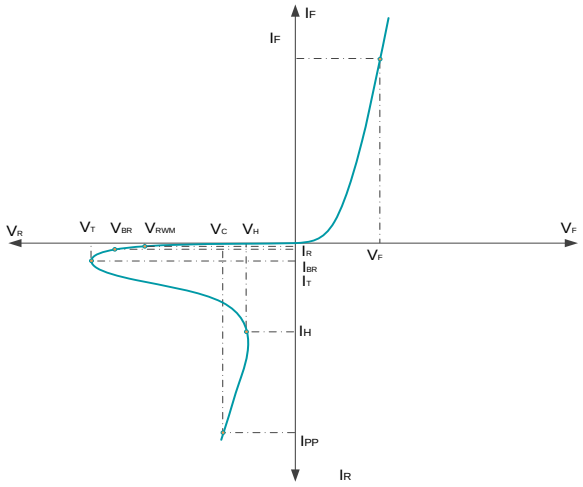
Pin	Identificaion
1,2,4,5	Input Lines
6,7,9,10	Output Lines (No Internal Connection)
3,8	Ground

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (t_p =8/20μs)	P_{PP}	35	Watts
Peak Pulse Current (t_p =8/20μs) (note1)	I_{PP}	7	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	25 20	kV
Lead Soldering Temperature	T_L	260(10seconds)	℃
Junction Temperature	T_J	-55 to + 125	℃
Storage Temperature	T_{stg}	-55 to + 125	℃

Electrical Parameters (T_A = 25°C unless otherwisenoted)

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



Electrical Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V_{RWM}				3.3	V
Reverse Leakage Current	I_R	V_{RWM}=3.3V,T=25℃			0.5	μA
Breakdown Voltage	V_{BR}	I_T=1mA	4			V
Holding Voltage	V_H	I_H=50mA		1		V
Forward Voltage	V_F	I_F=10mA	0.6		1.2	V
Clamping Voltage	V_C	I_{PP}=1A,t_p=8/20μs			2	V
Clamping Voltage	V_C	I_{PP}=4A,t_p=8/20μs			4	V
Junction Capacitance	C_j	V_R = 1.65V, f = 1MHz Between I/O pins		0.3	0.4	pF
		V_R = 1.65V, f = 1MHz I/O pin to GND		0.45	0.55	pF

Typical Characteristic Curves

Figure1: ESD pulse wavefrom according to IEC 61000-4-2

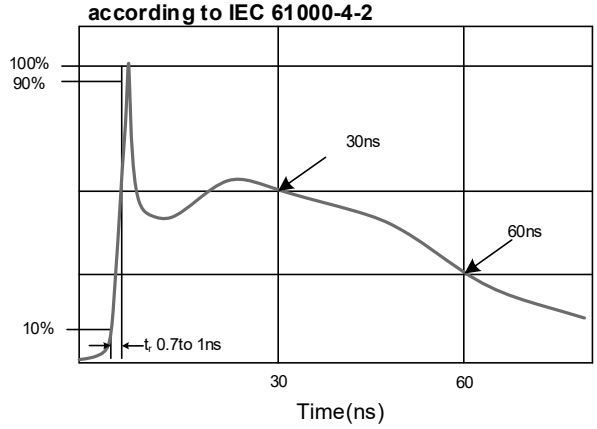


Figure 2: Power Derating Curve

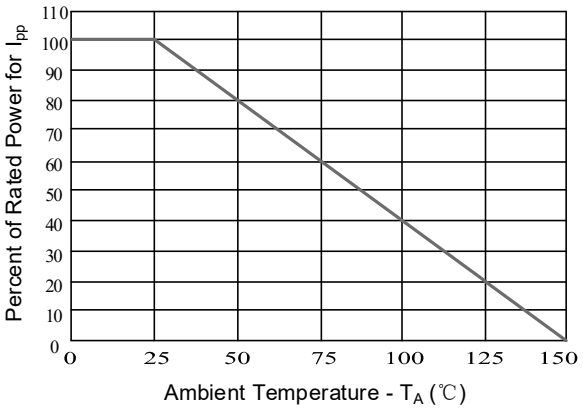


Figure3: 8/20μs Pulse Waveform

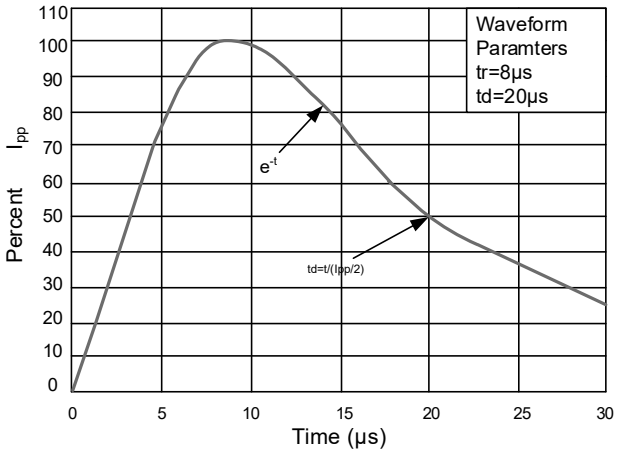


Figure 4: Clamping Voltage vs.Ipp

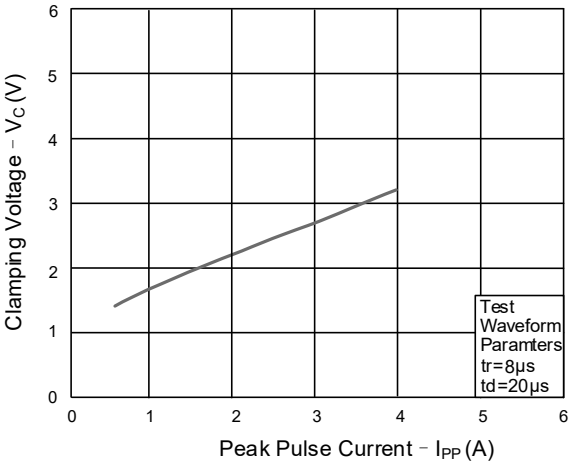


Figure5: ESD Clamping(+8kV Contact per IEC61000-4-2)

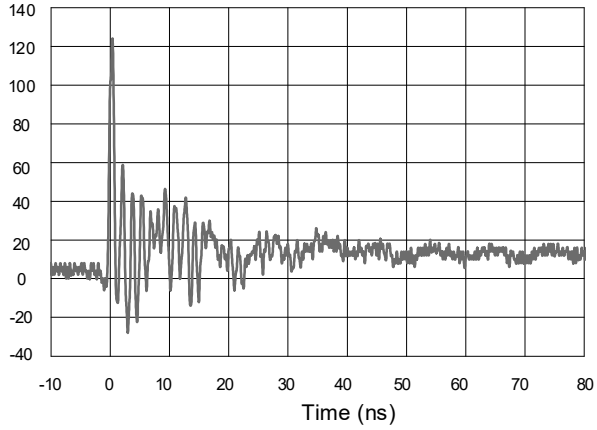
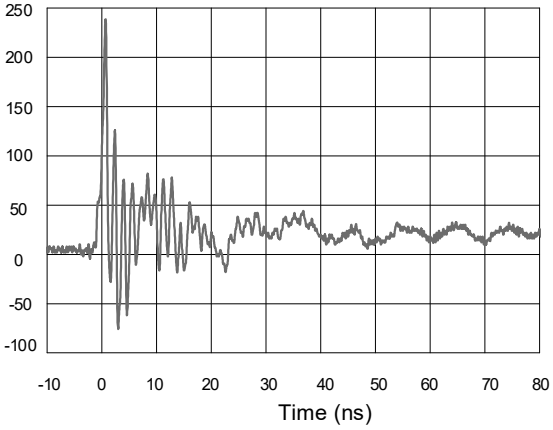
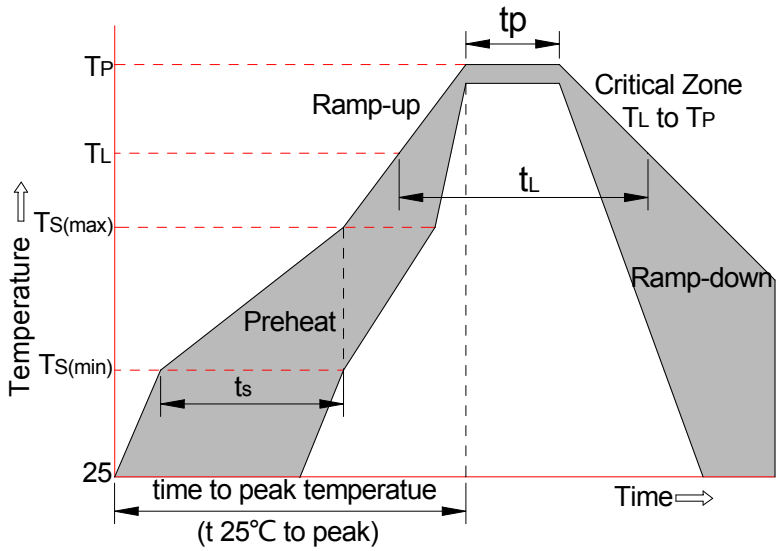


Figure6: ESD Clamping(+20kV Contact per IEC61000-4-2)



Soldering Parameters



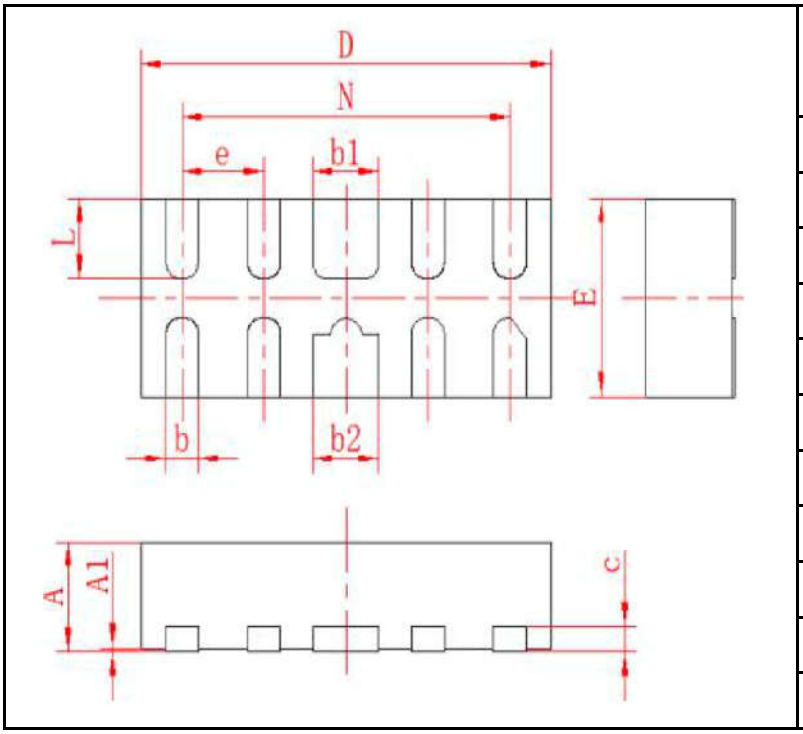
Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid 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

Ordering information

Package	Packing Description	Packing Quantity
DFN2510-10L	Tape/Reel,7”reel	3000PCS/Reel 120000PCS/Carton

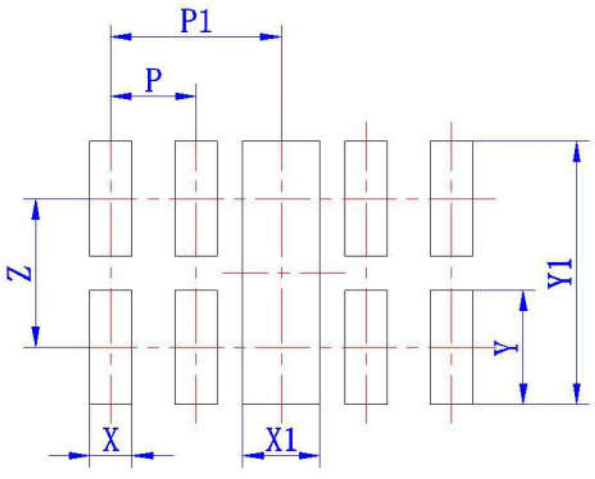
Package Dimensions

DFN2510-10L



Dim.	Millimeter(mm)		Inches	
	Min.	Max.	Min.	Max.
A	0.5	0.6	0.02	0.024
A1	-	0.05	-	0.002
D	2.4	2.6	0.095	0.102
E	0.9	1.1	0.035	0.043
e	Typ0.5		Typ0.02	
N	Typ2.0		Typ0.08	
b	0.15	0.25	0.006	0.010
b1	0.35	0.45	0.014	0.018
b2	0.35	0.45	0.014	0.018
C	Typ0.127		Typ0.005	
L	0.35	0.45	0.014	0.018

The recommended mounting pad size



Dim.	Millimeter(mm)
	TYP
X	0.30
X1	0.45
Y	0.67
Y1	1.55
Z	0.87
P	0.50
P1	1.00

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