

Transient Voltage Suppressor

FEATURES

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

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



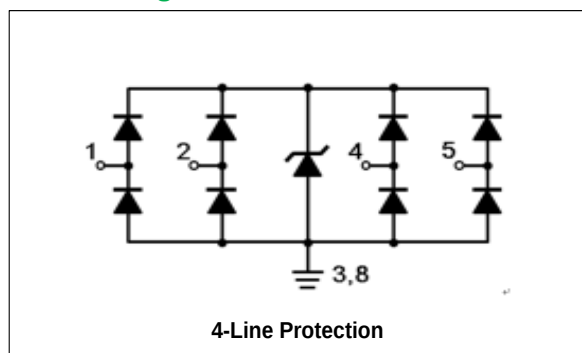
DFN2510-10L

Marking Code

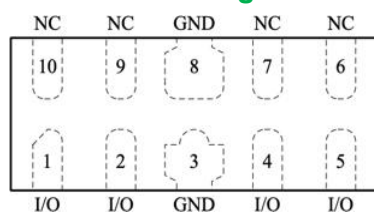
ESD2510D3V3B

.324H

Circuit Diagram



Schematic& PIN Configuration



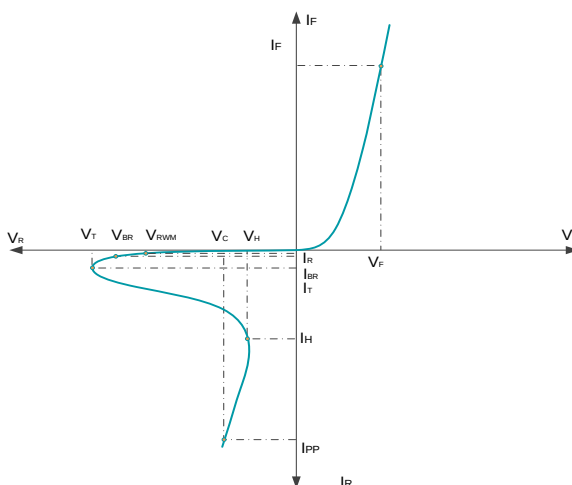
Pin	Identificaion
1,2,4,5	Input Lines
6,7,9,10	Output Lines (No Internal Connection)
3,8	Ground

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PP}	35	Watts
Peak Pulse Current ($t_p = 8/20\mu s$) (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)	$^{\circ}C$
Junction Temperature	T_J	-55 to + 125	$^{\circ}C$
Storage Temperature	T_{stg}	-55 to + 125	$^{\circ}C$

Electrical Parameters ($T_A = 25^{\circ}C$ unless otherwise noted)

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	$V_{RWM}=3.3V, T=25^{\circ}C$			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	$I_{PP}=1A, t_p=8/20\mu s$			2	V
Clamping Voltage	V_C	$I_{PP}=4A, t_p=8/20\mu s$			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 waveform according to IEC 61000-4-2

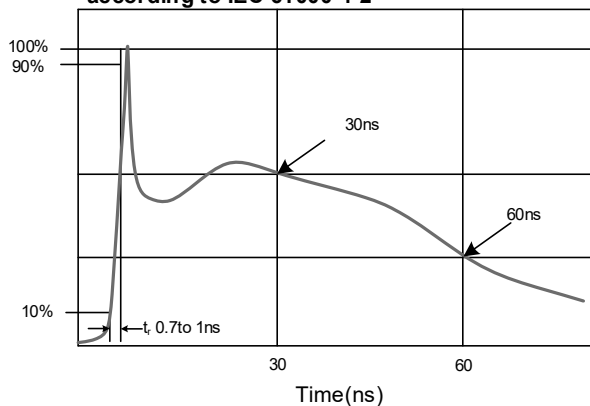


Figure 2: Power Derating Curve

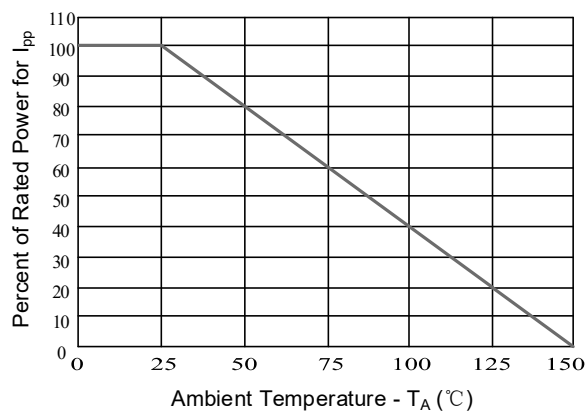


Figure3: 8/20 μ s Pulse Waveform

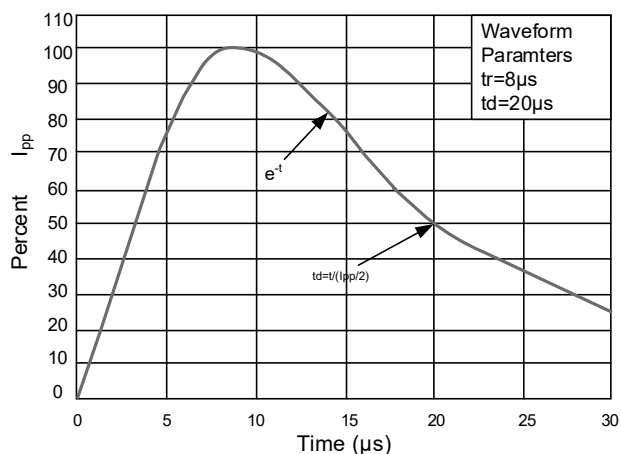


Figure 4: Clamping Voltage vs. Ipp

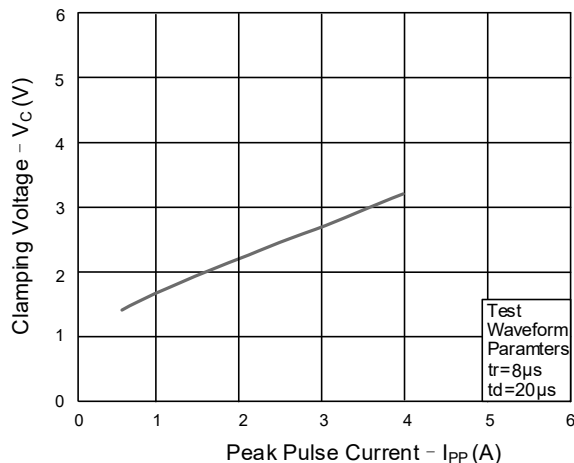


Figure5: ESD Clamping(+8kV Contact per IEC61000-4-2)

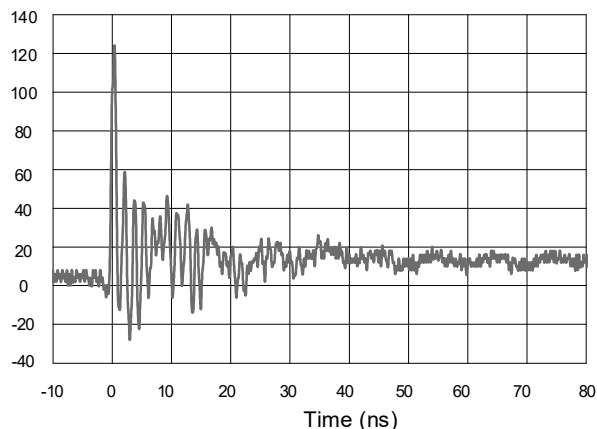
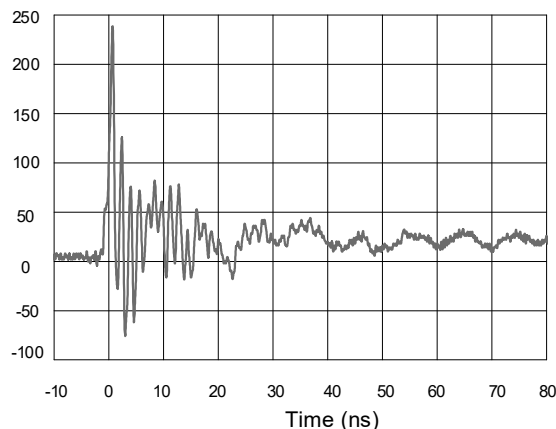
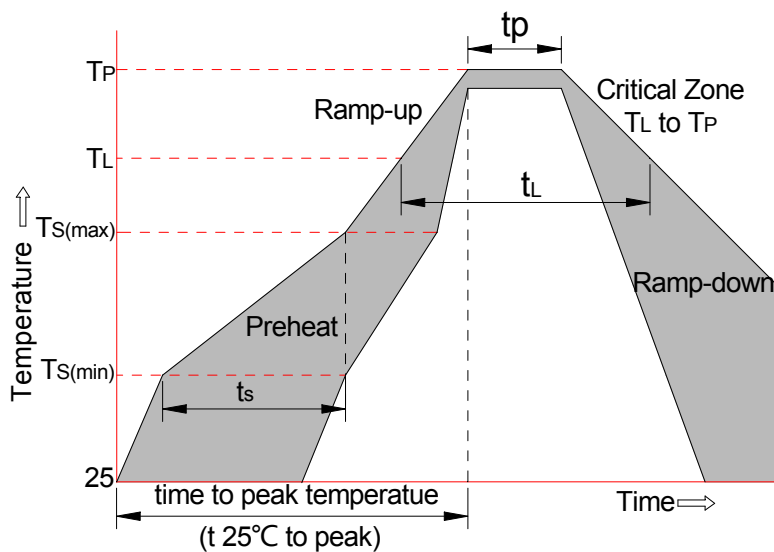


Figure6: ESD Clamping(+20kV Contact per IEC61000-4-2)



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) (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

Ordering information

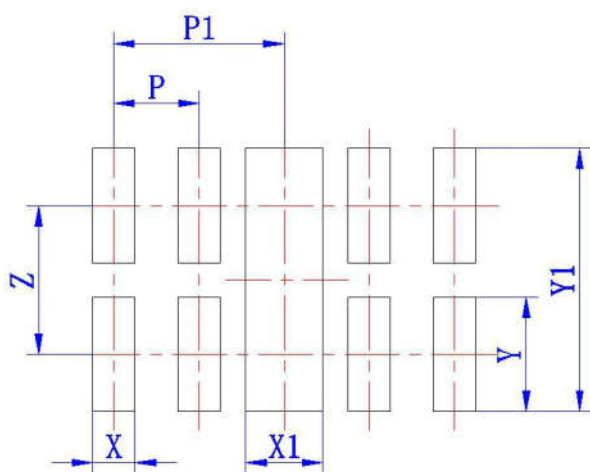
Package	Packing Description	Packing Quantity
DFN2510-10L	Tape/Reel, 7" reel	3000PCS/Reel 120000PCS/Carton

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

Disclaimer

The information presented in this document is for reference only. Guangdong Youfeng Microelectronics Co.,Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise. The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), YFW or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale. This publication supersedes & replaces all information previously supplied. For additional information, please visit our website <https://www.yfwdiode.com>, or consult YFW sales office for further assistance.