

4-Line Ultra Low Capacitance TVS Diode Array

Features

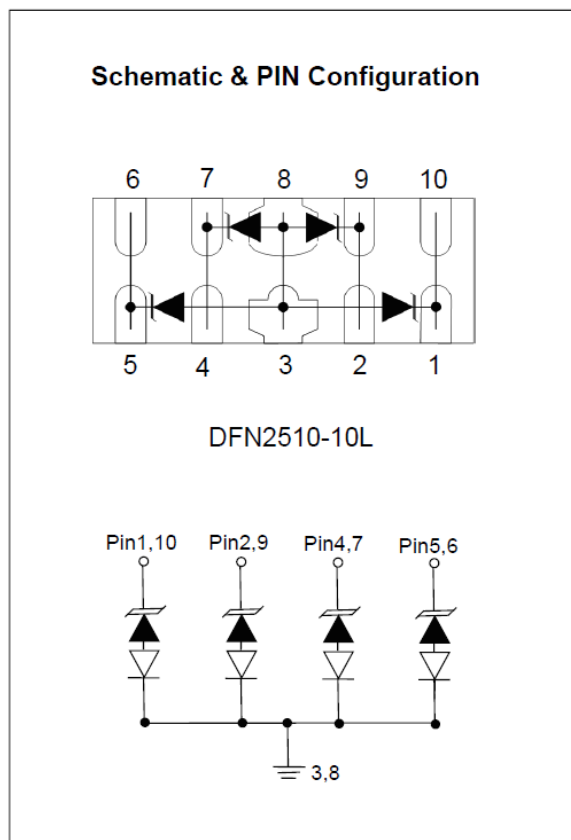
- IEC 61000-4-2 (ESD) $\pm 25\text{kV}$ (air), $\pm 20\text{kV}$ (contact)
- IEC 61000-4-5 (Lightning) 5.5A (8/20 μs)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- Ultra low capacitance
- Ultra low leakage current
- Operating voltage: 5V
- Low clamping voltage

Applications

- Digital Visual Interface
- USB Ports
- PCI Express
- Serial ATA
- Firewire Ports
- Infiniband Transceiver Protection

Mechanical Characteristics

- Package: DFN2510-10L (2.5 \times 1.0 \times 0.5mm)
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Right
- RoHS Compliant



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power ($t_p = 8/20\mu\text{s}$)	P_{PP}	80	W
Peak Pulse Current ($t_p = 8/20\mu\text{s}$)	I_{PP}	5.5	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 25	KV
ESD per IEC 61000-4-2 (Contact)		± 20	KV
Operating Temperature Range	T_J	-55 to + 125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to + 150	$^\circ\text{C}$

Electrical Parameters ($T_A = 25^\circ\text{C}$ Unless otherwise noted)	
Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Reverse Stand-Off Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F

Electrical Characteristics ($T_A = 25^\circ\text{C}$ Unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V_{RWM}	Any I/O pin to ground			5	V
Reverse breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$, any I/O pin to ground	6			V
Reverse leakage current	I_R	$V_{RWM} = 5\text{V}$, any I/O pin to ground			0.1	μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$ ($t_p = 8/20\mu\text{s}$), any I/O pin to ground			9.8	V
Clamping Voltage	V_C	$I_{PP} = 3\text{A}$ ($t_p = 8/20\mu\text{s}$), any I/O pin to ground			13.5	V
Clamping Voltage	V_C	$I_{PP} = 5\text{A}$ ($t_p = 8/20\mu\text{s}$), any I/O pin to ground			16	V
ESD Clamping Voltage	V_C	$I_{PP} = 1\text{A}$, $t_p = 0.2/100\text{ns}$ (TLP)		9.5		V
ESD Clamping Voltage	V_C	$I_{PP} = 8\text{A}$, $t_p = 0.2/100\text{ns}$ (TLP)		14		V
ESD Clamping Voltage	V_C	$I_{PP} = 16\text{A}$, $t_p = 0.2/100\text{ns}$ (TLP)		17.5		V
Junction capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$, any I/O pin to ground		0.6		pF

Typical Performance Characteristics ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

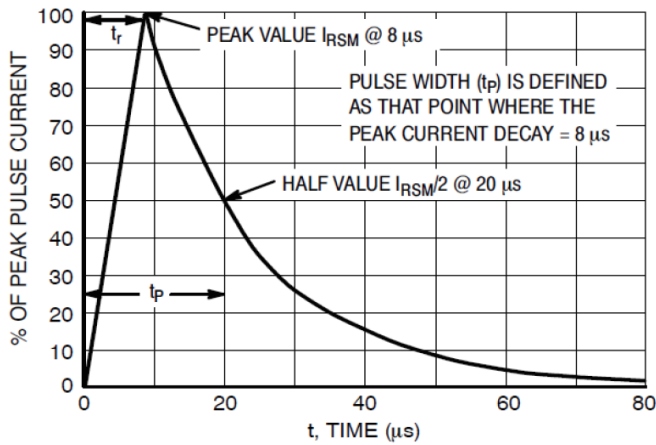


Figure 1. 8 X 20 μs Pulse Waveform

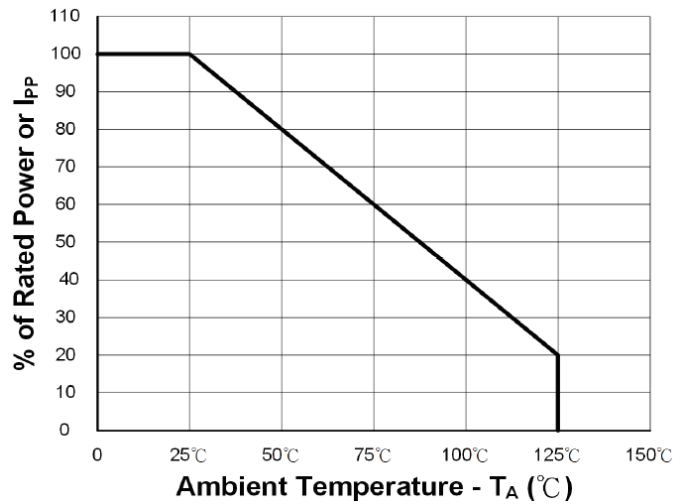


Fig 2. Power Derating Curve

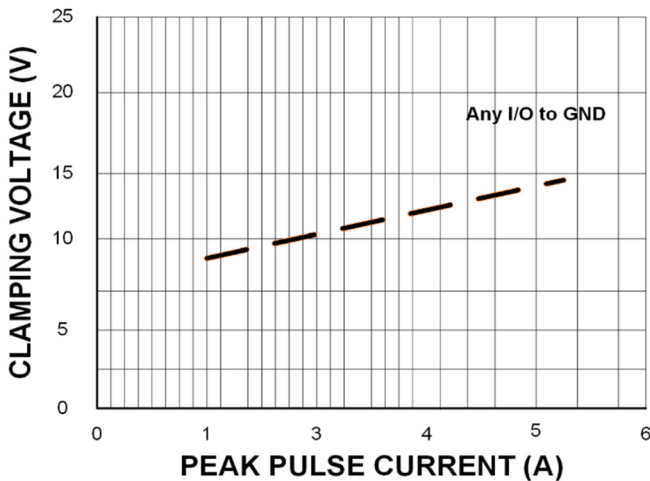


Fig 3. Clamping Voltage vs. Peak Pulse Current

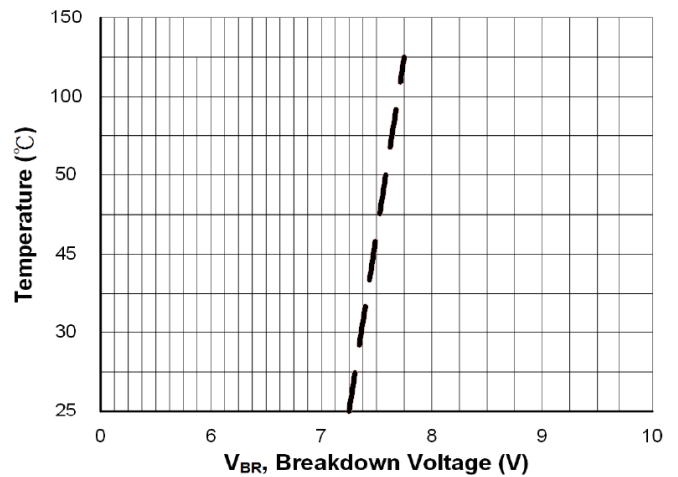


Fig 4. Typical Breakdown Voltage vs. Temperature

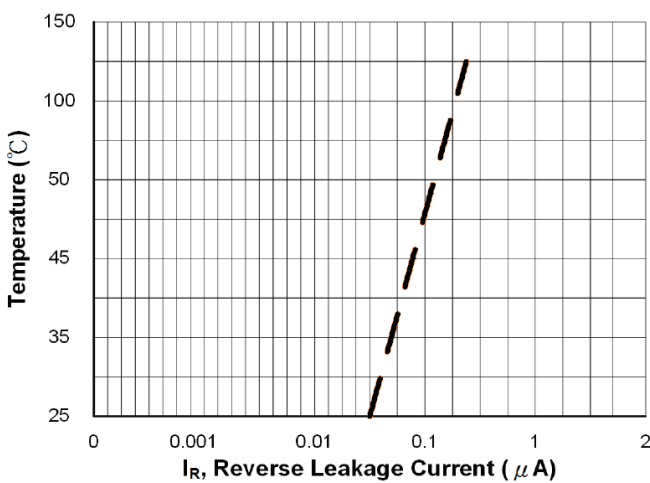


Fig 5. Typical Reverse Current vs. Temperature

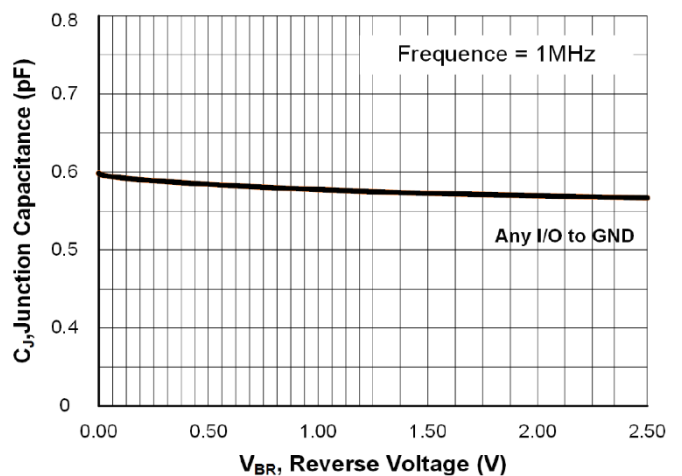


Fig 6. Typical Capacitance vs. Reverse Voltage

Typical Performance Characteristics (T_A = 25°C Unless otherwise noted)

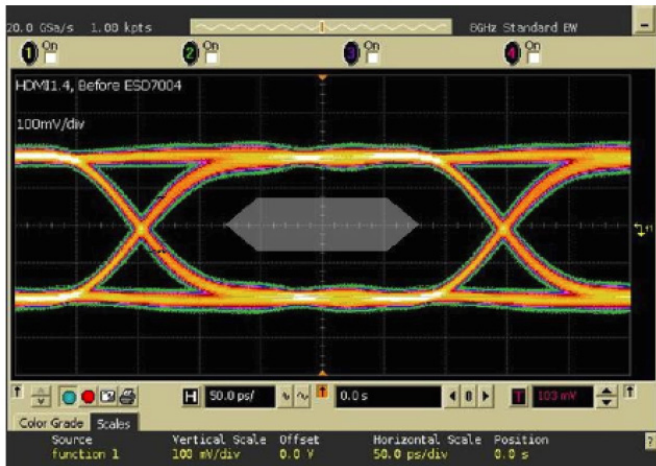


Fig 7.1. @HDMI 1.4 mask at 3.4 Gbps per channel (Without Component)

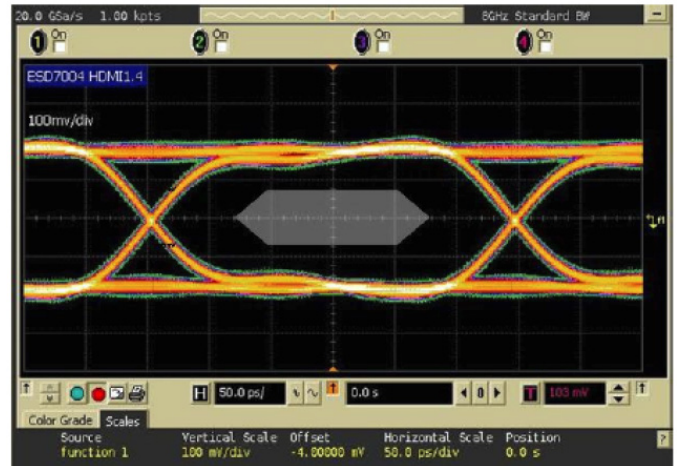


Fig 7.2. @HDMI 1.4 mask at 3.4 Gbps per channel (With Component)

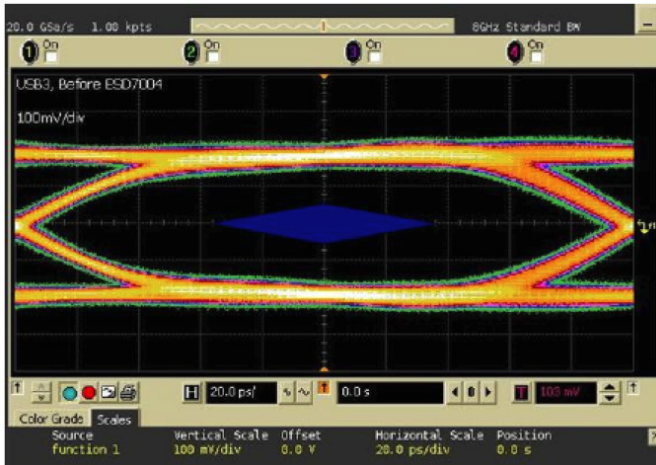


Fig 7.3. @USB 3.0 mask at 5.0 Gbps per channel (Without Component)

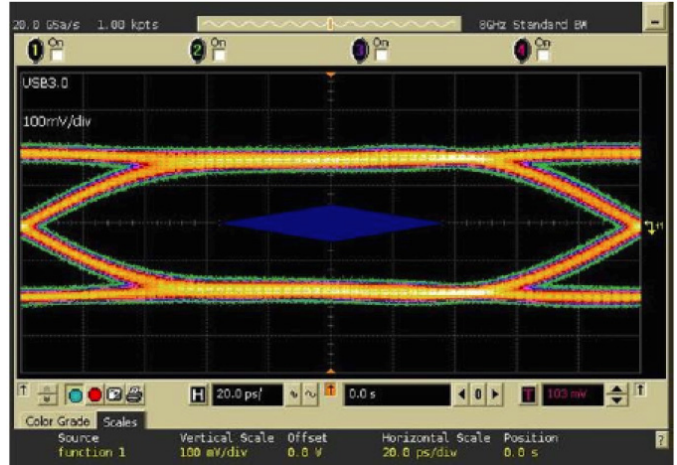


Fig 7.4. @USB 3.0 mask at 5.0 Gbps per channel (With Component)

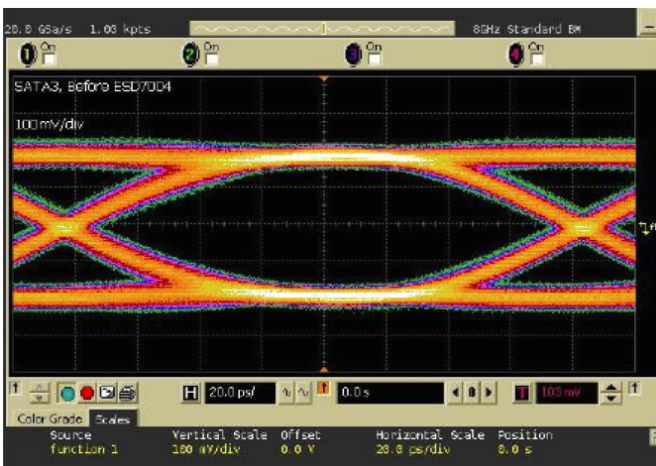


Fig 7.5. @ESATA 3.0 mask at 6.0 Gbps per channel (Without Component)

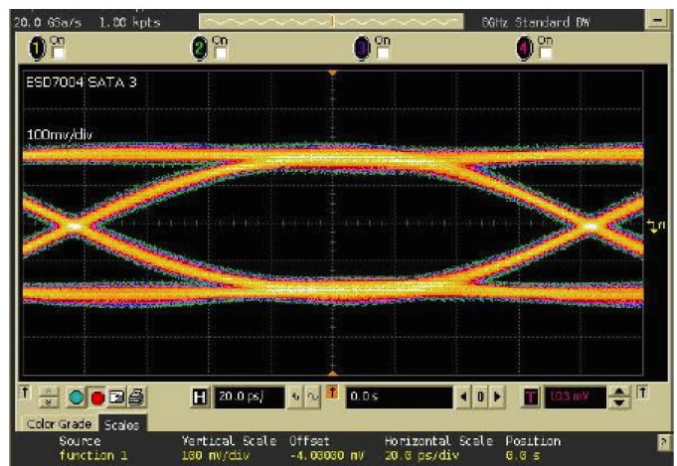
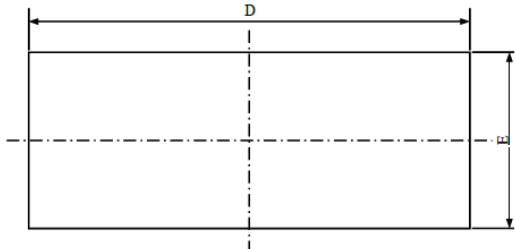


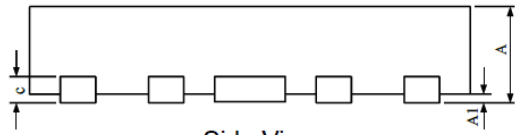
Fig 7.6. @ ESATA 3.0 mask at 6.0 Gbps per channel (With Component)

DFN2510-10L Package Outline Drawing

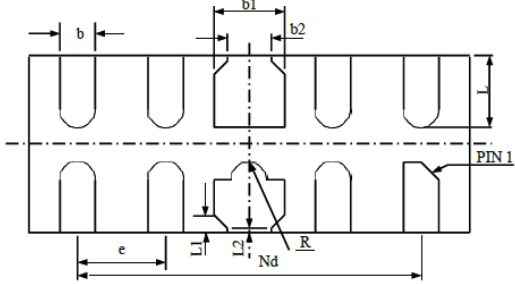
Symbol	Millimeter		
	Min.	Nom.	Max.
A	0.45	0.55	0.60
A1	0.00	0.02	0.05
b	0.15	0.20	0.25
b1	0.35	0.40	0.45
b2	0.20	0.25	0.30
c	0.10	0.15	0.20
D	2.45	2.50	2.55
e	0.50 BSC		
Nd	2.00 BSC		
E	0.95	1.00	1.05
L	0.35	0.40	0.45
L1	0.075 REF		
L2	0.050 REF		
R	0.05	0.10	0.15



Top View



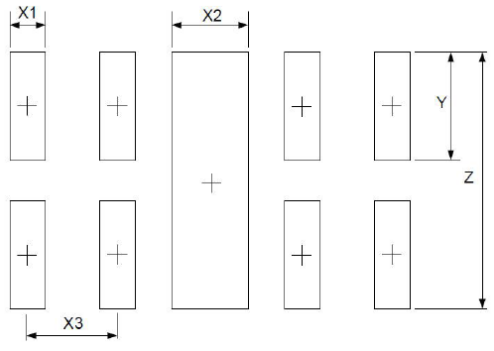
Side View



Bottom View

Suggested PAD Layout

Symbol	DFN2510-10L
	Millimeter
X1	0.20
X2	0.40
X3	0.50
Y	0.60
Z	1.40



Marking Code

Part Number	Marking Code	
STCDN050SLC	504U	

Ordering information

Part Number	Package	Base qty	Reel Size	Delivery mode
		(pcs)	(inch)	
STCDN050SLC	DFN2510-10L	3,000	7	Tape and reel