



PRODUCT SPECIFICATION

DOCUMENT NO. ENS000126240

DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
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TVU5VU4S-DFN2510-10LDG Engineering Specification

1. Scope

TVU5VU4S-DFN2510-10L are TVS arrays designed to protect high-speed signal lines from overvoltage hazard of Electrostatic Discharge (**ESD**) and Electrical Fast Transients (**EFT**). These interfaces can be used in **HDMI**, **DisplayPort** interface, **SATA** and **eSATA** interface, digital visual interface (DVI), USB2.0/USB3.0, IEEE 1394 Firewire Ports, Ethernet port (10/100/1000 Mb/s), etc.

Feature

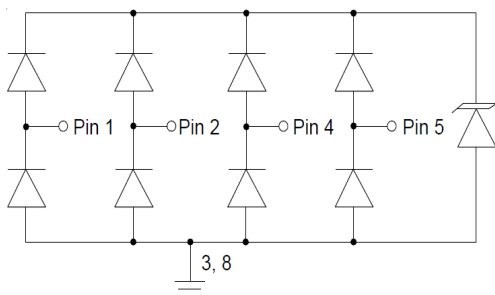
- ◆ IEC61000-4-2(ESD) : Contact $\pm 12\text{KV}$,Air $\pm 16\text{KV}$
- ◆ IEC61000-4-5(Surge) : 5A, 8/20us
- ◆ Low clamping voltage
- ◆ Ultra low capacitance:0.5pF (any I/O to GND.)
- ◆ Protection 4 lines I/O port
- ◆ **Lead free** and in **ROHS** compliance.

2. Explanation of Part Number

<u>TV</u>	<u>U</u>	<u>5V</u>	<u>U4</u>	<u>S-</u>	<u>DFN2510</u>	<u>-10L</u>	<u>DG</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

- (1) Product Type : TV=TVS Diode
- (2) Capacitance Code
- (3) Working Voltage:
- (4) Direction/Channel Code : U=Uni-directional, 4=Channe
- (5) Control Code
- (6) Package Size
- (7) Pin Code: 10L
- (8) Inpaq Control Code

3. Circuit Diagram /Pin Configuration



DFN-2510 (Top-view)

4. Specifications

4.1. ABSOLUTE MAXIMUM RATINGS

Symbol	Rating	Value	Units
T_J	Operating Temperature	-40 to 125	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_{SOL}	Lead Soldering Temperature	260 (10 sec)	°C
I_{PP}	Peak Pulse Current (8/20µs)	5	A
PPK	Maximum Peak Pulse Power (8/20µs)	40	Watts
V_{ESD}	ESD Rating pre IEC 61000-4-2 (Contact)	+/- 12	kV
	ESD Rating pre IEC 61000-4-2 (Air)	+/- 16	kV

4.2. ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{RWM}	Reverse Working Voltage	I/O Pin to GND	---	---	5	V
V_{BR}	Breakdown Voltage	$I_{BR} = 1\text{mA}$, I/O pin to GND	6	8	10	V
V_F	Forward Voltage	$I_F = -15\text{mA}$, I/O pin to GND		1	---	V
I_R	Reverse Leakage Current	$V_{RWM} = 5\text{V}$, I/O Pin to GND	---	---	1	µA
V_C	Surge Clamping Voltage	$I_{PP} = 5\text{A}$, I/O Pin to GND(positive)		7.4	7.8	V
	(8/20µs)	$I_{PP} = -5\text{A}$, I/O Pin to GND (negative)	---	3.5	5.3	
	Clamping Voltage	$I_{TLP} = 1\text{A}$, I/O Pin to GND(positive)		6		V
	(tperiod=100ns, tr=1ns)	$I_{TLP} = 16\text{A}$, I/O Pin to GND(positive)	---	10	---	
R_{DYN}	TLP Dynamic Resistance	I/O Pin to GND (positive)		0.26		
	(tperiod=100ns, tr=1ns)	I/O Pin to GND (negative)	---	0.3	---	Ω
C_J	Junction Capacitance	$V_R = 0\text{V}$, $f=1\text{MHz}$ between I/O Pins to GND V_R		0.48	0.6	pF
		$= 2.5\text{V}$, $f=1\text{MHz}$ between I/O Pins to GND	---	0.47		

Mechanical Characteristics

- ◆ Molded JEDEC DFN 10pin package (2.5x1.0x0.58mm)
- ◆ Packing: Tape and 3,000pcs/ Reel (for 7" Reel)
- ◆ Flammability rating UL 94V-0
- ◆ RoHS Compliant

4.3. TYPICAL CHARACTERISTICS

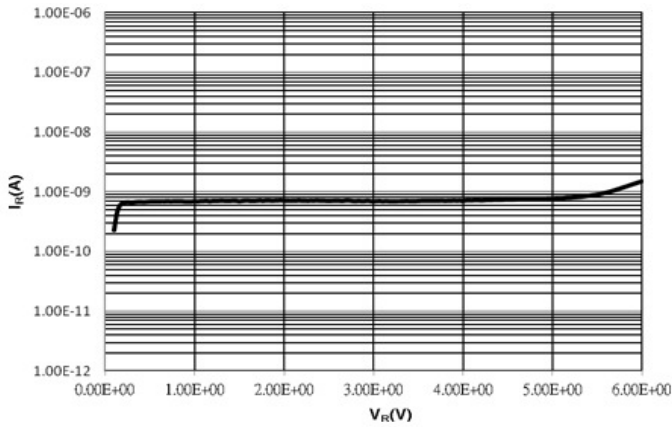


Fig.3 Reverse Leakage Current

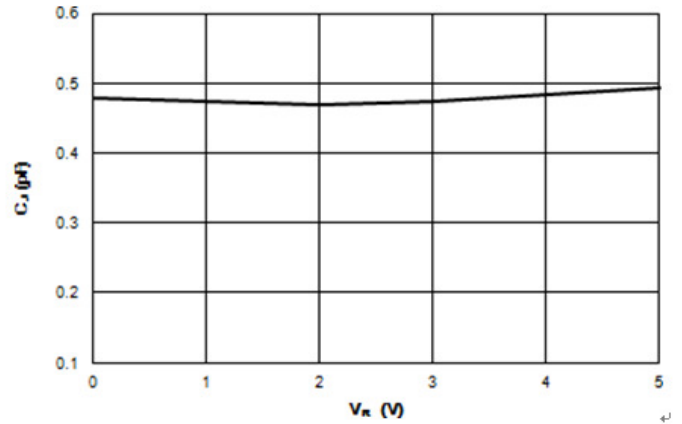


Fig.4 Junction Capacitance (I/O Pin to GND)

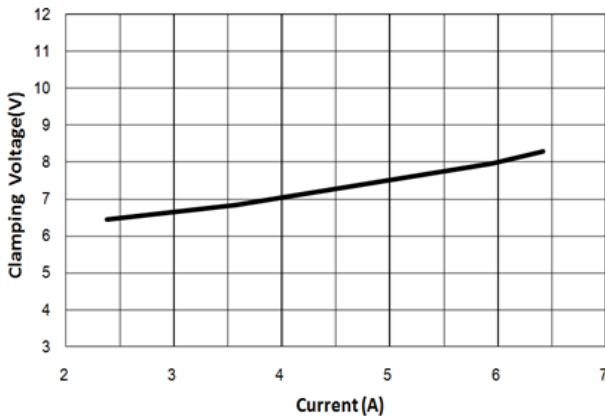


Fig.5 Positive Surge Clamping Voltage (8/20µs)

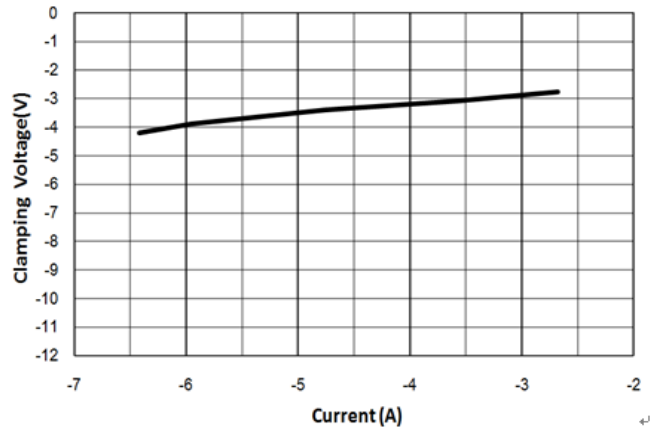


Fig.6 Negative Surge Clamping Voltage (8/20µs)

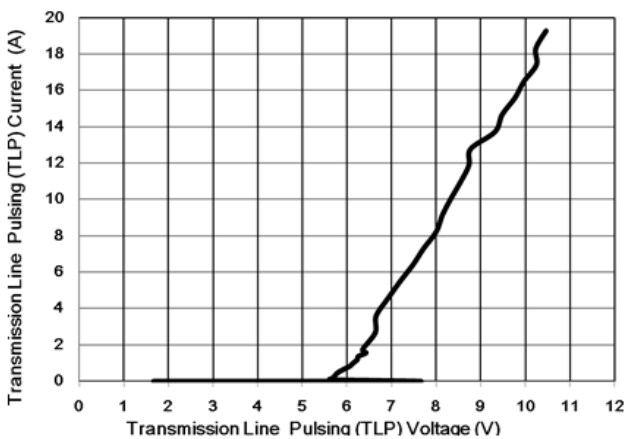


Fig.7 Positive Clamping Voltage (tperiod=100ns, tr=1ns)

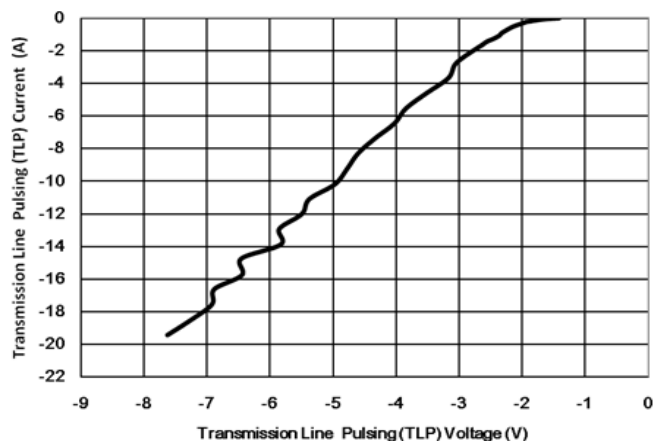
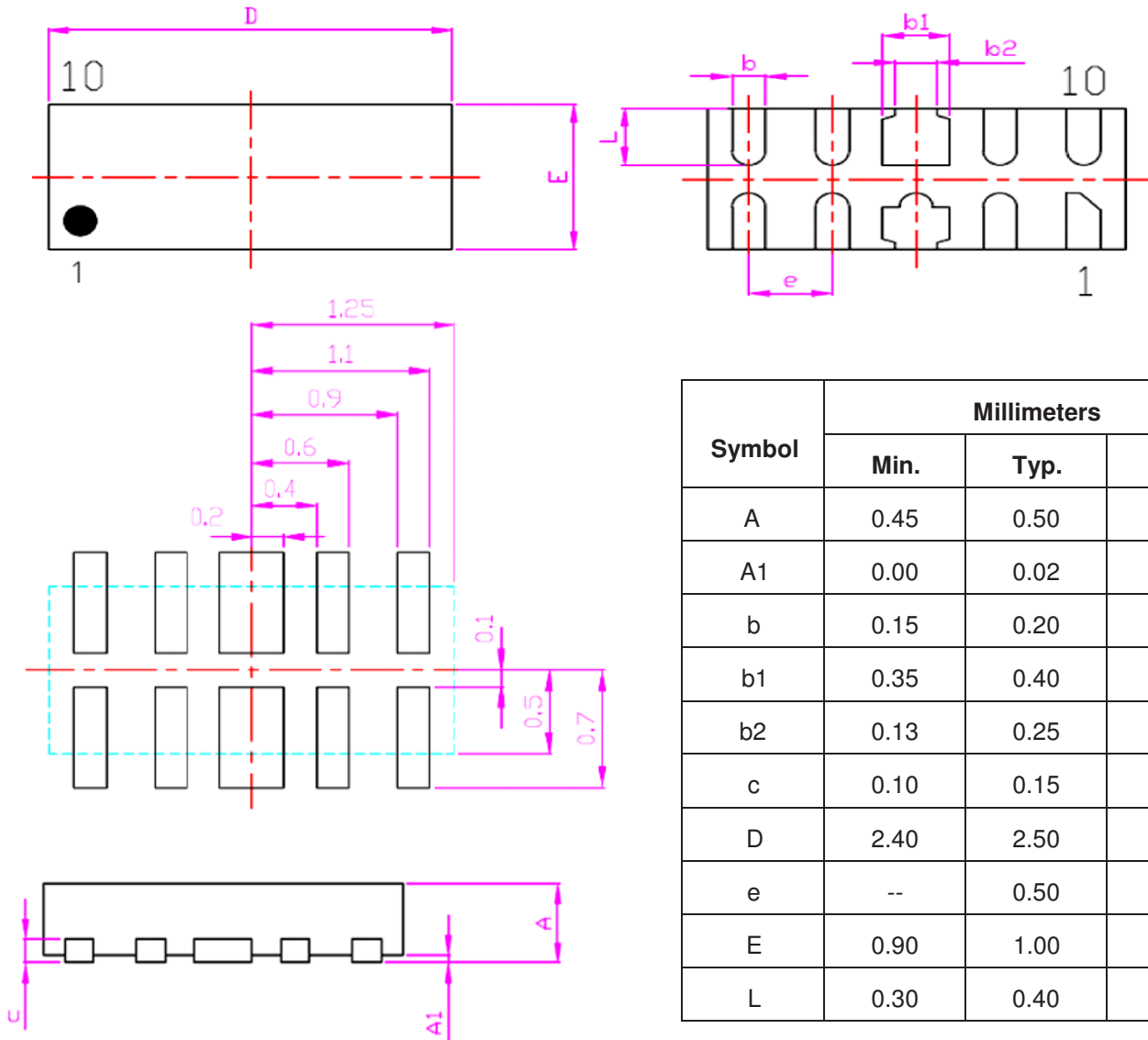


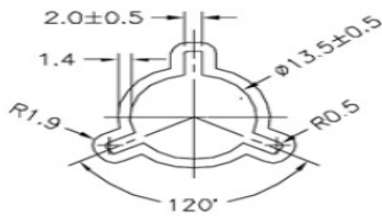
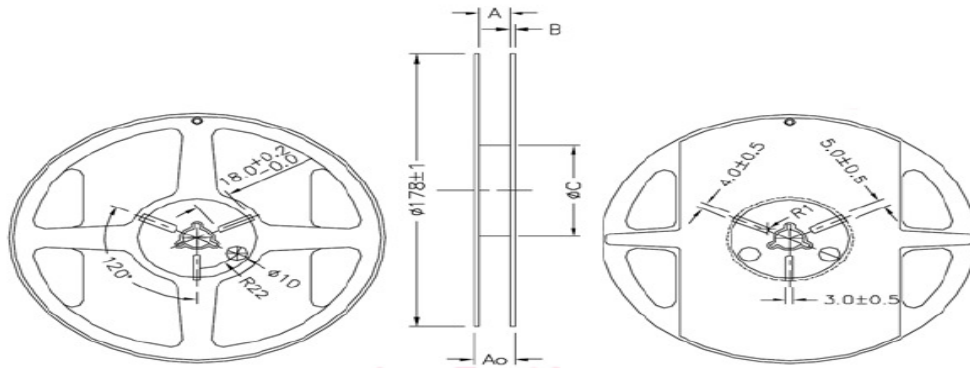
Fig.8 Negative Clamping Voltage (tperiod=100ns, tr=1ns)

5. Mechanical Details

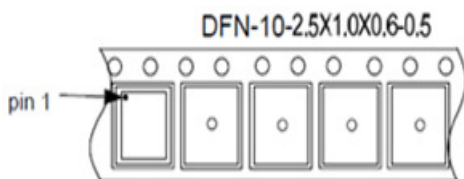
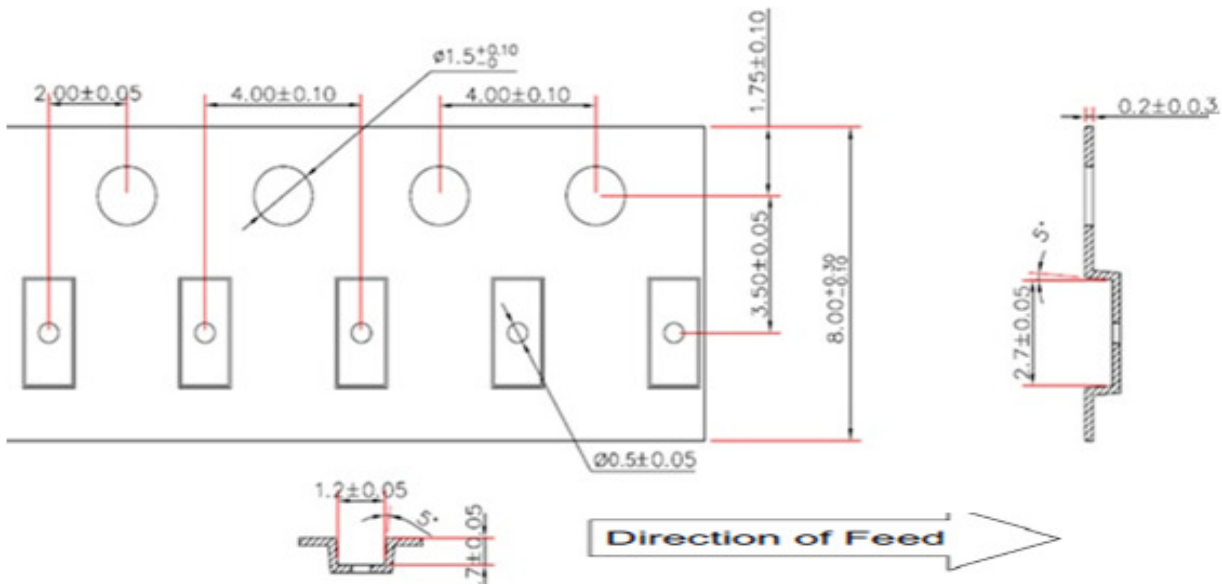


Symbol	Millimeters		
	Min.	Typ.	Max.
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
b	0.15	0.20	0.25
b1	0.35	0.40	0.45
b2	0.13	0.25	0.30
c	0.10	0.15	0.20
D	2.40	2.50	2.60
e	--	0.50	--
E	0.90	1.00	1.10
L	0.30	0.40	0.50

6. Tape & Reel



Width of carrier tape	8	12	16
A±0.05	9.0	13.0	17.0
Ao±0.05	12.0	16.0	20.0
B	1.5	1.5	1.5
øC $\begin{smallmatrix} +1 \\ -0 \end{smallmatrix}$	60	60	60



7. Order information

Part Number	Marking Code	Quantity	Packaging Option
TVU5VU4S-DFN2510-10LDG	. 5R3P	3,000pcs/reel	Tape & reel- 8mm tape/7"reel

8. MSL Description

MSL LEVEL 1