



PRODUCT SPECIFICATION

DOCUMENT NO. ENS000106750

DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
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TVU1V8U4S-DFN2510-10LDG Engineering Specification

1. Features

- Transient Protection for High-speed Data Lines
- IEC 61000-4-2 (ESD) ±15kV (Air) ±12kV (Contact)
- IEC 61000-4-5 (Surge) 6A (8/20µs)
- For 1.8V and Below Operating Voltage
- Ultra Low Capacitance: 0.28pF(Typical)
- Excellent Package: 2.5mmx1.0mmx0.55mm

2. Applications

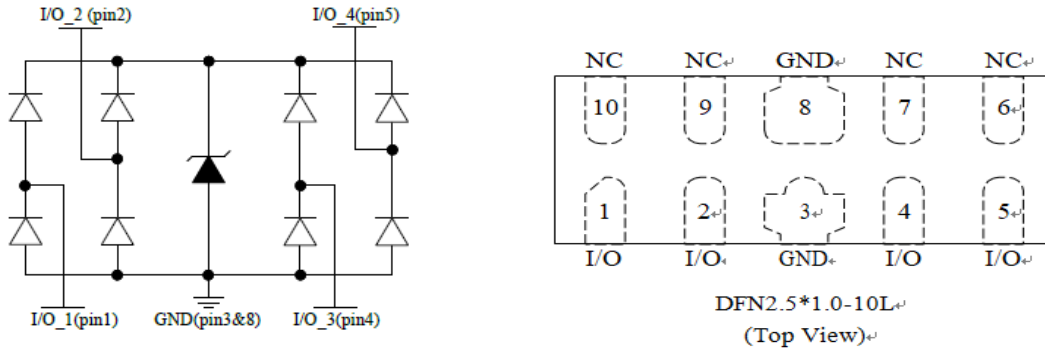
- USB3.0&3.x
- HDMI
- V-By-One
- SATA and eSATA Interface
- PCI Express
- Thunderbolt interface
- Display Ports

3. Explanation of Part Number

<u>TV</u>	<u>U</u>	<u>1V8</u>	<u>U4S</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: 1V8=1.8V
- (4) Direction/Channel Code : U=Uni-directional, 4=Channel, S= Control code
- (5) Control Code
- (6) Package Size
- (7) Pin Code: 10L: 10 Pins
- (8) Inpaq Control Code

4. Circuit Diagram & Pin Configuration



5. Maximum Ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
IEC 61000-4-2 ESD Voltage Air Model Contact Model	$V_{ESD}^{(1)}$	± 15	kV
		± 12	
Peak Pulse Current	$I_{PP}^{(2)}$	6	A
Operating Temperature Range	T_J	-40 ~ +125	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$
Lead Soldering Temperature	T_{SOL}	260	$^{\circ}\text{C}$

(1) Device stressed with ten non-repetitive ESD pulses.

(2) Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

6. Electrical Characteristics ($T = 25^{\circ}\text{C}$)

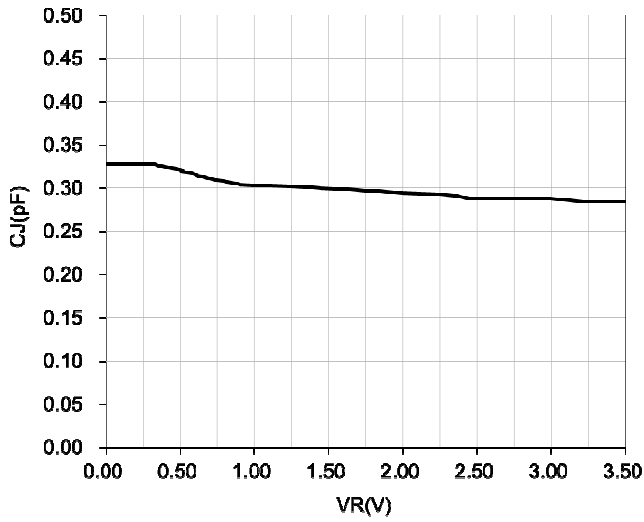
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Reverse stand-off voltage	$V_{RWM}^{(1)}$			1.8	3.3	V
Reverse Leakage Current	I_R	$V_{RWM} = 1.8\text{V}, T = 25^{\circ}\text{C}$			1	μA
Breakdown Voltage	V_B	$I_B = 1\text{mA}, \text{I/O to GND}$	6		17	V
Clamping Voltage	$V_{C(2)}$	$I_{PP} = 6\text{A}, \text{I/O to GND}$		3.8		V
Clamping Voltage	V_C	$I_{TLP} = 16\text{A}, \text{I/O to GND}$ (tperiod=100ns, tr=1ns)		5.6		V
Dynamic Resistance	R_{DYN}	I/O to GND (tperiod=100ns, tr=1ns)		0.2		Ω
Junction Capacitance	C_{ESD}	$V_R = 0\text{V}, f = 1\text{MHz}, \text{I/O to GND}$		0.28	0.35	pF

(1) Other voltages available upon request.

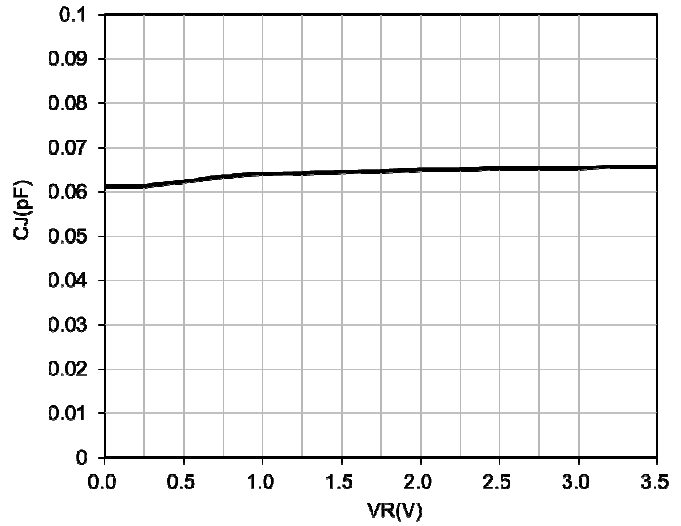
(2) Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

7. Typical Characteristics

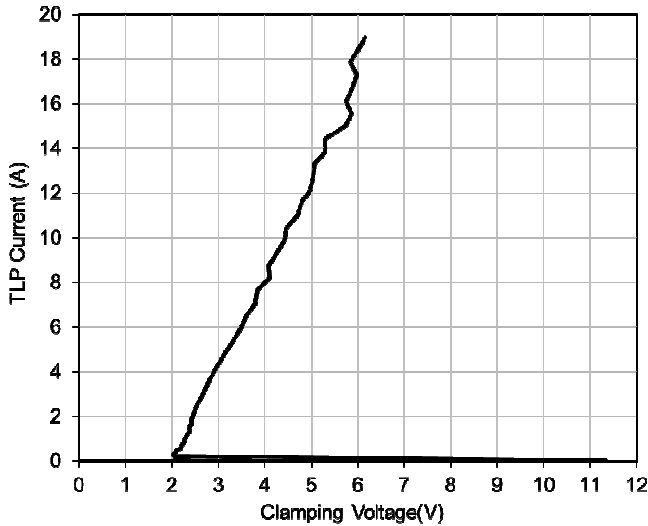
Junction Capacitance (I/O Pin to GND)



Junction Capacitance (I/O Pin to I/O Pin)

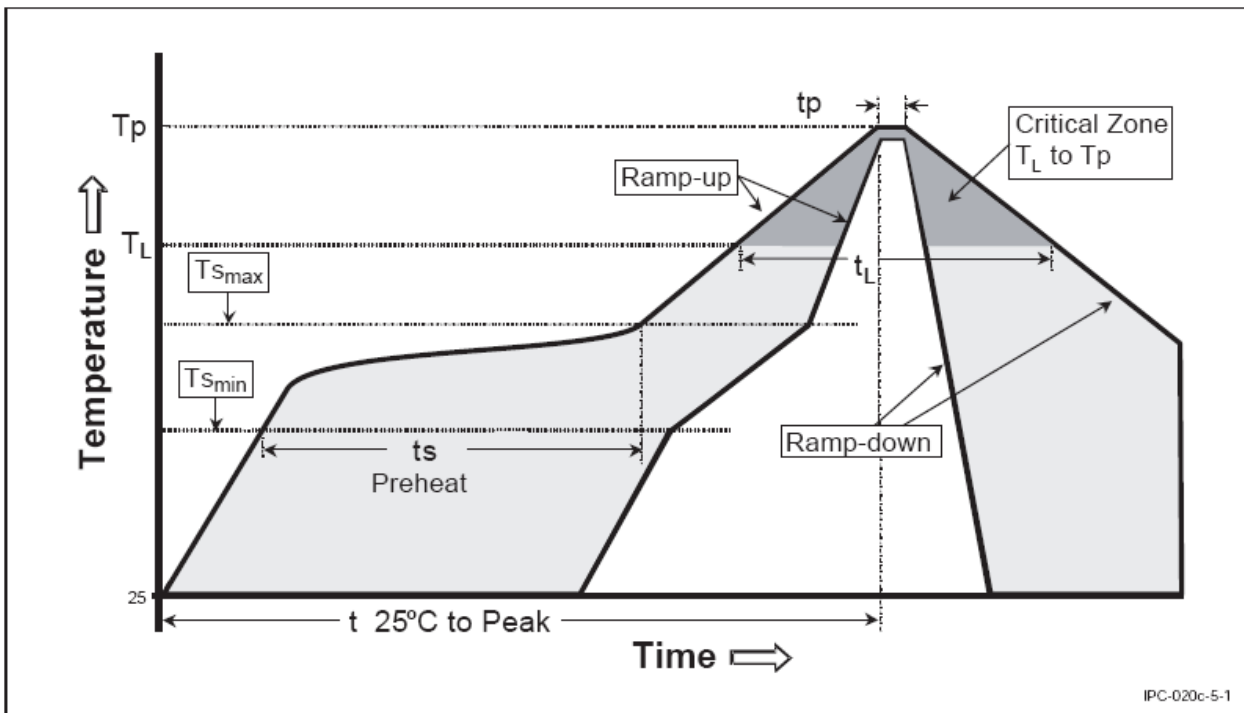


TLP Clamping Voltage

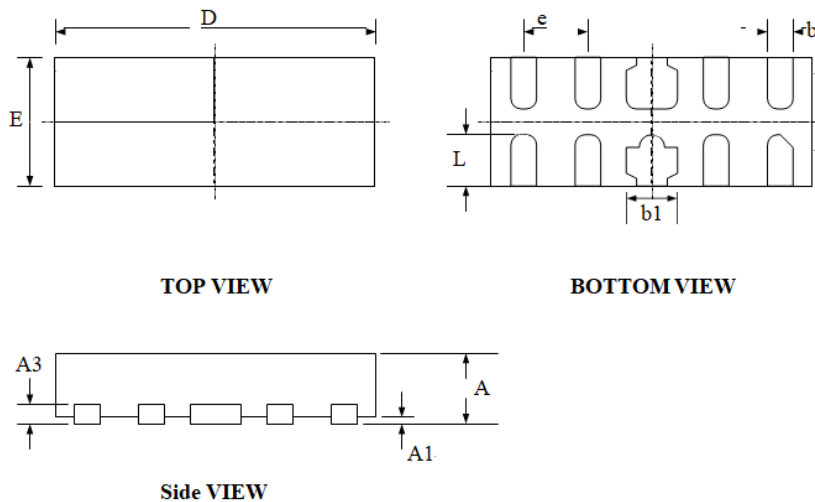


8. Soldering Parameters

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T _{smax} to T _p)	3°C/second max.
Preheat – Temperature Min (T _{smin}) – Temperature Max (T _{smax}) – Time (t _{smin} to t _{smax})	150°C 200°C 60-120 seconds
Time maintained above: – Temperature (T _L) – Time (t _L)	217°C 60-150 seconds
Peak/Classification Temperature (T _p)	260°C
Time within 5°C of actual Peak Temperature (t _p)	30 seconds
Ramp-Down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

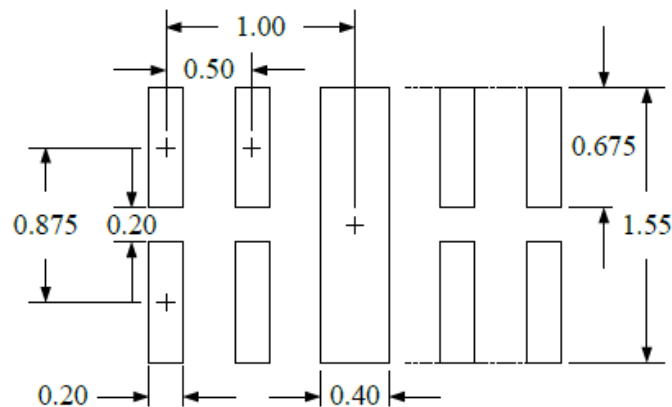


9. Package Outline



Symbol	Dimensions (mm)	
	Minimum	Maximum
A	0.45	.55
A1	0.00	0.05
A3	0.152REF	
b	0.15	0.25
b1	0.35	0.45
D	2.40	2.60
E	0.90	1.10
e	0.50 BSC	
L	0.30	0.50

10. PCB Layout Pattern



Notes: All dimension in millimeter

11. Order information



U2B1=Device Code

W=Week code

Part Number	Marking Code	Quantity	Packaging Option
TVU1V8U4S-DFN2510-10LDG	. U2B1W	3,000pcs/reel	Tape & reel- 8mm tape/7"reel

12. MSL Description

MSL LEVEL 3