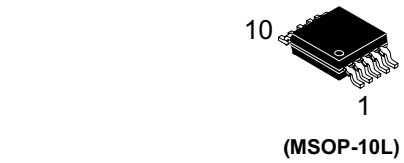
ESDA6V8UH

Transil array for data protection

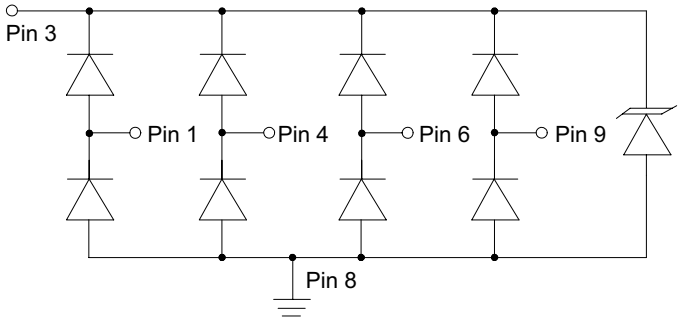
Description:

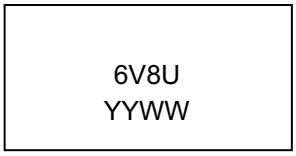
The ESDA6V8UH is 4-channel very low capacitance ESD transient voltage suppressor which provides a very high level of protection for sensitive electronic components that may be subjected to electrostatic discharge. It is particularly well-suited to protect systems with high speed communication lines from ESD, EFT, and lighting.

The ESDA6V8UH is consists of eight low capacitance steering diodes and a TVS diode in a MSOP-10L package. Each channel of ESDA6V8UH could safely dissipate ESD strikes of ±15kV air discharge as well as ±8kV contact discharge, meeting the requirement of the IEC 61000-4-2 international standard. Using the MIL-STD-883 (Method 3015) specification for Human Body Model (HBM) ESD, the device provides protection for contact discharges to greater than ±15kV.



(MSOP-10L)





6V8U=Specific Device Code
YYWW=Date Code(y=year,w=week)

Specification Features:

- Stand−off Voltage: 5 V
- Peak Power up to 300 Watts @ 8 x 20 us Pulse
- Low Leakage current IEC61000−4−2
- Level 4 ESD Protection IEC61000−4−4
- Level 4 EFT Protection
- Low capacitance: 0.35 pF typical

Mechanical Characteristics

- MSOP-10L Package
- Pb−Free Packages are Available
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel per EIA 481

Applications

- High Speed Communication Line Protection
- USB 2.0 Power and Data Line Protection
- Monitors and Flat Panel Displays Notebook Computers
- Video Line Protection & Base Stations
- HDSL, IDSL Secondary IC Side Protection
- Microcontroller Input Protection
- LCD and camera modules
- 10/100/1000 Ethernet

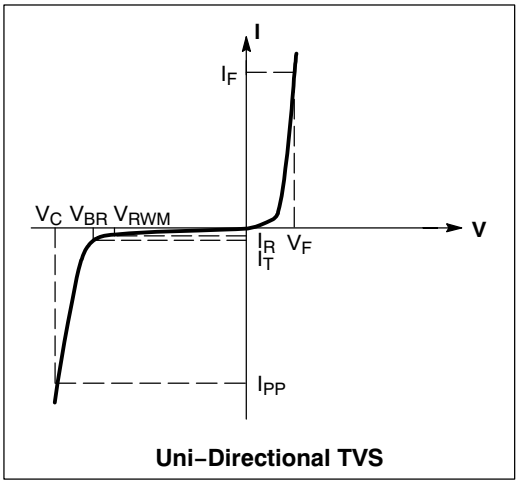
Order Information

Part Number	Package	Shipping
ESDA6V8UH -10/TR	MSOP-10L	3000pcs

Absolute Max Rating (Tamp=25°C)

Rating	Symbol	Value	Units
Peak Pulse Power(tp = 8/20μs)	P_{PP}	300	W
ESD per IEC 61000-4-2 (Air) **ESD per IEC 61000-4-2 (Contact)**	**Vpp**	+/-15 +/-8	KV
Maximum lead temperature for soldering during 10s	T_L	260	° C
Storage Temperature Range	**Tstg**	-55 to +125	° C
Operating Temperature Range	**Top**	-55 to +125	° C

Electrical Parameter



Uni−Directional TVS

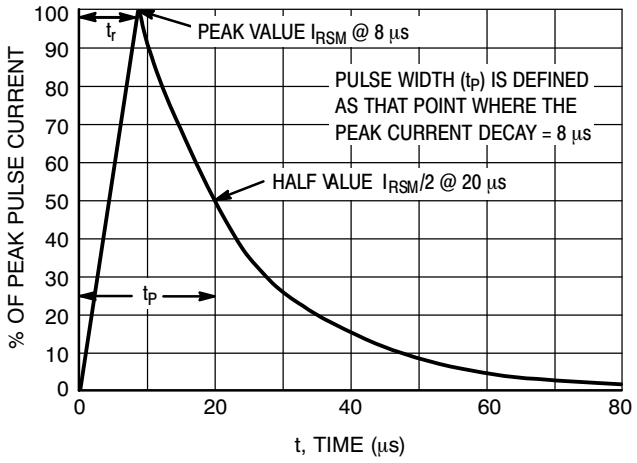


Figure 1. 8 X 20 μs Pulse Waveform

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ IPP
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ VRWM
I_T	Test Current
V_{BR}	Breakdown Voltage @ IT
I_F	Forward Current
V_F	Forward Voltage @ IF

Electrical Characteristics

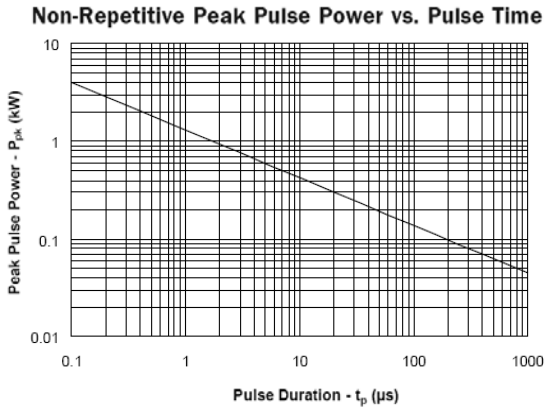
(T=25°C, Device for 5.0V Reverse Stand-off Voltage)

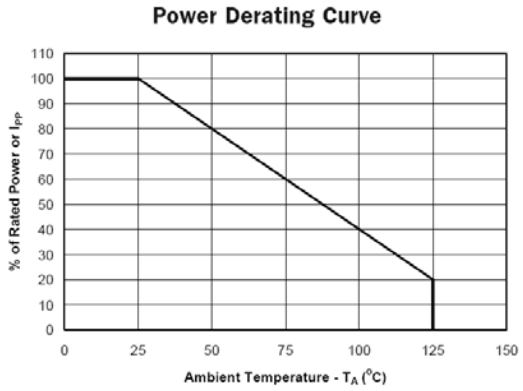
	Conditions	Minimum	Typical	Maximum	Unit
I_R	V_{RWM}=5V, Pin5 to 2			5	uA
V_F	I_F= 10mA	0.4	0.8	1.5	V
V_{BR},	I_T=1mA, Pin5 to 2	6.0	7.0		V
V_C	I_{PP}=1A, tp = 8/20us, note 1&2 Any I/O pin to Ground			12.0	V
C_j	V_R = 0V, f = 1MHz Any I/O pin to Ground		0.7	1.0	pF
	V_R = 0V, f = 1MHz Between I/O pins		0.35		pF

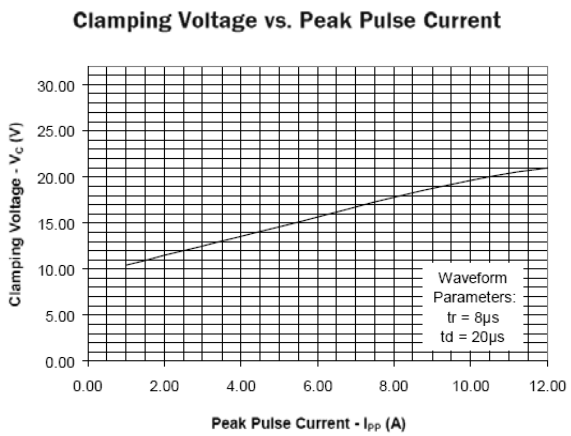
Note 1: These parameters guaranteed by design and characterization.

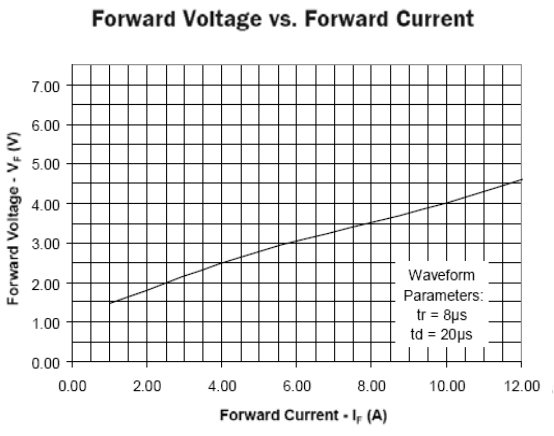
Note 2: These measurements performed with no external capacitor on Pin5.

Typical Characteristics

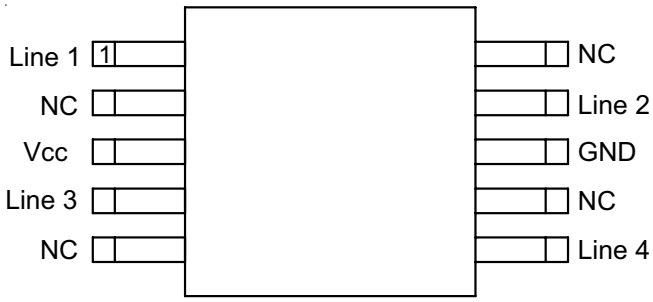






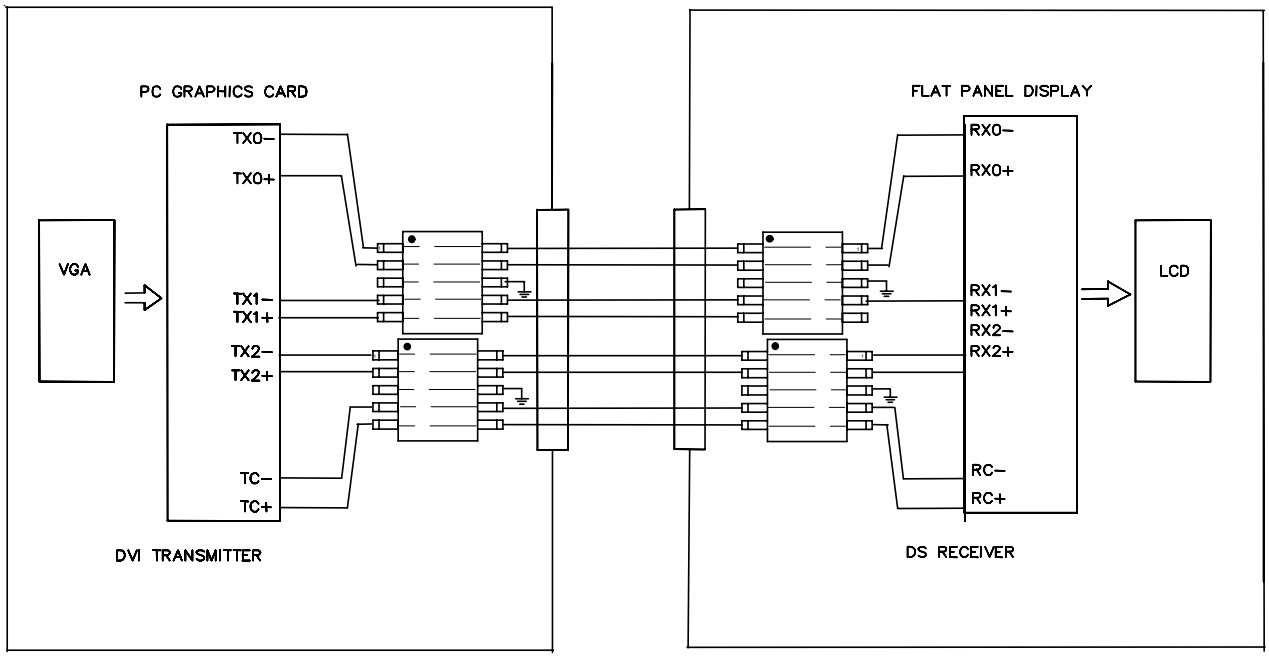


Schematic&PIN Configuration



Application information

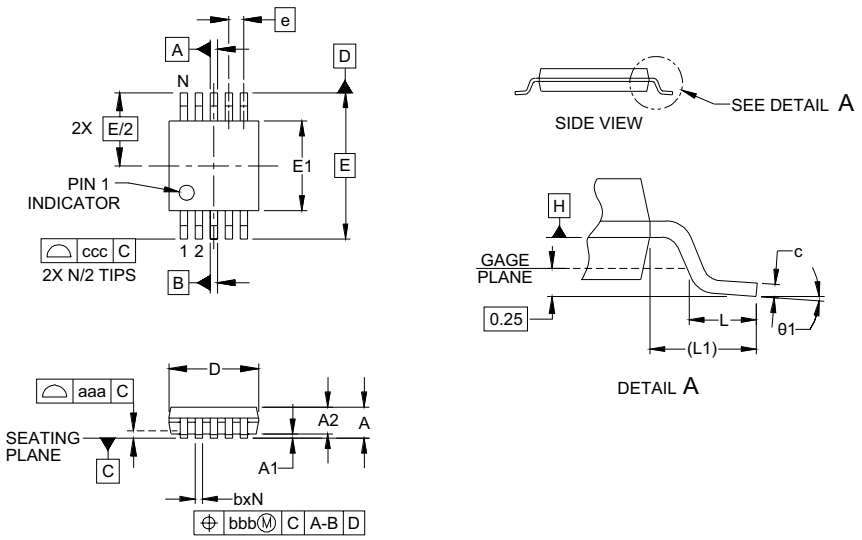
The HDMI Compliance Test Specification (CTS) requiressink (receiver) ports maintain a differential impedanceof 100 Ohms +/- 15%. The measurement is takenusing a Time Domain Reflectometry (TDR) method thatutilizes a pulse with a risetime <= 200ps.ESD protection devices have an inherent junctioncapacitance. Even a small amount of added capaci-tance on an HDMI port will cause the impedance ofthe differential pair to drop. As such, some form ofcompensation to the layout will be required to bringthe differential pairs back within the required 100Ohm +/- 15% range. The higher the added capaci-tance, the more extreme the modifications will need tobe. If the added capacitance is too high, compensa-tion may not even be possible. The ESDA6V8UH presents <1pF capacitance between the pairs whilebeing rated to handle >8kV ESD contact discharges(>15kV air discharge) as outlined in IEC 61000-4-2.As such, it is possible to make minor adjustments tothe board layout parameters to compensate for theadded capacitance of the ESDA6V8UH. Figure 7shows how to implement the ESDA6V8UH in anHDMI application (transmitter and receiver). Figure 8shows impedance test results using a Semtech evalua-tion board with layout compensation. As shown, thedevice meets the HDMI CTS impedance requirements.



HDMI Schematic

Package mechanical data

Outline drawing:

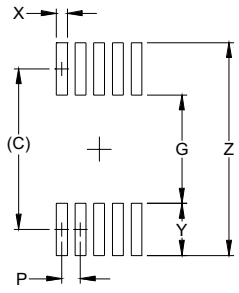


DIM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	-	-	.043	-	-	1.10
A1	.000	-	.006	0.00	-	0.15
A2	.030	-	.037	0.75	-	0.95
b	.007	-	.011	0.17	-	0.27
c	.003	-	.009	0.08	-	0.23
D	.114	.118	.122	2.90	3.00	3.10
E1	.114	.118	.122	2.90	3.00	3.10
E	.193 BSC			4.90 BSC		
e	.020 BSC			0.50 BSC		
L	.016	.024	.032	0.40	0.60	0.80
L1	(.037)			(.95)		
N	10			10		
θ1	0°	-	8°	0°	-	8°
aaa	.004			0.10		
bbb	.003			0.08		
ccc	.010			0.25		

NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DATUMS -A- AND -B- TO BE DETERMINED AT DATUM PLANE -H-
3. DIMENSIONS "E1" AND "D" DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
4. REFERENCE JEDEC STD MO-187, VARIATION BA.

Land Pattern:



DIM	DIMENSIONS	
	INCHES	MILLIMETERS
C	(.161)	(4.10)
G	.098	2.50
P	.020	0.50
X	.011	0.30
Y	.063	1.60
Z	.224	5.70

NOTES:

1. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY. CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.