

## SuperESD - TPD4S010DQAR-ES

### 1. Description

The TPD4S010DQAR-ES is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability. Low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium.

### 2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - ±12kV Contact Discharge
  - ±17kV Air Discharge
- IEC 61000-4-4 EFT Protection
  - 40A (5/50ns)
- IEC 61000-4-5 Surge
  - 4.5A (8/20us)
- RoHS compliance
- Protecting four I/O line
- Ultra-low Capacitance:0.6pF (Typical)
- Low clamping voltage
- Low leakage current
- Solid-state silicon technology

### 3. Applications

- HDMI/USB2.0
- Monitors and flat panel displays
- 10/100/1000 ethernet
- Notebook computers
- SIM ports
- ATM interface

### 4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
TPD4S010DQA  R-ES	DFN2510-10L	.0524P	Halogen free	Tape & Reel	3K PCS	UL 94V-0	7 inches

Table-1 Ordering information

## 5.Pin Configuration and Functions

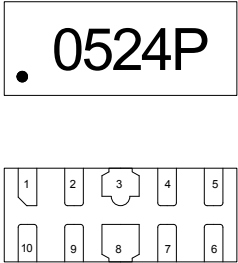
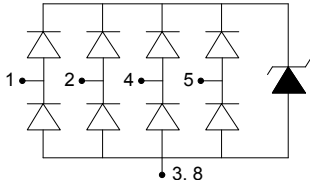
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO		
2	IO	Connect to IO		
3	GND	Connect to GND		
4	IO	Connect to IO		
5	IO	Connect to IO		
6	NC	NO Connection		
7	NC	NO Connection		
8	GND	Connect to GND		
9	NC	NO Connection		
10	NC	NO Connection		

Table-2 Pin configuration

## 6.Specification

### 6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25°C	P <sub>pk</sub>	-	70	W
Peak pulse current (tp=8/20us)@25°C	I <sub>PP</sub>		4.5	A
ESD (IEC61000-4-2 air discharge) @25°C	V <sub>ESD</sub>	-	±17	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V <sub>ESD</sub>	-	±12	kV
Junction temperature	T <sub>J</sub>	-	150	°C
Operating temperature	T <sub>OP</sub>	-40	125	°C
Storage temperature	T <sub>STG</sub>	-55	150	°C
Lead temperature	T <sub>L</sub>	-	260	°C

Table-3 Absolute Maximum rating

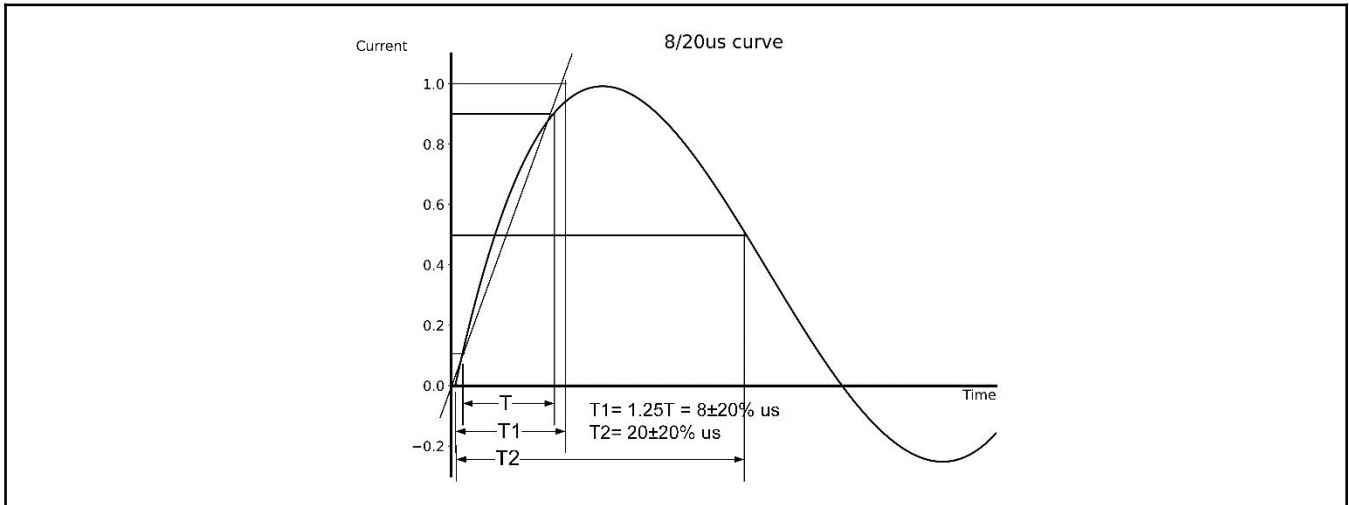
## 6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

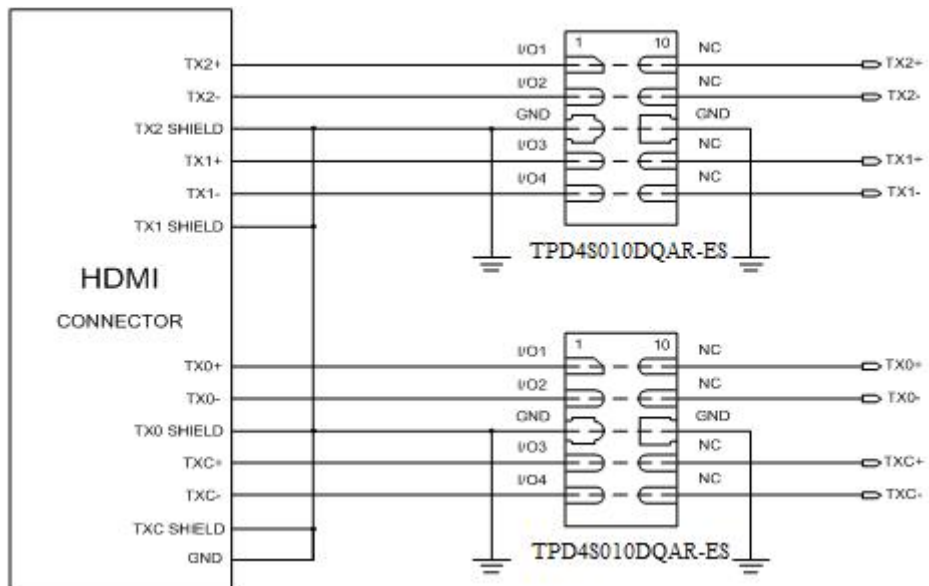
Parameters	Symbol	conditions	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	$V_{RWM}$				5.0	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T = 1mA$	6.0			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5V$			1.0	$\mu A$
Peak Pulse Current	$I_{PP}$	$TP = 8/20\mu s @ 25^\circ C$			4.5	A
Clamping Voltage	$V_{CL}$	$I_{PP} = 1A; TP = 8/20\mu s$		9.0	11.0	V
Clamping Voltage	$V_{CL}$	$I_{PP} = 4.5A; TP = 8/20\mu s$		12.0	15.0	V
Junction capacitance	$C_J$	I/O pins to ground; $V_R = 0V; f = 1MHz$		0.6		pF
		Between I/O pins; $V_R = 0V; f = 1MHz$		0.3		

Table-4 Electrical Characteristics

**7. Typical Characteristic**

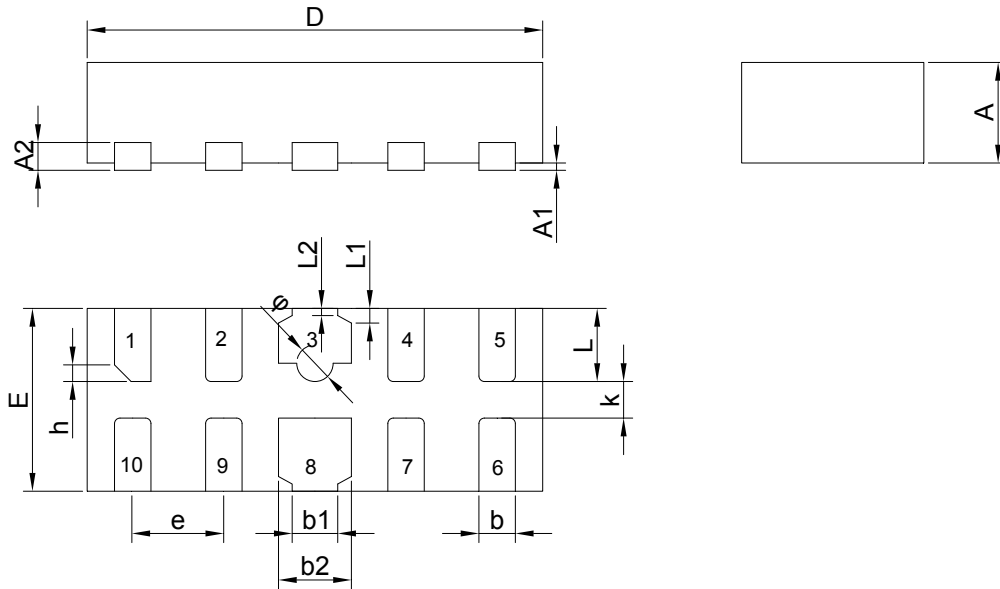


**8. Typical Application**



Typical HDMI Interface Application

9.Dimension (DFN2510-10L)



Dimensions in Millimeter							
Symbol	Min.	Nom.	Max.	Symbol	Min.	Nom.	Max.
A	0.500	0.550	0.600	D	2.450	2.500	2.550
A1	0.00	/	0.05	E	0.950	1.00	1.050
A2	0.122	0.152	0.200	e	0.450	0.500	0.550
b	0.150	0.200	0.250	h	0.080	0.120	0.150
b1	0.200	0.250	0.300	k	0.150	0.200	0.250
b2	0.350	0.400	0.450	L	0.350	0.400	0.450
L1	0.075 REF			L2	0.05 REF		
$\phi$	0.150	0.200	0.250				

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