Ultra-Low Capacitance ESD Array

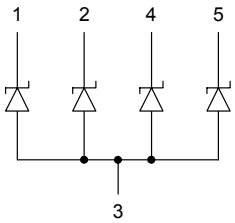
- ESD / transient protection of high-speed data lines exceeding
  IEC61000-4-2 (ESD): 20 kV (air / contact)
  IEC61000-4-4 (EFT): 2.5 kV / 50 A (5/50 ns)
  IEC61000-4-5 (surge): 3 A (8/20 µs)
- Max. working voltage: 5.3 V
- Very low reverse current: < 1 nA typ.
- Extremely low cap. : 0.4 pF typ. (I/O to GND)
- Very low clamping voltage: 12 V typ.
- Extremely low forward clamping voltage: 4 V typ.
- TSLP-9 package with pad pitch = 0.5 mm
- Optimized pad design to simplify PCB layout
- Pb-free (RoHS compliant) package

Applications

- DVI, HDMI, S-ATA, DisplayPort
- USB 2.0, 10/100/1000 Ethernet, Firewire
- Mobile communication
- Consumer products (STB, MP3; DVD, DSC...)
- LCD displays, camera
- Notebooks and desktop computers, peripherals

RoHS

ESD5V3U4U-HDMI



Type	Package	Configuration	Marking
ESD5V3U4U-HDMI	TSLP-9-1	4 lines, uni-directional	Z1

Maximum Ratings at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Value	Unit
ESD contact discharge[1)]	V_{ESD}	20	kV
Peak pulse current (t_p = 8 / 20 µs)[2)]	I_{pp}	3	A
Operating temperature range	T_{op}	-40...125	°C
Storage temperature	T_{stg}	-65...150	

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics -					
Reverse working voltage	V_{RWM}	-	-	5.3	V
Breakdown voltage $I_{(BR)}$ = 1 mA, (I/O to GND)	$V_{(BR)}$	6	-	-	
Reverse current V_R = 5.3 V, (I/O to GND)	I_R	-	< 1	50	nA
Clamping voltage	V_{CL}				V
I_{PP} = 1 A, t_p = 8/20 µs[2)], (I/O to GND)		-	10	13	
I_{PP} = 3 A, t_p = 8/20 µs[2)], (I/O to GND)		-	12	15	
Forward clamping voltage	V_{FC}				
I_{PP} = 1 A, t_p = 8/20 µs[2)], (GND to I/O)		-	2	4	
I_{PP} = 3 A, t_p = 8/20 µs[2)], (GND to I/O)		-	4	6	
Diode capacitance	C_T				pF
V_R = 0 V, f = 1 MHz, (I/0 GND)[3)]		-	0.4	0.6	
V_R = 0 V, f = 1 MHz, (I/O to I/O) [4)]		-	0.2	0.3	

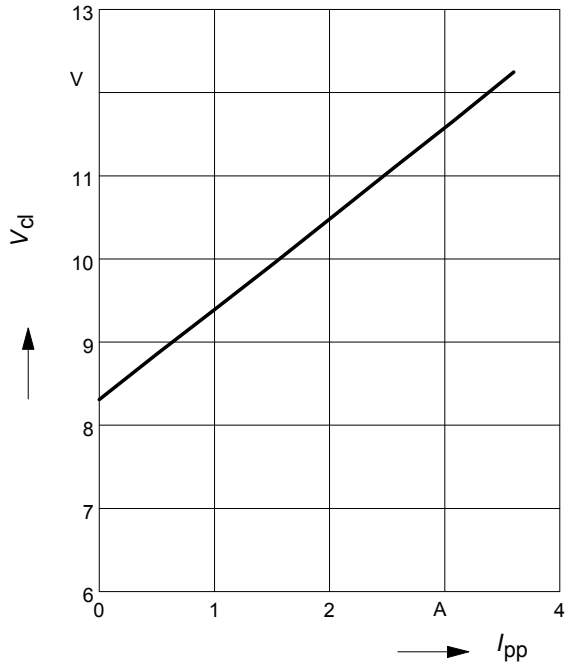
[1] V_{ESD} according to IEC61000-4-2

[2] I_{pp} according to IEC61000-4-5

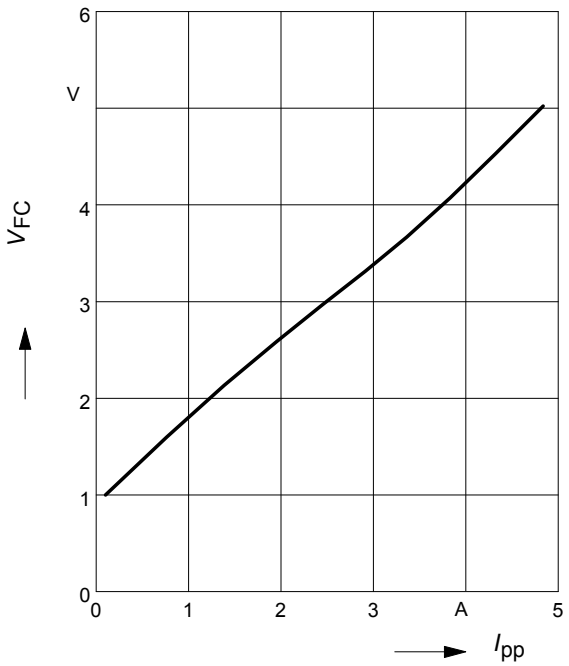
[3] Total capacitance line to ground

[4] Line to line capacitance

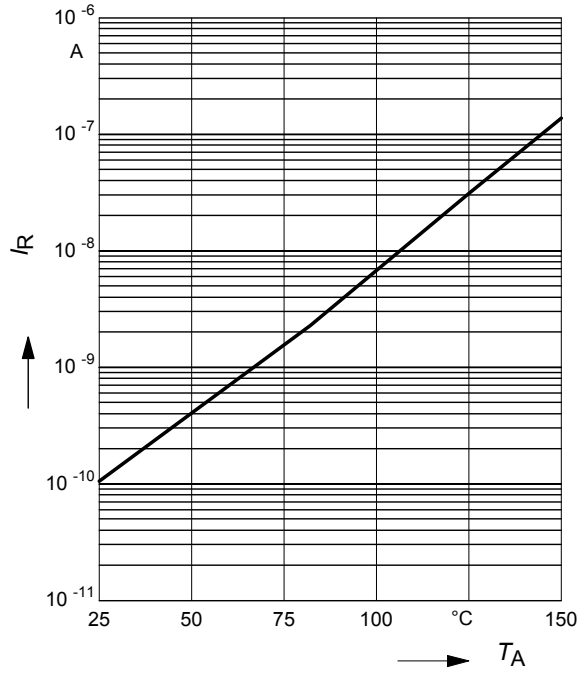
Clamping voltage, $V_{cl} = f(I_{pp})$
t_p = 8 / 20 µs, (I/O to GND)



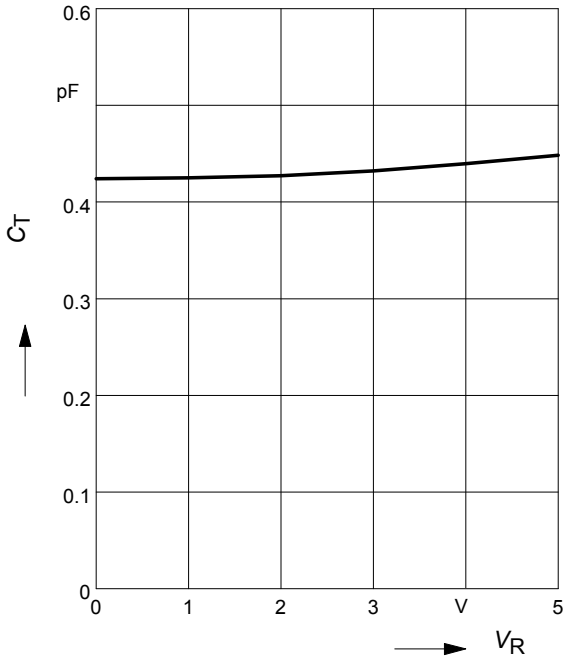
Forward clamping voltage $V_{FC} = f(I_{PP})$
t_p = 8 / 20 µs, (GND to I/O)



Reverse current $I_R = f(T_A)$
V_R = 5.3 V, (I/O to GND)

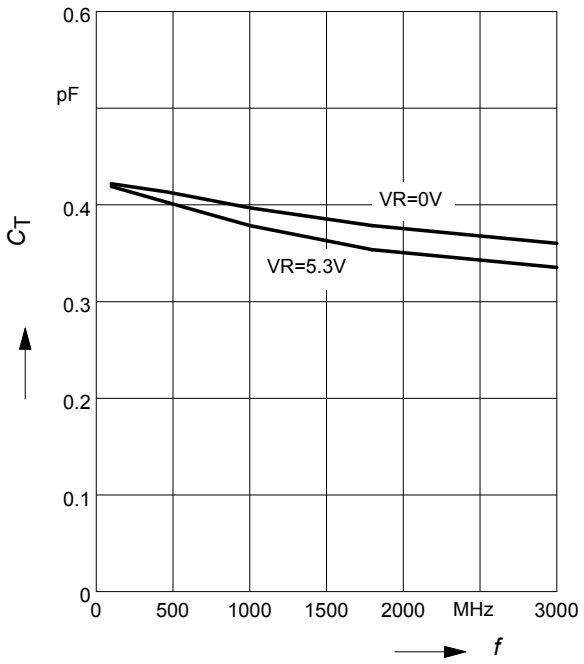


Diode capacitance $C_T = f(V_R)$
f = 1MHz, (I/O to GND))



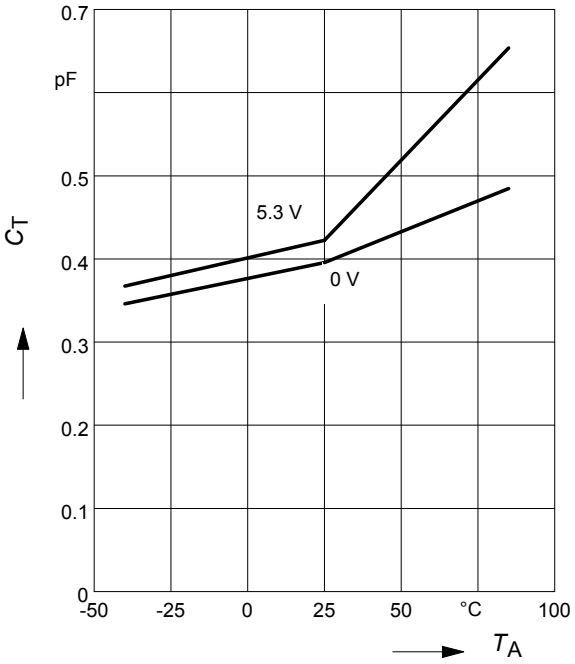
Line capacitance $C_T = f$ (f)

V_R = parameter, (I/O to GND)



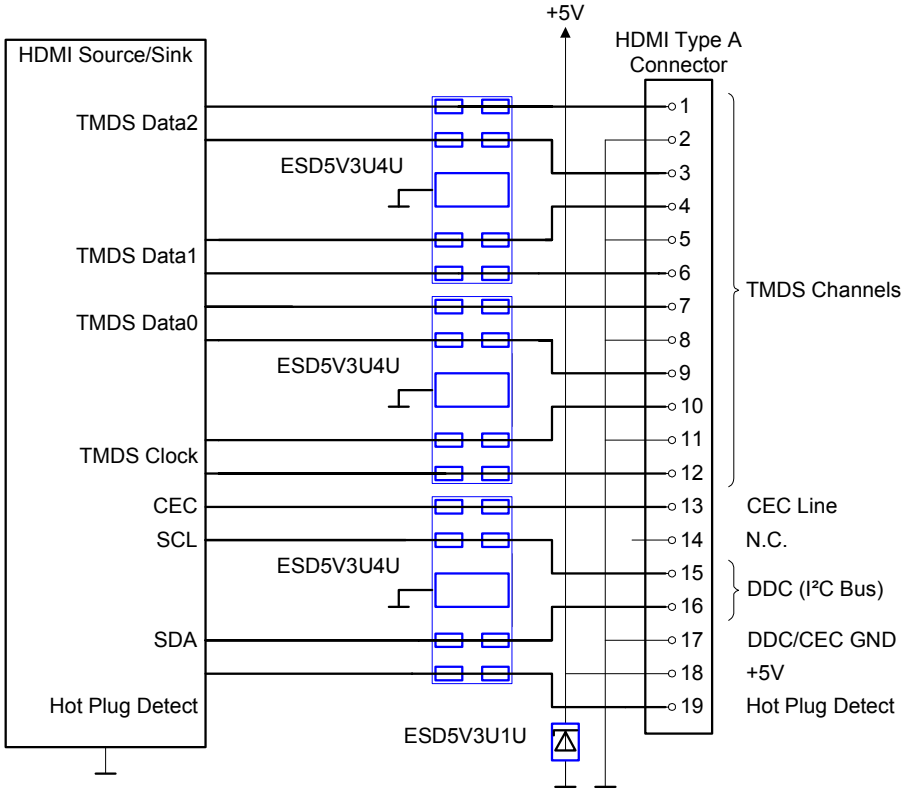
Line capacitance $C_T = f(T_A)$

V_R = 0 V, f = 1 MHz

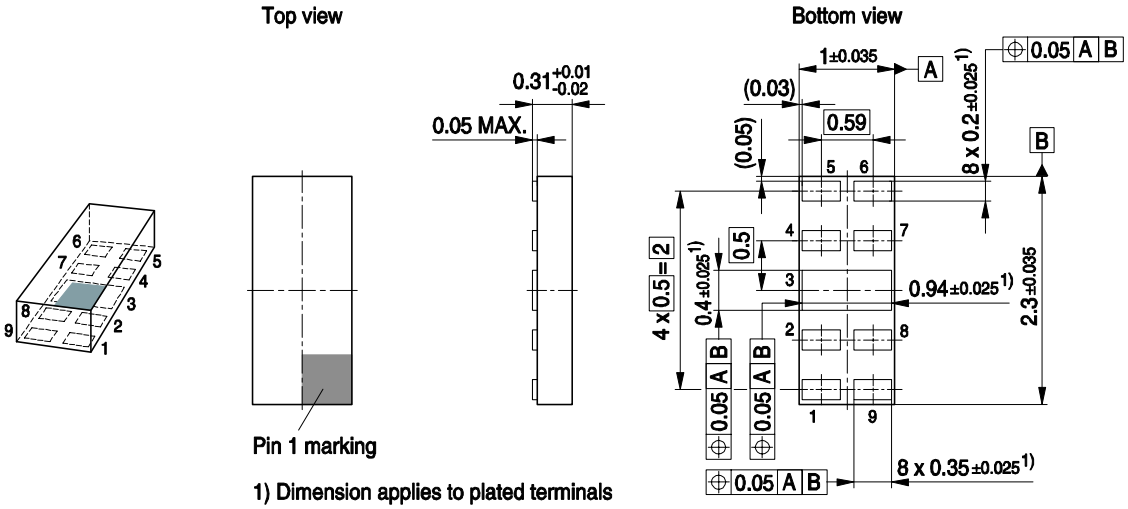


4 lines, unidirectional ESD5V3U4U-HDMI

For protection on the 5 V supply rail please refer to ESD5V3U1U- TVS diode data sheet.

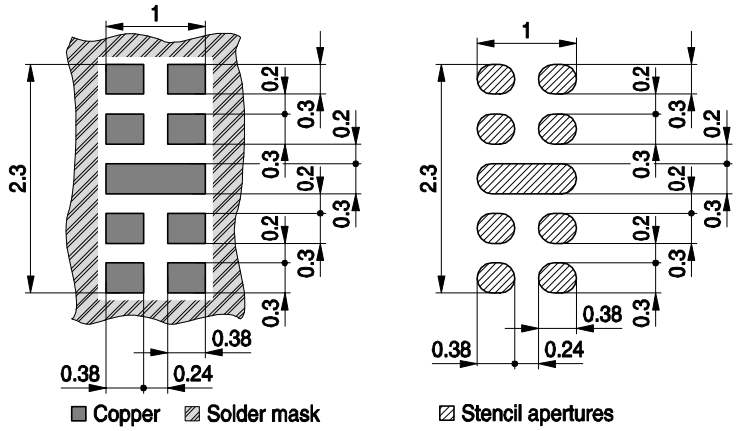


Package Outline

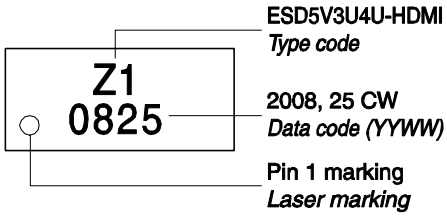


1) Dimension applies to plated terminals

Foot Print



Marking Layout (Example)



Standard Packing

Reel ø180 mm = 7.500 Pieces/Reel

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