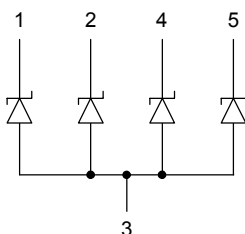


Ultra-Low Capacitance ESD Array

- 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 μ s)
- 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


ESD5V3U4U-HDMI


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

Maximum Ratings at $T_A = 25^\circ\text{C}$, unless otherwise specified

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

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Characteristics -

Reverse working voltage	V_{RWM}	-	-	5.3	V
Breakdown voltage $I_{\text{(BR)}} = 1 \text{ mA}$, (I/O to GND)	$V_{\text{(BR)}}$	6	-	-	
Reverse current $V_{\text{R}} = 5.3 \text{ V}$, (I/O to GND)	I_{R}	-	< 1	50	nA
Clamping voltage $I_{\text{PP}} = 1 \text{ A}$, $t_p = 8/20 \mu\text{s}^2$, (I/O to GND) $I_{\text{PP}} = 3 \text{ A}$, $t_p = 8/20 \mu\text{s}^2$, (I/O to GND)	V_{CL}	-	10	13	V
		-	12	15	
Forward clamping voltage $I_{\text{PP}} = 1 \text{ A}$, $t_p = 8/20 \mu\text{s}^2$, (GND to I/O) $I_{\text{PP}} = 3 \text{ A}$, $t_p = 8/20 \mu\text{s}^2$, (GND to I/O)	V_{FC}	-	2	4	
		-	4	6	
Diode capacitance $V_{\text{R}} = 0 \text{ V}$, $f = 1 \text{ MHz}$, (I/O GND) ³⁾ $V_{\text{R}} = 0 \text{ V}$, $f = 1 \text{ MHz}$, (I/O to I/O) ⁴⁾	C_{T}	-	0.4	0.6	pF
		-	0.2	0.3	

¹⁾ V_{ESD} according to IEC61000-4-2

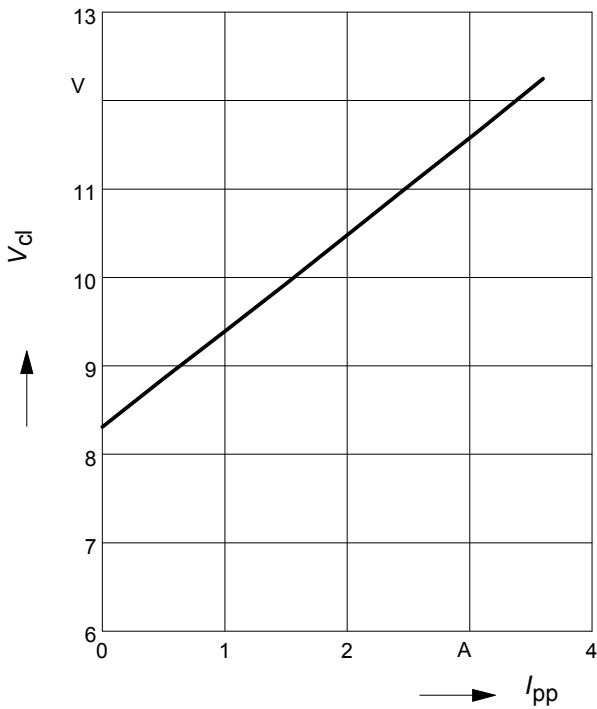
²⁾ I_{pp} according to IEC61000-4-5

³⁾ Total capacitance line to ground

⁴⁾ Line to line capacitance

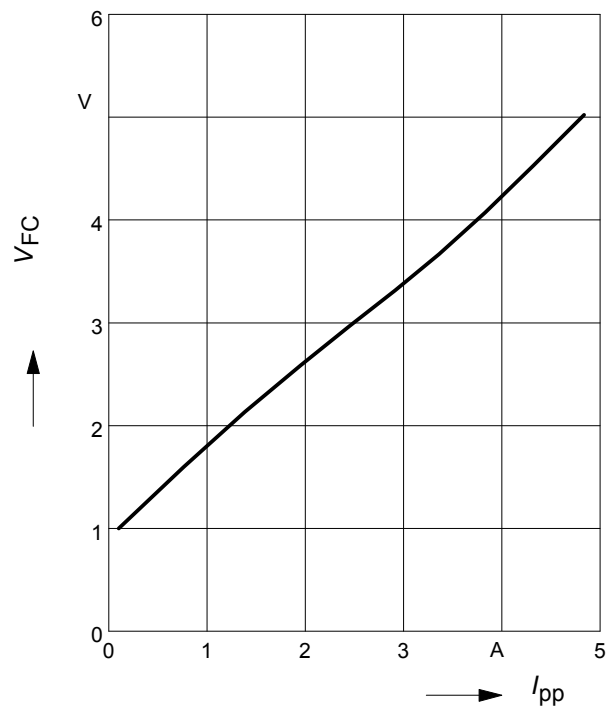
Clamping voltage, $V_{cl} = f(I_{pp})$

$t_p = 8 / 20 \mu s$, (I/O to GND)



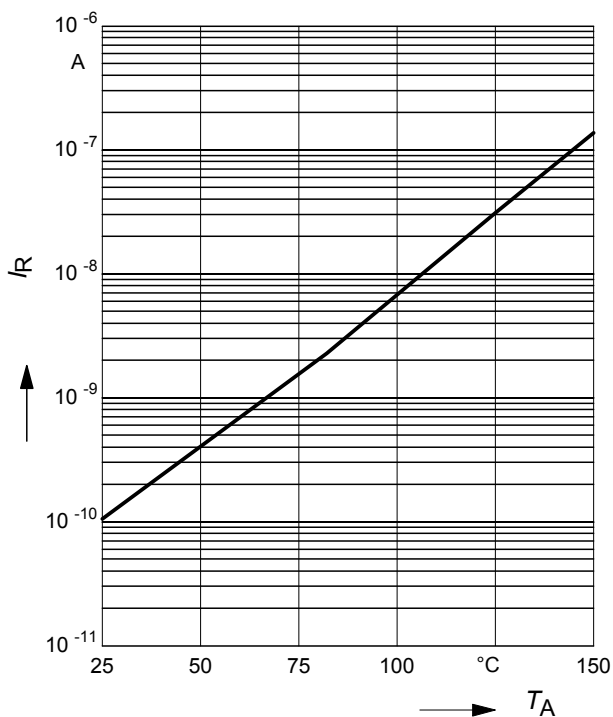
Forward clamping voltage $V_{FC} = f(I_{PP})$

$t_p = 8 / 20 \mu s$, (GND to I/O)



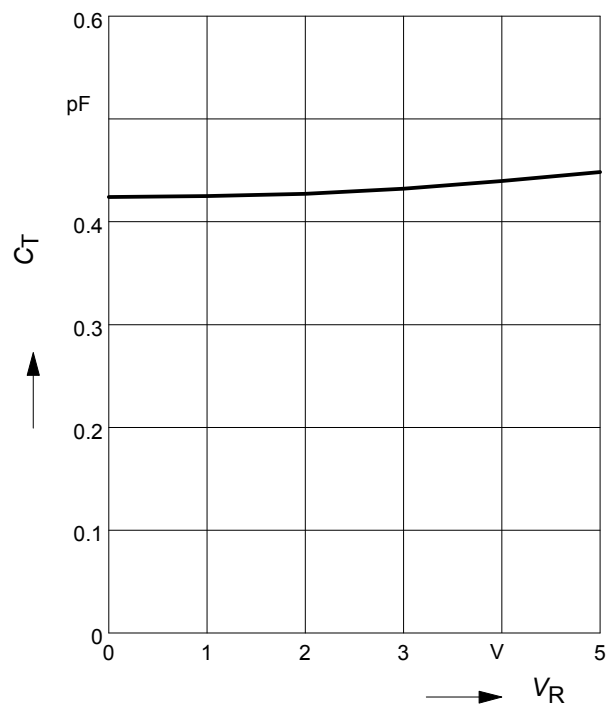
Reverse current $I_R = f(T_A)$

$V_R = 5.3 V$, (I/O to GND)



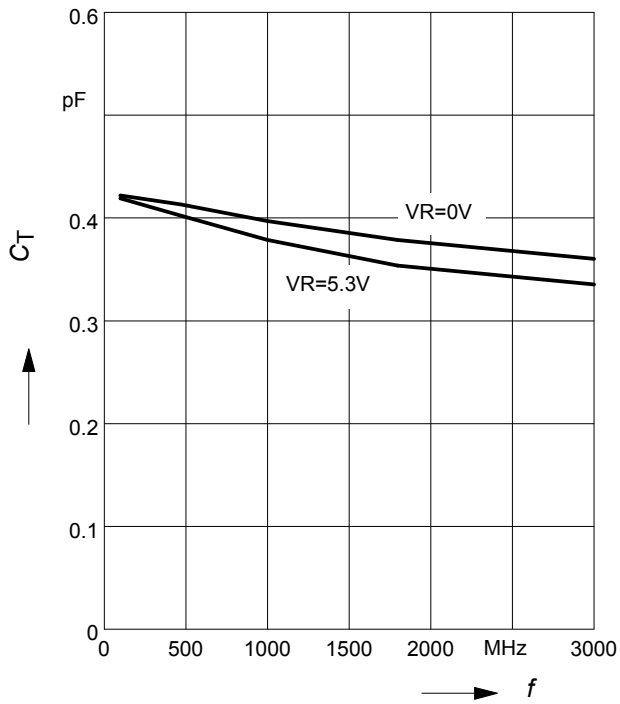
Diode capacitance $C_T = f(V_R)$

$f = 1 MHz$, (I/O to GND))



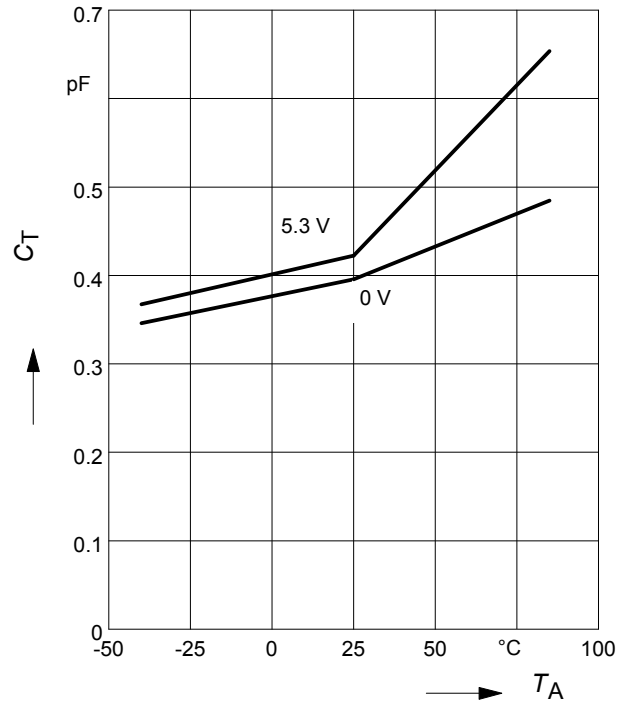
Line capacitance $C_T = f(f)$

$V_R =$ parameter, (I/O to GND)



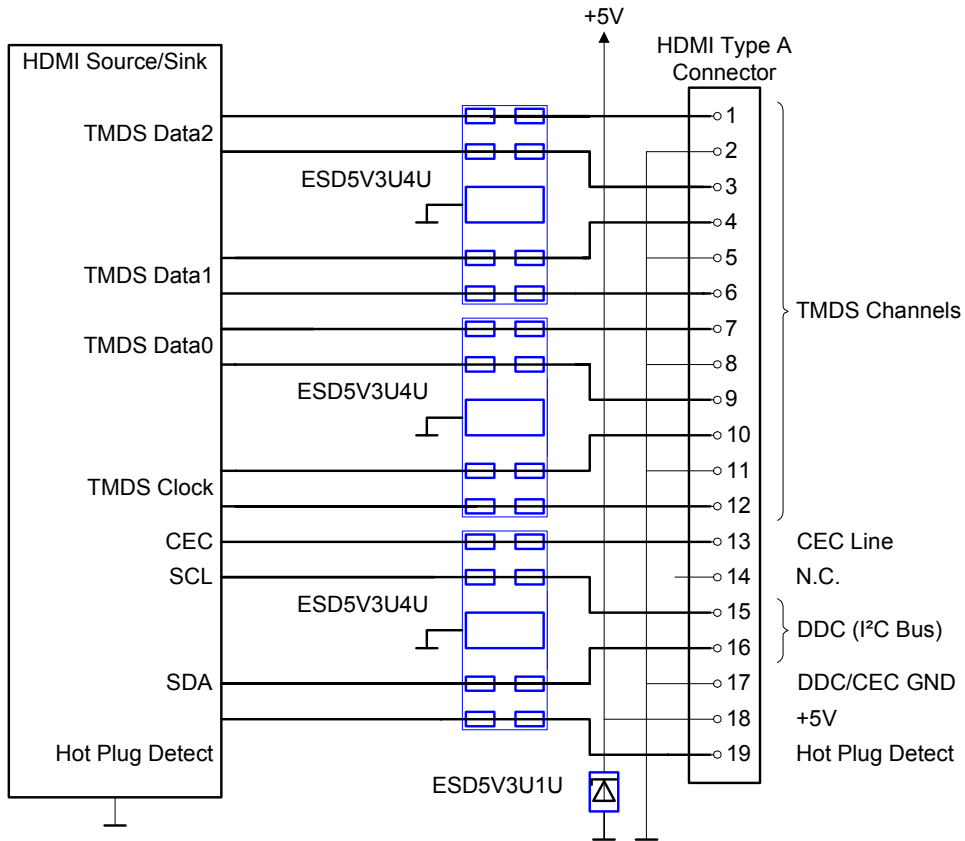
Line capacitance $C_T = f(T_A)$

$V_R = 0 V, f = 1 MHz$



4 lines, unidirectional ESD5V3U4U-HDMI

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



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