

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



ESD5V3U4U-HDMI



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





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

Parameter	Symbol	Value	Unit						
ESD contact discharge ¹⁾	V _{ESD}	20	kV						
Peak pulse current ($t_p = 8 / 20 \ \mu s)^{2}$)	I _{pp}	3	А						
Operating temperature range	T _{op}	-40125	°C						
Storage temperature	T _{stg}	-65150							

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

Parameter	Symbol	Values		Unit	
		min.	typ.	max.	
Characteristics -	_				
Reverse working voltage	V _{RWM}	-	-	5.3	V
Breakdown voltage	V _(BR)	6	-	-	
I _(BR) = 1 mA, (I/O to GND)					
Reverse current	I _R	-	< 1	50	nA
V _R = 5.3 V, (I/O to GND)					
Clamping voltage	V _{CL}				V
I_{PP} = 1 A, t_p = 8/20 µs ²⁾ , (I/O to GND)		-	10	13	
$I_{\rm PP}$ = 3 A, $t_{\rm p}$ = 8/20 µs ²⁾ , (I/O to GND)		-	12	15	
Forward clamping voltage	V _{FC}				
<i>I</i> _{PP} = 1 A, <i>t</i> _p = 8/20 μs ²⁾ , (GND to I/O)		-	2	4	
$I_{\rm PP}$ = 3 A, $t_{\rm p}$ = 8/20 µs ²⁾ , (GND to I/O)		-	4	6	
Diode capacitance	CT				pF
V _R = 0 V, <i>f</i> = 1 MHz, (I/0 GND) ³⁾		-	0.4	0.6	
$V_{\rm R}$ = 0 V, f = 1 MHz, (I/O to I/O) ⁴)		-	0.2	0.3	

 $^{1}V_{\text{ESD}}$ according to IEC61000-4-2

 $^2\textit{I}_{pp}$ according to IEC61000-4-5

³Total capacitance line to ground

⁴Line to line capacitance



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



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



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

 $t_{\rm p}$ = 8 / 20 µs, (GND to I/O)



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





Line capacitance $C_T = f$ (f)

 $V_{\rm R}$ = parameter, (I/O to GND)



Line capacitance $C_{T} = f(T_{A})$

 $V_{\rm R} = 0 \, {\rm V}, \, f = 1 \, {\rm MHz}$





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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