ESD Protection Device

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Device Schematic & PIN Configuration
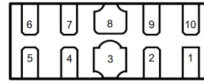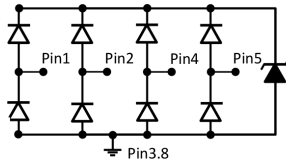
Pin Assignment	
1, 2, 4, 5	Input lines
6, 7, 9, 10	NC
3, 8	Ground

Description

The H04X645V0U is ultra low capacitance ESD arrays designed toprotect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from over voltage caused by ESD (electrostatic discharge).

Applications

- High definition multi-media interface (HDMI)
- Digital visual interface (DVI)
- Display protTM interface
- USB3.0(5G) / USB 3.1(10G)
- MDDI ports / SATA

Features

- Protects four I/O lines (Data line)
- Peak Pulse Power :Ppp = 60W (tp=8/20 us)
- Reverse Working Voltage : 5V
- Low Leakage Current
- Ultra Low Junction Capacitance : I/O to I/O , 0.3pF (Max)
- IEC 61000-4-2 (ESD) :±20kV(Contact) / ±25kV(Air)
- IEC 61000-4-4 (EFT) 40A (5/50ns)

Mechanical Data

- Case: DFN2510 Package
- Case Material: "Green" Molding Compound UL Flammability Case Material: "Green" Molding Compound UL Flammability

Maximum Ratings (@TA = +25°C, unless otherwise specified.)

Absolute Ratings			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power Dissipation (8/20 us)	P_{PP}	60	W
Peak Pulse Current (8/20 us)	I_{PP}	4	A
ESD Protection- Contact (Standard IEC 61000-4-2)	V_{ESD}	±20	k V
ESD Protection- Air (Standard IEC 61000-4-2)		±25	
Operating Temperature Range	T_J	-55 to +125	°C
Storage Temperature Range	T_{STG}	-55 to +150	
Soldering Temperature, t max =10s	T_L	260	

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Electrical Characteristics

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Reverse Working Voltage	Any I/O pin to ground	V_{RWM}	-	-	5	V
Reverse Breakdown Voltage	I_T = 1mA	V_B	6		9	
Reverse Current	V_R = 5V	I_R			1	uA
Reverse Clamping Voltage	I_{PP} = 1A (8/20μs)	V_C			10	V
	I_{PP} = 4A (8/20μs)				15	
Junction Capacitance	V_R = 0V, F = 1MHz Between I/O pins	C_j	-	0.25	0.3	p F
	V_R = 0V, F = 1MHz Any I/O pin to ground			0.5	0.6	

Rating and Characteristic Curves

FIG.1 - 8/20us Pulse Waveform According to IEC 61000-4-5
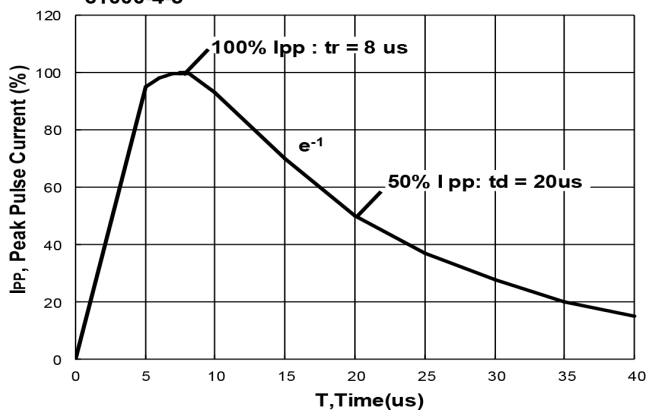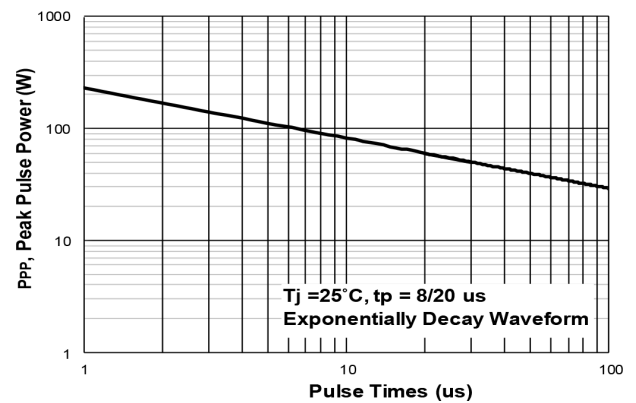

FIG.2 - Power Dissipation Versus Pulse Time

FIG.3 - Peak Pulse Power Versus Tj
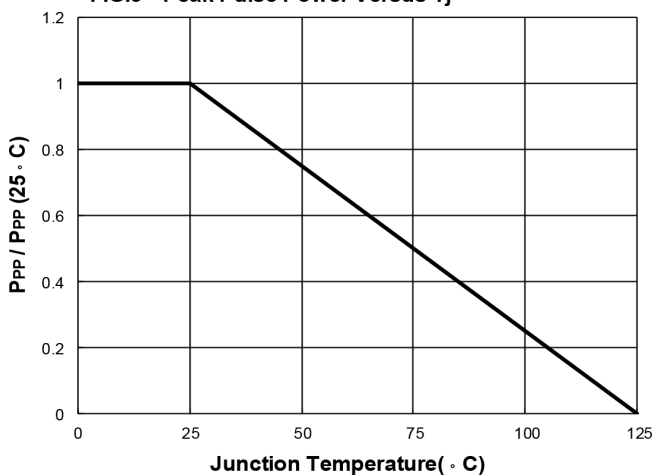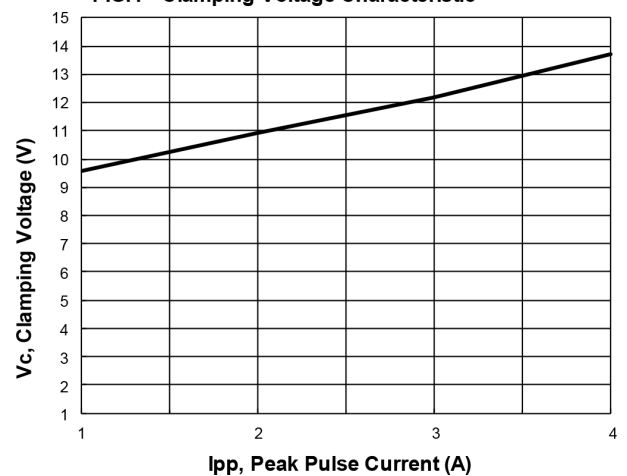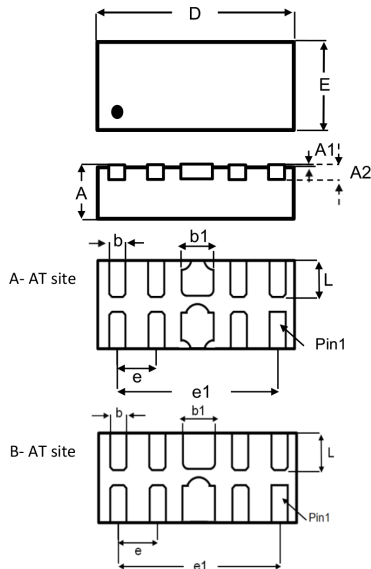

FIG.4 - Clamping Voltage Characteristic
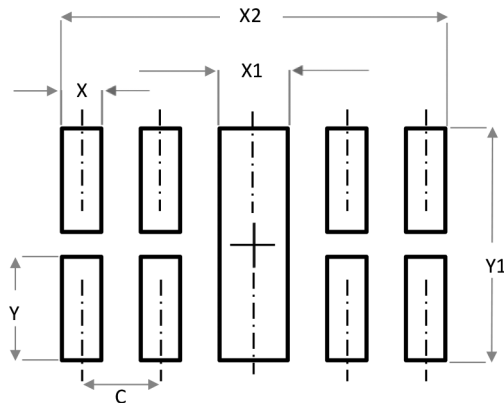
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Package Outline Dimensions

DFN2510 Package			
Dim	**Min**	**Typ**	**Max**
D	2.45	2.5	2.55
E	0.95	1	1.05
A	0.45	0.5	0.55
A1	0	--	0.05
A2	0.15REF		
b	0.15	0.2	0.25
b1	0.35	0.4	0.45
e	--	0.5	--
e1	--	2	--
L	0.33	0.38	0.43

Suggested Soldering Pad Layout

Dim.	Value
X	0.25
X1	0.45
X2	2.25
Y	0.63
Y1	1.4
C	0.5

Part Number Table

Dimensions : Millimetres

Description	Part Number
ESD ARRAY PROTECTION DEVICE, 5A, 12V, DFN-2510	H04X645V0U

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