ESDALD05UD4

ESD Protection Diodes Array

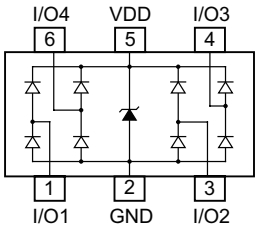
Rev.01 - 20 May 2021 Product data sheet

1. General description

The ESDALD05UD4 is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time. The ESDALD05UD4 suited for use in USB 2.0, Firewire, DVI, and Gigabit Ethernet Interfaces.

2. Features and benefits

- Peak pulse power 88W @ 8/20μs waveform
- Protects four I/O lines and one V_{CC} line
- IEC 61000-4-2 (ESD) ±15kV(air), ±8kV(contact)
- IEC 61000-4-5 (Lightning) 5.5A (8/20μs)
- Low capacitance
- Low leakage current
- Low clamping voltage
- Meet MSL level1
- Halogen free and RoHS compliant



3. Applications

- USB 2.0
- Digital Visual Interface (DVI)
- IEEE 1394 Firewire Ports
- Notebooks & Handhelds
- Projection TV & Monitors
- Set-top box
- Flat Panel Displays
- PCI Express

4. Ordering information

Type number	Package Name	Orderable part number	Packing method	Small packing quantity	Marking	Package issue date
ESDALD05UD4	SOT23-6L	ESDALD05UD4X	Tape and reel	3000	V05	13-Oct-2020

5. Absolute maximum ratings

In accordance with the Absolute Maximum Rating System (IEC 60134).
T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Values	Unit
Absolute maximum rating				
P_{PPM}	peak pulse power	t_p = 8/20 μs	88	W
I_{PP}	peak pulse current	t_p = 8/20 μs	5.5	A
V_{ESD}	ESD per IEC 61000-4-2 (air) ESD per IEC 61000-4-2 (contact)		±15 ±8	kV kV
T_{stg}	storage temperature range		-55 to 150	°C
T_j	operating temperature range		-55 to 150	°C

6. Characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Condition	Min	Typ	Max	Unit
V_{RWM}	Reverse Working Voltage	Any I/O pin to GND	-	-	5	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1 mA; Any I/O pin to GND	6	-	-	V
I_R	Reverse Leakage Current	V_{RWM} = 5 V; Any I/O pin to GND	-	-	100	nA
V_F	Diode Forward Voltage	I_F = 15 mA	-	-	1.2	V
V_C	Clamping Voltage	I_{PP} = 1 A; t_p = 8/20 µs; Any I/O pin to GND	-	-	10	V
		I_{PP} = 5.5 A; t_p = 8/20 µs; Any I/O pin to GND	-	-	16	V
C_J	Junction Capacitance	V_R = 0 V; f = 1 MHz; Between I/O pins	-	0.3	0.5	pF
		V_R = 0 V; f = 1 MHz; Any I/O pin to GND	-	0.6	1	pF

Note: I/O pins are pin 1,3,4,6

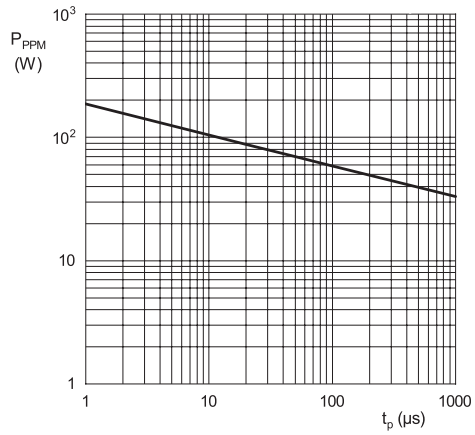


Fig. 1. Pulse rating curve

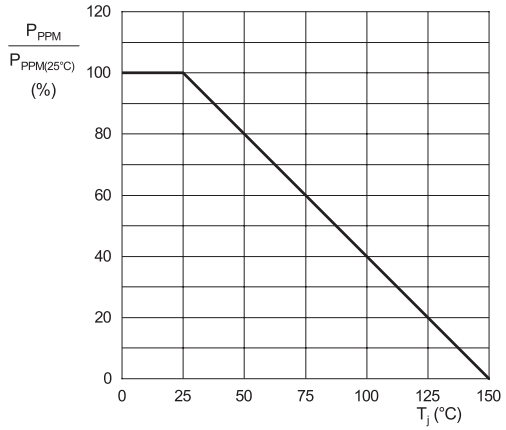


Fig. 2. Peak pulse power derating curve

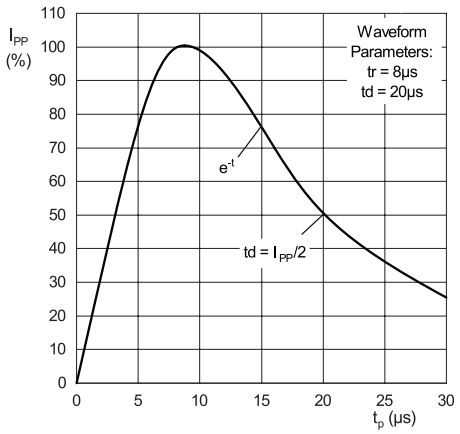


Fig. 3. Pulse waveform

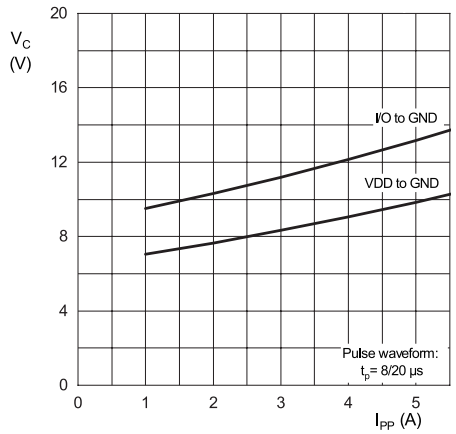


Fig. 4. Clamping voltage vs Peak pulse current

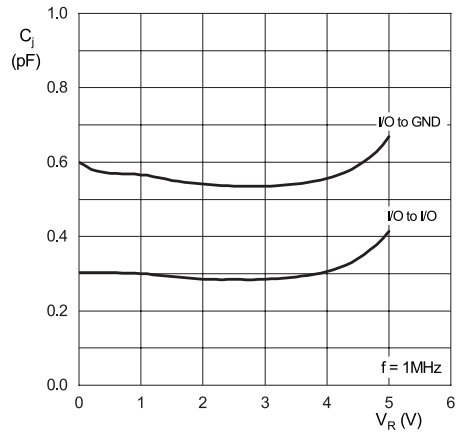


Fig. 5. Capacitance vs Reverse voltage

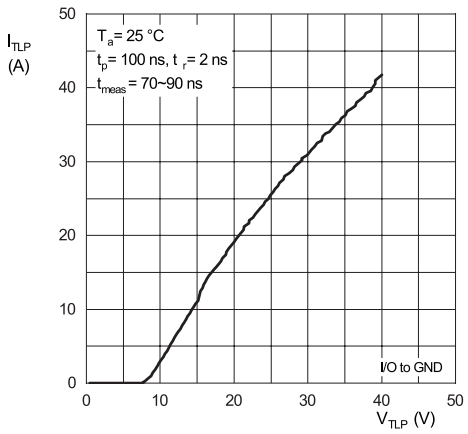


Fig. 6. TLP I-V Curve

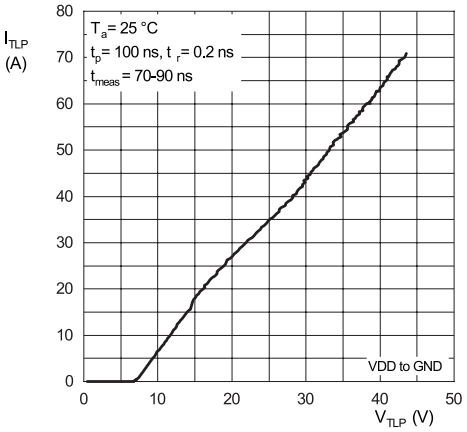


Fig. 7. TLP I-V Curve

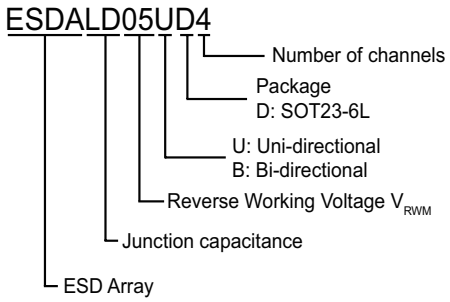
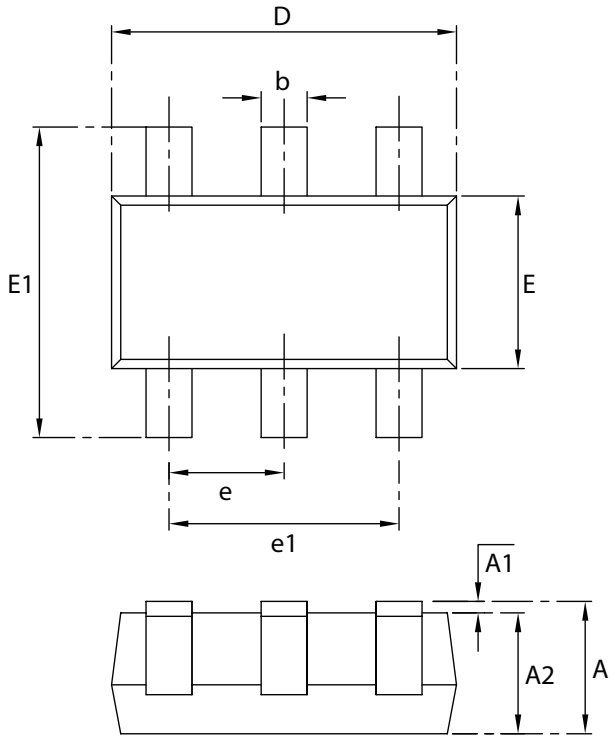


Fig. 8. Part numbering

7. Package outline

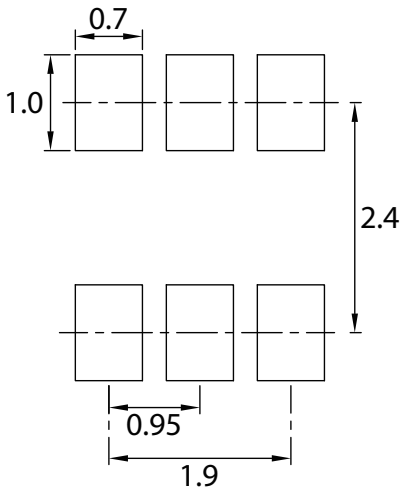
SOT23-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100		0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
Θ	0°	8°	0°	8°

Note:

1. Controlling dimension : in millimeters.
2. General tolerance:+/-0.05mm.
3. The pad layout is for reference purposes only.



Recommended Pad Layout

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Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
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