ESDALCL6-4P6A

Multi-line low capacitance and low leakage current ESD protection

Datasheet – production data

Features

Diode array topology:

- 4 lines protection
- Low leakage current:
  - 10 nA at 3 V
  - 1 nA at 1 V
- Very low diode capacitance (2.5 pF max.)
- 5 V V_{CC} protection
- ECOPACK®2 compliant components
- RoHS compliant

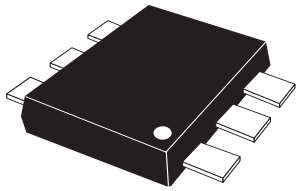
Complies with the following standards:

- IEC 61000-4-2 level 4 and higher:
  - 30 kV (air discharge)
  - 15 kV (contact discharge)
- MIL STD 883G - Method 3015-7: class 3B
  - Human body model

Applications

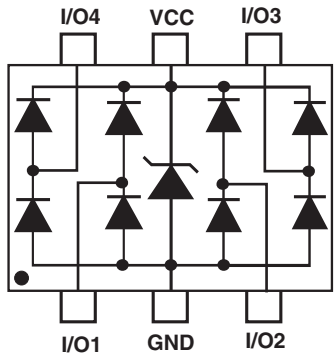
Where transient overvoltage protection in ESD sensitive equipment is required, such as:

- Computer
- Portable healthcare equipment
- Printers
- Communication systems
- Cellular phone handsets and accessories
- Video equipment



SOT-666
ESDALCL6-4P6A

Figure 1. Functional diagram



Description

The ESDALCL6-4P6A is an ESD protection array designed to protect data lines or other I/O ports against ESD transients.

This device is ideal for applications where reduced line capacitance, board space saving and low leakage currents are required. Its low leakage current makes it suitable for portable equipment where battery consumption is a key factor and in analog front end where low leakage currents are mandatory for measurements precision.

This is information on a product in full production. www.st.com

1 Characteristics

Table 1. Absolute maximum ratings (T_{amb} = 25 °C)

Symbol	Parameter		Value	Unit
V_{PP}	Peak pulse voltage	IEC 61000-4-2 contact discharge IEC 61000-4-2 air discharge	15 30	kV
P_{PP}(1)	Peak pulse power dissipation (8/20 µs) I/O to GND		90	W
I_{PP}	Peak pulse current (8/20 µs) I/O to GND		5	A
T_j	Maximum junction temperature range		-55 to +150	°C
T_{stg}	Storage temperature range		-65 to +150	°C
T_L	Maximum lead temperature for soldering during 10 s		260	°C

1. For a surge greater than the maximum values, the diode will fail in short-circuit.

Figure 2. Electrical characteristics (definitions)

Symbol		Parameter
V_{BR}	=	Breakdown voltage
V_{CL}	=	Clamping voltage
I_{RM}	=	Leakage current at V_{RM}
V_{RM}	=	Stand-off voltage
I_{PP}	=	Peak pulse current
I_R	=	Breakdown current
I_F	=	Forward current
C_{line}	=	Input capacitance per line

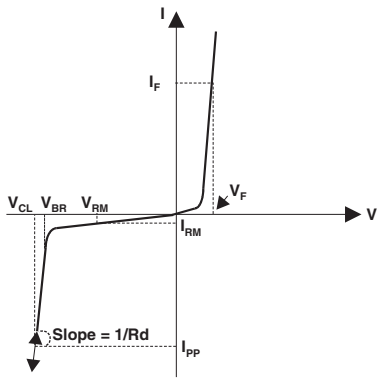


Table 2. Electrical characteristics (values, T_{amb} = 25 °C)

Symbol	Test condition	Min.	Typ.	Max.	Unit
V_{BR}	I_R = 1 mA	6			V
I_{RM}	V_{RM} = 3 V, I/O to GND			10	nA
	V_{RM} = 1 V, I/O to GND			1	
C_{line}	F = 1 MHz, V_R = 0 V			2.5	pF

Figure 3. Leakage current versus junction temperature (typical values, V_R = 1 V)

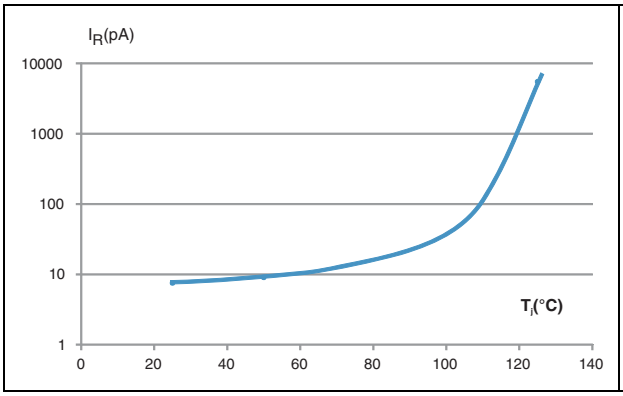


Figure 4. Leakage current versus reverse applied voltage (typical values)

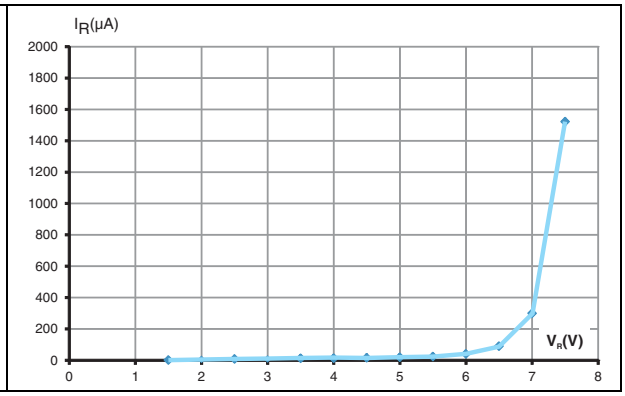


Figure 5. ESD response to IEC 61000-4-2 (+8 kV contact discharge)

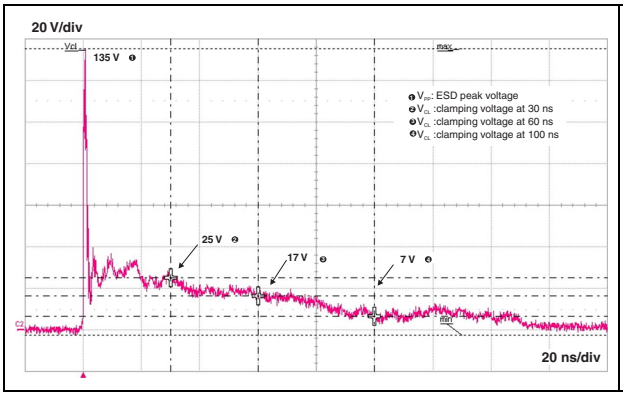


Figure 6. ESD response to IEC 61000-4-2 (-8 kV contact discharge)

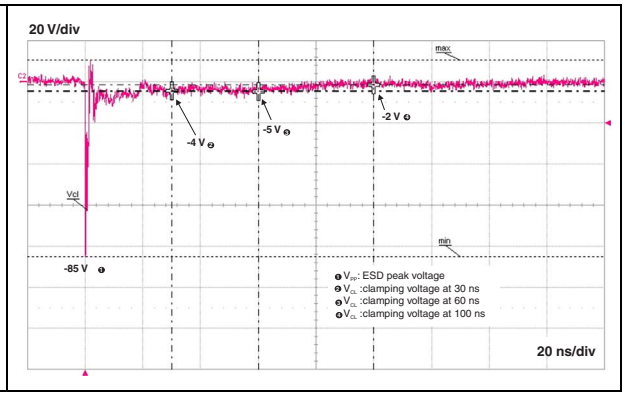
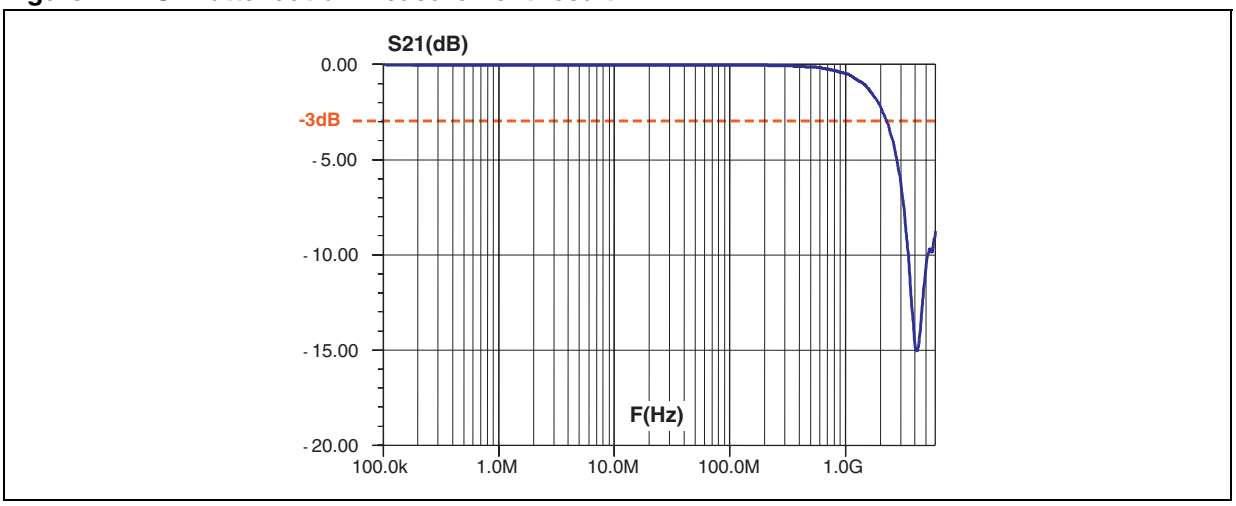
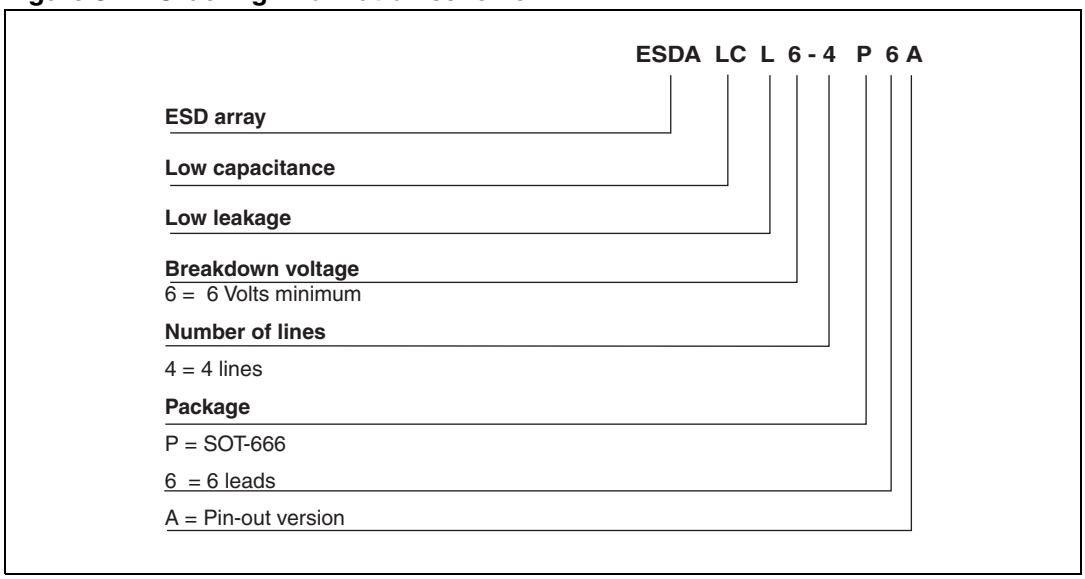


Figure 7. S21 attenuation measurement result



2 Ordering information scheme

Figure 8. Ordering information scheme

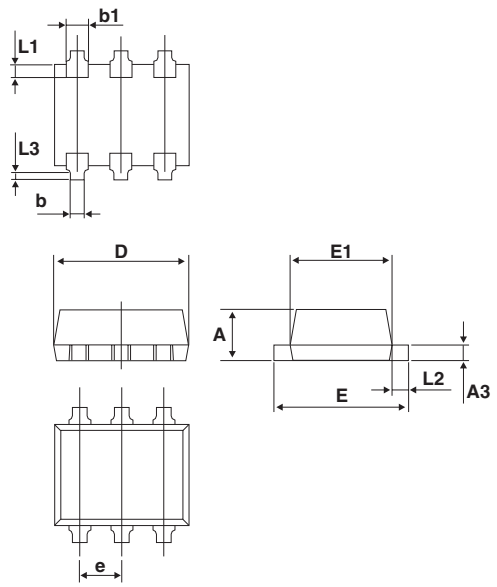


3 Package information

- Epoxy meets UL94, V0
- Lead-free package

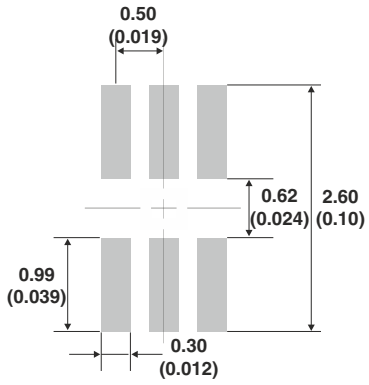
In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: *www.st.com.* ECOPACK® is an ST trademark.

Table 3. SOT-666 dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.45		0.60	0.018		0.024
A3	0.08		0.18	0.003		0.007
b	0.17		0.34	0.007		0.013
b1	0.19	0.27	0.34	0.007	0.011	0.013
D	1.50		1.70	0.059		0.067
E	1.50		1.70	0.059		0.067
E1	1.10		1.30	0.043		0.051
e		0.50			0.020	
L1		0.19			0.007	
L2	0.10		0.30	0.004		0.012
L3		0.10			0.004	

Figure 9. Footprint - dimensions in mm (inches)



4 Ordering information

Table 4. Ordering information

Order code	Marking[1]	Package	Weight	Base qty	Delivery mode
ESDALCL6-4P6A	S	SOT-666	2.9 mg	3000	Tape and reel

1. The marking can be rotated by multiples of 90° to differentiate assembly location

5 Revision history

Table 5. Document revision history

Date	Revision	Changes
30-Oct-2012	1	Initial release.

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