



ESDALC6V1-1M2

Single line low capacitance TRANSIL™ for ESD protection

Applications

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

- Computers
- Printers
- Communication systems
- Cellular phone handsets and accessories
- Video equipment

Features

- 1 line low capacitance TRANSIL diode
- Unidirectional ESD protection
- Breakdown voltage $V_{BR} = 6.1 \text{ V min.}$
- Low diode capacitance (22 pF @ 0 V)
- Low leakage current (< 100 nA @ 3 V)
- Very small PCB area (0.6 mm²)
- RoHS compliant

Benefits

- High ESD protection level
- High integration
- Suitable for high density boards

Description

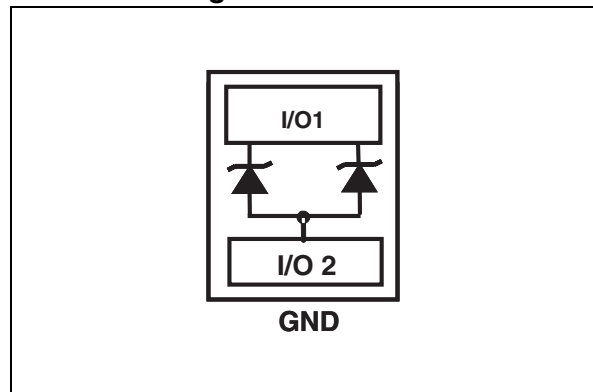
The ESDALC6V1-1M2 is a unidirectional single line TVS diode designed to protect the data lines or other I/O ports against ESD transients.

The device is ideal for applications where both reduced line capacitance and board space saving are required.

TM: TRANSIL is a trademark of STMicroelectronics



Functional diagram



Order code

Part number	Marking
ESDALC6V1-1M2	N

Complies with the following standards:

IEC 61000-4-2 level 4

15 kV (air discharge)

8 kV (contact discharge)

MIL STD 883E - Method 3015-7: class 3

HBM (Human body model)

1 Characteristics

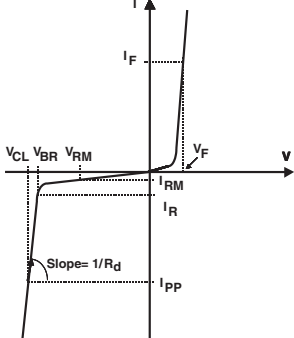
Table 1. Absolute maximum ratings ($T_{amb} = 25^{\circ}C$)

Symbol	Parameter	Value	Unit
V_{PP}	ESD discharge - IEC 61000-4-2 contact discharge	± 30	kV
P_{PP}	Peak pulse power dissipation (8/20 μs) ⁽¹⁾	50	W
I_{PP}	Repetitive peak pulse current (8/20 μs)	6	A
T_j	Junction temperature	125	$^{\circ}C$
T_{stg}	Storage temperature	- 55 to +150	$^{\circ}C$
T_L	Maximum lead temperature for soldering during 10 s at 5 mm for case	260	$^{\circ}C$
T_{OP}	Operating temperature range	- 40 to + 125	$^{\circ}C$

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

Table 2. Electrical characteristics

Symbol	Parameter
V_{RM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{CL}	Clamping voltage
I_{RM}	Leakage current @ V_{RM}
I_{PP}	Peak pulse current
αT	Voltage temperature coefficient
V_F	Forward voltage drop



Type	$V_{BR} @ I_R$			$I_{RM} @ V_{RM}$		R_D	$V_F @ 10\text{ mA}$	αT	$C @ 0\text{ V}$
	Vmin	Vmax	mA	nA max	V	Ω typ	V max	10-4/ $^{\circ}C$ max	pF typ
ESDALC6V1-1M2	6.1	7.2	1	100	3	0.5	1	4.5	22

Figure 1. Peak power dissipation versus initial junction temperature

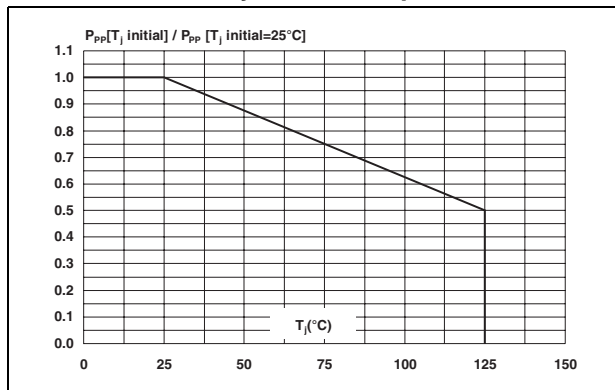


Figure 2. Peak pulse power versus exponential pulse duration

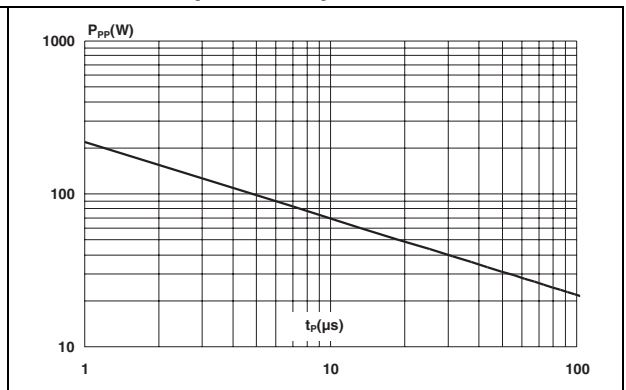


Figure 3. Clamping voltage versus peak pulse current, rectangular waveform

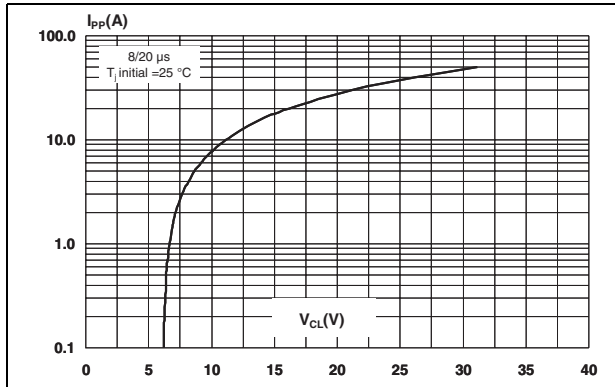


Figure 4. Forward voltage drop versus peak forward current (typical values)

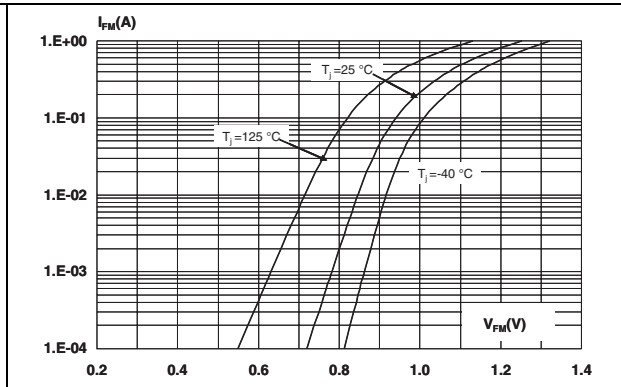


Figure 5. Capacitance versus reverse applied voltage (typical values)

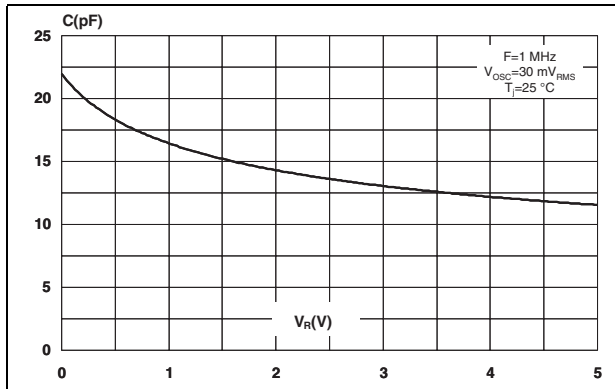


Figure 6. Relative variation of the leakage current versus junction temperature (typical values)

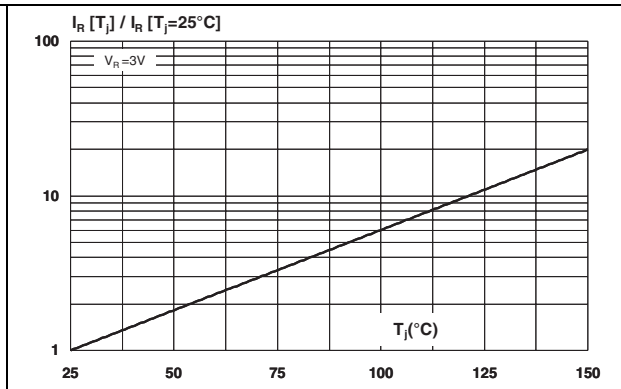


Figure 7. ESD response to IEC 61000-4-2 (+15 kV air discharge) on each channel

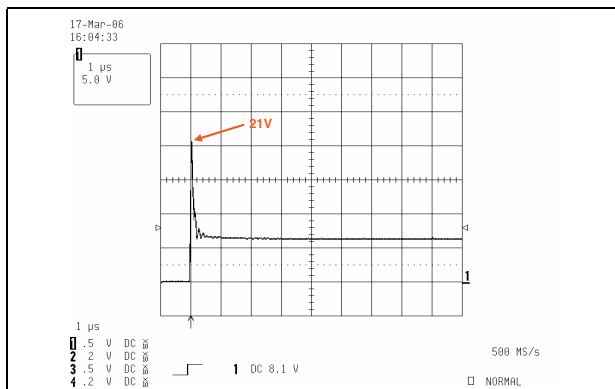


Figure 8. ESD response to IEC 61000-4-2 (-15 kV air discharge) on each channel

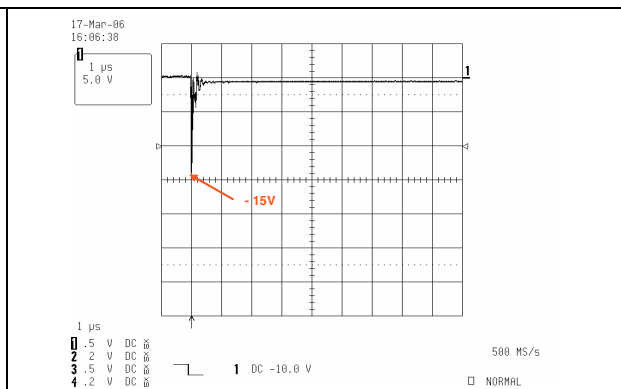
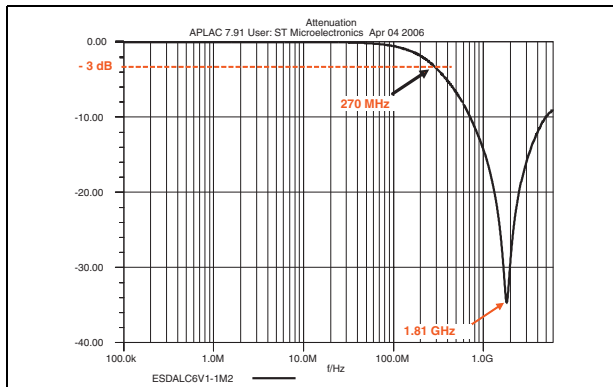
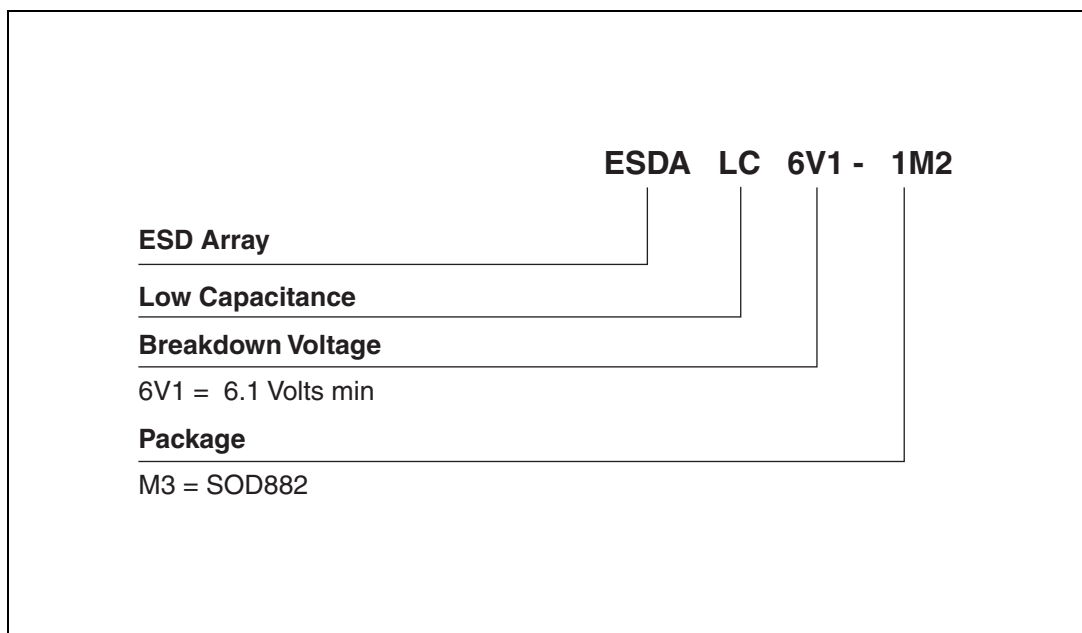


Figure 9. S21 Attenuation measurement result



2 Ordering information scheme



3 Package information

Table 3. SOD882 dimensions

Ref	Dimensions					
	Millimetres			Inches		
	Min	Typ	Max	Min	Typ	Max
A	0.40	0.47	0.50	0.016	0.019	0.020
A1	0.00		0.05	0.000		0.002
b1	0.20	0.25	0.30	0.008	0.010	0.012
b2	0.20	0.25	0.30	0.008	0.010	0.012
D		1.00			0.039	
E		0.60			0.024	
e		0.65			0.026	
L1	0.45	0.50	0.55	0.018	0.020	0.022
L2	0.45	0.50	0.55	0.018	0.020	0.022

Figure 10. Footprint (dimensions in mm) Figure 11. Marking

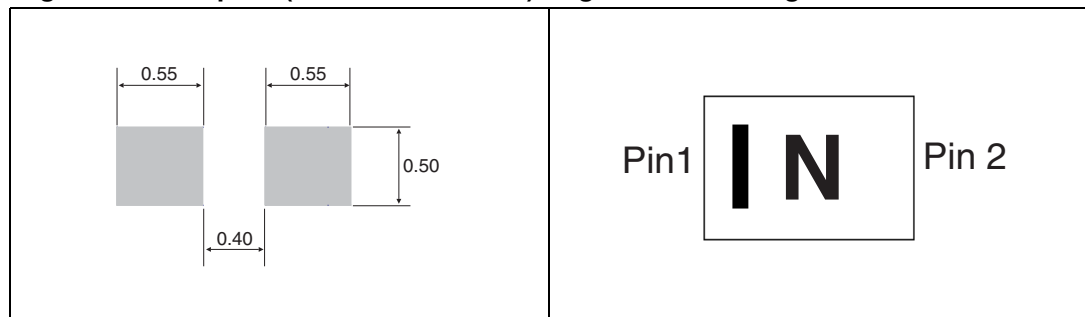


Figure 12. ST Ecopack® recommended soldering reflow profile for PCB mounting

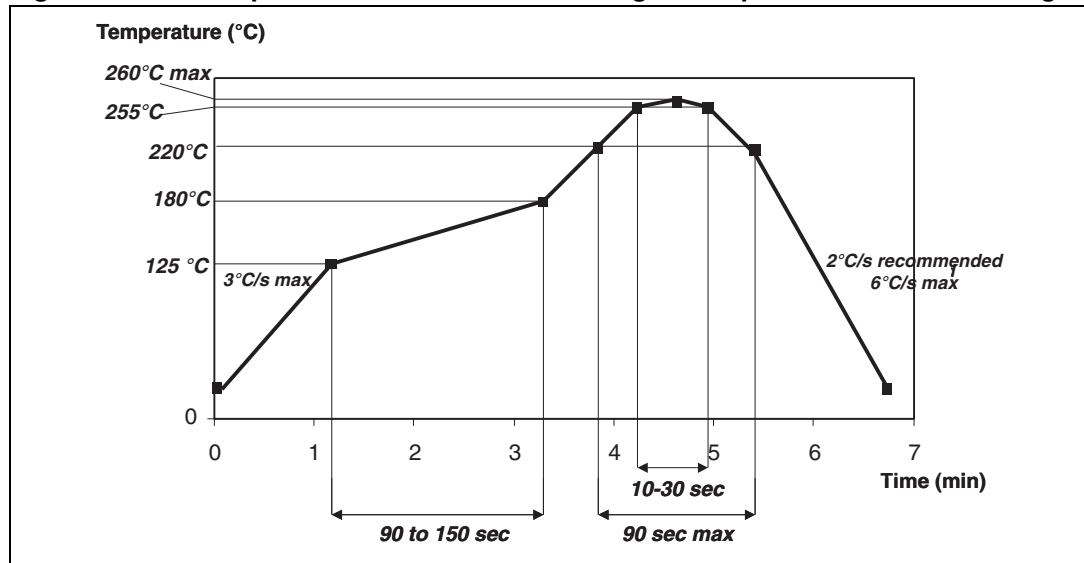
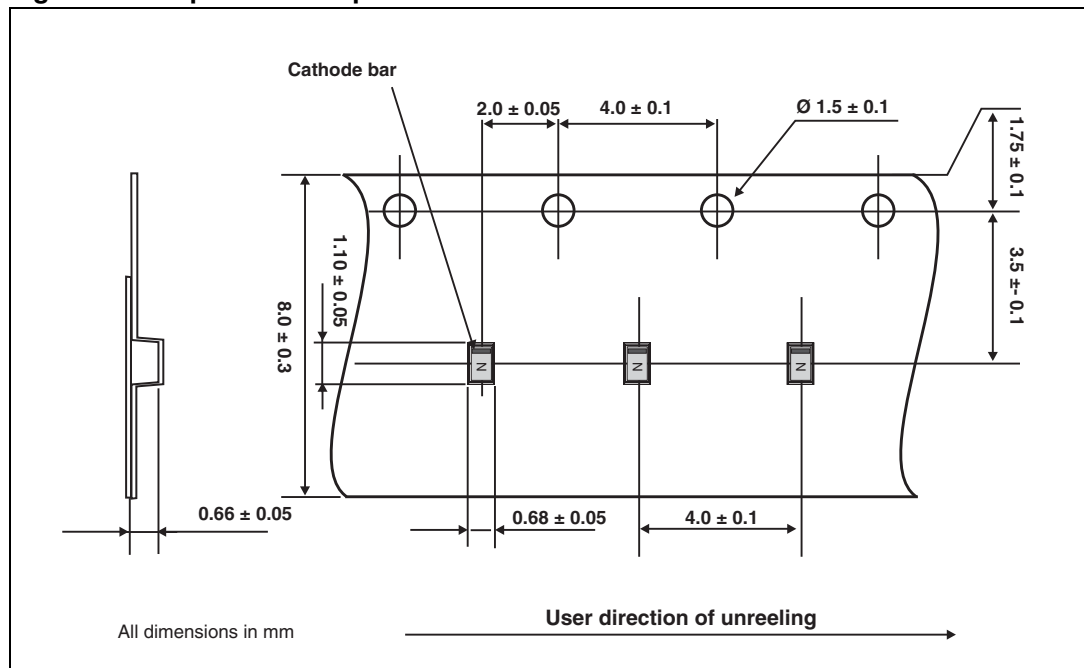


Figure 13. Tape and reel specifications



In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

4 Ordering information

Part number	Marking	Package	Weight	Base qty	Delivery mode
ESDALC6V1-1M2	N	SOD882	0.92 mg	3000	Tape and reel

5 Revision history

Date	Revision	Changes
23-May-2006	1	Initial release
16-Jun-2006	2	Updated tape and reel illustration (Figure 13).
11-Oct-2006	3	Corrected formatting errors on page 1. No technical changes.

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