



ESDALC6V1-1BM2

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
- Bidirectional ESD protection
- Breakdown Voltage $V_{BR} = 6.1 \text{ V min.}$
- Low diode capacitance (22 pF typ. at 0 V)
- Low leakage current: $< 100 \text{ nA}$ at 3 V
- Very small PCB area: 0.6 mm^2
- Leadfree package

Description

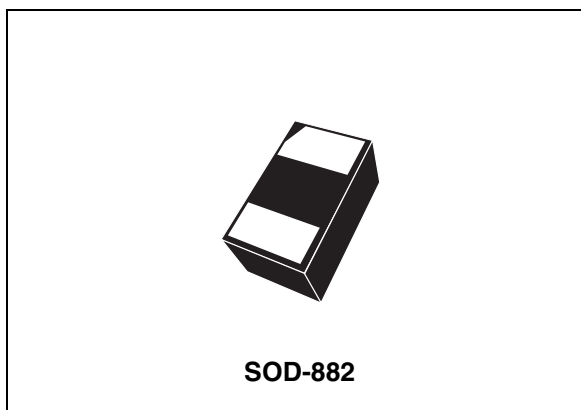
The ESDALC6V1-1BM2 is a bidirectional single line TVS diode designed to protect the datalines or other I/O ports against ESD transients.

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

Benefits

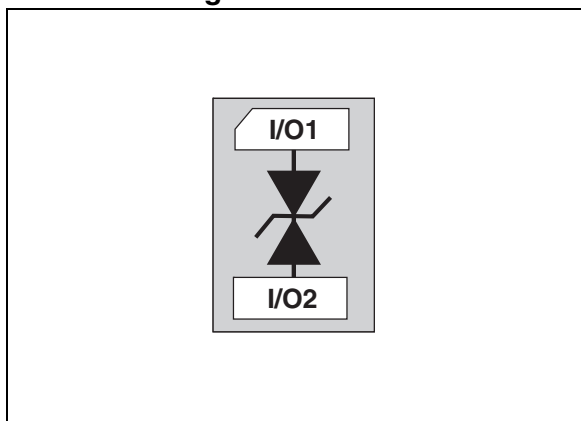
- High ESD protection level
- High integration
- Suitable for high density boards

TM: TRANSIL is a trademark of STMicroelectronics



SOD-882

Functional diagram



Order code

Part number	Marking
ESDALC6V1-1BM2	P

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)

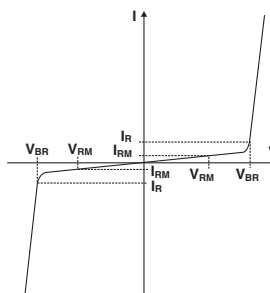
1 Characteristics

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

Symbol	Parameter	Value	Unit
$V_{PP}^{(1)}$	Peak pulse voltage (IEC 61000-4-2 contact discharge)	± 30	kV
$P_{PP}^{(1)}$	Peak pulse power dissipation (8/20 μs)	T_j initial = T_{amb} 140	W
I_{PP}	Repetitive peak pulse current (8/20 μs)	9	A
T_j	Junction temperature	125	$^{\circ}C$
T_{stg}	Storage temperature range	- 55 to + 150	$^{\circ}C$
T_L	Maximum lead temperature for soldering during 10 s	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 ($T_{amb} = 25^{\circ}C$)

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	
V_F	Forward voltage drop	

Part Number	$V_{BR} @ I_R$			$I_{RM} @ V_{RM}$		R_d	αT	$C @ 0V$ Bias
	min.	max.		max.		typ.	max.	typ.
	V	V	mA	nA	V	Ω	$10^{-4}/^{\circ}C$	pF
ESDALC6V1-1BM2	6.1	8.0	1	100	3	0.65	2.5	22

Figure 1. Relative variation of peak pulse power versus initial junction temperature

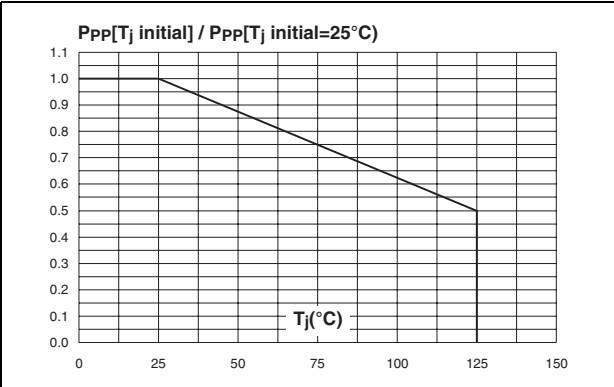


Figure 2. Peak pulse power versus exponential pulse duration

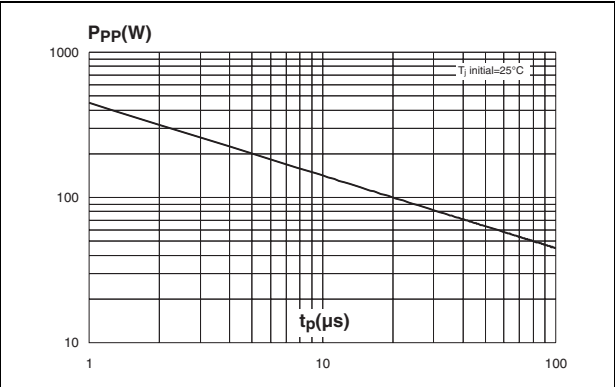


Figure 3. Clamping voltage versus peak pulse current (typical values)

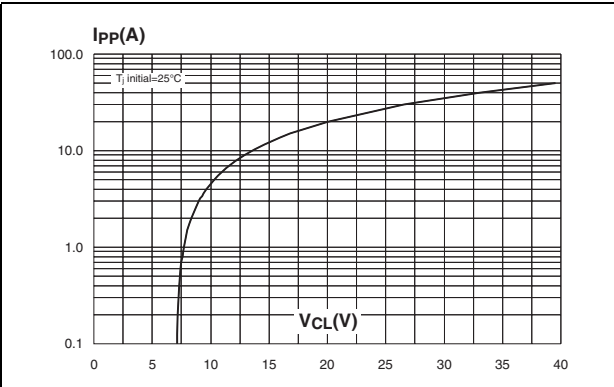


Figure 4. Junction capacitance versus reverse voltage applied (typical values)

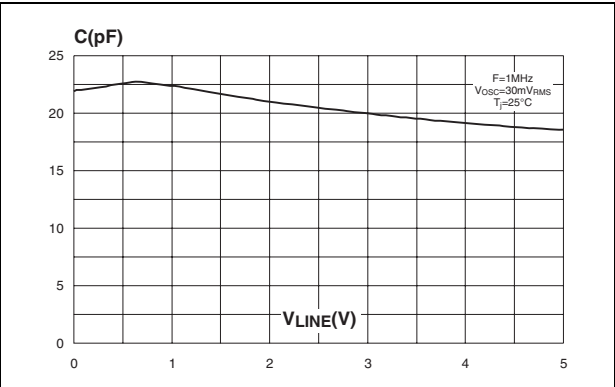


Figure 5. Relative variation of leakage current versus junction temperature (typical values)

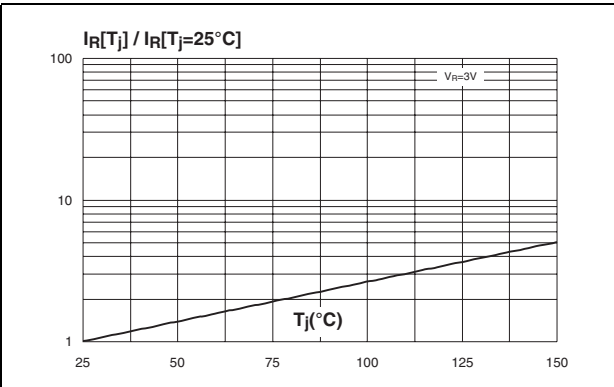


Figure 6. ESD response to IEC 61000-4-2 (+15 kV air discharge) on each channel

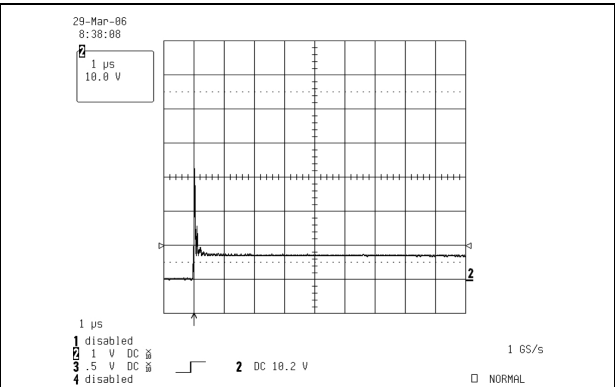


Figure 7. ESD response to IEC 61000-4-2 (-15 kV air discharge) on each channel

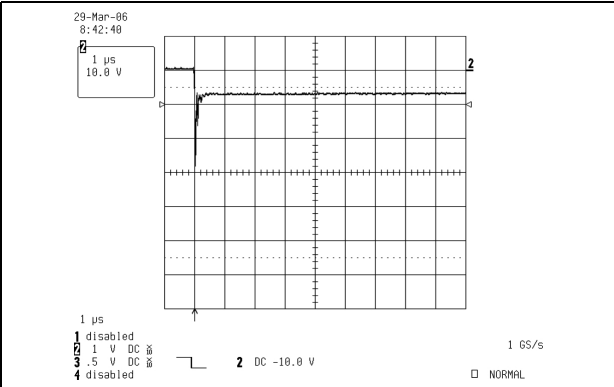
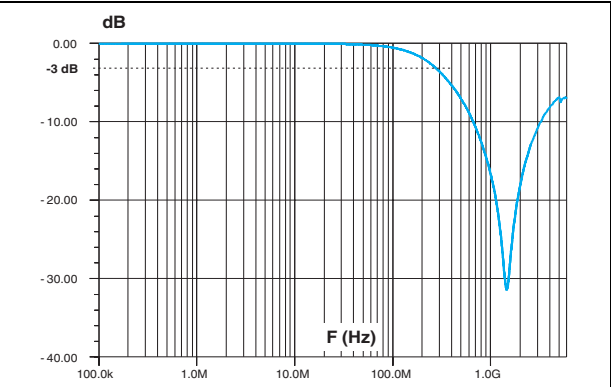
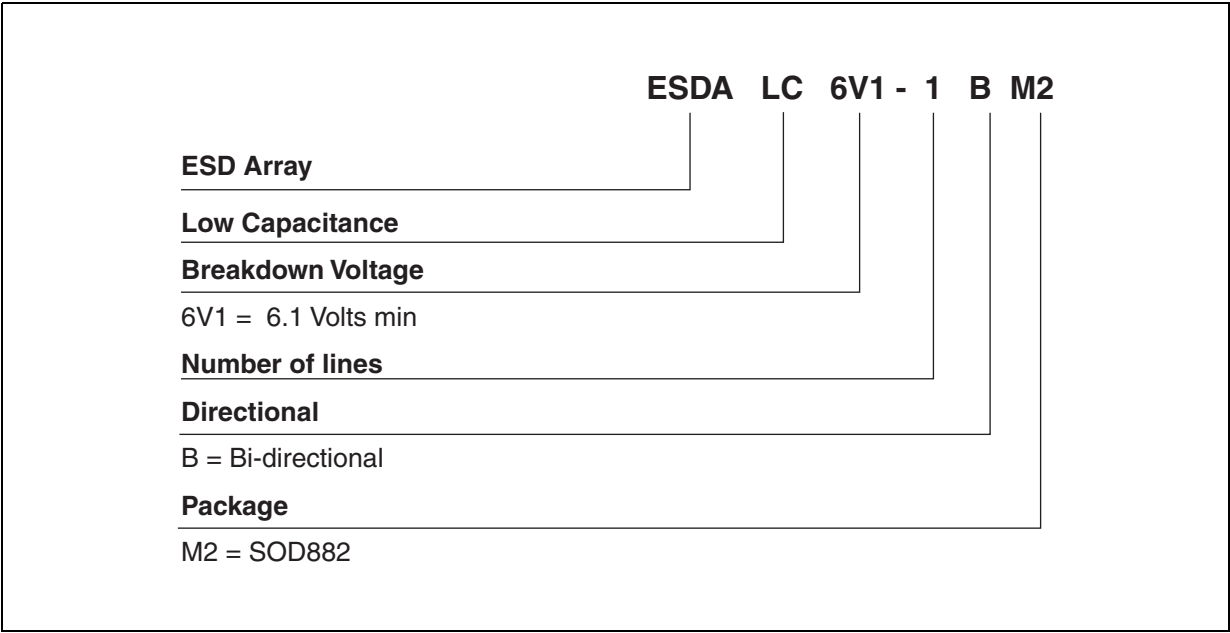


Figure 8. S21 attenuation measurement result



2 Ordering information scheme



3 Package information

- Epoxy meets UL94, V0

Table 3. SOD-882 dimensions

Ref.	Dimensions					
	Millimeters			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

Note: Product marking may be rotated by 90° for assembly plant differentiation. In no case should this product marking be used to orient the component for its placement on a PCB. Only pin 1 mark is to be used for this purpose.

Figure 9. SOD-882 footprint (dimensions in mm)

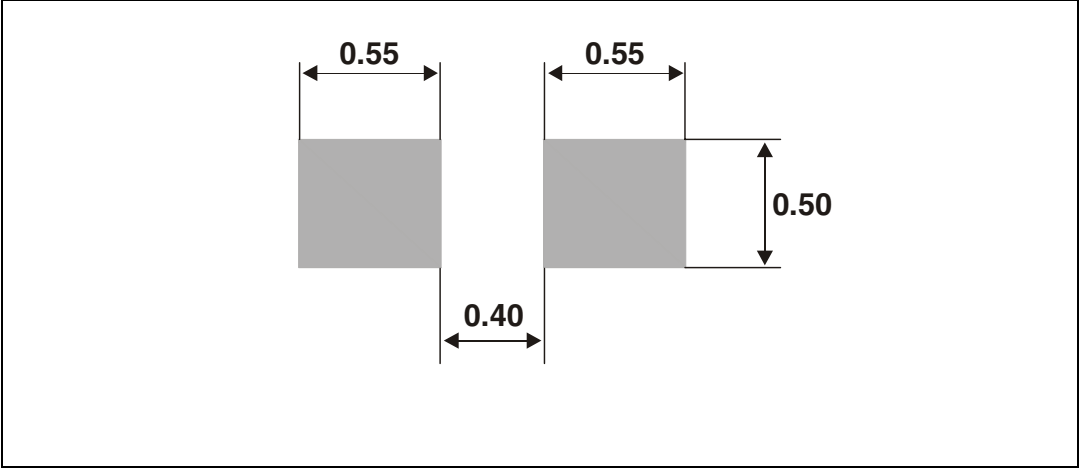
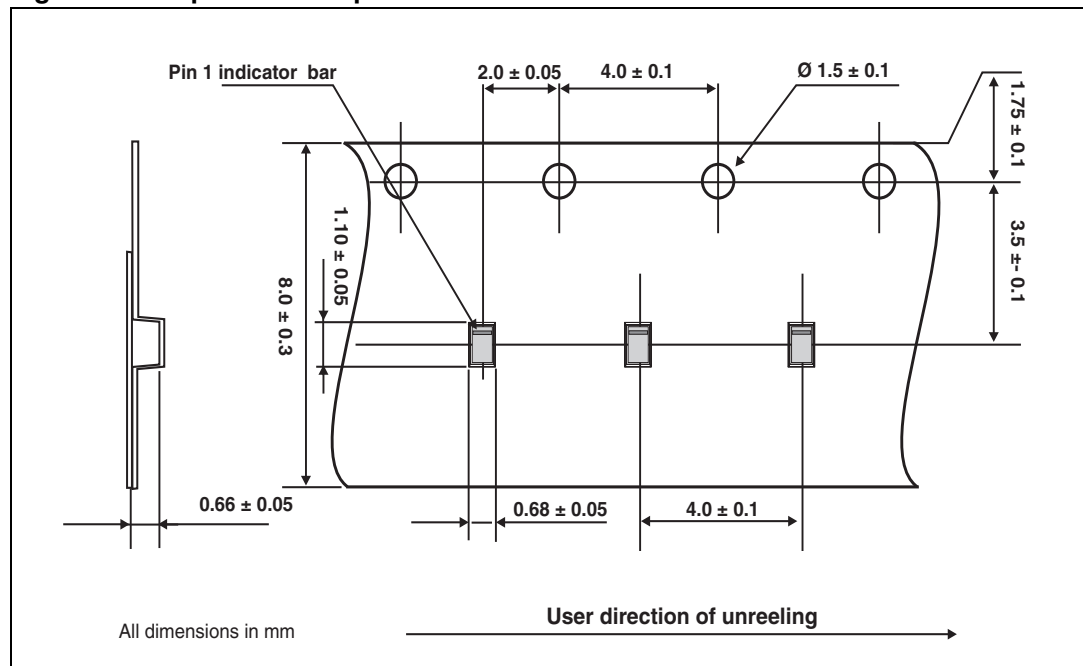


Figure 10. Tape and reel specifications



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 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
ESDALC6V1-1BM2	P ⁽¹⁾	SOD-882	0.89 mg	3000	Tape and reel

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

5 Revision history

Date	Revision	Changes
11-Jan-2007	1	Initial release.

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