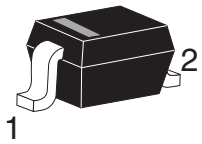
ESDLIN1524BJ

TRANSIL™ diode for ESD protection

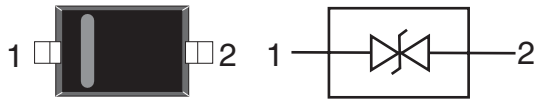
Features

- Max peak pulse power 160 W (8/20 µs)
- Asymmetrical bidirectional device
- Stand-off voltage: 15 and 24 V
- Low clamping factor V_{CL}/V_{BR}
- Complies with the following standards :
  - IEC 61000-4-2 level 4 (> 15 kV air discharge, > 8 kV contact discharge)
  - IEC 61000-4-5; I_{pp}= 3 A (8/20 µs)
  - HBM MIL STD 833, class 3 (> 4 kV)
- Low Leakage current



SOD-323

Configuration



Pin	Description
1	Cathode 1 (15 V reverse stand-off voltage)
2	Cathode 2 (24 V reverse stand-off voltage)

Description

The ESDLIN1524BJ is an asymmetrical TRANSIL diode designed specifically for protecting one automotive LIN bus line against electrostatic discharge (ESD). The SOD-323 is a very small package which allows space saving on high density printed circuit board .

Transil diodes provide high overvoltage protection by clamping action and have instantaneous response to transient overvoltages.

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

Symbol	Parameter		Value	Unit
P_{PP}	Peak pulse power dissipation 8/20 µs (1)	T_j initial = T_{amb}	160	W
T_{stg} T_j	Storage temperature range Operating junction temperature range		-65 to +175 -40 to 150	° C
T_L	Maximum lead temperature for soldering during 10 s		260	° C

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

Table 2. ESD Maximum ratings

Symbol	Parameter	Conditions	Value	Unit
ESD	Electrostatic discharge capability	IEC 61000-4-2 (contact discharge)	23	kV
		HBM MIL STD 833	10	

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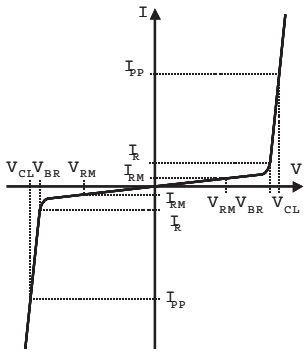
1 Characteristics

Table 3. Electrical characteristics (T_{amb} = 25° C)

Symbol	Parameter
V_{RM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{CL}	Clamping voltage
I_{RM}	Leakage current @ V_{RM}
I_R	Breakdown current @ V_{BR}
I_{PP}	Peak pulse current
C	Junction capacitance



Types	I_{RM} @V_{RM}			V_{BR} @ I_R (1)				$V_{CL\ max}$ @ I_{PP} 8/20 µs				C (2)		αT(3)
	nA		V	V			mA	V	A	V	A	pF		10^{-4}/°C
	Typ	Max		Min	Typ	Max						Typ	Max	Max
ESDLIN1524BJ(15V)	1	50	15	17.1	18.9	20.3	5	25	1	35	5	16	20	8.8
ESDLIN1524BJ(24V)	1	50	24	25.4	27.8	30.3	5	40	1	50	3			9.6

1. Pulse test: t_p < 50 ms
2. V_R = 0 V, F= 1 MHz
3. $\Delta V_{BR} = \alpha T \times (T_{amb} - 25) \times V_{BR(25° C)}$

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

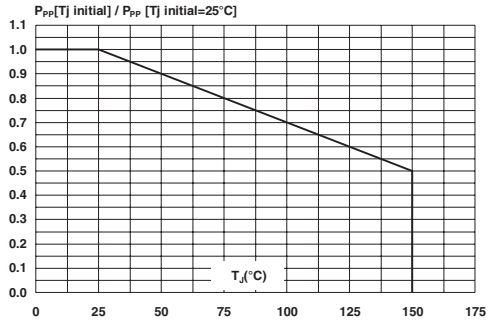


Figure 2. Peak pulse power versus exponential pulse duration

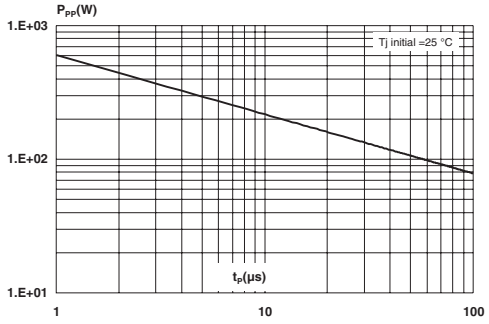


Figure 3. Junction capacitance versus line voltage (typical values), 15 V side

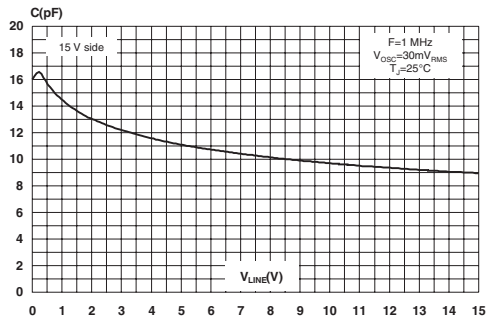


Figure 4. Junction capacitance versus line voltage (typical values), 24 V side

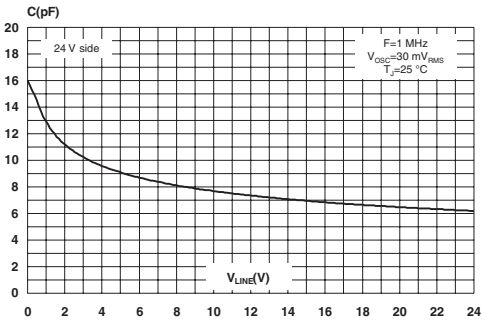
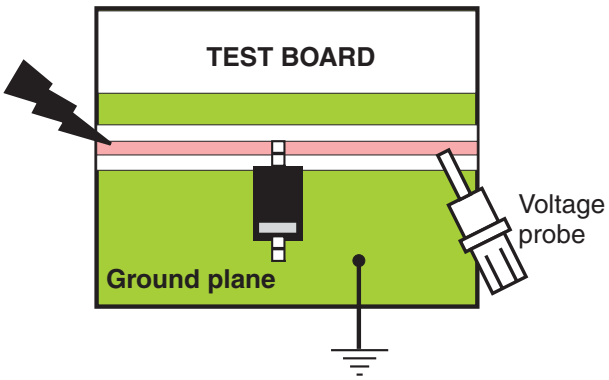
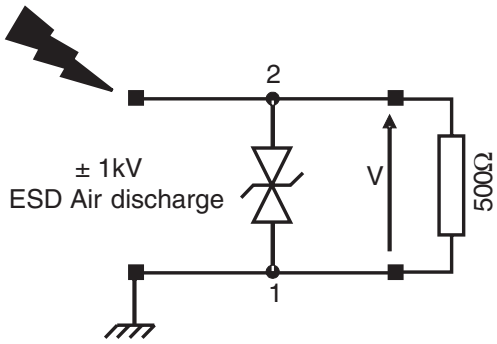
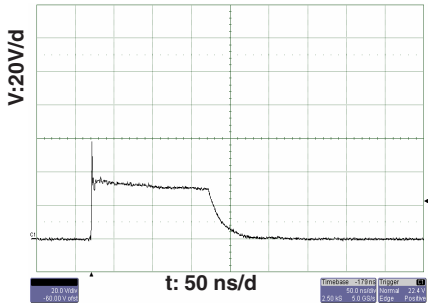


Figure 5. Clamping test conditions and results

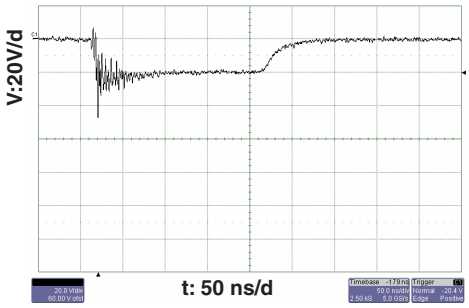




ESD test configuration



Remaining voltage after +1 kV ESD voltage waveform (IEC 61000-4-2 conditions)

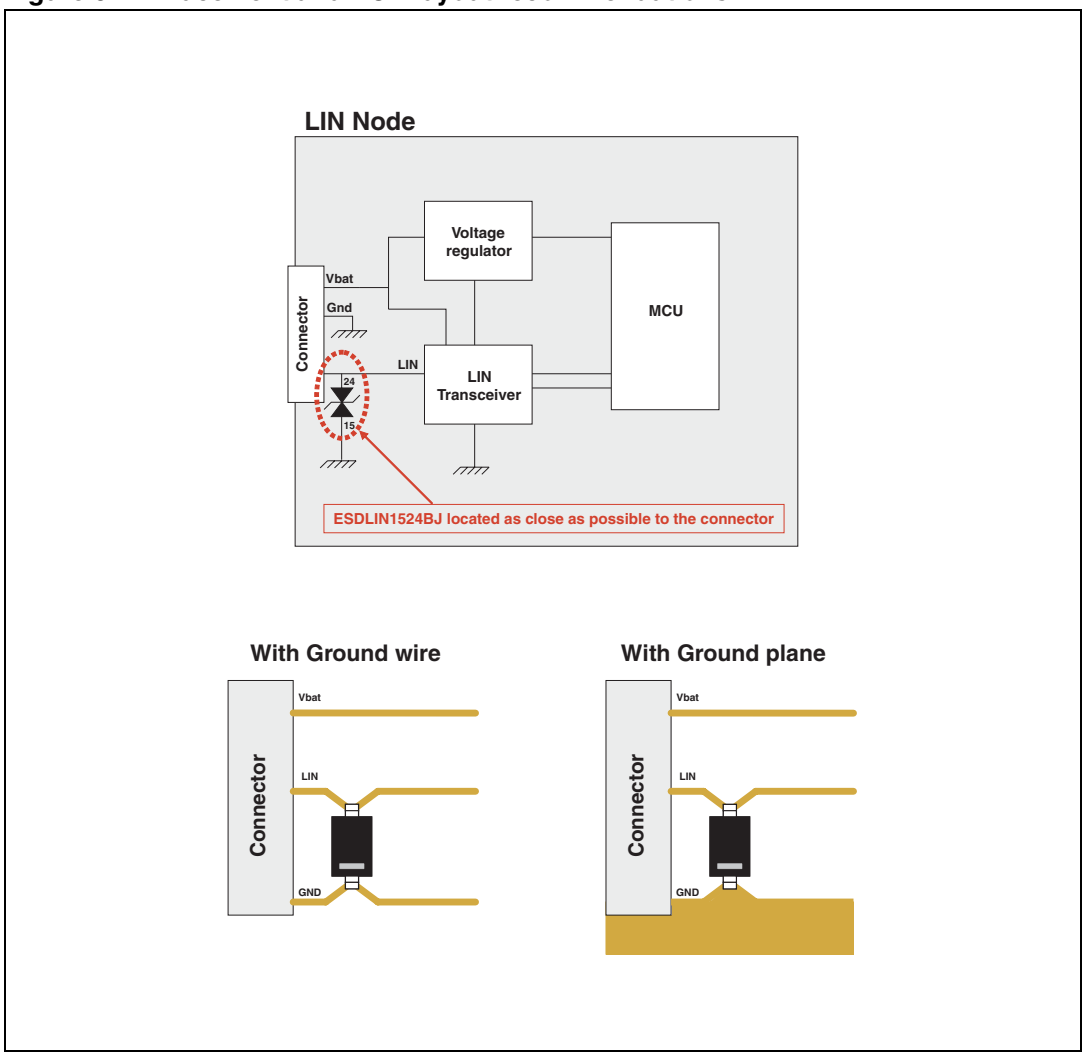


Remaining voltage after -1 kV ESD voltage waveform (IEC 61000-4-2 conditions)

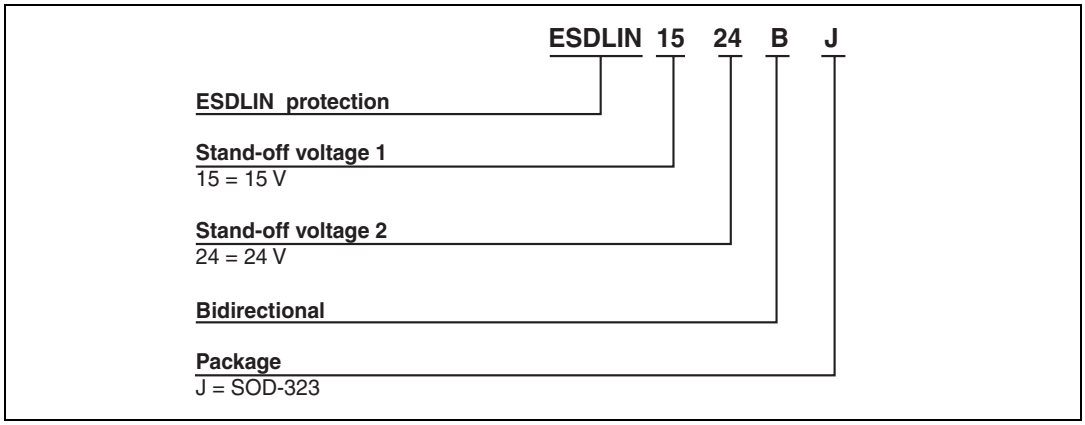
2 Placement and PCB layout recommendations

Figure 6. illustrates recommendations for the placement and layout of the PCB for optimum benefit of the ESDLIN1524BJ.

Figure 6. Placement and PCB layout recommendations

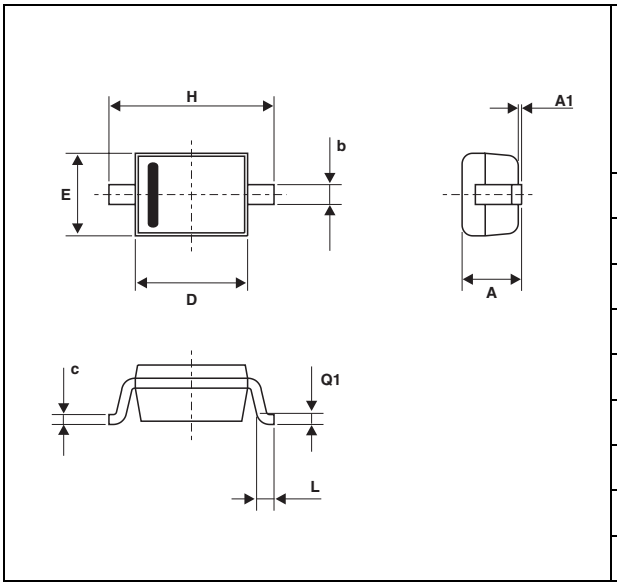


3 Ordering information scheme



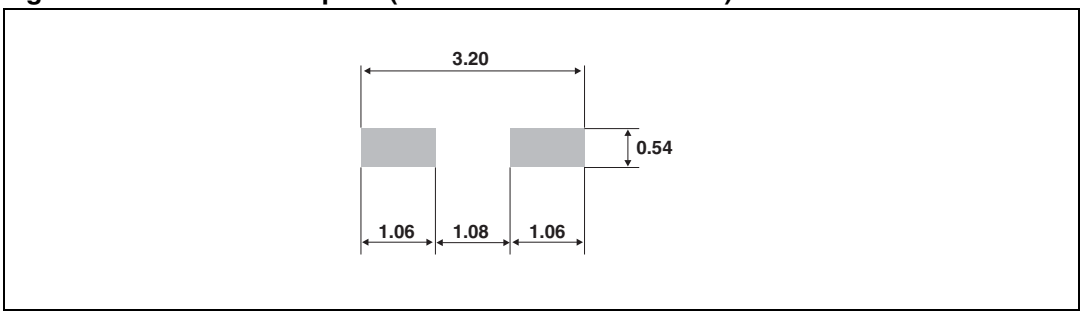
4 Package information

Table 4. SOD-323 dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		1.17		0.046
A1	0	0.1	0	0.004
b	0.25	0.44	0.01	0.017
c	0.1	0.25	0.004	0.01
D	1.52	1.8	0.06	0.071
E	1.11	1.45	0.044	0.057
H	2.3	2.7	0.09	0.106
L	0.1	0.46	0.004	0.02
Q1	0.1	0.41	0.004	0.016

Figure 7. SOD-323 footprint (dimensions in millimeters)



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.

5 Ordering information

Part number	Marking	Package	Weight	Base qty	Delivery mode
ESDLIN1524BJ	24	SOD-323	5 mg	3000	Tape and reel

6 Revision history

Date	Revision	Changes
28-Aug-2006	1	Initial release.
22-Sep-2006	2	Added Figure 6 Placement and layout recommendations.

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