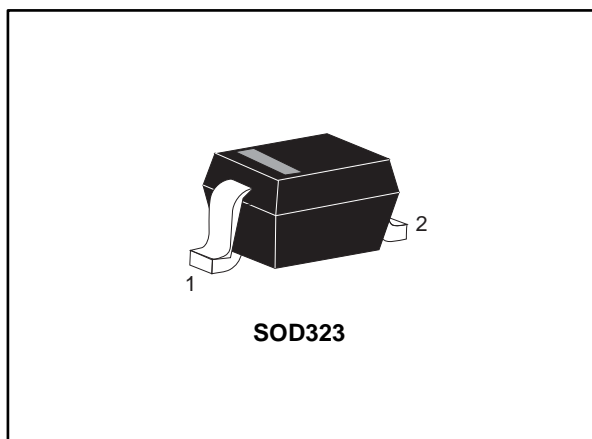


## Automotive Transil™, transient voltage suppressor (TVS) for LIN bus


Datasheet - production data



### Description

The device is an asymmetrical Transil diode designed specifically for one automotive LIN bus line against electrostatic discharge (ESD) protection. The SOD323 is a very small package that saves space on high density printed circuit board.

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

 TM: Transil is a trademark of STMicroelectronics.

### Features

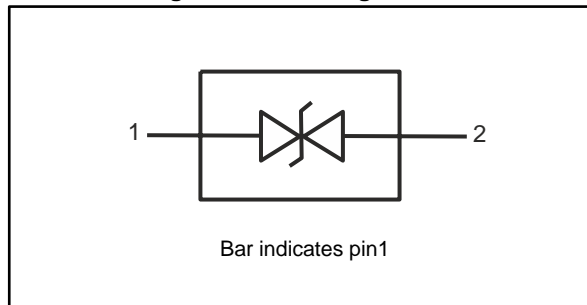
- AEC-Q101 qualified
- Asymmetrical bidirectional device
- Stand-off voltage:
  - - 15 V (to comply with reverse battery)
  - + 24 V (to comply with jump start)
- Low leakage current



### Complies with the following standards

- ISO 10605 (C = 150 pF, R = 330 Ω)
  - 30 kV (air discharge)
  - 30 kV (contact discharge)
- ISO 10605 (C = 330 pF, R = 330 Ω)
  - 30 kV (air discharge)
  - 30 kV (contact discharge)
- ISO 7637-3
  - Pulse 3a:  $V_s = -150$  V
  - Pulse 3b:  $V_s = 100$  V
- HBM MIL STD 833, class 3 (> 4 kV)
- ISO 17987-7 (LIN bus)
- SAE J3076 (CXPI bus)

Figure 1: Pin configuration



# 1 Characteristics

**Table 1: Absolute maximum ratings (limiting values)  $T_{amb} = 25^{\circ}C$**

Symbol	Parameter	Value	Unit
$P_{PP}$	Peak pulse power dissipation 8/20 $\mu s$	$T_j \text{ initial} = T_{amb}$ 160	W
$T_{stg}$	Storage junction temperature range	-65 to +175	$^{\circ}C$
$T_j$	Maximum operating junction temperature	-40 to +150	
$T_L$	Maximum temperature for soldering during 10 s	260	$^{\circ}C$

**Table 2: ESD maximum ratings**

Symbol	Parameter	Conditions	Value	Unit
ESD	Electrostatic discharge capability	ISO 10605 (C = 150 pF, R = 330 $\Omega$ ) air discharge contact discharge	30 30	kV
		ISO 10605 (C = 330 pF, R = 330 $\Omega$ ) air discharge contact discharge	30 30	
		HBM MIL STD 833	10	

**Figure 2: Electrical characteristics (definitions)**

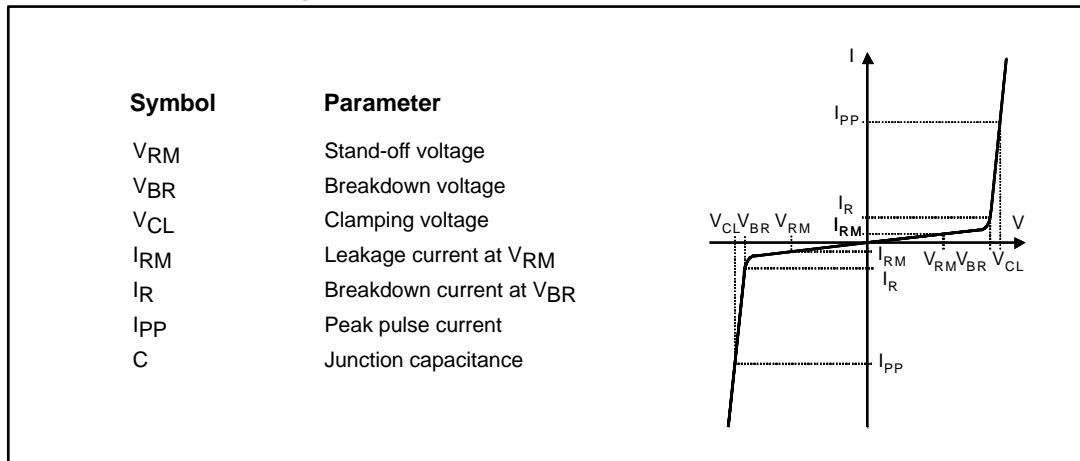


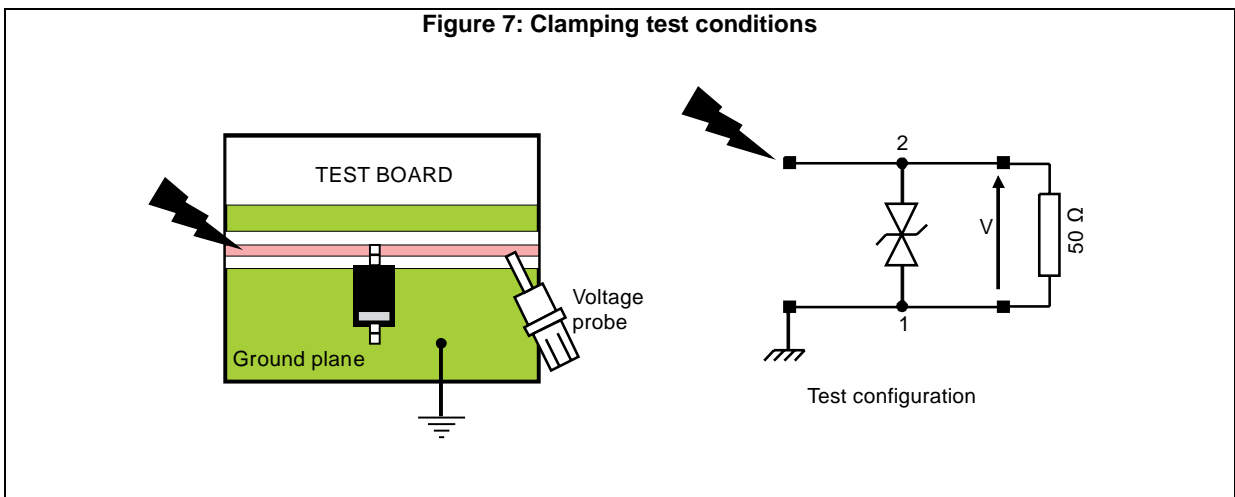
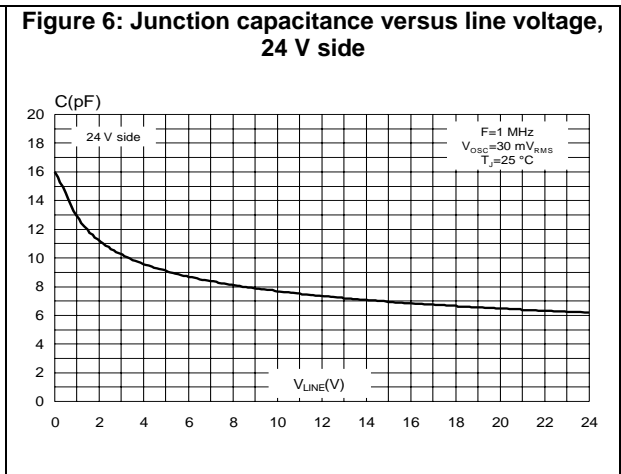
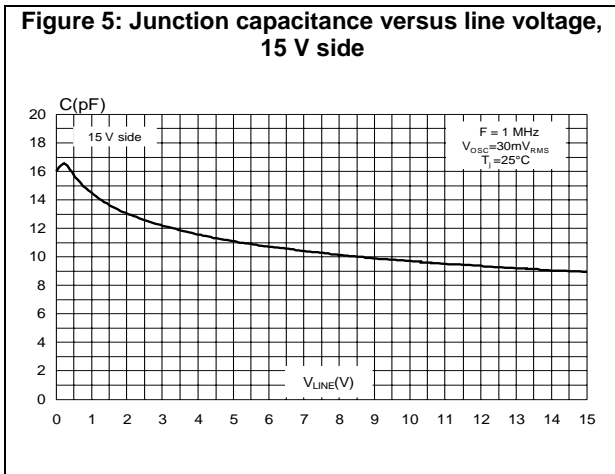
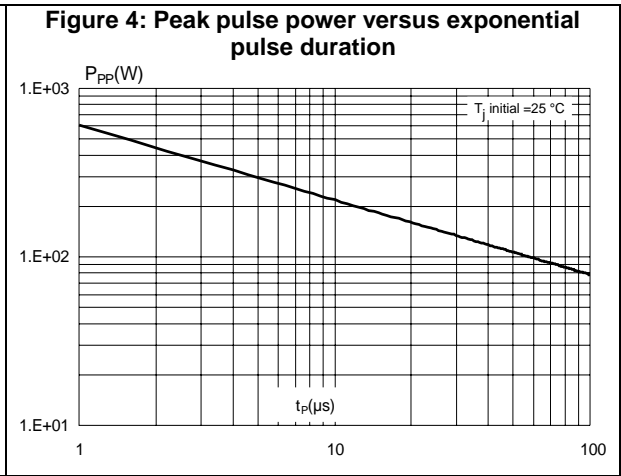
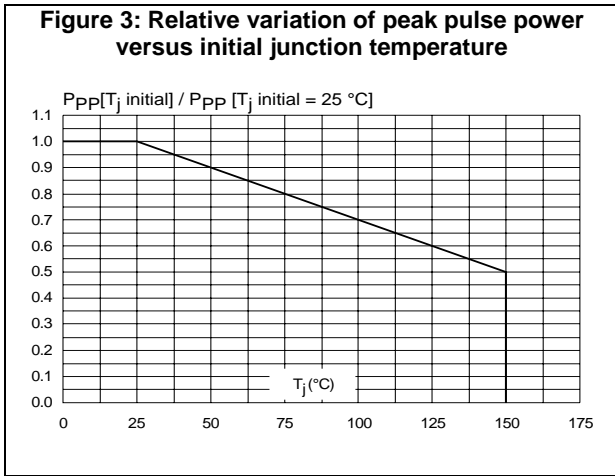
Table 3: Electrical characteristics ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ )

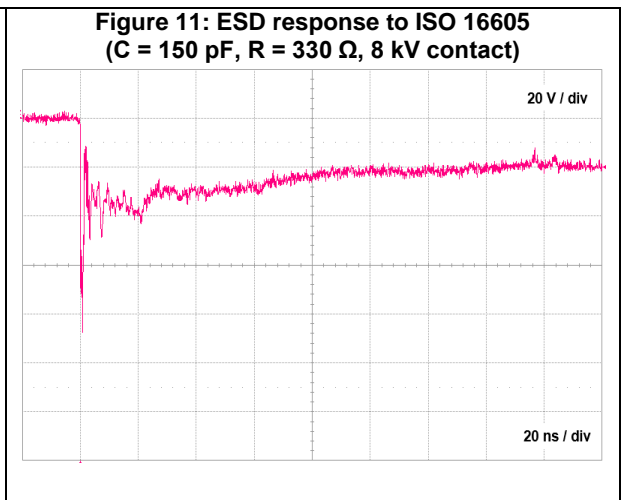
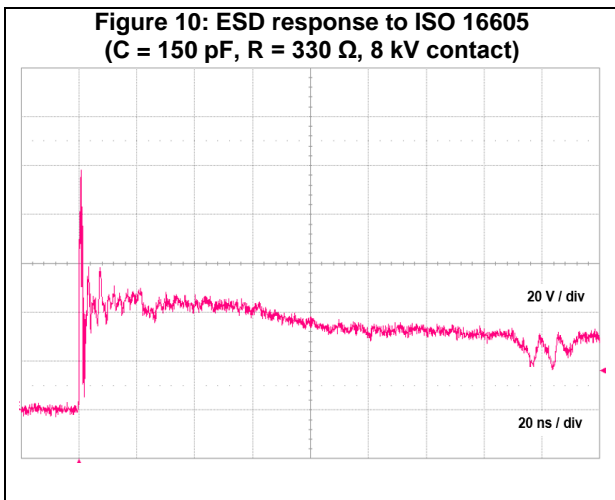
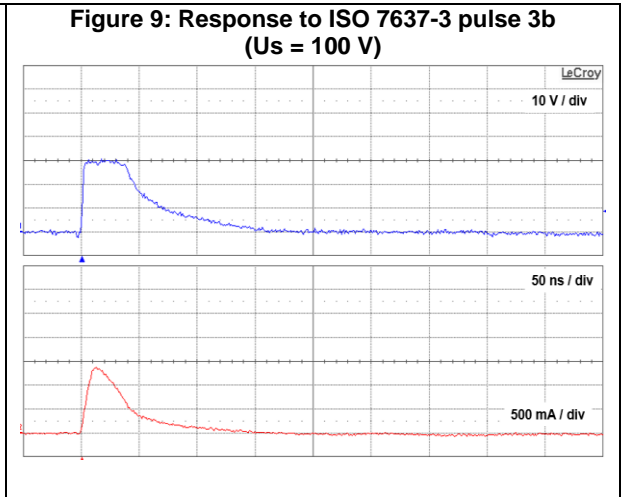
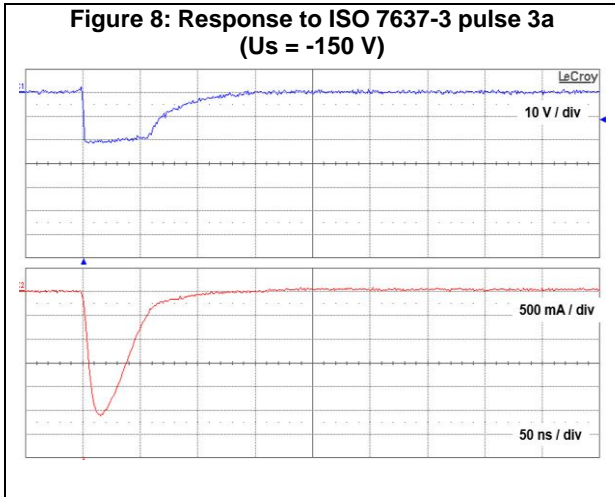
Symbol	Test conditions		Min.	Typ.	Max.	Unit
$V_{BR}$	From pin 2 to pin 1	$I_R = 5\text{ mA}$ , $t_p < 50\text{ ms}$	25.4	27.8	30.3	V
	From pin 1 to pin 2		17.1	18.9	20.3	
$I_{RM}$	From pin 2 to pin 1	$V_{RM} = 24\text{ V}$		1	50	nA
	From pin 1 to pin 2	$V_{RM} = 15\text{ V}$				
$V_{CL}$	From pin 2 to pin 1	$I_{PP} = 1\text{ A}$	8/20 $\mu\text{s}$		40	V
	From pin 2 to pin 1	$I_{PP} = 3\text{ A}$			50	
	From pin 1 to pin 2	$I_{PP} = 1\text{ A}$			25	
	From pin 1 to pin 2	$I_{PP} = 5\text{ A}$			35	
C	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$			16	20	pF
$\alpha T^{(1)}$	From pin 2 to pin 1				9.6	$10^{-4}/^{\circ}\text{C}$
	From pin 1 to pin 2				8.8	

**Notes:**

$$^{(1)}\Delta V_{BR} = \alpha T \times (T_{amb} - 25) \times V_{BR}(25^{\circ}\text{C})$$

### 1.1 Characteristics (curves)





## 2 Package information

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](http://www.st.com). ECOPACK® is an ST trademark.

- Epoxy meets UL94, V0
- Lead-free package

### 2.1 SOD323 package information

Figure 12: SOD323 package outline

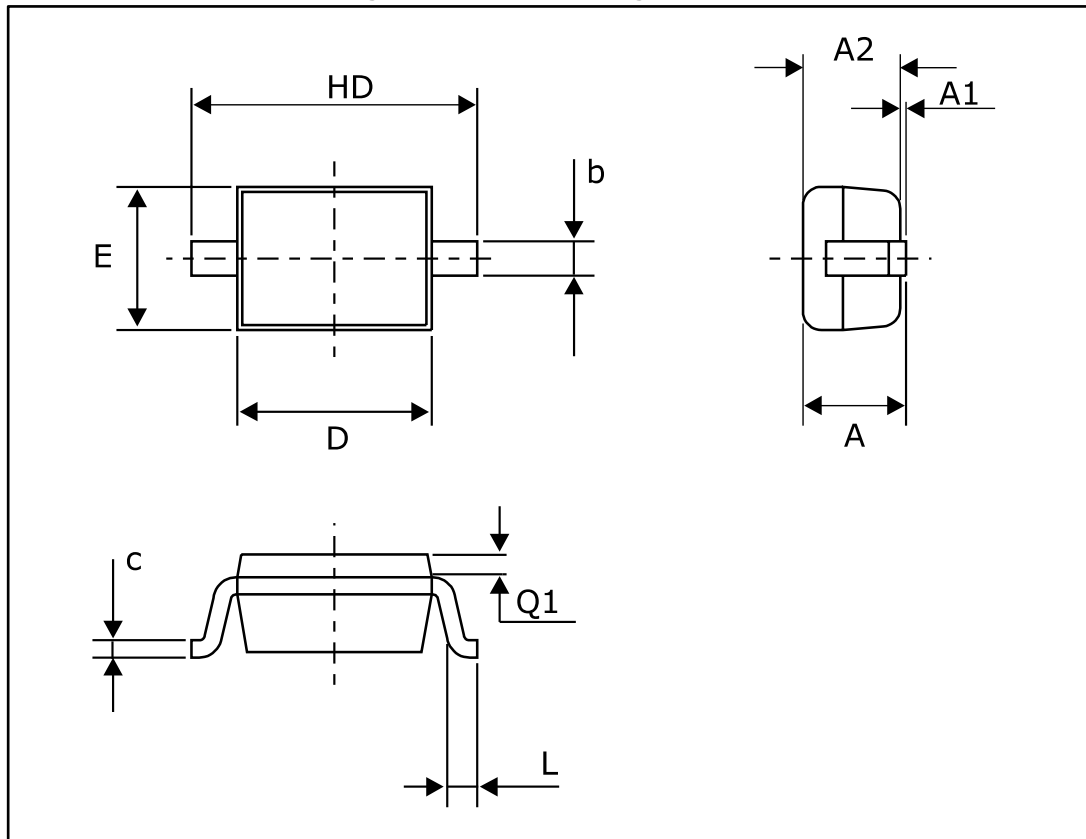
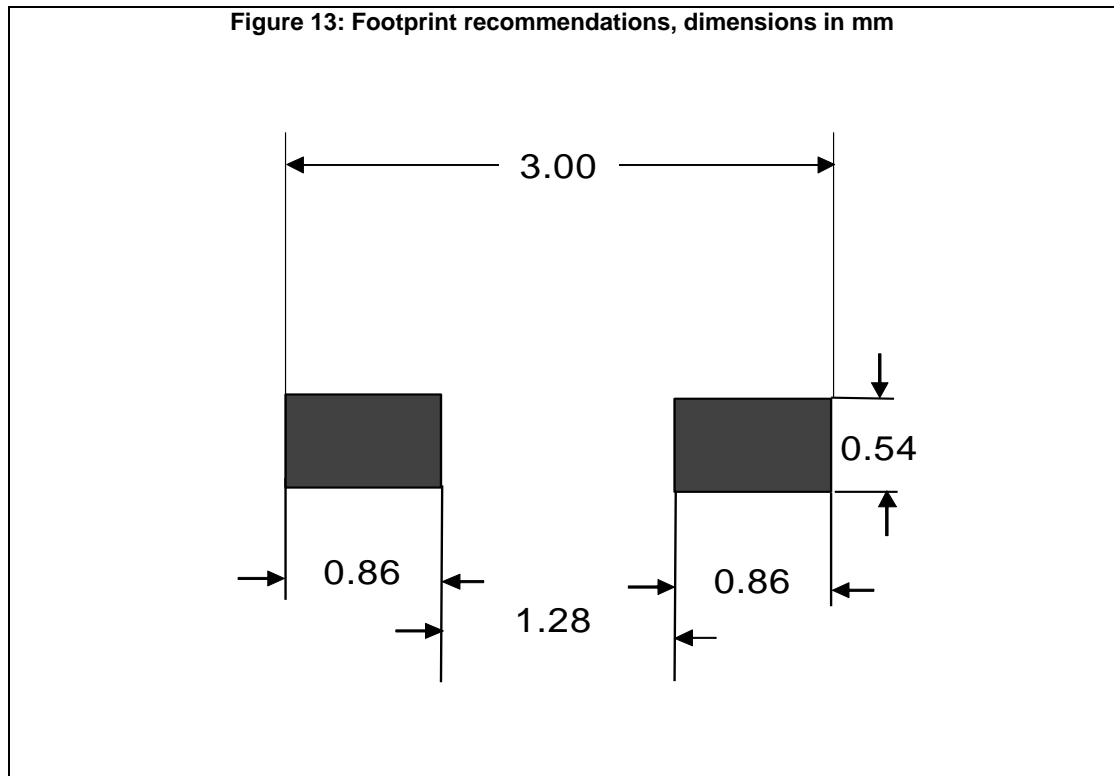


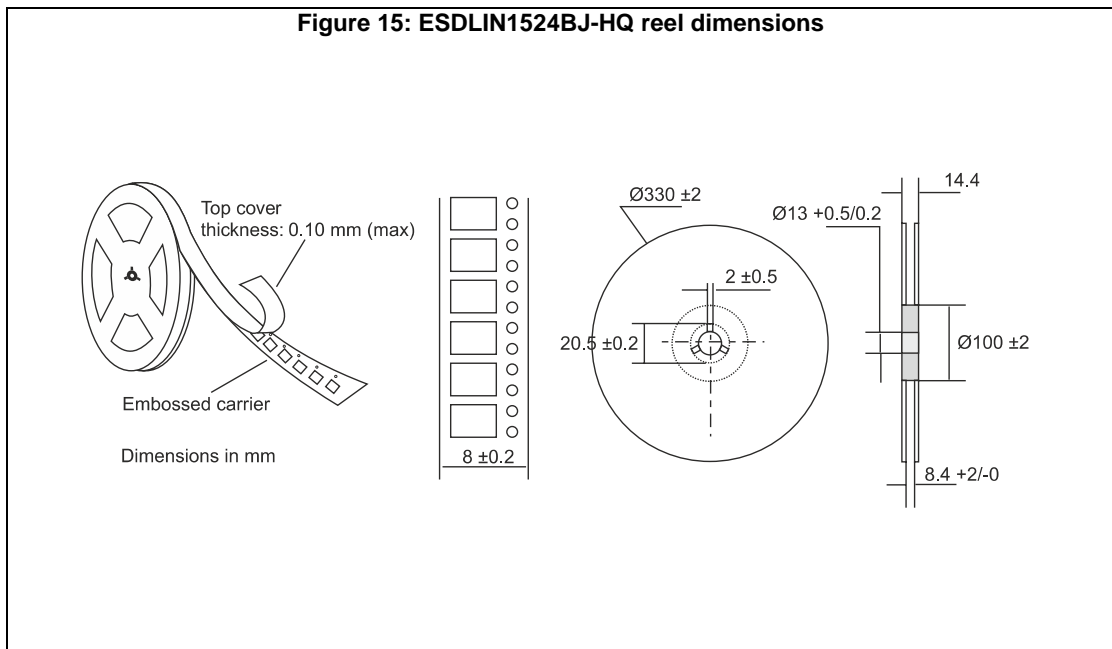
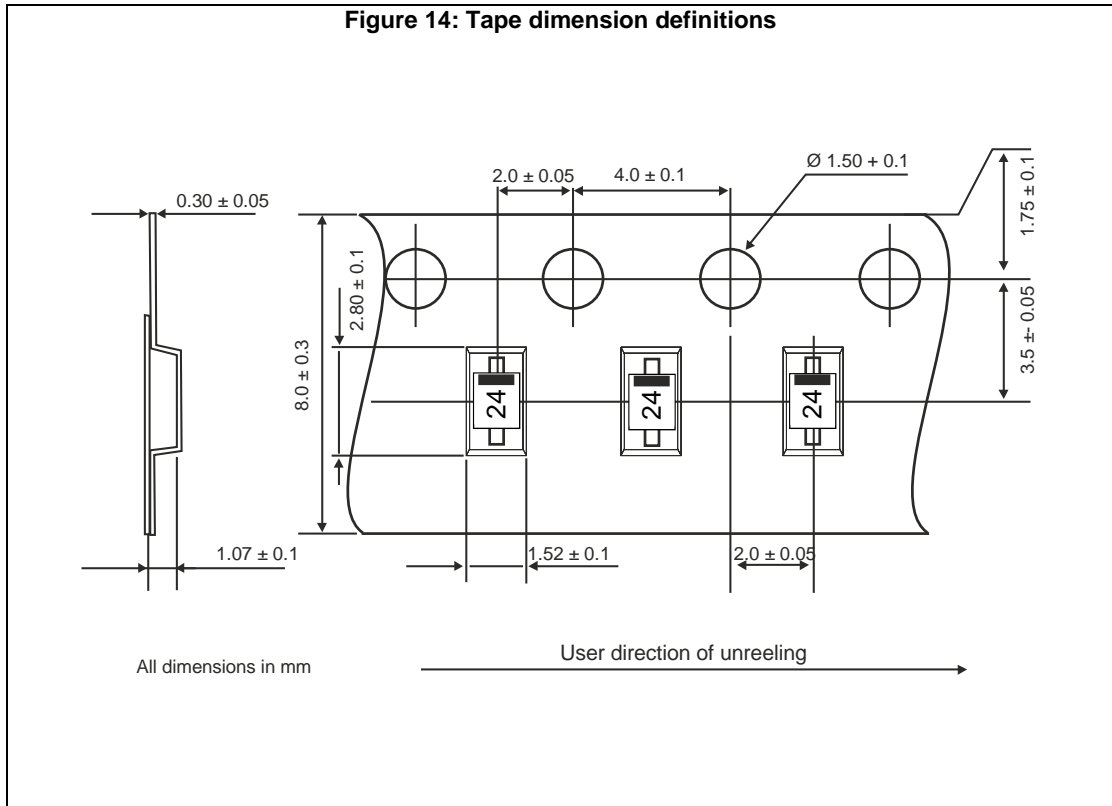
Table 4: SOD323 package mechanical data

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		1.17		0.046
A1		0.10		0.004
A2	0.93	1.01	0.037	0.040
b	0.25	0.44	0.01	0.017
c	0.10	0.25	0.004	0.01
D	1.52	1.80	0.06	0.071
E	1.11	1.45	0.044	0.057
HD	2.30	2.70	0.09	0.106
L	0.10	0.46	0.004	0.02
Q1	0.10	0.41	0.004	0.016

Figure 13: Footprint recommendations, dimensions in mm



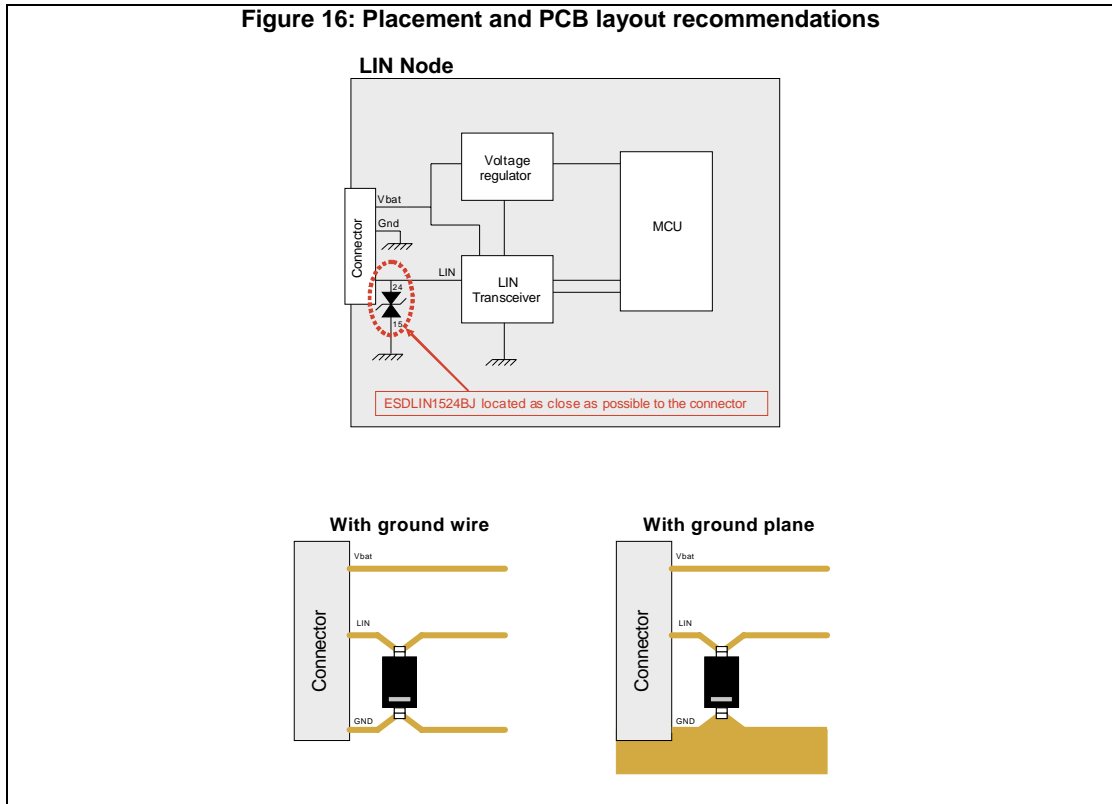
## 2.2 SOD323 packing information





### 3 Placement and PCB layout recommendations

Below figure illustrates the PCB placement and layout recommendations for optimal benefits of the ESDLIN1524BJ.



## 4 Ordering information

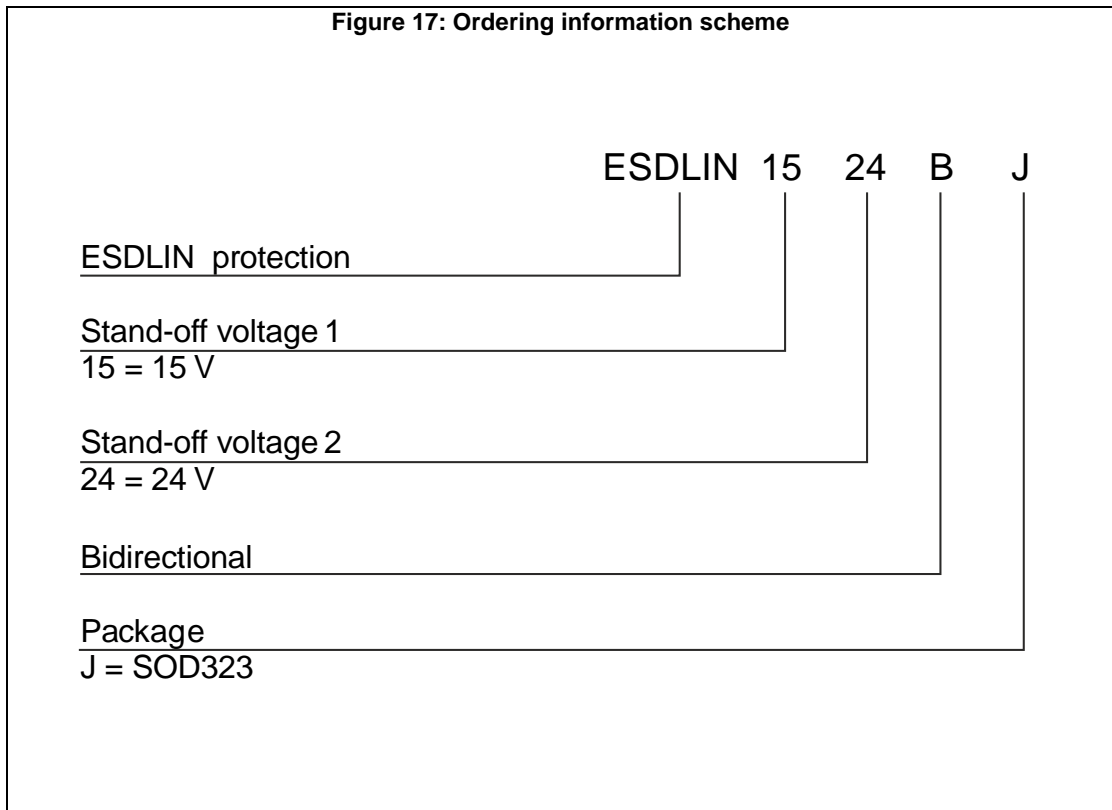


Table 5: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
ESDLIN1524BJ	24	SOD323	5 mg	3000	Tape and reel
ESDLIN1524BJ-HQ				10000	

## 5 Revision history

**Table 6: Document revision history**

Date	Revision	Changes
28-Aug-2006	1	Initial release.
22-Sep-2006	2	Added Figure 6 Placement and layout recommendations
18-Jan-2013	3	Updated Table 6. Added Figure 10 and Figure 11.
17-Oct-2017	4	<p>Updated title and cover page.</p> <p>Updated <i>Table 1: "Absolute maximum ratings (limiting values) Tamb = 25° C"</i> and <i>Table 3: "Electrical characteristics (Tamb = 25 °C)"</i>.</p> <p>Added <i>Figure 8: "Response to ISO 7637-3 pulse 3a (Us = -150 V)"</i>, <i>Figure 9: "Response to ISO 7637-3 pulse 3b (Us = 100 V)"</i>, <i>Figure 10: "ESD response to ISO 16605 ( C = 150 pF, R = 330 Ω, 8 kV contact)"</i> and <i>Figure 11: "ESD response to ISO 16605 ( C = 150 pF, R = 330 Ω, 8 kV contact)"</i>.</p> <p>Minor text changes to improve readability.</p>

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