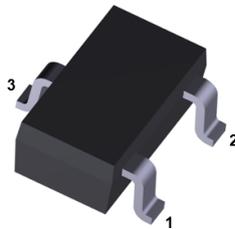
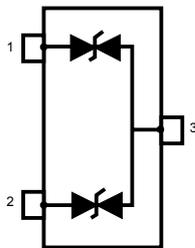


## Automotive transient voltage suppressor (TVS) in SOT23-3L



**SOT23-3L**  
(Jedec TO-236)



## Features

- AEC-Q101 qualified 
- Dual-line ESD and EOS protection
- Bidirectional device
- Max. pulse power: 140 W (8/20  $\mu$ s)
- Low clamping factor  $V_{CL}/V_{BR}$
- Low leakage current
- ECOPACK2 compliant
- Complies with the standard ISO 10605 - C = 150 pF, R = 330  $\Omega$ 
  - $\pm 13$  kV (air discharge)
  - $\pm 13$  kV (contact discharge)
- Complies with the standard ISO 10605 - C = 330 pF, R = 330  $\Omega$ 
  - $\pm 10$  kV (air discharge)
  - $\pm 10$  kV (contact discharge)
- Complies with the standard ISO 10605 - C = 330 pF, R = 2 k $\Omega$ 
  - $\pm 30$  kV (air discharge)
  - $\pm 30$  kV (contact discharge)
- Complies with the standard ISO 7637-3
  - Fast transient pulse 3a:  $V_s = -150$  V
  - Fast transient pulse 3b:  $V_s = +150$  V
  - Slow transient pulse 2a:  $V_s = -85$  V
  - Slow transient pulse 2a:  $V_s = +85$  V

## Product status link

[ESDAVLC6-2BLY](#)

## Product summary

Order code	ESDAVLC6-2BLY
Package	SOT23-3L
Packing	Tape and reel

## Application

- Automotive interfaces

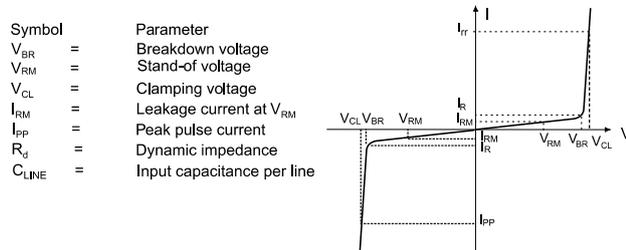
## Description

The ESDAVLC6-2BLY is a dual-line Transil specifically designed for the protection of the automotive buses lines against electrostatic discharge (ESD). Thanks to its low capacitance, this product is compliant with all key interfaces in automotive applications.

# 1 Characteristics

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

Symbol	Parameter	Value	Unit	
$V_{PP}$	Peak pulse voltage	ISO 10605 - C = 150 pF, R = 330 $\Omega$ : Contact discharge	13	kV
		Air discharge	13	
		ISO 10605 - C = 330 pF, R = 330 $\Omega$ : Contact discharge	10	
		Air discharge	10	
		ISO 10605 - C = 330 pF, R = 2 k $\Omega$ : Contact discharge	30	
		Air discharge	30	
$P_{PP}$	Peak pulse power dissipation (8/20 $\mu\text{s}$ ) $T_j \text{ initial} = T_{amb}$	140	W	
$I_{PP}$	Peak pulse current (8/20 $\mu\text{s}$ )	5.5	A	
$T_j$	Operating junction temperature range	-55 to +150	$^{\circ}\text{C}$	
$T_{stg}$	Storage temperature range	-55 to +150	$^{\circ}\text{C}$	

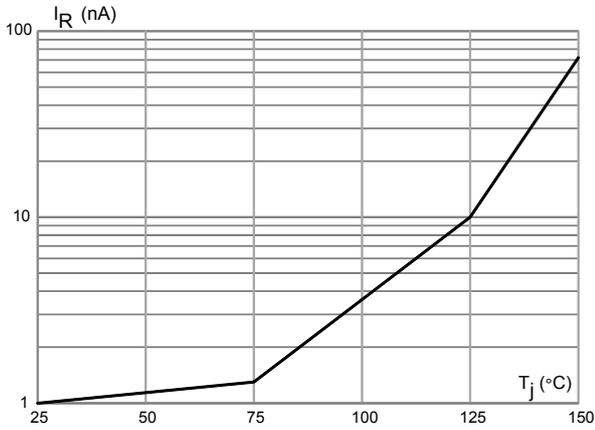
**Figure 1. Electrical characteristics (definitions)**

**Table 2. Electrical characteristics (values,  $T_{amb} = 25\text{ }^{\circ}\text{C}$ )**

Symbol	Test conditions	Min.	Typ.	Max.	Unit
$V_{BR}$	$I_R = 1\text{ mA}$	6		10	V
$I_R$	$V_{RM} = 5\text{ V}$			100	nA
$V_{CL}$	At $I_{PP} = 1\text{ A} - 8/20\text{ }\mu\text{s}$			12	V
	At $I_{PP} = 4\text{ A} - 8/20\text{ }\mu\text{s}$			17	
$C_{I/O-GND}$	$V_{I/O} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $V_{OSC} = 30\text{ mV}$		0.95	1.2	pF
$\Delta C_{I/O-GND}$			0.01		
$f_C$	$S_{21} = -3\text{ dB}$		3		GHz
$\alpha T^{(1)}$			9		$10^{-4}/^{\circ}\text{C}$

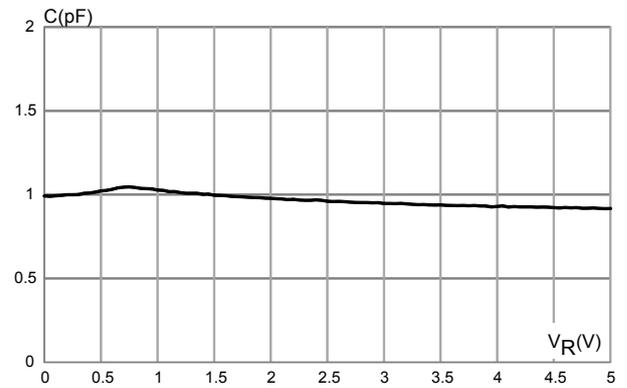
 1.  $V_{BR}$  at  $T_j = V_{BR}$  at  $25\text{ }^{\circ}\text{C} \times (1 + \alpha T \times (T_j - 25))$

## 1.1 Characteristics (curves)

**Figure 2. Leakage current versus junction temperature**



**Figure 3. Junction capacitance versus reverse applied voltage**



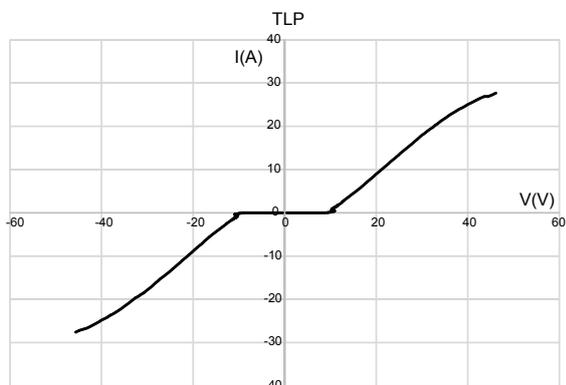
**Figure 4. ESD response to ISO10605-C = 150 pF, R = 330  $\Omega$  (+8 kV contact discharge)**



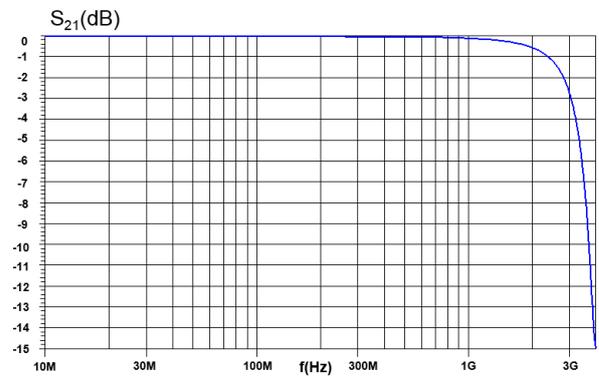
**Figure 5. ESD response to ISO10605-C = 150 pF, R = 330  $\Omega$  (-8 kV contact discharge)**



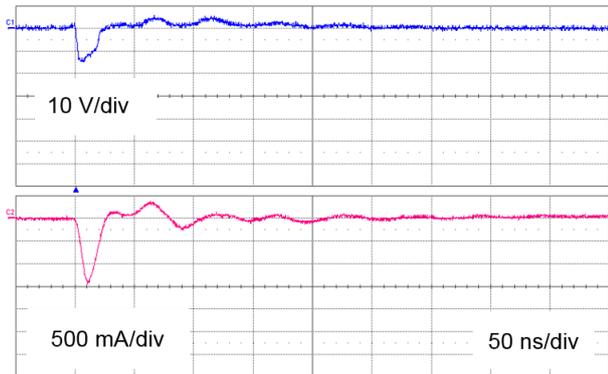
**Figure 6. TLP**



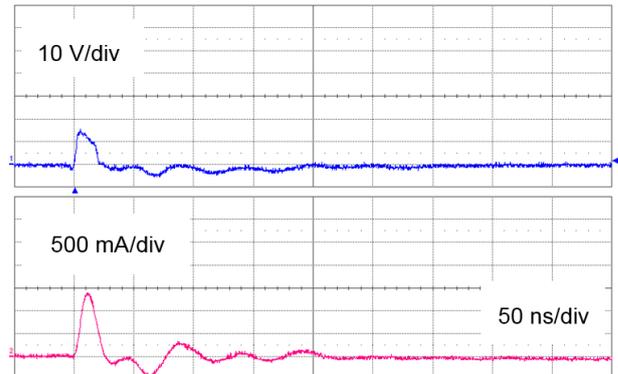
**Figure 7. S<sub>21</sub> attenuation**



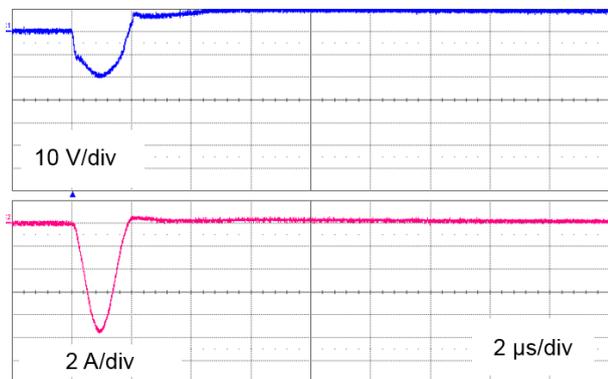
**Figure 8. Fast transient pulse 3a ( $U_s = -150\text{ V}$ )**



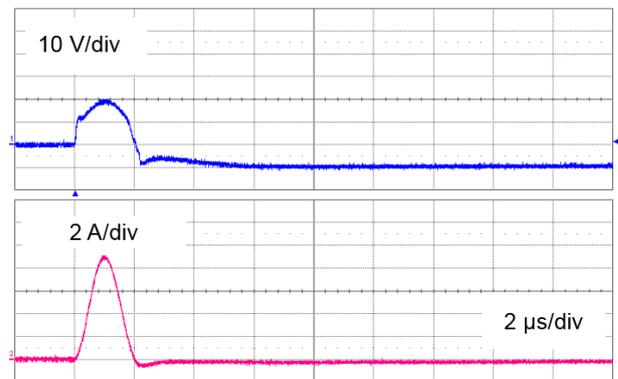
**Figure 9. Fast transient pulse 3b ( $U_s = +150\text{ V}$ )**



**Figure 10. Slow transient pulse 2a ( $U_s = -85\text{ V}$ )**



**Figure 11. Slow transient pulse 2a ( $U_s = +85\text{ V}$ )**



## 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.

### 2.1 SOT23-3L package information

Figure 12. SOT23-3L package outline

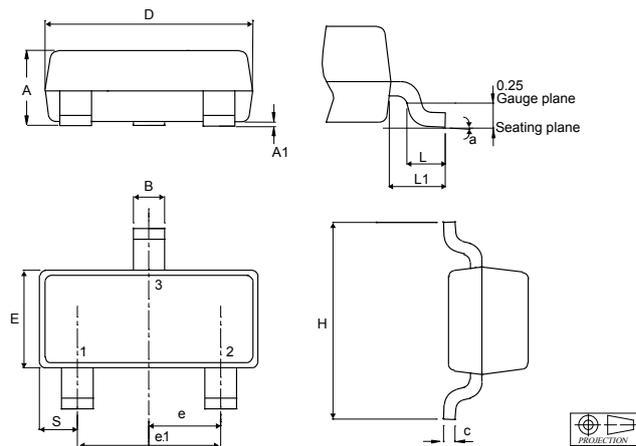
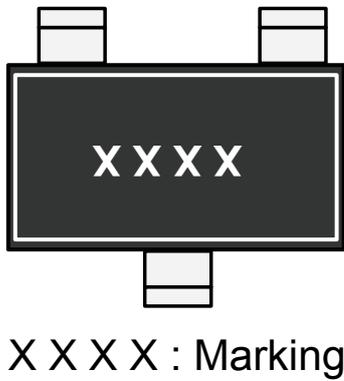


Table 3. SOT23-3L package mechanical data

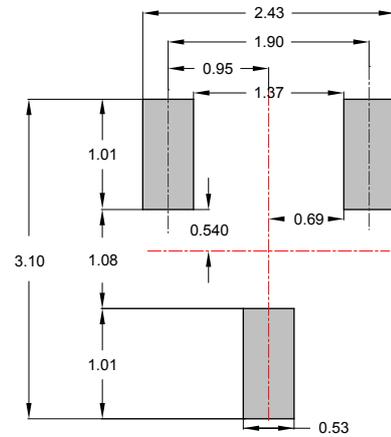
Ref.	Dimensions					
	Millimeters			Inches <sup>(1)</sup>		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.89		1.25	0.0350		0.050
A1	0.00		0.15	0.0000		0.006
B	0.30		0.51	0.011		0.021
C	0.085		0.20	0.003		0.008
D	2.75		3.04	0.108		0.120
E	1.20		1.75	0.047		0.069
e	0.85	0.95	1.05	0.033	0.037	0.042
e1	1.70	1.90	2.10	0.066	0.075	0.083
H	2.10		3.00	0.082		0.119
L	0.25		0.61	0.009		0.025
L1		0.55			0.022	
S	0.35		0.65	0.013		0.026
a	0°		8°	0°		8°

1. Dimension in inches are given for reference only.

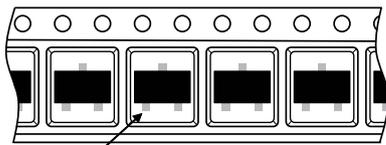
**Figure 13. SOT23-3L marking**



**Figure 14. SOT23-3L footprint in mm**



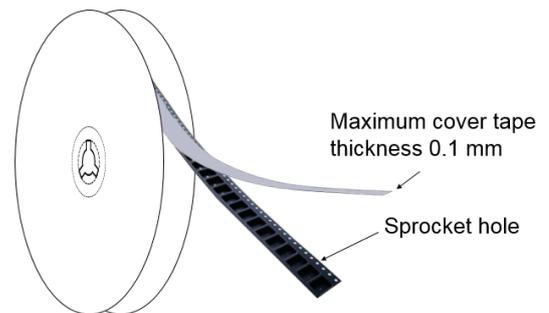
**Figure 15. Package orientation in reel**



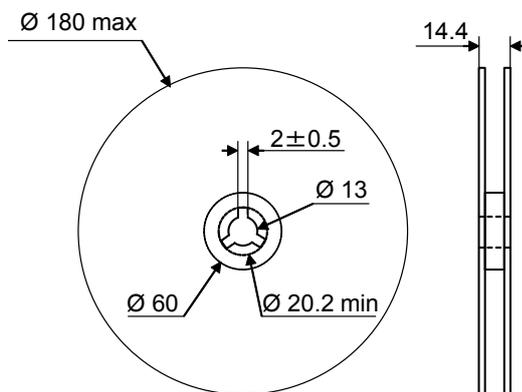
Pin 1 located according to EIA-481

Note: Pocket dimensions are not on scale  
Pocket shape may vary depending on package

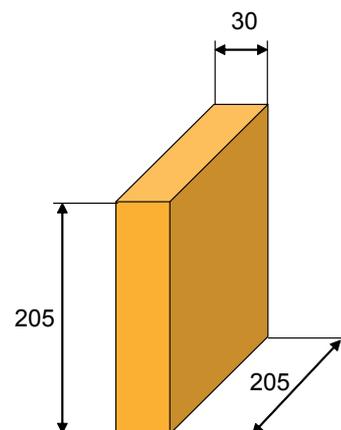
**Figure 16. Tape and reel orientation**



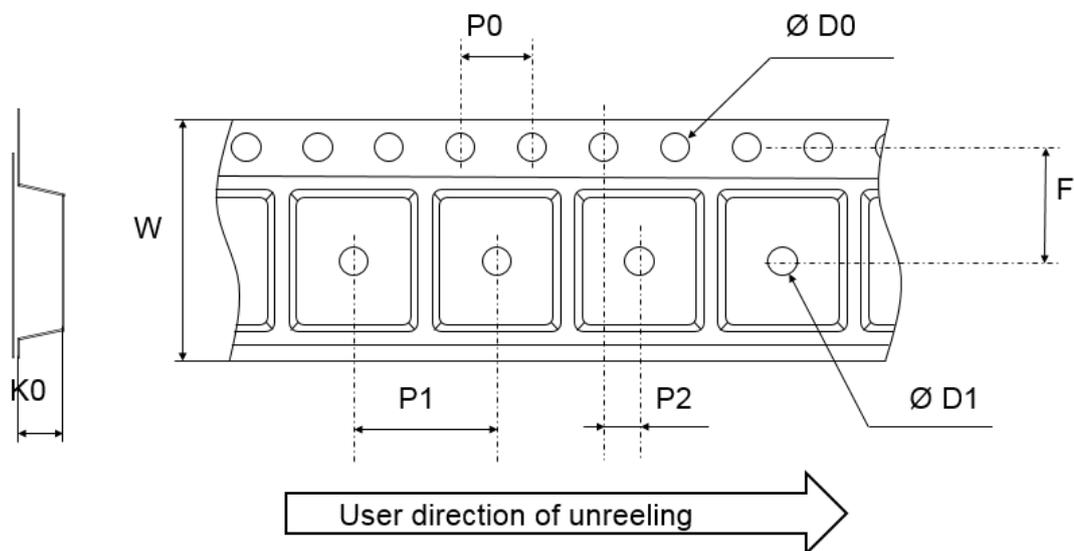
**Figure 17. 7" reel dimension values**



**Figure 18. Inner box dimension values**



**Figure 19. Tape outline**



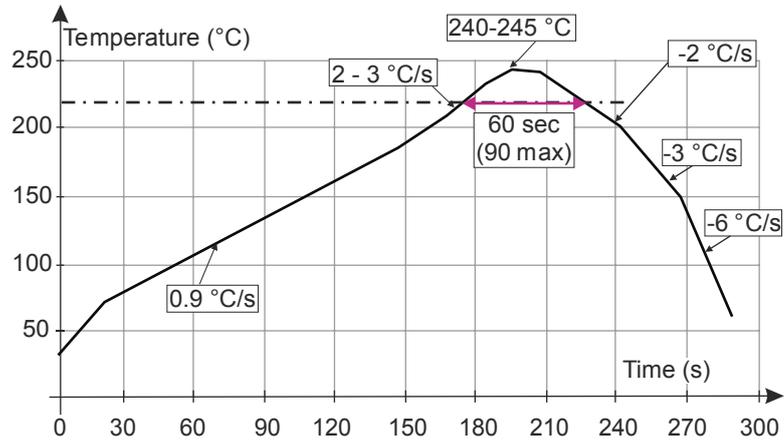
Note: Pocket dimensions are not on scale  
Pocket shape may vary depending on package

**Table 4. Tape dimension values**

Ref.	Dimensions		
	Millimeters		
	Min.	Typ.	Max.
D0	1.45	1.5	1.6
D1	1		
F	3.45	3.5	3.55
K0	1.3	1.4	1.5
P0	3.9	4.0	4.1
P1	3.9	4.0	4.1
P2	1.95	2.0	2.05
W	7.9	8	8.3

## 2.3 Reflow profile

Figure 20. ST ECOPACK® recommended soldering reflow profile for PCB mounting



**Note:** Minimize air convection currents in the reflow oven to avoid component movement. Maximum soldering profile corresponds to the latest IPC/JEDEC J-STD-020.

### 3 Ordering information

Figure 21. Ordering information scheme

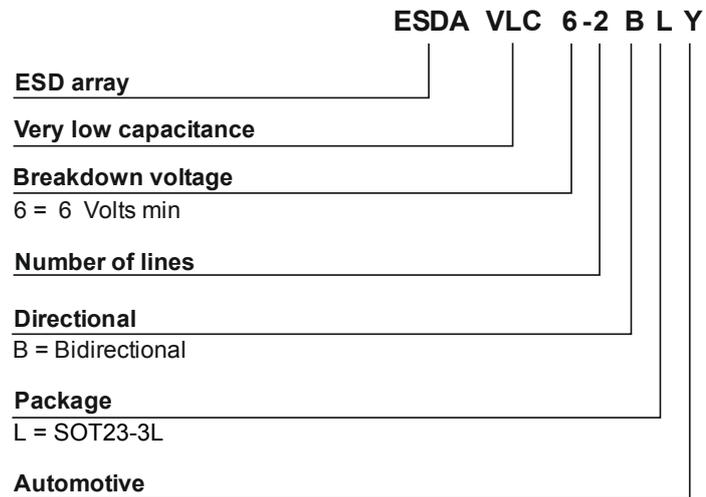


Table 5. Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
ESDAVLC6-2BLY	C06Y	SOT23-3L	10 mg	3000	Tape and reel

## Revision history

**Table 6. Document revision history**

Date	Version	Changes
28-Sep-2018	1	Initial release.
18-Oct-2018	2	Updated Table 2. Electrical characteristics (values, $T_{amb} = 25\text{ °C}$ ).
04-May-2022	3	Updated Section 2.1 SOT23-3L package information and Figure 14.

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