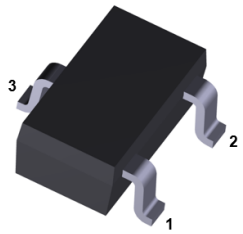
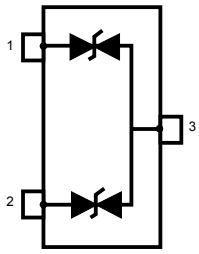
ESDAVLC6-2BLY

Datasheet

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



SOT23-3L
(Jedec TO-236)



Product status link
ESDAVLC6-2BLY

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

Features

- AEC-Q101 qualified
- Dual-line ESD and EOS protection
- Bidirectional device
- Max. pulse power: 140 W (8/20 µs)
- Low clamping factor V_{CL}/V_{BR}
- Low leakage current
- ECOPACK®2 compliant
- Complies with the standard ISO 10605 - C = 150 pF, R = 330 Ω
  - ±13 kV (air discharge)
  - ±13 kV (contact discharge)
- Complies with the standard ISO 10605 - C = 330 pF, R = 330 Ω
  - ±10 kV (air discharge)
  - ±10 kV (contact discharge)
- Complies with the standard ISO 10605 - C = 330 pF, R = 2 kΩ
  - ±30 kV (air discharge)
  - ±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

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 °C)

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

Figure 1. Electrical characteristics (definitions)

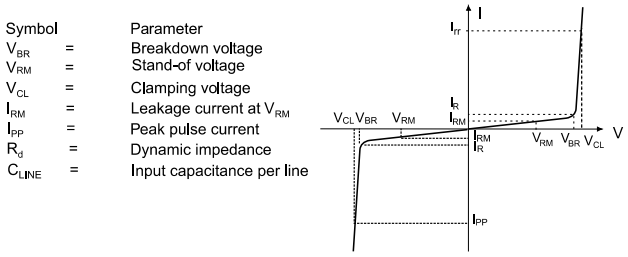


Table 2. Electrical characteristics (values, T_{amb} = 25 °C)

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

1. *V_{BR} at T_j = V_{BR} at 25 °C x (1 + αT x (T_j– 25))*

1.1 Characteristics (curves)

Figure 2. Leakage current versus junction temperature

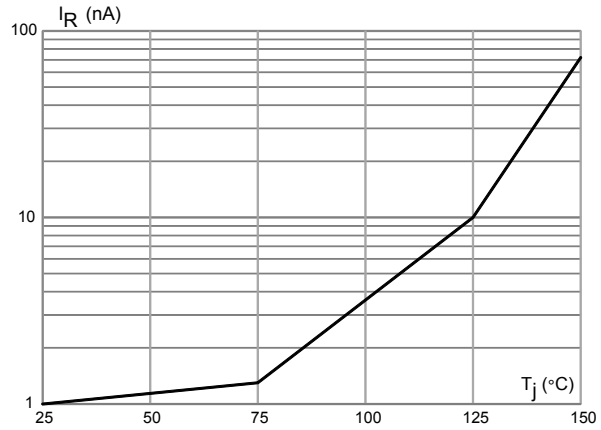


Figure 3. Junction capacitance versus reverse applied voltage

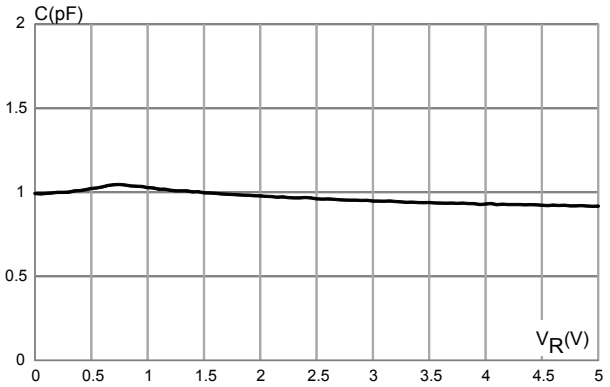


Figure 4. ESD response to ISO10605-C = 150 pF, R = 330 Ω (+8 kV contact discharge)

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

Figure 6. TLP

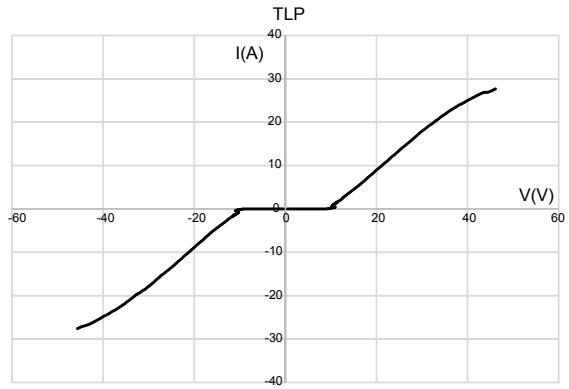


Figure 7. S21 attenuation

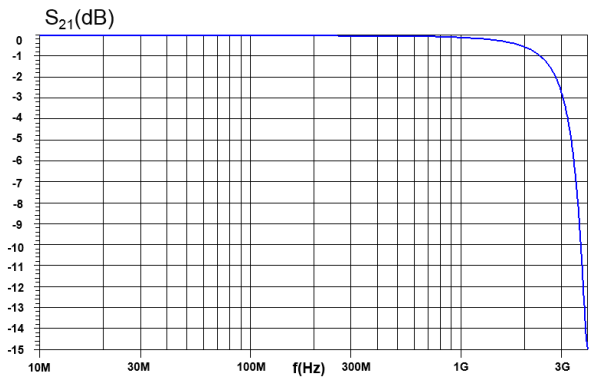


Figure 8. **Fast transient pulse 3a (Us = -150 V)**

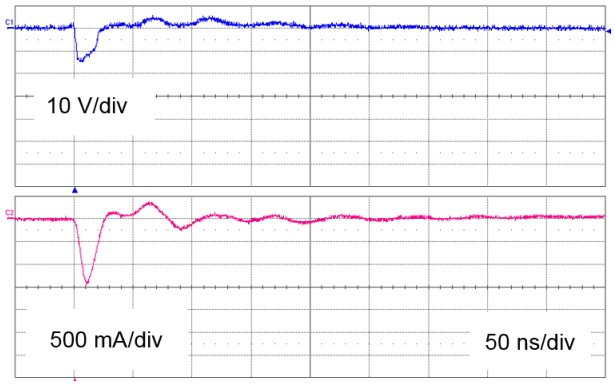


Figure 9. **Fast transient pulse 3b (Us = +150 V)**

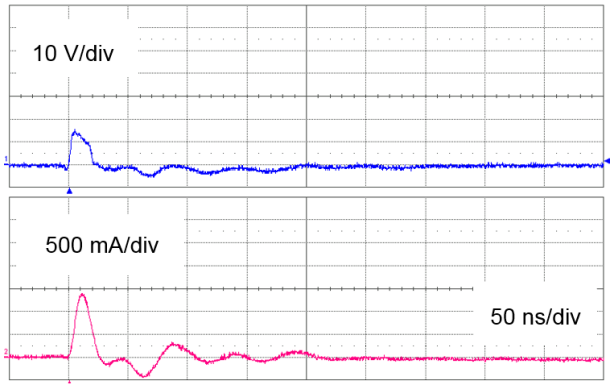


Figure 10. **Slow transient pulse 2a (Us = - 85 V)**

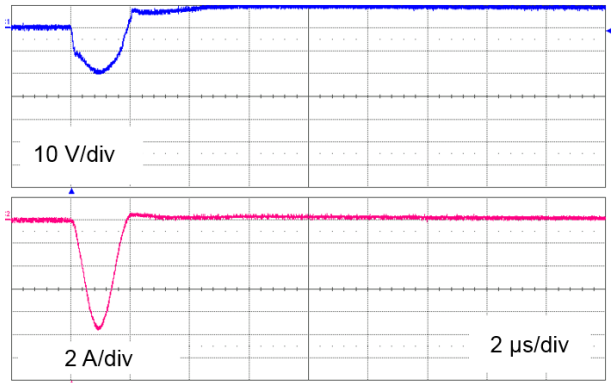
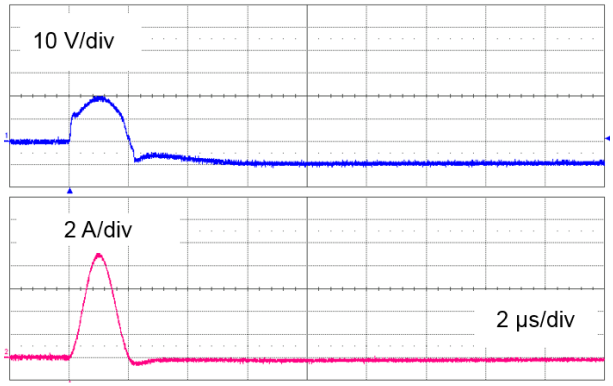


Figure 11. **Slow transient pulse 2a (Us = + 85 V)**



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. ECOPACK® is an ST trademark.

2.1 SOT23-3L package information

Figure 12. SOT23-3L package outline

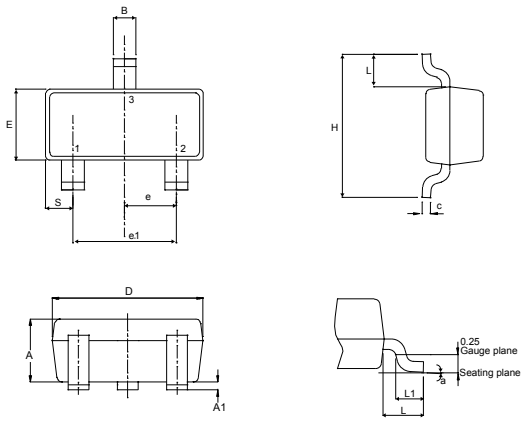


Table 3. SOT23-3L package mechanical data

Ref.	Dimensions					
	Millimeters			Inches[1]		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.89		1.40	0.0350		0.0551
A1	0.00		0.10	0.0000		0.0039
B	0.30		0.51	0.0118		0.0201
C	0.085		0.18	0.0033		0.0071
D	2.75		3.04	0.1083		0.1197
e	0.85		1.05	0.0335		0.0413
e1	1.70		2.10	0.0669		0.0827
E	1.20		1.75	0.0472		0.0689
H	2.10		3.00	0.0827		0.1181
L		0.60			0.0236	
S	0.35		0.65	0.0138		0.256
L1	0.25		0.55	0.0098		0.0217
a	0°		8°	0°		8°

1. *Dimension in inches are given for reference only.*

Figure 13. SOT23-3L marking

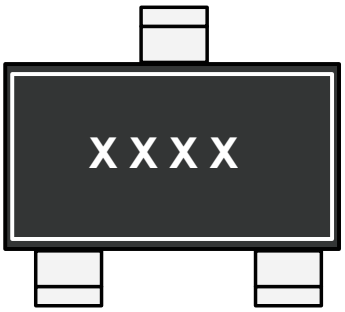


Figure 14. SOT23-3L footprint in mm (inches)

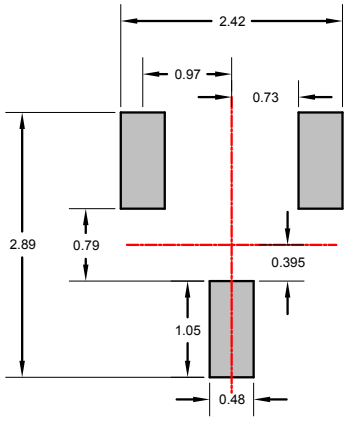
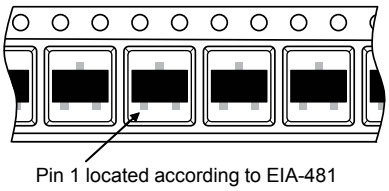


Figure 15. Package orientation in reel



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

Figure 16. Tape and reel orientation

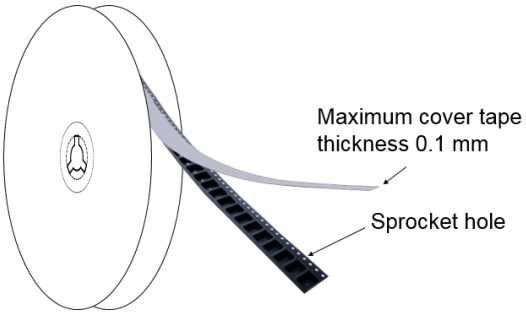


Figure 17. 7" reel dimension values

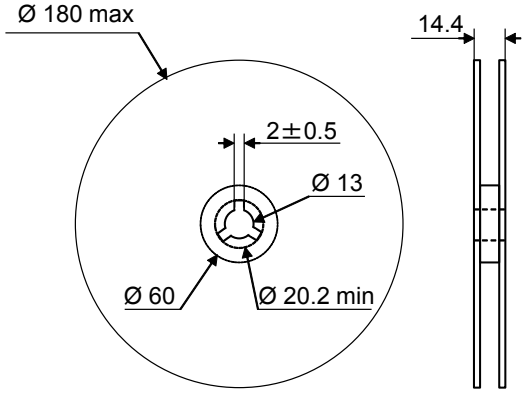


Figure 18. Inner box dimension values

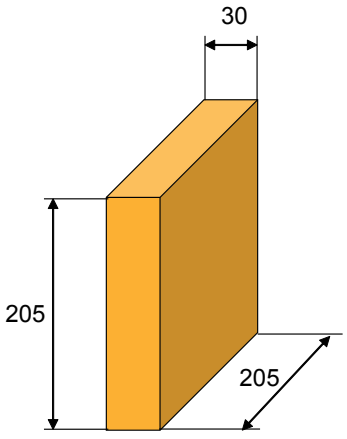
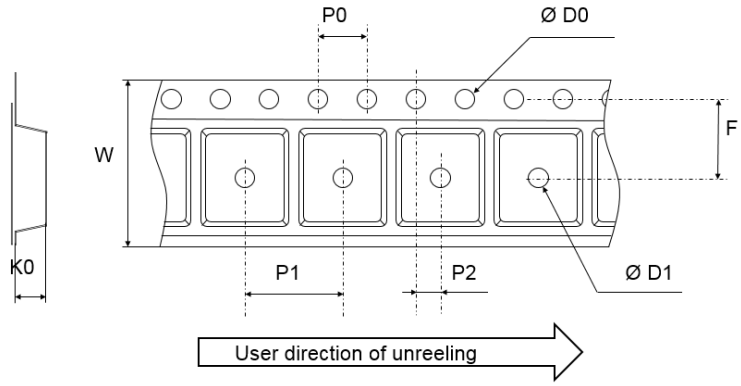


Figure 19. **Tape outline**



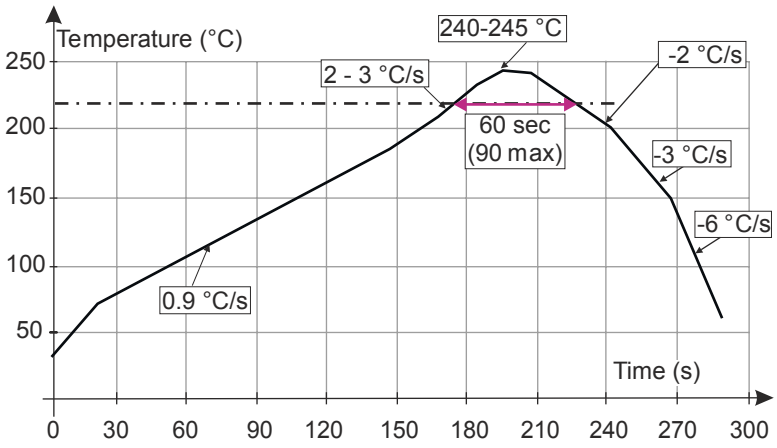
Note: Pocket dimensions are not on scale
Pocket shape may vary depending on package

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**

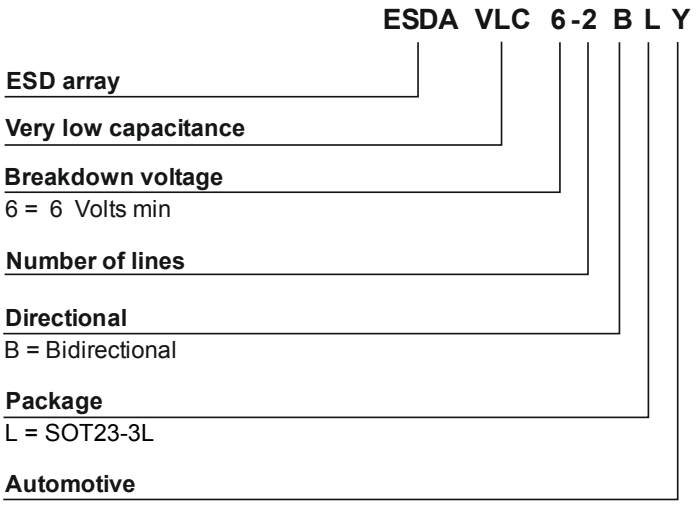


Table 5. **Ordering information**

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 °C).

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