

ESD protection for LIN nodes

Designed for ESD protection of LIN bus nodes in automotive applications



Automaker requirements to ESD robustness on module level for data lines are far above the capability of today's data transceivers, covering only the ESD human body model.

STMicroelectronics' ESDLIN1524BJ is designed to protect LIN transceivers from hazardous electrostatic energy, providing an instantaneous response to transient over-voltages.

The asymmetric clamping structure prevents in case of electromagnetic radiation into the bus line a parasitic rectification, pulling the output DC level to an unrequested dominant status.

This results in conjunction with an LC filter to a proper EMC performance. The transil diode is housed inside the popular SOD323 package and allows space saving on high density printed circuit boards.

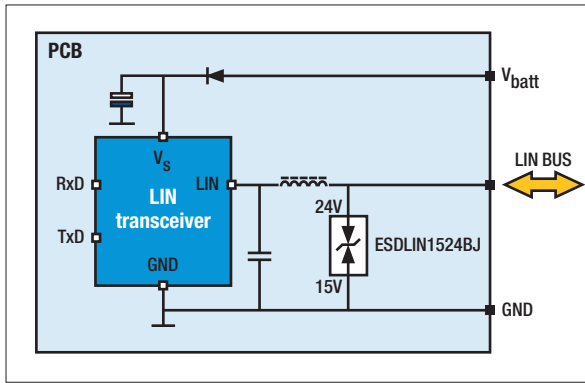
Key features

- Electrostatic discharge capability up to 23kV
- Exceeding ESD standards
- Asymmetrical bidirectional configuration
- Ultra low leakage current
- Low clamping factor (V_{CL}/V_{BR})
- Tiny SOD323 package
- RoHS compliant
- AEC-Q101 qualified

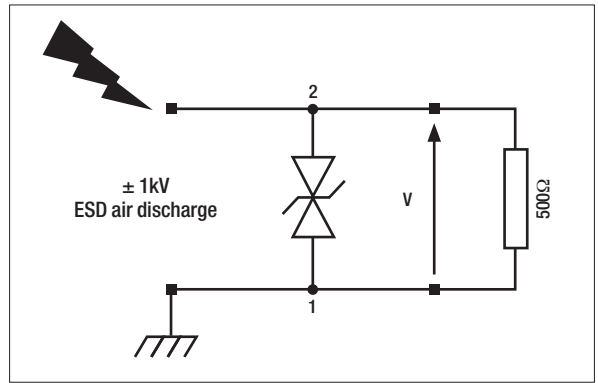
Key benefits

- Asymmetrical configuration ensures optimized electromagnetic immunity of the application
- Instantaneous response to transient over-voltages increases overall reliability
- PCB space saving due to integration of bidirectional structure in a tiny package
- Protection concept recommended by major car manufacturers

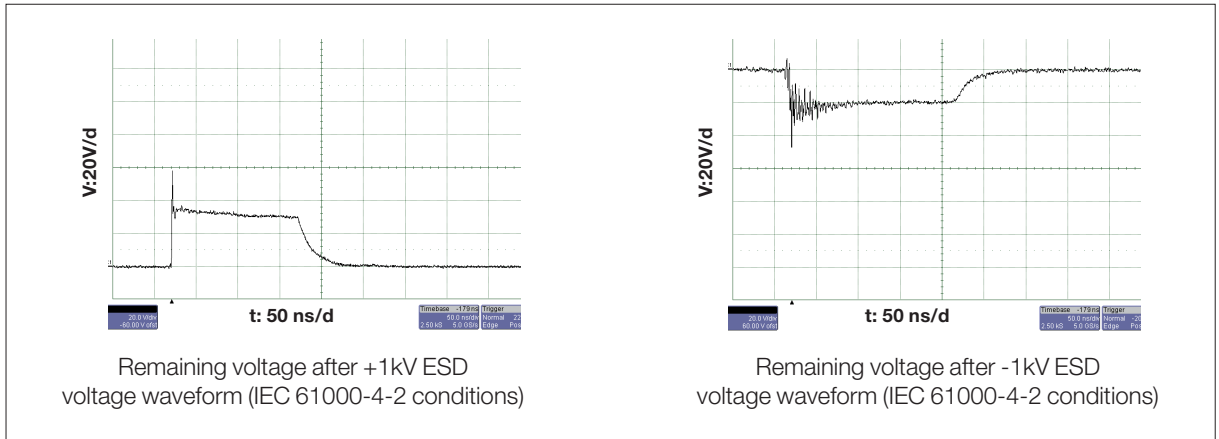
Principal configuration of the protection circuit



ESD test setup



Clamping test results



Key electrical characteristics

ESD capability	23kV	IEC 61000-4-2 level 4
	10kV	(>8kV, contact discharge, 150pF/330Ω)
Peak pulse current	3A	MIL STD 883 class 3 (>4kV, human body model)
Peak pulse power	160W	IEC 61000-4-5 (tp = 8/20μs)
Leakage current	<1nA	tp = 8/20μs
Stand-off voltage	15V/24V	Typical
Breakdown voltage	18.9V/27.8V	Typical
Clamp voltage	25V/40V	Maximum
Operating junction temperature	-40 to +150°C	



The SOD323 package is an ECOPACK® version, compliant with the European Directive 2002/95/EC relating to restrictions on hazardous substances (RoHS).



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