Features

- ESD protection for one line with bi-directional
- Provide transient protection for one line to
  IEC 61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
  IEC 61000-4-5 (Lightning) 3A (8/20μs)
- Suitable for, 27V and below, operating voltage applications
- Fast turn-on and low clamping voltage
- Solid-state silicon-avalanche and active circuit triggering technology
- Protect one I/O line or power line
- ***Green part***
- ***AEC-Q101 qualified***

Applications

- Automotive application
- LIN bus application
- CAN bus application
- Power management system
- Industrial control
- Portable instrumentation
- Peripherals

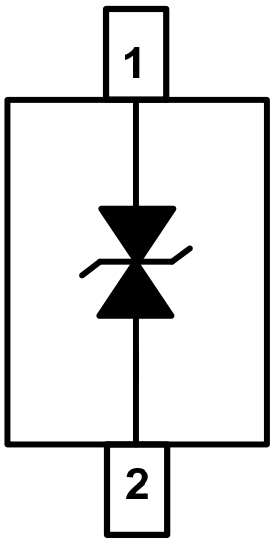
Description

AZ9827-01L is a design which includes one bi-directional ESD rated clamping cell to protect one power line, or one control line, or one low-speed data line in an electronic system. The AZ9827-01L has been specifically designed to protect sensitive components which are connected to power and control lines from over-voltage damage caused by Electrostatic Discharging (ESD), Lightning, and Cable Discharge Event (CDE).

AZ9827-01L is a unique design which includes proprietary clamping cell in a single package. During transient conditions, the proprietary clamping cell prevents over-voltage on the power line or control/data lines, protecting any downstream components.

AZ9827-01L may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 (±15kV air, ±8kV contact discharge).

Circuit Diagram / Pin Configuration



SOD323-2L (Top View)

Specifications

Absolute Maximum Ratings			
Parameter	**Symbol**	**Rating**	**Unit**
Peak Pulse Current (t_p=8/20μs)	I_{PP} (Note 1)	3	A
Operating Voltage	V_{DC}	±28	V
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD-1} V_{ESD-2}	±30 ±30	kV
Lead Soldering Temperature	T_{SOL}	260 (10 sec.)	°C
Operating Temperature	T_{OP}	-55 to +150	°C
Storage Temperature	T_{STO}	-55 to +150	°C

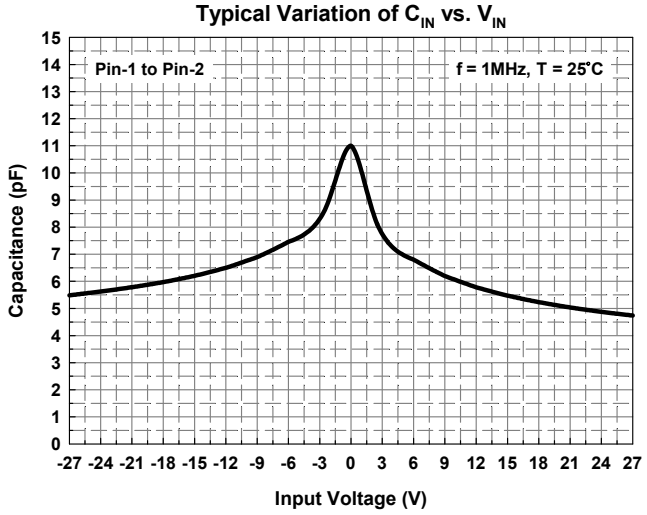
Electrical Characteristics						
Parameter	**Symbol**	**Condition**	**Min**	**Typ**	**Max**	**Unit**
Reverse Stand-Off Voltage	V_{RWM}	T=25°C.	-27		27	V
Reverse Leakage Current	I_{Leak}	V_{RWM} = ±27V, T=25°C.			1	μA
Reverse Breakdown Voltage	V_{BV}	I_{BV} = 1mA, T=25°C.	28.5		40	V
Surge Clamping Voltage (Note 1)	$V_{CL-Surge}$	I_{PP} = 3A, t_p = 8/20μs, T=25°C.		36		V
ESD Clamping Voltage (Note 2)	V_{CL-ESD}	IEC 61000-4-2 +8kV (I_{TLP} = 16A), contact mode, T=25°C.		35		V
ESD Dynamic Turn-on Resistance	$R_{dynamic}$	IEC 61000-4-2, 0~+8kV, contact mode, T=25°C.		0.2		Ω
Channel Input Capacitance	C_{IN}	V_{IN} = 0V, f = 1MHz, T=25°C.		11	17	pF

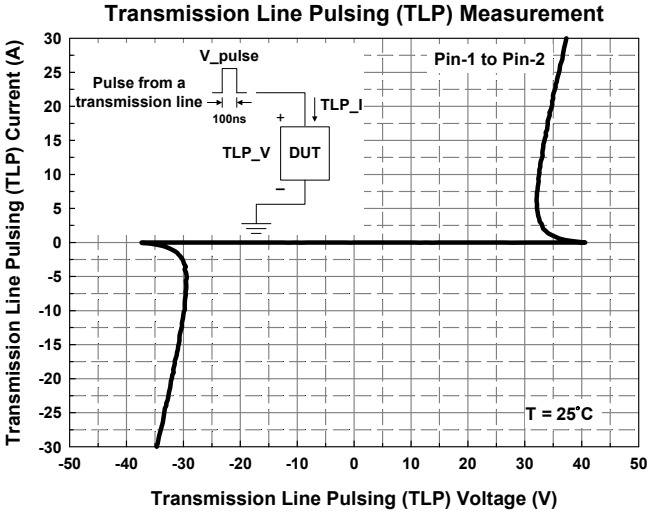
Note 1: The Peak Pulse Current measured conditions: t_p = 8/20μs, 2Ω source impedance.

Note 2: ESD Clamping Voltage was measured by Transmission Line Pulsing (TLP) System.

TLP conditions: Z_0= 50Ω, t_p= 100ns, t_r= 1ns.

Typical Characteristics





Application Information

The AZ9827-01L is designed to protect one automotive LIN bus line against system ESD/Lightning pulses by clamping it to an acceptable reference.

The usage of the AZ9827-01L for LIN bus protection is shown in Fig. 1. The protected line is connected to pin 1. The pin 2 is connected to a ground plane on the board. In order to minimize parasitic inductance in the board traces, all path lengths connected to the pins of AZ9827-01L should be kept as short as possible.

In order to obtain enough suppression of ESD induced transient, a good circuit board is critical. Thus, the following guidelines are recommended:

- Minimize the path length between the protected lines and the AZ9827-01L.
- Place the AZ9827-01L near the input terminals or connectors to restrict transient coupling.
- The ESD current return path to ground should be kept as short as possible.
- Use ground planes whenever possible.
- NEVER route critical signals near board edges and near the lines which the ESD transient easily injects to.

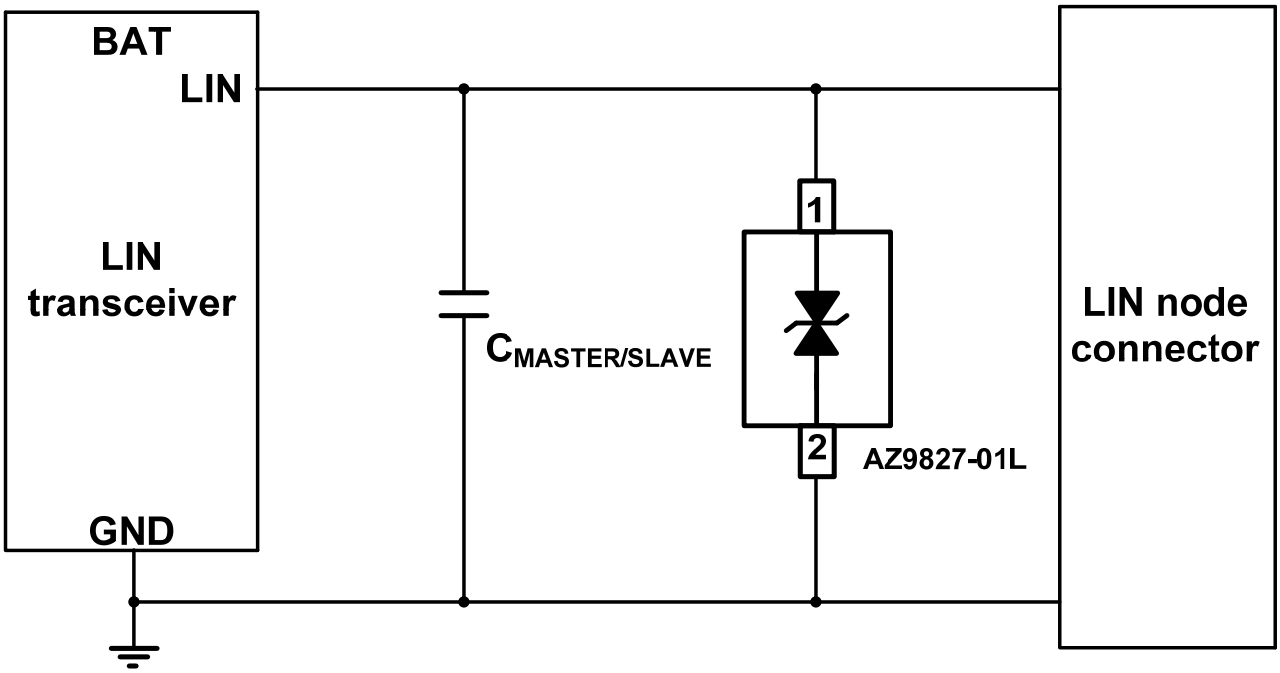
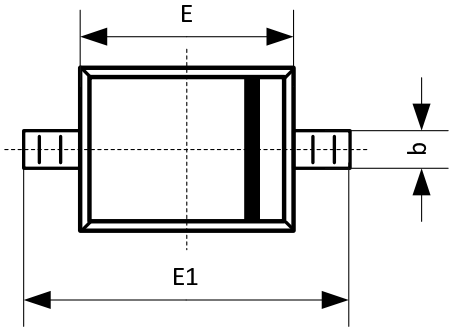


Fig. 1

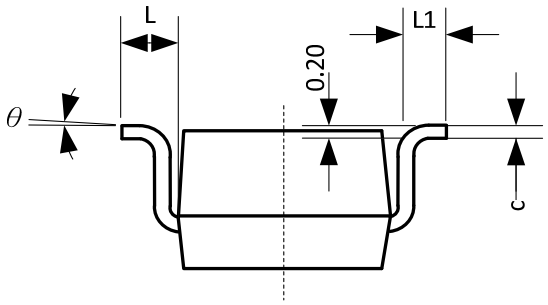
Mechanical Details

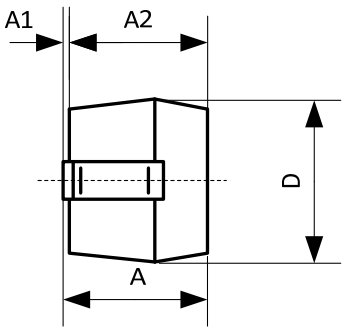
SOD323-2L
Package Diagrams

TOP VIEW



SIDE VIEW

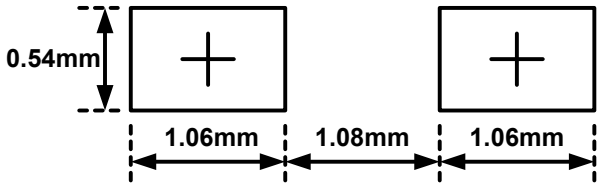




Package Dimensions

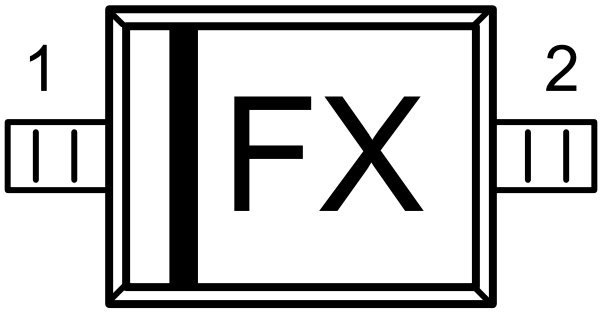
SYMBOL	MILLIMETERS	
	MIN.	MAX.
A	0.80	1.00
A1	0.00	0.10
A2	0.80	0.90
b	0.25	0.35
c	0.08	0.15
D	1.20	1.40
E	1.60	1.80
E1	2.50	2.70
L	0.475 REF	
L1	0.25	0.40
θ	0	8

Land Layout



Notes:
This LAND LAYOUT is for reference purposes only. Please consult your manufacturing partners to ensure your company's PCB design guidelines are met.

Marking Code



Part Number	Marking Code
AZ9827-01L.R7G (Green Part)	FX

Note. Green means Pb-free, RoHS, and Halogen free compliant.

F = Device Code
X = Date Code

Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ9827-01L.R7G	Green	T/R	7 inch	3,000/reel	4 reels=12,000/box	6 boxes=72,000/carton

Revision History

Revision	Modification Description
Revision 2024/02/20	Preliminary Release.
Revision 2025/03/12	Formal Release.