Features

- ESD Protection for 1 Line with Bi-directional
- Provide ESD protection for the protected line to
  IEC 61000-4-2 (ESD) ±30kV (air / contact)
  IEC 61000-4-4 (EFT) 80A (5/50ns)
  IEC 61000-4-5 (Lightning) 12A (8/20μs)
- Ultra-small SOD-523 package saves board space.
- Protect one I/O line or one power line
- Fast turn-on and low clamping voltage
- For low operating voltage applications: 5V maximum
- Solid-state silicon-avalanche and active circuit triggering technology
- ***Green part***

Applications

- Computer Interfaces Protection
- Microprocessors Protection
- Serial and Parallel Ports Protection
- Control Signal Lines Protection
- Power lines on PCB Protection
- Latchup Protection

Description

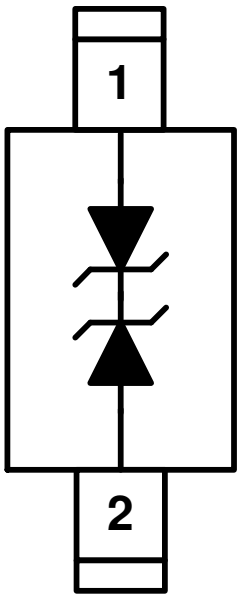
AZ5925-01H is a design which includes a bi-directional ESD rated clamping cell to protect one power line, or one control line, or one low speed data line in an electronic system. The AZ5925-01H has been specifically designed to protect sensitive components which are connected to power and control lines from over-voltage damage caused by Electrostatic Discharging (ESD), Electrical Fast Transients (EFT), and Lightning.

AZ5925-01H is a unique design which includes proprietary clamping cells in a single package. During transient conditions, the proprietary clamping cells prevent over-voltage on the power line or control/data lines, protecting any downstream components.

AZ5925-01H is bi-directional and may be used on lines where the signal swings above and below ground.

AZ5925-01H 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



SOD-523 (Top View)

SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS			
PARAMETER	**SYMBOL**	**RATING**	**UNITS**
Peak Pulse Current (tp = 8/20μs)	I_{PP}	12	A
Operating Supply Voltage	V_{DC}	±5.5	V
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	±30 ±30	kV
Lead Soldering Temperature	T_{SOL}	260 (10 sec.)	℃
Operating Temperature	T_{OP}	-55 to +85	℃
Storage Temperature	T_{STO}	-55 to +150	℃

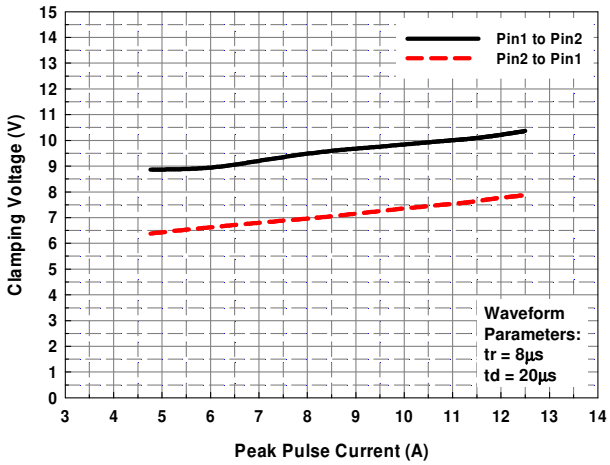
ELECTRICAL CHARACTERISTICS						
PARAMETER	**SYMBOL**	**CONDITIONS**	**MINI**	**TYP**	**MAX**	**UNITS**
Reverse Stand-Off Voltage	V_{RWM}	T = 25°C.	-5		5	V
Reverse Leakage Current	I_{Leak}	V_{RWM} = ±5V, T = 25°C.			100	nA
Reverse Breakdown Voltage	V_{BV}	I_{BV} = 1mA, T = 25°C.	5.6		9	V
Surge Clamping Voltage	$V_{CL-surge}$	I_{PP} = 5A, tp = 8/20μs, T = 25°C.		9.0		V
ESD Clamping Voltage (Note 1)	V_{clamp}	IEC 61000-4-2 +8kV (I_{TLP} = 16A), T = 25°C, Contact mode.		9.5		V
ESD Dynamic Turn-on Resistance	$R_{dynamic}$	IEC 61000-4-2 0 ~ +8kV, Contact mode, T = 25°C.		0.1		Ω
Channel Input Capacitance	C_{IN}	V_R = 0V, f = 1MHz, T = 25°C.		27	33	pF

Note 1: ESD Clamping Voltage was measured by Transmission Line Pulsing (TLP) System.

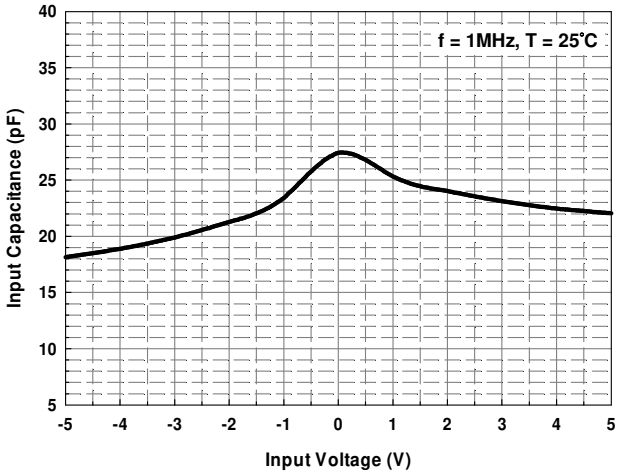
TLP conditions: Z_0= 50Ω, t_p= 100ns, t_r= 1ns.

Typical Characteristics

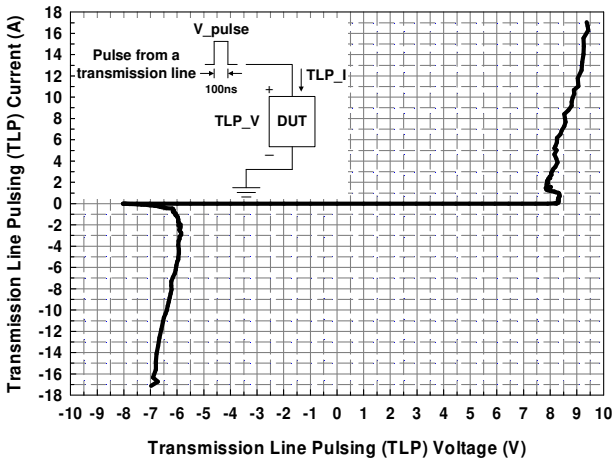
Reverse Clamping Voltage vs. Peak Pulse Current



Typical Variation of C_{IN} vs. V_{IN}



Transmission Line Pulsing (TLP) Measurement



Applications Information

The AZ5925-01H is designed to protect one line against system ESD/EFT/Lightning pulses by clamping them to an acceptable reference. It provides bi-directional protection.

The usage of the AZ5925-01H is shown in Fig. 1. Protected line, such as data lines, control lines, or power lines, is connected at pin 1. The pin 2 is connected to a ground plane on the board. Since AZ5925-01H is bi-directional, these connections can be reversed (protected line to pin 2, ground to pin 1). In order to minimize parasitic inductance in the board traces, all path lengths connected to the pins of AZ5925-01H should be kept as short as possible.

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

- Minimize the path length between the protected lines and the AZ5925-01H.
- Place the AZ5925-01H 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.

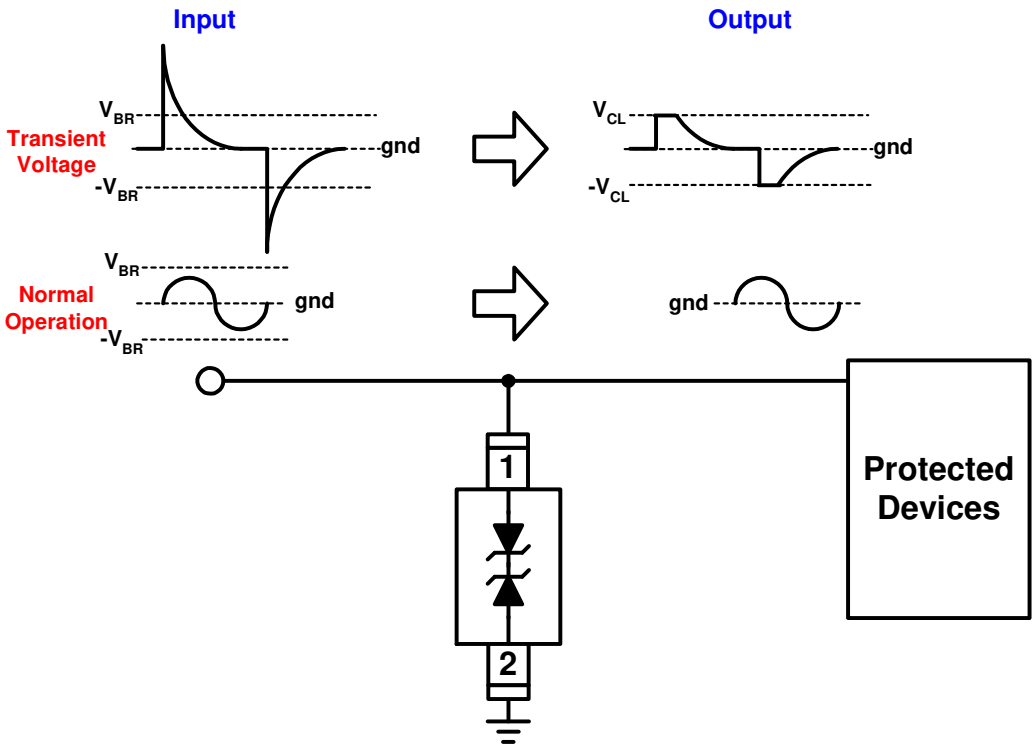
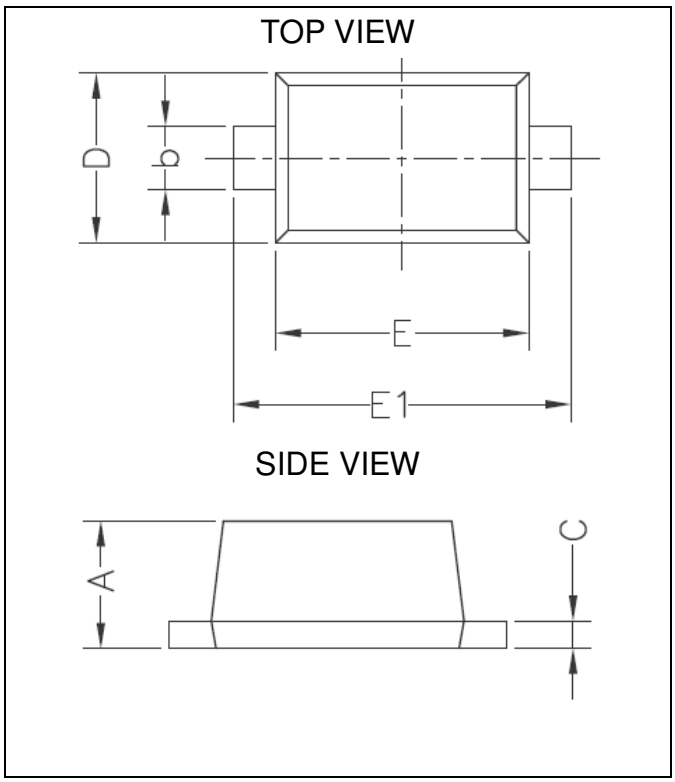


Fig. 1 ESD protection scheme by using AZ5925-01H.

Mechanical Details

SOD-523

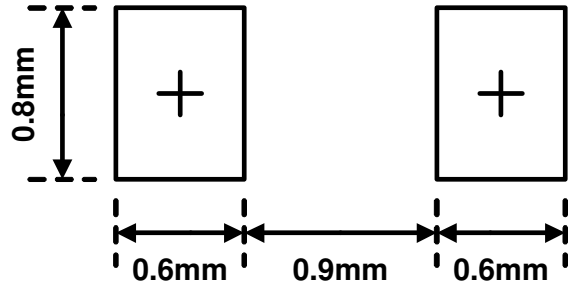
PACKAGE DIAGRAMS



PACKAGE DIMENSIONS

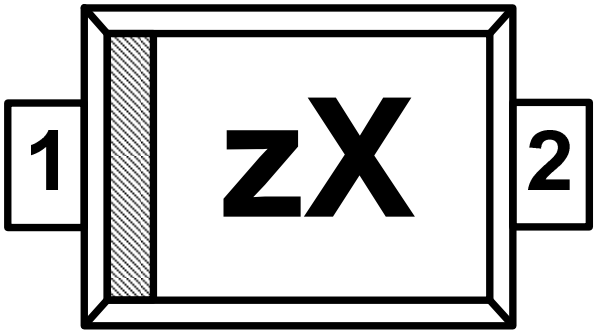
Symbol	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.5	0.77	0.020	0.030
b	0.25	0.35	0.010	0.014
C	0.08	0.2	0.003	0.008
D	0.7	0.9	0.028	0.035
E	1.1	1.3	0.043	0.051
E1	1.5	1.7	0.059	0.067

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



z = Device Code
X = Date Code

Part Number	Marking Code
AZ5925-01H.R7G (Green Part)	zX

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

Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ5925-01H.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 2015/11/24	Preliminary Release.
Revision 2017/05/16	Formal Release.