Features

- ESD/Surge Protection for 1 Line with Bi-directional
- Provide ESD protection for each line to
  IEC 61000-4-2 (ESD) ±30kV (air / contact)
  IEC 61000-4-4 (EFT) 80A (5/50ns)
  IEC 61000-4-5 (Lightning) 60A (8/20μs)
- Suitable for**, 2.5V and below,** operating voltage applications
- Small package saves board space
- Protect one I/O line or one power line
- Fast turn-on and low clamping voltage
- 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
- Power management systems

Description

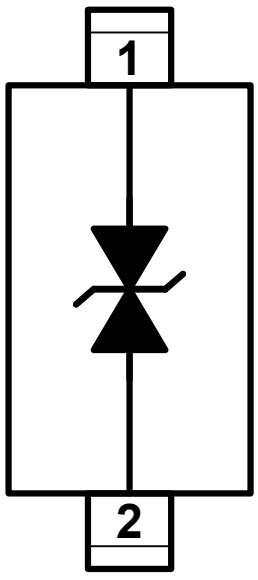
AZ6425-01G is a design which includes a bi-directional surge rated clamping cell to protect one power line, or one control line, or one low speed data line in an electronic system. The AZ6425-01G has been specifically designed to protect sensitive components which are connected to power and control lines from over-voltage damage caused by Electrostatic Discharging (ESD), Electrical Fast Transients (EFT), Lightning, and Cable Discharge Event (CDE).

AZ6425-01G 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.

AZ6425-01G is bi-directional and may be used on lines where the signal swings above and below ground.

AZ6425-01G 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-123 (Top View)

SPECIFICATIONS

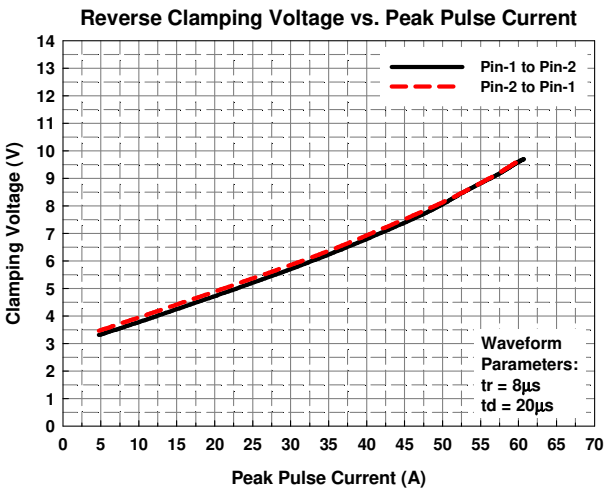
ABSOLUTE MAXIMUM RATINGS			
PARAMETER	**SYMBOL**	**RATING**	**UNITS**
Peak Pulse Current (tp =8/20μs)	I_{PP}	60	A
Operating Supply Voltage	V_{DC}	±2.8	V
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD-1} V_{ESD-2}	±30 ±30	kV
Lead Soldering Temperature	T_{SOL}	260 (10 sec.)	°C
Operating Temperature	T_{OP}	-55 to +85	°C
Storage Temperature	T_{STO}	-55 to +150	°C

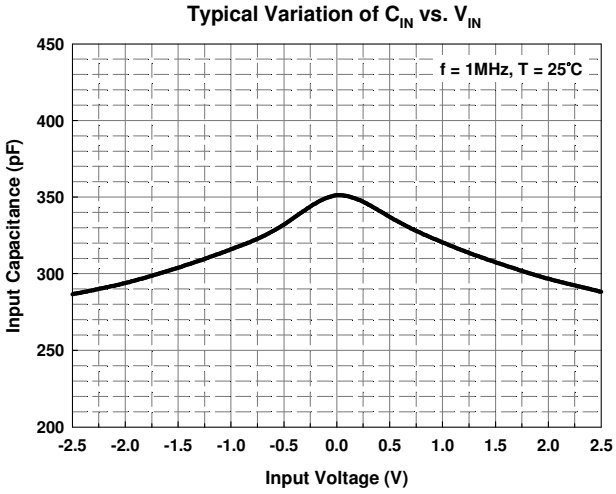
ELECTRICAL CHARACTERISTICS						
PARAMETER	**SYMBOL**	**CONDITIONS**	**MINI**	**TYP**	**MAX**	**UNITS**
Reverse Stand-Off Voltage	V_{RWM}	T= 25°C.	-2.5		2.5	V
Reverse Leakage Current	I_{Leak}	V_{RWM} = ±2.5V, T= 25°C.			2	μA
Reverse Breakdown Voltage	V_{BV}	I_{BV} = 1mA, T= 25°C.	3.5			V
Surge Clamping Voltage	$V_{CL-surge}$	I_{PP} = 5A, tp = 8/20μs, T= 25°C.		3.5		V
		I_{PP} = 60A, tp = 8/20μs, T= 25°C.		9.5		
ESD Clamping Voltage (Note 1)	V_{clamp}	IEC 61000-4-2 +8kV (I_{TLP}= 16A), Contact mode, T= 25°C.		4.7		V
ESD Dynamic Turn-on Resistance	$R_{dynamic}$	IEC 61000-4-2 0~+8kV, Contact mode, T= 25 °C.		0.05		Ω
Channel Input Capacitance	C_{IN}	V_R = 0V, f = 1MHz, T=25 °C.		350	390	pF

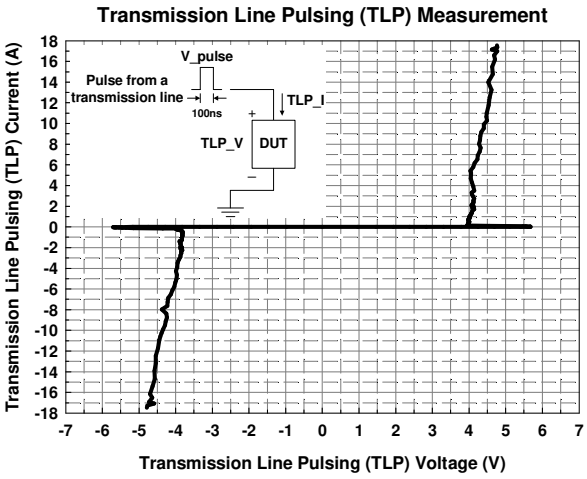
Note 1: ESD Clamping Voltage was measured by Transmission Line Pulsing (TLP) System.

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

Typical Characteristics







Applications Information

The AZ6425-01G 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 AZ6425-01G is shown in Fig. 1. Protected line, such as data line, control line, or power line, is connected at 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 AZ6425-01G 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 AZ6425-01G.
- Place the AZ6425-01G 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.

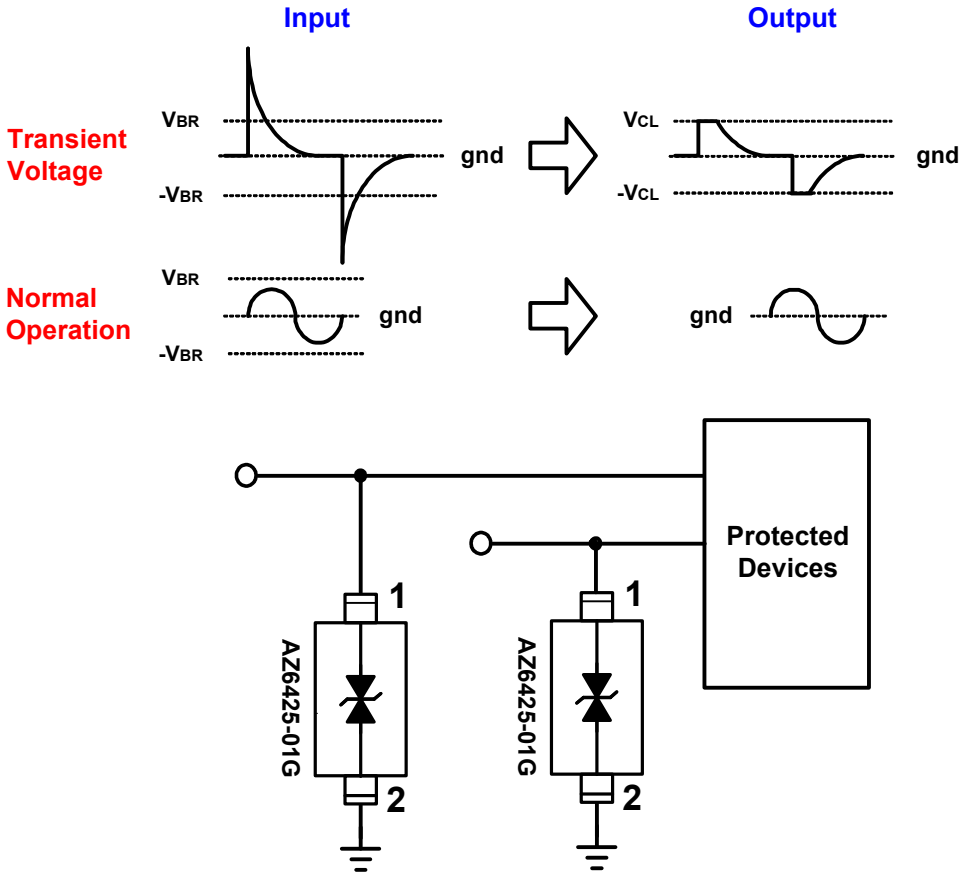


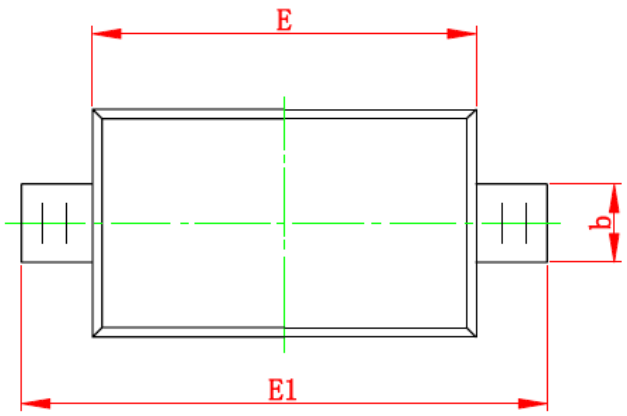
Fig. 1 ESD protection scheme by using AZ6425-01G.

Mechanical Details

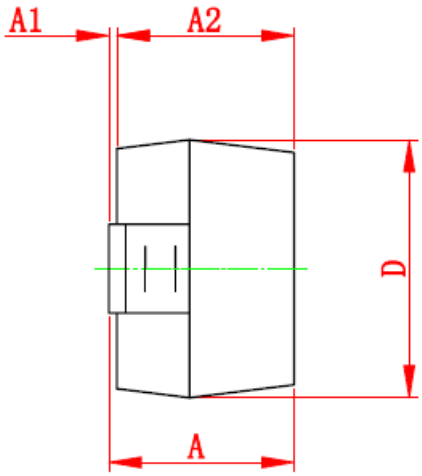
SOD-123

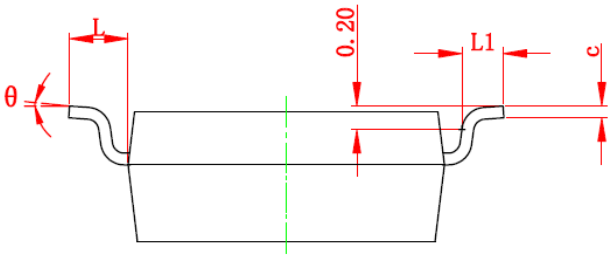
PACKAGE DIAGRAMS

TOP VIEW



SIDE VIEW

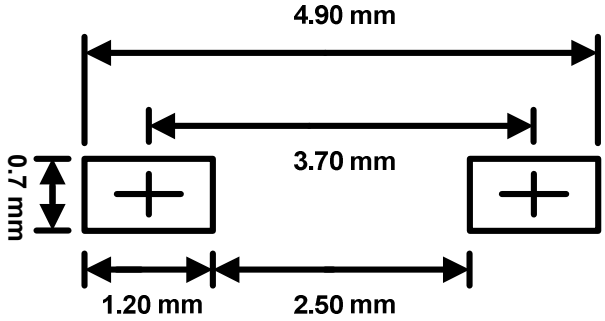




PACKAGE DIMENSIONS

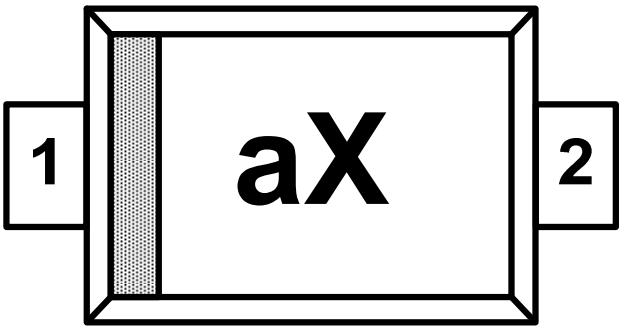
Symbol	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.450	0.650	0.018	0.026
c	0.080	0.150	0.003	0.006
D	1.500	1.700	0.059	0.067
E	2.600	2.800	0.102	0.110
E1	3.550	3.850	0.140	0.152
L	0.500 REF		0.020 REF	
L1	0.250	0.450	0.010	0.018
θ	0°	8°	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



a = Device Code
X = Date Code

Part Number	Marking Code
AZ6425-01G.R7G (Green Part)	aX

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

Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ6425-01G.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 2016/10/18	Preliminary Release.
Revision 2017/05/16	Formal Release.