



## Features

- ESD/Surge Protection for 1 Line with Unidirectional.
- Provide ESD protection for each line to  
**IEC 61000-4-2 (ESD)  $\pm 30\text{kV}$  (air / contact)**  
**IEC 61000-4-4 (EFT) 80A (5/50ns)**  
**IEC 61000-4-5 (Lightning) 30A (8/20 $\mu\text{s}$ )**
- Suitable for, **20V 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

- Battery Contacts
- Power Manager System
- PDA's
- Portable Devices
- Digital Cameras
- Digital Frames
- Cellular Handsets and Accessories
- Notebooks, desktops, and servers
- Microprocessor-based equipment
- Peripherals

## Description

AZ4020-01G is a design which includes a unidirectional ESD rated clamping cell to protect one power line, or one control line, or one low speed data line in an electronic systems. The AZ4020-01G has been specifically designed to protect sensitive components which are connected to power and control lines from

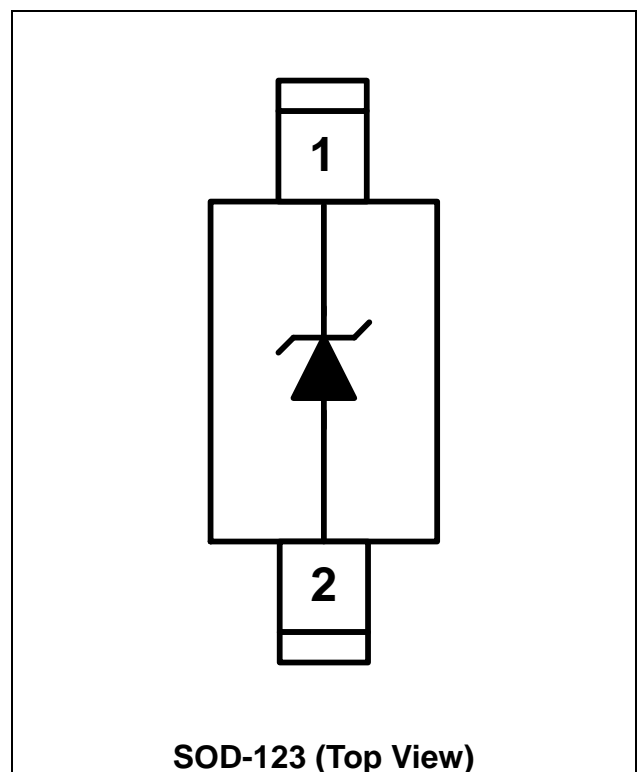
over-voltage damage and latch-up caused by Electrostatic Discharging (ESD), Electrical Fast Transients (EFT), Lightning, and Cable Discharge Event (CDE).

AZ4020-01G 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.

AZ4020-01G may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ( $\pm 15\text{kV}$  air,  $\pm 8\text{kV}$  contact discharge).

## Circuit Diagram / Pin Configuration



**SOD-123 (Top View)**

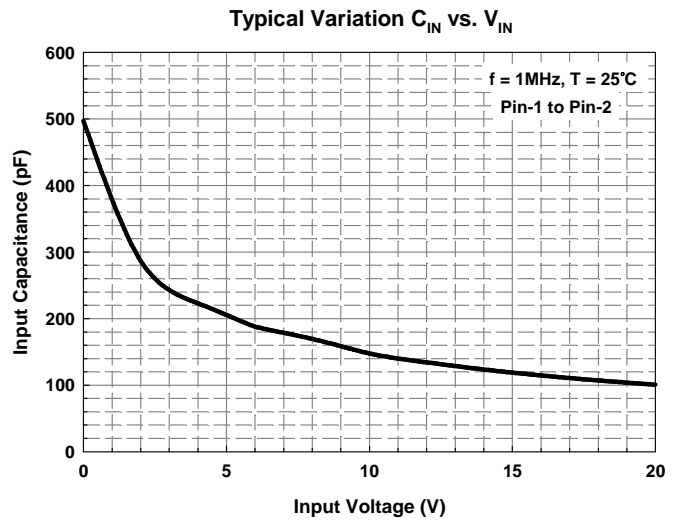
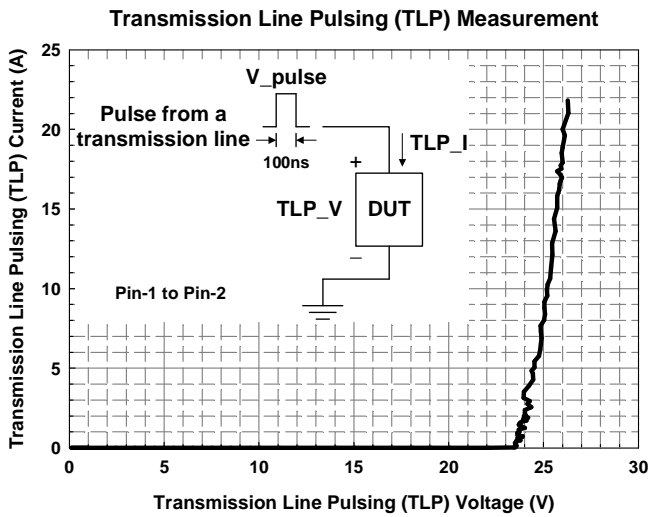
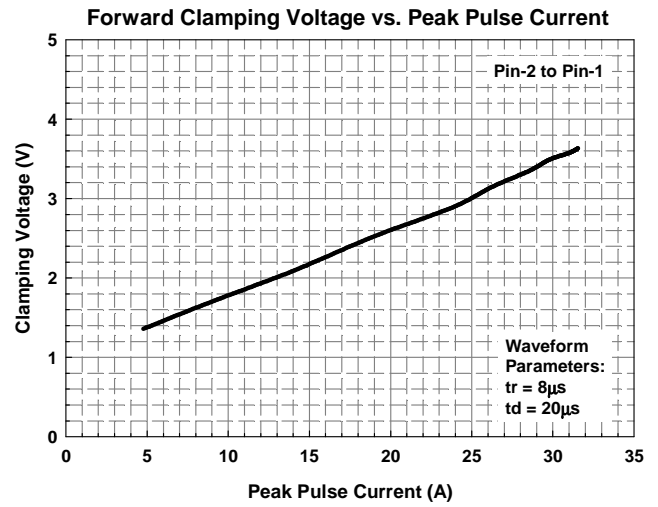
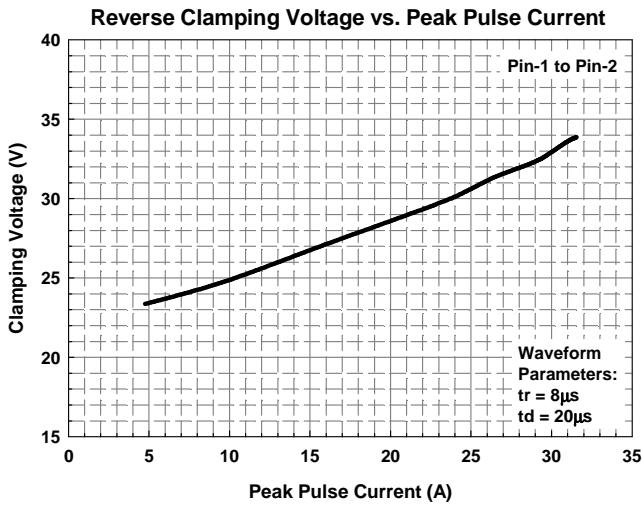


## SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS			
PARAMETER	SYMBOL	RATING	UNITS
Peak Pulse Current (tp =8/20μs)	I <sub>PP</sub>	30	A
Operating Supply Voltage (pin-1 to pin-2)	V <sub>DC</sub>	22	V
Pin-1 to pin-2 ESD per IEC 61000-4-2 (Air)	V <sub>ESD-1</sub>	±30	kV
Pin-1 to pin-2 ESD per IEC 61000-4-2 (Contact)	V <sub>ESD-2</sub>	±30	
Lead Soldering Temperature	T <sub>SOL</sub>	260 (10 sec.)	°C
Operating Temperature	T <sub>OP</sub>	-55 to +85	°C
Storage Temperature	T <sub>STO</sub>	-55 to +150	°C

ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITIONS	MINI	TYP	MAX	UNITS
Reverse Stand-Off Voltage	V <sub>RWM</sub>	Pin-1 to pin-2, T=25 °C.			20	V
Reverse Leakage Current	I <sub>Leak</sub>	V <sub>RWM</sub> = 20V, T=25 °C, pin-1 to pin-2.			1	μA
Reverse Breakdown Voltage	V <sub>BV</sub>	I <sub>BV</sub> = 1mA, T=25 °C, pin-1 to pin-2	22.2		24.5	V
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 15mA, T=25 °C, pin-2 to pin-1	0.6		1.2	V
Surge Clamping Voltage	V <sub>CL-surge</sub>	I <sub>PP</sub> =5A, tp=8/20μs, T=25 °C, pin-1 to pin-2		23.5		V
ESD Clamping Voltage	V <sub>clamp</sub>	IEC 61000-4-2 +6kV, T=25 °C, Contact mode, pin-1 to pin-2.		26		V
ESD Dynamic Turn-on Resistance	R <sub>dynamic</sub>	IEC 61000-4-2 0~+6kV, T=25 °C, Contact mode, pin-1 to pin-2.		0.12		Ω
Channel Input Capacitance	C <sub>IN</sub>	V <sub>R</sub> = 0V, f = 1MHz, T=25 °C, pin-1 to pin-2.			580	pF

## Typical Characteristics

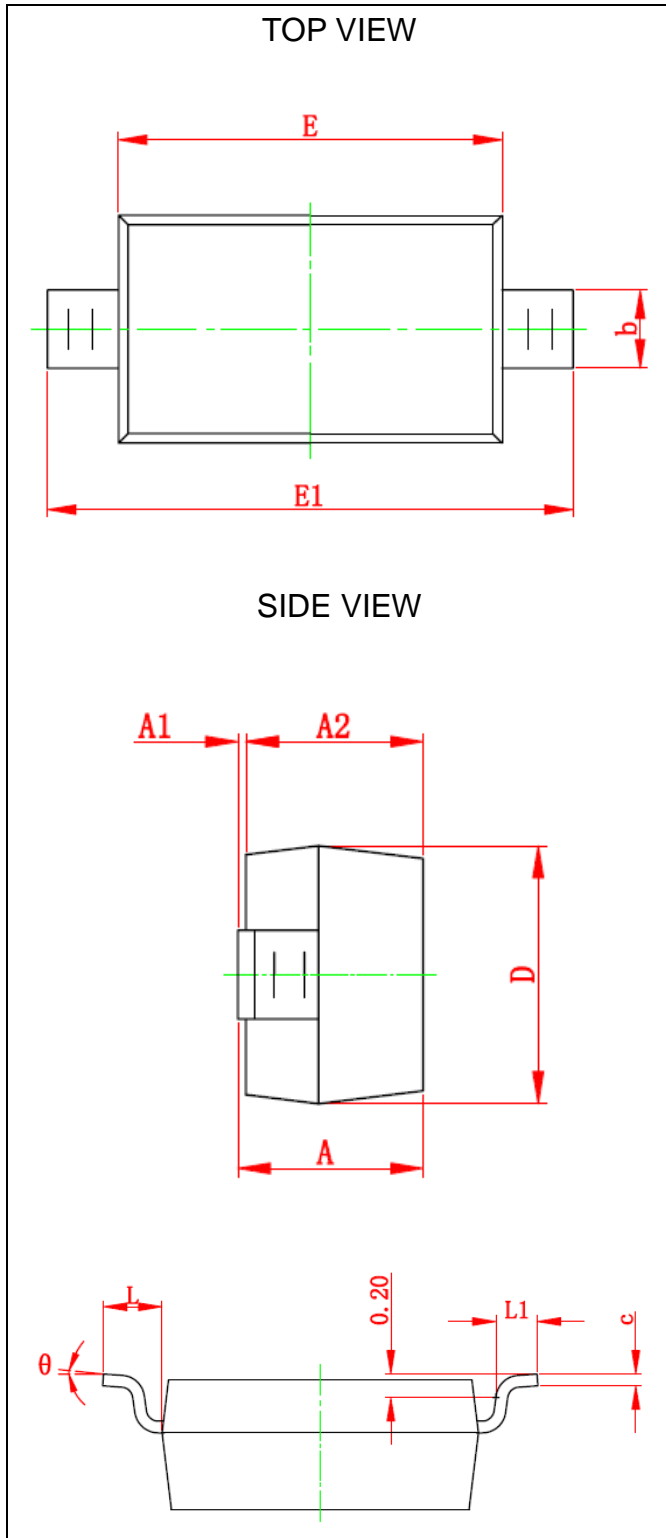




## Mechanical Details

SOD-123

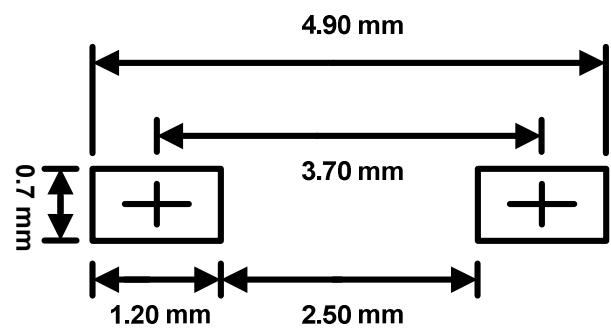
### PACKAGE DIAGRAMS



### 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
$\theta$	0°	8°	0°	8°

### LAND LAYOUT

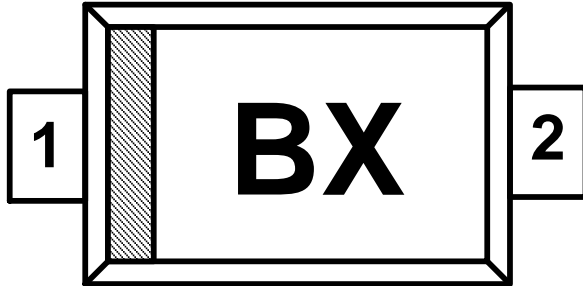


#### Notes:

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



B = Device Code  
X = Date Code

Part Number	Marking Code
AZ4020-01G (Green Part)	BX

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

## Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ4020-01G.R7G	Green	T/R	7 inch	3,000/reel	4 reel= 12,000/box	6 box =72,000/carton

## Revision History

Revision	Modification Description
Revision 2014/06/09	Preliminary Release.
Revision 2014/09/04	Update the specification of Lightning.
Revision 2015/01/29	Formal Release.