

Features

- ESD protect for one line with bi-directional
- Provide transient protection for the protected line to
IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
IEC 61000-4-5 (Lightning) 5A (8/20 μs)
- **Ultra-low capacitance: 0.4pF typical**
- **0402 small DFN package** saves board space
- Protect one I/O line or one power line
- Fast turn-on and low clamping voltage
- Suitable for, **8V and below**, operating voltage applications
- Solid-state silicon-avalanche and active circuit triggering technology
- **Green part**
- **AEC-Q101 qualified**

Applications

- Automotive applications
- Antenna applications
- USB3.0 / USB2.0
- High Definition Multi-media Interface (HDMI)
- Hand held portable applications
- High speed data interfaces

Description

AZ9568-01F is a design which includes a bi-directional ESD rated clamping cell to protect high speed data interfaces in an electronic systems. The AZ9568-01F has been specifically designed to protect sensitive components which are connected to data and transmission lines from over-voltage caused by Electrostatic Discharging (ESD) and Lightning.

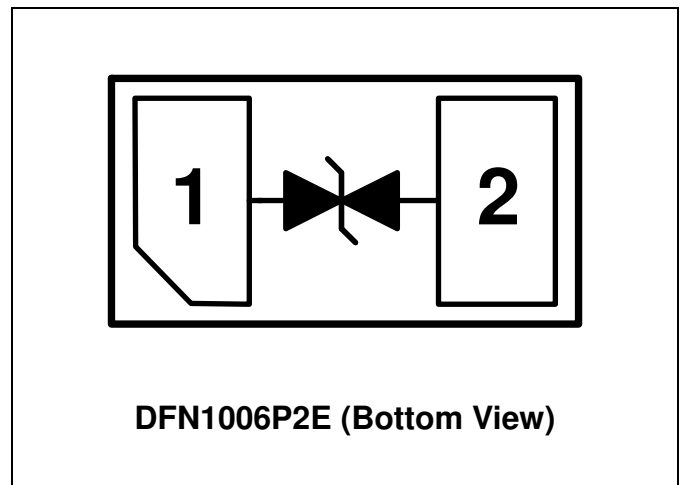
AZ9568-01F is a unique design which includes proprietary clamping cells with ultra-low capacitance in a small package. During transient conditions, the proprietary clamping cells prevent

over-voltage on the control/data lines, protecting any downstream components.

AZ9568-01F is bi-directional and may be used on lines where the signal swings above and below ground.

AZ9568-01F 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



SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS			
PARAMETER	SYMBOL	RATING	UNIT
Peak Pulse Current (tp = 8/20μs)	I _{PP}	5	A
Operating Voltage	V _{DC}	±8.8	V
ESD per IEC 61000-4-2 (Air)	V _{ESD-1}	±30	kV
ESD per IEC 61000-4-2 (Contact)	V _{ESD-2}	±30	
Lead Soldering Temperature	T _{SOL}	260 (10 sec.)	°C
Operating Temperature	T _{OP}	-55 to +125	°C
Storage Temperature	T _{STO}	-55 to +150	°C

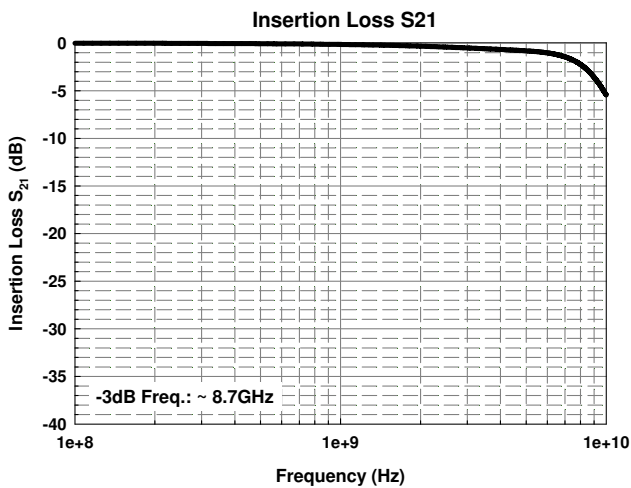
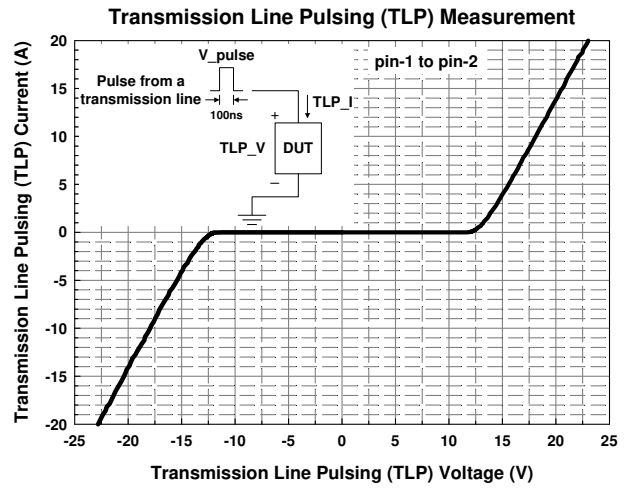
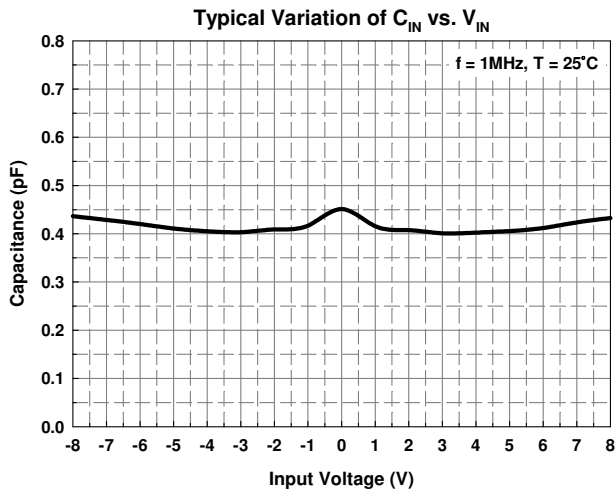
ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Reverse Stand-Off Voltage	V _{RWM}	T=25 °C.	-8.0		8.0	V
Reverse Leakage Current	I _{Leak}	V _{RWM} = ±8V, T=25 °C.			1.0	μA
Reverse Breakdown Voltage	V _{BV}	I _{BV} = 1mA, T=25 °C.	10			V
Surge Clamping Voltage	V _{CL-surge}	I _{PP} = 5A, tp = 8/20μs, T=25°C.		16		V
ESD Clamping Voltage (Note 1)	V _{CL-ESD}	IEC 61000-4-2 +8kV (I _{TLP} = 16A), Contact mode, T=25 °C.		20		V
ESD Dynamic Turn-on Resistance	R _{dynamic}	IEC 61000-4-2, 0~+8kV, Contact mode, T=25 °C.		0.5		Ω
Channel Input Capacitance	C _{IN}	V _R = 0V, f = 1MHz, T=25 °C.		0.4	0.7	pF

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

TLP conditions: Z₀= 50Ω, t_p= 100ns, t_r= 1ns.



Typical Characteristics



Application Information

The AZ9568-01F is designed to protect one line against system ESD pulses by clamping it to an acceptable reference. It provides bi-directional protection.

The usage of the AZ9568-01F 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 AZ9568-01F 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 AZ9568-01F.
- Place the AZ9568-01F 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.

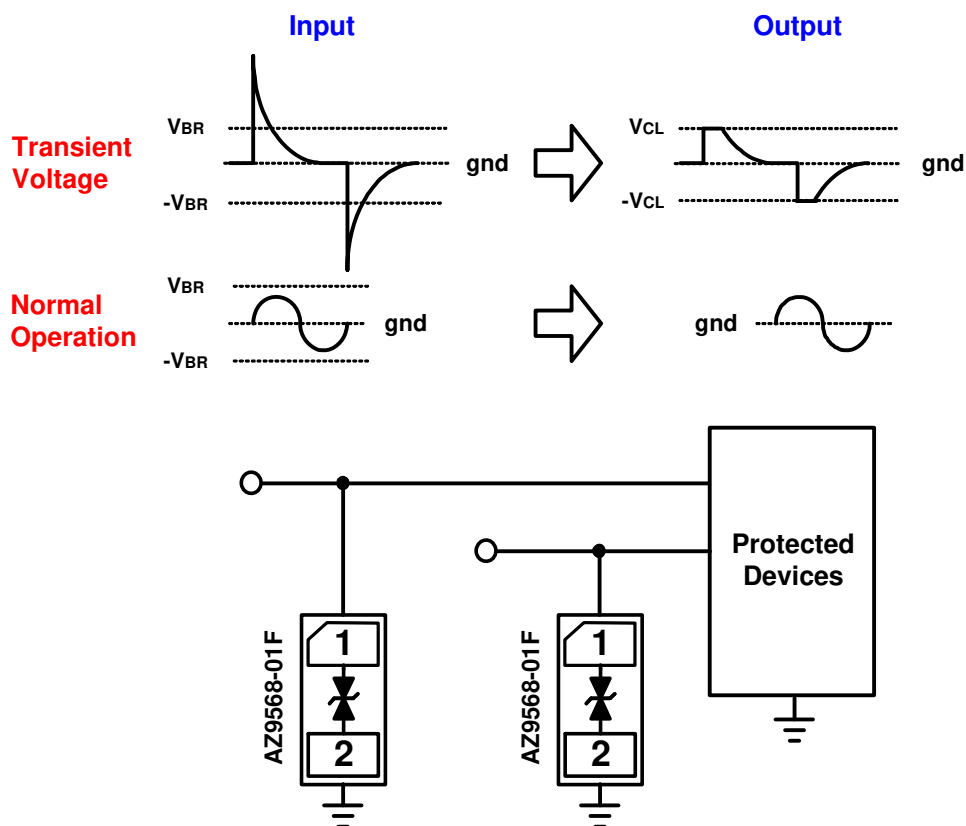
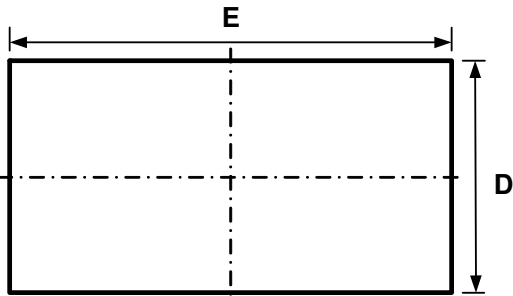


Fig. 1



Mechanical Details

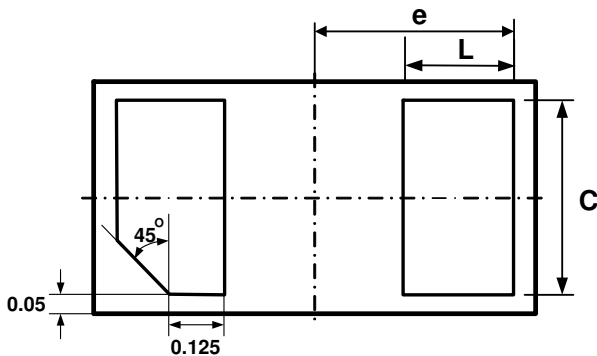
DFN1006P2E PACKAGE DIAGRAMS



TOP VIEW



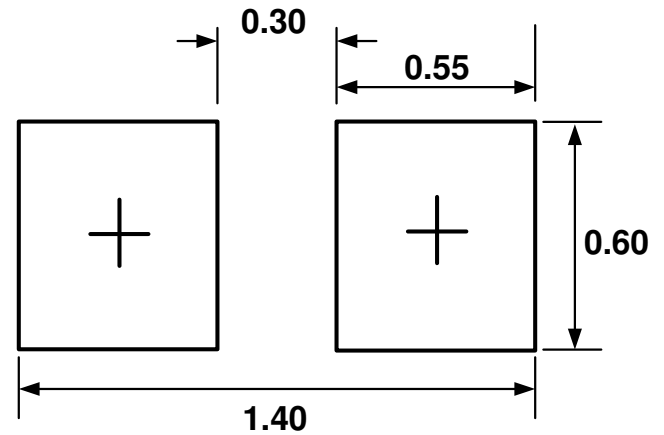
SIDE VIEW



BOTTOM VIEW

SYMBOL	MILLIMETERS	
	MIN.	MAX.
E	0.95	1.05
D	0.55	0.65
A	0.45	0.55
e	0.45 BSC	
L	0.20	0.30
C	0.45	0.55

LAND LAYOUT

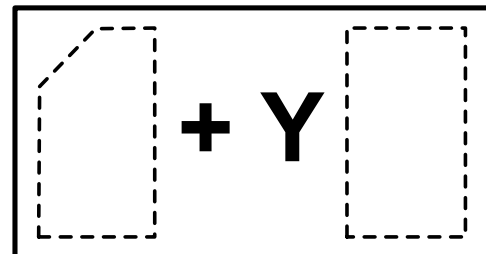


(Unit: mm)

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



Top View

Y=Device Code

Part Number	Marking Code
AZ9568-01F.R7GR (Green part)	Y

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



Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ9568-01F.R7GR	Green	T/R	7 inch	12,000/reel	4 reels = 48,000/box	6 boxes = 288,000/carton

Revision History

Revision	Modification Description
Revision 2019/01/14	Preliminary release.
Revision 2020/08/14	Formal release.