



## Features

- ESD Protect for 1 Line with Bi-directional
- Provide ESD protection for the protected line to IEC 61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 13\text{kV}$  (contact) IEC 61000-4-4 (EFT) 40A (5/50ns) Cable Discharge Event (CDE)
- **0201 small DFN 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

- Mobile Phones
- Hand Held Portable Applications
- Computer Interfaces Protection
- Microprocessors Protection
- Serial and Parallel Ports Protection
- Control Signal Lines Protection
- Power lines on PCB Protection
- Latchup Protection

## Description

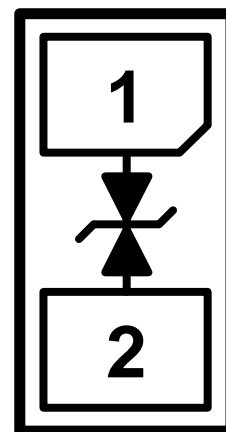
AZ5A25-01F is a design which includes one Bi-directional ESD rated clamping cell to protect one power line, or one control line, or one low speed data line in an electronic systems. The AZ5A25-01F has been specifically designed to protect sensitive components which are connected to power and control lines from over-voltage damage and latch-up caused by Electrostatic Discharging (ESD), Electrical Fast Transients (EFT), and Cable Discharge Event (CDE).

AZ5A25-01F 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.

AZ5A25-01F 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



**DFN0603P2Y (Bottom View)**  
**(0.6mm x 0.3mm x 0.3mm)**



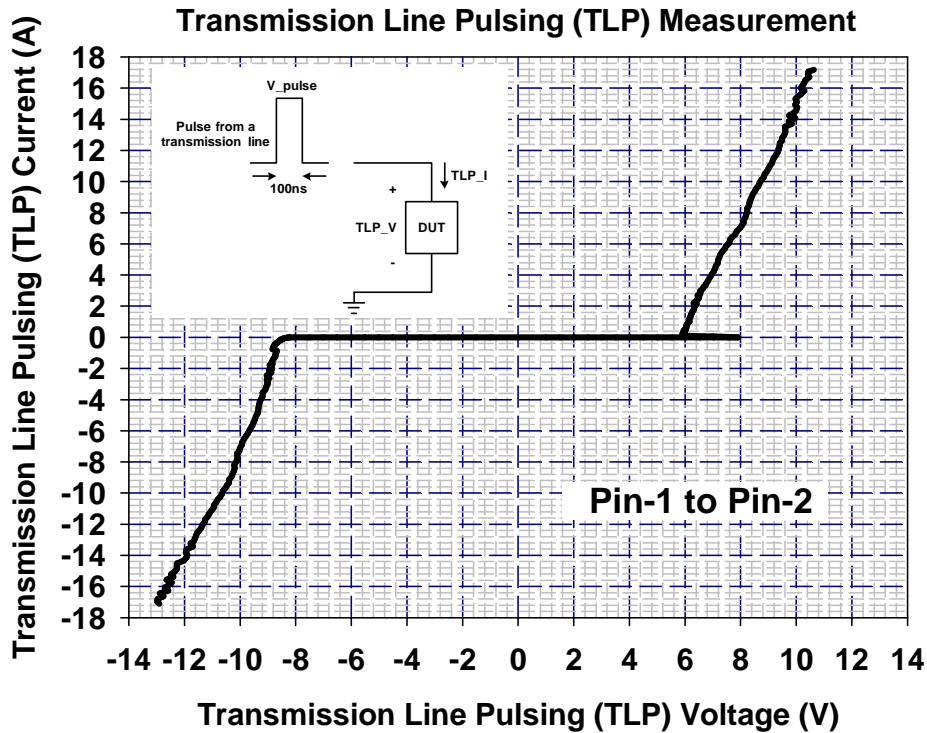
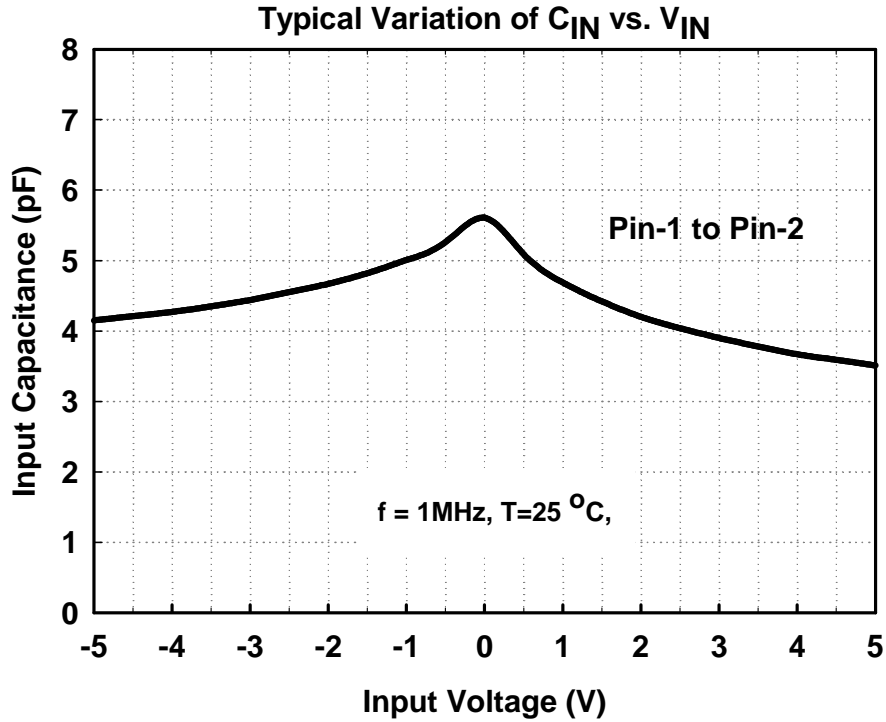
## SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS			
PARAMETER	PARAMETER	RATING	UNITS
Operating Supply Voltage	$V_{DC}$	$\pm 5.5$	V
ESD per IEC 61000-4-2 (Air)	$V_{ESD}$	$\pm 15$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 13$	
Lead Soldering Temperature	$T_{SOL}$	260 (10 sec.)	$^{\circ}C$
Operating Temperature	$T_{OP}$	-55 to +85	$^{\circ}C$
Storage Temperature	$T_{STO}$	-55 to +150	$^{\circ}C$

ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITIONS	MINI	TYP	MAX	UNITS
Stand-Off Voltage	$V_{RVM}$	$T=25^{\circ}C$ .	-5		5	V
Leakage Current	$I_{Leak}$	$V_{RVM} = \pm 5V, T=25^{\circ}C$ .			1	$\mu A$
Breakdown Voltage	$V_{BV}$	$I_{BV} = 1mA, T=25^{\circ}C$ .	5.6		9	V
ESD Clamping Voltage	$V_{ESD\_CL}$	IEC 61000-4-2 +6kV, $T=25^{\circ}C$ , Contact mode.		14		V
Channel Input Capacitance	$C_{IN1}$	$V_R = 0V, f = 1MHz, T=25^{\circ}C$ .		5.5	7	pF
	$C_{IN2}$	$V_R = 5V, f = 1MHz, T=25^{\circ}C$ .		3	4.5	pF



### Typical Characteristics



## Applications Information

The AZ5A25-01F is designed to protect one line against System ESD/EFT/Cable-Discharge pulses by clamping it to an acceptable reference. It provides bi-directional protection.

The usage of the AZ5A25-01F 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 AZ5A25-01F 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 AZ5A25-01F.
- Place the AZ5A25-01F 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.

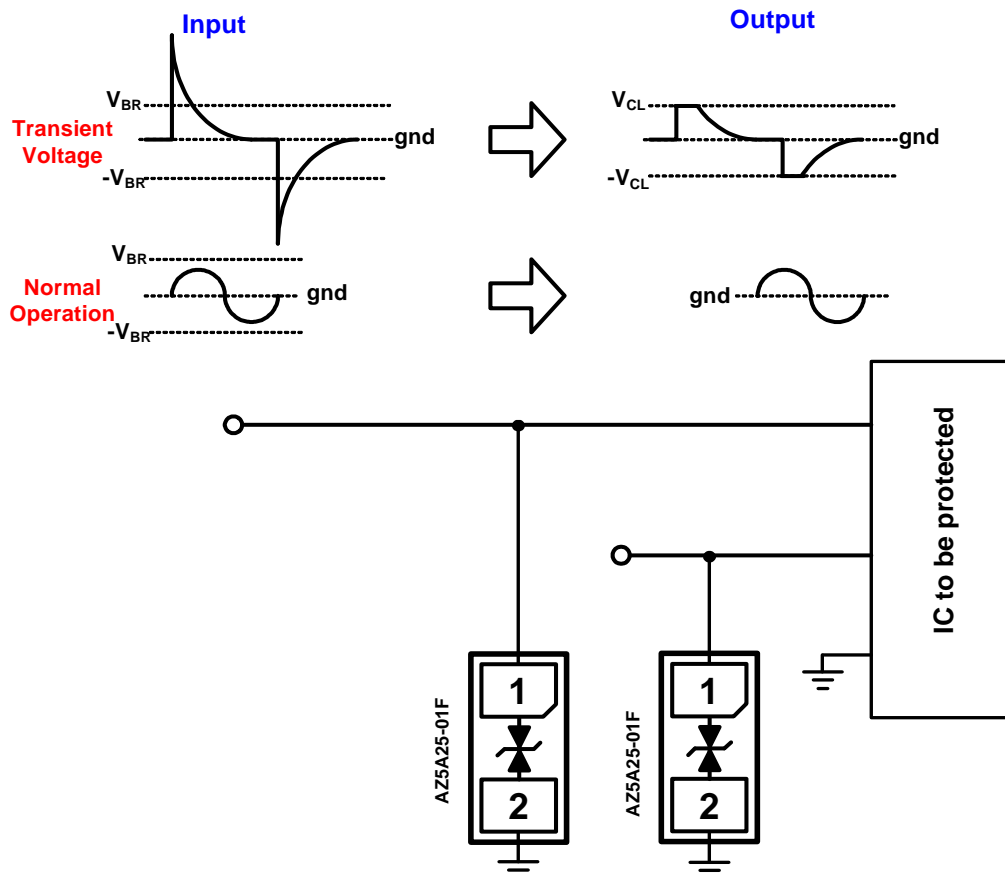


Fig. 1



Fig. 2 shows another simplified example of using AZ5A25-01F to protect the control line, low speed data line, and power line from ESD transient stress.

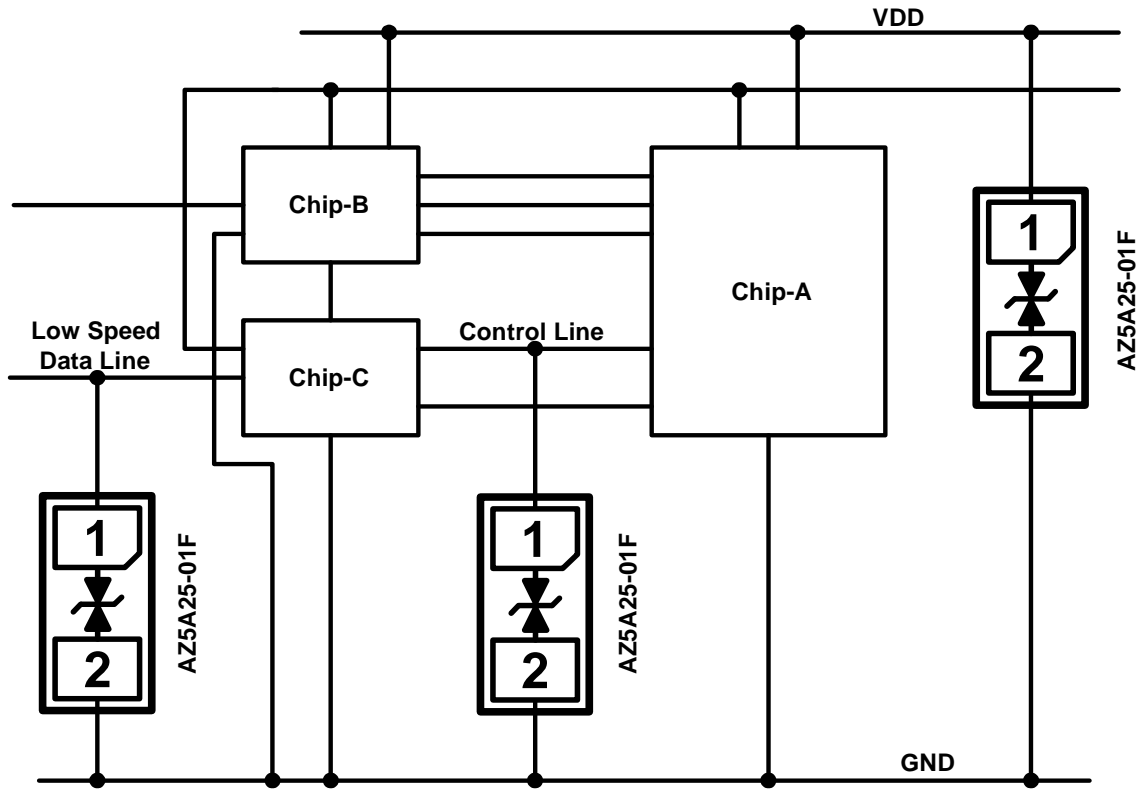
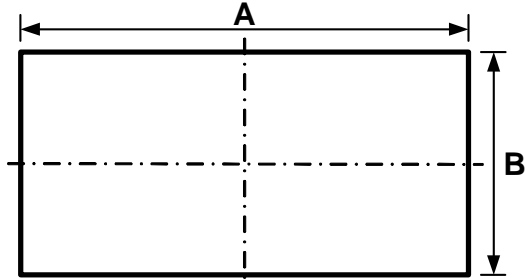


Fig. 2

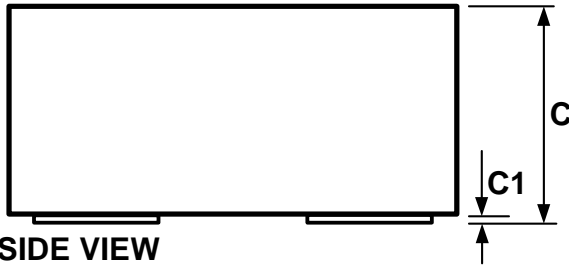


**Mechanical Details**

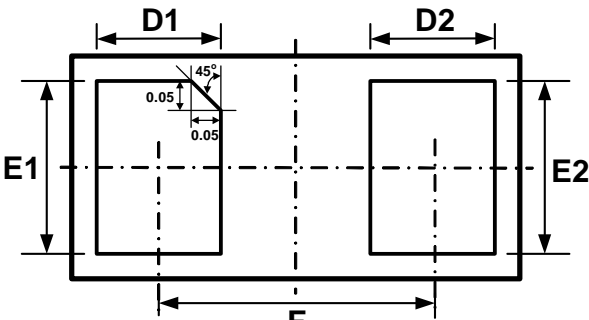
**DFN0603P2Y  
PACKAGE DIAGRAMS**



TOP VIEW



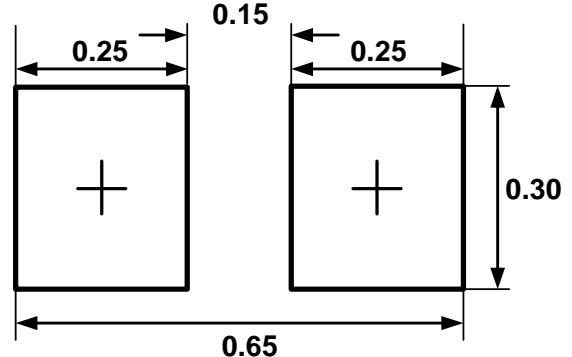
SIDE VIEW



BOTTOM VIEW

SYMBOL	Millimeters		
	MIN.	NOM.	MAX.
A	0.55	0.60	0.65
B	0.25	0.30	0.35
C	0.28	0.30	0.32
C1	0.00	0.02	0.05
D1	0.13	0.18	0.23
D2	0.14	0.19	0.24
E1/E2	0.20	0.25	0.30
F	0.35		

**LAND LAYOUT**

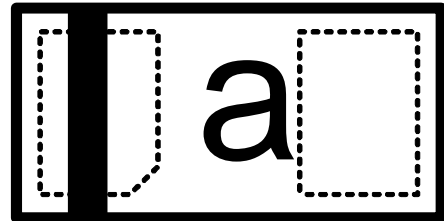


(Unit: mm)

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**



Part Number	Marking Code
AZ5A25-01F	a



## Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ5A25-01F.R7G	Green	T/R	7 inch	12,000/reel	4 reel= 48,000/box	6 box =288,000/carton

## Revision History

Revision	Modification Description
Revision 2010/05/12	Preliminary Release.
Revision 2010/12/29	Formal Release.
Revision 2011/07/28	1. Update the Company Logo. 2. Add the Ordering Information. 3. Add the Channel Input Capacitance value of $C_{IN2}$ .
Revision 2012/01/18	Update the Ordering Information.
Revision 2013/03/14	Update the Absolute Maximum Ratings.