Features

- ESD protection for one line with bi-directional
- Provide transient protection for one line to
  IEC 61000-4-2 (ESD) ±17kV (air), ±15kV (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
- Handheld portable applications
- Computer interfaces protection
- Microprocessors protection
- Serial and parallel ports protection
- Control signal lines protection
- Power lines on PCB protection
- Latch-up protection

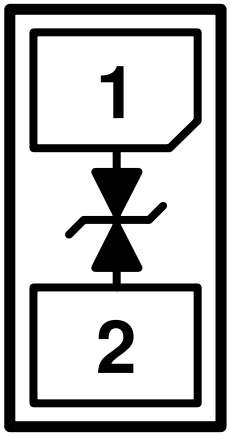
Description

AZ5A75-01F 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 system. The AZ5A75-01F 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).

AZ5A75-01F 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.

AZ5A75-01F 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



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

SPECIFICATIONS

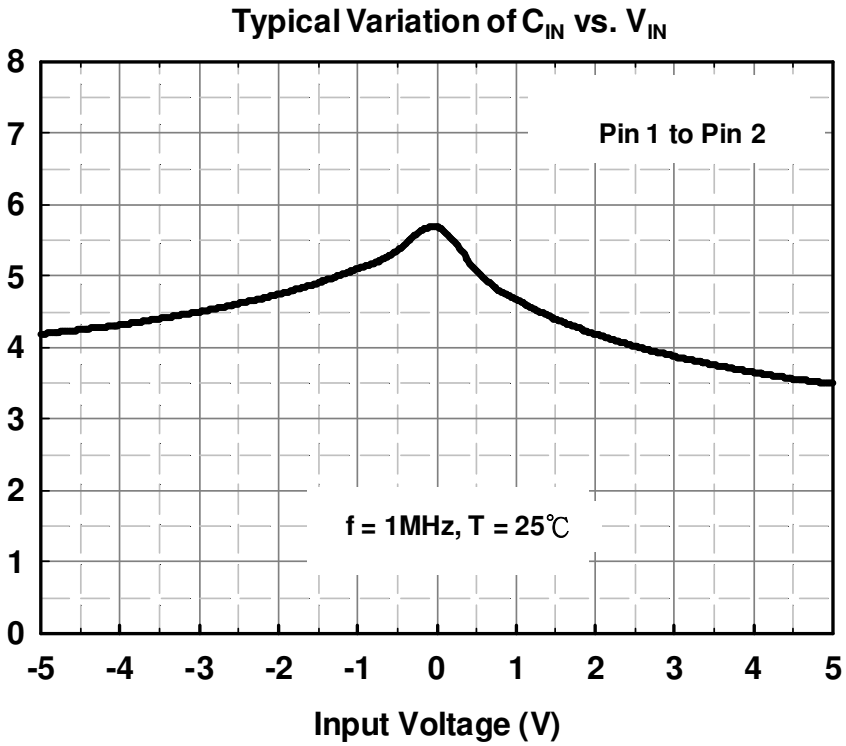
ABSOLUTE MAXIMUM RATINGS (T_A= 25°C, unless otherwise specified)			
PARAMETER	**SYMBOL**	**RATING**	**UNIT**
Operating Supply Voltage	V_{DC}	±5.5	V
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD-1} V_{ESD-2}	±17 ±15	kV
Lead Soldering Temperature	T_{SOL}	260 (10 sec.)	°C
Operating Temperature	T_{OP}	-55 to +85	°C
Storage Temperature	T_{STO}	-55 to +150	°C

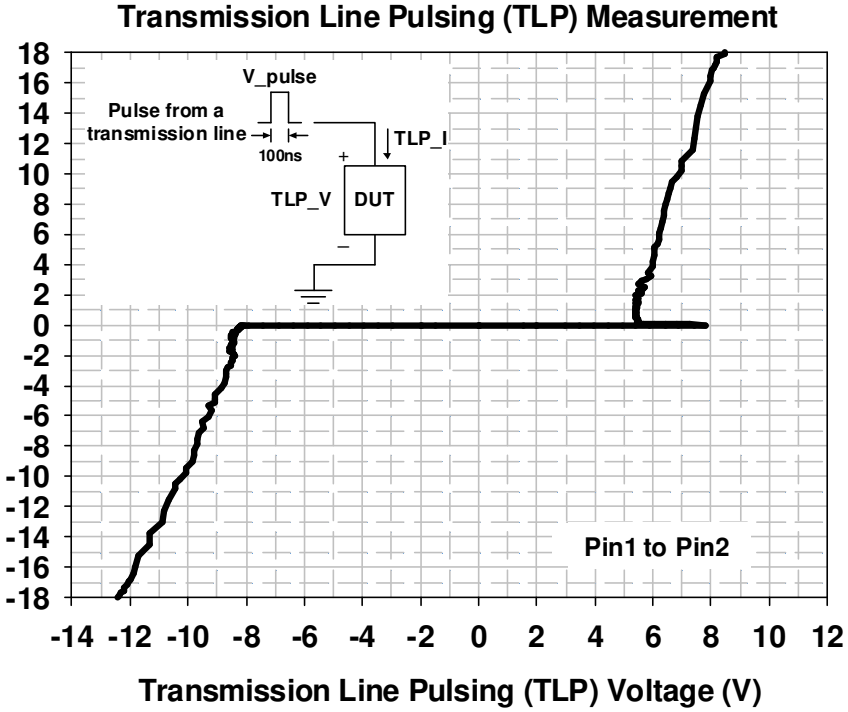
ELECTRICAL CHARACTERISTICS						
PARAMETER	**SYMBOL**	**CONDITION**	**MIN**	**TYP**	**MAX**	**UNIT**
Reverse Stand-Off Voltage	V_{RWM}	T=25 °C.	-5		5	V
Reverse Leakage Current	I_{Leak}	V_{RWM} = ±5V, T=25 °C.			100	nA
Reverse Breakdown Voltage	V_{BV}	I_{BV} = 1mA, T=25 °C.	5.6		9	V
ESD Clamping Voltage (Note 1)	V_{CL-ESD}	IEC 61000-4-2 +8kV (I_{TLP} = 16A), Contact mode, T=25 °C.		12		V
ESD Dynamic Turn-on Resistance	$R_{dynamic}$	IEC 61000-4-2, 0~+8kV, T=25 °C, Contact mode.		0.25		Ω
Channel Input Capacitance	C_{IN}	V_R = 0V, f = 1MHz, T=25 °C.		5.5	7	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





Application Information

The AZ5A75-01F 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 AZ5A75-01F 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 AZ5A75-01F should be kept as short as possible.

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

- Minimize the path length between the protected lines and the AZ5A75-01F.
- Place the AZ5A75-01F 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.

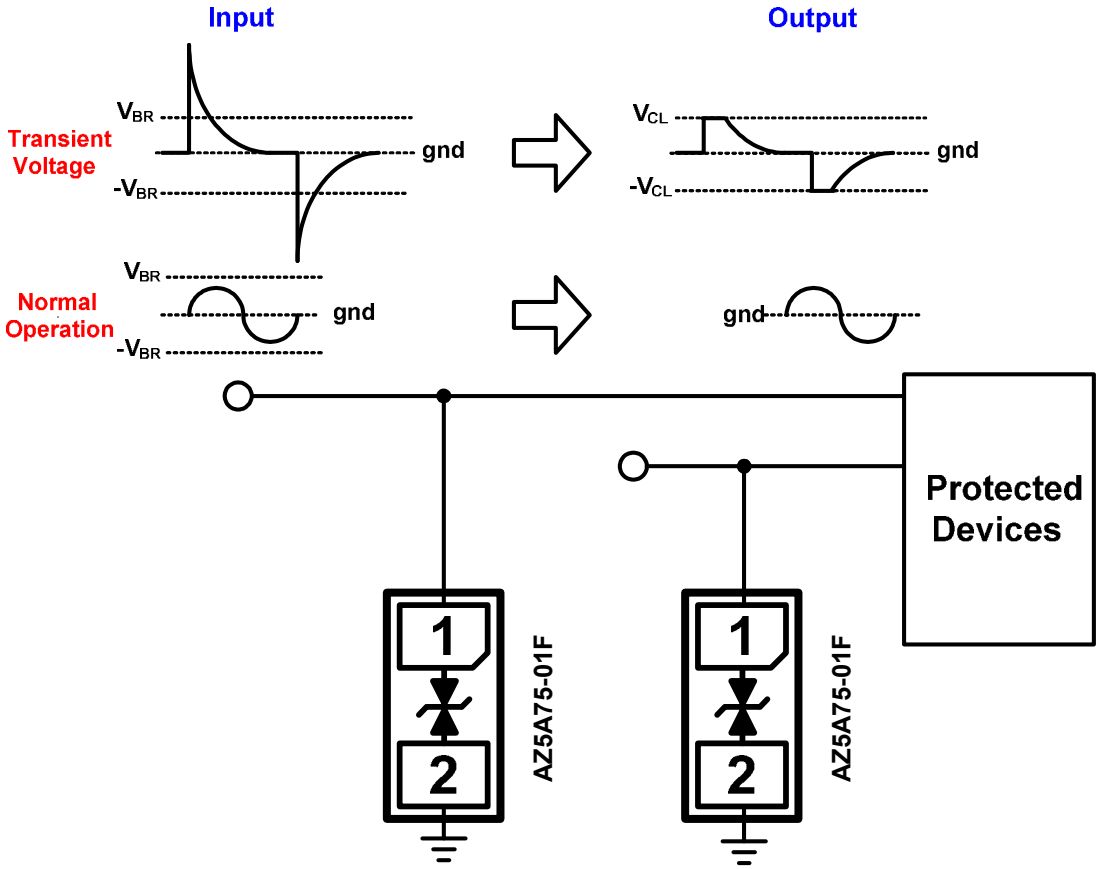


Fig. 1

Fig. 2 shows another simplified example of using AZ5A75-01F to protect the control line, low-speed data line, and power line from ESD transient stress.

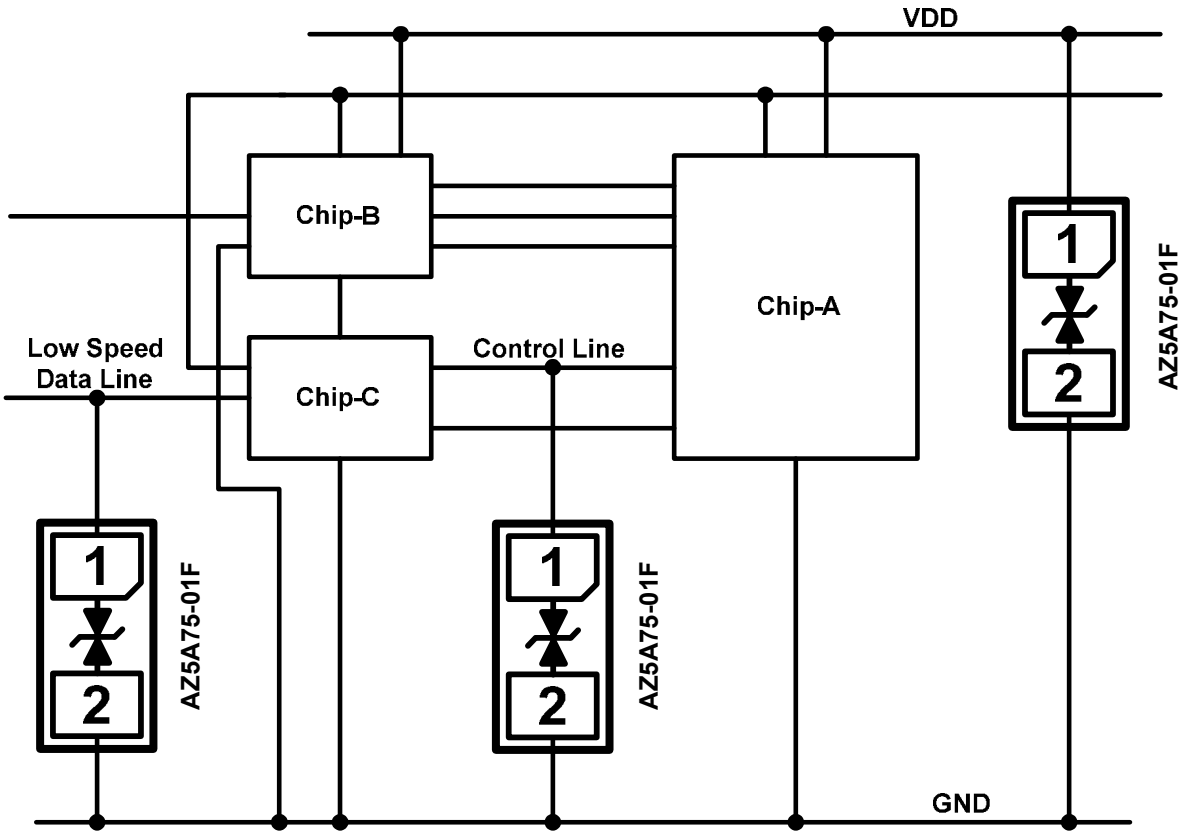
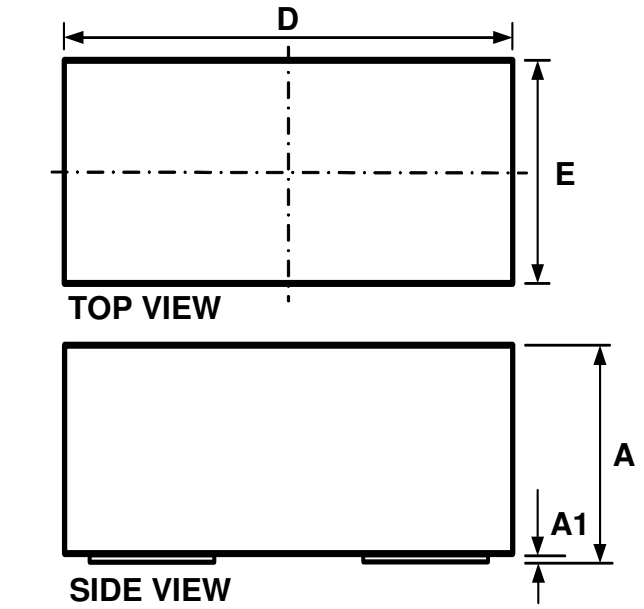
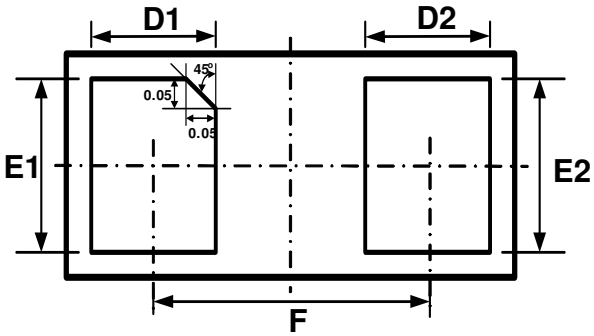


Fig. 2

Mechanical Details

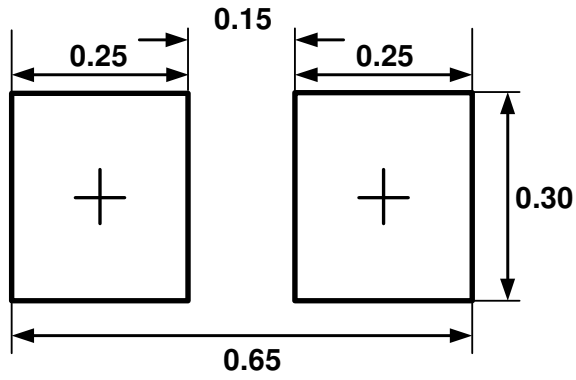
DFN0603P2Y PACKAGE DIAGRAMS





SYMBOL	Millimeters		
	MIN.	NOM.	MAX.
D	0.55	0.60	0.65
E	0.25	0.30	0.35
A	0.28	0.30	0.32
A1	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	

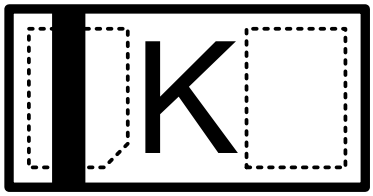
LAND LAYOUT



(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



K = Device Code

Part Number	Marking Code
AZ5A75-01F.R7G (Green Part)	K

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

Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ5A75-01F.R7G	Green	T/R	7 inch	12,000/reel	4 reels= 48,000/box	6 boxes =288,000/carton

Revision History

Revision	Modification Description
Revision 2017/03/24	Preliminary Release.
Revision 2018/03/19	Formal Release.