



Features

- ESD Protect for 1 Line with Bi-directional
- Provide ESD protection for the protected line to IEC 61000-4-2 (ESD) $\pm 20\text{kV}$ (air), $\pm 20\text{kV}$ (contact) IEC 61000-4-4 (EFT) 50A (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 operating voltage of **20V and below**
- 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

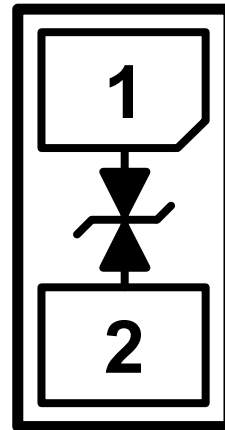
AZ4A20-01F is a design which includes one Bi-directional ESD rated clamping cell to protect one power line, or one control line, or one low speed data line in an electronic systems. The AZ4A20-01F has been specifically designed to protect sensitive components which are connected to power and control lines from over-voltage damage and latch-up caused by Electrostatic Discharging (ESD), Electrical Fast Transients (EFT), and Cable Discharge Event (CDE).

AZ4A20-01F 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.

AZ4A20-01F 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	SYMBOL	RATING	UNITS
Operating Supply Voltage	V_{DC}	± 22	V
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 20	kV
ESD per IEC 61000-4-2 (Contact)		± 20	
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	$^{\circ}C$

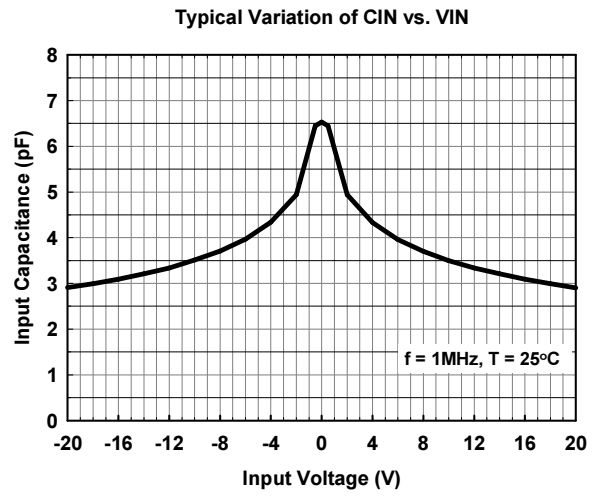
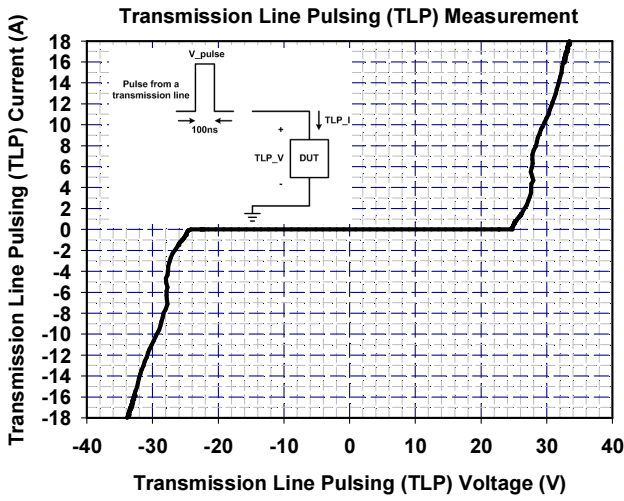
ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Stand-Off Voltage	V_{RWM}	$T=25^{\circ}C$.	-20		20	V
Leakage Current	I_{Leak}	$V_{RWM} = \pm 20V, T=25^{\circ}C$			0.1	μA
Breakdown Voltage	V_{BV}	$I_{BV} = 1mA, T=25^{\circ}C$	22.8		27.3	V
ESD Clamping Voltage (Note 1)	V_{clamp}	IEC 61000-4-2 +8kV ($I_{TLP} = 16A$), $T=25^{\circ}C$, Contact mode.		34		V
ESD Dynamic Turn-on Resistance	$R_{dynamic}$	IEC 61000-4-2, 0~+8kV, $T=25^{\circ}C$, Contact mode		0.5		Ω
Channel Input Capacitance	C_{IN}	$V_R = 0V, f = 1MHz, T=25^{\circ}C$.		6.5	10	pF

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

TLP conditions: $Z_0 = 50\Omega$, $t_p = 100ns$, $t_r = 1ns$.



Typical Characteristics



Applications Information

The AZ4A20-01F 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 AZ4A20-01F 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 AZ4A20-01F 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 AZ4A20-01F.
- Place the AZ4A20-01F 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.

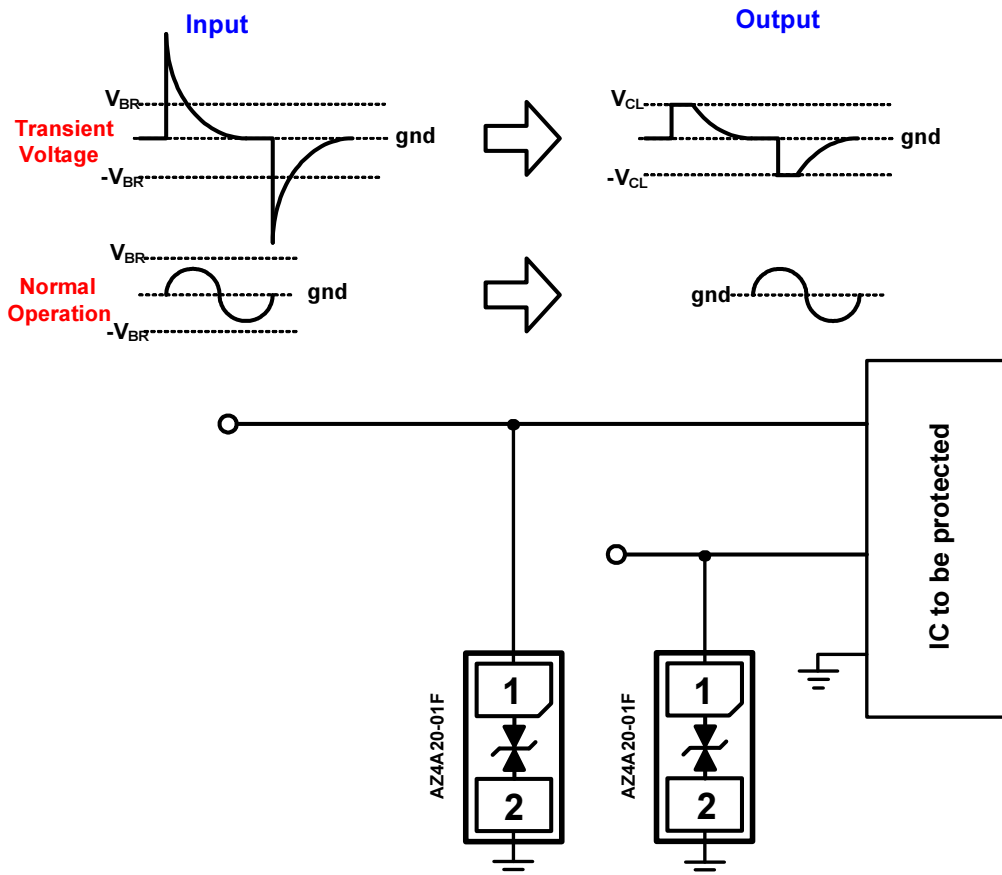


Fig. 1



Fig. 2 shows another simplified example of using AZ4A20-01F to protect the control line, low speed data line, and power line from ESD transient stress.

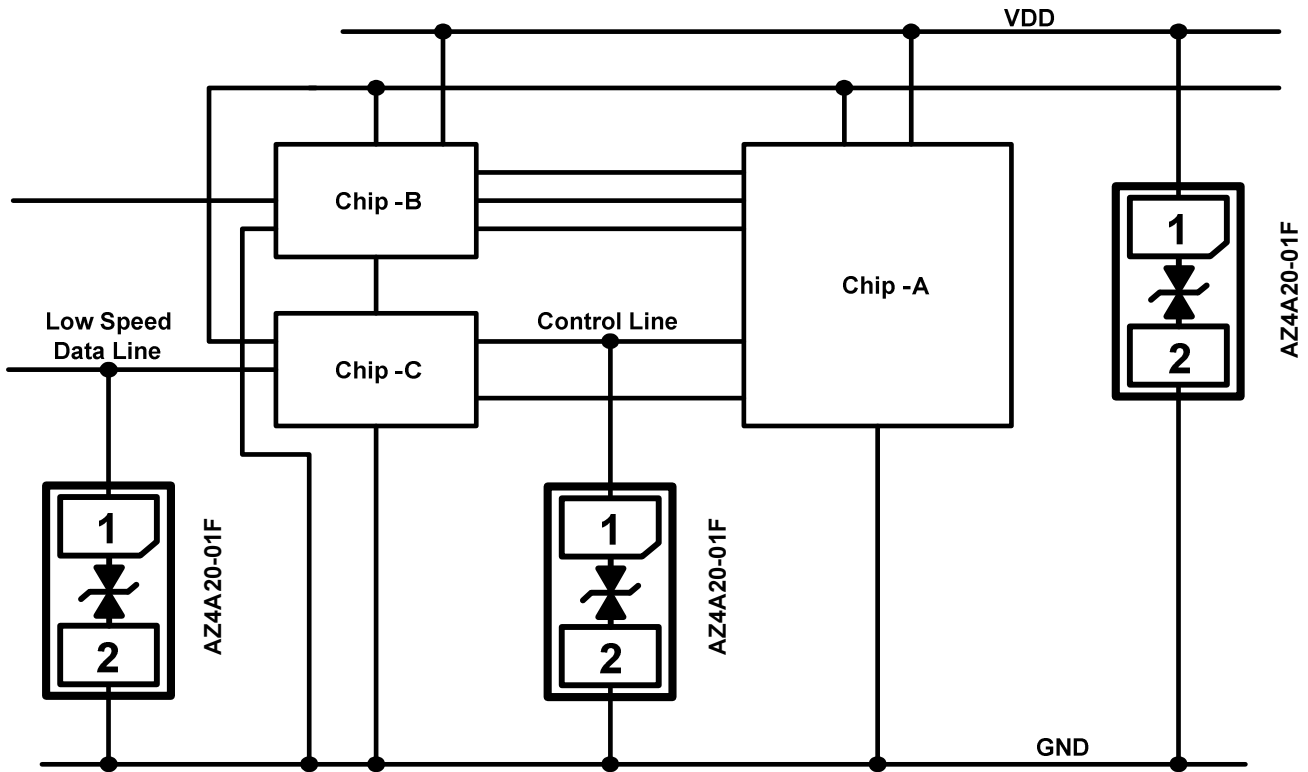
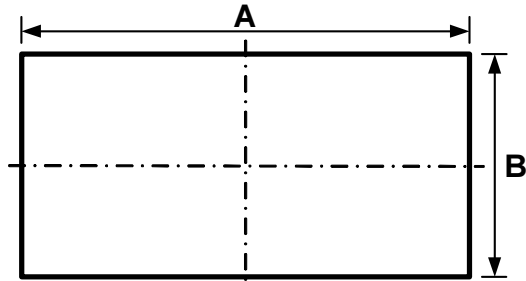


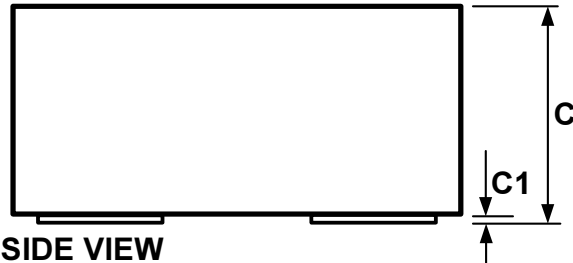
Fig. 2

Mechanical Details

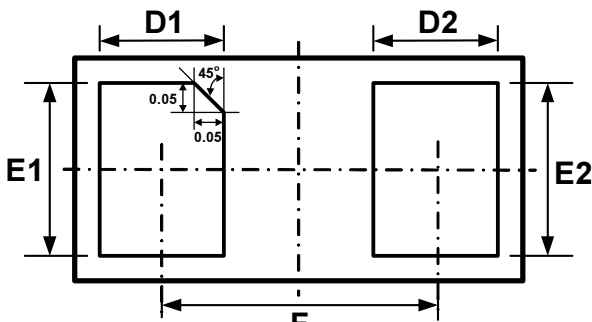
DFN0603P2Y PACKAGE DIAGRAMS



TOP VIEW



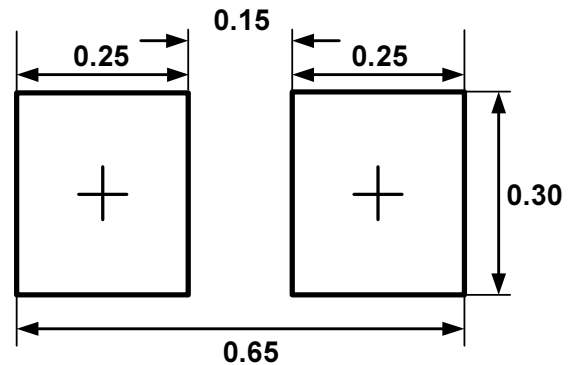
SIDE VIEW



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

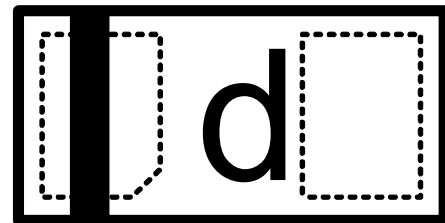


(Unit: mm)

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
AZ4A20-01F (Green Part)	d

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



Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ4A20-01F.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 2015/03/24	Preliminary Release.
Revision 2015/09/25	1. Update the ESD level per IEC61000-4-2. 2. Add the EFT level per IEC61000-4-4.
Revision 2015/12/11	Formal Release.