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AZ5425-01F

Ultra Low Capacitance ESD Protection Device
0402 DFN Package for ESD Protection

Features

- ESD Protection for 1 Line with Bi-directional
- Provide ESD protection for the protected line to IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- **Ultra low capacitance: 0.8pF typical**
- For low operating voltage applications: **5V and below**
- **0402 small DFN package** saves board space
- Protect one I/O line
- Fast turn-on and Low clamping voltage
- Solid-state silicon-avalanche and active circuit triggering technology
- **Green Part**

Applications

- Antenna applications
- Hand Held Portable Applications
- High Definition Multi-media Interface (HDMI)
- Digital Visual Interface (DVI)
- Display Port
- Serial ATA
- Desktop and Notebooks PCs
- Consumer Applications

Description

AZ5425-01F is a design which includes a bi-directional ESD rated clamping cell to protect high speed data interfaces in an electronic systems. The AZ5425-01F has been specifically designed to protect sensitive components which are connected to data and transmission lines from over-voltage caused by Electrostatic

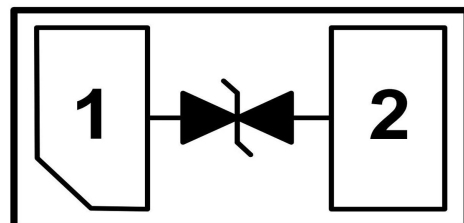
Discharging (ESD).

AZ5425-01F 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.

AZ5425-01F is bi-directional and may be used on lines where the signal swings above and below ground.

AZ5425-01F 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



DFN1006P2E (Bottom View)
(1.0mm x 0.6mm x 0.55mm)

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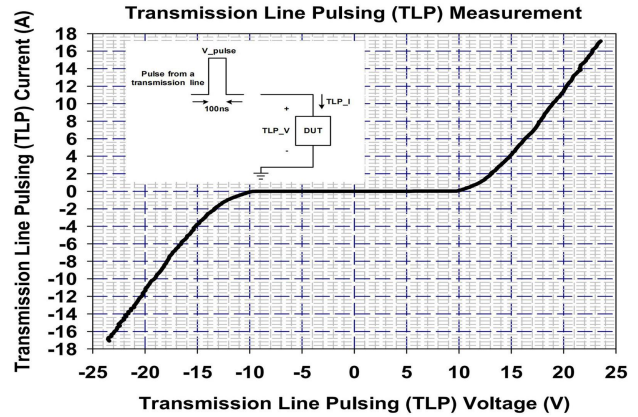
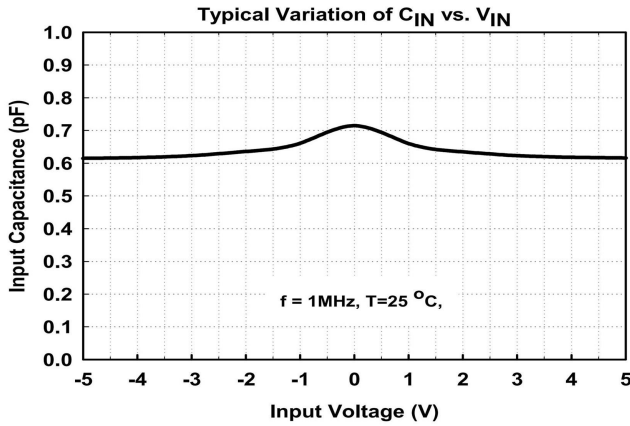
ABSOLUTE MAXIMUM RATINGS

PARAMETER	PARAMETER	RATING	UNITS
Operating DC Voltage (I/O to GND)	V_{DC}	± 6	V
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 15	kV
ESD per IEC 61000-4-2 (Contact)		± 8	kV
Lead Soldering Temperature	T_{SOL}	260 (10 sec.)	$^{\circ}C$
Operating Temperature	T_{OP}	-40 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_{RWM}	$T=25^{\circ}C$, I/O to GND, or GND to I/O.			5	V
Leakage Current	I_{Leak}	$V_{RWM} = 5V$, $T=25^{\circ}C$, I/O to GND, or GND to I/O.			1	μA
Breakdown Voltage	V_{BV}	$I_{BV} = 1mA$, $T=25^{\circ}C$, I/O to GND, or GND to I/O.	7			V
ESD Clamping Voltage	V_{clamp}	IEC 61000-4-2, 6kV Contact mode, $T=25^{\circ}C$, I/O to GND, or GND to I/O.		24		V
ESD Dynamic Turn-on Resistance	$R_{dynamic}$	IEC 61000-4-2, 0~6kV, Contact mode, $T=25^{\circ}C$, I/O to GND, or GND to I/O.		0.7		Ω
Input Capacitance	C_{IN}	$V_R = 0V$, $f = 1MHz$, $T=25^{\circ}C$, I/O to GND.		0.8	1.0	pF

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Applications Information

The AZ5425-01F is designed to protect one line against System ESD pulse by clamping it to an acceptable reference. It provides bi-directional protection.

The usage of the AZ5425-01F 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 AZ5425-01F 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 AZ5425-01F.
- Place the AZ5425-01F 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.

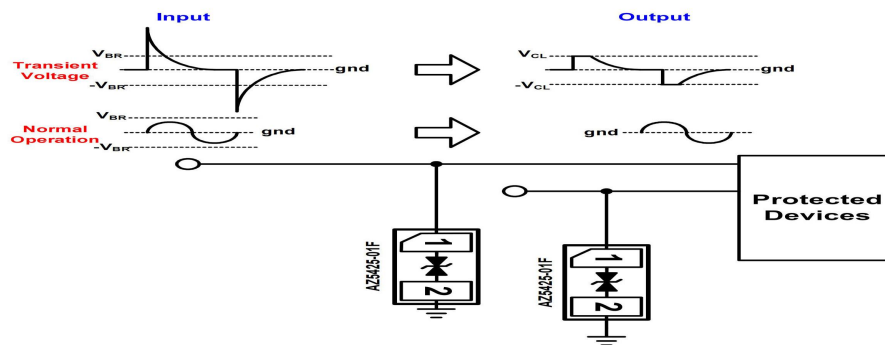


Fig. 1

Fig. 2 shows another simplified example of using AZ5425-01F to protect the control line, high

speed data line, and power line from ESD transient stress.

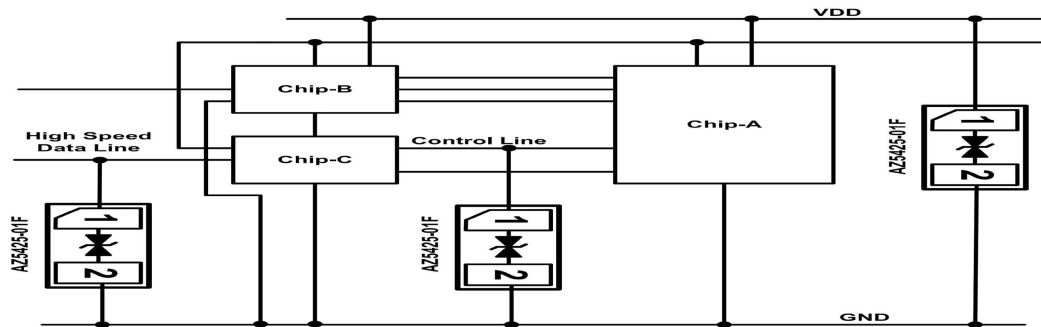


Fig. 2

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Ordering Information

PREFERRED P/N	PACKAGE	SIZE(mm)	DELIVERY MODE	MPQ(PCS)
	DFN1006-2L	1.00×0.60×0.37	7" REEL	10,000

Recommended Soldering Conditions



Package Outline Dimensions (DFN1006-2L)

Symbol	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
A	0.950	1.050	0.037	0.041
B	0.550	0.650	0.022	0.026
C	0.350	0.450	0.014	0.018
D	0.550	0.650	0.022	0.026
D ₁	0.280	0.380	0.011	0.015
E	0.450	0.550	0.018	0.022
L	0.000	0.100	0.000	0.004

Suggested Pad Layout

Symbol	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
J	0.50	0.60	0.020	0.024
K	0.25	0.35	0.010	0.014
M	0.55	0.65	0.022	0.026