

## Transient Voltage Suppressors 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),  $\pm 13\text{kV}$  (contact) IEC 61000-4-5 (Lightning) 5.5A (8/20 $\mu\text{s}$ )
- **Ultra low capacitance: 0.85pF typical**
- For low operating voltage applications: **3.3V 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

- USB2.0
- HDMI
- Hand Held Portable Applications
- Data and I/O lines protection
- Analog input lines protection
- Video lines protection
- 3.3V operating systems

### Description

AZ5423-01F is a design which includes a bi-directional ESD rated clamping cell to protect high speed data interfaces in an electronic systems. The AZ5423-01F has been specifically designed to protect sensitive components which are connected to data and transmission lines from over-voltage caused by Electrostatic Discharging (ESD), Electrical Fast Transients

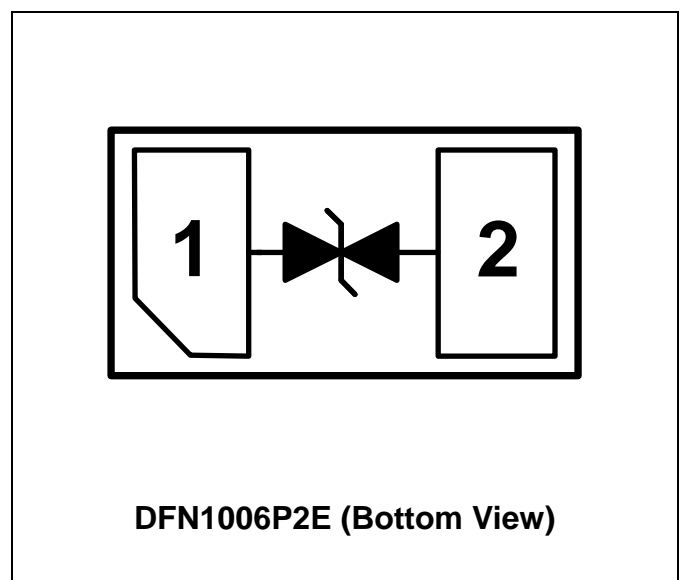
(EFT), Lightning, and Cable Discharge Event (CDE).

AZ5423-01F 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.

AZ5423-01F is bi-directional and may be used on lines where the signal swings above and below ground.

AZ5423-01F 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



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### SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS			
PARAMETER	SYMBOL	RATING	UNITS
Peak Pulse Current (tp=8/20μs)	I <sub>PP</sub>	5.5	A
Operating DC Voltage (I/O to GND)	V <sub>DC</sub>	±3.6	V
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	±15	kV
ESD per IEC 61000-4-2 (Contact)		±13	kV
Lead Soldering Temperature	T <sub>SOL</sub>	260 (10 sec.)	°C
Operating Temperature	T <sub>OP</sub>	-40 to +85	°C
Storage Temperature	T <sub>STO</sub>	-55 to +150	°C

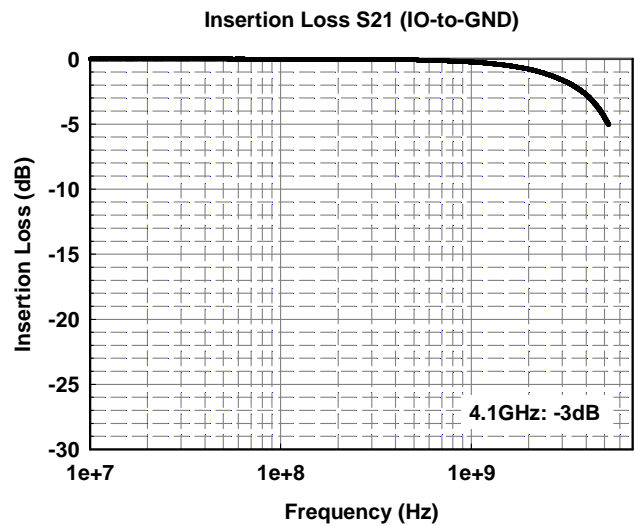
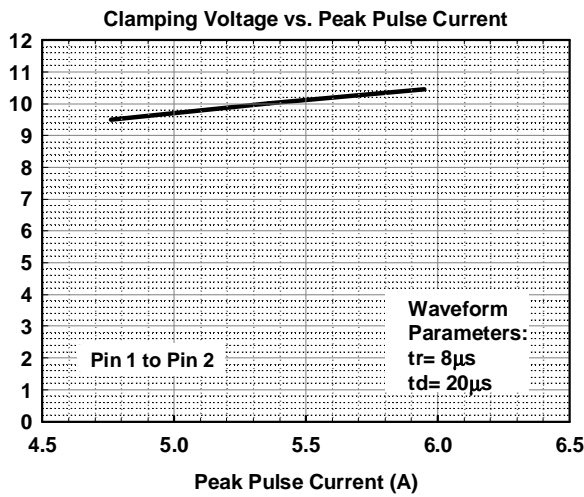
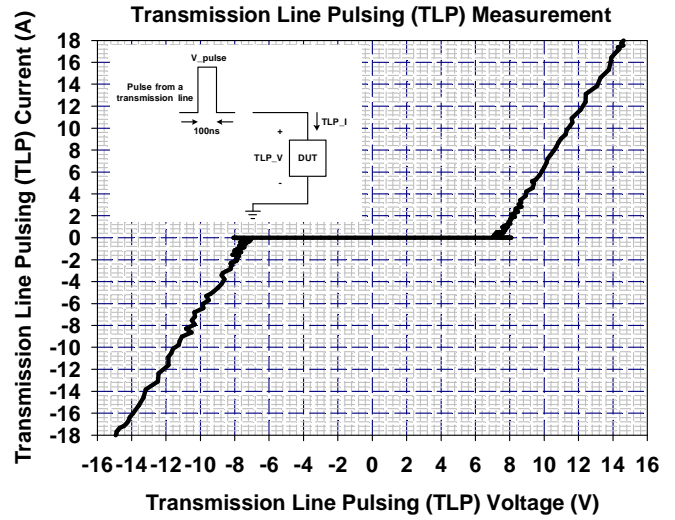
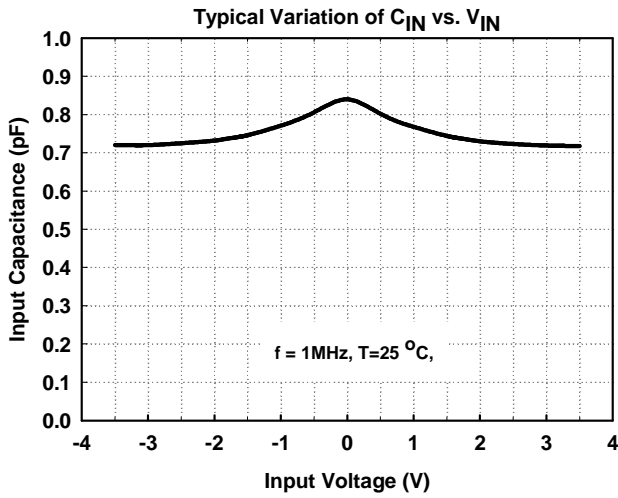
ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITIONS	MINI	TYP	MAX	UNITS
Stand-Off Voltage	V <sub>RWM</sub>	T=25 °C.	-3.3		3.3	V
Leakage Current	I <sub>Leak</sub>	V <sub>RWM</sub> = ±3.3V, T=25 °C.			0.1	μA
Breakdown Voltage	V <sub>BV</sub>	I <sub>BV</sub> = 1mA, T=25 °C.	4.5		8.5	V
Surge Clamping Voltage	V <sub>CL</sub>	I <sub>PP</sub> = 5A, tp= 8/20μs, T=25 °C.		10		V
ESD Clamping Voltage (Note 1)	V <sub>clamp</sub>	IEC 61000-4-2 +8kV (I <sub>TLP</sub> = 16A), Contact mode, T=25 °C.		14		V
ESD Dynamic Turn-on Resistance	R <sub>dynamic</sub>	IEC 61000-4-2, 0~+8kV, Contact mode, T=25 °C.		0.4		Ω
Input Capacitance	C <sub>IN</sub>	V <sub>R</sub> = 0V, f = 1MHz, T=25 °C.		0.85	1.0	pF

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

TLP conditions: Z<sub>0</sub>= 50Ω, t<sub>p</sub>= 100ns, t<sub>r</sub>= 1ns.

**Transient Voltage Suppressors for ESD Protection**

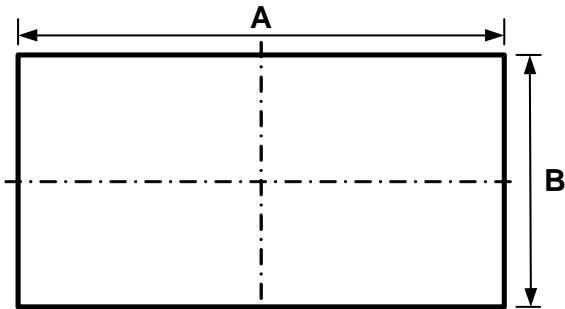
**Typical Characteristics**



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**Mechanical Details**

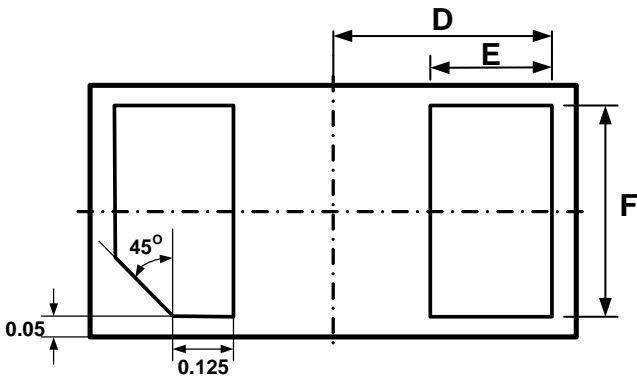
**DFN1006P2E  
PACKAGE DIAGRAMS**



**TOP VIEW**

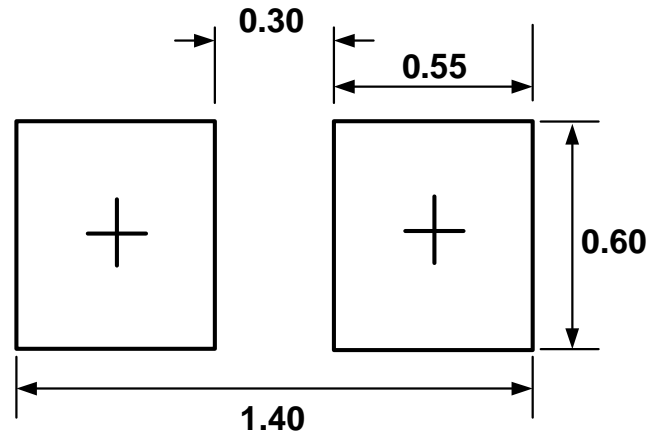


**SIDE VIEW**



**BOTTOM VIEW**

**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.

Symbol	Millimeters		Inches	
	min	max	min	max
A	0.95	1.05	0.037	0.041
B	0.55	0.65	0.022	0.026
C	0.45	0.60	0.018	0.024
D	0.45		0.018	
E	0.20	0.30	0.008	0.012
F	0.45	0.55	0.018	0.022