

Features

- ESD Protection for 1 line with Unidirectional
- Provide ESD protection for the protected line to
IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
IEC 61000-4-4 (EFT) $\pm 80\text{A}$ (5/50ns)
IEC 61000-4-5 (Lightning) 4.5A (8/20 μs)
- Suitable for, **20V and below**, operating voltage applications
- **0402 small DFN package** saves board space
- Protect one I/O line or one power line
- Fast turn-on and low clamping voltage
- Solid-state silicon-avalanche and active circuit triggering technology
- **Green part**

Applications

- Power Supply Protection
- Power Management
- LCD Panel
- Portable Devices
- Hand Held Portable Applications
- Low Speed Data or Control lines protection
- Cellular Handsets and Accessories
- Notebooks, desktops, and servers
- Peripherals

Description

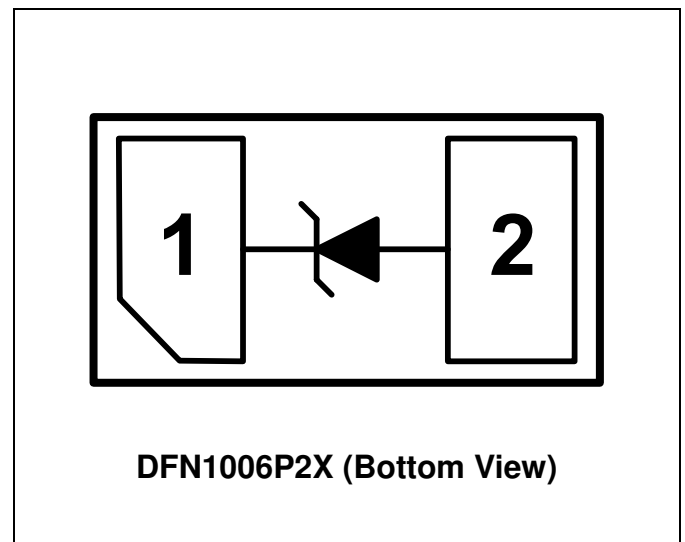
AZ4120-01F is a design which includes a unidirectional ESD rated clamping cell to protect one power line, or one control line, or one low speed data line in an electronic system. The AZ4120-01F has been specifically designed to protect sensitive components which are connected to power and control lines from

over-voltage damage caused by Electrostatic Discharging (ESD), Electrical Fast Transients (EFT), Lightning, and Cable Discharge Event (CDE).

AZ4120-01F 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.

AZ4120-01F 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





SPECIFICATIONS

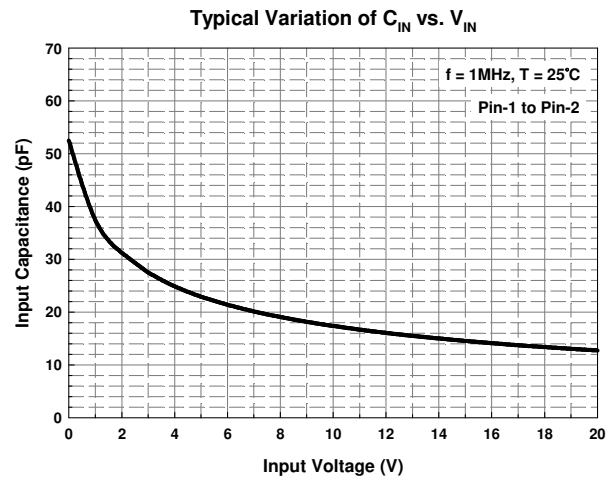
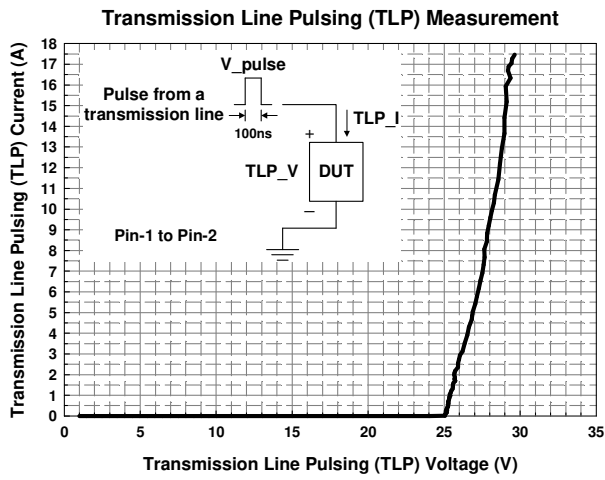
| ABSOLUTE MAXIMUM RATINGS | | | |
|---|--------------------|---------------|-------|
| PARAMETER | SYMBOL | RATING | UNITS |
| Peak Pulse Current (tp=8/20μs) | I _{PP} | 4.5 | A |
| Operating Supply Voltage (pin-1 to pin-2) | V _{DC} | 22 | V |
| ESD per IEC 61000-4-2 (Air) | V _{ESD-1} | ±30 | kV |
| ESD per IEC 61000-4-2 (Contact) | V _{ESD-2} | ±30 | |
| 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 | CONDITIONS | MINI | TYP | MAX | UNITS |
| Reverse Stand-Off Voltage | V _{RWM} | Pin-1 to pin-2, T=25 °C. | | | 20 | V |
| Reverse Leakage Current | I _{Leak} | V _{RWM} = 20V, T=25 °C, pin-1 to pin-2. | | | 0.5 | μA |
| Reverse Breakdown Voltage | V _{BV} | I _{BV} = 1mA, T=25 °C, pin-1 to pin-2. | 22.2 | | | V |
| Forward Voltage | V _F | I _F = 15mA, T=25 °C, pin-2 to pin-1. | 0.6 | | 1.2 | V |
| ESD Clamping Voltage (Note 1) | V _{clamp} | IEC 61000-4-2 +8kV (I _{TLP} = 16A), Contact mode, T=25 °C, pin-1 to pin-2. | | 29 | | V |
| ESD Dynamic Turn-on Resistance | R _{dynamic} | IEC 61000-4-2 0~+8kV, T= 25 °C, Contact mode, pin-1 to pin-2. | | 0.25 | | Ω |
| Channel Input Capacitance | C _{IN} | V _R = 0V, f = 1MHz, T=25 °C, pin-1 to pin-2. | | 52 | 65 | pF |

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

TLP conditions: Z₀= 50Ω, t_p= 100ns, t_r= 1ns.

Typical Characteristics

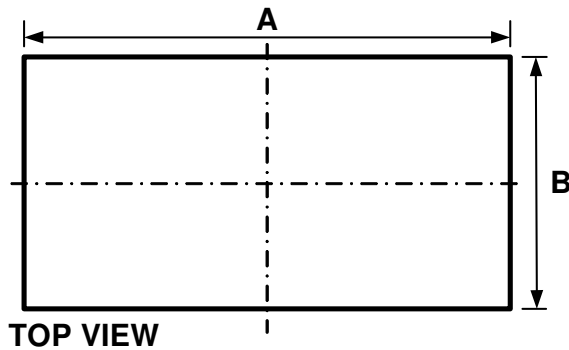




Mechanical Details

DFN1006P2X

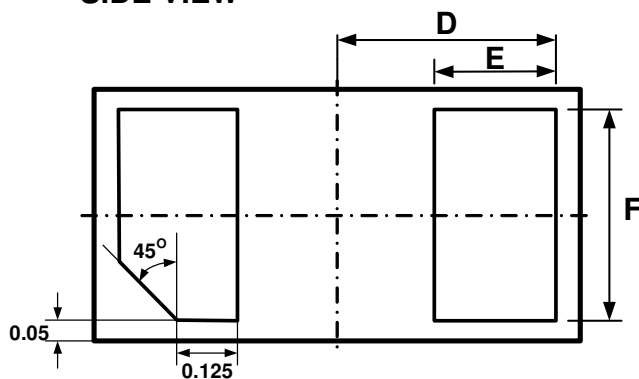
PACKAGE DIAGRAMS



TOP VIEW



SIDE VIEW

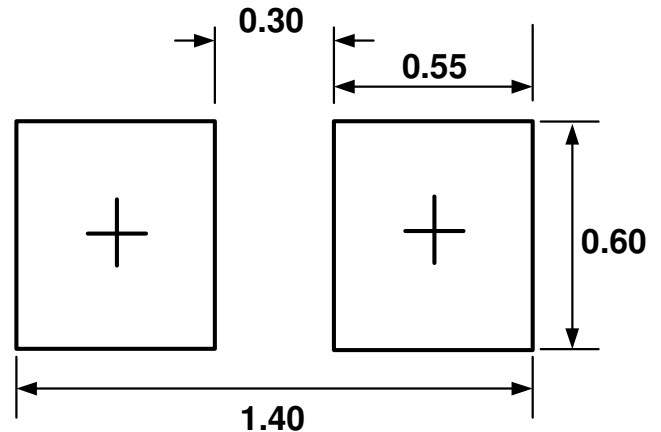


BOTTOM VIEW

PACKAGE DIMENSIONS

| 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 | 0.40 | 0.55 | 0.016 | 0.022 |
| D | 0.45 | | 0.018 | |
| E | 0.20 | 0.30 | 0.008 | 0.012 |
| F | 0.45 | 0.55 | 0.018 | 0.022 |

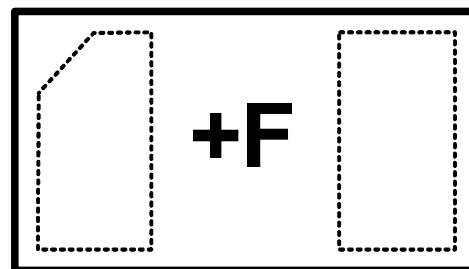
LAND LAYOUT



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



Top View

F = Device Code

| Part Number | Marking Code |
|---------------------------------|--------------|
| AZ4120-01F.R7GR (Green Part) | F |

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



Ordering Information

| PN# | Material | Type | Reel size | MOQ | MOQ/internal box | MOQ/carton |
|-----------------|----------|------|-----------|-------------|----------------------|--------------------------|
| AZ4120-01F.R7GR | Green | T/R | 7 inch | 12,000/reel | 4 reels = 48,000/box | 6 boxes = 288,000/carton |

Revision History

| Revision | Modification Description |
|---------------------|--------------------------|
| Revision 2016/02/18 | Preliminary Release. |
| Revision 2017/05/15 | Formal Release. |
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