

Features

- ESD Protection for 4 lines with bi-direction
- Provide transient protection for the protected line to
IEC 61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
IEC 61000-4-4 (EFT) 50A (5/50ns)
IEC 61000-4-5 (Lightning) 4A (8/20μs)
- For operating voltage of 60V and below
- Fast turn-on and low clamping voltage
- Array of ESD rated diodes with internal equivalent TVS (Transient Voltage Suppression) diode
- Solid-state silicon-avalanche and active circuit triggering technology
- **Green part**

Applications

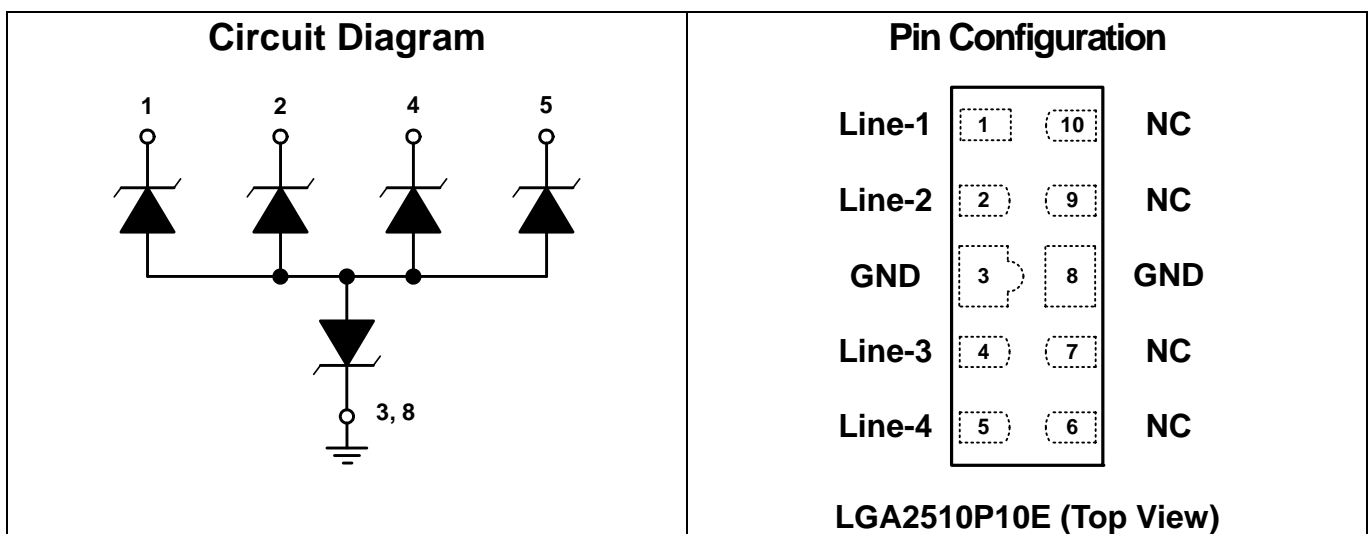
- Chip-On-Glass (COG) panels
- Power line protection
- Control signal lines protection
- Monitors and Flat Panel Displays
- OLED panels
- Industrial system
- Set-Top box

Description

AZ4860-04F is a design which includes 4 bi-directional ESD rated clamping cell to protect power line, control line, or low speed data line in an electronic system. The AZ4860-04F has been specifically designed to protect sensitive components or circuit which are connected to power, low speed data, and control lines from over-voltage damage caused by Electrostatic Discharging (ESD), Electrical Fast Transients (EFT) and Lightning.

AZ4860-04F is a unique design which includes ESD rated and a unique design of clamping cell which is an equivalent TVS diode 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.

AZ4860-04F may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 (±15kV air, ±8kV contact discharge).



Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$, unless otherwise specified)			
Parameter	Symbol	Rating	Unit
Operating Voltage	V_{DC}	± 60	V
Peak Pulse Current ($t_p = 8/20\mu\text{s}$)	I_{PP}	4	A
Peak Pulse Power ($t_p = 8/20\mu\text{s}$)	P_{PP}	350	W
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.)	$^\circ\text{C}$
Operating Temperature	T_{OP}	-55 to +125	$^\circ\text{C}$
Storage Temperature	T_{STO}	-55 to +150	$^\circ\text{C}$

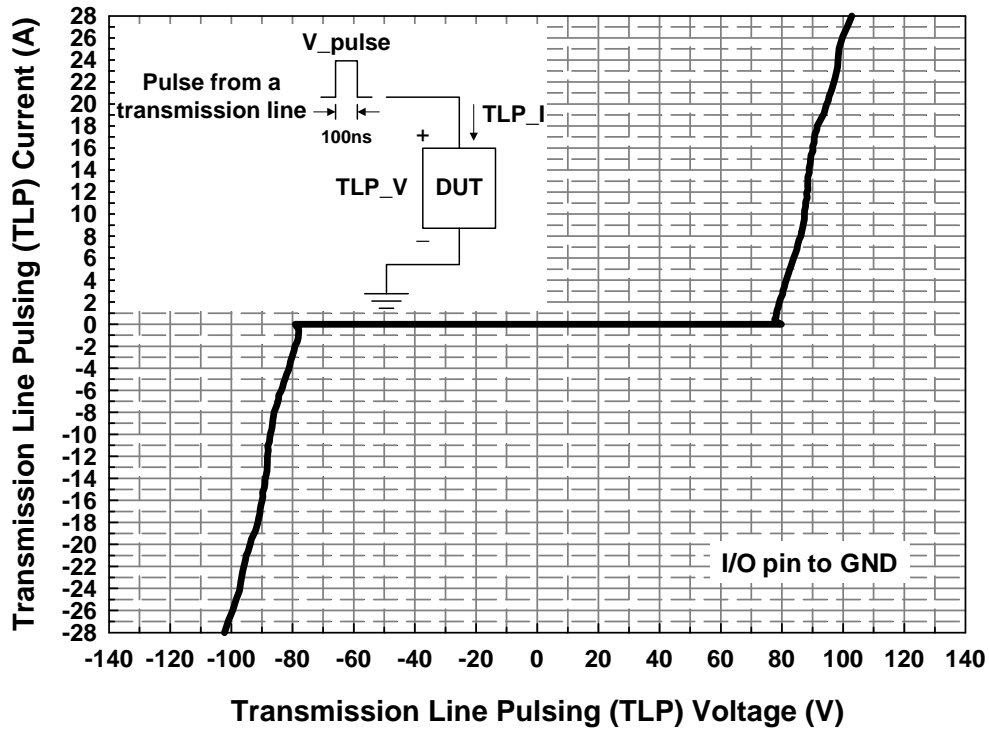
Electrical Characteristics						
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Reverse Stand-Off Voltage	V_{RWM}	Pin-1,-2,-4,-5 to pin-3,-8, $T = 25^\circ\text{C}$.	-60		60	V
Reverse Leakage Current	$I_{CH-Leak}$	$V_{Pin-1,-2,-4,-5} = 60\text{V}$, $V_{Pin-3,-8} = 0\text{V}$, $T = 25^\circ\text{C}$.			1	μA
Reverse Breakdown Voltage	V_{BV}	$I_{BV} = 1\text{mA}$, $T = 25^\circ\text{C}$, Pin-1,-2,-4,-5 to pin-3,-8.	65		95	V
ESD Clamping Voltage (Note 1)	V_{CL-ESD}	IEC 61000-4-2 +8kV ($I_{TLP} = 16\text{A}$), contact mode, any I/O pin to GND, $T = 25^\circ\text{C}$.		90		V
Channel Input Capacitance	C_{IN}	$V_{pin-3,-8} = 0\text{V}$, $V_{IN} = 0\text{V}$, $f = 1\text{MHz}$, any I/O pin to GND, $T = 25^\circ\text{C}$.		7.7	10.5	pF

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

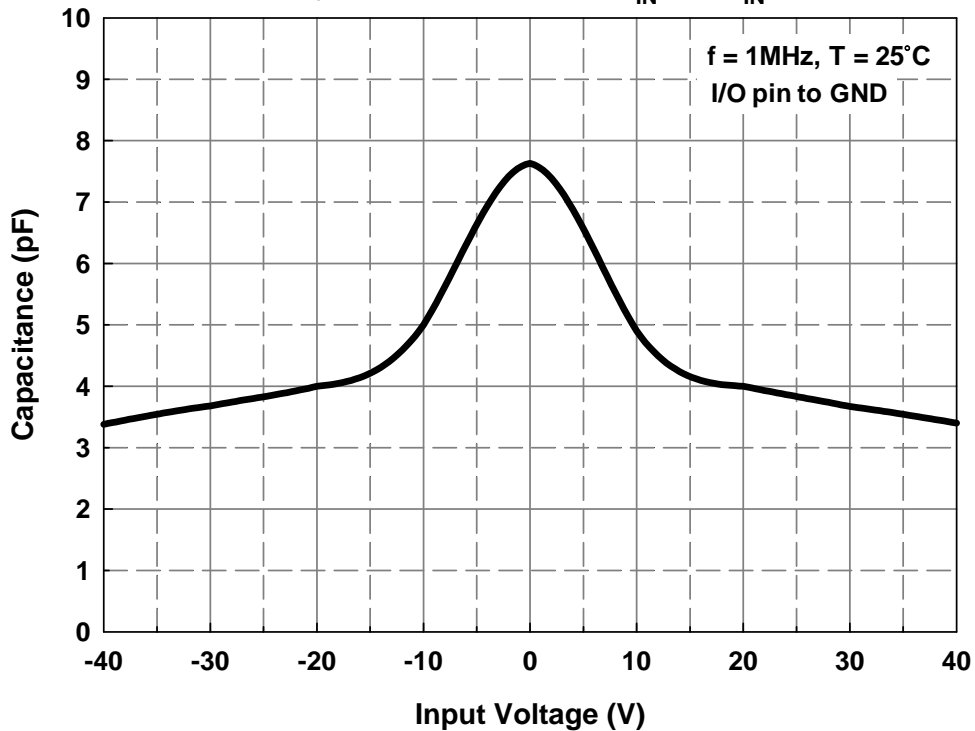
TLP conditions: $Z_0 = 50\Omega$, $t_p = 100\text{ns}$, $t_r = 1\text{ns}$.

Typical Characteristics

Transmission Line Pulsing (TLP) Measurement



Typical Variation of C_{IN} vs. V_{IN}



Application Information

The AZ4860-04F is designed to protect four data lines from transient over-voltage (such as ESD stress pulse). The device connection of AZ4860-04F is shown in Fig. 1. In Fig. 1, the four protected data lines are connected to the ESD protection pins (pin1, pin2, pin4, and pin5) of AZ4860-04F. The ground pins (pin3 and pin8) of AZ4860-04F are the negative reference pins.

These pins should be directly connected to the GND rail of PCB (Printed Circuit Board). To get minimum parasitic inductance, the path length should be kept as short as possible.

AZ4860-04F can provide ESD protection for 4 I/O signal lines simultaneously. If the number of I/O signal lines is less than 4, the unused I/O pins can be simply left as NC pins.

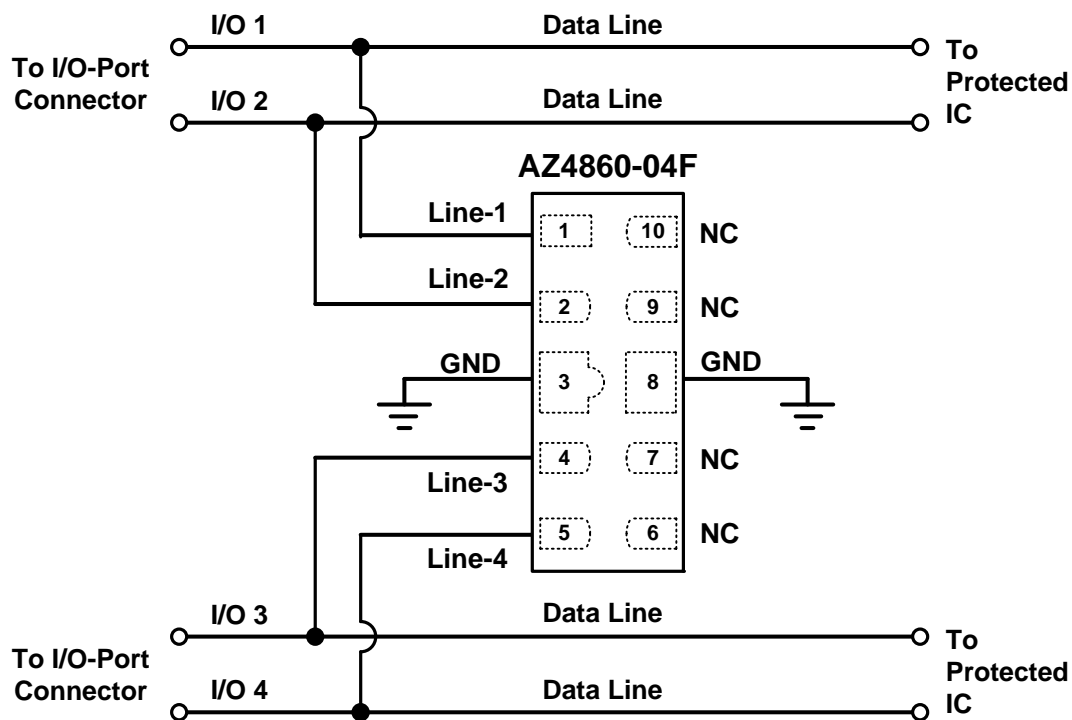


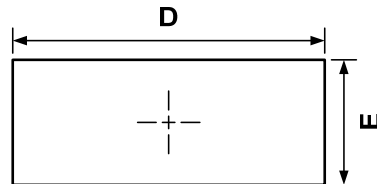
Fig. 1 Data lines connection of AZ4860-04F.

Mechanical Details

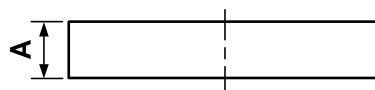
LGA2510P10E

Package Diagrams and Package Dimensions

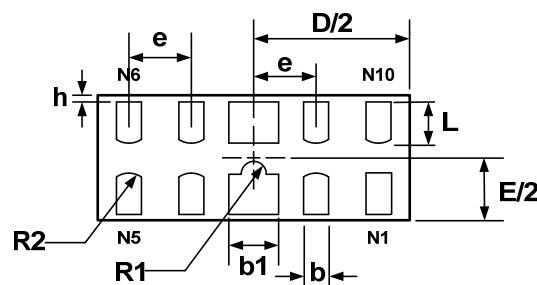
TOP VIEW



SIDE VIEW

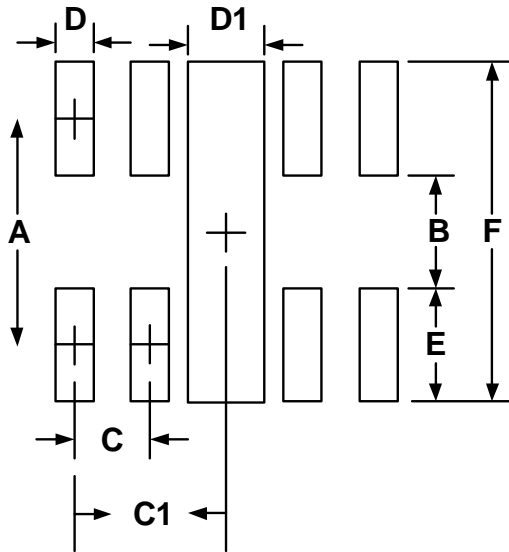


BOTTOM VIEW



Symbol	Millimeters	
	Min.	Max.
A	0.520	0.640
D	2.400	2.600
E	0.900	1.100
e	0.500 BSC	
b	0.150	0.250
b1	0.350	0.450
L	0.280	0.380
h	0.050 REF	
R1	0.125 REF	
R2	0.075 REF	

Land Layout



Dimensions		
Index	Millimeter	Inches
A	0.875	0.034
B	0.20	0.008
C	0.50	0.02
C1	1.00	0.039
D	0.25	0.01
D1	0.4	0.016
E	0.675	0.027
F	1.55	0.061

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



486 = Device Code
X = Date Code
Y = Control Code

Part Number	Marking Code
AZ4860-04F.R7G (Green Part)	486XY

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

Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ4860-04F.R7G	Green	T/R	7 inch	3,000/reel	4 reels= 12,000/box	6 boxes = 72,000/carton



Revision History

Revision	Modification Description
Revision 2020/06/15	Formal Release.