

## Features

- ESD Protect for 4 Lines with Bi-directional
- Provide ESD protection for the protected line to IEC 61000-4-2 (ESD)  $\pm 17\text{kV}$  (air),  $\pm 12\text{kV}$  (contact) IEC 61000-4-4 (EFT) 40A (5/50ns) Cable Discharge Event (CDE)
- Small SOT563 package saves board space
- Protect four I/O lines or four power lines
- Fast turn-on and Low clamping voltage
- Low operating voltage: 5V and below
- Solid-state silicon-avalanche and active circuit triggering technology
- Green part available

## Applications

- Audio Interfaces Protection
- Computer Interfaces Protection
- Microprocessors Protection
- Serial and Parallel Ports Protection
- Control Signal Lines Protection
- Power lines on PCB Protection
- Latchup Protection

## Description

AZ2025-04R is a design which includes four bi-directional ESD rated clamping cells to protect four power lines, or four control lines, or four low speed data lines in an electronic systems. The AZ2025-04R 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).

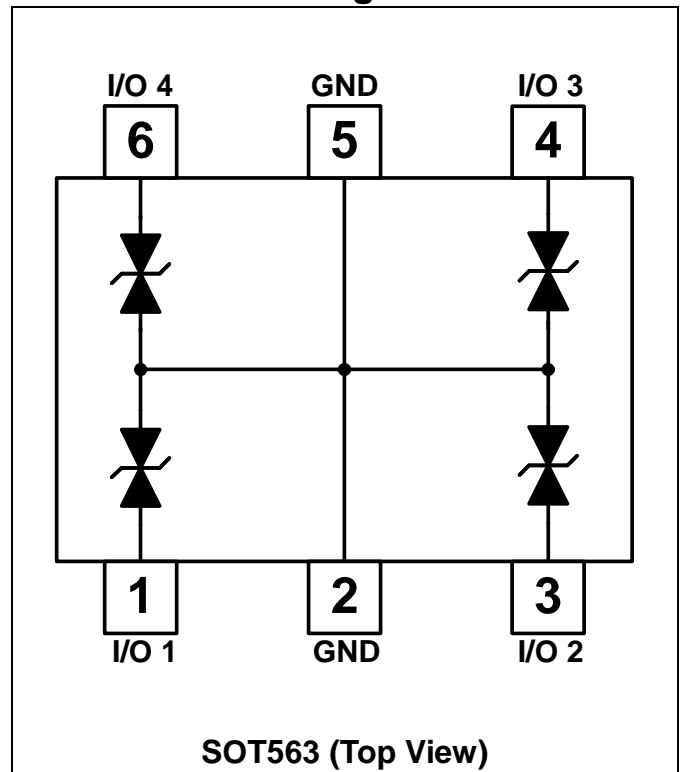
AZ2025-04R is a unique design which includes proprietary clamping cells in a single package. During transient conditions, the proprietary

clamping cells prevent over-voltage on the power lines or control/data lines, protecting any downstream components.

AZ2025-04R is bi-directional and may be used on lines where the signal swings above and below ground.

AZ2025-04R 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





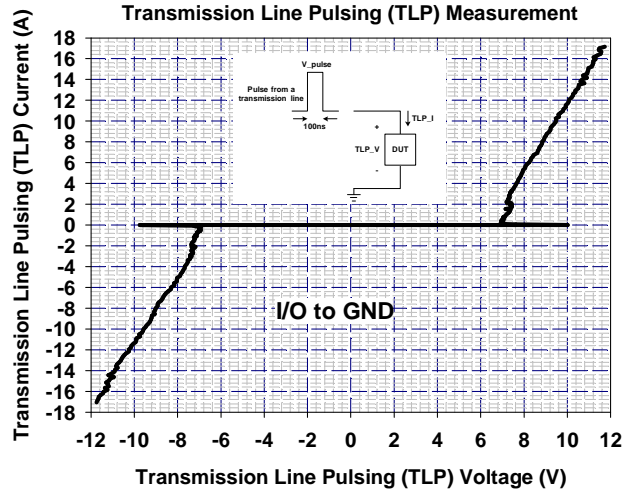
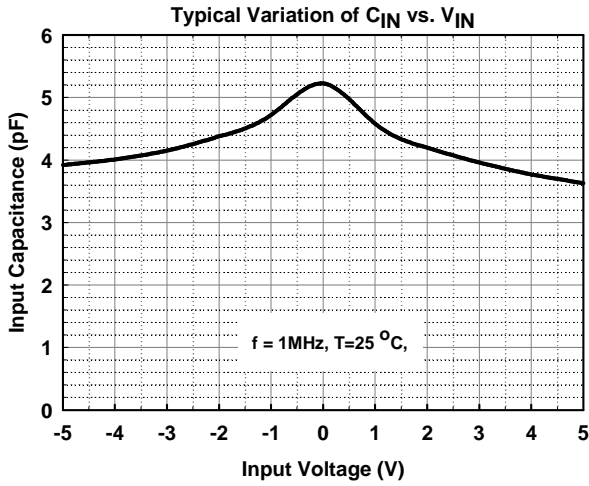
## SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS			
PARAMETER	PARAMETER	RATING	UNITS
Operating Supply Voltage (pin-1,-3,-4,-6 to pin-2,-5)	$V_{DC}$	$\pm 6$	V
ESD per IEC 61000-4-2 (Air)	$V_{ESD}$	$\pm 17$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 12$	kV
Lead Soldering Temperature	$T_{SOL}$	260 (10 sec.)	$^{\circ}C$
Operating Temperature	$T_{OP}$	-55 to +125	$^{\circ}C$
Storage Temperature	$T_{STO}$	-55 to +150	$^{\circ}C$

ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITIONS	MINI	TYP	MAX	UNITS
Reverse Stand-Off Voltage	$V_{RWM}$	Pin-1, -3, -4, -6 to Pin-2,-5, $T=25^{\circ}C$	-5		5	V
Reverse Leakage Current	$I_{Leak}$	$V_{RWM} = \pm 5V, T=25^{\circ}C$ . Pin-1, -3, -4, -6 to Pin-2,-5.	-1		1	$\mu A$
Reverse DC Breakdown Voltage	$V_{BV}$	$I_{BV} = 1mA, T=25^{\circ}C$ . Pin-1, -3, -4, -6 to Pin-2,-5.	6		9.5	V
Reverse DC Breakdown Voltage	$V_{BV}$	$I_{BV} = -1mA, T=25^{\circ}C$ . Pin-1, -3, -4, -6 to Pin-2,-5.	-9.5		-6	V
ESD Clamping Voltage	$V_{ESD\_CL}$	IEC 61000-4-2 $\pm 6kV, T=25^{\circ}C$ , Contact mode, Pin-1, -3, -4, -6 to Pin-2,-5.		$\pm 12$		V
Channel Input Capacitance	$C_{IN}$	$V_R = 0V, f = 1MHz, T=25^{\circ}C$ . Pin-1, -3, -4, -6 to Pin-2,-5.		5.5	6.5	pF



### Typical Characteristics





## Applications Information

The AZ2025-04R is designed to protect four lines against System ESD/EFT/CDE pulses by clamping them to an acceptable reference. It provides bi-directional protection.

The usage of the AZ2025-04R is shown in Fig. 1. Protected lines, such as data lines, control lines, or power lines, are connected at pin-1, -3, -4, and -6. The pin-2, -5 are 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 AZ2025-04R 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 AZ2025-04R.
- Place the AZ2025-04R 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.

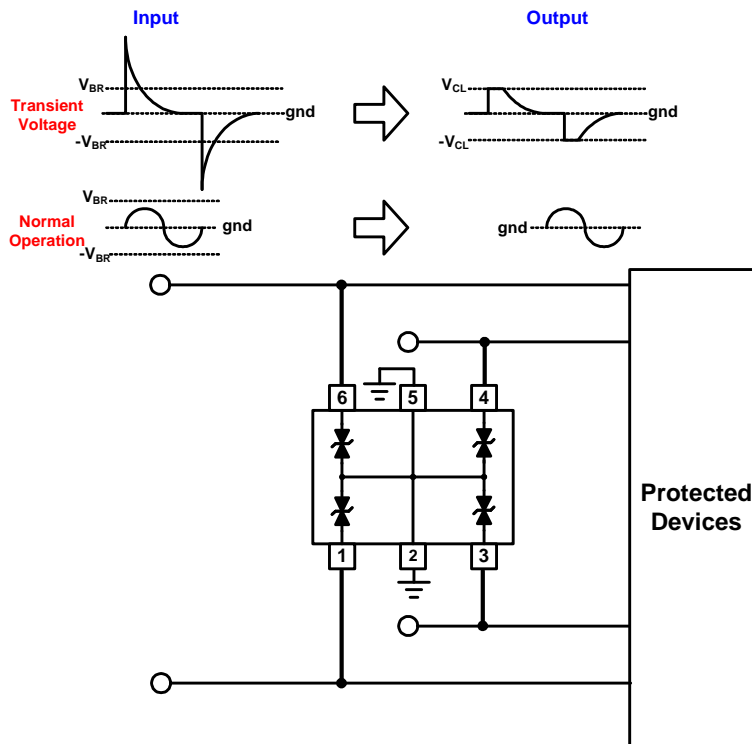
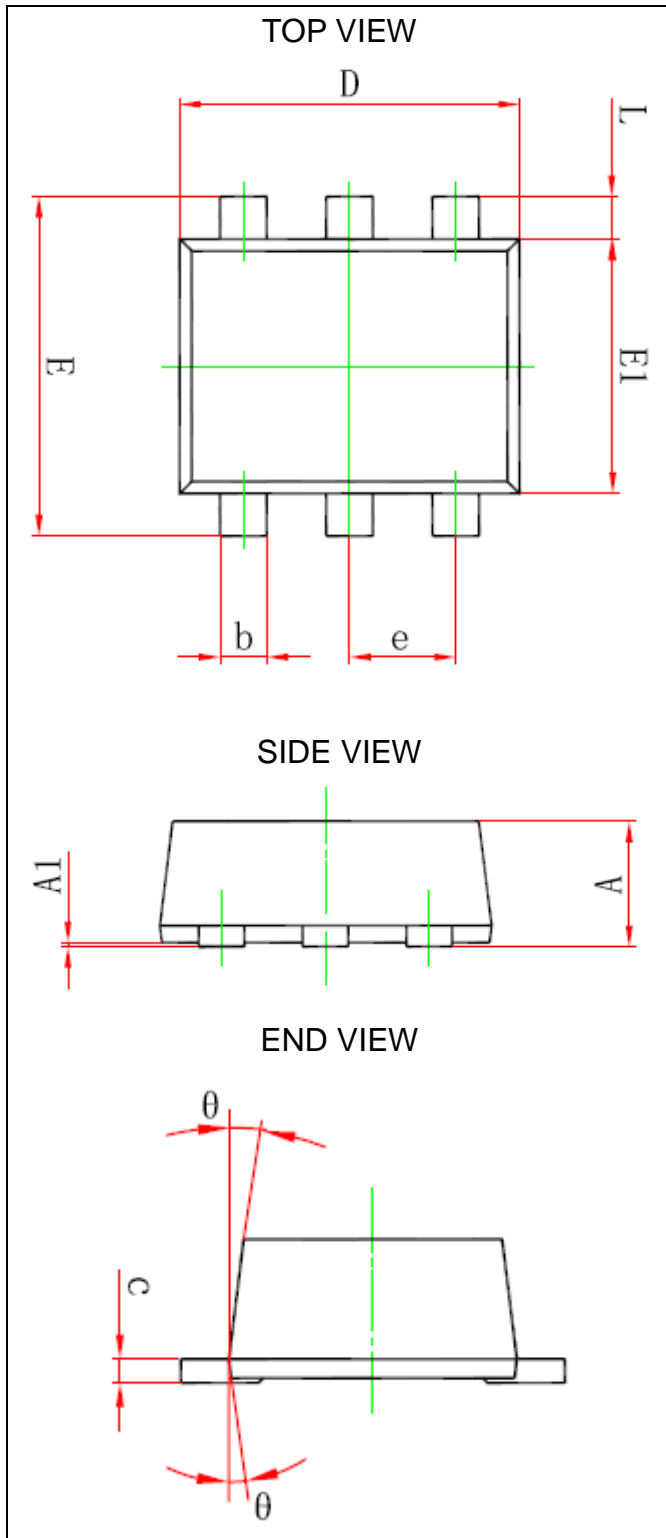


Fig. 1

## Mechanical Details

### SOT563

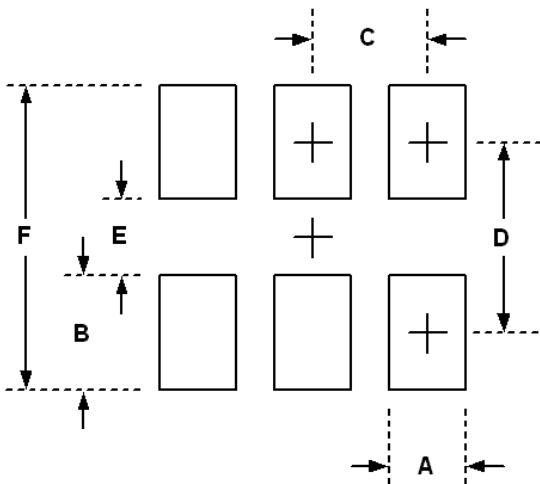
#### PACKAGE DIAGRAMS



#### PACKAGE DIMENSIONS

SYMBOL	Millimeters		
	MIN.	NOMINAL	MAX.
A	0.525	-	0.60
A1	0	-	0.05
e	0.45	-	0.55
c	0.09	-	0.16
D	1.50	-	1.70
b	0.17	-	0.27
E1	1.10	-	1.30
E	1.50	-	1.70
L	0.10	-	0.30
$\theta$	7° REF		

## LAND LAYOUT

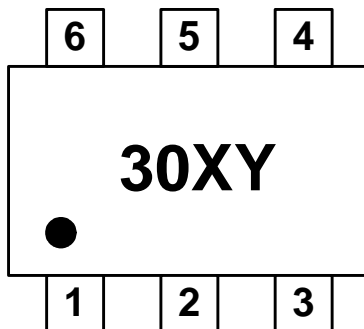


Dimensions	
Index	Millimeter
A	0.30
B	0.50
C	0.50
D	1.40
E	0.90
F	1.90

### 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



30=Device Code

X=Date Code

Y=Control Code

Part Number	Marking Code
AZ2025-04R (Green Part)	30XY
AZ2025-04R (Engineering Part)	5UXY

## Ordering Information

PN#	Material	Type	Reel size	MOQ/interal box	MOQ/carton
AZ2025-04R.R7G	Green	T/R	7 inch	4 reel=12,000/box	6 box=72,000/carton



## Revision History

Revision	Modification Description
Revision 2009/11/04	Initial Release.
Revision 2011/06/18	1. Update the Company Logo. 2. Add the Ordering Information.