



Features

- ESD Protect for 5 Lines with Uni-directional
- Provide ESD protection for the protected line to IEC 61000-4-2 (ESD) $\pm 18\text{kV}$ (air), $\pm 18\text{kV}$ (contact)
IEC 61000-4-4 (EFT) 60A (5/50ns)
Cable Discharge Event (CDE)
- Small SOT563 package saves board space
- Protect five I/O lines or five power lines
- Fast turn-on and Low clamping voltage
- Low operating voltage: 3.3V 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

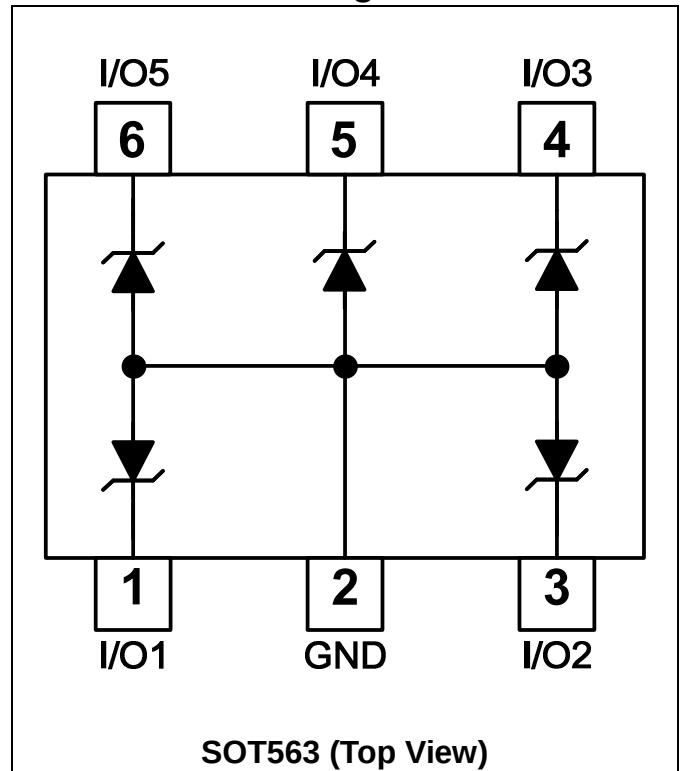
Description

AZ2013-05R is a design which includes five uni-directional ESD rated clamping cells to protect five power lines, or five control lines, or five low speed data lines in an electronic systems. The AZ2013-05R 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).

AZ2013-05R 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.

AZ2013-05R 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



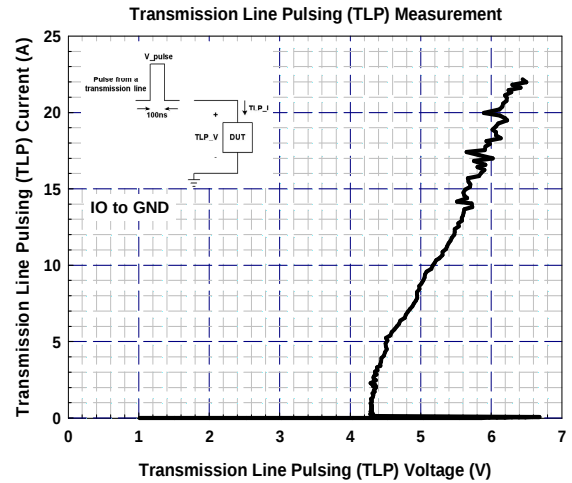
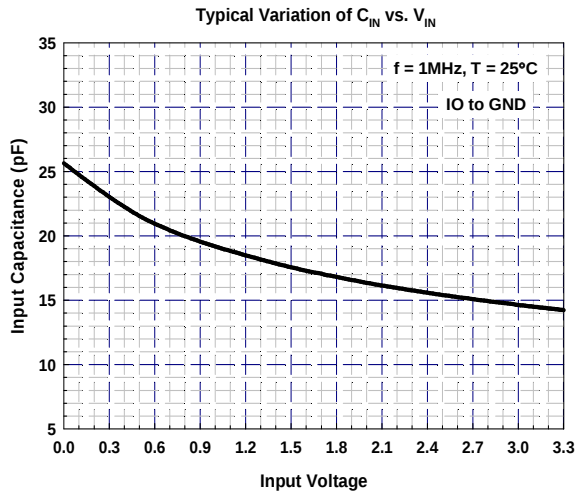
SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS			
PARAMETER	PARAMETER	RATING	UNITS
Operating Supply Voltage	V_{DC}	3.6	V
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 18	kV
ESD per IEC 61000-4-2 (Contact)		± 18	kV
Lead Soldering Temperature	T_{SOL}	260 (10 sec.)	$^{\circ}C$
Operating Temperature	T_{OP}	-55 to +85	$^{\circ}C$
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, -5, -6 to Pin-2, $T = 25^{\circ}C$			3.3	V
Reverse Leakage Current	I_{Leak}	$V_{RWM} = 3.3V$, $T = 25^{\circ}C$. Pin-1, -3, -4, -5, -6 to Pin-2.			1	μA
Reverse DC Breakdown Voltage	V_{BV}	$I_{BV} = 1mA$, $T = 25^{\circ}C$. Pin-1, -3, -4, -5, -6 to Pin-2.	4.5		6.8	V
Forward Voltage	V_F	$I_F = 15mA$, $T = 25^{\circ}C$. Pin-2 to Pin-1, -3, -4, -5, -6.	0.6		1.0	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.		6.0		V
Channel Input Capacitance	C_{IN}	$V_R = 0V$, $f = 1MHz$, $T = 25^{\circ}C$. Pin-1, -3, -4, -5, -6 to Pin-2.		26	32	pF



Typical Characteristics



Applications Information

The AZ2013-05R is designed to protect five lines against System ESD/EFT/CDE pulses by clamping them to an acceptable reference.

The usage of the AZ2013-05R is shown in Fig. 1. Protected lines, such as data lines, control lines, or power lines, are connected at pin 1, 3, 4, 5 and 6. The pin2 should be connected directly 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 AZ2013-05R 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 AZ2013-05R.
- Place the AZ2013-05R 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.

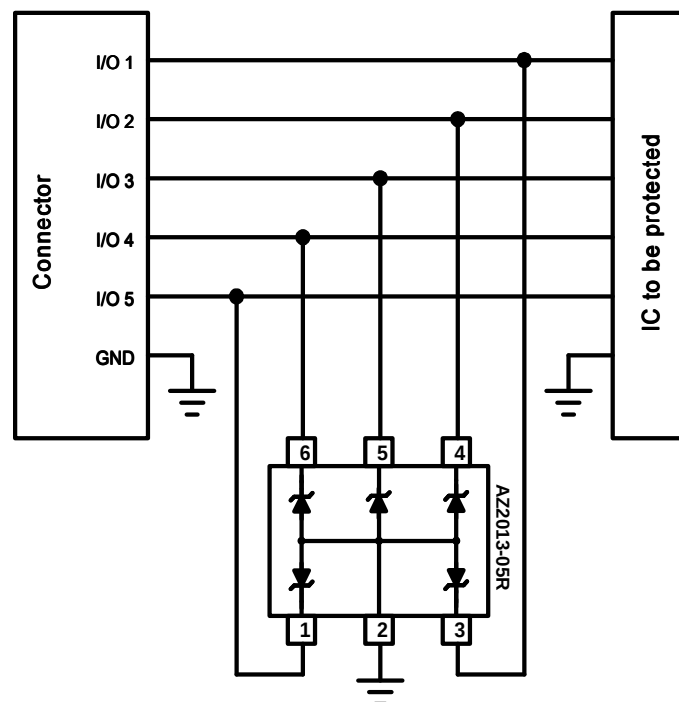


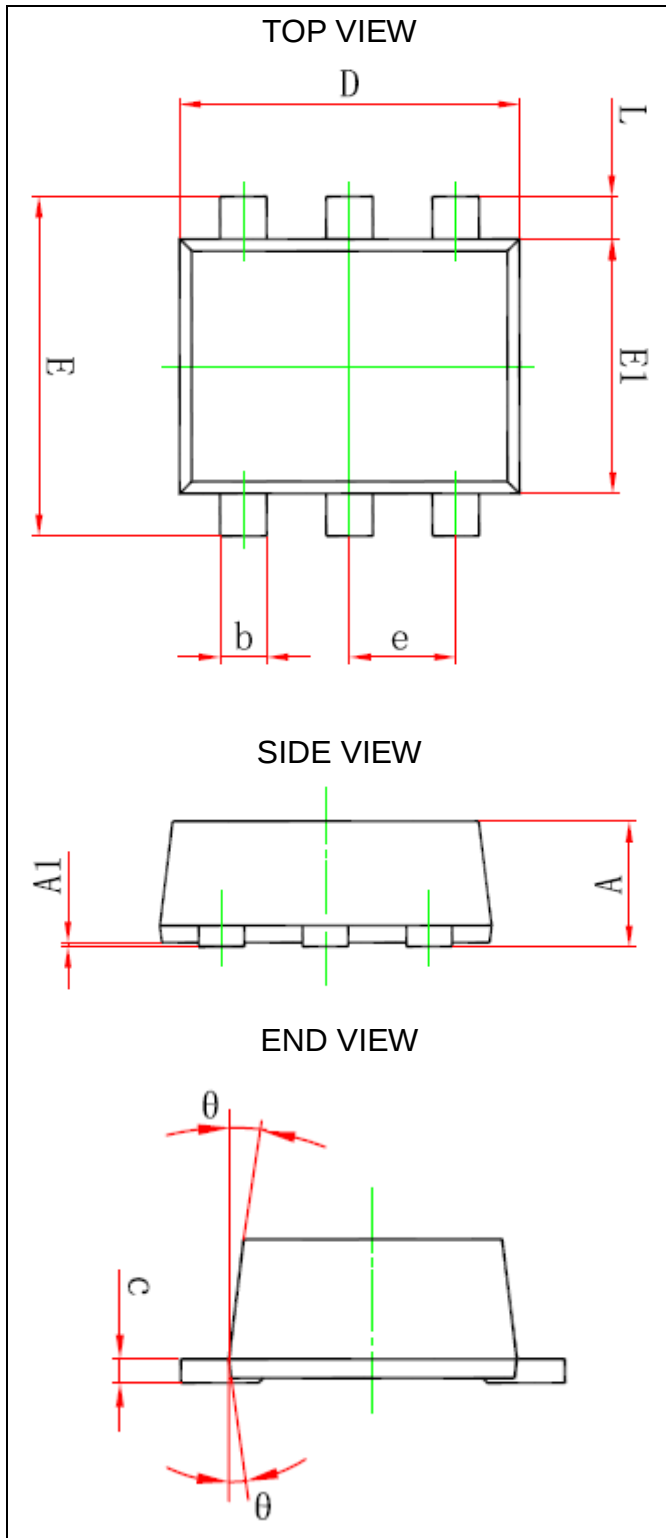
Fig. 1



Mechanical Details

SOT563

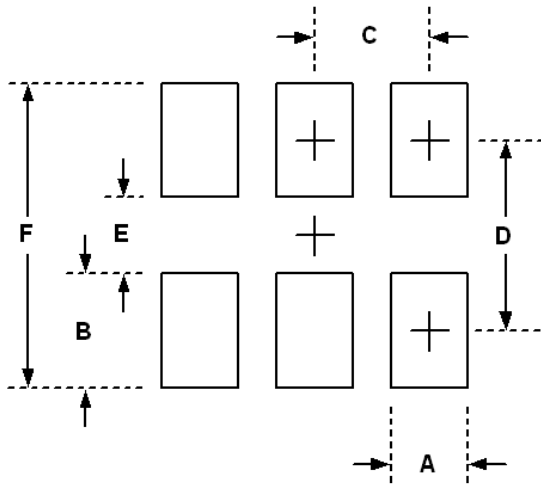
PACKAGE DIAGRAMS



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
θ	7° REF		

LAND LAYOUT

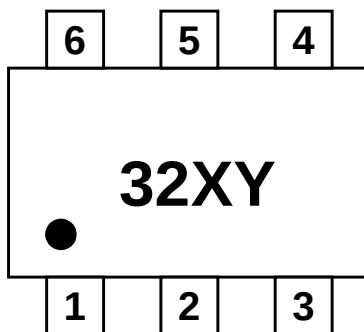


Dimensions	
Index	Millimeter
A	0.30
B	0.50
C	0.50
D	1.40
E	0.90
F	1.90

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



32=Device Code

X=Date Code

Y=Control Code

Part Number	Marking Code
AZ2013-05R (Green Part)	32XY



Revision History

Revision	Modification Description
Revision 2011/12/01	Preliminary release.
Revision 2012/05/29	Formal release.