

Features

- ESD protection for one line with bi-directional
- Provide transient protection for each line to **IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (air) / $\pm 10\text{kV}$ (contact)**
- **Ultra low capacitance: 0.3pF typical**
- Suitable for, **18V and below**, operating voltage applications
- **0201 small CSP package** saves board space
- Fast turn-on and low clamping voltage
- Solid-state silicon-avalanche and active circuit triggering technology
- **Green part**

Applications

- RF signal lines
- Wi-Fi antenna
- NFC applications
- GSM applications
- GPS antenna
- Bluetooth antenna
- Handheld portable applications
- Consumer electronics

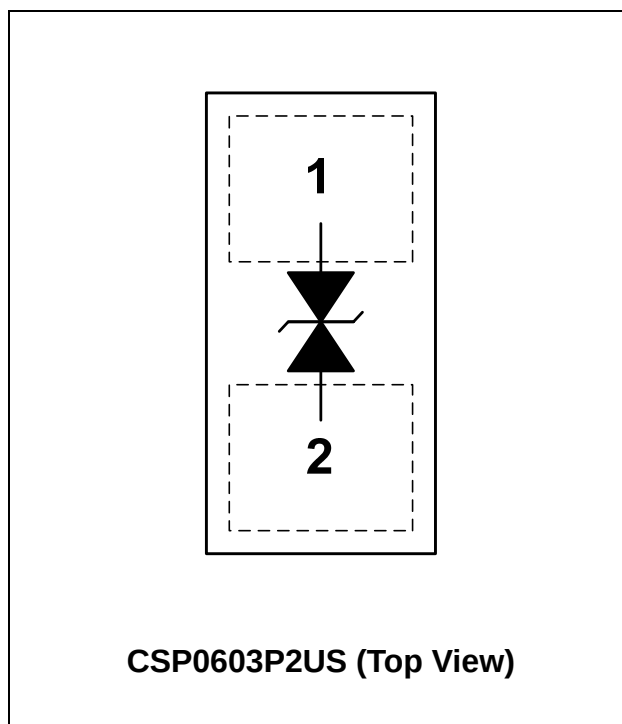
Description

AZ4B18-01BS is a design which includes a bi-directional ESD rated clamping cell to protect one high speed data line in an electronic system. The AZ4B18-01BS has been specifically designed to protect sensitive components which are connected to high speed data lines from over-voltage damage caused by Electrostatic Discharging (ESD).

AZ4B18-01BS 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 high speed data lines, protecting any downstream components.

AZ4B18-01BS 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 ($T_A = 25^\circ\text{C}$, unless otherwise specified)			
Parameter	Symbol	Rating	Unit
ESD per IEC 61000-4-2 (Air)	$V_{\text{ESD-1}}$	± 15	kV
ESD per IEC 61000-4-2 (Contact)	$V_{\text{ESD-2}}$	± 10	
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	$^\circ\text{C}$

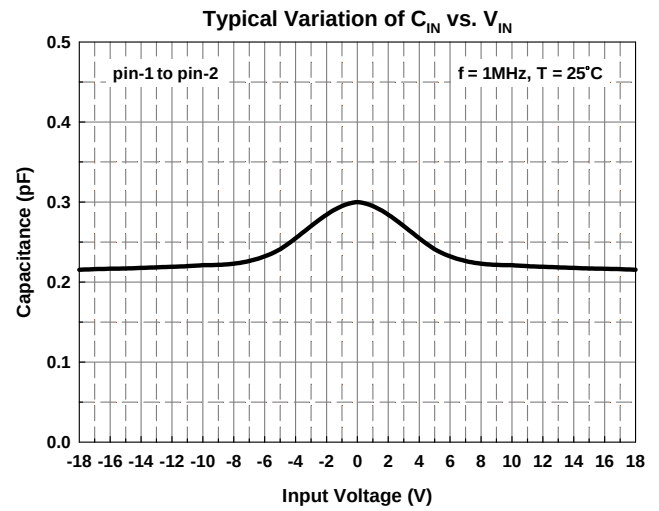
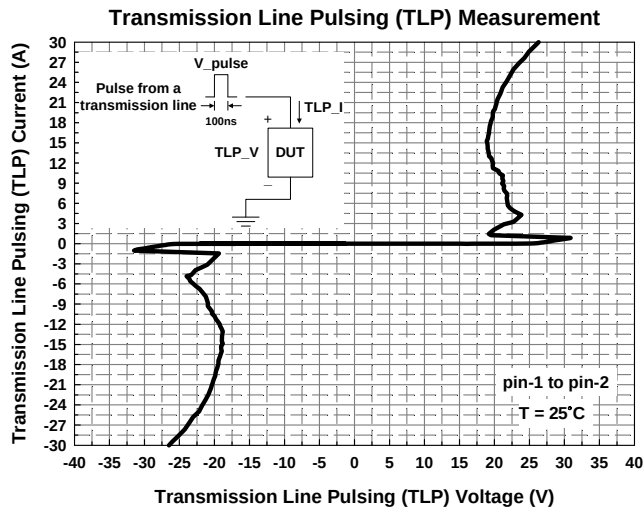
Electrical Characteristics						
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Reverse Stand-Off Voltage	V_{RWM}	$T = 25^\circ\text{C}$.	-18		18	V
Reverse Leakage Current	I_{Leak}	$V_R = \pm 18\text{V}$, $T = 25^\circ\text{C}$.			100	nA
Reverse Breakdown Voltage	V_{BV}	$I_{\text{BV}} = 1\text{mA}$, $T = 25^\circ\text{C}$.	19			V
ESD Clamping Voltage (Note 1)	$V_{\text{CL-ESD}}$	IEC 61000-4-2 +8kV ($I_{\text{TLP}} = 16\text{A}$), contact mode, $T = 25^\circ\text{C}$.		20		V
ESD Dynamic Turn-on Resistance	R_{dynamic}	IEC 61000-4-2, contact mode, $T = 25^\circ\text{C}$.		0.3		Ω
Channel Input Capacitance	C_{IN}	$V_R = 0\text{V}$, $f = 1\text{MHz}$, $T = 25^\circ\text{C}$.		0.3	0.5	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



Applications Information

The AZ4B18-01BS is designed to protect one line against system ESD pulses by clamping it to an acceptable reference.

The usage of the AZ4B18-01BS is shown in Fig. 1. Protected line, such as high speed data line, is connected at pin 1. The pin 2 is 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 AZ4B18-01BS 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 AZ4B18-01BS.
- Place the AZ4B18-01BS 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.

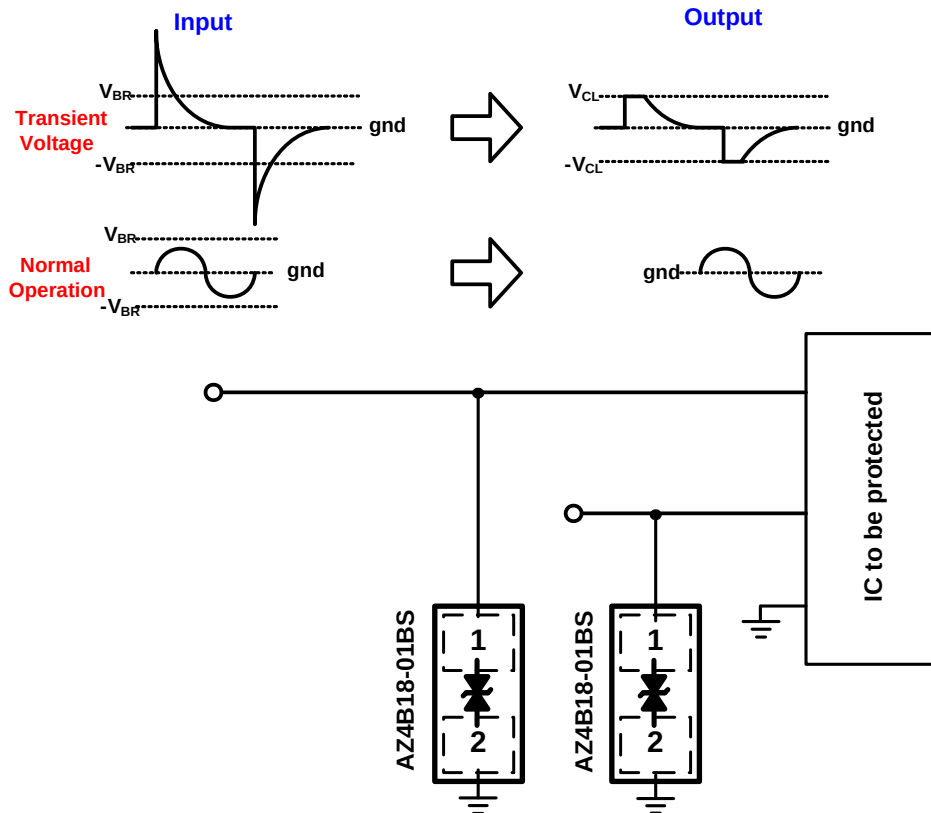
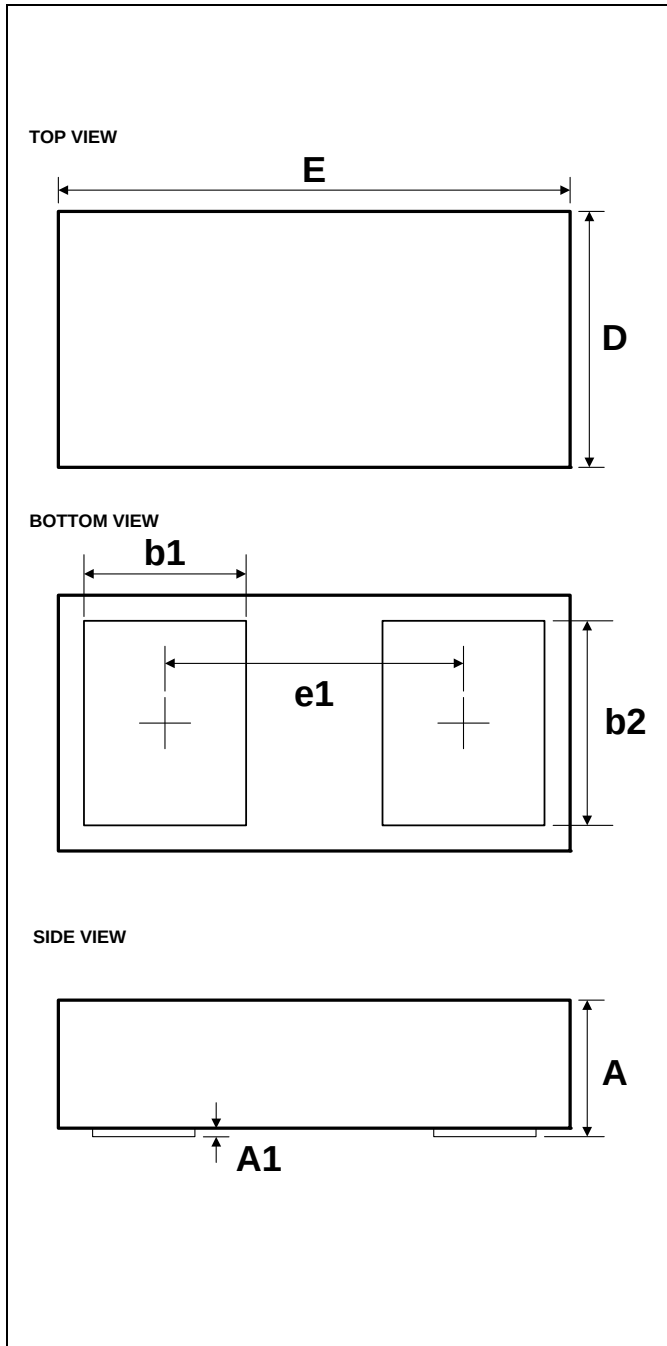


Fig. 1 ESD protection scheme by using AZ4B18-01BS.

Mechanical Details

CSP0603P2US

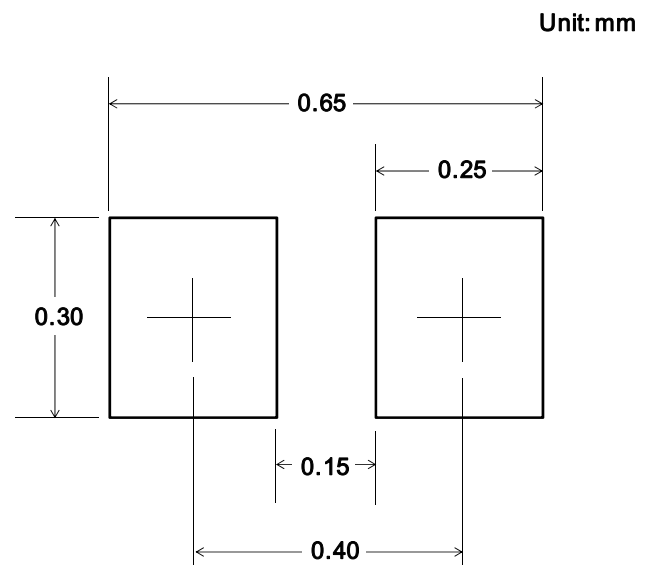
PACKAGE DIAGRAMS



PACKAGE DIMENSIONS

Symbol	Millimeters		
	MIN.	NOM.	MAX.
D	0.270	0.300	0.330
E	0.570	0.600	0.630
A	0.130	0.150	0.170
A1	0.008	0.011	0.014
e1	0.350 BSC		
b2	0.220	0.240	0.260
b1	0.170	0.190	0.210

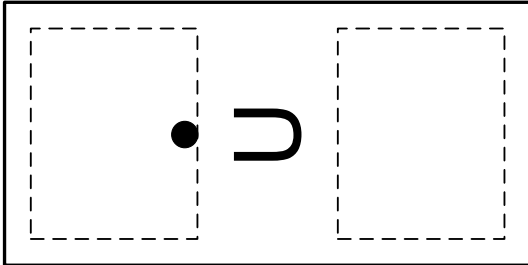
Land Layout



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



Part Number	Marking Code
AZ4B18-01BS.R7G (Green Part)	U

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

U = Device Code

Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ4B18-01BS.R7G	Green	T/R	7 inch	15,000/reel	4 reels = 60,000/box	6 boxes = 360,000/carton

Revision History

Revision	Modification Description
Revision 2025/02/11	Preliminary Release.
Revision 2025/10/17	Formal Release.