AOZ8302ACI

Two-line High Current Surge TVS Diodes

General Description

The AOZ8302ACI is a high current surge transient voltages suppressor diode designed to protect voltage sensitive electronics from high current surge and ESD.

This device incorporates two high current surge TVS diodes in a small SOT23-3L package. It may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 (±15kV air, ±8kV contact discharge).

The AOZ8302ACI comes in an RoHS compliant SOT23-3L package and is rated over a -40°C to +125°C ambient temperature range.

The small SOT23-3L package makes it ideal for applications where PCB space is a premium. The small size and high ESD protection makes it ideal for protecting voltage sensitive electronics from high transient conditions and ESD.

Features

- ESD and high current surge protection:
  AOZ8302ACI-05 (5V version):
  - Exceeds: IEC 61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
  - Human Body Model (HBM) ±30kV
  - IEC 61000-4-5 (Lightning) 32A (8/20μs)

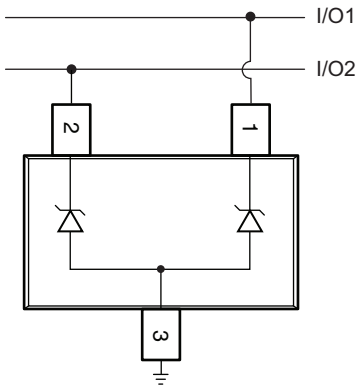
  AOZ8302ACI-12 (12V version):
  - Exceeds: IEC 61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
  - Human Body Model (HBM) ±30kV
  - IEC 61000-4-5 (Lightning) 24A (8/20μs)
- Low clamping voltage
- Low operating voltages: 5V, 12V
- IEC 61000-4-4 (EFT) ±40A

Applications

- Ethernet
- Datacom Interfaces
- Telecom Interfaces

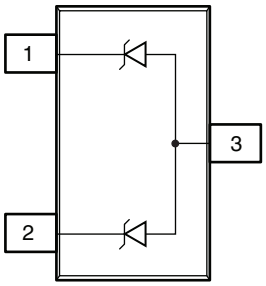
Green Product

Typical Application



Protection of Two Lines

Pin Configuration



SOT-23
(Top View)

Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8302ACI-05	-40°C to +85°C	SOT23-3L	Green Product
AOZ8302ACI-12			

AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
Please visit www.aosmd.com/media/AOSGreenPolicy.pdf for additional information.

Absolute Maximum Ratings

Exceeding the Absolute Maximum ratings may damage the device.

Parameter	Rating	
	5V	12V
VP – VN	5V	12V
Peak Pulse Current (I_{PP}), t_P = 8/20µs	32A	24A
Storage Temperature (T_S)	-65°C to +150°C	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact(1)	±30kV	±30kV
ESD Rating per IEC61000-4-2, Air(1)	±30kV	±30kV
ESD Rating per Human Body Model(2)	±30kV	±30kV

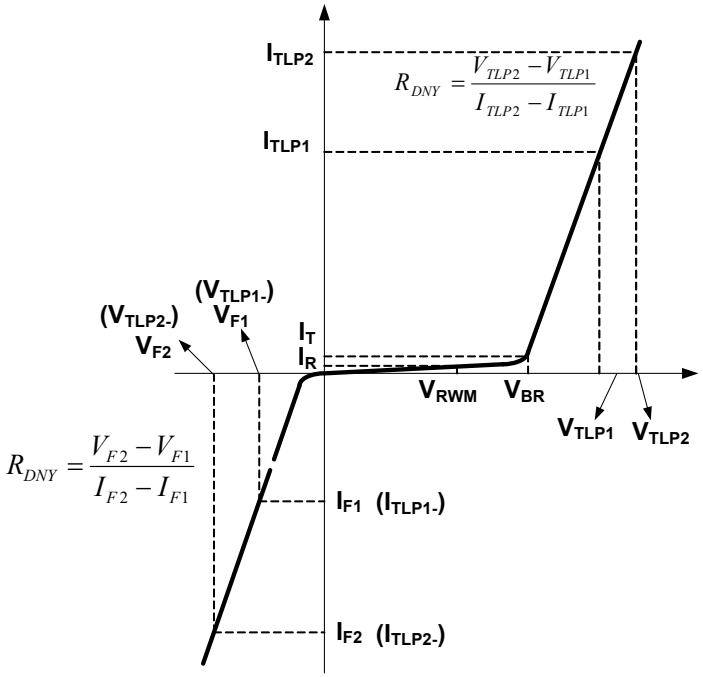
Notes:

1. IEC 61000-4-2 discharge with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω.
2. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}$ = 100pF, $R_{Discharge}$ = 1.5kΩ.

Maximum Operating Ratings

Parameter	Rating
Junction Temperature (T_J)	-40°C to +85°C

Electrical Characteristics



T_A = 25°C unless otherwise noted.

AOZ8302ACI-05						
Symbol	**Parameter**	**Condition**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage	I/O Pin to ground			5	V
V_{BR}	Reverse Breakdown Voltage	I_T=1mA, I/O Pin to ground	6			V
I_R	Reverse Leakage Current	V_{RWM}=5V, I/O Pin to ground			1	µA
V_F	Forward Voltage	I_F=15mA		0.85		V
V_{CL}	Clamping Voltage(3, 4) (100ns Transmission Line Pulse, I/O Pin to ground)	I_{TLP}=1A I_{TLP}=-1A		11 -1	14 -2.5	V
		I_{TLP}=30A I_{TLP}=-30A		14 -5	17 -7	V
	Clamping Voltage(3) (IEC61000-4-5, 8/20µs, I/O Pin to ground)	I_{PP}=2A I_{PP}=-2A		11 -1.8	14.5 -3.5	V
		I_{PP}=32A I_{PP}=-32A		20 -7	24 -9	V
R_{DNY}	Dynamic Resistance(3, 4)	I_{TLP}= 1A to 30A I_{TLP}= -1A to -30A		0.1 0.1		Ω
C_J	Junction Capacitance	V_{Pin1}=0V, f=1MHz, Pin1 to ground		20		pF

Electrical Characteristics (continued)

AOZ8302ACI-12						
Symbol	**Parameter**	**Condition**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage	I/O Pin to ground			12	V
V_{BR}	Reverse Breakdown Voltage	I_T=1mA, I/O Pin to ground	13			V
I_R	Reverse Leakage Current	V_{RWM}=12V, I/O Pin to ground			1	µA
V_F	Forward Voltage	I_F=15mA		0.85		V
V_{CL}	Clamping Voltage(3, 4) (100ns Transmission Line Pulse, I/O Pin to ground)	I_{TLP}=1A I_{TLP}=-1A		16 -1	19 -2.5	V
		I_{TLP}=30A I_{TLP}=-30A		19 -4.5	22 -6.5	V
	Clamping Voltage(3) (IEC61000-4-5, 8/20µs, I/O Pin to ground)	I_{PP}=1A I_{PP}=-1A		12 -12	14 -14	V
		I_{PP}=24A I_{PP}=-24A		23 -5	27 -7	V
R_{DNY}	Dynamic Resistance(3, 4)	I_{TLP}= 1A to 30A I_{TLP}= -1A to -30A		0.1 0.1		Ω
C_J	Junction Capacitance	V_{Pin1}=0V, f=1MHz, Pin1 to ground		20		pF

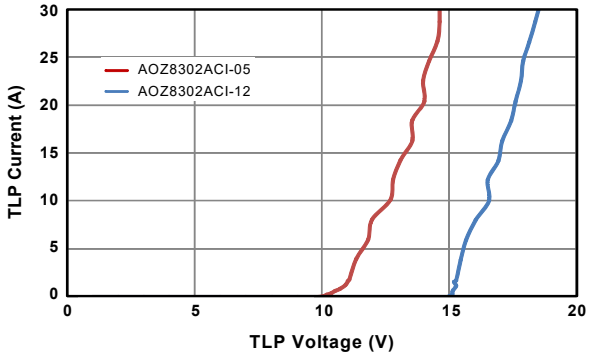
Notes:

3. These specifications are guaranteed by design and characterization.

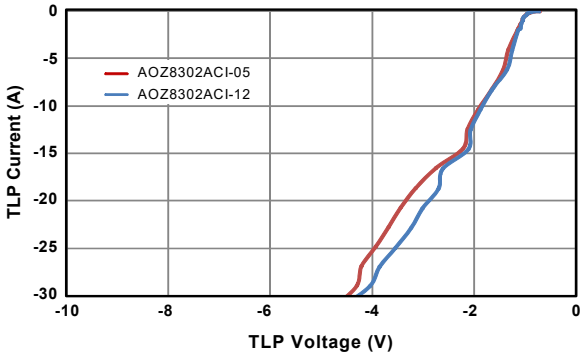
4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

Typical Performance Characteristics

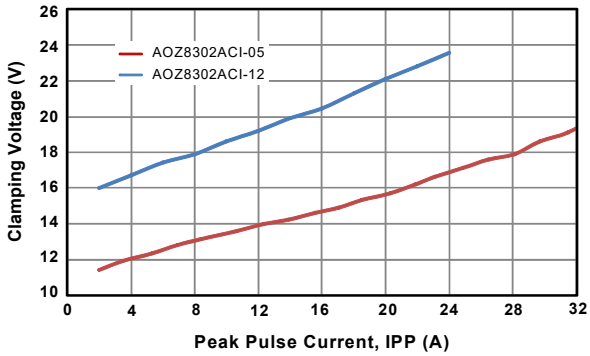
Positive TLP Clamping
(t_{period} = 100ns, t_{rise} = 1ns)



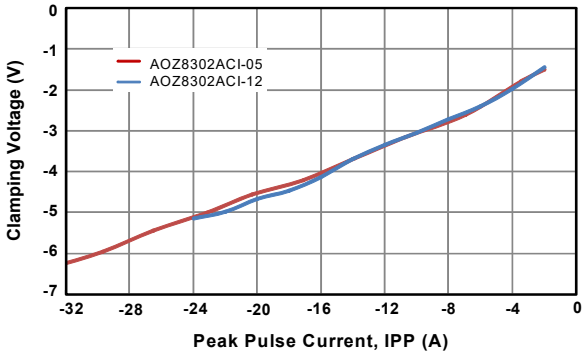
Negative TLP Clamping
(t_{period} = 100ns, t_{rise} = 1ns)



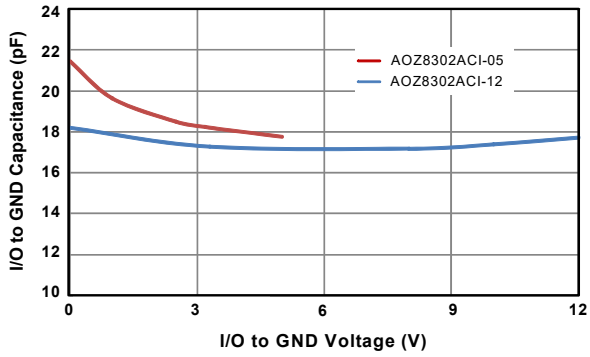
IEC61000-4-5 Surge 8/20µs (Positive)



IEC61000-4-5 Surge 8/20µs (Negative)



Typical Variation of C_J vs. V_R



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