

AOZ8231ADI-24 Datasheet

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DiGi Electronics Part Number	AOZ8231ADI-24-DG
Manufacturer	Alpha & Omega Semiconductor Inc.
Manufacturer Product Number	AOZ8231ADI-24
Description	TVS DIODE 24VWM 39VC 2DFN
Detailed Description	39V Clamp 2.5A (8/20µs) Ipp Tvs Diode Surface Mount 2-DFN (1x0.6)

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Purchase and inquiry

Manufacturer Product Number:

AOZ8231ADI-24

Series:

-

Type:

Zener

Voltage - Reverse Standoff (Typ):

24V (Max)

Voltage - Clamping (Max) @ Ipp:

39V

Power - Peak Pulse:

-

Applications:

General Purpose

Operating Temperature:

-40°C ~ 125°C (Tj)

Package / Case:

2-UDFN

Base Product Number:

AOZ8231

Manufacturer:

Alpha & Omega Semiconductor Inc.

Product Status:

Active

Bidirectional Channels:

1

Voltage - Breakdown (Min):

29V

Current - Peak Pulse (10/1000µs):

2.5A (8/20µs)

Power Line Protection:

No

Capacitance @ Frequency:

12pF @ 1MHz

Mounting Type:

Surface Mount

Supplier Device Package:

2-DFN (1x0.6)

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.10.0080

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

General Description

The AOZ8231ADI is a one-line bi-directional transient voltage suppressor diode designed to protect voltage sensitive electronics from high transient conditions and ESD.

This device incorporates one TVS diode in an ultra-small DFN 1006 package. It may be used to meet the ESD immunity requirements of EC 61000-4-2, Level 4 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge).

The AOZ8231ADI comes in a RoHS compliant, Halogen-Free DFN 1.0 mm x 0.6 mm package and is rated over a $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ ambient temperature range.

The ultra-small 1.0 mm x 0.6 mm x 0.5 mm DFN 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.

Applications

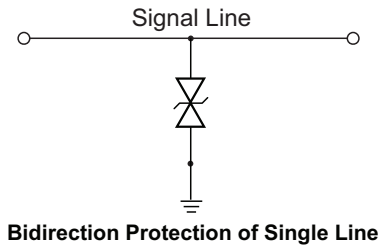
- Portable handheld devices
- Keypads, data lines, buttons
- Notebook computers
- Digital Cameras
- Portable GPS
- MP3 players

Features

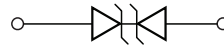
- ESD protection for high-speed data lines
 - AOZ8231ADI-02:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 30\text{ kV}$ (air), $\pm 30\text{ kV}$ (contact)
 - Human Body Model (HBM) $\pm 30\text{ kV}$
 - IEC 61000-4-5 (Lightning) 6 A (8/20 μS)
 - IEC 61000-4-4 (EFT) 40 A
 - AOZ8231ADI-03:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 30\text{ kV}$ (air), $\pm 30\text{ kV}$ (contact)
 - Human Body Model (HBM) $\pm 30\text{ kV}$
 - IEC 61000-4-5 (Lightning) 6 A (8/20 μS)
 - IEC 61000-4-4 (EFT) 40 A
 - AOZ8231ADI-05:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 30\text{ kV}$ (air), $\pm 30\text{ kV}$ (contact)
 - Human Body Model (HBM) $\pm 30\text{ kV}$
 - IEC 61000-4-5 (Lightning) 5 A (8/20 μS)
 - IEC 61000-4-4 (EFT) 40 A
 - AOZ8231ADI-08:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 30\text{ kV}$ (air), $\pm 30\text{ kV}$ (contact)
 - Human Body Model (HBM) $\pm 30\text{ kV}$
 - IEC 61000-4-5 (Lightning) 5 A (8/20 μS)
 - IEC 61000-4-4 (EFT) 40 A
 - AOZ8231ADI-12:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 30\text{ kV}$ (air), $\pm 30\text{ kV}$ (contact)
 - Human Body Model (HBM) $\pm 30\text{ kV}$
 - IEC 61000-4-5 (Lightning) 4 A (8/20 μS)
 - IEC 61000-4-4 (EFT) 40 A
 - AOZ8231ADI-24:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 18\text{ kV}$ (air), $\pm 15\text{ kV}$ (contact)
 - Human Body Model (HBM) $\pm 15\text{ kV}$
 - IEC 61000-4-5 (Lightning) 2.5 A (8/20 μS)
 - IEC 61000-4-4 (EFT) 40 A
- Small package saves board space
- Low insertion loss
- Low clamping voltage
- Low operating voltage
- Pb-free device



Typical Application



Pin Configuration



Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8231ADI-02	-40 °C to +85 °C	DFN 1.0 x 0.6	Green Product
AOZ8231ADI-03			
AOZ8231ADI-05			
AOZ8231ADI-08			
AOZ8231ADI-12			
AOZ8231ADI-24			



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 for AOZ8231ADI					
	-02	-03	-05	-08	-12	-24
VP – VN	2.5 V	3.3 V	5 V	8 V	12 V	24 V
Peak Pulse Current, $t_p = 8/20 \mu s$	6 A	6 A	5 A	5 A	4 A	2.5 A
Storage Temperature (T_S)	-65 °C to +150 °C					
ESD Rating per IEC61000-4-2, Contact ⁽¹⁾	± 30 kV	± 30 kV	± 30 kV	± 30 kV	± 30 kV	± 15 kV
ESD Rating per IEC61000-4-2, Air ⁽¹⁾	± 30 kV	± 30 kV	± 30 kV	± 30 kV	± 30 kV	± 18 kV
ESD Rating per Human Body Model ⁽²⁾	± 30 kV	± 30 kV	± 30 kV	± 30 kV	± 30 kV	± 15 kV

Notes:

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

Maximum Operating Ratings

Parameter	Rating
Junction Temperature (T_J)	-40 °C to +125 °C

Electrical Characteristics

$T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified.

Symbol	Parameter	Diagram
I_{PP}	Reverse Peak Pulse Current, ($t_{period} = 100\text{ ns}$, $t_r = 1\text{ ns}$)	
V_{CL}	Clamping Voltage @ I_{PP}	
V_{RWM}	Working Peak Reverse Voltage	
I_R	Maximum Reverse Leakage Current	
V_{BR}	Breakdown Voltage	
C_J	Capacitance @ $V_R = 0$ and $f = 1\text{ MHz}$	

Device	Device Marking	V_{RWM} (V) Max.	V_{BR} (V) Min. @ 1mA	I_R (μA) Max.	V_{CL} Max. ⁽³⁾			C_J (pF) ⁽³⁾		
					$I_{PP} = 1\text{ A}$	$I_{PP} = 5\text{ A}$	$I_{PP} = 12\text{ A}$	Min.	Typ.	Max.
AOZ8231ADI-02	P	2.5	3.0	0.1	6.5	9.0	12.5	4.4	5.5	7.0
AOZ8231ADI-03	D	3.3	3.7	0.1	7.5	10.0	13.5	4.4	5.5	7.0
AOZ8231ADI-05	E	5.0	5.5	0.1	10.5	13.5	15.5	10.4	13.0	14.0
AOZ8231ADI-08	Y	8.0	9.5	0.1	15.0	18.0	22.5	19.0	23.0	27.0
AOZ8231ADI-12	F	12.0	13.0	0.1	20.0	23.0	26.0	10.4	13.0	14.0
AOZ8231ADI-24	R	24.0	27.0	0.1	35.0	38.0	39.0	9.6	12.0	15.0

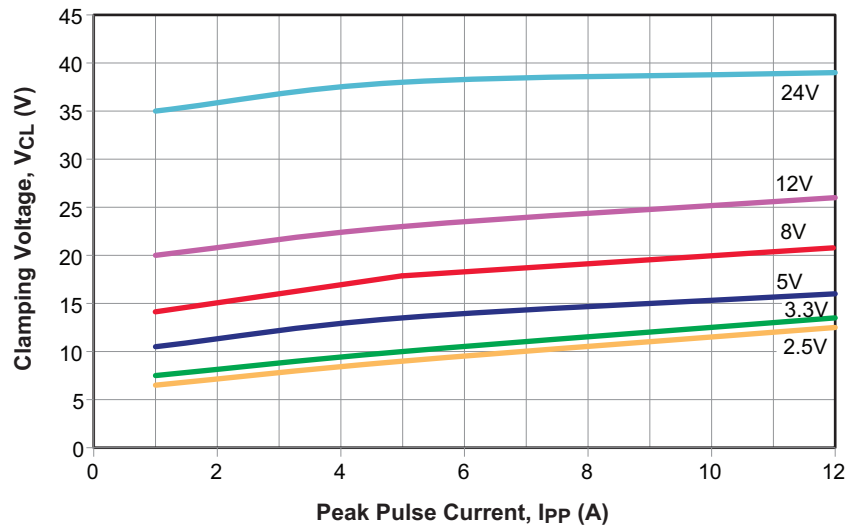
Note:

3. Guaranteed by design and characterization.

Typical Performance Characteristics

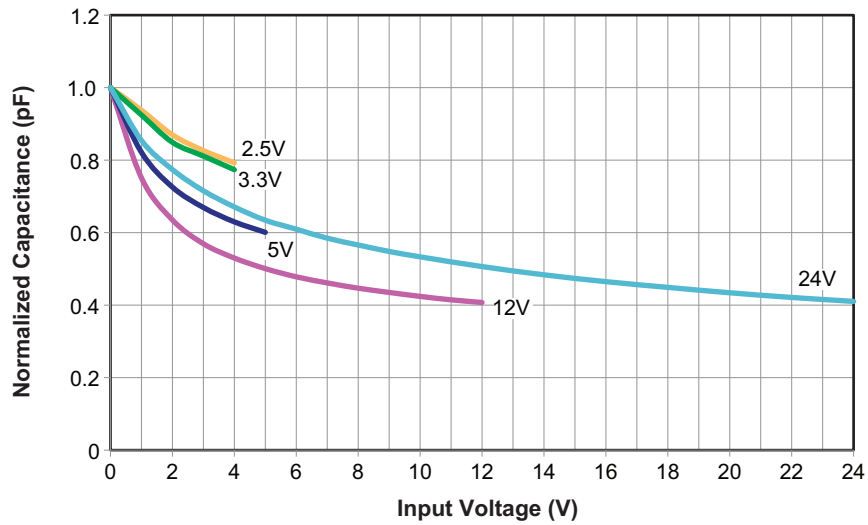
Clamping Voltage vs. Peak Pulse Current

($t_{\text{period}} = 100 \text{ ns}$, $t_r = 1 \text{ ns}$)



Typical Variation of C_{IN} vs. V_R

($f = 1 \text{ MHz}$, $T = 25 \text{ }^\circ\text{C}$)



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