ESD Protection Diode

Dual Common Anode

NZL5V6AXV3T1 Series

These dual monolithic silicon ESD protection diodes are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. Their dual junction common anode design protects two separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Specification Features:

- SC−89 Package Allows Either Two Separate Unidirectional Configurations or a Single Bidirectional Configuration
- ESD Rating of Class N (exceeding 16 kV) per the Human Body Model
- Meets IEC61000−4−2 Level 4
- Low Leakage < 5.0 μA
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

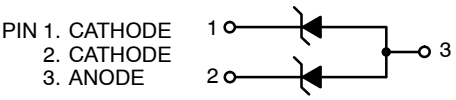
Mechanical Characteristics:

CASE: Void-free, Transfer-molded, Thermosetting Plastic Epoxy Meets UL 94, V−0

LEAD FINISH: 100% Matte Sn (Tin)

MOUNTING POSITION: Any

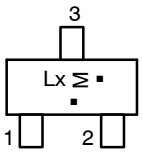
QUALIFIED MAX REFLOW TEMPERATURE: 260°C Device Meets MSL 1 Requirements





SC−89
CASE 463C
STYLE 4

MARKING DIAGRAM



L	= Device Code
x	= Specific Device
M	= Date Code
▪	= Pb−Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering, marking, and shipping information on page 6 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 6.

DEVICE MARKING INFORMATION

See specific marking information in the device marking column of the table on page 2 of this data sheet.

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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Total Power Dissipation on FR−5 Board (Note 1) @ T_A = 25 °C Derate above 25 °C	P_D	240 1.9	mW mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	525	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C
Lead Solder Temperature − Maximum (10 Second Duration)	T_L	260	°C
IEC61000−4−2 Contact IEC61000−4−2 Air	ESD	10 10	kV

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR−5 board with minimum recommended mounting pad.

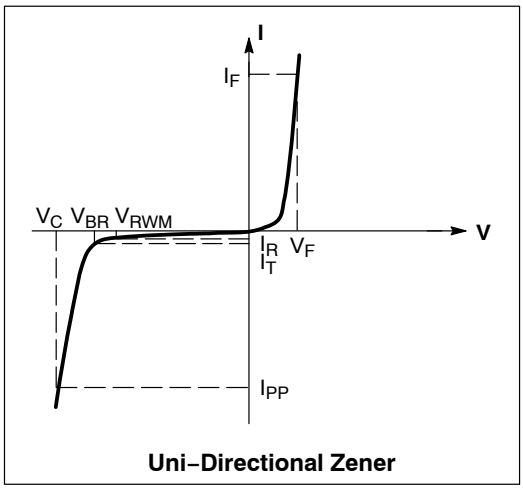
* Other voltages may be available upon request.

ELECTRICAL CHARACTERISTICS

(T_A = 25 °C unless otherwise noted)

UNIDIRECTIONAL (Circuit tied to Pins 1 and 3 or 2 and 3)

Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F



Uni−Directional Zener

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted, V_F = 0.9 V Max @ I_F = 10 mA for all types)

UNIDIRECTIONAL (Circuit tied to Pins 1 and 3 or Pins 2 and 3)

Device	Device Marking	V_{RWM}	I_R @ V_{RWM}	Breakdown Voltage				Surge			
				V_{BR} (Note 2) (V)			@ Iz_T	V_C (V) @ I_{PP} = 1.0 A†	V_C (V) @ Max I_{PP}†	Max I_{PP} (A)†	P_{pk} (W)†
		V	μA	Min	Nom	Max	mA	Typ	Max		Typ
NZL5V6AXV3T1	L0	3.0	5.0	5.32	5.6	5.88	5.0	7.0	10.1	4.8	50
NZL6V8AXV3T1	L2	4.5	1.0	6.46	6.8	7.14	5.0	7.9	11.9	6.7	73
NZL6V8AXV3T3	L2	4.5	1.0	6.46	6.8	7.14	5.0	7.9	11.9	6.7	73
NZL7V5AXV3T1	L3	5.0	1.0	7.12	7.5	7.88	5.0	8.8	13.5	5.7	75

† Surge current waveform per Figure 5.

2. V_{BR} measured at pulse test current I_T at an ambient temperature of 25 °C.

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TYPICAL CHARACTERISTICS

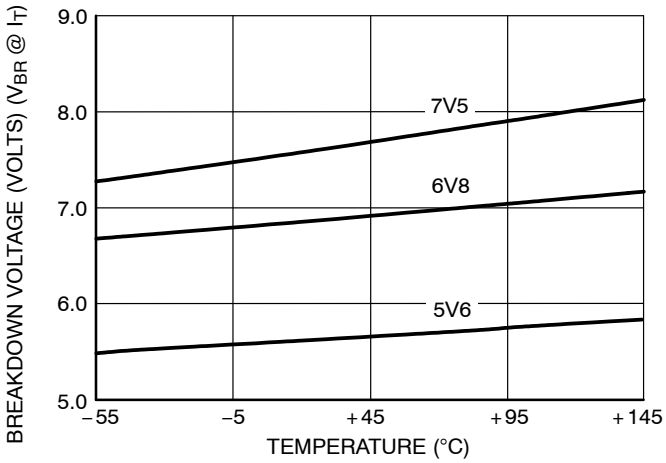


Figure 1. Typical Breakdown Voltage versus Temperature

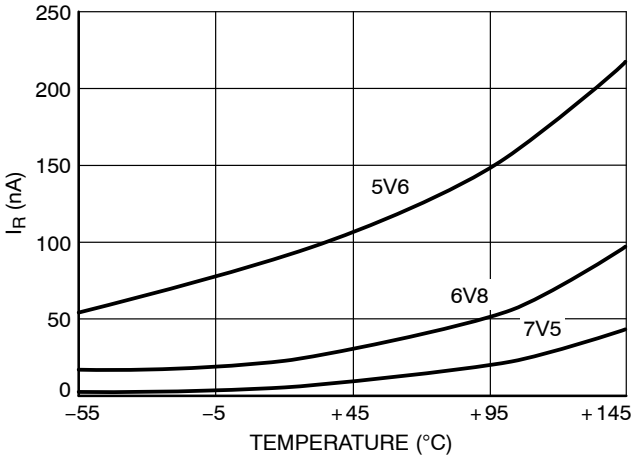


Figure 2. Typical Leakage Current versus Temperature

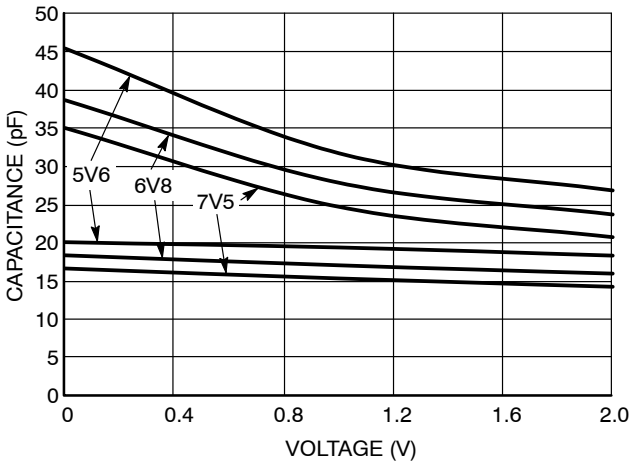


Figure 3. Typical Capacitance versus Bias Voltage
(Upper curve for each part is unidirectional mode, lower curve is bidirectional mode)

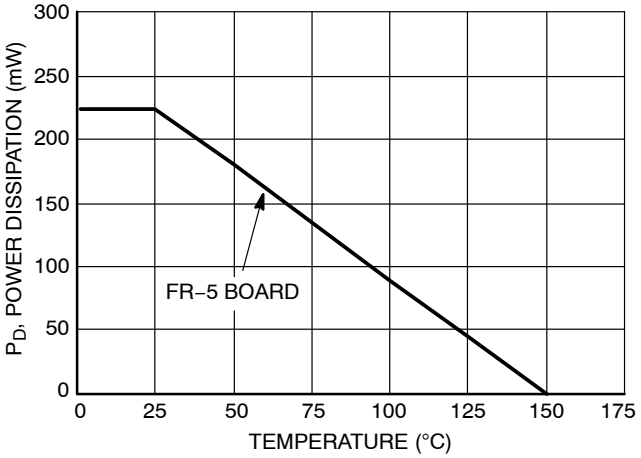


Figure 4. Steady State Power Derating Curve

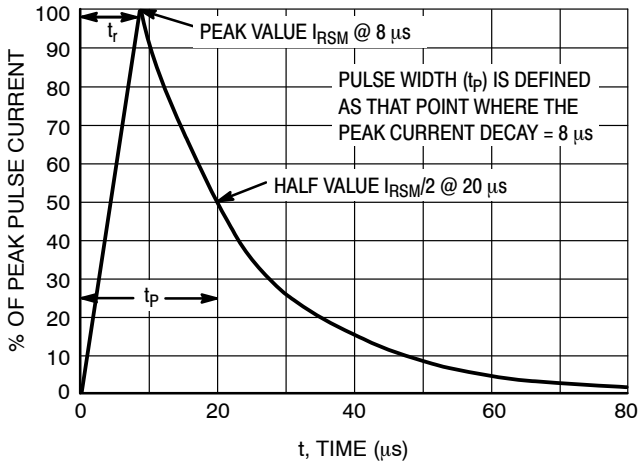


Figure 5. 8 x 20 μs Pulse Waveform

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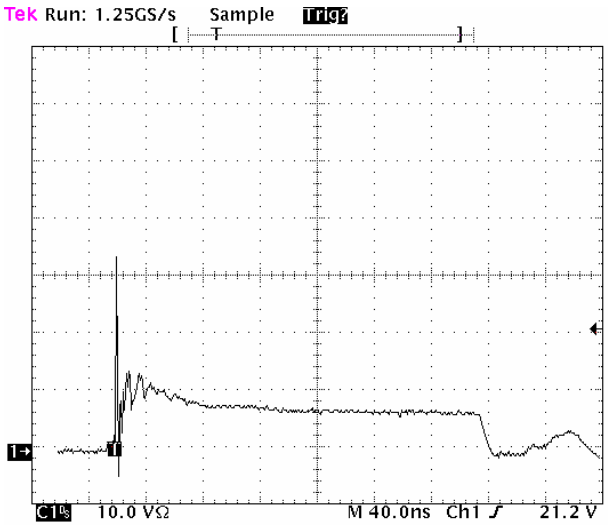


Figure 6. Positive 8 kV contact per IEC 6100−4−2 − NZL6V8AXV3T1G

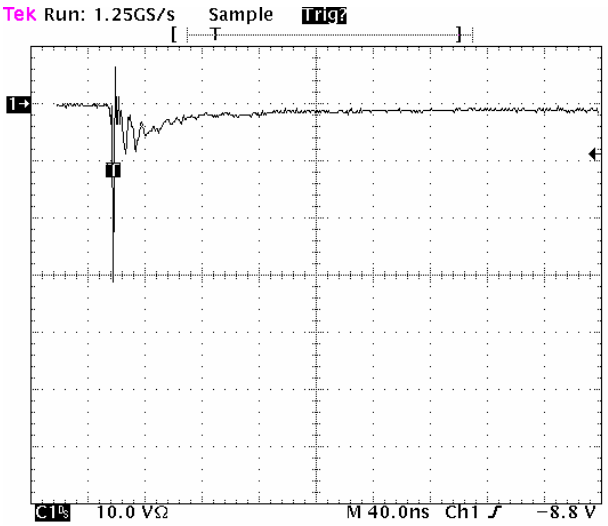


Figure 7. Negative 8 kV contact per IEC 6100−4−2 − NZL6V8AXV3T1G

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TYPICAL COMMON ANODE APPLICATIONS

A dual junction common anode design in an SC−89 package protects two separate lines using only one package. This adds flexibility and creativity to PCB design especially when board space is at a premium. Two simplified examples of surge protection applications are illustrated below.

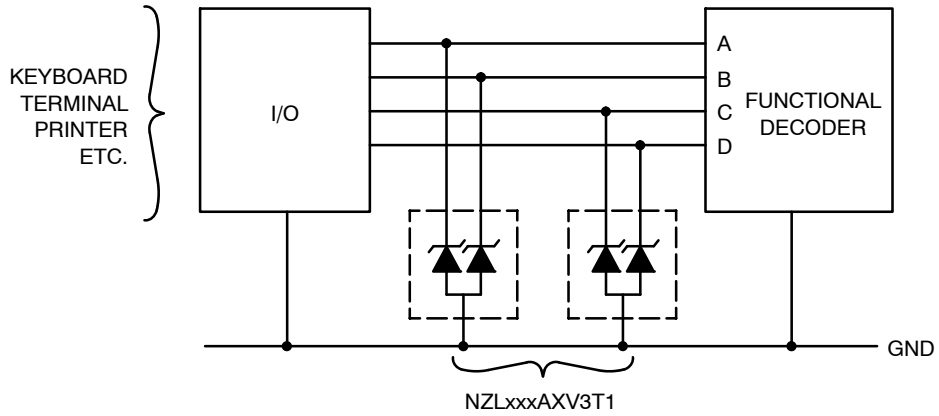


Figure 8. Computer Interface Protection

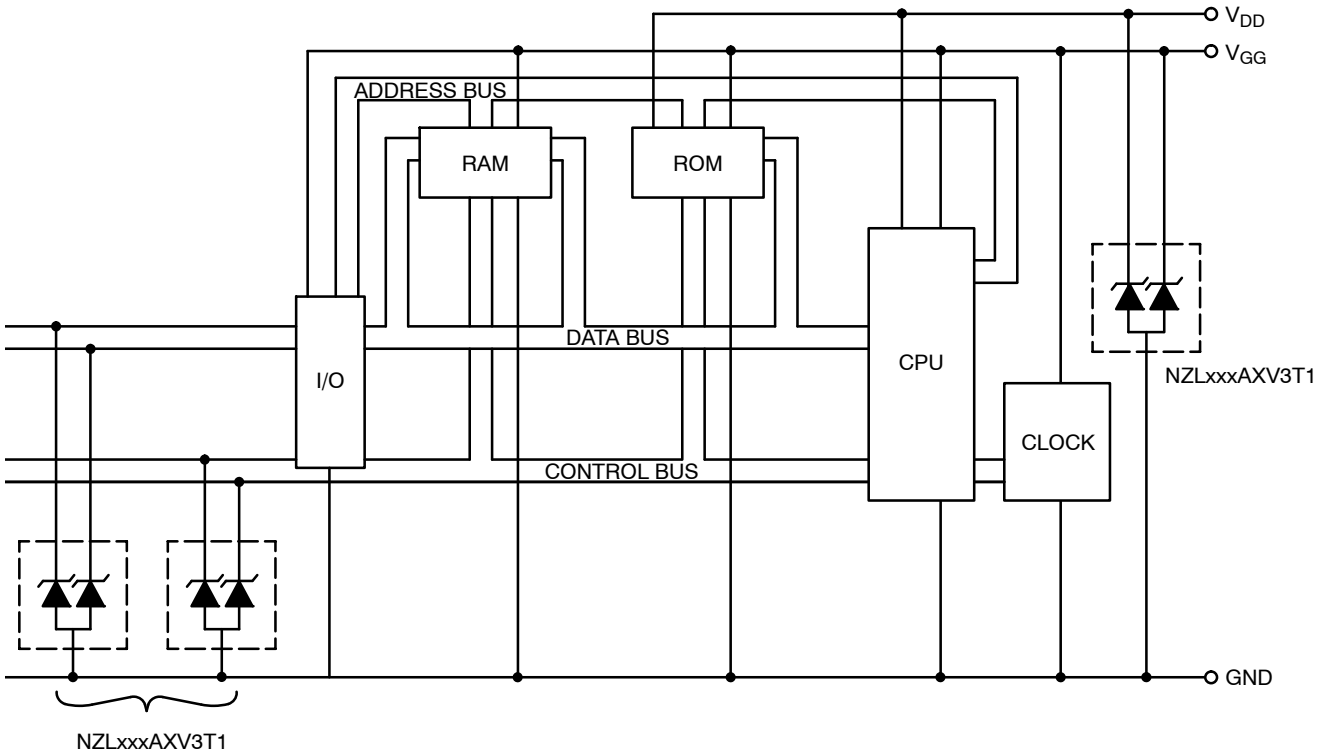


Figure 9. Microprocessor Protection

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Table 1. ORDERING INFORMATION

Device	Package	Shipping†
NZL5V6AXV3T1G	SC-89	3000 / Tape & Reel
NZL6V8AXV3T1G		
NZL7V5AXV3T1G		
SZNZL7V5AXV3T1G		
SZNZL6V8AXV3T3G		10000 / Tape & Reel

DISCONTINUED (Note 3)

SZNZL5V6AXV3T1G	SC-89	3000 / Tape & Reel
SZNZL6V8AXV3T1G		
NZL6V8AXV3T3G		10000 / Tape & Reel

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

3. **DISCONTINUED:** These devices are not available. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.

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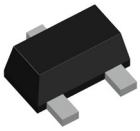
REVISION HISTORY

Revision	Description of Changes	Date
8	Rebranded the Data Sheet to **onsemi** format. SZNZL5V6AXV3T1G, SZNZL6V8AXV3T1G, NZL6V8AXV3T3G OPNs Marked as Discontinued.	09/16/2025

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

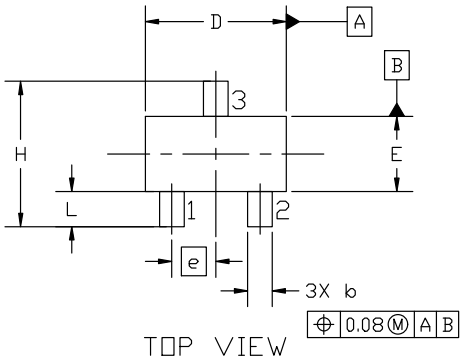
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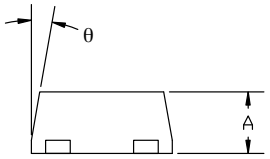


SC−89 3−LEAD, 1.60x0.85x0.70, 0.50P
CASE 463C
ISSUE D

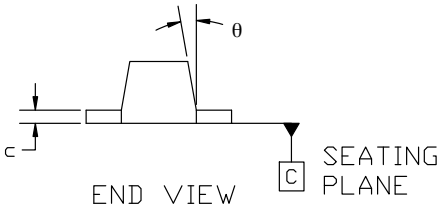
DATE 20 FEB 2024



TOP VIEW



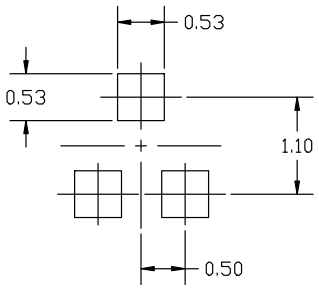
SIDE VIEW



END VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSIONS: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

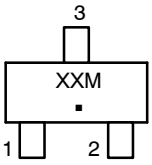
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.60	0.70	0.80
b	0.23	0.28	0.33
c	0.10	0.15	0.20
D	1.50	1.60	1.70
E	0.75	0.85	0.95
e	0.50 BSC		
H	1.50	1.60	1.70
L	0.30	0.40	0.50
θ	---	---	10°



RECOMMENDED MOUNTING FOOTPRINT

* FOR ADDITIONAL INFORMATION ON OUR PB−FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

STYLE 2:
PIN 1. ANODE
2. N/C
3. CATHODE

STYLE 3:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 4:
PIN 1. CATHODE
2. CATHODE
3. ANODE

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DESCRIPTION:	**SC−89 3−LEAD, 1.60x0.85x0.70, 0.50P**		**PAGE 1 OF 1**

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