NZL5V6AXV3T1 Series

ESD Protection Diode

Dual Common Anode

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

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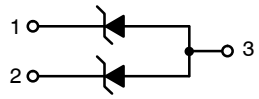
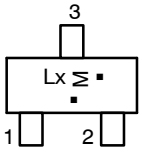
PIN 1. CATHODE
2. CATHODE
3. ANODE



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

Device	Package	Shipping†
NZL5V6AXV3T1G	SC−89	3000/Tape & Reel
SZNZL5V6AXV3T1G	SC−89	3000/Tape & Reel
NZL6V8AXV3T1G	SC−89	3000/Tape & Reel
SZNZL6V8AXV3T1G	SC−89	3000/Tape & Reel
NZL6V8AXV3T3G	SC−89	10000/Tape & Reel
SZNZL6V8AXV3T3G	SC−89	10000/Tape & Reel
NZL7V5AXV3T1G	SC−89	3000/Tape & Reel
SZNZL7V5AXV3T1G	SC−89	3000/Tape & Reel

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

DEVICE MARKING INFORMATION

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

MAXIMUM RATINGS

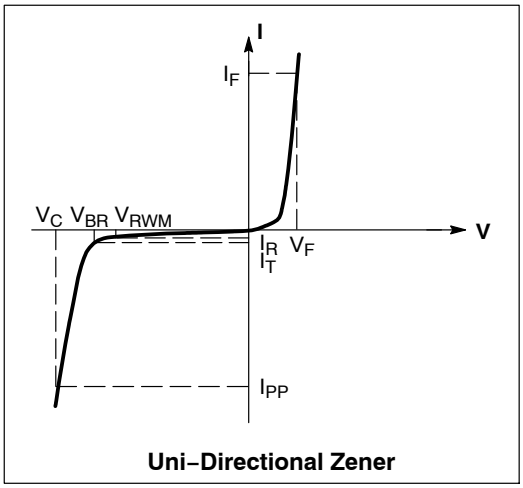
Rating	Symbol	Value	Unit
Total Power Dissipation on FR−5 Board (Note 1) @ T_A = 25°C Derate above 25°C	P_D	240 1.9	mW mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	525	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C
Lead Solder Temperature − Maximum (10 Second Duration)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

2. V_{BR} measured at pulse test current I_T at an ambient temperature of 25°C.
† Surge current waveform per Figure 5.

TYPICAL CHARACTERISTICS

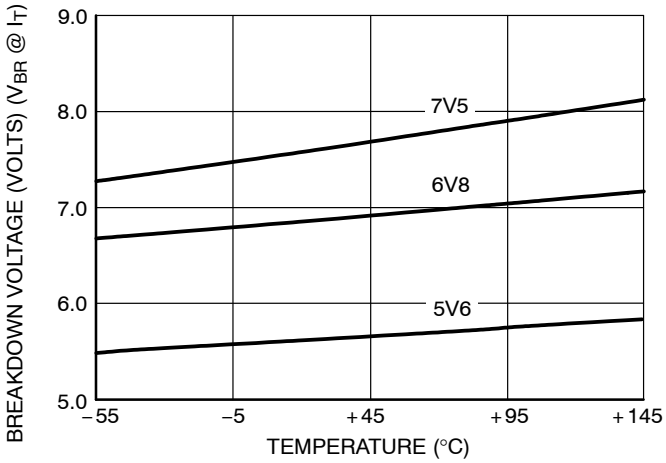


Figure 1. Typical Breakdown Voltage versus Temperature

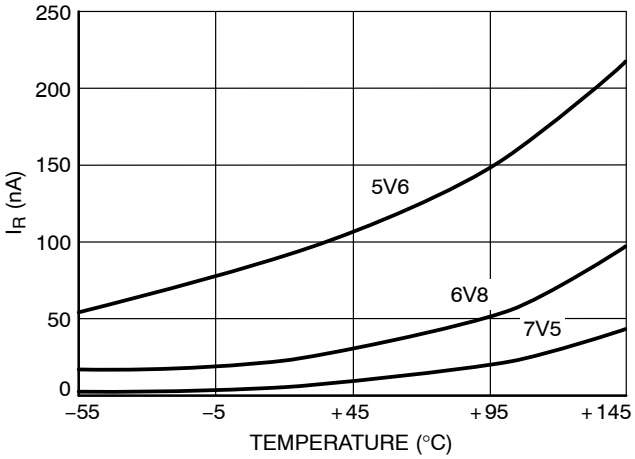


Figure 2. Typical Leakage Current versus Temperature

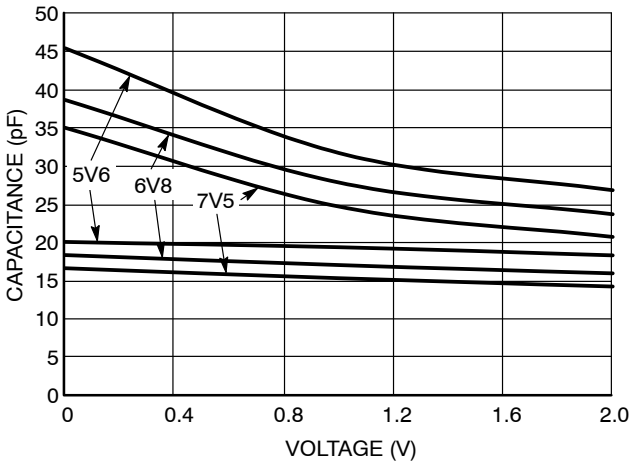


Figure 3. Typical Capacitance versus Bias Voltage
(Upper curve for each part is unidirectional mode, lower curve is bidirectional mode)

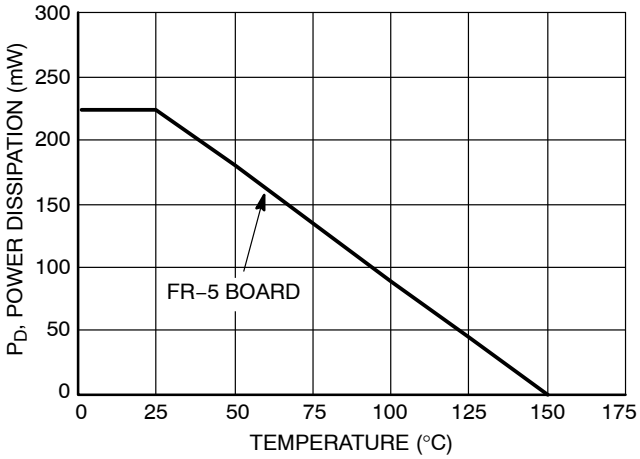


Figure 4. Steady State Power Derating Curve

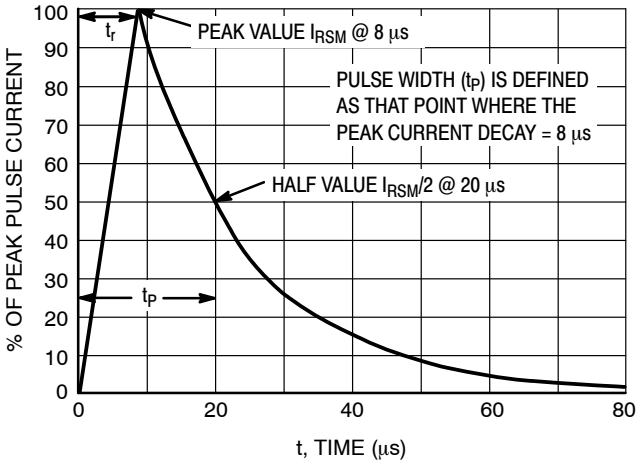


Figure 5. 8 x 20 μs Pulse Waveform

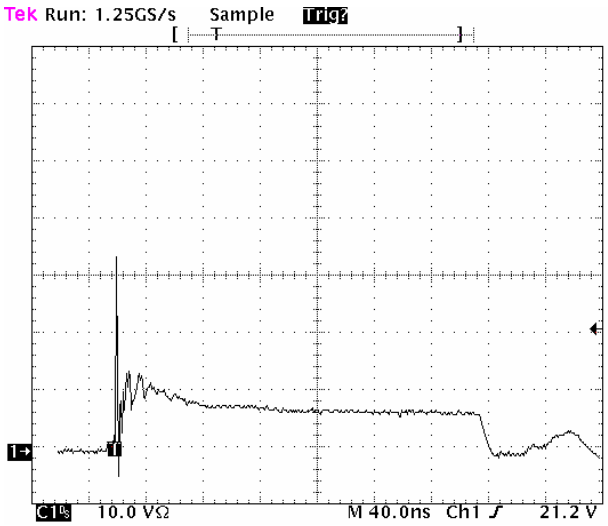


Figure 6. Positive 8 kV contact per IEC 6100−4−2 − NZL6V8AXV3T1G

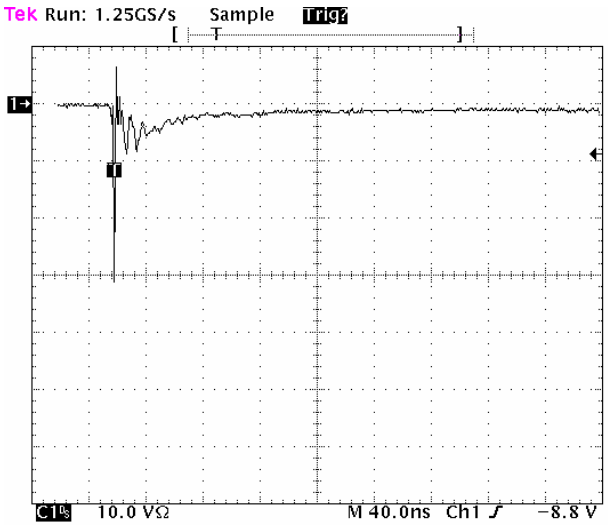


Figure 7. Negative 8 kV contact per IEC 6100−4−2 − NZL6V8AXV3T1G

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.

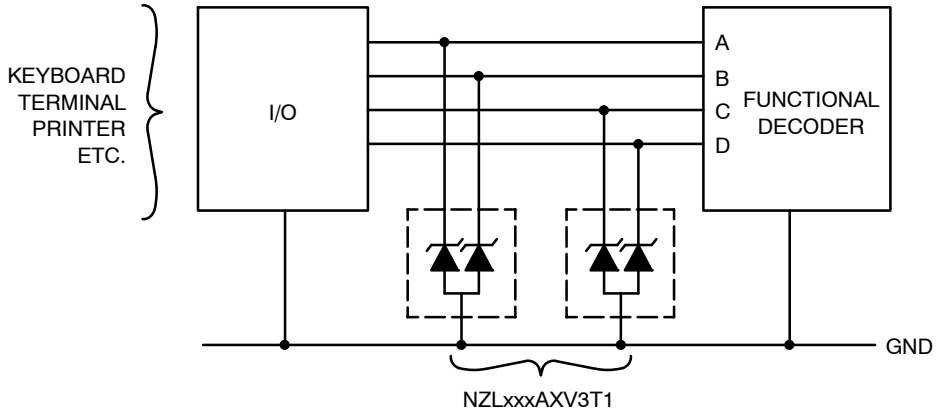


Figure 8. Computer Interface Protection

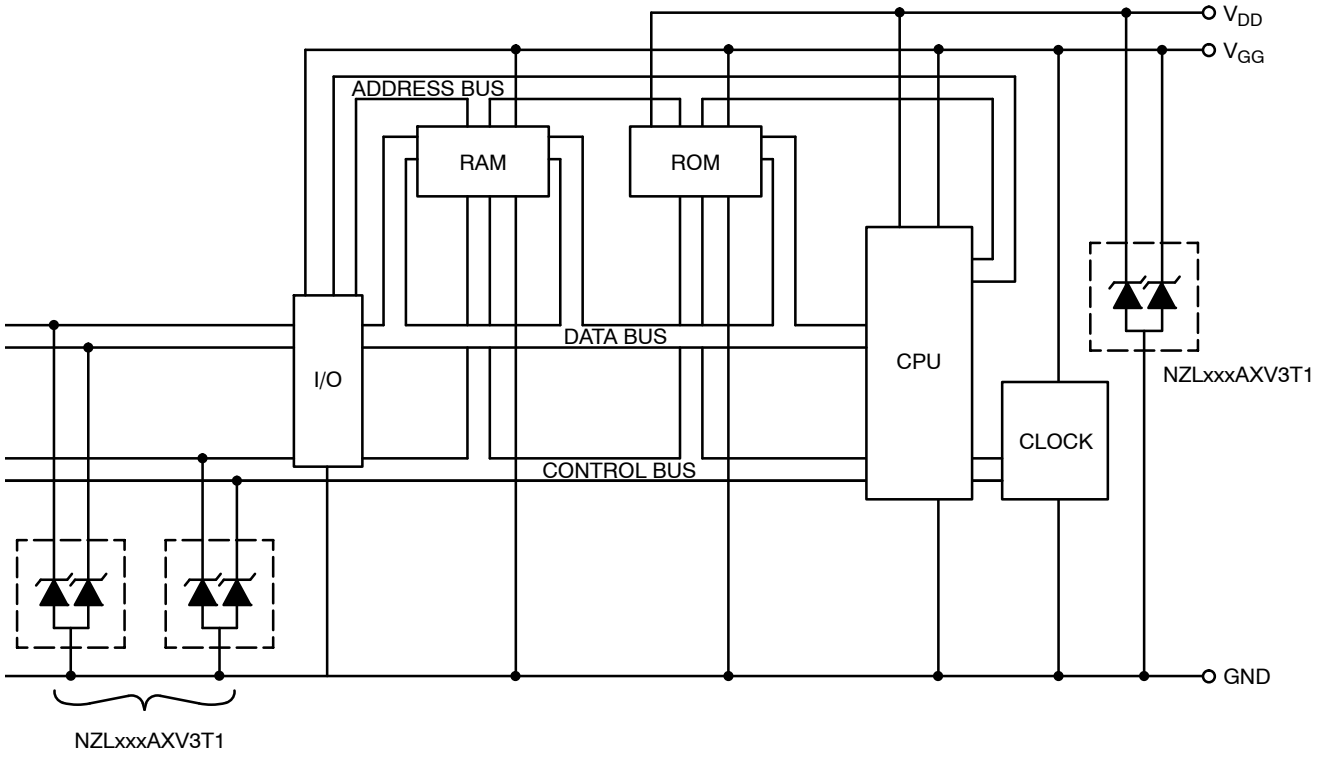


Figure 9. Microprocessor Protection

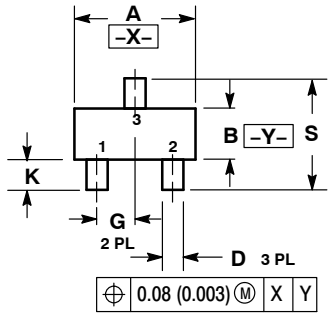
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

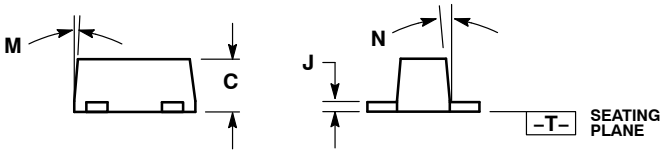
ON Semiconductor®

SC−89, 3 LEAD
CASE 463C−03
ISSUE C

DATE 31 JUL 2003

SCALE 4:1





NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 463C−01 OBSOLETE, NEW STANDARD 463C−02.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.60	1.70	0.059	0.063	0.067
B	0.75	0.85	0.95	0.030	0.034	0.040
C	0.60	0.70	0.80	0.024	0.028	0.031
D	0.23	0.28	0.33	0.009	0.011	0.013
G	0.50 BSC			0.020 BSC		
H	0.53 REF			0.021 REF		
J	0.10	0.15	0.20	0.004	0.006	0.008
K	0.30	0.40	0.50	0.012	0.016	0.020
L	1.10 REF			0.043 REF		
M	---	---	10	---	---	10
N	---	---	10	---	---	10
S	1.50	1.60	1.70	0.059	0.063	0.067

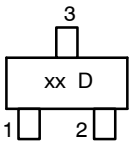
STYLE 1:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

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

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

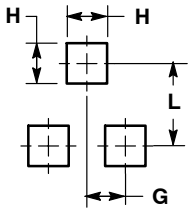
STYLE 4:
PIN 1. CATHODE
2. CATHODE
3. ANODE

GENERIC MARKING DIAGRAM*



xx = Specific Device Code
D = Date Code

*This information is generic. Please refer to device data sheet for actual part marking.



RECOMMENDED PATTERN OF SOLDER PADS

DOCUMENT NUMBER:	**98AON11472D**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	**SC−89, 3 LEAD**	**PAGE 1 OF 1**

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