

# Zener Protection Diode

## NZ8P Series

The NZ8P series of Protection Diodes are designed for applications requiring transient overvoltage ESD protection. They are intended for use to protect voltage sensitive components from ESD and other harmful transient voltage events. This device provides a single channel of uni-directional protection in an ultra-compact X2DFNW2 1.0 x 0.6 mm package.

### Features

- Full Range of Working Voltage Options
- High ESD Ratings
- Wettable Flank Package for Optimal Automated Optical Inspection (AOI)
- 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

### Typical Applications

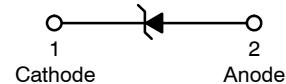
- Automotive ECU's
- IVN – In Vehicle Networking
- Voltage Sensitive Circuits

### MAXIMUM RATINGS (T<sub>A</sub> = 25 °C unless otherwise noted)

| Symbol                            | Rating   | Value                           | Unit        |
|-----------------------------------|--|---------------------------------|-------------|
| P <sub>D</sub>                    | Total Device Dissipation FR-4 Board, (Note 1) @ T <sub>A</sub> = 25 °C<br>Derate above 25 °C   | 250<br>1.5                      | mW<br>mW/°C |
| P <sub>D</sub>                    | Total Device Dissipation FR-4 Board, (Note 2) @ T <sub>A</sub> = 25 °C<br>Derate above 25 °C   | 500<br>1.2                      | mW<br>mW/°C |
| R <sub>θJA</sub>                  | Thermal Resistance from Junction-to-Ambient (Note 1)<br>(Note 2)   | 415<br>247                      | °C/W        |
| ESD                               | IEC 61000-4-2 Contact<br>IEC 61000-4-2 Air<br>ISO 10605 Contact (330 pF / 330 Ω)<br>ISO 10605 Contact (330 pF / 2 kΩ)<br>ISO 10605 Contact (150 pF / 2 kΩ) | ±30<br>±30<br>±30<br>±30<br>±30 | kV          |
| T <sub>J</sub> , T <sub>stg</sub> | Junction and Storage Temperature Range   | -55 to +150                     | °C          |
| T <sub>L</sub>                    | Lead Solder Temperature - Maximum (10 Second Duration)   | 260                             | °C          |

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-4 Minimum Pad, 1 oz. Cu.
2. FR-4 150 mm<sup>2</sup>, 1 oz. Cu.
3. T<sub>A</sub> = 25 °C, t<sub>p</sub> = 100 μs.



X2DFNW2  
CASE 711BG

### DEVICE MARKING INFORMATION



XX = Specific Device Code  
M = Date Code

### ORDERING INFORMATION

| Device           | Package   | Shipping <sup>†</sup> |
|------------------|-----------|-----------------------|
| NZ8PxxxMX2WT5G   | X2DFNW2   | 8,000 /               |
| SZNZ8PxxxMX2WT5G | (Pb-Free) | Tape & Reel           |

<sup>†</sup> 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](#).

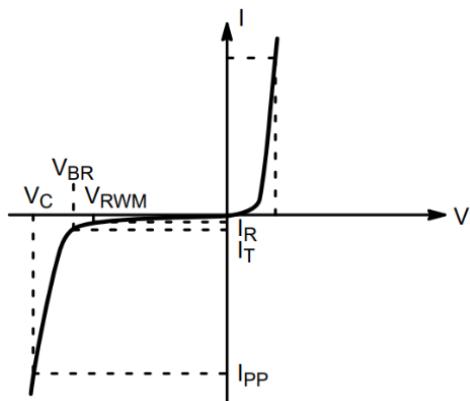
# NZ8P Series

## ELECTRICAL CHARACTERISTICS

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| Symbol    | Parameter                                   |
|-----------|---|
| $I_{PP}$  | Maximum Reverse Peak Pulse Current          |
| $V_C$     | Clamping Voltage @ $I_{PP}$                 |
| $V_{RWM}$ | Working Peak Reverse Voltage                |
| $I_R$     | Maximum Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$  | Breakdown Voltage @ $I_T$                   |
| $I_T$     | Test Current                                |

\* See Application Note [AND8308/D](#) for detailed explanations of data sheet parameters.



## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Device*         | Device Marking | $V_{RWM}$<br>(Note 4) | $V_{BR}$ @ $I_T = 5\text{ mA}$<br>(Note 5) |     |      | $V_{BR}$ @ $I_T = 5\text{ mA}$<br>(150 °C) | $I_R$ @ $V_{RWM}$ |     |      | $V_C$ Max @<br>$I_{PP} = 1.0\text{ A}$ | $I_{PP}$ Max<br>(8x20 $\mu\text{s}$ ) | Junction Ca-<br>pacitance<br>Typical |  |  |  |
|-----------------|----------------|-----------------------|--|-----|------|--|-------------------|-----|------|--|---------------------------------------|--------------------------------------|--|--|--|
|                 |                |                       | V  |     |      |  | nA                |     |      |  |                                       |                                      |  |  |  |
|                 |                | V                     | Min  | Typ | Max  |  | Min               | Typ | Max  |  |                                       |                                      |  |  |  |
| NZ8P3V3MX2WT5-G | P7             | 3.3                   | 3.6  | 3.9 | 4.2  | 4.5  |                   | 200 | 5000 | 5.5                                    | 8                                     | 109                                  |  |  |  |
| NZ8P5V0MX2WT5-G | P6             | 5.0                   | 6.0  | 6.2 | 6.4  | 7.0  |                   | 10  | 1000 | 9                                      | 8                                     | 47                                   |  |  |  |
| NZ8P7V0MX2WT5-G | PA             | 7.0                   | 8.0  | 8.2 | 8.4  | 9.3  |                   | 1.5 | 500  | 10                                     | 8                                     | 40                                   |  |  |  |
| NZ8P8V0MX2WT5-G | PB             | 8.0                   | 9.7  | 10  | 10.3 | 11.7                                       |                   | 1   | 100  | 11.5                                   | 8                                     | 40                                   |  |  |  |
| NZ8P12VMX2WT5-G | P5             | 12                    | 14.5                                       | 15  | 15.4 | 17.5                                       |                   | 1   | 100  | 17                                     | 7                                     | 38                                   |  |  |  |
| NZ8P15VMX2WT5-G | P4             | 15                    | 17.5                                       | 18  | 18.5 | 21.0                                       |                   | 1   | 100  | 22                                     | 6                                     | 31                                   |  |  |  |
| NZ8P18VMX2WT5-G | PC             | 18                    | 21.4                                       | 22  | 22.6 | 25.7                                       |                   | 1   | 100  | 26.5                                   | 5                                     | 20                                   |  |  |  |
| NZ8P20VMX2WT5-G | PD             | 20                    | 23.4                                       | 24  | 24.6 | 28.0                                       |                   | 1   | 100  | 29.5                                   | 5                                     | 20                                   |  |  |  |
| NZ8P24VMX2WT5-G | P3             | 24                    | 26.3                                       | 27  | 27.7 | 31.2                                       |                   | 1   | 100  | 35                                     | 4.5                                   | 19                                   |  |  |  |
| NZ8P26VMX2WT5-G | P2             | 26                    | 32.2                                       | 33  | 33.8 | 38.8                                       |                   | 1   | 100  | 38                                     | 4.5                                   | 19                                   |  |  |  |
| NZ8P36VMX2WT5-G | P8             | 36                    | 38.1                                       | 39  | 39.9 | 45.3                                       |                   | 1   | 100  | 49                                     | 3.0                                   | 15                                   |  |  |  |
| NZ8P42VMX2WT5-G | P9             | 42                    | 45.5                                       | 47  | 48.5 | 55.1                                       |                   | 1   | 100  | 60                                     | 3.0                                   | 12                                   |  |  |  |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

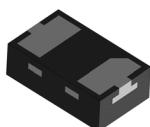
- \* Includes SZ prefix where applicable: SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements;
- AEC-Q101 Qualified and PPAP Capable.
- 4. Surge protection devices are normally selected according to the working peak reverse voltage ( $V_{RWM}$ ), which should be equal or greater than the DC or continuous peak operating voltage level.
- 5.  $V_{BR}$  is measured at pulse test current  $I_T$ .

## NZ8P Series

### REVISION HISTORY

| Revision | Description of Changes  | Date       |
|----------|---|------------|
| 0        | Initial Release.  | 06/18/2025 |
| 1        | Updated with $P_D$ power dissipation and $R_{\theta JA}$ thermal coefficient. | 09/18/2025 |
| 2        | Update of the front page case outline 3D model.                               | 11/19/2025 |

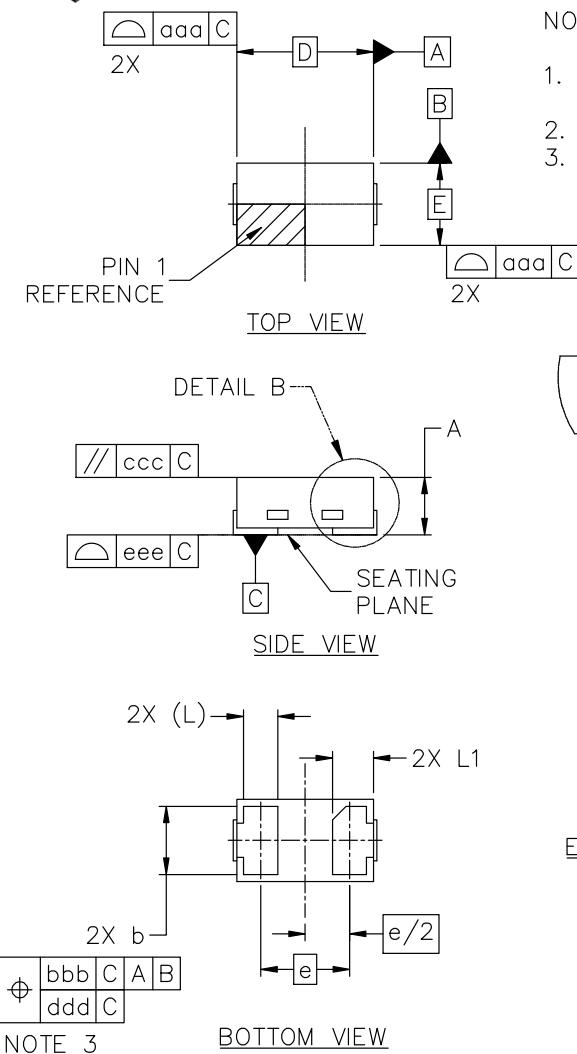
This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.



## X2DFNW-2 1.00x0.60x0.37, 0.65P

CASE 711BG  
ISSUE F

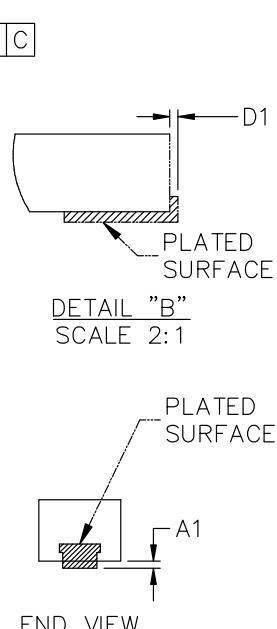
DATE 06 NOV 2025

GENERIC  
MARKING DIAGRAM\*XX = Specific Device Code  
M = Date Code

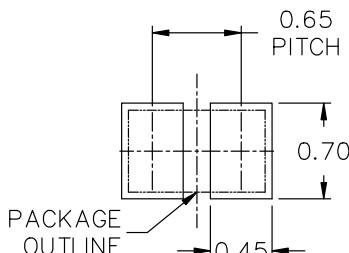
\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G", may or not be present. Some products may not follow the Generic Marking.

## NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
2. ALL DIMENSION ARE IN MILLIMETERS.
3. DIMENSION b APPLIES TO THE PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 FROM THE TERMINAL TIP.



| MILLIMETERS               |          |      |      |
|---------------------------|----------|------|------|
| DIM                       | MIN      | NOM  | MAX  |
| A                         | 0.34     | 0.37 | 0.40 |
| A1                        | ~        | ~    | 0.05 |
| b                         | 0.45     | 0.50 | 0.55 |
| D                         | 1.00 BSC |      |      |
| D1                        | ~        | ~    | 0.05 |
| E                         | 0.60 BSC |      |      |
| e                         | 0.65 BSC |      |      |
| L                         | 0.22 REF |      |      |
| L1                        | 0.24     | 0.28 | 0.34 |
| TOLERANCE FORM & POSITION |          |      |      |
| aaa                       | 0.05     |      |      |
| bbb                       | 0.10     |      |      |
| ccc                       | 0.05     |      |      |
| ddd                       | 0.05     |      |      |
| eee                       | 0.05     |      |      |



## RECOMMENDED MOUNTING FOOTPRINT\*

\* FOR ADDITIONAL INFORMATION ON OUR Pb-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE onsemi SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

|                  |                                |   |
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