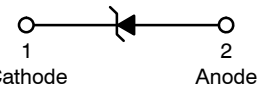
Zener Protection Diode

NZ8P Series



X2DFNW2
CASE 711BG

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

DEVICE MARKING INFORMATION

XX = Specific Device Code
M = Date Code

ORDERING INFORMATION

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

† 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.

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

Symbol	Rating	Value	Unit
P_D	Total Device Dissipation FR-4 Board, (Note 1) @ T_A = 25 °C Derate above 25 °C	250 1.5	mW mW/°C
P_D	Total Device Dissipation FR-4 Board, (Note 2) @ T_A = 25 °C Derate above 25 °C	500 1.2	mW mW/°C
$R_{\theta JA}$	Thermal Resistance from Junction-to-Ambient (Note 1) (Note 2)	415 247	°C/W
ESD	IEC 61000-4-2 Contact IEC 61000-4-2 Air ISO 10605 Contact (330 pF / 330 Ω) ISO 10605 Contact (330 pF / 2 kΩ) ISO 10605 Contact (150 pF / 2 kΩ)	±30 ±30 ±30 ±30 ±30	kV
T_J, T_{stg}	Junction and Storage Temperature Range	−55 to +150	°C
T_L	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.

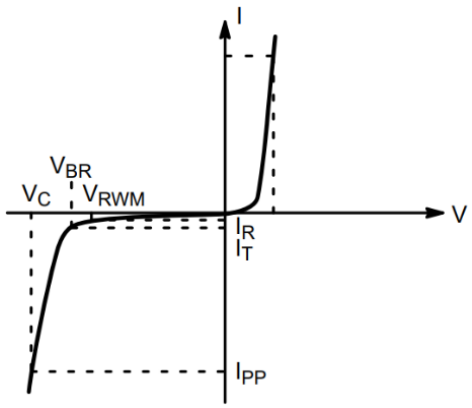
1. FR-4 Minimum Pad, 1 oz. Cu.
2. FR-4 150 mm^2, 1 oz. Cu.
3. T_A = 25 °C, t_p = 100 μs.

ELECTRICAL CHARACTERISTICS

(T_A = 25 °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 °C unless otherwise noted)

Device*	Device Marking	V_{RWM} (Note 4)	V_{BR} @ I_T = 5 mA (Note 5)			V_{BR} @ I_T = 5 mA (150 °C)	I_R @ V_{RWM}			V_C Max @ I_{PP} = 1.0 A	I_{PP} Max (8x20 μs)	Junction Capacitance Typical
			V				nA					
		V	Min	Typ	Max	V	Min	Typ	Max	V	A	pF
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.

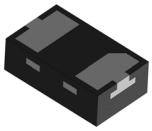
* Includes SZ prefix where applicable: SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements;
AEC-Q101 Qualified and PPAP Capable.

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 measure at pulse test current I_T.

REVISION HISTORY

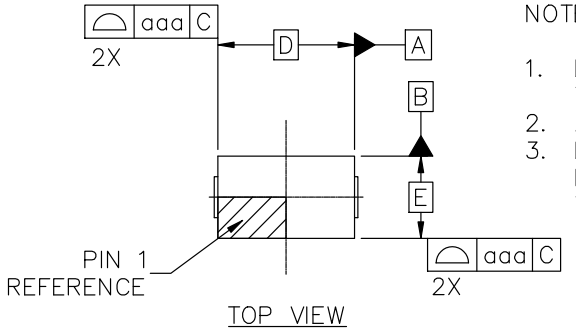
Revision	Description of Changes	Date
0	Initial Release.	06/18/2025
1	Updated with P_D power dissipation and $R_{\theta JA}$ thermal coefficient.	09/18/2025
2	Update of the front page case outline 3D model.	11/19/2025

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.

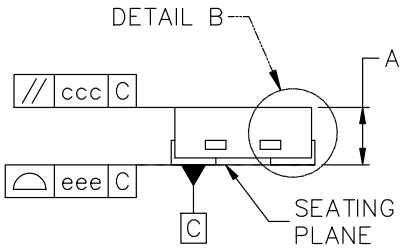


X2DFNW-2 1.00x0.60x0.37, 0.65P
CASE 711BG
ISSUE F

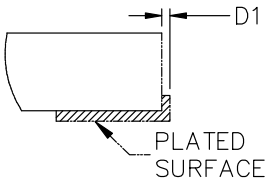
DATE 06 NOV 2025



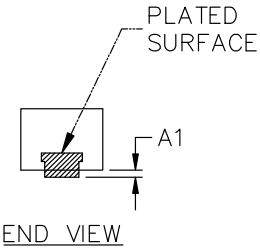
TOP VIEW



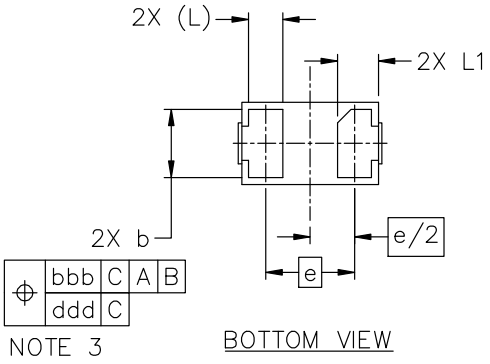
SIDE VIEW



DETAIL "B"
SCALE 2:1



END VIEW



BOTTOM VIEW

NOTES:

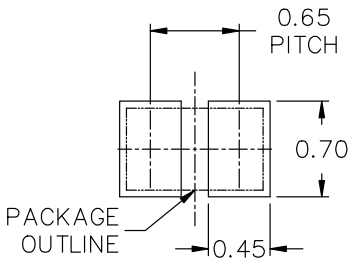
1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5−2018.
2. ALL DIMENSION ARE IN MILLIMETERS.
3. DIMENSION b APPLIES TO THE PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 FROM THE TERMINAL TIP.

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	

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.



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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DESCRIPTION:	**X2DFNW-2 1.00x0.60x0.37, 0.65P**		**PAGE 1 OF 1**

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