Zener Voltage Regulators
200 mW Micro Packaged

NZD5V1MU Series

This Zener diode is designed to provide voltage regulation protection and is especially attractive in situations where space is at a premium. Because of its small size, it is suited for use in mobile applications.

Specification Features:

- Standard Zener Breakdown Voltage Range: 2.2 V to 9.1 V
- Steady State Power Rating of 200 mW
- Small Body Outline Dimensions: 0.60 mm x 0.30 mm
- Low Body Height: 0.30 mm
- ESD Rating of Class 3 (>8 kV) per Human Body Model
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

Mechanical Characteristics:
MOUNTING POSITION: Any
QUALIFIED MAX REFLOW TEMPERATURE: 260°C
Device Meets MSL 1 Requirements

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Device Dissipation FR−5 Board, (Note 1) @ T_A = 25°C	P_D	200	mW
Thermal Resistance from Junction−to−Ambient	$R_{\theta JA}$	400	°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

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 = 1.0 x 0.75 x 0.62 in.

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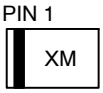
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X3DFN2
CASE 152AF

MARKING DIAGRAM



X = Specific Device Code
M = Month Code

ORDERING INFORMATION

Device	Package	Shipping†
NZDxxxMUT5G	X3DFN (Pb−Free)	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.

DEVICE MARKING INFORMATION

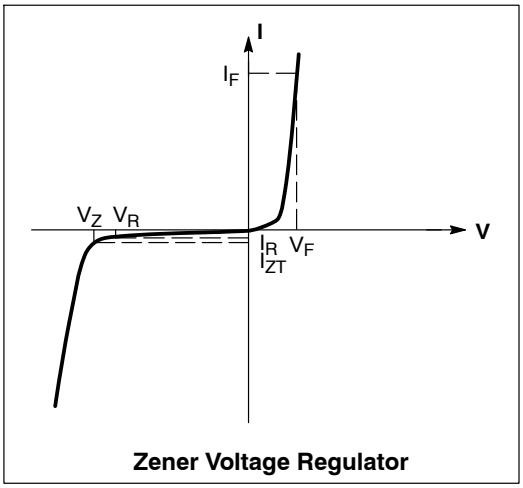
See specific marking information in the device marking column of the Electrical Characteristics tables starting on page 3 of this data sheet.

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ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise noted,
V_F = 1.1 V Max. @ I_F = 10 mA for all types)

Symbol	Parameter
V_Z	Reverse Zener Voltage @ I_{ZT}
I_{ZT}	Reverse Current
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
I_{ZK}	Reverse Current
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}
I_R	Reverse Leakage Current @ V_R
V_R	Reverse Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F
ΘV_Z	Maximum Temperature Coefficient of V_Z
C	Max. Capacitance @V_R = 0 and f = 1 MHz



Zener Voltage Regulator

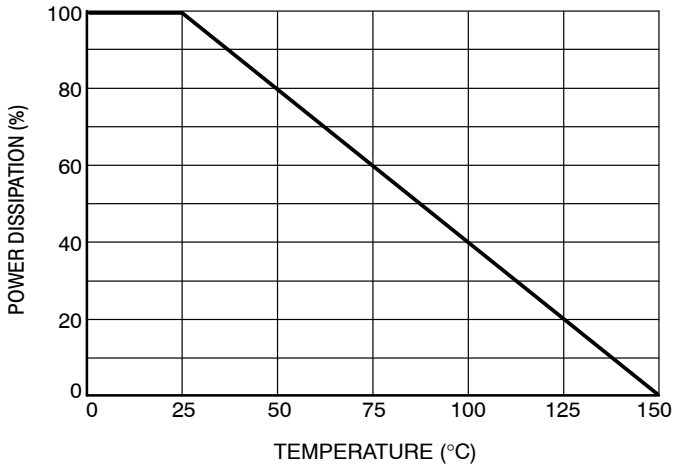
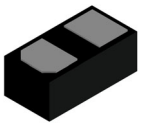


Figure 1. Steady State Power Derating

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 1.1 V Max. @ I_F = 10 mA for all types)

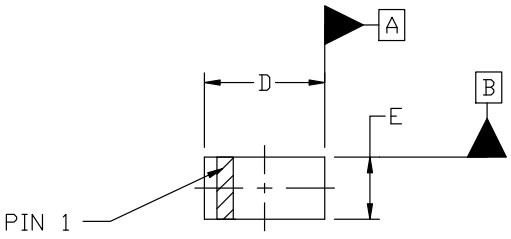
Device	Device Marking	Zener Voltage (Note 1)			Zener Impedance			Leakage Current		ΘV_Z (mV/k) @ I_{ZT}		C @ V_R = 0 f = 1 MHz
		V_Z (Volts)		@ I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}		I_R @ V_R				
		Min	Max	mA	Ω	Ω	mA	μA	Volts	Min	Max	pF
NZD2V2MUT5G	K*	2.08	2.30	4	100	1000	1	50	1	−3.5	0	210
NZD2V4MUT5G	D***	2.28	2.52	5	100	1000	1	50	1	−3.5	0	210
NZD2V7MUT5G	E***	2.57	2.84	5	100	1000	1	20	1	−3.5	0	210
NZD3V0MUT5G	Q*	2.85	3.15	5	100	1000	1	10	1	−3.5	0	210
NZD3V3MUT5G	F***	3.14	3.47	5	100	1000	1	10	1	−3.5	0	210
NZD3V6MUT5G	J***	3.42	3.78	5	100	1000	1	10	1	−3.5	0	210
NZD3V9MUT5G	L	3.71	4.10	5	100	1000	1	5	1	−3.5	−2.5	210
NZD4V3MUT5G	D**	4.09	4.52	5	100	1000	1	5	1	−3.5	0	210
NZD4V7MUT5G	P	4.47	4.94	5	100	800	0.5	2	1	−3.5	0.2	150
NZD5V1MUT5G	Q	4.85	5.36	5	80	500	0.5	2	1.5	−2.7	1.2	130
NZD5V6MUT5G	R	5.32	5.88	5	60	200	0.5	1	2.5	−2.0	2.5	115
NZD6V2MUT5G	T	5.89	6.51	5	60	100	0.5	1	3.0	0.4	3.7	110
NZD6V8MUT5G	K***	6.46	7.14	5	40	60	0.5	0.5	3.5	1.2	4.5	105
NZD7V5MUT5G	L***	7.13	7.88	5	30	60	0.5	0.5	4.0	2.5	5.3	100
NZD8V2MUT5G	2	7.79	8.61	5	30	60	0.5	0.5	5.0	3.2	6.2	90
NZD9V1MUT5G	E**	8.65	9.56	5	30	60	0.5	0.5	6.0	3.8	7.0	80

*Rotated 90°.
**Rotated 180°.
***Rotated 270°.
1. Zener voltage is measured with a pulse test current I_Z at an ambient temperature of 25°C.

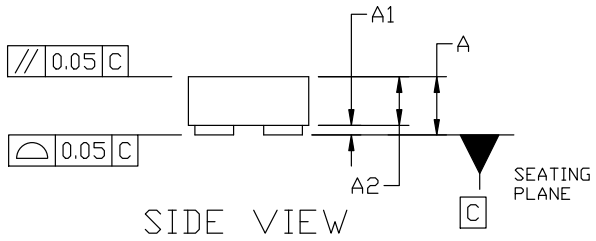


X3DFN2 0.62x0.32x0.24, 0.35P
CASE 152AF
ISSUE C

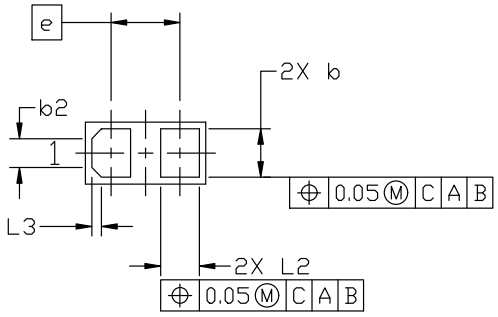
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TOP VIEW



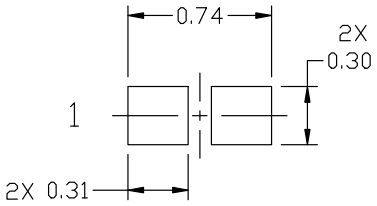
SIDE VIEW



BOTTOM VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. 0201

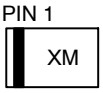
	MILLIMETERS		
DIM	MIN.	NOM.	MAX.
A	0.25	0.29	0.33
A1	0.00	---	0.05
A2	0.14	0.24	0.34
b	0.22	0.25	0.28
b2	0.150 REF		
D	0.58	0.62	0.66
E	0.28	0.32	0.36
e	0.355 BSC		
L2	0.17	0.20	0.23
L3	0.050 REF		



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*



X = Specific Device Code
M = Date Code

*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.

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DESCRIPTION:	**X3DFN2 0.62x0.32x0.24, 0.35P**	**PAGE 1 OF 1**

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