

NZ9F2V4ST5G, SZNZ9F2V4ST5G SERIES

Zener Voltage Regulators

250 mW SOD-923 Surface Mount

This series of Zener diodes is packaged in a SOD-923 surface mount package. They are designed to provide voltage regulation protection and are especially attractive in situations where space is at a premium. They are well suited for applications such as cellular phones, hand held portables, and high density PC boards.

Specification Features

- Standard Zener Breakdown Voltage Range -2.4 V to 18 V
- Steady State Power Rating of 250 mW
- Small Body Outline Dimensions:
0.039" x 0.024" (1.00 mm x 0.60 mm)
- Low Body Height: 0.016" (0.40 mm)
- ESD Rating of Class 3 (>16 kV) per Human Body Model
- Tight Tolerance V_Z
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These are Pb-Free Devices

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

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (Note 1) @ T _A = 25°C Derate above 25°C	P _D	250 2.0	mW mW/°C
Thermal Resistance from Junction-to-Ambient	R _{θJA}	500	°C/W
Junction and Storage Temperature Range	T _J , T _{stg}	-65 to +150	°C

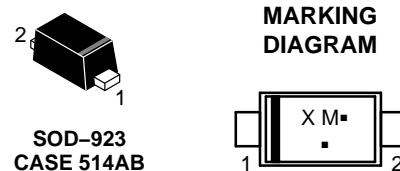
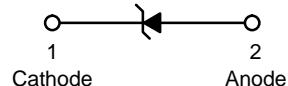
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR-4 Minimum Pad.



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X = Specific Device Code
M = Month Code
- = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
NZ9FxxxST5G, SZNZ9FxxxST5G	SOD-923 (Pb-Free)	8000/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 table on page 3 of this data sheet.

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ELECTRICAL CHARACTERISTICS

($T_A = 25^\circ\text{C}$ unless otherwise noted,
 $V_F = 0.9 \text{ V Max.} @ I_F = 10 \text{ mA}$ 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
Θ_{VZ}	Maximum Temperature Coefficient of V_Z
C	Max. Capacitance @ $V_R = 0$ and $f = 1 \text{ MHz}$

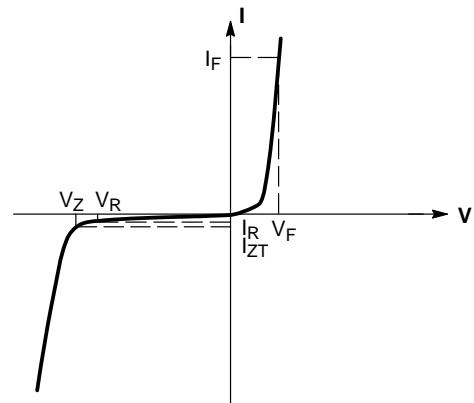


Figure 1. Zener Voltage Regulator

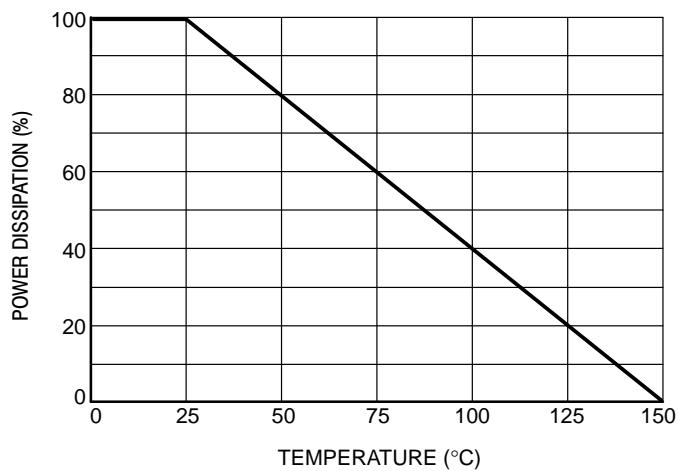


Figure 2. Steady State Power Derating

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ELECTRICAL CHARACTERISTICS ($V_F = 0.9$ Max @ $I_F = 10$ mA for all types)

Device***	Device Marking	Zener Voltage V_Z		Test Current I_{ZT} mA	Z_{ZT} $I_Z = I_{ZT}$ @ 10% Mod Ω Max	Z_{ZK} $I_Z = 1.0$ mA Ω Max	I_{ZK} mA	Max IR @ VR		dV_Z/dt (mV/k) @ $I_{ZT1} = 5$ mA		CpF Max @ $V_R = 0$ $f = 1$ MHz
		Min	Max					μ A	V	Min	Max	
SZ, NZ9F2V4ST5G	2*	2.43	2.63	5	100	1000	1	50	1	-3.5	0	210
SZ, NZ9F2V7ST5G	3*	2.67	2.91	5	100	1000	1	20	1	-3.5	0	210
SZ, NZ9F3V0ST5G	4*	2.94	3.26	5	100	1000	1	10	1	-3.5	0	210
SZ, NZ9F3V3ST5G	5*	3.32	3.53	5	100	1000	1	10	1	-3.5	0	210
SZ, NZ9F3V6ST5G	6*	3.6	3.85	5	100	1000	1	10	1	-3.5	0	210
SZ, NZ9F3V9ST5G	A**	3.89	4.16	5	100	1000	1	5	1	-3.5	-2.5	210
SZ, NZ9F4V3ST5G	D**	4.17	4.43	5	100	1000	1	5	1	-3.5	0	210
SZ, NZ9F4V7ST5G	E**	4.55	4.75	5	100	800	0.5	2	1	-3.5	0.2	150
SZ, NZ9F5V1ST5G	F**	4.989	5.2	5	80	500	0.5	2	1.5	-2.7	1.2	130
SZ, NZ9F5V6ST5G	J**	5.49	5.73	5	60	200	0.5	1	2.5	-2.0	2.5	115
SZ, NZ9F6V2ST5G	K**	6.06	6.33	5	60	100	0.5	1	3	0.4	3.7	110
SZ, NZ9F6V8ST5G	L**	6.65	6.93	5	40	60	0.5	0.5	3.5	1.2	4.5	105
SZ, NZ9F7V5ST5G	P**	7.28	7.6	5	30	60	0.5	0.5	4	2.5	5.3	100
SZ, NZ9F8V2ST5G	Q**	8.02	8.36	5	30	60	0.5	0.5	5	3.2	6.2	90
SZ, NZ9F9V1ST5G	R**	8.85	9.23	5	30	60	0.5	0.5	6	3.8	7	80
SZ, NZ9F10VST5G	T**	9.77	10.21	5	30	60	0.5	0.1	7	4.5	8	80
SZ, NZ9F11VST5G	V**	10.76	11.22	5	30	60	0.5	0.1	8	5.4	9	80
SZ, NZ9F12VST5G	Y**	11.74	12.24	5	30	80	0.5	0.1	9	6	10	80
SZ, NZ9F13VST5G	2**	12.91	13.49	5	37	80	0.5	0.1	10	7	11	75
SZ, NZ9F15VST5G	3**	14.34	14.98	5	42	80	0.5	0.1	11	9.2	13	70
SZ, NZ9F16VST5G	4**	15.85	16.51	5	50	80	0.5	0.1	12	10.4	14	65
SZ, NZ9F18VST5G	5**	17.56	18.35	5	50	80	0.5	0.1	14	12.4	16	60

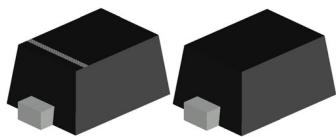
*Rotated 90°.

**Rotated 180°.

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

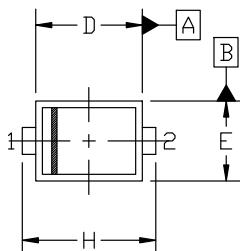
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

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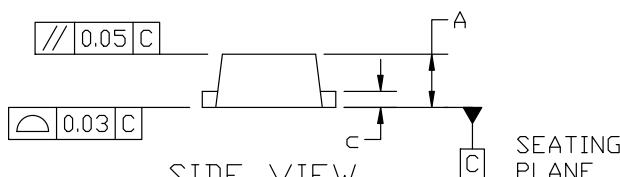


SOD-923 0.80x0.60x0.37
CASE 514AB
ISSUE E

DATE 08 FEB 2024

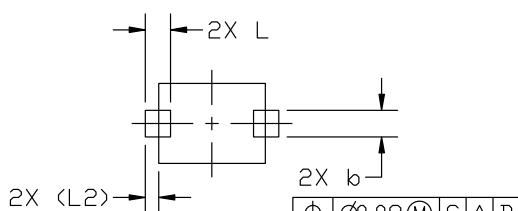


TOP VIEW



SIDE VIEW

SEATING PLANE

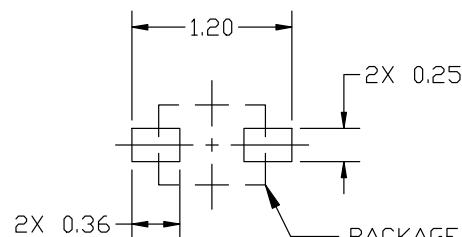


BOTTOM VIEW

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.
5. DIMENSION L WILL NOT EXCEED 0.30mm.

MILLIMETERS			
DIM	MIN.	NOM.	MAX.
A	0.34	0.37	0.40
b	0.15	0.20	0.25
c	0.07	0.12	0.17
D	0.75	0.80	0.85
E	0.55	0.60	0.65
H	0.95	1.00	1.05
L	0.19 REF		
L2	0.05	0.10	0.15

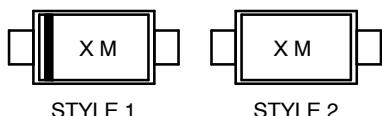


PACKAGE OUTLINE

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.

STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

STYLE 2:
NO POLARITY

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DESCRIPTION:	SOD-923 0.80x0.60x0.37	PAGE 1 OF 1

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