Zener Voltage Regulators

250 mW SOD-923 Surface Mount

NZ9F2V4ST5G, SZNZ9F2V4ST5G SERIES

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

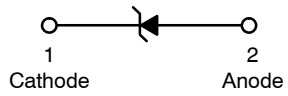
Mechanical Characteristics

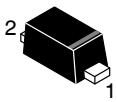
CASE: Void-free, transfer-molded, thermosetting plastic
Epoxy Meets UL 94, V-0
LEAD FINISH: 100% Matte Sn (Tin)
MOUNTING POSITION: Any
QUALIFIED MAX REFLOW TEMPERATURE: 260°C
Device Meets MSL 1 Requirements

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	$R_{\theta JA}$	500	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−65 to +150	°C

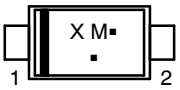
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.
1. FR-4 Minimum Pad.





SOD-923
CASE 514AB

MARKING DIAGRAM



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 Specification Brochure, BRD8011/D.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 3.

DEVICE MARKING INFORMATION

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

Downloaded from Arrow.com.

ELECTRICAL CHARACTERISTICS

(T_A = 25 °C unless otherwise noted,
V_F = 0.9 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

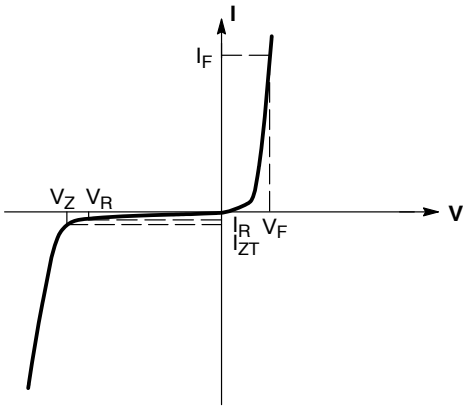


Figure 1. Zener Voltage Regulator

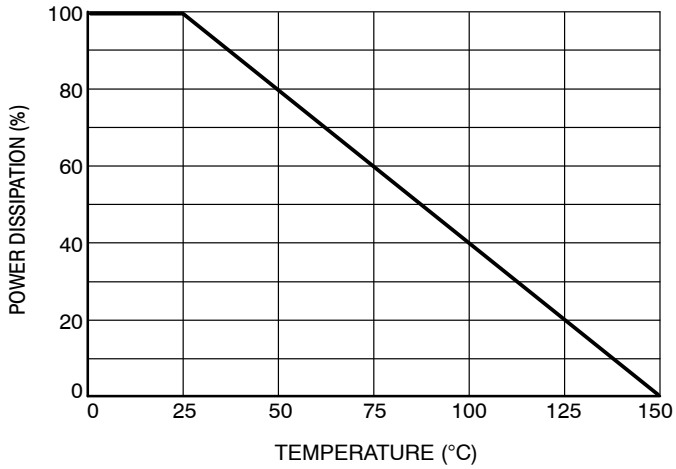


Figure 2. Steady State Power Derating

Share Feedback
Your Opinion Matters

Downloaded from Arrow.com.

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

Device***	Device Marking	Zener Voltage VZ		Test Current Izt mA	Z_{ZT} I_Z = IZT @ 10% Mod Ω Max	Z_{ZK} I_Z = 1.0 mA Ω Max	I_{ZK} mA	Max IR @ VR		d_{VZ}/dt (mV/k) @ I_{ZT1} = 5 mA		CpF Max @ V_R = 0 f = 1 MHz
		Min	Max					μA	V	Min	Max	
SZ, NZ9F2V4ST5G	2*	2.43	2.63	5	100	1000	1	50	1	–3.5	0	210
SZNZ9F3V0ST5G	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
SZNZ9F3V6ST5G	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
SZNZ9F4V3ST5G	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
SZNZ9F8V2ST5G	Q**	8.02	8.36	5	30	60	0.5	0.5	5	3.2	6.2	90
SZNZ9F9V1ST5G	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
SZNZ9F13VST5G	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

DISCONTINUED (Note 2)

NZ9F2V7ST5G	3*	2.67	2.91	5	100	1000	1	20	1	–3.5	0	210
NZ9F3V6ST5G	6*	3.6	3.85	5	100	1000	1	10	1	–3.5	0	210
NZ9F4V3ST5G	D**	4.17	4.43	5	100	1000	1	5	1	–3.5	0	210
NZ9F8V2ST5G	Q**	8.02	8.36	5	30	60	0.5	0.5	5	3.2	6.2	90
NZ9F9V1ST5G	R**	8.85	9.23	5	30	60	0.5	0.5	6	3.8	7	80
NZ9F13VST5G	2**	12.91	13.49	5	37	80	0.5	0.1	10	7	11	75

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.

2. **DISCONTINUED:** These devices are not available. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.

* Rotated 90°.

* *Rotated 180°.

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

Share Feedback
Your Opinion Matters

Downloaded from Arrow.com.

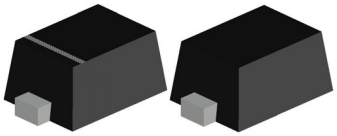
REVISION HISTORY

Revision	Description of Changes	Date
4	Rebranded the Data Sheet to **onsemi** format. NZ9F2V7ST5G, NZ9F3V6ST5G, NZ9F4V3ST5G, NZ9F8V2ST5G, NZ9F9V1ST5G, NZ9F13VST5G OPNs Marked as Discontinued.	09/18/2025

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.

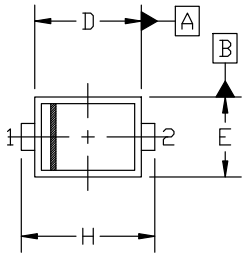
Share Feedback
Your Opinion Matters

Downloaded from Arrow.com.

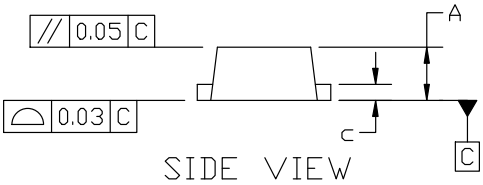


SOD−923 0.80x0.60x0.37
CASE 514AB
ISSUE E

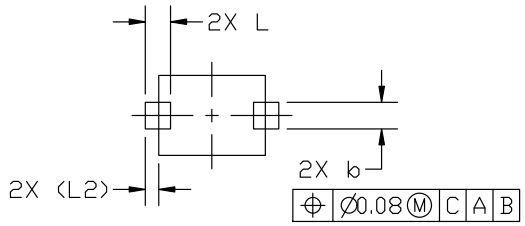
DATE 08 FEB 2024



TOP VIEW



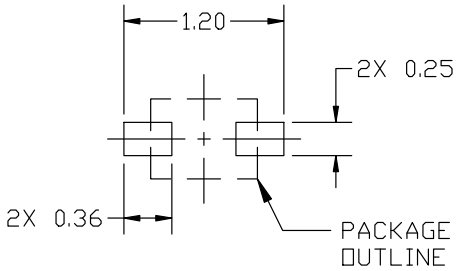
SIDE VIEW



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.

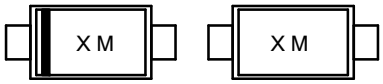
MILLIMETERS			
DIM	MIN.	NOM.	MAX.
A	0.34	0.37	0.40
b	0.15	0.20	0.25
c	0.07	0.12	0.17
D	0.75	0.80	0.85
E	0.55	0.60	0.65
H	0.95	1.00	1.05
L	0.19 REF		
L2	0.05	0.10	0.15



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*



STYLE 1 STYLE 2

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

DOCUMENT NUMBER:	**98AON23284D**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped “CONTROLLED COPY” in red.	
DESCRIPTION:	**SOD−923 0.80x0.60x0.37**		**PAGE 1 OF 1**

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. **onsemi** does not convey any license under its patent rights nor the rights of others.

Downloaded from Arrow.com.

onsemi, ONSEMI , and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent−Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as−is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales

◊

Downloaded from Arrow.com.