

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) @ $T_A = 25^\circ\text{C}$ 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

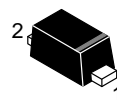
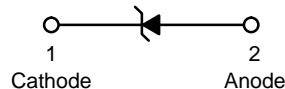
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR-4 Minimum Pad.



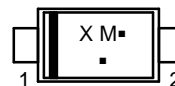
ON Semiconductor®

<http://onsemi.com>



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 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.

NZ9F2V4ST5G, SZNZ9F2V4ST5G SERIES

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
ΘV_Z	Maximum Temperature Coefficient of V_Z
C	Max. Capacitance @ $V_R = 0$ and $f = 1\text{ MHz}$



Figure 1. Zener Voltage Regulator

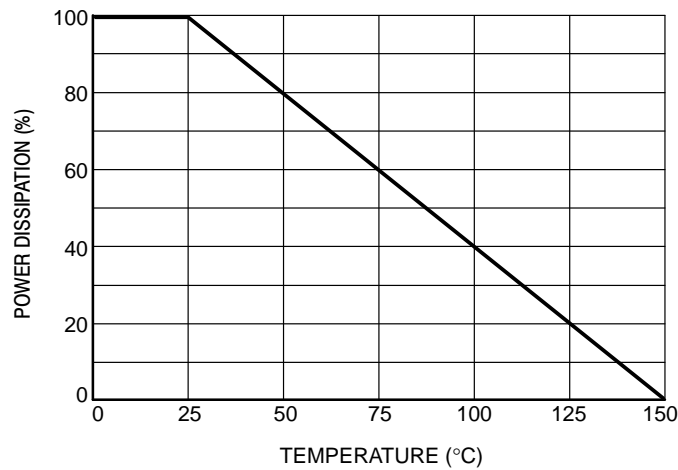


Figure 2. Steady State Power Derating

NZ9F2V4ST5G, SZNZ9F2V4ST5G SERIES

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 = 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					μA	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.

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.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Email Requests to: orderlit@onsemi.com

onsemi Website: www.onsemi.com

TECHNICAL SUPPORT

North American Technical Support:

Voice Mail: 1 800-282-9855 Toll Free USA/Canada

Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative