NZ9F2V4T5G, SZNZ9F2V4T5G 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 24 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
- 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

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

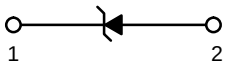
MAXIMUM RATINGS

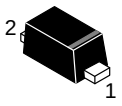
Rating	Symbol	Max	Unit
Total Device Dissipation FR−5 Board, (Note 1) @ T_A = 25°C Derate above 25°C	P_D	250 2.0	mW mW/°C
Thermal Resistance from Junction−to−Ambient	$R_{\theta JA}$	500	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−65 to +150	°C

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.

ON Semiconductor®

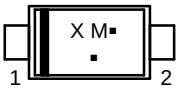
www.onsemi.com





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†
NZ9FxxxxT5G, SZNZ9FxxxxT5G	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

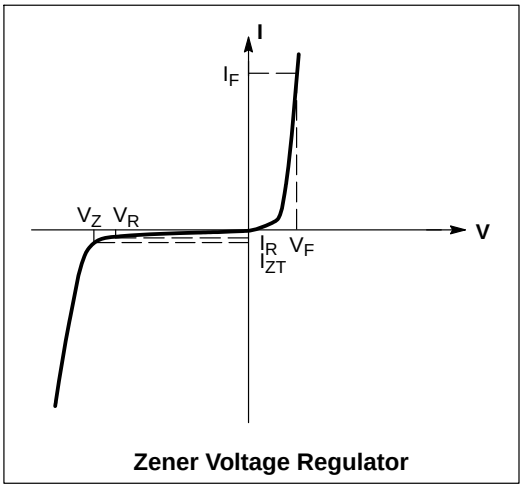
See specific marking information in the device marking column of the Electrical Characteristics tables starting on page 3 of this data sheet.

© Semiconductor Components Industries, LLC, 2016

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



Zener Voltage Regulator

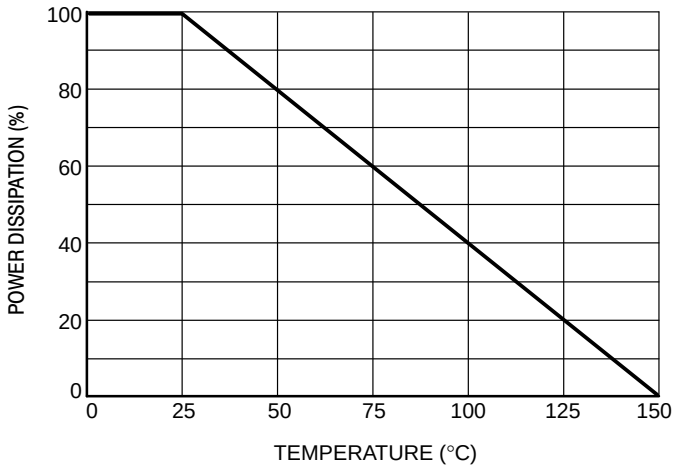


Figure 1. Steady State Power Derating

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 0.9 V Max. @ I_F = 10 mA for all types)

Device***	Device Marking	Zener Voltage (Note 1) V_Z (Volts) Min	V_Z (Volts) Max	@ I_{ZT} mA	Zener Impedance Z_{ZT} @ I_{ZT} Ω	Z_{ZK} @ I_{ZK} Ω	I_{ZK} mA	Leakage Current I_R @ V_R μA	V_R Volts	ΘV_Z (mV/k) @ I_{ZT} Min	ΘV_Z (mV/k) @ I_{ZT} Max	C @ V_R = 0 f = 1 MHz pF
SZ, NZ9F2V4T5G	J	2.28	2.52	5	100	1000	1	50	1	−3.5	0	210
SZ, NZ9F2V7T5G	E**	2.57	2.84	5	100	1000	1	20	1	−3.5	0	210
SZ, NZ9F3V0T5G	T**	2.85	3.15	5	100	1000	1	10	1	−3.5	0	210
SZ, NZ9F3V3T5G	Q	3.14	3.47	5	100	1000	1	10	1	−3.5	0	210
SZ, NZ9F3V6T5G	3**	3.42	3.78	5	100	1000	1	10	1	−3.5	0	210
SZ, NZ9F3V9T5G	V**	3.71	4.10	5	100	1000	1	5	1	−3.5	−2.5	210
SZ, NZ9F4V3T5G	Y**	4.09	4.52	5	100	1000	1	5	1	−3.5	0	210
SZ, NZ9F4V7T5G	3	4.47	4.94	5	100	800	0.5	2	1	−3.5	0.2	150
SZ, NZ9F5V1T5G	4	4.85	5.36	5	80	500	0.5	2	1.5	−2.7	1.2	130
SZ, NZ9F5V6T5G	5	5.32	5.88	5	60	200	0.5	1	2.5	−2.0	2.5	115
SZ, NZ9F6V2T5G	6	5.89	6.51	5	60	100	0.5	1	3	0.4	3.7	110
SZ, NZ9F6V8T5G	A*	6.46	7.14	5	40	60	0.5	0.5	3.5	1.2	4.5	105
SZ, NZ9F7V5T5G	D*	7.13	7.88	5	30	60	0.5	0.5	4	2.5	5.3	100
SZ, NZ9F8V2T5G	E*	7.79	8.61	5	30	60	0.5	0.5	5	3.2	6.2	90
SZ, NZ9F9V1T5G	F*	8.65	9.56	5	30	60	0.5	0.5	6	3.8	7	80
SZ, NZ9F10VT5G	J*	9.50	10.50	5	30	60	0.5	0.1	7	4.5	8	80
SZ, NZ9F11VT5G	K*	10.45	11.55	5	30	60	0.5	0.1	8	5.4	9	80
SZ, NZ9F12VT5G	L*	11.40	12.60	5	30	80	0.5	0.1	9	6	10	80
SZ, NZ9F13VT5G	P*	12.35	13.65	5	37	80	0.5	0.1	10	7	11	75
SZ, NZ9F15VT5G	Q*	14.25	15.75	5	42	80	0.5	0.1	11	9.2	13	70
SZ, NZ9F16VT5G	R*	15.20	16.80	5	50	80	0.5	0.1	12	10.4	14	65
SZ, NZ9F18VT5G	T*	17.10	18.90	5	50	80	0.5	0.1	14	12.4	16	60
SZ, NZ9F20VT5G	V*	19.00	21.00	5	55	100	0.5	0.1	15.4	14.4	18	55
SZ, NZ9F22VT5G	Y*	20.90	23.10	5	55	100	0.5	0.1	16.8	15.4	20	55
SZ, NZ9F24VT5G	F	22.80	25.20	5	70	120	0.5	0.1	18.9	16.8	22	50

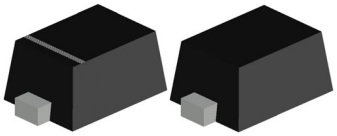
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

*Rotated 90°.

**Rotated 270°.

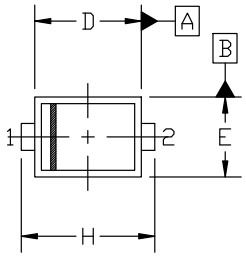
***SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable.

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

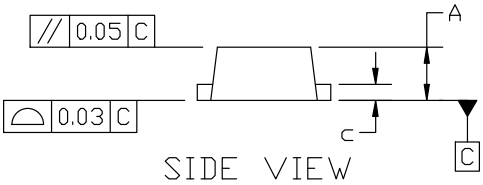


SOD−923 0.80x0.60x0.37
CASE 514AB
ISSUE E

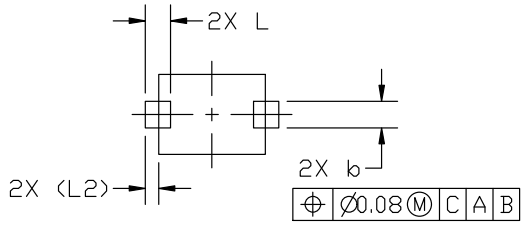
DATE 08 FEB 2024



TOP VIEW



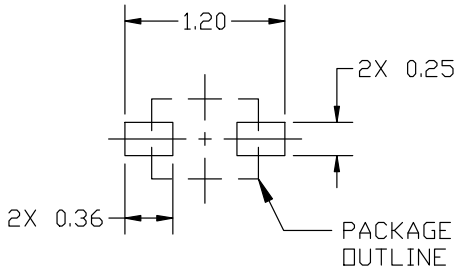
SIDE VIEW



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.

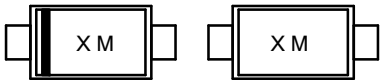
MILLIMETERS			
DIM	MIN.	NOM.	MAX.
A	0.34	0.37	0.40
b	0.15	0.20	0.25
c	0.07	0.12	0.17
D	0.75	0.80	0.85
E	0.55	0.60	0.65
H	0.95	1.00	1.05
L	0.19 REF		
L2	0.05	0.10	0.15



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.

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

Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

ON Semiconductor:

LV8014T-TLM-E NCV5501DT33RKG CNY17-3V-M CS8182YDPSR5G LB1861M-TLM-H FDMS7608S LM385BD-2.5R2G NB3N853531EDTG 1SMA5938BT3G FDMA7672 NC7WV07P6X NCP114AMX250TCG NCP1342ENDCEAD1R2G SZ1SMA5913BT3G KSA1156OSTSTU NCS20081MUTAG TLV431CSN1T1G UC2845BD1R2G FOD2741AV MC33077DR2G MC34152DR2G MMBTH81 MOC212R2M NCP1566MNTXG LA4440J-E LM393NG MC74ACT541DWG MC74LCX02DTR2G NCP1397BDR2G NTBG060N090SC1