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	$R_{\theta JA}$	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.

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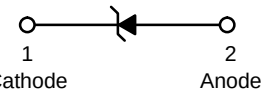
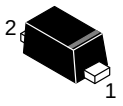
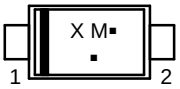




SOD−923
CASE 514AB

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.

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

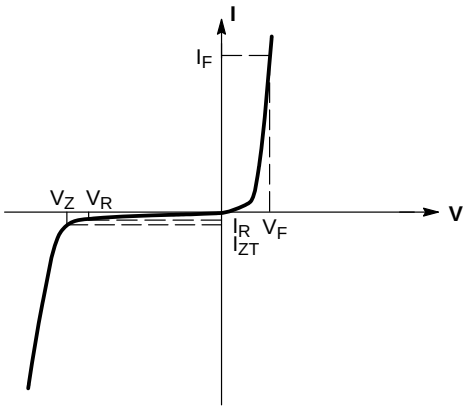


Figure 1. Zener Voltage Regulator

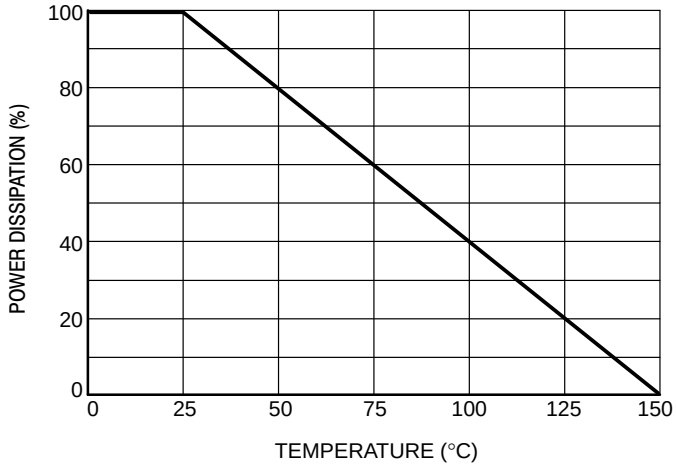


Figure 2. Steady State Power Derating

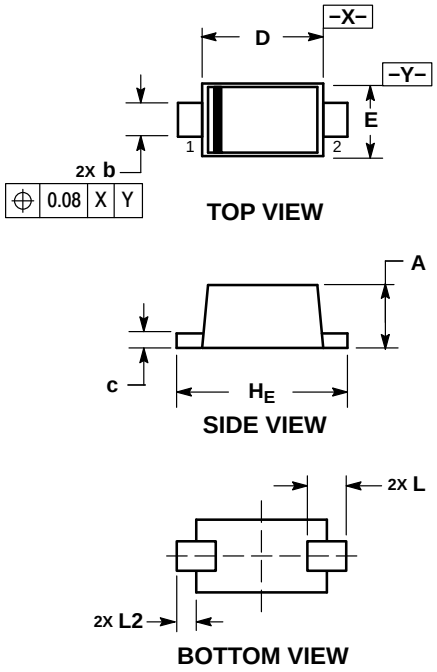
ELECTRICAL CHARACTERISTICS (V_F = 0.9 Max @ I_F = 10 mA for all types)

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
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.

PACKAGE DIMENSIONS

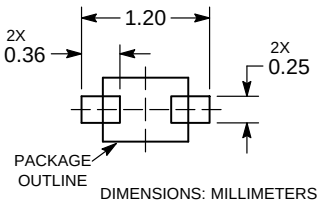
SOD−923
CASE 514AB
ISSUE C



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
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.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.34	0.37	0.40	0.013	0.015	0.016
b	0.15	0.20	0.25	0.006	0.008	0.010
c	0.07	0.12	0.17	0.003	0.005	0.007
D	0.75	0.80	0.85	0.030	0.031	0.033
E	0.55	0.60	0.65	0.022	0.024	0.026
H_E	0.95	1.00	1.05	0.037	0.039	0.041
L	0.19 REF			0.007 REF		
L2	0.05	0.10	0.15	0.002	0.004	0.006

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

See Application Note AND8455/D for more mounting details

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
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NZ9F10VST5G NZ9F11VST5G NZ9F12VST5G NZ9F13VST5G NZ9F15VST5G NZ9F16VST5G NZ9F18VST5G NZ9F2V7ST5G NZ9F3V0ST5G NZ9F3V3ST5G NZ9F3V6ST5G NZ9F3V9ST5G NZ9F4V3ST5G NZ9F4V7ST5G NZ9F5V1ST5G NZ9F5V6ST5G NZ9F6V2ST5G NZ9F6V8ST5G NZ9F7V5ST5G NZ9F8V2ST5G NZ9F9V1ST5G NZ9F2V4ST5G