NZ9F2V4T5G SERIES

Zener Voltage Regulators

200 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 200 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
- 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, @ T_A = 25°C	P_D	200	mW
Junction and Storage Temperature Range	T_J, T_{stg}	−65 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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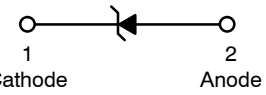
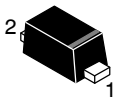
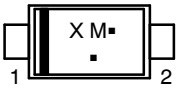




SOD−923
CASE 514AB

MARKING DIAGRAM



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

ORDERING INFORMATION

Device	Package	Shipping†
NZ9FxxxxT5G	SOD−923 (Pb−Free)	8000/Tape & Reel

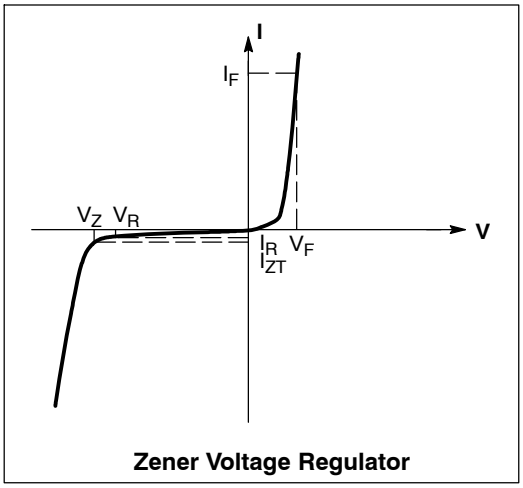
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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.

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

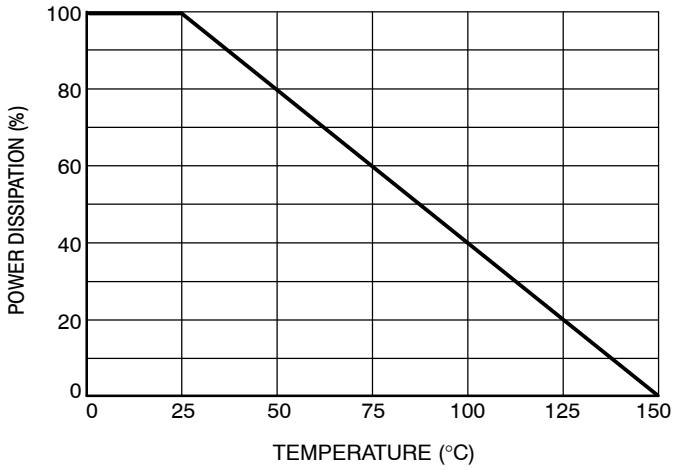


Figure 1. Steady State Power Derating

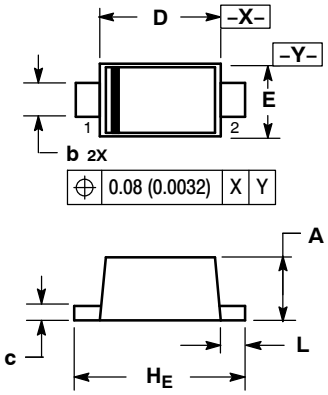
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 0.9 V Max. @ I_F = 10 mA for all types)

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

*Rotated 90°.
**Rotated 270°.
1. Zener voltage is measured with a pulse test current I_Z at an ambient temperature of 25°C.

PACKAGE DIMENSIONS

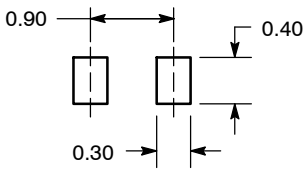
SOD−923
CASE 514AB−01
ISSUE B



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

	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	0.05	0.10	0.15	0.002	0.004	0.006

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*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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