

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

Mechanical Characteristics:

CASE: Void-free, transfer-molded, thermosetting plastic
Epoxy Meets UL 94 V-0

LEAD FINISH: 100% Matte Sn (Tin)

MOUNTING POSITION: Any

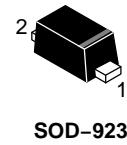
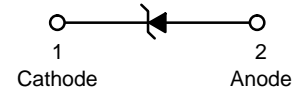
QUALIFIED MAX REFLOW TEMPERATURE: 260°C
Device Meets MSL 1 Requirements

MAXIMUM RATINGS

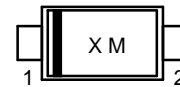
Rating	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, @ T _A = 25°C	P _D	200	mW
Junction and Storage Temperature Range	T _J , T _{stg}	-65 to +150	°C

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.

NZ9Fxx Series S-NZ9Fxx Series



MARKING DIAGRAM



X = Specific Device Code
M = Month Code

ORDERING INFORMATION

Device	Package	Shipping
NZ9Fxx Series	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.



NZ9Fxx Series , S-NZ9Fxx 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 $f = 1\text{ MHz}$

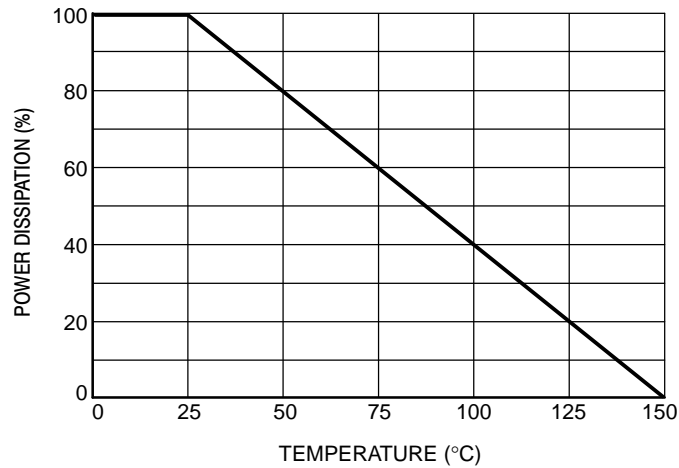
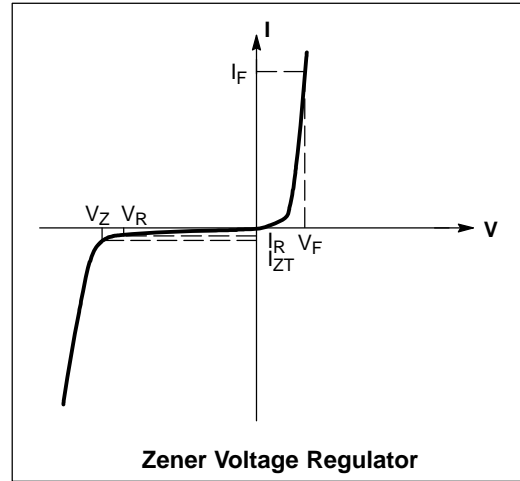


Figure 1. Steady State Power Derating



NZ9Fxx Series , S-NZ9Fxx 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)

Device	Device Marking	Zener Voltage (Note 1)			Zener Impedance			Leakage Current		θ_{Vz} (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	pF
		Min	Max	mA	Ω	Ω	mA	μA	Volts			
NZ9F2V4	J	2.28	2.52	5	100	1000	1	50	1	-3.5	0	210
NZ9F2V7	E**	2.57	2.84	5	100	1000	1	20	1	-3.5	0	210
NZ9F3V0	T**	2.85	3.15	5	100	1000	1	10	1	-3.5	0	210
NZ9F3V3	Q	3.14	3.47	5	100	1000	1	10	1	-3.5	0	210
NZ9F3V6	3**	3.42	3.78	5	100	1000	1	10	1	-3.5	0	210
NZ9F3V9	V**	3.71	4.10	5	100	1000	1	5	1	-3.5	-2.5	210
NZ9F4V3	Y**	4.09	4.52	5	100	1000	1	5	1	-3.5	0	210
NZ9F4V7	3	4.47	4.94	5	100	800	0.5	2	1	-3.5	0.2	150
NZ9F5V1	4	4.85	5.36	5	80	500	0.5	2	1.5	-2.7	1.2	130
NZ9F5V6	5	5.32	5.88	5	60	200	0.5	1	2.5	-2.0	2.5	115
NZ9F6V2	6	5.89	6.51	5	60	100	0.5	1	3	0.4	3.7	110
NZ9F6V8	A*	6.46	7.14	5	40	60	0.5	0.5	3.5	1.2	4.5	105
NZ9F7V5	D*	7.13	7.88	5	30	60	0.5	0.5	4	2.5	5.3	100
NZ9F8V2	E*	7.79	8.61	5	30	60	0.5	0.5	5	3.2	6.2	90
NZ9F9V1	F*	8.65	9.56	5	30	60	0.5	0.5	6	3.8	7	80
NZ9F10V	J*	9.50	10.50	5	30	60	0.5	0.1	7	4.5	8	80
NZ9F11V	K*	10.45	11.55	5	30	60	0.5	0.1	8	5.4	9	80
NZ9F12V	L*	11.40	12.60	5	30	80	0.5	0.1	9	6	10	80
NZ9F13V	P*	12.35	13.65	5	37	80	0.5	0.1	10	7	11	75
NZ9F15V	Q*	14.25	15.75	5	42	80	0.5	0.1	11	9.2	13	70
NZ9F16V	R*	15.20	16.80	5	50	80	0.5	0.1	12	10.4	14	65
NZ9F18V	T*	17.10	18.90	5	50	80	0.5	0.1	14	12.4	16	60
NZ9F20V	V*	19.00	21.00	5	55	100	0.5	0.1	15.4	14.4	18	55
NZ9F22V	Y*	20.90	23.10	5	55	100	0.5	0.1	16.8	15.4	20	55
NZ9F24V	F	22.80	25.20	5	70	120	0.5	0.1	18.9	16.8	22	50

*Rotated 90° .

**Rotated 270° .

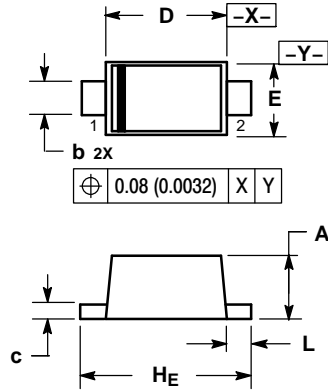
1. Zener voltage is measured with a pulse test current I_Z at an ambient temperature of 25°C .



NZ9Fxx Series , S-NZ9Fxx Series

PACKAGE DIMENSIONS

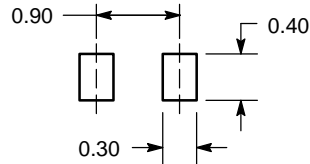
SOD-923



- 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.

DIM	MILLIMETERS			INCHES		
	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
HE	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

