

### 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)

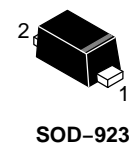
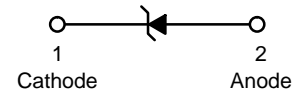
**MOUNTING POSITION:** Any

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

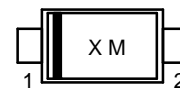
#### MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, @ T <sub>A</sub> = 25°C	P <sub>D</sub>	200	mW
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-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.



#### MARKING DIAGRAM



X = Specific Device Code  
M = Month Code

#### ORDERING INFORMATION

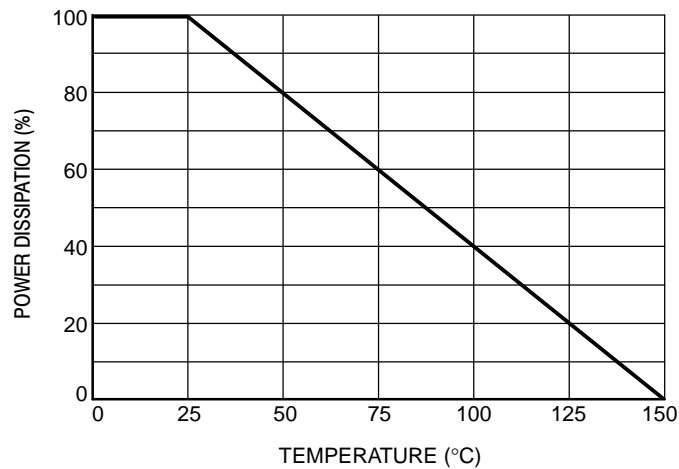
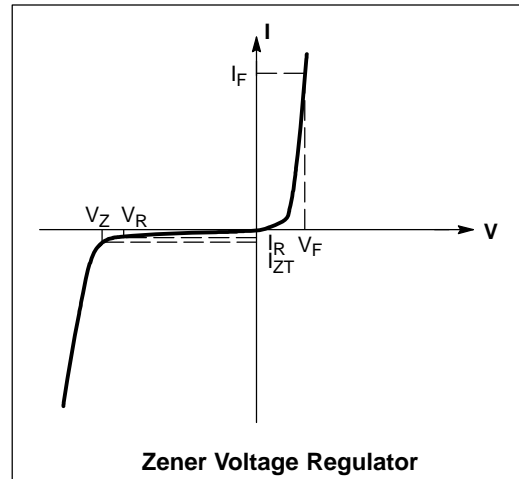
Device	Package	Shipping†
NZ9F2V4T5G Series	SOD-923 (Pb-Free)	8000/Tape & Reel

†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.

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



**Figure 1. Steady State Power Derating**

**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		$\theta_{V_Z}$ (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	$\Omega$	$\Omega$	mA	$\mu\text{A}$	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
NZ9F7V5T5	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

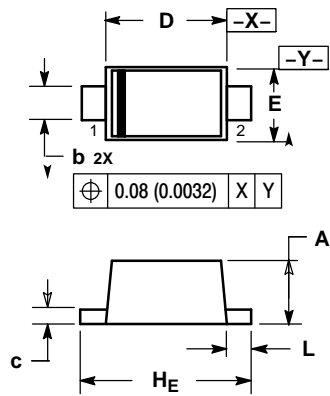
\*Rotated 90°.

\*\*Rotated 270°.

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

**PACKAGE DIMENSIONS**

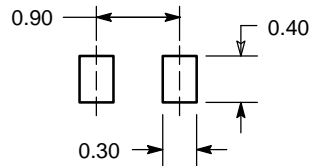
**SOD-923**



- 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
H <sub>E</sub>	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