

# 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

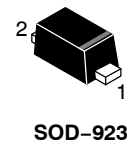
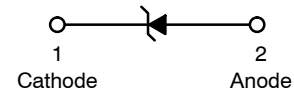
Device Meets MSL 1 Requirements

### MAXIMUM RATINGS

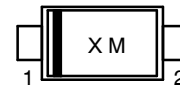
Rating	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, @ $T_A = 25^\circ\text{C}$	$P_D$	200	mW
Junction and Storage Temperature Range	$T_J, T_{stg}$	-65 to +150	°C

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.

## LNZ9F2V4T5G Series



### MARKING DIAGRAM



X = Specific Device Code  
M = Month Code

### ORDERING INFORMATION

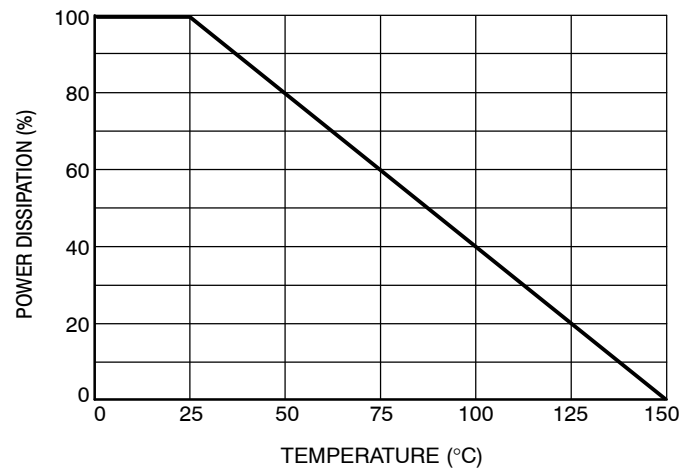
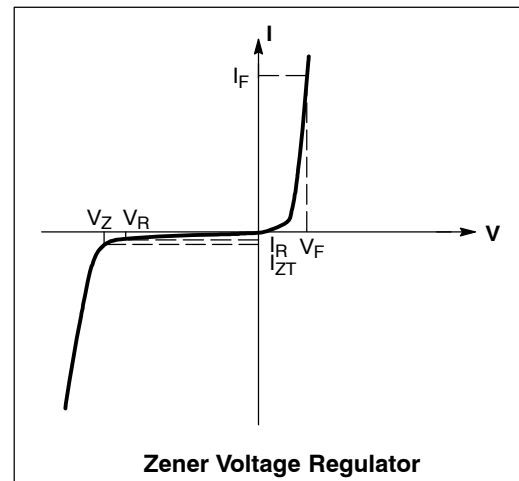
Device	Package	Shipping†
LNZ9F2V4T5G Series	SOD-923 (Pb-Free)	8000/Tape & Reel

†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.

**LNZ9F2V4T5G 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 @ $I_F$
$\Theta_{VZ}$	Maximum Temperature Coefficient of $V_Z$
C	Max. Capacitance @ $V_R = 0$ and $f = 1\text{ MHz}$



**Figure 1. Steady State Power Derating**

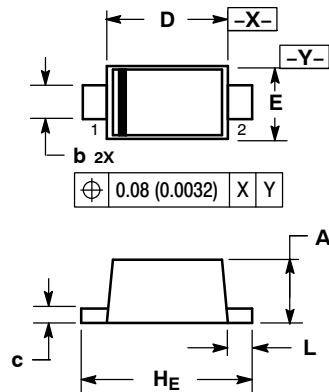
**LNZ9F2V4T5G Series**
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted,  $V_F = 0.9\text{ V Max.}$  @  $I_F = 10\text{ mA}$  for all types)

Device	Device Marking	Zener Voltage (Note 1)			Zener Impedance			Leakage Current		$\theta_{V_Z}$ (mV/k) @ $I_{ZT}$		C @ $V_R = 0$ f = 1 MHz pF
		$V_Z$ (Volts)		@ $I_{ZT}$	$Z_{ZT}$ @ $I_{ZT}$	$Z_{ZK}$ @ $I_{ZK}$		$I_R$ @ $V_R$		Min	Max	
		Min	Max	mA	$\Omega$	$\Omega$	mA	$\mu\text{A}$	Volts			
LNZ9F2V4T5G	J	2.28	2.52	5	100	1000	1	50	1	-3.5	0	210
LNZ9F2V7T5G	E**	2.57	2.84	5	100	1000	1	20	1	-3.5	0	210
LNZ9F3V0T5G	T**	2.85	3.15	5	100	1000	1	10	1	-3.5	0	210
LNZ9F3V3T5G	Q	3.14	3.47	5	100	1000	1	10	1	-3.5	0	210
LNZ9F3V6T5G	3**	3.42	3.78	5	100	1000	1	10	1	-3.5	0	210
LNZ9F3V9T5G	V**	3.71	4.10	5	100	1000	1	5	1	-3.5	-2.5	210
LNZ9F4V3T5G	Y**	4.09	4.52	5	100	1000	1	5	1	-3.5	0	210
LNZ9F4V7T5G	3	4.47	4.94	5	100	800	0.5	2	1	-3.5	0.2	150
LNZ9F5V1T5G	4	4.85	5.36	5	80	500	0.5	2	1.5	-2.7	1.2	130
LNZ9F5V6T5G	5	5.32	5.88	5	60	200	0.5	1	2.5	-2.0	2.5	115
LNZ9F6V2T5G	6	5.89	6.51	5	60	100	0.5	1	3	0.4	3.7	110
LNZ9F6V8T5G	A*	6.46	7.14	5	40	60	0.5	0.5	3.5	1.2	4.5	105
LNZ9F7V5T5G	D*	7.13	7.88	5	30	60	0.5	0.5	4	2.5	5.3	100
LNZ9F8V2T5G	E*	7.79	8.61	5	30	60	0.5	0.5	5	3.2	6.2	90
LNZ9F9V1T5G	F*	8.65	9.56	5	30	60	0.5	0.5	6	3.8	7	80
LNZ9F10VT5G	J*	9.50	10.50	5	30	60	0.5	0.1	7	4.5	8	80
LNZ9F11VT5G	K*	10.45	11.55	5	30	60	0.5	0.1	8	5.4	9	80
LNZ9F12VT5G	L*	11.40	12.60	5	30	80	0.5	0.1	9	6	10	80
LNZ9F13VT5G	P*	12.35	13.65	5	37	80	0.5	0.1	10	7	11	75
LNZ9F15VT5G	Q*	14.25	15.75	5	42	80	0.5	0.1	11	9.2	13	70
LNZ9F16VT5G	R*	15.20	16.80	5	50	80	0.5	0.1	12	10.4	14	65
LNZ9F18VT5G	T*	17.10	18.90	5	50	80	0.5	0.1	14	12.4	16	60
LNZ9F20VT5G	V*	19.00	21.00	5	55	100	0.5	0.1	15.4	14.4	18	55
LNZ9F22VT5G	Y*	20.90	23.10	5	55	100	0.5	0.1	16.8	15.4	20	55
LNZ9F24VT5G	F	22.80	25.20	5	70	120	0.5	0.1	18.9	16.8	22	50

 \*Rotated  $90^\circ$ .

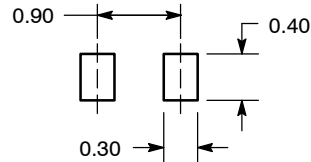
 \*\*Rotated  $270^\circ$ .

 1. Zener voltage is measured with a pulse test current  $I_Z$  at an ambient temperature of  $25^\circ\text{C}$ .

**LNZ9F2V4T5G 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