

Zener Voltage Regulators

200mW Surface Mount Zener Diodes

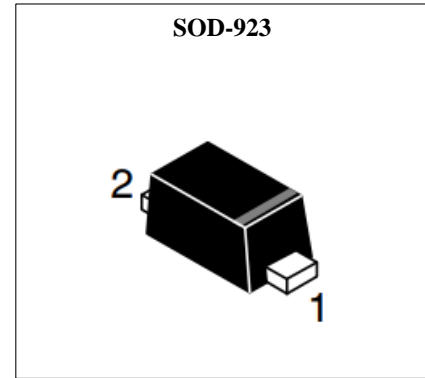
This series of Zener diodes is packaged in a SOD-923 surface mount package that has a power dissipation of 200 mW. They are designed to provide voltage regulation protection and are especially attractive in situations where space is at a premium. They are well suited for applications such as cellular phones, hand held portables, and high density PC boards.

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(>16kV) per Human Body Model
- These are Pb-Free Devices
- We declare that the material of product compliance with RoHS requirements
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

Mechanical Data

- Case : SOD-923 Void-free, transfer-molded plastic
- Lead Finish : 100% Matte Sn (Tin)
- Maximum Case Temperature for Soldering Purposes : 260°C for 10 Seconds
- Polarity : Cathode indicated by polarity band
- Flammability Rating : UL 94 V-0
- Mounting Position : Any
- Device Meets MSL 1 Requirements



Marking



X = Specific Device Code
M = Month Code

Maximum Ratings

Parameter	Symbol	Rated Value	Unit	Remark
Total Power Dissipation on FR-5 Board,(Note 1)at Ta=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.



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				Zener Impedance (Note 5)			Leakage Current I_R @ V_R		$\Theta V_Z(\text{mV/k})@I_{ZT}$		Capacitance @ $V_R=0$, $f=1\text{MHz}$
		V_Z (V)			I_{ZT}	Z_{ZT} @	Z_{ZK} @ I_{ZK}	I_{ZK}	I_R	V_R	mV/k		C
		Min	Nom	Max	mA	Ω	Ω	mA	μA	Volts	Min	Max	pF
LNZ9F2V4T5G	J	2.28	2.4	2.52	5.0	100	1000	1.0	50	1.0	-3.5	0.0	210
LNZ9F2V7T5G	E**	2.57	2.7	2.84	5.0	100	1000	1.0	20	1.0	-3.5	0.0	210
LNZ9F3V0T5G	T**	2.85	3.0	3.15	5.0	100	1000	1.0	10	1.0	-3.5	0.0	210
LNZ9F3V3T5G	Q	3.14	3.3	3.47	5.0	100	1000	1.0	10	1.0	-3.5	0.0	210
LNZ9F3V6T5G	3**	3.42	3.6	3.78	5.0	100	1000	1.0	10	1.0	-3.5	0.0	210
LNZ9F3V9T5G	V**	3.71	3.9	4.10	5.0	100	1000	1.0	5.0	1.0	-3.5	-2.5	210
LNZ9F4V3T5G	Y**	4.09	4.3	4.52	5.0	100	1000	1.0	5.0	1.0	-3.5	0.0	210
LNZ9F4V7T5G	3	4.47	4.7	4.94	5.0	100	800	0.5	2.0	1.0	-3.5	0.2	150
LNZ9F5V1T5G	4	4.85	5.1	5.36	5.0	80	500	0.5	2.0	1.5	-2.7	1.2	130
LNZ9F5V6T5G	5	5.32	5.6	5.88	5.0	60	200	0.5	1.0	2.5	-2.0	2.5	115
LNZ9F6V2T5G	6	5.89	6.2	6.51	5.0	60	100	0.5	1.0	3.0	0.4	3.7	110
LNZ9F6V8T5G	A*	6.46	6.8	7.14	5.0	40	60	0.5	0.5	3.5	1.2	4.5	105
LNZ9F7V5T5G	D*	7.13	7.5	7.88	5.0	30	60	0.5	0.5	4.0	2.5	5.3	100
LNZ9F8V2T5G	E*	7.79	8.2	8.61	5.0	30	60	0.5	0.5	5.0	3.2	6.2	90
LNZ9F9V1T5G	F*	8.65	9.1	9.56	5.0	30	60	0.5	0.5	6.0	3.8	7.0	80
LNZ9F10VT5G	J*	9.50	10	10.50	5.0	30	60	0.5	0.1	7.0	4.5	8.0	80
LNZ9F11VT5G	K*	10.45	11	11.55	5.0	30	60	0.5	0.1	8.0	5.4	9.0	80
LNZ9F12VT5G	L*	11.40	12	12.60	5.0	30	80	0.5	0.1	9.0	6.0	10.0	80
LNZ9F13VT5G	P*	12.35	13	13.65	5.0	37	80	0.5	0.1	10.0	7.0	11.0	75
LNZ9F15VT5G	Q*	14.25	15	15.75	5.0	42	80	0.5	0.1	11.0	9.2	13.0	70
LNZ9F16VT5G	R*	15.20	16	16.80	5.0	50	80	0.5	0.1	12.0	10.4	14.0	65
LNZ9F18VT5G	T*	17.10	18	18.90	5.0	50	80	0.5	0.1	14.0	12.4	16.0	60
LNZ9F20VT5G	V*	19.00	20	21.00	5.0	55	100	0.5	0.1	15.4	14.4	18.0	55
LNZ9F22VT5G	Y*	20.90	22	23.10	5.0	55	100	0.5	0.1	16.8	15.4	20.0	55
LNZ9F24VT5G	F	22.80	24	25.20	5.0	70	120	0.5	0.1	18.9	16.8	22.0	50

* Rotated 90°

** Rotated 270°

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

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

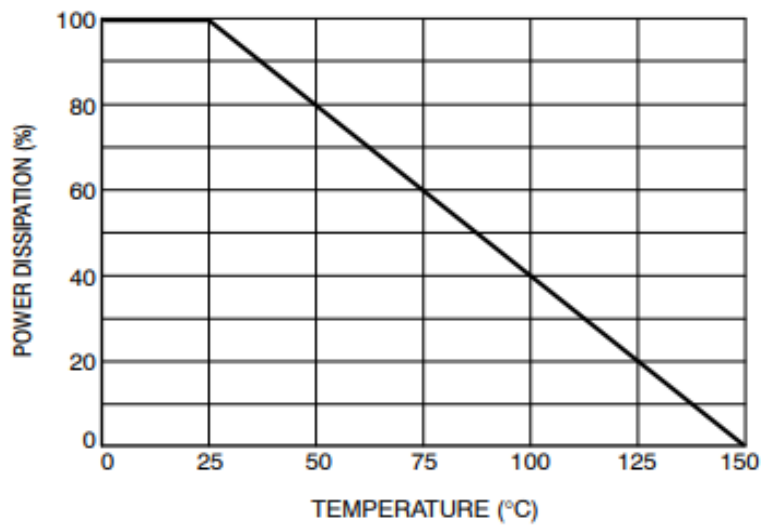
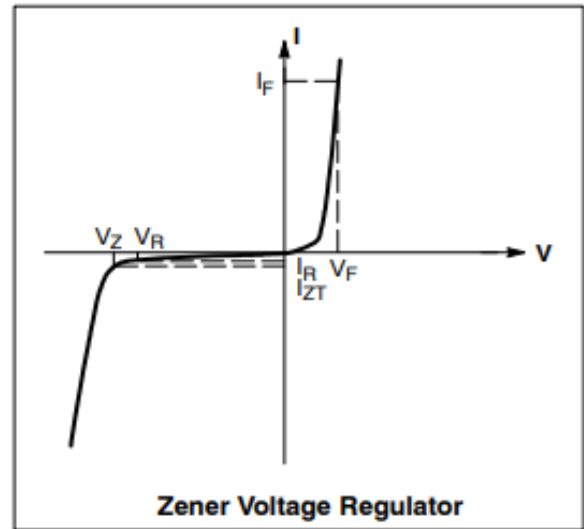
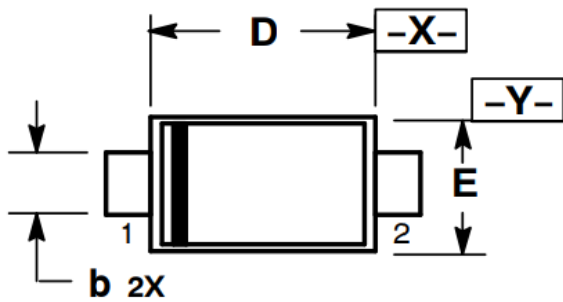


Figure 1. Steady State Power Derating

Outline and Dimensions

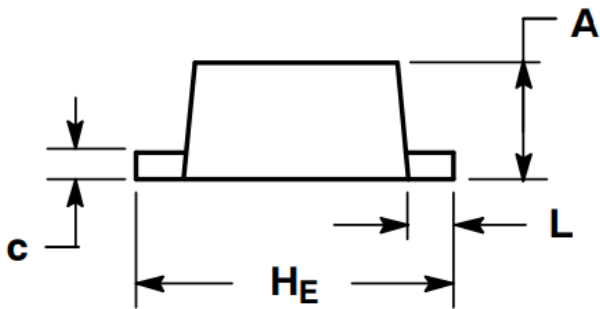
SOD-923



\varnothing	0.08 (0.0032)	X	Y
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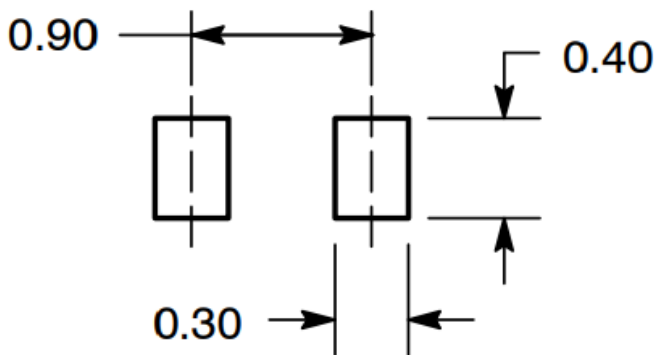
NOTES:

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 _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