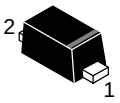
Zener Voltage Regulators

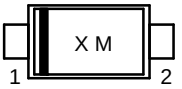
200 mW SOD−923 Surface Mount

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.

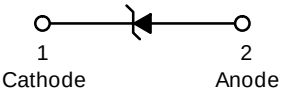


SOD−923

MARKING DIAGRAM



X = Specific Device Code
M = Month Code



Specification Features:

- Standard Zener Breakdown Voltage Range 2.4 V to 24 V
- Steady State Power Rating of 200mW
- 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℃
Device Meets MSL 1 Requirements

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, @ T_A = 25℃	P_D	200	mW
Junction and Storage Temperature Range	T_J, T_{stg}	−65 to +150	℃

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.

ORDERING INFORMATION

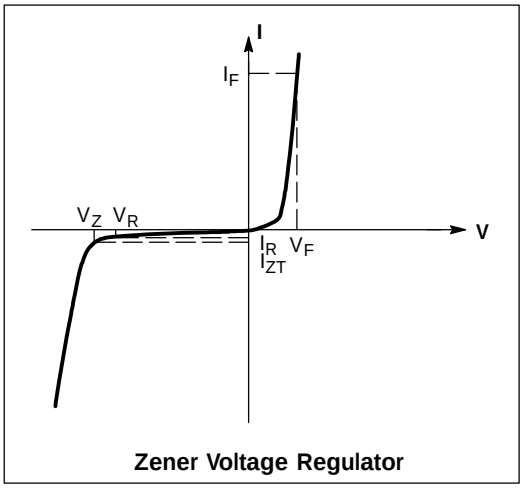
Device	Package	Shipping †
FDZXXXF Series	SOD-923 (Pb−Free)	8000/Tape & Reel

†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℃ 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

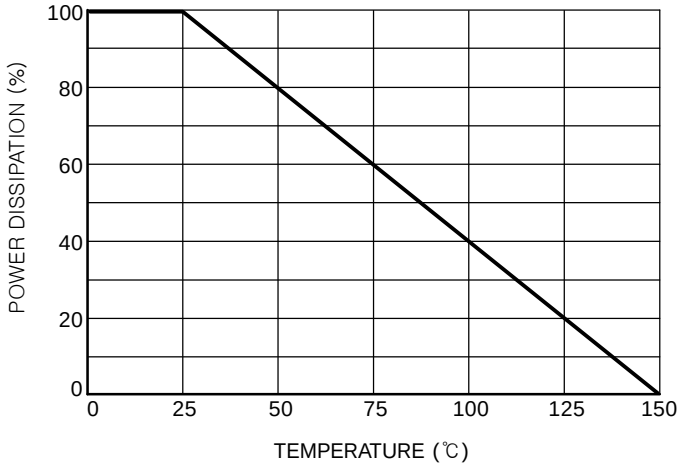


Figure 1. Steady State Power Derating

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
FDZ2.4F	J	2.28	2.52	5	100	1000	1	50	1	−3.5	0	210
FDZ2.7F	E**	2.57	2.84	5	100	1000	1	20	1	−3.5	0	210
FDZ3.0F	T**	2.85	3.15	5	100	1000	1	10	1	−3.5	0	210
FDZ3.3F	Q	3.14	3.47	5	100	1000	1	10	1	−3.5	0	210
FDZ3.6F	3**	3.42	3.78	5	100	1000	1	10	1	−3.5	0	210
FDZ3.9F	V**	3.71	4.10	5	100	1000	1	5	1	−3.5	−2.5	210
FDZ4.3F	Y**	4.09	4.52	5	100	1000	1	5	1	−3.5	0	210
FDZ4.7F	3	4.47	4.94	5	100	800	0.5	2	1	−3.5	0.2	150
FDZ5.1F	4	4.85	5.36	5	80	500	0.5	2	1.5	−2.7	1.2	130
FDZ5.6F	5	5.32	5.88	5	60	200	0.5	1	2.5	−2.0	2.5	115
FDZ6.2F	6	5.89	6.51	5	60	100	0.5	1	3	0.4	3.7	110
FDZ6.8F	A*	6.46	7.14	5	40	60	0.5	0.5	3.5	1.2	4.5	105
FDZ7.5F	D*	7.13	7.88	5	30	60	0.5	0.5	4	2.5	5.3	100
FDZ8.2F	E*	7.79	8.61	5	30	60	0.5	0.5	5	3.2	6.2	90
FDZ9.1F	F*	8.65	9.56	5	30	60	0.5	0.5	6	3.8	7	80
FDZ10F	J*	9.50	10.50	5	30	60	0.5	0.1	7	4.5	8	80
FDZ11F	K*	10.45	11.55	5	30	60	0.5	0.1	8	5.4	9	80
FDZ12F	L*	11.40	12.60	5	30	80	0.5	0.1	9	6	10	80
FDZ13F	P*	12.35	13.65	5	37	80	0.5	0.1	10	7	11	75
FDZ15F	Q*	14.25	15.75	5	42	80	0.5	0.1	11	9.2	13	70
FDZ16F	R*	15.20	16.80	5	50	80	0.5	0.1	12	10.4	14	65
FDZ18F	T*	17.10	18.90	5	50	80	0.5	0.1	14	12.4	16	60
FDZ20F	V*	19.00	21.00	5	55	100	0.5	0.1	15.4	14.4	18	55
FDZ22F	Y*	20.90	23.10	5	55	100	0.5	0.1	16.8	15.4	20	55
FDZ24F	F	22.80	25.20	5	70	120	0.5	0.1	18.9	16.8	22	50

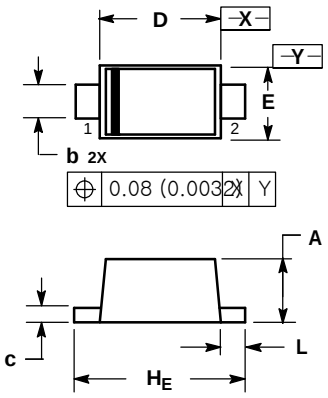
*Rotated 90°.

**Rotated 270°.

1. Zener voltage is measured with a pulse test current Iz at an ambient temperature of 25℃

PACKAGE DIMENSIONS

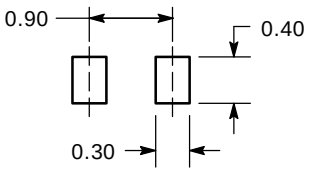
SOD−923



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.

	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