WEITRON

MM9D2V4 Series

Surface Mount Zener Diodes

Lead(Pb)-Free

SMALL SIGNAL ZENER DIODES 200m WATTS

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

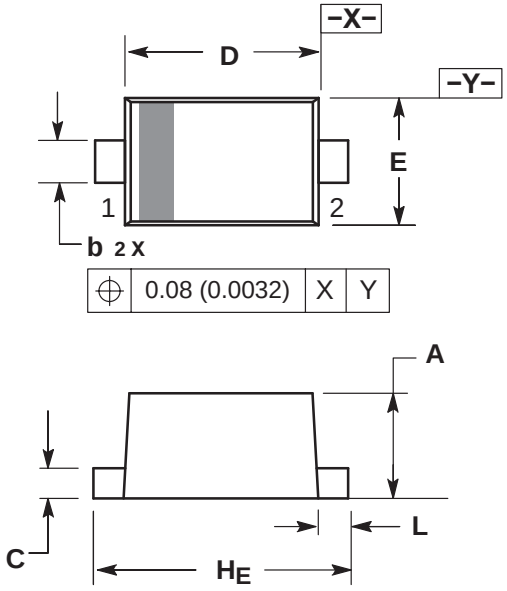
SOD-923

Mechanical Data:

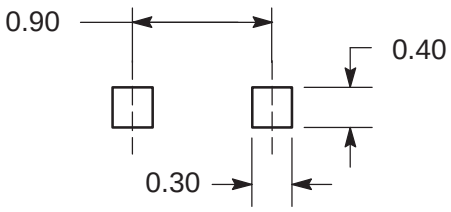
* CASE: Void-free, transfer-molded, thermosetting plastic
* Epoxy Meets UL 94 V–0
* LEAD FINISH: 100% Matte Sn (Tin)
* MOUNTING POSITION: Any
* QUALIFIED MAX REFLOW TEMPERATURE: 260°C
* Device Meets MSL 1 Requirements

SOD-923 Outline Dimensions

Unit:mm



MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.34	0.37	0.40
b	0.15	0.20	0.25
c	0.07	0.12	0.17
D	0.75	0.80	0.85
E	0.55	0.60	0.65
H_E	0.95	1.00	1.05
L	0.05	0.10	0.15



SOLDERING FOOTPRINT

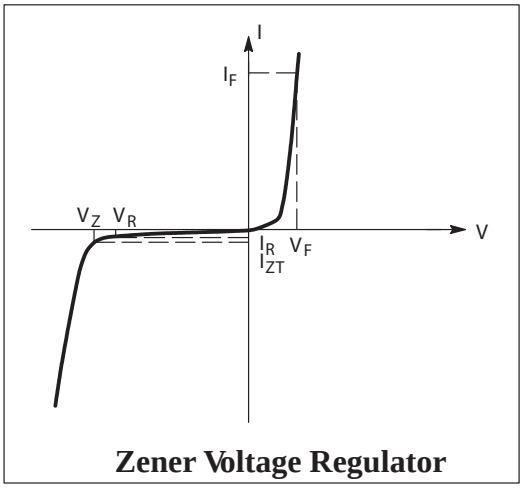
Maximum Ratings and Electrical Characteristics (TA=25 °C Unless Otherwise Noted)

Characteristics	Symbol	Value	Unit
Total Power Dissipation on FR-5 Board @T_A=25°C	PD	200	mW
Forward Voltage @ IF=10mA	VF	0.9	V
Junction and Storage Temperature Range	Tj,TSTG	-65 to+150	°C

ELECTRICAL CHARACTERISTICS

(T_A = 25 °C unless otherwise noted, V_F = 0.9 V Max. @ I_F = 10 mA)

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

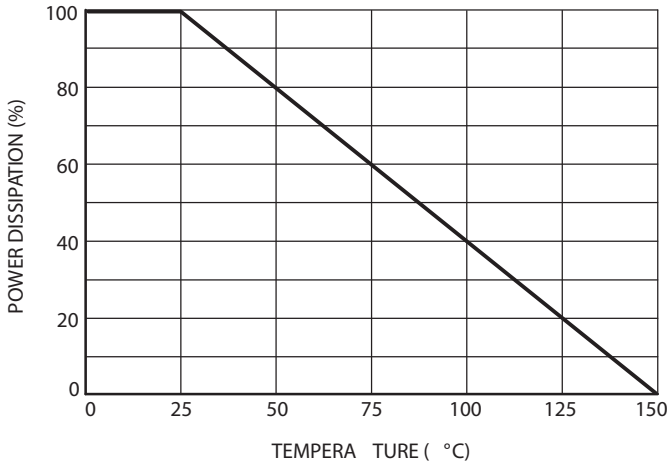


Figure 1. Steady State Power Derating

Device Marking

Item	Marking	Equivalent Circuit Diagram
MM9D2V4 Series	SOD-923 (Pb-Free)	1 o—▷—o 2 Cathode Anode

ELECTRICAL CHARACTERISTICS(T_A = 25 ℃ 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		V_Z (mV/k)		C
		V_Z (Volts)		@ I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}		I_R @ V_R		@ I_{ZT}		@ V_R =0 f=1MHz
		Min	Max	mA	Ω	Ω	mA	uA	Volts	Min	Max	pF
MM9D2V4	J	2.28	2.52	5	100	1000	1	50	1	-3.5	0	210
MM9D2V7	E**	2.57	2.84	5	100	1000	1	20	1	-3.5	0	210
MM9D3V0	T**	2.85	3.15	5	100	1000	1	10	1	-3.5	0	210
MM9D3V3	Q	3.14	3.47	5	100	1000	1	10	1	-3.5	0	210
MM9D3V6	3**	3.42	3.78	5	100	1000	1	10	1	-3.5	0	210
MM9D3V9	V**	3.71	4.10	5	100	1000	1	5	1	-3.5	-2.5	210
MM9D4V3	Y**	4.09	4.52	5	100	1000	1	5	1	-3.5	0	210
MM9D4V7	3	4.47	4.94	5	100	800	0.5	2	1	-3.5	0.2	150
MM9D5V1	4	4.85	5.36	5	80	500	0.5	2	1.5	-2.7	1.2	130
MM9D5V6	5	5.32	5.88	5	60	200	0.5	1	2.5	-2.0	2.5	115
MM9D6V2	6	5.89	6.51	5	60	100	0.5	1	3	0.4	3.7	110
MM9D6V8	A*	6.46	7.14	5	40	60	0.5	0.5	3.5	1.2	4.5	105
MM9D7V5	D*	7.13	7.88	5	30	60	0.5	0.5	4	2.5	5.3	100
MM9D8V2	E*	7.79	8.61	5	30	60	0.5	0.5	5	3.2	6.2	90
MM9D9V1	F*	8.65	9.56	5	30	60	0.5	0.5	6	3.8	7	80
MM9D10V	J*	9.50	10.50	5	30	60	0.5	0.1	7	4.5	8	80
MM9D11V	K*	10.45	11.55	5	30	60	0.5	0.1	8	5.4	9	80
MM9D12V	L*	11.40	12.60	5	30	80	0.5	0.1	9	6	10	80
MM9D13V	P*	12.35	13.65	5	37	80	0.5	0.1	10	7	11	75
MM9D15V	Q*	14.25	15.75	5	42	80	0.5	0.1	11	9.2	13	70
MM9D16V	R*	15.20	16.80	5	50	80	0.5	0.1	12	10.4	14	65
MM9D18V	T*	17.10	18.90	5	50	80	0.5	0.1	14	12.4	16	60
MM9D20V	V*	19.00	21.00	5	55	100	0.5	0.1	15.4	14.4	18	55
MM9D22V	Y*	20.90	23.10	5	55	100	0.5	0.1	16.8	15.4	20	55
MM9D24V	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 ℃.