

## SOD-323 SURFACE MOUNT SILICON ZENER DIODES

### ● Features

- Low Zener Impedance
- Power Dissipation of 200mW
- High Stability and High Reliability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C

### ● Applications

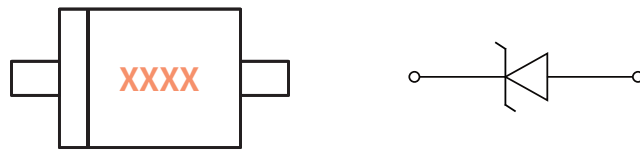
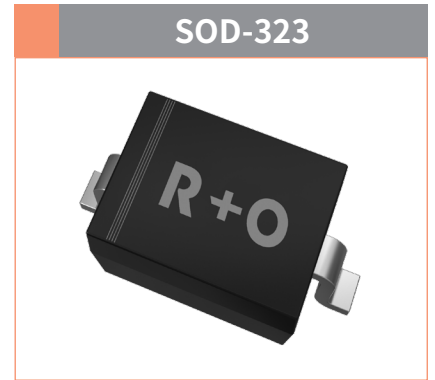
Zener diode is generally used as reference voltage sources in regulated power supplies or as protective diode in overvoltage protection circuits.

### ● Mechanical Data

- Case: SOD-323  
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant, halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Cathode line denotes the cathode end

### ● Function Diagram

**Zener Diode**  
2.4 to 39 Volts  
**Power Dissipation**  
0.2 Watts



### ● Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Power Dissipation	$P_D$	mW	200
Forward Voltage @ $I_F=10\text{mA}$	$V_F$	V	0.9
Storage Temperature	$T_{stg}$	°C	-55 ~ +150
Junction Temperature	$T_J$	°C	-55 ~ +150
Typical Thermal Resistance	$R_{\theta J-A}$	°C /W	417

### ● Electrical Parameter

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 @ $I_F$

# MMSZ5221BS THRU MMSZ5259BS

SURFACE MOUNT ZENER DIODES

## ● Electrical Characteristics (Ta=25°C Unless otherwise noted)

Type Number	Marking	Nominal Zener Voltage				Zener Impedance			Leakage Current	
		V <sub>Z</sub> (V)			I <sub>ZT</sub>	Z <sub>ZT</sub> @I <sub>ZT</sub>	Z <sub>ZK</sub> @I <sub>ZK</sub>	I <sub>ZK</sub>	I <sub>R</sub> @V <sub>R</sub>	
		Min.	Nom.	Max.	(mA)	(Ω)		(mA)	I <sub>R</sub> (μA)	V <sub>R</sub> (V)
MMSZ5221BS	C1	2.28	2.4	2.52	20	30	1200	0.25	100	1.0
MMSZ5223BS	C3	2.57	2.7	2.84	20	30	1300	0.25	75	1.0
MMSZ5225BS	C5	2.85	3.0	3.15	20	30	1600	0.25	50	1.0
MMSZ5226BS	G1	3.14	3.3	3.47	20	28	1600	0.25	25	1.0
MMSZ5227BS	G2	3.42	3.6	3.78	20	24	1700	0.25	15	1.0
MMSZ5228BS	G3	3.71	3.9	4.10	20	23	1900	0.25	10	1.0
MMSZ5229BS	G4	4.09	4.3	4.52	20	22	2000	0.25	5	1.0
MMSZ5230BS	G5	4.47	4.7	4.94	20	19	1900	0.25	5	2.0
MMSZ5231BS	E1	4.85	5.1	5.36	20	17	1600	0.25	5	2.0
MMSZ5232BS	E2	5.32	5.6	5.88	20	11	1600	0.25	5	3.0
MMSZ5233BS	E3	5.70	6.0	6.30	20	7	1600	0.25	5	3.5
MMSZ5234BS	E4	5.89	6.2	6.51	20	7	1000	0.25	5	4.0
MMSZ5235BS	E5	6.46	6.8	7.14	20	5	750	0.25	3	5.0
MMSZ5236BS	F1	7.13	7.5	7.88	20	6	500	0.25	3	6.0
MMSZ5237BS	F2	7.79	8.2	8.61	20	8	500	0.25	3	6.5
MMSZ5238BS	F3	8.27	8.7	9.14	20	8	600	0.25	3	6.5
MMSZ5239BS	F4	8.65	9.1	9.56	20	10	600	0.25	3	7.0
MMSZ5240BS	F5	9.50	10	10.50	20	17	600	0.25	3	8.0
MMSZ5241BS	H1	10.45	11	11.55	20	22	600	0.25	2.0	8.4
MMSZ5242BS	H2	11.40	12	12.60	20	30	600	0.25	1.0	9.1
MMSZ5243BS	H3	12.35	13	13.65	9.5	13	600	0.25	0.5	9.9
MMSZ5244BS	H4	13.30	14	14.70	9.0	15	600	0.25	0.1	10
MMSZ5245BS	H5	14.25	15	15.75	8.5	16	600	0.25	0.1	11
MMSZ5246BS	J1	15.20	16	16.80	7.8	17	600	0.25	0.1	12
MMSZ5248BS	J3	17.10	18	18.90	7.0	21	600	0.25	0.1	14
MMSZ5250BS	J5	19.00	20	21.00	6.2	25	600	0.25	0.1	15
MMSZ5251BS	K1	20.90	22	23.10	5.6	29	600	0.25	0.1	17
MMSZ5252BS	K2	22.80	24	25.20	5.2	33	600	0.25	0.1	18
MMSZ5253BS	K3	23.75	25	26.25	5.0	35	600	0.25	0.1	19
MMSZ5254BS	K4	25.65	27	28.35	5.0	41	600	0.25	0.1	21
MMSZ5255BS	K5	26.60	28	29.40	4.5	44	600	0.25	0.1	21
MMSZ5256BS	M1	28.50	30	31.50	4.2	49	600	0.25	0.1	23
MMSZ5257BS	M2	31.35	33	34.65	3.8	58	700	0.25	0.1	25
MMSZ5258BS	M3	34.20	36	37.80	3.4	70	700	0.25	0.1	27
MMSZ5259BS	M4	37.05	39	40.95	3.2	80	800	0.25	0.1	30

● Ratings And Characteristics Curves ( $T_a=25^\circ\text{C}$  Unless otherwise specified)

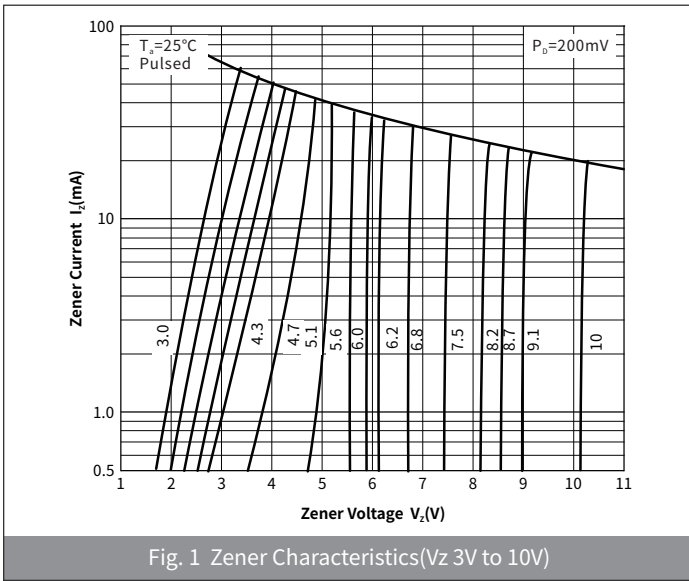


Fig. 1 Zener Characteristics( $V_z$  3V to 10V)

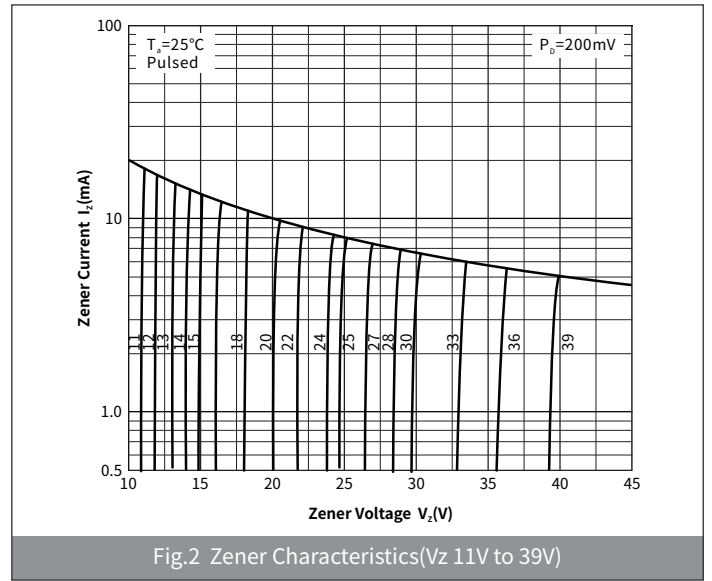


Fig.2 Zener Characteristics( $V_z$  11V to 39V)

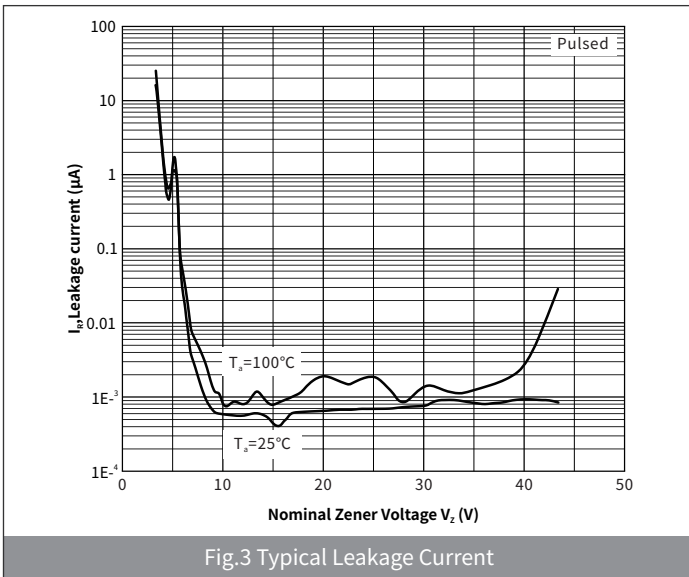


Fig.3 Typical Leakage Current

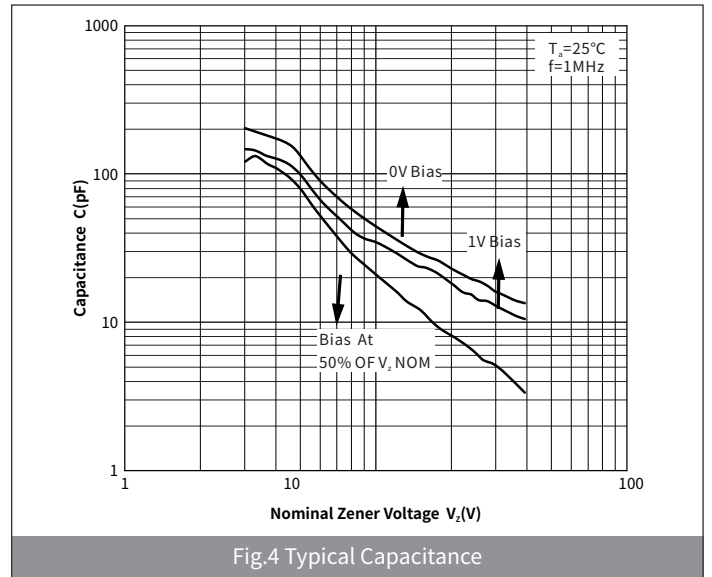


Fig.4 Typical Capacitance

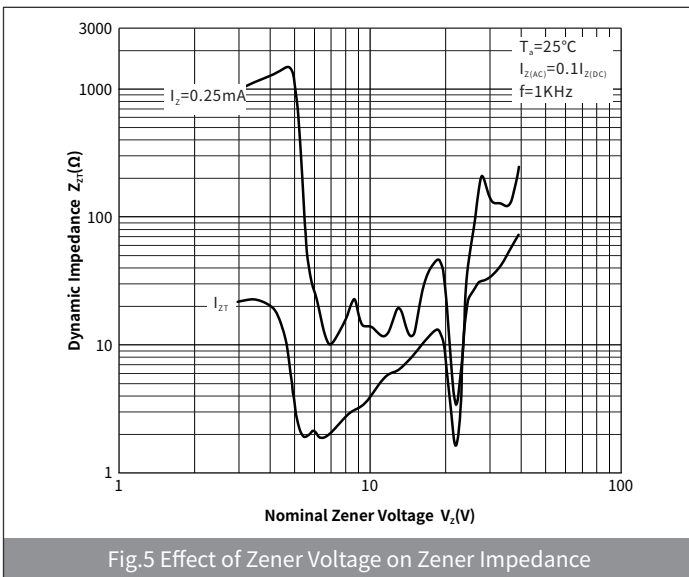


Fig.5 Effect of Zener Voltage on Zener Impedance

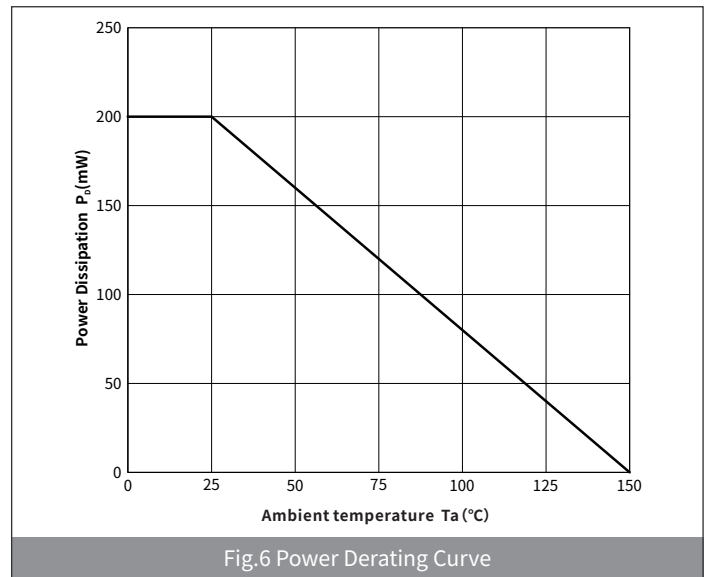


Fig.6 Power Derating Curve

# MMSZ5221BS THRU MMSZ5259BS

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## ● Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOD-323	R1	0.0048	3000	45000	180000	7"

## ● Package Outline Dimensions (SOD-323)

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.60	1.80	0.063	0.071
B	0.25	0.40	0.010	0.016
C	2.30	2.80	0.091	0.110
D	0.80	1.10	0.031	0.043
D <sub>1</sub>	0.80	0.90	0.031	0.035
E	1.20	1.40	0.047	0.055
F	0.08	0.18	0.003	0.007
L	0.475REF		0.019REF	
L <sub>1</sub>	0.25	0.40	0.010	0.016
H	-	0.14	-	0.006

## ● Suggested Pad Layout

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
X	0.65	0.75	0.026	0.030
Y	0.65	0.75	0.026	0.030
Z	2.10	2.20	0.084	0.088