

SOT-23 SURFACE MOUNT SILICON ZENER DIODES

Features

- Low Zener Impedance
- Power Dissipation of 300mW
- 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.

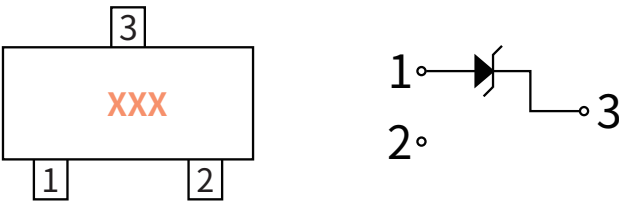
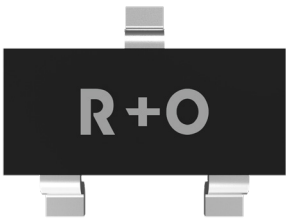
Mechanical Data

- Case: SOT-23
- 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
0.3 Watts

SOT-23



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

PARAMETER	SYMBOL	UNIT	VALUE
Power Dissipation	P_D	mW	300
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	$R_{\theta JA}$	°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

MMBZ5221B THRU MMBZ5259B

SURFACE MOUNT ZENER DIODES

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

Type Number	Type Code	Nominal Zener Voltage				Maximum Zener Impedance		Maximum Leakage Current	
		V _Z			I _{ZT}	Z _{VT} @I _{ZT}	Z _{ZK} @ I _{ZK} =0.25mA	I _R @V _R	
		Min.(V)	Nom.(V)	Max.(V)	(mA)	Z _{VT} (Ω)	Z _{ZK} (Ω)	I _R (μA)	V _R (V)
MMBZ5221B	KC1	2.28	2.4	2.52	20	30	1200	100	1.0
MMBZ5222B	KC2	2.38	2.5	2.63	20	30	1250	100	1.0
MMBZ5223B	KC3	2.57	2.7	2.84	20	30	1300	75	1.0
MMBZ5225B	KC5	2.85	3.0	3.15	20	30	1600	50	1.0
MMBZ5226B	KG1	3.14	3.3	3.47	20	28	1600	25	1.0
MMBZ5227B	KG2	3.42	3.6	3.78	20	24	1700	15	1.0
MMBZ5228B	KG3	3.71	3.9	4.10	20	23	1900	10	1.0
MMBZ5229B	KG4	4.09	4.3	4.52	20	22	2000	5.0	1.0
MMBZ5230B	KG5	4.47	4.7	4.94	20	19	1900	5.0	2.0
MMBZ5231B	KE1	4.85	5.1	5.36	20	17	1600	5.0	2.0
MMBZ5232B	KE2	5.32	5.6	5.88	20	11	1600	5.0	3.0
MMBZ5233B	KE3	5.70	6.0	6.30	20	7	1600	5.0	3.5
MMBZ5234B	KE4	5.89	6.2	6.51	20	7	1000	5.0	4.0
MMBZ5235B	KE5	6.46	6.8	7.14	20	5	750	3.0	5.0
MMBZ5236B	KF1	7.13	7.5	7.88	20	6	500	3.0	6.0
MMBZ5237B	KF2	7.79	8.2	8.61	20	8	500	3.0	6.5
MMBZ5238B	KF3	8.27	8.7	9.14	20	8	600	3.0	6.5
MMBZ5239B	KF4	8.65	9.1	9.56	20	10	600	3.0	7.0
MMBZ5240B	KF5	9.50	10	10.50	20	17	600	3.0	8.0
MMBZ5241B	KH1	10.45	11	11.55	20	22	600	2.0	8.4
MMBZ5242B	KH2	11.40	12	12.60	20	30	600	1.0	9.1
MMBZ5243B	KH3	12.35	13	13.65	9.5	13	600	0.5	9.9
MMBZ5244B	KH4	13.30	14	14.70	9.0	15	600	0.1	10
MMBZ5245B	KH5	14.25	15	15.75	8.5	16	600	0.1	11
MMBZ5246B	KJ1	15.20	16	16.80	7.8	17	600	0.1	12
MMBZ5247B	KJ2	16.15	17	17.85	7.4	19	600	0.1	13
MMBZ5248B	KJ3	17.10	18	18.90	7.0	21	600	0.1	14
MMBZ5249B	KJ4	18.05	19	19.95	6.6	23	600	0.1	14
MMBZ5250B	KJ5	19.00	20	21.00	6.2	25	600	0.1	15
MMBZ5251B	KK1	20.90	22	23.10	5.6	29	600	0.1	17
MMBZ5252B	KK2	22.80	24	25.20	5.2	33	600	0.1	18
MMBZ5253B	KK3	23.75	25	26.25	5.0	35	600	0.1	19
MMBZ5254B	KK4	25.65	27	28.35	5.0	41	600	0.1	21

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

Type Number	Type Code	Nominal Zener Voltage				Maximum Zener Impedance		Maximum Leakage Current	
		V _Z			I _{ZT}	Z _{VT} @I _{ZT}	Z _{ZK} @I _{ZK} =0.25mA	I _R @V _R	
		Min.(V)	Nom.(V)	Max.(V)		Z _{VT} (Ω)	Z _{ZK} (Ω)	I _R (μA)	V _R (V)
MMBZ5255B	KK5	26.60	28	29.40	4.5	44	600	0.1	21
MMBZ5256B	KM1	28.50	30	31.50	4.2	49	600	0.1	23
MMBZ5257B	KM2	31.35	33	34.65	3.8	58	700	0.1	25
MMBZ5258B	KM3	34.20	36	37.80	3.4	70	700	0.1	27
MMBZ5259B	KM4	37.05	39	40.95	3.2	80	800	0.1	30

Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

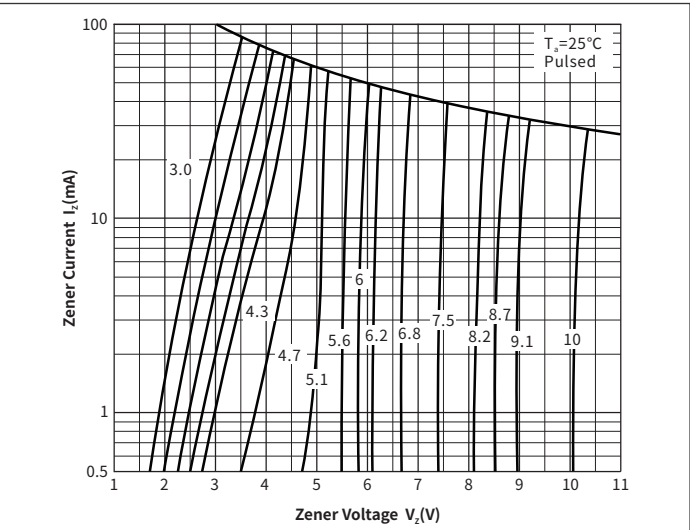


Fig. 1 Zener Characteristics(V_Z Up to 10V)

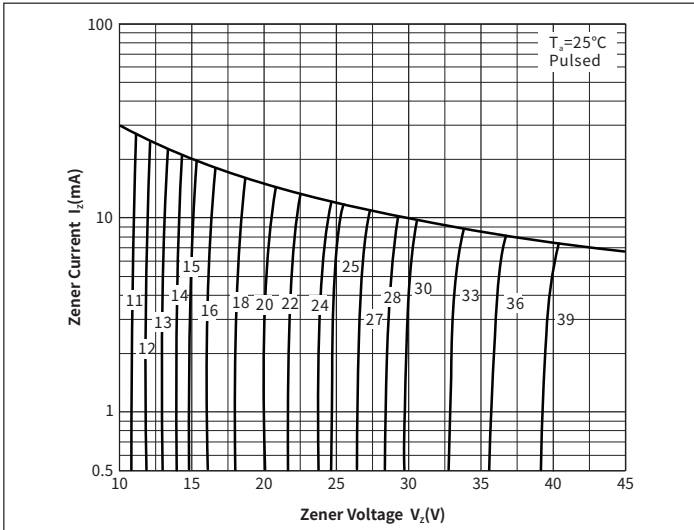


Fig. 1 Zener Characteristics(V_Z 11 to 10V)

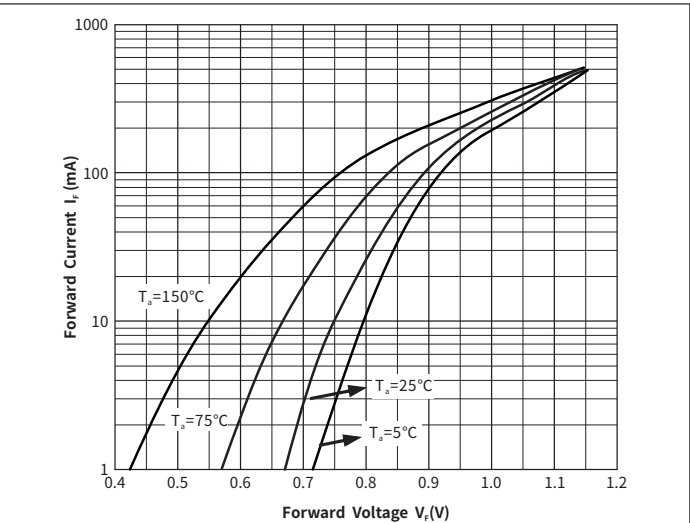


Fig.3 Typical Forward Voltage

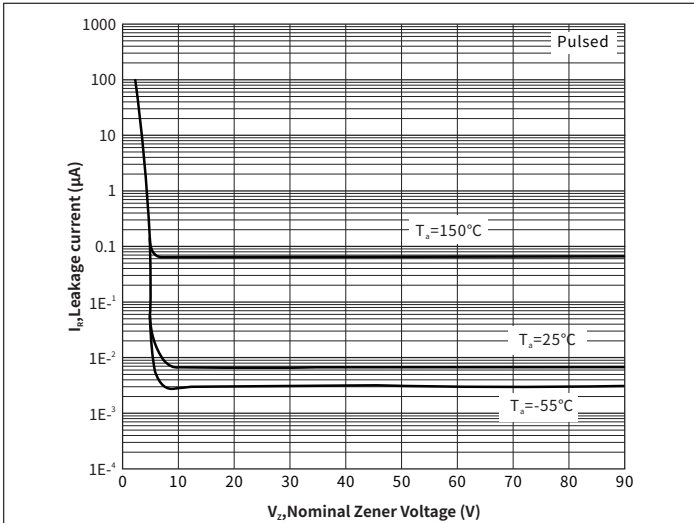


Fig.4 Typical Leakage Current

● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

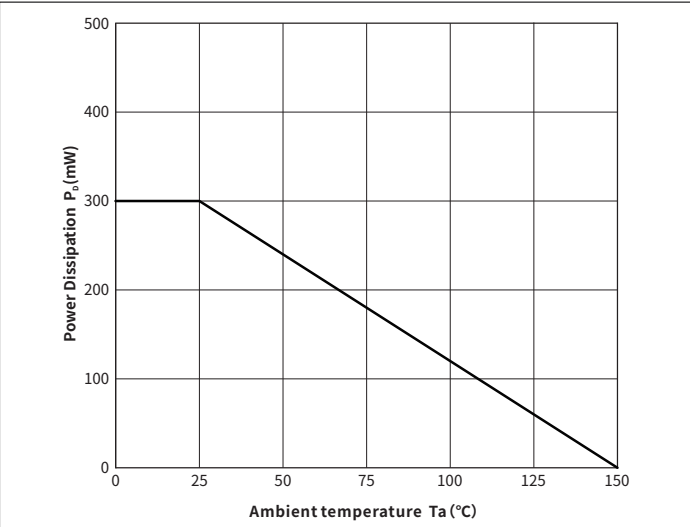


Fig. 5 Power Temperature Derating Curve

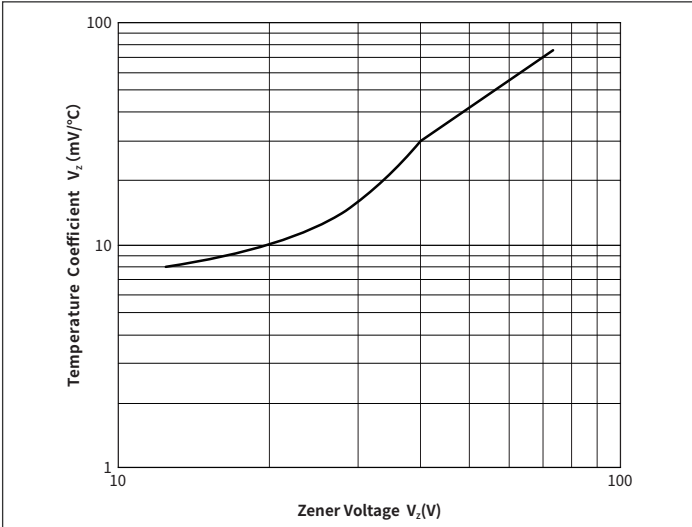


Fig.6 Temperature Coefficients v.s. Zener Voltage

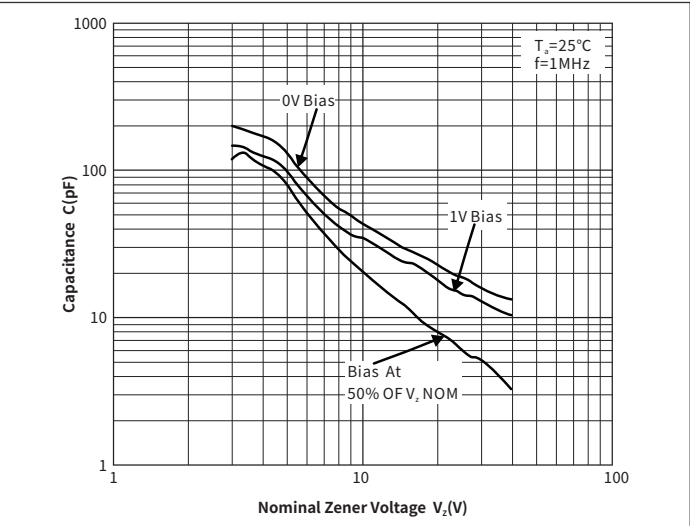


Fig. 7 Typical Capacitance

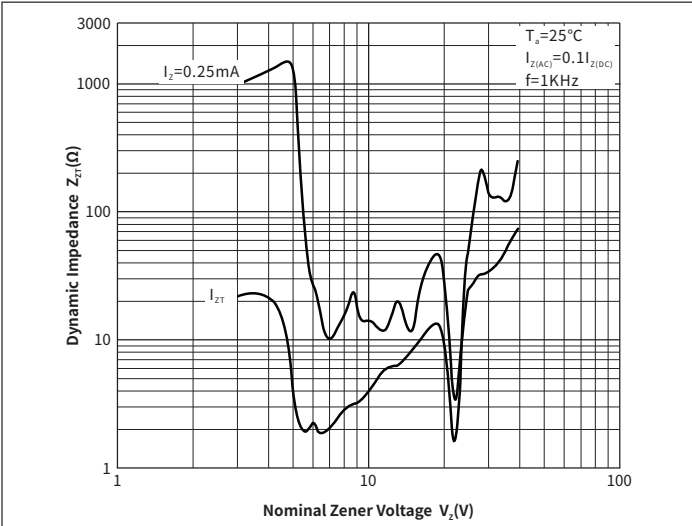


Fig.8 Effect of Zener Voltage on Zener Impedance

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SURFACE MOUNT ZENER DIODES

Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-23	R1	0.008	3000	45000	180000	7"

Package Outline Dimensions (SOT-23)

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	-	0.10	-	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.550REF		0.022REF	
L1	0.30	0.50	0.012	0.020
θ	-	8°	-	8°

Suggested Pad Layout

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	0.75	0.85	0.030	0.033
K	0.85	0.95	0.033	0.037
M	1.95	2.05	0.077	0.081
N	1.85	1.95	0.073	0.077