500mW, 5% Tolerance SMD Zener Diode

FEATURES

- Wide zener voltage range selection: 2.4V to 51V
- V_Z tolerance selection of ± 5%
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

APPLICATIONS

- Low voltage stabilizers or voltage references
- Adapters
- On-board DC/DC converter

MECHANICAL DATA

- Case: SOD-123F
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight: 8.85mg (approximately)

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
V_Z	2.4 - 51	V
P_D	500	mW
V_F at I_F = 10mA	0.9	V
$T_{J\,MAX}$	150	°C
Package	SOD-123F	
Configuration	Single die	



SOD-123F



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Forward voltage @ I_F = 10mA	V_F	0.9	V
Power dissipation	P_D	500	mW
Junction temperature range	T_J	-65 to +150	°C
Storage temperature range	T_{STG}	-65 to +150	°C

THERMAL PERFORMANCE			
PARAMETER	**SYMBOL**	**TYP**	**UNIT**
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	330	°C/W

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

PART NUMBER	MARKING CODE	ZENER VOLTAGE			TEST CURRENT	REGULAR IMPEDANCE		TEST CURRENT	LEAKAGE CURRENT	
		V_Z @ I_{ZT}			I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZK}	I_R @ V_R	
		V			mA	Ω	Ω	mA	μA	V
		Min	Nom	Max		Max	Max		Max	
MMSZ5221B	Z2V4	2.28	2.4	2.52	20	30	1200	0.25	100	1
MMSZ5225B	Z3V0	2.85	3.0	3.15	20	29	1600	0.25	50	1
MMSZ5226B	Z3V3	3.14	3.3	3.47	20	28	1600	0.25	25	1
MMSZ5227B	Z3V6	3.42	3.6	3.78	20	24	1700	0.25	15	1
MMSZ5228B	Z3V9	3.71	3.9	4.10	20	23	1900	0.25	10	1
MMSZ5229B	Z4V3	4.09	4.3	4.52	20	22	2000	0.25	5	1
MMSZ5230B	Z4V7	4.47	4.7	4.94	20	19	1900	0.25	5	2
MMSZ5231B	Z5V1	4.85	5.1	5.36	20	17	1600	0.25	5	2
MMSZ5232B	Z5V6	5.32	5.6	5.88	20	11	1600	0.25	5	3
MMSZ5234B	Z6V2	5.89	6.2	6.51	20	7	1000	0.25	5	4
MMSZ5235B	Z6V8	6.46	6.8	7.14	20	5	750	0.25	3	5
MMSZ5236B	Z7V5	7.13	7.5	7.88	20	6	500	0.25	3	6
MMSZ5237B	Z8V2	7.79	8.2	8.61	20	8	500	0.25	3	6.5
MMSZ5239B	Z9V1	8.65	9.1	9.56	20	10	600	0.25	3	7
MMSZ5240B	Z10V	9.50	10	10.50	20	17	600	0.25	3	8
MMSZ5241B	Z11V	10.45	11	11.55	20	22	600	0.25	2	8.4
MMSZ5242B	Z12V	11.40	12	12.60	20	30	600	0.25	1	9.1
MMSZ5243B	Z13V	12.35	13	13.65	9.5	13	600	0.25	0.5	9.9
MMSZ5245B	Z15V	14.25	15	15.75	8.5	16	600	0.25	0.1	11
MMSZ5246B	Z16V	15.20	16	16.80	7.8	17	600	0.25	0.1	12
MMSZ5248B	Z18V	17.10	18	18.90	7.0	21	600	0.25	0.1	14
MMSZ5250B	Z20V	19.00	20	21.00	6.2	25	600	0.25	0.1	15
MMSZ5251B	Z22V	20.90	22	23.10	5.6	29	600	0.25	0.1	17
MMSZ5252B	Z24V	22.80	24	25.20	5.2	33	600	0.25	0.1	18
MMSZ5254B	Z27V	25.65	27	28.35	4.6	41	600	0.25	0.1	21
MMSZ5256B	Z30V	28.50	30	31.50	4.2	49	600	0.25	0.1	23
MMSZ5257B	Z33V	31.35	33	34.65	3.8	58	700	0.25	0.1	25
MMSZ5258B	Z36V	34.20	36	37.80	3.4	70	700	0.25	0.1	27
MMSZ5259B	Z39V	37.05	39	40.95	3.2	80	800	0.25	0.1	30
MMSZ5260B	Z43V	40.85	43	45.15	3.0	93	900	0.25	0.1	33
MMSZ5261B	Z47V	44.65	47	49.35	2.7	105	1000	0.25	0.1	36
MMSZ5262B	Z51V	48.45	51	53.55	2.5	125	1100	0.25	0.1	39

Notes:

1. The zener voltage (V_Z) is tested under pulse condition of 30ms.
2. The device numbers listed have a standard tolerance on the normal zener voltage of ±5%.
3. For detailed information on price, availability and delivery of normal zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest Taiwan Semiconductor representative.
4. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having a rms value equal to 10% of the DC zener current(I_{ZT} or I_{ZK}) is superimposed to I_{ZT} or I_{ZK}.

ORDERING INFORMATION		
ORDERING CODE[1][2]	**PACKAGE**	**PACKING**
MMSZ52xB RH	SOD-123F	3K / 7" Reel
MMSZ52xB RHG	SOD-123F	3K / 7" Reel

Notes:

1. "x" defines voltage from 2.4V (MMSZ5221B) to 51V (MMSZ5262B)
2. "G" means green compound (halogen-free)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Typical Forward Voltage

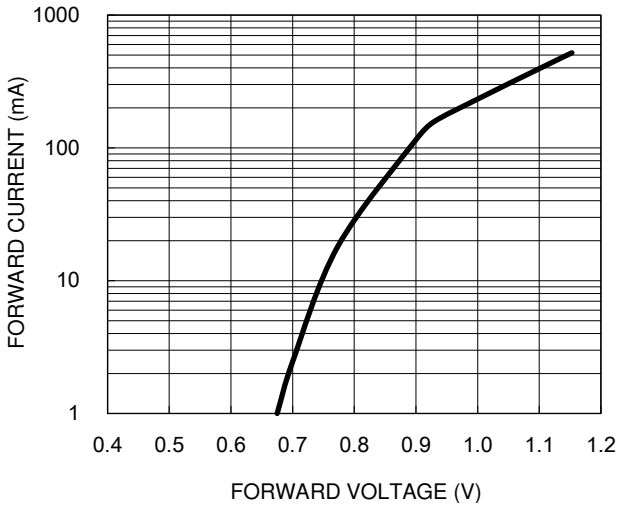


Fig.2 Zener Breakdown Characteristics

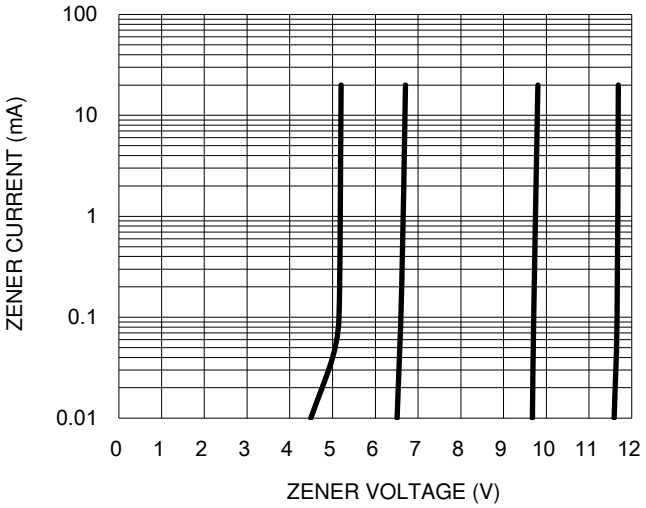


Fig.3 Zener Breakdown Characteristics

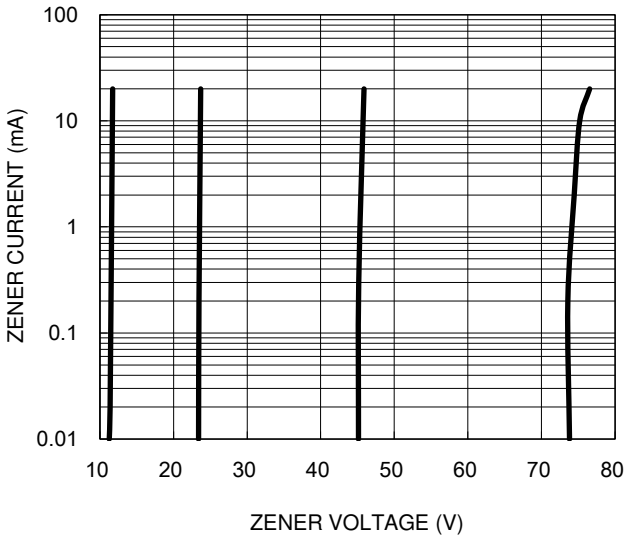
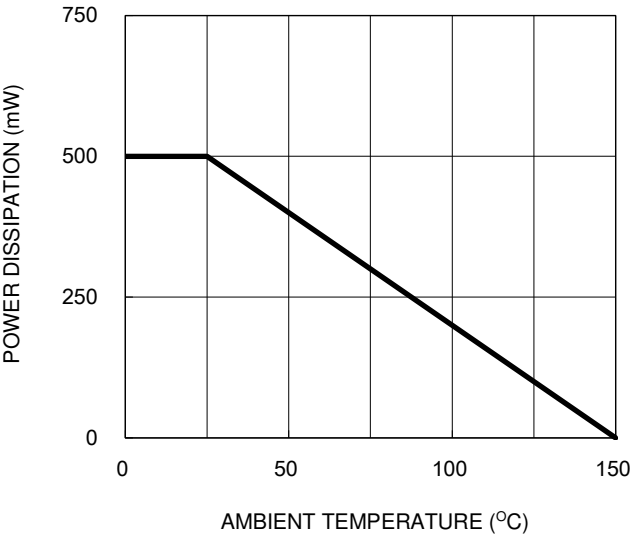


Fig.4 Power Dissipation Curve



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.5 Typical Capacitance

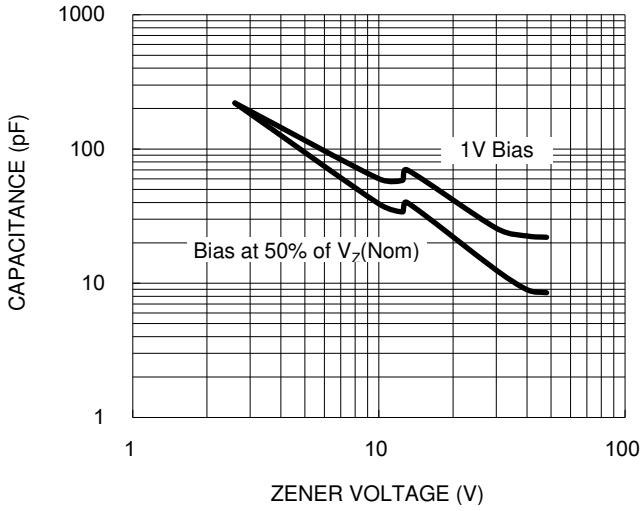
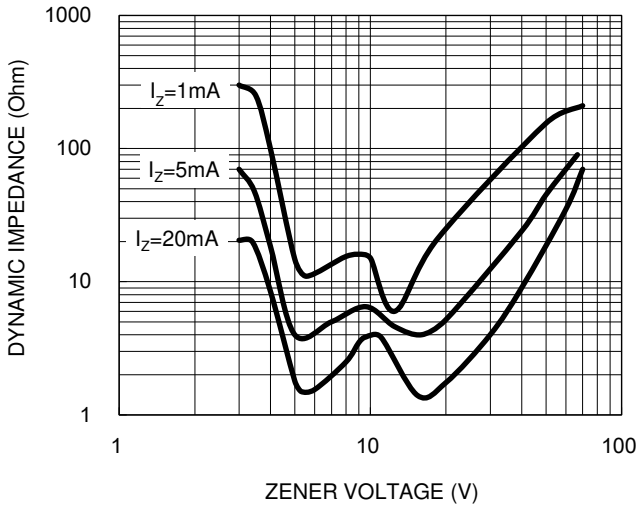
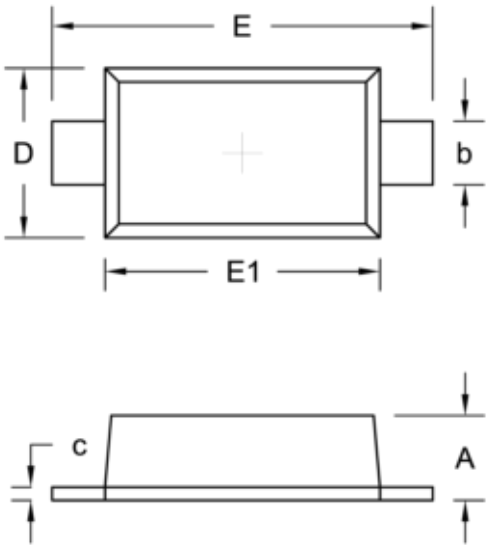


Fig.6 Effect of Zener Voltage on Impedance



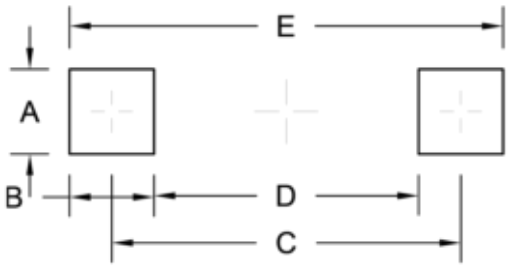
PACKAGE OUTLINE DIMENSION

SOD-123F



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.80	1.15	0.031	0.045
b	0.50	0.70	0.020	0.028
c	0.05	0.20	0.002	0.008
D	1.50	1.70	0.059	0.067
E	3.30	3.90	0.130	0.154
E1	2.50	2.70	0.098	0.106

SUGGEST PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	0.80	0.031
B	0.80	0.031
C	3.30	0.130
D	2.50	0.098
E	4.10	0.161

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