

500mW 5% Zener Diodes

FEATURES

- Wide zener voltage range selection: 2.4V to 51V
- VZ Tolerance Selection of $\pm 5\%$
- Surface device type mountin
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Constant Voltage control

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
V_Z	2.4-51	V
Test current I_{ZT}	20	mA
P_{tot}	500	mW
T_J Max.	150	$^{\circ}\text{C}$
Package	SOD-123F	
Configuration	Single dice	

MECHANICAL DATA

- Case: SOD-123F
- Molding compound: UL flammability classification rating 94V-0
- Moisture sensitivity level: level 1, per J-STD-020
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight: 8.85 mg (approximately)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	PART NUMBER	UNIT
Total power dissipation	P_{tot}	500	mW
Junction temperature range	T_J	-65 ~ 150	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-65 ~ 150	$^{\circ}\text{C}$

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-ambient thermal resistance	$R_{\theta JA}$	330	$^{\circ}\text{C/W}$

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ 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 (VZ) is tested under pulse condition of 1ms
2. The device numbers listed have a standard tolerance on the nominal zener voltage of $\pm 5\%$
3. For detailed information on price, availability and delivery of nominal 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 an RMS value equal to 10% of the dc zener current (IZT or IZK) is superimposed to IZT or IZK

ORDERING INFORMATION

PART NO.	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
MMSZ52xxB (Note1&2)	RH	G	SOD-123F	3K / 7" Reel

Notes:

1. "xxx" defines voltage from 2.4V (MMSZ5221B) to 51V (MMSZ5262B)
2. Whole series with green compound

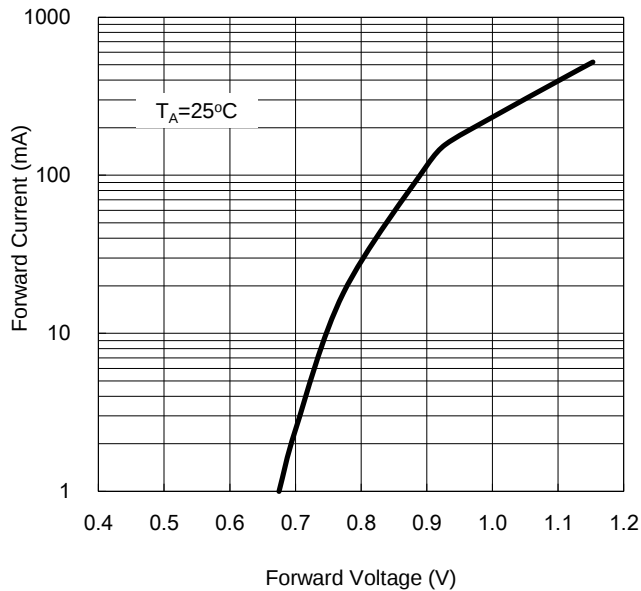
EXAMPLE

EXAMPLE P/N	PART NO.	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
MMSZ5221B RHG	MMSZ5221B	RH	G	Green compound

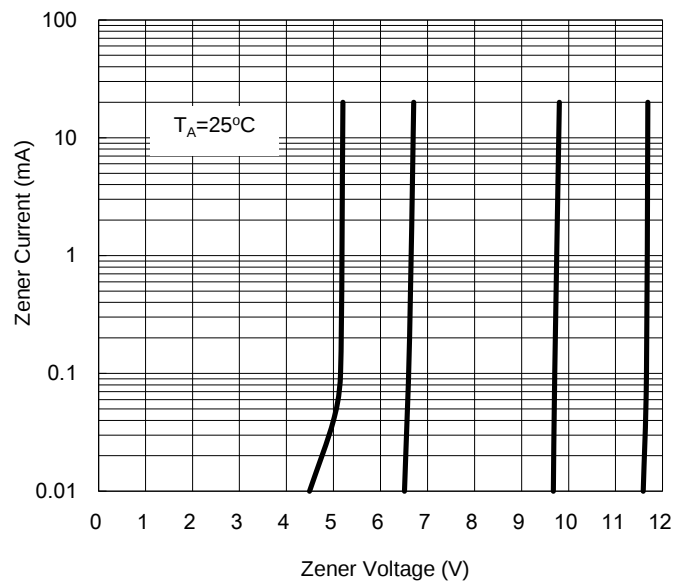
CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

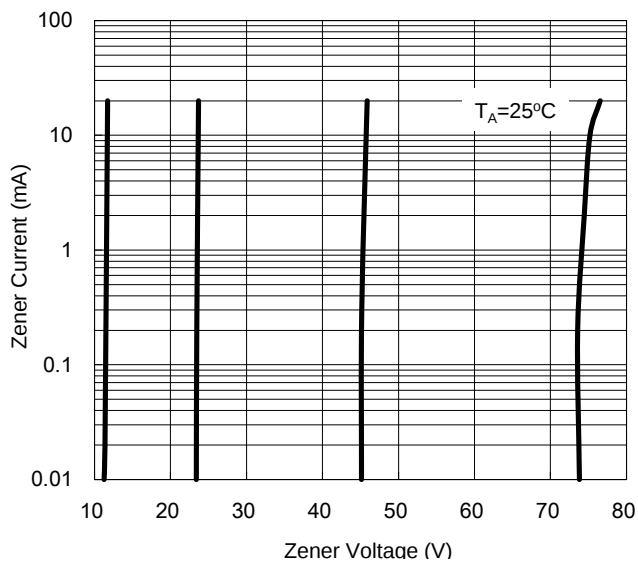
Typical Forward Voltage



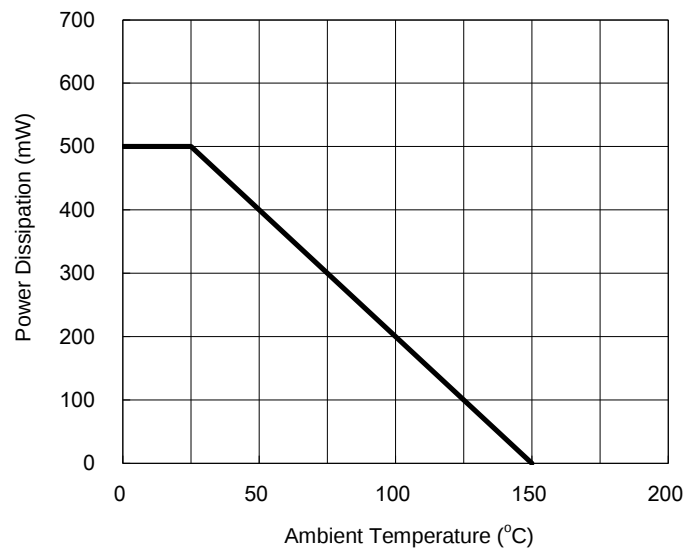
Zener Breakdown Characteristics



Zener Breakdown Characteristics



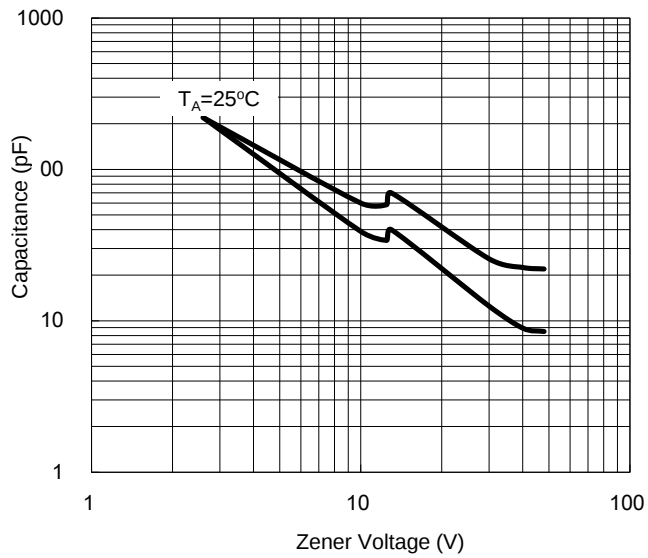
Admissible Dissipation VS. Ambient Temperature



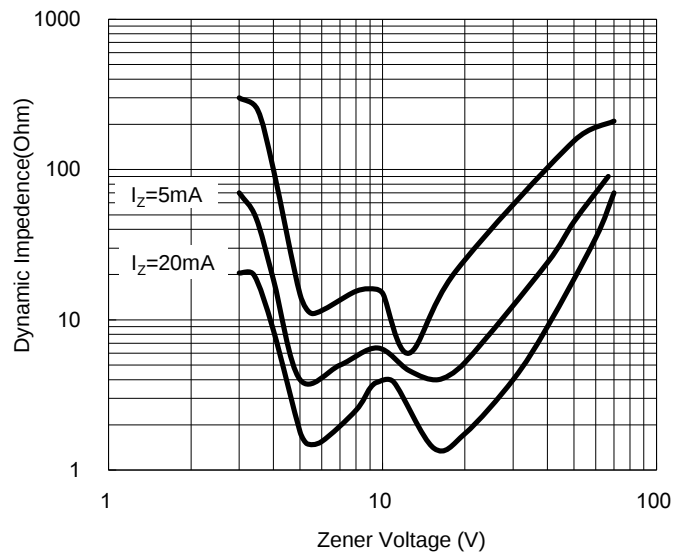
CHARACTERISTICS CURVES

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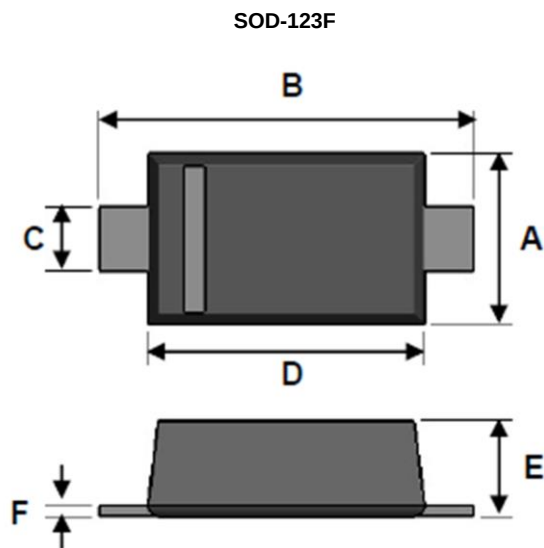
Typical Capacitance



Effect of Zener Voltage on Impedance

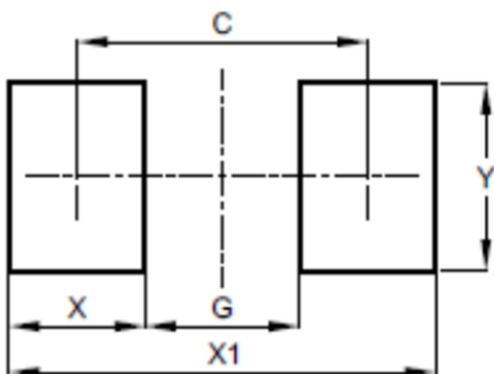


PACKAGE OUTLINE DIMENSION



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

SUGGEST PAD LAYOUT



DIM.	Unit(mm)	Unit(inch)
	Typ.	Typ.
C	2.86	0.113
G	1.52	0.060
X	1.34	0.053
X1	4.20	0.165
Y	1.80	0.071

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