

Vishay Semiconductors

Small Signal Zener Diodes



DESIGN SUPPORT TOOLS

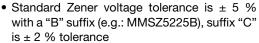
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PRIMARY CHARACTERISTICS					
PARAMETER	VALUE	UNIT			
V _Z range nom.	3.3 to 75	V			
Test current I _{ZT}	1.7 to 20	mA			
V_Z specification	Thermal equilibrium				
Circuit configuration	Single				

FEATURES

• Silicon planar Zener diodes





AUTOMOTIVE GRADE

- AEC-Q101 qualified available
- ESD capability according to AEC-Q101: Human body model > 8 kV Machine model > 800 V



- Base P/N-E3 RoHS-compliant, commercial grade
- Base P/N-HE3 RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

ORDERING INFORMATION						
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY			
MMSZ5225 to MMSZ5267	MMSZ5225B-E3-08 to MMSZ5267B-E3-08		15 000/box			
	MMSZ5225C-E3-08 to MMSZ5267C-E3-08	3000 (8 mm tape on 7" reel)				
	MMSZ5225B-HE3-08 to MMSZ5267B-HE3-08	3000 (8 mm tape on 7 Teel)				
	MMSZ5225C-HE3-08 to MMSZ5267C-HE3-08					
	MMSZ5225B-E3-18 to MMSZ5267B-E3-18					
	MMSZ5225C-E3-18 to MMSZ5267C-E3-18	10 000 (8 mm tape on 13" reel)	10 000/box			
	MMSZ5225B-HE3-18 to MMSZ5267B-HE3-18	10 000 (6 min tape on 15 reel)	10 000/B0X			
	MMSZ5225C-HE3-18 to MMSZ5267C-HE3-18					

PACKAGE						
PACKAGE NAME	CKAGE NAME WEIGHT MOLDING COMPOUNI FLAMMABILITY RATIN		MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS		
SOD-123	10.3 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals		

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Power dissipation	T_L = 75 °C, on FR - 4 or FR - 5 board with minimum recommended solder pad layout	P _{tot}	500	mW	
Zener current	See table "Electrical Characteristics"				
Thermal resistance junction to ambient air	On FR - 4 or FR - 5 board with minimum recommended solder pad layout	R _{thJA}	340	K/W	
Junction temperature		Tj	150		
Storage temperature range		T _{stg}	-65 to +150	°C	
Operating temperature range		T _{op}	-55 to +150		



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ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)									
MADIZIN		ZENER VOLTAGE TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE (2)		TEMPERATURE COEFFICIENT	
PART NUMBER	MARKING CODE	V _Z at I _{ZT1}	I _{ZT1}	I _{ZT2}	I _R a	t V _R	Z _Z at I _{ZT1}	Z _{ZK} at I _{ZT2}	ανΖ
		V	m	Α	μA	V		Ω	%/°C
		NOM.			MAX.		MAX.	MAX.	TYP.
MMSZ5225	C5	3	20	0.25	50	1	30	1600	-0.075
MMSZ5226	D1	3.3	20	0.25	25	1	28	1600	-0.07
MMSZ5227	D2	3.6	20	0.25	15	1	24	1700	-0.065
MMSZ5228	D3	3.9	20	0.25	10	1	23	1900	-0.06
MMSZ5229	D4	4.3	20	0.25	5	1	22	2000	-0.055
MMSZ5230	D5	4.7	20	0.25	5	2	19	1900	± 0.030
MMSZ5231	E1	5.1	20	0.25	5	2	17	1600	± 0.030
MMSZ5232	E2	5.6	20	0.25	5	3	11	1600	0.038
MMSZ5233	E3	6	20	0.25	5	3.5	7	1600	0.038
MMSZ5234	E4	6.2	20	0.25	5	4	7	1000	0.045
MMSZ5235	E5	6.8	20	0.25	3	5	5	750	0.05
MMSZ5236	F1	7.5	20	0.25	3	6	6	500	0.058
MMSZ5237	F2	8.2	20	0.25	3	6.5	8	500	0.062
MMSZ5238	F3	8.7	20	0.25	3	6.5	8	600	0.065
MMSZ5239	F4	9.1	20	0.25	3	7	10	600	0.068
MMSZ5240	F5	10	20	0.25	3	8	17	600	0.075
MMSZ5241	H1	11	20	0.25	2	8.4	22	600	0.076
MMSZ5242	H2	12	20	0.25	1	9.1	30	600	0.077
MMSZ5243	Н3	13	9.5	0.25	0.5	9.9	13	600	0.079
MMSZ5244	H4	14	9	0.25	0.1	10	15	600	0.082
MMSZ5245	H5	15	8.5	0.25	0.1	11	16	600	0.082
MMSZ5246	J1	16	7.8	0.25	0.1	12	17	600	0.083
MMSZ5247	J2	17	7.4	0.25	0.1	13	19	600	0.084
MMSZ5248	J3	18	7	0.25	0.1	14	21	600	0.085
MMSZ5249	J4	19	6.6	0.25	0.1	14	23	600	0.086
MMSZ5250	J5	20	6.2	0.25	0.1	15	25	600	0.086
MMSZ5251	K1	22	5.6	0.25	0.1	17	29	600	0.087
MMSZ5252	K2	24	5.2	0.25	0.1	18	33	600	0.087
MMSZ5253	K3	25	5	0.25	0.1	19	35	600	0.089
MMSZ5254	K4	27	4.6	0.25	0.1	21	41	600	0.09
MMSZ5255	K5	28	4.5	0.25	0.1	21	44	600	0.091
MMSZ5256	M1	30	4.2	0.25	0.1	23	49	600	0.091
MMSZ5257	M2	33	3.8	0.25	0.1	25	58	700	0.092
MMSZ5258	M3	36	3.4	0.25	0.1	27	70	700	0.093
MMSZ5259	M4	39	3.2	0.25	0.1	30	80	800	0.094
MMSZ5260	M5	43	3	0.25	0.1	33	93	900	0.095
MMSZ5261	N1	47	2.7	0.25	0.1	36	105	1000	0.095
MMSZ5262	N2	51	2.5	0.25	0.1	39	125	1100	0.096
MMSZ5263	N3	56	2.2	0.25	0.1	43	150	1300	0.096
MMSZ5264	N4	60	2.1	0.25	0.1	46	170	1400	0.097
MMSZ5265	N5	62	2	0.25	0.1	47	185	1400	0.097
MMSZ5266	P1	68	1.8	0.25	0.1	52	230	1600	0.097
MMSZ5267	P2	75	1.7	0.25	0.1	56	270	1700	0.098

Notes

[•] Maximum $V_F = 0.9 V$, at $I_F = 10 mA$

⁽¹⁾ Measured with device junction in thermal equilibrium

The Zener Impedance is derived from the 1 kHz AC voltage which results when an AC current having an RMS value equal to 10 % of the Zener current (I_{ZT1} or I_{ZT2}) is superimposed on I_{ZT1} or I_{ZT2}. Zener Impedance is measured at two points to insure a sharp knee on the breakdown curve and to eliminate unstable units

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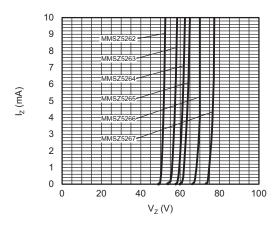


Fig. 1 - Breakdown Characteristics

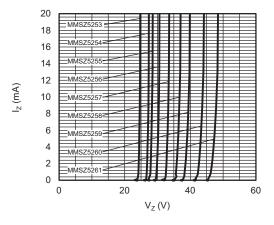


Fig. 2 - Breakdown Characteristics

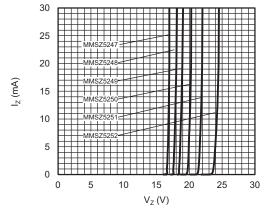


Fig. 3 - Breakdown Characteristics

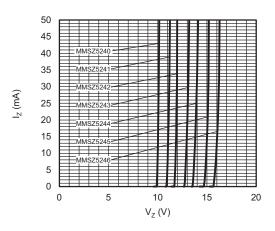


Fig. 4 - Breakdown Characteristics

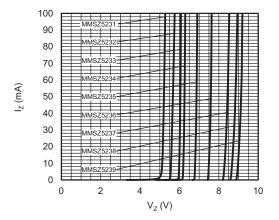


Fig. 5 - Breakdown Characteristics

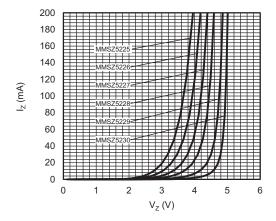
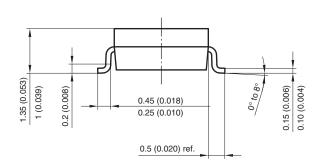
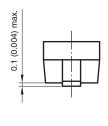


Fig. 6 - Breakdown Characteristics

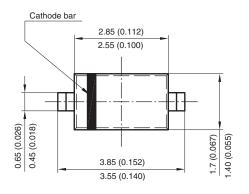
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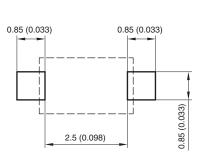
PACKAGE DIMENSIONS in millimeters (inches): SOD-123





Mounting Pad Layout





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