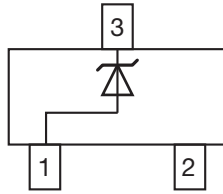




## Small Signal Zener Diodes



### FEATURES

- Silicon planar power Zener diodes
- Standard Zener voltage tolerance is  $\pm 5\%$  with a "B" suffix (e.g.: MMBZ5225B), suffix "C" is  $\pm 2\%$  tolerance.
- High temperature soldering guaranteed: 260 °C/4 x 10 s at terminals
- 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 [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

AUTOMOTIVE GRADE Available



RoHS COMPLIANT

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V <sub>Z</sub> range nom.	3 to 75	V
Test current I <sub>ZT</sub>	1.7 to 20	mA
V <sub>Z</sub> specification	Thermal equilibrium	
Int. construction	Single	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
MMBZ5225 to MMBZ5267	MMBZ5225B-E3-08 to MMBZ5267B-E3-08	3000 (8 mm tape on 7" reel)	15 000/box
	MMBZ5225C-E3-08 to MMBZ5267C-E3-08		
	MMBZ5225B-HE3-08 to MMBZ5267B-HE3-08		
	MMBZ5225C-HE3-08 to MMBZ5267C-HE3-08		
	MMBZ5225B-E3-18 to MMBZ5267B-E3-18	10 000 (8 mm tape on 13" reel)	10 000/box
	MMBZ5225C-E3-18 to MMBZ5267C-E3-18		
	MMBZ5225B-HE3-18 to MMBZ5267B-HE3-18		
	MMBZ5225C-HE3-18 to MMBZ5267C-HE3-18		

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SOT-23	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	On FR - 5 board using recommended solder pad layout	P <sub>tot</sub>	225	mW
	On alumina substrate	P <sub>tot</sub>	300	mW
Zener current	See table "Electrical Characteristics"			
Thermal resistance, junction to ambient air	On FR - 5 board using recommended solder pad layout	R <sub>thJA</sub>	556	K/W
Junction temperature		T <sub>j</sub>	150	°C
Storage temperature range		T <sub>stg</sub>	-65 to +150	°C
Operating temperature range		T <sub>op</sub>	-55 to +150	°C



ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)									
PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE <sup>(1)</sup>	TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE <sup>(2)</sup>		TEMPERATURE COEFFICIENT
		$V_Z$ at $I_{ZT1}$	$I_{ZT1}$	$I_{ZT2}$	$I_R$ at $V_R$		$Z_Z$ at $I_{ZT1}$	$Z_{ZK}$ at $I_{ZT2}$	$\alpha_{VZ}$
		V	mA		$\mu\text{A}$	V	$\Omega$		%/ $^{\circ}\text{C}$
		NOM.			MAX.		MAX.	MAX.	TYP.
MMBZ5225	18E	3	20	0.25	50	1	30	1600	-0.075
MMBZ5226	8A	3.3	20	0.25	25	1	28	1600	-0.07
MMBZ5227	8B	3.6	20	0.25	15	1	24	1700	-0.065
MMBZ5228	8C	3.9	20	0.25	10	1	23	1900	-0.06
MMBZ5229	8D	4.3	20	0.25	5	1	22	2000	-0.055
MMBZ5230	8E	4.7	20	0.25	5	2	19	1900	$\pm 0.030$
MMBZ5231	8F	5.1	20	0.25	5	2	17	1600	$\pm 0.030$
MMBZ5232	8G	5.6	20	0.25	5	3	11	1600	0.038
MMBZ5233	8H	6	20	0.25	5	3.5	7	1600	0.038
MMBZ5234	8J	6.2	20	0.25	5	4	7	1000	0.045
MMBZ5235	8K	6.8	20	0.25	3	5	5	750	0.05
MMBZ5236	8L	7.5	20	0.25	3	6	6	500	0.058
MMBZ5237	8M	8.2	20	0.25	3	6.5	8	500	0.062
MMBZ5238	8N	8.7	20	0.25	3	6.5	8	600	0.065
MMBZ5239	8P	9.1	20	0.25	3	7	10	600	0.068
MMBZ5240	8Q	10	20	0.25	3	8	17	600	0.075
MMBZ5241	8R	11	20	0.25	2	8.4	22	600	0.076
MMBZ5242	8S	12	20	0.25	1	9.1	30	600	0.077
MMBZ5243	8T	13	9.5	0.25	0.5	9.9	13	600	0.079
MMBZ5244	8U	14	9	0.25	0.1	10	15	600	0.082
MMBZ5245	8V	15	8.5	0.25	0.1	11	16	600	0.082
MMBZ5246	8W	16	7.8	0.25	0.1	12	17	600	0.083
MMBZ5247	8X	17	7.4	0.25	0.1	13	19	600	0.084
MMBZ5248	8Y	18	7	0.25	0.1	14	21	600	0.085
MMBZ5249	8Z	19	6.6	0.25	0.1	14	23	600	0.086
MMBZ5250	81A	20	6.2	0.25	0.1	15	25	600	0.086
MMBZ5251	81B	22	5.6	0.25	0.1	17	29	600	0.087
MMBZ5252	81C	24	5.2	0.25	0.1	18	33	600	0.087
MMBZ5253	81D	25	5	0.25	0.1	19	35	600	0.089
MMBZ5254	81E	27	4.6	0.25	0.1	21	41	600	0.09
MMBZ5255	81F	28	4.5	0.25	0.1	21	44	600	0.091
MMBZ5256	81G	30	4.2	0.25	0.1	23	49	600	0.091
MMBZ5257	81H	33	3.8	0.25	0.1	25	58	700	0.092
MMBZ5258	81J	36	3.4	0.25	0.1	27	70	700	0.093
MMBZ5259	81K	39	3.2	0.25	0.1	30	80	800	0.094
MMBZ5260	18F	43	3	0.25	0.1	33	93	900	0.095
MMBZ5261	81M	47	2.7	0.25	0.1	36	105	1000	0.095
MMBZ5262	81N	51	2.5	0.25	0.1	39	125	1100	0.096
MMBZ5263	81P	56	2.2	0.25	0.1	43	150	1300	0.096
MMBZ5264	81Q	60	2.1	0.25	0.1	46	170	1400	0.097
MMBZ5265	81R	62	2	0.25	0.1	47	185	1400	0.097
MMBZ5266	81S	68	1.8	0.25	0.1	52	230	1600	0.097
MMBZ5267	81T	75	1.7	0.25	0.1	56	270	1700	0.098

**Notes**

- Maximum  $V_F = 0.9\text{ V}$ , at  $I_F = 10\text{ mA}$

(1) Measured at thermal equilibrium

(2) 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

**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

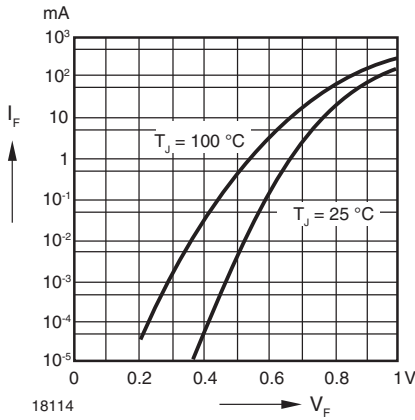


Fig. 1 - Forward Characteristics

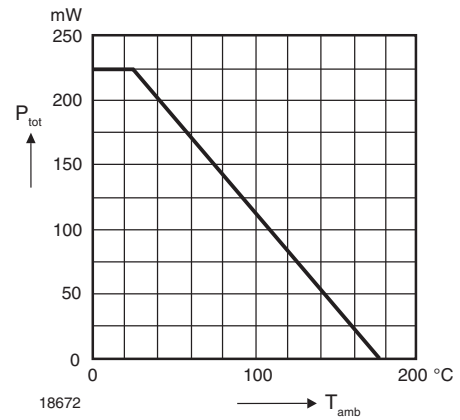
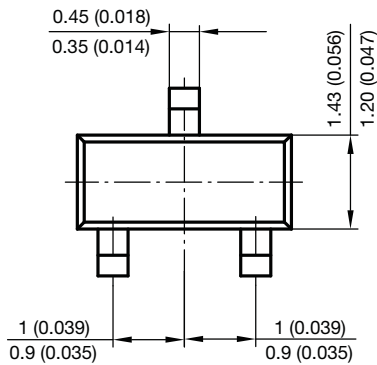
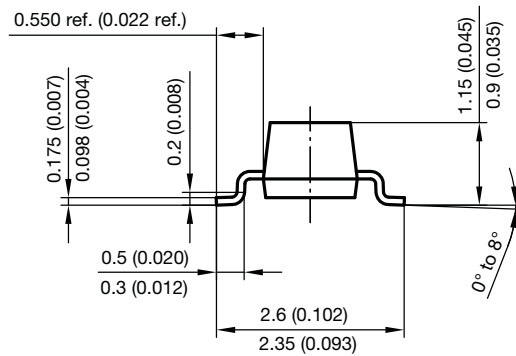
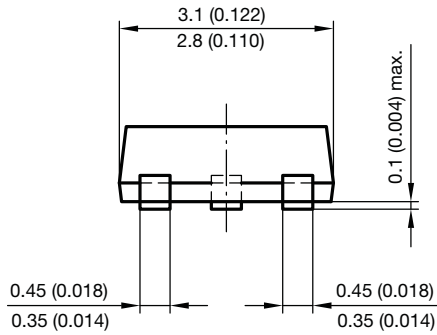
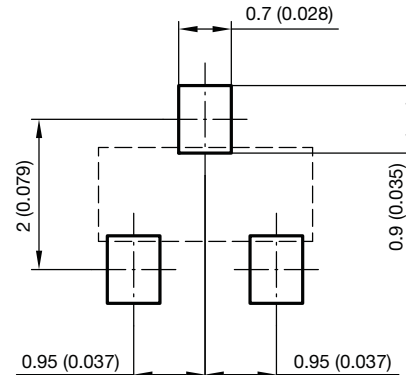


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

**PACKAGE DIMENSIONS** in millimeters (inches): **SOT-23**



Foot print recommendation:





## **Disclaimer**

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.