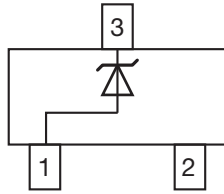




## Small Signal Zener Diodes



### FEATURES

- Silicon planar Zener diodes
- Standard Zener voltage tolerance is  $\pm 5\%$ .
- 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)



**DESIGN SUPPORT TOOLS** click logo to get started



PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V <sub>Z</sub> range nom.	2.4 to 43	V
Test current I <sub>ZT</sub>	0.05	mA
V <sub>Z</sub> specification	Pulse current	
Circuit configuration	Single	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
MMBZ4681 to MMBZ4717	MMBZ4681-E3-08 to MMBZ4717-E3-08	3000 (8 mm tape on 7" reel)	15 000/box
	MMBZ4681-HE3-08 to MMBZ4717-HE3-08		
	MMBZ4681-E3-18 to MMBZ4717-E3-18	10 000 (8 mm tape on 13" reel)	10 000/box
	MMBZ4681-HE3-18 to MMBZ4717-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>	350	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>	420	K/W
Junction temperature, maximum		T <sub>j</sub>	150	°C
Storage temperature range		T <sub>stg</sub>	-55 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 CURRENT		VOLTAGE CHANGE <sup>(2)</sup>
		$V_Z$ at $I_{ZT1}$			$I_{ZT1}$	$I_R$ at $V_R$		$\Delta V_Z$
		V			mA	$\mu\text{A}$	V	V
		MIN.	nom.	max.		max.		MAX.
MMBZ4681	CF	2.28	2.4	2.52	0.05	2	1	0.8
MMBZ4682	CH	2.57	2.7	2.84	0.05	1	1	0.85
MMBZ4683	CJ	2.85	3	3.15	0.05	0.8	1	0.9
MMBZ4684	CK	3.14	3.3	3.47	0.05	7.5	1.5	0.95
MMBZ4685	CM	3.42	3.6	3.78	0.05	7.5	2	0.95
MMBZ4686	CN	3.71	3.9	4.1	0.05	5	2	0.97
MMBZ4687	CP	4.09	4.3	4.52	0.05	4	2	0.99
MMBZ4688	CT	4.47	4.7	4.94	0.05	10	3	0.99
MMBZ4689	CU	4.85	5.1	5.36	0.05	10	3	0.97
MMBZ4690	CV	5.32	5.6	5.88	0.05	10	4	0.96
MMBZ4691	CA	5.89	6.2	6.51	0.05	10	5	0.95
MMBZ4692	CX	6.46	6.8	7.14	0.05	10	5.1	0.9
MMBZ4693	CY	7.13	7.5	7.88	0.05	10	5.7	0.75
MMBZ4694	CZ	7.79	8.2	8.61	0.05	1	6.2	0.5
MMBZ4695	DC	8.27	8.7	9.14	0.05	1	6.6	0.1
MMBZ4696	DD	8.65	9.1	9.56	0.05	1	6.9	0.08
MMBZ4697	DE	9.5	10	10.5	0.05	1	7.6	0.1
MMBZ4698	DF	10.5	11	11.6	0.05	0.05	8.4	0.11
MMBZ4699	DH	11.4	12	12.6	0.05	0.05	9.1	0.12
MMBZ4700	DJ	12.4	13	13.7	0.05	0.05	9.8	0.13
MMBZ4701	DK	13.3	14	14.7	0.05	0.05	10.6	0.14
MMBZ4702	DM	14.3	15	15.8	0.05	0.05	11.4	0.15
MMBZ4703	DN	15.2	16	16.8	0.05	0.05	12.1	0.16
MMBZ4704	DP	16.2	17	17.9	0.05	0.05	12.9	0.17
MMBZ4705	DT	17.1	18	18.9	0.05	0.05	13.6	0.18
MMBZ4706	DU	18.1	19	20	0.05	0.05	14.4	0.19
MMBZ4707	DV	19	20	21	0.05	0.01	15.2	0.2
MMBZ4708	DA	20.9	22	23.1	0.05	0.01	16.7	0.22
MMBZ4709	DZ	22.8	24	25.2	0.05	0.01	18.2	0.24
MMBZ4710	DY	23.8	25	26.3	0.05	0.01	19	0.25
MMBZ4711	EA	25.7	27	28.4	0.05	0.01	20.4	0.27
MMBZ4712	EC	26.6	28	29.4	0.05	0.01	21.2	0.28
MMBZ4713	ED	28.5	30	31.5	0.05	0.01	22.8	0.3
MMBZ4714	EE	31.4	33	34.7	0.05	0.01	25	0.33
MMBZ4715	EF	34.2	36	37.8	0.05	0.01	27.3	0.36
MMBZ4716	EH	37.1	39	41	0.05	0.01	29.6	0.39
MMBZ4717	EJ	40.9	43	45.2	0.05	0.01	32.6	0.43

**Notes**

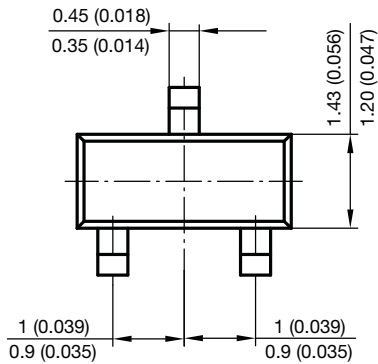
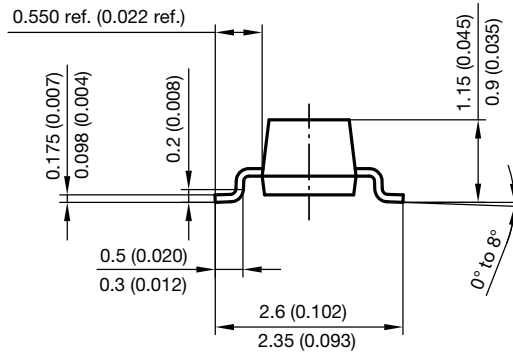
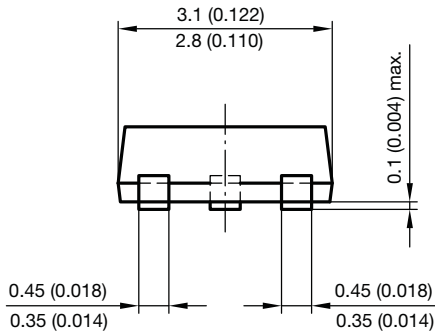
- Maximum  $V_F = 0.9\text{ V}$ , at  $I_F = 10\text{ mA}$

<sup>(1)</sup> Tested with pulse test current

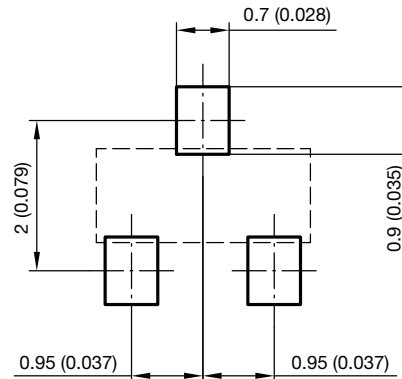
<sup>(2)</sup> Maximum voltage change ( $V_Z$ ). Voltage change is equal to the difference between  $V_Z$  at  $100\text{ }\mu\text{A}$  and  $V_Z$  at  $10\text{ }\mu\text{A}$ .



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



Foot print recommendation:



Document no.: 6.541-5014.01-4  
Rev. 8 - Date: 23.Sept.2009  
17418



## **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.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Vishay:

[MMBZ4689-E3-08](#) [MMBZ4704-E3-18](#) [MMBZ4710-E3-08](#) [MMBZ4694-HE3-08](#) [MMBZ4694-E3-18](#) [MMBZ4691-E3-08](#)  
[MMBZ4681-E3-08](#) [MMBZ4714-E3-18](#) [MMBZ4703-HE3-18](#) [MMBZ4687-HE3-18](#) [MMBZ4715-E3-08](#) [MMBZ4699-E3-18](#)  
[MMBZ4681-HE3-18](#) [MMBZ4716-E3-08](#) [MMBZ4699-HE3-18](#) [MMBZ4711-E3-08](#) [MMBZ4686-HE3-08](#) [MMBZ4700-HE3-08](#)  
[MMBZ4685-E3-18](#) [MMBZ4714-E3-08](#) [MMBZ4698-E3-18](#) [MMBZ4693-HE3-08](#) [MMBZ4683-HE3-18](#)  
[MMBZ4688-E3-18](#) [MMBZ4708-E3-18](#) [MMBZ4712-HE3-18](#) [MMBZ4700-E3-08](#) [MMBZ4717-HE3-08](#) [MMBZ4690-E3-08](#)  
[MMBZ4705-E3-08](#) [MMBZ4706-HE3-08](#) [MMBZ4696-HE3-08](#) [MMBZ4693-E3-08](#) [MMBZ4692-E3-18](#) [MMBZ4711-HE3-18](#)  
[MMBZ4701-HE3-18](#) [MMBZ4687-E3-18](#) [MMBZ4702-HE3-08](#) [MMBZ4709-E3-18](#) [MMBZ4684-HE3-08](#)  
[MMBZ4703-E3-08](#) [MMBZ4691-HE3-18](#) [MMBZ4711-E3-18](#) [MMBZ4698-HE3-18](#) [MMBZ4694-HE3-18](#) [MMBZ4697-E3-18](#)  
[MMBZ4712-HE3-08](#) [MMBZ4694-E3-08](#) [MMBZ4710-HE3-18](#) [MMBZ4710-HE3-08](#) [MMBZ4702-HE3-18](#)  
[MMBZ4717-E3-18](#) [MMBZ4705-E3-18](#) [MMBZ4697-E3-08](#) [MMBZ4706-E3-18](#) [MMBZ4712-E3-08](#) [MMBZ4716-HE3-18](#)  
[MMBZ4689-HE3-08](#) [MMBZ4707-HE3-18](#) [MMBZ4701-HE3-08](#) [MMBZ4685-HE3-08](#) [MMBZ4683-HE3-08](#) [MMBZ4717-E3-08](#)  
[MMBZ4690-E3-18](#) [MMBZ4709-HE3-08](#) [MMBZ4704-E3-08](#) [MMBZ4686-E3-08](#) [MMBZ4704-HE3-18](#)  
[MMBZ4706-E3-08](#) [MMBZ4693-E3-18](#) [MMBZ4709-E3-08](#) [MMBZ4701-E3-08](#) [MMBZ4695-E3-18](#) [MMBZ4696-E3-08](#)  
[MMBZ4695-HE3-08](#) [MMBZ4685-E3-08](#) [MMBZ4681-HE3-08](#) [MMBZ4691-HE3-08](#) [MMBZ4684-E3-18](#) [MMBZ4688-HE3-08](#)  
[MMBZ4697-HE3-08](#) [MMBZ4713-E3-08](#) [MMBZ4706-HE3-18](#) [MMBZ4685-HE3-18](#) [MMBZ4689-HE3-18](#)  
[MMBZ4716-HE3-08](#) [MMBZ4703-HE3-08](#) [MMBZ4687-HE3-08](#) [MMBZ4682-HE3-08](#) [MMBZ4705-HE3-08](#) [MMBZ4681-E3-18](#)  
[MMBZ4713-HE3-18](#) [MMBZ4682-E3-08](#) [MMBZ4692-E3-08](#) [MMBZ4707-E3-08](#) [MMBZ4701-E3-18](#) [MMBZ4705-HE3-18](#)  
[MMBZ4711-HE3-08](#) [MMBZ4707-HE3-08](#) [MMBZ4703-E3-18](#)