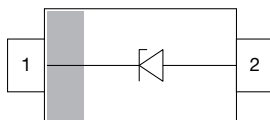


Small Signal Zener Diodes



MARKING (example only)



XYZ = type code (see table below)

bar = pin 1

LINKS TO ADDITIONAL RESOURCES



FEATURES

- Silicon planar Zener diodes
- The Zener voltages are graded according to the international E24 standard
- Standard Zener voltage tolerance is $\pm 5\%$; replace "C" with "B" for $\pm 2\%$ tolerance
- 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_A - RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V_Z range nom.	2.2 to 75	V
Test current I_{ZT}	2; 5	mA
V_Z specification	Pulse current	
Circuit configuration	Single	

ORDERING INFORMATION					
DEVICE NAME	ORDERING CODE	ZENER TOLERANCE	AEC-Q101 QUALIFIED	TAPED UNITS	MINIMUM ORDER QUANTITY
BZX384 series	BZX384C2V2-E3-08 to BZX384C75-E3-08	5 %	No	3000 (8 mm tape on 7" reel)	15 000
	BZX384B2V2-E3-08 to BZX384B75-E3-08	2 %	No		
	BZX384C2V2-HE3_A08 to BZX384C75-HE3_A08	5 %	Yes		
	BZX384B2V2-HE3_A08 to BZX384B75-HE3_A08	2 %	Yes		
	BZX384C2V2-E3-18 to BZX384C75-E3-18	5 %	No	10 000 (8 mm tape on 13" reel)	10 000
	BZX384B2V2-E3-18 to BZX384B75-E3-18	2 %	No		
	BZX384C2V2-HE3_A18 to BZX384C75-HE3_A18	5 %	Yes		
	BZX384B2V2-HE3_A18 to BZX384B75-HE3_A18	2 %	Yes		

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SOD-323	4 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ °C}$, unless otherwise specified)					
PARAMETER	TEST CONDITION		SYMBOL	VALUE	UNIT
Power dissipation			P_{tot}	200	mW
Thermal resistance junction to lead			R_{thJL}	625	K/W
Junction temperature			T_j	150	°C
Storage temperature range			T_{stg}	-65 to +150	°C
Operating temperature range			T_{op}	-55 to +150	°C

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

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE ⁽¹⁾			TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE		PEAK PULSE CURRENT ⁽²⁾	REVERSE CLAMPING VOLTAGE AT I_{PPM}	ESD IMMUNITY ⁽³⁾	TEMPERATURE COEFFICIENT OF ZENER VOLTAGE	
		V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2}	I_R at V_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	I_{PPM}	V_C	V_{ESD}	α_{VZ} at I_{ZT1}	
		V			mA		μA	V	Ω		A	V	kV	$10^{-4}/^{\circ}\text{C}$	
		MIN.	NOM.	MAX.			MAX.		MAX.	MAX.		MAX.	MAX.	MIN.	MAX.
BZX384C2V2	E1	2.09	2.2	2.31	5	1	100	1	120	600	11.8	5.91	≥ 30	-9	-4
BZX384C2V4	E2	2.28	2.4	2.52	5	1	50	1	100	600	11.6	6.02	≥ 30	-9	-4
BZX384C2V7	E3	2.57	2.7	2.84	5	1	20	1	100	600	11.2	6.22	≥ 30	-9	-3
BZX384C3V0	E4	2.85	3	3.15	5	1	10	1	95	600	10.9	6.4	≥ 30	-9	-3
BZX384C3V3	E5	3.14	3.3	3.47	5	1	5	1	95	600	10.7	6.54	≥ 30	-8	-3
BZX384C3V6	E6	3.42	3.6	3.78	5	1	5	1	90	600	10.6	6.6	≥ 30	-8	-3
BZX384C3V9	E7	3.71	3.9	4.1	5	1	3	1	90	600	10.4	6.73	≥ 30	-7	-3
BZX384C4V3	E8	4.09	4.3	4.52	5	1	3	1	90	600	10.1	6.93	≥ 30	-6	-1
BZX384C4V7	E9	4.47	4.7	4.94	5	1	3	2	80	500	12.3	8.14	≥ 30	-5	2
BZX384C5V1	E0	4.85	5.1	5.36	5	1	2	2	60	480	12.1	9.87	≥ 30	-3	4
BZX384C5V6	H1	5.32	5.6	5.88	5	1	1	2	40	400	10.5	10.6	≥ 30	-2	6
BZX384C6V2	H2	5.89	6.2	6.51	5	1	3	4	10	150	10.3	9.66	≥ 30	-1	7
BZX384C6V8	H3	6.46	6.8	7.14	5	1	2	4	15	80	9.4	10.6	≥ 30	2	7
BZX384C7V5	H4	7.13	7.5	7.88	5	1	1	5	15	80	8.6	11.54	≥ 30	3	7
BZX384C8V2	H5	7.79	8.2	8.61	5	1	0.7	5	15	80	7.9	12.6	≥ 30	4	7
BZX384C9V1	H6	8.65	9.1	9.56	5	1	0.5	6	15	100	7.4	13.55	≥ 30	5	8
BZX384C10	H7	9.5	10	10.5	5	1	0.2	7	20	150	6.75	14.8	≥ 30	5	8
BZX384C11	H8	10.45	11	11.55	5	1	0.1	8	20	150	6.1	16.4	≥ 30	5	9
BZX384C12	H9	11.4	12	12.6	5	1	0.1	8	25	150	5.43	18.4	≥ 30	6	9
BZX384C13	H0	12.4	13	13.65	5	1	0.1	8	30	170	5.15	19.4	≥ 30	7	9
BZX384C15	N1	14.25	15	15.6	5	1	0.05	10.5	30	200	4.5	22	≥ 30	7	9
BZX384C16	N2	15.3	16	16.8	5	1	0.05	11.2	40	200	3.96	25.2	≥ 30	8	9.5
BZX384C18	N3	17.1	18	18.9	5	1	0.05	12.6	45	225	3.69	27.1	≥ 30	8	9.5
BZX384C20	N4	19	20	21	5	1	0.05	14	55	225	3.18	31.4	≥ 30	8	10
BZX384C22	N5	20.9	22	23.1	5	1	0.05	15.4	55	250	2.8	35.6	25	8	10
BZX384C24	N6	22.8	24	25.2	5	1	0.05	16.8	70	250	2.61	38.3	25	8	10
BZX384C27	N7	25.65	27	28.35	2	0.5	0.05	18.9	80	300	2.3	43.5	20	8	10
BZX384C30	N8	28.5	30	31.5	2	0.5	0.05	21	80	300	2.2	46.3	20	8	10
BZX384C33	N9	31.35	33	34.65	2	0.5	0.05	23.1	80	325	1.88	53.1	15	8	10
BZX384C36	N0	34.2	36	37.8	2	0.5	0.05	25.2	90	350	1.74	57.4	15	8	10
BZX384C39	P1	37.05	39	40.95	2	0.5	0.05	27.3	130	350	1.49	67.1	14	10	12
BZX384C43	P2	40.85	43	45.15	2	0.5	0.05	30.1	150	375	1.41	70.9	14	10	12
BZX384C47	P3	44.65	47	49.35	2	0.5	0.05	32.9	170	375	1.21	82.6	14	10	12
BZX384C51	P4	48.45	51	53.55	2	0.5	0.05	35.7	180	400	1.16	86.2	14	10	12
BZX384C56	P5	53.2	56	58.8	2	0.5	0.05	39.2	200	425	1.00	100	12	9	11
BZX384C62	P6	58.9	62	65.1	2	0.5	0.05	43.4	215	450	0.96	105	12	9	12
BZX384C68	P7	64.6	68	71.4	2	0.5	0.05	47.6	240	475	0.83	120	9	10	12
BZX384C75	P8	71.25	75	78.75	2	0.5	0.05	52.5	255	500	0.81	123	9	10	12

Notes(1) Pulse test $t_p = 5\text{ ms}$ (2) Pulse test: $t_p = 8/20\text{ }\mu\text{s}$ according to IEC 61000-4-5

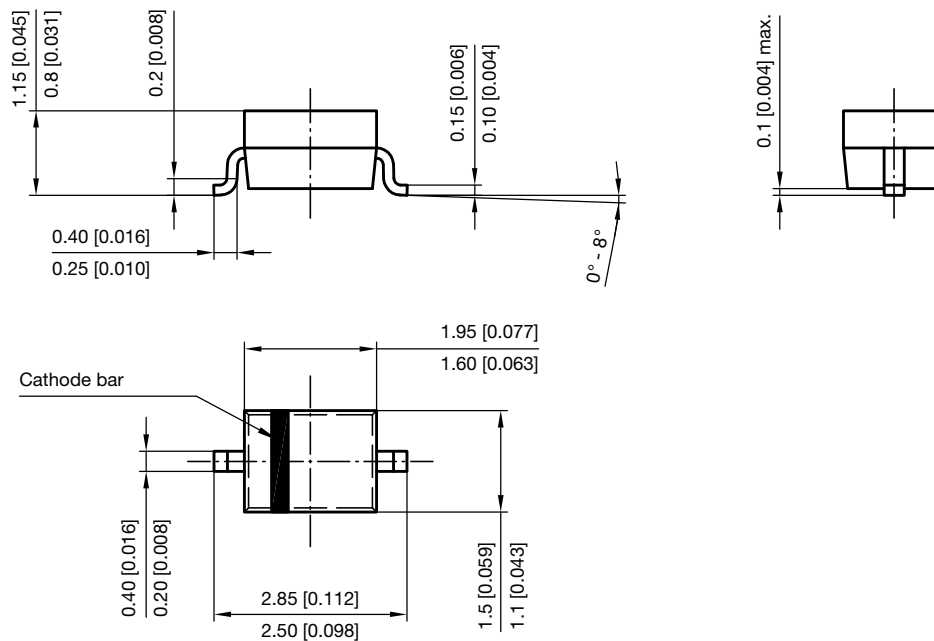
(3) Contact and air discharge according to IEC 61000-4-2

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

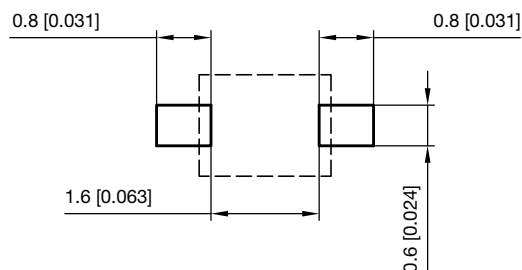
PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE ⁽¹⁾			TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE		PEAK PULSE CURRENT ⁽²⁾	REVERSE CLAMPING VOLTAGE AT I_{PPM}	ESD IMMUNITY ⁽³⁾	TEMPERATURE COEFFICIENT OF ZENER VOLTAGE	
		V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2}	I_R at V_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	I_{PPM}	V_C	V_{ESD}	α_{VZ} at I_{ZT1}	
		V			mA		μA	V	Ω		A	V	kV	$10^{-4}/^{\circ}\text{C}$	
		MIN.	NOM.	MAX.			MAX.		MAX.	MAX.		MAX.	MAX.	MIN.	MAX.
BZX384B2V2	P9	2.16	2.2	2.24	5	1	100	1	120	600	11.8	5.91	≥ 30	-9	-4
BZX384B2V4	P0	2.35	2.4	2.45	5	1	50	1	100	600	11.6	6.02	≥ 30	-9	-4
BZX384B2V7	B1	2.65	2.7	2.75	5	1	20	1	100	600	11.2	6.22	≥ 30	-9	-3
BZX384B3V0	B2	2.94	3	3.06	5	1	10	1	95	600	10.9	6.4	≥ 30	-9	-3
BZX384B3V3	B3	3.23	3.3	3.37	5	1	5	1	95	600	10.7	6.54	≥ 30	-8	-3
BZX384B3V6	B4	3.53	3.6	3.67	5	1	5	1	90	600	10.6	6.6	≥ 30	-8	-3
BZX384B3V9	B5	3.82	3.9	3.98	5	1	3	1	90	600	10.4	6.73	≥ 30	-7	-3
BZX384B4V3	B8	4.21	4.3	4.39	5	1	3	1	90	600	10.1	6.93	≥ 30	-6	-1
BZX384B4V7	B9	4.61	4.7	4.79	5	1	3	2	80	500	12.3	8.14	≥ 30	-5	2
BZX384B5V1	B0	5	5.1	5.2	5	1	2	2	60	480	12.1	9.87	≥ 30	-3	4
BZX384B5V6	K1	5.49	5.6	5.71	5	1	1	2	40	400	10.5	10.7	≥ 30	-2	6
BZX384B6V2	K2	6.08	6.2	6.32	5	1	3	4	10	150	10.3	9.66	≥ 30	-1	7
BZX384B6V8	K3	6.66	6.8	6.94	5	1	2	4	15	80	9.4	10.6	≥ 30	2	7
BZX384B7V5	K4	7.35	7.5	7.65	5	1	1	5	15	80	8.6	11.54	≥ 30	3	7
BZX384B8V2	K5	8.04	8.2	8.36	5	1	0.7	5	15	80	7.9	12.6	≥ 30	4	7
BZX384B9V1	K6	8.92	9.1	9.28	5	1	0.5	6	15	100	7.4	13.55	≥ 30	5	8
BZX384B10	K7	9.8	10	10.2	5	1	0.2	7	20	150	6.75	14.8	≥ 30	5	8
BZX384B11	K8	10.78	11	11.22	5	1	0.1	8	20	150	6.1	16.4	≥ 30	5	9
BZX384B12	K9	11.76	12	12.24	5	1	0.1	8	25	150	5.43	18.4	≥ 30	6	9
BZX384B13	K0	12.74	13	13.26	5	1	0.1	8	30	170	5.15	19.4	≥ 30	7	9
BZX384B15	2C	14.7	15	15.3	5	1	0.05	10.5	30	200	4.5	22	≥ 30	7	9
BZX384B16	3C	15.68	16	16.32	5	1	0.05	11.2	40	200	3.96	25.2	≥ 30	8	9.5
BZX384B18	4C	17.64	18	18.36	5	1	0.05	12.6	45	225	3.69	27.1	≥ 30	8	9.5
BZX384B20	5C	19.6	20	20.4	5	1	0.05	14	55	225	3.18	31.4	≥ 30	8	10
BZX384B22	6C	21.56	22	22.44	5	1	0.05	15.4	55	250	2.8	35.6	25	8	10
BZX384B24	7C	23.52	24	24.48	5	1	0.05	16.8	70	250	2.61	38.3	25	8	10
BZX384B27	8C	26.46	27	27.54	2	0.5	0.05	18.9	80	300	2.3	43.5	20	8	10
BZX384B30	9C	29.4	30	30.6	2	0.5	0.05	21	80	300	2.2	46.3	20	8	10
BZX384B33	0C	32.34	33	33.66	2	0.5	0.05	23.1	80	325	1.88	53.1	15	8	10
BZX384B36	2B	35.28	36	36.72	2	0.5	0.05	25.2	90	350	1.74	57.4	15	8	10
BZX384B39	3B	38.22	39	39.78	2	0.5	0.05	27.3	130	350	1.49	67.1	14	10	12
BZX384B43	4B	42.14	43	43.86	2	0.5	0.05	30.1	150	375	1.41	70.9	14	10	12
BZX384B47	5B	46.06	47	47.94	2	0.5	0.05	32.9	170	375	1.21	82.6	14	10	12
BZX384B51	6B	49.98	51	52.02	2	0.5	0.05	35.7	180	400	1.16	86.2	14	10	12
BZX384B56	7B	54.88	56	57.12	2	0.5	0.05	39.2	200	425	1.00	100	12	9	11
BZX384B62	8B	60.76	62	63.24	2	0.5	0.05	43.4	215	450	0.96	105	12	9	12
BZX384B68	9B	66.64	68	69.36	2	0.5	0.05	47.6	240	475	0.83	120	9	10	12
BZX384B75	0B	73.5	75	76.5	2	0.5	0.05	52.5	255	500	0.81	123	9	10	12

Notes(1) Pulse test $t_p = 5\text{ ms}$ (2) Pulse test: $t_p = 8/20\text{ }\mu\text{s}$ according to IEC 61000-4-5

(3) Contact and air discharge according to IEC 61000-4-2

PACKAGE DIMENSIONS in millimeters (inches): **SOD-323**


Footprint recommendation:



Document no.: S8-V-3910.02-001 (4)
Created - Date: 24.August.2004
Rev. 6 - Date: 23.Sept.2016
17443



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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.