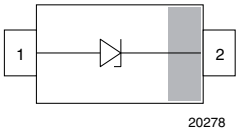
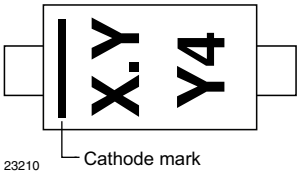
Small Signal Zener Diodes



MARKING (example only)



X.Y = type code
Y4 = date code

FEATURES

- Silicon planar Zener diodes
- The Zener voltages are graded according to the international E24 standard. Standard Zener voltage tolerance is ± 5 %, indicated by the “C” in the ordering code. Replace “C” with “B” for 2 % tolerance
- AEC-Q101 qualified available
  (part number on request)
- ESD capability according to AEC-Q101:
  Human body model > 8 kV
  Machine model > 800 V
- Base P/N-G3 - green, commercial grade
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

LINKS TO ADDITIONAL RESOURCES

3D Models

SPICE Models

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 VOLTAGE TOLERANCE	AEC-Q101 QUALIFIED	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
BZT52-G series	BZT52C2V2-G3-08 to BZT52C75-G3-08	5%	no	3000 (8 mm tape on 7" reel)	15 000/box
	BZT52B2V2-G3-08 to BZT52B75-G3-08	2%	no		
	BZT52C2V2-G3-18 to BZT52C75-G3-18	5%	no	10 000 (8 mm tape on 13" reel)	10 000/box
	BZT52B2V2-G3-18 to BZT52B75-G3-18	2%	no		

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SOD-123	10.6 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	R_{thJL} = 250 K/W	P_{tot}	500	mW
	On FR-4 board with recommended soldering footprint	P_{tot}	300	mW
Zener current	See table “Electrical Characteristics “			
Thermal resistance junction to lead		R_{thJL}	250	K/W
Thermal resistance junction to ambient	According to JEDEC® 51-3 on FR-4 board with recommended soldering footprint	R_{thJA}	420	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 °C, unless otherwise specified)

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE (1)			TEST CURRENT		REVERSE VOLTAGE		DYNAMIC RESISTANCE		TEMP. COEFFICIENT	ADMISSABLE ZENER CURRENT (2)	
		V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2}	V_R at I_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	α_{VZ}	I_Z at T_{amb} = 45 °C	I_Z at T_{amb} = 25 °C
		V			mA		V	nA	Ω		10^{-4}/°C	mA	
		MIN.	NOM.	MAX.									
BZT52C2V2-G	Z9	2.09	2.2	2.31	5	1	> 1	100 000	120	600	-9 to -4	130	154
BZT52C2V4-G	Y1	2.28	2.4	2.52	5	1	> 1	50 000	100	600	-9 to -4	124	146
BZT52C2V7-G	Y2	2.57	2.7	2.84	5	1	> 1	20 000	83	500	-9 to -4	111	131
BZT52C3V0-G	Y3	2.85	3.0	3.15	5	1	> 1	10 000	95	500	-9 to -3	106	123
BZT52C3V3-G	Y4	3.14	3.3	3.47	5	1	> 1	5000	95	500	-8 to -3	103	118
BZT52C3V6-G	Y5	3.42	3.6	3.78	5	1	> 1	5000	95	500	-8 to -3	100	114
BZT52C3V9-G	Y6	3.71	3.9	4.10	5	1	> 1	2000	95	500	-7 to -3	94	107
BZT52C4V3-G	Y7	4.09	4.3	4.52	5	1	> 1	1000	95	500	-6 to -1	91	103
BZT52C4V7-G	Y8	4.47	4.7	4.94	5	1	> 1	500	78	500	-5 to +2	87	99
BZT52C5V1-G	Y9	4.85	5.1	5.36	5	1	> 0.8	100	60	480	-3 to +4	84	101
BZT52C5V6-G	YA	5.32	5.6	5.88	5	1	> 1	100	40	400	-2 to +6	75	91
BZT52C6V2-G	YB	5.89	6.2	6.51	5	1	> 2	100	10	150	-1 to +7	67	80
BZT52C6V8-G	YC	6.46	6.8	7.14	5	1	> 3	100	8	80	+2 to +7	60	72
BZT52C7V5-G	YD	7.13	7.5	7.88	5	1	> 5	100	7	50	+3 to +7	54	64
BZT52C8V2-G	YE	7.79	8.2	8.61	5	1	> 6	100	7	50	+4 to +7	48	57
BZT52C9V1-G	YF	8.65	9.1	9.56	5	1	> 7	100	10	50	+5 to +8	42	50
BZT52C10-G	YG	9.50	10	10.50	5	1	> 7.5	100	15	70	+5 to +8	38	45
BZT52C11-G	YH	10.45	11	11.55	5	1	> 8.5	100	20	70	+5 to +9	35	41
BZT52C12-G	YI	11.40	12	12.60	5	1	> 9	100	20	90	+6 to +9	32	37
BZT52C13-G	YK	12.40	13	13.65	5	1	> 10	100	25	110	+7 to +9	29	34
BZT52C15-G	YL	14.25	15	15.60	5	1	> 11	100	30	110	+7 to +9	25	29
BZT52C16-G	YM	15.30	16	16.80	5	1	> 12	100	40	170	+8 to +9.5	23	27
BZT52C18-G	YN	17.10	18	18.90	5	1	> 14	100	45	170	+8 to +9.5	21	24
BZT52C20-G	YO	19.00	20	21.00	5	1	> 15	100	50	220	+8 to +10	18	22
BZT52C22-G	YP	20.90	22	23.10	5	1	> 17	100	55	220	+8 to +10	17	20
BZT52C24-G	YR	22.80	24	25.20	5	1	> 18	100	70	220	+8 to +10	15	18
BZT52C27-G	YS	25.65	27	28.35	2	0.5	> 20	100	80	250	+8 to +10	14	16
BZT52C30-G	YT	28.50	30	31.50	2	0.5	> 22.5	100	80	250	+8 to +10	12	14
BZT52C33-G	YU	31.35	33	34.65	2	0.5	> 25	100	80	250	+8 to +10	11	13
BZT52C36-G	YW	34.20	36	37.80	2	0.5	> 27	100	87	250	+8 to +10	10	12
BZT52C39-G	YX	37.05	39	40.95	2	0.5	> 29	100	87	300	+8 to +12	9	11
BZT52C43-G	YY	40.85	43	45.15	2	0.5	> 32	100	97	375	+8 to +12	9	10
BZT52C47-G	YZ	44.65	47	49.35	2	0.5	> 35	100	97	375	+8 to +12	8	9
BZT52C51-G	Z1	48.45	51	53.55	2	0.5	> 38	100	100	400	+8 to +12	7	8
BZT52C56-G	Z2	53.20	56	58.80	2	0.5	> 42	100	135	425	+8 to +12	7	8
BZT52C62-G	Z3	58.90	62	65.10	2	0.5	> 46	100	150	450	+8 to +12	6	7
BZT52C68-G	Z4	64.60	68	71.40	2	0.5	> 51	100	200	475	+8 to +12	5	6
BZT52C75-G	Z5	71.25	75	78.75	2	0.5	> 56	100	250	500	+8 to +12	5	6

Notes

- I_{ZT1} = 5 mA, I_{ZT2} = 1 mA or 0.5 mA

(1) Measured with pulses t_p = 5 ms

(2) Valid provided that electrodes are kept at ambient temperature

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE (1)			TEST CURRENT		REVERSE VOLTAGE		DYNAMIC RESISTANCE		TEMP. COEFFICIENT	ADMISSABLE ZENER CURRENT (2)	
		V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2}	V_R at I_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	α_{VZ}	I_Z at T_{amb} = 45 °C	I_Z at T_{amb} = 25 °C
		V			mA		V	nA	Ω		10^{-4}/°C	mA	
		MIN.	NOM.	MAX.									
BZT52B2V2-G	U6	2.16	2.2	2.24	5	1	> 1	100 000	120	600	-9 to -4	130	154
BZT52B2V4-G	V1	2.35	2.4	2.45	5	1	> 1	50 000	100	600	-9 to -4	124	146
BZT52B2V7-G	V2	2.65	2.7	2.75	5	1	> 1	20 000	83	500	-9 to -4	111	131
BZT52B3V0-G	V3	2.94	3.0	3.06	5	1	> 1	10 000	95	500	-9 to -3	106	123
BZT52B3V3-G	V4	3.23	3.3	3.37	5	1	> 1	5000	95	500	-8 to -3	103	118
BZT52B3V6-G	V5	3.53	3.6	3.67	5	1	> 1	5000	95	500	-8 to -3	100	114
BZT52B3V9-G	V6	3.82	3.9	3.98	5	1	> 1	2000	90	500	-7 to -3	94	107
BZT52B4V3-G	V7	4.21	4.3	4.39	5	1	> 1	1000	90	500	-6 to -1	91	103
BZT52B4V7-G	V8	4.61	4.7	4.79	5	1	> 1	500	78	500	-5 to +2	87	99
BZT52B5V1-G	V9	5.00	5.1	5.20	5	1	> 0.8	100	60	480	-3 to +4	84	101
BZT52B5V6-G	VA	5.49	5.6	5.71	5	1	> 1	100	40	400	-2 to +6	75	91
BZT52B6V2-G	VB	6.08	6.2	6.32	5	1	> 2	100	10	150	-1 to +7	67	80
BZT52B6V8-G	VC	6.66	6.8	6.94	5	1	> 3	100	8	80	+2 to +7	60	72
BZT52B7V5-G	VD	7.35	7.5	7.65	5	1	> 5	100	7	50	+3 to +7	54	64
BZT52B8V2-G	VE	8.04	8.2	8.36	5	1	> 6	100	7	50	+4 to +7	48	57
BZT52B9V1-G	VF	8.92	9.1	9.28	5	1	> 7	100	10	50	+5 to +8	42	50
BZT52B10-G	VG	9.80	10	10.20	5	1	> 7.5	100	15	70	+5 to +8	38	45
BZT52B11-G	VH	10.78	11	11.22	5	1	> 8.5	100	20	70	+5 to +9	35	41
BZT52B12-G	VI	11.76	12	12.24	5	1	> 9	100	20	90	+6 to +9	32	37
BZT52B13-G	VK	12.74	13	13.26	5	1	> 10	100	25	110	+7 to +9	29	34
BZT52B15-G	VL	14.70	15	15.30	5	1	> 11	100	30	110	+7 to +9	25	29
BZT52B16-G	VM	15.68	16	16.32	5	1	> 12	100	40	170	+8 to +9.5	23	27
BZT52B18-G	VN	17.64	18	18.36	5	1	> 14	100	45	170	+8 to +9.5	21	24
BZT52B20-G	VO	19.60	20	20.40	5	1	> 15	100	50	220	+8 to +10	18	22
BZT52B22-G	VP	21.56	22	22.44	5	1	> 17	100	55	220	+8 to +10	17	20
BZT52B24-G	VR	23.52	24	24.48	5	1	> 18	100	70	220	+8 to +10	15	18
BZT52B27-G	VS	26.46	27	27.54	2	0.5	> 20	100	80	250	+8 to +10	14	16
BZT52B30-G	VT	29.40	30	30.60	2	0.5	> 22.5	100	80	250	+8 to +10	12	14
BZT52B33-G	VU	32.34	33	33.66	2	0.5	> 25	100	80	250	+8 to +10	11	13
BZT52B36-G	VW	35.28	36	36.72	2	0.5	> 27	100	87	250	+8 to +10	10	12
BZT52B39-G	VX	38.22	39	39.78	2	0.5	> 29	100	87	300	+8 to +12	9	11
BZT52B43-G	VY	42.14	43	43.86	2	0.5	> 32	100	97	375	+8 to +12	9	10
BZT52B47-G	VZ	46.06	47	47.94	2	0.5	> 35	100	97	375	+8 to +12	8	9
BZT52B51-G	U1	49.98	51	52.02	2	0.5	> 38	100	100	400	+8 to +12	7	8
BZT52B56-G	U2	54.88	56	57.12	2	0.5	> 42	100	135	425	+8 to +12	7	8
BZT52B62-G	U3	60.76	62	63.24	2	0.5	> 46	100	150	450	+8 to +12	6	7
BZT52B68-G	U4	66.64	68	69.36	2	0.5	> 51	100	200	475	+8 to +12	5	6
BZT52B75-G	U5	73.50	75	76.50	2	0.5	> 56	100	250	500	+8 to +12	5	6

Notes

- I_{ZT1} = 5 mA, I_{ZT2} = 1 mA or 0.5 mA

(1) Measured with pulses t_p = 5 ms

(2) Valid provided that electrodes are kept at ambient temperature

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

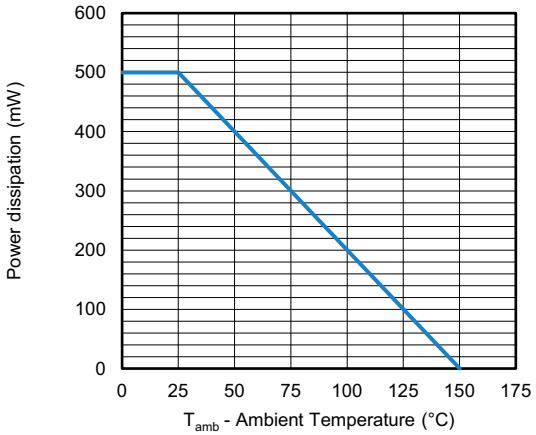


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature

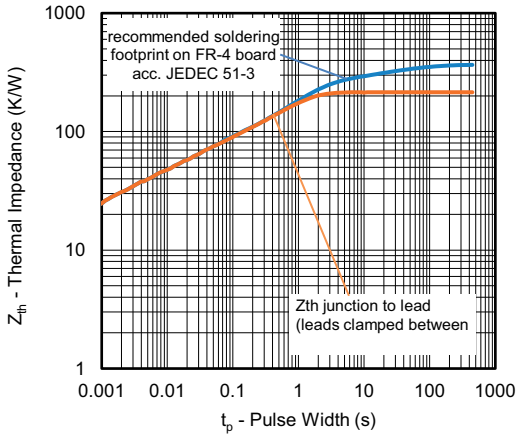
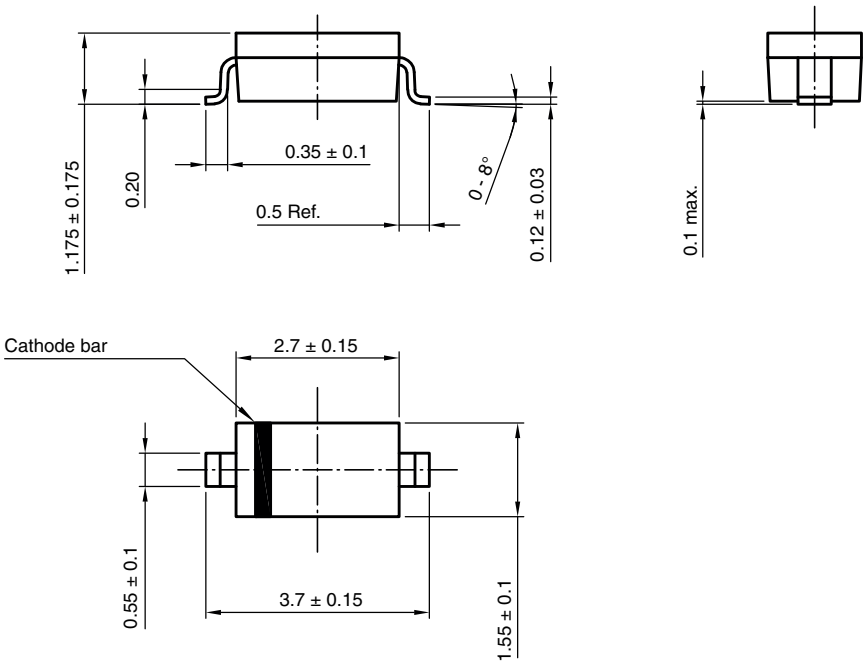
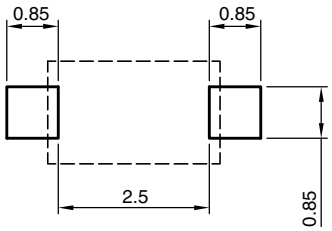


Fig. 2 - Thermal Impedance vs. Time

PACKAGE DIMENSIONS in millimeters (inches): **SOD-123**

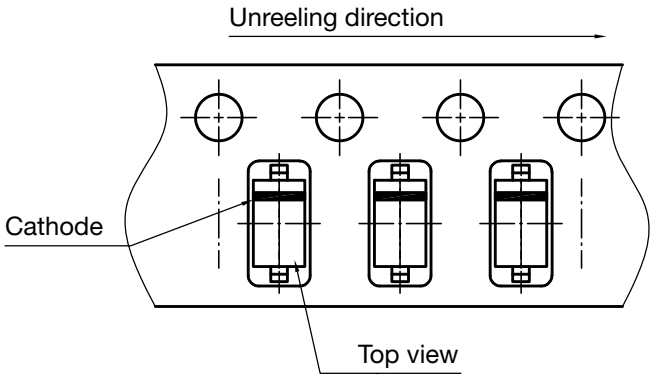


Footprint recommendation:



Created - Date: 18 Oct. 2021
Rev. 01 - Date: 18 Jan. 2022
Document no.: S8-V-3910.01-003 (4)

ORIENTATION IN CARRIER TAPE



SOD-123

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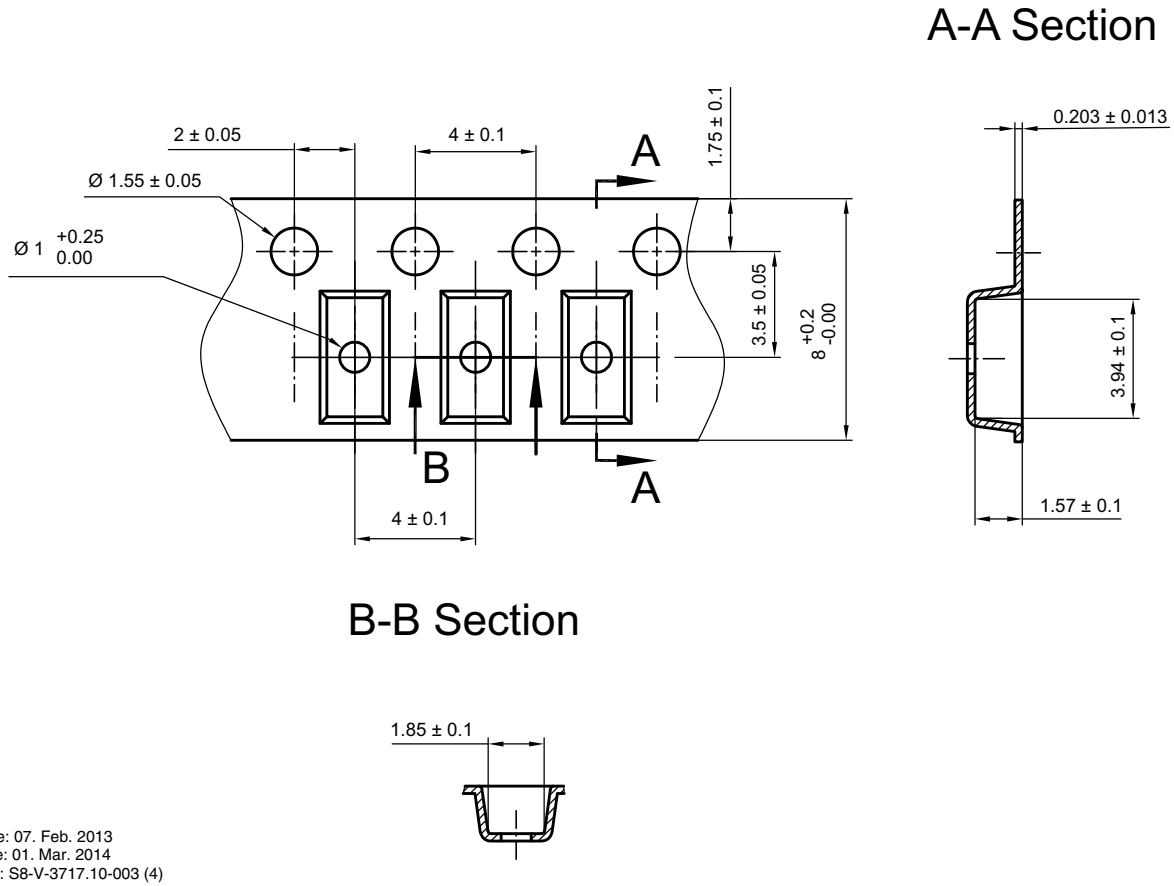
Document no.: S8-V-3717.10-003 (4)

CARRIER TAPE



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Rev. 01 - Date: 01. Mar. 2014
Document no.: S8-V-3717.10-003 (4)

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