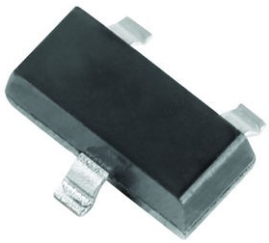
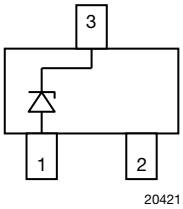
Small Signal Zener Diodes





FEATURES

AUTOMOTIVE GRADE Available

- 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
- ESD capability acc. 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

Pb-free

e3

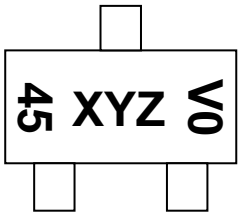
RoHS COMPLIANT

LINKS TO ADDITIONAL RESOURCES

3D Models

SPICE Models

MARKING (example only)



XYZ = type code
45 = working week
0 = year
V = Vishay

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
BZX84 series	BZX84C2V4-E3-08 to BZX84C75-E3-08	5 %	no	3000 (8 mm tape on 7" reel)	15 000
	BZX84B2V4-E3-08 to BZX84B75-E3-08	2 %	no		
	BZX84C2V4-HE3_A-08 to BZX84C75-HE3_A-08	5 %	yes		
	BZX84B2V4-HE3_A-08 to BZX84B75-HE3_A-08	2 %	yes		
	BZX84C2V4-E3-18 to BZX84C75-E3-18	5 %	no	10 000 (8 mm tape on 13" reel)	10 000
	BZX84B2V4-E3-18 to BZX84B75-E3-18	2 %	no		
	BZX84C2V4-HE3_A-18 to BZX84C75-HE3_A-18	5 %	yes		
	BZX84B2V4-HE3_A-18 to BZX84B75-HE3_A-18	2 %	yes		

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SOT-23	9.2 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

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ABSOLUTE MAXIMUM RATINGS

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
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			TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE f = 1 kHz		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}	α_{VZ} at I_{ZT1}	
		V			mA		µA	V	Ω		10^{-4}/°C	
		MIN.	NOM.	MAX.					MAX.	MAX.	MIN.	MAX.
BZX84C2V2	G49	2.09	2.2	2.31	5	1	100	1	120	600	-9	-4
BZX84C2V4	G50	2.28	2.4	2.52	5	1	50	1	100	600	-9	-4
BZX84C2V7	G51	2.57	2.7	2.84	5	1	20	1	100	600	-9	-4
BZX84C3V0	G52	2.85	3.0	3.15	5	1	10	1	95	600	-9	-3
BZX84C3V3	G53	3.14	3.3	3.47	5	1	5	1	95	600	-8	-3
BZX84C3V6	G54	3.42	3.6	3.78	5	1	5	1	90	600	-8	-3
BZX84C3V9	G55	3.71	3.9	4.10	5	1	3	1	90	600	-7	-3
BZX84C4V3	G56	4.09	4.3	4.52	5	1	3	1	90	600	-6	-1
BZX84C4V7	G57	4.47	4.7	4.94	5	1	3	2	80	500	-5	2
BZX84C5V1	G58	4.85	5.1	5.36	5	1	2	2	60	480	-3	4
BZX84C5V6	G59	5.32	5.6	5.88	5	1	1	2	40	400	-2	6
BZX84C6V2	G60	5.89	6.2	6.51	5	1	3	4	10	150	-1	7
BZX84C6V8	G61	6.46	6.8	7.14	5	1	2	4	15	80	2	7
BZX84C7V5	G62	7.13	7.5	7.88	5	1	1	5	15	80	3	7
BZX84C8V2	G63	7.79	8.2	8.61	5	1	0.7	5	15	80	4	7
BZX84C9V1	G64	8.65	9.1	9.56	5	1	0.5	6	15	100	5	8
BZX84C10	G65	9.50	10	10.50	5	1	0.2	7	20	150	5	8
BZX84C11	G66	10.45	11	11.55	5	1	0.1	8	20	150	5	9
BZX84C12	G67	11.40	12	12.60	5	1	0.1	8	25	150	6	9
BZX84C13	G68	12.40	13	13.65	5	1	0.1	8	30	170	7	9
BZX84C15	G69	14.25	15	15.60	5	1	0.05	10.5	30	200	7	9
BZX84C16	G70	15.30	16	16.80	5	1	0.05	11.2	40	200	8	9.5
BZX84C18	G71	17.10	18	18.90	5	1	0.05	12.6	45	225	8	9.5
BZX84C20	G72	19.00	20	21.00	5	1	0.05	14.0	55	225	8	10
BZX84C22	G73	20.90	22	23.10	5	1	0.05	15.4	55	250	8	10
BZX84C24	G74	22.80	24	25.20	5	1	0.05	16.8	70	250	8	10
BZX84C27	G75	25.65	27	28.35	2	0.5	0.05	18.9	80	300	8	10
BZX84C30	G76	28.50	30	31.50	2	0.5	0.05	21.0	80	300	8	10
BZX84C33	G77	31.35	33	34.65	2	0.5	0.05	23.1	80	325	8	10
BZX84C36	G78	34.20	36	37.80	2	0.5	0.05	25.2	90	350	8	10
BZX84C39	G79	37.05	39	40.95	2	0.5	0.05	27.3	130	350	10	12
BZX84C43	G80	40.85	43	45.15	2	0.5	0.05	30.1	150	375	10	12
BZX84C47	G81	44.65	47	49.35	2	0.5	0.05	32.9	170	375	10	12
BZX84C51	G82	48.45	51	53.55	2	0.5	0.05	35.7	180	400	10	12
BZX84C56	G83	53.20	56	58.80	2	0.5	0.05	39.2	200	425	9	11
BZX84C62	G84	58.90	62	65.10	2	0.5	0.05	43.4	215	450	9	12
BZX84C68	G85	64.60	68	71.40	2	0.5	0.05	47.6	240	475	10	12
BZX84C75	G86	71.25	75	78.75	2	0.5	0.05	52.5	255	500	10	12

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

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE			TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE f = 1 kHz		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}	α_{VZ} at I_{ZT1}	
		V			mA		µA	V	Ω		10^{-4}/°C	
		MIN.	NOM.	MAX.					MAX.	MAX.	MIN.	MAX.
BZX84B2V2	H49	2.16	2.2	2.24	5	1	100	1	120	600	-9	-4
BZX84B2V4	H50	2.35	2.4	2.45	5	1	50	1	100	600	-9	-4
BZX84B2V7	H51	2.65	2.7	2.75	5	1	20	1	100	600	-9	-4
BZX84B3V0	H52	2.94	3.0	3.06	5	1	10	1	95	600	-9	-3
BZX84B3V3	H53	3.23	3.3	3.37	5	1	5	1	95	600	-8	-3
BZX84B3V6	H54	3.53	3.6	3.67	5	1	5	1	90	600	-8	-3
BZX84B3V9	H55	3.82	3.9	3.98	5	1	3	1	90	600	-7	-3
BZX84B4V3	H56	4.21	4.3	4.39	5	1	3	1	90	600	-6	-1
BZX84B4V7	H57	4.61	4.7	4.79	5	1	3	2	80	500	-5	2
BZX84B5V1	H58	5.00	5.1	5.20	5	1	2	2	60	480	-3	4
BZX84B5V6	H59	5.49	5.6	5.71	5	1	1	2	40	400	-2	6
BZX84B6V2	H60	6.08	6.2	6.32	5	1	3	4	10	150	-1	7
BZX84B6V8	H61	6.66	6.8	6.94	5	1	2	4	15	80	2	7
BZX84B7V5	H62	7.35	7.5	7.65	5	1	1	5	15	80	3	7
BZX84B8V2	H63	8.04	8.2	8.36	5	1	0.7	5	15	80	4	7
BZX84B9V1	H64	8.92	9.1	9.28	5	1	0.5	6	15	100	5	8
BZX84B10	H65	9.80	10	10.20	5	1	0.2	7	20	150	5	8
BZX84B11	H66	10.78	11	11.22	5	1	0.1	8	20	150	5	9
BZX84B12	H67	11.76	12	12.24	5	1	0.1	8	25	150	6	9
BZX84B13	H68	12.74	13	13.26	5	1	0.1	8	30	170	7	9
BZX84B15	H69	14.70	15	15.30	5	1	0.05	10.5	30	200	7	9
BZX84B16	H70	15.68	16	16.32	5	1	0.05	11.2	40	200	8	9.5
BZX84B18	H71	17.64	18	18.36	5	1	0.05	12.6	45	225	8	9.5
BZX84B20	H72	19.60	20	20.40	5	1	0.05	14	55	225	8	10
BZX84B22	H73	21.56	22	22.44	5	1	0.05	15.4	55	250	8	10
BZX84B24	H74	23.52	24	24.48	5	1	0.05	16.8	70	250	8	10
BZX84B27	H75	26.46	27	27.54	2	0.5	0.05	18.9	80	300	8	10
BZX84B30	H76	29.40	30	30.60	2	0.5	0.05	21	80	300	8	10
BZX84B33	H77	32.34	33	33.66	2	0.5	0.05	23.1	80	325	8	10
BZX84B36	H78	35.28	36	36.72	2	0.5	0.05	25.2	90	350	8	10
BZX84B39	H79	38.22	39	39.78	2	0.5	0.05	27.3	130	350	10	12
BZX84B43	H80	42.14	43	43.86	2	0.5	0.05	30.1	150	375	10	12
BZX84B47	H81	46.06	47	47.94	2	0.5	0.05	32.9	170	375	10	12
BZX84B51	H82	49.98	51	52.02	2	0.5	0.05	35.7	180	400	10	12
BZX84B56	H83	54.88	56	57.12	2	0.5	0.05	39.2	200	425	9	11
BZX84B62	H84	60.76	62	63.24	2	0.5	0.05	43.4	215	450	9	12
BZX84B68	H85	66.64	68	69.36	2	0.5	0.05	47.6	240	475	10	12
BZX84B75	H86	73.50	75	76.50	2	0.5	0.05	52.5	255	500	10	12

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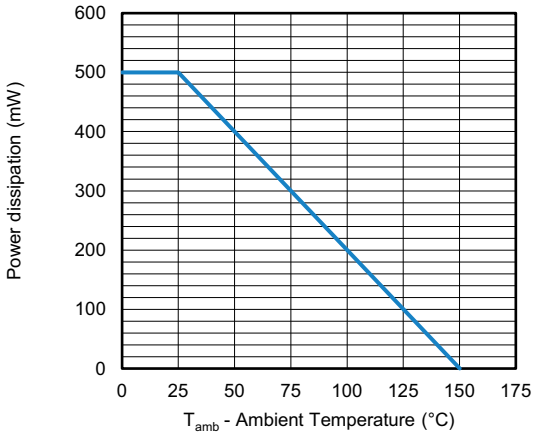


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature

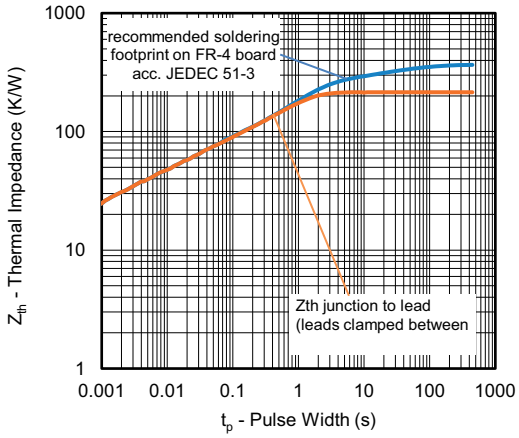
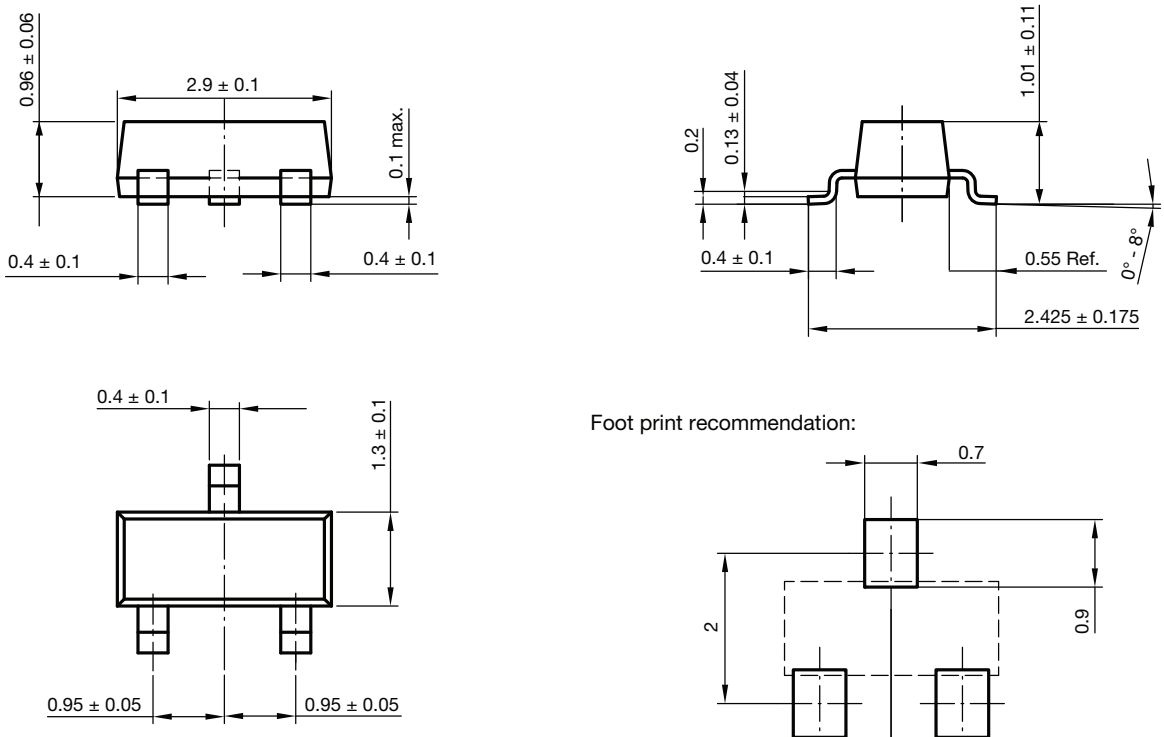


Fig. 2 - Thermal Impedance vs. Time

PACKAGE DIMENSIONS in millimeters (inches): SOT-23



Foot print recommendation:

Document no.: S8-V-3929.01-009 (4)
Created - Date: 18. Oct. 2021
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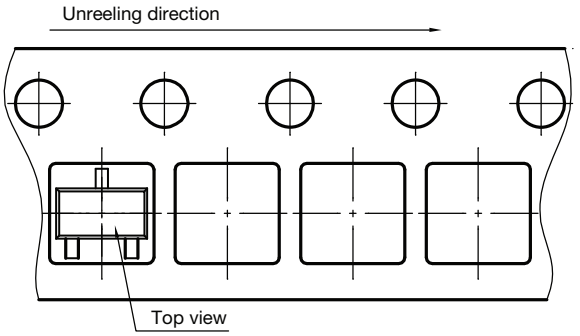
ORIENTATION IN CARRIER TAPE



SOT-23

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Created Date: 04.02.2010
Rev. 02 Date: 07.11.2022

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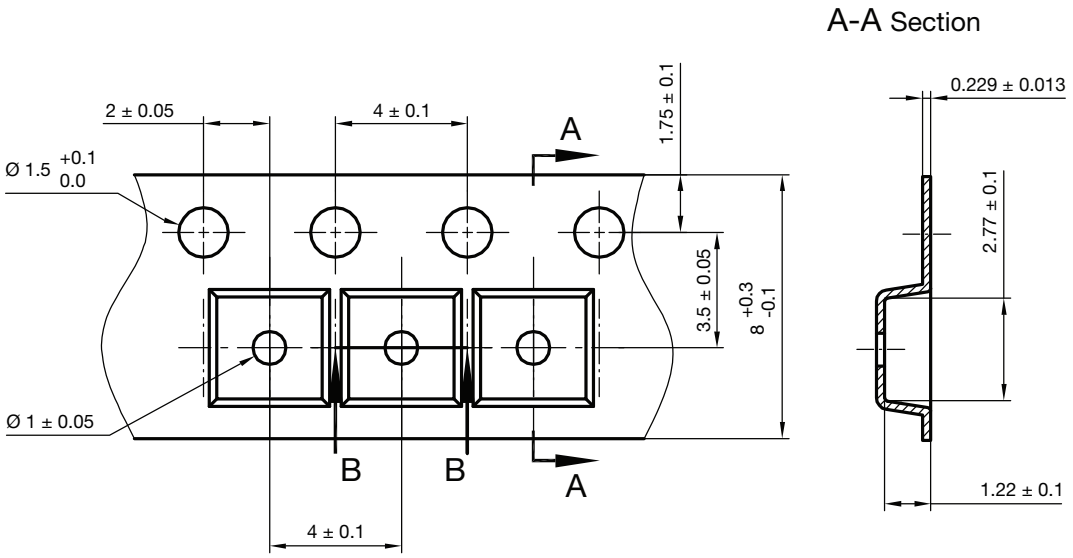

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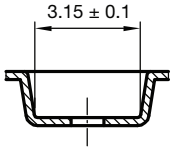

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