



### Small Signal Zener Diodes



#### FEATURES

- Silicon planar power Zener diodes
- The zener voltages are graded according to the international E 24 standard. Standard zener voltage tolerance is  $\pm 5\%$ . Replace "C" with "B" for 2% tolerance.
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS COMPLIANT

GREEN (5-2008)\*\*

#### Note

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
$V_Z$ range nom.	2.4 to 75	V
Test current $I_{ZT}$	2; 5	mA
$V_Z$ specification	Pulse current	
Int. construction	Single	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
BZX84-V-G-series	BZX84-V-series-G-18	10 000 (8 mm tape on 13" reel)	10 000
BZX84-V-G-series	BZX84-V-series-G-08	3000 (8 mm tape on 7" reel)	15 000

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SOT-23	8.1 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Power dissipation	$T_{amb} = 25\text{ °C}$ , device on fiberglass substrate, acc. layout on page 7	$P_{tot}$	300	mW	
Thermal resistance junction to ambient air	$T_{amb} = 25\text{ °C}$ , device on fiberglass substrate, acc. layout on page 7	$R_{thJA}$	420	K/W	
Junction temperature		$T_j$	150	°C	
Storage temperature range		$T_{stg}$	- 65 to + 150	°C	



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)													
PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE			TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE		TEMPERATURE COEFFICIENT		
		$V_Z$ at $I_{ZT1}$			$I_{ZT1}$	$I_{ZT2}$	$I_R$ at $V_R$		$Z_Z$ at $I_{ZT1}$	$Z_{ZK}$ at $I_{ZT2}$	$\alpha_{VZ}$ at $I_{ZT1}$		
		V			mA		$\mu\text{A}$	V	$\Omega$		$10^{-4}/^{\circ}\text{C}$		
		MIN.	NOM.	MAX.					MAX.	MAX.	MIN.	MAX.	
BZX84C2V4-V-G	G50	2.2	2.4	2.6	5	1	50	1	100	275	-9	-4	
BZX84C2V7-V-G	G51	2.5	2.7	2.9	5	1	20	1	100	600	-9	-4	
BZX84C3V0-V-G	G52	2.8	3.0	3.2	5	1	10	1	95	600	-9	-3	
BZX84C3V3-V-G	G53	3.1	3.3	3.5	5	1	5	1	95	600	-8	-3	
BZX84C3V6-V-G	G54	3.4	3.6	3.8	5	1	5	1	90	600	-8	-3	
BZX84C3V9-V-G	G55	3.7	3.9	4.1	5	1	3	1	90	600	-7	-3	
BZX84C4V3-V-G	G56	4.0	4.3	4.6	5	1	3	1	90	600	-6	-1	
BZX84C4V7-V-G	G57	4.4	4.7	5.0	5	1	3	2	80	500	-5	2	
BZX84C5V1-V-G	G58	4.8	5.1	5.4	5	1	2	2	60	480	-3	4	
BZX84C5V6-V-G	G59	5.2	5.6	6.0	5	1	1	2	40	400	-2	6	
BZX84C6V2-V-G	G60	5.8	6.2	6.6	5	1	3	4	10	150	-1	7	
BZX84C6V8-V-G	G61	6.4	6.8	7.2	5	1	2	4	15	80	2	7	
BZX84C7V5-V-G	G62	7.0	7.5	7.9	5	1	1	5	15	80	3	7	
BZX84C8V2-V-G	G63	7.7	8.2	8.7	5	1	0.7	5	15	80	4	7	
BZX84C9V1-V-G	G64	8.5	9.1	9.6	5	1	0.5	6	15	100	5	8	
BZX84C10-V-G	G65	9.4	10	10.6	5	1	0.2	7	20	150	5	8	
BZX84C11-V-G	G66	10.4	11	11.6	5	1	0.1	8	20	150	5	9	
BZX84C12-V-G	G67	11.4	12	12.7	5	1	0.1	8	25	150	6	9	
BZX84C13-V-G	G68	12.4	13	14.1	5	1	0.1	8	30	170	7	9	
BZX84C15-V-G	G69	13.8	15	15.6	5	1	0.05	10.5	30	200	7	9	
BZX84C16-V-G	G70	15.3	16	17.1	5	1	0.05	11.2	40	200	8	9.5	
BZX84C18-V-G	G71	16.8	18	19.1	5	1	0.05	12.6	45	225	8	9.5	
BZX84C20-V-G	G72	18.8	20	21.2	5	1	0.05	14.0	55	225	8	10	
BZX84C22-V-G	G73	20.8	22	23.3	5	1	0.05	15.4	55	250	8	10	
BZX84C24-V-G	G74	22.8	24	25.6	5	1	0.05	16.8	70	250	8	10	
BZX84C27-V-G	G75	25.1	27	28.9	2	0.5	0.05	18.9	80	300	8	10	
BZX84C30-V-G	G76	28	30	32	2	0.5	0.05	21.0	80	300	8	10	
BZX84C33-V-G	G77	31	33	35	2	0.5	0.05	23.1	80	325	8	10	
BZX84C36-V-G	G78	34	36	38	2	0.5	0.05	25.2	90	350	8	10	
BZX84C39-V-G	G79	37	39	41	2	0.5	0.05	27.3	130	350	10	12	
BZX84C43-V-G	G80	40	43	46	2	0.5	0.05	30.1	150	375	10	12	
BZX84C47-V-G	G81	44	47	50	2	0.5	0.05	32.9	170	375	10	12	
BZX84C51-V-G	G82	48	51	54	2	0.5	0.05	35.7	180	400	10	12	
BZX84C56-V-G	G83	52	56	60	2	0.5	0.05	39.2	200	425	9	11	
BZX84C62-V-G	G84	58	62	66	2	0.5	0.05	43.4	215	450	9	12	
BZX84C68-V-G	G85	64	68	72	2	0.5	0.05	47.6	240	475	10	12	
BZX84C75-V-G	G86	70	75	79	2	0.5	0.05	52.5	255	500	10	12	



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)													
PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE			TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE		TEMPERATURE COEFFICIENT		
		$V_Z$ at $I_{ZT1}$			$I_{ZT1}$	$I_{ZT2}$	$I_R$ at $V_R$		$Z_Z$ at $I_{ZT1}$	$Z_{ZK}$ at $I_{ZT2}$	$\alpha_{VZ}$ at $I_{ZT1}$		
		V			mA		$\mu\text{A}$	V	$\Omega$		$10^{-4}/^{\circ}\text{C}$		
		MIN.	NOM.	MAX.					MAX.	MAX.	MIN.	MAX.	
BZX84B2V4-V-G	H50	2.35	2.4	2.45	5	1	50	1	100	275	-9	-4	
BZX84B2V7-V-G	H51	2.65	2.7	2.75	5	1	20	1	100	600	-9	-4	
BZX84B3V0-V-G	H52	2.94	3.0	3.06	5	1	10	1	95	600	-9	-3	
BZX84B3V3-V-G	H53	3.23	3.3	3.37	5	1	5	1	95	600	-8	-3	
BZX84B3V6-V-G	H54	3.53	3.6	3.67	5	1	5	1	90	600	-8	-3	
BZX84B3V9-V-G	H55	3.82	3.9	3.98	5	1	3	1	90	600	-7	-3	
BZX84B4V3-V-G	H56	4.21	4.3	4.39	5	1	3	1	90	600	-6	-1	
BZX84B4V7-V-G	H57	4.61	4.7	4.79	5	1	3	2	80	500	-5	2	
BZX84B5V1-V-G	H58	5.0	5.1	5.2	5	1	2	2	60	480	-3	4	
BZX84B5V6-V-G	H59	5.49	5.6	5.71	5	1	1	2	40	400	-2	6	
BZX84B6V2-V-G	H60	6.08	6.2	6.32	5	1	3	4	10	150	-1	7	
BZX84B6V8-V-G	H61	6.66	6.8	6.94	5	1	2	4	15	80	2	7	
BZX84B7V5-V-G	H62	7.35	7.5	7.65	5	1	1	5	15	80	3	7	
BZX84B8V2-V-G	H63	8.04	8.2	8.36	5	1	0.7	5	15	80	4	7	
BZX84B9V1-V-G	H64	8.92	9.1	9.28	5	1	0.5	6	15	100	5	8	
BZX84B10-V-G	H65	9.8	10	10.2	5	1	0.2	7	20	150	5	8	
BZX84B11-V-G	H66	10.8	11	11.2	5	1	0.1	8	20	150	5	9	
BZX84B12-V-G	H67	11.8	12	12.2	5	1	0.1	8	25	150	6	9	
BZX84B13-V-G	H68	12.7	13	13.3	5	1	0.1	8	30	170	7	9	
BZX84B15-V-G	H69	14.7	15	15.3	5	1	0.05	10.5	30	200	7	9	
BZX84B16-V-G	H70	15.7	16	16.3	5	1	0.05	11.2	40	200	8	9.5	
BZX84B18-V-G	H71	17.6	18	18.4	5	1	0.05	12.6	45	225	8	9.5	
BZX84B20-V-G	H72	19.6	20	20.4	5	1	0.05	14	55	225	8	10	
BZX84B22-V-G	H73	21.6	22	22.4	5	1	0.05	15.4	55	250	8	10	
BZX84B24-V-G	H74	23.5	24	24.5	5	1	0.05	16.8	70	250	8	10	
BZX84B27-V-G	H75	26.5	27	27.5	2	0.5	0.05	18.9	80	300	8	10	
BZX84B30-V-G	H76	29.4	30	30.6	2	0.5	0.05	21	80	300	8	10	
BZX84B33-V-G	H77	32.3	33	33.7	2	0.5	0.05	23.1	80	325	8	10	
BZX84B36-V-G	H78	35.3	36	36.7	2	0.5	0.05	25.2	90	350	8	10	
BZX84B39-V-G	H79	38.2	39	39.8	2	0.5	0.05	27.3	130	350	10	12	
BZX84B43-V-G	H80	42.1	43	43.9	2	0.5	0.05	30.1	150	375	10	12	
BZX84B47-V-G	H81	46.1	47	47.9	2	0.5	0.05	32.9	170	375	10	12	
BZX84B51-V-G	H82	50	51	52	2	0.5	0.05	35.7	180	400	10	12	
BZX84B56-V-G	H83	54.9	56	57.1	2	0.5	0.05	39.2	200	425	9	11	
BZX84B62-V-G	H84	60.8	62	63.2	2	0.5	0.05	43.4	215	450	9	12	
BZX84B68-V-G	H85	66.6	68	69.4	2	0.5	0.05	47.6	240	475	10	12	
BZX84B75-V-G	H86	73.5	75	76.5	2	0.5	0.05	52.5	255	500	10	12	



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

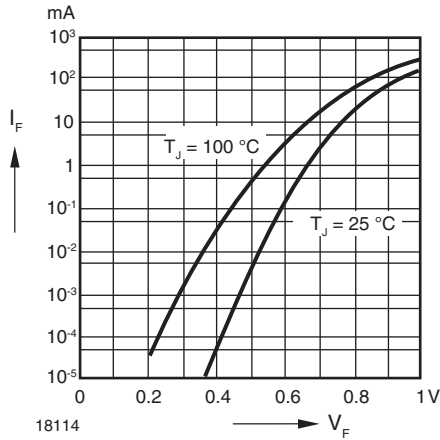


Fig. 1 - Forward Characteristics

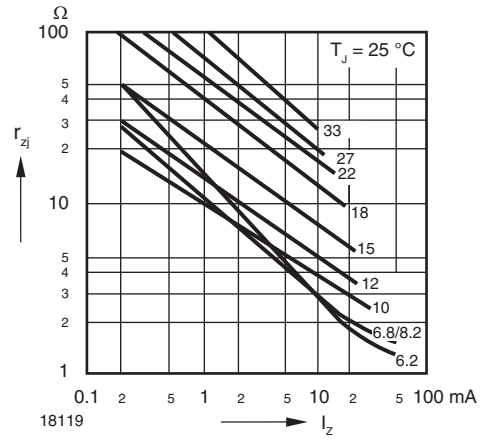


Fig. 4 - Dynamic Resistance vs. Zener Current

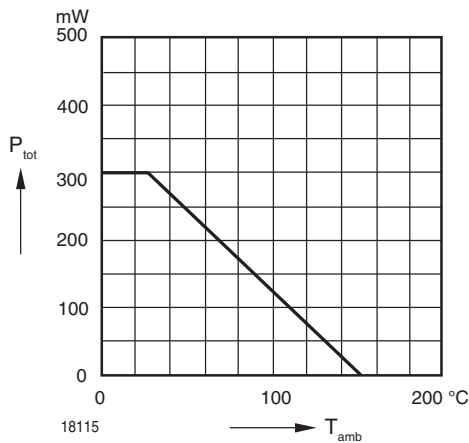


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

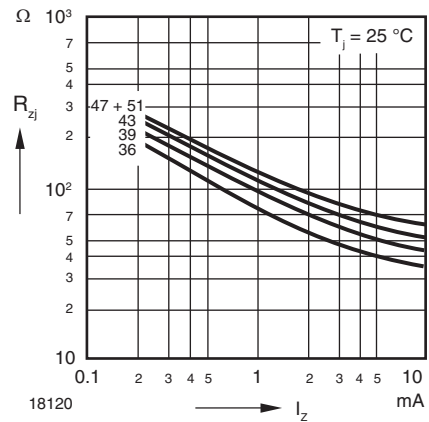


Fig. 5 - Dynamic Resistance vs. Zener Current

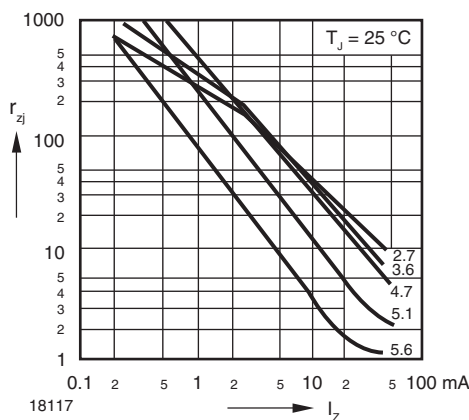


Fig. 3 - Dynamic Resistance vs. Zener Current

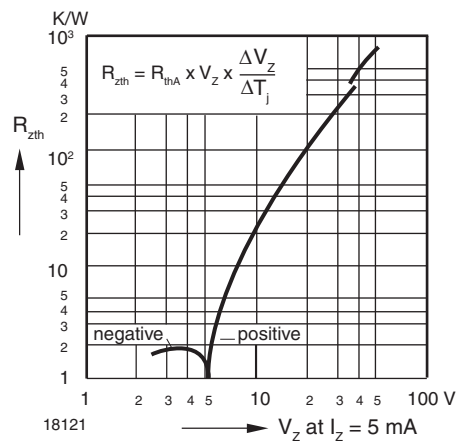


Fig. 6 - Thermal Differential Resistance vs. Zener Voltage

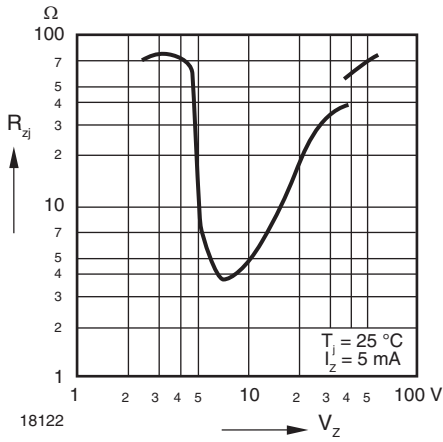


Fig. 7 - Dynamic Resistance vs. Zener Voltage

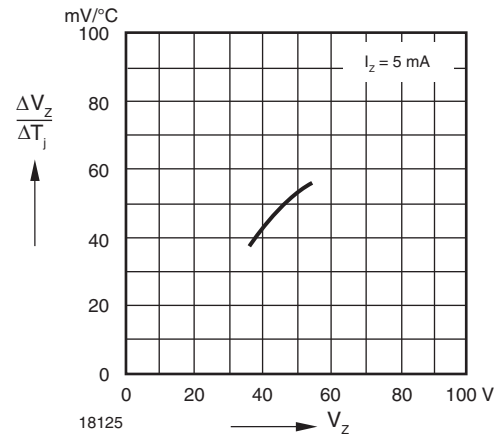


Fig. 10 - Temperature Dependence of Zener Voltage vs. Zener Voltage

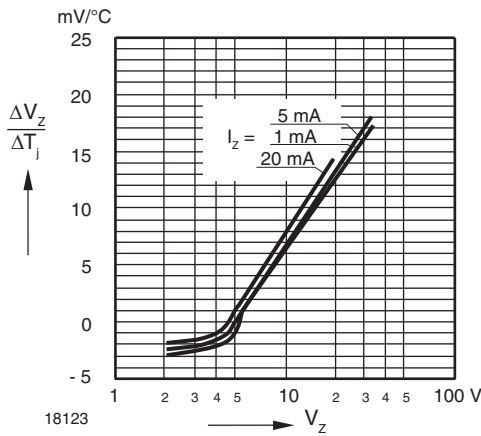


Fig. 8 - Temperature Dependence of Zener Voltage vs. Zener Voltage

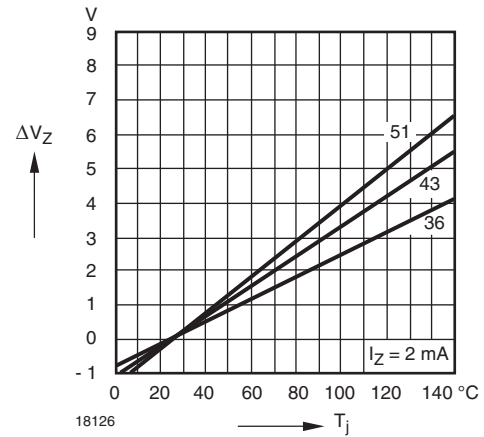


Fig. 11 - Change of Zener Voltage vs. Junction Temperature

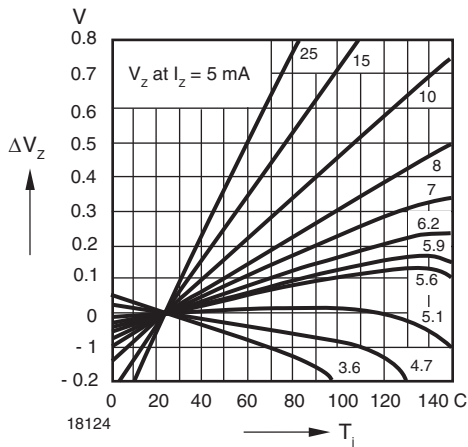


Fig. 9 - Change of Zener Voltage vs. Junction Temperature

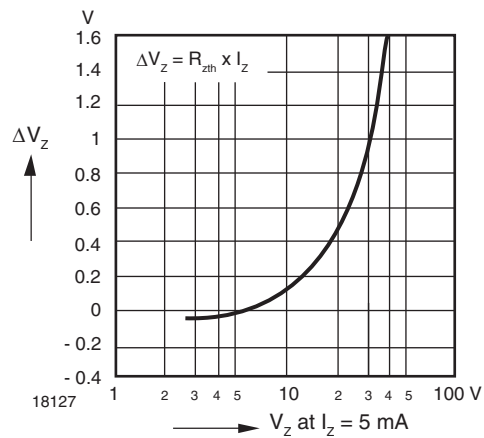


Fig. 12 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener Voltage

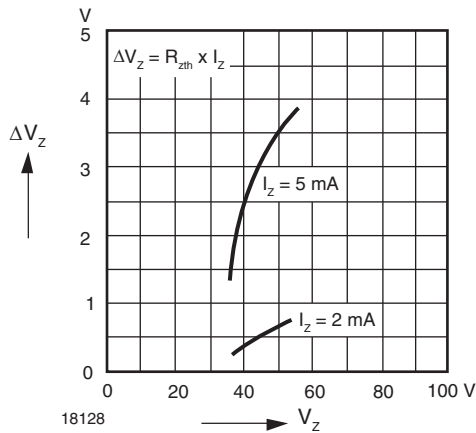


Fig. 13 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener Voltage

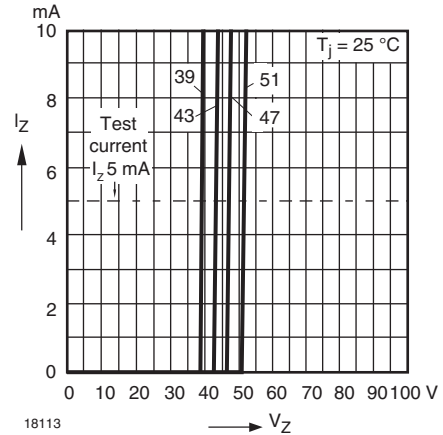


Fig. 16 - Breakdown Characteristics

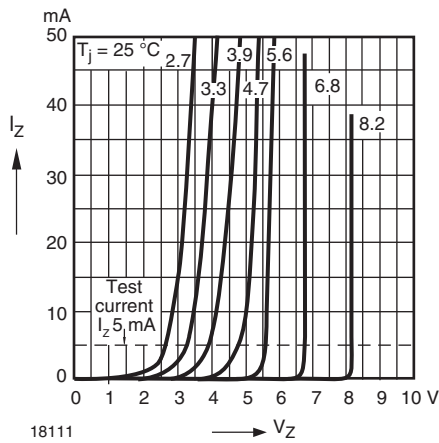


Fig. 14 - Breakdown Characteristics

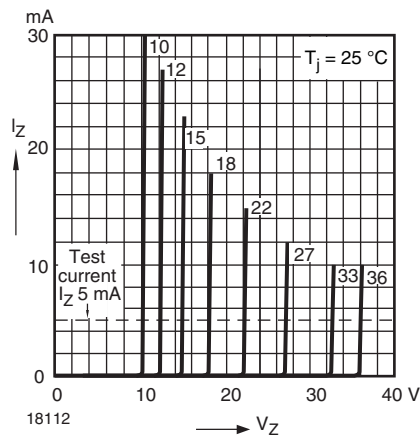
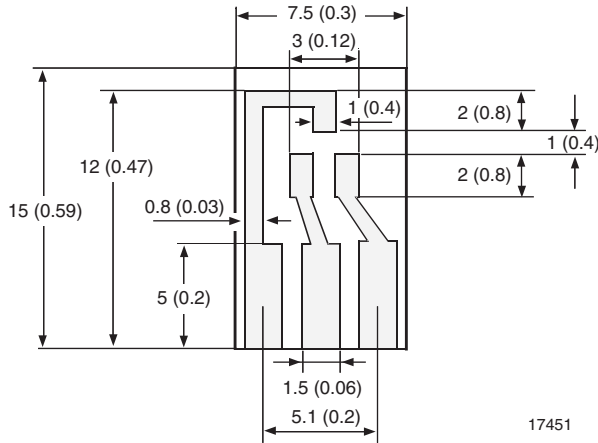


Fig. 15 - Breakdown Characteristics

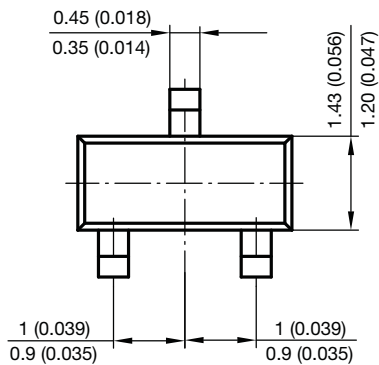
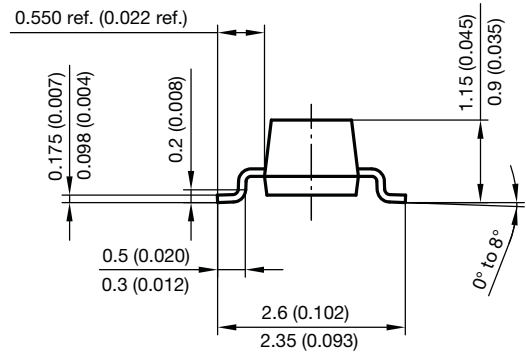
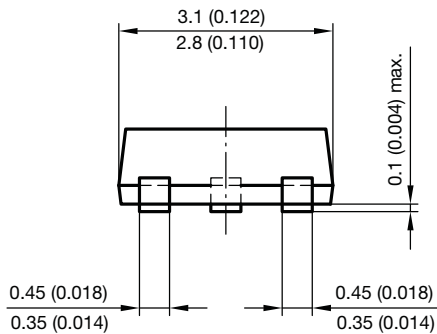


### LAYOUT FOR R<sub>θ</sub>; J<sub>A</sub> TEST

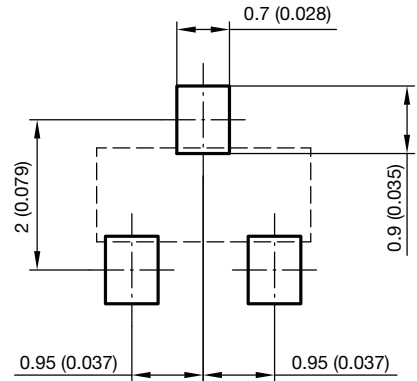
Thickness: fiberglass 0.059" (1.5 mm)  
Copper leads 0.012" (0.3 mm)



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



Foot print recommendation:



Document no.: 6.541-5014.01-4

Rev. 8 - Date: 23.Sept.2009

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## Disclaimer

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## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**