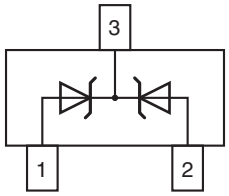
Small Signal Zener Diodes, Dual



FEATURES

- Dual silicon planar Zener diodes, common cathode
- The Zener voltages are graded according to the international E24 standard. Standard Zener voltage tolerance is ± 5 %. Replace “C” with “B” for 2 % tolerance
- The parameters are valid for both diodes in one case. ΔV_Z and ΔR_{zj} of the two diodes in one case is ≤ 5 %
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free

e3

RoHS COMPLIANT

GREEN (5-2008)**

Note

** Please see document “Vishay Material Category Policy”: www.vishay.com/doc?99902

PRIMERY CHARACTERISTICS		
PARAMETER	**VALUE**	**UNIT**
V_Z range nom.	2.7 to 51	V
Test current I_{ZT}	5	mA
V_Z specification	Pulse current	
Int. construction	Dual	

ORDERING INFORMATION			
DEVICE NAME	**ORDERING CODE**	**TAPED UNITS PER REEL**	**MINIMUM ORDER QUANTITY**
DZ23-V-G series	DZ23-V-G series-18	10 000 (8 mm tape on 13" reel)	10 000
DZ23-V-G series	DZ23-V-G series-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 (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Power dissipation	Device on fiberglass substrate, see layout on page 6	P_{tot}	300	mW
Thermal resistance junction to ambient air	Device on fiberglass substrate, see layout on page 6	R_{thJA}	420	K/W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C
Zener current		I_Z	P_{tot}/V_Z	mA

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

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE (1)			TEST CURRENT		REVERSE VOLTAGE		DYNAMIC RESISTANCE f = 1 kHz		TEMPERATURE COEFFICIENT OF ZENER VOLTAGE	
		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} at I_{ZT1}	
		V			mA		V	nA	Ω		10^{-4}/°C	
		MIN.	NOM.	MAX.			MAX.		MAX.	MAX.	MIN.	MAX.
DZ23C2V7-V-G	V41	2.5	2.7	2.9	5	1	-	-	75 (< 83)	< 500	- 9	- 4
DZ23C3V0-V-G	V42	2.8	3.0	3.2	5	1	-	-	80 (< 95)	< 500	- 9	- 3
DZ23C3V3-V-G	V43	3.1	3.3	3.5	5	1	-	-	80 (< 95)	< 500	- 8	- 3
DZ23C3V6-V-G	V44	3.4	3.6	3.8	5	1	-	-	80 (< 95)	< 500	- 8	- 3
DZ23C3V9-V-G	V45	3.7	3.9	4.1	5	1	-	-	80 (< 95)	< 500	- 7	- 3
DZ23C4V3-V-G	V46	4	4.3	4.6	5	1	-	-	80 (< 95)	< 500	- 6	- 1
DZ23C4V7-V-G	V47	4.4	4.7	5	5	1	-	-	70 (< 78)	< 500	- 5	2
DZ23C5V1-V-G	V48	4.8	5.1	5.4	5	1	> 0.8	100	30 (< 60)	< 480	- 3	4
DZ23C5V6-V-G	V49	5.2	5.6	6	5	1	> 1	100	10 (< 40)	< 400	- 2	6
DZ23C6V2-V-G	V50	5.8	6.2	6.6	5	1	> 2	100	4.8 (< 10)	< 200	- 1	7
DZ23C6V8-V-G	V51	6.4	6.8	7.2	5	1	> 3	100	4.5 (< 8)	< 150	2	7
DZ23C7V5-V-G	V52	7	7.5	7.9	5	1	> 5	100	4 (< 7)	< 50	3	7
DZ23C8V2-V-G	V53	7.7	8.2	8.7	5	1	> 6	100	4.5 (< 7)	< 50	4	7
DZ23C9V1-V-G	V54	8.5	9.1	9.6	5	1	> 7	100	4.8 (< 10)	< 50	5	8
DZ23C10-V-G	V55	9.4	10	10.6	5	1	> 7.5	100	5.2 (< 15)	< 70	5	8
DZ23C11-V-G	V56	10.4	11	11.6	5	1	> 8.5	100	6 (< 20)	< 70	5	9
DZ23C12-V-G	V57	11.4	12	12.7	5	1	> 9	100	7 (< 20)	< 90	6	9
DZ23C13-V-G	V58	12.4	13	14.1	5	1	> 10	100	9 (< 25)	< 110	7	9
DZ23C15-V-G	V59	13.8	15	15.6	5	1	> 11	100	11 (< 30)	< 110	7	9
DZ23C16-V-G	V60	15.3	16	17.1	5	1	> 12	100	13 (< 40)	< 170	8	9.5
DZ23C18-V-G	V61	16.8	18	19.1	5	1	> 14	100	18 (< 50)	< 170	8	9.5
DZ23C20-V-G	V62	18.8	20	21.2	5	1	> 15	100	20 (< 50)	< 220	8	10
DZ23C22-V-G	V63	20.8	22	23.3	5	1	> 17	100	25 (< 55)	< 220	8	10
DZ23C24-V-G	V64	22.8	24	25.6	5	1	> 18	100	28 (< 80)	< 220	8	10
DZ23C27-V-G	V65	25.1	27	28.9	5	1	> 20	100	30 (< 80)	< 250	8	10
DZ23C30-V-G	V66	28	30	32	5	1	> 22.5	100	35 (< 80)	< 250	8	10
DZ23C33-V-G	V67	31	33	35	5	1	> 25	100	40 (< 80)	< 250	8	10
DZ23C36-V-G	V68	34	36	38	5	1	> 27	100	40 (< 90)	< 250	8	10
DZ23C39-V-G	V69	37	39	41	5	1	> 29	100	50 (< 90)	< 300	10	12
DZ23C43-V-G	V70	40	43	46	5	1	> 32	100	60 (< 100)	< 700	10	12
DZ23C47-V-G	V71	44	47	50	5	1	> 35	100	70 (< 100)	< 750	10	12
DZ23C51-V-G	V72	48	51	54	5	1	> 38	100	70 (< 100)	< 750	10	12

Note

(1) Tested with pulses t_p = 5 ms

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

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE (1)			TEST CURRENT		REVERSE VOLTAGE		DYNAMIC RESISTANCE f = 1 kHz		TEMPERATURE COEFFICIENT OF ZENER VOLTAGE	
		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} at I_{ZT1}	
		V			mA		V	nA	Ω		10^{-4}/°C	
		MIN.	NOM.	MAX.			MAX.		MAX.	MAX.	MIN.	MAX.
DZ23B2V7-V-G	V81	2.65	2.7	2.75	5	1	-	-	75 (< 83)	< 500	- 9	- 4
DZ23B3V0-V-G	V82	2.94	3.0	3.06	5	1	-	-	80 (< 95)	< 500	- 9	- 3
DZ23B3V3-V-G	V83	3.23	3.3	3.37	5	1	-	-	80 (< 95)	< 500	- 8	- 3
DZ23B3V6-V-G	V84	3.53	3.6	3.67	5	1	-	-	80 (< 95)	< 500	- 8	- 3
DZ23B3V9-V-G	V85	3.82	3.9	3.98	5	1	-	-	80 (< 95)	< 500	- 7	- 3
DZ23B4V3-V-G	V86	4.21	4.3	4.39	5	1	-	-	80 (< 95)	< 500	- 6	- 1
DZ23B4V7-V-G	V87	4.61	4.7	4.79	5	1	-	-	70 (< 78)	< 500	- 5	2
DZ23B5V1-V-G	V88	5	5.1	5.2	5	1	> 0.8	100	30 (< 60)	< 480	- 3	4
DZ23B5V6-V-G	V89	5.49	5.6	5.71	5	1	> 1	100	10 (< 40)	< 400	- 2	6
DZ23B6V2-V-G	V90	6.08	6.2	6.32	5	1	> 2	100	4.8 (< 10)	< 200	- 1	7
DZ23B6V8-V-G	V91	6.66	6.8	6.94	5	1	> 3	100	4.5 (< 8)	< 150	2	7
DZ23B7V5-V-G	V92	7.35	7.5	7.65	5	1	> 5	100	4 (< 7)	< 50	3	7
DZ23B8V2-V-G	V93	8.04	8.2	8.36	5	1	> 6	100	4.5 (< 7)	< 50	4	7
DZ23B9V1-V-G	V94	8.92	9.1	9.28	5	1	> 7	100	4.8 (< 10)	< 50	5	8
DZ23B10-V-G	V95	9.8	10	10.2	5	1	> 7.5	100	5.2 (< 15)	< 70	5	8
DZ23B11-V-G	V96	10.8	11	11.2	5	1	> 8.5	100	6 (< 20)	< 70	5	9
DZ23B12-V-G	V97	11.8	12	12.2	5	1	> 9	100	7 (< 20)	< 90	6	9
DZ23B13-V-G	V98	12.7	13	13.3	5	1	> 10	100	9 (< 25)	< 110	7	9
DZ23B15-V-G	V99	14.7	15	15.3	5	1	> 11	100	11 (< 30)	< 110	7	9
DZ23B16-V-G	VA0	15.7	16	16.3	5	1	> 12	100	13 (< 40)	< 170	8	0.5
DZ23B18-V-G	VA1	17.6	18	18.4	5	1	> 14	100	18 (< 50)	< 170	8	0.5
DZ23B20-V-G	VA2	19.6	20	20.4	5	1	> 15	100	20 (< 50)	< 220	8	10
DZ23B22-V-G	VA3	21.6	22	22.4	5	1	> 17	100	25 (< 55)	< 220	8	10
DZ23B24-V-G	VA4	23.5	24	24.5	5	1	> 18	100	28 (< 80)	< 220	8	10
DZ23B27-V-G	VA5	26.5	27	27.5	5	1	> 20	100	30 (< 80)	< 250	8	10
DZ23B30-V-G	VA6	29.4	30	30.6	5	1	> 22.5	100	35 (< 80)	< 250	8	10
DZ23B33-V-G	VA7	32.3	33	33.7	5	1	> 25	100	40 (< 80)	< 250	8	10
DZ23B36-V-G	VA8	35.3	36	36.7	5	1	> 27	100	40 (< 90)	< 250	8	10
DZ23B39-V-G	VA9	38.2	39	39.8	5	1	> 29	100	50 (< 90)	< 300	10	12
DZ23B43-V-G	VB0	42.1	43	43.9	5	1	> 32	100	60 (< 100)	< 700	10	12
DZ23B47-V-G	VB1	46.1	47	47.9	5	1	> 35	100	70 (< 100)	< 750	10	12
DZ23B51-V-G	VB2	50	51	52	5	1	> 38	100	70 (< 100)	< 750	10	12

Note

(1) Tested with pulses t_p = 5 ms

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

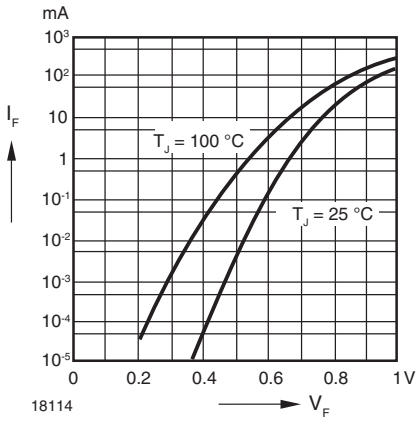


Fig. 1 - Forward Characteristics

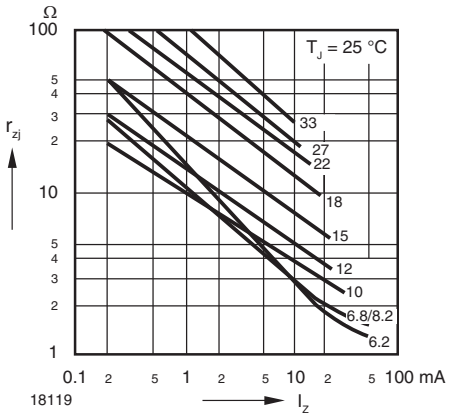


Fig. 4 - Dynamic Resistance vs. Zener Current

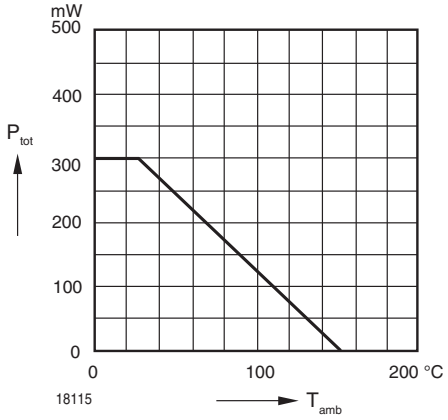


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

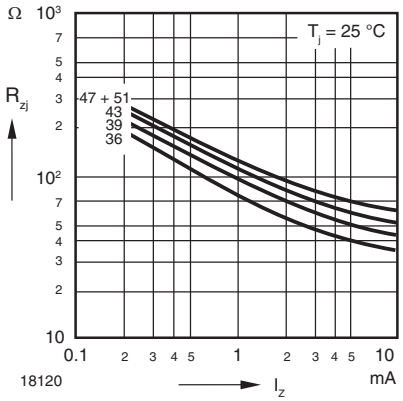


Fig. 5 - Dynamic Resistance vs. Zener Current

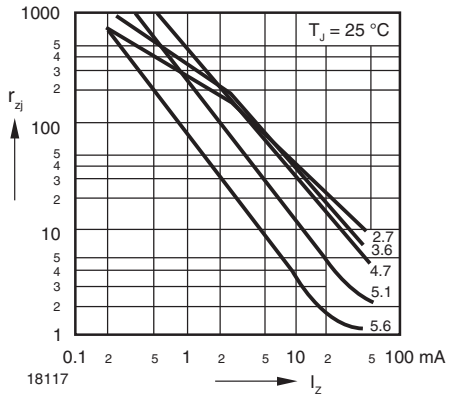


Fig. 3 - Dynamic Resistance vs. Zener Current

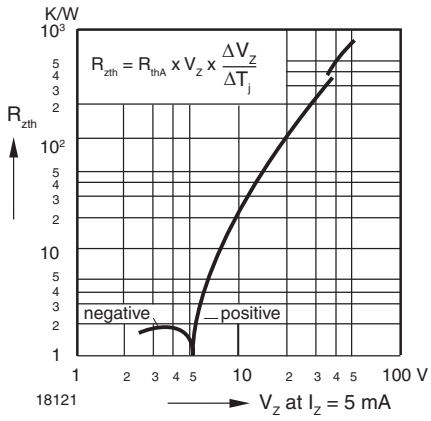


Fig. 6 - Thermal Differential Resistance vs. Zener Voltage

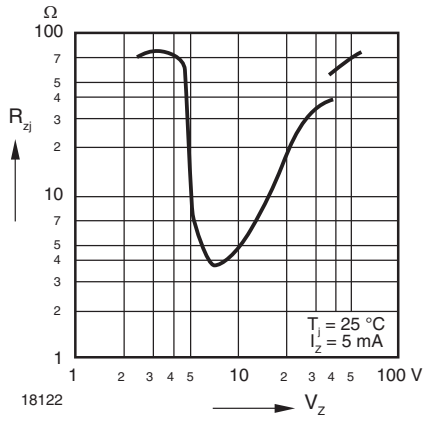


Fig. 7 - Dynamic Resistance vs. Zener Voltage

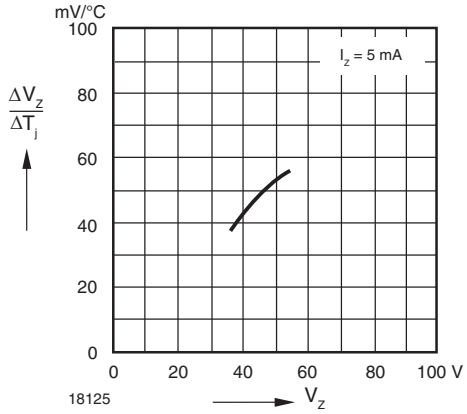


Fig. 10 - Temperature Dependence of Zener Voltage vs. Zener Voltage

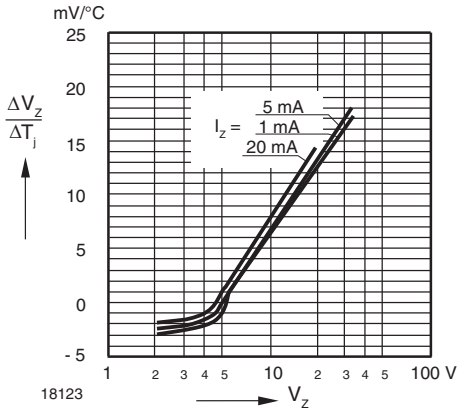


Fig. 8 - Temperature Dependence of Zener Voltage vs. Zener Voltage

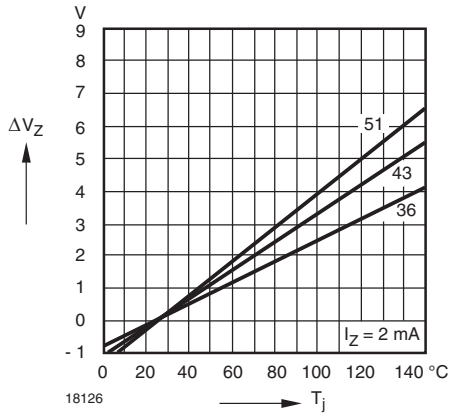


Fig. 11 - Change of Zener Voltage vs. Junction Temperature

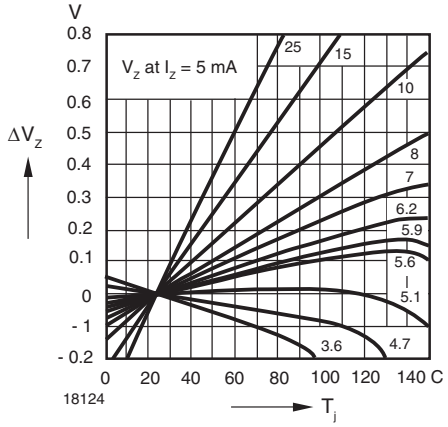


Fig. 9 - Change of Zener Voltage vs. Junction Temperature

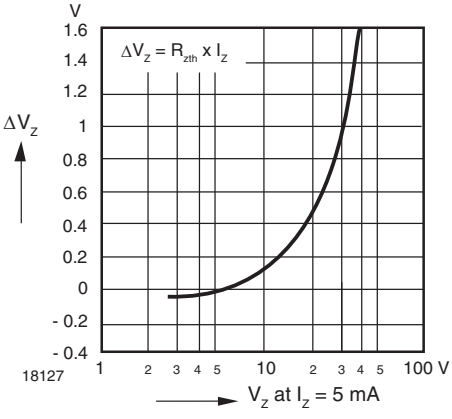


Fig. 12 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener voltage

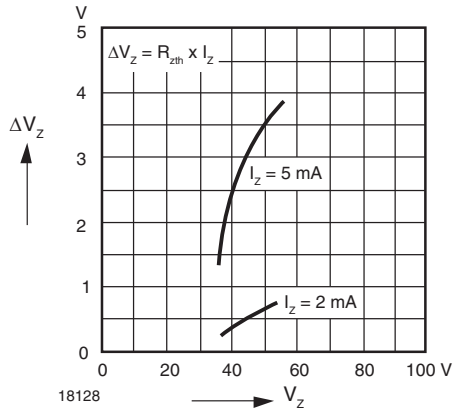


Fig. 13 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener voltage

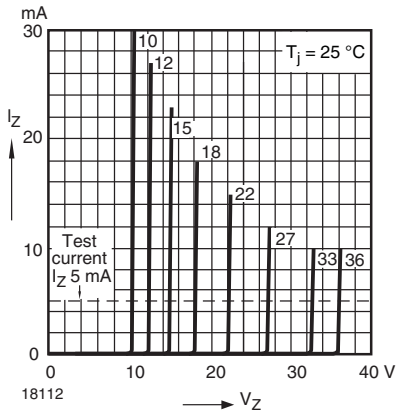


Fig. 15 - Breakdown Characteristics

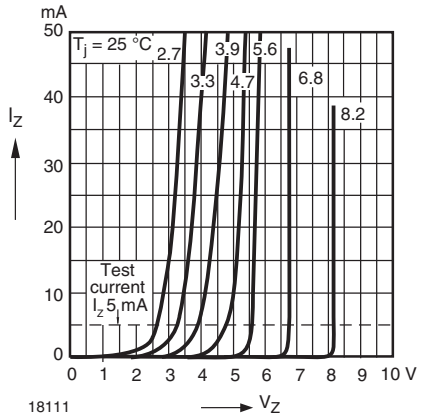


Fig. 14 - Breakdown Characteristics

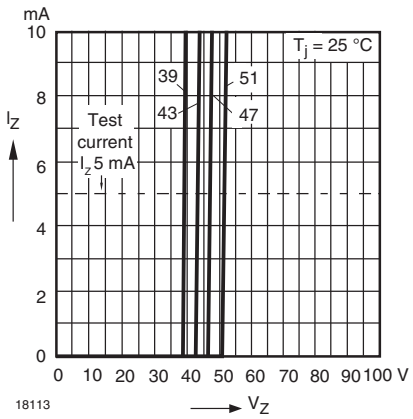
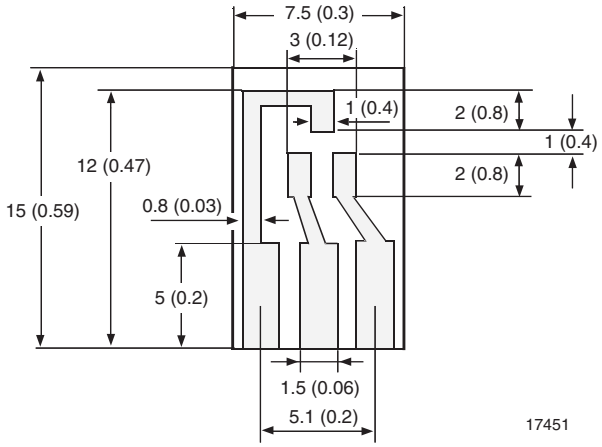


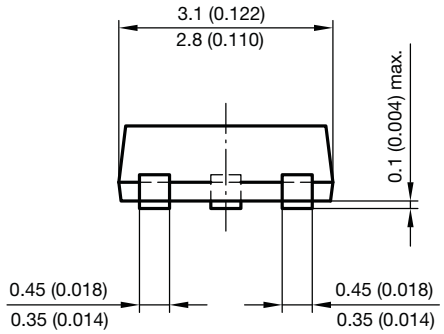
Fig. 16 - Breakdown Characteristics

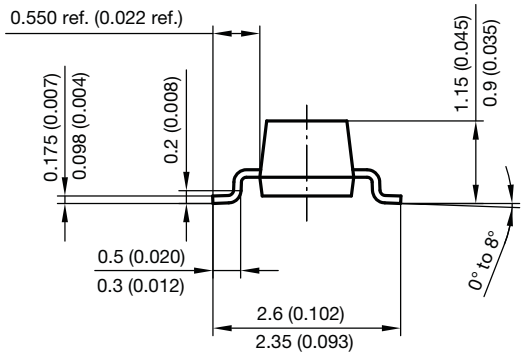
LAYOUT FOR R_{thJA} TEST

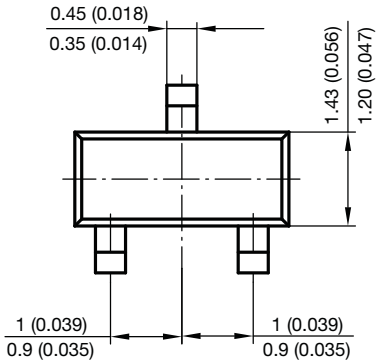
Thickness: fiberglass 0.059" (1.5 mm)
Copper leads 0.012" (0.3 mm)



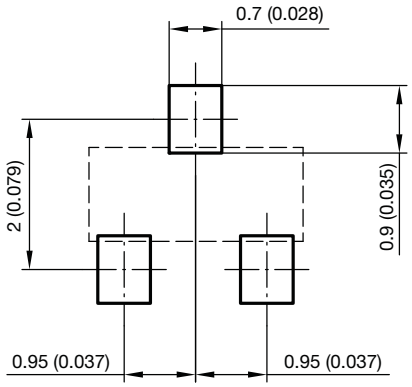
PACKAGE DIMENSIONS in millimeters (inches): **SOT-23**







Foot print recommendation:



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Rev. 8 - Date: 23.Sept.2009
17418

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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.