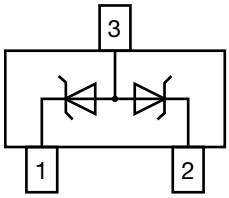
Small Signal Zener Diodes, Dual



FEATURES

- These diodes are also available in other case styles and configurations including: the dual diode common cathode configuration with type designation DZ23, the single diode SOT-23 case with the type designation BZX84C, and the single diode SOD-123 case with the type designation BZT52C
- Dual silicon planar Zener diodes, common anode
- The Zener voltages are graded according to the international E 24 standard
- 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

PRIMARY 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**
AZ23-V-series	AZ23-V-series-GS18	10 000 (8 mm tape on 13" reel)	10 000
AZ23-V-series	AZ23-V-series-GS08	3000 (8 mm tape on 7" reel)	15 000

PACKAGE				
PACKAGE NAME	**WEIGHT**	**MOLDING COMPOUND FLAMMABILITY RATING**	**MOISTURE SENSITIVITY LEVEL**	**SOLDERING CONDITIONS**
SOT-23	8.8 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
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

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

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE (1)			TEST CURRENT		REVERSE VOLTAGE		DYNAMIC RESISTANCE		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_{ZT}	
		V			mA		V	nA	Ω		10^{-4}/°C	
		MIN.	NOM.	MAX.			MAX.		MAX.	MAX.	MIN.	MAX.
AZ23C2V7-V	D1	2.5	2.7	2.9	5	1	-	-	75 (< 83)	< 500	- 9	- 4
AZ23C3V0-V	D2	2.8	3.0	3.2	5	1	-	-	80 (< 95)	< 500	- 9	- 3
AZ23C3V3-V	D3	3.1	3.3	3.5	5	1	-	-	80 (< 95)	< 500	- 8	- 3
AZ23C3V6-V	D4	3.4	3.6	3.8	5	1	-	-	80 (< 95)	< 500	- 8	- 3
AZ23C3V9-v	D5	3.7	3.9	4.1	5	1	-	-	80 (< 95)	< 500	- 7	- 3
AZ23C4V3-V	D6	4	4.3	4.6	5	1	-	-	80 (< 95)	< 500	- 6	- 1
AZ23C4V7-V	D7	4.4	4.7	5	5	1	-	-	70 (< 78)	< 500	- 5	2
AZ23C5V1-V	D8	4.8	5.1	5.4	5	1	> 0.8	100	30 (< 60)	< 480	- 3	4
AZ23C5V6-V	D9	5.2	5.6	6	5	1	> 1	100	10 (< 40)	< 400	- 2	6
AZ23C6V2-V	D10	5.8	6.2	6.6	5	1	> 2	100	4.8 (< 10)	< 200	- 1	7
AZ23C6V8-V	D11	6.4	6.8	7.2	5	1	> 3	100	4.5 (< 8)	< 150	2	7
AZ23C7V5-V	D12	7	7.5	7.9	5	1	> 5	100	4 (< 7)	< 50	- 3	7
AZ23C8V2-V	D13	7.7	8.2	8.7	5	1	> 6	100	4.5 (< 7)	< 50	4	7
AZ23C9V1-V	D14	8.5	9.1	9.6	5	1	> 7	100	4.8 (< 10)	< 50	5	8
AZ23C10-V	D15	9.4	10	10.6	5	1	> 7.5	100	5.2 (< 15)	< 70	5	8
AZ23C11-V	D16	10.4	11	11.6	5	1	> 8.5	100	6 (< 20)	< 70	5	9
AZ23C12-V	D17	11.4	12	12.7	5	1	> 9	100	7 (< 20)	< 90	6	9
AZ23C13-V	D18	12.4	13	14.1	5	1	> 10	100	9 (< 25)	< 110	7	9
AZ23C15-V	D19	13.8	15	15.6	5	1	> 11	100	11 (< 30)	< 110	7	9
AZ23C16-V	D20	15.3	16	17.1	5	1	> 12	100	13 (< 40)	< 170	8	9.5
AZ23C18-V	D21	16.8	18	19.1	5	1	> 14	100	18 (< 50)	< 170	8	9.5
AZ23C20-V	D22	18.8	20	21.2	5	1	> 15	100	20 (< 50)	< 220	8	10
AZ23C22-V	D23	20.8	22	23.3	5	1	> 17	100	25 (< 55)	< 220	8	10
AZ23C24-V	D24	22.8	24	25.6	5	1	> 18	100	28 (< 80)	< 220	8	10
AZ23C27-V	D25	25.1	27	28.9	5	1	> 20	100	30 (< 80)	< 250	8	10
AZ23C30-V	D26	28	30	32	5	1	> 22.5	100	35 (< 80)	< 250	8	10
AZ23C33-V	D27	31	33	35	5	1	> 25	100	40 (< 80)	< 250	8	10
AZ23C36-V	D28	34	36	38	5	1	> 27	100	40 (< 90)	< 250	8	10
AZ23C39-V	D29	37	39	41	5	1	> 29	100	50 (< 90)	< 300	10	12
AZ23C43-V	D30	40	43	46	5	1	> 32	100	60 (< 100)	< 700	10	12
AZ23C47-V	D31	44	47	50	5	1	> 35	100	70 (< 100)	< 750	10	12
AZ23C51-V	D32	48	51	54	5	1	> 38	100	70 (< 100)	< 750	10	12

Note

(1) Tested with pulses t_p = 5 ms

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

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE (1)			TEST CURRENT		REVERSE VOLTAGE		DYNAMIC RESISTANCE		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_{ZT}	
		V			mA		V	nA	Ω		10^{-4}/°C	
		MIN.	NOM.	MAX.			MAX.		MAX.	MAX.	MIN.	MAX.
AZ23B2V7-V	D1	2.65	2.7	2.75	5	1	-	-	75 (< 83)	< 500	- 9	- 4
AZ23B3V0-V	D2	2.94	3.0	3.06	5	1	-	-	80 (< 95)	< 500	- 9	- 3
AZ23B3V3-V	D3	3.23	3.3	3.37	5	1	-	-	80 (< 95)	< 500	- 8	- 3
AZ23B3V6-V	D4	3.53	3.6	3.67	5	1	-	-	80 (< 95)	< 500	- 8	- 3
AZ23B3V9-V	D5	3.82	3.9	3.98	5	1	-	-	80 (< 95)	< 500	- 7	- 3
AZ23B4V3-V	D6	4.21	4.3	4.39	5	1	-	-	80 (< 95)	< 500	- 6	- 1
AZ23B4V7-V	D7	4.61	4.7	4.79	5	1	-	-	70 (< 78)	< 500	- 5	2
AZ23B5V1-V	D8	5	5.1	5.2	5	1	> 0.8	100	30 (< 60)	< 480	- 3	4
AZ23B5V6-V	D9	5.49	5.6	5.71	5	1	> 1	100	10 (< 40)	< 400	- 2	6
AZ23B6V2-V	D10	6.08	6.2	6.32	5	1	> 2	100	4.8 (< 10)	< 200	- 1	7
AZ23B6V8-V	D11	6.66	6.8	6.94	5	1	> 3	100	4.5 (< 8)	< 150	2	7
AZ23B7V5-V	D12	7.35	7.5	7.65	5	1	> 5	100	4 (< 7)	< 50	- 3	7
AZ23B8V2-V	D13	8.04	8.2	8.36	5	1	> 6	100	4.5 (< 7)	< 50	4	7
AZ23B9V1-V	D14	8.92	9.1	9.28	5	1	> 7	100	4.8 (< 10)	< 50	5	8
AZ23B10-V	D15	9.8	10	10.2	5	1	> 7.5	100	5.2 (< 15)	< 70	5	8
AZ23B11-V	D16	10.8	11	11.2	5	1	> 8.5	100	6 (< 20)	< 70	5	9
AZ23B12-V	D17	11.8	12	12.2	5	1	> 9	100	7 (< 20)	< 90	6	9
AZ23B13-V	D18	12.7	13	13.3	5	1	> 10	100	9 (< 25)	< 110	7	9
AZ23B15-V	D19	14.7	15	15.3	5	1	> 11	100	11 (< 30)	< 110	7	9
AZ23B16-V	D20	15.7	16	16.3	5	1	> 12	100	13 (< 40)	< 170	8	0.5
AZ23B18-V	D21	17.6	18	18.4	5	1	> 14	100	18 (< 50)	< 170	8	0.5
AZ23B20-V	D22	19.6	20	20.4	5	1	> 15	100	20 (< 50)	< 220	8	10
AZ23B22-V	D23	21.6	22	22.4	5	1	> 17	100	25 (< 55)	< 220	8	10
AZ23B24-V	D24	23.5	24	24.5	5	1	> 18	100	28 (< 80)	< 220	8	10
AZ23B27-V	D25	26.5	27	27.5	5	1	> 20	100	30 (< 80)	< 250	8	10
AZ23B30-V	D26	29.4	30	30.6	5	1	> 22.5	100	35 (< 80)	< 250	8	10
AZ23B33-V	D27	32.3	33	33.7	5	1	> 25	100	40 (< 80)	< 250	8	10
AZ23B36-V	D28	35.3	36	36.7	5	1	> 27	100	40 (< 90)	< 250	8	10
AZ23B39-V	D29	38.2	39	39.8	5	1	> 29	100	50 (< 90)	< 300	10	12
AZ23B43-V	D30	42.1	43	43.9	5	1	> 32	100	60 (< 100)	< 700	10	12
AZ23B47-V	D31	46.1	47	47.9	5	1	> 35	100	70 (< 100)	< 750	10	12
AZ23B51-V	D32	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)

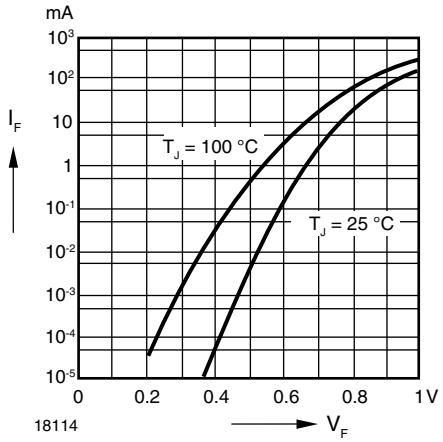


Fig. 1 - Forward Characteristics

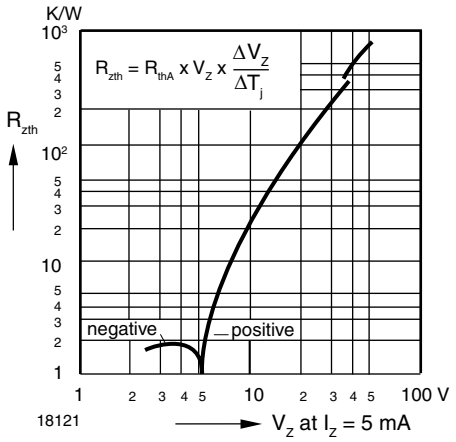


Fig. 4 - Thermal Differential Resistance vs. Zener Voltage

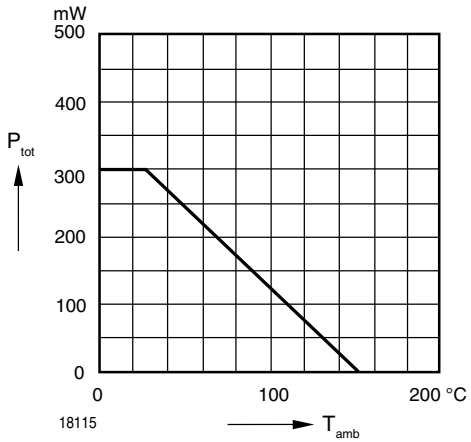


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

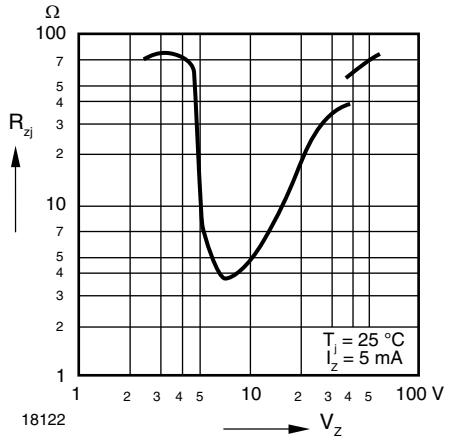


Fig. 5 - Dynamic Resistance vs. Zener Voltage

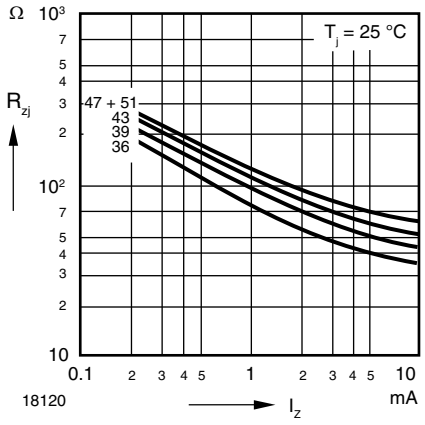


Fig. 3 - Dynamic Resistance vs. Zener Current

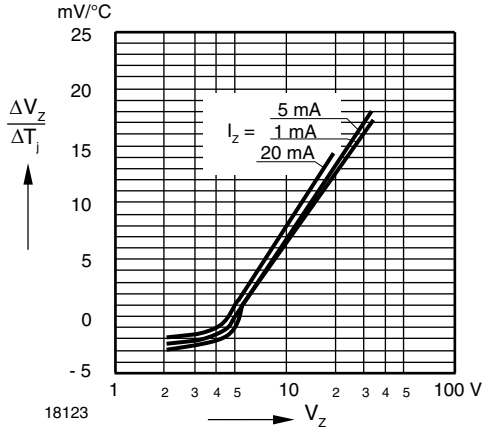


Fig. 6 - Temperature Dependence of Zener Voltage vs. Zener Voltage

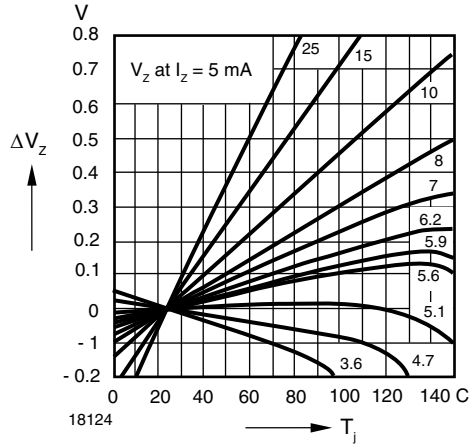


Fig. 7 - Change of Zener Voltage vs. Junction Temperature

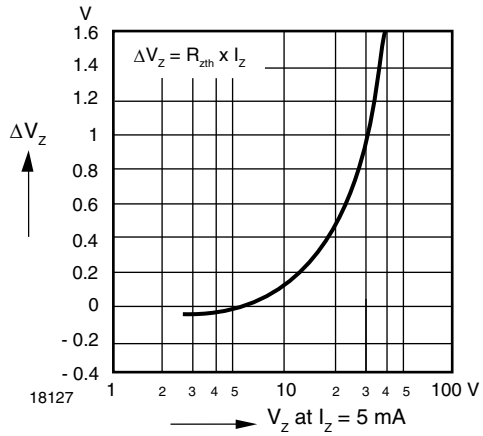


Fig. 10 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener Voltage

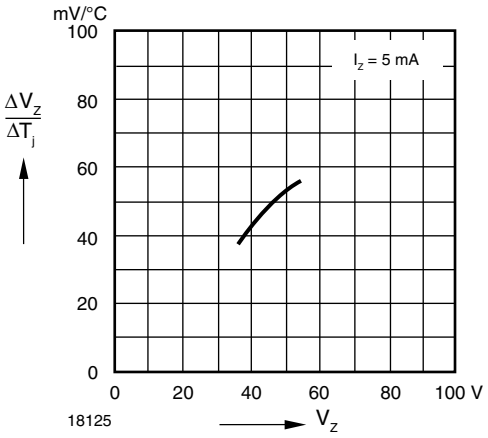


Fig. 8 - Temperature Dependence of Zener Voltage vs. Zener Voltage

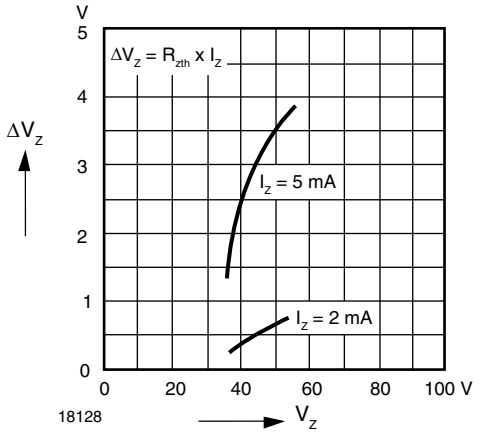


Fig. 11 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener Voltage

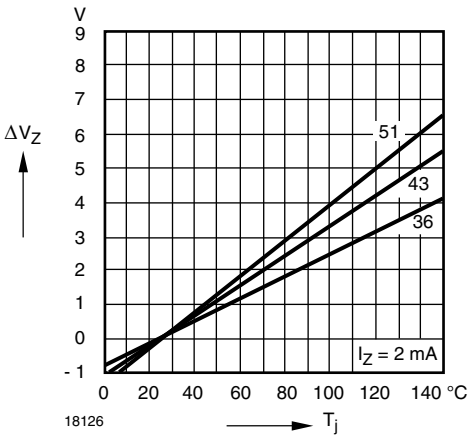


Fig. 9 - Change of Zener Voltage vs. Junction Temperature

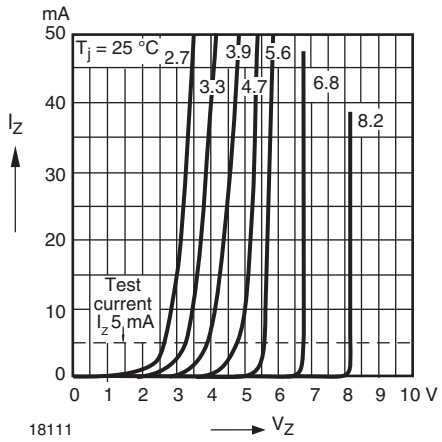


Fig. 12 - Breakdown Characteristics

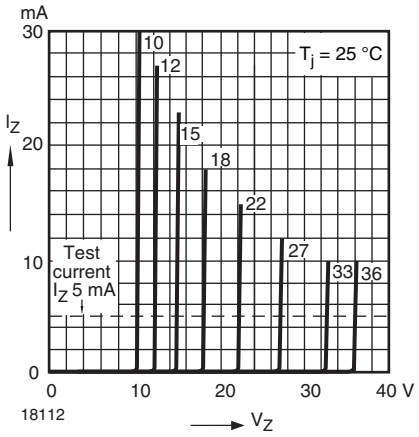


Fig. 13 - Breakdown Characteristics

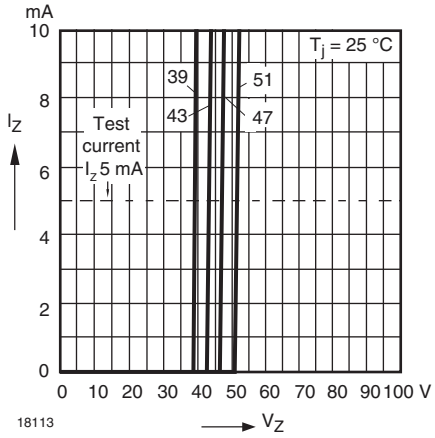
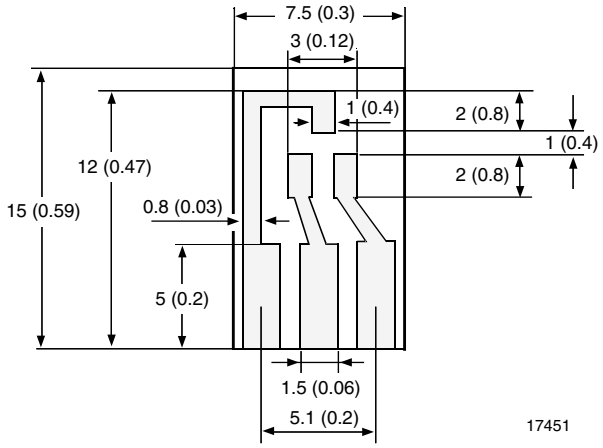


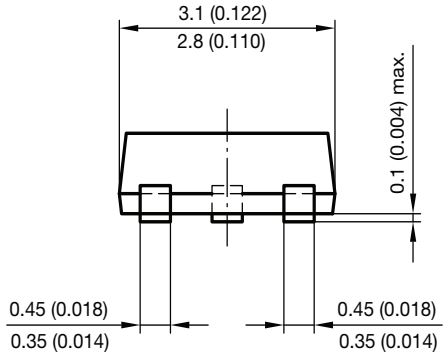
Fig. 14 - Breakdown Characteristics

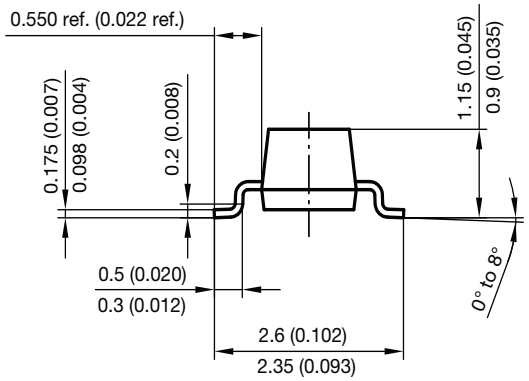
LAYOUT FOR R_{thJA} TEST

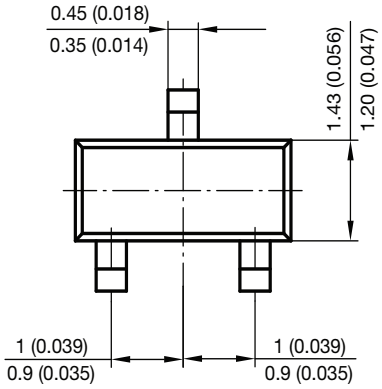
Thickness: fiberglass 0.059" (1.5 mm)
Copper leads 0.012" (0.3 mm)



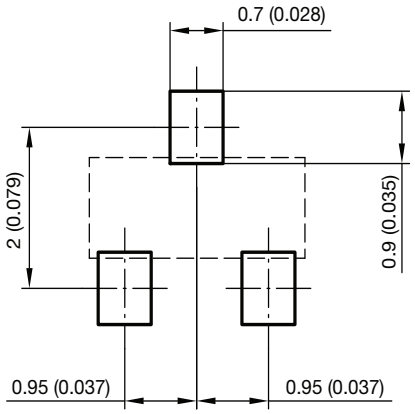
PACKAGE DIMENSIONS in millimeters (inches): **SOT-23**







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.