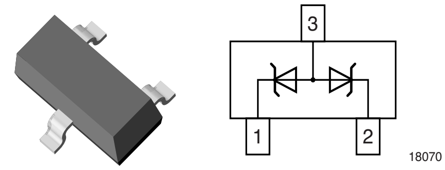
Dual Common-Anode Zener Diodes

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. Standard Zener voltage tolerance is ± 5 %. Replace "C" with " B " for 2 % tolerance. Other voltage tolerances and other Zener voltages are available upon request.
- The parameters are valid for both diodes in one case. ΔV_Z and Δr_{zj} of the two diodes in one case is $\leq$ 5 %



Mechanical Data

Case: SOT-23 Plastic Package
Weight: Approx. 8 mg
Packaging Codes/Options:
E8 / 10k per 13 " reel (8 mm tape), 30 k/box
E9 / 3k per 7 " reel (8 mm tape), 30 k/box

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Power dissipation		P_{tot}	300[1)]	mW

[1)] Device on fiberglass substrate, see layout

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		$R_{\theta JA}$	420[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Device on fiberglass substrate, see layout

Electrical Characteristics

Partnumber	Marking Code	Zener Voltage Range[1]		Dynamic Resistance		Test Current	Temperature Coefficient of Zener Voltage		Reverse Voltage
		V_Z @ I_{ZT}		r_{zj} @ I_{ZT} = 5 mA, f = 1 kHz	r_{zj} @ I_{ZT} = 1 mA, f = 1 kHz	I_{ZT}	α_{VZ} @ I_{ZT}		V_R @ I_R = 100 nA
		V		Ω		mA	10^{-4}/°C		V
		min	max				min	max	
AZ23C2V7	D1	2.5	2.9	75 (<83)	<500	5	-9	-4	-
AZ23C3	D2	2.8	3.2	80 (<95)	<500	5	-9	-3	-
AZ23C3V3	D3	3.1	3.5	80 (<95)	<500	5	-8	-3	-
AZ23C3V6	D4	3.4	3.8	80 (<95)	<500	5	-8	-3	-
AZ23C3V9	D5	3.7	4.1	80 (<95)	<500	5	-7	-3	-
AZ23C4V3	D6	4	4.6	80 (<95)	<500	5	-6	-1	-
AZ23C4V7	D7	4.4	5	70 (<78)	<500	5	-5	2	-
AZ23C5V1	D8	4.8	5.4	30 (<60)	<480	5	-3	4	>0.8
AZ23C5V6	D9	5.2	6	10 (<40)	<400	5	-2	6	>1
AZ23C6V2	D10	5.8	6.6	4.8 (<10)	<200	5	-1	7	>2
AZ23C6V8	D11	6.4	7.2	4.5 (<8)	<150	5	2	7	>3
AZ23C7V5	D12	7	7.9	4 (<7)	<50	5	-3	7	>5
AZ23C8V2	D13	7.7	8.7	4.5 (<7)	<50	5	4	7	>6
AZ23C9V1	D14	8.5	9.6	4.8 (<10)	<50	5	5	8	>7
AZ23C10	D15	9.4	10.6	5.2 (<15)	<70	5	5	8	>7.5
AZ23C11	D16	10.4	11.6	6 (<20)	<70	5	5	9	>8.5
AZ23C12	D17	11.4	12.7	7 (<20)	<90	5	6	9	>9
AZ23C13	D18	12.4	14.1	9 (<25)	<110	5	7	9	>10
AZ23C15	D19	13.8	15.6	11 (<30)	<110	5	7	9	>11
AZ23C16	D20	15.3	17.1	13 (<40)	<170	5	8	9.5	>12
AZ23C18	D21	16.8	19.1	18 (<50)	<170	5	8	9.5	>14
AZ23C20	D22	18.8	21.2	20 (<50)	<220	5	8	10	>15
AZ23C22	D23	20.8	23.3	25 (<55)	<220	5	8	10	>17
AZ23C24	D24	22.8	25.6	28 (<80)	<220	5	8	10	>18
AZ23C27	D25	25.1	28.9	30 (<80)	<250	5	8	10	>20
AZ23C30	D26	28	32	35 (<80)	<250	5	8	10	>22.5
AZ23C33	D27	31	35	40 (<80)	<250	5	8	10	>25
AZ23C36	D28	34	38	40 (<90)	<250	5	8	10	>27
AZ23C39	D29	37	41	50 (<90)	<300	5	10	12	>29
AZ23C43	D30	40	46	60 (<100)	<700	5	10	12	>32
AZ23C47	D31	44	50	70 (<100)	<750	5	10	12	>35
AZ23C51	D32	48	54	70 (<100)	<750	5	10	12	>38

[1] Tested with pulses tp = 5 ms

Electrical Characteristics

Partnumber	Marking Code	Zener Voltage Range[1]		Dynamic Resistance		Test Current	Temperature Coefficient of Zener Voltage		Reverse Voltage
		V_Z @ I_{ZT}		r_{zj} @ I_{ZT} = 5 mA, f = 1 kHz	r_{zj} @ I_{ZT} = 1 mA, f = 1 kHz	I_{ZT}	α_{VZ} @ I_{ZT}		V_R @ I_R = 100 nA
		V		Ω		mA	10^{-4}/°C		V
		min	max				min	max	
AZ23B2V7	D1	2.65	2.75	75 (<83)	<500	5	-9	-4	-
AZ23B3	D2	2.94	3.06	80 (<95)	<500	5	-9	-3	-
AZ23B3V3	D3	3.23	3.37	80 (<95)	<500	5	-8	-3	-
AZ23B3V6	D4	3.53	3.67	80 (<95)	<500	5	-8	-3	-
AZ23B3V9	D5	3.82	3.98	80 (<95)	<500	5	-7	-3	-
AZ23B4V3	D6	4.21	4.39	80 (<95)	<500	5	-6	-1	-
AZ23B4V7	D7	4.61	4.79	70 (<78)	<500	5	-5	2	-
AZ23B5V1	D8	5	5.2	30 (<60)	<480	5	-3	4	>0.8
AZ23B5V6	D9	5.49	5.71	10 (<40)	<400	5	-2	6	>1
AZ23B6V2	D10	6.08	6.32	4.8 (<10)	<200	5	-1	7	>2
AZ23B6V8	D11	6.66	6.94	4.5 (<8)	<150	5	2	7	>3
AZ23B7V5	D12	7.35	7.65	4 (<7)	<50	5	-3	7	>5
AZ23B8V2	D13	8.04	8.36	4.5 (<7)	<50	5	4	7	>6
AZ23B9V1	D14	8.92	9.28	4.8 (<10)	<50	5	5	8	>7
AZ23B10	D15	9.8	10.2	5.2 (<15)	<70	5	5	8	>7.5
AZ23B11	D16	10.8	11.2	6 (<20)	<70	5	5	9	>8.5
AZ23B12	D17	11.8	12.2	7 (<20)	<90	5	6	9	>9
AZ23B13	D18	12.7	13.3	9 (<25)	<110	5	7	9	>10
AZ23B15	D19	14.7	15.3	11 (<30)	<110	5	7	9	>11
AZ23B16	D20	15.7	16.3	13 (<40)	<170	5	8	0.5	>12
AZ23B18	D21	17.6	18.4	18 (<50)	<170	5	8	0.5	>14
AZ23B20	D22	19.6	20.4	20 (<50)	<220	5	8	10	>15
AZ23B22	D23	21.6	22.4	25 (<55)	<220	5	8	10	>17
AZ23B24	D24	23.5	24.5	28 (<80)	<220	5	8	10	>18
AZ23B27	D25	26.5	27.5	30 (<80)	<250	5	8	10	>20
AZ23B30	D26	29.4	30.6	35 (<80)	<250	5	8	10	>22.5
AZ23B33	D27	32.3	33.7	40 (<80)	<250	5	8	10	>25
AZ23B36	D28	35.3	36.7	40 (<90)	<250	5	8	10	>27
AZ23B39	D29	38.2	39.8	50 (<90)	<300	5	10	12	>29
AZ23B43	D30	42.1	43.9	60 (<100)	<700	5	10	12	>32
AZ23B47	D31	46.1	47.9	70 (<100)	<750	5	10	12	>35
AZ23B51	D32	50	52	70 (<100)	<750	5	10	12	>38

[1] Tested with pulses tp = 5 ms

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

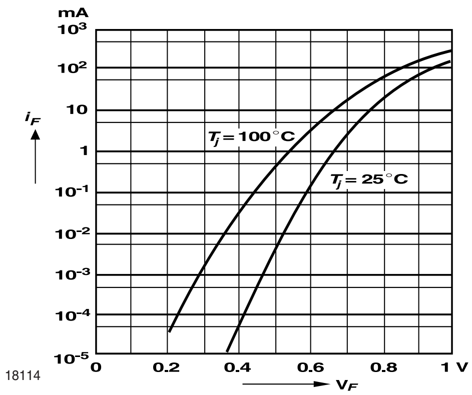


Figure 1. Forward characteristics

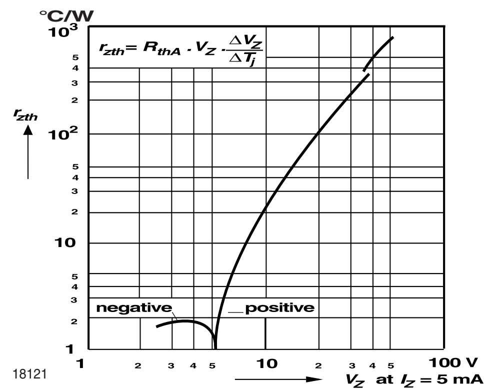


Figure 4. Thermal differential resistance versus Zener voltage

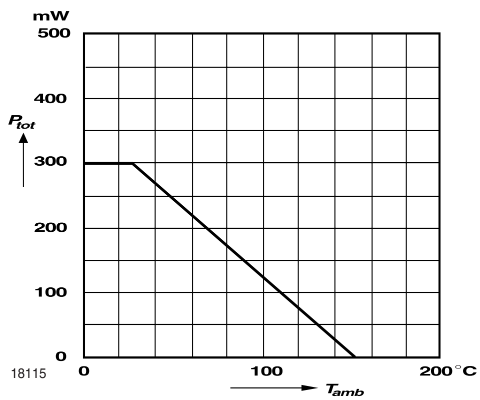


Figure 2. Admissible Power Dissipation vs. Ambient Temperature

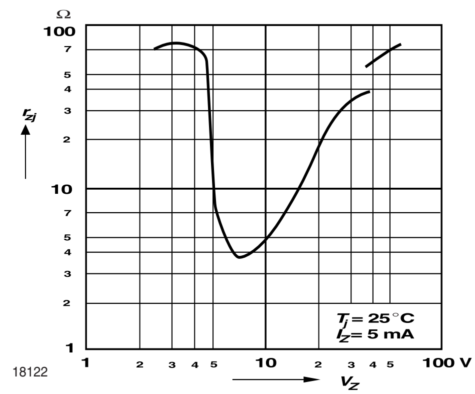


Figure 5. Dynamic resistance versus Zener voltage

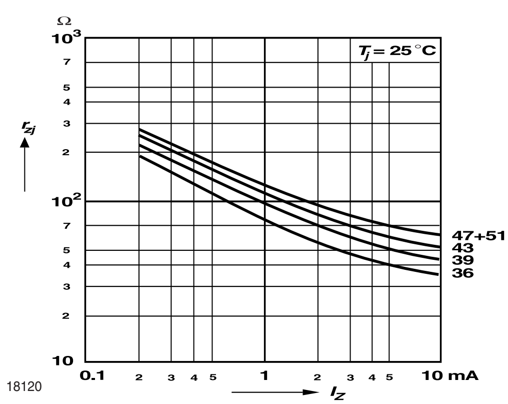


Figure 3. Dynamic Resistance vs. Zener Current

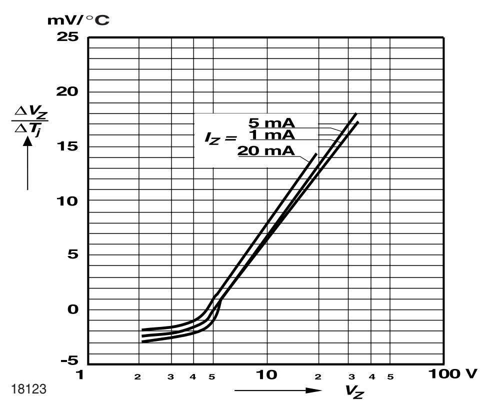


Figure 6. Temperature dependence of Zener voltage versus Zener voltage

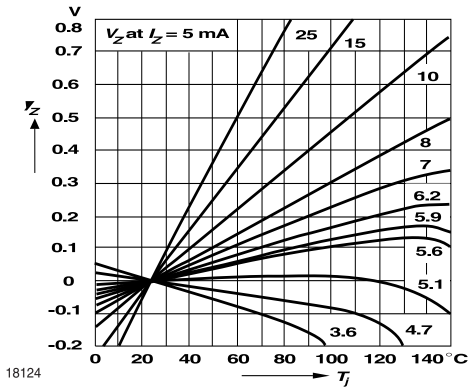


Figure 7. Change of Zener voltage versus junction temperature

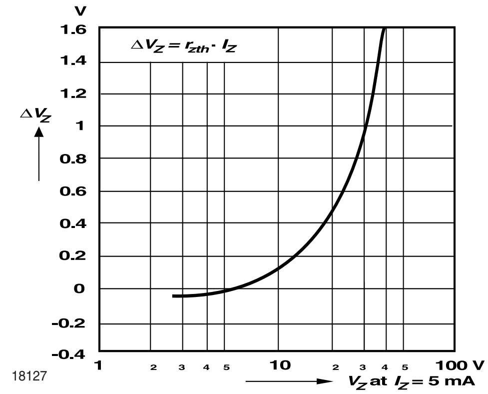


Figure 10. Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage

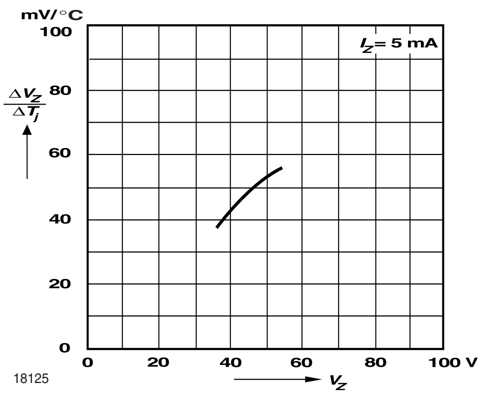


Figure 8. Temperature dependence of Zener voltage versus Zener voltage

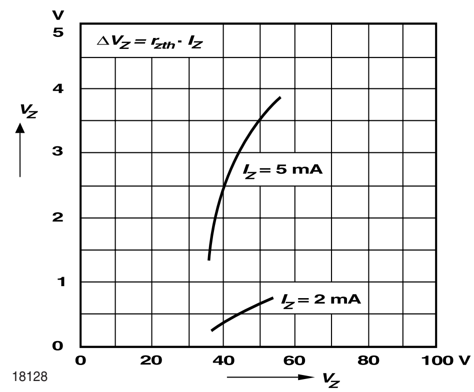


Figure 11. Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage

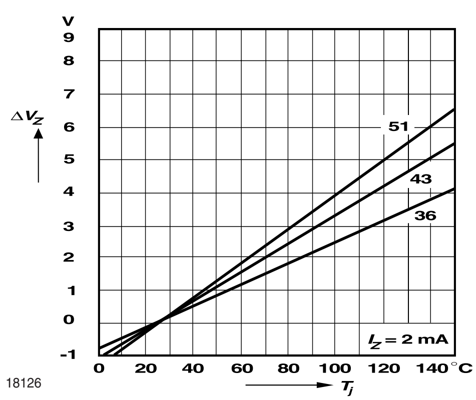


Figure 9. Change of Zener voltage versus junction temperature

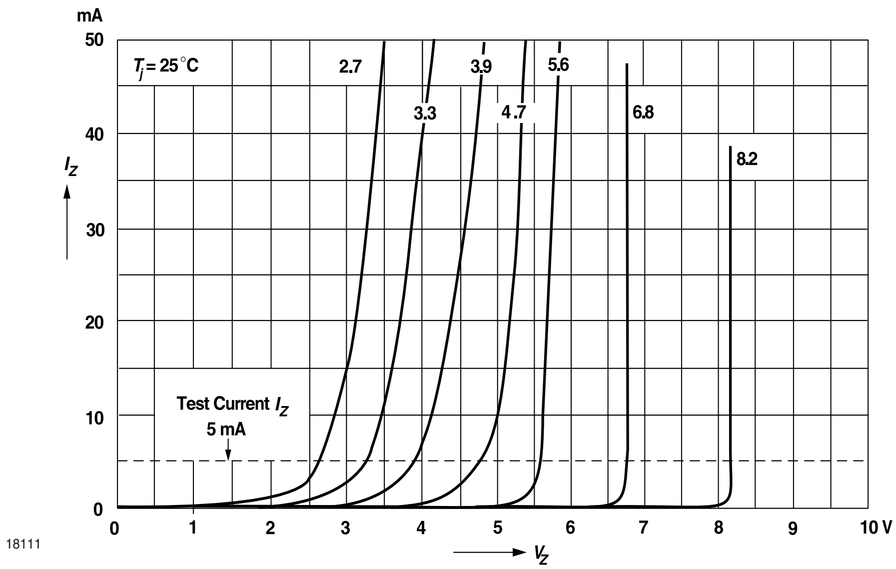


Figure 12. Breakdown Characteristics

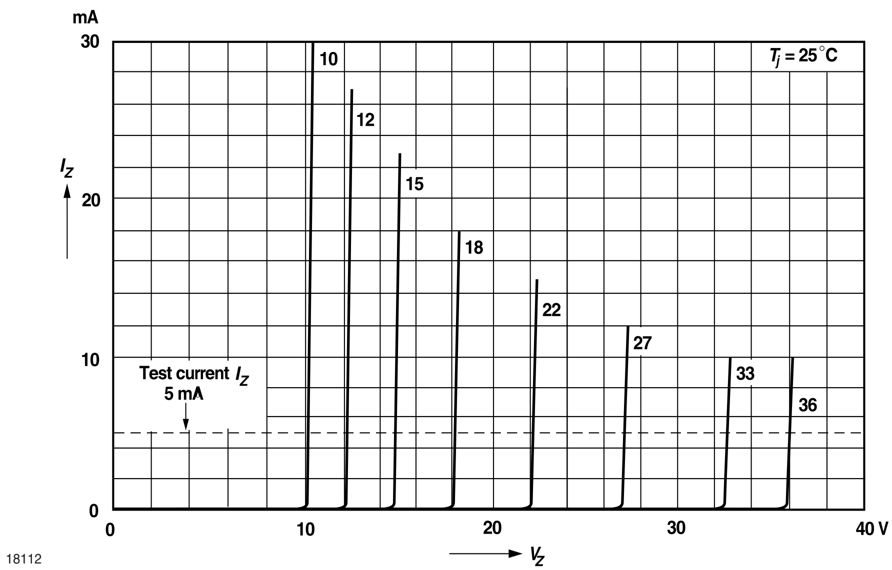


Figure 13. Breakdown Characteristics

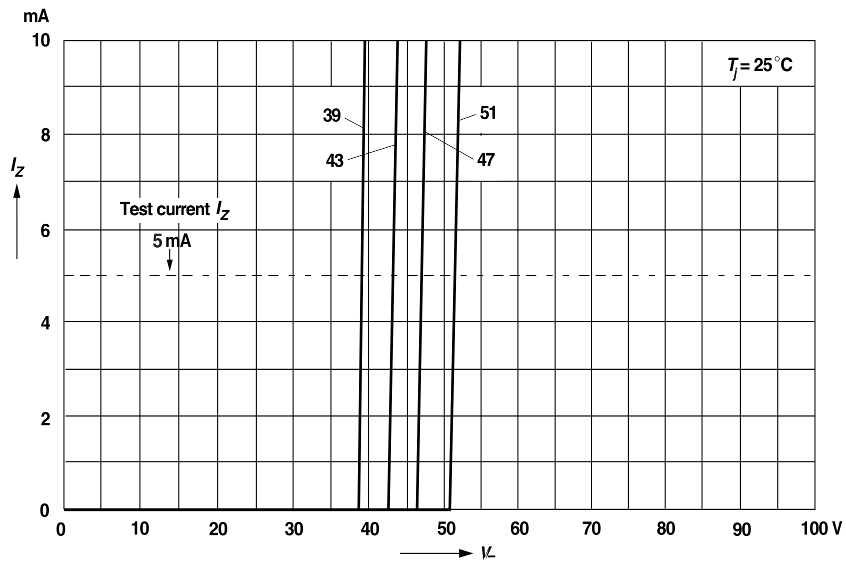
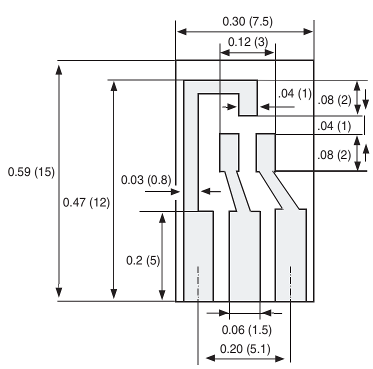


Figure 14. Breakdown Characteristics

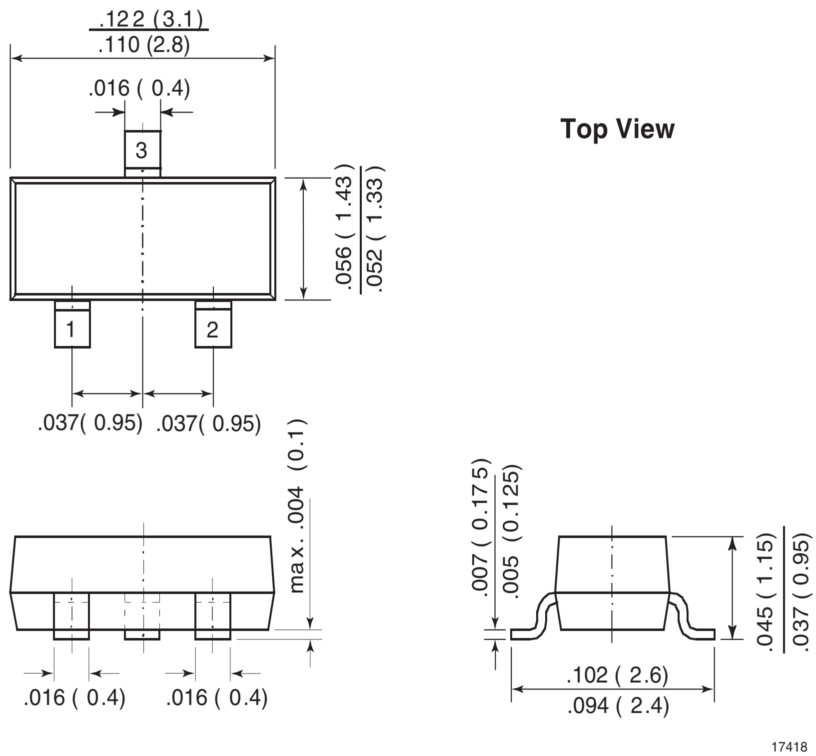
Layout for $R_{\theta JA}$ test

Thickness: Fiberglass 0.059 in. (1.5 mm)
Copper leads 0.012 in. (0.3 mm)

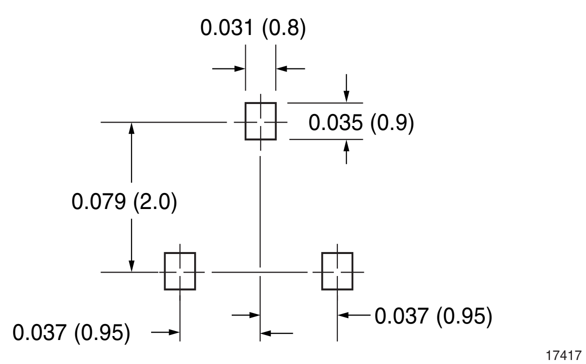


17451 Dimensions in inches (millimeters)

Package Dimensions in Inches (mm)



Mounting Pad Layout



Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operatingsystems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

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