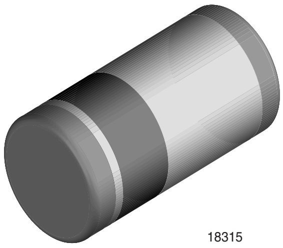
Zener Diodes

Features

- Silicon Planar Power Zener Diodes.
- For use in stablilizing and clipping circuits with high power rating.
- The Zener voltages are graded according to the international E 24 standard. Smaller voltage tolerances are available upon request.
- These diodes are also available in the DO-41 case with the type designation ZPY1 ... ZPY100.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Mechanical Data

Case: MELF Glass Case

Weight: approx. 250 mg

Packaging Codes/Options:

E4 / 5k per 13 " reel (12 mm tape), 10k/box

25 / 1.5k per 7 " reel (12 mm tape), 12k/box

Absolute Maximum Ratings

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

Parameter	Test condition	Symbol	Value	Unit
Zener current (see Table "Characteristics")				
Power dissipation		P_{tot}	1.0 [1)]	W

[1)] Valid provided that electrodes are kept at ambient temperature.

Thermal Characteristics

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

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient (max.)		$R_{\theta JA}$	170 [1)]	°C/W
Thermal resistance junction to case (typ.)		$R_{\theta JC}$	60	°C/W
Junction temperature		T_j	175	°C
Storage temperature		T_S	- 55 to + 175	°C

[1)] Valid provided that electrodes are kept at ambient temperature.

Electrical Characteristics

Partnumber	Zener Voltage (2)		Dynamic Resistance		Temperature Coefficient of Zener Voltage		Test Current	Reverse Voltage	Admissible Zener Current (1)
	V_Z @ I_{ZT}		r_{zj} @ I_{ZT}, f = 1 kHz		α_{VZ} @ I_{ZT}		I_{ZT}	V_R @ $I_R = 0.5\ \mu A$	I_Z @ T_{amb}=25°C
	V		Ω		10^{-4}/°C		mA	V	mA
	min	max	max	typ	min	max			
ZMY1	0.65	0.75	8	6.5	-26	-23	5	-	406
ZMY3.9	3.7	4.1	7	4	-7	2	100	-	203
ZMY4.3	4	4.6	7	4	-7	3	100	-	182
ZMY4.7	4.4	5	7	4	-7	4	100	-	165
ZMY5.1	4.8	5.4	5	2	-6	5	100	0.7	150
ZMY5.6	5.2	6	2	1	-3	5	100	1.5	135
ZMY6.2	5.8	6.6	2	1	-1	6	100	2	128
ZMY6.8	6.4	7.2	2	1	0	7	100	3	110
ZMY7.5	7	7.9	2	1	0	7	100	5	100
ZMY8.2	7.7	8.7	2	1	3	8	100	6	89
ZMY9.1	8.5	9.6	4	2	3	8	50	7	82
ZMY10	9.4	10.6	4	2	5	9	50	7.5	74
ZMY11	10.4	11.6	7	3	5	10	50	8.5	66
ZMY12	11.4	12.7	7	3	5	10	50	9	60
ZMY13	12.4	14.1	9	4	5	10	50	10	55
ZMY15	13.8	15.8	9	4	5	10	50	11	49
ZMY16	15.3	17.1	10	5	7	11	25	12	44
ZMY18	16.8	19.1	11	5	7	11	25	14	40
ZMY20	18.8	21.2	12	6	7	11	25	15	36
ZMY22	20.8	23.3	13	7	7	11	25	17	34
ZMY24	22.8	25.6	14	8	7	12	25	18	29
ZMY27	25.1	28.9	15	9	7	12	25	20	27
ZMY30	28	32	20	10	7	12	25	22.5	25
ZMY33	31	35	20	11	7	12	25	25	22
ZMY36	34	38	60	25	7	12	10	27	20
ZMY39	37	41	60	30	8	12	10	29	18
ZMY43	40	46	80	35	8	13	10	32	17
ZMY47	44	50	80	40	8	13	10	35	15
ZMY51	48	54	100	45	8	13	10	38	14
ZMY56	52	60	100	50	8	13	10	42	13
ZMY62	58	66	130	60	8	13	10	47	11
ZMY68	64	72	130	65	8	13	10	51	10
ZMY75	70	79	160	70	8	13	10	56	9
ZMY82	77	88	160	80	8	13	10	61	8
ZMY91	85	96	250	120	9	13	5	68	7.5
ZMY100	94	106	250	130	9	13	5	75	7

1) Valid provided that electrodes are kept at ambient temperature

2) Tested with pulses t_p = 5 ms

The ZMY1 is a silicon diode operated in forward direction.Hence, the index of all characteristics and maximum ratings should be "F"instead of "Z". Connect the cathode terminal to the negative pole. For devices in glass case MELF with higher Zener voltage but same power dissipation see types ZMU100 ... ZMU180

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

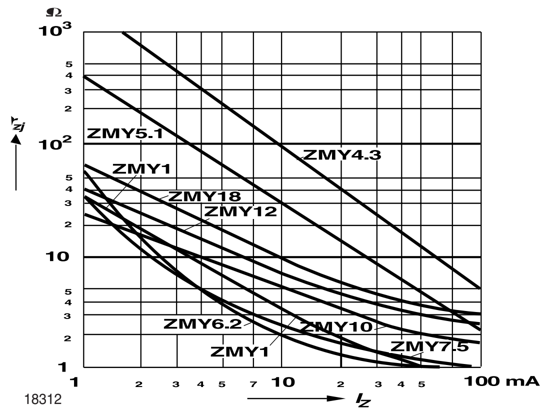


Figure 1. Dynamic Resistance vs. Zener Current

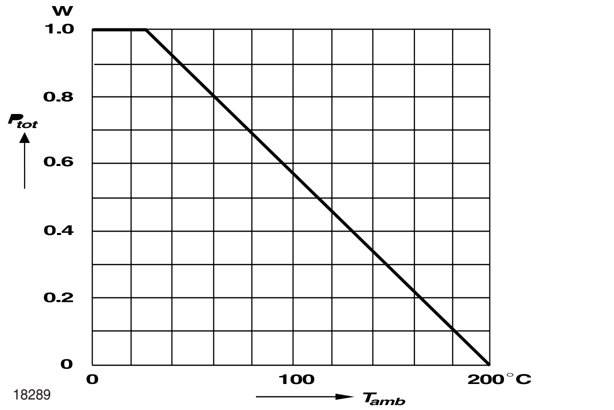


Figure 4. Admissible Power Dissipation vs. Ambient Temperature

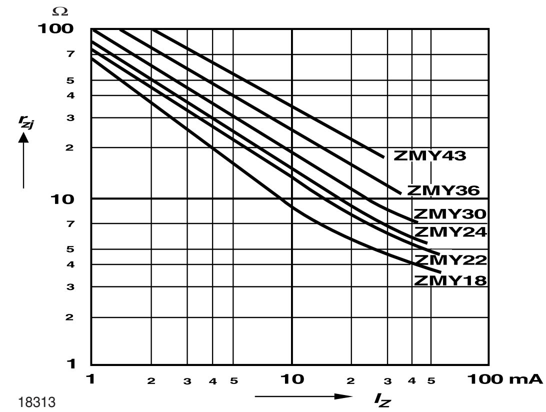


Figure 2. Dynamic Resistance vs. Zener Current

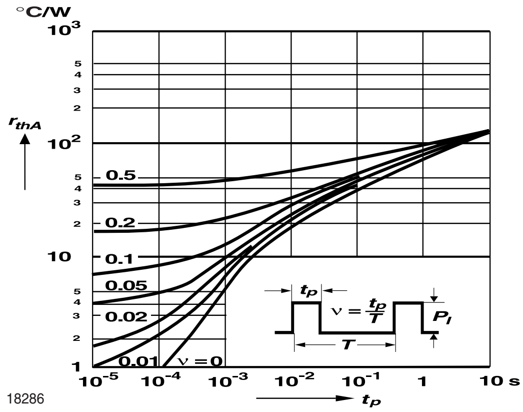


Figure 5. Pulse Thermal Resistance vs. Pulse Duration

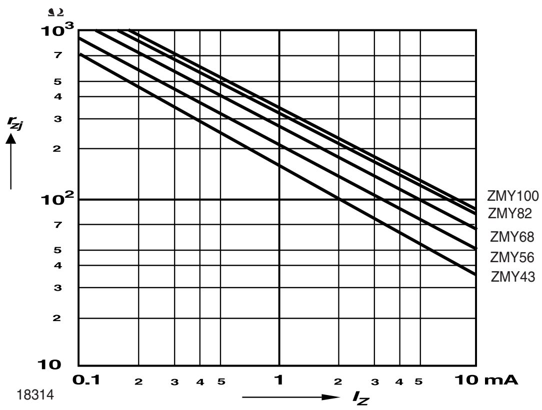


Figure 3. Dynamic Resistance vs. Zener Current

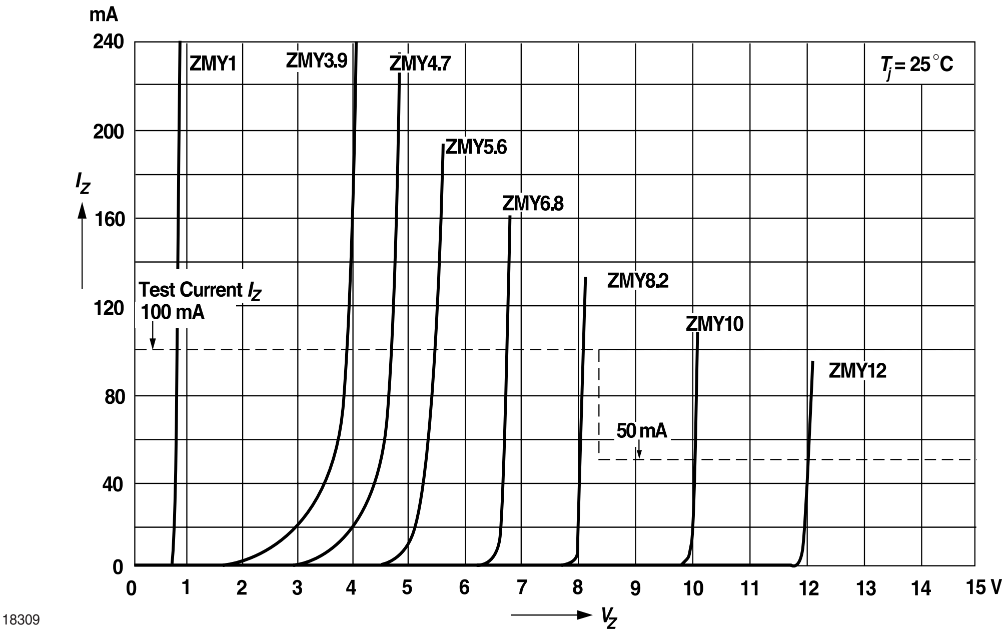


Figure 6. Breakdown Characteristics

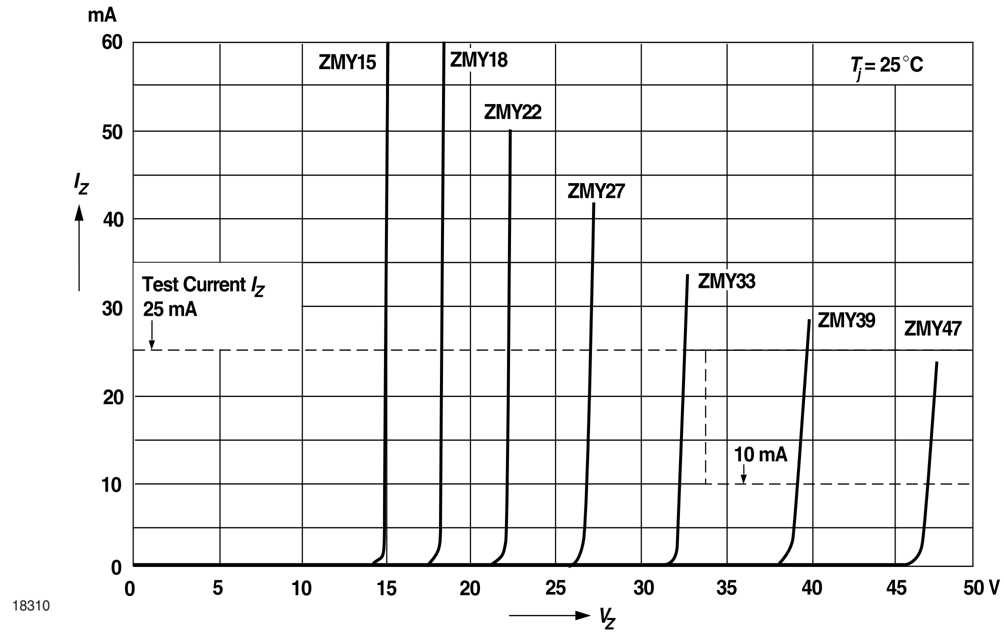


Figure 7. Breakdown Characteristics

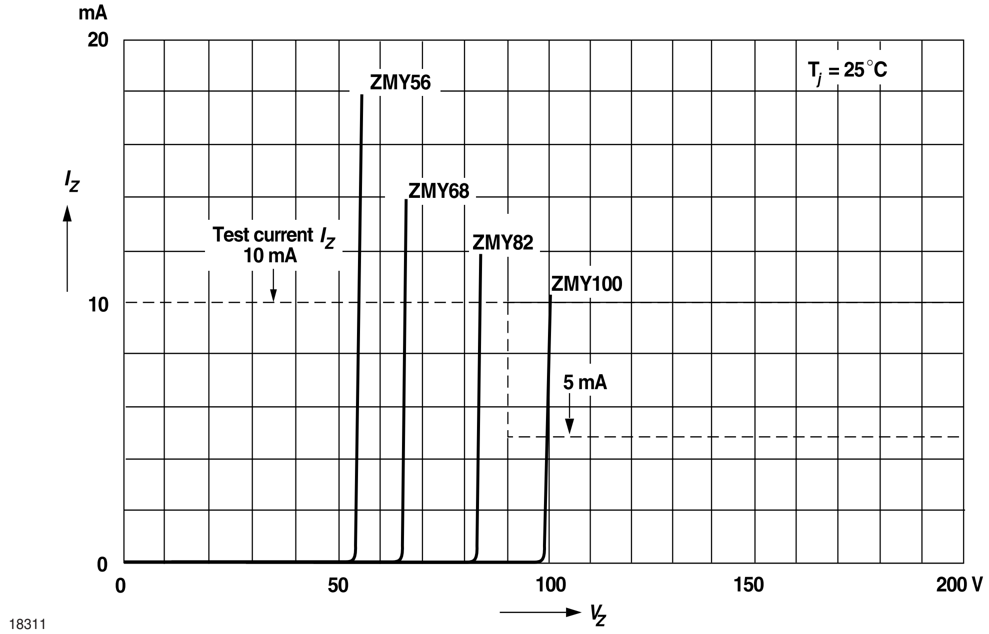
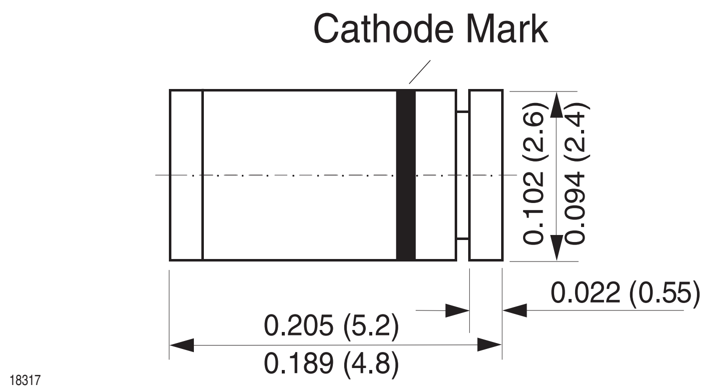
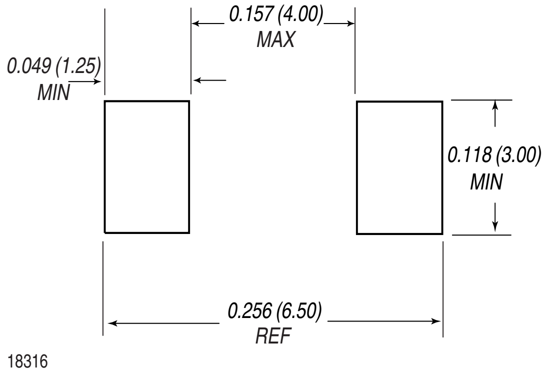


Figure 8. Breakdown Characteristics

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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423