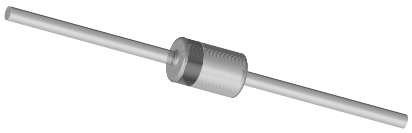
Zener Diodes

Features

- Silicon Planar Power Zener Diodes
- For use in stabilizing and clipping circuits with high power rating.
- The Zener voltages are graded according to the international E 12 standard. Smaller voltage tolerances are available upon request.
- These diodes are also available in the MELF case with the type designation ZMY10 ... ZMY110.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Mechanical Data

Case: DO-41 Glass Case

Weight: approx. 350 mg

Packaging Codes/Options:

D9/5 K per 13 " reel (52 mm tape), 10 K/box

E1/5 K per Ammo mag. (52 mm tape), 10 K/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}	1.3 [1]	W

[1] Valid provided that leads at a distance of 10 mm from case are kept at ambient temperature.

Maximum Thermal Resistance

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

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		$R_{\theta JA}$	130 [1]	°C/W
Maximum junction temperature		T_j	175	°C
Storage temperature range		T_S	- 55 to + 175	°C

[1] Valid provided that leads at a distance of 10 mm from case are kept at ambient temperature.

Electrical Characteristics

Partnumber	Marking Code	Zener Voltage Range		Dynamic Resistance	Temperature Coefficient of Zener Voltage		Test Current	Reverse Voltage	Admissible Zener Current
		V_Z@I_{ZT}		r_{zj}@I_{ZT1}, f = 1 kHz	TC_{VZ}@I_{ZT}		I_{ZT}	V_R@I_R=0.5 µA,	I_Z@T_{amb} = 25 °C,
		V		Ω	10^{-4}/°C		mA	V	mA
		min	max	typ	min	max			
ZPY1[3]		0.65	0.75	6.5 (< 8)	-23	-23	5	-	580
ZPY3.9		3.7	4.1	4 (< 7)	-7	2	100	-	290
ZPY4.3		4.0	4.6	4 (< 7)	-7	3	100	-	260
ZPY4.7		4.4	5.0	4 (< 7)	-7	4	100	-	235
ZPY5.1		4.8	5.4	2 (< 5)	-6	5	100	> 0.7	215
ZPY5.6		5.2	6.0	1 (< 2)	-3	5	100	> 1.5	193
ZPY6.2		5.8	6.6	1 (< 2)	-1	6	100	> 2.0	183
ZPY6.8		6.4	7.2	1 (< 2)	0	7	100	> 3.0	157
ZPY7.5		7.0	7.9	1 (< 2)	0	7	100	> 5.0	143
ZPY8.2		7.7	8.7	1 (< 2)	3	8	100	> 6.0	127
ZPY9.1		8.5	9.6	2 (< 4)	3	8	50	> 7.0	117
ZPY10		9.41	10.6	2 (< 4)	5	9	50	> 7.5	105
ZPY11		10.4	11.6	3 (< 7)	5	10	50	> 8.5	94
ZPY12		11.4	12.7	3 (< 7)	5	10	50	> 9.0	85
ZPY13		12.4	14.1	4 (< 9)	5	10	50	> 10	78
ZPY15		13.8	15.8	4 (< 9)	5	10	50	> 11	70
ZPY16		15.3	17.1	5 (< 10)	7	11	25	> 12	63
ZPY18		16.8	19.1	5 (< 11)	7	11	25	> 14	57
ZPY20		18.8	21.2	6 (< 12)	7	11	25	> 15	52
ZPY22		20.8	23.3	7 (< 13)	7	11	25	> 17	48
ZPY24		22.8	25.6	8 (< 14)	7	12	25	> 18	42
ZPY27		25.1	28.9	9 (< 15)	7	12	25	> 20	38
ZPY30		28	32	10 (< 20)	7	12	25	> 22.5	35
ZPY33		31	35	11 (< 20)	7	12	25	> 25	31
ZPY36		34	38	25 (< 60)	7	12	10	> 27	29
ZPY39		37	41	30 (< 60)	8	12	10	> 29	26
ZPY43		40	46	35 (< 80)	8	13	10	> 32	24
ZPY47		44	50	40 (< 80)	8	13	10	> 35	22
ZPY51		48	54	45 (< 100)	8	13	10	> 38	20
ZPY56		52	60	50 (< 100)	8	13	10	> 42	18
ZPY62		58	66	60 (< 130)	8	13	10	> 47	16
ZPY68		64	72	65 (< 130)	8	13	10	> 51	14
ZPY75		70	79	70 (< 160)	8	13	10	> 56	13
ZPY82		77	88	80 (< 160)	8	13	10	> 61	12
ZPY91		85	96	120 (< 250)	9	13	5	> 68	11
ZPY100		94	106	130 (< 250)	9	13	5	> 75	10
ZPY110		104	116	150 (< 250)	9	13	5	> 85	9

[1] Valid provided that leads are kept at ambient temperature at a distance of 10 mm from case

[2] Tested with pulses tp = 5 ms

[3] The ZPY1 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

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

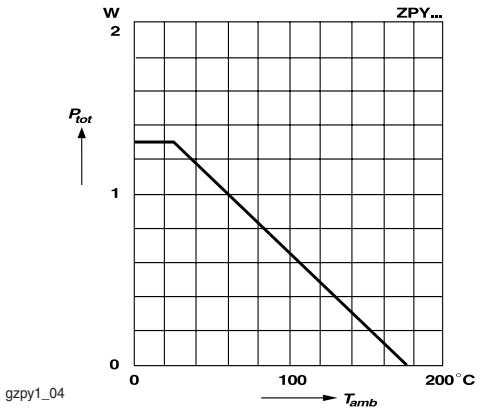


Figure 1. Admissible Power Dissipation vs. Ambient Temperature

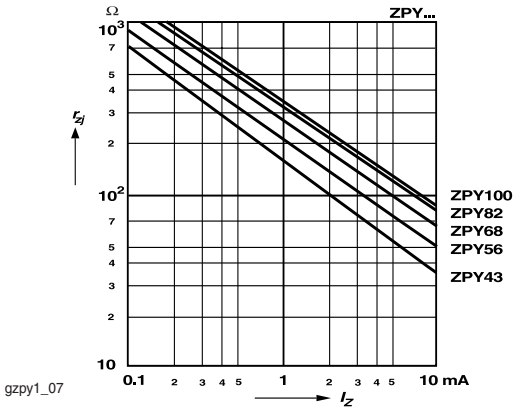


Figure 4. Dynamic Resistance vs. Zener Current

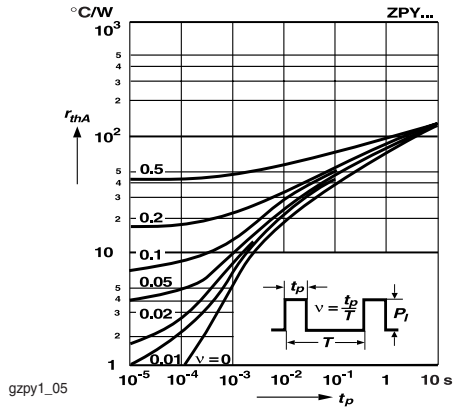


Figure 2. Pulse Thermal Resistance vs. Pulse Duration

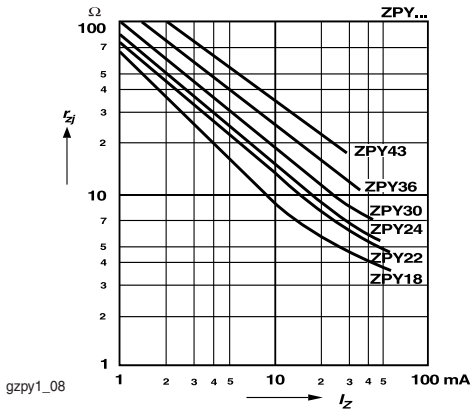


Figure 5. Dynamic Resistance vs. Zener Current

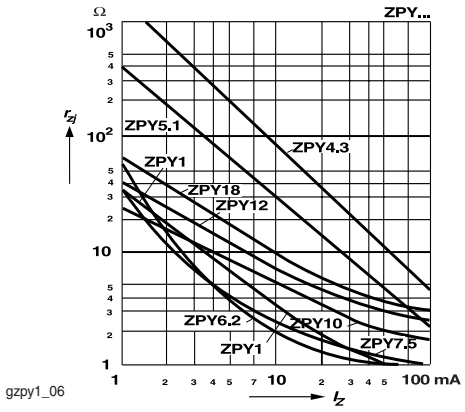


Figure 3. Dynamic Resistance vs. Zener Current

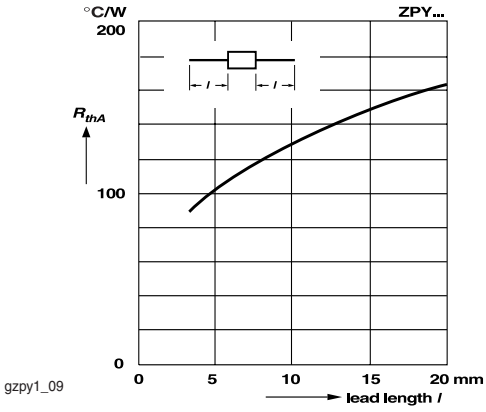


Figure 6. Thermal Resistance vs. Lead Length

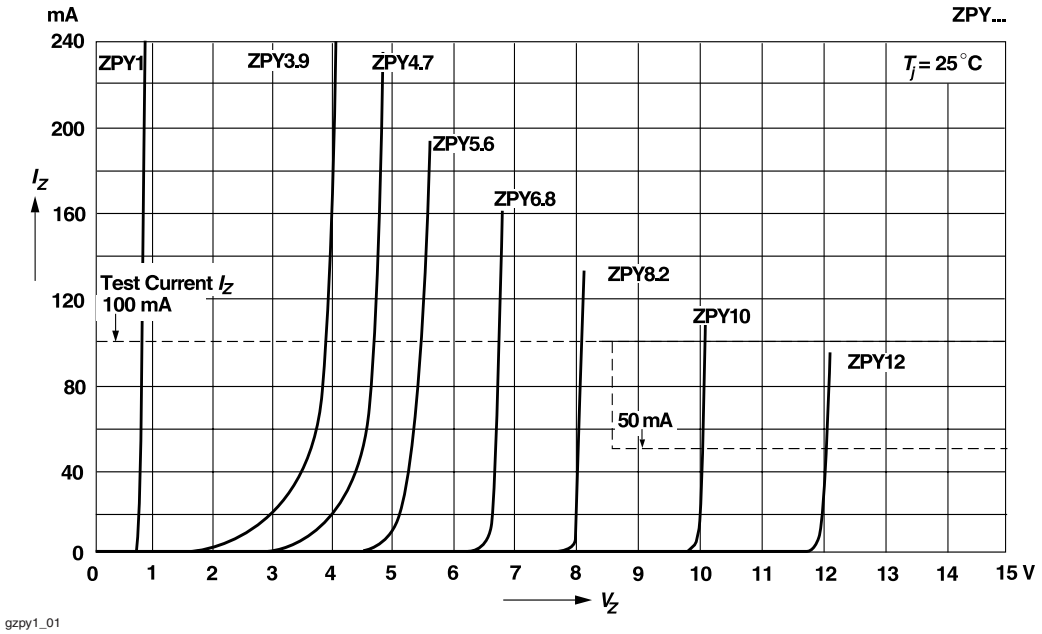


Figure 7. Breakdown Characteristics

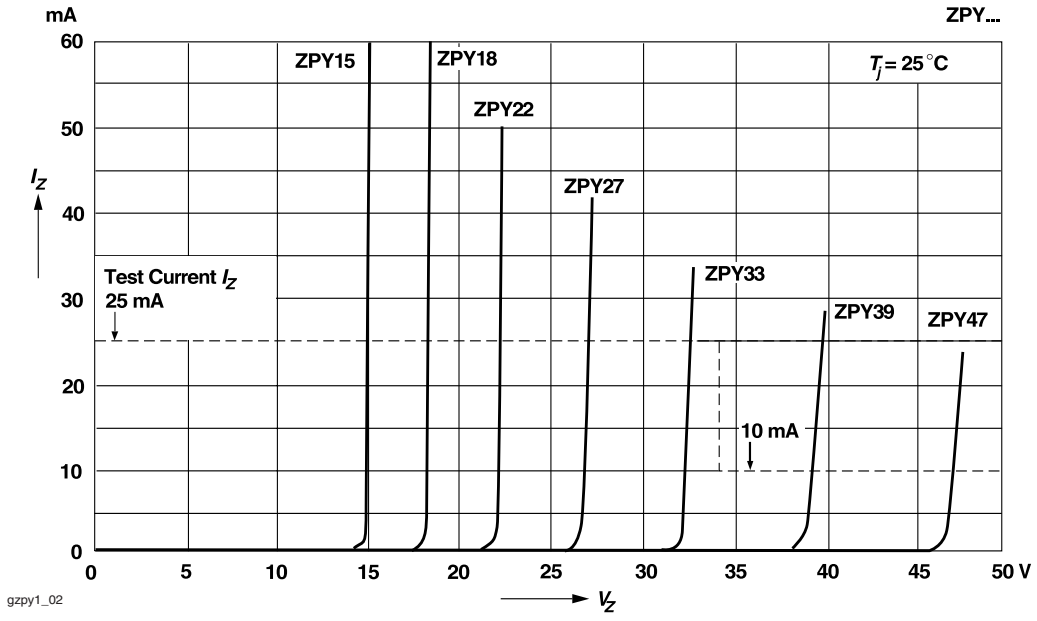


Figure 8. Breakdown Characteristics

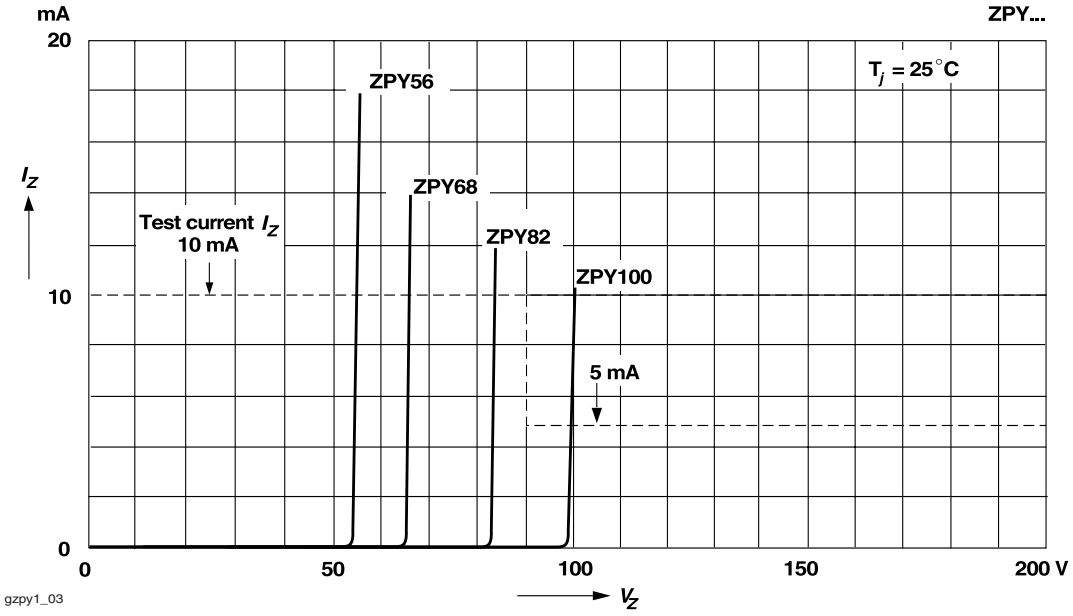
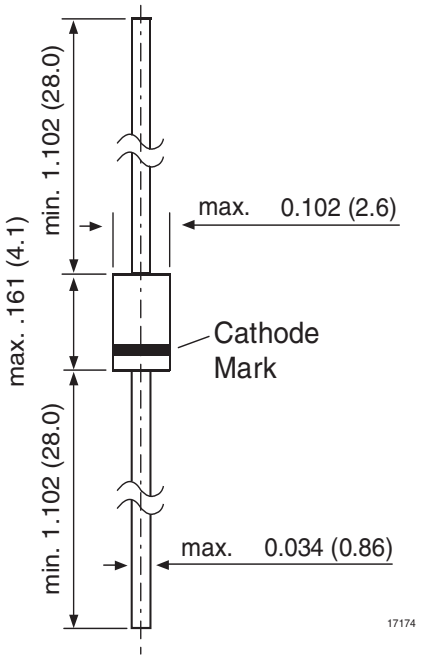


Figure 9. Breakdown Characteristics

Package Dimensions in Inches (mm)



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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