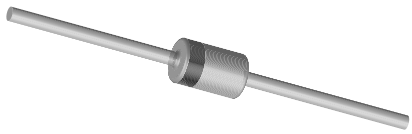
Zener Diodes

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 ZMY3V9 to ZMY100
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



Mechanical Data

Case: DO41 Glass case
Weight: approx. 310 mg
Cathode Band Color: black
Packaging Codes/Options:
TR/5 k per 13" reel (52 mm tape), 25 k/box
TAP/5 k per Ammo mag. (52 mm tape), 25 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 4 mm from case 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 air		R_{thJA}	110[1)]	K/W
Maximum junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 55 to + 175	°C

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Electrical Characteristics

Partnumber	Zener Voltage Range[2)]		Dynamic Resistance	Temperature Coefficient of Zener Voltage		Test Current	Reverse Voltage	Admissible Zener Current[1)]
	V_Z at I_{ZT}		r_{zj} at I_{ZT1}, f = 1 kHz	TC_{VZ} at I_{ZT}		I_{ZT}	V_R at I_R = 0.5 µA	I_Z at T_{amb} = 25 °C
	V		Ω	10^{-4}/°C		mA	V	mA
	min	max	typ	min	max			
ZPY3V9	3.7	4.1	4 (< 7)	- 7	2	100	-	290
ZPY4V3	4.0	4.6	4 (< 7)	- 7	3	100	-	260
ZPY4V7	4.4	5.0	4 (< 7)	- 7	4	100	-	235
ZPY5V1	4.8	5.4	2 (< 5)	- 6	5	100	> 0.7	215
ZPY5V6	5.2	6.0	1 (< 2)	- 3	5	100	> 1.5	193
ZPY6V2	5.8	6.6	1 (< 2)	- 1	6	100	> 2.0	183
ZPY6V8	6.4	7.2	1 (< 2)	0	7	100	> 3.0	157
ZPY7V5	7.0	7.9	1 (< 2)	0	7	100	> 5.0	143
ZPY8V2	7.7	8.7	1 (< 2)	3	8	100	> 6.0	127
ZPY9V1	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

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

Typical Characteristics

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

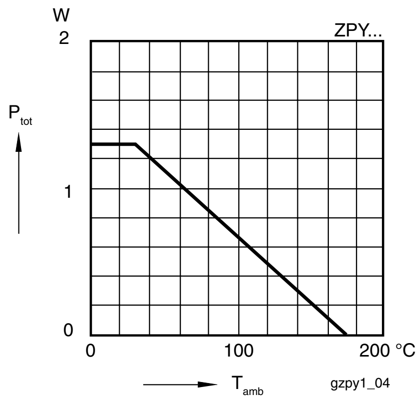


Figure 1. Admissible Power Dissipation vs. Ambient Temperature

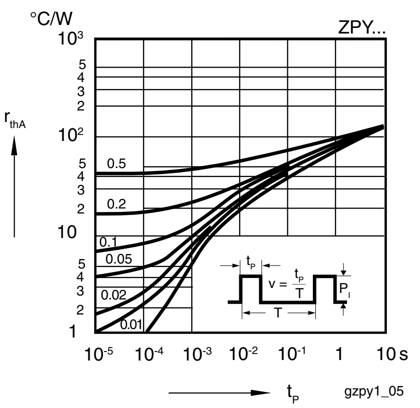


Figure 2. Pulse Thermal Resistance vs. Pulse Duration

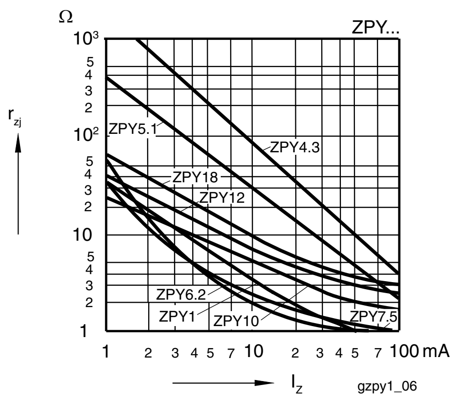


Figure 3. Dynamic Resistance vs. Zener Current

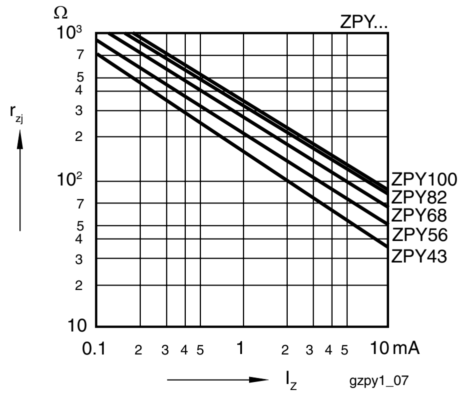


Figure 4. Dynamic Resistance vs. Zener Current

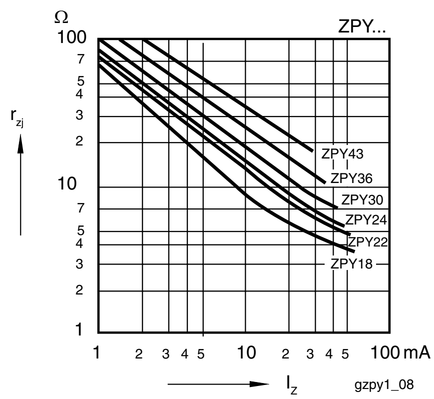


Figure 5. Dynamic Resistance vs. Zener Current

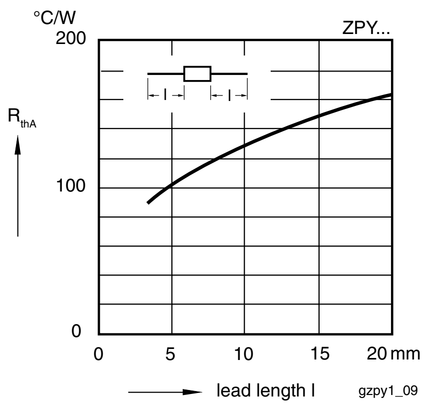


Figure 6. Thermal Resistance vs. Lead Length

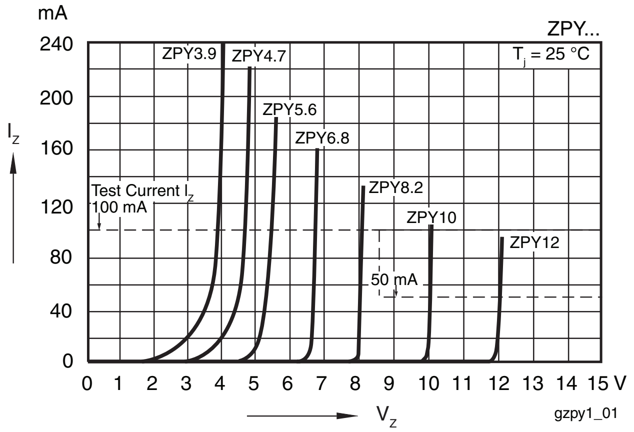


Figure 7. Breakdown Characteristics

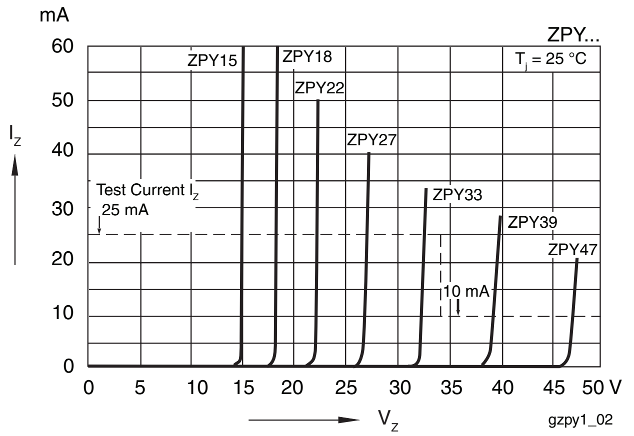


Figure 8. Breakdown Characteristics

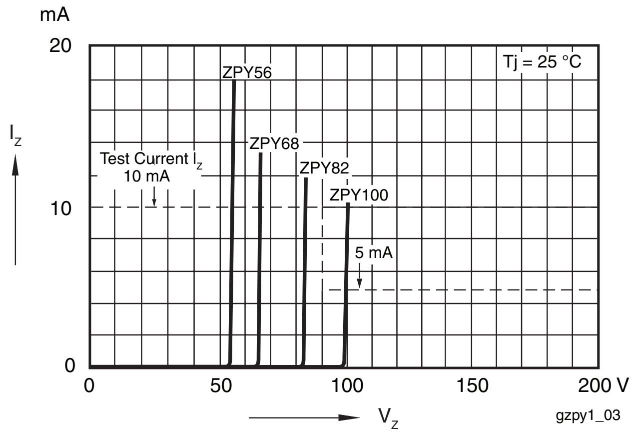
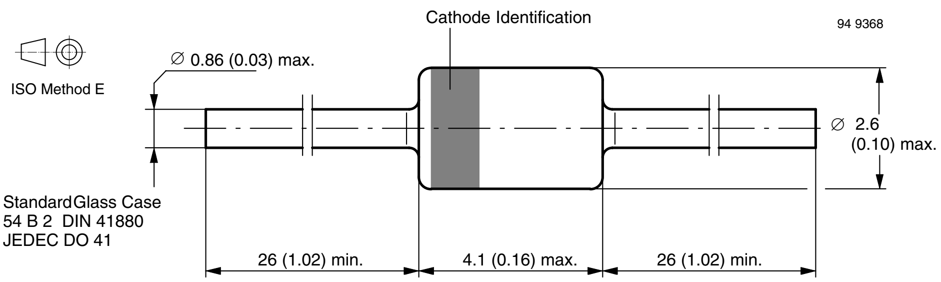


Figure 9. Breakdown Characteristics

Package Dimensions in mm (Inches): DO41



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 operating systems 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

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