



# 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.
- These diodes are also available in the MELF case with the type designation ZMY3V9 to ZMY100
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V <sub>Z</sub> range nom.	3.9 to 100	V
Test current I <sub>ZT</sub>	5 to 100	mA
V <sub>Z</sub> specification	Pulse current	
Int. construction	Single	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
ZPY3V9 to ZPY100	ZPY3V9 to ZPY100-series-TR	5000 (52 mm tape on 13" reel)	25 000/box
ZPY3V9 to ZPY100	ZPY3V9 to ZPY100-series-TAP	5000 per ammopack (52 mm tape)	25 000/box

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
DO-41	310 mg	-	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature	P <sub>tot</sub>	1300	mW
Zener current	See table "Characteristics"			
Junction to ambient air	Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature	R <sub>thJA</sub>	110	K/W
Junction temperature		T <sub>j</sub>	175	°C
Storage temperature range		T <sub>stg</sub>	-55 to +175	°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)										
PART NUMBER	ZENER VOLTAGE RANGE <sup>(2)</sup>			TEST CURRENT	REVERSE VOLTAGE		DYNAMIC RESISTANCE $f = 1\text{ kHz}$	ADMISSIBLE ZENER CURRENT <sup>(1)</sup>	TEMPERATURE COEFFICIENT OF ZENER VOLTAGE	
	$V_Z$ at $I_{ZT1}$			$I_{ZT1}$	$V_R$ at $I_R$		$Z_Z$ at $I_{ZT1}$	$I_Z$	$TC_{VZ}$ at $I_{ZT1}$	
	V			mA	V	$\mu\text{A}$	$\Omega$	mA	$10^{-4}/^{\circ}\text{C}$	
	MIN.	NOM.	MAX.				TYP.		MIN.	MAX.
ZPY3V9	3.7	3.9	4.1	100	-	0.5	4 (< 7)	290	- 7	2
ZPY4V3	4	4.3	4.6	100	-	0.5	4 (< 7)	260	- 7	3
ZPY4V7	4.4	4.7	5	100	-	0.5	4 (< 7)	235	- 7	4
ZPY5V1	4.8	5.1	5.4	100	> 0.7	0.5	2 (< 5)	215	- 6	5
ZPY5V6	5.2	5.6	6	100	> 1.5	0.5	1 (< 2)	193	- 3	5
ZPY6V2	5.8	6.2	6.6	100	> 2.0	0.5	1 (< 2)	183	- 1	6
ZPY6V8	6.4	6.8	7.2	100	> 3.0	0.5	1 (< 2)	157	0	7
ZPY7V5	7	7.5	7.9	100	> 5.0	0.5	1 (< 2)	143	0	7
ZPY8V2	7.7	8.2	8.7	100	> 6.0	0.5	1 (< 2)	127	3	8
ZPY9V1	8.5	9.1	9.6	50	> 7.0	0.5	2 (< 4)	117	3	8
ZPY10	9.4	10	10.6	50	> 7.5	0.5	2 (< 4)	105	5	9
ZPY11	10.4	11	11.6	50	> 8.5	0.5	3 (< 7)	94	5	10
ZPY12	11.4	12	12.7	50	> 9.0	0.5	3 (< 7)	85	5	10
ZPY13	12.4	13	14.1	50	> 10	0.5	4 (< 9)	78	5	10
ZPY15	13.8	15	15.8	50	> 11	0.5	4 (< 9)	70	5	10
ZPY16	15.3	16	17.1	25	> 12	0.5	5 (< 10)	63	7	11
ZPY18	16.8	18	19.1	25	> 14	0.5	5 (< 11)	57	7	11
ZPY20	18.8	20	21.2	25	> 15	0.5	6 (< 12)	52	7	11
ZPY22	20.8	22	23.3	25	> 17	0.5	7 (< 13)	48	7	11
ZPY24	22.8	24	25.6	25	> 18	0.5	8 (< 14)	42	7	12
ZPY27	25.1	27	28.9	25	> 20	0.5	9 (< 15)	38	7	12
ZPY30	28	30	32	25	> 22.5	0.5	10 (< 20)	35	7	12
ZPY33	31	33	35	25	> 25	0.5	11 (< 20)	31	7	12
ZPY36	34	36	38	10	> 27	0.5	25 (< 60)	29	7	12
ZPY39	37	39	41	10	> 29	0.5	30 (< 60)	26	8	12
ZPY43	40	43	46	10	> 32	0.5	35 (< 80)	24	8	13
ZPY47	44	47	50	10	> 35	0.5	40 (< 80)	22	8	13
ZPY51	48	51	54	10	> 38	0.5	45 (< 100)	20	8	13
ZPY56	52	56	60	10	> 42	0.5	50 (< 100)	18	8	13
ZPY62	58	62	66	10	> 47	0.5	60 (< 130)	16	8	13
ZPY68	64	68	72	10	> 51	0.5	65 (< 130)	14	8	13
ZPY75	70	75	79	10	> 56	0.5	70 (< 160)	13	8	13
ZPY82	77	82	88	10	> 61	0.5	80 (< 160)	12	8	13
ZPY91	85	91	96	5	> 68	0.5	120 (< 250)	11	9	13
ZPY100	94	100	106	5	> 75	0.5	130 (< 250)	10	9	13

**Notes**

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

(2) Tested with pulses  $t_p = 5\text{ ms}$

**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

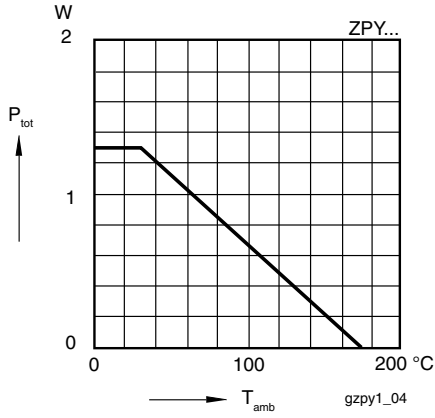


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature



Fig. 4 - Dynamic Resistance vs. Zener Current

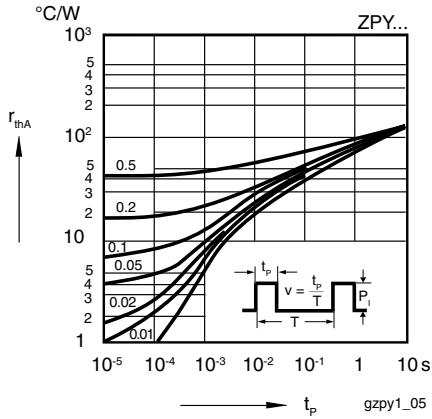


Fig. 2 - Pulse Thermal Resistance vs. Pulse Duration

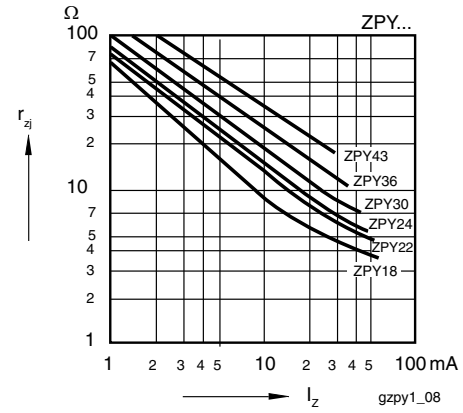


Fig. 5 - Dynamic Resistance vs. Zener Current

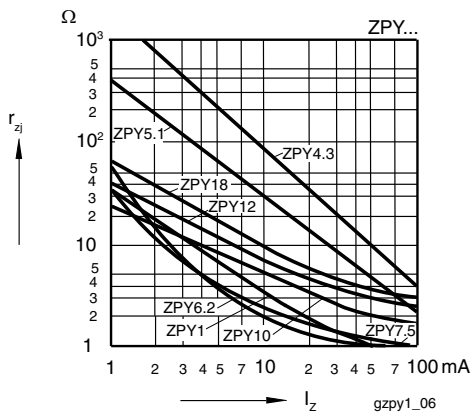


Fig. 3 - Dynamic Resistance vs. Zener Current

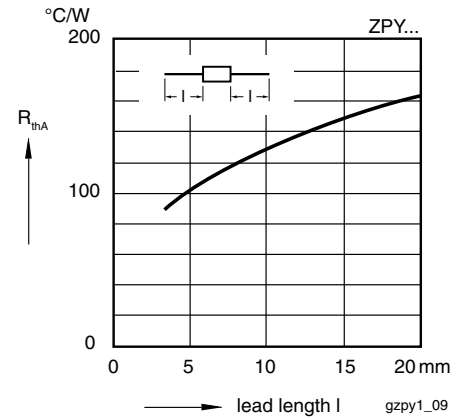


Fig. 6 - Thermal Resistance vs. Lead Length

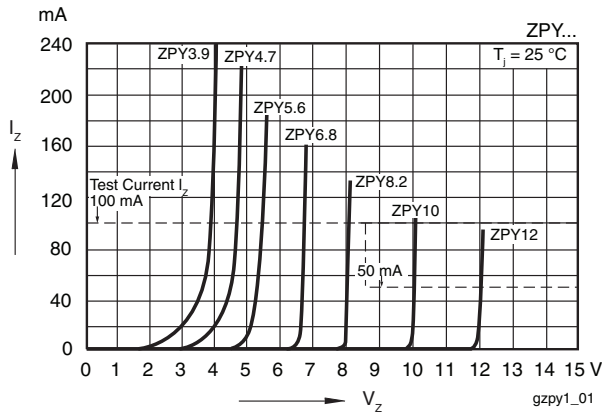


Fig. 7 - Breakdown Characteristics

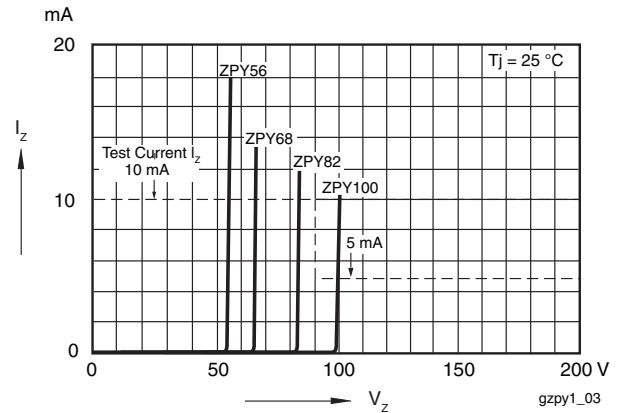


Fig. 9 - Breakdown Characteristics

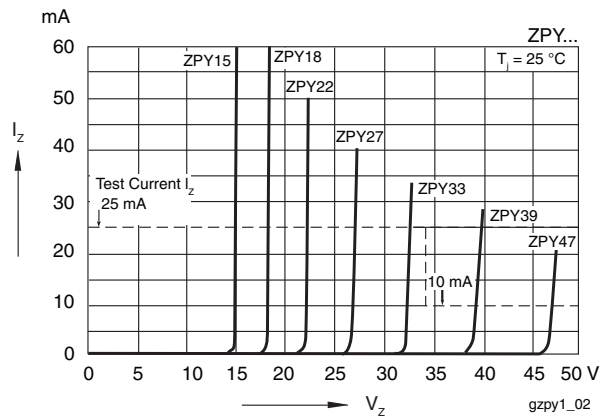
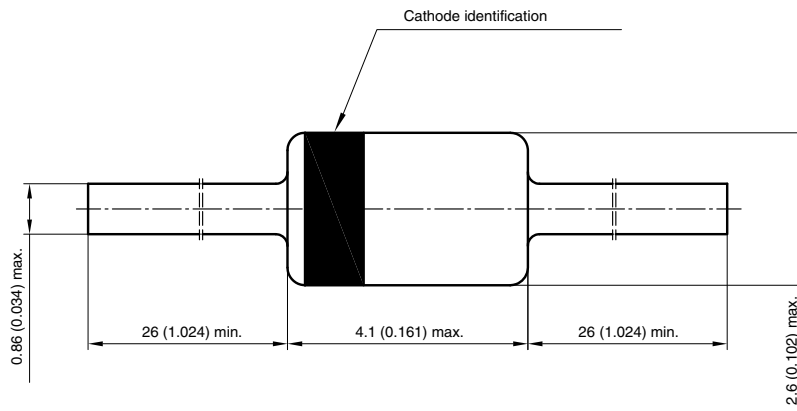


Fig. 8 - Breakdown Characteristics

**PACKAGE DIMENSIONS** in millimeters (inches): **DO-41**



Document no.:6.561-5001.02-4  
 Rev. 3 - Date: 09 February 2005  
 94 9368



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

## Material Category Policy

**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.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.