

Zener Diodes



DESIGN SUPPORT TOOLS AVAILABLE



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/doc299912



RoHS
COMPLIANT
HALOGEN
FREE

PRIMARY CHARACTERISTICS

PARAMETER	VALUE	UNIT
V_Z range nom.	3.9 to 100	V
Test current I_{ZT}	5 to 100	mA
V_Z specification	Pulse current	
Circuit configuration	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 ammpack (52 mm tape)	25 000/box

PACKAGE

PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
DO-41 (DO-204AL)	310 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ °C}$, 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_{tot}	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_{thJA}	110	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	-55 to +175	°C

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

PART NUMBER	ZENER VOLTAGE RANGE ⁽²⁾			TEST CURRENT	REVERSE VOLTAGE		DYNAMIC RESISTANCE $f = 1\text{ kHz}$	ADMISSIBLE ZENER CURRENT ⁽¹⁾	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	μA	Ω	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)

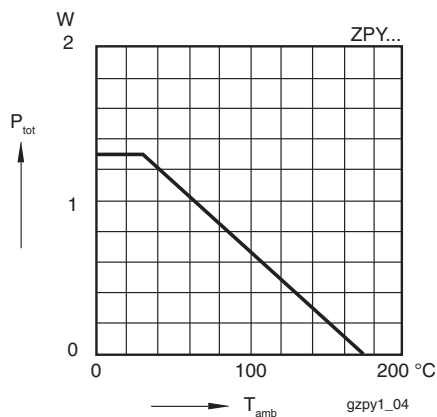


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature

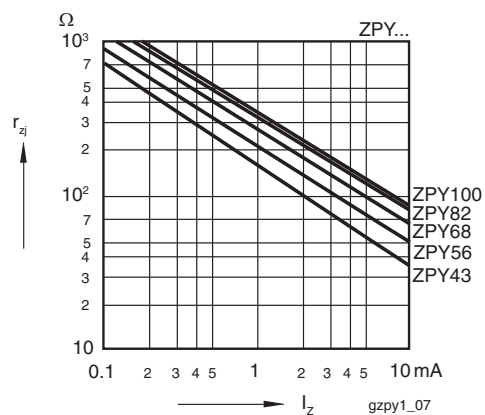


Fig. 4 - Dynamic Resistance vs. Zener Current

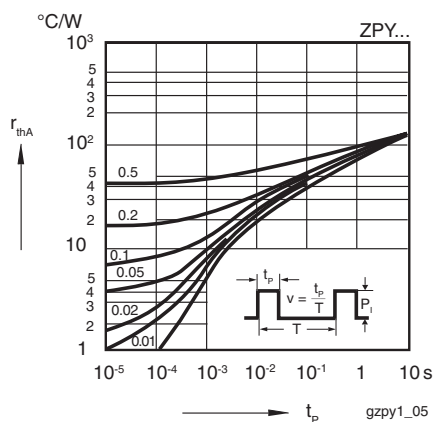


Fig. 2 - Pulse Thermal Resistance vs. Pulse Duration

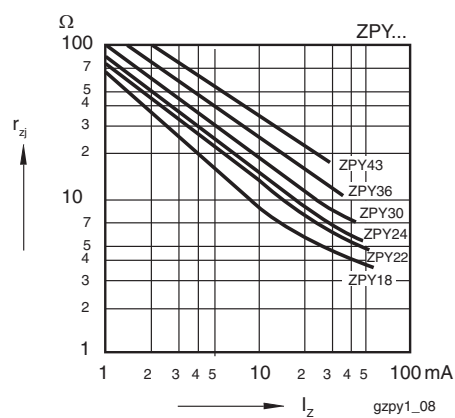


Fig. 5 - Dynamic Resistance vs. Zener Current

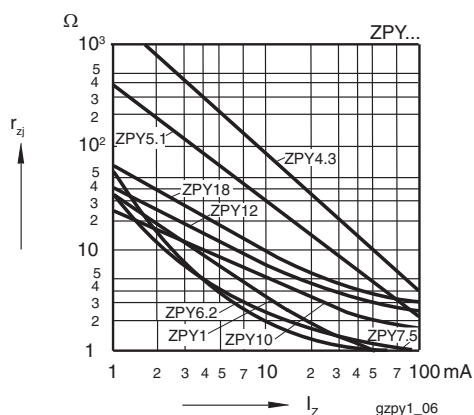


Fig. 3 - Dynamic Resistance vs. Zener Current

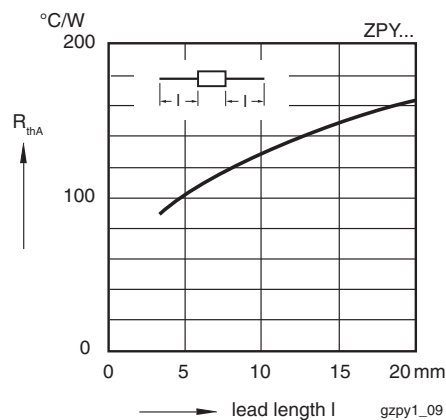


Fig. 6 - Thermal Resistance vs. Lead Length

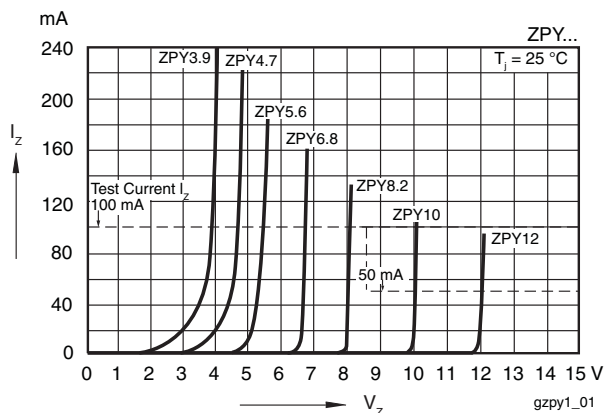


Fig. 7 - Breakdown Characteristics

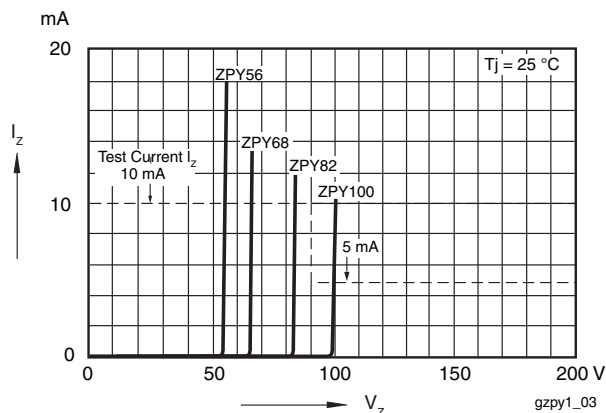


Fig. 9 - Breakdown Characteristics

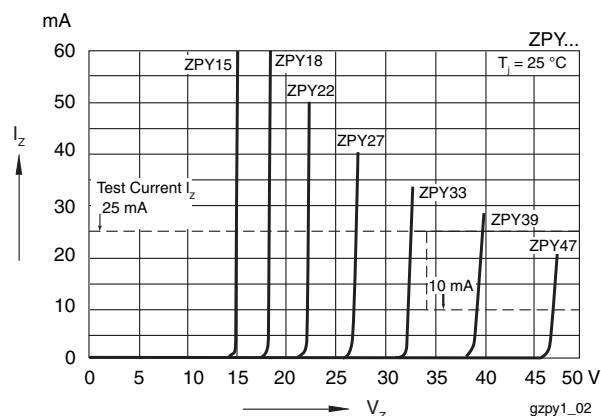
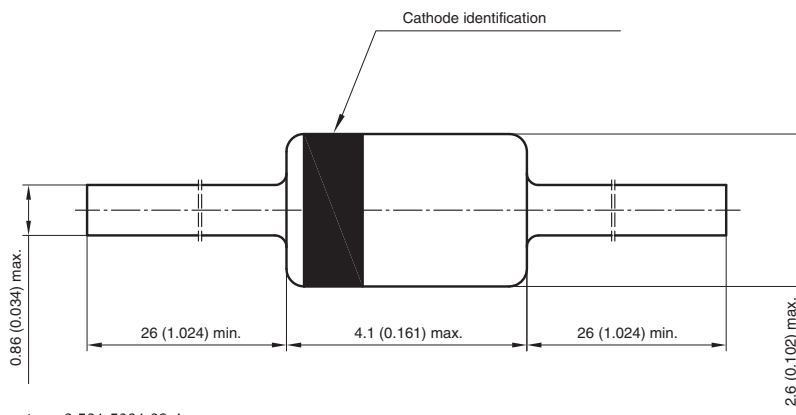


Fig. 8 - Breakdown Characteristics

PACKAGE DIMENSIONS in millimeters (inches): **DO-41 (DO-204AL)**


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.