



## 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 case75
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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

### LINKS TO ADDITIONAL RESOURCES



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 ZPY75	ZPY3V9 to ZPY75-series-TR	5000 (52 mm tape on 14" reel)	25 000/box
ZPY3V9 to ZPY75	ZPY3V9 to ZPY75-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)	approx. 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 $t_p = 10\text{ ms}$	$P_{tot}$	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 $t_p = 10\text{ ms}$	$R_{thJA}$	110	K/W
Junction temperature		$T_j$	175	°C
Storage temperature range		$T_{stg}$	-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

**Notes**

(1) Valid provided that electrodes at a distance of 4 mm from case are kept at ambient temperature,  $t_p = 10\text{ ms}$

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

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

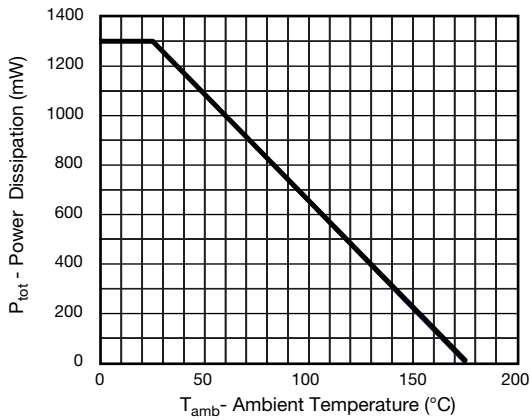


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature  
 $P_{tot} = f(T_{amb})$

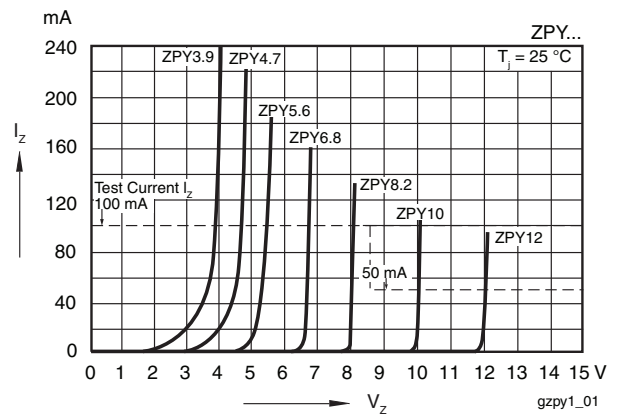


Fig. 3 - Typical Breakdown Characteristics

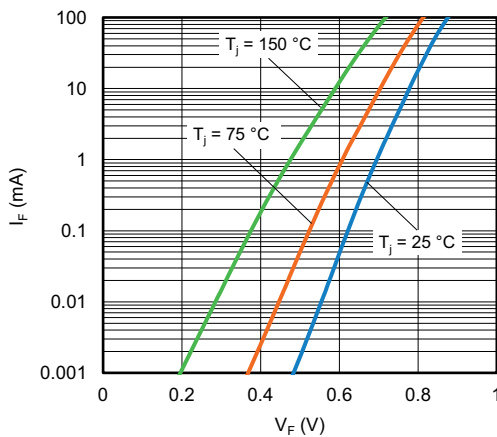


Fig. 2 - Typical Forward Current  $I_F$  vs. Forward Voltage  $V_F$

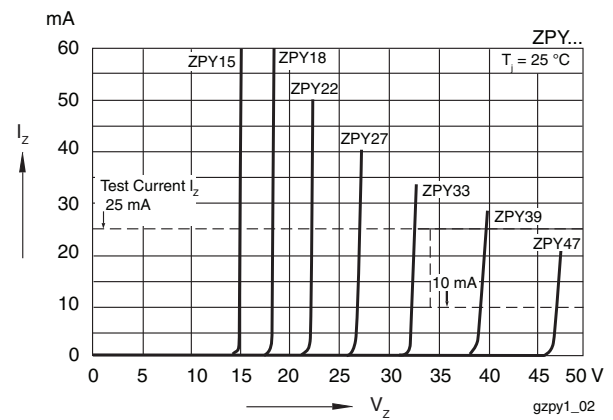
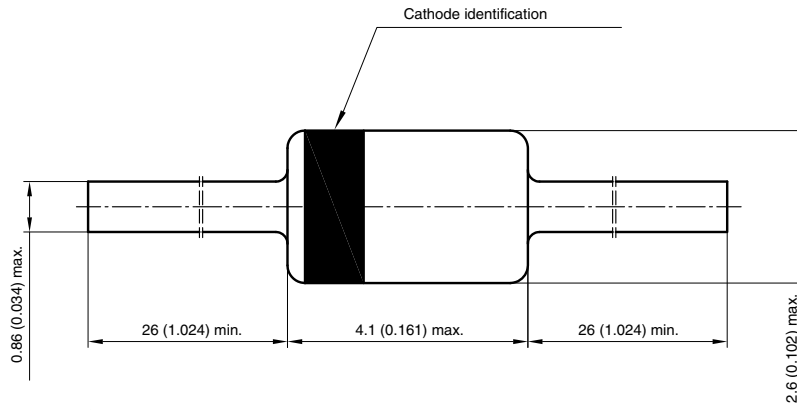


Fig. 4 - Typical Breakdown Characteristics

## 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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View ZPY4V7-TR on WIN SOURCE](#)

 [Vishay Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management