



# 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**

## DESIGN SUPPORT TOOLS AVAILABLE



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	
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 ammopack (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 <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**

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

<sup>(2)</sup> Tested with pulses  $t_p = 5\text{ ms}$



BASIC CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

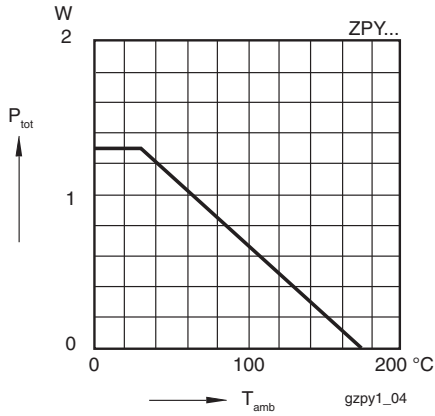


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature

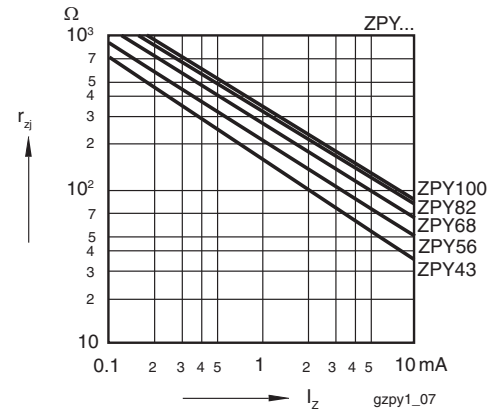


Fig. 4 - Dynamic Resistance vs. Zener Current

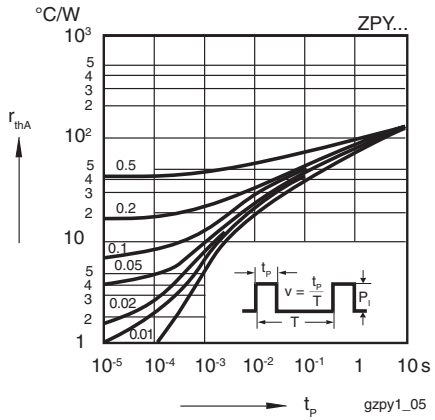


Fig. 2 - Pulse Thermal Resistance vs. Pulse Duration

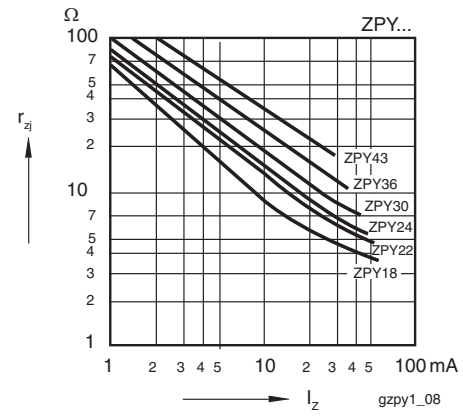


Fig. 5 - Dynamic Resistance vs. Zener Current

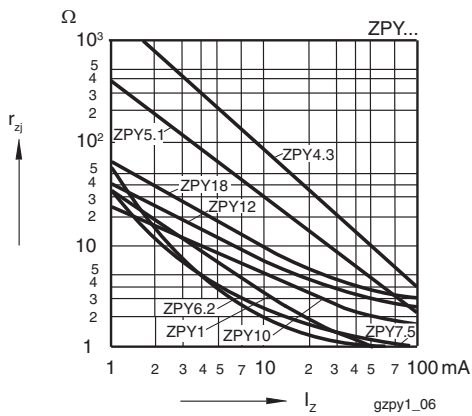


Fig. 3 - Dynamic Resistance vs. Zener Current

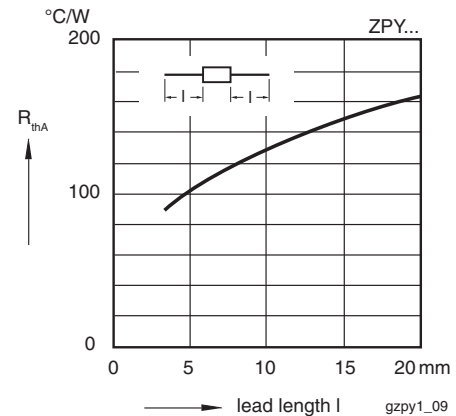


Fig. 6 - Thermal Resistance vs. Lead Length

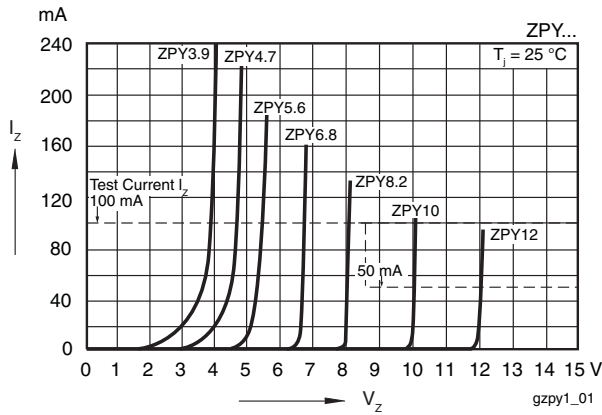


Fig. 7 - Breakdown Characteristics

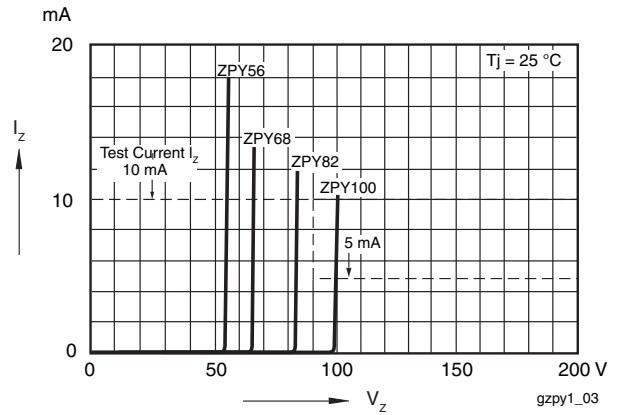


Fig. 9 - Breakdown Characteristics

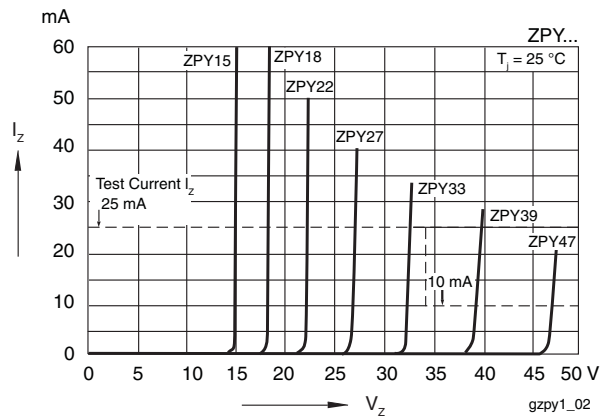
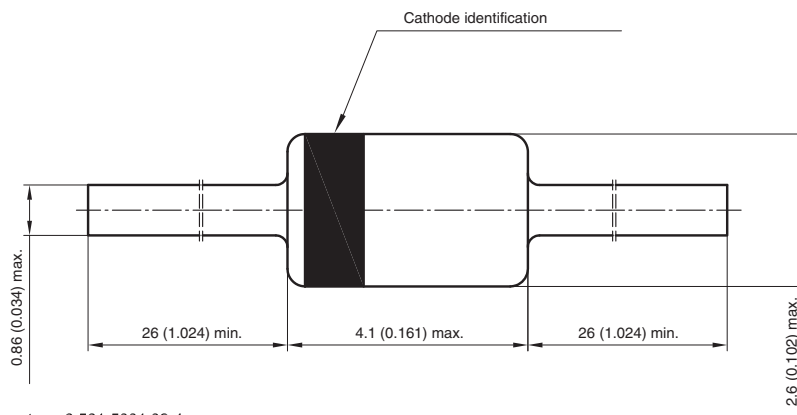


Fig. 8 - Breakdown Characteristics

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



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