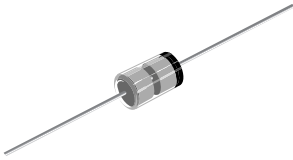
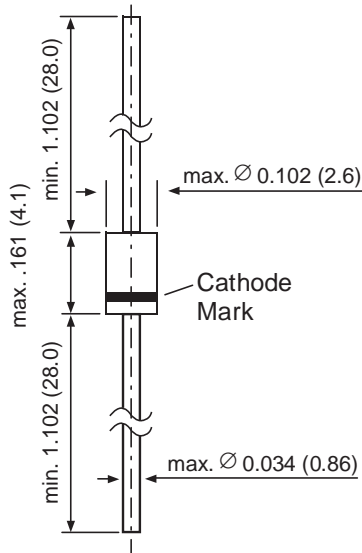


## Zener Diodes

**V<sub>z</sub> Range** 1.0, 3.9 to 100V  
**Power Dissipation** 1.3W



### DO-204AL (DO-41 Glass)



Dimensions in inches and (millimeters)

### 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 ZMY10 ... ZMY100.

### Mechanical Data

**Case:** DO-41 Glass Case

**Weight:** approx. 0.35g

**Packaging Codes/Options:**

D9/5K per 13" reel (52mm tape), 10K/box

E1/5K per Ammo mag. (52 mm tape), 10K/box

### Maximum Ratings and Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                                    | Symbol           | Value              | Unit |
|--|------------------|--------------------|------|
| Zener Current (see Table "Characteristics")  |                  |                    |      |
| Power Dissipation at T <sub>amb</sub> = 25°C | P <sub>tot</sub> | 1.3 <sup>(1)</sup> | W    |
| Thermal Resistance Junction to Ambient Air   | R <sub>θJA</sub> | 130 <sup>(1)</sup> | °C/W |
| Junction Temperature                         | T <sub>j</sub>   | 175                | °C   |
| Storage Temperature Range                    | T <sub>s</sub>   | -55 to +175        | °C   |

**Note:**

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

# ZPY1 thru ZPY100

Vishay Semiconductors  
formerly General Semiconductor



## Electrical Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Type                | Zener Voltage <sup>(2)</sup><br>at I <sub>ZT</sub> V <sub>Z</sub> (V) |      | Dynamic Resistance<br>at I <sub>ZT</sub><br>f = 1 kHz<br>r <sub>Zi</sub> (Ω) | Temp. Coeff. of<br>Zener Voltage at I <sub>ZT</sub><br>α <sub>VZ</sub> (10 <sup>-4</sup> /°C) |      | Test current<br>I <sub>ZT</sub> (mA) | Reverse<br>Voltage<br>at<br>I <sub>R</sub> = 0.5 μA<br>V <sub>R</sub> (V) | Admissible<br>Zener current <sup>(1)</sup><br>at<br>T <sub>amb</sub> = 25°C<br>I <sub>Z</sub> (mA) |
|---------------------|---|------|--|---|------|--------------------------------------|---|--|
|                     | Min   | Max  |  | Min   | Max  |                                      |   |  |
| ZPY1 <sup>(3)</sup> | 0.65  | 0.75 | 6.5 (< 8)  | - 26  | - 23 | 5                                    | -   | 580  |
| ZPY3.9              | 3.7   | 4.1  | 4 (< 7)  | - 7   | +2   | 100                                  | -   | 290  |
| ZPY4.3              | 4.0   | 4.6  | 4 (< 7)  | - 7   | +3   | 100                                  | -   | 260  |
| ZPY4.7              | 4.4   | 5.0  | 4 (< 7)  | - 7   | +4   | 100                                  | -   | 235  |
| ZPY5.1              | 4.8   | 5.4  | 2 (< 5)  | - 6   | +5   | 100                                  | > 0.7   | 215  |
| ZPY5.6              | 5.2   | 6.0  | 1 (< 2)  | - 3   | +5   | 100                                  | > 1.5   | 193  |
| ZPY6.2              | 5.8   | 6.6  | 1 (< 2)  | - 1   | +6   | 100                                  | > 2.0   | 183  |
| ZPY6.8              | 6.4   | 7.2  | 1 (< 2)  | 0   | +7   | 100                                  | > 3.0   | 157  |
| ZPY7.5              | 7.0   | 7.9  | 1 (< 2)  | 0   | +7   | 100                                  | > 5.0   | 143  |
| ZPY8.2              | 7.7   | 8.7  | 1 (< 2)  | +3  | +8   | 100                                  | > 6.0   | 127  |
| ZPY9.1              | 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   |

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

(2) Tested with pulses t<sub>p</sub> = 5 ms

(3) The ZPY1 is a silicon diode operated in forward direction. Hence, the index of all characteristics and maximum ratings should be "F" instead of "Z"  
Connect the cathode terminal to the negative pole

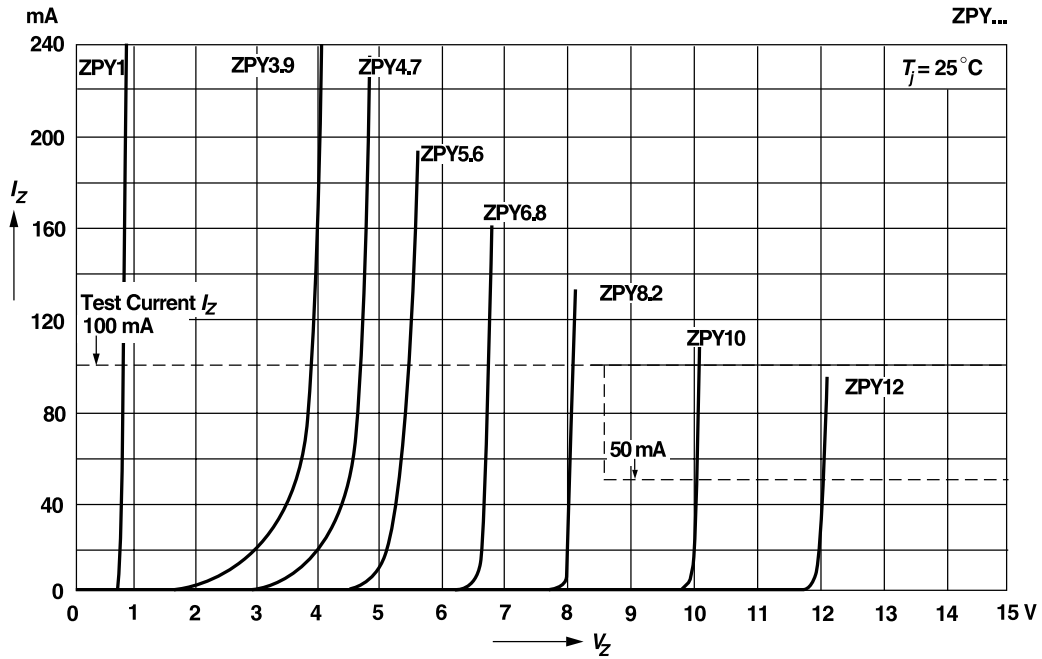
For devices in glass case DO-41 with higher Zener voltage but same power dissipation see types ZPU100 ... ZPU180



## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

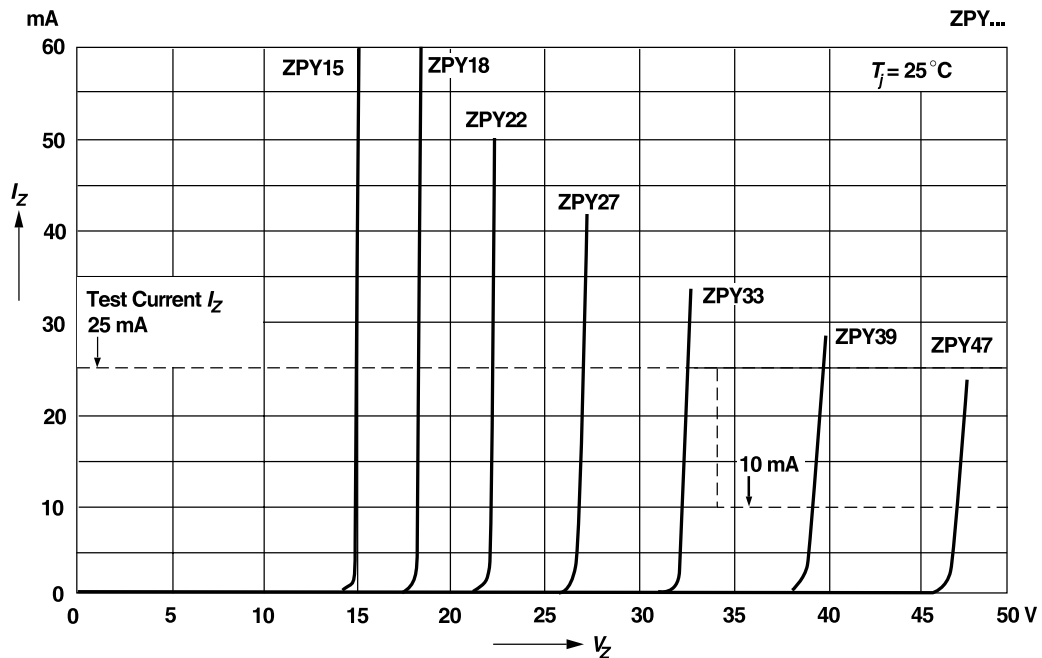
### Breakdown characteristics

$T_j = \text{constant (pulsed)}$



### Breakdown characteristics

$T_j = \text{constant (pulsed)}$



# ZPY1 thru ZPY100

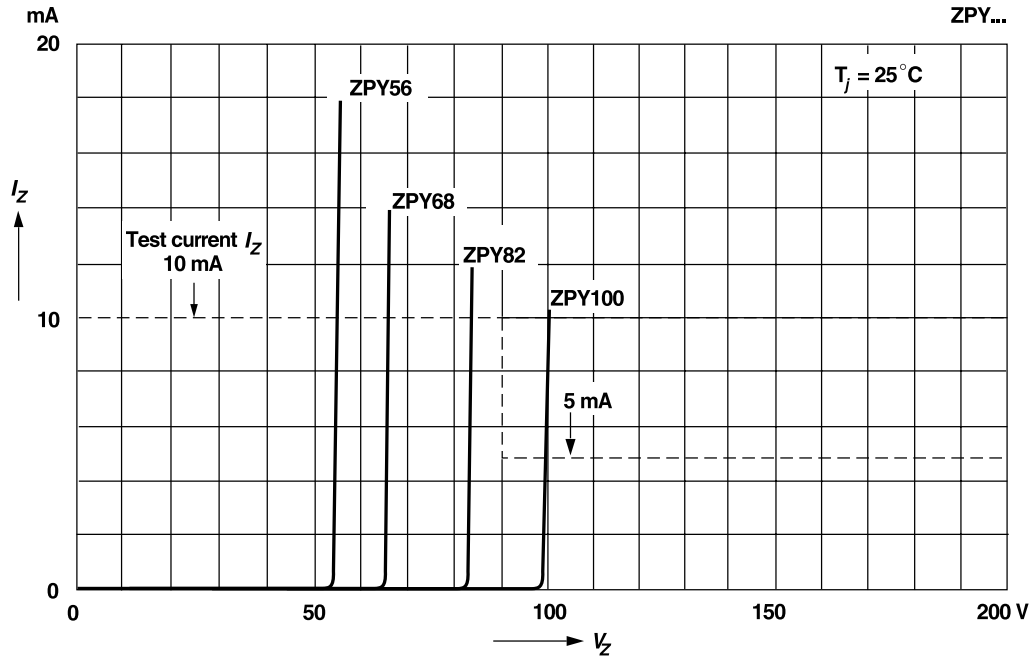
Vishay Semiconductors  
formerly General Semiconductor



## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

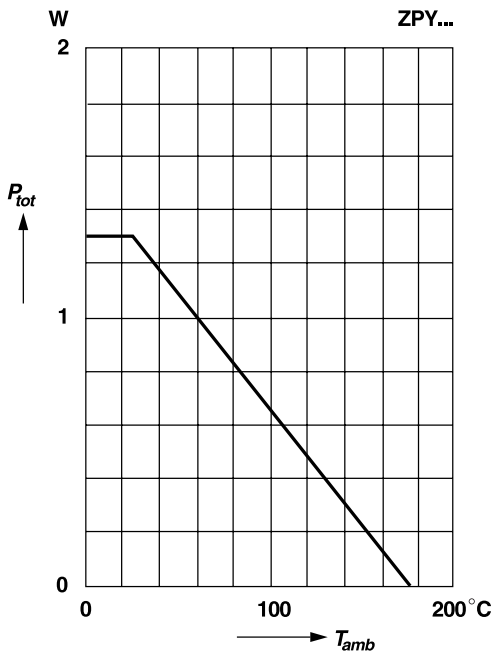
### Breakdown characteristics

$T_j = \text{constant (pulsed)}$



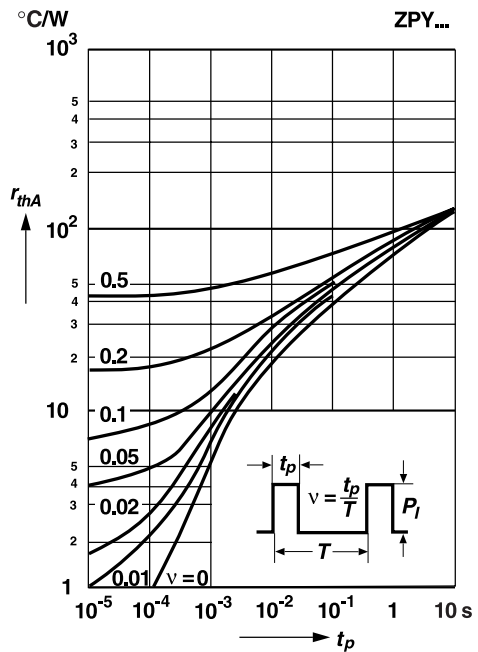
### Admissible power dissipation versus ambient temperature

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



### Pulse thermal resistance versus pulse duration

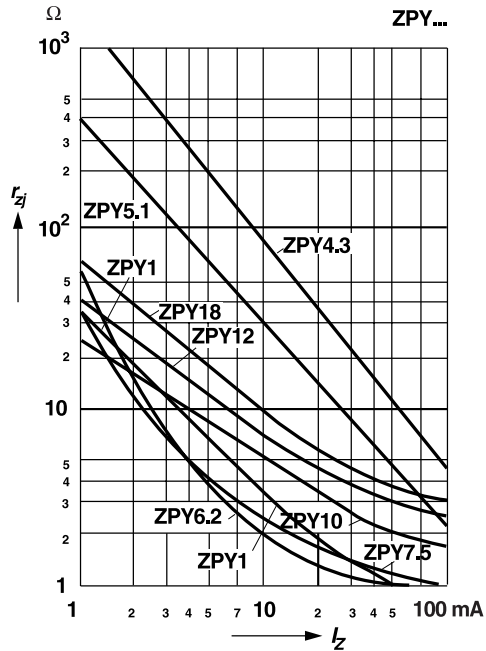
Valid provided that leads are kept at ambient temperature at a distance of 10 mm from case



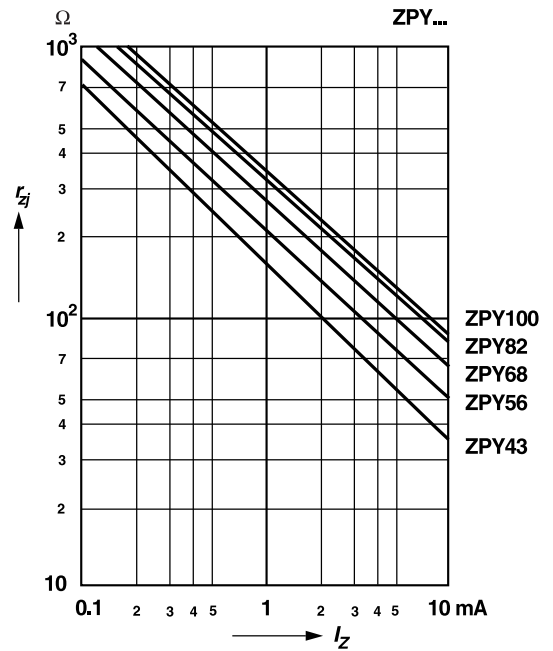


Ratings and  
Characteristic Curves (T<sub>A</sub> = 25°C unless otherwise noted)

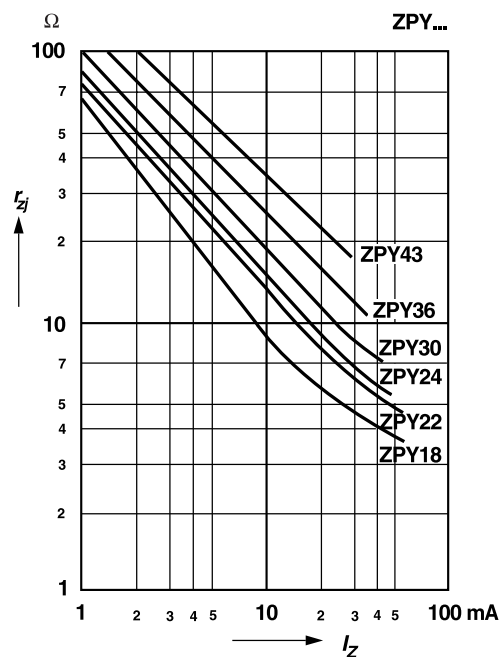
Dynamic resistance  
versus Zener current



Dynamic resistance  
versus Zener current



Dynamic resistance  
versus Zener current



Thermal resistance  
versus lead length

