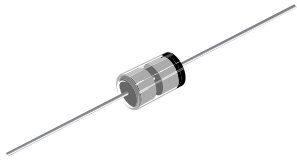


**Zener Diodes**

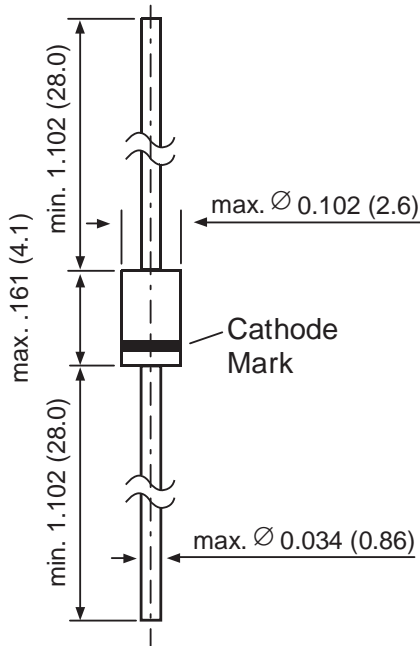
**V<sub>z</sub> Range 3.6 to 200V**

**Power Dissipation 1.3W**



*Extended Voltage Range*

**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 24 standard. Replace suffix "C" with "B" for ±2% tolerance. Other voltage tolerances and other Zener voltages are available upon request.

**Mechanical Data**

**Case:** DO-41Glass Case

**Weight:** approx. 0.35g

**Packaging Codes/Options:**

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

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

**Maximum Ratings and Thermal Characteristics** (T<sub>A</sub> = 25°C unless otherwise noted)

| 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.

### Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted) Maximum V<sub>F</sub> = 1.0 V at I<sub>F</sub> = 200 mA

| Type<br>y = C for 5%<br>y = B for 2% | Dynamic resistance                    |                            |                                       |                            | Temp. coefficient<br>of Zener Voltage<br>at I <sub>Z</sub> = I <sub>ZT</sub><br>α <sub>VZ</sub> (%/°C) |        | Reverse leakage<br>current |                          | Admissible<br>Zener current <sup>(2)</sup> |  |
|--------------------------------------|---------------------------------------|----------------------------|---------------------------------------|----------------------------|--|--------|----------------------------|--------------------------|--|--|
|                                      | r <sub>ZT</sub> <sup>(3)</sup><br>(Ω) | at<br>I <sub>ZT</sub> (mA) | r <sub>ZK</sub> <sup>(3)</sup><br>(Ω) | at<br>I <sub>ZK</sub> (mA) | min.   | max.   | at<br>I <sub>R</sub> (μA)  | at<br>V <sub>R</sub> (V) | I <sub>Z</sub> (mA)                        | at t <sub>p</sub> =10ms<br>I <sub>ZSM</sub> (mA) |
|                                      |                                       |                            |                                       |                            |  |        |                            |                          |  |  |
| BZX85 – y3V6                         | < 15                                  | 60                         | < 500                                 | 1                          | – 0.08   | – 0.05 | < 20                       | 1                        | 290  | 2660   |
| BZX85 – y3V9                         | < 15                                  | 60                         | < 500                                 | 1                          | – 0.07   | – 0.02 | < 10                       | 1                        | 280  | 2540   |
| BZX85 – y4V3                         | < 13                                  | 50                         | < 500                                 | 1                          | – 0.05   | +0.01  | < 3                        | 1                        | 250  | 2440   |
| BZX85 – y4V7                         | < 13                                  | 45                         | < 600                                 | 1                          | – 0.03   | +0.04  | < 3                        | 1                        | 215  | 2320   |
| BZX85 – y5V1                         | < 10                                  | 45                         | < 500                                 | 1                          | – 0.01   | +0.04  | < 1                        | 1.5                      | 200  | 2200   |
| BZX85 – y5V6                         | < 7                                   | 45                         | < 400                                 | 1                          | 0  | +0.045 | < 1                        | 2                        | 190  | 2080   |
| BZX85 – y6V2                         | < 4                                   | 35                         | < 300                                 | 1                          | +0.01  | +0.055 | < 1                        | 3                        | 170  | 1960   |
| BZX85 – y6V8                         | < 3.5                                 | 35                         | < 300                                 | 1                          | +0.015   | +0.06  | < 1                        | 4                        | 155  | 1800   |
| BZX85 – y7V5                         | < 3                                   | 35                         | < 200                                 | 0.5                        | +0.02  | +0.065 | < 1                        | 4.5                      | 140  | 1620   |
| BZX85 – y8V2                         | < 5                                   | 25                         | < 200                                 | 0.5                        | +0.03  | +0.07  | < 1                        | 6.2                      | 130  | 1520   |
| BZX85 – y9V1                         | < 5                                   | 25                         | < 200                                 | 0.5                        | +0.035   | +0.075 | < 1                        | 6.8                      | 120  | 1340   |
| BZX85 – y10                          | < 7                                   | 25                         | < 200                                 | 0.5                        | +0.04  | +0.08  | < 0.5                      | 7.5                      | 105  | 1200   |
| BZX85 – y11                          | < 8                                   | 20                         | < 300                                 | 0.5                        | +0.045   | +0.08  | < 0.5                      | 8.2                      | 97   | 1100   |
| BZX85 – y12                          | < 9                                   | 20                         | < 350                                 | 0.5                        | +0.045   | +0.085 | < 0.5                      | 9.1                      | 88   | 1000   |
| BZX85 – y13                          | < 10                                  | 20                         | < 400                                 | 0.5                        | +0.05  | +0.085 | < 0.5                      | 10                       | 79   | 900  |
| BZX85 – y15                          | < 10                                  | 15                         | < 500                                 | 0.5                        | +0.055   | +0.09  | < 0.5                      | 11                       | 71   | 760  |
| BZX85 – y16                          | < 15                                  | 15                         | < 500                                 | 0.5                        | +0.055   | +0.09  | < 0.5                      | 12                       | 66   | 700  |
| BZX85 – y18                          | < 20                                  | 15                         | < 500                                 | 0.5                        | +0.06  | +0.09  | < 0.5                      | 13                       | 62   | 600  |
| BZX85 – y20                          | < 24                                  | 10                         | < 600                                 | 0.5                        | +0.06  | +0.09  | < 0.5                      | 15                       | 56   | 540  |
| BZX85 – y22                          | < 25                                  | 10                         | < 600                                 | 0.5                        | +0.06  | +0.095 | < 0.5                      | 16                       | 52   | 500  |
| BZX85 – y24                          | < 25                                  | 10                         | < 600                                 | 0.5                        | +0.06  | +0.095 | < 0.5                      | 18                       | 47   | 450  |
| BZX85 – y27                          | < 30                                  | 8                          | < 750                                 | 0.25                       | +0.06  | +0.095 | < 0.5                      | 20                       | 41   | 400  |
| BZX85 – y30                          | < 30                                  | 8                          | < 1000                                | 0.25                       | +0.06  | +0.095 | < 0.5                      | 22                       | 36   | 380  |
| BZX85 – y33                          | < 35                                  | 8                          | < 1000                                | 0.25                       | +0.06  | +0.095 | < 0.5                      | 24                       | 33   | 350  |
| BZX85 – y36                          | < 40                                  | 8                          | < 1000                                | 0.25                       | +0.06  | +0.095 | < 0.5                      | 27                       | 30   | 320  |
| BZX85 – y39                          | < 50                                  | 6                          | < 1000                                | 0.25                       | +0.06  | +0.095 | < 0.5                      | 30                       | 28   | 296  |
| BZX85 – y43                          | < 50                                  | 6                          | < 1000                                | 0.25                       | +0.06  | +0.095 | < 0.5                      | 33                       | 26   | 270  |
| BZX85 – y47                          | < 90                                  | 4                          | < 1500                                | 0.25                       | +0.06  | +0.095 | < 0.5                      | 36                       | 23   | 246  |
| BZX85 – y51                          | < 115                                 | 4                          | < 1500                                | 0.25                       | +0.06  | +0.095 | < 0.5                      | 39                       | 21   | 226  |
| BZX85 – y56                          | < 120                                 | 4                          | < 2000                                | 0.25                       | +0.06  | +0.095 | < 0.5                      | 43                       | 19   | 208  |
| BZX85 – y62                          | < 125                                 | 4                          | < 2000                                | 0.25                       | +0.06  | +0.095 | < 0.5                      | 47                       | 16   | 186  |
| BZX85 – y68                          | < 130                                 | 4                          | < 2000                                | 0.25                       | 0.055  | 0.095  | < 0.5                      | 51                       | 15   | 171  |
| BZX85 – y75                          | < 135                                 | 4                          | < 2000                                | 0.25                       | 0.055  | 0.095  | < 0.5                      | 56                       | 14   | 161  |
| BZX85 – y82                          | < 200                                 | 2.7                        | < 3000                                | 0.25                       | 0.055  | 0.095  | < 0.5                      | 62                       | 12   | 141  |
| BZX85 – y91                          | < 250                                 | 2.7                        | < 3000                                | 0.25                       | 0.055  | 0.095  | < 0.5                      | 68                       | 10   | 127  |
| BZX85 – y100                         | < 350                                 | 2.7                        | < 3000                                | 0.25                       | 0.055  | 0.095  | < 0.5                      | 75                       | 9.4  | 116  |
| BZX85 – y110                         | < 450                                 | 2.7                        | < 4000                                | 0.25                       | 0.055  | 0.095  | < 0.5                      | 82                       | 8.6  | 105  |
| BZX85 – y120                         | < 550                                 | 2                          | < 4500                                | 0.25                       | 0.055  | 0.095  | < 0.5                      | 91                       | 7.8  | 96   |
| BZX85 – y130                         | < 700                                 | 2                          | < 5000                                | 0.25                       | 0.055  | 0.095  | < 0.5                      | 100                      | 7.0  | 89   |
| BZX85 – y150                         | < 1000                                | 2                          | < 6000                                | 0.25                       | 0.055  | 0.095  | < 0.5                      | 110                      | 6.4  | 77   |
| BZX85 – y160                         | < 1100                                | 1.5                        | < 6500                                | 0.25                       | 0.050  | 0.095  | < 0.5                      | 120                      | 5.8  | 72   |
| BZX85 – y180                         | < 1200                                | 1.5                        | < 7000                                | 0.25                       | 0.050  | 0.095  | < 0.5                      | 130                      | 5.2  | 64   |
| BZX85 – y200                         | < 1500                                | 1.5                        | < 8000                                | 0.25                       | 0.050  | 0.095  | < 0.5                      | 150                      | 4.7  | 58   |

Notes: (1) Measured with pulses t<sub>p</sub> = 5 ms

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

(3) Measured with f = 1 kHz

### Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

| Type<br>± 5% Tol. | Zener Voltage<br>range <sup>(1)</sup> at I <sub>Z</sub><br>V <sub>Z</sub> (V) |      | Test Current<br>I <sub>Z</sub> (mA) |
|-------------------|---|------|-------------------------------------|
|                   | min.  | max. |                                     |
| BZX85-C3V6        | 3.40  | 3.80 | 60                                  |
| BZX85-C3V9        | 3.70  | 4.10 | 60                                  |
| BZX85-C4V3        | 4.00  | 4.60 | 50                                  |
| BZX85-C4V7        | 4.40  | 5.00 | 45                                  |
| BZX85-C5V1        | 4.80  | 5.40 | 45                                  |
| BZX85-C5V6        | 5.20  | 6.00 | 45                                  |
| BZX85-C6V2        | 5.80  | 6.60 | 35                                  |
| BZX85-C6V8        | 6.40  | 7.20 | 35                                  |
| BZX85-C7V5        | 7.00  | 7.90 | 35                                  |
| BZX85-C8V2        | 7.70  | 8.70 | 25                                  |
| BZX85-C9V1        | 8.50  | 9.60 | 25                                  |
| BZX85-C10         | 9.4   | 10.6 | 25                                  |
| BZX85-C11         | 10.4  | 11.6 | 20                                  |
| BZX85-C12         | 11.4  | 12.7 | 20                                  |
| BZX85-C13         | 12.4  | 14.1 | 20                                  |
| BZX85-C15         | 13.8  | 15.6 | 15                                  |
| BZX85-C16         | 15.3  | 17.1 | 15                                  |
| BZX85-C18         | 16.8  | 19.1 | 15                                  |
| BZX85-C20         | 18.8  | 21.2 | 10                                  |
| BZX85-C22         | 20.8  | 23.3 | 10                                  |
| BZX85-C24         | 22.8  | 25.6 | 10                                  |
| BZX85-C27         | 25.1  | 28.9 | 8.0                                 |
| BZX85-C30         | 28.0  | 32.0 | 8.0                                 |
| BZX85-C33         | 31.0  | 35.0 | 8.0                                 |
| BZX85-C36         | 34.0  | 38.0 | 8.0                                 |
| BZX85-C39         | 37.0  | 41.0 | 6.0                                 |
| BZX85-C43         | 40.0  | 46.0 | 6.0                                 |
| BZX85-C47         | 44.0  | 50.0 | 4.0                                 |
| BZX85-C51         | 48.0  | 54.0 | 4.0                                 |
| BZX85-C56         | 52.0  | 60.0 | 4.0                                 |
| BZX85-C62         | 58.0  | 66.0 | 4.0                                 |
| BZX85-C68         | 64.0  | 72.0 | 4.0                                 |
| BZX85-C75         | 70.0  | 80.0 | 4.0                                 |
| BZX85-C82         | 77.0  | 87.0 | 2.7                                 |
| BZX85-C91         | 85.0  | 96.0 | 2.7                                 |
| BZX85-C100        | 96.0  | 106  | 2.7                                 |
| BZX85-C110        | 104   | 116  | 2.7                                 |
| BZX85-C120        | 114   | 127  | 2.0                                 |
| BZX85-C130        | 124   | 141  | 2.0                                 |
| BZX85-C150        | 138   | 156  | 2.0                                 |
| BZX85-C160        | 153   | 171  | 1.5                                 |
| BZX85-C180        | 168   | 191  | 1.5                                 |
| BZX85-C200        | 188   | 212  | 1.5                                 |

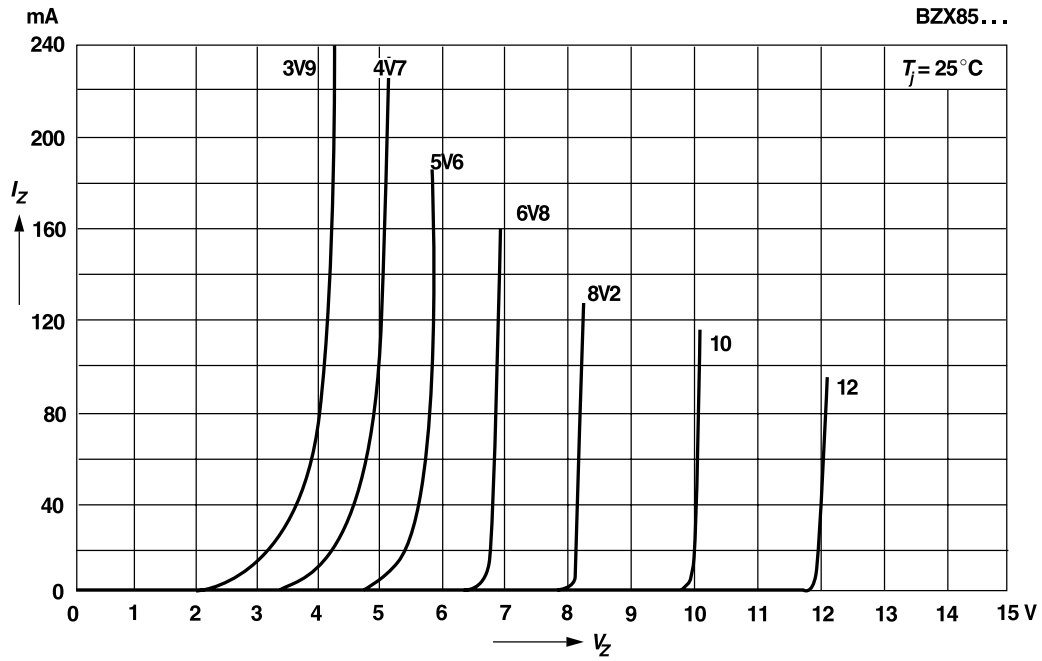
| Type<br>± 2% Tol. | Zener Voltage<br>range <sup>(1)</sup> at I <sub>Z</sub><br>V <sub>Z</sub> (V) |      | Test Current<br>I <sub>Z</sub> (mA) |
|-------------------|---|------|-------------------------------------|
|                   | min.  | max. |                                     |
| BZX85-B3V6        | 3.53  | 3.67 | 60                                  |
| BZX85-B3V9        | 3.82  | 3.98 | 60                                  |
| BZX85-B4V3        | 4.21  | 4.39 | 50                                  |
| BZX85-B4V7        | 4.61  | 4.79 | 45                                  |
| BZX85-B5V1        | 5.00  | 5.20 | 45                                  |
| BZX85-B5V6        | 5.49  | 5.71 | 45                                  |
| BZX85-B6V2        | 6.08  | 6.32 | 35                                  |
| BZX85-B6V8        | 6.66  | 6.94 | 35                                  |
| BZX85-B7V5        | 7.35  | 7.65 | 35                                  |
| BZX85-B8V2        | 8.04  | 8.36 | 25                                  |
| BZX85-B9V1        | 8.92  | 9.28 | 25                                  |
| BZX85-B10         | 9.80  | 10.2 | 25                                  |
| BZX85-B11         | 10.8  | 11.2 | 20                                  |
| BZX85-B12         | 11.8  | 12.2 | 20                                  |
| BZX85-B13         | 12.7  | 13.3 | 20                                  |
| BZX85-B15         | 14.7  | 15.3 | 15                                  |
| BZX85-B16         | 15.7  | 16.3 | 15                                  |
| BZX85-B18         | 17.6  | 18.4 | 15                                  |
| BZX85-B20         | 19.6  | 20.4 | 10                                  |
| BZX85-B22         | 21.6  | 22.4 | 10                                  |
| BZX85-B24         | 23.5  | 24.5 | 10                                  |
| BZX85-B27         | 26.5  | 27.5 | 8.0                                 |
| BZX85-B30         | 29.4  | 30.6 | 8.0                                 |
| BZX85-B33         | 32.3  | 33.7 | 8.0                                 |
| BZX85-B36         | 35.3  | 36.7 | 8.0                                 |
| BZX85-B39         | 38.2  | 39.8 | 6.0                                 |
| BZX85-B43         | 42.1  | 43.9 | 6.0                                 |
| BZX85-B47         | 46.1  | 47.9 | 4.0                                 |
| BZX85-B51         | 50.0  | 52.0 | 4.0                                 |
| BZX85-B56         | 54.9  | 57.1 | 4.0                                 |
| BZX85-B62         | 60.8  | 63.2 | 4.0                                 |
| BZX85-B68         | 66.6  | 69.4 | 4.0                                 |
| BZX85-B75         | 73.5  | 76.5 | 4.0                                 |
| BZX85-B82         | 80.4  | 83.6 | 2.7                                 |
| BZX85-B91         | 89.2  | 92.8 | 2.7                                 |
| BZX85-B100        | 98.0  | 102  | 2.7                                 |
| BZX85-B110        | 108   | 112  | 2.7                                 |
| BZX85-B120        | 118   | 122  | 2.0                                 |
| BZX85-B130        | 127   | 133  | 2.0                                 |
| BZX85-B150        | 147   | 153  | 2.0                                 |
| BZX85-B160        | 157   | 163  | 1.5                                 |
| BZX85-B180        | 176   | 184  | 1.5                                 |
| BZX85-B200        | 196   | 204  | 1.5                                 |

Notes: (1) Measured with pulses t<sub>p</sub> = 5 ms

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

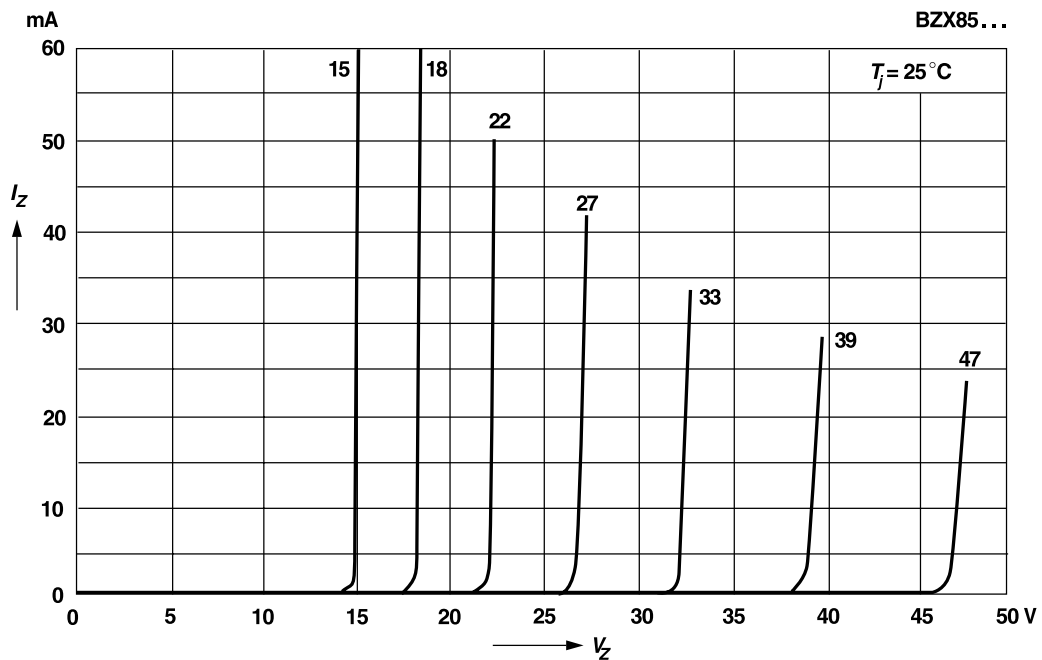
#### Breakdown characteristics

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



#### Breakdown characteristics

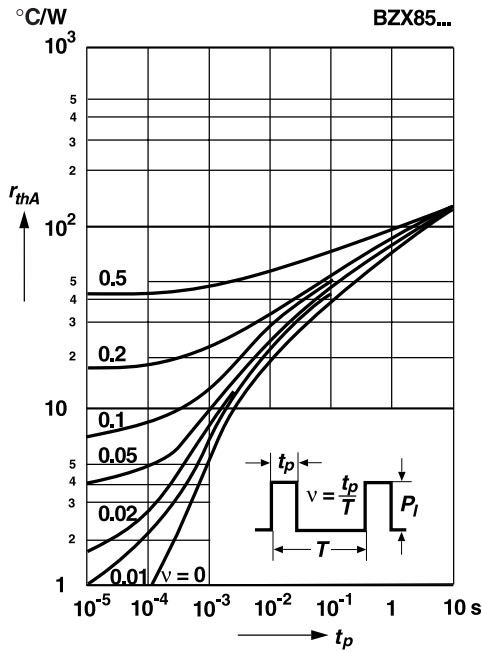
at  $T_j = \text{constant}$  (pulsed)



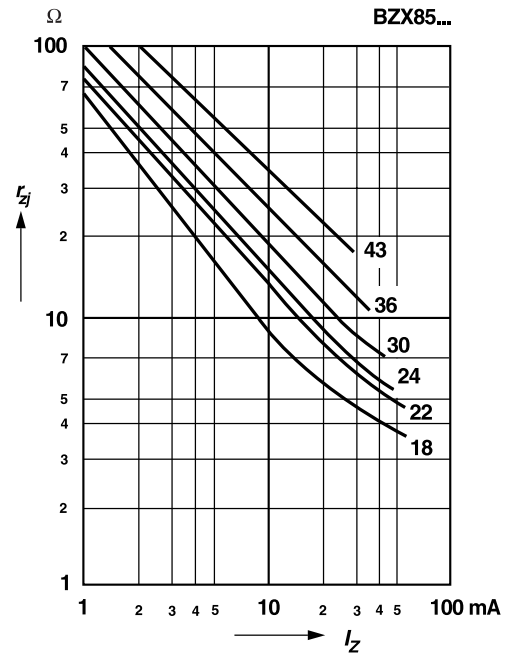
### Ratings and Characteristic Curves (T<sub>A</sub> = 25°C unless otherwise noted)

#### Pulse thermal resistance versus pulse duration

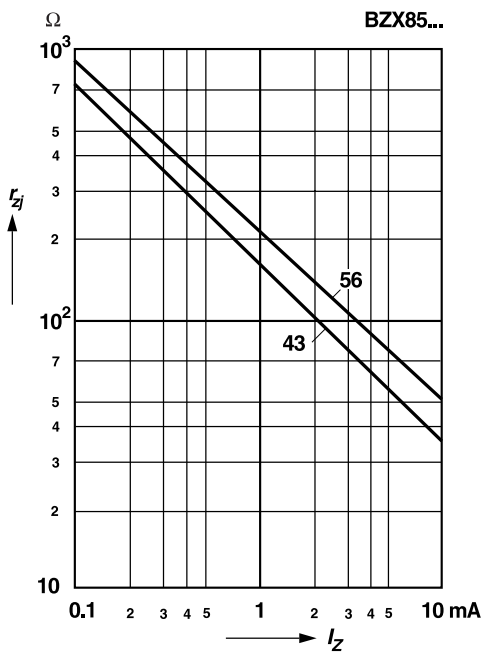
Valid provided that leads are kept at ambient temperature at a distance of 10 mm from case.



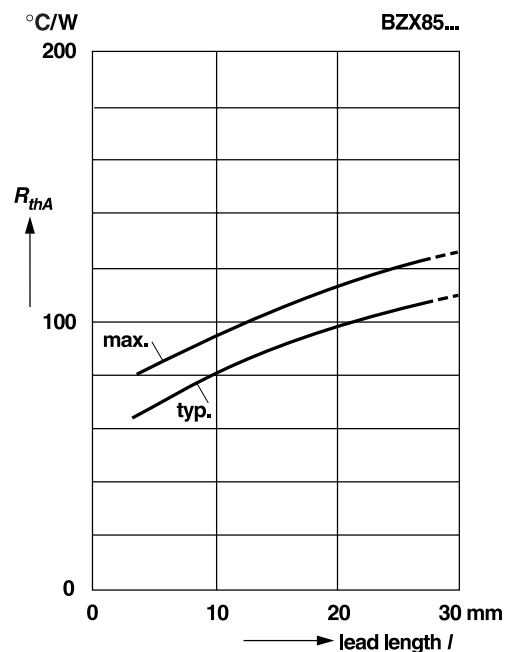
#### Dynamic resistance versus Zener current



#### Dynamic resistance versus Zener current



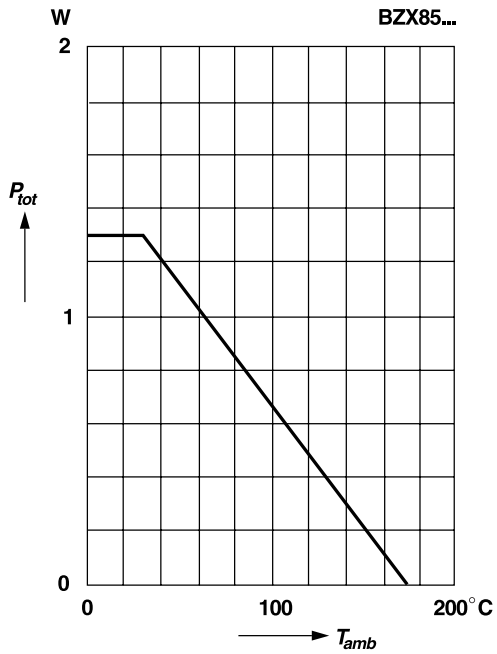
#### Thermal resistance versus lead length



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

#### Admissible power dissipation versus ambient temperature

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



#### Dynamic resistance versus Zener current

