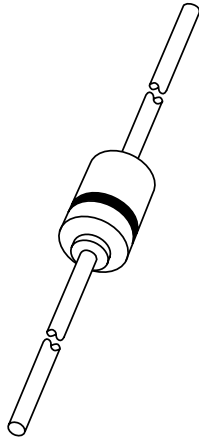


DATA SHEET



BZV85 series Voltage regulator diodes

Product data sheet
Supersedes data of 1996 Apr 26

1999 May 11

Voltage regulator diodes

BZV85 series

FEATURES

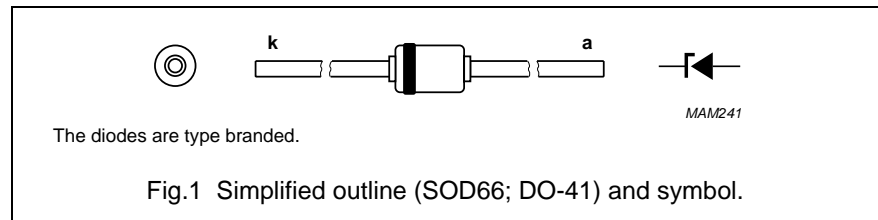
- Total power dissipation: max. 1.3 W
- Tolerance series: approx. $\pm 5\%$
- Working voltage range: nom. 3.6 to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: max. 60 W.

APPLICATIONS

- Stabilization purposes.

DESCRIPTION

Medium-power voltage regulator diodes in hermetically sealed leaded glass SOD66 (DO-41) packages. The diodes are available in the normalized E24 approx. $\pm 5\%$ tolerance range. The series consists of 33 types with nominal working voltages from 3.6 to 75 V (BZV85-C3V6 to BZV85-C75).



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|---|---|----------------------|------|------------------|
| I_F | continuous forward current | | – | 500 | mA |
| I_{ZSM} | non-repetitive peak reverse current | $t_p = 100 \mu s$; square wave; $T_j = 25 \text{ }^\circ\text{C}$ prior to surge; see Fig.3 | see Table "Per type" | | |
| | | $t_p = 10 \text{ ms}$; half sinewave; $T_j = 25 \text{ }^\circ\text{C}$ prior to surge | see Table "Per type" | | |
| P_{tot} | total power dissipation | $T_{amb} = 25 \text{ }^\circ\text{C}$; lead length 10 mm; note 1 | – | 1 | W |
| | | note 2 | – | 1.3 | W |
| P_{ZSM} | non-repetitive peak reverse power dissipation | $t_p = 100 \mu s$; square wave; $T_j = 25 \text{ }^\circ\text{C}$ prior to surge | – | 60 | W |
| T_{stg} | storage temperature | | –65 | +200 | $^\circ\text{C}$ |
| T_j | junction temperature | | – | 200 | $^\circ\text{C}$ |

Notes

1. Device mounted on a printed circuit-board with 1 cm² copper area per lead.
2. If the leads are kept at $T_{tp} = 55 \text{ }^\circ\text{C}$ at 4 mm from body.

ELECTRICAL CHARACTERISTICS

Total series

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MAX. | UNIT |
|--------|-----------------|-----------------------------------|------|------|
| V_F | forward voltage | $I_F = 50 \text{ mA}$; see Fig.4 | 1 | V |

Voltage regulator diodes

BZV85 series

Per type

$T_j = 25\text{ °C}$ unless otherwise specified.

| BZV85- CXXX | WORKING VOLTAGE V_Z (V) at I_{Ztest} | | DIFFERENTIAL RESISTANCE r_{dif} (Ω) at I_{Ztest} | TEMP. COEFF. S_Z (mV/K) at I_{Ztest} see Figs 5 and 6 | | TEST CURRENT I_{Ztest} (mA) | DIODE CAP. C_d (pF) at $f = 1\text{ MHz}$; $V_R = 0\text{ V}$ | REVERSE CURRENT at REVERSE VOLTAGE | | NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} | |
|----------------|--|------|---|--|------|----------------------------------|---|---------------------------------------|-----------|---|---|
| | MIN. | MAX. | MAX. | MIN. | MAX. | | | I_R (μA) | V_R (V) | at $t_p = 100\ \mu\text{s}$; $T_{amb} = 25\text{ °C}$ | at $t_p = 10\text{ ms}$; $T_{amb} = 25\text{ °C}$ |
| | | | | | | | | | | MAX. (A) | MAX. (mA) |
| 3V6 | 3.4 | 3.8 | 15 | -3.5 | -1.0 | 60 | 450 | 50 | 1.0 | 8.0 | 2000 |
| 3V9 | 3.7 | 4.1 | 15 | -3.5 | -1.0 | 60 | 450 | 10 | 1.0 | 8.0 | 1950 |
| 4V3 | 4.0 | 4.6 | 13 | -2.7 | 0 | 50 | 450 | 5 | 1.0 | 8.0 | 1850 |
| 4V7 | 4.4 | 5.0 | 13 | -2.0 | +0.7 | 45 | 300 | 3 | 1.0 | 8.0 | 1800 |
| 5V1 | 4.8 | 5.4 | 10 | -0.5 | +2.2 | 45 | 300 | 3 | 2.0 | 8.0 | 1750 |
| 5V6 | 5.2 | 6.0 | 7 | 0 | 2.7 | 45 | 300 | 2 | 2.0 | 8.0 | 1700 |
| 6V2 | 5.8 | 6.6 | 4 | 0.6 | 3.6 | 35 | 200 | 2 | 3.0 | 7.0 | 1620 |
| 6V8 | 6.4 | 7.2 | 3.5 | 1.3 | 4.3 | 35 | 200 | 2 | 4.0 | 7.0 | 1550 |
| 7V5 | 7.0 | 7.9 | 3 | 2.5 | 5.5 | 35 | 150 | 1 | 4.5 | 5.0 | 1500 |
| 8V2 | 7.7 | 8.7 | 5 | 3.1 | 6.1 | 25 | 150 | 0.7 | 5.0 | 5.0 | 1400 |
| 9V1 | 8.5 | 9.6 | 5 | 3.8 | 7.2 | 25 | 150 | 0.7 | 6.5 | 4.0 | 1340 |
| 10 | 9.4 | 10.6 | 8 | 4.7 | 8.5 | 25 | 90 | 0.2 | 7.0 | 4.0 | 1200 |
| 11 | 10.4 | 11.6 | 10 | 5.3 | 9.3 | 20 | 85 | 0.2 | 7.7 | 3.0 | 1100 |
| 12 | 11.4 | 12.7 | 10 | 6.3 | 10.8 | 20 | 85 | 0.2 | 8.4 | 3.0 | 1000 |
| 13 | 12.4 | 14.1 | 10 | 7.4 | 12.0 | 20 | 80 | 0.2 | 9.1 | 3.0 | 900 |
| 15 | 13.8 | 15.6 | 15 | 8.9 | 13.6 | 15 | 75 | 0.05 | 10.5 | 2.5 | 760 |
| 16 | 15.3 | 17.1 | 15 | 10.7 | 15.4 | 15 | 75 | 0.05 | 11.0 | 1.75 | 700 |
| 18 | 16.8 | 19.1 | 20 | 11.8 | 17.1 | 15 | 70 | 0.05 | 12.5 | 1.75 | 600 |
| 20 | 18.8 | 21.2 | 24 | 13.6 | 19.1 | 10 | 60 | 0.05 | 14.0 | 1.75 | 540 |
| 22 | 20.8 | 23.3 | 25 | 16.6 | 22.1 | 10 | 60 | 0.05 | 15.5 | 1.5 | 500 |
| 24 | 22.8 | 25.6 | 30 | 18.3 | 24.3 | 10 | 55 | 0.05 | 17 | 1.5 | 450 |
| 27 | 25.1 | 28.9 | 40 | 20.1 | 27.5 | 8 | 50 | 0.05 | 19 | 1.2 | 400 |
| 30 | 28.0 | 32.0 | 45 | 22.4 | 32.0 | 8 | 50 | 0.05 | 21 | 1.2 | 380 |

Voltage regulator diodes

BZV85 series

| BZV85- CXXX | WORKING VOLTAGE V_Z (V) at I_{Ztest} | | DIFFERENTIAL RESISTANCE r_{dif} (Ω) at I_{Ztest} | TEMP. COEFF. S_Z (mV/K) at I_{Ztest} see Figs 5 and 6 | | TEST CURRENT I_{Ztest} (mA) | DIODE CAP. C_d (pF) at $f = 1$ MHz; $V_R = 0$ V | REVERSE CURRENT at REVERSE VOLTAGE | | NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} | |
|----------------|--|------|---|--|------|----------------------------------|--|------------------------------------|-----------|--|---|
| | MIN. | MAX. | MAX. | MIN. | MAX. | | | I_R (μ A) | V_R (V) | at $t_p = 100 \mu$ s; $T_{amb} = 25^\circ$ C | at $t_p = 10$ ms; $T_{amb} = 25^\circ$ C |
| | | | | | | | | | | MAX. (A) | MAX. (mA) |
| 33 | 31.0 | 35.0 | 45 | 24.8 | 35.0 | 8 | 45 | 0.05 | 23 | 1.0 | 350 |
| 36 | 34.0 | 38.0 | 50 | 27.2 | 39.9 | 8 | 45 | 0.05 | 25 | 0.9 | 320 |
| 39 | 37.0 | 41.0 | 60 | 29.6 | 43.0 | 6 | 45 | 0.05 | 27 | 0.8 | 296 |
| 43 | 40.0 | 46.0 | 75 | 34.0 | 48.3 | 6 | 40 | 0.05 | 30 | 0.7 | 270 |
| 47 | 44.0 | 50.0 | 100 | 37.4 | 52.5 | 4 | 40 | 0.05 | 33 | 0.6 | 246 |
| 51 | 48.0 | 54.0 | 125 | 40.8 | 56.5 | 4 | 40 | 0.05 | 36 | 0.5 | 226 |
| 56 | 52.0 | 60.0 | 150 | 46.8 | 63.0 | 4 | 40 | 0.05 | 39 | 0.4 | 208 |
| 62 | 58.0 | 66.0 | 175 | 52.2 | 72.5 | 4 | 35 | 0.05 | 43 | 0.4 | 186 |
| 68 | 64.0 | 72.0 | 200 | 60.5 | 81.0 | 4 | 35 | 0.05 | 48 | 0.35 | 171 |
| 75 | 70.0 | 80.0 | 225 | 66.5 | 88.0 | 4 | 35 | 0.05 | 53 | 0.3 | 161 |

Voltage regulator diodes

BZV85 series

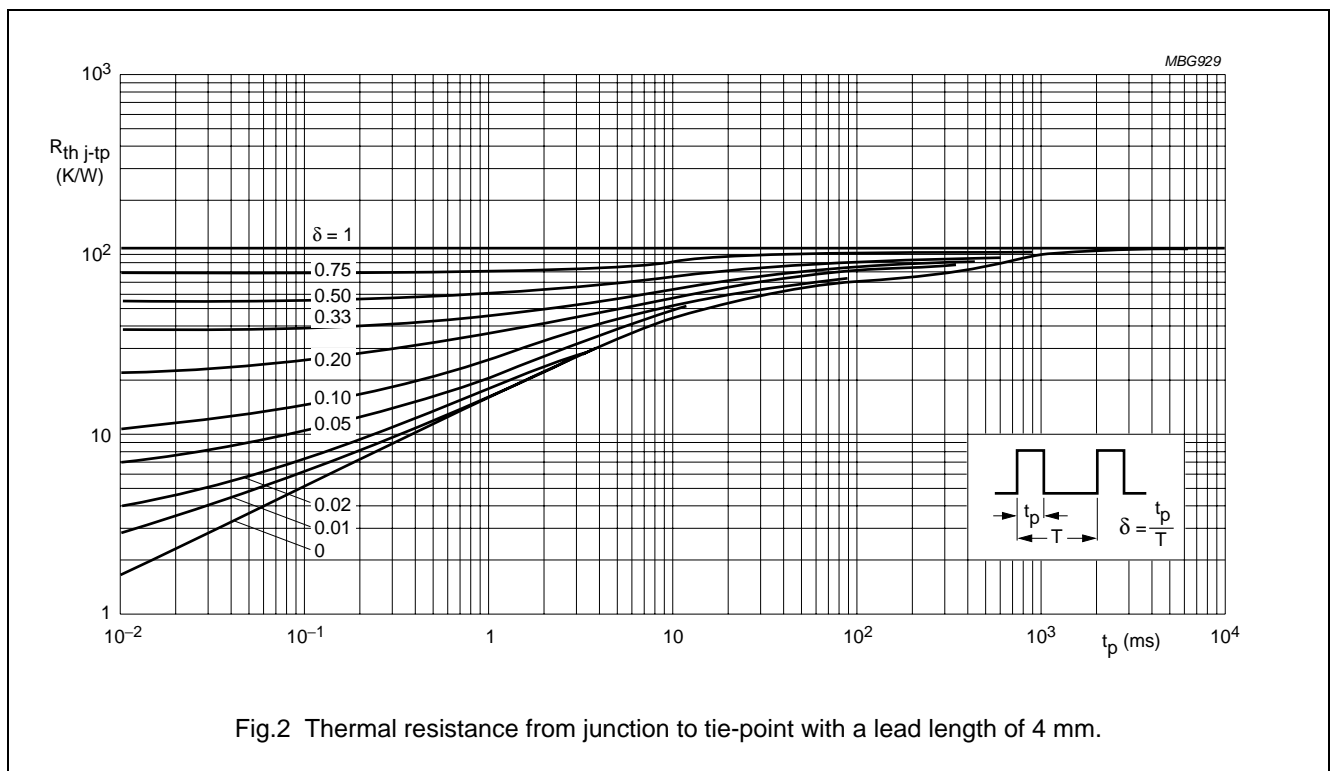
THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|----------------|---|-----------------------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point | lead length 4 mm; see Fig.2 | 110 | K/W |
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | lead length 10 mm; note 1 | 175 | K/W |

Note

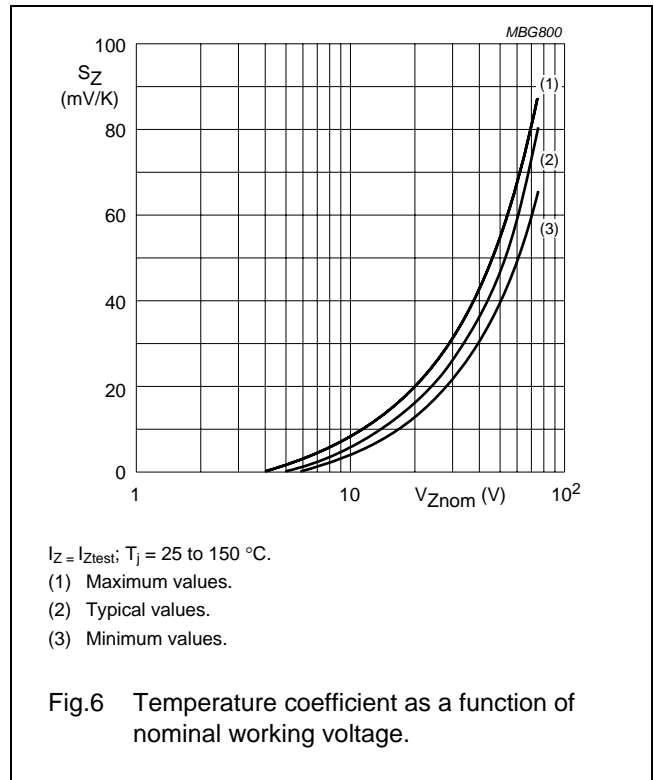
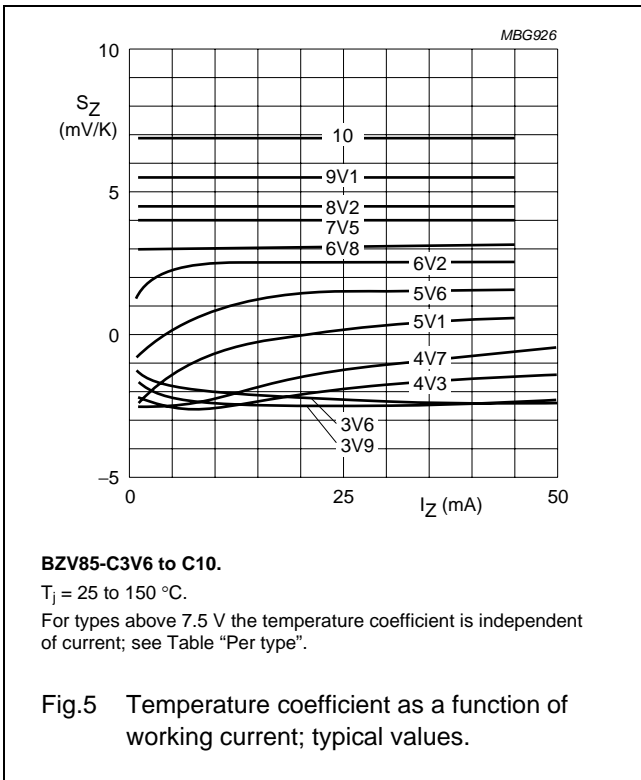
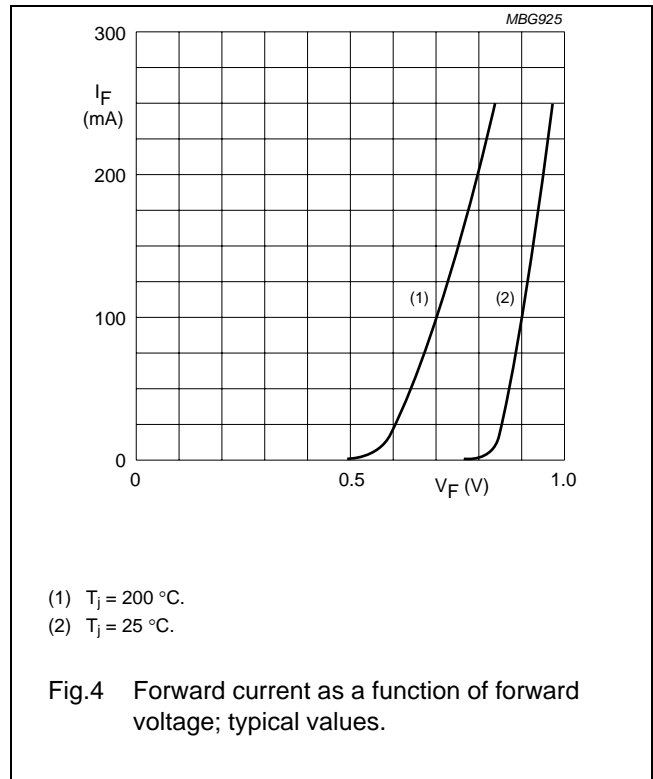
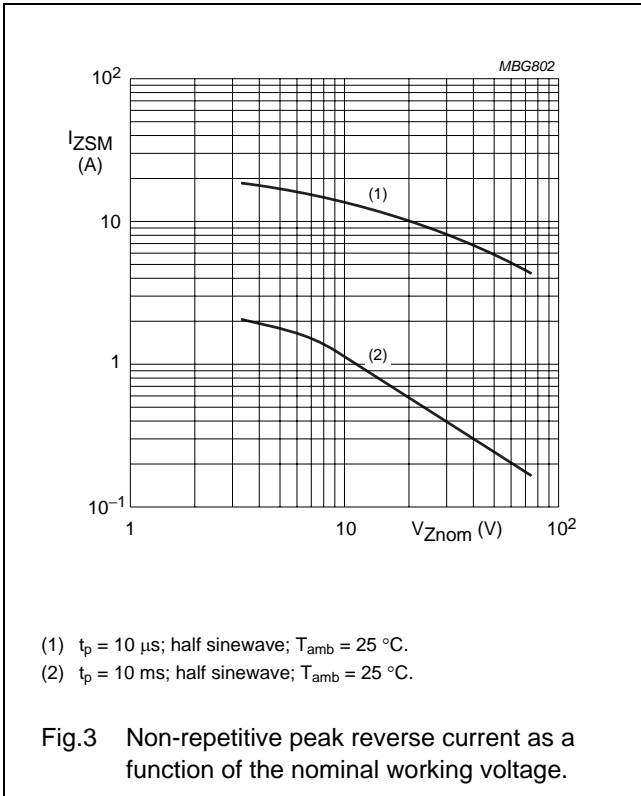
1. Device mounted on a printed circuit-board with 1 cm² copper area per lead.

GRAPHICAL DATA



Voltage regulator diodes

BZV85 series



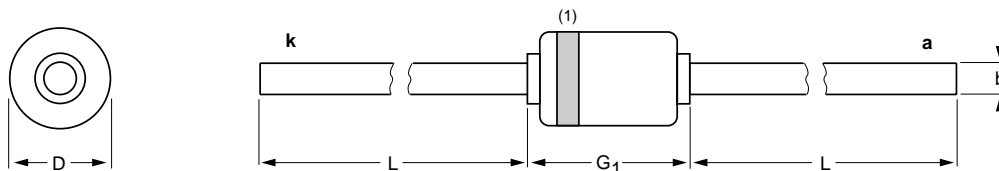
Voltage regulator diodes

BZV85 series

PACKAGE OUTLINE

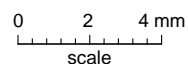
Hermetically sealed glass package; axial leaded; 2 leads

SOD66



DIMENSIONS (mm are the original dimensions)

| UNIT | b max. | D max. | G ₁ max. | L min. |
|------|-----------|-----------|------------------------|-----------|
| mm | 0.81 | 2.6 | 4.8 | 28 |



Note

1. The marking band indicates the cathode.

| OUTLINE VERSION | REFERENCES | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|-------|------|------------------------|------------|
| | IEC | JEDEC | EIAJ | | |
| SOD66 | | DO-41 | | | 97-06-20 |

Voltage regulator diodes

BZV85 series

DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | DEFINITION |
|--------------------------------|-------------------------------|---|
| Objective data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary data sheet | Qualification | This document contains data from the preliminary specification. |
| Product data sheet | Production | This document contains the product specification. |

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