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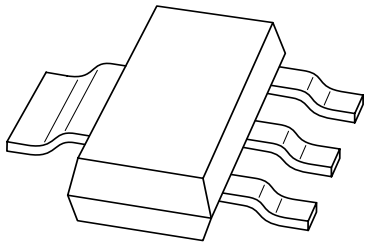
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Kind regards,

Team Nexperia

DATA SHEET



BZV90 series Voltage regulator diodes

Product data sheet
Supersedes data of 1996 Oct 25

1999 May 17

Voltage regulator diodes

BZV90 series

FEATURES

- Total power dissipation: max. 1500 mW
- Tolerance series: approx. $\pm 5\%$
- Working voltage range: nom. 2.4 to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: max. 40 W.

APPLICATIONS

- General regulation functions.

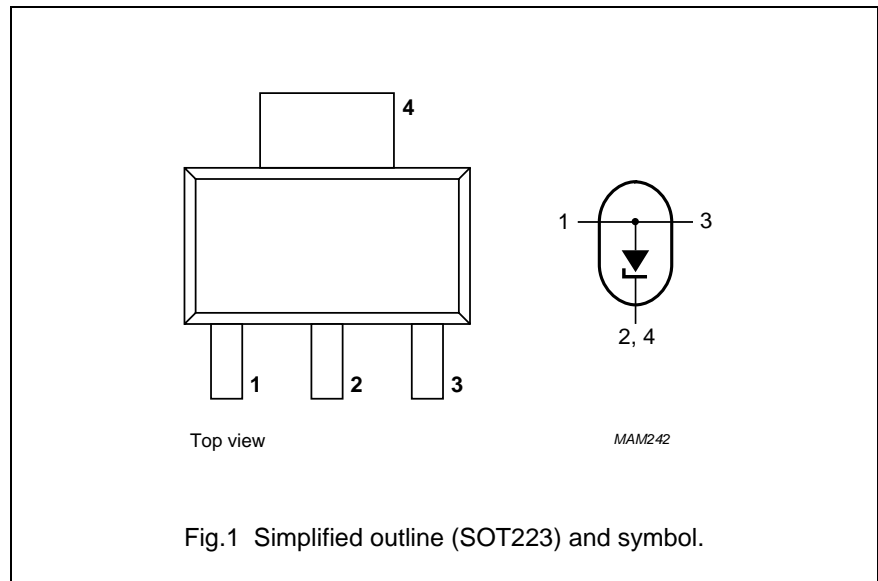
DESCRIPTION

Medium-power voltage regulator diodes in SOT223 plastic SMD packages.

The diodes are available in the normalized E24 approx. $\pm 5\%$ tolerance range. The series consists of 37 types with nominal working voltages from 2.4 to 75 V (BZV90-C2V4 to C75).

PINNING

| PIN | DESCRIPTION |
|------|-------------|
| 1 | anode |
| 2, 4 | cathode |
| 3 | anode |



LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|---|---|----------------------|------|------------------|
| I_F | continuous forward current | | – | 400 | 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 Table "Per type" | | |
| P_{tot} | total power dissipation | $T_{amb} = 25 \text{ }^\circ\text{C}$; note 1 | – | 1500 | mW |
| 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; see Fig.2 | – | 40 | W |
| T_{stg} | storage temperature | | –65 | +150 | $^\circ\text{C}$ |
| T_j | junction temperature | | – | 150 | $^\circ\text{C}$ |

Note

1. Device mounted on an FR4 double-sided copper-clad printed circuit-board; copper area = 2 cm².

ELECTRICAL CHARACTERISTICS

Total series

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--------|-----------------|-----------------------------------|------|------|------|
| V_F | forward voltage | $I_F = 50 \text{ mA}$; see Fig.3 | – | 1.0 | V |

Per typeT_j = 25 °C unless otherwise specified.

| BZV90- 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 4 and 5 | | | TEST CURRENT I _{Ztest} (mA) | DIODE CAP. C _d (pF) at f = 1 MHz; at V _R = 0 V | REVERSE CURRENT at REVERSE VOLTAGE | |
|----------------|---|------|---|------|--|------|------|--|---|---|-----------------------|
| | MIN. | MAX. | TYP. | MAX. | MIN. | TYP. | MAX. | | | I _R (μA) | V _R (V) |
| | | | | | | | | | | MAX. | MAX. |
| 2V4 | 2.2 | 2.6 | 70 | 100 | -3.5 | -1.6 | 0 | 5 | 450 | 50 | 1.0 |
| 2V7 | 2.5 | 2.9 | 75 | 100 | -3.5 | -2.0 | 0 | 5 | 450 | 20 | 1.0 |
| 3V0 | 2.8 | 3.2 | 80 | 95 | -3.5 | -2.1 | 0 | 5 | 450 | 10 | 1.0 |
| 3V3 | 3.1 | 3.5 | 85 | 95 | -3.5 | -2.4 | 0 | 5 | 450 | 5 | 1.0 |
| 3V6 | 3.4 | 3.8 | 85 | 90 | -3.5 | -2.4 | 0 | 5 | 450 | 5 | 1.0 |
| 3V9 | 3.7 | 4.1 | 85 | 90 | -3.5 | -2.5 | 0 | 5 | 450 | 3 | 1.0 |
| 4V3 | 4.0 | 4.6 | 80 | 90 | -3.5 | -2.5 | 0 | 5 | 450 | 3 | 1.0 |
| 4V7 | 4.4 | 5.0 | 50 | 80 | -3.5 | -1.4 | 0.2 | 5 | 300 | 3 | 2.0 |
| 5V1 | 4.8 | 5.4 | 40 | 60 | -2.7 | -0.8 | 1.2 | 5 | 300 | 2 | 2.0 |
| 5V6 | 5.2 | 6.0 | 15 | 40 | -2.0 | 1.2 | 2.5 | 5 | 300 | 1 | 2.0 |
| 6V2 | 5.8 | 6.6 | 6 | 10 | 0.4 | 2.3 | 3.7 | 5 | 200 | 3 | 4.0 |
| 6V8 | 6.4 | 7.2 | 6 | 15 | 1.2 | 3.0 | 4.5 | 5 | 200 | 2 | 4.0 |
| 7V5 | 7.0 | 7.9 | 6 | 15 | 2.5 | 4.0 | 5.3 | 5 | 150 | 1 | 5.0 |
| 8V2 | 7.7 | 8.7 | 6 | 15 | 3.2 | 4.6 | 6.2 | 5 | 150 | 0.7 | 5.0 |
| 9V1 | 8.5 | 9.6 | 6 | 15 | 3.8 | 5.5 | 7.0 | 5 | 150 | 0.5 | 6.0 |
| 10 | 9.4 | 10.6 | 8 | 20 | 4.5 | 6.4 | 8.0 | 5 | 90 | 0.2 | 7.0 |
| 11 | 10.4 | 11.6 | 10 | 20 | 5.4 | 7.4 | 9.0 | 5 | 85 | 0.1 | 8.0 |
| 12 | 11.4 | 12.7 | 10 | 25 | 6.0 | 8.4 | 10.0 | 5 | 85 | 0.1 | 8.0 |
| 13 | 12.4 | 14.1 | 10 | 30 | 7.0 | 9.4 | 11.0 | 5 | 80 | 0.1 | 8.0 |
| 15 | 13.8 | 15.6 | 10 | 30 | 9.2 | 11.4 | 13.0 | 5 | 75 | 0.05 | 10.5 |
| 16 | 15.3 | 17.1 | 10 | 40 | 10.4 | 12.4 | 14.0 | 5 | 75 | 0.05 | 11.2 |
| 18 | 16.8 | 19.1 | 10 | 45 | 12.4 | 14.4 | 16.0 | 5 | 70 | 0.05 | 12.6 |
| 20 | 18.8 | 21.2 | 15 | 55 | 14.4 | 16.4 | 18.0 | 5 | 60 | 0.05 | 14.0 |

| BZV90- 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 4 and 5 | | | TEST CURRENT I_{Ztest} (mA) | DIODE CAP. C_d (pF) at $f = 1$ MHz; at $V_R = 0$ V | REVERSE CURRENT at REVERSE VOLTAGE | | |
|----------------|--|------|---|------|--|------|------|----------------------------------|---|---------------------------------------|------------------|-----------|
| | MIN. | MAX. | TYP. | MAX. | MIN. | TYP. | MAX. | | | MAX. | I_R (μ A) | V_R (V) |
| | | | | | | | | | | | MAX. | (V) |
| 22 | 20.8 | 23.3 | 20 | 55 | 16.4 | 18.4 | 20.0 | 5 | 60 | 0.05 | 15.4 | |
| 24 | 22.8 | 25.6 | 25 | 70 | 18.4 | 20.4 | 22.0 | 5 | 55 | 0.05 | 16.8 | |
| 27 | 25.0 | 28.9 | 25 | 80 | 21.4 | 23.4 | 25.3 | 2 | 50 | 0.05 | 18.9 | |
| 30 | 28.0 | 32.0 | 30 | 80 | 24.4 | 26.6 | 29.4 | 2 | 50 | 0.05 | 21.0 | |
| 33 | 31.0 | 35.0 | 35 | 80 | 27.4 | 29.7 | 33.4 | 2 | 45 | 0.05 | 23.1 | |
| 36 | 34.0 | 38.0 | 35 | 90 | 30.4 | 33.0 | 37.4 | 2 | 45 | 0.05 | 25.2 | |
| 39 | 37.0 | 41.0 | 40 | 130 | 33.4 | 36.4 | 41.2 | 2 | 45 | 0.05 | 27.3 | |
| 43 | 40.0 | 46.0 | 45 | 150 | 37.6 | 41.2 | 46.6 | 2 | 40 | 0.05 | 30.1 | |
| 47 | 44.0 | 50.0 | 50 | 170 | 42.0 | 46.1 | 51.8 | 2 | 40 | 0.05 | 32.9 | |
| 51 | 48.0 | 54.0 | 60 | 180 | 46.6 | 51.0 | 57.2 | 2 | 40 | 0.05 | 35.7 | |
| 56 | 52.0 | 60.0 | 70 | 200 | 52.2 | 57.0 | 63.8 | 2 | 40 | 0.05 | 39.2 | |
| 62 | 58.0 | 66.0 | 80 | 215 | 58.8 | 64.4 | 71.6 | 2 | 35 | 0.05 | 43.4 | |
| 68 | 64.0 | 72.0 | 90 | 240 | 65.6 | 71.7 | 79.8 | 2 | 35 | 0.05 | 47.6 | |
| 75 | 70.0 | 79.0 | 95 | 255 | 73.4 | 80.2 | 88.6 | 2 | 35 | 0.05 | 52.5 | |

Voltage regulator diodes

BZV90 series

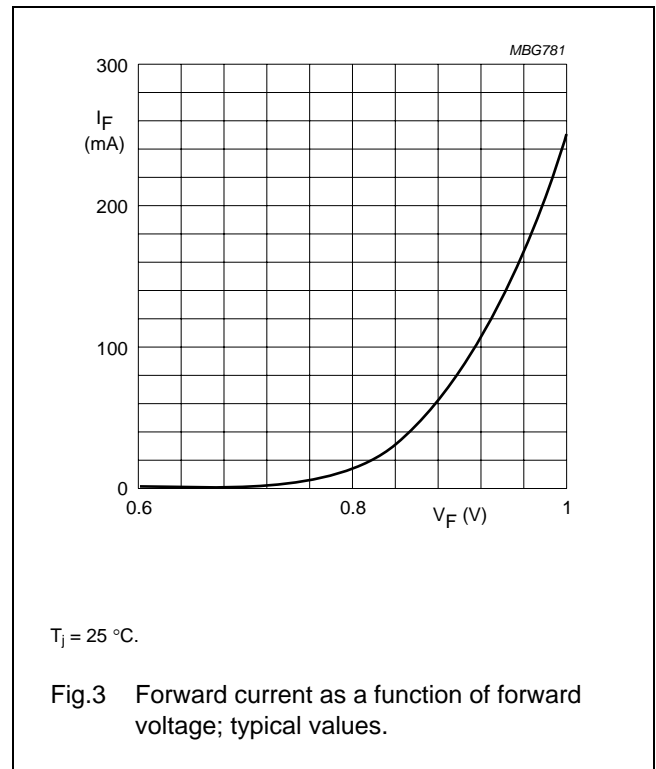
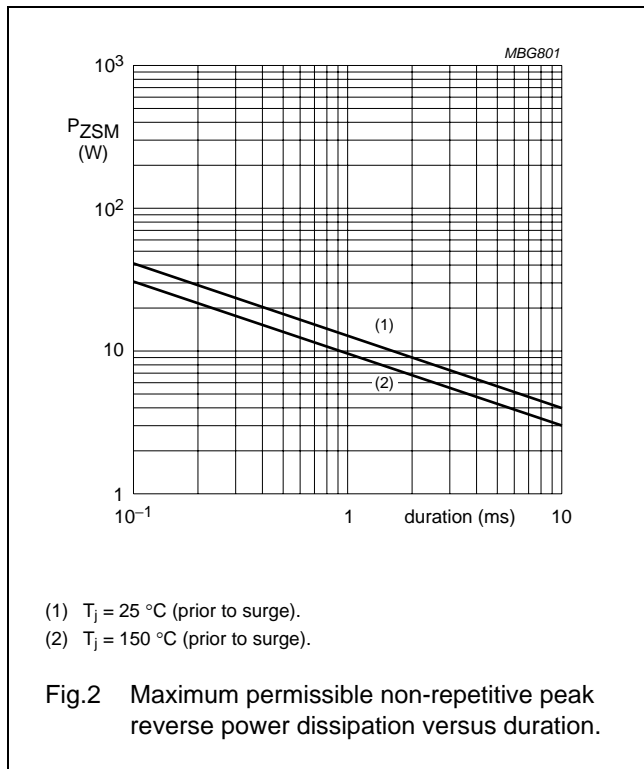
THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|--------------------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | lead length max.; note 1 | 83.3 | K/W |

Note

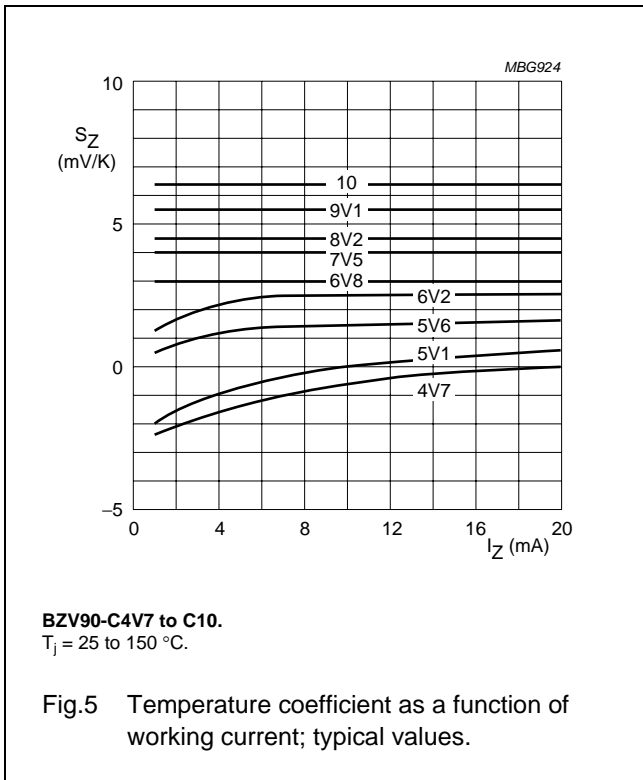
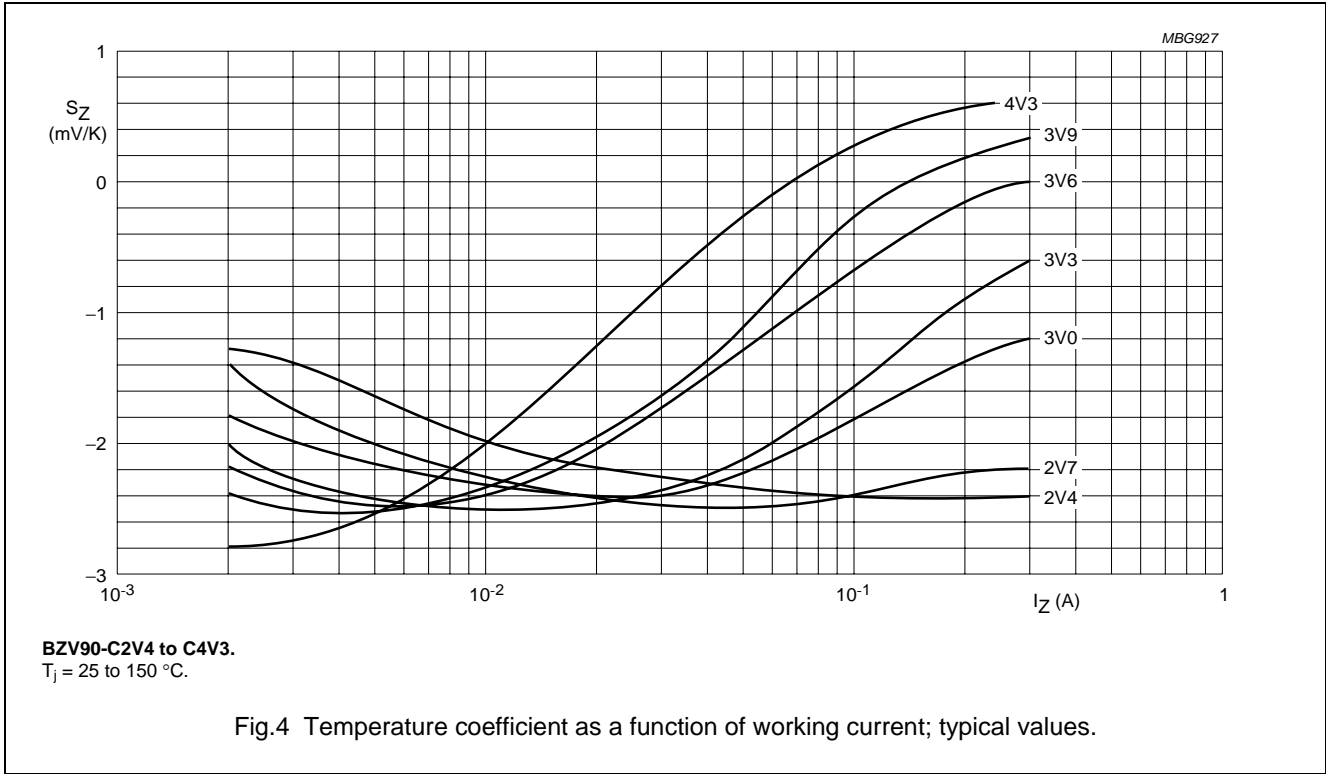
1. Device mounted on an FR4 double-sided copper-clad printed circuit-board; copper area = 2 cm².

GRAPHICAL DATA



Voltage regulator diodes

BZV90 series



Voltage regulator diodes

BZV90 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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NXP Semiconductors

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Contact information

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