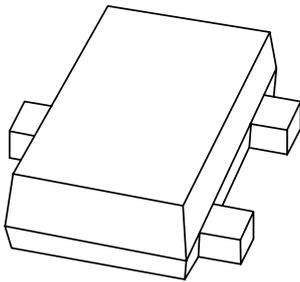


DATA SHEET



BZB984 series Voltage regulator double diodes

Product specification
Supersedes data of 2001 Nov 28

2002 Jun 21

Voltage regulator double diodes

BZB984 series

FEATURES

- Total power dissipation: max. 425 mW
- Approx. 5% V_Z tolerance
- Ultra small flat plastic SMD package
- Working voltage range nom. 2.4 to 15 V (E24 range).

APPLICATIONS

- General regulation functions
- ESD and surge protection.

DESCRIPTION

Low-power voltage regulator diodes in a SOT663 ultra small plastic SMD package.

PINNING

| PIN | DESCRIPTION |
|-----|--------------|
| 1 | cathode 1 |
| 2 | cathode 2 |
| 3 | common anode |

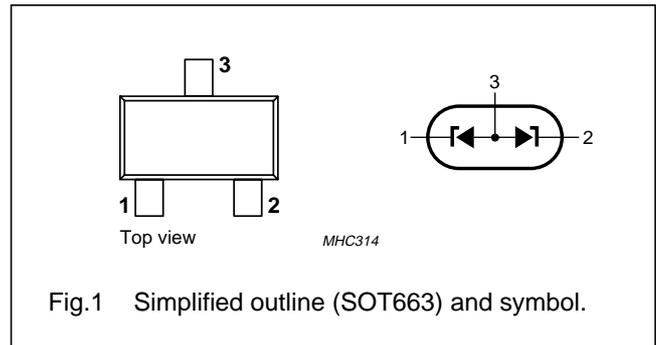


Fig.1 Simplified outline (SOT663) and symbol.

MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|
| BZB984-C2V4 | 91 | BZB984-C3V9 | 96 | BZB984-C6V2 | 9B | BZB984-C10 | 9G |
| BZB984-C2V7 | 92 | BZB984-C4V3 | 97 | BZB984-C6V8 | 9C | BZB984-C11 | 9H |
| BZB984-C3V0 | 93 | BZB984-C4V7 | 98 | BZB984-C7V5 | 9D | BZB984-C12 | 9J |
| BZB984-C3V3 | 94 | BZB984-C5V1 | 99 | BZB984-C8V2 | 9E | BZB984-C13 | 9K |
| BZB984-C3V6 | 95 | BZB984-C5V6 | 9A | BZB984-C9V1 | 9F | BZB984-C15 | 9L |

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|---|---|-------------|------|------------|
| I_F | continuous forward current | | – | 200 | mA |
| I_{ZSM} | non-repetitive peak reverse current | $t_p = 100 \mu s$; square wave; $T_{amb} = 25 \text{ }^\circ C$; prior to surge | see Table 1 | | |
| P_{tot} | total power dissipation | $T_{amb} = 25 \text{ }^\circ C$; 2 diodes loaded; note 1 | – | 425 | mW |
| | | $T_{amb} = 25 \text{ }^\circ C$; 1 diode loaded; note 1 | – | 265 | mW |
| P_{ZSM} | non-repetitive peak reverse dissipation | $t_p = 100 \mu s$; square wave; $T_{amb} = 25 \text{ }^\circ C$; prior to surge | – | 40 | W |
| T_{stg} | storage temperature | | –65 | +150 | $^\circ C$ |
| T_j | junction temperature | | – | 150 | $^\circ C$ |

Note

1. Device mounted on an FR4 printed-circuit board.

Voltage regulator double diodes

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ELECTRICAL CHARACTERISTICS**Total BZB984-C series**

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

| SYMBOL | PARAMETER | CONDITIONS | MAX. | UNIT |
|--------|-----------------|----------------------------------|------|---------------|
| V_F | forward voltage | $I_F = 10\text{ mA}$; see Fig.2 | 0.9 | V |
| I_R | reverse current | | | |
| | BZB984-C2V4 | $V_R = 1\text{ V}$ | 50 | μA |
| | BZB984-C2V7 | $V_R = 1\text{ V}$ | 20 | μA |
| | BZB984-C3V0 | $V_R = 1\text{ V}$ | 10 | μA |
| | BZB984-C3V3 | $V_R = 1\text{ V}$ | 5 | μA |
| | BZB984-C3V6 | $V_R = 1\text{ V}$ | 5 | μA |
| | BZB984-C3V9 | $V_R = 1\text{ V}$ | 3 | μA |
| | BZB984-C4V3 | $V_R = 1\text{ V}$ | 3 | μA |
| | BZB984-C4V7 | $V_R = 2\text{ V}$ | 3 | μA |
| | BZB984-C5V1 | $V_R = 2\text{ V}$ | 2 | μA |
| | BZB984-C5V6 | $V_R = 2\text{ V}$ | 1 | μA |
| | BZB984-C6V2 | $V_R = 4\text{ V}$ | 3 | μA |
| | BZB984-C6V8 | $V_R = 4\text{ V}$ | 2 | μA |
| | BZB984-C7V5 | $V_R = 5\text{ V}$ | 1 | μA |
| | BZB984-C8V2 | $V_R = 5\text{ V}$ | 700 | nA |
| | BZB984-C9V1 | $V_R = 6\text{ V}$ | 500 | nA |
| | BZB984-C10 | $V_R = 7\text{ V}$ | 200 | nA |
| | BZB984-C11 | $V_R = 8\text{ V}$ | 100 | nA |
| | BZB984-C12 | $V_R = 8\text{ V}$ | 100 | nA |
| | BZB984-C13 | $V_R = 8\text{ V}$ | 100 | nA |
| | BZB984-C15 | $V_R = 10.5\text{ V}$ | 50 | nA |

Voltage regulator double diodes

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Table 1 Per type BZB984-C2V4 to C15
 $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified.

| BZB984-Cxxx | WORKING VOLTAGE V_Z (V) at $I_Z = 5\text{ mA}$ | | DIFFERENTIAL RESISTANCE r_{diff} (Ω) | | | | TEMP. COEFF. S_z (mV/K) at $I_{Ztest} = 5\text{ mA}$ (see Figs 3 and 4) | DIODE CAP. C_d (pF) at $f = 1\text{ MHz}$; $V_R = 0\text{ V}$ | NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at $t_p = 100\text{ }\mu\text{s}$; $T_{amb} = 25\text{ }^\circ\text{C}$ |
|-------------|--|------|--|------|------------------------|------|--|---|---|
| | Tol. $\approx 5\%$ | | at $I_Z = 1\text{ mA}$ | | at $I_Z = 5\text{ mA}$ | | | | |
| | MIN. | MAX. | TYP. | MAX. | TYP. | MAX. | | | |
| 2V4 | 2.2 | 2.6 | 275 | 600 | 70 | 100 | 450 | 6.0 | |
| 2V7 | 2.5 | 2.9 | 300 | 600 | 75 | 100 | 450 | 6.0 | |
| 3V0 | 2.8 | 3.2 | 325 | 600 | 80 | 95 | 450 | 6.0 | |
| 3V3 | 3.1 | 3.5 | 350 | 600 | 85 | 95 | 450 | 6.0 | |
| 3V6 | 3.4 | 3.8 | 375 | 600 | 85 | 90 | 450 | 6.0 | |
| 3V9 | 3.7 | 4.1 | 400 | 600 | 85 | 90 | 450 | 6.0 | |
| 4V3 | 4.0 | 4.6 | 410 | 600 | 80 | 90 | 450 | 6.0 | |
| 4V7 | 4.4 | 5.0 | 425 | 500 | 50 | 80 | 300 | 6.0 | |
| 5V1 | 4.8 | 5.4 | 400 | 480 | 40 | 60 | 300 | 6.0 | |
| 5V6 | 5.2 | 6.0 | 80 | 400 | 15 | 40 | 300 | 6.0 | |
| 6V2 | 5.8 | 6.6 | 40 | 150 | 6 | 10 | 200 | 6.0 | |
| 6V8 | 6.4 | 7.2 | 30 | 80 | 6 | 15 | 200 | 6.0 | |
| 7V5 | 7.0 | 7.9 | 30 | 80 | 6 | 15 | 150 | 4.0 | |
| 8V2 | 7.7 | 8.7 | 40 | 80 | 6 | 15 | 150 | 4.0 | |
| 9V1 | 8.5 | 9.6 | 40 | 100 | 6 | 15 | 150 | 3.0 | |
| 10 | 9.4 | 10.6 | 50 | 150 | 8 | 20 | 90 | 3.0 | |
| 11 | 10.4 | 11.6 | 50 | 150 | 10 | 20 | 90 | 2.5 | |
| 12 | 11.4 | 12.7 | 50 | 150 | 10 | 25 | 85 | 2.5 | |
| 13 | 12.4 | 14.1 | 50 | 170 | 10 | 30 | 80 | 2.5 | |
| 15 | 13.8 | 15.6 | 50 | 200 | 10 | 30 | 75 | 2.0 | |

Voltage regulator double diodes

BZB984 series

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------------|---|-------------------------|-------|------|
| R _{th j-s} | thermal resistance from junction to soldering point | 2 diodes loaded; note 1 | 125 | K/W |
| | | 1 diode loaded; note 1 | 230 | K/W |
| R _{th j-a} | thermal resistance from junction to ambient | 2 diodes loaded; note 2 | 294 | K/W |
| | | 1 diode loaded; note 2 | 472 | K/W |

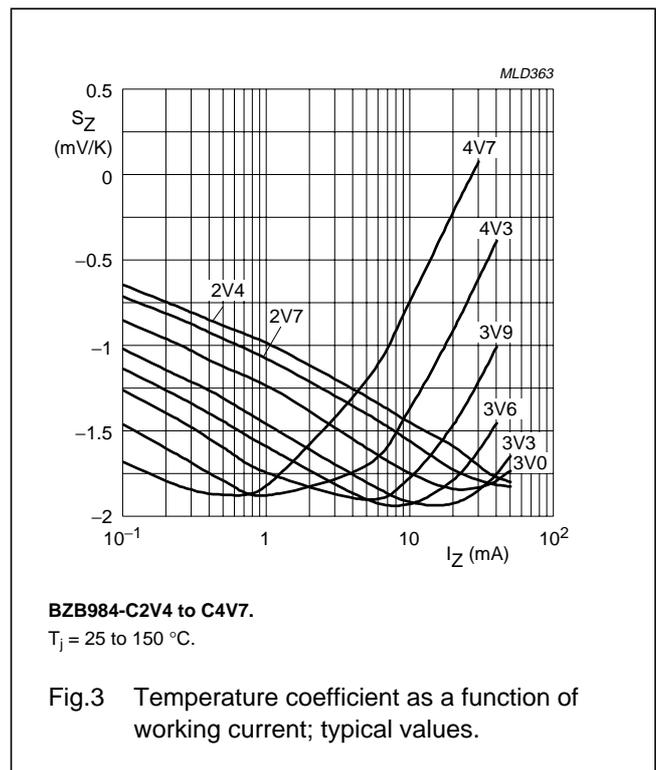
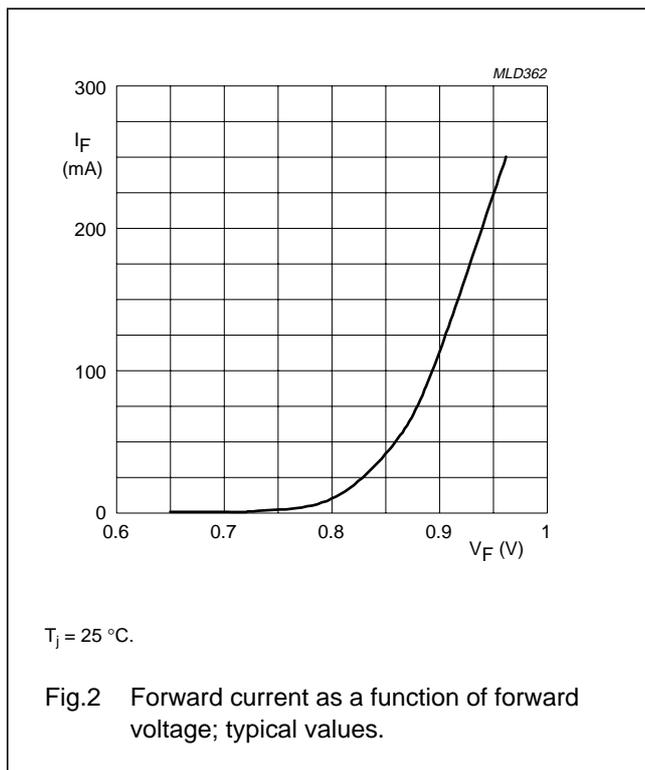
Notes

1. Solder points on cathode tabs.
2. Device mounted on an FR4 printed-circuit board.

Soldering

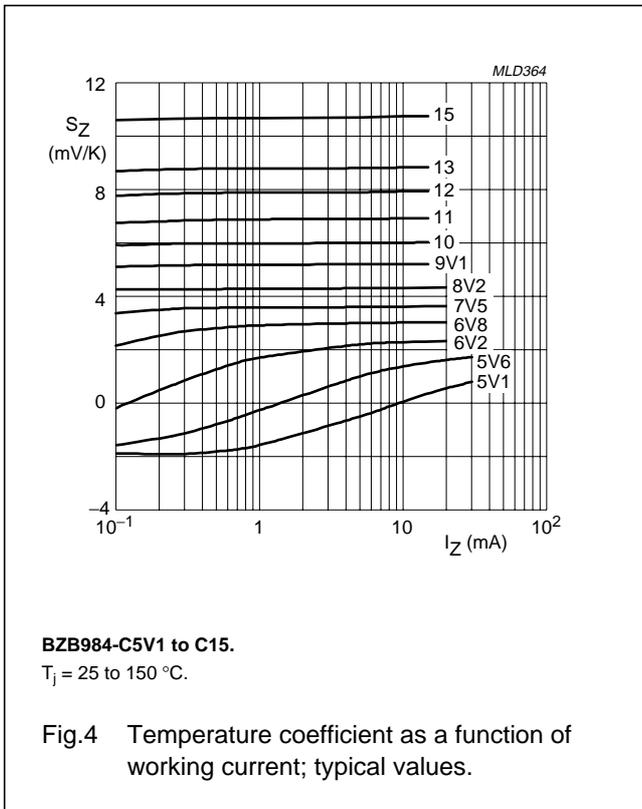
The only recommended soldering method is reflow soldering.

GRAPHICAL DATA



Voltage regulator double diodes

BZB984 series



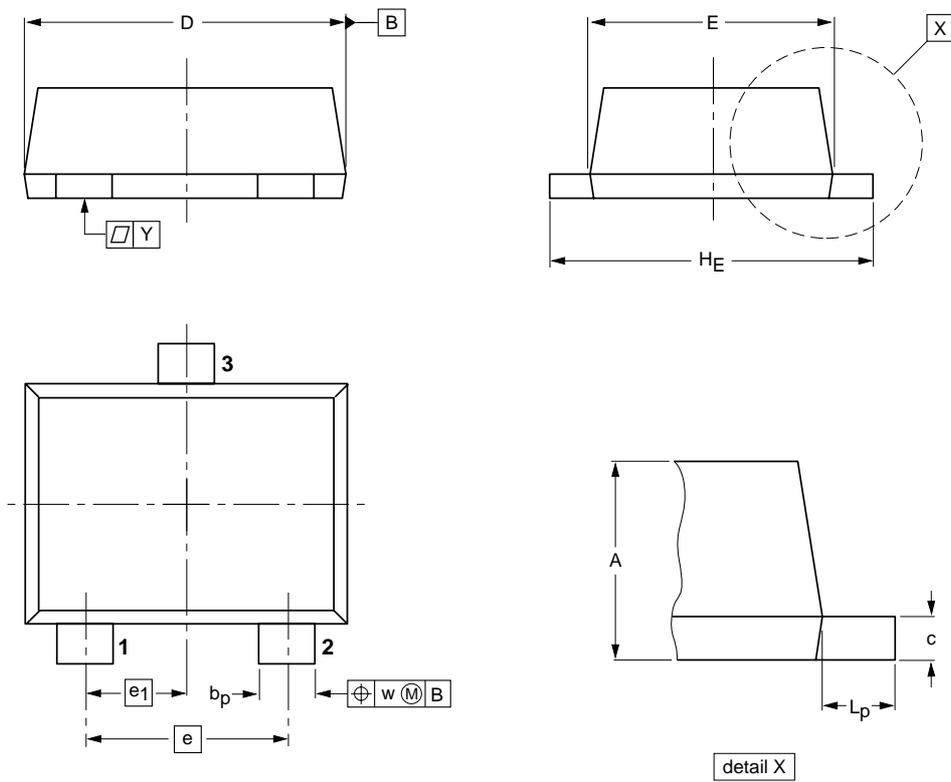
Voltage regulator double diodes

BZB984 series

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT663



DIMENSIONS (mm are the original dimensions)

| UNIT | A | b_p | c | D | E | e | e_1 | H_E | L_p | w | y |
|------|------------|--------------|--------------|------------|------------|-----|-------|------------|------------|-----|-----|
| mm | 0.6 0.5 | 0.33 0.23 | 0.18 0.08 | 1.7 1.5 | 1.3 1.1 | 1.0 | 0.5 | 1.7 1.5 | 0.3 0.1 | 0.1 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|-------|--|---------------------|----------------------|
| | IEC | JEDEC | JEITA | | | |
| SOT663 | | | | | | 01-12-04 02-05-21 |

Voltage regulator double diodes

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DATA SHEET STATUS

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|----------------------------------|-------------------------------|--|
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NOTES

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