



**THE DATASHEET OF  
BZB984-C3V0,115**



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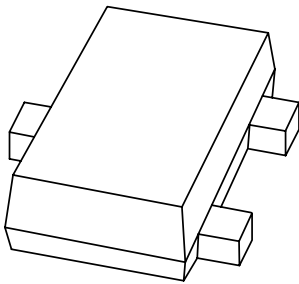
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Team Nexperia

# DATA SHEET



## **BZB984 series** Voltage regulator double diodes

Product data sheet  
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 |

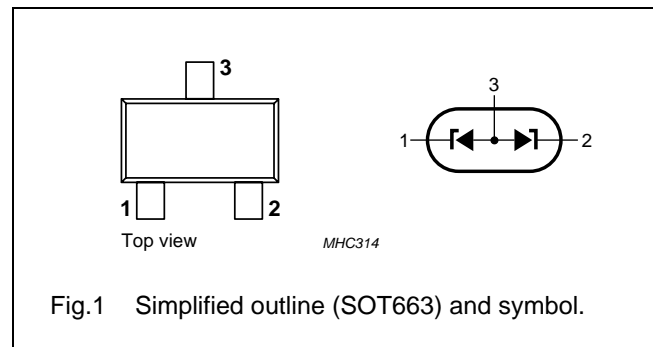


Fig.1 Simplified outline (SOT663) and symbol.

## MARKING

| TYPE NUMBER | MARKING CODE | TYPE NUMBER | MARKING CODE | TYPE NUMBER | MARKING CODE | 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     | $t_p = 100 \mu\text{s}$ ; square wave; $T_{amb} = 25 \text{ }^\circ\text{C}$ ; prior to surge | see Table 1 |      |                  |
| $P_{tot}$ | total power dissipation                 | $T_{amb} = 25 \text{ }^\circ\text{C}$ ; 2 diodes loaded; note 1                               | –           | 425  | mW               |
|           |   | $T_{amb} = 25 \text{ }^\circ\text{C}$ ; 1 diode loaded; note 1                                | –           | 265  | mW               |
| $P_{ZSM}$ | non-repetitive peak reverse dissipation | $t_p = 100 \mu\text{s}$ ; square wave; $T_{amb} = 25 \text{ }^\circ\text{C}$ ; prior to surge | –           | 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 printed-circuit board.

## Voltage regulator double diodes

## BZB984 series

**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   | $\mu\text{A}$ |
|        | BZB984-C2V7     | $V_R = 1\text{ V}$               | 20   | $\mu\text{A}$ |
|        | BZB984-C3V0     | $V_R = 1\text{ V}$               | 10   | $\mu\text{A}$ |
|        | BZB984-C3V3     | $V_R = 1\text{ V}$               | 5    | $\mu\text{A}$ |
|        | BZB984-C3V6     | $V_R = 1\text{ V}$               | 5    | $\mu\text{A}$ |
|        | BZB984-C3V9     | $V_R = 1\text{ V}$               | 3    | $\mu\text{A}$ |
|        | BZB984-C4V3     | $V_R = 1\text{ V}$               | 3    | $\mu\text{A}$ |
|        | BZB984-C4V7     | $V_R = 2\text{ V}$               | 3    | $\mu\text{A}$ |
|        | BZB984-C5V1     | $V_R = 2\text{ V}$               | 2    | $\mu\text{A}$ |
|        | BZB984-C5V6     | $V_R = 2\text{ V}$               | 1    | $\mu\text{A}$ |
|        | BZB984-C6V2     | $V_R = 4\text{ V}$               | 3    | $\mu\text{A}$ |
|        | BZB984-C6V8     | $V_R = 4\text{ V}$               | 2    | $\mu\text{A}$ |
|        | BZB984-C7V5     | $V_R = 5\text{ V}$               | 1    | $\mu\text{A}$ |
|        | 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            |

**Table 1** Per type BZB984-C2V4 to C15T<sub>j</sub> = 25 °C unless otherwise specified.

| BZB984-Cxxx | WORKING VOLTAGE<br>V <sub>Z</sub> (V)<br>at I <sub>Z</sub> = 5 mA |      | DIFFERENTIAL RESISTANCE<br>r <sub>diff</sub> (Ω) |      |                          |      | TEMP. COEFF.<br>S <sub>Z</sub> (mV/K)<br>at I <sub>Ztest</sub> = 5 mA<br>(see Figs 3 and 4) | DIODE CAP.<br>C <sub>d</sub> (pF)<br>at f = 1 MHz;<br>V <sub>R</sub> = 0 V | N   |
|-------------|---|------|--|------|--------------------------|------|---|--|-----|
|             | Tol. ≈5%  |      | at I <sub>Z</sub> = 1 mA                         |      | at I <sub>Z</sub> = 5 mA |      |   |  |     |
|             | MIN.  | MAX. | TYP.   | MAX. | TYP.                     | MAX. |   |  |     |
| 2V4         | 2.2   | 2.6  | 275  | 600  | 70                       | 100  | -1.3  | 450  | 6.0 |
| 2V7         | 2.5   | 2.9  | 300  | 600  | 75                       | 100  | -1.4  | 450  | 6.0 |
| 3V0         | 2.8   | 3.2  | 325  | 600  | 80                       | 95   | -1.6  | 450  | 6.0 |
| 3V3         | 3.1   | 3.5  | 350  | 600  | 85                       | 95   | -1.8  | 450  | 6.0 |
| 3V6         | 3.4   | 3.8  | 375  | 600  | 85                       | 90   | -1.9  | 450  | 6.0 |
| 3V9         | 3.7   | 4.1  | 400  | 600  | 85                       | 90   | -1.9  | 450  | 6.0 |
| 4V3         | 4.0   | 4.6  | 410  | 600  | 80                       | 90   | -1.7  | 450  | 6.0 |
| 4V7         | 4.4   | 5.0  | 425  | 500  | 50                       | 80   | -1.2  | 300  | 6.0 |
| 5V1         | 4.8   | 5.4  | 400  | 480  | 40                       | 60   | -0.5  | 300  | 6.0 |
| 5V6         | 5.2   | 6.0  | 80   | 400  | 15                       | 40   | 1.0   | 300  | 6.0 |
| 6V2         | 5.8   | 6.6  | 40   | 150  | 6                        | 10   | 2.2   | 200  | 6.0 |
| 6V8         | 6.4   | 7.2  | 30   | 80   | 6                        | 15   | 3.0   | 200  | 6.0 |
| 7V5         | 7.0   | 7.9  | 30   | 80   | 6                        | 15   | 3.6   | 150  | 4.0 |
| 8V2         | 7.7   | 8.7  | 40   | 80   | 6                        | 15   | 4.3   | 150  | 4.0 |
| 9V1         | 8.5   | 9.6  | 40   | 100  | 6                        | 15   | 5.2   | 150  | 3.0 |
| 10          | 9.4   | 10.6 | 50   | 150  | 8                        | 20   | 6.0   | 90   | 3.0 |
| 11          | 10.4  | 11.6 | 50   | 150  | 10                       | 20   | 6.9   | 90   | 2.5 |
| 12          | 11.4  | 12.7 | 50   | 150  | 10                       | 25   | 7.9   | 85   | 2.5 |
| 13          | 12.4  | 14.1 | 50   | 170  | 10                       | 30   | 8.8   | 80   | 2.5 |
| 15          | 13.8  | 15.6 | 50   | 200  | 10                       | 30   | 10.7  | 75   | 2.0 |

Voltage regulator double diodes

BZB984 series

**THERMAL CHARACTERISTICS**

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

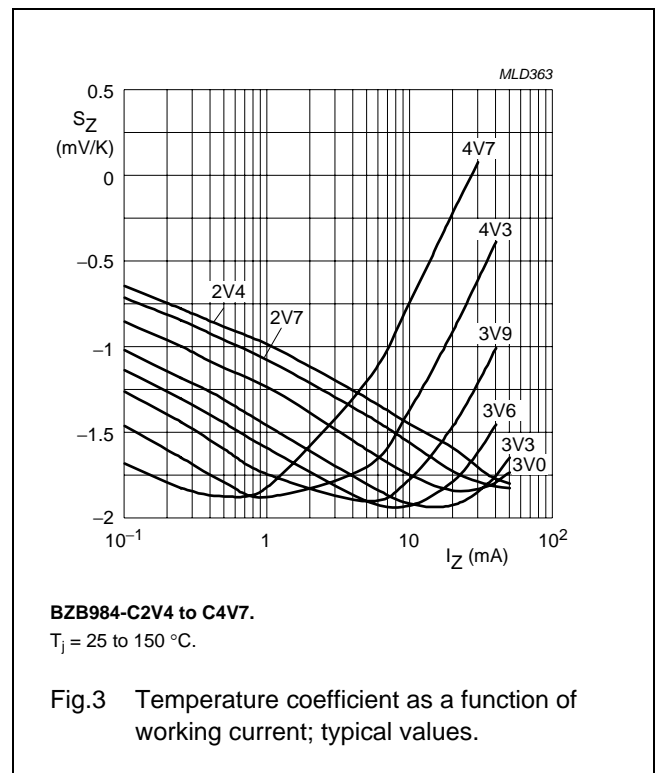
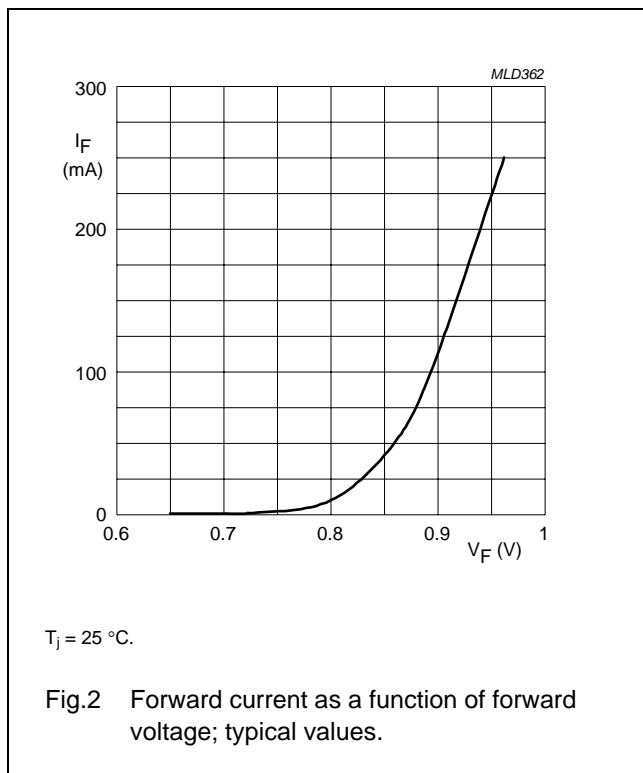
**Notes**

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

**Soldering**

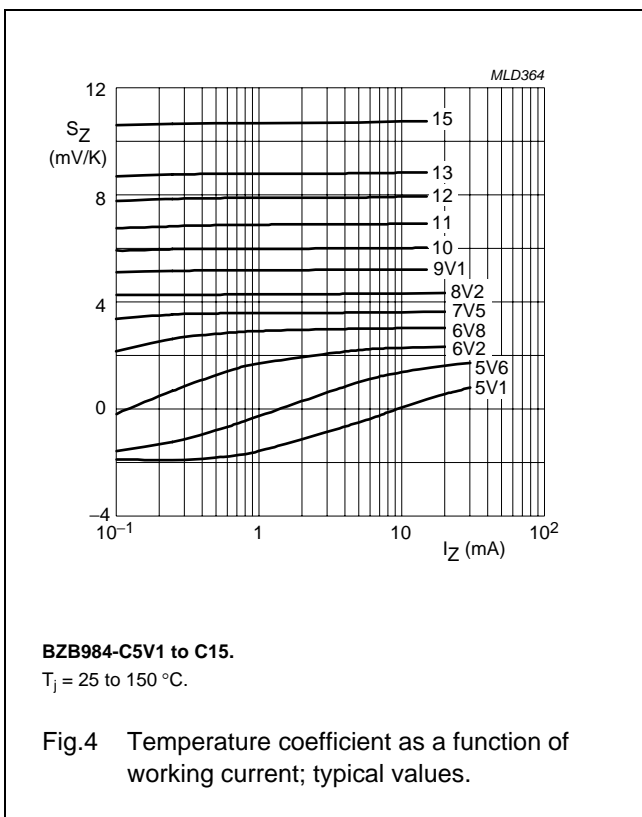
The only recommended soldering method is reflow soldering.

**GRAPHICAL DATA**



# Voltage regulator double diodes

# BZB984 series



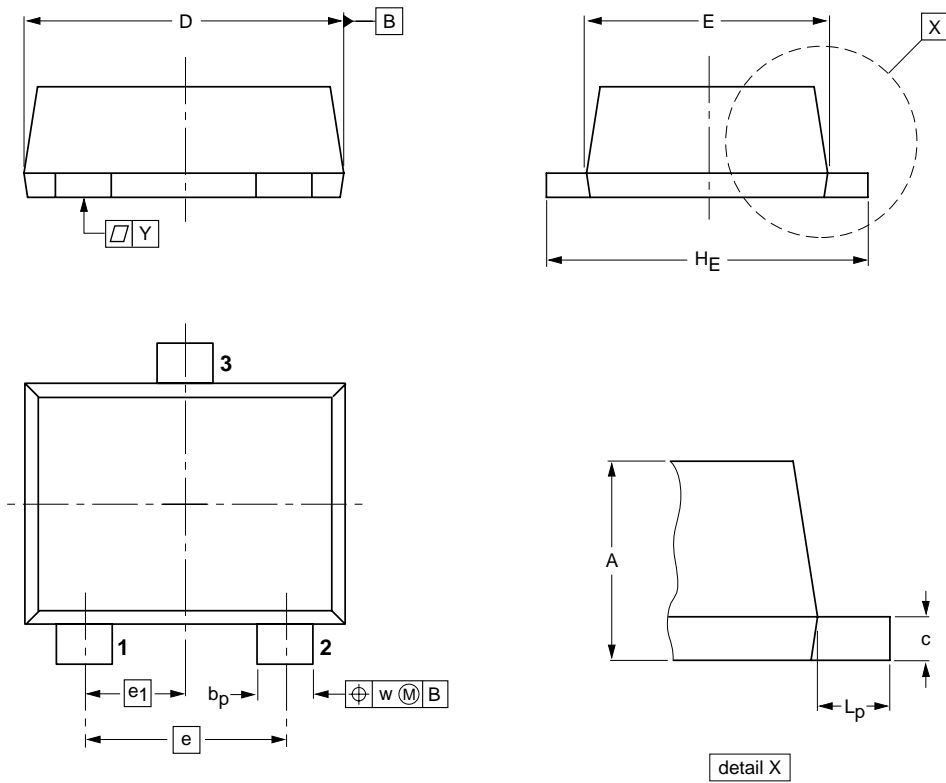
Voltage regulator double diodes

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<br>0.5 | 0.33<br>0.23 | 0.18<br>0.08 | 1.7<br>1.5 | 1.3<br>1.1 | 1.0 | 0.5   | 1.7<br>1.5 | 0.3<br>0.1 | 0.1 | 0.1 |

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

## Voltage regulator double diodes

## BZB984 series

## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | 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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