# THE DATASHEET OF

# BZX884-B5V6,315

# BZX884 series

## Voltage regulator diodes

Rev. 4 — 23 March 2018 Product data sheet

## 1 Product profile

### 1.1 General description

General-purpose Zener diodes in an SOD882 (DFN1006-2) leadless ultra small Surface-Mounted Device (SMD) plastic package.

### 1.2 Features and benefits

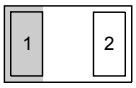
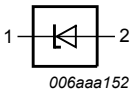
- Total power dissipation: $P_{tot} \leq 250$ mW
- Wide working voltage range: nominal 2.4 V to 75 V (E24 range)
- Two tolerance series: ± 2 % and ± 5 %
- Leadless ultra small plastic package suitable for surface-mounted design
- AEC-Q101 qualified

### 1.3 Applications

- General regulation functions
- ElectroStatic Discharge (ESD) ultra high-speed switching
- High-frequency applications

## 2 Pinning information

**Table 1. Pinning**

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|---|---|---|---|---|
| 1 | K | cathode[1] |   Transparent top view |   |
| 2 | A | anode | | |

[1] The marking bar indicates the cathode.

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# 3 Ordering information

**Table 2. Ordering information**

| Type number | Package | | |
|---|---|---|---|
| | Name | Description | Version |
| BZX884-B2V4 to BZX884-C75[1] | DFN1006-2 | leadless ultra small plastic package; 2 terminals; body 1.0 x 0.6 x 0.5 mm | SOD882 |

[1] The series consists of 74 types with nominal working voltages from 2.4 V to 75 V.

# 4 Marking

**Table 3. Marking Codes**

| Type number | Marking Code | Type number | Marking Code | Type number | Marking Code | Type number | Marking Code |
|---|---|---|---|---|---|---|---|
| BZX884-B2V4 | A1 | BZX884-B15 | AL | BZX884-C2V4 | B1 | BZX884-C15 | BL |
| BZX884-B2V7 | A2 | BZX884-B16 | C1 | BZX884-C2V7 | B2 | BZX884-C16 | D1 |
| BZX884-B3V0 | A3 | BZX884-B18 | C2 | BZX884-C3V0 | B3 | BZX884-C18 | D2 |
| BZX884-B3V3 | A4 | BZX884-B20 | C3 | BZX884-C3V3 | B4 | BZX884-C20 | D3 |
| BZX884-B3V6 | A5 | BZX884-B22 | C4 | BZX884-C3V6 | B5 | BZX884-C22 | D4 |
| BZX884-B3V9 | A6 | BZX884-B24 | C5 | BZX884-C3V9 | B6 | BZX884-C24 | D5 |
| BZX884-B4V3 | A7 | BZX884-B27 | C6 | BZX884-C4V3 | B7 | BZX884-C27 | D6 |
| BZX884-B4V7 | A8 | BZX884-B30 | C7 | BZX884-C4V7 | B8 | BZX884-C30 | D7 |
| BZX884-B5V1 | A9 | BZX884-B33 | C8 | BZX884-C5V1 | B9 | BZX884-C33 | D8 |
| BZX884-B5V6 | AA | BZX884-B36 | C9 | BZX884-C5V6 | BA | BZX884-C36 | D9 |
| BZX884-B6V2 | AB | BZX884-B39 | CA | BZX884-C6V2 | BB | BZX884-C39 | DA |
| BZX884-B6V8 | AC | BZX884-B43 | CB | BZX884-C6V8 | BC | BZX884-C43 | DB |
| BZX884-B7V5 | AD | BZX884-B47 | CC | BZX884-C7V5 | BD | BZX884-C47 | DC |
| BZX884-B8V2 | AE | BZX884-B51 | CD | BZX884-C8V2 | BE | BZX884-C51 | DD |
| BZX884-B9V1 | AF | BZX884-B56 | CE | BZX884-C9V1 | BF | BZX884-C56 | DE |
| BZX884-B10 | AG | BZX884-B62 | CF | BZX884-C10 | BG | BZX884-C62 | DF |
| BZX884-B11 | AH | BZX884-B68 | CG | BZX884-C11 | BH | BZX884-C68 | DG |
| BZX884-B12 | AJ | BZX884-B75 | CH | BZX884-C12 | BJ | BZX884-C75 | DH |
| BZX884-B13 | AK | - | - | BZX884-C13 | BK | - | - |

# 5 Limiting values

**Table 4. Limiting values**

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

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|---|---|---|---|---|---|---|
| $I_F$ | forward current | | | - | 200 | mA |
| $I_{ZSM}$ | non-repetitive peak reverse current | $t_p$ = 100 µs; square wave; $T_{amb}$ = 25 °C; prior to surge | | see Table 7 | | |
| $P_{tot}$ | total power dissipation | $T_{amb}$ = 25 °C | [1] | - | 250 | mW |
| $T_j$ | junction temperature | | | - | 150 | °C |
| $T_{amb}$ | ambient temperature | | | −55 | +150 | °C |
| $T_{stg}$ | storage temperature | | | −65 | +150 | °C |

[1] Refer to SOD882 standard mounting conditions (footprint), FR4 with 60 µ copper strip line.

# 6 Thermal characteristics

**Table 5. Thermal characteristics**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | - | - | 500 | K/W |

[1] Refer to SOD882 standard mounting conditions (footprint), FR4 with 60 µm copper strip line.

# 7 Characteristics

**Table 6. Electrical characteristics**

*$T_j$ = 25 °C unless otherwise specified.*

| Symbol | Parameter | Conditions | Max | Unit |
|---|---|---|---|---|
| $V_F$ | forward voltage | $I_F$ = 10 mA | 0.9 | V |
| $I_R$ | reverse current | | | |
| | BZX884-B/C2V4 | $V_R$ = 1 V | 50 | µA |
| | BZX884-B/C2V7 | $V_R$ = 1 V | 20 | µA |
| | BZX884-B/C3V0 | $V_R$ = 1 V | 10 | µA |
| | BZX884-B/C3V3 | $V_R$ = 1 V | 5 | µA |
| | BZX884-B/C3V6 | $V_R$ = 1 V | 5 | µA |
| | BZX884-B/C3V9 | $V_R$ = 1 V | 3 | µA |
| | BZX884-B/C4V3 | $V_R$ = 1 V | 3 | µA |
| | BZX884-B/C4V7 | $V_R$ = 2 V | 3 | µA |
| | BZX884-B/C5V1 | $V_R$ = 2 V | 2 | µA |
| | BZX884-B/C5V6 | $V_R$ = 2 V | 1 | µA |
| | BZX884-B/C6V2 | $V_R$ = 4 V | 3 | µA |
| | BZX884-B/C6V8 | $V_R$ = 4 V | 2 | µA |
| | BZX884-B/C7V5 | $V_R$ = 5 V | 1 | µA |
| | BZX884-B/C8V2 | $V_R$ = 5 V | 700 | nA |
| | BZX884-B/C9V1 | $V_R$ = 6 V | 500 | nA |
| | BZX884-B/C10 | $V_R$ = 7 V | 200 | nA |
| | BZX884-B/C11 | $V_R$ = 8 V | 100 | nA |
| | BZX884-B/C12 | $V_R$ = 8 V | 100 | nA |
| | BZX884-B/C13 | $V_R$ = 8 V | 100 | nA |
| | BZX884-B/C15 to 75 | $V_R$ = 0.7 $V_{Znom}$ | 50 | nA |

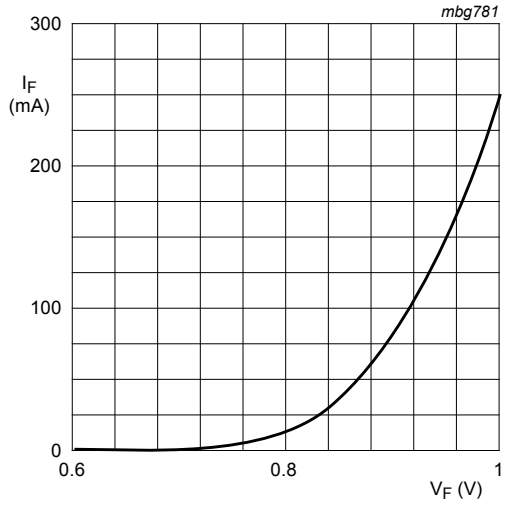
**Table 7. Electrical characteristics per type**

| BZX884-B or C | Working voltage $V_Z$ (V); at $I_Z$ = 5 mA | | | | Differential resistance $r_{diff}$ (Ω); | | | | Temperature coefficient $S_Z$ (mV/K); $I_{Ztest}$ = 5 mA | Diode capacit. $C_d$ (pF)[1] | Non-repetitive peak reverse current $I_{ZSM}$ (A) at $t_p$ = 100 µs; $T_{amb}$ = 25°C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tol. ± 2% (B) | | Tol. ± 5% (C) | | at $I_{Ztest}$ = 1 mA | | at $I_{Ztest}$ = 5 mA | | | | |
| | Min | Max | Min | Max | Typ | Max | Typ | Max | Typ | Max | Max |
| 2V4 | 2.35 | 2.45 | 2.28 | 2.52 | 275 | 400 | 70 | 100 | -1.3 | 450 | 6 |
| 2V7 | 2.65 | 2.75 | 2.57 | 2.84 | 300 | 450 | 75 | 100 | -1.4 | 440 | 6 |
| 3V0 | 2.94 | 3.06 | 2.85 | 3.15 | 325 | 500 | 80 | 95 | -1.6 | 425 | 6 |
| 3V3 | 3.23 | 3.37 | 3.14 | 3.47 | 350 | 500 | 85 | 95 | -1.8 | 410 | 6 |
| 3V6 | 3.53 | 3.67 | 3.42 | 3.78 | 375 | 500 | 85 | 90 | -1.9 | 390 | 6 |
| 3V9 | 3.82 | 3.98 | 3.71 | 4.10 | 400 | 500 | 85 | 90 | -1.9 | 370 | 6 |
| 4V3 | 4.61 | 4.39 | 4.09 | 4.52 | 410 | 600 | 80 | 90 | -1.7 | 350 | 6 |
| 4V7 | 4.61 | 4.79 | 4.47 | 4.94 | 425 | 500 | 50 | 80 | -1.2 | 320 | 6 |
| 5V1 | 5.00 | 5.20 | 4.85 | 5.36 | 400 | 480 | 40 | 60 | -0.5 | 300 | 6 |
| 5V6 | 5.49 | 5.71 | 5.32 | 5.88 | 80 | 400 | 15 | 40 | 1.0 | 275 | 6 |
| 6V2 | 6.08 | 6.32 | 5.89 | 6.51 | 40 | 150 | 6 | 10 | 2.2 | 250 | 6 |
| 6V8 | 6.66 | 6.94 | 6.46 | 7.14 | 30 | 80 | 6 | 15 | 3.0 | 215 | 6 |
| 7V5 | 7.35 | 7.65 | 7.13 | 7.88 | 15 | 80 | 2 | 10 | 3.6 | 170 | 4 |
| 8V2 | 8.04 | 8.36 | 7.79 | 8.61 | 20 | 80 | 2 | 10 | 4.3 | 150 | 4 |
| 9V1 | 8.92 | 9.28 | 8.65 | 9.56 | 20 | 100 | 2 | 10 | 5.2 | 120 | 3 |
| 10 | 9.80 | 10.20 | 9.50 | 10.50 | 20 | 150 | 2 | 10 | 6.0 | 110 | 3 |
| 11 | 10.78 | 11.22 | 10.45 | 11.55 | 25 | 150 | 2 | 10 | 6.9 | 110 | 2.5 |
| 12 | 11.76 | 12.24 | 11.40 | 12.60 | 25 | 150 | 2 | 10 | 7.9 | 105 | 2.5 |
| 13 | 12.74 | 13.26 | 12.35 | 13.65 | 25 | 170 | 2 | 10 | 8.8 | 105 | 2.5 |
| 15 | 14.70 | 15.30 | 14.25 | 15.75 | 25 | 200 | 3 | 15 | 10.7 | 100 | 2 |
| 16 | 15.68 | 16.32 | 15.20 | 16.80 | 50 | 200 | 10 | 40 | 12.4 | 90 | 1.5 |
| 18 | 17.64 | 18.36 | 17.10 | 18.90 | 50 | 225 | 10 | 45 | 14.4 | 80 | 1.5 |
| 20 | 19.60 | 20.40 | 19.00 | 21.00 | 60 | 225 | 15 | 55 | 16.4 | 70 | 1.5 |
| 22 | 21.56 | 22.44 | 20.90 | 23.10 | 60 | 250 | 20 | 55 | 18.4 | 60 | 1.25 |
| 24 | 23.52 | 24.48 | 22.80 | 25.20 | 60 | 250 | 25 | 70 | 20.4 | 55 | 1.25 |

[1] f = 1 MHz; $V_R$ = 0 V

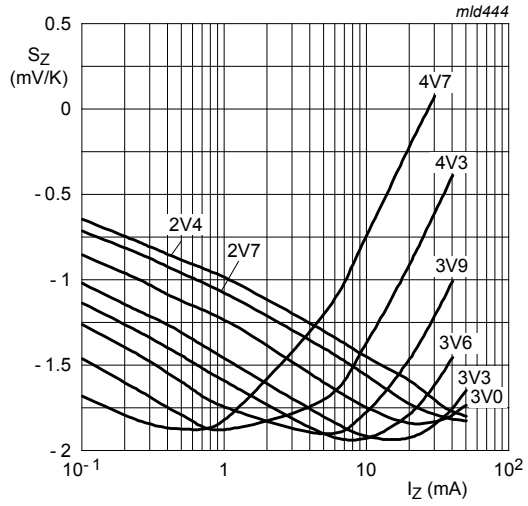
| BZX884-B or C | Working voltage $V_Z$ (V); at $I_Z$ = 2 mA | | | | Differential resistance $r_{diff}$ (Ω); | | | | Temperature coefficient $S_Z$ (mV/K); $I_{Ztest}$ = 2 mA | Diode capacit. $C_d$ (pF)[1] | Non-repetitive peak reverse current $I_{ZSM}$ (A) at $t_p$ = 100 µs; $T_{amb}$ = 25°C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tol. ± 2% (B) | | Tol. ± 5% (C) | | at $I_{Ztest}$ = 0.5 mA | | at $I_{Ztest}$ = 2 mA | | | | |
| | Min | Max | Min | Max | Typ | Max | Typ | Max | Typ | Max | Max |
| 27 | 26.46 | 27.57 | 25.65 | 28.35 | 65 | 300 | 25 | 80 | 23.4 | 50 | 1.0 |
| 30 | 29.40 | 30.60 | 28.50 | 31.50 | 70 | 300 | 30 | 80 | 26.6 | 50 | 1.0 |
| 33 | 32.34 | 33.66 | 31.35 | 34.65 | 75 | 325 | 35 | 80 | 29.7 | 45 | 0.9 |
| 36 | 35.28 | 36.72 | 34.20 | 37.80 | 80 | 350 | 35 | 90 | 33.0 | 45 | 0.8 |
| 39 | 38.22 | 39.78 | 37.05 | 40.95 | 80 | 350 | 40 | 130 | 36.4 | 45 | 0.7 |
| 43 | 42.14 | 43.86 | 40.85 | 45.15 | 85 | 375 | 45 | 150 | 41.2 | 40 | 0.6 |
| 47 | 46.06 | 47.94 | 44.65 | 49.35 | 85 | 375 | 50 | 170 | 46.1 | 40 | 0.5 |
| 51 | 49.98 | 52.02 | 48.45 | 53.55 | 90 | 400 | 60 | 180 | 51 | 40 | 0.4 |
| 56 | 54.88 | 57.12 | 53.20 | 58.80 | 100 | 425 | 70 | 200 | 57.0 | 40 | 0.3 |
| 62 | 60.76 | 63.24 | 58.90 | 65.10 | 120 | 450 | 80 | 215 | 64.4 | 35 | 0.3 |
| 68 | 66.64 | 69.36 | 64.60 | 71.40 | 150 | 475 | 90 | 240 | 71.7 | 35 | 0.25 |
| 75 | 73.50 | 76.50 | 71.25 | 78.75 | 170 | 500 | 95 | 255 | 80.2 | 35 | 0.2 |

[1] f = 1 MHz; $V_R$ = 0 V




$T_j$ = 25 °C

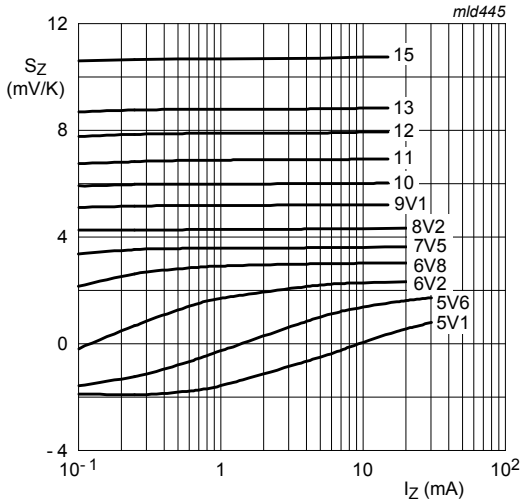
**Figure 1. Forward current as a function of forward voltage; typical values**




BZX884_B/C2V4 to B/C4V7

$T_j$ = 25 °C to 150 °C

**Figure 2. Temperature coefficient as a function of working current; typical values**



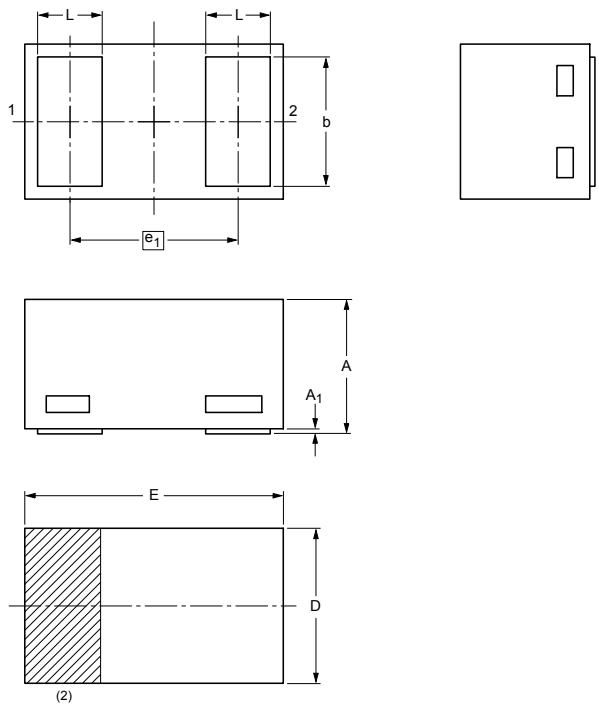

BZX884_B/C5V1 to B/C15

$T_j$ = 25 °C to 150 °C

**Figure 3. Temperature coefficient as a function of working current; typical values**

# 8 Package outline

**DFN1006-2: Leadless ultra small plastic package; 2 terminals; body 1.0 x 0.6 x 0.5 mm** **SOD882**




Dimensions (mm are the original dimensions)

| Unit | | A(1) | A1 | b | D | E | e1 | L |
|---|---|---|---|---|---|---|---|---|
| mm | max | 0.50 | 0.03 | 0.55 | 0.62 | 1.02 | 0.65 | 0.30 |
| | nom | | | | | | | |
| | min | 0.46 | | 0.47 | 0.55 | 0.95 | | 0.22 |

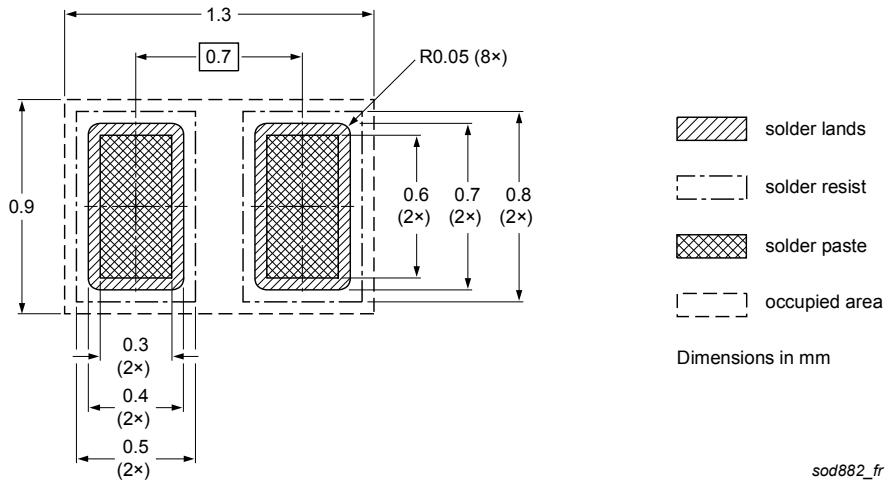
Note
1. Including plating thickness
2. The marking bar indicates the cathode (if applicable)

*sod882_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOD882 | | | | | | ~~14-08-26~~ 14-08-27 |

**Figure 4. Package outline SOD882**

# 9 Soldering




Reflow soldering is the only recommended soldering method.

Dimensions in mm.

**Figure 5. Reflow soldering footprint SOD882**

## 10 Revision history

**Table 8. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| BZX884_SER v.4 | 20180323 | Product data sheet | - | BZX884_SER v.3 |
| Modifications: | • Table 7: Working voltage maximum value corrected at BZX884-B16 | | | |
| BZX884_SER v.3 | 20171114 | Product data sheet | - | BZX884_SER v.2 |

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| Document status[1][2] | Product status[3] | Definition |
|---|---|---|
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**Document identifier: BZX884_SER**

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