

# BZB84 series

## Dual Zener diodes

Rev. 03 — 9 June 2009

Product data sheet

## 1. Product profile

### 1.1 General description

General-purpose Zener diodes in a SOT23 (TO-236AB) small Surface-Mounted Device (SMD) plastic package.

### 1.2 Features

- Non-repetitive peak reverse power dissipation:  $\leq 40$  W
- Total power dissipation:  $\leq 300$  mW
- Two tolerance series:  
B =  $\pm 2$  % and C =  $\pm 5$  %
- Wide working voltage range:  
nominal 2.4 V to 75 V (E24 range)
- Small plastic package suitable for surface-mounted design
- Dual common anode configuration
- AEC-Q101 qualified

### 1.3 Applications

- General regulation functions

### 1.4 Quick reference data

Table 1. Quick reference data

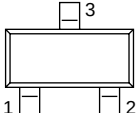
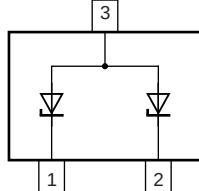
| Symbol           | Parameter                                     | Conditions    | Min   | Typ | Max | Unit |
|------------------|-----------------------------------------------|---------------|-------|-----|-----|------|
| <b>Per diode</b> |                                               |               |       |     |     |      |
| $V_F$            | forward voltage                               | $I_F = 10$ mA | [1] - | -   | 0.9 | V    |
| $P_{ZSM}$        | non-repetitive peak reverse power dissipation |               | [2] - | -   | 40  | W    |

[1] Pulse test:  $t_p \leq 300$   $\mu$ s;  $\delta \leq 0.02$ .

[2]  $t_p = 100$   $\mu$ s; square wave;  $T_j = 25$  °C prior to surge

## 2. Pinning information

Table 2. Pinning

| Pin | Description       | Simplified outline                                                                  | Graphic symbol                                                                      |
|-----|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1   | cathode (diode 1) |  |  |
| 2   | cathode (diode 2) |                                                                                     |                                                                                     |
| 3   | common anode      |                                                                                     |                                                                                     |

006aaa154

## 3. Ordering information

Table 3. Ordering information

| Type number                            | Package |                                          |         |
|----------------------------------------|---------|------------------------------------------|---------|
|                                        | Name    | Description                              | Version |
| BZB84-B2V4 to BZB84-C75 <sup>[1]</sup> | -       | plastic surface-mounted package; 3 leads | SOT23   |

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

## 4. Marking

Table 4. Marking codes

| Type number | Marking code <sup>[1]</sup> | Type number | Marking code <sup>[1]</sup> |
|-------------|-----------------------------|-------------|-----------------------------|
| BZB84-B2V4  | V9*                         | BZB84-C2V4  | U9*                         |
| BZB84-B2V7  | VA*                         | BZB84-C2V7  | UA*                         |
| BZB84-B3V0  | VB*                         | BZB84-C3V0  | UB*                         |
| BZB84-B3V3  | VC*                         | BZB84-C3V3  | UC*                         |
| BZB84-B3V6  | VD*                         | BZB84-C3V6  | UD*                         |
| BZB84-B3V9  | VE*                         | BZB84-C3V9  | UE*                         |
| BZB84-B4V3  | VF*                         | BZB84-C4V3  | UF*                         |
| BZB84-B4V7  | VG*                         | BZB84-C4V7  | UG*                         |
| BZB84-B5V1  | VH*                         | BZB84-C5V1  | UH*                         |
| BZB84-B5V6  | VK*                         | BZB84-C5V6  | UK*                         |
| BZB84-B6V2  | VL*                         | BZB84-C6V2  | UL*                         |
| BZB84-B6V8  | VM*                         | BZB84-C6V8  | UM*                         |
| BZB84-B7V5  | VN*                         | BZB84-C7V5  | UN*                         |
| BZB84-B8V2  | VP*                         | BZB84-C8V2  | UP*                         |
| BZB84-B9V1  | VR*                         | BZB84-C9V1  | UR*                         |

Table 4. Marking codes ...continued

| Type number | Marking code <sup>[1]</sup> | Type number | Marking code <sup>[1]</sup> |
|-------------|-----------------------------|-------------|-----------------------------|
| BZB84-B10   | VS*                         | BZB84-C10   | US*                         |
| BZB84-B11   | VT*                         | BZB84-C11   | UT*                         |
| BZB84-B12   | VU*                         | BZB84-C12   | UU*                         |
| BZB84-B13   | VV*                         | BZB84-C13   | UV*                         |
| BZB84-B15   | VW*                         | BZB84-C15   | UW*                         |
| BZB84-B16   | PT*                         | BZB84-C16   | PB*                         |
| BZB84-B18   | PU*                         | BZB84-C18   | PC*                         |
| BZB84-B20   | RP*                         | BZB84-C20   | RQ*                         |
| BZB84-B22   | PV*                         | BZB84-C22   | PD*                         |
| BZB84-B24   | PW*                         | BZB84-C24   | PE*                         |
| BZB84-B27   | PX*                         | BZB84-C27   | PF*                         |
| BZB84-B30   | PY*                         | BZB84-C30   | PG*                         |
| BZB84-B33   | PZ*                         | BZB84-C33   | PH*                         |
| BZB84-B36   | RA*                         | BZB84-C36   | PJ*                         |
| BZB84-B39   | RB*                         | BZB84-C39   | PK*                         |
| BZB84-B43   | RC*                         | BZB84-C43   | PL*                         |
| BZB84-B47   | RD*                         | BZB84-C47   | PM*                         |
| BZB84-B51   | RE*                         | BZB84-C51   | PN*                         |
| BZB84-B56   | RF*                         | BZB84-C56   | PP*                         |
| BZB84-B62   | RG*                         | BZB84-C62   | PQ*                         |
| BZB84-B68   | RH*                         | BZB84-C68   | PR*                         |
| BZB84-B75   | RJ*                         | BZB84-C75   | PS*                         |

[1] \* = -: made in Hong Kong

\* = p: made in Hong Kong

\* = t: made in Malaysia

\* = W: made in China

## 5. Limiting values

Table 5. Limiting values

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

| Symbol           | Parameter                                     | Conditions     | Min | Max                       | Unit |
|------------------|-----------------------------------------------|----------------|-----|---------------------------|------|
| <b>Per diode</b> |                                               |                |     |                           |      |
| $I_F$            | forward current                               |                | -   | 200                       | mA   |
| $I_{ZSM}$        | non-repetitive peak reverse current           | <sup>[1]</sup> | -   | see Table 8, 9, 10 and 11 |      |
| $P_{ZSM}$        | non-repetitive peak reverse power dissipation | <sup>[1]</sup> | -   | 40                        | W    |

**Table 5. Limiting values ...continued***In accordance with the Absolute Maximum Rating System (IEC 60134).*

| Symbol            | Parameter               | Conditions                         | Min   | Max  | Unit |
|-------------------|-------------------------|------------------------------------|-------|------|------|
| <b>Per device</b> |                         |                                    |       |      |      |
| $P_{\text{tot}}$  | total power dissipation | $T_{\text{amb}} \leq 25\text{ °C}$ | [2] - | 300  | mW   |
| $T_{\text{j}}$    | junction temperature    |                                    | -     | 150  | °C   |
| $T_{\text{amb}}$  | ambient temperature     |                                    | -55   | +150 | °C   |
| $T_{\text{stg}}$  | storage temperature     |                                    | -65   | +150 | °C   |

[1]  $t_p = 100\text{ }\mu\text{s}$ ; square wave;  $T_{\text{j}} = 25\text{ °C}$  prior to surge

[2] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

## 6. Thermal characteristics

**Table 6. Thermal characteristics**

| Symbol                                 | Parameter                                        | Conditions  | Min   | Typ | Max | Unit |
|----------------------------------------|--------------------------------------------------|-------------|-------|-----|-----|------|
| <b>Per device; single diode loaded</b> |                                                  |             |       |     |     |      |
| $R_{\text{th(j-a)}}$                   | thermal resistance from junction to ambient      | in free air | [1] - | -   | 417 | K/W  |
| $R_{\text{th(j-sp)}}$                  | thermal resistance from junction to solder point |             | [2] - | -   | 100 | K/W  |

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[2] Soldering points at pins 1 and 2.

## 7. Characteristics

**Table 7. Characteristics** *$T_{\text{j}} = 25\text{ °C}$  unless otherwise specified.*

| Symbol           | Parameter       | Conditions                    | Min   | Typ | Max | Unit |
|------------------|-----------------|-------------------------------|-------|-----|-----|------|
| <b>Per diode</b> |                 |                               |       |     |     |      |
| $V_{\text{F}}$   | forward voltage | $I_{\text{F}} = 10\text{ mA}$ | [1] - | -   | 0.9 | V    |

[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .

**Table 8. Characteristics per type; BZB84-B2V4 to BZB84-B24***T<sub>J</sub> = 25 °C unless otherwise specified.*

| BZB84-Bxxx | Working voltage<br>V <sub>Z</sub> (V) |       | Differential resistance<br>r <sub>dif</sub> (Ω) |                       | Reverse current<br>I <sub>R</sub> (μA) |                    | Temperature coefficient<br>S <sub>Z</sub> (mV/K) |      | Diode capacitance<br>C <sub>d</sub> (pF) <sup>[1]</sup> | Non-repetitive peak reverse current<br>I <sub>ZSM</sub> (A) <sup>[2]</sup> |
|------------|---------------------------------------|-------|-------------------------------------------------|-----------------------|----------------------------------------|--------------------|--------------------------------------------------|------|---------------------------------------------------------|----------------------------------------------------------------------------|
|            | I <sub>Z</sub> = 5 mA                 |       | I <sub>Z</sub> = 1 mA                           | I <sub>Z</sub> = 5 mA |                                        |                    | I <sub>Z</sub> = 5 mA                            |      |                                                         |                                                                            |
|            | Min                                   | Max   | Max                                             | Max                   | Max                                    | V <sub>R</sub> (V) | Min                                              | Max  | Max                                                     | Max                                                                        |
| 2V4        | 2.35                                  | 2.45  | 600                                             | 100                   | 50                                     | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 2V7        | 2.65                                  | 2.75  | 600                                             | 100                   | 20                                     | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 3V0        | 2.94                                  | 3.06  | 600                                             | 95                    | 10                                     | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 3V3        | 3.23                                  | 3.37  | 600                                             | 95                    | 5                                      | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 3V6        | 3.53                                  | 3.67  | 600                                             | 90                    | 5                                      | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 3V9        | 3.82                                  | 3.98  | 600                                             | 90                    | 3                                      | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 4V3        | 4.21                                  | 4.39  | 600                                             | 90                    | 3                                      | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 4V7        | 4.61                                  | 4.79  | 500                                             | 80                    | 3                                      | 2                  | −3.5                                             | 0.2  | 300                                                     | 6.0                                                                        |
| 5V1        | 5.00                                  | 5.20  | 480                                             | 60                    | 2                                      | 2                  | −2.7                                             | 1.2  | 300                                                     | 6.0                                                                        |
| 5V6        | 5.49                                  | 5.71  | 400                                             | 40                    | 1                                      | 2                  | −2.0                                             | 2.5  | 300                                                     | 6.0                                                                        |
| 6V2        | 6.08                                  | 6.32  | 150                                             | 10                    | 3                                      | 4                  | 0.4                                              | 3.7  | 200                                                     | 6.0                                                                        |
| 6V8        | 6.66                                  | 6.94  | 80                                              | 15                    | 2                                      | 4                  | 1.2                                              | 4.5  | 200                                                     | 6.0                                                                        |
| 7V5        | 7.35                                  | 7.65  | 80                                              | 15                    | 1                                      | 5                  | 2.5                                              | 5.3  | 150                                                     | 4.0                                                                        |
| 8V2        | 8.04                                  | 8.36  | 80                                              | 15                    | 0.70                                   | 5                  | 3.2                                              | 6.2  | 150                                                     | 4.0                                                                        |
| 9V1        | 8.92                                  | 9.28  | 100                                             | 15                    | 0.50                                   | 6                  | 3.8                                              | 7.0  | 150                                                     | 3.0                                                                        |
| 10         | 9.80                                  | 10.20 | 150                                             | 20                    | 0.20                                   | 7                  | 4.5                                              | 8.0  | 90                                                      | 3.0                                                                        |
| 11         | 10.80                                 | 11.20 | 150                                             | 20                    | 0.10                                   | 8                  | 5.4                                              | 9.0  | 85                                                      | 2.5                                                                        |
| 12         | 11.80                                 | 12.20 | 150                                             | 25                    | 0.10                                   | 8                  | 6.0                                              | 10.0 | 85                                                      | 2.5                                                                        |
| 13         | 12.70                                 | 13.30 | 170                                             | 30                    | 0.10                                   | 8                  | 7.0                                              | 11.0 | 80                                                      | 2.5                                                                        |
| 15         | 14.70                                 | 15.30 | 200                                             | 30                    | 0.05                                   | 10.5               | 9.2                                              | 13.0 | 75                                                      | 2.0                                                                        |
| 16         | 15.70                                 | 16.30 | 200                                             | 40                    | 0.05                                   | 11.2               | 10.4                                             | 14.0 | 75                                                      | 1.5                                                                        |
| 18         | 17.60                                 | 18.40 | 225                                             | 45                    | 0.05                                   | 12.6               | 12.4                                             | 16.0 | 70                                                      | 1.5                                                                        |
| 20         | 19.6                                  | 20.4  | 225                                             | 55                    | 0.05                                   | 14.0               | 14.4                                             | 18.0 | 60                                                      | 1.5                                                                        |
| 22         | 21.6                                  | 22.4  | 250                                             | 55                    | 0.05                                   | 15.4               | 16.4                                             | 20.0 | 60                                                      | 1.25                                                                       |
| 24         | 23.5                                  | 24.5  | 250                                             | 70                    | 0.05                                   | 16.8               | 18.4                                             | 22.0 | 55                                                      | 1.25                                                                       |

[1] f = 1 MHz; V<sub>R</sub> = 0 V[2] t<sub>p</sub> = 100 μs; square wave; T<sub>J</sub> = 25 °C prior to surge

**Table 9. Characteristics per type; BZB84-B27 to BZB84-B75***T<sub>j</sub> = 25 °C unless otherwise specified.*

| BZB84-Bxxx | Working voltage<br>V <sub>Z</sub> (V) |      | Differential resistance<br>r <sub>dif</sub> (Ω) |                       | Reverse current<br>I <sub>R</sub> (μA) |                    | Temperature coefficient<br>S <sub>Z</sub> (mV/K) |      | Diode capacitance<br>C <sub>d</sub> (pF) <sup>[1]</sup> | Non-repetitive peak reverse current<br>I <sub>ZSM</sub> (A) <sup>[2]</sup> |
|------------|---------------------------------------|------|-------------------------------------------------|-----------------------|----------------------------------------|--------------------|--------------------------------------------------|------|---------------------------------------------------------|----------------------------------------------------------------------------|
|            | I <sub>Z</sub> = 2 mA                 |      | I <sub>Z</sub> = 0.5 mA                         | I <sub>Z</sub> = 2 mA |                                        |                    | I <sub>Z</sub> = 2 mA                            |      |                                                         |                                                                            |
|            | Min                                   | Max  | Max                                             | Max                   | Max                                    | V <sub>R</sub> (V) | Min                                              | Max  | Max                                                     | Max                                                                        |
| 27         | 26.5                                  | 27.5 | 300                                             | 80                    | 0.05                                   | 18.9               | 21.4                                             | 25.3 | 50                                                      | 1.00                                                                       |
| 30         | 29.4                                  | 30.6 | 300                                             | 80                    | 0.05                                   | 21.0               | 24.4                                             | 29.4 | 50                                                      | 1.00                                                                       |
| 33         | 32.3                                  | 33.7 | 325                                             | 80                    | 0.05                                   | 23.1               | 27.4                                             | 33.4 | 45                                                      | 0.90                                                                       |
| 36         | 35.3                                  | 36.7 | 350                                             | 90                    | 0.05                                   | 25.2               | 30.4                                             | 37.4 | 45                                                      | 0.80                                                                       |
| 39         | 38.2                                  | 39.8 | 350                                             | 130                   | 0.05                                   | 27.3               | 33.4                                             | 41.2 | 45                                                      | 0.70                                                                       |
| 43         | 42.1                                  | 43.9 | 375                                             | 150                   | 0.05                                   | 30.1               | 37.6                                             | 46.6 | 40                                                      | 0.60                                                                       |
| 47         | 46.1                                  | 47.9 | 375                                             | 170                   | 0.05                                   | 32.9               | 42.0                                             | 51.8 | 40                                                      | 0.50                                                                       |
| 51         | 50.0                                  | 52.0 | 400                                             | 180                   | 0.05                                   | 35.7               | 46.6                                             | 57.2 | 40                                                      | 0.40                                                                       |
| 56         | 54.9                                  | 57.1 | 425                                             | 200                   | 0.05                                   | 39.2               | 52.2                                             | 63.8 | 40                                                      | 0.30                                                                       |
| 62         | 60.8                                  | 63.2 | 450                                             | 215                   | 0.05                                   | 43.4               | 58.8                                             | 71.6 | 35                                                      | 0.30                                                                       |
| 68         | 66.6                                  | 69.4 | 475                                             | 240                   | 0.05                                   | 47.6               | 65.6                                             | 79.8 | 35                                                      | 0.25                                                                       |
| 75         | 73.5                                  | 76.5 | 500                                             | 255                   | 0.05                                   | 52.5               | 73.4                                             | 88.6 | 35                                                      | 0.20                                                                       |

[1] f = 1 MHz; V<sub>R</sub> = 0 V[2] t<sub>p</sub> = 100 μs; square wave; T<sub>j</sub> = 25 °C prior to surge

**Table 10. Characteristics per type; BZB84-C2V4 to BZB84-C24** $T_J = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

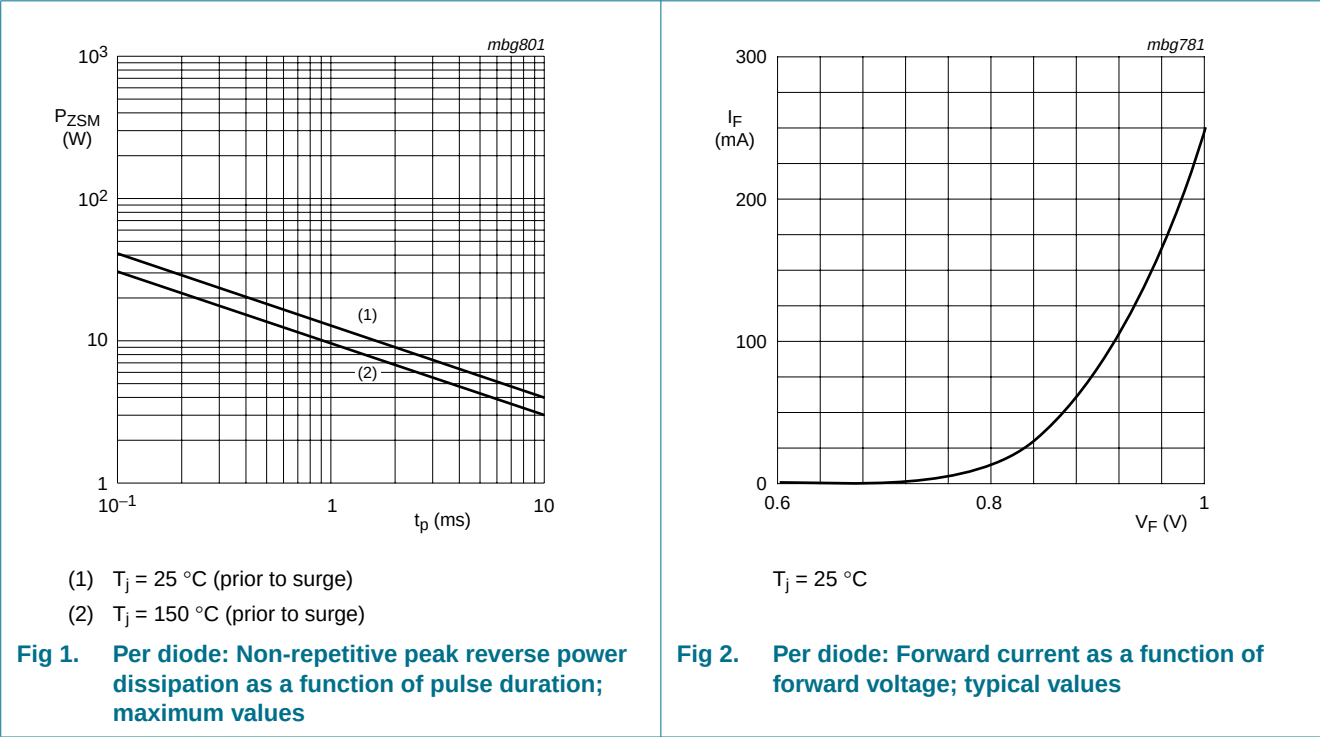
| BZB84-Cxxx | Working voltage<br>V <sub>Z</sub> (V) |      | Differential resistance<br>r <sub>dif</sub> (Ω) |                       | Reverse current<br>I <sub>R</sub> (μA) |                    | Temperature coefficient<br>S <sub>Z</sub> (mV/K) |      | Diode capacitance<br>C <sub>d</sub> (pF) <sup>[1]</sup> | Non-repetitive peak reverse current<br>I <sub>ZSM</sub> (A) <sup>[2]</sup> |
|------------|---------------------------------------|------|-------------------------------------------------|-----------------------|----------------------------------------|--------------------|--------------------------------------------------|------|---------------------------------------------------------|----------------------------------------------------------------------------|
|            | I <sub>Z</sub> = 5 mA                 |      | I <sub>Z</sub> = 1 mA                           | I <sub>Z</sub> = 5 mA |                                        |                    | I <sub>Z</sub> = 5 mA                            |      |                                                         |                                                                            |
|            | Min                                   | Max  | Max                                             | Max                   | Max                                    | V <sub>R</sub> (V) | Min                                              | Max  | Max                                                     | Max                                                                        |
| 2V4        | 2.2                                   | 2.6  | 600                                             | 100                   | 50                                     | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 2V7        | 2.5                                   | 2.9  | 600                                             | 100                   | 20                                     | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 3V0        | 2.8                                   | 3.2  | 600                                             | 95                    | 10                                     | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 3V3        | 3.1                                   | 3.5  | 600                                             | 95                    | 5                                      | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 3V6        | 3.4                                   | 3.8  | 600                                             | 90                    | 5                                      | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 3V9        | 3.7                                   | 4.1  | 600                                             | 90                    | 3                                      | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 4V3        | 4.0                                   | 4.6  | 600                                             | 90                    | 3                                      | 1                  | −3.5                                             | 0    | 450                                                     | 6.0                                                                        |
| 4V7        | 4.4                                   | 5.0  | 500                                             | 80                    | 3                                      | 2                  | −3.5                                             | 0.2  | 300                                                     | 6.0                                                                        |
| 5V1        | 4.8                                   | 5.4  | 480                                             | 60                    | 2                                      | 2                  | −2.7                                             | 1.2  | 300                                                     | 6.0                                                                        |
| 5V6        | 5.2                                   | 6.0  | 400                                             | 40                    | 1                                      | 2                  | −2.0                                             | 2.5  | 300                                                     | 6.0                                                                        |
| 6V2        | 5.8                                   | 6.6  | 150                                             | 10                    | 3                                      | 4                  | 0.4                                              | 3.7  | 200                                                     | 6.0                                                                        |
| 6V8        | 6.4                                   | 7.2  | 80                                              | 15                    | 2                                      | 4                  | 1.2                                              | 4.5  | 200                                                     | 6.0                                                                        |
| 7V5        | 7.0                                   | 7.9  | 80                                              | 15                    | 1                                      | 5                  | 2.5                                              | 5.3  | 150                                                     | 4.0                                                                        |
| 8V2        | 7.7                                   | 8.7  | 80                                              | 15                    | 0.70                                   | 5                  | 3.2                                              | 6.2  | 150                                                     | 4.0                                                                        |
| 9V1        | 8.5                                   | 9.6  | 100                                             | 15                    | 0.50                                   | 6                  | 3.8                                              | 7.0  | 150                                                     | 3.0                                                                        |
| 10         | 9.4                                   | 10.6 | 150                                             | 20                    | 0.20                                   | 7                  | 4.5                                              | 8.0  | 90                                                      | 3.0                                                                        |
| 11         | 10.4                                  | 11.6 | 150                                             | 20                    | 0.10                                   | 8                  | 5.4                                              | 9.0  | 85                                                      | 2.5                                                                        |
| 12         | 11.4                                  | 12.7 | 150                                             | 25                    | 0.10                                   | 8                  | 6.0                                              | 10.0 | 85                                                      | 2.5                                                                        |
| 13         | 12.4                                  | 14.1 | 170                                             | 30                    | 0.10                                   | 8                  | 7.0                                              | 11.0 | 80                                                      | 2.5                                                                        |
| 15         | 13.8                                  | 15.6 | 200                                             | 30                    | 0.05                                   | 10.5               | 9.2                                              | 13.0 | 75                                                      | 2.0                                                                        |
| 16         | 15.3                                  | 17.1 | 200                                             | 40                    | 0.05                                   | 11.2               | 10.4                                             | 14.0 | 75                                                      | 1.5                                                                        |
| 18         | 16.8                                  | 19.1 | 225                                             | 45                    | 0.05                                   | 12.6               | 12.4                                             | 16.0 | 70                                                      | 1.5                                                                        |
| 20         | 18.8                                  | 21.2 | 225                                             | 55                    | 0.05                                   | 14.0               | 14.4                                             | 18.0 | 60                                                      | 1.5                                                                        |
| 22         | 20.8                                  | 23.3 | 250                                             | 55                    | 0.05                                   | 15.4               | 16.4                                             | 20.0 | 60                                                      | 1.25                                                                       |
| 24         | 22.8                                  | 25.6 | 250                                             | 70                    | 0.05                                   | 16.8               | 18.4                                             | 22.0 | 55                                                      | 1.25                                                                       |

[1]  $f = 1\text{ MHz}$ ;  $V_R = 0\text{ V}$ [2]  $t_p = 100\text{ }\mu\text{s}$ ; square wave;  $T_J = 25\text{ }^{\circ}\text{C}$  prior to surge

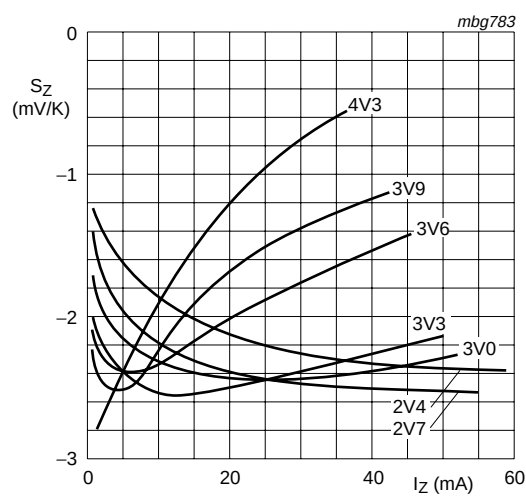
Table 11. Characteristics per type; BZB84-C27 to BZB84-C75  
*T<sub>j</sub> = 25 °C unless otherwise specified.*

| BZB84-Cxxx | Working voltage<br>V <sub>Z</sub> (V) |      | Differential resistance<br>r <sub>dif</sub> (Ω) |                       | Reverse current<br>I <sub>R</sub> (μA) |                    | Temperature coefficient<br>S <sub>Z</sub> (mV/K) |      | Diode capacitance<br>C <sub>d</sub> (pF) <sup>[1]</sup> | Non-repetitive peak reverse current<br>I <sub>ZSM</sub> (A) <sup>[2]</sup> |
|------------|---------------------------------------|------|-------------------------------------------------|-----------------------|----------------------------------------|--------------------|--------------------------------------------------|------|---------------------------------------------------------|----------------------------------------------------------------------------|
|            | I <sub>Z</sub> = 2 mA                 |      | I <sub>Z</sub> = 0.5 mA                         | I <sub>Z</sub> = 2 mA |                                        |                    | I <sub>Z</sub> = 2 mA                            |      |                                                         |                                                                            |
|            | Min                                   | Max  | Max                                             | Max                   | Max                                    | V <sub>R</sub> (V) | Min                                              | Max  | Max                                                     | Max                                                                        |
| 27         | 25.1                                  | 28.9 | 300                                             | 80                    | 0.05                                   | 18.9               | 21.4                                             | 25.3 | 50                                                      | 1.00                                                                       |
| 30         | 28.0                                  | 32.0 | 300                                             | 80                    | 0.05                                   | 21.0               | 24.4                                             | 29.4 | 50                                                      | 1.00                                                                       |
| 33         | 31.0                                  | 35.0 | 325                                             | 80                    | 0.05                                   | 23.1               | 27.4                                             | 33.4 | 45                                                      | 0.90                                                                       |
| 36         | 34.0                                  | 38.0 | 350                                             | 90                    | 0.05                                   | 25.2               | 30.4                                             | 37.4 | 45                                                      | 0.80                                                                       |
| 39         | 37.0                                  | 41.0 | 350                                             | 130                   | 0.05                                   | 27.3               | 33.4                                             | 41.2 | 45                                                      | 0.70                                                                       |
| 43         | 40.0                                  | 46.0 | 375                                             | 150                   | 0.05                                   | 30.1               | 37.6                                             | 46.6 | 40                                                      | 0.60                                                                       |
| 47         | 44.0                                  | 50.0 | 375                                             | 170                   | 0.05                                   | 32.9               | 42.0                                             | 51.8 | 40                                                      | 0.50                                                                       |
| 51         | 48.0                                  | 54.0 | 400                                             | 180                   | 0.05                                   | 35.7               | 46.6                                             | 57.2 | 40                                                      | 0.40                                                                       |
| 56         | 52.0                                  | 60.0 | 425                                             | 200                   | 0.05                                   | 39.2               | 52.2                                             | 63.8 | 40                                                      | 0.30                                                                       |
| 62         | 58.0                                  | 66.0 | 450                                             | 215                   | 0.05                                   | 43.4               | 58.8                                             | 71.6 | 35                                                      | 0.30                                                                       |
| 68         | 64.0                                  | 72.0 | 475                                             | 240                   | 0.05                                   | 47.6               | 65.6                                             | 79.8 | 35                                                      | 0.25                                                                       |
| 75         | 70.0                                  | 79.0 | 500                                             | 255                   | 0.05                                   | 52.5               | 73.4                                             | 88.6 | 35                                                      | 0.20                                                                       |

- [1] f = 1 MHz; V<sub>R</sub> = 0 V  
[2] t<sub>p</sub> = 100 μs; square wave; T<sub>j</sub> = 25 °C prior to surge

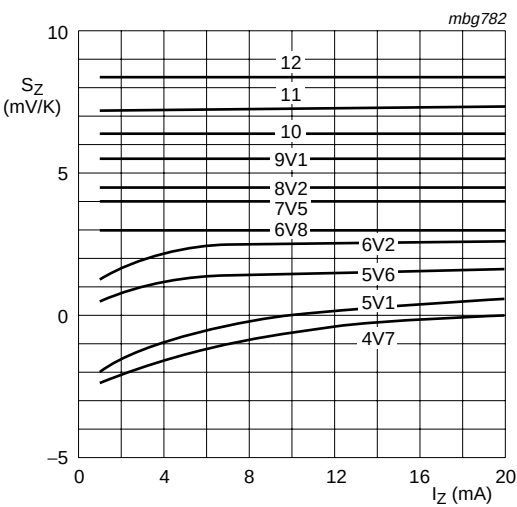






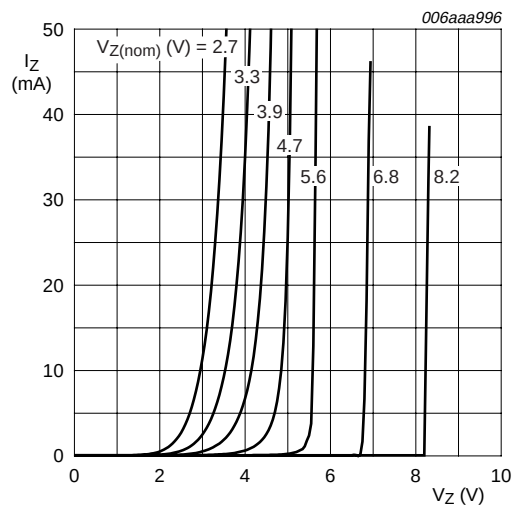
$T_j = 25\text{ }^{\circ}\text{C}$  to  $150\text{ }^{\circ}\text{C}$   
BZB84-B/C2V4 to BZB84-B/C4V3

Fig 3. Per diode: Temperature coefficient as a function of working current; typical values



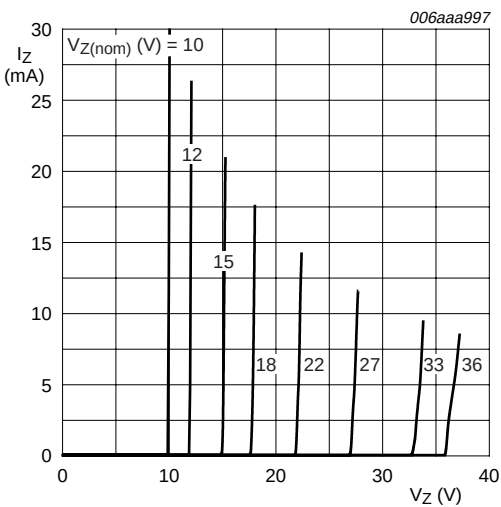
$T_j = 25\text{ }^{\circ}\text{C}$  to  $150\text{ }^{\circ}\text{C}$   
BZB84-B/C4V7 to BZB84-B/C12

Fig 4. Per diode: Temperature coefficient as a function of working current; typical values



$T_j = 25\text{ }^{\circ}\text{C}$   
BZB84-B/C2V7 to BZB84-B/C8V2

Fig 5. Per diode: Working current as a function of working voltage; typical values



$T_j = 25\text{ }^{\circ}\text{C}$   
BZB84-B/C10 to BZB84-B/C36

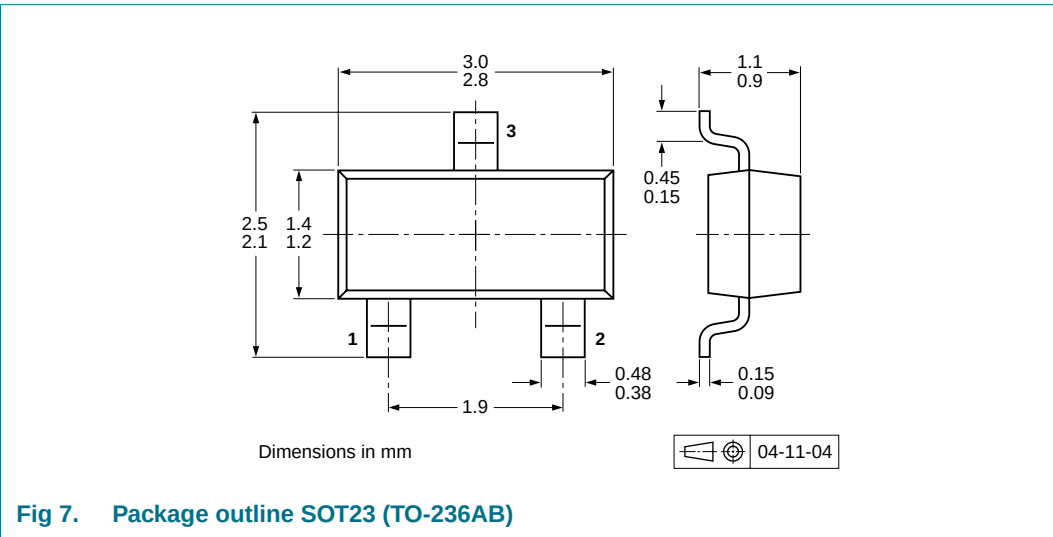
Fig 6. Per diode: Working current as a function of working voltage; typical values

8. Test information

8.1 Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

9. Package outline



10. Packing information

**Table 12. Packing methods**  
The indicated -xxx are the last three digits of the 12NC ordering code.<sup>[1]</sup>

| Type number                            | Package | Description                    | Packing quantity |       |
|----------------------------------------|---------|--------------------------------|------------------|-------|
|                                        |         |                                | 3000             | 10000 |
| BZB84-B2V4 to BZB84-C75 <sup>[2]</sup> | SOT23   | 4 mm pitch, 8 mm tape and reel | -215             | -235  |

[1] For further information and the availability of packing methods, see [Section 14](#).  
[2] The series consists of 74 types with nominal working voltages from 2.4 V to 75 V.



## 12. Revision history

**Table 13. Revision history**

| Document ID    | Release date                                                                                                                                                                                                                                                                            | Data sheet status  | Change notice | Supersedes  |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|-------------|
| BZB84_SER_3    | 20090609                                                                                                                                                                                                                                                                                | Product data sheet | -             | BZB84_SER_2 |
| Modifications: | <ul style="list-style-type: none"><li>• <a href="#">Table 5 “Limiting values”</a>: <math>P_{tot}</math> maximum value amended</li><li>• <a href="#">Table 6</a>: <math>R_{th}</math> maximum values amended</li><li>• <a href="#">Section 13 “Legal information”</a>: updated</li></ul> |                    |               |             |
| BZB84_SER_2    | 20090223                                                                                                                                                                                                                                                                                | Product data sheet | -             | BZB84_SER_1 |
| BZB84_SER_1    | 20080514                                                                                                                                                                                                                                                                                | Product data sheet | -             | -           |

## 13. Legal information

### 13.1 Data sheet status

| Document status <sup>[1][2]</sup> | Product status <sup>[3]</sup> | Definition                                                                            |
|-----------------------------------|-------------------------------|---------------------------------------------------------------------------------------|
| Objective [short] data sheet      | Development                   | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet    | Qualification                 | This document contains data from the preliminary specification.                       |
| Product [short] data sheet        | Production                    | This document contains the product specification.                                     |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

### 13.2 Definitions

**Draft** — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

**Short data sheet** — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local NXP Semiconductors sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

### 13.3 Disclaimers

**General** — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

**Right to make changes** — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

**Suitability for use** — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental

damage. NXP Semiconductors accepts no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

**Applications** — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

**Limiting values** — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) may cause permanent damage to the device. Limiting values are stress ratings only and operation of the device at these or any other conditions above those given in the Characteristics sections of this document is not implied. Exposure to limiting values for extended periods may affect device reliability.

**Terms and conditions of sale** — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at <http://www.nxp.com/profile/terms>, including those pertaining to warranty, intellectual property rights infringement and limitation of liability, unless explicitly otherwise agreed to in writing by NXP Semiconductors. In case of any inconsistency or conflict between information in this document and such terms and conditions, the latter will prevail.

**No offer to sell or license** — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

**Export control** — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from national authorities.

**Quick reference data** — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

### 13.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

## 14. Contact information

For more information, please visit: <http://www.nxp.com>

For sales office addresses, please send an email to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

15. Contents

1 Product profile ..... 1

1.1 General description..... 1

1.2 Features ..... 1

1.3 Applications ..... 1

1.4 Quick reference data..... 1

2 Pinning information..... 2

3 Ordering information..... 2

4 Marking..... 2

5 Limiting values..... 3

6 Thermal characteristics..... 4

7 Characteristics..... 4

8 Test information..... 10

8.1 Quality information ..... 10

9 Package outline ..... 10

10 Packing information..... 10

11 Soldering ..... 11

12 Revision history..... 12

13 Legal information..... 13

13.1 Data sheet status ..... 13

13.2 Definitions..... 13

13.3 Disclaimers..... 13

13.4 Trademarks..... 13

14 Contact information..... 13

15 Contents ..... 14



Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А