



# 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

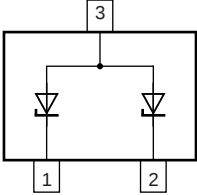
| Symbol           | Parameter                                     | Conditions    | Min   | Typ | Max | Unit |
|------------------|-----------------------------------------------|---------------|-------|-----|-----|------|
| <b>Per diode</b> |                                               |               |       |     |     |      |
| $V_F$            | 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      |                                                                                     |                                                                                     |

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

Table 9. Characteristics per type; BZB84-B27 to BZB84-B75

$T_j = 25\text{ }^{\circ}\text{C}$  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]  $f = 1\text{ MHz}$ ;  $V_R = 0\text{ V}$

[2]  $t_p = 100\text{ }\mu\text{s}$ ; square wave;  $T_j = 25\text{ }^{\circ}\text{C}$  prior to surge

**Table 10. Characteristics per type; BZB84-C2V4 to BZB84-C24** $T_J = 25\text{ °C}$  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;  $T_J = 25\text{ °C}$  prior to surge

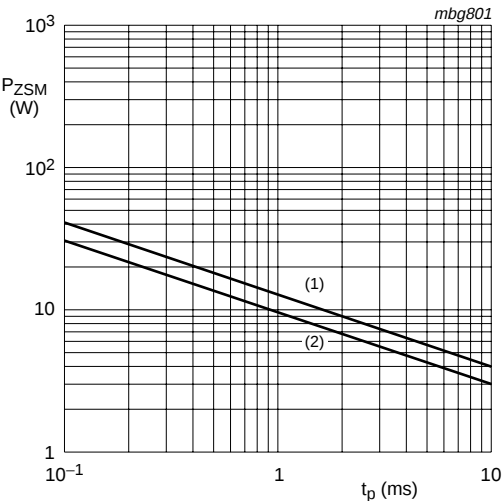
Table 11. Characteristics per type; BZB84-C27 to BZB84-C75

$T_j = 25\text{ }^{\circ}\text{C}$  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> = 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                                                                       |

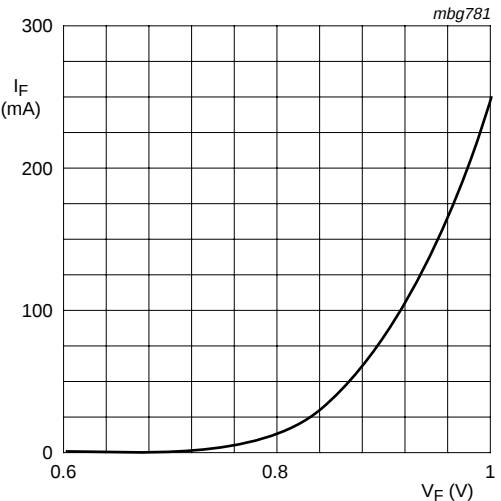
[1]  $f = 1\text{ MHz}$ ;  $V_R = 0\text{ V}$

[2]  $t_p = 100\text{ }\mu\text{s}$ ; square wave;  $T_j = 25\text{ }^{\circ}\text{C}$  prior to surge



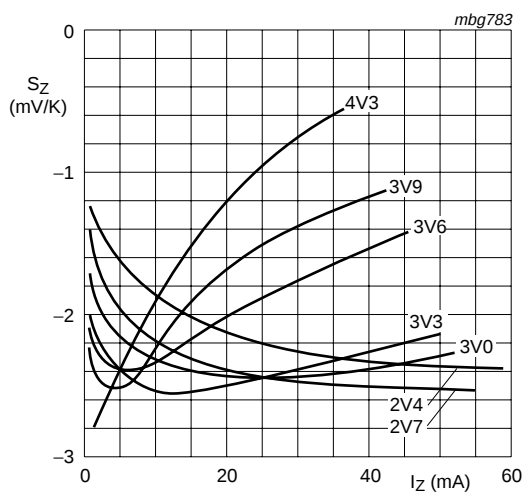
- (1)  $T_j = 25\text{ }^{\circ}\text{C}$  (prior to surge)
- (2)  $T_j = 150\text{ }^{\circ}\text{C}$  (prior to surge)

Fig 1. Per diode: Non-repetitive peak reverse power dissipation as a function of pulse duration; maximum values



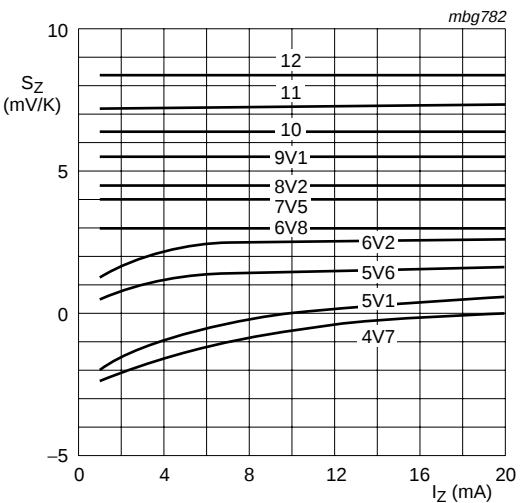
$T_j = 25\text{ }^{\circ}\text{C}$

Fig 2. Per diode: Forward current as a function of forward voltage; typical values



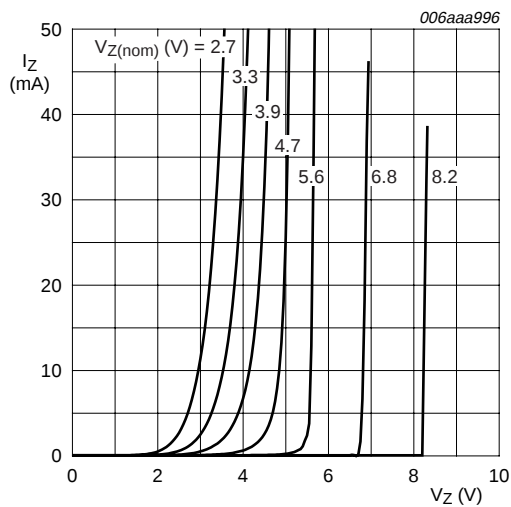
$T_j = 25\text{ }^{\circ}\text{C}$  to  $150\text{ }^{\circ}\text{C}$   
BZB84-B/C2V4 to BZB84-B/C4V3

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



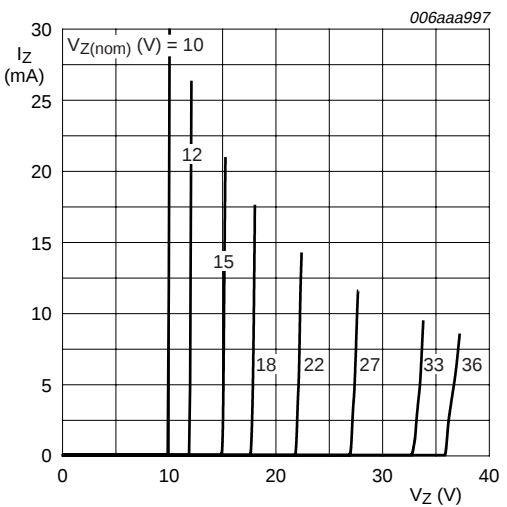
$T_j = 25\text{ }^{\circ}\text{C}$  to  $150\text{ }^{\circ}\text{C}$   
BZB84-B/C4V7 to BZB84-B/C12

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

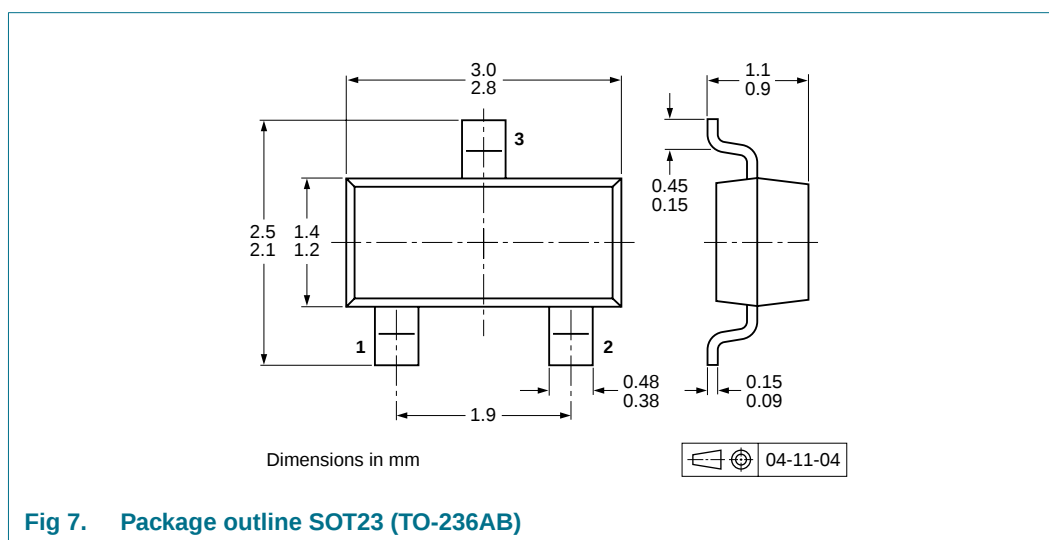
Fig 6. Per diode: Working current as a function of working voltage; typical values

## 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.

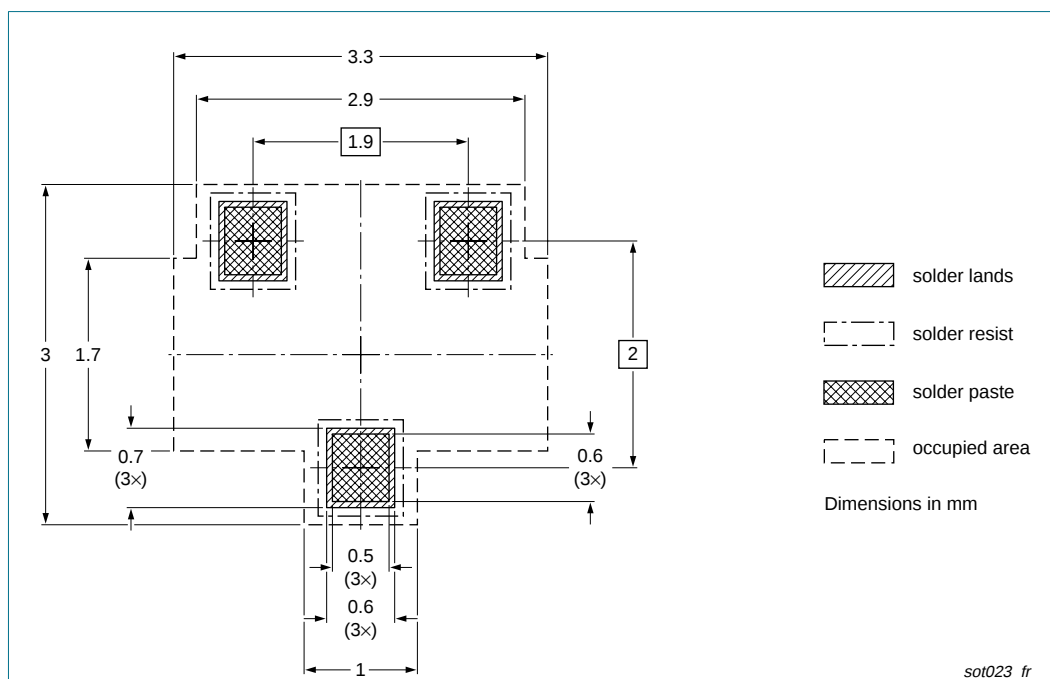
## 9. Package outline



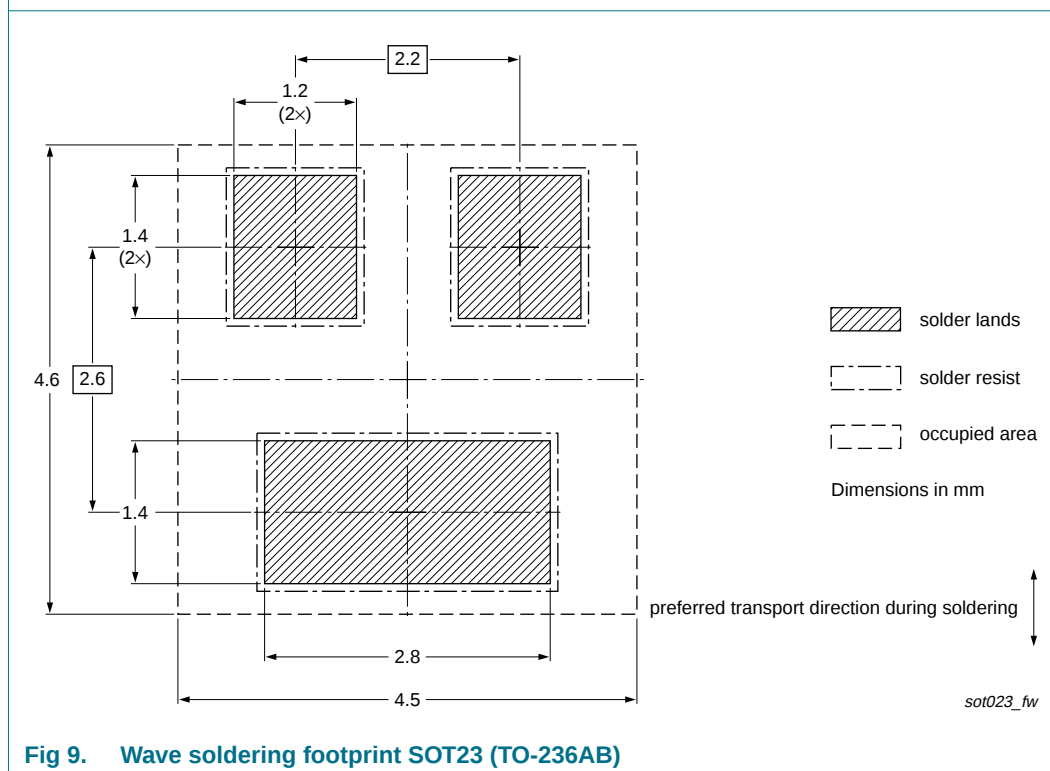
## 10. Packing information

Please refer to packing information on [www.nexperia.com](http://www.nexperia.com).

## 11. Soldering



**Fig 8. Reflow soldering footprint SOT23 (TO-236AB)**



**Fig 9. Wave soldering footprint SOT23 (TO-236AB)**

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.nexperia.com>.

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