



# BZX384 series

## Voltage regulator diodes

Rev. 3 — 11 October 2016

Product data sheet

## 1. Product profile

### 1.1 General description

Low-power voltage regulator diodes in a small SOD323 (SC-76) Surface-Mounted Device (SMD) plastic package.

The diodes are available in the normalized E24  $\pm 2\%$  (BZX384-B) and approximately  $\pm 5\%$  (BZX384-C) tolerance range. The series includes 37 breakdown voltages with nominal working voltages from 2.4 V to 75 V.

### 1.2 Features and benefits

- Total power dissipation:  $\leq 300$  mW
- Two tolerance series:  $\pm 2\%$  and approximately  $\pm 5\%$
- AEC-Q101 qualified
- Working voltage range: nominal 2.4 V to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation:  $\leq 40$  W

### 1.3 Applications

- General regulation functions

### 1.4 Quick reference data

Table 1. Quick reference data

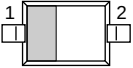
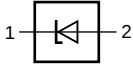
| Symbol    | Parameter               | Conditions                               | Min | Typ | Max | Unit |
|-----------|-------------------------|------------------------------------------|-----|-----|-----|------|
| $V_F$     | forward voltage         | $I_F = 10$ mA <a href="#">[1]</a>        | -   | -   | 0.9 | V    |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25$ °C <a href="#">[2]</a> | -   | -   | 300 | mW   |

[1] Pulse test:  $t_p \leq 100$   $\mu$ s;  $\delta \leq 0.02$

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

## 2. Pinning information

Table 2. Pinning

| Pin | Symbol | Description            | Simplified outline                                                                  | Graphic symbol                                                                      |
|-----|--------|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1   | K      | cathode <sup>[1]</sup> |  |  |
| 2   | A      | anode                  |                                                                                     |                                                                                     |

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 3. Ordering information

| Type number                  | Package |                                          |         |
|------------------------------|---------|------------------------------------------|---------|
|                              | Name    | Description                              | Version |
| BZX384 series <sup>[1]</sup> | SC-76   | plastic surface-mounted package; 2 leads | SOD323  |

[1] The series includes 37 breakdown voltages with nominal working voltages from 2.4 V to 75 V and  $\pm 2\%$  and  $\pm 5\%$  tolerances.

## 4. Marking

Table 4. Marking codes

| Type number | Marking code | Type number | Marking code | Type number | Marking code | Type number | Marking code |
|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|
| BZX384-B2V4 | K1           | BZX384-B15  | M2           | BZX384-C2V4 | T3           | BZX384-C15  | DD           |
| BZX384-B2V7 | K2           | BZX384-B16  | M3           | BZX384-C2V7 | T4           | BZX384-C16  | DE           |
| BZX384-B3V0 | K3           | BZX384-B18  | M4           | BZX384-C3V0 | T5           | BZX384-C18  | DF           |
| BZX384-B3V3 | K4           | BZX384-B20  | M5           | BZX384-C3V3 | T6           | BZX384-C20  | DG           |
| BZX384-B3V6 | K5           | BZX384-B22  | M6           | BZX384-C3V6 | T7           | BZX384-C22  | DH           |
| BZX384-B3V9 | K6           | BZX384-B24  | M7           | BZX384-C3V9 | T8           | BZX384-C24  | DJ           |
| BZX384-B4V3 | K7           | BZX384-B27  | M8           | BZX384-C4V3 | T9           | BZX384-C27  | DK           |
| BZX384-B4V7 | K8           | BZX384-B30  | M9           | BZX384-C4V7 | T0           | BZX384-C30  | DL           |
| BZX384-B5V1 | K9           | BZX384-B33  | N0           | BZX384-C5V1 | D5           | BZX384-C33  | DM           |
| BZX384-B5V6 | L1           | BZX384-B36  | N1           | BZX384-C5V6 | D6           | BZX384-C36  | DN           |
| BZX384-B6V2 | L2           | BZX384-B39  | N2           | BZX384-C6V2 | T1           | BZX384-C39  | DP           |
| BZX384-B6V8 | L3           | BZX384-B43  | N3           | BZX384-C6V8 | D7           | BZX384-C43  | DR           |
| BZX384-B7V5 | L4           | BZX384-B47  | N4           | BZX384-C7V5 | D8           | BZX384-C47  | DS           |
| BZX384-B8V2 | L5           | BZX384-B51  | N5           | BZX384-C8V2 | D9           | BZX384-C51  | DT           |
| BZX384-B9V1 | L6           | BZX384-B56  | N6           | BZX384-C9V1 | D0           | BZX384-C56  | DU           |
| BZX384-B10  | L7           | BZX384-B62  | N7           | BZX384-C10  | T2           | BZX384-C62  | DV           |
| BZX384-B11  | L8           | BZX384-B68  | N8           | BZX384-C11  | DA           | BZX384-C68  | DW           |
| BZX384-B12  | L9           | BZX384-B75  | N9           | BZX384-C12  | DB           | BZX384-C75  | DX           |
| BZX384-B13  | M1           | -           | -            | BZX384-C13  | DC           | -           | -            |

## 5. Limiting values

**Table 5. Limiting values**

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

| Symbol    | Parameter                                     | Conditions                      | Min | Max                                               | Unit |
|-----------|-----------------------------------------------|---------------------------------|-----|---------------------------------------------------|------|
| $I_F$     | forward current                               |                                 | -   | 250                                               | mA   |
| $I_{ZSM}$ | non-repetitive peak reverse current           | [1]                             | -   | see <a href="#">Table 8</a> and <a href="#">9</a> |      |
| $P_{ZSM}$ | non-repetitive peak reverse power dissipation | [1]                             | -   | 40                                                | W    |
| $P_{tot}$ | total power dissipation                       | $T_{amb} \leq 25\text{ °C}$ [2] | -   | 300                                               | mW   |
| $T_j$     | junction temperature                          |                                 | -65 | +150                                              | °C   |
| $T_{amb}$ | ambient temperature                           |                                 | -65 | +150                                              | °C   |
| $T_{stg}$ | storage temperature                           |                                 | -65 | +150                                              | °C   |

[1]  $t_p = 100\text{ }\mu\text{s}$ ; square wave;  $T_j = 25\text{ °C}$  before surge

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

## 6. Thermal characteristics

**Table 6. Thermal characteristics**

| Symbol         | Parameter                                        | Conditions      | Min | Typ | Max | Unit |
|----------------|--------------------------------------------------|-----------------|-----|-----|-----|------|
| $R_{th(j-a)}$  | thermal resistance from junction to ambient      | in free air [1] | -   | -   | 415 | K/W  |
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point | [2]             | -   | -   | 110 | K/W  |

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

[2] Soldering point of cathode tab.

## 7. Characteristics

**Table 7. Characteristics**

$T_j = 25\text{ °C}$  unless otherwise specified.

| Symbol | Parameter       | Conditions                | Min | Typ | Max | Unit |
|--------|-----------------|---------------------------|-----|-----|-----|------|
| $V_F$  | forward voltage | $I_F = 10\text{ mA}$ [1]  | -   | -   | 0.9 | V    |
|        |                 | $I_F = 100\text{ mA}$ [1] | -   | -   | 1.1 | V    |

[1] Pulse test:  $t_p \leq 100\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$

**Table 8. Characteristics per type; BZX384-B2V4 to BZX384-C24** $T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| BZX384<br>-xxx | Sel | Working<br>voltage<br>V <sub>Z</sub> (V) |      | Differential resistance<br>r <sub>dif</sub> (Ω) |     |                       |     | Reverse<br>current<br>I <sub>R</sub> (μA) |                    | Temperature<br>coefficient<br>S <sub>Z</sub> (mV/K) |      |      | Diode<br>capacitance<br>C <sub>d</sub> (pF) <sup>[1]</sup> | Non-repetitive<br>peak reverse<br>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  | Typ                                             | Max | Typ                   | Max | Max                                       | V <sub>R</sub> (V) | Min                                                 | Typ  | Max  | Max                                                        | Max                                                                              |
| 2V4            | B   | 2.35                                     | 2.45 | 275                                             | 600 | 70                    | 100 | 50                                        | 1                  | −3.5                                                | −1.6 | 0    | 450                                                        | 6.0                                                                              |
|                | C   | 2.2                                      | 2.6  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 2V7            | B   | 2.65                                     | 2.75 | 300                                             | 600 | 75                    | 100 | 20                                        | 1                  | −3.5                                                | −2.0 | 0    | 450                                                        | 6.0                                                                              |
|                | C   | 2.5                                      | 2.9  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 3V0            | B   | 2.94                                     | 3.06 | 325                                             | 600 | 80                    | 95  | 10                                        | 1                  | −3.5                                                | −2.1 | 0    | 450                                                        | 6.0                                                                              |
|                | C   | 2.8                                      | 3.2  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 3V3            | B   | 3.23                                     | 3.37 | 350                                             | 600 | 85                    | 95  | 5                                         | 1                  | −3.5                                                | −2.4 | 0    | 450                                                        | 6.0                                                                              |
|                | C   | 3.1                                      | 3.5  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 3V6            | B   | 3.53                                     | 3.67 | 375                                             | 600 | 85                    | 90  | 5                                         | 1                  | −3.5                                                | −2.4 | 0    | 450                                                        | 6.0                                                                              |
|                | C   | 3.4                                      | 3.8  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 3V9            | B   | 3.82                                     | 3.98 | 400                                             | 600 | 85                    | 90  | 3                                         | 1                  | −3.5                                                | −2.5 | 0    | 450                                                        | 6.0                                                                              |
|                | C   | 3.7                                      | 4.1  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 4V3            | B   | 4.21                                     | 4.39 | 410                                             | 600 | 80                    | 90  | 3                                         | 1                  | −3.5                                                | −2.5 | 0    | 450                                                        | 6.0                                                                              |
|                | C   | 4.0                                      | 4.6  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 4V7            | B   | 4.61                                     | 4.79 | 425                                             | 500 | 50                    | 80  | 3                                         | 2                  | −3.5                                                | −1.4 | 0.2  | 300                                                        | 6.0                                                                              |
|                | C   | 4.4                                      | 5.0  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 5V1            | B   | 5.0                                      | 5.2  | 400                                             | 480 | 40                    | 60  | 2                                         | 2                  | −2.7                                                | −0.8 | 1.2  | 300                                                        | 6.0                                                                              |
|                | C   | 4.8                                      | 5.4  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 5V6            | B   | 5.49                                     | 5.71 | 80                                              | 400 | 15                    | 40  | 1                                         | 2                  | −2.0                                                | 1.2  | 2.5  | 300                                                        | 6.0                                                                              |
|                | C   | 5.2                                      | 6.0  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 6V2            | B   | 6.08                                     | 6.32 | 40                                              | 150 | 6                     | 10  | 3                                         | 4                  | 0.4                                                 | 2.3  | 3.7  | 200                                                        | 6.0                                                                              |
|                | C   | 5.8                                      | 6.6  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 6V8            | B   | 6.66                                     | 6.94 | 30                                              | 80  | 6                     | 15  | 2                                         | 4                  | 1.2                                                 | 3.0  | 4.5  | 200                                                        | 6.0                                                                              |
|                | C   | 6.4                                      | 7.2  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 7V5            | B   | 7.35                                     | 7.65 | 30                                              | 80  | 6                     | 15  | 1                                         | 5                  | 2.5                                                 | 4.0  | 5.3  | 150                                                        | 4.0                                                                              |
|                | C   | 7.0                                      | 7.9  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 8V2            | B   | 8.04                                     | 8.36 | 40                                              | 80  | 6                     | 15  | 0.7                                       | 5                  | 3.2                                                 | 4.6  | 6.2  | 150                                                        | 4.0                                                                              |
|                | C   | 7.7                                      | 8.7  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 9V1            | B   | 8.92                                     | 9.28 | 40                                              | 100 | 6                     | 15  | 0.5                                       | 6                  | 3.8                                                 | 5.5  | 7.0  | 150                                                        | 3.0                                                                              |
|                | C   | 8.5                                      | 9.6  |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 10             | B   | 9.8                                      | 10.2 | 50                                              | 150 | 8                     | 20  | 0.2                                       | 7                  | 4.5                                                 | 6.4  | 8.0  | 90                                                         | 3.0                                                                              |
|                | C   | 9.4                                      | 10.6 |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 11             | B   | 10.8                                     | 11.2 | 50                                              | 150 | 10                    | 20  | 0.1                                       | 8                  | 5.4                                                 | 7.4  | 9.0  | 85                                                         | 2.5                                                                              |
|                | C   | 10.4                                     | 11.6 |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 12             | B   | 11.8                                     | 12.2 | 50                                              | 150 | 10                    | 25  | 0.1                                       | 8                  | 6.0                                                 | 8.4  | 10.0 | 85                                                         | 2.5                                                                              |
|                | C   | 11.4                                     | 12.7 |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |

**Table 8. Characteristics per type; BZX384-B2V4 to BZX384-C24 ...continued** $T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| BZX384<br>-xxx | Sel | Working<br>voltage<br>V <sub>Z</sub> (V) |      | Differential resistance<br>r <sub>dif</sub> (Ω) |     |                       |                       | Reverse<br>current<br>I <sub>R</sub> (μA) |                    | Temperature<br>coefficient<br>S <sub>Z</sub> (mV/K) |      |      | Diode<br>capacitance<br>C <sub>d</sub> (pF) <sup>[1]</sup> | Non-repetitive<br>peak reverse<br>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  | Typ                                             | Max | Typ                   | Max                   | Max                                       | V <sub>R</sub> (V) | Min                                                 | Typ  | Max  | Max                                                        | Max                                                                              |
| 13             | B   | 12.7                                     | 13.3 | 50                                              | 170 | 10                    | 30                    | 0.1                                       | 8                  | 7.0                                                 | 9.4  | 11.0 | 80                                                         | 2.5                                                                              |
|                | C   | 12.4                                     | 14.1 |                                                 |     |                       |                       |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 15             | B   | 14.7                                     | 15.3 | 50                                              | 200 | 10                    | 30                    | 0.05                                      | 10.5               | 9.2                                                 | 11.4 | 13.0 | 75                                                         | 2.0                                                                              |
|                | C   | 13.8                                     | 15.6 |                                                 |     |                       |                       |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 16             | B   | 15.7                                     | 16.3 | 50                                              | 200 | 10                    | 40                    | 0.05                                      | 11.2               | 10.4                                                | 12.4 | 14.0 | 75                                                         | 1.5                                                                              |
|                | C   | 15.3                                     | 17.1 |                                                 |     |                       |                       |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 18             | B   | 17.6                                     | 18.4 | 50                                              | 225 | 10                    | 45                    | 0.05                                      | 12.6               | 12.4                                                | 14.4 | 16.0 | 70                                                         | 1.5                                                                              |
|                | C   | 16.8                                     | 19.1 |                                                 |     |                       |                       |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 20             | B   | 19.6                                     | 20.4 | 60                                              | 225 | 15                    | 55                    | 0.05                                      | 14                 | 14.4                                                | 16.4 | 18.0 | 60                                                         | 1.5                                                                              |
|                | C   | 18.8                                     | 21.2 |                                                 |     |                       |                       |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 22             | B   | 21.6                                     | 22.4 | 60                                              | 250 | 20                    | 55                    | 0.05                                      | 15.4               | 16.4                                                | 18.4 | 20.0 | 60                                                         | 1.25                                                                             |
|                | C   | 20.8                                     | 23.3 |                                                 |     |                       |                       |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 24             | B   | 23.5                                     | 24.5 | 60                                              | 250 | 25                    | 70                    | 0.05                                      | 16.8               | 18.4                                                | 20.4 | 22.0 | 55                                                         | 1.25                                                                             |
|                | C   | 22.8                                     | 25.6 |                                                 |     |                       |                       |                                           |                    |                                                     |      |      |                                                            |                                                                                  |

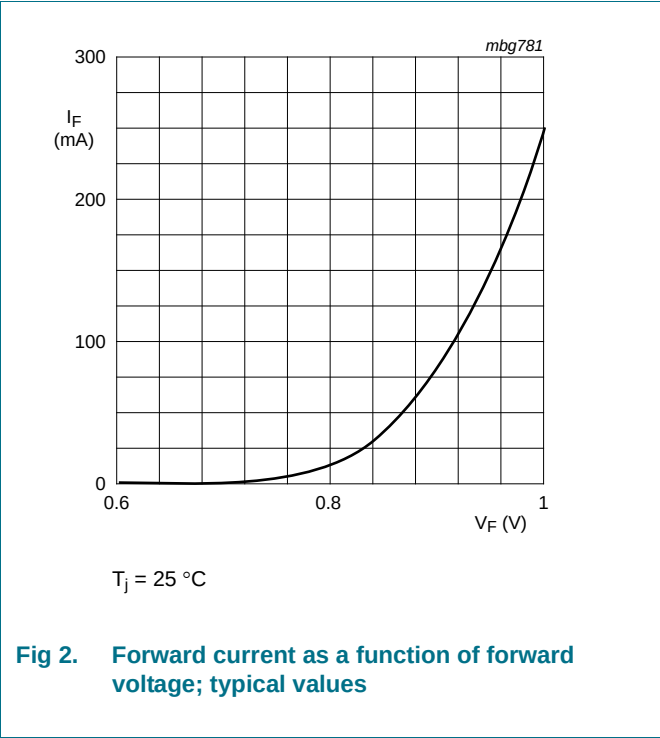
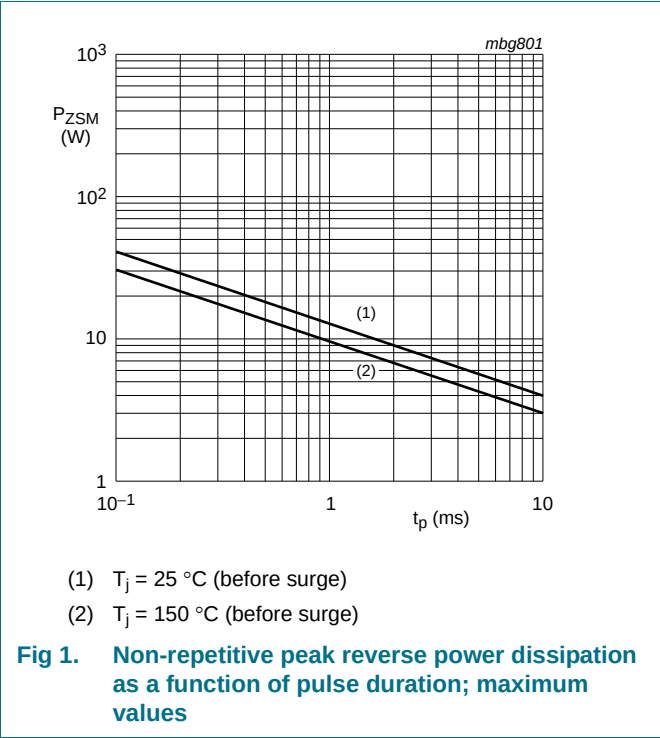
[1]  $f = 1\text{ MHz}$ ;  $V_R = 0\text{ V}$ [2]  $t_p = 100\text{ }\mu\text{s}$ ; square wave;  $T_j = 25\text{ }^{\circ}\text{C}$  before surge**Table 9. Characteristics per type; BZX384-B27 to BZX384-C75** $T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

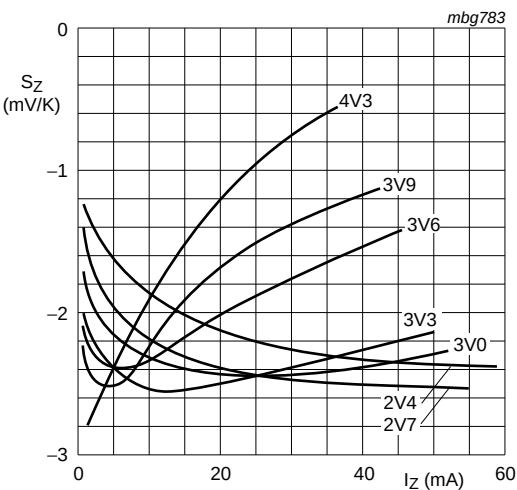
| BZX384<br>-xxx | Sel | Working<br>voltage<br>V <sub>Z</sub> (V) |      | Differential resistance<br>r <sub>dif</sub> (Ω) |     |                       |     | Reverse<br>current<br>I <sub>R</sub> (μA) |                    | Temperature<br>coefficient<br>S <sub>Z</sub> (mV/K) |      |      | Diode<br>capacitance<br>C <sub>d</sub> (pF) <sup>[1]</sup> | Non-repetitive<br>peak reverse<br>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  | Typ                                             | Max | Typ                   | Max | Max                                       | V <sub>R</sub> (V) | Min                                                 | Typ  | Max  | Max                                                        | Max                                                                              |
| 27             | B   | 26.5                                     | 27.5 | 65                                              | 300 | 25                    | 80  | 0.05                                      | 18.9               | 21.4                                                | 23.4 | 25.3 | 50                                                         | 1.0                                                                              |
|                | C   | 25.1                                     | 28.9 |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 30             | B   | 29.4                                     | 30.6 | 70                                              | 300 | 30                    | 80  | 0.05                                      | 21                 | 24.4                                                | 26.6 | 29.4 | 50                                                         | 1.0                                                                              |
|                | C   | 28.0                                     | 32.0 |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 33             | B   | 32.3                                     | 33.7 | 75                                              | 325 | 35                    | 80  | 0.05                                      | 23.1               | 27.4                                                | 29.7 | 33.4 | 45                                                         | 0.9                                                                              |
|                | C   | 31.0                                     | 35.0 |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 36             | B   | 35.3                                     | 36.7 | 80                                              | 350 | 35                    | 90  | 0.05                                      | 25.2               | 30.4                                                | 33.0 | 37.4 | 45                                                         | 0.8                                                                              |
|                | C   | 34.0                                     | 38.0 |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 39             | B   | 38.2                                     | 39.8 | 80                                              | 350 | 40                    | 130 | 0.05                                      | 27.3               | 33.4                                                | 36.4 | 41.2 | 45                                                         | 0.7                                                                              |
|                | C   | 37.0                                     | 41.0 |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 43             | B   | 42.1                                     | 43.9 | 85                                              | 375 | 45                    | 150 | 0.05                                      | 30.1               | 37.6                                                | 41.2 | 46.6 | 40                                                         | 0.6                                                                              |
|                | C   | 40.0                                     | 46.0 |                                                 |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |

Table 9. Characteristics per type; BZX384-B27 to BZX384-C75 ...continued  
T<sub>j</sub> = 25 °C unless otherwise specified.

| BZX384<br>-xxx | Sel | Working<br>voltage<br>V <sub>Z</sub> (V) |      | Differential resistance<br>r <sub>diff</sub> (Ω) |     |                       |     | Reverse<br>current<br>I <sub>R</sub> (μA) |                    | Temperature<br>coefficient<br>S <sub>Z</sub> (mV/K) |      |      | Diode<br>capacitance<br>C <sub>d</sub> (pF) <sup>[1]</sup> | Non-repetitive<br>peak reverse<br>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 |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
|                |     | Min                                      | Max  | Typ                                              | Max | Typ                   | Max | Max                                       | V <sub>R</sub> (V) | Min                                                 | Typ  | Max  | Max                                                        | Max                                                                              |
| 47             | B   | 46.1                                     | 47.9 | 85                                               | 375 | 50                    | 170 | 0.05                                      | 32.9               | 42.0                                                | 46.1 | 51.8 | 40                                                         | 0.5                                                                              |
|                | C   | 44.0                                     | 50.0 |                                                  |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 51             | B   | 50.0                                     | 52.0 | 90                                               | 400 | 60                    | 180 | 0.05                                      | 35.7               | 46.6                                                | 51.0 | 57.2 | 40                                                         | 0.4                                                                              |
|                | C   | 48.0                                     | 54.0 |                                                  |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 56             | B   | 54.9                                     | 57.1 | 100                                              | 425 | 70                    | 200 | 0.05                                      | 39.2               | 52.2                                                | 57.0 | 63.8 | 40                                                         | 0.3                                                                              |
|                | C   | 52.0                                     | 60.0 |                                                  |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 62             | B   | 60.8                                     | 63.2 | 120                                              | 450 | 80                    | 215 | 0.05                                      | 43.4               | 58.8                                                | 64.4 | 71.6 | 35                                                         | 0.3                                                                              |
|                | C   | 58.0                                     | 66.0 |                                                  |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 68             | B   | 66.6                                     | 69.4 | 150                                              | 475 | 90                    | 240 | 0.05                                      | 47.6               | 65.6                                                | 71.7 | 79.8 | 35                                                         | 0.25                                                                             |
|                | C   | 64.0                                     | 72.0 |                                                  |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |
| 75             | B   | 73.5                                     | 76.5 | 170                                              | 500 | 95                    | 255 | 0.05                                      | 52.5               | 73.4                                                | 80.2 | 88.6 | 35                                                         | 0.20                                                                             |
|                | C   | 70.0                                     | 79.0 |                                                  |     |                       |     |                                           |                    |                                                     |      |      |                                                            |                                                                                  |

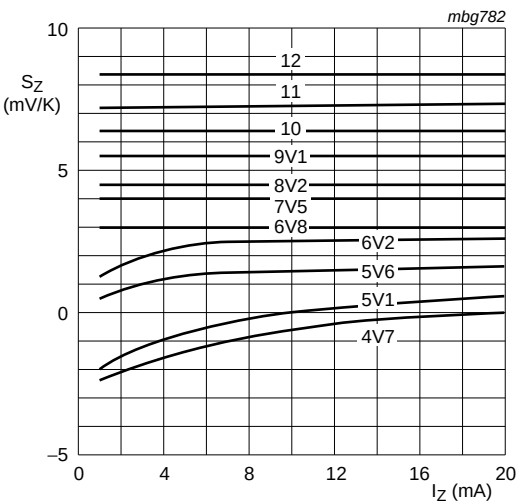
- [1] f = 1 MHz; V<sub>R</sub> = 0 V  
[2] t<sub>p</sub> = 100 μs; square wave; T<sub>j</sub> = 25 °C before surge





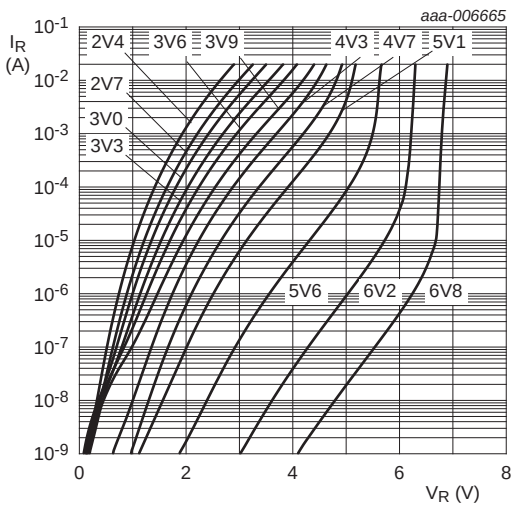
BZX384-B/C2V4 to BZX384-B/C4V3  
 $T_j = 25\text{ }^{\circ}\text{C}$  to  $150\text{ }^{\circ}\text{C}$

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



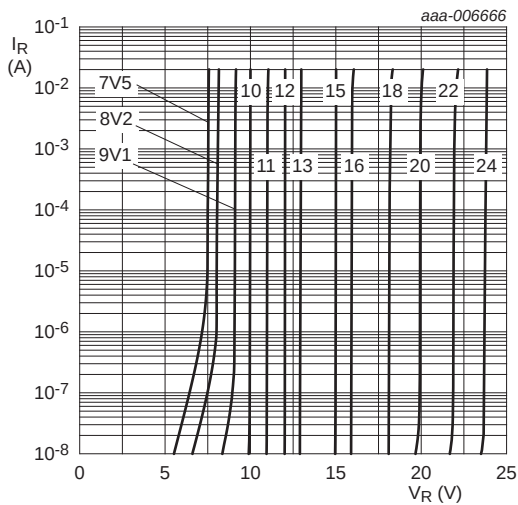
BZX384-B/C4V7 to BZX384-B/C12  
 $T_j = 25\text{ }^{\circ}\text{C}$  to  $150\text{ }^{\circ}\text{C}$

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



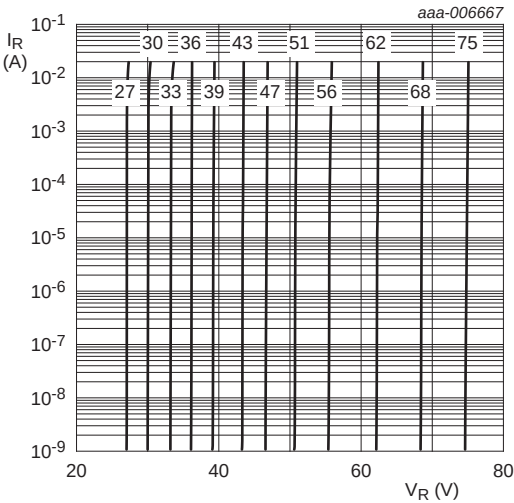
BZX384-B/C2V4 to BZX384-B/C6V8  
 $T_{amb} = 25\text{ }^{\circ}\text{C}$

Fig 5. Reverse current as a function of reverse voltage; typical values



BZX384-B/C7V5 to BZX384-B/C24  
 $T_{amb} = 25\text{ }^{\circ}\text{C}$

Fig 6. Reverse current as a function of reverse voltage; typical values



BZX384-B/C27 to BZX384-B/C75  
 $T_{amb} = 25\text{ }^{\circ}\text{C}$

Fig 7. Reverse current as a function of reverse 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

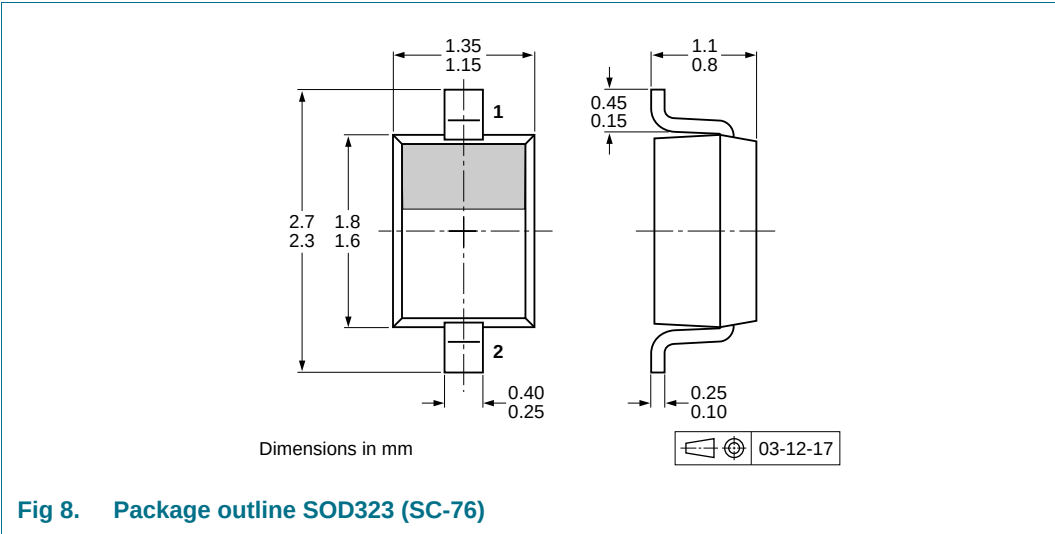
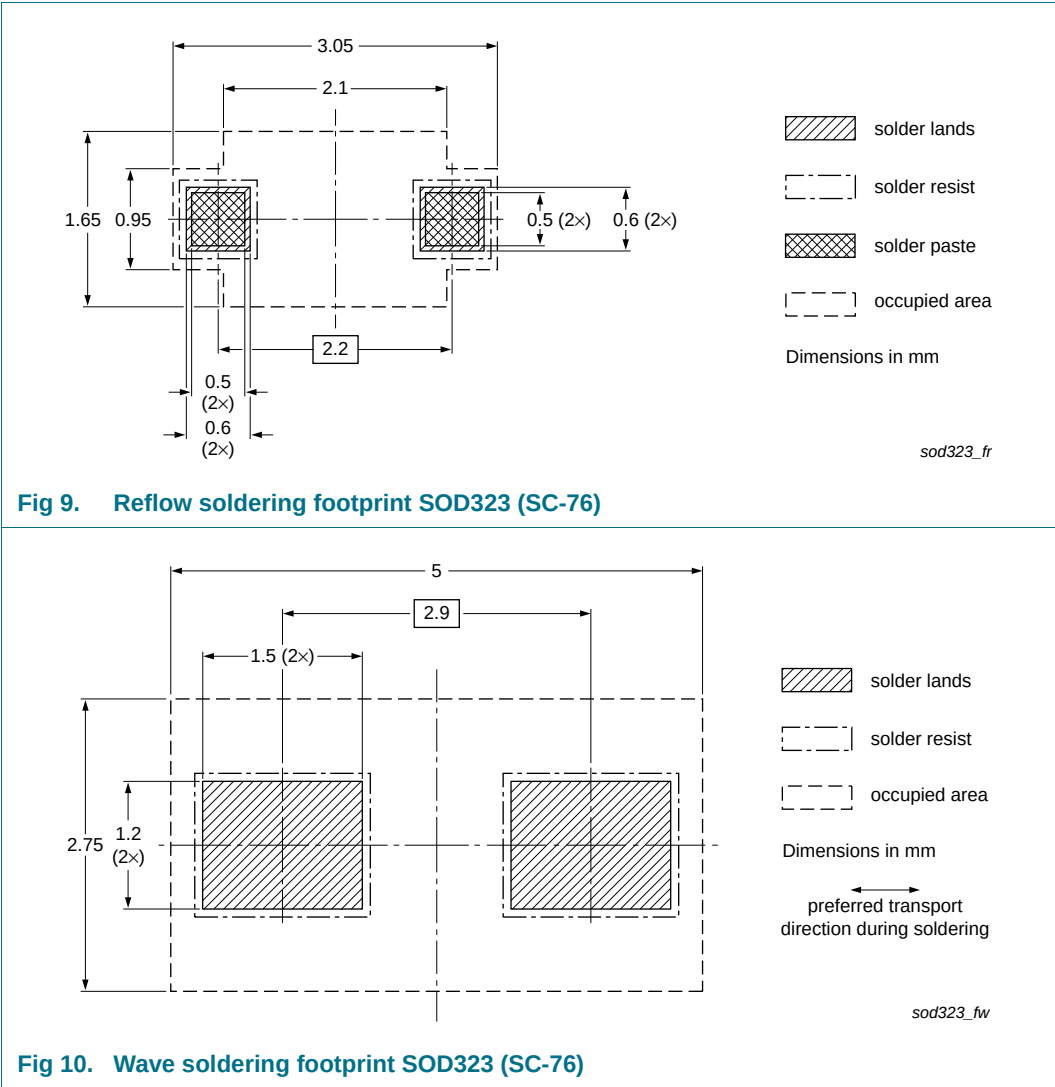


Fig 8. Package outline SOD323 (SC-76)



10. Soldering



## 11. Revision history

Table 10. Revision history

| Document ID    | Release date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Data sheet status     | Change notice | Supersedes     |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------|----------------|
| BZX384_SER v.3 | 20161011                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Product data sheet    | -             | BZX384_SER v.2 |
| Modifications: | <ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• <a href="#">Section 1 “Product profile”</a>: enhanced.</li><li>• <a href="#">Table 5</a>: <math>T_{amb}</math> added.</li><li>• <a href="#">Figure 5</a> to <a href="#">Figure 7</a>: added.</li><li>• <a href="#">Section 8 “Test information”</a>: added.</li><li>• <a href="#">Figure 9</a>: replaced by minimized package outline.</li><li>• <a href="#">Section 10 “Soldering”</a>: added.</li><li>• <a href="#">Section 12 “Legal information”</a>: updated.</li></ul> |                       |               |                |
| BZX384_SER v.2 | 20040322                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Product data sheet    | -             | BZX384_SER v.1 |
| BZX384_SER v.1 | 20030401                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Product specification | -             | -              |

## 12. Legal information

### 12.1 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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## 13. Contact information

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

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

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