



BZX884S-Q series

Voltage regulator diodes

Rev. 2 — 5 May 2021

Product data sheet

1. General description

General-purpose Zener diodes in an ultra small SOD882BD (DFN1006BD-2) leadless Surface Mounted Device (SMD) plastic package with side-wettable flanks.

2. Features and benefits

- Leadless ultra small plastic package with side-wettable flanks suitable for surface-mounted design
- Two tolerance series: $\pm 2\%$ and approximately $\pm 5\%$
- Wide working voltage range: nominal 2.4 V to 75 V (E24 range)
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- General regulation functions

4. Quick reference data

Table 1. Quick reference data

$T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------|-------------------------|--------------------------|-----|-----|-----|------|
| V_F | forward voltage | $I_F = 10\text{ mA}$ [1] | - | - | 0.9 | V |
| P_{tot} | total power dissipation | [2] | - | - | 365 | mW |

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

[2] Device mounted on a FR4 PCB, single-sided 70 μm copper, tin-plated and standard footprint.

5. Pinning information

Table 2. Pinning

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------|--------------------------|----------------|
| 1 | K | cathode[1] | Transparent top view | 006aaa152 |
| 2 | A | anode | | |

[1] The marking bar indicates the cathode.

6. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|----------------------|-------------|--|----------|
| | Name | Description | Version |
| BZX884S-Q series [1] | DFN1006BD-2 | Leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.47 mm body | SOD882BD |

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

7. Marking

Table 4. Marking Codes

| Type number | Mark. Code | Type number | Mark. Code | Type number | Mark. Code | Type number | Mark. Code |
|----------------|------------|---------------|------------|----------------|------------|---------------|------------|
| BZX884S-B2V4-Q | 2A | BZX884S-B15-Q | 2U | BZX884S-C2V4-Q | 4K | BZX884S-C15-Q | 4C |
| BZX884S-B2V7-Q | 2B | BZX884S-B16-Q | 2V | BZX884S-C2V7-Q | 4L | BZX884S-C16-Q | 4D |
| BZX884S-B3V0-Q | 2C | BZX884S-B18-Q | 2W | BZX884S-C3V0-Q | 4R | BZX884S-C18-Q | 4E |
| BZX884S-B3V3-Q | 2D | BZX884S-B20-Q | 2X | BZX884S-C3V3-Q | 4S | BZX884S-C20-Q | 4F |
| BZX884S-B3V6-Q | 2E | BZX884S-B22-Q | 2Y | BZX884S-C3V6-Q | 4T | BZX884S-C22-Q | 4G |
| BZX884S-B3V9-Q | 2F | BZX884S-B24-Q | 2Z | BZX884S-C3V9-Q | 4U | BZX884S-C24-Q | 4H |
| BZX884S-B4V3-Q | 2G | BZX884S-B27-Q | 3A | BZX884S-C4V3-Q | 4U | BZX884S-C27-Q | 4J |
| BZX884S-B4V7-Q | 2H | BZX884S-B30-Q | 3B | BZX884S-C4V7-Q | 4Y | BZX884S-C30-Q | 4M |
| BZX884S-B5V1-Q | 2J | BZX884S-B33-Q | 3C | BZX884S-C5V1-Q | 5B | BZX884S-C33-Q | 4N |
| BZX884S-B5V6-Q | 2K | BZX884S-B36-Q | 3D | BZX884S-C5V6-Q | 5C | BZX884S-C36-Q | 4P |
| BZX884S-B6V2-Q | 2L | BZX884S-B39-Q | 3E | BZX884S-C6V2-Q | 5F | BZX884S-C39-Q | 4Q |
| BZX884S-B6V8-Q | N3 | BZX884S-B43-Q | 3F | BZX884S-C6V8-Q | 5G | BZX884S-C43-Q | 4V |
| BZX884S-B7V5-Q | 2M | BZX884S-B47-Q | 3G | BZX884S-C7V5-Q | 5J | BZX884S-C47-Q | 4W |
| BZX884S-B8V2-Q | 2N | BZX884S-B51-Q | 3H | BZX884S-C8V2-Q | 5K | BZX884S-C51-Q | 4Z |
| BZX884S-B9V1-Q | 2P | BZX884S-B56-Q | 3J | BZX884S-C9V1-Q | 5L | BZX884S-C56-Q | 5A |
| BZX884S-B10-Q | 2Q | BZX884S-B62-Q | 3K | BZX884S-C10-Q | 3Y | BZX884S-C62-Q | 5D |
| BZX884S-B11-Q | 2R | BZX884S-B68-Q | 3L | BZX884S-C11-Q | 3Z | BZX884S-C68-Q | 5E |
| BZX884S-B12-Q | 2S | BZX884S-B75-Q | 3M | BZX884S-C12-Q | 4A | BZX884S-C75-Q | 5H |
| BZX884S-B13-Q | 2T | - | - | BZX884S-C13-Q | 4B | - | - |

8. 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 | | | - | 200 | mA |
| P_{tot} | total power dissipation | $T_{amb} = 25\text{ °C}$ | [1] | - | 365 | mW |
| T_j | junction temperature | | | - | 150 | °C |
| T_{amb} | ambient temperature | | | -55 | +150 | °C |
| T_{stg} | storage temperature | | | -65 | +150 | °C |

[1] Device mounted on a FR4 PCB, single-sided 70 µm copper, tin-plated and standard footprint.

9. 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] | - | - | 340 | K/W |

[1] Device mounted on a FR4 PCB, single-sided 70 µm copper, tin-plated and standard footprint.

10. 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 |

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

Table 8. Characteristics per type; BZX884S-B2V4-Q to BZX884S-C24-Q

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

| BZX884S | Sel | Working voltage V_Z (V) | | Differential resistance r_{dif} (Ω) | | | | Reverse current I_R (μ A) | | Temperature coefficient S_Z (mV/K) | | Diode capacitance C_d (pF) [1] |
|---------|-----|---------------------------|-------|--|-----|---------------------|-----|----------------------------------|-----------|--------------------------------------|------|----------------------------------|
| | | $I_Z = 5\text{ mA}$ | | $I_Z = 1\text{ mA}$ | | $I_Z = 5\text{ mA}$ | | Max | V_R (V) | $I_Z = 5\text{ mA}$ | | |
| | | Min | Max | Typ | Max | Typ | Max | | | Min | Max | |
| 2V4-Q | B | 2.35 | 2.45 | 275 | 600 | 70 | 100 | 50 | 1.0 | -3.5 | 0.0 | 260 |
| | C | 2.20 | 2.60 | | | | | | | | | |
| 2V7-Q | B | 2.65 | 2.75 | 300 | 600 | 75 | 100 | 20 | 1.0 | -3.5 | 0.0 | 260 |
| | C | 2.50 | 2.90 | | | | | | | | | |
| 3V0-Q | B | 2.94 | 3.06 | 325 | 600 | 80 | 95 | 10 | 1.0 | -3.5 | 0.0 | 260 |
| | C | 2.80 | 3.20 | | | | | | | | | |
| 3V3-Q | B | 3.23 | 3.37 | 350 | 600 | 85 | 95 | 5 | 1.0 | -3.5 | 0.0 | 260 |
| | C | 3.10 | 3.50 | | | | | | | | | |
| 3V6-Q | B | 3.53 | 3.67 | 375 | 600 | 85 | 90 | 5 | 1.0 | -3.5 | 0.0 | 260 |
| | C | 3.40 | 3.80 | | | | | | | | | |
| 3V9-Q | B | 3.82 | 3.98 | 400 | 600 | 85 | 90 | 3 | 1.0 | -3.5 | 0.0 | 260 |
| | C | 3.70 | 4.10 | | | | | | | | | |
| 4V3-Q | B | 4.21 | 4.39 | 410 | 600 | 80 | 90 | 3 | 1.0 | -3.5 | 0.0 | 260 |
| | C | 4.00 | 4.60 | | | | | | | | | |
| 4V7-Q | B | 4.61 | 4.79 | 425 | 500 | 50 | 80 | 3 | 2.0 | -3.5 | 0.2 | 170 |
| | C | 4.40 | 5.00 | | | | | | | | | |
| 5V1-Q | B | 5.00 | 5.20 | 400 | 480 | 40 | 60 | 2 | 2.0 | -2.7 | 1.2 | 170 |
| | C | 4.80 | 5.40 | | | | | | | | | |
| 5V6-Q | B | 5.49 | 5.71 | 80 | 400 | 15 | 40 | 1 | 2.0 | -2.0 | 2.5 | 170 |
| | C | 5.20 | 6.00 | | | | | | | | | |
| 6V2-Q | B | 6.08 | 6.32 | 40 | 150 | 6 | 10 | 3 | 4.0 | 0.4 | 3.7 | 120 |
| | C | 5.80 | 6.60 | | | | | | | | | |
| 6V8-Q | B | 6.66 | 6.94 | 30 | 80 | 6 | 15 | 2 | 4.0 | 1.2 | 4.5 | 120 |
| | C | 6.40 | 7.20 | | | | | | | | | |
| 7V5-Q | B | 7.35 | 7.65 | 30 | 80 | 6 | 15 | 1 | 5.0 | 2.5 | 5.3 | 150 |
| | C | 7.00 | 7.90 | | | | | | | | | |
| 8V2-Q | B | 8.04 | 8.36 | 40 | 80 | 6 | 15 | 0.7 | 5.0 | 3.2 | 6.2 | 150 |
| | C | 7.70 | 8.70 | | | | | | | | | |
| 9V1-Q | B | 8.92 | 9.28 | 40 | 100 | 6 | 15 | 0.5 | 6.0 | 3.8 | 7.0 | 150 |
| | C | 8.50 | 9.60 | | | | | | | | | |
| 10-Q | B | 9.80 | 10.20 | 50 | 150 | 8 | 20 | 0.2 | 7.0 | 4.5 | 8.0 | 90 |
| | C | 9.40 | 10.60 | | | | | | | | | |
| 11-Q | B | 10.80 | 11.20 | 50 | 150 | 10 | 20 | 0.1 | 8.0 | 5.4 | 9.0 | 85 |
| | C | 10.40 | 11.60 | | | | | | | | | |
| 12-Q | B | 11.80 | 12.20 | 50 | 150 | 10 | 25 | 0.1 | 8.0 | 6.0 | 10.0 | 85 |
| | C | 11.40 | 12.70 | | | | | | | | | |
| 13-Q | B | 12.70 | 13.30 | 50 | 170 | 10 | 30 | 0.1 | 8.0 | 7.0 | 11.0 | 80 |
| | C | 12.40 | 14.10 | | | | | | | | | |

| BZX884S | Sel | Working voltage V_Z (V) | | Differential resistance r_{dif} (Ω) | | | | Reverse current I_R (μ A) | | Temperature coefficient S_Z (mV/K) | | Diode capacitance C_d (pF) [1] |
|---------|-----|------------------------------|-------|---|-----|--------------|-----|-------------------------------------|-----------|---|------|-------------------------------------|
| | | | | $I_Z = 5$ mA | | $I_Z = 1$ mA | | | | $I_Z = 5$ mA | | |
| | | Min | Max | Typ | Max | Typ | Max | Max | V_R (V) | Min | Max | |
| 15-Q | B | 14.70 | 15.30 | 50 | 200 | 10 | 30 | 0.05 | 10.5 | 9.2 | 13.0 | 75 |
| | C | 13.80 | 15.60 | | | | | | | | | |
| 16-Q | B | 15.70 | 16.30 | 50 | 200 | 10 | 40 | 0.05 | 11.2 | 10.4 | 14.0 | 75 |
| | C | 15.30 | 17.10 | | | | | | | | | |
| 18-Q | B | 17.60 | 18.40 | 50 | 225 | 10 | 45 | 0.05 | 12.6 | 12.4 | 16.0 | 70 |
| | C | 16.80 | 19.10 | | | | | | | | | |
| 20-Q | B | 19.60 | 20.40 | 60 | 225 | 15 | 55 | 0.05 | 14.0 | 14.4 | 18.0 | 60 |
| | C | 18.80 | 21.20 | | | | | | | | | |
| 22-Q | B | 21.60 | 22.40 | 60 | 250 | 20 | 55 | 0.05 | 15.4 | 16.4 | 20.0 | 60 |
| | C | 20.80 | 23.30 | | | | | | | | | |
| 24-Q | B | 23.50 | 24.50 | 60 | 250 | 25 | 70 | 0.05 | 16.8 | 18.4 | 22.0 | 55 |
| | C | 22.80 | 25.60 | | | | | | | | | |

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

Table 9. Characteristics per type; BZX884S-B27-Q to BZX884S-C75-Q

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

| BZX884S | Sel | Working voltage V_Z (V) | | Differential resistance r_{dif} (Ω) | | | | Reverse current I_R (μA) | | Temperature coefficient S_Z (mV/K) | | Diode capacitance C_d (pF) [1] |
|---------|-----|---------------------------|-------|--|-----|---------------------|-----|---|-----------|--------------------------------------|------|----------------------------------|
| | | $I_Z = 2\text{ mA}$ | | $I_Z = 0.5\text{ mA}$ | | $I_Z = 2\text{ mA}$ | | Max | V_R (V) | $I_Z = 2\text{ mA}$ | | |
| | | Min | Max | Typ | Max | Typ | Max | | | Min | Max | |
| 27-Q | B | 26.50 | 27.50 | 65 | 300 | 25 | 80 | 0.05 | 18.9 | 21.4 | 25.3 | 50 |
| | C | 25.10 | 28.90 | | | | | | | | | |
| 30-Q | B | 29.40 | 30.60 | 70 | 300 | 30 | 80 | 0.05 | 21.0 | 24.4 | 29.4 | 50 |
| | C | 28.00 | 32.00 | | | | | | | | | |
| 33-Q | B | 32.30 | 33.70 | 75 | 325 | 35 | 80 | 0.05 | 23.1 | 27.4 | 33.4 | 45 |
| | C | 31.00 | 35.00 | | | | | | | | | |
| 36-Q | B | 35.30 | 36.70 | 80 | 350 | 35 | 90 | 0.05 | 25.2 | 30.4 | 37.4 | 45 |
| | C | 34.00 | 38.00 | | | | | | | | | |
| 39-Q | B | 38.20 | 39.80 | 80 | 350 | 40 | 130 | 0.05 | 27.3 | 33.4 | 41.2 | 45 |
| | C | 37.00 | 41.00 | | | | | | | | | |
| 43-Q | B | 42.10 | 43.90 | 85 | 375 | 45 | 150 | 0.05 | 30.1 | 37.6 | 46.6 | 40 |
| | C | 40.00 | 46.00 | | | | | | | | | |
| 47-Q | B | 46.10 | 47.90 | 85 | 375 | 50 | 170 | 0.05 | 32.9 | 42 | 51.8 | 40 |
| | C | 44.00 | 50.00 | | | | | | | | | |
| 51-Q | B | 50.00 | 52.00 | 90 | 400 | 60 | 180 | 0.05 | 35.7 | 46.6 | 57.2 | 40 |
| | C | 48.00 | 54.00 | | | | | | | | | |
| 56-Q | B | 54.90 | 57.10 | 100 | 425 | 70 | 200 | 0.05 | 39.2 | 52.2 | 63.8 | 40 |
| | C | 52.00 | 60.00 | | | | | | | | | |
| 62-Q | B | 60.80 | 63.20 | 120 | 450 | 80 | 215 | 0.05 | 43.4 | 58.8 | 71.6 | 35 |
| | C | 58.00 | 66.00 | | | | | | | | | |
| 68-Q | B | 66.60 | 69.40 | 150 | 475 | 90 | 240 | 0.05 | 47.6 | 65.6 | 79.8 | 35 |
| | C | 64.00 | 72.00 | | | | | | | | | |
| 75-Q | B | 73.50 | 76.50 | 170 | 500 | 95 | 255 | 0.05 | 52.5 | 73.4 | 88.6 | 35 |
| | C | 70.00 | 79.00 | | | | | | | | | |

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

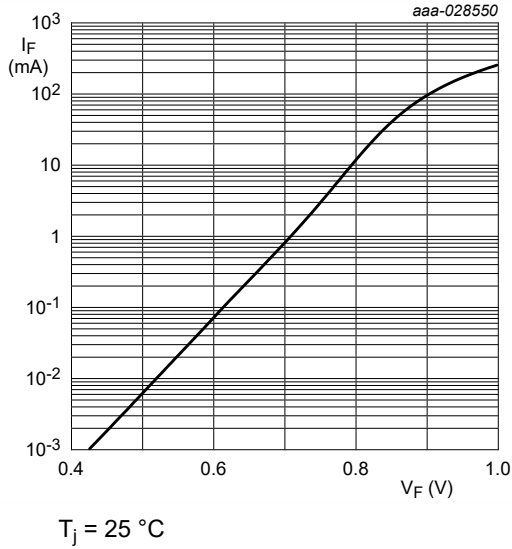


Fig. 1. Forward current as a function of forward voltage; typical values (BZX884S-B/C2V4-Q)

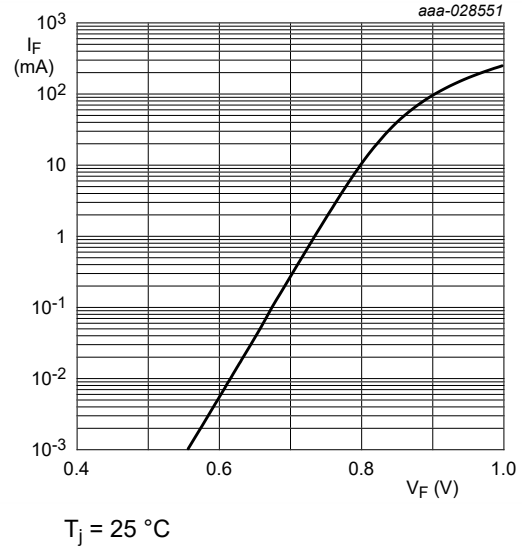


Fig. 2. Forward current as a function of forward voltage; typical values (BZX884S-B/C6V8-Q)

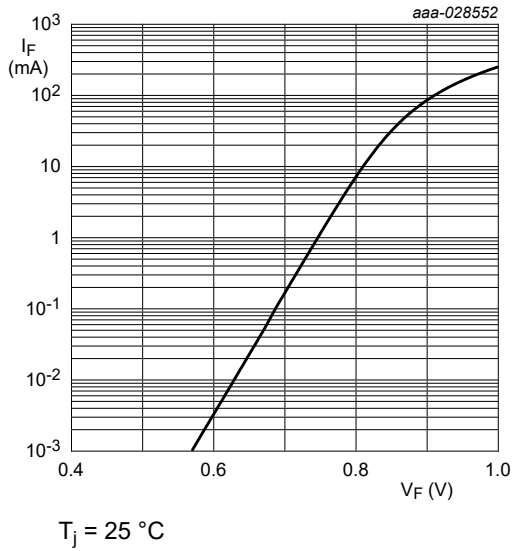


Fig. 3. Forward current as a function of forward voltage; typical values (BZX884S-B/C7V5-Q)

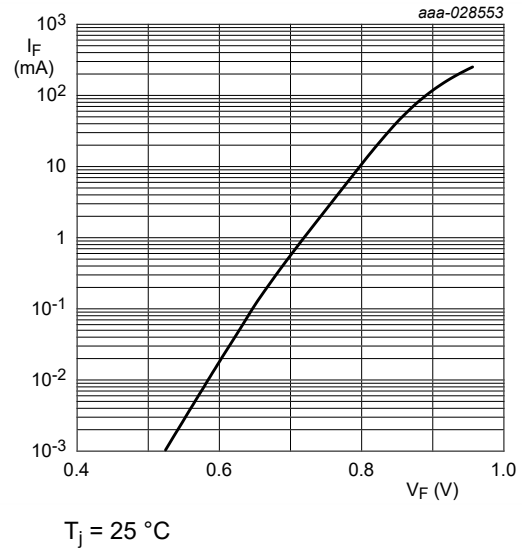


Fig. 4. Forward current as a function of forward voltage; typical values (BZX884S-B/C75-Q)

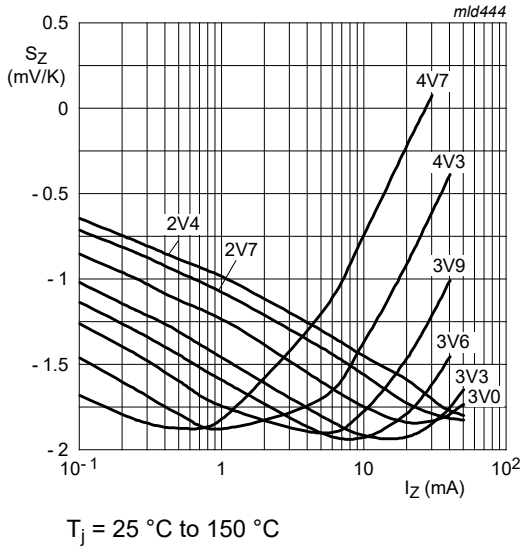


Fig. 5. Temperature coefficient as a function of working current; typical values (BZX884S-B/C2V4-Q to B/C4V7-Q)

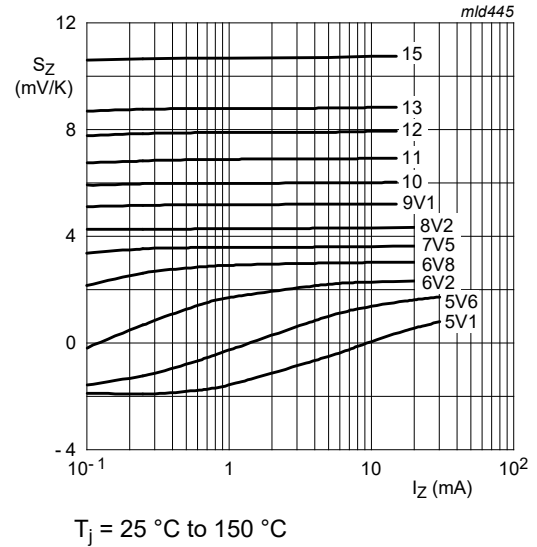


Fig. 6. Temperature coefficient as a function of working current; typical values (BZX884S-B/C5V1-Q to B/C15-Q)

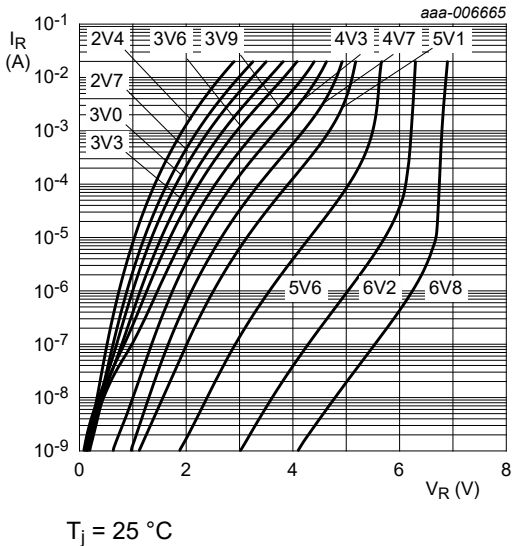


Fig. 7. Reverse current as a function of reverse voltage; typical values (BZX884S-B/C2V4-Q to BZX884S-B/C6V8-Q)

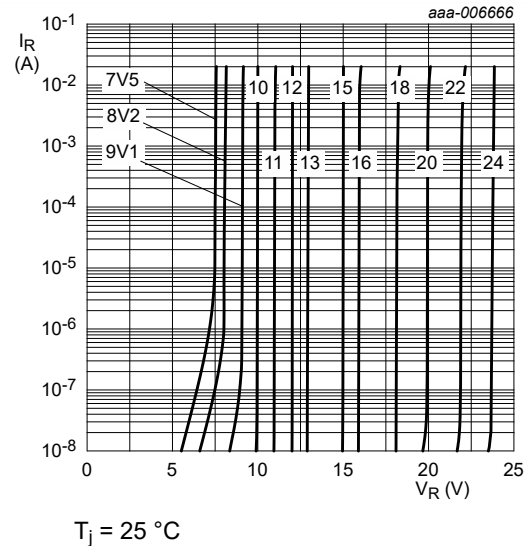
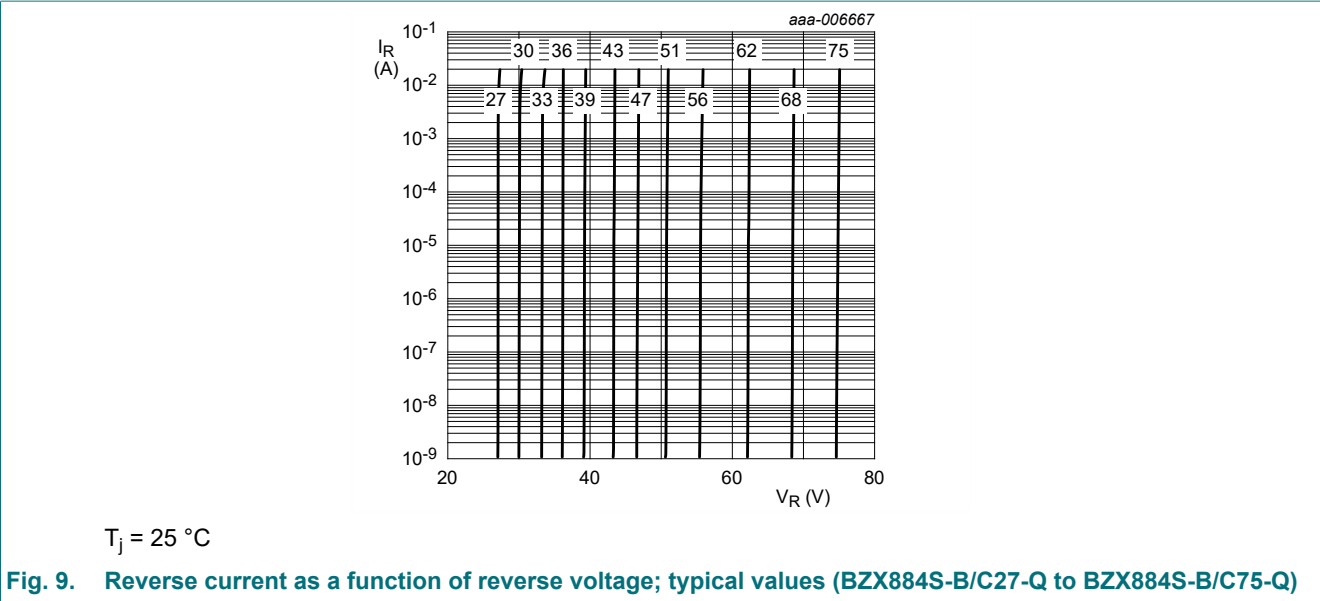


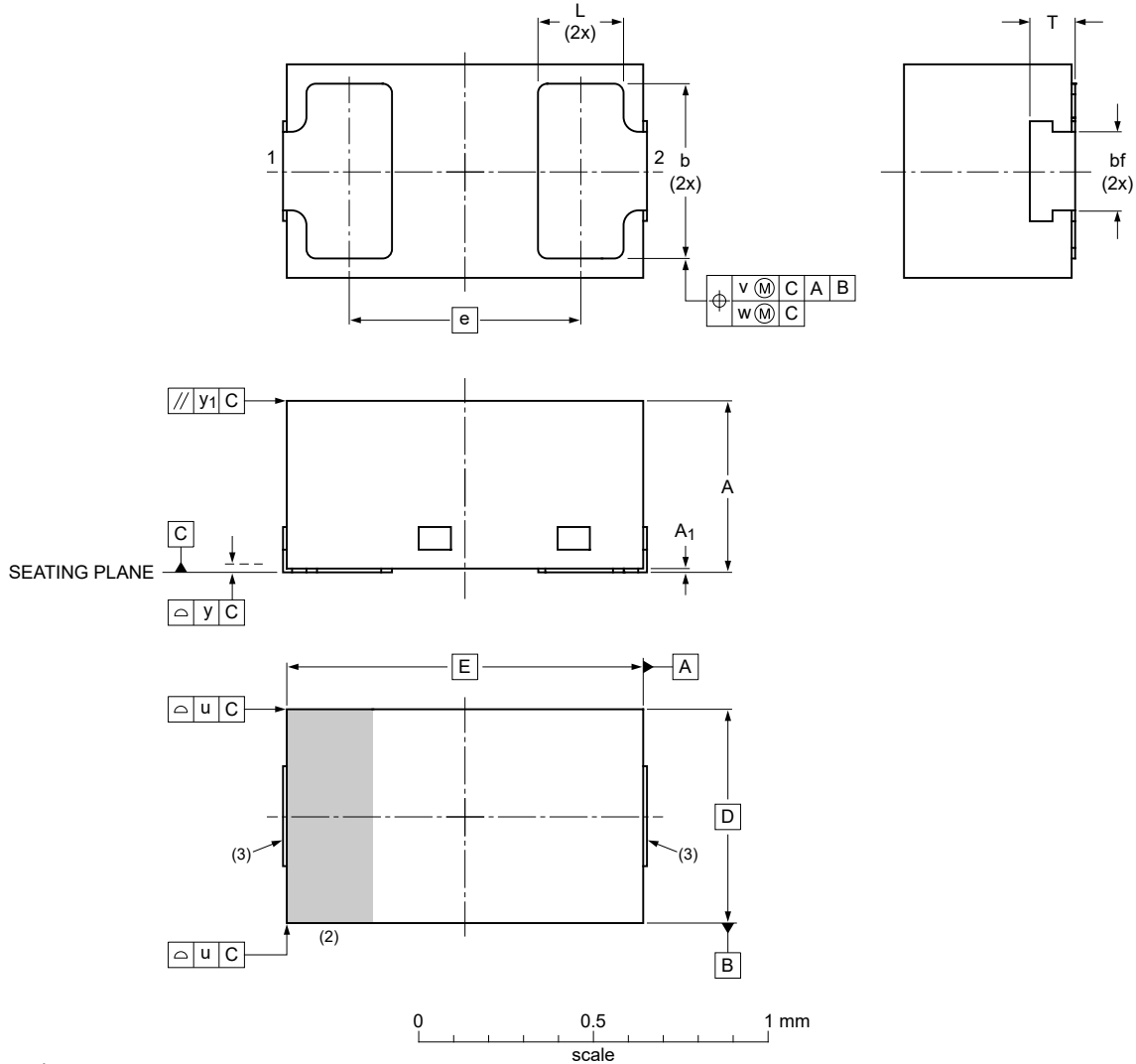
Fig. 8. Reverse current as a function of reverse voltage; typical values (BZX884S-B/C7V5-Q to BZX884S-B/C24-Q)



11. Package outline

DFN1006BD-2 Leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.47 mm body

SOD882BD



Dimensions

| Unit | A ⁽¹⁾ | A ₁ | bf ⁽¹⁾ | b | D | E | e | L | T ⁽¹⁾ | u | v | w | y | y ₁ |
|------|------------------|----------------|-------------------|------|------|------|------|------|------------------|------|------|------|------|----------------|
| mm | max 0.50 | 0.04 | | 0.55 | | | | 0.30 | 0.22 | | | | | |
| | nom 0.47 | | | 0.50 | 0.60 | 1.00 | 0.65 | 0.25 | 0.16 | 0.05 | 0.10 | 0.05 | 0.05 | 0.05 |
| | min 0.44 | | 0.20 | 0.45 | | | | 0.22 | 0.10 | | | | | |

Note

1. Dimension including plating thickness.
2. The marking bar indicates the cathode.
3. Solderable lead end, protrusion max. 0.02 mm.

sod882bd_po

| Outline version | References | | | | European projection | Issue date |
|-----------------|------------|----------|-------|--|---------------------|----------------------|
| | IEC | JEDEC | JEITA | | | |
| SOD882BD | | MO-343AA | | | | 20-06-22 20-06-23 |

Fig. 10. Package outline SOD882BD

13. Revision history

Table 10. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|-------------------|---|--------------------|---------------|-------------------|
| BZX884S-Q_SER v.2 | 20210505 | Product data sheet | - | BZX884S-Q_SER v.1 |
| Modification: | • Features and benefits: added recommendation for automotive applications | | | |
| BZX884S-Q_SER v.1 | 20210210 | Product data sheet | - | - |

14. Legal information

Data sheet status

| Document status [1][2] | Product status [3] | 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 <https://www.nexperia.com>.

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