



# BZT52H-Q series

## Voltage regulator diodes

Rev. 1 — 4 October 2021

Product data sheet

## 1. General description

General-purpose Zener diodes in an SOD123F small and flat lead Surface-Mounted Device (SMD) plastic package.

## 2. Features and benefits

- Total power dissipation:  $\leq 830$  mW
- Three tolerance series:  $\pm 1\%$ ,  $\pm 2\%$  and approximately  $\pm 5\%$
- Wide working voltage range: nominal 2.4 V to 75 V (E24 range)
- Small plastic package suitable for surface-mounted design
- 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

| Symbol    | Parameter               | Conditions           |     | Min | Typ | Max | Unit |
|-----------|-------------------------|----------------------|-----|-----|-----|-----|------|
| $V_F$     | forward voltage         | $I_F = 10$ mA        | [1] | -   | -   | 0.9 | V    |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25$ °C | [2] | -   | -   | 375 | mW   |
|           |                         |                      | [3] | -   | -   | 830 | mW   |


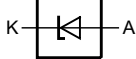
[1] Pulse test:  $t_p \leq 300$   $\mu$ s;  $\delta \leq 0.02$ .

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

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm<sup>2</sup>.

## 5. Pinning information

Table 2. Pinning

| Pin | Symbol | Description |     | Simplified outline   | Graphic symbol   |
|-----|--------|-------------|-----|--|--|
| 1   | K      | cathode     | [1] |  | <br>006aaa152 |
| 2   | A      | anode       |     |  |  |

[1] The marking bar indicates the cathode.

## 6. Ordering information

Table 3. Ordering information

| Type number        | Package |  |         |
|--------------------|---------|--|---------|
|                    | Name    | Description                              | Version |
| BZT52H-Q series[1] | -       | plastic surface-mounted package; 2 leads | SOD123F |

[1] The series consists of 111 types with 37 breakdown voltages with nominal working voltages from 2.4 V to 75 V and  $\pm 1\%$ ,  $\pm 2\%$  and  $\pm 5\%$  tolerances.

## 7. Marking

Table 4. Marking codes

| Type number   | Marking code | Type number   | Marking code | Type number   | Marking code |
|---------------|--------------|---------------|--------------|---------------|--------------|
| BZT52H-A2V4-Q | FT           | BZT52H-B2V4-Q | DC           | BZT52H-C2V4-Q | B3           |
| BZT52H-A2V7-Q | FU           | BZT52H-B2V7-Q | DD           | BZT52H-C2V7-Q | B4           |
| BZT52H-A3V0-Q | FV           | BZT52H-B3V0-Q | DE           | BZT52H-C3V0-Q | B5           |
| BZT52H-A3V3-Q | FW           | BZT52H-B3V3-Q | DF           | BZT52H-C3V3-Q | B6           |
| BZT52H-A3V6-Q | FX           | BZT52H-B3V6-Q | DG           | BZT52H-C3V6-Q | B7           |
| BZT52H-A3V9-Q | FY           | BZT52H-B3V9-Q | DH           | BZT52H-C3V9-Q | B8           |
| BZT52H-A4V3-Q | FZ           | BZT52H-B4V3-Q | DJ           | BZT52H-C4V3-Q | B9           |
| BZT52H-A4V7-Q | G1           | BZT52H-B4V7-Q | DK           | BZT52H-C4V7-Q | BA           |
| BZT52H-A5V1-Q | G2           | BZT52H-B5V1-Q | DL           | BZT52H-C5V1-Q | BB           |
| BZT52H-A5V6-Q | G3           | BZT52H-B5V6-Q | DM           | BZT52H-C5V6-Q | BC           |
| BZT52H-A6V2-Q | G4           | BZT52H-B6V2-Q | DN           | BZT52H-C6V2-Q | BD           |
| BZT52H-A6V8-Q | G5           | BZT52H-B6V8-Q | DP           | BZT52H-C6V8-Q | BE           |
| BZT52H-A7V5-Q | G6           | BZT52H-B7V5-Q | DQ           | BZT52H-C7V5-Q | BF           |
| BZT52H-A8V2-Q | G7           | BZT52H-B8V2-Q | DR           | BZT52H-C8V2-Q | BG           |
| BZT52H-A9V1-Q | G8           | BZT52H-B9V1-Q | DS           | BZT52H-C9V1-Q | BH           |
| BZT52H-A10-Q  | G9           | BZT52H-B10-Q  | DT           | BZT52H-C10-Q  | BJ           |
| BZT52H-A11-Q  | GA           | BZT52H-B11-Q  | DU           | BZT52H-C11-Q  | BK           |
| BZT52H-A12-Q  | GB           | BZT52H-B12-Q  | DV           | BZT52H-C12-Q  | BL           |
| BZT52H-A13-Q  | GC           | BZT52H-B13-Q  | DW           | BZT52H-C13-Q  | BM           |
| BZT52H-A15-Q  | GD           | BZT52H-B15-Q  | DX           | BZT52H-C15-Q  | BN           |
| BZT52H-A16-Q  | GE           | BZT52H-B16-Q  | DY           | BZT52H-C16-Q  | BP           |
| BZT52H-A18-Q  | GF           | BZT52H-B18-Q  | DZ           | BZT52H-C18-Q  | BQ           |
| BZT52H-A20-Q  | GG           | BZT52H-B20-Q  | E1           | BZT52H-C20-Q  | BR           |
| BZT52H-A22-Q  | GH           | BZT52H-B22-Q  | E2           | BZT52H-C22-Q  | BS           |
| BZT52H-A24-Q  | GJ           | BZT52H-B24-Q  | E3           | BZT52H-C24-Q  | BT           |
| BZT52H-A27-Q  | GK           | BZT52H-B27-Q  | E4           | BZT52H-C27-Q  | BU           |
| BZT52H-A30-Q  | GL           | BZT52H-B30-Q  | E5           | BZT52H-C30-Q  | BV           |
| BZT52H-A33-Q  | GM           | BZT52H-B33-Q  | E6           | BZT52H-C33-Q  | BW           |
| BZT52H-A36-Q  | GN           | BZT52H-B36-Q  | E7           | BZT52H-C36-Q  | BX           |
| BZT52H-A39-Q  | GP           | BZT52H-B39-Q  | E8           | BZT52H-C39-Q  | BY           |
| BZT52H-A43-Q  | GY           | BZT52H-B43-Q  | E9           | BZT52H-C43-Q  | BZ           |
| BZT52H-A47-Q  | GR           | BZT52H-B47-Q  | EA           | BZT52H-C47-Q  | C1           |
| BZT52H-A51-Q  | GS           | BZT52H-B51-Q  | EB           | BZT52H-C51-Q  | C2           |
| BZT52H-A56-Q  | GT           | BZT52H-B56-Q  | EC           | BZT52H-C56-Q  | C3           |
| BZT52H-A62-Q  | GU           | BZT52H-B62-Q  | ED           | BZT52H-C62-Q  | C4           |
| BZT52H-A68-Q  | GV           | BZT52H-B68-Q  | EE           | BZT52H-C68-Q  | C5           |
| BZT52H-A75-Q  | GW           | BZT52H-B75-Q  | EF           | BZT52H-C75-Q  | C6           |

## 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                               |                             | -     | 250                    | mA   |
| $I_{ZSM}$ | non-repetitive peak reverse current           |                             | [1] - | see Tables 8, 9 and 10 |      |
| $P_{ZSM}$ | non-repetitive peak reverse power dissipation |                             | [1] - | 40                     | W    |
| $P_{tot}$ | total power dissipation                       | $T_{amb} \leq 25\text{ °C}$ | [2] - | 375                    | mW   |
|           |   |                             | [3] - | 830                    | mW   |
| $T_j$     | junction temperature                          |                             | -     | 150                    | °C   |
| $T_{amb}$ | ambient temperature                           |                             | -65   | +150                   | °C   |
| $T_{stg}$ | storage temperature                           |                             | -65   | +150                   | °C   |

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

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

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode  $1\text{ cm}^2$ .

## 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] - | -   | 330 | K/W  |
|                |  |             | [2] - | -   | 150 | K/W  |
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point |             | [3] - | -   | 70  | K/W  |

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

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode  $1\text{ cm}^2$ .

[3] Soldering point of cathode tab.

## 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:  $t_p \leq 300\ \mu\text{s}$ ;  $\delta \leq 0.02$ .

Table 8. Characteristics per type; BZT52H-A2V4-Q to BZT52H-C24-Q

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

| BZT52H<br>-xxx | Sel | Working<br>voltage<br>$V_Z$ (V)<br>$I_Z = 5\text{ mA}$ |      | Maximum differential<br>resistance<br>$r_{\text{dif}}$ ( $\Omega$ ) |                     | Reverse<br>current<br>$I_R$ ( $\mu\text{A}$ ) |           | Temperature<br>coefficient<br>$S_Z$ (mV/K)<br>$I_Z = 5\text{ mA}$ |     | Diode<br>capacitance<br>$C_d$ (pF) [1] | Non-repetitive<br>peak reverse<br>current<br>$I_{ZSM}$ (A) [2] |
|----------------|-----|--|------|---|---------------------|---|-----------|---|-----|--|--|
|                |     | Min  | Max  | $I_Z = 1\text{ mA}$   | $I_Z = 5\text{ mA}$ | Max   | $V_R$ (V) | Min   | Max | Max                                    | Max  |
| 2V4-Q          | A   | 2.37   | 2.43 | 400   | 85                  | 50  | 1         | -3.5  | 0.0 | 450                                    | 6.0  |
|                | B   | 2.35   | 2.45 |   |                     |   |           |   |     |  |  |
|                | C   | 2.20   | 2.60 |   |                     |   |           |   |     |  |  |
| 2V7-Q          | A   | 2.67   | 2.73 | 500   | 83                  | 20  | 1         | -3.5  | 0.0 | 450                                    | 6.0  |
|                | B   | 2.65   | 2.75 |   |                     |   |           |   |     |  |  |
|                | C   | 2.50   | 2.90 |   |                     |   |           |   |     |  |  |
| 3V0-Q          | A   | 2.97   | 3.03 | 500   | 95                  | 10  | 1         | -3.5  | 0.0 | 450                                    | 6.0  |
|                | B   | 2.94   | 3.06 |   |                     |   |           |   |     |  |  |
|                | C   | 2.80   | 3.20 |   |                     |   |           |   |     |  |  |
| 3V3-Q          | A   | 3.26   | 3.34 | 500   | 95                  | 5   | 1         | -3.5  | 0.0 | 450                                    | 6.0  |
|                | B   | 3.23   | 3.37 |   |                     |   |           |   |     |  |  |
|                | C   | 3.10   | 3.50 |   |                     |   |           |   |     |  |  |
| 3V6-Q          | A   | 3.56   | 3.64 | 500   | 95                  | 5   | 1         | -3.5  | 0.0 | 450                                    | 6.0  |
|                | B   | 3.53   | 3.67 |   |                     |   |           |   |     |  |  |
|                | C   | 3.40   | 3.80 |   |                     |   |           |   |     |  |  |
| 3V9-Q          | A   | 3.86   | 3.94 | 500   | 95                  | 3   | 1         | -3.5  | 0.0 | 450                                    | 6.0  |
|                | B   | 3.82   | 3.98 |   |                     |   |           |   |     |  |  |
|                | C   | 3.70   | 4.10 |   |                     |   |           |   |     |  |  |
| 4V3-Q          | A   | 4.25   | 4.35 | 500   | 95                  | 3   | 1         | -3.5  | 0.0 | 450                                    | 6.0  |
|                | B   | 4.21   | 4.39 |   |                     |   |           |   |     |  |  |
|                | C   | 4.00   | 4.60 |   |                     |   |           |   |     |  |  |
| 4V7-Q          | A   | 4.65   | 4.75 | 500   | 78                  | 3   | 2         | -3.5  | 0.2 | 300                                    | 6.0  |
|                | B   | 4.61   | 4.79 |   |                     |   |           |   |     |  |  |
|                | C   | 4.40   | 5.00 |   |                     |   |           |   |     |  |  |
| 5V1-Q          | A   | 5.04   | 5.16 | 480   | 60                  | 2   | 2         | -2.7  | 1.2 | 300                                    | 6.0  |
|                | B   | 5.00   | 5.20 |   |                     |   |           |   |     |  |  |
|                | C   | 4.80   | 5.40 |   |                     |   |           |   |     |  |  |
| 5V6-Q          | A   | 5.54   | 5.66 | 400   | 40                  | 1   | 2         | -2.0  | 2.5 | 300                                    | 6.0  |
|                | B   | 5.49   | 5.71 |   |                     |   |           |   |     |  |  |
|                | C   | 5.20   | 6.00 |   |                     |   |           |   |     |  |  |
| 6V2-Q          | A   | 6.13   | 6.27 | 150   | 10                  | 3   | 4         | 0.4   | 3.7 | 200                                    | 6.0  |
|                | B   | 6.08   | 6.32 |   |                     |   |           |   |     |  |  |
|                | C   | 5.80   | 6.60 |   |                     |   |           |   |     |  |  |
| 6V8-Q          | A   | 6.73   | 6.87 | 80  | 8                   | 2   | 4         | 1.2   | 4.5 | 200                                    | 6.0  |
|                | B   | 6.66   | 6.94 |   |                     |   |           |   |     |  |  |
|                | C   | 6.40   | 7.20 |   |                     |   |           |   |     |  |  |
| 7V5-Q          | A   | 7.42   | 7.58 | 80  | 10                  | 1   | 5         | 2.5   | 5.3 | 150                                    | 4.0  |
|                | B   | 7.35   | 7.65 |   |                     |   |           |   |     |  |  |
|                | C   | 7.00   | 7.90 |   |                     |   |           |   |     |  |  |

| BZT52H<br>-xxx | Sel | Working voltage<br>$V_Z$ (V)<br>$I_Z = 5$ mA |       | Maximum differential resistance<br>$r_{dif}$ ( $\Omega$ ) |              | Reverse current<br>$I_R$ ( $\mu$ A) |           | Temperature coefficient<br>$S_Z$ (mV/K)<br>$I_Z = 5$ mA |      | Diode capacitance<br>$C_d$ (pF) [1] | Non-repetitive peak reverse current<br>$I_{ZSM}$ (A) [2] |
|----------------|-----|--|-------|---|--------------|-------------------------------------|-----------|---|------|-------------------------------------|--|
|                |     | Min  | Max   | $I_Z = 1$ mA  | $I_Z = 5$ mA | Max                                 | $V_R$ (V) | Min   | Max  | Max                                 | Max  |
| 8V2-Q          | A   | 8.11   | 8.29  | 80  | 10           | 0.7                                 | 5         | 3.2   | 6.2  | 150                                 | 4.0  |
|                | B   | 8.04   | 8.36  |   |              |                                     |           |   |      |                                     |  |
|                | C   | 7.70   | 8.70  |   |              |                                     |           |   |      |                                     |  |
| 9V1-Q          | A   | 9.00   | 9.20  | 100   | 10           | 0.5                                 | 6         | 3.8   | 7.0  | 150                                 | 3.0  |
|                | B   | 8.92   | 9.28  |   |              |                                     |           |   |      |                                     |  |
|                | C   | 8.50   | 9.60  |   |              |                                     |           |   |      |                                     |  |
| 10-Q           | A   | 9.90   | 10.10 | 70  | 10           | 0.2                                 | 7         | 4.5   | 8.0  | 90                                  | 3.0  |
|                | B   | 9.80   | 10.20 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 9.40   | 10.60 |   |              |                                     |           |   |      |                                     |  |
| 11-Q           | A   | 10.89  | 11.11 | 70  | 10           | 0.1                                 | 8         | 5.4   | 9.0  | 85                                  | 2.5  |
|                | B   | 10.80  | 11.20 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 10.40  | 11.60 |   |              |                                     |           |   |      |                                     |  |
| 12-Q           | A   | 11.88  | 12.12 | 90  | 10           | 0.1                                 | 8         | 6.0   | 10.0 | 85                                  | 2.5  |
|                | B   | 11.80  | 12.20 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 11.40  | 12.70 |   |              |                                     |           |   |      |                                     |  |
| 13-Q           | A   | 12.87  | 13.13 | 110   | 10           | 0.1                                 | 8         | 7.0   | 11.0 | 80                                  | 2.5  |
|                | B   | 12.70  | 13.30 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 12.40  | 14.10 |   |              |                                     |           |   |      |                                     |  |
| 15-Q           | A   | 14.85  | 15.15 | 110   | 15           | 0.05                                | 10.5      | 9.2   | 13.0 | 75                                  | 2.0  |
|                | B   | 14.70  | 15.30 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 13.80  | 15.60 |   |              |                                     |           |   |      |                                     |  |
| 16-Q           | A   | 15.84  | 16.16 | 170   | 20           | 0.05                                | 11.2      | 10.4  | 14.0 | 75                                  | 1.5  |
|                | B   | 15.70  | 16.30 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 15.30  | 17.10 |   |              |                                     |           |   |      |                                     |  |
| 18-Q           | A   | 17.82  | 18.18 | 170   | 20           | 0.05                                | 12.6      | 12.4  | 16.0 | 70                                  | 1.5  |
|                | B   | 17.60  | 18.40 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 16.80  | 19.10 |   |              |                                     |           |   |      |                                     |  |
| 20-Q           | A   | 19.80  | 20.20 | 220   | 20           | 0.05                                | 14        | 14.4  | 18.0 | 60                                  | 1.5  |
|                | B   | 19.60  | 20.40 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 18.80  | 21.20 |   |              |                                     |           |   |      |                                     |  |
| 22-Q           | A   | 21.78  | 22.22 | 220   | 25           | 0.05                                | 15.4      | 16.4  | 20.0 | 60                                  | 1.25   |
|                | B   | 21.60  | 22.40 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 20.80  | 23.30 |   |              |                                     |           |   |      |                                     |  |
| 24-Q           | A   | 23.76  | 24.24 | 220   | 30           | 0.05                                | 16.8      | 18.4  | 22.0 | 55                                  | 1.25   |
|                | B   | 23.50  | 24.50 |   |              |                                     |           |   |      |                                     |  |
|                | C   | 22.80  | 25.60 |   |              |                                     |           |   |      |                                     |  |

[1]  $f = 1$  MHz;  $V_R = 0$  V[2]  $t_p = 100$   $\mu$ s;  $T_{amb} = 25$  °C

Table 9. Characteristics per type; BZT52H-A27-Q to BZT52H-C51-Q

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

| BZT52H-xxx | Sel | Working voltage<br>$V_Z$ (V)<br>$I_Z = 2\text{ mA}$ |       | Maximum differential resistance<br>$r_{dif}$ ( $\Omega$ ) |                     | Reverse current<br>$I_R$ ( $\mu\text{A}$ ) |           | Temperature coefficient<br>$S_Z$ (mV/K)<br>$I_Z = 2\text{ mA}$ |      | Diode capacitance<br>$C_d$ (pF) [1] | Non-repetitive peak reverse current<br>$I_{ZSM}$ (A) [2] |
|------------|-----|---|-------|---|---------------------|--|-----------|--|------|-------------------------------------|--|
|            |     | Min   | Max   | $I_Z = 1\text{ mA}$                                       | $I_Z = 5\text{ mA}$ | Max  | $V_R$ (V) | Min  | Max  | Max                                 | Max  |
| 27-Q       | A   | 26.73   | 27.27 | 250   | 40                  | 0.05                                       | 18.9      | 21.4   | 25.3 | 50                                  | 1.0  |
|            | B   | 26.50   | 27.50 |   |                     |  |           |  |      |                                     |  |
|            | C   | 25.10   | 28.90 |   |                     |  |           |  |      |                                     |  |
| 30-Q       | A   | 29.70   | 30.30 | 250   | 40                  | 0.05                                       | 21        | 24.4   | 29.4 | 50                                  | 1.0  |
|            | B   | 29.40   | 30.60 |   |                     |  |           |  |      |                                     |  |
|            | C   | 28.00   | 32.00 |   |                     |  |           |  |      |                                     |  |
| 33-Q       | A   | 32.67   | 33.33 | 250   | 40                  | 0.05                                       | 23.1      | 27.4   | 33.4 | 45                                  | 0.9  |
|            | B   | 32.30   | 33.70 |   |                     |  |           |  |      |                                     |  |
|            | C   | 31.00   | 35.00 |   |                     |  |           |  |      |                                     |  |
| 36-Q       | A   | 35.64   | 36.36 | 250   | 60                  | 0.05                                       | 25.2      | 30.4   | 37.4 | 45                                  | 0.8  |
|            | B   | 35.30   | 36.70 |   |                     |  |           |  |      |                                     |  |
|            | C   | 34.00   | 38.00 |   |                     |  |           |  |      |                                     |  |
| 39-Q       | A   | 38.61   | 39.39 | 300   | 75                  | 0.05                                       | 27.3      | 33.4   | 41.2 | 45                                  | 0.7  |
|            | B   | 38.20   | 39.80 |   |                     |  |           |  |      |                                     |  |
|            | C   | 37.00   | 41.00 |   |                     |  |           |  |      |                                     |  |
| 43-Q       | A   | 42.57   | 43.43 | 325   | 80                  | 0.05                                       | 30.1      | 37.6   | 46.6 | 40                                  | 0.6  |
|            | B   | 42.10   | 43.90 |   |                     |  |           |  |      |                                     |  |
|            | C   | 40.00   | 46.00 |   |                     |  |           |  |      |                                     |  |
| 47-Q       | A   | 46.53   | 47.47 | 325   | 90                  | 0.05                                       | 32.9      | 42.0   | 51.8 | 40                                  | 0.5  |
|            | B   | 46.10   | 47.90 |   |                     |  |           |  |      |                                     |  |
|            | C   | 44.00   | 50.00 |   |                     |  |           |  |      |                                     |  |
| 51-Q       | A   | 50.49   | 51.51 | 350   | 100                 | 0.05                                       | 35.7      | 46.6   | 57.2 | 40                                  | 0.4  |
|            | B   | 50.00   | 52.00 |   |                     |  |           |  |      |                                     |  |
|            | C   | 48.00   | 54.00 |   |                     |  |           |  |      |                                     |  |

[1]  $f = 1\text{ MHz}$ ;  $V_R = 0\text{ V}$ [2]  $t_p = 100\text{ }\mu\text{s}$ ;  $T_{amb} = 25\text{ °C}$ .

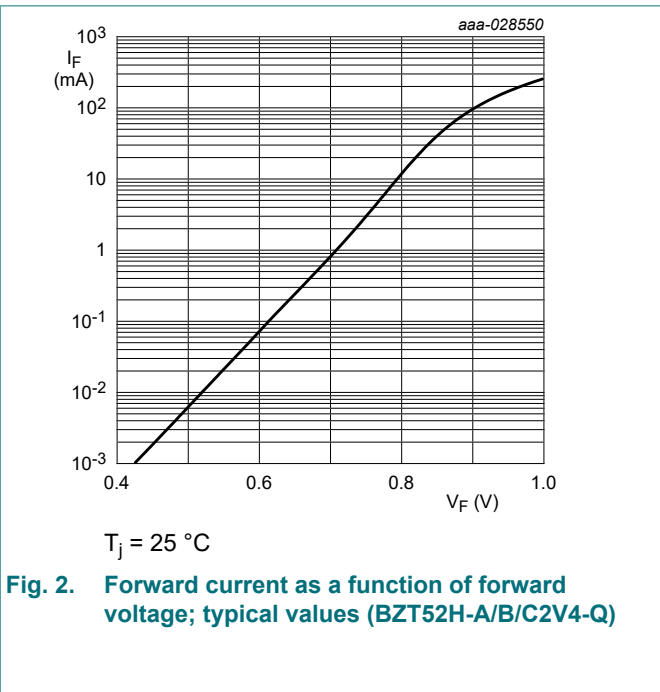
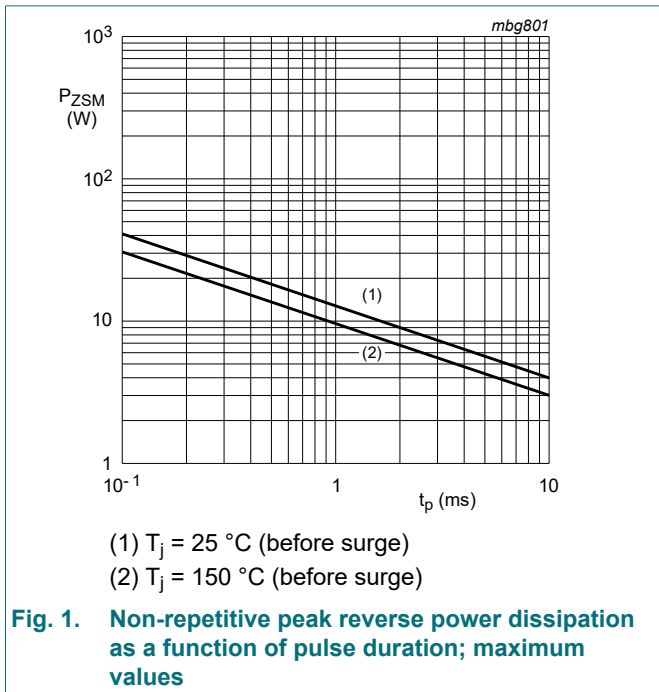
Table 10. Characteristics per type; BZT52H-A56-Q to BZT52H-C75-Q

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

| BZT52H-xxx | Sel | Working voltage $V_Z$ (V) $I_Z = 2\text{ mA}$ |       | Maximum differential resistance $r_{dif}$ ( $\Omega$ ) |                     | Reverse current $I_R$ ( $\mu\text{A}$ ) |           | Temperature coefficient $S_Z$ (mV/K) $I_Z = 2\text{ mA}$ |      | Diode capacitance $C_d$ (pF) [1] | Non-repetitive peak reverse current $I_{ZSM}$ (A) [2] |
|------------|-----|---|-------|--|---------------------|---|-----------|--|------|----------------------------------|---|
|            |     | Min   | Max   | $I_Z = 0.5\text{ mA}$                                  | $I_Z = 2\text{ mA}$ | Max                                     | $V_R$ (V) | Min  | Max  | Max                              | Max   |
| 56-Q       | A   | 55.44   | 56.56 | 375  | 120                 | 0.05                                    | 39.2      | 52.2   | 63.8 | 40                               | 0.3   |
|            | B   | 54.90   | 57.10 |  |                     |   |           |  |      |                                  |   |
|            | C   | 52.00   | 60.00 |  |                     |   |           |  |      |                                  |   |
| 62-Q       | A   | 61.38   | 62.62 | 400  | 140                 | 0.05                                    | 43.4      | 58.8   | 71.6 | 35                               | 0.3   |
|            | B   | 60.80   | 63.20 |  |                     |   |           |  |      |                                  |   |
|            | C   | 58.00   | 66.00 |  |                     |   |           |  |      |                                  |   |
| 68-Q       | A   | 67.32   | 68.68 | 400  | 160                 | 0.05                                    | 47.6      | 65.6   | 79.8 | 35                               | 0.25  |
|            | B   | 66.60   | 69.40 |  |                     |   |           |  |      |                                  |   |
|            | C   | 64.00   | 72.00 |  |                     |   |           |  |      |                                  |   |
| 75-Q       | A   | 74.25   | 75.75 | 400  | 175                 | 0.05                                    | 52.5      | 73.4   | 88.6 | 35                               | 0.20  |
|            | B   | 73.50   | 76.50 |  |                     |   |           |  |      |                                  |   |
|            | C   | 70.00   | 79.00 |  |                     |   |           |  |      |                                  |   |

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

[2]  $t_p = 100\text{ }\mu\text{s}$ ;  $T_{amb} = 25\text{ }^\circ\text{C}$ .





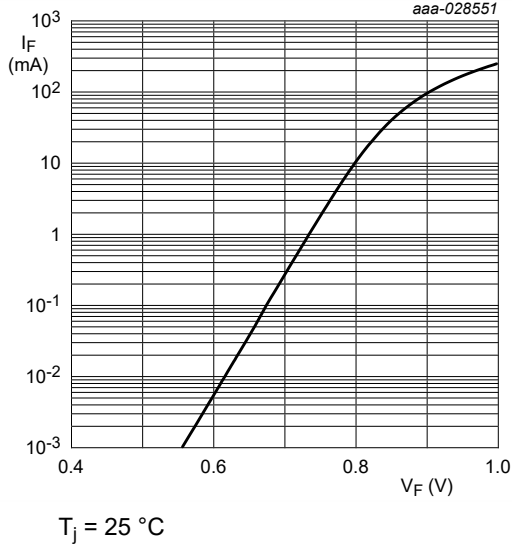


Fig. 3. Forward current as a function of forward voltage; typical values (BZT52H-A/B/C6V8-Q)

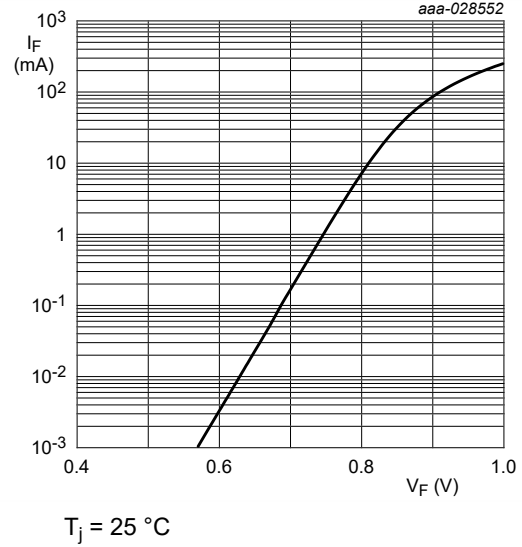


Fig. 4. Forward current as a function of forward voltage; typical values (BZT52H-A/B/C7V5-Q)

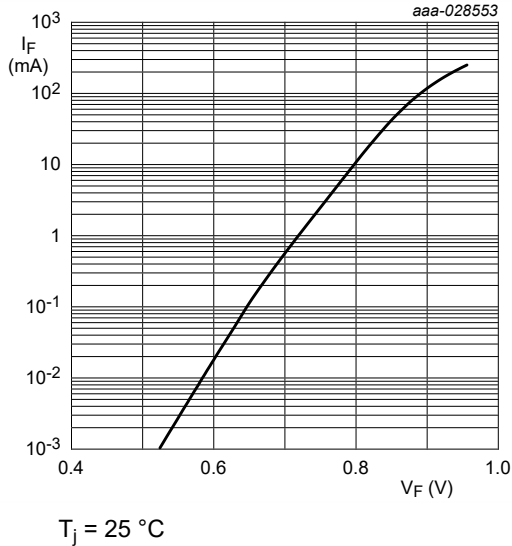


Fig. 5. Forward current as a function of forward voltage; typical values (BZT52H-A/B/C75-Q)

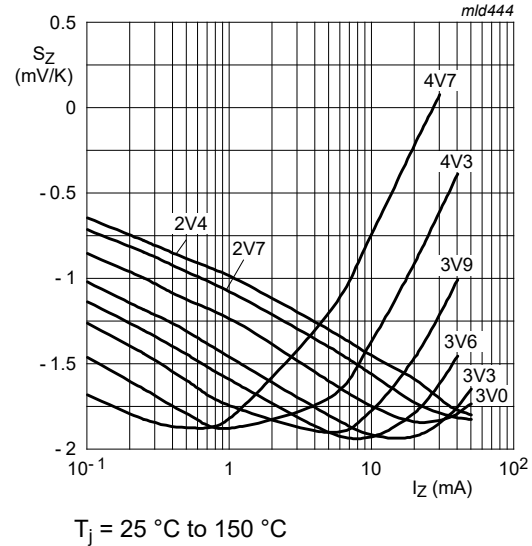
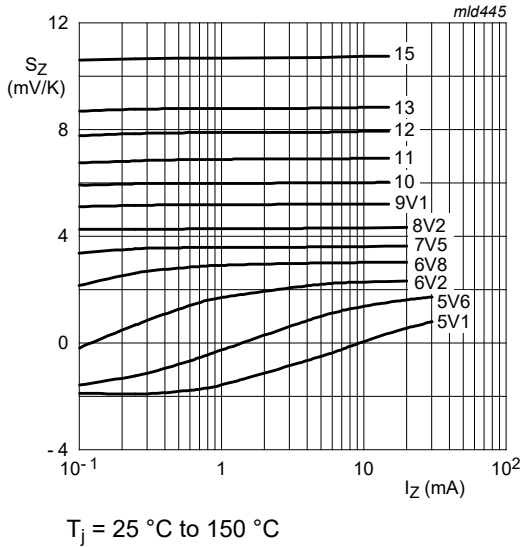
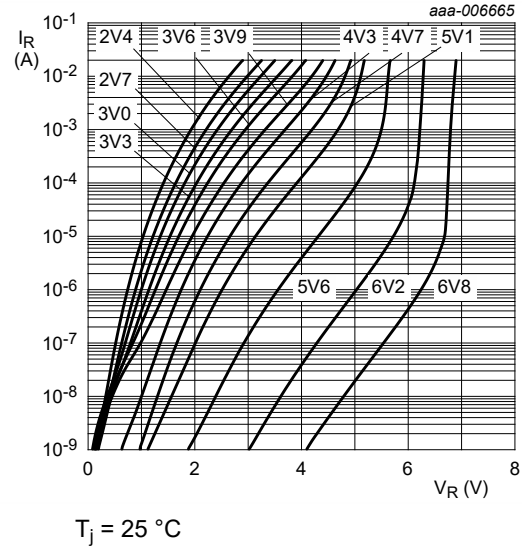


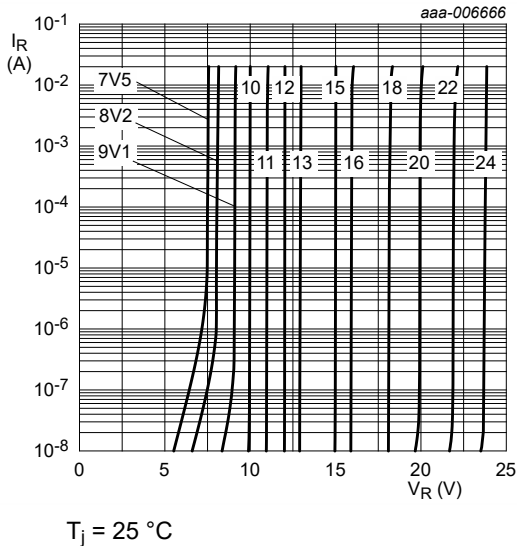
Fig. 6. Temperature coefficient as a function of working current; typical values (BZT52H-A/B/C2V4-Q to BZT52H-A/B/C4V7-Q)



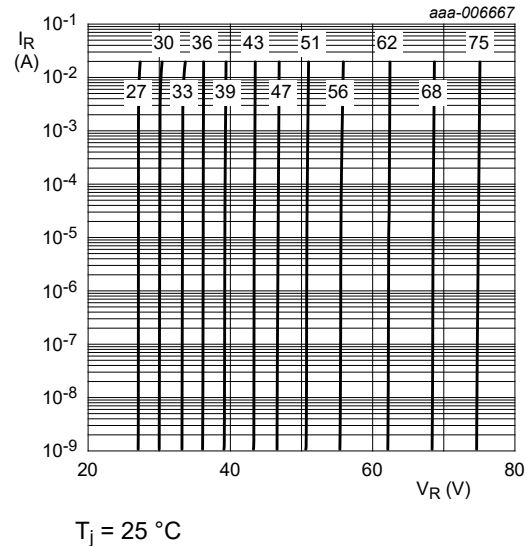
**Fig. 7. Temperature coefficient as a function of working current; typical values (BZT52H-A/B/C5V1-Q to BZT52H-A/B/C15-Q)**



**Fig. 8. Reverse current as a function of reverse voltage; typical values (BZT52H-A/B/C2V4-Q to BZT52H-A/B/C6V8-Q)**



**Fig. 9. Reverse current as a function of reverse voltage; typical values (BZT52H-A/B/C7V5-Q to BZT52H-A/B/C24-Q)**



**Fig. 10. Reverse current as a function of reverse voltage; typical values (BZT52H-A/B/C27-Q to BZT52H-A/B/C75-Q)**

## 11. Test information

### 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.

## 12. Package outline

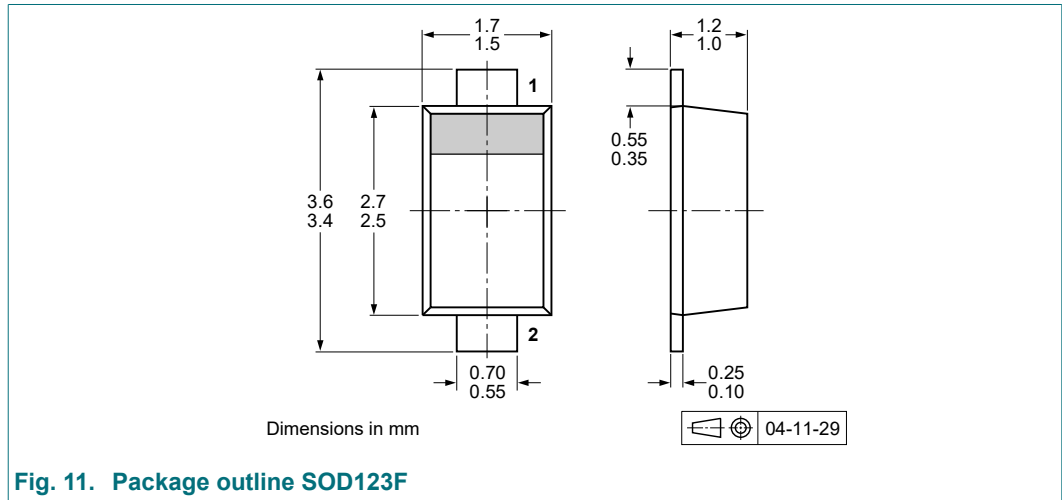


Fig. 11. Package outline SOD123F

## 13. Soldering

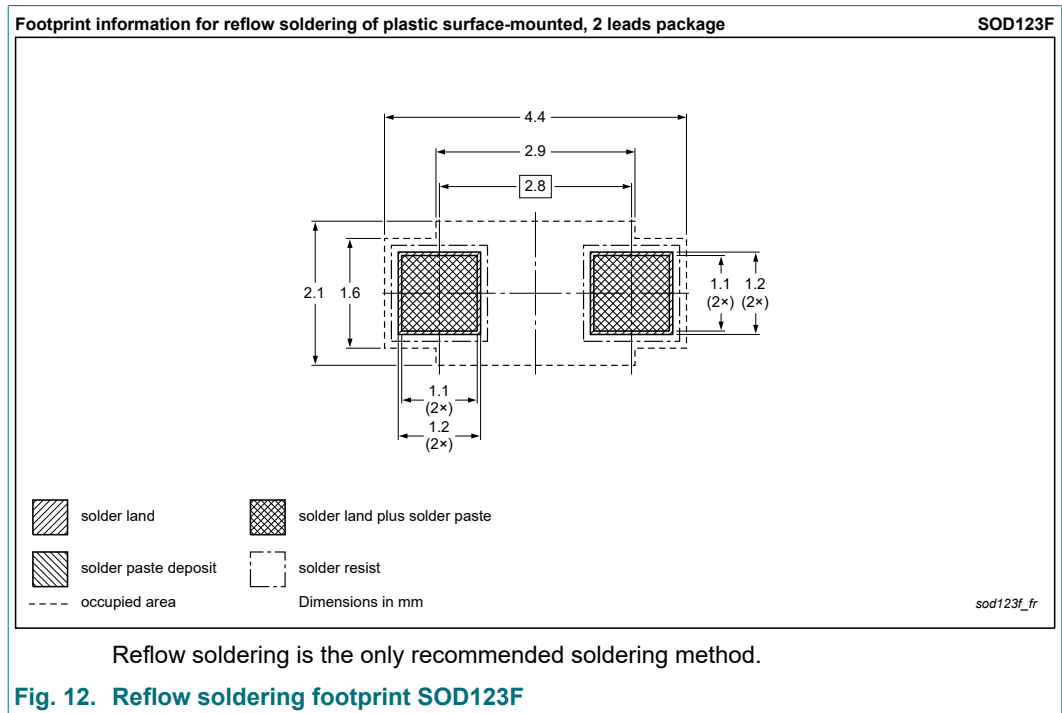


Fig. 12. Reflow soldering footprint SOD123F

## 14. Revision history

Table 11. Revision history

| Document ID      | Release date | Data sheet status  | Change notice | Supersedes |
|------------------|--------------|--------------------|---------------|------------|
| BZT52H-Q_SER v.1 | 20211004     | Product data sheet | -             | -          |

## 15. 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".
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Date of release: 4 October 2021

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