



# PZUxB series

Zener voltage regulator diodes in a SOD323F package

Rev. 6 — 16 August 2024

Product data sheet

## 1. General description

General-purpose Zener diodes in a SOD323F (SC-90) very small and flat lead Surface Mounted Device (SMD) plastic package.

## 2. Features and benefits

- Total power dissipation: 550 mW
- Tolerance series: B: approximately 5 %; B1, B2, B3: sequential, approximately 2 %
- Small plastic package suitable for surface mounted design
- Wide working voltage range: nominal 2.4 V to 51 V
- Very low leakage current for a given reverse voltage for types PZU5.1B - PZU10B
- PZU5.1B2 - 10B: Very low dynamic impedances at low currents, very low leakage current, hard breakdown knee
- PZU11B2 - 51B: Intentional minor rise of leakage current for optimized fast switching and noise reduction [Ref. [AN90031](#)]
- AEC-Q101 qualified

## 3. Applications

- General regulation functions

## 4. Quick reference data

Table 1. Quick reference data

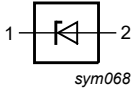
| Symbol    | Parameter               | Conditions                       | Min | Typ | Max | Unit |
|-----------|-------------------------|----------------------------------|-----|-----|-----|------|
| $V_F$     | forward voltage         | $I_F = 10 \text{ mA}$ [1]        | -   | -   | 0.9 | V    |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25 \text{ °C}$ [2] | -   | -   | 550 | mW   |

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

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

5. Pinning information

Table 2. Pinning

| Pin | Description |     | Simplified outline                                                                  | Symbol                                                                                        |
|-----|-------------|-----|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 1   | cathode     | [1] |  | <br>sym068 |
| 2   | anode       |     |                                                                                     |                                                                                               |

[1] The marking bar indicates the cathode

6. Ordering information

Table 3. Ordering information

| Type number           | Package |                                          |         |
|-----------------------|---------|------------------------------------------|---------|
|                       | Name    | Description                              | Version |
| PZU2.4B to PZU51B [1] | SC-90   | plastic surface mounted package; 2 leads | SOD323F |

[1] The series consists of 105 types with nominal working voltages from 2.4 V to 51 V.

7. Marking

Table 4. Marking codes

| Type number | Marking code |    |    |    | Type number | Marking code |    |    |    |
|-------------|--------------|----|----|----|-------------|--------------|----|----|----|
|             | B            | B1 | B2 | B3 |             | B            | B1 | B2 | B3 |
| PZU2.4      | G3           | -  | -  | -  | PZU12       | GL           | FK | HH | KD |
| PZU2.7      | G4           | F3 | H1 | -  | PZU13       | GM           | FL | HJ | KE |
| PZU3.0      | G5           | F4 | H2 | -  | PZU14       | -            | -  | HK | -  |
| PZU3.3      | G6           | F5 | H3 | -  | PZU15       | GN           | FM | HL | KF |
| PZU3.6      | G7           | F6 | H4 | -  | PZU16       | GP           | FN | HM | KG |
| PZU3.9      | G8           | F7 | H5 | -  | PZU18       | GQ           | FP | HN | KH |
| PZU4.3      | G9           | F8 | H6 | HS | PZU20       | GR           | FQ | HP | KJ |
| PZU4.7      | GA           | F9 | H7 | HT | PZU22       | GS           | FR | HQ | KK |
| PZU5.1      | GB           | FA | H8 | HU | PZU24       | GT           | FS | HR | KL |
| PZU5.6      | GC           | FB | H9 | HV | PZU27       | GU           | -  | -  | -  |
| PZU6.2      | GD           | FC | HA | HW | PZU30       | GV           | -  | -  | -  |
| PZU6.8      | GE           | FD | HB | HX | PZU33       | GW           | -  | -  | -  |
| PZU7.5      | GF           | FE | HC | HY | PZU36       | GX           | -  | -  | -  |
| PZU8.2      | GG           | FF | HD | HZ | PZU39       | FY           | -  | J2 | -  |
| PZU9.1      | GH           | FG | HE | KA | PZU43       | FZ           | -  | J3 | -  |
| PZU10       | GJ           | FH | HF | KB | PZU47       | GY           | -  | J4 | -  |
| PZU11       | GK           | FJ | HG | KC | PZU51       | GZ           | -  | J5 | -  |

## 8. Limiting values

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

| Symbol           | Parameter                                     | Conditions               | Min   | Max          | Unit |
|------------------|-----------------------------------------------|--------------------------|-------|--------------|------|
| I <sub>F</sub>   | forward current                               |                          | -     | 200          | mA   |
| I <sub>ZSM</sub> | non-repetitive peak reverse current           |                          | -     | see: Table 8 |      |
| P <sub>ZSM</sub> | non-repetitive peak reverse power dissipation |                          | [1] - | 40           | W    |
| P <sub>tot</sub> | total power dissipation                       | T <sub>amb</sub> ≤ 25 °C | [2] - | 310          | mW   |
|                  |                                               |                          | [3] - | 550          | mW   |
| T <sub>j</sub>   | junction temperature                          |                          | -     | 150          | °C   |
| T <sub>amb</sub> | ambient temperature                           |                          | -65   | +150         | °C   |
| T <sub>stg</sub> | storage temperature                           |                          | -65   | +150         | °C   |

- [1] t<sub>p</sub> = 100 µs; square wave; T<sub>j</sub> = 25 °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 1cm<sup>2</sup>.

## 9. Thermal characteristics

**Table 6. Thermal characteristics**

| Symbol                | Parameter                                        | Conditions  | Min   | Typ | Max | Unit |
|-----------------------|--------------------------------------------------|-------------|-------|-----|-----|------|
| R <sub>th(j-a)</sub>  | thermal resistance from junction to ambient      | in free air | [1] - | -   | 400 | K/W  |
|                       |                                                  |             | [2] - | -   | 230 | K/W  |
| R <sub>th(j-sp)</sub> | thermal resistance from junction to solder point |             | [3] - | -   | 55  | 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 1cm<sup>2</sup>.  
[3] Soldering point of cathode tab

## 10. Characteristics

**Table 7. Characteristics**  
*T<sub>j</sub> = 25 °C unless otherwise specified*

| Symbol         | Parameter       | Conditions              | Min   | Typ | Max | Unit |
|----------------|-----------------|-------------------------|-------|-----|-----|------|
| V <sub>F</sub> | forward voltage | I <sub>F</sub> = 10 mA  | [1] - | -   | 0.9 | V    |
|                |                 | I <sub>F</sub> = 100 mA | [1] - | -   | 1.1 | V    |

- [1] Pulse test: t<sub>p</sub> ≤ 300 µs; δ ≤ 0.02

Table 8. Characteristics per type; PZU2.4B to PZU36B

T<sub>j</sub> = 25 °C unless otherwise specified

| PZU<br>xxx | Sel | Working<br>voltage<br>V <sub>Z</sub> (V);<br>I <sub>Z</sub> = 5 mA |      | Maximum differential<br>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);<br>I <sub>Z</sub> = 5 mA | Diode<br>capacitance<br>C <sub>d</sub> (pF) ;<br>f = 1 MHz;<br>V <sub>R</sub> = 0 V | Non-repetitive<br>peak<br>reverse current<br>I <sub>ZSM</sub> (A)<br>t <sub>p</sub> = 100 μs;<br>square wave;<br>T <sub>j</sub> = 25 °C ;<br>prior to surge |
|------------|-----|--------------------------------------------------------------------|------|------------------------------------------------------------|-----------------------|-------------------------------------------|--------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |     | Min                                                                | Max  | I <sub>Z</sub> = 0.5 mA                                    | I <sub>Z</sub> = 5 mA | Max                                       | V <sub>R</sub> (V) | Typ                                                                           | Max                                                                                 | Max                                                                                                                                                         |
| 2.4        | B   | 2.3                                                                | 2.6  | 1000                                                       | 100                   | 50                                        | 1                  | -1.6                                                                          | 450                                                                                 | 8                                                                                                                                                           |
| 2.7        | B   | 2.5                                                                | 2.9  | 1000                                                       | 100                   | 20                                        | 1                  | -2.0                                                                          | 440                                                                                 | 8                                                                                                                                                           |
|            | B1  | 2.5                                                                | 2.75 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 2.65                                                               | 2.9  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 3.0        | B   | 2.80                                                               | 3.20 | 1000                                                       | 95                    | 10                                        | 1                  | -2.1                                                                          | 425                                                                                 | 8                                                                                                                                                           |
|            | B1  | 2.80                                                               | 3.05 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 2.95                                                               | 3.20 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 3.3        | B   | 3.10                                                               | 3.50 | 1000                                                       | 95                    | 5                                         | 1                  | -2.4                                                                          | 410                                                                                 | 8                                                                                                                                                           |
|            | B1  | 3.10                                                               | 3.35 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 3.25                                                               | 3.50 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 3.6        | B   | 3.40                                                               | 3.80 | 1000                                                       | 90                    | 5                                         | 1                  | -2.4                                                                          | 390                                                                                 | 8                                                                                                                                                           |
|            | B1  | 3.40                                                               | 3.65 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 3.55                                                               | 3.80 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 3.9        | B   | 3.70                                                               | 4.10 | 1000                                                       | 90                    | 3                                         | 1                  | -2.5                                                                          | 370                                                                                 | 8                                                                                                                                                           |
|            | B1  | 3.70                                                               | 3.97 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 3.87                                                               | 4.10 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 4.3        | B   | 4.01                                                               | 4.48 | 1000                                                       | 90                    | 3                                         | 1                  | -2.5                                                                          | 350                                                                                 | 8                                                                                                                                                           |
|            | B1  | 4.01                                                               | 4.21 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 4.15                                                               | 4.34 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 4.28                                                               | 4.48 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 4.7        | B   | 4.42                                                               | 4.90 | 800                                                        | 80                    | 2                                         | 1                  | -1.4                                                                          | 325                                                                                 | 8                                                                                                                                                           |
|            | B1  | 4.42                                                               | 4.61 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 4.55                                                               | 4.75 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 4.69                                                               | 4.90 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 5.1        | B   | 4.84                                                               | 5.37 | 250                                                        | 60                    | 2                                         | 1.5                | 0.3                                                                           | 300                                                                                 | 5.5                                                                                                                                                         |
|            | B1  | 4.84                                                               | 5.04 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 4.98                                                               | 5.20 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 5.14                                                               | 5.37 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |

Zener voltage regulator diodes in a SOD323F package

| PZU<br>xxx | Sel | Working<br>voltage<br>V <sub>Z</sub> (V);<br>I <sub>Z</sub> = 5 mA |       | Maximum differential<br>resistance<br>r <sub>dif</sub> (Ω) |                       | Reverse<br>current<br>I <sub>R</sub> (nA) |                    | Temperature<br>coefficient<br>S <sub>Z</sub> (mV/K);<br>I <sub>Z</sub> = 5 mA | Diode<br>capacitance<br>C <sub>d</sub> (pF) ;<br>f = 1 MHz;<br>V <sub>R</sub> = 0 V | Non-repetitive<br>peak<br>reverse current<br>I <sub>ZSM</sub> (A)<br>t <sub>p</sub> = 100 μs;<br>square wave;<br>T <sub>j</sub> = 25 °C ;<br>prior to surge |
|------------|-----|--------------------------------------------------------------------|-------|------------------------------------------------------------|-----------------------|-------------------------------------------|--------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |     | Min                                                                | Max   | I <sub>Z</sub> = 0.5 mA                                    | I <sub>Z</sub> = 5 mA | Max                                       | V <sub>R</sub> (V) | Typ                                                                           | Max                                                                                 | Max                                                                                                                                                         |
| 5.6        | B   | 5.31                                                               | 5.92  | 100                                                        | 40                    | 1000                                      | 2.5                | 1.9                                                                           | 275                                                                                 | 5.5                                                                                                                                                         |
|            | B1  | 5.31                                                               | 5.55  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 5.49                                                               | 5.73  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 5.67                                                               | 5.92  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 6.2        | B   | 5.86                                                               | 6.53  | 80                                                         | 30                    | 500                                       | 3                  | 2.7                                                                           | 250                                                                                 | 5.5                                                                                                                                                         |
|            | B1  | 5.86                                                               | 6.12  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 6.06                                                               | 6.33  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 6.26                                                               | 6.53  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 6.8        | B   | 6.47                                                               | 7.14  | 60                                                         | 20                    | 500                                       | 3.5                | 3.4                                                                           | 215                                                                                 | 5.5                                                                                                                                                         |
|            | B1  | 6.47                                                               | 6.73  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 6.65                                                               | 6.93  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 6.86                                                               | 7.14  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 7.5        | B   | 7.06                                                               | 7.84  | 60                                                         | 10                    | 500                                       | 4                  | 4.0                                                                           | 170                                                                                 | 3.5                                                                                                                                                         |
|            | B1  | 7.06                                                               | 7.36  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 7.28                                                               | 7.60  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 7.52                                                               | 7.84  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 8.2        | B   | 7.76                                                               | 8.64  | 60                                                         | 10                    | 500                                       | 5                  | 4.6                                                                           | 150                                                                                 | 3.5                                                                                                                                                         |
|            | B1  | 7.76                                                               | 8.10  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 8.02                                                               | 8.36  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 8.28                                                               | 8.64  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 9.1        | B   | 8.56                                                               | 9.55  | 60                                                         | 10                    | 500                                       | 6                  | 5.5                                                                           | 120                                                                                 | 3.5                                                                                                                                                         |
|            | B1  | 8.56                                                               | 8.93  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 8.85                                                               | 9.23  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 9.15                                                               | 9.55  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 10         | B   | 9.45                                                               | 10.55 | 60                                                         | 10                    | 100                                       | 7                  | 6.4                                                                           | 110                                                                                 | 3.5                                                                                                                                                         |
|            | B1  | 9.45                                                               | 9.87  |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 9.77                                                               | 10.21 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 10.11                                                              | 10.55 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 11         | B   | 10.44                                                              | 11.56 | 60                                                         | 10                    | 100                                       | 8                  | 7.4                                                                           | 108                                                                                 | 3                                                                                                                                                           |
|            | B1  | 10.44                                                              | 10.88 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 10.76                                                              | 11.22 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 11.10                                                              | 11.56 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 12         | B   | 11.42                                                              | 12.60 | 80                                                         | 10                    | 100                                       | 9                  | 8.4                                                                           | 105                                                                                 | 3                                                                                                                                                           |
|            | B1  | 11.42                                                              | 11.90 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 11.74                                                              | 12.24 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 12.08                                                              | 12.60 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |

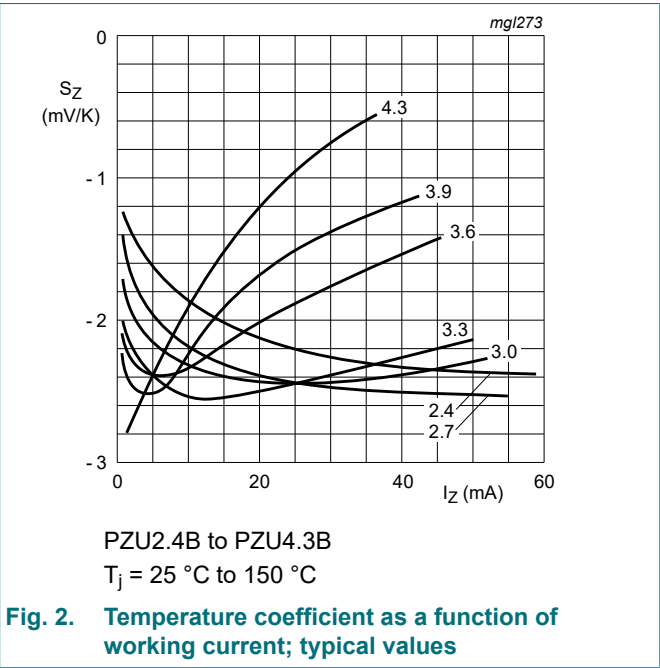
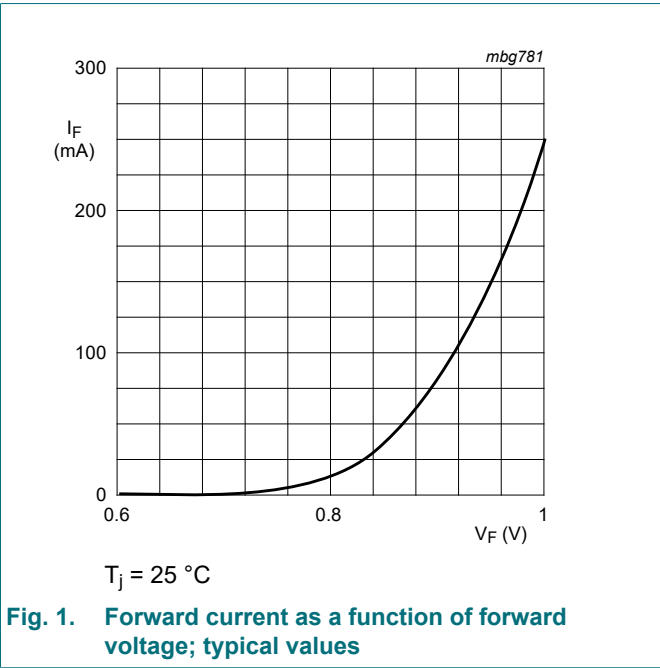
Zener voltage regulator diodes in a SOD323F package

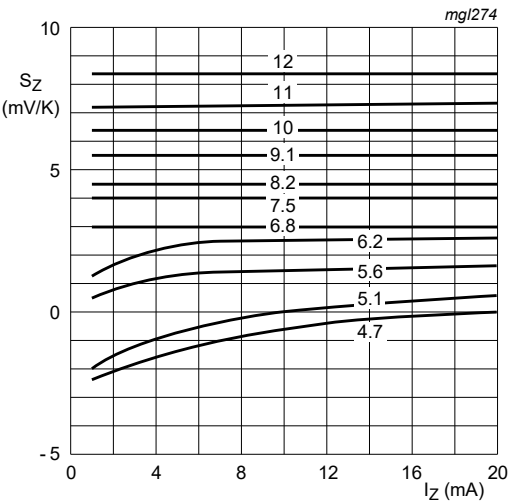
| PZU<br>xxx | Sel | Working<br>voltage<br>V <sub>Z</sub> (V);<br>I <sub>Z</sub> = 5 mA |       | Maximum differential<br>resistance<br>r <sub>dif</sub> (Ω) |                       | Reverse<br>current<br>I <sub>R</sub> (nA) |                    | Temperature<br>coefficient<br>S <sub>Z</sub> (mV/K);<br>I <sub>Z</sub> = 5 mA | Diode<br>capacitance<br>C <sub>d</sub> (pF) ;<br>f = 1 MHz;<br>V <sub>R</sub> = 0 V | Non-repetitive<br>peak<br>reverse current<br>I <sub>ZSM</sub> (A)<br>t <sub>p</sub> = 100 μs;<br>square wave;<br>T <sub>j</sub> = 25 °C ;<br>prior to surge |
|------------|-----|--------------------------------------------------------------------|-------|------------------------------------------------------------|-----------------------|-------------------------------------------|--------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |     | Min                                                                | Max   | I <sub>Z</sub> = 0.5 mA                                    | I <sub>Z</sub> = 5 mA | Max                                       | V <sub>R</sub> (V) | Typ                                                                           | Max                                                                                 | Max                                                                                                                                                         |
| 13         | B   | 12.47                                                              | 13.96 | 80                                                         | 10                    | 100                                       | 10                 | 9.4                                                                           | 103                                                                                 | 2.5                                                                                                                                                         |
|            | B1  | 12.47                                                              | 13.03 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 12.91                                                              | 13.49 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 13.37                                                              | 13.96 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 14         | B2  | 13.70                                                              | 14.30 | 80                                                         | 10                    | 100                                       | 11                 | 10.4                                                                          | 101                                                                                 | 2                                                                                                                                                           |
| 15         | B   | 13.84                                                              | 15.52 | 80                                                         | 15                    | 50                                        | 11                 | 11.4                                                                          | 99                                                                                  | 2                                                                                                                                                           |
|            | B1  | 13.84                                                              | 14.46 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 14.34                                                              | 14.98 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 14.85                                                              | 15.52 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 16         | B   | 15.37                                                              | 17.09 | 80                                                         | 20                    | 50                                        | 12                 | 12.4                                                                          | 97                                                                                  | 1.5                                                                                                                                                         |
|            | B1  | 15.37                                                              | 16.01 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 15.85                                                              | 16.51 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 16.35                                                              | 17.09 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 18         | B   | 16.94                                                              | 19.03 | 80                                                         | 20                    | 50                                        | 13                 | 14.4                                                                          | 93                                                                                  | 1.5                                                                                                                                                         |
|            | B1  | 16.94                                                              | 17.70 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 17.56                                                              | 18.35 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 18.21                                                              | 19.03 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 20         | B   | 18.86                                                              | 21.08 | 100                                                        | 20                    | 50                                        | 15                 | 16.4                                                                          | 88                                                                                  | 1.5                                                                                                                                                         |
|            | B1  | 18.86                                                              | 19.70 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 19.52                                                              | 20.39 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 20.21                                                              | 21.08 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 22         | B   | 20.88                                                              | 23.17 | 100                                                        | 25                    | 50                                        | 17                 | 18.4                                                                          | 84                                                                                  | 1.3                                                                                                                                                         |
|            | B1  | 20.88                                                              | 21.77 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 21.54                                                              | 22.47 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 22.23                                                              | 23.17 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 24         | B   | 22.93                                                              | 25.57 | 120                                                        | 30                    | 50                                        | 19                 | 20.4                                                                          | 80                                                                                  | 1.3                                                                                                                                                         |
|            | B1  | 22.93                                                              | 23.96 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B2  | 23.72                                                              | 24.78 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
|            | B3  | 24.54                                                              | 25.57 |                                                            |                       |                                           |                    |                                                                               |                                                                                     |                                                                                                                                                             |
| 27         | B   | 25.1                                                               | 28.9  | 150                                                        | 40                    | 50                                        | 21                 | 23.4                                                                          | 73                                                                                  | 1                                                                                                                                                           |
| 30         | B   | 28                                                                 | 32    | 200                                                        | 40                    | 50                                        | 23                 | 26.6                                                                          | 66                                                                                  | 1                                                                                                                                                           |
| 33         | B   | 31                                                                 | 35    | 250                                                        | 40                    | 50                                        | 25                 | 29.7                                                                          | 60                                                                                  | 0.9                                                                                                                                                         |
| 36         | B   | 34                                                                 | 38    | 300                                                        | 60                    | 50                                        | 27                 | 33.0                                                                          | 59                                                                                  | 0.8                                                                                                                                                         |

Table 9. Characteristics per type; PZU39B to PZU51B

T<sub>j</sub> = 25 °C unless otherwise specified

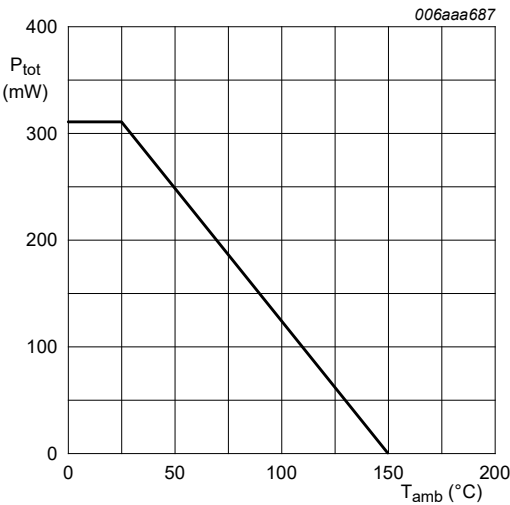
| PZU<br>xxx | Sel | Working<br>voltage<br>V <sub>Z</sub> (V) |       | Maximum<br>differential<br>resistance<br>r <sub>dif</sub> (Ω) | I <sub>Z</sub> = 2 mA | Reverse<br>current<br>I <sub>R</sub> (μA) |      | Temperature<br>coefficient<br>S <sub>Z</sub> (mV/K) | Diode<br>capacitance<br>C <sub>d</sub> (pF) | Non-repetitive<br>peak<br>reverse current<br>I <sub>ZSM</sub> (A)                      |
|------------|-----|------------------------------------------|-------|---------------------------------------------------------------|-----------------------|-------------------------------------------|------|-----------------------------------------------------|---------------------------------------------|----------------------------------------------------------------------------------------|
|            |     | I <sub>Z</sub> = 2 mA                    |       | I <sub>Z</sub> = 0.5 mA                                       |                       |                                           |      | I <sub>Z</sub> = 2 mA                               | f = 1 MHz;<br>V <sub>R</sub> = 0 V          | t <sub>p</sub> = 100 μs;<br>square wave;<br>T <sub>j</sub> = 25 °C ;<br>prior to surge |
|            |     | Min                                      | Max   | Max                                                           | Max                   |                                           |      | Typ                                                 | Max                                         | Max                                                                                    |
| 39         | B2  | 38.20                                    | 39.80 | 350                                                           | 130                   | 50                                        | 27.3 | 36.4                                                | 45                                          | 0.7                                                                                    |
|            | B   | 37.00                                    | 41.00 |                                                               |                       |                                           |      |                                                     |                                             |                                                                                        |
| 43         | B2  | 42.10                                    | 43.90 | 375                                                           | 150                   | 50                                        | 30.1 | 41.2                                                | 40                                          | 0.6                                                                                    |
|            | B   | 40.00                                    | 46.00 |                                                               |                       |                                           |      |                                                     |                                             |                                                                                        |
| 47         | B2  | 46.10                                    | 47.90 | 375                                                           | 170                   | 50                                        | 32.9 | 46.1                                                | 40                                          | 0.5                                                                                    |
|            | B   | 44.00                                    | 50.00 |                                                               |                       |                                           |      |                                                     |                                             |                                                                                        |
| 51         | B2  | 50.00                                    | 52.00 | 400                                                           | 180                   | 50                                        | 35.7 | 51.0                                                | 40                                          | 0.4                                                                                    |
|            | B   | 48.00                                    | 54.00 |                                                               |                       |                                           |      |                                                     |                                             |                                                                                        |





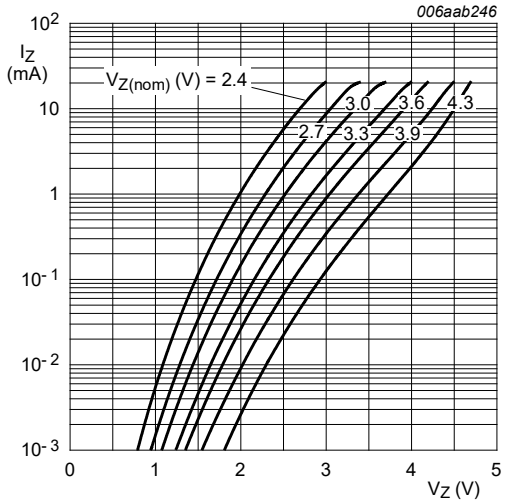
PZU4.7B to PZU12B  
 $T_j = 25\text{ }^{\circ}\text{C}$  to  $150\text{ }^{\circ}\text{C}$

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



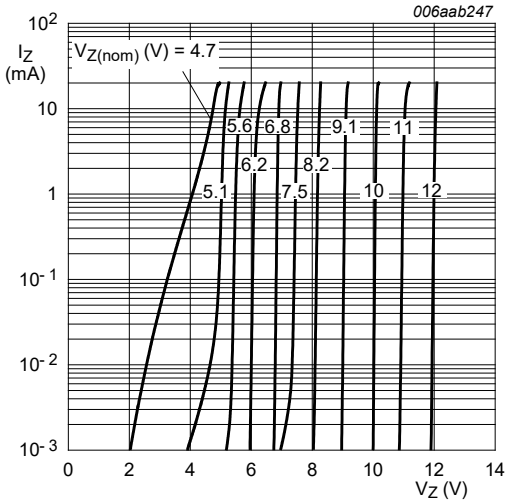
FR4 PCB, standard footprint

Fig. 4. Power derating curve



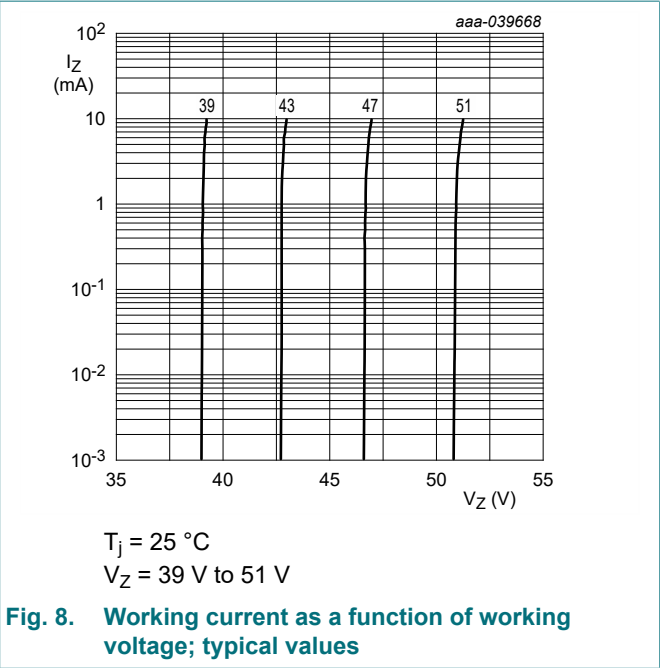
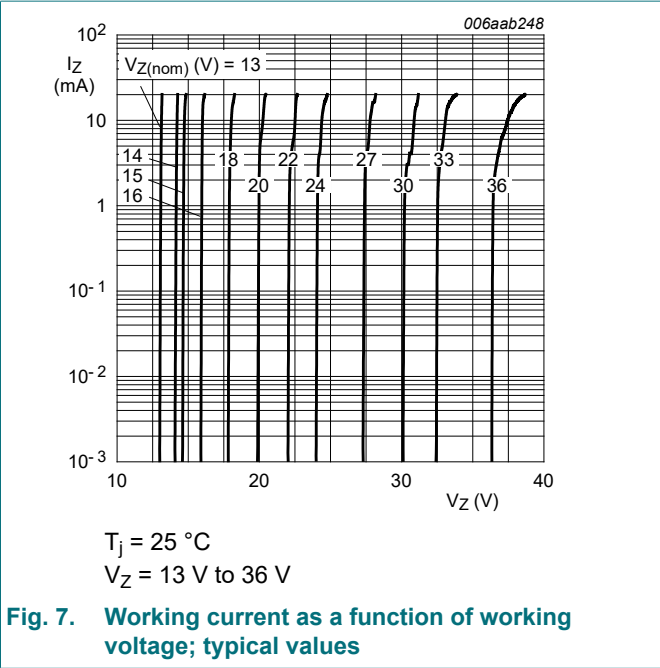
$T_j = 25\text{ }^{\circ}\text{C}$   
 $V_Z = 2.4\text{ V}$  to  $4.3\text{ V}$

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



$T_j = 25\text{ }^{\circ}\text{C}$   
 $V_Z = 4.7\text{ V}$  to  $12\text{ V}$

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

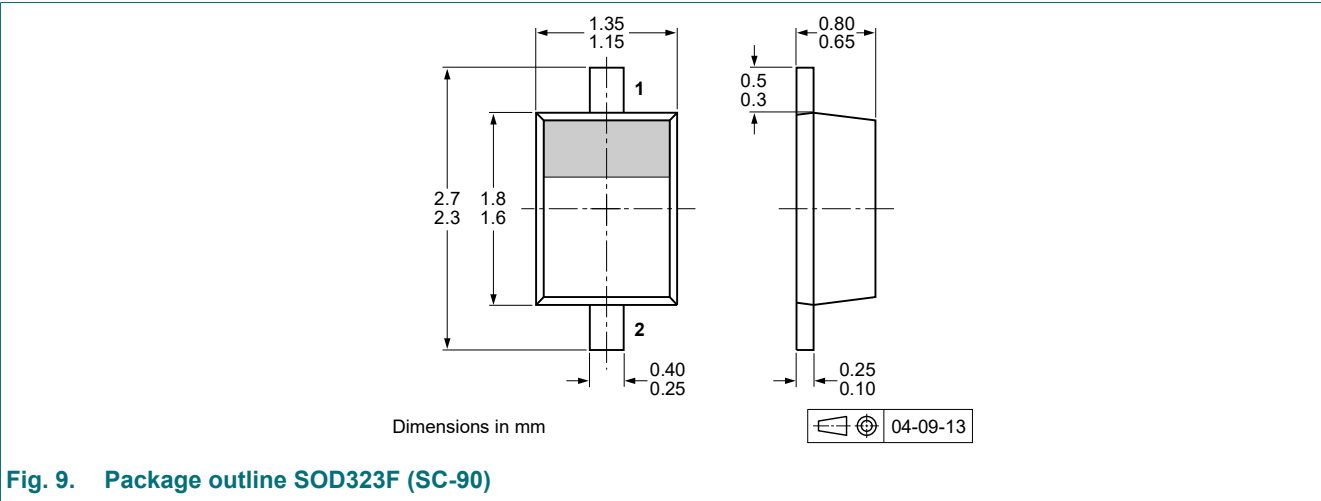


11. Test information

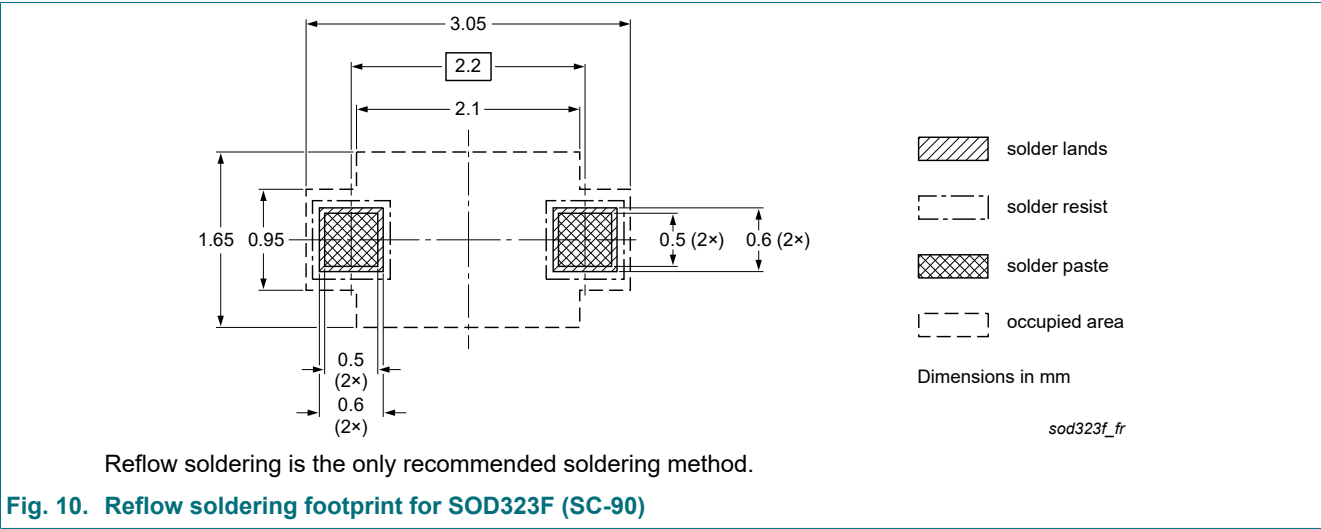
Quality information

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



13. Soldering



## 14. Revision history

Table 10. Revision history

| Document ID      | Release date                  | Data sheet status  | Supersedes       |
|------------------|-------------------------------|--------------------|------------------|
| PZUXB_SER v. 6   | 20240816                      | Product data sheet | PZUXB_SER v. 5   |
| Modifications:   | • Selections B39 to B51 added |                    |                  |
| PZUXB_SER v. 5   | 20201102                      | Product data sheet | PZUXB_SER v. 4   |
| PZUXB_SER v. 4   | 20190510                      | Product data sheet | PZUXB_SER v. 3   |
| PZUXB_SER v. 3   | 20180115                      | Product data sheet | PZUXB_SER_2 v. 2 |
| PZUXB_SER_2 v. 2 | 20091115                      | Product data sheet | PZUXB_SER_1 v. 1 |
| PZUXB_SER_1 v. 1 | 20060307                      | 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".
- [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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