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Kind regards,

Team Nexperia

# 1PS76SB10

Schottky barrier single diode

17 December 2012

Product data sheet

## 1. General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a very small SOD323 Surface-Mounted Device (SMD) plastic package.

## 2. Features and benefits

- Low forward voltage
- Low capacitance
- AEC-Q101 qualified

## 3. Applications

- Ultra high-speed switching
- Line termination
- Voltage clamping
- Reverse polarity protection

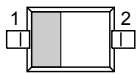


## 4. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter       | Conditions  | Min | Typ | Max | Unit |
|--------|-----------------|---|-----|-----|-----|------|
| $I_F$  | forward current |   | -   | -   | 200 | mA   |
| $V_R$  | reverse voltage |   | -   | -   | 30  | V    |
| $V_F$  | forward voltage | $I_F = 10 \text{ mA}$ ; pulsed; $t_p = 300 \mu\text{s}$ ;<br>$\delta = 0.02$ ; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ | -   | -   | 400 | mV   |

## 5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline  | Graphic symbol   |
|-----|--------|-------------|---|--|
| 1   | K      | cathode[1]  | <br>SOD323 | <br>K  A<br>aaa-003679 |
| 2   | A      | anode       |   |  |

[1] The marking bar indicates the cathode.



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## 6. Ordering information

Table 3. Ordering information

| Type number | Package |  |         |
|-------------|---------|--|---------|
|             | Name    | Description                              | Version |
| 1PS76SB10   | SOD323  | plastic surface-mounted package; 2 leads | SOD323  |

## 7. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| 1PS76SB10   | S0           |

## 8. Limiting values

Table 5. Limiting values

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

| Symbol           | Parameter                           | Conditions                                  | Min | Max | Unit |
|------------------|-------------------------------------|---|-----|-----|------|
| $V_R$            | reverse voltage                     |   | -   | 30  | V    |
| $I_F$            | forward current                     |   | -   | 200 | mA   |
| $I_{FRM}$        | repetitive peak forward current     | $t_p \leq 1$ s; $\delta \leq 0.5$           | -   | 300 | mA   |
| $I_{FSM}$        | non-repetitive peak forward current | $t_p < 10$ ms; $T_{j(\text{init})} = 25$ °C | -   | 600 | mA   |
| $T_j$            | junction temperature                |   | -   | 125 | °C   |
| $T_{\text{amb}}$ | ambient temperature                 |   | -55 | 125 | °C   |
| $T_{\text{stg}}$ | storage temperature                 |   | -65 | 150 | °C   |

## 9. Thermal characteristics

Table 6. Thermal characteristics

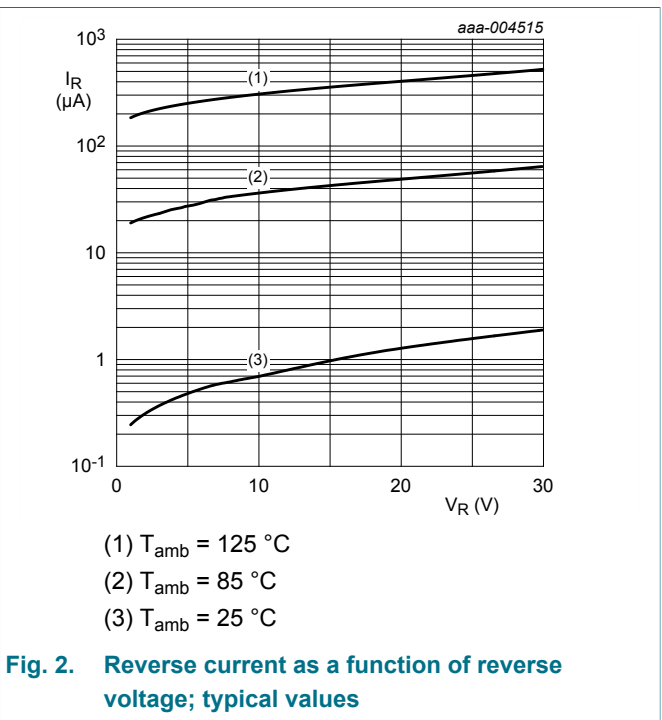
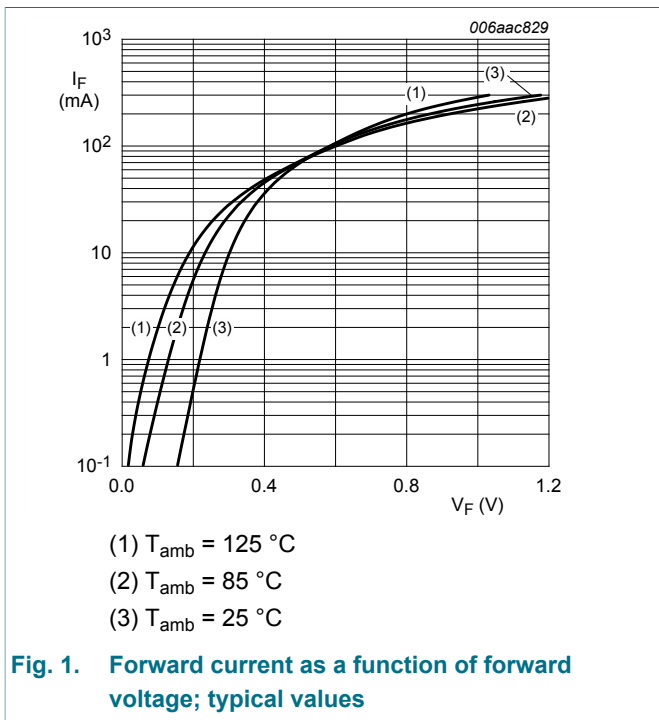
| Symbol               | Parameter                                   | Conditions  | Min | Typ | Max | Unit |
|----------------------|---|-------------|-----|-----|-----|------|
| $R_{\text{th}(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | -   | 450 | K/W  |

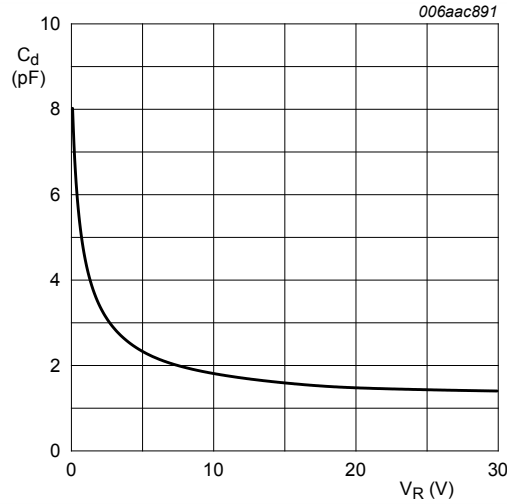
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

### 10. Characteristics

Table 7. Characteristics

| Symbol         | Parameter         | Conditions  | Min | Typ | Max | Unit |
|----------------|-------------------|---|-----|-----|-----|------|
| V <sub>F</sub> | forward voltage   | I <sub>F</sub> = 0.1 mA; pulsed; t <sub>p</sub> = 300 μs;<br>δ = 0.02; T <sub>amb</sub> = 25 °C | -   | -   | 240 | mV   |
|                |                   | I <sub>F</sub> = 1 mA; pulsed; t <sub>p</sub> = 300 μs;<br>δ = 0.02; T <sub>amb</sub> = 25 °C   | -   | -   | 320 | mV   |
|                |                   | I <sub>F</sub> = 10 mA; pulsed; t <sub>p</sub> = 300 μs;<br>δ = 0.02; T <sub>amb</sub> = 25 °C  | -   | -   | 400 | mV   |
|                |                   | I <sub>F</sub> = 30 mA; pulsed; t <sub>p</sub> = 300 μs;<br>δ = 0.02; T <sub>amb</sub> = 25 °C  | -   | -   | 500 | mV   |
|                |                   | I <sub>F</sub> = 100 mA; pulsed; t <sub>p</sub> = 300 μs;<br>δ = 0.02; T <sub>amb</sub> = 25 °C | -   | -   | 800 | mV   |
| I <sub>R</sub> | reverse current   | V <sub>R</sub> = 25 V; pulsed; t <sub>p</sub> = 300 μs;<br>δ = 0.02; T <sub>amb</sub> = 25 °C   | -   | -   | 2   | μA   |
| C <sub>d</sub> | diode capacitance | V <sub>R</sub> = 1 V; f = 1 MHz; T <sub>amb</sub> = 25 °C                                       | -   | -   | 10  | pF   |





T<sub>amb</sub> = 25 °C; f = 1 MHz

Fig. 3. Diode capacitance as a function of reverse voltage; typical values

## 11. Test information

### 11.1 Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - Stress test qualification for discrete semiconductors, and is suitable for use in automotive applications.

## 12. Package outline

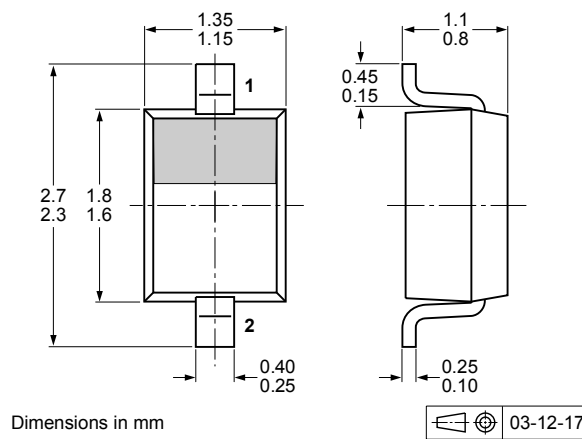


Fig. 4. Package outline SOD323

### 13. Soldering

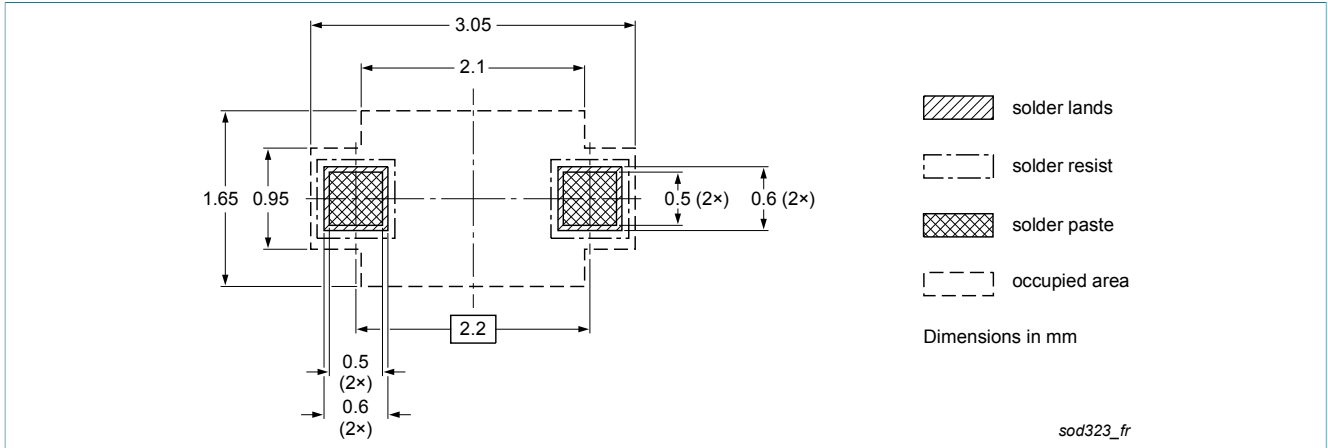


Fig. 5. Reflow soldering footprint for SOD323

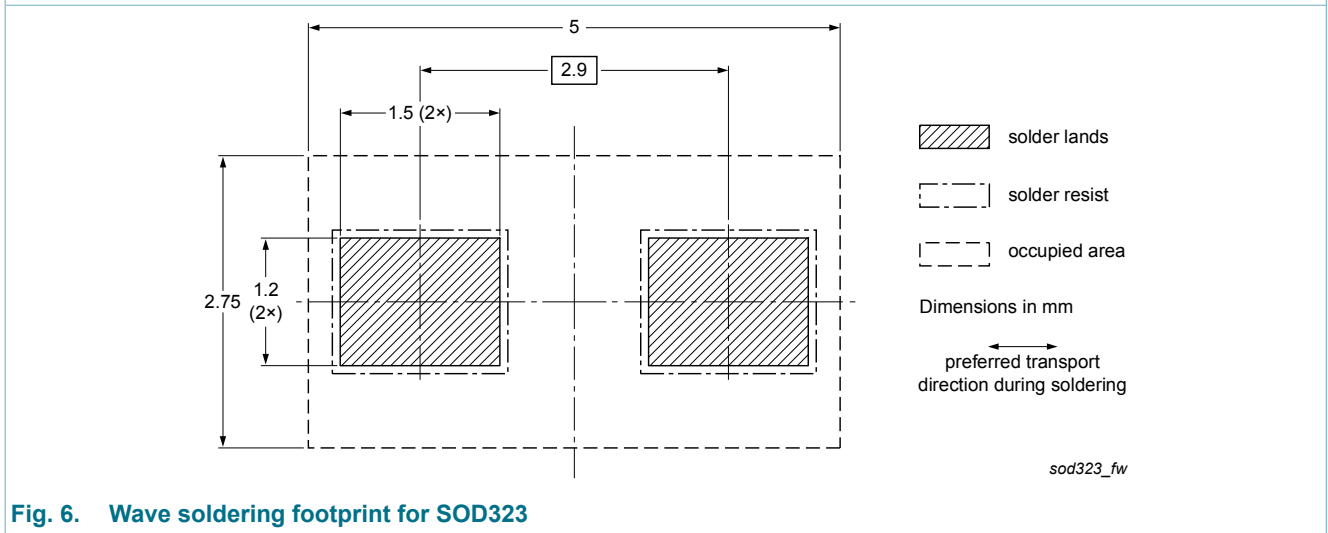


Fig. 6. Wave soldering footprint for SOD323

### 14. Revision history

Table 8. Revision history

| Data sheet ID  | Release date   | Data sheet status     | Change notice | Supersedes    |
|----------------|--|-----------------------|---------------|---------------|
| 1PS76SB10 v.4  | 20121217   | Product data sheet    | -             | 1PS76SB10 v.3 |
| Modifications: | <ul style="list-style-type: none"> <li>Section "Features and benefits" updated</li> <li>Section "Applications" updated</li> <li>Table 5 "Limiting values": ambient temperature <math>T_{amb}</math> minimum value updated</li> <li>Table 7 "Characteristics": forward voltage <math>V_F</math> conditions updated</li> <li>Figures 1, 2 and 3 updated</li> </ul> |                       |               |               |
| 1PS76SB10 v.3  | 20120718   | Product data sheet    | -             | 1PS76SB10 v.2 |
| 1PS76SB10 v.2  | 20040126   | Product specification | -             | 1PS76SB10 v.1 |
| 1PS76SB10 v.1  | 19961014   | Product specification | -             | -             |

## 15. Legal information

### 15.1 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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