

1PS76SB10

Schottky barrier single diode

18 July 2012

Product data sheet

1. Product profile

1.1 General description

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

1.2 Features and benefits

- Low forward voltage
- Guard ring protected
- Very small plastic SMD package
- AEC-Q101 qualified

1.3 Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes

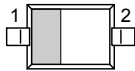

1.4 Quick reference data

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 | $I_F = 10 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ | - | - | 400 | mV |

2. Pinning information

Table 2. Pinning information

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

[1] The marking bar indicates the cathode.



3. Ordering information

Table 3. Ordering information

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

4. Marking

Table 4. Marking codes

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

5. 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_{amb} | ambient temperature | | -65 | 150 | °C |
| T_{stg} | storage temperature | | -65 | 150 | °C |

6. Thermal characteristics

Table 6. Thermal characteristics

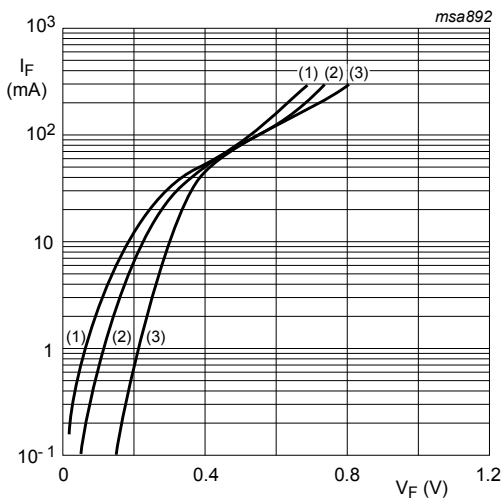
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------------|---|-------------|-----|-----|-----|------|
| $R_{\text{th}(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | - | 450 | K/W |

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

7. Characteristics

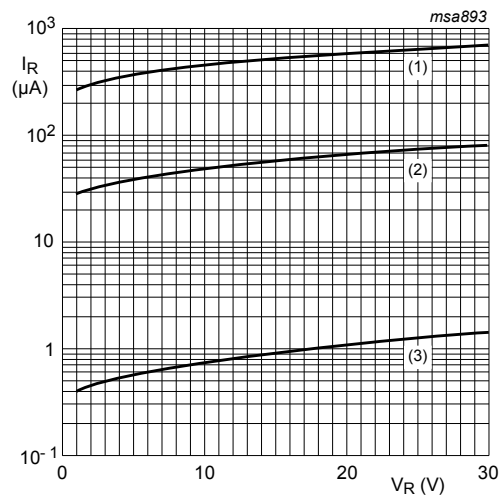
Table 7. Characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------|-------------------|---|-----|-----|-----|------|
| V _F | forward voltage | I _F = 0.1 mA; T _{amb} = 25 °C | - | - | 240 | mV |
| | | I _F = 1 mA; T _{amb} = 25 °C | - | - | 320 | mV |
| | | I _F = 10 mA; T _{amb} = 25 °C | - | - | 400 | mV |
| | | I _F = 30 mA; T _{amb} = 25 °C | - | - | 500 | mV |
| | | I _F = 100 mA; T _{amb} = 25 °C | - | - | 800 | mV |
| I _R | reverse current | V _R = 25 V; T _{amb} = 25 °C; pulsed; t _p = 300 μs; δ = 0.02 | - | - | 2 | μA |
| C _d | diode capacitance | f = 1 MHz; T _{amb} = 25 °C; V _R = 1 V | - | - | 10 | pF |



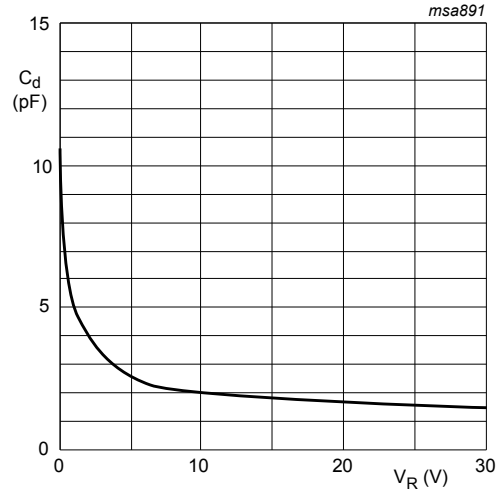
- (1) T_{amb} = 125 °C
- (2) T_{amb} = 85 °C
- (3) T_{amb} = 25 °C

Fig. 1. Forward current as a function of forward voltage; typical values



- (1) T_{amb} = 125 °C
- (2) T_{amb} = 85 °C
- (3) T_{amb} = 25 °C

Fig. 2. Reverse current as a function of reverse voltage; typical values



f = 1 MHz; T_{amb} = 25 °C

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

8. Test information

8.1 Quality information

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

9. Package outline

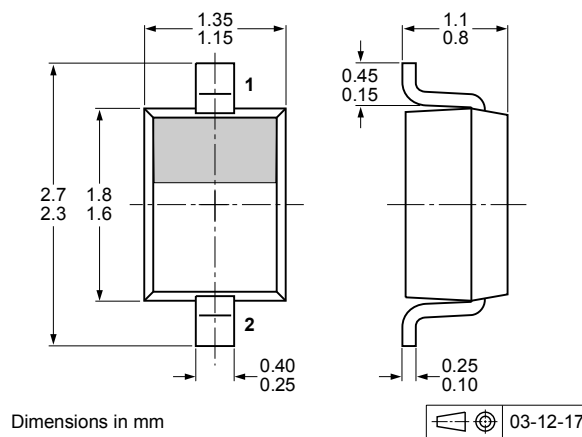


Fig. 4. SOD323

10. Soldering

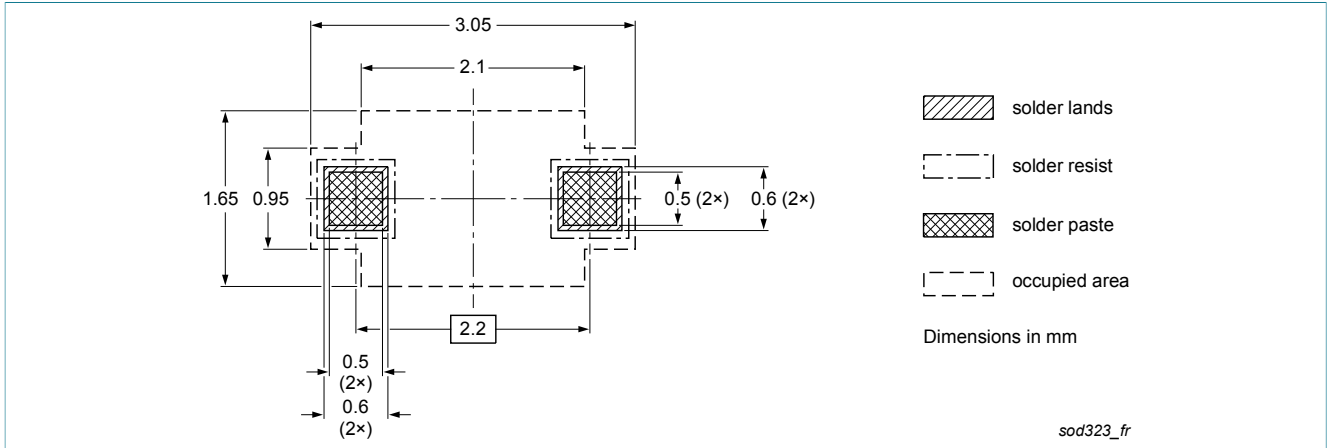


Fig. 5. Reflow soldering footprint for SOD323 (SOD323)

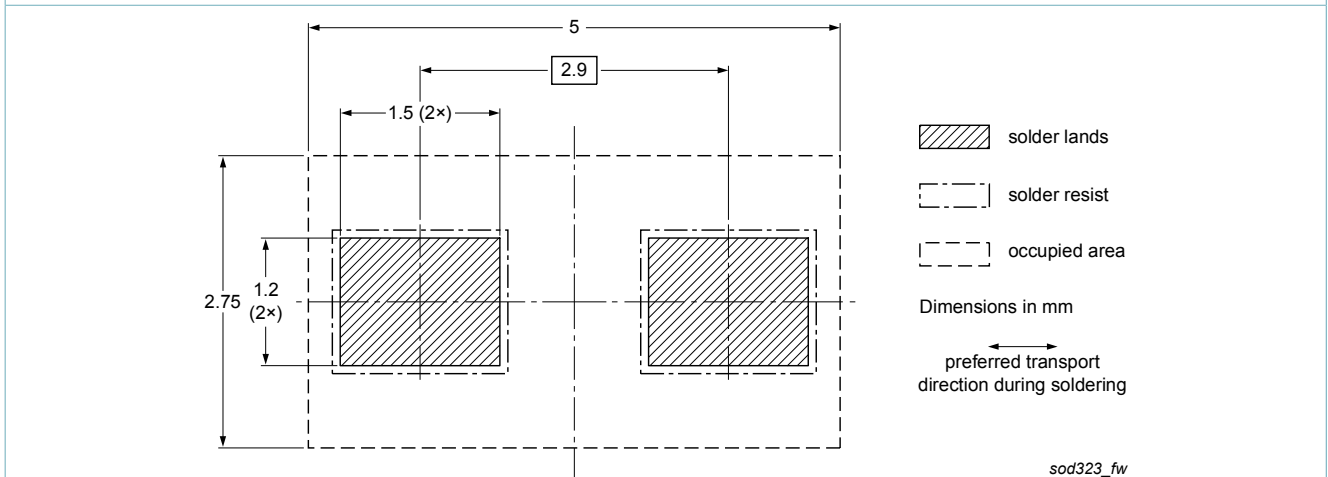


Fig. 6. Wave soldering footprint for SOD323 (SOD323)

11. Revision history

Table 8. Revision history

| Data sheet ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|---|-----------------------|---------------|---------------|
| 1PS76SB10 v.3 | 20120718 | Product data sheet | - | 1PS76SB10 v.2 |
| Modifications: | <ul style="list-style-type: none"> The format of this document has been redesigned to comply with the new identity guidelines of NXP Semiconductors. Legal texts have been adapted to the new company name where appropriate. Package outline drawing replaced by minimized package outline drawing Section "Test information" added Section "Soldering" added | | | |
| 1PS76SB10 v.2 | 20040126 | Product specification | - | 1PS76SB10 v.1 |
| 1PS76SB10 v.1 | 19961014 | Product specification | - | - |

12. Legal information

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| Document status [1][2] | Product status [3] | Definition |
|--------------------------------|--------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
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