

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

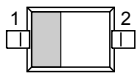


4. Quick reference data

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; $t_p = 300 \mu\text{s}$; $\delta = 0.02$; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ | - | - | 400 | mV |

5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------|---|--|
| 1 | K | cathode[1] |  SOD323 |  K  A 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_{amb} | ambient temperature | | -55 | 125 | °C |
| T_{stg} | storage temperature | | -65 | 150 | °C |

9. Thermal characteristics

Table 6. Thermal characteristics

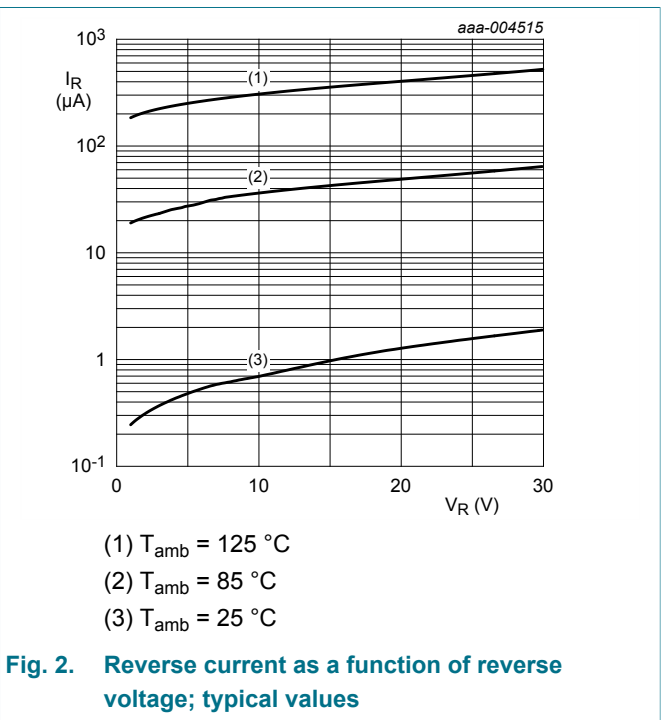
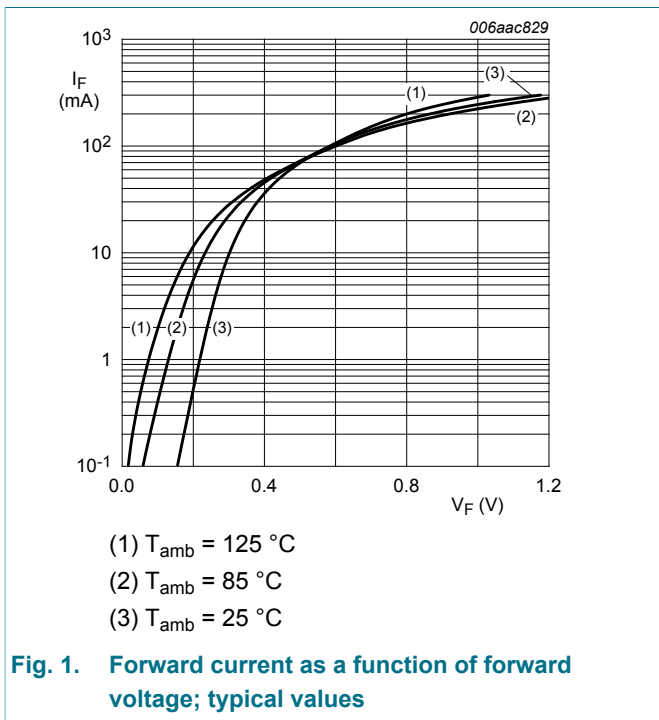
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------------|---|-------------|-----|-----|-----|------|
| $R_{\text{th}(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | - | 450 | K/W |

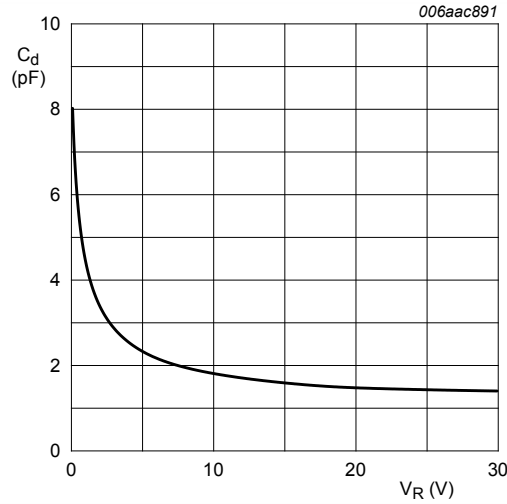
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

10. Characteristics

Table 7. Characteristics

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





T_{amb} = 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

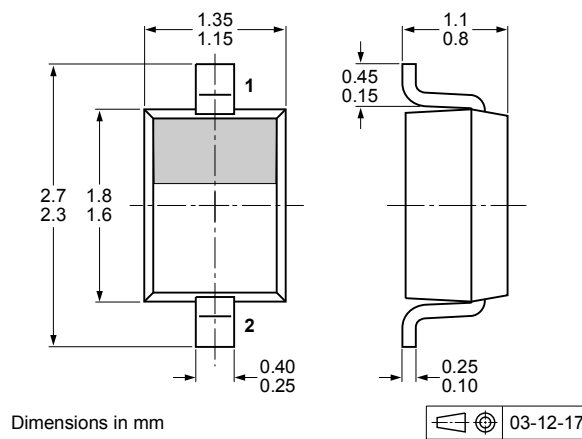


Fig. 4. Package outline SOD323

13. Soldering

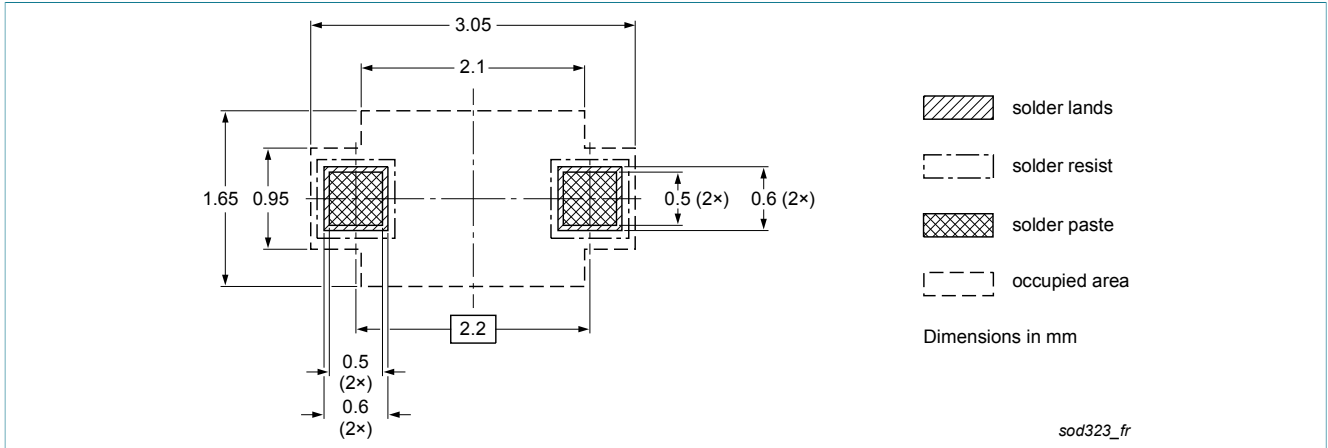


Fig. 5. Reflow soldering footprint for SOD323

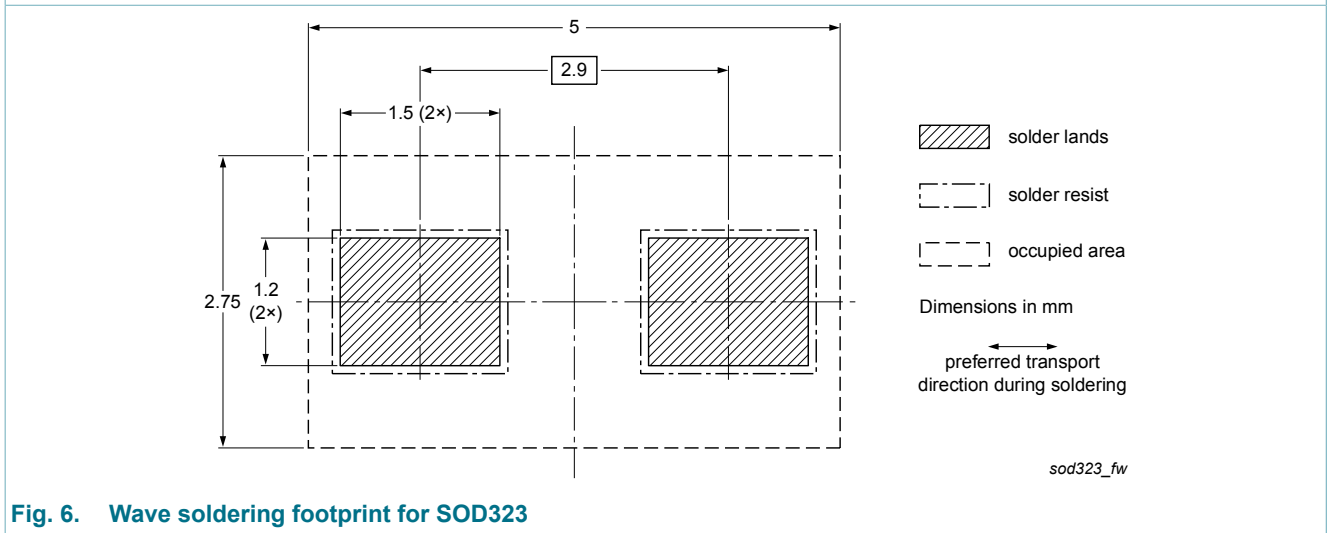


Fig. 6. Wave soldering footprint for SOD323

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"> Section "Features and benefits" updated Section "Applications" updated Table 5 "Limiting values": ambient temperature T_{amb} minimum value updated Table 7 "Characteristics": forward voltage V_F conditions updated Figures 1, 2 and 3 updated | | | |
| 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

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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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