



1PS76SB17

4 V, 30 mA low capacitance Schottky barrier diode

27 December 2022

Product data sheet

1. General description

Planar low capacitance Schottky barrier diode encapsulated in a SOD323 (SC-76) very small Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Very low diode capacitance
- Very low forward voltage
- Very small SMD plastic package
- AEC-Q101 qualified

3. Applications

- Digital applications:
 - Ultra high-speed switching
 - Clamping circuits
- RF applications:
 - Diode ring mixer
 - RF detector
 - RF voltage doubler

4. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|-------------------|--|-----|-----|-----|------|
| I_F | forward current | | - | - | 30 | mA |
| V_R | reverse voltage | | - | - | 4 | V |
| C_d | diode capacitance | $V_R = 0\text{ V}$; $f = 1\text{ MHz}$; $T_{amb} = 25\text{ °C}$ | - | 0.8 | 1 | pF |

5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------|--------------------|----------------|
| 1 | K | cathode[1] | SOD323 | sym001 |
| 2 | A | anode | | |

[1] The marking bar indicates the cathode.

6. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|---------------------------|---------|--|------------------------|
| | Name | Description | Version |
| 1PS76SB17 | SOD323 | plastic, surface-mounted package; 2 leads; 1.3 mm pitch; 1.7 mm x 1.25 mm x 0.95 mm body | SOD323 |

7. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| 1PS76SB17 | S7 |

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 | | - | 4 | V |
| I_F | forward current | | - | 30 | mA |
| T_j | junction temperature | | - | 150 | °C |
| T_{amb} | ambient temperature | | -65 | 150 | °C |
| T_{stg} | storage temperature | | -65 | 150 | °C |

9. Thermal characteristics

Table 6. Thermal characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------|---|-------------|---------|-----|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] [2] | - | 450 | K/W |

[1] For Schottky barrier diodes, thermal run-away has to be considered as in some applications the reverse power losses P_R are a significant part of the total power losses. Nomograms for determining the reverse power losses P_R and $I_{F(AV)}$ rating will be available on request

[2] Refer to SOD323 (SC-76) standard mounting conditions.

10. Characteristics

Table 7. Characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|-------------------|---|-----|------|-----|------|
| V_F | forward voltage | $I_F = 0.1 \text{ mA}; t_p \leq 300 \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ | - | 300 | 350 | mV |
| | | $I_F = 1 \text{ mA}; t_p \leq 300 \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ | - | 360 | 450 | mV |
| | | $I_F = 10 \text{ mA}; t_p \leq 300 \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ | - | 470 | 600 | mV |
| I_R | reverse current | $V_R = 3 \text{ V}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ | - | - | 250 | nA |
| C_d | diode capacitance | $V_R = 0 \text{ V}; f = 1 \text{ MHz}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ | - | 0.8 | 1 | pF |
| | | $V_R = 0.5 \text{ V}; f = 1 \text{ MHz}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ | - | 0.65 | - | pF |

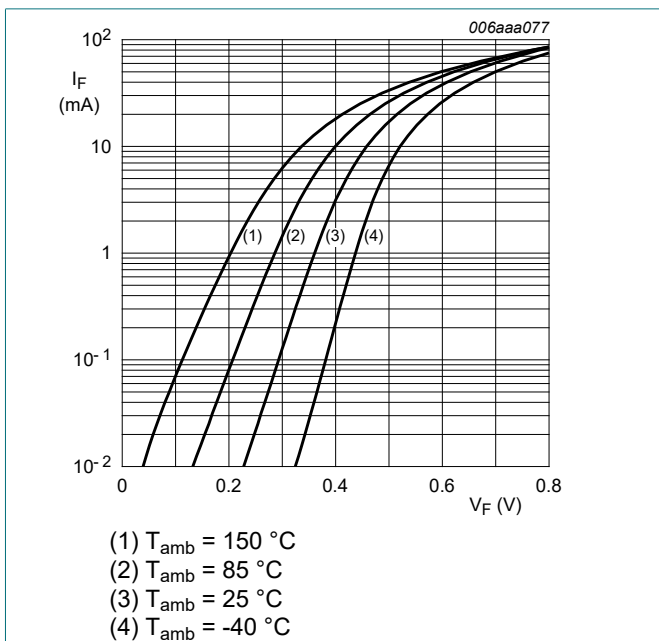


Fig. 1. Forward current as a function of forward voltage; typical values.

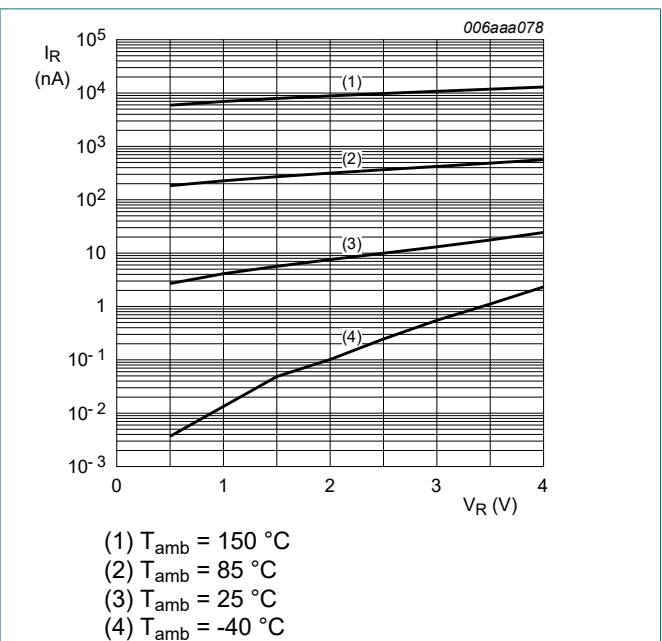


Fig. 2. Reverse current as a function of reverse voltage; typical values.

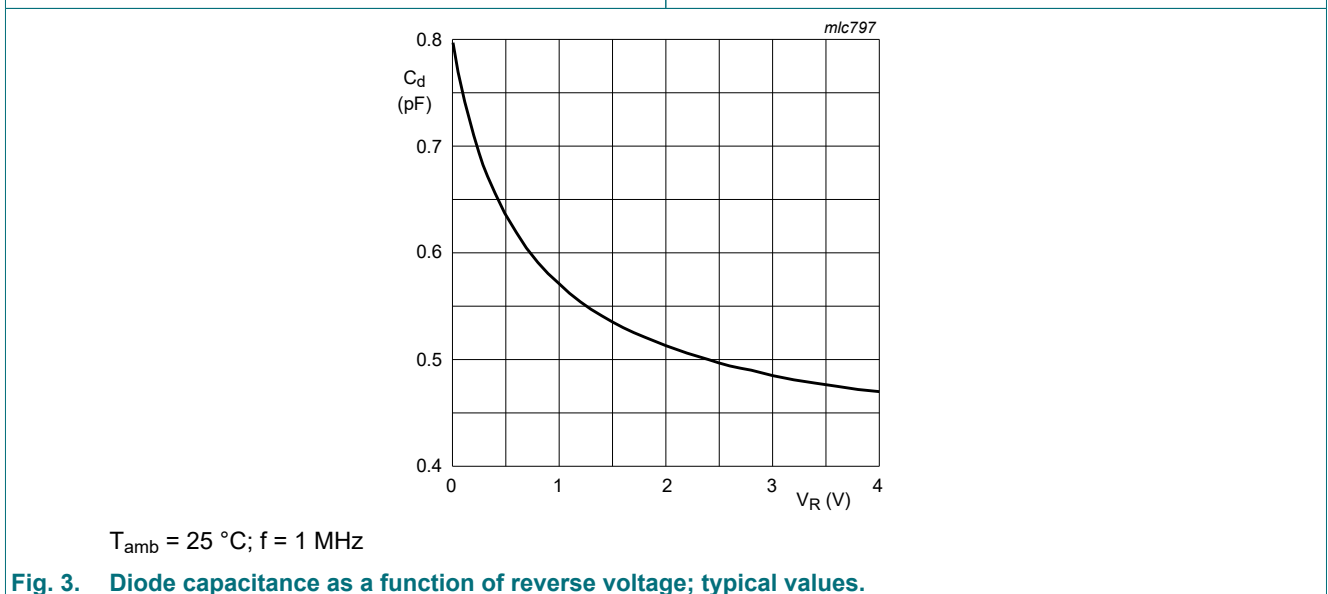


Fig. 3. Diode capacitance as a function of reverse voltage; typical values.

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

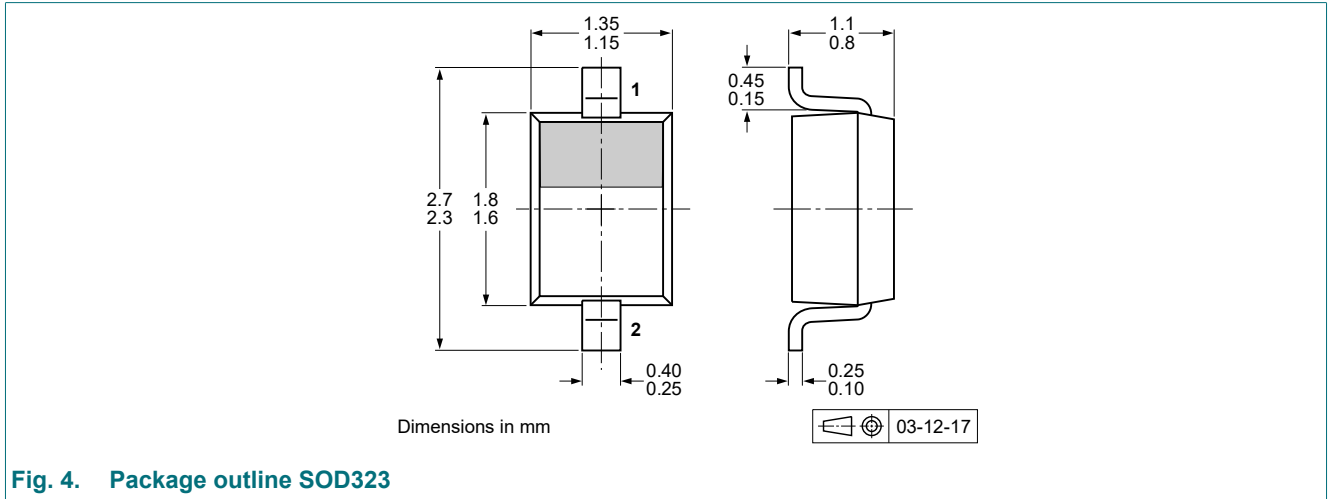


Fig. 4. Package outline SOD323

13. Soldering

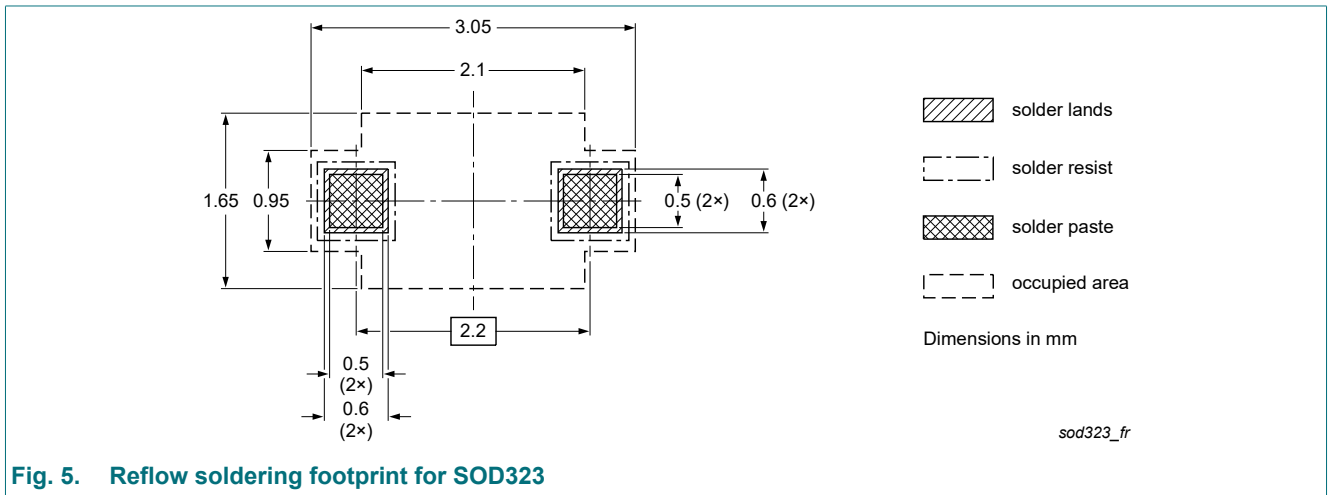
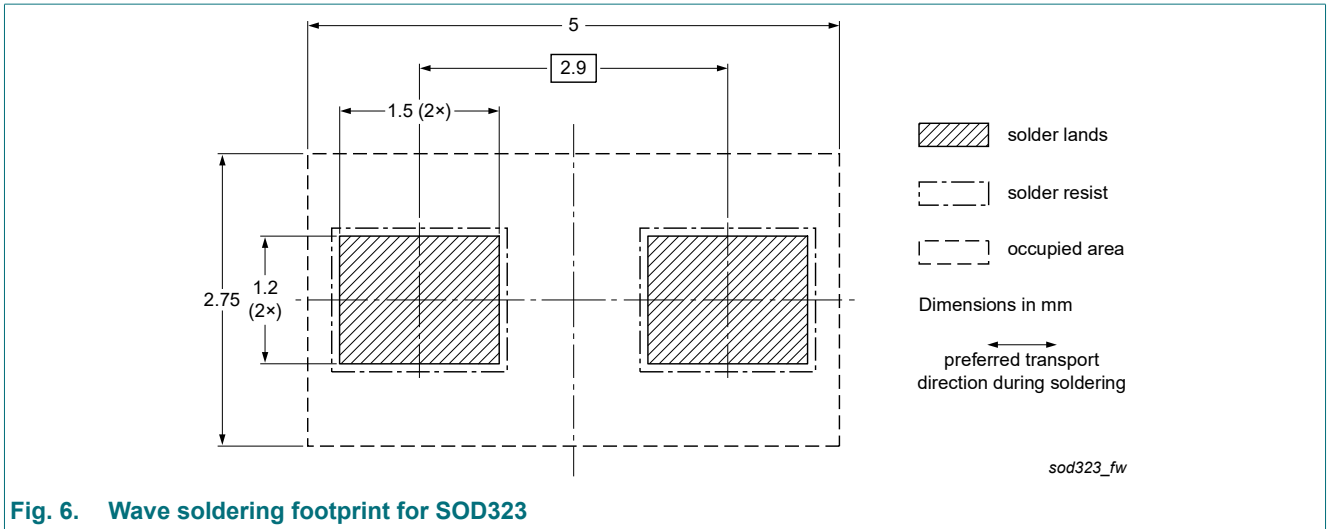


Fig. 5. Reflow soldering footprint for SOD323



14. Revision history

Table 8. Revision history

| Data sheet ID | Release date | Data sheet status | Change notice | Supersedes |
|---------------------------|--|------------------------|---------------|---------------------------|
| 1PS76SB17 v.7 | 20221227 | Product data sheet | - | 1PSXSB17_6 |
| Modifications: | <ul style="list-style-type: none"> Family data sheet splitted to single type data sheets. Packing information removed. | | | |
| 1PSXSB17_6 | 20050404 | Product data sheet | - | 1PS76SB17_ 1PS79SB17_5 |
| 1PS76SB17_ 1PS79SB17_5 | 20041028 | Product data sheet | - | 1PS76SB17_4 |
| 1PS76SB17_4 | 20040126 | Product data sheet | - | 1PS76SB17_3 |
| 1PS76SB21_3 | 20020809 | Product data sheet | - | 1PS76SB21_2 |
| 1PS76SB17_2 | 19990525 | Preliminary data sheet | - | 1PS76SB17_1 |
| 1PS76SB17_1 | 19961014 | Preliminary data sheet | - | - |

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15. Legal information

Data sheet status

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

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
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