

RB751 series

Schottky barrier single diodes

Rev. 01 — 21 May 2007

Product data sheet

1. Product profile

1.1 General description

Planar Schottky barrier single diodes with an integrated guard ring for stress protection, encapsulated in small Surface-Mounted Device (SMD) plastic packages.

Table 1. Product overview

| Type number | Package | | Package configuration |
|-------------|---------|-------|-----------------------|
| | NXP | JEITA | |
| RB751CS40 | SOD882 | - | leadless ultra small |
| RB751S40 | SOD523 | SC-79 | ultra small |
| RB751V40 | SOD323 | SC-76 | very small |

1.2 Features

- Low forward voltage
- Low capacitance

1.3 Applications

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

1.4 Quick reference data


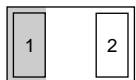

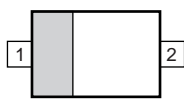
Table 2. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------|---------------------------------|----------------------|-----|-----|-----|------|
| I_F | forward current | | - | - | 120 | mA |
| V_{RRM} | repetitive peak reverse voltage | | - | - | 40 | V |
| V_F | forward voltage | $I_F = 1 \text{ mA}$ | [1] | - | 370 | mV |

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

2. Pinning information

Table 3. Pinning

| Pin | Description | Simplified outline | Symbol |
|-----------------------|-------------|---|---|
| SOD882 | | | |
| 1 | cathode | [1] |  sym001 |
| 2 | anode |  Transparent top view | |
| SOD323; SOD523 | | | |
| 1 | cathode | [1] |  sym001 |
| 2 | anode |  001aab540 | |

[1] The marking bar indicates the cathode.

3. Ordering information

Table 4. Ordering information

| Type number | Package | | |
|-------------|---------|--|---------|
| | Name | Description | Version |
| RB751CS40 | - | leadless ultra small plastic package; 2 terminals; body 1.0 × 0.6 × 0.5 mm | SOD882 |
| RB751S40 | SC-79 | plastic surface-mounted package; 2 leads | SOD523 |
| RB751V40 | SC-76 | plastic surface-mounted package; 2 leads | SOD323 |

4. Marking

Table 5. Marking codes

| Type number | Marking code |
|-------------|--------------|
| RB751CS40 | F6 |
| RB751S40 | G4 |
| RB751V40 | W8 |

5. Limiting values

Table 6. Limiting values

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

| Symbol | Parameter | Conditions | Min | Max | Unit | |
|-----------|-------------------------------------|-------------------------------|-----|------|------|----|
| V_{RRM} | repetitive peak reverse voltage | | - | 40 | V | |
| V_R | reverse voltage | | - | 40 | V | |
| I_F | forward current | | - | 120 | mA | |
| I_{FSM} | non-repetitive peak forward current | square wave; $t_p < 10$ ms | - | 200 | mA | |
| P_{tot} | total power dissipation | $T_{amb} \leq 25$ °C | [1] | | | |
| | RB751CS40 | | [2] | - | 250 | mW |
| | RB751S40 | | [2] | - | 280 | mW |
| | RB751V40 | | - | - | 280 | mW |
| T_j | junction temperature | | - | 150 | °C | |
| T_{amb} | ambient temperature | | -65 | +150 | °C | |
| T_{stg} | storage temperature | | -65 | +150 | °C | |

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

[2] Reflow soldering is the only recommended soldering method.

6. Thermal characteristics

Table 7. Thermal characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|---------------|---|-------------|-----|-----|-----|------|-----|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | | | | |
| | RB751CS40 | | [2] | - | - | 500 | K/W |
| | RB751S40 | | [2] | - | - | 450 | K/W |
| | RB751V40 | | - | - | - | 450 | K/W |

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

[2] Reflow soldering is the only recommended soldering method.

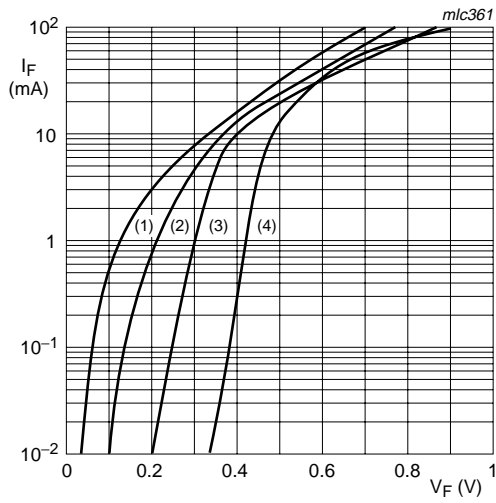
7. Characteristics

Table 8. Characteristics

$T_{amb} = 25$ °C unless otherwise specified.

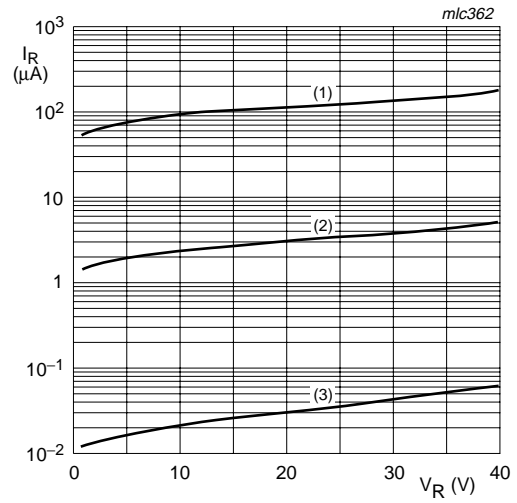
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|--------|-------------------|--------------------------|-----|-----|-----|------|----|
| V_F | forward voltage | $I_F = 1$ mA | [1] | - | - | 370 | mV |
| I_R | reverse current | $V_R = 30$ V | - | - | 0.5 | μA | |
| C_d | diode capacitance | $V_R = 1$ V; $f = 1$ MHz | - | 2 | - | pF | |

[1] Pulse test: $t_p \leq 300$ μs; $\delta \leq 0.02$.



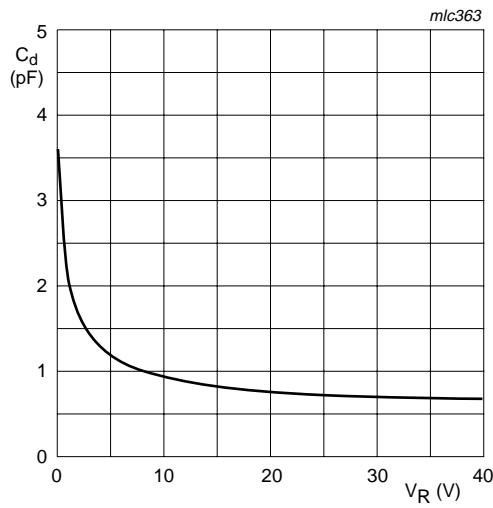
- (1) $T_{amb} = 125\text{ °C}$
- (2) $T_{amb} = 85\text{ °C}$
- (3) $T_{amb} = 25\text{ °C}$
- (4) $T_{amb} = -40\text{ °C}$

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



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

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



$f = 1\text{ MHz}; T_{amb} = 25\text{ °C}$

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

8. Package outline

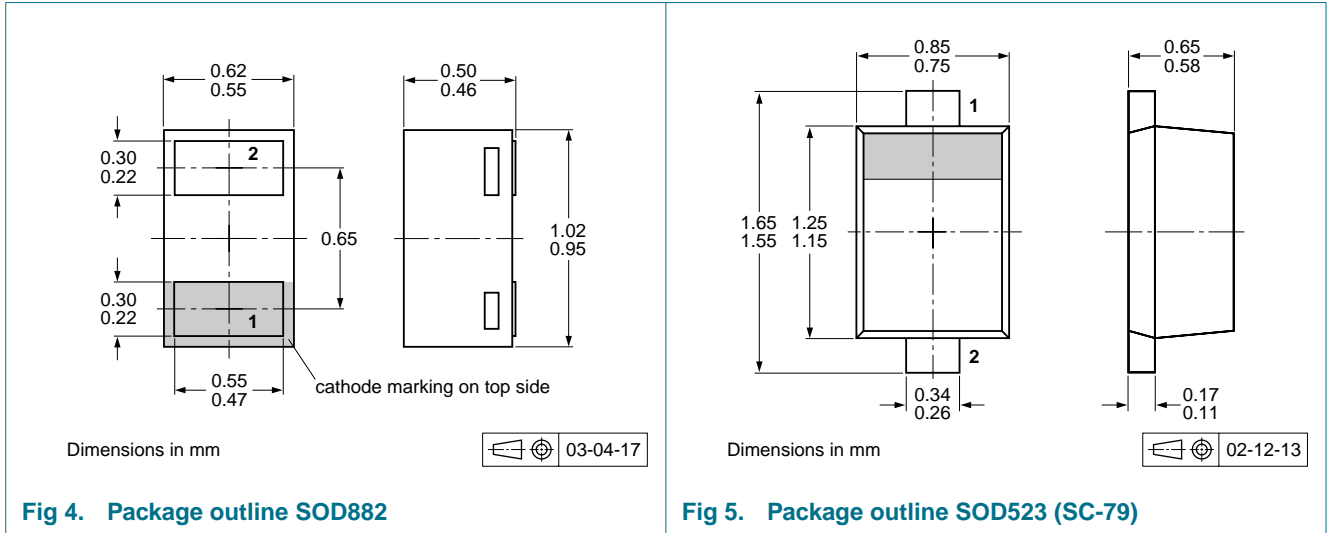


Fig 4. Package outline SOD882

Fig 5. Package outline SOD523 (SC-79)

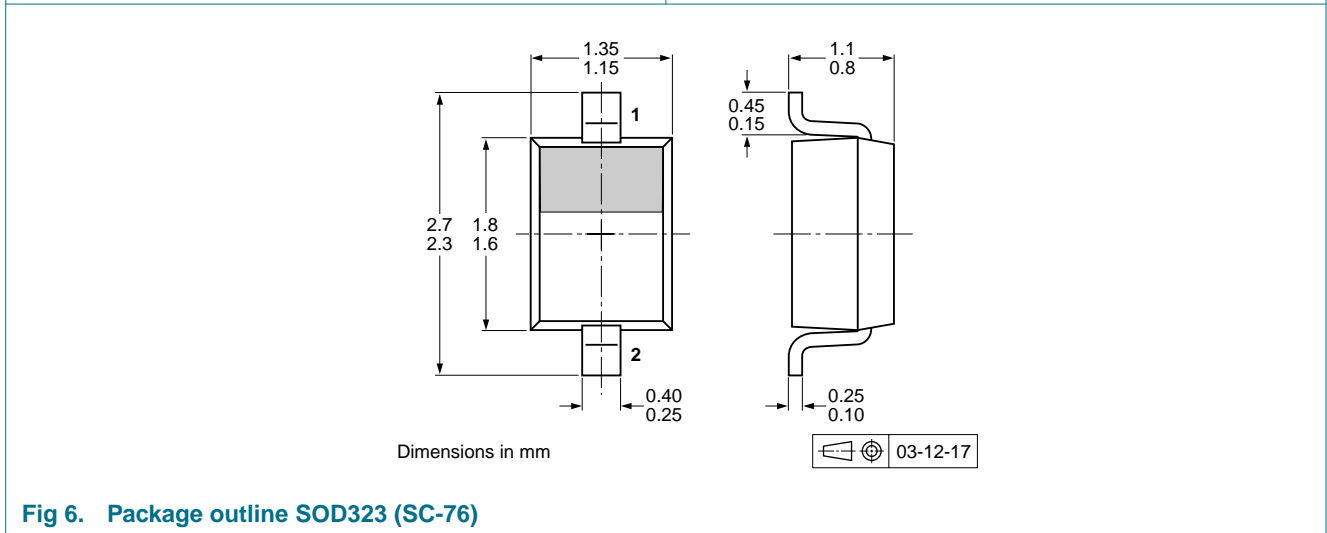


Fig 6. Package outline SOD323 (SC-76)

9. Packing information

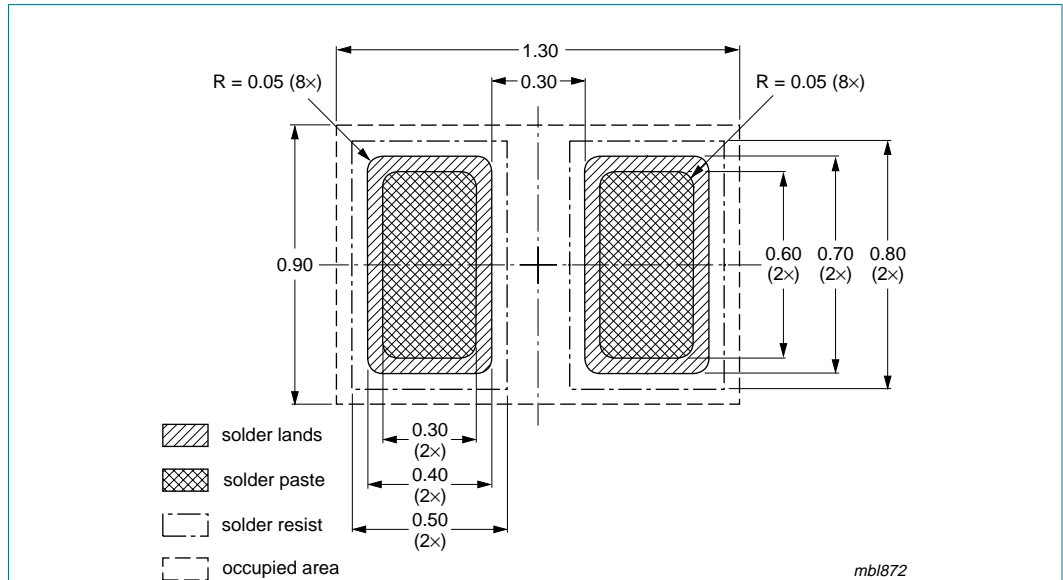
Table 9. Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code.^[1]

| Type number | Package | Description | Packing quantity | | |
|-------------|---------|--------------------------------|------------------|------|-------|
| | | | 3000 | 8000 | 10000 |
| RB751CS40 | SOD882 | 2 mm pitch, 8 mm tape and reel | - | - | -315 |
| RB751S40 | SOD523 | 2 mm pitch, 8 mm tape and reel | - | -315 | - |
| | | 4 mm pitch, 8 mm tape and reel | -115 | - | -135 |
| RB751V40 | SOD323 | 4 mm pitch, 8 mm tape and reel | -115 | - | -135 |

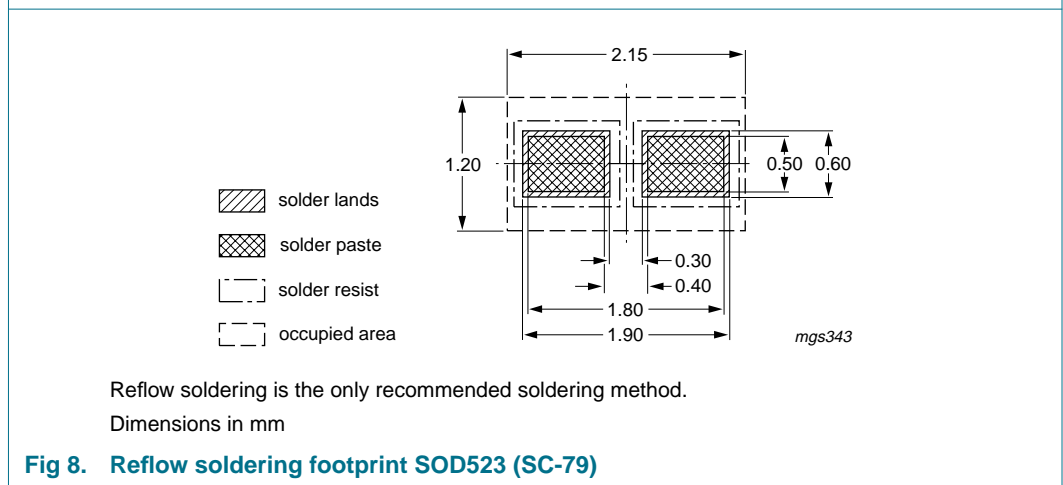
[1] For further information and the availability of packing methods, see [Section 13](#).

10. Soldering



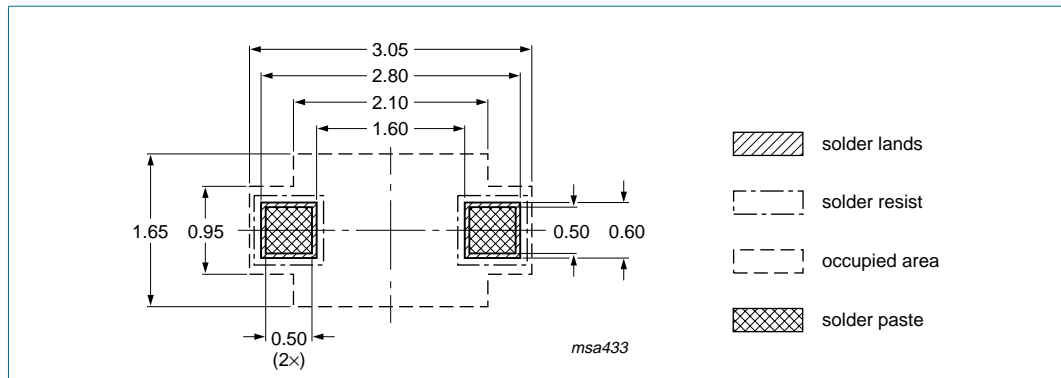
Reflow soldering is the only recommended soldering method.
Dimensions in mm

Fig 7. Reflow soldering footprint SOD882



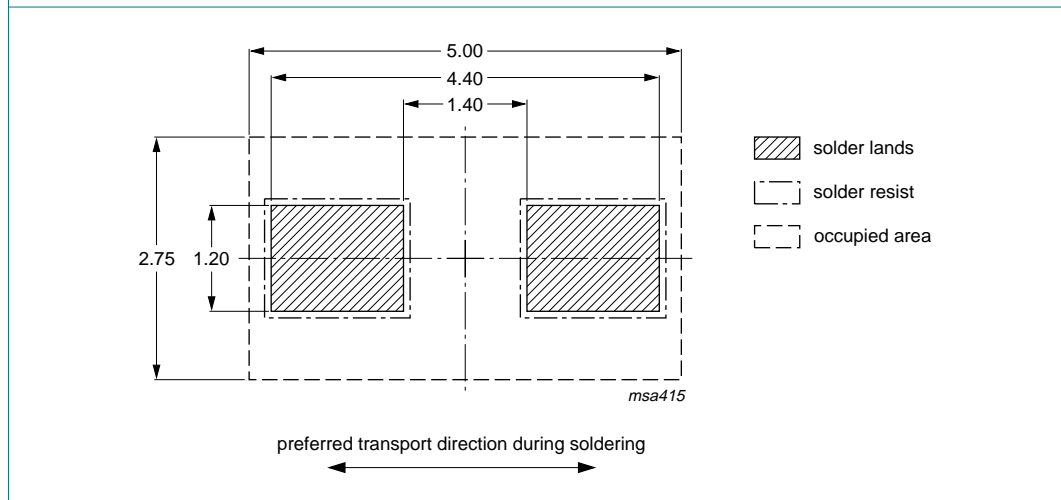
Reflow soldering is the only recommended soldering method.
Dimensions in mm

Fig 8. Reflow soldering footprint SOD523 (SC-79)



Dimensions in mm

Fig 9. Reflow soldering footprint SOD323 (SC-76)



Dimensions in mm

Fig 10. Wave soldering footprint SOD323 (SC-76)

11. Revision history

Table 10. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|-------------|--------------|--------------------|---------------|------------|
| RB751_SER_1 | 20070521 | Product data sheet | - | - |

12. Legal information

12.1 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".

[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 URL <http://www.nxp.com>.

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