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# 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 mA | [1] | - | - | 370 | mV |

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

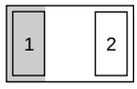
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## 2. Pinning information

**Table 3. Pinning**

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

[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 |



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## 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 |

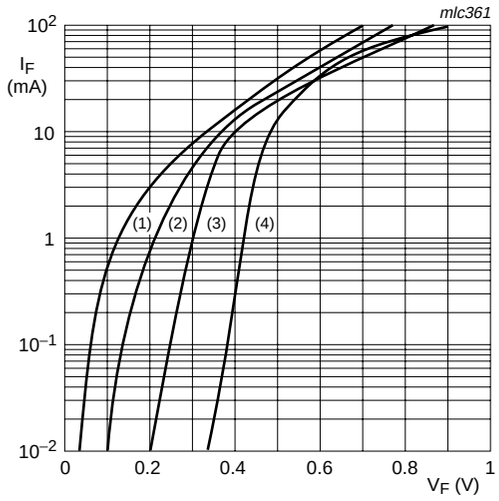
[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.



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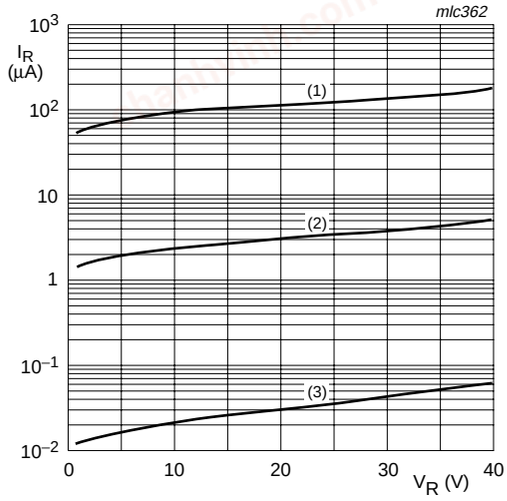
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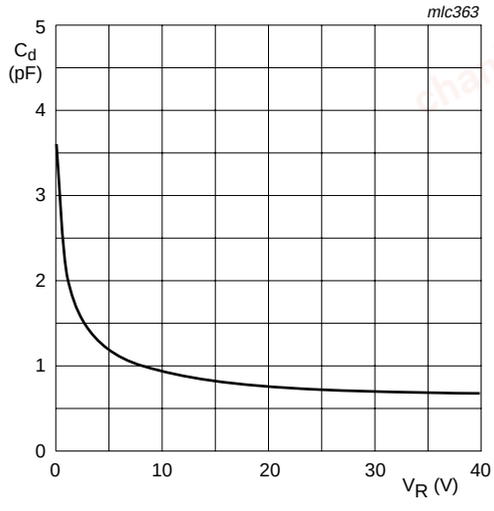

(1) $T_{amb}$ = 125 °C
(2) $T_{amb}$ = 85 °C
(3) $T_{amb}$ = 25 °C
(4) $T_{amb}$ = –40 °C

**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**


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## 8. Package outline

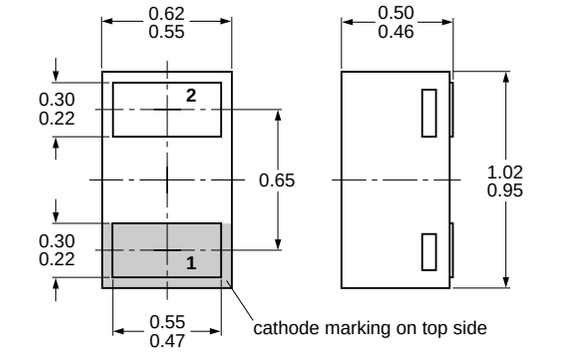



**Fig 4. Package outline SOD882**

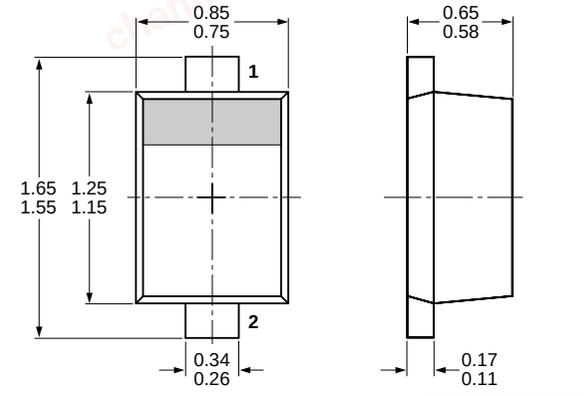



**Fig 5. Package outline SOD523 (SC-79)**

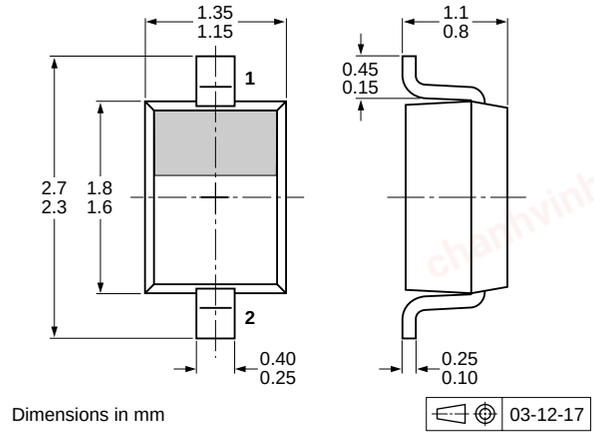



**Fig 6. Package outline SOD323 (SC-76)**

## 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.

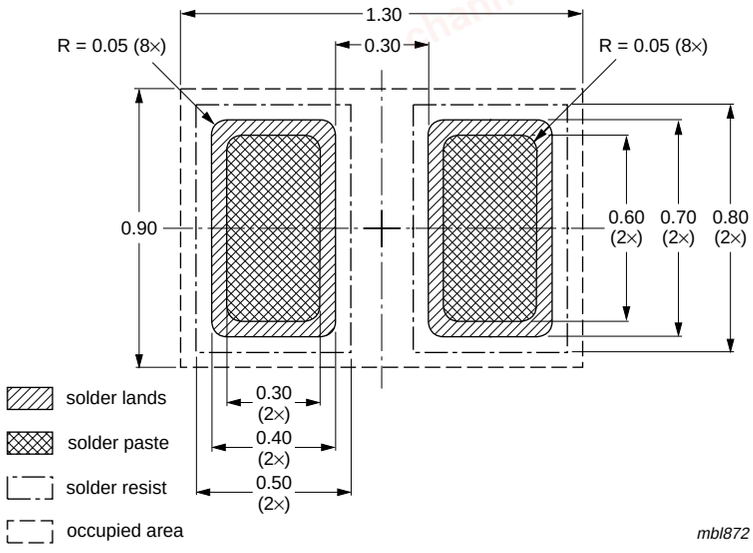


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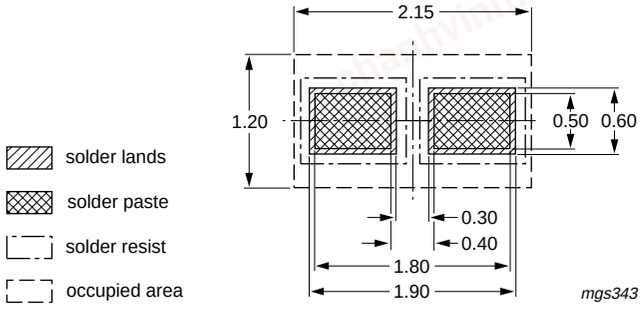
## 10. Soldering




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

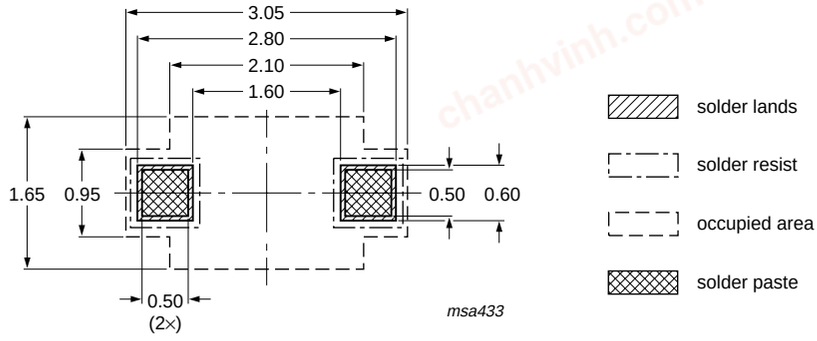
**Fig 8. Reflow soldering footprint SOD523 (SC-79)**



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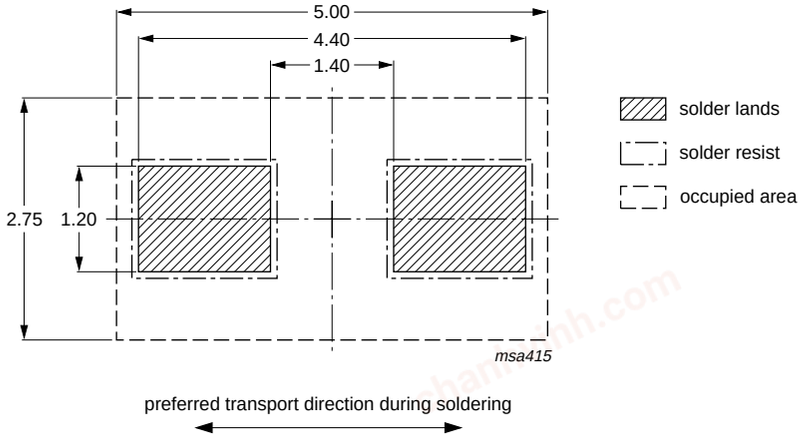
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Dimensions in mm

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




Dimensions in mm

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



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## 11. Revision history

**Table 10. Revision history**

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

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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. |
| 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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