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Kind regards,

Team Nexperia

# 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

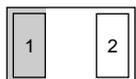
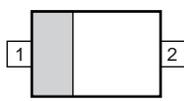
Table 2. Quick reference data

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
<b>SOD882</b>			
1	cathode	[1]	 sym001
2	anode	 Transparent top view	
<b>SOD323; SOD523</b>			
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.

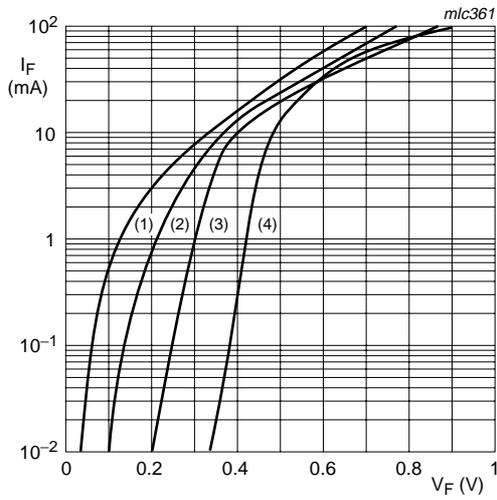
## 7. Characteristics

**Table 8. Characteristics**

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

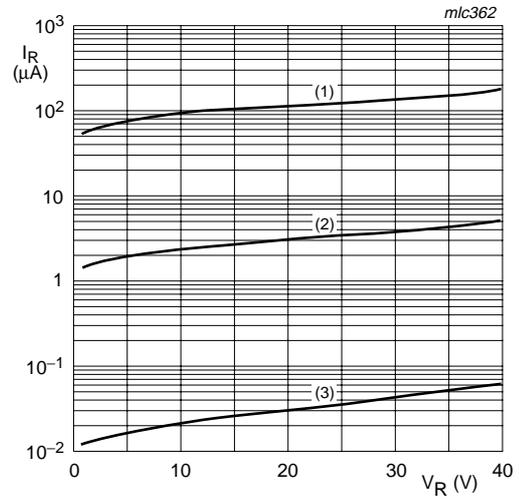
Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$V_F$	forward voltage	$I_F = 1$ mA	[1]	-	-	370	mV
$I_R$	reverse current	$V_R = 30$ V	-	-	0.5	μA	
$C_d$	diode capacitance	$V_R = 1$ V; $f = 1$ MHz	-	2	-	pF	

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



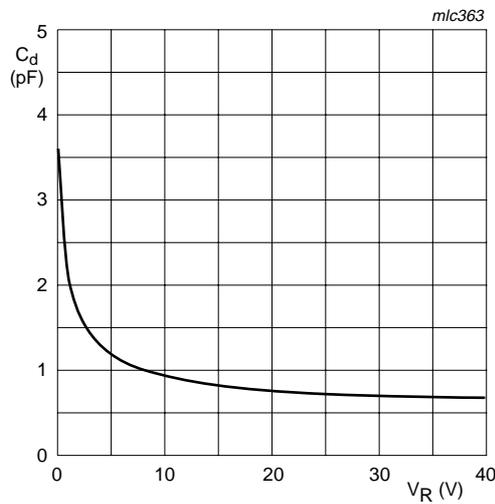
- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}$
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}$
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$
- (4)  $T_{amb} = -40\text{ }^{\circ}\text{C}$

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



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

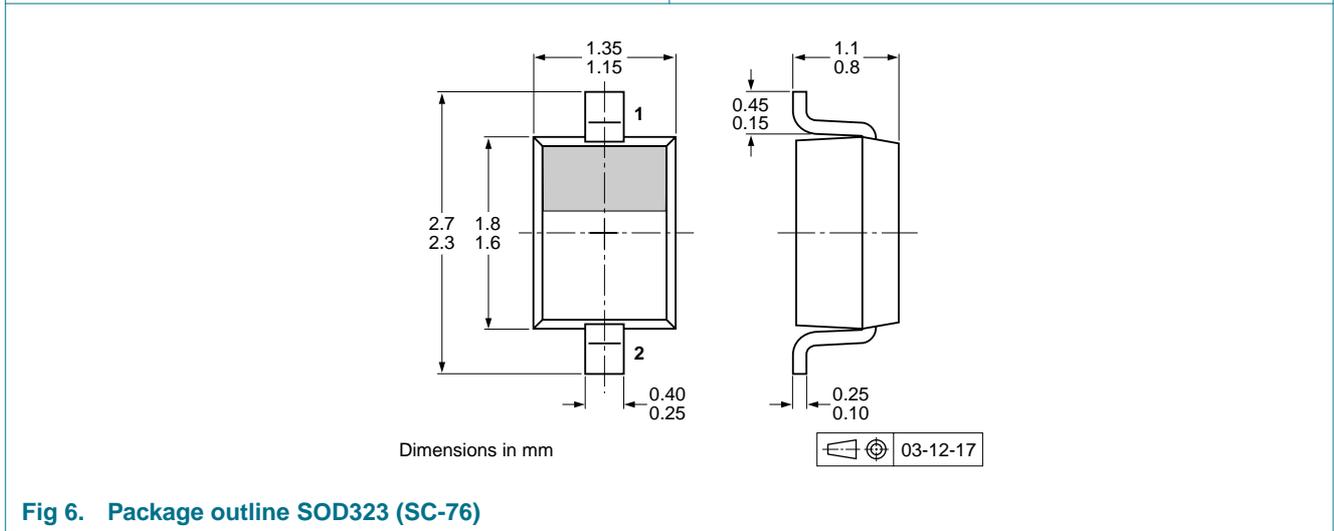
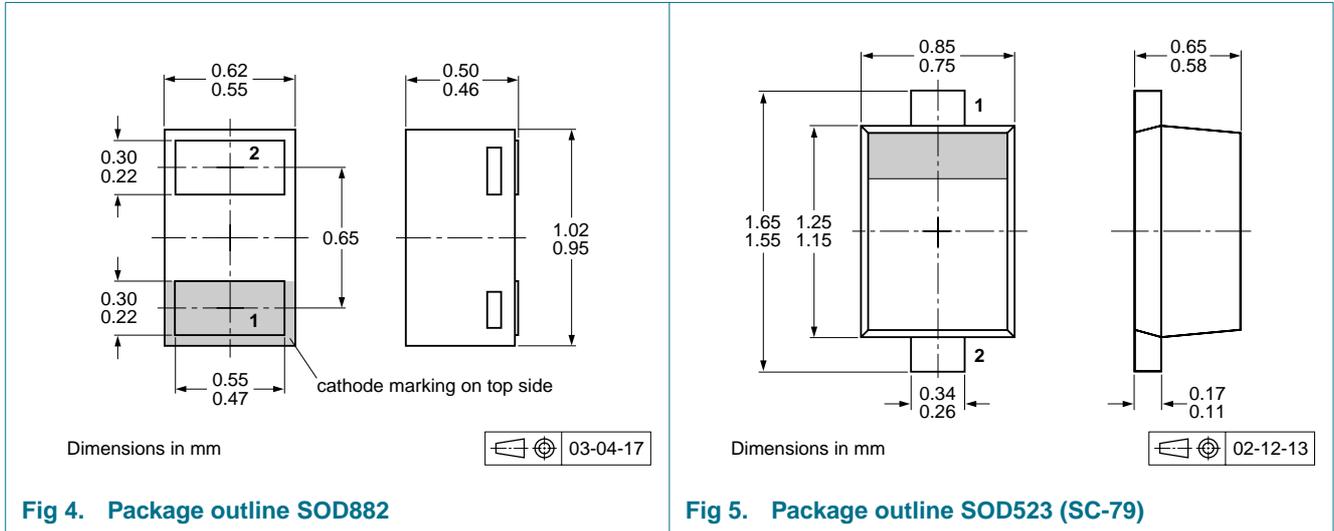
**Fig 2. Reverse current as a function of reverse voltage; typical values**



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

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

**8. Package outline**



**9. Packing information**

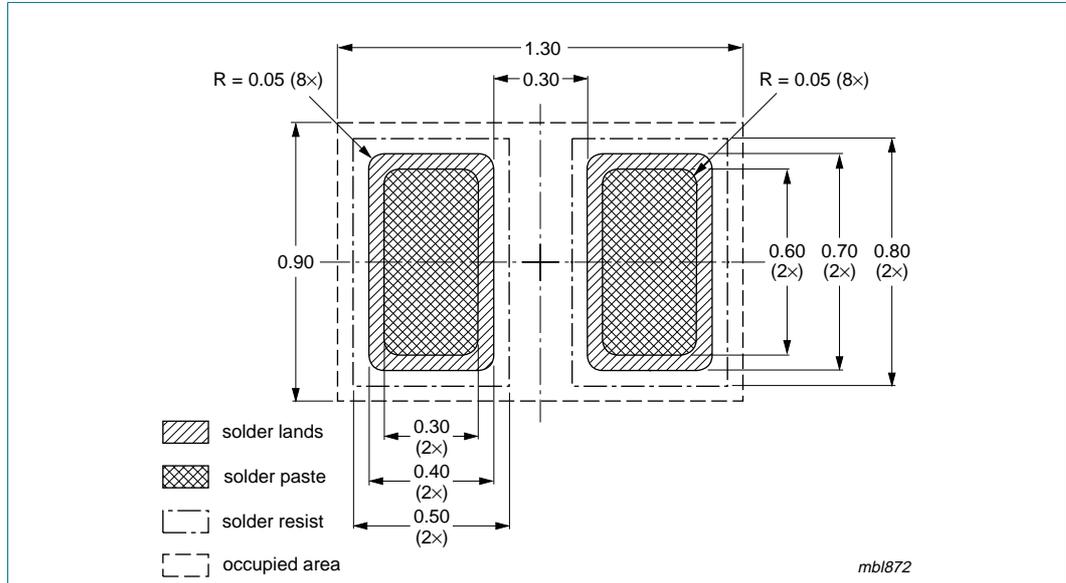
**Table 9. Packing methods**

The indicated -xxx are the last three digits of the 12NC ordering code.<sup>[1]</sup>

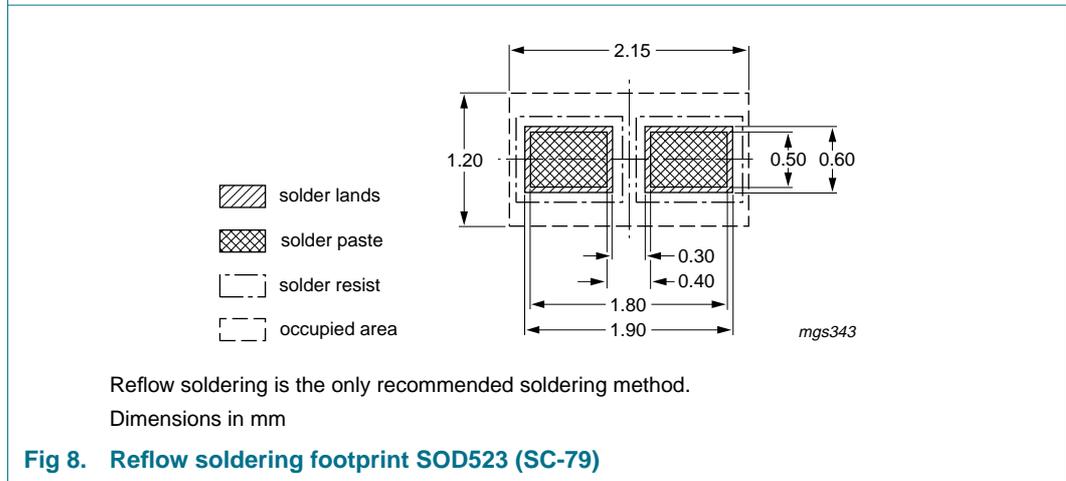
Type number	Package	Description	Packing quantity		
			3000	8000	10000
RB751CS40	SOD882	2 mm pitch, 8 mm tape and reel	-	-	-315
RB751S40	SOD523	2 mm pitch, 8 mm tape and reel	-	-315	-
		4 mm pitch, 8 mm tape and reel	-115	-	-135
RB751V40	SOD323	4 mm pitch, 8 mm tape and reel	-115	-	-135

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

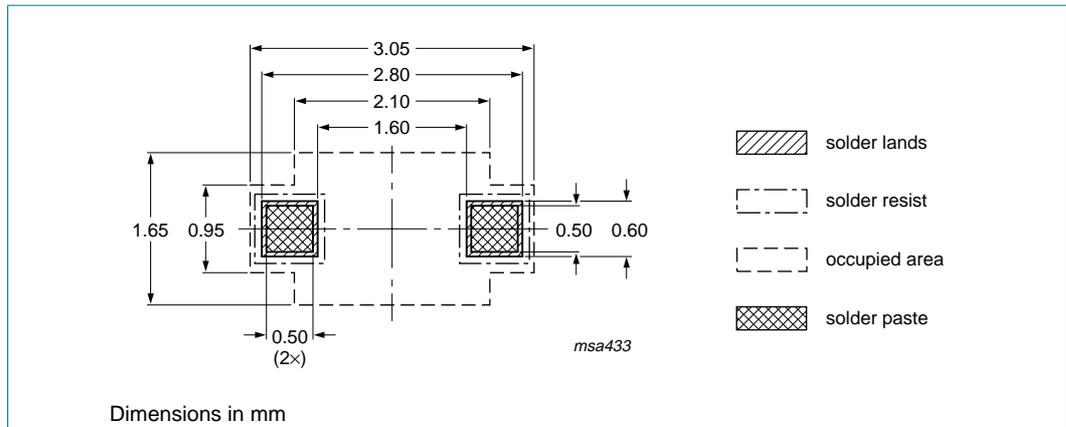
**10. Soldering**



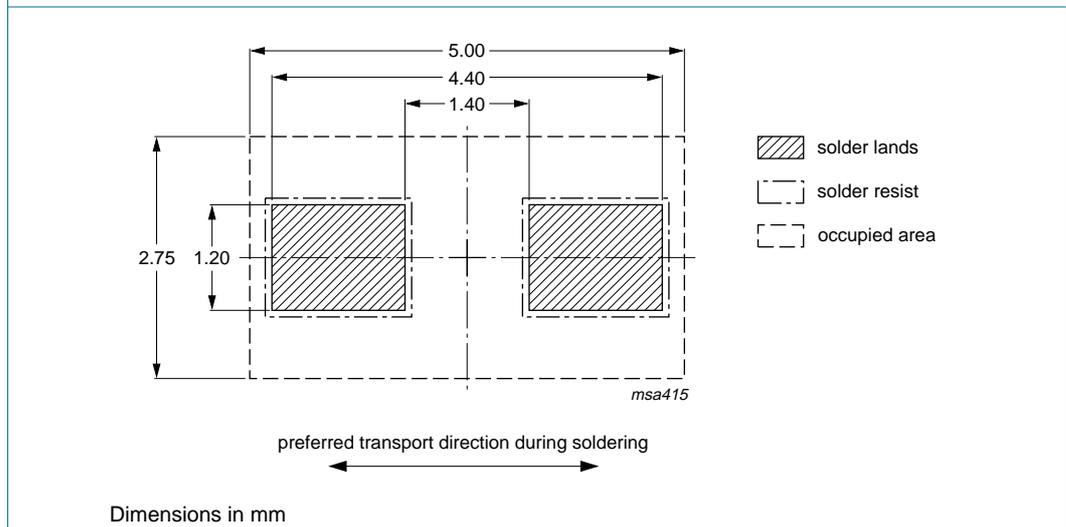
**Fig 7. Reflow soldering footprint SOD882**



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



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



**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 <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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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