

# 1PS66SB62; 1PS76SB62

40 V, 20 mA low  $C_d$  Schottky barrier diodes

Rev. 03 — 24 November 2004

Product data sheet

## 1. Product profile

### 1.1 General description

Planar low capacitance Schottky barrier diodes with an integrated guard ring for stress protection, encapsulated in very small SMD plastic packages.

Table 1: Product overview

Type number	Package		Configuration
	Philips	JEITA	
1PS66SB62	SOT666	-	triple isolated diode
1PS76SB62	SOD323	SC-76	single diode

### 1.2 Features

- Very low diode capacitance
- Low forward voltage
- Very small SMD plastic packages.

### 1.3 Applications

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

### 1.4 Quick reference data

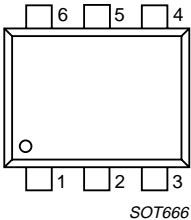
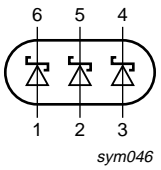
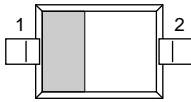

Table 2: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current		-	-	20	mA
$V_R$	reverse voltage		-	-	40	V
$C_d$	diode capacitance	$V_R = 0$ V; $f = 1$ MHz	-	-	0.6	pF

**PHILIPS**

## 2. Pinning information

**Table 3: Pinning**

Pin	Description	Simplified outline	Symbol
<b>1PS66SB62 (SOT666)</b>			
1	anode (diode 1)	 <p style="text-align: center;">SOT666</p>	 <p style="text-align: center;">sym046</p>
2	anode (diode 2)		
3	anode (diode 3)		
4	cathode (diode 3)		
5	cathode (diode 2)		
6	cathode (diode 1)		
<b>1PS76SB62 (SOD323)</b>			
1	cathode		 <p style="text-align: center;">sym001</p>
2	anode		

[1] The marking bar indicates the cathode.

## 3. Ordering information

**Table 4: Ordering information**

Type number	Package		Version
	Name	Description	
1PS66SB62	-	plastic surface mounted package; 6 leads	SOT666
1PS76SB62	SC-76	plastic surface mounted package; 2 leads	SOD323

## 4. Marking

**Table 5: Marking codes**

Type number	Marking code
1PS66SB62	N3
1PS76SB62	S6

## 5. Limiting values

**Table 6: Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	Unit
$V_R$	reverse voltage		-	40	V
$I_F$	forward current		-	20	mA
$T_j$	junction temperature		-	125	°C
$T_{amb}$	ambient temperature		-65	+125	°C
$T_{stg}$	storage temperature		-65	+150	°C

## 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]			
	SOT666		[2] [3]	-	700	K/W
	SOD323		[4]	-	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 SOT666 standard mounting conditions.

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

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

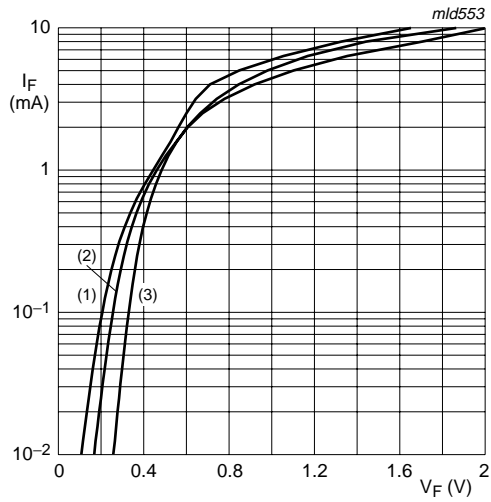
## 7. Characteristics

**Table 8: Characteristics**

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

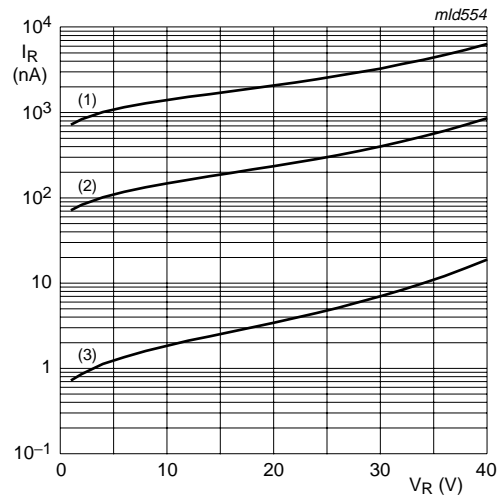
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 2\text{ mA}$ ; see <a href="#">Figure 1</a>	[1]	-	800	mV
$I_R$	reverse current	$V_R = 40\text{ V}$ ; see <a href="#">Figure 2</a>	[1]	-	1	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$ ; see <a href="#">Figure 3</a>	-	-	0.6	pF

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



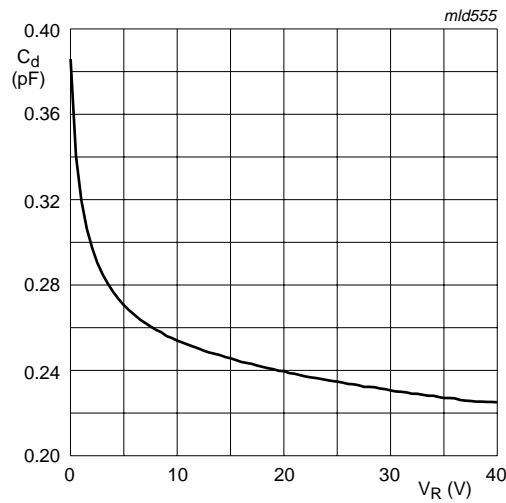
- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}$ .
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}$ .
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ .

**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**



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

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

8. Package outline

Plastic surface mounted package; 6 leads

SOT666

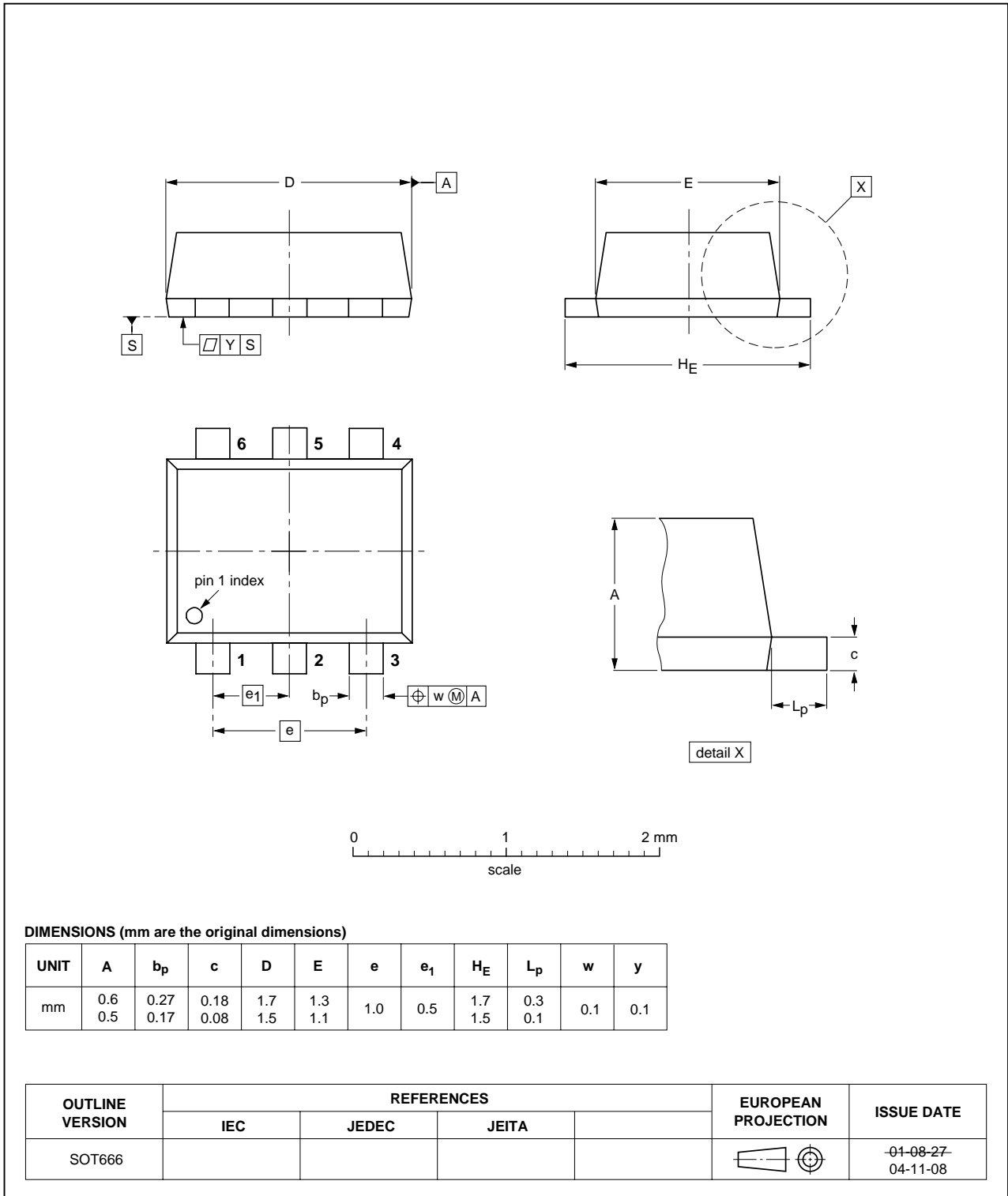


Fig 4. Package outline SOT666

Plastic surface mounted package; 2 leads

SOD323

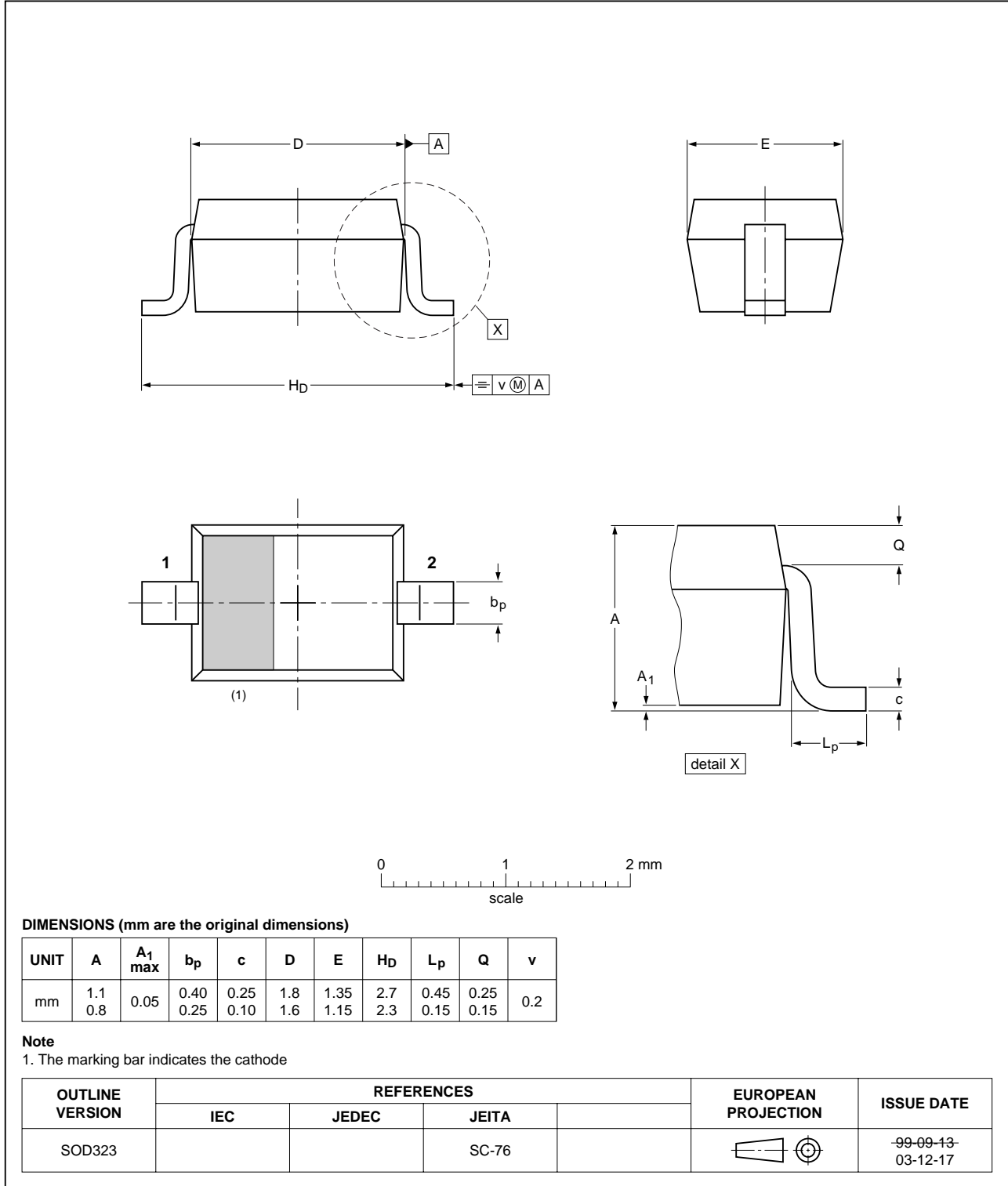


Fig 5. Package outline SOD323 (SC-76)

## 9. Packing information

**Table 9: Packing methods**

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

Type number	Package	Description	Packing quantity		
			3000	4000	10000
1PS66SB62	SOT666	4 mm pitch, 8 mm tape and reel	-	-115	-
1PS76SB62	SOD323	4 mm pitch, 8 mm tape and reel	-115	-	-135

[1] For further information and the availability of packing methods see [Section 14](#).

## 10. Revision history

Table 10: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
1PS66SB62_ 1PS76SB62_3	20041124	Product data sheet	-	9397 750 13845	1PS76SB62_2
Modifications:	<ul style="list-style-type: none"> <li>• The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.</li> <li>• Type number 1PS66SB62 added</li> <li>• <a href="#">Section 1.1</a>: text redefined</li> <li>• <a href="#">Section 1.2</a>: text redefined</li> <li>• <a href="#">Section 1.3</a>: RF applications added</li> <li>• <a href="#">Table 2</a>: table added</li> <li>• <a href="#">Table 9</a>: table added.</li> </ul>				
1PS76SB62_2	20040126	Product specification	-	9397 750 12622	1PS76SB62_1
1PS76SB62_1	20010216	Product specification	-	9397 750 08024	-



## 11. Data sheet status

Level	Data sheet status <sup>[1]</sup>	Product status <sup>[2]</sup> <sup>[3]</sup>	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

## 12. Definitions

**Short-form specification** — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

**Limiting values definition** — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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