

# 1PSxSB17

4 V, 30 mA low  $C_d$  Schottky barrier diode

Rev. 06 — 4 April 2005

Product data sheet

## 1. Product profile

### 1.1 General description

Planar low capacitance Schottky barrier diode encapsulated in a very small SMD plastic package.

Table 1: Product overview

Type number	Package		Configuration
	Philips	JEITA	
1PS66SB17	SOT666	-	triple isolated diode
1PS76SB17	SOD323	SC-76	single diode
1PS79SB17	SOD523	SC-79	single diode

### 1.2 Features

- Very low diode capacitance
- Very 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



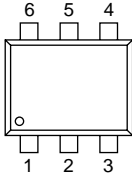
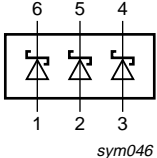
Table 2: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	continuous forward current		-	-	30	mA
$V_R$	continuous reverse voltage		-	-	4	V
$C_d$	diode capacitance		-	0.8	1	pF

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## 2. Pinning information

Table 3: Pinning

Pin	Description	Simplified outline	Symbol
<b>SOD323 (SC-76); SOD523 (SC-79)</b>			
1	cathode	 <p>001aab540</p>	 <p>sym001</p>
2	anode		
<b>SOT666</b>			
1	anode (diode 1)		 <p>sym046</p>
2	anode (diode 2)		
3	anode (diode 3)		
4	cathode (diode 3)		
5	cathode (diode 2)		
6	cathode (diode 1)		

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 4: Ordering information

Type number	Package		
	Name	Description	Version
1PS66SB17	-	plastic surface mounted package; 6 leads	SOT666
1PS76SB17	SC-76	plastic surface mounted package; 2 leads	SOD323
1PS79SB17	SC-79	plastic surface mounted package; 2 leads	SOD523

## 4. Marking

Table 5: Marking codes

Type number	Marking code
1PS66SB17	N2
1PS76SB17	S7
1PS79SB17	T2

## 5. Limiting values

Table 6: Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>R</sub>	continuous reverse voltage		-	4	V
I <sub>F</sub>	continuous forward current		-	30	mA

**Table 6: Limiting values ...continued**

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

Symbol	Parameter	Conditions	Min	Max	Unit
$T_j$	junction temperature		-	150	°C
$T_{amb}$	ambient temperature		-65	+150	°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]			
	SOD323		[2]	-	450	K/W
	SOD523		[3]	-	450	K/W
	SOT666		[4]	-	700	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.

[3] Refer to SOD523 (SC-79) standard mounting conditions.

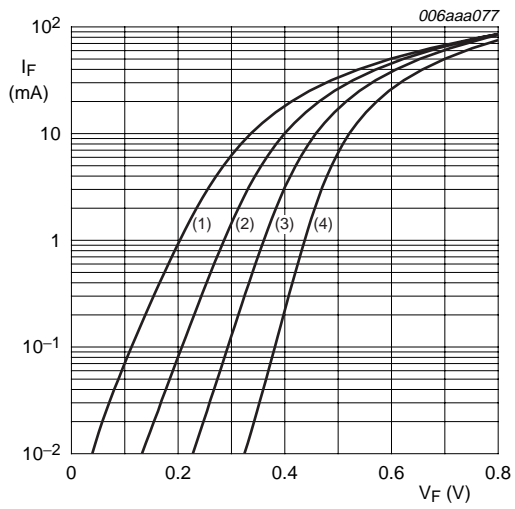
[4] Refer to SOT666 standard mounting conditions.

## 7. Characteristics

**Table 8: Characteristics** $T_{amb} = 25^\circ\text{C}$  unless otherwise specified.

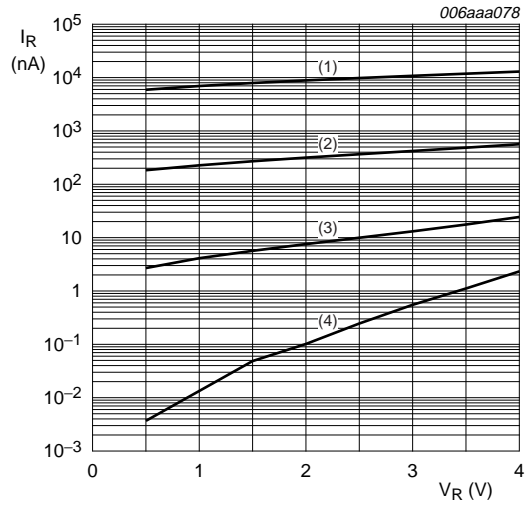
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	see <a href="#">Figure 1</a> ;	[1]			
		$I_F = 0.1\text{ mA}$	-	300	350	mV
		$I_F = 1\text{ mA}$	-	360	450	mV
		$I_F = 10\text{ mA}$	-	470	600	mV
$I_R$	reverse current	$V_R = 3\text{ V}$ ; see <a href="#">Figure 2</a>	-	-	250	nA
$C_d$	diode capacitance	see <a href="#">Figure 3</a> ;				
		$V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$	-	0.8	1	pF
		$V_R = 0.5\text{ V}$ ; $f = 1\text{ MHz}$	-	0.65	-	pF

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



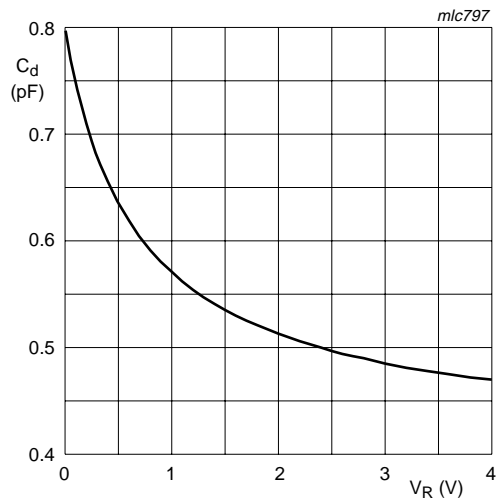
- (1)  $T_{amb} = 150\text{ °C}$
- (2)  $T_{amb} = 85\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$
- (4)  $T_{amb} = -40\text{ °C}$

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



- (1)  $T_{amb} = 150\text{ °C}$
- (2)  $T_{amb} = 85\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$
- (4)  $T_{amb} = -40\text{ °C}$

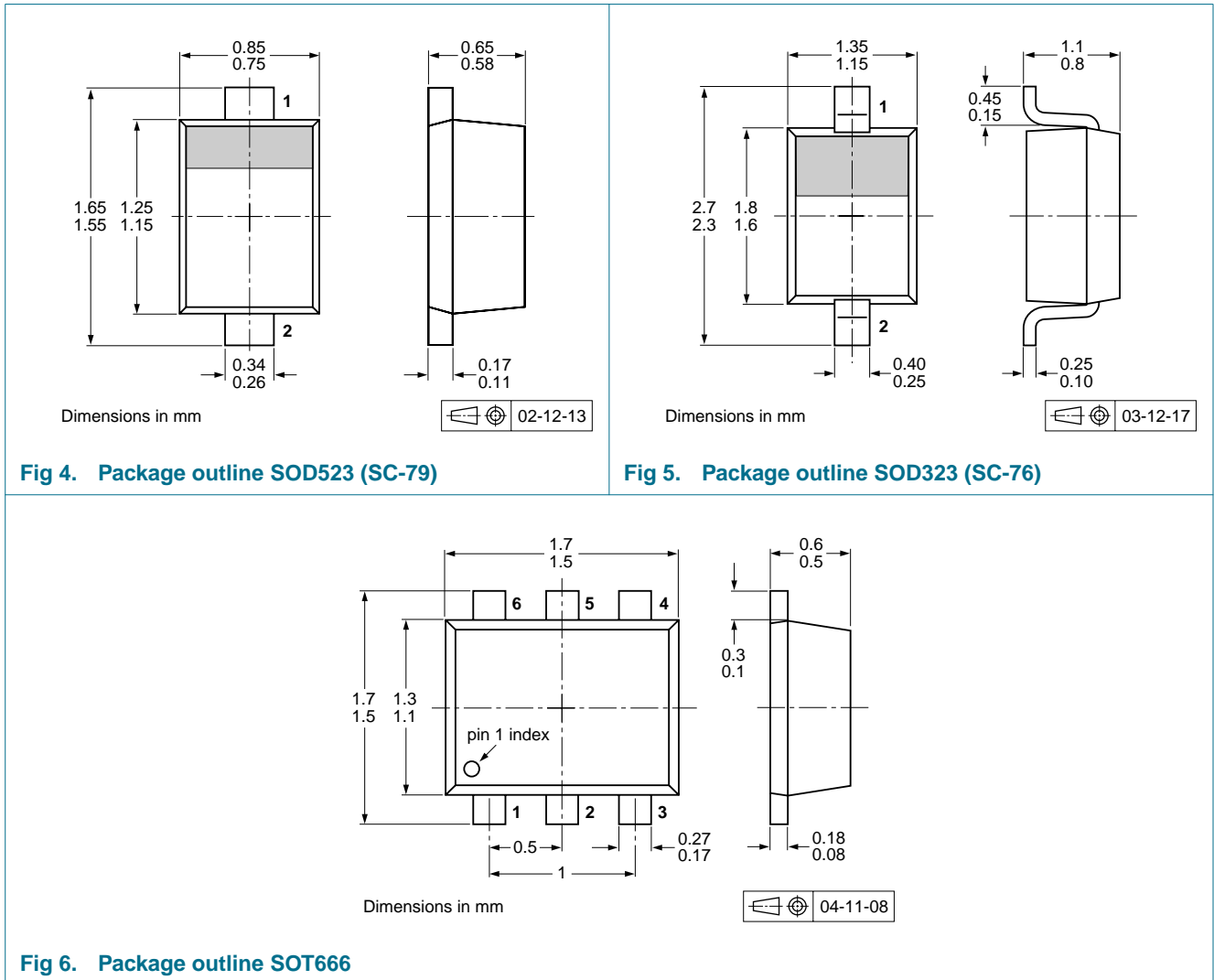
Fig 2. Reverse current as a function of reverse voltage; typical values.



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

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. [1]

Type number	Package	Description	Packing quantity		
			3000	4000	10000
1PS66SB17	SOT666	4 mm pitch, 8 mm tape and reel	-	-115	-
1PS76SB17	SOD323	4 mm pitch, 8 mm tape and reel	-115		-135
1PS79SB17	SOD523	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
1PSXSB17_6	20050404	Product data sheet	-	9397 750 14587	1PS76SB17_1 PS79SB17_5
Modifications:	• Type number 1PS66SB17 added				
1PS76SB17_1PS79SB17_5	20041028	Product data sheet	-	9397 750 13733	1PS76SB17_4
1PS76SB17_4	20040126	Product data sheet	-	9397 750 12618	1PS76SB17_3
1PS76SB17_3	20020809	Product data sheet	-	9397 750 10174	1PS76SB17_2
1PS76SB17_2	19990525	Preliminary data sheet	-	9397 750 05893	1PS76SB17_1
1PS76SB17_1	19961014	Preliminary data sheet	-	9397 750 01342	-

## 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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[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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