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

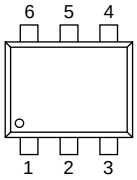
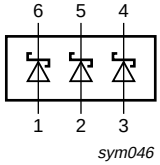
Table 2: Quick reference data

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

PHILIPS

2. Pinning information

Table 3: Pinning

Pin	Description		Simplified outline	Symbol
SOD323 (SC-76); SOD523 (SC-79)				
1	cathode	[1]	 001aab540	 sym001
2	anode			
SOT666				
1	anode (diode 1)			 sym046
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_R	continuous reverse voltage		-	4	V
I_F	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.

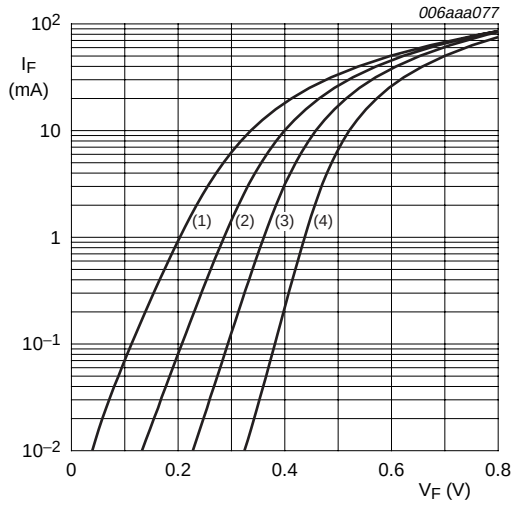
7. Characteristics

Table 8: Characteristics

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

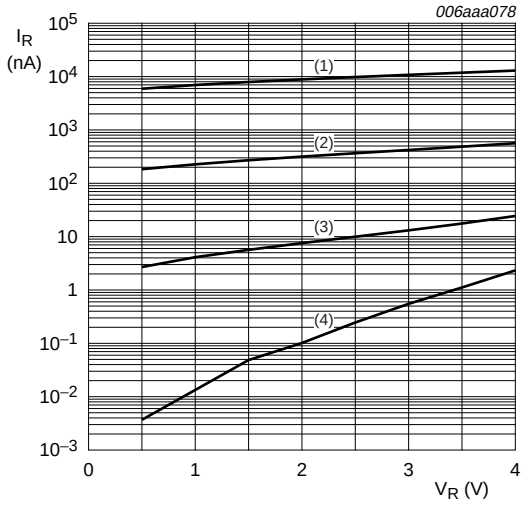
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	see Figure 1;	[1]				
		I_F = 0.1 mA		-	300	350	mV
		I_F = 1 mA		-	360	450	mV
		I_F = 10 mA		-	470	600	mV
I_R	reverse current	V_R = 3 V; see Figure 2		-	-	250	nA
C_d	diode capacitance	see Figure 3;					
		V_R = 0 V; f = 1 MHz		-	0.8	1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

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



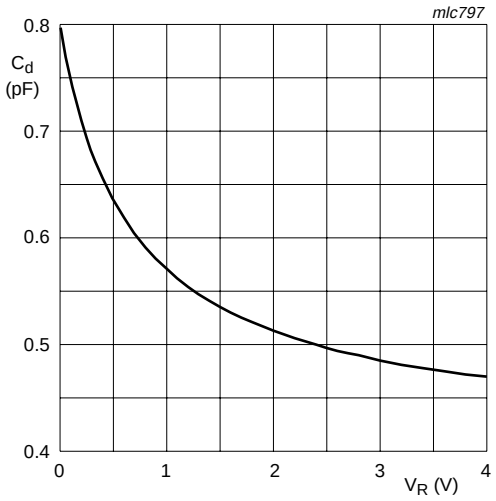
(1) T_{amb} = 150 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = –40 °C

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



(1) T_{amb} = 150 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = –40 °C

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



T_{amb} = 25 °C; f = 1 MHz

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

8. Package outline

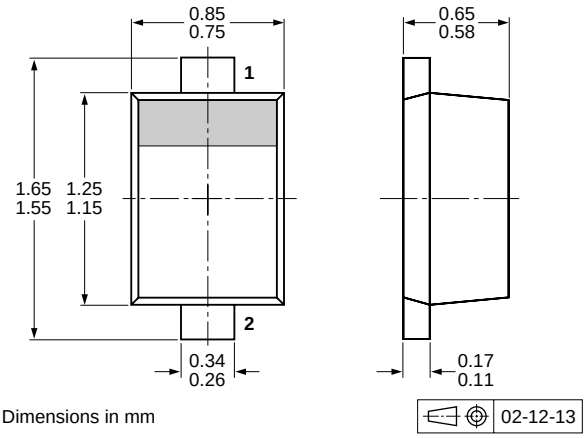


Fig 4. Package outline SOD523 (SC-79)

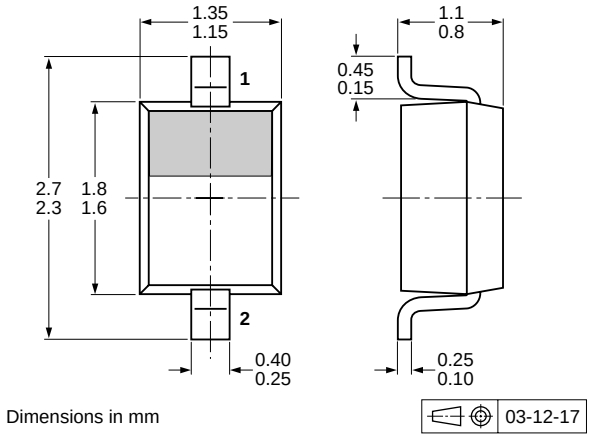


Fig 5. Package outline SOD323 (SC-76)

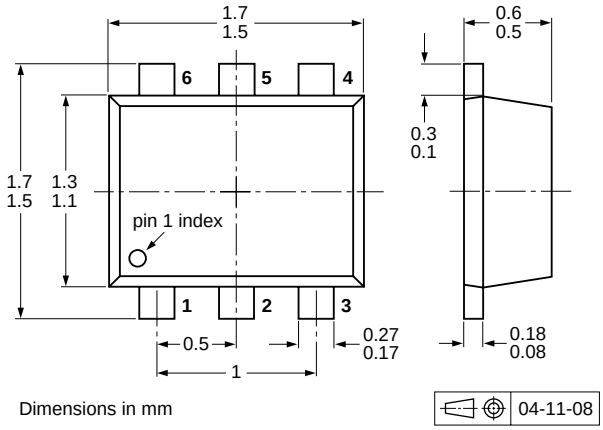


Fig 6. Package outline SOT666

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 [1]	Product status [2] [3]	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.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
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[1] Please consult the most recently issued data sheet before initiating or completing a design.

[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.

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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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15. Contents

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