

1PS66SB82; 1PS88SB82

15 V, 30 mA low C_d Schottky barrier diodes

Rev. 03 — 24 January 2005

Product data sheet

1. Product profile

1.1 General description

Epitaxial low capacitance Schottky barrier diodes encapsulated in very small SMD plastic packages.

Table 1: Product overview

Type number	Package		Configuration
	Philips	JEITA	
1PS66SB82	SOT666	-	triple isolated diode
1PS88SB82	SOT363	SC-88	triple isolated diode

1.2 Features

- 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	continuous forward current		-	-	30	mA
V_R	continuous reverse voltage		-	-	15	V
C_d	diode capacitance	$V_R = 0$ V; $f = 1$ MHz; see Figure 4	-	1	-	pF

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2. Pinning information

Table 3: Pinning

Pin	Description	Simplified outline	Symbol
1	anode (diode 1)		
2	anode (diode 2)		
3	anode (diode 3)		
4	cathode (diode 3)		
5	cathode (diode 2)		
6	cathode (diode 1)		

3. Ordering information

Table 4: Ordering information

Type number	Package		Version
	Name	Description	
1PS66SB82	-	plastic surface mounted package; 6 leads	SOT666
1PS88SB82	SC-88	plastic surface mounted package; 6 leads	SOT363

4. Marking

Table 5: Marking codes

Type number	Marking code
1PS66SB82	N5
1PS88SB82	E1*

- [1] * = -: made in Hong Kong.
 * = p: made in Hong Kong.
 * = t: made in Malaysia.
 * = W: made in China.

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		-	15	V
I_F	continuous forward current		-	30	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
	SOT363		[3] [4]	-	-	416 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 SOT363 (SC-88) standard mounting conditions.

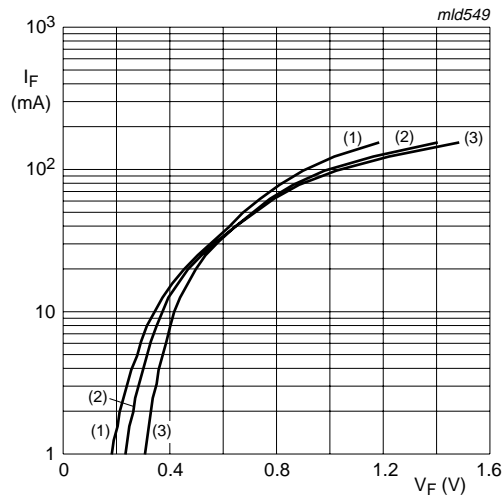
7. Characteristics

Table 8: Characteristics

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

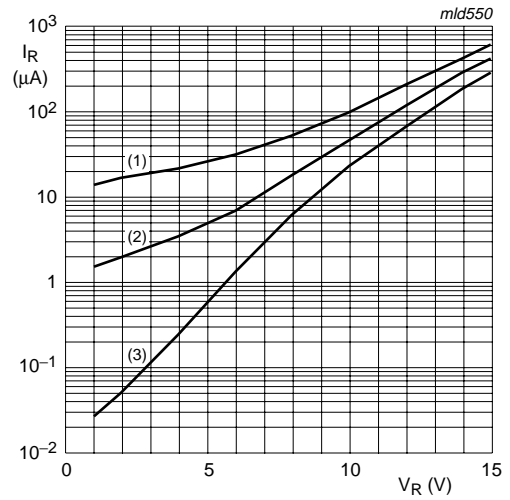
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	see Figure 1	[1]			
		$I_F = 1\text{ mA}$	-	-	340	mV
		$I_F = 30\text{ mA}$	-	-	700	mV
I_R	reverse current	$V_R = 1\text{ V}$; see Figure 2	-	-	0.2	μA
r_{dif}	differential resistance	$I_F = 5\text{ mA}$; $f = 1\text{ kHz}$; see Figure 3	-	12	-	Ω
C_d	diode capacitance	$V_R = 0\text{ V}$; $f = 1\text{ MHz}$; see Figure 4	-	1	-	pF

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



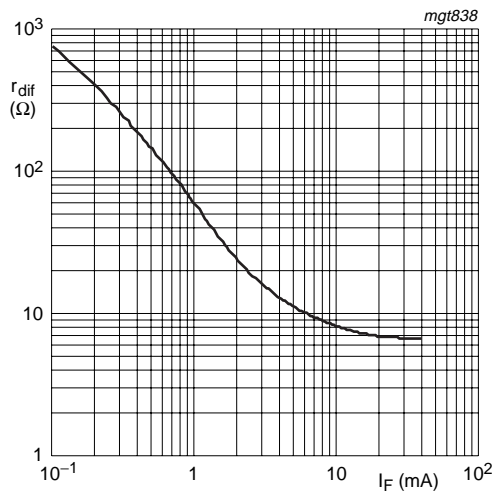
- (1) $T_{amb} = 125\text{ °C}$
- (2) $T_{amb} = 85\text{ °C}$
- (3) $T_{amb} = 25\text{ °C}$

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



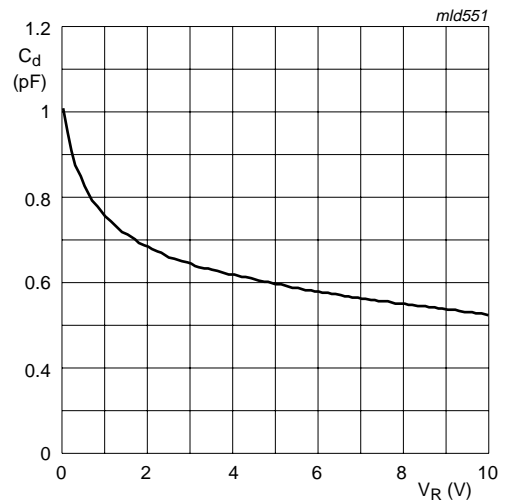
- (1) $T_{amb} = 125\text{ °C}$
- (2) $T_{amb} = 85\text{ °C}$
- (3) $T_{amb} = 25\text{ °C}$

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



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

Fig 3. Differential diode forward resistance as a function of forward current; typical values



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

Fig 4. Diode capacitance as a function of reverse voltage; typical values

8. Package outline

Plastic surface mounted package; 6 leads

SOT666

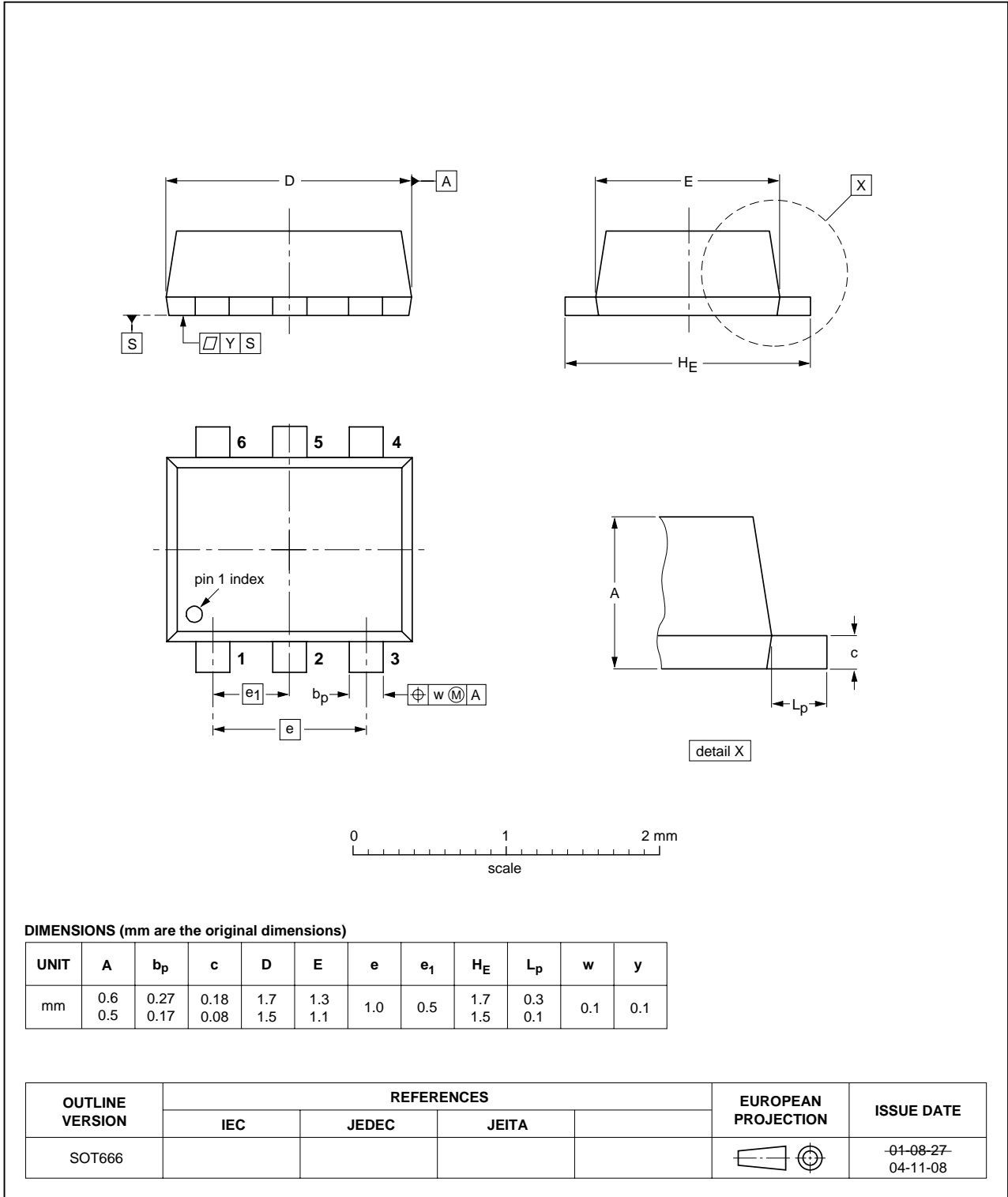


Fig 5. Package outline SOT666

Plastic surface mounted package; 6 leads

SOT363

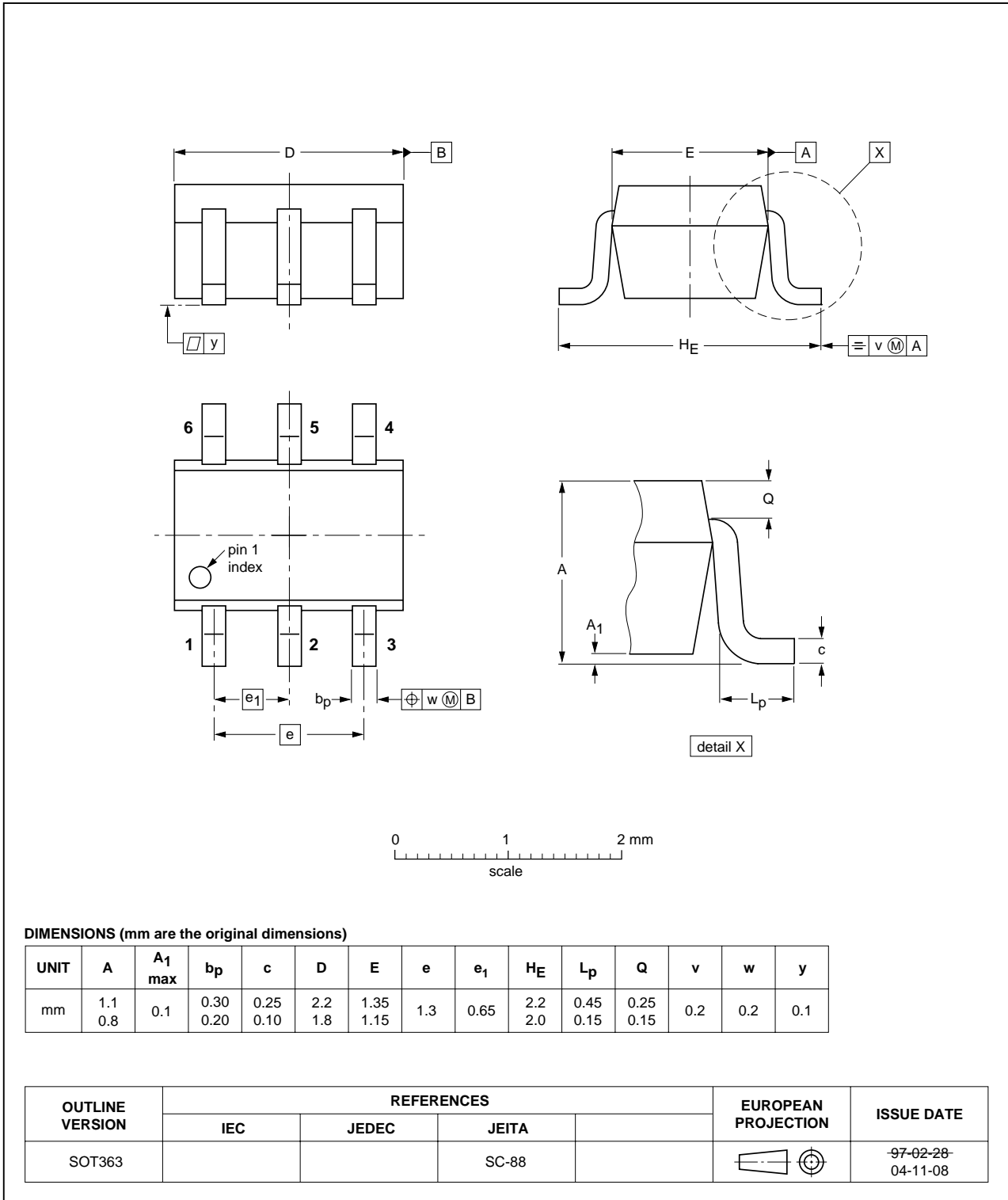


Fig 6. Package outline SOT363 (SC-88)

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		
			3 000	4 000	10 000
1PS66SB82	SOT666	4 mm pitch, 8 mm tape and reel	-	-115	-
1PS88SB82	SOT363	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
1PS66SB82_1PS88SB82_3	20050124	Product data sheet	-	9397 750 13915	1PS88SB82_2
Modifications:					
			<ul style="list-style-type: none">The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips SemiconductorsType number 1PS66SB63 added		
1PS88SB82_2	20030411	Product specification	-	9397 750 11052	1PS88SB82_1
1PS88SB82_1	20010216	Product specification	-	9397 750 07937	-

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.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

[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.

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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