

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

PHILIPS

2. Pinning information

Table 3: Pinning

Pin	Description	Simplified outline	Symbol
1	anode (diode 1)	 001aab555	 sym046
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		
	Name	Description	Version
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: $t_p \leq 300\ \mu\text{s}$; $\delta \leq 0.02$.

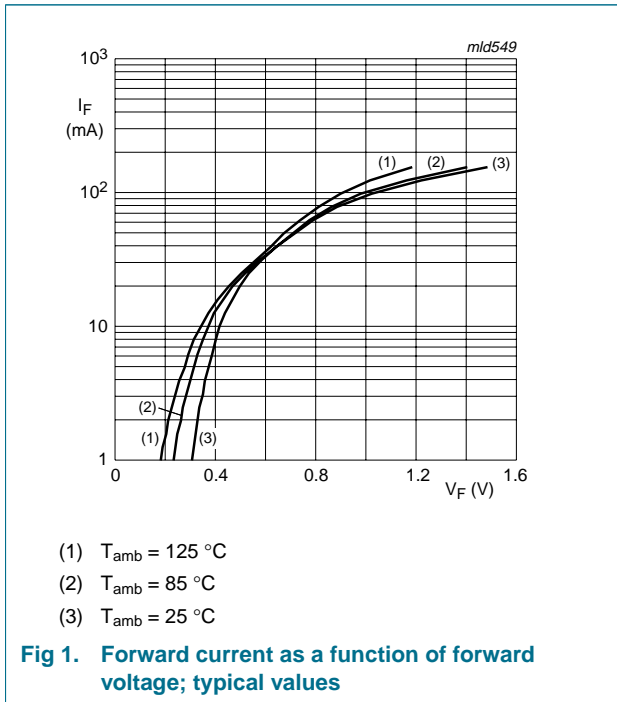


Fig 1. Forward current as a function of forward voltage; typical values

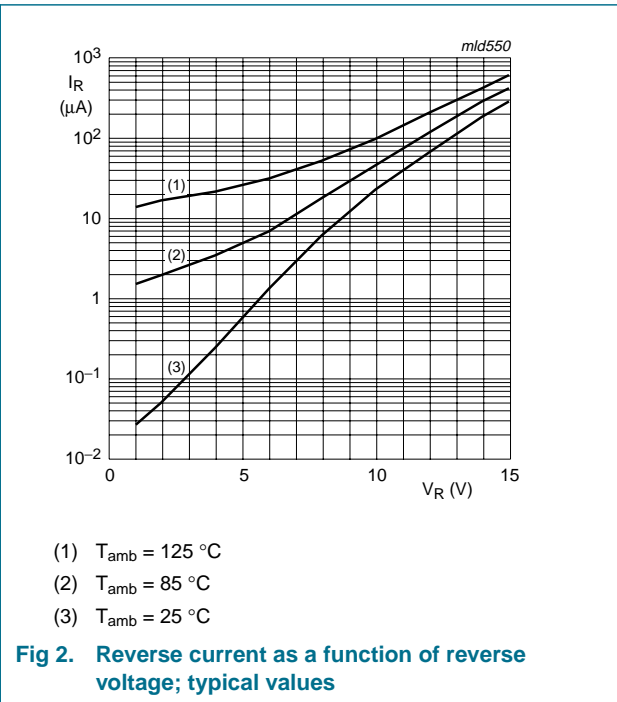


Fig 2. Reverse current as a function of reverse voltage; typical values

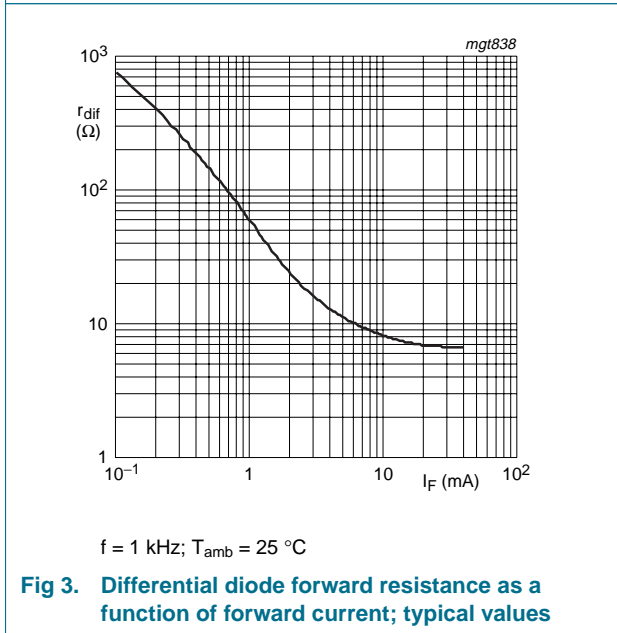


Fig 3. Differential diode forward resistance as a function of forward current; typical values

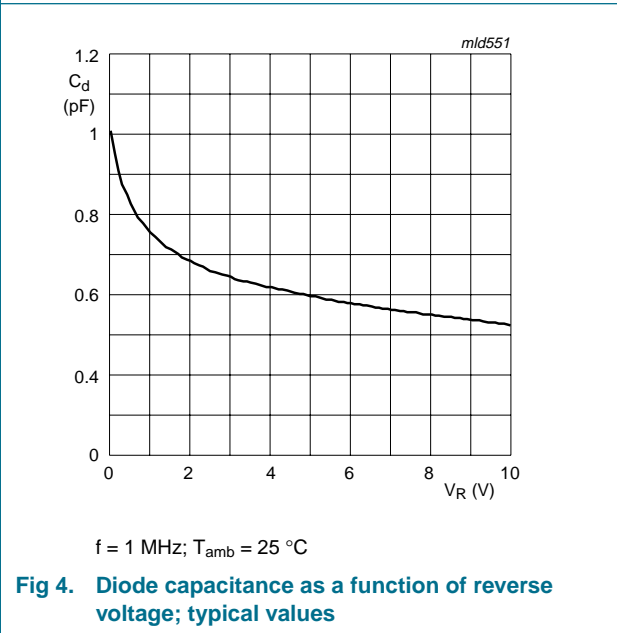


Fig 4. Diode capacitance as a function of reverse voltage; typical values

8. Package outline

Plastic surface mounted package; 6 leads

SOT666

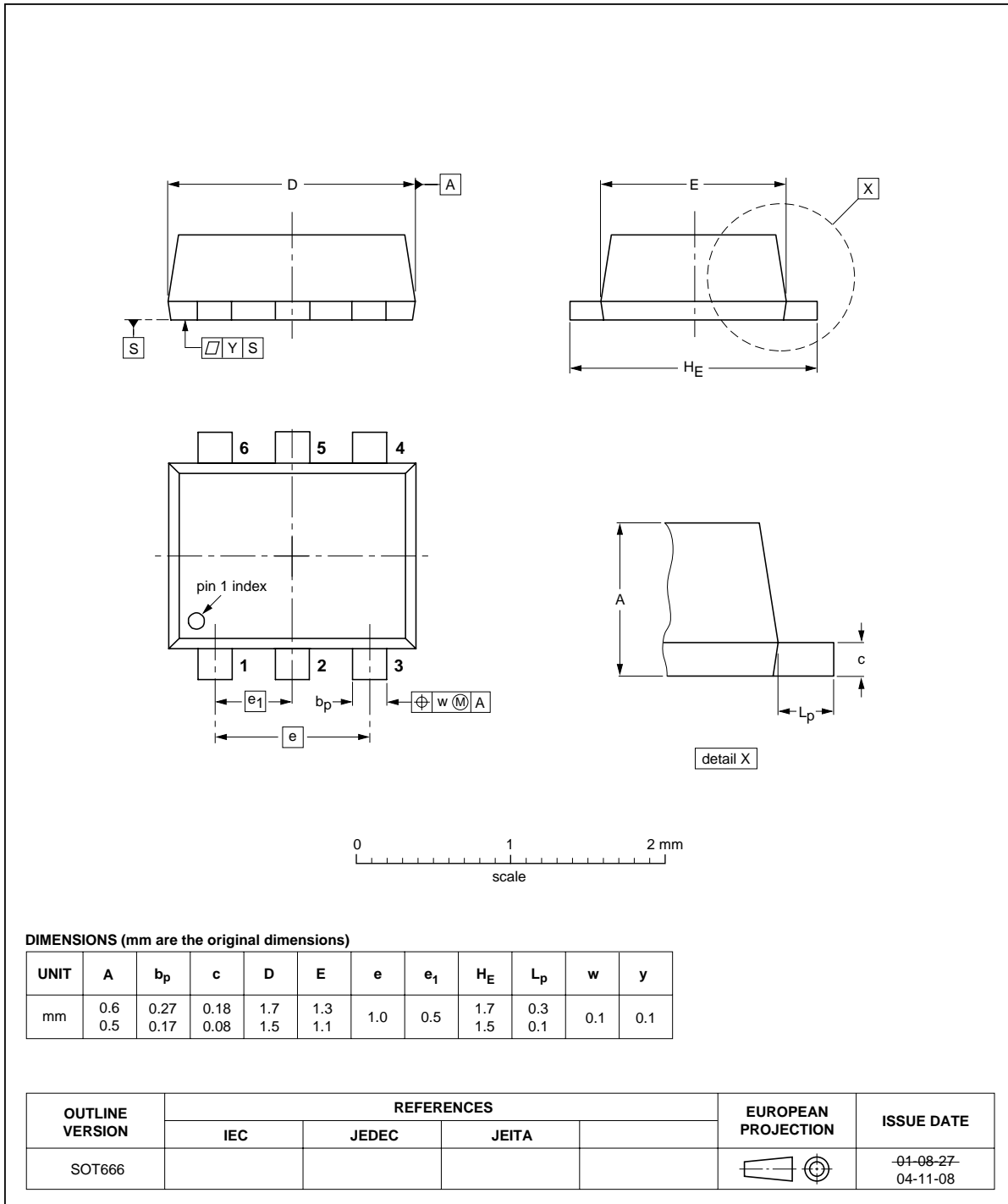


Fig 5. Package outline SOT666

Plastic surface mounted package; 6 leads

SOT363

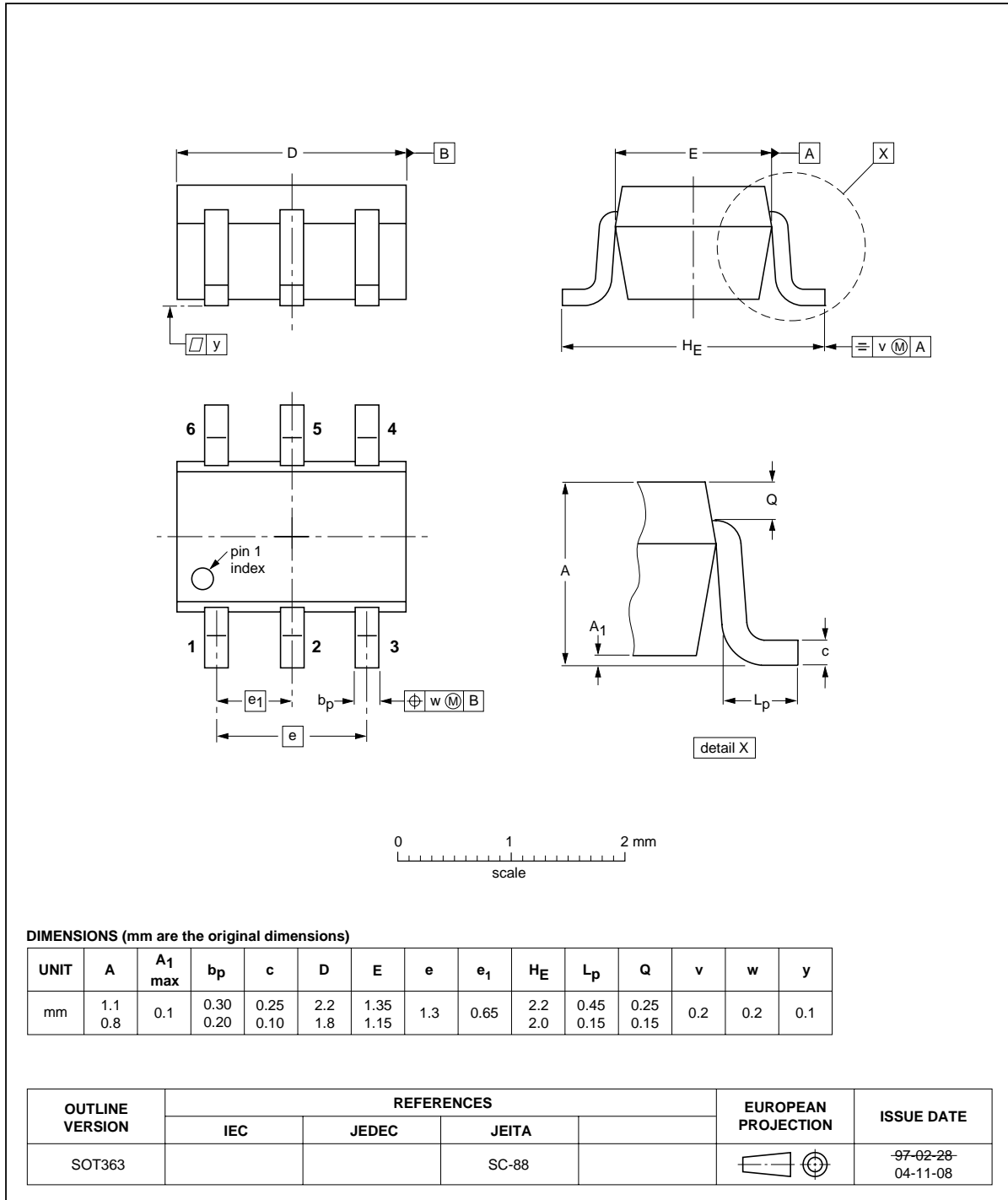


Fig 6. Package outline SOT363 (SC-88)

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.

Application information — Applications that are described herein for any of these products are for illustrative purposes only. Philips Semiconductors make no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

13. Disclaimers

Life support — These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips Semiconductors customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips Semiconductors for any damages resulting from such application.

Right to make changes — Philips Semiconductors reserves the right to make changes in the products - including circuits, standard cells, and/or software - described or contained herein in order to improve design and/or performance. When the product is in full production (status 'Production'), relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN). Philips Semiconductors assumes no responsibility or liability for the use of any of these products, conveys no license or title under any patent, copyright, or mask work right to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified.

14. Contact information

For additional information, please visit: <http://www.semiconductors.philips.com>

For sales office addresses, send an email to: sales.addresses@www.semiconductors.philips.com

15. Contents

1	Product profile	1
1.1	General description.	1
1.2	Features	1
1.3	Applications	1
1.4	Quick reference data.	1
2	Pinning information	2
3	Ordering information	2
4	Marking	2
5	Limiting values	2
6	Thermal characteristics	3
7	Characteristics	3
8	Package outline	5
9	Packing information	7
10	Revision history	8
11	Data sheet status	9
12	Definitions	9
13	Disclaimers	9
14	Contact information	9



© Koninklijke Philips Electronics N.V. 2005

All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Date of release: 24 January 2005
Document number: 9397 750 13915

Published in The Netherlands