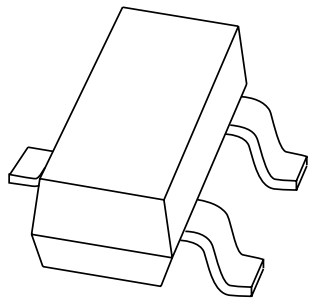


DATA SHEET



BAS19; BAS20; BAS21 General purpose diodes

Product specification
Supersedes data of 1999 May 26

2003 Mar 20

General purpose diodes

BAS19; BAS20; BAS21

FEATURES

- Small plastic SMD package
- Switching speed: max. 50 ns
- General application
- Continuous reverse voltage: max. 100 V; 150 V; 200 V
- Repetitive peak reverse voltage: max. 120 V; 200 V; 250 V
- Repetitive peak forward current: max. 625 mA.

APPLICATIONS

- General purpose switching in e.g. surface mounted circuits.

DESCRIPTION

The BAS19, BAS20 and BAS21 are general purpose diodes fabricated in planar technology, and encapsulated in a small SOT23 plastic SMD package.

MARKING

TYPE NUMBER	MARKING CODE ⁽¹⁾
BAS19	JP*
BAS20	JR*
BAS21	JS*

Note

- * = p: Made in Hong Kong.
 * = t: Made in Malaysia.
 * = W: Made in China.

PINNING

PIN	DESCRIPTION
1	anode
2	not connected
3	cathode

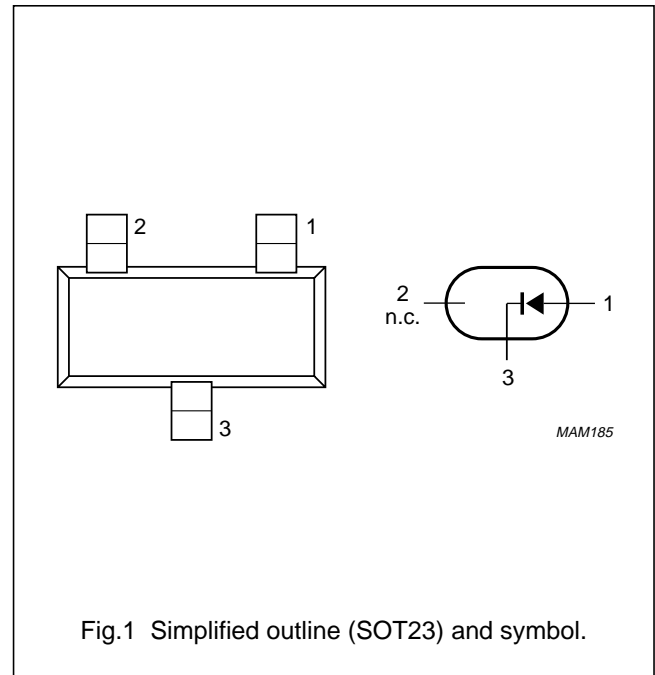


Fig.1 Simplified outline (SOT23) and symbol.

General purpose diodes

BAS19; BAS20; BAS21

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage				
	BAS19		–	120	V
	BAS20		–	200	V
	BAS21		–	250	V
V_R	continuous reverse voltage				
	BAS19		–	100	V
	BAS20		–	150	V
	BAS21		–	200	V
I_F	continuous forward current	see Fig.2; note 1	–	200	mA
I_{FRM}	repetitive peak forward current		–	625	mA
I_{FSM}	non-repetitive peak forward current	square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4			
		$t = 1\ \mu\text{s}$	–	9	A
		$t = 100\ \mu\text{s}$	–	3	A
		$t = 10\ \text{ms}$	–	1.7	A
P_{tot}	total power dissipation	$T_{amb} = 25\text{ °C}$; note 1	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

Note

1. Device mounted on an FR4 printed-circuit board.

General purpose diodes

BAS19; BAS20; BAS21

ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	see Fig.3		
		$I_F = 100\text{ mA}$	1	V
		$I_F = 200\text{ mA}$	1.25	V
I_R	reverse current BAS19	see Fig.5		
		$V_R = 100\text{ V}$	100	nA
	$V_R = 100\text{ V}; T_j = 150\text{ °C}$	100	μA	
	BAS20	$V_R = 150\text{ V}$	100	nA
		$V_R = 150\text{ V}; T_j = 150\text{ °C}$	100	μA
BAS21	$V_R = 200\text{ V}$	100	nA	
	$V_R = 200\text{ V}; T_j = 150\text{ °C}$	100	μA	
C_d	diode capacitance	$f = 1\text{ MHz}; V_R = 0$; see Fig.6	5	pF
t_{rr}	reverse recovery time	when switched from $I_F = 30\text{ mA}$ to $I_R = 30\text{ mA}; R_L = 100\ \Omega$; measured at $I_R = 3\text{ mA}$; see Fig.8	50	ns

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		330	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

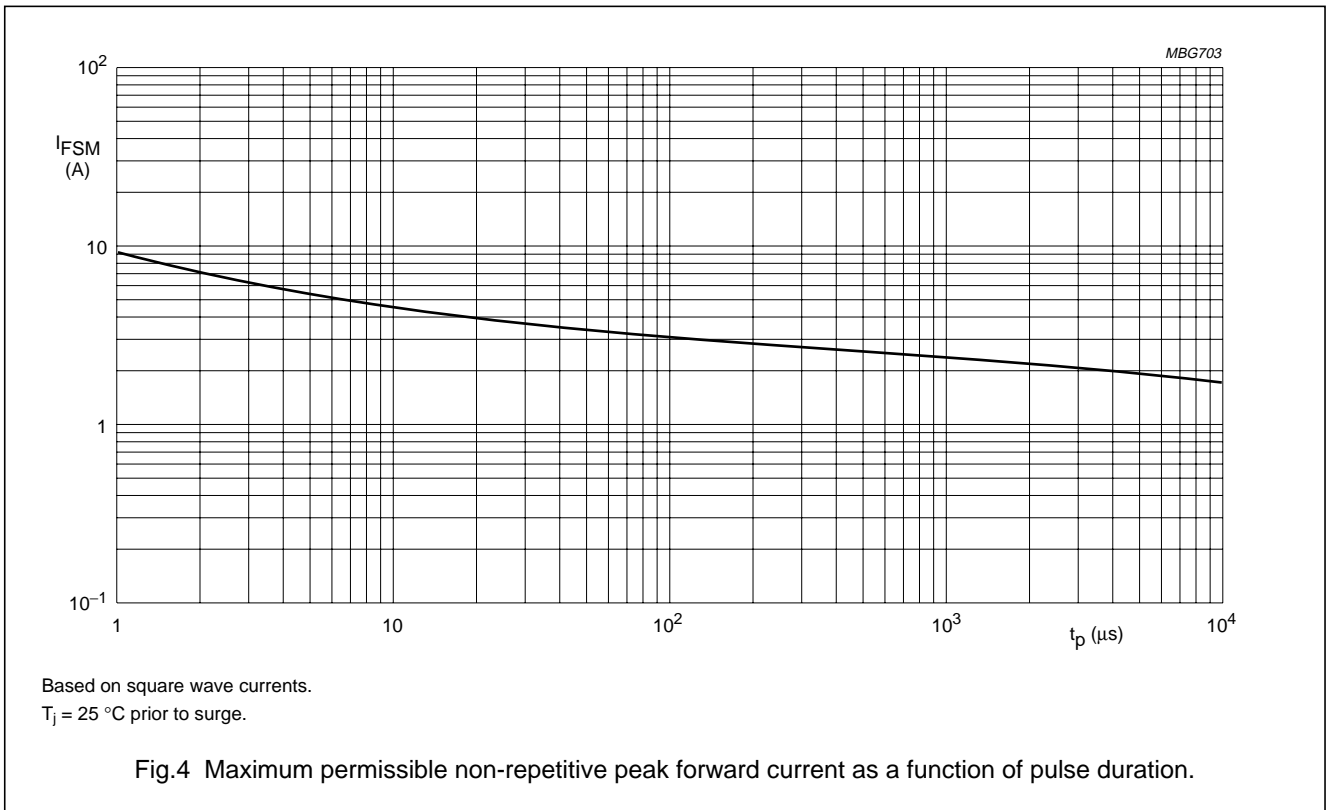
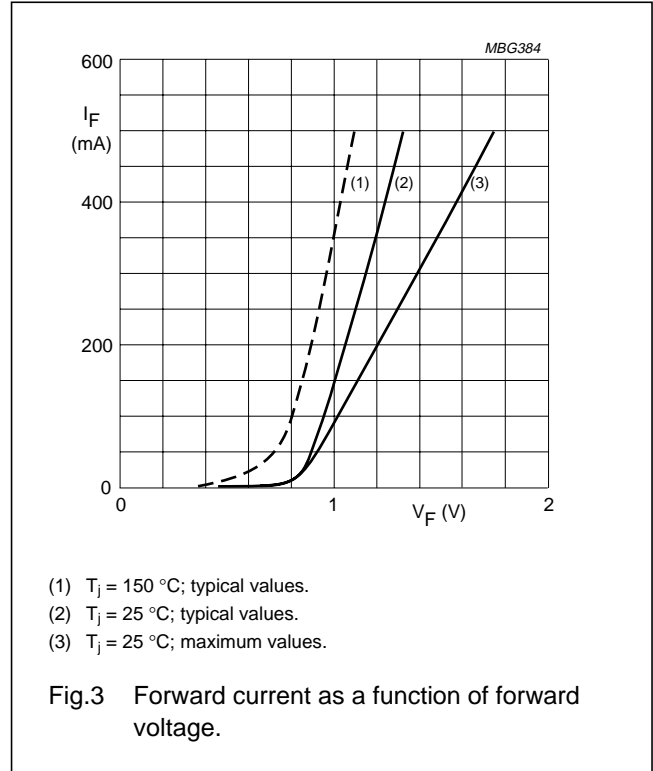
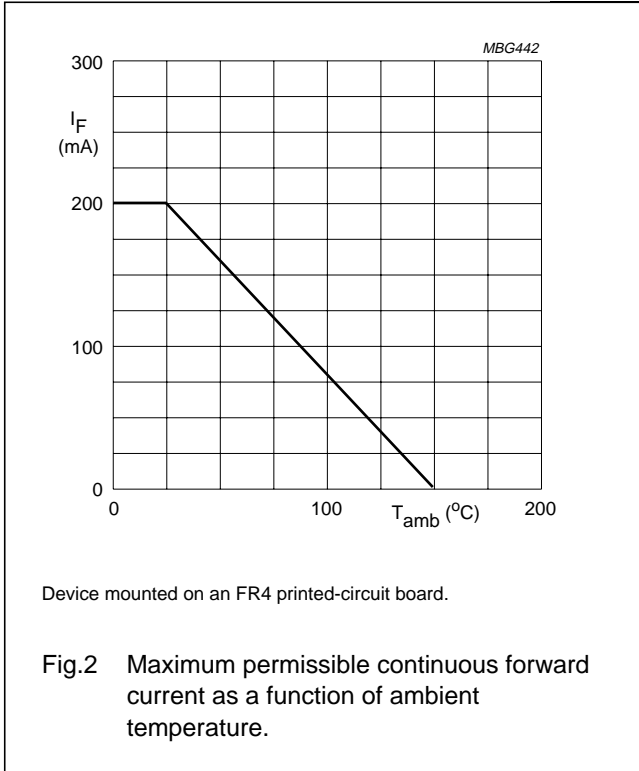
Note

1. Device mounted on an FR4 printed-circuit board.

General purpose diodes

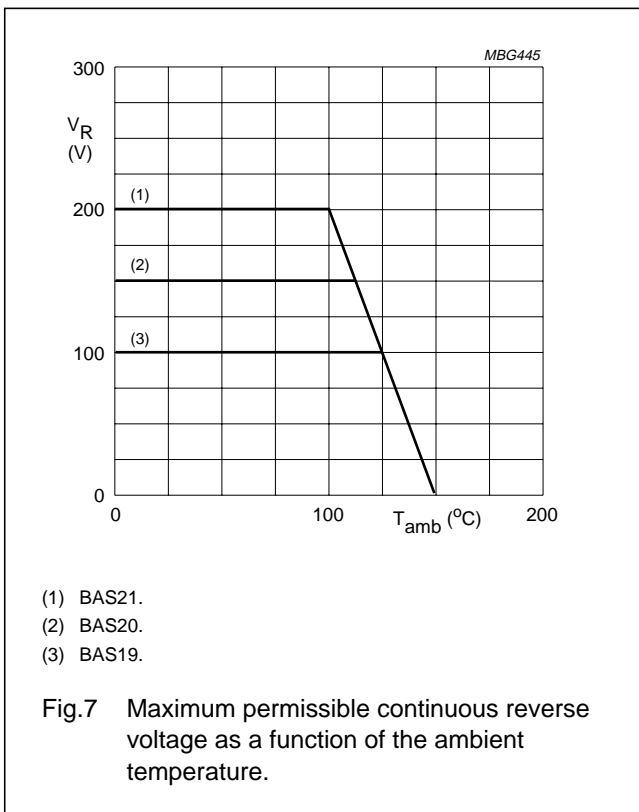
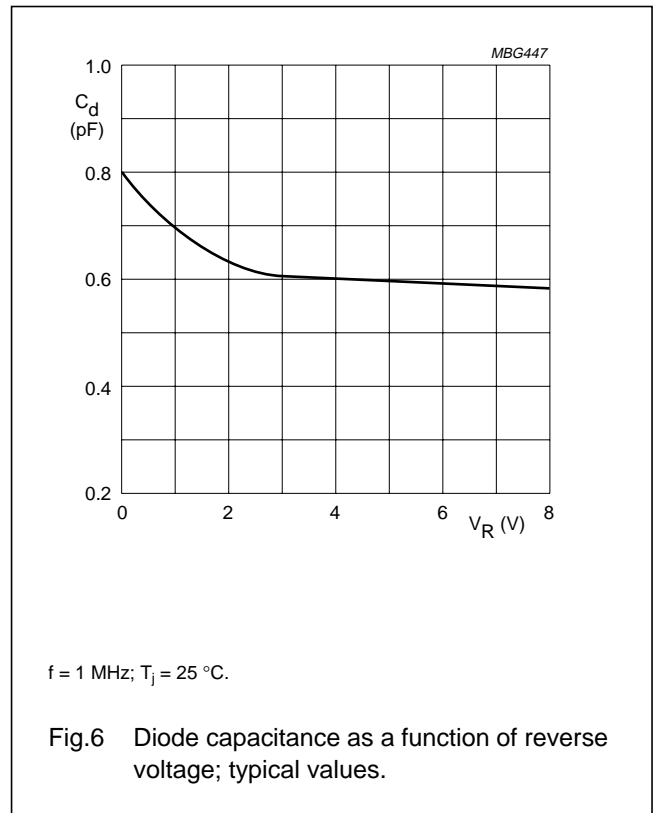
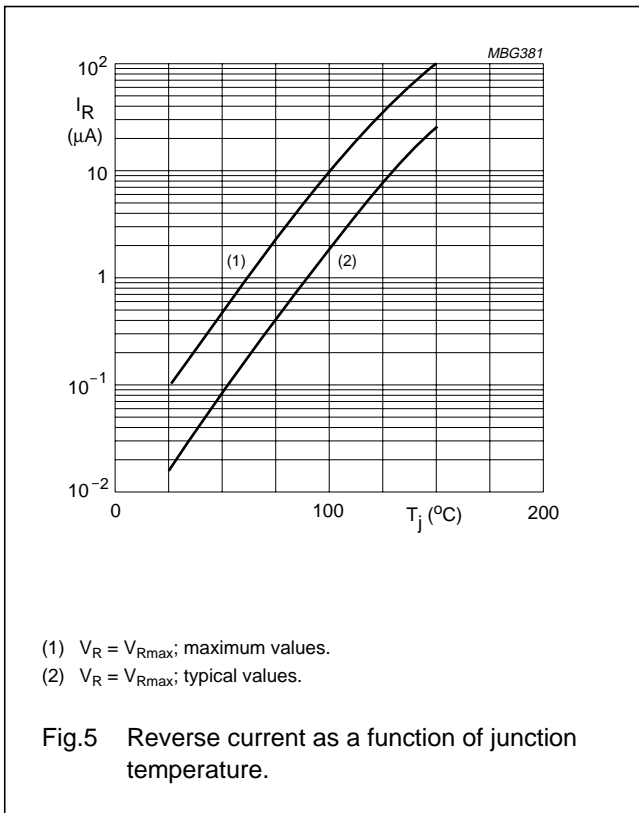
BAS19; BAS20; BAS21

GRAPHICAL DATA



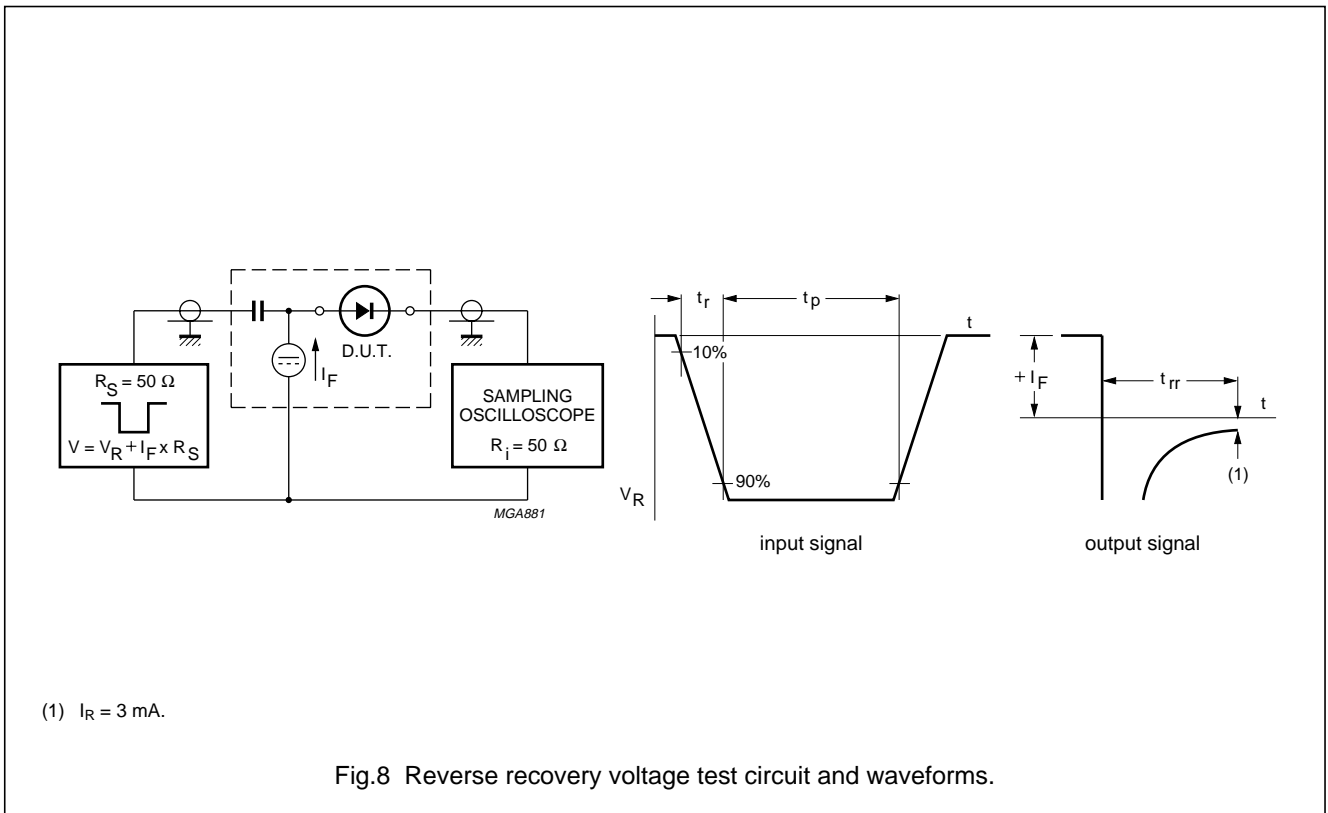
General purpose diodes

BAS19; BAS20; BAS21



General purpose diodes

BAS19; BAS20; BAS21



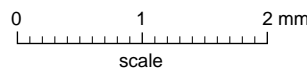
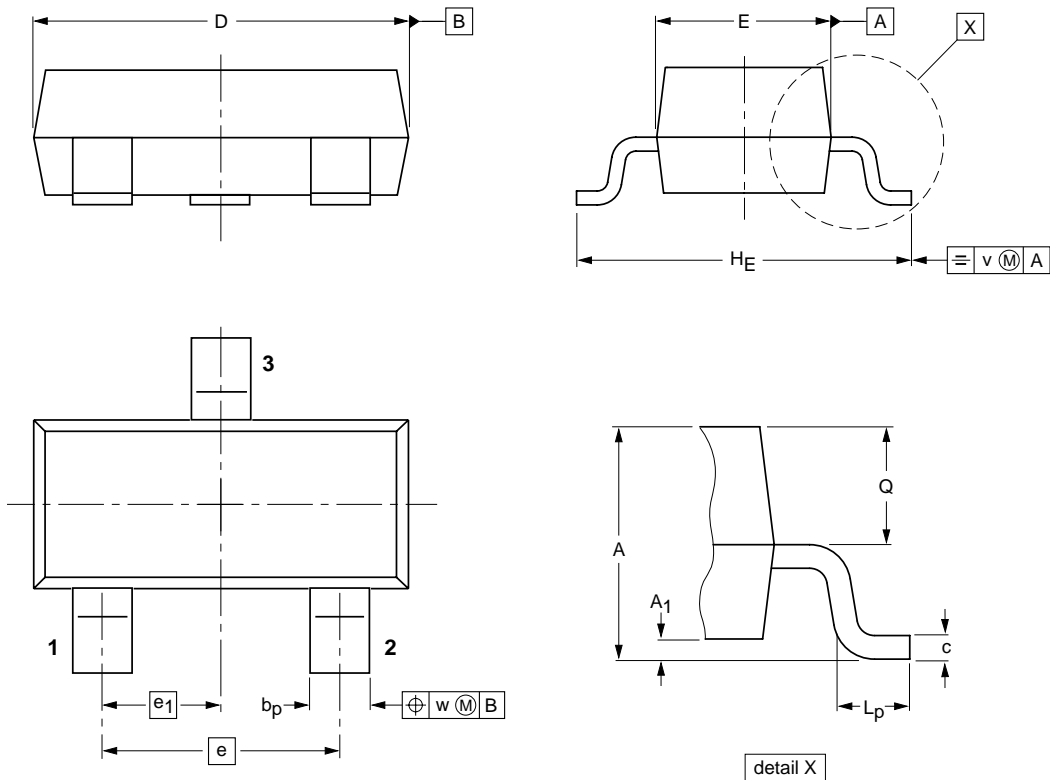
General purpose diodes

BAS19; BAS20; BAS21

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				97-02-28- 99-09-13

General purpose diodes

BAS19; BAS20; BAS21

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).

Notes

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.

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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General purpose diodes

BAS19; BAS20; BAS21

NOTES

General purpose diodes

BAS19; BAS20; BAS21

NOTES

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Contact information

For additional information please visit <http://www.semiconductors.philips.com>. Fax: +31 40 27 24825

For sales offices addresses send e-mail to: sales.addresses@www.semiconductors.philips.com.

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