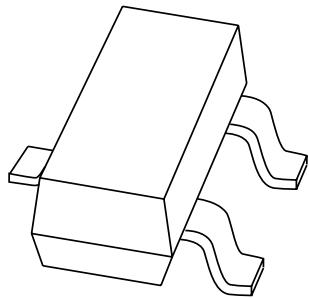


DATA SHEET



BAS29; BAS31; BAS35 General purpose controlled avalanche (double) diodes

Product specification
Supersedes data of 1999 May 21

2001 Oct 10

General purpose controlled avalanche (double) diodes

BAS29; BAS31; BAS35

FEATURES

- Small plastic SMD package
- Switching speed: max. 50 ns
- General application
- Continuous reverse voltage: max. 90 V
- Repetitive peak reverse voltage: max. 110 V
- Repetitive peak forward current: max. 600 mA
- Repetitive peak reverse current: max. 600 mA.

APPLICATIONS

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

DESCRIPTION

General purpose switching diodes fabricated in planar technology, and encapsulated in small rectangular plastic SMD SOT23 packages. The BAS29 consists of a single diode. The BAS31 has two diodes in series. The BAS35 has two diodes with a common anode.

MARKING

TYPE NUMBER	MARKING CODE ⁽¹⁾
BAS29	L20
BAS31	L21 or *V1
BAS35	L22 or *V2

Note

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

PINNING

PIN	DESCRIPTION		
	BAS29	BAS31	BAS35
1	anode	anode	cathode (k1)
2	not connected	cathode	cathode (k2)
3	cathode	common connection	common anode

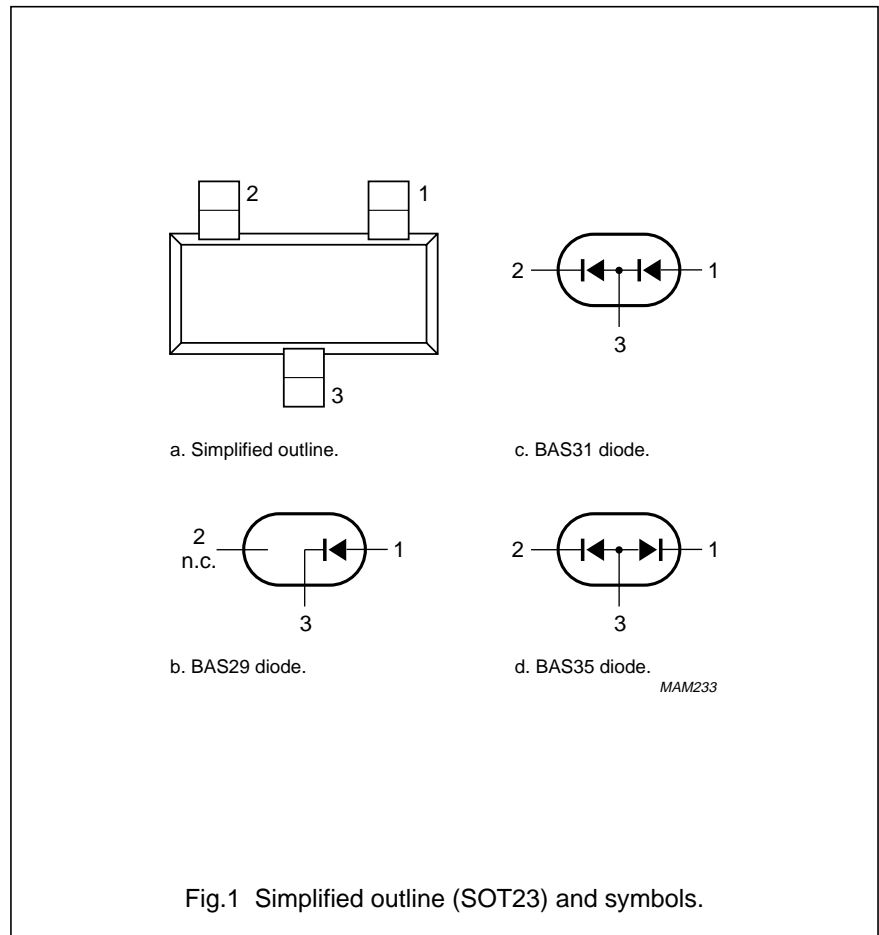


Fig.1 Simplified outline (SOT23) and symbols.

General purpose controlled avalanche (double) diodes

BAS29; BAS31; BAS35

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_{RRM}	repetitive peak reverse voltage		–	110	V
V_R	continuous reverse voltage		–	90	V
I_F	continuous forward current	single diode loaded; see Fig.2; note 1	–	250	mA
		double diode loaded; see Fig.2; note 1	–	150	mA
I_{FRM}	repetitive peak forward current		–	600	mA
I_{FSM}	non-repetitive peak forward current	square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4			
		$t = 1\ \mu\text{s}$	–	10	A
		$t = 100\ \mu\text{s}$	–	4	A
		$t = 1\ \text{s}$	–	0.75	A
P_{tot}	total power dissipation	$T_{amb} = 25\text{ °C}$; note 1	–	250	mW
I_{RRM}	repetitive peak reverse current		–	600	mA
E_{RRM}	repetitive peak reverse energy	$t_p \geq 50\ \mu\text{s}$; $f \leq 20\ \text{Hz}$; $T_j = 25\text{ °C}$	–	5	mJ
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 controlled avalanche (double) diodes

BAS29; BAS31; BAS35

ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_F	forward voltage	see Fig.3			
		$I_F = 10\text{ mA}$	–	750	mV
		$I_F = 50\text{ mA}$	–	840	mV
		$I_F = 100\text{ mA}$	–	900	mV
		$I_F = 200\text{ mA}$	–	1	V
		$I_F = 400\text{ mA}$	–	1.25	V
I_R	reverse current	see Fig.5			
		$V_R = 90\text{ V}$	–	100	nA
		$V_R = 90\text{ V}; T_j = 150\text{ °C}$	–	100	μA
$V_{(BR)R}$	reverse avalanche breakdown voltage	$I_R = 1\text{ mA}$	120	170	V
C_d	diode capacitance	$f = 1\text{ MHz}; V_R = 0$; see Fig.6	–	35	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.7	–	50	ns

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		360	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

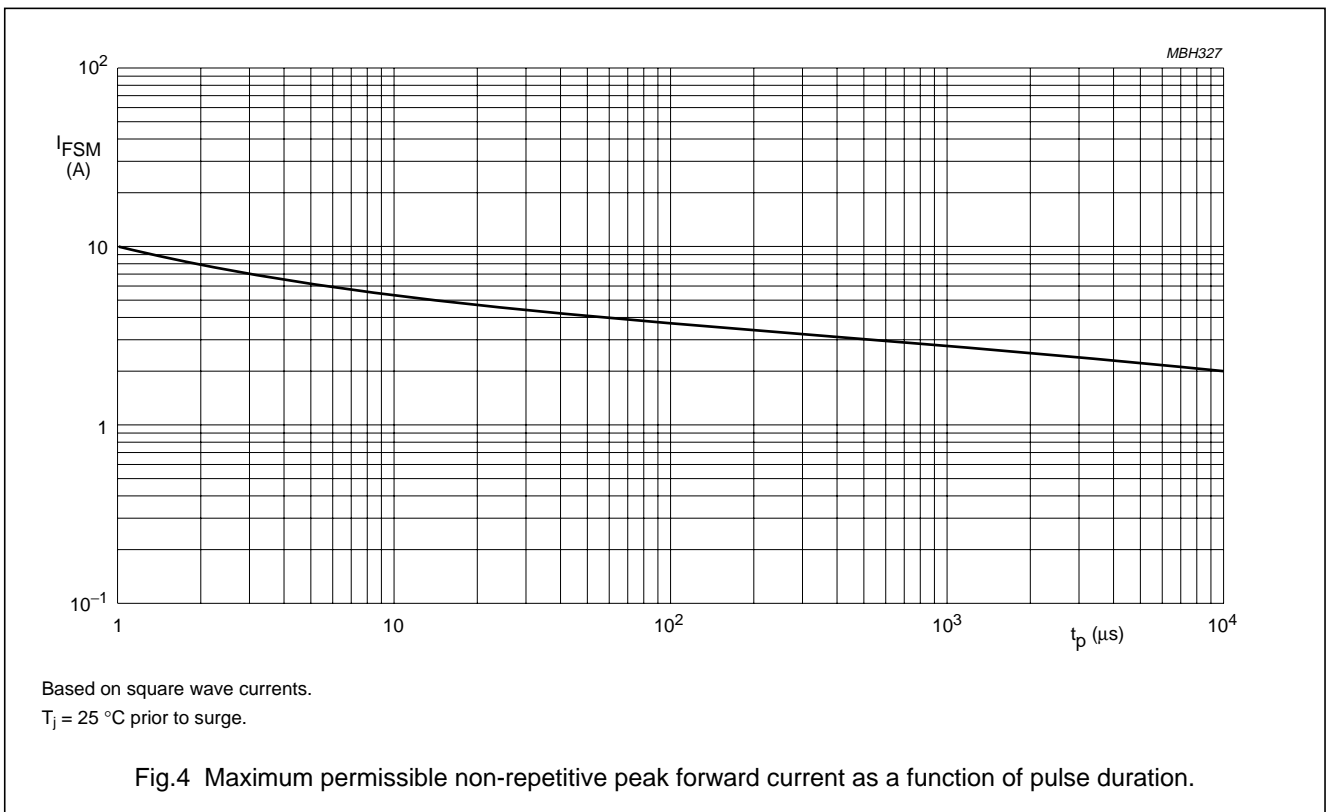
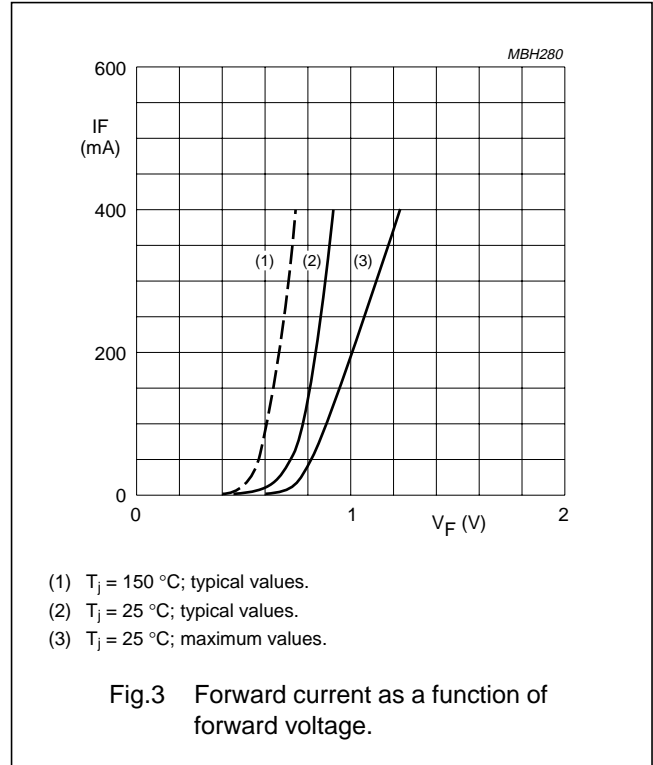
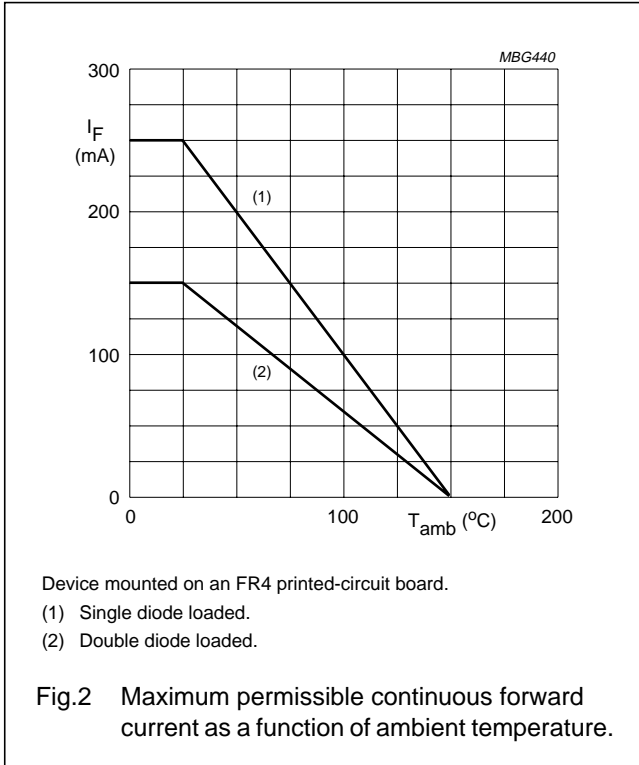
Note

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

General purpose controlled avalanche
(double) diodes

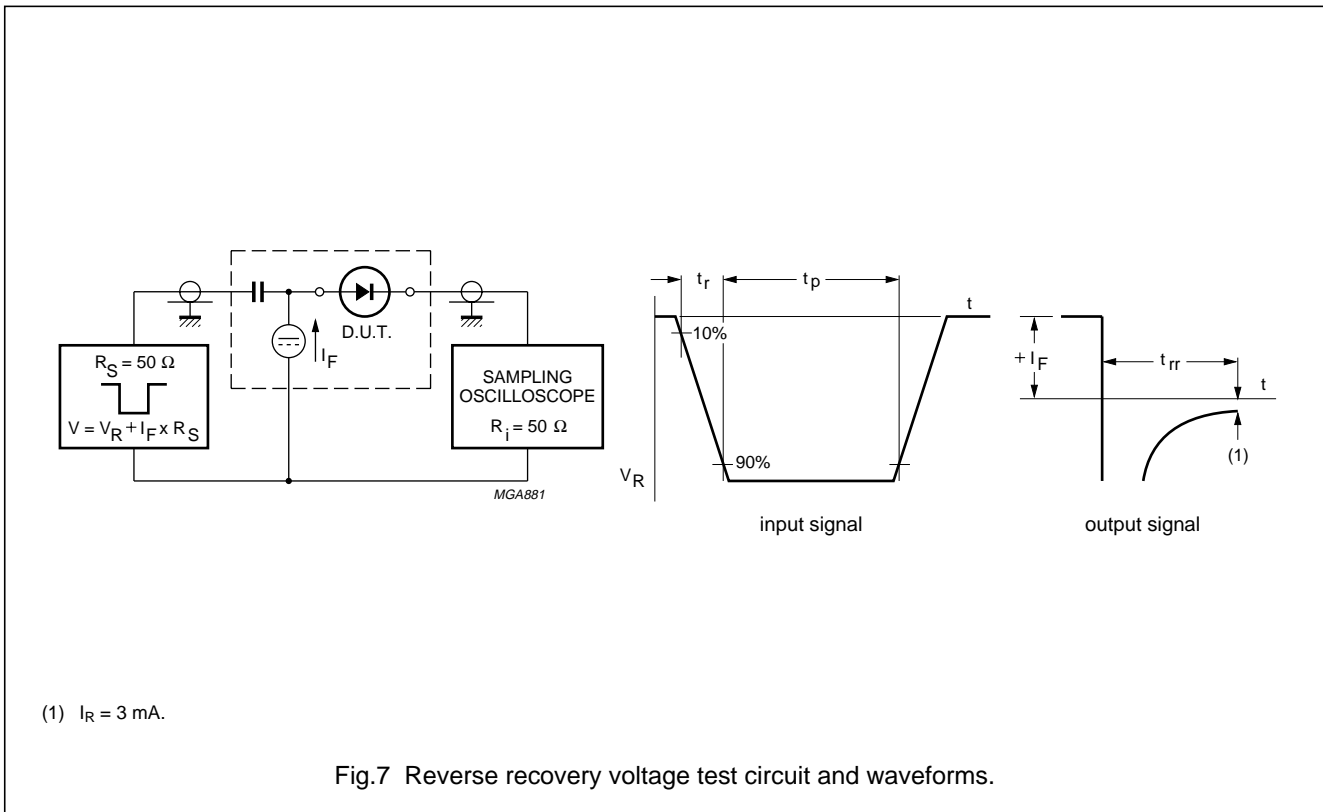
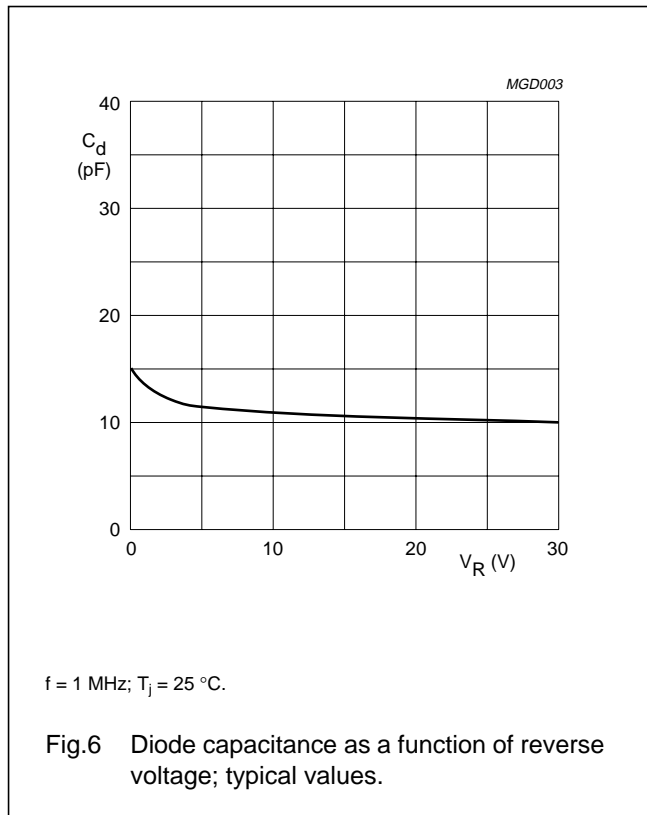
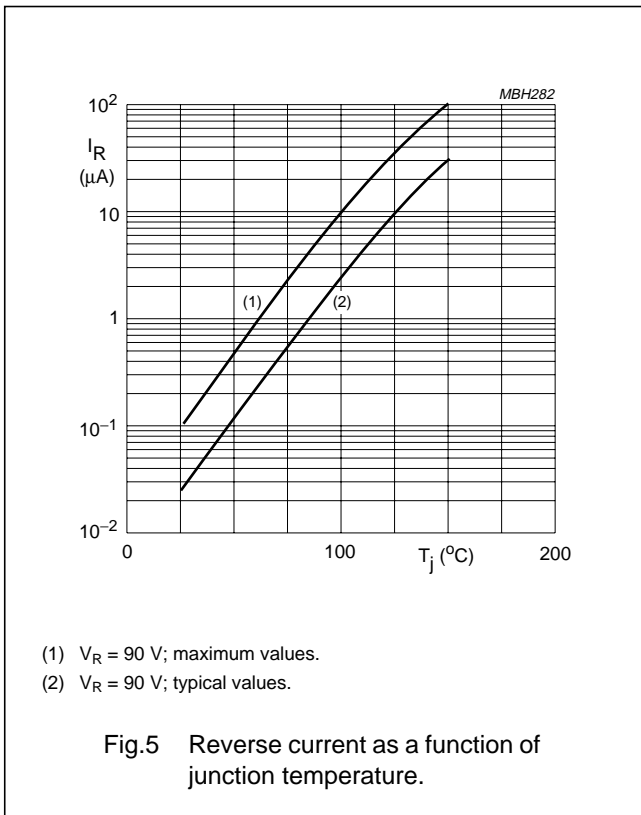
BAS29; BAS31; BAS35

GRAPHICAL DATA



General purpose controlled avalanche
(double) diodes

BAS29; BAS31; BAS35



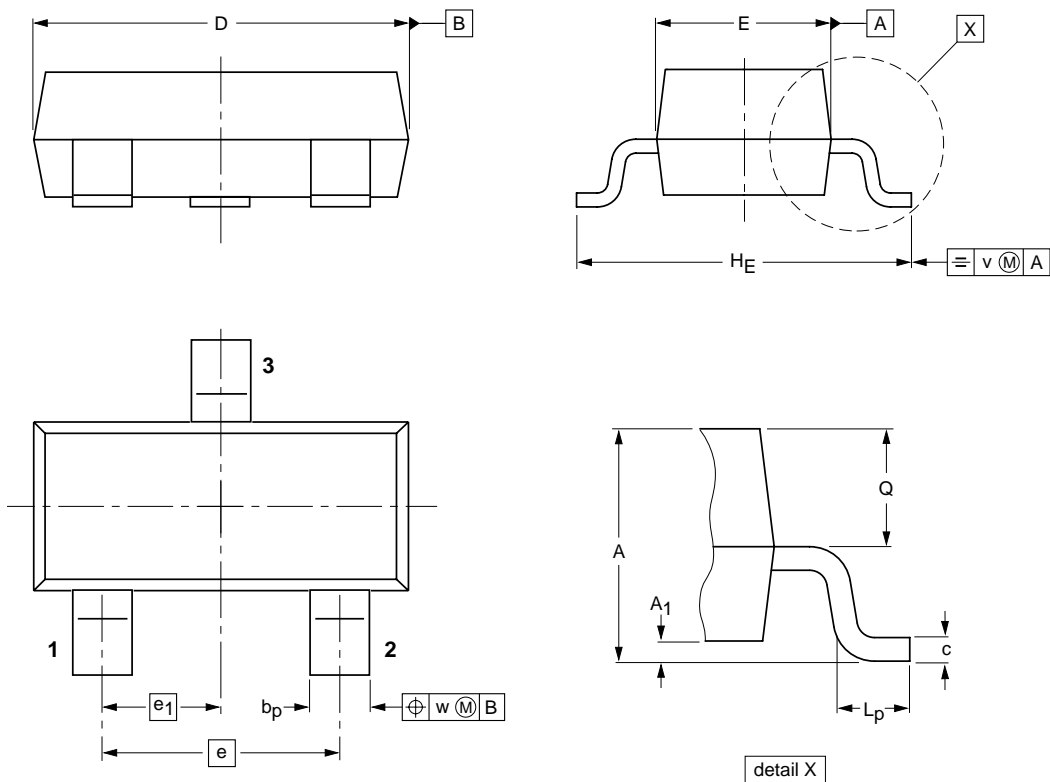
General purpose controlled avalanche
(double) diodes

BAS29; BAS31; BAS35

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 controlled avalanche (double) diodes

BAS29; BAS31; BAS35

DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
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.
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.
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. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A.

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>.

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.

DISCLAIMERS

Life support applications — 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, without notice, in the products, including circuits, standard cells, and/or software, described or contained herein in order to improve design and/or performance. Philips Semiconductors assumes no responsibility or liability for the use of any of these products, conveys no licence 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.

General purpose controlled avalanche
(double) diodes

BAS29; BAS31; BAS35

NOTES

General purpose controlled avalanche
(double) diodes

BAS29; BAS31; BAS35

NOTES

General purpose controlled avalanche
(double) diodes

BAS29; BAS31; BAS35

NOTES

Philips Semiconductors – a worldwide company

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.

© Koninklijke Philips Electronics N.V. 2001

SCA73

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.

Printed in The Netherlands

613514/04/pp12

Date of release: 2001 Oct 10

Document order number: 9397 750 08758

Let's make things better.

**Philips
Semiconductors**



PHILIPS

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.