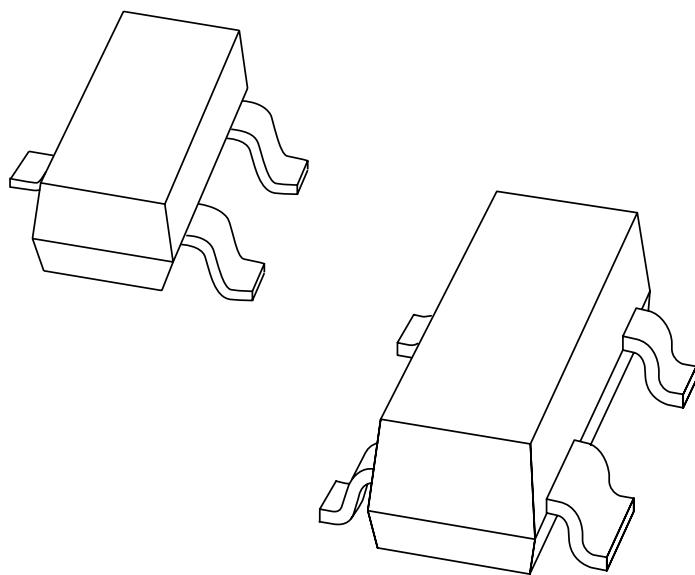


DATA SHEET



BAS70 series Schottky barrier (double) diodes

Product specification
Supersedes data of 1999 Jun 01

2001 Oct 11

Schottky barrier (double) diodes

BAS70 series

FEATURES

- Low forward current
- High breakdown voltage
- Guard ring protected
- Small plastic SMD package
- Low diode capacitance.

APPLICATIONS

- Ultra high-speed switching
- Voltage clamping
- Protection circuits.

DESCRIPTION

Planar Schottky barrier diodes with an integrated guard ring for stress protection. Single diodes and double diodes with different pinning are available.

The diodes BAS70, BAS70-04, BAS70-05 and BAS70-06 are encapsulated in a SOT23 small plastic SMD package. The BAS70-07 is encapsulated in a SOT143B small plastic SMD package.

MARKING

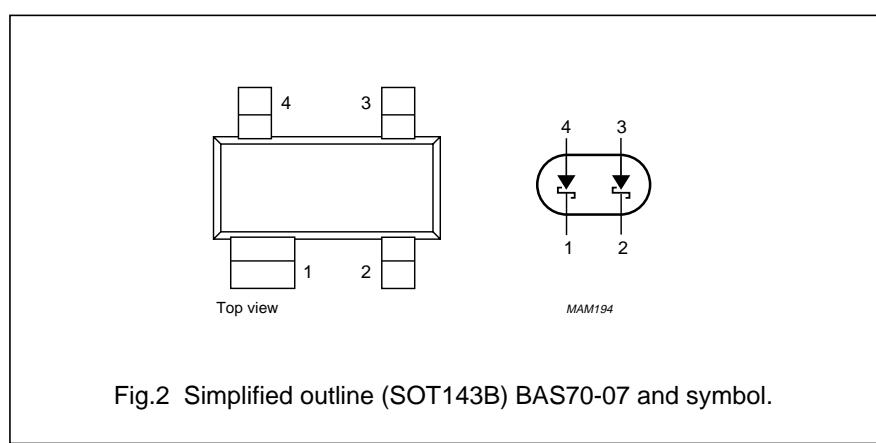
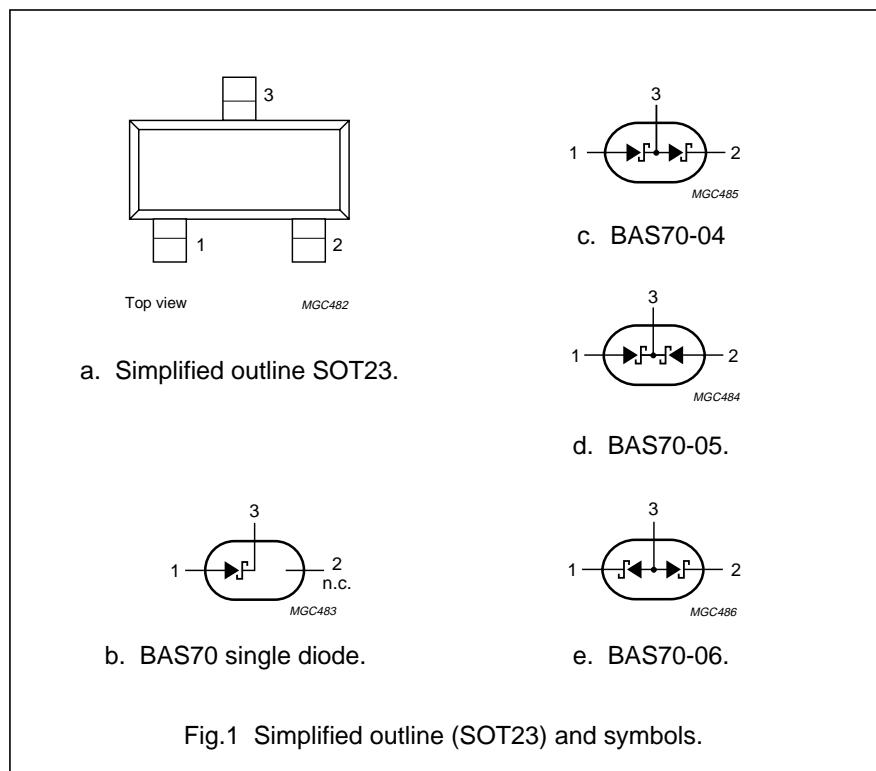
TYPE NUMBER	MARKING CODE ⁽¹⁾
BAS70	73*
BAS70-04	74*
BAS70-05	75*
BAS70-06	76*
BAS70-07	77*

Note

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

PINNING

PIN	DESCRIPTION				
	SOT23				SOT143B
BAS70 (see Fig.1b)	BAS70-04 (see Fig.1c)	BAS70-05 (see Fig.1d)	BAS70-06 (see Fig.1e)	BAS70-07 (see Fig.2)	
1	a ₁	a ₁	a ₁	k ₁	k ₁
2	n.c.	k ₂	a ₂	k ₂	k ₂
3	k ₁	k ₁ , a ₂	k ₁ , k ₂	a ₁ , a ₂	a ₂
4	—	—	—	—	a ₁



Schottky barrier (double) diodes

BAS70 series

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_R	continuous reverse voltage		–	70	V
I_F	continuous forward current		–	70	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 1 \text{ s}; \delta \leq 0.5$	–	70	mA
I_{FSM}	non-repetitive peak forward current	$t_p < 10 \text{ ms}$	–	100	mA
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

ELECTRICAL CHARACTERISTICS $T_{amb} = 25 \text{ °C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
Per diode				
V_F	forward voltage	see Fig.3 $I_F = 1 \text{ mA}$ $I_F = 10 \text{ mA}$ $I_F = 15 \text{ mA}$	410 750 1	mV mV V
I_R	reverse current	$V_R = 50 \text{ V}$; note 1; see Fig.4 $V_R = 70 \text{ V}$; note 1; see Fig.4	100 10	nA μA
τ	charge carrier life time (Krakauer method)	$I_F = 5 \text{ mA}$	100	ps
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0$; see Fig.6	2	pF

Note

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

THERMAL CHARACTERISTICS

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

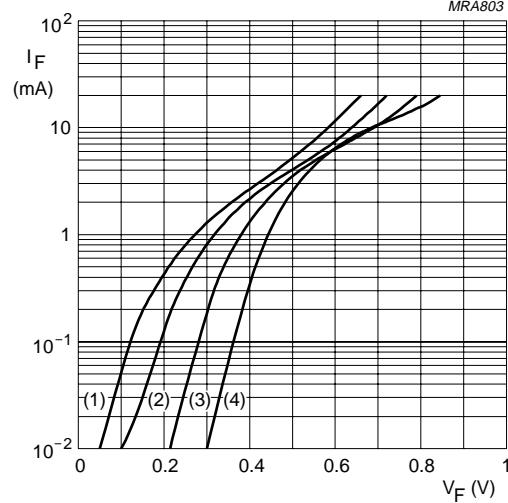
Note

1. Refer to SOT23 or SOT143B standard mounting conditions.

Schottky barrier (double) diodes

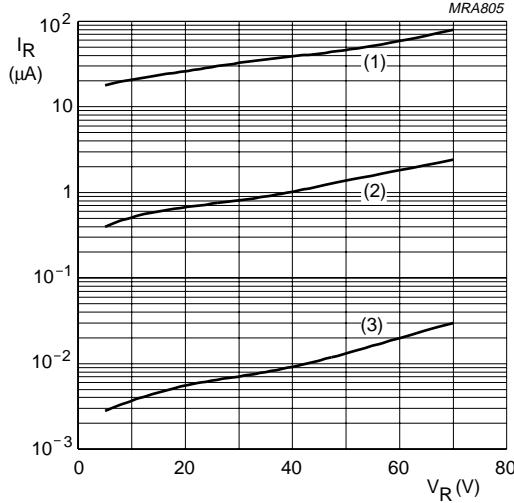
BAS70 series

GRAPHICAL DATA



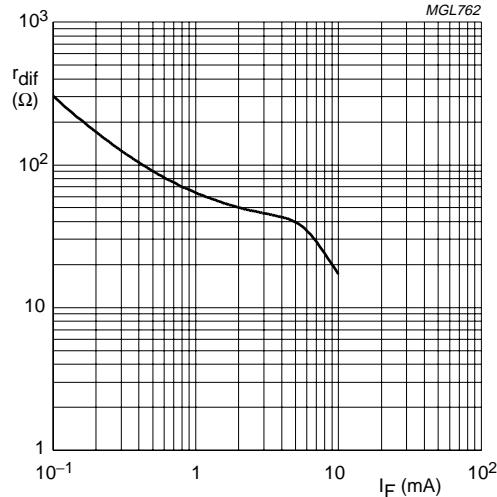
- (1) $T_{amb} = 125 \text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 85 \text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = 25 \text{ }^{\circ}\text{C}$.
- (4) $T_{amb} = -40 \text{ }^{\circ}\text{C}$.

Fig.3 Forward current as a function of forward voltage; typical values.



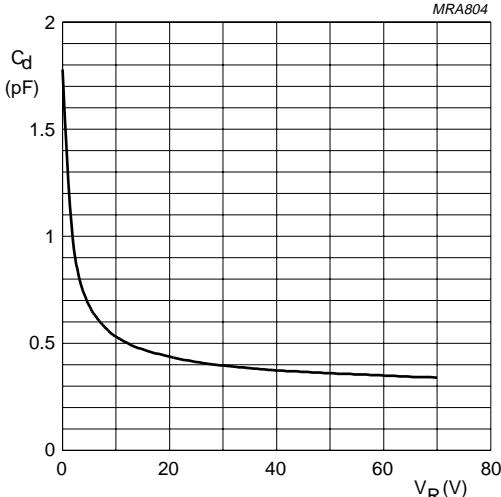
- (1) $T_{amb} = 150 \text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 85 \text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = 25 \text{ }^{\circ}\text{C}$.

Fig.4 Reverse current as a function of reverse voltage; typical values.



$f = 10 \text{ kHz}$.

Fig.5 Differential forward resistance as a function of forward current; typical values.



$f = 1 \text{ MHz}$.

Fig.6 Diode capacitance as a function of reverse voltage; typical values.

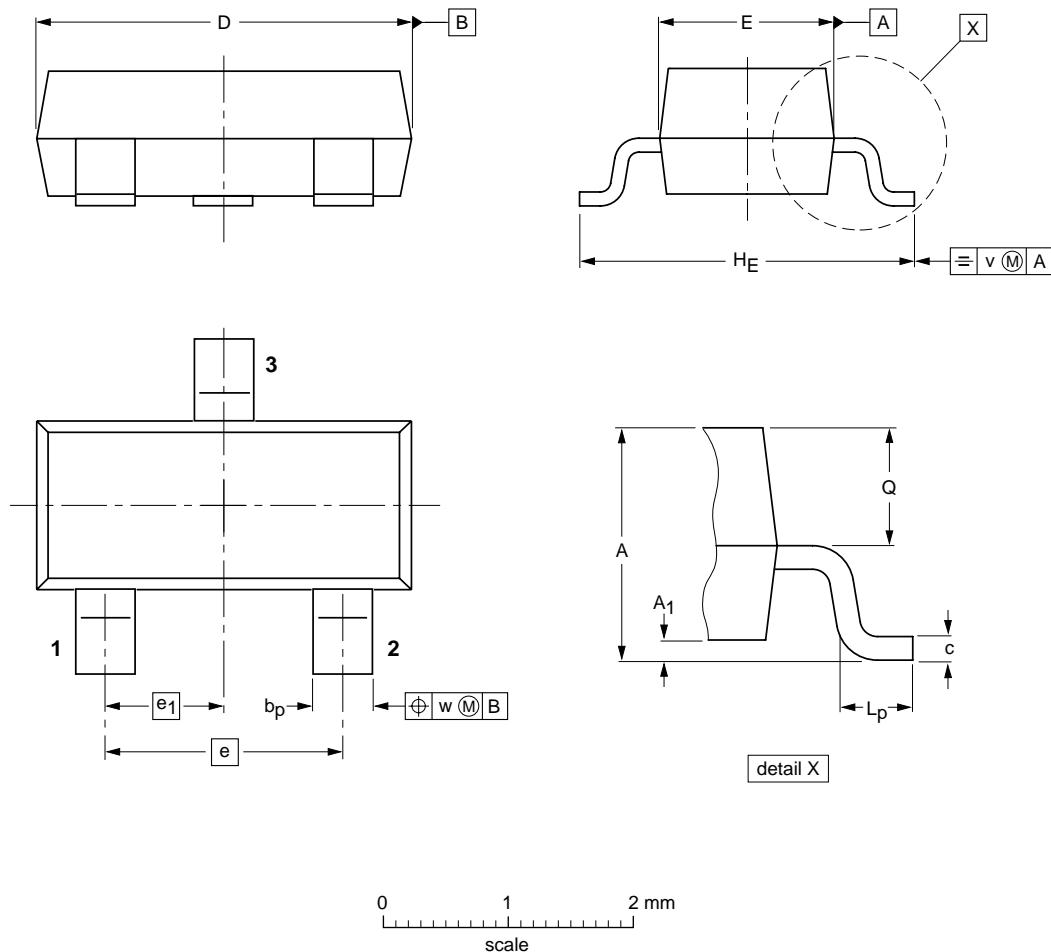
Schottky barrier (double) diodes

BAS70 series

PACKAGE OUTLINES

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

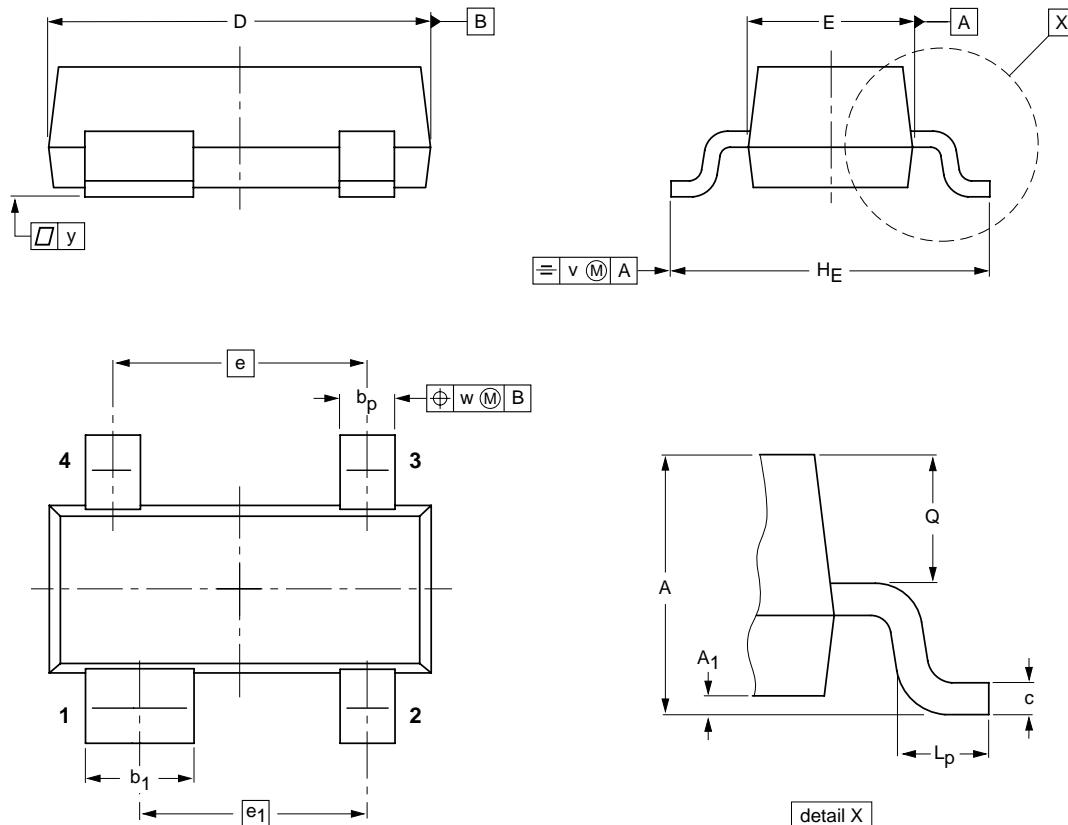
OUTLINE VERSION	REFERENCES					EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ				
SOT23		TO-236AB					-97-02-28 99-09-13

Schottky barrier (double) diodes

BAS70 series

Plastic surface mounted package; 4 leads

SOT143B



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	b_1	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.1 0.9	0.1	0.48 0.38	0.88 0.78	0.15 0.09	3.0 2.8	1.4 1.2	1.9	1.7	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT143B						97-02-28

Schottky barrier (double) diodes

BAS70 series

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.

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

613514/06/08

Date of release: 2001 Oct 11

Document order number: 9397 750 08761

Let's make things better.

**Philips
Semiconductors**



PHILIPS