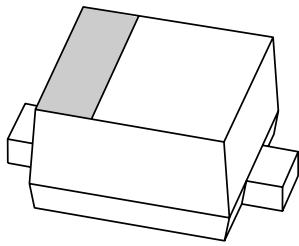


# DATA SHEET



## **BAS521** High voltage switching diode

Product specification

2003 Aug 12

# High voltage switching diode

# BAS521

## FEATURES

- High switching speed: max. 50 ns
- High continuous reverse voltage: 300 V
- Repetitive peak forward current: 625 mA
- Ultra small plastic SMD package.

## APPLICATIONS

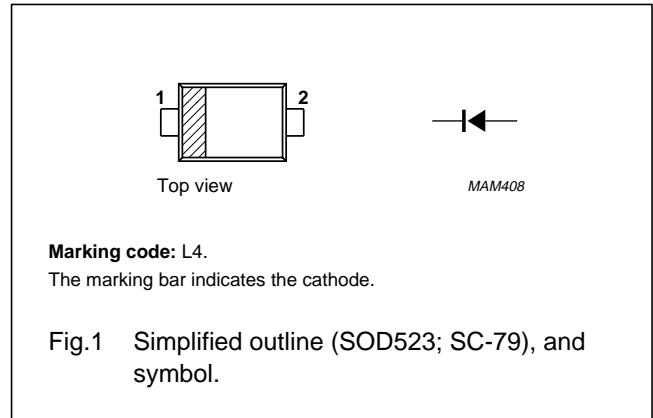
- High speed switching
- High voltage switching.

## DESCRIPTION

The BAS521 is a high-voltage switching diode fabricated in planar technology and encapsulated in an ultra small SOD523 (SC-79) plastic SMD package.

## PINNING

PIN	DESCRIPTION
1	cathode
2	anode



## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_R$	continuous reverse voltage		–	300	V
$V_{RRM}$	repetitive peak reverse voltage		–	300	V
$I_F$	continuous forward current	$T_s \leq 90\text{ °C}$ ; note 1	–	250	mA
$I_{FRM}$	repetitive peak forward current	$t_p = 1\text{ ms}$ ; $\delta = 0.25$	–	1	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 1\text{ }\mu\text{s}$ ; square wave; $T_j = 25\text{ °C}$ prior to surge	–	4.5	A
$P_{tot}$	total power dissipation	$T_s \leq 90\text{ °C}$ ; note 1	–	500	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

## Note

1.  $T_s$  is the temperature at the soldering point of the cathode tab.

## High voltage switching diode

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{BR}$	breakdown voltage	$I_R = 100\ \mu\text{A}$	300	340	–	V
$V_F$	forward voltage	$I_F = 100\ \text{mA}$ ; note 1	–	0.95	1.1	V
$I_R$	reverse current	$V_R = 250\ \text{V}$	–	30	150	nA
		$V_R = 250\ \text{V}$ ; $T_a = 150\text{ °C}$	–	40	100	$\mu\text{A}$
$t_{rr}$	reverse recovery time	when switched from $I_F = 30\ \text{mA}$ to $I_R = 30\ \text{mA}$ ; $R_L = 100\ \Omega$ ; measured at $I_R = 3\ \text{mA}$	–	16	50	ns
$C_d$	diode capacitance	$V_R = 0\ \text{V}$ ; $f = 1\ \text{MHz}$	–	0.4	5	pF

**Note**

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

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to solder point	note 1	120	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 2	500	K/W

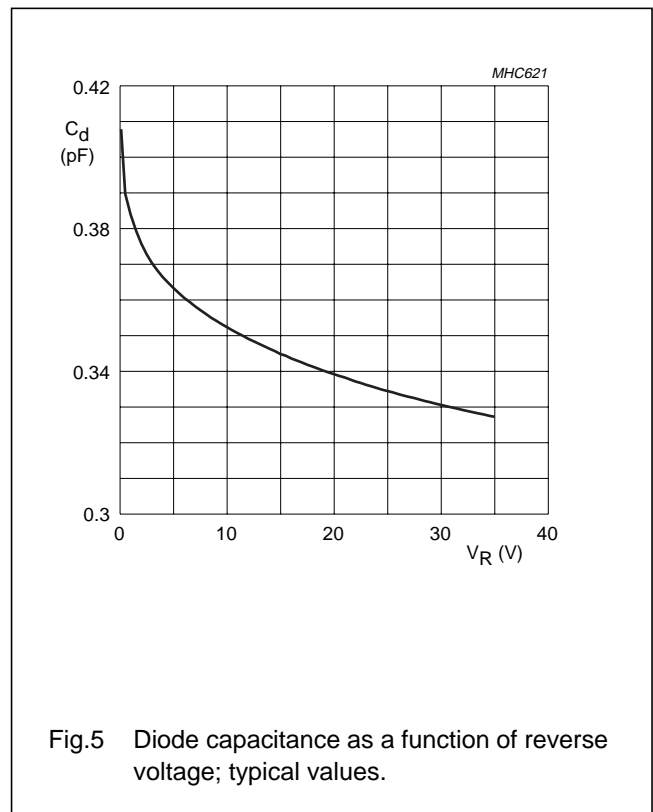
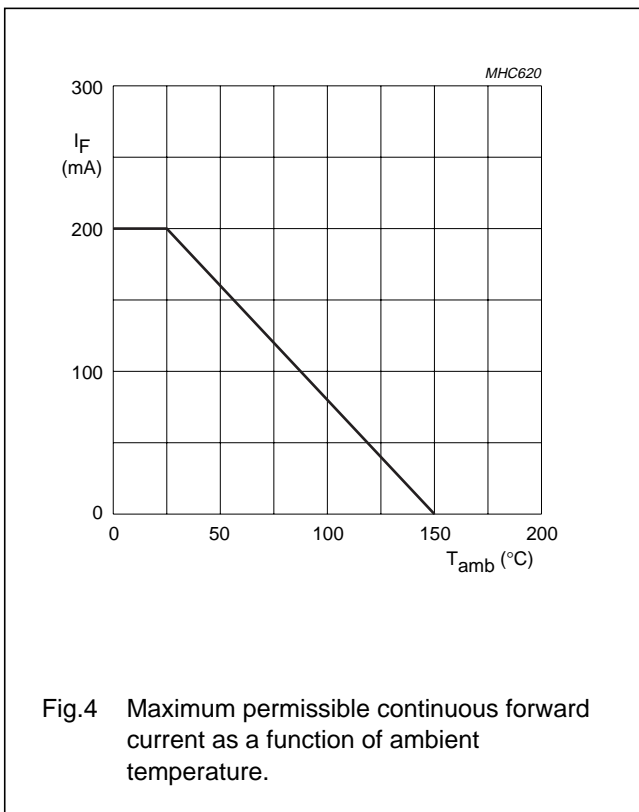
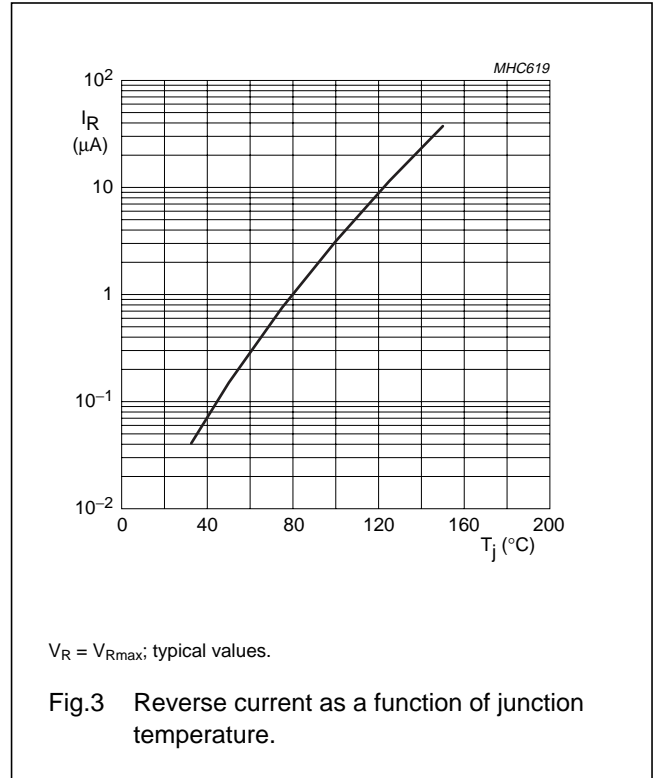
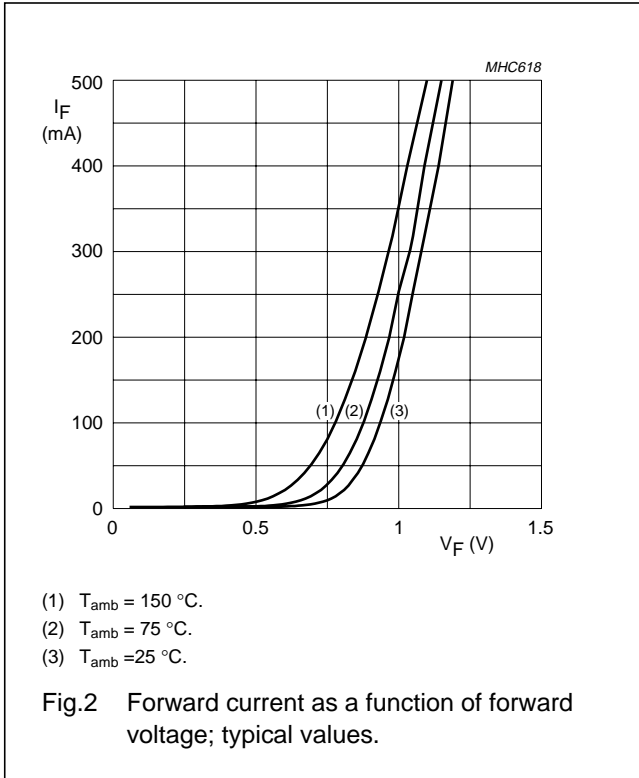
**Notes**

1. Soldering point of the cathode tab.
2. Refer to SOD523 (SC-79) standard mounting conditions.

High voltage switching diode

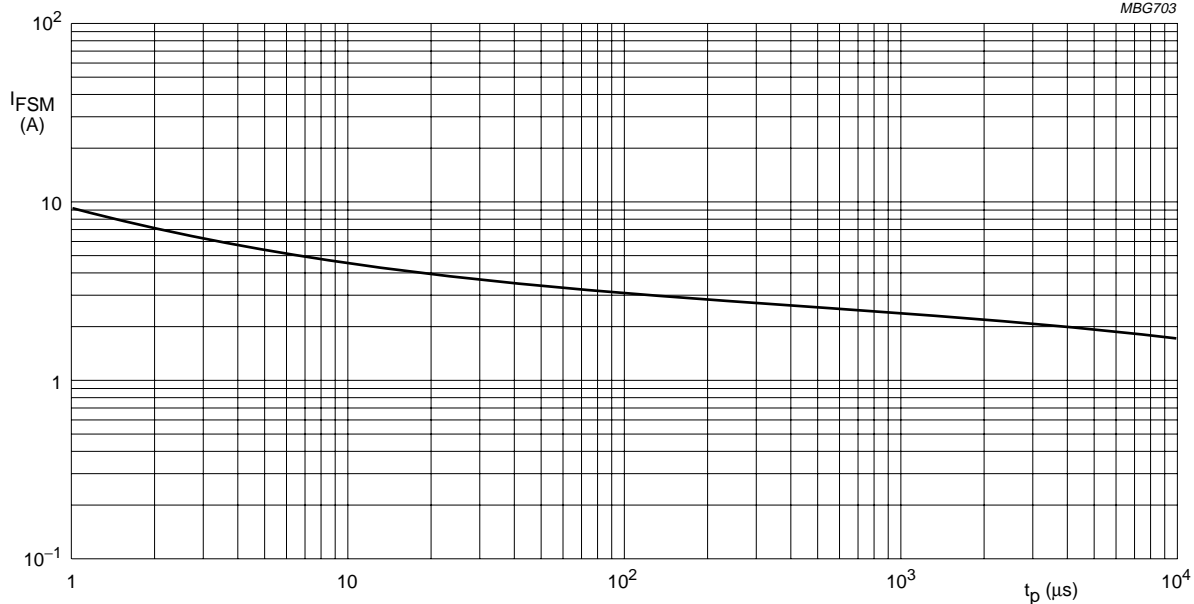
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GRAPHICAL DATA



High voltage switching diode

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Based on square wave currents.  
 $T_j = 25^\circ C$  prior to surge.

Fig.6 Maximum permissible non-repetitive peak forward current as a function of pulse duration.

# High voltage switching diode

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## PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD523

**DIMENSIONS (mm are the original dimensions)**

UNIT	A	bp	c	D	E	HE	v
mm	0.65 0.58	0.34 0.26	0.17 0.11	1.25 1.15	0.85 0.75	1.65 1.55	0.1

**Note**  
1. The marking bar indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD523			SC-79			-98-11-25- 02-12-13

## High voltage switching diode

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## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	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.
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**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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