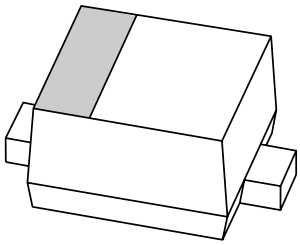
DATA SHEET



BAS521
High voltage switching diode

Product specification

2003 Aug 12

Philips
Semiconductors

PHILIPS

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

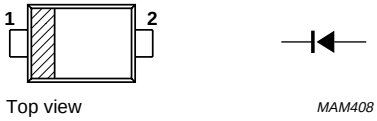
- High speed switching
- High voltage switching.

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



Marking code: L4.
The marking bar indicates the cathode.

Fig.1 Simplified outline (SOD523; SC-79), and symbol.

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	$T_s \leq 90$ °C; note 1	–	250	mA
I_{FRM}	repetitive peak forward current	$t_p = 1$ ms; $\delta = 0.25$	–	1	A
I_{FSM}	non-repetitive peak forward current	$t_p = 1$ µs; square wave; $T_j = 25$ °C prior to surge	–	4.5	A
P_{tot}	total power dissipation	$T_s \leq 90$ °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.

ELECTRICAL CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

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

Note

1. Pulse test: t_p = 300 μs; δ = 0.02.

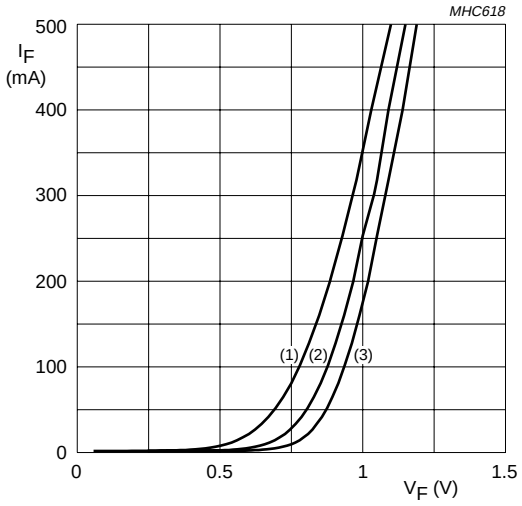
THERMAL CHARACTERISTICS

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

Notes

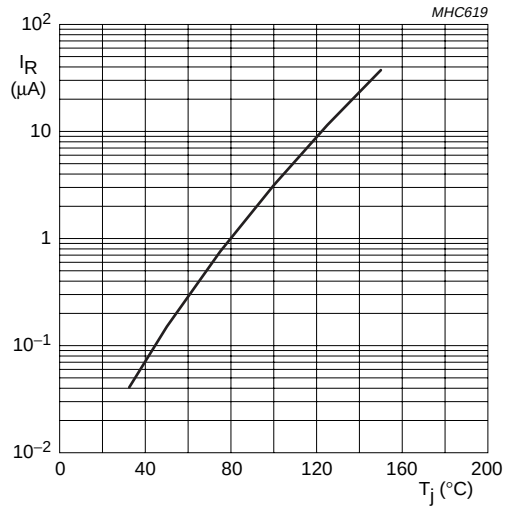
1. Soldering point of the cathode tab.
2. Refer to SOD523 (SC-79) standard mounting conditions.

GRAPHICAL DATA



(1) T_{amb} = 150 °C.
(2) T_{amb} = 75 °C.
(3) T_{amb} =25 °C.

Fig.2 Forward current as a function of forward voltage; typical values.



$V_R = V_{Rmax}$; typical values.

Fig.3 Reverse current as a function of junction temperature.

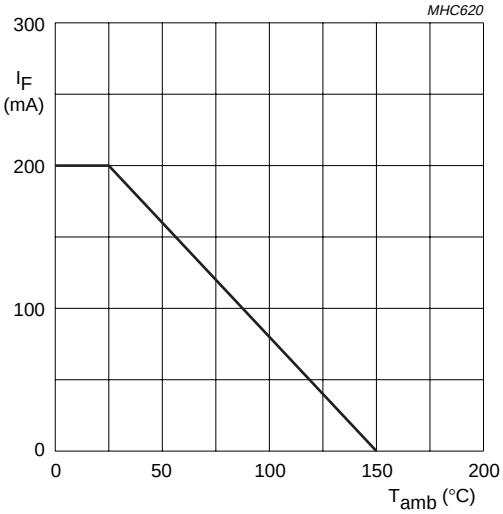


Fig.4 Maximum permissible continuous forward current as a function of ambient temperature.

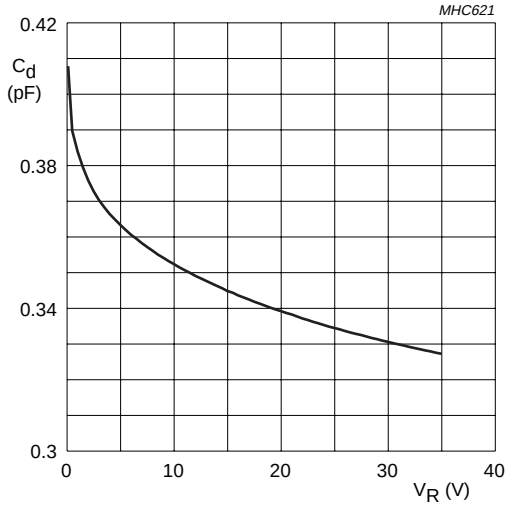
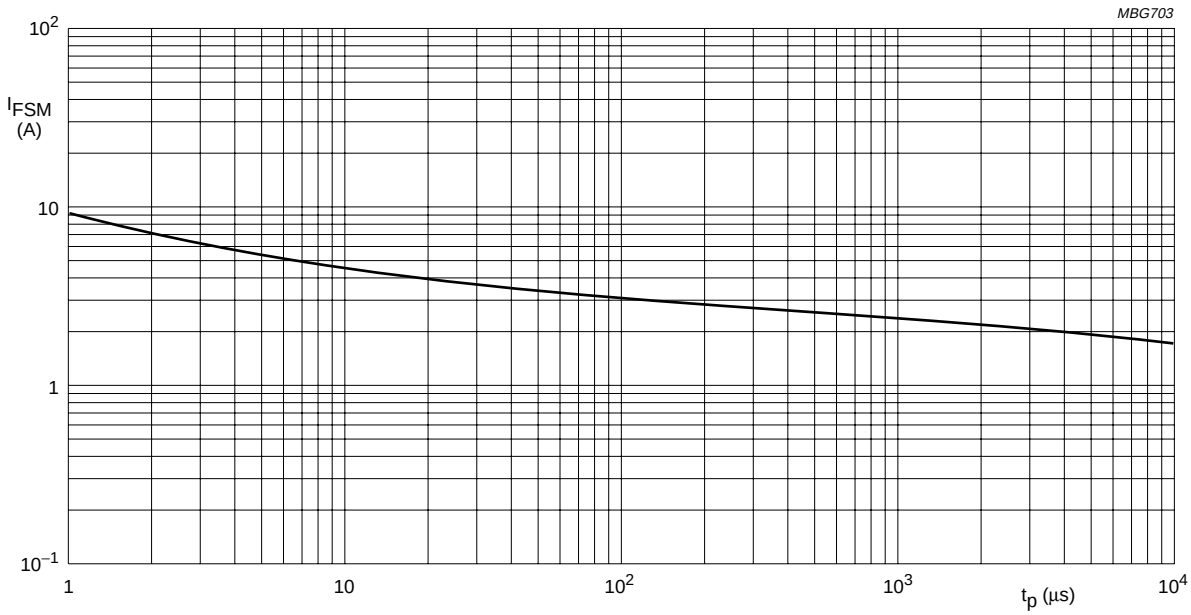


Fig.5 Diode capacitance as a function of reverse voltage; typical values.

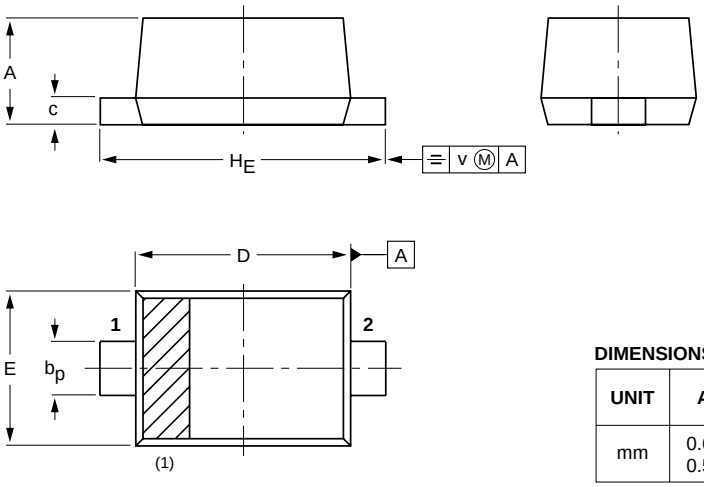


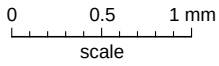
Based on square wave currents.
T_j = 25°C prior to surge.

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

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads **SOD523**





DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	H_E	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

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
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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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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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