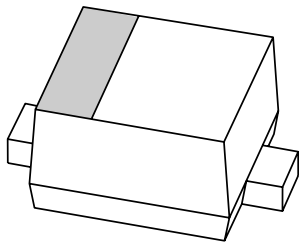


DATA SHEET



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

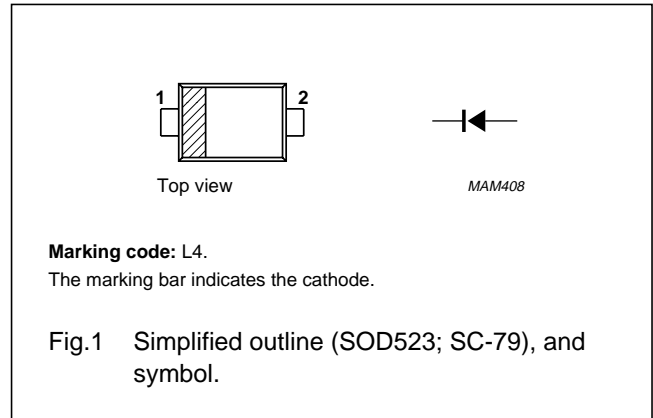
- High speed switching
- High voltage switching.

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 | $T_s \leq 90\text{ }^\circ\text{C}$; 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; $T_j = 25\text{ }^\circ\text{C}$ prior to surge | – | 4.5 | A |
| P_{tot} | total power dissipation | $T_s \leq 90\text{ }^\circ\text{C}$; note 1 | – | 500 | mW |
| T_{stg} | storage temperature | | –65 | +150 | $^\circ\text{C}$ |
| T_j | junction temperature | | – | 150 | $^\circ\text{C}$ |
| T_{amb} | operating ambient temperature | | –65 | +150 | $^\circ\text{C}$ |

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 | μA |
| 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 |

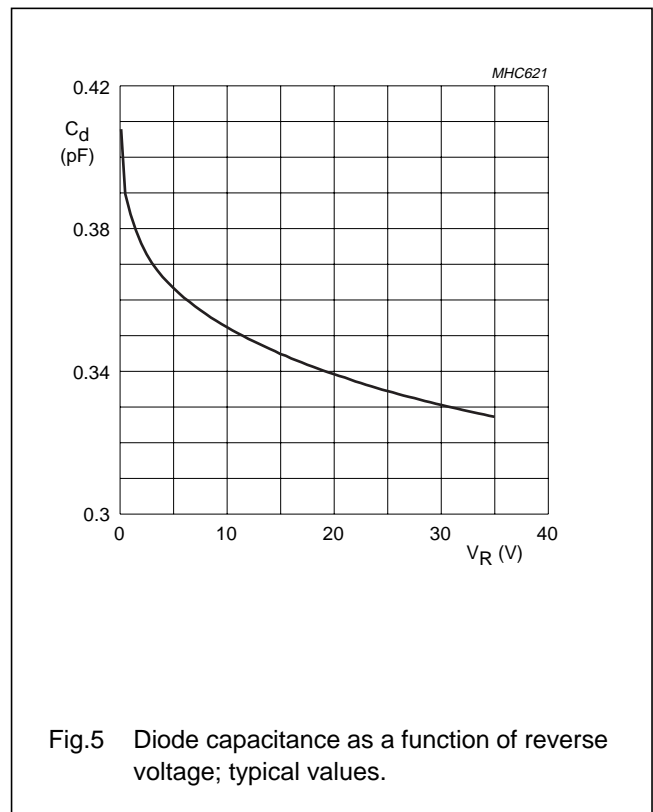
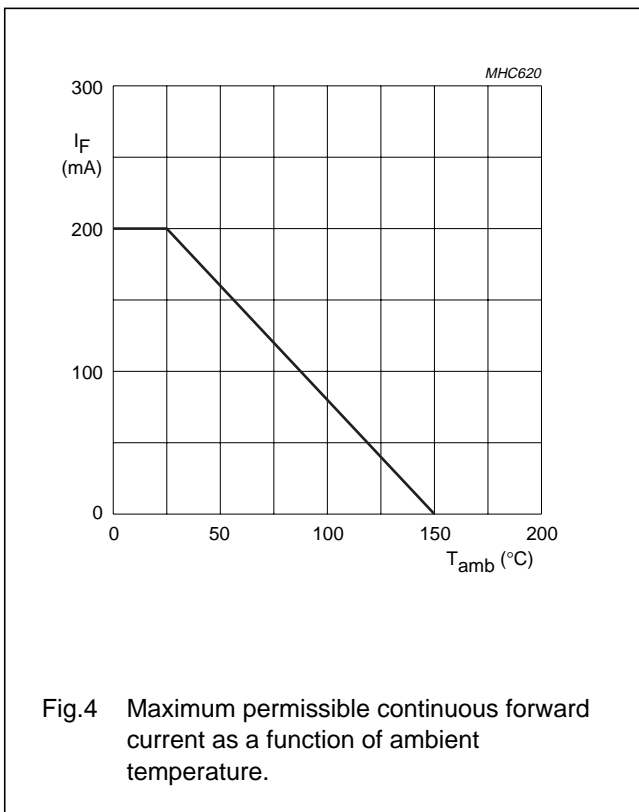
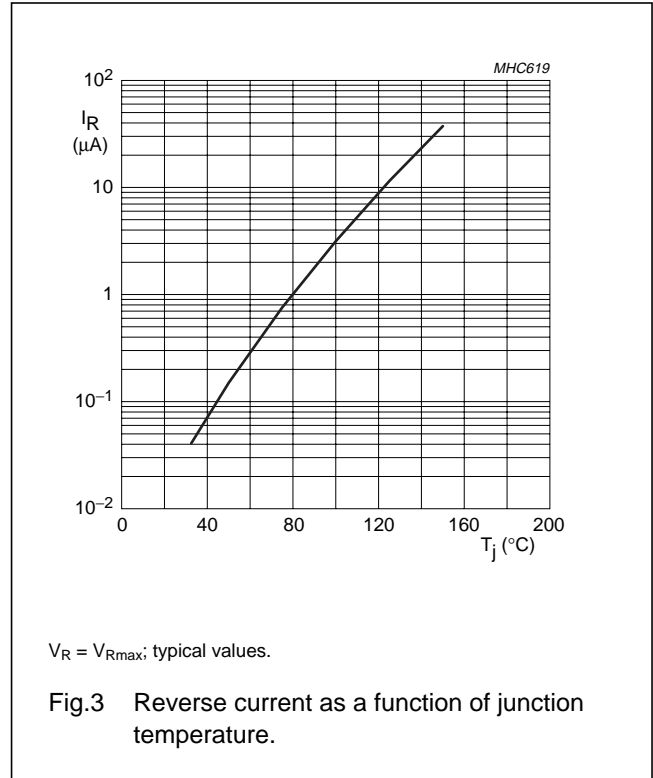
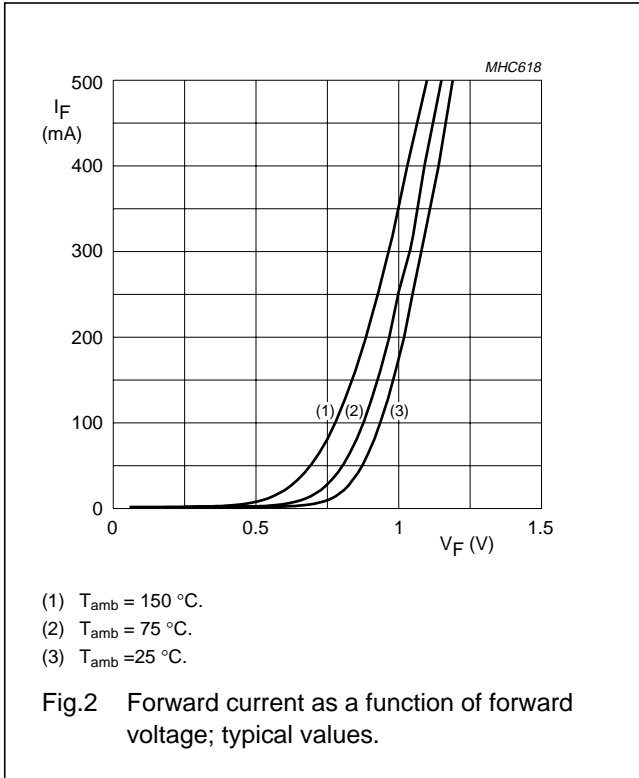
Notes

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

High voltage switching diode

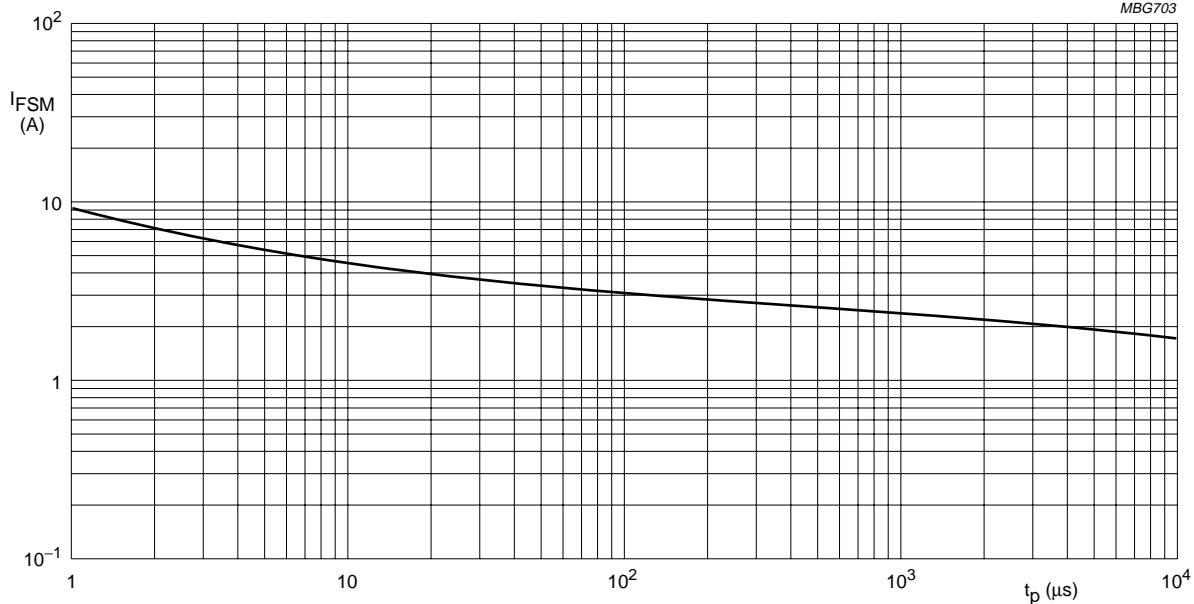
BAS521

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

BAS521

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. |
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Printed in The Netherlands

613514/01/pp8

Date of release: 2003 Aug 12

Document order number: 9397 750 11448

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