



FUKUCOM COMPANY LTD.

福 靈 有 限 公 司

FLAT P, 3/F., EVEREST INDUSTRIAL CENTRE, 396 KWUN TONG ROAD,
KWUN TONG, KOWLOON, HONG KONG.

TEL: 852-2790 0314 FAX: 852-2790 0206

Philips Semiconductors

Product specification

General purpose diodes

BAS19; BAS20; BAS21

FEATURES

- Small plastic SMD package
- Switching speed: max. 50 ns
- General application
- Continuous reverse voltage: max. 100 V; 150 V; 200 V
- Repetitive peak reverse voltage: max. 120 V; 200 V; 250 V
- Repetitive peak forward current: max. 625 mA.

APPLICATIONS

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

DESCRIPTION

The BAS19, BAS20 and BAS21 are general purpose diodes fabricated in planar technology, and encapsulated in a small SOT23 plastic SMD package.

MARKING

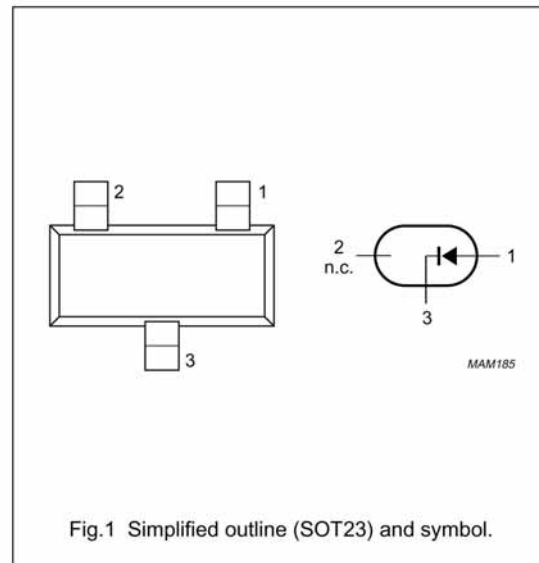
| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| BAS19 | JP* |
| BAS20 | JR* |
| BAS21 | JS* |

Note

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

PINNING

| PIN | DESCRIPTION |
|-----|---------------|
| 1 | anode |
| 2 | not connected |
| 3 | cathode |



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LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|-------------------------------------|---|------|------|------|
| V_{RRM} | repetitive peak reverse voltage | | | | |
| | BAS19 | | – | 120 | V |
| | BAS20 | | – | 200 | V |
| | BAS21 | | – | 250 | V |
| V_R | continuous reverse voltage | | | | |
| | BAS19 | | – | 100 | V |
| | BAS20 | | – | 150 | V |
| | BAS21 | | – | 200 | V |
| I_F | continuous forward current | see Fig.2; note 1 | – | 200 | mA |
| I_{FRM} | repetitive peak forward current | | – | 625 | mA |
| I_{FSM} | non-repetitive peak forward current | square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4 | | | |
| | | $t = 1\ \mu\text{s}$ | – | 9 | A |
| | | $t = 100\ \mu\text{s}$ | – | 3 | A |
| | | $t = 10\ \text{ms}$ | – | 1.7 | A |
| P_{tot} | total power dissipation | $T_{amb} = 25\text{ °C}$; note 1 | – | 250 | mW |
| T_{stg} | storage temperature | | –65 | +150 | °C |
| T_j | junction temperature | | – | 150 | °C |

Note

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



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ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MAX. | UNIT |
|----------|-----------------------|--|------|---------------|
| V_F | forward voltage | see Fig.3 | | |
| | | $I_F = 100\text{ mA}$ | 1 | V |
| | | $I_F = 200\text{ mA}$ | 1.25 | V |
| I_R | reverse current | see Fig.5 | | |
| | BAS19 | $V_R = 100\text{ V}$ | 100 | nA |
| | | $V_R = 100\text{ V}; T_j = 150\text{ }^\circ\text{C}$ | 100 | μA |
| | BAS20 | $V_R = 150\text{ V}$ | 100 | nA |
| | | $V_R = 150\text{ V}; T_j = 150\text{ }^\circ\text{C}$ | 100 | μA |
| | BAS21 | $V_R = 200\text{ V}$ | 100 | nA |
| | | $V_R = 200\text{ V}; T_j = 150\text{ }^\circ\text{C}$ | 100 | μA |
| C_d | diode capacitance | $f = 1\text{ MHz}; V_R = 0$; see Fig.6 | 5 | 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.8 | 50 | ns |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|----------------|---|------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point | | 330 | K/W |
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 500 | K/W |

Note

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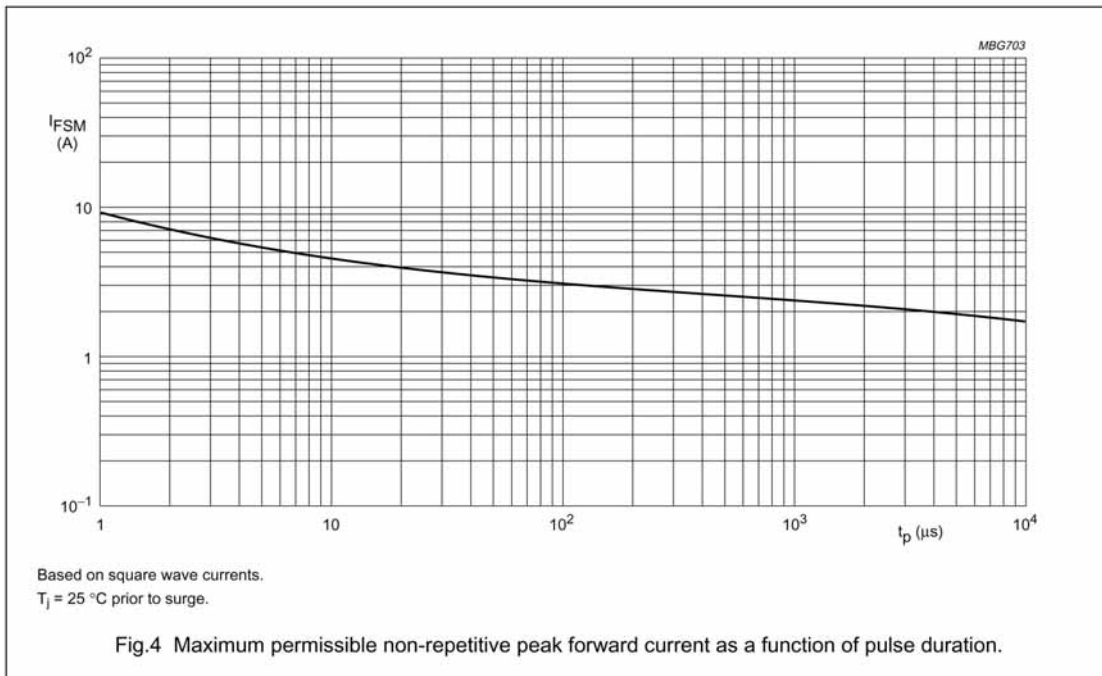
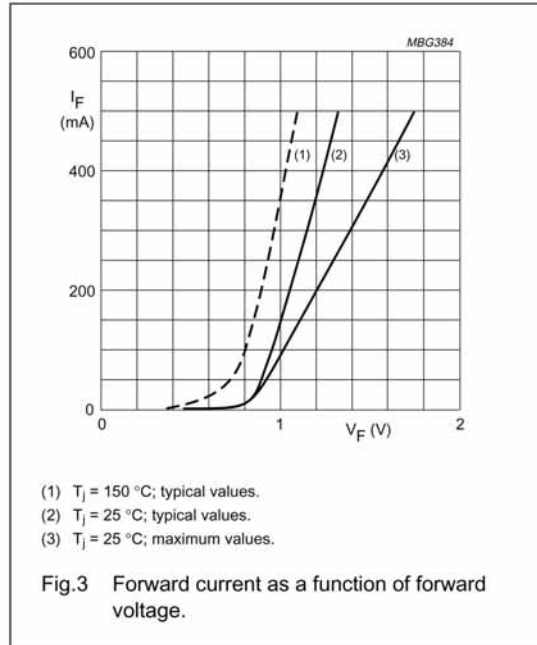
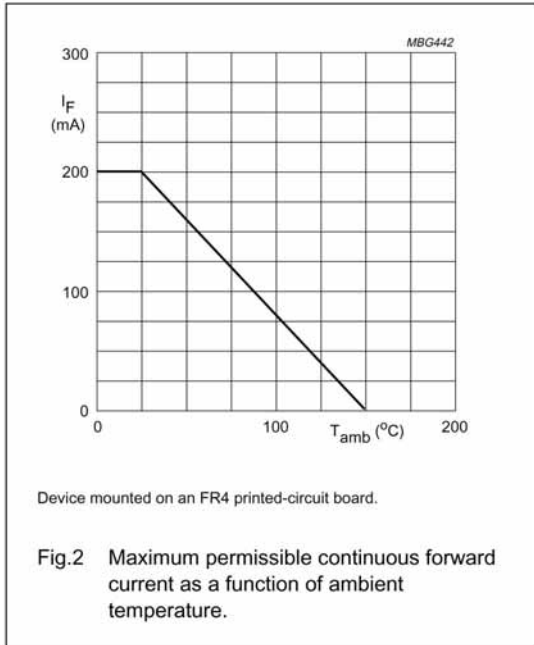
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GRAPHICAL DATA





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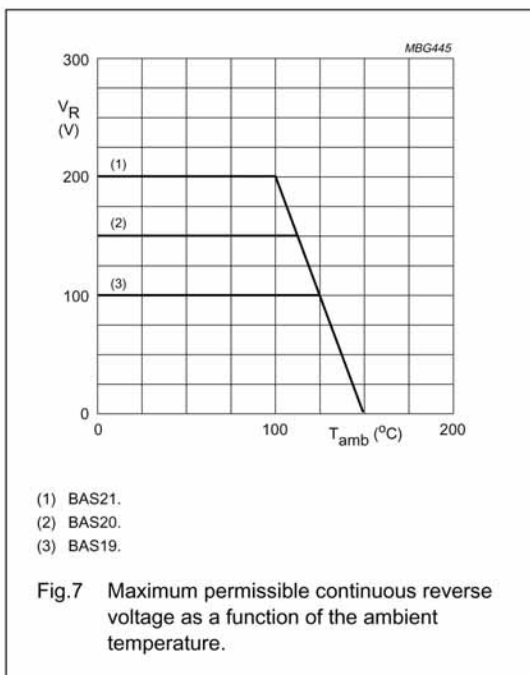
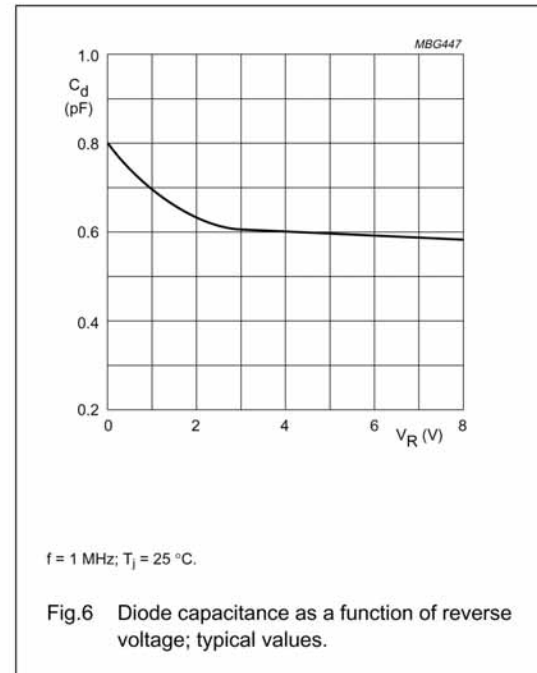
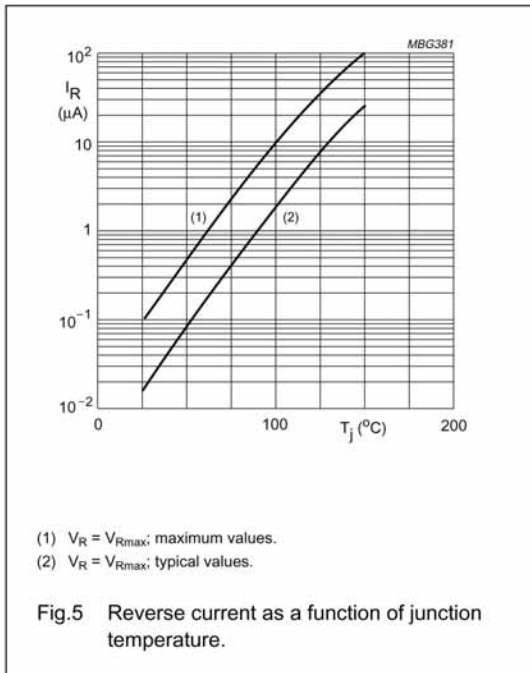
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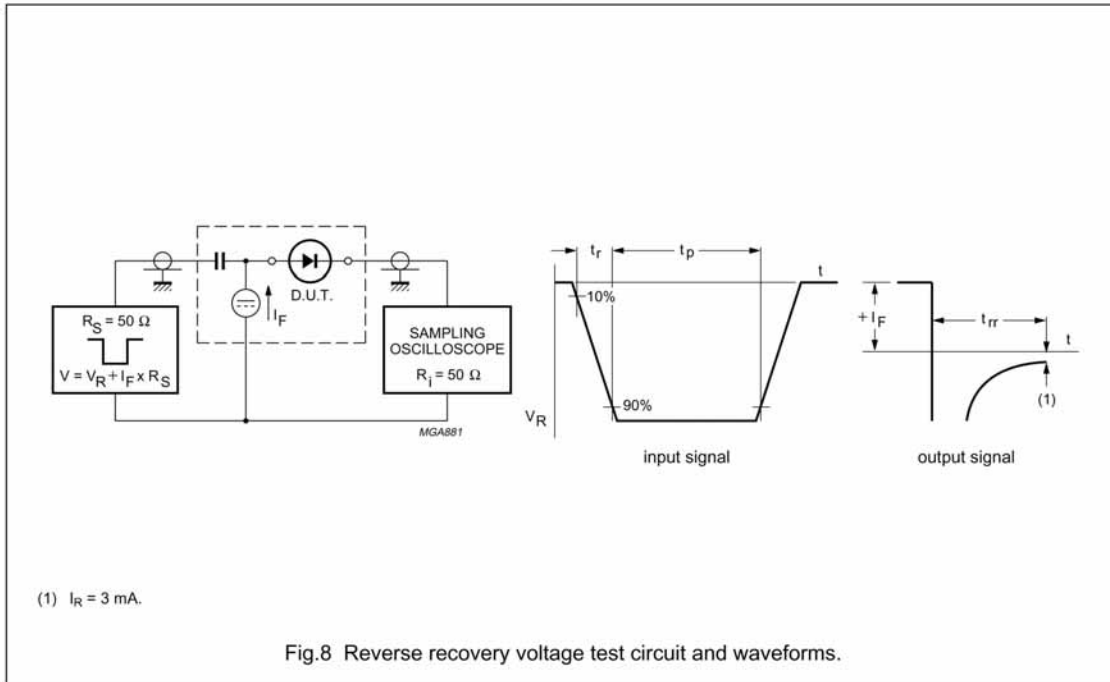
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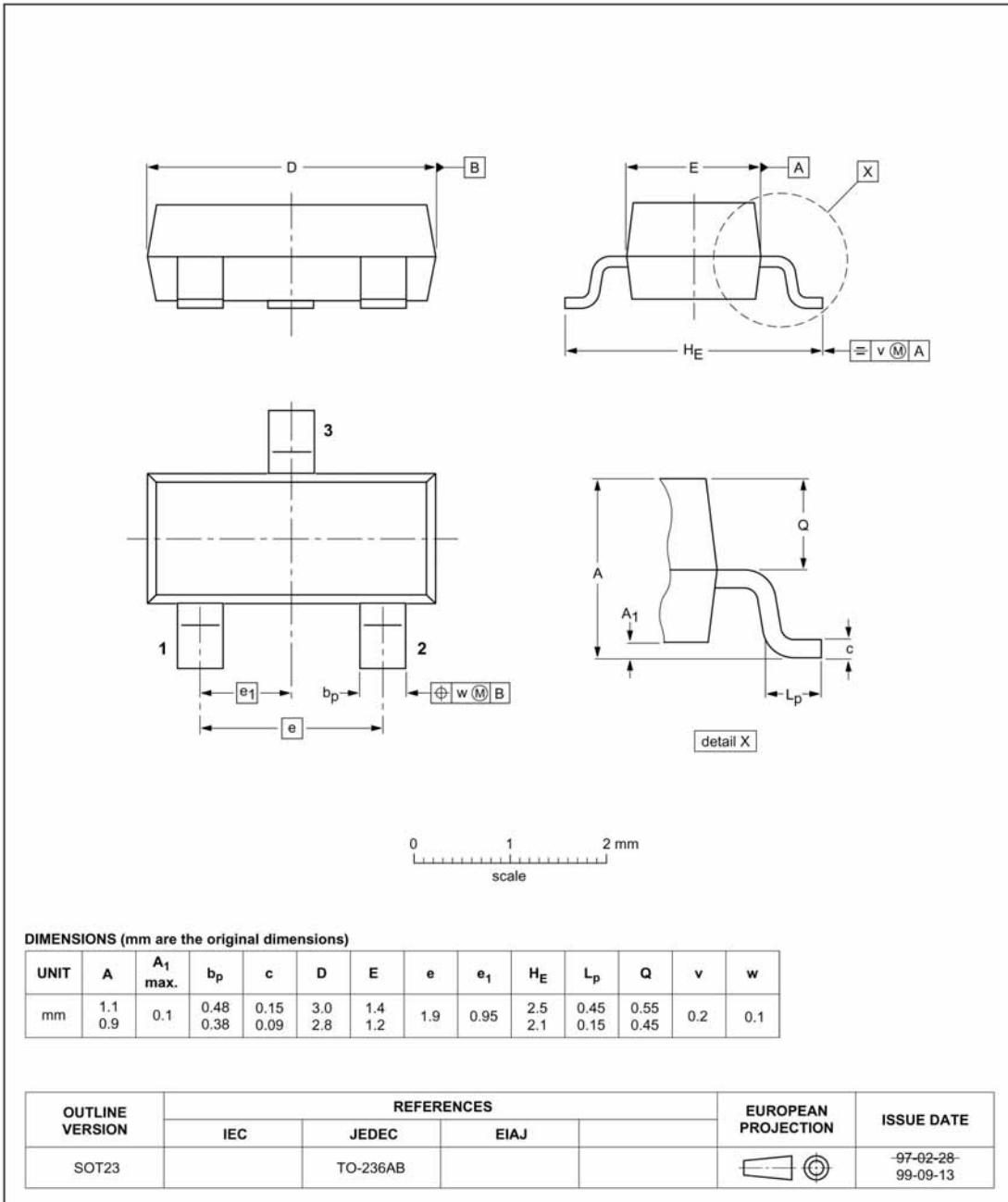
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23





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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. |
| II | 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. |
| III | 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. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN). |

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>.
3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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.

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