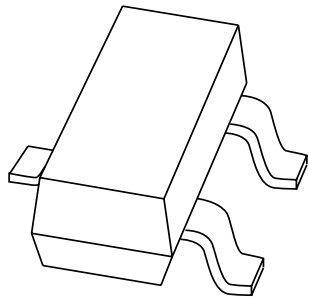


# DATA SHEET



## **BAS116** Low-leakage diode

Product specification  
Supersedes data of 1999 May 26

2003 Dec 12

# Low-leakage diode

# BAS116

## FEATURES

- Plastic SMD package
- Low leakage current: typ. 3 pA
- Switching time: typ. 0.8  $\mu$ s
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 500 mA.

## APPLICATION

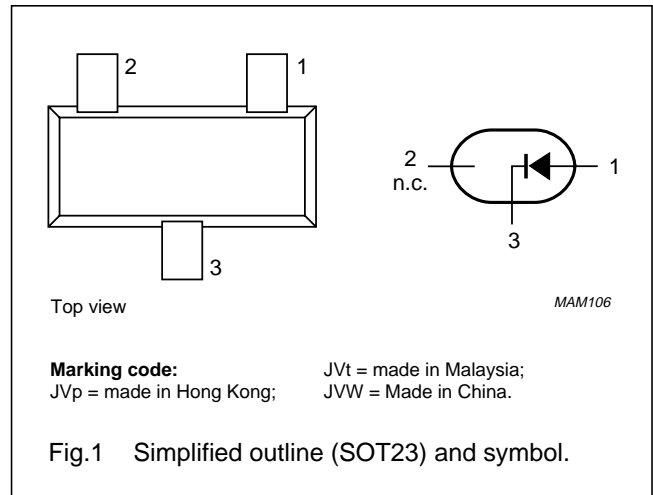
- Low leakage current applications in surface mounted circuits.

## DESCRIPTION

Epitaxial medium-speed switching diode with a low leakage current in a small SOT23 plastic SMD package.

## PINNING

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



## ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |  |         |
|-------------|---------|--|---------|
|             | NAME    | DESCRIPTION                              | VERSION |
| BAS116      | –       | plastic surface mounted package; 3 leads | SOT23   |

## LIMITING VALUES

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

| SYMBOL    | PARAMETER                           | CONDITIONS   | MIN. | MAX.          | UNIT             |
|-----------|-------------------------------------|--|------|---------------|------------------|
| $V_{RRM}$ | repetitive peak reverse voltage     |  | –    | 85            | V                |
| $V_R$     | continuous reverse voltage          |  | –    | 75            | V                |
| $I_F$     | continuous forward current          | see Fig.2; note 1  | –    | 215           | mA               |
| $I_{FRM}$ | repetitive peak forward current     |  | –    | 500           | mA               |
| $I_{FSM}$ | non-repetitive peak forward current | square wave; $T_j = 25\text{ }^\circ\text{C}$ prior to surge; see Fig.4<br>$t_p = 1\text{ }\mu\text{s}$<br>$t_p = 1\text{ ms}$<br>$t_p = 1\text{ s}$ | –    | 4<br>1<br>0.5 | A<br>A<br>A      |
| $P_{tot}$ | total power dissipation             | $T_{amb} = 25\text{ }^\circ\text{C}$ ; note 1  | –    | 250           | mW               |
| $T_{stg}$ | storage temperature                 |  | –65  | +150          | $^\circ\text{C}$ |
| $T_j$     | junction temperature                |  | –    | 150           | $^\circ\text{C}$ |

## Note

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

## Low-leakage diode

## BAS116

**ELECTRICAL CHARACTERISTICS**

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

| SYMBOL   | PARAMETER             | CONDITIONS   | TYP.  | MAX. | UNIT          |
|----------|-----------------------|--|-------|------|---------------|
| $V_F$    | forward voltage       | see Fig.3  |       |      |               |
|          |                       | $I_F = 1\text{ mA}$  | –     | 0.9  | V             |
|          |                       | $I_F = 10\text{ mA}$   | –     | 1    | V             |
|          |                       | $I_F = 50\text{ mA}$   | –     | 1.1  | V             |
|          |                       | $I_F = 150\text{ mA}$  | –     | 1.25 | V             |
| $I_R$    | reverse current       | see Fig.5  |       |      |               |
|          |                       | $V_R = 75\text{ V}$  | 0.003 | 5    | nA            |
|          |                       | $V_R = 75\text{ V}; T_j = 150\text{ °C}$   | 3     | 80   | nA            |
| $C_d$    | diode capacitance     | $f = 1\text{ MHz}; V_R = 0$ ; see Fig.6  | 2     | –    | pF            |
| $t_{rr}$ | reverse recovery time | when switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$ ;<br>$R_L = 100\ \Omega$ ; measured at $I_R = 1\text{ mA}$ ; see Fig.7 | 0.8   | 3    | $\mu\text{s}$ |

**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  |

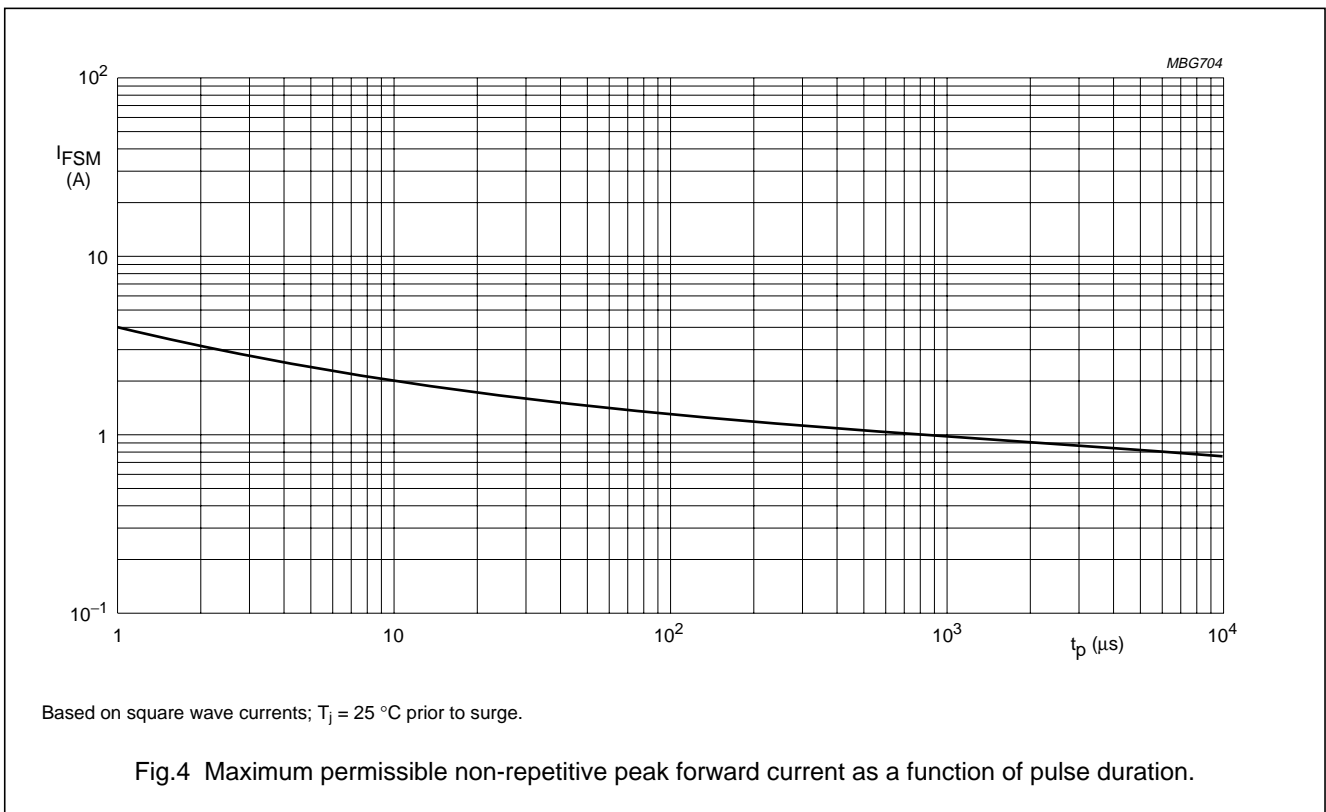
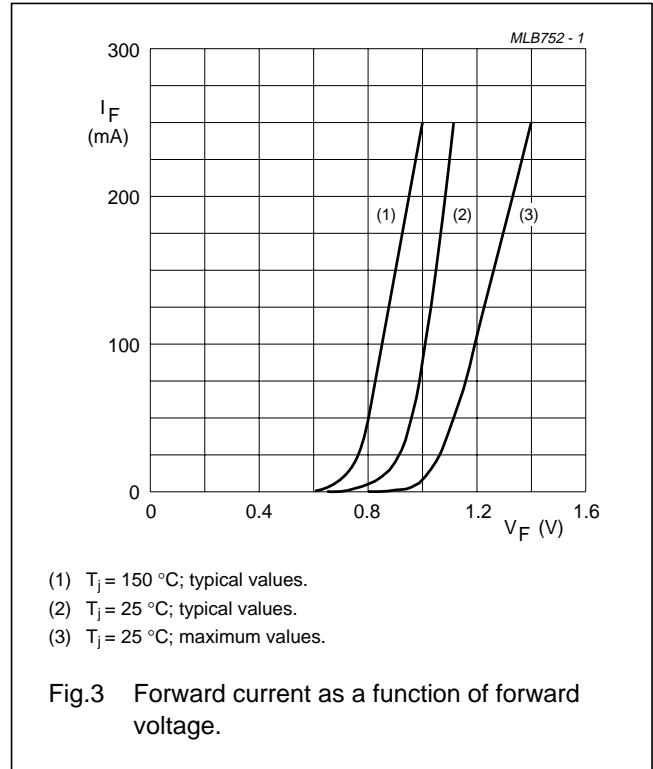
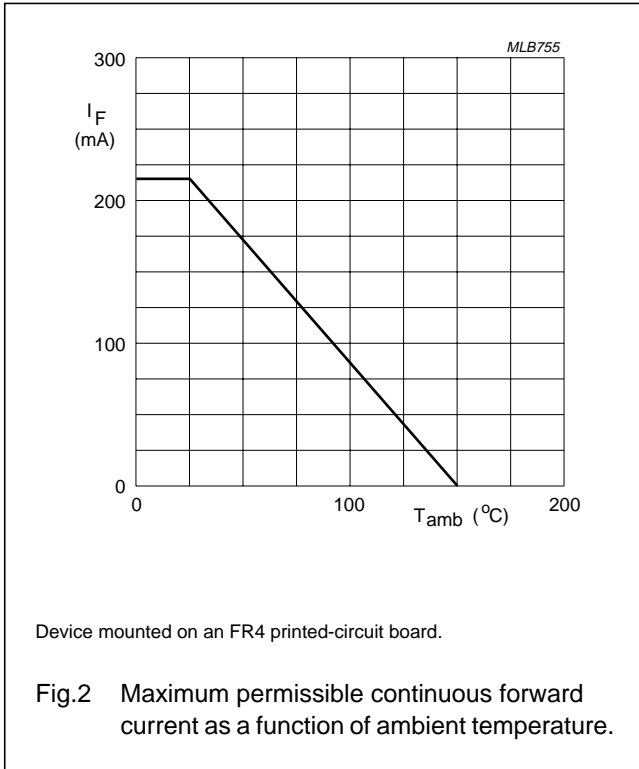
**Note**

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

Low-leakage diode

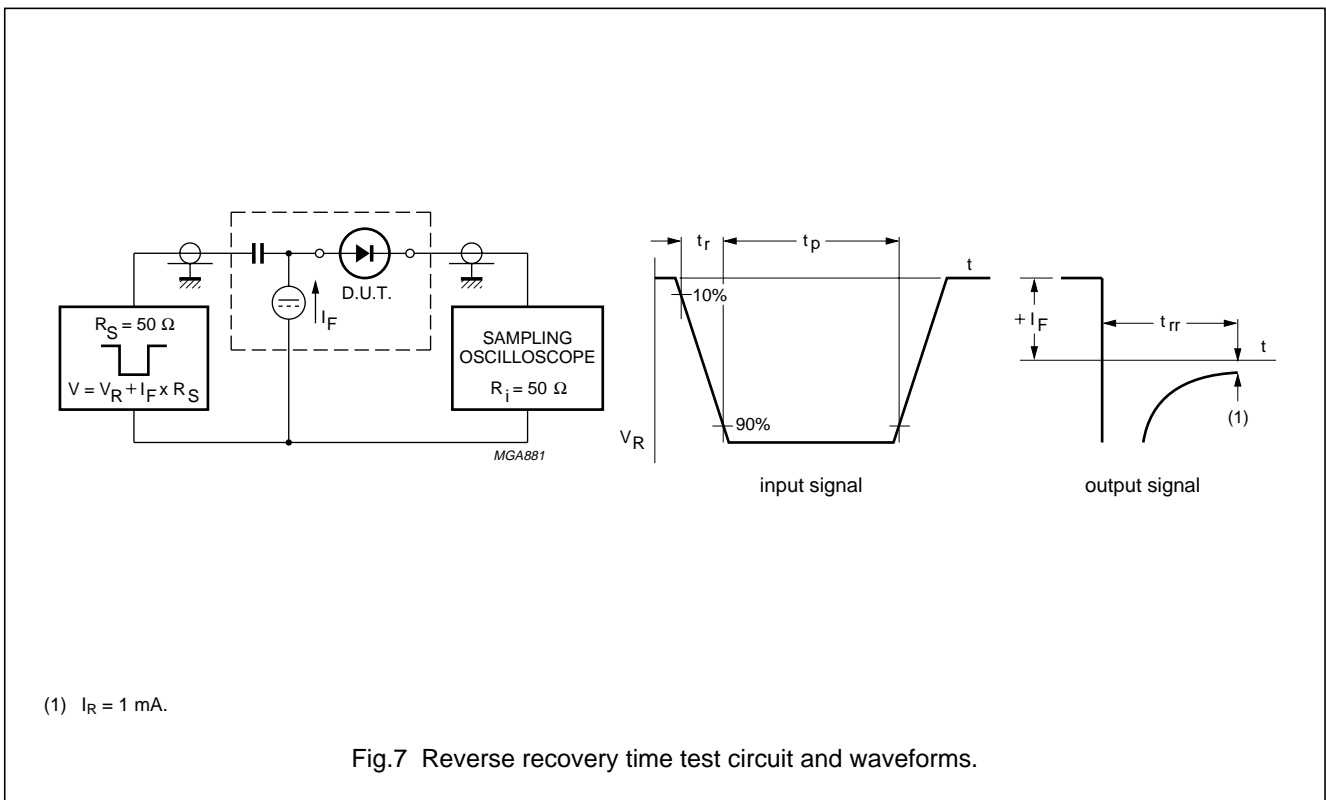
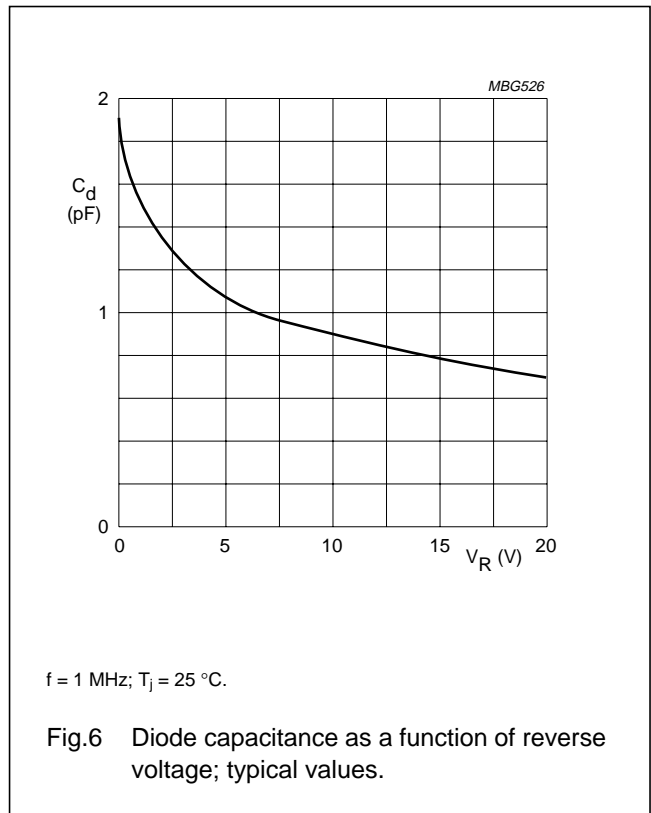
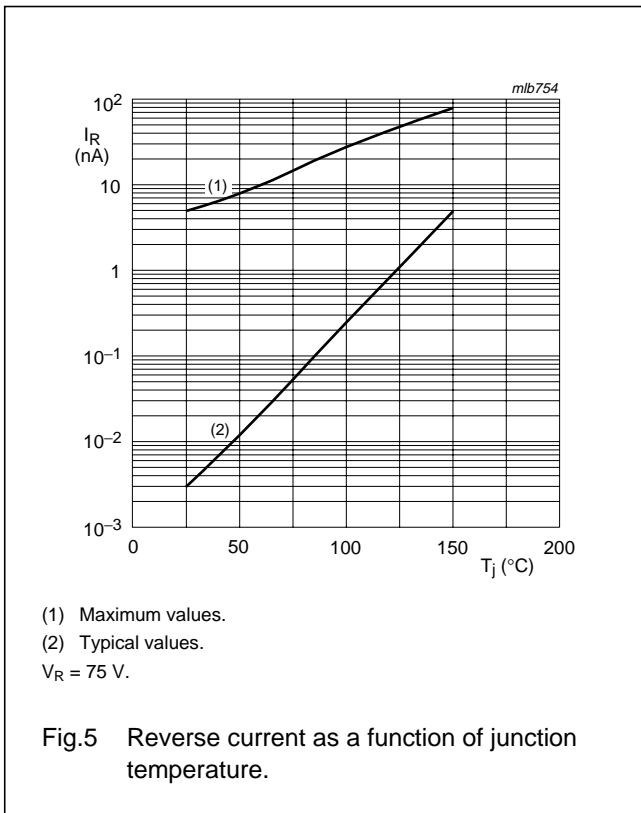
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GRAPHICAL DATA



Low-leakage diode

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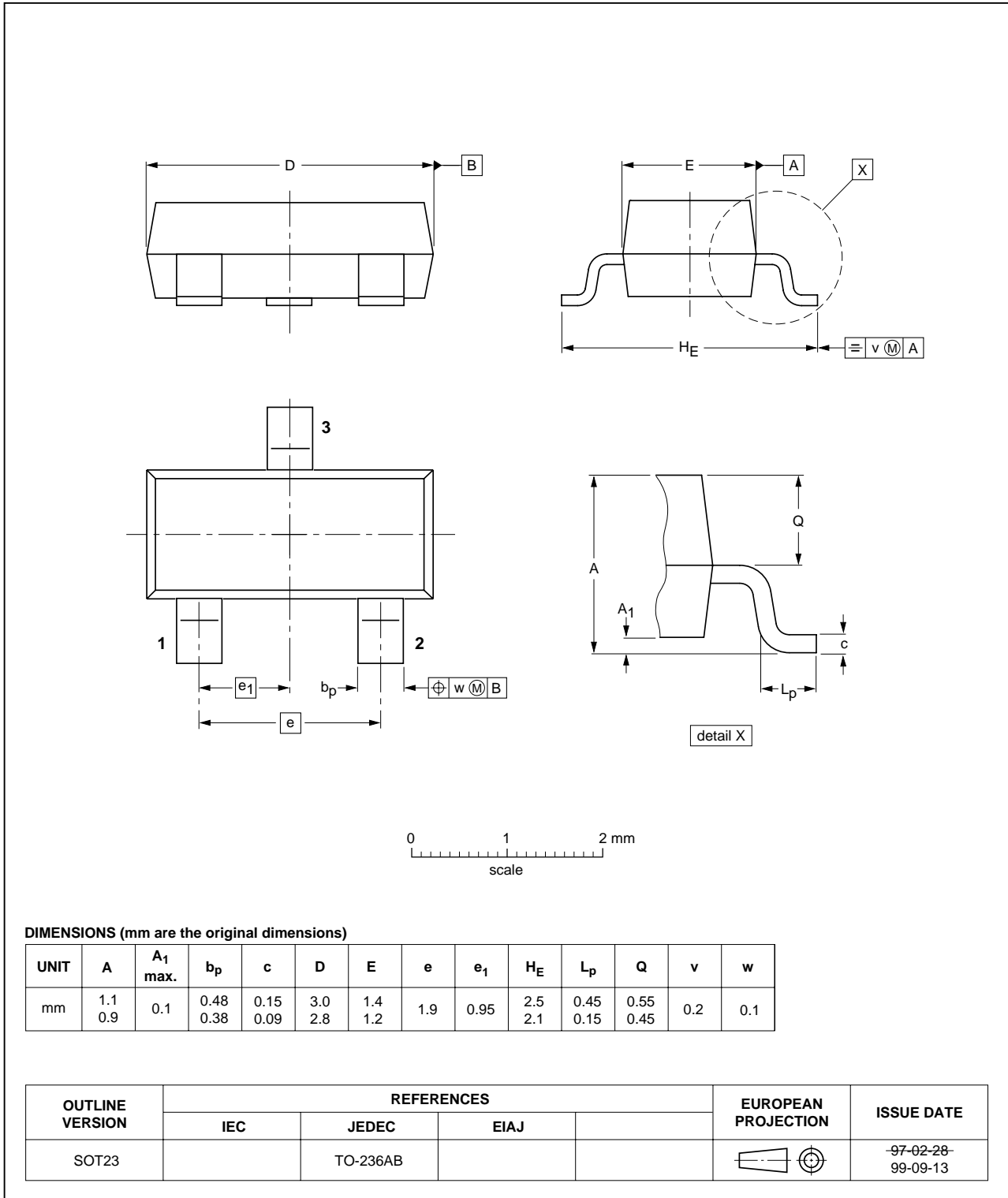
Low-leakage diode

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



## Low-leakage diode

BAS116

## 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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