

# BAT18

## Silicon planar diode

Rev. 02 — 31 August 2004 Product data sheet

## 1. Product profile

### 1.1 General description

Planar high performance band-switching diode in a small rectangular SOT23 SMD plastic package.

### 1.2 Features

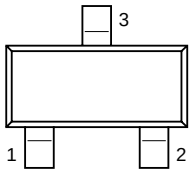
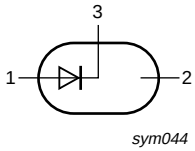
- Continuous reverse voltage: max. 35 V
- Continuous forward current: max. 100 mA
- Low diode capacitance: max. 1.0 pF
- Low diode forward resistance: max. 0.7 Ω.

### 1.3 Applications

- Band switching.

## 2. Pinning information

**Table 1: Pinning**

| Pin | Description | Simplified outline | Symbol |
|---|---|---|---|
| 1 | anode |  |  |
| 2 | not connected | | |
| 3 | cathode | | |





## 3. Ordering information

**Table 2: Ordering information**

| Type number | Package | | |
|---|---|---|---|
| | Name | Description | Version |
| BAT18 | - | plastic surface mounted package; 3 leads | SOT23 |

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## 4. Marking

**Table 3: Marking**

| Type number | Marking code [1] |
|---|---|
| BAT18 | 10* |

[1] * = p: made in Hong Kong
* = t: made in Malaysia
* = W: made in China.

## 5. Limiting values

**Table 4: Limiting values**

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_R$ | continuous reverse voltage | | - | 35 | V |
| $I_F$ | continuous forward current | | - | 100 | mA |
| $T_{stg}$ | storage temperature | | –55 | +125 | °C |
| $T_j$ | junction temperature | | - | 125 | °C |

## 6. Thermal characteristics

**Table 5: Thermal characteristics**

*$T_j$ = 25 °C unless otherwise specified.*

| Symbol | Parameter | Conditions | Typ | 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 | [1] | 500 | K/W |

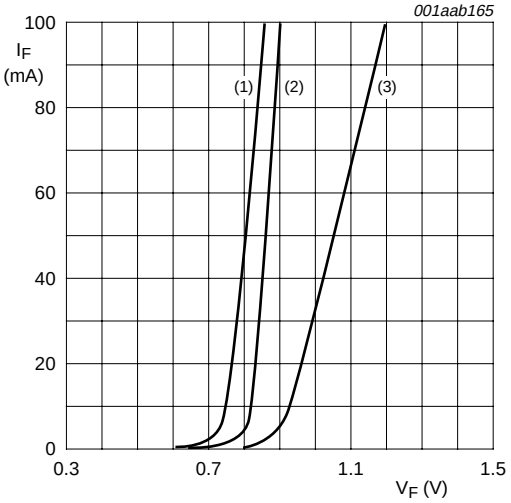
[1] Device mounted on a FR4 printed-circuit board.

## 7. Characteristics

**Table 6: Electrical characteristics**

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_F$ | forward voltage | $I_F$ = 100 mA; see Figure 1 | - | - | 1.2 | V |
| $I_R$ | reverse current | see Figure 2 | | | | |
| | | $V_R$ = 20 V | - | - | 100 | nA |
| | | $V_R$ = 20 V; $T_j$ = 60 °C | - | - | 1 | µA |
| $C_d$ | diode capacitance | $V_R$ = 20 V; f = 1 MHz; see Figure 3 | - | 0.8 | 1.0 | pF |
| $r_D$ | diode forward resistance | $I_F$ = 5 mA; f = 200 MHz; see Figure 4 | - | 0.5 | 0.7 | Ω |


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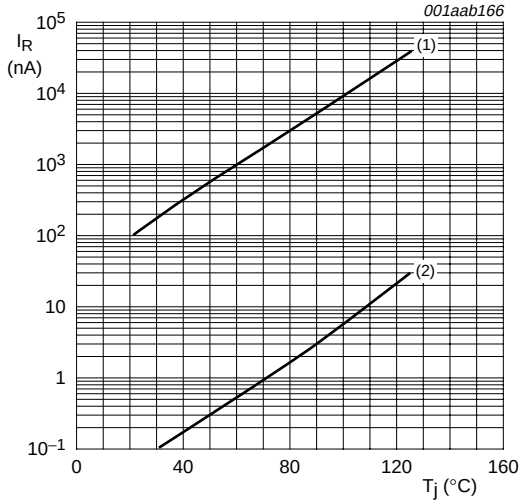



(1) $T_j$ = 60 °C; typical values.

(2) $T_j$ = 25 °C; typical values.

(3) $T_j$ = 25 °C; maximum values.

**Fig 1. Forward current as a function of forward voltage.**

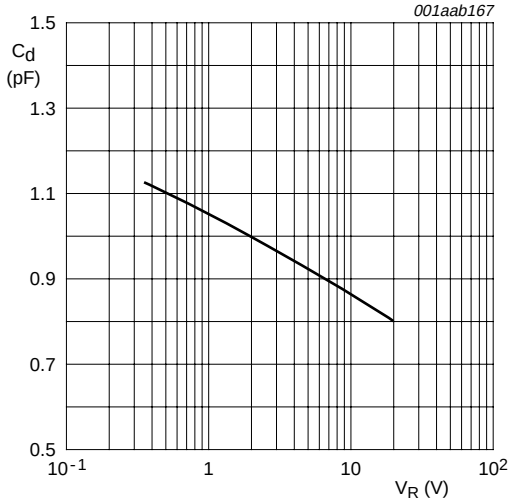



$V_R$ = 20 V.

(1) maximum values.

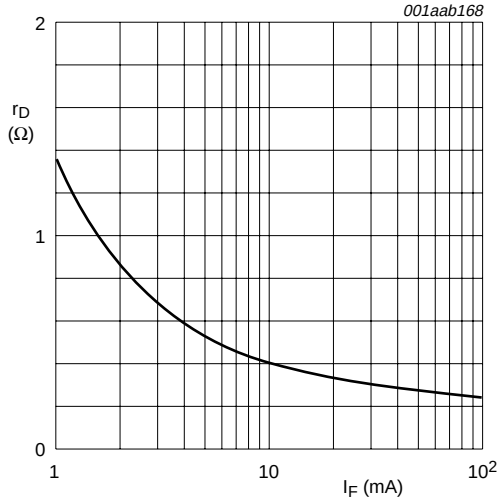
(2) typical values.

**Fig 2. Reverse current as a function of junction temperature.**




f = 1 MHz; $T_j$ = 25 °C.

**Fig 3. Diode capacitance as a function of reverse voltage; typical values.**




f = 200 MHz; $T_j$ = 25 °C.

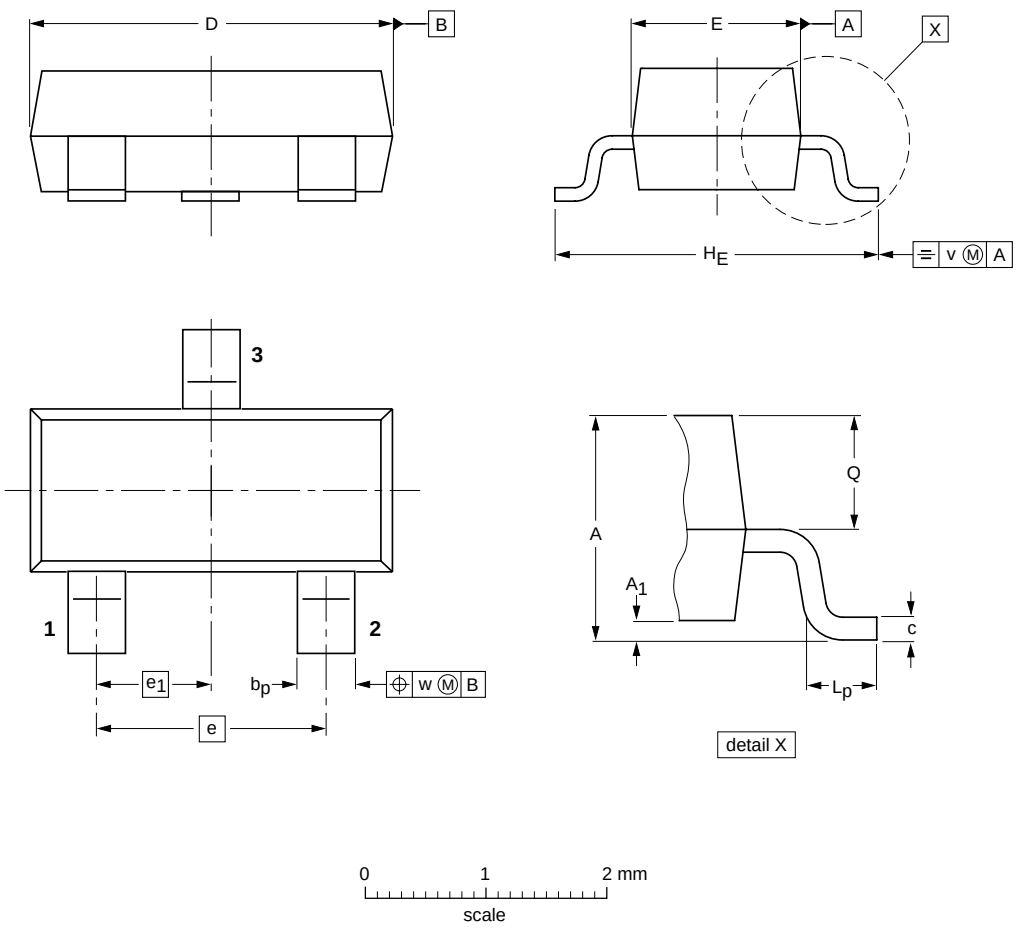
**Fig 4. Diode forward resistance as a function of forward current; typical values.**



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## 8. Package outline

**Plastic surface mounted package; 3 leads** **SOT23**




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

| UNIT | A | $A_1$ max. | $b_p$ | c | D | E | e | $e_1$ | $H_E$ | $L_p$ | Q | v | w |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1<br>0.9 | 0.1 | 0.48<br>0.38 | 0.15<br>0.09 | 3.0<br>2.8 | 1.4<br>1.2 | 1.9 | 0.95 | 2.5<br>2.1 | 0.45<br>0.15 | 0.55<br>0.45 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| SOT23 | | TO-236AB | | | | ~~97-02-28~~<br>99-09-13 |

**Fig 5. Package outline.**


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## 9. Revision history

**Table 7: Revision history**

| Document ID | Release date | Data sheet status | Change notice | Doc. number | Supersedes |
|---|---|---|---|---|---|
| BAT18_2 | 20040831 | Product data sheet | - | 9397 750 13385 | BAT18_1 |
| Modifications: | • The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.<br>• Table 3: marking code changed. | | | | |
| BAT18_1 | 19960313 | Product specification | - | not applicable | - |


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## 10. 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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[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.

## 11. 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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For sales office addresses, send an email to: **sales.addresses@www.semiconductors.philips.com**



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## 14. Contents


| | | |
|---|---|---|
| **1** | **Product profile** | **1** |
| 1.1 | General description | 1 |
| 1.2 | Features | 1 |
| 1.3 | Applications | 1 |
| **2** | **Pinning information** | **1** |
| **3** | **Ordering information** | **1** |
| **4** | **Marking** | **2** |
| **5** | **Limiting values** | **2** |
| **6** | **Thermal characteristics** | **2** |
| **7** | **Characteristics** | **2** |
| **8** | **Package outline** | **4** |
| **9** | **Revision history** | **5** |
| **10** | **Data sheet status** | **6** |
| **11** | **Definitions** | **6** |
| **12** | **Disclaimers** | **6** |
| **13** | **Contact information** | **6** |


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