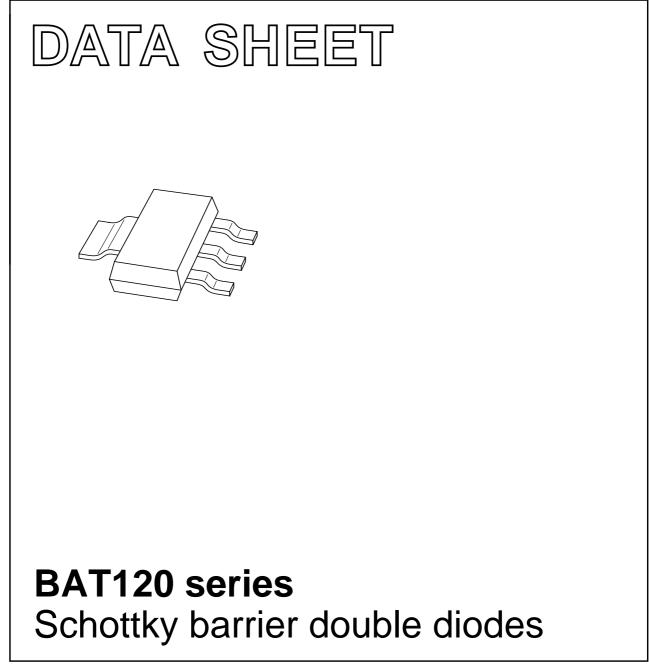
## DISCRETE SEMICONDUCTORS



Product specification Supersedes data of 2001 Aug 27 2003 Aug 04



### FEATURES

- Low switching losses
- Capability of absorbing very high surge current
- · Fast recovery time
- · Guard ring protected
- Plastic SMD package.

#### APPLICATIONS

- Low power switched-mode power supplies
- Rectification
- Polarity protection.

### DESCRIPTION

Planar Schottky barrier double diodes encapsulated in a SOT223 plastic SMD package.

#### MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| BAT120A     | AT120A       |
| BAT120C     | AT120C       |
| BAT120S     | AT120S       |

#### **BAT120** PIN С S Α 1 k<sub>1</sub> $a_1$ a<sub>1</sub> 2 n.c. n.c. n.c. 3 $k_2$ $a_2$ $k_2$ 4 a<sub>1</sub>, a<sub>2</sub> $k_1,\,k_2$ k<sub>1</sub>, a<sub>2</sub>

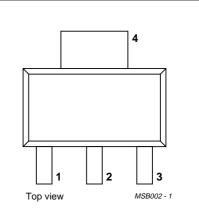
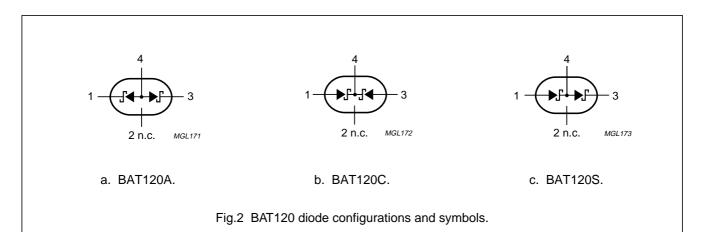


Fig.1 Simplified outline (SOT223) and pin configuration.



PINNING

### BAT120 series

### BAT120 series

### LIMITING VALUES

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

| SYMBOL           | PARAMETER  | CONDITIONS   | MIN. | MAX. | UNIT |  |
|------------------|--|--|------|------|------|--|
| Per diode        |  |  |      |      |      |  |
| V <sub>R</sub>   | continuous reverse voltage – 2                         |  | 25   | V    |      |  |
| I <sub>F</sub>   | continuous forward current                             |  | _    | 1    | A    |  |
| I <sub>FSM</sub> | non-repetitive peak forward current                    | t <sub>p</sub> < 10 ms; half sinewave;<br>JEDEC method | -    | 10   | A    |  |
| I <sub>RSM</sub> | on-repetitive peak reverse current $t_p = 100 \ \mu s$ |  | _    | 0.5  | A    |  |
| T <sub>stg</sub> | storage temperature                                    |  | -65  | +150 | °C   |  |
| Tj               | junction temperature                                   |  | _    | 125  | °C   |  |
| T <sub>amb</sub> | operating ambient temperature                          |  | -65  | +125 | °C   |  |

### ELECTRICAL CHARACTERISTICS

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

| SYMBOL         | PARAMETER         | CONDITIONS  | TYP. | MAX. | UNIT |
|----------------|-------------------|---|------|------|------|
| Per diode      |                   |   |      |      |      |
| V <sub>F</sub> | forward voltage   | see Fig.3   |      |      |      |
|                |                   | I <sub>F</sub> = 100 mA                                   | 260  | 300  | mV   |
|                |                   | I <sub>F</sub> = 1 A                                      | 400  | 450  | mV   |
| I <sub>R</sub> | reverse current   | V <sub>R</sub> = 20 V; note 1; see Fig.4                  | 80   | 500  | μA   |
|                |                   | V <sub>R</sub> = 25 V; note 1; see Fig.4                  | -    | 1    | mA   |
|                |                   | V <sub>R</sub> = 20 V; T <sub>j</sub> = 100 °C; note 1    | _    | 10   | mA   |
| C <sub>d</sub> | diode capacitance | $f = 1 \text{ MHz}; V_R = 4 \text{ V}; \text{ see Fig.5}$ | 100  | _    | pF   |

### Note

1. Pulse test:  $t_p = 300 \ \mu s$ ;  $\delta = 0.02$ .

### THERMAL CHARACTERISTICS

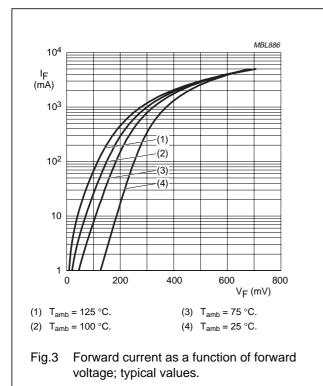
| SYMBOL              | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|---------------------|---|------------|-------|------|
| R <sub>th j-a</sub> | thermal resistance from junction to ambient | note 1     | 100   | K/W  |

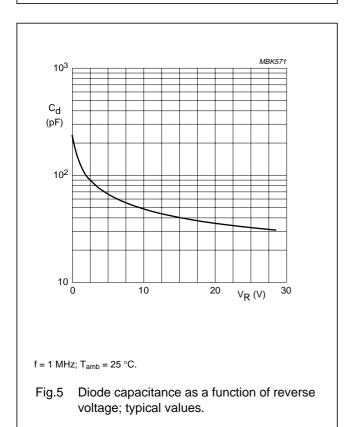
#### Note

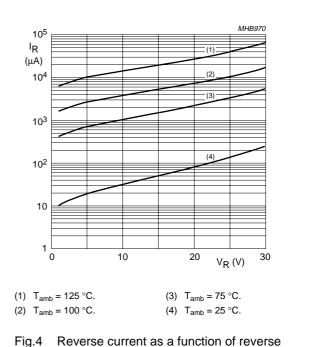
1. Refer to SOT223 standard mounting conditions.

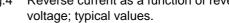
### BAT120 series

### **GRAPHICAL DATA**



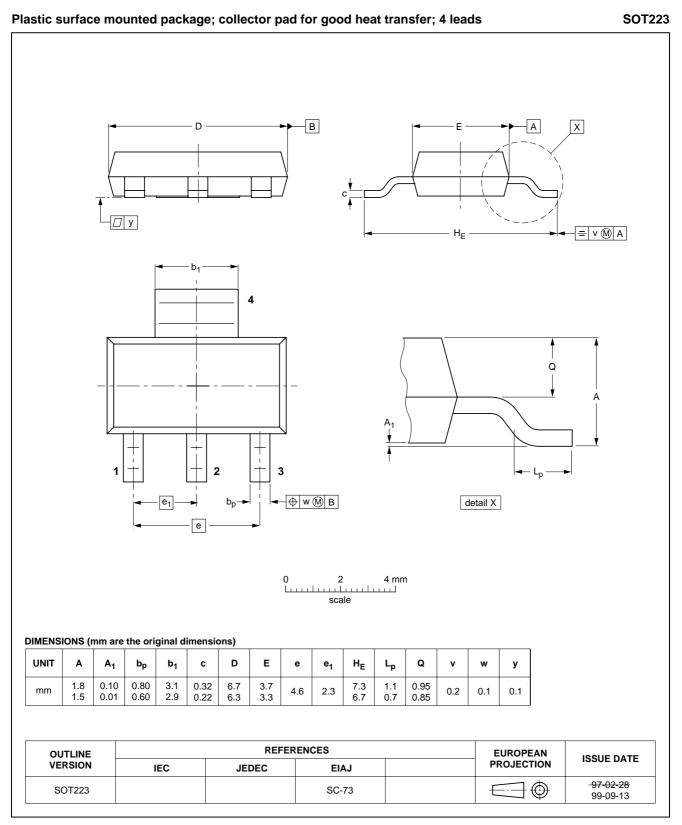






### BAT120 series

### PACKAGE OUTLINE



BAT120 series

#### DATA SHEET STATUS

| LEVEL | DATA SHEET<br>STATUS <sup>(1)</sup> | PRODUCT<br>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.  |
| 11    | Preliminary data                    | Qualification                       | This data sheet contains data from the preliminary specification.<br>Supplementary data will be published at a later date. Philips<br>Semiconductors reserves the right to change the specification without<br>notice, in order to improve the design and supply the best possible<br>product.             |
|       | Product data                        | Production                          | This data sheet contains data from the product specification. Philips<br>Semiconductors reserves the right to make changes at any time in order<br>to improve the design, manufacturing and supply. Relevant changes will<br>be communicated via a Customer Product/Process Change Notification<br>(CPCN). |

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- 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.

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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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