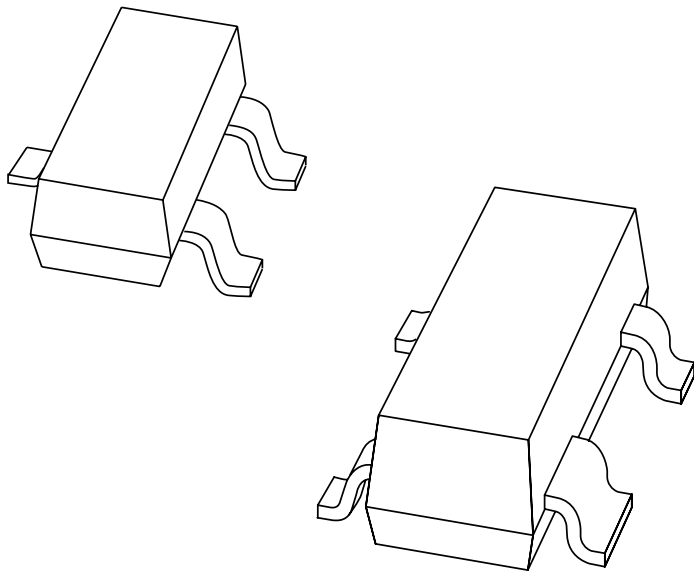


# DATA SHEET



## **BAS70 series** Schottky barrier (double) diodes

Product specification  
Supersedes data of 1996 Oct 01

1999 Jun 01

Schottky barrier (double) diodes

BAS70 series

FEATURES

- Low forward current
- High breakdown voltage
- Guard ring protected
- Small plastic SMD package
- Low diode capacitance.

APPLICATIONS

- Ultra high-speed switching
- Voltage clamping
- Protection circuits.

DESCRIPTION

Planar Schottky barrier diodes with an integrated guard ring for stress protection. Single diodes and double diodes with different pinning are available.

The diodes BAS70, BAS70-04, BAS70-05 and BAS70-06 are encapsulated in a SOT23 small plastic SMD package. The BAS70-07 is encapsulated in a SOT143B small plastic SMD package.

MARKING

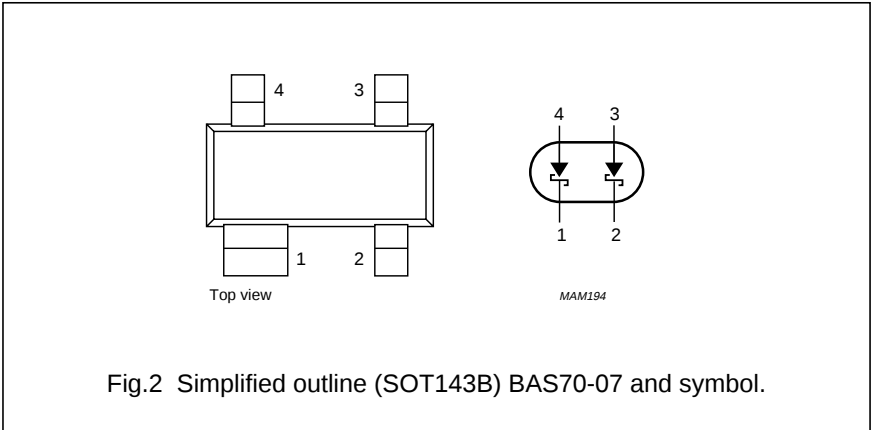
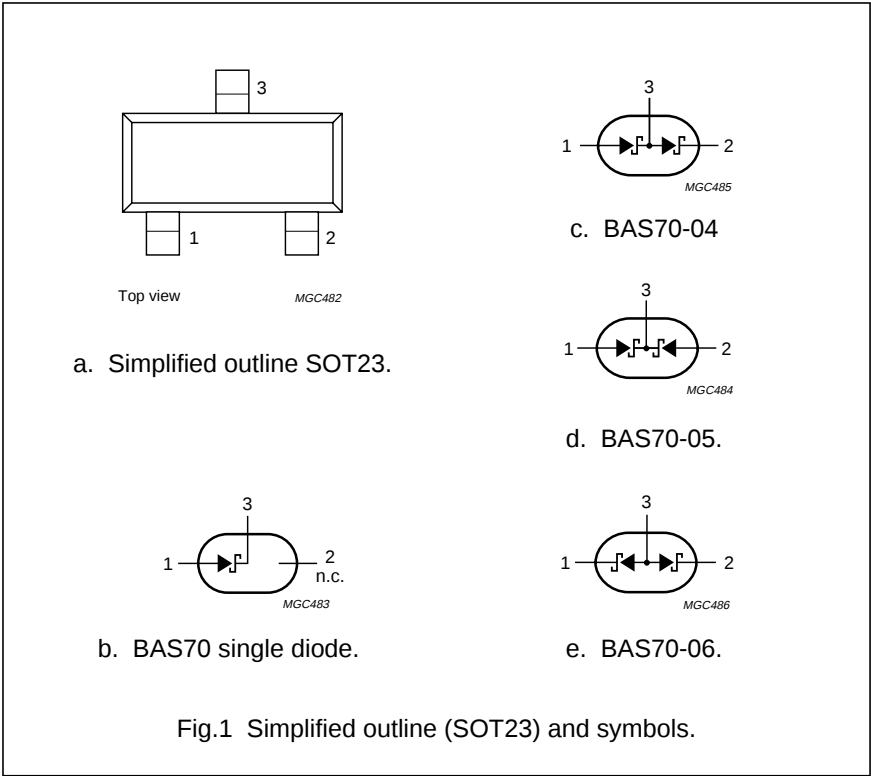
| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| BAS70       | 73p*                        |
| BAS70-04    | 74p*                        |
| BAS70-05    | 75p*                        |
| BAS70-06    | 76p*                        |
| BAS70-07    | 77p                         |

Note

1. \* = -: Made in Hong Kong.  
\* = t: Made in Malaysia.

PINNING

| PIN | DESCRIPTION           |                                 |                                 |                                 |                         |
|-----|-----------------------|---------------------------------|---------------------------------|---------------------------------|-------------------------|
|     | SOT23                 |                                 |                                 |                                 | SOT143B                 |
|     | BAS70<br>(see Fig.1b) | BAS70-04<br>(see Fig.1c)        | BAS70-05<br>(see Fig.1d)        | BAS70-06<br>(see Fig.1e)        | BAS70-07<br>(see Fig.2) |
| 1   | a <sub>1</sub>        | a <sub>1</sub>                  | a <sub>1</sub>                  | k <sub>1</sub>                  | k <sub>1</sub>          |
| 2   | n.c.                  | k <sub>2</sub>                  | a <sub>2</sub>                  | k <sub>2</sub>                  | k <sub>2</sub>          |
| 3   | k <sub>1</sub>        | k <sub>1</sub> , a <sub>2</sub> | k <sub>1</sub> , k <sub>2</sub> | a <sub>1</sub> , a <sub>2</sub> | a <sub>2</sub>          |
| 4   | –                     | –                               | –                               | –                               | a <sub>1</sub>          |



## Schottky barrier (double) diodes

## BAS70 series

**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL           | PARAMETER                           | CONDITIONS                              | MIN. | MAX. | UNIT |
|------------------|-------------------------------------|-----------------------------------------|------|------|------|
| <b>Per diode</b> |                                     |                                         |      |      |      |
| $V_R$            | continuous reverse voltage          |                                         | –    | 70   | V    |
| $I_F$            | continuous forward current          |                                         | –    | 70   | mA   |
| $I_{FRM}$        | repetitive peak forward current     | $t_p \leq 1 \text{ s}; \delta \leq 0.5$ | –    | 70   | mA   |
| $I_{FSM}$        | non-repetitive peak forward current | $t_p < 10 \text{ ms}$                   | –    | 100  | mA   |
| $T_{stg}$        | storage temperature                 |                                         | –65  | +150 | °C   |
| $T_j$            | junction temperature                |                                         | –    | 150  | °C   |
| $T_{amb}$        | operating ambient temperature       |                                         | –65  | +150 | °C   |

**ELECTRICAL CHARACTERISTICS**

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

| SYMBOL           | PARAMETER                                  | CONDITIONS                                                                           | MAX.            | UNIT                |
|------------------|--------------------------------------------|--------------------------------------------------------------------------------------|-----------------|---------------------|
| <b>Per diode</b> |                                            |                                                                                      |                 |                     |
| $V_F$            | forward voltage                            | see Fig.3<br>$I_F = 1 \text{ mA}$<br>$I_F = 10 \text{ mA}$<br>$I_F = 15 \text{ mA}$  | 410<br>750<br>1 | mV<br>mV<br>V       |
| $I_R$            | reverse current                            | $V_R = 50 \text{ V}$ ; note 1; see Fig.4<br>$V_R = 70 \text{ V}$ ; note 1; see Fig.4 | 100<br>10       | nA<br>$\mu\text{A}$ |
| $\tau$           | charge carrier life time (Krakauer method) | $I_F = 5 \text{ mA}$                                                                 | 100             | ps                  |
| $C_d$            | diode capacitance                          | $f = 1 \text{ MHz}$ ; $V_R = 0$ ; see Fig.6                                          | 2               | pF                  |

**Note**

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

**THERMAL CHARACTERISTICS**

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

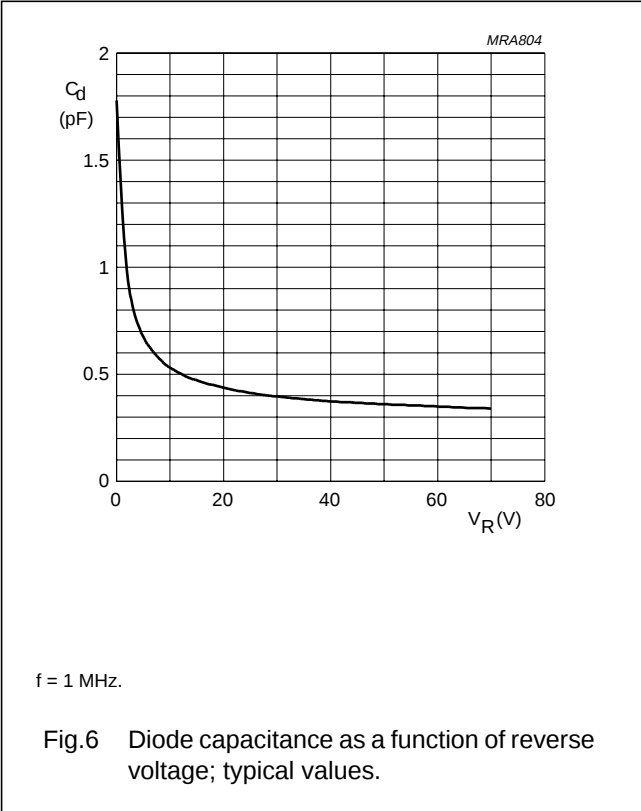
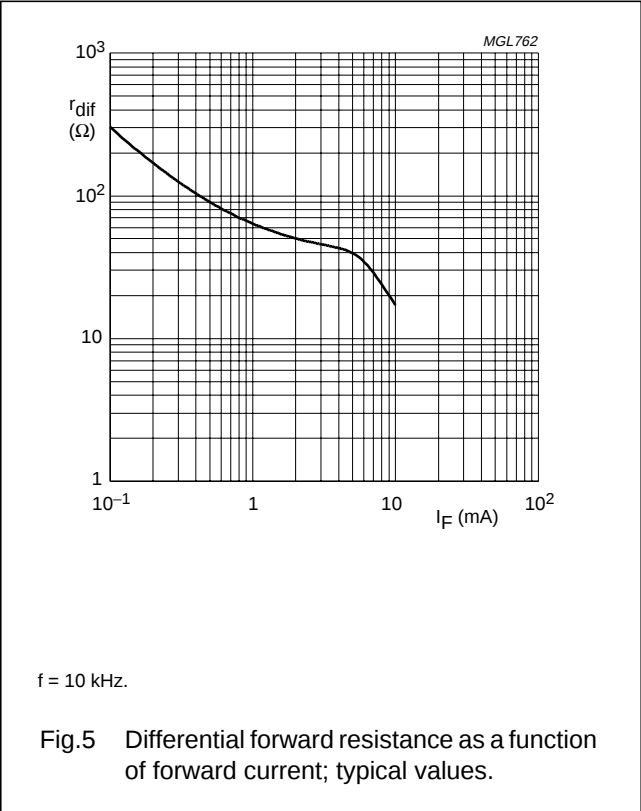
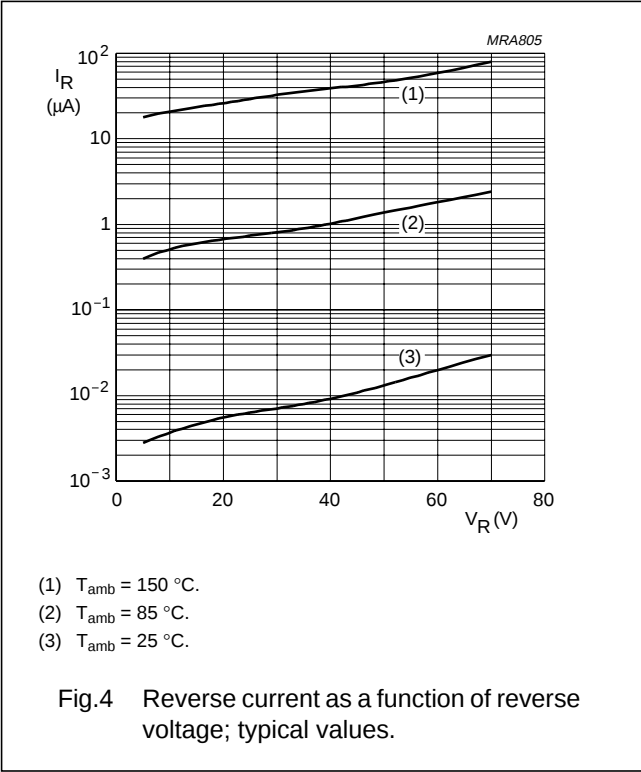
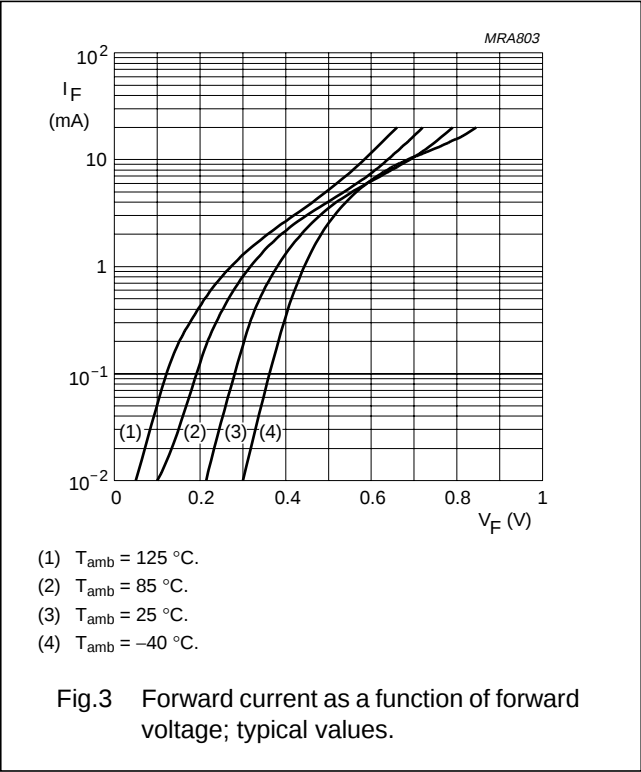
**Note**

1. Refer to SOT23 or SOT143B standard mounting conditions.

Schottky barrier (double) diodes

BAS70 series

GRAPHICAL DATA



Schottky barrier (double) diodes

BAS70 series

PACKAGE OUTLINES

Plastic surface mounted package; 3 leads

SOT23

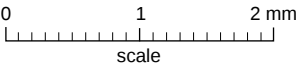
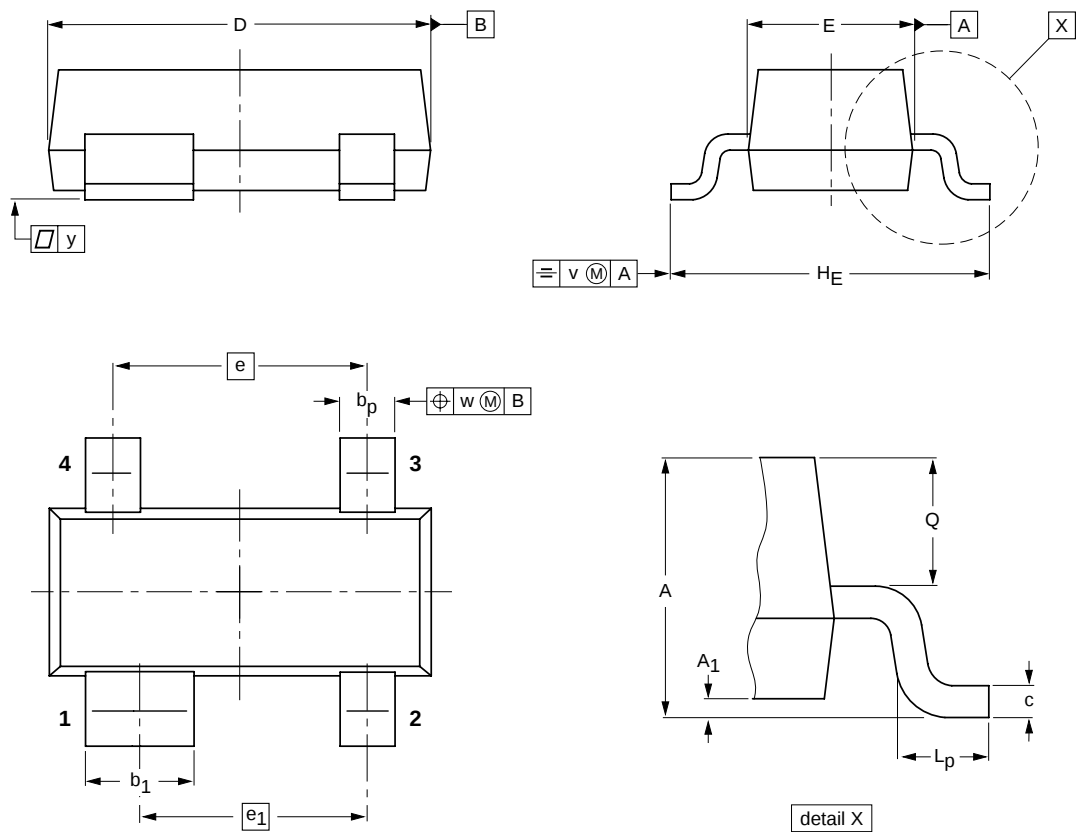


Schottky barrier (double) diodes

BAS70 series

Plastic surface mounted package; 4 leads

SOT143B



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max | b <sub>p</sub> | b <sub>1</sub> | c            | D          | E          | e   | e <sub>1</sub> | H <sub>E</sub> | L <sub>p</sub> | Q            | v   | w   | y   |
|------|------------|-----------------------|----------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|-----|
| mm   | 1.1<br>0.9 | 0.1                   | 0.48<br>0.38   | 0.88<br>0.78   | 0.15<br>0.09 | 3.0<br>2.8 | 1.4<br>1.2 | 1.9 | 1.7            | 2.5<br>2.1     | 0.45<br>0.15   | 0.55<br>0.45 | 0.2 | 0.1 | 0.1 |

| OUTLINE<br>VERSION | REFERENCES |       |      |  | EUROPEAN<br>PROJECTION | ISSUE DATE |
|--------------------|------------|-------|------|--|------------------------|------------|
|                    | IEC        | JEDEC | EIAJ |  |                        |            |
| SOT143B            |            |       |      |  |                        | 97-02-28   |

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**Schottky barrier (double) diodes****BAS70 series**

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**DEFINITIONS**

| <b>Data sheet status</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Objective specification                                                                                                                                                                                                                                                                                                                                                                                                                                   | This data sheet contains target or goal specifications for product development.       |
| Preliminary specification                                                                                                                                                                                                                                                                                                                                                                                                                                 | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification                                                                                                                                                                                                                                                                                                                                                                                                                                     | This data sheet contains final product specifications.                                |
| <b>Limiting values</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                       |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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. |                                                                                       |
| <b>Application information</b>                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                       |
| Where application information is given, it is advisory and does not form part of the specification.                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |

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