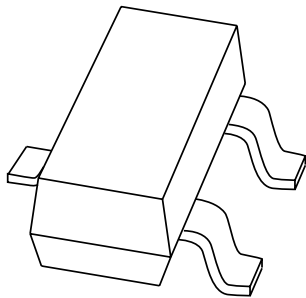


# DATA SHEET



## **BAT54 series** Schottky barrier (double) diodes

Product specification  
Supersedes data of 2001 Oct 12

2002 Mar 04

# Schottky barrier (double) diodes

# BAT54 series

### FEATURES

- Low forward voltage
- Guard ring protected
- Small plastic SMD package.

### APPLICATIONS

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

### DESCRIPTION

Planar Schottky barrier diodes encapsulated in a SOT23 small plastic SMD package. Single diodes and double diodes with different pinning are available.

### MARKING

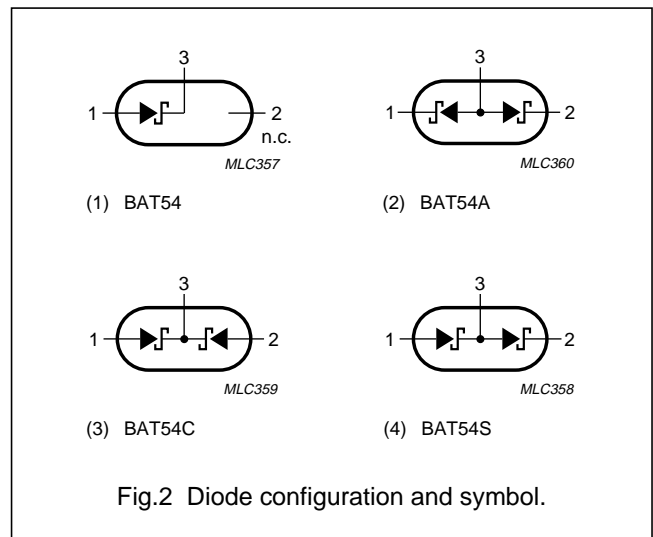
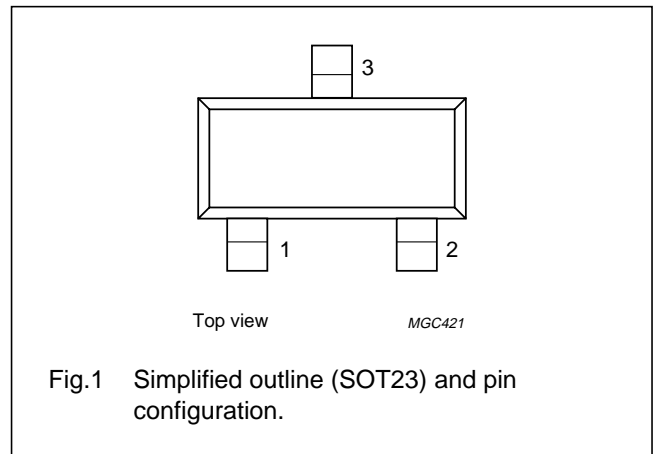
| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| BAT54       | L4*                         |
| BAT54A      | L42 or *V3                  |
| BAT54C      | L43 or *W1                  |
| BAT54S      | L44 or *V4                  |

### Note

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

### PINNING

| PIN | DESCRIPTION |                                 |                                 |                                 |
|-----|-------------|---------------------------------|---------------------------------|---------------------------------|
|     | BAT54       | BAT54A                          | BAT54C                          | BAT54S                          |
| 1   | a           | k <sub>1</sub>                  | a <sub>1</sub>                  | a <sub>1</sub>                  |
| 2   | n.c.        | k <sub>2</sub>                  | a <sub>2</sub>                  | k <sub>2</sub>                  |
| 3   | k           | a <sub>1</sub> , a <sub>2</sub> | k <sub>1</sub> , k <sub>2</sub> | k <sub>1</sub> , a <sub>2</sub> |



## Schottky barrier (double) diodes

## BAT54 series

**LIMITING VALUES**

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

| SYMBOL            | PARAMETER                           | CONDITIONS                                 | MIN. | MAX. | UNIT |
|-------------------|-------------------------------------|--|------|------|------|
| <b>Per diode</b>  |                                     |  |      |      |      |
| $V_R$             | continuous reverse voltage          |  | –    | 30   | V    |
| $I_F$             | continuous forward current          |  | –    | 200  | mA   |
| $I_{FRM}$         | repetitive peak forward current     | $t_p \leq 1 \text{ s}$ ; $\delta \leq 0.5$ | –    | 300  | mA   |
| $I_{FSM}$         | non-repetitive peak forward current | $t_p < 10 \text{ ms}$                      | –    | 600  | mA   |
| $T_{stg}$         | storage temperature                 |  | –65  | +150 | °C   |
| $T_j$             | junction temperature                |  | –    | 125  | °C   |
| <b>Per device</b> |                                     |  |      |      |      |
| $P_{tot}$         | total power dissipation             | $T_{amb} \leq 25 \text{ °C}$               | –    | 230  | mW   |

**THERMAL CHARACTERISTICS**

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

**Note**

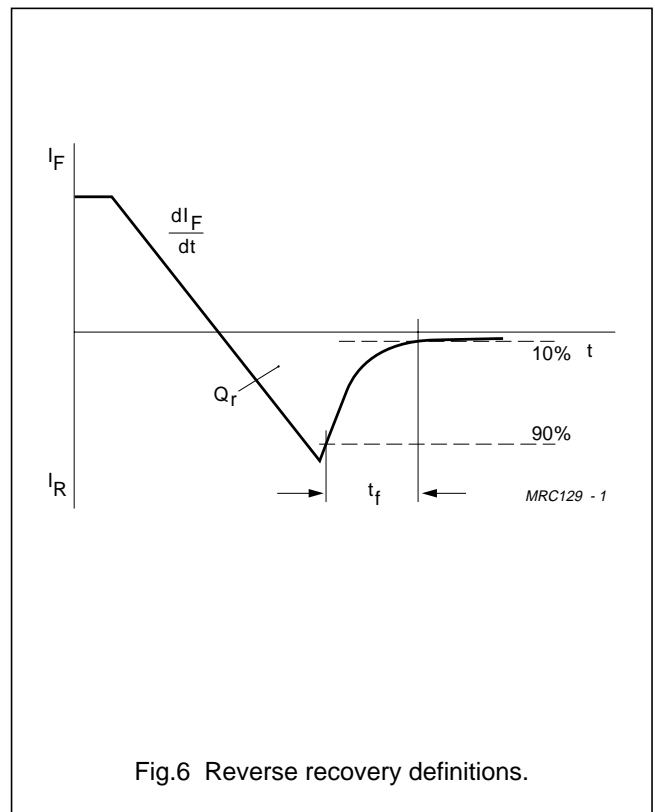
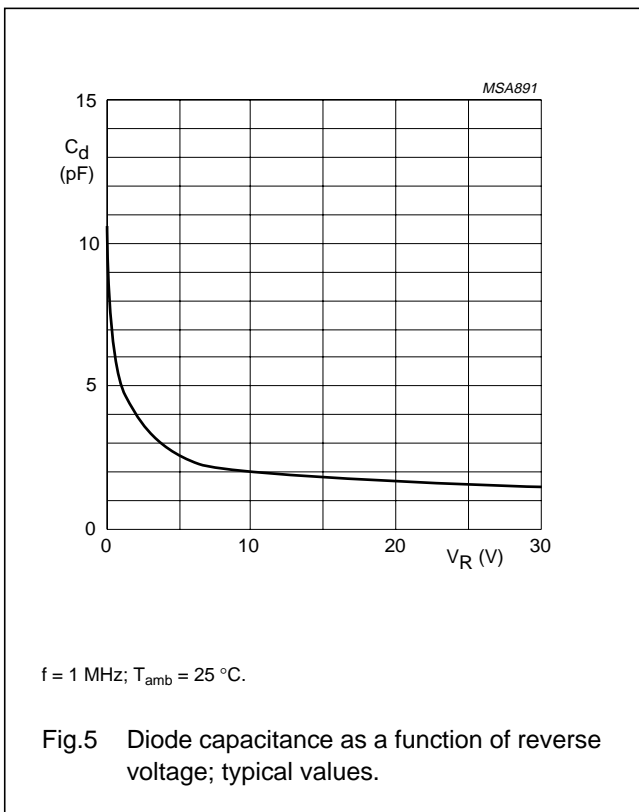
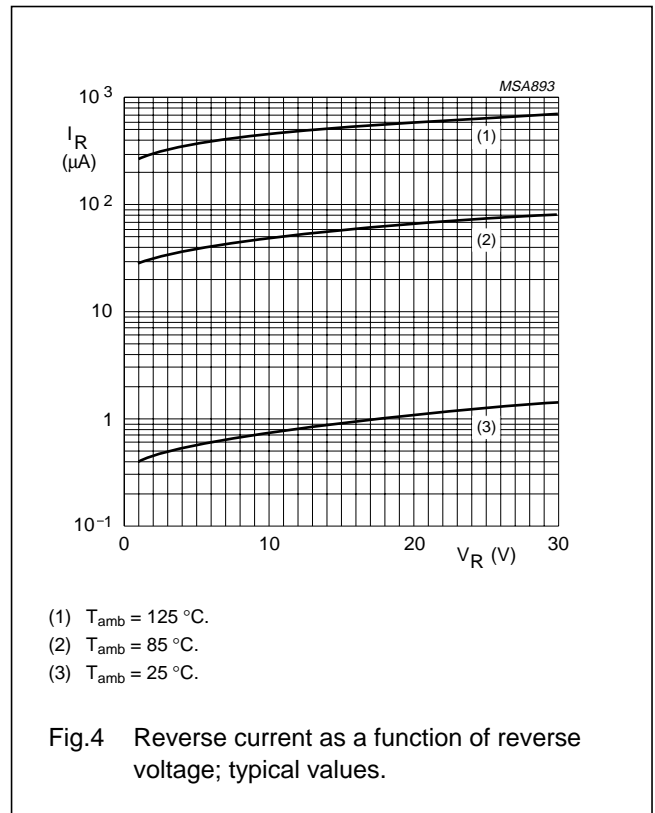
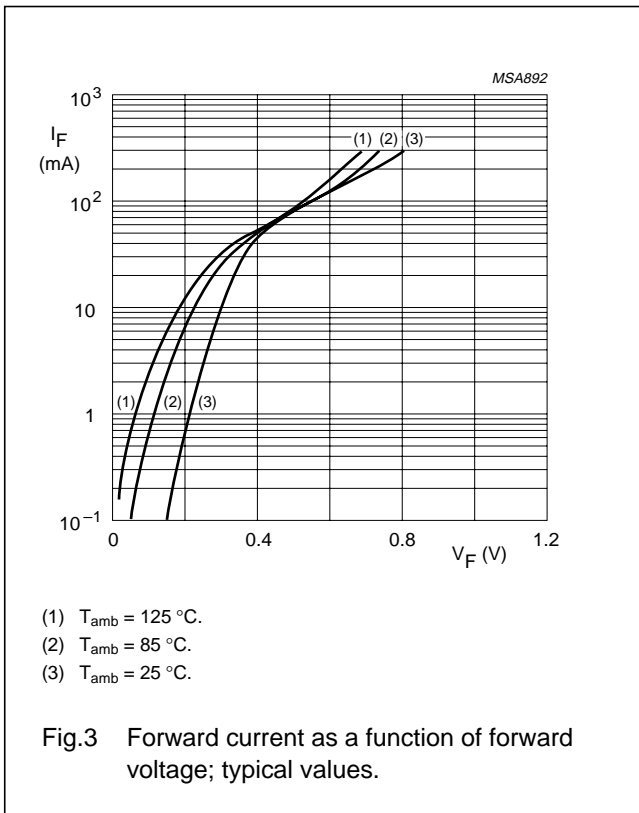
1. Refer to SOT23 standard mounting conditions.

**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>$I_F = 0.1 \text{ mA}$<br>$I_F = 1 \text{ mA}$<br>$I_F = 10 \text{ mA}$<br>$I_F = 30 \text{ mA}$<br>$I_F = 100 \text{ mA}$       | 240<br>320<br>400<br>500<br>800 | mV<br>mV<br>mV<br>mV<br>mV |
| $I_R$            | reverse current       | $V_R = 25 \text{ V}$ ; see Fig.4  | 2                               | $\mu\text{A}$              |
| $t_{rr}$         | reverse recovery time | when switched from $I_F = 10 \text{ mA}$ to $I_R = 10 \text{ mA}$ ; $R_L = 100 \text{ }\Omega$ ; measured at $I_R = 1 \text{ mA}$ ; see Fig.6 | 5                               | ns                         |
| $C_d$            | diode capacitance     | $f = 1 \text{ MHz}$ ; $V_R = 1 \text{ V}$ ; see Fig.5   | 10                              | pF                         |

Schottky barrier (double) diodes

BAT54 series



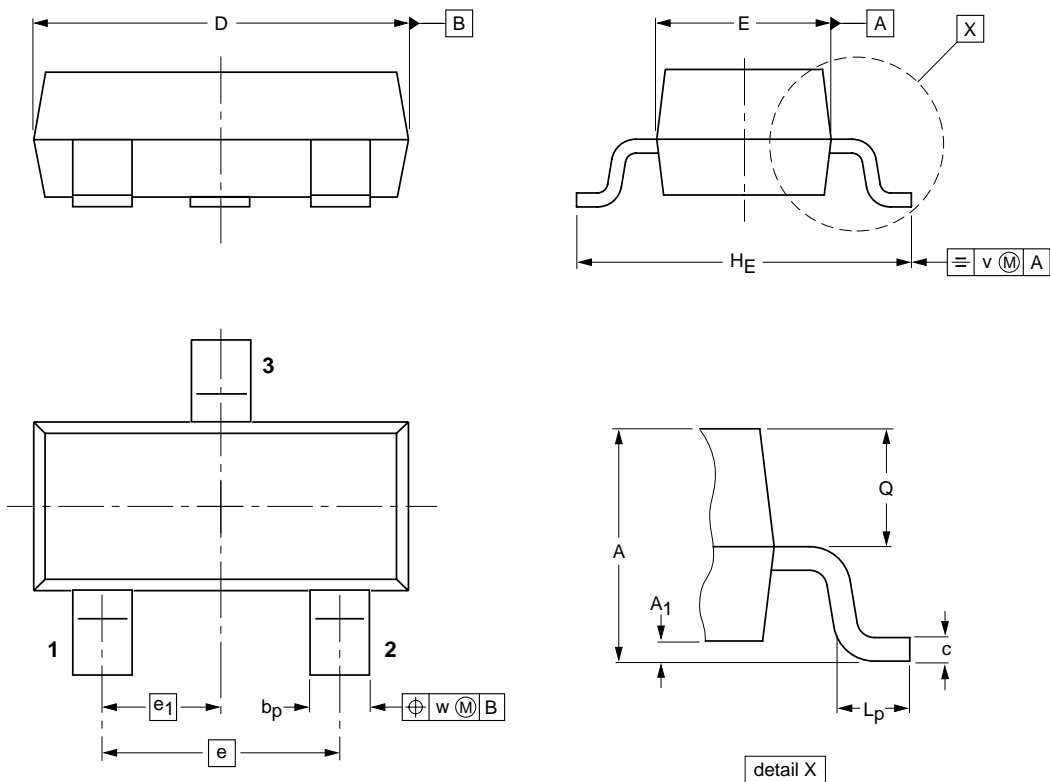
# Schottky barrier (double) diodes

# BAT54 series

## PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



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

| UNIT | A          | A <sub>1</sub><br>max. | b <sub>p</sub> | c            | D          | E          | e   | e <sub>1</sub> | H <sub>E</sub> | L <sub>p</sub> | 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 |

## Schottky barrier (double) diodes

## BAT54 series

## DATA SHEET STATUS

| DATA SHEET STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITIONS  |
|----------------------------------|-------------------------------|--|
| 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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Schottky barrier (double) diodes

BAT54 series

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**NOTES**

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