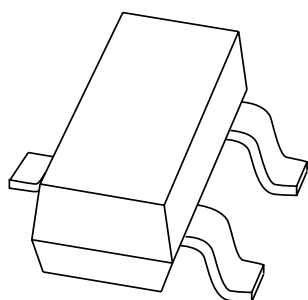


# DATA SHEET



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

Product specification  
Supersedes data of 1996 Mar 19

1999 May 06

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

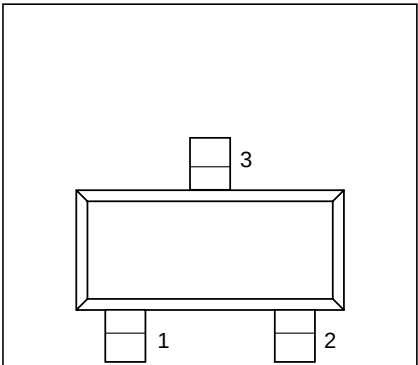
| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| BAT54       | L4*                         |
| BAT54A      | L42                         |
| BAT54C      | L43                         |
| BAT54S      | L44                         |

Note

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

PINNING

| PIN | BAT54 |                                 |                                 |                                 |
|-----|-------|---------------------------------|---------------------------------|---------------------------------|
|     |       | A                               | C                               | S                               |
| 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> |



Top view MGC421

Fig.1 Simplified outline (SOT23) and pin configuration.

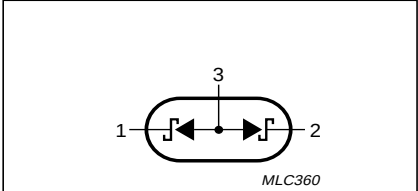


Fig.3 BAT54A diode configuration (symbol).

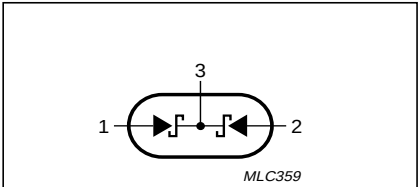


Fig.4 BAT54C diode configuration (symbol).

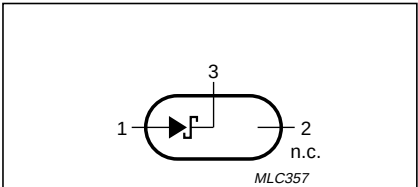


Fig.2 BAT54 single diode configuration (symbol).

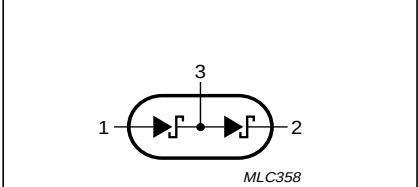


Fig.5 BAT54S diode configuration (symbol).

## Schottky barrier (double) diodes

## BAT54 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            |                                   | –    | 30   | V    |
| $I_F$            | continuous forward current            |                                   | –    | 200  | mA   |
| $I_{FRM}$        | repetitive peak forward current       | $t_p \leq 1$ s; $\delta \leq 0.5$ | –    | 300  | mA   |
| $I_{FSM}$        | non-repetitive peak forward current   | $t_p < 10$ ms                     | –    | 600  | mA   |
| $P_{tot}$        | total power dissipation (per package) | $T_{amb} \leq 25$ °C              | –    | 230  | mW   |
| $T_{stg}$        | storage temperature                   |                                   | –65  | +150 | °C   |
| $T_j$            | junction temperature                  |                                   | –    | 125  | °C   |

## ELECTRICAL CHARACTERISTICS

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

| SYMBOL           | PARAMETER             | CONDITIONS                                                                                            | MAX.                            | UNIT                       |
|------------------|-----------------------|-------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------|
| <b>Per diode</b> |                       |                                                                                                       |                                 |                            |
| $V_F$            | forward voltage       | see Fig.6<br>$I_F = 0.1$ mA<br>$I_F = 1$ mA<br>$I_F = 10$ mA<br>$I_F = 30$ mA<br>$I_F = 100$ mA       | 240<br>320<br>400<br>500<br>800 | mV<br>mV<br>mV<br>mV<br>mV |
| $I_R$            | reverse current       | $V_R = 25$ V; see Fig.7                                                                               | 2                               | µA                         |
| $t_{rr}$         | reverse recovery time | when switched from $I_F = 10$ mA to $I_R = 10$ mA; $R_L = 100$ Ω; measured at $I_R = 1$ mA; see Fig.9 | 5                               | ns                         |
| $C_d$            | diode capacitance     | $f = 1$ MHz; $V_R = 1$ V; see Fig.8                                                                   | 10                              | pF                         |

## THERMAL CHARACTERISTICS

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

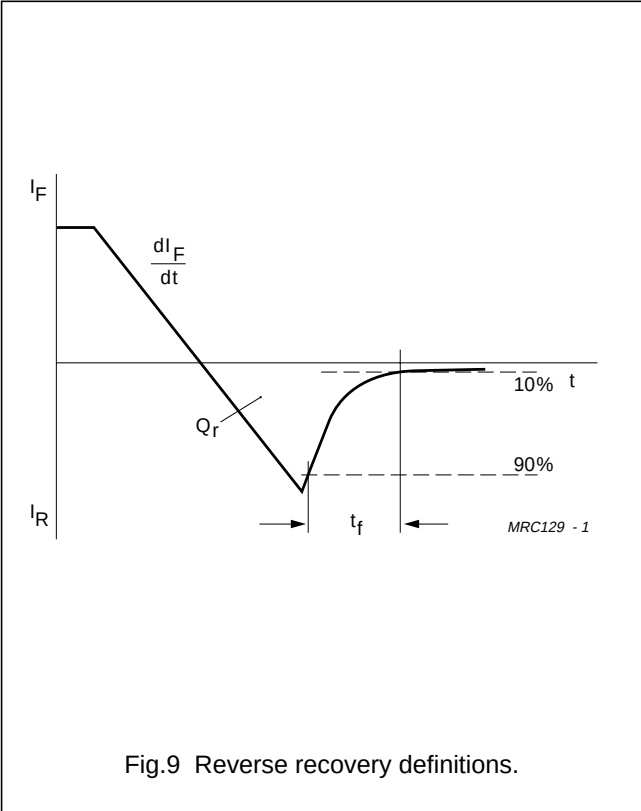
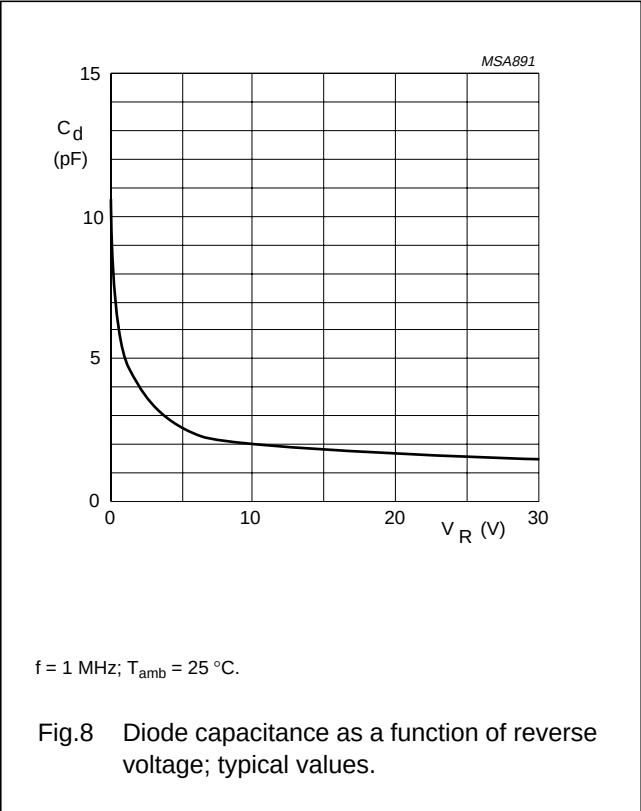
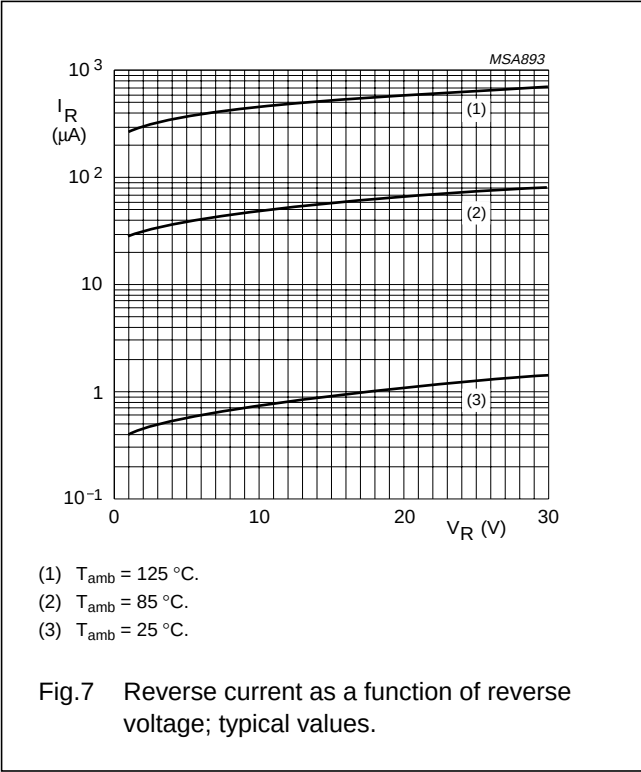
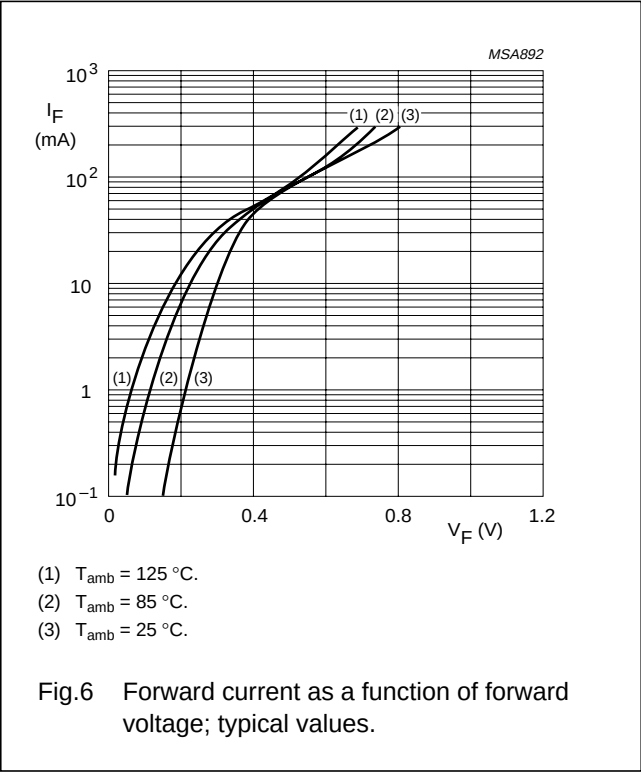
## Note

1. Refer to SOT23 standard mounting conditions.

Schottky barrier (double) diodes

BAT54 series

GRAPHICAL DATA



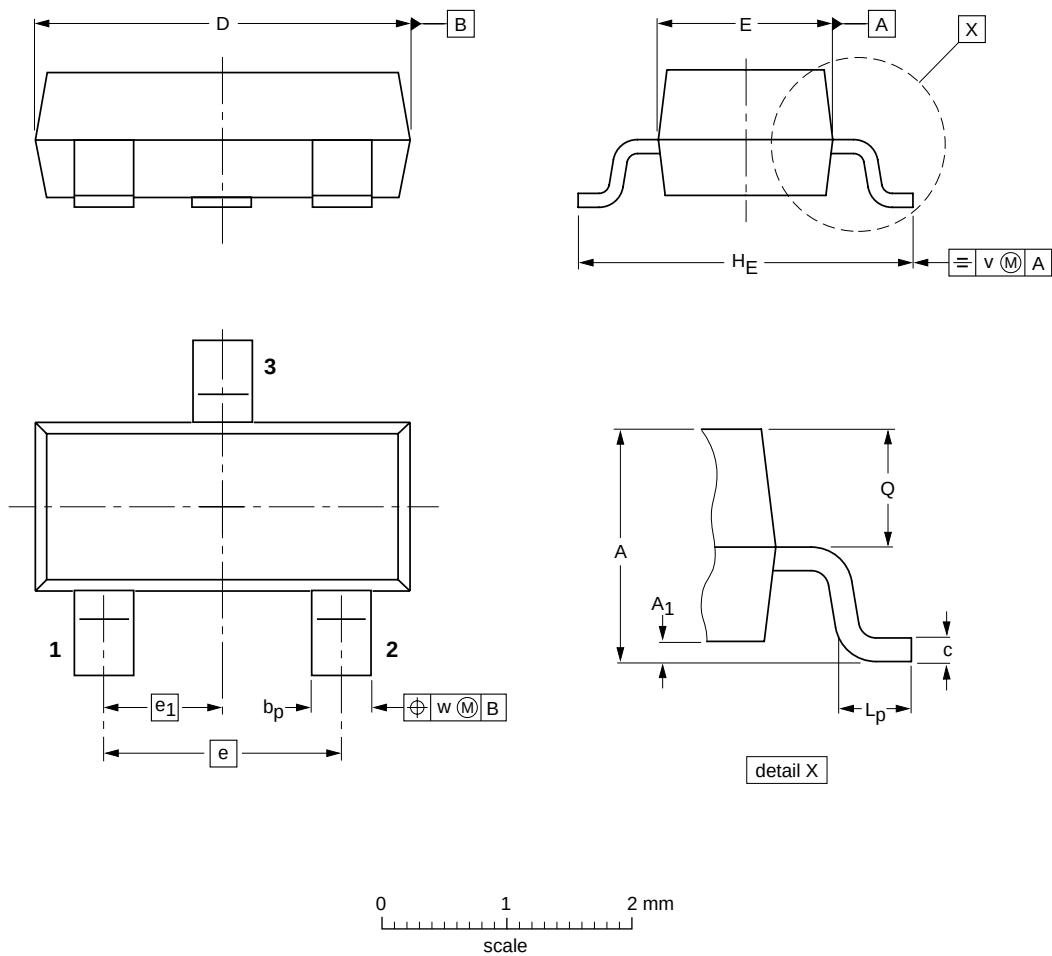
Schottky barrier (double) diodes

BAT54 series

PACKAGE OUTLINE

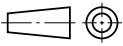
Plastic surface mounted package; 3 leads

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<br>VERSION | REFERENCES |       |      |  | EUROPEAN<br>PROJECTION                                                                | ISSUE DATE |
|--------------------|------------|-------|------|--|---------------------------------------------------------------------------------------|------------|
|                    | IEC        | JEDEC | EIAJ |  |                                                                                       |            |
| SOT23              |            |       |      |  |  | 97-02-28   |

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## Schottky barrier (double) diodes

## BAT54 series

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### DEFINITIONS

| Data sheet status                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 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.                                |
| Limiting values                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                       |
| 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. |                                                                                       |
| Application information                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                       |
| Where application information is given, it is advisory and does not form part of the specification.                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |

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Schottky barrier (double) diodes

BAT54 series

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