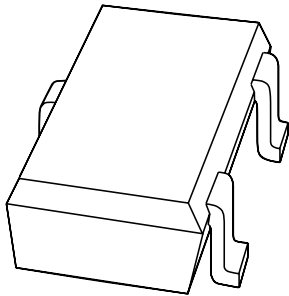


# DATA SHEET



## **1PS70SB40 series** **Schottky barrier (double) diodes**

Product specification  
Supersedes data of 1997 Oct 28

1999 Apr 26

# Schottky barrier (double) diodes

# 1PS70SB40 series

### FEATURES

- Low forward voltage
- Guard ring protected
- Very small SMD package
- Low diode capacitance.

### APPLICATIONS

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

### DESCRIPTION

Planar Schottky barrier diodes encapsulated in an SC-70 very small plastic SMD package. Single diodes and double diodes with different pinning are available.

### MARKING

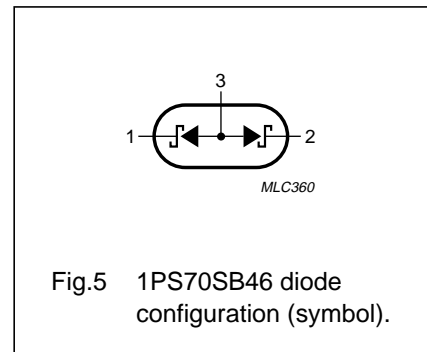
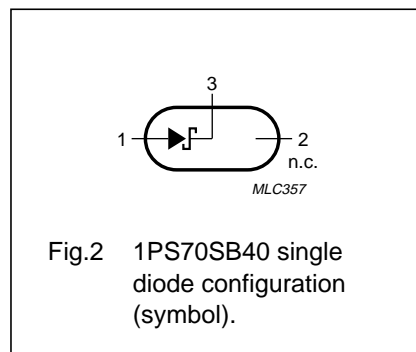
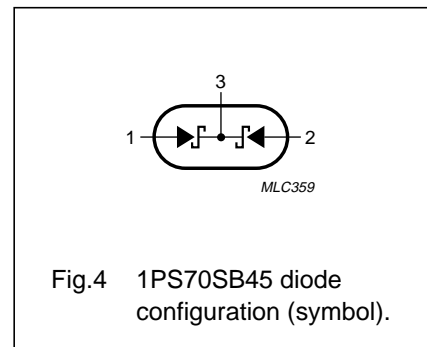
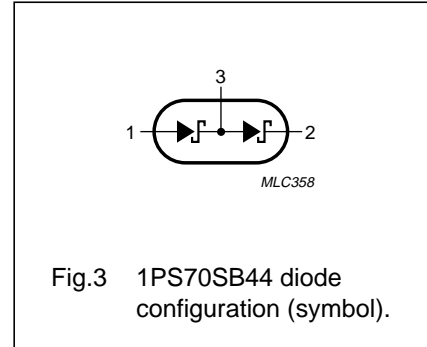
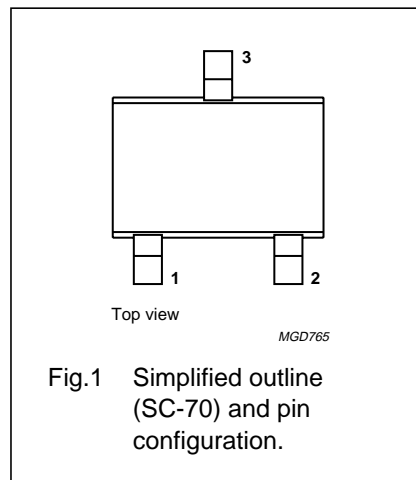
| TYPE NUMBER | MARKING CODE (1) |
|-------------|------------------|
| 1PS70SB40   | 6*3              |
| 1PS70SB44   | 6*4              |
| 1PS70SB45   | 6*5              |
| 1PS70SB46   | 6*6              |

### Note

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

### PINNING

| PIN | 1PS70SB..      |                                 |                                 |                                 |
|-----|----------------|---------------------------------|---------------------------------|---------------------------------|
|     | 40             | 44                              | 45                              | 46                              |
| 1   | a <sub>1</sub> | a <sub>1</sub>                  | a <sub>1</sub>                  | k <sub>1</sub>                  |
| 2   | n.c.           | k <sub>2</sub>                  | a <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> |



## Schottky barrier (double) diodes

## 1PS70SB40 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          |                                   | –    | 40   | V    |
| $I_F$            | continuous forward current          |                                   | –    | 120  | mA   |
| $I_{FRM}$        | repetitive peak forward current     | $t_p \leq 1$ s; $\delta \leq 0.5$ | –    | 120  | mA   |
| $I_{FSM}$        | non-repetitive peak forward current | $t_p < 10$ ms                     | –    | 200  | mA   |
| $T_{stg}$        | storage temperature                 |                                   | –65  | +150 | °C   |
| $T_j$            | junction temperature                |                                   | –    | 150  | °C   |
| $T_{amb}$        | operating ambient temperature       |                                   | –65  | +150 | °C   |

**ELECTRICAL CHARACTERISTICS**

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

| SYMBOL           | PARAMETER                  | CONDITIONS  | MAX.            | UNIT          |
|------------------|----------------------------|---|-----------------|---------------|
| <b>Per diode</b> |                            |   |                 |               |
| $V_F$            | continuous forward voltage | see Fig.6<br>$I_F = 1$ mA<br>$I_F = 10$ mA<br>$I_F = 40$ mA | 380<br>500<br>1 | mV<br>mV<br>V |
| $I_R$            | continuous reverse current | $V_R = 30$ V; note 1; see Fig.7                             | 1               | $\mu$ A       |
|                  |                            | $V_R = 40$ V; note 1; see Fig.7                             | 10              | $\mu$ A       |
| $\tau$           | charge carrier life time   | $I_F = 5$ mA; Krakauer method                               | 100             | ps            |
| $C_d$            | diode capacitance          | $V_R = 0$ ; $f = 1$ MHz; see Fig.9                          | 5               | pF            |

**Note**

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

**THERMAL CHARACTERISTICS**

| SYMBOL        | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1     | 625   | K/W  |

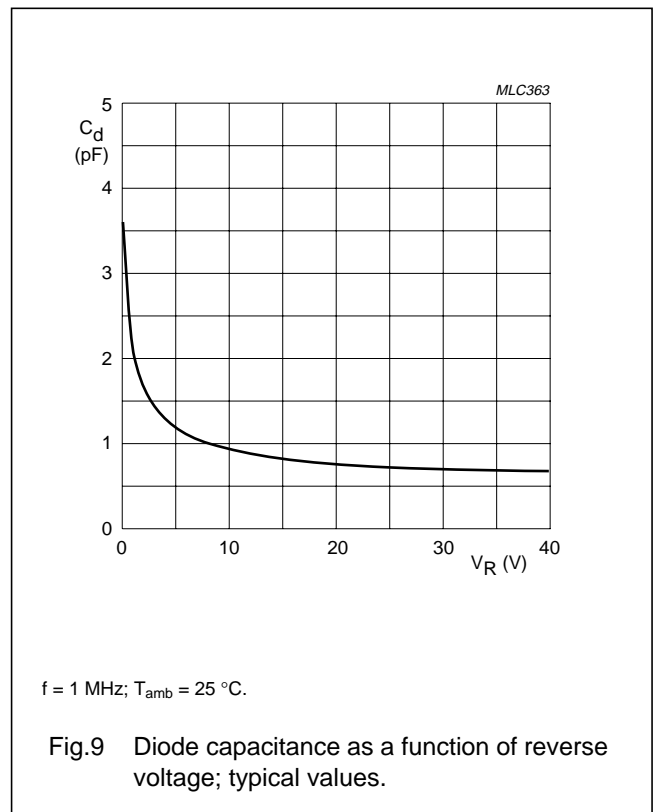
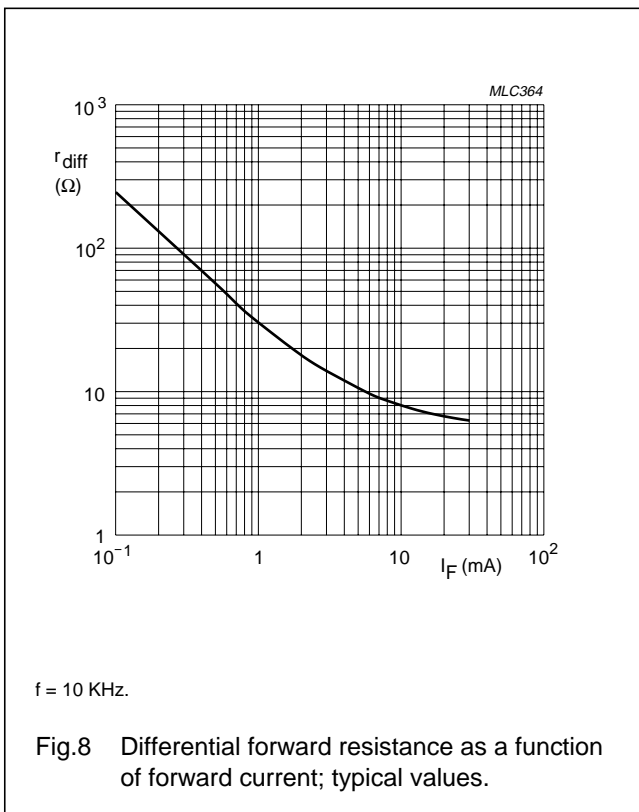
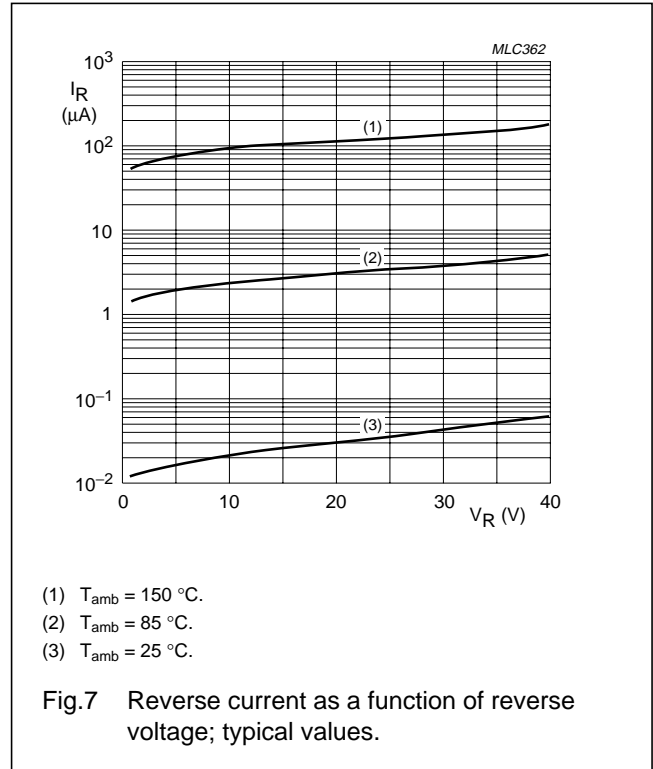
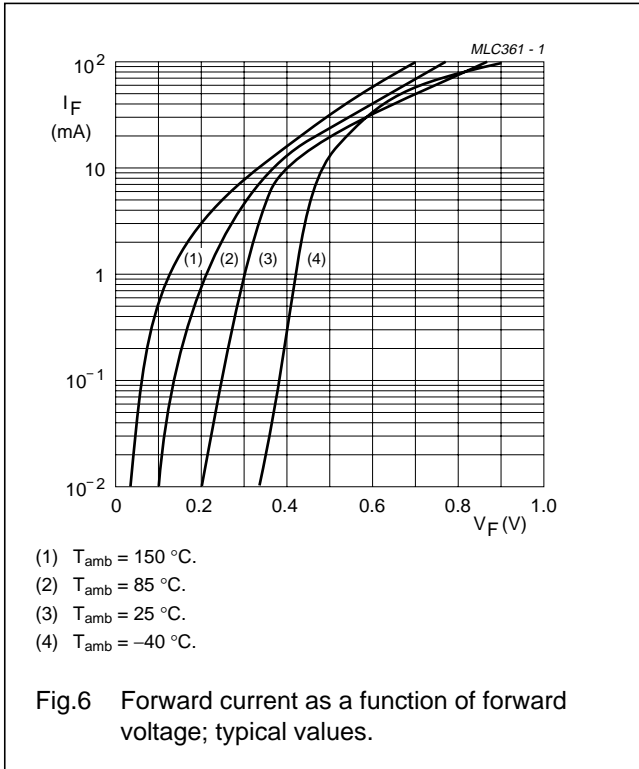
**Note**

1. Refer to SC70 standard mounting conditions.

Schottky barrier (double) diodes

1PS70SB40 series

GRAPHICAL DATA



# Schottky barrier (double) diodes

# 1PS70SB40 series

## PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



**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>0.8 | 0.1                   | 0.4<br>0.3     | 0.25<br>0.10 | 2.2<br>1.8 | 1.35<br>1.15 | 1.3 | 0.65           | 2.2<br>2.0     | 0.45<br>0.15   | 0.23<br>0.13 | 0.2 | 0.2 |

| OUTLINE<br>VERSION | REFERENCES |       |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE |
|--------------------|------------|-------|-------|--|------------------------|------------|
|                    | IEC        | JEDEC | EIAJ  |  |                        |            |
| SOT323             |            |       | SC-70 |  |                        | 97-02-28   |

## Schottky barrier (double) diodes

## 1PS70SB40 series

**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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These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

Schottky barrier (double) diodes

1PS70SB40 series

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