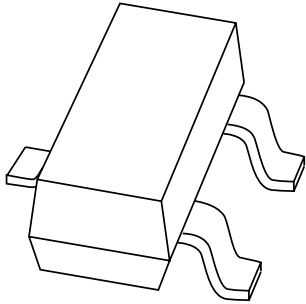


# DATA SHEET



## **PMBD7100** High-speed double diode

Product data sheet

2003 Nov 07

# High-speed double diode

# PMBD7100

### FEATURES

- Small plastic SMD package
- High switching speed: max. 4 ns
- Continuous reverse voltage: max. 100 V
- Repetitive peak reverse voltage: max. 100 V
- Repetitive peak forward current: max. 450 mA.

### APPLICATIONS

- High-speed switching in thick and thin-film circuits.

### DESCRIPTION

The PMBD7100 consists of two high-speed switching diodes with common cathodes, fabricated in planar technology, and encapsulated in the small SOT23 SMD plastic package.

### MARKING

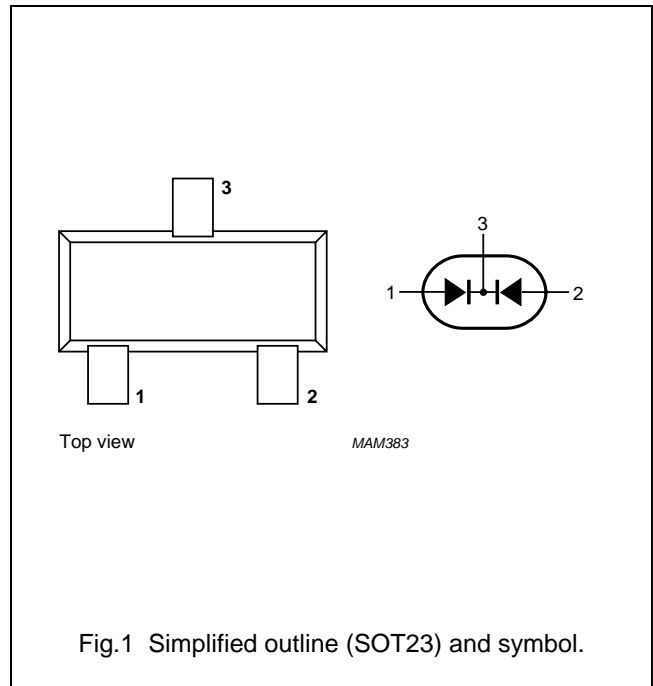
| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| PMBD7100    | *3A                         |

### Note

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

### PINNING

| PIN | DESCRIPTION       |
|-----|-------------------|
| 1   | anode (a1)        |
| 2   | anode (a2)        |
| 3   | common connection |



### ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |  |         |
|-------------|---------|--|---------|
|             | NAME    | DESCRIPTION                              | VERSION |
| PMBD7100    | -       | plastic surface mounted package; 3 leads | SOT23   |

## High-speed double diode

## PMBD7100

**LIMITING VALUES**

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

| SYMBOL           | PARAMETER                           | CONDITIONS  | MIN. | MAX. | UNIT |
|------------------|-------------------------------------|---|------|------|------|
| <b>Per diode</b> |                                     |   |      |      |      |
| $V_{RRM}$        | repetitive peak reverse voltage     |   | –    | 100  | V    |
| $V_R$            | continuous reverse voltage          |   | –    | 100  | V    |
| $I_F$            | continuous forward current          | single diode loaded; see Fig.2; note 1                      | –    | 215  | mA   |
|                  |                                     | double diode loaded; see Fig.2; note 1                      | –    | 125  | mA   |
| $I_{FRM}$        | repetitive peak forward current     |   | –    | 450  | mA   |
| $I_{FSM}$        | non-repetitive peak forward current | square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4 |      |      |      |
|                  |                                     | $t_p = 1\ \mu\text{s}$                                      | –    | 4    | A    |
|                  |                                     | $t_p = 1\ \text{ms}$  | –    | 1    | A    |
|                  |                                     | $t_p = 1\ \text{s}$   | –    | 0.5  | A    |
| $P_{tot}$        | total power dissipation             | $T_{amb} = 25\text{ °C}$ ; note 1                           | –    | 250  | mW   |
| $T_{stg}$        | storage temperature                 |   | –65  | +150 | °C   |
| $T_j$            | junction temperature                |   | –    | 150  | °C   |

**Note**

1. Device mounted on an FR4 printed-circuit board.

## High-speed double diode

PMBD7100

**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  |      |               |
|                  |                          | $I_F = 1\text{ mA}$  | 715  | mV            |
|                  |                          | $I_F = 10\text{ mA}$   | 855  | mV            |
|                  |                          | $I_F = 50\text{ mA}$   | 1    | V             |
|                  |                          | $I_F = 150\text{ mA}$  | 1.25 | V             |
| $I_R$            | reverse current          | see Fig.5  |      |               |
|                  |                          | $V_R = 25\text{ V}$  | 30   | nA            |
|                  |                          | $V_R = 100\text{ V}$   | 2.5  | $\mu\text{A}$ |
|                  |                          | $V_R = 25\text{ V}; T_j = 150\text{ °C}$   | 60   | $\mu\text{A}$ |
|                  |                          | $V_R = 100\text{ V}; T_j = 150\text{ °C}$  | 100  | $\mu\text{A}$ |
| $C_d$            | diode capacitance        | $V_R = 0\text{ V}; f = 1\text{ MHz};$ see Fig.6  | 1.5  | pF            |
| $t_{rr}$         | reverse recovery time    | when switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}; R_L = 100\ \Omega;$ measured at $I_R = 1\text{ mA};$ see Fig.7 | 4    | ns            |
| $V_{fr}$         | forward recovery voltage | when switched from $I_F = 10\text{ mA}$ to $t_r = 20\text{ nA};$ see Fig.8   | 1.75 | V             |

**THERMAL CHARACTERISTICS**

| SYMBOL         | PARAMETER                                     | CONDITIONS | VALUE | UNIT |
|----------------|---|------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point |            | 360   | K/W  |
| $R_{th\ j-a}$  | thermal resistance from junction to ambient   | note 1     | 500   | K/W  |

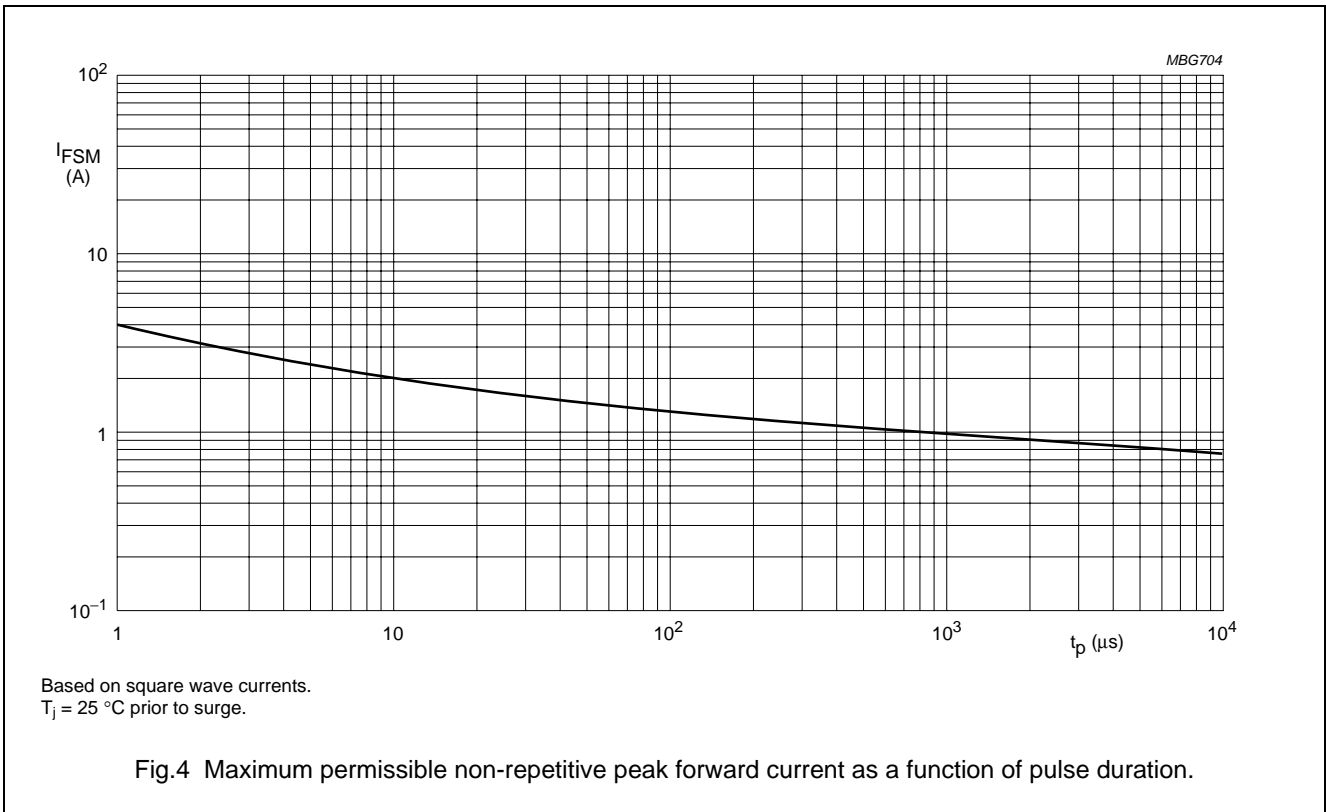
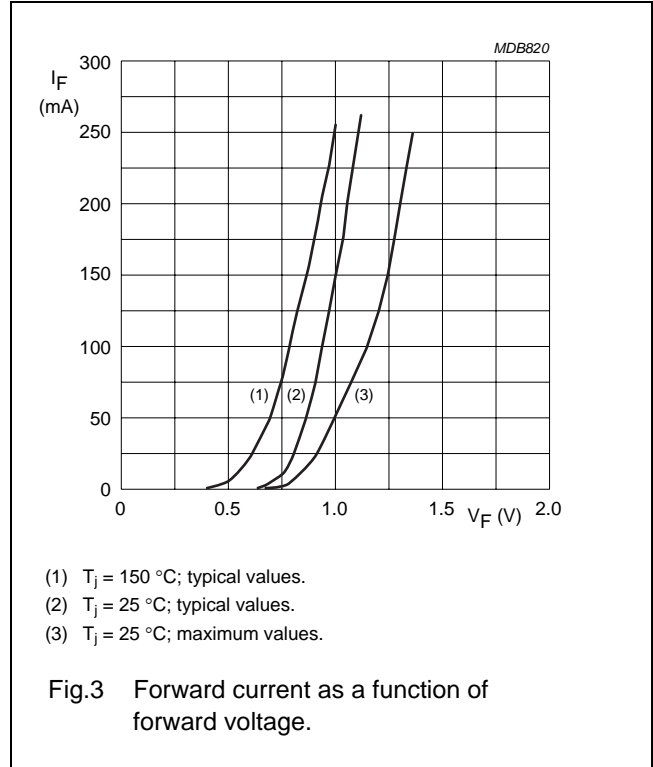
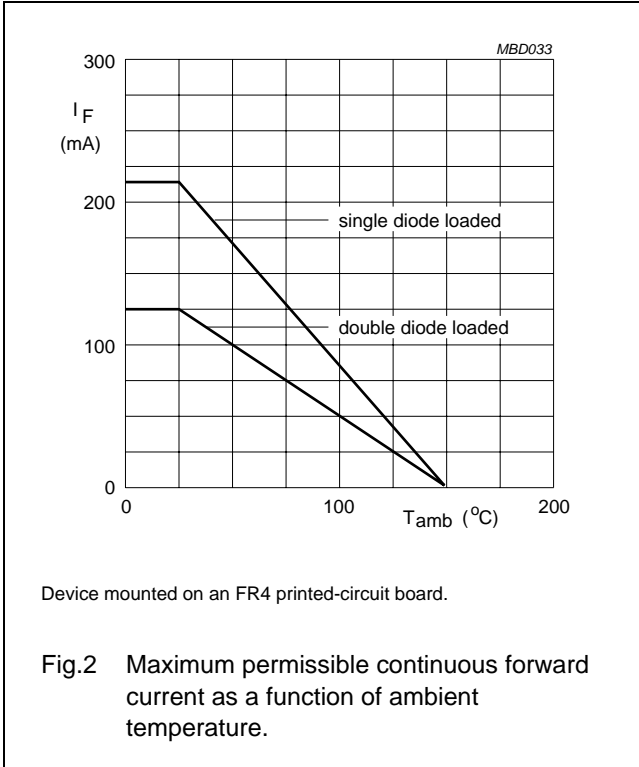
**Note**

1. Device mounted on an FR4 printed-circuit board.

High-speed double diode

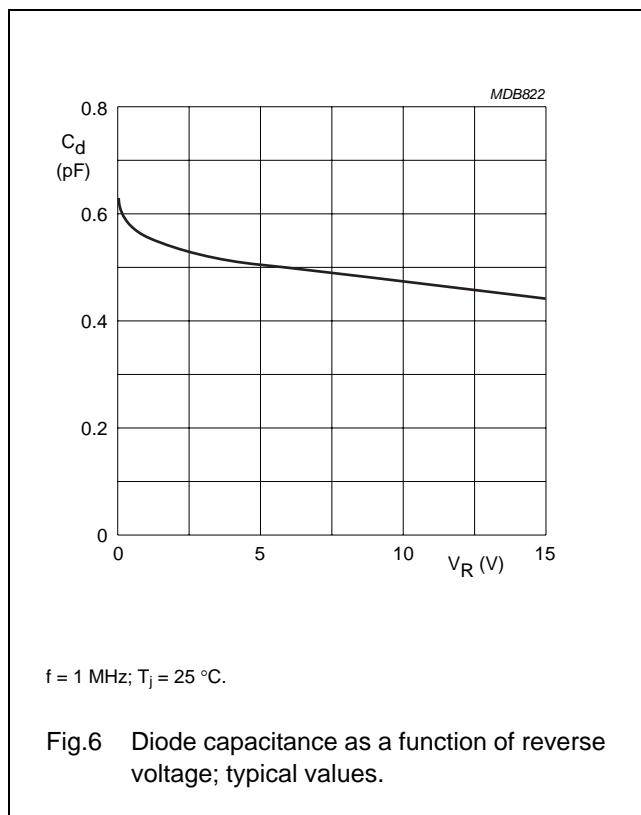
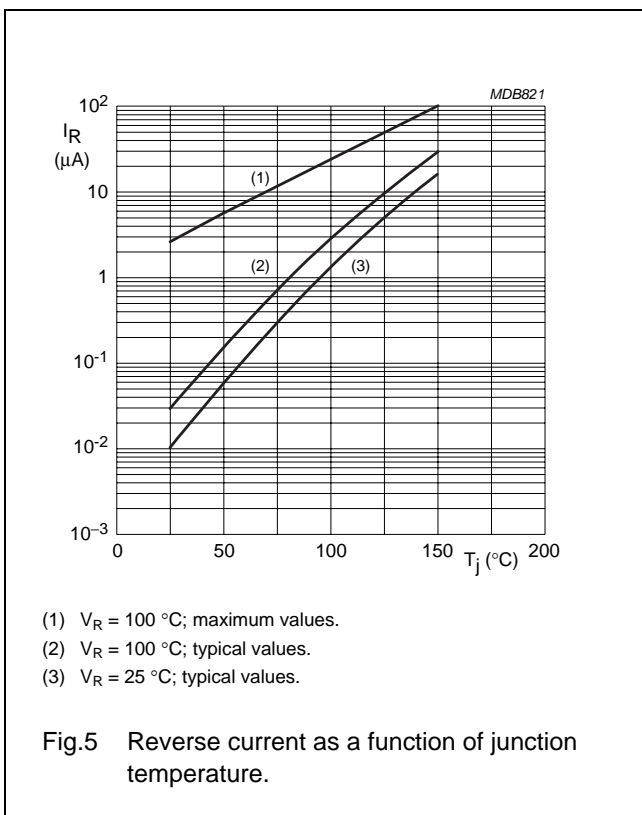
PMBD7100

GRAPHICAL DATA



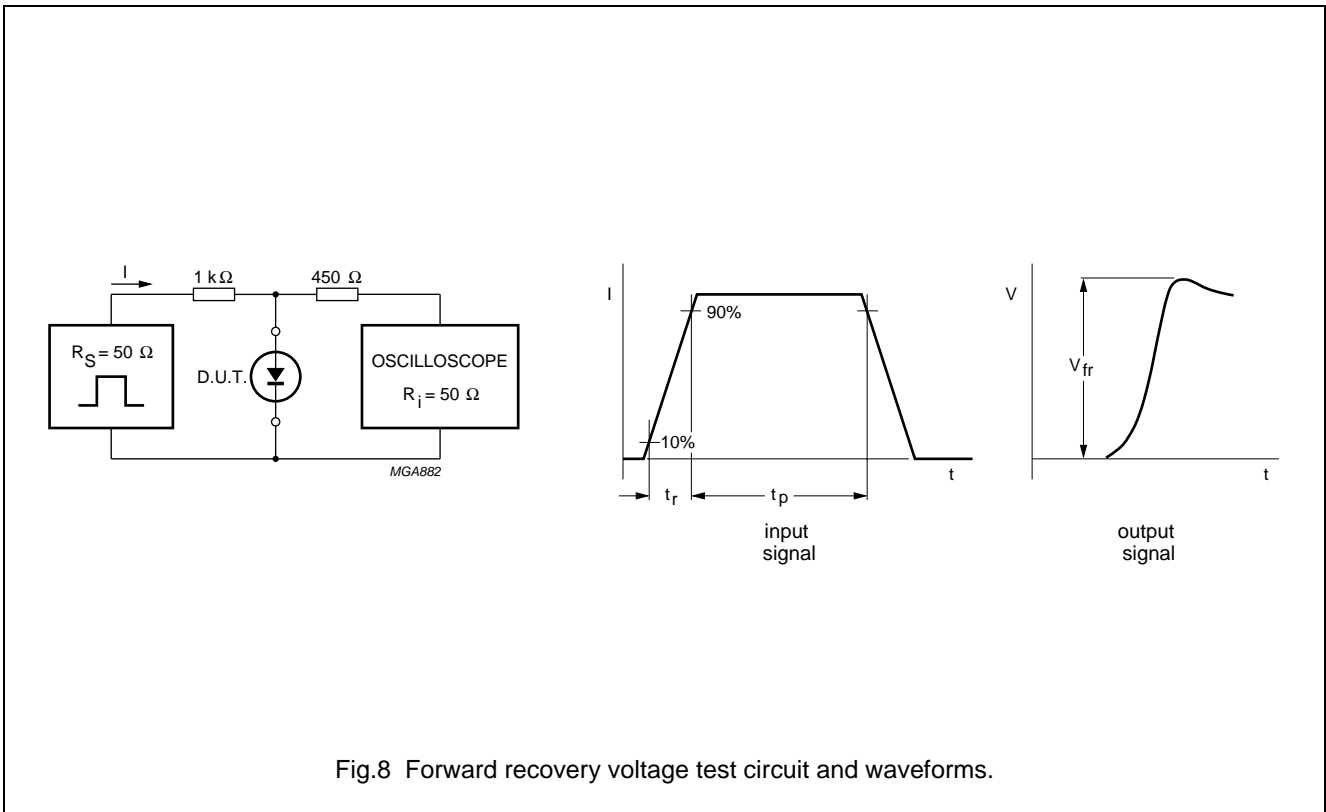
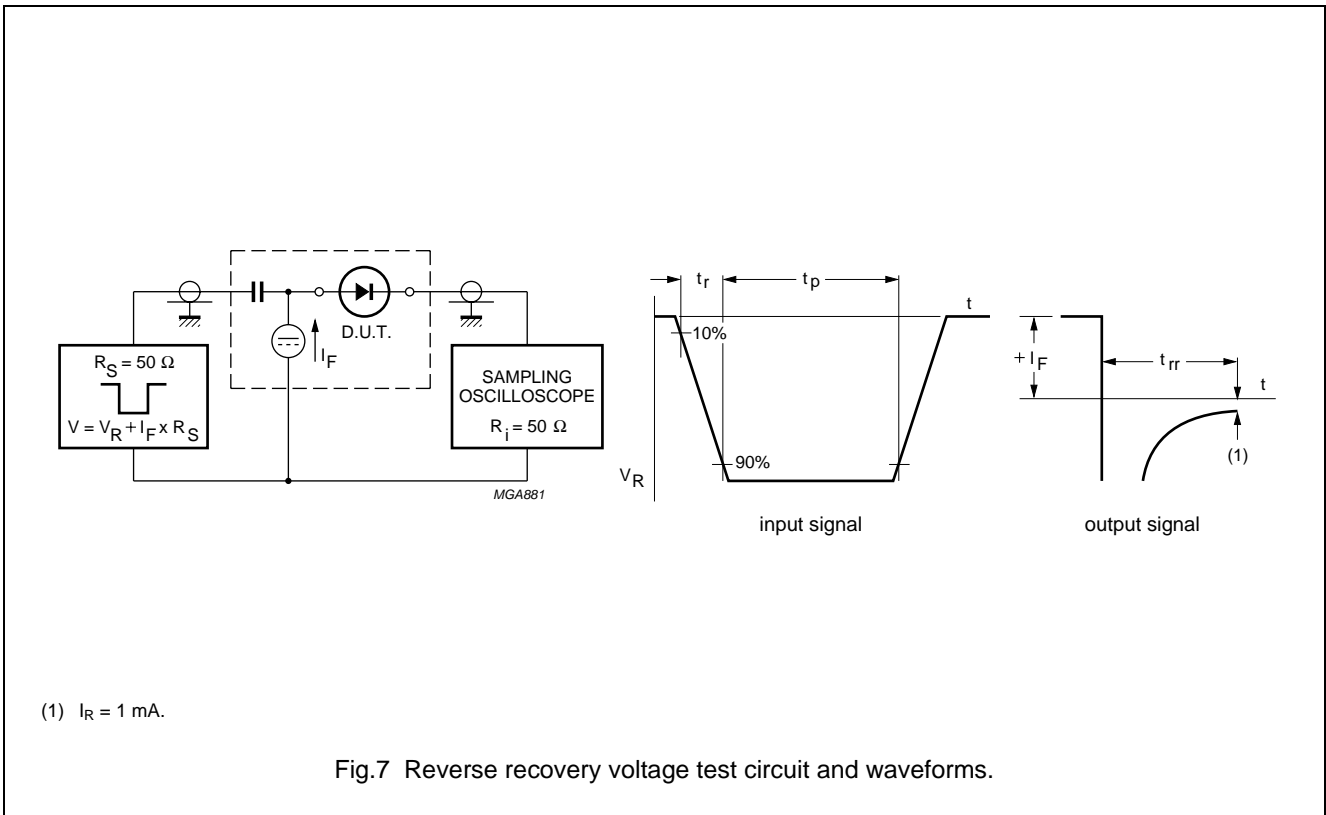
High-speed double diode

PMBD7100



High-speed double diode

PMBD7100



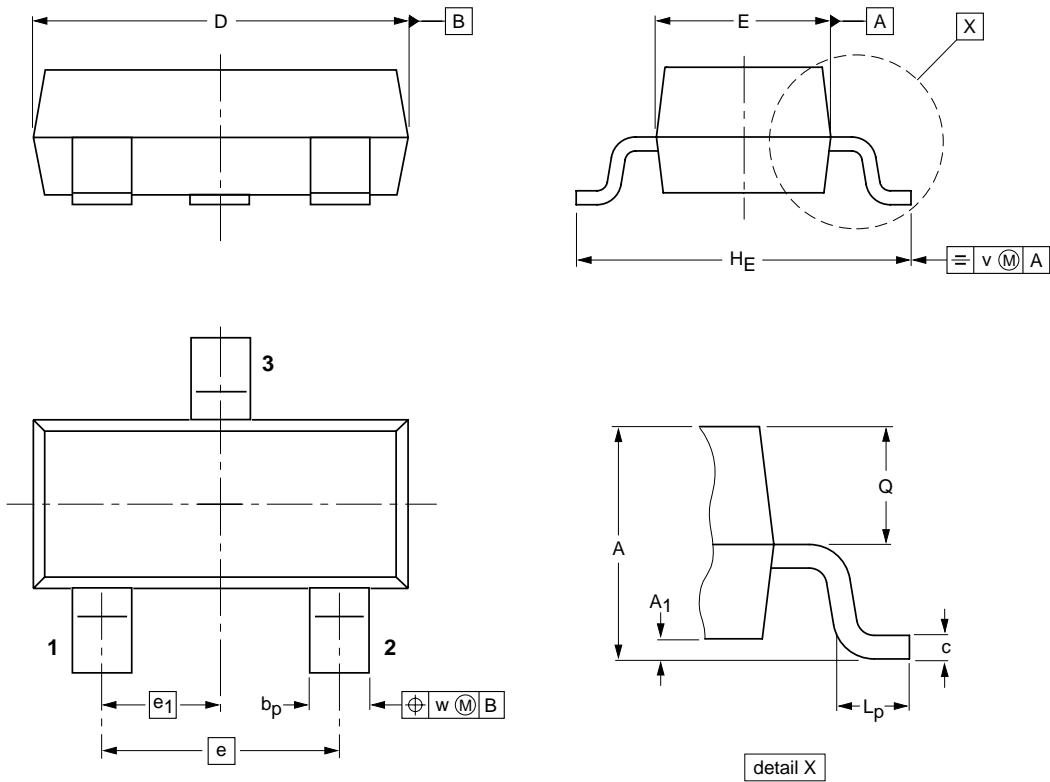
High-speed double diode

PMBD7100

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 |      |  |                     | <del>97-02-28</del><br>99-09-13 |



## High-speed double diode

PMBD7100

## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITION  |
|--------------------------------|-------------------------------|---|
| Objective data sheet           | Development                   | This document contains data from the objective specification for product development. |
| Preliminary data sheet         | Qualification                 | This document contains data from the preliminary specification.                       |
| Product data sheet             | Production                    | This document contains the product specification.                                     |

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