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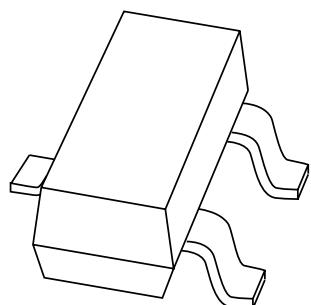
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Kind regards,

Team Nexperia

# 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**

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

**ORDERING INFORMATION**

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

**PINNING**

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

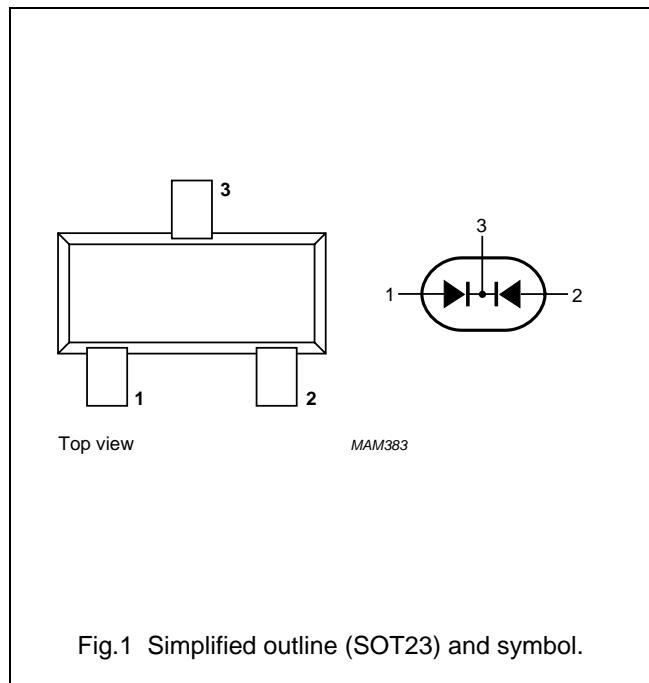


Fig.1 Simplified outline (SOT23) and symbol.

## 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; $T_j = 25^\circ\text{C}$ 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
$P_{\text{tot}}$	total power dissipation	$T_{\text{amb}} = 25^\circ\text{C}$ ; note 1	–	250	mW
$T_{\text{stg}}$	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

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

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
<b>Per diode</b>				
$V_F$	forward voltage	see Fig.3 $I_F = 1 \text{ mA}$ $I_F = 10 \text{ mA}$ $I_F = 50 \text{ mA}$ $I_F = 150 \text{ mA}$	715 855 1 1.25	mV mV V V
$I_R$	reverse current	see Fig.5 $V_R = 25 \text{ V}$ $V_R = 100 \text{ V}$ $V_R = 25 \text{ V}; T_j = 150 \text{ }^{\circ}\text{C}$ $V_R = 100 \text{ V}; T_j = 150 \text{ }^{\circ}\text{C}$	30 2.5 60 100	nA $\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
$C_d$	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
$R_{th\ j\-\text{tp}}$	thermal resistance from junction to tie-point		360	K/W
$R_{th\ j\-\text{a}}$	thermal resistance from junction to ambient	note 1	500	K/W

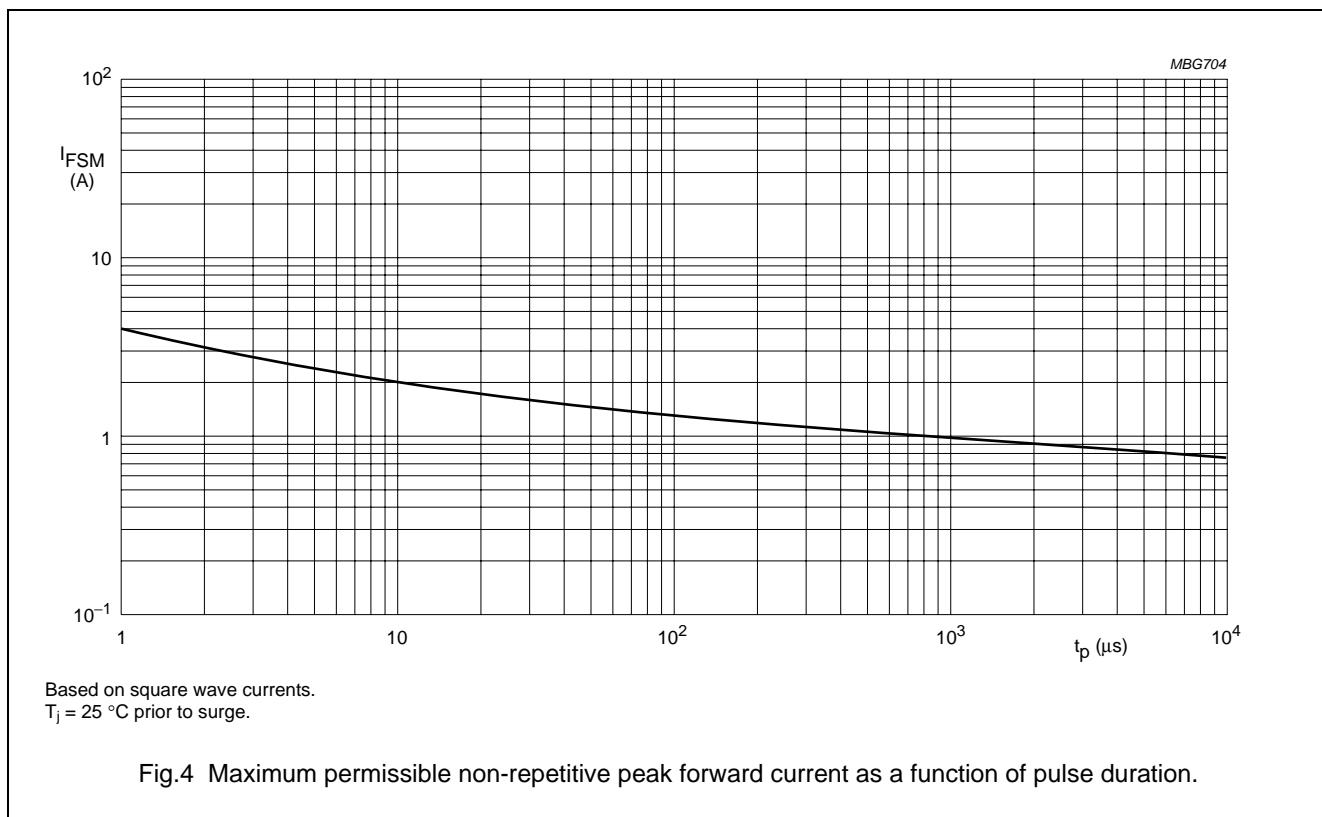
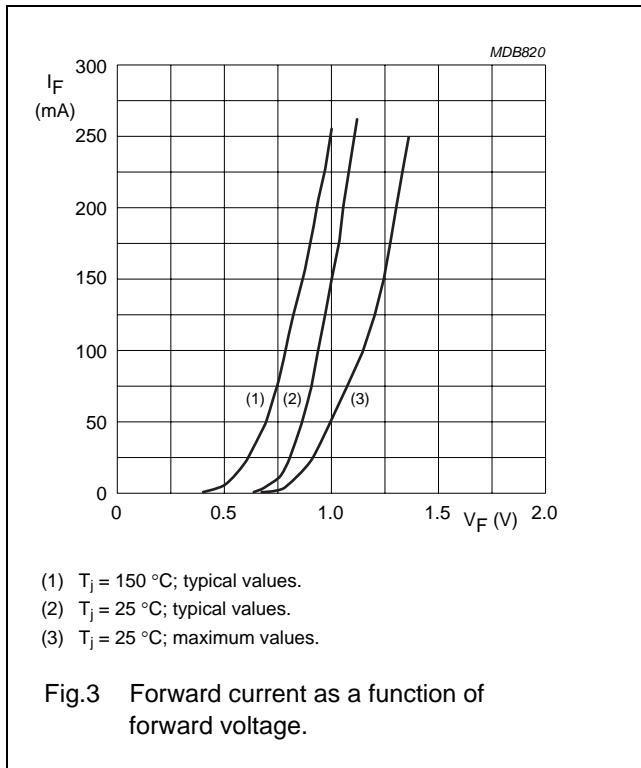
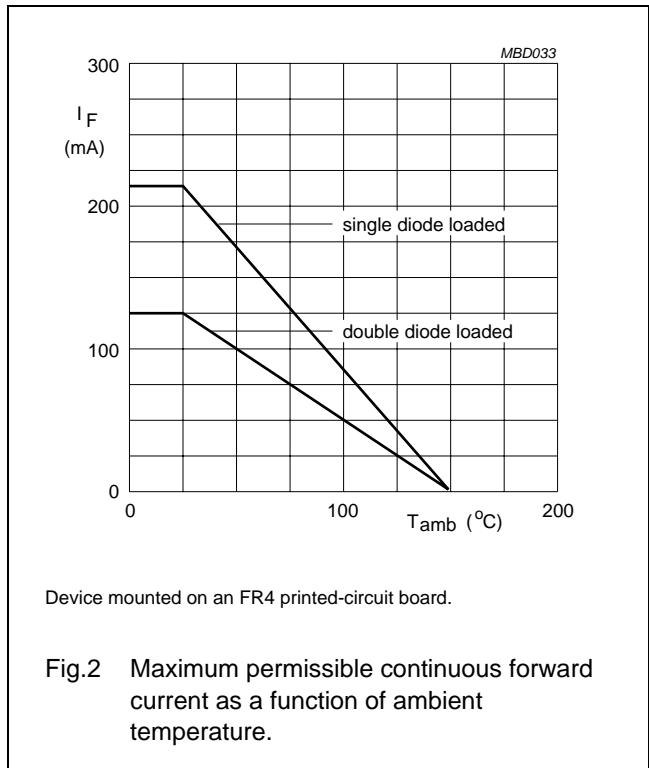
## Note

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

## High-speed double diode

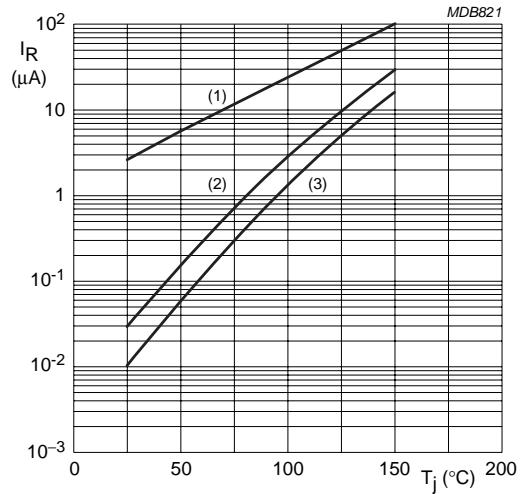
PMBD7100

## GRAPHICAL DATA



## High-speed double diode

## PMBD7100

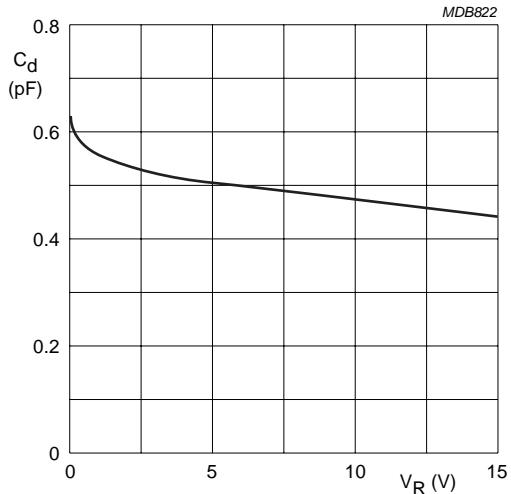


(1)  $V_R = 100\text{ }^{\circ}\text{C}$ ; maximum values.

(2)  $V_R = 100\text{ }^{\circ}\text{C}$ ; typical values.

(3)  $V_R = 25\text{ }^{\circ}\text{C}$ ; typical values.

Fig.5 Reverse current as a function of junction temperature.



$f = 1\text{ MHz}; T_j = 25\text{ }^{\circ}\text{C}$ .

Fig.6 Diode capacitance as a function of reverse voltage; typical values.

## High-speed double diode

PMBD7100

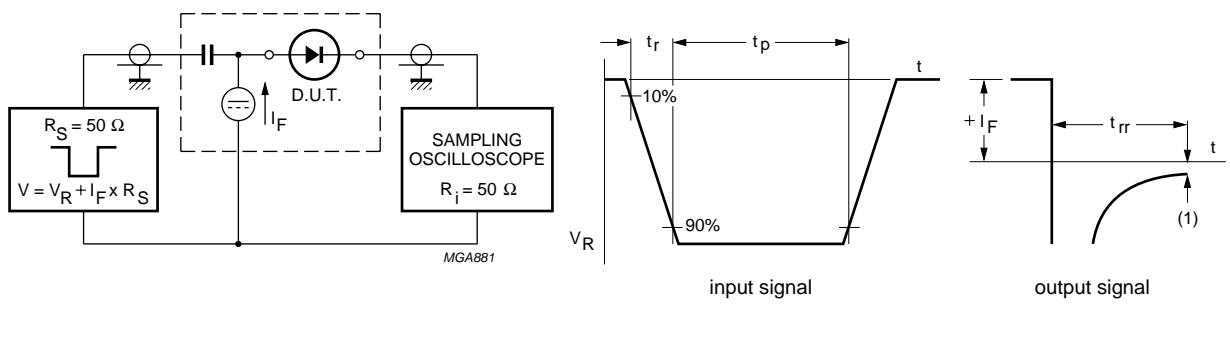
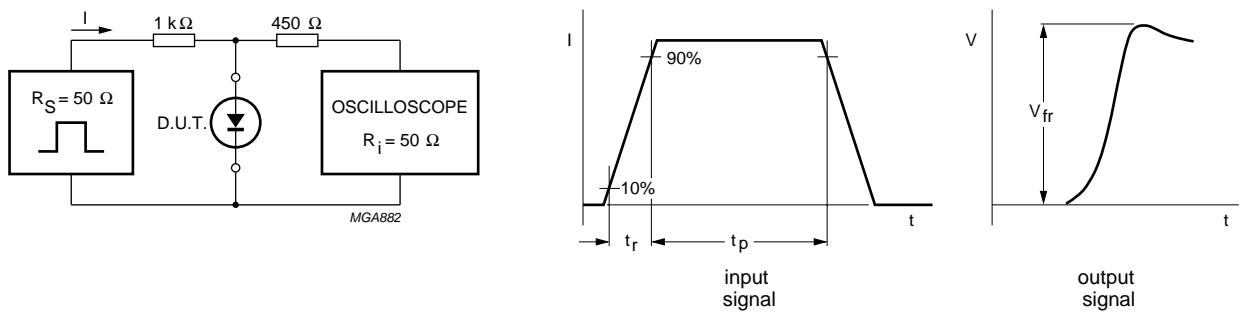
(1)  $I_R = 1 \text{ mA.}$ 

Fig.7 Reverse recovery voltage test circuit and waveforms.



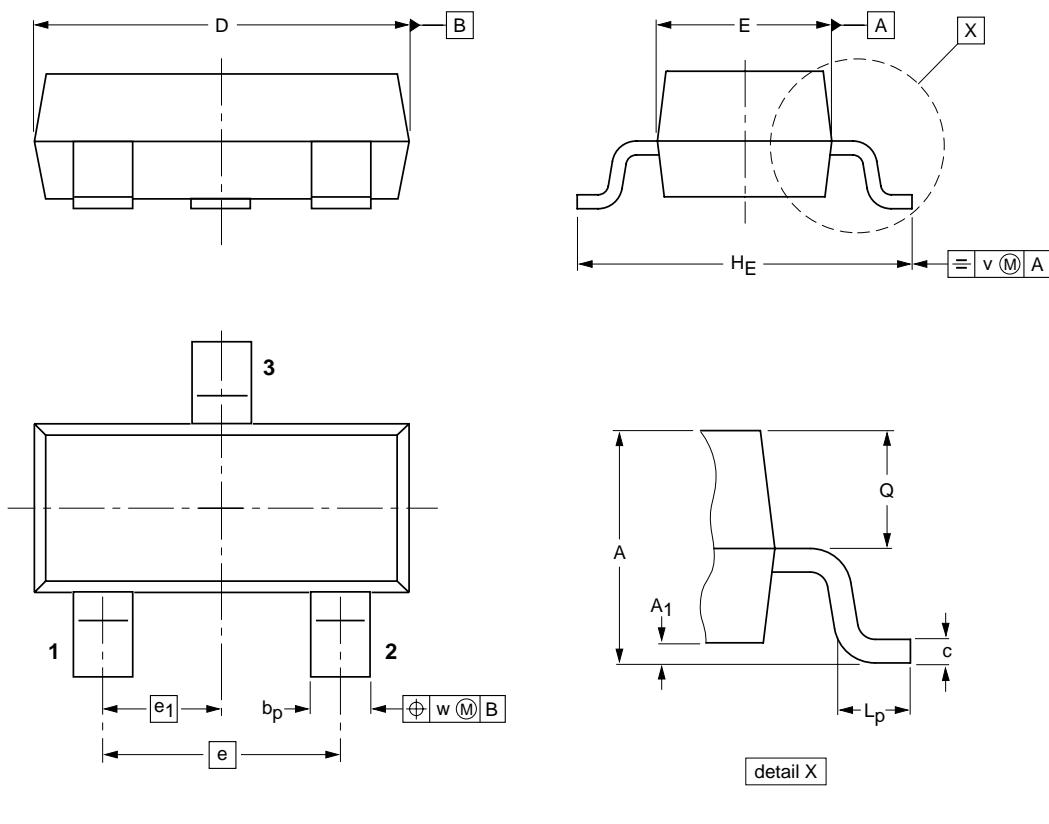
## High-speed double diode

PMBD7100

## PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



## DIMENSIONS (mm are the original dimensions)

UNIT	A	$A_1$ max.	$b_p$	c	D	E	e	$e_1$	$H_E$	$L_p$	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				-97-02-28 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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## **Contact information**

For additional information please visit: <http://www.nxp.com>

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