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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via salesaddresses@nexperia.com). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia
PMBD6100
High-speed double diode

Product data sheet
Supersedes data of 1999 May 11
High-speed double diode

PMBD6100

FEATURES
• Small plastic SMD package
• High switching speed: max. 4 ns
• General application
• Continuous reverse voltage: max. 70 V
• Repetitive peak reverse voltage: max. 85 V
• Repetitive peak forward current: max. 450 mA.

APPLICATIONS
• High-speed switching in surface mounted circuits.

DESCRIPTION
The PMBD6100 consists of two high-speed switching diodes with common cathodes, fabricated in planar technology, and encapsulated in the small SOT23 plastic SMD package.

PINNING

<table>
<thead>
<tr>
<th>PIN</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>anode (a1)</td>
</tr>
<tr>
<td>2</td>
<td>anode (a2)</td>
</tr>
<tr>
<td>3</td>
<td>common cathode</td>
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MARKING

<table>
<thead>
<tr>
<th>TYPE NUMBER</th>
<th>MARKING CODE(1)</th>
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<tbody>
<tr>
<td>PMBD6100</td>
<td>*5B</td>
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Note
1. * = p: Made in Hong Kong.
   * = t: Made in Malaysia.
   * = W: Made in China.

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

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>MIN.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Per diode</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$V_{RRM}$</td>
<td>repetitive peak reverse voltage</td>
<td></td>
<td>–</td>
<td>85</td>
<td>V</td>
</tr>
<tr>
<td>$V_R$</td>
<td>continuous reverse voltage</td>
<td>single diode loaded; note 1; see Fig.2</td>
<td>–</td>
<td>70</td>
<td>V</td>
</tr>
<tr>
<td>$I_F$</td>
<td>continuous forward current</td>
<td>double diode loaded; note 1; see Fig.2</td>
<td>–</td>
<td>215</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–</td>
<td>125</td>
</tr>
</tbody>
</table>
## High-speed double diode

**PMBD6100**

### SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT
---|---|---|---|---|---
I_{FRM} | repetitive peak forward current | square wave; $T_J = 25 \, ^\circ C$ prior to surge; see Fig.4 | – | 450 | mA
I_{FSM} | non-repetitive peak forward current | | | | |
| | | t = 1 $\mu$s | – | 4 | A
| | | t = 1 ms | – | 1 | A
| | | t = 1 s | – | 0.5 | A
P_{tot} | total power dissipation | $T_{amb} = 25 \, ^\circ C$; note 1 | – | 250 | mW
T_{stg} | storage temperature | | –65 | +150 | $^\circ C$
T_J | junction temperature | | – | 150 | $^\circ C$

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

## ELECTRICAL CHARACTERISTICS

$T_J = 25 \, ^\circ C$ unless otherwise specified.

### SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT
---|---|---|---|---
V_F | forward voltage | see Fig.3 | | |
| | | $I_F = 1 \, mA$ | 550 | mV
| | | $I_F = 10 \, mA$ | – | 855
| | | $I_F = 50 \, mA$ | – | 1
| | | $I_F = 100 \, mA$ | 0.85 | 1.1 | V
I_R | reverse current | see Fig.5 | | |
| | | $V_R = 50 \, V$ | – | 100 | nA
| | | $V_R = 50 \, V; T_J = 150 \, ^\circ C$ | – | 50 | µA
C_d | diode capacitance | $f = 1 \, MHz; V_R = 0$; see Fig.6 | – | 1.5 | pF
t_{rr} | reverse recovery time | when switched from $I_F = 10 \, mA$ to $I_R = 10 \, mA$; $R_L = 100 \, \Omega$; measured at $I_R = 1 \, mA$; see Fig.7 | – | 4 | ns
V_{fr} | forward recovery voltage | when switched from $I_F = 10 \, mA$; $t_r = 20 \, ns$; 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

PMBD6100

GRAPHICAL DATA

Device mounted on an FR4 printed-circuit board.

Fig.2 Maximum permissible continuous forward current as a function of ambient temperature.

Fig.3 Forward current as a function of forward voltage.

Fig.4 Maximum permissible non-repetitive peak forward current as a function of pulse duration.

Based on square wave currents.

$T_J = 25 \, ^\circ C$ prior to surge.
High-speed double diode
PMBD6100

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

(1) $V_R = 50\, \text{V}$; maximum values.
(2) $V_R = 50\, \text{V}$; typical values.
(3) $V_R = 30\, \text{V}$; typical values.

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

$f = 1\, \text{MHz}; T_j = 25\, ^\circ\text{C}.$
Fig. 7 Reverse recovery voltage test circuit and waveforms.

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

Fig. 8 Forward recovery voltage test circuit and waveforms.
High-speed double diode

PMBD6100

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23

DIMENSIONS (mm are the original dimensions)

<table>
<thead>
<tr>
<th>UNIT</th>
<th>A</th>
<th>A₁ max.</th>
<th>b_p</th>
<th>c</th>
<th>D</th>
<th>E</th>
<th>e</th>
<th>e₁</th>
<th>H_E</th>
<th>L_p</th>
<th>Q</th>
<th>v</th>
<th>w</th>
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<tr>
<td>mm</td>
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<td>0.9</td>
<td>0.48</td>
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<td>0.45</td>
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OUTLINE VERSION

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<th>REFERENCES</th>
<th>EUROPEAN PROJECTION</th>
<th>ISSUE DATE</th>
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<tbody>
<tr>
<td>IEC</td>
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DATA SHEET STATUS

<table>
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<tr>
<th>DOCUMENT STATUS(1)</th>
<th>PRODUCT STATUS(2)</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective data sheet</td>
<td>Development</td>
<td>This document contains data from the objective specification for product development.</td>
</tr>
<tr>
<td>Preliminary data sheet</td>
<td>Qualification</td>
<td>This document contains data from the preliminary specification.</td>
</tr>
<tr>
<td>Product data sheet</td>
<td>Production</td>
<td>This document contains the product specification.</td>
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</tbody>
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Notes
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