Important notice

Dear Customer,

On 7 February 2017 the former NXP Standard Product business became a new company with the tradename Nexperia. Nexperia is an industry leading supplier of Discrete, Logic and PowerMOS semiconductors with its focus on the automotive, industrial, computing, consumer and wearable application markets

In data sheets and application notes which still contain NXP or Philips Semiconductors references, use the references to Nexperia, as shown below.


Instead of sales.addresses@www.nxp.com or sales.addresses@www.semiconductors.philips.com, use salesaddresses@nexperia.com (email)

Replace the copyright notice at the bottom of each page or elsewhere in the document, depending on the version, as shown below:
- © NXP N.V. (year). All rights reserved or © Koninklijke Philips Electronics N.V. (year). All rights reserved
Should be replaced with:
- © Nexperia B.V. (year). All rights reserved.

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
1. Product profile

1.1 General description


1.2 Features

- Forward current: $I_F \leq 0.2$ A
- Reverse voltage: $V_R \leq 40$ V
- Low forward voltage
- Leadless ultra small SMD plastic package
- Power dissipation comparable to SOT23

1.3 Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Low voltage rectification
- Blocking diodes
- Low power consumption applications

1.4 Quick reference data

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_F$</td>
<td>forward current</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.2</td>
<td>A</td>
</tr>
<tr>
<td>$V_R$</td>
<td>reverse voltage</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>40</td>
<td>V</td>
</tr>
</tbody>
</table>
2. Pinning information

Table 2. Pinning

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
<th>Simplified outline</th>
<th>Graphic symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>cathode</td>
<td><img src="image" alt="Simplified outline" /></td>
<td><img src="image" alt="Graphic symbol" /></td>
</tr>
<tr>
<td>2</td>
<td>anode</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[1] The marking bar indicates the cathode.

3. Ordering information

Table 3. Ordering information

<table>
<thead>
<tr>
<th>Type number</th>
<th>Package</th>
<th>Name</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMEG4002EL</td>
<td>-</td>
<td>SOD882</td>
<td>leadless ultra small plastic package; 2 terminals; body 1.0 x 0.6 x 0.5 mm</td>
<td></td>
</tr>
</tbody>
</table>

4. Marking

Table 4. Marking

<table>
<thead>
<tr>
<th>Type number</th>
<th>Marking code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMEG4002EL</td>
<td>F4</td>
</tr>
</tbody>
</table>

5. Limiting values

Table 5. 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>$V_R$</td>
<td>reverse voltage</td>
<td></td>
<td>40</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$I_F$</td>
<td>forward current</td>
<td></td>
<td>0.2</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>$I_{FRM}$</td>
<td>repetitive peak forward current</td>
<td>$t_p \leq 1$ ms; $\delta \leq 0.25$</td>
<td>1</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>$I_{FSM}$</td>
<td>non-repetitive peak forward current</td>
<td>square wave; $t_p = 8$ ms</td>
<td>3</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>$T_J$</td>
<td>junction temperature</td>
<td>$-65$</td>
<td>150</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>$T_{amb}$</td>
<td>ambient temperature</td>
<td>$-65$</td>
<td>+150</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

[1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses $P_R$ are a significant part of the total power losses. Nomograms for determining the reverse power losses $P_R$ and $I_{F(AV)}$ rating are available on request.
6. Thermal characteristics

Table 6. Thermal characteristics

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_{th(j-a)}$</td>
<td>thermal resistance from junction to ambient</td>
<td>in free air</td>
<td>[1][2] -</td>
<td>-</td>
<td>500</td>
<td>K/W</td>
</tr>
</tbody>
</table>

[1] Refer to SOD882 standard mounting conditions (footprint), FR4 Printed-Circuit Board (PCB) with 60 µm copper strip line.

[2] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses $P_R$ are a significant part of the total power losses. Nomograms for determining the reverse power losses $P_R$ and $I_{F(AV)}$ rating are available on request.

7. Characteristics

Table 7. Characteristics

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_F$</td>
<td>forward voltage</td>
<td>$I_F = 0.1$ mA</td>
<td>190</td>
<td>220</td>
<td>mV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 1$ mA</td>
<td>250</td>
<td>290</td>
<td>mV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 10$ mA</td>
<td>320</td>
<td>360</td>
<td>mV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 100$ mA</td>
<td>440</td>
<td>500</td>
<td>mV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 200$ mA</td>
<td>520</td>
<td>600</td>
<td>mV</td>
<td></td>
</tr>
<tr>
<td>$I_R$</td>
<td>reverse current</td>
<td>$V_R = 25$ V</td>
<td>0.3</td>
<td>0.5</td>
<td>µA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 40$ V</td>
<td>0.7</td>
<td>10</td>
<td>µA</td>
<td></td>
</tr>
<tr>
<td>$C_d$</td>
<td>diode capacitance</td>
<td>$V_R = 1$ V; $f = 1$ MHz</td>
<td>14</td>
<td>20</td>
<td>pF</td>
<td></td>
</tr>
</tbody>
</table>

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$. 

---

NXP Semiconductors

PMEG4002EL

40 V, 0.2 A low $V_F$ MEGA Schottky barrier rectifier

---

Product data sheet  Rev. 02 — 11 March 2009  3 of 8

© NXP B.V. 2009. All rights reserved.
Fig 1. Forward current as a function of forward voltage; typical values

Fig 2. Reverse current as a function of reverse voltage; typical values

Fig 3. Diode capacitance as a function of reverse voltage; typical values

f = 1 MHz; \( T_{\text{amb}} = 25 \, ^\circ\text{C} \)
8. Package outline

Fig 4. Package outline SOD882

9. Packing information

Table 8. Packing methods

<table>
<thead>
<tr>
<th>Type number</th>
<th>Package</th>
<th>Description</th>
<th>Packing quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMEG4002EL</td>
<td>SOD882</td>
<td>2 mm pitch, 8 mm tape and reel</td>
<td>10000</td>
</tr>
</tbody>
</table>

[1] For further information and the availability of packing methods, see Section 13.

10. Soldering

Fig 5. Reflow soldering footprint SOD882
11. Revision history

<table>
<thead>
<tr>
<th>Document ID</th>
<th>Release date</th>
<th>Data sheet status</th>
<th>Change notice</th>
<th>Supersedes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMEG4002EL_2</td>
<td>20090311</td>
<td>Product data sheet</td>
<td>-</td>
<td>PMEG4002EL_1</td>
</tr>
</tbody>
</table>

**Modifications:**
- The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.
- Legal texts have been adapted to the new company name where appropriate.
- Figure 4: superseded by minimized package outline drawing
- Section 9 “Packing Information”: added
- Section 10 “Soldering”: added
- Section 12 “Legal information”: updated
12. Legal information

12.1 Data sheet status

<table>
<thead>
<tr>
<th>Document status</th>
<th>Product status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective [short] data sheet</td>
<td>Development</td>
<td>This document contains data from the objective specification for product development.</td>
</tr>
<tr>
<td>Preliminary [short] data sheet</td>
<td>Qualification</td>
<td>This document contains data from the preliminary specification.</td>
</tr>
<tr>
<td>Product [short] data sheet</td>
<td>Production</td>
<td>This document contains the product specification.</td>
</tr>
</tbody>
</table>

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

12.2 Definitions

Draft — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

Short data sheet — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local NXP Semiconductors sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

12.3 Disclaimers

General — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Right to make changes — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. NXP Semiconductors accepts no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Limiting values — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) may cause permanent damage to the device. Limiting values are stress ratings only and operation of the device at these or any other conditions above those given in the Characteristics sections of this document is not implied. Exposure to limiting values for extended periods may affect device reliability.

Terms and conditions of sale — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at http://www.nxp.com/profile/terms, including those pertaining to warranty, intellectual property rights infringement and limitation of liability, unless explicitly otherwise agreed to in writing by NXP Semiconductors. In case of any inconsistency or conflict between information in this document and such terms and conditions, the latter will prevail.

No offer to sell or license — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

Quick reference data — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from national authorities.

12.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

13. Contact information

For more information, please visit: http://www.nxp.com

For sales office addresses, please send an email to: salesaddresses@nxp.com
14. Contents

1   Product profile ............................ 1
1.1  General description....................... 1
1.2  Features .................................. 1
1.3  Applications .............................. 1
1.4  Quick reference data...................... 1
2   Pinning information ....................... 2
3   Ordering information ...................... 2
4   Marking ................................... 2
5   Limiting values ............................ 2
6   Thermal characteristics .................... 3
7   Characteristics ............................. 3
8   Package outline ............................ 5
9   Packing information ....................... 5
10  Soldering .................................. 5
11  Revision history ............................ 6
12  Legal information ........................... 7
12.1 Data sheet status ......................... 7
12.2 Definitions ............................... 7
12.3 Disclaimers ............................... 7
12.4 Trademarks ............................... 7
13  Contact information ....................... 7
14  Contents .................................. 8