# DATA SHEET

# PRLL4001; PRLL4002
Rectifiers

Product specification
Supersedes data of 1996 Jun 10

2003 May 13

Philips
Semiconductors

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# Rectifiers PRLL4001; PRLL4002

## FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Shipped in 8 mm embossed tape
- Smallest surface mount rectifier outline.

## DESCRIPTION

Cavity free cylindrical glass package through Implotec™(1) technology.

This package is hermetically sealed and fatigue free as coefficients of expansion of all used parts are matched.

(1) Implotec is a trademark of Philips.

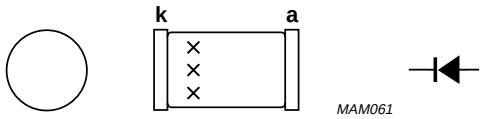



Fig.1 Simplified outline (SOD87) and symbol.

## LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $V_{RRM}$ | repetitive peak reverse voltage | | | | |
| | PRLL4001 | | – | 50 | V |
| | PRLL4002 | | – | 100 | V |
| $V_R$ | continuous reverse voltage | | | | |
| | PRLL4001 | | – | 50 | V |
| | PRLL4002 | | – | 100 | V |
| $I_{F(AV)}$ | average forward current | averaged over any 20 ms period; $T_{tp}$ = 105 °C | – | 1.60 | A |
| | | averaged over any 20 ms period; $T_{amb}$ = 65 °C; see Fig.2 | – | 0.68 | A |
| $I_{FRM}$ | repetitive peak forward current | | – | 10 | A |
| $I_{FSM}$ | non-repetitive peak forward current | half sinewave; 60 Hz | – | 20 | A |
| $T_{stg}$ | storage temperature | | –65 | +175 | °C |
| $T_j$ | junction temperature | | –65 | +175 | °C |

## ELECTRICAL CHARACTERISTICS

$T_j$ = 25 °C unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MAX. | UNIT |
|---|---|---|---|---|
| $V_F$ | forward voltage | $I_F$ = 1 A; see Fig.3 | 1.1 | V |
| $V_{F(AV)}$ | full-cycle average forward voltage | $I_{F(AV)}$ = 1 A | 0.8 | V |
| $I_R$ | reverse current | $V_R = V_{Rmax}$ | 10 | μA |
| | | $V_R = V_{Rmax}$; $T_{amb}$ = 100 °C | 50 | μA |
| $I_{R(AV)}$ | full-cycle average reverse current | $V_R = V_{RRMmax}$; $T_{amb}$ = 75 °C | 30 | μA |

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---|---|---|---|---|
| $R_{th\ j\text{-}tp}$ | thermal resistance from junction to tie-point | | 30 | K/W |
| $R_{th\ j\text{-}a}$ | thermal resistance from junction to ambient | note 1 | 150 | K/W |

**Note**

1. Device mounted on epoxy-glass printed-circuit board, 1.5 mm thick; thickness of copper ≥40 μm, see Fig.4. For more information please refer to the *"General Part of associated Handbook"*.

## GRAPHICAL DATA

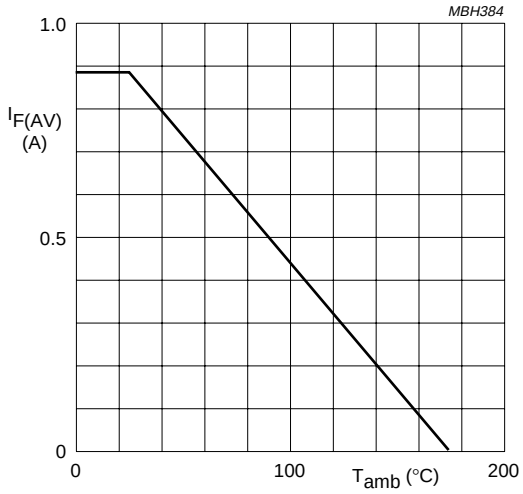
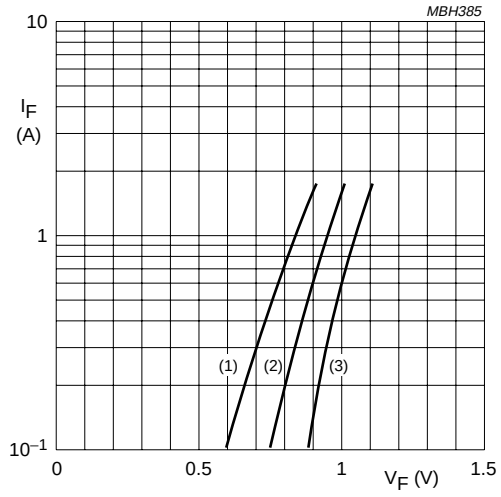
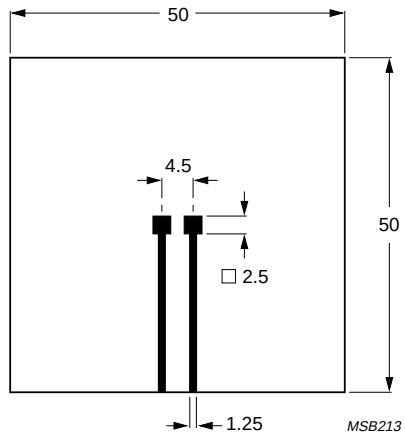



Fig.2 Maximum average forward current as a function of ambient temperature.




(1) $T_{amb}$ = 100 °C.
(2) $T_{amb}$ = 20 °C.
(3) $T_{amb}$ = –50 °C.

Fig.3 Forward current as a function of forward voltage; typical values.

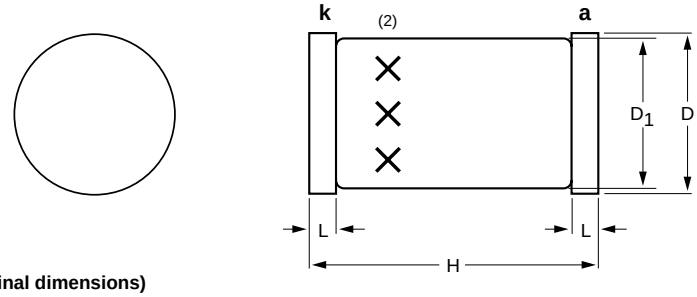



Dimensions in mm.

Fig.4 Printed-circuit board for surface mounting.

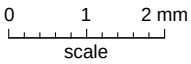
## PACKAGE OUTLINE

**Hermetically sealed glass surface mounted package; Implotec™(1) technology; 2 connectors** **SOD87**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | D | D1 | H | L |
|---|---|---|---|---|
| mm | 2.1<br>2.0 | 2.0<br>1.8 | 3.7<br>3.3 | 0.3 |




**Notes**

1. Implotec is a trademark of Philips.
2. The marking indicates the cathode.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| SOD87 | 100H03 | | | | | ~~99-03-31~~<br>99-06-04 |

**DATA SHEET STATUS**

| LEVEL | DATA SHEET STATUS(1) | PRODUCT STATUS(2)(3) | DEFINITION |
|---|---|---|---|
| I | Objective data | Development | This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice. |
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**Limiting values definition** — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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