1N4001ID to 1N4007ID
Rectifiers

Product specification
Supersedes data of April 1992

1996 Jun 10
**Rectifiers 1N4001ID to 1N4007ID**

### FEATURES
- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Available in ammo-pack.

### DESCRIPTION
Cavity free cylindrical glass package through Implotec™ technology.

(1) Implotec is a trademark of Philips.

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

![Simplified outline (SOD81) and symbol.](image)

### LIMITING VALUES
In accordance with the Absolute Maximum Rating System (IEC 134).

<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>$V_{RRM}$</td>
<td>repetitive peak reverse voltage</td>
<td>1N4001ID</td>
<td>–</td>
<td>50</td>
<td>V</td>
</tr>
<tr>
<td>$V_R$</td>
<td>continuous reverse voltage</td>
<td>1N4001ID</td>
<td>–</td>
<td>50</td>
<td>V</td>
</tr>
<tr>
<td>$I_{F(AV)}$</td>
<td>average forward current</td>
<td>averaged over any 20 ms period; $T_{amb} = 75 , ^\circ\mathrm{C}$; see Fig.2</td>
<td>–</td>
<td>1.00</td>
<td>A</td>
</tr>
<tr>
<td>$I_{FRM}$</td>
<td>repetitive peak forward current</td>
<td>–</td>
<td>10</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>$I_{FSM}$</td>
<td>non-repetitive peak forward current</td>
<td>half sinewave; 60 Hz</td>
<td>–</td>
<td>20</td>
<td>A</td>
</tr>
<tr>
<td>$T_{stg}$</td>
<td>storage temperature</td>
<td>–65</td>
<td>+175</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>$T_j$</td>
<td>junction temperature</td>
<td>–65</td>
<td>+175</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>
Philips Semiconductors

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ELECTRICAL CHARACTERISTICS

$T_j = 25 \degree C$; unless otherwise specified.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_F$</td>
<td>forward voltage</td>
<td>$I_F = 1 , A$; see see Fig.3</td>
<td>1.1</td>
<td>V</td>
</tr>
<tr>
<td>$V_{F(AV)}$</td>
<td>full-cycle average forward voltage</td>
<td>$I_{F(AV)} = 1 , A$</td>
<td>0.8</td>
<td>V</td>
</tr>
<tr>
<td>$I_R$</td>
<td>reverse current</td>
<td>$V_R = V_{Rmax}$</td>
<td>10</td>
<td>$\mu A$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = V_{Rmax}; T_{amb} = 100 \degree C$</td>
<td>50</td>
<td>$\mu A$</td>
</tr>
<tr>
<td>$I_{R(AV)}$</td>
<td>full-cycle average reverse current</td>
<td>$V_R = V_{RIMax}; T_{amb} = 75 \degree C$</td>
<td>30</td>
<td>$\mu A$</td>
</tr>
</tbody>
</table>

THERMAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_{th,j-Tp}$</td>
<td>thermal resistance from junction to tie-point</td>
<td>lead length = 10 mm</td>
<td>60</td>
<td>K/W</td>
</tr>
<tr>
<td>$R_{th,j-a}$</td>
<td>thermal resistance from junction to ambient</td>
<td>note 1</td>
<td>120</td>
<td>K/W</td>
</tr>
</tbody>
</table>

Note

1. Device mounted on epoxy-glass printed-circuit board, 1.5 mm thick; thickness of copper $\geq 40 \, \mu\text{m}$, see Fig.4.
   For more information please refer to the “General Part of associated Handbook”.
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GRAPHICAL DATA

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

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

(1) $T_{\text{amb}} = 100 \, ^\circ \text{C}$.
(2) $T_{\text{amb}} = 20 \, ^\circ \text{C}$.
(3) $T_{\text{amb}} = -50 \, ^\circ \text{C}$.

Fig.4 Device mounted on a printed-circuit board.

Dimensions in mm.
 PACKAGE OUTLINE

DEFINITIONS

Data sheet status
Objective specification: This data sheet contains target or goal specifications for product development.
Preliminary specification: This data sheet contains preliminary data; supplementary data may be published later.
Product specification: This data sheet contains final product specifications.

Limiting values
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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.

Application information
Where application information is given, it is advisory and does not form part of the specification.

LIFE SUPPORT APPLICATIONS
These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

Fig.5 SOD81.