Silicon Epitaxial Planar Diodes

Features

- Electrical data identical with the devices 1N4148 and 1N4448 respectively

Applications

Extreme fast switches

Absolute Maximum Ratings

\( T_j = 25^\circ C \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Type</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive peak reverse voltage</td>
<td></td>
<td></td>
<td>( V_{RRM} )</td>
<td>100</td>
<td>V</td>
</tr>
<tr>
<td>Reverse voltage</td>
<td></td>
<td></td>
<td>( V_R )</td>
<td>75</td>
<td>V</td>
</tr>
<tr>
<td>Peak forward surge current</td>
<td>( t_p = 1 \mu s )</td>
<td></td>
<td>( I_{FSM} )</td>
<td>2</td>
<td>A</td>
</tr>
<tr>
<td>Repetitive peak forward current</td>
<td></td>
<td></td>
<td>( I_{FRM} )</td>
<td>500</td>
<td>mA</td>
</tr>
<tr>
<td>Forward current</td>
<td></td>
<td></td>
<td>( I_F )</td>
<td>300</td>
<td>mA</td>
</tr>
<tr>
<td>Average forward current</td>
<td>( V_R=0 )</td>
<td></td>
<td>( I_{FAV} )</td>
<td>150</td>
<td>mA</td>
</tr>
<tr>
<td>Power dissipation</td>
<td></td>
<td></td>
<td>( P_V )</td>
<td>500</td>
<td>mW</td>
</tr>
<tr>
<td>Junction temperature</td>
<td></td>
<td></td>
<td>( T_J )</td>
<td>175</td>
<td>(^\circ C)</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td></td>
<td></td>
<td>( T_{Stg} )</td>
<td>–65...+175</td>
<td>(^\circ C)</td>
</tr>
</tbody>
</table>

Maximum Thermal Resistance

\( T_j = 25^\circ C \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junction ambient</td>
<td>on PC board 50mmx50mmx1.6mm</td>
<td>( R_{thJA} )</td>
<td>500</td>
<td>K/W</td>
</tr>
</tbody>
</table>
Electrical Characteristics

$T_j = 25^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Type</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward voltage</td>
<td>$I_F = 5mA$</td>
<td>LL4448</td>
<td>$V_F$</td>
<td>0.62</td>
<td>0.72</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$I_F = 50mA$</td>
<td>LL4148</td>
<td>$V_F$</td>
<td>0.86</td>
<td>1</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$I_F = 100mA$</td>
<td>LL4448</td>
<td>$V_F$</td>
<td>0.93</td>
<td>1</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Reverse current</td>
<td>$V_R = 20V$</td>
<td>$I_R$</td>
<td>25</td>
<td>nA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$V_R = 20V, T_j = 150^\circ C$</td>
<td>$I_R$</td>
<td>50</td>
<td>μA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$V_R = 75V$</td>
<td>$I_R$</td>
<td>5</td>
<td>μA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breakdown voltage</td>
<td>$I_R = 100μA, t_p/T = 0.01, t_p = 0.3ms$</td>
<td>$V_{(BR)}$</td>
<td>100</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diode capacitance</td>
<td>$V_R = 0, f = 1MHz, V_{HF} = 50mV$</td>
<td>$C_D$</td>
<td>4</td>
<td>pF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectification efficiency</td>
<td>$V_{HF} = 2V, f = 100MHz$</td>
<td>$\eta_r$</td>
<td>45</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse recovery time</td>
<td>$I_F = I_Q = 10mA, i_R = 1mA$</td>
<td>$t_{tr}$</td>
<td>8</td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$I_F = 10mA, V_R = 6V, i_R = 0.1xI_R, R_L = 100Ω$</td>
<td>$t_{tr}$</td>
<td>4</td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Characteristics  ($T_j = 25^\circ C$ unless otherwise specified)

Figure 1. Forward Current vs. Forward Voltage

Figure 2. Forward Current vs. Forward Voltage
Figure 3. Reverse Current vs. Reverse Voltage

Figure 4. Diode Capacitance vs. Reverse Voltage

Dimensions in mm

Glass case:
Mini MELF / SOD 80
JEDEC DO 213 AA
Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.

2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems
   with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design and may do so without further notice.
Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay-Telefunken products for any unintended or unauthorized application, the buyer shall indemnify Vishay-Telefunken against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0) 7131 67 2831, Fax number: 49 (0) 7131 67 2423

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