Small Signal Fast Switching Diodes

FEATURES
- Silicon epitaxial planar diode
- Electrically equivalent diodes: 1N4148 - 1N914
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS
- Extreme fast switches

MECHANICAL DATA
Case: DO-35 (DO-204AH)
Weight: approx. 105 mg
Cathode band color: black
Packaging codes / options:
TR/10K per 13" reel (52 mm tape), 50K/box
TAP/10K per ammopack (52 mm tape), 50K/box

PARTS TABLE

<table>
<thead>
<tr>
<th>PART</th>
<th>ORDERING CODE</th>
<th>TYPE MARKING</th>
<th>CIRCUIT CONFIGURATION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1N4148</td>
<td>1N4148-TAP or 1N4148TR</td>
<td>V4148</td>
<td>Single</td>
<td>Tape and reel / ammopack</td>
</tr>
</tbody>
</table>

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITION</th>
<th>SYMBOL</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive peak reverse voltage</td>
<td>V_{RRM}</td>
<td>100</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Reverse voltage</td>
<td>V_{R}</td>
<td>75</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Peak forward surge current</td>
<td>I_{FSM}</td>
<td>2</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Repetitive peak forward current</td>
<td>I_{FRM}</td>
<td>500</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Forward continuous current</td>
<td>I_{F}</td>
<td>300</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Average forward current</td>
<td>I_{F(AV)}</td>
<td>150</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Power dissipation</td>
<td>P_{tot}</td>
<td>440</td>
<td>mW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I = 4 mm, T_{L} = 45 °C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P_{tot}</td>
<td>500</td>
<td>mW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I = 4 mm, T_{L} ≤ 25 °C</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

THERMAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITION</th>
<th>SYMBOL</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal resistance junction to ambient air</td>
<td>I = 4 mm, T_{L} = constant</td>
<td>R_{thJA}</td>
<td>350</td>
<td>K/W</td>
</tr>
<tr>
<td>Junction temperature</td>
<td>T_{j}</td>
<td>175</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>T_{stg}</td>
<td>-65 to +150</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>
**ELECTRICAL CHARACTERISTICS** (T<sub>amb</sub> = 25 °C, unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITION</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&lt;sub&gt;F&lt;/sub&gt; = 10 mA</td>
<td>V&lt;sub&gt;F&lt;/sub&gt;</td>
<td>1</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Reverse current</td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 20 V</td>
<td>I&lt;sub&gt;R&lt;/sub&gt;</td>
<td>25 nA</td>
<td>50 μA</td>
<td>5 μA</td>
<td>nA, μA</td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 20 V, T&lt;sub&gt;j&lt;/sub&gt; = 150 °C</td>
<td>I&lt;sub&gt;R&lt;/sub&gt;</td>
<td>50 μA</td>
<td></td>
<td></td>
<td>μA</td>
</tr>
<tr>
<td>Breakdown voltage</td>
<td>I&lt;sub&gt;R&lt;/sub&gt; = 100 μA, t&lt;sub&gt;p&lt;/sub&gt;/T = 0.01, t&lt;sub&gt;p&lt;/sub&gt; = 0.3 ms</td>
<td>V&lt;sub&gt;(BR)&lt;/sub&gt;</td>
<td>100 V</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Diode capacitance</td>
<td>V&lt;sub&gt;HF&lt;/sub&gt; = 2 V, f = 100 MHz</td>
<td>C&lt;sub&gt;D&lt;/sub&gt;</td>
<td>4 pF</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Rectification efficiency</td>
<td>V&lt;sub&gt;HF&lt;/sub&gt; = 2 V, f = 100 MHz</td>
<td>η&lt;sub&gt;r&lt;/sub&gt;</td>
<td>45%</td>
<td></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Reverse recovery time</td>
<td>I&lt;sub&gt;F&lt;/sub&gt; = I&lt;sub&gt;R&lt;/sub&gt; = 10 mA, I&lt;sub&gt;R&lt;/sub&gt; = 1 mA</td>
<td>t&lt;sub&gt;rr&lt;/sub&gt;</td>
<td>8 ns</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;F&lt;/sub&gt; = 10 mA, V&lt;sub&gt;R&lt;/sub&gt; = 6 V, I&lt;sub&gt;R&lt;/sub&gt; = 0.1 x I&lt;sub&gt;R&lt;/sub&gt;, R&lt;sub&gt;L&lt;/sub&gt; = 100 Ω</td>
<td>t&lt;sub&gt;rr&lt;/sub&gt;</td>
<td>4 ns</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>

**TYPICAL CHARACTERISTICS** (T<sub>amb</sub> = 25 °C, unless otherwise specified)

![Fig. 1 - Forward Voltage vs. Junction Temperature](image1)

![Fig. 2 - Forward Current vs. Forward Voltage](image2)

![Fig. 3 - Reverse Current vs. Reverse Voltage](image3)
PACKAGE DIMENSIONS in millimeters (inches): **DO-35 (DO-204AH)**

![Diode Package Dimensions Diagram]

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