Small Signal Fast Switching Diodes

MECHANICAL DATA

Case: DO-35
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

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

PARTS TABLE

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

ABSOLUTE MAXIMUM RATINGS (Tamb = 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></td>
<td>VRRM</td>
<td>100</td>
<td>V</td>
</tr>
<tr>
<td>Reverse voltage</td>
<td></td>
<td>VR</td>
<td>75</td>
<td>V</td>
</tr>
<tr>
<td>Peak forward surge current</td>
<td>t_p = 1 μs</td>
<td>ISM</td>
<td>2</td>
<td>A</td>
</tr>
<tr>
<td>Repetitive peak forward current</td>
<td></td>
<td>IFRM</td>
<td>500</td>
<td>mA</td>
</tr>
<tr>
<td>Forward continuous current</td>
<td></td>
<td>IF</td>
<td>300</td>
<td>mA</td>
</tr>
<tr>
<td>Average forward current</td>
<td>VR = 0</td>
<td>IF(AV)</td>
<td>150</td>
<td>mA</td>
</tr>
<tr>
<td>Power dissipation</td>
<td>I = 4 mm, TL = 45 °C</td>
<td>Ptot</td>
<td>440</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td>I = 4 mm, TL ≤ 25 °C</td>
<td>Ptot</td>
<td>500</td>
<td>mW</td>
</tr>
</tbody>
</table>

THERMAL CHARACTERISTICS (Tamb = 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, TL = constant</td>
<td>RthJA</td>
<td>350</td>
<td>K/W</td>
</tr>
<tr>
<td>Junction temperature</td>
<td></td>
<td>TJ</td>
<td>175</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td></td>
<td>Tstg</td>
<td>- 65 to + 150</td>
<td>°C</td>
</tr>
</tbody>
</table>
**ELECTRICAL CHARACTERISTICS** (\(T_{\text{amb}} = 25 \, ^\circ\text{C}\), 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_F = 10 , mA)</td>
<td>(V_F)</td>
<td>1 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse current</td>
<td>(I_R) (V_R = 20 , V)</td>
<td>(I_R)</td>
<td>25 nA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(V_R = 20 , V, T_J = 150 , ^\circ\text{C})</td>
<td>(I_R)</td>
<td>50 (\mu)A</td>
<td></td>
<td></td>
<td>(\mu)A</td>
</tr>
<tr>
<td>Breakdown voltage</td>
<td>(I_R = 100 , \mu)A, (t_p/T = 0.01, t_p = 0.3 , \text{ms})</td>
<td>(V_{(BR)})</td>
<td>100 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diode capacitance</td>
<td>(V_{RF} = 0 , V, f = 1 , \text{MHz}, V_{HF} = 50 , \text{mV})</td>
<td>(C_D)</td>
<td>4 pF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectification effiency</td>
<td>(V_{HF} = 2 , V, f = 100 , \text{MHz})</td>
<td>(n_r)</td>
<td>45 %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse recovery time</td>
<td>(I_F = I_R = 10 , mA, I_R = 1 , mA)</td>
<td>(t_{rr})</td>
<td>8 ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(I_F = 10 , mA, V_R = 6 , V, I_R = 0.1 \times , I_F, R_L = 100 , \Omega)</td>
<td>(t_{rr})</td>
<td>4 ns</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TYPICAL CHARACTERISTICS** (\(T_{\text{amb}} = 25 \, ^\circ\text{C}\), 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_02**

- Cathode identification

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1N4148-TAP  1N4148TR