Small Signal Schottky Diode

FEATURES
- For general purpose applications
- This diode features very low turn-on voltage and fast switching. This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges
- This diode is also available in the SOD-123 case with type designation BAT46W-V and in the MiniMELF case with type designations LL46
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

MECHANICAL DATA
Case: DO-35 (DO-204AH)  
Weight: approx. 125 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>CIRCUIT CONFIGURATION</th>
<th>TYPE MARKING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT46</td>
<td>BAT46-TR or BAT46-TAP</td>
<td>Single</td>
<td>BAT46</td>
<td>Tape and reel/ammopack</td>
</tr>
</tbody>
</table>

ABSOLUTE MAXIMUM RATINGS \((T_{amb} = 25 \, ^{\circ}C, \text{unless otherwise specified})\)

<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>(V_{RRM})</td>
<td>100</td>
<td>V</td>
</tr>
<tr>
<td>Forward continuous current (^{(1)})</td>
<td>(t_c &lt; 1, s, \delta &lt; 0.5)</td>
<td>(I_F)</td>
<td>150</td>
<td>mA</td>
</tr>
<tr>
<td>Repetitive peak forward current (^{(1)})</td>
<td>(t_p &lt; 10, ms)</td>
<td>(I_{F,RM})</td>
<td>350</td>
<td>mA</td>
</tr>
<tr>
<td>Surge forward current (^{(1)})</td>
<td></td>
<td>(I_{FSM})</td>
<td>750</td>
<td>mA</td>
</tr>
<tr>
<td>Power dissipation (^{(1)})</td>
<td>(T_{amb} = 80, ^{\circ}C)</td>
<td>(P_{tot})</td>
<td>150</td>
<td>mW</td>
</tr>
</tbody>
</table>

Note
\(^{(1)}\) Valid provided that electrodes are kept at ambient temperature

THERMAL CHARACTERISTICS \((T_{amb} = 25 \, ^{\circ}C, \text{unless otherwise specified})\)

<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></td>
<td>(R_{h,JA})</td>
<td>300</td>
<td>K/W</td>
</tr>
<tr>
<td>Junction temperature</td>
<td></td>
<td>(T_j)</td>
<td>125</td>
<td>°C</td>
</tr>
<tr>
<td>Ambient operating temperature range</td>
<td></td>
<td>(T_{amb})</td>
<td>-65 to +125</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td></td>
<td>(T_{stg})</td>
<td>-65 to +150</td>
<td>°C</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>Reverse breakdown voltage</td>
<td>I&lt;sub&gt;r&lt;/sub&gt; = 100 μA (pulsed)</td>
<td>V&lt;sub&gt;BRQ&lt;/sub&gt;</td>
<td>100</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 1.5 V</td>
<td>I&lt;sub&gt;r&lt;/sub&gt;</td>
<td>0.5</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 1.5 V, T&lt;sub&gt;j&lt;/sub&gt; = 60 °C</td>
<td>I&lt;sub&gt;r&lt;/sub&gt;</td>
<td>5</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 10 V</td>
<td>I&lt;sub&gt;r&lt;/sub&gt;</td>
<td>0.8</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 10 V, T&lt;sub&gt;j&lt;/sub&gt; = 60 °C</td>
<td>I&lt;sub&gt;r&lt;/sub&gt;</td>
<td>7.5</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 50 V</td>
<td>I&lt;sub&gt;r&lt;/sub&gt;</td>
<td>2</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 50 V, T&lt;sub&gt;j&lt;/sub&gt; = 60 °C</td>
<td>I&lt;sub&gt;r&lt;/sub&gt;</td>
<td>15</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 75 V</td>
<td>I&lt;sub&gt;r&lt;/sub&gt;</td>
<td>5</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 75 V, T&lt;sub&gt;j&lt;/sub&gt; = 60 °C</td>
<td>I&lt;sub&gt;r&lt;/sub&gt;</td>
<td>20</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leakage current (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VR = 1.5 V</td>
<td>IR</td>
<td>0.5</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VR = 1.5 V, T&lt;sub&gt;j&lt;/sub&gt; = 60 °C</td>
<td>IR</td>
<td>0.8</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VR = 10 V</td>
<td>IR</td>
<td>7.5</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VR = 10 V, T&lt;sub&gt;j&lt;/sub&gt; = 60 °C</td>
<td>IR</td>
<td>2</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VR = 50 V</td>
<td>IR</td>
<td>15</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VR = 50 V, T&lt;sub&gt;j&lt;/sub&gt; = 60 °C</td>
<td>IR</td>
<td>5</td>
<td>μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward voltage (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IF = 0.1 mA</td>
<td>VF</td>
<td>250</td>
<td>mV</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IF = 10 mA</td>
<td>VF</td>
<td>450</td>
<td>mV</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IF = 250 mA</td>
<td>VF</td>
<td>1000</td>
<td>mV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diode capacitance</td>
<td>VR = 0 V, f = 1 MHz</td>
<td>CD</td>
<td>10</td>
<td>pF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VR = 1 V, f = 1 MHz</td>
<td>CD</td>
<td>6</td>
<td>pF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note
(1) Pulse test; t<sub>p</sub> ≤ 300 μs, , δ < 2 %

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

![Fig. 1 - Typical Instantaneous Forward Characteristics](image1)
![Fig. 2 - Typical Reverse Characteristics](image2)
![Fig. 3 - Admissible Power Dissipation vs. Ambient Temperature](image3)
PACKAGE DIMENSIONS in millimeters (inches): **DO-35 (DO-204AH)**

![Diagram of the package dimensions with annotations for cathode identification and key dimensions.]

- **Cathode Identification**
- 26 min. [0.102]
- 3.9 max. [0.154]
- 26 min. [0.102]
- 3.1 min. [0.120]
- Ø 0.4 min. [0.015]
- Ø 0.6 max. [0.024]
- 1.7 [0.067]

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