RB168MM150TF
Schottky Barrier Diode

(AEC-Q101 qualified) Data sheet

● Outline

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_R$</td>
<td>150 V</td>
</tr>
<tr>
<td>$I_o$</td>
<td>1 A</td>
</tr>
<tr>
<td>$I_{FSM}$</td>
<td>35 A</td>
</tr>
</tbody>
</table>

● Features

- High reliability
- Small power mold type
- Super low $I_R$

● Application

General rectification

● Structure

Silicon epitaxial planar

● Absolute Maximum Ratings ($T_c=25^\circ C$ unless otherwise specified)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Limits</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive peak reverse voltage</td>
<td>$V_{RM}$</td>
<td>Duty $\leq 0.5$</td>
<td>150 V</td>
<td></td>
</tr>
<tr>
<td>Reverse voltage</td>
<td>$V_R$</td>
<td>Reverse direct voltage</td>
<td>150 V</td>
<td></td>
</tr>
<tr>
<td>Average rectified forward current</td>
<td>$I_o$</td>
<td>Glass epoxy mounted, 60Hz half sin waveform, resistive load, $T_c=110^\circ C$ Max.</td>
<td>1 A</td>
<td></td>
</tr>
<tr>
<td>Peak forward surge current</td>
<td>$I_{FSM}$</td>
<td>60Hz half sin waveform, Non-repetitive, one cycle, $T_a=25^\circ C$</td>
<td>35 A</td>
<td></td>
</tr>
<tr>
<td>Junction temperature</td>
<td>$T_j$</td>
<td>-</td>
<td>150 $^\circ C$</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>$T_{stg}$</td>
<td>-</td>
<td>-55 $^\circ C$ to 150 $^\circ C$</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward voltage</td>
<td>$V_F$</td>
<td>$I_F=1A$</td>
<td>0.76</td>
<td>0.84</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Reverse current</td>
<td>$I_R$</td>
<td>$V_F=150V$</td>
<td>0.11</td>
<td>4</td>
<td></td>
<td>$\mu A$</td>
</tr>
</tbody>
</table>

Attention

Compared with PN junction diodes, Schottky Barrier Diode is generally high reverse current (IR). The reverse loss of the diode might increase as temperature increasing that causes heat-up and further IR. This phenomenon might end up the thermal destruction (thermal runaway). Therefore please give consideration to the reverse loss and the ambient temperature when using this product.
● Characteristic Curves

- Forward Current vs. Forward Voltage
- Reverse Current vs. Reverse Voltage
- Capacitance Between Terminals vs. Reverse Voltage
- Reverse Recovery Time vs. Reverse Voltage

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● Characteristic Curves

[Graphs showing characteristic curves for RB168MM150TF]
● Characteristic Curves

### Forward Power Dissipation

- **FORWARD POWER DISSIPATION: \( P_i \) (W)**
  - Axis: \( I_{av} = P_i \) CHARACTERISTICS
  - Graphs show \( T = 150\,^\circ C \)
  - \( D = 1/2 \)
  - \( \sin(\theta = 180) \)
  - \( DC \)

### Reverse Power Dissipation

- **REVERSE POWER DISSIPATION: \( P_o \) (mW)**
  - Axis: \( V_o = P_o \) CHARACTERISTICS
  - Graphs show \( T = 150\,^\circ C \)
  - \( D = 1/2 \)
  - \( \sin(\theta = 180) \)
  - \( DC \)

### Average Rectified Forward Current

- **AVERAGE RECTIFIED FORWARD CURRENT: \( I_{av} \) (A)**
  - Graphs show \( I_{av} = I_0 \)
  - \( D = 1/2 \)
  - \( \sin(\theta = 180) \)
  - \( DC \)

### Derating Curves

- **DERATING CURVE: \( I_{av}, T_o \) (A)**
  - **AMBIENT TEMPERATURE: \( T_o \) \((^\circ C)\)**
  - Graphs show \( D = 1/2 \)
  - \( \sin(\theta = 180) \)

- **CASE TEMPERATURE: \( T_c \) \((^\circ C)\)**
  - Graphs show \( D = 1/2 \)
  - \( \sin(\theta = 180) \)
**Dimensions**

![Diagram of SOD-123FL, SC-109B, (FMDU)]

<table>
<thead>
<tr>
<th>DIM</th>
<th>Min</th>
<th>Average</th>
<th>Max</th>
<th>Min</th>
<th>Average</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.70</td>
<td>0.80</td>
<td>0.90</td>
<td>0.028</td>
<td>0.031</td>
<td>0.035</td>
</tr>
<tr>
<td>b</td>
<td>0.80</td>
<td>0.90</td>
<td>1.00</td>
<td>0.031</td>
<td>0.035</td>
<td>0.039</td>
</tr>
<tr>
<td>c</td>
<td>0.05</td>
<td>0.10</td>
<td>0.20</td>
<td>0.002</td>
<td>0.004</td>
<td>0.008</td>
</tr>
<tr>
<td>D</td>
<td>1.50</td>
<td>1.60</td>
<td>1.70</td>
<td>0.059</td>
<td>0.063</td>
<td>0.067</td>
</tr>
<tr>
<td>E</td>
<td>2.50</td>
<td>2.60</td>
<td>2.70</td>
<td>0.098</td>
<td>0.102</td>
<td>0.106</td>
</tr>
<tr>
<td>Hc</td>
<td>3.38</td>
<td>3.50</td>
<td>3.62</td>
<td>0.133</td>
<td>0.138</td>
<td>0.143</td>
</tr>
<tr>
<td>I1</td>
<td>-</td>
<td>0.85</td>
<td>-</td>
<td>0.033</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>b3</td>
<td>-</td>
<td>1.20</td>
<td>-</td>
<td>-</td>
<td>0.047</td>
<td>-</td>
</tr>
<tr>
<td>e1</td>
<td>-</td>
<td>3.05</td>
<td>-</td>
<td>-</td>
<td>0.120</td>
<td>-</td>
</tr>
</tbody>
</table>

(1) The marking bar indicates the cathode.
(2) The direction indicates the anode.

**Taping (Unit:mm)**

![Diagram of taping specifications]
Notice

Precaution on using ROHM Products

1. If you intend to use our Products in devices requiring extremely high reliability (such as medical equipment (Note 1), aircraft/spacecraft, nuclear power controllers, etc.) and whose malfunction or failure may cause loss of human life, bodily injury or serious damage to property (“Specific Applications”), please consult with the ROHM sales representative in advance. Unless otherwise agreed in writing by ROHM in advance, ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties arising from the use of any ROHM’s Products for Specific Applications.

(Note 1) Medical Equipment Classification of the Specific Applications

<table>
<thead>
<tr>
<th>JAPAN</th>
<th>USA</th>
<th>EU</th>
<th>CHINA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS III</td>
<td>CLASS III</td>
<td>CLASS II b</td>
<td>CLASS III</td>
</tr>
</tbody>
</table>

2. ROHM designs and manufactures its Products subject to strict quality control system. However, semiconductor products can fail or malfunction at a certain rate. Please be sure to implement, at your own responsibilities, adequate safety measures including but not limited to fail-safe design against the physical injury, damage to any property, which a failure or malfunction of our Products may cause. The following are examples of safety measures:

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[b] Installation of redundant circuits to reduce the impact of single or multiple circuit failure

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[b] Use of our Products outdoors or in places where the Products are exposed to direct sunlight or dust

[c] Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl2, H2S, NH3, SO2, and NO2

[d] Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves

[e] Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items

[f] Sealing or coating our Products with resin or other coating materials

[g] Use of our Products without cleaning residue of flux (Exclude cases where no-clean type fluxes is used. However, recommend sufficiently about the residue.); or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering

[h] Use of the Products in places subject to dew condensation

4. The Products are not subject to radiation-proof design.

5. Please verify and confirm characteristics of the final or mounted products in using the Products.

6. In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse, is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

7. De-rate Power Dissipation depending on ambient temperature. When used in sealed area, confirm that it is the use in the range that does not exceed the maximum junction temperature.

8. Confirm that operation temperature is within the specified range described in the product specification.

9. ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

Precaution for Mounting / Circuit board design

1. When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.

2. In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

For details, please refer to ROHM Mounting specification
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Precaution for Electrostatic
This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of ionizer, friction prevention and temperature / humidity control).

Precaution for Storage / Transportation
1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
   [a] the Products are exposed to sea winds or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
   [b] the temperature or humidity exceeds those recommended by ROHM
   [c] the Products are exposed to direct sunshine or condensation
   [d] the Products are exposed to high Electrostatic

2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.

3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.

4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

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