RB160L-40
Schottky Barrier Diode

Data sheet

Specifications

Outline

<table>
<thead>
<tr>
<th>Package Code</th>
<th>DO-214AC(BMA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JEITA Code</td>
<td>-</td>
</tr>
<tr>
<td>ROHM Code</td>
<td>PMDS</td>
</tr>
</tbody>
</table>

Features

- High reliability
- Small power mold type
- Low $V_F$

Application

- General rectification

Structure

- Silicon epitaxial planar

Absolute Maximum Ratings ($T_a=25^\circ C$ 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>40</td>
<td>V</td>
</tr>
<tr>
<td>Reverse voltage</td>
<td>$V_R$</td>
<td>Reverse direct voltage</td>
<td>40</td>
<td>V</td>
</tr>
<tr>
<td>Average rectified forward current</td>
<td>$I_0$</td>
<td>Glass epoxy mounted, 60Hz half sin waveform, resistive load</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>Forward direct current</td>
<td>$I_F$</td>
<td></td>
<td>1</td>
<td>A</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>70</td>
<td>A</td>
</tr>
<tr>
<td>Junction temperature ($T_a=25^\circ C$)</td>
<td>$T_j$</td>
<td></td>
<td>-</td>
<td>150</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>$T_{stg}$</td>
<td></td>
<td>-</td>
<td>-40 ~ 150</td>
</tr>
</tbody>
</table>

Note(1) To avoid occurrence of thermal runaway, actual board is to be designed to fulfill $dP/dT_j < 1/R_{th(j-a)}$.

Characteristics ($T_a=25^\circ C$ 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>-</td>
<td>-</td>
<td>0.55</td>
<td>V</td>
</tr>
<tr>
<td>Reverse current</td>
<td>$I_{R1}$</td>
<td>$V_R=6V$</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>μA</td>
</tr>
<tr>
<td></td>
<td>$I_{R2}$</td>
<td>$V_R=40V$</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>μA</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.

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● Characteristic Curves

**FORWARD CURRENT (I, A)**

- $T = 160°C$
- $T = 125°C$
- $T = 75°C$
- $T = 25°C$
- $T = 25°C$

**FORWARD VOLTAGE (V_f, mV)**

- $V_f - I_f$ CHARACTERISTICS

**REVERSE CURRENT (I_r, μA)**

- $T = 150°C$
- $T = 125°C$
- $T = 75°C$
- $T = 25°C$
- $T = 25°C$

**REVERSE VOLTAGE (V_r, V)**

- $V_r - I_r$ CHARACTERISTICS

**CAPACITANCE BETWEEN TERMINALS (C, pF)**

- $f = 1 MHz$
- $T = 25°C$

- $V_r - C_r$ CHARACTERISTICS

**REVERSE RECOVERY TIME (t_r, ns)**

- $T = 25°C$
- $I_r = 1 A$
- $I_s = 0.1 A$
- $I_w = 0.1 A$
- $n = 10 pcs$

**t_r DISPERSION MAP**

Ave.: 11.8 ns

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2019/05/28_Rev002
● Characteristic Curves

![Graph 1: Peak Surge Forward Current vs. Number of Cycles](image1)

![Graph 2: Peak Surge Forward Current vs. Time](image2)

![Graph 3: Transient Thermal Impedance vs. Time](image3)

Substrate conditions:
- Material: Glass epoxy substrate (FR4)
- Size: 20mm x 20mm x 0.8mm
- Both sides are all covered with copper (35um thickness)
● Characteristic Curves

- Forward Power Dissipation vs. Average Rectified Forward Current
- Reverse Power Dissipation vs. Reverse Voltage
- Average Rectified Current vs. Ambient Temperature
- Average Rectified Current vs. Case Temperature
● Dimensions

![Diagram of DO-214AC(SMA) (PMDS)]

<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>1.80</td>
<td>2.00</td>
<td>2.20</td>
<td>0.071</td>
<td>0.079</td>
<td>0.087</td>
</tr>
<tr>
<td>b</td>
<td>1.30</td>
<td>1.50</td>
<td>1.70</td>
<td>0.051</td>
<td>0.059</td>
<td>0.067</td>
</tr>
<tr>
<td>D</td>
<td>2.40</td>
<td>2.60</td>
<td>2.80</td>
<td>0.094</td>
<td>0.102</td>
<td>0.110</td>
</tr>
<tr>
<td>E</td>
<td>4.30</td>
<td>4.50</td>
<td>4.70</td>
<td>0.169</td>
<td>0.177</td>
<td>0.185</td>
</tr>
<tr>
<td>H_e</td>
<td>4.70</td>
<td>5.00</td>
<td>5.30</td>
<td>0.185</td>
<td>0.197</td>
<td>0.209</td>
</tr>
<tr>
<td>L_e</td>
<td>0.90</td>
<td>1.20</td>
<td>1.50</td>
<td>0.035</td>
<td>0.047</td>
<td>0.059</td>
</tr>
<tr>
<td>l1</td>
<td>-</td>
<td>2.00</td>
<td>-</td>
<td>-</td>
<td>0.079</td>
<td>-</td>
</tr>
<tr>
<td>b3</td>
<td>-</td>
<td>2.00</td>
<td>-</td>
<td>-</td>
<td>0.079</td>
<td>-</td>
</tr>
<tr>
<td>e1</td>
<td>-</td>
<td>4.20</td>
<td>-</td>
<td>-</td>
<td>0.165</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](

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(Note1) Medical Equipment Classification of the Specific Applications

<table>
<thead>
<tr>
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<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>

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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.

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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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   - [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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