Schottky Barrier Diode
RB531ES-30

**Application**
General rectification

**Features**
1) Small silicon package (SMD0603)
2) High Accuracy Manufacturing Dimension tolerance: ±10μm
3) Low $V_F$

**Construction**
Silicon epitaxial planar type

**Absolute Maximum Ratings** ($T_c = 25°C$)

<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>30</td>
<td>V</td>
</tr>
<tr>
<td>Reverse voltage</td>
<td>$V_R$</td>
<td>Direct reverse voltage</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>Average forward rectified current</td>
<td>$I_o$</td>
<td>Glass epoxy board mounted, 60Hz half sin wave, resistive load</td>
<td>100</td>
<td>mA</td>
</tr>
<tr>
<td>Non-repetitive forward current surge peak</td>
<td>$I_{FSM}$</td>
<td>60Hz half sin wave, one cycle, non-repetitive at $T_a = 25°C$</td>
<td>500</td>
<td>mA</td>
</tr>
<tr>
<td>Operating junction temperature</td>
<td>$T_j$</td>
<td>-</td>
<td>150</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>$T_{stg}$</td>
<td>-</td>
<td>-40 to +150</td>
<td>°C</td>
</tr>
</tbody>
</table>

**Electrical Characteristics** ($T_j = 25°C$)

<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>$V_{F1}$</td>
<td>$I_f=10mA$</td>
<td>-</td>
<td>270</td>
<td>300</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>$V_{F2}$</td>
<td>$I_f=100mA$</td>
<td>-</td>
<td>420</td>
<td>500</td>
<td>mV</td>
</tr>
<tr>
<td>Reverse current</td>
<td>$I_{R1}$</td>
<td>$V_R=10V$</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>μA</td>
</tr>
<tr>
<td></td>
<td>$I_{R2}$</td>
<td>$V_R=30V$</td>
<td>-</td>
<td>-</td>
<td>50</td>
<td>μA</td>
</tr>
</tbody>
</table>
**Electrical Characteristic Curves**

- **Forward Current**: $I_F (mA)$
- **Forward Voltage**: $V_F (mV)$
- **Reverse Current**: $I_R (\mu A)$
- **Reverse Voltage**: $V_R (V)$
- **Capacitance Between Terminals**: $C_t (pF)$

**Forward Voltage - Forward Current Characteristics**

- $V_F - I_F$ Characteristics

**Reverse Voltage - Reverse Current Characteristics**

- $V_R - I_R$ Characteristics

**Capacitance Between Terminals - Reverse Voltage Characteristics**

- $V_R - C_t$ Characteristics

**Forward Voltage Dispersion Map**

- $V_F$ Dispersion Map

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**Notes**

- Not Recommended for New Designs
- $T_J = 25^\circ C$
- $I_F = 10 mA$
- $n = 30$ pcs
- $f = 1 MHz$

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Electrical Characteristic Curves

- Reverse Current: $I_R$ (μA)
  - Average: 9.0μA
  - Temperature: $T=25^\circ C$
  - Voltage: $V_R=30V$
  - Sample Size: $n=30$pcs

- Capacitance Between Terminals: $C_t$ (pF)
  - Average: 12pF
  - Temperature: $T=25^\circ C$
  - Frequency: $f=1$MHz
  - Voltage: $V_R=0V$
  - Sample Size: $n=10$pcs

- Peak Surge Forward Current: $I_{FSM}$ (A)
  - Average: 6.4A
  - Temperature: $T=25^\circ C$

- Reverse Recovery Time: $t_{rr}$ (ns)
  - Average: 5.6ns
  - Temperature: $T=25^\circ C$
  - Current: $I_F=0.1A$
  - $I_R=0.1A$
  - $I_{rr} / I_R=0.1$
  - Sample Size: $n=10$pcs

Not Recommended for New Designs
● Electrical Characteristic Curves

- **Forward Power Dissipation:** $P_F (mW)$
  - Averaged Rectified Forward Current: $I_o (A)$
  - $I_o - P_F$ Characteristics

- **Reverse Power Dissipation:** $P_R (W)$
  - $D = 1/2$
  - $\sin(\theta = 180)$
  - $T_j = 150°C$

- **Reverse Voltage:** $V_R (V)$
  - $V_R - P_R$ Characteristics

Not Recommended for New Designs

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

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[g] Use of our Products without cleaning residue of flux (even if you use no-clean type fluxes, cleaning residue of flux is recommended), 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

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

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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.

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   - the Products are exposed to direct sunshine or condensation
   - the Products are exposed to high Electrostatic

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