DATA SHEET

BYG90-90
Schottky barrier rectifier diode

Product specification
Supersedes data of December 1994
File under Discrete Semiconductors, SC01

1996 May 13
Schottky barrier rectifier diode

BYG90-90

FEATURES

- Low switching losses
- High breakdown voltage
- Capability of absorbing very high surge current
- Fast recovery time
- Guard ring protected
- Plastic SMD package.

APPLICATIONS

- Low power switched-mode power supplies
- Rectifying
- Polarity protection.

DESCRIPTION

The BYG 90-90 is a Schottky barrier rectifier diode, fabricated in planar technology, and encapsulated in the rectangular SOD106A plastic SMD package.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>MIN.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_R</td>
<td>continuous reverse voltage</td>
<td></td>
<td>90</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>V_RRM</td>
<td>repetitive peak reverse voltage</td>
<td></td>
<td>90</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>V_RWM</td>
<td>crest working reverse voltage</td>
<td></td>
<td>90</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>I_F(AV)</td>
<td>average forward current</td>
<td>T_amb = 100 °C; see Fig.2; R_{thj-a} = 13.5 K/W; note 1; V_{R(equiv)} = 0.2 V; note 2</td>
<td>–</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>I_FSM</td>
<td>non-repetitive peak forward current</td>
<td>t = 8.3 ms half sine wave; JEDEC method</td>
<td>–</td>
<td>30</td>
<td>A</td>
</tr>
<tr>
<td>I_RSM</td>
<td>non-repetitive peak reverse current</td>
<td>t_p = 100 µs</td>
<td>–</td>
<td>0.5</td>
<td>A</td>
</tr>
<tr>
<td>T_stg</td>
<td>storage temperature</td>
<td>–</td>
<td>−65</td>
<td>+150</td>
<td>°C</td>
</tr>
<tr>
<td>T_J</td>
<td>junction temperature</td>
<td>–</td>
<td>−150</td>
<td>+150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Notes

1. Refer to SOD106A standard mounting conditions.
2. For Schottky barrier diodes thermal run-away has to be considered, as in some applications, the reverse power losses P_R are a significant part of the total power losses. Nomograms for determination of the reverse power losses P_R and I_F(AV) rating will be available on request.
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ELECTRICAL CHARACTERISTICS

$T_{\text{amb}} = 25 \, ^\circ\text{C}$; unless otherwise specified.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_F$</td>
<td>forward voltage</td>
<td>see Fig.2; note 1</td>
<td>–</td>
<td>–</td>
<td>360</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 0.06 , \text{A}$</td>
<td>–</td>
<td>–</td>
<td>790</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 1 , \text{A}$</td>
<td>–</td>
<td>–</td>
<td>690</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 1 , \text{A}; T_j = 100 , ^\circ\text{C}$</td>
<td>–</td>
<td>–</td>
<td>690</td>
<td>mV</td>
</tr>
<tr>
<td>$I_R$</td>
<td>reverse current</td>
<td>$V_R = V_{\text{RRMmax}}$; note 1; see Fig.3</td>
<td>–</td>
<td>–</td>
<td>0.5</td>
<td>mA</td>
</tr>
<tr>
<td>$C_d$</td>
<td>diode capacitance</td>
<td>$V_R = 4 , \text{V}; f = 1 , \text{MHz}$; see Fig.4</td>
<td>–</td>
<td>–</td>
<td>100</td>
<td>pF</td>
</tr>
</tbody>
</table>

Note

1. Pulsed test: $t_p = 300 \, \mu\text{s}; \delta = 0.02$.

THERMAL CHARACTERISTICS

<table>
<thead>
<tr>
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<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_{\text{thj-a}}$</td>
<td>thermal resistance from junction to ambient</td>
<td>note 1</td>
<td>80</td>
<td>K/W</td>
</tr>
</tbody>
</table>

Note

1. Refer to SOD106A standard mounting conditions.
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Graphical Data

**Fig. 2** Forward current as a function of forward voltage; typical values.

1. $T_{\text{amb}} = 150 ^\circ C.$
2. $T_{\text{amb}} = 125 ^\circ C.$
3. $T_{\text{amb}} = 100 ^\circ C.$
4. $T_{\text{amb}} = 85 ^\circ C.$
5. $T_{\text{amb}} = 25 ^\circ C.$

**Fig. 3** Reverse current as a function of reverse voltage; typical values.

1. $T_{\text{amb}} = 150 ^\circ C.$
2. $T_{\text{amb}} = 125 ^\circ C.$
3. $T_{\text{amb}} = 100 ^\circ C.$
4. $T_{\text{amb}} = 85 ^\circ C.$
5. $T_{\text{amb}} = 25 ^\circ C.$

**Fig. 4** Diode capacitance as a function of reverse voltage; typical values.

$f = 1 \text{ MHz}.$
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PACKAGE OUTLINE

Dimensions in mm.
The marking bar indicates the cathode.

Fig. 5 SOD106A.
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DEFINITIONS

Data sheet status

<table>
<thead>
<tr>
<th>Objective specification</th>
<th>This data sheet contains target or goal specifications for product development.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary specification</td>
<td>This data sheet contains preliminary data; supplementary data may be published later.</td>
</tr>
<tr>
<td>Product specification</td>
<td>This data sheet contains final product specifications.</td>
</tr>
</tbody>
</table>

Limiting values

Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

Application information

Where application information is given, it is advisory and does not form part of the specification.

LIFE SUPPORT APPLICATIONS

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