BBY40
VHF variable capacitance diode
VHF variable capacitance diode

FEATURES
- Excellent linearity
- Small plastic SMD package
- C25: 4.6 pF; ratio: 5.5.

APPLICATIONS
- Electronic tuning in VHF television tuners, band A up to 160 MHz.

DESCRIPTION
The BBY40 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the SOT23 small 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>CONDITION</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_R</td>
<td>continuous reverse voltage</td>
<td>V_R = 28 V; see Fig.3</td>
<td>–</td>
<td>–</td>
<td>10</td>
<td>nA</td>
</tr>
<tr>
<td>I_F</td>
<td>continuous forward current</td>
<td>V_R = 28 V; T_j = 85 °C; see Fig.3</td>
<td>–</td>
<td>–</td>
<td>200</td>
<td>mA</td>
</tr>
<tr>
<td>T_stg</td>
<td>storage temperature</td>
<td>f = 200 MHz; note 1</td>
<td>–</td>
<td>–</td>
<td>0.7</td>
<td>Ω</td>
</tr>
<tr>
<td>T_j</td>
<td>operating junction temperature</td>
<td>–55</td>
<td>+125</td>
<td>°C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ELECTRICAL CHARACTERISTICS
T_j = 25 °C; unless otherwise specified.

<table>
<thead>
<tr>
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<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>I_R</td>
<td>reverse current</td>
<td>V_R = 3 V; f = 1 MHz; see Figs 2 and 4</td>
<td>26</td>
<td>–</td>
<td>32</td>
<td>pF</td>
</tr>
<tr>
<td>r_s</td>
<td>diode series resistance</td>
<td>V_R = 25 V; f = 1 MHz; see Figs 2 and 4</td>
<td>4.3</td>
<td>–</td>
<td>6</td>
<td>pF</td>
</tr>
<tr>
<td>C_d</td>
<td>diode capacitance</td>
<td>f = 1 MHz</td>
<td>5</td>
<td>–</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>C_d(3V) / C_d(25V)</td>
<td>capacitance ratio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note
1. V_R is the value at which C_d = 25 pF.
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GRAPHICAL DATA

Fig. 2  Diode capacitance as a function of reverse voltage; typical values.

Fig. 3  Reverse current as a function of junction temperature; maximum values.

Fig. 4  Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.
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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23

DIMENSIONS (mm are the original dimensions)

<table>
<thead>
<tr>
<th>UNIT</th>
<th>A</th>
<th>A1 max.</th>
<th>bP</th>
<th>c</th>
<th>D</th>
<th>E</th>
<th>e</th>
<th>e1</th>
<th>H_E</th>
<th>L_P</th>
<th>Q</th>
<th>v</th>
<th>w</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>1.1</td>
<td>0.9</td>
<td>0.48</td>
<td>0.15</td>
<td>3.0</td>
<td>1.4</td>
<td>1.9</td>
<td>0.95</td>
<td>2.5</td>
<td>0.45</td>
<td>0.55</td>
<td>0.2</td>
<td>0.1</td>
</tr>
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</table>

OUTLINE VERSION

<table>
<thead>
<tr>
<th>IEC</th>
<th>JEDEC</th>
<th>JEITA</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOT23</td>
<td>TO-236AB</td>
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REFERENCES

EUROPEAN PROJECTION

ISSUE DATE

04-11-04
06-03-16

1996 May 03
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DATA SHEET STATUS

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</thead>
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<tr>
<td>Objective data sheet</td>
<td>Development</td>
<td>This document contains data from the objective specification for product development.</td>
</tr>
<tr>
<td>Preliminary data sheet</td>
<td>Qualification</td>
<td>This document contains data from the preliminary specification.</td>
</tr>
<tr>
<td>Product data sheet</td>
<td>Production</td>
<td>This document contains the product specification.</td>
</tr>
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</table>

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This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

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