BB131
VHF variable capacitance diode

Product specification
Supersedes data of 1998 Sep 15

2004 Feb 10
FEATURES

- Excellent linearity
- Very small plastic SMD package
- C28: 1 pF; ratio: 14.

APPLICATIONS

- Electronic tuning in satellite tuners
- Tunable coupling
- VCO.

DESCRIPTION

The BB131 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the SOD323 (SC-76) very small plastic SMD package.

PINNING

<table>
<thead>
<tr>
<th>PIN</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>cathode</td>
</tr>
<tr>
<td>2</td>
<td>anode</td>
</tr>
</tbody>
</table>

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>TYPE NUMBER</th>
<th>PACKAGE NAME</th>
<th>DESCRIPTION</th>
<th>VERSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB131</td>
<td></td>
<td>plastic surface mounted package; 2 leads</td>
<td>SOD323</td>
</tr>
</tbody>
</table>

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>MIN.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR</td>
<td>continuous reverse voltage</td>
<td>–</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>IF</td>
<td>continuous forward current</td>
<td>–</td>
<td>20</td>
<td>mA</td>
</tr>
<tr>
<td>Tstg</td>
<td>storage temperature</td>
<td>-55</td>
<td>+150</td>
<td>°C</td>
</tr>
<tr>
<td>Tj</td>
<td>operating junction temperature</td>
<td>-55</td>
<td>+125</td>
<td>°C</td>
</tr>
</tbody>
</table>
CHARACTERISTICS
$T_\text{j} = 25 \, ^\circ\text{C}$ unless otherwise specified.

<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>$I_R$</td>
<td>reverse current</td>
<td>$V_R = 30 , \text{V}$; see Fig.3</td>
<td>–</td>
<td>10</td>
<td>nA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 30 , \text{V}; T_\text{j} = 85 , ^\circ\text{C}$; see Fig.3</td>
<td>–</td>
<td>200</td>
<td>nA</td>
</tr>
<tr>
<td>$r_s$</td>
<td>diode series resistance</td>
<td>$f = 470 , \text{MHz}$; note 1</td>
<td>–</td>
<td>3</td>
<td>$\Omega$</td>
</tr>
<tr>
<td>$C_d$</td>
<td>diode capacitance</td>
<td>$V_R = 0.5 , \text{V}$; $f = 1 , \text{MHz}$; see Figs 2 and 4</td>
<td>8</td>
<td>17</td>
<td>pF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 28 , \text{V}$; $f = 1 , \text{MHz}$; see Figs 2 and 4</td>
<td>0.7</td>
<td>1.055</td>
<td>pF</td>
</tr>
<tr>
<td>$\frac{C_d(0.5\text{V})}{C_d(28\text{V})}$</td>
<td>capacitance ratio</td>
<td>$f = 1 , \text{MHz}$</td>
<td>12</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

Note
1. $V_R$ is the value at which $C_d = 9 \, \text{pF}$. 
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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.

$T_j = 25 \, ^\circ C; f = 1 \, MHz.$

$T_j = 0 \text{ to } 85 \, ^\circ C.$
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PACKAGE OUTLINE

Plastic surface-mounted package; 2 leads

SOD323

DIMENSIONS (mm are the original dimensions)

<table>
<thead>
<tr>
<th>UNIT</th>
<th>A (mm)</th>
<th>A₁ max</th>
<th>b_p (mm)</th>
<th>c (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>H₀ (mm)</th>
<th>L_p (mm)</th>
<th>Q (mm)</th>
<th>v (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>1.1</td>
<td>0.05</td>
<td>0.40</td>
<td>0.25</td>
<td>1.8</td>
<td>1.35</td>
<td>2.7</td>
<td>0.45</td>
<td>0.25</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>0.8</td>
<td>0.25</td>
<td>0.25</td>
<td>0.10</td>
<td>1.6</td>
<td>1.15</td>
<td>2.3</td>
<td>0.15</td>
<td>0.15</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Note
1. The marking bar indicates the cathode

OUTLINE VERSION

REFERENCES

EUROPEAN PROJECTION

ISSUE DATE

SOD323

IEC

JEDEC

JEITA

SC-76

03.12.12

06.03.16
DATA SHEET STATUS

<table>
<thead>
<tr>
<th>DOCUMENT STATUS(1)</th>
<th>PRODUCT STATUS(2)</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

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Customer notification

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.

Contact information

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