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In data sheets and application notes which still contain NXP or Philips Semiconductors references, use the references to Nexperia, as shown below.


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Kind regards,

Team Nexperia
1. **General description**

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a very small SOT323 (SC-70) Surface-Mounted Device (SMD) plastic package.

2. **Features and benefits**

- Low forward voltage
- Low capacitance
- AEC-Q101 qualified

3. **Applications**

- Ultra high-speed switching
- Line termination
- Voltage clamping
- Reverse polarity protection

4. **Quick reference data**

<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>$I_F$</td>
<td>forward current</td>
<td></td>
<td>-</td>
<td>-</td>
<td>500</td>
<td>mA</td>
</tr>
<tr>
<td>$V_R$</td>
<td>reverse voltage</td>
<td></td>
<td>-</td>
<td>-</td>
<td>40</td>
<td>V</td>
</tr>
<tr>
<td>$V_F$</td>
<td>forward voltage</td>
<td>$I_F = 500 , mA; \ T_{amb} = 25 , ^{\circ}C$</td>
<td>-</td>
<td>-</td>
<td>550</td>
<td>mV</td>
</tr>
</tbody>
</table>

5. **Pinning information**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Symbol</th>
<th>Description</th>
<th>Simplified outline</th>
<th>Graphic symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>anode</td>
<td>SC-70 (SOT323)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>n.c.</td>
<td>not connected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>K</td>
<td>cathode</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. Ordering information

Table 3. Ordering information

<table>
<thead>
<tr>
<th>Type number</th>
<th>Package</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>1PS70SB20</td>
<td>SC-70</td>
<td>plastic surface-mounted package; 3 leads</td>
<td>SOT323</td>
</tr>
</tbody>
</table>

7. Marking

Table 4. Marking codes

<table>
<thead>
<tr>
<th>Type number</th>
<th>Marking code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1PS70SB20</td>
<td>7%2</td>
</tr>
</tbody>
</table>

[1] % = placeholder for manufacturing site code

8. Limiting values

Table 5. Limiting values

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

<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>reverse voltage</td>
<td>-</td>
<td>40</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$I_F$</td>
<td>forward current</td>
<td>-</td>
<td>500</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>$I_{FSM}$</td>
<td>non-repetitive peak forward current</td>
<td>$t_p = 8.3 \text{ ms}; T_{j(\text{init})} = 25 ^\circ \text{C}; \text{ half sine wave}$</td>
<td>-</td>
<td>2</td>
<td>A</td>
</tr>
<tr>
<td>$T_j$</td>
<td>junction temperature</td>
<td>-</td>
<td>125</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>$T_{amb}$</td>
<td>ambient temperature</td>
<td>-55</td>
<td>125</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>$T_{stg}$</td>
<td>storage temperature</td>
<td>-65</td>
<td>150</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

9. Thermal characteristics

Table 6. Thermal characteristics

<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>$R_{th(j-a)}$</td>
<td>thermal resistance from junction to ambient</td>
<td>in free air</td>
<td>[1]</td>
<td>-</td>
<td>-</td>
<td>500</td>
</tr>
</tbody>
</table>

10. Characteristics

Table 7. Characteristics

<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>I_F = 500 mA; T_amb = 25 °C</td>
<td>-</td>
<td>-</td>
<td>550</td>
<td>mV</td>
</tr>
<tr>
<td>I_R</td>
<td>reverse current</td>
<td>V_R = 35 V; T_amb = 25 °C</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>µA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V_R = 35 V; pulsed; t_p = 300 µs; δ = 0.02; T_J = 100 °C</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>mA</td>
</tr>
<tr>
<td>C_d</td>
<td>diode capacitance</td>
<td>V_R = 0 V; f = 1 MHz; T_amb = 25 °C</td>
<td>60</td>
<td>-</td>
<td>90</td>
<td>pF</td>
</tr>
</tbody>
</table>

Fig. 1. Forward current as a function of forward voltage; typical values

Fig. 2. Reverse current as a function of reverse voltage; typical values
11. Test information

11.1 Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - Stress test qualification for discrete semiconductors, and is suitable for use in automotive applications.

12. Package outline

Fig. 4. Package outline SC-70 (SOT323)
13. Soldering

Fig. 5. Reflow soldering footprint for SC-70 (SOT323)

Fig. 6. Wave soldering footprint for SC-70 (SOT323)

14. Revision history

Table 8. Revision history

<table>
<thead>
<tr>
<th>Data sheet ID</th>
<th>Release date</th>
<th>Data sheet status</th>
<th>Change notice</th>
<th>Supersedes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1PS70SB20 v.2</td>
<td>20121217</td>
<td>Product data sheet</td>
<td>-</td>
<td>1PS70SB20 v.1</td>
</tr>
</tbody>
</table>
## Modifications:

- The format of this document has been redesigned to comply with the new identity guidelines of NXP Semiconductors.
- Legal texts have been adapted to the new company name where appropriate.
- Sections 1 to 3 updated
- Section 4 "Quick reference data" added
- Section 6 "Ordering information" added
- Section 7 "Marking" updated
- Table 5 "Limiting values": ambient temperature $T_{\text{amb}}$ added
- Figure 2 updated
- Section 11 "Test information" added
- Figure 4: superseded by minimized package outline drawing
- Section 13 "Soldering" added
- Section 14 "Legal information" updated

<table>
<thead>
<tr>
<th>Data sheet ID</th>
<th>Release date</th>
<th>Data sheet status</th>
<th>Change notice</th>
<th>Supersedes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1PS70SB20 v.1</td>
<td>20010316</td>
<td>Product data sheet</td>
<td>-</td>
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15. Legal information

15.1 Data sheet status

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

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term ‘short data sheet’ is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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# Contents

1. General description ............................................... 1
2. Features and benefits ............................................1
3. Applications ........................................................... 1
4. Quick reference data ...............................................1
5. Pinning information ...............................................1
6. Ordering information .............................................2
7. Marking ................................................................... 2
8. Limiting values .......................................................2
9. Thermal characteristics ............................................2
10. Characteristics ..........................................................3
11. Test information .....................................................4
11.1 Quality information ..............................................
12. Package outline ..................................................... 4
13. Soldering ................................................................. 5
14. Revision history ......................................................5
15. Legal information ...................................................7
15.1 Data sheet status .................................................. 7
15.2 Definitions ............................................................ 7
15.3 Disclaimers .......................................................... 7
15.4 Trademarks .......................................................... 8

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