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Kind regards,

Team Nexperia
1. Product profile

1.1 General description
Planar Schottky barrier double diode with an integrated guard ring for stress protection. Two electrically isolated Schottky barrier diodes, encapsulated in a small SOT143B Surface-Mounted Device (SMD) plastic package.

1.2 Features and benefits
- Low forward voltage
- Guard-ring protected
- Small SMD plastic package

1.3 Applications
- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes

1.4 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>200</td>
<td>mA</td>
</tr>
<tr>
<td>V_R</td>
<td>reverse voltage</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>V_F</td>
<td>forward voltage</td>
<td>I_F = 100 mA</td>
<td>-</td>
<td>-</td>
<td>800</td>
<td>mV</td>
</tr>
</tbody>
</table>

2. Pinning information

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
<th>Simplified outline</th>
<th>Graphic symbol</th>
</tr>
</thead>
</table>
3. Ordering information

Table 3. Ordering information

<table>
<thead>
<tr>
<th>Type number</th>
<th>Package</th>
<th>Name</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT74</td>
<td>-</td>
<td>plastic surface-mounted package; 4 leads</td>
<td>SOT143B</td>
<td></td>
</tr>
</tbody>
</table>

4. Marking

Table 4. Marking codes

<table>
<thead>
<tr>
<th>Type number</th>
<th>Marking code[1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT74</td>
<td>*L4</td>
</tr>
</tbody>
</table>

[1] * = -: made in Hong Kong
* = p: made in Hong Kong
* = t: made in Malaysia
* = W: made in China

5. 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></td>
<td>Per diode</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V_R</td>
<td>reverse voltage</td>
<td>-</td>
<td>30</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>I_F</td>
<td>forward current</td>
<td>-</td>
<td>200</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>I_FRM</td>
<td>repetitive peak forward current</td>
<td>t_p ≤ 1 s; δ ≤ 0.5</td>
<td>-</td>
<td>300</td>
<td>mA</td>
</tr>
<tr>
<td>I_FSM</td>
<td>non-repetitive peak forward current</td>
<td>t_p &lt; 10 ms</td>
<td>-</td>
<td>600</td>
<td>mA</td>
</tr>
<tr>
<td>P_tot</td>
<td>total power dissipation</td>
<td>T_amb ≤ 25 °C</td>
<td>-</td>
<td>230</td>
<td>mW</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>-65</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>
<tr>
<td></td>
<td>Double diode operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V_R</td>
<td>reverse voltage</td>
<td>-</td>
<td>30</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>I_F</td>
<td>forward current</td>
<td>-</td>
<td>110</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>[2]</td>
<td>If both diodes are in forward operation at the same moment, total device current is max. 110 mA. If one diode is in reverse operation and the other is in forward operation at the same moment, total device current is max. 200 mA.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I_FRM</td>
<td>repetitive peak forward current</td>
<td>t_p ≤ 1 s; δ ≤ 0.5</td>
<td>-</td>
<td>200</td>
<td>mA</td>
</tr>
</tbody>
</table>
6. 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>500</td>
<td>K/W</td>
</tr>
</tbody>
</table>

[1] Refer to SOT143B standard mounting conditions.

7. Characteristics

Table 7. Characteristics

$T_{amb} = 25 ^\circ C$ 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>Per diode</td>
<td>$V_F$ forward voltage</td>
<td>$I_F = 0.1$ mA</td>
<td>-</td>
<td>-</td>
<td>240</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 1$ mA</td>
<td>-</td>
<td>-</td>
<td>320</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 10$ mA</td>
<td>-</td>
<td>-</td>
<td>400</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 30$ mA</td>
<td>-</td>
<td>-</td>
<td>500</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 100$ mA</td>
<td>-</td>
<td>-</td>
<td>800</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>$I_R$ reverse current</td>
<td>$V_R = 25$ V</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>$\mu$A</td>
</tr>
<tr>
<td>Cd diode</td>
<td>capacitance</td>
<td>$V_R = 1$ V; $f = 1$ MHz</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>pF</td>
</tr>
<tr>
<td></td>
<td>reverse recovery time</td>
<td></td>
<td>[3]</td>
<td>-</td>
<td>5</td>
<td>ns</td>
</tr>
</tbody>
</table>

[1] Temperature coefficient of forward voltage $-0.6 \, ^\circ C^{-1}$.
[2] Pulse test: $t_p = 300 \, \mu$s; $\delta = 0.02$.
[3] When switched from $I_F = 10$ mA to $I_R = 10$ mA; $R_L = 100 \, \Omega$; measured at $I_R = 1$ mA.
Schottky barrier double diode

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

- (1) $T_{\text{amb}} = 125 \, ^\circ\text{C}$
- (2) $T_{\text{amb}} = 85 \, ^\circ\text{C}$
- (3) $T_{\text{amb}} = 25 \, ^\circ\text{C}$

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

- (1) $T_{\text{amb}} = 125 \, ^\circ\text{C}$
- (2) $T_{\text{amb}} = 85 \, ^\circ\text{C}$
- (3) $T_{\text{amb}} = 25 \, ^\circ\text{C}$

Fig 3. Diode capacitance as a function of reverse voltage; typical values

$f = 1 \, \text{MHz}; T_{\text{amb}} = 25 \, ^\circ\text{C}$

Fig 4. Power derating curve

Standard footprint
8. Test information

![Diagram of test circuit and waveforms](image1)

(1) \( I_R = 1 \, \text{mA} \)

Fig 5. Reverse recovery time test circuit and waveforms

9. Package outline

![Package outline diagram](image2)

Fig 6. Package outline BAT74 (SOT143B)

10. Packing information

<table>
<thead>
<tr>
<th>Type number</th>
<th>Package</th>
<th>Description</th>
<th>Packing quantity</th>
<th>Packing quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT74</td>
<td>SOT143B</td>
<td>4 mm pitch, 8 mm tape and reel</td>
<td>3000</td>
<td>10000</td>
</tr>
</tbody>
</table>

[1] For further information and the availability of packing methods, see Section 14.
11. Soldering

Fig 7. Reflow soldering footprint BAT74 (SOT143B)

Fig 8. Wave soldering footprint BAT74 (SOT143B)
## 12. Revision history

<table>
<thead>
<tr>
<th>Document ID</th>
<th>Release date</th>
<th>Data sheet status</th>
<th>Change notice</th>
<th>Supersedes</th>
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<tr>
<td>BAT74_3</td>
<td>20100419</td>
<td>Product data sheet</td>
<td>-</td>
<td>BAT74_2</td>
</tr>
<tr>
<td>BAT74_2</td>
<td>20010905</td>
<td>Product specification</td>
<td>-</td>
<td>BAT74_1</td>
</tr>
<tr>
<td>BAT74_1</td>
<td>19960319</td>
<td>Product specification</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Modifications:**
- The format of this data sheet 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.
- **Section 1.1 “General description”**: amended
- **Table 1 “Quick reference data”**: added
- **Section 4 “Marking”**: updated
- **Section 8 “Test information”**: added
- **Figure 5**: enhanced
- **Figure 6**: superseded by minimized package outline drawing
- **Section 10 “Packing information”**: added
- **Section 11 “Soldering”**: added
- **Section 13 “Legal information”**: updated
13. Legal information

13.1 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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14. Contact information

For more information, please visit: http://www.nxp.com

For sales office addresses, please send an email to: salesaddresses@nxp.com
15. Contents

1 Product profile ..................................... 1
  1.1 General description ............................ 1
  1.2 Features and benefits ......................... 1
  1.3 Applications .................................. 1
  1.4 Quick reference data ......................... 1
2 Pinning information ............................... 1
3 Ordering information ............................... 2
4 Marking ............................................. 2
5 Limiting values .................................... 2
6 Thermal characteristics .......................... 3
7 Characteristics ..................................... 3
8 Test information .................................... 5
9 Package outline .................................... 5
10 Packing information ............................... 5
11 Soldering ........................................... 6
12 Revision history .................................. 7
13 Legal information .................................. 8
  13.1 Data sheet status ............................... 8
  13.2 Definitions .................................... 8
  13.3 Disclaimers .................................... 8
  13.4 Trademarks ..................................... 9
14 Contact information ............................... 9
15 Contents .......................................... 10