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Team Nexperia
1. Product profile

1.1 General description
Single high-speed switching diode, encapsulated in a SOD882D leadless ultra small Surface-Mounted Device (SMD) plastic package with visible and solderable side pads.

1.2 Features and benefits
- High switching speed: $t_{rr} \leq 4$ ns
- Low leakage current
- Repetitive peak reverse voltage: $V_{RRM} \leq 100$ V
- AEC-Q101 qualified
- Low capacitance
- Reverse voltage: $V_R \leq 100$ V
- Ultra small and leadless SMD plastic package
- Solderable side pads

1.3 Applications
- High-speed switching
- General-purpose switching

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>$[1]$ - -</td>
<td>215</td>
<td>mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$I_R$</td>
<td>reverse current</td>
<td>$V_R = 80$ V - -</td>
<td>0.5</td>
<td>$\mu$A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$V_R$</td>
<td>reverse voltage</td>
<td>- -</td>
<td>100</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$t_{rr}$</td>
<td>reverse recovery time</td>
<td>$[2]$ - -</td>
<td>4</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[1] Device mounted on an FR4 Printed-Circuit Board (PCB) with 60 $\mu$m copper strip line.

[2] When switched from $I_F = 10$ mA to $I_R = 10$ mA; $R_L = 100$ Ω; measured at $I_R = 1$ mA.
2. Pinning information

Table 2. Pinning

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
<th>Simplified outline</th>
<th>Graphic symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>cathode</td>
<td><img src="image" alt="Simplified outline" /></td>
<td><img src="image" alt="Graphic symbol" /></td>
</tr>
<tr>
<td>2</td>
<td>anode</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[1] The marking bar indicates the cathode.

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>BAS16LD</td>
<td>-</td>
<td>leadless ultra small plastic package; 2 terminals; body 1.0 × 0.6 × 0.4 mm</td>
<td>SOD882D</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>BAS16LD</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>0000</td>
</tr>
</tbody>
</table>

[1] For SOD882D binary marking code description, see Figure 1.

4.1 Binary marking code description

![Binary marking code description](image)
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>$V_{RRM}$</td>
<td>repetitive peak reverse voltage</td>
<td>-</td>
<td>100</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$V_R$</td>
<td>reverse voltage</td>
<td>-</td>
<td>100</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$I_F$</td>
<td>forward current</td>
<td>[1]</td>
<td>215</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>$I_{FRM}$</td>
<td>repetitive peak forward current</td>
<td>$t_p \leq 0.5 \mu s$; $\delta \leq 0.25$</td>
<td>-</td>
<td>500</td>
<td>mA</td>
</tr>
<tr>
<td>$I_{FSM}$</td>
<td>non-repetitive peak forward current</td>
<td>square wave</td>
<td>[2]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t_p = 1 \mu s$</td>
<td>-</td>
<td>4</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t_p = 1 \text{ ms}$</td>
<td>-</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t_p = 1 \text{ s}$</td>
<td>-</td>
<td>0.5</td>
<td>A</td>
</tr>
<tr>
<td>$P_{tot}$</td>
<td>total power dissipation</td>
<td>$T_{amb} \leq 25 ^\circ C$ [1][3]</td>
<td>-</td>
<td>250</td>
<td>mW</td>
</tr>
<tr>
<td>$T_J$</td>
<td>junction temperature</td>
<td>-</td>
<td>150</td>
<td>$^\circ C$</td>
<td></td>
</tr>
<tr>
<td>$T_{amb}$</td>
<td>ambient temperature</td>
<td>-55</td>
<td>+150</td>
<td>$^\circ C$</td>
<td></td>
</tr>
<tr>
<td>$T_{stg}$</td>
<td>storage temperature</td>
<td>-65</td>
<td>+150</td>
<td>$^\circ C$</td>
<td></td>
</tr>
</tbody>
</table>

[1] Device mounted on an FR4 PCB with 60 $\mu m$ copper strip line.
[2] $T_J = 25 ^\circ C$ prior to surge.
[3] Reflow soldering is the only recommended soldering method.

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 [1][2]</td>
<td>-</td>
<td>-</td>
<td>500</td>
<td>K/W</td>
</tr>
</tbody>
</table>

[1] Device mounted on an FR4 PCB with 60 $\mu m$ copper strip line.
[2] Reflow soldering is the only recommended soldering method.
7. Characteristics

Table 7. 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>( I_F = 1 , \text{mA} )</td>
<td>-</td>
<td>-</td>
<td>715</td>
<td>mV</td>
</tr>
<tr>
<td>( I_F = 10 , \text{mA} )</td>
<td>-</td>
<td>-</td>
<td>855</td>
<td>mV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( I_F = 50 , \text{mA} )</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( I_F = 150 , \text{mA} )</td>
<td>-</td>
<td>-</td>
<td>1.25</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( I_R )</td>
<td>reverse current</td>
<td>( V_R = 25 , \text{V} )</td>
<td>-</td>
<td>-</td>
<td>30</td>
<td>nA</td>
</tr>
<tr>
<td>( V_R = 80 , \text{V} )</td>
<td>-</td>
<td>-</td>
<td>0.5</td>
<td>µA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( V_R = 25 , \text{V}; , T_J = 150 , ^\circ\text{C} )</td>
<td>-</td>
<td>-</td>
<td>30</td>
<td>µA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( V_R = 80 , \text{V}; , T_J = 150 , ^\circ\text{C} )</td>
<td>-</td>
<td>-</td>
<td>50</td>
<td>µA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( C_d )</td>
<td>diode capacitance</td>
<td>( f = 1 , \text{MHz}; , V_R = 0 , \text{V} )</td>
<td>-</td>
<td>-</td>
<td>1.5</td>
<td>pF</td>
</tr>
<tr>
<td>( t_{rr} )</td>
<td>reverse recovery time</td>
<td>( I_R = 10 , \text{mA} ) to ( I_R = 10 , \text{mA} ); ( R_L = 100 , \Omega ); measured at ( I_R = 1 , \text{mA} )</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>ns</td>
</tr>
<tr>
<td>( V_{F FR} )</td>
<td>forward recovery voltage</td>
<td>( I_F = 10 , \text{mA} ); ( t_r = 20 , \text{ns} )</td>
<td>-</td>
<td>-</td>
<td>1.75</td>
<td>V</td>
</tr>
</tbody>
</table>

[1] Pulse test: \( t_p \leq 300 \, \mu\text{s}; \, \delta \leq 0.02 \).
[2] When switched from \( I_F = 10 \, \text{mA} \) to \( I_R = 10 \, \text{mA} \); \( R_L = 100 \, \Omega \); measured at \( I_R = 1 \, \text{mA} \).
[3] When switched from \( I_F = 10 \, \text{mA} \); \( t_r = 20 \, \text{ns} \).
(1) $T_{\text{amb}} = 150 \, ^\circ\text{C}$
(2) $T_{\text{amb}} = 85 \, ^\circ\text{C}$
(3) $T_{\text{amb}} = 25 \, ^\circ\text{C}$
(4) $T_{\text{amb}} = -40 \, ^\circ\text{C}$

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

(1) $T_{\text{amb}} = 150 \, ^\circ\text{C}$
(2) $T_{\text{amb}} = 85 \, ^\circ\text{C}$
(3) $T_{\text{amb}} = 25 \, ^\circ\text{C}$
(4) $T_{\text{amb}} = -40 \, ^\circ\text{C}$

Fig 4. Reverse current as a function of reverse voltage; typical values

Based on square wave currents.
$T_J = 25 \, ^\circ\text{C}$; prior to surge

Fig 3. Non-repetitive peak forward current as a function of pulse duration; maximum values

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

Fig 5. Diode capacitance as a function of reverse voltage; typical values
8. Test information

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

Input signal: reverse pulse rise time $t_r = 0.6 \text{ ns}$; reverse voltage pulse duration $t_p = 100 \text{ ns}$; duty cycle $\delta = 0.05$

Oscilloscope: rise time $t_r = 0.35 \text{ ns}$

Fig 6. Reverse recovery time test circuit and waveforms

Input signal: forward pulse rise time $t_r = 20 \text{ ns}$; forward current pulse duration $t_p \geq 100 \text{ ns}$; duty cycle $\delta \leq 0.005$

Fig 7. Forward recovery voltage test circuit and waveforms
9. Package outline

![Package outline BAS16LD (SOD882D)](image)

Fig 8. Package outline BAS16LD (SOD882D)

10. Packing information

<table>
<thead>
<tr>
<th>Type number</th>
<th>Package</th>
<th>Description</th>
<th>Packing quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAS16LD</td>
<td>SOD882D</td>
<td>2 mm pitch, 8 mm tape and reel</td>
<td>-315</td>
</tr>
</tbody>
</table>

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

11. Soldering

![Reflow soldering footprint BAS16LD (SOD882D)](image)

Fig 9. Reflow soldering footprint BAS16LD (SOD882D)
## 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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<td>BAS16LD v.1</td>
<td>20101012</td>
<td>Product data sheet</td>
<td>-</td>
<td>-</td>
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13. Legal information

13.1 Data sheet status

<table>
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<tr>
<td>Development</td>
<td>Qualification</td>
<td>Development</td>
<td>Production</td>
<td>This document contains data from the objective specification for product development.</td>
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<tr>
<td>Development</td>
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<td>This document contains data from the preliminary specification.</td>
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<tr>
<td>Production</td>
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<td>This document contains the product specification.</td>
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</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”.
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For sales office addresses, please send an email to: salesaddresses@nxp.com
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