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Kind regards,

Team Nexperia
BAS45A
Low-leakage diode

Product data sheet
Supersedes data of June 1994
Low-leakage diode

FEATURES
- Continuous reverse voltage: max. 125 V
- Repetitive peak forward current: max. 625 mA
- Low reverse current: max. 1 nA
- Switching time: typ. 1.5 μs.

APPLICATION
- Low leakage current applications.

DESCRIPTION
Epitaxial medium-speed switching diode with a low leakage current in a hermetically-sealed glass SOD68 (DO-34) package.

Fig.1 Simplified outline (SOD68; DO-34) and symbol.

LIMITING VALUES
In accordance with the Absolute Maximum Rating System (IEC 134).

<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>125</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>V_R</td>
<td>continuous reverse voltage</td>
<td>–</td>
<td>125</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>I_F</td>
<td>continuous forward current</td>
<td>see Fig.2; note 1</td>
<td>–</td>
<td>250</td>
<td>mA</td>
</tr>
<tr>
<td>I_FRM</td>
<td>repetitive peak forward current</td>
<td>–</td>
<td>625</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>I_FSM</td>
<td>non-repetitive peak forward current</td>
<td>square wave; ( T_j = 25 , ^\circ C ) prior to surge; see Fig.4</td>
<td>( t_p = 1 , \mu s )</td>
<td>4</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( t_p = 1 , ms )</td>
<td>1</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( t_p = 1 , s )</td>
<td>0.5</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>P_tot</td>
<td>total power dissipation</td>
<td>( T_{amb} = 25 , ^\circ C )</td>
<td>–</td>
<td>300</td>
<td>mW</td>
</tr>
<tr>
<td>T_stg</td>
<td>storage temperature</td>
<td>–65</td>
<td>+175</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>T_J</td>
<td>junction temperature</td>
<td>–</td>
<td>175</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

Note
1. Device mounted on a printed-circuit board without metallization pad.
**ELECTRICAL CHARACTERISTICS**

*Tj = 25 °C unless otherwise specified.*

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF</td>
<td>forward voltage</td>
<td>see Fig.3</td>
<td>–</td>
<td>780</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>I_F = 1 mA</td>
<td></td>
<td>–</td>
<td>860</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>I_F = 10 mA</td>
<td></td>
<td>–</td>
<td>1000</td>
<td>mV</td>
</tr>
<tr>
<td>IR</td>
<td>reverse current</td>
<td>see Fig.5</td>
<td>–</td>
<td>1</td>
<td>nA</td>
</tr>
<tr>
<td></td>
<td>VR = 125 V; E_max = 100 lx</td>
<td></td>
<td>–</td>
<td>300</td>
<td>nA</td>
</tr>
<tr>
<td></td>
<td>VR = 30 V; Tj = 125 °C; E_max = 100 lx</td>
<td></td>
<td>–</td>
<td>500</td>
<td>nA</td>
</tr>
<tr>
<td></td>
<td>VR = 125 V; Tj = 150 °C; E_max = 100 lx</td>
<td></td>
<td>–</td>
<td>2</td>
<td>μA</td>
</tr>
<tr>
<td>Cd</td>
<td>diode capacitance</td>
<td>f = 1 MHz; VR = 0; see Fig.6</td>
<td>–</td>
<td>4</td>
<td>pF</td>
</tr>
<tr>
<td>tr</td>
<td>reverse recovery time</td>
<td>when switched from I_F = 10 mA to I_R = 10 mA; R_L = 100 Ω; measured at I_R = 1 mA; see Fig.7</td>
<td>1.5</td>
<td>–</td>
<td>μs</td>
</tr>
</tbody>
</table>

**THERMAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rth_j-tp</td>
<td>thermal resistance from junction to tie-point</td>
<td>8 mm from the body</td>
<td>300</td>
<td>KW</td>
</tr>
<tr>
<td>Rth_j-a</td>
<td>thermal resistance from junction to ambient</td>
<td>lead length 10 mm; note 1</td>
<td>500</td>
<td>KW</td>
</tr>
</tbody>
</table>

**Note**

1. Device mounted on a printed-circuit board without metallization pad.
Low-leakage diode

NXP Semiconductors

GRAPHICAL DATA

Device mounted on a printed-circuit board without metallization pad.

Fig. 2 Maximum permissible continuous forward current as a function of ambient temperature.

Fig. 3 Forward current as a function of forward voltage.

Fig. 4 Maximum permissible non-repetitive peak forward current as a function of pulse duration.

Based on square wave currents; $T_j = 25^\circ C$ prior to surge.
Low-leakage diode

**Fig.5** Reverse current as a function of junction temperature.

VR = 125 V.

**Fig.6** Diode capacitance as a function of reverse voltage; typical values.

VR (V)   Cd (pF)

**Fig.7** Reverse recovery time test circuit and waveforms.
Low-leakage diode  

BAS45A

PACKAGE OUTLINE

Fig. 8  SOD68 (DO-34).

Dimensions in mm.  
The black marking band indicates the cathode.
Low-leakage diode

DATA SHEET STATUS

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<tr>
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<td>Qualification</td>
<td>This document contains data from the preliminary specification.</td>
</tr>
<tr>
<td>Product data sheet</td>
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<td>This document contains the product specification.</td>
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