

# BAS16LD

Single high-speed switching diode

Rev. 1 — 12 October 2010

Product data sheet

## 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 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current		[1]	-	215	mA
$I_R$	reverse current	$V_R = 80$ V	-	-	0.5	$\mu$ A
$V_R$	reverse voltage		-	-	100	V
$t_{rr}$	reverse recovery time		[2]	-	4	ns

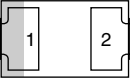
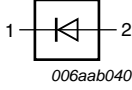
[1] Device mounted on an FR4 Printed-Circuit Board (PCB) with 60  $\mu$ m copper strip line.

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



## 2. Pinning information

**Table 2. Pinning**

Pin	Description	Simplified outline	Graphic symbol
1	cathode	 <p>Transparent top view</p>	
2	anode		

[1] The marking bar indicates the cathode.

## 3. Ordering information

**Table 3. Ordering information**

Type number	Package		
	Name	Description	Version
BAS16LD	-	leadless ultra small plastic package; 2 terminals; body 1.0 × 0.6 × 0.4 mm	SOD882D

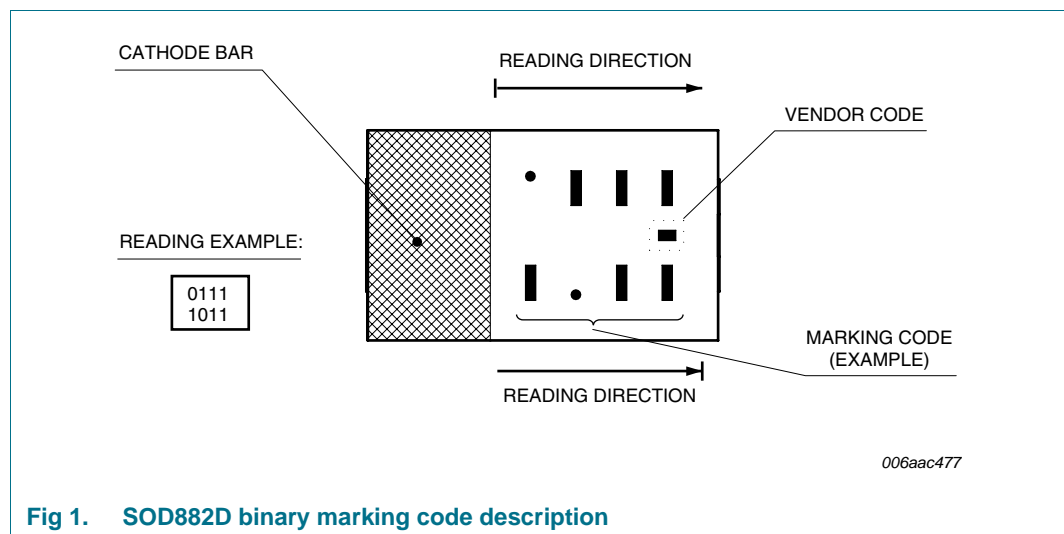
## 4. Marking

**Table 4. Marking codes**

Type number	Marking code <sup>[1]</sup>
BAS16LD	1000 0000

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

### 4.1 Binary marking code description



## 5. Limiting values

**Table 5. Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	Unit	
$V_{RRM}$	repetitive peak reverse voltage		-	100	V	
$V_R$	reverse voltage		-	100	V	
$I_F$	forward current		[1]	215	mA	
$I_{FRM}$	repetitive peak forward current	$t_p \leq 0.5 \mu\text{s}$ ; $\delta \leq 0.25$	-	500	mA	
$I_{FSM}$	non-repetitive peak forward current	square wave	[2]			
		$t_p = 1 \mu\text{s}$	-	4	A	
		$t_p = 1 \text{ms}$	-	1	A	
		$t_p = 1 \text{s}$	-	0.5	A	
$P_{tot}$	total power dissipation	$T_{amb} \leq 25 \text{ }^\circ\text{C}$	[1][3]	-	250	mW
$T_j$	junction temperature		-	150	$^\circ\text{C}$	
$T_{amb}$	ambient temperature		-55	+150	$^\circ\text{C}$	
$T_{stg}$	storage temperature		-65	+150	$^\circ\text{C}$	

[1] Device mounted on an FR4 PCB with 60  $\mu\text{m}$  copper strip line.

[2]  $T_j = 25 \text{ }^\circ\text{C}$  prior to surge.

[3] Reflow soldering is the only recommended soldering method.

## 6. Thermal characteristics

**Table 6. Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1][2]	-	-	500	K/W

[1] Device mounted on an FR4 PCB with 60  $\mu\text{m}$  copper strip line.

[2] Reflow soldering is the only recommended soldering method.

## 7. Characteristics

**Table 7. Characteristics**

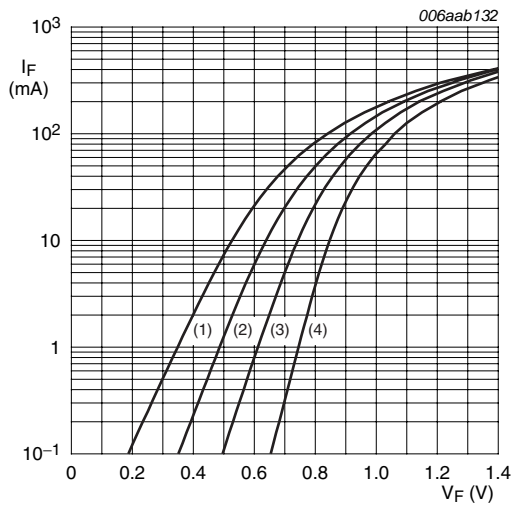
$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage		[1]			
		$I_F = 1\text{ mA}$	-	-	715	mV
		$I_F = 10\text{ mA}$	-	-	855	mV
		$I_F = 50\text{ mA}$	-	-	1	V
		$I_F = 150\text{ mA}$	-	-	1.25	V
$I_R$	reverse current	$V_R = 25\text{ V}$	-	-	30	nA
		$V_R = 80\text{ V}$	-	-	0.5	$\mu\text{A}$
		$V_R = 25\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	-	-	30	$\mu\text{A}$
		$V_R = 80\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	-	-	50	$\mu\text{A}$
$C_d$	diode capacitance	$f = 1\text{ MHz}; V_R = 0\text{ V}$	-	-	1.5	pF
$t_{rr}$	reverse recovery time		[2]	-	4	ns
$V_{FR}$	forward recovery voltage		[3]	-	1.75	V

[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .

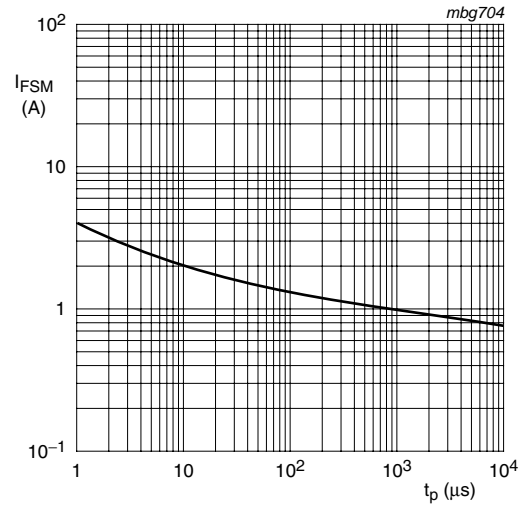
[2] When switched from  $I_F = 10\text{ mA}$  to  $I_R = 10\text{ mA}$ ;  $R_L = 100\text{ }\Omega$ ; measured at  $I_R = 1\text{ mA}$ .

[3] When switched from  $I_F = 10\text{ mA}$ ;  $t_r = 20\text{ ns}$ .



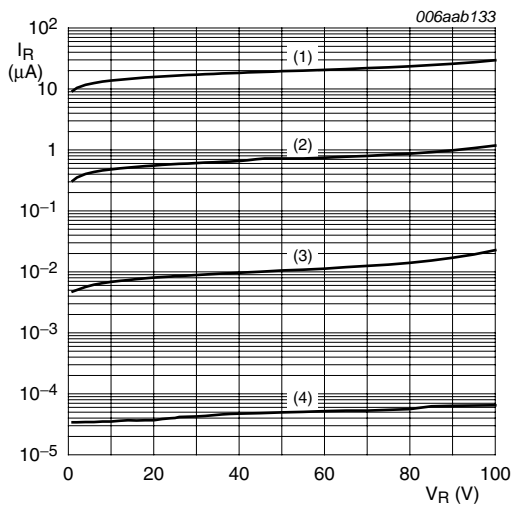
- (1)  $T_{amb} = 150^\circ\text{C}$
- (2)  $T_{amb} = 85^\circ\text{C}$
- (3)  $T_{amb} = 25^\circ\text{C}$
- (4)  $T_{amb} = -40^\circ\text{C}$

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



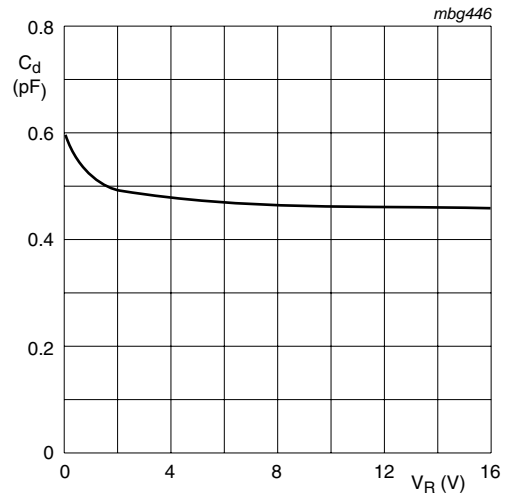
Based on square wave currents.  
 $T_j = 25^\circ\text{C}$ ; prior to surge

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



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

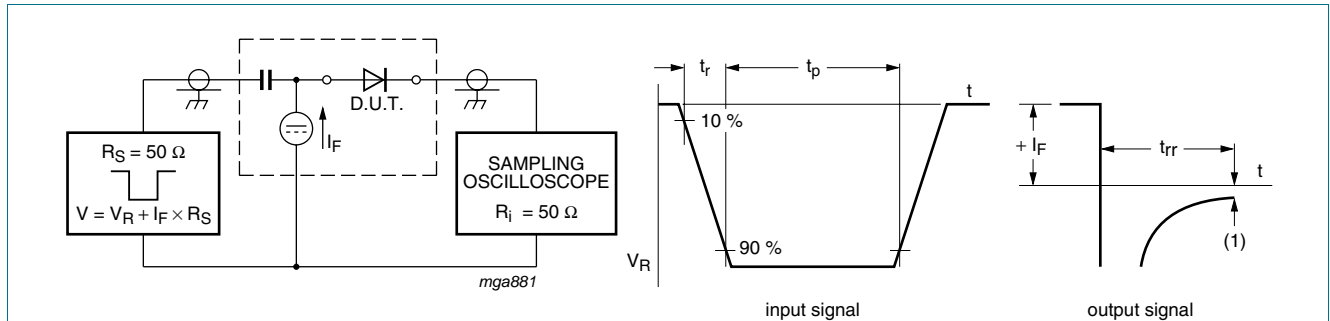
**Fig 4. Reverse current as a function of reverse voltage; typical values**



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

**Fig 5. Diode capacitance as a function of reverse voltage; typical values**

## 8. Test information

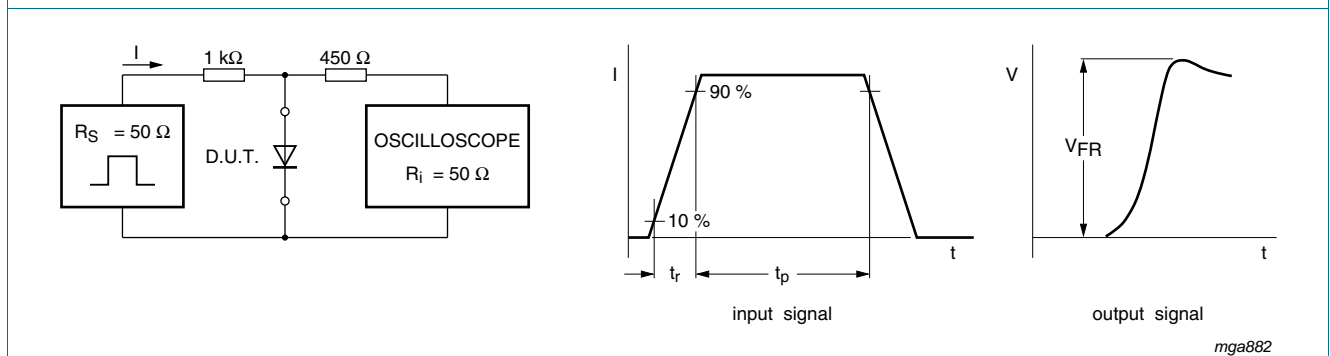


(1)  $I_R = 1 \text{ mA}$

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  $t_r = 0.35 \text{ ns}$

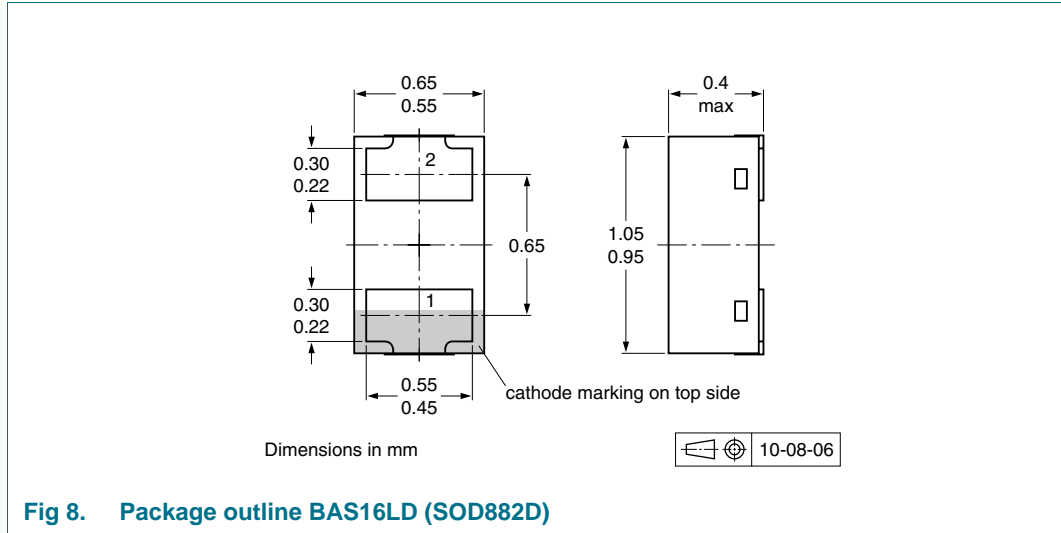
**Fig 6. Reverse recovery time test circuit and waveforms**



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**



**10. Packing information**

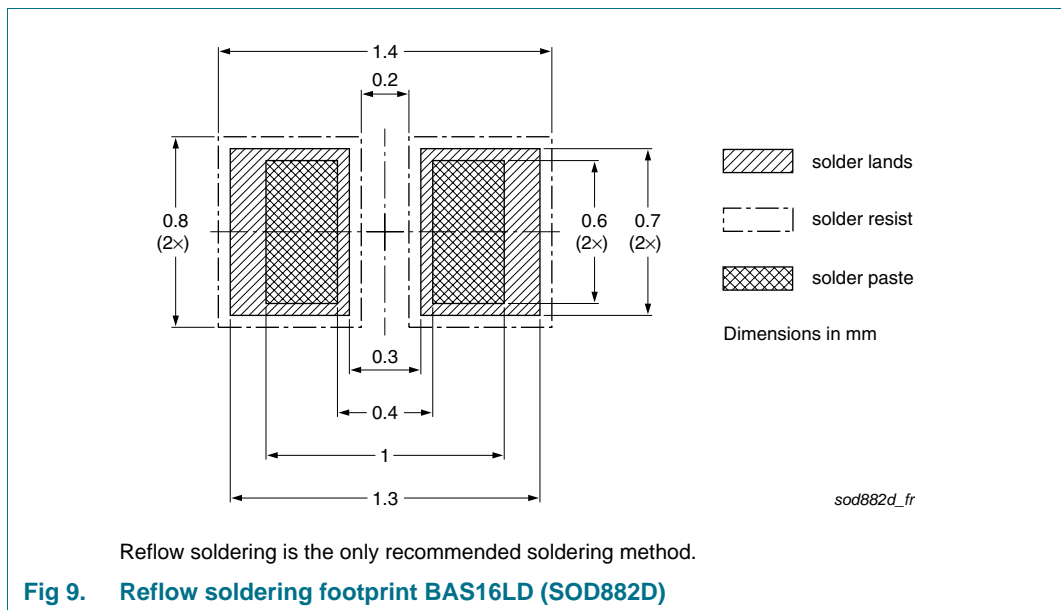
**Table 8. Packing methods**

The indicated -xxx are the last three digits of the 12NC ordering code.<sup>[1]</sup>

Type number	Package	Description	Packing quantity
BAS16LD	SOD882D	2 mm pitch, 8 mm tape and reel	10000 -315

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

**11. Soldering**



## 12. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAS16LD v.1	20101012	Product data sheet	-	-

## 13. Legal information

### 13.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
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## 15. Contents

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

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