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

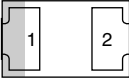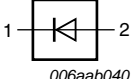### 1.4 Quick reference data

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	µA
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 µm 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

Pin	Description	Simplified outline	Graphic symbol
1	cathode [1]		
2	anode		

Transparent top view

006aab040

[1]   The marking bar indicates the cathode.

3. Ordering information

Table 3.   Ordering information

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

4. Marking

Table 4.   Marking codes

Type number	Marking code[1]
BAS16LD	1000 0000

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

4.1 Binary marking code description

CATHODE BAR

READING DIRECTION

VENDOR CODE

READING EXAMPLE:

0111
1011

MARKING CODE
(EXAMPLE)

READING DIRECTION

006aac477

Fig 1.   SOD882D binary marking code description
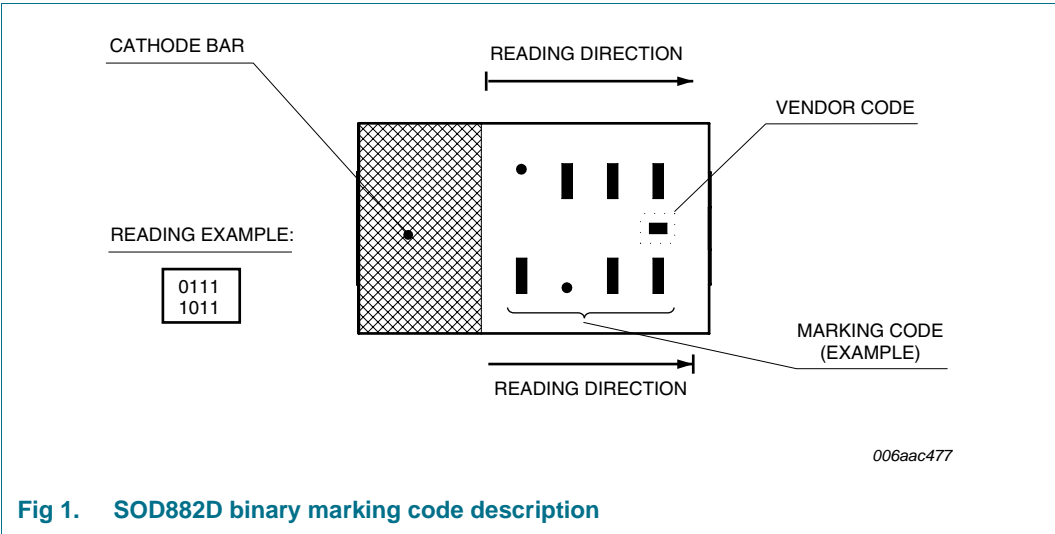
5. Limiting values

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	$t_p \leq 0.5$ μs; $\delta \leq 0.25$		-	500	mA
I_{FSM}	non-repetitive peak forward current	square wave	[2]			
		$t_p = 1$ μs		-	4	A
		$t_p = 1$ ms		-	1	A
		$t_p = 1$ s		-	0.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1][3]	-	250	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			−55	+150	°C
T_{stg}	storage temperature			−65	+150	°C

[1]   Device mounted on an FR4 PCB with 60 μm copper strip line.

[2] T_j = 25 °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 μm copper strip line.

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

7. Characteristics

Table 7. Characteristics

$T_{amb} = 25$ °C unless otherwise specified.

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

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

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

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

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(1) T_{amb} = 150 °C

(2) T_{amb} = 85 °C

(3) T_{amb} = 25 °C

(4) T_{amb} = −40 °C

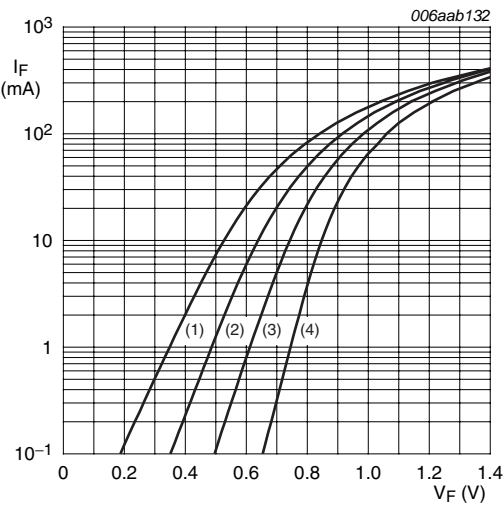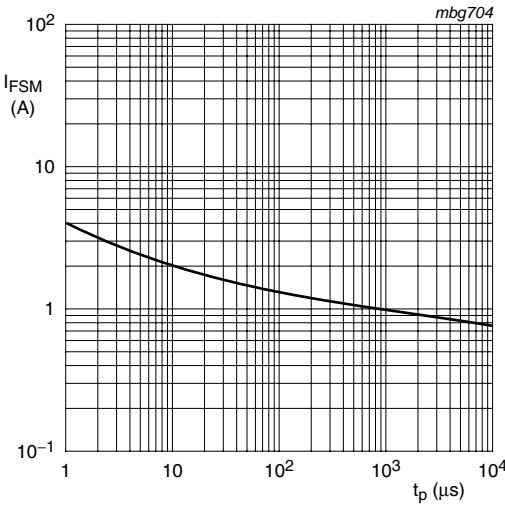**Fig 2. Forward current as a function of forward voltage; typical values**

Based on square wave currents.

T_j = 25 °C; prior to surge

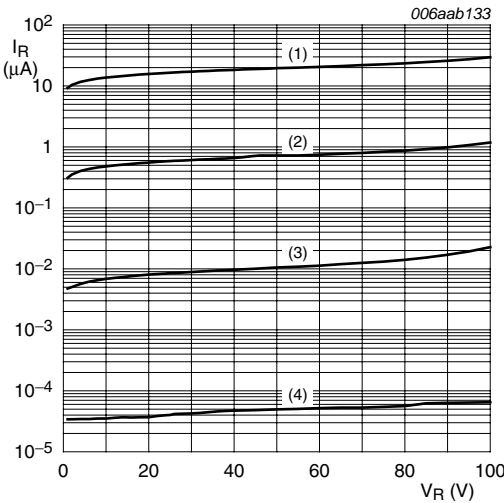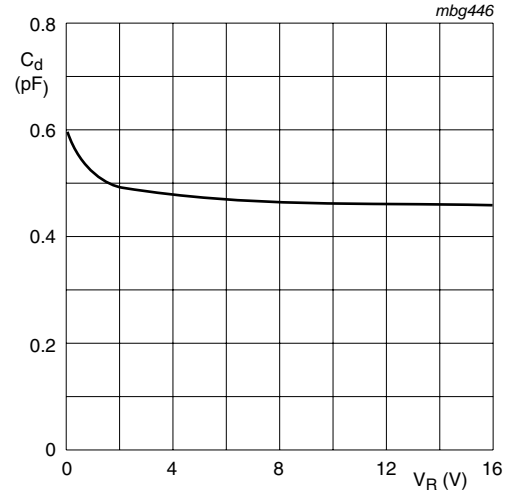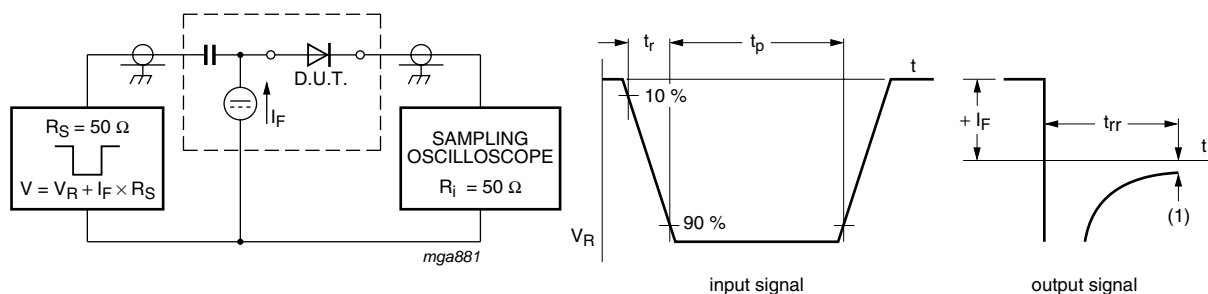**Fig 3. Non-repetitive peak forward current as a function of pulse duration; maximum values**

(1) T_{amb} = 150 °C

(2) T_{amb} = 85 °C

(3) T_{amb} = 25 °C

(4) T_{amb} = −40 °C

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

f = 1 MHz; T_{amb} = 25 °C

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

BAS16LD

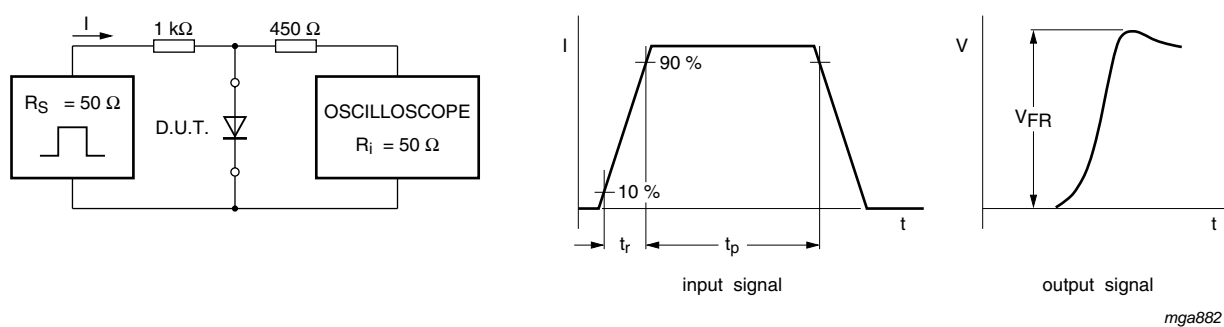**Product data sheet** **Rev. 1 — 12 October 2010** 5 of 11

8. Test information

(1) I_R = 1 mA

Input signal: reverse pulse rise time t_r = 0.6 ns; reverse voltage pulse duration t_p = 100 ns; duty cycle δ = 0.05
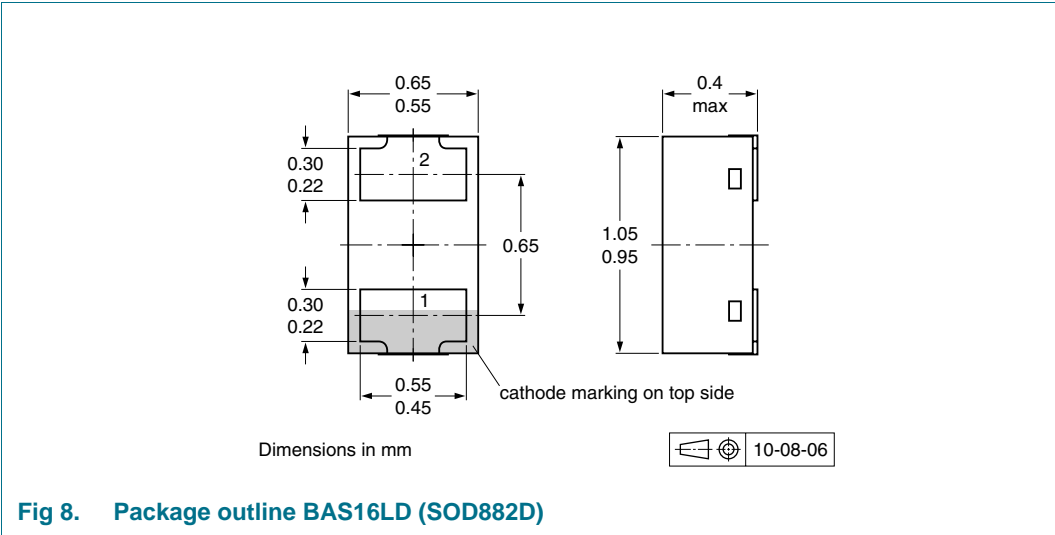
Oscilloscope: rise time t_r = 0.35 ns

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

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

Fig 7. **Forward recovery voltage test circuit and waveforms**

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9. Package outline

Dimensions in mm

Fig 8. **Package outline BAS16LD (SOD882D)**
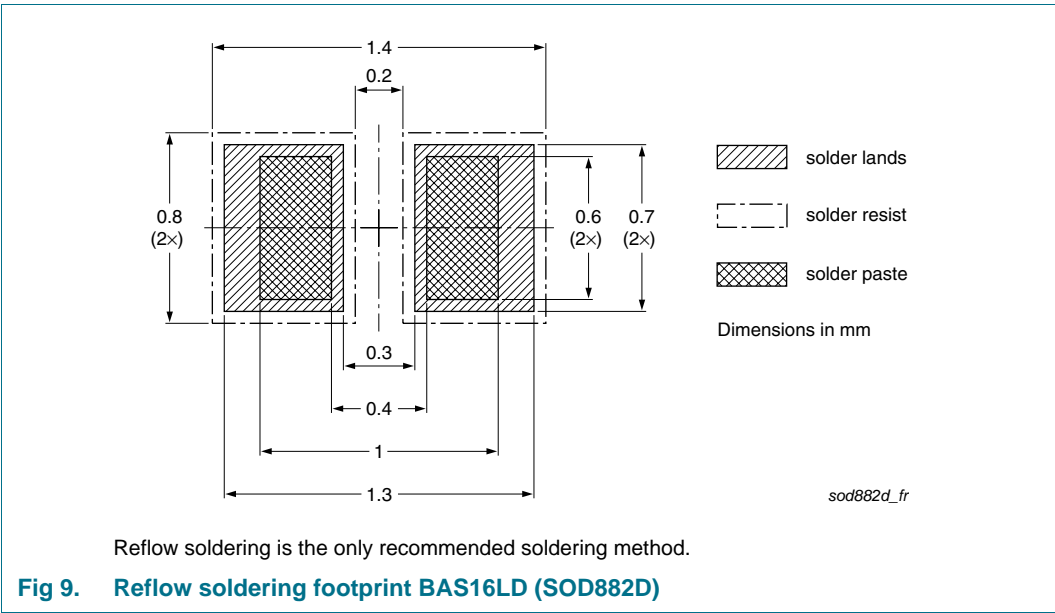
10. Packing information

Table 8. **Packing methods**

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

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

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

11. Soldering

Dimensions in mm

sod882d_fr

Reflow soldering is the only recommended soldering method.

Fig 9. **Reflow soldering footprint BAS16LD (SOD882D)**

12. Revision history

Table 9. **Revision history**

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

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13. Legal information

13.1 Data sheet status

Document status[1][2]	Product status[3]	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.
Product [short] data sheet	Production	This document contains the product specification.

[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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