



**THE DATASHEET OF
BAS16LD,315**





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

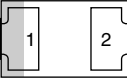
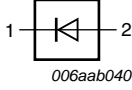
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_F	forward current		[1] -	-	215	mA
I_R	reverse current	$V_R = 80$ V	-	-	0.5	μ A
V_R	reverse voltage		-	-	100	V
t_{rr}	reverse recovery time		[2] -	-	4	ns

[1] Device mounted on an FR4 Printed-Circuit Board (PCB) with 60 μ 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

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

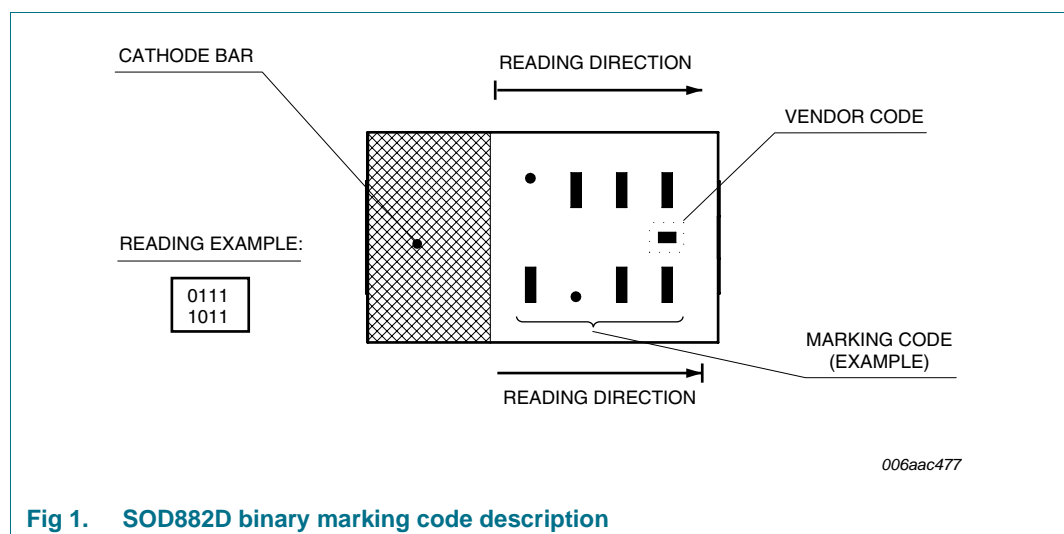
4. Marking

Table 4. Marking codes

Type number	Marking code ^[1]
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 μm 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 μm copper strip line.

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

7. Characteristics

Table 7. Characteristics

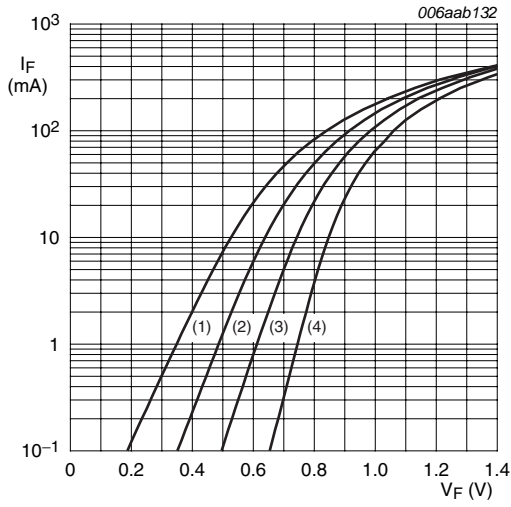
$T_{amb} = 25\text{ °C}$ unless otherwise specified.

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	μA
		$V_R = 25\text{ V}; T_j = 150\text{ °C}$	-	-	30	μA
		$V_R = 80\text{ V}; T_j = 150\text{ °C}$	-	-	50	μA
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: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$.

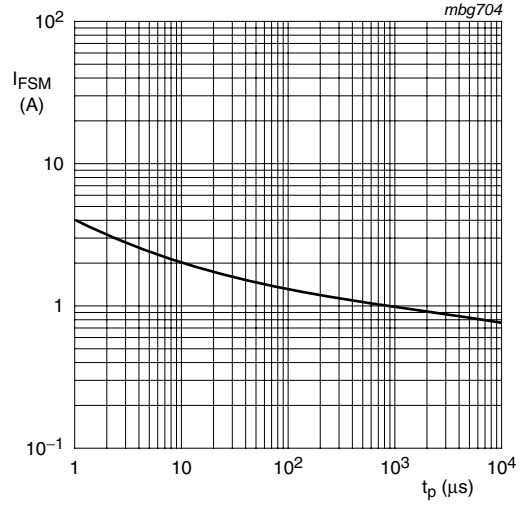
[2] When switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$; $R_L = 100\text{ }\Omega$; measured at $I_R = 1\text{ mA}$.

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



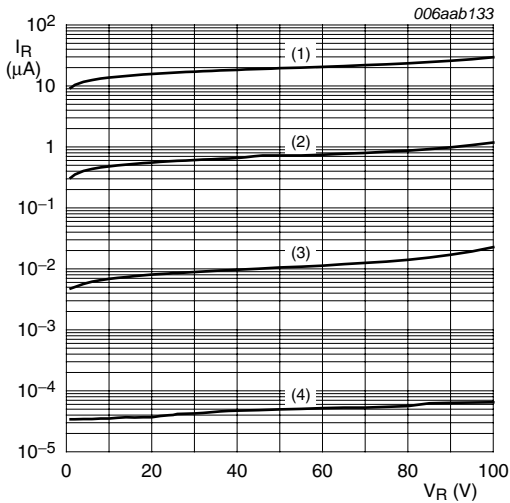
- (1) $T_{amb} = 150^\circ\text{C}$
- (2) $T_{amb} = 85^\circ\text{C}$
- (3) $T_{amb} = 25^\circ\text{C}$
- (4) $T_{amb} = -40^\circ\text{C}$

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



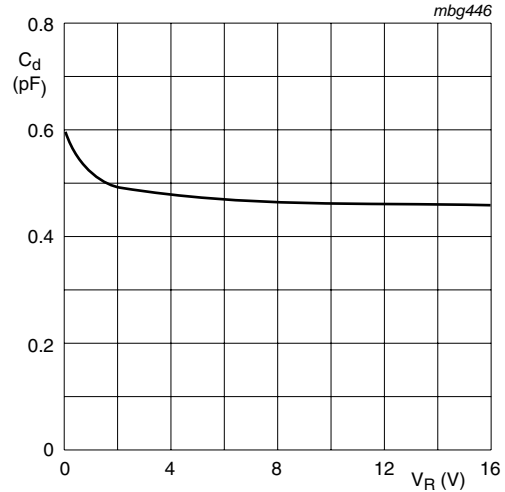
Based on square wave currents.
 $T_j = 25^\circ\text{C}$; prior to surge

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) $T_{amb} = -40^\circ\text{C}$

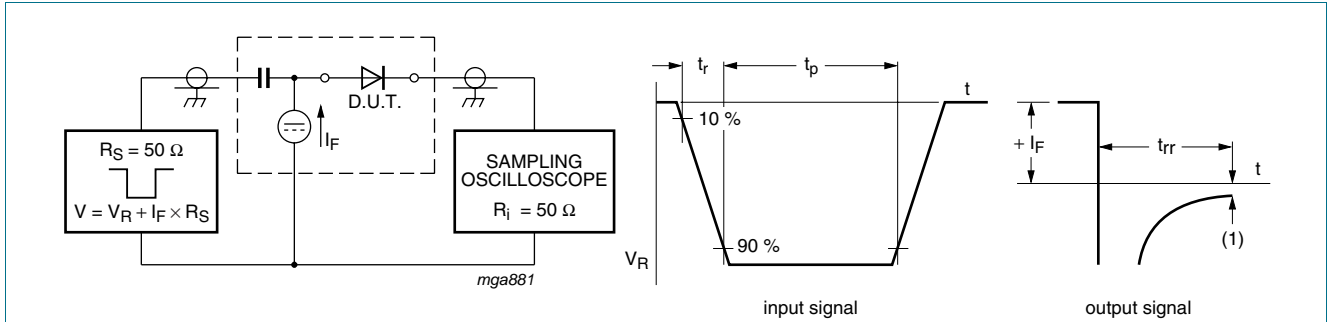
Fig 4. Reverse current as a function of reverse voltage; typical values



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

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

8. Test information

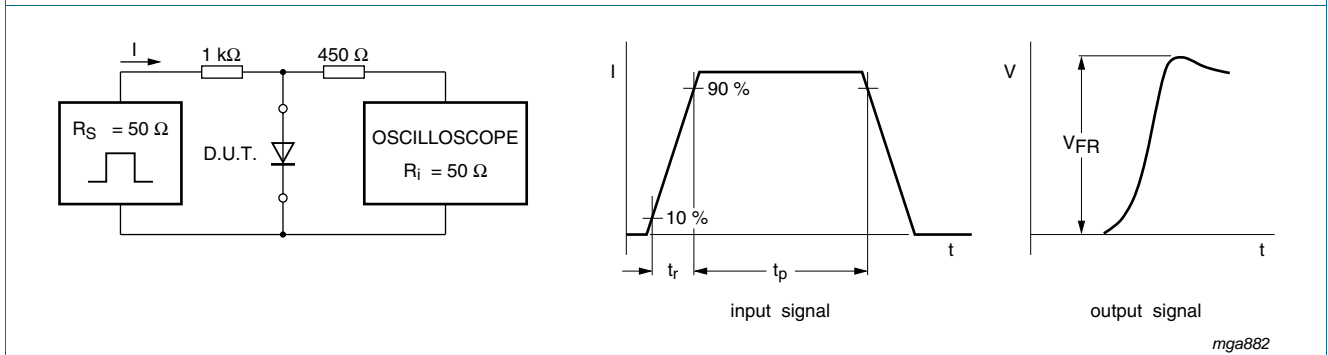


(1) $I_R = 1 \text{ mA}$

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 $t_r = 0.35 \text{ ns}$

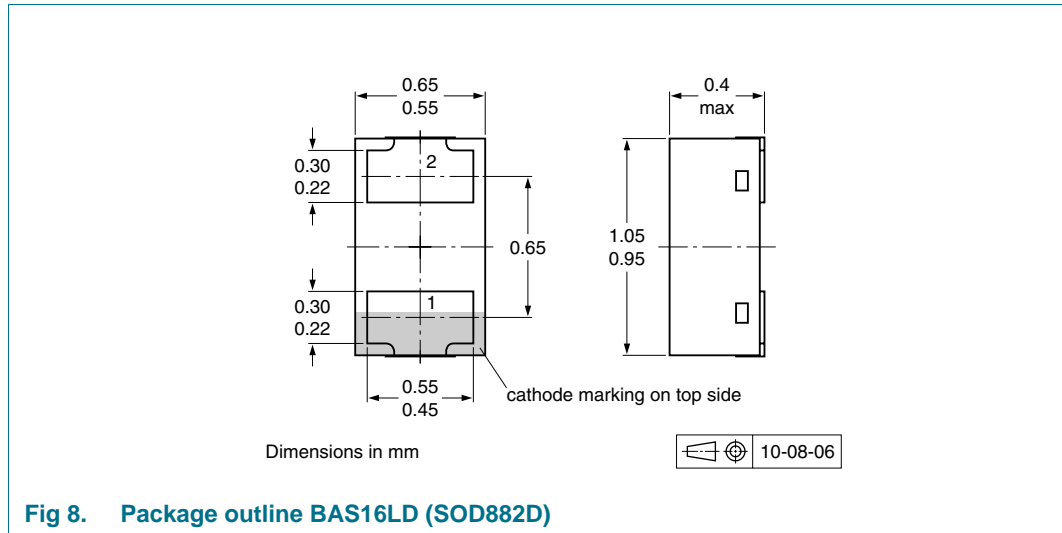
Fig 6. Reverse recovery time test circuit and waveforms



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

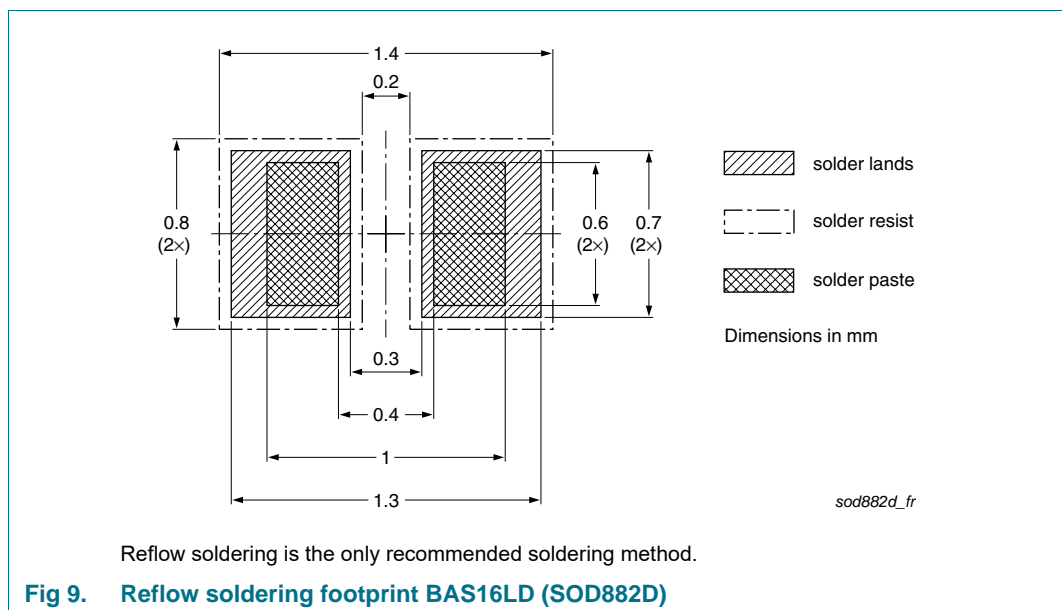
9. Package outline



10. Packing information

Please refer to packing information on www.nexperia.com.

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 ^{[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".

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14. 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	2
3	Ordering information	2
4	Marking	2
4.1	Binary marking code description	2
5	Limiting values	3
6	Thermal characteristics	3
7	Characteristics	4
8	Test information	6
9	Package outline	7
10	Packing information	7
11	Soldering	7
12	Revision history	8
13	Legal information	9
13.1	Data sheet status	9
13.2	Definitions	9
13.3	Disclaimers	9
13.4	Trademarks	10
14	Contents	11

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