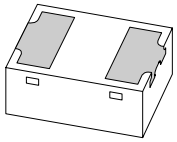


BAS16LD

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

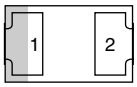
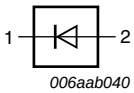
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current		[1]	-	-	215	mA
I_R	reverse current	V_R = 80 V		-	-	0.5	μA
V_R	reverse voltage			-	-	100	V
t_{rr}	reverse recovery time		[2]	-	-	4	ns

[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]	 Transparent top view	 006aab040
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

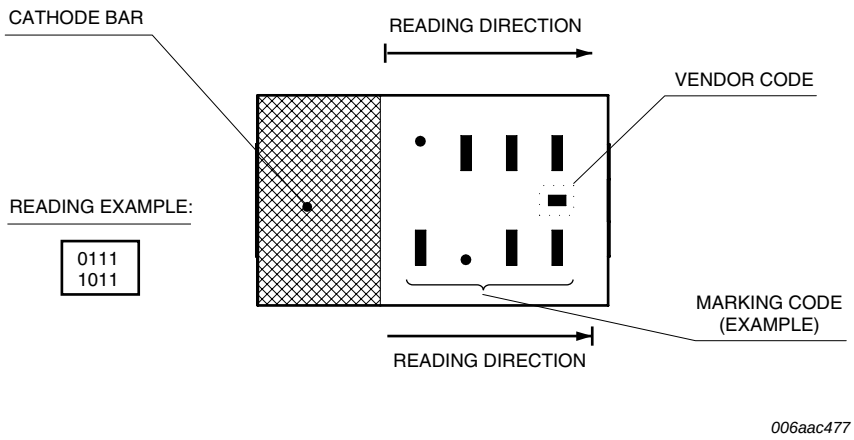


Fig 1. SOD882D binary marking code description

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

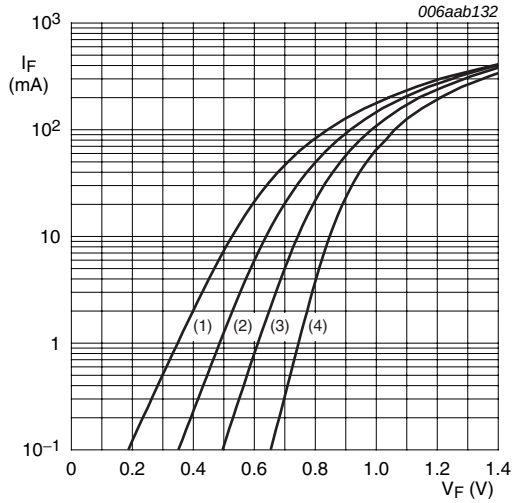
T_{amb} = 25 °C unless otherwise specified.

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; $\delta \leq 0.02$.

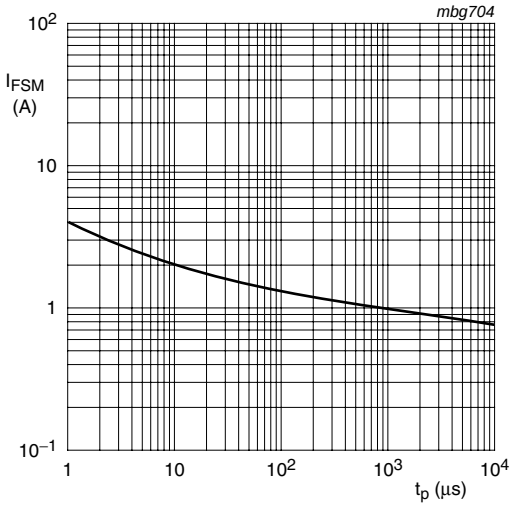
[2] When switched from I_F = 10 mA to I_R = 10 mA; R_L = 100 Ω; measured at I_R = 1 mA.

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



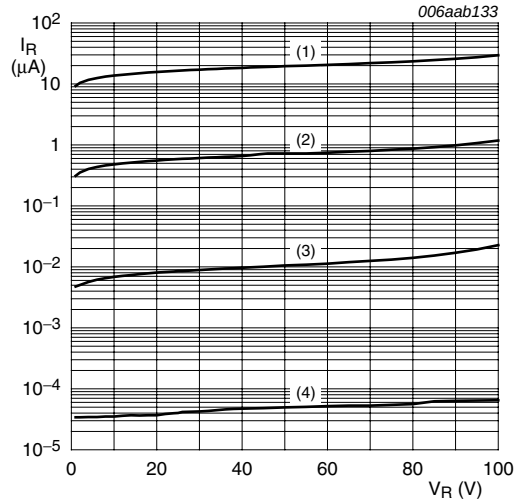
(1) T_{amb} = 150 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = −40 °C

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



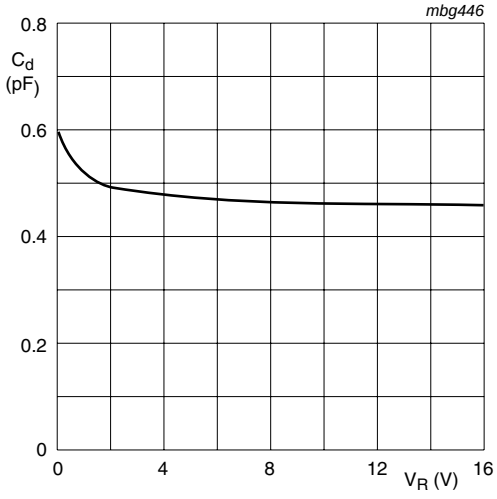
Based on square wave currents.
T_j = 25 °C; prior to surge

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

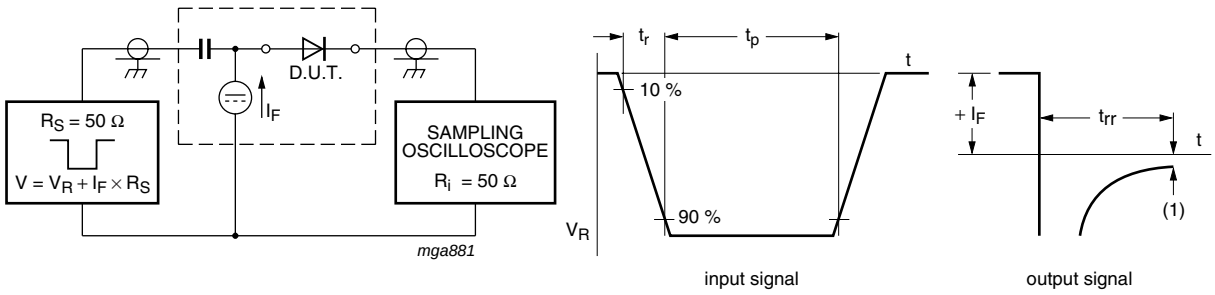
Fig 4. Reverse current as a function of reverse voltage; typical values



f = 1 MHz; T_{amb} = 25 °C

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

8. Test information

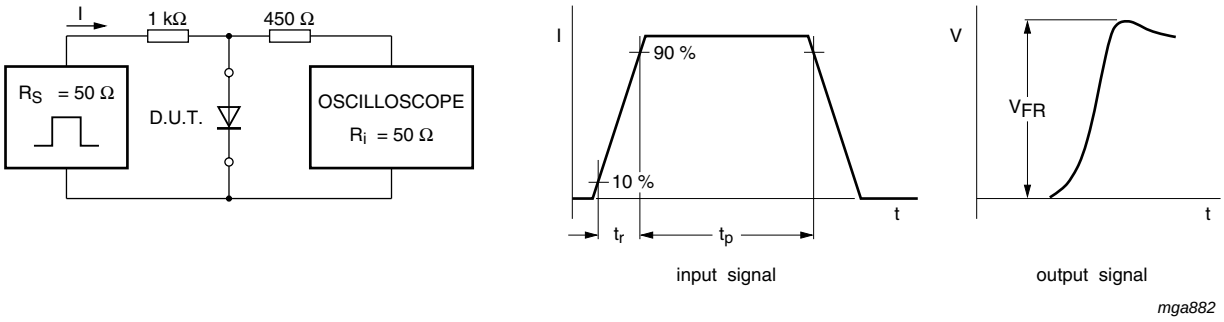


(1) I_R = 1 mA

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

9. Package outline

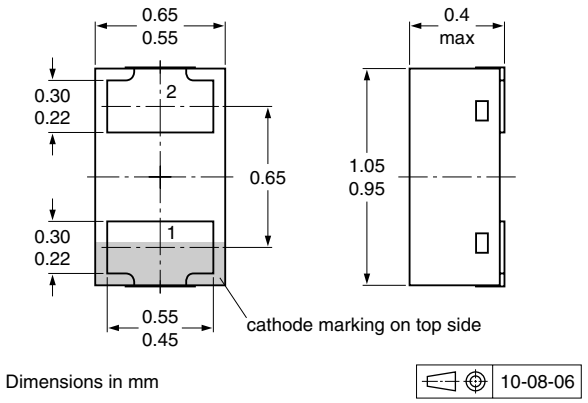


Fig 8. Package outline BAS16LD (SOD882D)

10. Packing information

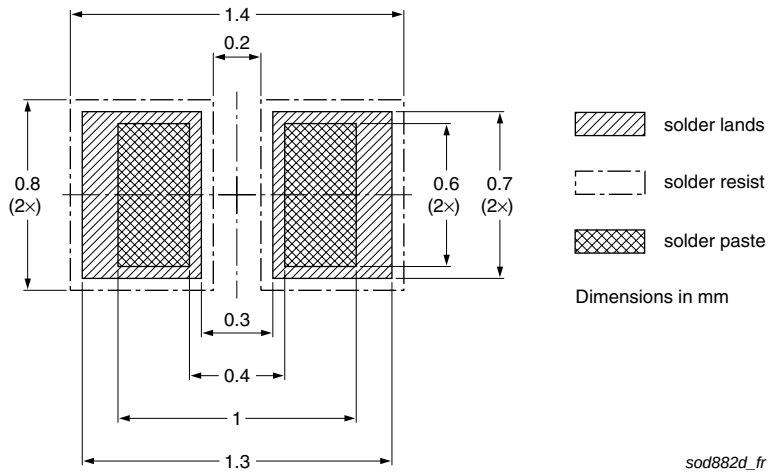
Table 8. Packing methods

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



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	-	-

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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