BAS116LS

Low-leakage diode

3 January 2022 **Product data sheet**

1. General description

Low-leakage diode in an ultra small DFN1006BD-2 (SOD882BD) leadless Surface-Mounted Device (SMD) plastic package with side-wettable flanks.

2. Features and benefits

- Switching time: max. t_{rr} = 3 µs
- Low leakage current: max. I_R = 5 nA
- Repetitive peak reverse voltage: $V_{RRM} \leq 85$ V
- Low capacitance typical: C_d = 2 pF
- Ultra small and leadless SMD plastic package
- Suitable for Automatic Optical Inspection (AOI) of solder joint

3. Applications

- Low-leakage current applications
- General-purpose switching

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current	T_{amb} = 25 °C	[1]	-	-	325	mA
I_R	reverse current	V_R = 75 V; pulsed; T_{amb} = 25 °C		-	-	5	nA
V_R	reverse voltage	T_{amb} = 25 °C		-	-	75	V
V_F	forward voltage	I_F = 150 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	-	1.25	V
V_{RRM}	repetitive peak reverse voltage			-	-	85	V
t_{rr}	reverse recovery time	I_F = 10 mA; I_R = 10 mA; $I_{R(meas)}$ = 1 mA; R_L = 100 Ω; T_{amb} = 25 °C		-	-	3	µs

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), 70 µm single-sided copper, tin-plated and standard footprint.

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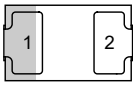
5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 Transparent top view **DFN1006BD-2 (SOD882BD)**	 *aaa-028035*
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS116LS	DFN1006BD-2	Leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.47 mm body	SOD882BD

7. Marking

Table 4. Marking codes

Type number	Marking code
BAS116LS	9C

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
V_R	reverse voltage	T_{amb} = 25 °C		-	75	V
V_{RRM}	repetitive peak reverse voltage			-	85	V
I_F	forward current	T_{amb} = 25 °C	[1]	-	325	mA
I_{FRM}	repetitive peak forward current	$t_p \leq$ 0.5 ms; $\delta \leq$ 0.25; T_{amb} = 25 °C		-	700	mA
I_{FSM}	non-repetitive peak forward current	t_p = 100 µs; square wave		-	4	A
		t_p = 1 ms; square wave		-	1.5	A
		t_p = 1 s; square wave		-	0.5	A
P_{tot}	total power dissipation	$T_{amb} \leq$ 25 °C	[1]	-	345	mW
			[2]	-	645	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			-55	150	°C
T_{stg}	storage temperature			-65	150	°C

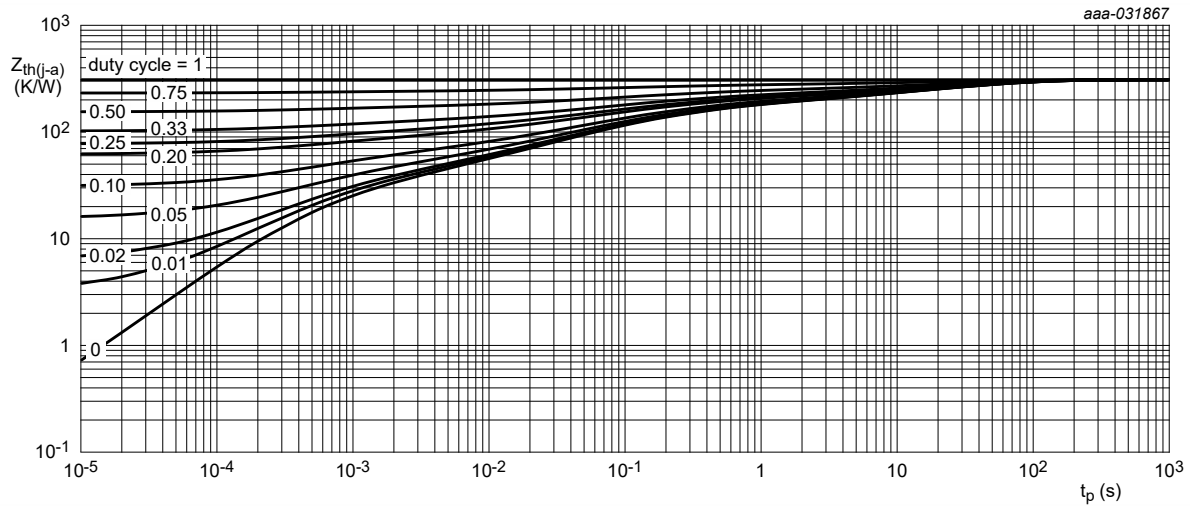
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), 70 µm single-sided copper, tin-plated and standard footprint.
[2] Device mounted on an FR4 PCB, 70 µm single-sided copper, tin-plated, mounting pad for cathode 1 cm².

9. Thermal characteristics

Table 6. Thermal characteristics

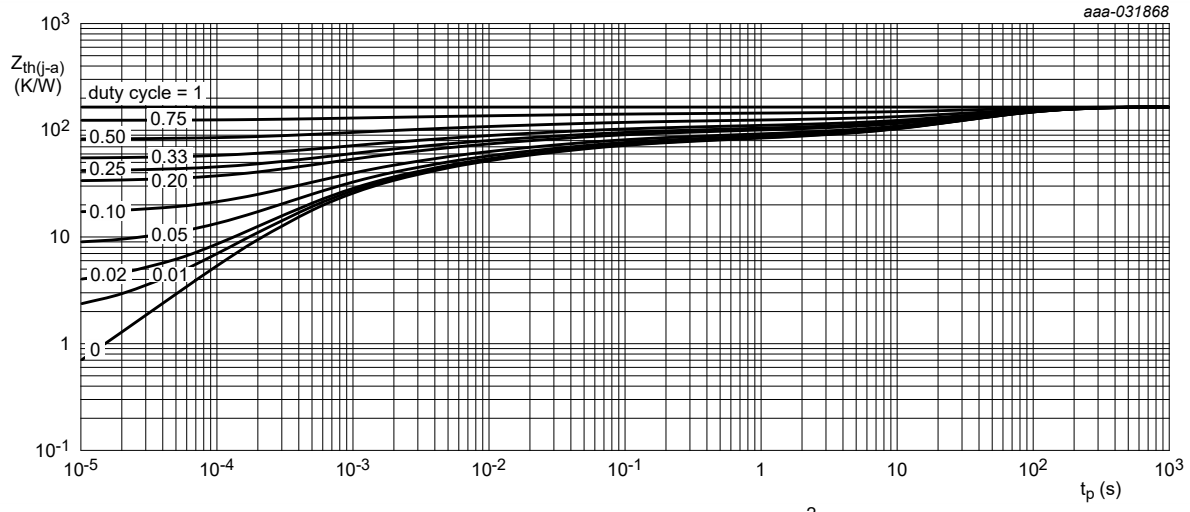
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	360	K/W
			[2]	-	-	195	K/W

[1] Device mounted on an FR4 PCB, 70 µm single-sided copper, tin-plated and standard footprint.
[2] Device mounted on an FR4 PCB, 70 µm single-sided copper, tin-plated, mounting pad for cathode 1 cm².



FR4 PCB, 70 µm single sided copper standard footprint

Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



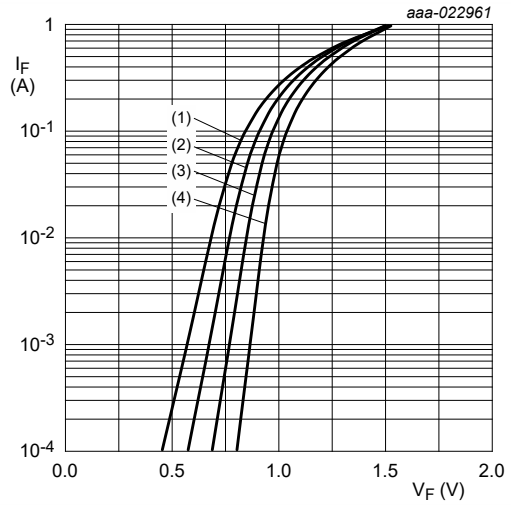
FR4 PCB, 70 µm single sided copper, mounting pad for cathode 1 cm^2

Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

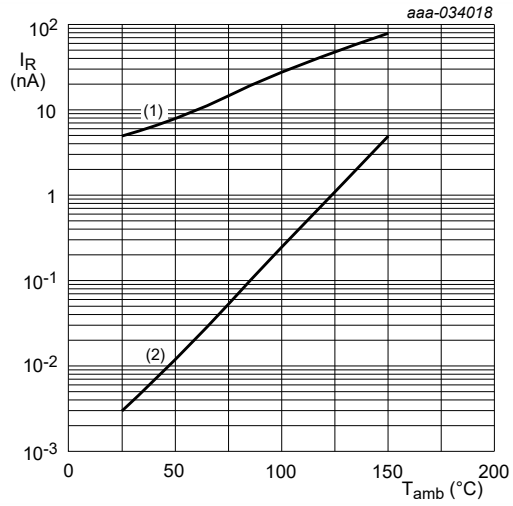
Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 1 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	-	0.9	V
		I_F = 10 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	-	1	V
		I_F = 50 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	-	1.1	V
		I_F = 150 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	-	1.25	V
I_R	reverse current	V_R = 75 V; pulsed; T_{amb} = 25 °C		-	-	5	nA
		V_R = 75 V; pulsed; T_{amb} = 150 °C		-	-	80	nA
C_d	diode capacitance	V_R = 0 V; f = 1 MHz; T_{amb} = 25 °C		-	2	-	pF
t_{rr}	reverse recovery time	I_F = 10 mA; I_R = 10 mA; $I_{R(meas)}$ = 1 mA; R_L = 100 Ω; T_{amb} = 25 °C		-	-	3	µs



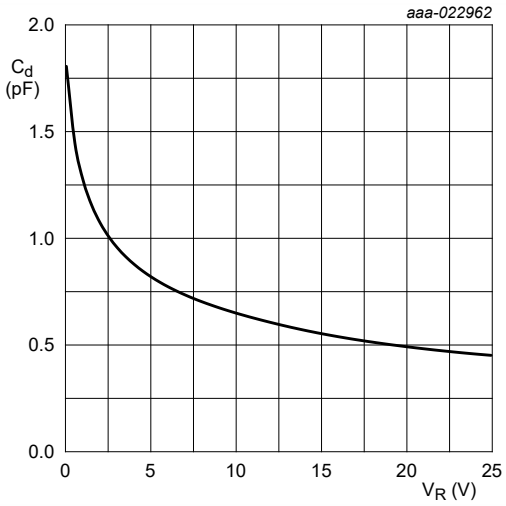
(1) T_{amb} = 150 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = −40 °C

Fig. 3. Forward current as a function of forward voltage; typical values



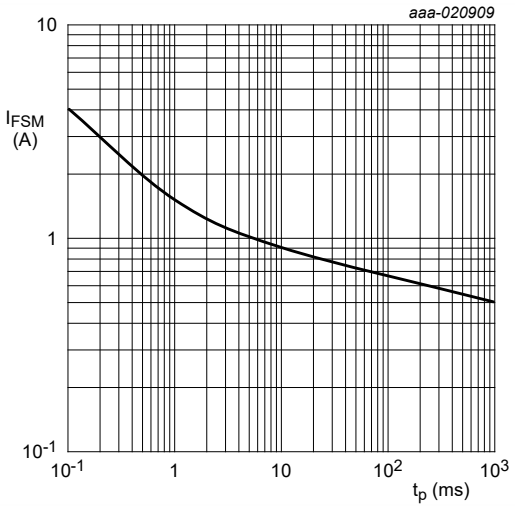
V_R = 75 V
(1) Maximum values
(2) Typical values

Fig. 4. Reverse current as a function of ambient temperature



f = 1 MHz; T_{amb} = 25 °C

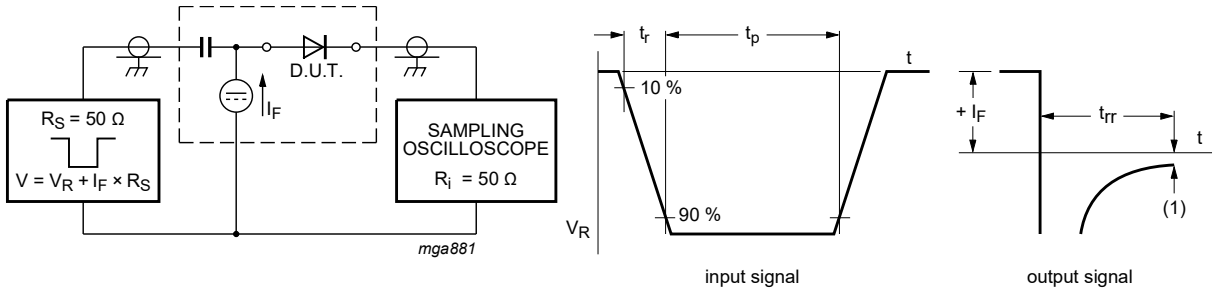
Fig. 5. Diode capacitance as a function of reverse voltage; typical values



Based on square wave currents.
T_{amb} = 25 °C

Fig. 6. Non-repetitive forward current as a function of pulse duration; maximum values

11. Test information



(1) I_R = 1 mA

Fig. 7. Reverse recovery time test circuit and waveforms

12. Package outline

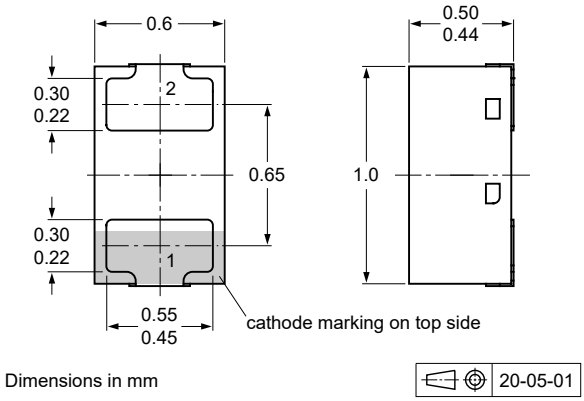


Fig. 8. Package outline DFN1006BD-2 (SOD882BD)

13. Soldering

Footprint information for reflow soldering of DFN1006BD-2 package **SOD882BD**

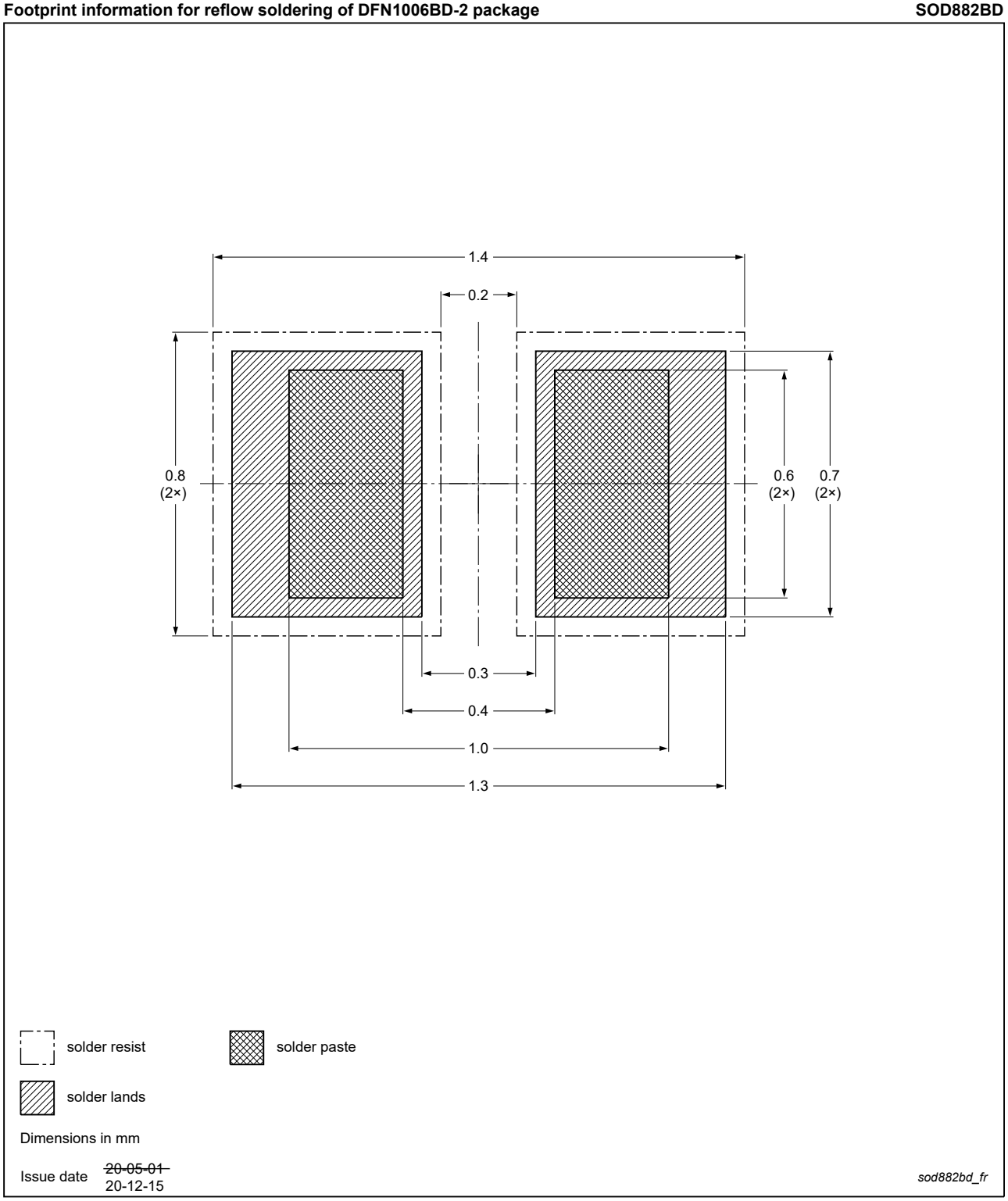


Fig. 9. Reflow soldering footprint for DFN1006BD-2 (SOD882BD)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS116LS v.1	20220103	Product data sheet	-	-

15. Legal information

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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