



BAS116LS-Q

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. $t_{rr} = 3 \mu\text{s}$
- Low leakage current: max. $I_R = 5 \text{ nA}$
- Repetitive peak reverse voltage: $V_{RRM} \leq 85 \text{ V}$
- Low capacitance typical: $C_d = 2 \text{ pF}$
- Ultra small and leadless SMD plastic package
- Suitable for Automatic Optical Inspection (AOI) of solder joint
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- Low-leakage current applications
- General-purpose switching

4. Quick reference data

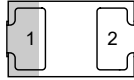

Table 1. Quick reference data

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

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

5. Pinning information

Table 2. Pinning information

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

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS116LS-Q	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-Q	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	$T_{amb} = 25\text{ °C}$		-	75	V
V_{RRM}	repetitive peak reverse voltage			-	85	V
I_F	forward current	$T_{amb} = 25\text{ °C}$	[1]	-	325	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 0.5\text{ ms}$; $\delta \leq 0.25$; $T_{amb} = 25\text{ °C}$		-	700	mA
I_{FSM}	non-repetitive peak forward current	$t_p = 100\text{ }\mu\text{s}$; square wave		-	4	A
		$t_p = 1\text{ ms}$; square wave		-	1.5	A
		$t_p = 1\text{ s}$; square wave		-	0.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[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 cm^2 .

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 cm^2 .

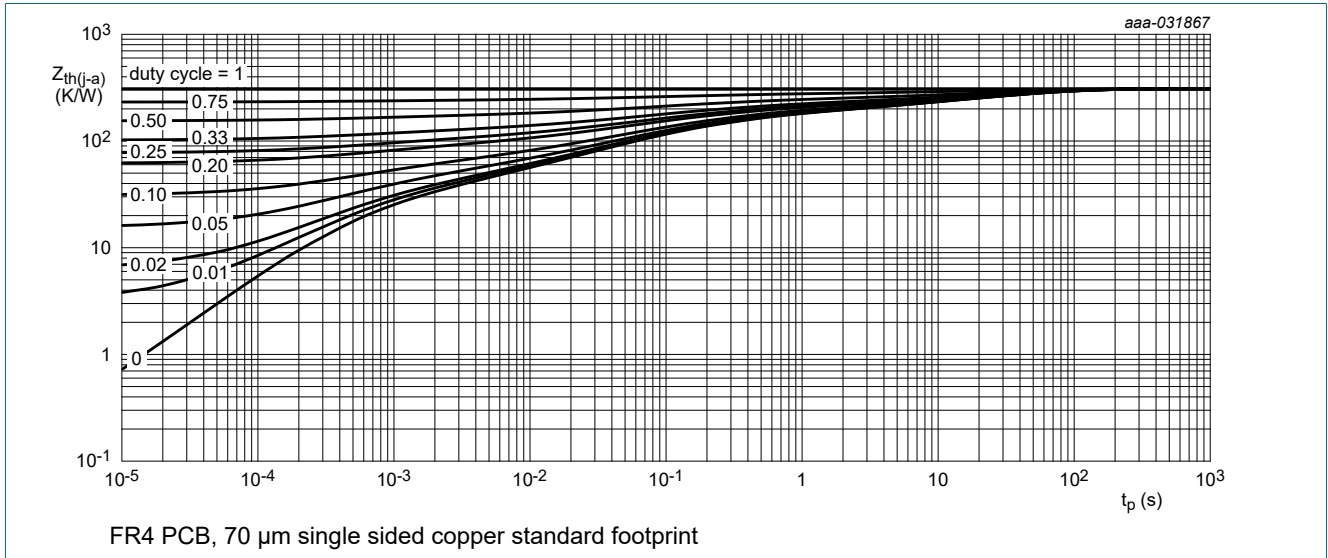


Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

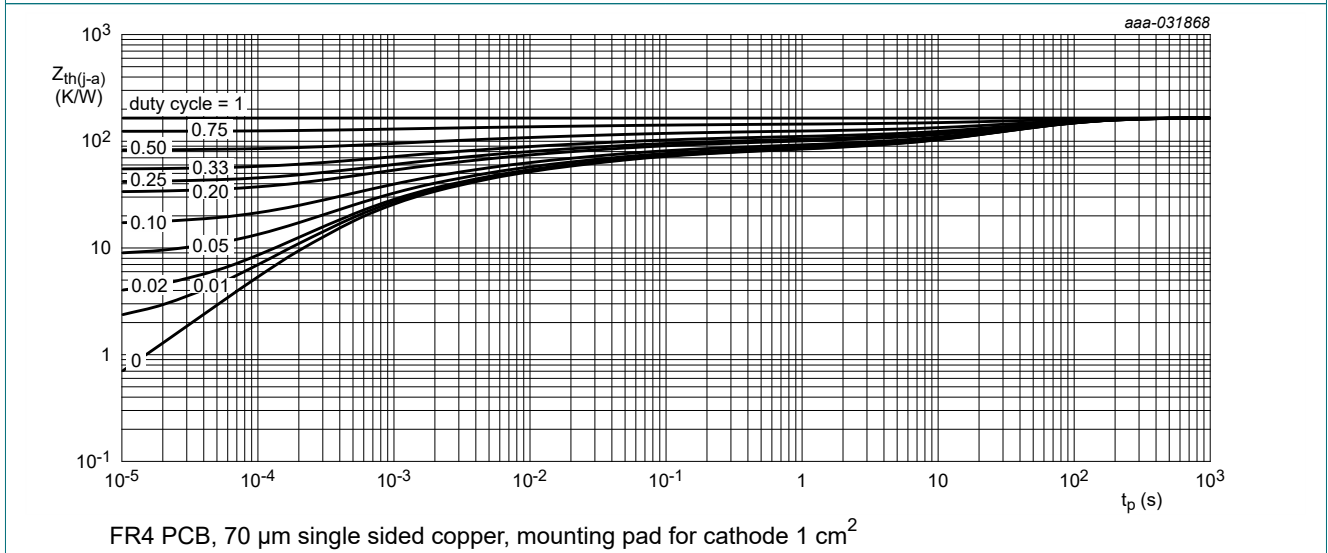
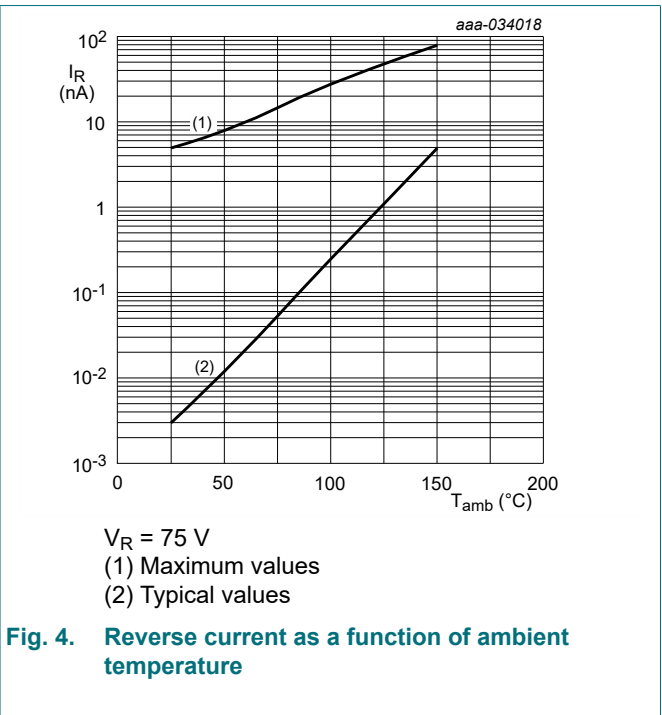
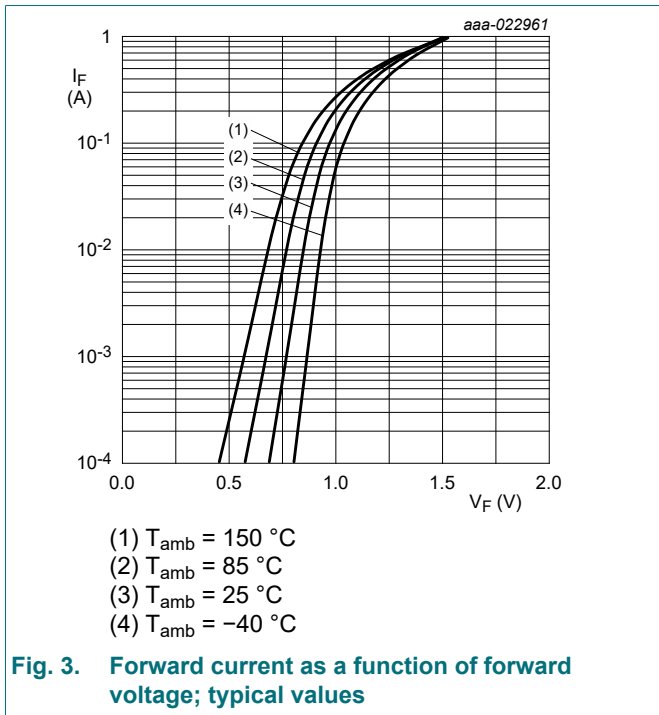


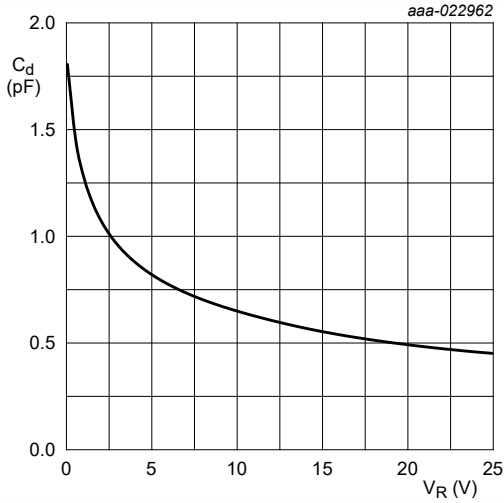
Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

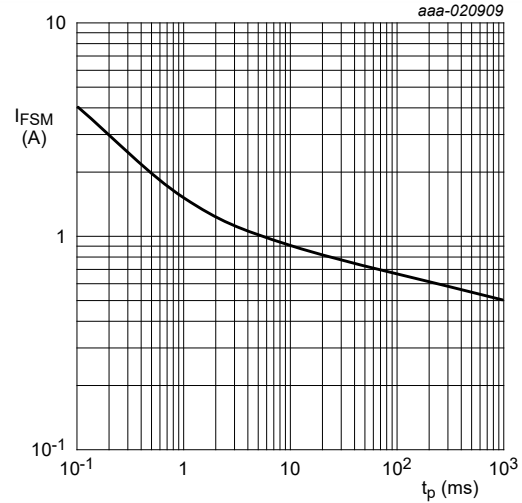
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _F	forward voltage	I _F = 1 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	0.9	V
		I _F = 10 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	1	V
		I _F = 50 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	1.1	V
		I _F = 150 mA; t _p ≤ 300 μs; δ ≤ 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





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

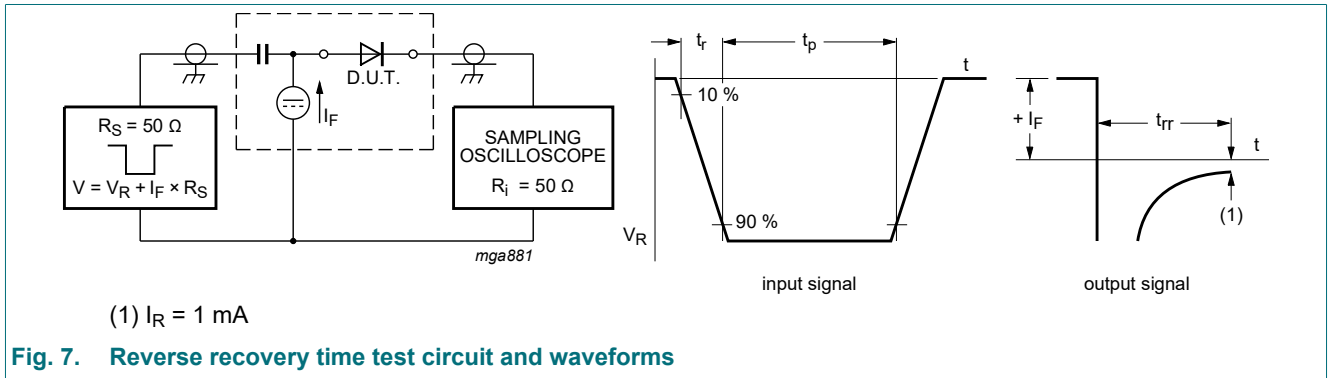
Fig. 5. Diode capacitance as a function of reverse voltage; typical values



Based on square wave currents.
 $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$

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

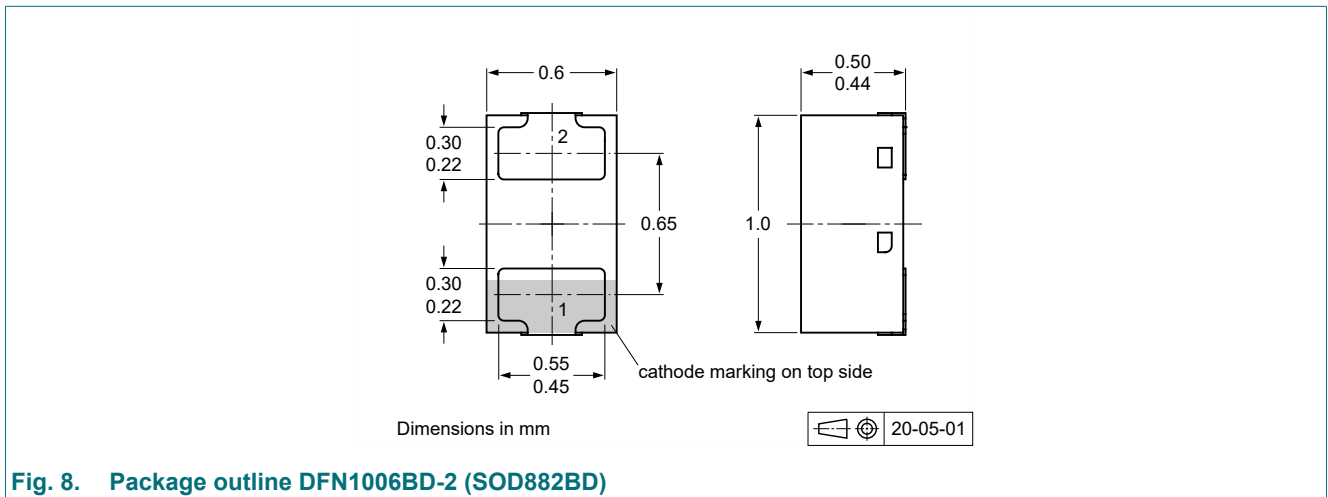
11. Test information



Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - *Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

12. Package outline



13. Soldering

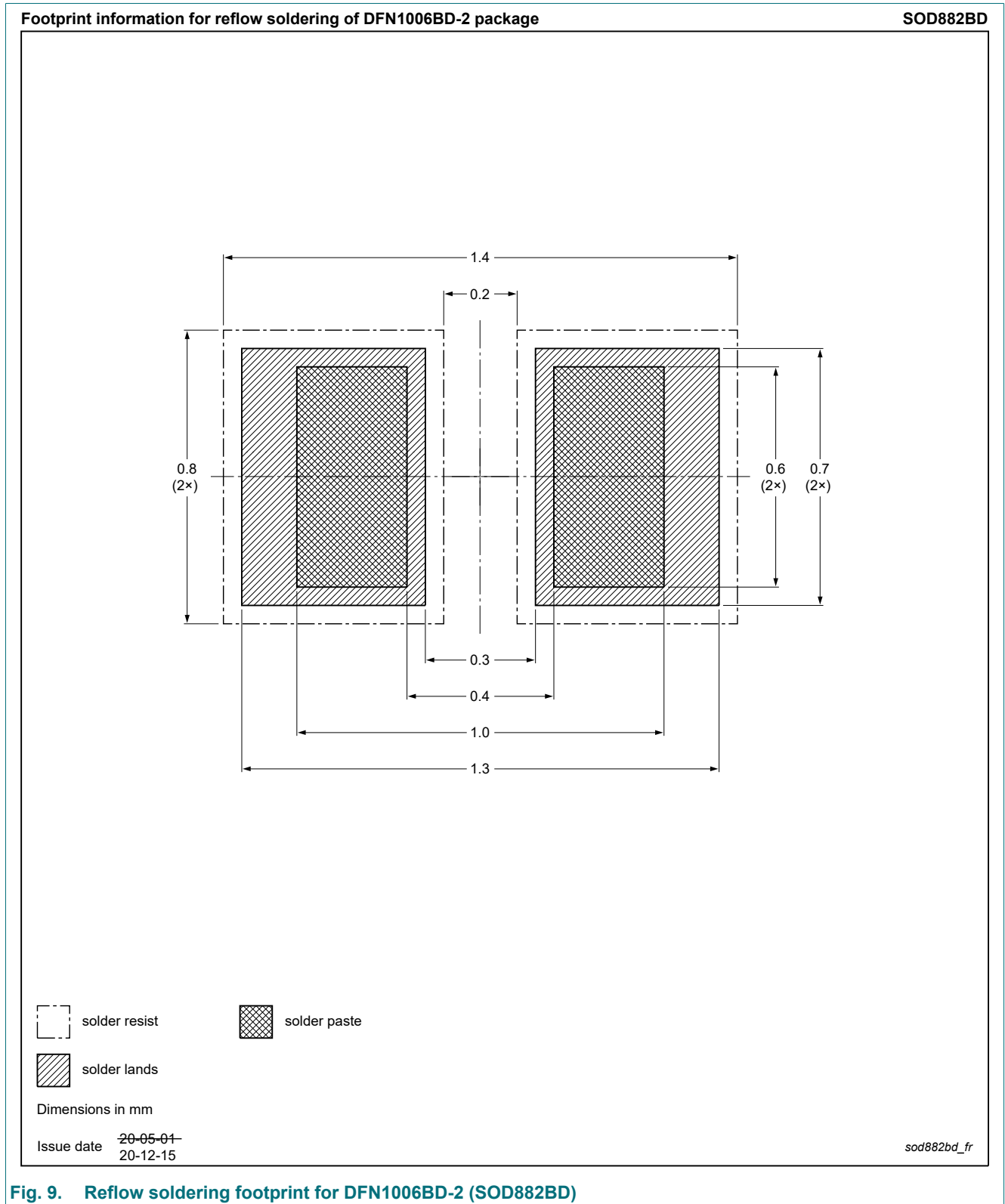


Fig. 9. Reflow soldering footprint for DFN1006BD-2 (SOD882BD)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS116LS-Q 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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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Date of release: 3 January 2022

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