



# 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.  $t_{rr} = 3 \mu s$
- 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	$I_F = 150 \text{ mA}$ ; $t_p \leq 300 \mu s$ ; $\delta \leq 0.02$ ; 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	$\mu s$

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), 70  $\mu m$  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><b>DFN1006BD-2 (SOD882BD)</b></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	$T_{amb} = 25\text{ }^{\circ}\text{C}$		-	75	V
$V_{RRM}$	repetitive peak reverse voltage			-	85	V
$I_F$	forward current	$T_{amb} = 25\text{ }^{\circ}\text{C}$	[1]	-	325	mA
$I_{FRM}$	repetitive peak forward current	$t_p \leq 0.5\text{ ms}$ ; $\delta \leq 0.25$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$		-	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	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	[1]	-	345	mW
			[2]	-	645	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 Printed-Circuit Board (PCB), 70  $\mu\text{m}$  single-sided copper, tin-plated and standard footprint.

[2] Device mounted on an FR4 PCB, 70  $\mu\text{m}$  single-sided copper, tin-plated, mounting pad for cathode 1  $\text{cm}^2$ .

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  $\mu$ m single-sided copper, tin-plated and standard footprint.  
[2] Device mounted on an FR4 PCB, 70  $\mu$ m single-sided copper, tin-plated, mounting pad for cathode 1 cm<sup>2</sup>.

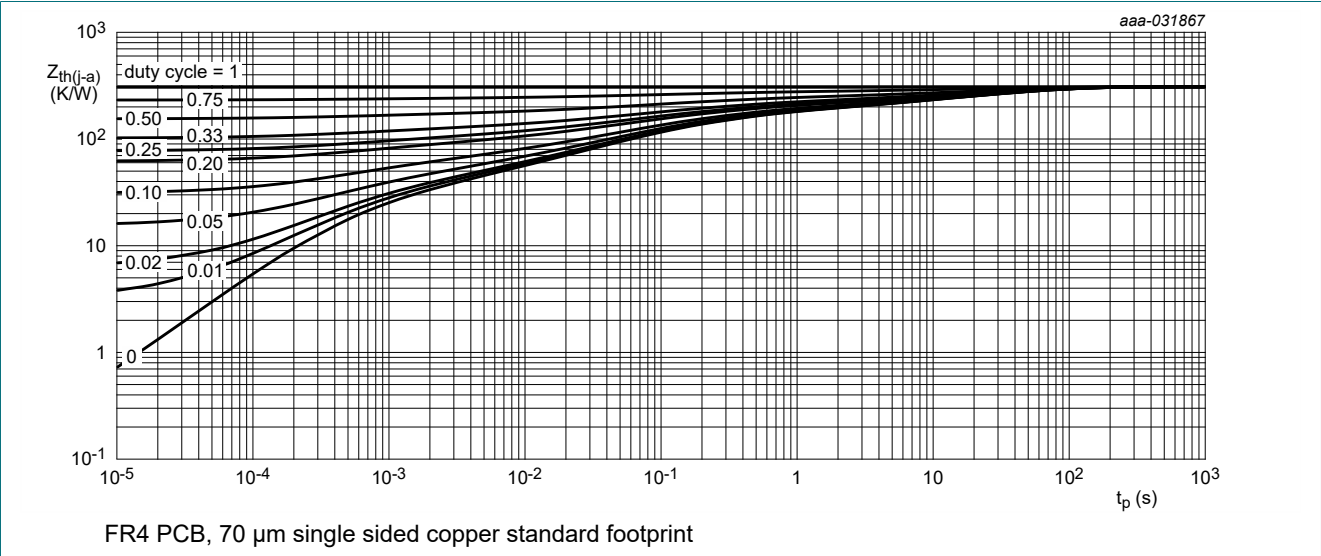


Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

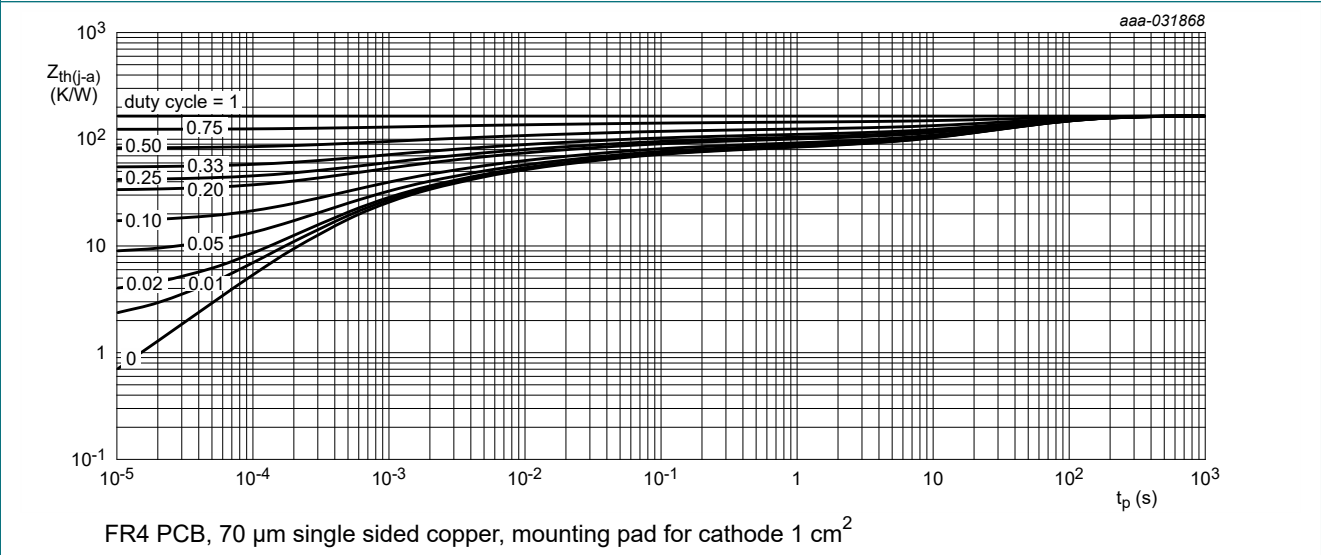
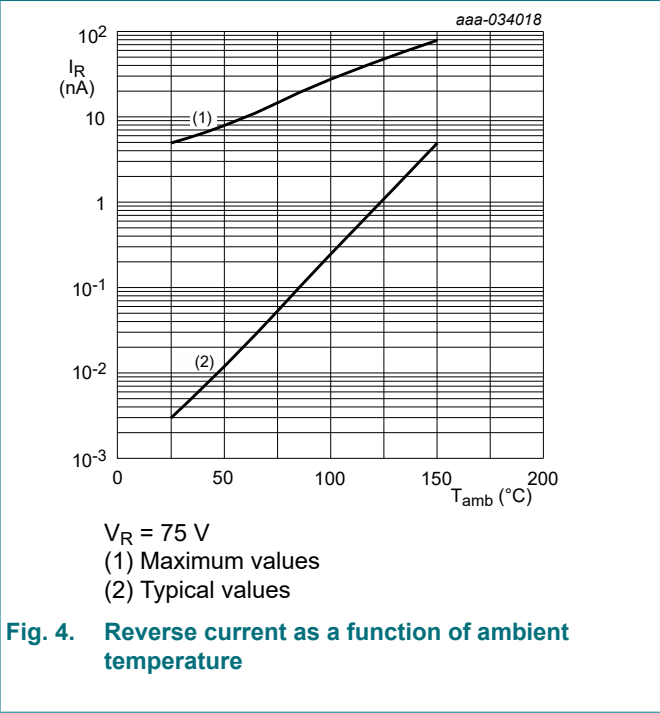
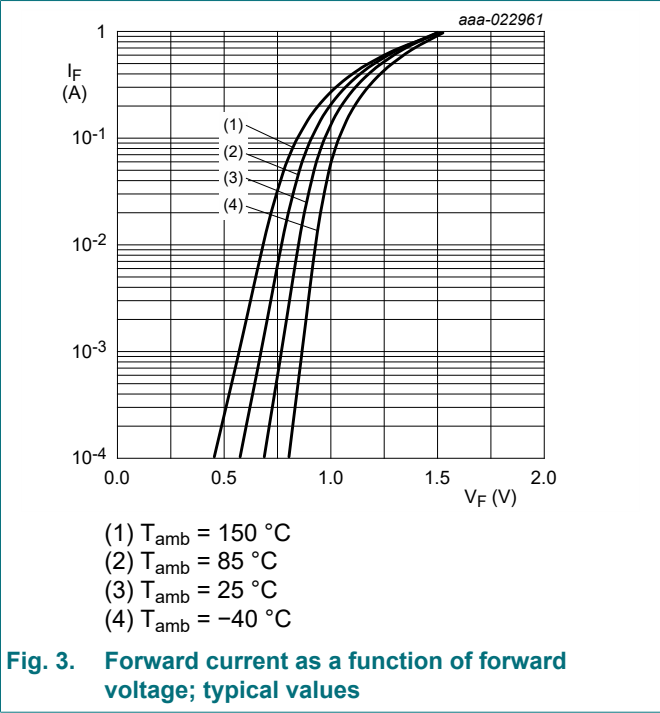


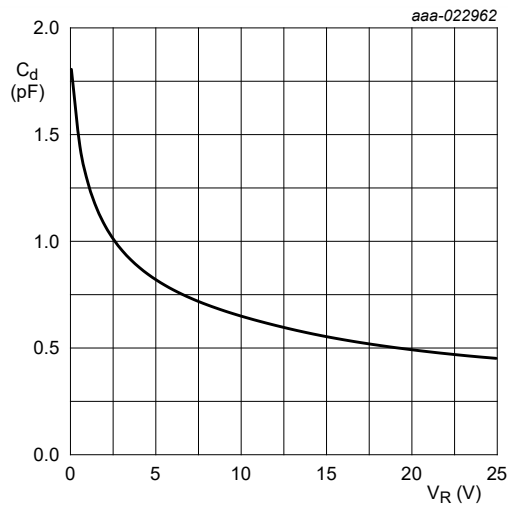
Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

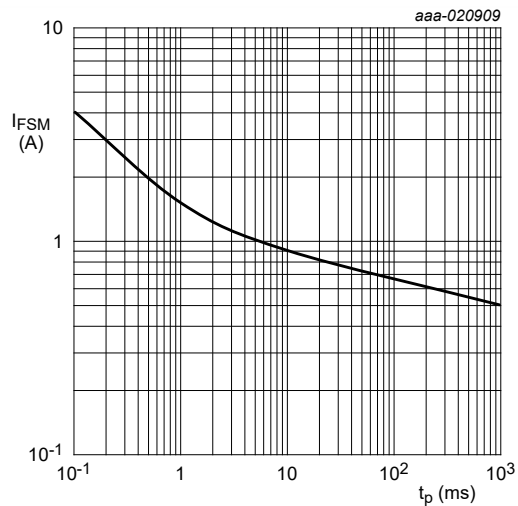
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 1\text{ mA}$ ; $t_p \leq 300\text{ }\mu\text{s}$ ; $\delta \leq 0.02$ ; pulsed; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	-	0.9	V
		$I_F = 10\text{ mA}$ ; $t_p \leq 300\text{ }\mu\text{s}$ ; $\delta \leq 0.02$ ; pulsed; $T_{\text{amb}}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





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

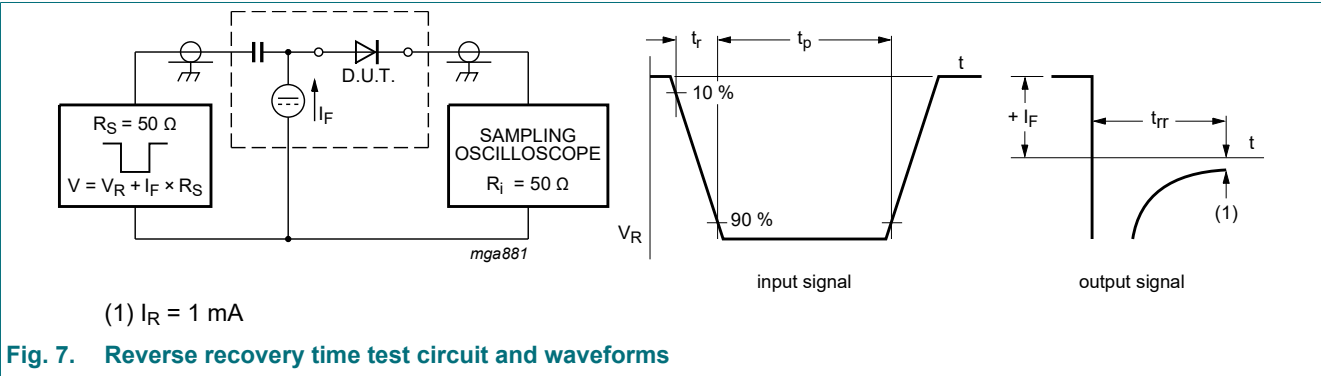
**Fig. 5. Diode capacitance as a function of reverse voltage; typical values**



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**

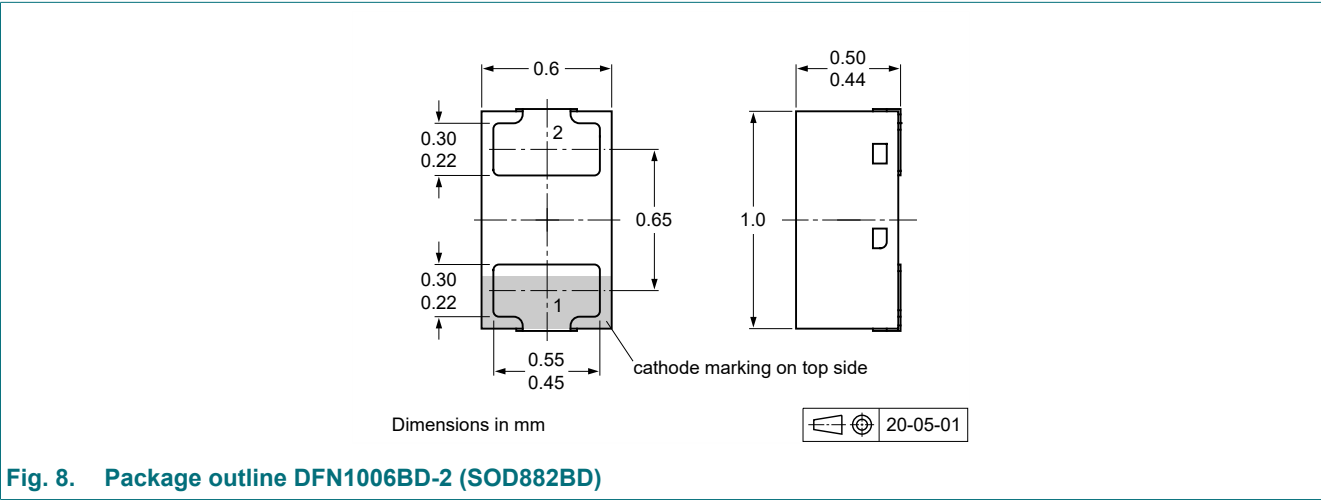
11. Test information



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

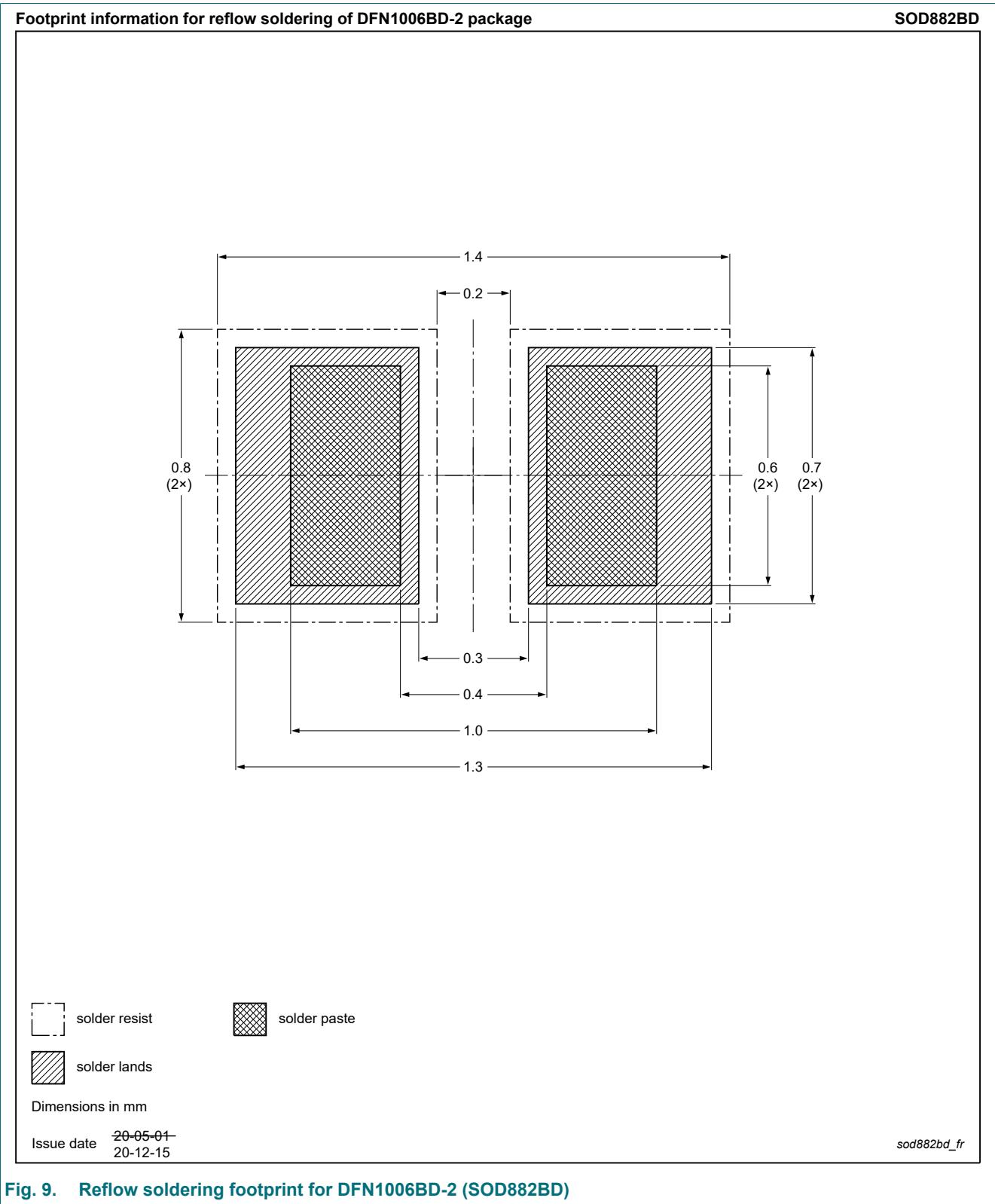


Fig. 9. Reflow soldering footprint for DFN1006BD-2 (SOD882BD)

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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