



BAT54LS-Q

Schottky barrier diode

4 May 2021

Product data sheet

1. General description

Planar Schottky barrier diode in a leadless ultra small DFN1006BD-2 (SOD882BD) Surface-Mounted Device (SMD) plastic package with side-wettable flanks.

2. Features and benefits

- Low forward voltage
- Low capacitance
- Leadless ultra small SMD plastic package
- Low package height of 0.5 mm
- Suitable for Automatic Optical Inspection (AOI) of solder joint
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits

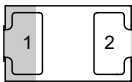
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_R	reverse voltage		-	-	30	V
V_F	forward voltage	$I_F = 10 \text{ mA}$; $t_p \leq 300 \text{ } \mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	400	mV

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 Transparent top view DFN1006BD-2 (SOD882BD)	 sym001
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAT54LS-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
BAT54LS-Q	8L

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			-	30	V
I_F	forward current	$T_{amb} \leq 25\text{ °C}$		-	200	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 1\text{ s}$; $\delta \leq 0.5$; $T_{amb} = 25\text{ °C}$		-	300	mA
I_{FSM}	non-repetitive peak forward current	square-wave pulse; $t_p \leq 10\text{ ms}$; $T_{j(init)} = 25\text{ °C}$		-	600	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1]	-	345	mW
			[2]	-	640	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), single-sided 70 µm copper, tin-plated and standard footprint.

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

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] [2]	-	-	360	K/W
			[3]	-	-	195	K/W

- [1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided 70 μm copper, tin-plated and standard footprint.
[2] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses PR are a significant part of the total power losses.
[3] Device mounted on an FR4 Printed-Circuit Board (PCB), 70 μm single-sided copper, tin-plated; mounting pad for collector 1cm².

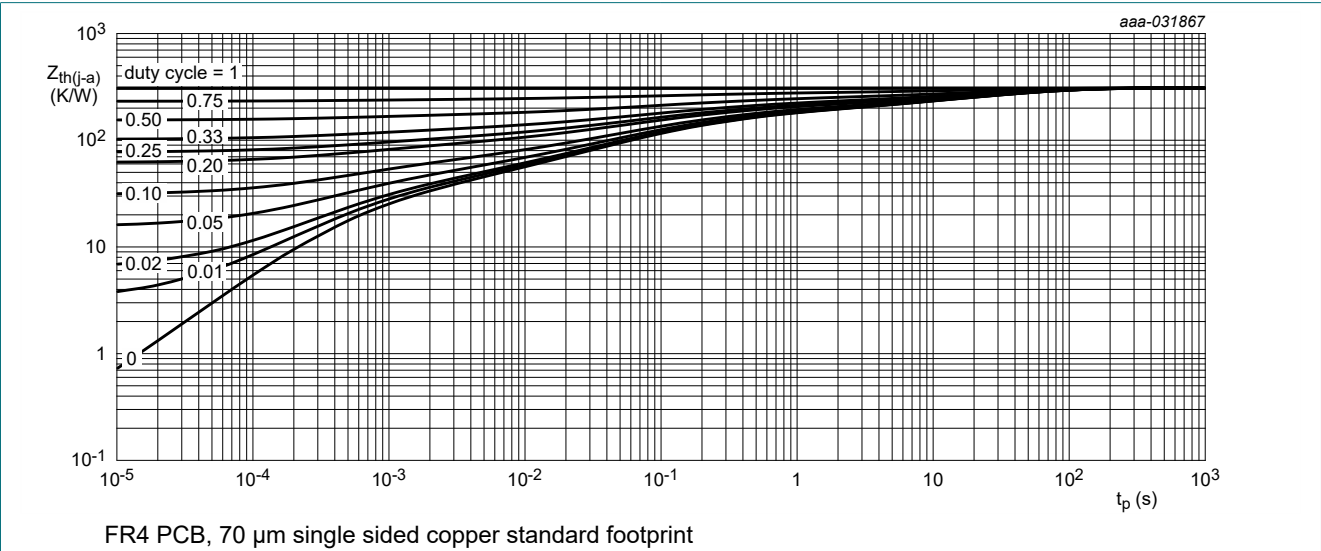


Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

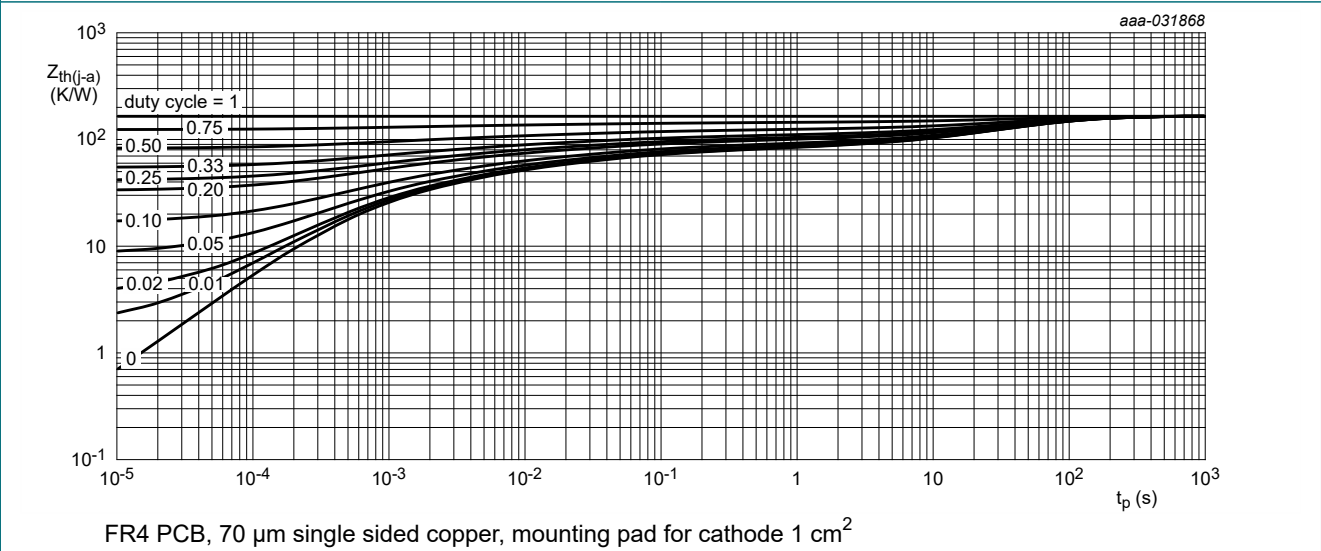
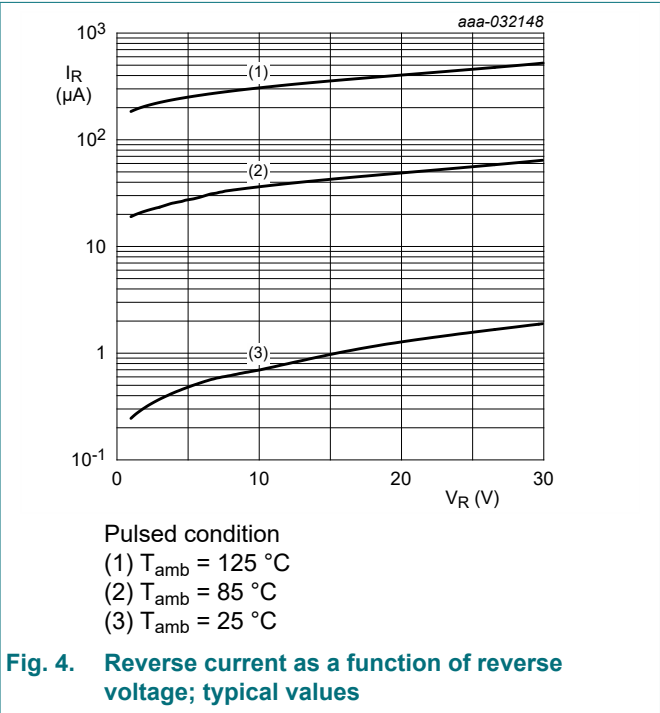
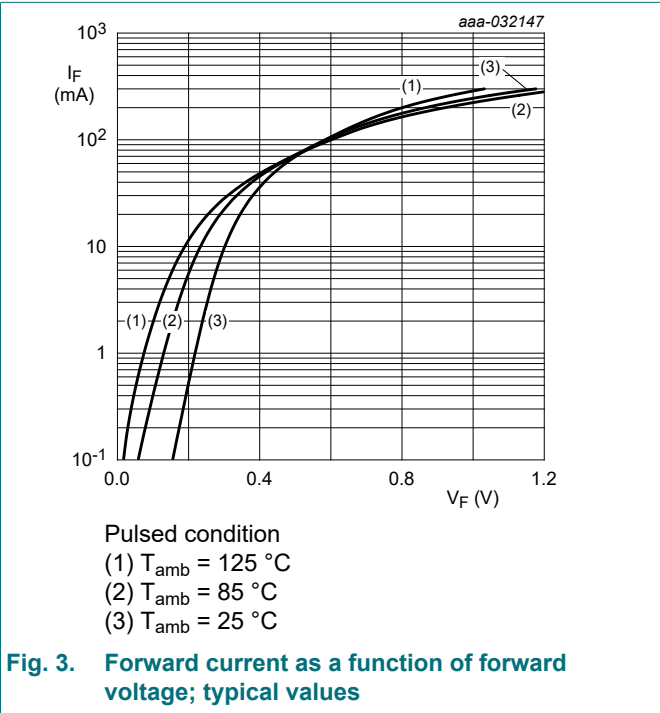


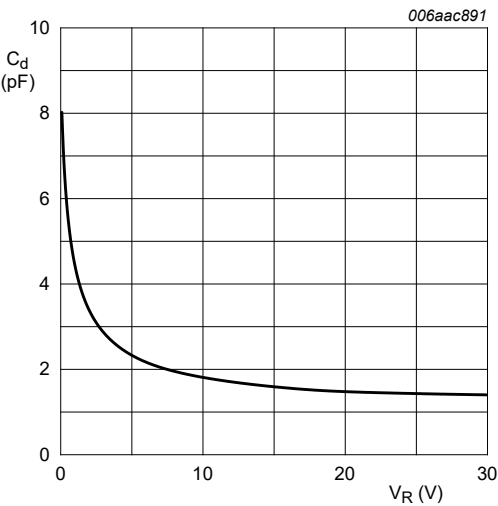
Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _F	forward voltage	I _F = 0.1 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	240	mV
		I _F = 1 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	320	mV
		I _F = 10 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	400	mV
		I _F = 30 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	500	mV
		I _F = 100 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	800	mV
I _R	reverse current	V _R = 25 V; t _p ≤ 300 μs; δ ≤ 2; pulsed; T _{amb} = 25 °C	-	-	2	μA
C _d	diode capacitance	V _R = 1 V; f = 1 MHz; T _{amb} = 25 °C	-	-	10	pF
t _{rr}	reverse recovery time	I _F = 10 mA; I _R = 10 mA; R _L = 100 Ω; I _{R(meas)} = 1 mA; T _{amb} = 25 °C	-	-	5	ns





T_{amb} = 25 °C; f = 1 MHz

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

11. Test information

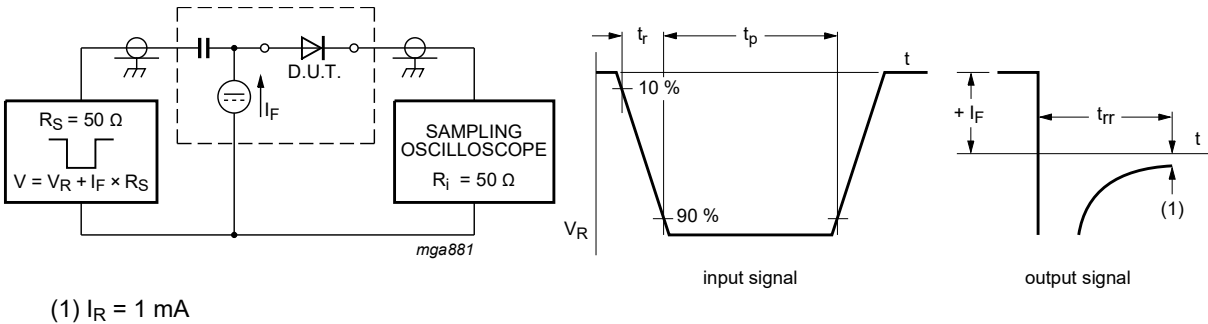
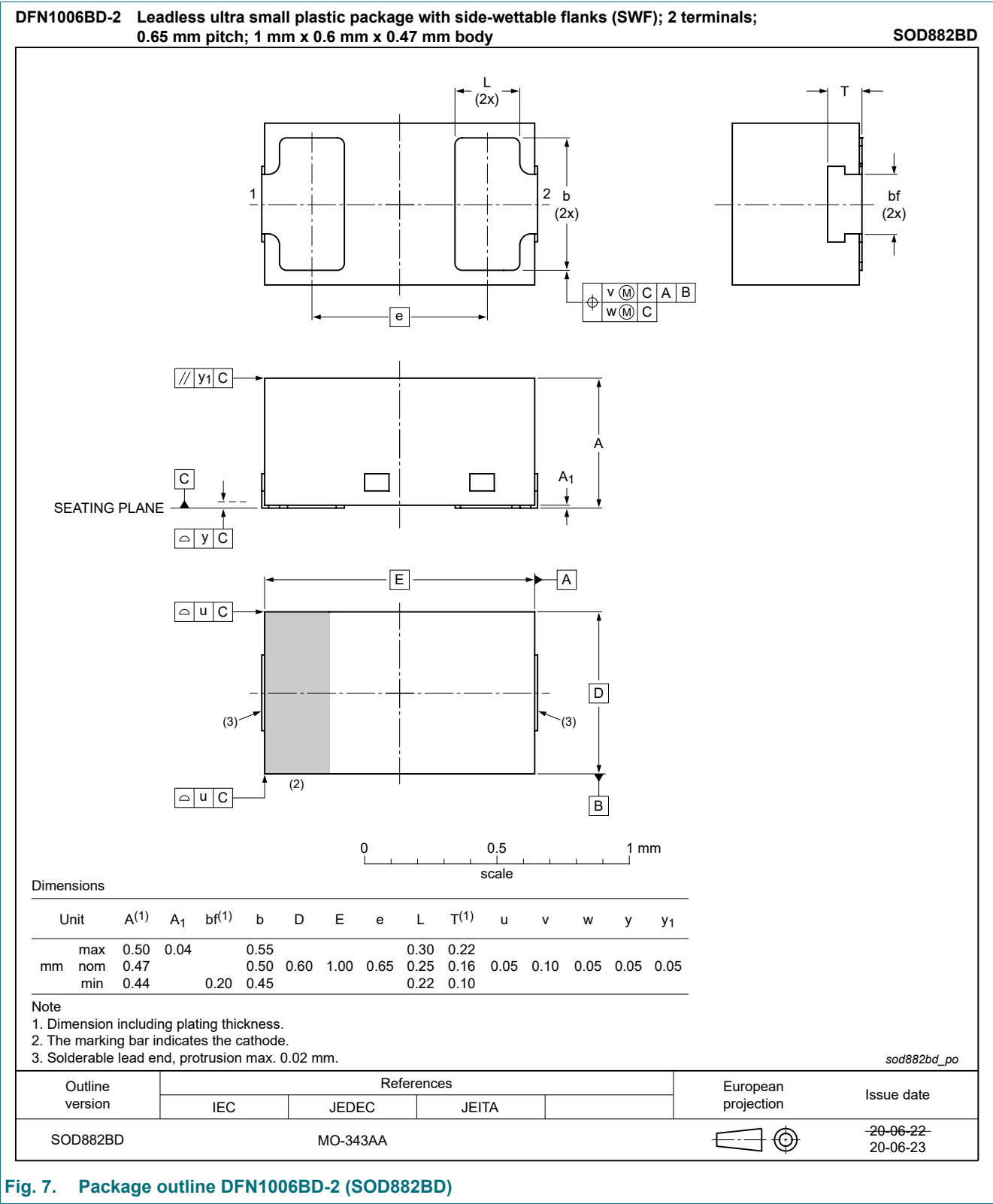


Fig. 6. Reverse recovery time test circuit and waveforms

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

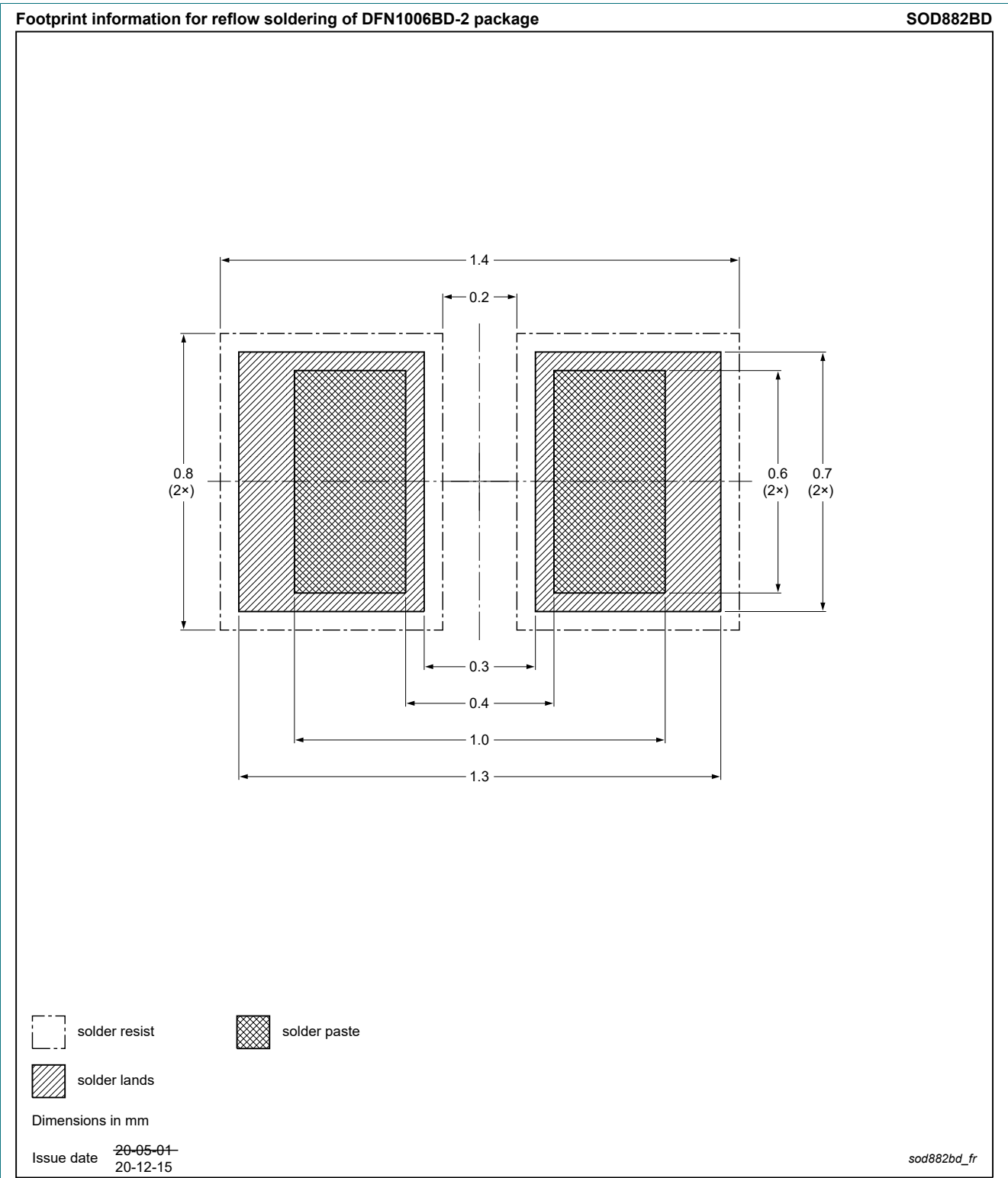


Fig. 8. Reflow soldering footprint for DFN1006BD-2 (SOD882BD)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT54LS-Q v.2	20210504	Product data sheet	-	BAT54LS-Q v.1
Modifications:	• Features and benefits: added recommendation for automotive applications			
BAT54LS-Q v.1	20210125	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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