



BAS16LS-Q

High-speed switching diode

18 May 2021

Product data sheet

1. General description

High-speed switching diode, encapsulated in a leadless ultra small DFN1006BD-2 (SOD882BD) Surface-Mounted Device (SMD) plastic package with side-wettable flanks.

2. Features and benefits

- High switching speed: $t_{rr} \leq 4 \text{ ns}$
- Low leakage current
- Repetitive peak reverse voltage $V_{RRM} \leq 100 \text{ V}$
- Suitable for Automatic Optical Inspection (AOI) of solder joint
- Low capacitance
- Reverse voltage $V_R \leq 100 \text{ V}$
- Ultra small and leadless SMD plastic package
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- High-speed switching
- General-purpose switching

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current	$T_j = 25 \text{ }^\circ\text{C}$	[1]	-	-	215	mA
I_R	reverse current	$V_R = 80 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$		-	-	0.5	μA
V_R	reverse voltage	$T_j = 25 \text{ }^\circ\text{C}$		-	-	100	V
t_{rr}	reverse recovery time	$I_F = 10 \text{ mA}; I_R = 10 \text{ mA}; R_L = 100 \text{ }\Omega;$ $I_{R(\text{meas})} = 1 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$		-	-	4	ns

[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	 Transparent top view DFN1006BD-2 (SOD882BD)	 aaa-028035
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS16LS-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
BAS16LS-Q	M8

8. 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	$T_j = 25\text{ °C}$		-	100	V
V_R	reverse voltage			-	100	V
I_F	forward current		[1]	-	215	mA
I_{FSM}	non-repetitive peak forward current	$t_p = 1\text{ }\mu\text{s}$; square wave; $T_{j(\text{init})} = 25\text{ °C}$		-	4	A
		$t_p = 1\text{ ms}$; square wave; $T_{j(\text{init})} = 25\text{ °C}$		-	1	A
		$t_p = 1\text{ s}$; square wave; $T_{j(\text{init})} = 25\text{ °C}$		-	0.5	A
I_{FRM}	repetitive peak forward current	$t_p \leq 0.5\text{ ms}$; $\delta \leq 0.25$		-	500	mA
P_{tot}	total power dissipation	$T_{\text{amb}} \leq 25\text{ °C}$	[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 Printed-Circuit Board (PCB), 70 μm single-sided copper, tin-plated mounting pad for cathode 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]	-	-	360	K/W
			[2]	-	-	195	K/W

- [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 Printed-Circuit Board (PCB), 70 μm single-sided copper, tin-plated mounting pad for cathode 1cm².

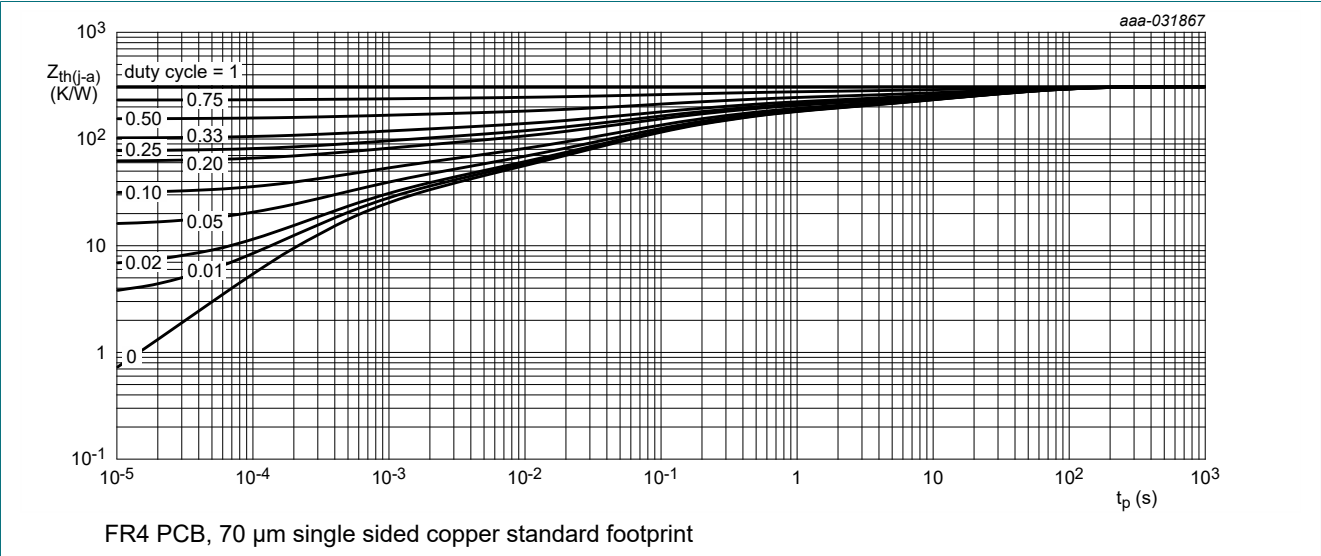


Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

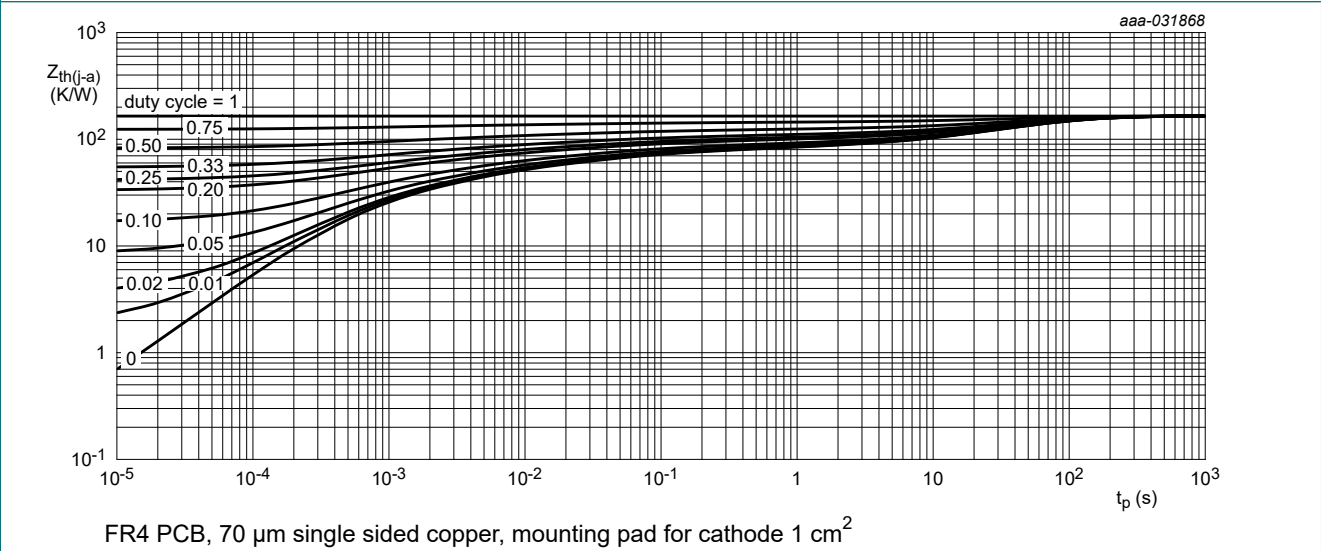
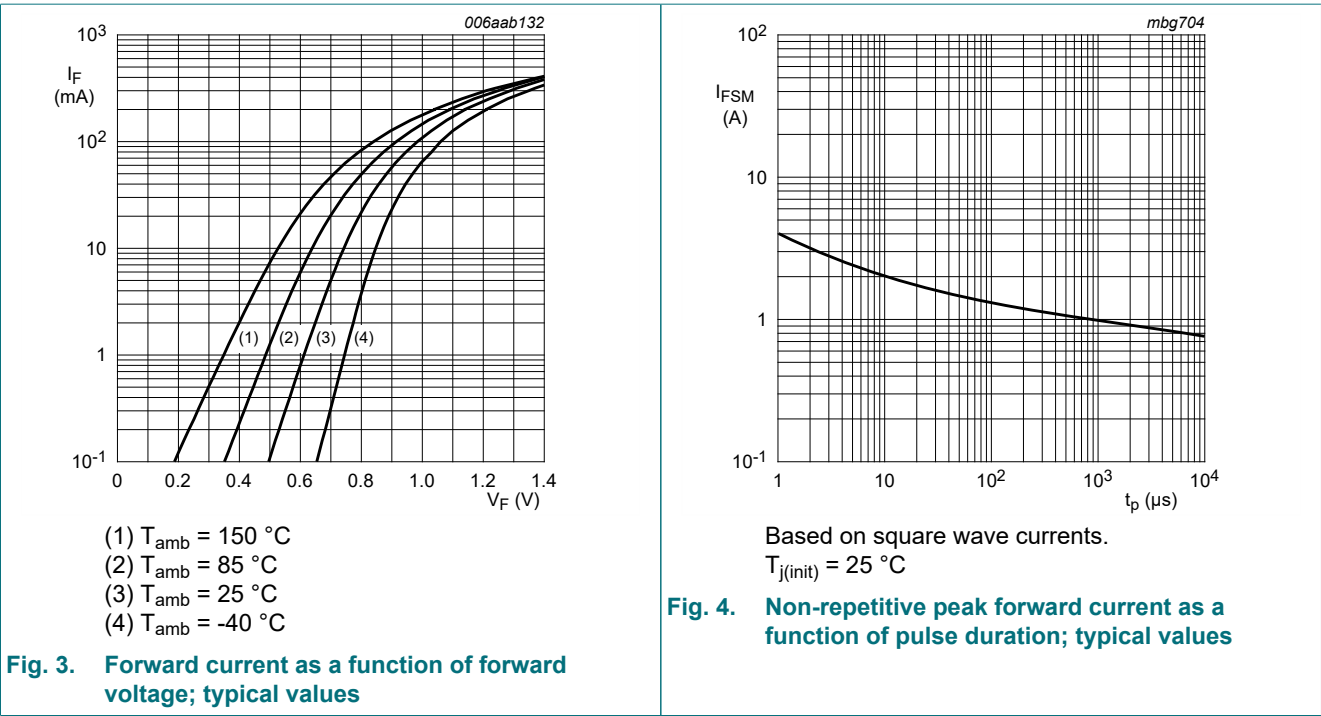


Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _F	forward voltage	I _F = 1 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	-	715	mV
		I _F = 10 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	-	855	mV
		I _F = 50 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	-	1	V
		I _F = 150 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	-	1.25	V
I _R	reverse current	V _R = 25 V; T _j = 25 °C	-	-	30	nA
		V _R = 80 V; T _j = 25 °C	-	-	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	V _R = 0 V; f = 1 MHz; T _{amb} = 25 °C	-	-	1.5	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	-	-	4	ns
V _{FRM}	peak forward recovery voltage	I _F = 10 mA; t _r = 20 ns; T _{amb} = 25 °C	-	-	1.75	V



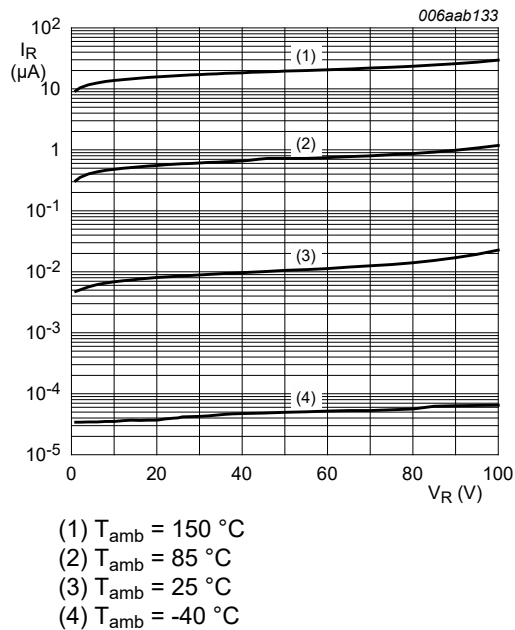


Fig. 5. Reverse current as a function of reverse voltage; typical values

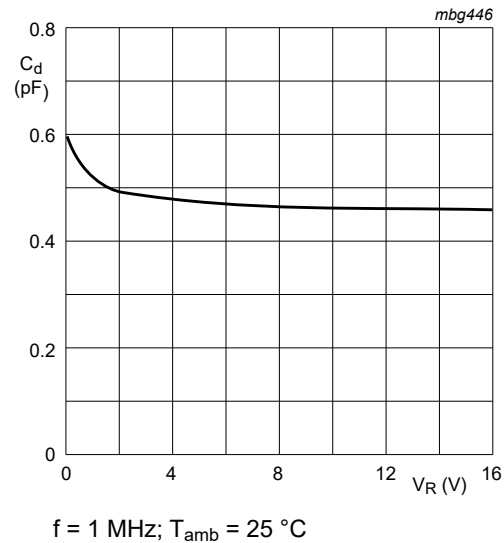
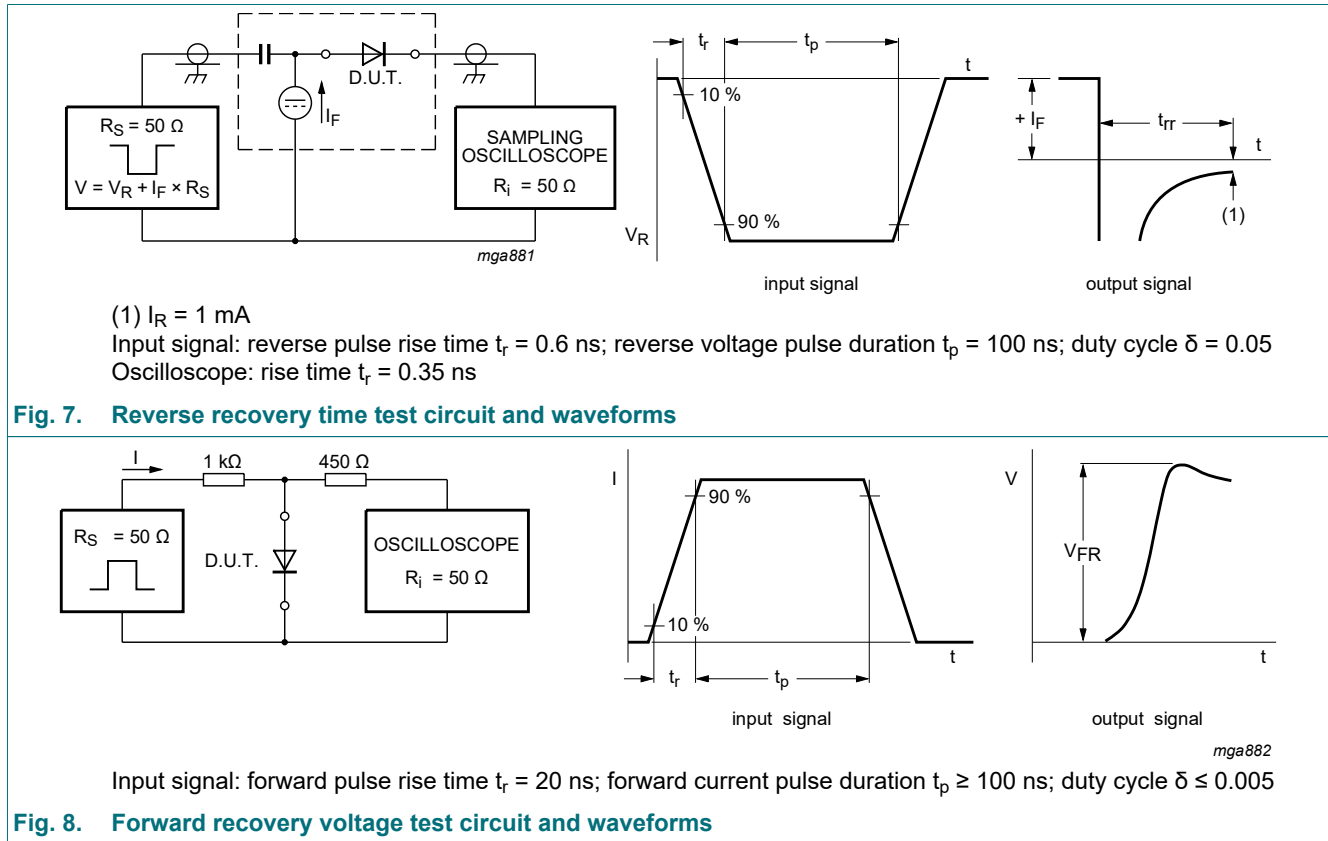


Fig. 6. Diode capacitance as a function of reverse voltage; typical values

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

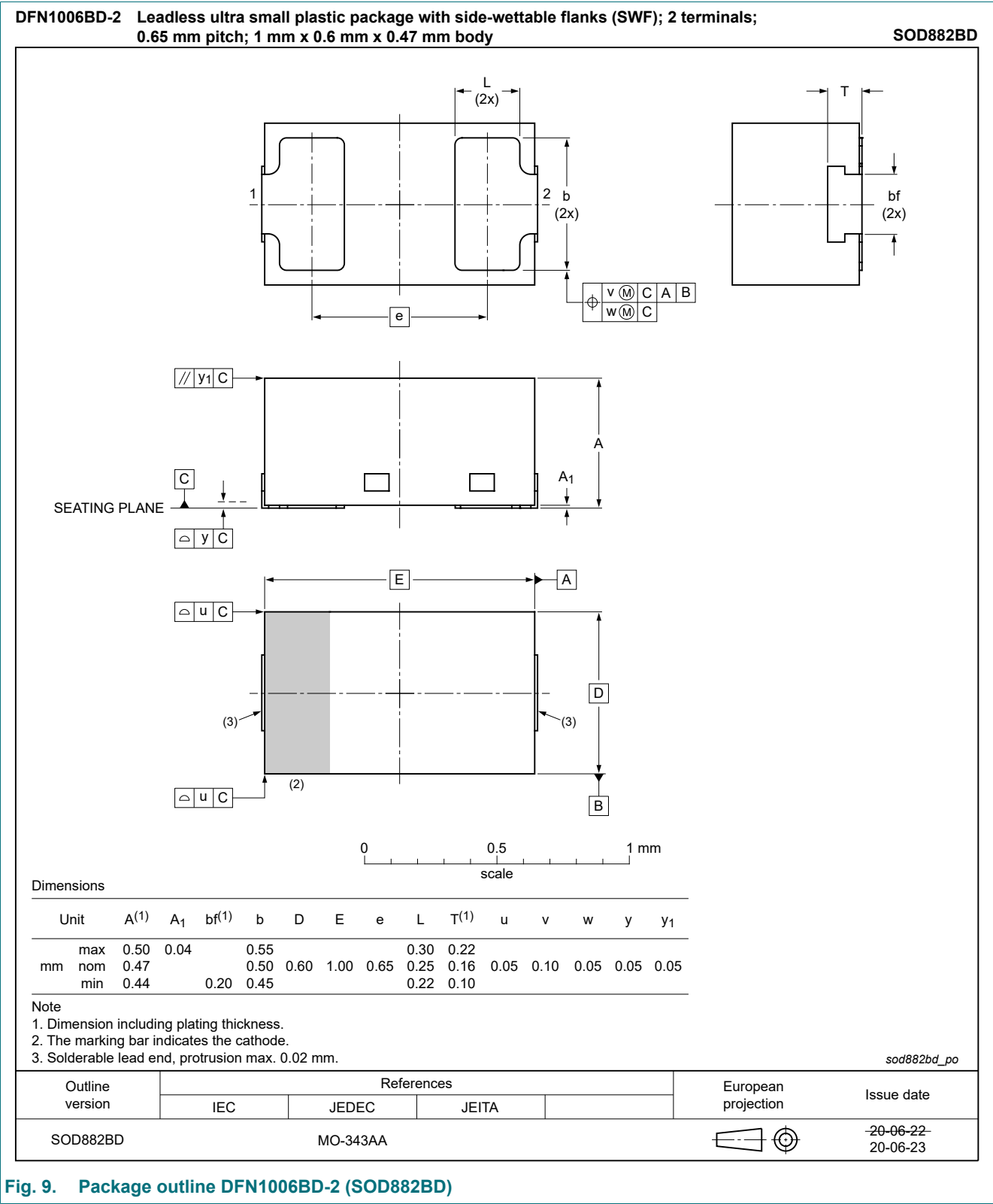


Fig. 9. Package outline DFN1006BD-2 (SOD882BD)

13. Soldering

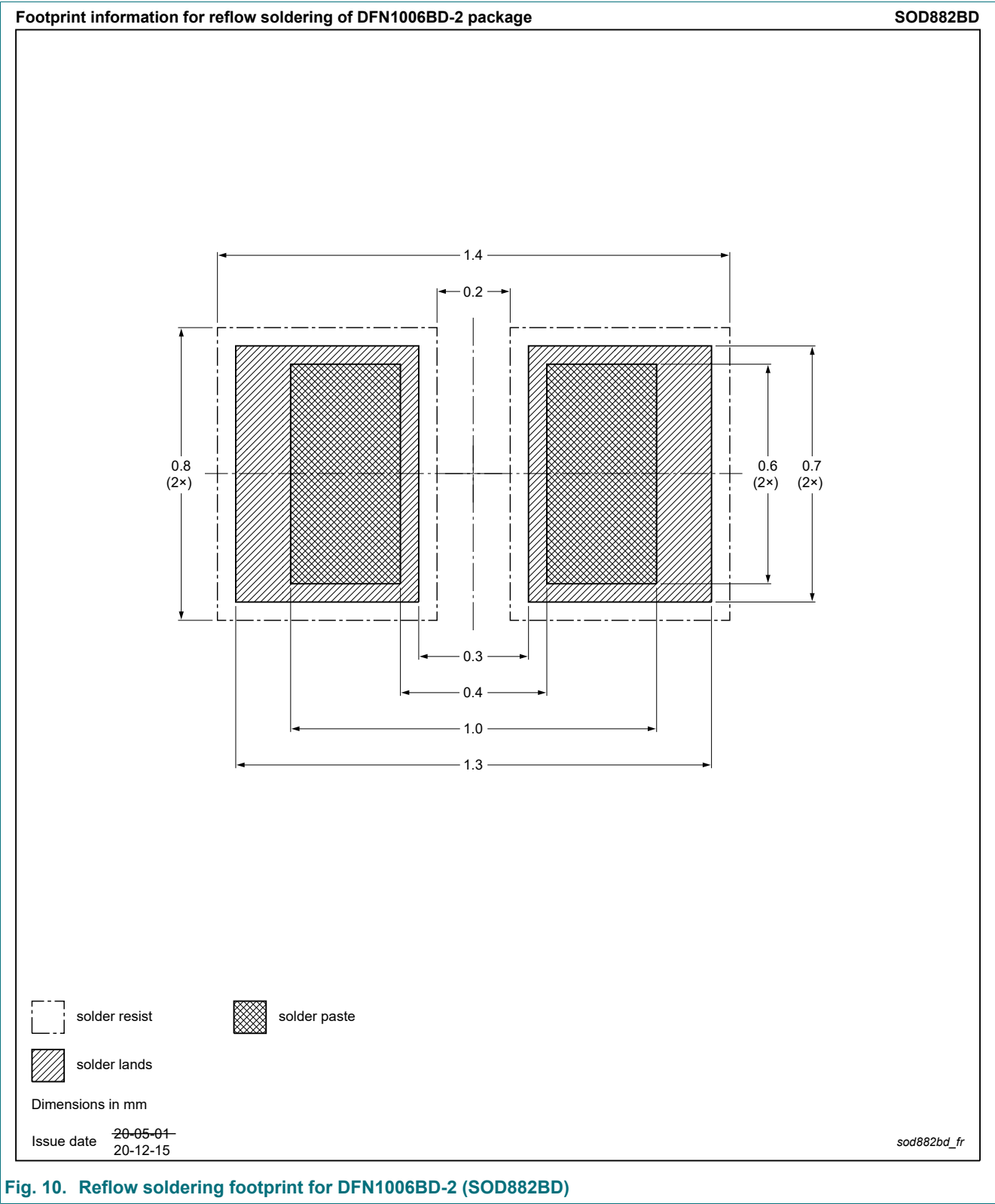


Fig. 10. Reflow soldering footprint for DFN1006BD-2 (SOD882BD)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS16LS-Q v.3	20210518	Product data sheet	-	BAS16LS-Q v.2
Modifications:	• Features and benefits: added recommendation for automotive applications			
BAS16LS-Q v.2	20210222	Product data sheet	-	BAS16LS-Q v.1
BAS16LS-Q v.1	20210209	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: 18 May 2021