



# BAS16LS-Q

## High-speed switching diode

9 February 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:  $t_{rr} \leq 4$  ns
- Low leakage current
- Repetitive peak reverse voltage  $V_{RRM} \leq 100$  V
- Suitable for Automatic Optical Inspection (AOI) of solder joint
- Low capacitance
- Reverse voltage  $V_R \leq 100$  V
- Ultra small and leadless SMD plastic package
- AEC-Q101 qualified

## 3. Applications

- High-speed switching
- General-purpose switching

## 4. Quick reference data

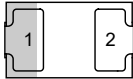

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$I_F$	forward current	$T_j = 25$ °C	[1]	-	-	215	mA
$I_R$	reverse current	$V_R = 80$ V; $T_j = 25$ °C		-	-	0.5	µA
$V_R$	reverse voltage	$T_j = 25$ °C		-	-	100	V
$t_{rr}$	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

[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><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
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
$P_{\text{tot}}$	total power dissipation	$T_{\text{amb}} \leq 25\text{ °C}$	[1]	-	345	mW
			[2]	-	645	mW
$T_j$	junction temperature			-	150	°C
$T_{\text{amb}}$	ambient temperature			-55	150	°C
$T_{\text{stg}}$	storage temperature			-65	150	°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 Printed-Circuit Board (PCB), 70  $\mu\text{m}$  single-sided copper, tin-plated mounting pad for cathode 1cm<sup>2</sup>.

## 9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	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  $\mu\text{m}$  single-sided copper, tin-plated and standard footprint.

[2] Device mounted on an FR4 Printed-Circuit Board (PCB), 70  $\mu\text{m}$  single-sided copper, tin-plated mounting pad for cathode 1cm<sup>2</sup>.

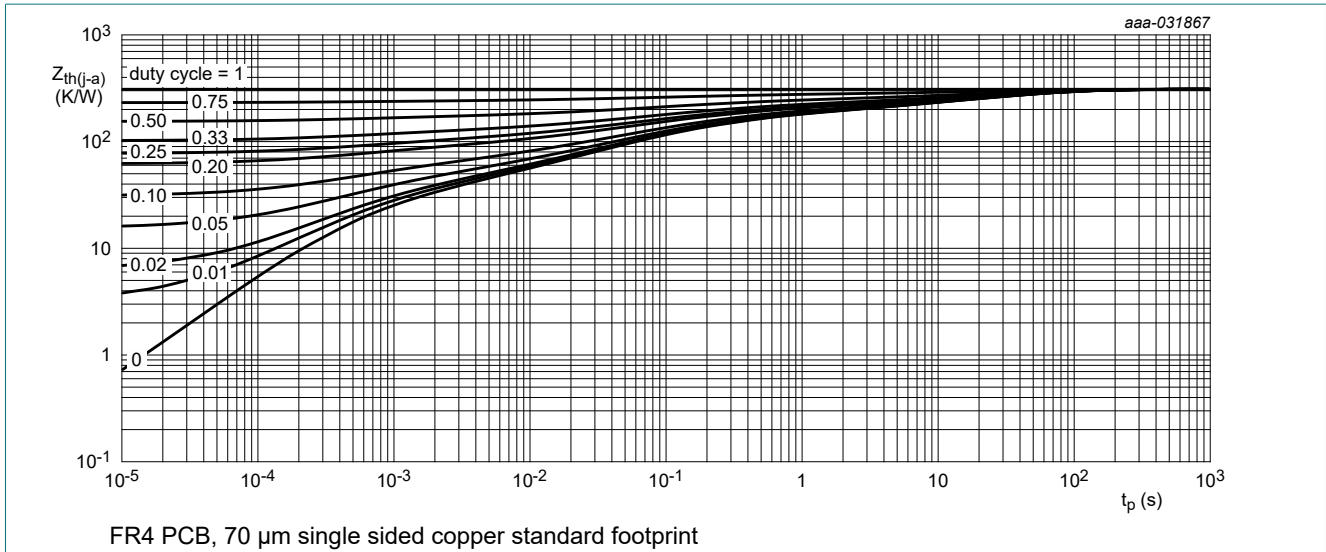


Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

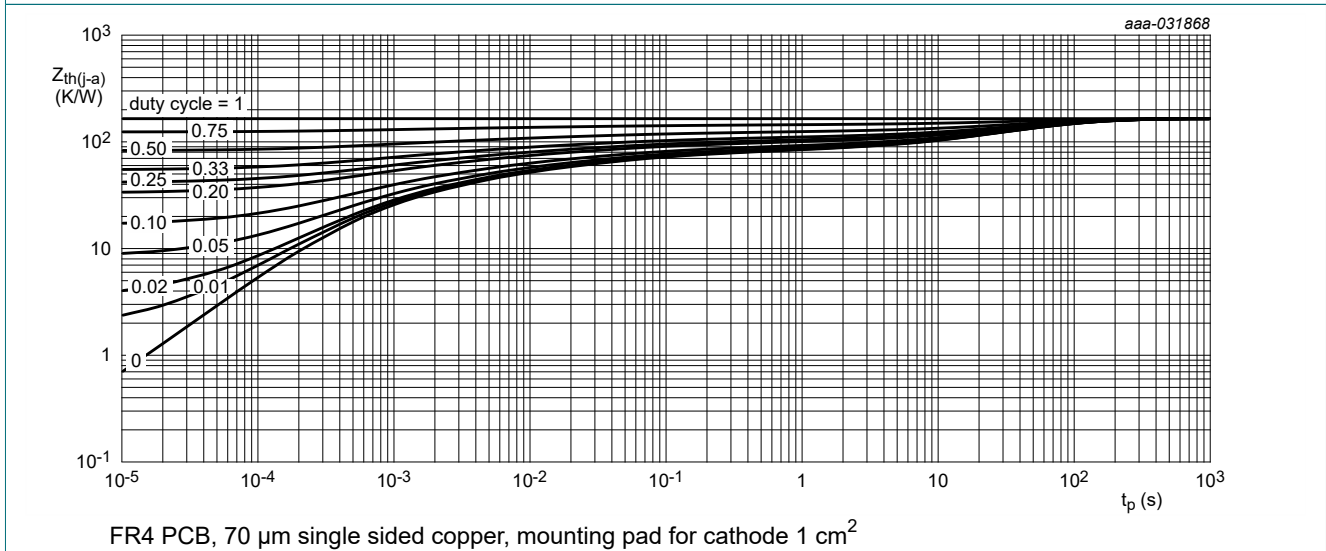


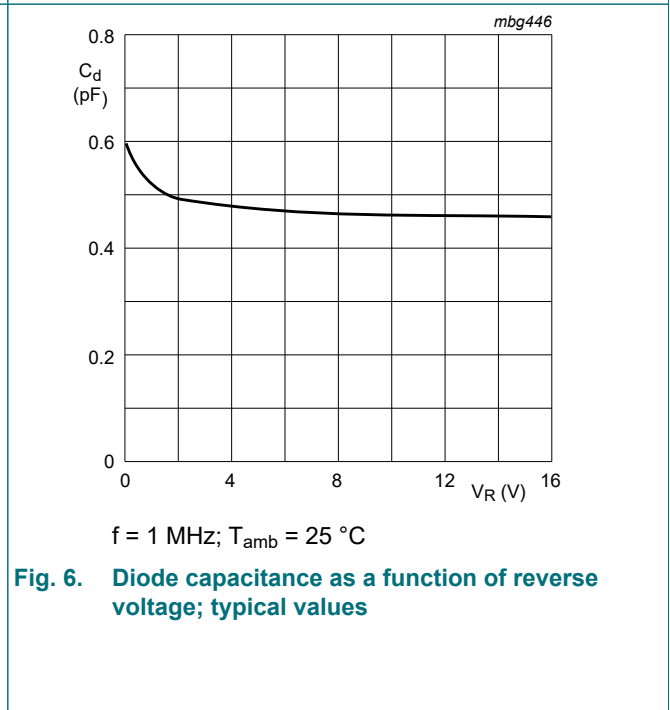
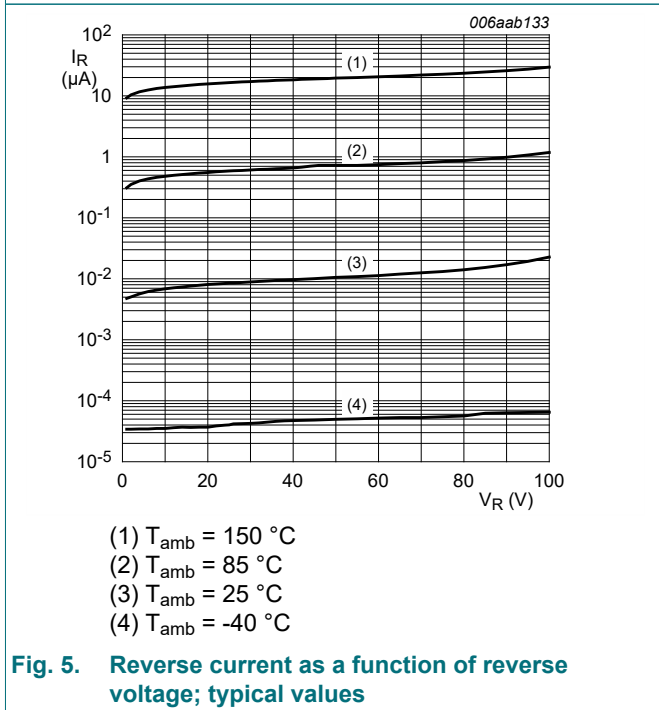
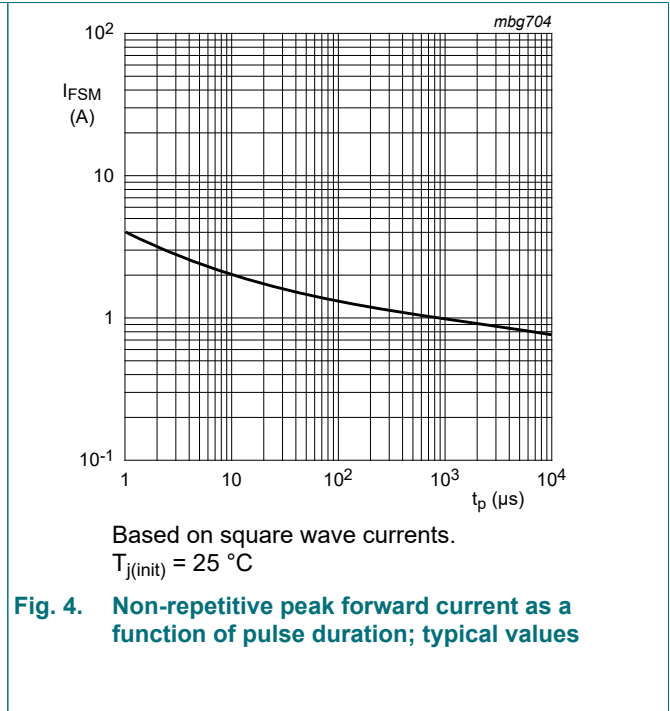
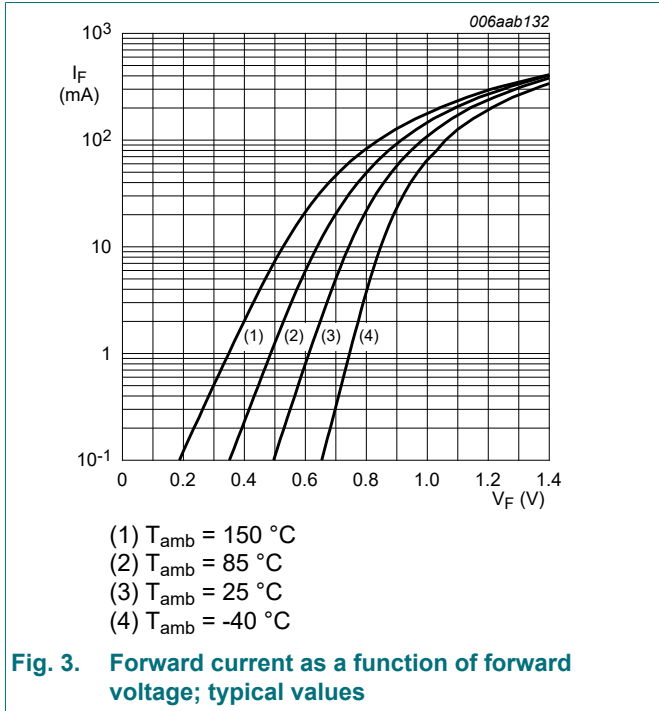
Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

## 10. Characteristics

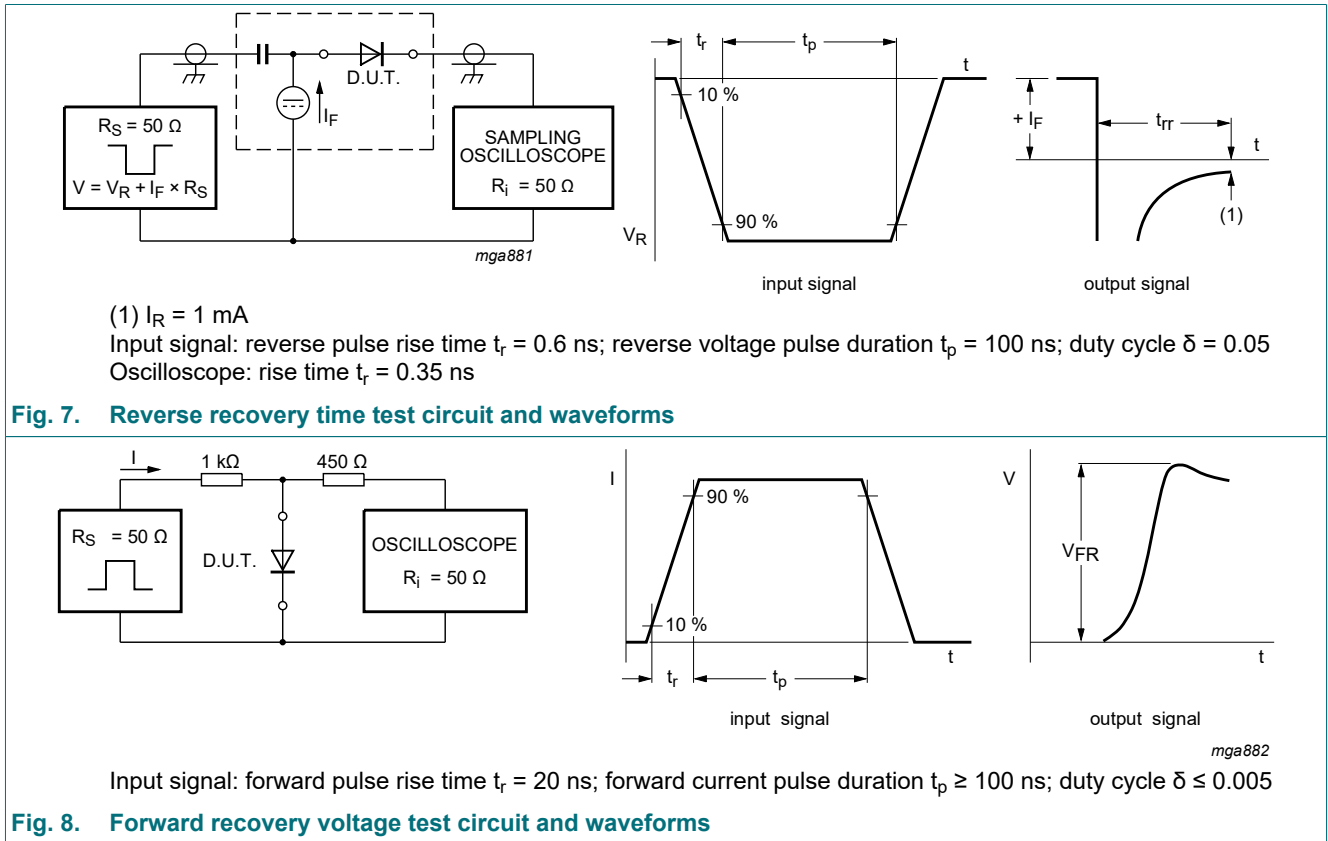
Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 1 mA; t <sub>p</sub> ≤ 300 $\mu$ s; $\delta$ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	-	715	mV
		I <sub>F</sub> = 10 mA; t <sub>p</sub> ≤ 300 $\mu$ s; $\delta$ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	-	855	mV
		I <sub>F</sub> = 50 mA; t <sub>p</sub> ≤ 300 $\mu$ s; $\delta$ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	-	1	V
		I <sub>F</sub> = 150 mA; t <sub>p</sub> ≤ 300 $\mu$ s; $\delta$ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	-	1.25	V
I <sub>R</sub>	reverse current	V <sub>R</sub> = 25 V; T <sub>j</sub> = 25 °C	-	-	30	nA
		V <sub>R</sub> = 80 V; T <sub>j</sub> = 25 °C	-	-	0.5	$\mu$ A
		V <sub>R</sub> = 25 V; T <sub>j</sub> = 150 °C	-	-	30	$\mu$ A
		V <sub>R</sub> = 80 V; T <sub>j</sub> = 150 °C	-	-	50	$\mu$ A

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$C_d$	diode capacitance	$V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$ ; $T_{amb} = 25\text{ °C}$	-	-	1.5	pF
$t_{rr}$	reverse recovery time	$I_F = 10\text{ mA}$ ; $I_R = 10\text{ mA}$ ; $R_L = 100\ \Omega$ ; $I_{R(meas)} = 1\text{ mA}$ ; $T_{amb} = 25\text{ °C}$	-	-	4	ns
$V_{FRM}$	peak forward recovery voltage	$I_F = 10\text{ mA}$ ; $t_r = 20\text{ ns}$ ; $T_{amb} = 25\text{ °C}$	-	-	1.75	V



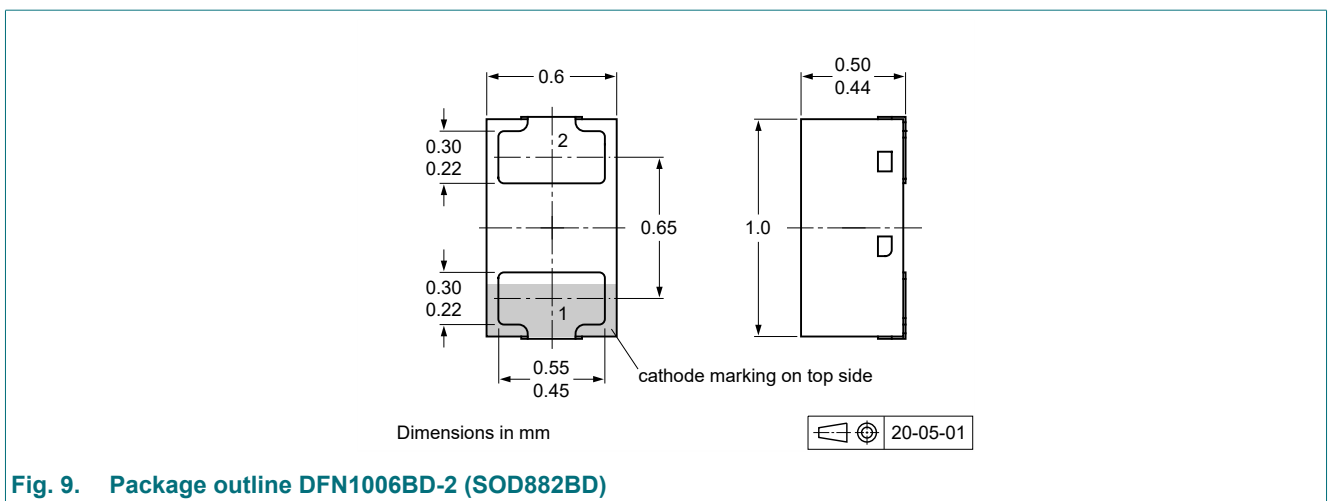
### 11. Test information



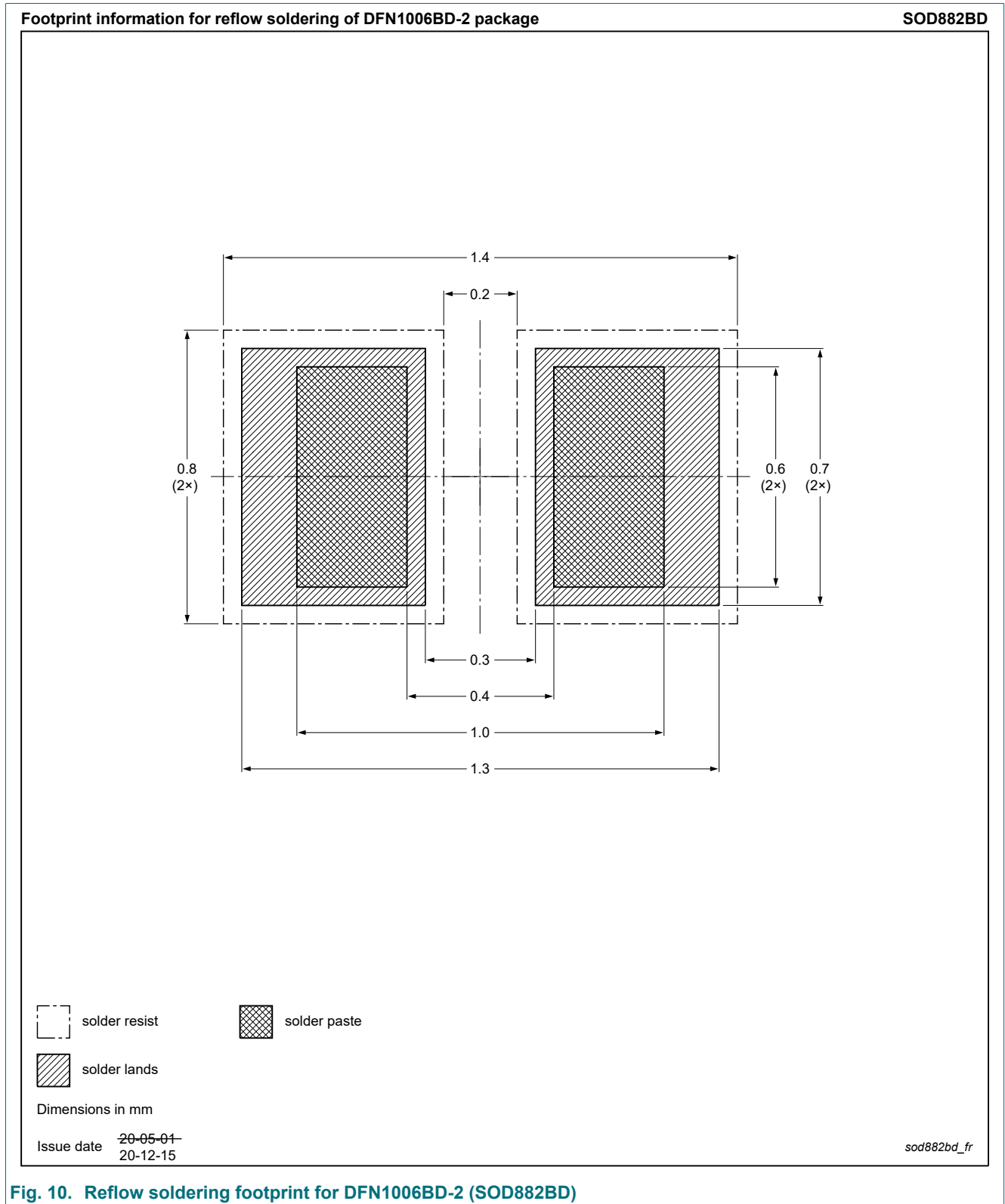
### Quality information

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



## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS16LS-Q v.1	20210210	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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## Contents

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1. General description.....	1
2. Features and benefits.....	1
3. Applications.....	1
4. Quick reference data.....	1
5. Pinning information.....	1
6. Ordering information.....	2
7. Marking.....	2
8. Limiting values.....	2
9. Thermal characteristics.....	2
10. Characteristics.....	3
11. Test information.....	5
12. Package outline.....	5
13. Soldering.....	6
14. Revision history.....	7
15. Legal information.....	8

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