



# BAT42LS-Q

## General-purpose Schottky diode

6 April 2022

Product data sheet

### 1. General description

General-purpose Schottky diode in an ultra small DFN1006BD-2 (SOD882BD) leadless Surface-Mounted Device (SMD) plastic package with side-wettable flanks.

### 2. Features and benefits

- Forward current:  $I_F \leq 0.2$  A
- Reverse voltage:  $V_R \leq 40$  V
- Ultra small SMD plastic package
- Low forward voltage
- 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
- Low voltage rectification
- Blocking diodes
- Low power consumption applications

### 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current		-	-	200	mA
$V_R$	reverse voltage		-	-	40	V
$V_F$	forward voltage	$I_F = 200$ mA; $t_p \leq 300$ $\mu$ s; $\delta \leq 0.02$ ; pulsed; $T_{amb} = 25$ °C	-	-	600	mV

### 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	<p>Transparent top view DFN1006BD-2 (SOD882BD)</p>	<p>sym001</p>
2	A	anode		

[1] The marking bar indicates the cathode.

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAT42LS-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
BAT42LS-Q	8Y

## 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			-	40	V
$I_F$	forward current			-	200	mA
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1$ ms; $\delta \leq 0.25$		-	1	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8$ ms; square wave		-	3	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	335	mW
			[2]	-	610	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 PCB, single-sided, 70 µm copper, tin-plated, mounting pad for cathode 1 cm<sup>2</sup>.

## 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]	-	-	375	K/W
			[3]	-	-	205	K/W

[1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses  $P_R$  are a significant part of the total power losses.

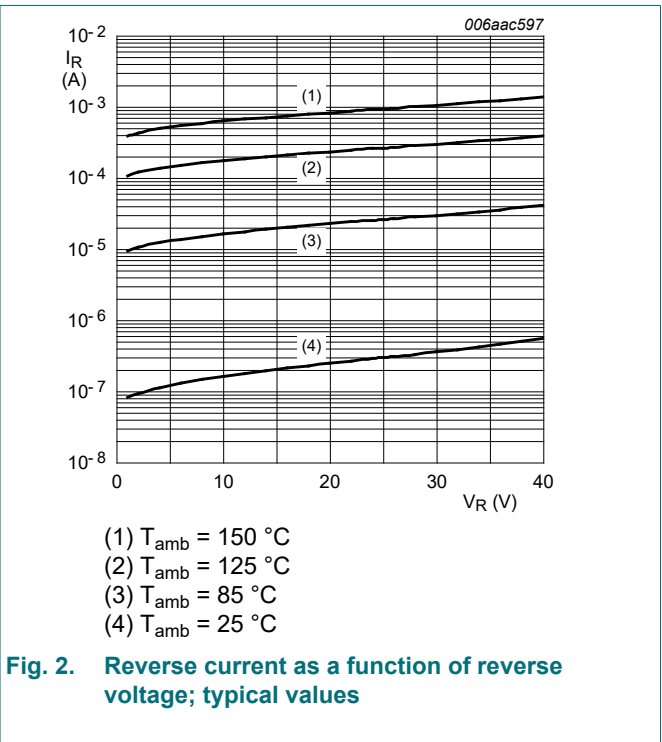
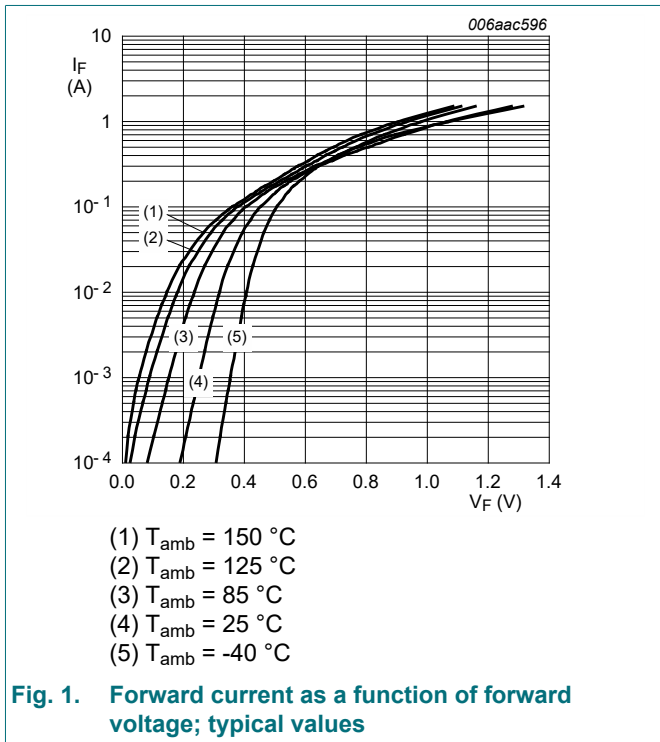
[2] Device mounted on an FR4 PCB, single-sided, 70 µm copper, tin-plated and standard footprint.

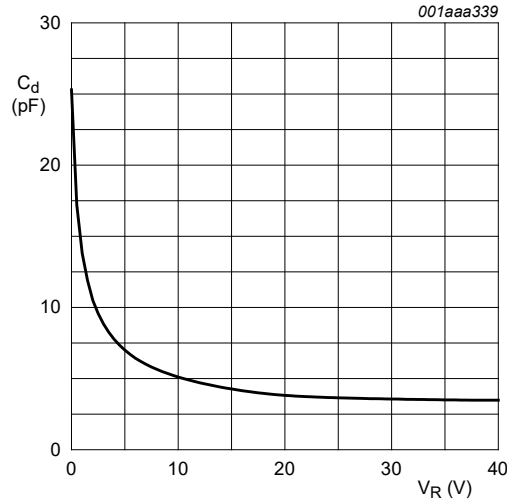
[3] Device mounted on an FR4 PCB, single-sided, 70 µm copper, tin-plated, mounting pad for cathode 1 cm<sup>2</sup>.

### 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 0.1 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = 25 °C	-	-	220	mV
		I <sub>F</sub> = 1 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = 25 °C	-	-	290	mV
		I <sub>F</sub> = 10 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = 25 °C	-	-	360	mV
		I <sub>F</sub> = 100 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = 25 °C	-	-	500	mV
		I <sub>F</sub> = 100 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = -40 °C	-	-	600	mV
		I <sub>F</sub> = 200 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = 25 °C	-	-	600	mV
		I <sub>F</sub> = 200 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = -40 °C	-	-	650	mV
I <sub>R</sub>	reverse current	V <sub>R</sub> = 25 V; T <sub>amb</sub> = 25 °C	-	-	0.5	μA
		V <sub>R</sub> = 40 V; T <sub>amb</sub> = 25 °C	-	-	10	μA
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 1 V; f = 1 MHz; T <sub>amb</sub> = 25 °C	-	-	20	pF





f = 1 MHz; T<sub>amb</sub> = 25 °C

Fig. 3. 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

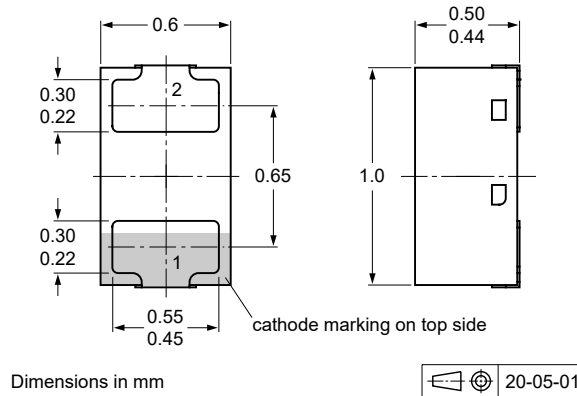


Fig. 4. Package outline DFN1006BD-2 (SOD882BD)

### 13. Soldering

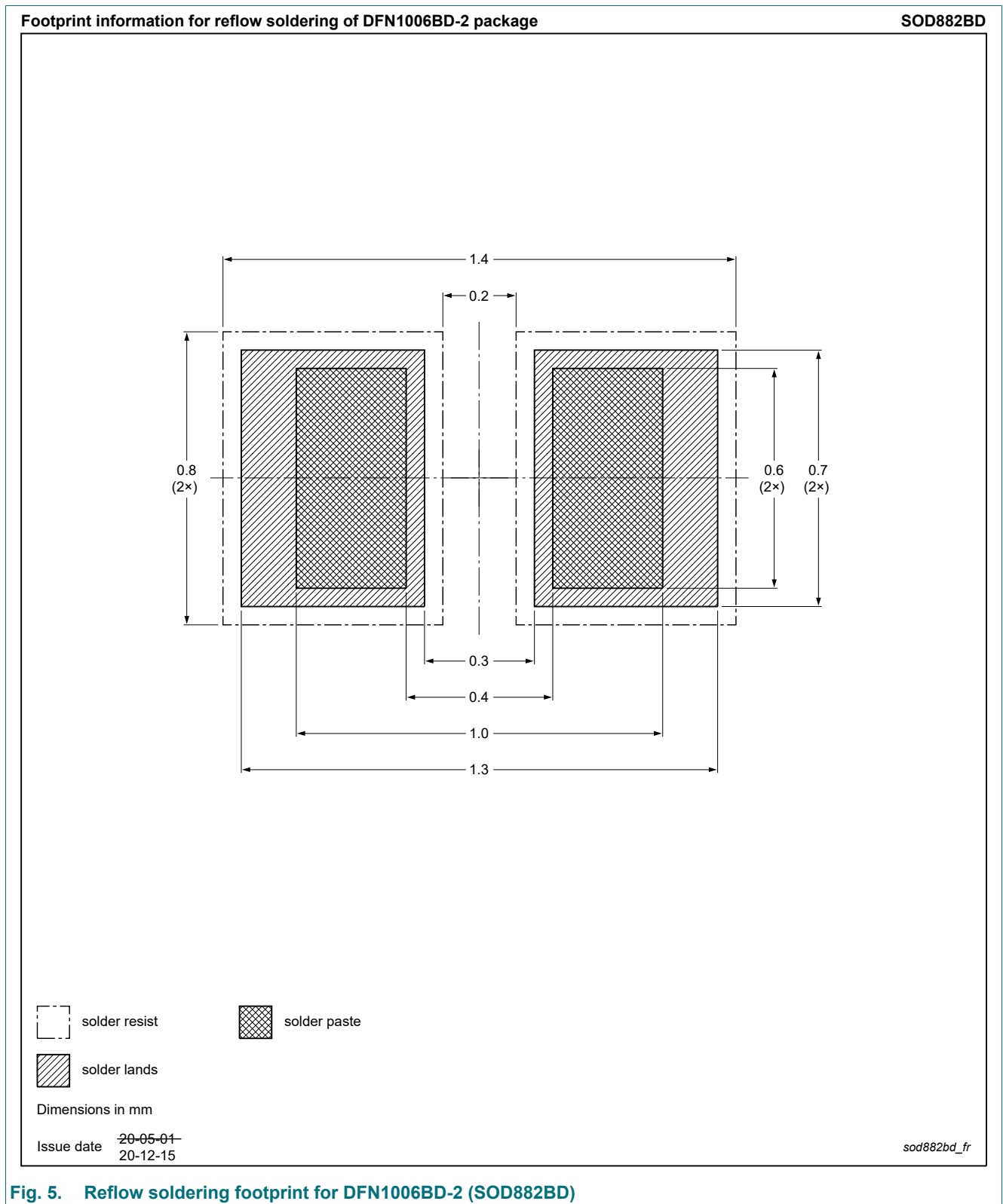


Fig. 5. Reflow soldering footprint for DFN1006BD-2 (SOD882BD)

## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT42LS-Q v.2	20220406	Product data sheet	-	BAT42LS-Q v.1
Modifications:	• Product status changed			
BAT42LS-Q v.1	20220131	Objective 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.....	4
12. Package outline.....	4
13. Soldering.....	5
14. Revision history.....	6
15. Legal information.....	7

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