



# BAT42LS

## 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

## 3. Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Low voltage rectification
- Blocking diodes
- Low power consumption applications

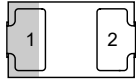

## 4. Quick reference data

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]  | <br>Transparent<br>top view<br>DFN1006BD-2 (SOD882BD) | <br><i>sym001</i> |
| 2   | A      | anode       |  |  |

[1] The marking bar indicates the cathode.

## 6. Ordering information

Table 3. Ordering information

| Type number | Package     |  |          |
|-------------|-------------|--|----------|
|             | Name        | Description  | Version  |
| BAT42LS     | 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     | 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.

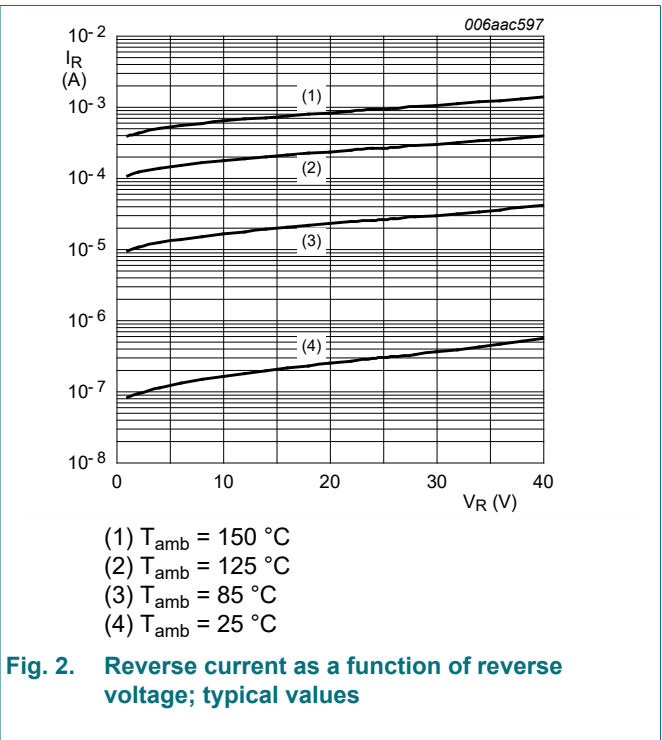
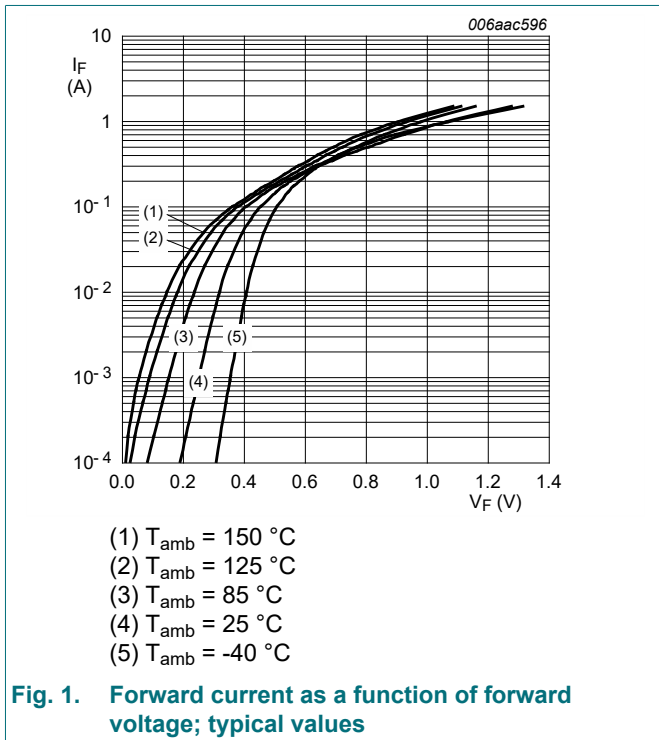
[2] Device mounted on an FR4 PCB, single-sided, 70 µm copper, tin-plated and standard footprint.

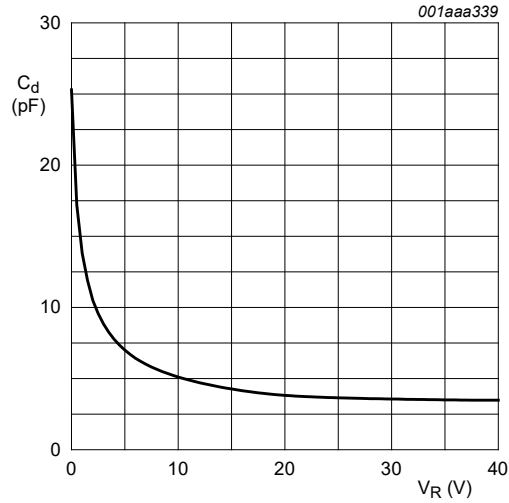
[3] Device mounted on an FR4 PCB, single-sided, 70 µm copper, tin-plated, mounting pad for cathode 1 cm<sup>2</sup>.

## 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. Package outline

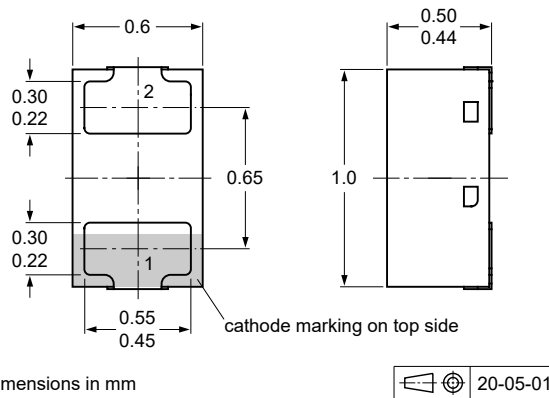


Fig. 4. Package outline DFN1006BD-2 (SOD882BD)

## 12. Soldering

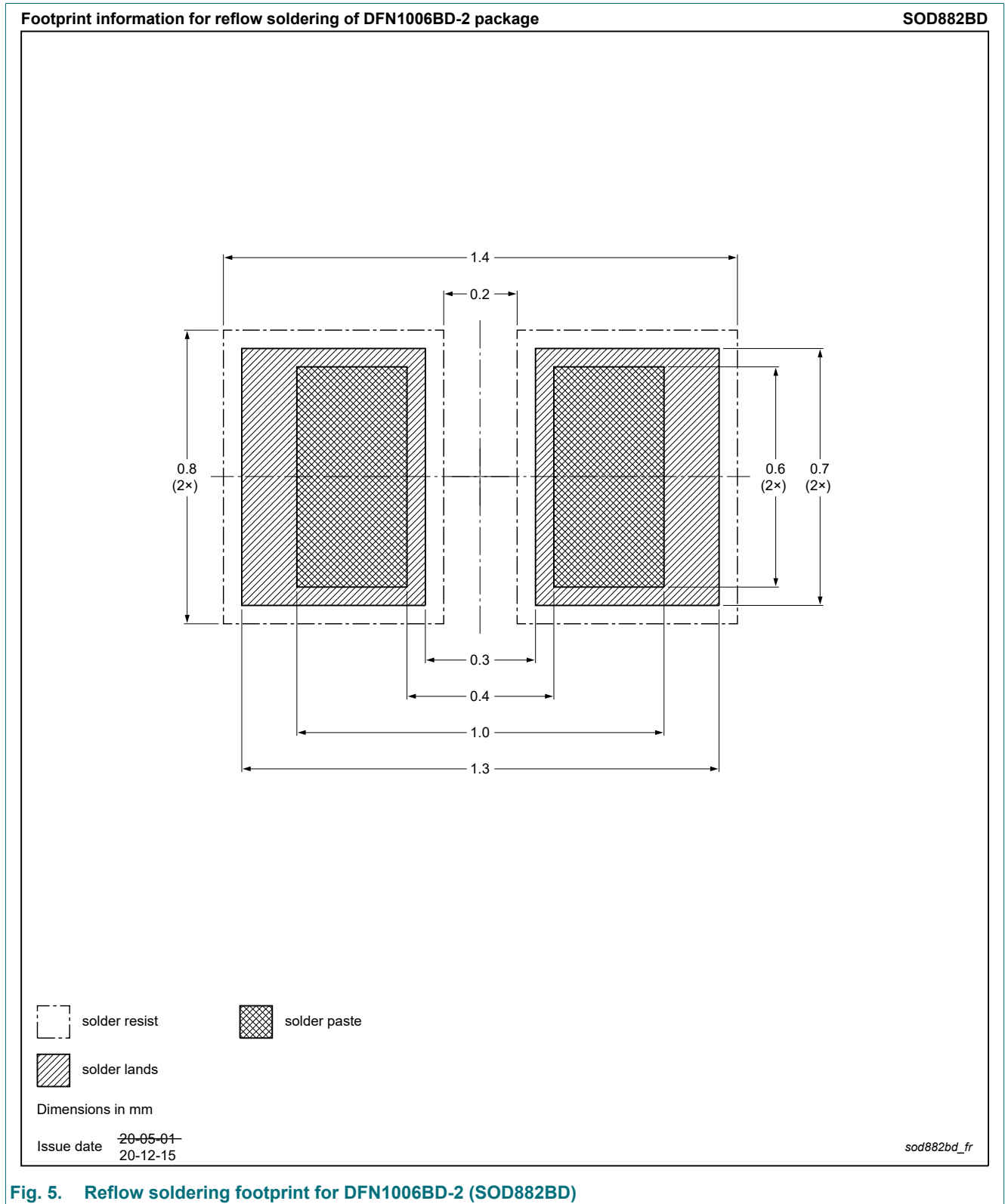


Fig. 5. Reflow soldering footprint for DFN1006BD-2 (SOD882BD)

## 13. Revision history

Table 8. Revision history

| Data sheet ID  | Release date             | Data sheet status    | Change notice | Supersedes  |
|----------------|--------------------------|----------------------|---------------|-------------|
| BAT42LS v.2    | 20220406                 | Product data sheet   | -             | BAT42LS v.1 |
| Modifications: | • Product status changed |                      |               |             |
| BAT42LS v.1    | 20220131                 | Objective data sheet | -             | -           |

## 14. 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.                                     |

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
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