



# BAS70-07-Q

## General-purpose dual Schottky diode

2 February 2022

Product data sheet

### 1. General description

General-purpose dual Schottky diode in a small SOT143B Surface-Mounted Device (SMD) plastic package.

### 2. Features and benefits

- High switching speed
- Low leakage current
- High breakdown voltage
- Low capacitance
- Qualified according to AEC-Q101 and recommended for use in automotive applications

### 3. Applications

- Ultra high-speed switching
- Voltage clamping

### 4. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter       | Conditions  | Min | Typ | Max | Unit |
|--------|-----------------|---|-----|-----|-----|------|
| $I_F$  | forward current |   | -   | -   | 70  | mA   |
| $V_F$  | forward voltage | $I_F = 1 \text{ mA}$ ; $t_p \leq 300 \text{ } \mu\text{s}$ ; $\delta \leq 0.02$ ; pulsed; $T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$ | -   | -   | 410 | mV   |
| $V_R$  | reverse voltage | $T_j = 25 \text{ } ^\circ\text{C}$  | -   | -   | 70  | V    |

### 5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description       | Simplified outline | Graphic symbol   |
|-----|--------|-------------------|--------------------|------------------|
| 1   | K1     | cathode (diode 1) | <p>SOT143B</p>     | <p>006aaa434</p> |
| 2   | K2     | cathode (diode 2) |                    |                  |
| 3   | A2     | anode (diode 2)   |                    |                  |
| 4   | A1     | anode (diode 1)   |                    |                  |

## 6. Ordering information

Table 3. Ordering information

| Type number | Package |  |         |
|-------------|---------|--|---------|
|             | Name    | Description  | Version |
| BAS70-07-Q  | SOT143B | plastic, surface-mounted package; 4 leads; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body | SOT143B |

## 7. Marking

Table 4. Marking codes

| Type number | Marking code[1] |
|-------------|-----------------|
| BAS70-07-Q  | 77%             |

[1] % = placeholder for manufacturing site code

## 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                     | $T_j = 25\text{ °C}$  | -   | 70  | V    |
| $I_F$            | forward current                     |   | -   | 70  | mA   |
| $I_{FRM}$        | repetitive peak forward current     | $t_p \leq 1\text{ s}$ ; $\delta \leq 0.5$                     | -   | 70  | mA   |
| $I_{FSM}$        | non-repetitive peak forward current | $t_p \leq 10\text{ ms}$ ; $T_{j(\text{init})} = 25\text{ °C}$ | -   | 100 | mA   |
| $T_j$            | junction temperature                |   | -   | 150 | °C   |
| $T_{\text{amb}}$ | ambient temperature                 |   | -65 | 150 | °C   |
| $T_{\text{stg}}$ | storage temperature                 |   | -65 | 150 | °C   |

## 9. Thermal characteristics

Table 6. Thermal characteristics

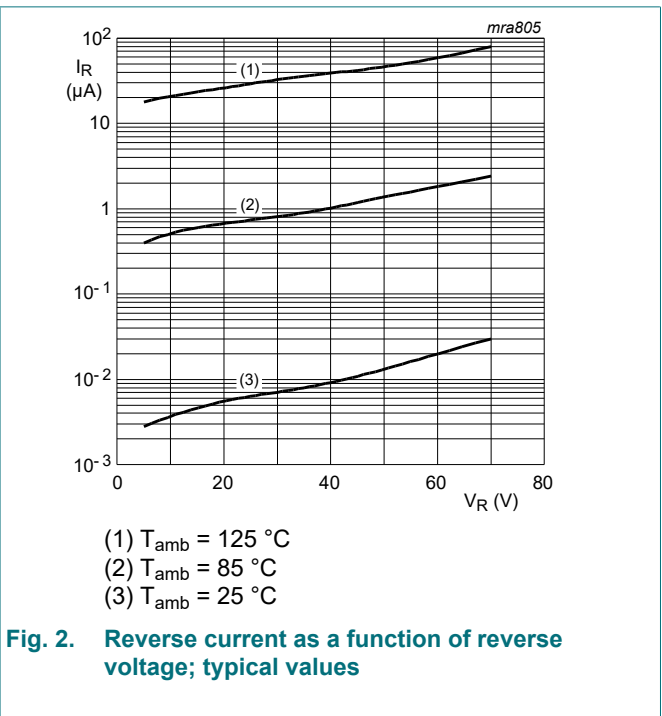
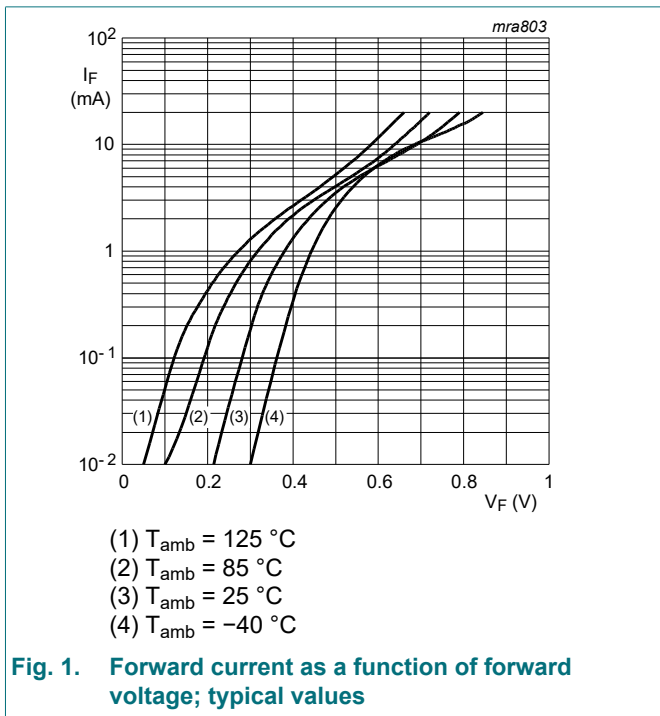
| Symbol               | Parameter                                   | Conditions  | Min | Typ | Max | Unit |
|----------------------|---|-------------|-----|-----|-----|------|
| $R_{\text{th}(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | -   | 500 | K/W  |

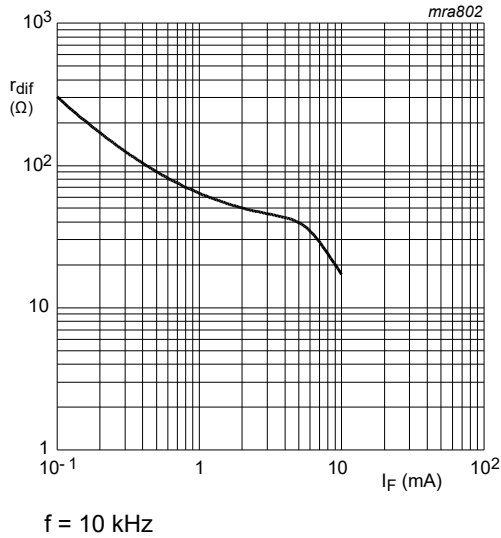
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

### 10. Characteristics

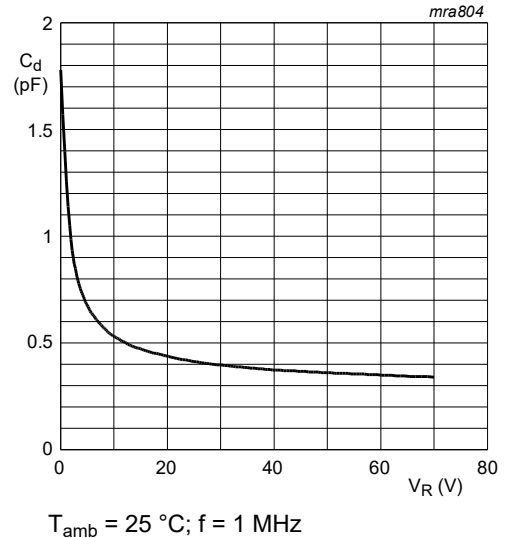
Table 7. Characteristics

| Symbol         | Parameter         | Conditions  | Min | Typ | Max | Unit |
|----------------|-------------------|---|-----|-----|-----|------|
| V <sub>F</sub> | forward voltage   | I <sub>F</sub> = 1 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = 25 °C  | -   | -   | 410 | mV   |
|                |                   | I <sub>F</sub> = 10 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = 25 °C | -   | -   | 750 | mV   |
|                |                   | I <sub>F</sub> = 15 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; pulsed; T <sub>amb</sub> = 25 °C | -   | -   | 1   | V    |
| I <sub>R</sub> | reverse current   | V <sub>R</sub> = 50 V; T <sub>amb</sub> = 25 °C   | -   | -   | 100 | nA   |
|                |                   | V <sub>R</sub> = 70 V; T <sub>amb</sub> = 25 °C   | -   | -   | 10  | μA   |
| C <sub>d</sub> | diode capacitance | V <sub>R</sub> = 0 V; f = 1 MHz; T <sub>amb</sub> = 25 °C                                   | -   | -   | 2   | pF   |





**Fig. 3. Differential forward resistance as a function of forward current; typical values**



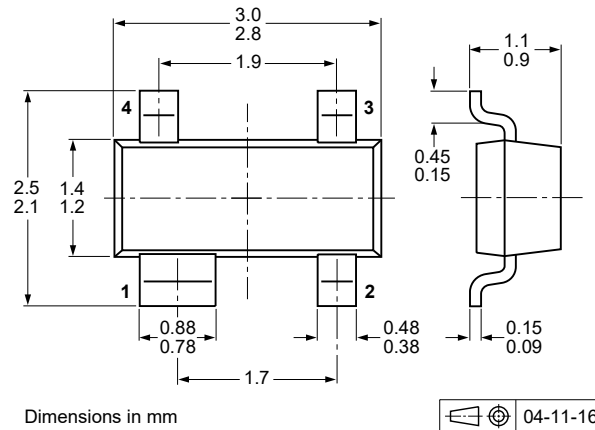
**Fig. 4. Diode capacitance as a function of reverse voltage; typical values**

## 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. 5. Package outline SOT143B**

13. Soldering

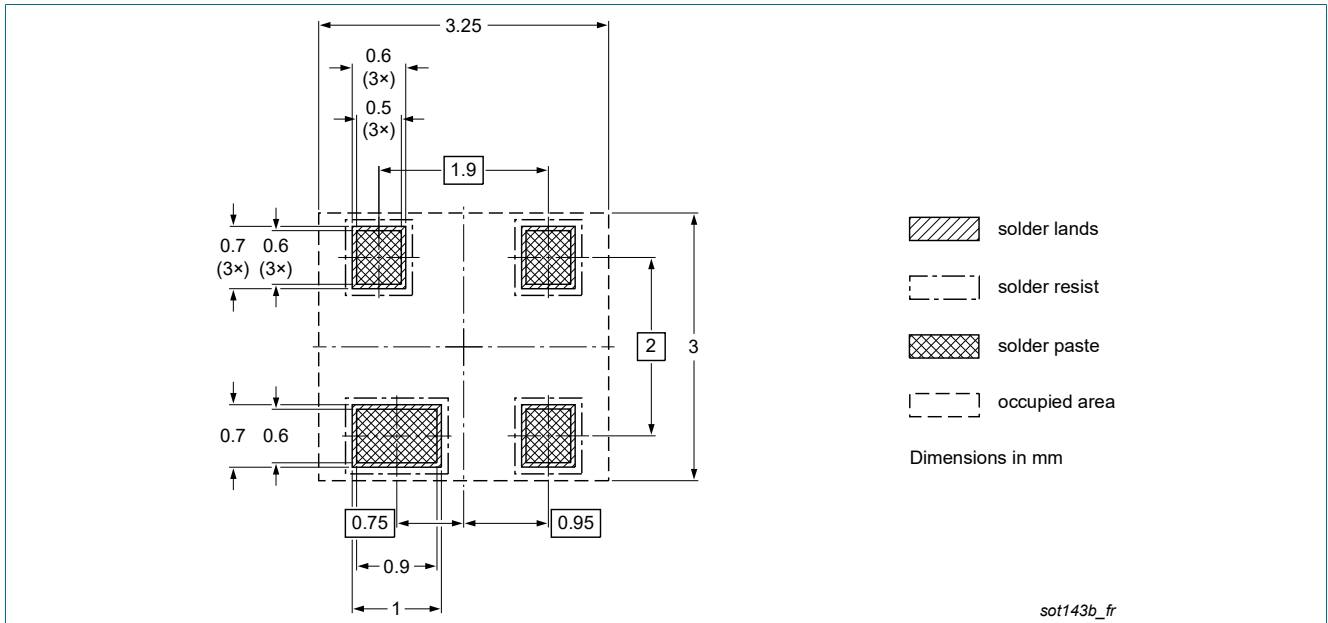


Fig. 6. Reflow soldering footprint for SOT143B

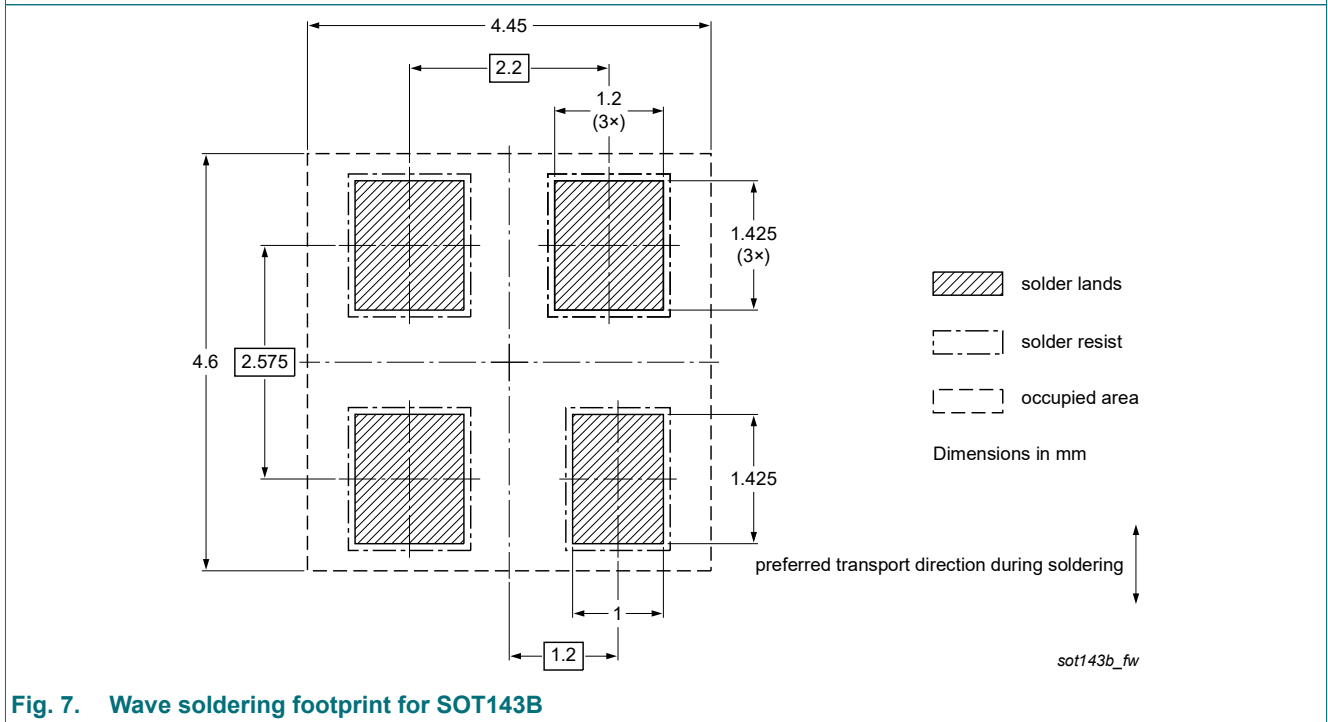


Fig. 7. Wave soldering footprint for SOT143B

### 14. Revision history

Table 8. Revision history

| Data sheet ID  | Release date | Data sheet status  | Change notice | Supersedes |
|----------------|--------------|--------------------|---------------|------------|
| BAS70-07-Q v.1 | 20220202     | 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.....       | 4 |
| 12. Package outline.....        | 4 |
| 13. Soldering.....              | 5 |
| 14. Revision history.....       | 6 |
| 15. Legal information.....      | 7 |

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Date of release: 2 February 2022

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