



# BAS85

Schottky barrier diode

Rev. 6 — 10 September 2010

Product data sheet

## 1. Product profile

### 1.1 General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a small hermetically sealed glass SOD80C Surface-Mounted Device SMD package with tin-plated metal discs at each end. It is suitable for “automatic placement” and as such it can withstand immersion soldering.

### 1.2 Features and benefits

- Low forward voltage
- High breakdown voltage
- Guard-ring protected
- Hermetically sealed glass SMD package

### 1.3 Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes



### 1.4 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 |                        | -   | -   | 30  | V    |
| $V_F$  | forward voltage | $I_F = 100 \text{ mA}$ | -   | -   | 800 | mV   |

## 2. Pinning information

Table 2. Pinning

| Pin | Description | Simplified outline  | Graphic symbol  |
|-----|-------------|---|---|
| 1   | cathode     | [1]   | <br>sym001 |
| 2   | anode       |  |   |

[1] The marking band indicates the cathode.

## 3. Ordering information

Table 3. Ordering information

| Type number | Package |  |         |
|-------------|---------|--|---------|
|             | Name    | Description  | Version |
| BAS85       | -       | hermetically sealed glass surface-mounted package;<br>2 connectors | SOD80C  |

## 4. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| BAS85       | marking band |

## 5. 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                     |                                   | -   | 30   | V    |
| $I_F$       | forward current                     |                                   | -   | 200  | mA   |
| $I_{F(AV)}$ | average forward current             | [1]                               | -   | 200  | mA   |
| $I_{FRM}$   | repetitive peak forward current     | $t_p \leq 1$ s; $\delta \leq 0.5$ | -   | 300  | mA   |
| $I_{FSM}$   | non-repetitive peak forward current | $t_p = 10$ ms                     | -   | 5    | A    |
| $T_j$       | junction temperature                |                                   | -   | 125  | °C   |
| $T_{amb}$   | ambient temperature                 |                                   | -65 | +125 | °C   |
| $T_{stg}$   | storage temperature                 |                                   | -65 | +150 | °C   |

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

## 6. 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] | -   | 320 | K/W  |

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

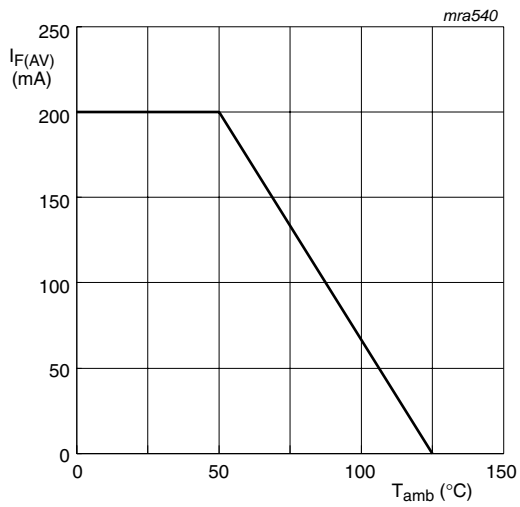
## 7. Characteristics

**Table 7. Characteristics**

$T_{amb} = 25\text{ °C}$  unless otherwise specified.

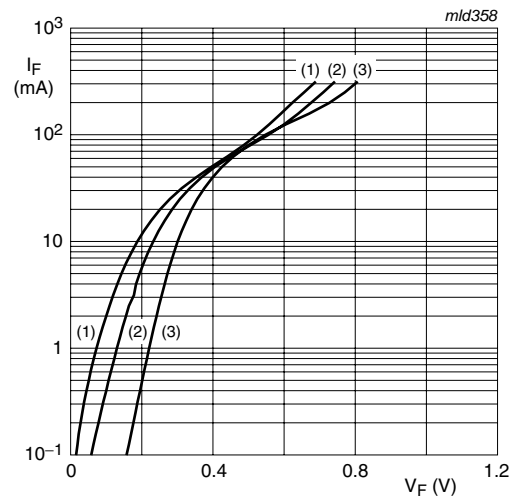
| Symbol | Parameter         | Conditions                           | Min | Typ | Max | Unit          |
|--------|-------------------|--------------------------------------|-----|-----|-----|---------------|
| $V_F$  | forward voltage   | $I_F = 0.1\text{ mA}$                | -   | -   | 240 | mV            |
|        |                   | $I_F = 1\text{ mA}$                  | -   | -   | 320 | mV            |
|        |                   | $I_F = 10\text{ mA}$                 | -   | -   | 400 | mV            |
|        |                   | $I_F = 30\text{ mA}$                 | -   | -   | 500 | mV            |
|        |                   | $I_F = 100\text{ mA}$                | -   | -   | 800 | mV            |
| $I_R$  | reverse current   | $V_R = 25\text{ V}$                  | [1] | -   | 2.3 | $\mu\text{A}$ |
| $C_d$  | diode capacitance | $V_R = 1\text{ V}; f = 1\text{ MHz}$ | -   | -   | 10  | pF            |

[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .



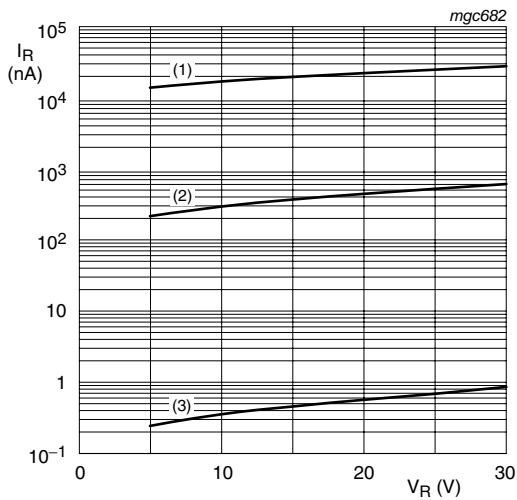
FR4 PCB, standard footprint

**Fig 1.** Average forward current as a function of ambient temperature; derating curve



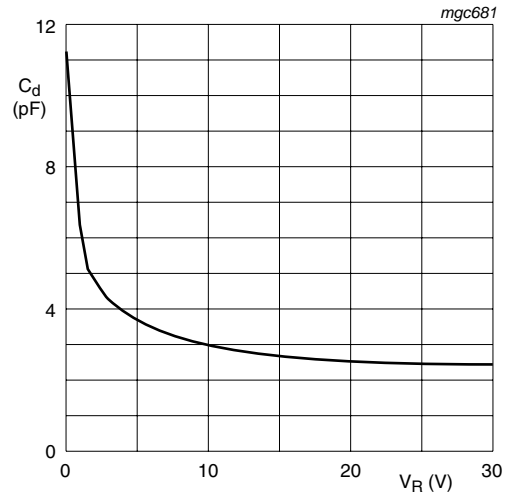
- (1)  $T_{amb} = 125\text{ °C}$
- (2)  $T_{amb} = 85\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$

**Fig 2.** Forward current as a function of forward voltage; typical values



- (1)  $T_{amb} = 85\text{ °C}$
- (2)  $T_{amb} = 25\text{ °C}$
- (3)  $T_{amb} = -40\text{ °C}$

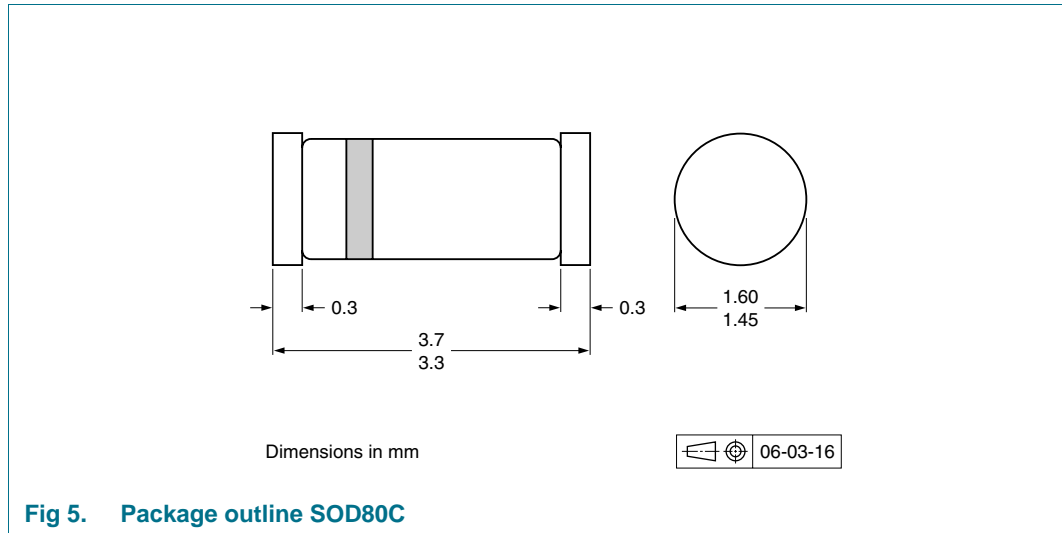
**Fig 3.** Reverse current as a function of reverse voltage; typical values



$f = 1\text{ MHz}; T_{amb} = 25\text{ °C}$

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

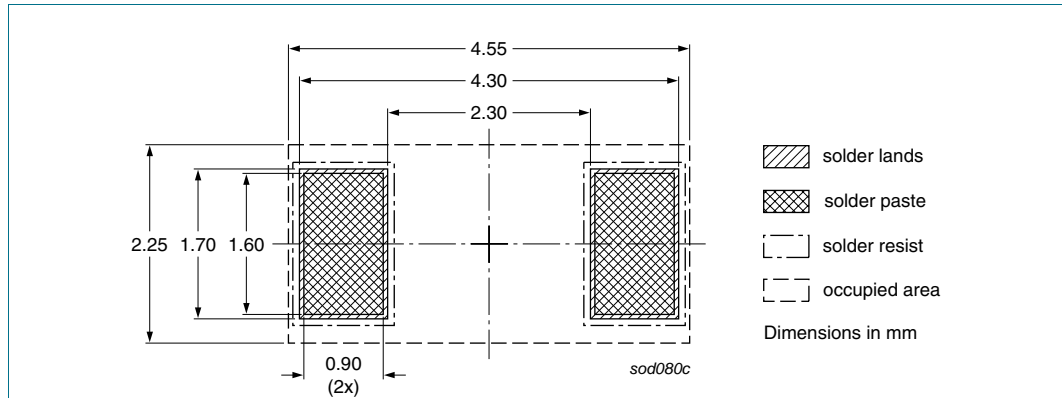
## 8. Package outline



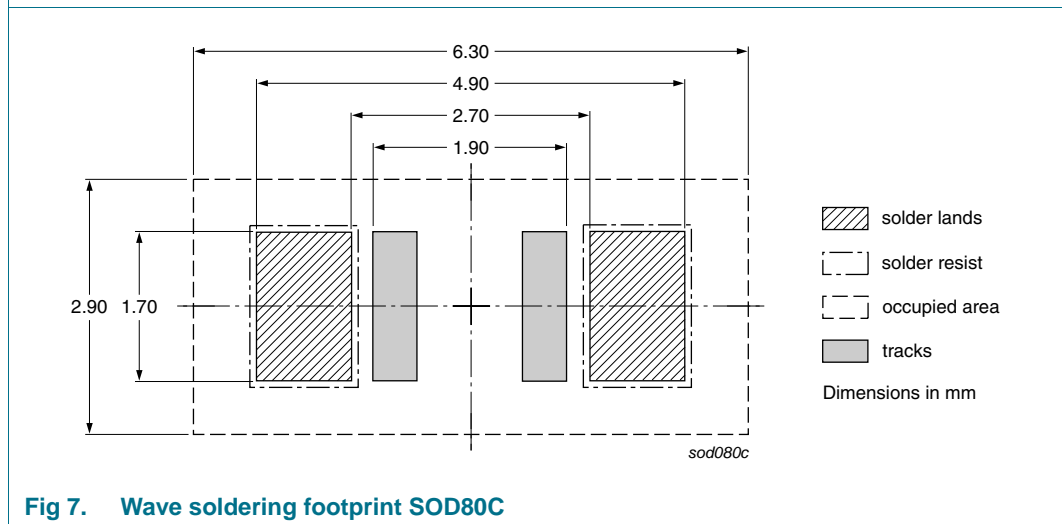
## 9. Packing information

Please refer to packing information on [www.nexperia.com](http://www.nexperia.com).

**10. Soldering**



**Fig 6. Reflow soldering footprint SOD80C**



**Fig 7. Wave soldering footprint SOD80C**

## 11. Revision history

Table 9. Revision history

| Document ID    | Release date | Data sheet status  | Change notice | Supersedes |
|----------------|--------------|--|---------------|------------|
| BAS85_6        | 20100910     | Product data sheet   | -             | BAS85_5    |
| Modifications: |              | <ul style="list-style-type: none"><li>• <a href="#">Section 4 "Marking"</a>: updated</li><li>• <a href="#">Section 12 "Legal information"</a>: updated</li></ul> |               |            |
| BAS85_5        | 20090325     | Product data sheet   | -             | BAS85_4    |
| BAS85_4        | 20000525     | Product specification  | -             | BAS85_3    |
| BAS85_3        | 19961001     | Product specification  | -             | BAS85_2    |
| BAS85_2        | 19960320     | Product specification  | -             | -          |

## 12. Legal information

### 12.1 Data sheet status

| Document status <sup>[1][2]</sup> | Product status <sup>[3]</sup> | 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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## 13. Contents

|           |  |           |
|-----------|--|-----------|
| <b>1</b>  | <b>Product profile</b> . . . . .         | <b>1</b>  |
| 1.1       | General description . . . . .            | 1         |
| 1.2       | Features and benefits . . . . .          | 1         |
| 1.3       | Applications . . . . .                   | 1         |
| 1.4       | Quick reference data . . . . .           | 1         |
| <b>2</b>  | <b>Pinning information</b> . . . . .     | <b>2</b>  |
| <b>3</b>  | <b>Ordering information</b> . . . . .    | <b>2</b>  |
| <b>4</b>  | <b>Marking</b> . . . . .                 | <b>2</b>  |
| <b>5</b>  | <b>Limiting values</b> . . . . .         | <b>2</b>  |
| <b>6</b>  | <b>Thermal characteristics</b> . . . . . | <b>3</b>  |
| <b>7</b>  | <b>Characteristics</b> . . . . .         | <b>3</b>  |
| <b>8</b>  | <b>Package outline</b> . . . . .         | <b>5</b>  |
| <b>9</b>  | <b>Packing information</b> . . . . .     | <b>5</b>  |
| <b>10</b> | <b>Soldering</b> . . . . .               | <b>6</b>  |
| <b>11</b> | <b>Revision history</b> . . . . .        | <b>7</b>  |
| <b>12</b> | <b>Legal information</b> . . . . .       | <b>8</b>  |
| 12.1      | Data sheet status . . . . .              | 8         |
| 12.2      | Definitions . . . . .                    | 8         |
| 12.3      | Disclaimers . . . . .                    | 8         |
| 12.4      | Trademarks . . . . .                     | 9         |
| <b>13</b> | <b>Contents</b> . . . . .                | <b>10</b> |

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