

# BAP51-03

Silicon PIN diode

Rev. 5.1 — 8 February 2019

Product data sheet

## 1 Product profile

### 1.1 General description

General-purpose pin diode in an SOD323 small plastic SMD package.

### 1.2 Features and benefits



- Low diode capacitance: maximum 1.05 pF
- Low diode forward resistance: max. 0.7  $\Omega$
- AEC-Q101 qualified

### 1.3 Applications

- General RF applications

## 2 Pinning information

Table 1. Discrete pinning

| Pin | Description | Simplified outline  | Graphic symbol  |
|-----|-------------|---|---|
| 1   | cathode     | <br>Top view | <br>sym006 |
| 2   | anode       |   |   |

## 3 Ordering information

Table 2. Ordering information

| Type number | Package |  | Version |
|-------------|---------|--|---------|
|             | Name    | Description                              |         |
| BAP51-03    | -       | plastic surface-mounted package; 2 leads | SOD323  |

## 4 Marking

Table 3. Marking code

| Type number | Marking code      |
|-------------|-------------------|
| BAP51-03    | A5 <sup>[1]</sup> |

[1] The marking bar indicates the cathode (see simplified outline graphic in [Table 1](#)).

## 5 Limiting values

**Table 4. Limiting values**

In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol    | Parameter                  | Conditions                 | Min | Max  | Unit |
|-----------|----------------------------|----------------------------|-----|------|------|
| $V_R$     | continuous reverse voltage |                            | -   | 50   | V    |
| $I_F$     | continuous forward current |                            | -   | 50   | mA   |
| $P_{tot}$ | total power dissipation    | $T_{sp} \leq 90\text{ °C}$ | -   | 500  | mW   |
| $T_{stg}$ | storage temperature        |                            | -65 | +150 | °C   |
| $T_j$     | junction temperature       |                            | -65 | +150 | °C   |

## 6 Thermal characteristics

**Table 5. Thermal characteristics**

| Symbol         | Parameter  | Conditions | Typ | Unit |
|----------------|--|------------|-----|------|
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point |            | 120 | K/W  |

## 7 Characteristics

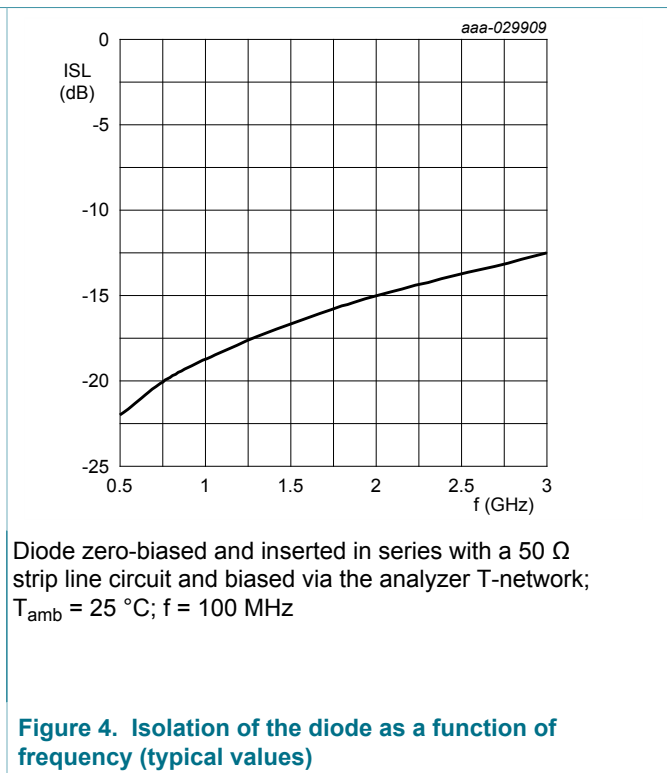
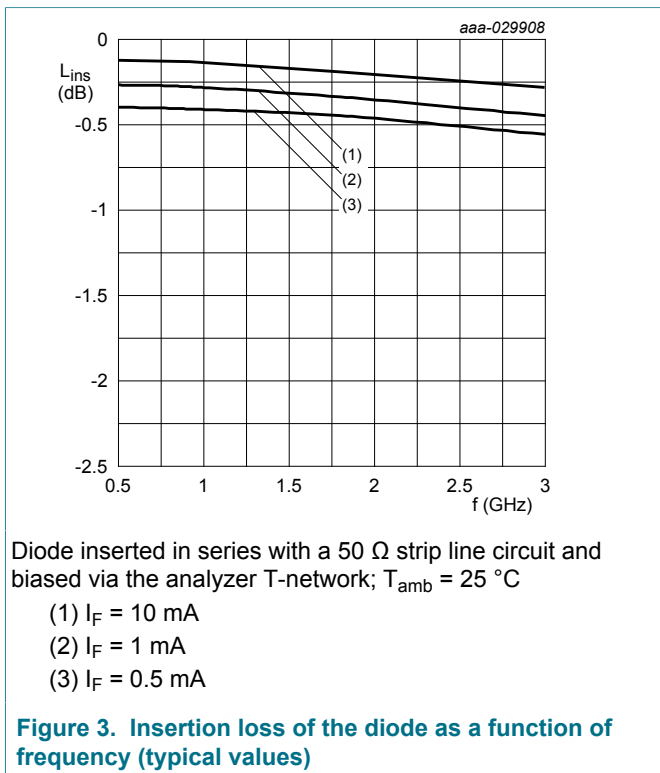
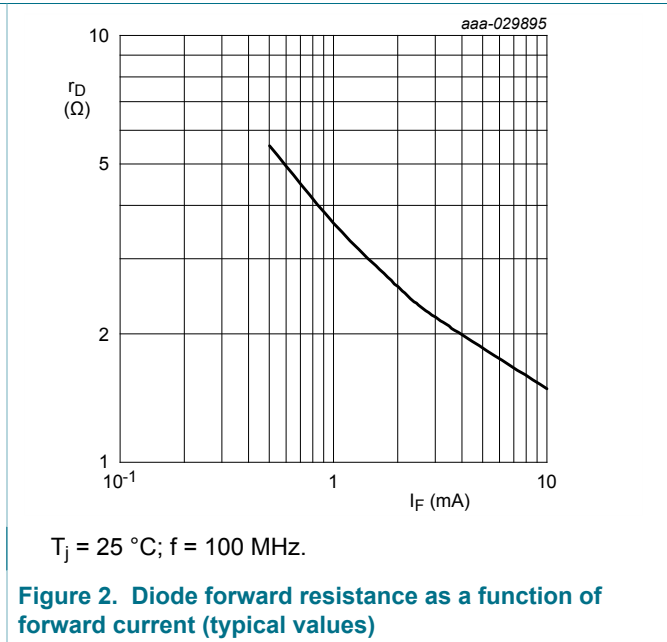
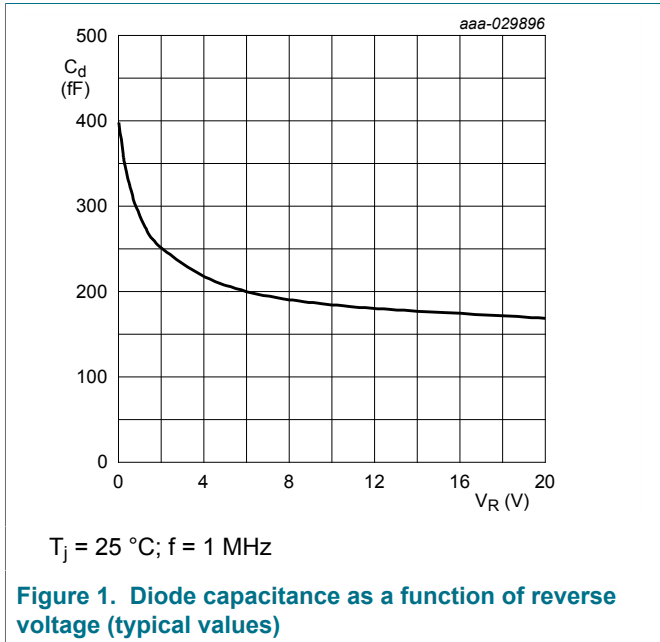
**Table 6. Characteristics**

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

| Symbol   | Parameter                | Conditions   | Min | Typ  | Max  | Unit |          |
|----------|--------------------------|--|-----|------|------|------|----------|
| $V_F$    | forward voltage          | $I_F = 50\text{ mA}$   | -   | 0.95 | 1.1  | V    |          |
| $V_R$    | reverse voltage          | $I_R = 10\text{ }\mu\text{A}$  | 50  | -    | -    | V    |          |
| $I_R$    | reverse current          | $V_R = 50\text{ V}$  | -   | -    | 100  | nA   |          |
| $C_d$    | diode capacitance        | f = 1 MHz (see <a href="#">Figure 1</a> )  |     |      |      |      |          |
|          |                          | $V_R = 0\text{ V}$   | -   | 0.4  | -    | pF   |          |
|          |                          | $V_R = 1\text{ V}$   | -   | 0.3  | 0.55 | pF   |          |
|          |                          | $V_R = 5\text{ V}$   | -   | 0.2  | 0.35 | pF   |          |
| $r_D$    | diode forward resistance | f = 100 MHz (see <a href="#">Figure 2</a> )  |     |      |      |      |          |
|          |                          | $I_F = 0.5\text{ mA}$  | [1] | -    | 5.5  | 9    | $\Omega$ |
|          |                          | $I_F = 1\text{ mA}$  | [1] | -    | 3.6  | 6.5  | $\Omega$ |
|          |                          | $I_F = 10\text{ mA}$   | [1] | -    | 1.5  | 2.5  | $\Omega$ |
| $\tau_L$ | charge carrier life time | when switched from $I_F = 10\text{ mA}$ to $I_R = 6\text{ mA}$ ; $R_L = 100\text{ }\Omega$ ; measured at $I_R = 3\text{ mA}$ | -   | 550  | -    | ns   |          |

[1] Guaranteed on AQL basis; inspection level S4, AQL 1.0

**8 Graphical data**



**9 Package outline**

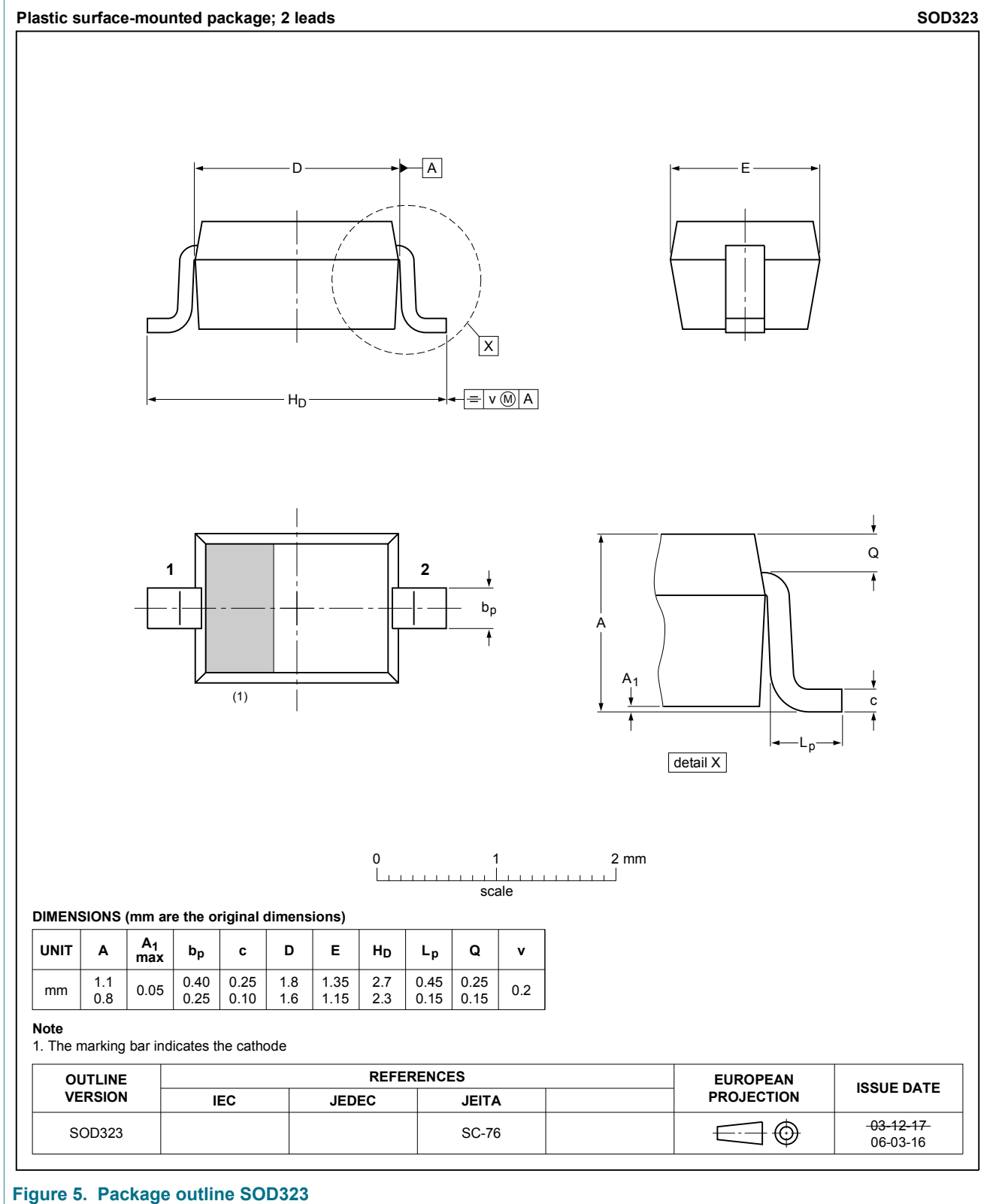


Figure 5. Package outline SOD323

## 10 Revision history

Table 7. Revision history

| Document ID    | Release date  | Data sheet status  | Change notice | Supersedes     |
|----------------|---|--------------------|---------------|----------------|
| BAP51-03 v.5.1 | 20190208  | Product data sheet | -             | BAP51-03 v.5   |
| Modifications: | • aligned the title of the data sheet with the description on the Internet  |                    |               |                |
| BAP51-03 v.5   | 20181126  | Product data sheet | -             | BAP51-03 v.3.1 |
| Modifications: | • AEC-Q101 qualification added to the features and benefits<br>• <a href="#">Section 1.2</a> "Features and benefits" has been updated.<br>• The "Legal information" pages have been updated to automotive version |                    |               |                |
| BAP51-03 v.4.1 | 20040211  | Product data sheet | -             | -              |

## 11 Legal information

### 11.1 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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