



BAP51-05W

Silicon PIN diode

Rev. 2.1 — 8 February 2019

Product data sheet

1 Product profile

1.1 General description

Two planar PIN diodes in common cathode configuration in a SOT323 small SMD plastic package.

1.2 Features and benefits

- Two elements in common cathode configuration in a small SMD plastic package
- Low diode capacitance
- Low diode forward resistance
- AEC-Q101 qualified

1.3 Applications

- General RF applications

2 Pinning information

Table 1. Discrete pinning

| Pin | Description | Simplified outline | Graphic symbol |
|-----|----------------|--------------------|----------------|
| 1 | anode (a1) | <p>Top view</p> | |
| 2 | anode (a2) | | |
| 3 | common cathode | | |

3 Ordering information

Table 2. Ordering information

| Type number | Package | | Version |
|-------------|---------|--|---------|
| | Name | Description | |
| BAP51-05W | - | plastic surface-mounted package; 3 leads | SOT323 |



4 Marking

Table 3. Marking

| Type number | Marking code |
|-------------|--------------|
| BAP51-05W | %1W |

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 | $T_{sp} \leq 90\text{ °C}$ | - | 240 | 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 | | 250 | K/W |

7 Characteristics

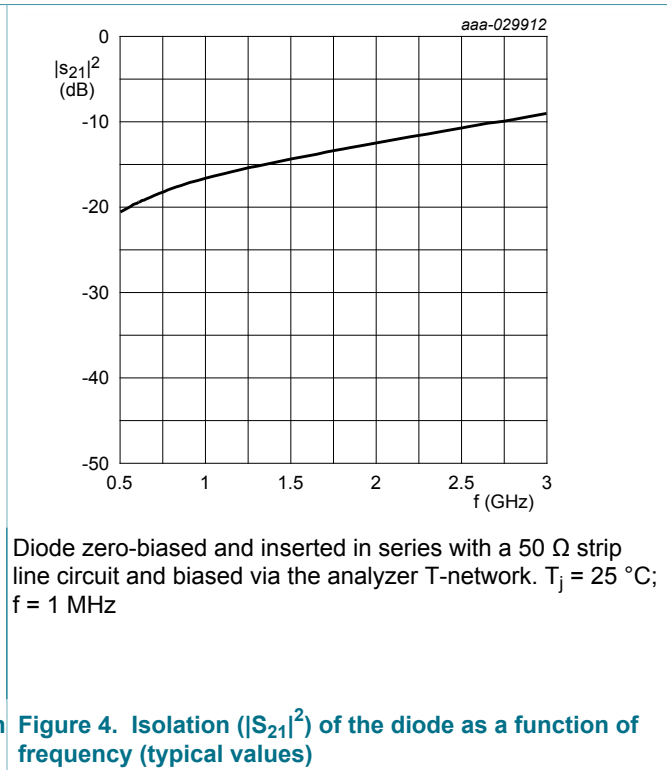
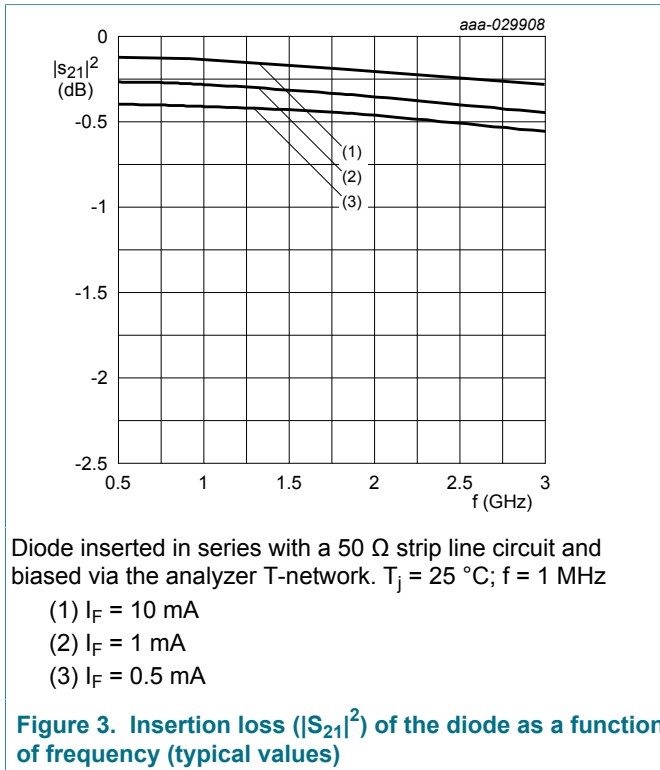
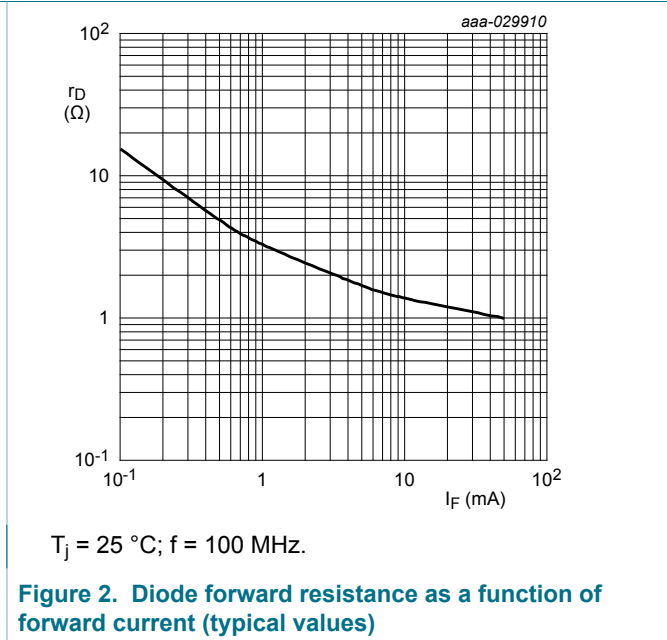
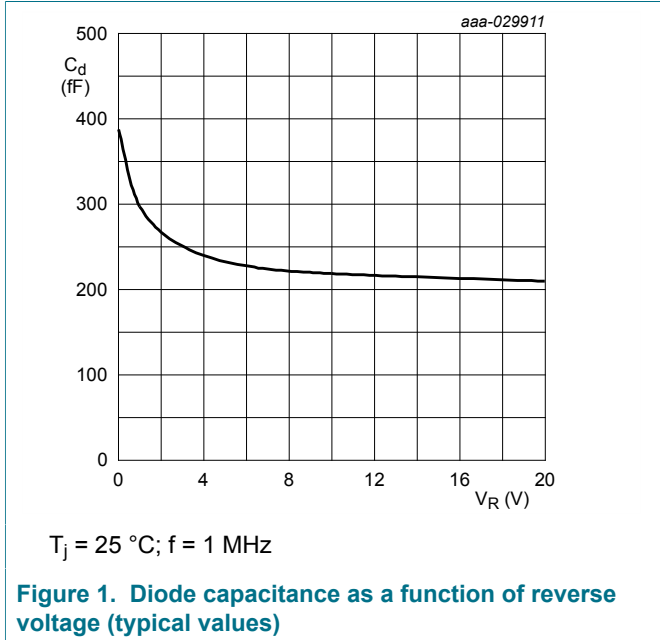
Table 6. Characteristics

$T_j = 25\text{ }^\circ\text{C}$ 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 Figure 1) | | | | | |
| | | $V_R = 0\text{ V}$ | - | 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 Figure 2) | | | | | |
| | | $I_F = 0.5\text{ mA}$ | [1] | - | 5.5 | 9 | Ω |
| | | $I_F = 1\text{ mA}$ | [1] | - | 3.6 | 6.5 | Ω |
| | | $I_F = 10\text{ mA}$ | [1] | - | 1.5 | 2.5 | Ω |
| τ_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 | |
| L_S | series inductance | $I_F = 10\text{ mA}$; f = 100 MHz | - | 1.6 | - | nH | |

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

8 Graphical data



9 Package outline

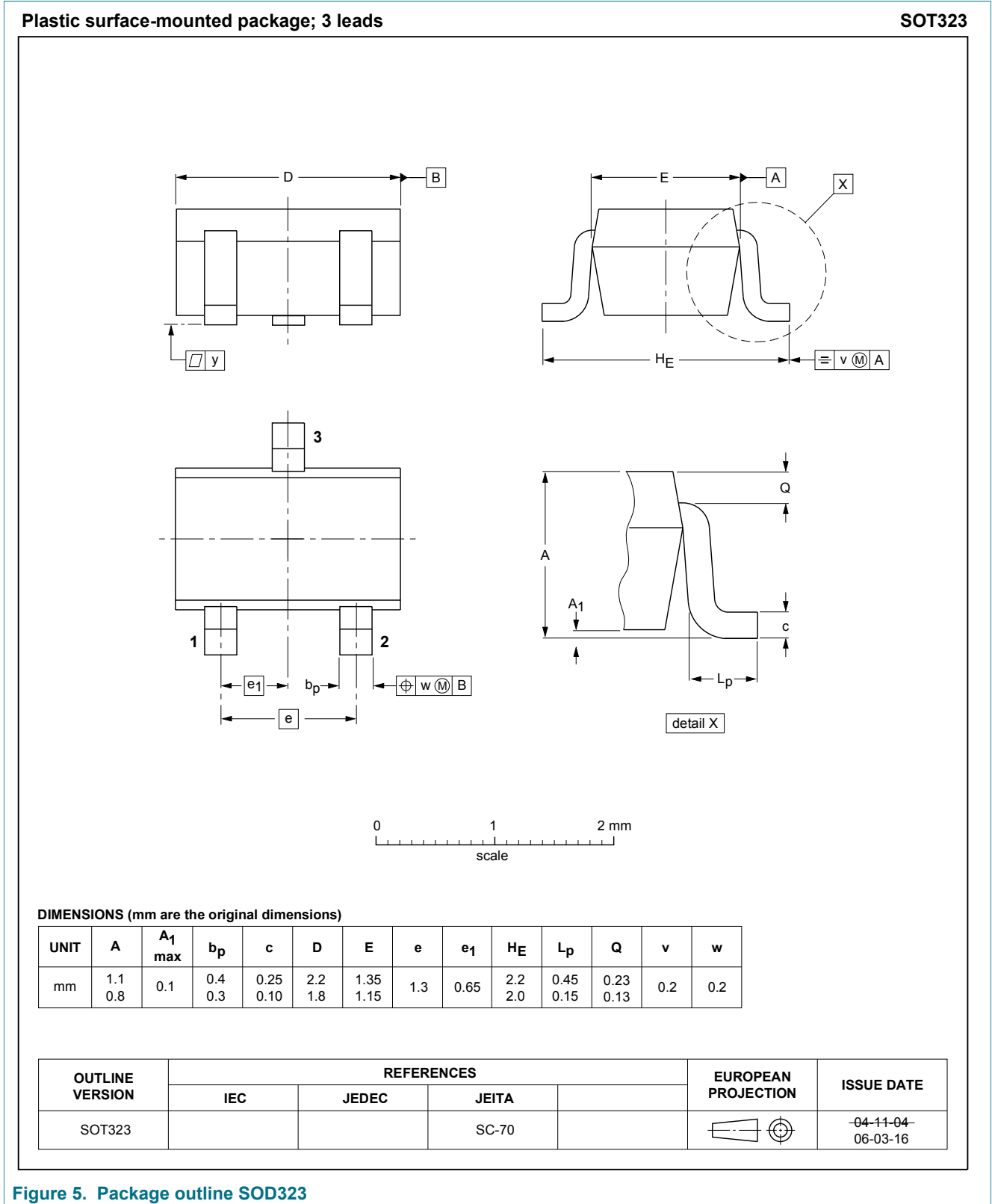


Figure 5. Package outline SOT323

10 Revision history

Table 7. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|-----------------|---|--------------------|---------------|---------------|
| BAP51-05W v.2.1 | 20190208 | Product data sheet | - | BAP51-05W v.2 |
| Modifications: | • aligned the title of the data sheet with the description on the Internet | | | |
| BAP51-05W v.2 | 20180323 | Product data sheet | - | BAP51-05W v.1 |
| Modifications: | • Section 1.2 "Features and benefits" has been updated. • The "Legal information" pages have been updated. | | | |
| BAP51-05W v.1 | 20010123 | Product data sheet | - | - |

11 Legal information

11.1 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. |
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[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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