

BAP50-03

General purpose PIN diode

Rev. 04 — 11 September 2009

Product data sheet

1. Product profile

1.1 General description

General purpose PIN diode in a SOD323 small plastic SMD package.

1.2 Features



- Low diode capacitance
- Low diode forward resistance

1.3 Applications

- General RF application

2. Pinning information

Table 1. Discrete pinning

| Pin | Description | Simplified outline | Graphic symbol |
|-----|-------------|---|--|
| 1 | cathode |  |  <i>sym006</i> |
| 2 | anode | | |

3. Ordering information

Table 2. Ordering information

| Type number | Package | | |
|-------------|---------|--|---------|
| | Name | Description | Version |
| BAP50-03 | SC-76 | plastic surface-mounted package; 2 leads | SOD323 |

4. Limiting values

Table 3. Limiting values

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

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

5. Thermal characteristics

Table 4. Thermal characteristics

| Symbol | Parameter | Conditions | Typ | Unit |
|----------------|---|------------|-----|------|
| $R_{th(j-sp)}$ | thermal resistance from junction to soldering point | | 85 | K/W |

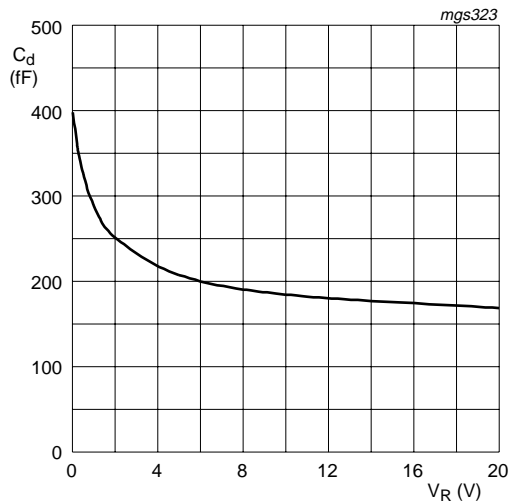
6. Characteristics

Table 5. Characteristics

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

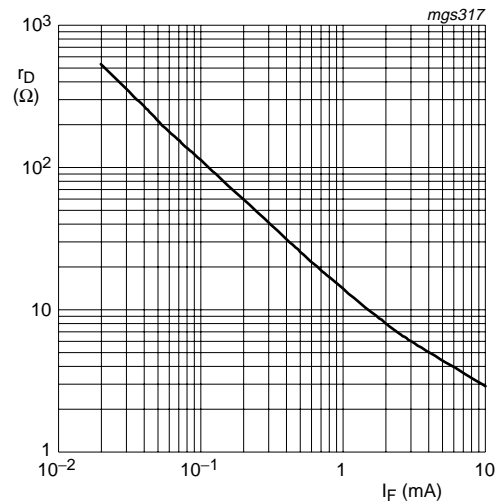
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|--------------------------|---|-------|------|------|----------|
| V_F | forward voltage | $I_F = 50\text{ mA}$ | - | 0.95 | 1.1 | V |
| V_R | reverse voltage | $I_R = 10\text{ }\mu\text{A}$ | 50 | - | - | V |
| I_R | reverse current | $V_R = 50\text{ V}$ | - | - | 100 | nA |
| C_d | diode capacitance | $f = 1\text{ MHz}$; 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 | $f = 100\text{ MHz}$; see Figure 2 | | | | |
| | | $I_F = 0.5\text{ mA}$ | [1] - | 25 | 40 | Ω |
| | | $I_F = 1\text{ mA}$ | [1] - | 14 | 25 | Ω |
| | | $I_F = 10\text{ mA}$ | [1] - | 3 | 5 | Ω |

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



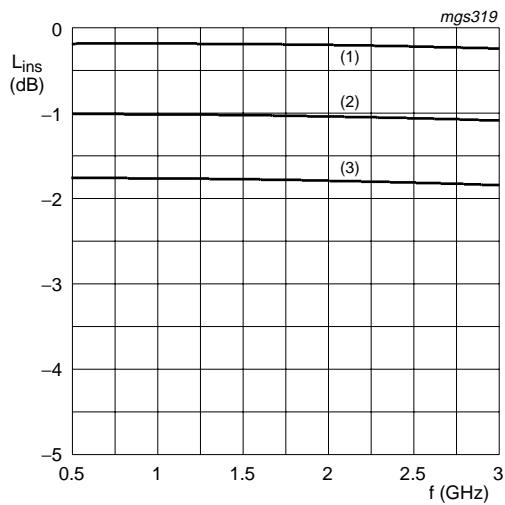
$f = 1 \text{ MHz}$; $T_j = 25^\circ\text{C}$.

Fig 1. Diode capacitance as a function of reverse voltage; typical values



$f = 100 \text{ MHz}$; $T_j = 25^\circ\text{C}$.

Fig 2. Diode forward resistance as a function of forward current; typical values



(1) $I_F = 10 \text{ mA}$

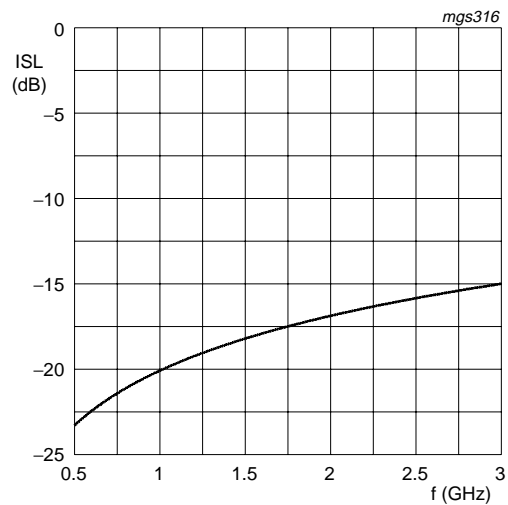
(2) $I_F = 1 \text{ mA}$

(3) $I_F = 0.5 \text{ mA}$

$T_{\text{amb}} = 25^\circ\text{C}$.

Diode inserted in series with a 50Ω stripline circuit and biased via the analyzer Tee network.

Fig 3. Insertion loss of the diode as a function of frequency; typical values



$T_{\text{amb}} = 25^\circ\text{C}$.

Diode zero biased and inserted in series with a 50Ω stripline circuit.

Fig 4. Isolation of the diode as a function of frequency; typical values

7. Package outline

Plastic surface-mounted package; 2 leads

SOD323

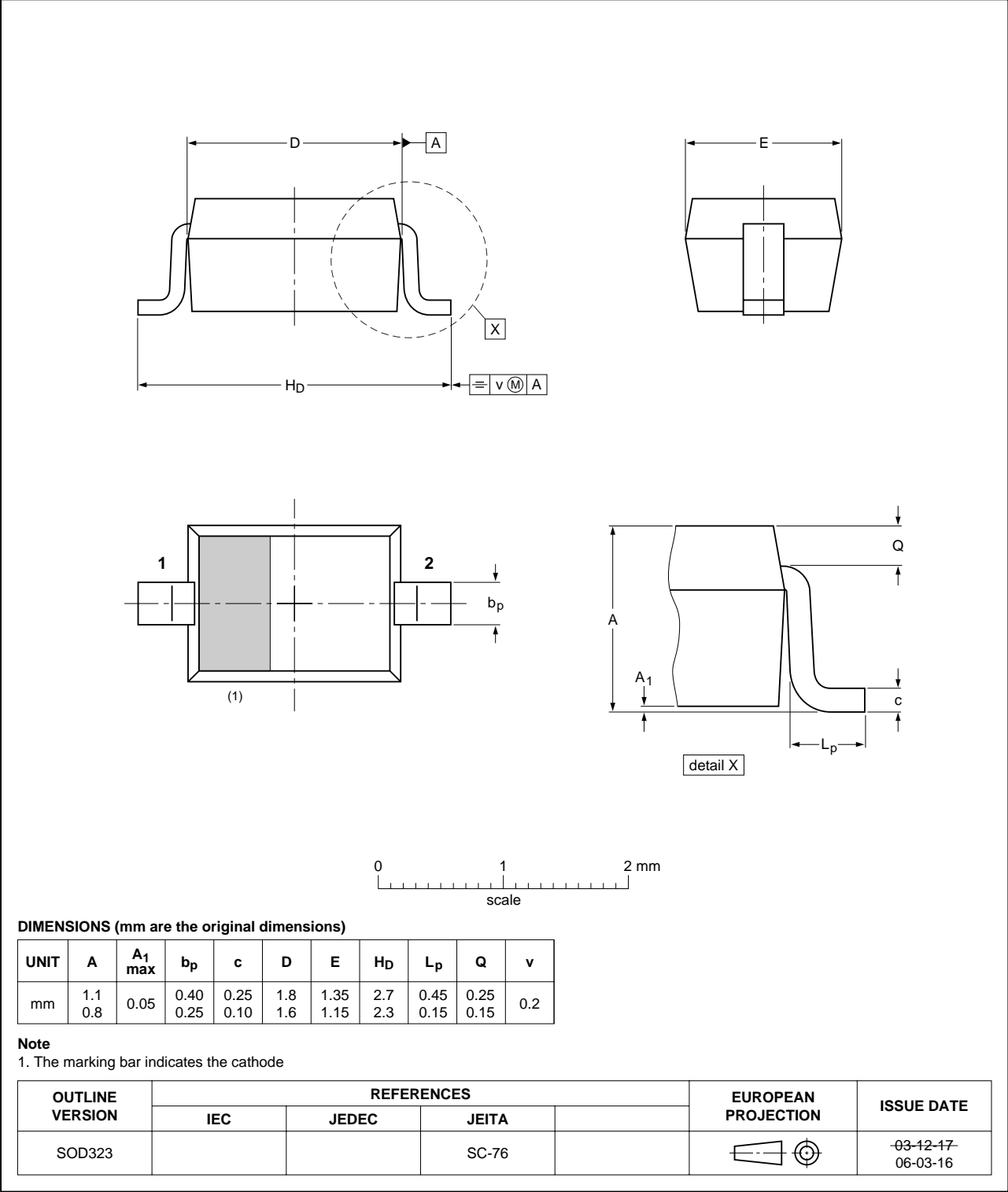


Fig 5. Package outline SOD323

8. Abbreviations

Table 6. Abbreviations

| Acronym | Description |
|---------|----------------------------|
| AQL | Acceptable Quality Level |
| PIN | P-type, Intrinsic, N-type |
| SMD | Surface Mounted Device |
| RF | Radio Frequency |
| S4 | Special inspection level 4 |

9. Revision history

Table 7. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|--|------------------------|---------------|--------------|
| BAP50-03_4 | 20090911 | Product data sheet | - | BAP50-03_3 |
| Modifications: | <ul style="list-style-type: none">The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.Legal texts have been adapted to the new company name where appropriate. | | | |
| BAP50-03_3 | 20040211 | Product data sheet | | BAP50-03_2 |
| BAP50-03_2 | 19990510 | Product data sheet | | BAP50-03_N_1 |
| BAP50-03_N_1 | 19990201 | Preliminary data sheet | | - |

10. Legal information

10.1 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. |
| 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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