



BAP70-02

Silicon PIN diode

Rev. 8 — 11 December 2018

Product data sheet

1 Product profile

1.1 General description

Planar PIN diode in a SOD523 ultra small SMD plastic package.

1.2 Features and benefits



- High voltage; current controlled RF resistor for attenuators
- Low diode capacitance
- Very low series inductance
- AEC-Q101 qualified

1.3 Applications

- RF attenuators
- (SAT) TV
- Car radio

2 Pinning information

Table 1. Discrete pinning

| Pin | Description | Simplified outline | Symbol |
|-----|-------------|--|---|
| 1 | cathode |  |  sym006 |
| 2 | anode | | |

3 Ordering information

Table 2. Ordering information

| Type number | Package | | |
|-------------|---------|--|---------|
| | Name | Description | Version |
| BAP70-02 | - | plastic surface-mounted package; 2 leads | SOD523 |



4 Marking

Table 3. Marking

| Type number | Marking code |
|-------------|-------------------|
| BAP70-02 | K8 ^[1] |

[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 | reverse voltage | continuous voltage | - | 50 | V |
| I_F | forward current | continuous current | - | 100 | mA |
| P_{tot} | total power dissipation | $T_{sp} \leq 90\text{ °C}$ | - | 415 | 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 | | 145 | K/W |

7 Characteristics

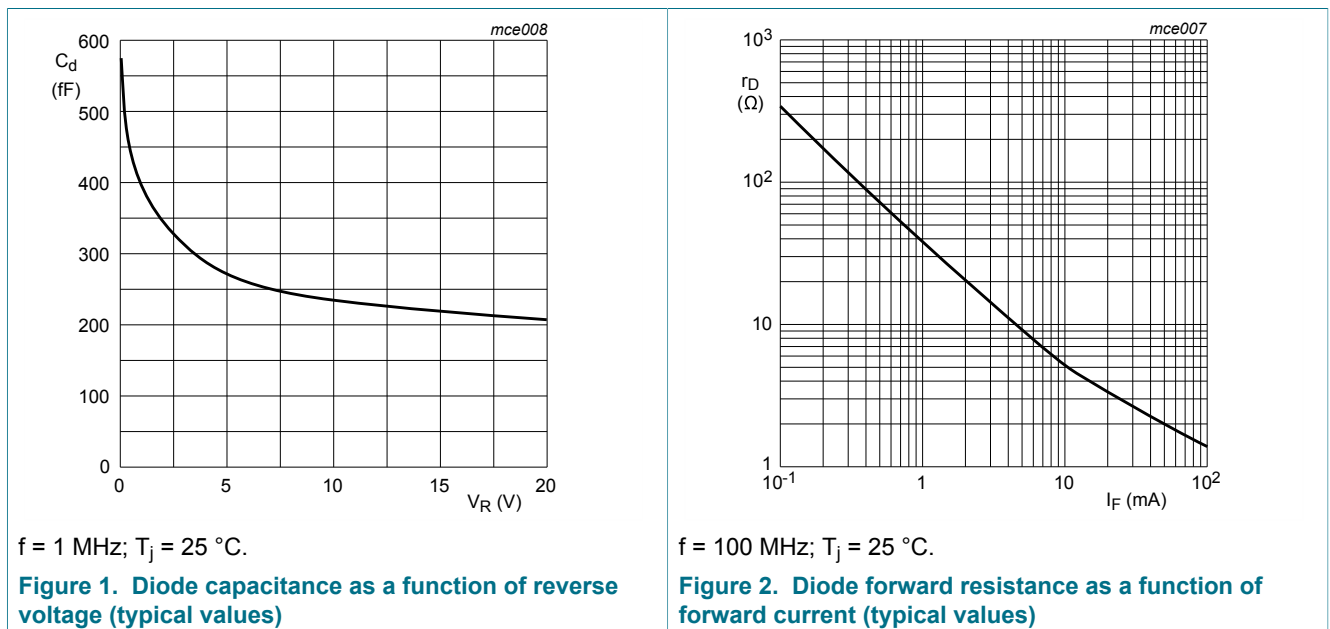
Table 6. Characteristics

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

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|-------------------|--|-----|-----|-----|------|
| V_F | forward voltage | $I_F = 50\text{ mA}$ | - | 0.9 | 1.1 | V |
| I_R | reverse current | $V_R = 50\text{ V}$ | - | - | 100 | nA |
| C_d | diode capacitance | $f = 1\text{ MHz}$ (see Figure 1) | | | | |
| | | $V_R = 0\text{ V}$ | - | 570 | - | fF |
| | | $V_R = 1\text{ V}$ | - | 400 | - | fF |
| | | $V_R = 5\text{ V}$ | - | 270 | - | fF |
| | | $V_R = 20\text{ V}$ | - | 200 | 250 | fF |

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------|--------------------------|--|-----|------|-----|---------------|
| r_D | diode forward resistance | $f = 100 \text{ MHz}$ (see Figure 2) | | | | |
| | | $I_F = 0.5 \text{ mA}$ | - | 77 | 100 | Ω |
| | | $I_F = 1 \text{ mA}$ | - | 40 | 50 | Ω |
| | | $I_F = 10 \text{ mA}$ | - | 5.4 | 7 | Ω |
| τ_L | charge carrier life time | $I_F = 100 \text{ mA}$ | - | 1.4 | 1.9 | Ω |
| | | when switched from $I_F = 10 \text{ mA}$ to $I_R = 6 \text{ mA}$; $R_L = 100 \Omega$; measured at $I_R = 3 \text{ mA}$ | - | 1.25 | - | μs |
| L_S | series inductance | $I_F = 100 \text{ mA}$; $f = 100 \text{ MHz}$ | - | 0.6 | - | nH |

8 Graphical data



9 Package outline

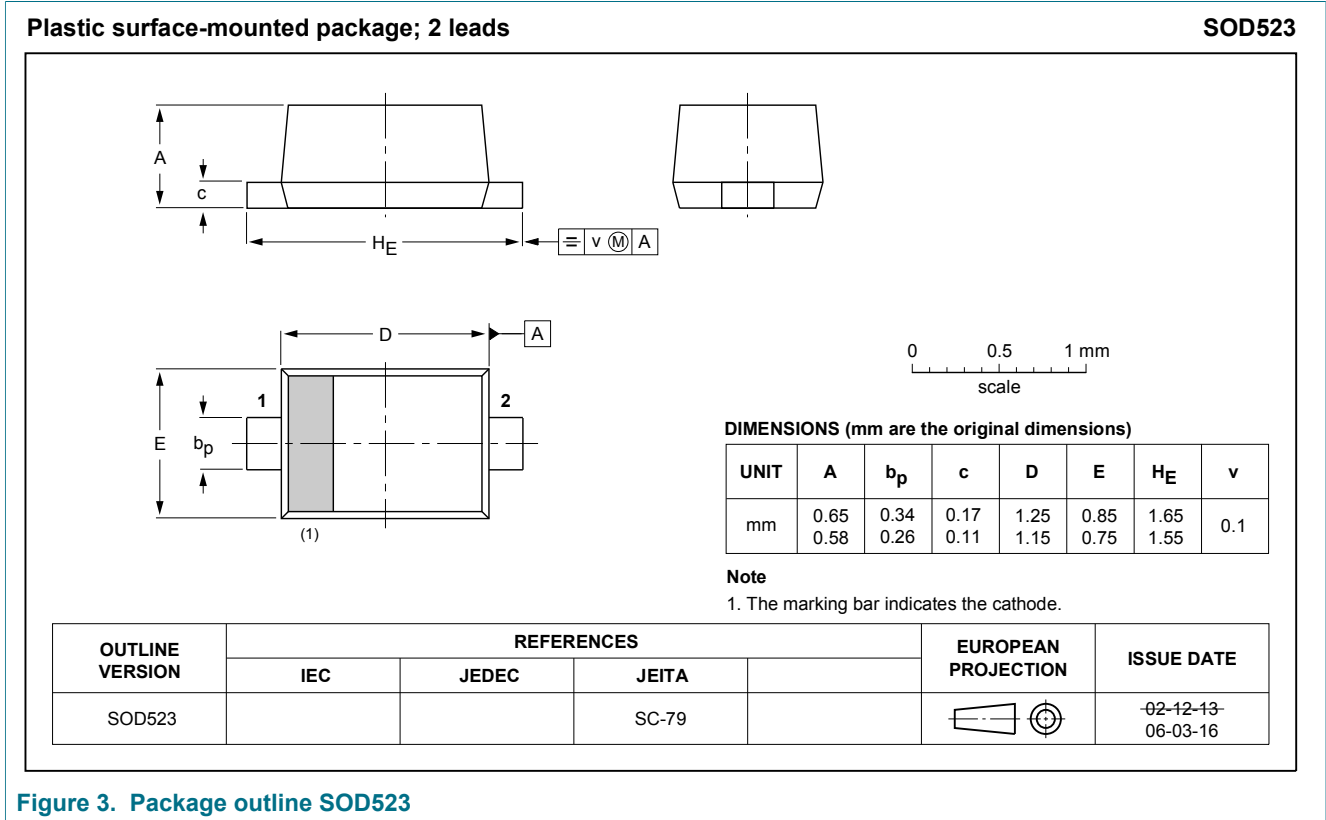


Figure 3. Package outline SOD523

10 Abbreviations

Table 7. Abbreviations

| Acronym | Description |
|---------|---------------------------|
| PIN | P-type, Intrinsic, N-type |
| SMD | Surface-Mounted Device |
| RF | Radio Frequency |

11 Revision history

Table 8. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---------------------------------|---|------------------------|---------------|----------------|
| BAP70-02 v.8 | 20181211 | Product data sheet | - | BAP70-02 v.7 |
| Modifications: | <ul style="list-style-type: none"> • Section 1.2 "Features and benefits" has been updated. • The "Legal information" pages have been updated. | | | |
| BAP70-02 v.7 | 20140416 | Product data sheet | - | BAP70-02 v.6 |
| BAP70-02 v.6 | 20140211 | Product data sheet | - | BAP70-02_N v.5 |
| BAP70-02_N v.5 | 20080102 | Product data sheet | - | BAP70-02_N v.4 |
| BAP70-02_N v.4 | 20070322 | Product data sheet | - | BAP70-02 v.3 |
| BAP70-02 v.3 (9397 750 10093) | 20020806 | Product data sheet | - | BAP70-02_N v.2 |
| BAP70-02_N v.2 (9397 750 10079) | 20020702 | Preliminary data sheet | - | BAP70-02_N v.1 |
| BAP70-02_N v.1 (9397 750 09578) | 20020402 | Preliminary data sheet | - | - |

12 Legal information

12.1 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. |

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- [2] The term 'short data sheet' is explained in section "Definitions".
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