

# BAP64-02

Silicon PIN diode

Rev. 06 — 9 January 2008

Product data sheet

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NXP Semiconductors

## Silicon PIN diode

## BAP64-02

## FEATURES

- High voltage, current controlled
- RF resistor for RF attenuators and switches
- Low diode capacitance
- Low diode forward resistance
- Very low series inductance
- For applications up to 3 GHz.

## APPLICATIONS

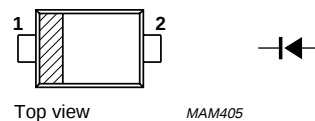
- RF attenuators and switches.

## DESCRIPTION

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

## PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | cathode     |
| 2   | anode       |



Marking code: S.

Fig.1 Simplified outline (SOD523) and symbol.

## LIMITING VALUES

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

| SYMBOL    | PARAMETER                  | CONDITIONS           | MIN. | MAX. | UNIT |
|-----------|----------------------------|----------------------|------|------|------|
| $V_R$     | continuous reverse voltage |                      | –    | 175  | V    |
| $I_F$     | continuous forward current |                      | –    | 100  | mA   |
| $P_{tot}$ | total power dissipation    | $T_s = 90\text{ °C}$ | –    | 715  | mW   |
| $T_{stg}$ | storage temperature        |                      | –65  | +150 | °C   |
| $T_j$     | junction temperature       |                      | –65  | +150 | °C   |

## Silicon PIN diode

## BAP64-02

**ELECTRICAL CHARACTERISTICS**

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

| SYMBOL   | PARAMETER                | CONDITIONS                                                                                                                   | TYP. | MAX. | UNIT          |
|----------|--------------------------|------------------------------------------------------------------------------------------------------------------------------|------|------|---------------|
| $V_F$    | forward voltage          | $I_F = 50\text{ mA}$                                                                                                         | 0.95 | 1.1  | V             |
| $I_R$    | reverse leakage current  | $V_R = 175\text{ V}$                                                                                                         | –    | 10   | $\mu\text{A}$ |
|          |                          | $V_R = 20\text{ V}$                                                                                                          | –    | 1    | $\mu\text{A}$ |
| $C_d$    | diode capacitance        | $V_R = 0$ ; $f = 1\text{ MHz}$                                                                                               | 0.48 | –    | pF            |
|          |                          | $V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$                                                                                      | 0.35 | –    | pF            |
|          |                          | $V_R = 20\text{ V}$ ; $f = 1\text{ MHz}$                                                                                     | 0.23 | 0.35 | pF            |
| $r_D$    | diode forward resistance | $f = 100\text{ MHz}$ ; note 1                                                                                                |      |      |               |
|          |                          | $I_F = 0.5\text{ mA}$                                                                                                        | 20   | 40   | $\Omega$      |
|          |                          | $I_F = 1\text{ mA}$                                                                                                          | 10   | 20   | $\Omega$      |
|          |                          | $I_F = 10\text{ mA}$                                                                                                         | 2    | 3.8  | $\Omega$      |
|          |                          | $I_F = 100\text{ mA}$                                                                                                        | 0.7  | 1.35 | $\Omega$      |
| $\tau_L$ | 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 $I_R = 3\text{ mA}$ | 1.55 | –    | $\mu\text{s}$ |
| $L_S$    | series inductance        |                                                                                                                              | 0.6  | –    | nH            |

**Note**

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

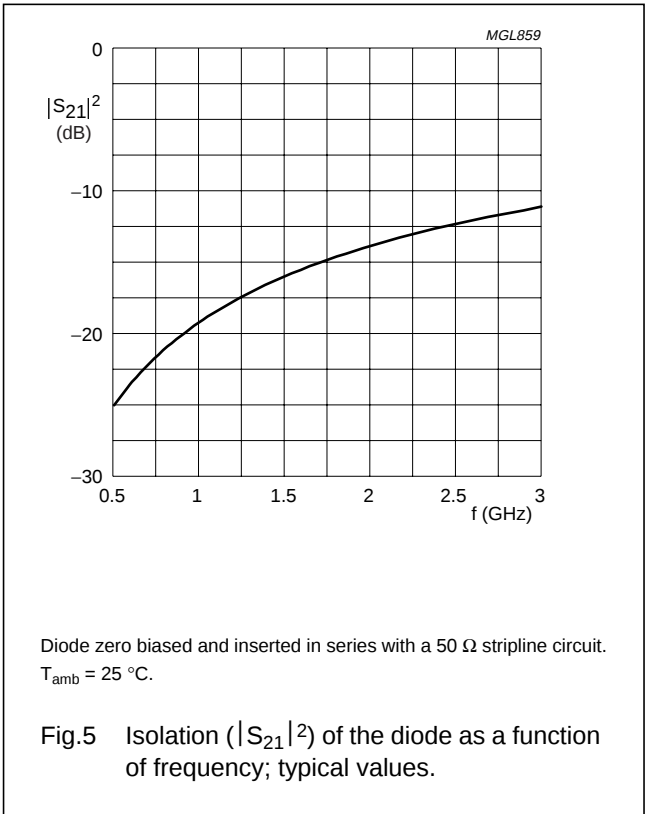
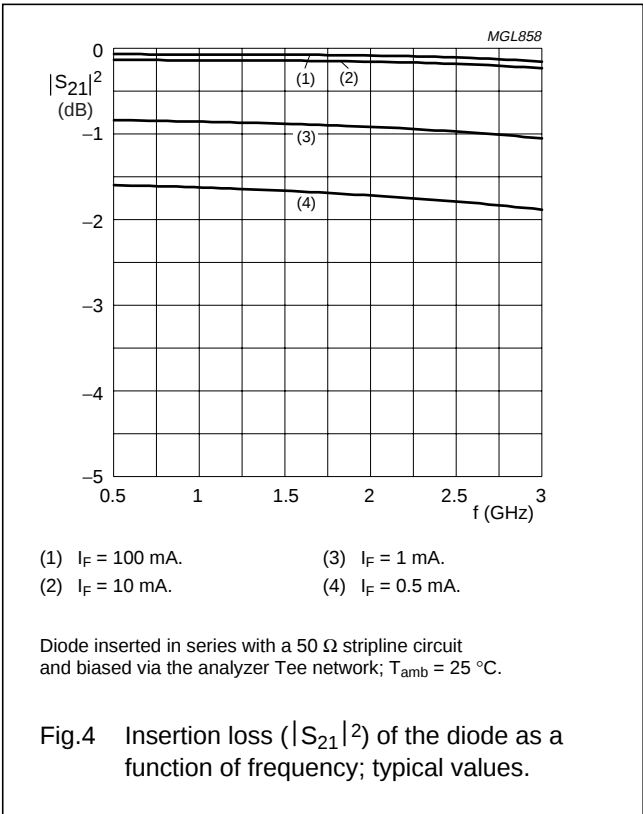
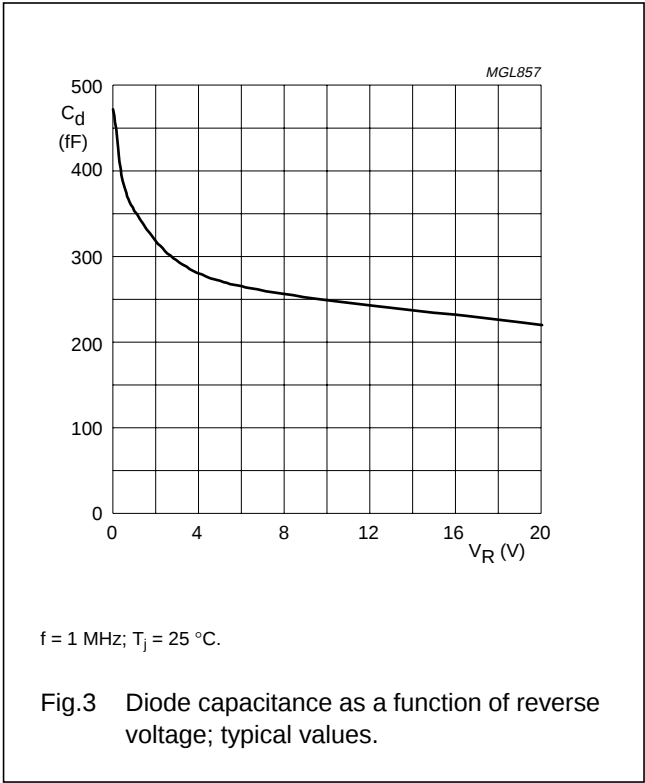
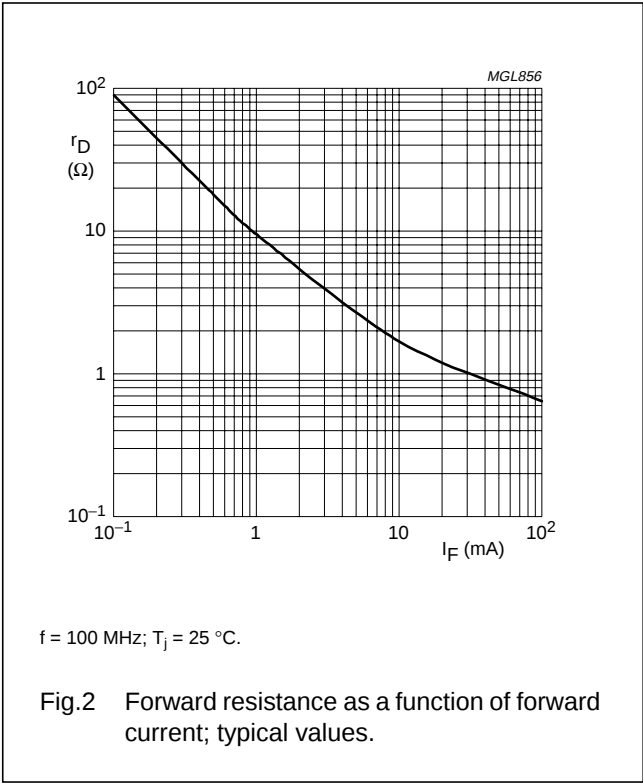
**THERMAL CHARACTERISTICS**

| SYMBOL        | PARAMETER                                           | VALUE | UNIT |
|---------------|-----------------------------------------------------|-------|------|
| $R_{th\ j-s}$ | thermal resistance from junction to soldering point | 85    | K/W  |

Silicon PIN diode

BAP64-02

GRAPHICAL DATA



Silicon PIN diode

BAP64-02

PACKAGE OUTLINE

Plastic surface-mounted package; 2 leads

SOD523

0 0.5 1 mm  
scale

**DIMENSIONS (mm are the original dimensions)**

| UNIT | A            | b <sub>p</sub> | c            | D            | E            | H <sub>E</sub> | v   |
|------|--------------|----------------|--------------|--------------|--------------|----------------|-----|
| mm   | 0.65<br>0.58 | 0.34<br>0.26   | 0.17<br>0.11 | 1.25<br>1.15 | 0.85<br>0.75 | 1.65<br>1.55   | 0.1 |

**Note**  
1. The marking bar indicates the cathode.

| OUTLINE<br>VERSION | REFERENCES |       |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE                      |
|--------------------|------------|-------|-------|--|------------------------|---------------------------------|
|                    | IEC        | JEDEC | JEITA |  |                        |                                 |
| SOD523             |            |       | SC-79 |  |                        | <del>02-12-13</del><br>06-03-16 |

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### 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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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## Revision history

### Revision history

| Document ID                                                                                              | Release date | Data sheet status         | Change notice | Supersedes   |
|----------------------------------------------------------------------------------------------------------|--------------|---------------------------|---------------|--------------|
| BAP64-02_N_6                                                                                             | 20080109     | Product data sheet        | -             | BAP64-02_5   |
| Modifications: <ul style="list-style-type: none"><li>Package outline drawing on page 5 changed</li></ul> |              |                           |               |              |
| BAP64-02_5<br>(9397 750 06912)                                                                           | 20000323     | Product specification     | -             | BAP64-02_4   |
| BAP64-02_4<br>(9397 750 06418)                                                                           | 19990921     | Preliminary specification | -             | BAP64-02_N_3 |
| BAP64-02_N_3<br>(9397 750 06086)                                                                         | 19990616     | Preliminary specification | -             | BAP64-02_2   |
| BAP64-02_2<br>(9397 750 05556)                                                                           | 19990510     | Objective specification   | -             | BAP64-02_N_1 |
| BAP64-02_N_1<br>(9397 750 05492)                                                                         | 19981204     | Objective specification   | -             | -            |

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Date of release: 9 January 2008

Document identifier: BAP64-02\_N\_6