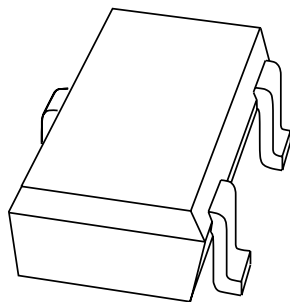


# DATA SHEET



## **BAP64-05W** Silicon PIN diode

Product specification

2000 Jul 13

Silicon PIN diode

BAP64-05W

FEATURES

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

APPLICATIONS

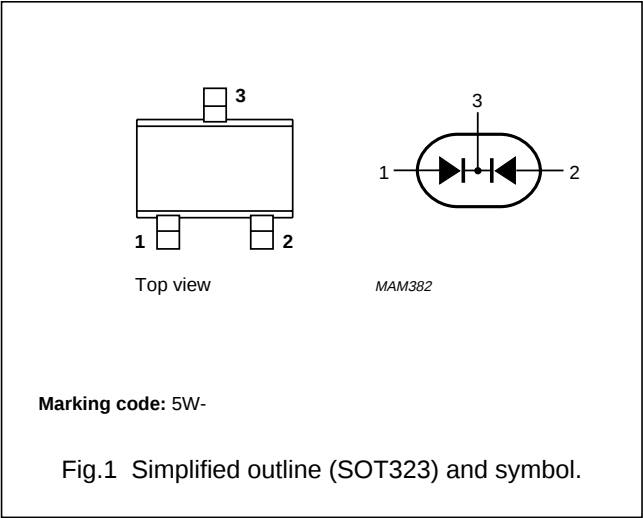
- RF attenuators and switches.

GENERAL DESCRIPTION

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

PINNING

| PIN | DESCRIPTION    |
|-----|----------------|
| 1   | anode (a1)     |
| 2   | anode (a2)     |
| 3   | common cathode |



LIMITING VALUES

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

| SYMBOL    | PARAMETER                  | CONDITIONS           | MIN. | MAX. | UNIT |
|-----------|----------------------------|----------------------|------|------|------|
| Per diode |                            |                      |      |      |      |
| $V_R$     | continuous reverse voltage |                      | –    | 100  | V    |
| $I_F$     | continuous forward current |                      | –    | 100  | mA   |
| $P_{tot}$ | total power dissipation    | $T_s = 90\text{ °C}$ | –    | 240  | mW   |
| $T_{stg}$ | storage temperature        |                      | –65  | +150 | °C   |
| $T_j$     | junction temperature       |                      | –65  | +150 | °C   |

## Silicon PIN diode

## BAP64-05W

**ELECTRICAL CHARACTERISTICS**

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

| SYMBOL           | PARAMETER                | CONDITIONS                                                                                                                | TYP. | MAX. | UNIT          |
|------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------|------|------|---------------|
| <b>Per diode</b> |                          |                                                                                                                           |      |      |               |
| $V_F$            | forward voltage          | $I_F = 50\text{ mA}$                                                                                                      | 0.95 | 1.1  | V             |
| $I_R$            | reverse current          | $V_R = 100\text{ V}$                                                                                                      | –    | 10   | $\mu\text{A}$ |
|                  |                          | $V_R = 20\text{ V}$                                                                                                       | –    | 1    | $\mu\text{A}$ |
| $C_d$            | diode capacitance        | $V_R = 0; f = 1\text{ MHz}$                                                                                               | 0.52 | –    | pF            |
|                  |                          | $V_R = 1\text{ V}; f = 1\text{ MHz}$                                                                                      | 0.37 | –    | pF            |
|                  |                          | $V_R = 20\text{ V}; f = 1\text{ MHz}$                                                                                     | 0.23 | 0.35 | pF            |
| $r_D$            | diode forward resistance | $I_F = 0.5\text{ mA}; f = 100\text{ MHz}; \text{note 1}$                                                                  | 20   | 40   | $\Omega$      |
|                  |                          | $I_F = 1\text{ mA}; f = 100\text{ MHz}; \text{note 1}$                                                                    | 10   | 20   | $\Omega$      |
|                  |                          | $I_F = 10\text{ mA}; f = 100\text{ MHz}; \text{note 1}$                                                                   | 2    | 3.8  | $\Omega$      |
|                  |                          | $I_F = 100\text{ mA}; f = 100\text{ MHz}; \text{note 1}$                                                                  | 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        |                                                                                                                           | 1.2  | –    | nH            |

**Note**

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

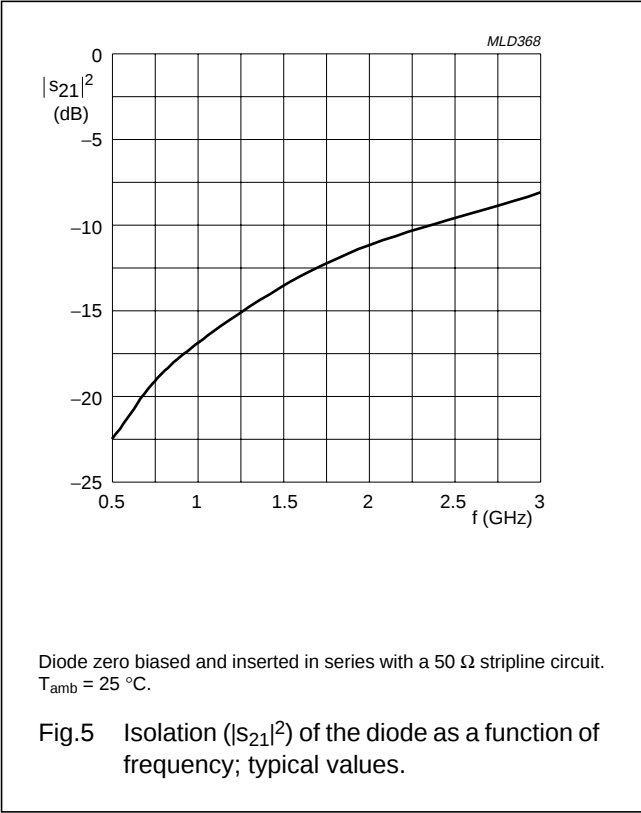
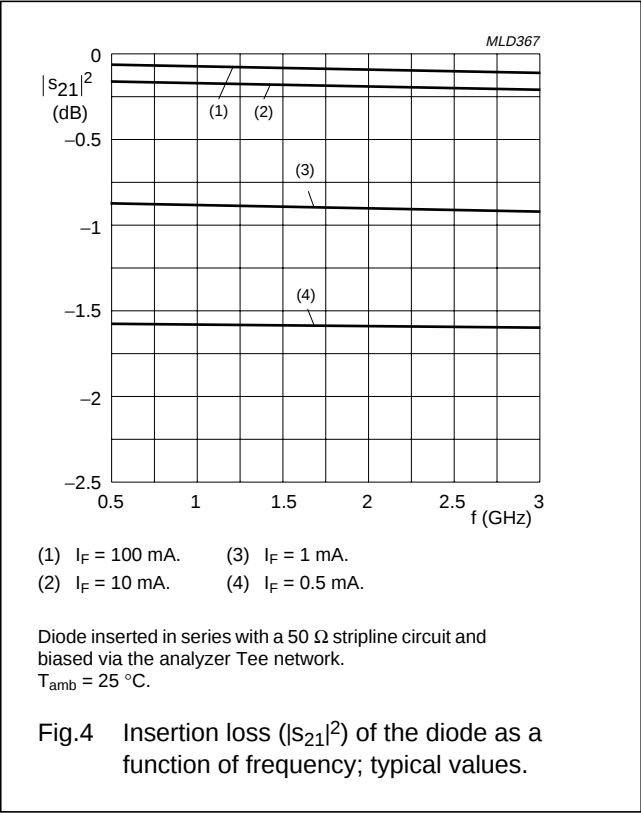
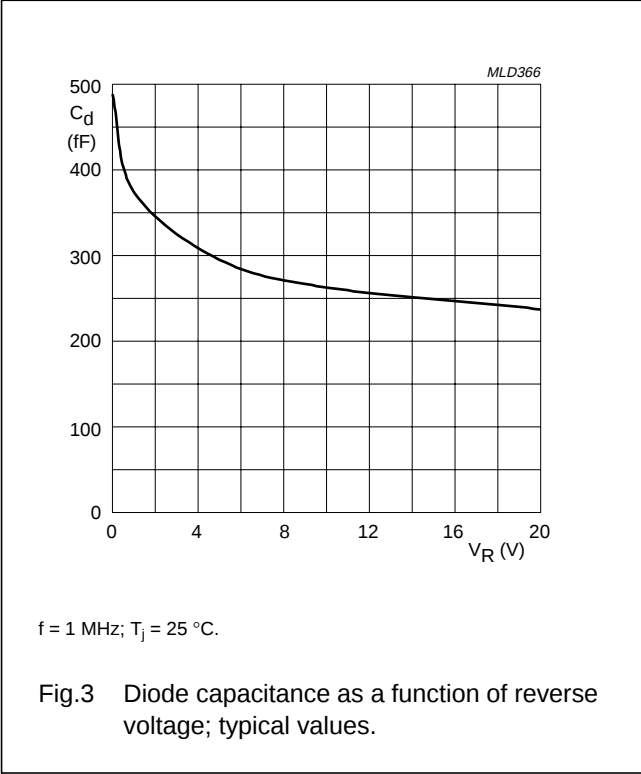
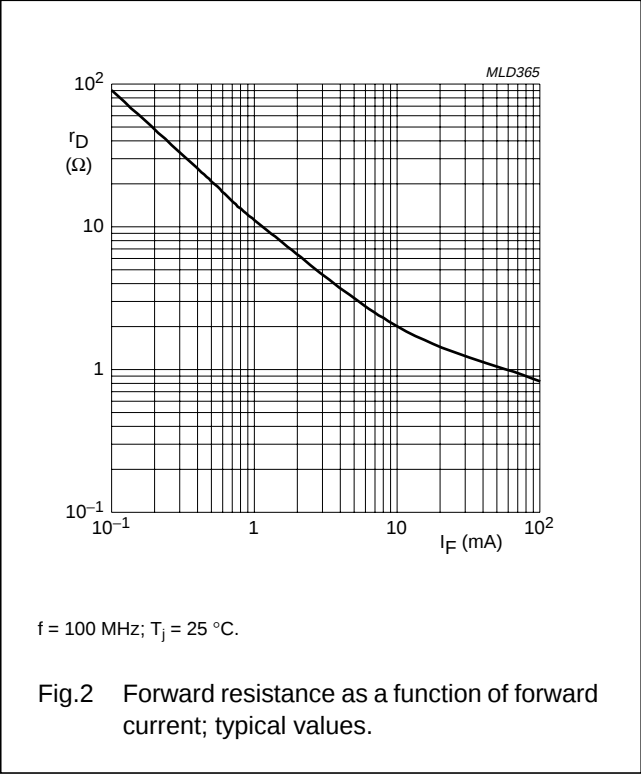
**THERMAL CHARACTERISTICS**

| SYMBOL              | PARAMETER                                           | VALUE | UNIT |
|---------------------|-----------------------------------------------------|-------|------|
| $R_{th\text{ j-s}}$ | thermal resistance from junction to soldering point | 250   | K/W  |

Silicon PIN diode

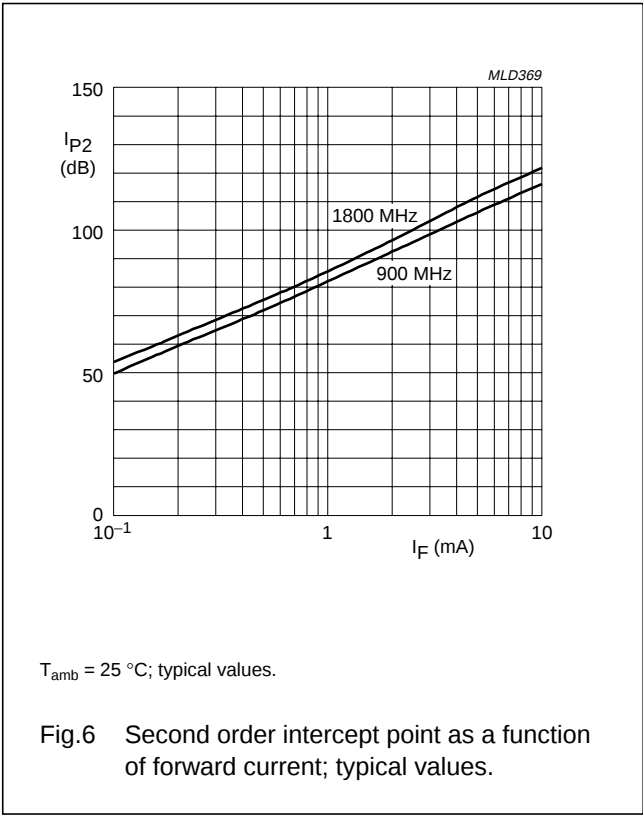
BAP64-05W

GRAPHICAL DATA



Silicon PIN diode

BAP64-05W



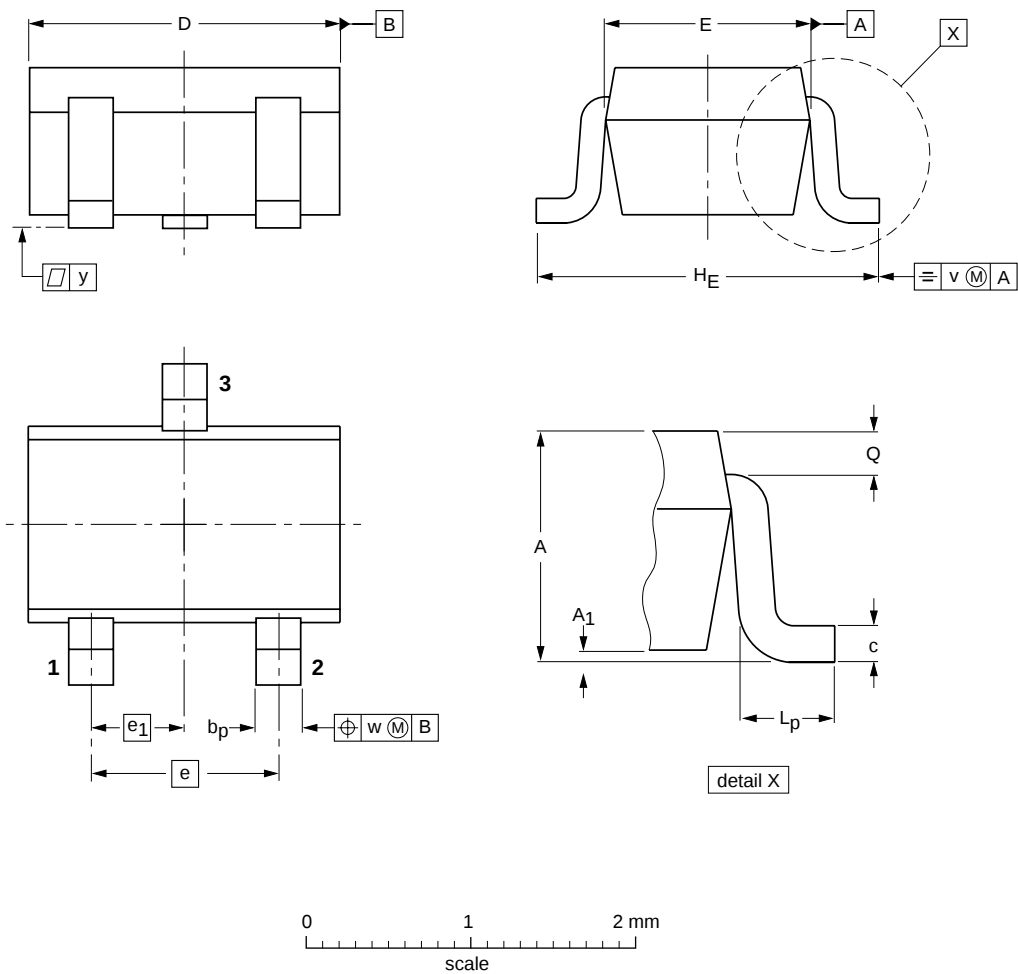
Silicon PIN diode

BAP64-05W

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max | b <sub>p</sub> | c            | D          | E            | e   | e <sub>1</sub> | H <sub>E</sub> | L <sub>p</sub> | Q            | v   | w   |
|------|------------|-----------------------|----------------|--------------|------------|--------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm   | 1.1<br>0.8 | 0.1                   | 0.4<br>0.3     | 0.25<br>0.10 | 2.2<br>1.8 | 1.35<br>1.15 | 1.3 | 0.65           | 2.2<br>2.0     | 0.45<br>0.15   | 0.23<br>0.13 | 0.2 | 0.2 |

| OUTLINE<br>VERSION | REFERENCES |       |       |  | EUROPEAN<br>PROJECTION                                                                | ISSUE DATE |
|--------------------|------------|-------|-------|--|---------------------------------------------------------------------------------------|------------|
|                    | IEC        | JEDEC | EIAJ  |  |                                                                                       |            |
| SOT323             |            |       | SC-70 |  |  | 97-02-28   |

## Silicon PIN diode

BAP64-05W

## DATA SHEET STATUS

| DATA SHEET STATUS         | PRODUCT STATUS | DEFINITIONS <sup>(1)</sup>                                                                                                                                                                                                                                 |
|---------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective specification   | Development    | This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.                                                                                                          |
| Preliminary specification | Qualification  | This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product. |
| Product specification     | Production     | This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.                                                       |

## Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

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**Limiting values definition** — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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Printed in The Netherlands

613512/01/pp8

Date of release: 2000 Jul 13

Document order number: 9397 750 07192

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