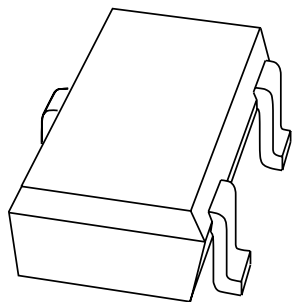


# DATA SHEET



## **BAP63-05W** Silicon PIN diode

Product specification  
Supersedes data of 2001 Apr 04

2001 May 18

# Silicon PIN diode

# BAP63-05W

## FEATURES

- High speed switching for RF signals
- Low diode capacitance
- Low diode forward resistance
- Low series inductance
- For applications up to 3 GHz.

## APPLICATIONS

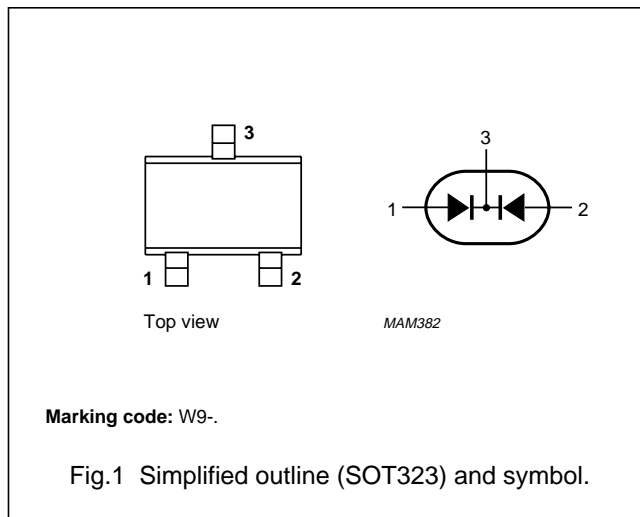
- RF attenuators and switches.

## 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 |
|------------------|----------------------------|-------------------------|------|------|------|
| <b>Per diode</b> |                            |                         |      |      |      |
| $V_R$            | continuous reverse voltage |                         | –    | 50   | V    |
| $I_F$            | continuous forward current |                         | –    | 100  | mA   |
| $P_{tot}$        | total power dissipation    | $T_s \leq 90\text{ °C}$ | –    | 240  | mW   |
| $T_{stg}$        | storage temperature        |                         | –65  | +150 | °C   |
| $T_j$            | junction temperature       |                         | –65  | +150 | °C   |

## Silicon PIN diode

## BAP63-05W

**ELECTRICAL CHARACTERISTICS**T<sub>j</sub> = 25 °C unless otherwise specified.

| SYMBOL                         | PARAMETER                | CONDITIONS  | TYP. | MAX. | UNIT |
|--------------------------------|--------------------------|---|------|------|------|
| <b>Per diode</b>               |                          |   |      |      |      |
| V <sub>F</sub>                 | forward voltage          | I <sub>F</sub> = 50 mA  | 0.95 | 1.1  | V    |
| I <sub>R</sub>                 | reverse current          | V <sub>R</sub> = 35 V   | –    | 10   | nA   |
| C <sub>d</sub>                 | diode capacitance        | V <sub>R</sub> = 0; f = 1 MHz   | 0.4  | –    | pF   |
|                                |                          | V <sub>R</sub> = 1 V; f = 1 MHz   | 0.35 | –    | pF   |
|                                |                          | V <sub>R</sub> = 20 V; f = 1 MHz  | 0.3  | 0.35 | pF   |
| r <sub>D</sub>                 | diode forward resistance | I <sub>F</sub> = 0.5 mA; f = 100 MHz; note 1  | 2.5  | 3.5  | Ω    |
|                                |                          | I <sub>F</sub> = 1 mA; f = 100 MHz; note 1  | 1.95 | 3    | Ω    |
|                                |                          | I <sub>F</sub> = 10 mA; f = 100 MHz; note 1   | 1.17 | 1.8  | Ω    |
|                                |                          | I <sub>F</sub> = 100 mA; f = 100 MHz; note 1  | 0.9  | 1.5  | Ω    |
| S <sub>21</sub>   <sup>2</sup> | isolation                | V <sub>R</sub> = 0; f = 900 MHz   | 14.5 | –    | dB   |
|                                |                          | V <sub>R</sub> = 0; f = 1800 MHz  | 9.5  | –    | dB   |
|                                |                          | V <sub>R</sub> = 0; f = 2450 MHz  | 7.0  | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 0.5 mA; f = 900 MHz  | 0.23 | –    | dB   |
|                                |                          | I <sub>F</sub> = 0.5 mA; f = 1800 MHz   | 0.27 | –    | dB   |
|                                |                          | I <sub>F</sub> = 0.5 mA; f = 2450 MHz   | 0.33 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 1 mA; f = 900 MHz  | 0.19 | –    | dB   |
|                                |                          | I <sub>F</sub> = 1 mA; f = 1800 MHz   | 0.24 | –    | dB   |
|                                |                          | I <sub>F</sub> = 1 mA; f = 2450 MHz   | 0.30 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 10 mA; f = 900 MHz   | 0.14 | –    | dB   |
|                                |                          | I <sub>F</sub> = 10 mA; f = 1800 MHz  | 0.19 | –    | dB   |
|                                |                          | I <sub>F</sub> = 10 mA; f = 2450 MHz  | 0.25 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 100 mA; f = 900 MHz  | 0.11 | –    | dB   |
|                                |                          | I <sub>F</sub> = 100 mA; f = 1800 MHz   | 0.17 | –    | dB   |
|                                |                          | I <sub>F</sub> = 100 mA; f = 2450 MHz   | 0.23 | –    | dB   |
| τ <sub>L</sub>                 | charge carrier life time | when switched from I <sub>F</sub> = 10 mA to I <sub>R</sub> = 6 mA; R <sub>L</sub> = 100 Ω; measured at I <sub>R</sub> = 3 mA | 310  | –    | ns   |
| L <sub>S</sub>                 | series inductance        | I <sub>F</sub> = 100 mA; f = 100 MHz  | 1.5  | –    | nH   |

**Note**

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

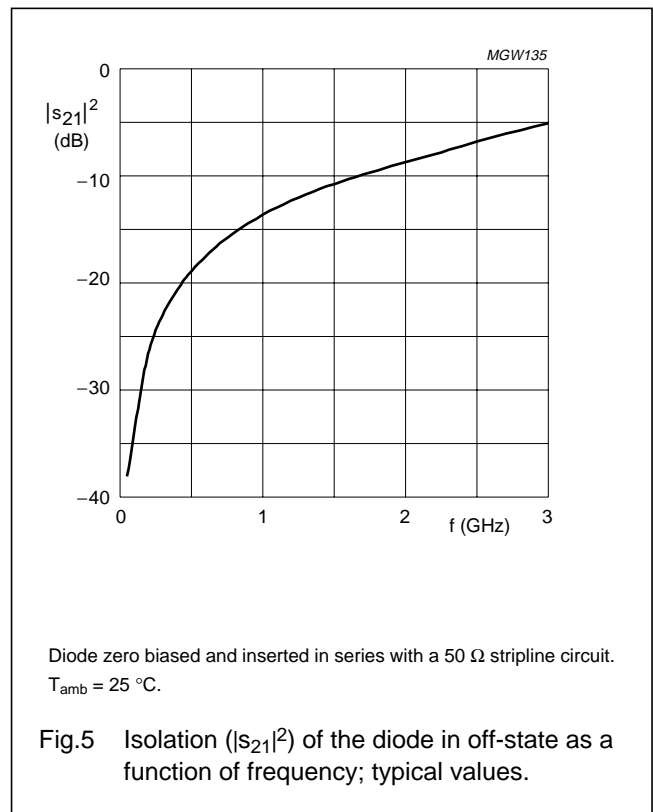
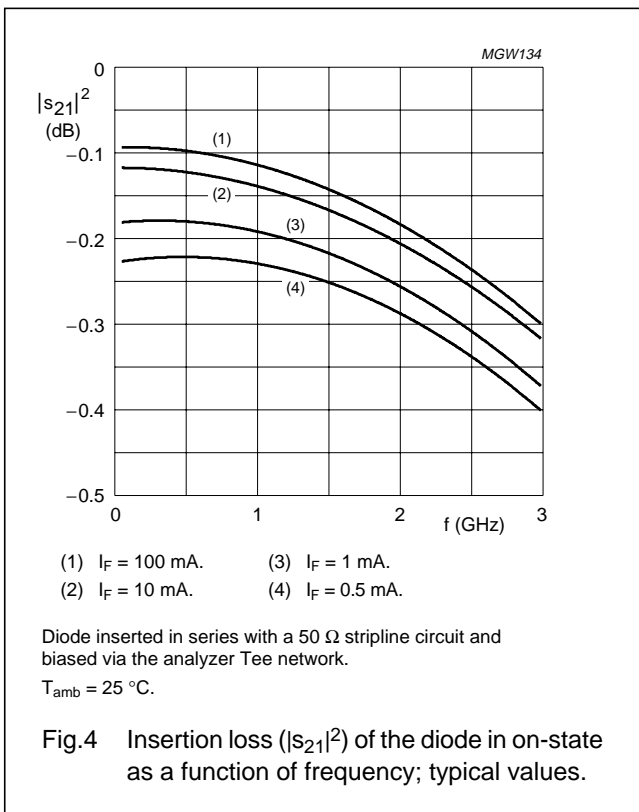
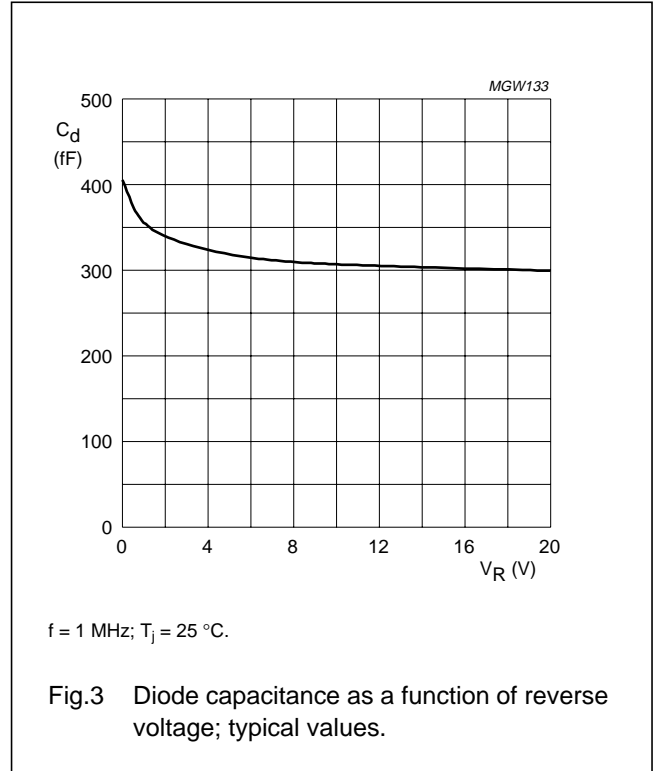
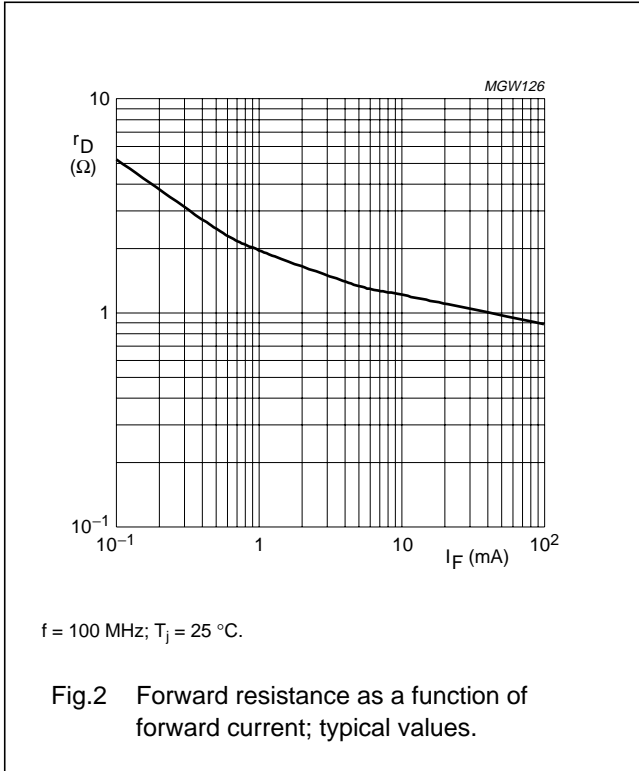
**THERMAL CHARACTERISTICS**

| SYMBOL              | PARAMETER   | VALUE | UNIT |
|---------------------|---|-------|------|
| R <sub>th j-s</sub> | thermal resistance from junction to soldering point | 250   | K/W  |

Silicon PIN diode

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GRAPHICAL DATA



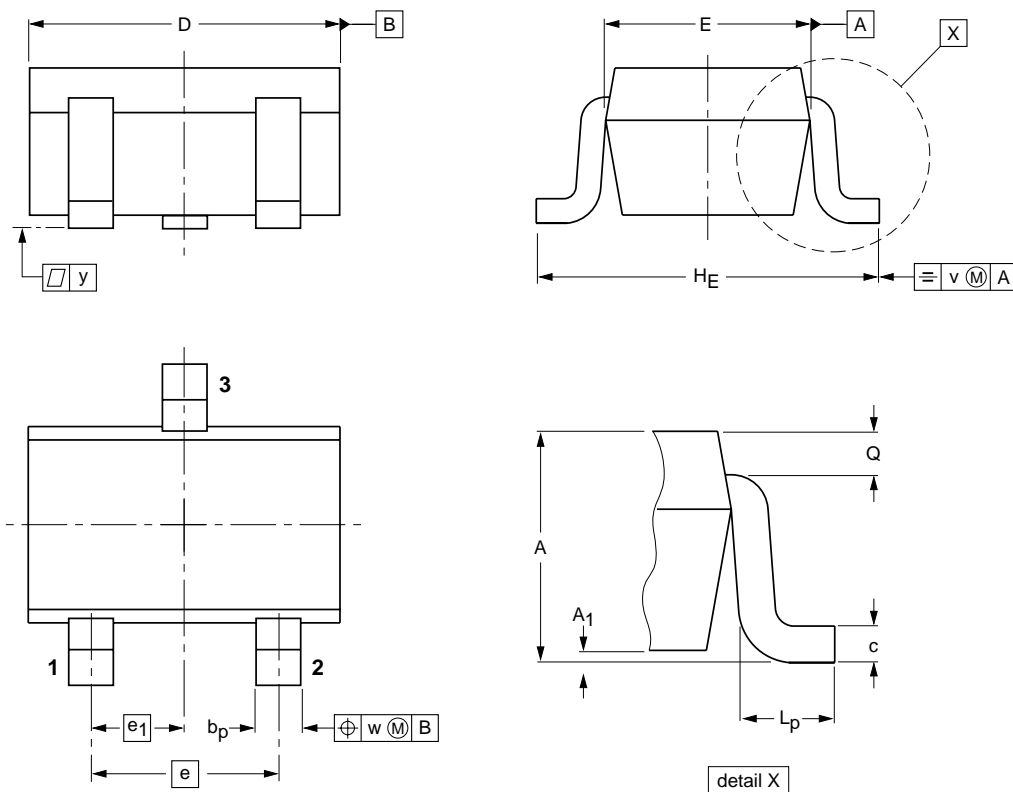
Silicon PIN diode

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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

BAP63-05W

## DATA SHEET STATUS

| DATA SHEET STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITIONS  |
|----------------------------------|-------------------------------|--|
| Objective data                   | Development                   | This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.  |
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Silicon PIN diode

BAP63-05W

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