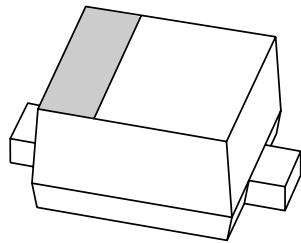


# DATA SHEET



**BAP50-02**

General purpose PIN diode

Product specification

2001 Apr 17

# General purpose PIN diode

# BAP50-02

### FEATURES

- Low diode capacitance
- Low diode forward resistance.

### APPLICATIONS

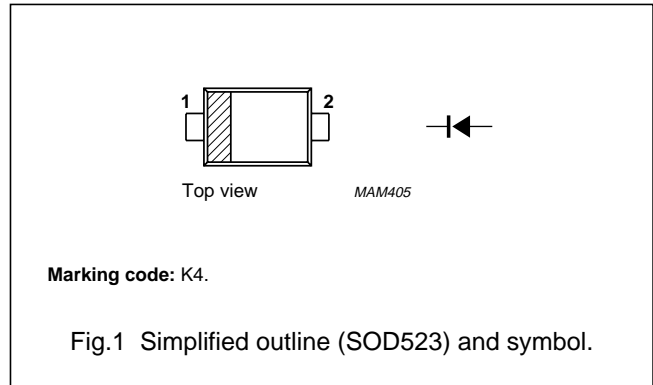
- General RF applications.

### DESCRIPTION

General purpose PIN diode in a SOD523 small SMD plastic package.

### PINNING

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



### LIMITING VALUES

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

| SYMBOL    | PARAMETER                  | CONDITIONS           | MIN. | MAX. | UNIT |
|-----------|----------------------------|----------------------|------|------|------|
| $V_R$     | continuous reverse voltage |                      | –    | 50   | V    |
| $I_F$     | continuous forward current |                      | –    | 50   | 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   |

## General purpose PIN diode

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

| SYMBOL                         | PARAMETER                | CONDITIONS  | MIN. | TYP. | MAX. | UNIT |
|--------------------------------|--------------------------|---|------|------|------|------|
| V <sub>F</sub>                 | forward voltage          | I <sub>F</sub> = 50 mA  | –    | 0.95 | 1.1  | V    |
| V <sub>R</sub>                 | reverse voltage          | I <sub>R</sub> = 10 μA  | 50   | –    | –    | V    |
| I <sub>R</sub>                 | reverse current          | V <sub>R</sub> = 50 V   | –    | –    | 100  | 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   | –    | 0.3  | 0.55 | pF   |
|                                |                          | V <sub>R</sub> = 5 V; f = 1 MHz   | –    | 0.22 | 0.35 | pF   |
| r <sub>D</sub>                 | diode forward resistance | I <sub>F</sub> = 0.5 mA; f = 100 MHz; note 1  | –    | 25   | 40   | Ω    |
|                                |                          | I <sub>F</sub> = 1 mA; f = 100 MHz; note 1  | –    | 14   | 25   | Ω    |
|                                |                          | I <sub>F</sub> = 10 mA; f = 100 MHz; note 1   | –    | 3    | 5    | Ω    |
| S <sub>21</sub>   <sup>2</sup> | isolation                | V <sub>R</sub> = 0; f = 900 MHz   | –    | 20.4 | –    | dB   |
|                                |                          | V <sub>R</sub> = 0; f = 1800 MHz  | –    | 17.3 | –    | dB   |
|                                |                          | V <sub>R</sub> = 0; f = 2450 MHz  | –    | 15.5 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 0.5 mA; f = 900 MHz  | –    | 1.74 | –    | dB   |
|                                |                          | I <sub>F</sub> = 0.5 mA; f = 1800 MHz   | –    | 1.79 | –    | dB   |
|                                |                          | I <sub>F</sub> = 0.5 mA; f = 2450 MHz   | –    | 1.88 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 1 mA; f = 900 MHz  | –    | 1.03 | –    | dB   |
|                                |                          | I <sub>F</sub> = 1 mA; f = 1800 MHz   | –    | 1.09 | –    | dB   |
|                                |                          | I <sub>F</sub> = 1 mA; f = 2450 MHz   | –    | 1.15 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 10 mA; f = 900 MHz   | –    | 0.26 | –    | dB   |
|                                |                          | I <sub>F</sub> = 10 mA; f = 1800 MHz  | –    | 0.32 | –    | dB   |
|                                |                          | I <sub>F</sub> = 10 mA; f = 2450 MHz  | –    | 0.34 | –    | 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 | –    | 1.05 | –    | μs   |
| L <sub>S</sub>                 | series inductance        | I <sub>F</sub> = 100 mA; f = 100 MHz  | –    | 0.6  | –    | nH   |

**Note**

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

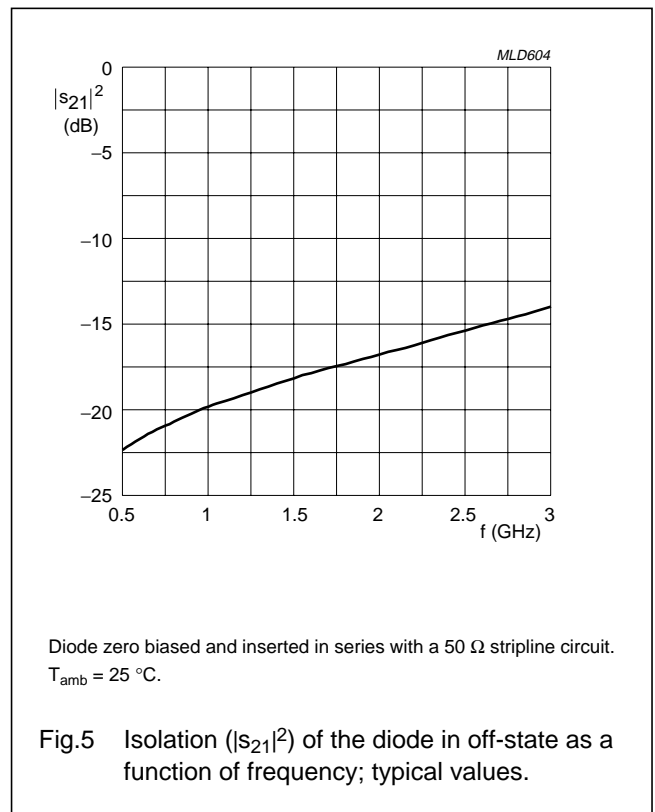
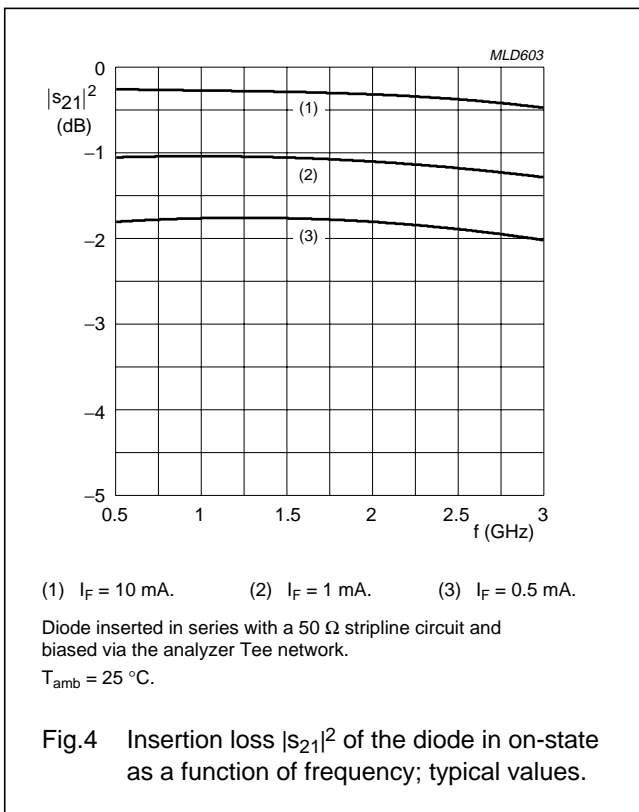
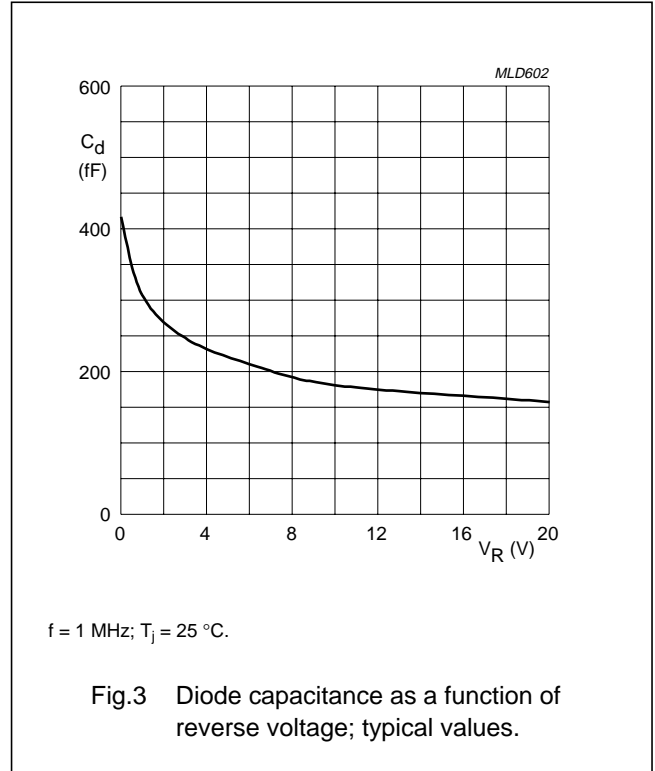
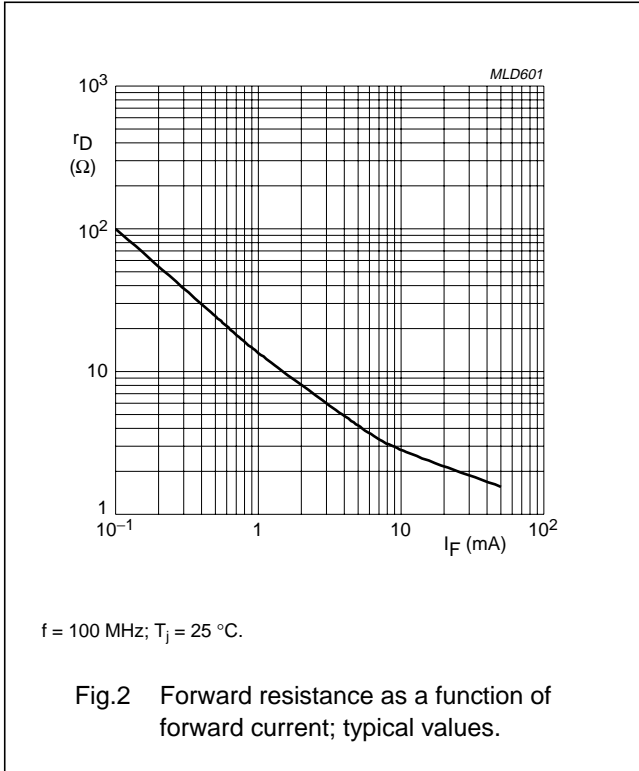
**THERMAL CHARACTERISTICS**

| SYMBOL              | PARAMETER   | VALUE | UNIT |
|---------------------|---|-------|------|
| R <sub>th j-s</sub> | thermal resistance from junction to soldering point | 85    | K/W  |

General purpose PIN diode

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GRAPHICAL DATA



General purpose PIN diode

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PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD523

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

| UNIT | A          | bp           | c          | D          | E          | HE         | v    |
|------|------------|--------------|------------|------------|------------|------------|------|
| mm   | 0.7<br>0.5 | 0.35<br>0.25 | 0.2<br>0.1 | 1.3<br>1.1 | 0.9<br>0.7 | 1.7<br>1.5 | 0.15 |

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

| OUTLINE VERSION | REFERENCES |       |       |  | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|-------|--|---------------------|------------|
|                 | IEC        | JEDEC | EIAJ  |  |                     |            |
| SOD523          |            |       | SC-79 |  |                     | 98-11-25   |

## General purpose PIN diode

BAP50-02

## DATA SHEET STATUS

| DATA SHEET STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITIONS  |
|----------------------------------|-------------------------------|--|
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General purpose PIN diode

BAP50-02

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