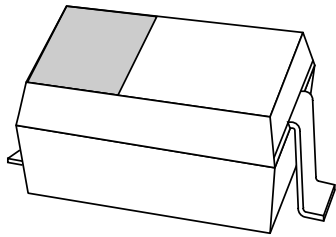


# DATA SHEET



## **BAP1321-03** Silicon PIN diode

Product specification  
Supersedes data of 2001 Apr 17

2001 May 11

# Silicon PIN diode

# BAP1321-03

## 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

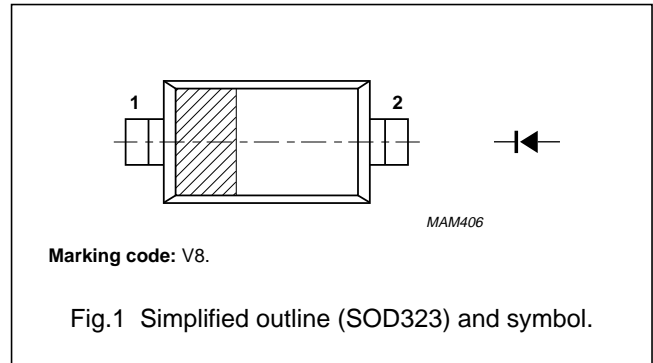
- RF attenuators and switches.

## DESCRIPTION

Planar PIN diode in a SOD323 ultra 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 |                         | –    | 60   | V    |
| $I_F$     | continuous forward current |                         | –    | 100  | mA   |
| $P_{tot}$ | total power dissipation    | $T_s \leq 90\text{ °C}$ | –    | 500  | mW   |
| $T_{stg}$ | storage temperature        |                         | –65  | +150 | °C   |
| $T_j$     | junction temperature       |                         | –65  | +150 | °C   |

## Silicon PIN diode

## BAP1321-03

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

| SYMBOL                         | PARAMETER                | CONDITIONS   | TYP. | MAX. | UNIT |
|--------------------------------|--------------------------|--|------|------|------|
| V <sub>F</sub>                 | forward voltage          | I <sub>F</sub> = 50 mA   | 0.95 | 1.1  | V    |
| I <sub>R</sub>                 | reverse leakage current  | V <sub>R</sub> = 60 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  | 0.35 | 0.45 | pF   |
|                                |                          | V <sub>R</sub> = 20 V; f = 1 MHz   | 0.25 | 0.32 | pF   |
| r <sub>D</sub>                 | diode forward resistance | f = 100 MHz; note 1  |      |      |      |
|                                |                          | I <sub>F</sub> = 0.5 mA  | 3.4  | 5.0  | Ω    |
|                                |                          | I <sub>F</sub> = 1 mA  | 2.4  | 3.6  | Ω    |
|                                |                          | I <sub>F</sub> = 10 mA   | 1.2  | 1.8  | Ω    |
| S <sub>21</sub>   <sup>2</sup> | isolation                | V <sub>R</sub> = 0; f = 900 MHz  | 16.6 | –    | dB   |
|                                |                          | V <sub>R</sub> = 0; f = 1800 MHz   | 11.6 | –    | dB   |
|                                |                          | V <sub>R</sub> = 0; f = 2450 MHz   | 9.2  | –    | dB   |
|                                |                          | I <sub>F</sub> = 0.5 mA; f = 900 MHz   | 0.26 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 0.5 mA; f = 1800 MHz  | 0.35 | –    | dB   |
|                                |                          | I <sub>F</sub> = 0.5 mA; f = 2450 MHz  | 0.44 | –    | dB   |
|                                |                          | I <sub>F</sub> = 1 mA; f = 900 MHz   | 0.20 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 1 mA; f = 1800 MHz  | 0.29 | –    | dB   |
|                                |                          | I <sub>F</sub> = 1 mA; f = 2450 MHz  | 0.38 | –    | dB   |
|                                |                          | I <sub>F</sub> = 10 mA; f = 900 MHz  | 0.13 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 10 mA; f = 1800 MHz   | 0.22 | –    | dB   |
|                                |                          | I <sub>F</sub> = 10 mA; f = 2450 MHz   | 0.32 | –    | dB   |
|                                |                          | I <sub>F</sub> = 100 mA; f = 900 MHz   | 0.10 | –    | dB   |
| S <sub>21</sub>   <sup>2</sup> | insertion loss           | I <sub>F</sub> = 100 mA; f = 1800 MHz  | 0.20 | –    | dB   |
|                                |                          | I <sub>F</sub> = 100 mA; f = 2450 MHz  | 0.29 | –    | dB   |
|                                |                          | when switched from I <sub>F</sub> = 10 mA to I <sub>R</sub> = 6 mA;<br>R <sub>L</sub> = 100 Ω; measured at I <sub>R</sub> = 3 mA | 0.5  | –    | μs   |
| 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.

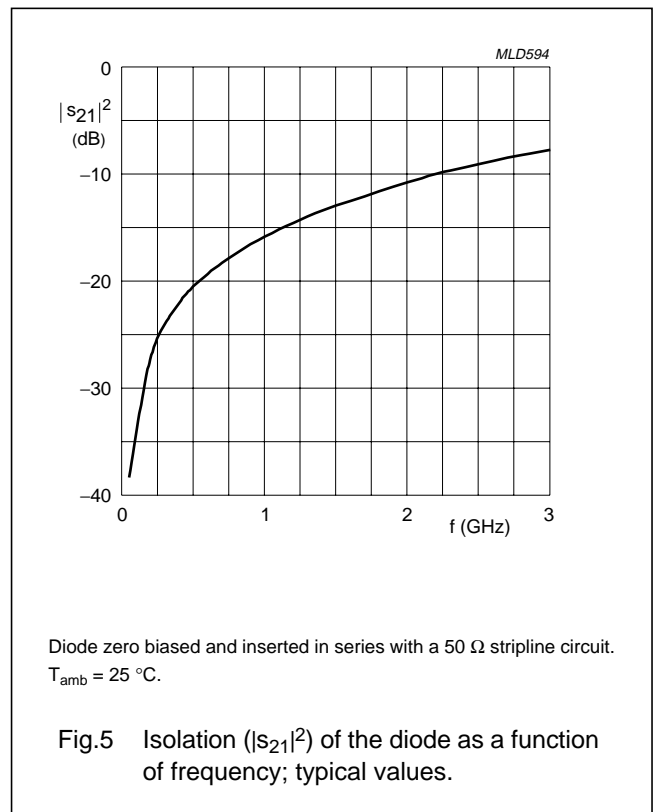
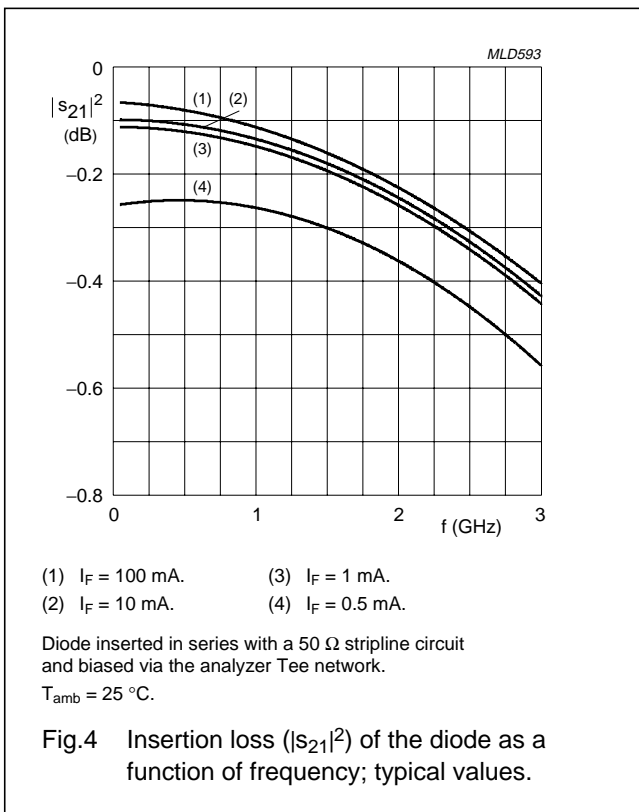
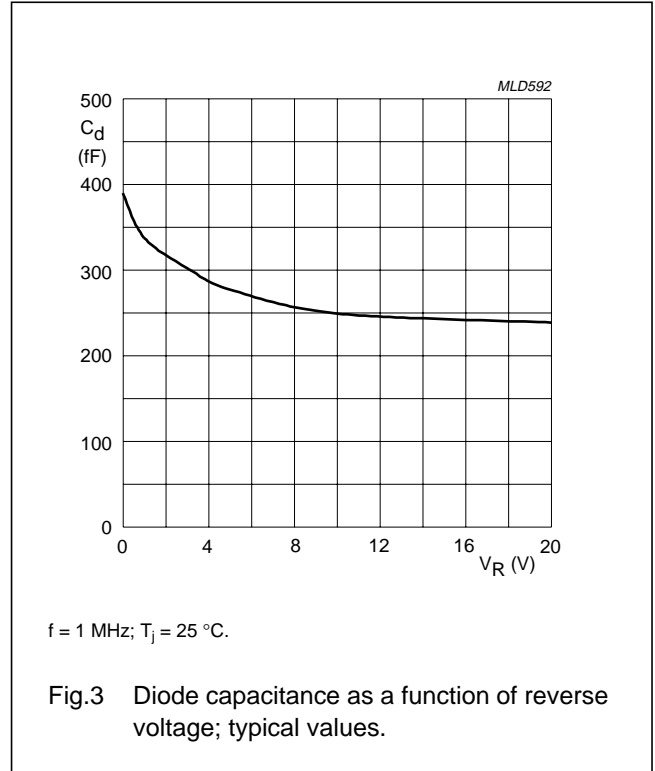
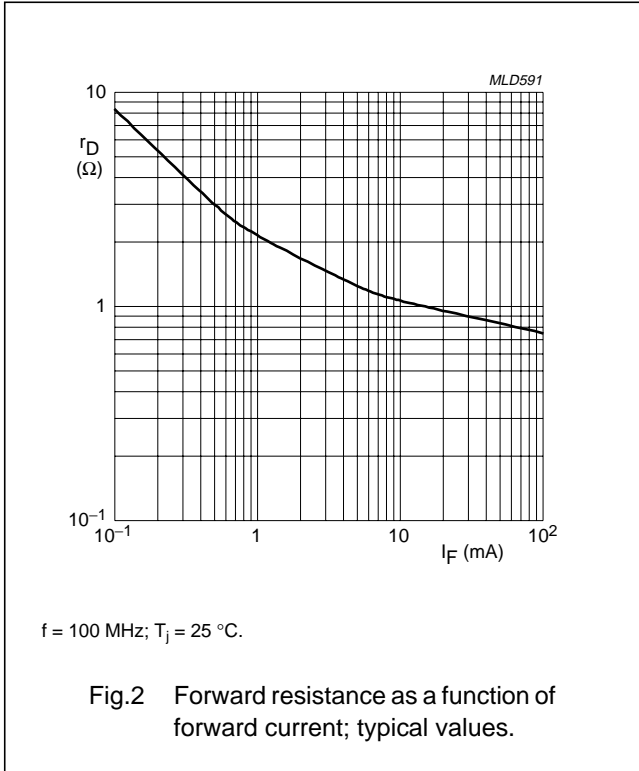
**THERMAL CHARACTERISTICS**

| SYMBOL              | PARAMETER   | VALUE | UNIT |
|---------------------|---|-------|------|
| R <sub>th j-s</sub> | thermal resistance from junction to soldering point | 120   | K/W  |

Silicon PIN diode

BAP1321-03

GRAPHICAL DATA



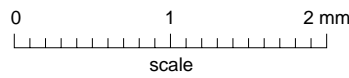
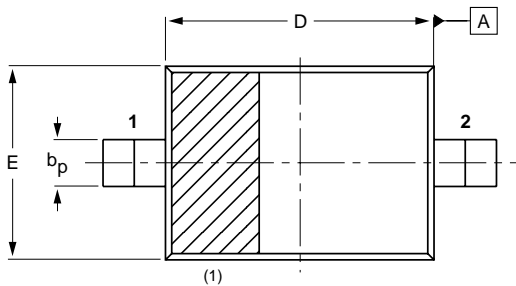
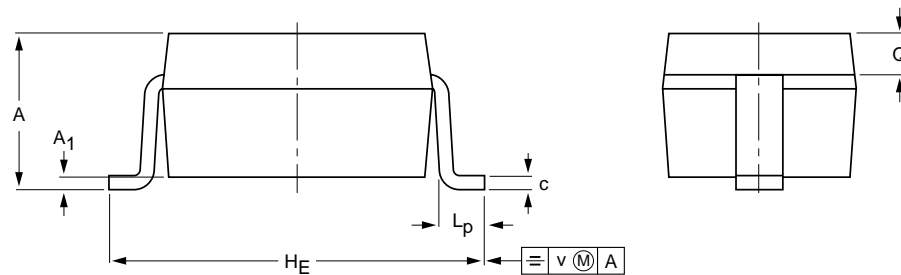
Silicon PIN diode

BAP1321-03

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD323



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max. | b <sub>p</sub> | c            | D          | E            | H <sub>E</sub> | L <sub>p</sub> | Q            | v   |
|------|------------|------------------------|----------------|--------------|------------|--------------|----------------|----------------|--------------|-----|
| mm   | 1.1<br>0.8 | +0.05<br>-0.05         | 0.40<br>0.25   | 0.25<br>0.10 | 1.8<br>1.6 | 1.35<br>1.15 | 2.7<br>2.3     | 0.45<br>0.15   | 0.25<br>0.15 | 0.2 |

Note

1. The marking bar indicates the cathode.

| OUTLINE<br>VERSION | REFERENCES |       |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE           |
|--------------------|------------|-------|-------|--|------------------------|----------------------|
|                    | IEC        | JEDEC | EIAJ  |  |                        |                      |
| SOD323             |            |       | SC-76 |  |                        | 98-09-14<br>99-09-13 |

## Silicon PIN diode

BAP1321-03

## DATA SHEET STATUS

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

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