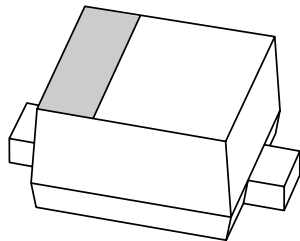


DATA SHEET



BAP27-01 Silicon PIN diode

Preliminary specification

2001 Nov 01

Silicon PIN diode

BAP27-01

FEATURES

- High speed switching for RF signals
- Low diode capacitance
- Low diode forward resistance
- Very low series inductance
- For applications up to 4 GHz.

APPLICATIONS

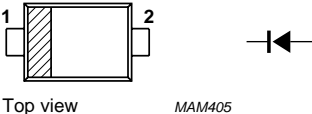
- RF attenuators and switches.

DESCRIPTION

Planar PIN diode in a SOD723A ultra small plastic SMD package.

PINNING

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



Top view

MAM405

Marking code: M1

Fig.1 Simplified outline (SOD723A) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|----------------------------|------------------------|------|------|------|
| V _R | continuous reverse voltage | | – | 50 | V |
| I _F | continuous forward current | | – | 100 | mA |
| P _{tot} | total power dissipation | T _s = 90 °C | – | 315 | mW |
| T _{stg} | storage temperature | | –65 | +150 | °C |
| T _j | junction temperature | | –65 | +150 | °C |

Silicon PIN diode

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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 current | $V_R = 20\text{ V}$ | – | 20 | nA |
| C_d | diode capacitance | $V_R = 0; f = 1\text{ MHz}$ | 0.45 | – | pF |
| | | $V_R = 1\text{ V}; f = 1\text{ MHz}$ | 0.35 | 0.45 | pF |
| | | $V_R = 20\text{ V}; f = 1\text{ MHz}$ | 0.27 | 0.32 | pF |
| r_D | diode forward resistance | $I_F = 0.5\text{ mA}; f = 100\text{ MHz}; \text{note 1}$ | 1.6 | 2.5 | Ω |
| | | $I_F = 1\text{ mA}; f = 100\text{ MHz}; \text{note 1}$ | 1.2 | 2.0 | Ω |
| | | $I_F = 5\text{ mA}; f = 100\text{ MHz}; \text{note 1}$ | 0.7 | 1.2 | Ω |
| | | $I_F = 10\text{ mA}; f = 100\text{ MHz}; \text{note 1}$ | 0.6 | 0.95 | Ω |
| $ S_{21} ^2$ | isolation | $V_R = 0; f = 900\text{ MHz}$ | 12.3 | – | dB |
| | | $V_R = 0; f = 1800\text{ MHz}$ | 7.7 | – | dB |
| | | $V_R = 0; f = 2450\text{ MHz}$ | 6.0 | – | dB |
| $ S_{21} ^2$ | insertion loss | $I_F = 0.5\text{ mA}; f = 900\text{ MHz}$ | 0.17 | – | dB |
| | | $I_F = 0.5\text{ mA}; f = 1800\text{ MHz}$ | 0.19 | – | dB |
| | | $I_F = 0.5\text{ mA}; f = 2450\text{ MHz}$ | 0.21 | – | dB |
| $ S_{21} ^2$ | insertion loss | $I_F = 1\text{ mA}; f = 900\text{ MHz}$ | 0.13 | – | dB |
| | | $I_F = 1\text{ mA}; f = 1800\text{ MHz}$ | 0.15 | – | dB |
| | | $I_F = 1\text{ mA}; f = 2450\text{ MHz}$ | 0.18 | – | dB |
| $ S_{21} ^2$ | insertion loss | $I_F = 10\text{ mA}; f = 900\text{ MHz}$ | 0.08 | – | dB |
| | | $I_F = 10\text{ mA}; f = 1800\text{ MHz}$ | 0.11 | – | dB |
| | | $I_F = 10\text{ mA}; f = 2450\text{ MHz}$ | 0.14 | – | dB |
| $ S_{21} ^2$ | insertion loss | $I_F = 100\text{ mA}; f = 900\text{ MHz}$ | 0.06 | – | dB |
| | | $I_F = 100\text{ mA}; f = 1800\text{ MHz}$ | 0.10 | – | dB |
| | | $I_F = 100\text{ mA}; f = 2450\text{ MHz}$ | 0.12 | – | dB |
| τ_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 $I_R = 3\text{ mA}$ | 0.17 | – | μs |
| L_S | series inductance | | 0.6 | – | nH |

Note

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

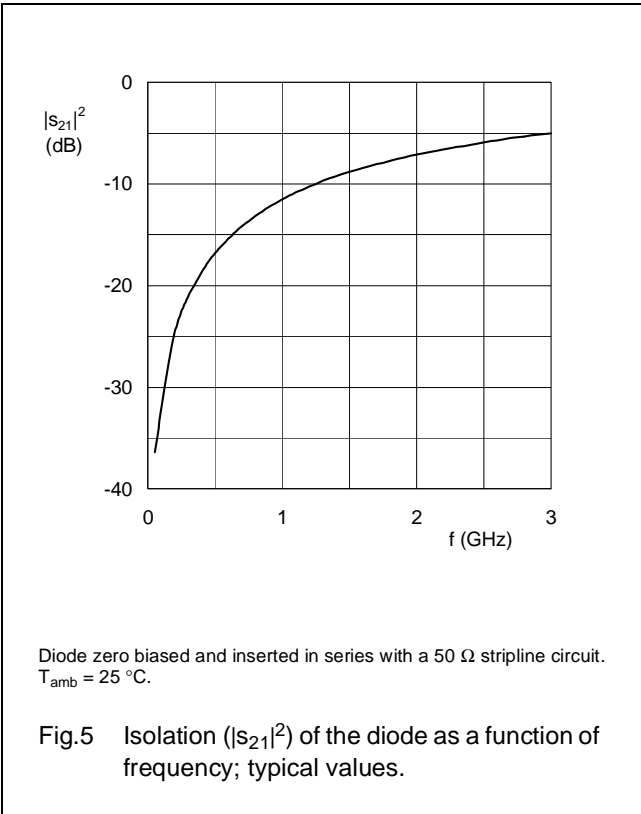
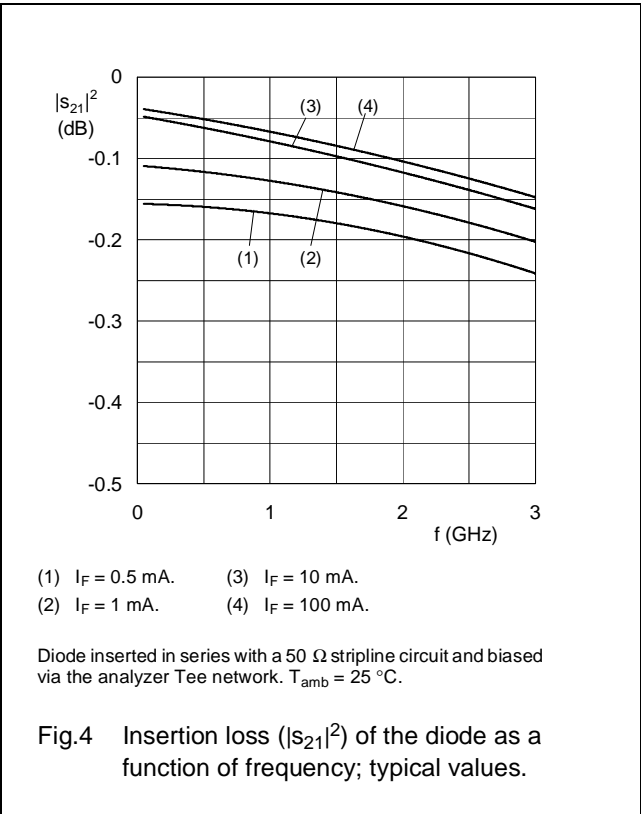
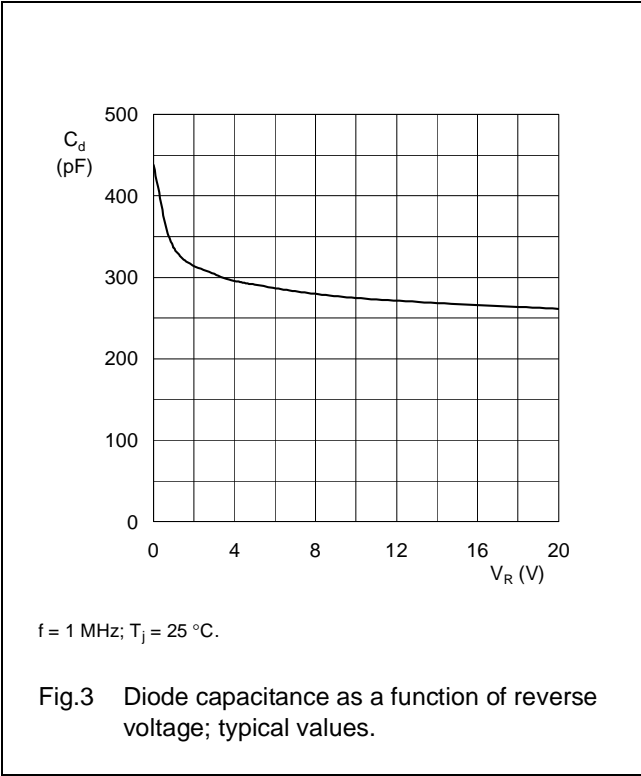
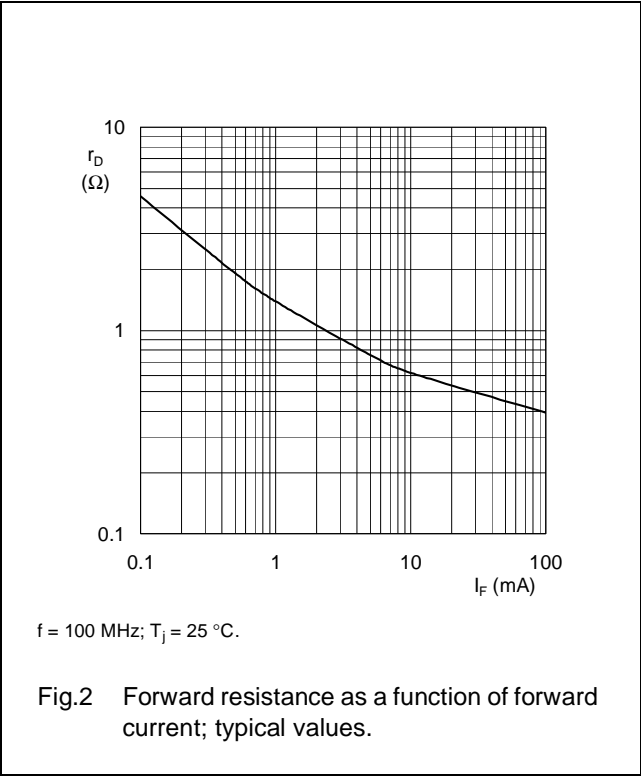
THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | VALUE | UNIT |
|---------------------|---|-------|------|
| $R_{th\text{ j-s}}$ | thermal resistance from junction to soldering point | 190 | K/W |

Silicon PIN diode

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GRAPHICAL DATA



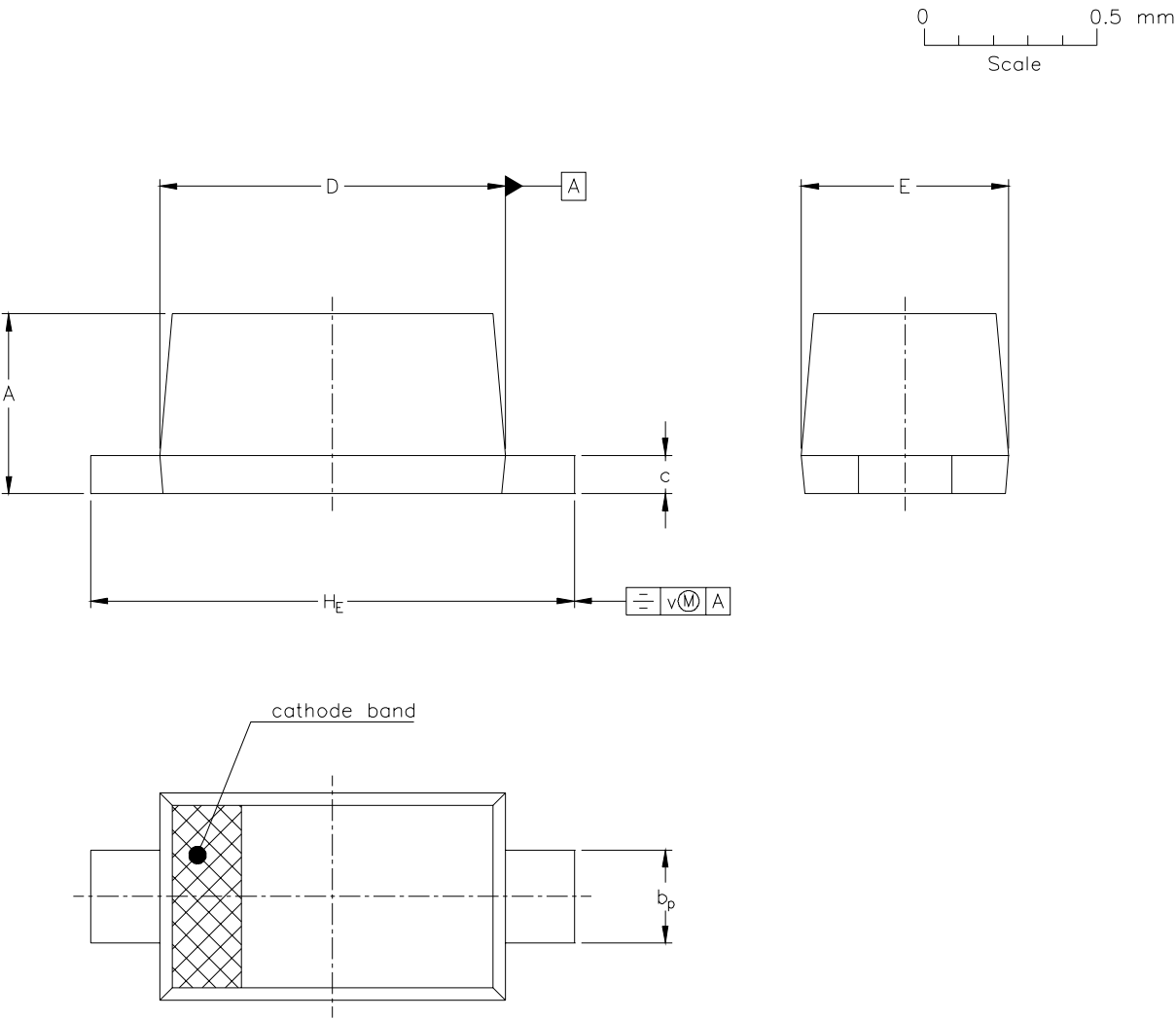
Silicon PIN diode

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PACKAGE OUTLINE

SOD723A

Plastic surface mounted package; 2 leads



| UNIT | A | b _p | c | D | E | H _E | v |
|------|--------------|----------------|--------------|--------------|--------------|----------------|-----|
| mm | 0.49 0.55 | 0.25 0.32 | 0.08 0.15 | 0.95 1.05 | 0.55 0.65 | 1.35 1.45 | 0.1 |

| PACKAGE OUTLINE VERSION | REFERENCES | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------------------|------------|-------|------|------------------------|------------|
| | IEC | JEDEC | EIAJ | | |
| SOD723A PUBLICATION DRAWING | | | | | 01-09-06 |

UNDER DEVELOPMENT

Silicon PIN diode

BAP27-01

DATA SHEET STATUS

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|----------------------------------|-------------------------------|--|
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