

BAP50-02

General purpose PIN diode

Rev. 02 — 3 January 2008

Product data sheet

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NXP Semiconductors

General purpose PIN diode

BAP50-02

FEATURES

- Low diode capacitance
- Low diode forward resistance.

APPLICATIONS

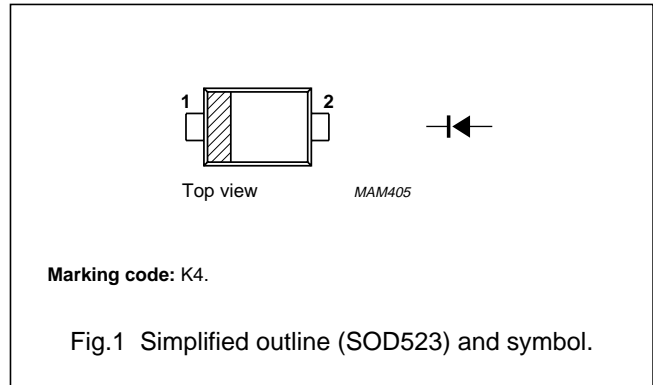
- General RF applications.

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 |

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ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--------------|--------------------------|--|------|------|------|---------------|
| V_F | forward voltage | $I_F = 50\text{ mA}$ | – | 0.95 | 1.1 | V |
| V_R | reverse voltage | $I_R = 10\text{ }\mu\text{A}$ | 50 | – | – | V |
| I_R | reverse current | $V_R = 50\text{ V}$ | – | – | 100 | nA |
| C_d | diode capacitance | $V_R = 0$; $f = 1\text{ MHz}$ | – | 0.4 | – | pF |
| | | $V_R = 1\text{ V}$; $f = 1\text{ MHz}$ | – | 0.3 | 0.55 | pF |
| | | $V_R = 5\text{ V}$; $f = 1\text{ MHz}$ | – | 0.22 | 0.35 | pF |
| r_D | diode forward resistance | $I_F = 0.5\text{ mA}$; $f = 100\text{ MHz}$; note 1 | – | 25 | 40 | Ω |
| | | $I_F = 1\text{ mA}$; $f = 100\text{ MHz}$; note 1 | – | 14 | 25 | Ω |
| | | $I_F = 10\text{ mA}$; $f = 100\text{ MHz}$; note 1 | – | 3 | 5 | Ω |
| $ S_{21} ^2$ | isolation | $V_R = 0$; $f = 900\text{ MHz}$ | – | 20.4 | – | dB |
| | | $V_R = 0$; $f = 1800\text{ MHz}$ | – | 17.3 | – | dB |
| | | $V_R = 0$; $f = 2450\text{ MHz}$ | – | 15.5 | – | dB |
| $ S_{21} ^2$ | insertion loss | $I_F = 0.5\text{ mA}$; $f = 900\text{ MHz}$ | – | 1.74 | – | dB |
| | | $I_F = 0.5\text{ mA}$; $f = 1800\text{ MHz}$ | – | 1.79 | – | dB |
| | | $I_F = 0.5\text{ mA}$; $f = 2450\text{ MHz}$ | – | 1.88 | – | dB |
| $ S_{21} ^2$ | insertion loss | $I_F = 1\text{ mA}$; $f = 900\text{ MHz}$ | – | 1.03 | – | dB |
| | | $I_F = 1\text{ mA}$; $f = 1800\text{ MHz}$ | – | 1.09 | – | dB |
| | | $I_F = 1\text{ mA}$; $f = 2450\text{ MHz}$ | – | 1.15 | – | dB |
| $ S_{21} ^2$ | insertion loss | $I_F = 10\text{ mA}$; $f = 900\text{ MHz}$ | – | 0.26 | – | dB |
| | | $I_F = 10\text{ mA}$; $f = 1800\text{ MHz}$ | – | 0.32 | – | dB |
| | | $I_F = 10\text{ mA}$; $f = 2450\text{ MHz}$ | – | 0.34 | – | 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 $I_R = 3\text{ mA}$ | – | 1.05 | – | μs |
| L_S | series inductance | $I_F = 100\text{ mA}$; $f = 100\text{ MHz}$ | – | 0.6 | – | nH |

Note

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

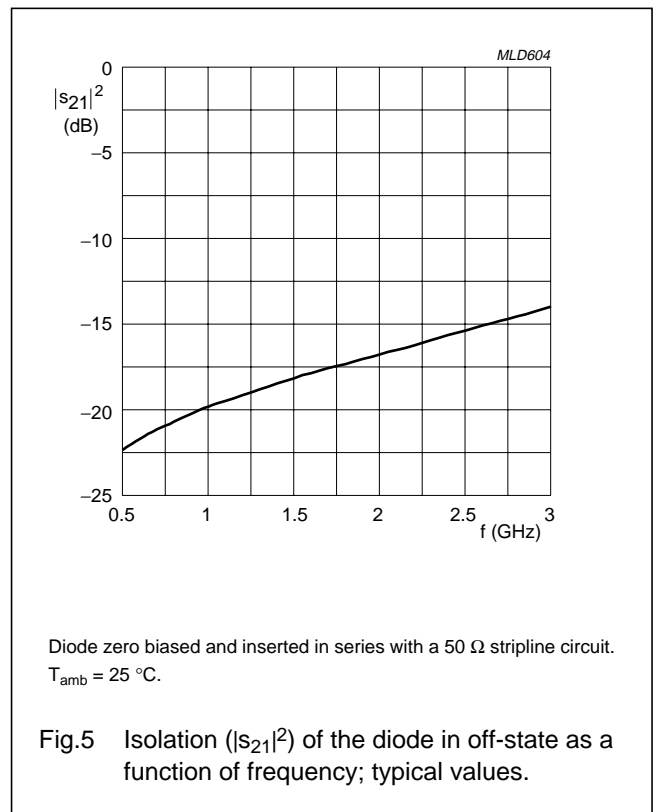
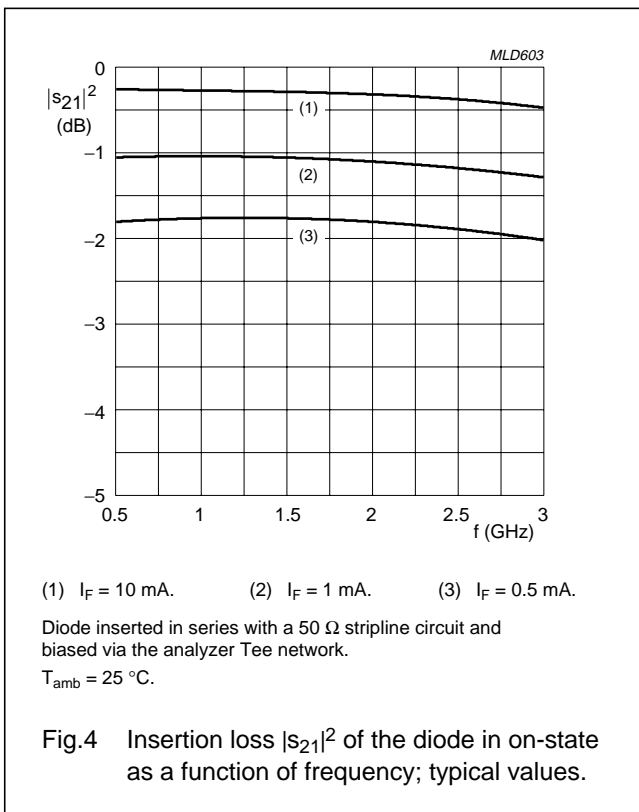
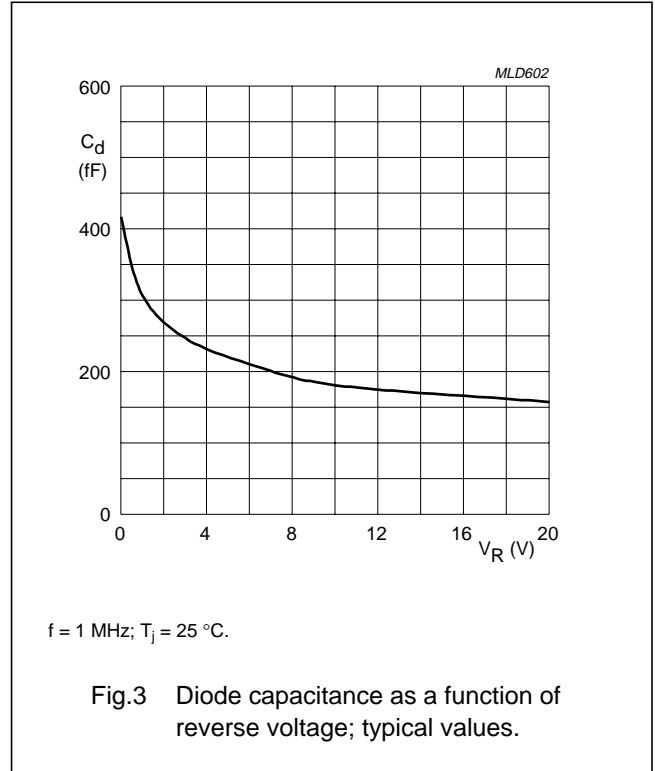
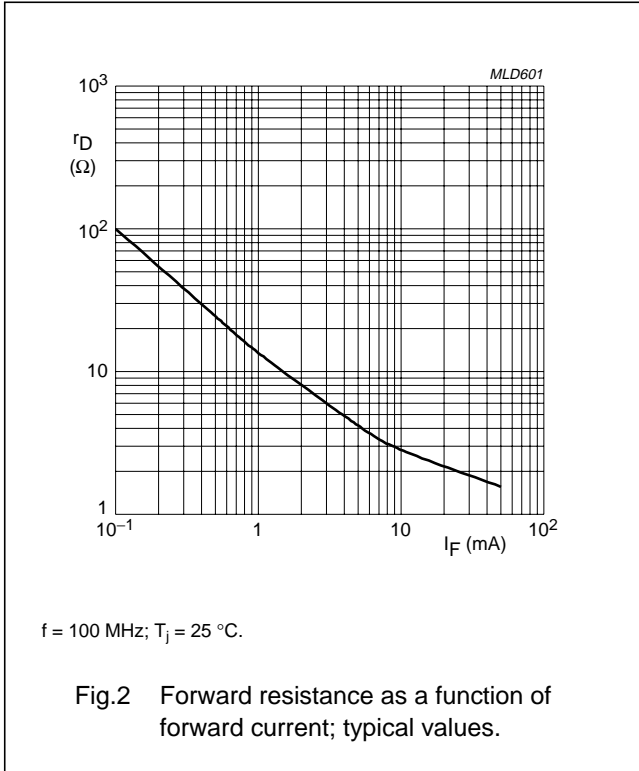
THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | VALUE | UNIT |
|---------------|---|-------|------|
| $R_{th\ j-s}$ | thermal resistance from junction to soldering point | 85 | K/W |

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GRAPHICAL DATA



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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 | 0.65 | 0.34 | 0.17 | 1.25 | 0.85 | 1.65 | 0.1 |
| | 0.58 | 0.26 | 0.11 | 1.15 | 0.75 | 1.55 | |

Note
1. The marking bar indicates the cathode.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|-------|--|---------------------|-------------------|
| | IEC | JEDEC | JEITA | | | |
| SOD523 | | | SC-79 | | | 02-12-13-06-03-16 |

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Data sheet status

| Document status ^{[1][2]} | Product status ^[3] | Definition |
|-----------------------------------|-------------------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
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[2] The term 'short data sheet' is explained in section "Definitions".

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Revision history

Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|--------------------------------|---|-----------------------|---------------|------------|
| BAP50-02_N_2 | 20080103 | Product data sheet | - | BAP50-02_1 |
| Modifications: | • Package outline drawing on page 5 changed | | | |
| BAP50-02_1 (9397 750 08113) | 20010417 | Product specification | - | - |

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