



BAP65-05W

Silicon PIN diode

Rev. 3.1 — 28 January 2019

Product data sheet

1 Product profile

1.1 General description

Two planar PIN diodes in an SOT323 small SMD plastic package.

1.2 Features and benefits

- Two elements in common cathode configuration
- High voltage, current controlled
- RF resistor for RF switches
- Low diode capacitance
- Low diode forward resistance
- AEC-Q101 qualified

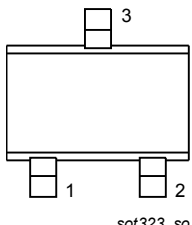
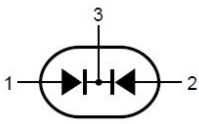
1.3 Applications

- RF attenuators and switches
- Bandswitch for TV tuners
- Series diode for mobile communication transmit/receive switch



2 Pinning information

Table 1. Discrete pinning

| Pin | Description | Simplified outline | Graphic symbol |
|-----|-------------------------|--|---|
| 1 | anode (a ₁) |  |  |
| 2 | anode (a ₂) | | |
| 3 | common cathode | | |

3 Ordering information

Table 2. Ordering information

| Type number | Package | | |
|-------------|---------|--|---------|
| | Name | Description | Version |
| BAP65-05W | - | plastic surface-mounted package; 3 leads | SOT323 |

4 Marking

Table 3. Marking

| Type number | Marking code |
|-------------|--------------|
| BAP65-05W | V6% |

5 Limiting values

Table 4. Limiting values

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|------------------|----------------------------|-------------------------|-----|------|------|
| V _R | continuous reverse voltage | | - | 30 | V |
| I _F | continuous forward current | | - | 100 | mA |
| P _{tot} | total power dissipation | T _{sp} ≤ 90 °C | - | 240 | mW |
| T _{stg} | storage temperature | | -65 | +150 | °C |
| T _j | junction temperature | | -65 | +150 | °C |
| T _{amb} | ambient temperature | | -40 | +85 | °C |

6 Thermal characteristics

Table 5. Thermal characteristics

| Symbol | Parameter | Conditions | Typ | Unit |
|----------------|--|------------|-----|------|
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point | | 250 | K/W |

7 Characteristics

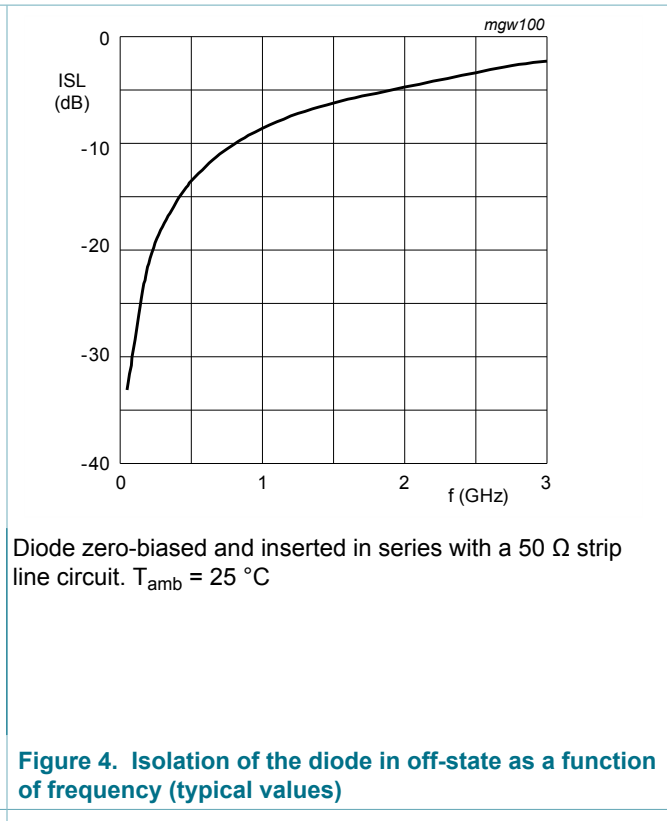
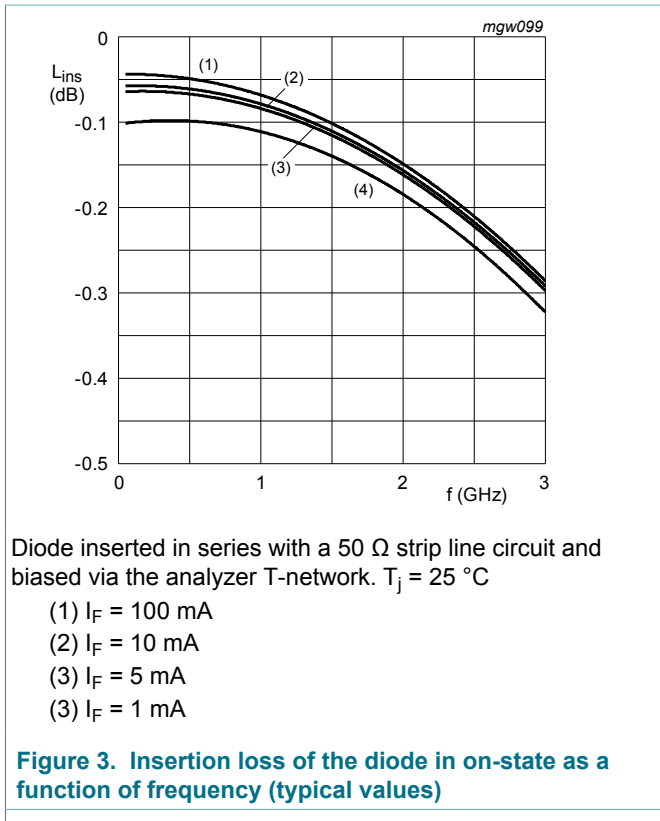
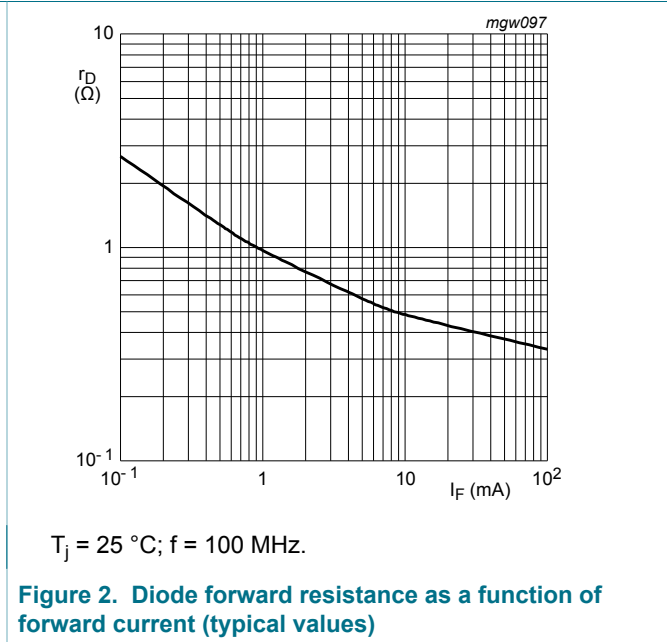
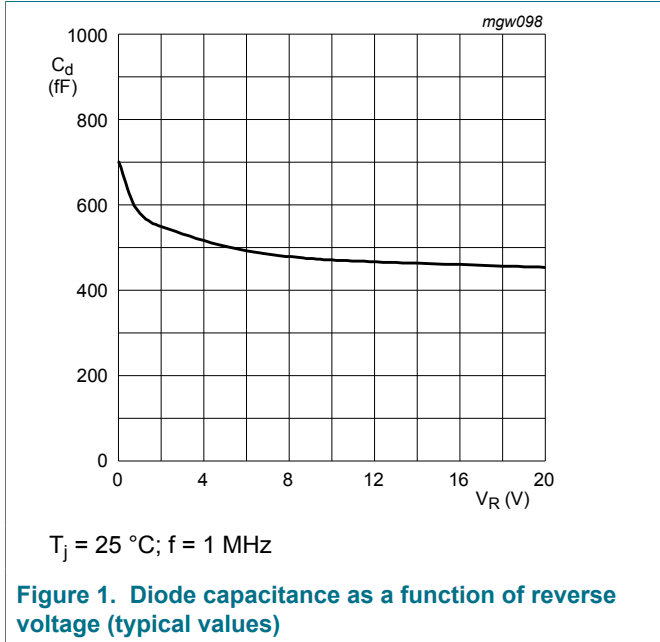
Table 6. Characteristics
 $T_j = 25\text{ °C}$ unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|-----------|--------------------------|--|-----|-------|------|----------|----------|
| V_F | forward voltage | $I_F = 50\text{ mA}$ | - | 0.9 | 1.1 | V | |
| I_R | reverse leakage current | $V_R = 20\text{ V}$ | - | - | 20 | nA | |
| C_d | diode capacitance | f = 1 MHz (see Figure 1) | | | | | |
| | | $V_R = 0\text{ V}$ | - | 0.7 | - | pF | |
| | | $V_R = 1\text{ V}$ | - | 0.575 | 0.9 | pF | |
| | | $V_R = 3\text{ V}$ | - | 0.525 | 0.8 | pF | |
| | | $V_R = 20\text{ V}$ | - | 0.425 | - | pF | |
| r_D | diode forward resistance | f = 100 MHz (see Figure 2) | | | | | |
| | | $I_F = 1\text{ mA}$ | - | 1 | - | Ω | |
| | | $I_F = 5\text{ mA}$ | [1] | - | 0.65 | 0.95 | Ω |
| | | $I_F = 10\text{ mA}$ | [1] | - | 0.56 | 0.9 | Ω |
| | | $I_F = 100\text{ mA}$ | - | - | 0.35 | - | Ω |
| ISL | isolation | $V_R = 0\text{ V}$ (see Figure 4) | | | | | |
| | | f = 900 MHz | - | 9.3 | - | dB | |
| | | f = 1800 MHz | - | 5.3 | - | dB | |
| | | f = 2450 MHz | - | 3.5 | - | dB | |
| L_{ins} | insertion loss | See Figure 3 . | | | | | |
| | | $I_F = 1\text{ mA}$ | | | | | |
| | | f = 900 MHz | - | 0.11 | - | dB | |
| | | f = 1800 MHz | - | 0.17 | - | dB | |
| | | f = 2450 MHz | - | 0.24 | - | dB | |
| | | $I_F = 5\text{ mA}$ | | | | | |
| | | f = 900 MHz | - | 0.08 | - | dB | |
| | | f = 1800 MHz | - | 0.14 | - | dB | |
| | | f = 2450 MHz | - | 0.21 | - | dB | |
| | | $I_F = 10\text{ mA}$ | | | | | |
| | | f = 900 MHz | - | 0.08 | - | dB | |
| | | f = 1800 MHz | - | 0.14 | - | dB | |
| | | f = 2450 MHz | - | 0.21 | - | dB | |
| L_{ins} | insertion loss | $I_F = 100\text{ mA}$ | | | | | |
| | | f = 900 MHz | - | 0.06 | - | dB | |
| | | f = 1800 MHz | - | 0.13 | - | dB | |
| | | f = 2450 MHz | - | 0.2 | - | dB | |

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------|--------------------------|---|-----|------|-----|---------|
| τ_L | charge carrier life time | when switched from $I_F = 10$ mA to $I_R = 6$ mA; $R_L = 100 \Omega$; measured at $I_R = 3$ mA | - | 0.17 | - | μ s |
| L_S | series inductance | $I_F = 100$ mA; $f = 100$ MHz | - | 1.4 | - | nH |

[1] Guaranteed on AQL basis; inspection level S4, AQL 1.0

8 Graphical data



9 Package outline

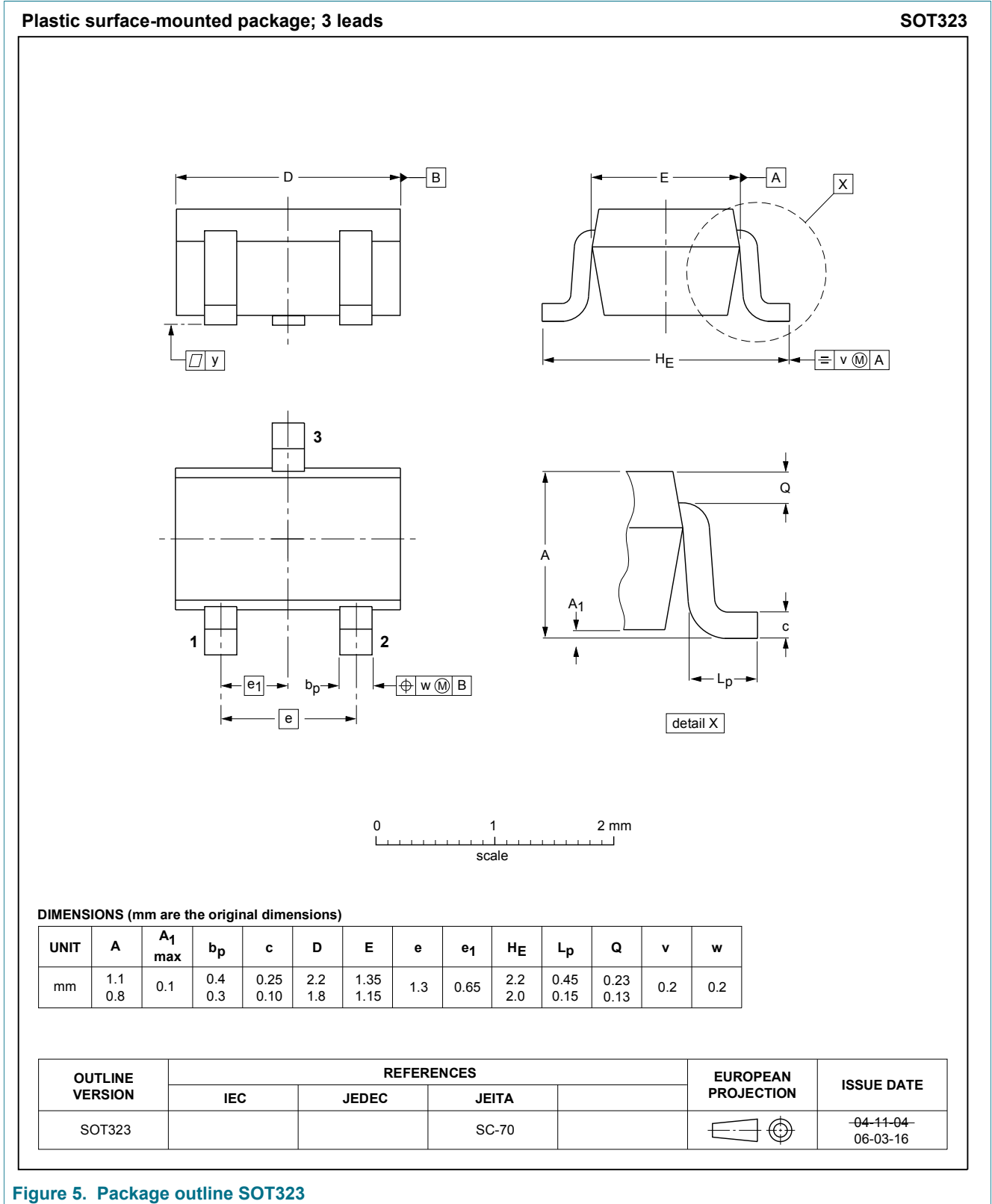


Figure 5. Package outline SOT323

10 Revision history

Table 7. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|-----------------|---|--------------------|---------------|---------------|
| BAP65-05W v.3.1 | 20190128 | Product data sheet | - | BAP65-05W v.3 |
| Modifications: | • Changed title to Silicon PIN diode | | | |
| BAP65-05W v.3 | 20181211 | Product data sheet | - | BAP65-05W v.2 |
| Modifications: | • Section 1.2 "Features and benefits" has been updated. • The "Legal information" pages have been updated. | | | |
| BAP65-05W v.2 | 20100927 | Product data sheet | - | BAP65-05W v.1 |

11 Legal information

11.1 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. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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