

BAP65-02

Silicon PIN diode

Rev. 6.1 — 28 January 2019

Product data sheet

1 Product profile

1.1 General description

Planar PIN diode in a SOD523 ultra small SMD plastic package.

1.2 Features and benefits



- High voltage, current controlled
- RF resistor for RF switches
- Low diode capacitance
- Low diode forward resistance
- Very low series inductance
- 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	cathode	 <p>Top view</p>	 <i>sym006</i>
2	anode		

3 Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BAP65-02	-	plastic surface-mounted package; 2 leads	SOD523

4 Marking

Table 3. Marking code

Type number	Marking code
BAP65-02	K6

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	$T_{sp} \leq 90\text{ °C}$	-	715	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		85	K/W

7 Characteristics

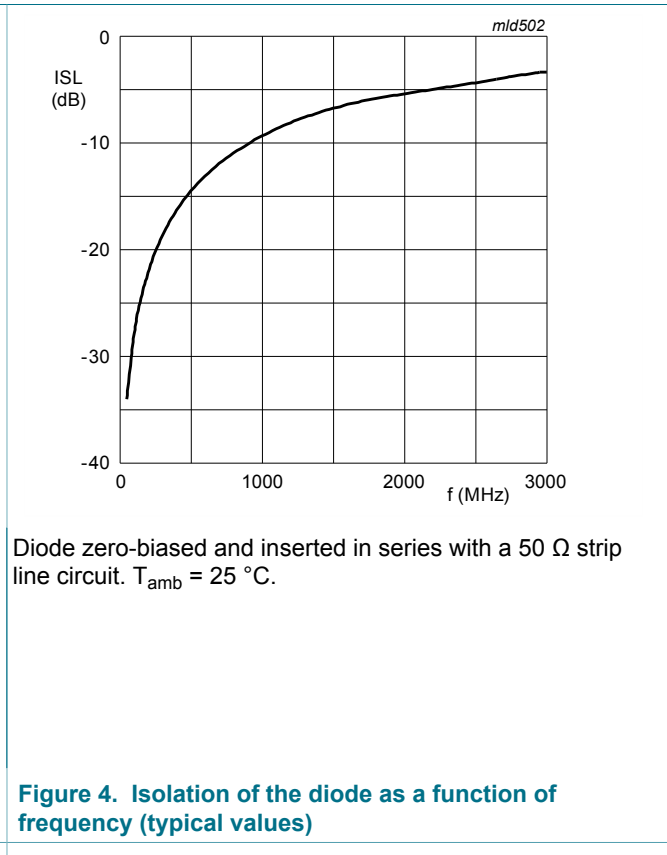
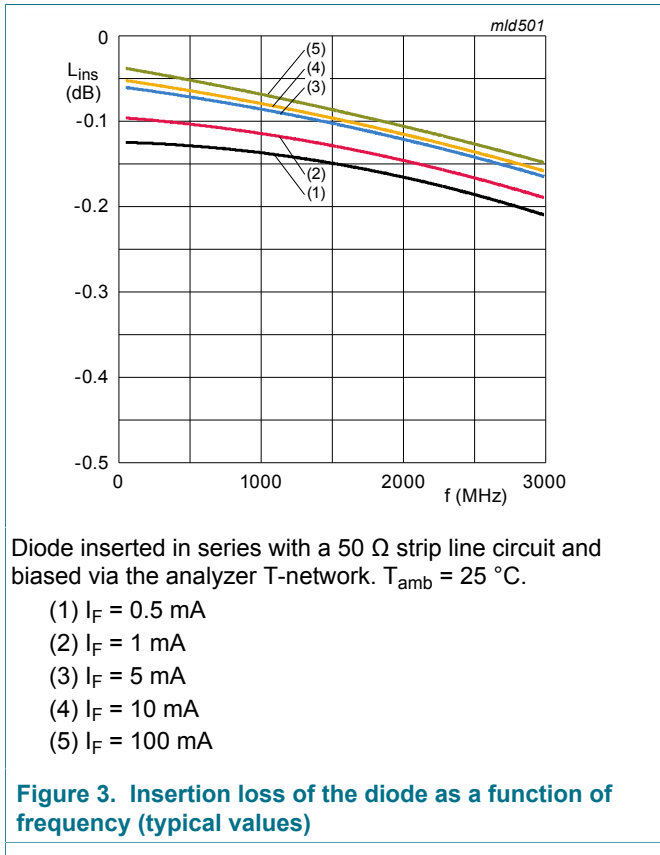
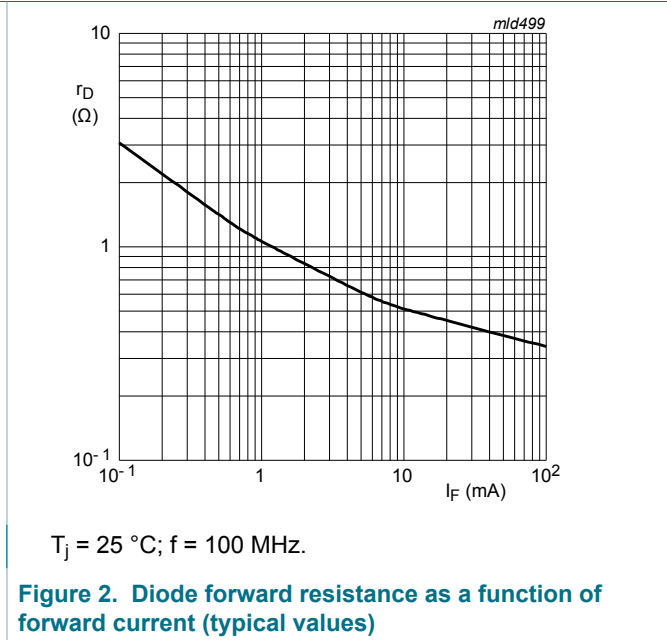
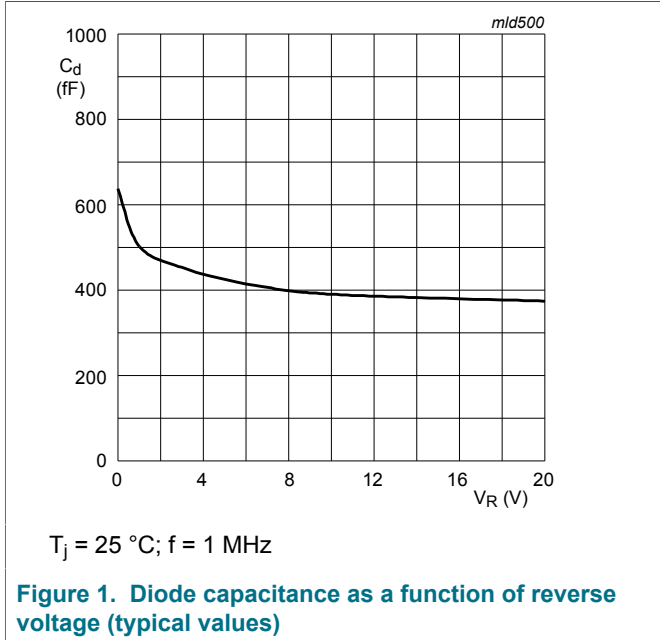
Table 6. Characteristics
 $T_j = 25\text{ °C}$ unless otherwise specified.

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)				
		$V_R = 0\text{ V}$	-	0.65	-	pF
		$V_R = 1\text{ V}$	-	0.55	0.9	pF
		$V_R = 3\text{ V}$	-	0.5	0.8	pF
		$V_R = 20\text{ V}$	-	0.375	-	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	-	10	-	dB
		f = 1800 MHz	-	5.8	-	dB
		f = 2450 MHz	-	4.4	-	dB
L_{ins}	insertion loss	See Figure 3 .				
		$I_F = 1\text{ mA}$				
		f = 900 MHz	-	0.11	-	dB
		f = 1800 MHz	-	0.13	-	dB
		f = 2450 MHz	-	0.16	-	dB
		$I_F = 5\text{ mA}$				
		f = 900 MHz	-	0.08	-	dB
		f = 1800 MHz	-	0.11	-	dB
		f = 2450 MHz	-	0.13	-	dB
		$I_F = 10\text{ mA}$				
		f = 900 MHz	-	0.07	-	dB
		f = 1800 MHz	-	0.1	-	dB
		f = 2450 MHz	-	0.13	-	dB
L_{ins}	insertion loss	$I_F = 100\text{ mA}$				
		f = 900 MHz	-	0.07	-	dB
		f = 1800 MHz	-	0.10	-	dB
		f = 2450 MHz	-	0.128	-	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	-	0.6	-	nH

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

8 Graphical data



9 Package outline

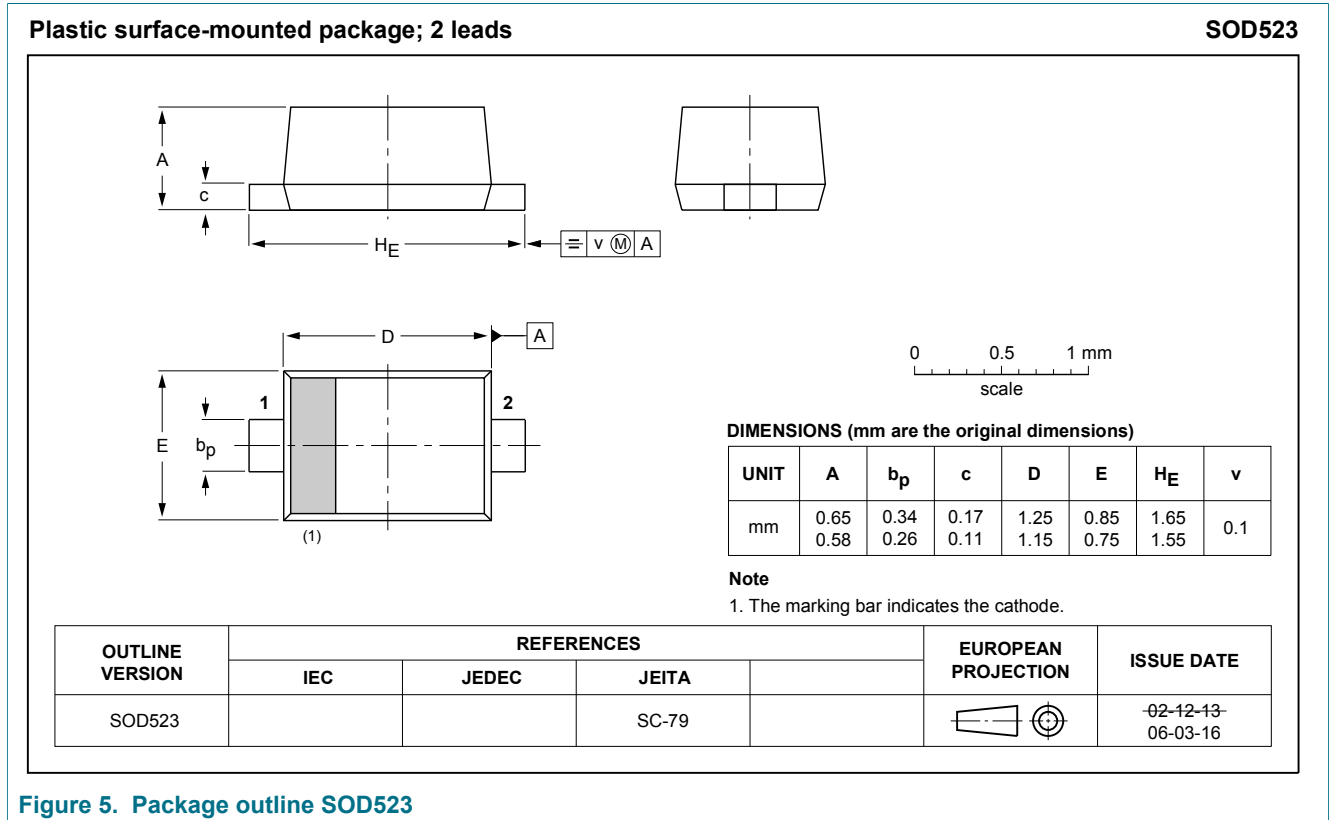


Figure 5. Package outline SOD523

10 Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP65-02 v.6.1	20190128	Product data sheet	-	BAP65-02 v.6
Modifications:	<ul style="list-style-type: none"> • Changed title to Silicon PIN diode 			
BAP65-02 v.6	20181211	Product data sheet	-	BAP65-02 v.5
Modifications:	<ul style="list-style-type: none"> • Section 1.2 "Features and benefits" has been updated. • The "Legal information" pages have been updated. 			
BAP65-02 v.5	20100928	Product data sheet	-	BAP65-02 v.4
BAP65-02_N v.4	20080108	Product data sheet	-	BAP65-02 v.3
BAP65-02 v.3 (9397 750 08364)	20010511	Product data sheet	-	BAP65-02 v.2
BAP65-02 v.2 (9397 750 08237)	20010507	Product data sheet	-	BAP65-02 v.1
BAP65-02 v.1 (9397 750 07724)	20001220	Product data sheet	-	-

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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