



# BAP50-02

Silicon PIN diode

Rev. 3.1 — 8 February 2019

Product data sheet

## 1 Product profile

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### 1.1 General description

General-purpose PIN diode in an SOD523 small SMD plastic package.

### 1.2 Features and benefits

- Low diode capacitance
- Low diode forward resistance



### 1.3 Applications

- General RF applications



## 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
BAP50-02	-	plastic surface-mounted package; 2 leads	SOD523

## 4 Marking

Table 3. Marking code

Type number	Marking code
BAP50-02	K4

## 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 forward voltage		-	50	V
$I_F$	continuous forward current		-	50	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

## 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

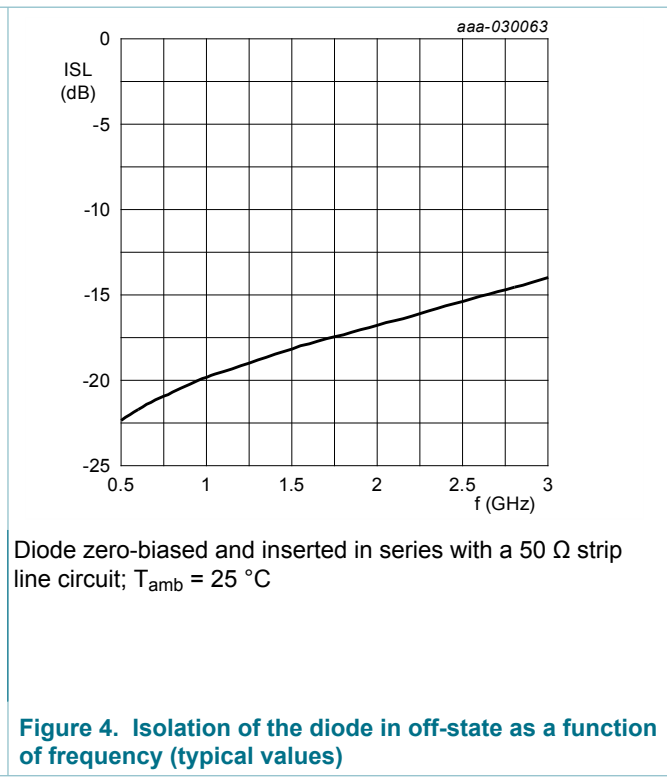
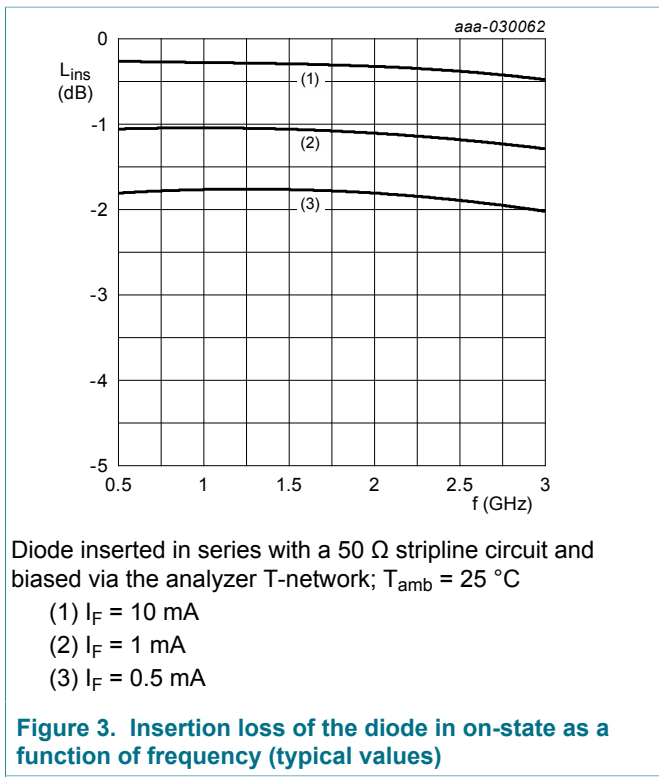
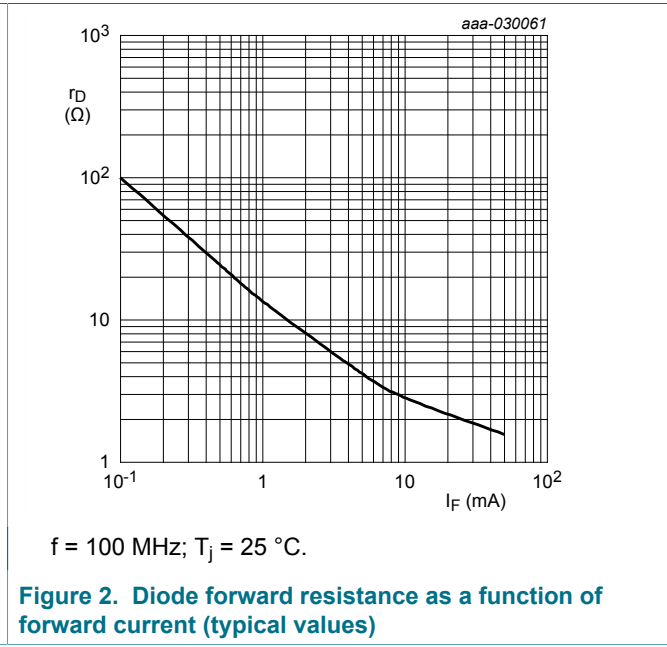
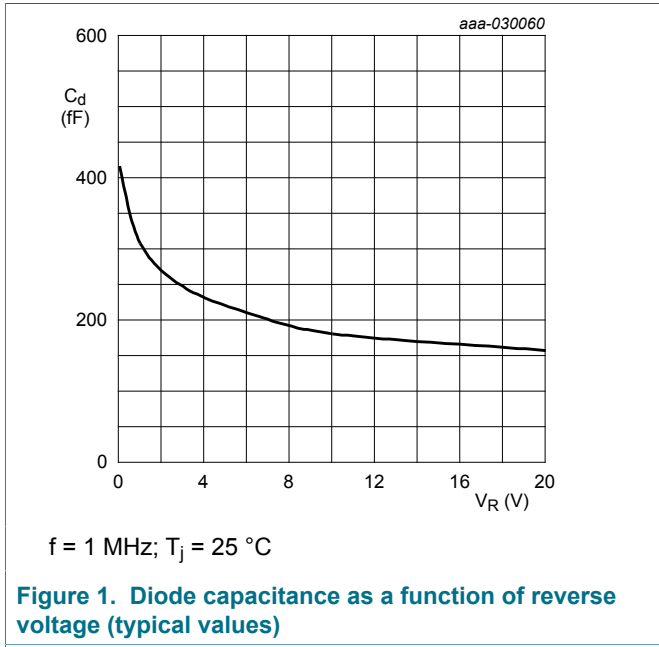
## 7 Characteristics

**Table 6. Characteristics**
 $T_j = 25\text{ }^\circ\text{C}$  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	f = 1 MHz (see <a href="#">Figure 1</a> )					
		$V_R = 0\text{ V}$	-	0.4	-	pF	
		$V_R = 1\text{ V}$	-	0.3	0.55	pF	
		$V_R = 5\text{ V}$	-	0.22	0.35	pF	
$r_D$	diode forward resistance	f = 100 MHz (see <a href="#">Figure 2</a> )					
		$I_F = 0.5\text{ mA}$	[1]	-	25	40	$\Omega$
		$I_F = 1\text{ mA}$	[1]	-	14	25	$\Omega$
		$I_F = 10\text{ mA}$	[1]	-	3	5	$\Omega$
ISL	isolation	$V_R = 0\text{ V}$ (see <a href="#">Figure 4</a> )					
		f = 900 MHz	-	20.4	-	dB	
		f = 1800 MHz	-	17.3	-	dB	
		f = 2450 MHz	-	15.5	-	dB	
$L_{ins}$	insertion loss	See <a href="#">Figure 3</a>					
		$I_F = 0.5\text{ mA}$					
		f = 900 MHz	-	1.74	-	dB	
		f = 1800 MHz	-	1.79	-	dB	
		f = 2450 MHz	-	1.88	-	dB	
		$I_F = 1\text{ mA}$					
		f = 900 MHz	-	1.03	-	dB	
		f = 1800 MHz	-	1.09	-	dB	
		f = 2450 MHz	-	1.15	-	dB	
		$I_F = 10\text{ mA}$					
		f = 900 MHz	-	0.26	-	dB	
		f = 1800 MHz	-	0.32	-	dB	
		f = 2450 MHz	-	0.34	-	dB	
$\tau_L$	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	-	$\mu\text{s}$	
$L_S$	series inductance	$I_F = 100\text{ mA}$ ; f = 100 MHz	-	0.6	-	nH	

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

**8 Graphical data**



**9 Package outline**

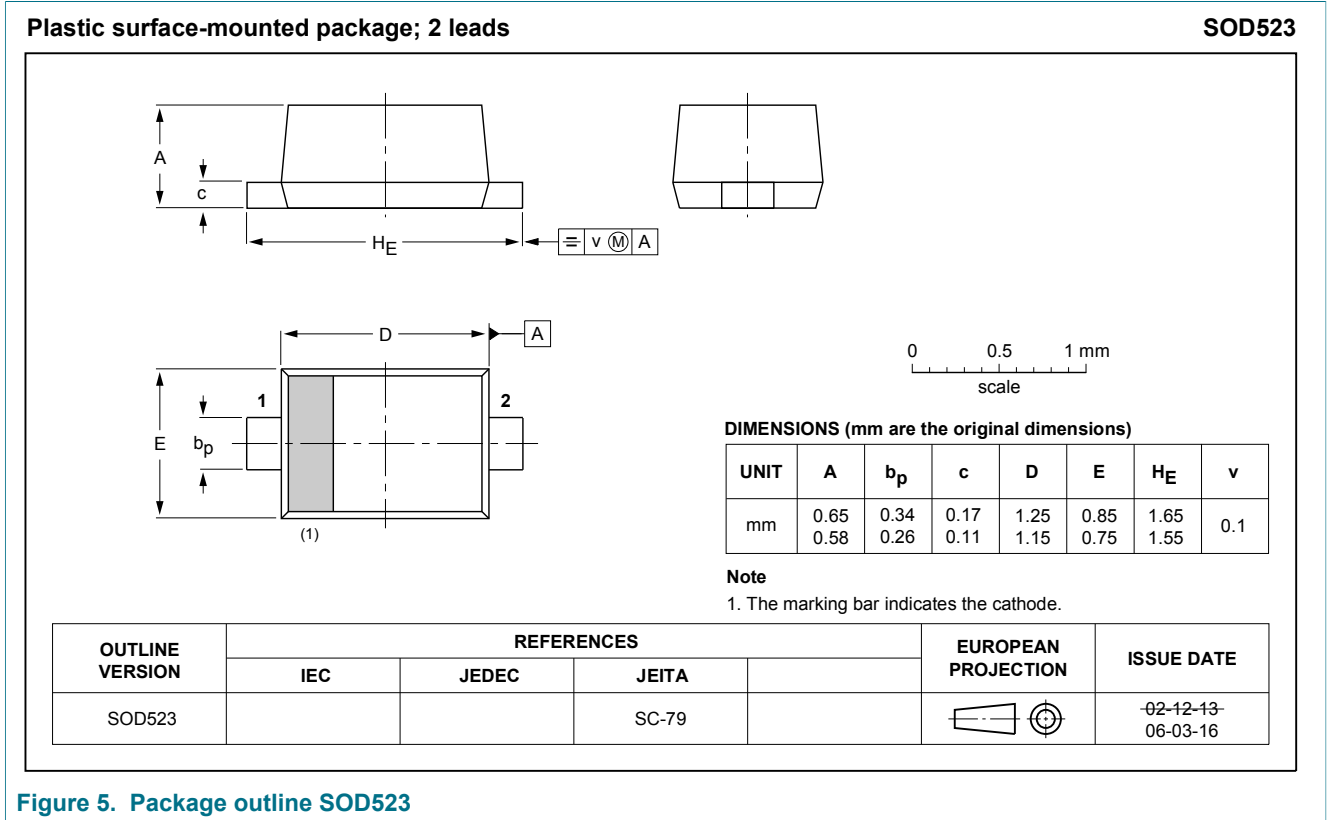


Figure 5. Package outline SOD523

**10 Abbreviations**

Table 7. Abbreviations

Acronym	Description
AQL	acceptable quality level
PIN	P-type, intrinsic, N-type
RF	radio frequency
S4	special inspection level 4
SMD	surface-mounted device

## 11 Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP50-02 v.3	20190208	Product data sheet	-	BAP50-02 v.3
Modifications:	• aligned the title of the data sheet with the description on the Internet			
BAP50-02 v.3	20181126	Product data sheet	-	BAP50-02 v.2
Modifications:	• <a href="#">Section 1.2</a> "Features and benefits" has been updated. • The "Legal information" pages have been updated.			
BAP50-02 v.2	20080103	Product data sheet	-	-

## 12 Legal information

### 12.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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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