



BAP50-02

Silicon PIN diode

Rev. 3.1 — 8 February 2019

Product data sheet

1 Product profile

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		 <i>sym006</i>
2	anode		

Top view

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

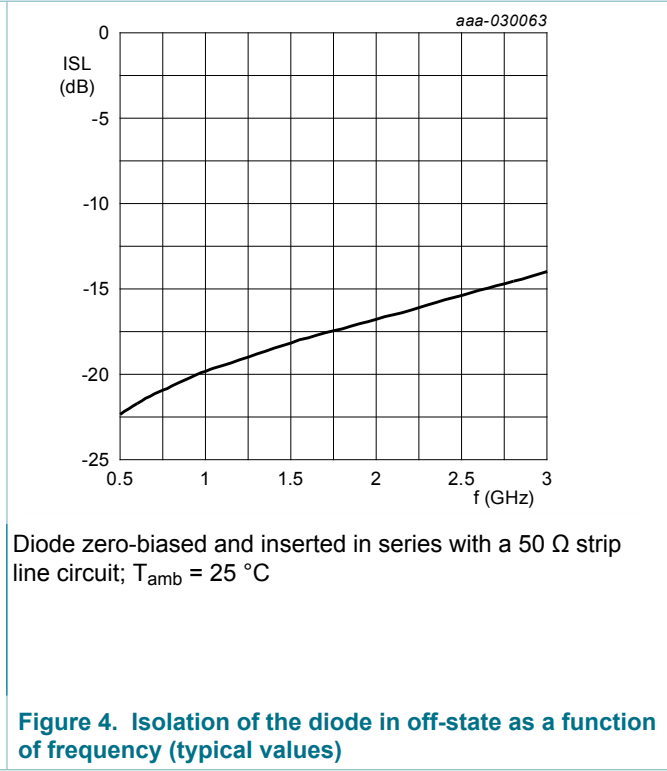
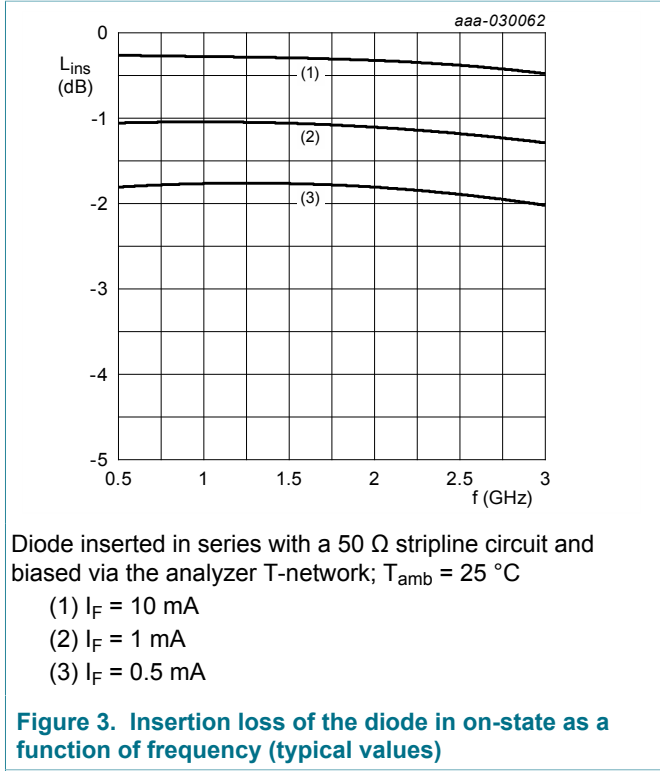
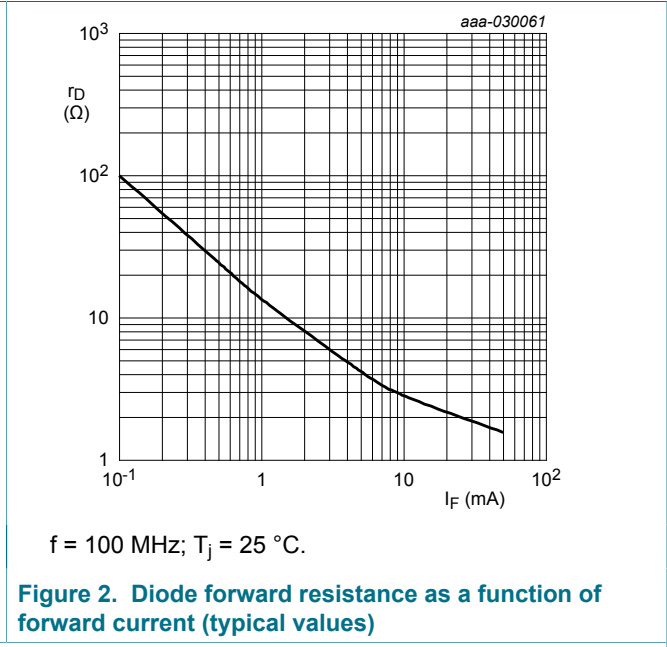
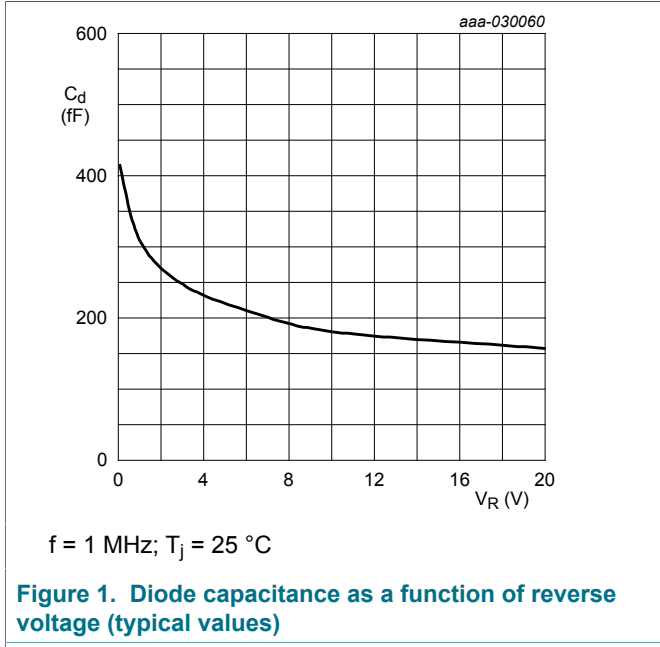
Table 6. Characteristics

$T_j = 25\text{ }^\circ\text{C}$ 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 Figure 1)					
		$V_R = 0\text{ V}$	-	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 Figure 2)					
		$I_F = 0.5\text{ mA}$	[1]	-	25	40	Ω
		$I_F = 1\text{ mA}$	[1]	-	14	25	Ω
		$I_F = 10\text{ mA}$	[1]	-	3	5	Ω
ISL	isolation	$V_R = 0\text{ V}$ (see Figure 4)					
		f = 900 MHz	-	20.4	-	dB	
		f = 1800 MHz	-	17.3	-	dB	
		f = 2450 MHz	-	15.5	-	dB	
L_{ins}	insertion loss	See Figure 3					
		$I_F = 0.5\text{ mA}$					
		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	
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 MHz	-	0.6	-	nH	

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

8 Graphical data



9 Package outline

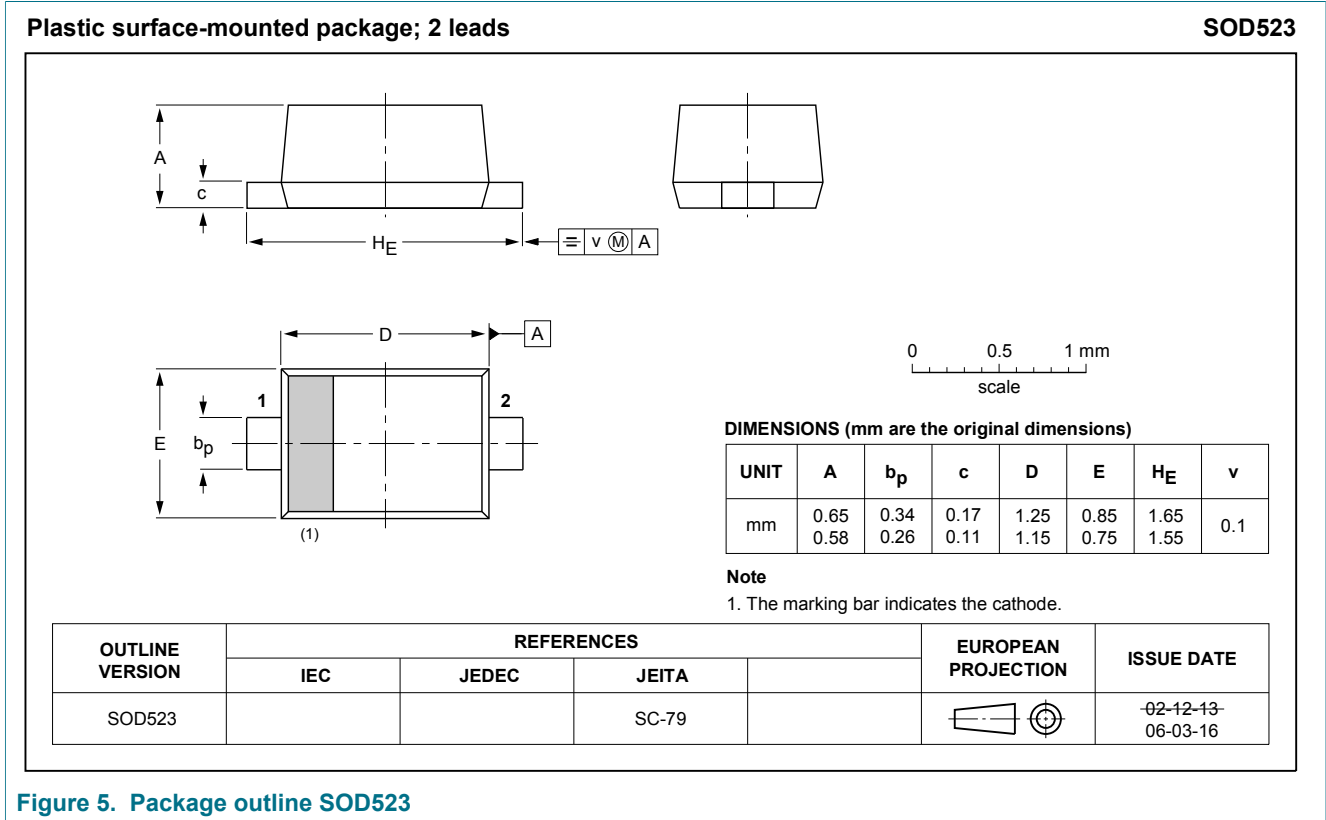


Figure 5. Package outline SOD523

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:	• Section 1.2 "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 ^{[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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