



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

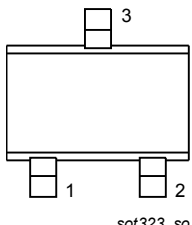
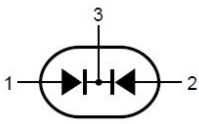
- Two elements in common cathode configuration
- High voltage, current controlled
- RF resistor for RF switches
- Low diode capacitance
- Low diode forward resistance
- AEC-Q101 qualified

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)	 <p>sot323_so</p> <p>Top view</p>	
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

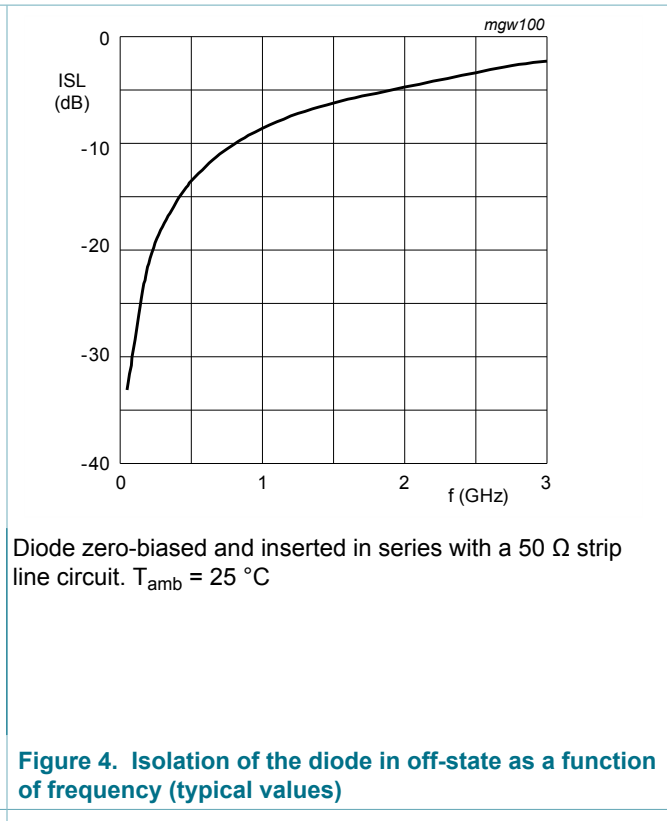
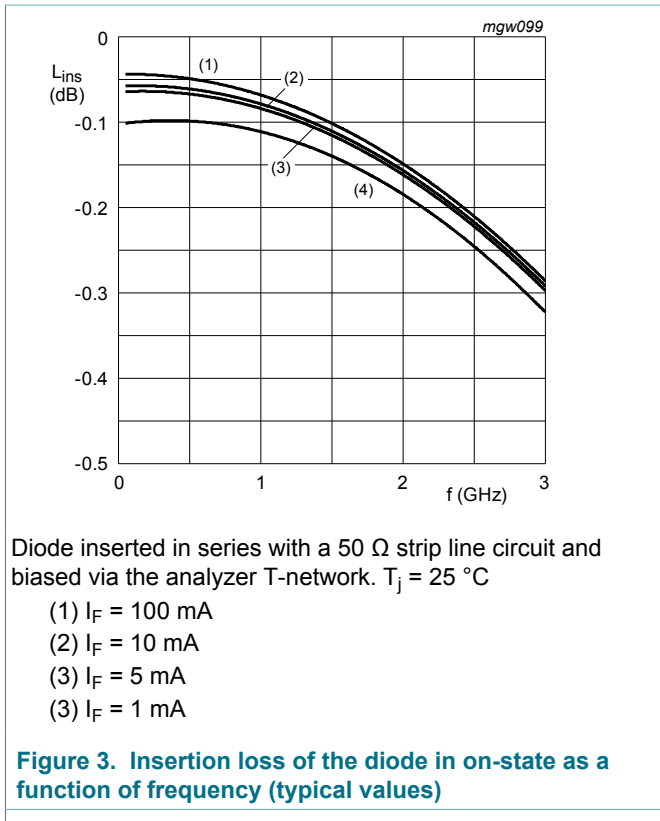
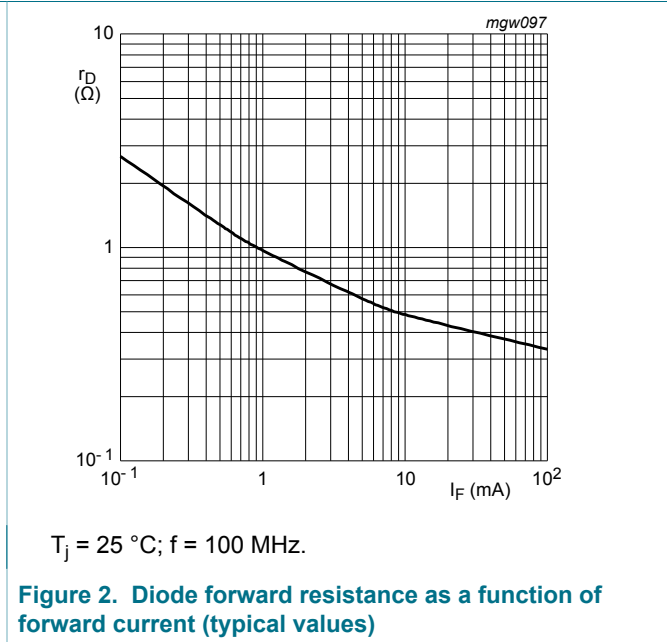
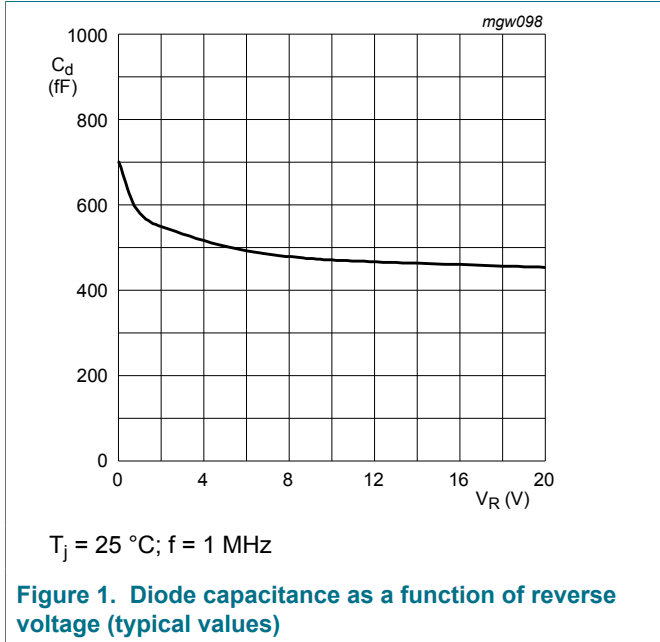
Table 6. Characteristics
 $T_j = 25\text{ °C}$ unless otherwise specified.

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	-	μs
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

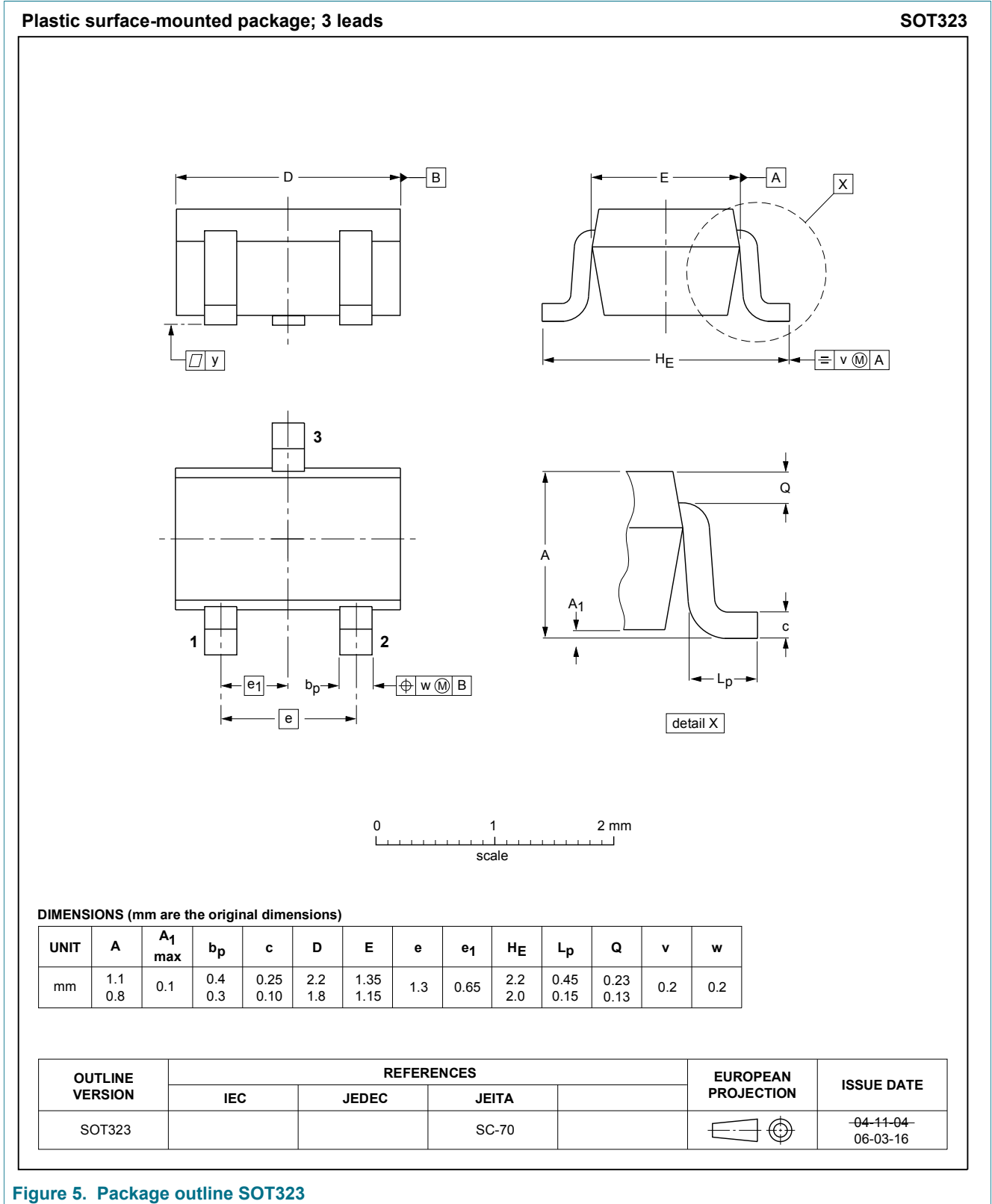


Figure 5. Package outline SOT323

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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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Contents

1	Product profile	1
1.1	General description	1
1.2	Features and benefits	1
1.3	Applications	1
2	Pinning information	2
3	Ordering information	2
4	Marking	2
5	Limiting values	2
6	Thermal characteristics	3
7	Characteristics	4
8	Graphical data	6
9	Package outline	7
10	Revision history	8
11	Legal information	9

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Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru