



# BAP65-05W

Silicon PIN diode

Rev. 3.1 — 28 January 2019

Product data sheet

## 1 Product profile

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### 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

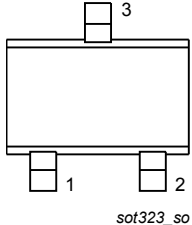
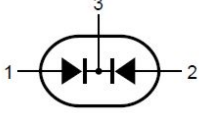
### 1.3 Applications

- 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 <sub>1</sub> )	 <p>sot323_so</p> <p>Top view</p>	
2	anode (a <sub>2</sub> )		
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 <sub>R</sub>	continuous reverse voltage		-	30	V
I <sub>F</sub>	continuous forward current		-	100	mA
P <sub>tot</sub>	total power dissipation	T <sub>sp</sub> ≤ 90 °C	-	240	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
T <sub>j</sub>	junction temperature		-65	+150	°C
T <sub>amb</sub>	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**

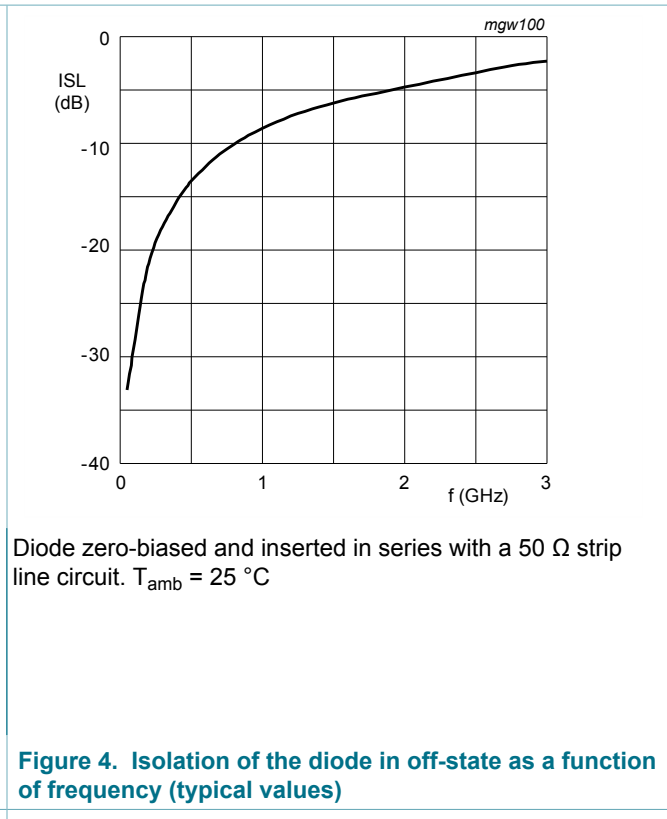
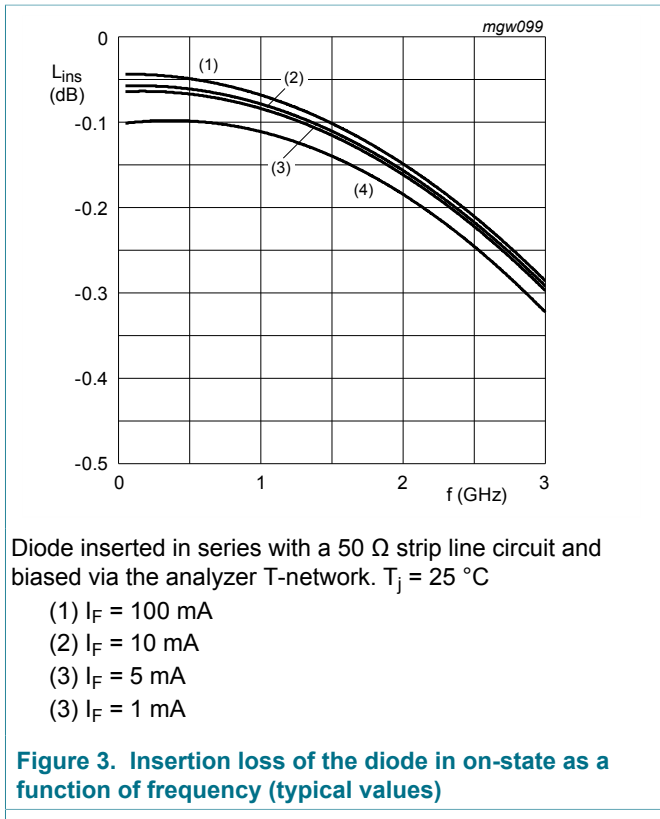
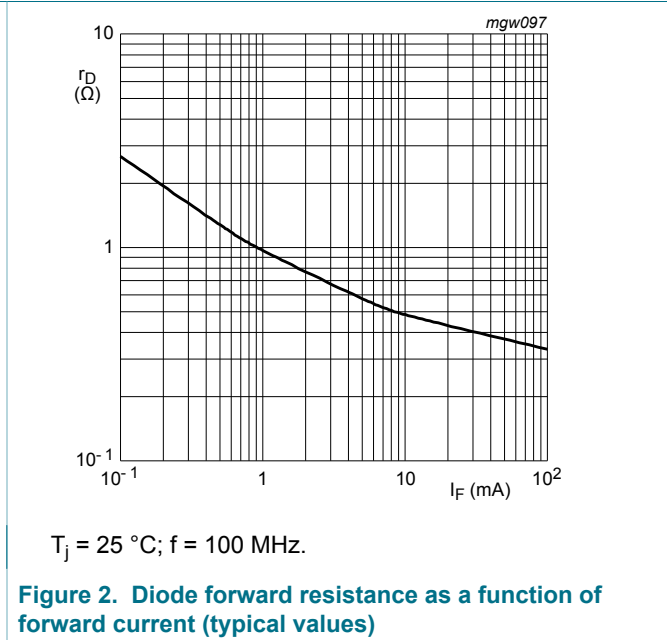
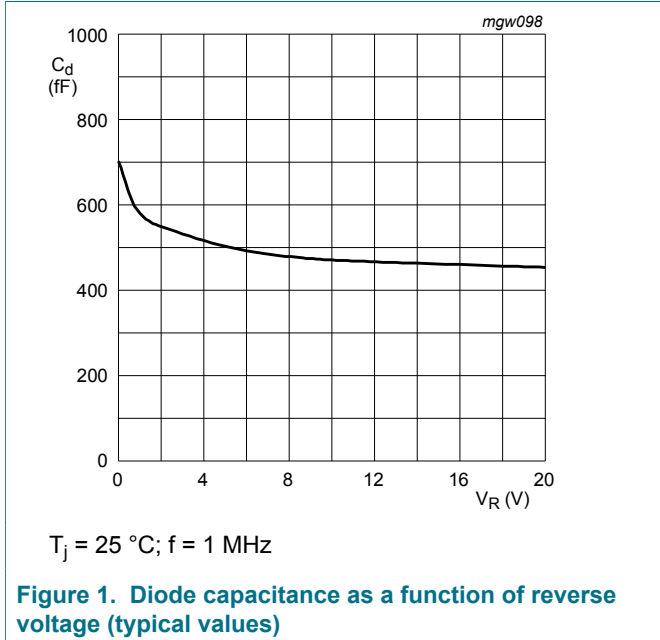
$T_j = 25\text{ °C}$  unless otherwise specified.

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 <a href="#">Figure 1</a> )					
		$V_R = 0\text{ V}$	-	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 <a href="#">Figure 2</a> )					
		$I_F = 1\text{ mA}$	-	1	-	$\Omega$	
		$I_F = 5\text{ mA}$	[1]	-	0.65	0.95	$\Omega$
		$I_F = 10\text{ mA}$	[1]	-	0.56	0.9	$\Omega$
		$I_F = 100\text{ mA}$	-	-	0.35	-	$\Omega$
ISL	isolation	$V_R = 0\text{ V}$ (see <a href="#">Figure 4</a> )					
		f = 900 MHz	-	9.3	-	dB	
		f = 1800 MHz	-	5.3	-	dB	
		f = 2450 MHz	-	3.5	-	dB	
$L_{ins}$	insertion loss	See <a href="#">Figure 3</a> .					
		$I_F = 1\text{ mA}$					
		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
$\tau_L$	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	-	$\mu\text{s}$
$L_S$	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**

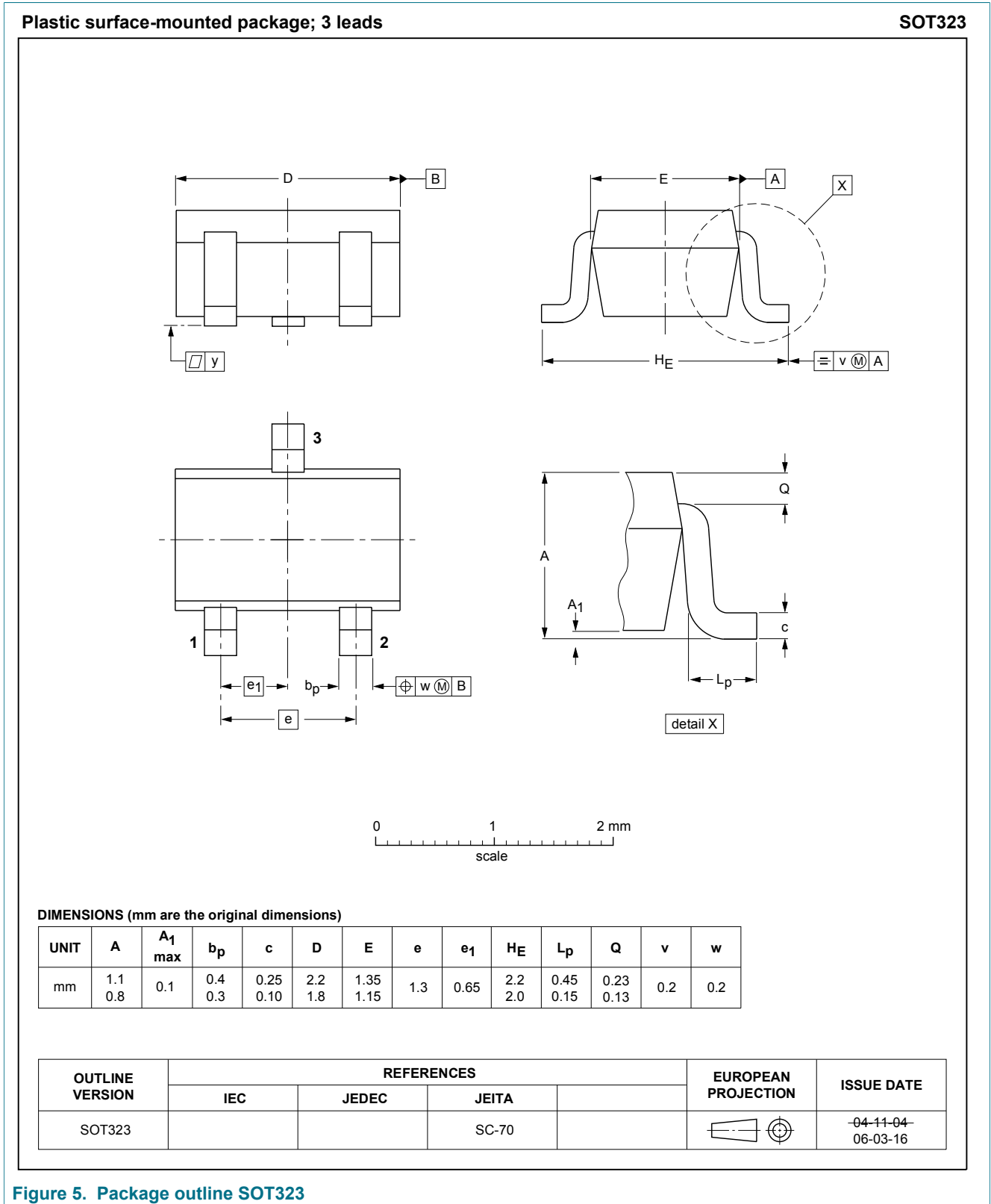


Figure 5. Package outline SOT323

## 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:	• <a href="#">Section 1.2</a> "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 <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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