



BAP64-05W

Silicon PIN diode

Rev. 2 — 28 April 2015

Product data sheet

1. Product profile

1.1 General description

Two planar PIN diodes in common cathode configuration in a SOT323 small plastic SMD package.

1.2 Features and benefits

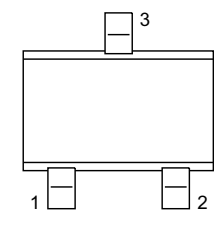
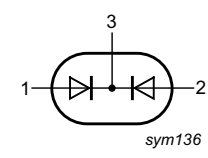
- High voltage, current controlled
- RF resistor for RF attenuators and switches
- Low diode capacitance
- Low diode forward resistance
- Low series inductance
- For applications up to 3 GHz
- AEC-Q101 qualified

1.3 Applications

- RF attenuators and switches

2. Pinning information

Table 1. Discrete pinning

Pin	Description	Simplified outline	Symbol
1	anode (a1)	 top view	 sym136
2	anode (a2)		
3	common cathode		

3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BAP64-05W	-	plastic surface-mounted package; 3 leads	SOT323



4. Marking

Table 3. Marking

Type number	Marking	Description
BAP64-05W	5W*	* = t : made in Malaysia
		* = W : made in China

Table 4. Marking

Type number	Marking code
BAP64-05W	5W-

5. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).
Values are specified per diode.

Symbol	Parameter	Conditions	Min	Max	Unit
V_R	reverse voltage		-	100	V
I_F	forward current		-	100	mA
P_{tot}	total power dissipation	$T_{sp} = 90\text{ }^{\circ}\text{C}$	-	240	mW
T_{stg}	storage temperature		-65	+150	$^{\circ}\text{C}$
T_j	junction temperature		-65	+150	$^{\circ}\text{C}$

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point		250	K/W

7. Characteristics

Table 7. Characteristics

Values are specified per diode; $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

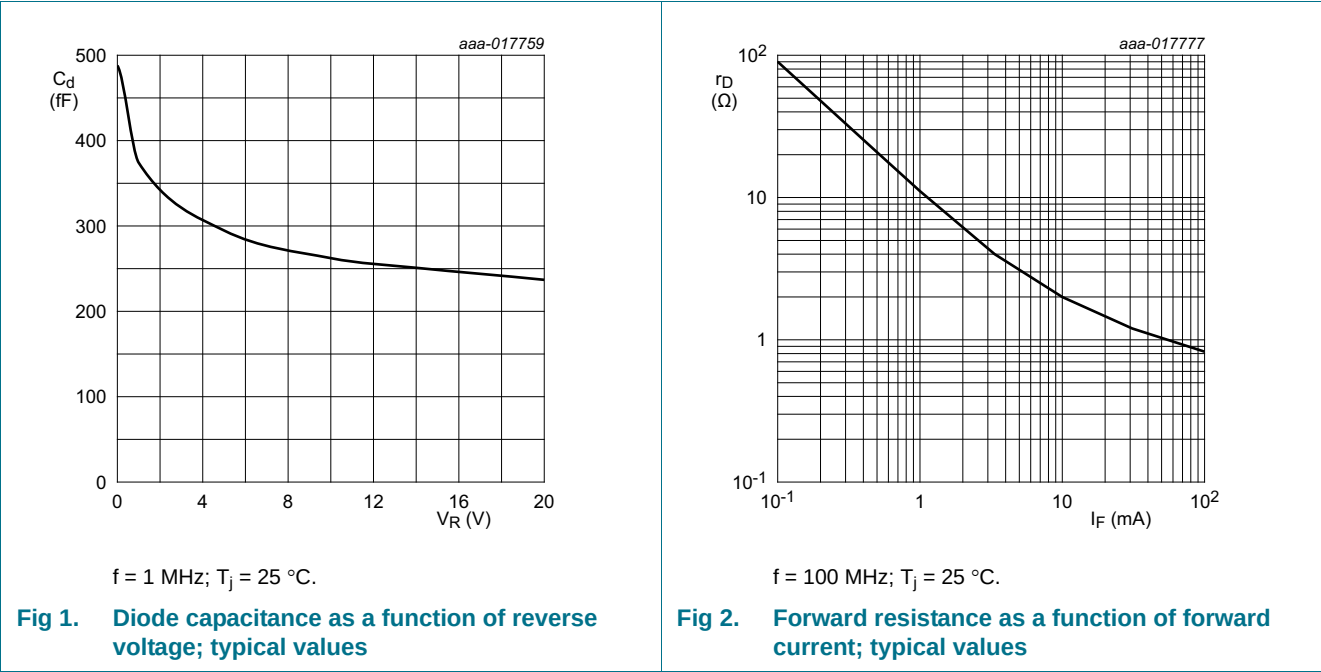
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 50\text{ mA}$	-	0.95	1.1	V
I_R	reverse current	$V_R = 175\text{ V}$	-	-	10	μA
		$V_R = 20\text{ V}$	-	-	1	μA
C_d	diode capacitance	see Figure 1 ; $f = 1\text{ MHz}$;				
		$V_R = 0\text{ V}$	-	0.52	-	pF
		$V_R = 1\text{ V}$	-	0.37	-	pF
		$V_R = 20\text{ V}$	-	0.23	0.35	pF

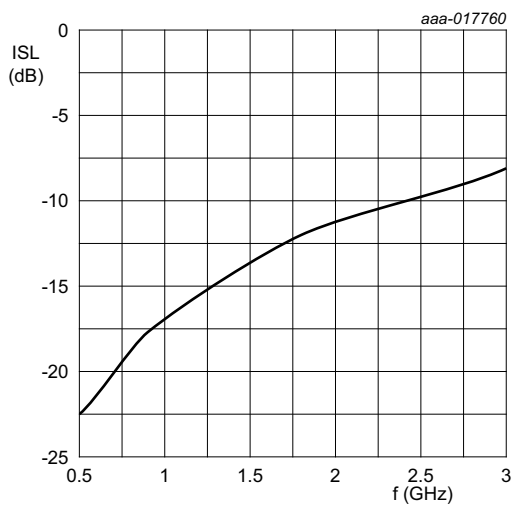
Table 7. Characteristics ...continued
 Values are specified per diode; $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
r_D	diode forward resistance	see Figure 2 ; $f = 100\text{ MHz}$; [1]				
		$I_F = 0.5\text{ mA}$	-	20	40	Ω
		$I_F = 1\text{ mA}$	-	10	20	Ω
		$I_F = 10\text{ mA}$	-	2.0	3.8	Ω
		$I_F = 100\text{ mA}$	-	0.7	1.35	Ω
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 $I_R = 3\text{ mA}$	-	1.55	-	μs
L_S	series inductance		-	1.2	-	nH

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

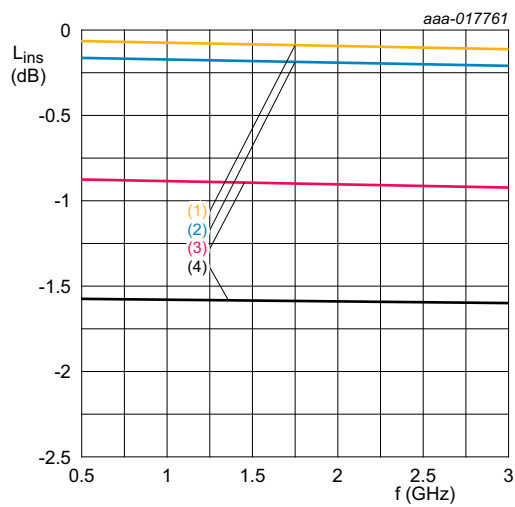
7.1 Graphical data





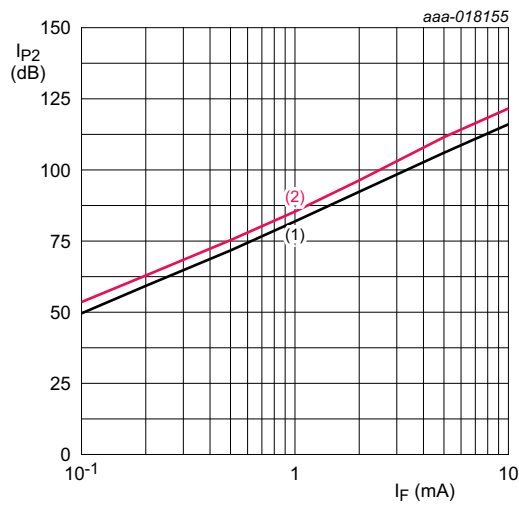
$T_{amb} = 25\text{ }^{\circ}\text{C}$
Diode zero biased and inserted in series with a 50 Ω stripline circuit

Fig 3. Isolation of the diode as a function of frequency; typical values



$T_{amb} = 25\text{ }^{\circ}\text{C}$
(1) $I_F = 100\text{ mA}$
(2) $I_F = 10\text{ mA}$
(3) $I_F = 1\text{ mA}$
(4) $I_F = 0.5\text{ mA}$
Diode inserted in series with a 50 Ω stripline circuit and biased via the analyzer Tee network

Fig 4. Insertion loss of the diode as a function of frequency; typical values



$T_{amb} = 25\text{ }^{\circ}\text{C}$
(1) $f = 900\text{ MHz}$
(2) $f = 1800\text{ MHz}$

Fig 5. Second-order intercept point as a function of forward current; typical values

8. Package outline

Plastic surface-mounted package; 3 leads

SOT323

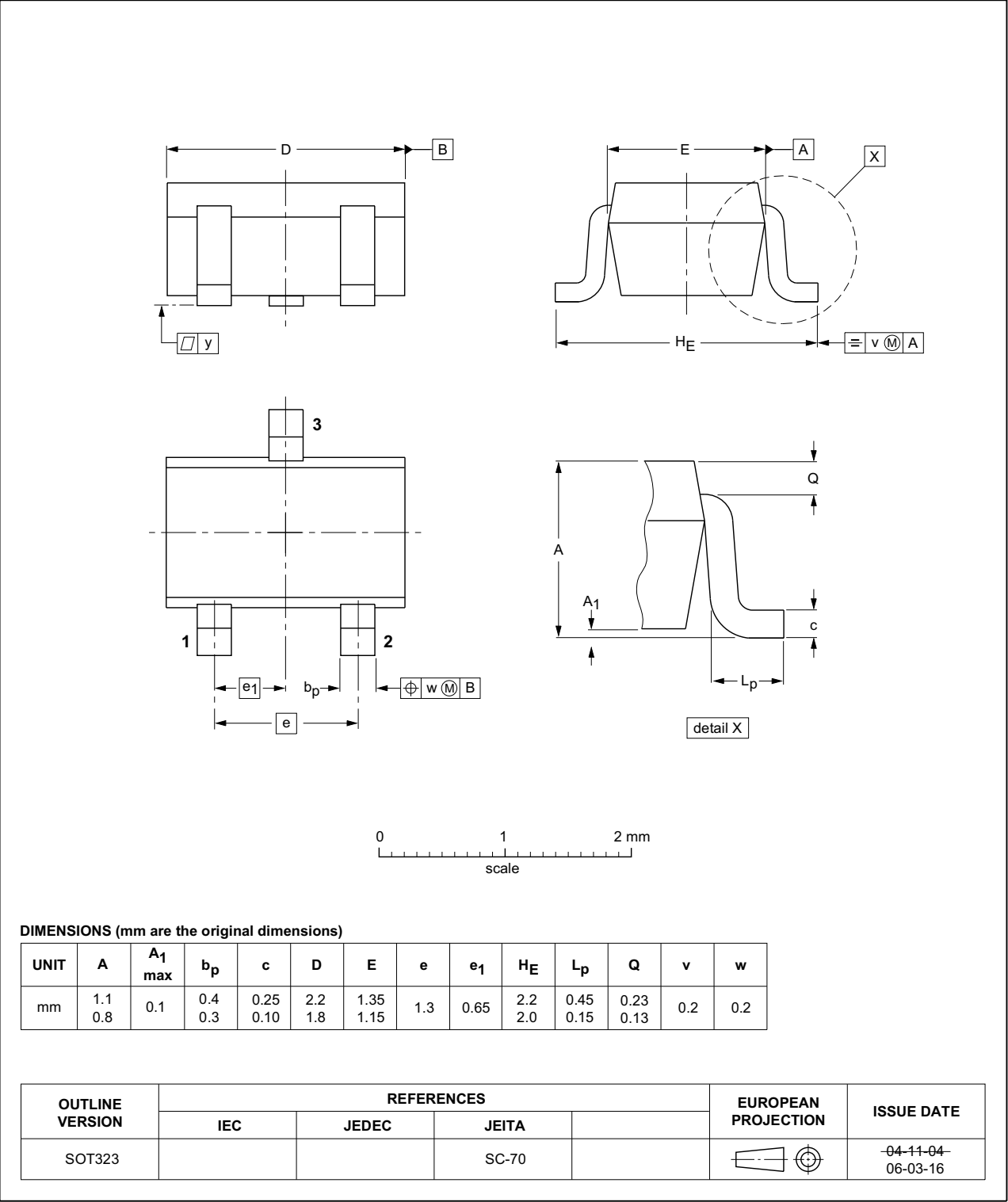


Fig 6. Package outline SOT323

9. Abbreviations

Table 8. Abbreviations

Acronym	Description
AQL	Acceptable Quality Level
PIN	P-type, Intrinsic, N-type
SMD	Surface Mounted Device
S4	Special inspection level 4

10. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP64-05W v.2	20150428	Product data sheet	-	BAP64-05W v.1
Modifications:	- The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. - Legal texts have been adapted to the new company name where appropriate. - AEC-Q101 qualified			
BAP64-05W v.1 (9397 750 07192)	20000713	Product specification	-	-

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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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13. Contents

1	Product profile	1
1.1	General description	1
1.2	Features and benefits	1
1.3	Applications	1
2	Pinning information	1
3	Ordering information	1
4	Marking	2
5	Limiting values	2
6	Thermal characteristics	2
7	Characteristics	2
7.1	Graphical data	3
8	Package outline	5
9	Abbreviations	6
10	Revision history	6
11	Legal information	7
11.1	Data sheet status	7
11.2	Definitions	7
11.3	Disclaimers	7
11.4	Trademarks	8
12	Contact information	8
13	Contents	9

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