BAP64-05W

Silicon PIN diode

Rev. 3.2 — 1 February 2019 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

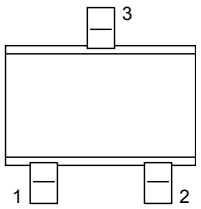
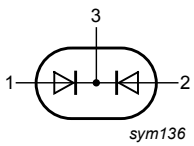
- High voltage, current controlled
- RF resistor for RF attenuators and switches
- Low diode capacitance
- Low diode forward resistance
- Low series inductance
- For applications up to 3 GHz
- AEC-Q101 qualified

1.3 Applications

- RF attenuators and switches

2 Pinning information

Table 1. Discrete pinning

Pin	Description		Simplified outline	Symbol
1	anode (a1)		 top view	
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	$T_{sp} \leq 90$ °C		-	240	mW
T_{stg}	storage temperature			-65	+150	°C
T_j	junction temperature			-65	+150	°C

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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

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7 Characteristics

Table 7. Characteristics

Values are specified per diode; T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 50 mA		-	0.95	1.1	V
I_R	reverse current	V_R = 60 V		-	-	10	µA
		V_R = 20 V		-	-	1	µA
C_d	diode capacitance	see Figure 1; f = 1 MHz;					
		V_R = 0 V		-	0.52	-	pF
		V_R = 1 V		-	0.37	-	pF
		V_R = 20 V		-	0.23	0.35	pF
r_D	diode forward resistance	see Figure 2; f = 100 MHz;	[1]				
		I_F = 0.5 mA		-	20	40	Ω
		I_F = 1 mA		-	10	20	Ω
		I_F = 10 mA		-	2.0	3.8	Ω
		I_F = 100 mA		-	0.7	1.35	Ω
τ_L	charge carrier life time	when switched from I_F = 10 mA to I_R = 6 mA; R_L = 100 Ω; measured at I_R = 3 mA		-	1.55	-	µs
L_S	series inductance			-	1.2	-	nH

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

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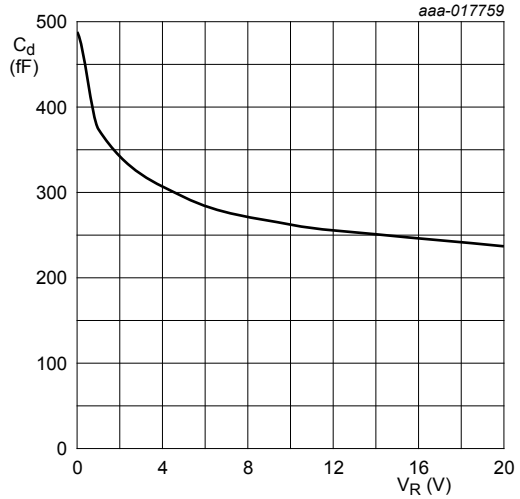
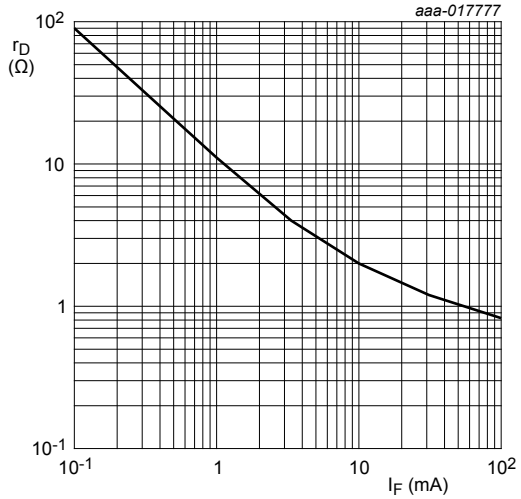
7.1 Graphical data



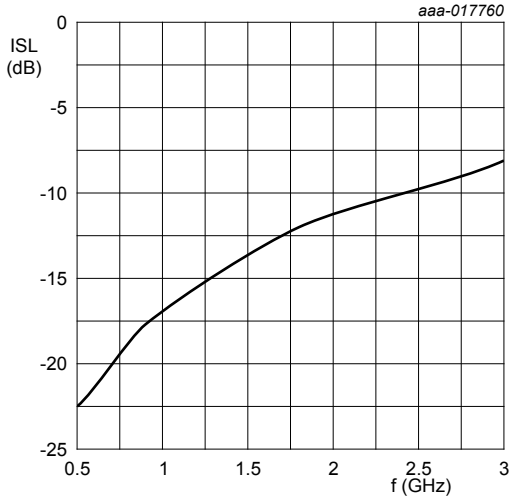
f = 1 MHz; T_j = 25 °C.

Figure 1. Diode capacitance as a function of reverse voltage; typical values



f = 100 MHz; T_j = 25 °C.

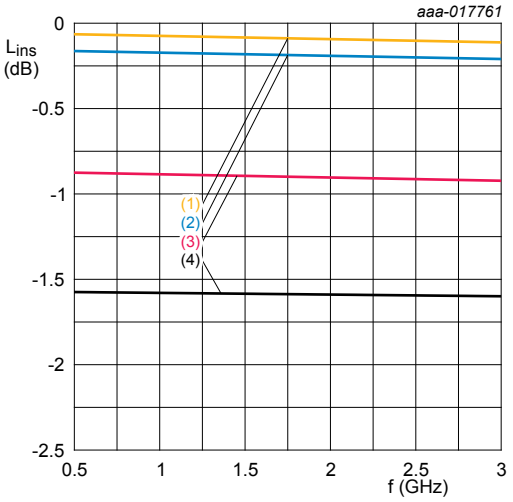
Figure 2. Forward resistance as a function of forward current; typical values



T_{amb} = 25 °C

Diode zero biased and inserted in series with a 50 Ω stripline circuit

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



T_{amb} = 25 °C

1. I_F = 100 mA
2. I_F = 10 mA
3. I_F = 1 mA
4. I_F = 0.5 mA

Diode inserted in series with a 50 Ω stripline circuit and biased via the analyzer T-network

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

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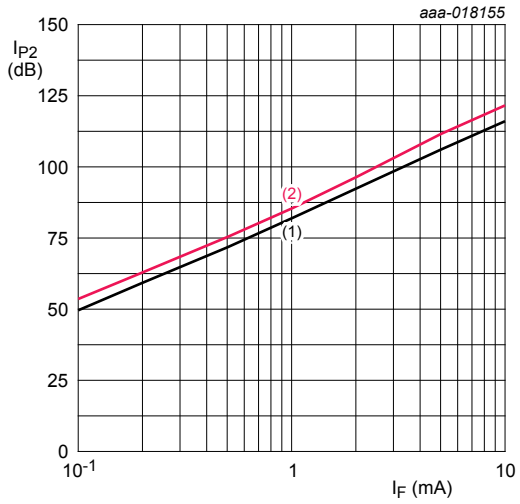

T_{amb} = 25 °C

1. f = 900 MHz
2. f = 1800 MHz

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

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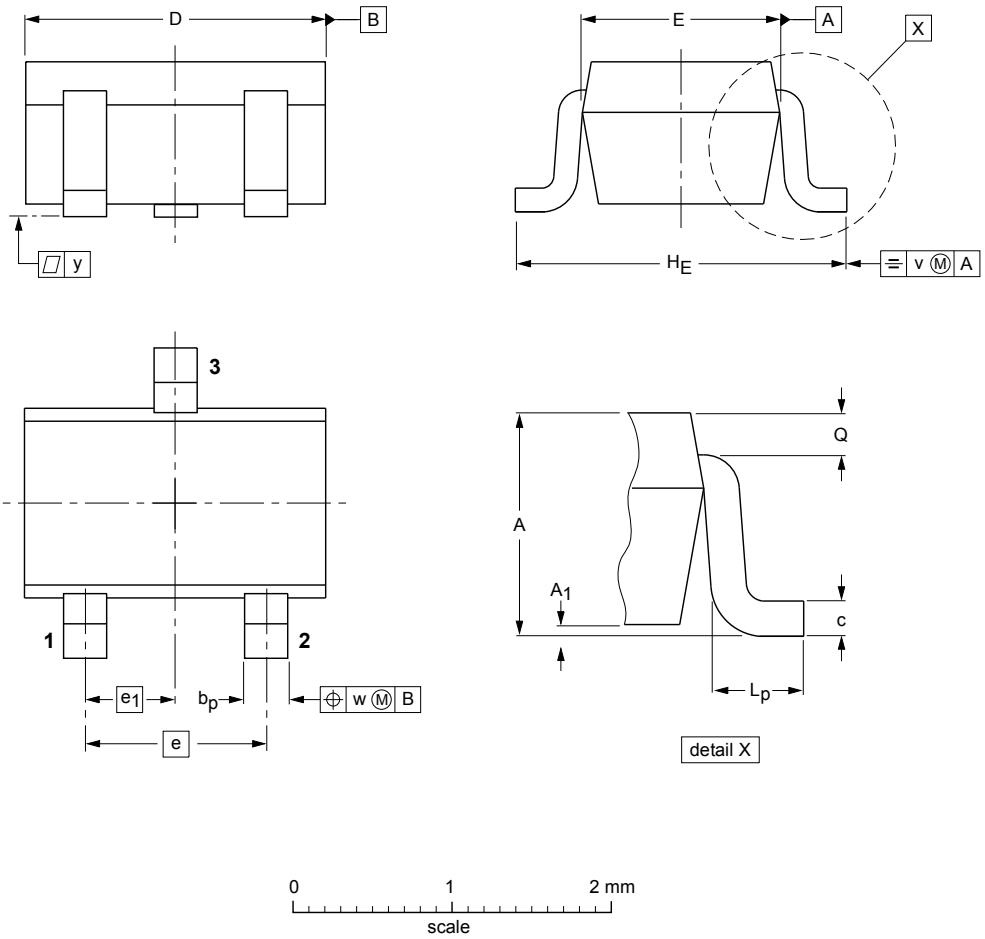
8 Package outline

Plastic surface-mounted package; 3 leads **SOT323**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT323			SC-70			~~04-11-04~~ 06-03-16

Figure 6. Package outline SOT323

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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.3.2	20190201	Product data sheet	-	BAP64-05W v.3.1
Modifications	• changed condition for reverse current for V_R from 100 V to 60 V			
BAP64-05W v.3.1	20181211	Product data sheet	-	BAP64-05W v.3
Modifications	• adapted marking code			
BAP64-05W v.3	20180713	Product data sheet	-	BAP64-05W v.2
Modifications	• changed $I_R$conditions at characteristics • adapted the layout of the data sheet			
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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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.

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[2] The term 'short data sheet' is explained in section "Definitions".
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