BAP51-06W

General purpose PIN diode

Rev. 01 — 26 May 2008 Product data sheet

1. Product profile

1.1 General description

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

1.2 Features

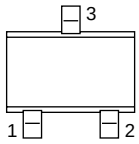
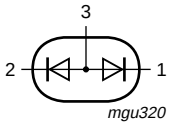
- Two elements in common anode configuration in a small SMD plastic package
- Low diode capacitance
- Low diode forward resistance

1.3 Applications

- general RF application

2. Pinning information

Table 1. Discrete pinning

Pin	Description	Simplified outline	Graphic symbol
1	cathode 1		
2	cathode 2		
3	common connection		

3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BAP51-06W	-	plastic surface-mounted package; 3 leads	SOT323

4. Marking

Table 3. Marking

Type number	Marking	Description
BAP51-06W	W7*	* = p: made in Hong Kong
		* = t : made in Malaysia

5. Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
Per diode					
V_R	reverse voltage		-	50	V
I_F	forward current		-	50	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

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 °C unless otherwise specified.

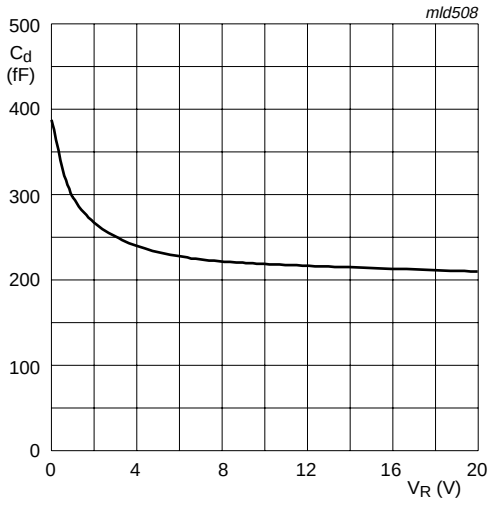
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 50 mA		-	0.95	1.1	V
I_R	reverse current	V_R = 50 V		-	-	100	nA
C_d	diode capacitance	see Figure 1; f = 1 MHz					
		V_R = 0 V		-	0.4	-	pF
		V_R = 1 V		-	0.3	0.55	pF
		V_R = 5 V		-	0.2	0.35	pF
r_D	diode forward resistance	see Figure 2; f = 100 MHz					
		I_F = 0.5 mA	[1]	-	5.3	9	Ω
		I_F = 1 mA	[1]	-	3.5	6.5	Ω
		I_F = 10 mA	[1]	-	1.5	2.5	Ω

Table 6. Characteristics *...continued*

T_j = 25 °C unless otherwise specified.

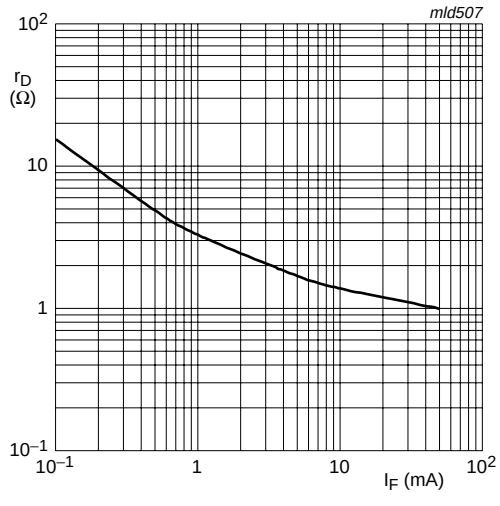
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
ISL	isolation	V_R = 0 V				
		f = 900 MHz	-	17	-	dB
		f = 1800 MHz	-	13	-	dB
		f = 2450 MHz	-	12	-	dB
L_{ins}	insertion loss	I_F = 0.5 mA				
		f = 900 MHz	-	0.44	-	dB
		f = 1800 MHz	-	0.50	-	dB
		f = 2450 MHz	-	0.54	-	dB
		I_F = 1 mA				
		f = 900 MHz	-	0.33	-	dB
		f = 1800 MHz	-	0.39	-	dB
		f = 2450 MHz	-	0.43	-	dB
		I_F = 10 mA				
		f = 900 MHz	-	0.19	-	dB
		f = 1800 MHz	-	0.24	-	dB
		f = 2450 MHz	-	0.28	-	dB
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	-	0.55	-	µs
L_S	series inductance	I_F = 100 mA; f = 100 MHz	-	1.6	-	nH

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



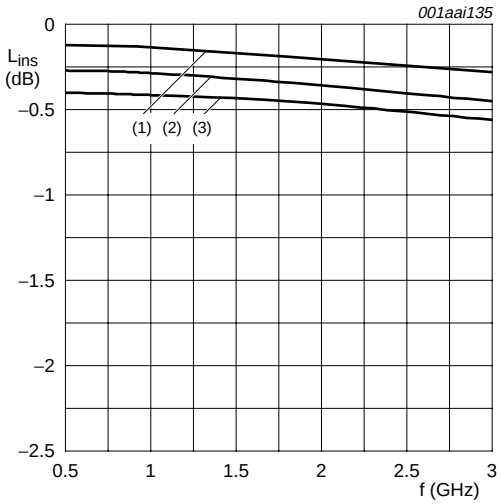
f = 100 MHz; T_j = 25 °C.

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



f = 100 MHz; T_j = 25 °C.

Fig 2. Diode forward resistance as a function of forward current; typical values



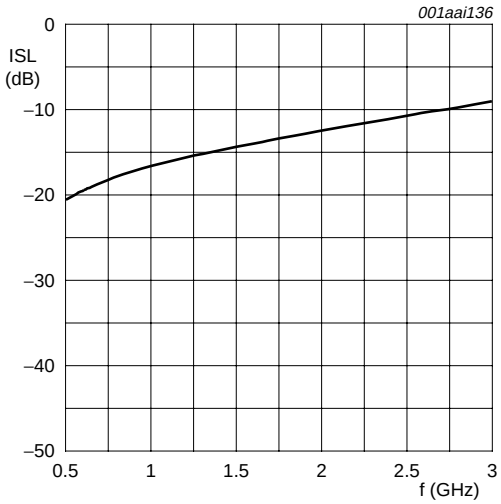
(1) I_F = 10 mA

(2) I_F = 1 mA

(3) I_F = 0.5 mA

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

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

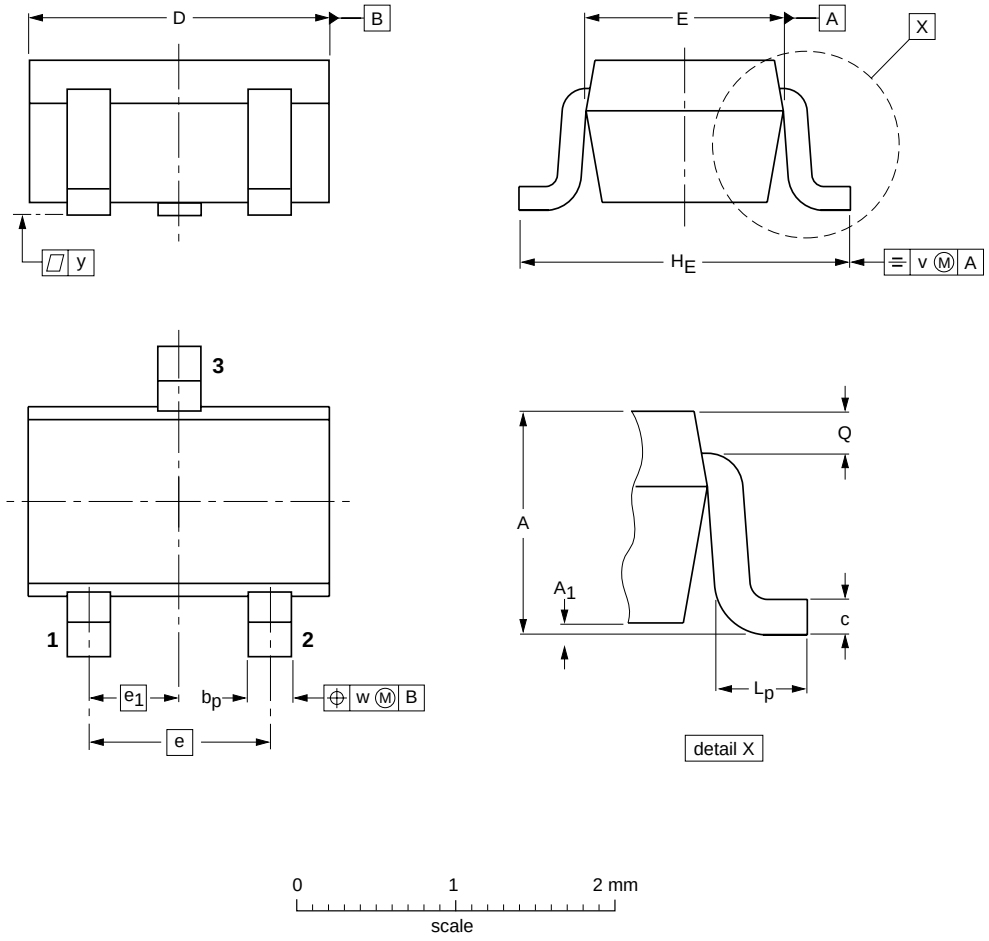


Diode zero biased and inserted in series with a 50 Ω stripline circuit; T_{amb} = 25 °C.

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

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

Fig 5. Package outline SOT323

9. Abbreviations

Table 7. Abbreviations

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

10. Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP51-06W_1	20080526	Product data sheet	-	-

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.
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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	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**
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	7
12	**Contact information**	**7**
13	**Contents**	**8**

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