

# 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

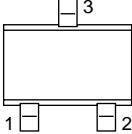
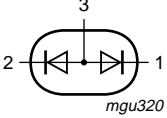
- Two elements in common anode configuration in a small SMD plastic package
- Low diode capacitance
- Low diode forward resistance

### 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		Version
	Name	Description	
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
<b>Per diode</b>					
$V_R$	reverse voltage		-	50	V
$I_F$	forward current		-	50	mA
$P_{tot}$	total power dissipation	$T_{sp} = 90\text{ °C}$	-	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**

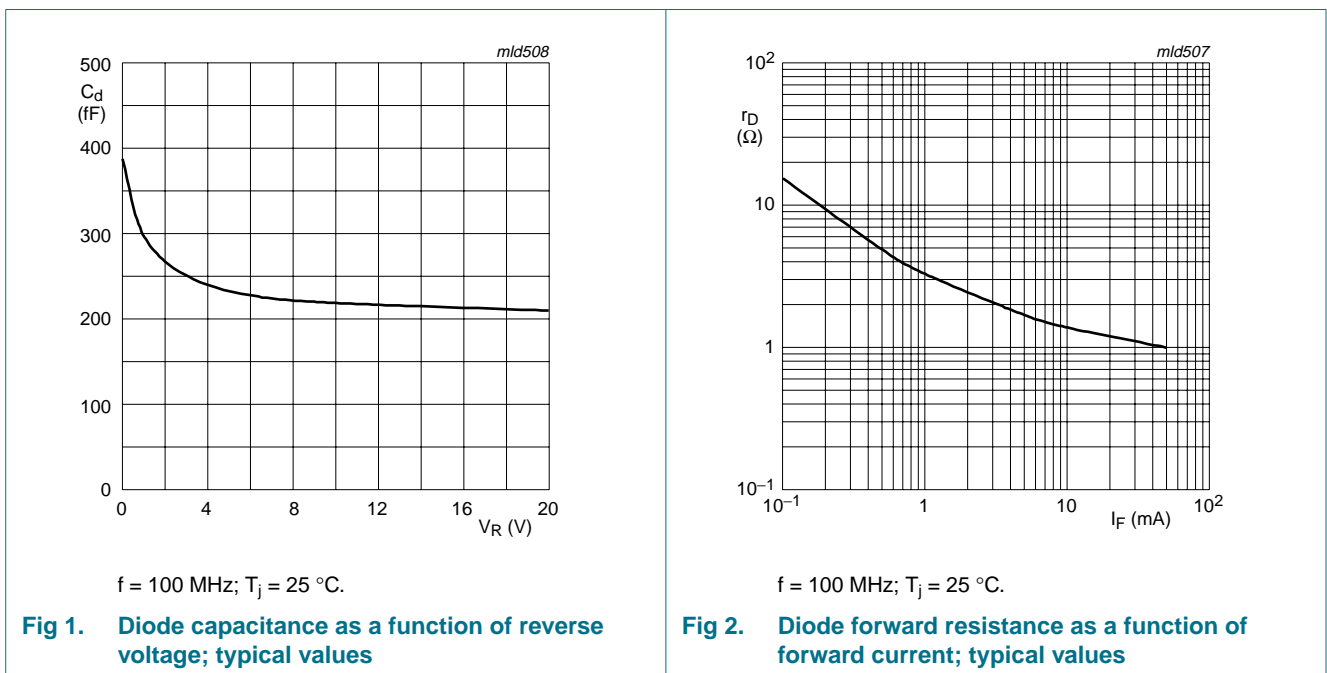
$T_j = 25\text{ °C}$  unless otherwise specified.

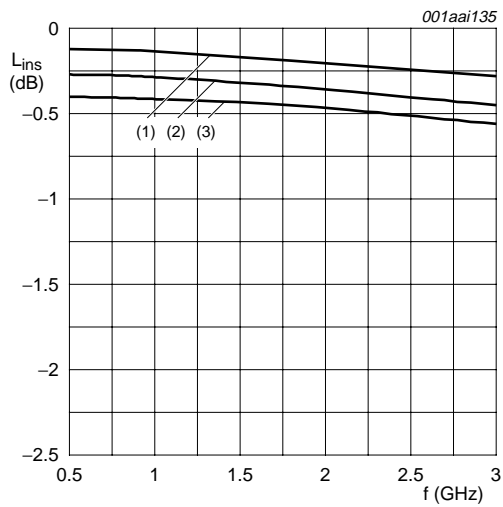
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 50\text{ mA}$	-	0.95	1.1	V
$I_R$	reverse current	$V_R = 50\text{ V}$	-	-	100	nA
$C_d$	diode capacitance	see <a href="#">Figure 1</a> ; $f = 1\text{ MHz}$				
		$V_R = 0\text{ V}$	-	0.4	-	pF
		$V_R = 1\text{ V}$	-	0.3	0.55	pF
		$V_R = 5\text{ V}$	-	0.2	0.35	pF
$r_D$	diode forward resistance	see <a href="#">Figure 2</a> ; $f = 100\text{ MHz}$				
		$I_F = 0.5\text{ mA}$	<a href="#">[1]</a> -	5.3	9	$\Omega$
		$I_F = 1\text{ mA}$	<a href="#">[1]</a> -	3.5	6.5	$\Omega$
		$I_F = 10\text{ mA}$	<a href="#">[1]</a> -	1.5	2.5	$\Omega$

**Table 6. Characteristics ...continued**  
 $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
ISL	isolation	$V_R = 0\text{ V}$				
		$f = 900\text{ MHz}$	-	17	-	dB
		$f = 1800\text{ MHz}$	-	13	-	dB
		$f = 2450\text{ MHz}$	-	12	-	dB
$L_{ins}$	insertion loss	$I_F = 0.5\text{ mA}$				
		$f = 900\text{ MHz}$	-	0.44	-	dB
		$f = 1800\text{ MHz}$	-	0.50	-	dB
		$f = 2450\text{ MHz}$	-	0.54	-	dB
		$I_F = 1\text{ mA}$				
		$f = 900\text{ MHz}$	-	0.33	-	dB
		$f = 1800\text{ MHz}$	-	0.39	-	dB
		$f = 2450\text{ MHz}$	-	0.43	-	dB
		$I_F = 10\text{ mA}$				
		$f = 900\text{ MHz}$	-	0.19	-	dB
		$f = 1800\text{ MHz}$	-	0.24	-	dB
		$f = 2450\text{ MHz}$	-	0.28	-	dB
$\tau_L$	charge carrier life time	when switched from $I_F = 10\text{ mA}$ to $I_R = 6\text{ mA}$ ; $R_L = 100\ \Omega$ ; measured at $I_R = 3\text{ mA}$	-	0.55	-	$\mu\text{s}$
$L_S$	series inductance	$I_F = 100\text{ mA}$ ; $f = 100\text{ MHz}$	-	1.6	-	nH

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

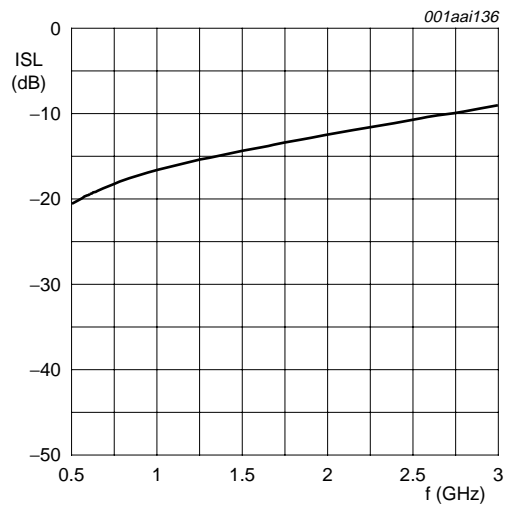




- (1)  $I_F = 10$  mA
- (2)  $I_F = 1$  mA
- (3)  $I_F = 0.5$  mA

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

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



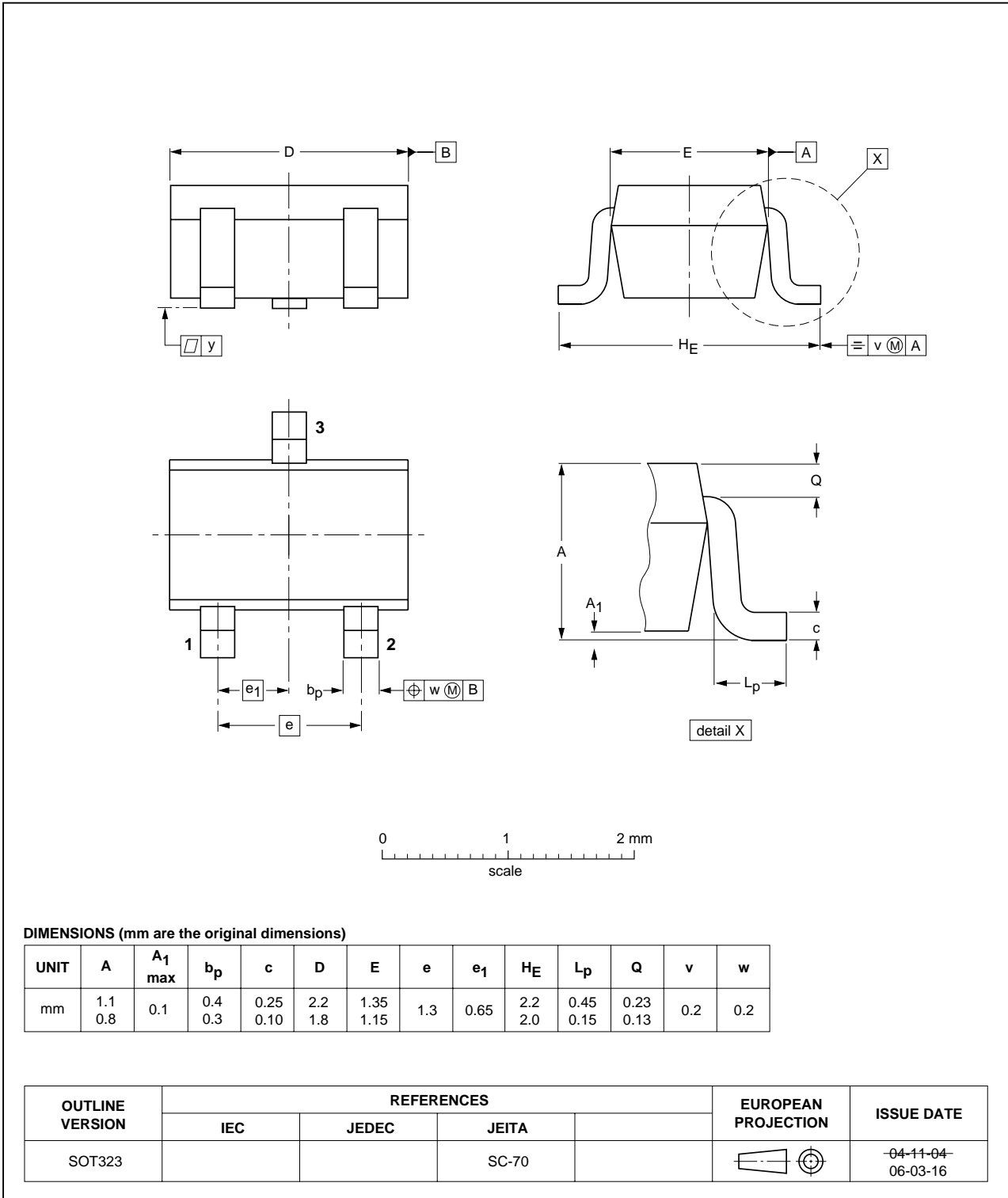
Diode zero biased and inserted in series with a 50  $\Omega$  stripline circuit;  $T_{amb} = 25$   $^{\circ}$ C.

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

**8. Package outline**

Plastic surface-mounted package; 3 leads

SOT323



**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 <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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**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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