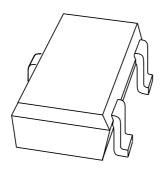
DISCRETE SEMICONDUCTORS

DATA SHEET



BAP51-04WGeneral purpose PIN diode

Preliminary specification

2002 Feb 19





General purpose PIN diode

BAP51-04W

FEATURES

- Two elements in series configuration in a small SMD plastic package
- Low diode capacitance
- Low diode forward resistance.

APPLICATIONS

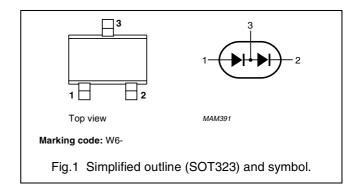
· General RF applications.

DESCRIPTION

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

PINNING

PIN	DESCRIPTION
1	anode
2	cathode
3	common connection



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V _R	continuous reverse voltage		_	50	V
I _F	continuous forward current		_	50	mA
P _{tot}	total power dissipation	T _s = 90 °C	_	240	mW
T _{stg}	storage temperature		-65	+150	°C
T _j	junction temperature		-65	+150	°C

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ELECTRICAL CHARACTERISTICS

 $T_i = 25$ °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Per diode					•	•
V _F	forward voltage	I _F = 50 mA	_	0.95	1.1	٧
V _R	reverse voltage	I _R = 10 μA	50	_	_	V
I _R	reverse current	V _R = 50 V	_	_	100	nA
C _d	diode capacitance	V _R = 0; f = 1 MHz	_	0.4	_	pF
		V _R = 1 V; f = 1 MHz	_	0.3	0.55	pF
		V _R = 5 V; f = 1 MHz	_	0.2	0.35	pF
r _D	diode forward resistance	I _F = 0.5 mA; f = 100 MHz; note 1	_	5.5	9	Ω
		I _F = 1 mA; f = 100 MHz; note 1	_	3.6	6.5	Ω
		I _F = 10 mA; f = 100 MHz; note 1	_	1.5	2.5	Ω
τ∟	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	-	550	_	ns
L _S	series inductance	I _F = 10 mA; f = 100 MHz	_	1.6	_	nH

Note

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
R _{th j-s}	thermal resistance from junction to soldering point	250	K/W

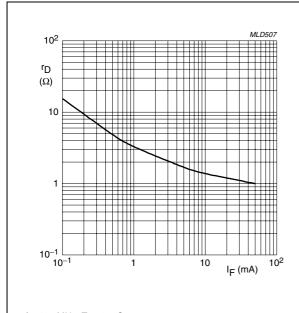
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^{1.} Guaranteed on AQL basis: inspection level S4, AQL 1.0.

General purpose PIN diode

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GRAPHICAL DATA



 $f = 100 \text{ MHz}; T_j = 25 \,^{\circ}\text{C}.$

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

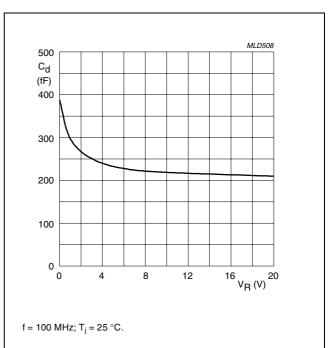
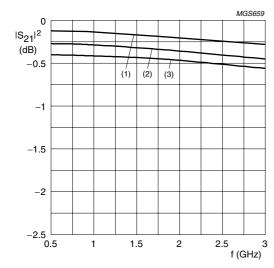


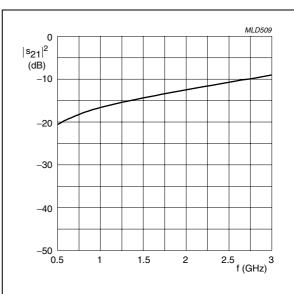
Fig.3 Diode capacitance as a function of reverse voltage; typical values.



- (1) $I_F = 10 \text{ mA}.$
- (2) $I_F = 1 \text{ mA}$
- (3) $I_F = 0.5 \text{ mA}$

Diode inserted in series with a 50 $\,\Omega$ stripline circuit and biased via the analyzer Tee network. T $_{amb}$ = 25 $^{\circ}C$.

Fig.4 Insertion loss $(|s_{21}|^2)$ 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 $^{\circ}C.$

Fig.5 Isolation ($|s_{21}|^2$) of the diode as a function of frequency; typical values.

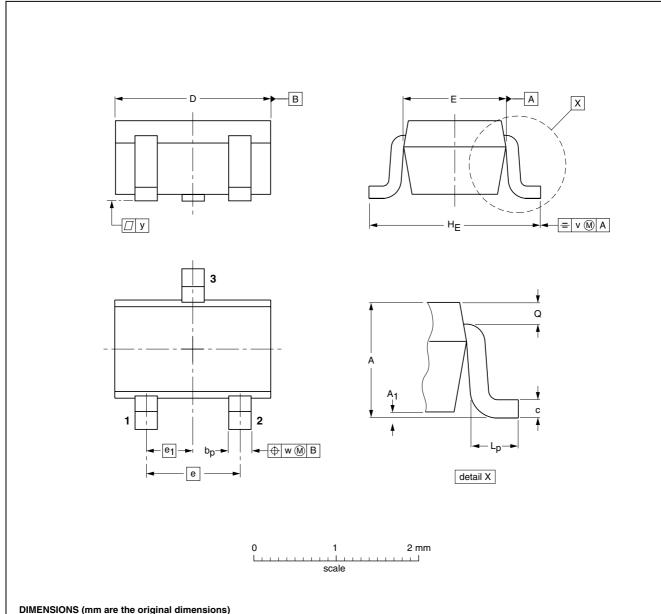
General purpose PIN diode

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



DIMENSIONS	(mm are	the original	dimensions)

ı	JNIT	A	A ₁ max	bp	С	D	E	е	e ₁	HE	Lp	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		REFER	REFERENCES EUROPEAN ISSUE I				REFERENCES			ISSUE DATE
VERSION	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE				
SOT323			SC-70			97-02-28				

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General purpose PIN diode

BAP51-04W

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DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
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