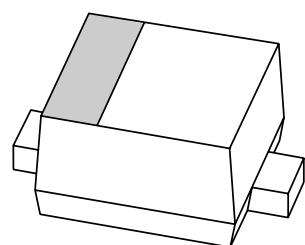


DATA SHEET



BAP63-01 Silicon PIN diode

Preliminary specification

2001 Nov 01

Silicon PIN diode**BAP63-01****FEATURES**

- High speed switching for RF signals
- Low diode capacitance
- Low diode forward resistance
- Very low series inductance
- For applications up to 3 GHz.

APPLICATIONS

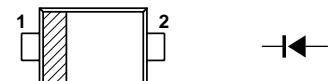
- RF attenuators and switches.

DESCRIPTION

Planar PIN diode in a SOD723A ultra small plastic SMD package.

PINNING

PIN	DESCRIPTION
1	cathode
2	anode



Top view MAM405

Marking code: K5

Fig.1 Simplified outline (SOD723A) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_R	continuous reverse voltage		–	50	V
I_F	continuous forward current		–	100	mA
P_{tot}	total power dissipation	$T_s = 90^\circ\text{C}$	–	315	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–65	+150	°C

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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_F	forward voltage	$I_F = 50 \text{ mA}$	0.95	1.1	V
I_R	reverse leakage current	$V_R = 35 \text{ V}$	—	10	nA
C_d	diode capacitance	$V_R = 0; f = 1 \text{ MHz}$	0.35	—	pF
		$V_R = 1 \text{ V}; f = 1 \text{ MHz}$	0.30	—	pF
		$V_R = 20 \text{ V}; f = 1 \text{ MHz}$	0.24	0.32	pF
r_D	diode forward resistance	$I_F = 0.5 \text{ mA}; f = 100 \text{ MHz}; \text{note 1}$	2.5	3.5	Ω
		$I_F = 1 \text{ mA}; f = 100 \text{ MHz}; \text{note 1}$	1.98	3.0	Ω
		$I_F = 10 \text{ mA}; f = 100 \text{ MHz}; \text{note 1}$	1.2	1.8	Ω
		$I_F = 100 \text{ mA}; f = 100 \text{ MHz}; \text{note 1}$	0.9	1.5	Ω
$ s_{21} ^2$	isolation	$V_R = 0; f = 900 \text{ MHz}$	14.9	—	dB
		$V_R = 0; f = 1800 \text{ MHz}$	9.7	—	dB
		$V_R = 0; f = 2450 \text{ MHz}$	7.8	—	dB
$ s_{21} ^2$	insertion loss	$I_F = 0.5 \text{ mA}; f = 900 \text{ MHz}$	0.22	—	dB
		$I_F = 0.5 \text{ mA}; f = 1800 \text{ MHz}$	0.23	—	dB
		$I_F = 0.5 \text{ mA}; f = 2450 \text{ MHz}$	0.25	—	dB
$ s_{21} ^2$	insertion loss	$I_F = 1 \text{ mA}; f = 900 \text{ MHz}$	0.19	—	dB
		$I_F = 1 \text{ mA}; f = 1800 \text{ MHz}$	0.21	—	dB
		$I_F = 1 \text{ mA}; f = 2450 \text{ MHz}$	0.22	—	dB
$ s_{21} ^2$	insertion loss	$I_F = 10 \text{ mA}; f = 900 \text{ MHz}$	0.15	—	dB
		$I_F = 10 \text{ mA}; f = 1800 \text{ MHz}$	0.17	—	dB
		$I_F = 10 \text{ mA}; f = 2450 \text{ MHz}$	0.19	—	dB
$ s_{21} ^2$	insertion loss	$I_F = 100 \text{ mA}; f = 900 \text{ MHz}$	0.12	—	dB
		$I_F = 100 \text{ mA}; f = 1800 \text{ MHz}$	0.15	—	dB
		$I_F = 100 \text{ mA}; f = 2450 \text{ MHz}$	0.17	—	dB
τ_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 $I_R = 3 \text{ mA}$	0.3	—	μs
L_S	series inductance		0.6	—	nH

Note

- Guaranteed on AQL basis: inspection level S4, AQL 1.0.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th,j-s}$	thermal resistance from junction to soldering point	190	K/W

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GRAPHICAL DATA

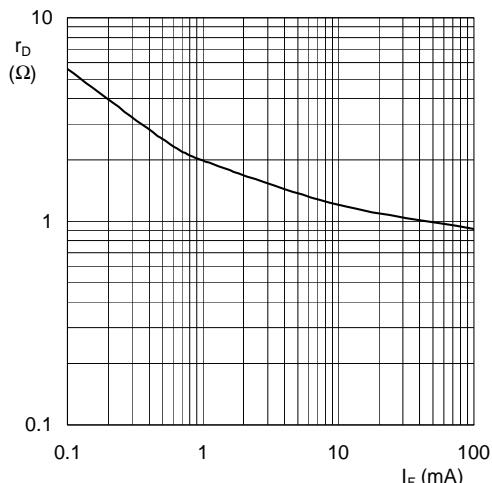
 $f = 100$ MHz; $T_j = 25$ °C.

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

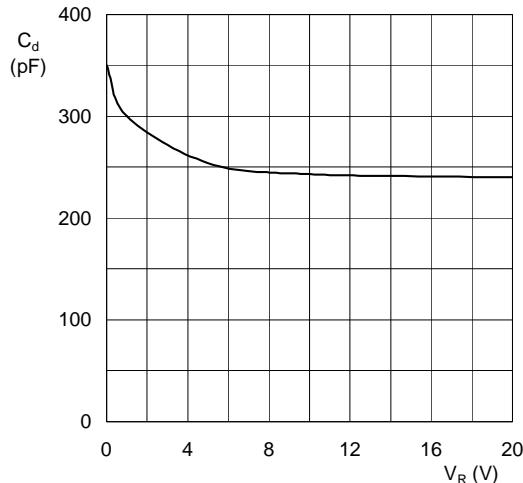
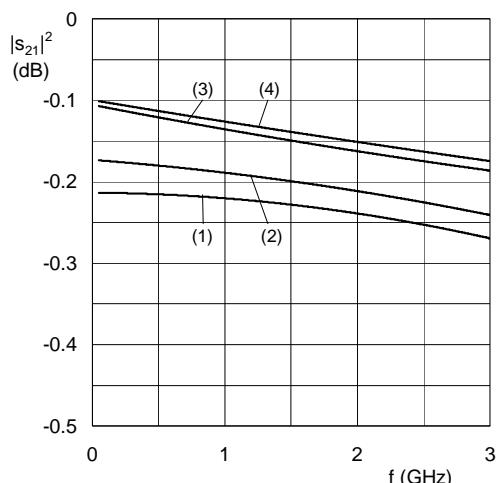
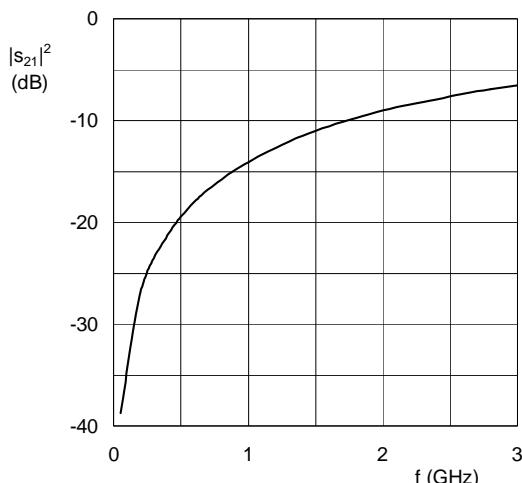
 $f = 1$ MHz; $T_j = 25$ °C.

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



(1) $I_F = 0.5$ mA. (3) $I_F = 10$ mA.
 (2) $I_F = 1$ mA. (4) $I_F = 100$ mA.

Diode inserted in series with a 50Ω stripline circuit and biased via the analyzer Tee network. $T_{amb} = 25$ °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 50Ω stripline circuit. $T_{amb} = 25$ °C.

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

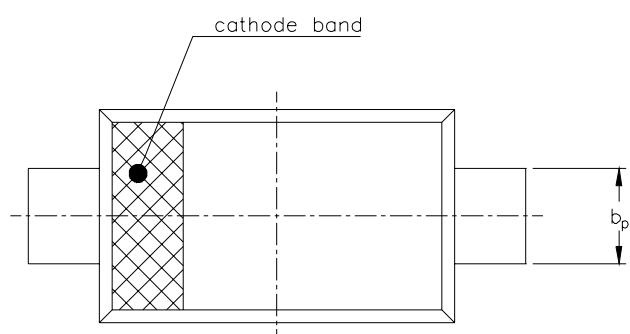
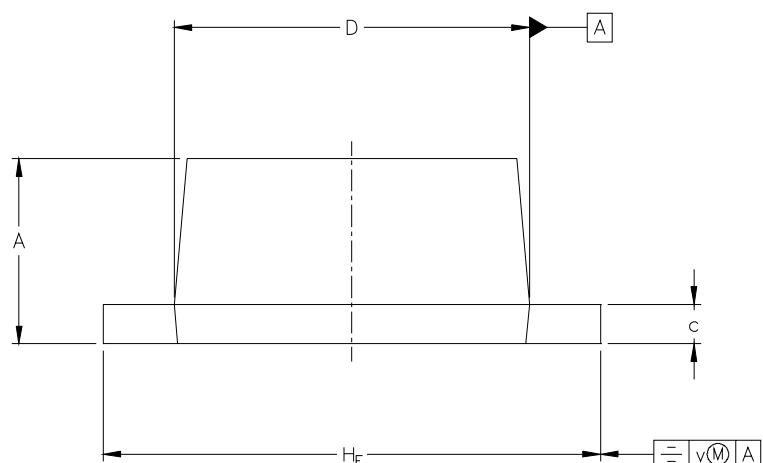
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PACKAGE OUTLINE

SOD723A

Plastic surface mounted package; 2 leads


 Scale


UNIT	A	b_p	c	D	E	H_E	v
mm	0.49 0.55	0.25 0.32	0.08 0.15	0.95 1.05	0.55 0.65	1.35 1.45	0.1

PACKAGE OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
SOD723A PUBLICATION DRAWING	IEC	JEDEC	EIAJ		
<i>UNDER DEVELOPMENT</i>					01-09-06

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