

General purpose PIN diode

BAP50 – 02

FEATURES

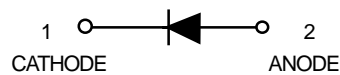
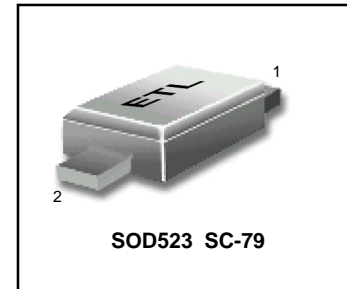
- Low diode capacitance
- Low diode forward resistance.

APPLICATIONS

- General RF applications.

DESCRIPTION

General purpose PIN diode in a SOD523 small SMD plastic package.



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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_R	continuous reverse voltage		–	50	V
I_F	continuous forward current		–	50	mA
P_{tot}	total power dissipation	$T_s=90^\circ\text{C}$	–	715	mW
T_{stg}	storage temperature		-65	+150	$^\circ\text{C}$
T_j	junction temperature		-65	+150	$^\circ\text{C}$

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX.	UNIT
V_F	forward voltage	$I_F=50\text{ mA}$	–	0.95	1.1	V
V_R	reverse voltage	$I_R=10\mu\text{A}$	50	–	–	V
I_R	reverse current	$V_R=50\text{ V}$	–	–	100	nA
C_d	diode capacitance	$V_R=0; f=1\text{ MHz}$	–	0.4	–	pF
		$V_R=1\text{ V}; f=1\text{ MHz}$	–	0.3	0.55	pF
		$V_R=5\text{ V}; f=1\text{ MHz}$	–	0.22	0.35	pF
r_D	diode forward resistance	$I_F=0.5\text{ mA}; f=100\text{ MHz}; \text{note 1}$	–	25	40	Ω
		$I_F=1\text{ mA}; f=100\text{ MHz}; \text{note 1}$	–	14	25	Ω
		$I_F=10\text{ mA}; f=100\text{ MHz}; \text{note 1}$	–	3	5	Ω
$ s_{21} ^2$	isolation	$V_R=0; f=900\text{ MHz}$	–	20.4	–	dB
		$V_R=0; f=1800\text{ MHz}$	–	17.3	–	dB
		$V_R=0; f=2450\text{ MHz}$	–	15.5	–	dB
$ s_{21} ^2$	insertion loss	$I_F=0.5\text{ mA}; f=900\text{ MHz}$	–	1.74	–	dB
		$I_F=0.5\text{ mA}; f=1800\text{ MHz}$	–	1.79	–	dB
		$I_F=0.5\text{ mA}; f=2450\text{ MHz}$	–	1.88	–	dB
$ s_{21} ^2$	insertion loss	$I_F=1\text{ mA}; f=900\text{ MHz}$	–	1.03	–	dB
		$I_F=1\text{ mA}; f=1800\text{ MHz}$	–	1.09	–	dB
		$I_F=1\text{ mA}; f=2450\text{ MHz}$	–	1.15	–	dB
$ s_{21} ^2$	insertion loss	$I_F=10\text{ mA}; f=900\text{ MHz}$	–	0.26	–	dB
		$I_F=10\text{ mA}; f=1800\text{ MHz}$	–	0.32	–	dB
		$I_F=10\text{ mA}; f=2450\text{ MHz}$	–	0.34	–	dB

ELECTRICAL CHARACTERISTICS $T_j = 25^\circ\text{C}$ unless otherwise specified. (Continue)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX.	UNIT
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 $I_R = 3\text{ mA}$	—	1.05	—	μs
L_s	series inductance	$I_F = 100\text{ mA}$; $f = 100\text{ MHz}$	—	0.6	—	nH

Note

1. 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	85	K/W

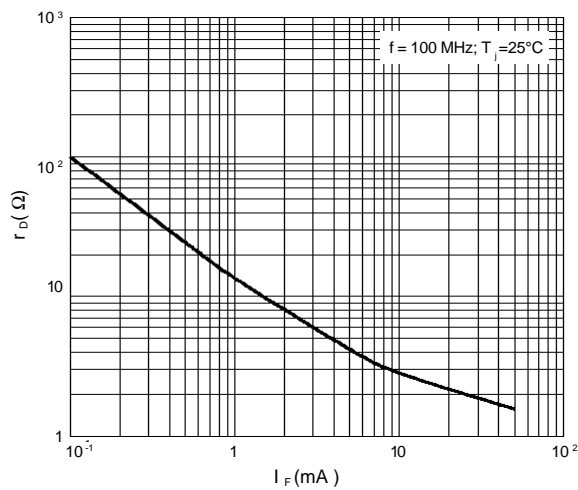


Fig.1 Forward resistance as a function of forward current; typical values.

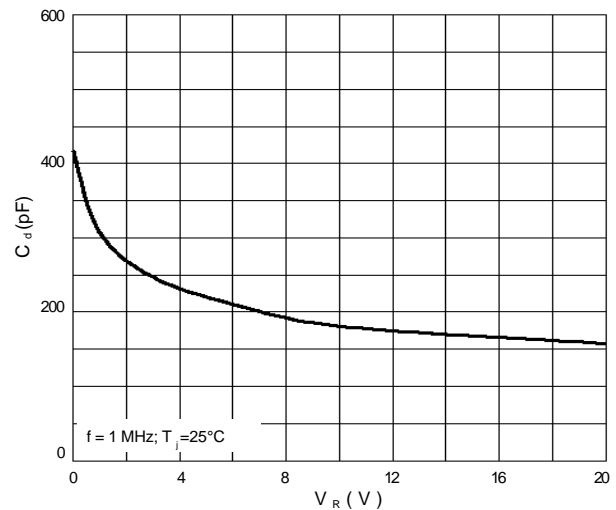


Fig.2 Diode capacitance as a function of reverse voltage; typical values.

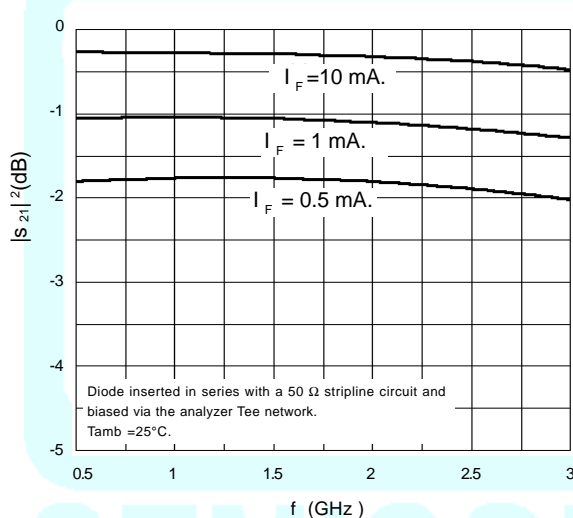


Fig.3 Insertion loss ($|S_{21}|^2$) of the diode in on-state as a function of frequency; typical values.

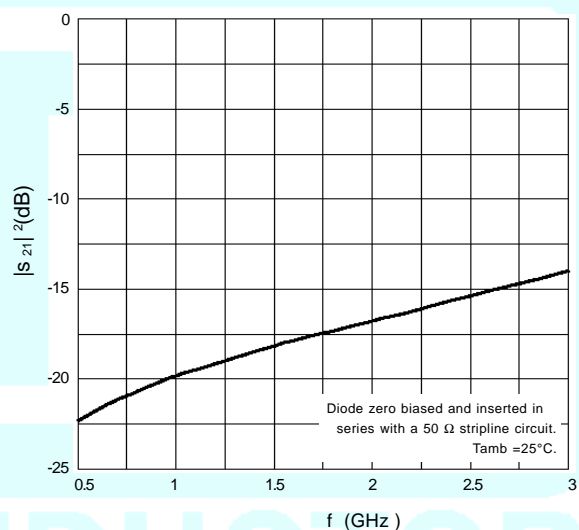


Fig.4 Isolation ($|S_{21}|^2$) of the diode in off-state as a function of frequency; typical values.