

## General purpose PIN diode

**BAP50 – 02**

### FEATURES

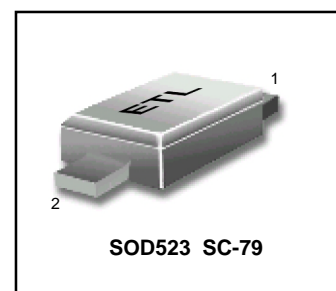
- Low diode capacitance
- Low diode forward resistance.

### 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	$\Omega$
		$I_F=1\text{ mA}; f=100\text{ MHz}; \text{note 1}$	–	14	25	$\Omega$
		$I_F=10\text{ mA}; f=100\text{ MHz}; \text{note 1}$	–	3	5	$\Omega$
$ 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
$\tau_L$	charge carrier life time	when switched from $I_F = 10\text{ mA}$ to $I_R = 6\text{ mA}$ ; $R_L = 100\ \Omega$ ; measured at $I_R = 3\text{ mA}$	—	1.05	—	$\mu\text{s}$
$L_s$	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

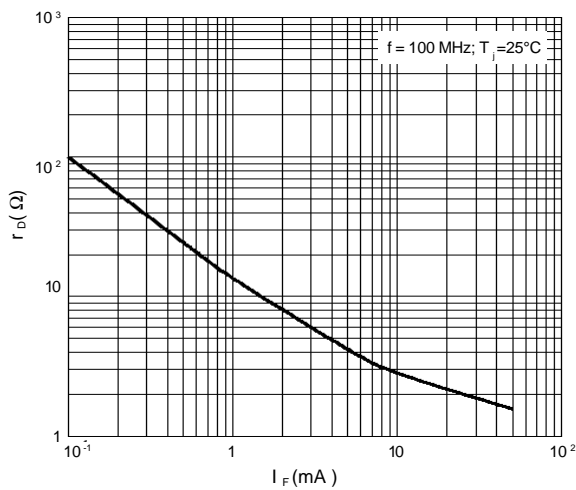


Fig.1 Forward resistance as a function of forward current; typical values.

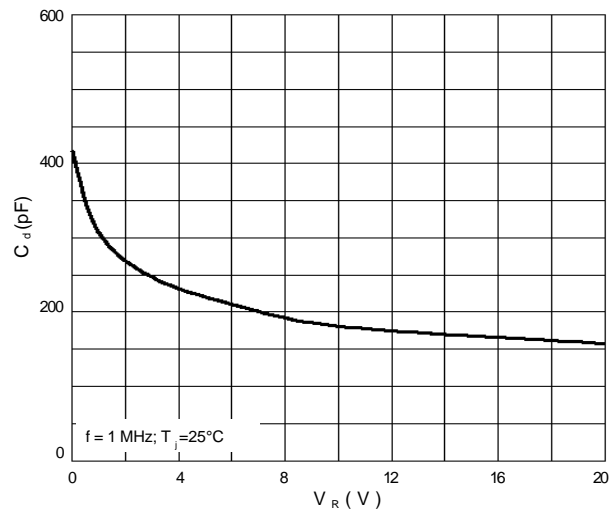


Fig.2 Diode capacitance as a function of reverse voltage; typical values.

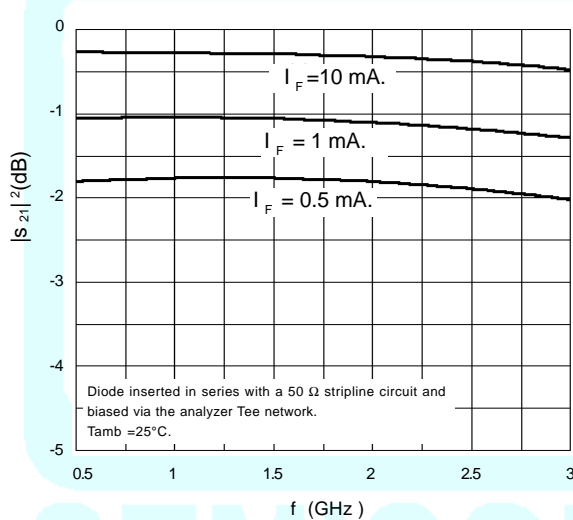


Fig.3 Insertion loss ( $|S_{21}|^2$ ) of the diode in on-state as a function of frequency; typical values.

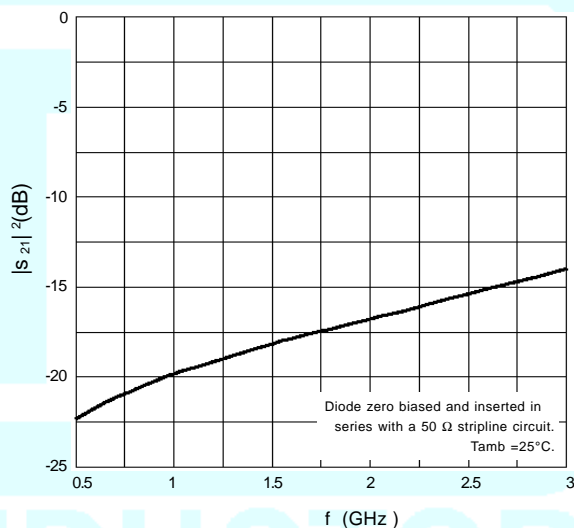


Fig.4 Isolation ( $|S_{21}|^2$ ) of the diode in off-state as a function of frequency; typical values.