General purpose PIN diode

BAP50 – 02

FEATURES

· Low diode capacitance

· Low diode forward resistance.

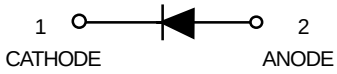
APPLICATIONS

· General RF applications.

DESCRIPTION

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

SOD523 SC-79



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°C	–	715	mW
T_{stg}	storage temperature		-65	+150	°C
T_j	junction temperature		-65	+150	°C

ELECTRICAL CHARACTERISTICS T_j = 25°C unless otherwise specified.

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

BAP50-02

ELECTRICAL CHARACTERISTICS T_j = 25°C unless otherwise specified. (Continue)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX.	UNIT
τ_L	charge carrier life time	when switched from I_F=10 mA to I_R = 6 mA; R_L = 100 Ω; measured at I_R=3 mA	–	1.05	–	µs
L_S	series inductance	I_F = 100 mA; f = 100 MHz	–	0.6	–	nH

Note

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

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering-point	85	K/W

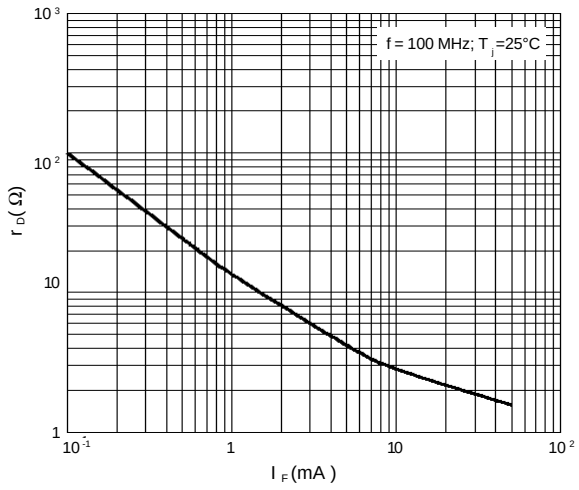


Fig.1 Forward resistance as a function of forward current; typical values.

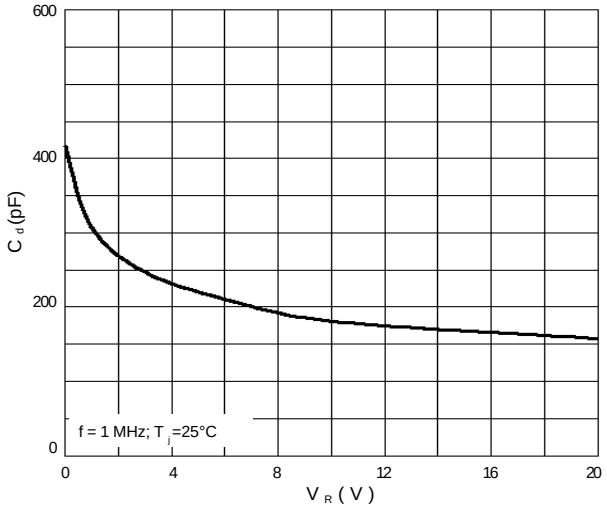


Fig.2 Diode capacitance as a function of reverse voltage; typical values.

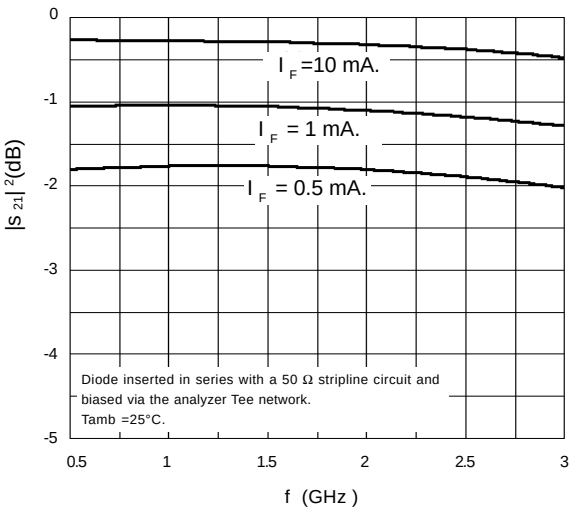


Fig.3 Insertion loss ($|s_{21}|^2$)of the diode in on-state as a function of frequency; typical values.

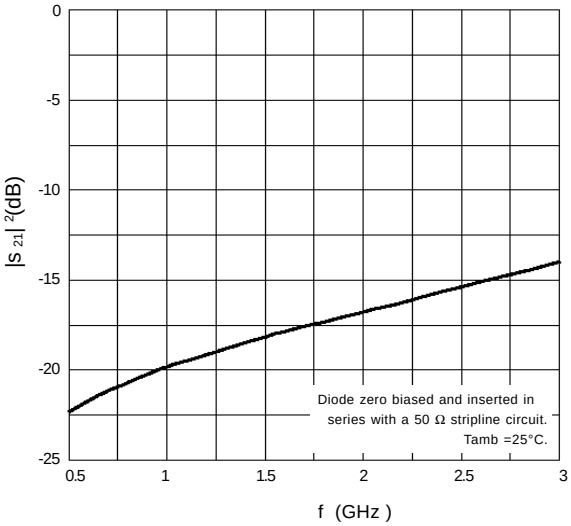


Fig.4 Isolation ($|s_{21}|^2$) of the diode in off-state as a function of frequency; typical values.