ETL SEMICONDUCTOR

Silicon PIN diode

BAP63 – 03

FEATURES

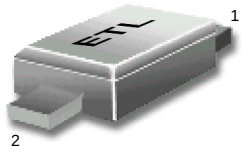
- High speed switching for RF signals
- Low diode capacitance
- Low diode forward resistance
- Very low series inductance
- For applications up to 3 GHz.

APPLICATIONS

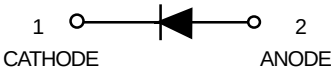
- RF attenuators and switches.

DESCRIPTION

Planar PIN diode in a SOD323 small SMD plastic package.



SOD523 SC-79



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	$T_s \leq 90°C$	–	500	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	TYP.	MAX.	UNIT
V_F	forward voltage	I_F=50 mA	0.95	1.1	V
I_R	reverse current	V_R=35 V	–	10	nA
C_d	diode capacitance	V_R = 0; f = 1 MHz	0.4	–	pF
		V_R = 1 V; f = 1 MHz	0.35	–	pF
		V_R = 20 V; f = 1 MHz	0.27	0.32	pF
r_D	diode forward resistance	I_F = 0.5 mA; f = 100 MHz; note 1	2.5	3.5	Ω
		I_F = 1 mA; f = 100 MHz; note 1	1.95	3	Ω
		I_F = 10 mA; f = 100 MHz; note 1	1.17	1.8	Ω
		I_F = 100 mA; f = 100 MHz; note 1	0.9	1.5	Ω
$\|s_{21}\|^2$	isolation	V_R = 0; f = 900 MHz	15.4	–	dB
		V_R = 0; f = 1800 MHz	10.1	–	dB
		V_R = 0; f = 2450 MHz	7.8	–	dB
$\|s_{21}\|^2$	insertion loss	I_F = 0.5 mA; f = 900 MHz	0.21	–	dB
		I_F = 0.5 mA; f = 1800 MHz	0.28	–	dB
		I_F = 0.5 mA; f = 2450 MHz	0.38	–	dB
$\|s_{21}\|^2$	insertion loss	I_F = 1 mA; f = 900 MHz	0.18	–	dB
		I_F = 1 mA; f = 1800 MHz	0.26	–	dB
		I_F = 1 mA; f = 2450 MHz	0.35	–	dB
$\|s_{21}\|^2$	insertion loss	I_F = 10 mA; f = 900 MHz	0.13	–	dB
		I_F = 10 mA; f = 1800 MHz	0.20	–	dB
		I_F = 10 mA; f = 2450 MHz	0.30	–	dB
$\|s_{21}\|^2$	insertion loss	I_F = 100 mA; f = 900 MHz	0.10	–	dB
		I_F = 100mA; f = 1800 MHz	0.18	–	dB
		I_F = 100 mA; f = 2450 MHz	0.28	–	dB

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

SYMBOL	PARAMETER	CONDITIONS	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	310	–	ns
L_S	series inductance		1.5	–	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	120	K/W

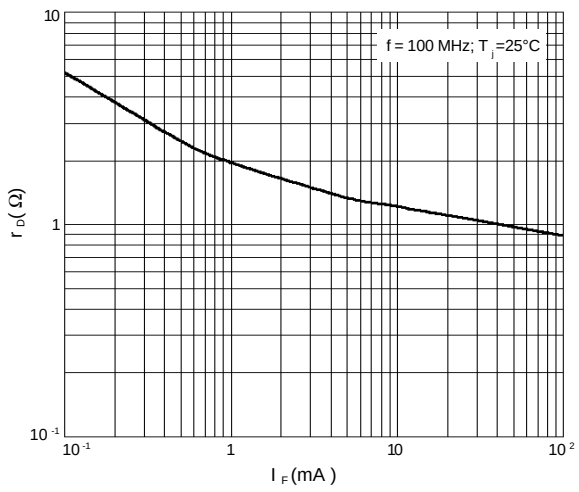


Fig.1 Forward resistance as a function of forward current; typical values.

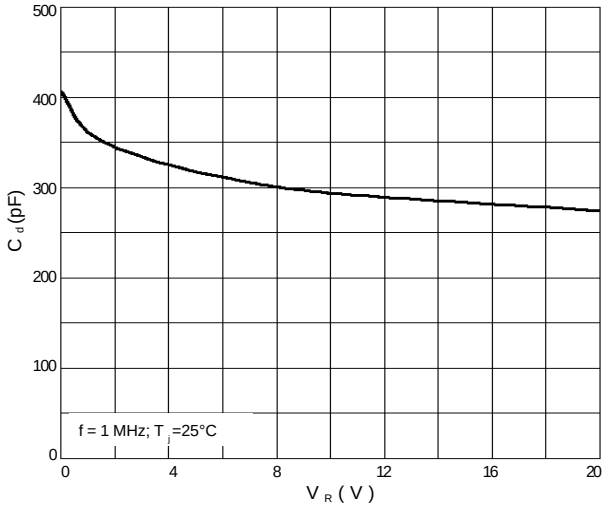


Fig.2 Diode capacitance as a function of reverse voltage; typical values.

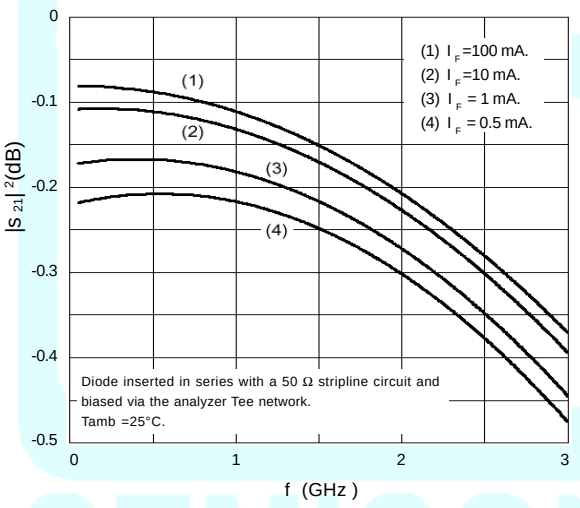


Fig.3 Insertion loss ($|s_{21}|^2$)of the diode in on-state as a function of frequency; typical values.

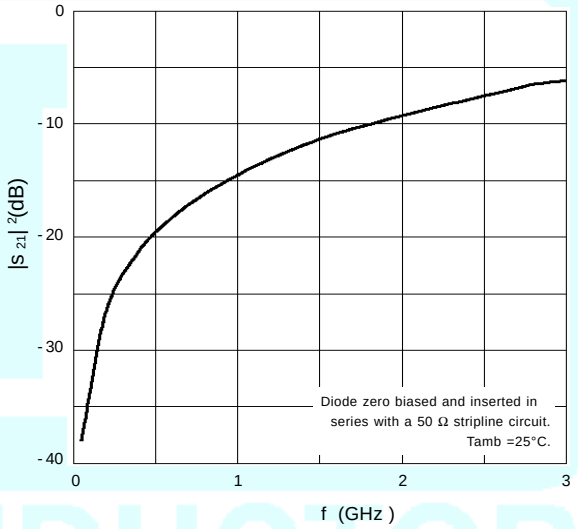


Fig.4 Isolation ($|s_{21}|^2$) of the diode in off-state as a function of frequency; typical values.