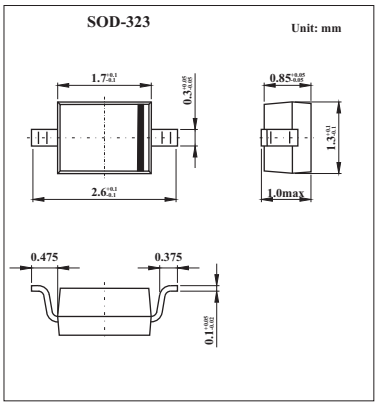
General Purpose PIN Diode

BAP63-03



■ Features

- High speed switching for RF signals
- Low diode capacitance
- Low diode forward resistance
- Very low series inductance

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Continuous reverse voltage	V_R	50	V
Continuous forward current	I_F	100	mA
Total power dissipation Ts = 90℃	P_{tot}	500	mW
Storage temperature	T_{stg}	-65 to +150	℃
Junction temperature	T_j	150	℃
Thermal resistance from junction to soldering point	$R_{th(j-s)}$	120	℃/W

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test conditons	Min	Typ	Max	Unit
Forward voltage	V_F	I_F = 50 mA		0.95	1.1	V
Reverse voltage	V_R	I_R = 10 μA	50			V
Reverse current	I_R	V_R = 35 V			10	nA
Diode capacitance	Cd	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
Diode forward resistance	r_D	I_F = 0.5 mA; f = 100 MHz		2.5	3.5	Ω
		I_F = 1 mA; f = 100 MHz		1.95	3	Ω
		I_F = 10 mA; f = 100 MHz		1.17	1.8	Ω
		I_F = 100 mA; f = 100 MHz		0.95	1.5	Ω
isolation	$\|S_{21}\|^2$	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
insertion loss	$\|S_{21}\|^2$	V_R = 0.5mA; f = 900 MHz		0.21		dB
		V_R = 0.5mA; f = 1800 MHz		0.28		dB
		V_R = 0.5mA; f = 2450 MHz		0.38		dB
insertion loss	$\|S_{21}\|^2$	V_R = 1mA; f = 900 MHz		0.18		dB
		V_R = 1mA; f = 1800 MHz		0.26		dB
		V_R = 1mA; f = 2450 MHz		0.35		dB
insertion loss	$\|S_{21}\|^2$	V_R = 10mA; f = 900 MHz		0.13		dB
		V_R = 10mA; f = 1800 MHz		0.20		dB
		V_R = 10mA; f = 2450 MHz		0.30		dB
insertion loss	$\|S_{21}\|^2$	V_R = 100mA; f = 900 MHz		0.10		dB
		V_R = 100mA; f = 1800 MHz		0.18		dB
		V_R = 100mA; f = 2450 MHz		0.28		dB
charge carrier life time	τ_L	When switched from I_F = 10 mA to I_R = 6 mA; R_L = 100 Ω; measured at I_R = 3 mA		310		ns
series inductance	L_S			1.5		nH

■ Marking

Marking	D2

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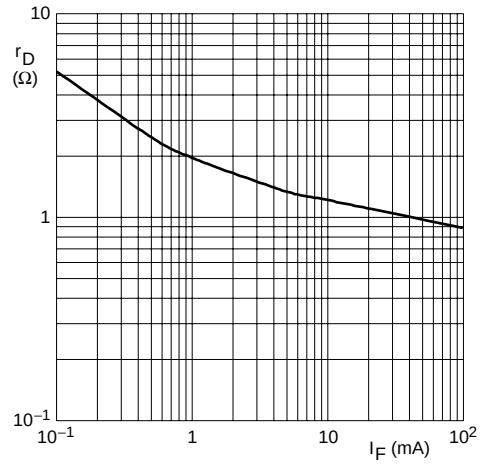
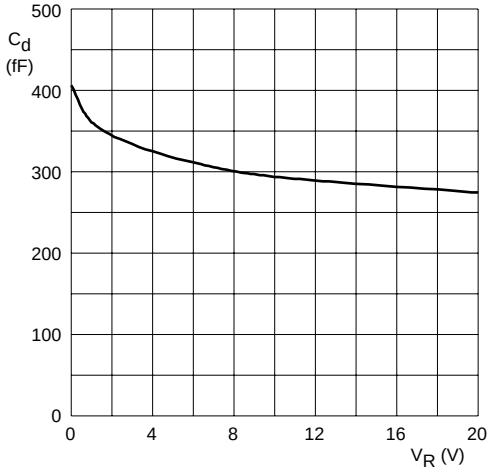
■ Typical Characteristics



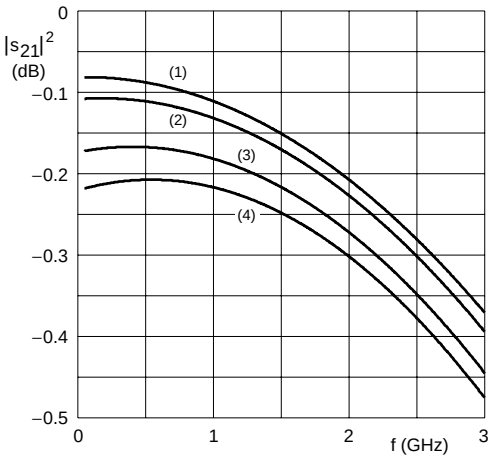
T_j = 25 °C; f = 100 MHz.

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



T_j = 25 °C; f = 1 MHz.

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

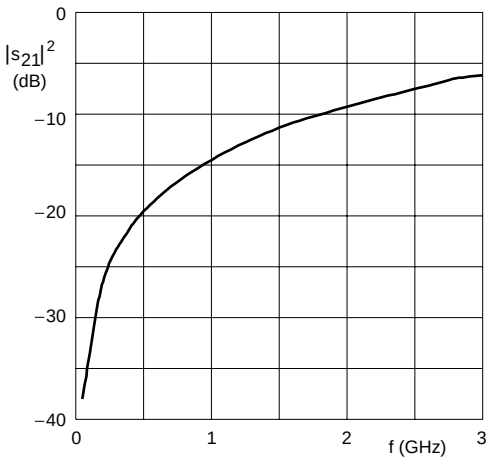


(1) I_F = 100 mA.
(2) I_F = 10 mA.
(3) I_F = 1 mA.
(4) I_F = 0.5 mA.

Diode inserted in series with a 50 Ω stripline circuit and biased via the analyzer Tee network.

T_{amb} = 25 °C.

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



Diode zero biased and inserted in series with a 50 Ω stripline circuit.

T_{amb} = 25 °C.

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