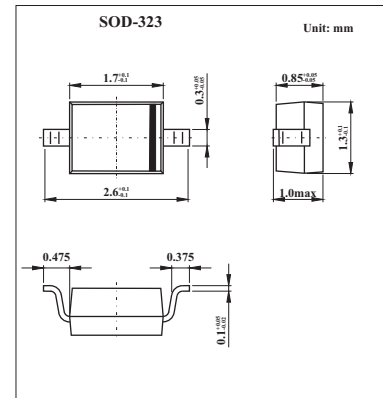


General Purpose PIN Diode

BAP1321-03

■ Features

- High voltage, current controlled
- RF resistor for RF attenuators and switches
- Low diode capacitance
- Low diode forward resistance
- Very low series inductance
- For applications up to 3 GHz.



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Continuous reverse voltage	V_R	60	V
Continuous forward current	I_F	100	mA
Total power dissipation $T_s = 90^\circ\text{C}$	P_{tot}	500	mW
Storage temperature	T_{stg}	-65 to +150	$^\circ\text{C}$
Junction temperature	T_j	150	$^\circ\text{C}$
Thermal resistance from junction to soldering point	$R_{th(j-s)}$	120	$^\circ\text{C/W}$

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■ Electrical Characteristics Ta = 25°C

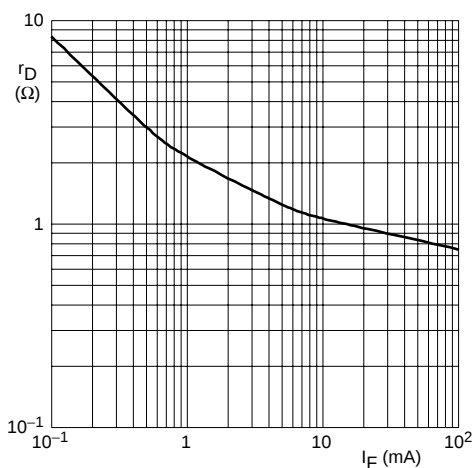
Parameter	Symbol	Test conditons	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 50 \text{ mA}$		0.95	1.1	V
Reverse current	I_R	$V_R = 60 \text{ V}$			100	nA
Diode capacitance	C_d	$V_R = 0; f = 1 \text{ MHz}$		0.4		pF
		$V_R = 1 \text{ V}; f = 1 \text{ MHz}$		0.35	0.45	pF
		$V_R = 20 \text{ V}; f = 1 \text{ MHz}$		0.25	0.32	pF
Diode forward resistance	r_D	$I_F = 0.5 \text{ mA}; f = 100 \text{ MHz}$		3.4	5	Ω
		$I_F = 1 \text{ mA}; f = 100 \text{ MHz}$		2.4	3.6	Ω
		$I_F = 10 \text{ mA}; f = 100 \text{ MHz}$		1.2	1.8	Ω
		$I_F = 100 \text{ mA}; f = 100 \text{ MHz}$		0.85	1.3	Ω
isolation	$ S_{21} ^2$	$V_R = 0; f = 900 \text{ MHz}$		16.6		dB
		$V_R = 0; f = 1800 \text{ MHz}$		11.6		dB
		$V_R = 0; f = 2450 \text{ MHz}$		9.2		dB
insertion loss	$ S_{21} ^2$	$V_R = 0.5 \text{ mA}; f = 900 \text{ MHz}$		0.26		dB
		$V_R = 0.5 \text{ mA}; f = 1800 \text{ MHz}$		0.35		dB
		$V_R = 0.5 \text{ mA}; f = 2450 \text{ MHz}$		0.44		dB
insertion loss	$ S_{21} ^2$	$V_R = 1 \text{ mA}; f = 900 \text{ MHz}$		0.2		dB
		$V_R = 1 \text{ mA}; f = 1800 \text{ MHz}$		0.29		dB
		$V_R = 1 \text{ mA}; f = 2450 \text{ MHz}$		0.38		dB
insertion loss	$ S_{21} ^2$	$V_R = 10 \text{ mA}; f = 900 \text{ MHz}$		0.13		dB
		$V_R = 10 \text{ mA}; f = 1800 \text{ MHz}$		0.22		dB
		$V_R = 10 \text{ mA}; f = 2450 \text{ MHz}$		0.32		dB
insertion loss	$ S_{21} ^2$	$V_R = 100 \text{ mA}; f = 900 \text{ MHz}$		0.1		dB
		$V_R = 100 \text{ mA}; f = 1800 \text{ MHz}$		0.2		dB
		$V_R = 100 \text{ mA}; f = 2450 \text{ MHz}$		0.29		dB
charge carrier life time	τ_L	When switched from $I_F = 10 \text{ mA}$ to $I_R = 6 \text{ mA}$; $R_L = 100 \Omega$; measured at $I_R = 3 \text{ mA}$		0.5		μs
series inductance	L_s	$I_F = 100 \text{ mA}; f = 100 \text{ MHz}$		1.5		nH

■ Marking

Marking	V8
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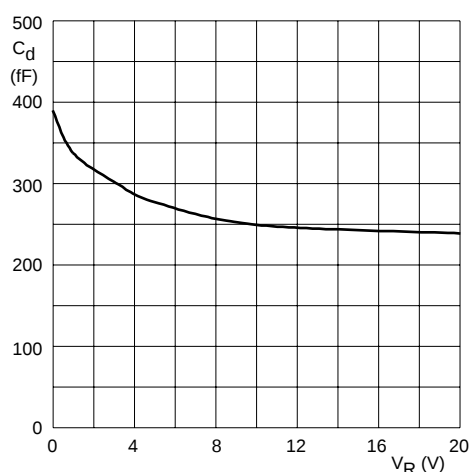
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■ Typical Characteristics



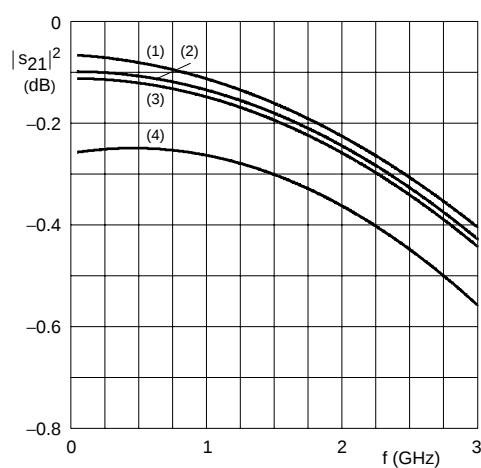
$T_j = 25^\circ\text{C}$; $f = 100\text{ MHz}$.

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



$T_j = 25^\circ\text{C}$; $f = 1\text{ MHz}$.

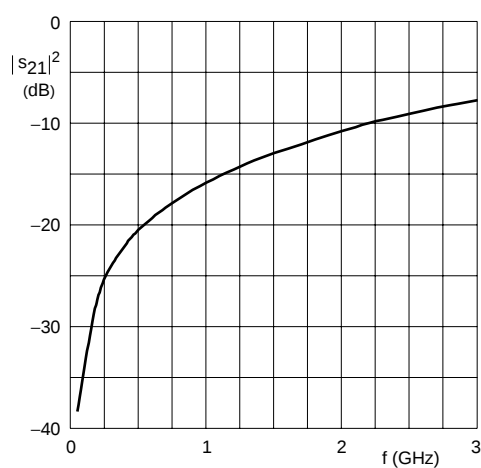
Fig.2 Diode capacitance as a function of reverse voltage; typical values.



- (1) $I_F = 100\text{ mA}$. (3) $I_F = 1\text{ mA}$.
 (2) $I_F = 10\text{ mA}$. (4) $I_F = 0.5\text{ mA}$.

Diode inserted in series with a $50\ \Omega$ stripline circuit and biased via the analyzer Tee network.
 $T_{\text{amb}} = 25^\circ\text{C}$.

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 $50\ \Omega$ stripline circuit.
 $T_{\text{amb}} = 25^\circ\text{C}$.

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