

isc Silicon NPN RF Transistor

2SC4901

DESCRIPTION

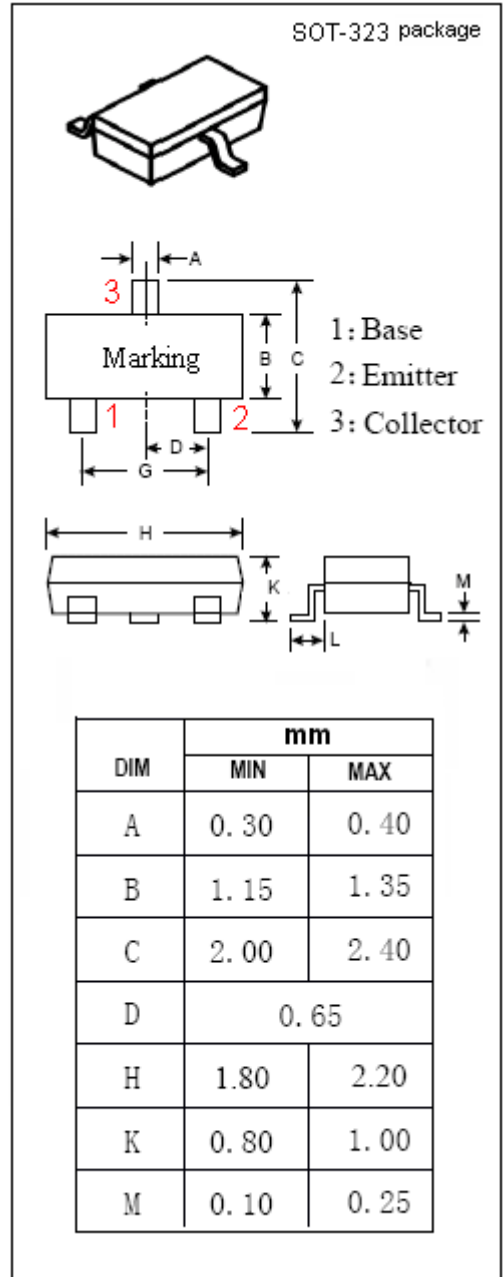
- High Gain Bandwidth Product
 $f_T = 9 \text{ GHz TYP.}$
- High gain, low noise figure
 $PG = 13.0 \text{ dB TYP., NF} = 1.2 \text{ dB TYP. @ } f = 900 \text{ MHz}$

APPLICATIONS

- Designed for VHF, UHF wide band amplifier.

ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ\text{C}$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	15	V
V_{CEO}	Collector-Emitter Voltage	9	V
V_{EBO}	Emitter-Base Voltage	1.5	V
I_C	Collector Current-Continuous	50	mA
P_C	Collector Power Dissipation @ $T_c=25^\circ\text{C}$	0.1	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-55~150	$^\circ\text{C}$



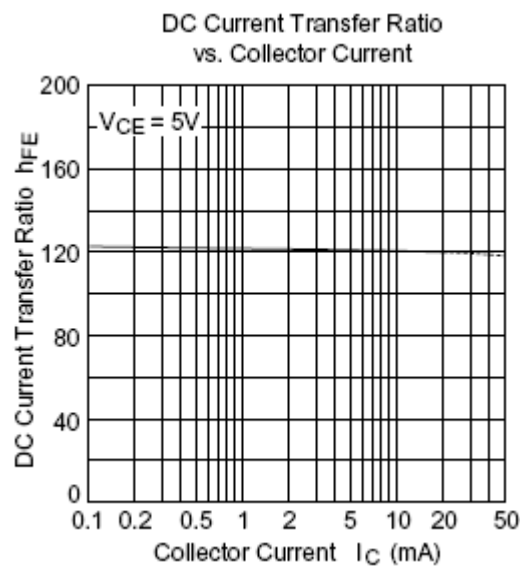
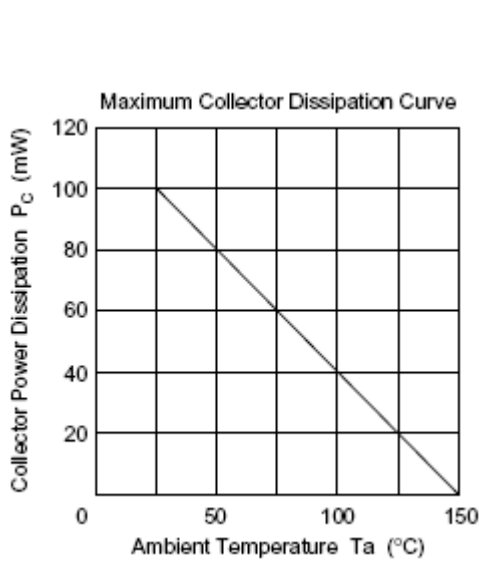
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ELECTRICAL CHARACTERISTICS

T_C=25°C unless otherwise specified

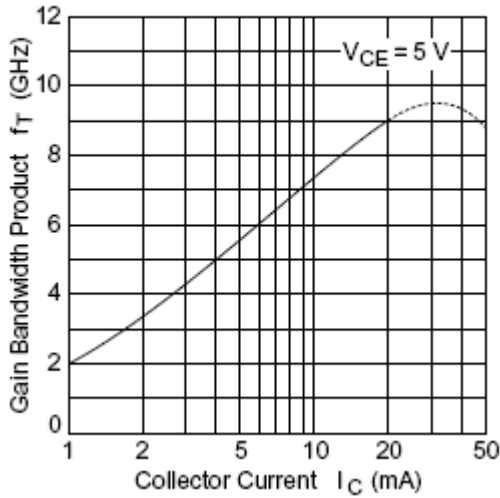
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{(BR)CBO}	Collector-Base Breakdown Voltage	I _C = 10 μ A ; I _E = 0	15			V
I _{CBO}	Collector Cutoff Current	V _{CB} = 12V; I _E = 0			10	μ A
I _{CEO}	Collector Cutoff Current	V _{CE} = 9V; R _{BE} = ∞			1.0	mA
I _{EBO}	Emitter Cutoff Current	V _{EB} = 1.5V; I _C = 0			10	μ A
h _{FE}	DC Current Gain	I _C = 20mA ; V _{CE} = 5V	50		250	
f _T	Current-Gain—Bandwidth Product	I _C = 20mA ; V _{CE} = 5V	6.0	9.0		GHz
C _{OB}	Output Capacitance	I _E = 0 ; V _{CB} = 5V; f= 1MHz		0.9	1.4	pF
PG	Power Gain	I _C = 20mA ; V _{CE} = 5V; f= 900MHz	10	13		dB
NF	Noise Figure	I _C = 5mA ; V _{CE} = 5V; f= 900MHz		1.2	2.5	dB



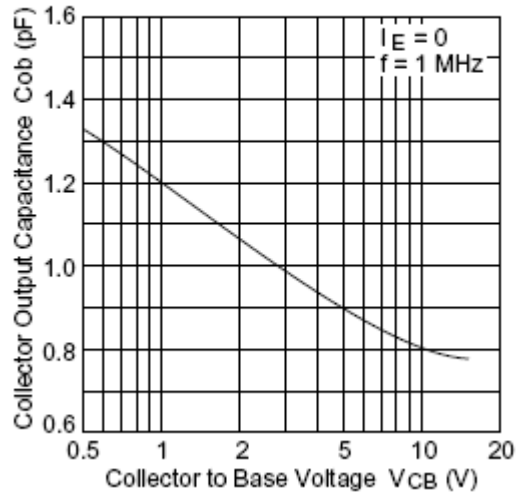
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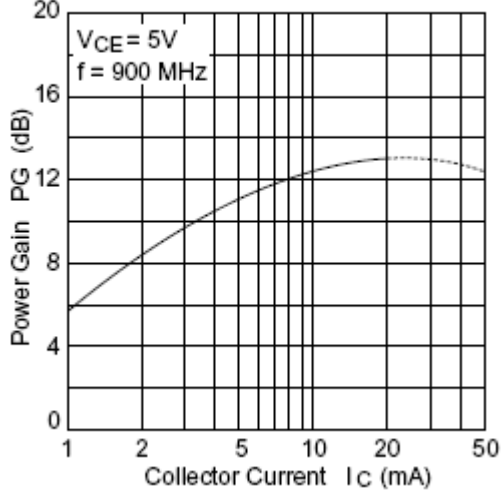
Gain Bandwidth Product vs. Collector Current



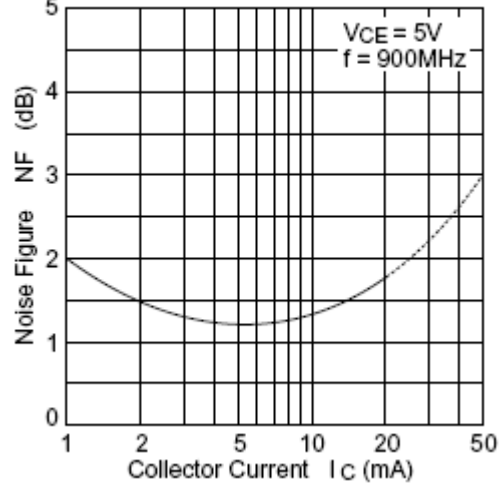
Collector Output Capacitance vs. Collector to Base Voltage



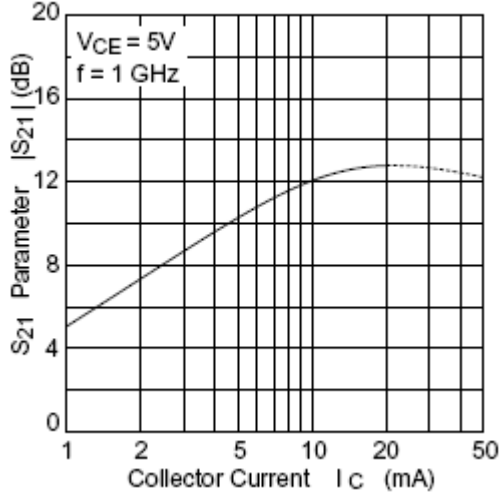
Power Gain vs. Collector Current



Noise Figure vs. Collector Current



S21 Parameter vs. Collector Current

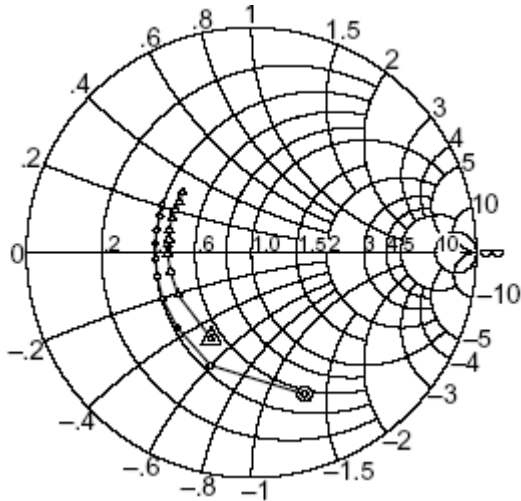


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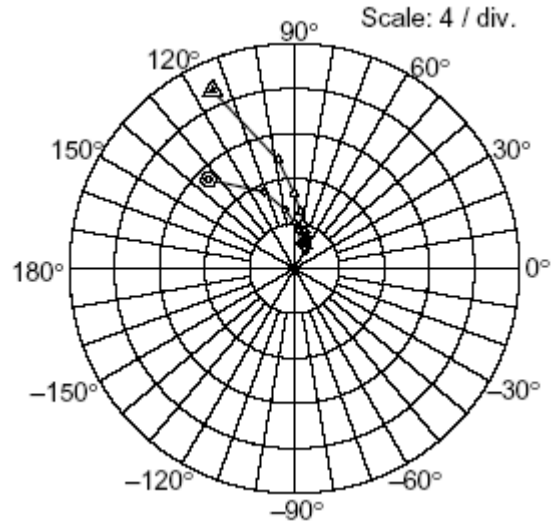
S11 Parameter vs. Frequency
 Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)

⊙—○ ($I_C = 5\text{ mA}$)
 ▲—△ ($I_C = 20\text{ mA}$)



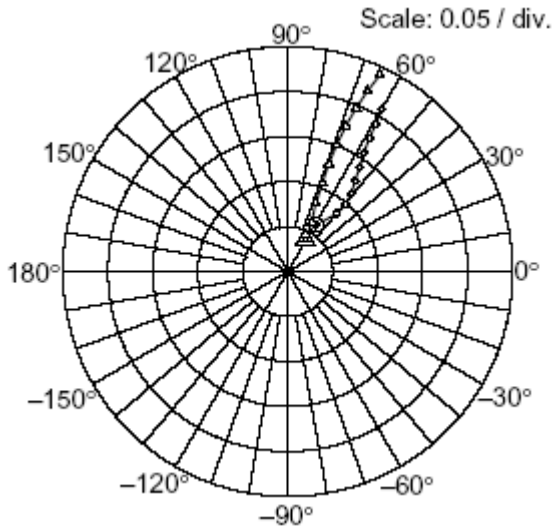
S21 Parameter vs. Frequency
 Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)

⊙—○ ($I_C = 5\text{ mA}$)
 ▲—△ ($I_C = 20\text{ mA}$)



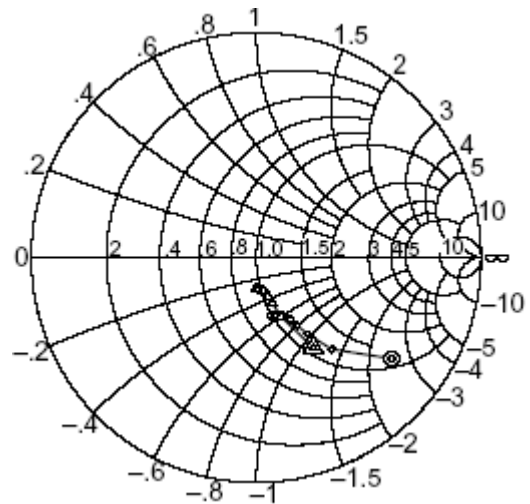
S12 Parameter vs. Frequency
 Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)

⊙—○ ($I_C = 5\text{ mA}$)
 ▲—△ ($I_C = 20\text{ mA}$)



S22 Parameter vs. Frequency
 Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)

⊙—○ ($I_C = 5\text{ mA}$)
 ▲—△ ($I_C = 20\text{ mA}$)



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S-PARAMETER

 $V_{CE} = 5\text{ V}$, $I_C = 5\text{ mA}$, $Z_0 = 50\ \Omega$

Freque.	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.672	-69.4	10.99	134.0	0.0610	58.8	0.752	-26.7
400	0.533	-109.9	7.32	111.5	0.0841	49.9	0.528	-50.5
600	0.469	-134.7	5.28	98.8	0.0989	49.3	0.412	-56.0
800	0.446	-152.3	4.12	90.2	0.112	50.9	0.351	-59.0
1000	0.432	-165.9	3.37	83.2	0.126	53.5	0.316	-61.0
1200	0.427	-176.2	2.88	77.2	0.141	55.5	0.294	-63.3
1400	0.430	174.1	2.52	72.1	0.157	57.4	0.282	-66.0
1600	0.433	166.5	2.26	67.5	0.174	58.6	0.274	-69.1
1800	0.439	158.0	2.04	63.3	0.191	59.2	0.269	-72.0
2000	0.453	151.9	1.88	59.2	0.209	60.0	0.265	-76.0

 $V_{CE} = 5\text{ V}$, $I_C = 20\text{ mA}$, $Z_0 = 50\ \Omega$

Freque.	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.421	-115.2	17.40	114.7	0.0399	50.6	0.474	-57.7
400	0.377	-150.2	9.74	98.5	0.0609	64.2	0.284	-67.2
600	0.370	-167.0	6.68	90.1	0.0822	67.8	0.213	-70.5
800	0.373	-179.1	5.09	84.0	0.105	68.6	0.180	-72.9
1000	0.371	170.6	4.13	79.0	0.128	69.2	0.161	-74.9
1200	0.377	164.9	3.49	74.3	0.151	68.9	0.151	-77.6
1400	0.384	156.9	3.04	70.3	0.174	68.3	0.146	-80.7
1600	0.388	150.7	2.71	66.8	0.197	67.3	0.143	-83.5
1800	0.392	145.3	2.45	63.3	0.219	66.2	0.142	-87.2
2000	0.406	139.0	2.25	59.5	0.241	64.9	0.141	-91.0