HA21005

BS Tuner Use GaAs IC

HITACHI

Rev. 0
September 1993

Application

- GaAs monolithic IC
- BS tuner wide band amplifier

Package Information

Type No.	Package
HA21005	MPAK—4

Features

- Operational in all BS frequency (0.95 to 1.75 GHz)
- Stable input impedance (VSWR = 2 typ)
- Surface mount package

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}*1	11	V
Maximum current	I_t	40	mA
Power dissipation	P_d*2	290	mW
Channel temperature	Tch	125	°C
Storage temperature	Tstg	−55 to +125	°C
Operation temperature	Topr	−10 to +70	°C

Notes: 1. Operation voltage is 8.5 to 9.5V.
2. Tc = 70 °C

Caution

This product uses GaAs. Since dust and fumes from GaAs are highly poisonous to the human body, do not treat the product mechanically or chemically in a manner which might release hazardous substances into the air. It should never be thrown out with general industrial or domestic wastes.

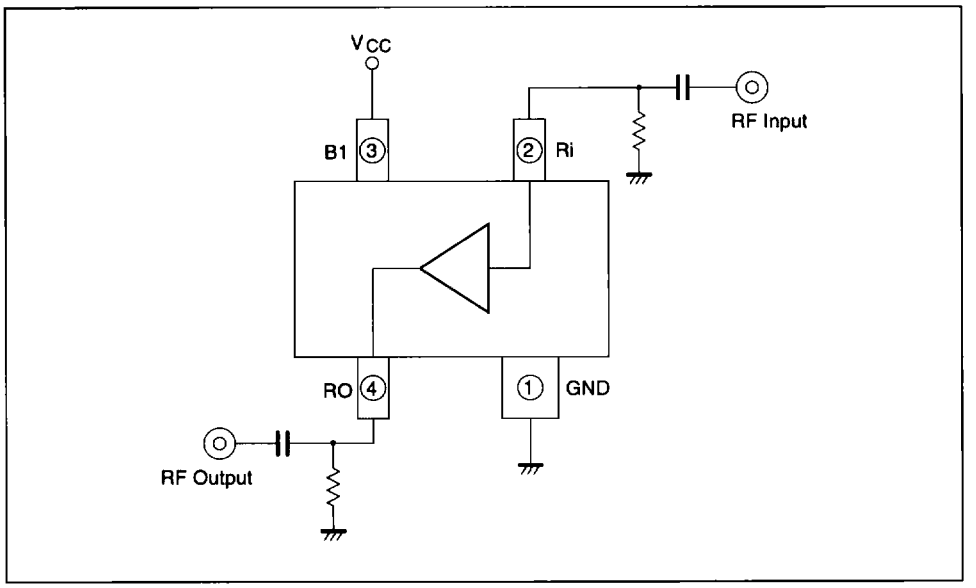
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Quiescent current	I_Q	18	—	32	mA	No signal
Power gain	PG	—	11	—	dB	f = 950 MHz
Noise figure	NF	—	7	—	dB	f = 950 MHz

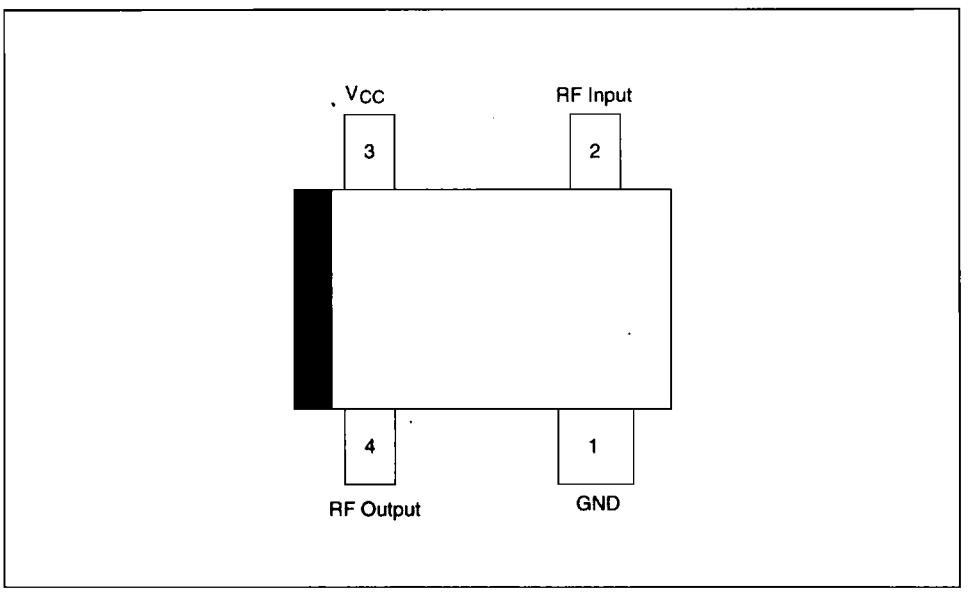
Typical Performance (Ta = 25°C, V_{CC} = 9 V)

Item	Symbol	Typ	Unit	Test Conditions
Power gain	PG	8	dB	f = 1.75 GHz
Noise figure	NF	7	dB	f = 1.75 GHz
3rd order intermodulation	IM3	–50	dB	–25 dBm, 2 RF input
Voltage standing wave ratio	VSWR	2	—	

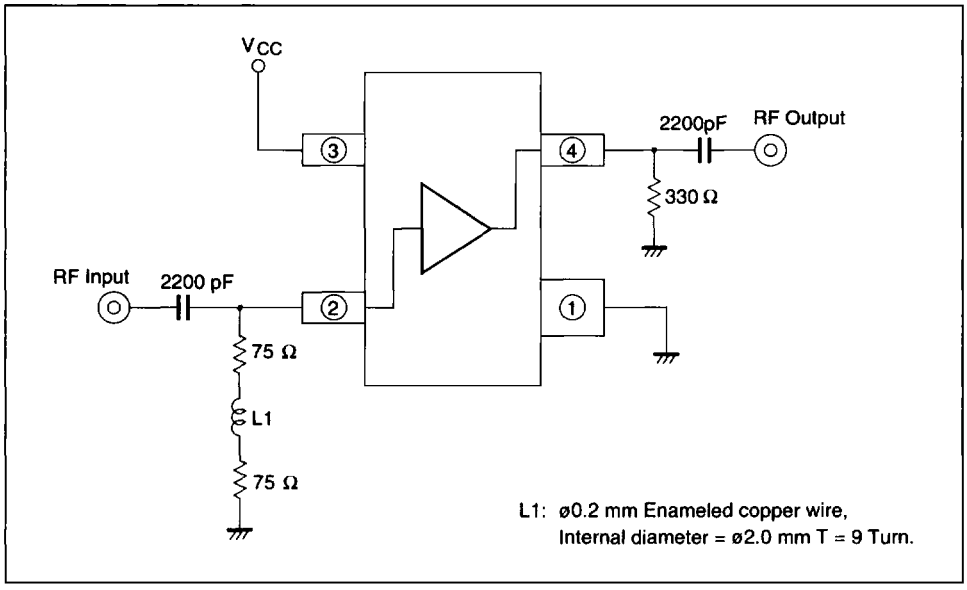
Block Diagram



Pin Arrangement



Test Fixture



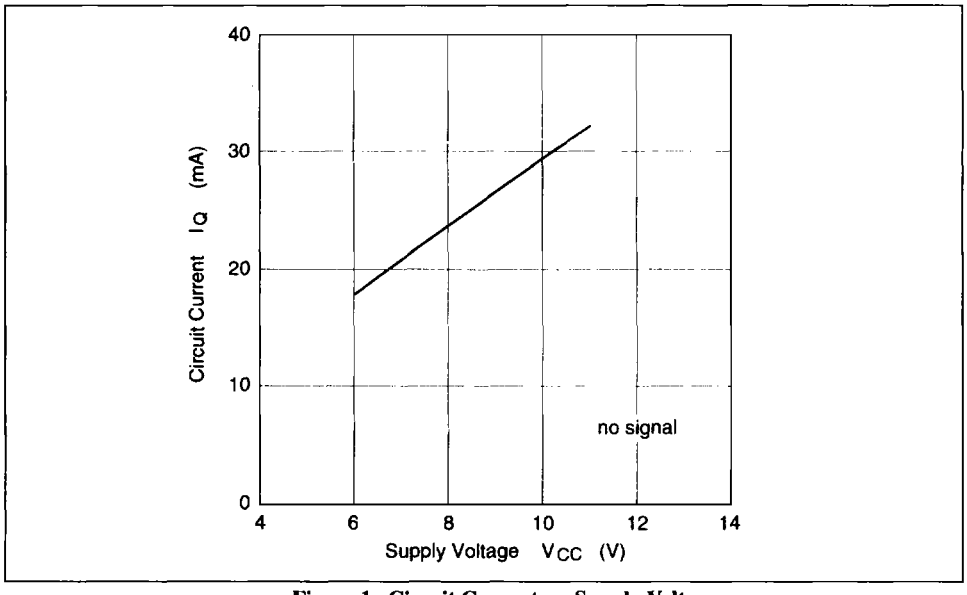


Figure 1 Circuit Current vs. Supply Voltage

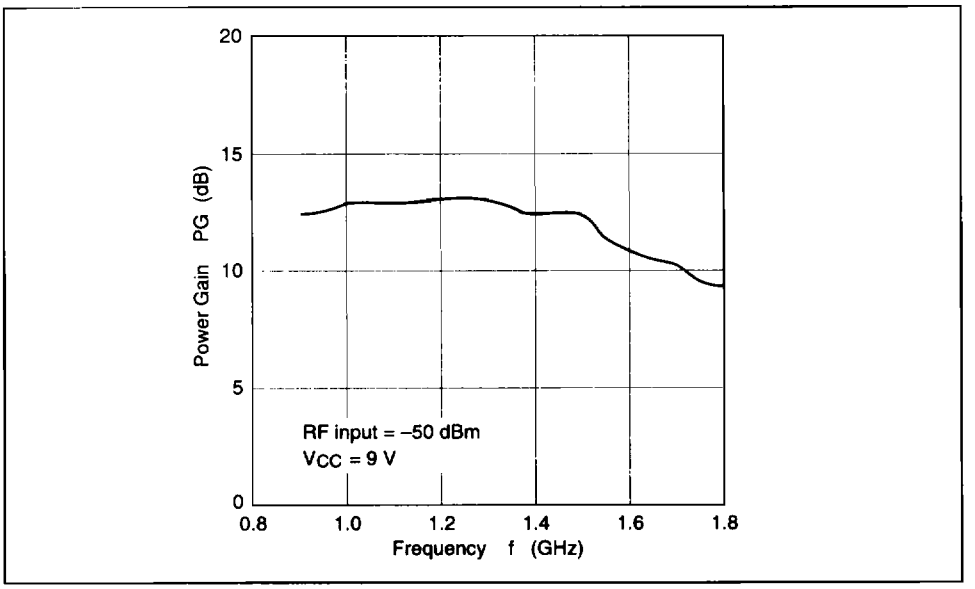


Figure 2 Power gain vs. Frequency

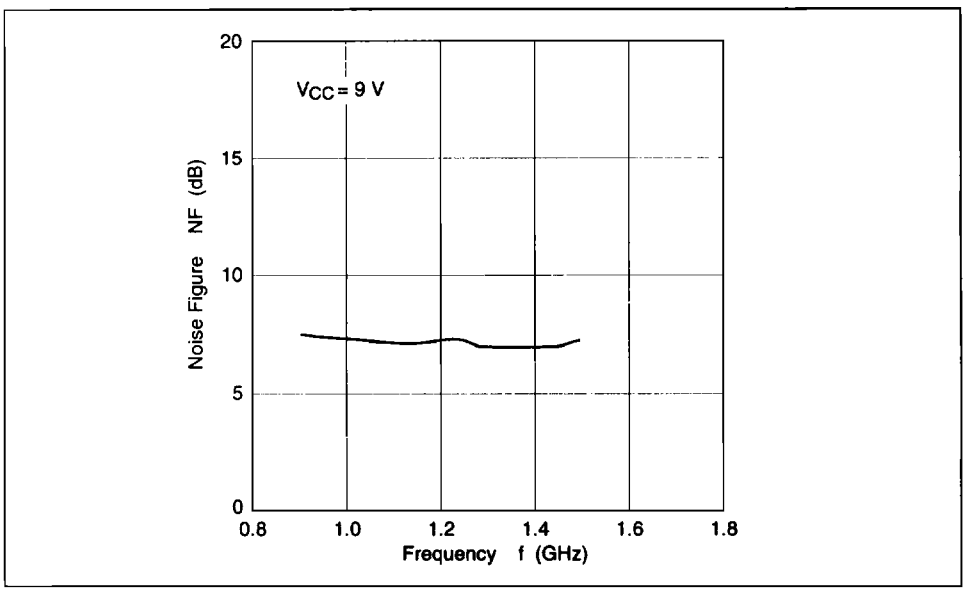


Figure 3 Noise Figure vs. Frequency

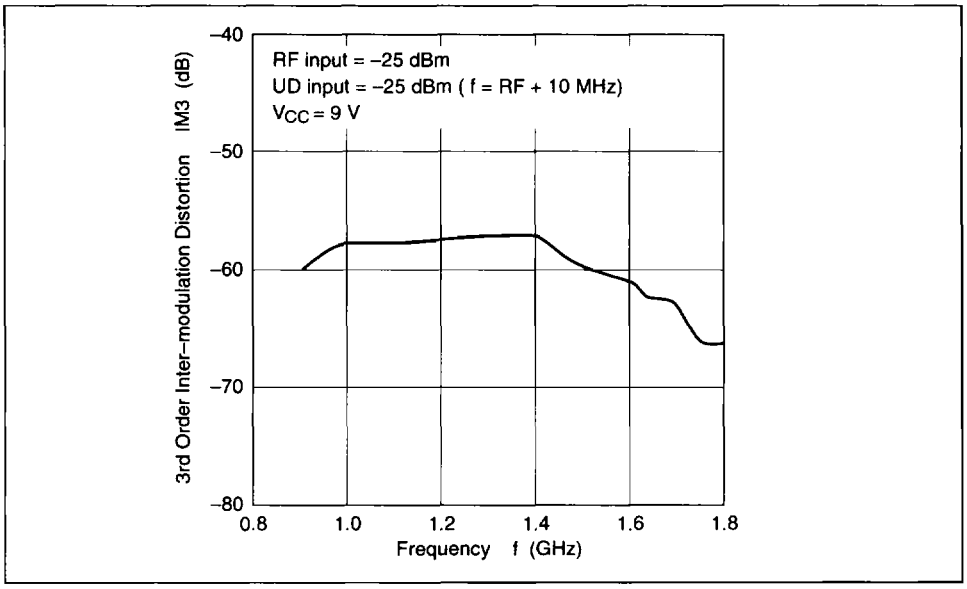


Figure 4 3rd Order Inter Modulation Distortion vs. Frequency

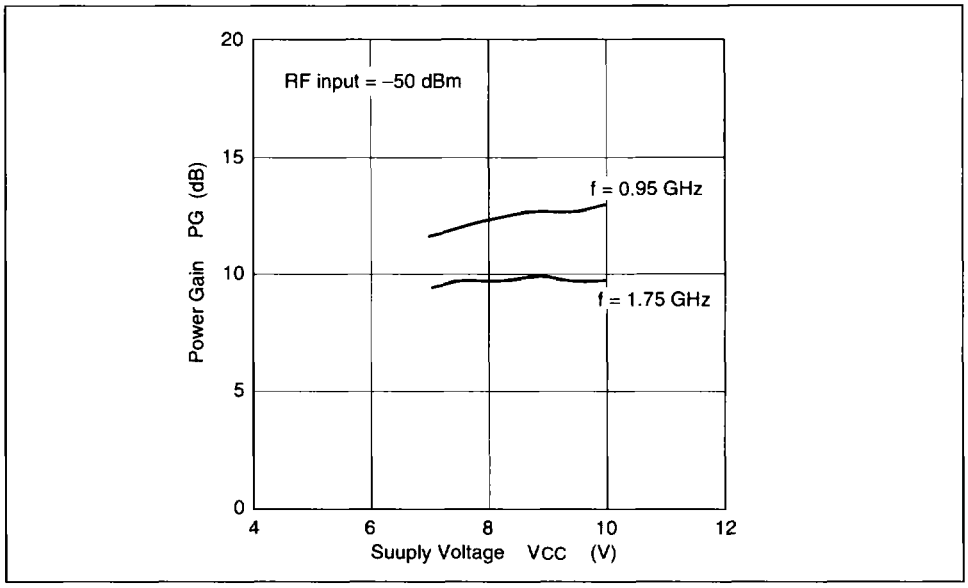


Figure 5 Power gain vs. Supply Voltage

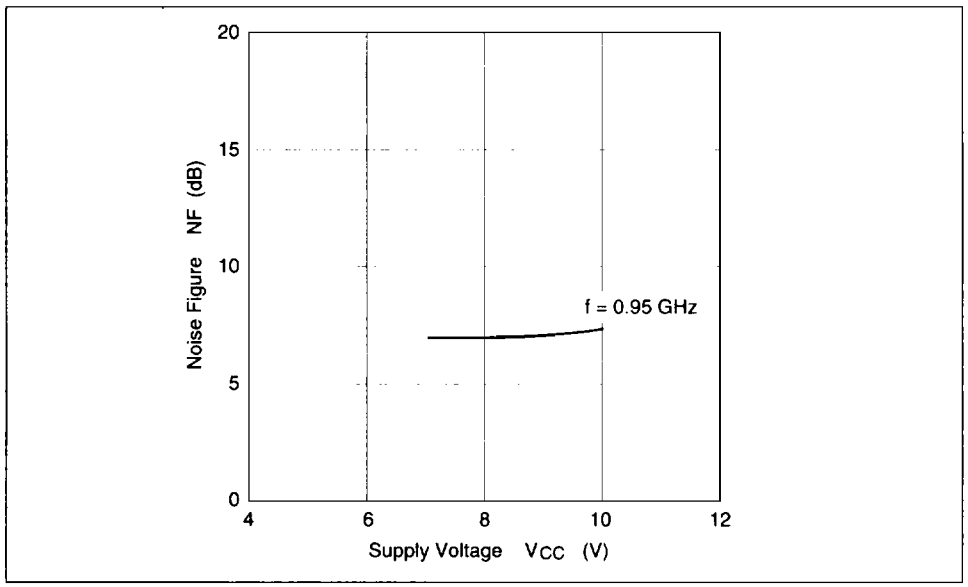


Figure 6 Noise Figure vs. Supply Voltage

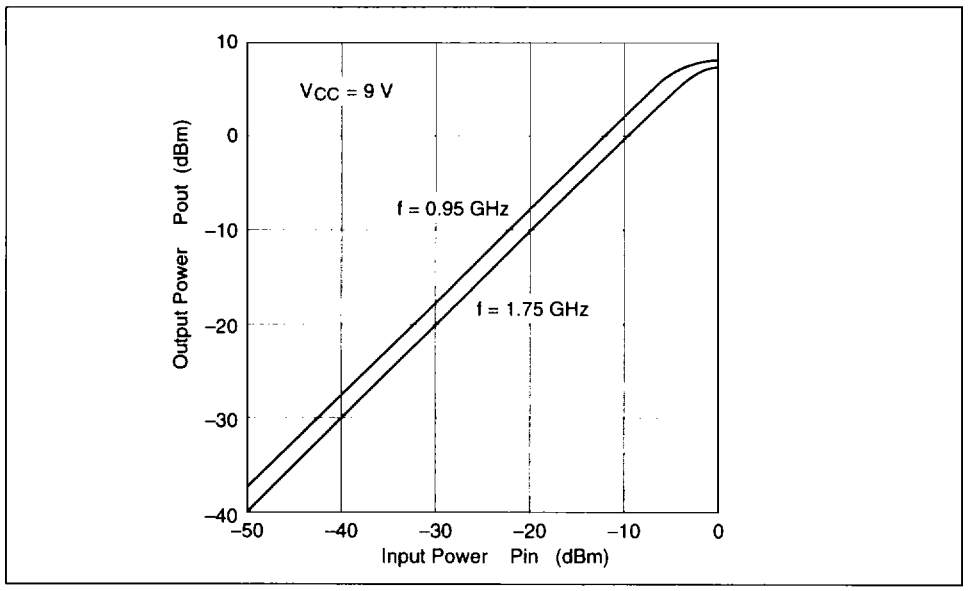


Figure 7 Output Power vs. Input Power

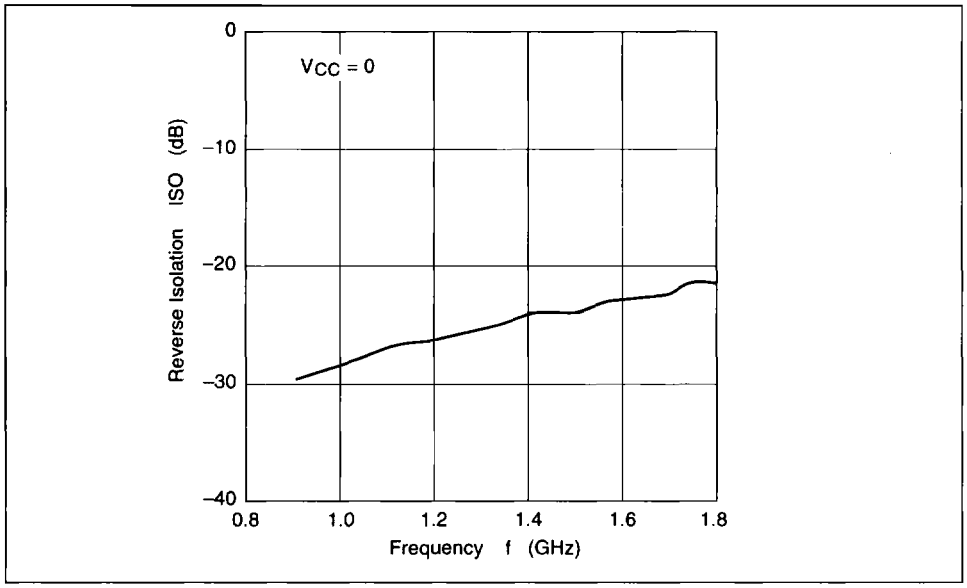


Figure 8 Reverse Isolation vs. Frequency

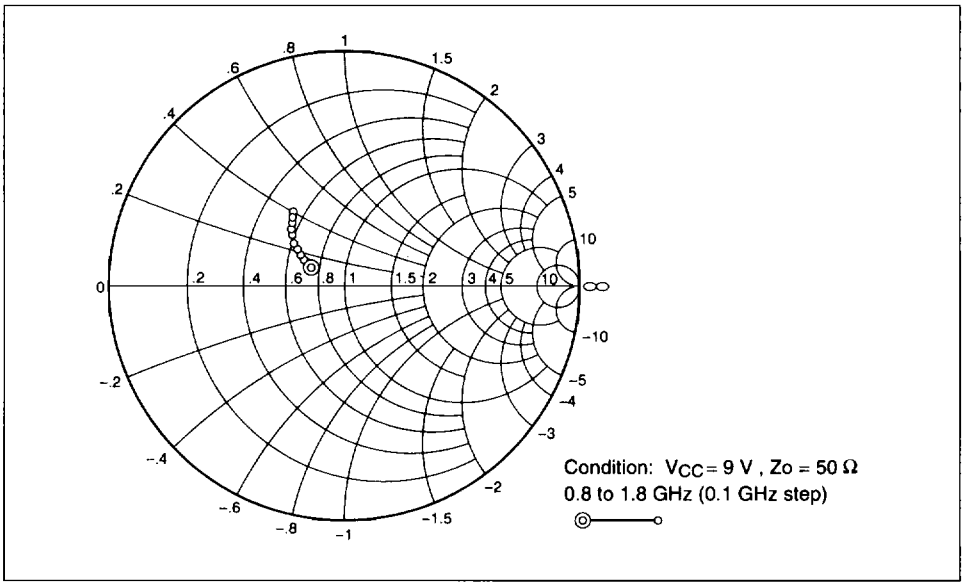


Figure 9 S_{11} Parameter vs. Frequency

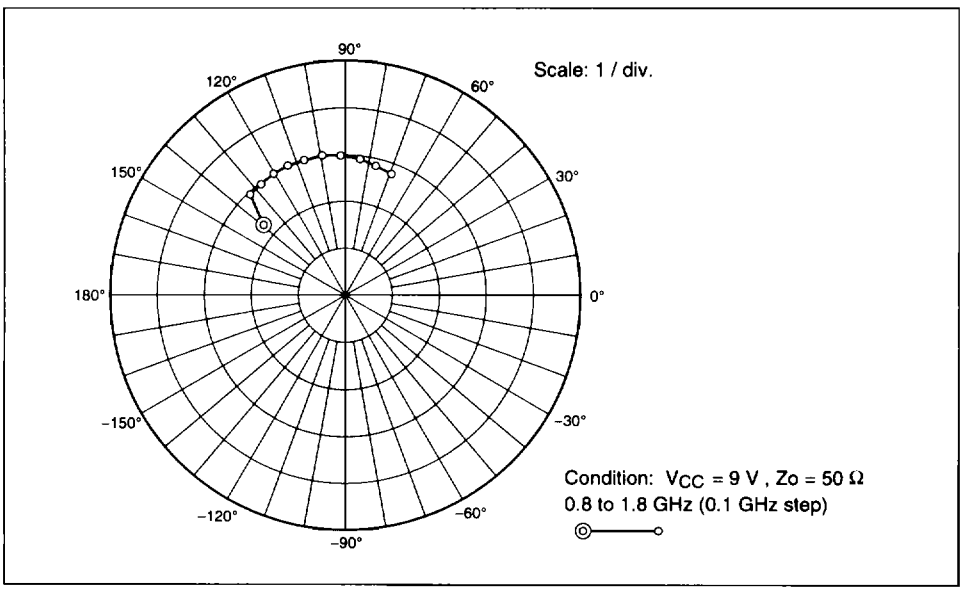


Figure 10 S_{21} Parameter vs. Frequency

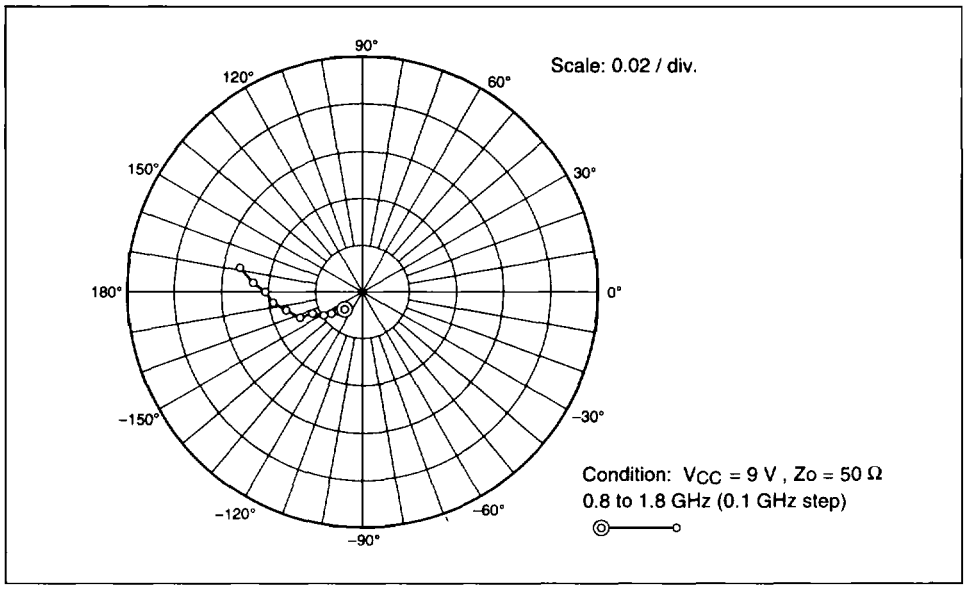


Figure 11 S_{12} Parameter vs. Frequency

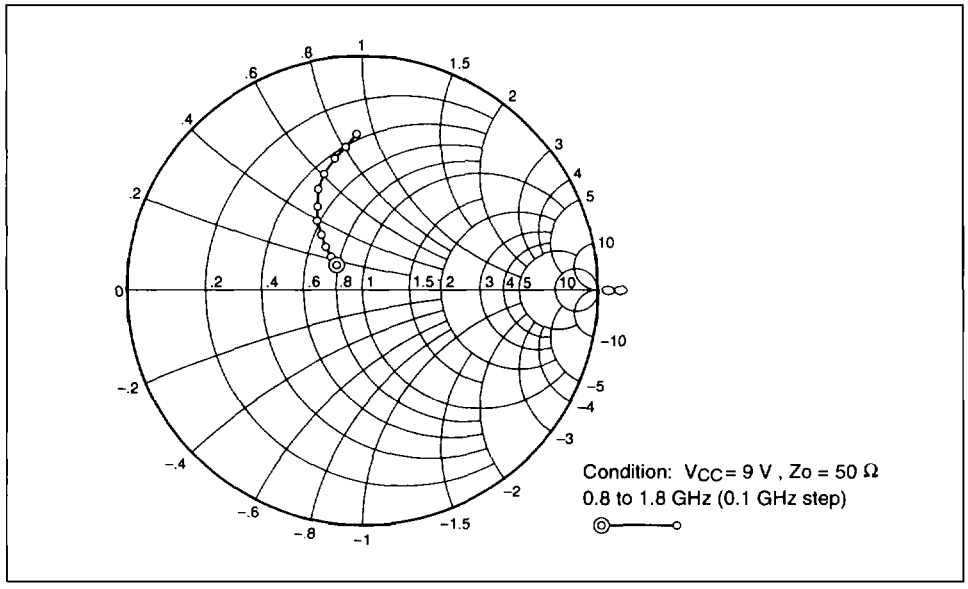


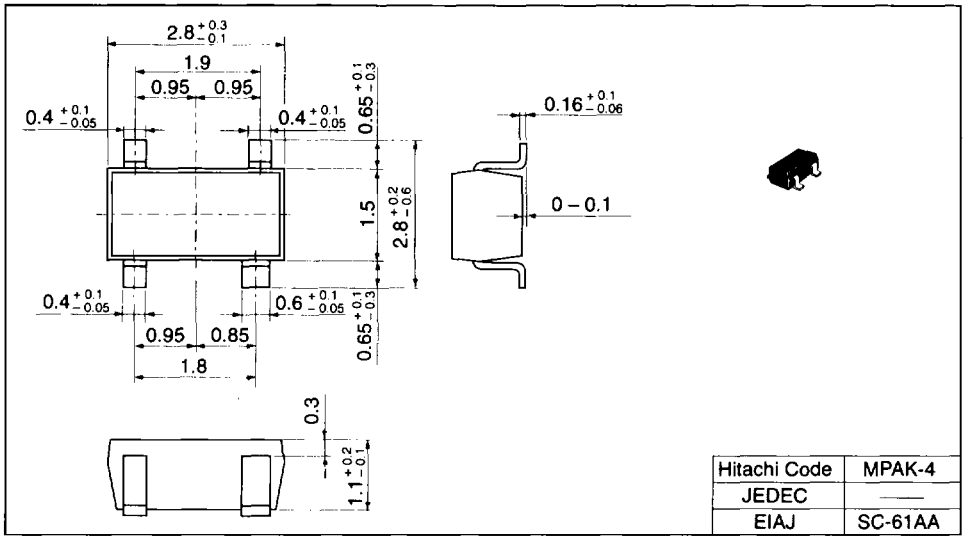
Figure 12 S_{22} Parameter vs. Frequency

S Parameter (HA21005) (V_{CC} = 9 V, Z_O = 50 Ω)

	S11		S21		S12		S22	
f (GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.8	0.162	150.9	2.92	139.3	0.0107	−135.5	0.151	135.6
0.85	0.178	147.2	2.93	136.5	0.0124	−139.5	0.174	134.6
0.9	0.189	147.3	2.95	133.3	0.0132	−141.0	0.194	133.0
0.95	0.194	146.9	2.96	130.0	0.0149	−141.3	0.217	131.3
1.0	0.207	146.9	2.97	127.1	0.0162	−144.7	0.241	130.1
1.05	0.219	144.8	2.98	123.9	0.018	−149.1	0.268	128.5
1.1	0.231	144.4	3.01	120.5	0.0193	−148.3	0.293	126.4
1.15	0.243	142.9	3.01	117.3	0.0214	−153.0	0.320	124.7
1.2	0.255	141.8	3.03	113.9	0.0232	−156.1	0.351	122.8
1.25	0.266	139.3	3.06	110.2	0.0245	−160.7	0.386	120.4
1.3	0.283	139.8	3.02	106.9	0.0287	−157.5	0.403	117.9
1.35	0.301	137.6	3.04	103.3	0.0305	−162.5	0.436	116.0
1.4	0.313	135.4	3.03	99.4	0.0334	−166.4	0.470	113.3
1.45	0.320	133.3	3.02	95.6	0.0346	−169.0	0.501	110.1
1.5	0.344	132.9	2.99	92.0	0.0383	−173.0	0.523	108.0
1.55	0.343	130.9	2.98	88.0	0.0404	−176.6	0.552	105.1
1.6	0.351	129.4	2.93	83.9	0.0414	−179.9	0.578	101.6
1.65	0.361	128.3	2.90	80.4	0.0442	177.0	0.602	99.3
1.7	0.369	126.9	2.84	76.9	0.0467	175.3	0.620	96.2
1.75	0.388	126.6	2.81	73.5	0.0502	173.8	0.641	94.8
1.8	0.387	124.4	2.77	69.3	0.0532	168.9	0.673	91.8

Package Dimensions

Unit : mm



Hitachi Code	MPAK-4
JEDEC	——
EIAJ	SC-61AA