MGF7136P

1.9GHz Band PHS Frontend MMIC

DESCRIPTION

MGF7136P is a monolithic microwave integrated circuit for 1.9GHz BAND RX / TX Front-end . It includes a power amplifier, RF-switch, LNA, MIX and control logic.

FEATURES

[TX-AMP]

- Gp=38dBtyp.
- ACP± 600KHz≦- 55dBc, Id(op)= 140mA @Po= 21dBm (π/4 DQPSK)
- Input matching circuit:included
- Output matching circuit:external
- Including negative generator

[RX-AMP]

- Gl=14dBtyp., NF=1.5dBtyp.
- Input matching circuit:external
- Output matching circuit:included

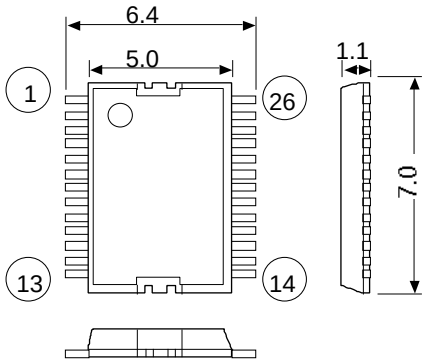
[RX-MIX]

- Gc=9dBtyp., NF=7dBtyp.
- Input matching circuit:external
- Output matching circuit:external

[RF-SWITCH]

- Insertion loss =0.6dBtyp.
- Isolation =20dBtyp.

OUTLINE DRAWING Unit:millimeters



26pin Surface mount package

[CONTROL LOGIC]

- RX-TX switching & timing control
- TX-AMP Bias trimming

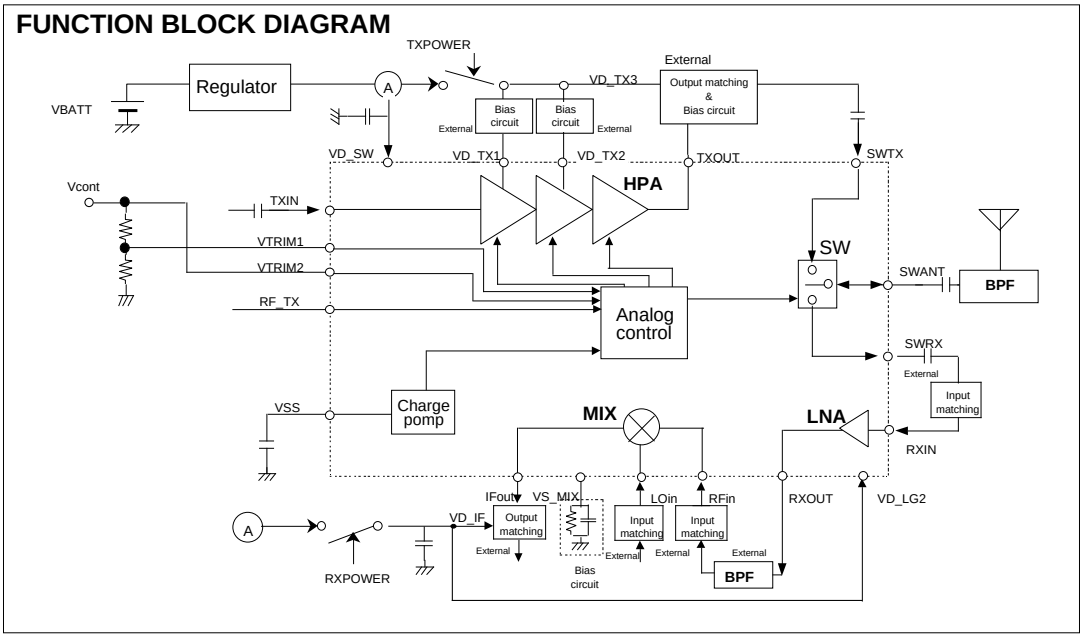
APPLICATION

1.9GHz BAND RX / TX Front-end

QUALITY

GG

FUNCTION BLOCK DIAGRAM



MGF7136P Evaluation Results (Summary) for ES

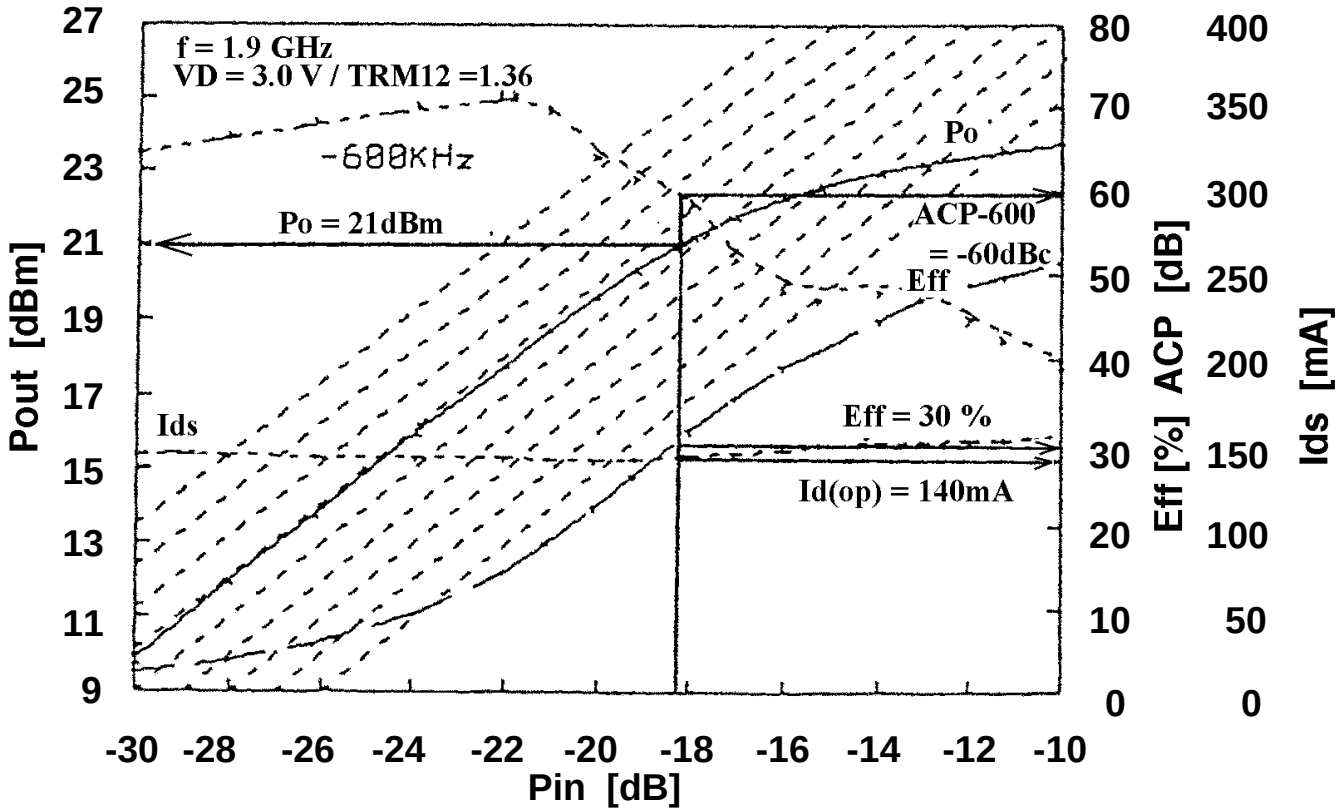
Function	HPA			LNA	
	Gp	ACP+/-600KHz	Id(op)	Gl	NF
	[dB]	[dBc]	[mA]	[dB]	[dB]
Target	38dB (typ.)	≦ - 55	140	14 (typ.)	1.8 (typ.)
Results	38 to 39	- 60	140	14 to 15	1.5 to 1.6

Function	SW		MIX		
	Insertion loss	Isolation	Gc	NF	IIP3
	[dB]	[dB]	[dB]	[dB]	[dBm]
Target	0.6 (typ.)	20 (typ.)	9 (typ.)	7 (typ.)	0 (typ.)
Results	TX-ANT 0.6 ANT-RX 0.6	TX-RX 30 ANT-TX 25	9 to 10	7	1

MGF7136P Evaluation Result (HPA)

FREQ.=1.9GHz VD=3V TRM12=1.36V ID1=36.59mA ID2=104.35mA

Pin	Pout	Gain	Eff	ID	A.C.P. -600KHz	A.C.P. +600KHz	VSS
-30.15	9.83	39.98	2.26	144.91	-64.15	-64.22	-1.92
-28.03	11.97	40.00	3.71	140.66	-66.18	-66.23	-1.92
-26.16	13.88	39.96	5.67	141.08	-67.88	-67.94	-1.92
-23.95	15.96	39.91	9.40	139.82	-69.69	-69.93	-1.92
-22.02	17.80	39.82	14.34	140.04	-70.88	-71.21	-1.92
-21.06	18.73	39.79	17.86	139.31	-69.88	-69.51	-1.92
-20.05	16.94	39.69	22.08	138.94	-64.55	-63.74	-1.92
-19.19	20.35	39.54	25.94	139.29	-62.29	-61.17	-1.92
-18.01	21.24	39.25	31.33	141.55	-58.63	-58.16	-1.92
-17.06	21.08	38.86	35.29	142.93	-52.76	-51.70	-1.92
-16.05	22.29	38.34	38.88	147.93	-49.32	-47.86	-1.92
-15.27	22.59	37.86	40.81	148.26	-48.31	-46.88	-1.92
-13.97	23.00	36.97	44.54	149.31	-48.71	-47.70	-1.92
-13.03	23.23	36.26	46.93	149.39	-48.23	-47.80	-1.92
-11.98	23.43	35.41	48.72	150.66	-45.30	-44.56	-1.92
-11.23	23.53	34.76	49.69	151.18	-42.97	-42.03	-1.92
-9.98	23.72	33.70	51.25	153.11	-39.95	-38.82	-1.92
-18.33	21.00	39.33	29.87	140.94	-59.62	-58.97	-1.92

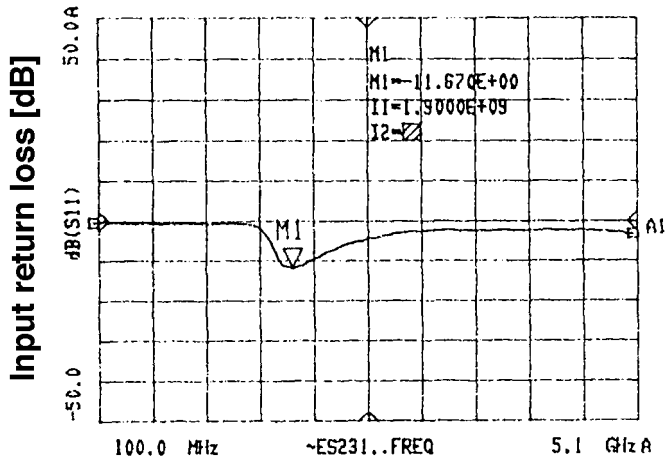


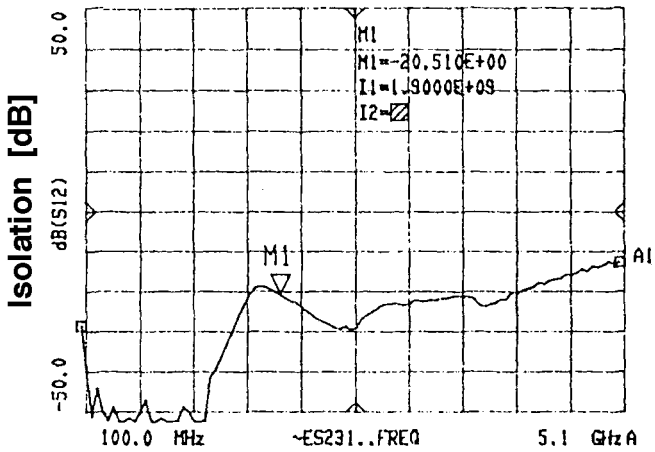
Input vs. Output power characteristics

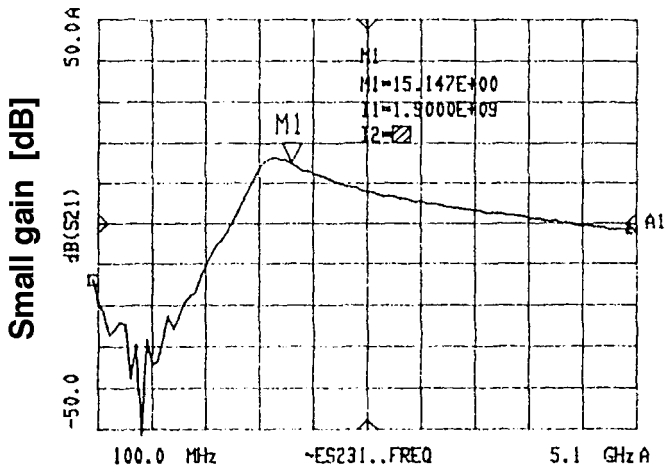
< Conditions > Bias condition VD =3V
Id(set) =140mA @Po=21dBm(π/ 4DQPSK), f=1.9GHz

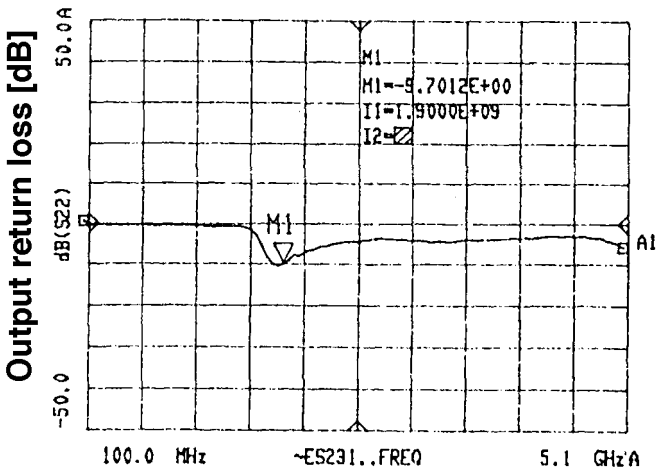
MGF7136P Evaluation Result (LNA)

— Small signal S-parameter —





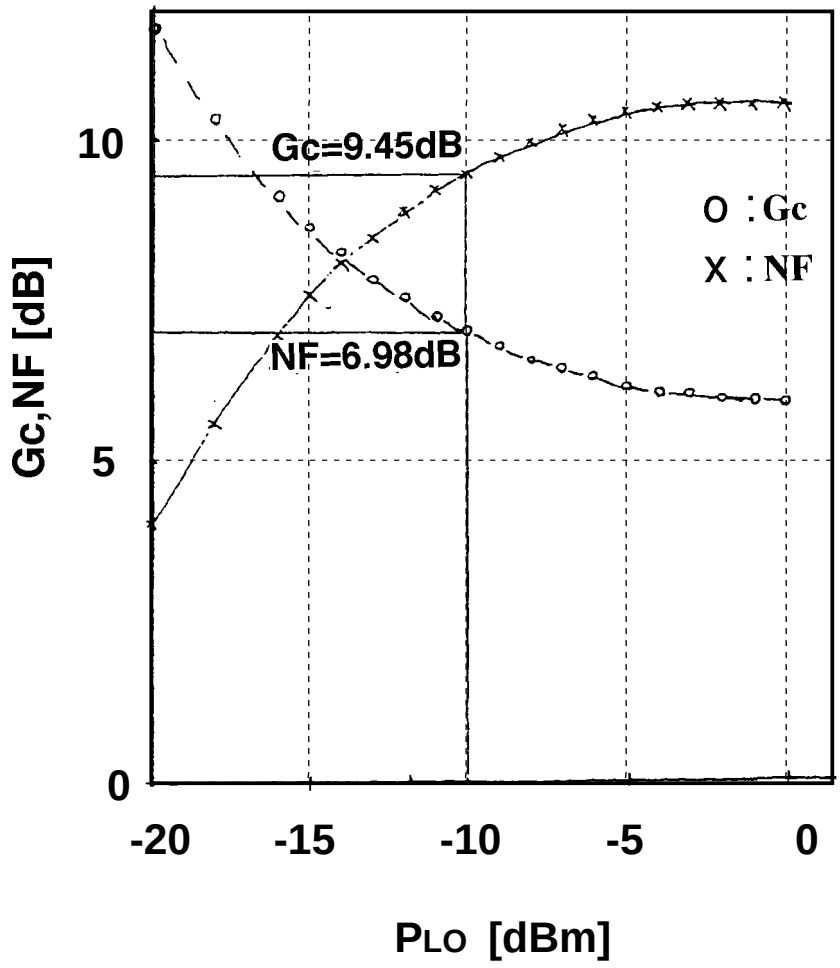




< Conditions >

VD_LG2 = 3 V , Id(op) = 3.6 mA , f = 0.1 to 5.1 GHz
Gl = 15 dB , NF = 1.5dB @ f=1.9 GHz

MGF7136P Evaluation Result (MIX)

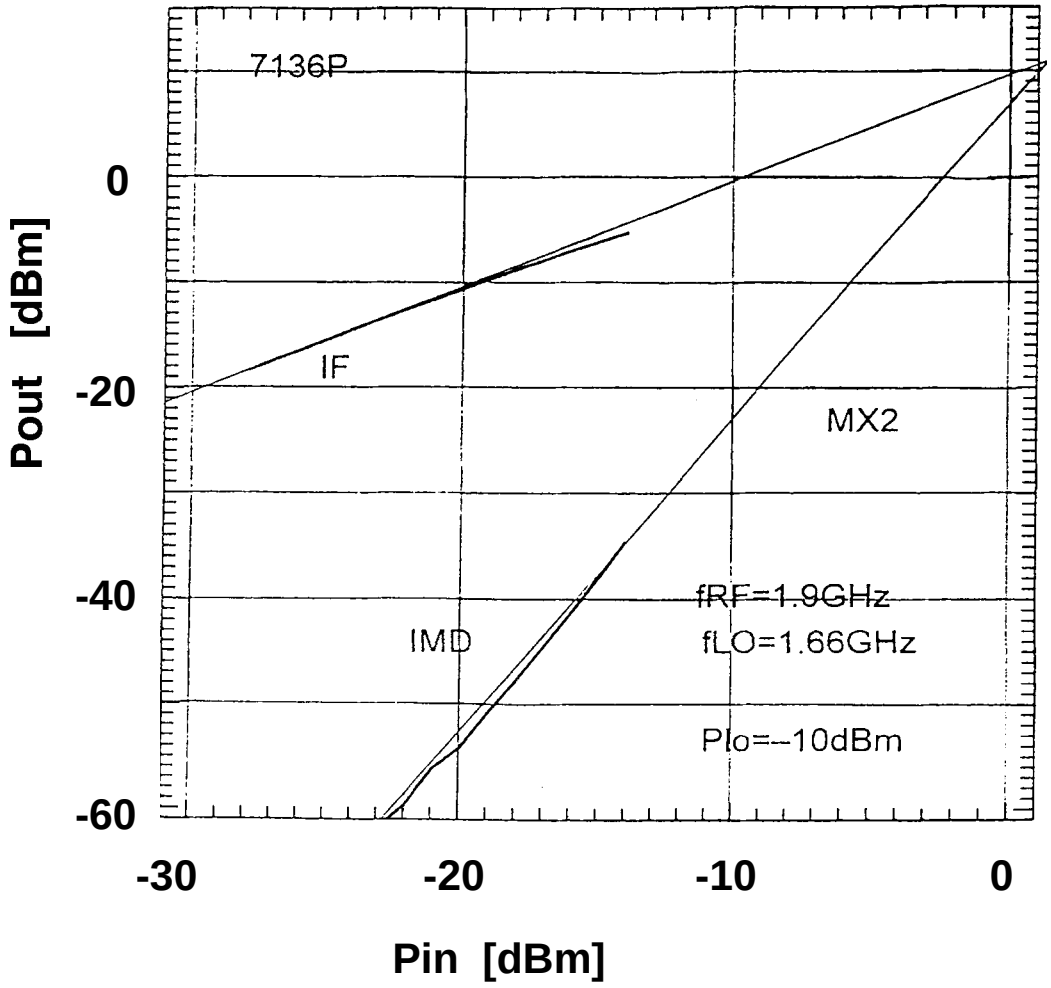


< Conditions >

fRF = 1.9 GHz
fLR = 1.66 GHz
fIF = 240 MHz
Vd = 3.0 V
Id = 29mA

Conversion gain, NF vs. Local signal power

MGF7136P Evaluation Result (MIX)



IF signal power (IIP3) vs. RF signal power