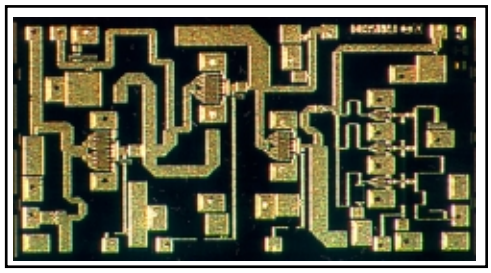
FMM5804X

17.5-31.5GHz Power Amplifier MMIC

FEATURES

- Output Power: (P_{1dB}): 23.0dBm (Typ.)
- High Gain: (G_{1dB}): 18dB (Typ.)
- High PAE: η_{add} = 18% (Typ.)
- Wide Frequency Band: 17.5-31.5 GHz
- Impedance Matched Zin/Zout = 50Ω
- 0.25μm PHEMT Technology



DESCRIPTION

The FMM5804X is a high-gain, wide band 4-stage MMIC amplifier designed for operation in the 17.5-31.5 GHz frequency range. This amplifier has an input and output designed for use in 50Ω systems.This device is well suited for point-to-point, point-to-multi-point(LMDS) and satellite communication system applications.

ABSOLUTE MAXIMUM RATING (Ambient Temperature Ta=25°C)

Item	Symbol	Condition	Rating	Unit
Drain Voltage	V_{DD}		10	V
Gate Voltage	V_{GG}		-3.0	V
Input Power	P_{in}		16	dBm
Storage Temperature	T_{stg}		-65 to +175	°C
Channel Temperature	T_{ch}		175	°C
Operating Backside Temperature	T_{op}		-40 to +95	°C

Eudyna recommends the following conditions for the long term reliable operation of GaAs FETs:

1. The drain-source operating voltage (V_{DD}) should not exceed 6 volts.
2. The forward and reverse gate currents should not exceed 1.0 and -0.08 mA respectively.
3. This product should be hermetically packaged.

ELECTRICAL CHARACTERISTICS (Ambient Temperature Tc=25°C)

Item	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Frequency Range	f	V_{DD} = 6V f = 17.5 ~ 31.5 GHz *: at f = 17.5-30.0 GHz **: at f = 30.0-31.5 GHz I_{DD} = 250mA (Typ.) $Z_S = Z_L$ = 50Ω	17.5-31.5			GHz
Output Power at 1 dB G.C.P.	P_{1dB}		23* 21**	25* 23**	- -	dBm
Power Gain at 1 dB G.C.P.	G_{1dB}		15	18	-	dB
Drain Current	I_{ddrf}		-	300	400	mA
Power-Added Efficiency	ηadd		-	18	-	%
Input Return Loss	RLi		-	-15	-	dB
Output Return Loss	RLo		-	-8	-	dB

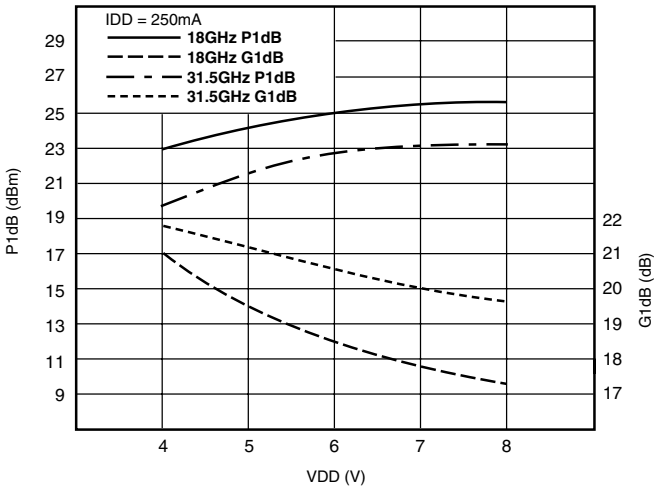
Note: RF parameter sample size 10pcs. Criteria (accept/reject)=(0/1)

G.C.P.: Gain Compression Point

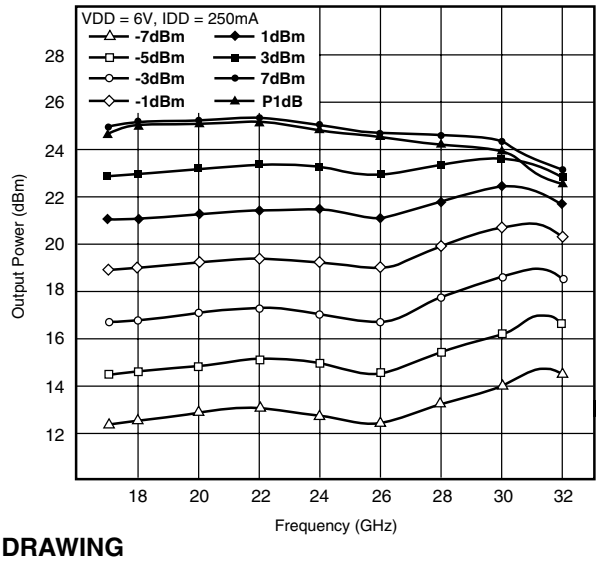
Eudyna

Edition 1.4
July 1999

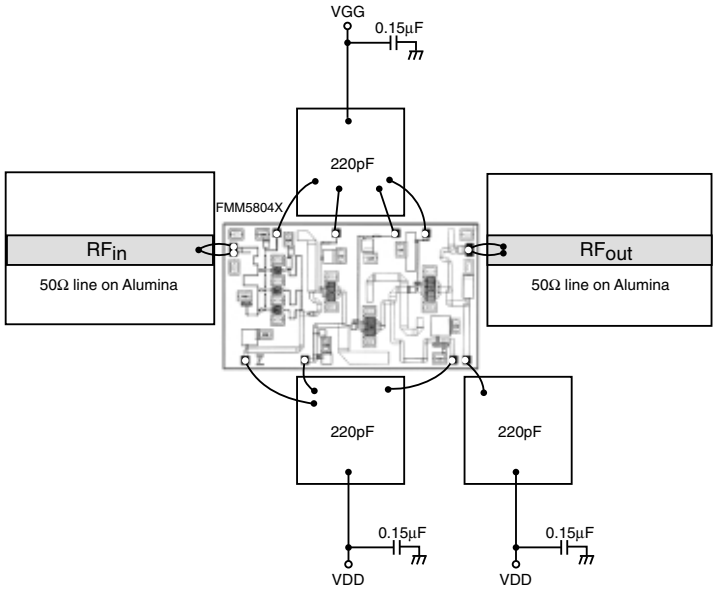
P1dB & G1dB vs. VDD



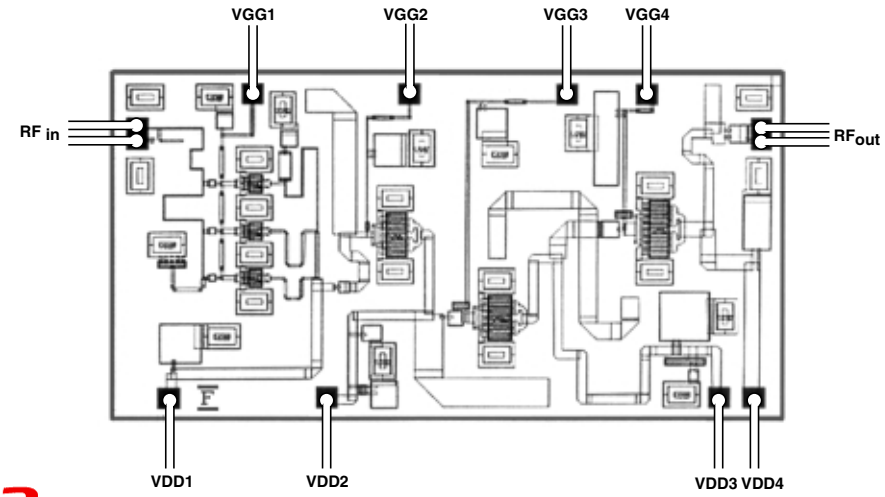
OUTPUT POWER vs. FREQUENCY



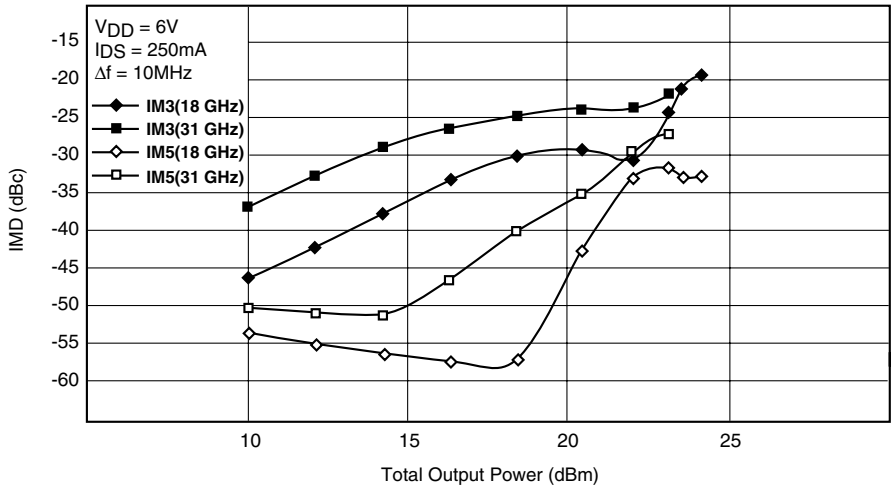
ASSEMBLY DRAWING



BONDING LAYOUT



IMD vs. OUTPUT POWER



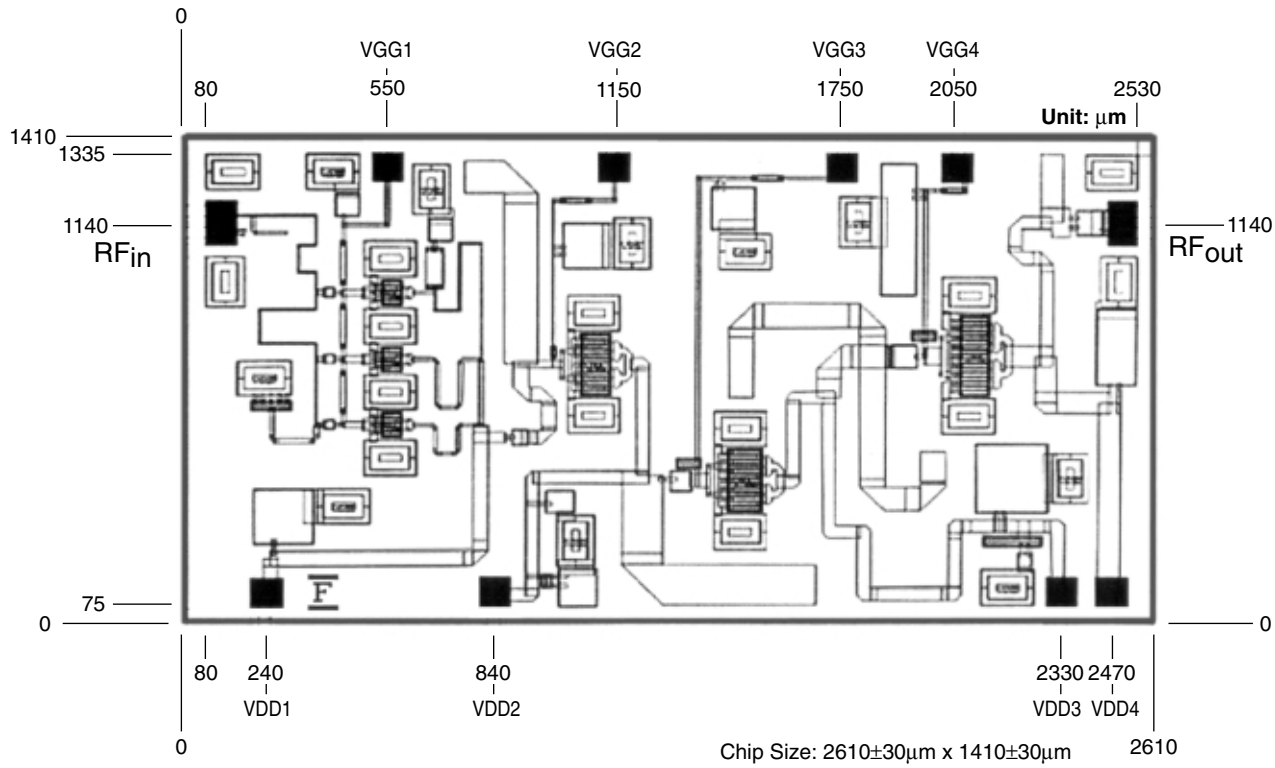
S-PARAMETERS

V_{DD} = 6V, I_{DS} = 250mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1000	.544	168.4	.013	122.1	.001	-17.1	.987	-50.9
2000	.534	156.9	.024	-13.5	.001	-106.6	.948	-92.3
3000	.521	145.5	.287	-112.7	.001	-166.3	.974	-149.5
4000	.503	133.6	.087	74.1	.001	-78.4	.965	-122.3
5000	.483	121.2	.027	79.7	.001	-104.7	.969	-143.9
6000	.457	108.2	.322	129.1	.001	-99.4	.968	-159.1
7000	.426	94.4	.967	39.2	.001	-95.9	.959	-172.0
8000	.389	79.3	1.700	-35.3	.001	-90.9	.944	176.1
9000	.342	64.8	2.442	-112.0	.002	-81.2	.920	164.3
10000	.311	51.4	2.256	173.0	.002	-91.2	.887	152.5
11000	.293	34.4	1.637	119.7	.003	-95.9	.844	140.0
12000	.270	14.9	1.143	89.2	.003	-73.4	.789	126.2
13000	.251	-6.2	1.105	91.1	.002	-94.4	.717	111.0
14000	.236	-29.0	2.536	79.3	.003	-84.2	.629	94.1
15000	.228	-52.8	6.192	25.5	.003	-89.6	.542	73.8
16000	.225	-78.1	9.276	-51.6	.003	-76.7	.449	48.7
17000	.219	-102.0	9.251	-116.6	.004	-74.5	.372	19.3
17500	.218	-114.1	9.085	-144.1	.004	-81.2	.338	3.2
18000	.221	-125.2	9.101	-169.6	.003	-109.0	.324	-13.9
18500	.219	-138.1	9.162	164.9	.004	-76.6	.316	-30.4
19000	.218	-150.4	9.326	139.9	.003	-83.7	.322	-45.7
19500	.216	-163.1	9.586	114.7	.004	-77.6	.341	-60.5
20000	.210	-176.0	9.729	88.9	.003	-88.4	.353	-73.3
20500	.206	171.0	9.911	63.5	.003	-86.6	.372	-84.6
21000	.197	158.1	9.991	37.3	.003	-90.2	.390	-95.9
21500	.192	145.5	10.021	11.7	.004	-97.5	.411	-104.8
22000	.183	132.5	10.009	-13.9	.005	-91.6	.434	-114.4
22500	.174	119.3	9.909	-39.8	.005	-82.0	.445	-124.1
23000	.170	106.4	9.829	-65.4	.005	-79.5	.454	-132.7
23500	.160	92.6	9.677	-91.0	.005	-78.1	.454	-141.4
24000	.156	78.7	9.583	-116.3	.004	-67.6	.450	-150.8
24500	.144	62.4	9.322	-142.3	.004	-66.8	.433	-159.8
25000	.138	47.9	9.232	-167.3	.004	-98.1	.406	-167.9
25500	.130	33.3	9.099	167.5	.004	-79.5	.374	-176.1
26000	.117	15.0	9.128	141.6	.005	-70.4	.345	177.1
26500	.109	-2.1	9.175	116.1	.004	-84.6	.307	167.1
27000	.095	-26.6	9.367	88.6	.005	-83.4	.261	160.5
27500	.084	-55.4	9.679	60.4	.005	-67.2	.220	154.6
28000	.081	-93.3	9.941	30.8	.004	-88.2	.182	150.6
28500	.090	-135.7	10.258	-0.9	.005	-92.7	.164	151.1
29000	.106	-170.8	10.465	-34.0	.004	-70.2	.140	144.0
29500	.137	157.3	10.688	-68.9	.005	-78.3	.139	139.6
30000	.164	133.6	10.884	-106.1	.004	-56.4	.142	122.8
30500	.188	117.2	11.095	-145.8	.006	-58.1	.151	98.9
31000	.212	99.5	11.456	169.9	.007	-67.4	.176	82.1
31500	.238	87.6	12.041	119.4	.006	-78.4	.219	68.7
32000	.256	73.1	12.909	53.4	.006	-80.9	.403	69.6
33000	.282	80.6	2.725	-120.4	.007	-50.1	.859	-11.2
34000	.427	56.0	.199	162.5	.008	-71.8	.800	-45.8
35000	.481	36.0	.007	-171.0	.005	-70.3	.785	-63.0
36000	.512	21.3	.013	-81.6	.007	-97.4	.809	-74.2
37000	.540	9.9	.007	-59.0	.006	-68.7	.816	-84.3
38000	.570	-0.5	.005	-116.0	.010	-65.4	.828	-91.6
39000	.571	-10.0	.008	-87.8	.007	-79.2	.844	-99.6
40000	.586	-13.6	.004	-106.4	.005	-73.7	.862	-104.8

Download S-Parameters, click here

CHIP OUTLINE



Chip Size: 2610±30μm x 1410±30μm
Chip Thickness:70±20μm
Pad Dimensions: 1. DC 80 x 80μm
2. RF 120 x 80μm