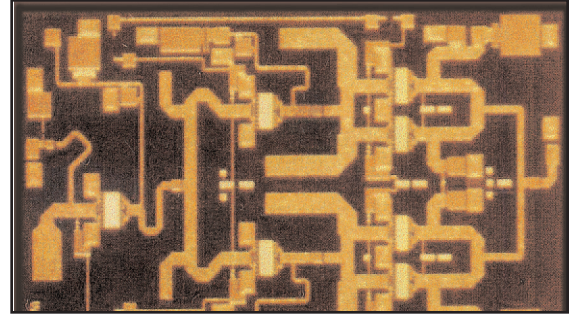


FEATURES

- High Output Power: $P_{1dB} = 25.5dBm$ (Typ.)
- High Gain: $G_{1dB} = 9dB$ (Typ.)
- High PAE: $\eta_{add} = 20\%$ (Typ.)
- Wide Frequency Band: 27.5-31.5 GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\Omega$
- 0.25 μm PHEMT Technology

DESCRIPTION

The FMM5802X is a high-gain, wide band 2-stage MMIC amplifier designed for operation in the 27.5-31.5 GHz frequency range. This amplifier has an input and output designed for use in 50 Ω systems. This device is well suited for point-to-point, point-to-multi-point(LMDS), and satellite communication system applications.



Eudyna's stringent Quality Assurance Program assures the highest reliability and consistent performance.

ABSOLUTE MAXIMUM RATING (Ambient Temperature $T_a=25^\circ C$)

Item	Symbol	Condition	Rating	Unit
Drain Voltage	V_{DD}		10	V
Gate Voltage	V_{GG}		-3.0	V
Input Power	P_{in}		27	dBm
Storage Temperature	T_{stg}		-65 to +175	$^\circ C$
Channel Temperature	T_{ch}		175	$^\circ C$
Operating Backside Temperature	T_{op}		-40 to +95	$^\circ C$

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 1.5 and -0.12 mA respectively.
3. This product should be hermetically packaged

ELECTRICAL CHARACTERISTICS (Ambient Temperature $T_c=25^\circ C$)

Item	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Frequency Range	f	$V_{DD} = 6V$ $f = 27.5 \sim 31.5$ GHz $I_{DD} = 220mA$ (Typ.) $Z_S = Z_L = 50\Omega$	27.5-31.5			GHz
Output Power at 1 dB G.C.P.	P_{1dB}		24.0	25.5	-	dBm
Power Gain at 1 dB G.C.P.	G_{1dB}		7	9	-	dB
Drain Current	I_{ddrf}		-	280	380	mA
Power-Added Efficiency	η_{add}		-	20	-	%
Input Return Loss	RL_i		-	-12	-	dB
Output Return Loss	RL_o		-	-8	-	dB

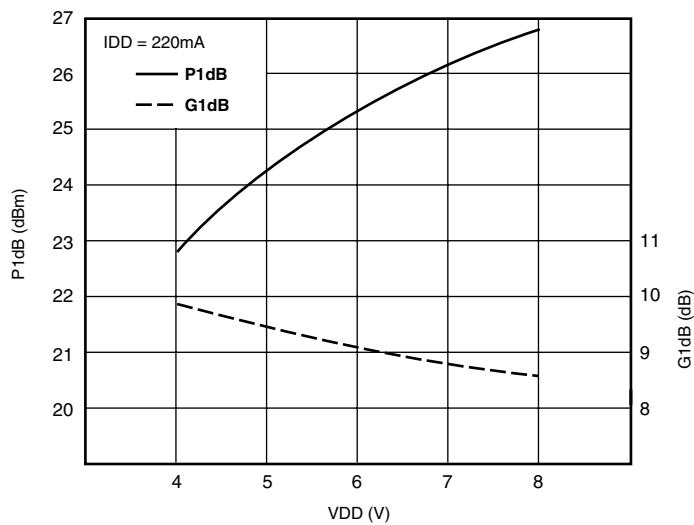
Note: RF parameter sample size 10pcs. Criteria (accept/reject)=(0/1)

G.C.P.: Gain Compression Point

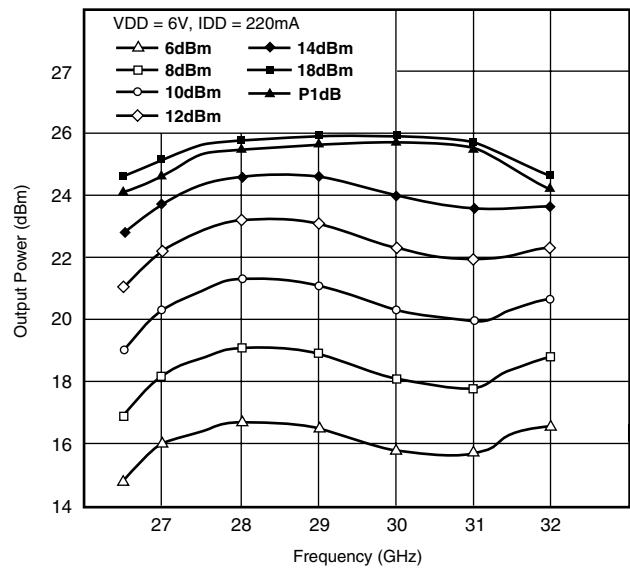
FMM5802X

27.5-31.5GHz Power Amplifier MMIC

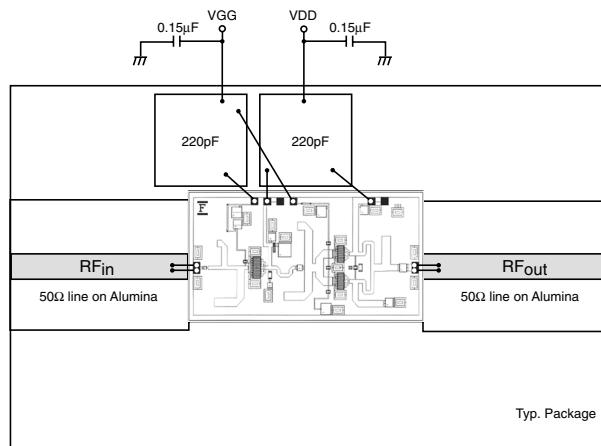
P1dB & G1dB vs. VDD



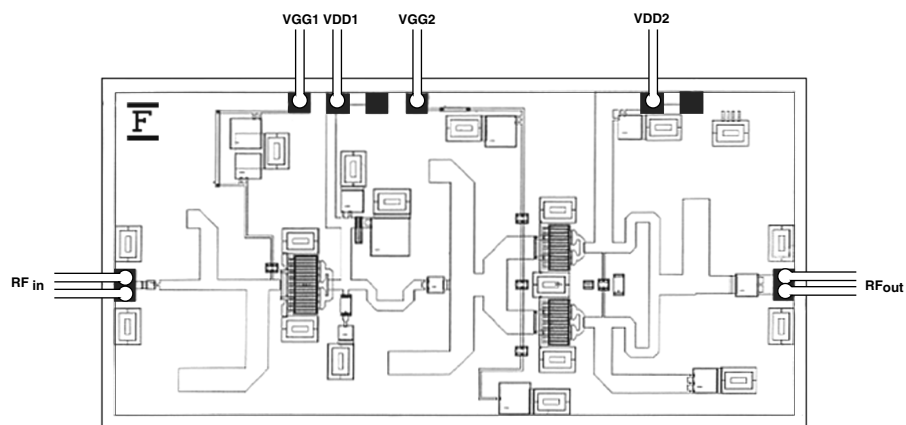
OUTPUT POWER vs. FREQUENCY



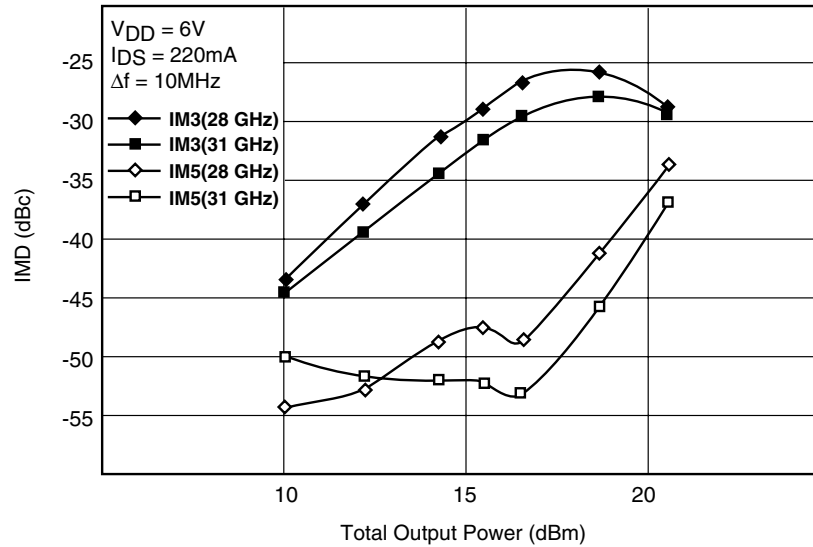
ASSEMBLY DRAWING



BONDING LAYOUT



IMD vs. OUTPUT POWER



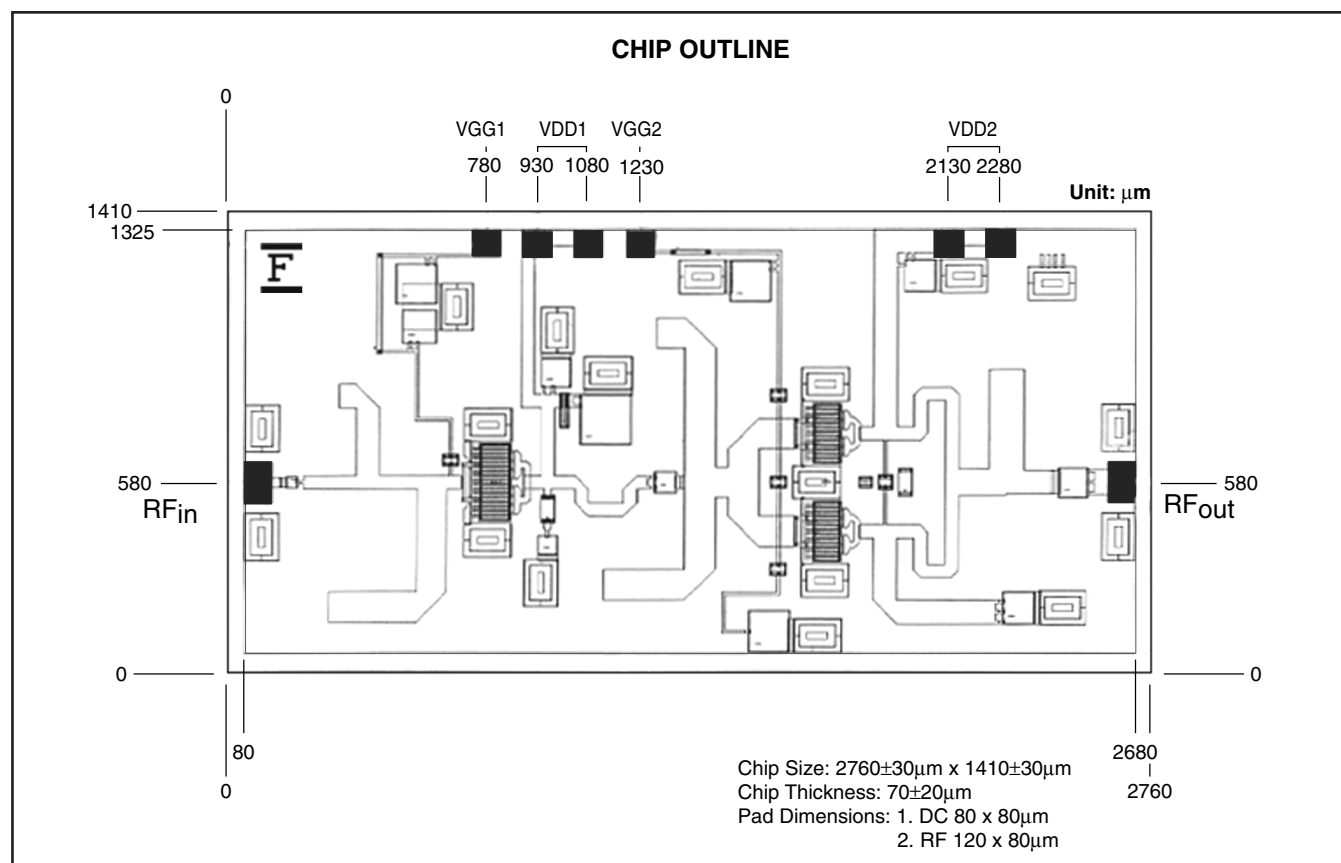
S-PARAMETERS

$V_{DD} = 6V, I_{DS} = 220mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1000	.996	-12.8	.053	152.8	.001	-75.3	.982	-77.7
2000	.989	-25.2	.114	163.6	.001	-108.9	.880	-123.0
3000	.983	-37.1	.762	62.2	.001	-66.5	.585	-151.8
4000	.975	-48.6	.557	-64.4	.001	-119.0	.853	-135.9
5000	.965	-59.4	.219	-113.7	.001	-98.5	.948	-154.8
6000	.958	-69.5	.068	-122.6	.002	-101.8	.960	-167.9
7000	.950	-79.0	.079	-54.7	.001	-94.9	.939	-178.8
8000	.942	-87.8	.155	-76.5	.001	-81.6	.875	172.7
9000	.934	-96.1	.143	-103.9	.002	-88.1	.849	169.3
10000	.926	-103.8	.132	-89.6	.002	-96.3	.881	162.3
11000	.918	-111.2	.291	-91.8	.002	-95.4	.886	151.5
12000	.910	-117.9	.425	-125.3	.003	-94.9	.854	138.8
13000	.902	-124.3	.532	-152.0	.003	-96.2	.781	122.7
14000	.894	-130.5	.662	-178.6	.003	-99.0	.650	102.0
15000	.887	-136.5	.795	151.7	.002	-111.9	.458	73.5
16000	.879	-142.2	.888	121.0	.004	-98.2	.251	27.1
17000	.870	-147.8	.930	92.0	.001	-94.5	.208	-54.4
18000	.864	-153.5	.949	65.8	.001	-84.4	.328	-103.4
19000	.857	-159.2	.966	42.1	.001	-79.7	.431	-127.2
20000	.849	-165.1	.995	19.8	.002	-64.1	.509	-142.5
21000	.841	-171.6	1.052	-1.4	.003	-34.3	.559	-153.9
22000	.840	-179.0	1.165	-21.7	.003	-29.4	.591	-163.4
23000	.830	172.3	1.345	-43.5	.005	-7.3	.607	-172.1
24000	.815	161.6	1.605	-67.1	.010	-7.3	.616	179.4
25000	.783	146.7	1.954	-93.7	.016	-27.8	.607	169.9
26000	.704	125.2	2.429	-125.2	.022	-46.7	.583	158.8
27000	.540	93.3	2.950	-162.6	.031	-70.3	.520	143.3
27500	.426	71.7	3.170	176.8	.038	-87.3	.464	135.7
28000	.310	43.0	3.265	155.5	.042	-103.5	.395	127.2
28500	.229	2.6	3.263	133.3	.042	-119.4	.326	121.3
29000	.212	-43.7	3.165	113.1	.045	-138.3	.259	113.9
29500	.241	-77.8	3.060	93.5	.044	-152.8	.200	108.1
30000	.272	-99.3	2.993	75.0	.047	-171.2	.157	100.6
30500	.287	-112.3	2.986	56.6	.053	171.4	.136	79.7
31000	.286	-118.5	3.082	36.7	.059	154.0	.143	49.8
31500	.278	-113.3	3.280	14.0	.067	130.4	.231	13.6
32000	.348	-99.2	3.470	-15.4	.074	100.4	.399	-14.3
33000	.769	-118.6	2.529	-88.9	.068	27.8	.795	-74.3
34000	.871	-149.7	1.120	-137.0	.042	-18.5	.833	-110.2
35000	.865	-170.5	.530	-166.3	.026	-44.4	.808	-126.5
36000	.858	172.7	.279	168.2	.021	-68.4	.808	-135.5
37000	.837	154.9	.154	149.4	.020	-79.0	.822	-143.4
38000	.829	134.0	.080	132.1	.013	-79.9	.836	-150.3
39000	.803	109.4	.053	109.8	.010	-69.1	.855	-156.4
40000	.785	78.0	.027	83.0	.006	-102.1	.868	-160.8

FMM5802X

27.5-31.5GHz Power Amplifier MMIC



For further information please contact:

Eudyna Devices USA Inc.

2355 Zanker Rd.
San Jose, CA 95131-1138, U.S.A.
TEL: (408) 232-9500
FAX: (408) 428-9111
www.us.eudyna.com

Eudyna Devices Europe Ltd.

Network House
Norreys Drive
Maidenhead, Berkshire SL6 4FJ
United Kingdom
TEL: +44 (0) 1628 504800
FAX: +44 (0) 1628 504888

Eudyna Devices Asia Pte Ltd.

Hong Kong Branch
Rm. 1101, Ocean Centre, 5 Canton Rd.
Tsim Sha Tsui, Kowloon, Hong Kong
TEL: +852-2377-0227
FAX: +852-2377-3921

Eudyna Devices Inc.

Sales Division
1, Kanai-cho, Sakae-ku
Yokohama, 244-0845, Japan
TEL: +81-45-853-8156
FAX: +81-45-853-8170

CAUTION

Eudyna Devices Inc. products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not put this product into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

Eudyna Devices Inc. reserves the right to change products and specifications without notice. The information does not convey any license under rights of Eudyna Devices Inc. or others.

© 2004 Eudyna Devices USA Inc.
Printed in U.S.A.

Eudyna