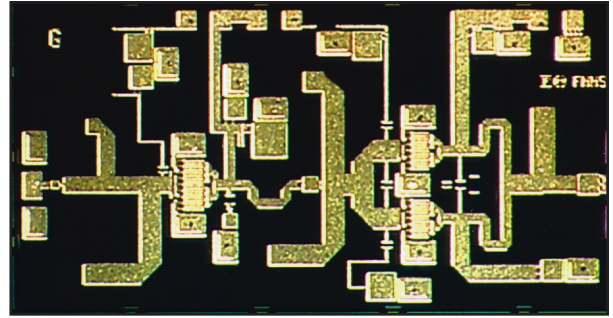


FEATURES

- 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 μ m 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.

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	$^\circ C$

Fujitsu 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	RLi		-	-12	-	dB
Output Return Loss	RLo		-	-8	-	dB

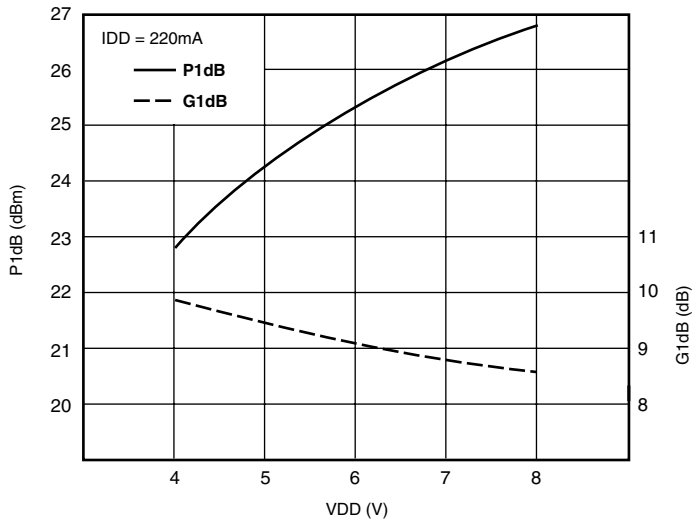
Note: RF parameter sample size 10pcs. Criteria (accept/reject)=(0/1)

G.C.P.: Gain Compression Point

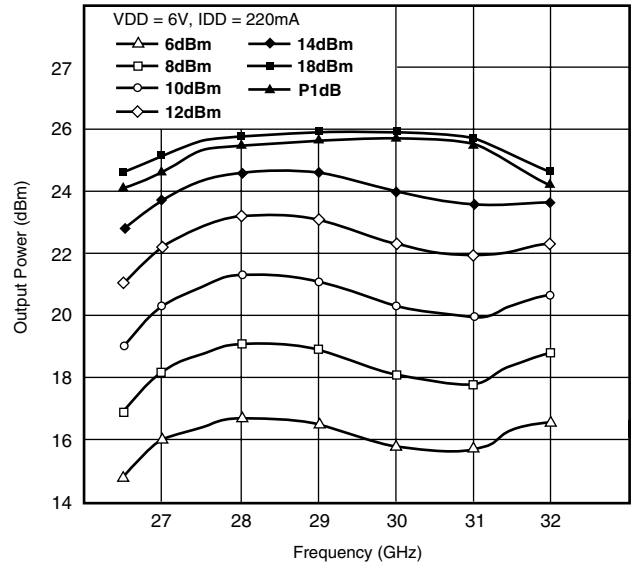
FMM5802X

27.5-31.5GHz Power Amplifier MMIC

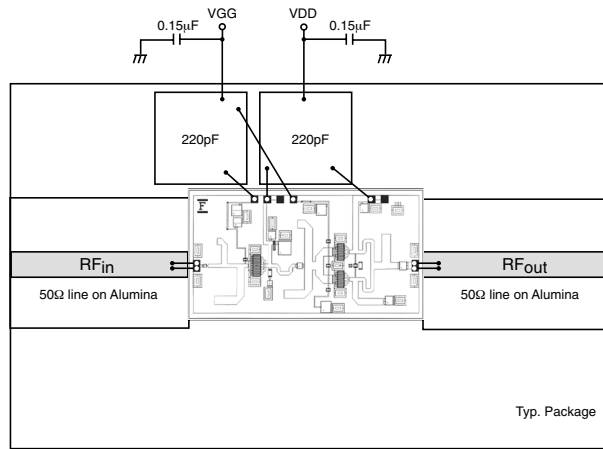
P1dB & G1dB vs. VDD



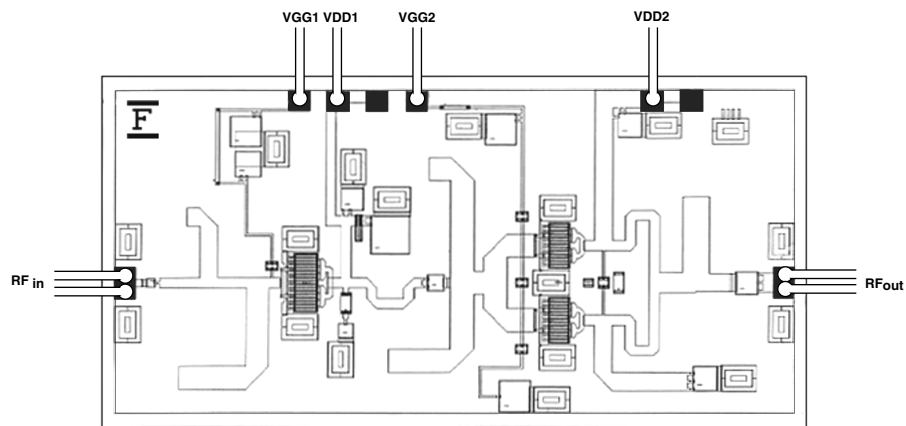
OUTPUT POWER vs. FREQUENCY



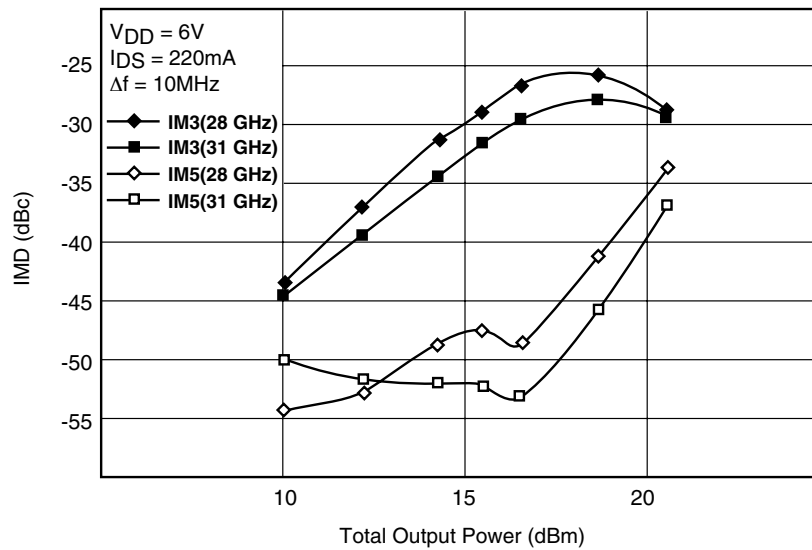
ASSEMBLY DRAWING



BONDING LAYOUT



IMD vs. OUTPUT POWER



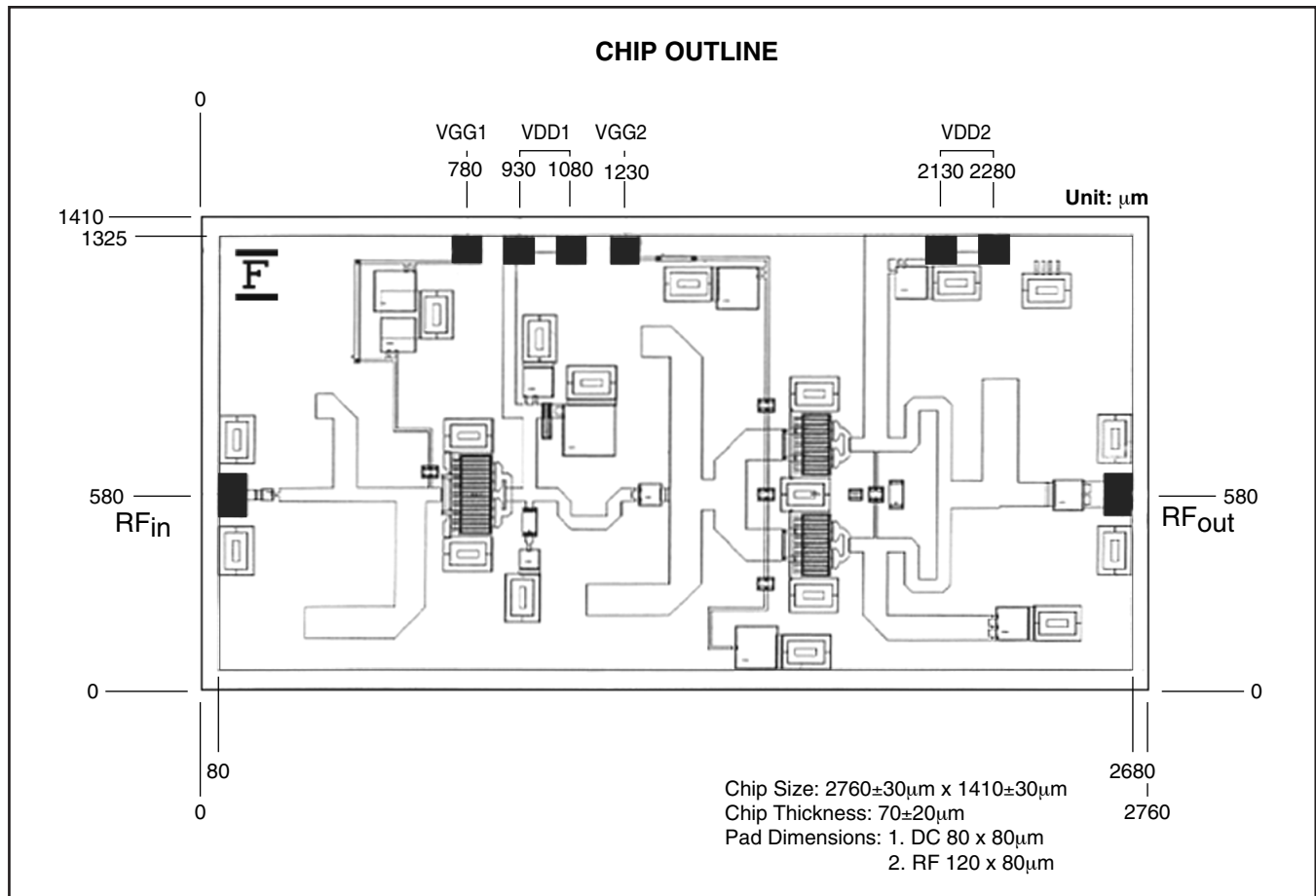
S-PARAMETERS

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

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



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CAUTION

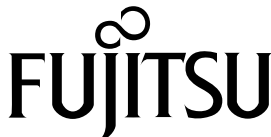
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