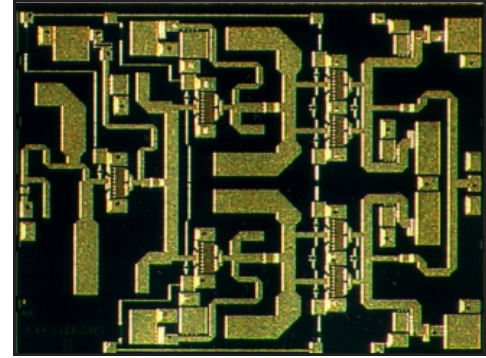


FEATURES

- High Output Power: $P_{1dB} = 31.0\text{dBm}$ (Typ.)
- High Gain: $G_{1dB} = 21.0\text{dB}$ (Typ.)
- High PAE: $\eta_{add} = 30\%$ (Typ.)
- Impedance Matched $Z_{in}/Z_{out} = 50\Omega$
- 0.25 μm PHEMT Technology



DESCRIPTION

The FMM5805X is a high-gain, high power, 3-stage MMIC amplifier designed for operation in the 17.5-20.0 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 communication applications.

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

Item	Symbol	Condition	Rating	Unit
Drain Voltage	V_{DD}		10	V
Gate Voltage	V_{GG}		-3.0	V
Input Power	P_{in}		22	dBm
Storage Temperature	T_{stg}		-65 to +175	$^\circ\text{C}$
Operating Backside Temperature	T_{op}		-40 to +85	$^\circ\text{C}$

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 4.0 and -0.33 mA respectively.
3. This product should be hermetically packaged

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

Item	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Frequency Range	f		17.5 - 20.0			GHz
Output Power at 1 dB G.C.P.	P_{1dB}		29	31	-	dBm
Power Gain at 1 dB G.C.P.	G_{1dB}	$V_{DD} = 6V$ $I_{DD} = 650\text{mA}$ (Typ.) $Z_S = Z_L = 50\Omega$	16	21	26	dB
Drain Current	I_{ddrf}		-	700	950	mA
Power-Added Efficiency	η_{add}		-	30	-	%
Input Return Loss	RLi		-	-12	-	dB
Output Return Loss	RLo		-	-8	-	dB

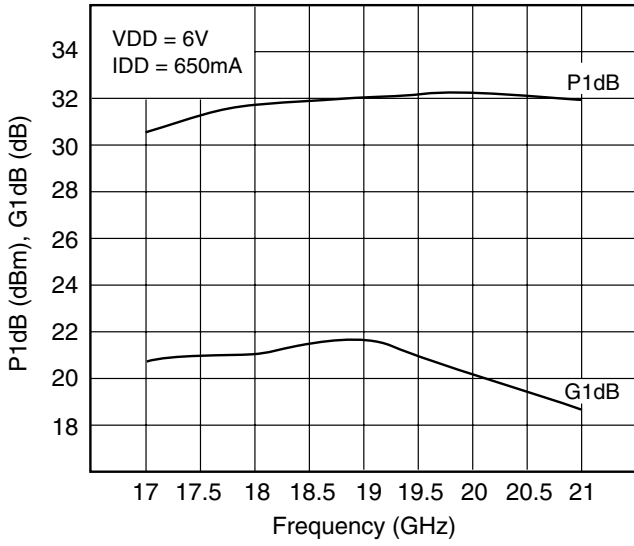
Note: RF parameter sample size 10pcs./wafer. Criteria (accept/reject)=(0/1)

G.C.P.: Gain Compression Point

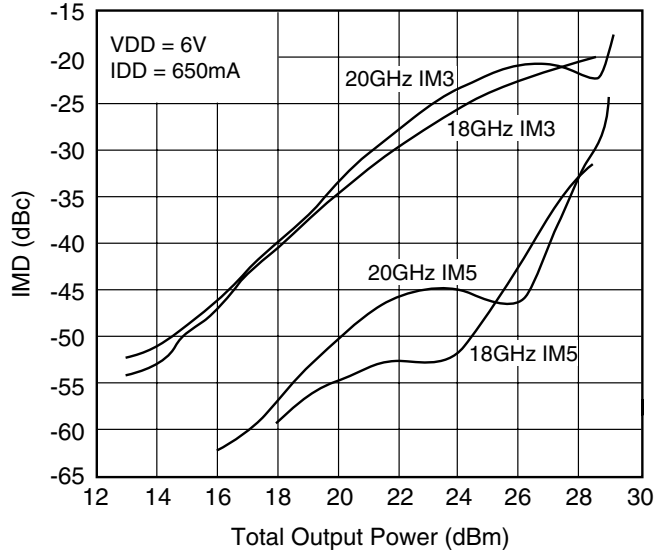
FMM5805X

17.5-20GHz Power Amplifier MMIC

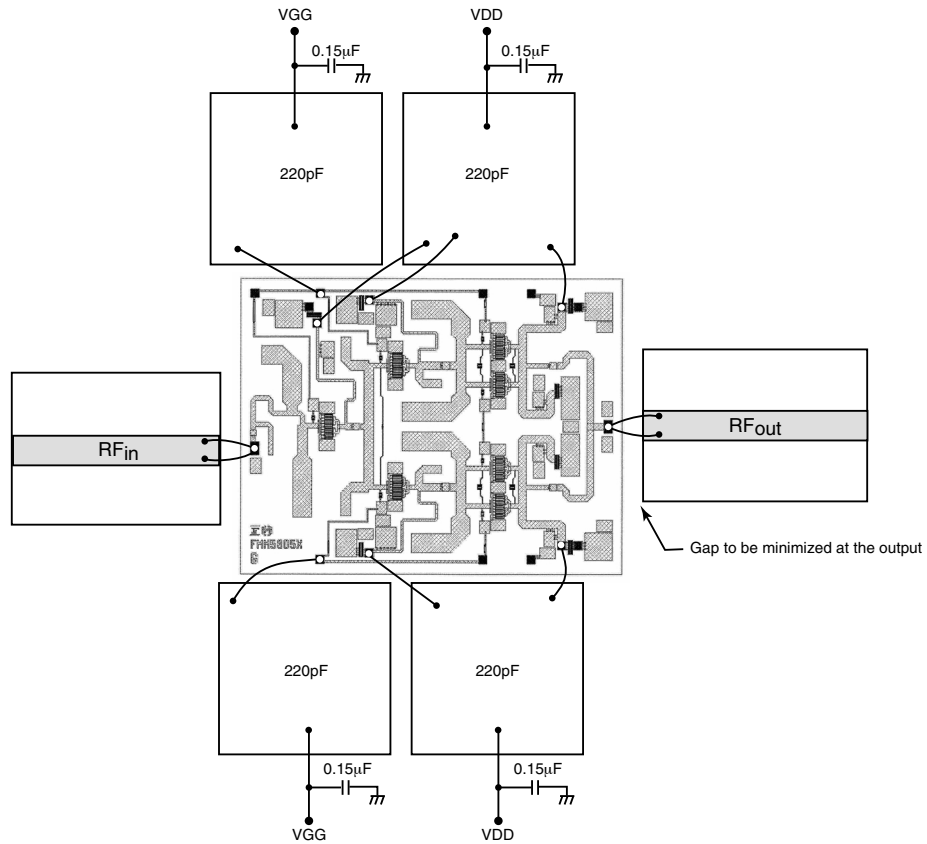
P1dB, G1dB vs. FREQUENCY



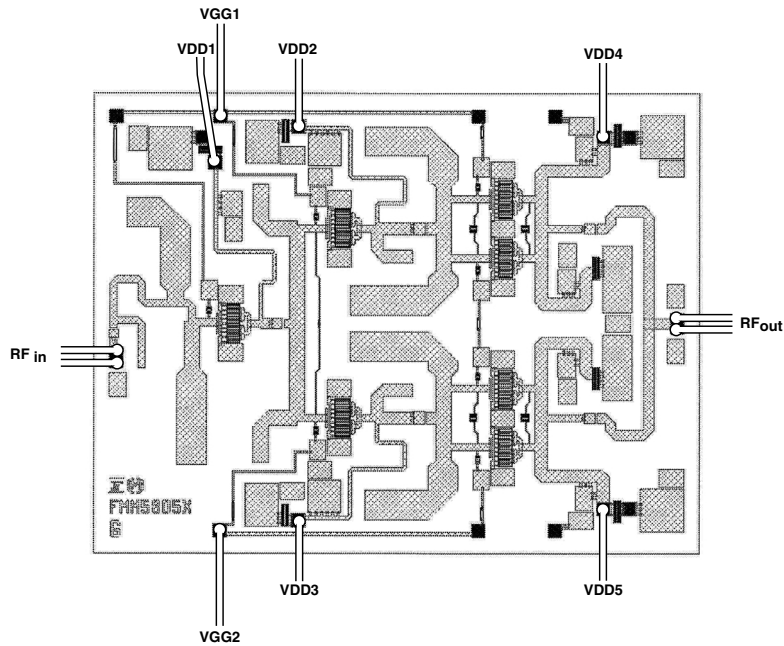
OUTPUT POWER vs. IMD



ASSEMBLY DRAWING



BONDING LAYOUT



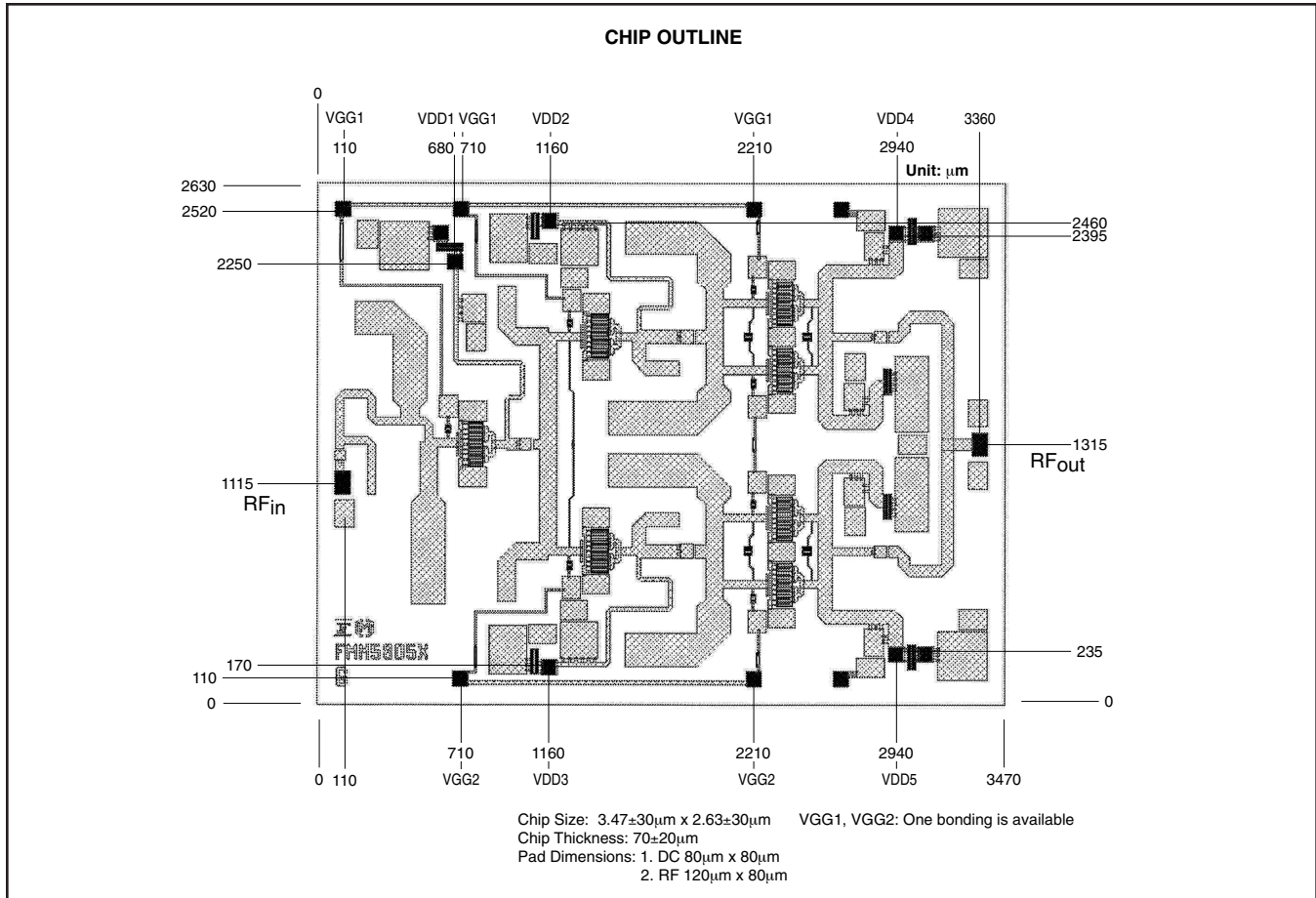
S-PARAMETERS

$V_{DD} = 6V, I_{DS} = 650mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
14000	.672	144.5	3.454	165.4	.006	-90.6	.821	114.2
14500	.596	138.7	4.871	134.6	.006	-84.4	.754	102.2
15000	.502	133.1	7.047	106.3	.006	-90.4	.659	87.0
15500	.402	132.5	7.936	68.9	.008	-101.5	.536	67.3
16000	.297	136.1	11.029	28.2	.007	-95.3	.399	34.4
16500	.225	147.8	12.663	-13.5	.007	-96.5	.316	-19.3
17000	.212	169.1	12.727	-58.7	.008	-93.8	.357	-77.0
17500	.256	-172.7	12.061	-97.8	.008	-90.3	.471	-117.9
18000	.321	-169.9	11.271	-133.1	.009	-92.5	.555	-144.7
18500	.364	-169.8	10.470	-167.0	.010	-92.2	.585	-163.0
19000	.405	-172.0	10.272	159.4	.010	-100.8	.578	-178.4
19500	.440	-179.7	9.732	129.4	.010	-109.5	.533	170.5
20000	.458	173.4	9.580	92.7	.009	-107.3	.471	162.5
20500	.431	161.5	9.979	55.9	.007	-115.9	.388	156.4
21000	.328	145.7	10.109	14.0	.007	-110.0	.325	156.3
21500	.116	138.9	9.421	-36.9	.006	-91.9	.282	158.9
22000	.209	-112.3	7.116	-92.0	.007	-84.0	.224	165.0
22500	.457	-133.3	4.684	-139.4	.009	-73.9	.186	178.1
23000	.598	-154.3	2.873	176.7	.011	-77.9	.162	-165.7

FMM5805X

17.5-20GHz Power Amplifier MMIC



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- 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.

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