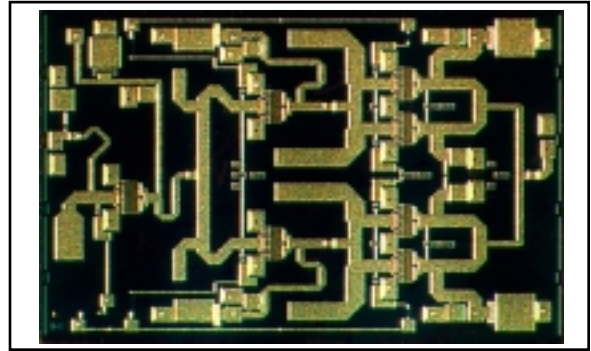


FEATURES

- High Output Power: $P_{1dB} = 30dBm$ (Typ.)
- High Gain: $G_{1dB} = 14dB$ (Typ.)
- High PAE: $\eta_{add} = 20\%$ (Typ.)
- Wide Frequency Band: 21-27 GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\Omega$
- 0.25 μm PHEMT Technology

DESCRIPTION

The FMM5807X is a high-gain, wide band 3-stage MMIC amplifier designed for operation in the 21-27GHz frequency range. This amplifier has an input and output designed for use in 50 Ω systems. This device is well suited for millimeter wave radio applications.



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

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V _{DD}		10	V
Gate-Source Voltage	V _{GG}		-3.0	V
Input Power	P _{in}		25	dBm
Storage Temperature	T _{stg}		-65 to +175	°C
Operating Backside Temperature	T _{op}		-40 to +85	°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 Tc=25°C)

Item	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Frequency Range	f		21 - 27			GHz
Output Power at 1 dB G.C.P.	P _{1dB}		27* 28**	29* 30**	- -	dBm
Power Gain at 1 dB G.C.P.	G _{1dB}	V _{DD} = 6V f = 21 ~ 27 GHz	10	14	19	dB
Drain Current	I _{ddrf}	*: at f = 21-24 GHz **: at f = 24-27 GHz	-	700	950	mA
Power-Added Efficiency	η_{add}	I _{DD} = 650mA (Typ.) Z _S = Z _L = 50 Ω	-	20	-	%
Input Return Loss	RL _{in}		-	-12	-	dB
Output Return Loss	RL _{out}		-	-8	-	dB

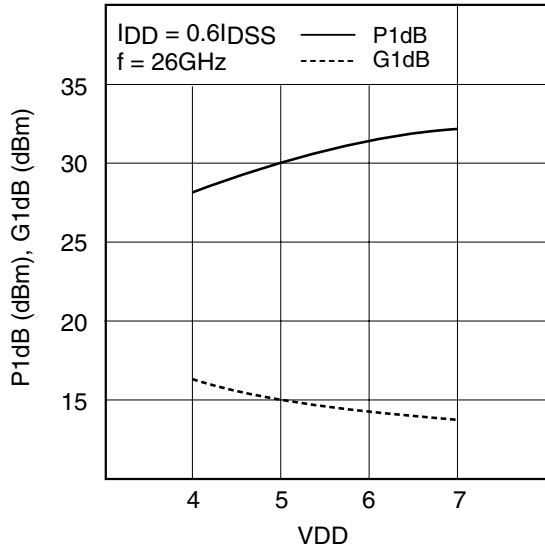
Note: RF parameter sample size 10pcs./wafer. Criteria (accept/reject)=(0/1)

G.C.P.: Gain Compression Point

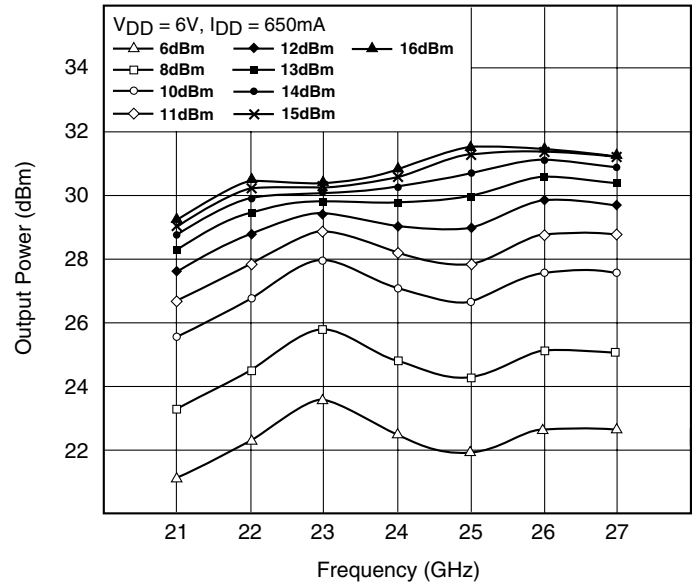
FMM5807X

21-27GHz Power Amplifier MMIC

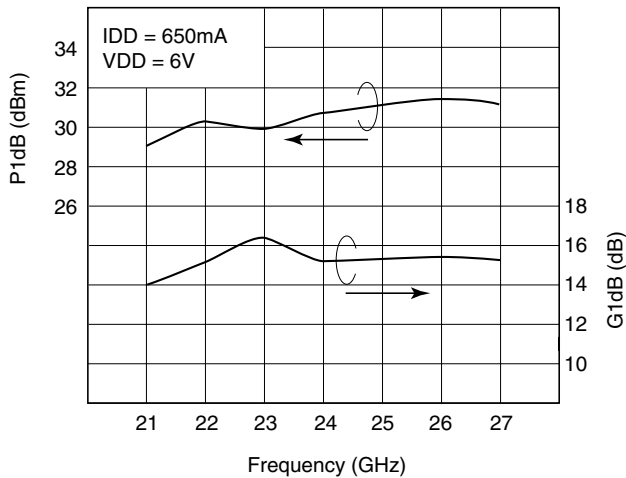
P1dB, G1dB vs. VDD



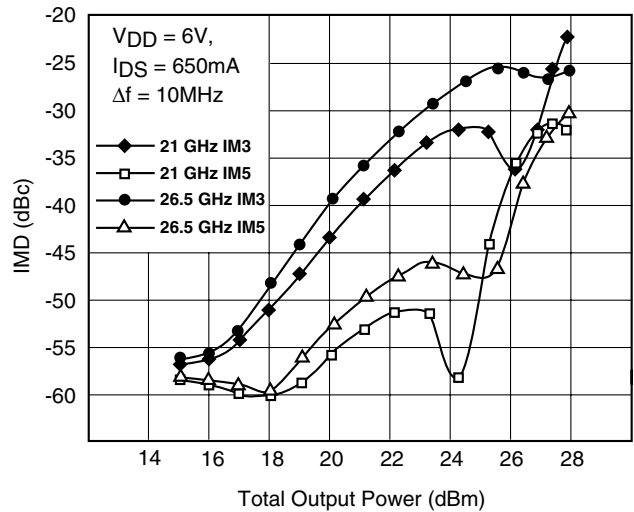
OUTPUT POWER & INPUT POWER vs. FREQUENCY



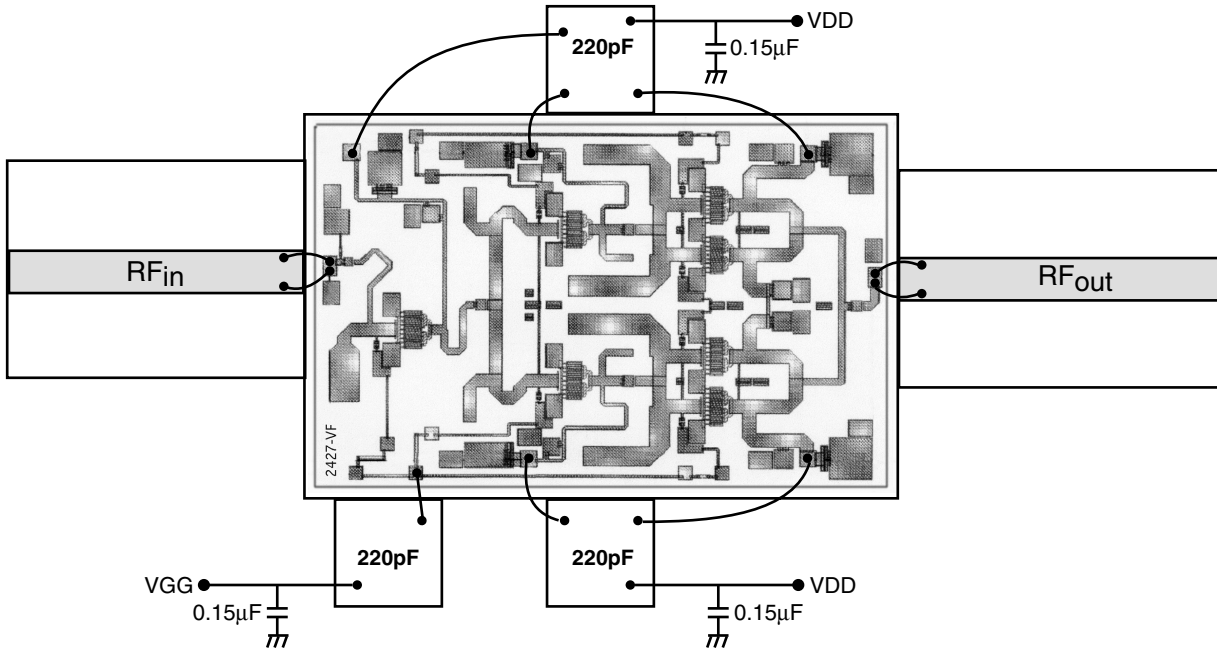
P1dB, G1dB vs. FREQUENCY



OUTPUT POWER vs. IMD



BONDING/ASSEMBLY DRAWING



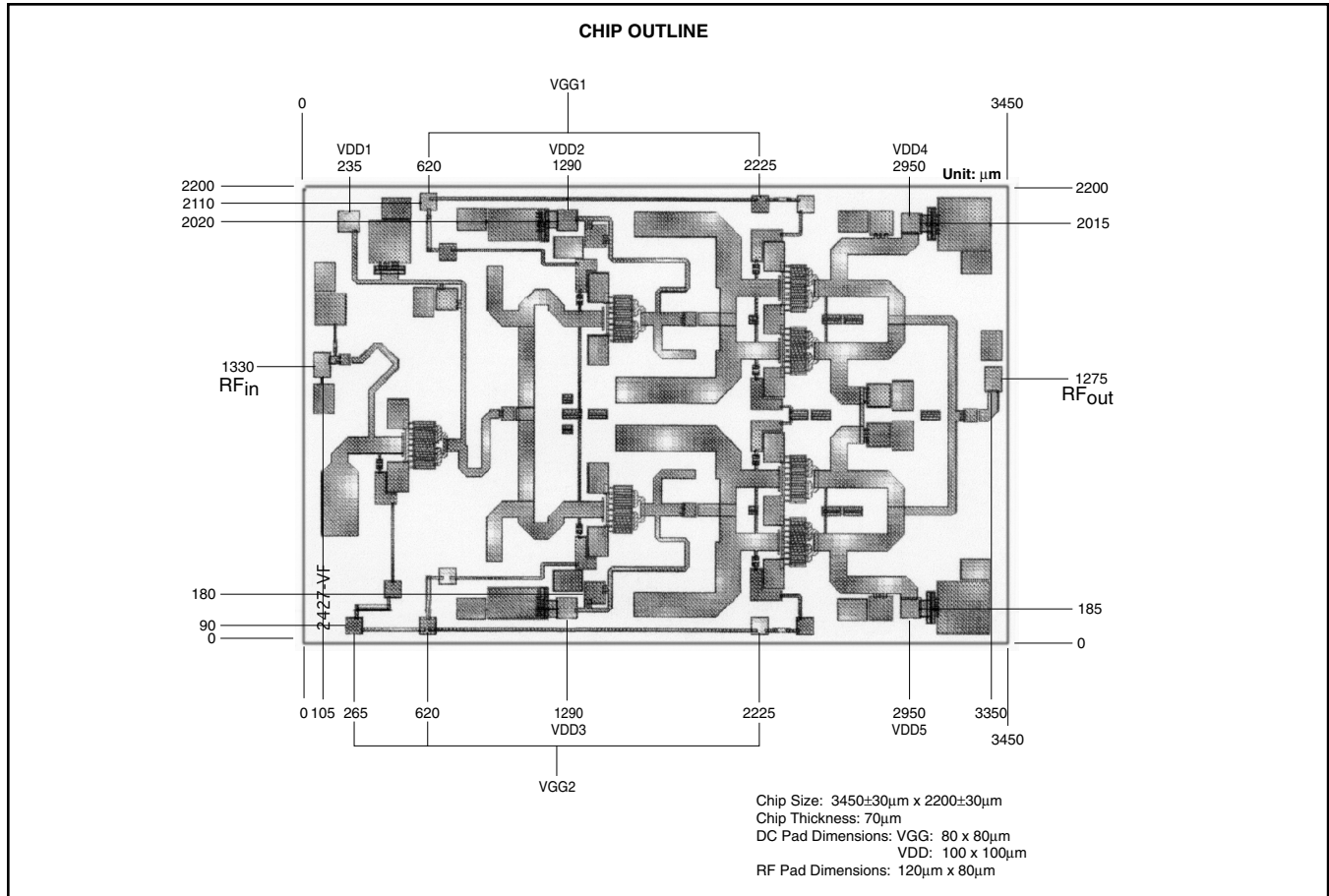
S-PARAMETERS

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

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
18000	.776	72.5	3.842	10.4	.003	-91.0	.702	63.2
18500	.740	65.1	4.541	-16.8	.005	-75.1	.617	52.6
19000	.698	57.8	5.287	-45.5	.004	-88.7	.510	41.5
19500	.655	50.9	6.001	-75.6	.005	-82.5	.381	29.7
20000	.613	44.5	6.588	-106.9	.005	-107.9	.230	21.6
20500	.566	38.3	6.949	-138.6	.004	-68.8	.082	32.9
21000	.520	31.9	7.057	-170.2	.003	-81.6	.100	123.2
21500	.476	26.4	7.001	159.2	.004	-42.0	.215	129.2
22000	.433	21.2	6.807	129.6	.005	-78.6	.309	121.0
22500	.400	16.1	6.568	100.8	.005	-75.2	.380	111.4
23000	.367	10.8	6.314	72.6	.004	-88.8	.425	100.1
23500	.339	5.7	6.104	45.1	.003	-45.0	.444	90.0
24000	.308	-0.5	5.956	17.8	.003	-86.7	.452	80.2
24500	.276	-7.1	5.838	-9.8	.005	-80.9	.451	70.6
25000	.243	-13.7	5.799	-37.5	.005	-67.7	.436	61.0
25500	.204	-22.5	5.832	-66.5	.006	-59.8	.419	50.8
26000	.166	-30.8	5.924	-96.6	.008	-67.8	.391	39.8
26500	.121	-44.7	6.109	-128.9	.006	-60.7	.351	27.4
27000	.064	-70.0	6.364	-164.0	.009	-71.9	.309	14.7
27500	.038	176.2	6.673	156.2	.008	-91.5	.269	2.3
28000	.140	117.5	6.840	109.2	.009	-100.9	.250	-9.2
28500	.286	86.2	6.228	52.2	.007	-119.9	.292	-34.1
29000	.408	52.4	4.231	-8.6	.004	-96.0	.330	-73.1
29500	.445	23.9	2.273	-59.9	.003	-59.5	.350	-113.7
30000	.453	2.0	1.145	-100.4	.009	-77.3	.382	-145.3

FMM5807X

21-27GHz Power Amplifier MMIC



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