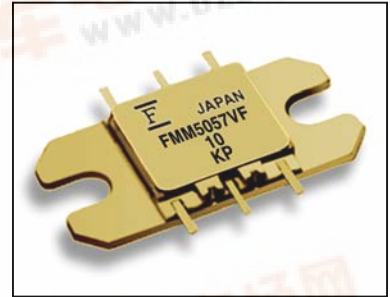


FMM5057VF

7.1-8.5GHz Power Amplifier MMIC

FEATURES

- High Output Power: 34.0dBm(typ.)
- High Linear Gain: 26.0dB(typ.)
- Low VSWR
- Broad Band: 7.1 ~ 8.5GHz
- Impedance Matched Zin/Zout = 50Ω
- Small Hermetic Metal-Ceramic Package(VF)



DESCRIPTION

The FMM5057VF is a MMIC amplifier that contains a four-stage amplifier, internally matched, for standard communications band in the 7.1 to 8.5GHz frequency range.

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

ABSOLUTE MAXIMUM RATINGS (Case Temperature Tc=25°C)

Item	Symbol	Rating	Unit
DC Input Voltage	V _{DD}	12	V
DC Input Voltage	V _{GG}	-7	V
Input Power	P _{in}	14	dBm
Storage Temperature	T _{stg}	-55 to +125	°C

Recommended Operating Condition

Item	Symbol	Condition	Unit
DC Input Voltage at Tc=25°C	V _{DD}	10	V
Input Power at Tc=25°C	P _{in}	12	dBm
DC Input Current at Tc=25°C	I _{DD}	≤1200	mA
Operating Case Temperature	T _c	-40 to +85	°C

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25°C)

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Frequency Range	f		7.1 - 8.5			GHz
Output Power at 1dB G.C.P.	P _{1dB}	V _{DD} =10V V _{GG} =-5V f=7.1 to 8.5GHz	32.0	34.0	-	dBm
Power Gain at 1dB G.C.P.	G _{1dB}		23.0	26.0	-	dB
Gain Flatness	ΔG		-	2.4	4.0	dB
Input VSWR	VSWR _i		-	2 : 1	2.6 : 1	-
Output VSWR	VSWR _o		-	2 : 1	-	-
DC Input Current	I _{DD}	V _{DD} =10V, V _{GG} =-5V	-	1100	1200	mA
DC Input Current	I _{GG}		-	5.0	15.0	mA
Channel Temperature Rise	ΔT _{ch}		-	50	-	°C

G.C.P.: Gain Compression Point

CASE STYLE: VF

Note: G_{1dB} is referenced to Linear Gain measured at P_{in}=-3dBm.

ESD	Class 0	~ 199 V
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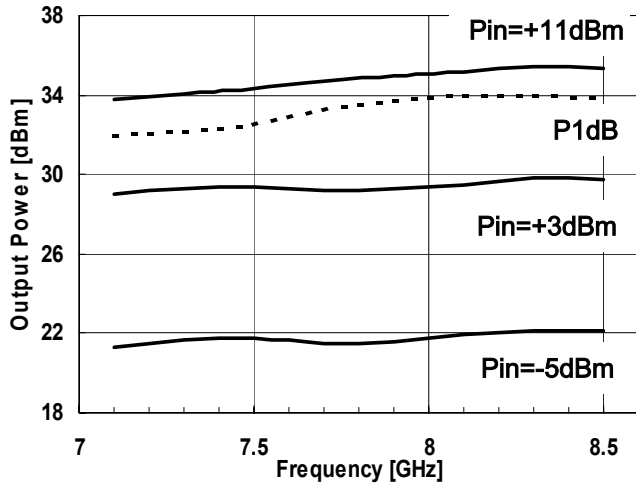
Note : Based on EIAJ ED-4701 C-111A(C=100pF, R=1.5kΩ)

FMM5057VF

7.1-8.5GHz Power Amplifier MMIC

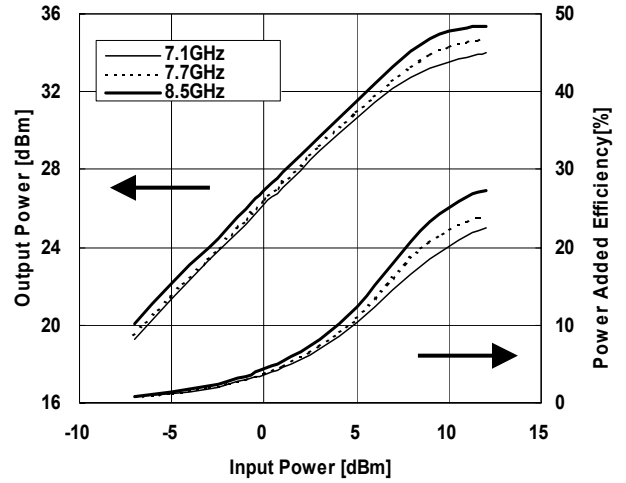
OUTPUT POWER vs. FREQUENCY

VDD=10V, VGG=-5V



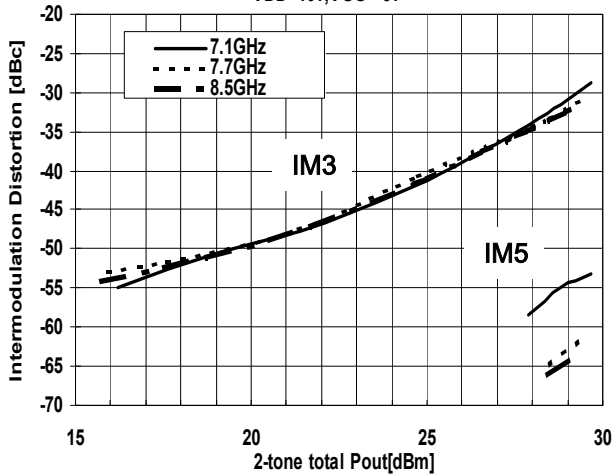
OUTPUT POWER, POWER ADDED EFFICIENCY vs. INPUT POWER

VDD=10V, VGG=-5V



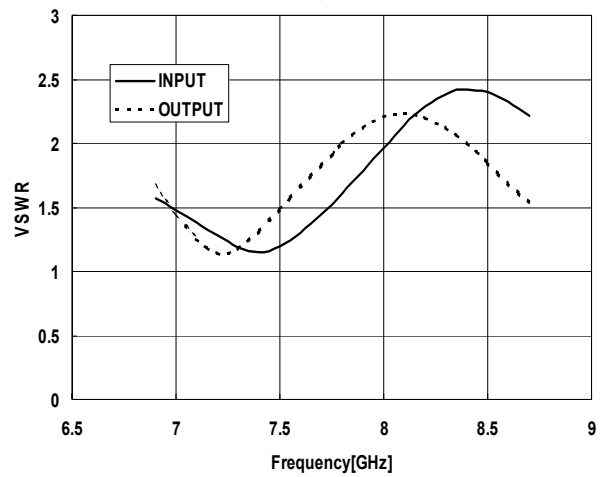
IMD vs. OUTPUT POWER

VDD=10V, VGG=-5V



VSWR vs. FREQUENCY

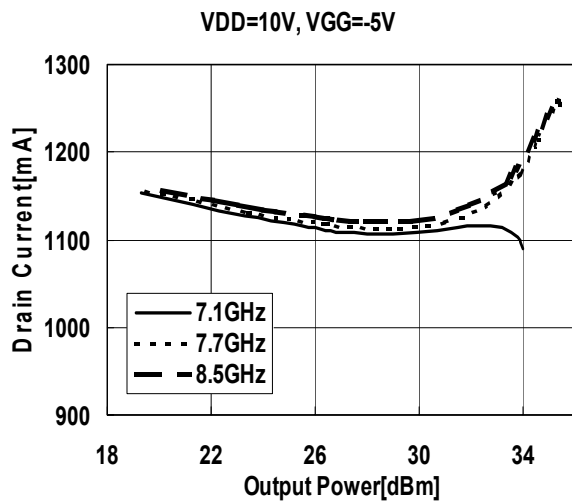
VDD=10V, VGG=-5V



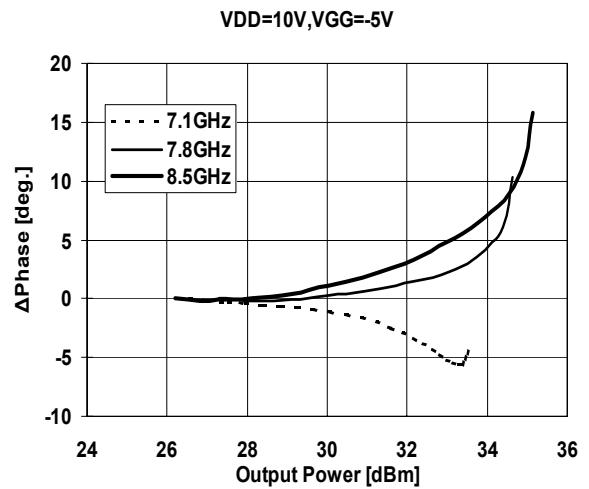
FMM5057VF

7.1-8.5GHz Power Amplifier MMIC

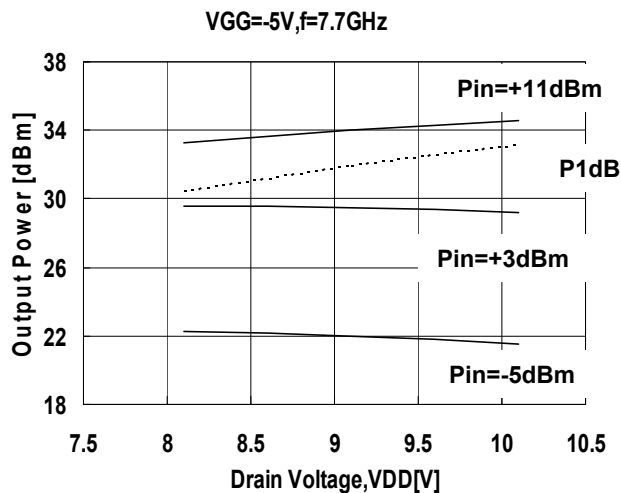
DRAIN CURRENT vs OUTPUT POWER



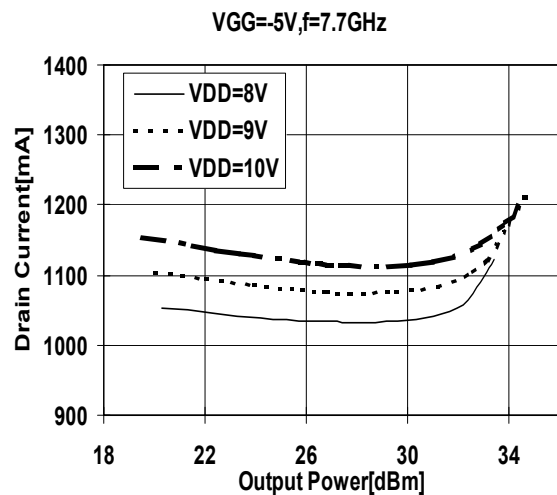
AMPM vs OUTPUT POWER



OUTPUT POWER vs. DRAIN VOLTAGE



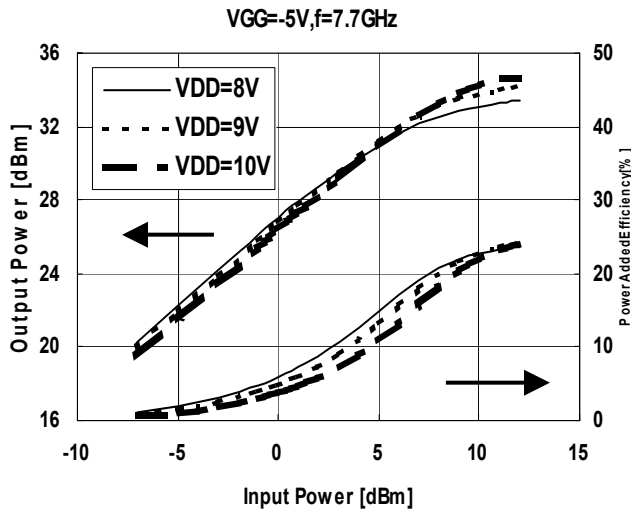
DRAIN CURRENT vs OUTPUT POWER



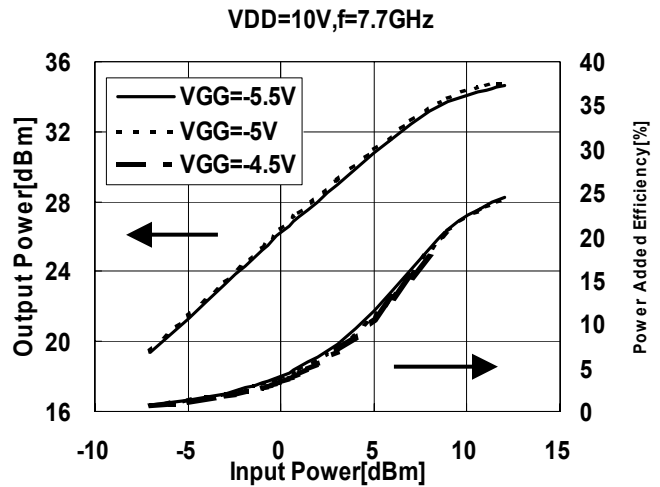
FMM5057VF

7.1-8.5GHz Power Amplifier MMIC

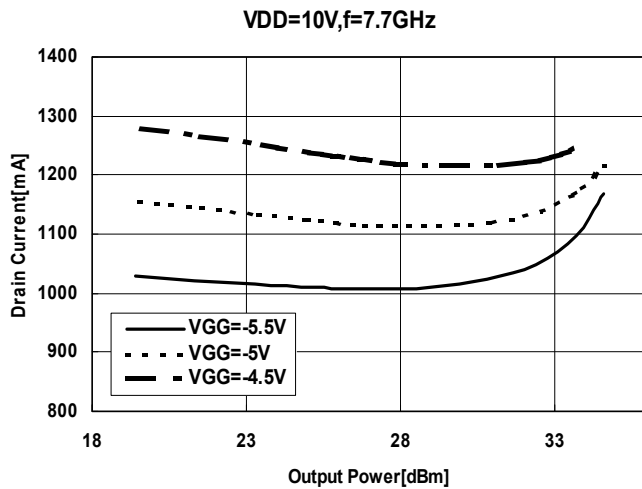
OUTPUT POWER , POWER ADDED EFFICIENCY vs. INPUT POWER



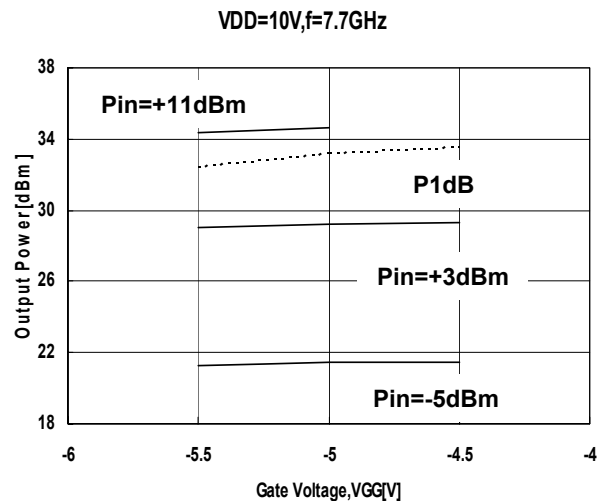
OUTPUT POWER , POWER ADDED EFFICIENCY vs. INPUT POWER



DRAIN CURRENT vs OUTPUT POWER



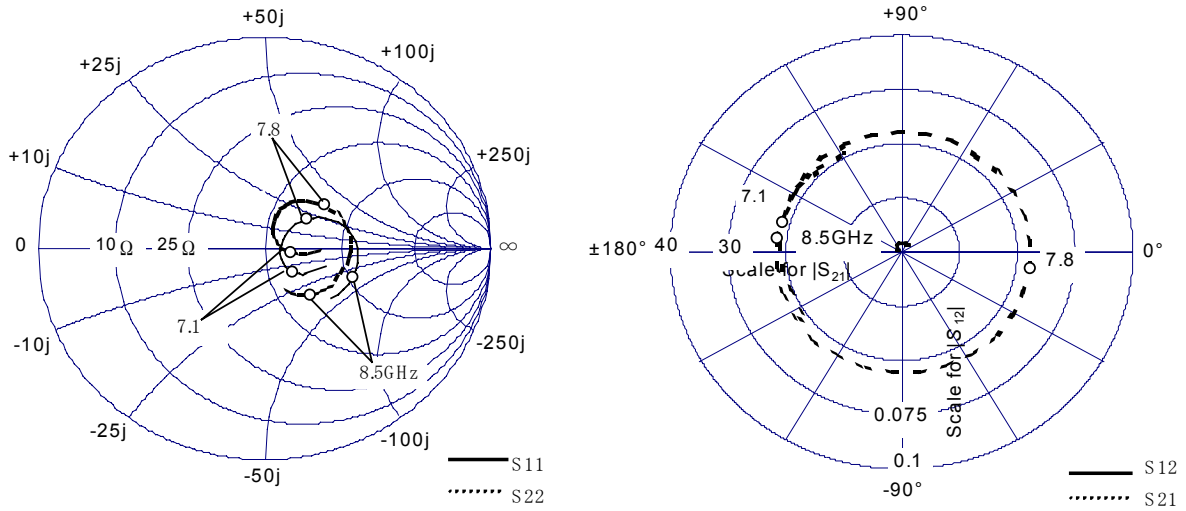
OUTPUT POWER vs. GATE VOLTAGE



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7.1-8.5GHz Power Amplifier MMIC

■ S-PARAMETER



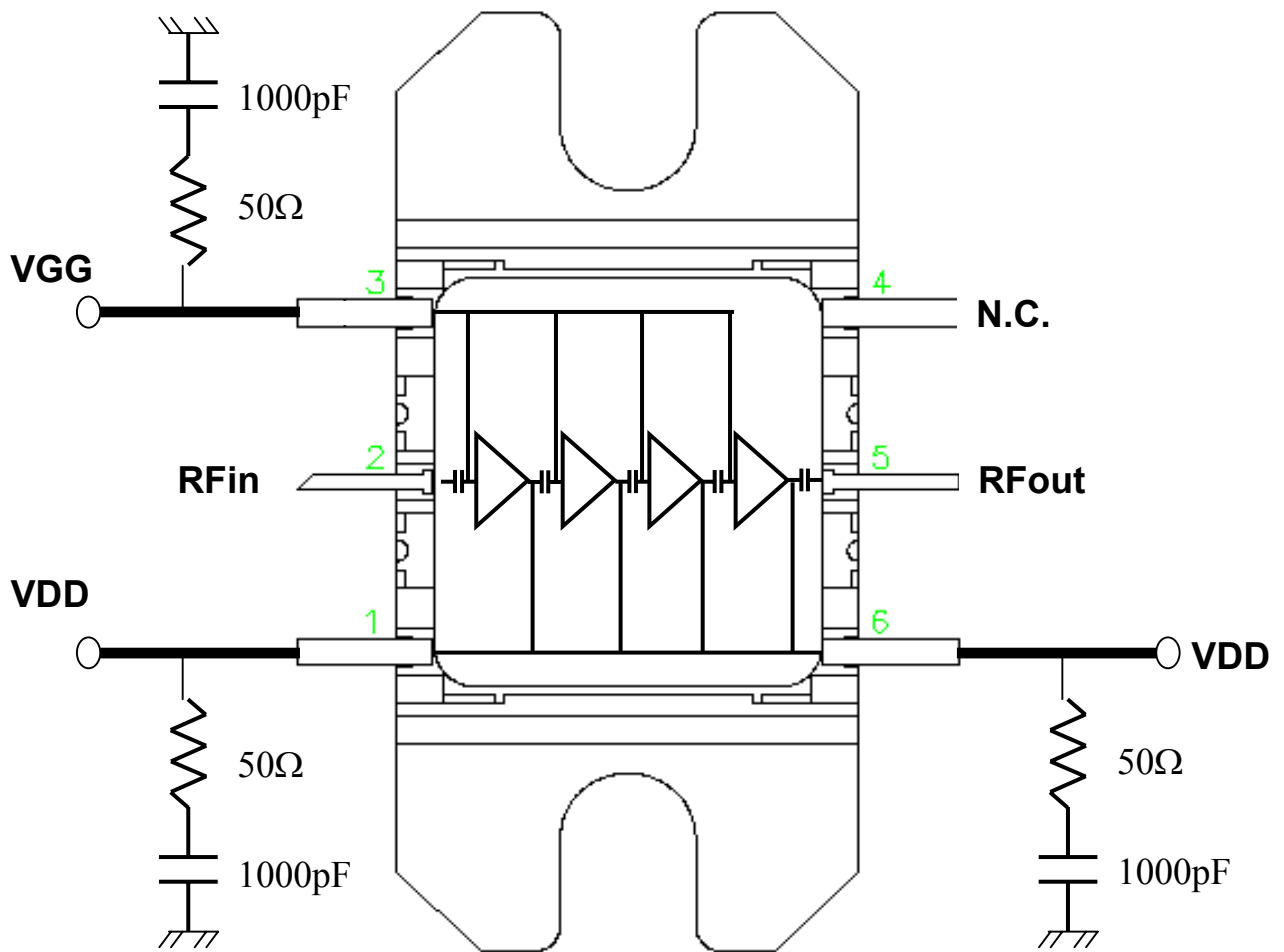
VDD=10.0V, VGG=-5.0V

Frequency [GHz]	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
6.9	0.22	-32.75	20.21	-147.13	0.0018	141.10	0.25	-1.17
7	0.19	-38.49	20.78	-171.17	0.0017	139.86	0.18	-7.55
7.1	0.16	-42.30	21.29	164.64	0.0017	144.62	0.11	-6.51
7.2	0.12	-42.44	21.74	140.28	0.0018	148.20	0.07	20.06
7.3	0.09	-32.59	22.04	115.51	0.0020	146.45	0.08	63.42
7.4	0.07	-2.59	22.24	90.84	0.0022	148.64	0.14	73.27
7.5	0.09	28.05	22.33	66.15	0.0025	143.94	0.20	68.70
7.6	0.13	38.99	22.35	41.55	0.0028	139.92	0.25	59.98
7.7	0.18	40.08	22.42	17.21	0.0031	134.35	0.29	49.76
7.8	0.23	36.58	22.37	-7.47	0.0033	127.55	0.33	38.34
7.9	0.28	31.41	22.44	-32.13	0.0036	121.48	0.36	26.63
8	0.33	24.61	22.42	-56.99	0.0038	116.50	0.38	14.30
8.1	0.36	16.99	22.41	-82.39	0.0040	105.95	0.38	1.81
8.2	0.39	8.76	22.35	-108.02	0.0042	97.60	0.37	-10.89
8.3	0.41	-0.24	22.15	-133.79	0.0044	89.83	0.36	-23.72
8.4	0.42	-9.50	21.99	-160.00	0.0044	81.16	0.33	-35.94
8.5	0.41	-19.29	21.71	173.43	0.0043	72.49	0.30	-47.13
8.6	0.40	-28.69	21.40	146.38	0.0041	63.50	0.26	-57.41

FMM5057VF

7.1-8.5GHz Power Amplifier MMIC

■ Recommended Bias Circuit and Internal Block Diagram



Note 1: The RC networks are recommended on the bias supply lines, close to the package, to prevent video oscillations which could damage the module.

Note 2: Bias point VDD can be connected at the input side or at the output. The two pins named VDD are internally connected.

PIN ASSIGNMENT

- 1 : VDD
- 2 : RF in
- 3 : VGG
- 4 : N.C.
- 5 : RF out
- 6 : VDD

FMM5057VF

7.1-8.5GHz Power Amplifier MMIC

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