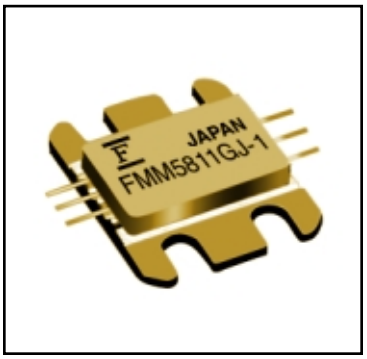
FMM5811GJ-1

17.7-23.6GHz Power Amplifier MMIC

FEATURES



- High Output Power: P_{1dB} = 24.5dBm (Typ.)
- High Gain: G_{1dB} = 15dB (Typ.)
- High PAE: η_{add} = 20% (Typ.)
- Wide Frequency Band: 17.7-23.6GHz
- Impedance Matched Zin/Zout = 50Ω
- 0.25μm PHEMT Technology

DESCRIPTION

The FMM5811GJ-1 is a high-gain, wide band 3-stage MMIC amplifier designed for operation in the 17.7-23.6GHz frequency range. This amplifier has an input and output matching designed for use in a 50Ω systems.This device is well suited for point-to-point 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}		-7	V
Input Power	P_{in}		16	dBm
Storage Temperature	T_{stg}		-55 to +125	°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.

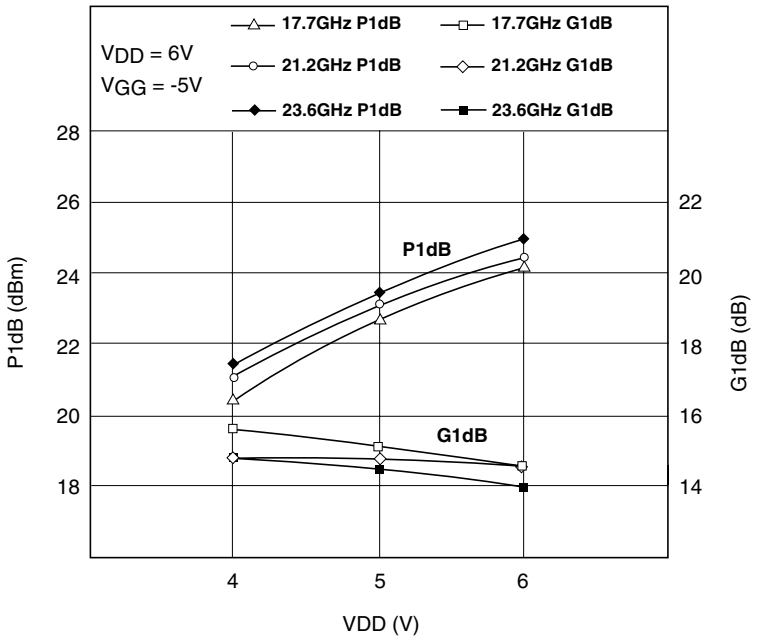
ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

Item	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Frequency Range	f	V_{DD} = 6V V_{GG} = -5V f = 17.7 - 23.6 GHz $Z_S = Z_L$ = 50Ω	17.7 - 23.6			GHz
Output Power at 1 dB G.C.P.	P_{1dB}		23.0	24.5	-	dBm
Power Gain at 1 dB G.C.P.	G_{1dB}		12	15	20	dB
Gain Flatness	ΔG		-	2.0	-	dB
Power-Added Efficiency	ηadd		-	20	-	%
Drain Current	I_{ddrf}		-	250	400	mA
Gate Current	I_{ggrf}		-	-7.5	-15.0	mA
Input Return Loss	RL_{in}		-	-7.0	-	dB
Output Return Loss	RL_{out}		-	-5.0	-	dB

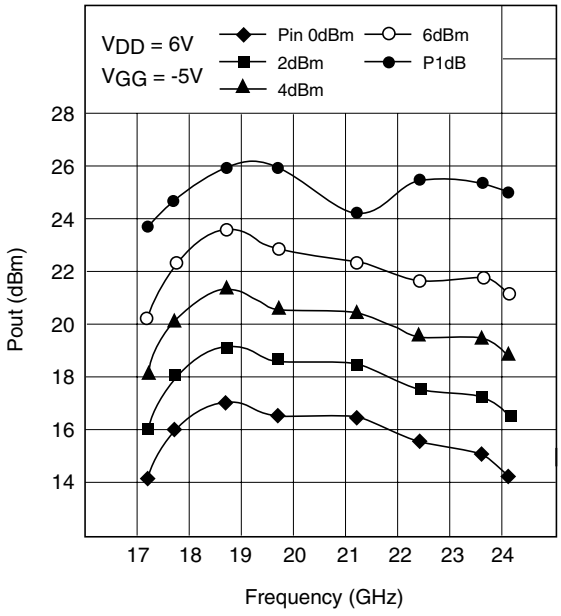
G.C.P.: Gain Compression Point

Edition 1.1
July 2001

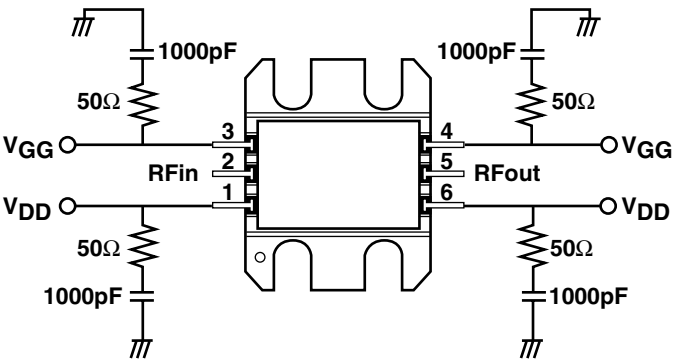
P1dB & G1dB vs. VDD



TOTAL OUTPUT POWER vs. FREQUENCY



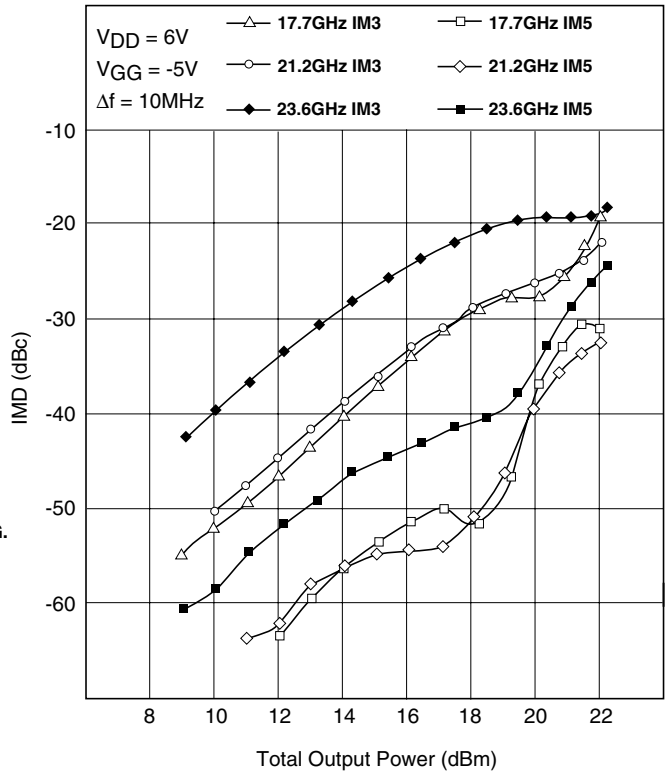
RECOMMENDED BIAS CIRCUIT

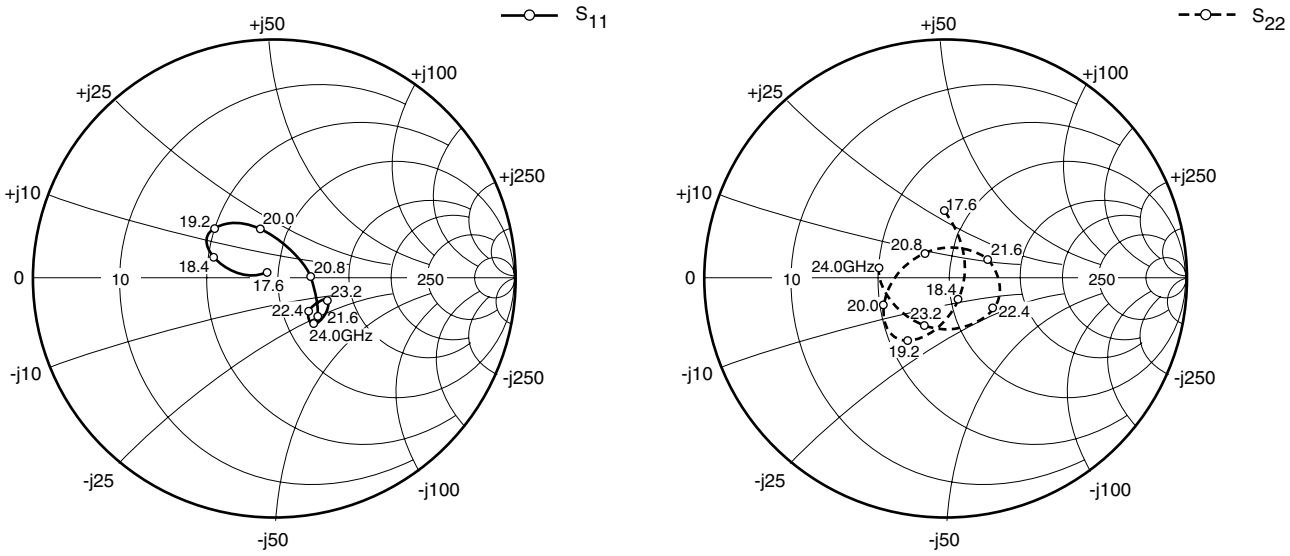


Note 1: The R/C networks are recommended on the bias supply lines, close to the package, to prevent video oscillations which could damage the module.

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

IMD vs. OUTPUT POWER





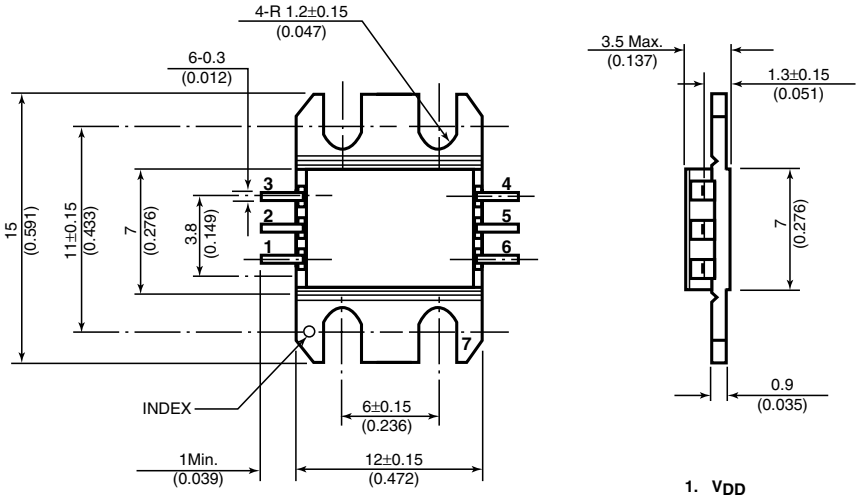
S-PARAMETERS

V_{DD} = 6V, V_{GG} = -5V

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
17200	.088	61.4	5.077	15.8	.007	156.7	.412	107.9
17300	.068	63.2	5.315	2.7	.007	145.1	.385	104.3
17400	.050	76.7	5.571	-10.9	.007	136.2	.355	100.3
17500	.036	105.3	5.823	-25.0	.006	125.8	.322	96.0
17600	.043	149.0	6.101	-39.6	.006	117.2	.287	91.2
17700	.070	167.9	6.342	-54.5	.006	106.5	.249	85.7
17800	.103	174.2	6.549	-69.9	.006	97.4	.210	78.9
17900	.136	173.9	6.724	-85.4	.006	88.1	.169	70.3
18000	.167	172.8	6.869	-101.2	.005	80.9	.130	57.7
18100	.199	170.0	6.968	-116.9	.005	70.1	.096	38.8
18200	.225	168.0	7.01	-132.6	.005	62.9	.074	6.7
18300	.253	165.3	7.025	-148.1	.005	54.9	.076	-32.7
18400	.273	162.1	7.02	-163.4	.005	48.4	.101	-60.3
18500	.291	159.8	6.987	-178.6	.005	40.3	.132	-76.7
18600	.305	156.8	6.948	166.4	.005	35.5	.165	-87.9
18700	.317	154.4	6.881	151.8	.004	26.3	.196	-96.0
18800	.324	151.9	6.819	137.0	.004	20.6	.223	-102.8
18900	.329	149.2	6.757	122.5	.004	12.1	.248	-108.5
19000	.332	146.9	6.686	108.2	.004	5.6	.269	-113.7
19100	.329	144.0	6.652	94.0	.004	-0.1	.287	-118.3
19200	.325	141.4	6.63	79.8	.004	-9.6	.301	-122.6
19300	.317	138.5	6.593	65.6	.004	-17.9	.310	-126.8
19400	.309	135.4	6.585	51.6	.004	-24.2	.317	-131.0
19500	.296	131.7	6.586	37.4	.004	-31.5	.319	-135.1
19600	.282	128.2	6.594	23.1	.004	-38.0	.318	-139.4
19700	.265	125.3	6.57	9.0	.004	-45.7	.314	-143.7
19800	.249	119.0	6.597	-5.1	.004	-55.2	.307	-148.3
19900	.227	113.6	6.644	-19.4	.004	-62.5	.296	-153.0
20000	.208	107.2	6.665	-34.2	.004	-71.7	.284	-158.1
20100	.187	99.0	6.661	-48.6	.004	-81.1	.269	-163.5
20200	.167	90.1	6.701	-63.1	.004	-87.5	.251	-169.6
20500	.129	49.5	6.716	-107.7	.004	-113.2	.190	166.8
21000	.174	-16.6	6.565	177.0	.003	-161.4	.131	98.1
21500	.228	-42.2	6.212	103.3	.002	139.3	.176	32.8
22000	.225	-50.6	6.081	29.9	.001	35.8	.223	-3.3
22500	.197	-41.6	6.088	-46.3	.001	-94.5	.225	-40.1
23000	.214	-25.9	5.956	-126.0	.001	-174.6	.210	-91.7
23500	.256	-27.2	5.559	152.1	.002	119.1	.242	-148.4
24000	.248	-49.3	5.103	66.9	.003	32.9	.279	170.8

Case Style "GJ"

Metal-Ceramic Hermetic Package



1. V_{DD}
2. RF_{in}
3. V_{GG}
4. V_{GG}
5. RF_{out}
6. V_{DD}
7. GND (Flange)

Unit: mm(inches)

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