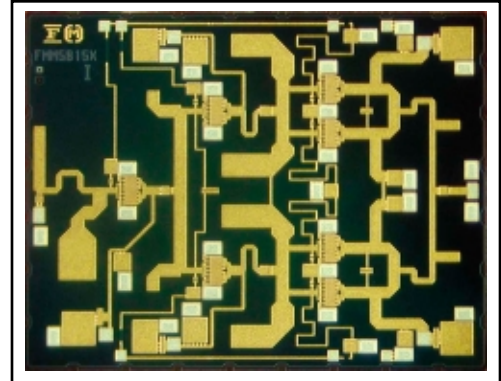


FEATURES

- High Output Power: $P_{1dB} = 31dBm$ (Typ.)
- High Gain: $G_{1dB} = 21dB$ (Typ.)
- High PAE: $\eta_{add} = 30%$ (Typ.)
- Impedance Matched $Z_{in}/Z_{out} = 50\Omega$
- 0.25 μm PHEMT Technology

DESCRIPTION

The FMM5815X is a high-gain, high linearity, 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 $T_a=25^\circ C$)

| 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 | $^\circ C$ |
| Operating Backside Temperature | T_{op} | | -65 to +85 | $^\circ C$ |

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 4 and -0.39 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 | | 17.5 - 20.0 | | | GHz |
| Output Power at 1 dB G.C.P. | P_{1dB} | $V_{DD} = 6V$ $I_{DD} = 600mA$ (Typ.) $Z_S = Z_L = 50\Omega$ | 29.5 | 31 | - | dBm |
| Power Gain at 1 dB G.C.P. | G_{1dB} | | 19 | 21 | 24 | dB |
| Drain Current | I_{ddrf} | | - | 700 | 950 | mA |
| Power-Added Efficiency | η_{add} | | - | 30 | - | % |
| Input Return Loss | RL_{in} | | - | -12 | - | dB |
| Output Return Loss | RL_{out} | | - | -8 | - | dB |
| 3rd Order Intermodulation Distortion | IM_3 | | $\Delta f=10MHz$, 2-Tone Test, $P_{out}=20dBm$ S.C.L. | -37.0 | -40 | - |

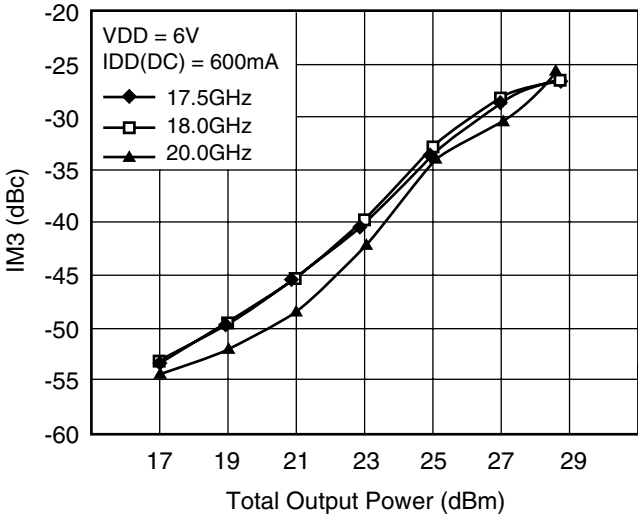
Note 1: RF parameter sample size 10pcs. Criteria (accept/reject)=(0/1)
 Note 2: Electrical Characteristic is specified on RF-probe measurements

G.C.P.: Gain Compression Point
 S.C.L.: Single Carrier Level

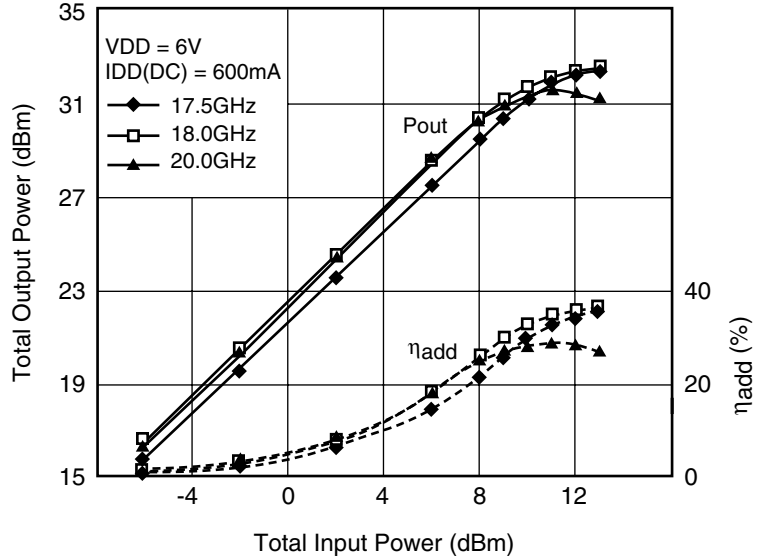
FMM5815X

17.5-20GHz Power Amplifier MMIC

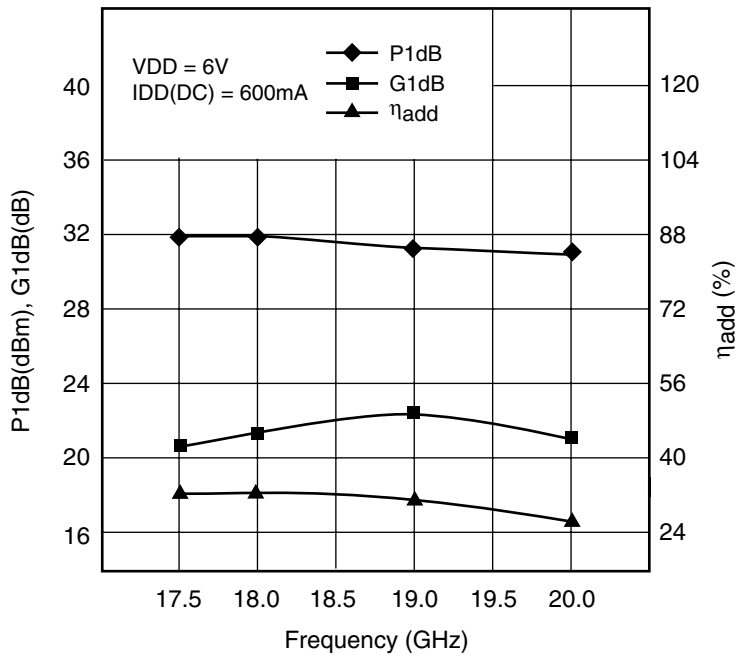
IM3 vs. OUTPUT POWER



OUTPUT POWER vs. INPUT POWER



P1dB & G1dB vs. FREQUENCY

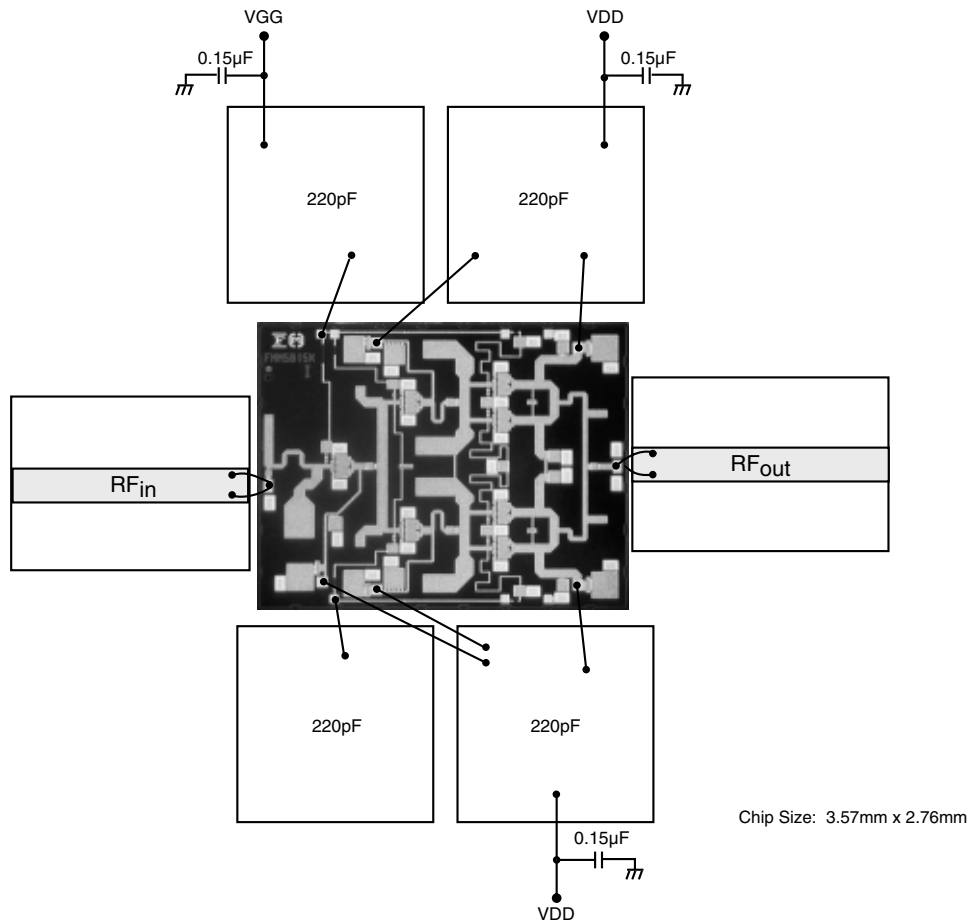


S-PARAMETERS

$V_{DD} = 6V, I_{DS} = 600mA$

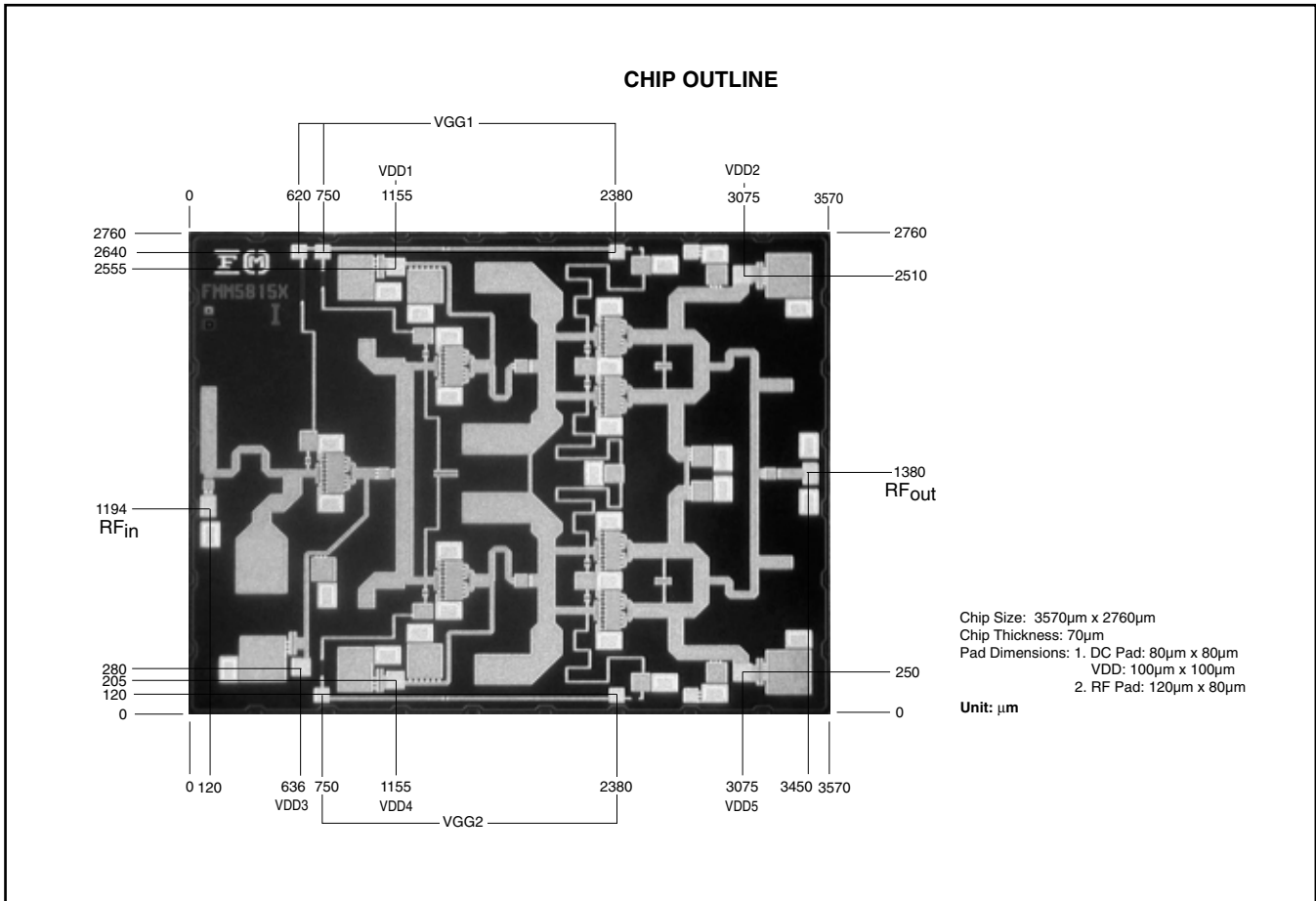
| FREQUENCY (MHZ) | S11 | | S21 | | S12 | | S22 | |
|--------------------|------|--------|--------|--------|------|--------|------|--------|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 16500 | .357 | 47.0 | 10.785 | -44.4 | .004 | -51.8 | .110 | -20.6 |
| 17000 | .385 | 19.3 | 12.059 | -80.4 | .005 | -42.8 | .111 | -93.5 |
| 17500 | .443 | -10.5 | 13.360 | -117.3 | .005 | -62.5 | .169 | -134.6 |
| 18000 | .512 | -39.3 | 14.483 | -156.9 | .007 | -83.0 | .205 | -166.6 |
| 18500 | .566 | -66.7 | 14.782 | 161.9 | .007 | -95.1 | .220 | 164.9 |
| 19000 | .572 | -92.9 | 14.585 | 120.3 | .005 | -112.5 | .178 | 137.0 |
| 19500 | .538 | -117.9 | 13.693 | 78.7 | .005 | -142.9 | .121 | 108.3 |
| 20000 | .459 | -144.7 | 13.188 | 37.1 | .003 | 94.6 | .051 | 53.6 |
| 20500 | .346 | 165.1 | 12.600 | -10.4 | .005 | 33.8 | .044 | 19.8 |
| 21000 | .307 | 74.2 | 11.066 | -65.4 | .006 | -10.5 | .080 | 11.4 |

ASSEMBLY DRAWING



FMM5815X

17.5-20GHz Power Amplifier MMIC



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- 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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