

FEATURES

- High Output Power: $P_{1dB} = 36.0\text{dBm(Typ.)}$
- High Gain: $G_{1dB} = 26.0\text{dB(Typ.)}$
- Low In/Out VSWR
- Broad Band: 13.75 ~ 14.5GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed Package (12 X 15 X 3.5mm)



DESCRIPTION

The FMM5048GJ is a module that contains a two-stage amplifier, internally matched, for standard communications in the 13.75 to 14.5GHz frequency range. This product is well suited for VSAT applications as it offers high power, high gain, and low VSWR.

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

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

| Parameter | Symbol | Condition | Rating | Unit |
|----------------------------|-----------|--------------------------|-------------|------------------|
| DC Input Voltage | V_{DD} | | 12 | V |
| DC Input Voltage | V_{GG} | | -7 | V |
| Input Power | P_{in} | $T_c = 25^\circ\text{C}$ | 12 | dBm |
| Storage Temperature | T_{stg} | | -55 to +125 | $^\circ\text{C}$ |
| Operating Case Temperature | T_{op} | | -55 to +85 | $^\circ\text{C}$ |

Fujitsu recommends the following conditions for the reliable operation of GaAs modules:

1. The drain operating voltage (V_{DD}) should not exceed 10 volts.
2. The gate operating voltage (V_{GG}) should not exceed -5 volts.

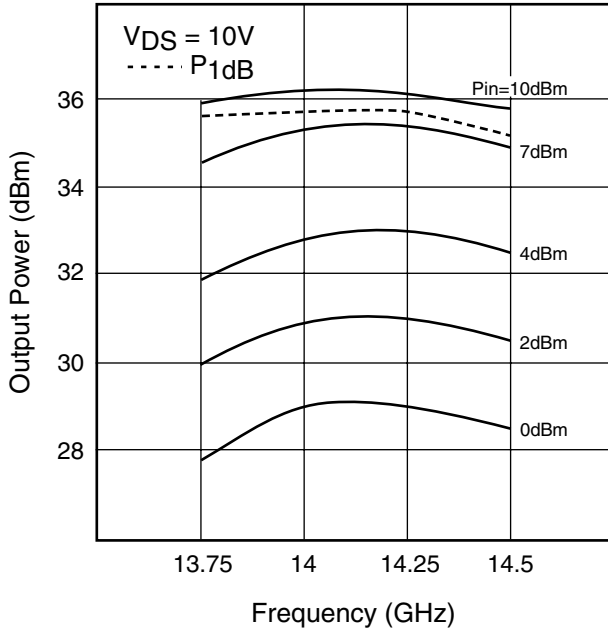
ELECTRICAL CHARACTERISTICS (Case Temperature $T_a = 25^\circ\text{C}$)

| Item | Symbol | Condition | Limit | | | Unit |
|----------------------------|------------|---|-------|------|-------|------|
| | | | Min. | Typ. | Max. | |
| Output Power at 1dB G.C.P. | P_{1dB} | $V_{DD} = 10\text{V}$ $V_{GG} = -5\text{V}$ $f = 13.75 \sim 14.5\text{GHz}$ | 35.0 | 36.0 | - | dBm |
| Power Gain at 1dB G.C.P. | G_{1dB} | | 23.0 | 26.0 | - | dB |
| Gain Flatness | ΔG | | - | 1.2 | 3.0 | dB |
| Input VSWR | $VSWR_i$ | | - | 2:1 | 2.5:1 | - |
| Output VSWR | $VSWR_o$ | | - | 3:1 | 3.5:1 | - |
| DC Input Current | I_{DD} | | - | 2.1 | 2.5 | A |
| DC Input Current | I_{GG} | | - | 6 | 12 | mA |

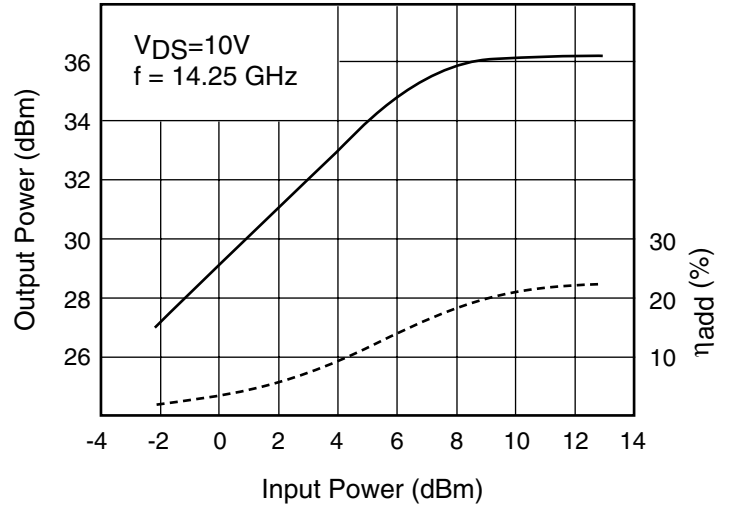
CASE STYLE: GJ

G.C.P.: Gain Compression Point

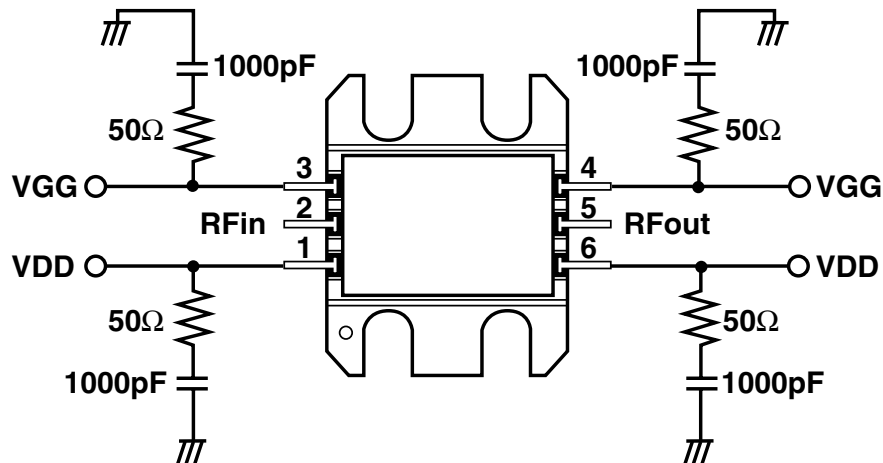
OUTPUT POWER vs. FREQUENCY



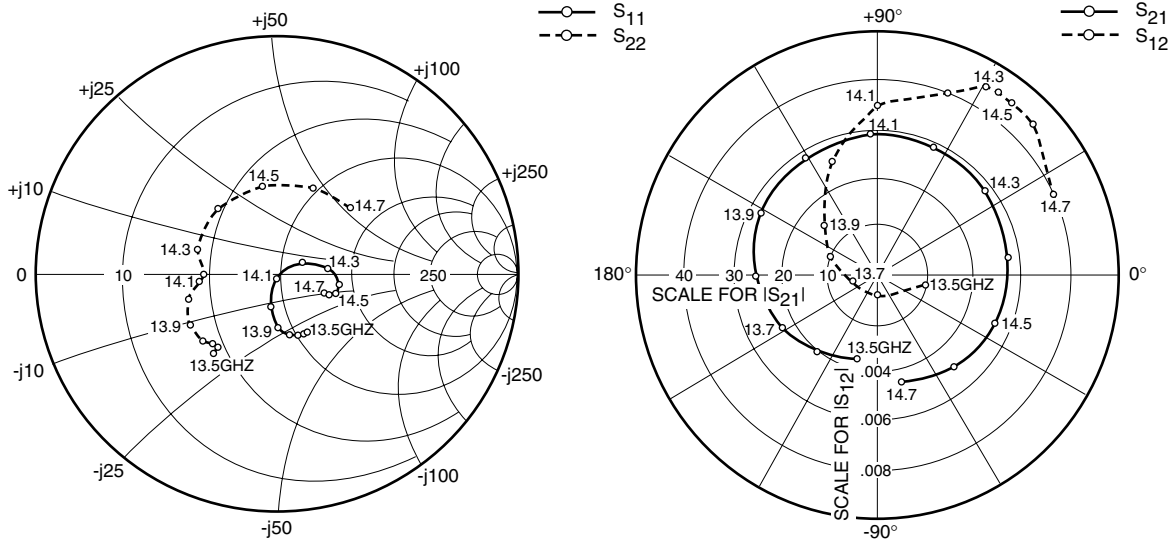
OUTPUT POWER vs. INPUT POWER



RECOMMENDED BIAS CIRCUIT



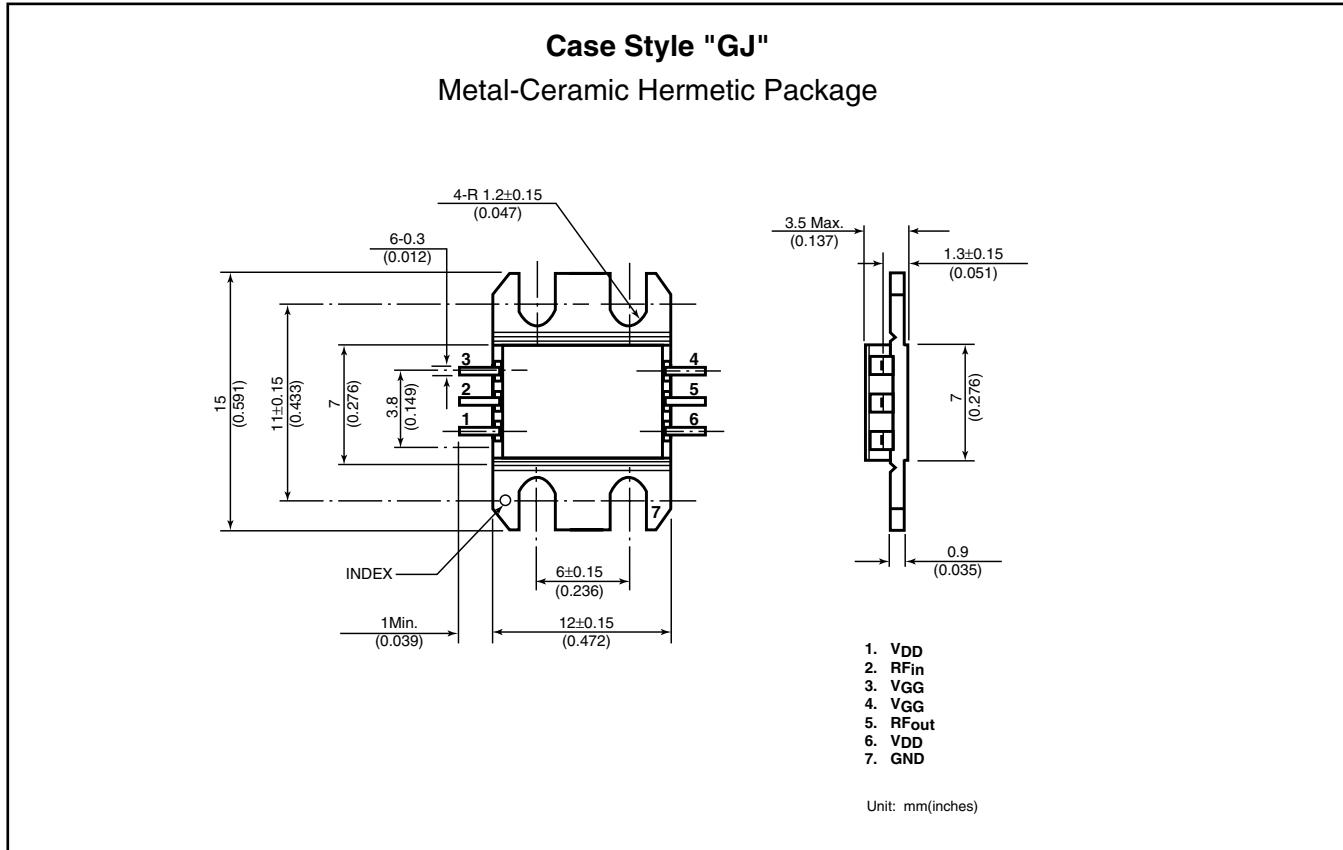
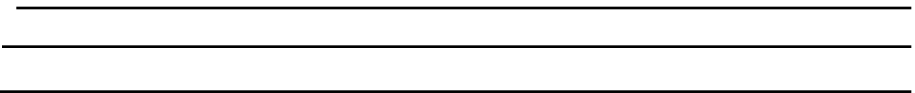
Note: The R/C networks are recommended on the bias supply lines, close to the package, to prevent video oscillations which could damage the module.



S-PARAMETERS

$V_{DD} = 10V, V_{GG} = -5V$

| FREQUENCY (MHZ) | S11 | | S21 | | S12 | | S22 | |
|--------------------|------|--------|--------|--------|------|--------|------|--------|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 1350 | .273 | -65.1 | 18.067 | -103.9 | .002 | -13.5 | .421 | -128.4 |
| 1360 | .275 | -67.3 | 20.347 | -127.4 | .001 | -89.7 | .400 | -129.1 |
| 1370 | .278 | -71.8 | 22.777 | -152.9 | .001 | -168.0 | .402 | -131.7 |
| 1380 | .263 | -78.4 | 25.351 | -179.5 | .002 | 160.2 | .417 | -137.8 |
| 1390 | .227 | -89.5 | 27.258 | 152.0 | .003 | 137.4 | .421 | -148.5 |
| 1400 | .145 | -102.8 | 28.576 | 121.9 | .005 | 112.2 | .386 | -163.4 |
| 1410 | .022 | -97.8 | 28.940 | 92.7 | .007 | 90.0 | .322 | -174.7 |
| 1420 | .118 | 24.0 | 28.940 | 65.6 | .008 | 68.2 | .307 | 180.0 |
| 1430 | .214 | 6.2 | 28.379 | 37.7 | .009 | 59.6 | .342 | 163.0 |
| 1440 | .257 | -8.1 | 27.542 | 7.4 | .009 | 56.0 | .363 | 132.0 |
| 1450 | .258 | -17.8 | 26.546 | -22.0 | .009 | 51.7 | .375 | 99.4 |
| 1460 | .244 | -21.6 | 25.003 | -50.4 | .009 | 44.1 | .389 | 67.7 |
| 1470 | .230 | -21.4 | 22.777 | -76.9 | .008 | 24.2 | .404 | 42.0 |



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- Do not put these products into the mouth.
- 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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Printed in U.S.A. FCSI0500M200