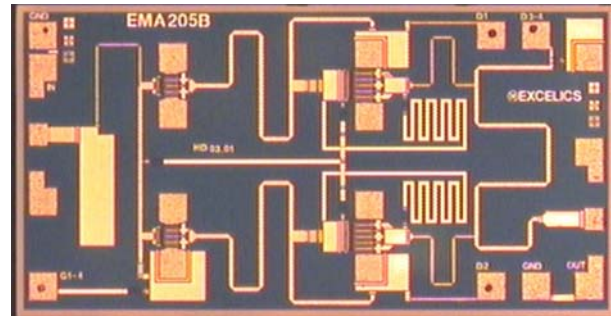


FEATURES

- 9-16 GHz BANDWIDTH
- +18.0 dBm TYPICAL OUTPUT POWER
- 14 dB \pm 1.5 dB TYPICAL POWER GAIN
- TWO SECTION, DISTRIBUTED AMPLIFIER
- DUAL BIAS SUPPLY
- 0.3 MICRON RECESSED “MUSHROOM” GATE
- Si₃N₄ PASSIVATION
- ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY



APPLICATIONS

- Analog and Digital Wireless Systems
- Military Applications
- C-Band Terrestrial Radio



Caution! ESD sensitive device.

Chip Size 1060 x 2000 microns
Chip Thickness: 75 \pm 13 microns
All Dimensions In Microns

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

| SYMBOL | PARAMETERS/TEST CONDITIONS ¹ | MIN | TYP | MAX | UNITS |
|--------------------------|---|------|-----------|-----------|-------|
| F | Operating Frequency Range | 9 | | 16 | GHz |
| P _{1dB} | Output Power at 1dB Gain Compression @ V _{dd} =6V 50% Id _{ss} | 16.5 | 18.0 | | dBm |
| G _{ss} | Small Signal Gain | 12 | 14 | | dB |
| Δ G _{ss} | Small Signal Gain Flatness | | \pm 1.5 | \pm 2.0 | dB |
| NF | Noise Figure | | 4 | | dB |
| Input RL | Input Return Loss | 9 | | | dB |
| Output RL | Output Return Loss | 7 | | | dB |
| I _{dd} | Power Supply Current | | 160 | | mA |
| V _{dd} | Power Supply Voltage | | 5 | 8 | V |

Notes:

1. Tested with 100 Ohm gate resistor.
2. S.C.L. = Single Carrier Level.
3. Overall R_{th} depends on case mounting.



EMA205B

ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION^{1,2}

| SYMBOL | CHARACTERISTIC | VALUE |
|------------------|-------------------------|-------------------|
| V _{DS} | Drain to Source Voltage | 8 V |
| V _{GS} | Gate to Source Voltage | -3 V |
| I _{DS} | Drain Current | 225 mA |
| I _{GSF} | Forward Gate Current | 9 mA |
| P _{IN} | Input Power | @ 3dB compression |
| P _T | Total Power Dissipation | 900 mW |
| T _{CH} | Channel Temperature | 150°C |
| T _{STG} | Storage Temperature | -65/+150°C |

Notes:

- Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTTF.
- Bias conditions must also satisfy the following equation $P_T < (T_{CH} - T_{PKG})/R_{TH}$; where T_{PKG} = temperature of package, and $P_T = (V_{DS} * I_{DS}) - (P_{OUT} - P_{IN})$.

S-PARAMETERS (On wafer Sij measurements) 5V, 1/2 Idss

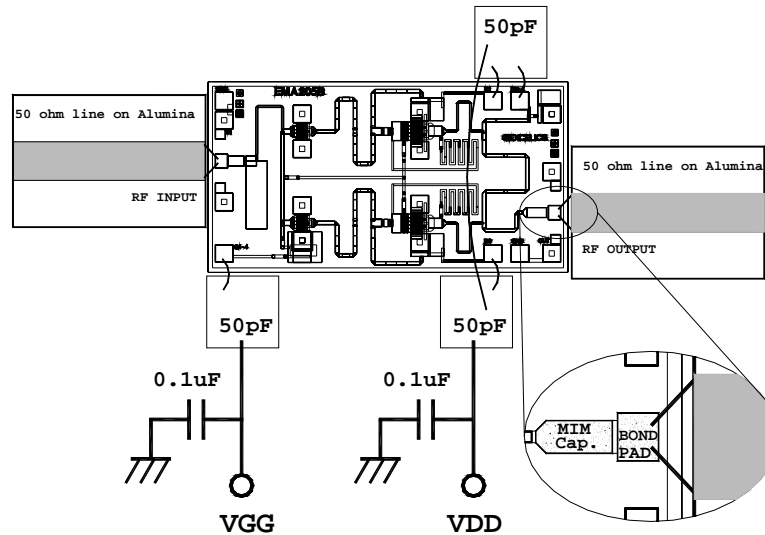
| FREQ (GHz) | --- S11 --- | | --- S21 --- | | --- S12 --- | | --- S22 --- | |
|---------------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 1 | 0.365 | -129.2 | 0.276 | 82.1 | 0.0038 | -28.6 | 0.620 | -112.2 |
| 2 | 0.471 | -172.2 | 0.441 | 47.4 | 0.0011 | -88.5 | 0.844 | -167.7 |
| 3 | 0.450 | 172.4 | 0.416 | 3.6 | 0.0008 | -125.9 | 0.810 | 158.0 |
| 4 | 0.422 | 162.0 | 0.389 | 16.1 | 0.0006 | -139.8 | 0.732 | 130.9 |
| 5 | 0.389 | 154.2 | 0.826 | 35.4 | 0.0007 | -175.1 | 0.614 | 104.5 |
| 6 | 0.350 | 148.0 | 1.825 | 8.7 | 0.0011 | 160.0 | 0.430 | 73.8 |
| 7 | 0.312 | 143.6 | 3.185 | -29.7 | 0.0020 | 139.7 | 0.185 | 34.2 |
| 8 | 0.276 | 141.4 | 4.559 | -73.3 | 0.0030 | 97.5 | 0.078 | -139.8 |
| 9 | 0.250 | 138.6 | 5.385 | -117.5 | 0.0037 | 58.0 | 0.245 | 168.1 |
| 10 | 0.234 | 136.9 | 5.626 | -159.0 | 0.0045 | 18.1 | 0.300 | 137.5 |
| 11 | 0.226 | 139.7 | 5.497 | 166.2 | 0.0052 | -10.6 | 0.275 | 115.0 |
| 12 | 0.221 | 141.9 | 5.350 | 136.0 | 0.0052 | -34.2 | 0.214 | 99.9 |
| 13 | 0.222 | 140.6 | 5.326 | 107.4 | 0.0060 | -54.4 | 0.149 | 95.2 |
| 14 | 0.220 | 135.3 | 5.360 | 79.5 | 0.0067 | -76.5 | 0.092 | 109.1 |
| 15 | 0.235 | 131.2 | 5.594 | 50.3 | 0.0077 | -103.0 | 0.088 | 149.1 |
| 16 | 0.271 | 127.6 | 6.062 | 18.7 | 0.0101 | -130.2 | 0.132 | 172.4 |
| 17 | 0.385 | 119.2 | 6.709 | -17.2 | 0.0122 | -160.7 | 0.205 | 176.3 |
| 18 | 0.511 | 89.3 | 6.771 | -59.4 | 0.0122 | 160.1 | 0.314 | 172.1 |
| 19 | 0.577 | 53.6 | 5.973 | -105.7 | 0.0111 | 115.1 | 0.457 | 159.6 |
| 20 | 0.577 | 21.6 | 4.309 | -151.4 | 0.0072 | 74.4 | 0.608 | 141.4 |
| 21 | 0.564 | -2.5 | 2.567 | 171.8 | 0.0022 | 33.0 | 0.711 | 119.8 |
| 22 | 0.589 | -23.7 | 1.423 | 155.1 | 0.0004 | 127.1 | 0.733 | 98.4 |
| 23 | 0.606 | -42.8 | 1.095 | 146.8 | 0.0018 | 108.7 | 0.686 | 81.3 |
| 24 | 0.623 | -58.4 | 0.917 | 130.5 | 0.0021 | 87.5 | 0.628 | 69.0 |
| 25 | 0.6426 | -70.4 | 0.754 | 112.2 | 0.0023 | 72.2 | 0.585 | 59.3 |
| 26 | 0.664 | -79.7 | 0.607 | 94.3 | 0.0027 | 75.1 | 0.555 | 50.8 |
| 27 | 0.694 | -88.2 | 0.487 | 76.6 | 0.0031 | 76.8 | 0.531 | 42.8 |
| 28 | 0.732 | -98.1 | 0.399 | 58.6 | 0.0026 | 68.9 | 0.511 | 34.9 |
| 29 | 0.761 | -106.2 | 0.330 | 41.6 | 0.0015 | 58.9 | 0.496 | 27.0 |
| 30 | 0.791 | -114.1 | 0.271 | 24.2 | 0.0014 | 23.6 | 0.480 | 19.1 |

Specifications are subject to change without notice.

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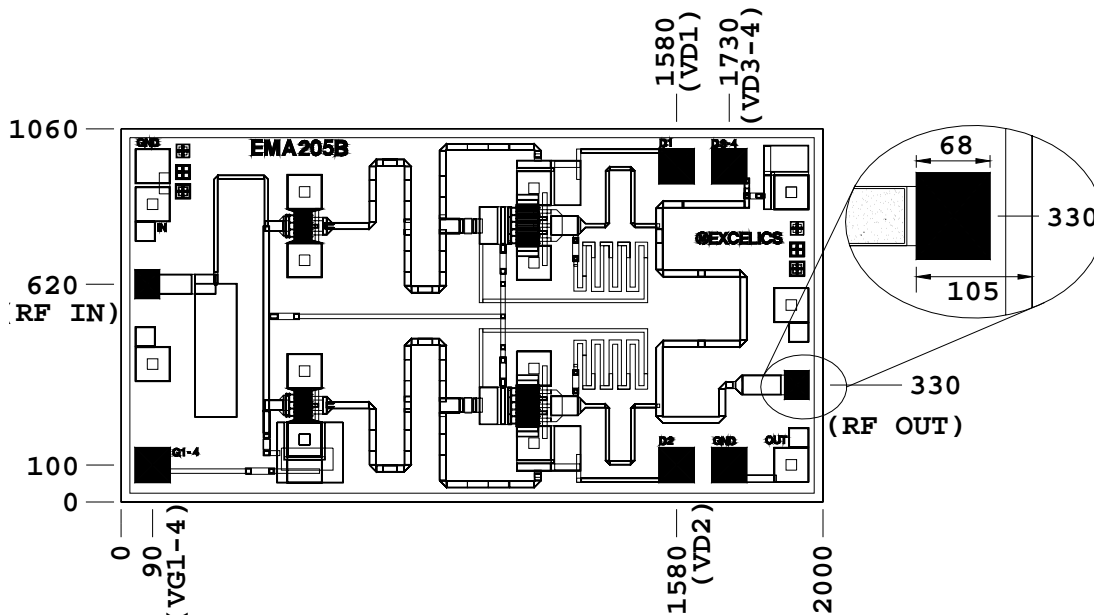
ASSEMBLY DRAWING



The length of RF wires should be as short as possible. Use at least two wires between RF pad and 50 ohm line and separate the wires to minimize the mutual inductance.

CAUTION: Bonding tip and wires **MUST** stay within pad dimensions as illustrated in CHIP OUTLINE below. Violation may cause damages on components in chip (especially damaging output MIM capacitor as shown on above zoom-in graph).

CHIP OUTLINE (dimensions in microns)



Chip Size 1060 x 2000 microns
Chip Thickness: 75 ± 13 microns

PAD Dimensions: 1. DC 100 x 100 microns
2. RF 80 x 68 microns

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TYPICAL APPLICATION PERFORMANCE

