



# EMP105

ISSUED DATE: 07-12-04

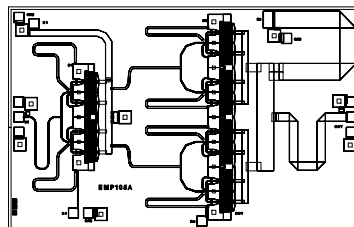
## 4.0 – 5.5 GHz Power Amplifier MMIC

### FEATURES

- 4.0 – 5.5 GHz Operating Frequency Range
- 32.5dBm Output Power at 1dB Compression
- 18.0 dB Typical Small Signal Gain
- -40dBc OIMD3 @Each Tone Pout 22dBm

### APPLICATIONS

- Point-to-point and point-to-multipoint radio
- Military Radar Systems



Dimension: 2200um X 3530um  
Thickness: 65um ± 15um



Caution! ESD sensitive device.

### ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C, 50 ohm, V<sub>DD</sub>=10V, I<sub>DQ</sub>=950mA)

| SYMBOL           | PARAMETER/TEST CONDITIONS  | MIN  | TYP  | MAX  | UNITS |
|------------------|--|------|------|------|-------|
| F                | Operating Frequency Range  | 4.0  |      | 5.5  | GHz   |
| P1dB             | Output Power at 1dB Gain Compression   | 31.5 | 32.5 |      | dBm   |
| G <sub>ss</sub>  | Small Signal Gain  | 16.0 | 18.0 |      | dB    |
| OIMD3            | Output 3 <sup>rd</sup> Order Intermodulation Distortion<br>@Δf=10MHz, Each Tone Pout 22dBm |      | -40  |      | dBc   |
| Input RL         | Input Return Loss  |      | -11  | -8   | dB    |
| Output RL        | Output Return Loss   |      | -6   |      | dB    |
| I <sub>dss</sub> | Saturate Drain Current V <sub>DS</sub> =3V, V <sub>GS</sub> =0V                            |      | 1680 |      | mA    |
| V <sub>DD</sub>  | Power Supply Voltage   |      | 10   |      | V     |
| R <sub>th</sub>  | Thermal Resistance (Au-Sn Eutectic Attach)   |      | 7    |      | °C/W  |
| T <sub>b</sub>   | Operating Base Plate Temperature   | - 35 |      | + 80 | °C    |

### ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION<sup>1,2</sup>

| SYMBOL           | CHARACTERISTIC          | VALUE             |
|------------------|-------------------------|-------------------|
| V <sub>DS</sub>  | Drain to Source Voltage | 10V               |
| V <sub>GS</sub>  | Gate to Source Voltage  | - 4V              |
| I <sub>DD</sub>  | Drain Current           | I <sub>dss</sub>  |
| I <sub>GSF</sub> | Forward Gate Current    | 35 mA             |
| P <sub>IN</sub>  | Input Power             | @ 3dB compression |
| T <sub>CH</sub>  | Channel Temperature     | 150°C             |
| T <sub>STG</sub> | Storage Temperature     | -65/150°C         |
| P <sub>T</sub>   | Total Power Dissipation | 17W               |

1. Operating the device beyond any of the above rating may result in permanent damage.

2. Bias conditions must also satisfy the following equation  $V_{DS} \cdot I_{DS} < (T_{CH} - T_{HS})/R_{TH}$ , where T<sub>HS</sub> = ambient temperature

Specifications are subject to change without notice.

Excelics Semiconductor, Inc. 310 De Guigne Drive, Sunnyvale, CA 94085

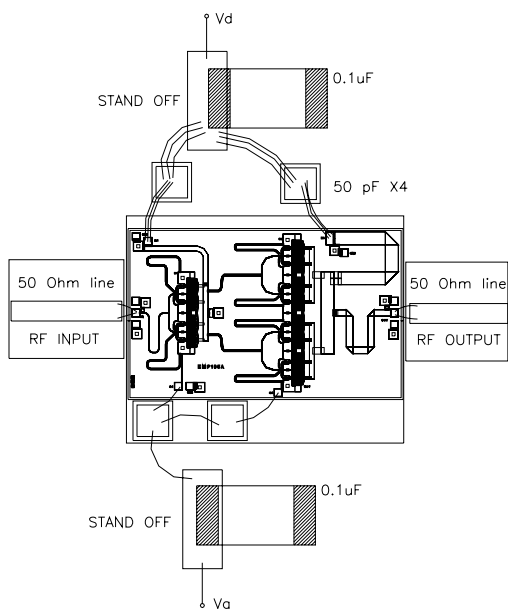
Phone: 408-737-1711 Fax: 408-737-1868 Web: [www.excelics.com](http://www.excelics.com)

page 1 of 2  
Revised July 2004

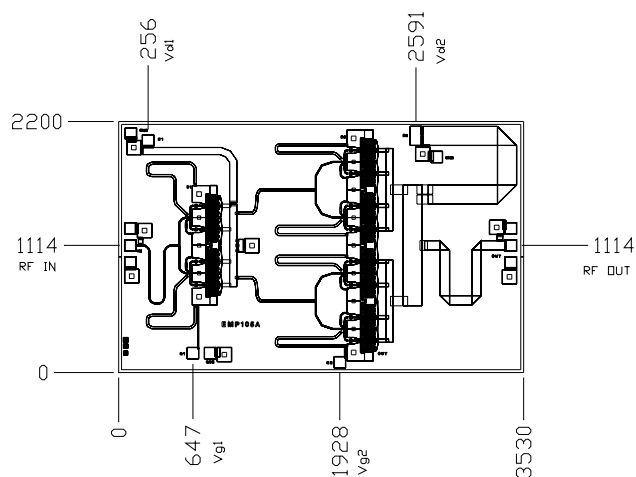
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### ASSEMBLY DRAWING

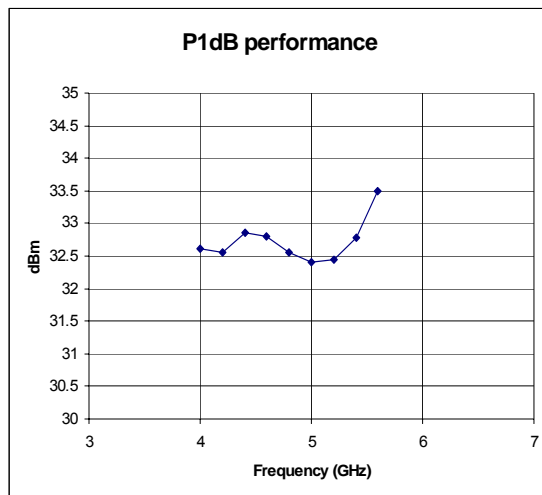
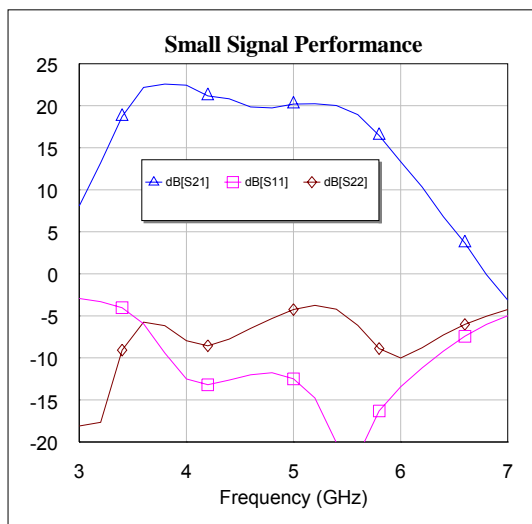


### CHIP OUTLINE



All dimensions in microns

### TYPICAL PERFORMANCE



Data measured @ Vd=10V, Ids=950mA

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