EMP307

21.0 – 24.0 GHz Power Amplifier MMIC

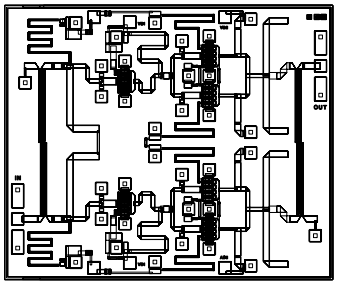
Issued Date: 12-18-03

FEATURES

- **21.0 – 24.0 GHz Bandwidth**
- **30dBm Output Power at 1dB Compression**
- **16 dB Typical Power Gain**

APPLICATIONS

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



Dimension: 2200um X 2650um

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	21		24	GHz
P_{1dB}	Output Power at 1dB Compression V_{DS} = 8 V, I_{DSQ} ≈ 1/2 I_{DSS}	29	30		dBm
Gss	Small Signal Gain	14	16		dB
IP3	Third Order Interception Point		36.5		dBm
Input RL	Input Return Loss	10	15		dB
Output RL	Output Return Loss	10	15		dB
Idd	Power Supply Current		540	760	mA
Vdd	Power Supply Voltage		7	8	V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)		9		°C/W

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_{DD}	Drain Current	1080mA
I_{GSF}	Forward Gate Current	30mA
P_{IN}	Input Power	@ 3dB compression
T_{CH}	Channel Temperature	150°C
T_{STG}	Storage Temperature	-65/150°C
P_T	Total Power Dissipation	12.6W

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}*I_{DS} < (T_{CH} –T_{HS})/R_{TH};
   where T_{HS} = ambient temperature

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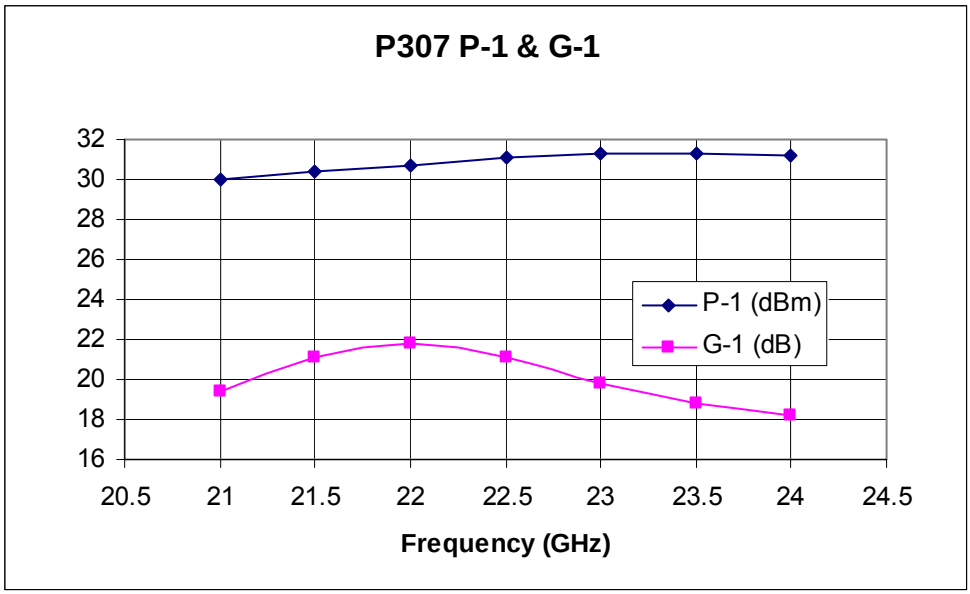
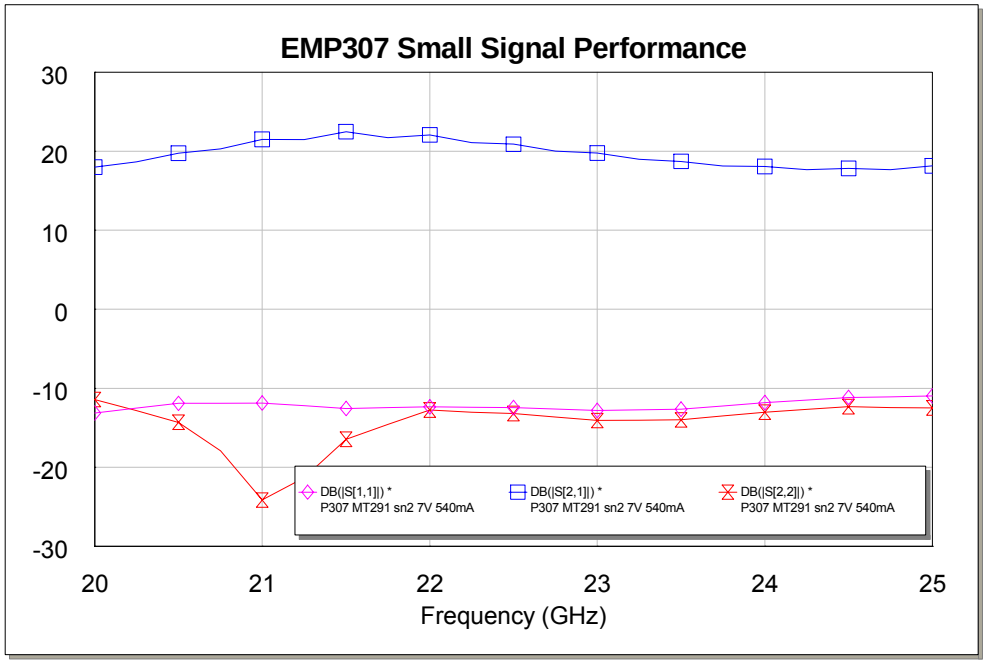
Typical Performance:

1. **P-1 and G-1**



2. **Small Signal Performance**



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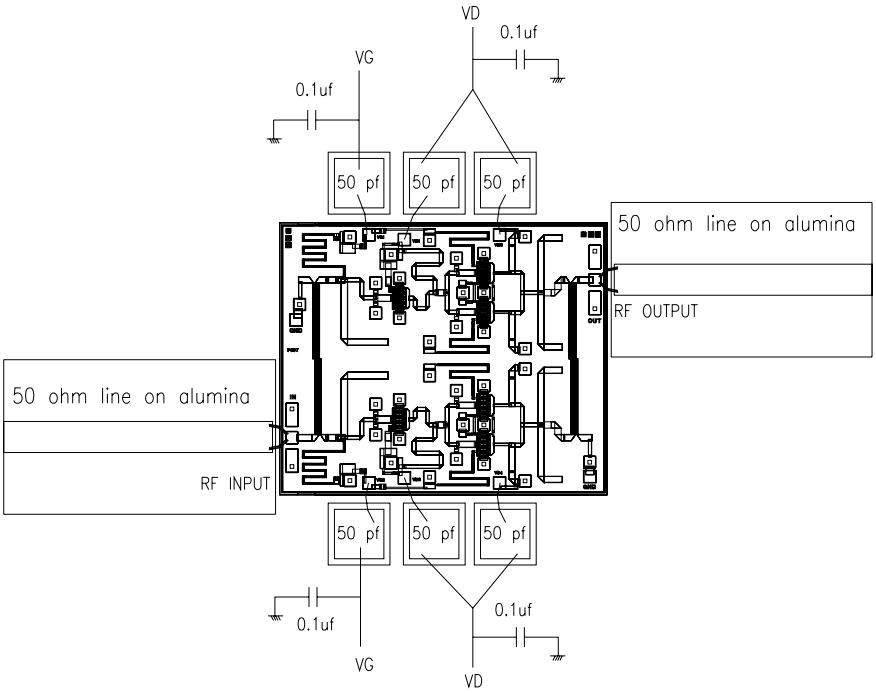
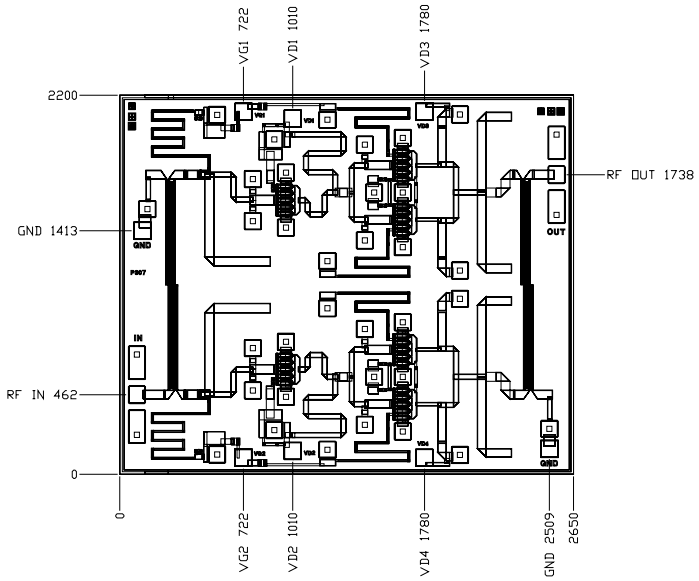
ASSEMBLY DRAWING



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.

CHIP OUTLINE



Chip Size 2200 x 2650 microns
Chip Thickness: 75 ± 13 microns
PAD Dimensions: 100 x 100 microns
All Dimensions in Microns

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