EMP310

21.0 – 24.0 GHz Power Amplifier MMIC

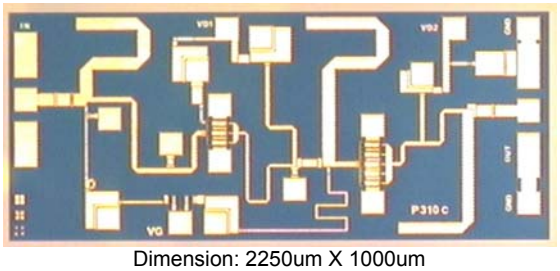
UPDATED 05/08/2008

FEATURES

- **21.0 – 24.0 GHz Operating Frequency Range**
- **24.0dBm Output Power at 1dB Compression**
- **14.0 dB Typical Small Signal Gain**
- **-40dBc OIMD3 @Each Tone Pout 14dBm**

APPLICATIONS

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



Dimension: 2250um X 1000um
Thickness: 75um ± 13um

Caution! ESD sensitive device.

ELECTRICAL CHARACTERISTICS (T_a = 25 °C, 50 ohm, VDD=7V, IDQ=170mA)

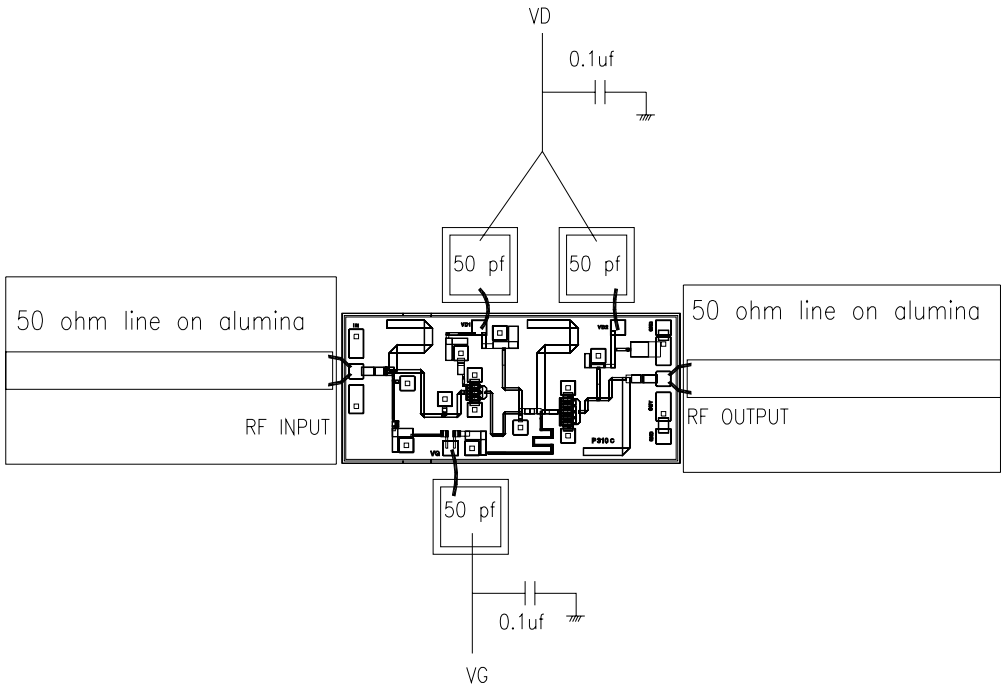
SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	21.0		24.0	GHz
P1dB	Output Power at 1dB Gain Compression	23.0	24.0		dBm
Gss	Small Signal Gain	11.0	14.0		dB
OIMD3	Output 3rd Order Intermodulation Distortion @Δf=10MHz, Each Tone Pout 14dBm		-40	-37	dBc
Input RL	Input Return Loss		-10	-8	dB
Output RL	Output Return Loss		-10	-8	dB
Idss	Saturate Drain Current V_{DS} =3V, V_{GS} =0V	211	264	317	mA
V_{DD}	Power Supply Voltage		7	8	V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)		34		°C/W
Tb	Operating Base Plate Temperature	-35		+85	ºC

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	-4 V
I_{DD}	Drain Current	Idss
I_{GSF}	Forward Gate Current	4mA
P_{IN}	Input Power	@ 3dB compression
T_{CH}	Channel Temperature	150°C
T_{STG}	Storage Temperature	-65/150°C
P_T	Total Power Dissipation	3.4W

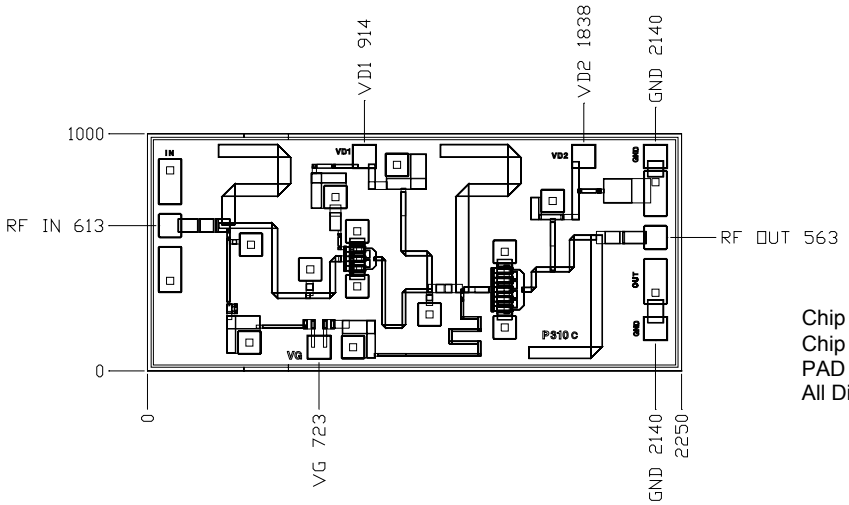
1. Operating the device beyond any of the above rating may result in permanent damage.
2. Bias conditions must also satisfy the following equation V_{DS}*I_{DS} < (T_{CH} –T_{HS})/R_{TH}; where T_{HS} = ambient temperature

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 1000 x 2250 microns
Chip Thickness: 75 ± 13 microns
PAD Dimensions: 100 x 100 microns
All Dimensions in Microns

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.