



EMP310

PRELIMINARY DATA SHEET

ISSUED DATE: 09-17-04

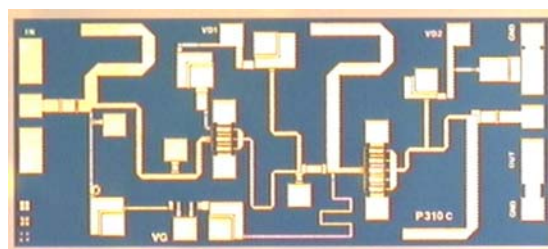
21 – 24 GHz Power Amplifier MMIC

FEATURES

- 21.0 – 24.0 GHz Operating Frequency Range
- 24.0dBm Output Power at 1dB Compression
- 13.0 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 ($T_a = 25^\circ\text{C}$, 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	13.0		dB
OIMD3	Output 3 rd Order Intermodulation Distortion @ $\Delta f=10\text{MHz}$, 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 $V_{DS}=3\text{V}$, $V_{GS}=0\text{V}$	211	264	317	mA
VDD	Power Supply Voltage		7	8	V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)		34		$^\circ\text{C/W}$
Tb	Operating Base Plate Temperature	-35		+85	$^\circ\text{C}$

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 $^\circ\text{C}$
T _{STG}	Storage Temperature	-65/150 $^\circ\text{C}$
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 $V_{DS} \cdot I_{DS} < (T_{CH} - T_{HS})/R_{TH}$; where T_{HS} = 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

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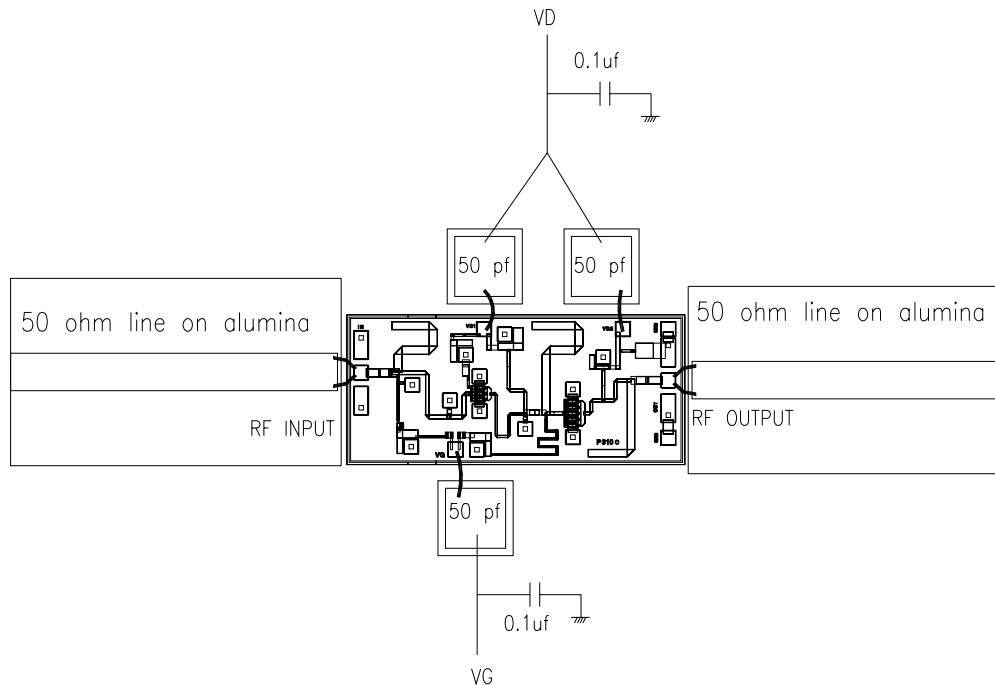
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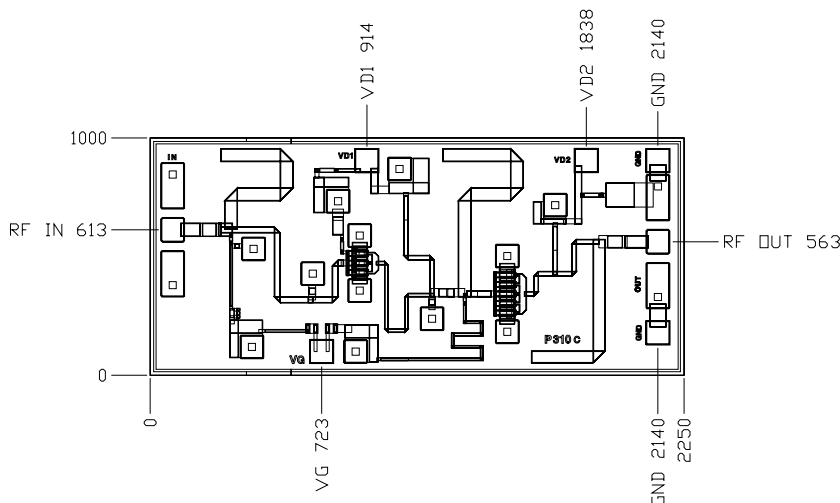
PRELIMINARY DATA SHEET ASSEMBLY DRAWING

21 – 24 GHz Power Amplifier MMIC



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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