

UPDATED 02/06/2006

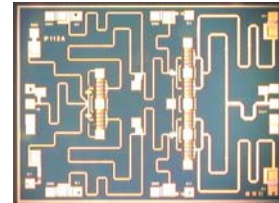
## 5.0 – 7.2 GHz Power Amplifier MMIC

### FEATURES

- 5.0 – 7.2 GHz Operating Frequency Range
- 30.0dBm Output Power at 1dB Compression
- 20.0 dB Typical Small Signal Gain
- -41dBc OIMD3 @Each Tone Pout 20 dBm

### APPLICATIONS

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



Dimension: 2.65mm x 2.0mm  
 Thickness: 85um ± 15um



Caution! ESD sensitive device.

### ELECTRICAL CHARACTERISTICS

(Tb = 25 °C, 50 ohm, Vds = 7 V, Idsq = 800 mA, Unless Otherwise Specified)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>F</b>	Operating Frequency Range	5.0		7.2	GHz
<b>P1dB</b>	Output Power at 1dB Gain Compression	29.0	30.0		dBm
<b>Gss</b>	Small Signal Gain	17.0	20.0		dB
<b>OIMD3</b>	Output 3 <sup>rd</sup> Order Intermodulation Distortion @Δf=10MHz, Each Tone Pout 20dBm, 7V, 60%±10%Idss		-41	-38	dBc
<b>Input RL</b>	Input Return Loss		-12	-8	dB
<b>Output RL</b>	Output Return Loss		-5		dB
<b>Idss</b>	Saturated Drain Current Vds =3V, VGS =0V	980	1140	1350	mA
<b>Vds</b>	Drain to Source Voltage		7	8	V
<b>NF</b>	Noise Figure @6GHz		8		dB
<b>Rth</b>	Thermal Resistance (Au-Sn Eutectic Attach)		11		°C/W
<b>Tb</b>	Operating Base Plate Temperature	- 35		+ 85	°C

### MAXIMUM RATINGS AT 25°C<sup>1,2</sup>

SYMBOL	CHARACTERISTIC	ABSOLUTE	CONTINUOUS
Vds	Drain to Source Voltage	12V	8 V
VGS	Gate to Source Voltage	-8V	- 4 V
Ids	Drain Current	Idss	1300mA
IGSF	Forward Gate Current	114mA	19 mA
PIN	Input Power	27dBm	@ 3dB compression
TCH	Channel Temperature	175°C	150°C
TSTG	Storage Temperature	-65/175°C	-65/150°C
PT	Total Power Dissipation	12.4W	10.4W

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

2. Bias conditions must also satisfy the following equation  $V_{ds} \cdot I_{ds} < (T_{CH} - T_b) / R_{TH}$

Specifications are subject to change without notice.

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

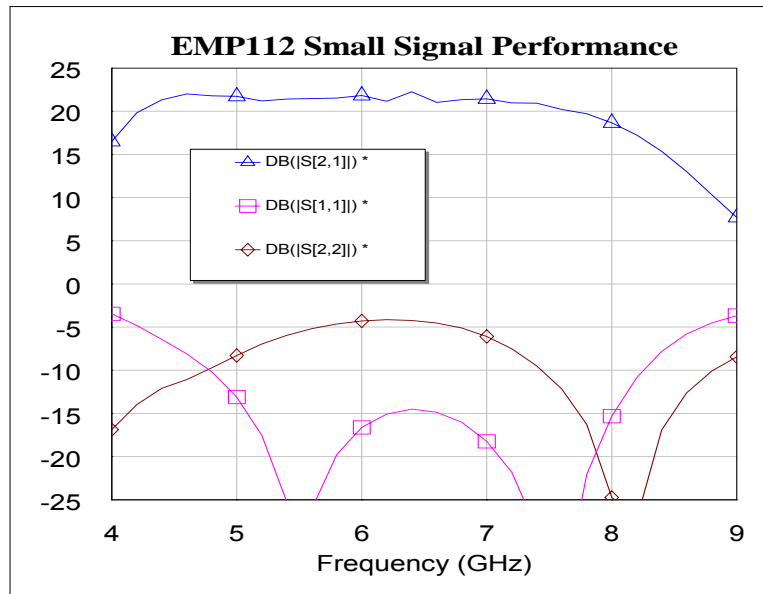
Phone: 408-737-1711 Fax: 408-737-1868 Web: [www.excelics.com](http://www.excelics.com)

page 1 of 3

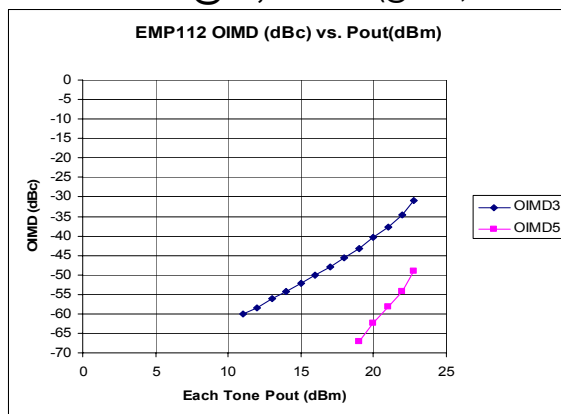
Revised February 2006

### Typical Performance:

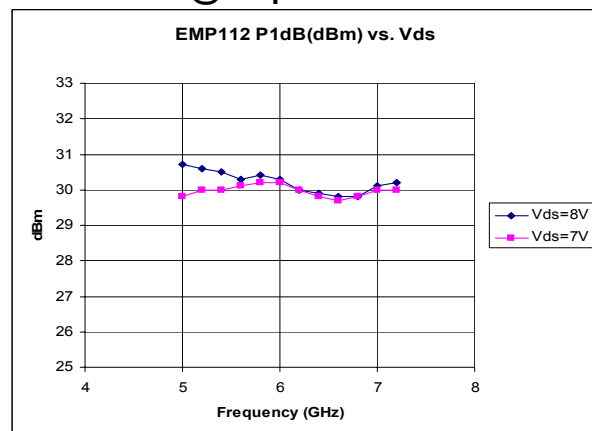
#### 1. Small Signal Performance (@7V, 800mA)



#### 2. OIMD VS Pout @7V, 800mA (@8GHz, Δf=10MHz)



#### 3. P-1 VS Vds @I<sub>dsq</sub>=800mA



### APPLICATION INFORMATION (CAUTION: THIS IS AN ESD SENSITIVE DEVICE)

Chip carrier should match GaAs thermal coefficient of expansion and have high thermal conductivity, such as copper tungsten or copper molybdenum. The chip carrier should be nickel-gold plated and capable of withstanding 325°C for 20 minutes.

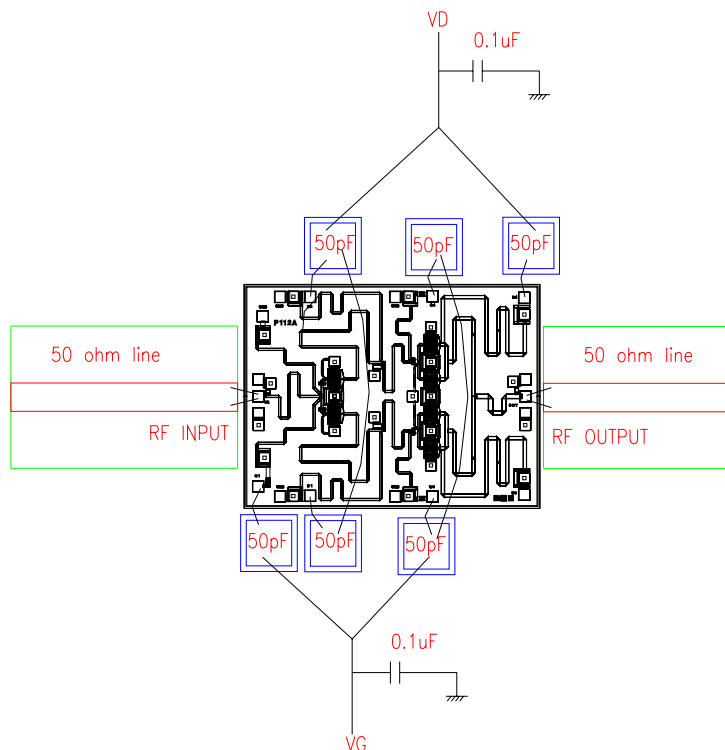
Die attach should be done with Gold/Tin (80/20) eutectic alloy in inert ambient gas. The backside is used as heatsinking, DC, and RF contacts.

All die attach and wire bond equipment, especially the tools which touch a die, should be well grounded to avoid accidental discharge through a die.

UPDATED 02/06/2006

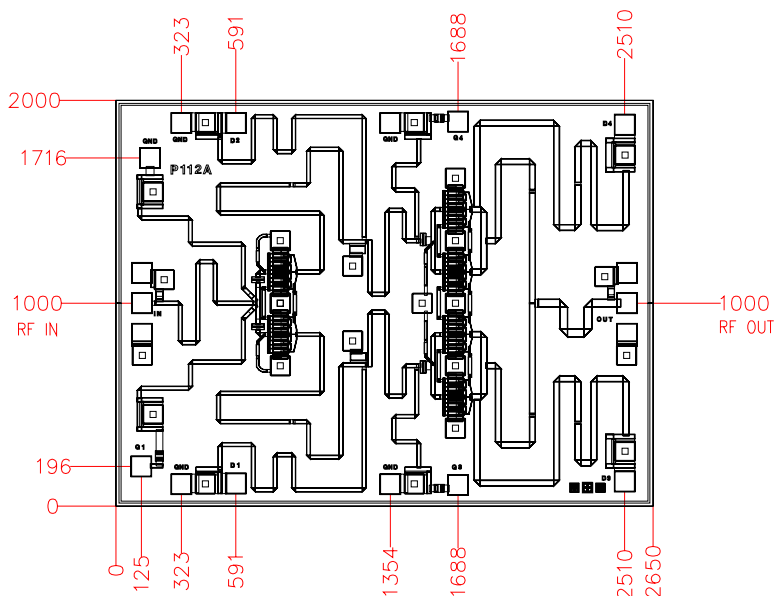
## 5.0 – 7.2 GHz Power Amplifier MMIC

### 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 2650 x 2000 microns  
 Chip Thickness: 85 ± 15 microns  
 PAD Dimensions: 100 x 100 microns  
 All Dimensions in Microns

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 3 of 3  
 Revised February 2006