EMP214

UPDATED 05/08/2008

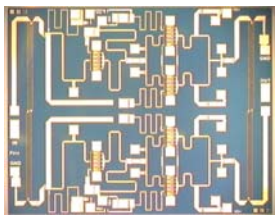
12.50 – 15.50 GHz Power Amplifier MMIC

FEATURES

- **12.5 – 15.5 GHz Operating Frequency Range**
- **29.5dBm Output Power at 1dB Compression**
- **16.0 dB Typical Small Signal Gain**
- **-42dBc OIMD3 @Each Tone Pout 18.5dBm**

APPLICATIONS

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



Dimension: 2650um X 2140um
Thickness: 85um ± 15um

Caution! ESD sensitive device.

ELECTRICAL CHARACTERISTICS (T_a = 25 °C, 50 ohm, VDD=7V, IDQ=750mA)

SYMBOL	PARAMETER/TEST CONDITIONS		MIN	TYP	MAX	UNITS
F	Operating Frequency Range	EMP214	12.5		15.5	GHz
		EMP214H	13.5		15.5	
		EMP214L	12.5		14.5	
P1dB	Output Power at 1dB Gain Compression		28.5	29.5		dBm
Gss	Small Signal Gain		13.0	16.0		dB
OIMD3	Output 3rd Order Intermodulation Distortion @Δf=10MHz, Each Tone Pout 18.5dBm Ids=60%±10%Idss			-42	-39	dBc
Input RL	Input Return Loss			-15	-10	dB
Output RL	Output Return Loss			-15	-10	dB
Idss	Saturate Drain Current V_{DS} =3V, V_{GS} =0V		920	1150	1380	mA
V_{DD}	Power Supply Voltage			7		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)			11		°C/W
Tb	Operating Base Plate Temperature		-35		+85	ºC

MAXIMUM RATINGS AT 25°C[1,2]

SYMBOL	CHARACTERISTIC	ABSOLUTE	CONTINUOUS
V_{DS}	Drain to Source Voltage	12 V	8 V
V_{GS}	Gate to Source Voltage	-8 V	-4 V
I_{DD}	Drain Current	Idss	1300mA
I_{GSF}	Forward Gate Current	114mA	19mA
P_{IN}	Input Power	27dBm	@ 3dB compression
T_{CH}	Channel Temperature	175°C	150°C
T_{STG}	Storage Temperature	-65/175°C	-65/150°C
P_T	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}*I_{DS} < (T_{CH} –T_{HS})/R_{TH}; where T_{HS} = Base Plate temperature

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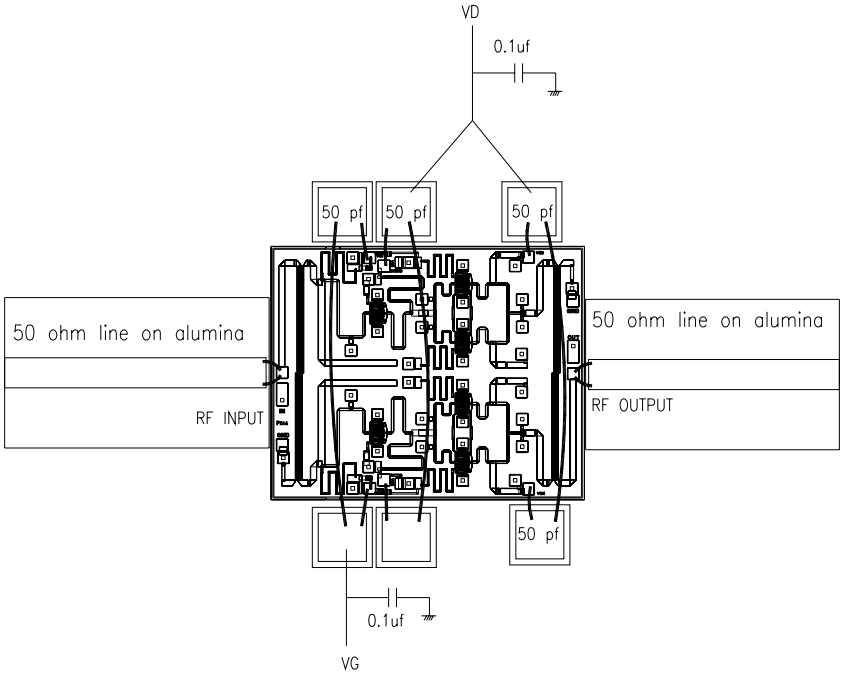
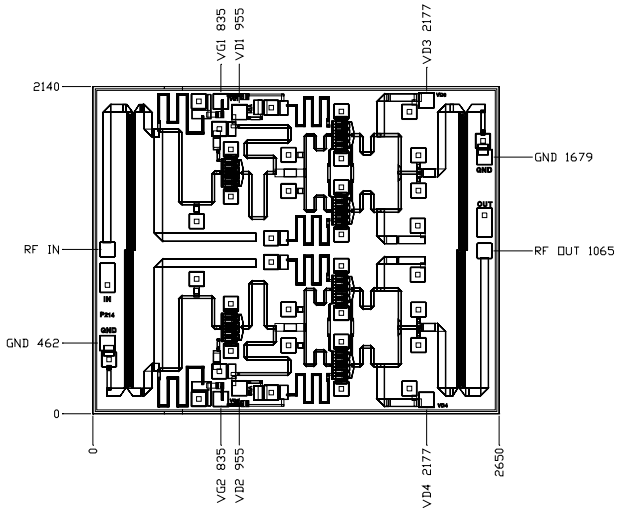
ASSEMBLY DRAWING



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 2140 x 2650 microns
Chip Thickness: 85 ± 15 microns
PAD Dimensions: 100 x 100 microns
All Dimensions in Microns

ORDERING INFORMATION

Part Number	Frequency (GHz)
EMP214	12.50-15.50 GHz
EMP214H	13.50-15.50 GHz
EMP214L	12.50-14.50 GHz

Notes: Contact factory for military and hi-rel grades.

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