

UPDATED: 04/24/2008

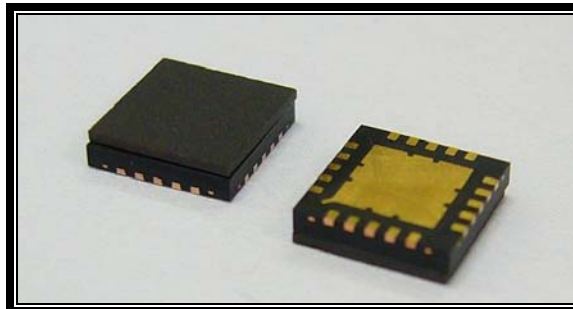
6.4 – 8.0 GHz Surface-Mounted PA

FEATURES

- 6.4 – 8.0 GHz Operating Frequency Range
- 32.5dBm Output Power at 1dB Compression
- 15.0 dB Typical Small Signal Gain
- -40dBc OIMD3 @Each Tone Pout 22.5dBm

APPLICATIONS

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



Caution! ESD sensitive device.

ELECTRICAL CHARACTERISTICS (T_a = 25 °C, 50 ohm, V_{DD}=10V, I_{DQ}=1000mA)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	6.4		8.0	GHz
P1dB	Output Power at 1dB Gain Compression	31.5	32.5		dBm
G_{ss}	Small Signal Gain	13.0	15.0		dB
OIMD3	Output 3 rd Order Intermodulation Distortion @Δf=10MHz, Each Tone Pout 22.5dBm		-40	-37	dBc
Input RL	Input Return Loss		-15	-10	dB
Output RL	Output Return Loss		-6		dB
I_{dss}	Saturate Drain Current V _{DS} =3V, V _{GS} =0V		1680		mA
V_{DD}	Power Supply Voltage		10		V
R_{th}	Thermal Resistance ¹		7		°C/W
T_b	Operating Base Plate Temperature	-35		+85	°C

ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION^{2,3}

SYMBOL	CHARACTERISTIC	CONTINUOUS
V _{DS}	Drain to Source Voltage	10 V
V _{GS}	Gate to Source Voltage	-4 V
I _{DD}	Drain Current	I _{dss}
I _{GSF}	Forward Gate Current	35mA
P _{IN}	Input Power	@ 3dB compression
T _{CH}	Channel Temperature	150°C
T _{STG}	Storage Temperature	-65/150°C
P _T	Total Power Dissipation	17W

 1. R_{th} is mounting dependent. Measured result when used with Excelics recommended evaluation board. Adequate heat sinking recommended.

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

 3. Bias conditions must also satisfy the following equation V_{DS}*I_{DS} < (T_{CH} - T_{HS})/R_{TH}; where T_{HS} = ambient temperature

Specifications are subject to change without notice.

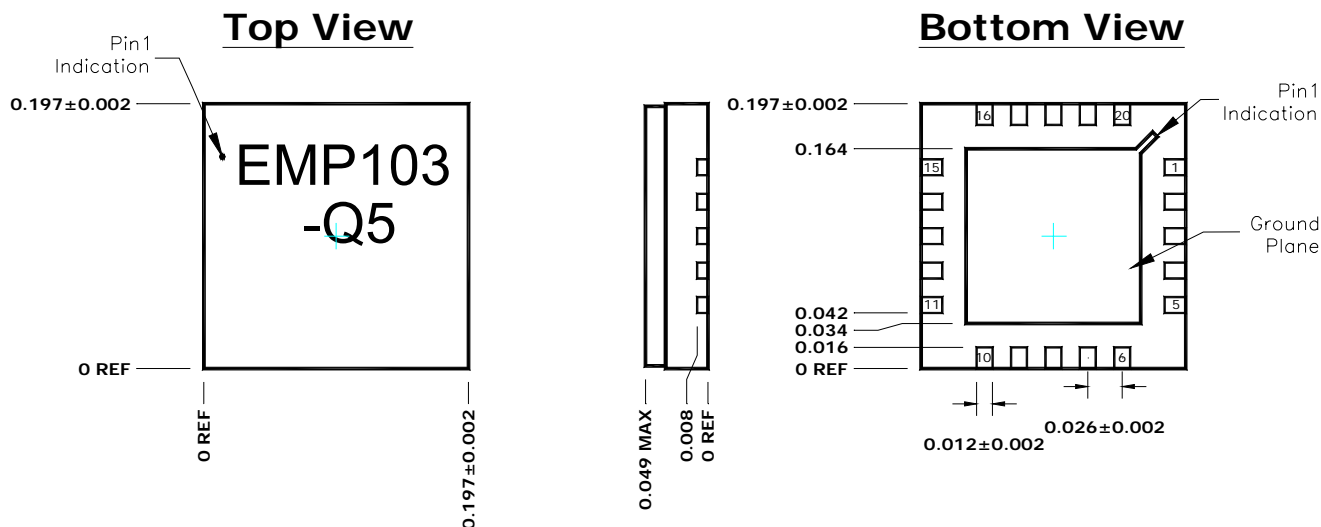
Excelics Semiconductor, Inc. 310 De Guigne Drive, Sunnyvale, CA 94085

 Phone: 408-737-1711 Fax: 408-737-1868 Web: www.excelics.com

Page 1 of 4

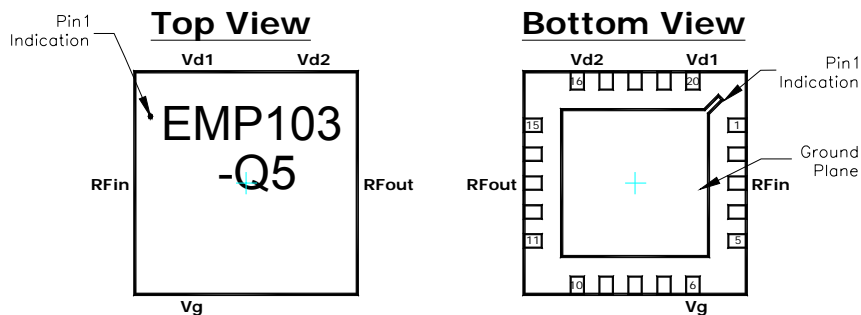
May 2008

CHIP OUTLINE AND PIN ASSIGNMENT



Additional Notes:

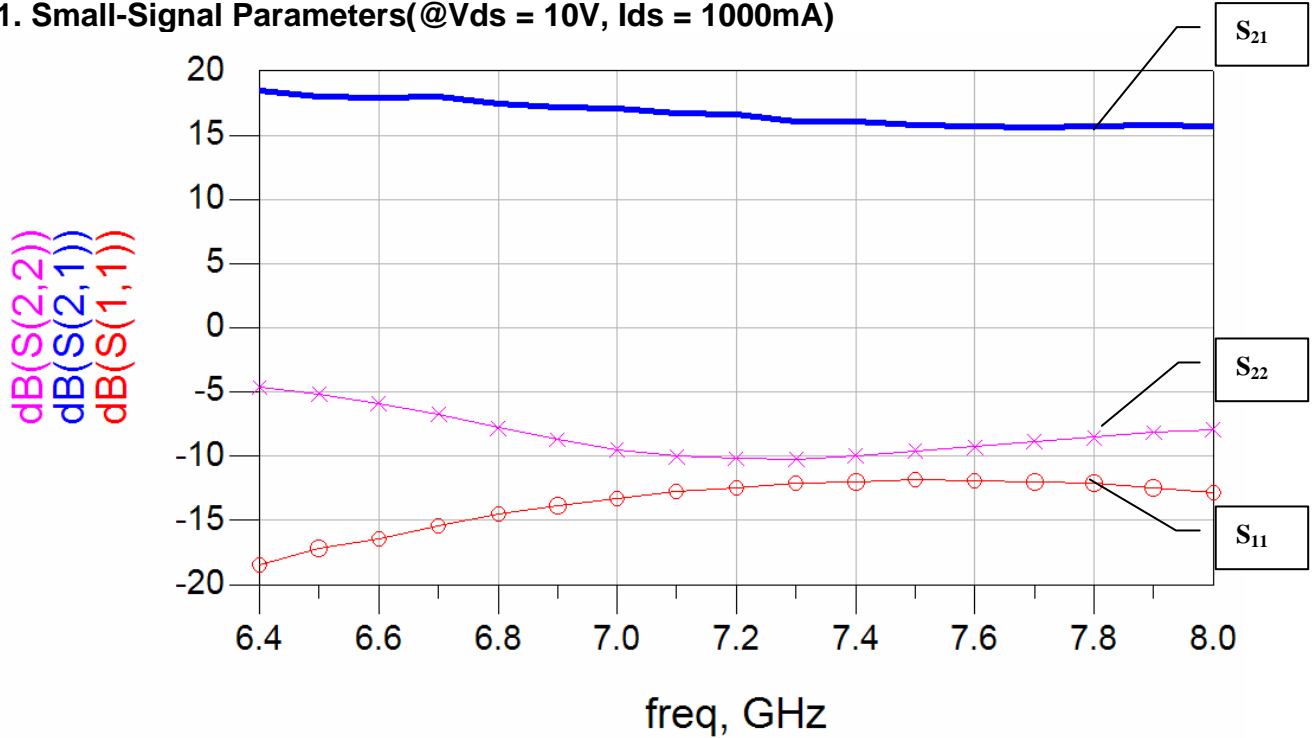
- 1) Ground Plane must be soldered to PCB RF ground
- 2) All dimensions are in inches
- 3) Refer to Excelics application notes on QFNs for further guidelines
- 4) Pin Assignment:



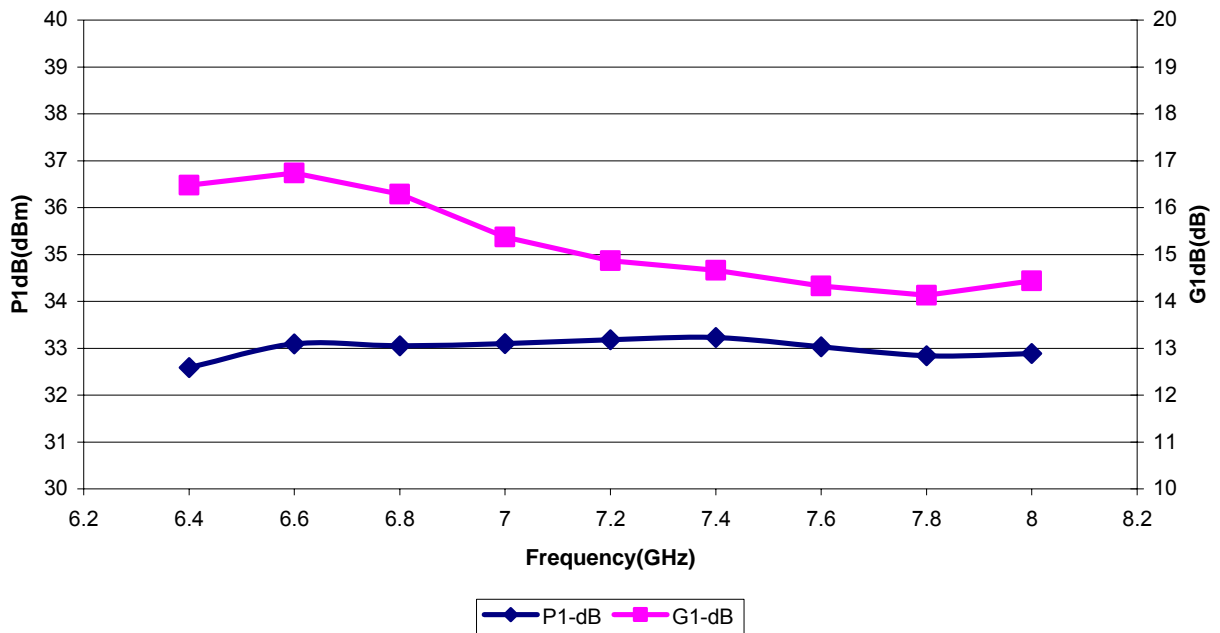
Pin	Assignment
1, 2, 4, 5	NC
3	RF _{in}
6	V _g
7, 8, 9, 10, 11, 12, 14, 15	NC
13	RF _{out}
16	V _{d2}
17, 18, 19	NC
20	V _{d1}

Typical Performance:

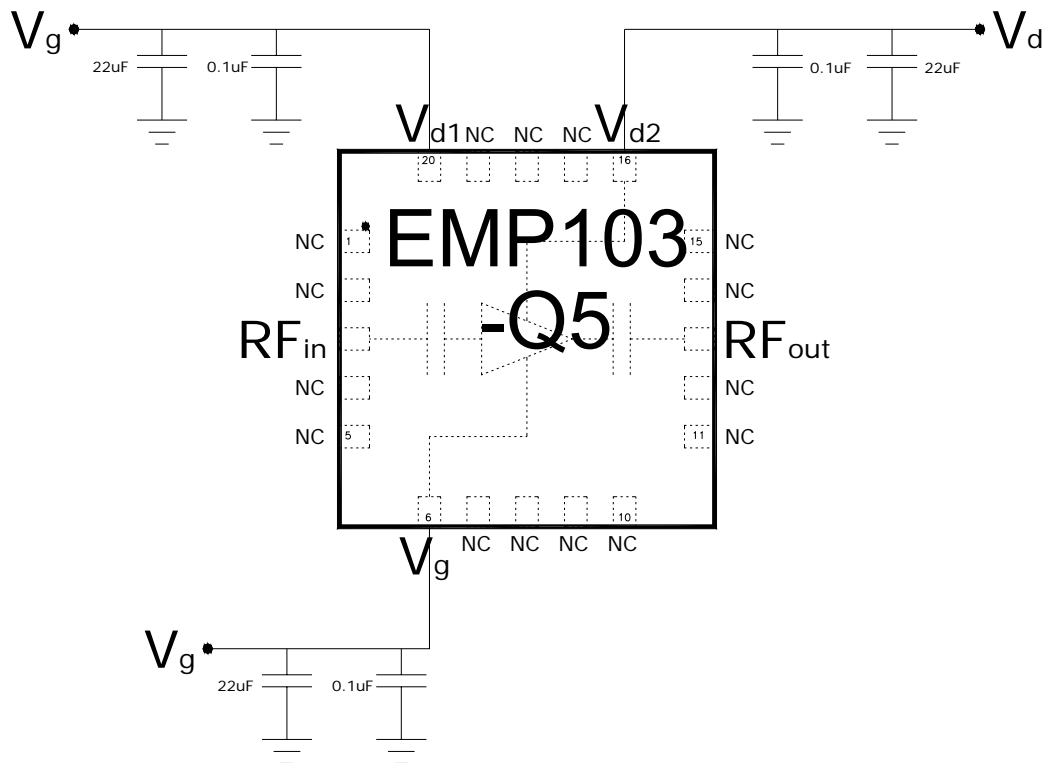
1. Small-Signal Parameters (@Vds = 10V, Ids = 1000mA)



2. P1-dB & G1-dB (@Vds = 10V, Ids = 1000mA)



Recommended Circuit Schematic:



Notes:

- 1) External bypass capacitors should be placed as close to the package as possible.
- 2) Dual biasing sequence required:
 - a. Turn-on Sequence: Apply $V_g = -2.5V$, followed by $V_d = 10V$, lastly increase V_g until required I_{dq}
 - b. Turn-off Sequence: Turn off V_d , followed by V_g
- 3) Demonstration board available upon request.

