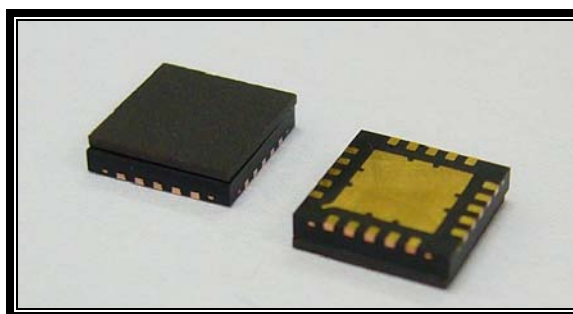


### FEATURES

- 17.5 – 20.0 GHz Operating Frequency Range
- 23.5 dBm Output Power at 1dB Compression
- 14.0 dB Typical Small Signal Gain
- -40dBc OIMD3 @Each Tone Pout 13.5dBm

### APPLICATIONS

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



Caution! ESD sensitive device.

### ELECTRICAL CHARACTERISTICS ( $T_a = 25\text{ }^\circ\text{C}$ , 50 ohm, VDD=7V, IDQ=180mA)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	17.5		20.0	GHz
P1dB	Output Power at 1dB Gain Compression	22.0	23.5		dBm
Gss	Small Signal Gain	12.0	14.0		dB
OIMD3	Output 3 <sup>rd</sup> Order Intermodulation Distortion @ $\Delta f=10\text{MHz}$ , Each Tone Pout 13.5dBm		-40	-37	dBc
Input RL	Input Return Loss		-10		dB
Output RL	Output Return Loss		-10		dB
Idss	Saturate Drain Current $V_{DS}=3\text{V}$ , $V_{GS}=0\text{V}$	210	270	320	mA
VDD	Power Supply Voltage		7	8	V
Rth	Thermal Resistance <sup>1</sup>		34		$^\circ\text{C/W}$
Tb	Operating Base Plate Temperature	-35		+85	$^\circ\text{C}$

### ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION<sup>2,3</sup>

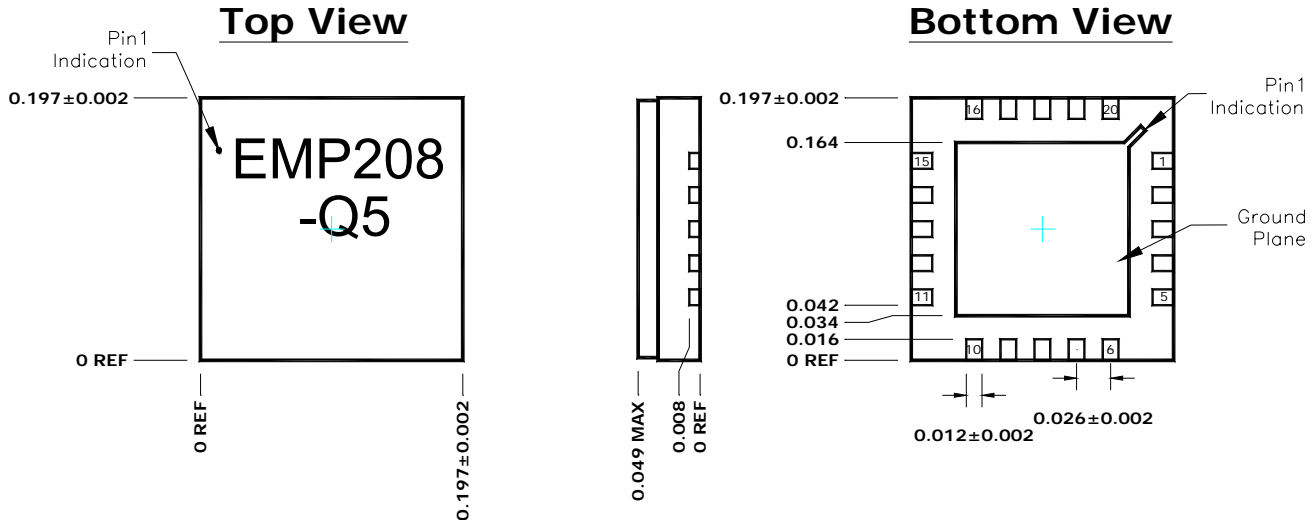
SYMBOL	CHARACTERISTIC	CONTINUOUS
$V_{DS}$	Drain to Source Voltage	8 V
$V_{GS}$	Gate to Source Voltage	-4 V
$I_{DD}$	Drain Current	Idss
$I_{GSF}$	Forward Gate Current	4mA
$P_{IN}$	Input Power	@ 3dB compression
$T_{CH}$	Channel Temperature	150 $^\circ\text{C}$
$T_{STG}$	Storage Temperature	-65/150 $^\circ\text{C}$
$P_T$	Total Power Dissipation	3.0W

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

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

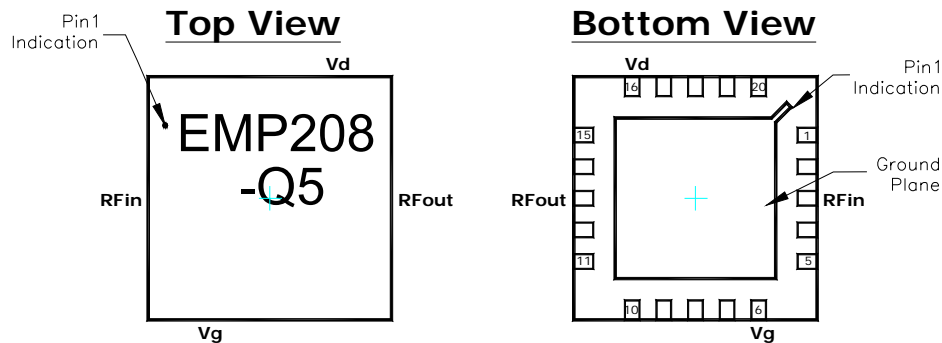
3. Bias conditions must also satisfy the following equation  $V_{DS} \cdot I_{DS} < (T_{CH} - T_{HS})/R_{TH}$ ; where  $T_{HS}$  = ambient temperature

## CHIP OUTLINE AND PIN ASSIGNMENT



### Additional Notes:

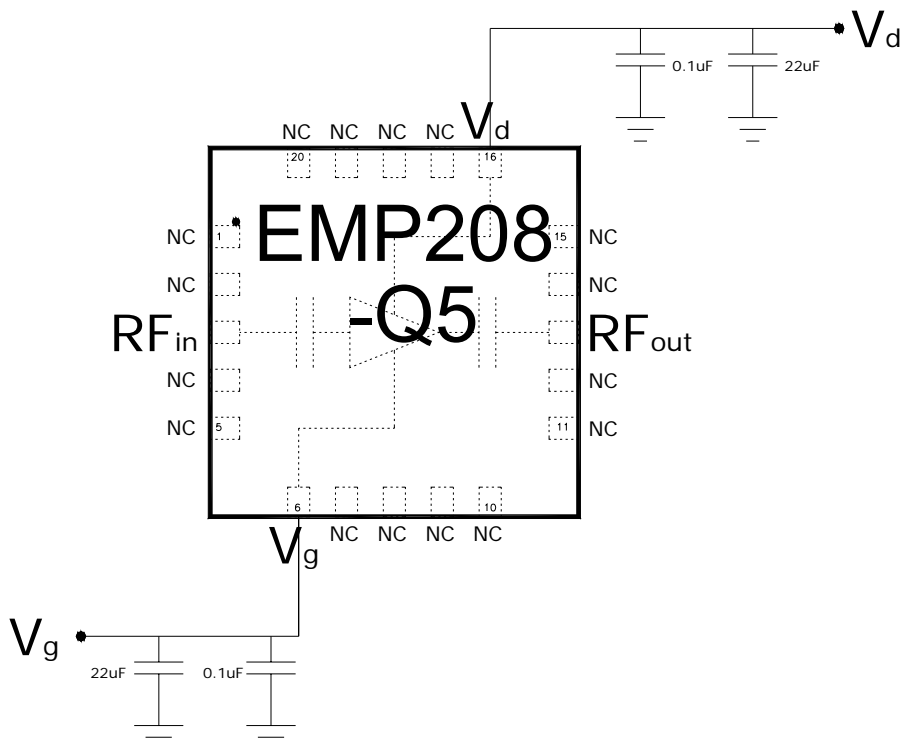
- 1) Ground Plane must be soldered to PCB RF ground
- 2) All dimensions are in inches
- 3) Refer to Excelics application notes on QFNs for further guidelines
- 4) Pin Assignment:



Pin	Assignment
1, 2, 4, 5	NC
3	R <sub>Fin</sub>
6	V <sub>g</sub>
7, 8, 9, 10, 11, 12, 14, 15	NC
13	R <sub>Fout</sub>
16	V <sub>d</sub>
17, 18, 19, 20	NC

Specifications are subject to change without notice.

### 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  $V_d = 7V$ , 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.

