



EMP212-SMP

ISSUED 06/30/2005

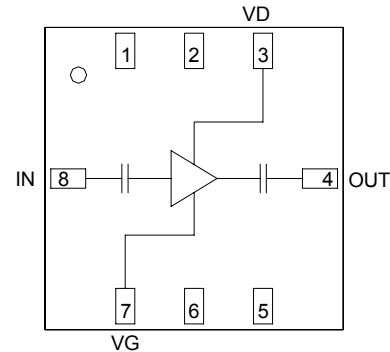
9.5 – 12 GHz Power AMPLIFIER MMIC

FEATURES

- 9.5 – 12GHz Operating Frequency Range
- 30dBm Output Power at 1dB Compression
- 16 dB Typical Small Signal Gain
- -41dBc OIMD3 @Each Tone Pout 19dBm
- Small Surface Mount Package

APPLICATIONS

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



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{DD} = 7\text{V}$, $I_{dss} = 750\text{mA}$)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	9.5		12	GHz
P_{1dB}	Output Power at 1dB Gain Compression	29	30		dBm
G _{SS}	Small Signal Gain	13	16		dB
OIMD3	Output 3 rd Order Intermodulation Distortion @ $\Delta f = 10\text{MHz}$, Each Tone Pout 19dBm $V_{DD} = 7.0\text{V}$, $I_{dss} = 60\% \pm 10\% I_{dss}$		-41	-38	dBc
Input RL	Input Return Loss		-10	-8	dB
Output RL	Output Return Loss		-6		dB
I_{dss}	Saturated Drain Current $V_{DS} = 3.0\text{V}$, $V_{GS} = 0\text{V}$	920	1150	1380	mA
V_{DD}	Drain Voltage		7	8	V
R _{th}	Thermal Resistance		12.5		$^\circ\text{C/W}$

MAXIMUM RATINGS AT $25^\circ\text{C}^{1,2}$

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

Specifications are subject to change without notice.

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Revised July 2005

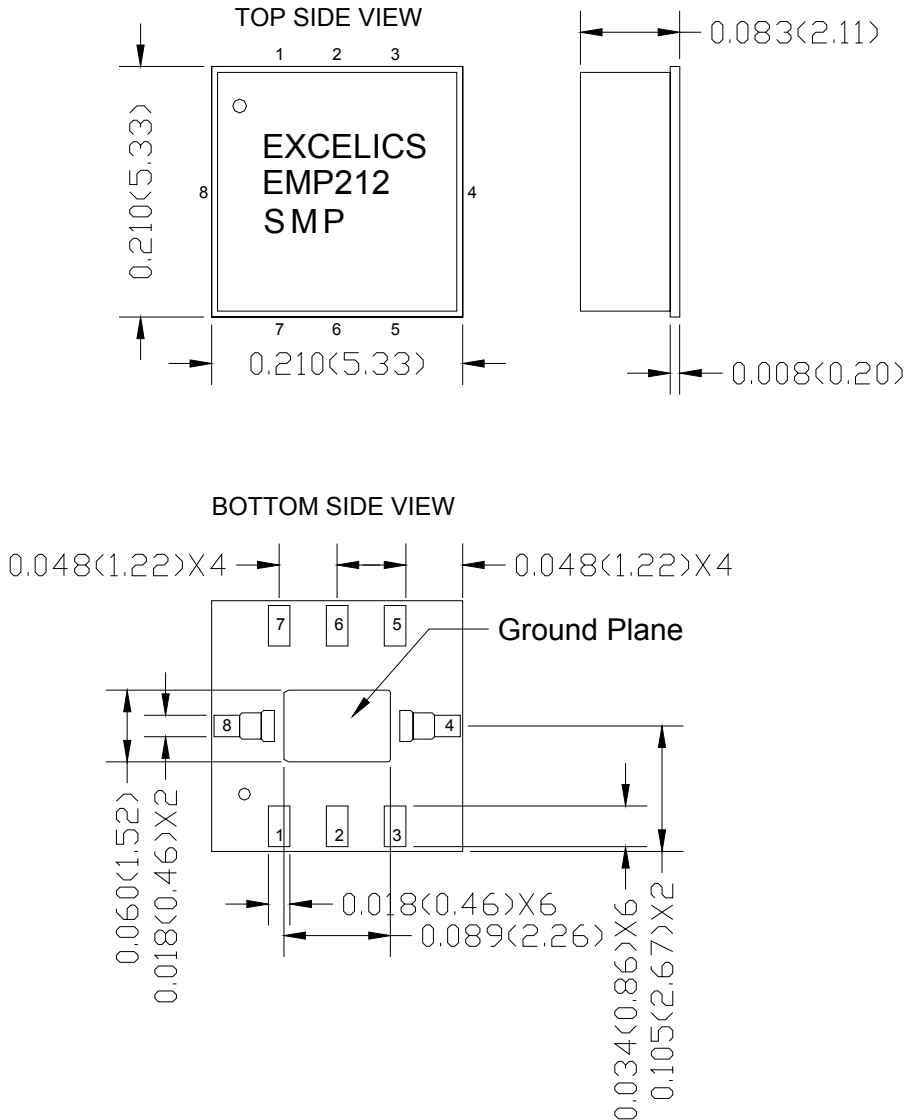


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Package Dimension and Pin Assignment



PIN	Assignment
1	N/C
2	N/C
3	VD
4	OUT
5	N/C
6	N/C
7	VG
8	IN

NOTES:

1. Material: Plastic
2. Plating: Gold over Nickel
3. Ground Plane Must be Soldered to PCB RF Ground.
4. ° Indicates PIN 1.
5. All Dimensions are in Inches (Millimeters).
6. All Tolerances are ±0.003 (±0.08).

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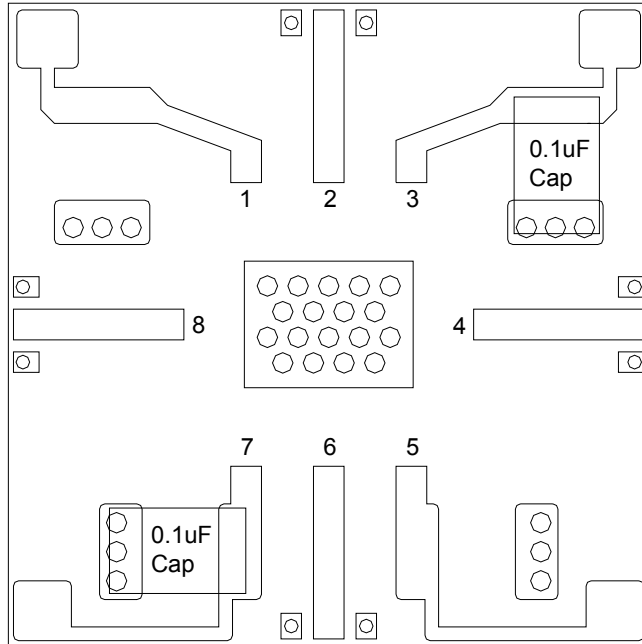


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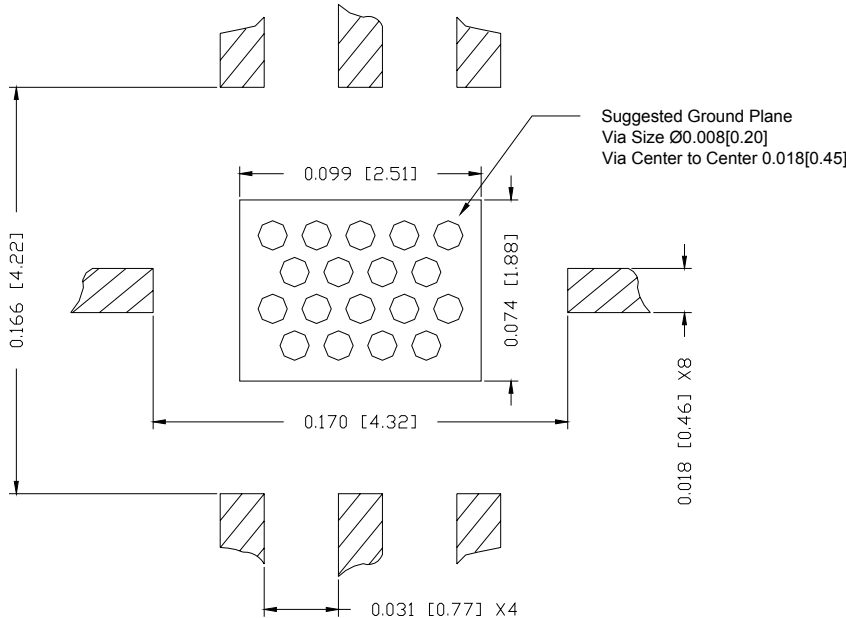
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Evaluation Board



The grounded Co-Planar Wave Guide (CPWG) PCB input/output transitions allow use of Ground_Signal_Ground (GSG) probes for testing. Suggested probe pitch is 500um. Alternatively, the evaluation board can be mounted in a metal housing with SMA coaxial connectors.

Suggested PCB Land Pattern



Notes:

1. All Dimensions Are In Inches [Millimeters]
2. All Tolerances Are $\pm 0.003 [0.08]$
3. Suggested PCB Material Is Rogers4003 with 1/2oz Copper
4. Suggested PCB Thickness is 8mil

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