



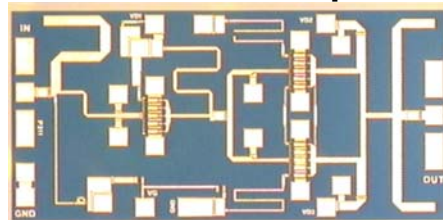
EMP311

ISSUED DATE: 09-10-04

21.0 – 24.0 GHz Power Amplifier MMIC

FEATURES

- 21.0 – 24.0 GHz Operating Frequency Range
- 26.5dBm Output Power at 1dB Compression
- 14.0 dB Typical Small Signal Gain
- -40dBc OIMD3 @Each Tone Pout 16.5dBm



Dimension: 1130um X 2250um
Thickness: 75um ± 13um

APPLICATIONS

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



Caution! ESD sensitive device.

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, 50 ohm, $V_{DD}=7\text{V}$, $IDQ=380\text{mA}$)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	21.0		24.0	GHz
P1dB	Output Power at 1dB Gain Compression	25.0	26.5		dBm
Gss	Small Signal Gain	11.0	14.0		dB
OIMD3	Output 3 rd Order Intermodulation Distortion @ $\Delta f=10\text{MHz}$, Each Tone Pout 16.5dBm		-40	-37	dBc
Input RL	Input Return Loss		-10	-8	dB
Output RL	Output Return Loss		-8	-6	dB
Idss	Saturate Drain Current $V_{DS}=3\text{V}$, $V_{GS}=0\text{V}$	429	536	644	mA
V_{DD}	Power Supply Voltage		7	8	V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)		18		$^\circ\text{C/W}$
Tb	Operating Base Plate Temperature	-35		+85	$^\circ\text{C}$

ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION^{1,2}

SYMBOL	CHARACTERISTIC	VALUE
V_{DS}	Drain to Source Voltage	8 V
V_{GS}	Gate to Source Voltage	-4 V
I_{DD}	Drain Current	I_{dss}
I_{GSF}	Forward Gate Current	7.5mA
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	6.3W

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} = ambient temperature

Specifications are subject to change without notice.

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

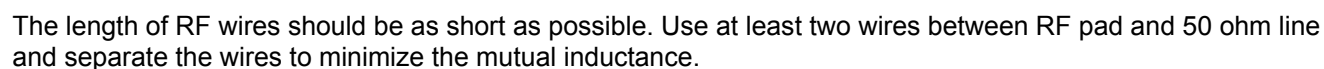
Phone: 408-737-1711 Fax: 408-737-1868 Web: www.excelics.com

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Revised September 2004



21.0 – 24.0 GHz Power Amplifier MMIC



Chip size 1130 X 2250 microns
Chip Thickness: 75±13 microns
PAD Dimensions: 100 x 100 microns
All Dimensions in Microns

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Revised September 2004