



# EMP311-P1

ISSUED DATE: 07-01-04

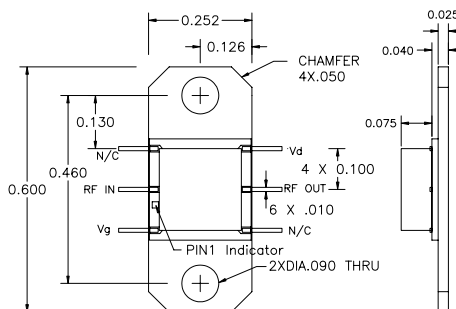
## 21.0 – 24.0 GHz Power Amplifier MMIC

### FEATURES

- 21.0 – 24.0 GHz Operating Frequency Range
- 26.0dBm Output Power at 1dB Compression
- 13.0 dB Typical Small Signal Gain
- -40dBc OIMD3 @Each Tone Pout 16dBm

### APPLICATIONS

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



Optional Packaging solutions are available contact the Excelics sales team for details.



**Caution! ESD sensitive device.**

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

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	21.0		24.0	GHz
P1dB	Output Power at 1dB Gain Compression	24.5	26.0		dBm
Gss	Small Signal Gain	10.0	13.0		dB
OIMD3	Output 3 <sup>rd</sup> Order Intermodulation Distortion @ $\Delta f=10\text{MHz}$ , Each Tone Pout 16dBm		-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
VDD	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<sup>1,2</sup>

SYMBOL	CHARACTERISTIC	VALUE
$V_{DS}$	Drain to Source Voltage	8 V
$V_{GS}$	Gate to Source Voltage	-4 V
$I_{DD}$	Drain Current	Idss
$I_{GSF}$	Forward Gate Current	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](http://www.excelics.com)

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