

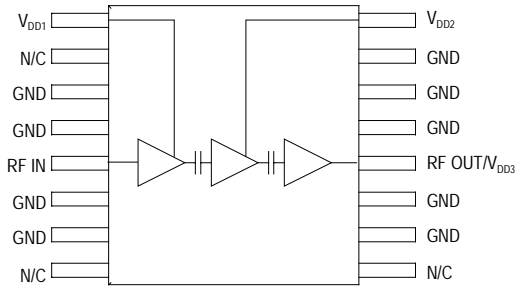
# M/A-COM 3.6V 1.2W RF Power Amplifier IC for N-PCS/ISM900

### Applications

- Two-Way Paging
- Wireless Modems
- Cordless Telephones
- Telemetry
- 900 MHz ISM

### Features

- Single Positive Supply
- 16 Pin TSSOP Plastic Package
- Class AB Bias
- 800 - 1000 MHz Operation
- 50Ω Input Impedance
- Single Capacitor Output Match
- Self-Aligned MSAG<sup>®</sup>-Lite MESFET Process
- Guaranteed Stability and Ruggedness



**Typical 3.6 Volt Performance**

- 30.8 dBm Power Output
- 30.8 dB Power Gain
- 60% Drain Efficiency (output stage FET)
- 45% Power Added Efficiency
- 36 dBc 2<sup>nd</sup> Harmonic
- 54 dBc 3<sup>rd</sup> Harmonic

**ELECTRICAL CHARACTERISTICS**  $V_{DD}=3.6\text{ V}$ ,  $P_{IN}=0\text{ dBm}$ ,  $T_S=40\text{ }^\circ\text{C}$  (Note 1), Output externally matched to 50 Ω System.

Characteristic	Symbol	Min	Typical	Max	Unit
Frequency Range	$f$	900		942	MHz
Output Power, $f = 900\text{ MHz}$	$P_{OUT}$	30.4	30.9	31.5	dBm
Power Added Efficiency, $f = 900\text{ MHz}$	$\eta$	40	45		%
Harmonics	$2f_o$		-36	-31	dBc
	$3f_o$		-54	-40	dBc
Input VSWR	—		1.4:1	2.0:1	—
Thermal Resistance (Junction of 3 <sup>rd</sup> stage FET to solder point of pin 13)	$R_{TH\ J-S}$		47		$^\circ\text{C/W}$
Load Mismatch ( $V_{DD} = 4.6\text{ V}$ , $P_{IN} = +3\text{ dBm}$ , $V_{SWR} = 8:1$ )	—		No Degradation in Power Output		
Stability ( $P_{IN} = -15\text{ to }+3\text{ dBm}$ , $V_{DD} = 3.6, 4.6\text{ V}$ , $T_S = -40\text{ to }+100\text{ }^\circ\text{C}$ , Load $V_{SWR} = 8:1$ )	—		All non-harmonically related outputs more than 60 dB below desired signal		

Note 1:  $T_S$  is the temperature measured at the soldering point of pin 13, mounted on 60 mil GETEK evaluation board in a free air condition with ambient room temperature  $T_A=25\text{ }^\circ\text{C}$ . The electrical data presented herein was taken with the evaluation board shown in Figures 1 and 6, under room temperature conditions and CW operation, unless otherwise specified.

Specifications subject to change without notice.

901753 G

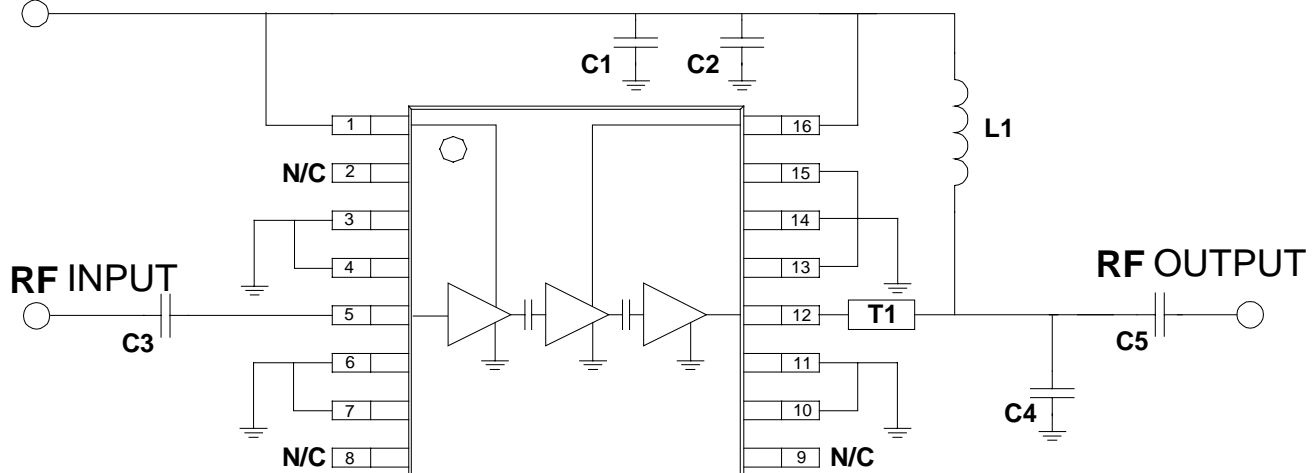
- North America: Tel. (800)366-2266, Fax (800)618-8883
- Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax +44 (1344) 300 020



Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information

**MAXIMUM RATINGS** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

Rating	Symbol	Value	Unit
DC Supply Voltage (Pins 1, 12, 16)	$V_{DD}$	5	Vdc
RF Input Power	$P_{IN}$	4	mW
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-40 to +150	$^\circ\text{C}$

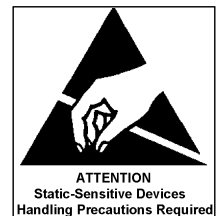
**APPLICATION INFORMATION****+V<sub>DD</sub> (+3.6V)****Figure 1. Evaluation Board Schematic****List of components:**C1 = 0.1 $\mu\text{F}$  Kemet multilayer ceramic chip capacitor (C1206C104K5RAC)

C2 = 4700 pF Kemet multilayer ceramic chip capacitor (C0805C472K5RAC)

C4 = 7.5 pF DLI multilayer ceramic chip capacitor (C11AH7R5B5TXL)

C3 = C5 = 100 pF DLI multilayer ceramic chip capacitor (DC Block; C11AH101K5TXL)

L1 = 39 nH Coilcraft chip inductor (1008CS.390XMBB)

T1 = 0.13" of 50  $\Omega$  grounded coplanar waveguide (60 mil GETEK board)

Component layout and printed circuit board drawing for RF IC evaluation board are shown in Figure 6.

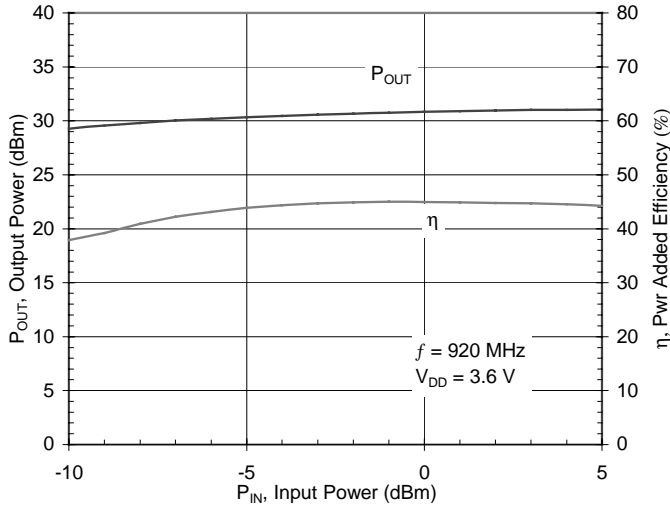
Specifications subject to change without notice.

- North America: Tel. (800)366-2266, Fax (800)618-8883
- Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax +44 (1344) 300 020

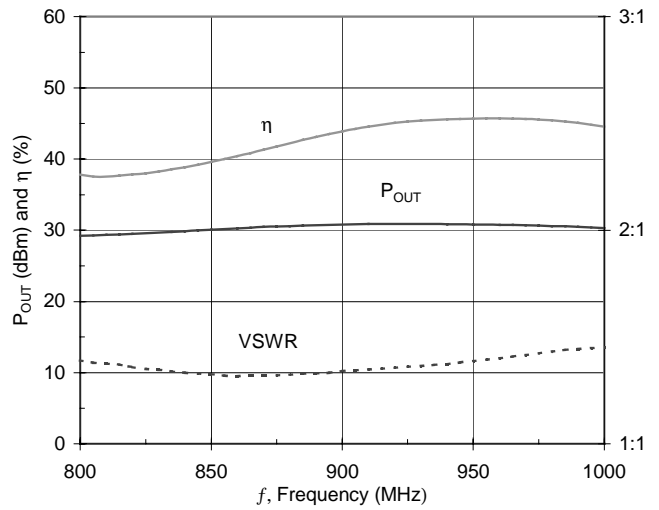
901753 G

**tyco** / Electronics / **M/A-COM**
Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information

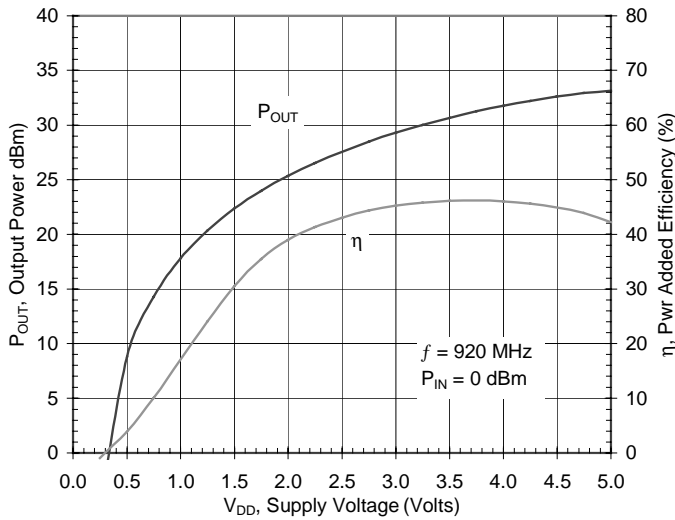
**TYPICAL CHARACTERISTICS**



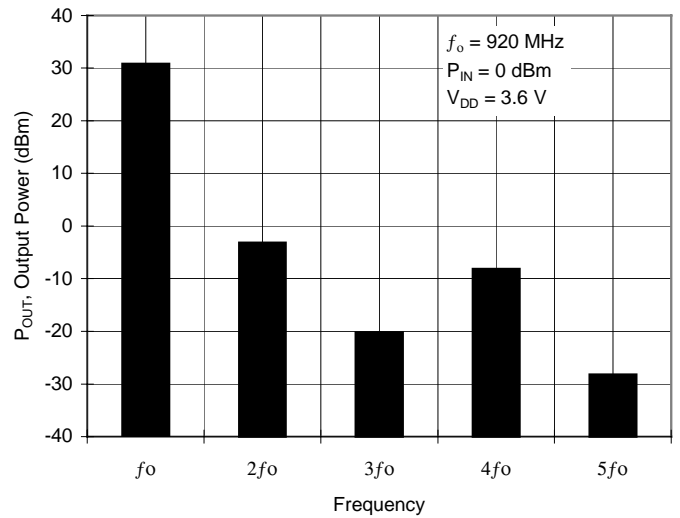
**Figure 2. Output power and efficiency vs. input power**



**Figure 3. Output power, efficiency and input VSWR vs. frequency**



**Figure 4. Output power and efficiency vs. supply voltage**



**Figure 5. Harmonics**

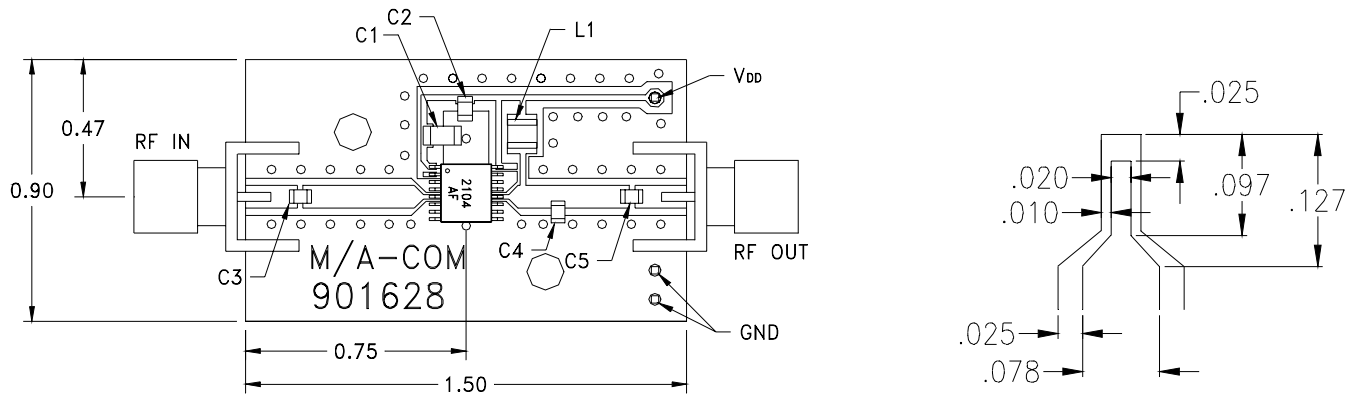
Specifications subject to change without notice.

- North America: Tel. (800)366-2266, Fax (800)618-8883
- Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax +44 (1344) 300 020

901753 G

Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information

**MECHANICAL DATA**



Top view

50Ω lead transition

Figure 6. Component layout and printed circuit drawing for evaluation board

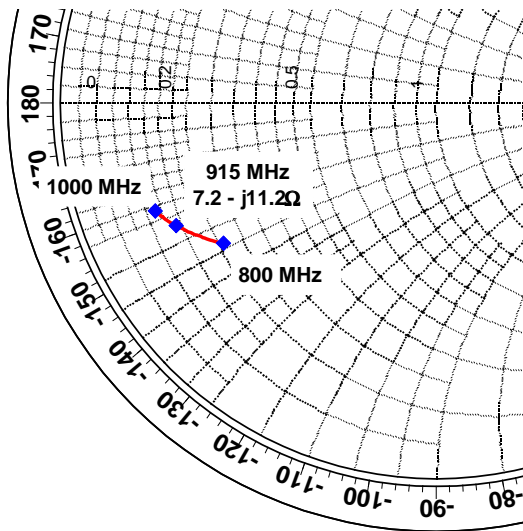


Figure 7. Output match impedance (as seen from pin 12)

Specifications subject to change without notice.

- North America: Tel. (800)366-2266, Fax (800)618-8883
- Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax +44 (1344) 300 020

901753 G

Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information

