

**GaAs MMIC XM2400LB-PM0601****muRata****LNA / Drv. Amp. MMIC for 2.4GHz Wireless Communications****■ Applications**

Low noise amplifier / Driver amplifier for 2.4GHz WLAN / Bluetooth™ and other ISM2400 applications.

**■ Features**

- 1 Positive Supply Voltage ..... +3V
- Internal Input and Output Matching Circuit
- Low Power Consumption ..... 3V/4.5mA
- High Gain ..... G=15.5dB
- Low Noise Figure ..... F=1.9dB
- High 1dB Compression Point ..... P<sub>1dB</sub>=4.0dBm
- Small Plastic Package ..... 6 pin Mini Mold Package (SOT-23-6)

**■ Absolute Maximum Ratings**

Symbol	Parameter	Conditions	Rating	Unit
VDD	Supply Voltage	T <sub>a</sub> = 25°C	5	V
P <sub>in</sub>	RF Input Power	T <sub>a</sub> = 25°C	-5	dBm
T <sub>op</sub>	Operating Temperature	-	-20 ~ 85	°C
T <sub>stg</sub>	Storage Temperature	-	-55 ~ 150	°C

**■ Electrical Specifications**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
f <sub>0</sub>	Operation Frequency	-	2.4	-	2.5	GHz
VDD	Supply Voltage (Drain)	-	-	3.0	-	V
I <sub>DD</sub>	Current Consumption	-	-	4.5	-	mA
G	Small Signal Gain	VDD = 3.0V Z <sub>0</sub> = 50Ω P <sub>in</sub> = -30dBm	-	15.5	-	dB
F	Noise Figure		-	1.9	-	dB
VSWR <sub>in</sub>	Input VSWR		-	1.8	-	-
VSWR <sub>out</sub>	Output VSWR		-	1.8	-	-
IP <sub>3</sub>	3rd Order Intercept Point	-	-	14.0	-	dBm
P <sub>1dB</sub>	1dB Compression Point	-	-	4.0	-	dBm

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\* Specifications are preliminary and information only.

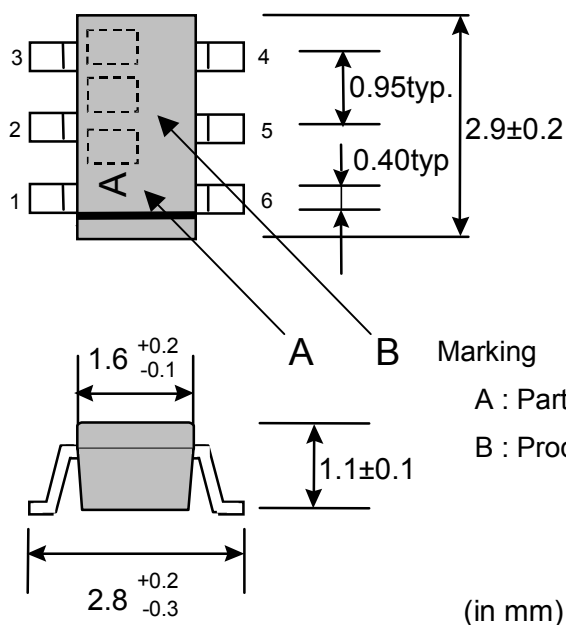
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# GaAs MMIC XM2400LB-PM0601



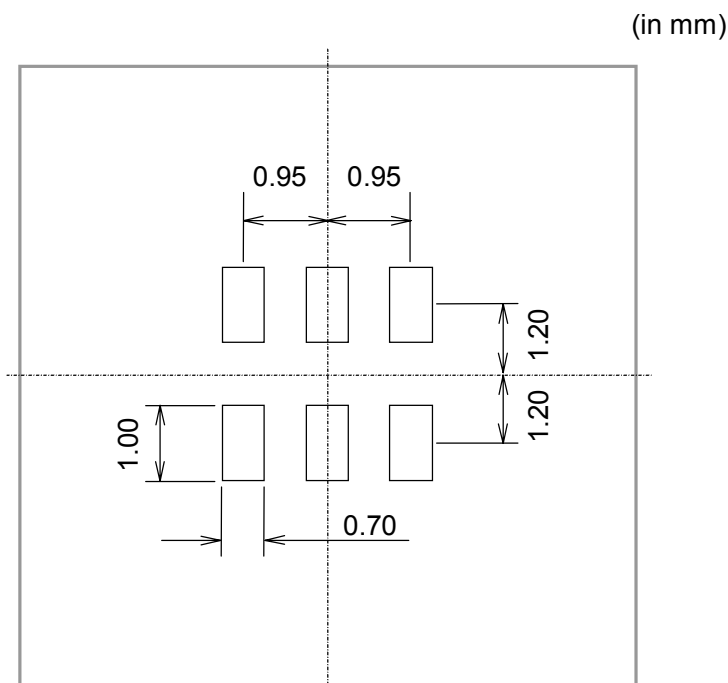
## LNA / Drv. Amp. MMIC for 2.4GHz Wireless Communications

### Package Outline and Pin Connections



Pin No.	Function
1	RF Input
2	Not Connected
3	VDD
4	RF Output
5	GND
6	GND

### Land Pattern



All tolerances would be 0.03.

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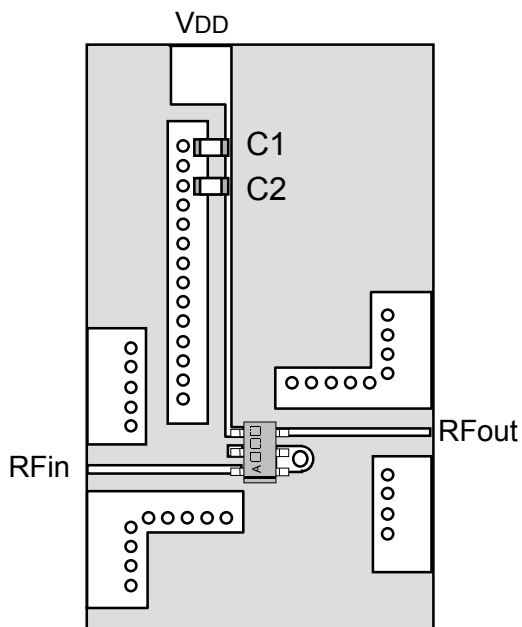
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## LNA / Drv. Amp. MMIC for 2.4GHz Wireless Communications

### ■ Evaluation Board 1 (for High Gain)



Part No.	Value
C1	GRM39 20pF (Murata)
C2	GRM39 200pF (Murata)

#### Substrate

**Glass-epoxy**

**Thickness = 0.2mm**

**Metal Thickness = 18μm**

**εr = 4.2**

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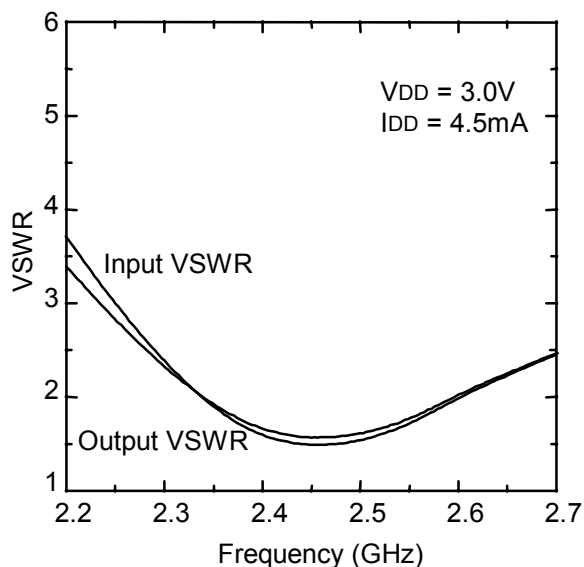
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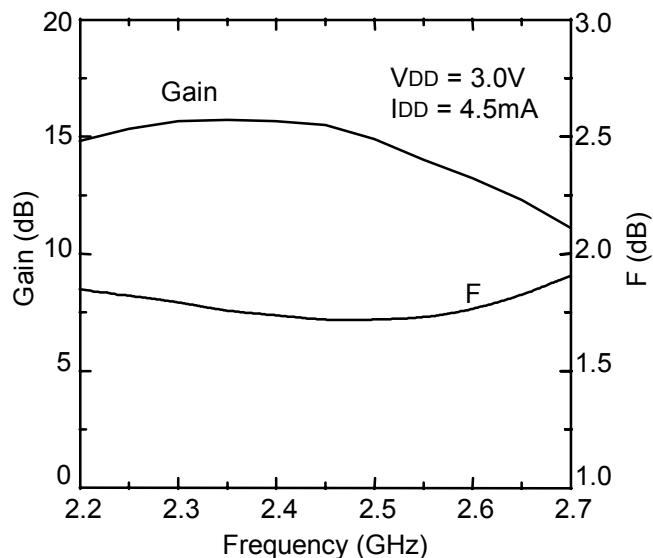


## LNA / Drv. Amp. MMIC for 2.4GHz Wireless Communications

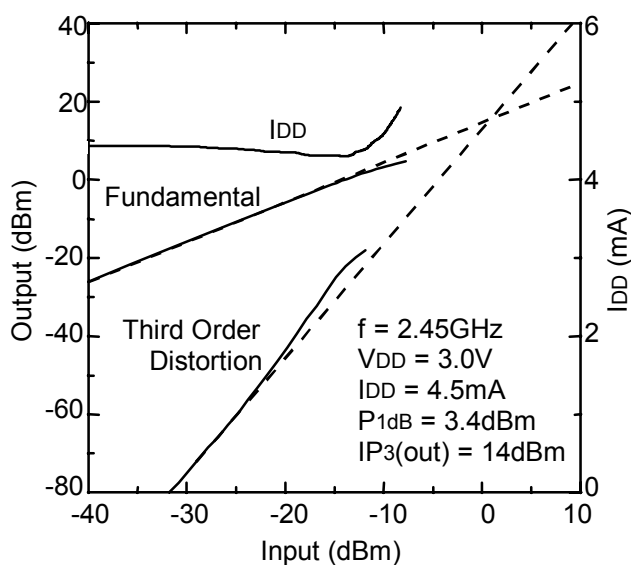
### Typical Performance



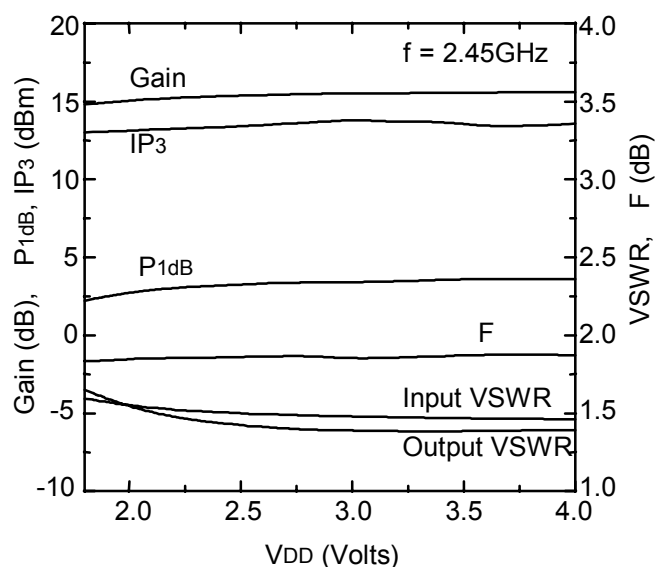
Input and Output VSWR v.s. Frequency



Gain and F v.s. Frequency



Output Power v.s. Input Power



Gain, P<sub>1dB</sub>, IP<sub>3</sub>, VSWR and F v.s. V<sub>DD</sub>

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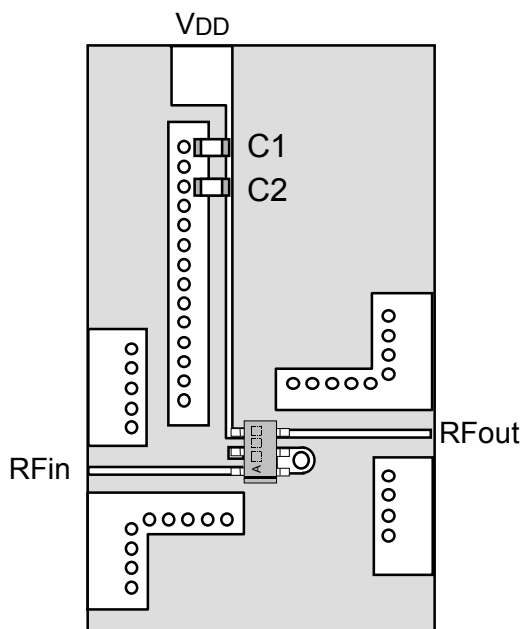
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# GaAs MMIC XM2400LB-PM0601

## LNA / Drv. Amp. MMIC for 2.4GHz Wireless Communications

### ■ Evaluation Board 2 (for Better VSWR)



Symbol	Parameter	Conditions	Typ.	Unit
IDD	Current Consumption	-	4.5	mA
G	Small Signal Gain	V <sub>DD</sub> = 3.0V Z <sub>0</sub> = 50Ω P <sub>in</sub> = -30dBm	15.0	dB
F	Noise Figure		1.9	dB
VSWR <sub>in</sub>	Input VSWR		1.6	-
VSWR <sub>out</sub>	Output VSWR		1.6	-
IP <sub>3</sub>	3rd Order Intercept Point	-	14.0	dBm
P <sub>1dB</sub>	1dB Compression Point	-	4.0	dBm

Part No.	Value
C1	GRM39 20pF (Murata)
C2	GRM39 470pF (Murata)

#### Substrate

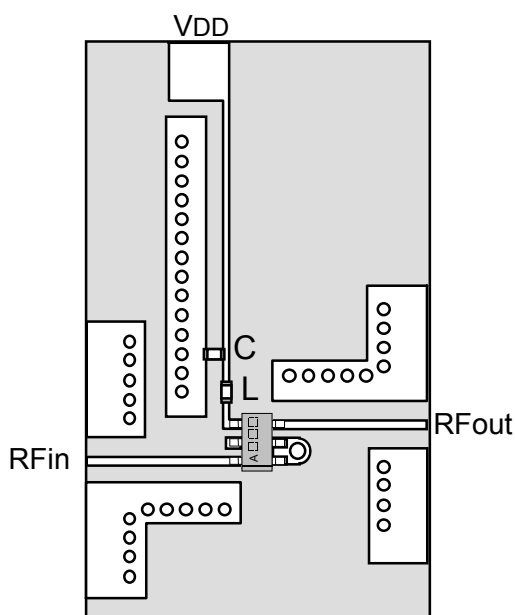
Glass-epoxy

Thickness = 0.2mm

Metal Thickness = 18μm

ε<sub>r</sub> = 4.2

### ■ Evaluation Board 3 (for Smaller Size)



Symbol	Parameter	Conditions	Typ.	Unit
IDD	Current Consumption	-	4.5	mA
G	Small Signal Gain	V <sub>DD</sub> = 3.0V Z <sub>0</sub> = 50Ω P <sub>in</sub> = -30dBm	15.7	dB
F	Noise Figure		1.9	dB
VSWR <sub>in</sub>	Input VSWR		1.8	-
VSWR <sub>out</sub>	Output VSWR		1.9	-
IP <sub>3</sub>	3rd Order Intercept Point	-	14.0	dBm
P <sub>1dB</sub>	1dB Compression Point	-	4.0	dBm

Part No.	Value
C	GRM36 5.6pF (Murata)
L	LQP10 6.8nH (Murata)

#### Substrate

Glass-epoxy

Thickness = 0.2mm

Metal Thickness = 18μm

ε<sub>r</sub> = 4.2

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