GaAs MMIC XM2400LB-PM0601

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_{1dB}=4.0dBm
Small Plastic Package ..... 6 pin Mini Mold Package (SOT-23-6)

■ Absolute Maximum Ratings

Symbol	Parameter	Conditions	Rating	Unit
V_{DD}	Supply Voltage	Ta = 25°C	5	V
P_{in}	RF Input Power	Ta = 25°C	-5	dBm
T_{op}	Operating Temperature	-	-20 ~ 85	°C
T_{stg}	Storage Temperature	-	-55 ~ 150	°C

■ Electrical Specifications

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
f_0	Operation Frequency	-	2.4	-	2.5	GHz
V_{DD}	Supply Voltage (Drain)	-	-	3.0	-	V
I_{DD}	Current Consumption	-	-	4.5	-	mA
G	Small Signal Gain	V_{DD} = 3.0V Z_0 = 50Ω P_{in} = -30dBm	-	15.5	-	dB
F	Noise Figure		-	1.9	-	dB
$VSWR_{in}$	Input VSWR		-	1.8	-	-
$VSWR_{out}$	Output VSWR		-	1.8	-	-
IP_3	3rd Order Intercept Point	-	-	14.0	-	dBm
P_{1dB}	1dB Compression Point	-	-	4.0	-	dBm

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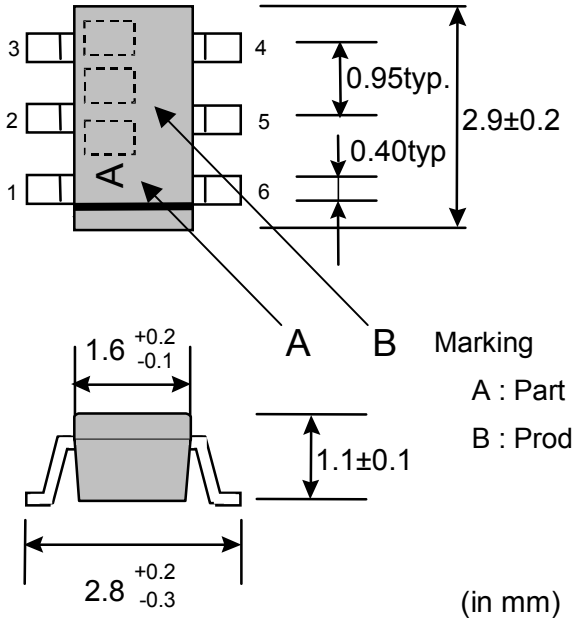
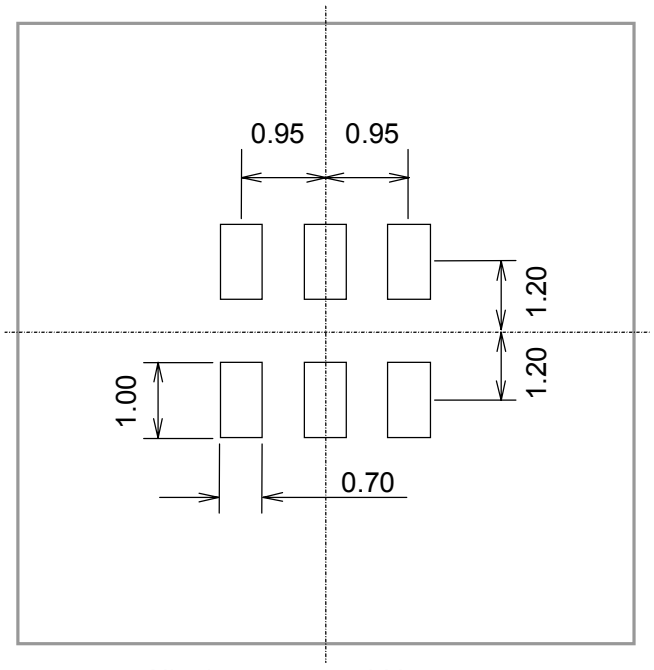
■ Package Outline and Pin Connections



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

■ Land Pattern

(in mm)



All tolerances would be 0.03.

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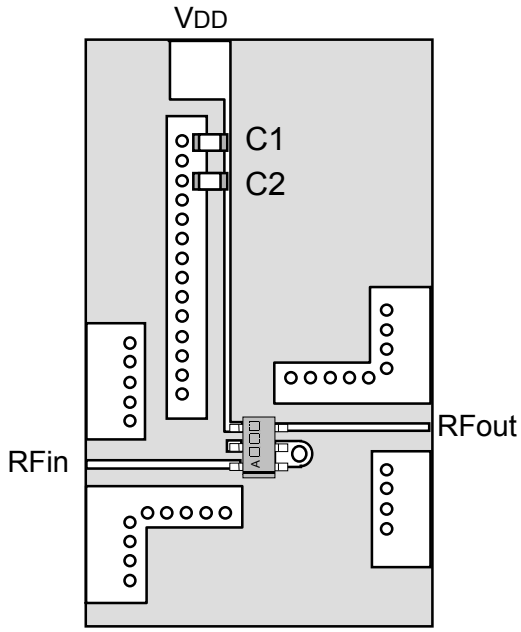
■ Evaluation Board 1 (for High Gain)



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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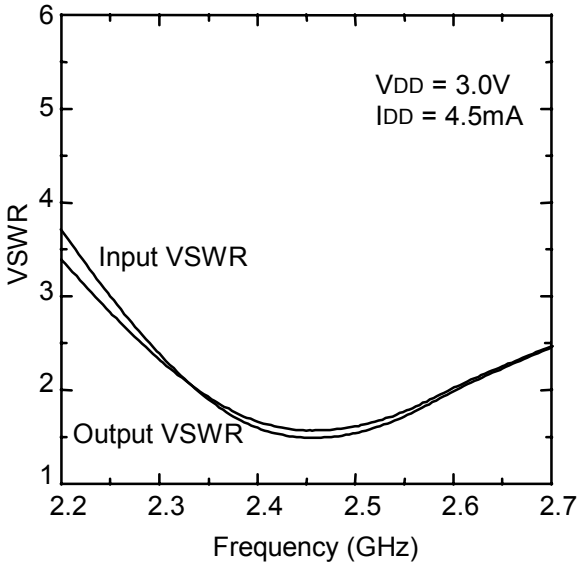
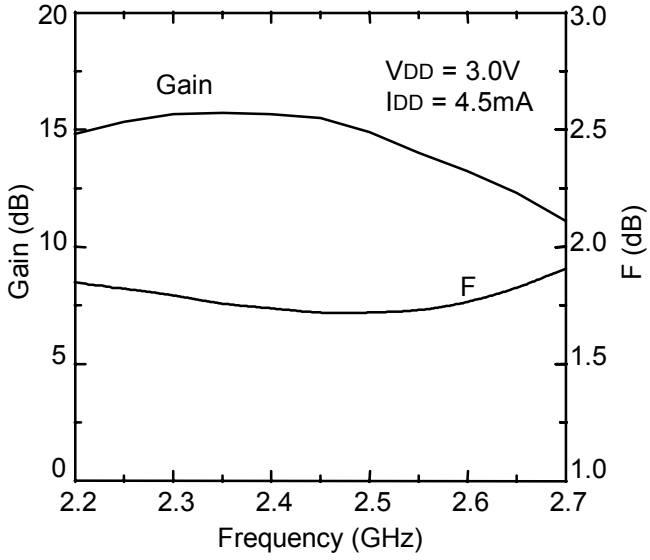
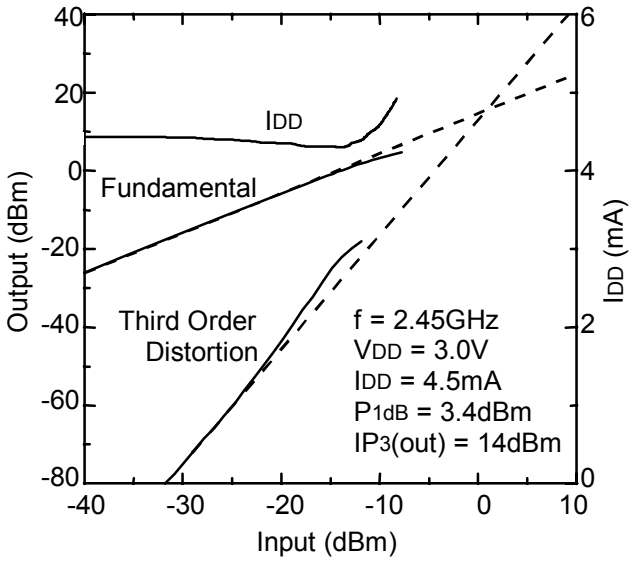
■ Typical Performance



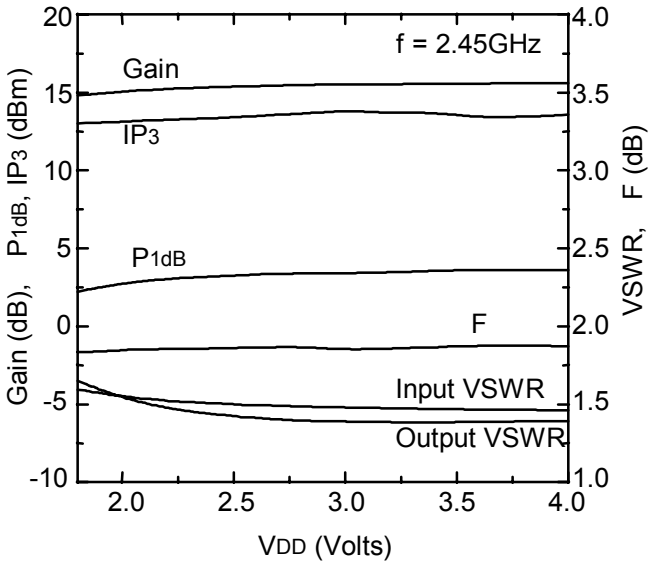
Input and Output VSWR v.s. Frequency



Gain and F v.s. Frequency



Output Power v.s. Input Power



Gain, P_{1dB}, IP_3, VSWR and F v.s. V_{DD}

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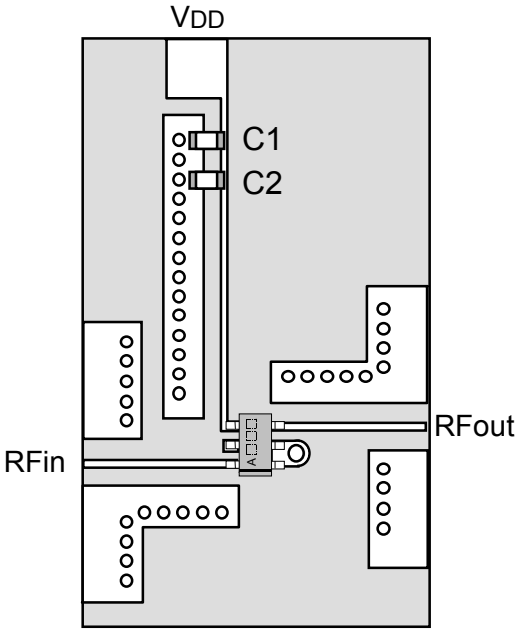
■ Evaluation Board 2 (for Better VSWR)



Symbol	Parameter	Conditions	Typ.	Unit
IDD	Current Consumption	-	4.5	mA
G	Small Signal Gain	VDD = 3.0V Z0 = 50Ω Pin = -30dBm	15.0	dB
F	Noise Figure		1.9	dB
VSWRin	Input VSWR		1.6	-
VSWRout	Output VSWR		1.6	-
IP3	3rd Order Intercept Point	-	14.0	dBm
P1dB	1dB Compression Point	-	4.0	dBm

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

Substrate

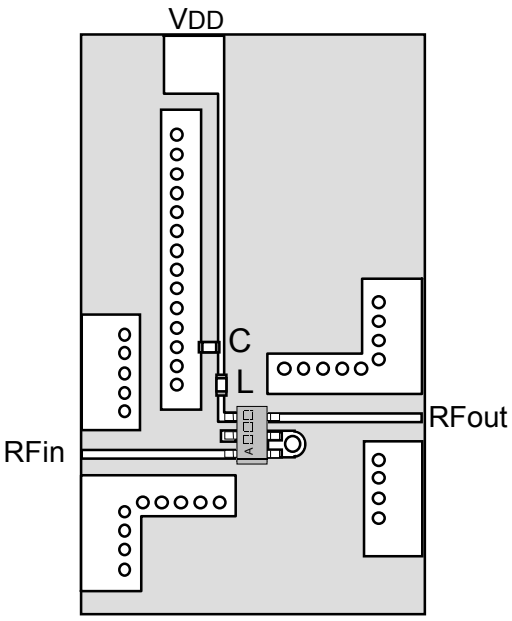
Glass-epoxy

Thickness = 0.2mm

Metal Thickness = 18μm

εr = 4.2

■ Evaluation Board 3 (for Smaller Size)



Symbol	Parameter	Conditions	Typ.	Unit
IDD	Current Consumption	-	4.5	mA
G	Small Signal Gain	VDD = 3.0V Z0 = 50Ω Pin = -30dBm	15.7	dB
F	Noise Figure		1.9	dB
VSWRin	Input VSWR		1.8	-
VSWRout	Output VSWR		1.9	-
IP3	3rd Order Intercept Point	-	14.0	dBm
P1dB	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

εr = 4.2

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