



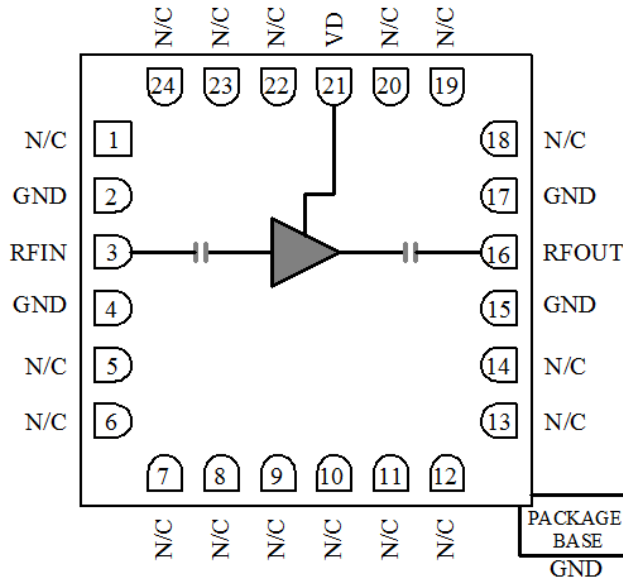
### Features

- Single Biasing Voltage (Self Biased)
- Frequency: 4 - 6GHz
- Small Signal Gain: 29.5dB Typical
- Gain Flatness:  $\pm 0.3$ dB Typical
- Noise Figure: 0.7dB Typical
- P1dB: 11dBm Typical
- Power Supply: +5V/30mA
- Input/Output: 50 $\Omega$
- Package Size : 4 x 4x 0.87mm

### Typical Applications

- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

### Functional Block Diagram



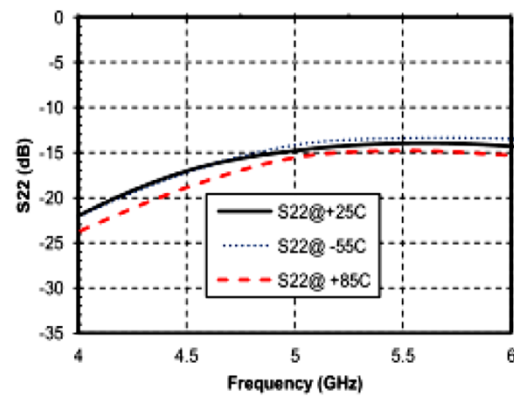
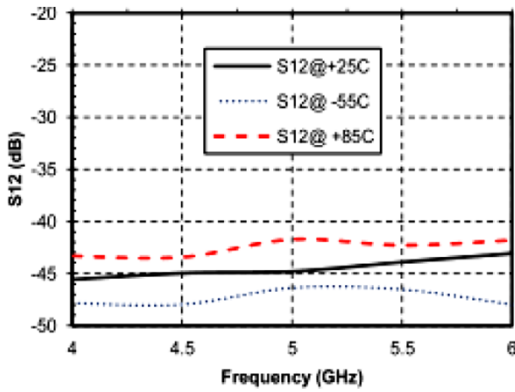
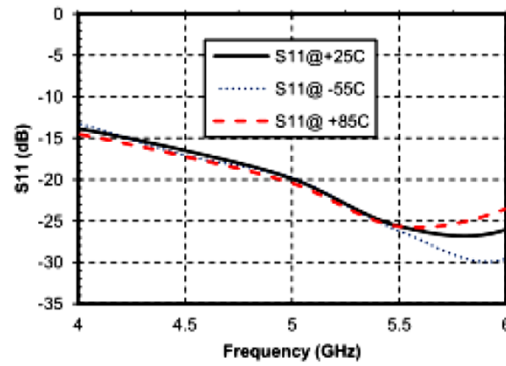
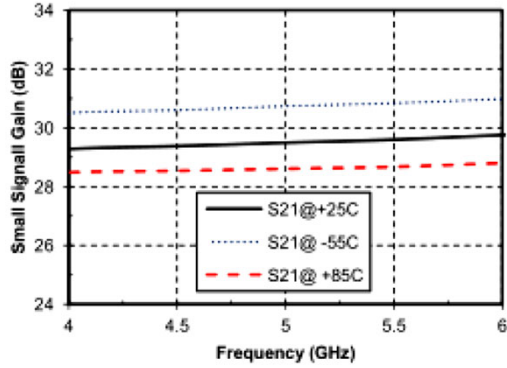
### Electrical Specifications

TA = +25°C, VD = +5V, IDD = 30mA Typical

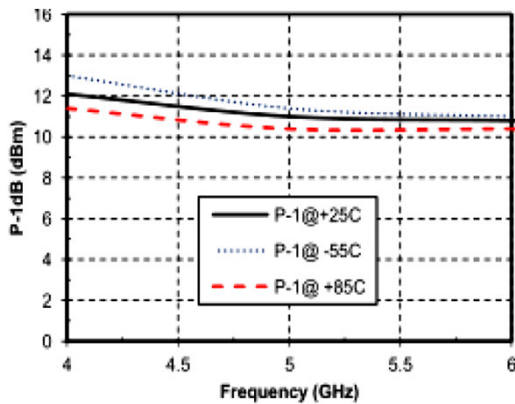
Parameters	Min.	Typ.	Max.	Units
Frequency	4		6	GHz
Small Signal Gain	28	29.5		dB
Gain Flatness		$\pm 0.3$		dB
Noise Figure		0.7		dB
P1dB - Output 1dB Compression	9	11		dBm
Past - Saturated Output Power		12		dBm
OIP3 - Output Third Order Intercept		20		dBm
Input Return Loss		18		dB
Output Return Loss		14		dB



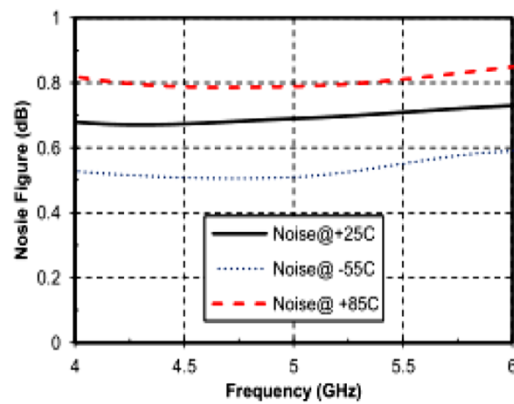
### Measurement Plots: S-parameters



### Measurement Plots: P1dB



### Measurement Plots: Noise Figure





# MILLER

MMIC

## MML025Q4A

V1.0.0

GaAs QFN 4x4mm  
Low Noise Amplifier 4-6GHz

MML025Q4A

GaAs QFN 4x4mm Low Noise Amplifier 4-6GHz

### Absolute Maximum Ratings

Drain Bias Voltage (VD)	+7V
RF Input Power (RFIN)(VDD=+5V)	+20 dBm
Channel Temperature	175°C
Continuous Pdiss (T = 85 °C) (derate 3.3mW/°C above 85 °C)	0.3W
Thermal Resistance (channel to die bottom)	50°C/W
Operating Temperature	-55°C to +85 °C
Storage Temperature	-55°C to +150 °C

### Typical Supply Current vs. VD

VD (V)	IDD (mA)
+5	30



ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS



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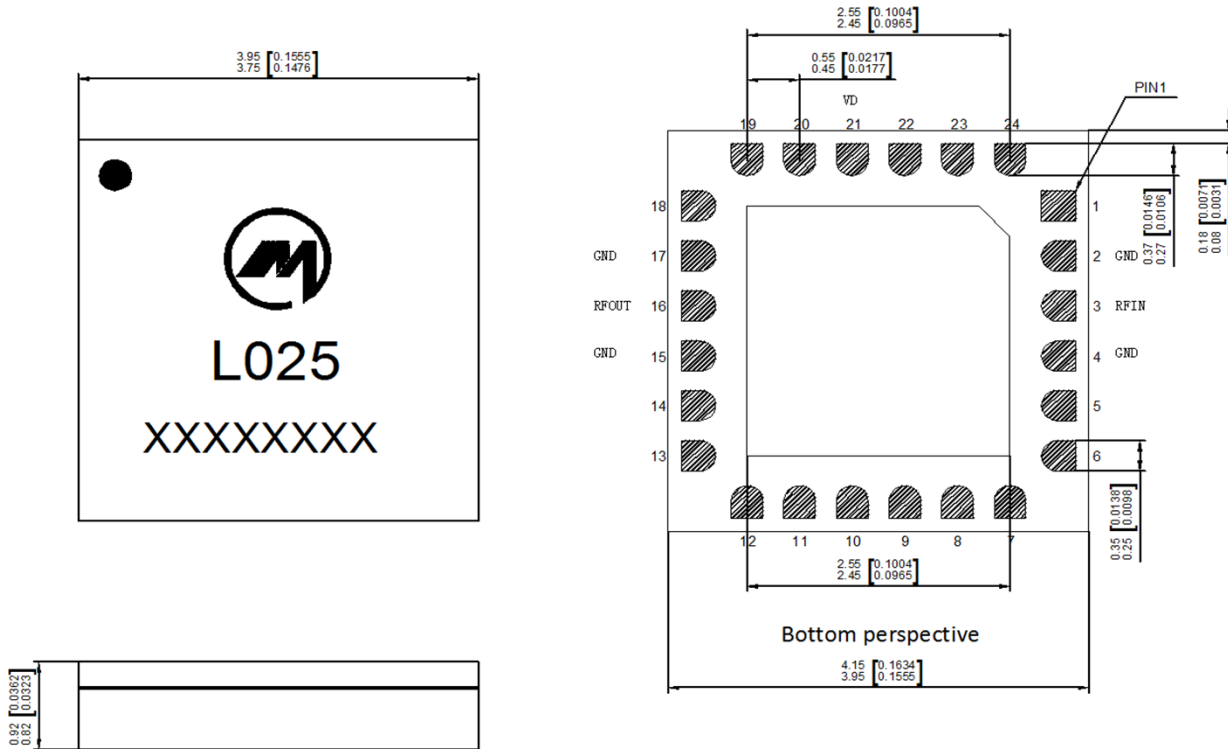
## MML025Q4A

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GaAs QFN 4x4mm  
Low Noise Amplifier 4-6GHz

### Outline Drawing:

All Dimensions in mm[inches]



### Notes:

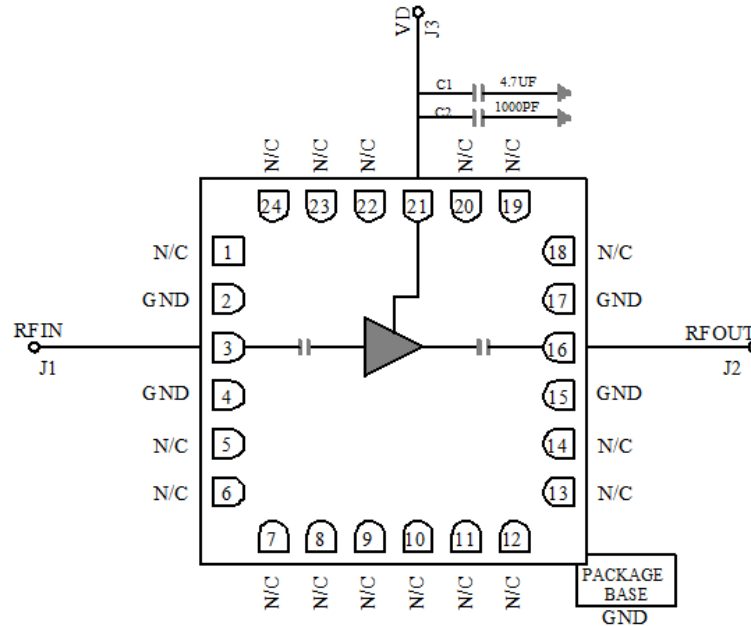
1. Package body material : Alumina.
2. Lead and ground paddle plating: Gold flash over nickel.
3. Dimensions are in millimeters(inches).
4. Lead spacing tolerance is non-cumulative.

MML025Q4A

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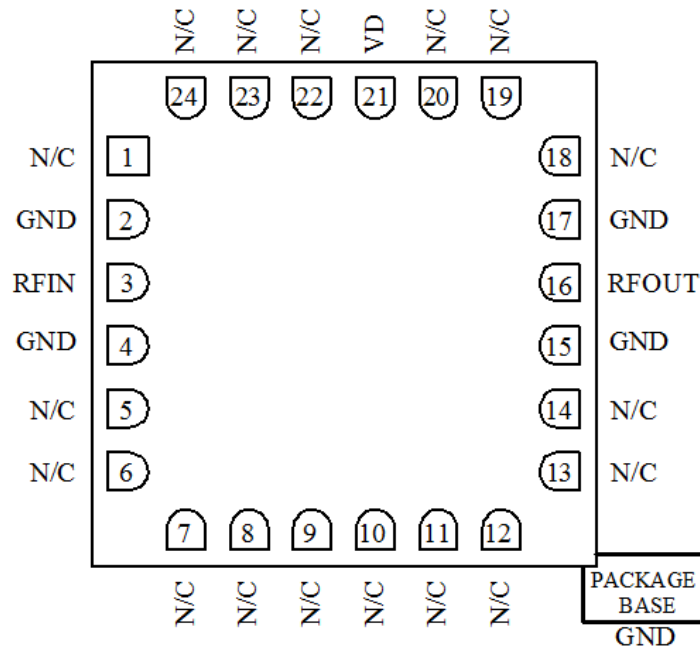


### Assembly Drawing



### Pin Descriptions

No	Function	Description
1,5,6,7,8,9,10,11,12,13,14,18,19,20,22,23,24	NC	No connection. These pins may be connected to RF ground. Performance will not be affected.
3	RF IN	RF Signal Input. This pad is ac-coupled and matched to 50 $\Omega$ .
16	RF OUT	RF Signal Output. This pad is ac-coupled and matched to 50 $\Omega$ .
21	VD	Connect to external 1000pF and 4.7uF bypass capacitors.
2,4,15,17	GND	These pins & exposed ground paddle must be connected to RF/DC ground
	GND	Package bottom must be connected to RF/DC ground



## Biasing and Operation

### Turn ON procedure:

1. Connect GND to RF and dc ground.
2. Apply positive drain voltage  $V_D$  and set to +5.0 V .
3. Apply RF signal.

### Turn OFF procedure:

1. Turn off the RF signal.
2. Turn off the positive drain voltage  $V_D$ .

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