MILLER MMIC

MML080

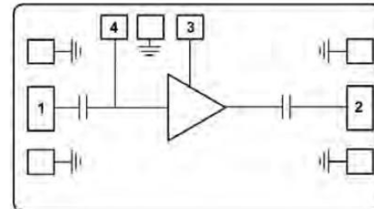
V1.0.0

GaAs MMIC
Low Noise Amplifier
0.8-18GHz

Features

- Two operating mode: high power consumption and low power consumption
- Frequency: 0.8-18GHz
- Noise Figure: 1.9dB@65mA, 1.7dB@40mA
- Gain: 16.5dB@65mA, 15.5dB@40mA
- P1dB: 18dBm@65mA, 17.5dBm@40mA
- Psat: 19.5dBm@65mA, 19dBm@40mA
- Power Supply: +5V@65mA, VG is floating
- +5V@40mA, VG connected to GND
- Input/Output: 50Ω
- Die Size: 1.5 x 1.0 x 0.1 mm

Functional Block Diagram



Typical Applications

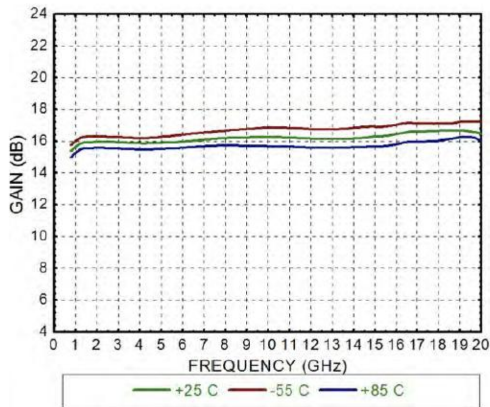
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

Electrical Specifications

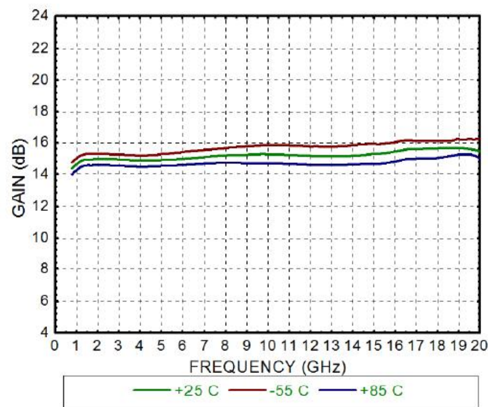
TA = +25ºC, VDD=+5V

Parameters	VG is floating			VG connected to GND			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Frequency	0.8-18			0.8-18			GHz
Gain		16.5			15.5		dB
Gain Flatness		±0.5			±0.3		dB
Input Return Loss		10			10		dB
Output Return Loss		12			12		dB
Output 1dB Compression (P1dB)		18			17.5		dBm
Psat		19.5			19		dBm
Noise Figure		1.9			1.7		dB
Operating current	45	65	85	25	40	60	mA

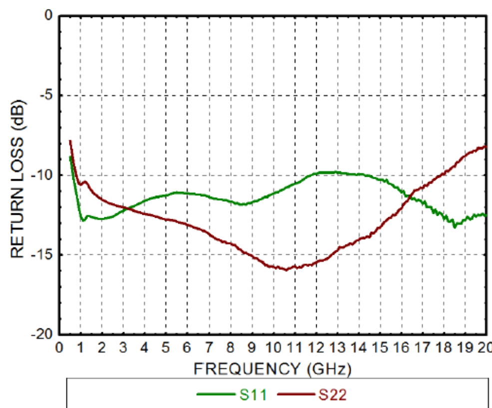
Gain (VG is floating)



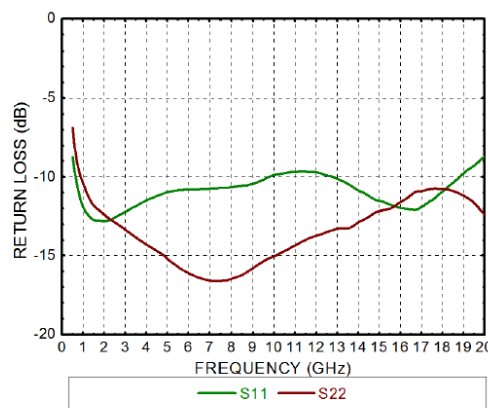
Gain(VG connected to GND)



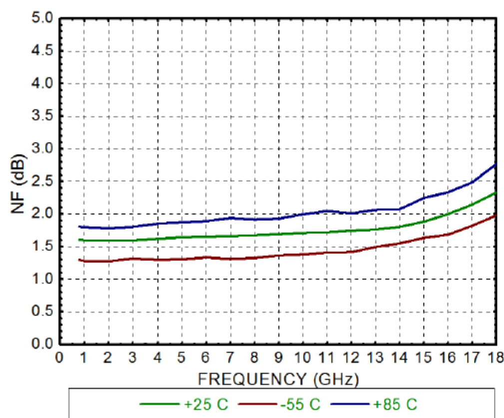
Return Loss(VG is floating)



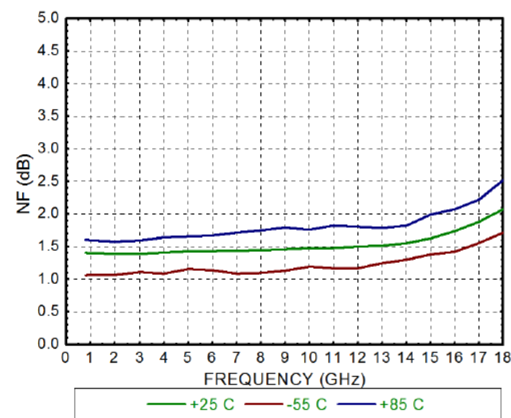
Return Loss(VG connected to GND)



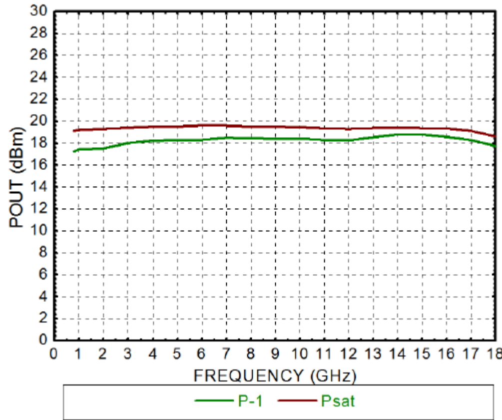
Noise Figure (VG is floating)



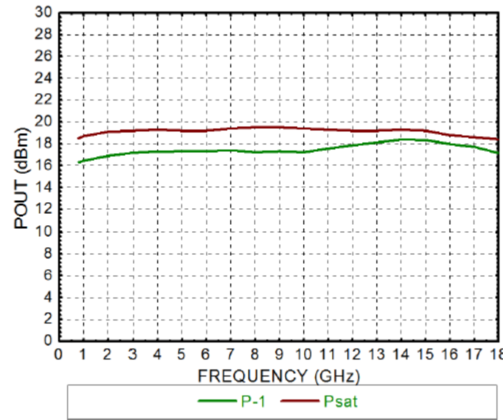
Noise Figure(VG connected to GND)



Pout(VG is floating)

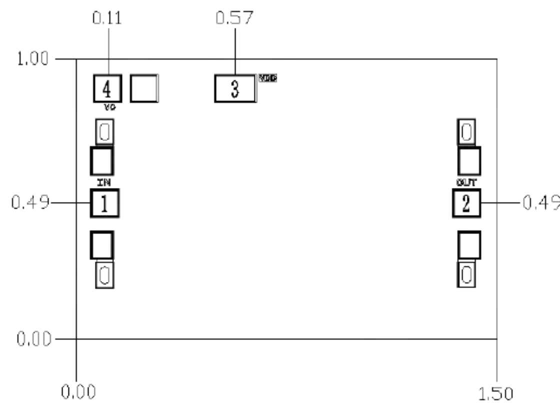


Pout(VG connected to GND)



Outline Drawing:

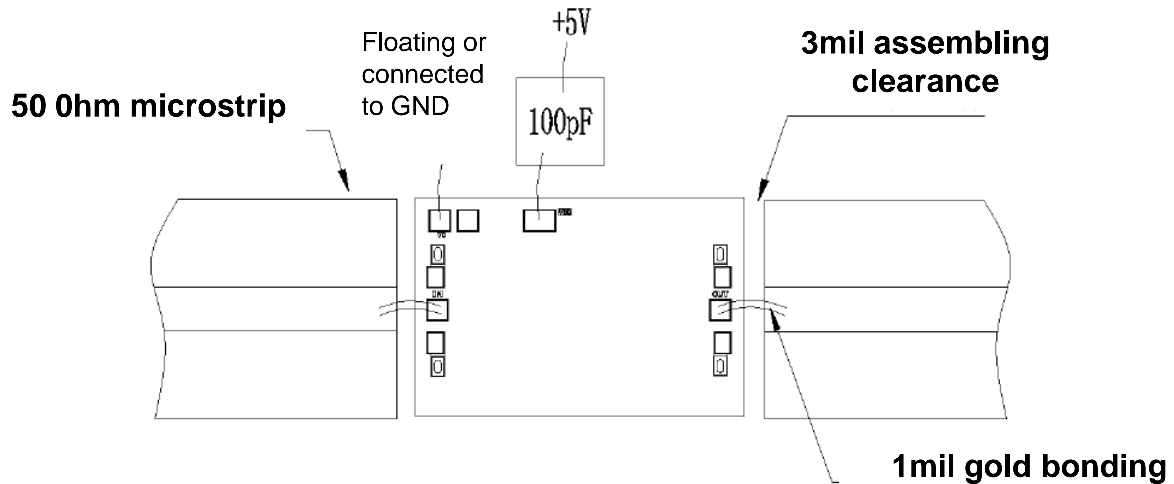
All Dimensions in mm



Pad Description

PAD	Function	Description
1	IN	This pad is AC coupling, 50 ohm matched.
2	OUT	This pad is AC coupling, 50 ohm matched.
3	VDD	This pad provides power supply for the amplifier. It should be connected to extra 100pF bypass capacitor.
4	VC	This pad determines the die’s operating mode. It could be floating or connected to GND.
Die Bottom	GND	Die backside must connect to RF/DC GND.

Assembly Drawing



Notes:
1. Die thickness: 100um
2. Typical bond pad is 100*100 μm^2
3. Bond pad metalization: Gold
4. Backside metalization: Gold
5. Backside of the die (GND)
6. No connection required for unlabeled bond pads

Maximum Ratings:
1. Maximum drain voltage: +7V
2. Maximum input power: +18dBm
3. Operating temperature: -55℃ to +85℃
4. Storage temperature: -65℃ to +150℃