MILLER MMIC

MML072

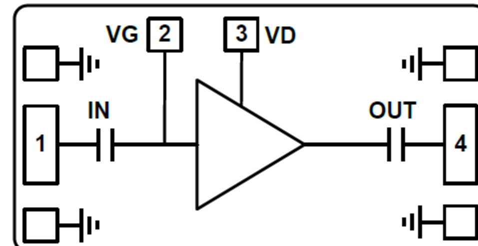
V1.0.0

GaAs MMIC
Low Noise Amplifier
6-18GHz

Features

- Two operating mode: high power consumption and low power consumption
- Frequency: 6-18GHz
- Noise Figure: 1.1dB
- Gain: 23dB@28mA, 21dB@14mA
- P1dB: 13.5dBm@28mA, 7dBm@14mA
- Power Supply: +5V@28mA, VG is floating
- +5V@14mA, VG connected to GND
- Input/Output: 50Ω
- Die Size: 1.5 x 0.8 x 0.1 mm

Functional Block Diagram



Typical Applications

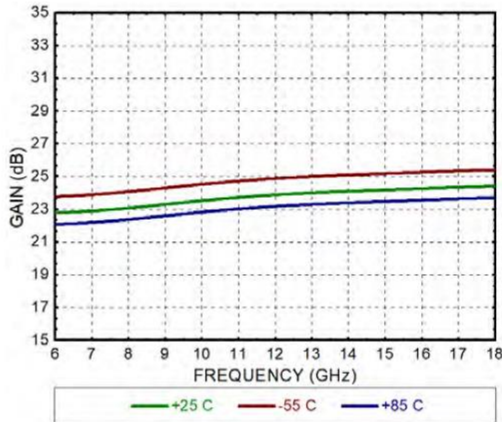
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

Electrical Specifications

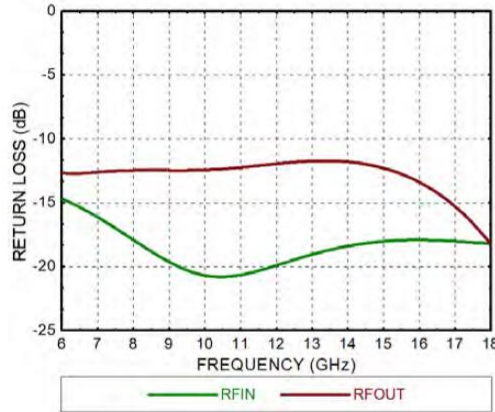
TA = +25ºC, VDD=+5V

Parameters	VG is floating			VG connected to GND			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Frequency	6-18			6-18			GHz
Gain		23			21		dB
Gain Flatness		±0.7			±0.3		dB
Input Return Loss		15			13		dB
Output Return Loss		13			13		dB
Output 1dB Compression (P1dB)		13.5			7		dBm
Psat		15.5			9		dBm
Output IP3		23			17		dBm
Noise Figure		1.1			1.1		dB
Operating current	20	28	40	8	14	20	mA

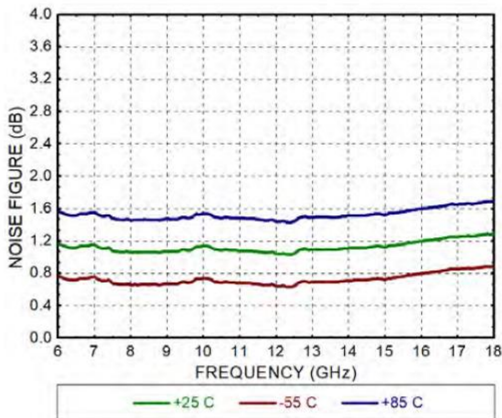
Gain (VG is floating)



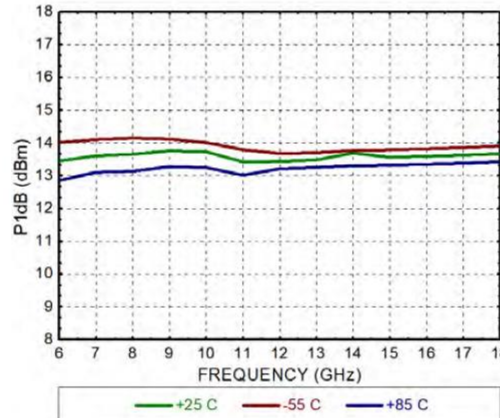
Return Loss (VG is floating)



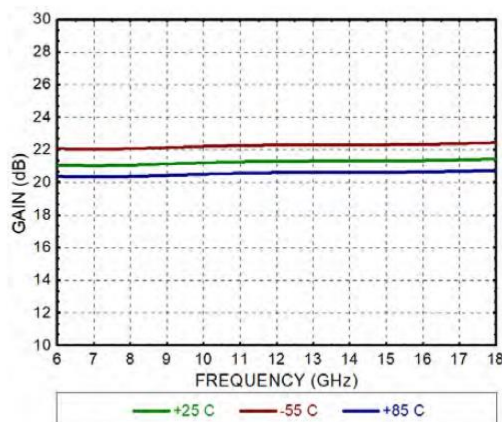
Noise Figure(VG is floating)



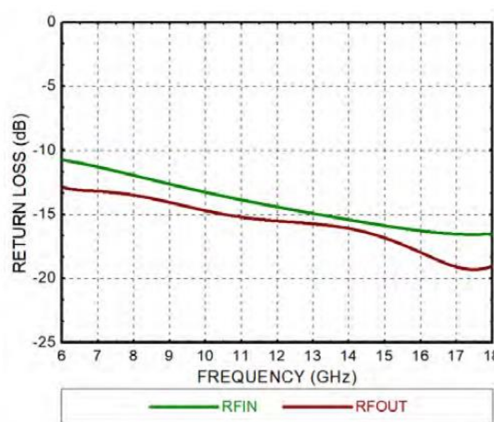
P1dB(VG is floating)



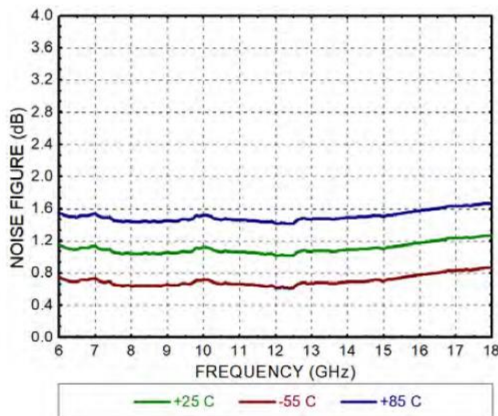
Gain (VG connected to GND)



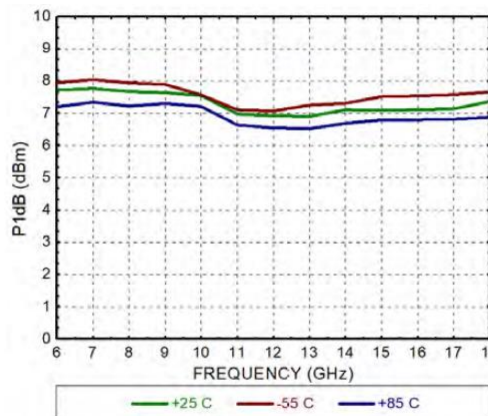
Return Loss (VG connected to GND)



Noise Figure (VG connected to GND)

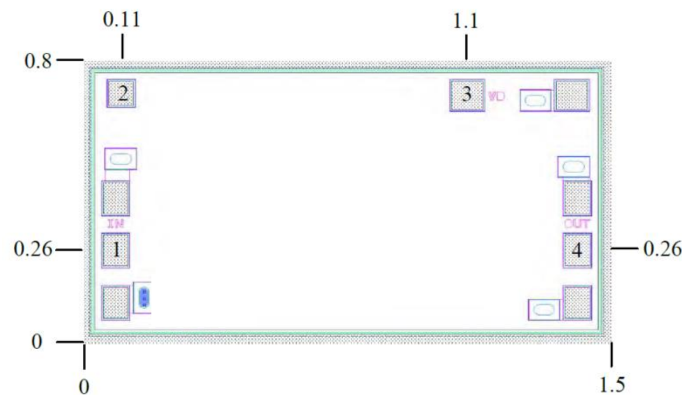


P1dB(VG connected to GND)



Outline Drawing:

All Dimensions in mm

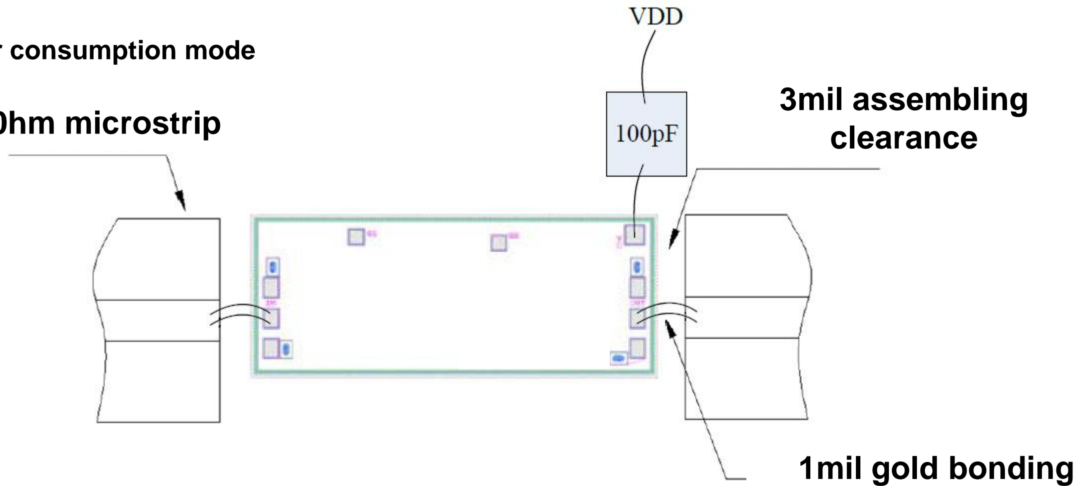


Pad Description

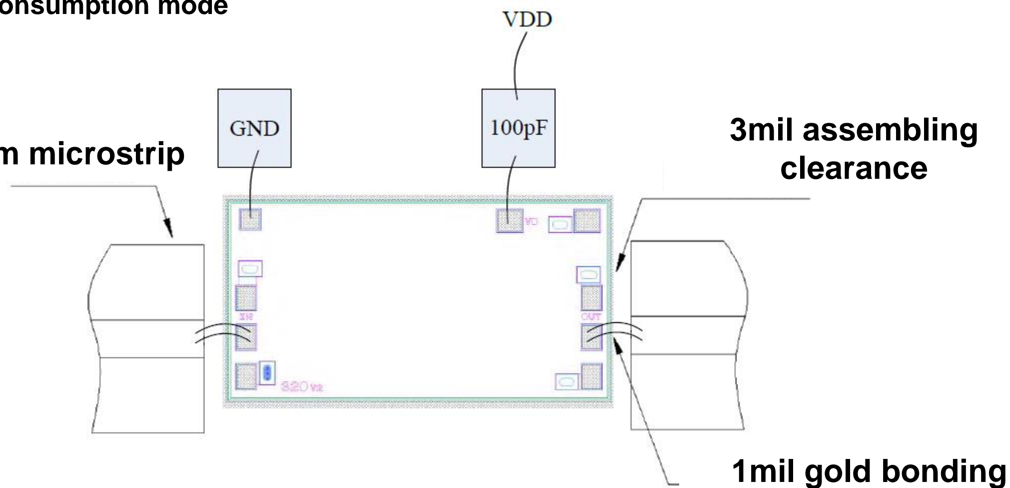
PAD	Function	Description
1	IN	This pad is AC coupling, 50 ohm matched.
2	VG	This pad determines the die's operating mode. When floating, it's high power consumption mode. When connected to RF/DC GND, it's low power consumption mode.
3	VD	This pad provides power supply for the amplifier. It should be connected to extra 100pF bypass capacitor.
4	OUT	This pad is AC coupling, 50 ohm matched.
Die Bottom	GND	Die backside must connect to RF/DC GND.

Assembly Drawing

High power consumption mode



Low power consumption mode



Notes:
1. Die thickness: 100um
2. Typical bond pad is 100*80 μm²
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: +6V
2. Maximum input power: +15dBm
3. Operating temperature: -55℃ to +85℃
4. Storage temperature: -65℃ to +150℃