MILLER MMIC

MMW012

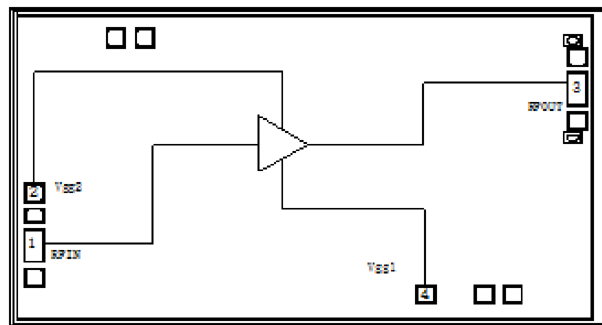
V1.0.0

GaAs MMIC
Distributed Amplifier
DC-20GHz

Features

- Frequency: DC~20GHz
- Small Signal Gain: 16dB
- P1dB:+17dBm
- Power Supply: +8V@60 mA
- Die Size: 3.02 x 1.62 x 0.1 mm

Functional Block Diagram



Typical Applications

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

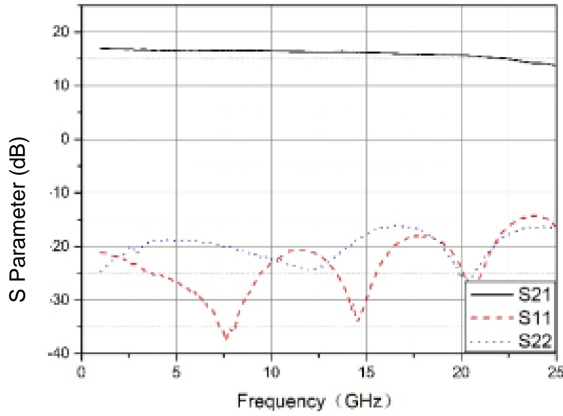
Electrical Specifications

TA = +25ºC, Vdd = +8V, Vgg2 = 1.5V, Idd=60mA (On-wafer Measurement Results)

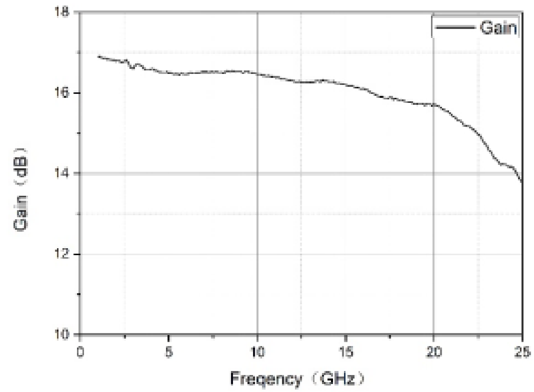
Parameters	Min.	Typ.	Max.	Units
Frequency		DC-20		GHz
Small Signal Gain		16		dB
P1dB		17		dBm
NF		2.5		dB
Input Return Loss		-15		dB
Output Return Loss		-15		dB
Supply Current (Idd)		60		mA

*** Power-on sequence: Vgg1 to -2V; Vgg2 to +1.5V; Vdd is adjusted to 8V and Vgg1 is adjusted so that Idd=60mA (Vgg1 is typically -0.5V)**
Power-off sequence: turn off the RF signal, Vdd; Turn off Vgg2, Vgg1

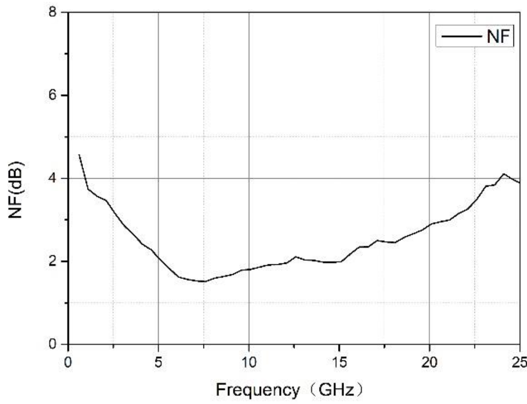
Frequency Response



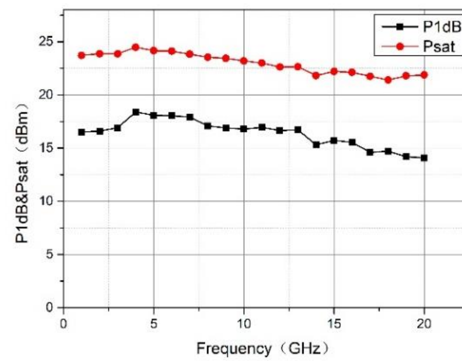
Gain



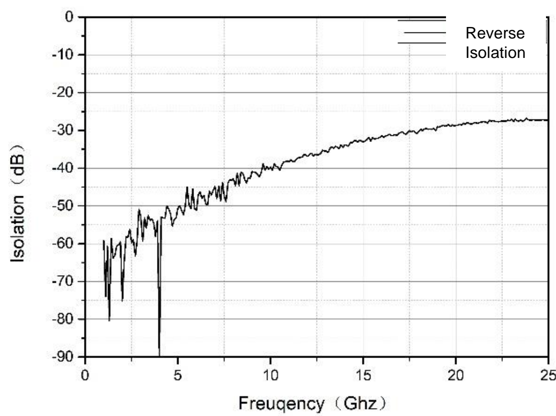
Noise Figure



P1dB & Psat

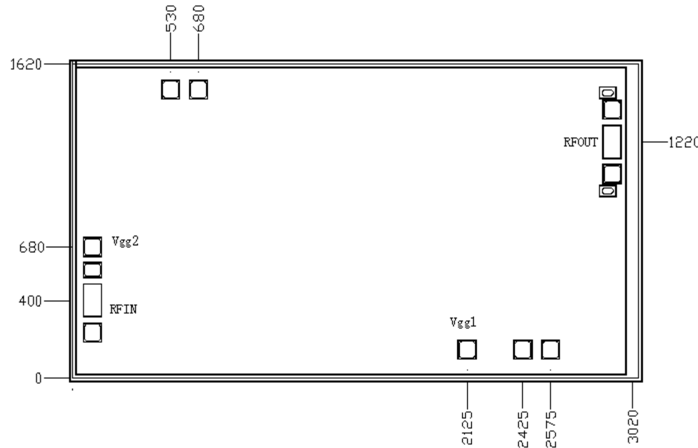


Reverse Isolation



Outline Drawing:

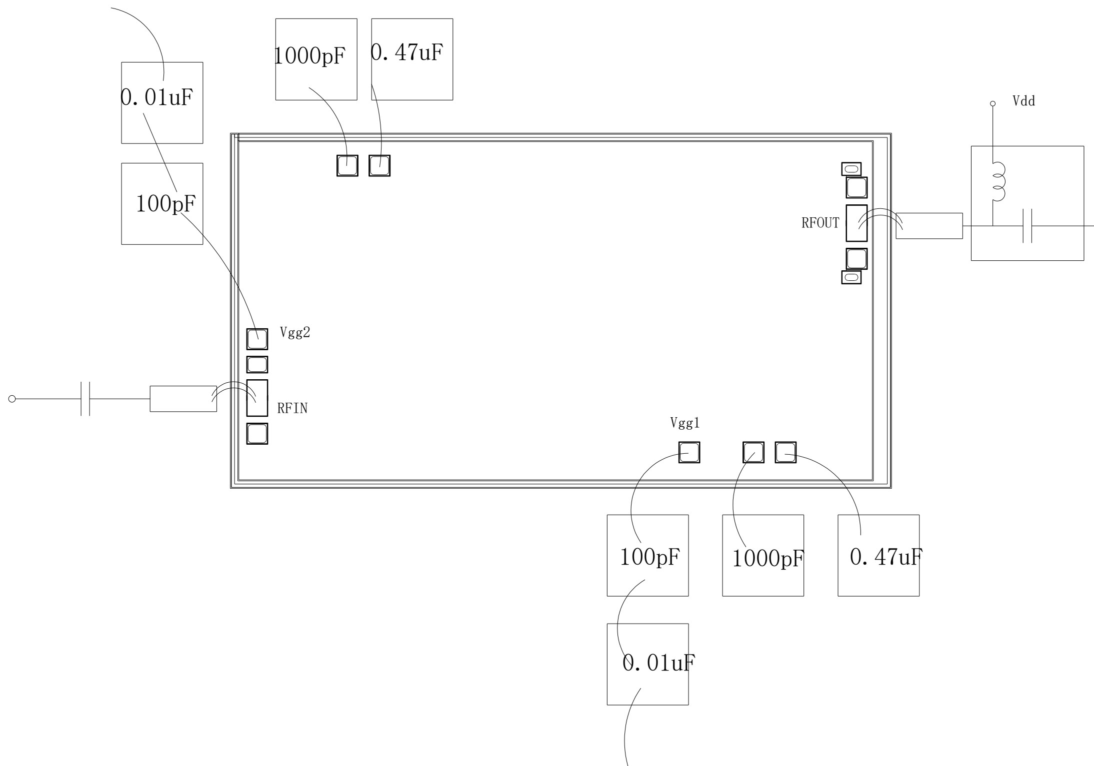
All Dimensions in µm



Pad Description

Pad	Function	Description	Equivalent Circuit
1	RF IN	Signal input terminal, connected to 50Ω circuit ; no blocking capacitor required.	
2	VGG1	Amplifier gate bias; external filter capacitor required.	
3	RF OUT	Signal output terminal, connected to 50Ω circuit ; no blocking capacitor required.	
4	VGG2	Amplifier gate bias; external filter capacitor required.	

Assembly Drawing



Notes:

1. Die thickness: 100um
2. Typical bond pad is 100*100 μm²
3. Bond pad metalization: Gold
4. Backside metalization: Gold
5. Backside of the die (GND)
6. No connection required for unlabeled bond pads
7. No DC Block
8. Input/Output use two 25um gold wire, length less than 300um is recommended.

Maximum Ratings:

1. Supply voltage: +9V
2. RF Input power: +18dBm
3. Operating temperature: -55℃ to +85℃
4. Storage temperature: -65℃ to +150℃