# MILLER MMIC



V1.0.0

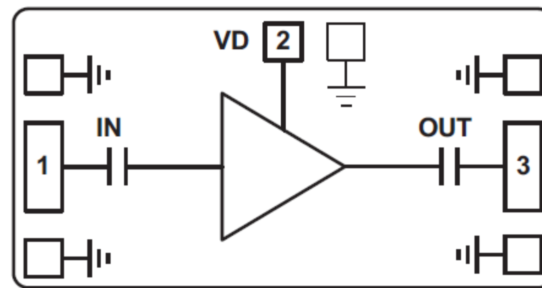
**GaAs pHEMT MMIC**
**Driver Amplifier**
**0.8-18GHz**



## Features

- Single Biasing Voltage (Self Biased)
- Gain: 9.5dB
- P1dB: +20dBm
- Psat: +22dBm
- Biasing +5V @ 105mA
- Impedance: 50Ω
- Die Size: 1.9 x 1.2 x 0.1 mm

## Functional Block Diagram




## Typical Applications

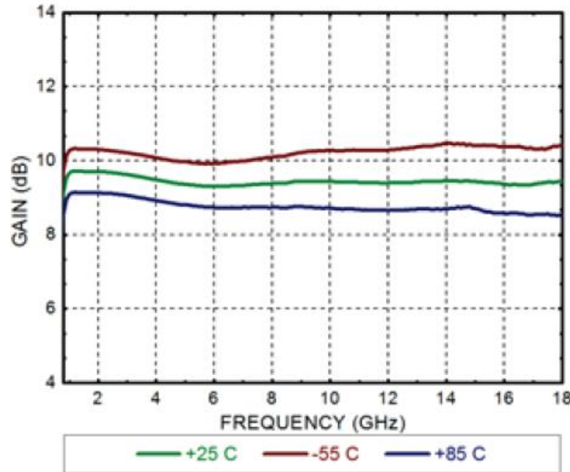
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

## Electrical Specifications

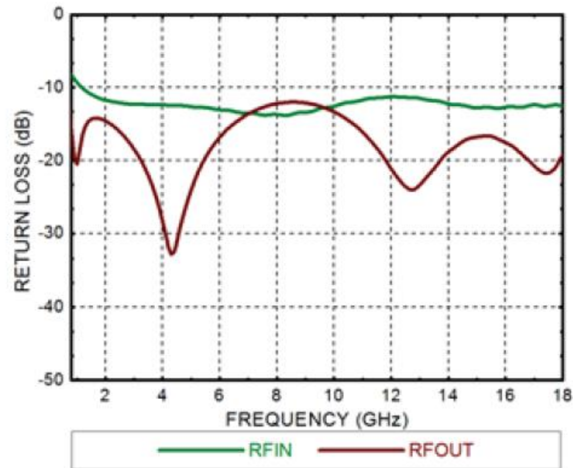
**TA = +25°C, Vdd = +5V  Idd = 105mA**

| Parameters | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | | 0.8 - 6 | | | 6 -12 | | | 12 -18 | | GHz |
| Gain | | 9.5 | | | 9.4 | | | 9.4 | | dB |
| Gain Flatness | | ±0.3 | | | ±0.1 | | | ±0.1 | | dB |
| Input Return Loss | | 10 | | | 12 | | | 12 | | dB |
| Output Return Loss | | 15 | | | 12 | | | 15 | | dB |
| Output 1dB Compression (P1dB) | | 21 | | | 20.5 | | | 19.5 | | dBm |
| Saturated Output Power (Psat) | | 23 | | | 22.5 | | | 21.5 | | dBm |
| Output Third Order Intercept (IP3) | | 29 | | | 28.5 | | | 27.5 | | dBm |
| Current | 80 | 105 | 130 | 80 | 105 | 130 | 80 | 105 | 130 | mA |

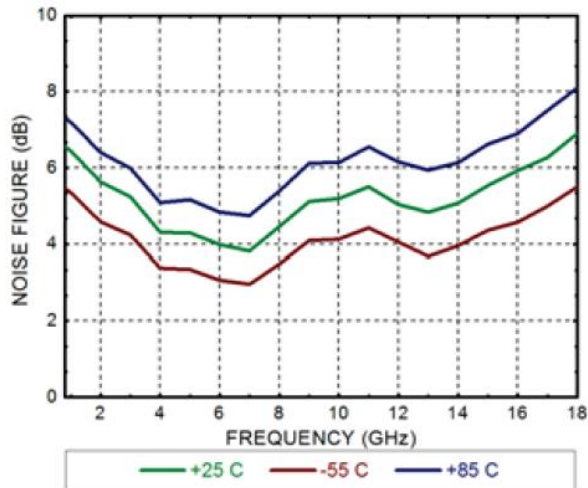
## Gain



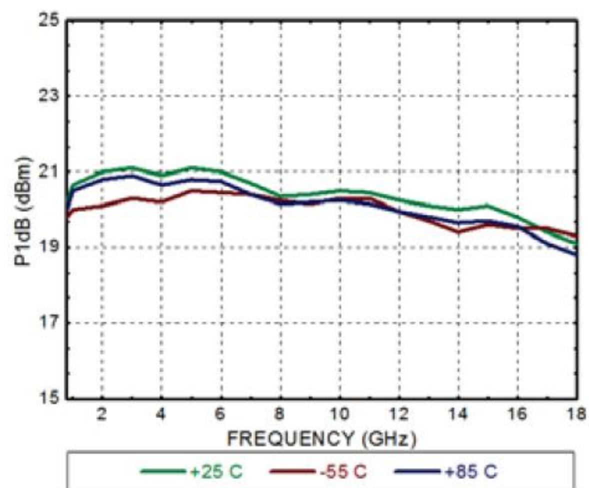

## Return Loss




## Noise Figure

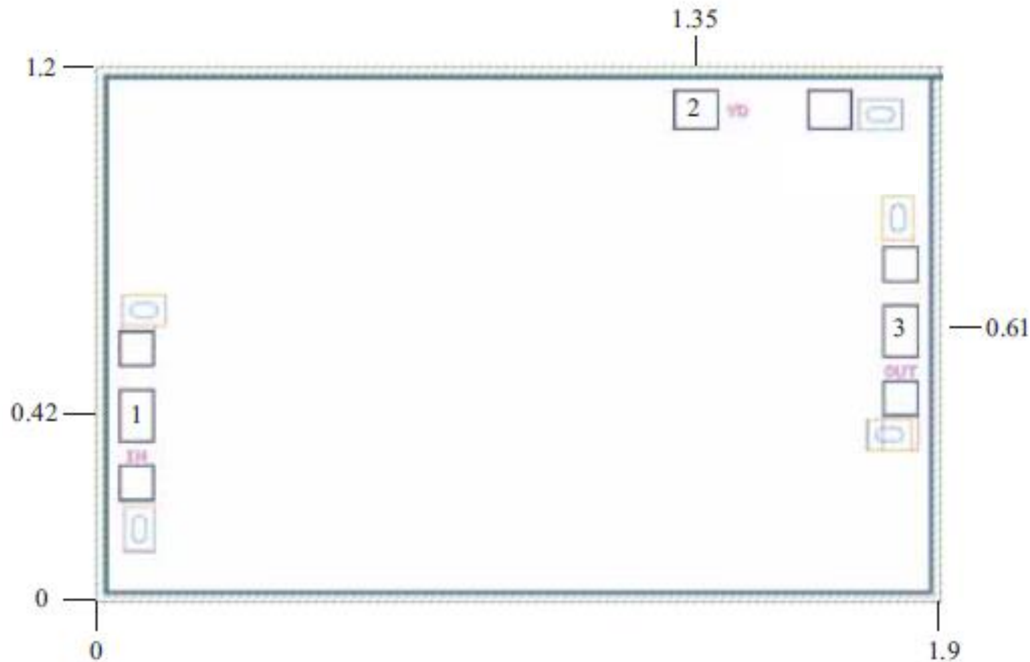



## Output Power $P_{-1}$



## Outline Drawing:

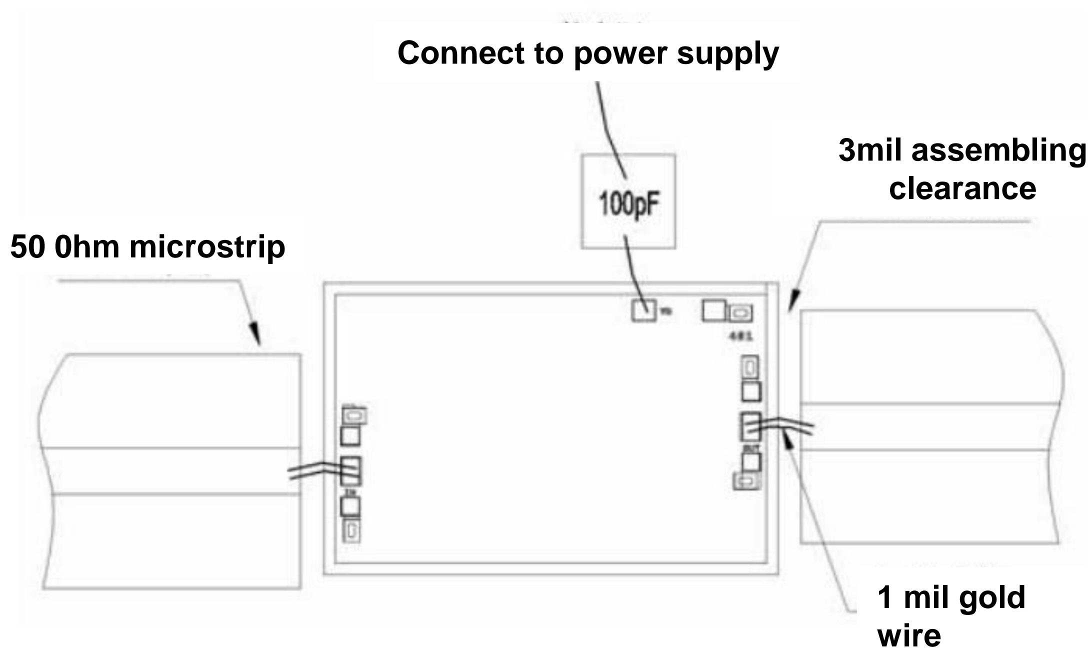
All Dimensions in mm




## Pad Description

| PAD | Function | Description |
|---|---|---|
| 1 | IN | Input AC coupling 50Ω Impedance |
| 2 | VD | The pad provides the power voltage of the amplifier, which needs to be externally connected with the 100pF bypass capacitor, and the pad to the capacitor cascade is controlled within 600um. |
| 3 | OUT | Output AC coupling 50Ω Impedance |
| Die Bottom | GND | Die bottom must be connected to RF/DC ground |

## 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. Power supply voltage: +6V
2. RF input power: +18dBm
3. Storage temperature: -65℃ to +175℃
4. Operating temperature: -55℃ to +85℃