V1.0.0

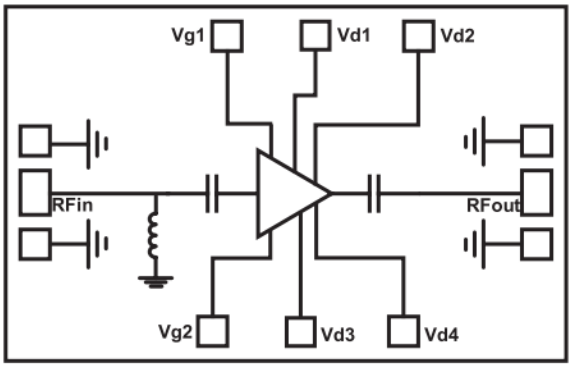
*GaAs MMIC*
*Power Amplifier*
*27.5-30GHz*



## Features

- Frequency: 27.5-30GHz
- Gain: 19dB
- P1dB: +33dBm@26%
- OIP3: +39dBm
- Power Supply: 6V@0.9A
- Die Size : 2.9x 2.4 x 0.1 mm

## Functional Block Diagram




## Typical Applications

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

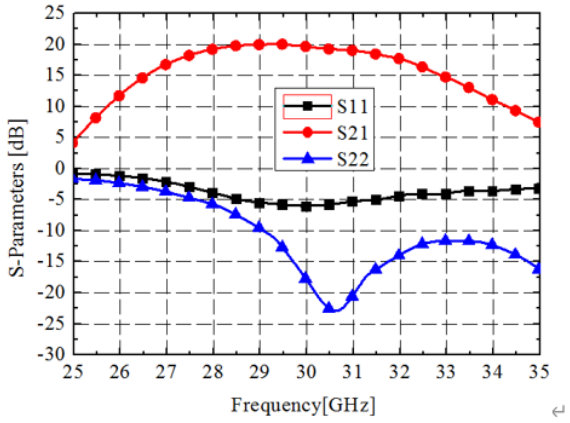
## Electrical Specifications

**TA = +25ºC, Vd1 = Vd2 = +6V, Vg = -0.8V , Id1 + Id2 = 0.9A [1]**

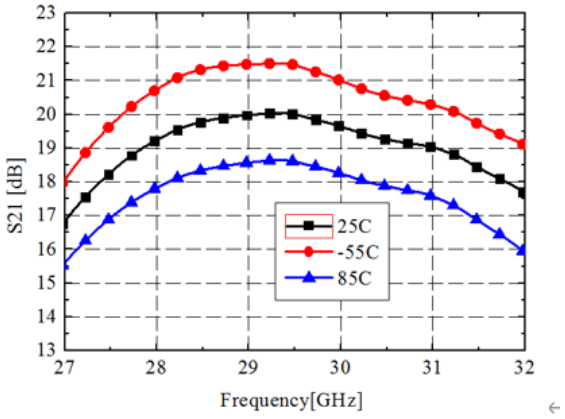
| Parameters | Min. | Typ. | Max. | Units |
|---|---|---|---|---|
| Frequency | | 27.5-30 | | GHz |
| Gain | 18.5 | 19 | 20 | dB |
| Rate of gain change | | 0.022 | | dB/℃ |
| P1dB | 32.5 | 33 | 33.5 | dBm |
| Psat | 33 | 33.5 | | dBm |
| PAE | 20 | 26 | | % |
| OIP3 | 38 | 39 | | dBm |
| Input Return Loss | | 5 | | dB |
| Output Return Loss | | 10 | | dB |
| Operating Current (@Vd = 6V) | | 0.9 | | A |

[1] Adjust Vg from -1V~0V so that Id=0.9A

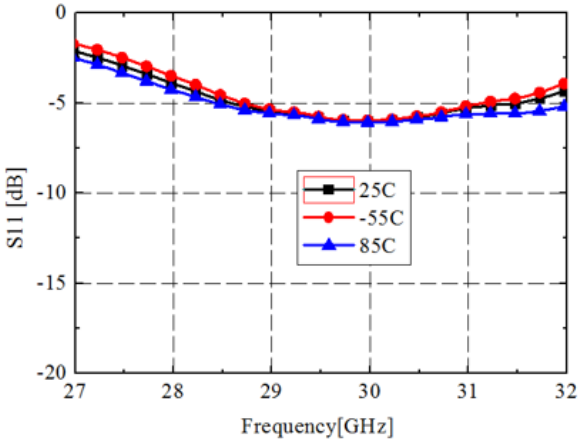
## Frequency Response



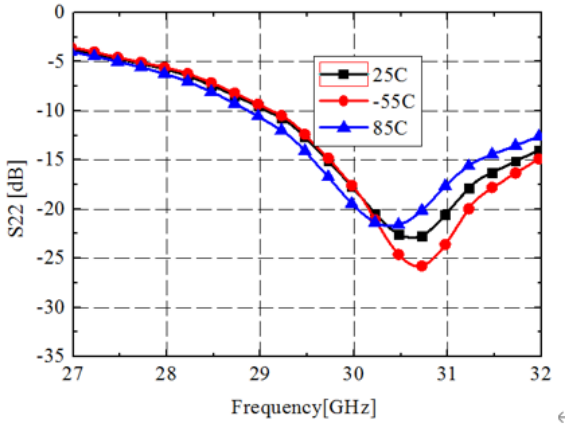

## Gain vs. Temperature



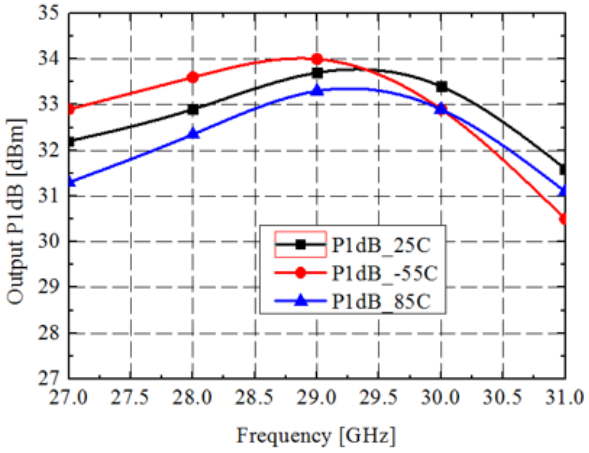

## Input Return Loss vs. Temperature



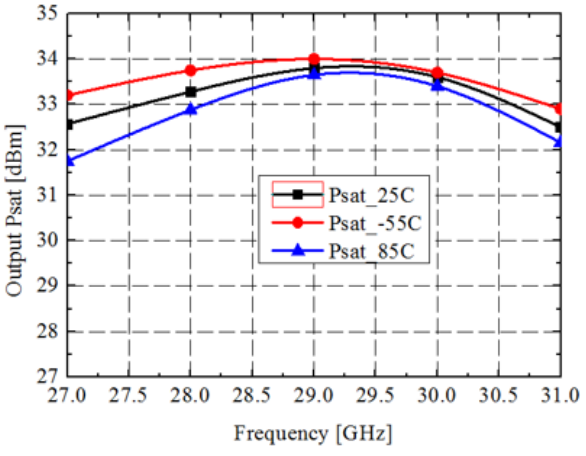

## Output Return Loss vs. Temperature



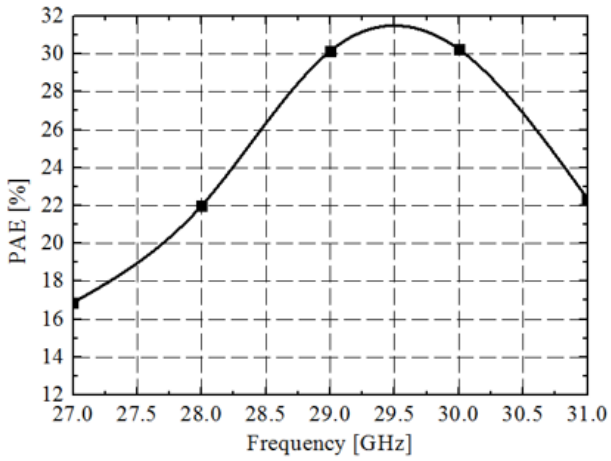

## P1dB vs. Temperature



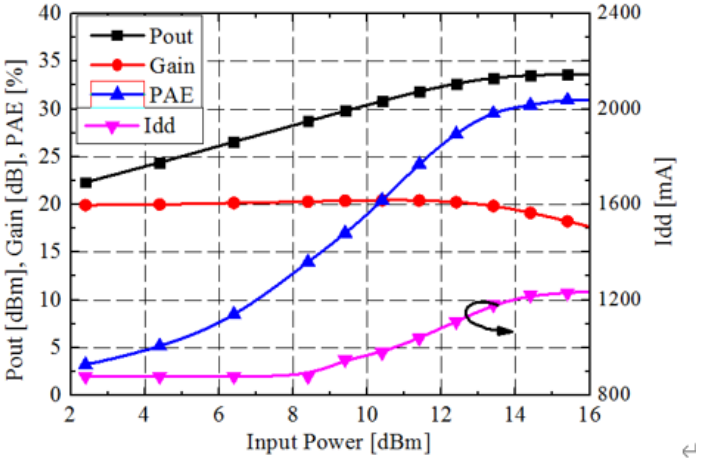

## Psat vs. Temperature



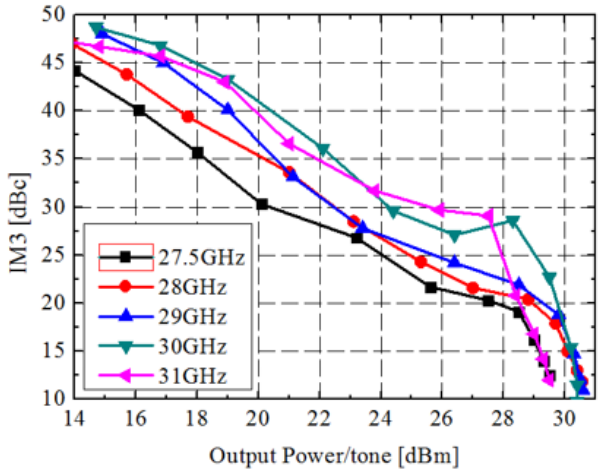
### PAE@P1dB vs. Frequency



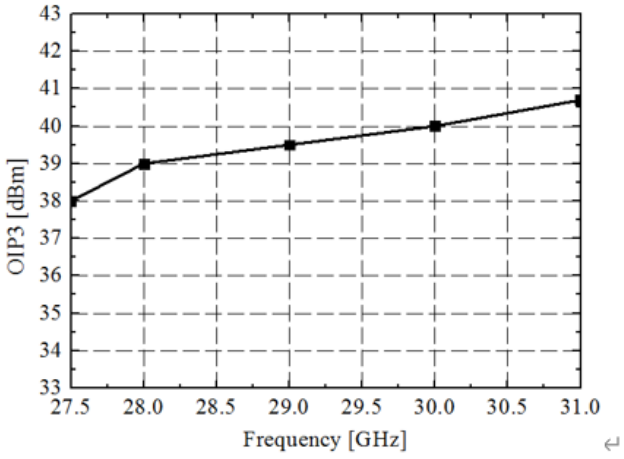

### Gain, Output Power, Idd, PAE vs. Input Power @29GHz



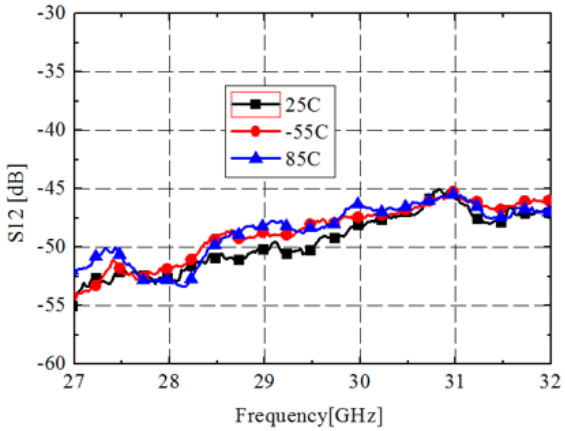

### IMD3 vs. Output Power



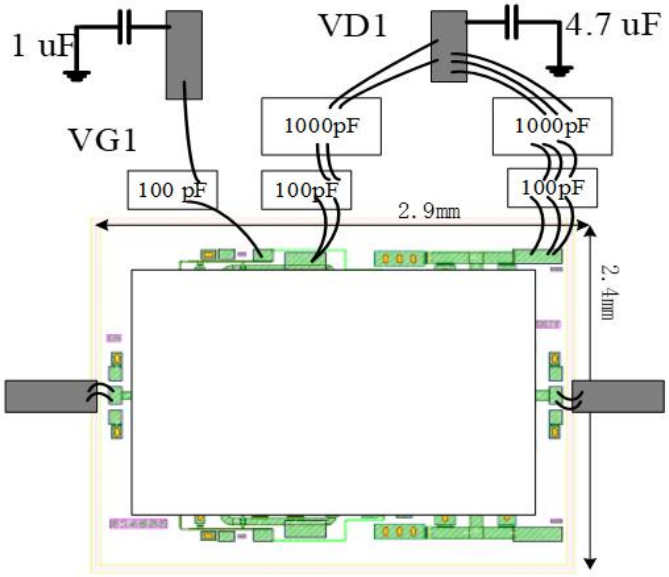

### OIP3 vs. Frequency (Pout/Tone = 28dBm)




### Reverse Isolation vs. Temperature



## Assembly Drawing (Bond testing)




*Due to the symmetry of the chip, the bottom side of the chip can also be selected for bonding feeding.

**Notes:**

1. Die thickness: 100um
2. Typical bond pad is 100*100 $\mu m^2$
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. Drain Bias voltage: +6.5V
2. RF Input Power: +22dBm
3. Channel Temperature: 175℃
4. Thermal Resistance: 12℃/W
5. Operating temperature: -55℃ to +85℃
6. Storage temperature: -65℃ to +150℃