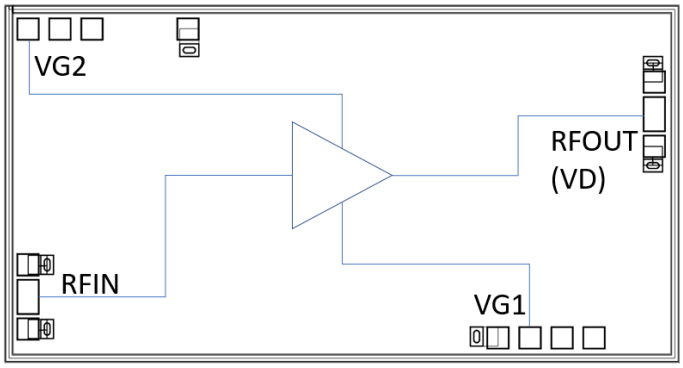
V1.0.3

GaAs MMIC
Wide-band Amplifier
DC-20GHz

Features

- Frequency: DC-20GHz
- Small Signal Gain: 18.5dB
- Gain Flatness: ≤±1.8 dB@ DC-20GHz
- Noise Figure: ≤4dB
- P1dB = 22.5 dBm
- Psat = 24.5 dBm
- Power Supply: +8V/145mA
- Input/Output: 50Ω
- Die Size: 3.12 x 1.63 x 0.1 mm

Functional Block Diagram



Typical Applications

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

Electrical Specifications

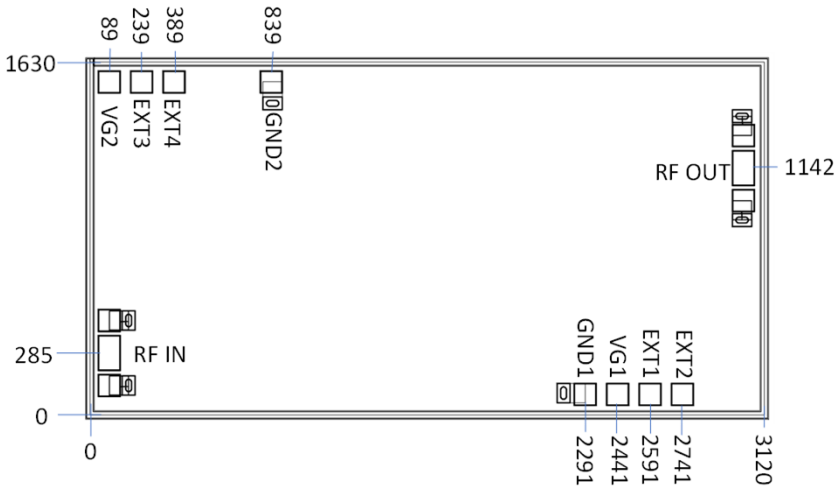
TA = +25°C, VD = +8V, VG1 = -0.4V, VG2 = 3.6V, ID = 145mA

Parameters	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency	DC-6			6-12			12-20			GHz
Small Signal Gain	18.4	18.9	21.2	17.5	18.2	18.4	16.2	17.1	17.6	dB
Gain Flatness		±0.9			±0.5			±0.7		dB
Noise Figure	2.2	4	9.7	2.0	2.1	2.3	2.3	2.6	3.2	dB
Output 1dB Compression (P1dB)	22.4	22.5	22.8	22.4	22.5	22.7	21.8	22.9	23	dBm
Saturated Output Power (Psat)		24.5			24.5			24.9		dBm
Input Return Loss		18			20			21		dB
Output Return Loss		27			19			13		dB

*** Adjust VG1, VG2 slightly to obtain device current of 145mA.**

Outline Drawing:

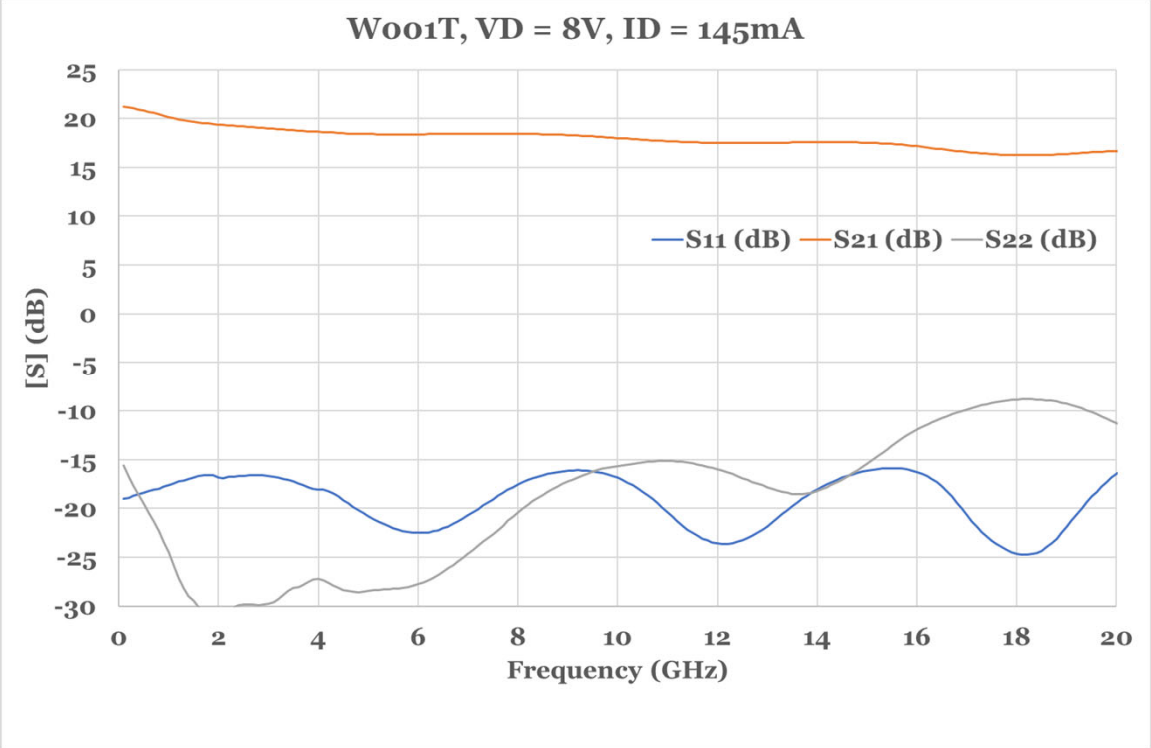
All Dimensions in μm



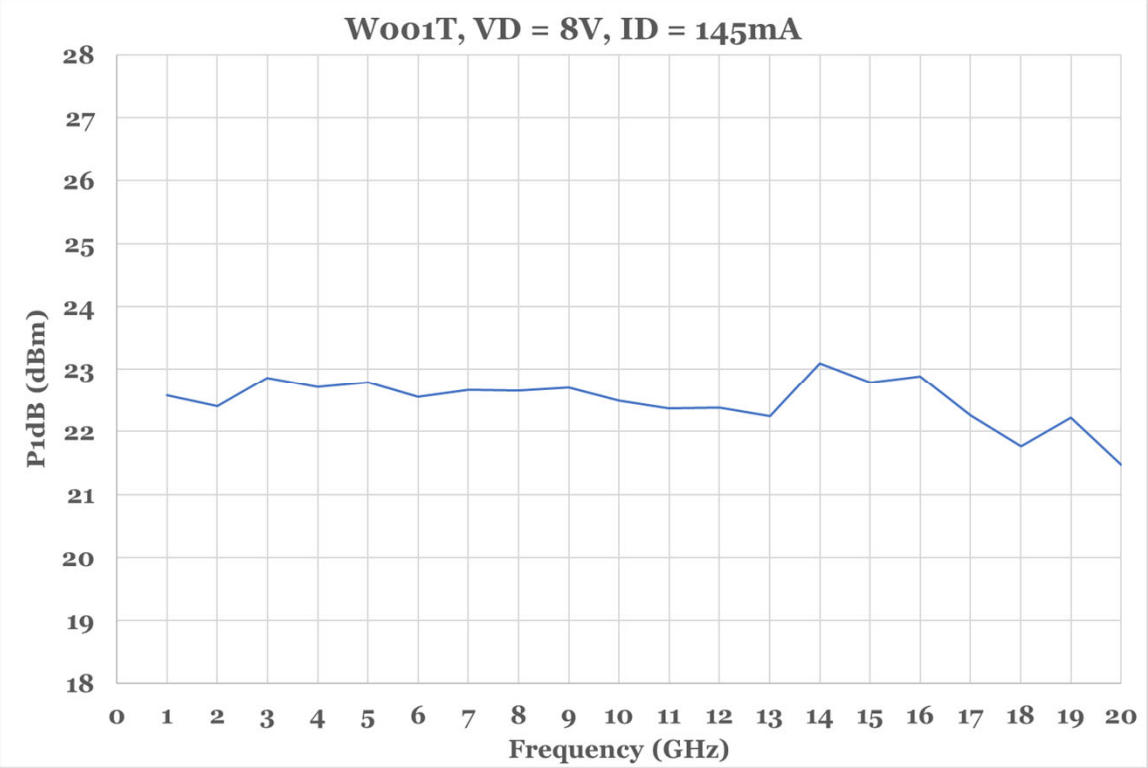
Pad Description

No	Function	Description
1	RF IN	Signal input terminal, connected to 50Ω circuit; blocking capacitor required.
2	RF OUT	Signal output terminal, connected to 50Ω circuit; blocking capacitor required; external DC biasing network required; drain current provided.
3	VG1	Amplifier 1st gate bias; connect to external 1000pF and 0.01uF bypass capacitors.
4	VG2	Amplifier 2nd gate bias; connect to external 1000pF and 0.01uF bypass capacitors.
5	EXT1	External bypass pad; connect to external 0.47uF bypass capacitor.
6	EXT2	External bypass pad; connect to external 1000pF bypass capacitor.
7	EXT3	External bypass pad; connect to external 1000pF bypass capacitor.
8	EXT4	External bypass pad; connect to external 0.47uF bypass capacitor.
9	GND1	Ground pad.
10	GND2	Ground pad.

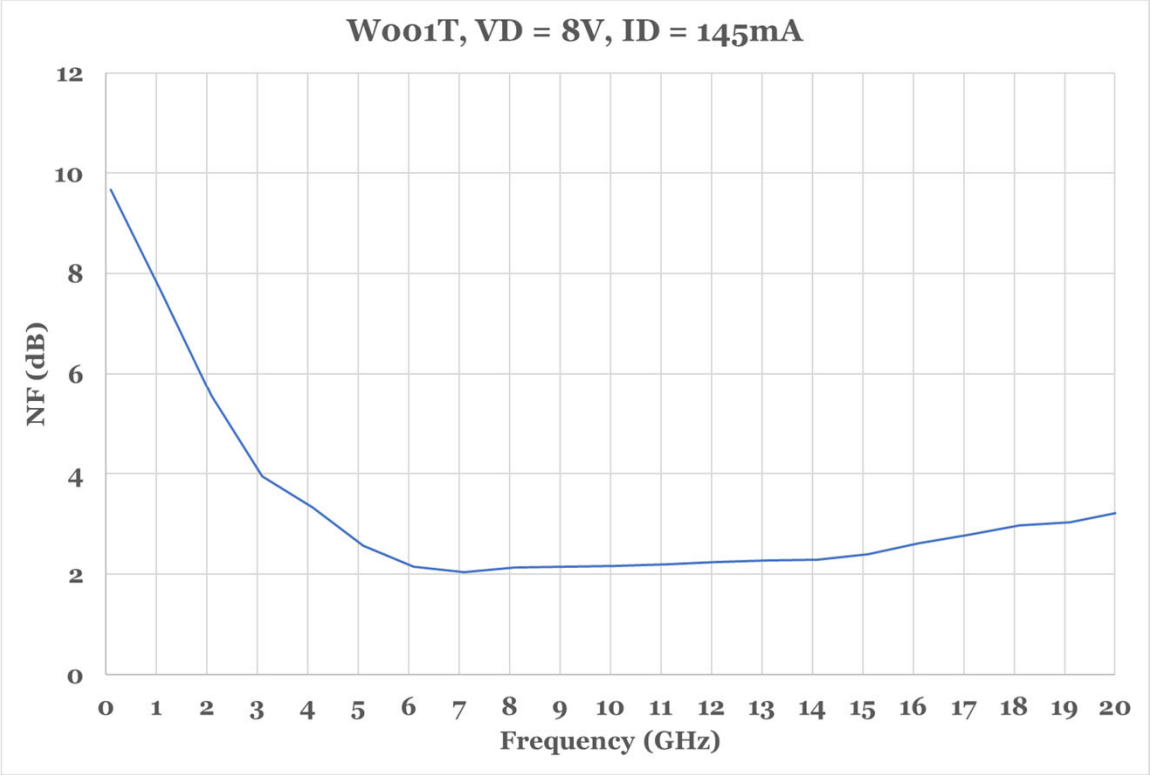
Measurement Plots: S-parameters



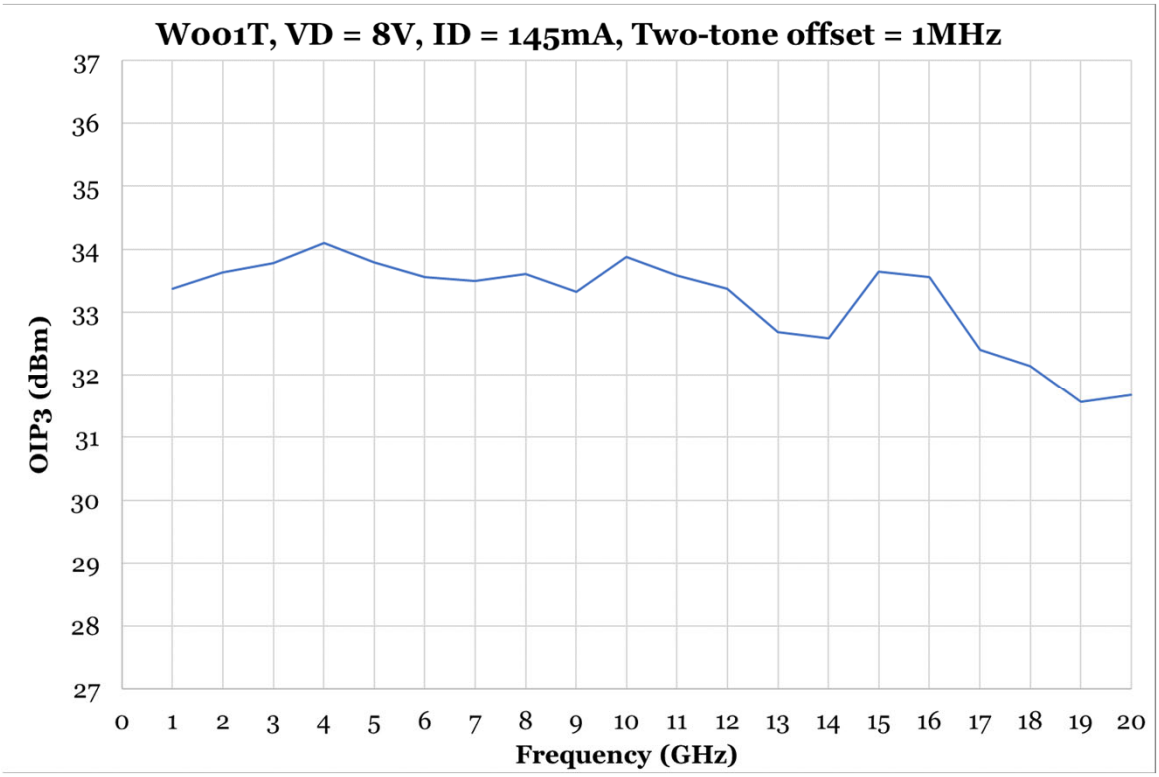
Measurement Plots: P1dB



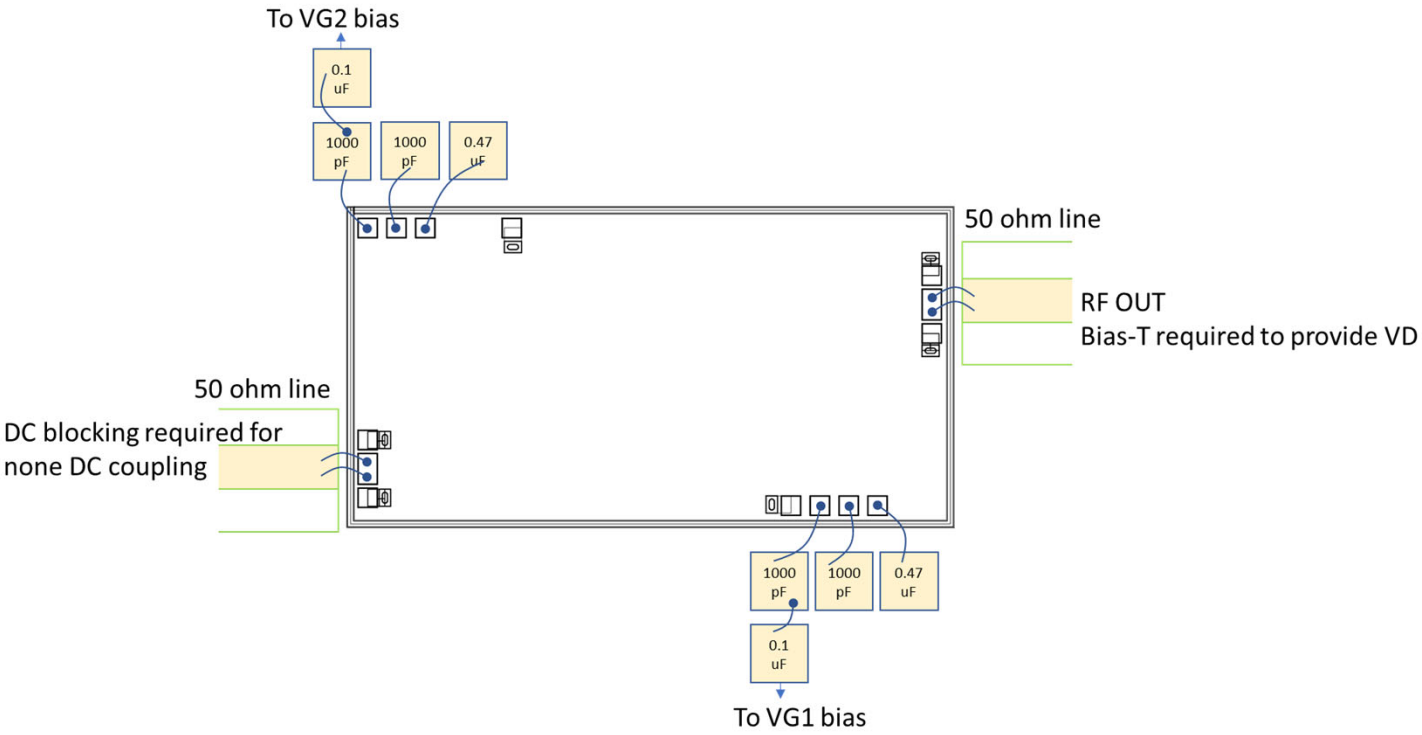
Measurement Plots: Noise Figure



Measurement Plots: OIP3



Assembly Drawing



Notes:

1. Die thickness: 100um
2. DC bond pad is 100 x 100 μm^2
3. RF IN/OUT bond pad is 100 x 160 μm^2
4. Bond pad metalization: Gold
5. Backside metalization: Gold
6. Backside of the die (GND)

Maximum Ratings:

1. Maximum drain voltage: +10V
2. Maximum gate bias: -3V
3. Maximum input power: +20dBm
4. Operating temperature: -55℃ to +85℃
5. Storage temperature: -65℃ to +150℃