AGLNA180405

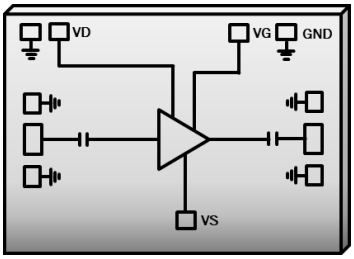
GaN HEMT MMIC
18.0 – 40.0 GHz Robust Low Noise Amplifier

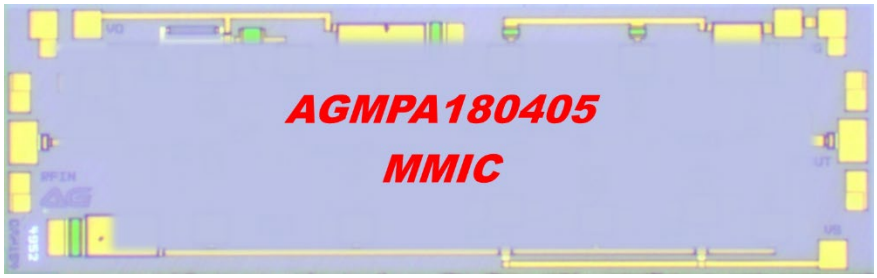
Typical Applications

- Electronic Warfare (EW)
- Radar
- K/Ka-Band SATCOM

Features

- Frequency Range: 18.0 – 40.0 GHz
- Noise Figure: 2dB
- Gain: 24dB
- P1dB: 6dBm
- VD=12V, IDQ=20mA, VG=+0.5V
- > 2W Input Power Handling
- 50Ω Matched Input/Output DC blocked
- Chip Size: 3.05 x 1.00 x 0.050 mm





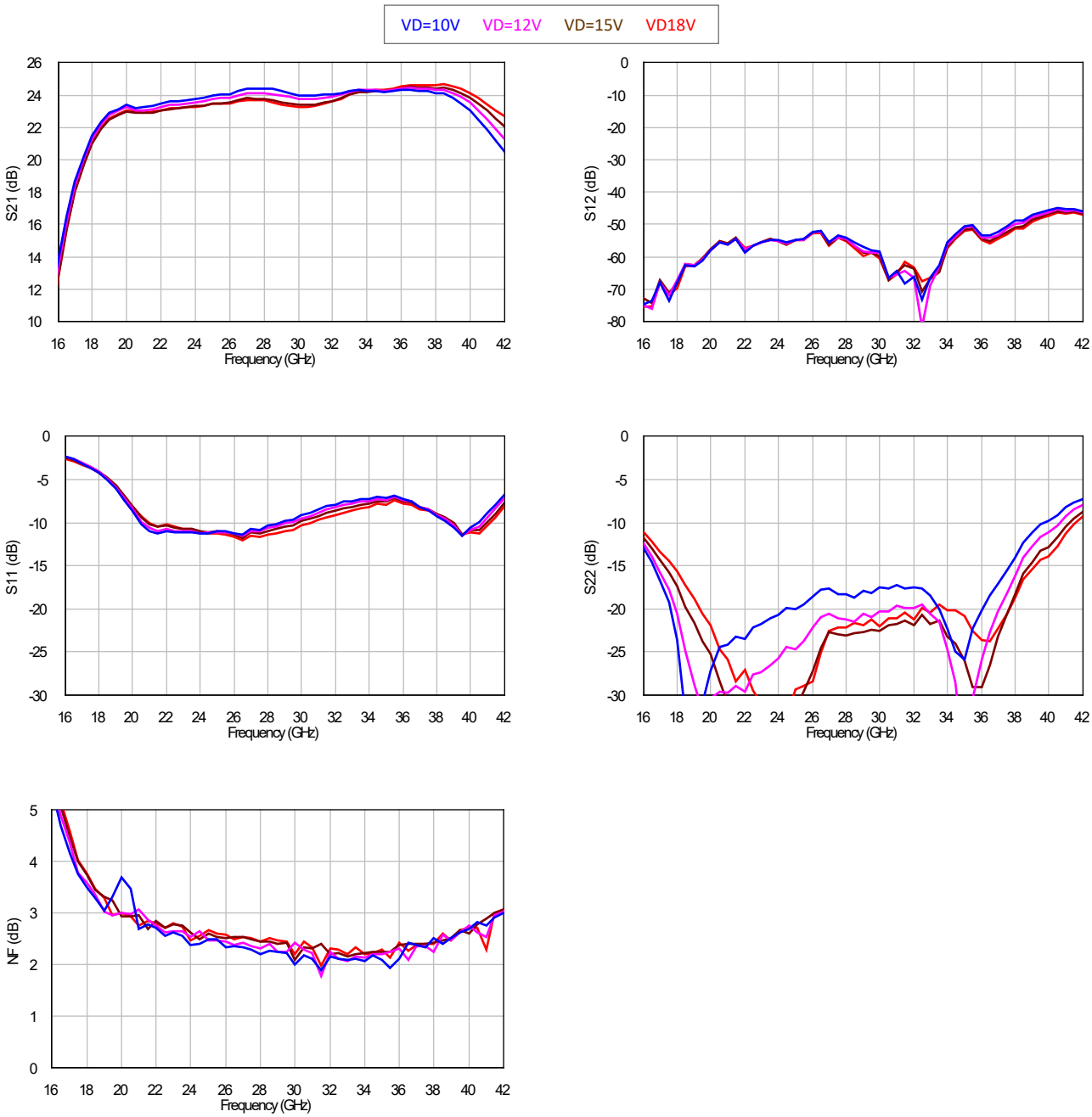
Electrical Specifications (TA = +25°C, VD = +15V, ID = 30mA)

Parameter	Units	Minimum	Typical	Maximum
Frequency	GHz	6.0		18.0
Gain	dB		24	
Gain Flatness	dB		± 0.5	
Noise Figure	dB		2	
Input Return Loss	dB		8	
Output Return Loss	dB		15	
P1dB	dBm		6	
Psat	dBm		15	
Supply Voltage	V		12	
Supply Current	mA		20	
DC Dissipated Power	mW		240	
Package Type			Die	

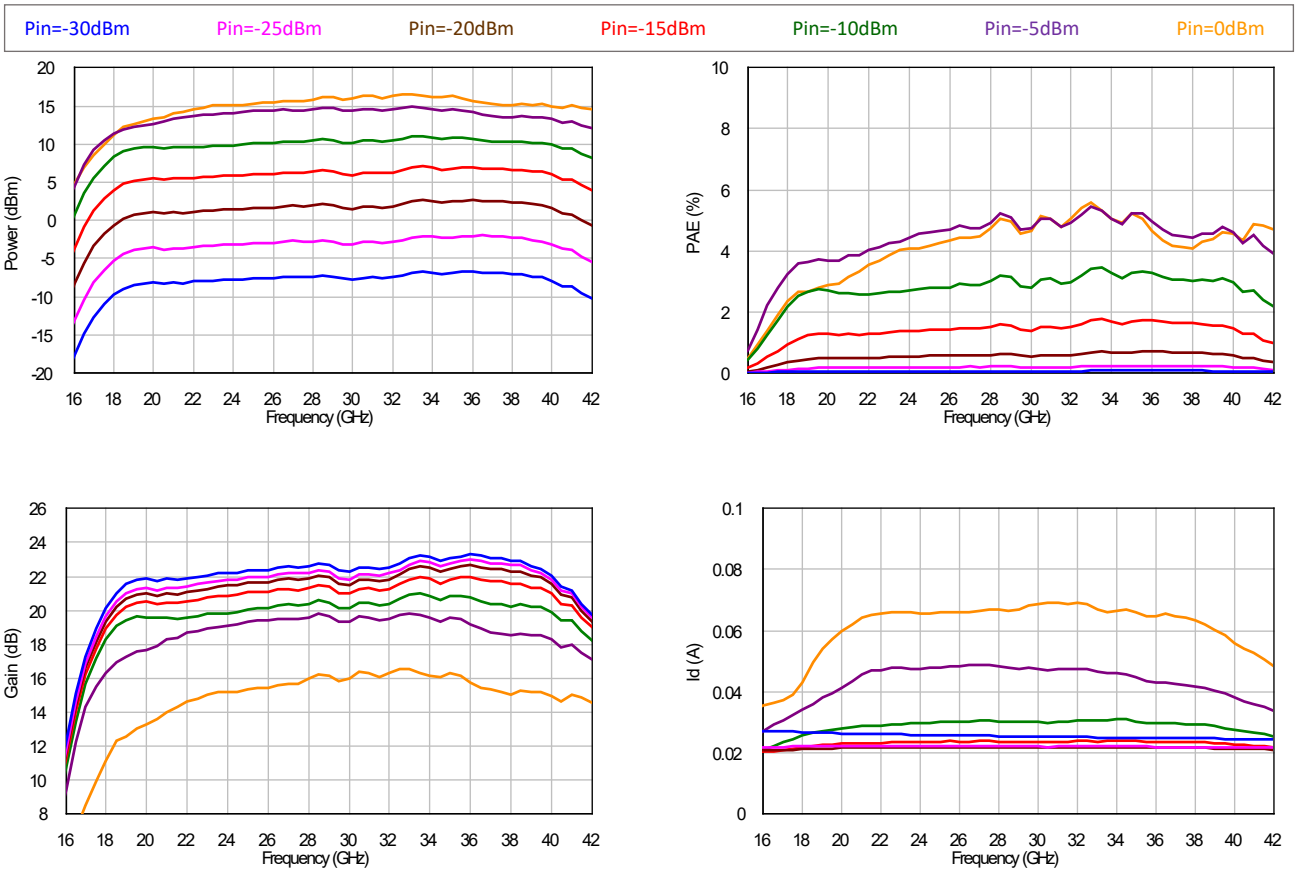
Low Noise Amplifiers - Die

Performance Graphs

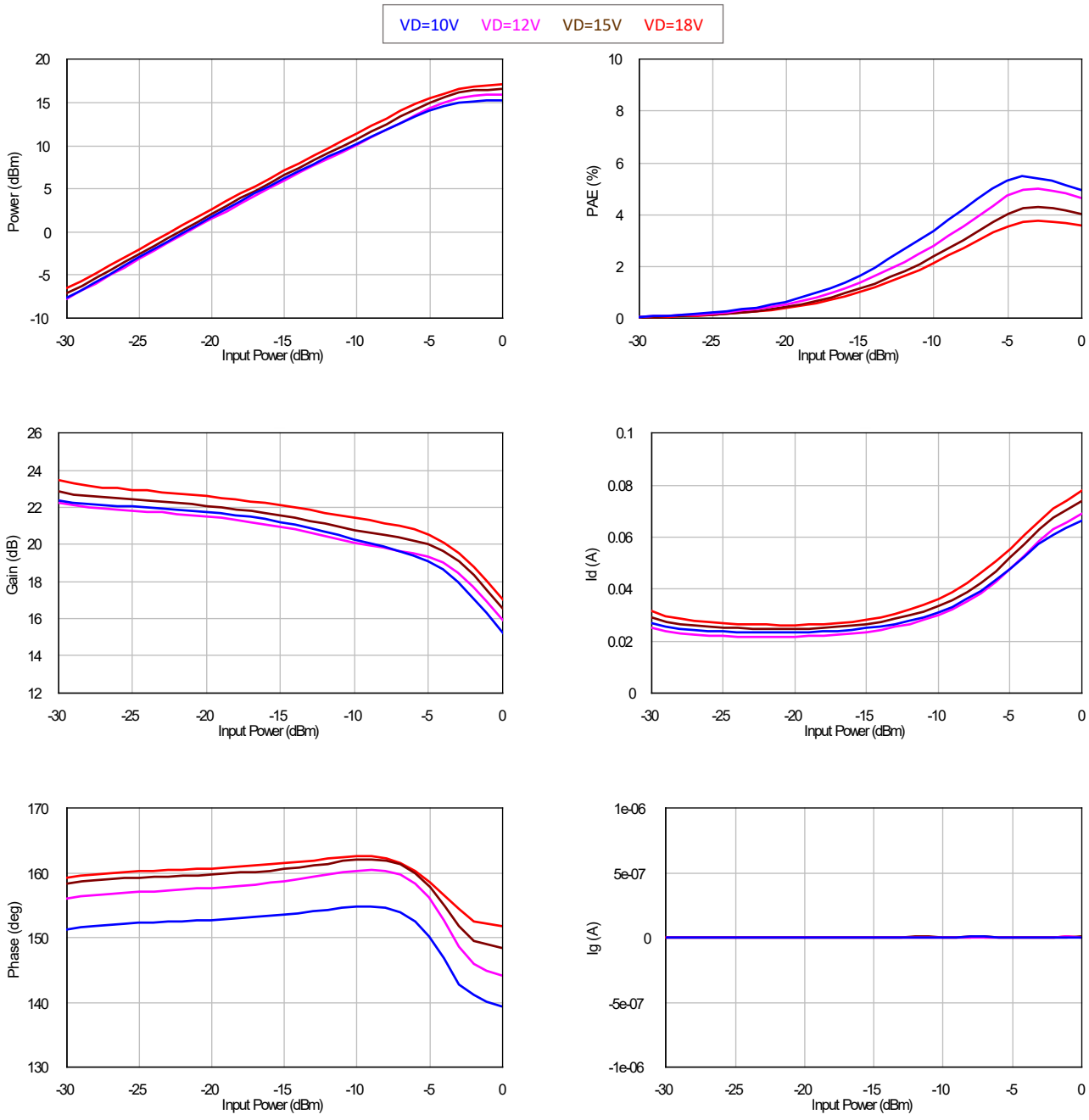
S-Parameters and Noise Figure vs. VD @ IDQ=20mA (25°C, VG~+0.5V)



Frequency Response vs. Input Power (25°C, VD=12V, IDQ=20mA, VG=+0.5V)



Power Sweep vs. VD (25°C, Frequency=30GHz, IDQ=20mA, VG=+0.5V)



Outline Drawing



Pad Descriptions

Pad	Function	Pad Size	Description
1	RFIN	100x150µm	AC coupled 50Ω Matched
4	RFOUT	100x150µm	AC coupled 50Ω Matched
2	VD	100x100µm	Drain Supply voltage, bypass capacitors needed*
3	VG	100x100µm	Gate Supply Voltage, bypass capacitors needed*
5	VS	100x100µm	Source Supply, Down-bond to GND needed
Die Bottom	GND	Backside	Epoxy/Solder to Baseplate

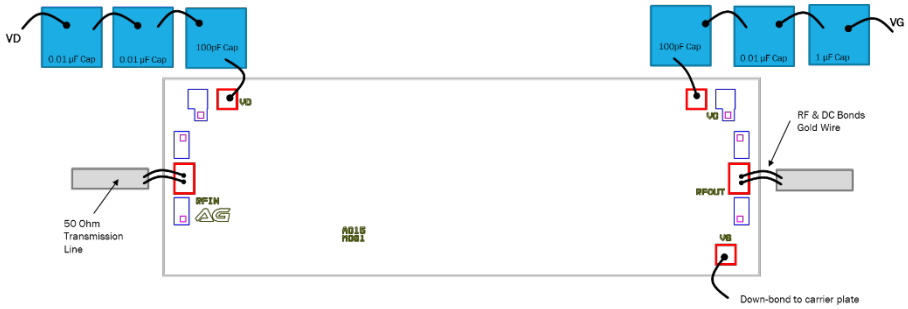
*See Assembly Diagram

Absolute Maximum Ratings

Parameter	Rating
Drain Bias Voltage (VDD)	+18V DC
RF Input Power (RFIN)	33dBm*
Channel Temperature	250°C
Storage Temperature	-65 to 150°C
Operating Temperature	-55 to 85°C

*To be tested

Assembly Diagram



Assembly Notes:

1. Die Thickness is 50µm
2. Bondpad metallization: 5µm gold
3. Backside metallization: 5µm gold
4. Silver Epoxy or AuSn Eutectic attach MMIC



Die Packaging Information

- GP-4 (Gel-Pak)

Biasing and Operation

The amplifier is biased with a positive drain supply and negative gate supply. Performance is optimized when the drain voltage is set to Vdq. The preferred biasing procedure is as follows:

Turn ON procedure:

1. Set VG to -1.0V.
2. Set VD to Vdq.
3. Adjust VG more positive until Id = Idq.
4. Apply RF signal.

Turn OFF procedure:

1. Turn off RF signal.
2. Reduce VG to -1.0V. Id should be 0mA.
3. Turn off VD.
4. Turn off VG.

Important Notice

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