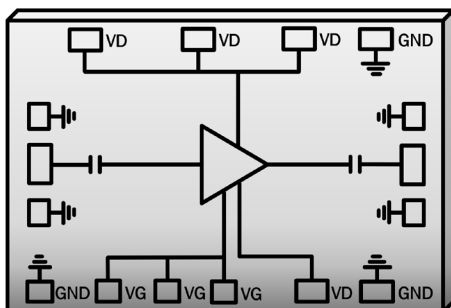


Typical Applications

- Point-to-Point Radio
- K-Band SATCOM

Features

- Frequency Range: 17.2 – 21.2 GHz
- Gain: 22 dB
- PAE: 30% @ 35 dBm Pout
- Psat: + 35dBm
- High Linearity Medium Power Amplifier
- Bias: VD = +18V, IDQ = 300mA, VG = -4.4
- 50Ω Matched Input/Output DC blocked
- Chip Size: 3.0 x 2.0 x 0.05 mm

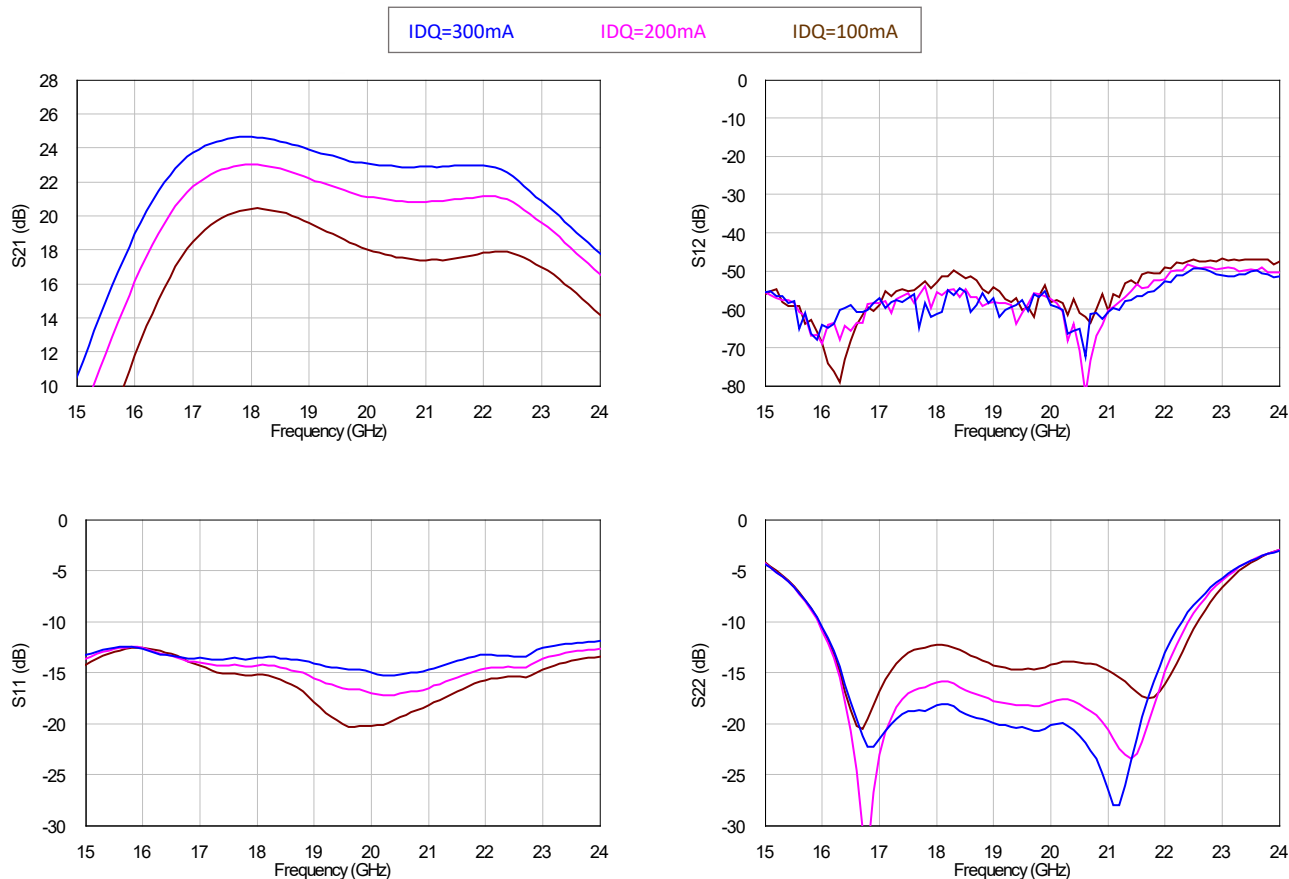


Electrical Specifications (TA = +25°C, VD = +18V, IDQ = 300mA, VG = -4.4)

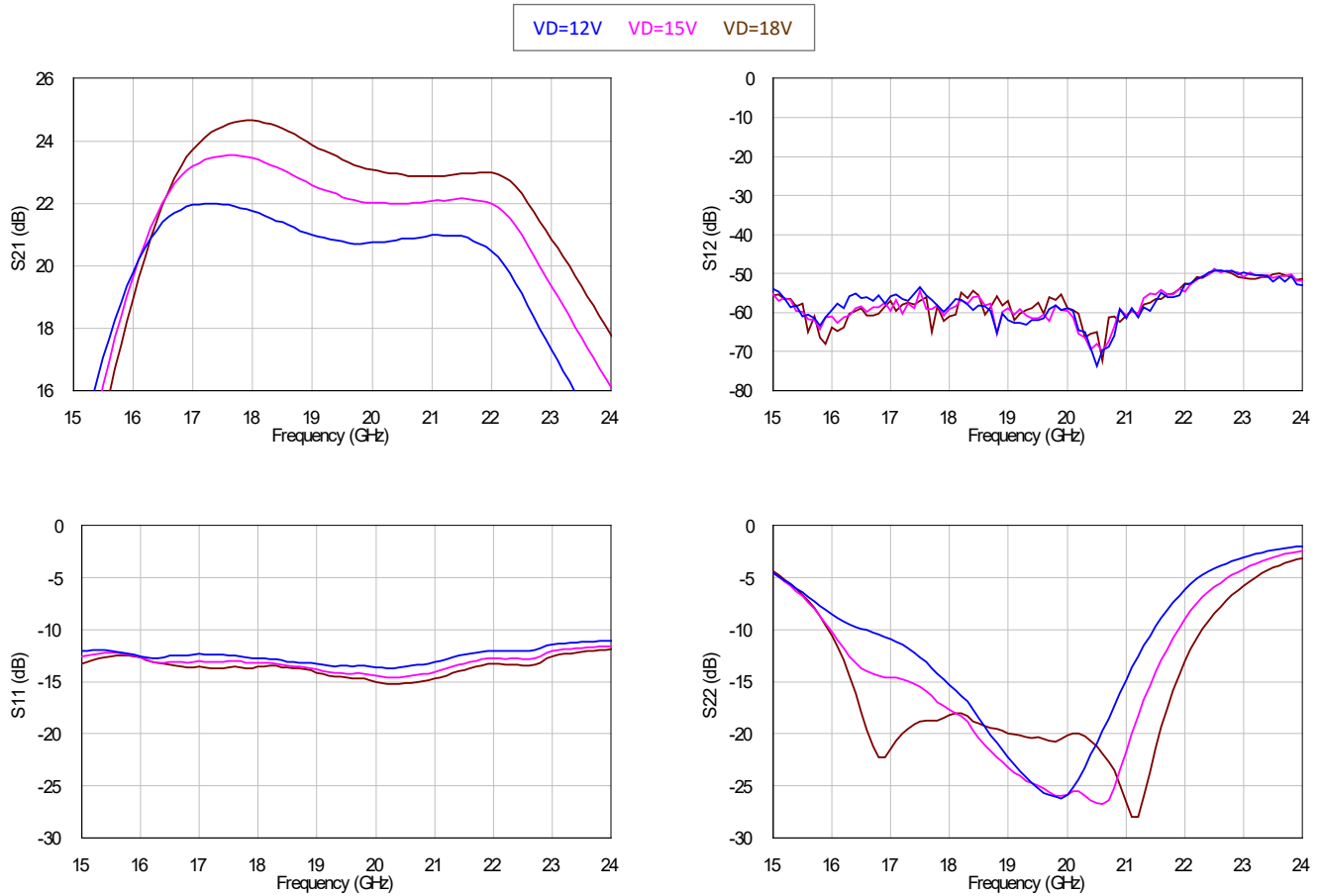
Parameter	Units	Minimum	Typical	Maximum
Frequency	GHz	17.2		21.2
Gain	dB		22	
Gain Flatness	dB		± 1.0	
Input Return Loss	dB	12		
Output Return Loss	dB	15		
PAE	%		30	
Psat	dBm		35	
Supply Voltage	V		+18	
Supply Current	mA		300	
DC Dissipated Power	W		5.4	
Package Type			Die	

Performance Graphs

S-Parameters vs. IDQ (25°C, VD=+18V)

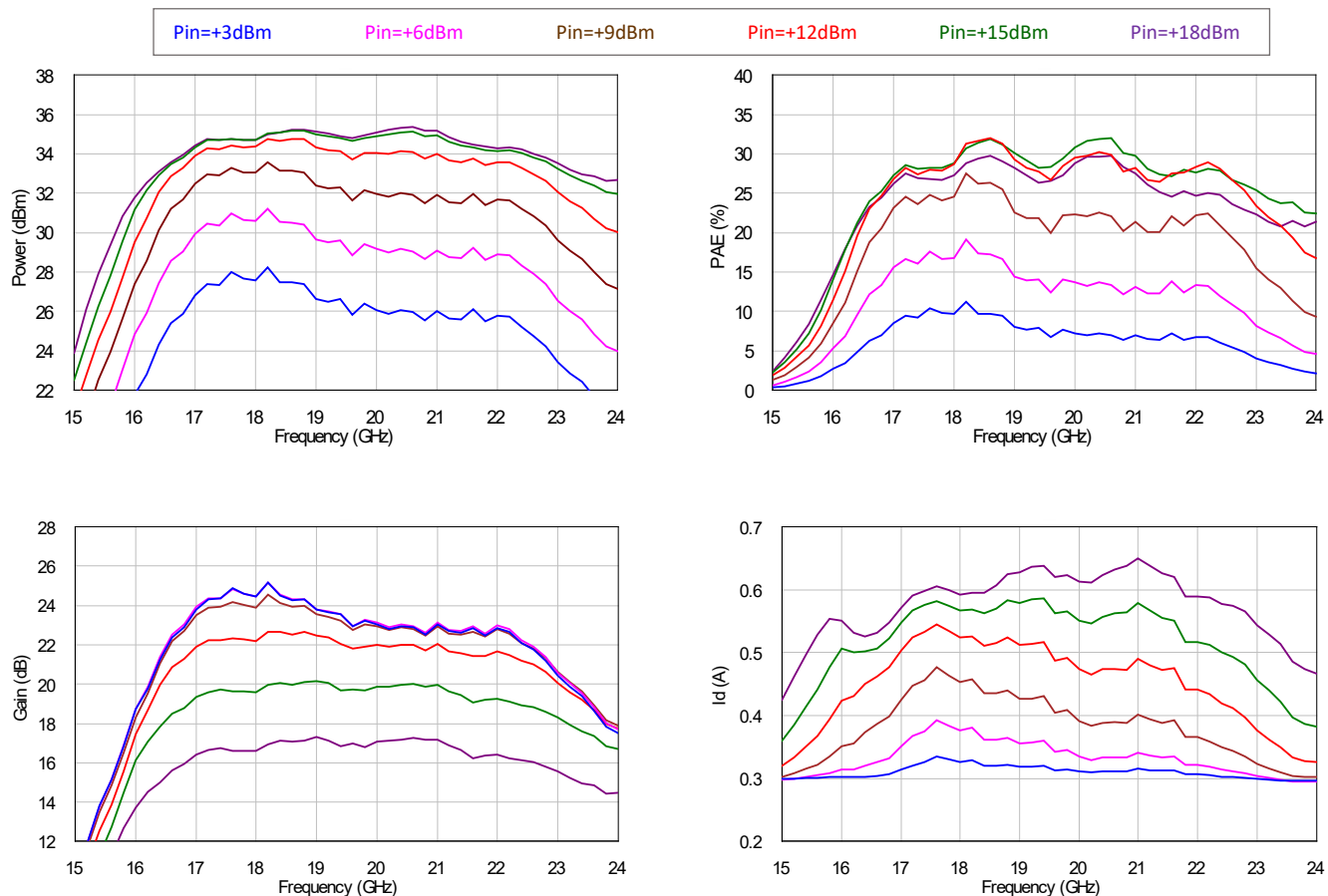


S-Parameters vs. VD (25°C, IDQ=300mA)



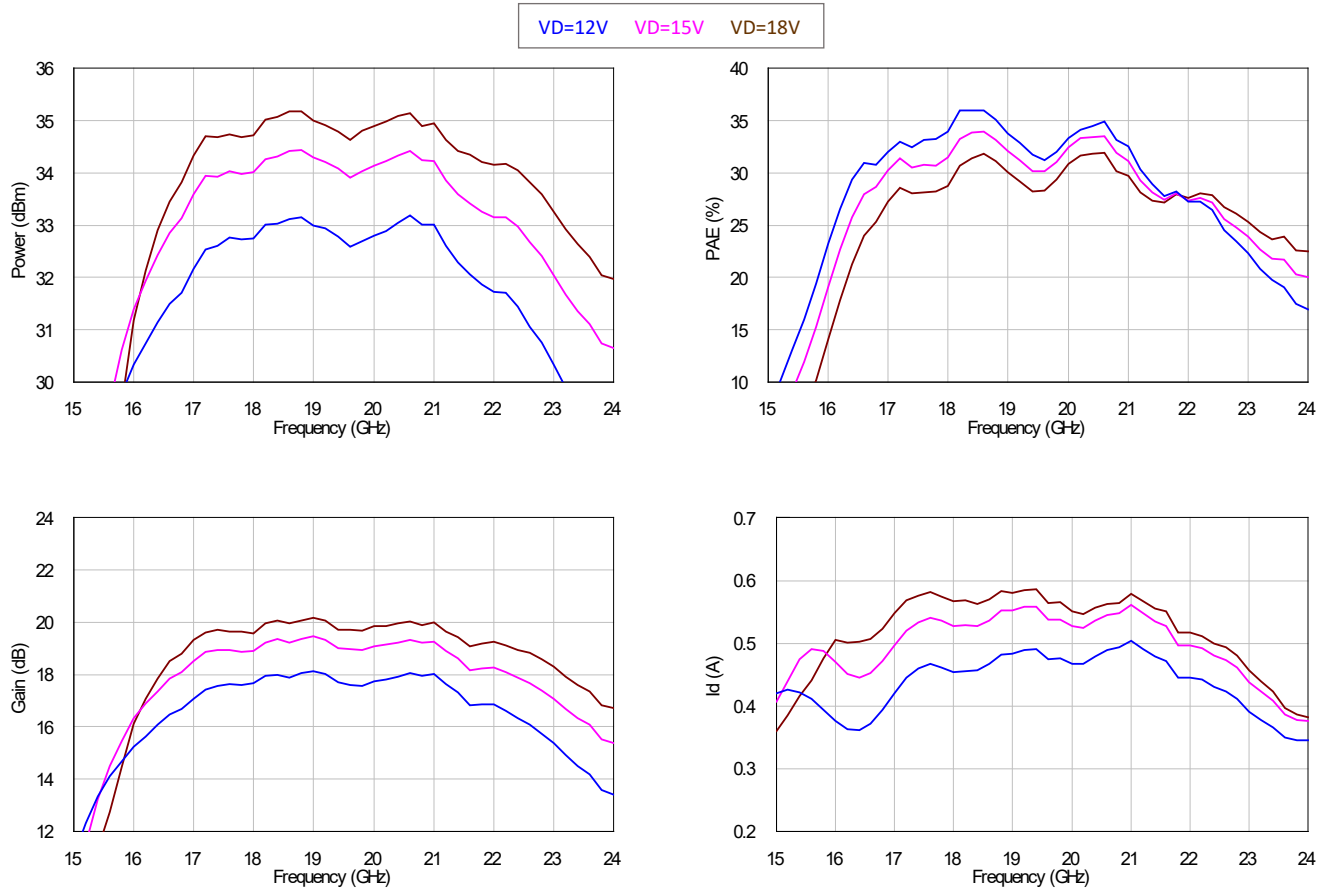
GaN HEMT MMIC 17 – 21GHz 2W Power Amplifier

Frequency Response vs. Input Power (25°C, VD = +18V, IDQ=300mA, VG = -4.4V)

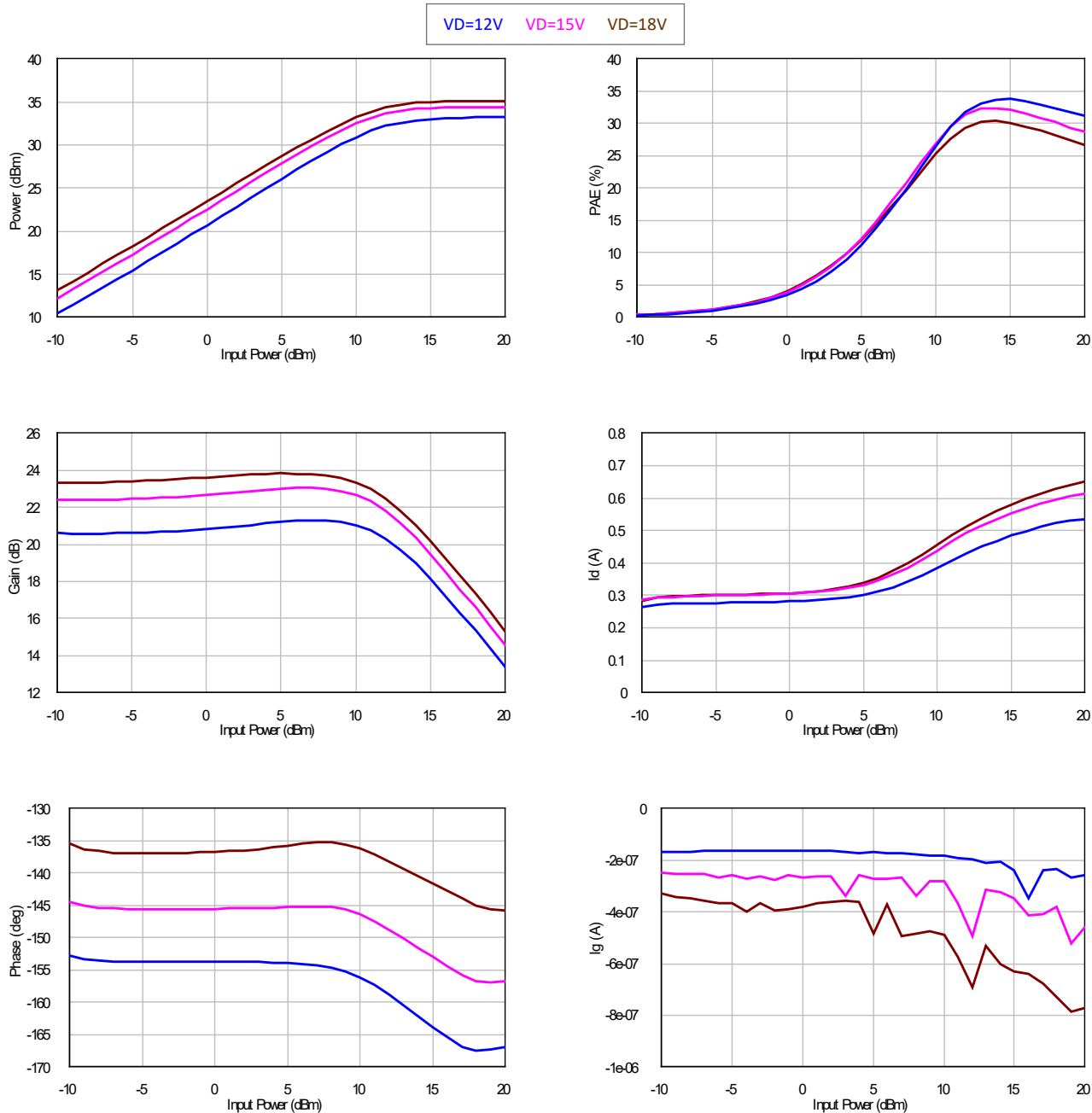


GaN HEMT MMIC
17 – 21GHz 2W Power Amplifier

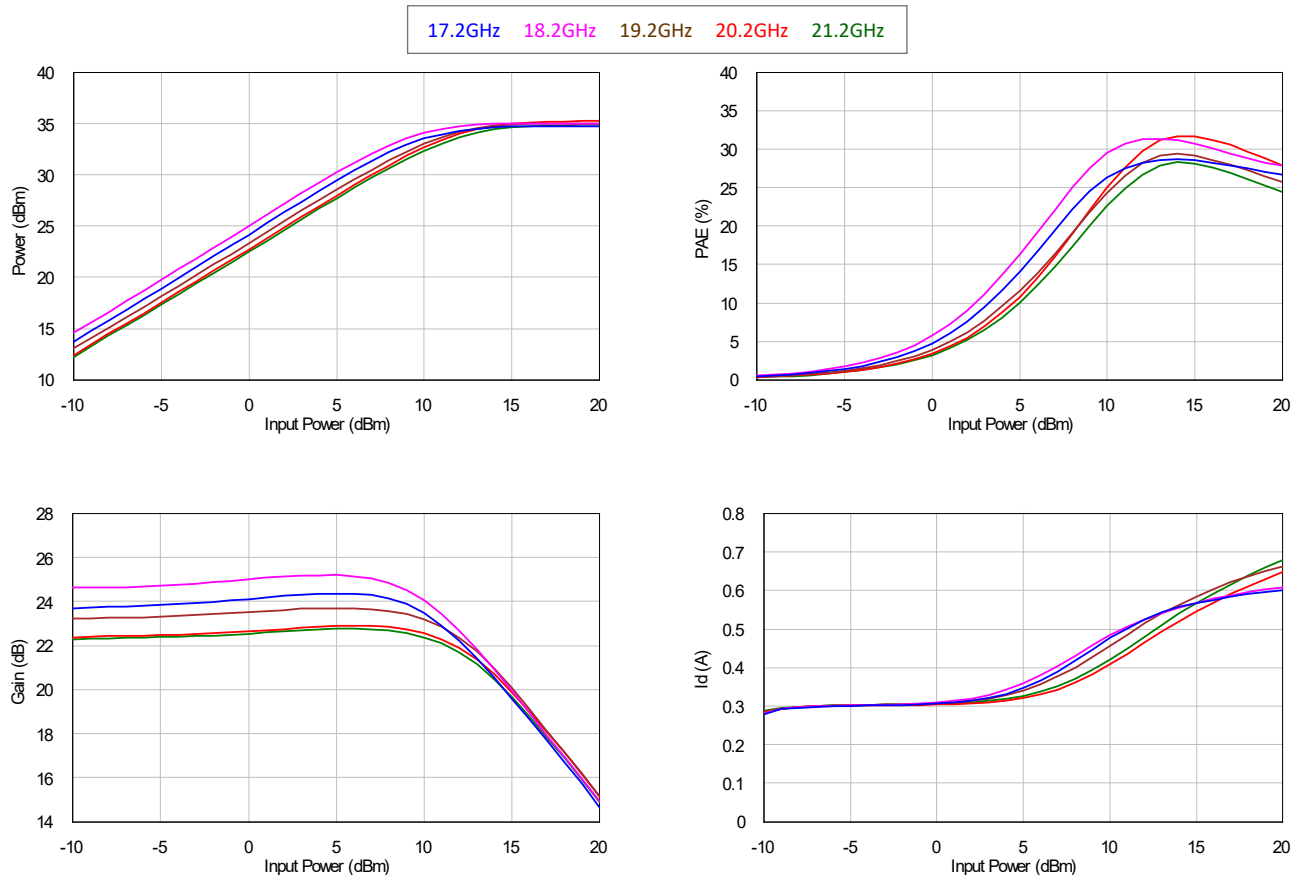
Frequency Response vs. VD (25°C, IDQ=300mA, VG = -4.4V, Pin = +15dBm)



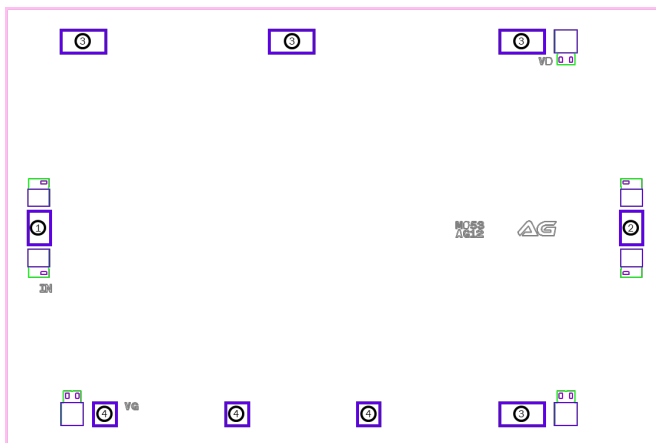
Power Sweep vs. VD (25°C, IDQ=300mA, VG = -4.4V, Freq=19GHz)



Power Sweep vs. Frequency (25°C, IDQ=300mA, VG = -4.4V)



Outline Drawing



Pad Descriptions

Pad	Function	Pad Size	Description
1	RFIN	102x154 μ m	AC coupled 50 Ω Matched
2	RFOUT	102x154 μ m	AC coupled 50 Ω Matched
3	VD	204x104 μ m	Drain Power Supply voltage, Only one (1) connection required, Bypass capacitors needed*
4	VG	104x104 μ m	Gate Power Supply voltage, Only one (1) connection required, Bypass capacitors needed*
Die Bottom	GND	Backside	Epoxy/Solder to Baseplate

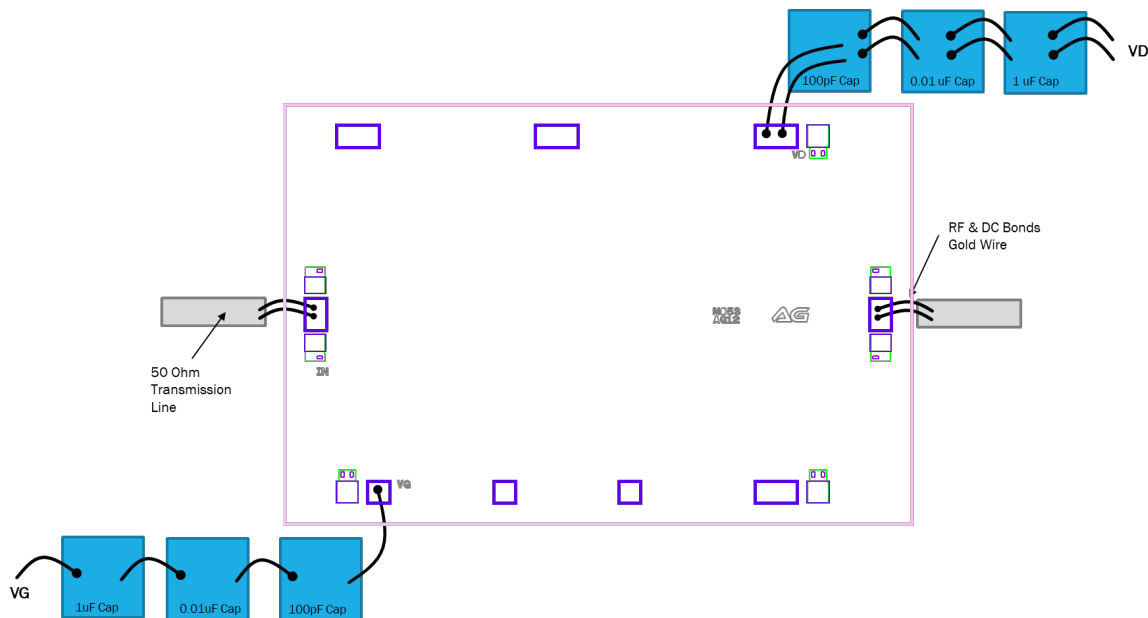
*See Assembly Diagram

Absolute Maximum Ratings

Parameter	Rating
Drain Bias Voltage (VDD)	+20V DC
RF Input Power (RFIN)	+36dBm*
Channel Temperature	200°C
Storage Temperature	-65 to 150°C
Operating Temperature	-55 to 85°C

*To be tested

Assembly Diagram



Assembly Notes:

1. Die Thickness is 50 μ m
2. Bondpad metallization: 4.5 μ m gold
3. Backside metallization: 3.5 μ m gold
4. High thermal conductivity Silver Epoxy or AuSn Eutectic attach MMIC



Die Packaging Information

- GP-4 (Gel-Pak)

Biassing 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 V_{dq} . The preferred biasing procedure is as follows:

Turn ON procedure:

1. Set VG to -6.0V.
2. Set VD to V_{dq} .
3. Adjust VG more positive until $I_d = I_{dq}$.
4. Apply RF signal.

Turn OFF procedure:

1. Turn off RF signal.
2. Reduce VG to -6.0V. I_d should be 0mA.
3. Turn off VD.
4. Turn off VG.

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