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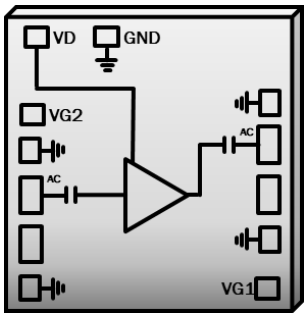
GaAs MMIC
2-20GHz Distributed Amplifier

Typical Applications

- Test Instrumentation
- EW Systems
- Telecom Infrastructure
- EW/ECM Comm Systems

Features

- Frequency Range: 2 – 20 GHz
- Gain: 16dB
- P1dB: + 12dBm
- Self-Biased: VD=+10V @ 50mA Single Supply
- 50Ω Matched DC blocked Input/Output





Electrical Specifications (TA = +25°C, VD = +10V, IDQ = 50mA)

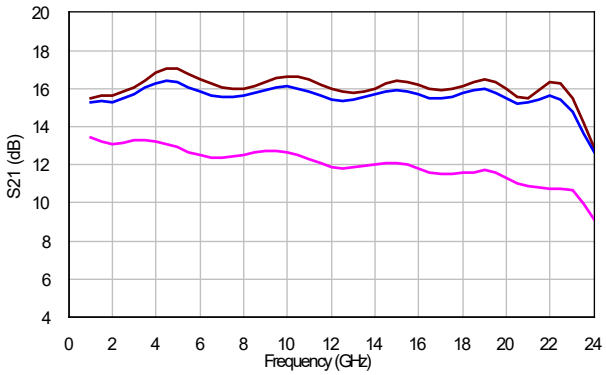
Parameter	Units	Minimum	Typical	Maximum
Frequency	GHz	2		20.0
Gain	dB		16.0	
Gain Flatness	dB		± 0.5	
Noise Figure	dB		2	3.5
Input Return Loss	dB	8	10	
Output Return Loss	dB	6	10	
P1dB	dBm		12	
Psat	dBm		18	
Supply Voltage	V		+10	
Supply Current	mA		50	
DC Dissipated Power	mW		500	
Package Type			Die	

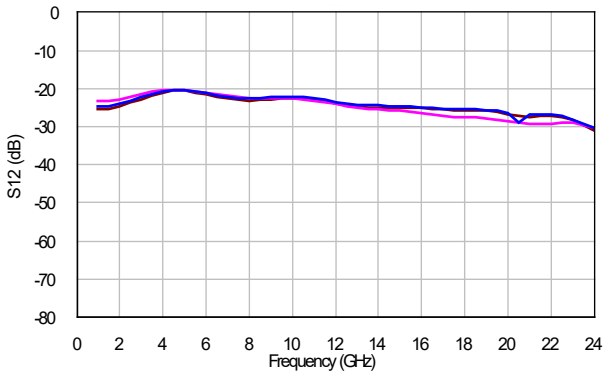
Broadband Amplifiers - Die

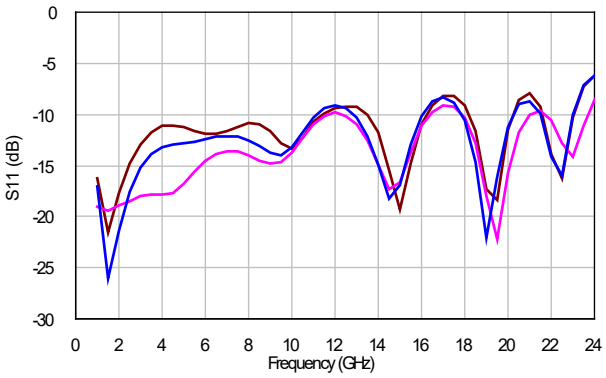
Performance Graphs

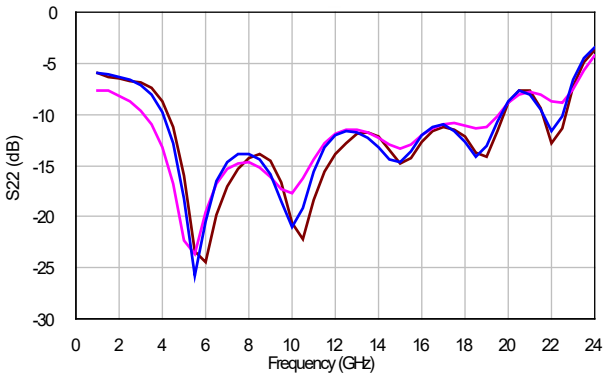
S-Parameters and Noise Figure vs. VD (25°C, AC Input – AC Output Configuration)

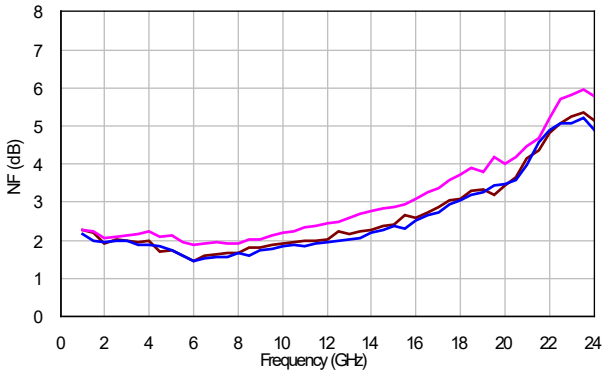
VD=10V (single supply) VD=8V (single supply) VD=10V & IDQ=50mA (Vg=+0.4V)



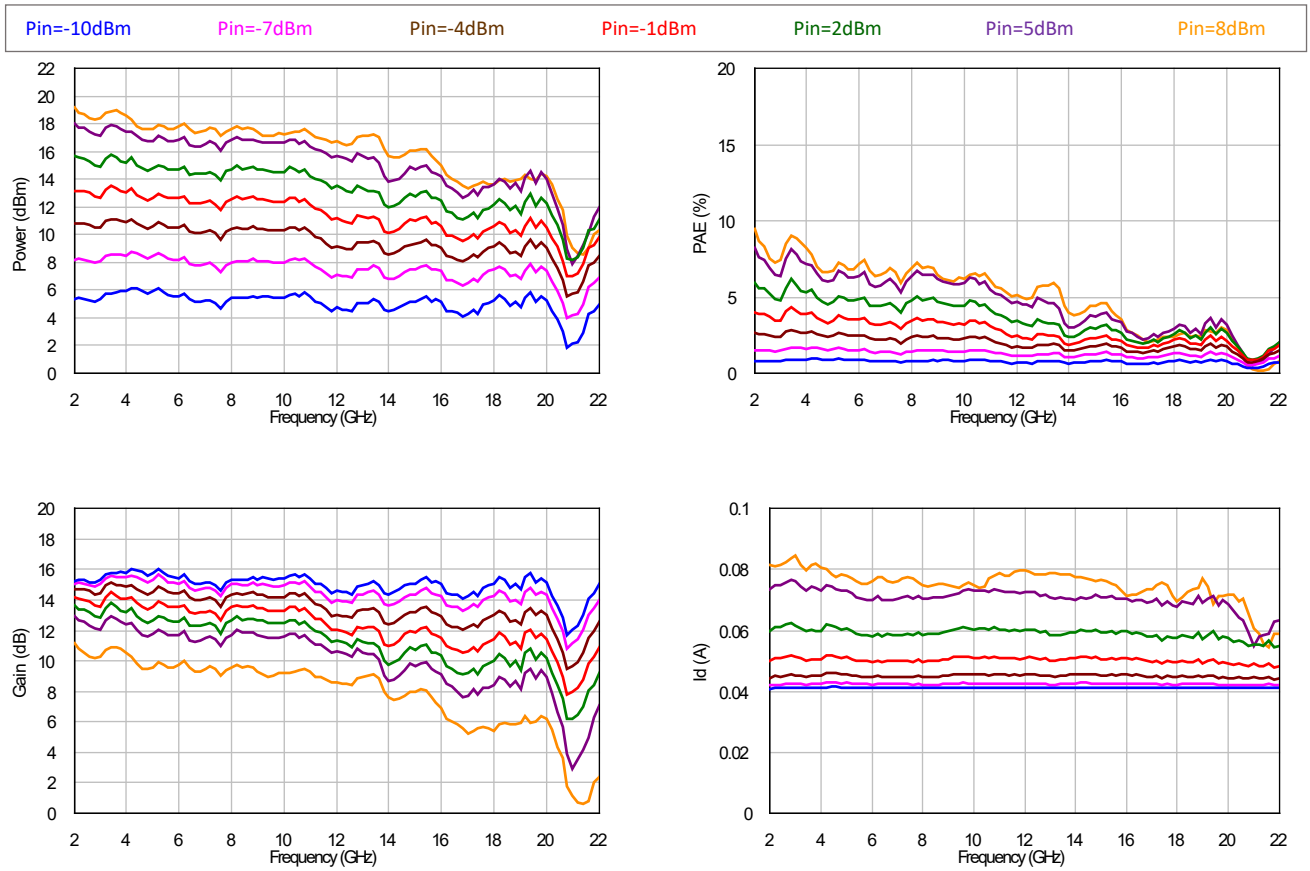




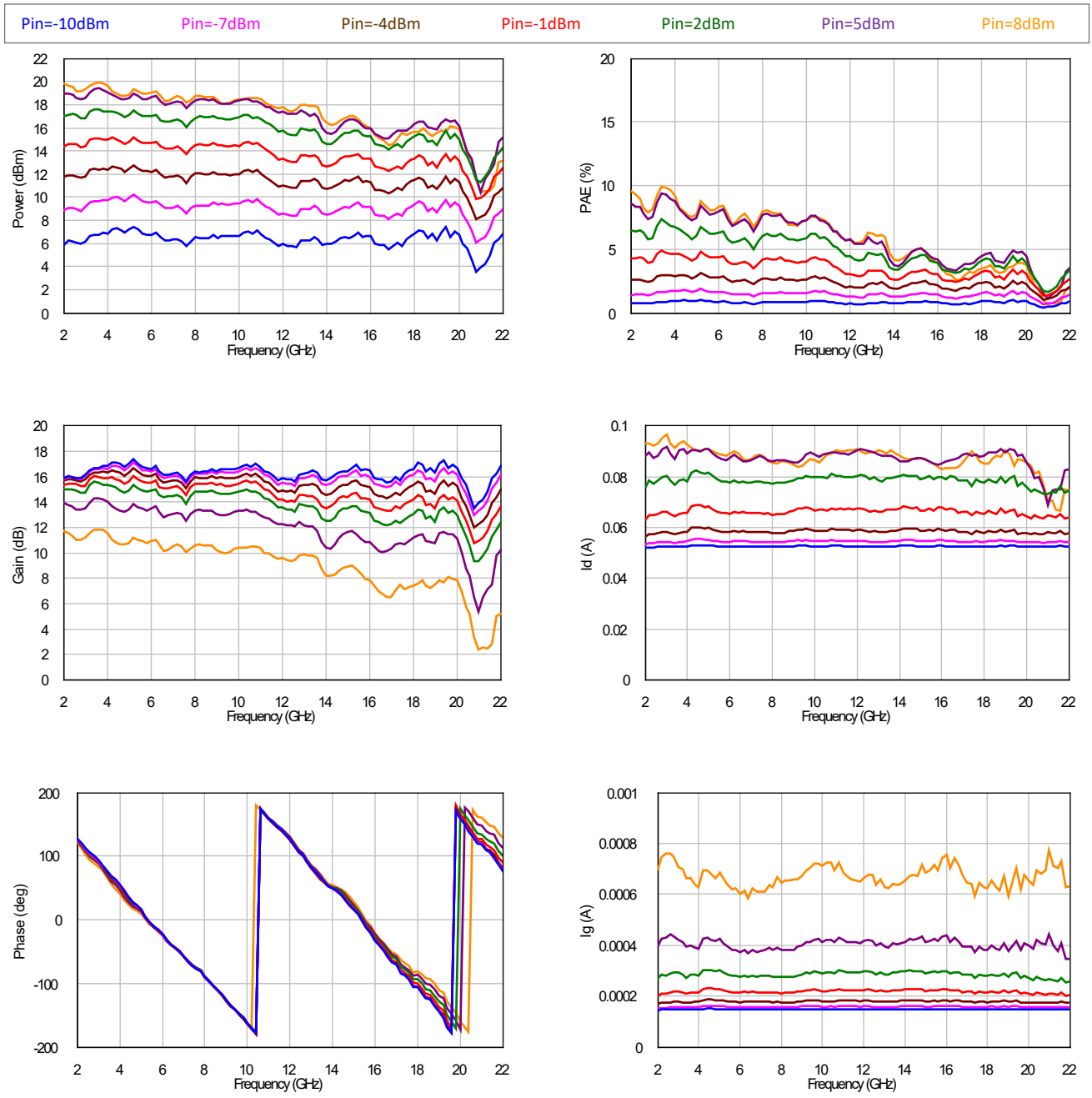




Frequency Response vs. Input Power (25°C, VD=10V, Single-Supply)

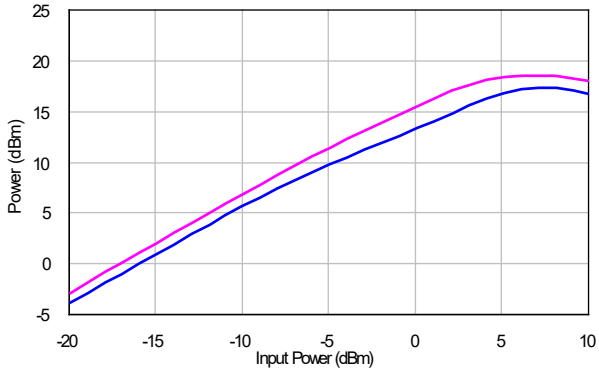


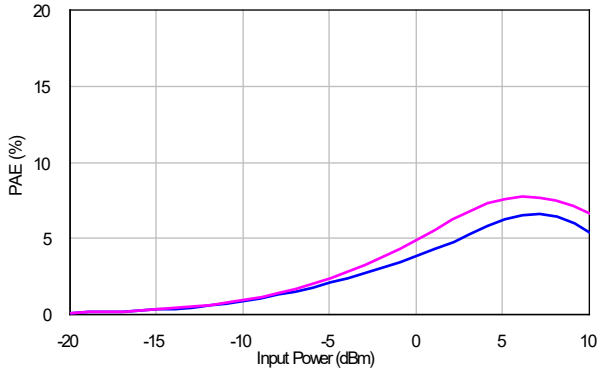
Frequency Response vs. Input Power (25°C, VD=10V & IDQ=50mA, & VG=0.4V)

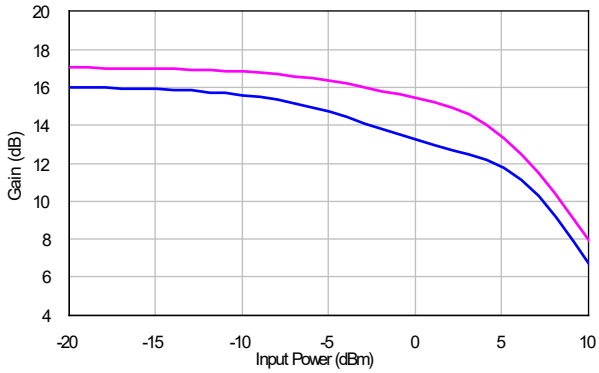


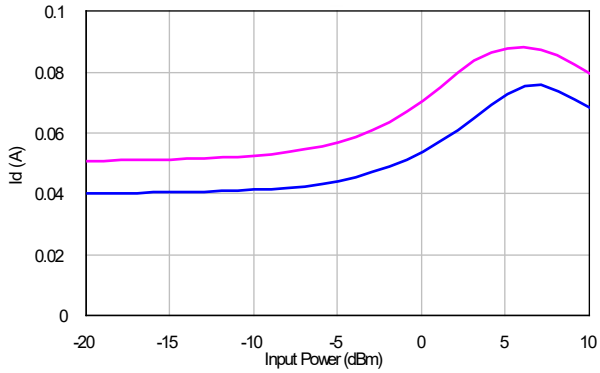
Power Sweep vs. Bias (25°C, 10GHz)

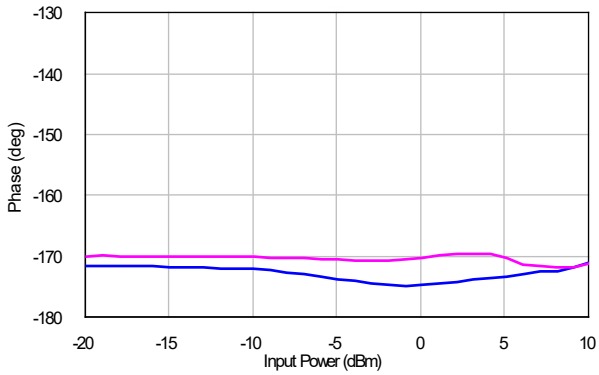
VD=10 (Single Supply) VD=10V & IDQ=50mA (VG=+0.4V)

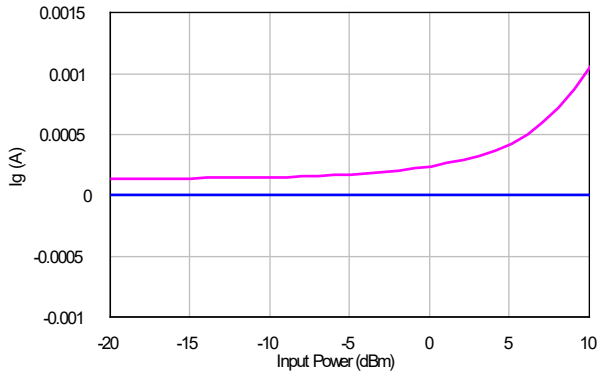












Die Outline Drawing



Die Pad Descriptions

Pad	Function	Pad Size	Description
1	RFIN	100x114µm	AC-Coupled 50Ω Matched
2	RFOUT	100x114µm	AC-Coupled 50Ω Matched
3	VD	100x100µm	Drain Power Supply, bypass capacitors needed*
4	VG1	100x100µm	No connect, Optional Gate Power Supply for Bias Override*
5	VG2	100x100µm	No connect, Optional Gate Power Supply for VGA
Die Bottom	GND	Backside	Epoxy/Solder to Baseplate

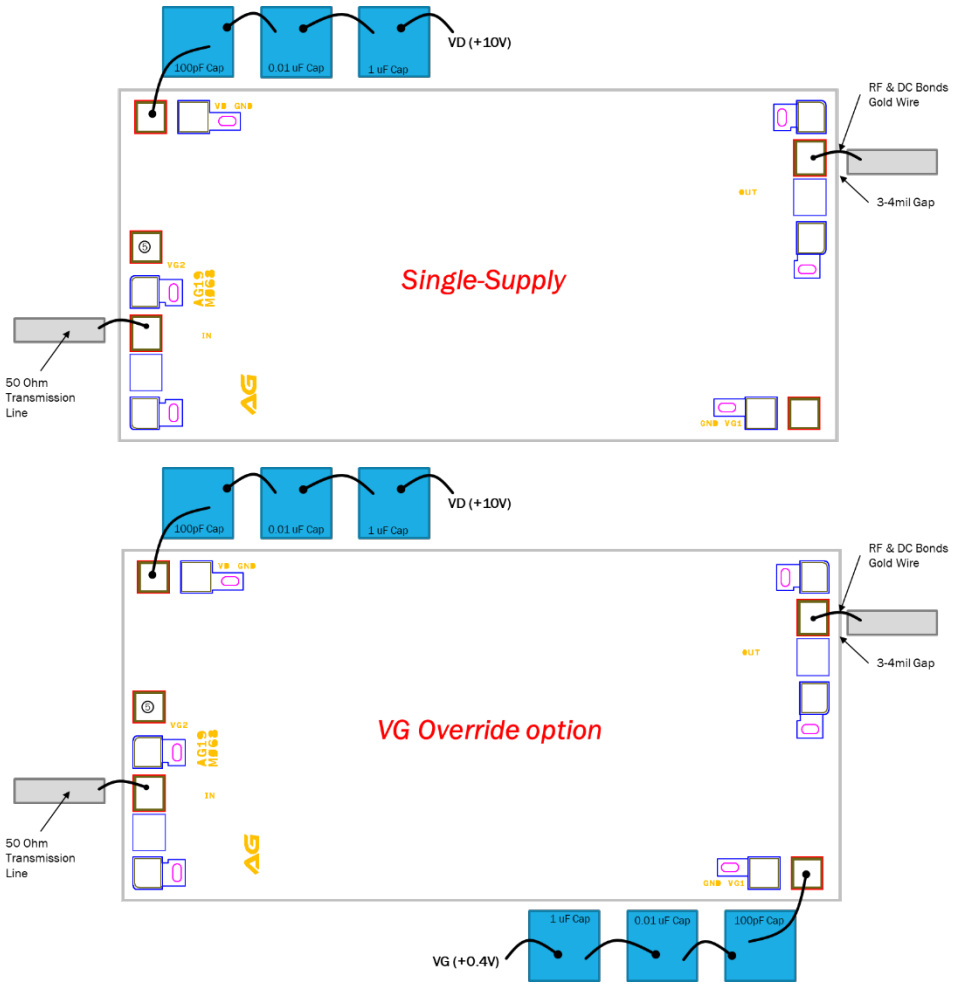
*See Assembly Diagram

Absolute Maximum Ratings

Parameter	Rating
Drain Bias Voltage (VDD)	+12V DC
RF Input Power (RFIN)	+20dBm*
Channel Temperature	150°C
Storage Temperature	-65 to 150°C
Operating Temperature	-55 to 85°C

*To be tested

Die Assembly Diagrams



Die Assembly Notes:

1. Die Thickness is 100µm
2. Backside and Bondpad metallization: 3µm gold
3. Silver Epoxy or AuSn Eutectic attach MMIC
4. Gap between MMIC and 50 Ohm lines should be 3-4mils
5. Off-Chip bypass capacitor values are approximate



Biasing and Operation

The amplifier has both a single supply biasing mode as well as used in a mode where the current can be adjusted by applying a Vg override voltage to optimize performance. For overriding the bias current use the following biasing procedure:

Turn ON procedure:

1. Set VG to 0.0V.
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 0.0V. Id should be 0mA.
3. Turn off VD.
4. Turn off VG.

Important Notice

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