AGMPA080160

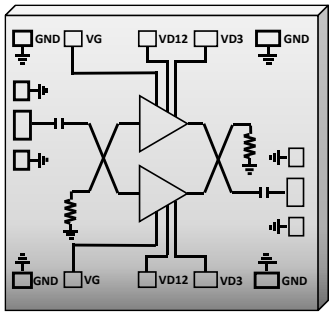
GaAs MMIC
2W 9.5-13.5GHz Balanced Power Amplifier

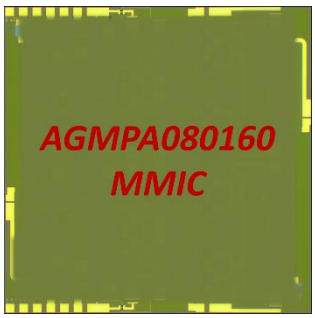
Typical Applications

- Point to Point Radio
- X-Band Communications
- Radar

Features

- Frequency Range: 9.5 – 13.3 GHz
- Gain: 31dB
- PSAT: 32dBm
- PAE: >33%
- IM3 @ 19dBm/Tn: - 40dBc
- Bias: +6V @ 1428mA
- 50Ω Matched Input / Output DC Blocked
- Die Size 3.5 x 3.5 x 0.1 mm





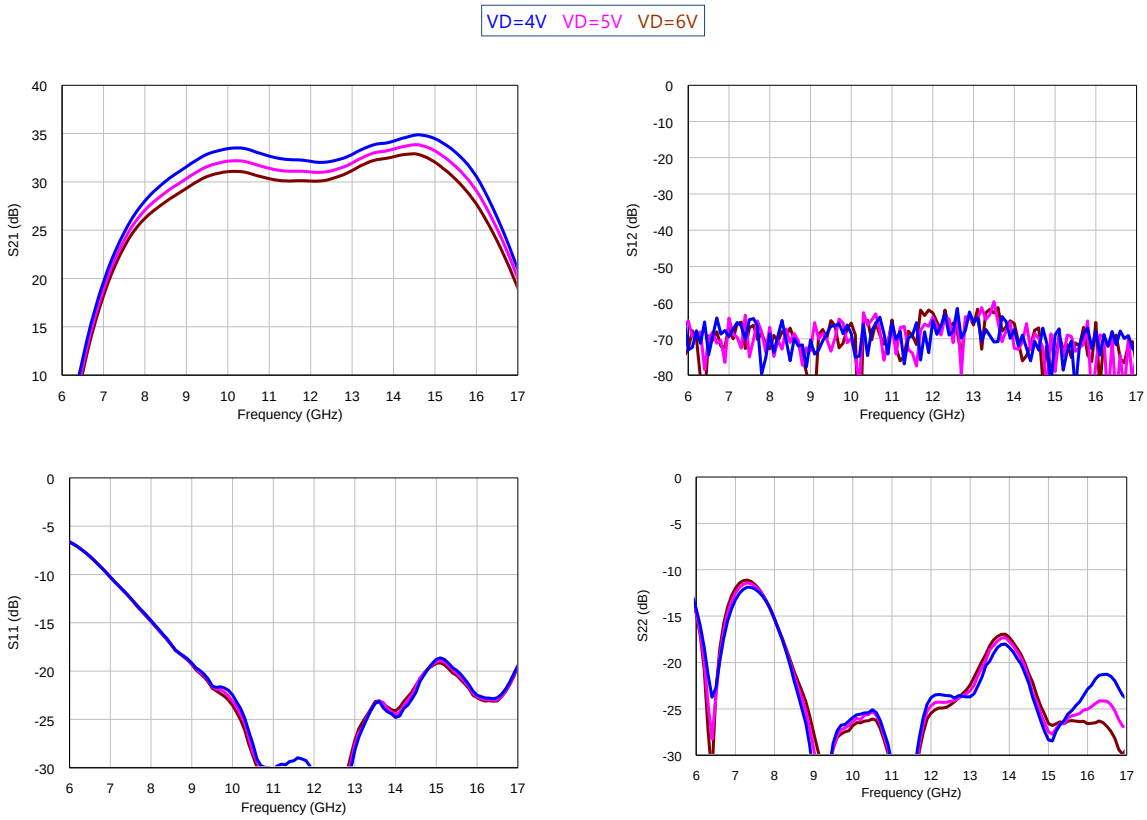
Electrical Specifications (TA = +25°C, VD = +6V, IDD = 1428mA)

Parameter	Units	Minimum	Typical	Maximum
Frequency	GHz	9.5		13.5
Gain	dB		31	
Input Return Loss	dB		20	
Output Return Loss	dB		20	
Psat	dBm		32	
PAE	%		31	
IM3	dBc		-40	
Supply Voltage	V		+6	
Supply Current	mA		1428	
DC Dissipated Power	W		8.57	
Package Type			Die	

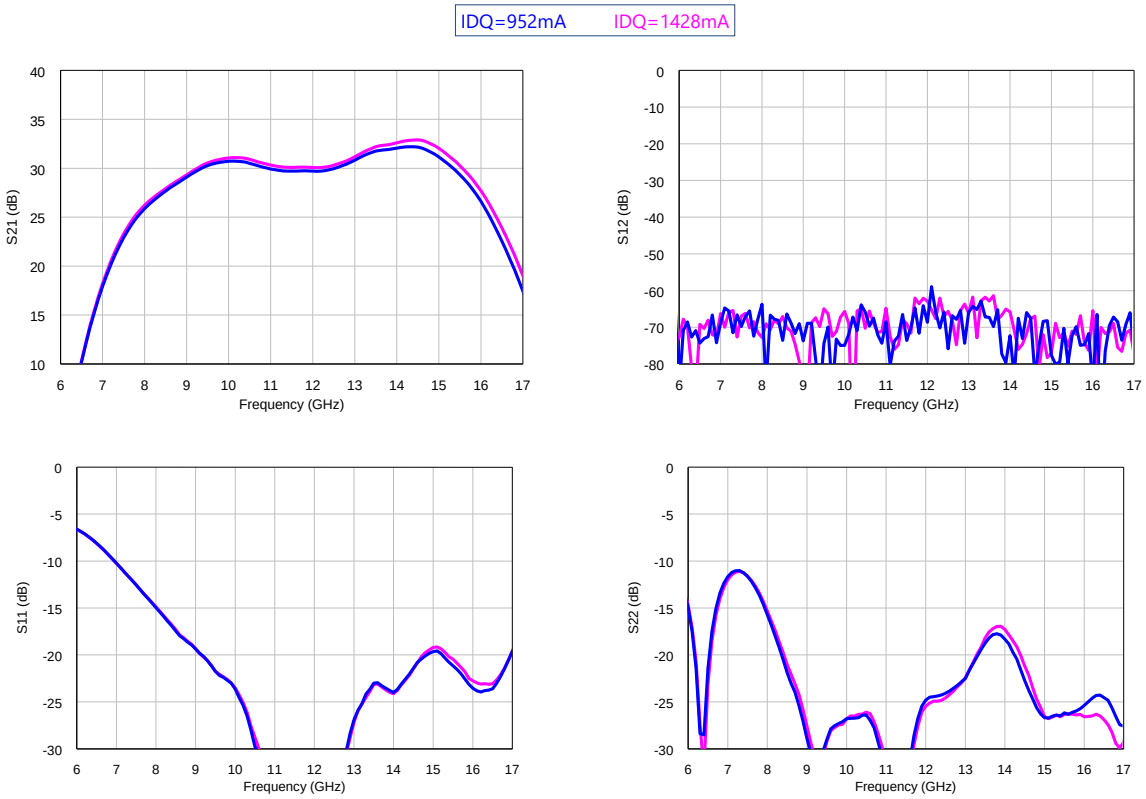
Power Amplifiers

Performance Graphs

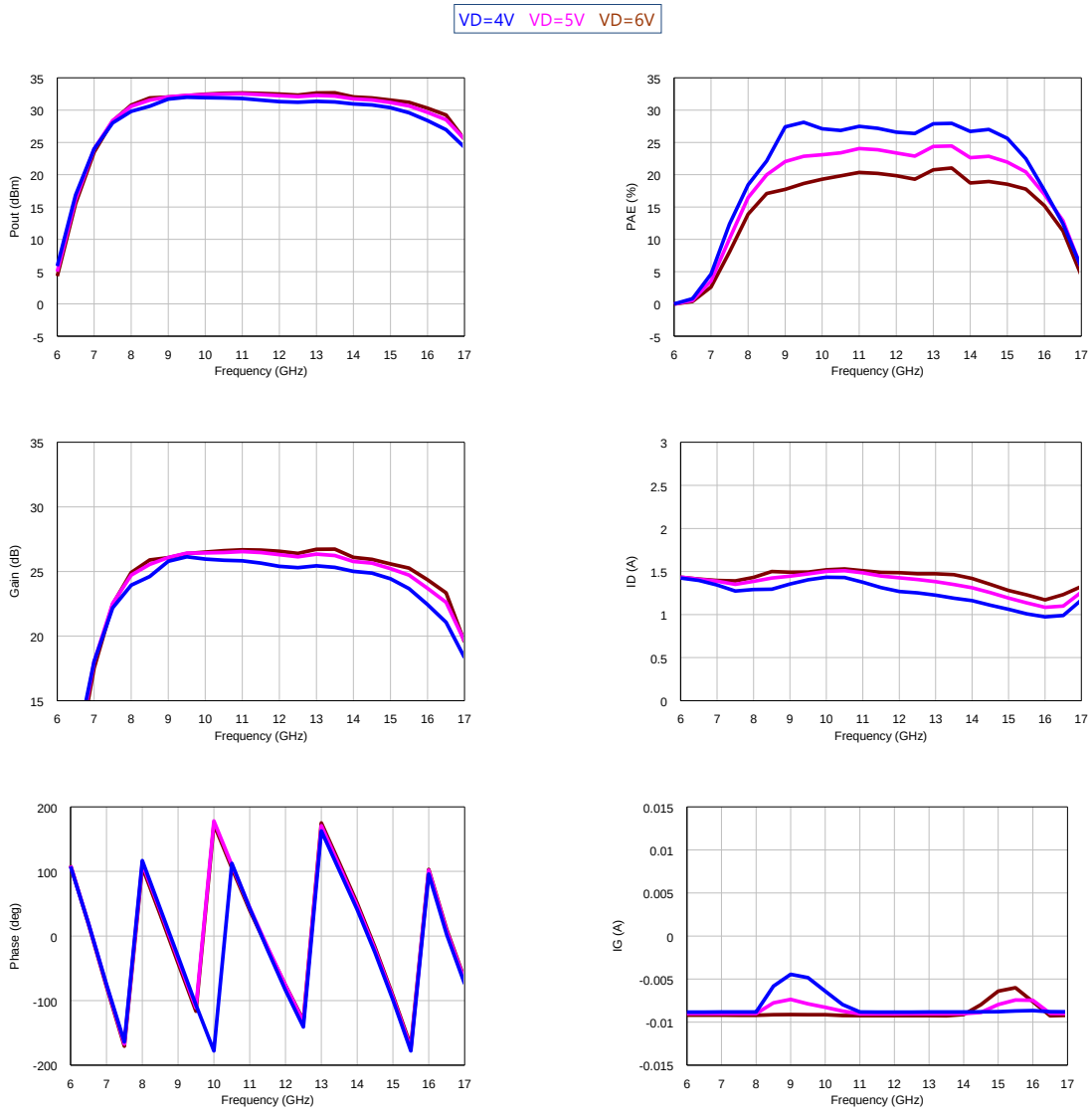
S-Parameters vs VD (25°C, IDQ=1428mA)



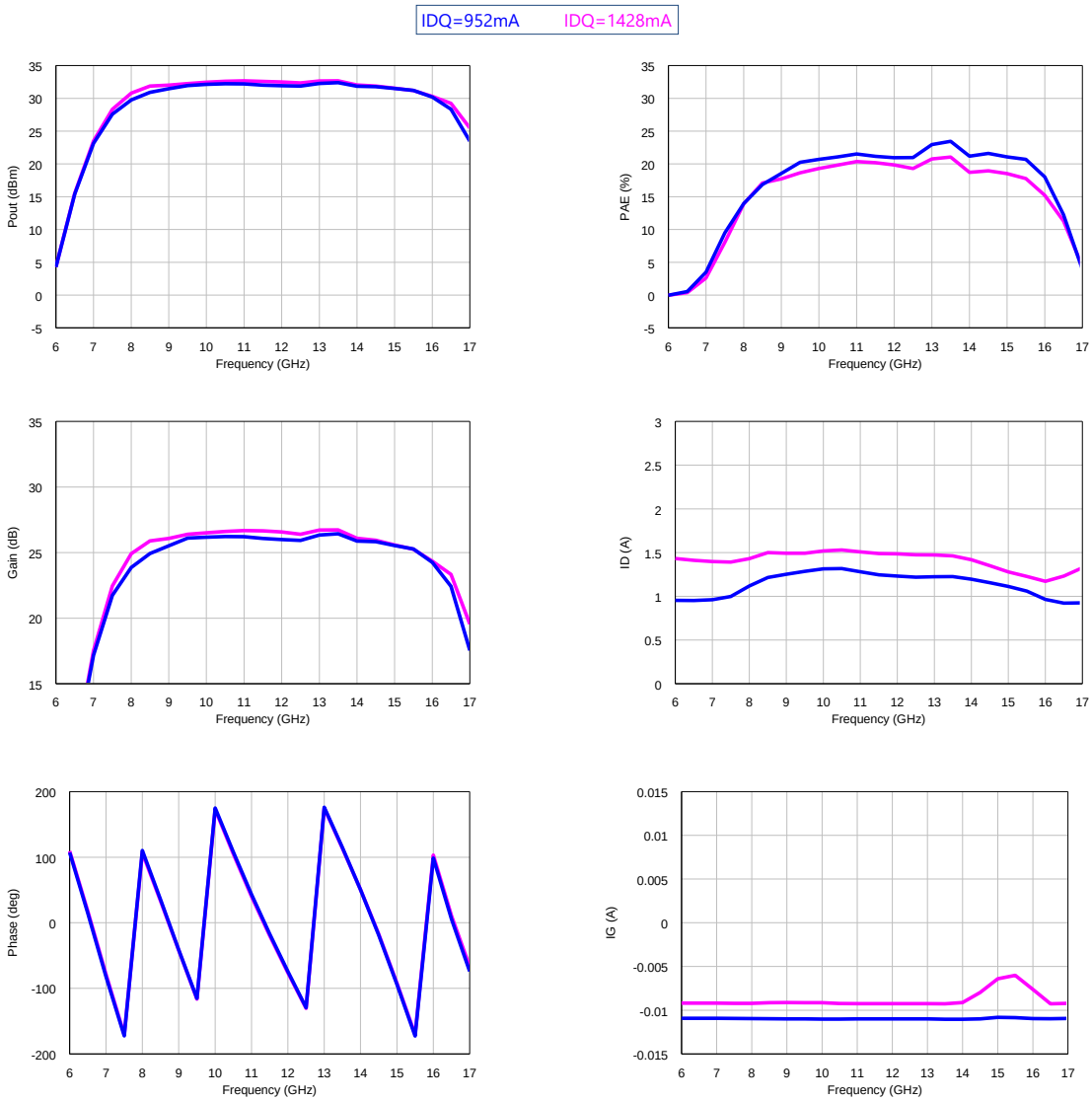
S-Parameters vs IDQ (25°C, VD=6V)



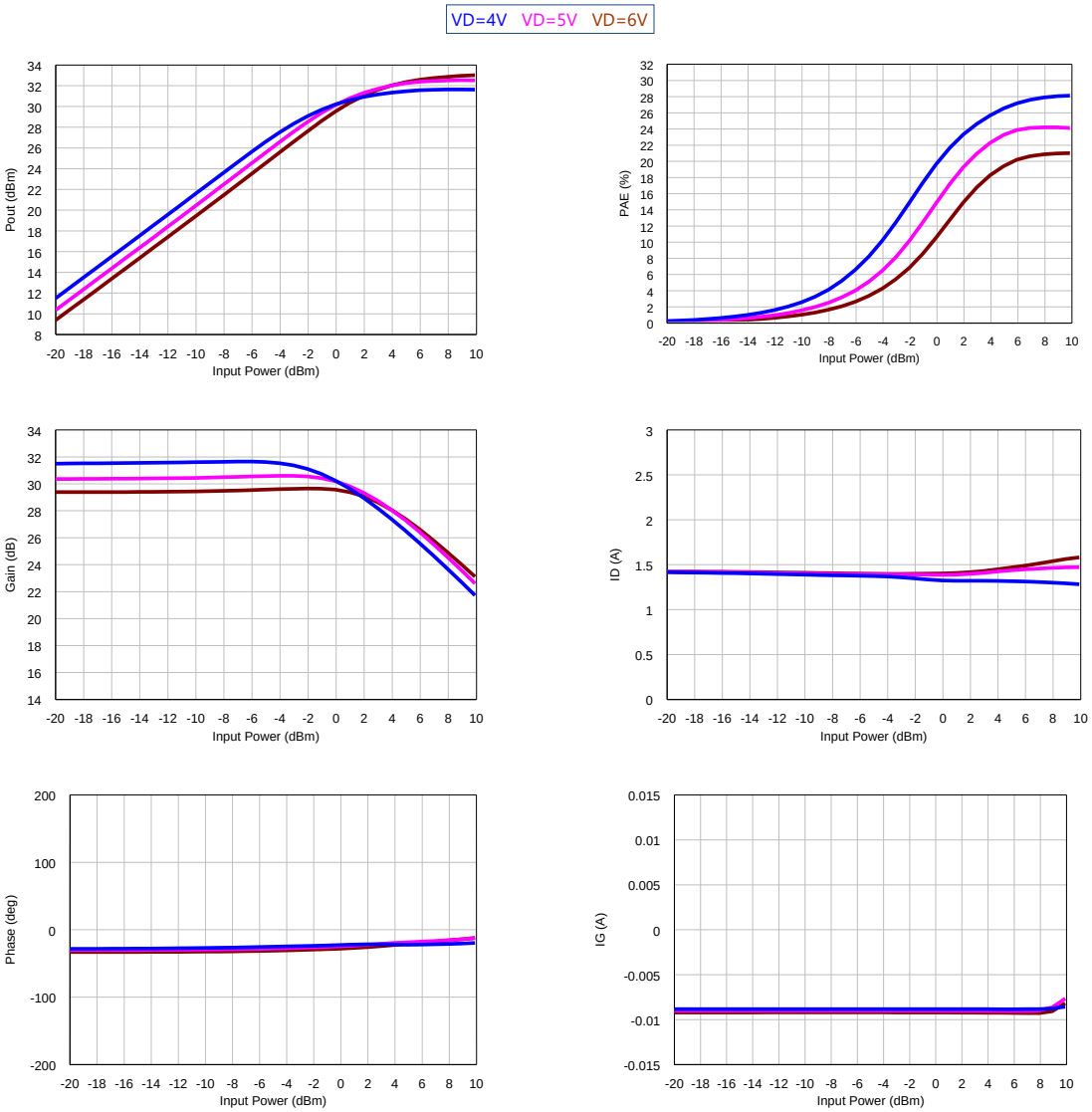
Frequency Response vs. VD (25oC, IDQ=1428mA, Pin=+6dBm)



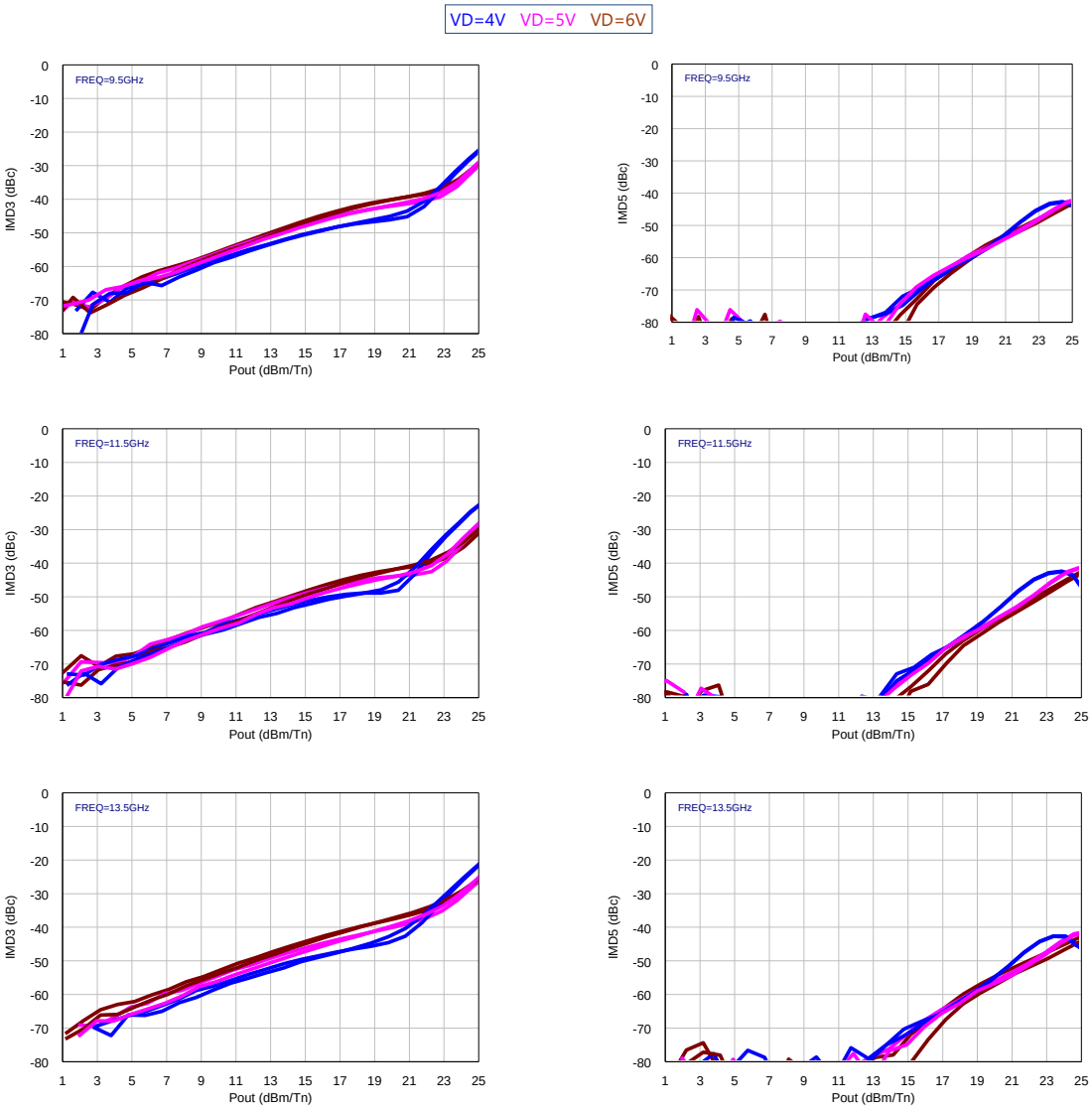
Frequency Response vs. IDQ (25°C, VD=6V, Pin=+6dBm)



Power Sweep vs. VD (25°C, IDQ=1428mA, Freq=11.5GHz)

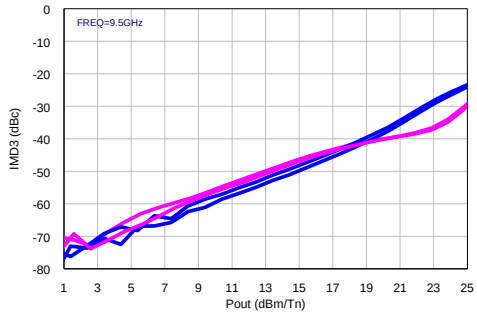


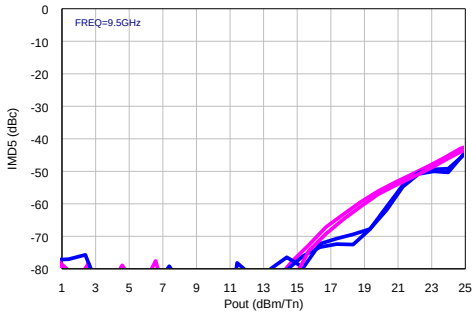
Linearity Response vs. VD (25°C, IDQ=1428mA, 10MHz Tone Spacing)

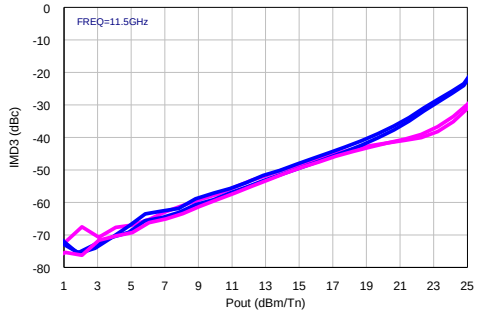


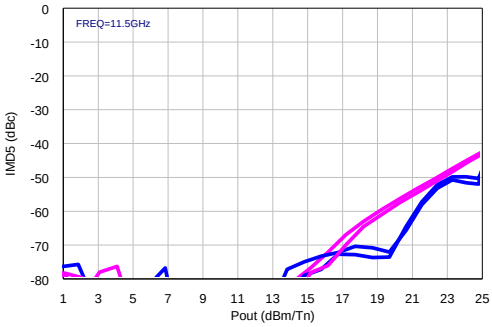
Linearity Response vs. IDQ (25°C, VD=6V, 10MHz Tone Spacing)

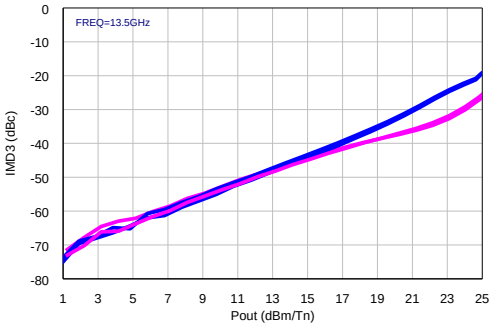
IDQ=952mA IDQ=1428mA

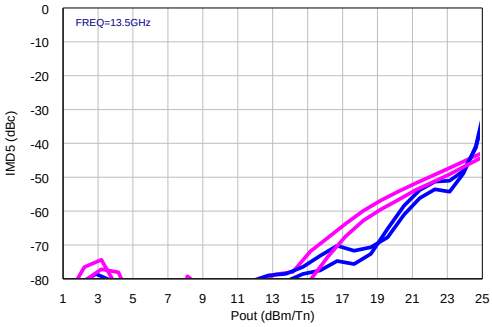




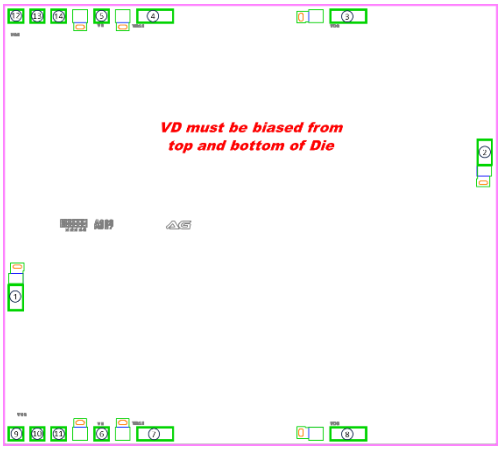








Die Outline Drawing



Die Pad Descriptions

Pad	Function	Pad Size	Description
1	RFIN	100x200µm	AC coupled 50Ω Matched
2	RFOUT	100x200µm	AC coupled 50Ω Matched
3	VD3	250x100µm	Drain Power Supply voltage, bypass capacitors needed*
4	VD12	250x100µm	Drain Power Supply voltage, bypass capacitors needed*
5	VG	100x100µm	Alternate Gate Power Supply voltage
6	VG	100x100µm	Alternate Gate Power Supply Voltage
7	VD12	250x100µm	Drain Power Supply voltage, bypass capacitors needed*
8	VD3	250x100µm	Drain Power Supply voltage, bypass capacitors needed*
9	VGG	100x100µm	Alternate Gate Power Supply Voltage
10	VGG	100x100µm	Gate Power Supply voltage, bypass capacitors needed*
11	VGG	100x100µm	Alternate Gate Power Supply Voltage
12	VGG	100x100µm	Alternate Gate Power Supply Voltage
13	VGG	100x100µm	Alternate Gate Power Supply Voltage
14	VGG	100x100µm	Alternate Gate Power Supply Voltage
Die Bottom	GND	Backside	Epoxy/Solder to Baseplate

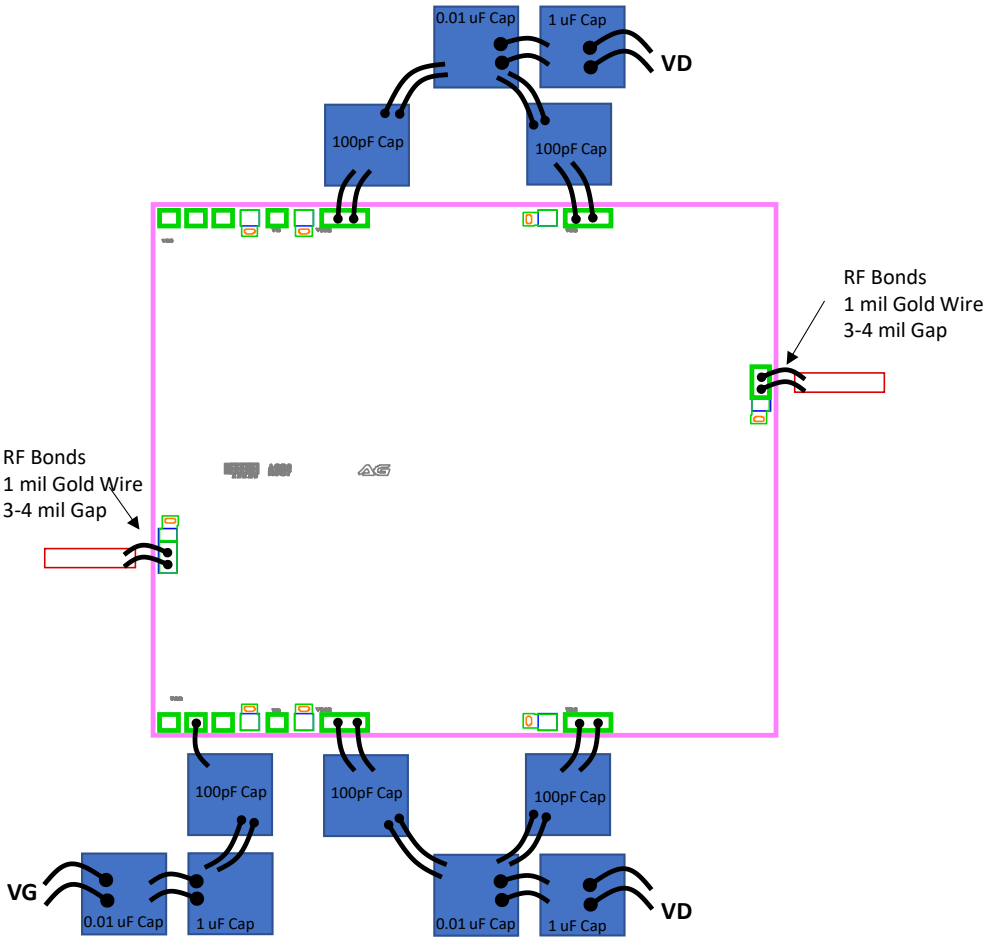
*See Assembly Diagram

Absolute Maximum Ratings

Parameter	Rating
Drain Bias Voltage (VDD)	+8V 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: 4µm gold
3. High K 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



Power Amplifiers

Biasing and Operation

The AGMPA080160 is biased with a positive drain supply and negative gate supply. The preferred biasing procedure is as follows:

Turn ON procedure:

1. Set VG to -5.0V.
2. Set VD to Vdq.
3. Apply RF signal.

Turn OFF procedure:

1. Turn off RF signal.
2. Turn off VD.
3. Turn off VG.

Important Notice

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