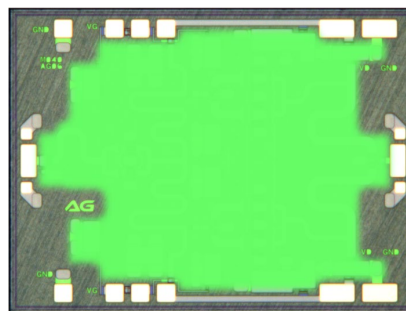
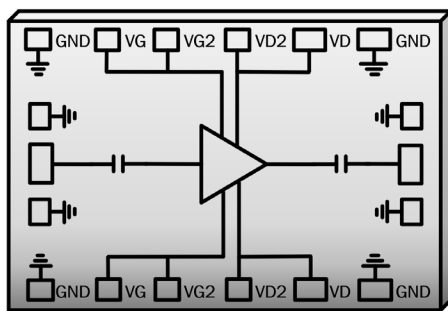


Typical Applications

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

Features

- Frequency Range: 17.3 – 20.2 GHz
- Gain: 20 dB
- PAE: 30% @ 35 dBm Pout
- Psat: + 35dBm
- Bias: VD = +28V, IDQ = 100mA, VG = -1.56
- 50Ω Matched Input/Output DC blocked
- Chip Size: 2.4 x 1.8 x 0.1 mm

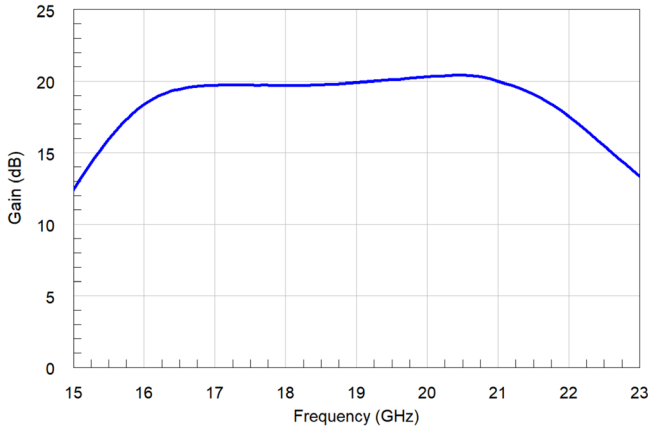


Electrical Specifications (TA = +25°C, VD = +28V, IDQ = 100mA, VG = -1.72V)

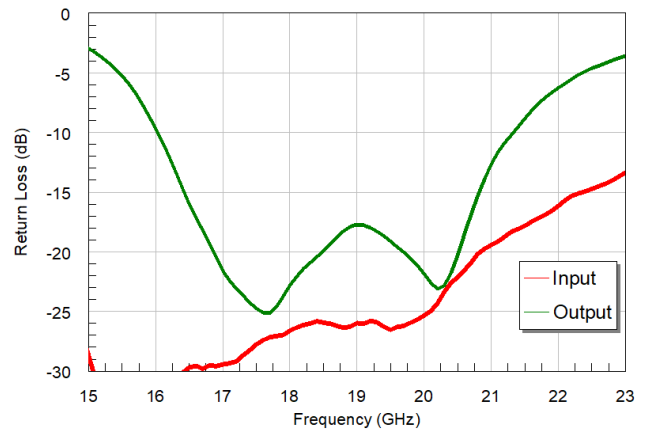
Parameter	Units	Minimum	Typical	Maximum
Frequency	GHz	16.5		21.5
Gain	dB		20	
Gain Flatness	dB		± 1	
Input Return Loss	dB		25	
Output Return Loss	dB		16	
PAE	%		30	
Psat	dBm		35	
Supply Voltage (Vdq)	V		+28	
Supply Current (Idq)	mA		100	
DC Dissipated Power	W		2.8	
Package Type			Die	

Performance Graphs

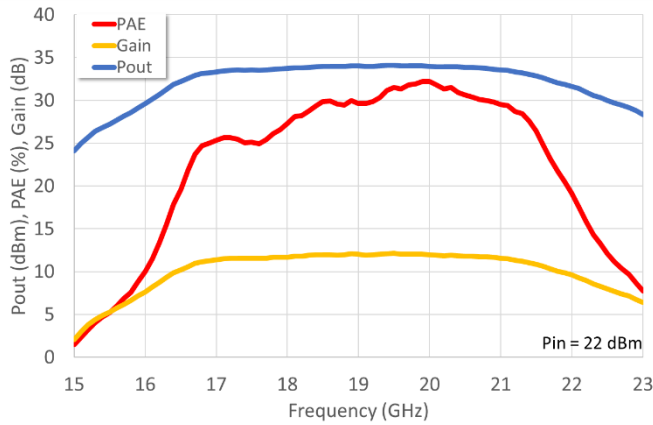
Gain



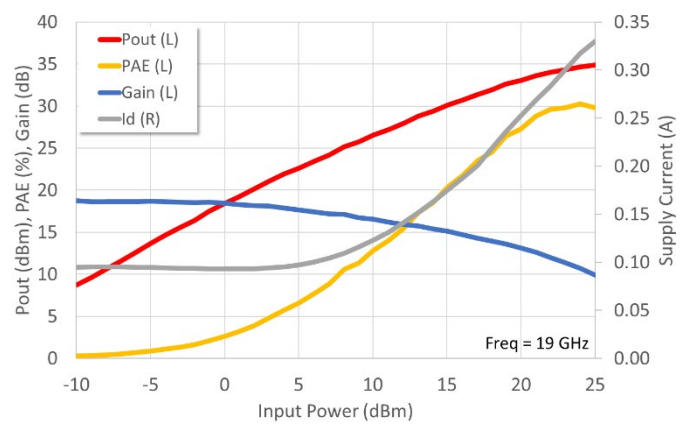
Return Losses



Frequency Response

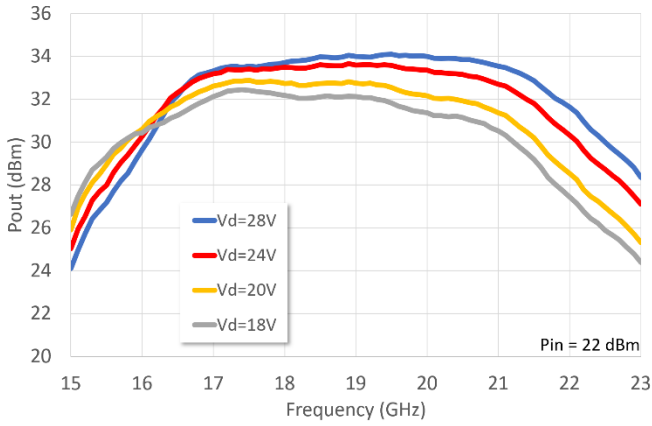


Power Sweep

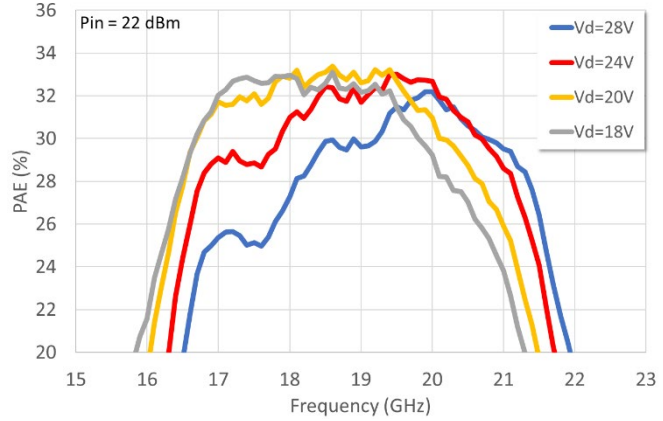


GaN on SiC HEMT MMIC
16.5 – 21.5GHz 2W Power Amplifier

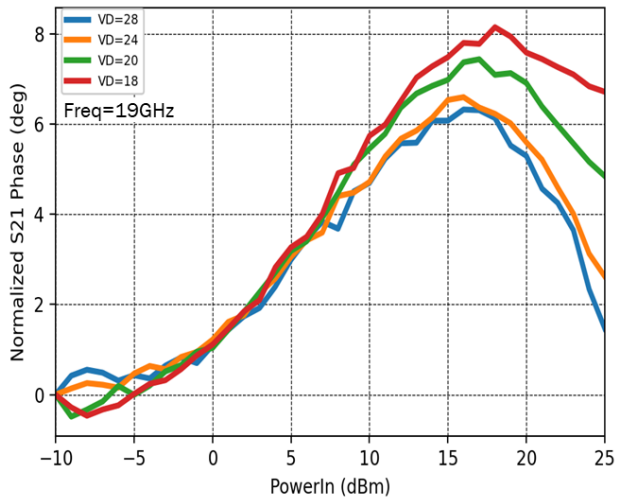
Power vs Supply Voltage



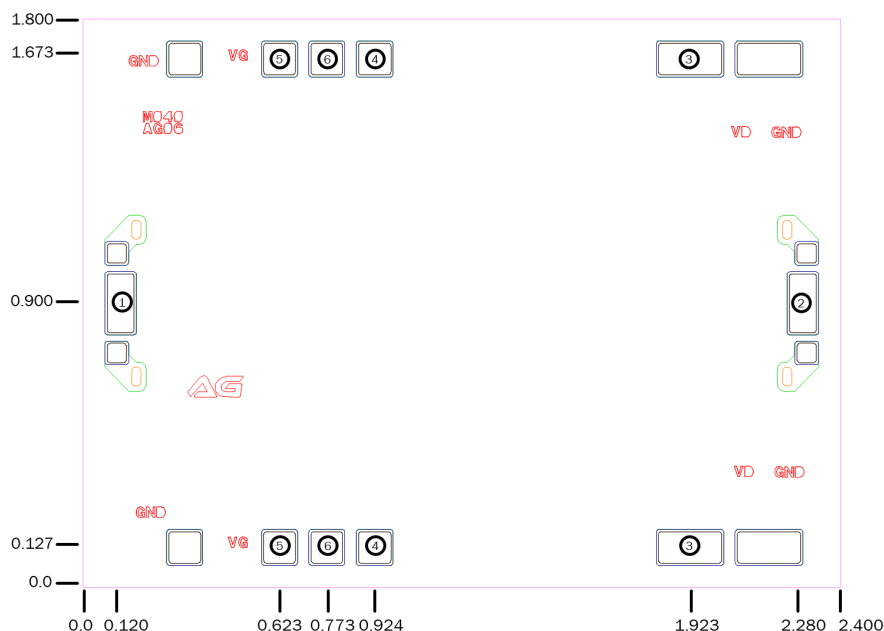
PAE vs Supply Voltage



AM to PM



Outline Drawing (dimensions in mm)



Pad Descriptions

Pad	Function	Pad Size	Description
1	RFIN	100x200 μ m	AC coupled 50 Ω Matched
2	RFOUT	100x200 μ m	AC coupled 50 Ω Matched
3	VD	214x114 μ m	Drain Power Supply voltage, bypass capacitors needed*
4	VD2	114x114 μ m	No connect, Alternate Drain Power Supply voltage
5	VG	114x114 μ m	Gate Power Supply voltage, bypass capacitors needed*
6	VG2	114x114 μ m	No connect, Alternate Gate Power Supply voltage
Die Bottom	GND	Backside	Epoxy/Solder to Baseplate

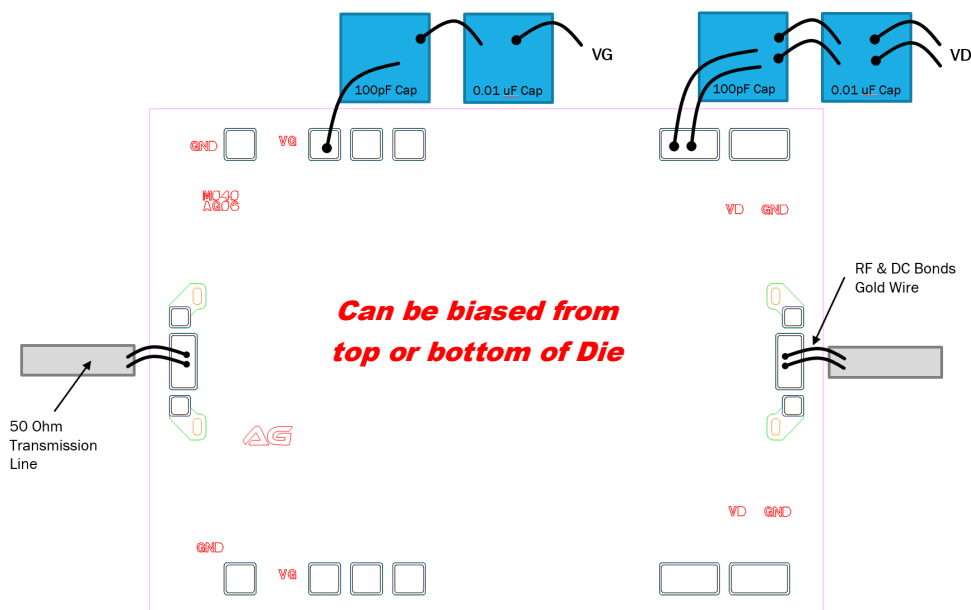
*See Assembly Diagram—Biasing is only required on one side of die

Absolute Maximum Ratings

Drain Bias Voltage (VDD)	+28V 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 100 μ m
2. Backside and Bondpad metallization: 5 μ m gold
3. High thermal conductivity Silver Epoxy or AuSn Eutectic attach MMIC



Die Packaging Information

- GP-4 (Gel-Pak)

Biasing and Operation

The AGM-040 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 -3.0V.
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 -3.0V. I_d should be 0mA.
3. Turn off VD.
4. Turn off VG.

<p>Datasheet vM040.05</p>	<p>Information on this datasheet is believed to be accurate and reliable. Specifications are subject to change without notice</p>	<p>For price, delivery, and to place an order contact: AmpliTech Sales 155 Plant Avenue, Hauppauge, NY 11788 USA Tel. +1 631.521.7831 Order online at www.AmpliTechInc.com</p>	<p>Pg.5</p>
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