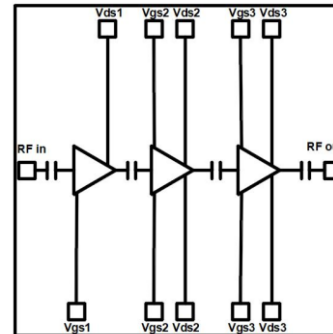


DESCRIPTION

AMCOM's AM408041WN-00 Chip is a broadband GaN MMIC power amplifier. It has 33dB gain, and 42 dBm output power over the 3.75 to 8.25 GHz band. This MMIC is matched to 50 Ohms



FEATURES

- Broadband from 3.75 to 8.25GHz
- Saturated output power Psat is 42dBm
- High gain, 33dB
- Input & output DC blocked and matched to 50 Ohms

APPLICATIONS

- Instrumentation
- Commercial telecom transmission equipment
- Fixed microwave backhaul

TYPICAL PERFORMANCE (AM408041WN-00-R Chip Data)

Parameters	Minimum	Typical **	Maximum
Frequency	4-8 GHz	3.75-8.25 GHz	
Small Signal Gain	29dB	33dB	
Gain Ripple		± 2dB	± 4.0dB
P1dB	35dBm	38dBm	
Psat	39dBm	42dBm	
Psat Efficiency		27%	
Noise Figure		TBD (TBD)	
IP3		TBD (TBD)	
Input Return Loss	10 dB	15dB	
Output Return Loss		5dB	
Thermal Resistance		TBD	

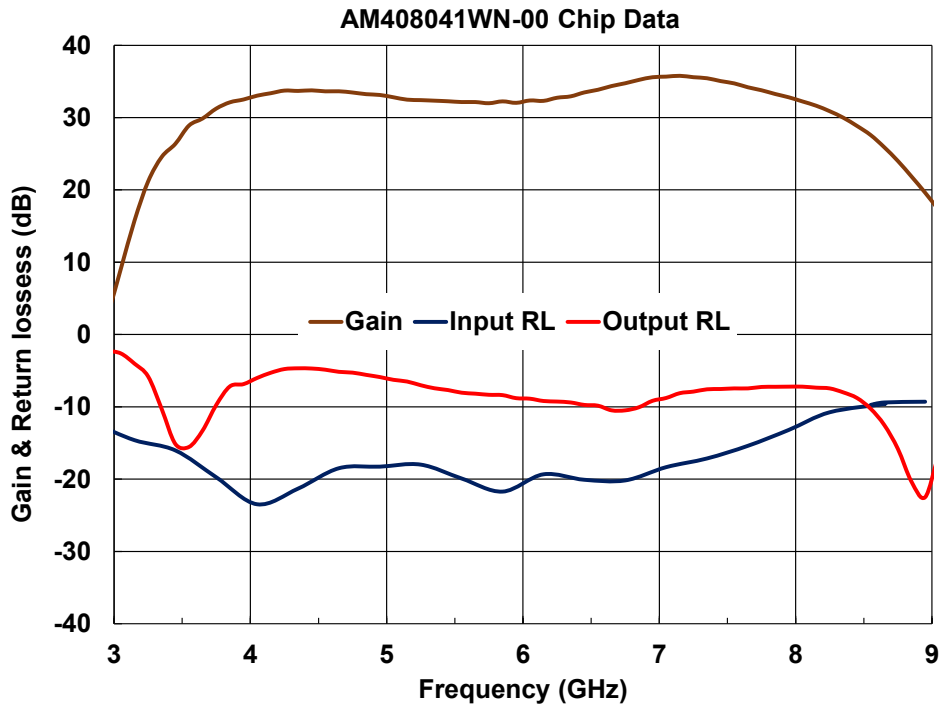
* Specifications subject to change without notice.

** Bias Conditions**: $V_{ds1,2,3} = +28V$, $I_{dsq1} + I_{dsq2} = 0.65A$, $I_{dsq3} = 0.90A$, $V_{gs1} = V_{gs2} = V_{gs3} = -1.8V$.

ABSOLUTE MAXIMUM RATING

Parameters	Symbol	Rating
First & second stage drain voltages	V_{ds1}, V_{ds2}	30V
Second stage drain voltage	V_{ds3}	30V
Gate source voltage	$V_{gs1}, V_{gs2}, V_{gs3}$	-6V
Drain source current	$I_{dsq1} + I_{dsq2}$	1A
Drain source current	I_{dsq3}	1.5A
Continuous dissipation at 25°C	P_t	80W
Channel temperature	T_{ch}	200°C
Operating temperature	T_{op}	-55°C to +85°C
Storage temperature	T_{sto}	-55°C to +135°C

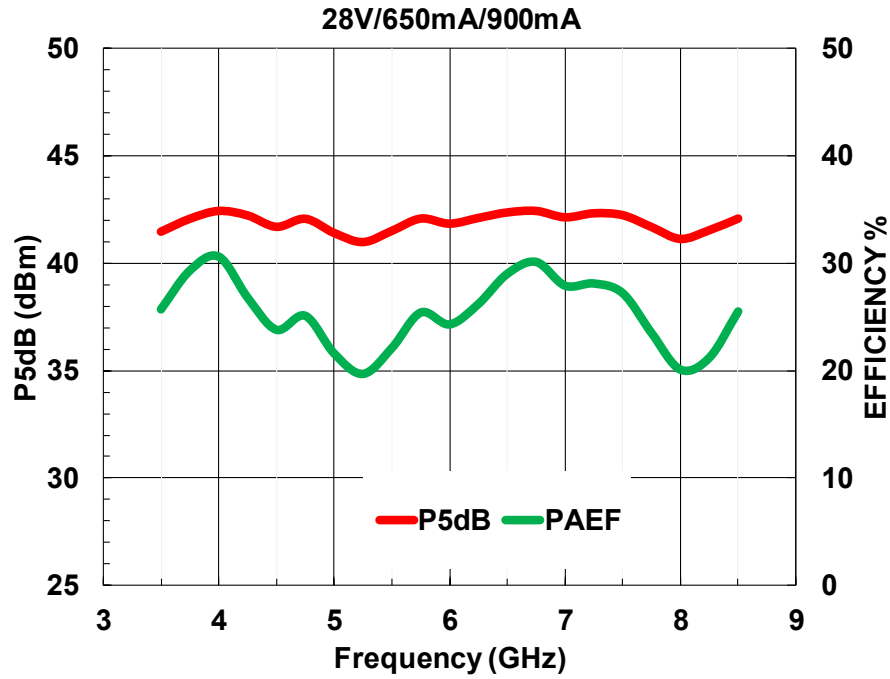
SMALL SIGNAL DATA*



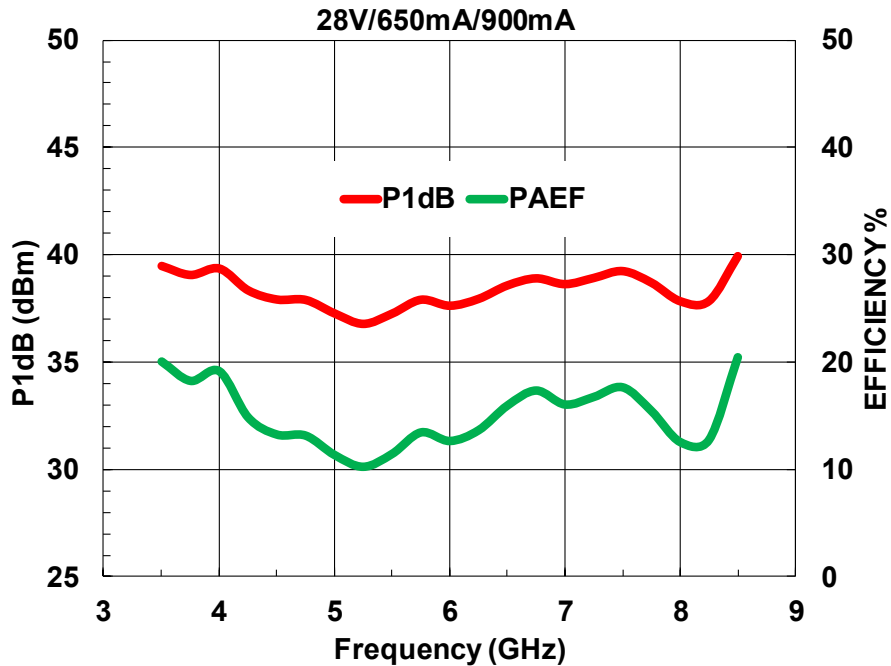
*Bias Conditions**: $V_{ds1, 2, 3} = +28V$, $I_{dsq1} + I_{dsq2} = 0.65A$, $I_{dsq3} = 0.90A$, $V_{gs1} = V_{gs2} = V_{gs3} = -1.8V$.

POWER DATA*

Psat (5dB compression)

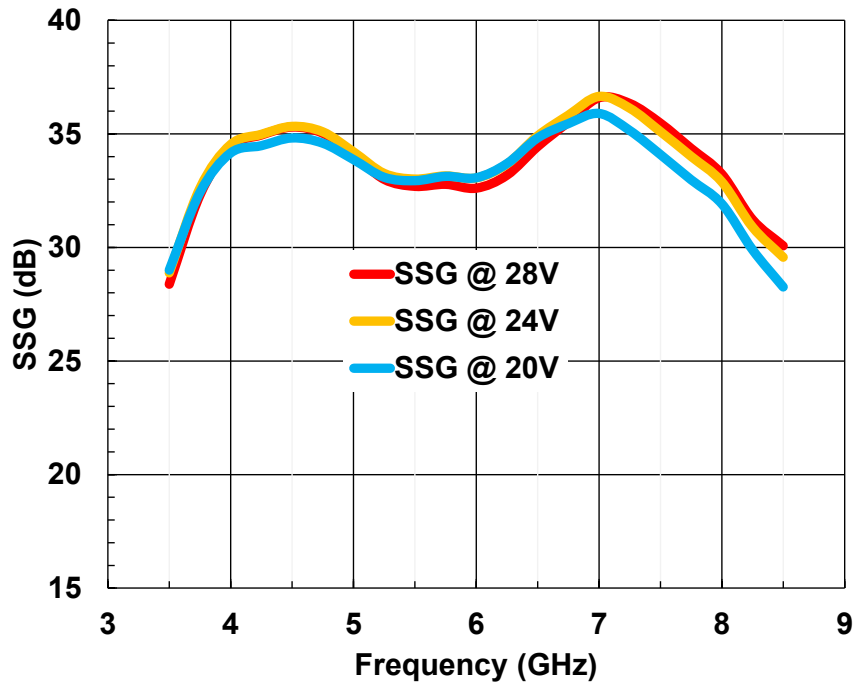
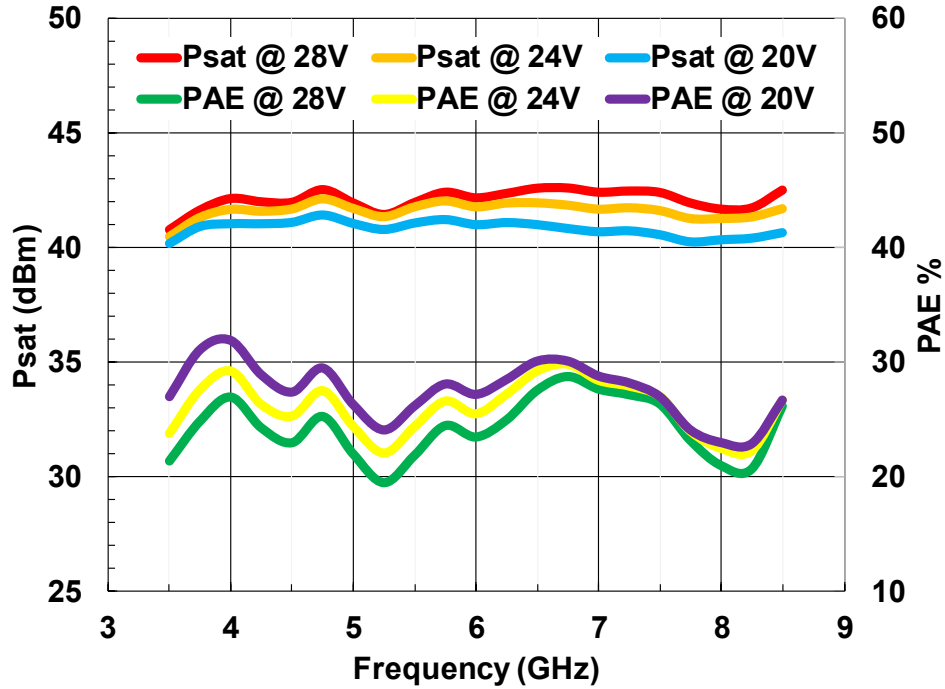


P1dB

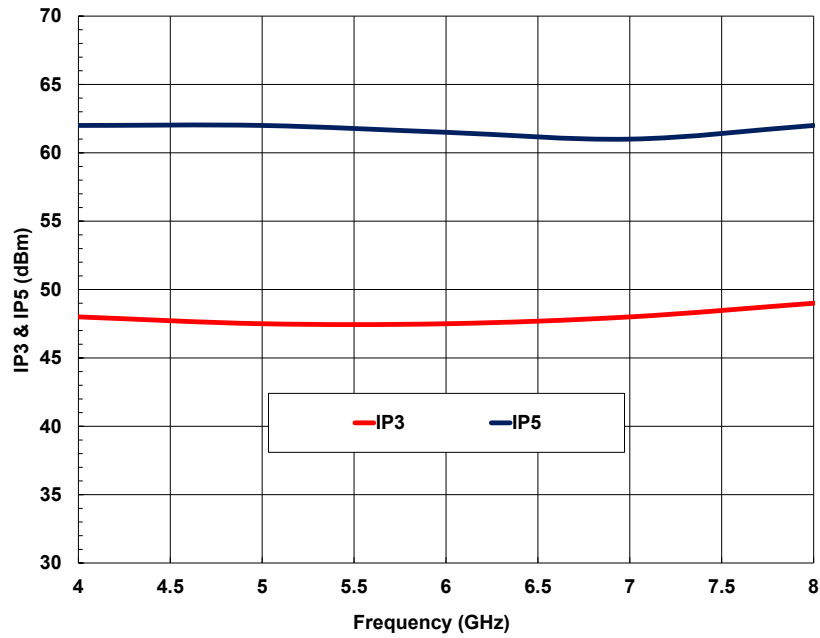


*Bias Conditions**: $V_{ds1, 2, 3} = +28V$, $I_{dsq1} + I_{dsq2} = 0.65A$, $I_{dsq3} = 0.90A$, $V_{gs1} = V_{gs2} = V_{gs3} = -1.8V$.

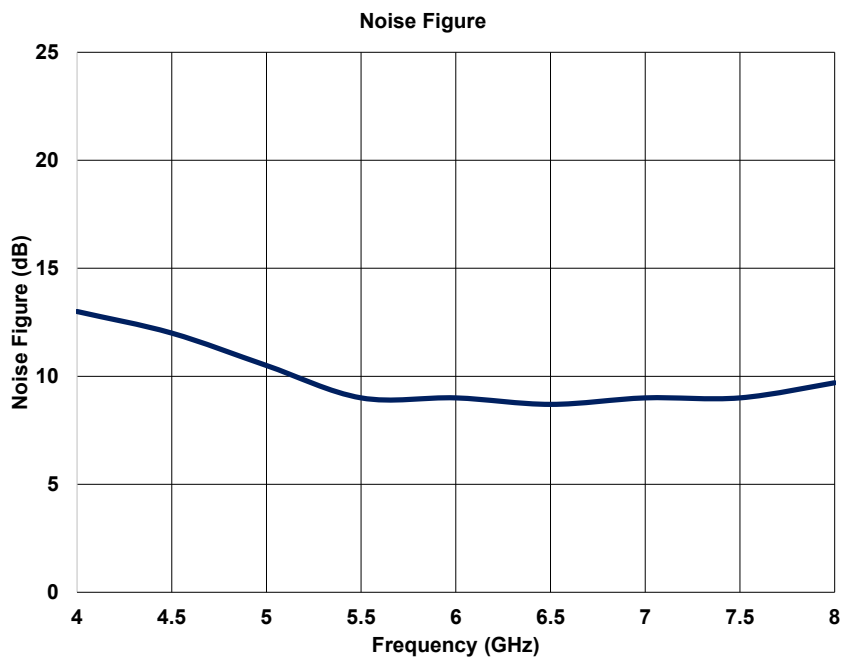
PERFORMANCE VS VOLTAGE



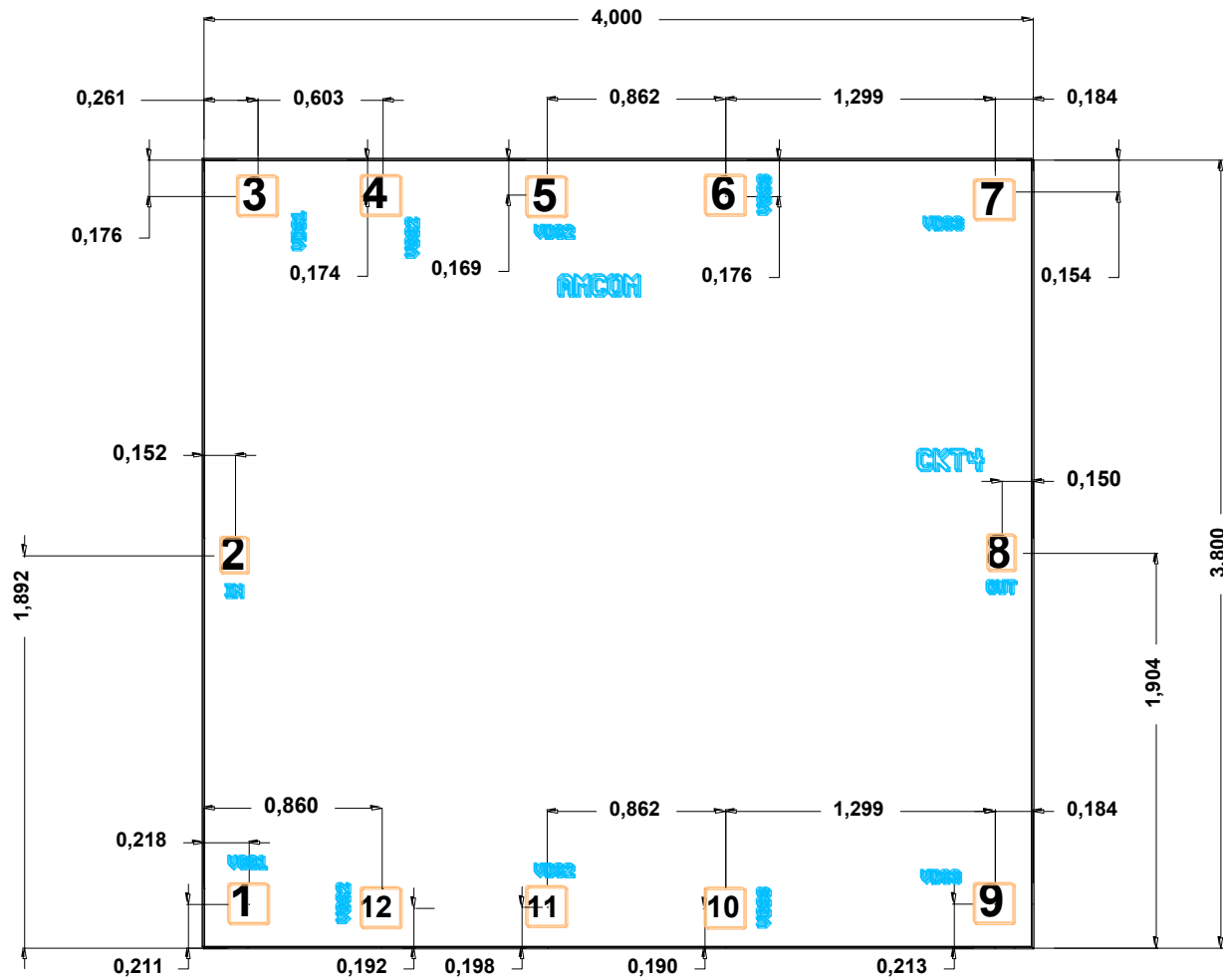
INTERMODULATION DISTORTION



NOISE FIGURE



CHIP OUTLINE

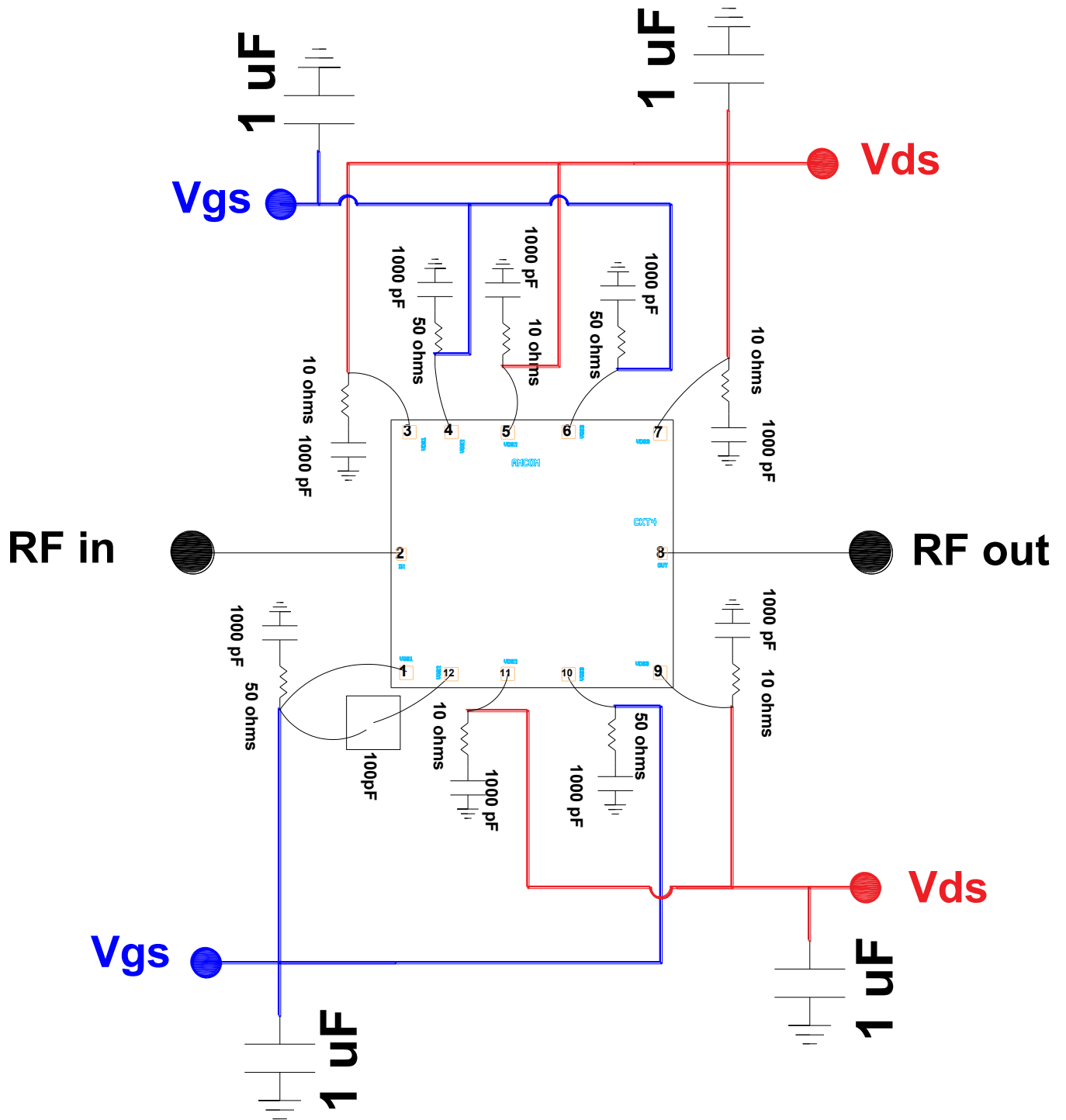


Notes:

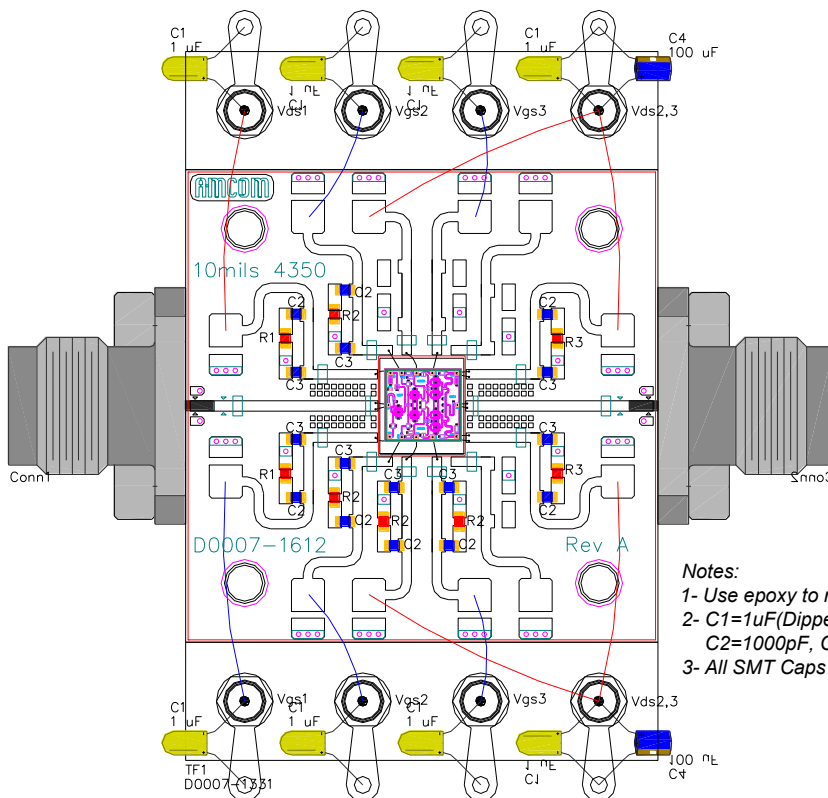
- 1) Dimensions in millimeter
- 2) Chip is 4x3.8 mm
- 3) RF bond pads are 140X180 microns, 50 ohms matched, and DC blocked.
- 4) Drains and Gates pads are all 200x200 microns
- 5) Use eutectic perform for ship assembly

Bond Pad #	Symbol	Voltage
1	Vgs1	-1.8V
2	RF in	-
3	Vds1	+28V
4	Vgs2	-1.8V
5	Vds2	+28V
6	Vgs3	-1.8V
7	Vds3	+28V
8	RF out	-
9	Vds3	+28V
10	Vgs3	-1.8V
11	Vds2	+28V
12	Vgs2	-1.8V

CIRCUIT SCHEMATIC



TEST CIRCUIT (Chip Version)



Notes:

- 1- Use epoxy to mount PCB, and Eutectic soldering to mount chip
- 2- C1=1uF(Dipped Radial Tantalum), C4=100uF(Aluminum Electrolytic)
C2=1000pF, C3=20pF, R1=50ohms, R2=10ohms, R3=5ohms
- 3- All SMT Caps & Resistors are 0402 size

Important Notes:

- 1- Recommended current biases are 220mA for first, 430mA for second stage and 900mA for the third stage. Gate biases of -1.8V are for reference only. Gate voltages could be adjusted to vary the currents going thru drain pins.
- 2- Do not apply drain voltages without proper negative voltages on gates. Otherwise MMIC would fail due to excess heat.
- 3- Eutectic soldering is recommended for chip mounting
- 4- AutoCAD DXF file is available