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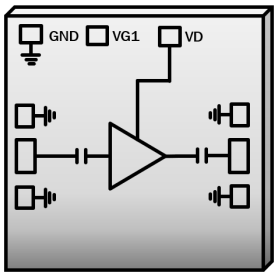
GaAs pHEMT MMIC
2.0 – 4.0GHz Low Noise Amplifier

Typical Applications

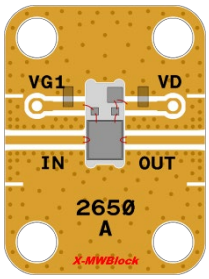
- Test Instrumentation
- S-band Radios
- Telecom Infrastructure
- 5G Base Stations

Features

- Frequency Range: 2.0 – 4.0 GHz
- Noise Figure: 0.8dB
- Gain: 26.5dB
- P1dB: + 11dBm
- Self-Biased: +5V @ 25mA Single Supply
- 50Ω Matched Input/Output DC blocked
- Chip Size: 1.8 x 2.0 x 0.1 mm
- X-MWBlock: XM-D513-0304D







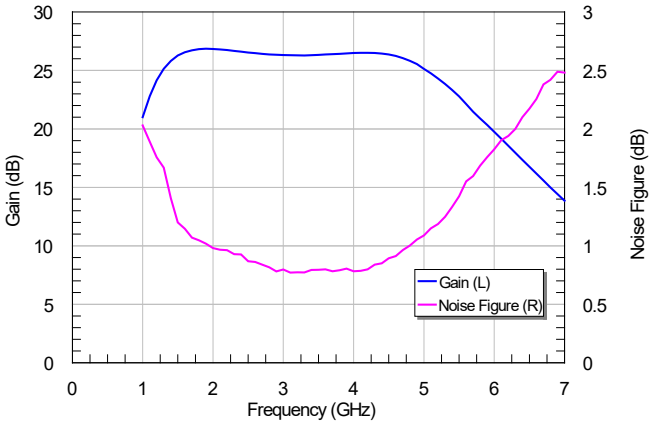
Electrical Specifications (TA = +25°C, VD = +5V, IDD = 25mA)

Parameter	Units	Minimum	Typical	Maximum
Frequency	GHz	1.8		4.7
Gain	dB		26.5	
Gain Flatness	dB		± 0.2	
Noise Figure	dB		0.8	
Input Return Loss	dB		15	
Output Return Loss	dB		15	
P1dB	dBm		11	
Psat	dBm		12	
Supply Voltage (Vdq)	V		+5	
Supply Current	mA		25	
DC Dissipated Power	mW		125	
Package Type			Die	

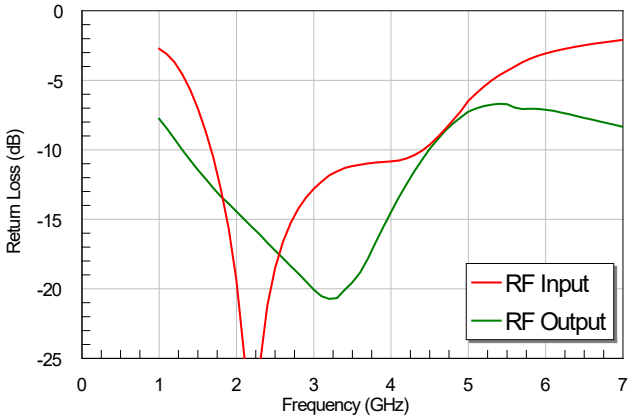
Low Noise Amplifiers - Die

Performance Graphs

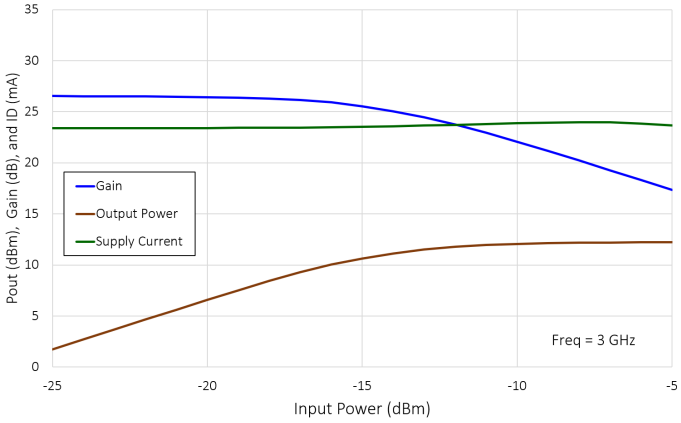
Gain and Noise Figure



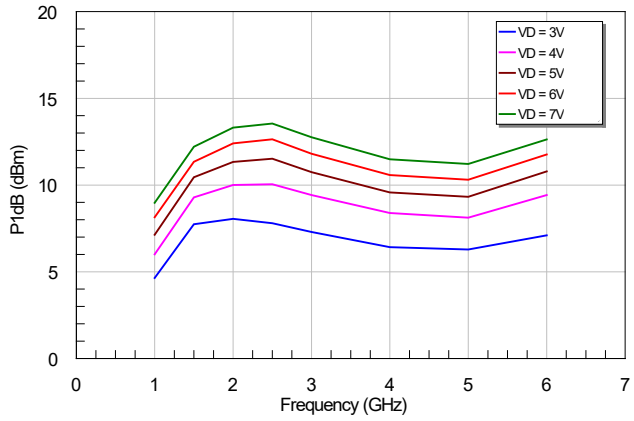
Return Losses



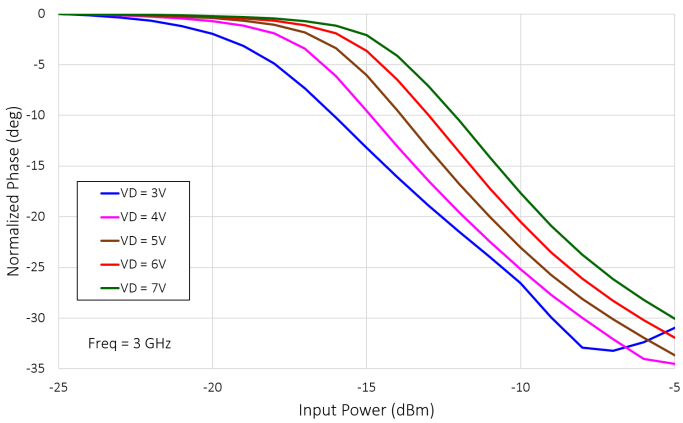
Power Sweep



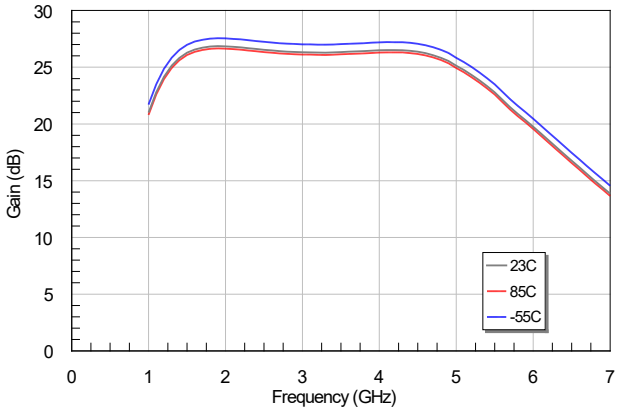
Output Power P1dB



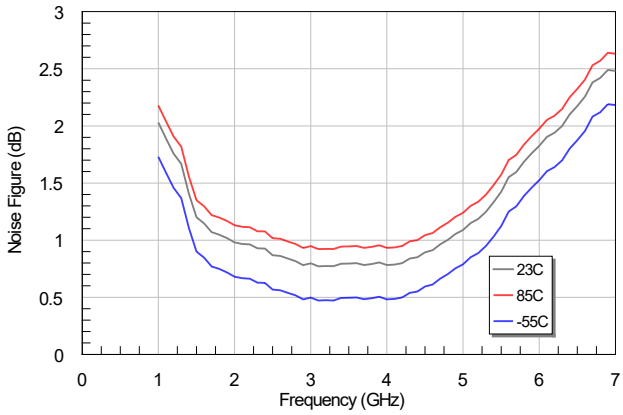
AM to PM



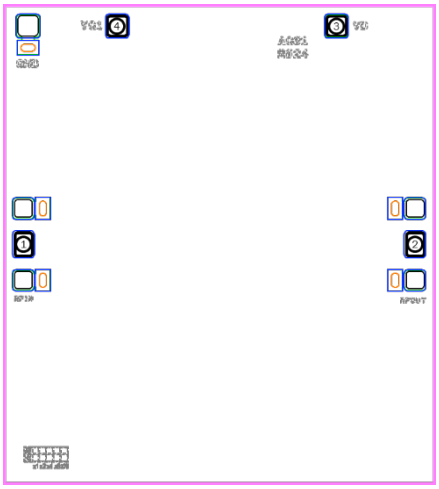
Gain vs Temperature



Noise Figure vs Temperature



Outline Drawing



Pad Descriptions

Pad	Function	Pad Size	Description
1	RFIN	75x100µm	AC coupled 50Ω Matched
2	RFOUT	75x100µm	AC coupled 50Ω Matched
3	VD	85x85µm	Drain Power Supply voltage, bypass capacitors needed*
4	VG1	85x85µm	No connect needed – if AGC function needed vary 0-5V
Die Bottom	GND	Backside	Epoxy/Solder to Baseplate

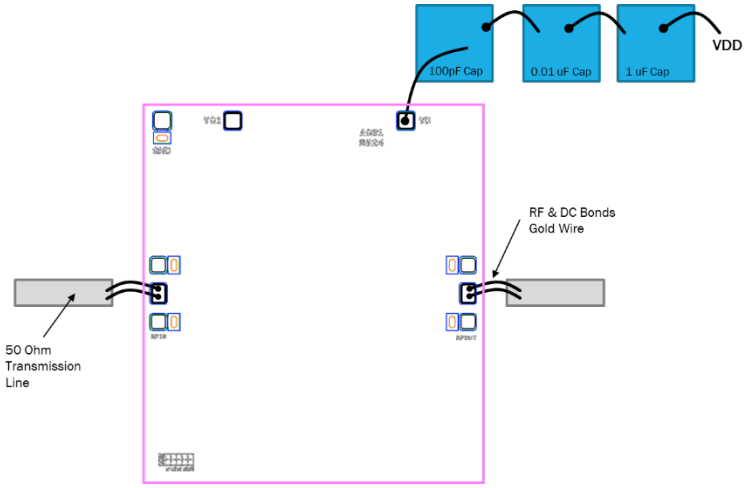
*See Assembly Diagram

Absolute Maximum Ratings

Parameter	Rating
Drain Bias Voltage (VDD)	+9V 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

Assembly Diagram



Assembly Notes:

1. Die Thickness is 100µm
2. Backside and Bondpad metallization: 4µm gold
3. Silver Epoxy or AuSn Eutectic attach MMIC



Die Packaging Information

- GP-4 (Gel-Pak)

Biasing and Operation

The amplifier is biased with a positive drain supply. The preferred biasing procedure is as follows:

Turn ON procedure:
1. Set VD to Vdq.
2. Apply RF signal.

Turn OFF procedure:
1. Turn off RF signal.
2. Turn off VD.

Important Notice

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