

DESCRIPTION

Sanland’s SG208 is a GaAs pHEMT single ended MMIC RF amplifier IC featuring 25dB of gain and low noise. This high linearity IC is designed to support Fiber to The Home (FTTH) applications, as well as Satellite, Terrestrial TV and Cable Modems applications from 47MHz to 1218MHz. The SG208 is powered by a single 5V to 8V supply and packaged in 3 x 3 QFN.

Major Applications

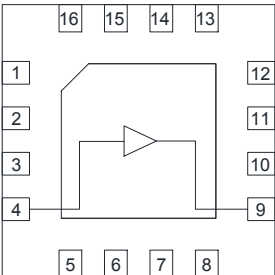
- DOCSIS 3.1
- Head End CMTS Equipment
- Optical Nodes and Amplifier
- Satellite Low Noise Amplifier
- FTTH GPON and GEPON
- Cable Modem and Set Top Box
- Single Ended Gain Block

KEY FEATURES

- 47 MHz to 1218 MHz Operation
- 5 V & 8V Operation
- Gain: 25 dB Typical
- Noise Figure: 1.0 dB @1200MHz
- RoHS Compliant



Pin Assignment



Pin Details

Pin	Name	Function
4	RF in	RF Input
9	RF out	RF Output/Bias
1,2,3,5,6,7,8,10,11,12,13,14,15,16	GND	Ground

Absolute Maximum Ratings

Important Note:

The information provided in this datasheet is deemed to be accurate and reliable only at present time. Sanland Technology Corp. reserves the right to make any changes to the specifications in this datasheet without prior notice.



Caution: ESD Sensitive
Appropriate precaution in handling, packaging
And testing devices must be observed.

Parameter	Rating	Unit
Supply Voltage (VDD)	+10	V
Supply Current (I _{DD})	170	mA
Maximum RF Input Level	+60	dBmV
Operating Ambient Temperature	-40~100	°C
Storage Temperature	-65~150	°C
Max. Junction Temp. (T _J)	+150	°C

Electrical Specifications at +5 V

Temp = +25 ° C, VDD = +5V, 75Ω system, Full band unless otherwise noted

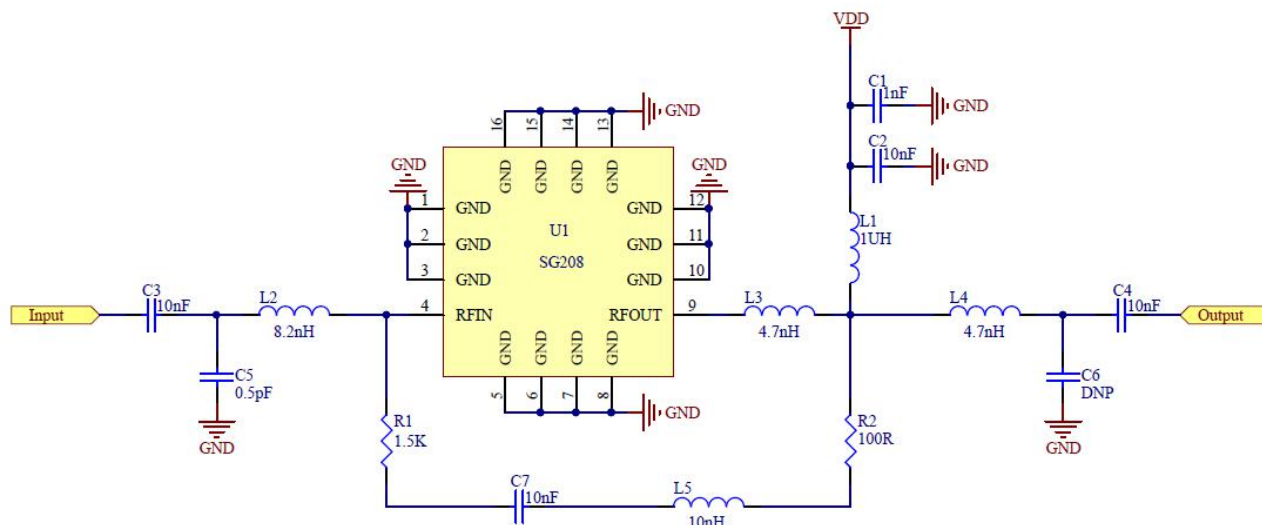
Parameter	Specification			Unit	Notes
	Min	Typ.	Max		
Frequency	47	-	1218	MHz	
Supply Voltage (VDD)		5		V	
Supply Current (IDD)		72		mA	
Gain		24.8		dB	
Gain Slope		0.6		dB	
Reverse Isolation		27		dB	
Input return loss	16	19		dB	
Output return loss	16	20		dB	
Noise Figure		0.7	1.0	dB	
OIP2L		50		dBm	Tone Spacing=50MHz F1=400MHz, F2=450MHz, +5dBm / tone output
OIP2U		50		dBm	
OIP3	35	37		dBm	Tone Spacing=1MHz, +5dBm / tone output
OP1dB		20.5		dBm	
Thermal Resistance		57		°C/W	

Electrical Specifications at +8 V

Temp = +25 ° C, VDD = +8 V, 75Ω system, Full band unless otherwise noted

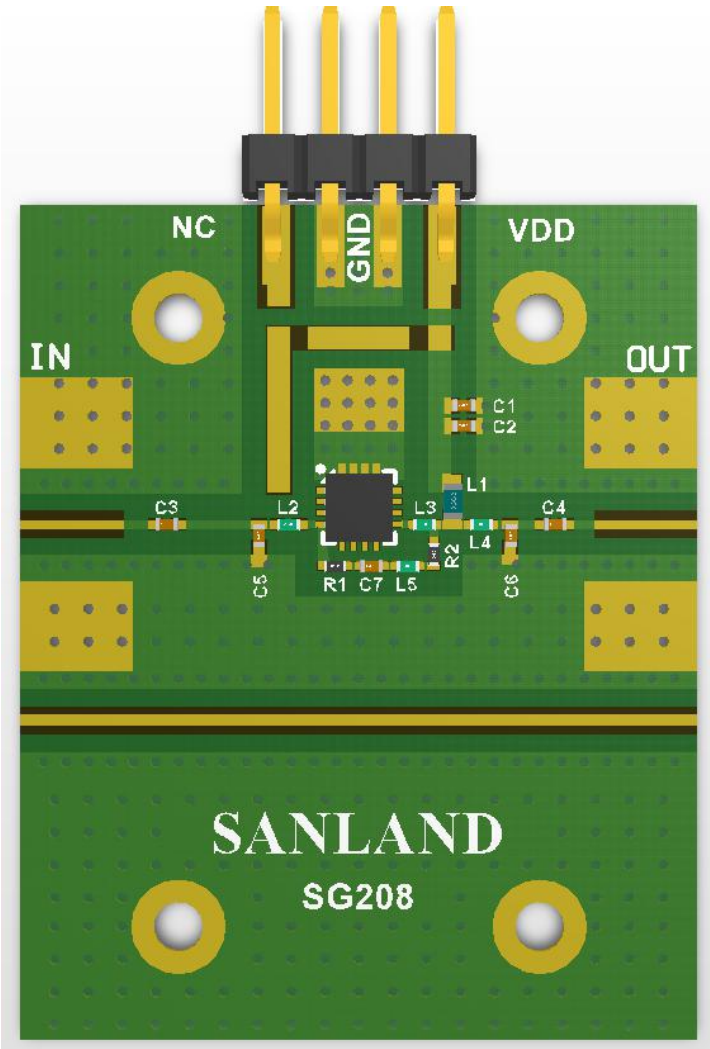
Parameter	Specification			Unit	Notes
	Min	Typ.	Max		
Frequency	47	-	1218	MHz	
Supply Voltage (VDD)		8		V	
Supply Current (IDD)		112		mA	
Gain		25		dB	
Gain Slope		0.5		dB	
Reverse Isolation		27		dB	
Input return loss	17	22		dB	
Output return loss	16	20		dB	
Noise Figure		0.8	1.1	dB	
OIP2L		60		dBm	Tone Spacing=50MHz F1=400MHz, F2=450MHz, +9dBm / tone output
OIP2U		55		dBm	
OIP3	36.3	39		dBm	Tone Spacing=1MHz, +9dBm / tone output
OP1dB	23	24		dBm	
Thermal Resistance		57		°C/W	

Application Circuit



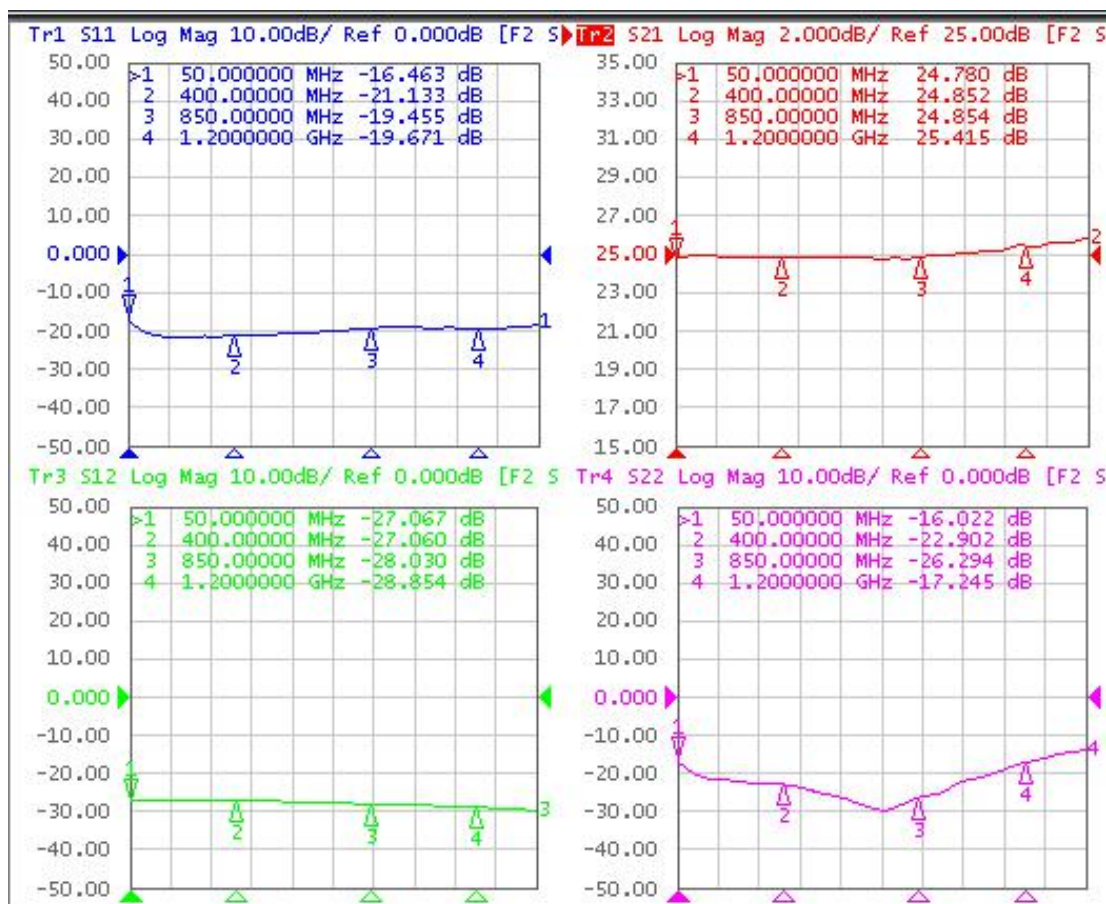
Component	Value	Size	Vendor	Part Number
U1	-	-	SANLAND	SG208
PCB	-	-	SANLAND	-
C1	1nF	0402	MURATA	GRM1555C1H102JA01D
C2,C3,C4,C7	10nF	0402	MURATA	GRM1555C1E103JE01D
C5	0.5pF	0402	MURATA	GRM1555C1HR50CA01D
L1	1uH	0603	FH	FHW0603UF1R0JST
L2	8.2nH	0402	MURATA	LQG15HS8N2S02D
L3,L4	4.7nH	0402	MURATA	LQG15HS4N7S02D
L5	10nH	0402	MURATA	LQG15HS10N0S02D
R1	1.5K	0402	UNI-ROYAL	0402WGF1501TCE
R2	100R	0402	UNI-ROYAL	0402WGF1000TCE
C6	Not Populated			

Evaluation Board Assembly Drawing



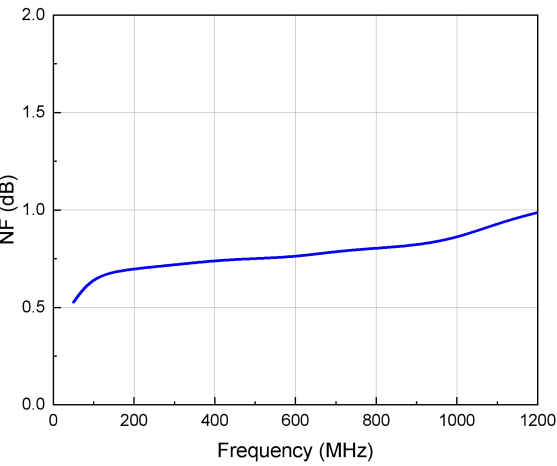
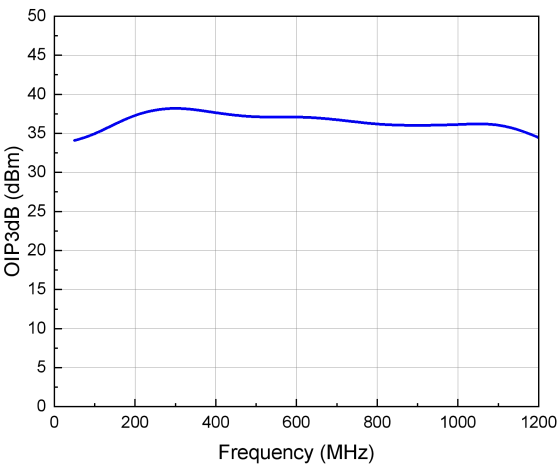
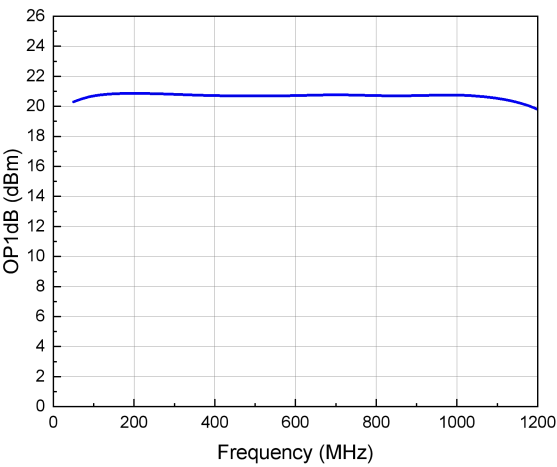
Performance Data at +5V

(VDD = +5V, Temp = +25C, Zo = 75Ω)



Performance Data at +5V

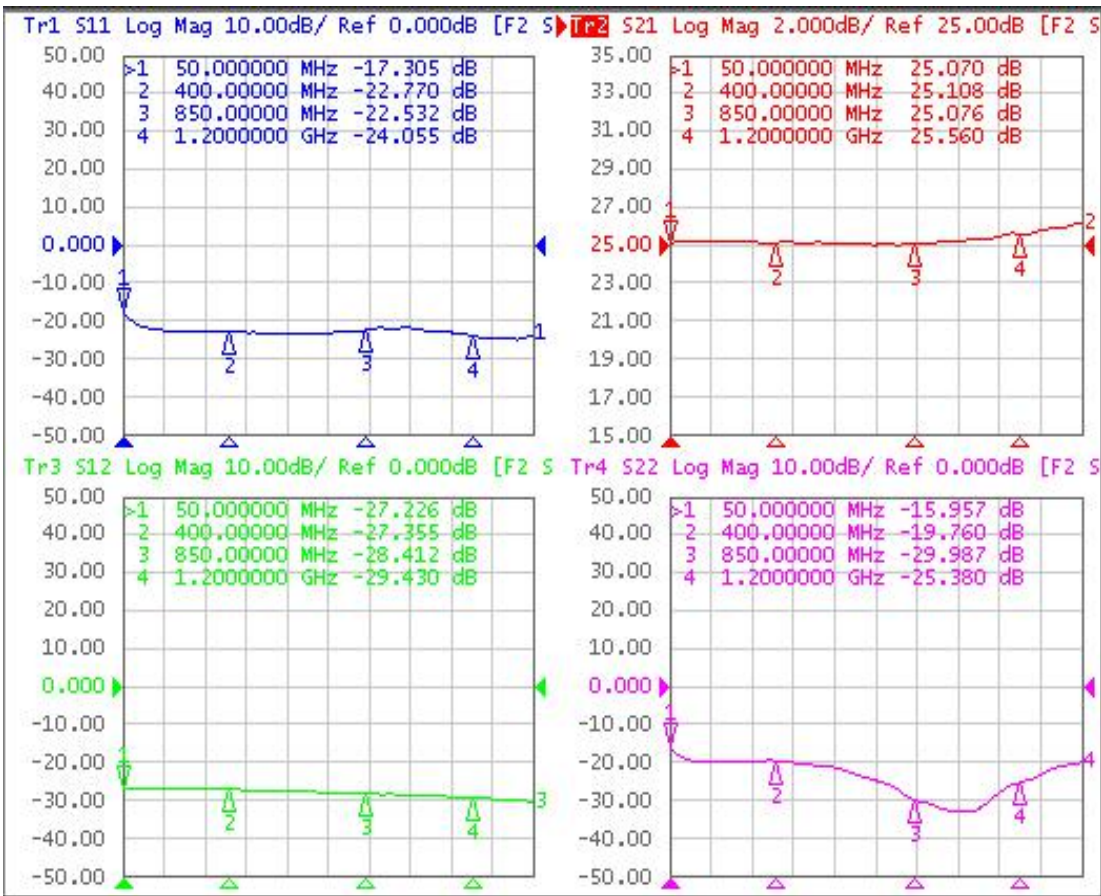
(VDD = +5V, Temp = +25C, Zo = 75Ω)



Note:
(1) OIP3: +5dBm / tone output

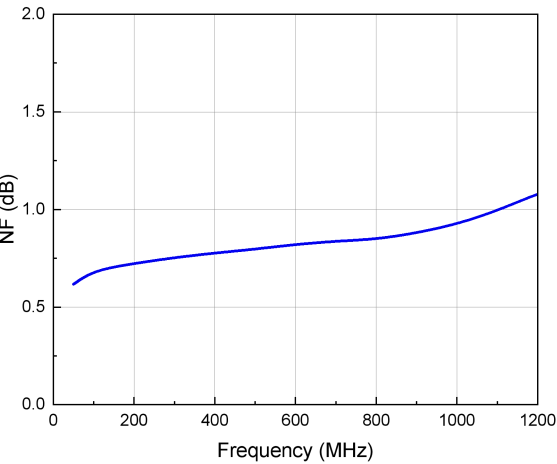
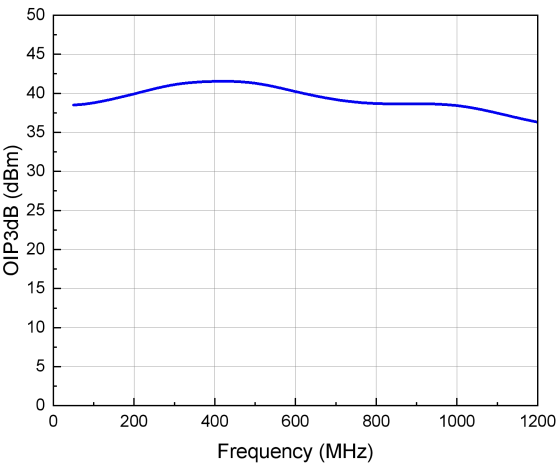
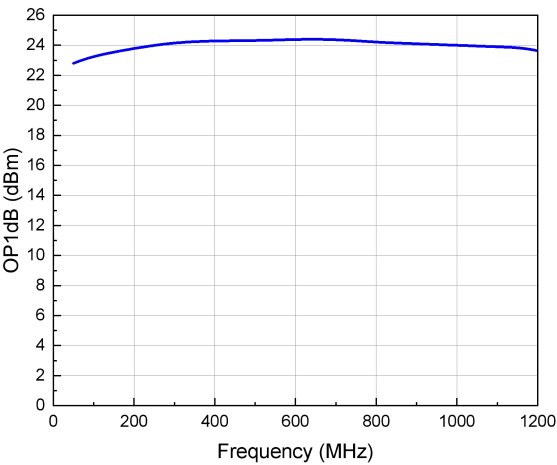
Performance Data at +8V

(VDD = +8V, Temp = +25C, Zo = 75Ω)



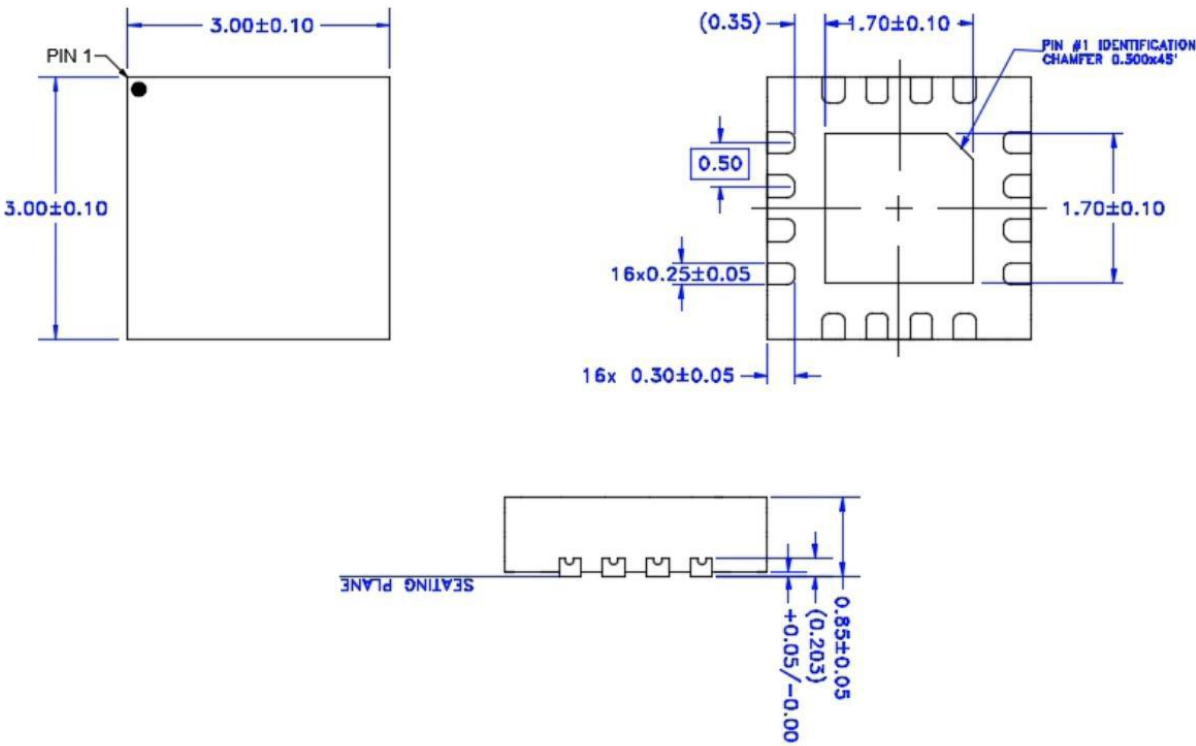
Performance Data at +8V

(VDD = +8V, Temp = +25C, Zo = 75Ω)



Note:
(1) OIP3: +9dBm / tone output

Package Outline



3 x 3 16-pin QFN

Recommended Mounting Pattern

