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Variable Gain Amplifier AGC1011

DESCRIPTION

Sanland's AGC1011 is a variable Gain Amplifier with digital Attenuator. . The Amplifier has low noise and high linearity achieved through the use of 0.5um GaAs Enhancement-mode pHEMT process. It is housed in a miniature 4.0 x 4.0 mm 24-pin Quad-Flat-Non-Lead (QFN) package. It is designed for optimum use from 0.05GHz up to 1.2GHz. The compact footprint and low profile coupled with low noise, high gain and high linearity make the AGC1011 an ideal choice as a low noise amplifier for CATV network and FTTH network.
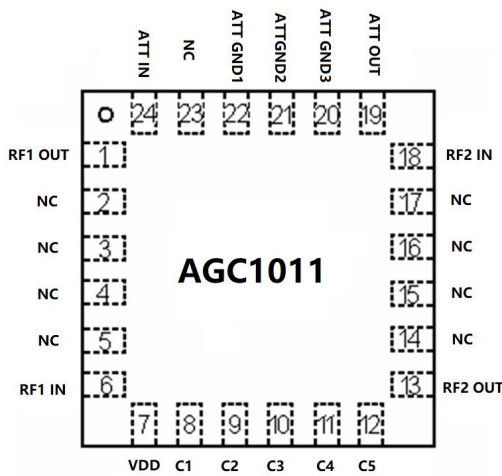
Major Applications

•CATV Network
•FTTH Network
•PON ONU

KEY FEATURES

- 40-1218MHz operating frequency range
- High linearity, 60dBc CTB/CSO 135 Channels @ +20dBmV/ch
- 41dB Gain at 55MHz；41.5dB Gain at 1218MHz
- High dynamic gain range, 24dB Gain Control Range,
- Support 12dBm optical range Single supply, Single +5V Supply
- Low power consumption, 180mA for one RF output at 5V supply voltage
- Lead-free/RoHS compliant QFN4X4-24L package

Pb RoHS Compliant & Green Package

Pin Assignment

Pin Details

Pin	Name	Description	Pin	Name	Description
1	RF1 OUT	AMP1 RF IN PORT	13	RF2 OUT	AMP2 RF OUT PORT
2	N/C	Not connected	14	N/C	Not connected
3	N/C	Not connected	15	N/C	Not connected
4	N/C	Not connected	16	N/C	Not connected
5	N/C	Not connected	17	N/C	Not connected
6	RF1 IN	AMP1 RF IN PORT	18	RF2 IN	AMP2 RF IN PORT
7	VDD	ATT Supply voltage	19	ATT OUT	ATT Inter RF OUT
8	C1	ATT Control 1	20	ATT GND3	ATT RF GND3
9	C2	ATT Control 2	21	ATT GND2	ATT RF GND2
10	C3	ATT Control 3	22	ATT GND1	ATT RF GND1
11	C4	ATT Control 4	23	N/C	Not connected
12	C5	ATT Control 5	24	ATT IN	ATT Inter RF IN

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Absolute Maximum Ratings

Parameter	Rating	Unit
DC Power Supply	+5.5	V
Max. Input Power	-10	dBm
Operating Ambient Temperature	-40 to +85	℃
Storage Temperature	-65 to +150	℃
Max. Junction Temp. (TJ)	+150	℃
MSL	Level 2	
Operation beyond any one of these limits may cause permanent damage.		

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.

Electrical Characteristics for Application

(VDD =+5V; unless otherwise noted.)

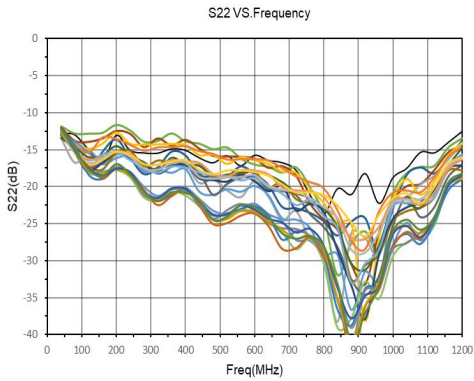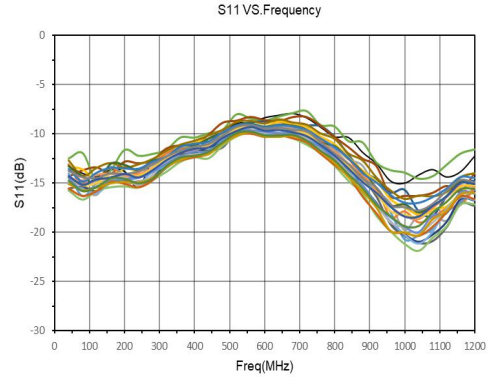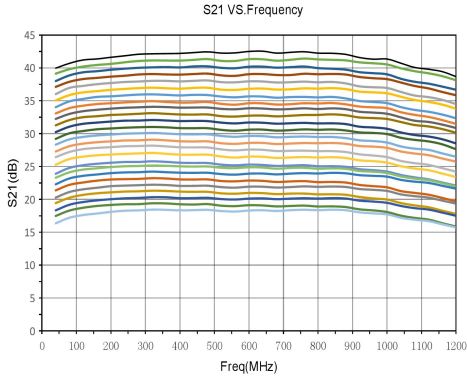| Parameter	Specification			Units	Notes
	Min	Typ.	Max		
Freq	0.05	-	1.218	GHz	50-1.218GHz
Gain	-	41	-	dB	50-1.218GHz
Gain Control Range	-	24	-	dB	0-24
P-1dB	-	20.5	-	dB	At 500MHz/5dBm
OIP3	-	34	-	dB	At 500MHz/5dBm
Output return loss	-	-15	-	dB	50-1.218GHz
NF	-	0.5	0.69	dB	At 500MHz/5dBm
VDD	-	5	-	V	-
IDD	160	180	200	mA	Vdd = 5.0V
Test Conditions: VDD=5V, IDD=55mA Typ. OIP3 Tone Spacing=1MHz, Pout per ton=+5 dBm					
TL=25℃, ZS=ZL=50 Ohms					

1. All measurements in a 75 Ohm system, unless otherwise specified.
2. Specified at maximum gain.
3. When the control voltage is changed, the attenuation is changed,Attenuation gain deviation is ± 1.5dB
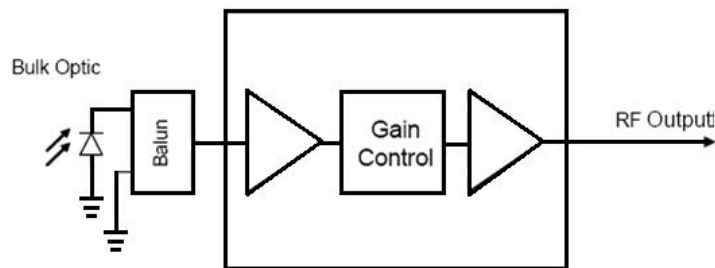
Voltage and attenuation value comparison table

Control Voltage					Attenuation
C1	C2	C3	C4	C5	RF1-RF2
Low	Low	Low	Low	Low	0
High	Low	Low	Low	Low	1dB
Low	High	Low	Low	Low	2dB
High	High	Low	Low	Low	3dB
Low	Low	High	Low	Low	4dB
High	Low	High	Low	Low	5dB
Low	High	High	Low	Low	6dB
High	High	High	Low	Low	7dB
Low	Low	Low	High	Low	8dB
High	Low	Low	High	Low	9dB
Low	High	Low	High	Low	10dB
High	High	Low	High	Low	11dB
Low	Low	High	High	Low	12dB
High	Low	High	High	Low	13dB
Low	High	High	High	Low	14dB
High	High	High	High	Low	15dB
High	High	High	Low	High	16dB
Low	Low	Low	High	High	17dB
High	Low	Low	High	High	18dB
Low	High	Low	High	High	19dB
High	High	Low	High	High	20dB
Low	Low	High	High	High	21dB
High	Low	High	High	High	22dB
Low	High	High	High	High	23dB
High	High	High	High	High	24dB

Note: V_{low}=0~0.5V @100µA Max
V_{high}=+3 to +5V @100µA Max
Vdd=5V±0.2V@5mA Max（PIN7）

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Typical Peformance (+25℃)

S21 VS.Frequency

S11 VS.Frequency

S22 VS.Frequency

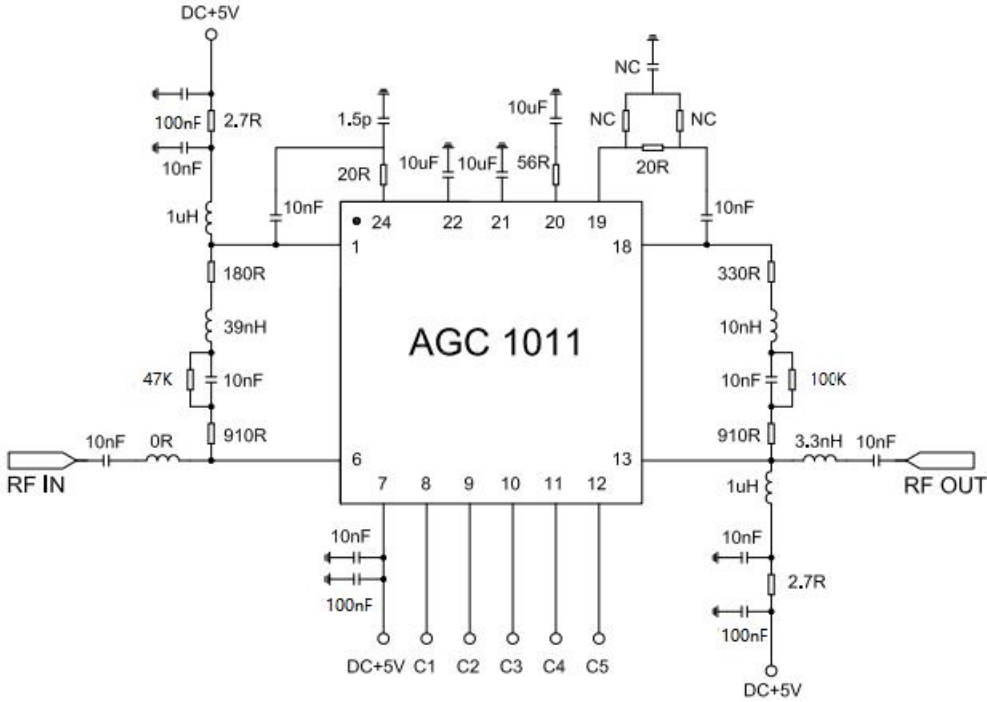## Application Schematic

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Application Circuit

QFN4X4-24L Package Outline Dimension

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