GaAs IC 1800 MHz
High Dynamic Range Amplifier

AL107-84

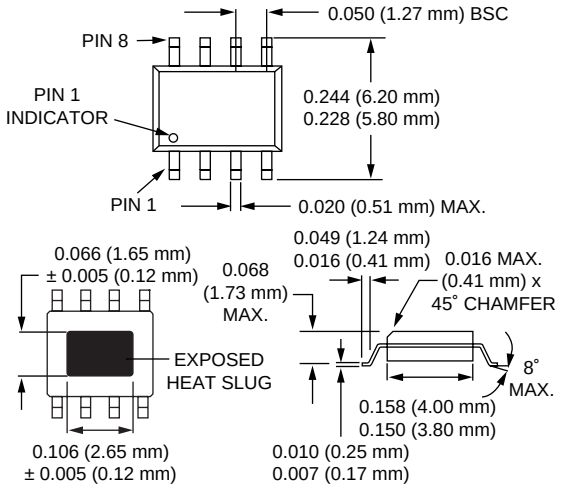
Features

- +33 dBm Output IP3
- 2.9 dB Noise Figure
- Single +5 V Supply
- Input and Output Matched to 50 Ω
- Ideal for Cellular Applications

Description

The AL107-84 is a high dynamic range amplifier for 1800 MHz applications. The amplifier has high input IP3 of 21 dBm, low noise figure of 2.9 dB and operates from a single positive bias of +5 V. External resistor sets the amplifier drain current. No external matching elements are required. As a low noise driver amplifier it is ideally suited for 1800 MHz wireless base station applications. The AL107-84 is encapsulated in SOIC-8 package with slug for improved heat dissipation and reliability.

SOIC-8 with Slug

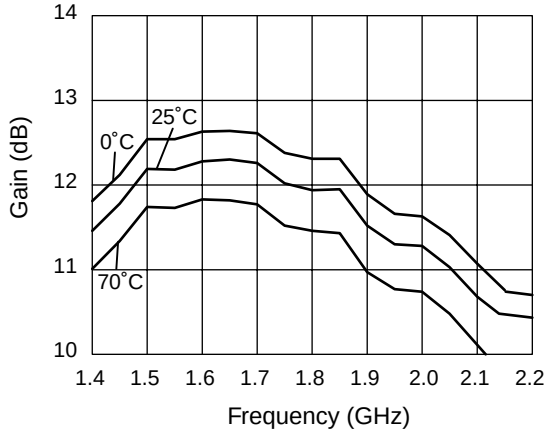


Electrical Specifications at 25°C

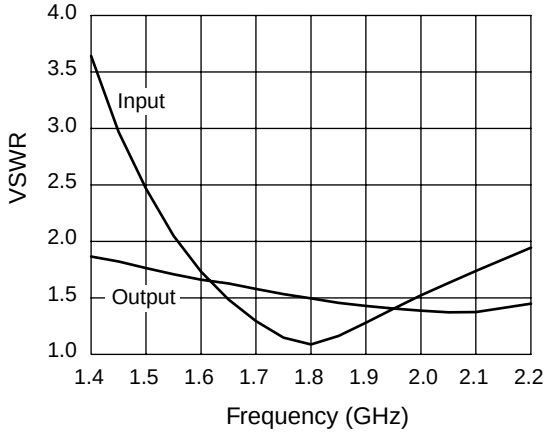
Parameter[1]	Condition	Frequency	Min.	Typ.	Max.	Unit
Small Signal Gain		1700-1900 MHz	10.5	12		dB
Input $P_{-1\ dB}$		1800 MHz		8		dB
Input IP3	P_{IN} = -5 dBm	1800 MHz	18	23		dBm
Noise Figure		1700-1900 MHz		2.9		
Reverse Isolation		1700-1900 MHz		22		dB
Input VSWR		1700-1900 MHz		1.5:1	1.8:1	dB
Output VSWR		1700-1900 MHz		1.8:1	2.1:1	

1. Test condition V_D = +5 V, I_D = 65 mA.

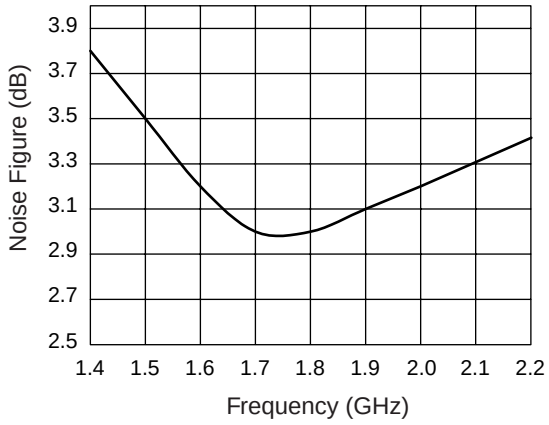
Typical Performance Data at 25°C



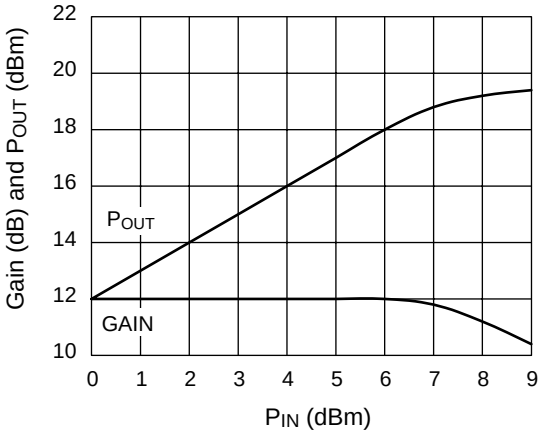
Gain vs. Frequency Over Temperature



Input and Output vs. Frequency

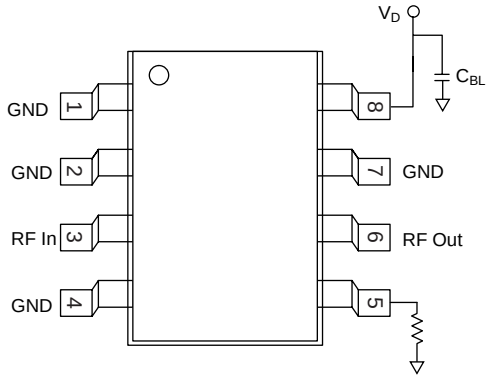


Noise Figure vs. Frequency



P_{OUT} and Gain vs. P_{IN} 1750 MHz

Pin Out



Pin Configuration

Terminal	Symbol	Function
1	GND	Ground
2	GND	Ground
3	RF In	RF Input
4	GND	Ground
5	R	Current Set External Resistor
6	RF Out	RF Output
7	GND	Ground
8	V_D	+5 V Supply Through Bypass Cap

Power Supply and Current Settings

V_D of +5 V is fed to pin 8. A 100 pF bypass capacitor should be placed as close as possible to the lead. The current can be set 50-80 mA by changing value of the external resistor connected to pin 6. Typical values for the resistor (R) are 12–24 Ω.

Absolute Maximum Ratings

Characteristic	Value
Drain Voltage (V_D)	7 V
Current (I_D)	100 mA
Input Power (P_{IN})	20 dBm
Operating Temperature (T_{OP})	-30 to +100°C
Storage Temperature (T_{ST})	-65 to +120°C