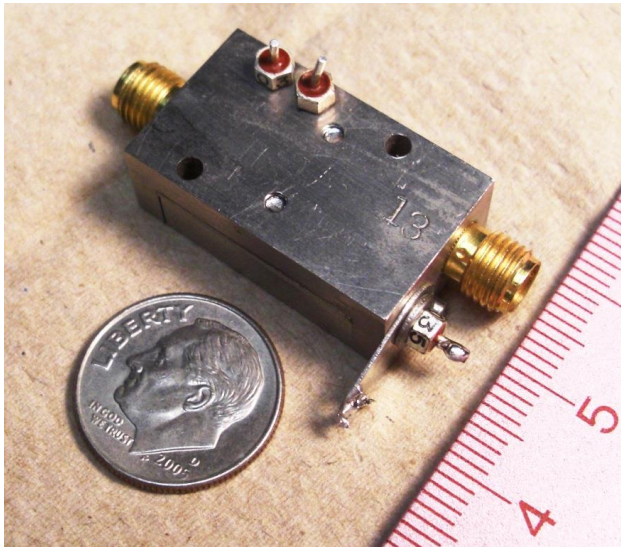


## Features

RF Frequency:	0.001 to 1.5 GHz
Gain @ 20K:	44dB $\pm$ 1dB (0.3-1.5 GHz), typical > 30 dB (.001 to 5 GHz)
Noise temperature @ 20 K:	<6K .001 to 1.5 GHz, < 10K to 5 GHz
Noise figure @ 20 K:	< 0.11 dB, typical .0001 to 1.5 GHz
Noise figure @ 300K	<1.5dB from .0001 to 5 GHz
IRL (-20log   S11  )	> 15 dB (0.1 - 1.5 GHz),
ORL (-20log   S22  )	> 15 dB (0.1 - 1.5 GHz)
Operating temperature:	4.2 K- 320 K
DC power @300K	4V, 21mA, 84mW
DC power @ 17 K:	3V, 12mA, 36 mW
Output power for 1 dB compression	-3 dBm
Safe input power level	< 0 dBm



## Description

The CITLF1 a SiGe low noise amplifier intended for extremely low noise cryogenic applications. The amplifier utilizes resistive feedback to achieve good input match (S11) and high gain stability. The amplifier is optimum for the frequency range of 0.1 MHz to 1500 MHz but has high gain and low noise to 5 GHz.

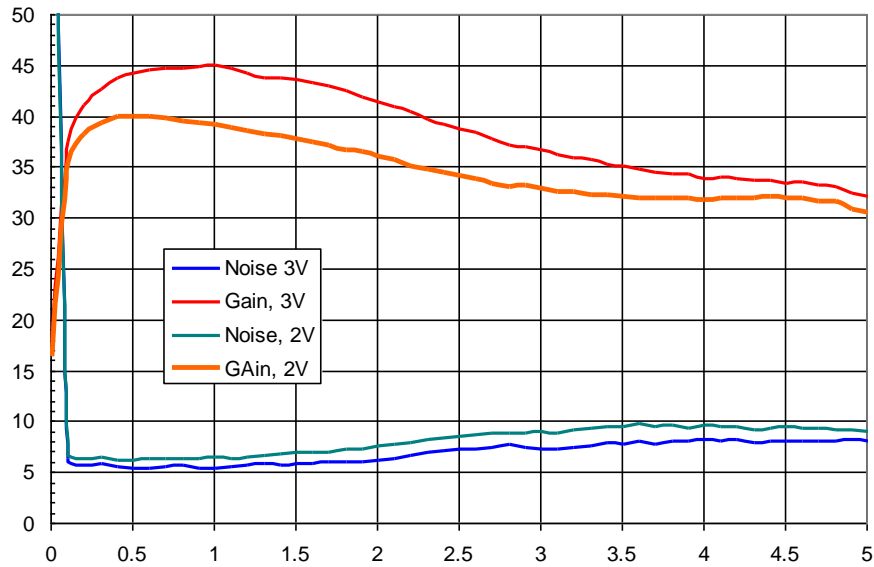
It is powered from a single positive DC supply which is optimum at 3V but can be reduced to as low as 1.1V for low power dissipation. Application of up to 6V will not damage the amplifier. It is recommended that the power supply for the amplifier be current limited to 100mA. A series resistor may be used. For example, 150 ohms to a +5V supply will provide 3V, 13mA when the amplifier is at 20K.

The amplifier offers an optional DC bias tee for an external device connected to the amplifier input. The bias tee is formed by two 20K resistors connected to the input; one can be used as a source of current and one the sense the voltage across the external device. Voltages applied to the bias tee have no effect on amplifier operation.

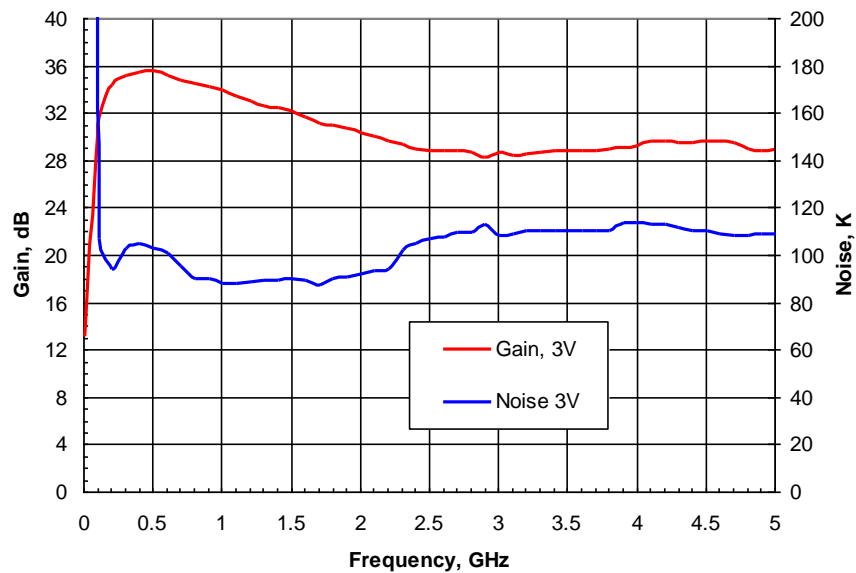
The amplifier is 20.7mm x 15.9mm x 8.7mm excluding connectors with input SMA at left and output SMA at right as shown above.

## Typical Test Results

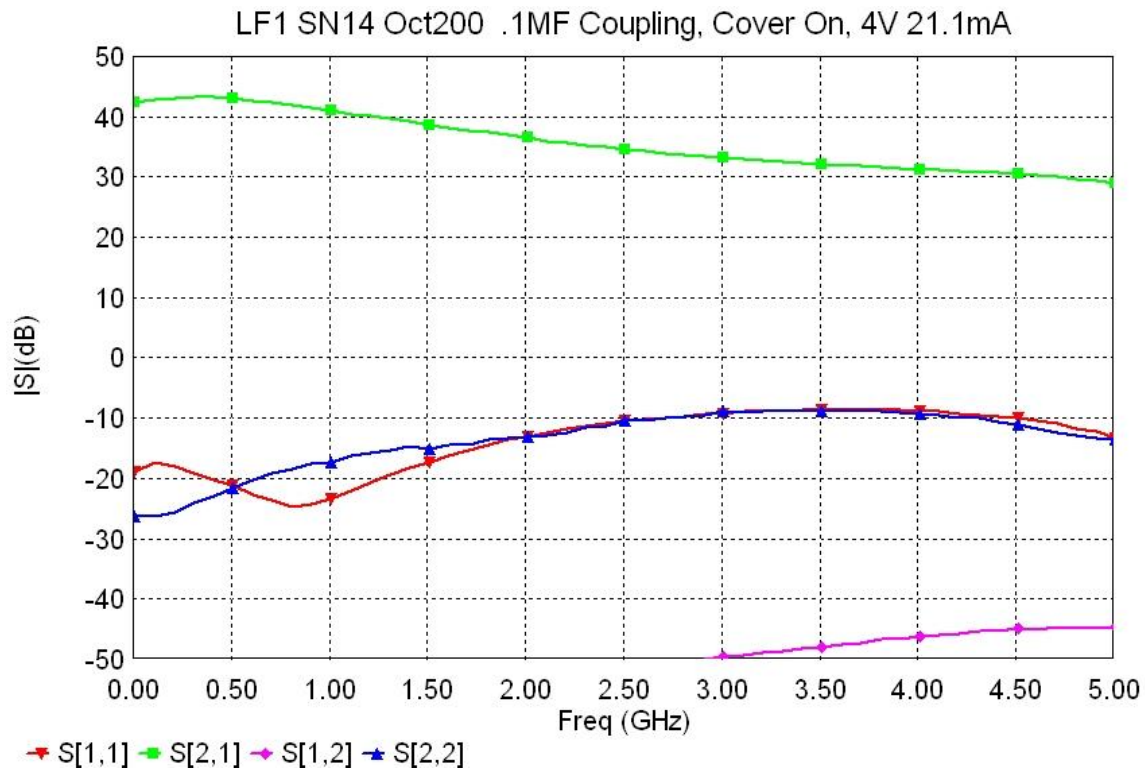
**LF1 Noise and Gain at 19K**  
DC Bias, 2V 6mA and 3V 12mA, Oct 17, 2009



**LF1 Noise and Gain at 300K**  
DC Bias, 3V Oct 17, 2009



## S parameters at 300K



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