

To: Team 04

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Subject: Analog Front End circuit

An analog front-end is a set of analog signal conditioning circuitry that uses operational amplifiers, filters, and sometimes application-specific integrated circuits for sensors and other circuits to provide a configurable and flexible electronics functional block, needed to interface a variety of sensors to an analog to digital converter or in some cases to a microcontroller.

This article introduced a high-performance Analog Front Ends. The front end design is not as simple because this application area often requires the input signal to be DC-coupled as well as provide the capability for AC-coupling. For high-speed signal, the method of interfacing high-frequency analog signals to the input of an ADC is through the use of differential amplifiers. So the first component to be selected should be a differential output operational amplifier.

I've found an example of the LMH6703 in circuit with differential amplifier diagram below.

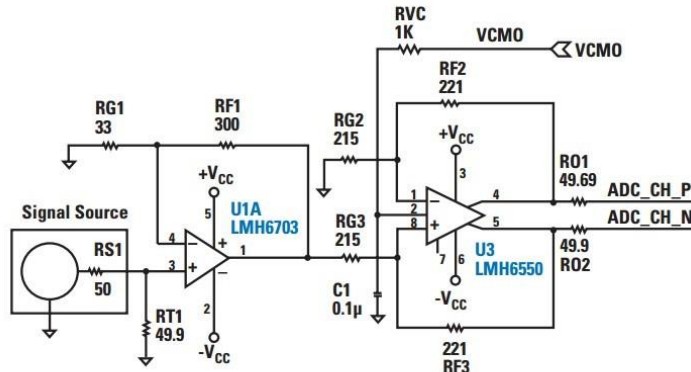


Figure 2. Two Stage Amplifier Circuit Diagram

Amplifier performance is continually being enhanced to deliver increased bandwidth and lower THD. With ADCs pushing well into the GSPS range, complimentary amplifiers that can interface to these converters will be in demand. Not only will system cost be reduced by eliminating circuit paths, the performance of the system will not be compromised and will allow designers to offer higher performance for lower cost, while reducing design time for front-end electronics.

Sources:

- 1) <http://www.ti.com/lit/wp/snoa828/snoa828.pdf>