DESCRIPTION

Demonstration circuit 1067 features the LTC2450, a 16 bit high performance ΔΣ analog-to-digital converter (ADC). The LTC2450 features 2LSB linearity, 2LSB offset, and 1.4µV RMS noise. The input is single ended with a range of 0 (Ground) to Vcc. The modulator’s proprietary sampling technique reduces the average input current to less than 50nA – orders of magnitude lower than typical delta sigma ADCs. The LTC2450 is available in a 6 pin, 3x3mm DFN package and has an easy to use SPI interface.

DC1067 is a member of Linear Technology’s QuickEval™ family of demonstration boards. It is designed to allow easy evaluation of the LTC2450 and may be connected directly to the target application’s analog signals while using the DC590 USB Serial Controller board and supplied software to measure performance. The exposed ground planes allow proper grounding to prototype circuitry. After evaluating with Linear Technology’s software, the digital signals can be connected to the end application’s processor / controller for development of the serial interface.

Design files for this circuit board are available. Call the LTC factory.

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Figure 1. Proper Measurement Equipment Setup

Monitor reference / Vcc or external reference source (See Hardware Set-up)

Single-ended Input

Ribbon cable To DC590 Controller
QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 1067 EVALUATION BOARD

QUICK START PROCEDURE

Connect DC1067 to a DC590 USB Serial Controller using the supplied 14 conductor ribbon cable. Connect DC590 to host PC with a standard USB A/B cable. Run the evaluation software supplied with DC590 or downloaded from http://www.linear.com/software. The correct program will be loaded automatically. Click the COLLECT button to start reading the input voltage. Details on software features are documented in the control panel’s help menu.

Tools are available for logging data, changing reference voltage, changing the number of points in the strip chart and histogram, and changing the number of points averaged for the DVM display.

Figure 2. Software Screenshot
HARDWARE SET-UP

CONNECTION TO DC590 SERIAL CONTROLLER

J1 is the power and digital interface connector. Connect to DC590 serial controller with supplied 14 conductor ribbon cable.

JUMPERS

JP1 – Select the source for REF+, either an LT6660-5 or the regulated VCC voltage from the DC590 controller. Removing this jumper allows an external supply to be connected to the VCC turret post.

ANALOG CONNECTIONS

Analog signal connections are made via the row of turret posts along the edge of the board. Also, when connecting the board to an existing circuit the exposed ground planes along the edges of the board may be used to form a solid connection between grounds.

GND – Two ground turrets are connected directly to the internal ground planes.

VCC – This is the supply and reference voltage for the ADC. Do not draw any power from this point.

VIN – This is the single-ended input to the ADC.