DESCRIPTION

Demonstration circuit 1384 features the LTC2452, a 16 bit high performance differential ΔΣ analog-to-digital converter (ADC) with an SPI interface. The input is bipolar with a range of Ref-to Ref+. 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 LTC2452 is available in an 8 pin, 3x2mm DFN package and has an easy to use SPI interface.

DC1384 is a member of Linear Technology's QuickEval™ family of demonstration boards. It is designed to allow easy evaluation of the LTC2452 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.

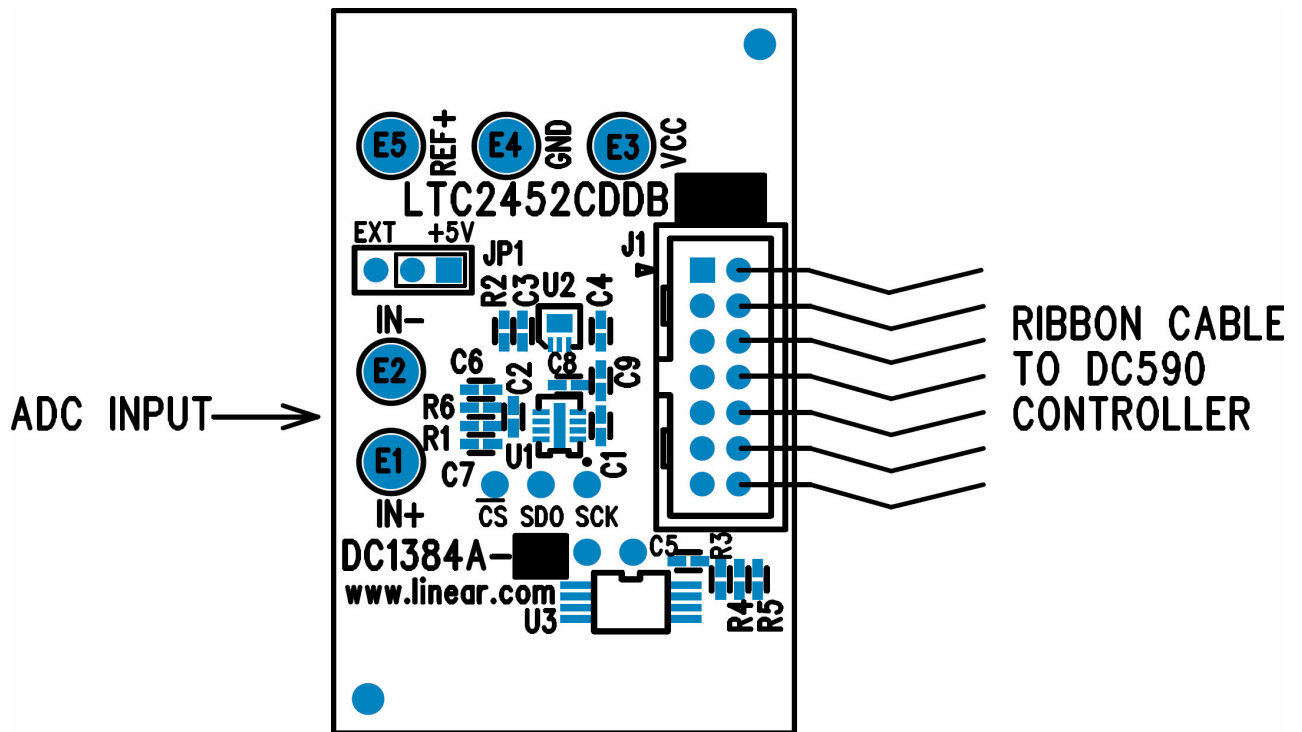LTC is a trademark of Linear Technology Corporation

**Figure 1. Proper Measurement Equipment Setup**

QUICK START PROCEDURE

Connect 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
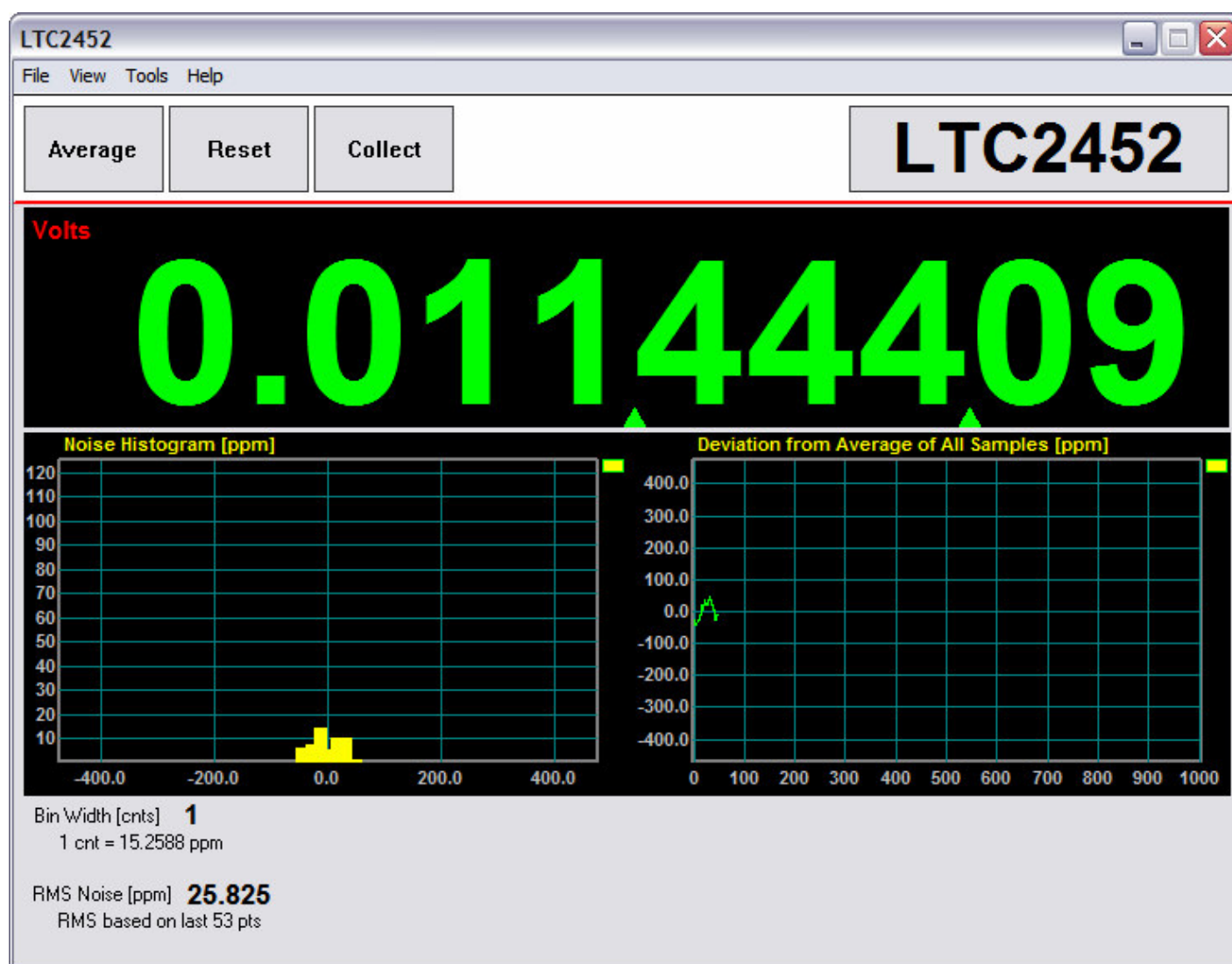
HARDWARE SET-UP

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 from an external source connected to the Ref+ 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 – This turret is connected directly to the internal ground planes.

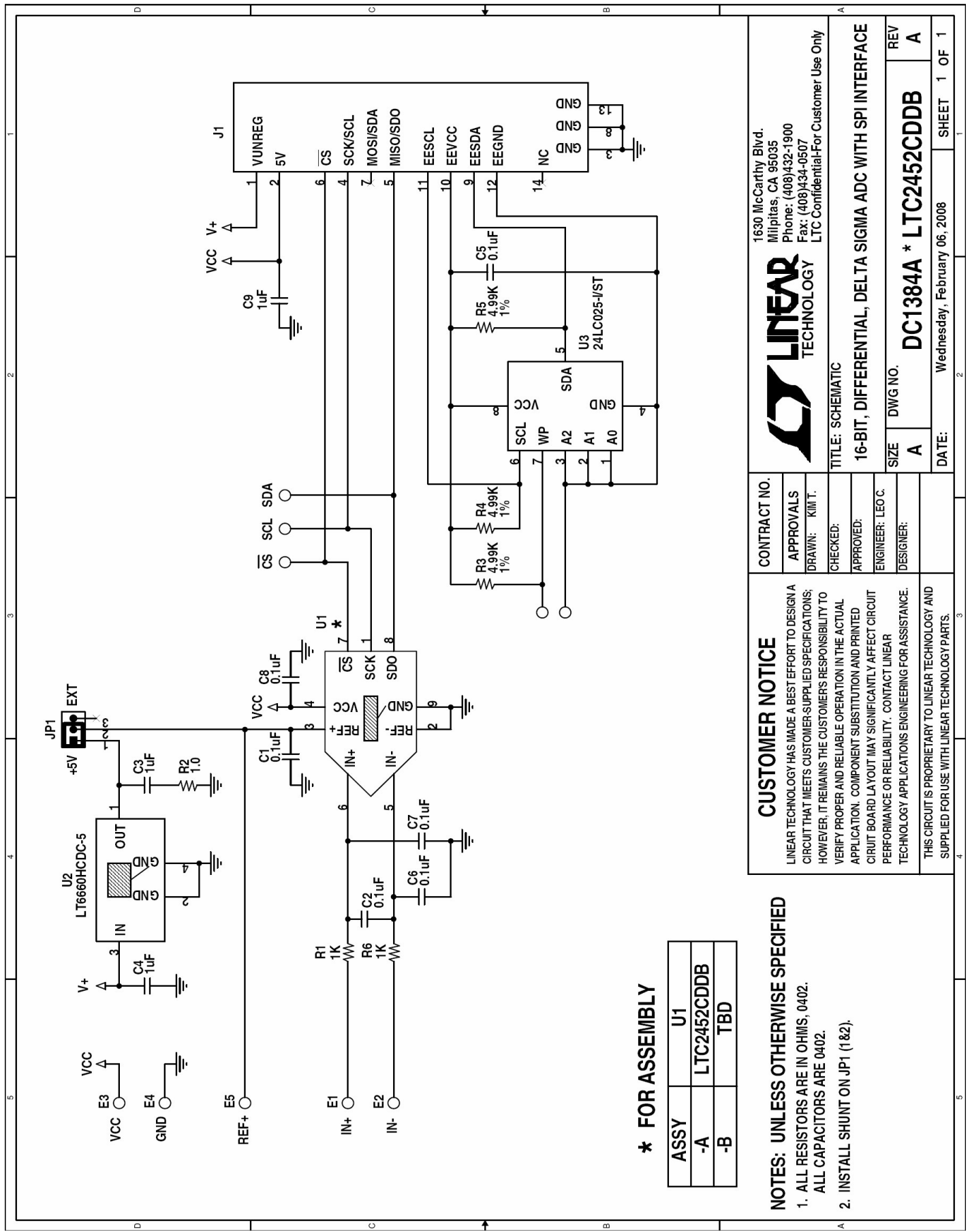VCC – This is the supply voltage for the ADC.

REF+ –This is the reference voltage for the ADC. May be used to drive the reference pin if JP1 is set to Ext.

IN+ – This is the positive input to the ADC.

IN - – This is the negative input to the ADC.

CUSTOMER NOTICE

LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMERS RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION AND PRINTED CIRUIT BOARD LAYOUT MAY SIGNIFICANTLY AFFECT CIRCUIT PERFORMANCE OR RELIABILITY. CONTACT LINEAR TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.

THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.

CONTRACT NO.

APPROVALS

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LTC Confidential-For Customer Use Only

TITLE: SCHEMATIC

16-BIT, DIFFERENTIAL, DELTA SIGMA ADC WITH SPI INTERFACE

SIZE	DWG NO.	REV
A	DC1384A * LTC2452CDDB	A

DATE: Wednesday, February 06, 2008   SHEET   1 OF 1

* FOR ASSEMBLY

ASSY	U1
-A	LTC2452CDDB
-B	TBD

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL RESISTORS ARE IN OHMS, 0402. ALL CAPACITORS ARE 0402.

2. INSTALL SHUNT ON JP1 (1&2).

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