## LTC2301/LTC2305

DESCRIPTION

Demonstration circuit 1444A features the LTC2301/LTC2305, low noise, low power, 1-Channel/2-Channel, 12-Bit, successive approximation ADCs with an I^{2}C compatible serial interface. The LTC2301/LTC2305 are available in a 12-pin MSOP package. DC1444A demonstrates the DC performance of the LTC2301/LTC2305 ADCs in conjunction with the DC590B Quick Eval data collection board. Alternatively, by connecting the DC1444A into a customer application the performance of the LTC2301/LTC2305 can be evaluated directly in that circuit. DC1444A-A uses LTC2301CMS.
DC1444A-B uses LTC2305CMS.

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

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FIGURE 1. DC1444A CONNECTION DIAGRAM
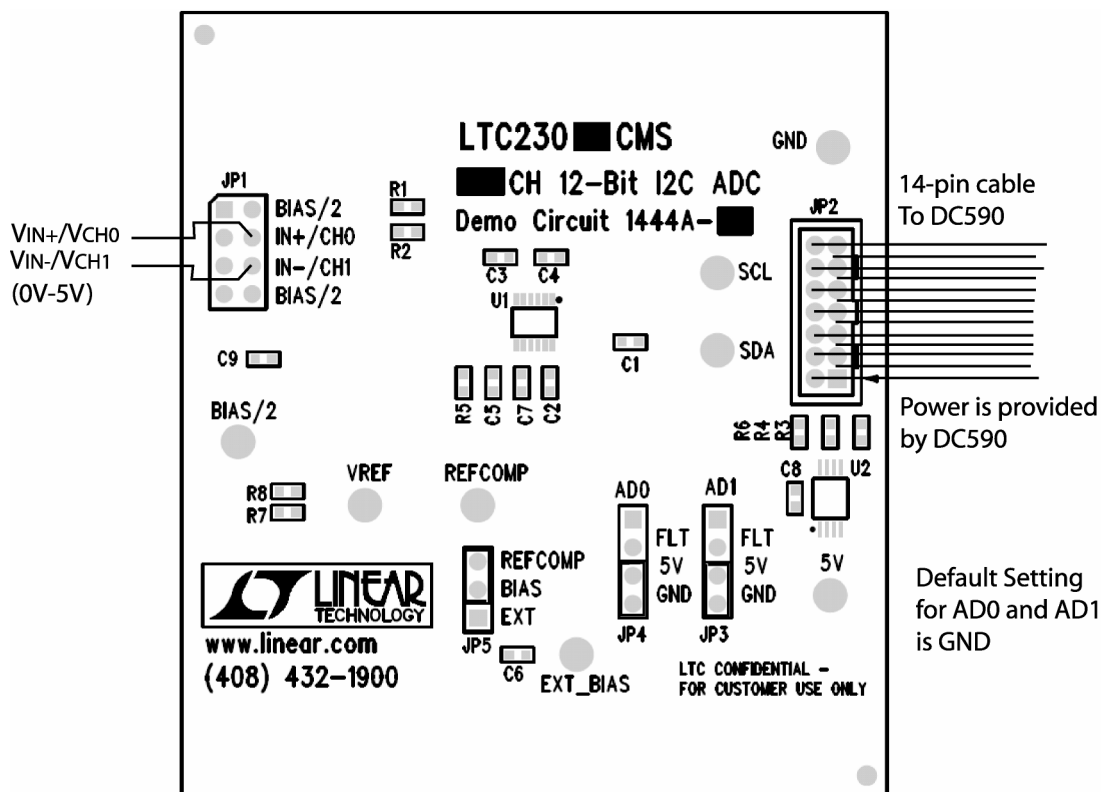
DC590B QUICK START PROCEDURE

Connect DC1444A to a DC590B USB serial controller using the supplied 14-conductor ribbon cable. **Make sure the VCCIO jumper of the DC590B is in the 5V position.** Connect DC590B to a host PC with a standard USB A/B cable. Apply analog input voltage to IN+ and IN- (CH0 and CH1 for LTC2301) on connector JP1. Run the evaluation software supplied with DC590B or download it from www.linear.com. The correct control panel will be loaded automatically. Click the COLLECT/PAUSE (Figure 2) button to begin reading the ADC. Pressing COLLECT/PAUSE again stops data collection. The Help menu

contains information on Data Logging the ADC results. The Tools menu has the Data Logging option as well as options for changing the number of points displayed, the number of points in an average and whether the data is displayed in LSBs or Volts. The View menu can be used to access the LTC2301/LTC2305 product page.

If the Quick Eval program is started without the demo board attached to DC590B, the Tools menu can be used to check for updates and automatically install them. DC1444A requires at least version K76 of the Quick Eval software.

HARDWARE SET UP

SIGNAL CONNECTIONS
See Figure 1 for locations.

JP1 Connector for IN+/IN- LTC2301 (CH0-CH1 LTC2305), COM and BIAS/2. Limit input voltage swings to GND-VDD. For optimum performance, the input should be bandlimited to the frequencies of interest.

JP2 DC590 interface connector. Provides power and I2C interface to DC1444A.

JP3 AD1 I^{2}C address line. Set to GND for operation with supplied software.

JP4 AD0 I^{2}C address line. Set to GND for operation with supplied software.

JP5 BIAS Selects between Refcomp and an external bias voltage to drive the Bias/2 line. Bias/2 is designed to set a center point for the minus input during bipolar operation.

EXT_BIAS External Bias connection. This can be used to drive the BIAS/2 line through a 2:1 divider. To use this pin put jumper JP5 in the EXT position and apply desired bias voltage.

5V Five volt supply line for DC1444A. Power is normally provided to this line by DC590B. Apply power to this line only if DC590B is not used.

GND Ground line for DC1444A

SDA I^{2}C bidirectional data line. Controlled by DC590B if connected.

SCL I^{2}C clock line. Controlled by DC590B if connected.

VREF Connected to ADC Vref pin through 50 ohm resistor.

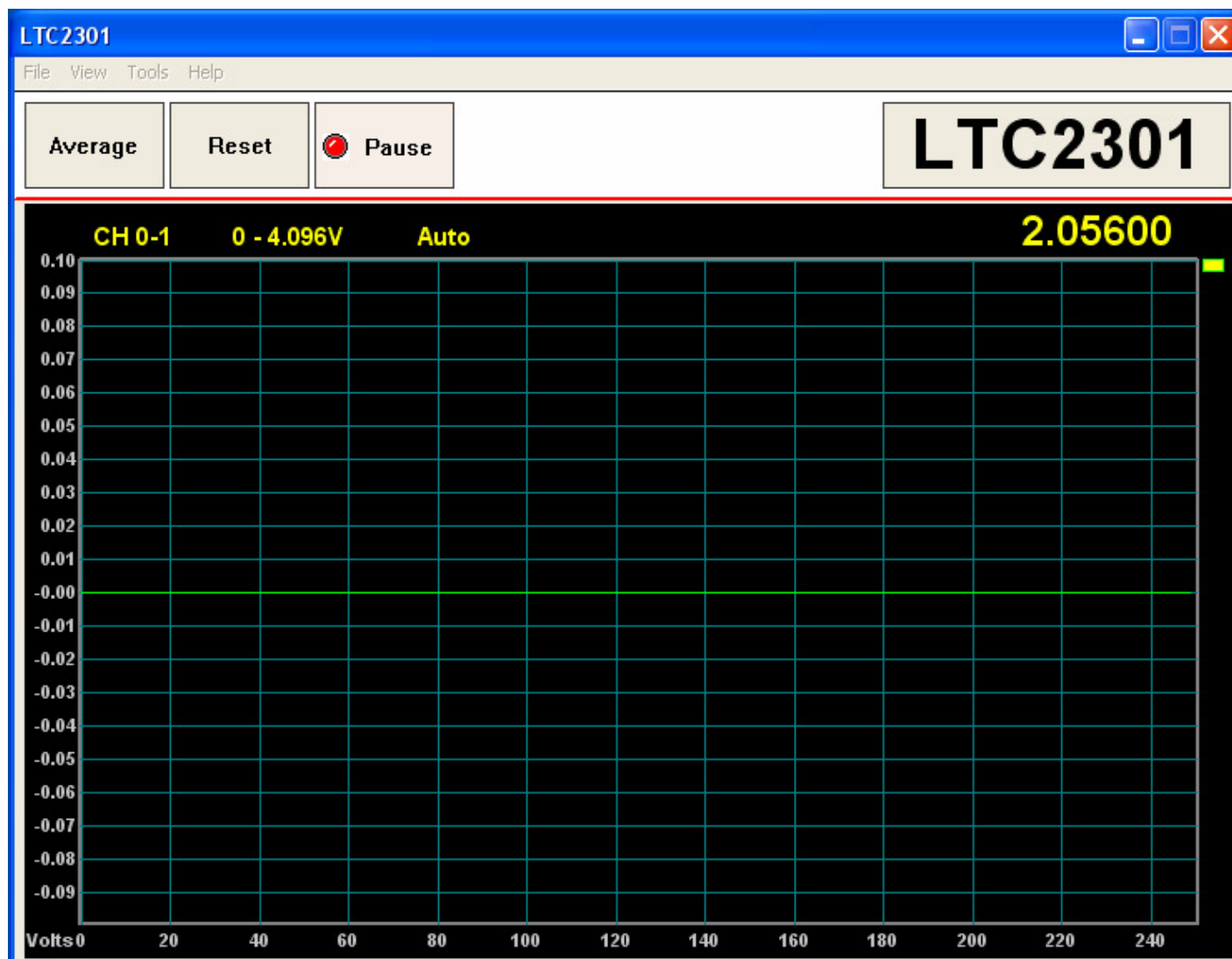**REFCOMP** Connected to ADC Refcomp pin.

BIAS/2 Bias voltage/2 (Refcomp or Ext)

USING DC1444A WITHOUT DC590

Interface signals SDA and SCL and power are normally provided to DC1444A by DC590. If you use this board without DC590, it is the user's responsibility to connect a 5V power supply and ground as well 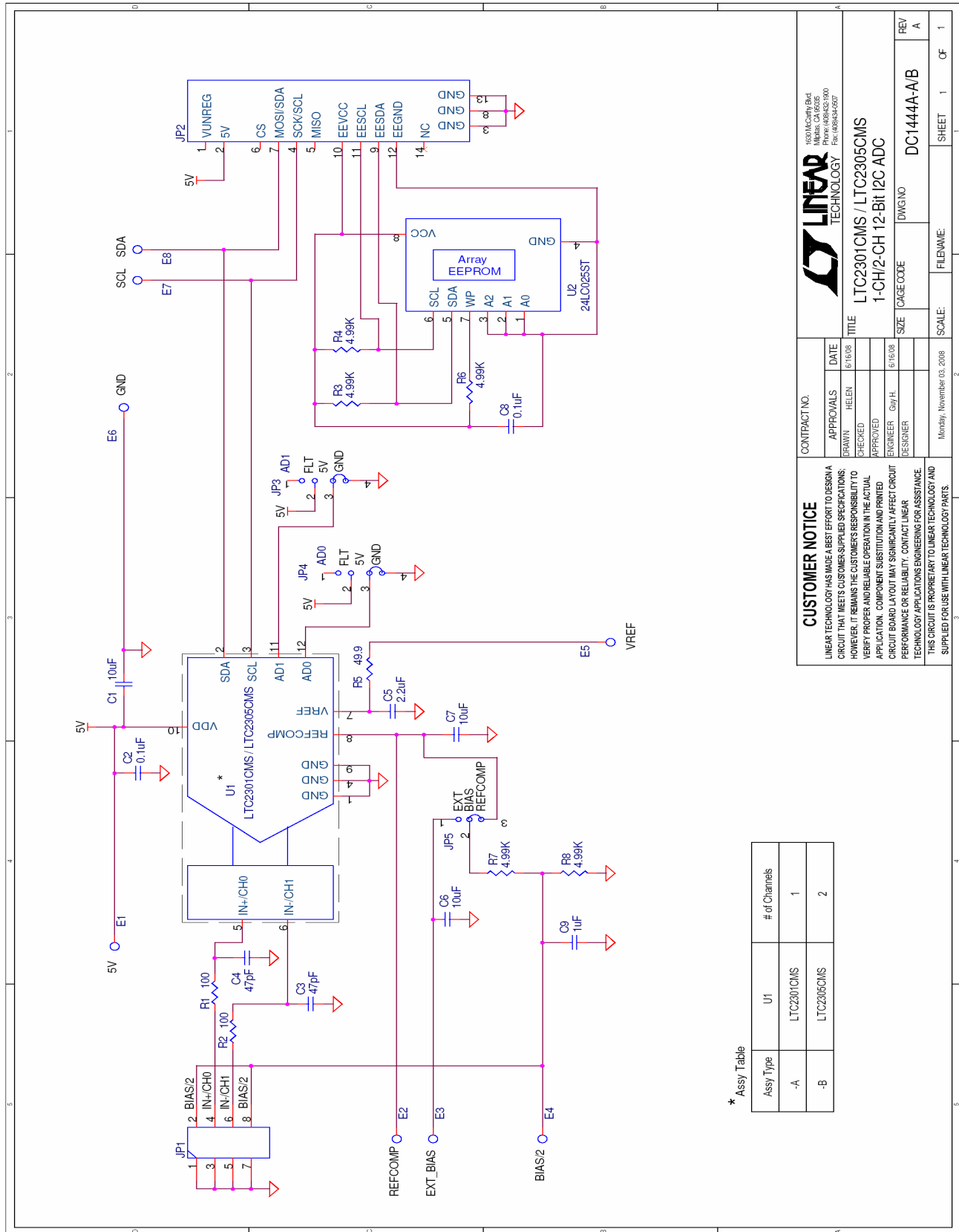as generating SDA and SCL. These signals can be provided through the 14-pin ribbon cable connector. See schematic for pin out. See LTC2301/LTC2305 Data Sheet for information on driving SDA and SCL.

Figure 2. DC1444A-A Quick Eval Screenshot

CUSTOMER NOTICE

LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION AND PRINTED CIRCUIT 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		DATE
DRAWN	HELEN	6/16/08
CHECKED		
APPROVED		
ENGINEER	Guy H.	6/16/08
DESIGNER		

Monday, November 03, 2008

1630 McCarthy Blvd.
Milpitas, CA 95035
Phone (408)432-1900
Fax (408)434-0507

TITLE
LTC2301CMS / LTC2305CMS
1-CH/2-CH 12-Bit I2C ADC

SIZE | CAGE CODE | DWG NO
DC1444A-A/B

REV
A

SCALE: | FILENAME:

SHEET 1 OF 1

Assy Table

Assy Type	U1	# of Channels
-A	LTC2301CMS	1
-B	LTC2305CMS	2

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