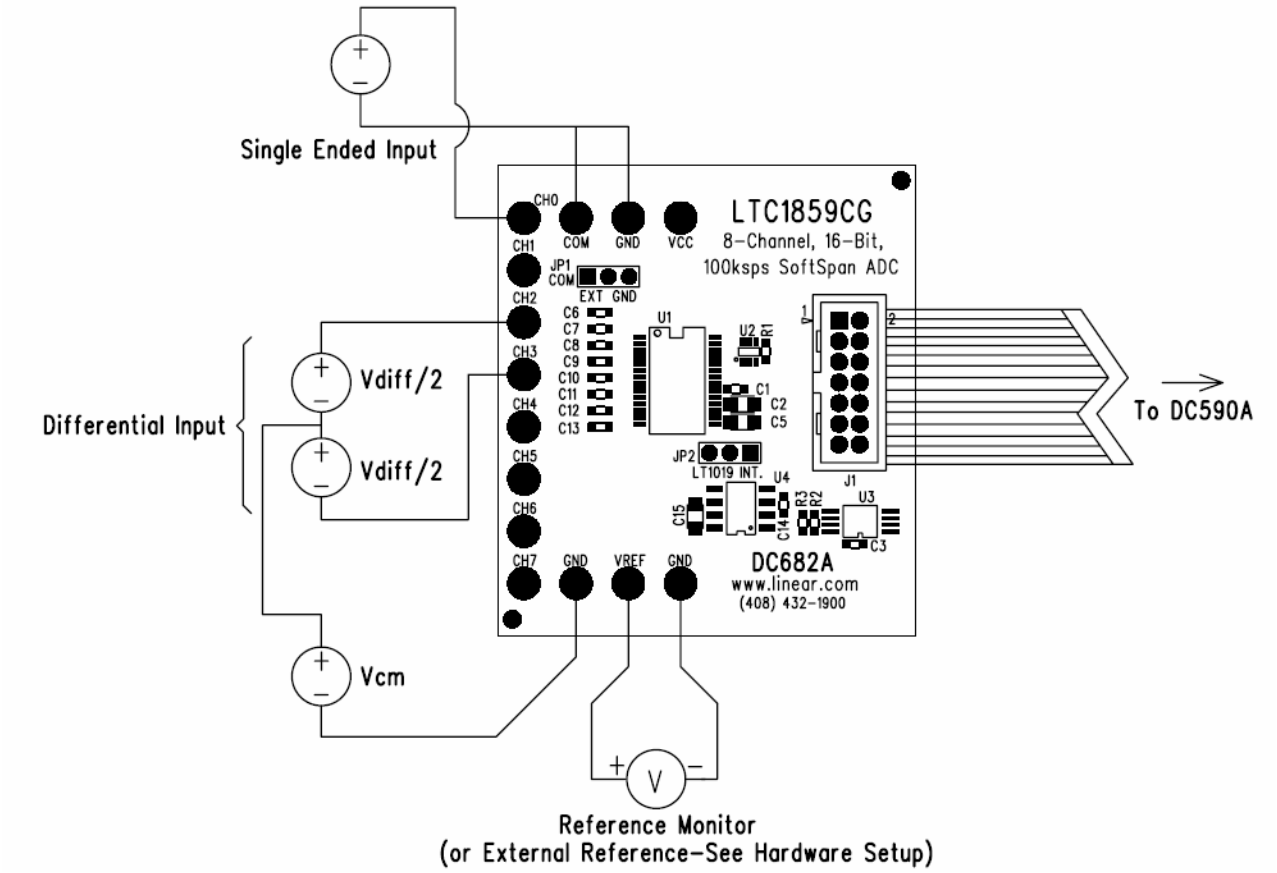
## DESCRIPTION

Demonstration circuit DC682 features the LTC1859 Octal 16 bit SoftSpan ADC. The LTC1859 can be software programmed for 0 to 5V, 0 to 10V, +/-5V, or +/-10V input spans while operating from a single 5V supply. The 8 channel multiplexer can be programmed for single-ended inputs or differential pairs or a combination of both. Also, the inputs are fault protected to +/-25V. A fault condition on any channel will not affect readings on other channels.

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

**Figure 1. Connection Diagram**



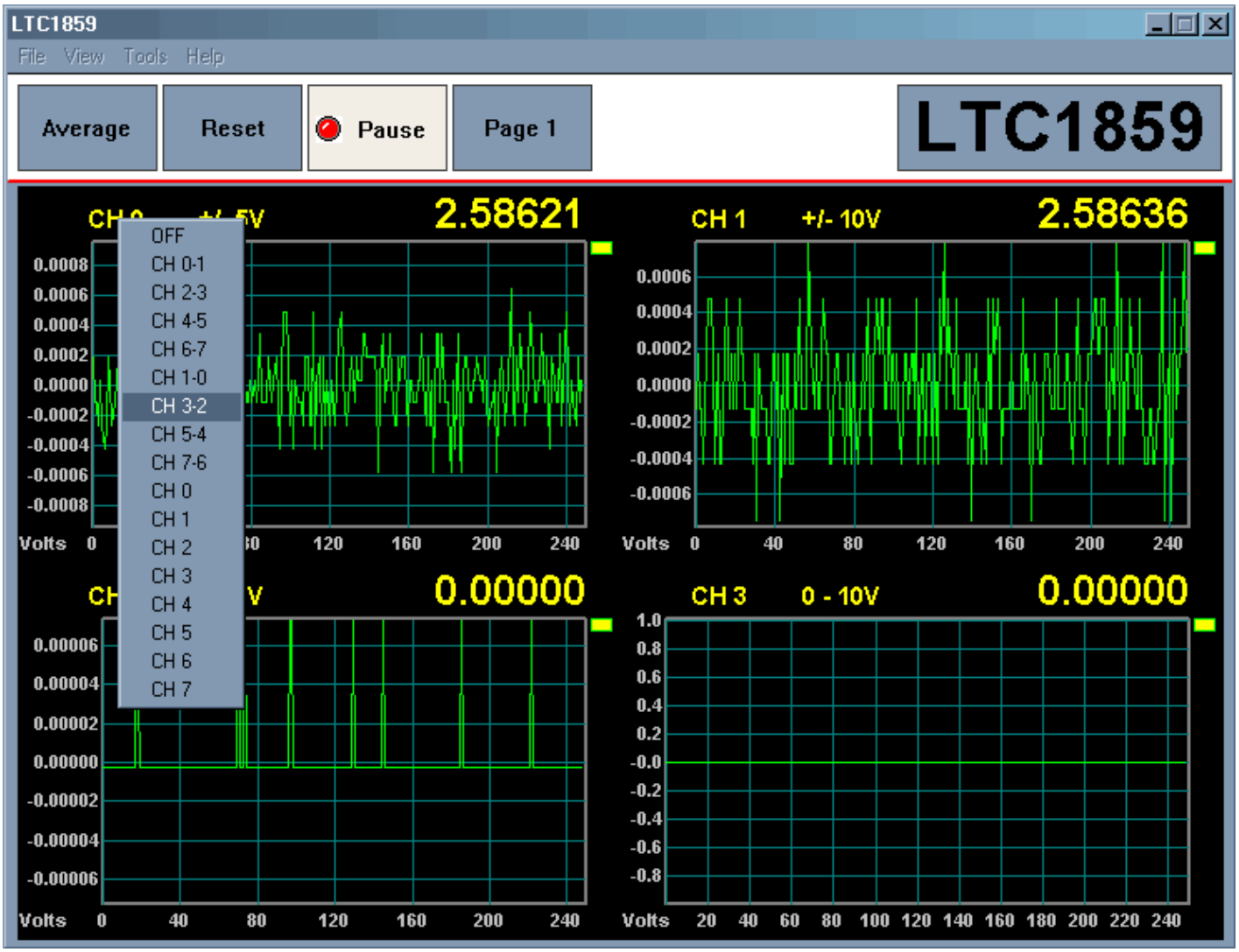
## Quick Start Procedure

Connect DC682 to a DC590 USB serial controller using the supplied 14 conductor ribbon cable. Connect DC590 to a host PC with a standard USB A/B cable. Run the evaluation software supplied with DC590 or download it from www.linear.com. The correct control panel will be loaded automatically. Click the COLLECT button to begin reading the ADC.

Change the channel and range by right-clicking over the channel or range indicator in the display.

Complete software documentation is available from the Help menu item, as features may be added periodically.

**Figure 2. Software Screenshot**



## HARDWARE SET-UP

### JUMPERS

**JP1** – Select connection for COM pin, either grounded or externally supplied through the COM turret.

**JP2** – Select reference, either internal or the onboard LT1019 reference.

### ANALOG CONNECTIONS (TURRET POSTS)

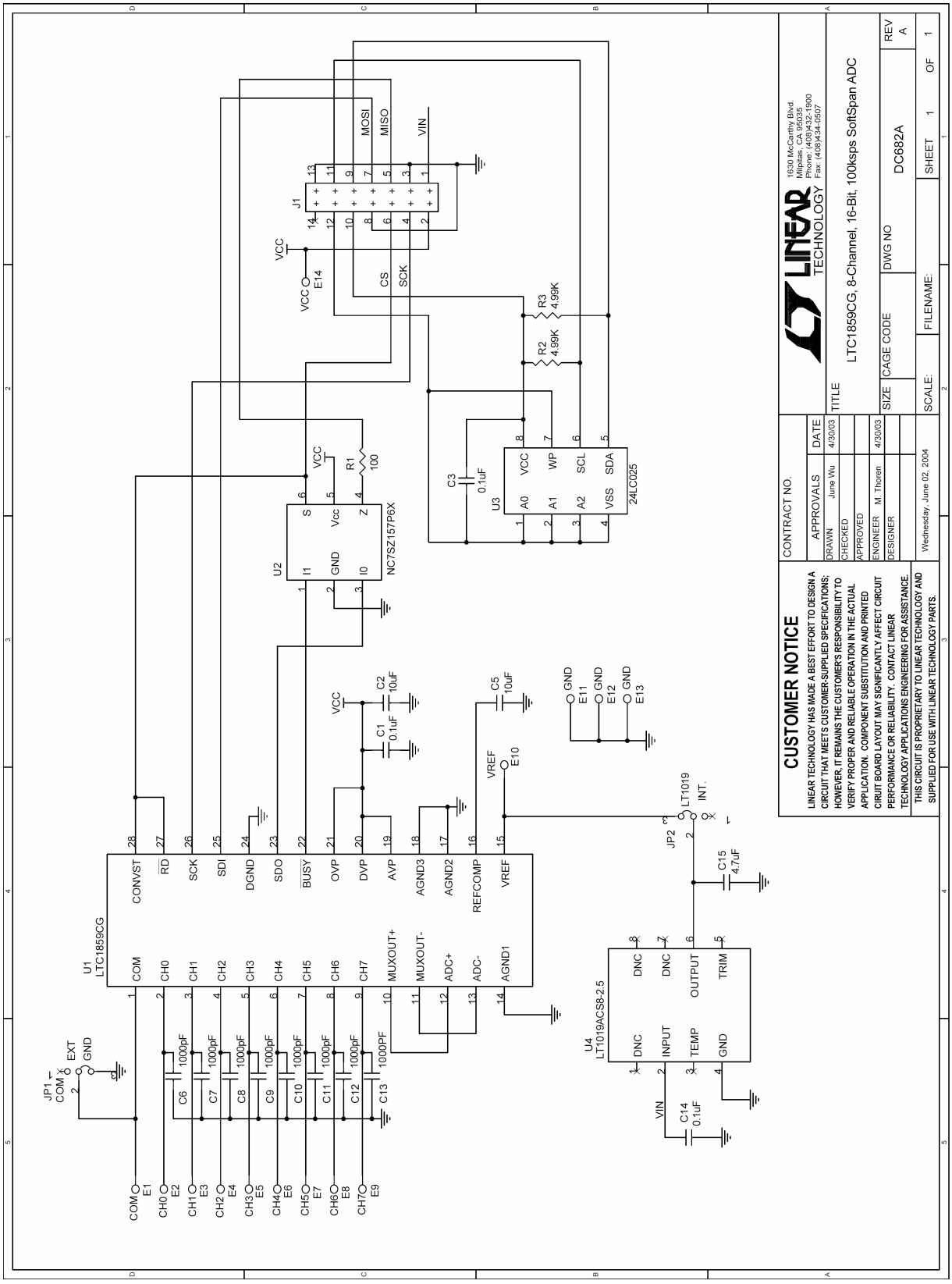
**COM** – LTC1859 COM pin. Make sure to select EXT on JP1 when supplying an external bias to this post.

**CH0 – CH7** – Analog inputs to LTC1859. Each input is bypassed to ground with a 1000pF capacitor.

**VREF** – Reference pin on LTC1859. When JP2 is set to INT, the LTC1859 uses its internal reference, or an external reference can be connected to this pin, overdriving the internal reference. When JP2 is set to LT1019, this turret should only be used for monitoring the reference voltage.

### GROUNDING AND POWER CONNECTIONS

DC682 does not require any external power source when used with the DC590 USB controller board. However, an external 5V power source can be connected to the Vcc and ground turrets if the power supply on DC590 has been disabled. Refer to the DC590 quick start guide for more information.


U1
LTC1859CG
U2
NC7SZ157P6X
U3
24LC025
U4
LT1019ACS8-2.5
J1
JP1
JP2
LT1019
INT.
VCC
GND
VIN
MOSI
MISO
SCK
CS
R1
100
R2
4.99K
R3
4.99K
C1
0.1uF
C2
10uF
C3
0.1uF
C5
10uF
C6
1000pF
C7
1000pF
C8
1000pF
C9
1000pF
C10
1000pF
C11
1000pF
C12
1000pF
C13
1000PF
C14
0.1uF
C15
4.7uF
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CONTRACT NO.
APPROVALS
DRAWN June Wu 4/30/03
CHECKED
APPROVED
ENGINEER M. Thoren 4/30/03
DESIGNER
DATE
TITLE
LTC1859CG, 8-Channel, 16-Bit, 100ksps SoftSpan ADC
SIZE
CAGE CODE
DWG NO
DC682A
REV A
Wednesday, June 02, 2004
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