LTC1859
8-Channel, 16-Bit,
100ksps SoftSpan ADC

DESCRIPTION

Demonstration circuit 682A features the LTC®1859 8-channel, 16-bit SoftSpan™ ADC. The LTC1859 can be software programmed for 0V to 5V, 0V 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 at http://www.linear.com/demo

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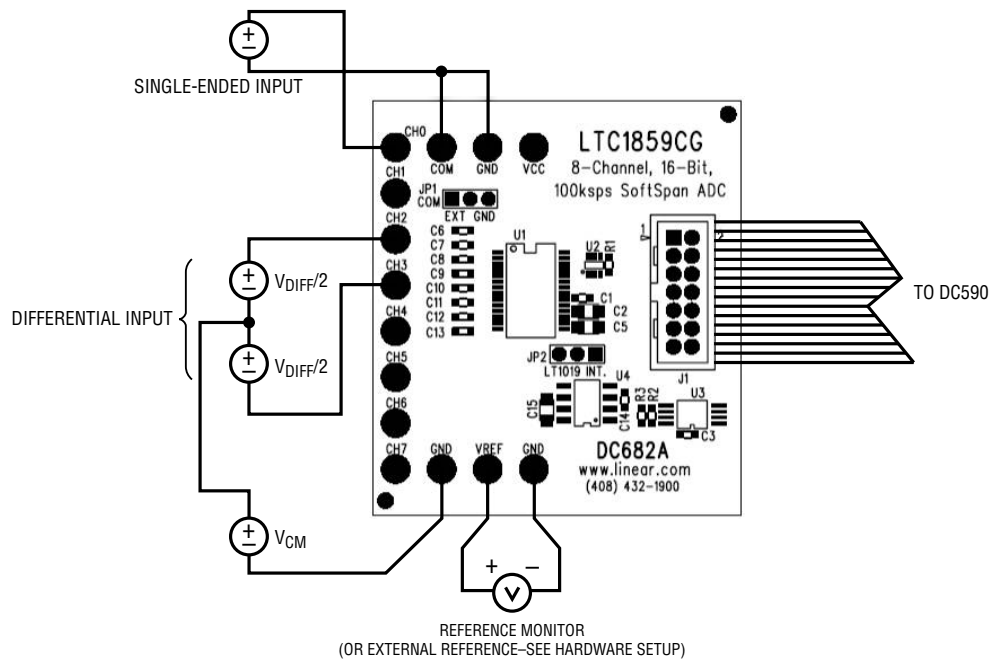
BOARD PHOTO

Figure 1. DC682A Connection Diagram

QUICK START PROCEDURE

Connect DC682A 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 QuikEval™ evaluation software supplied with DC590 or download it from www.linear.com/software. 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.
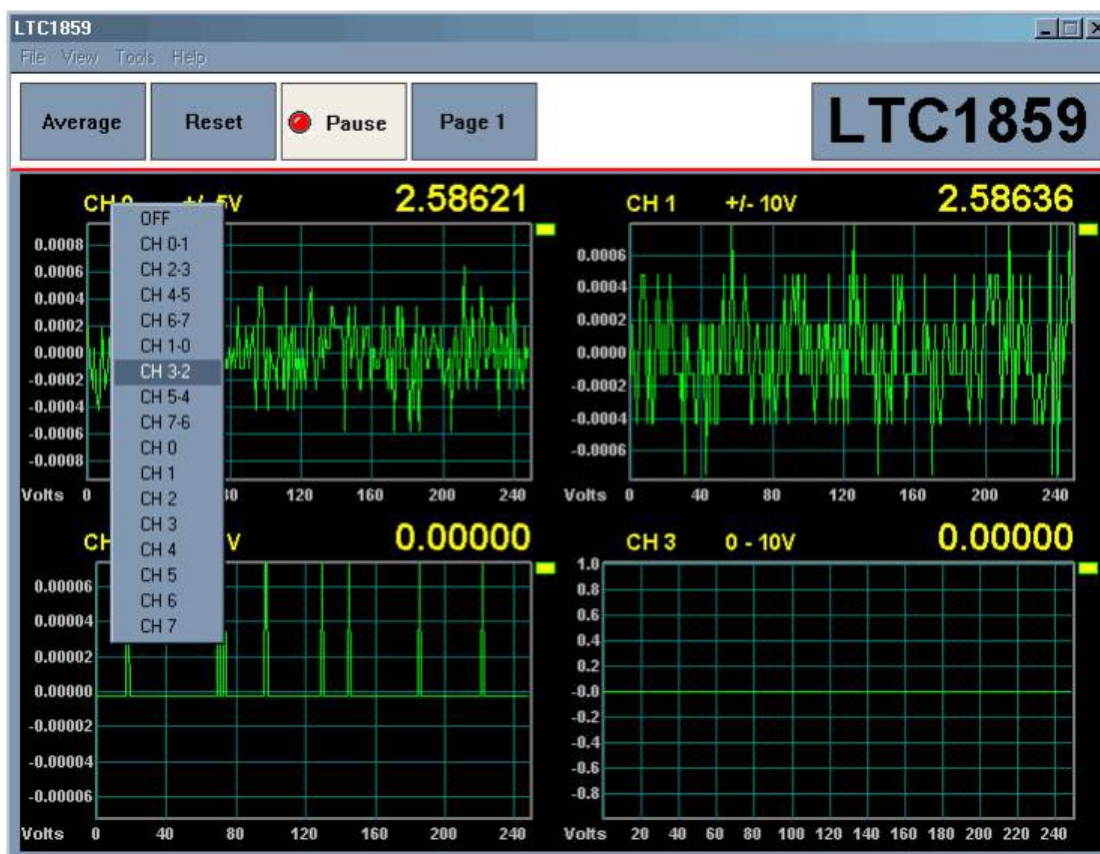

Figure 2. DC682A Software Screenshot

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HARDWARE SETUP

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 by-passed to ground with a 1000pF capacitor.

V_{REF}: 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.
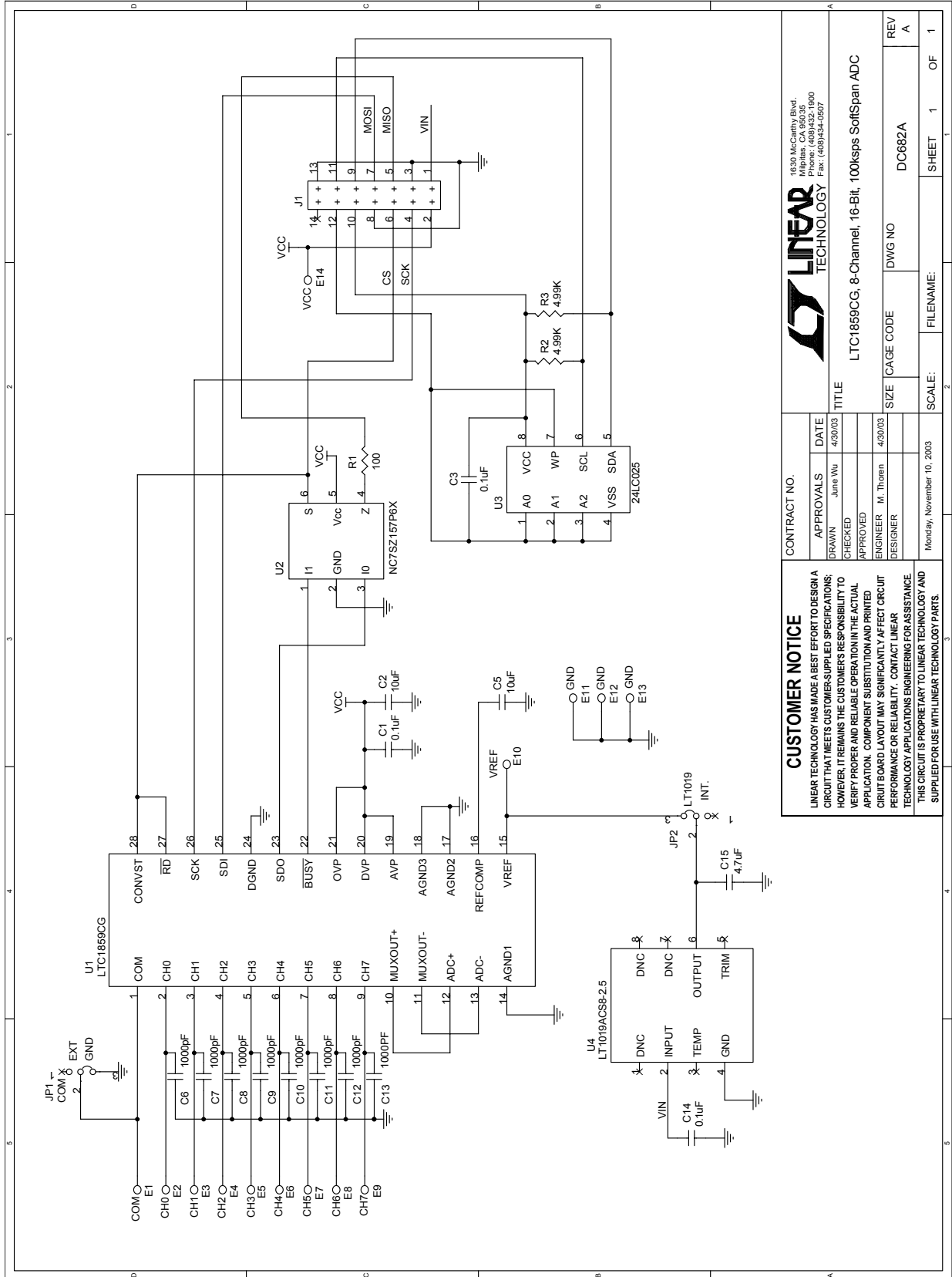
Grounding and Power Connections

DC682A 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 V_{CC} and ground turrets if the power supply on DC590 has been disabled. Refer to the DC590 demo manual for more information.

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
1	3	C1, C3, C14	CAP., X7R, 0.1µF, 10V, 20%, 0603	AVX, 0603ZC104MAT2A
2	2	C2, C5	CAP., X5R, 10µF, 6.3V, 20%, 0805	Taiyo Yuden, JMK212BJ106MG
3	8	C6–C13	CAP., COG, 1000pF, 50V, 5%, 0603	AVX, 06035A102JAT
4	1	C15	CAP., X5R, 4.7µF, 6.3V, 20%, 0805	Taiyo Yuden, JMK212BJ475MG
5	14	E1–E14	TURRET, TESTPOINT .064"	MILL-MAX, 2308-2
6	2	JP1, JP2	0.079 SINGLE ROW HEADER, 3-PIN	COMM CON, 2802S-03-G2
7	2	JP1, JP2	SHUNT,	COMM CON, CCIJ2MM-138G
8	1	J1	CONNECTOR, DUAL 2 × 7 .079CC	MOLEX, 87331-1420
9	1	R1	RES., CHIP, 100, 1/16W, 5% 0603	AAC, CR16-101JM
10	2	R2, R3	RES., CHIP, 4.99k, 1/16W, 1% 0603	AAC, CR16-4991FM
11	1	U1	I.C. LTC1859CG SSOP28G	LINEAR, LTC1859CG
12	1	U2	MULTIPLEXER, NC7SZ157P6X SC70	FAIRCHILD, NC7SZ157P6X
13	1	U3	I.C., Serial EEPROM TSSOP8	MICROCHIP, 24LC025
14	1	U4	I.C., LT1019ACS8-2.5 SO-8	LINEAR, LT1019ACS8-2.5

dc682af

SCHEMATIC DIAGRAM

TITLE
LTC1859CG, 8-Channel, 16-Bit, 100ksps SoftSpan ADC

SIZE	CAGE CODE	DWG NO
		DC682A

REV
A

| SCALE: | | SHEET | 1 | OF | 1 |

FILENAME:

CONTRACT NO.

APPROVALS		DATE
DRAWN	June Wu	4/30/03
CHECKED		
APPROVED		
ENGINEER	M. Thoren	4/30/03
DESIGNER		

Monday, November 10, 2003

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dc682af

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This notice contains important safety information about temperatures and voltages. For further safety concerns, please contact a LTC application engineer.

Mailing Address:

Linear Technology

1630 McCarthy Blvd.

Milpitas, CA 95035

dc682af

Linear Technology Corporation
1630 McCarthy Blvd., Milpitas, CA 95035-7417
(408) 432-1900 • FAX: (408) 434-0507 • www.linear.com

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