LTC1867
Octal 16-Bit 200ksps ADC

DESCRIPTION

Demonstration circuit 806A features the LTC®1867 Octal 16-bit ADC. The LTC1867 can be software programmed for a unipolar 0V to 4.096V or bipolar ±2.048V input range. The 8 channel multiplexer can be programmed for 8 single-ended inputs with respect to ground, 7 single-ended inputs with respect to the COM/CH7 pin, 4 differential inputs, or any combination of these.

The LTC1867's DC performance is outstanding with a ±2LSB INL specification and no missing codes over temperature. The signal-to-noise ratio (SNR) for the LTC1867 is typically 89dB. The LTC1863 is the 12-bit version of the LTC1867. Housed in a compact, narrow 16-pin SSOP package, the LTC1863/LTC1867 is ideal for space sensitive and low power applications.

Design files for this circuit board are available at http://www.linear.com/demo

BOARD PHOTO

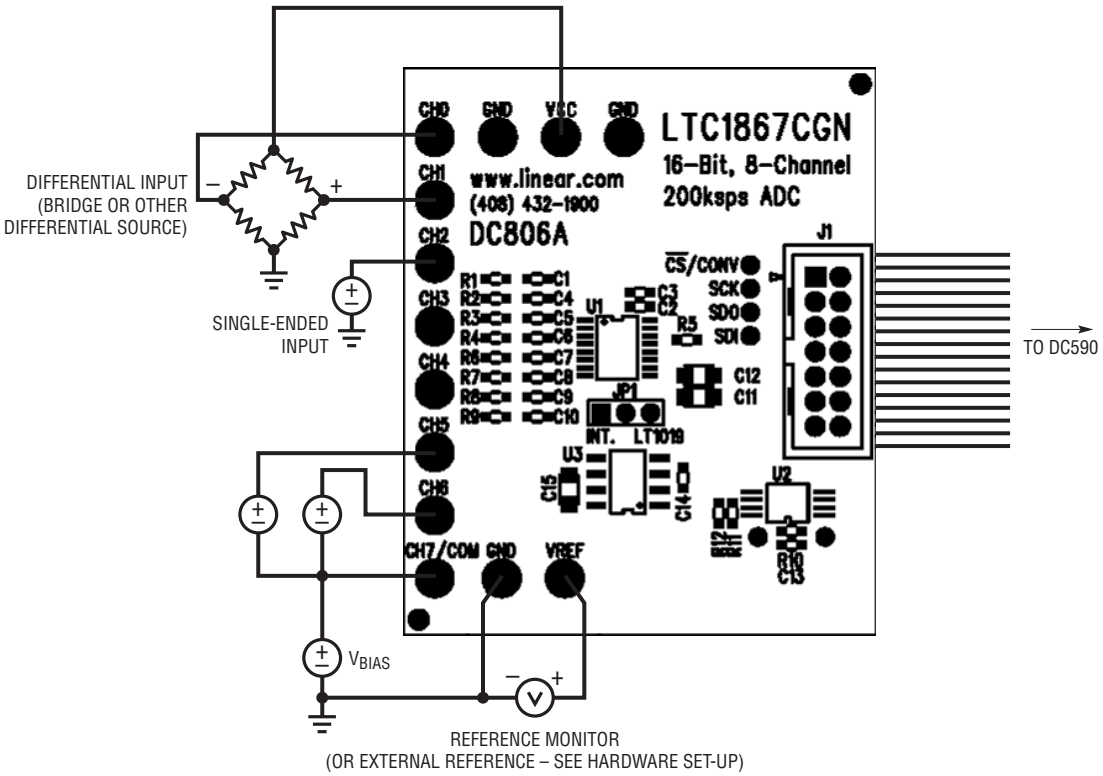


Figure 1. Connection Diagram

QUICK START PROCEDURE

Connect DC806A 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.

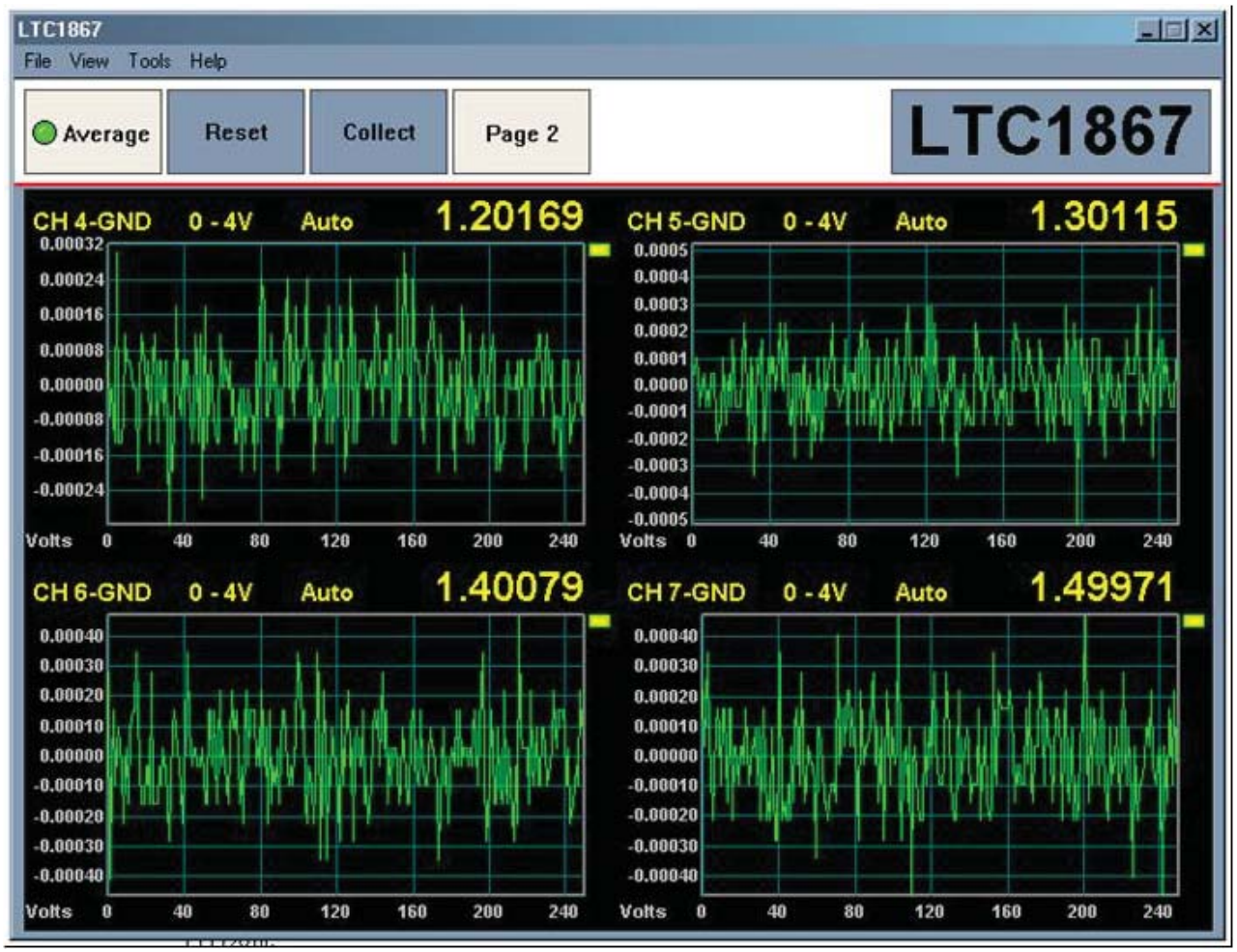


Figure 2. Software Screenshot

HARDWARE SET-UP

JUMPERS

JP1: Select reference, either internal or the onboard LT1019 reference.

ANALOG CONNECTIONS (TURRET POSTS)

GND (3×): Ground plane connections. DC806 can also be grounded to an application circuit by the exposed ground planes at the edges of the board.

CH0 – CH7/COM: Analog inputs to LTC1859. Each input has a 100Ω/1000pF filter to reduce wideband noise pickup.

V_{REF}: Reference pin on LTC1859. When JP2 is set to INT, the LTC1867 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.

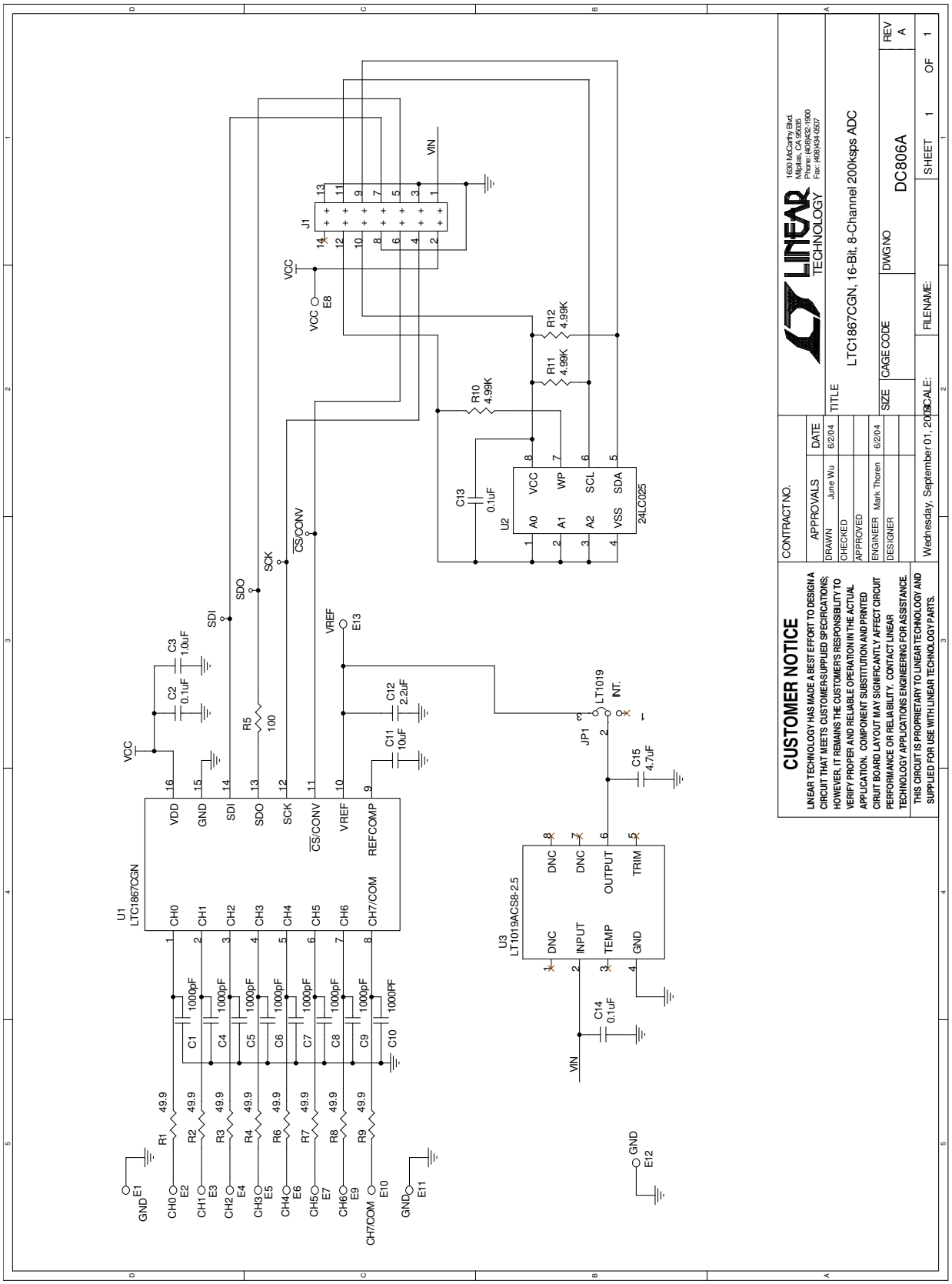
GROUNDING AND POWER CONNECTIONS

DC806 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 quick start guide for more information.

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	8	C1, C4, C5-C10	CAP., C0G, 1000pF, 50V, 5%, 0603	AVX, 06035A102JAT2A
2	3	C2, C13, C14	CAP., X7R, 0.1µF, 10V, 20%, 0603	AVX, 0603ZC104MAT2A
3	1	C3	CAP., X5R, 1µF, 10V, 20%, 0603	AVX, 0603ZD105MAT2A
4	1	C11	CAP., X5R, 10µF, 6.3V, 20%, 0805	Taiyo Yuden, JMK212BJ106MG
5	1	C12	CAP., X5R, 2.2µF, 10V, 20%, 0805	Taiyo Yuden, LMK212BJ225MG
6	1	C15	CAP., X5R, 4.7µF, 6.3V, 20%, 0805	Taiyo Yuden, JMK212BJ475MG
7	13	E1-E13	TURRET, TESTPOINT .064"	MILL-MAX, 2308-2
8	1	JP1	0.079 SINGLE ROW HEADER, 3-PIN	COMM CON, 2802S-03-G2
9	1	JP1	SHUNT	COMM CON, CCIJ2MM-138G
10	1	J1	CONNECTOR, DUAL 2×7 .079CC	MOLEX, 87331-1420
11	8	R1-R4, R6-R9	RES., CHIP, 49.9, 1/16W, 1% 0603	AAC, CR16-49R9FM
12	1	R5	RES., CHIP, 100, 1/16W, 5% 0603	AAC, CR16-101JM
13	3	R10, R11, R12	RES., CHIP, 4.99k, 1/16W, 1% 0603	AAC, CR16-4991FM
14	1	U1	I.C. LTC1867CGN SSOP-16GN	LINEAR, LTC1867CGN
15	1	U2	I.C., Serial EEPROM TSSOP8	MICROCHIP, 24LC025-I /ST
16	1	U3	I.C. LT1019ACS8-2.5 SO-8	LINEAR, LT1019ACS8-2.5
17	1	FOR INVENTORY ONLY	CABLE ASSY., 8" STRIP	LINEAR RIBBON CABLE CA-2440
18	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #806A
19	1		STENCIL	STENCIL #806A

SCHEMATIC DIAGRAM



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

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