LTC2631
Single 12-/10-/8-Bit I²C V$_{OUT}$ DACs with Integrated 10ppm/°C Reference

DESCRIPTION

Demonstration circuit 1332A features the LTC®2631, a 12-bit I²C DAC. This device establishes a new benchmark for size and integration of 12-bit DACs and onboard reference.

The DC1332A 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. 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 at http://www.linear.com/demo

DEMO BOARD VARIATIONS

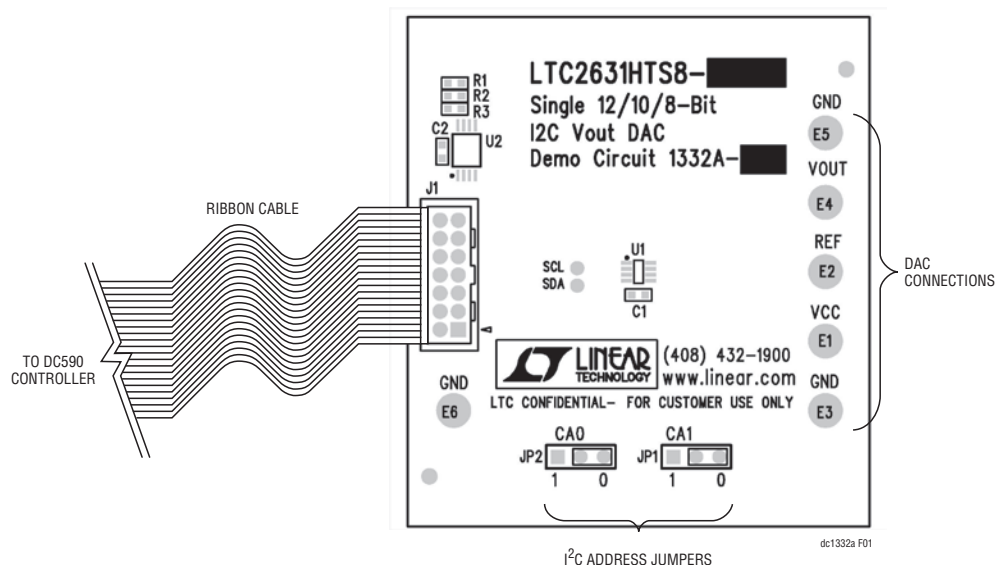| DEMO BOARD TYPE	LTC2631 VARIATION	RESOLUTION (BITS)	POWER-UP	FULL-SCALE
DC1332A-A	LTC2631-LM12	12	Mid-Scale	2.5V
DC1332A-B	LTC2631-LZ12	12	Zero	2.5V
DC1332A-C	LTC2631-HM12	12	Mid-Scale	4.096V
DC1332A-D	LTC2631-HZ12	12	Zero	4.096V

BOARD PHOTO

Figure 1. DC1332A Connection Diagram

QUICK START PROCEDURE

1. Connect the DC1332A to a DC590 USB serial controller using the supplied 14-conductor ribbon cable.

2. Connect the DC590 to the host PC with a standard USB A/B cable.

3. Run the QuikEval™ evaluation software supplied with the DC590 or download it from: www.linear.com/software. The correct program will be loaded automatically.

Options are available to display the DAC output in voltage, hex code, or decimal count. Additionally, the reference voltage may be changed to reflect an actual measured value, such that the output voltage matches the theoretical output voltage. The reference mode may be changed from internal reference to external reference.

Features may be periodically added to the software. See the software's help menu for the latest information.
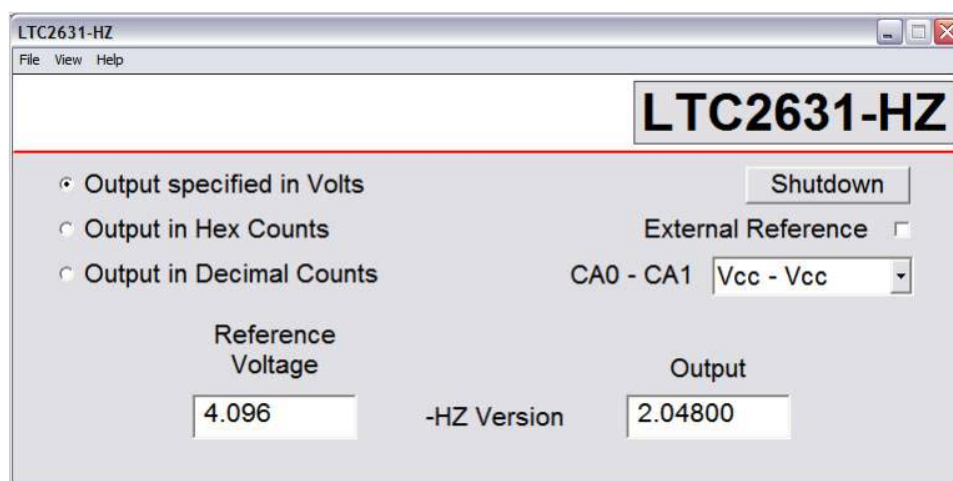

Figure 2. QuikEval Software

HARDWARE SETUP

JUMPERS

CA0: This sets the I^{2}C address of the LTC2631. These should be set to 1 (V$_{CC}$) by default.

CA1/REF_SEL: On the B and D versions of the demo board, this is used to determine the I^{2}C address of the LTC2631. On the A and C versions of the demo board, this is used to determine the reference input.

ANALOG CONNECTIONS

DAC outputs are provided on the row of turret posts at the edge of the board.

GROUNDING AND POWER CONNECTIONS

Power (V$_{CC}$): Normally, the DC1332A is powered by the DC590 controller. V$_{CC}$ can be supplied to the 5V turret, however the power supply on the DC590 must be disabled! Refer to the DC590 Quick Start Guide for more details on this mode of operation.
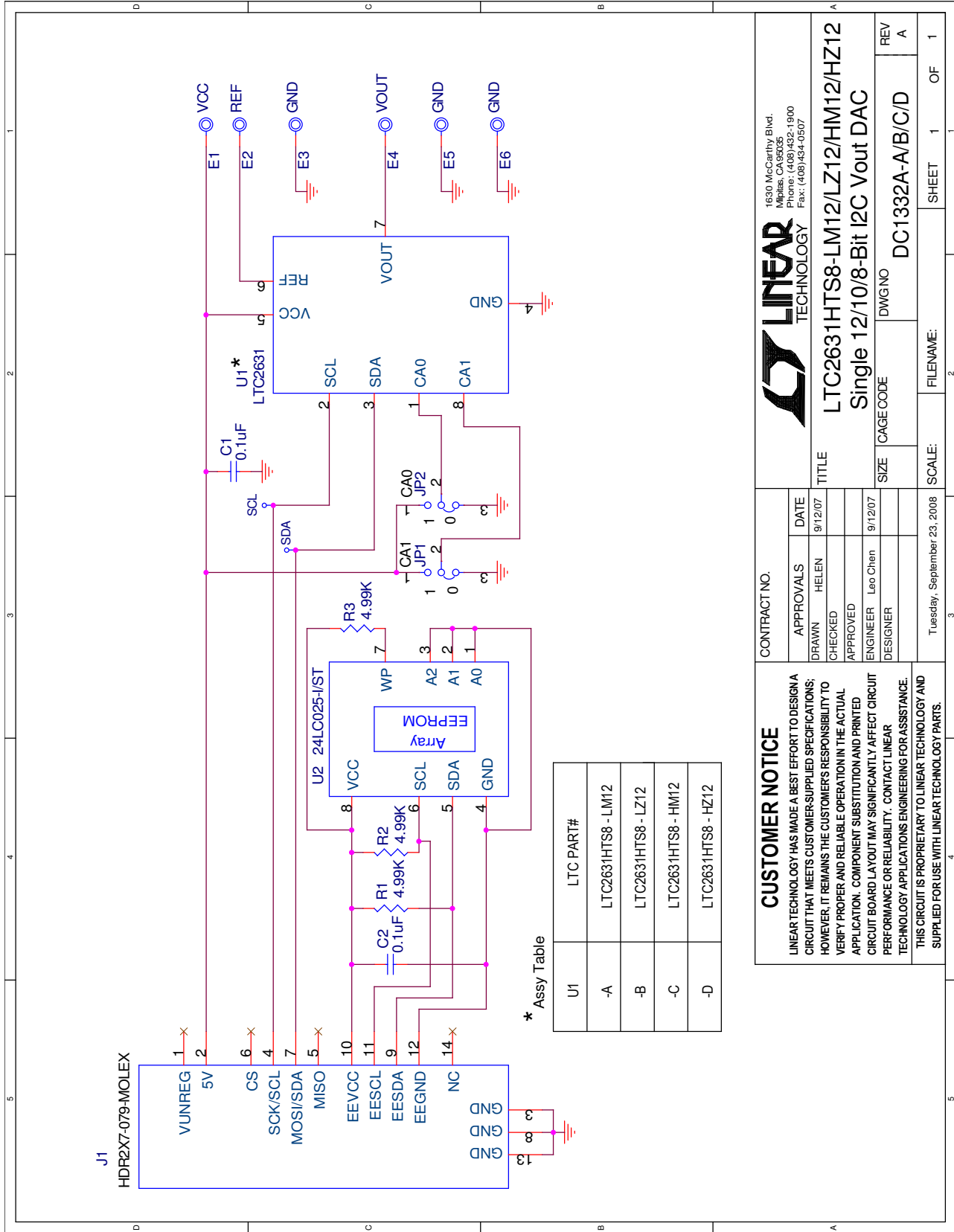
Grounding: Three ground posts are provided.

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
DC1332A Required Circuit Components				
1	2	C1, C2	CAP., X7R, 0.1µF, 16V, 10%, 0603	AVX, 0603YC104KAT
2	1	J1	HEADER, 2×7 PIN, 0.079"	MOLEX, 87831-1420
3	3	R1, R2, R3	RES., CHIP, 4.99k, 1/16W, 1%, 0603	VISHAY, CRCW06034K99FKEA
4	1	U2	IC, 24LC025ST, TSSOP	MICROCHIP, 24LC025-I/ST
Hardware: For Demo Board Only				
1	6	E1-E6	TESTPOINT, TURRET, 0.095"	MILL-MAX, 2501-2-00-80-00-00-07-0
2	2	JP1, JP2	0.1" SINGLE ROW HEADER, 3-PIN	SAMTEC, TSW-103-07-L-S
3	2	JP1, JP2	SHUNT, 1" BLK	SAMTEC, SNT-100-BK-G
DC1332A-A				
5	1	U1	IC, LTC2631HTS8-LM12#PBF, TSOT-23	LINEAR TECHNOLOGY, LTC2631HTS8-LM12#PBF
DC1332A-B				
5	1	U1	IC, LTC2631HTS8-LZ12#PBF, TSOT-23	LINEAR TECHNOLOGY, LTC2631HTS8-LZ12#PBF
DC1332A-C				
5	1	U1	IC, LTC2631HTS8-HM12#PBF, TSOT-23	LINEAR TECHNOLOGY, LTC2631HTS8-HM12#PBF
DC1332A-D				
5	1	U1	IC, LTC2631HTS8-HZ12#PBF, TSOT-23	LINEAR TECHNOLOGY, LTC2631HTS8-HZ12#PBF

SCHEMATIC DIAGRAM

Figure 3. LTC2631 Schematic Diagram

Assy Table

U1	LTC PART#
-A	LTC2631HTS8 - LM12
-B	LTC2631HTS8 - LZ12
-C	LTC2631HTS8 - HM12
-D	LTC2631HTS8 - HZ12

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CONTRACT NO.		
APPROVALS		DATE
DRAWN	HELEN	9/12/07
CHECKED		
APPROVED		
ENGINEER	Leo Chen	9/12/07
DESIGNER		

TITLE
LTC2631HTS8-LM12/LZ12/HM12/HZ12
Single 12/10/8-Bit I2C Vout DAC

DWG NO DC1332A-A/B/C/D REV A

Tuesday, September 23, 2008

SIZE | CAGE CODE | SCALE: | FILENAME:
SHEET 1 OF 1

DC1332af

DC1332af

6 **Linear Technology Corporation**
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