

# LTC2631

## Single 12-/10-/8-Bit I<sup>2</sup>C V<sub>OUT</sub> DACs with Integrated 10ppm/°C Reference

### DESCRIPTION

Demonstration circuit 1332A features the [LTC®2631](#), a 12-bit I<sup>2</sup>C 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>**

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### 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

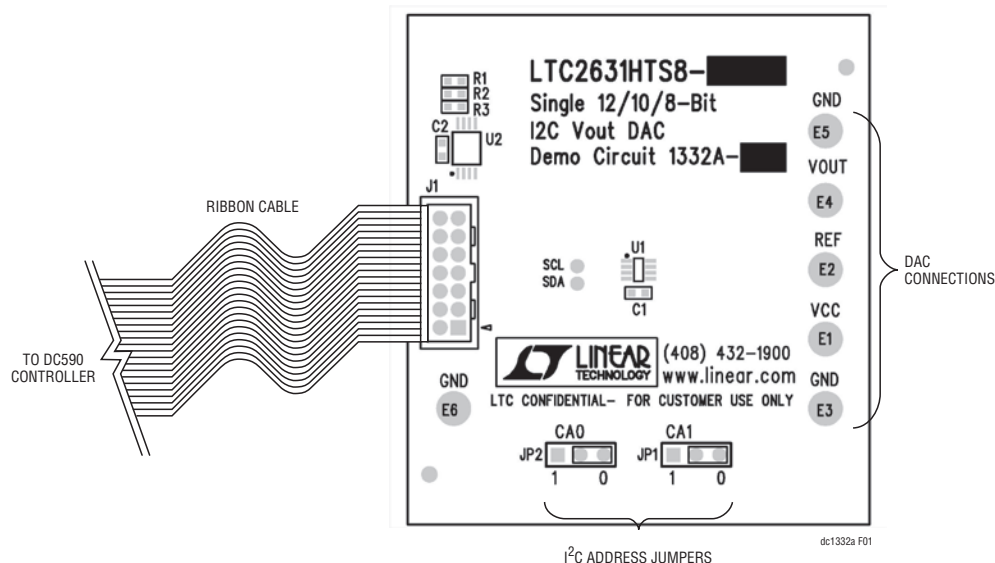


Figure 1. DC1332A Connection Diagram

## 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](http://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.

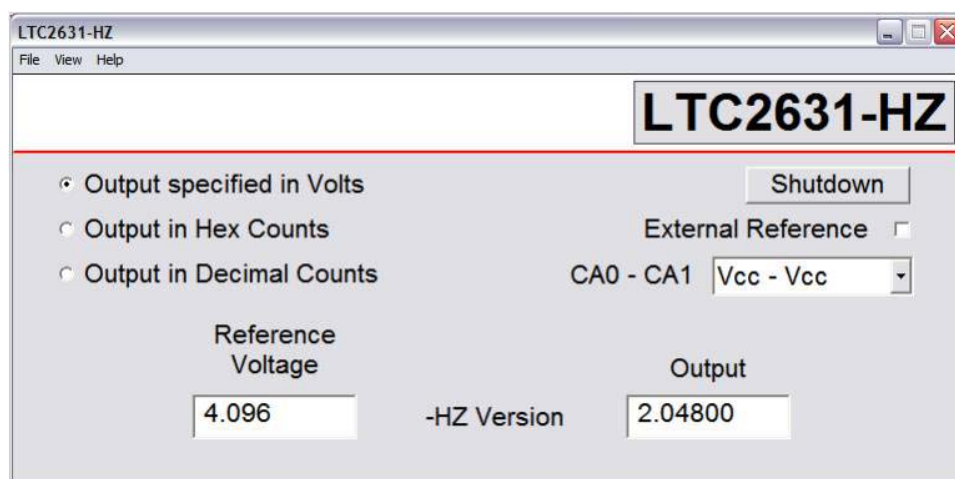


Figure 2. QuikEval Software

## HARDWARE SETUP

### JUMPERS

**CA0:** This sets the I<sup>2</sup>C address of the LTC2631. These should be set to 1 (V<sub>CC</sub>) by default.

**CA1/REF\_SEL:** On the B and D versions of the demo board, this is used to determine the I<sup>2</sup>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<sub>CC</sub>):** Normally, the DC1332A is powered by the DC590 controller. V<sub>CC</sub> 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.

# DEMO MANUAL DC1332A

## PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
<b>DC1332A Required Circuit Components</b>				
1	2	C1, C2	CAP., X7R, 0.1 $\mu$ F, 16V, 10%, 0603	AVX, 0603YC104KAT
2	1	J1	HEADER, 2 $\times$ 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
<b>Hardware: For Demo Board Only</b>				
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
<b>DC1332A-A</b>				
5	1	U1	IC, LTC2631HTS8-LM12#PBF, TSOT-23	LINEAR TECHNOLOGY, LTC2631HTS8-LM12#PBF
<b>DC1332A-B</b>				
5	1	U1	IC, LTC2631HTS8-LZ12#PBF, TSOT-23	LINEAR TECHNOLOGY, LTC2631HTS8-LZ12#PBF
<b>DC1332A-C</b>				
5	1	U1	IC, LTC2631HTS8-HM12#PBF, TSOT-23	LINEAR TECHNOLOGY, LTC2631HTS8-HM12#PBF
<b>DC1332A-D</b>				
5	1	U1	IC, LTC2631HTS8-HZ12#PBF, TSOT-23	LINEAR TECHNOLOGY, LTC2631HTS8-HZ12#PBF

## SCHEMATIC DIAGRAM

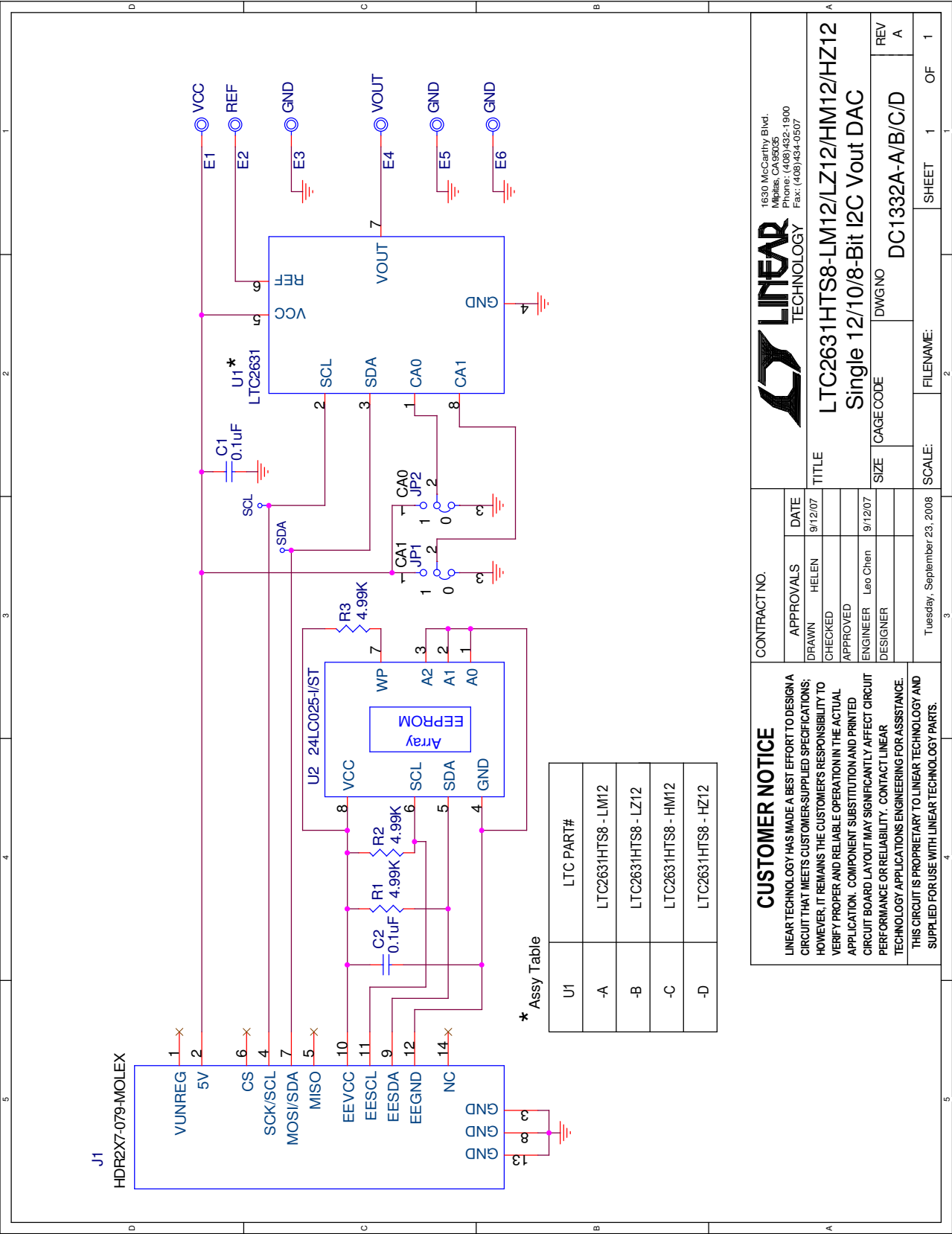


Figure 3. LTC2631 Schematic Diagram

# DEMO MANUAL DC1332A

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## DEMONSTRATION BOARD IMPORTANT NOTICE

Linear Technology Corporation (LTC) provides the enclosed product(s) under the following **AS IS** conditions:

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**Please read the DEMO BOARD manual prior to handling the product.** Persons handling this product must have electronics training and observe good laboratory practice standards. **Common sense is encouraged.**

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

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