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DESCRIPTION

Demonstration circuit 1074 features the LTC2630 family of 12 bit DACs. This device establishes a new benchmark for size and integration of 12 bit DACs and onboard reference. Four DACs are included:

LTC2630HZ (4.096V reference, reset to zero)

LTC2630HM (4.096V reference, reset to midscale)

LTC2630LZ (2.5V reference, reset to zero)

LTC2630LM (2.5V reference, reset to midscale)

DC1074 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. Call the LTC factory.


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Figure 1. Proper Measurement Equipment Setup

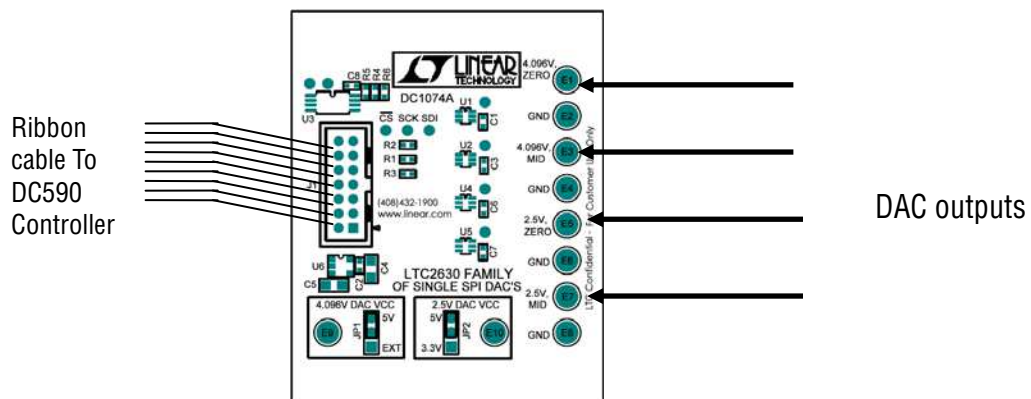


Table 1. LTC2630 Performance Summary, AHM / AHZ versions ($V_{fs} = 4.096V$)

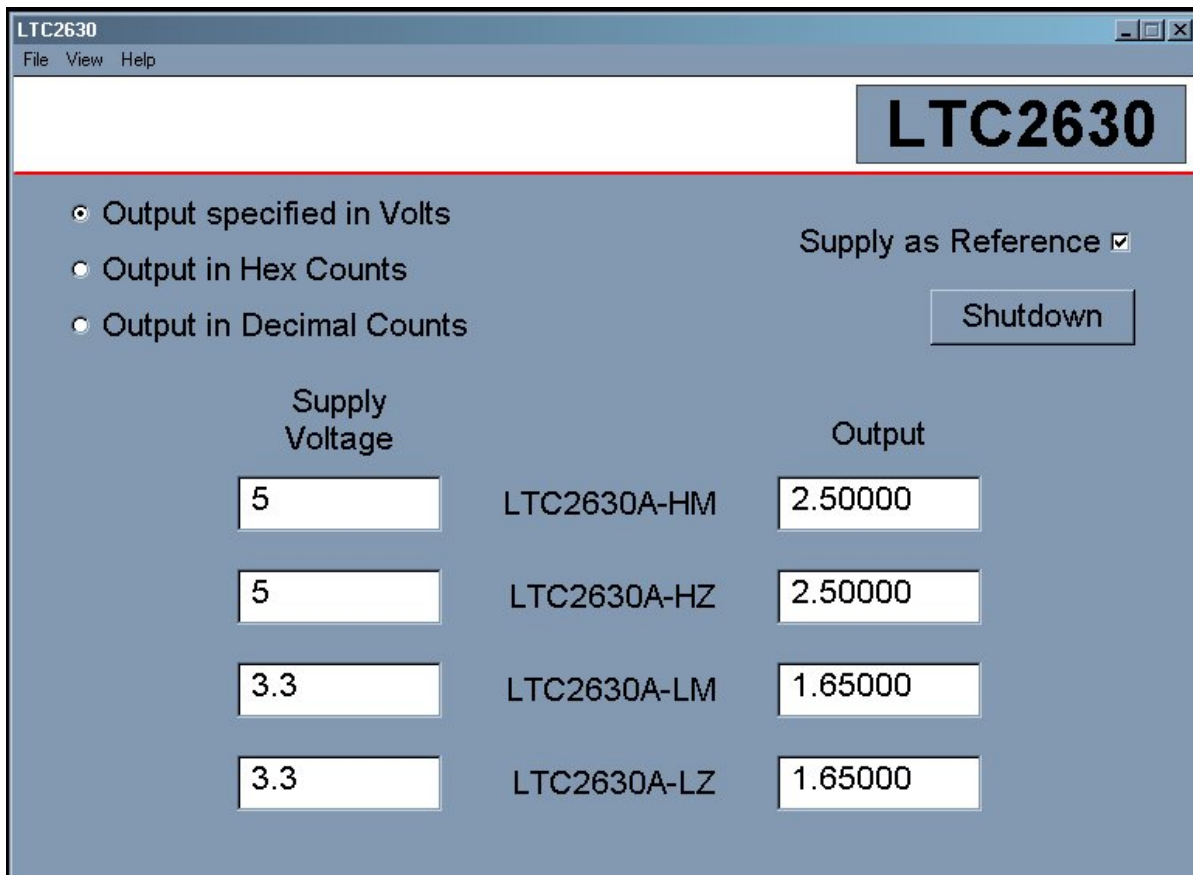
PARAMETER	CONDITION	VALUE
Resolution		12 BITS
Monotonicity	$V_{cc} = 5V$, $V_{ref} = \text{internal}$	12 BITS
Differential Nonlinearity	$V_{cc} = 5V$, $V_{ref} = \text{internal}$	+/-1 LSB
Integral Nonlinearity	$V_{cc} = 5V$, $V_{ref} = \text{internal}$	+/-0.5 LSB Typical
Load Regulation	$V_{out} = \text{Midscale}$, $I_{out} = +/- 5 \text{ mA}$	0.1 LSB/mA

QUICK START PROCEDURE

Connect DC1074 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. Options are available to display the DAC output in

Voltage, hex code, or decimal count. Additionally, the supply or internal 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 supply as reference.

Figure 2. Software Screenshot



HARDWARE SET-UP

JUMPERS

4.096V DAC VCC – Select the supply for the H DACs, either 5V (default) or supplied externally to the turret post.

2.5V DAC VCC – Select the supply for the L DACs, either 5V, 3.3V (default) or supplied externally to the turret post. (remove jumper.)

ANALOG CONNECTIONS

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

GROUNDING AND POWER CONNECTIONS

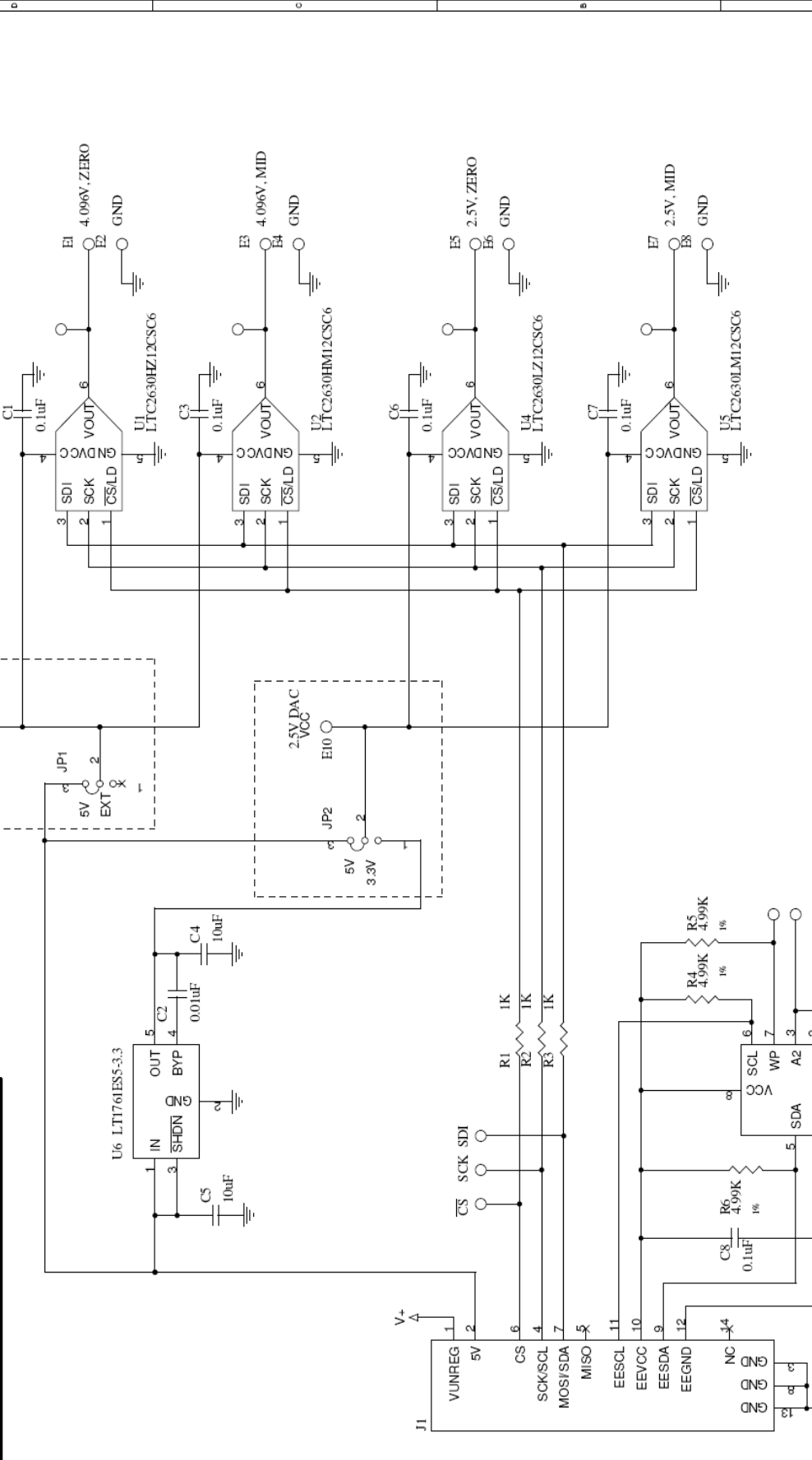
Power (Vcc) – Normally DC1074 is powered by the DC590 controller. Vcc can be supplied to the 5V turret, however the power supply on DC590 must be disabled! Refer to DC590 Quick Start Guide for more details on this mode of operation.

Grounding – Four ground posts are provided. Exposed ground planes at the edges of the board are also provided for optimum grounding to other circuits.

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT DC1074

LTC2630 FAMILY OF SINGLE SPI DACS

This circuit is proprietary to Linear Technology and supplied for use with Linear Technology parts.
Customer Notice: Linear Technology has made a best effort to design a circuit that meets customer-supplied specifications; however, it remains the customer's responsibility to verify proper and reliable operation in the actual application. Component substitution and printed circuit board layout may significantly affect circuit performance or reliability. Contact Linear Applications Engineering for assistance.



REVISION HISTORY	
ECO	DESCRIPTION
2	PROTO
	DATE
	APPROVED

CONTRACT NO.	DATE
APPROVALS	03/15/04
DRAWN	
CHECKED	
APPROVED	
ENGINEER	
DESIGNER	

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LINEAR TECHNOLOGY
TITLE
SCH, LTC2630 FAMILY OF SINGLE SPI DAC'S
SIZE
CAGE CODE
DWG NO
DC1074A
REV
2

SCALE:	FILENAME:	SHEET:	OF:
	1074A-2.DSN	1	1