LTC1661/LTC1662
2-Channel, 10-Bit, Micropower DACs

DESCRIPTION

Demonstration circuit 2789A features the LTC®1661/LTC1662, 2-channel, 10-Bit, micropower DACs in an 8-lead MSOP package. The DC2789A also features an LTC1258-4.1, a lower voltage reference.

The LTC1661/ LTC1662 are ultralow power, fully buffered voltage output, dual 10-bit digital-to-analog converters (DACs).

Each LTC1662 channel draws just 1.7µA (typ) total supply-plus reference operating current, yet is capable of supplying DC output currents in excess of 1mA and reliably driving capacitive loads of up to 1000pF. Each LTC1661 channel draws 30µA.

Design files for this circuit board are available at http://www.linear.com/demo/DC2789A

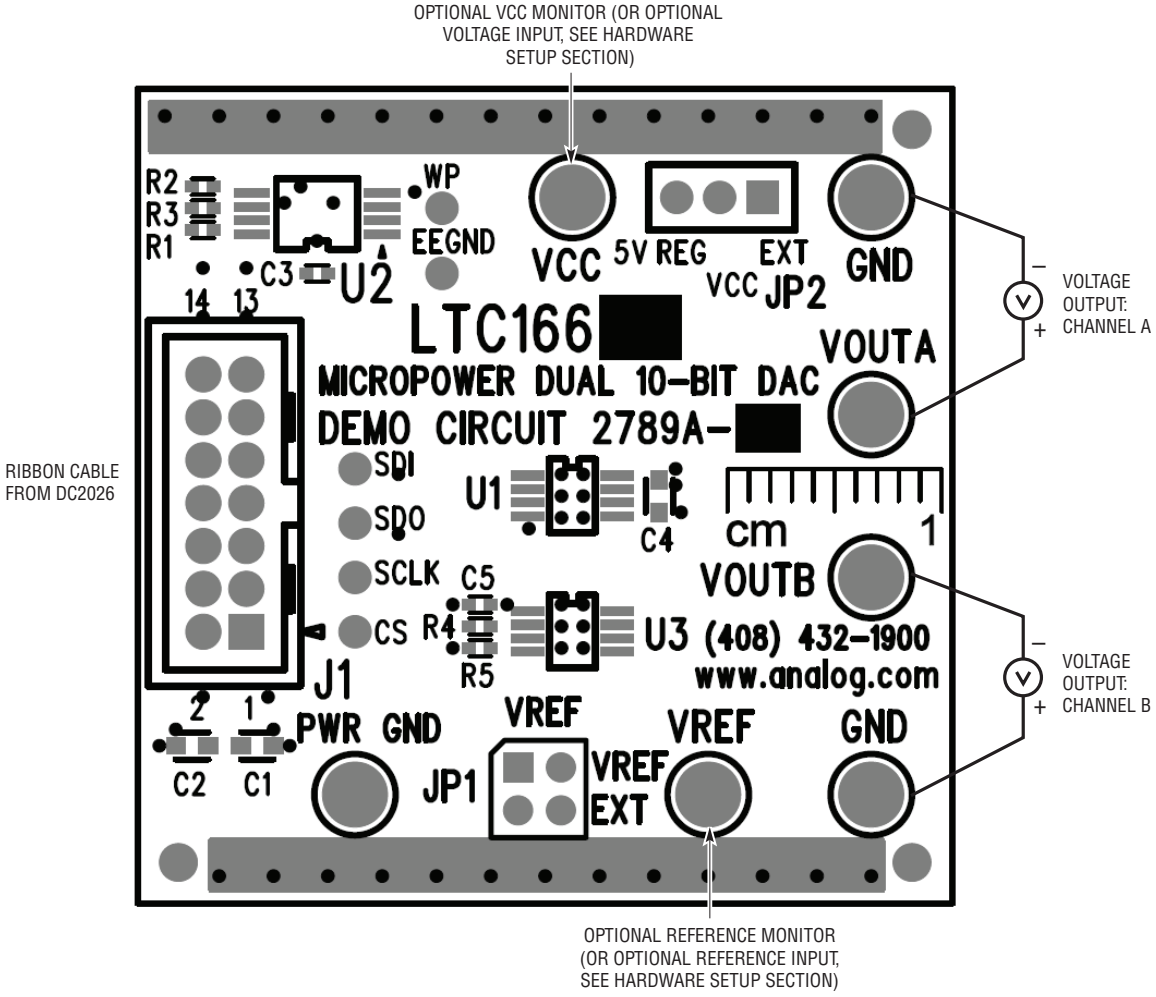

Figure 1. Connection Diagram

ASSEMBLY OPTIONS

ASSEMBLY TYPE	PART NUMBER	DAC CHANNELS	BITS	TYPICAL CURRENT (I_{CC})
DC2789A-A	LTC1661	2	10	95µA
DC2789A-B	LTC1662	2	10	3µA

QUICK START PROCEDURE

1. Download and install QuikEval™ from:

   www.linear.com/quikeval

2. Connect a DC590 controller or DC2026 Linduino® with the DC590 emulator firmware to the DC2789A with the supplied ribbon cable. If the DC590 emulator firmware is not installed on the DC2026, refer to the Linduino manual to reinstall it.

3. Connect the controller to the host PC's USB port and run QuikEval. The DC2789A software will be downloaded and installed, after which the GUI will appear as shown in Figure 2. The control panel gives access to the LTC1661/LTC1662's functionality including output voltage for both channels and sleep mode. If an external reference is used the reference voltage can also be changed.

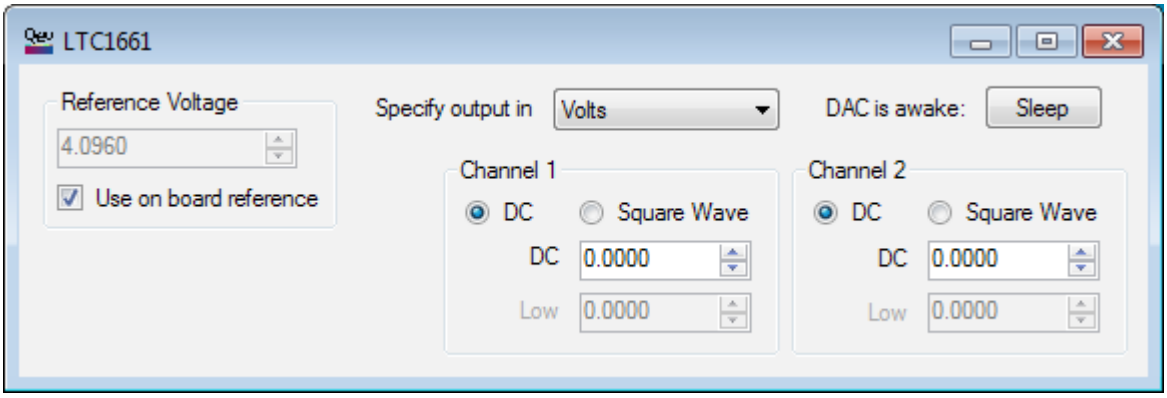

Figure 2. QuikEval Module

USING EXTERNAL REFERENCE FOR THE DC2789A

To use an external reference to drive the DC2789A, move the jumper named V_{REF} (JP1) from the V_{REF} position to the EXT position. Use the REF turret to drive the reference voltage. If the QuikEval module is being used, the new reference voltage will need to be manually set.

Using External Supplies for V_{CC}

As a default, the DC2789A is powered from the DC590/DC2026. It can be powered by an external supply as well. Move the jumper labeled V_{CC} from 5V reg to EXT and connect the low noise supply to the V_{CC} turret.

Connectors and Turrets

J1: Interface connector to DC590 controller or Linduino. Provides V_{CC} power, SPI interface, and board identification.

V_{CC}: Normally V_{CC} is supplied by the DC590 or DC2026. By changing JP2 (V_{CC}) an external voltage can be used to power the DC2789A. This voltage should be between 2.7V to 5.5V.

GND/PWR GND: Additional ground posts and exposed ground plane around the board edge allow solid connection to prototype circuitry and measurement equipment.

V_{REF}: Connection to the REF pin. In internal reference mode, the reference voltage may be monitored at this point. Placing V_{REF} jumper in EXT position allows an external low noise reference to be connected to this point. External references should be between 0V and V_{CC}.

V_{OUTA}: Output supply voltage for DAC channel A.

V_{OUTB}: Output supply voltage for DAC channel B.

Jumpers

V_{REF} (JP1): Selects internal or external reference mode. (Default: V_{REF})

V_{CC} (JP2): Selects between 5V regulated voltage from the DC590/DC2026 or an external voltage supply. (Default: 5V Reg)

Test Points

The SPI bus is available on a row of through-hole test points next to J1 that may be used to monitor the bus or drive the bus with an external controller.

EEGND, WP: For factory use only.

ESD Caution
ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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