DC332 QUICK START GUIDE

Description

Demonstration circuit DC332 is a constant current source LED driver. The demo board uses the LTC1682 inductorless DC/DC converter with an internal low noise linear regulator. The circuit is designed to drive five white LEDs in parallel from a single Li-Ion cell. The constant current architecture of the DC332 circuit accurately controls the LED light output regardless of the variations in the forward voltage drop of the LEDs. The constant switching frequency, internal slew control and low noise LDO in the LTC1682 result in low input voltage ripple, low output voltage ripple and a small circuit size of less than 30mm^2.

The DC332 is specifically targeted for white LED backlight applications in cellular phones and small hand-held devices such as PDAs, where circuit noise and circuit size are critical. The input ripple, output ripple and dropout voltage performance can be improved by increasing the input, output, and CPO capacitors to 4.7µF, X7R ceramic. Gerber files for this circuit board are available. Call the LTC factory.

Quick Start

DC332 is easy to set up to evaluate the LTC1682 low noise, LED driver circuit. Refer to Figure 1 for equipment setup and follow the procedure outlined below:

1. Before turning on the power supply, connect a 3.3V, 500mA bench supply to the V_{IN} and GND terminals.

2. Turn on the input power supply and observe that the white LEDs light up. The output voltage should measure 4.5V (typical) with 3V–4.2V input voltage.
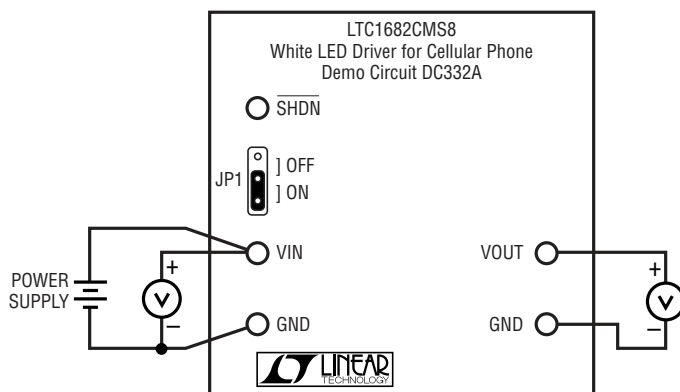

Figure 1. DC332A Test and Measurement Setup

3. Connect the JP1 jumper to the "off" position to turn off the LTC1682. Returning the jumper to the "on" position will turn on the LTC1682.

4. When measuring the input / output voltage ripple, care must be taken to avoid a long ground return for the oscilloscope probe. After removing the grabber and outer plastic sleeve from the scope probe, measure the input voltage ripple by touching the probe between V_{IN} and GND and measure the output voltage ripple by touching the probe between V_{OUT} and GND as shown in Figure 2.
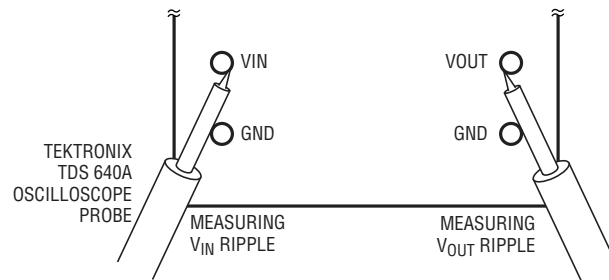
Figure 2. Proper Noise Measurement Technique