

DESCRIPTION

Demonstration circuit 484 features the LT1937 constant-current white LED driver in a small SOT23 ThinSOT package. The demo board is designed to demonstrate the high efficiency performance and the small size of the LT1937. The LT1937 features a 95mV feedback voltage, 1.2MHz switching frequency and a special internal compensation network, which allows small (0603) input and output capacitors. DC484 is specifically designed for

white LED backlight applications using 2–4 LEDs, making LT1937-SOT23 an ideal solution for battery powered portable applications such as cellular phones, digital cameras, MP3 players, GPS receivers, and handheld computers (PDAs). LT1937 offers numerous LED dimming circuit options, see the datasheet for details.

Design files for this circuit board are available from the LTC factory.

QUICK START PROCEDURE

Demonstration circuit 484 is easy to set up to evaluate the performance of the LT1937. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

NOTE: When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. Measure the input or output voltage ripple by touching the probe tip directly across the Vin or Vout and GND terminals. See Figure 2 for proper scope probe technique.

1. The demo board can be powered from a 3V Lithium battery installed on the demo board (B1) or other input source (bench top power supply) by selecting input source jumper (JP1).

For battery (B1) input operation, place the jumper (JP1) to the “BATTERY” position.

For bench supply input, place the jumper (JP1) in the Vin position and connect a 3.3V, 500mA Bench supply to the Vin and GND terminals.

2. Turn on the input power supply or connect the single cell Li-Ion battery. Turn on the LT1937 LED driver circuit by pushing down SW1. Observe all four white LEDs light up. The output voltage should measure about 13V across the Vout Test terminal to GND terminal.
3. The brightness of the LEDs can be controlled by applying a PWM signal to the SHDN terminal. The typical frequency range recommended for PWM dimming is 1KHz–10KHz with the signal magnitude of the PWM signal higher than 1.5V. See the LT1937 data sheet for more information about PWM dimming control.

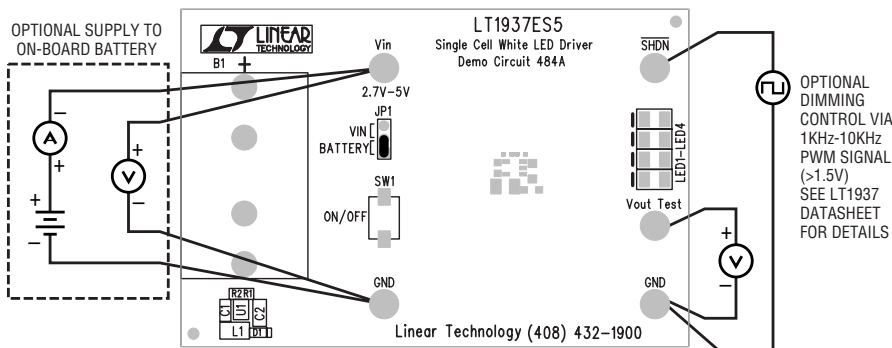


Figure 1. Proper Measurement Equipment Setup

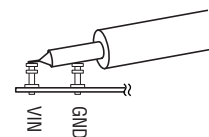


Figure 2. Measuring Ripple

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 484

SINGLE CELL WHITE LED DRIVER

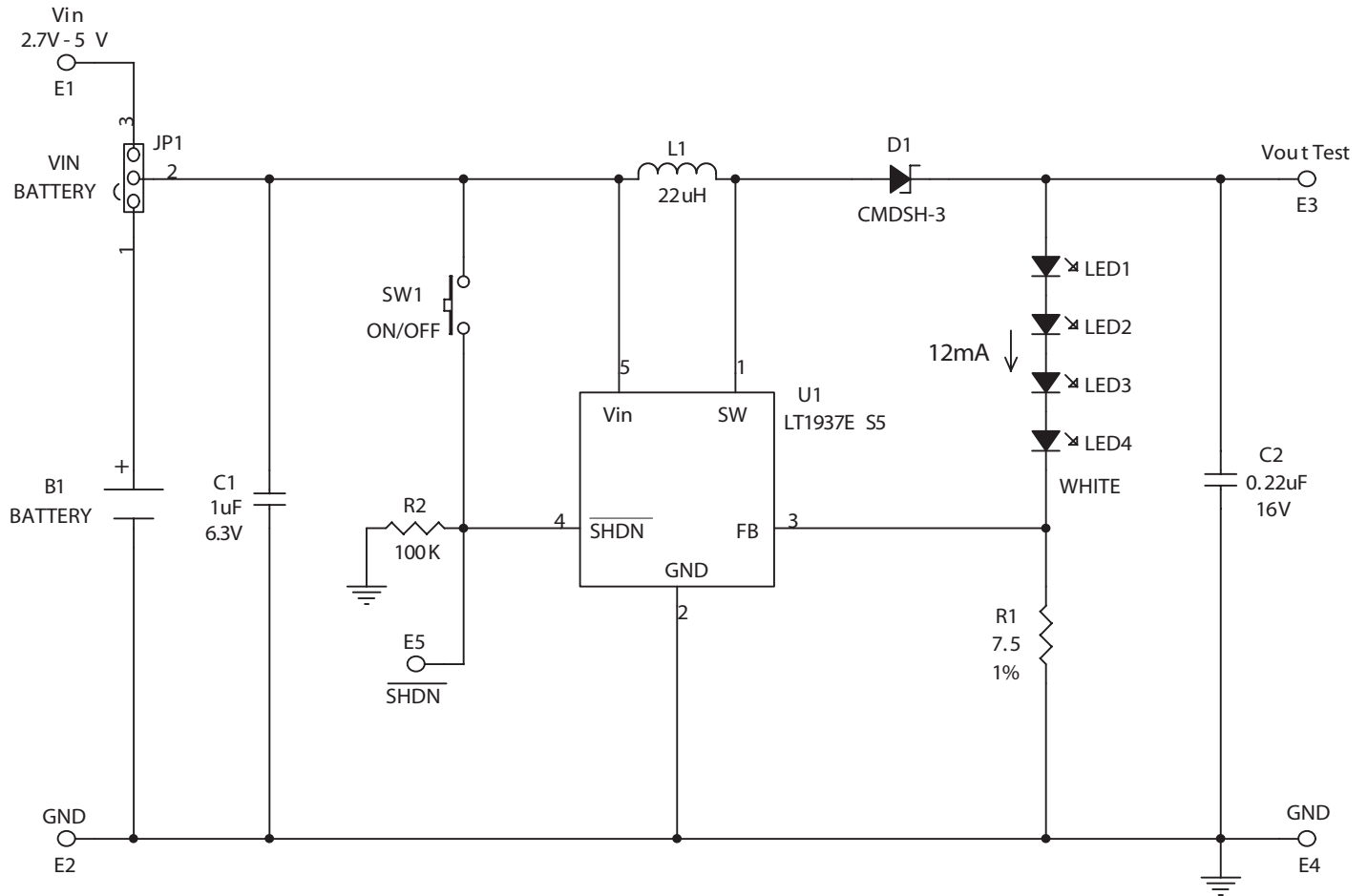
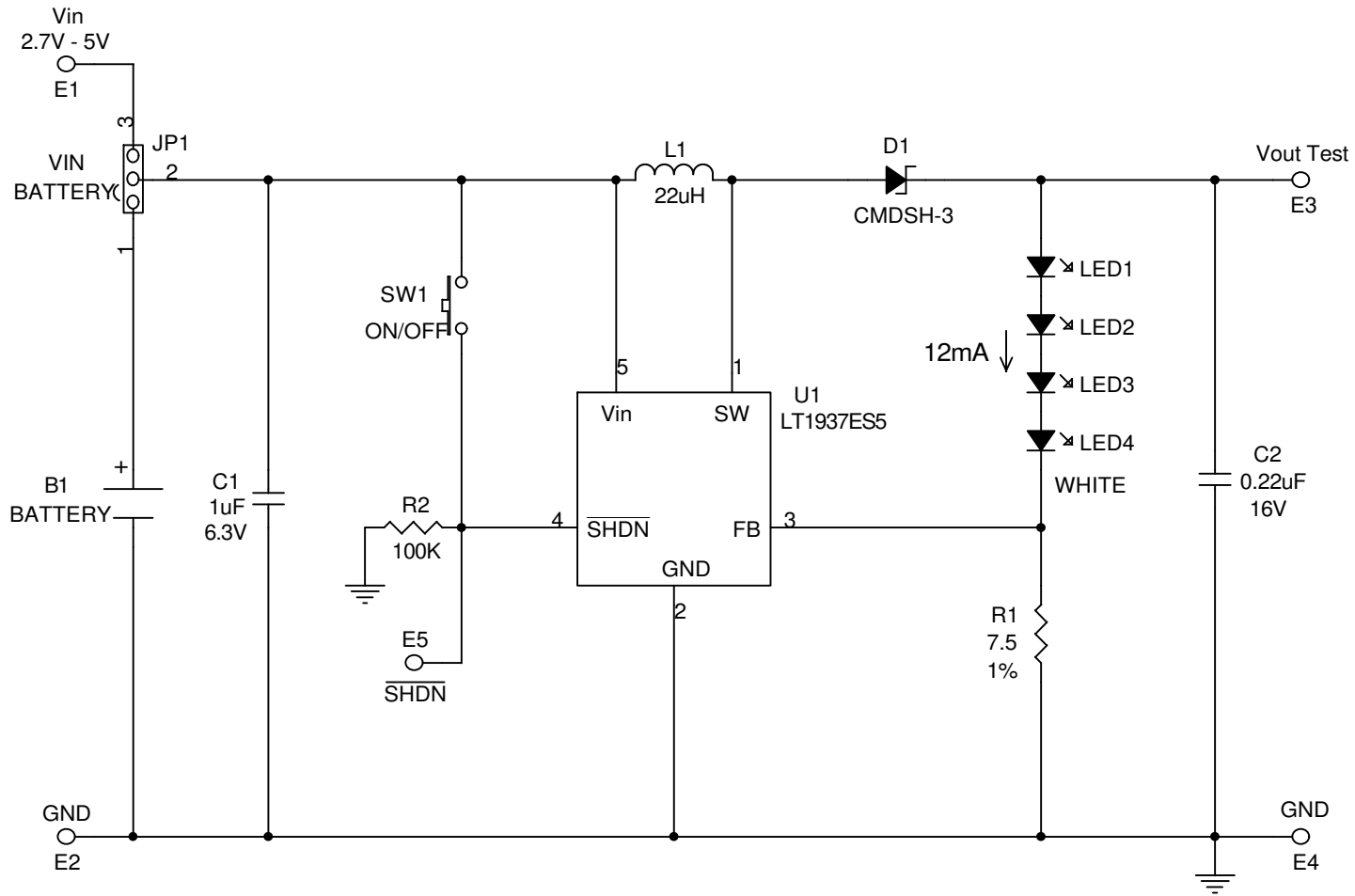


Figure 3. Schematic



| | |
|---------------------------|----------|
| CONTRACT NO. | |
| APPROVALS | DATE |
| DRAWN June Wu | 11/27/01 |
| CHECKED | |
| APPROVED | |
| ENGINEER David Chen | 11/27/01 |
| DESIGNER | |
| Friday, December 14, 2001 | |



1630 McCarthy Blvd.
 Milpitas, CA 95035
 Phone: (408)432-1900
 Fax: (408)434-0507

| | | | |
|---|-----------|-------------|------|
| TITLE | | | |
| LT1937ES5, SINGLE CELL WHITE LED DRIVER | | | |
| SIZE | CAGE CODE | DWG NO | REV |
| | | DEMO DC484A | A |
| SCALE: | FILENAME: | SHEET 1 | OF 1 |

6/17/2005

12:34 PM

| Item | Qty | Reference | Part Description | Manufacture / Part # |
|-------------|------------|--------------------|----------------------------------|----------------------------------|
| 1 | 1 | B1 | BATTERY, AA | SANYO., CR2 |
| 2 | 2 | B1 HOLDER | BATTERY HOLDER, | KEYSTONE, 92 |
| 3 | 1 | L1 | INDUCTOR, 22uH | MURATA, LQH32CN220K51L |
| 4 | 1 | C1 | CAP., X5R, 1.0uF, 6.3V, 20% 0603 | TAIYO YUDEN, JMK107BJ105MA |
| 5 | 1 | C2 | CAP., X7R, 0.22uF, 16V 20% 0805 | TAIYO YUDEN, EMK212BJ224MG |
| 6 | 1 | D1 | DIODE, CMDSH-3, SOD-323 | Central Semi. CMDSH-3 |
| 7 | 5 | E1,E2,E3,E4,E5 | TESTPOINT, TURRET, .094" | MILL-MAX, 2501-2 |
| 8 | 1 | JP1 | JUMPER, 0.079, 3 PIN | COMM CON, 2802S-03G1 |
| 9 | 1 | JP1 (BATTERY SIDE) | SHUNT, | COMM CON. CCIJ2MM-138G |
| 10 | 4 | LED1-LED4 | LED, NSCX SERIES, WHITE | NICHIA, NSCW100 |
| 11 | 1 | R1 | RES., CHIP, 7.5, 1/16W, 1% 0402 | AAC., CR05-7R50FM |
| 12 | 1 | R2 | RES., CHIP, 100K, 1/16W, 5% 0402 | AAC., CR05-104JM |
| 13 | 1 | SW1 | SWITCH MOMENTARY | PANASONIC EVQ PJS 05K |
| 14 | 1 | U1 | IC., LT1937, SOT23-S5 | LINEAR., LT1937ES5 (Bulk) |
| 15 | 1 | | PRINTED CIRCUIT BOARD | DEMO BOARD DC484A |