

DESCRIPTION

Demonstration circuit 876 is a dual 1.3A white LED step-up converter with wide dimming range featuring the LT3486. The board is optimized to drive a string of six, eight, or ten white LEDs at 100mA from each of its two outputs with a PVIN input voltage range of 3V to 25V. The maximum LED output voltage must be less than 36V and the over-voltage protection at the output will limit the maximum output voltage to 36V in the case of an open circuit load. The high input voltage range, high-efficiency low-side internal 1.3A npn power switches, ground-referenced low-voltage current sense resistors, pwm pins for high dimming ratio, control pins for brightness adjust, overvoltage protection, shutdown control pin, externally programmable switching frequency, low shutdown current and internal soft-start capacitor make the LT3486 an extremely powerful and versatile LED driving IC for portable applications and displays.

DC876 has overvoltage protection at 36V if the LEDs are open or not properly attached to the terminals on the PCB. The shutdown function is activated by pulling the shutdown terminal to ground, but in shutdown the boost configuration allows the input voltage to be seen on the output and if the attached LED array leaks current at the input voltage, the LEDs may not completely turn off in shutdown. The CTRL terminals can be used to decrease the LED current by connecting the CTRL jumpers to 'terminal' instead of 'VIN'. The PWM terminals can be used to dim the LEDs with a PWM signal greater than 3.5V when the PWM jumper is connected to 'terminal' instead of 'VIN'. When the 'VIN' setting is used at either jumper, the function is disabled and the part will run at full current or without PWM dimming. If VIN is below 3.5V,

the gate of the MOSFET may not be activated and the LEDs may not turn on. For proper operation with VIN voltages below 3.5V, either external PWM signals must be used to turn the MOSFETs on or another, lower voltage, MOSFET must be used in place of the FDN5630. Some gate voltage curves are provided below.

A simple modification can be made to the DC876A board in order to change the constant current output of either channel. The sense resistor can be changed according to the equation in the datasheet and that will change the constant LED current.

The silkscreen on the demonstration circuit and the table in the schematic give a guideline of the input voltage range for a 100mA LED output at a given LED forward voltage in which the LT3486 remains below its maximum current limit.

The LT3486 datasheet gives a complete description of the part, operation and applications information. The datasheet must be read in conjunction with this Quick Start Guide for demonstration circuit 876. The LT3486 is assembled in a small 16-lead plastic TSSOP FE package with a thermally enhanced ground pad. Proper board layout is essential for maximum thermal performance. See the datasheet section 'Layout Considerations'. An additional 16-lead (5mm x 3mm) plastic DFN DHC package is available, but not on this demonstration circuit.

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

LT is a trademark of Linear Technology Corporation

QUICK START PROCEDURE

Demonstration circuit 876 is easy to set up to evaluate the performance of the LT3486. Follow the procedure below:

NOTE: Make sure that the power input voltage (PVIN) does not exceed 25V and that the input voltage (VIN) does not exceed 10V.

1. Connect an array of LEDs with forward voltage less than 35V, but greater than the input voltage, to the LED+ and LED- terminals on the PCB as shown.
2. Connect a 2.5V to 10V input power supply to the VIN and GND terminals on the PCB and a 3V to 25V input power supply to the PVIN and GND terminals on the PCB.
3. Set the CTRL and PWM jumpers in the VIN position or if VIN is below 3.5V, set the PWM jumper to the terminal position and use a PWM or DC signal with a voltage higher than 3.5V.
4. Observe the bright LEDs and the constant LED current.

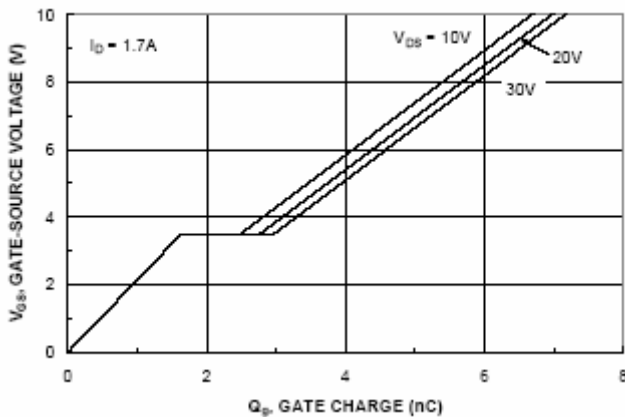


Figure 1. FDN5630 typical gate charge characteristics

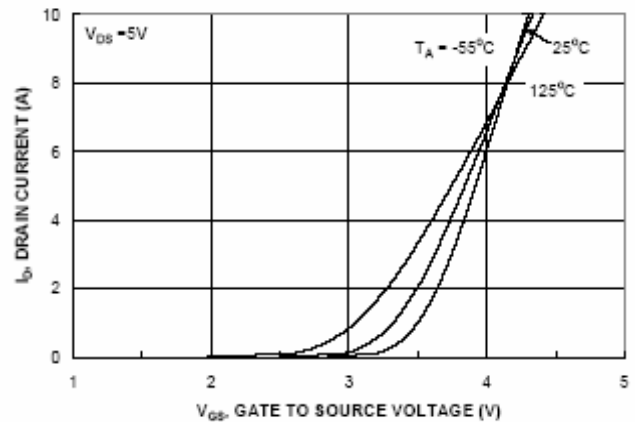


Figure 2. FDN5630 typical transfer characteristics

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 876 DUAL 1.3A WHITE LED STEP-UP CONVERTERS WITH WIDE DIMMING RANGE

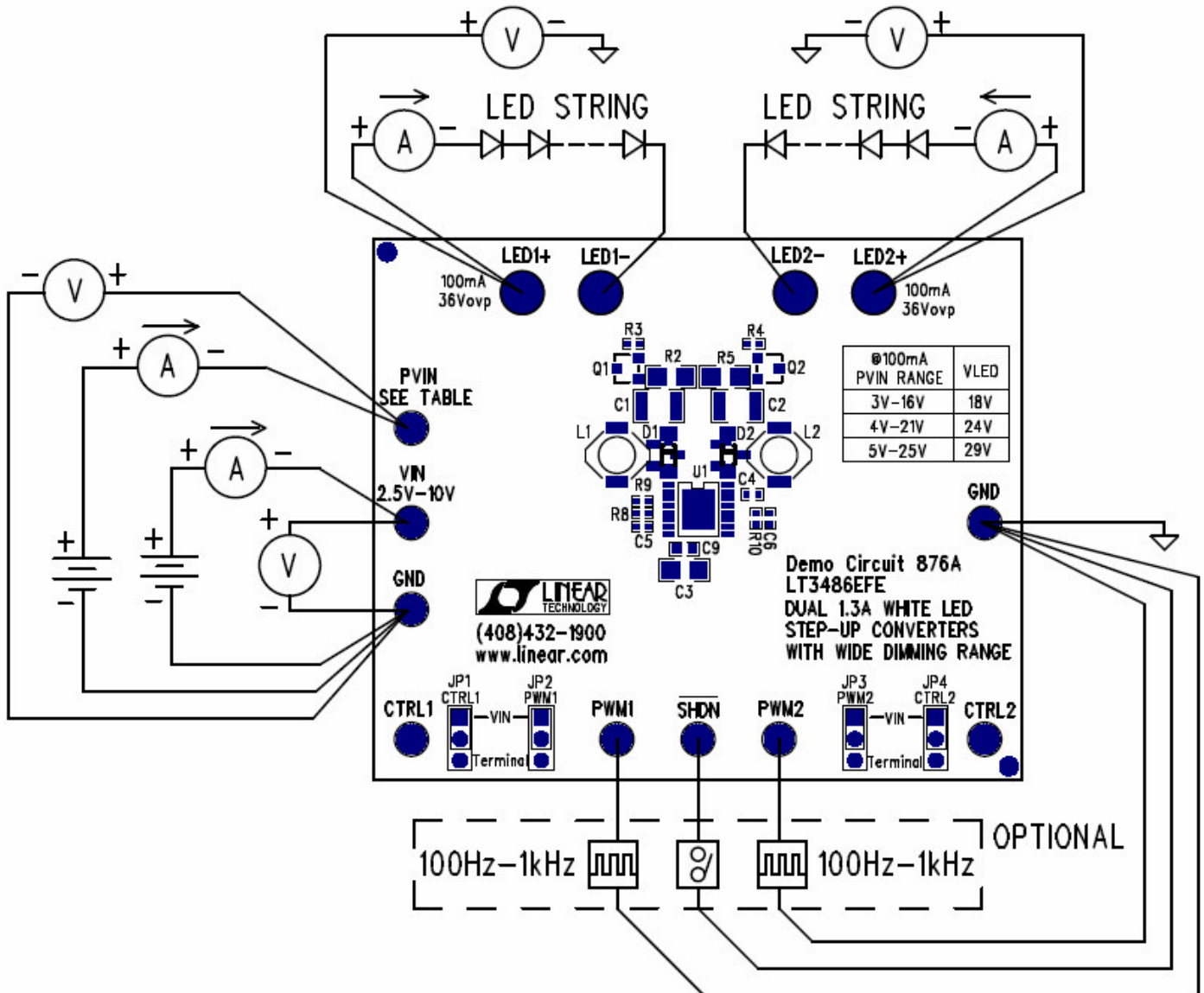
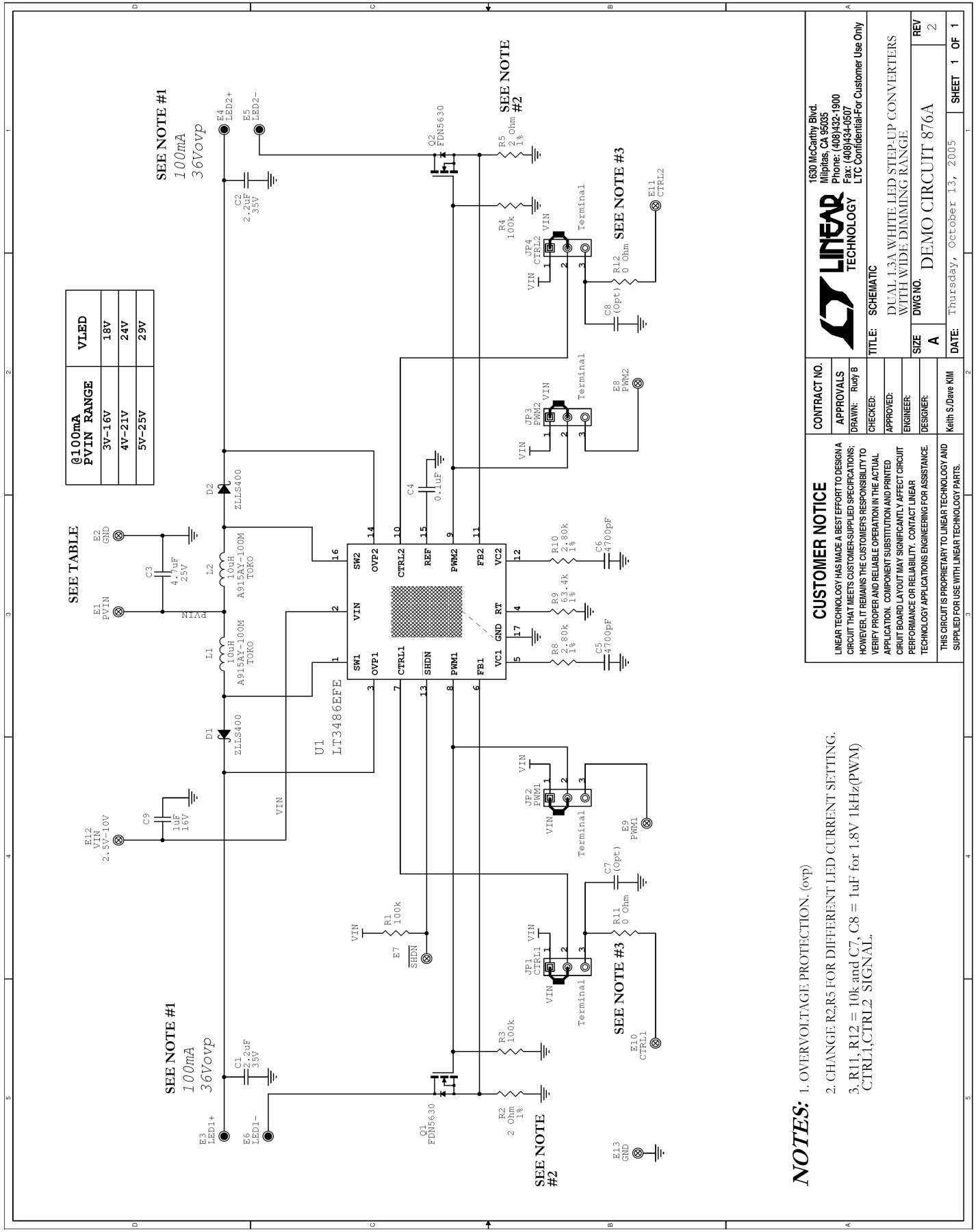


Figure 3. Proper Measurement Equipment Setup

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 876

DUAL 1.3A WHITE LED STEP-UP CONVERTERS WITH WIDE DIMMING RANGE



NOTES:

1. OVERVOLTAGE PROTECTION. (ovp)
2. CHANGE R2,R5 FOR DIFFERENT LED CURRENT SETTING.
3. R11, R12 = 10k and C7, C8 = 1uF for 1.8V 1kHz(PWM) CTRL1,CTRL2 SIGNAL.

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 TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.
THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.

CONTRACT NO.
APPROVALS
DRAWN: Rudy B
CHECKED:
APPROVED:
ENGINEER:
DESIGNER:

1630 McCarthy Blvd.
Milpitas, CA 95055
Phone: (408)432-1900
Fax: (408)434-0507
LTC Confidential-For Customer Use Only

LINEAR TECHNOLOGY

TITLE: SCHEMATIC
DUAL 1.3A WHITE LED STEP-UP CONVERTERS WITH WIDE DIMMING RANGE.

SIZE A
DWG NO. DEMO CIRCUIT 876A
REV 2

DATE: Thursday, October 13, 2005
SHEET 1 OF 1

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru