

**WARNING!**

**DO NOT LOOK DIRECTLY AT OPERATING LED**  
 This Circuit Produces Light that Can Damage Eyes.

## DESCRIPTION

Demonstration circuit 1166A is a 48V Buck-Mode LED Driver featuring the LT<sup>®</sup>3590. The LT3590 is a fixed frequency buck-mode converter specifically designed to drive up to 10 LEDs in series from a 48V DC source. Series connection of the LEDs provides identical LED currents of up to 50mA, resulting in uniform brightness and eliminating the need for ballast resistors. A fixed frequency current mode architecture results in stable operation over a wide range of input voltage and load condition. The high switching frequency allows using tiny components for the circuit.

The LT3590 data sheet gives complete descriptions of the part, operation and application information. The data sheet must be read in conjunction with this quick start guide for working on or modifying the demo circuit 1166A.

**Design files for this circuit board are available at**  
<http://www.linear.com/demo/DC1166A>

LT, LT, LTC, LTM, Linear Technology and the Linear logo are registered trademarks of Linear Technology Corporation. All other trademarks are the property of their respective owners.

## PERFORMANCE SUMMARY

Specifications are at  $T_A = 25^\circ\text{C}$

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
$V_{IN}$	Input Supply Range		4.5		55	V
$D_{MAX}$	Maximum Duty Cycle		90			%
$I_{QSHDN}$	Quiescent Current in Shutdown	$V_{IN} = 48\text{V}$		15	20	$\mu\text{A}$
$f_{SW}$	Switching Frequency		650	850	1050	KHz
$V_{REG}$	VREG Pin Voltage	1mA Load on VREG Pin	3.1	3.3	3.5	V
EFF	Efficiency	$V_{IN} = 48\text{V}; V_{LED} = 30\text{V}; I_{LED} = 50\text{mA}$		90		%

## QUICK START PROCEDURE

Demonstration circuit 1166A is easy to set up to evaluate the performance of the LT3590. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. Place jumpers in the following positions:

**JP1**      ON

2. With power off, connect the input power supply to VIN and GND.

3. With power off, connect LEDs to LED+ and LED-.
4. Turn on the power at the input.

NOTE: Make sure that the input voltage does not exceed 55V.

5. Check for the proper output voltage and current.

**QUICK START PROCEDURE**

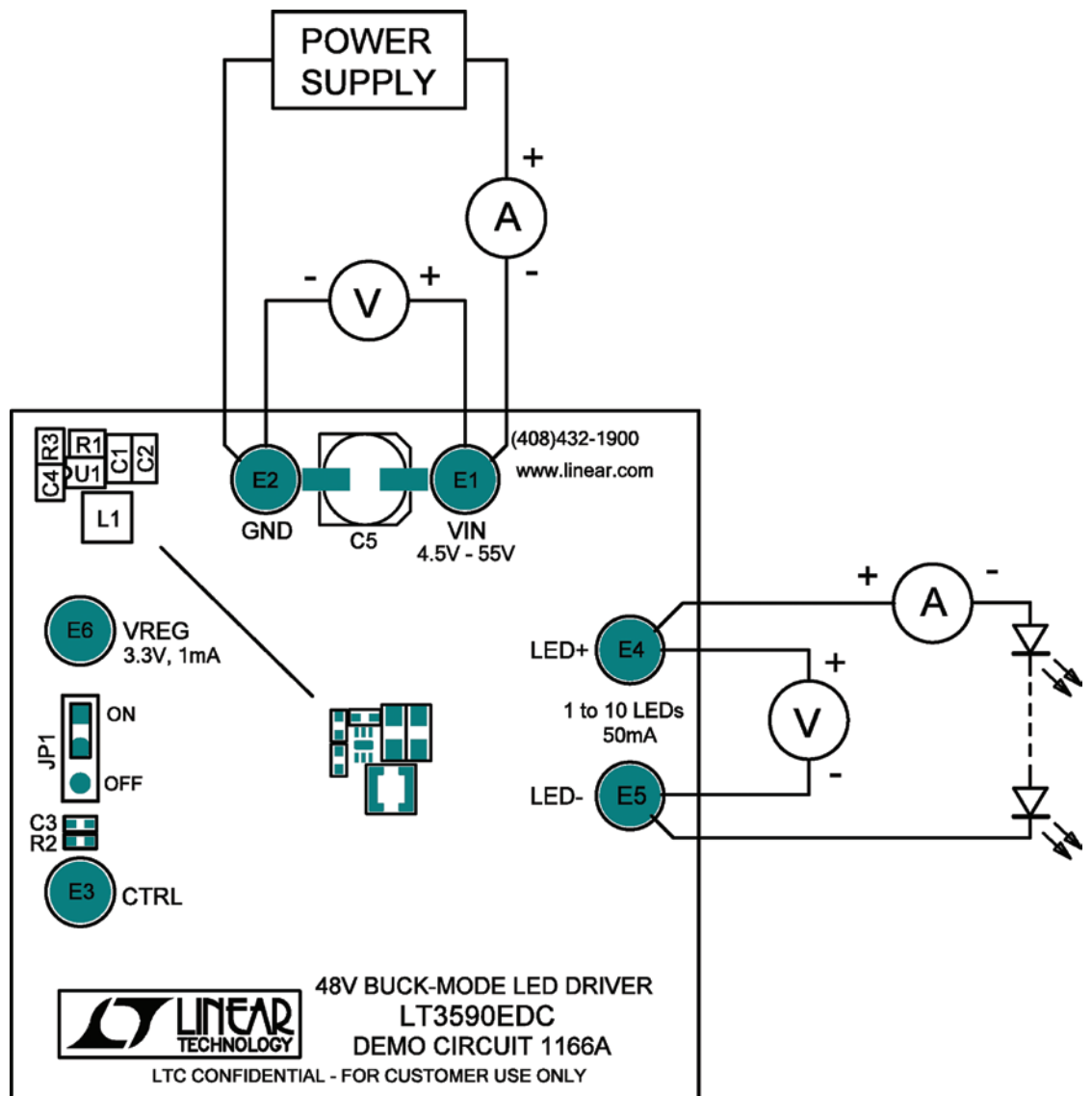


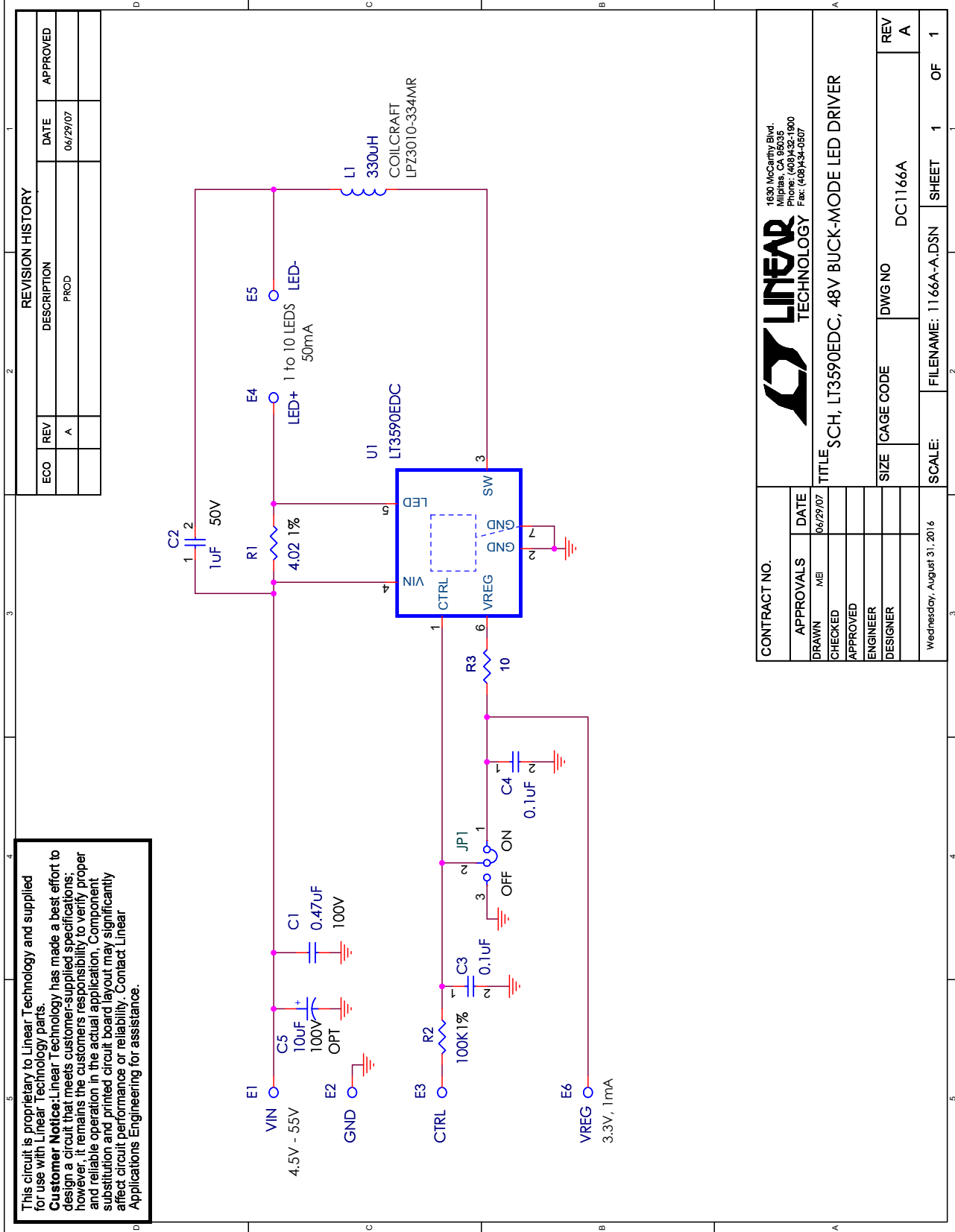
Figure 1. Proper Measurement Equipment Setup

# DEMO MANUAL DC1166A

## PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
<b>Required Circuit Components</b>				
1	1	C1	CAP, 0805 0.47 $\mu$ F 10% 100V X7R	MURATA GRM21BR72A474KA73BL
2	1	C2	CAP, 0805 1 $\mu$ F 10% 50V X7R	MURATA GRM21BR71H105K
3	1	L1	INDUCTOR, 330 $\mu$ H	COILCRAFT LPZ3010-334MR
4	1	R1	RES, 0402 4.02 $\Omega$ 1% 1/16W	VISHAY CRCW04024R02FKED
5	1	U1	IC, LT3590EDC	LINEAR TECH. LT3590EDC
<b>Additional Demo Board Circuit Components</b>				
1	2	C3, C4	CAP, 0402 0.1 $\mu$ F 10% 16V X5R	AVX 0402YD104K
2	1	C5	CAP, 10 $\mu$ F 20% 100V ALUM	SANYO 100CE10BS
3	1	JP1	HEADER, 3-PIN 0.100	SAMTEC TSW-103-26-L-S
4	1	JP1	SHUNT	SAMTEC SNT-100-BK-G
5	1	R2	RES, 0402 100k 1% 1/16W	VISHAY CRCW04021003FKED
6	1	R3	RES, 0402 10 $\Omega$ 5% 1/16W	VISHAY CRCW040210R0JNED
<b>Hardware: For Demo Board Only</b>				
1	5	E1, E2, E3, E4, E5	TURRET	MILL-MAX 2501-2-00-80-00-00-07-0

**SCHEMATIC DIAGRAM**



dc1166af

# DEMO MANUAL DC1166A

---

## DEMONSTRATION BOARD IMPORTANT NOTICE

Linear Technology Corporation (LTC) provides the enclosed product(s) under the following **AS IS** conditions:

This demonstration board (DEMO BOARD) kit being sold or provided by Linear Technology is intended for use for **ENGINEERING DEVELOPMENT OR EVALUATION PURPOSES ONLY** and is not provided by LTC for commercial use. As such, the DEMO BOARD herein may not be complete in terms of required design-, marketing-, and/or manufacturing-related protective considerations, including but not limited to product safety measures typically found in finished commercial goods. As a prototype, this product does not fall within the scope of the European Union directive on electromagnetic compatibility and therefore may or may not meet the technical requirements of the directive, or other regulations.

If this evaluation kit does not meet the specifications recited in the DEMO BOARD manual the kit may be returned within 30 days from the date of delivery for a full refund. **THE FOREGOING WARRANTY IS THE EXCLUSIVE WARRANTY MADE BY THE SELLER TO BUYER AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. EXCEPT TO THE EXTENT OF THIS INDEMNITY, NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.**

The user assumes all responsibility and liability for proper and safe handling of the goods. Further, the user releases LTC from all claims arising from the handling or use of the goods. Due to the open construction of the product, it is the user's responsibility to take any and all appropriate precautions with regard to electrostatic discharge. Also be aware that the products herein may not be regulatory compliant or agency certified (FCC, UL, CE, etc.).

No License is granted under any patent right or other intellectual property whatsoever. **LTC assumes no liability for applications assistance, customer product design, software performance, or infringement of patents or any other intellectual property rights of any kind.**

LTC currently services a variety of customers for products around the world, and therefore this transaction **is not exclusive**.

**Please read the DEMO BOARD manual prior to handling the product.** Persons handling this product must have electronics training and observe good laboratory practice standards. **Common sense is encouraged.**

This notice contains important safety information about temperatures and voltages. For further safety concerns, please contact a LTC application engineer.

Mailing Address:

Linear Technology  
1630 McCarthy Blvd.  
Milpitas, CA 95035

Copyright © 2004, Linear Technology Corporation

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9