

## DESCRIPTION

Demonstration Circuit 510 is a 1Watt single output CCFL inverter with internal PWM dimming and bottom bulb sense feedback features. The Demo Board consists of a LTC1697 CCFL Controller and a Royer converter that uses bipolar transistors. The LTC1697 also features internal CCFL short circuit and over-voltage protection. The maximum lamp current is set by a single resistor while a 1V –2V Dimming input allows the user to set the desired lamp current anywhere between 0 and the maximum CCFL current set by R5.

Using the LTC1697 with the Royer topology results in a particularly low component count design. Target applications for this Demo Board are PDAs such as Handheld Computers, Handheld GPSs with Map Displays, and Handheld TVVideo Monitors.

DC510 is designed to operate off a single Li-Ion cell for a  $V_{in}$  range of 2.7V – 5.5V and outputs 100s of volts at milliAmp current levels.

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

## QUICK START PROCEDURE

DC510 is easy to set up to evaluate the performance of the LTC1697. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. Connect the LCD\CCFL across the E1 & E2 terminals. Connect the positive CCFL wire to E2 and the negative wire of the LCD to E1.

**Warning:** There may be 100s of volts across the E1 & E2 terminals, across the capacitor C1, and on the secondary side of the transformer T1 that can be harmful if the user accidentally or otherwise touches these points.

2. Ground the LCD Casing through the DC510 GND terminal.
3. Apply 2.7V – 5.5V across the VIN & GND terminals.
4. Apply 1.0V – 2.0V across the VDIM & GND terminals, measuring the CCFL current for the desired output CCFL current.

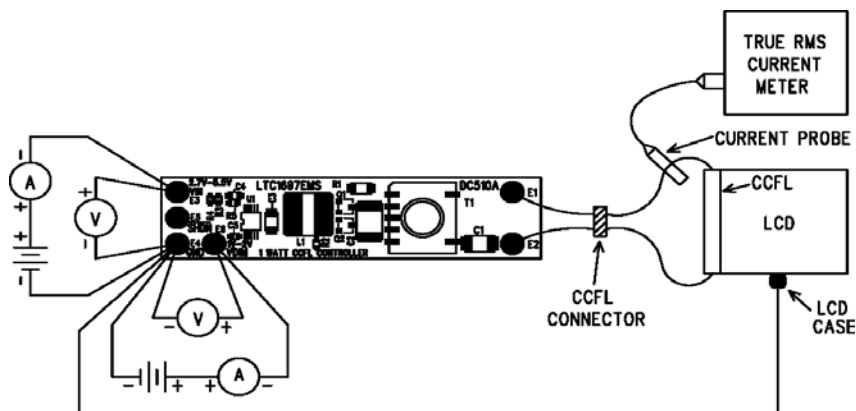
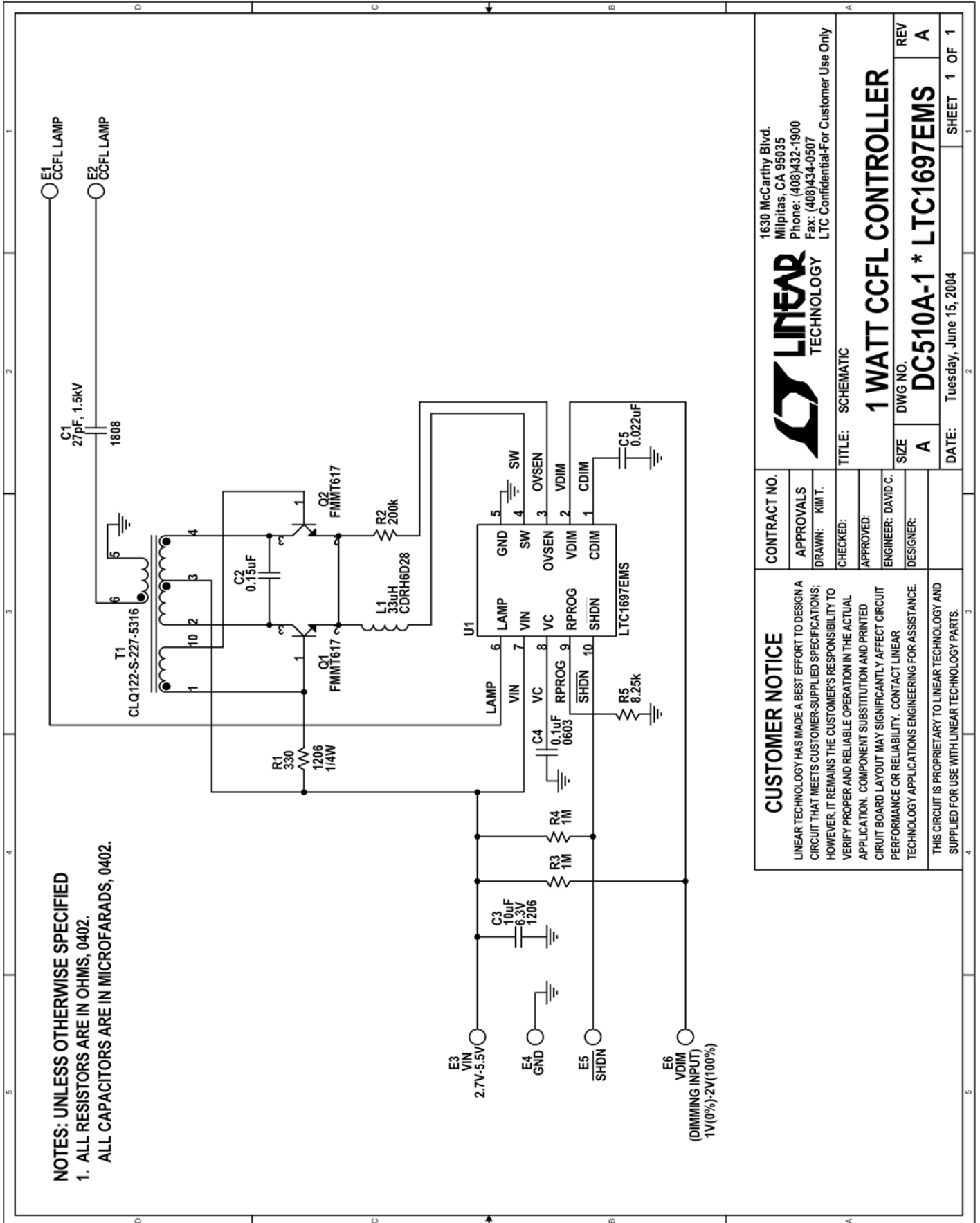


Figure 1. Proper Measurement Equipment Setup

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 510

## 1WATT CCFL POWER SUPPLY



**LINEAR TECHNOLOGY**  
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 LTC Confidential-For Customer Use Only

**1 WATT CCFL CONTROLLER**  
 DC510A-1 \* LTC1697EMS

DATE: Tuesday, June 15, 2004

SHEET 1 OF 1

<b>CUSTOMER NOTICE</b>	CONTRACT NO.
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.	APPROVALS
THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.	DRAWN: KIM T.
	CHECKED:
	APPROVED:
	ENGINEER: DAVID C.
	DESIGNER:

# Linear Technology Corporation

LTC1697EMS

1 WATT CCFL CONTROLLER

**BILL OF MATERIALS**  
DC510A-1

**QTY-425**

6/24/03

10:33 AM

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 510

## 1WATT CCFL POWER SUPPLY

Item	Qty	Reference	Part Description	Manufacture / Part #	Kit Qty
				<b>NUMBER OF BOARDS =</b>	<b>425</b>
1	1	C1	CAP., 27pF 1.5kV, 1808	AVX, 1808SC270MATBA	425
2	1	C2	CAP., 0.15uF, C-PANA-E3-D5	PANASONIC, ECHU1H154JC9	425
3	1	C3	CAP., X5R 10uF 6.3V, 1206	TAIYO YUDEN, JMK316BJ106ML	425
4	1	C4	CAP., X7R 0.1uF 16V	AVX, 0603YC104MAT1A	425
5	1	C5	CAP., X7R 0.022uF 16V, 0402	AVX, 0402YC223MAT1A	425
6	6	E1,E2,E3,E4,E5,E6	TP, TURRET, .064"	MILL-MAX, 2308-2	2550
7	1	L1	IND, 33uH, L-CDRH6D28	SUMIDA, CDRH6D28-330NC	425
8	2	Q1,Q2	TRANSISTOR, NPN, FMMT617, SOT23	ZETEX, FMMT617	850
9	1	R1	RES, 330 1/4W, 5%, 1206	AAC, CR18-331JM	425
10	1	R2	RES, 200k 5%, 0402	AAC, CR05-204JM	425
11	2	R3,R4	RES, 1M 5%, 0402	AAC, CR05-105JM	850
12	1	R5	RES, 8.25k 1%, 0402	AAC, CR05-8251FM	425
13	1	T1	TRANSFORMER, TRANS-CLQ122	SUMIDA, CLQ122-S-227-5316	425
14	1	U1	IC, LTC1697EMS, MSOP10	LINEAR TECH., LTC1697EMS	425
			<b>NOTES: UNLESS OTHERWISE SPECIFIED</b>		
			<b>1. ALL RESISTORS ARE IN OHMS.</b>		
			<b>2. BREAK BOARDS FROM PANELS AFTER ASSY. BY THE CUTTING MACHINE. DO NOT BEND.</b>		
			<b>BE CAREFULL AT THE TRANSFORMER AREA.</b>		