DEMO CIRCUIT 1542
QUICK START GUIDE

LT3596
60V Step-Down 3-Channel LED Driver

DESCRIPTION

Demonstration circuit 1542 is a 60V Step-Down 3-Channel LED Driver featuring the LT3596. The demo board is optimized for 8 LEDs, 100mA output per channel from a 48V input. When different number of LEDs is used for evaluation, it is recommended to change the resistor divider (R1 and R4) values according to the datasheet. The connections between the board and LEDs strings should be as short as feasible.

The circuit achieves 10,000:1 PWM dimming at 100Hz PWM frequency. LED dimming can also be done by analog control of the CTRL1-3 pin. If dimming is not required, leave the PWM1-3 and CTRL1-3 terminals unconnected. The demo circuit pulls PWM1-3 and CTRL1-3 pins up to VREF. The switching frequency is set to 1MHz on the demo circuit for best solution size. The LT3596 internal compensation makes it a lot easier for a designer to design different application circuits.

The LT3596 datasheet gives a complete description of the part, operation and application information. The datasheet must be read in conjunction with this quick start guide for demo circuit 1542A.

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

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PERFORMANCE SUMMARY

Specifications are at TA = 25°C

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}*	Input Supply		6		55	V
V_{OUT}	Output Voltage	8 White LEDs		29	32	V
$V_{OUT(MAX)}$	Maximum Output Voltage			38		V
I_{OUT}	Output Current		98	100	102	mA
DIM	PWM Dimming Ratio	PWM Dimming Frquency = 100Hz		10,000:1		V
F_{SW}	Switching Frequency	R3=100k	0.9	1	1.1	MHz
EFE	Efficiency	V_{IN}=48V, V_{OUT}=29V, I_{OUT}=100mA, BIAS=5V, No Dimming		90		%

*: Actual V_{IN} range should be determined by the load. For 8 white LEDs per channel, use a 48V input for evaluation.

QUICK START PROCEDURE

Demonstration circuit 1542A is easy to set up to evaluate the performance of the LT3596. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. With power off, connect the input power supply to V_{IN} and GND.
2. With power off, connect a 5V bias supply to BIAS and GND. Bias voltage should be less then 25V.
3. With power off, connect 3 LED strings between VOUT and LED1-, LED2-, LED3- respectively.
4. Turn on the power at the input. Be careful not to look at the LEDs directly.

5. Carefully evaluate all design parameters as needed.
6. To evaluate PWM dimming, apply a PWM signal to PWM1, PWM2 and/or PWM3. To evaluate 10,000:1 PWM dimming, the PWM signal should have a frequency of 100Hz and the minimum pulse width can be as low as 1us.
7. To modify the demo board for other applications, please contact Linear Applications Group for help.

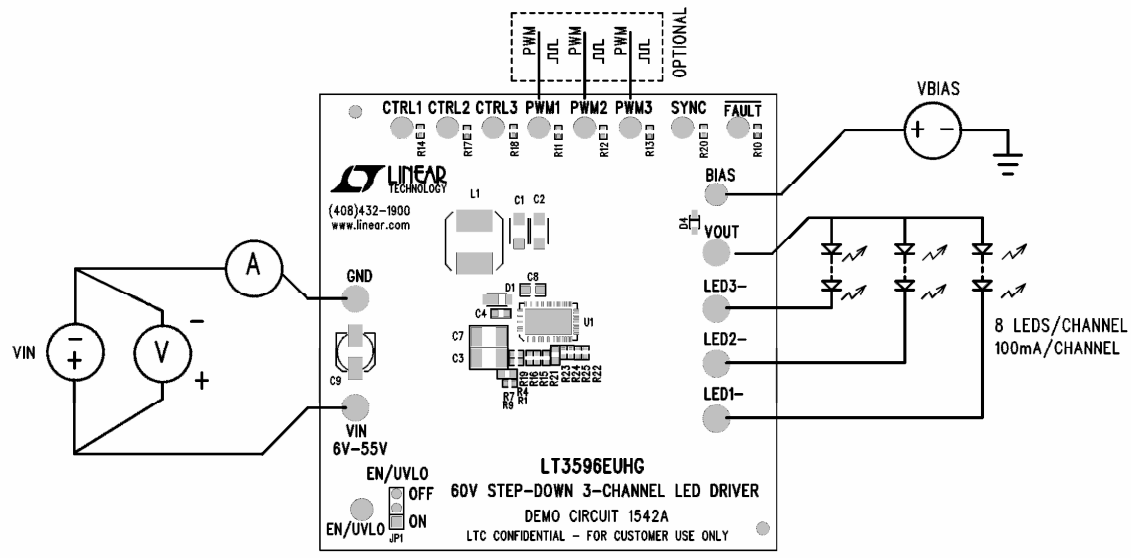
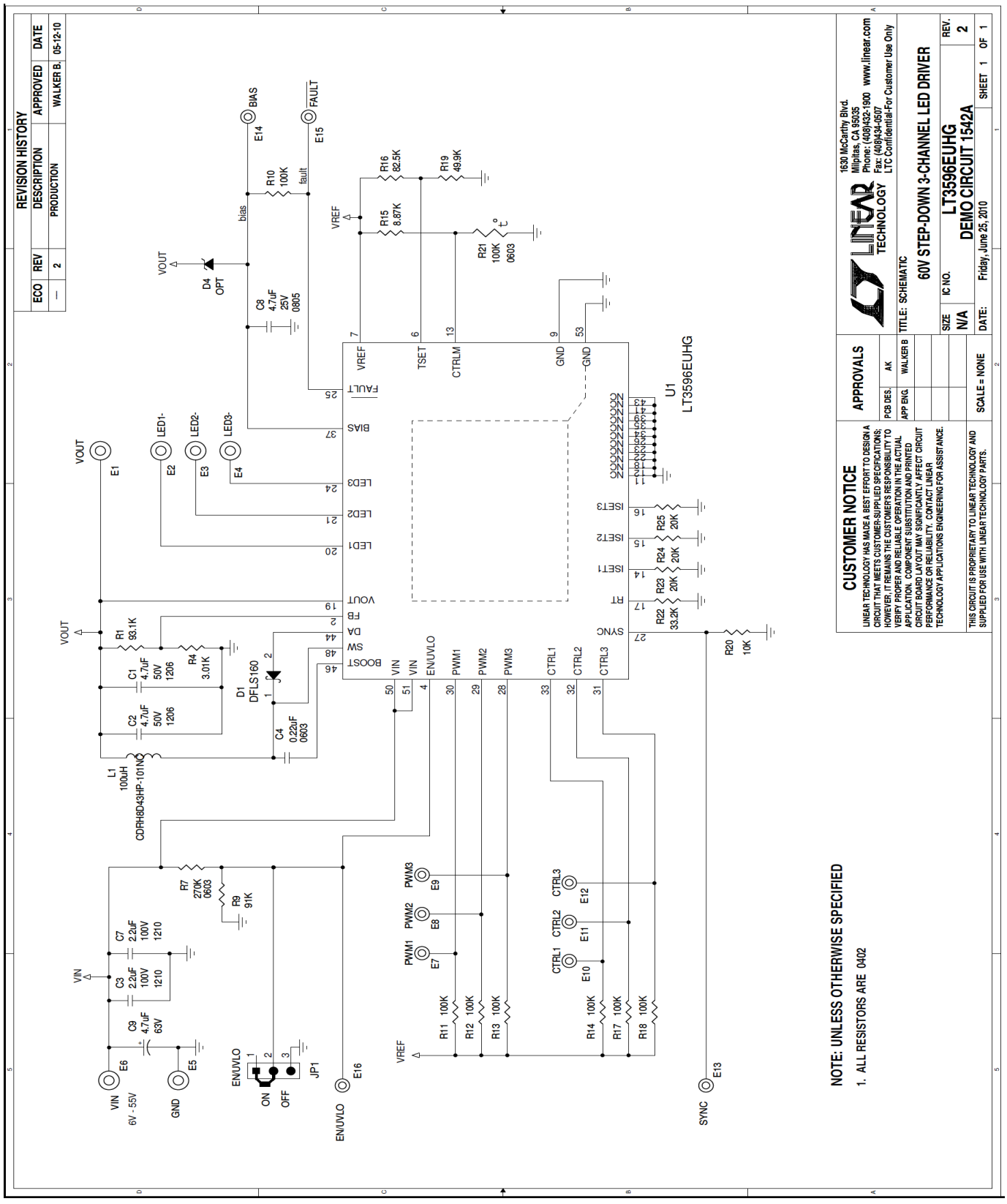


Figure 1. Proper Measurement Equipment Setup


REVISION HISTORY
ECO REV DESCRIPTION APPROVED DATE
— 2 PRODUCTION WALKER B. 05-12-10
U1
LT3596EUHG
VIN
VOUT
SW
BOOST
FB
DA
VOUT
LED1
LED2
LED3
BIAS
FAULT
VREF
TSET
CTRLM
GND
ISET1
ISET2
ISET3
RT
SYNC
ENUVLO
PWM1
PWM2
PWM3
CTRL1
CTRL2
CTRL3
L1 100uH CDRH8D43HP-101NC
D1 DFLS160
D4 OPT
JP1
ENUVLO ON OFF
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1630 McCarthy Blvd. Milpitas, CA 95035 Phone: (408)432-1900 www.linear.com Fax: (408)434-0507 LTC Confidential-For Customer Use Only
TITLE: SCHEMATIC
60V STEP-DOWN 3-CHANNEL LED DRIVER
SIZE N/A
IC NO. LT3596EUHG
DEMO CIRCUIT 1542A
REV. 2
DATE: Friday, June 25, 2010
SCALE = NONE
SHEET 1 OF 1
NOTE: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE 0402