

LTM8040

36V, 1A Step-Down μ Module LED Driver

DESCRIPTION

Demo circuit DC1274A features the LTM[®]8040 36V, 1A step-down constant current μ Module[®] LED driver. The demonstration circuit is designed to drive a single LED or string of LEDs at up to 1A from a wide input voltage range. The maximum LED string voltage is 13V and the minimum voltage varies depending upon the BIAS pin supply arrangement. The demonstration circuit is assembled with the BIAS pin connected to the LEDA pin.

The LTM8040 runs at 500kHz switching frequency by default. DC1274A can be adjusted to raise the switching

frequency, lower the LED current, and implement PWM dimming. The shutdown feature can be examined by connecting the shutdown terminal to ground. The LTM8040 data sheet must be read in conjunction with this demo manual prior to working on or modifying demo circuit DC1274A.

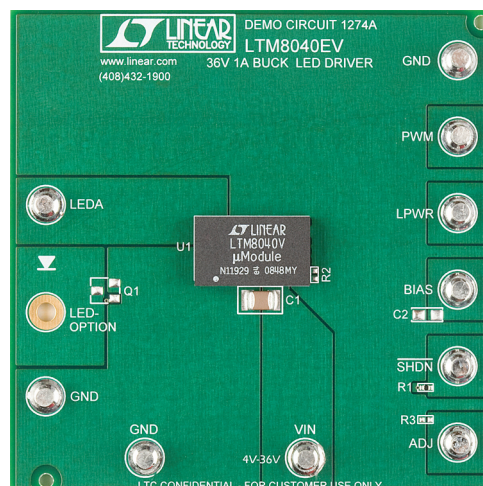
Design files for this circuit board are available at <http://www.linear.com/demo>

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PERFORMANCE SUMMARY (T_A = 25°C)

PARAMETER	CONDITIONS/NOTES	VALUE
Input Voltage Range	I _{LED} = 1A, V _{LEDA} = 3.3V	4V to 36V
Output Current (I _{LED})	R3 = Open	1A
Switching Frequency	R2 = Open	500kHz
Maximum Output Voltage (V _{LEDA}), Open LED Voltage		13V

BOARD PHOTO



QUICK START PROCEDURE

DC1274A is an easy way to evaluate the LTM8040. Refer to the test procedures outlined below and Figure 1.

1. Make sure the power supply is less than 36V. With the supply OFF, connect it to the VIN and GND terminals.
2. Connect an LED or string of LEDs between the LEDA terminal and the GND terminal. For PWM dimming, the PWM dimming MOSFET must be added to the PCB and the string of LEDs must be attached between LEDA and LED- terminals. However, for simplicity, the MOSFET is not assembled on the board as shipped.
3. Turn on the input power supply and set the voltage between 4V and 36V based on the forward voltage of the LED(s) and desired output current. Please see the LTM8040 data sheet for details.

4. Tie the shutdown terminal to ground in order to turn the output off and examine the shutdown operation. Allow the IC to run by releasing the shutdown terminal connection to ground. The IC will run with the 100k pull-up resistor from the shutdown terminal to VIN.

For LEDs or LED strings with a low forward voltage such as a single red LED, the BIAS terminal can be disconnected from the output (LPWR) and tied to the input (VIN). There is a small trace on the back of the PCB (layer 4) that can be cut in order to disconnect LPWR from BIAS. Please see the LTM8040 data sheet for details regarding the proper connection of the BIAS pin.

QUICK START PROCEDURE

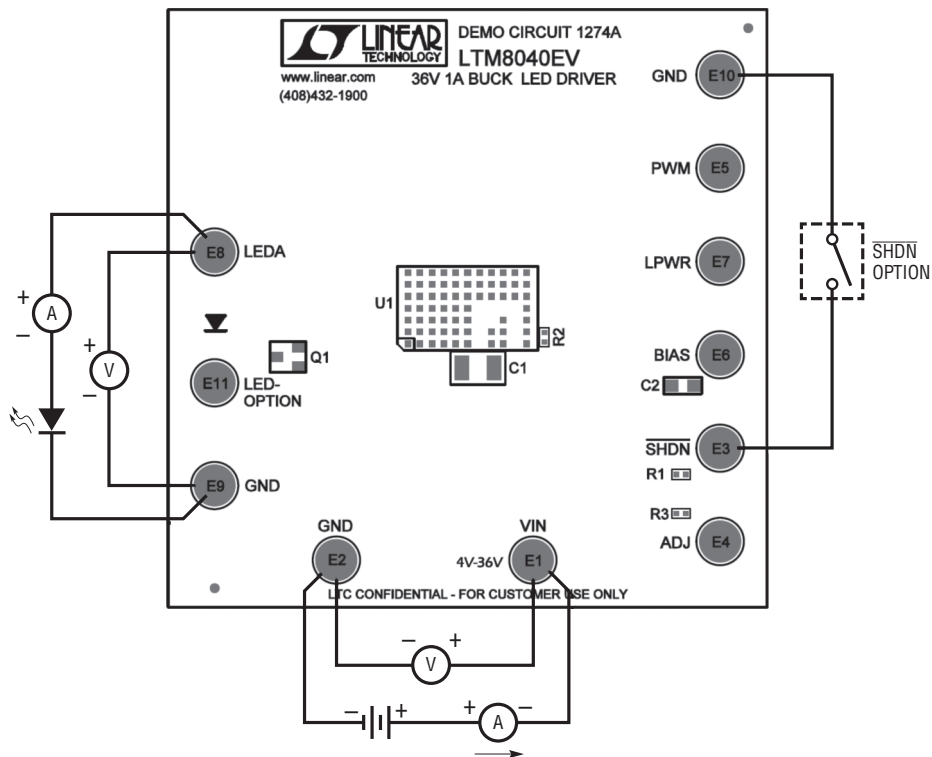


Figure 1. Proper Measurement Equipment Setup

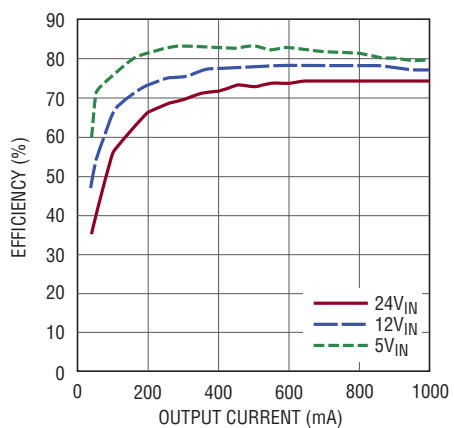


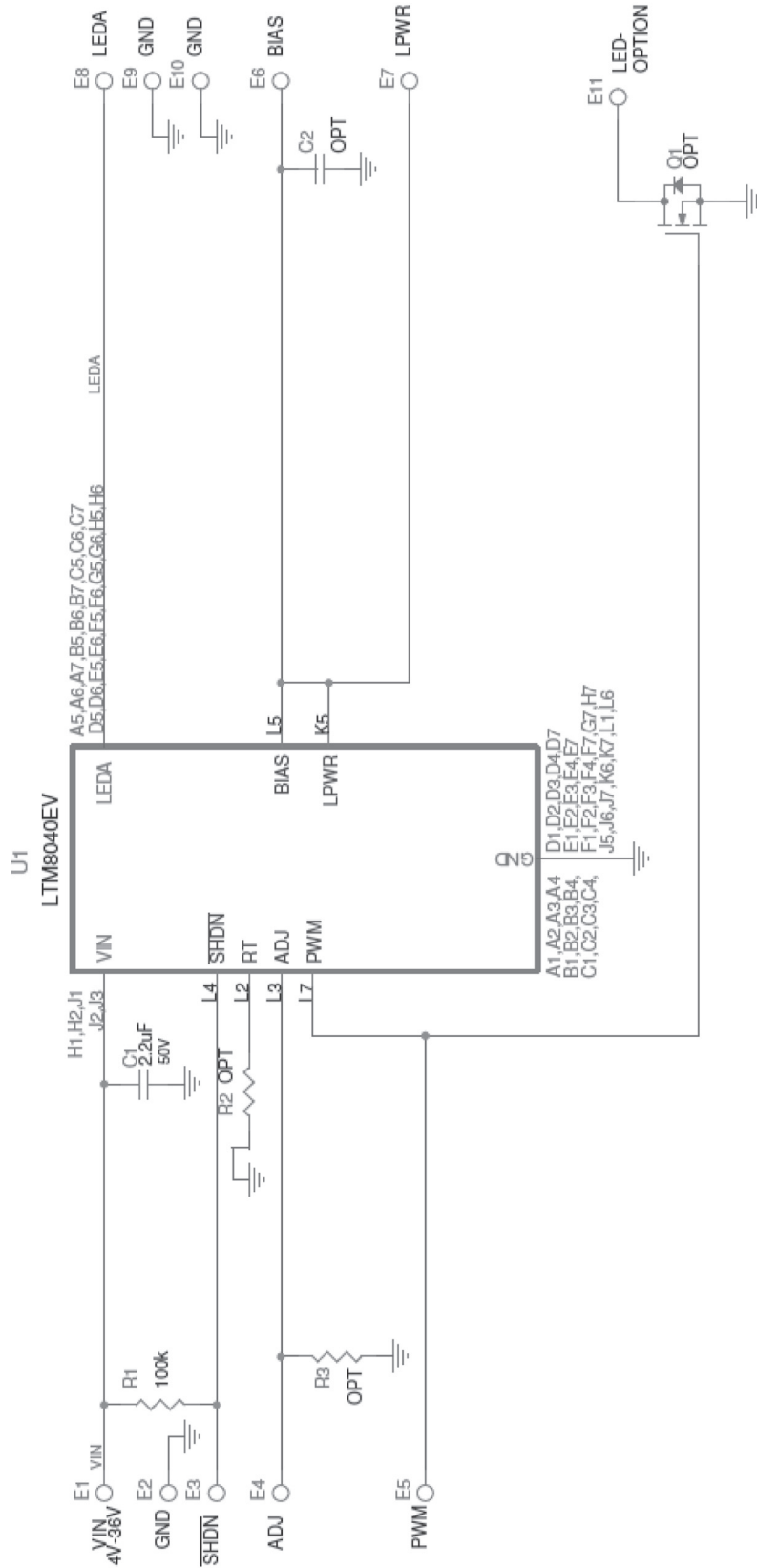
Figure 2. Efficiency with Single 3.3V_F LED at 1A. LED Current is Adjusted with ADJ Voltage

DEMO MANUAL DC1274A

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C1	CAP, 1210 2.2 μ F 10% 50V X7R	TDK C3225X7R1H225K
2	1	R1	RES, 0402 100k 5% 1/16W	VISHAY CRCW0402100KJNED
3	1	U1	IC, MODULE	LINEAR TECH. LTM8040EV
Optional Demo Circuit Components				
1	0	C2	CAP, 0805 OPT	OPT
2	0	Q1	N-CHANNEL MOSFET, SOT-23 OPT	OPT
3	0	R2, R3	RES, 0402 OPT	OPT
Hardware				
1	10	E1-E10	TURRET	MILL-MAX 2501-2-00-80-00-00-07-0

SCHEMATIC DIAGRAM



DEMO MANUAL DC1274A

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

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