DLD101EV1 USER GUIDE

Description

The board is intended for the evaluation of DLD101, a linear mode constant current LED driver.

When an input voltage higher than the forward voltage of the LED string (max. 50V) is applied to the board, the board supplies a fixed current to the LED string connected to its output.

Jumpers 1, 2 and 3 on the evaluation board set the value of the LED current. Jumper 1 sets the LED current to 260mA, jumper 2 sets it to 45mA and jumper 3 sets it to 20mA.

The board also incorporates a PWM input operating between 0V and 5-10V, which can be used for PWM dimming of the LED string.

Ordering Information

ORDER NUMBER
DLD101EV1

Please note evaluation boards are subject to availability and qualified leads

Figure 1. DLD101 evaluation board

Quick Start Guide

Required Test Equipment

12V 2A adjustable power supply, digital multimeter and high brightness LEDs

Constant Current LED Driving Operation

1. Set the power supply to 8V for a string of 2 LEDs.
2. Set the current limit to 350mA.
3. Connect up the DLD101EV1 to the equipment as in Figure 1 above.
4. Set DMM1 to measure the LED current.
5. Set jumper to JP1 position. (Only one jumper should be fitted at any time).
6. Switch on the power supply and check that the LED lights up.
7. Check that the current measured on DMM1 is 260mA +/- 10mA.
8. Switch off the power supply and set jumper to JP2 position.
9. Switch on the power supply and check that the LED lights up.
10. Check that the current measured on DMM1 is 45mA +/- 5mA.
11. Switch off the power supply and set jumper to JP3 position.
12. Switch on the power supply and check that the LED lights up.
13. Check that the current measured on DMM1 is 20mA +/- 5mA.

DLD101EV1 Schematic

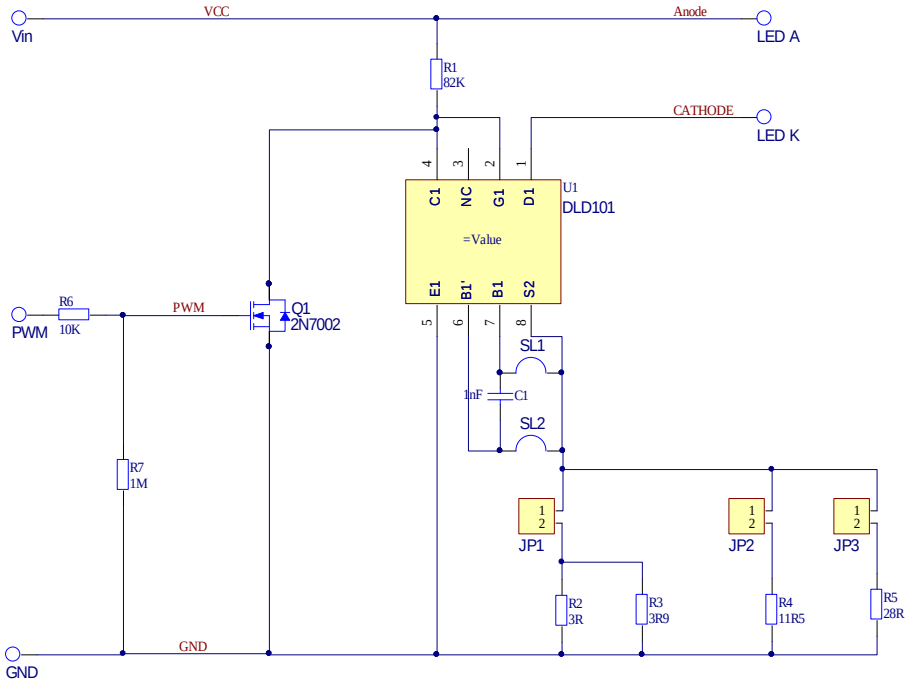

Figure 2. PCB Schematic diagram

Parts List

Designator	Description	Package	Part Number	Manufacturer
U1	Linear mode constant sink LED driver	DFN3030D-8	DLD101	Diodes Inc
Q1	Small signal MOSFET	SOT-23	2N7002	Diodes Inc
C1	Do not fit			
R1	Resistor, 82K +/- 1% 250ppm 125mW	0805		generic
R2	Resistor, 3R +/- 1% 250ppm 250mW	1206		generic
R3	Resistor, 3R9 +/- 1% 250ppm 250mW	1206		generic
R4	Resistor, 11R5 +/- 0.1% 250ppm 125mW	0805		generic
R5	Resistor, 28R +/- 1% 250ppm 125mW	0805		generic
R6	Resistor, 10K0 +/- 1% 250ppm 125mW	0805		generic
R7	Resistor, 1M0 +/- 1% 250ppm 125mW	0805		generic

Table 1. Parts list

Performance

The performance of the DLD101 when used to regulate LED current is shown in Figure 3. With only jumper 1 fitted, a load of 2 LEDs, and a supply of 8VDC, the LED current is around 300mA at 25°C PCB and LED temperature. Over the typical lighting board temperature range, the LED current changes from 380mA at 0°C PCB temperature to 220mA at 85°C.

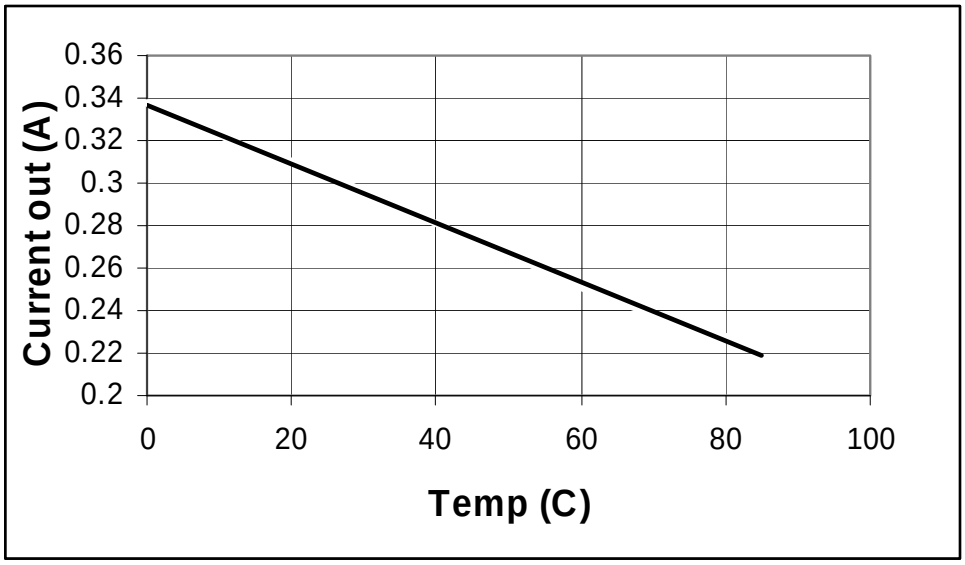

Figure 3. LED current vs. PCB board temperature

PWM dimming functionality can be implemented by applying a signal between 0V and 5-10V on the 'PWM' terminal. Figures 4, 5 and 6 show the LED current variation as the duty cycle of a 400Hz signal changes.

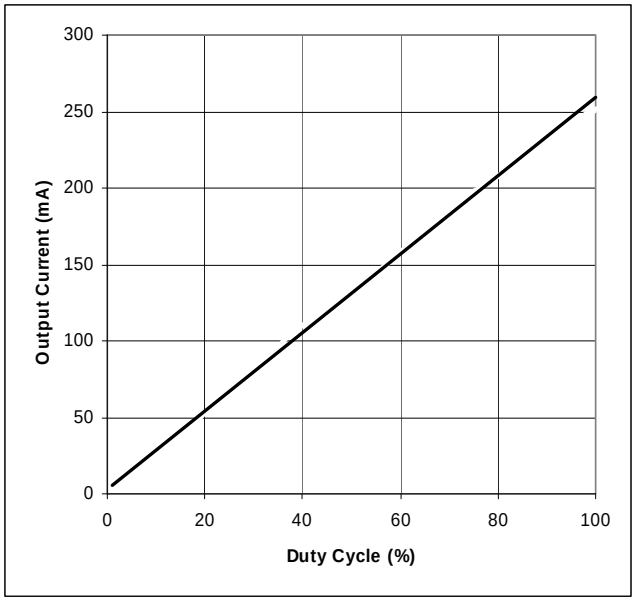

Figure 4. Duty Cycle vs. output Current for JP1 Configuration (260mA) at 400Hz

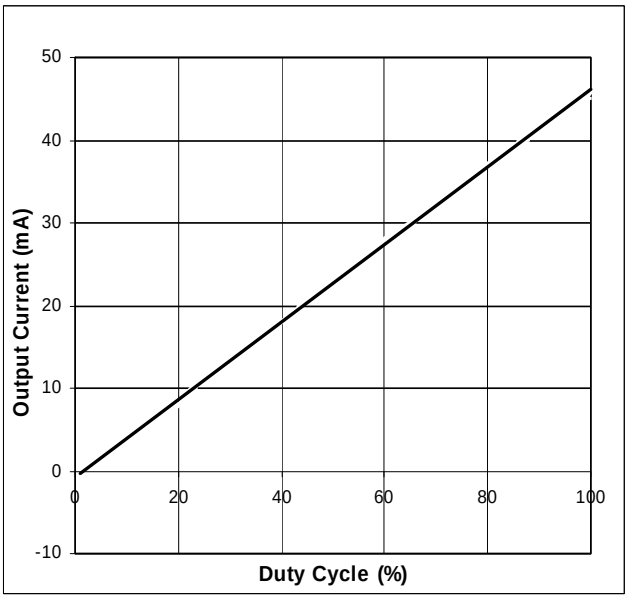

Figure 5. Duty Cycle vs. Output Current for JP2 Configuration (45mA) at 400Hz

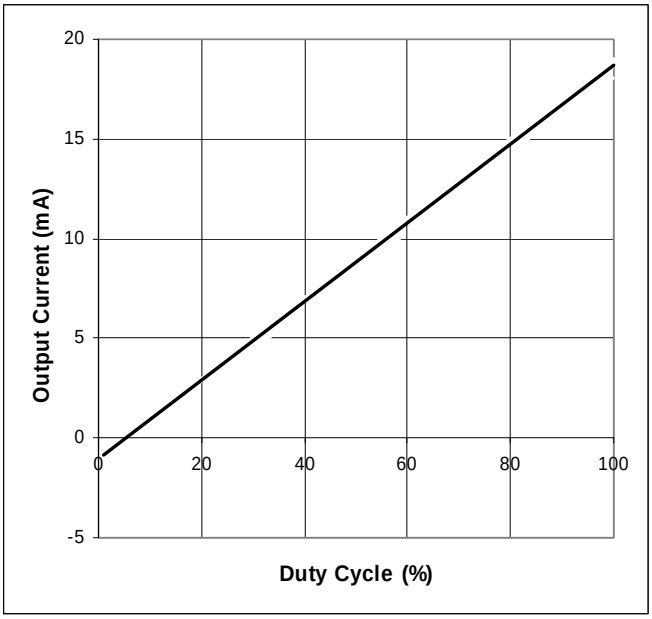

Figure 6. Duty Cycle vs. Output Current for JP3 Configuration (20mA) at 400Hz

PCB Copper Layout & Silk Screen –Top

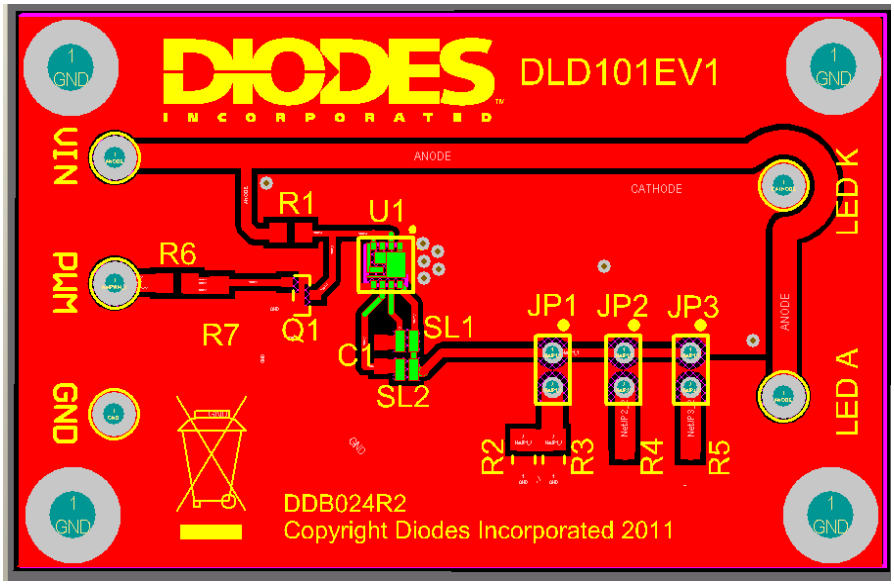

Figure 7. PCB layout

The bottom layer is a solid plane connected to LED K

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