

AL5802EV1 USER GUIDE

Description

The board is intended for the evaluation of AL5802, an adjustable current sink linear LED driver in the SOT26 package. The device is ideal for driving 20mA to 120mA LED.

When an input voltage higher than the forward voltage of the LED string is applied to the board, the board supplies a fixed current to the LED string connected to its output. The board can operate from 5V to 24V DC power supplies. The maximum input voltage is up to 30V.

The board has been designed for driving low current LEDs with typical current of 20mA, 50mA or 100mA. Jumpers 1, 2 and 3 on the evaluation board set the value of the LED current.

The board also provides an ENABLE input which can be used for PWM dimming of the LED string. The LED current will shut down when the ENABLE input is pulled down to ground either with an external open-collector NPN transistor, or open-drain N-channel MOSFET.

Ordering Information

ORDER NUMBER
AL5802EV1

Please note evaluation boards are subject to availability and qualified leads

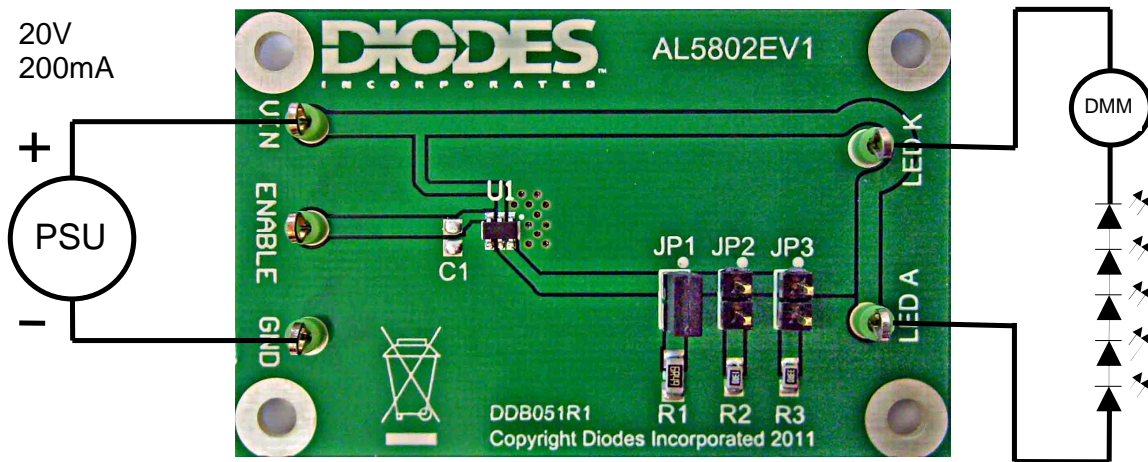


Figure 1. AL5802 evaluation board

Quick Start Guide

Required Test Equipment

20V 1A adjustable power supply, Digital Multi-Meter (DMM) and low current LEDs

Constant Current LED Driving Operation

1. Set the power supply to 20V for a string of 5 LEDs.
2. Set the current limit to 200mA.
3. Connect up the AL5802EV1 to the equipment as in Figure 1 above.
4. Set DMM 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 DMM is 100mA +/- 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 DMM is 50mA +/- 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 DMM is 20mA +/- 2mA.

AL5802EV1 Schematic

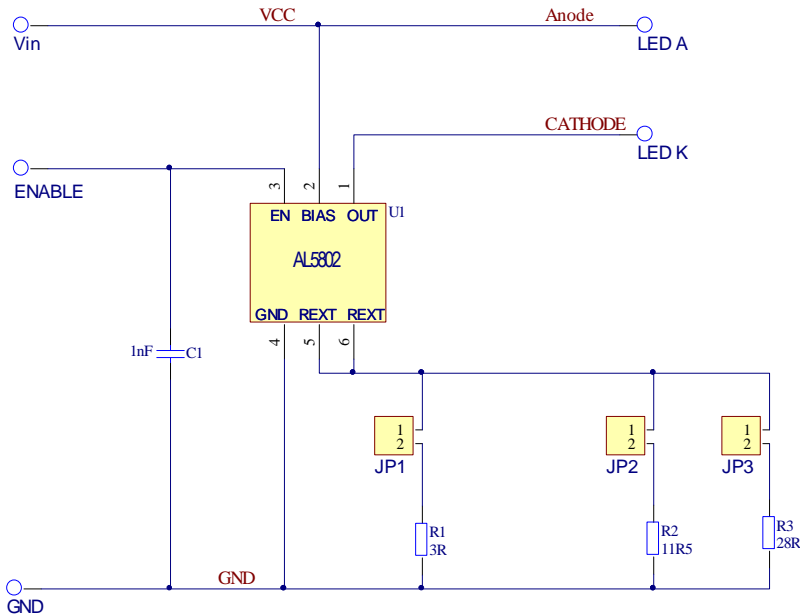


Figure 2. Evaluation board schematic diagram

Parts List

Designator	Description	Package	Part Number	Manufacturer
U1	Linear mode constant sink LED driver	SOT23-6	AL5802	Diodes Inc.
R1	Resistor, 6K49 +/- 1% 250ppm 250mW	1206	-	Generic
R2	Resistor, 13R +/- 1% 250ppm 125mW	0805	-	Generic
R3	Resistor, 33R +/- 1% 250ppm 125mW	0805	-	Generic

Table 1. Parts list

Performance

Figure 3 shows the performance of the AL5802 when used to regulate LED current. With jumper 1 fitted, a load of 5 series connected low current LEDs and a supply voltage of 20VDC, the LED current is measured around 100mA at 25°C PCB temperature. Over the typical lighting board temperature range, the LED current changes from 106mA at 0°C PCB temperature to 85mA at 85°C.

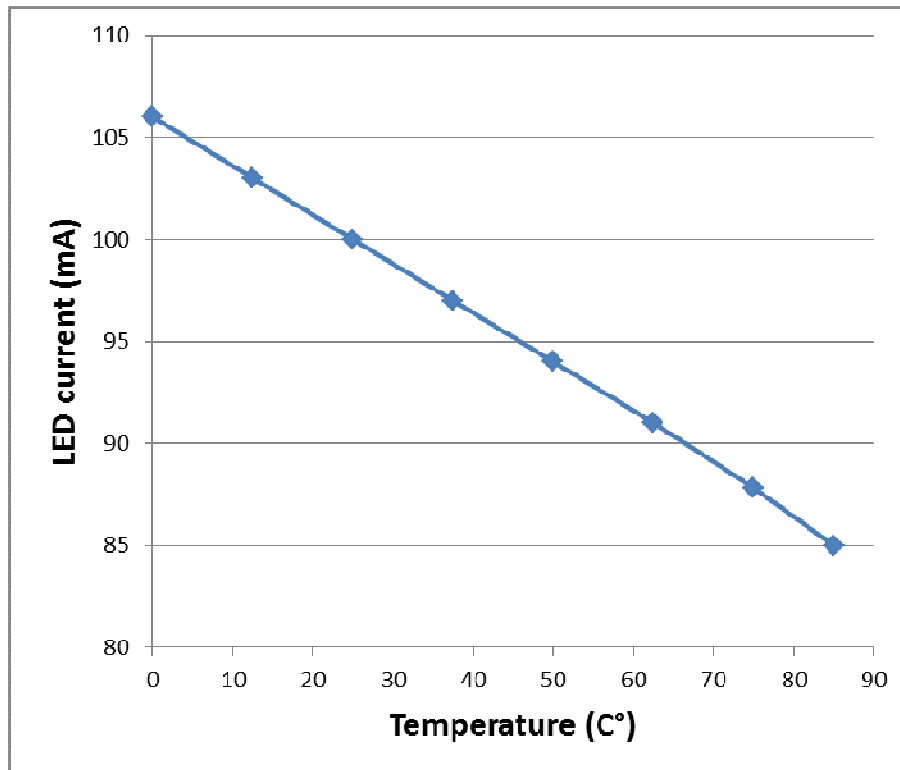


Figure 3. LED current vs. PCB board temperature

PWM dimming can be achieved by driving the on-board ENABLE input. An external open-collector NPN transistor or open-drain N-channel MOSFET can be used to drive the EN pin. The PWM frequency can be around 100Hz to 1KHz. Figures 4 to 6 show the LED current variation as the duty cycle of a 400Hz PWM dimming signal changes.

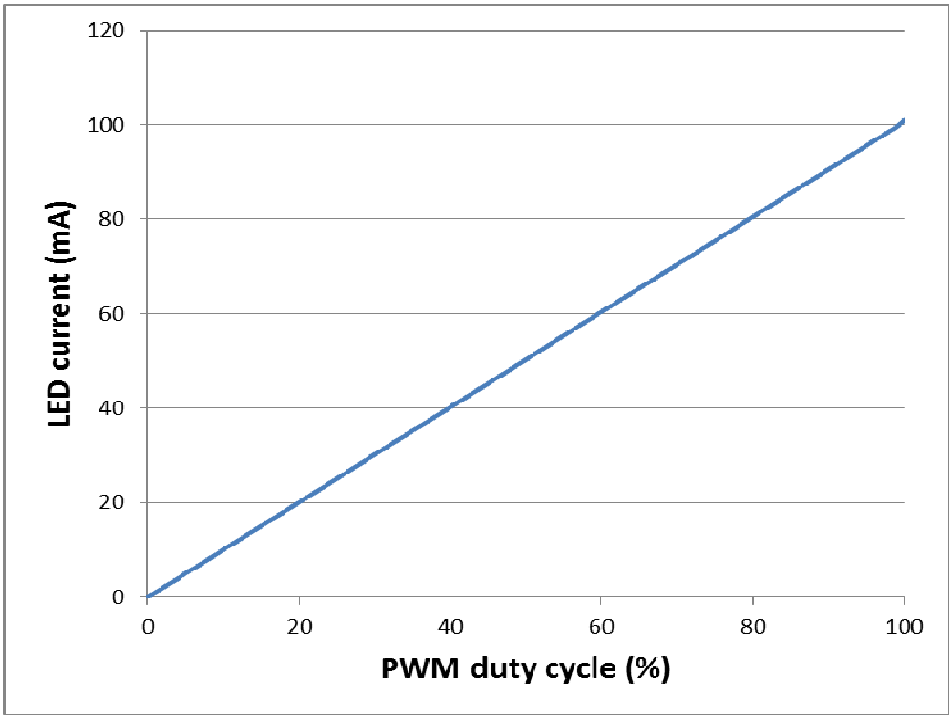


Figure 4. Duty Cycle vs. output Current for JP1 Configuration (100mA) at 400Hz

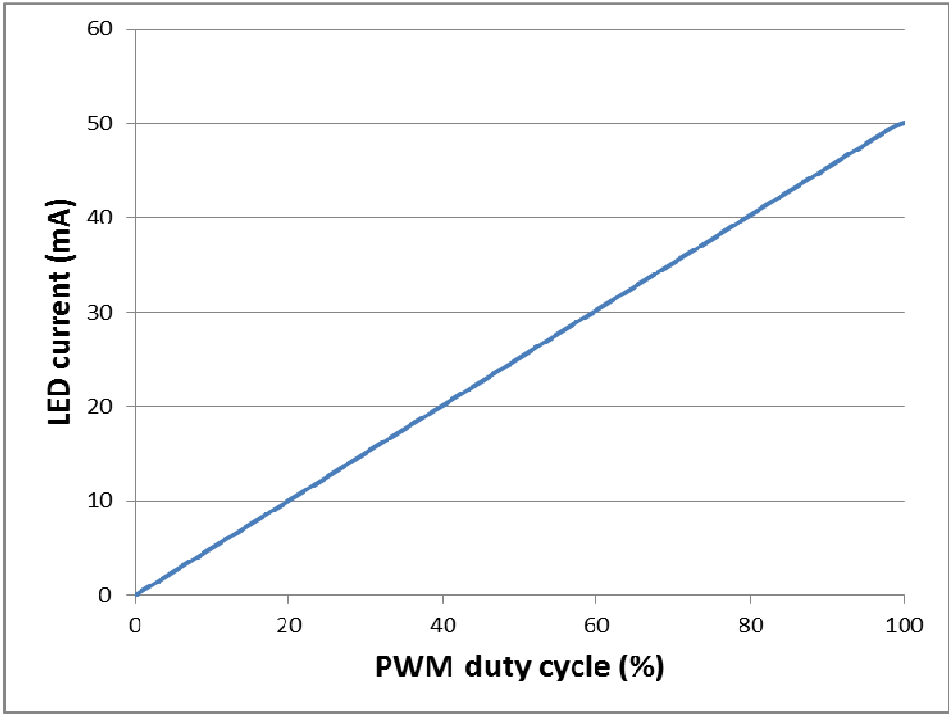


Figure 5. Duty Cycle vs. Output Current for JP2 Configuration (50mA) at 400Hz

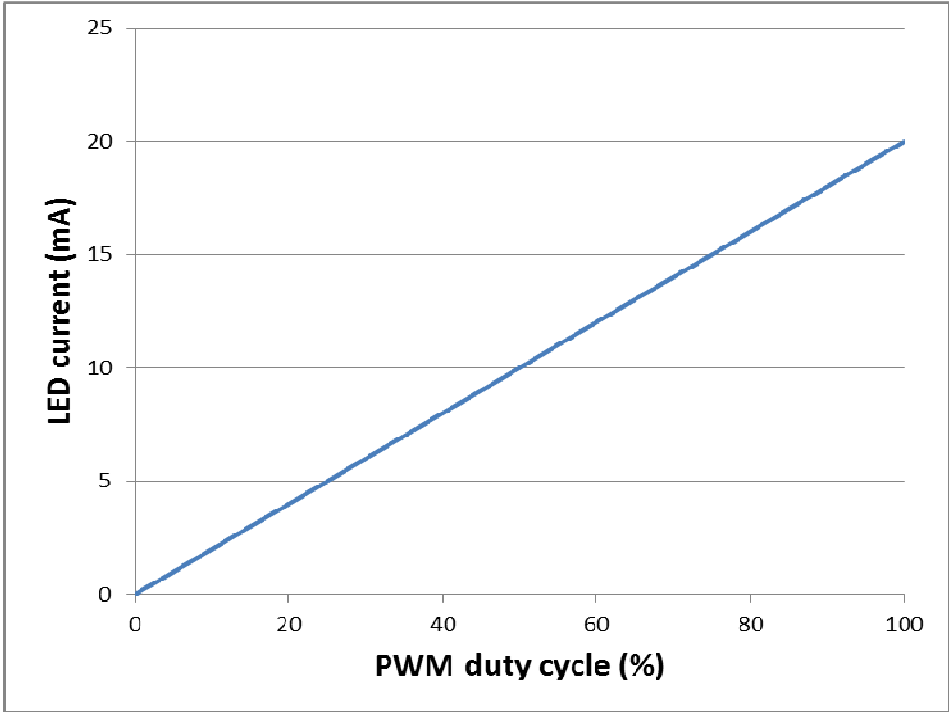


Figure 6. Duty Cycle vs. Output Current for JP3 Configuration (20mA) at 400Hz

PCB Copper Layout & Silk Screen –Top

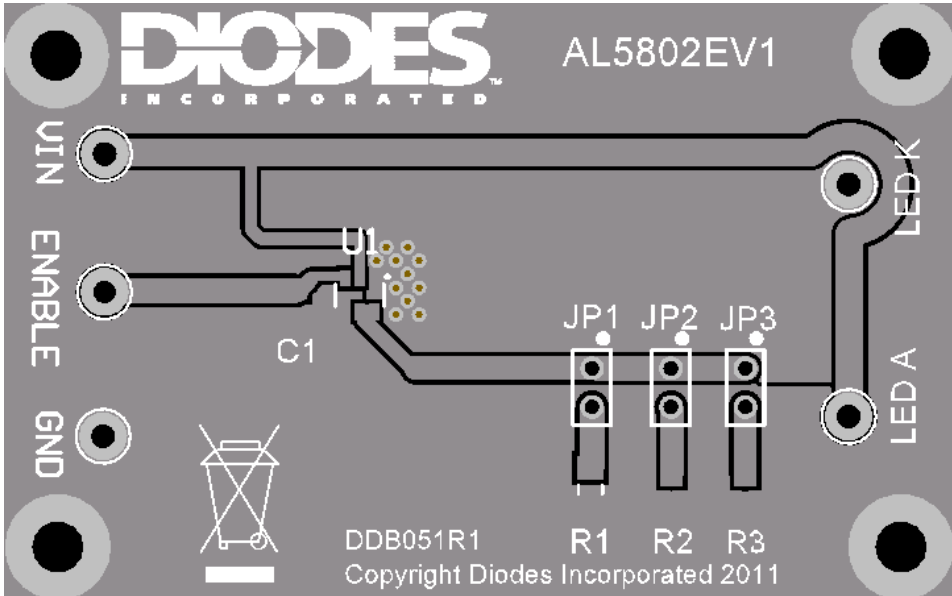


Figure 7. PCB layout

The bottom layer is a solid plane connected to LED K

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