

LED Brightness Control using PWM

Student Group

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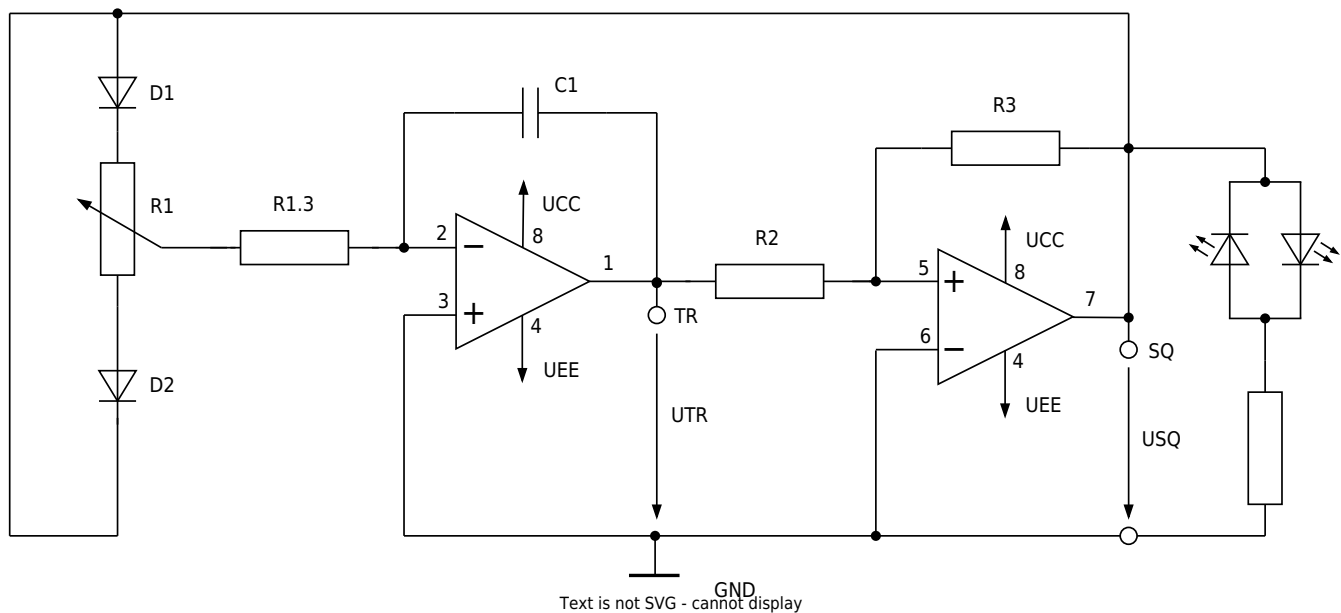
LED Brightness Control using PWM

Background Information

In the final part of the experiment, LEDs are connected to the circuit and their brightness is controlled using the generated PWM signal. By adjusting the duty cycle, the average power delivered to the LEDs changes, resulting in a corresponding change in brightness.

Experimental Tasks

To analyze how to adjust the brightness of LED-lamps, using a PWM-signal, the following circuit is used:



1. Build the circuit on the MEXLE-board. To do this, connect two LEDs in anti-parallel. What value must the series resistor for the LEDs have? **An LED requires approx. 20 mA to operate.**
2. Use the circuit variant with **C1 = 10 nF**. Vary the duty cycle and document the result.
3. What are the advantages of this type of brightness control? Name some applications.

4. How would the circuit have to be designed if only one LED is to be operated with brightness control?

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