

Digital Circuits 01: Led Throttles

Adam Stammer

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Abstract

Using resistors to limit the current going through LEDs. I found that the color of the LED changed the voltage drop across the LED thus changing the current going through them. Anything over 200 Ohms seemed to be a safe resistance to use with any of the LEDs.

I. EXPLANATION AND ANALYSIS

First I set up a single LED in series with a resistor to verify it worked. After that I swapped out resistors, measuring the current each time. The collected data can be seen graphed below.

Ohm's Laws tells us that the relationship between I and R is linear, such that graphing the two against each other should get us an inverse relationship slope. Which we can indeed see within the graph above.

To linearize the relationship of this graph we can simply invert the denominator of the relationship. With Ohms Law we can see this relationship should be linear.

$$V = I \frac{1}{R} \tag{1}$$

We do indeed see this relationship in the following graph.