

uebung_2.1.2

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You want to drive a red light-emitting diode with a voltage source of $U_S = 5.0 \text{ V}$ and a current of $I_D = 20 \text{ mA}$. You have found for red LEDs a voltage drop of $U_D = 2.3 \text{ V}$ based on a web search. Now you want to know which resistor value from the E12 series (available to you) is correct as a shunt resistor.

1. Draw the circuit of the LED with a series resistor and plot the voltages.
2. What is the value of the series resistor R_S to get the given voltage drop U_D ?
3. Find the relationship between forward voltage and forward current in the datasheet of the red LED [TLUR6400](#). What voltage drop U_D can be determined from this datasheet for $I_D = 20 \text{ mA}$ and what is the correct series resistance?
4. Briefly compare the different results considering the [E12 series](#).

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