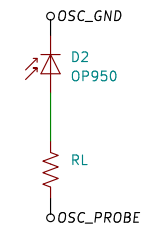


555 Timer Calculations using:  
<https://ohmslawcalculator.com/555-astable-calculator>  
 The output should oscillate at 634.4 Hz with 55.95% duty cycle

The forward voltage of IR1503 is 1.2 V (at 20 mA). Assuming a supply voltage of 5V, the voltage drop over the battery is  $5 - 1.2 = 3.8$  V. Then the required resistor for 30 mA is  $R = 3.8 \text{ V} / 30 \text{ mA} = 126.67 \text{ Ohm}$ . Rounding to the nearest common value we get  $R = 150 \text{ Ohm}$ .



When light shines on the OP950, it generates a current. This current, combined with  $R_L$  creates a measureable voltage drop. In the next part, we replace this with a transimpedance amplifier.

555 Timer (IR LED Driver)

Switching Test Time

**E80 Team 36**

Sheet: /  
 File: 555.kicad\_sch

**Title: 555 Timer & IR LED Driver / Sensor**

Size: A4 Date: 2024-02-05

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**Rev: 2**

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