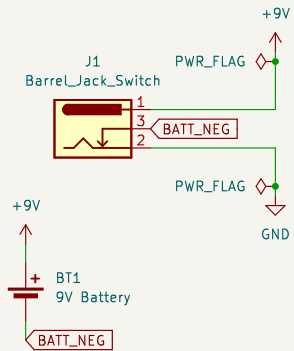


POWER

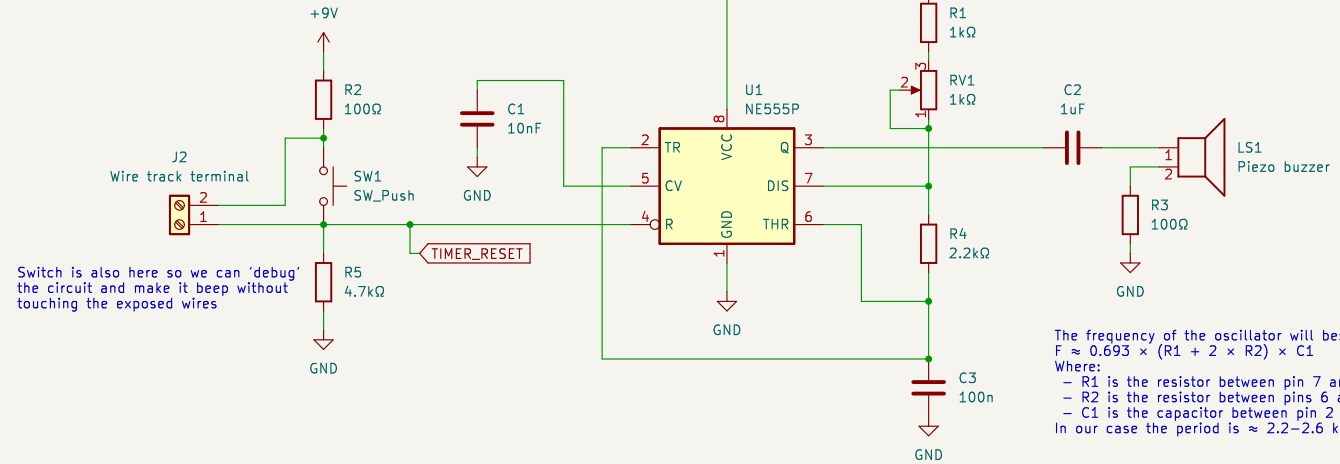
9V adapter and battery connection (and KiCADs power flags for DRC)

Battery negative terminal is connected such that when the DC connector is inserted the battery ground is disconnected and so we can't short circuit anything by accident



BUZZER

One terminal connection should be made to the wire track, and one to the 'wand' that is passed over the wire track, and once they make the connection, the buzzer should sound because the reset line will be pulled high by the 4.7kΩ resistor, and if not connected, the reset line will be connected to ground via the 100kΩ resistor.



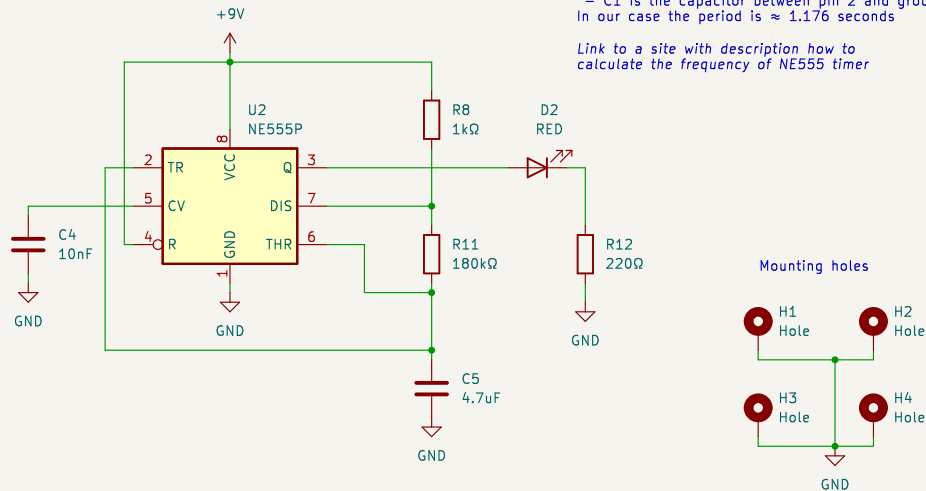
LED BLINK

Simple LED blinking circuit

The period time of the oscillator will be:

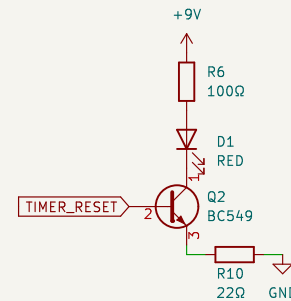
$$T \approx 0.693 \times (R1 + 2 \times R2) \times C1$$
 Where:
 - R1 is the resistor between pin 7 and supply voltage
 - R2 is the resistor between pins 6 and 7
 - C1 is the capacitor between pin 2 and ground
 In our case the period is ≈ 1.176 seconds

[Link to a site with description how to calculate the frequency of NE555 timer](#)



LED INDICATORS

NPN transistor 'switch'
 When base is at 0V, the LED is off,
 when it's at 9V the LED turns on



NPN transistor 'inverter'
 When base is at 0V, the LED is on,
 when it's at 9V the LED turns off

