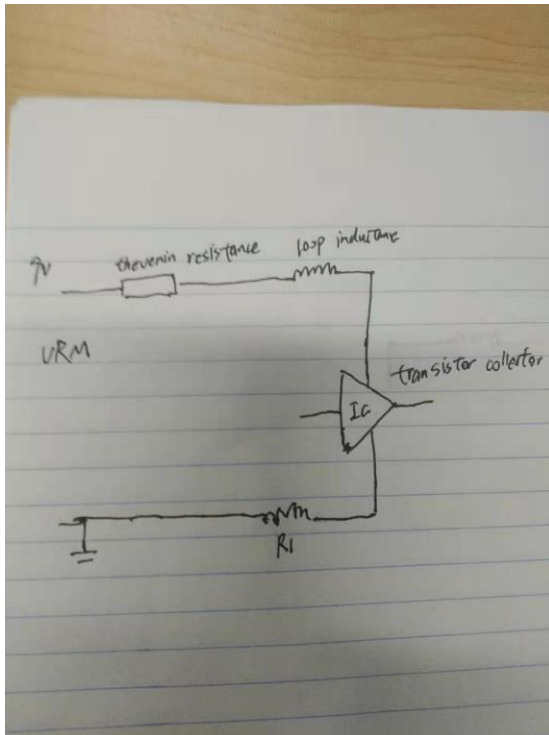
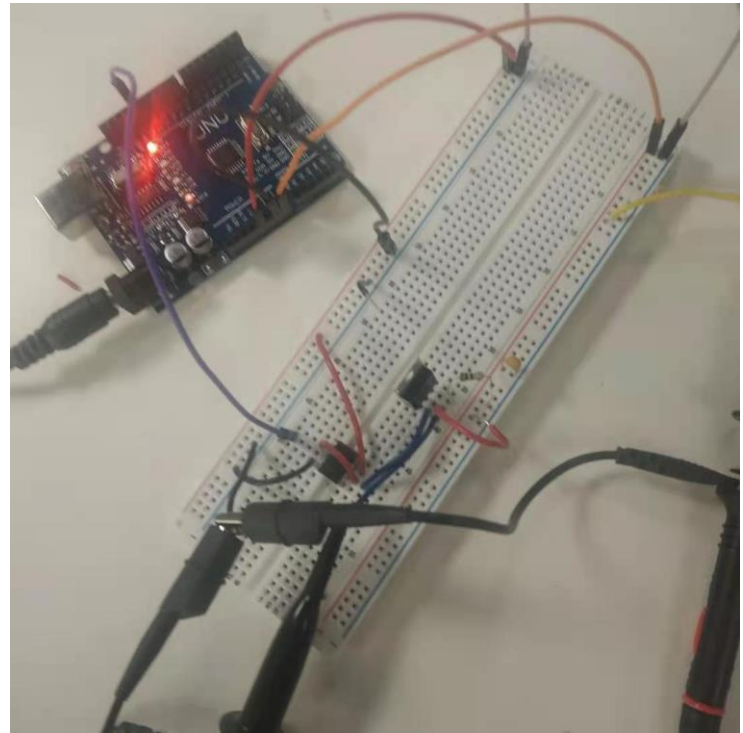


1. The equivalent circuit including Thevenin resistance and loop inductance.



2. The photo of the circuit



3. The switching noise without decoupling cap



4. The switching noise with 1uF cap (near And far)



## 5. The switching noise with 1000uF large cap



## 6. Analysis based on measurements:

a. The Thevenin output voltage is 8.55v.

The current through resistor is  $3.78\text{V}/10\text{ohm} = 0.378\text{A}$ ,

The Thevenin resistor is  $(9\text{V}-8.55\text{V})/0.378\text{A} = 1.19\text{ohm}$ .

b. The voltage drop because of loop

inductance is  $(9\text{V}-8.15\text{V}) = 0.85\text{V}$

The rise time  $dt$  is roughly  $2\mu\text{s}$

The rise current  $di$  is  $0.378\text{A}$

Because  $V_{\text{drop}} = L \cdot (di/dt)$

The inductance  $L$  is calculated as:

$$L = 4497.35\text{nH}$$

