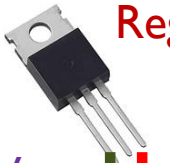
Tutorial 4

BJT

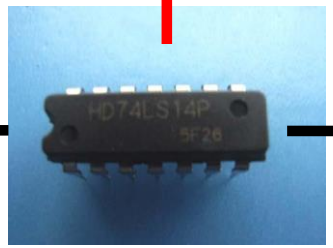


12V

5V

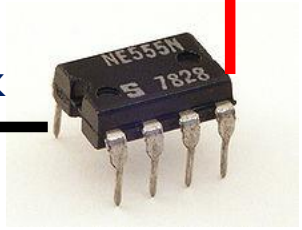
Counter

straighten



Schmitt Trigger

clock



NE555 timer

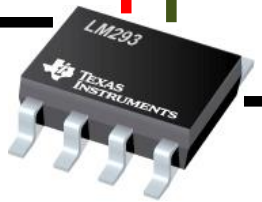
Comp. Input

Comparator

Dir.

Inverter

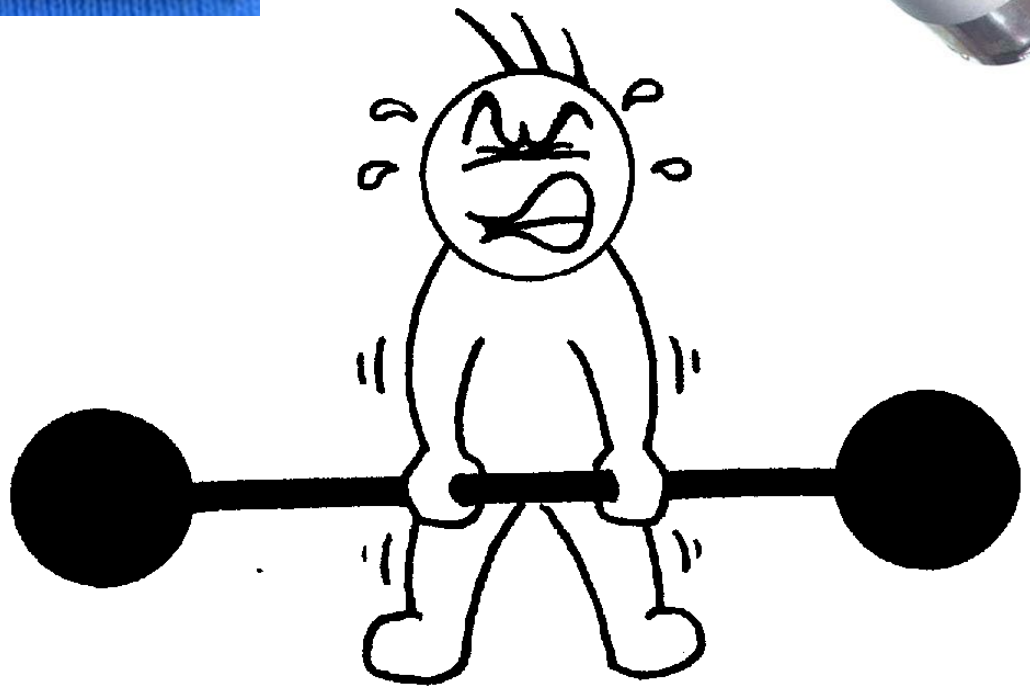
PWM signal



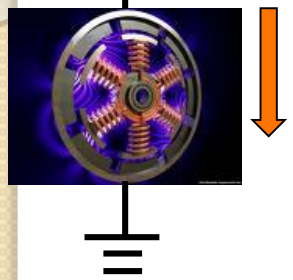
DC Motor Driver

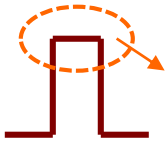
Motor

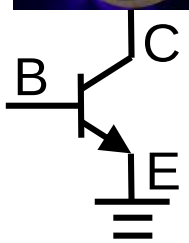
- However, if you use the PWM signal on a motor, it will/may/will not work.
- WHY?

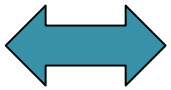


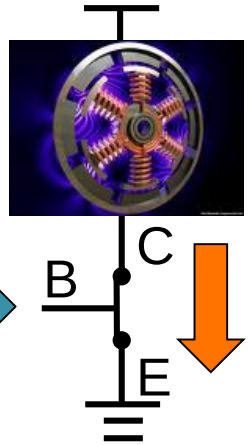
Solution: BJT











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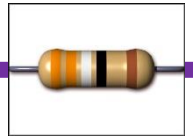
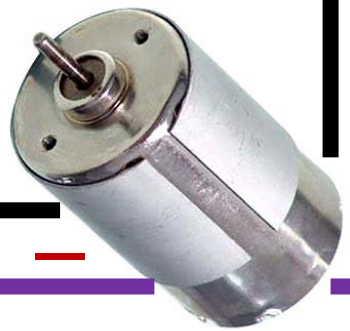
PWM





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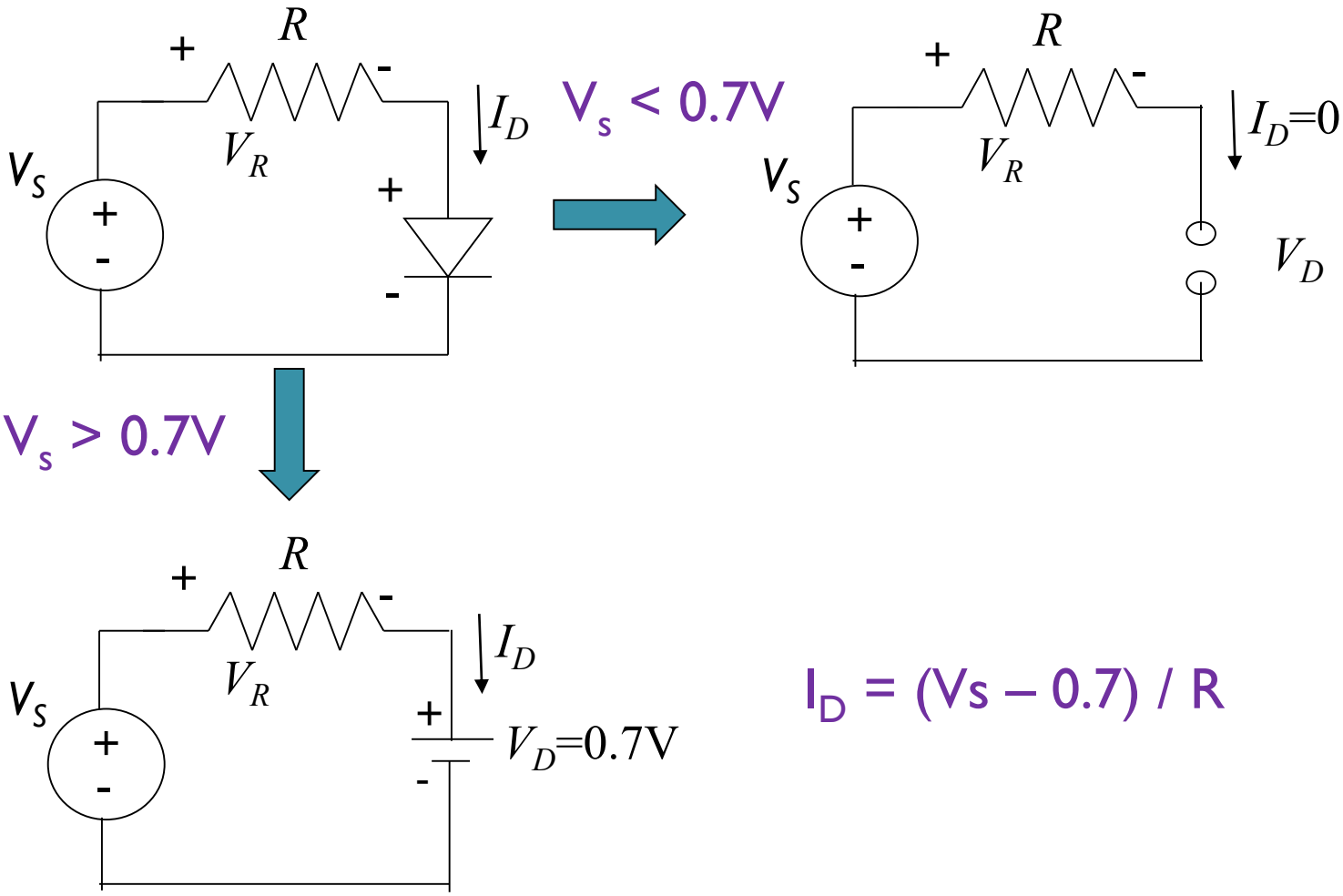
Diode is like a switch

- Consider diode circuit:

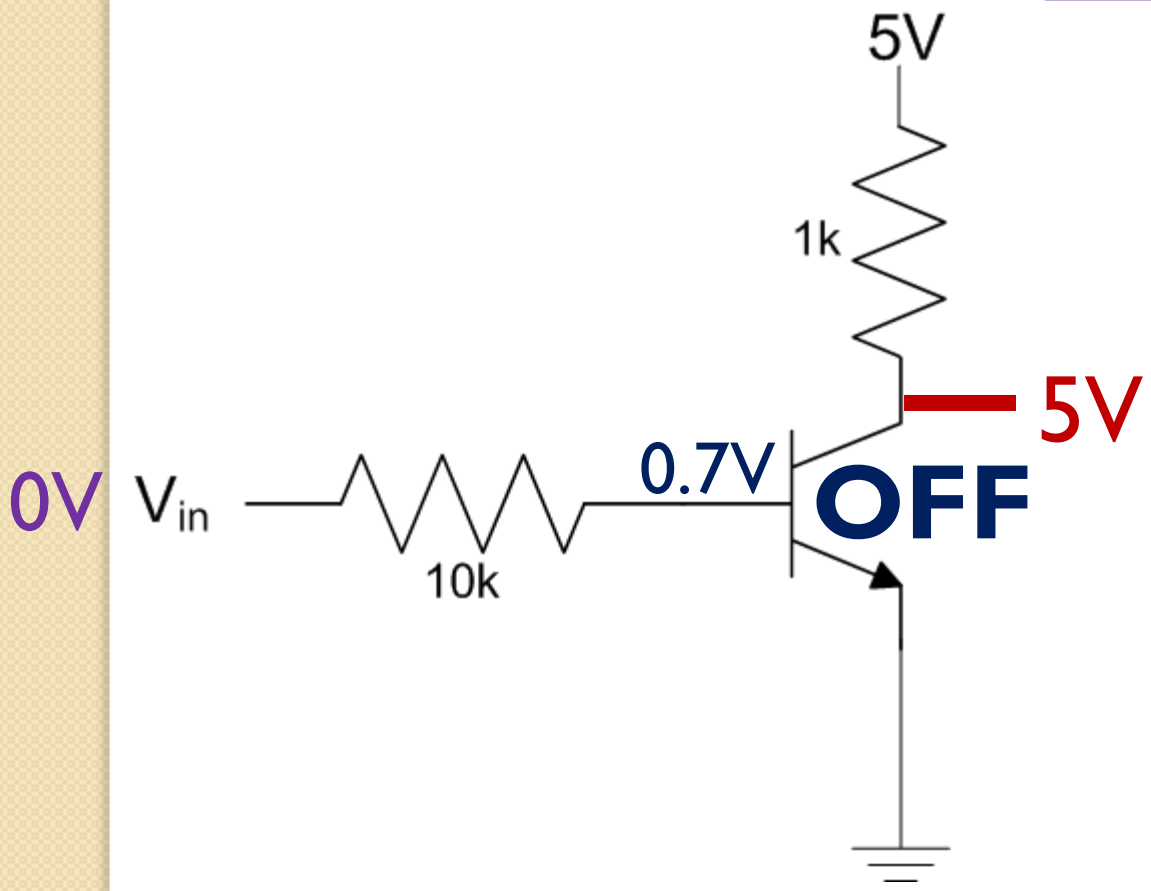


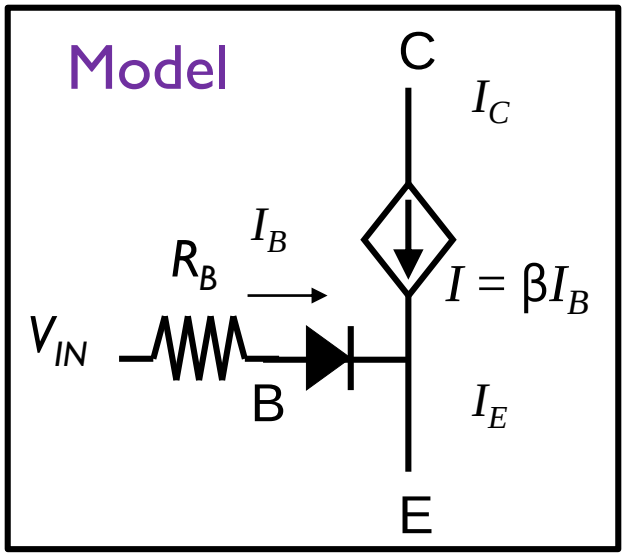
$I_D = (Vs - 0.7) / R$

Transistor analysis

- Consider this circuit:

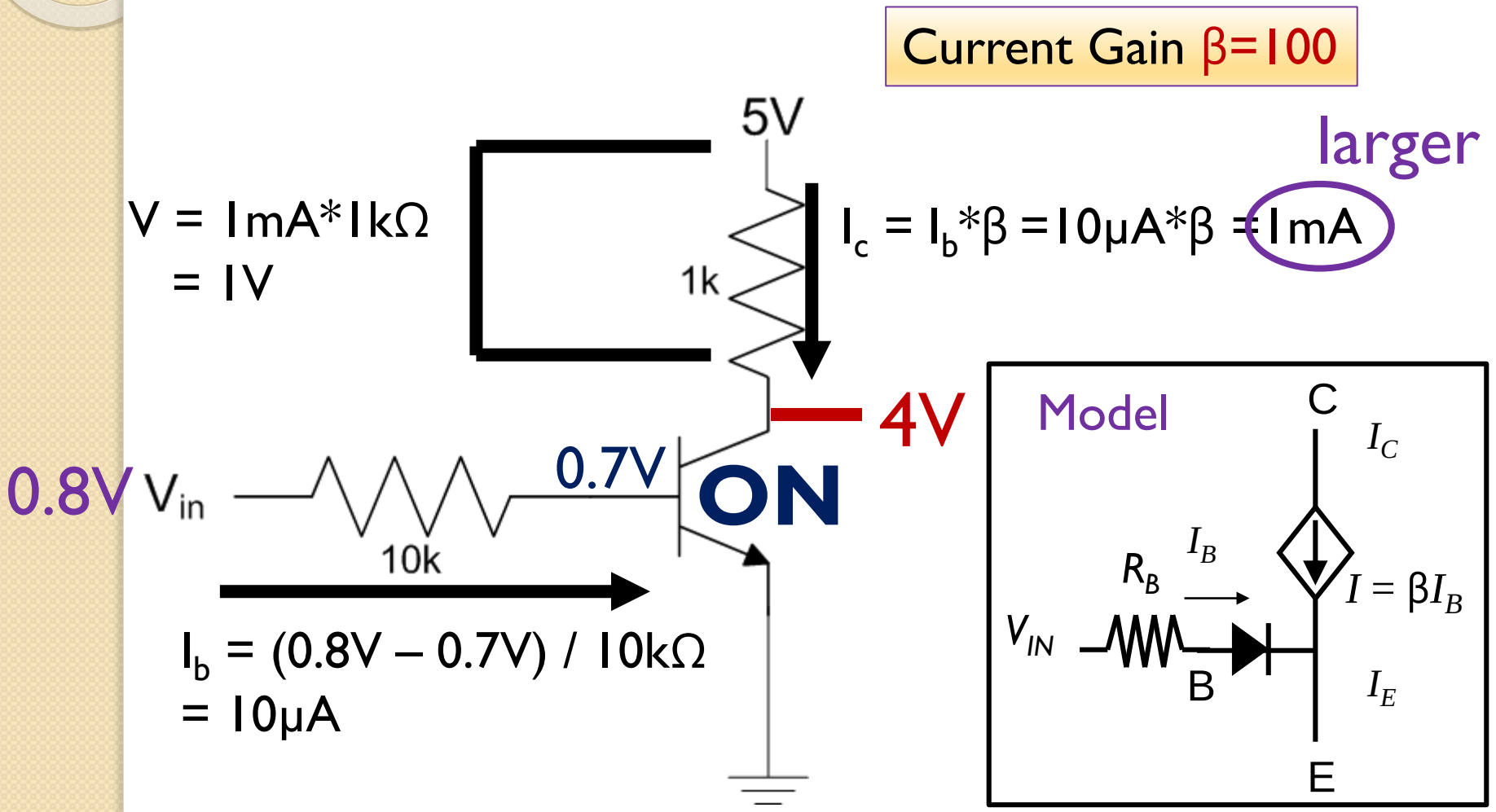
Current Gain β=100





Transistor analysis

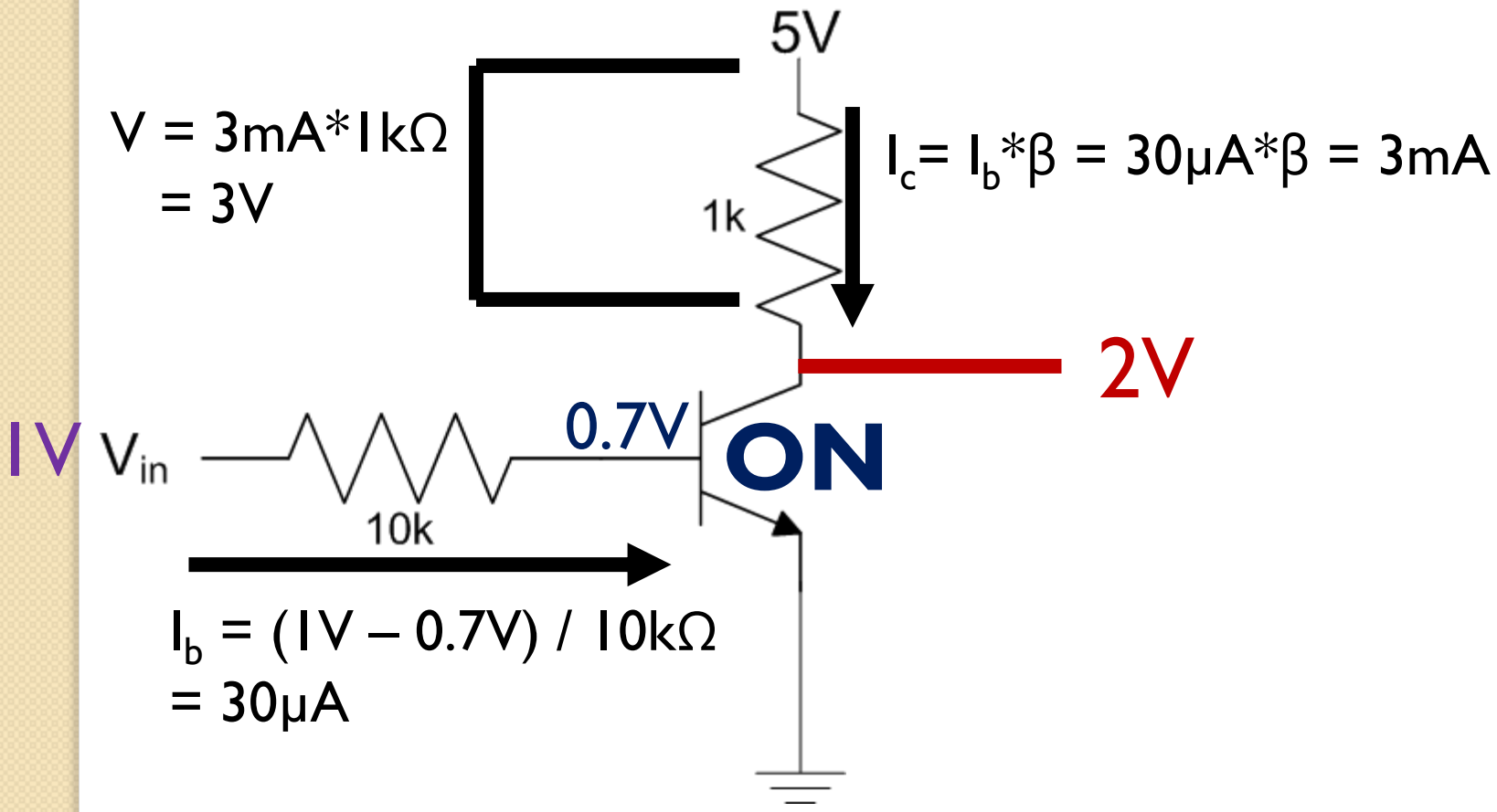
- Consider this circuit:



Transistor analysis

- How about if V_{in} = 1V?

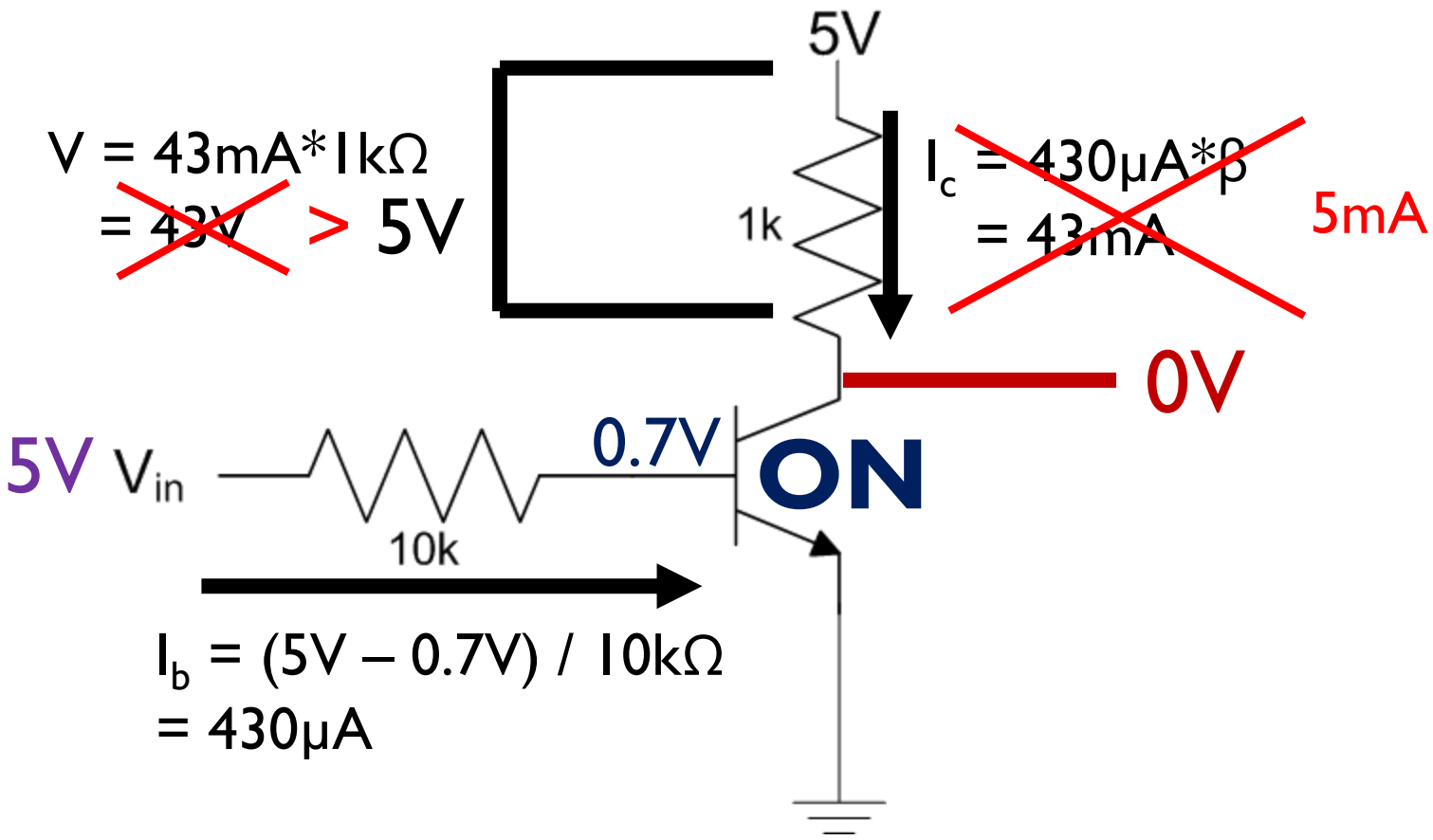
Current Gain β=100



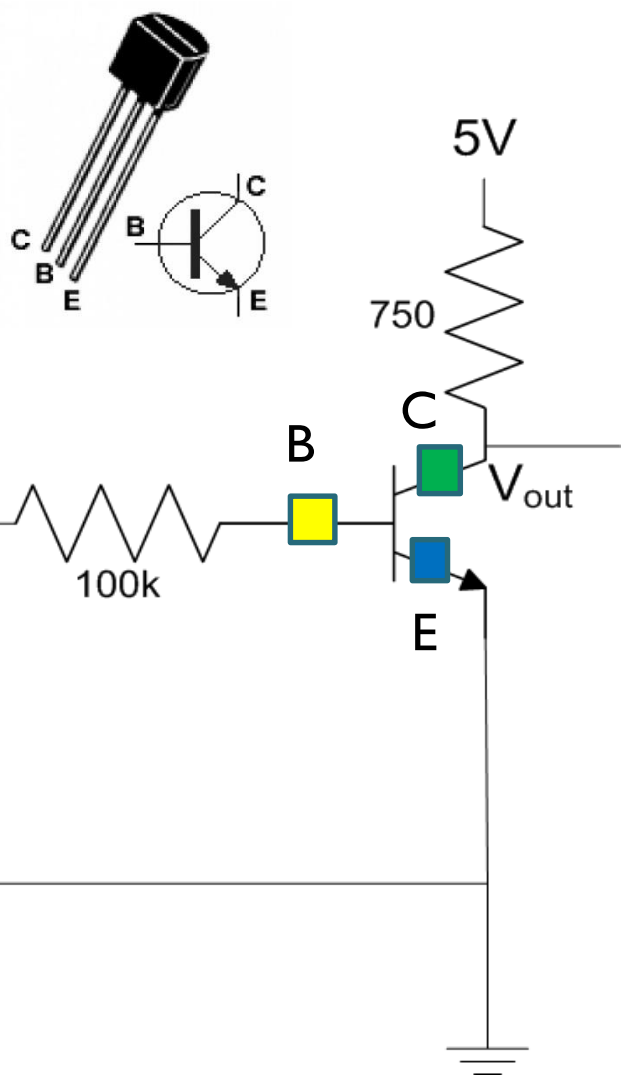
Transistor analysis

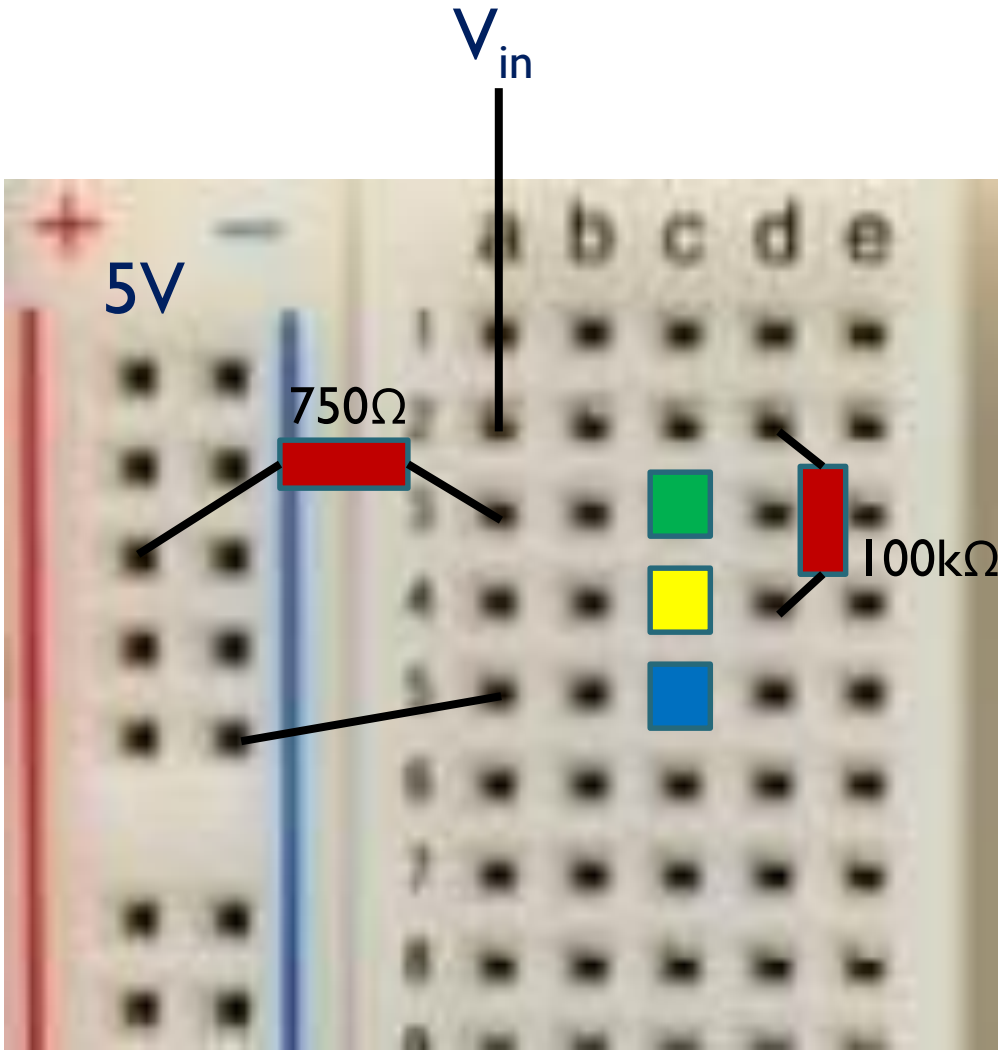
- How about if V_{in} = 5V?

Current Gain β=100

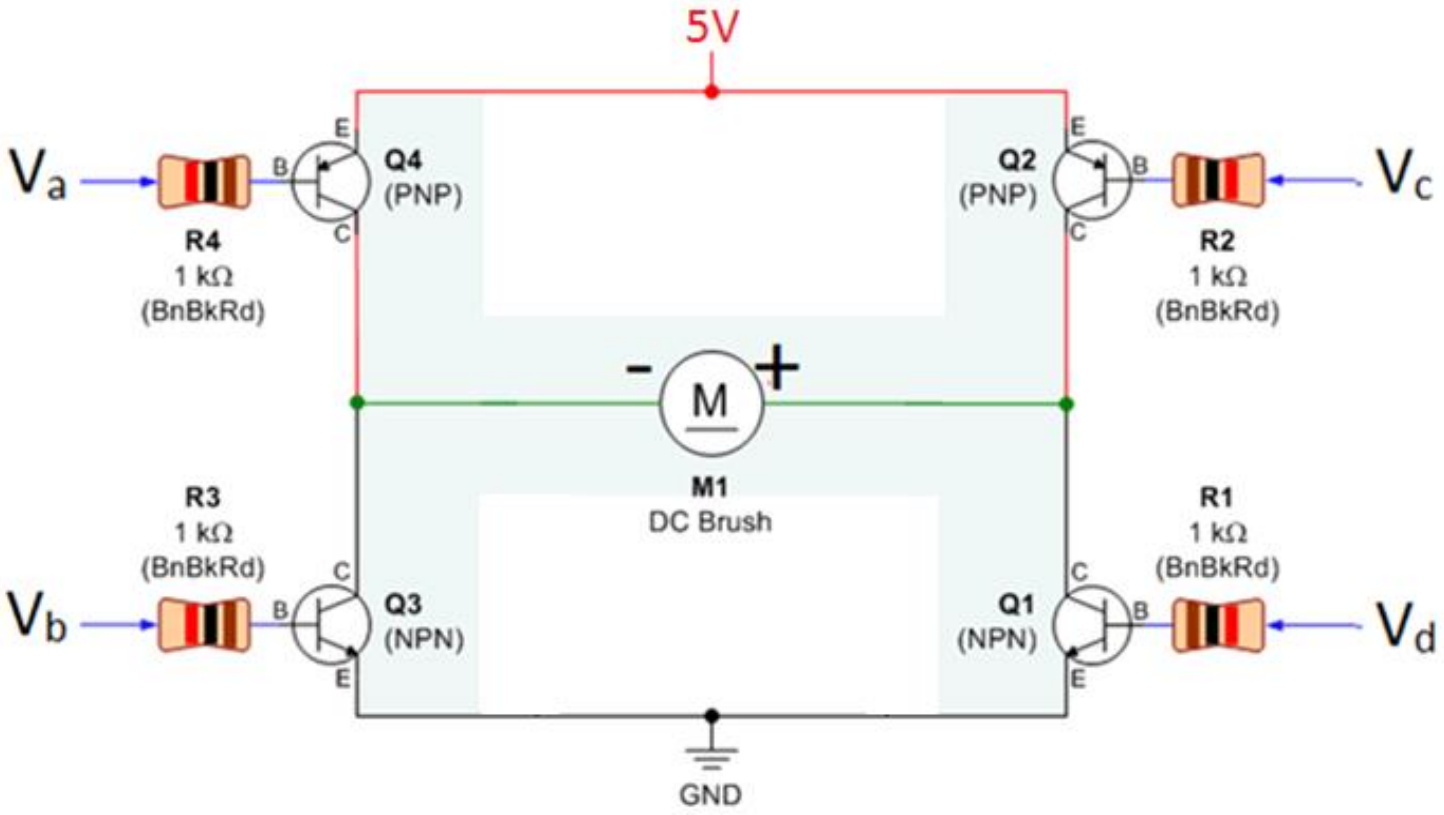


Breadboard





H-bridge



- V_a = ? V_b = ? V_c = ? V_d = ?

H-bridge DC Motor Driver

Lab#04: Experiment 2

(Schmitt Trigger from lab03)

Breadboard

Lab#04: Experiment 2