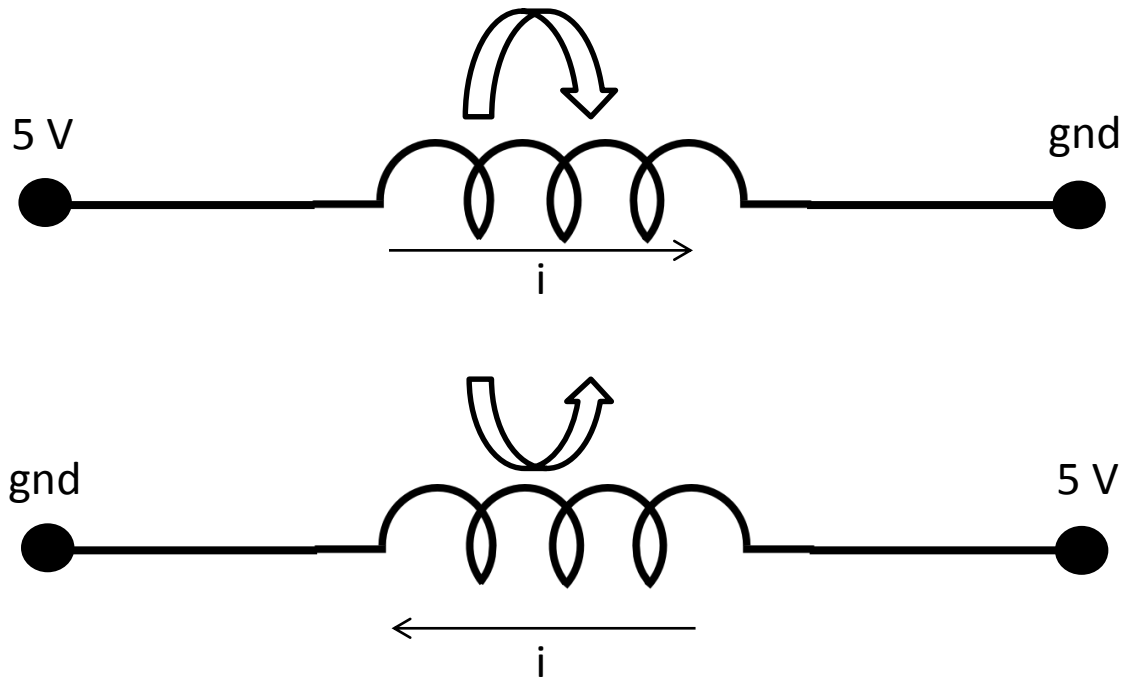


Introduction to H-Bridge



How does a motor turn?



- If you want to change the direction of the rotation, change the direction of current flow

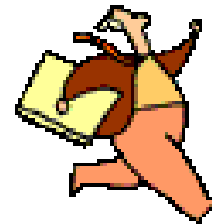
How much current does a motor need?



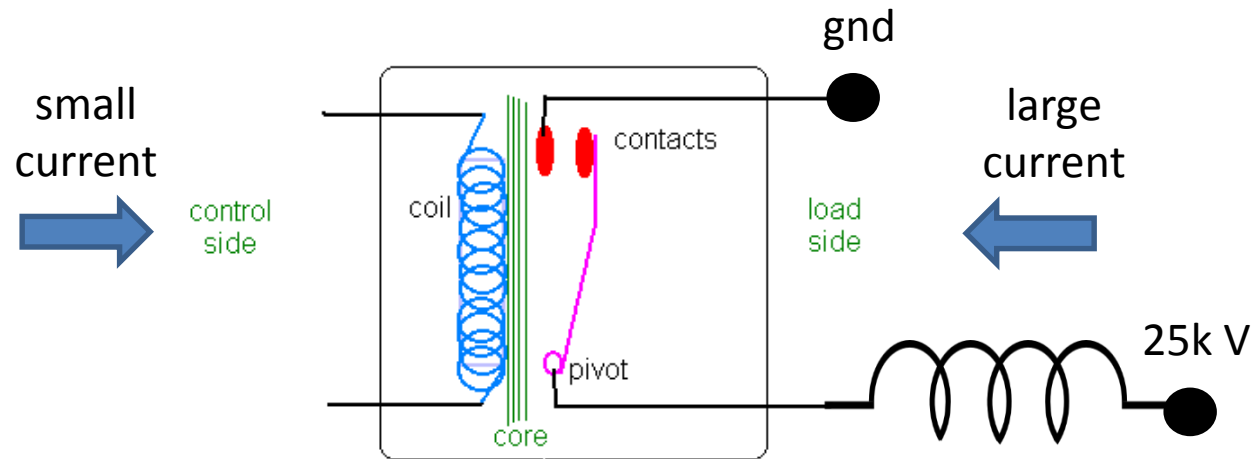
- Your nano board works @ 5 V, 0.5 Ams AT MOST
- Depending on the application, motors need huge amount of voltage and current

How much current does a motor need?

- Can I connect my Nano board to 25K Volts?
- Yes you can
 - Please inform me before doing it, I will run away from you as far as possible
- You should use electric switch
 - Relay
 - Transistor/h-Bridge



Relay : Electro mechanical switch

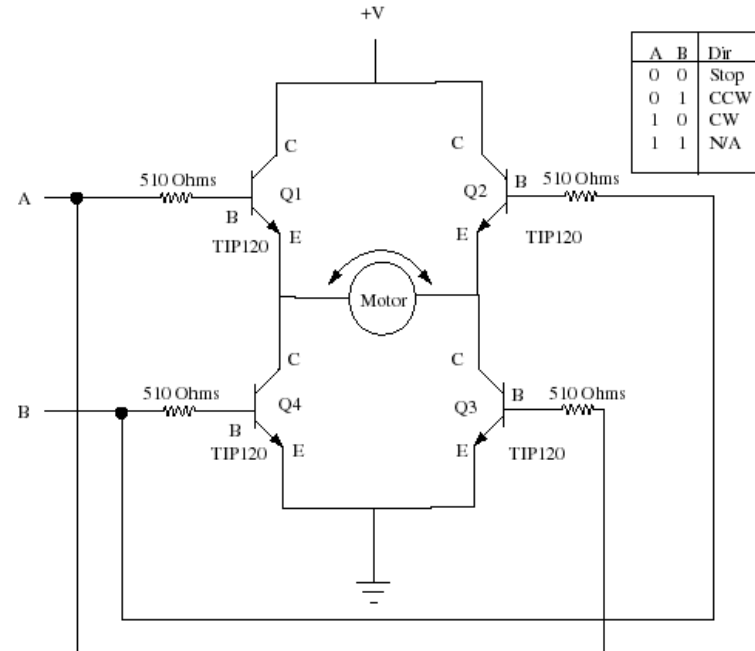
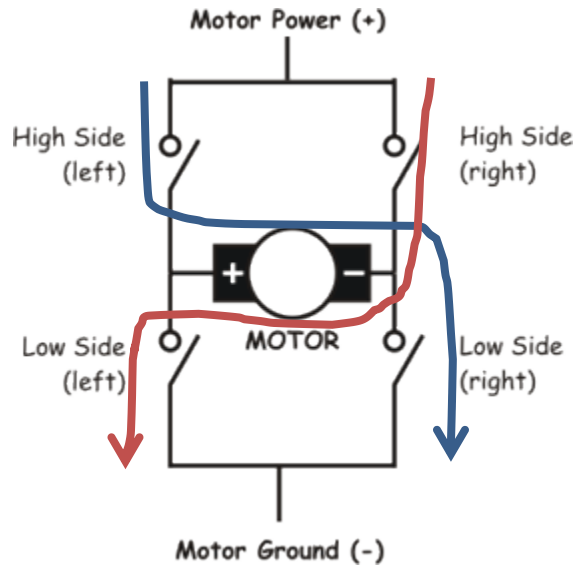


INSIDE A SPST RELAY

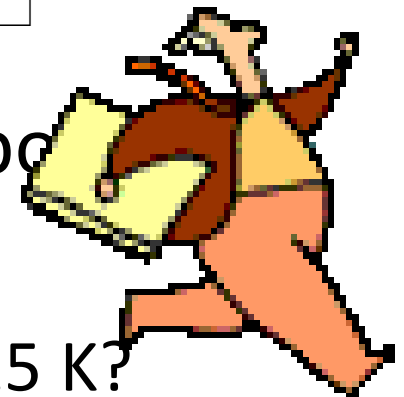
pic r-1a

- The small current flowing from coil creates electro-magnetic force which attracts the pivoted contact and circuit is closed on the large current side
 - Provides isolation
 - Slow reaction due to mechanical motion

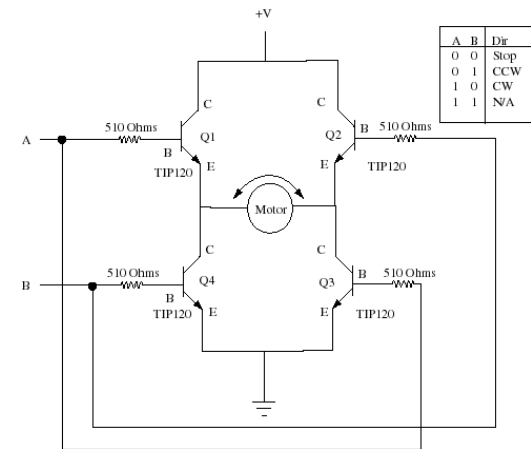
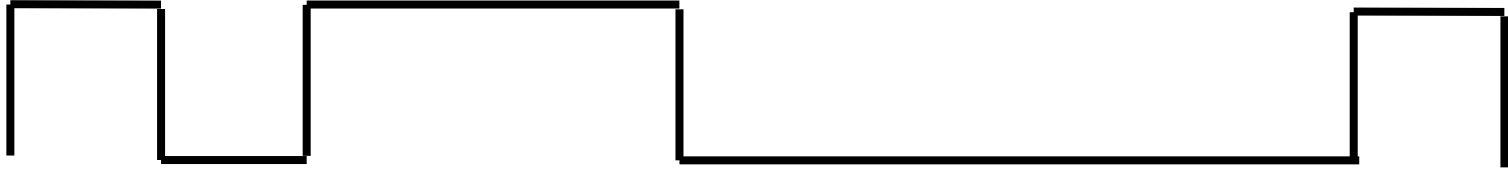
H-Bridge



- Drive signal A & B from your Nano board
 - Transistor is an electronic switch
 - What happens if A = 1, B = 1 and V = 25 K?



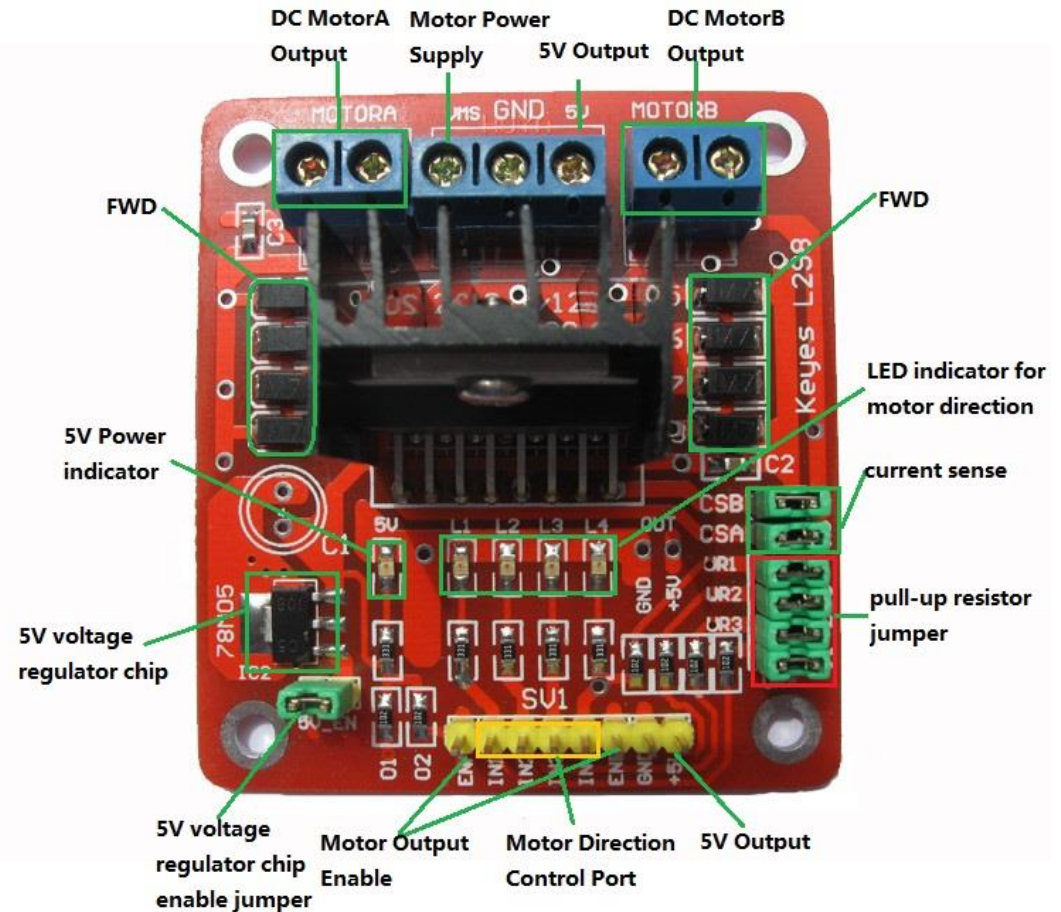
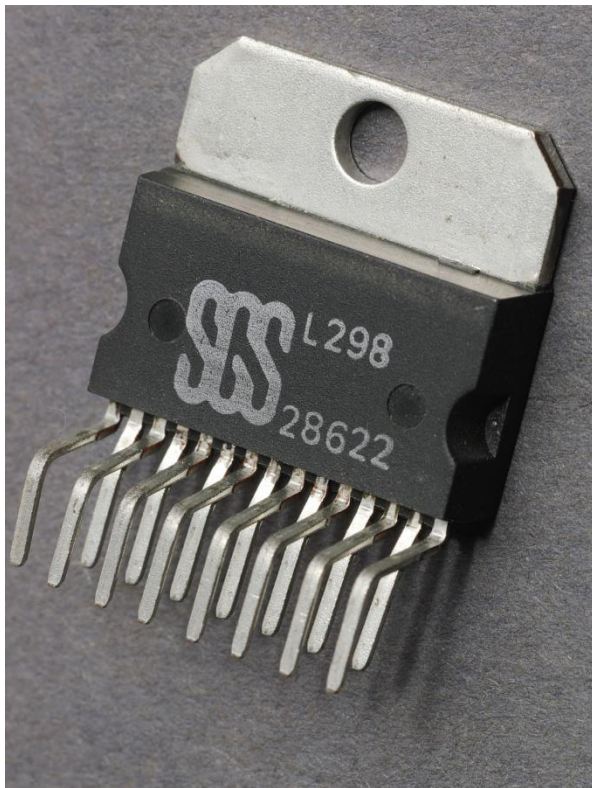
H-Bridge



- A & B must be driven by square wave pulses as shown above
 - Have you seen such square wave before?

Component: H-bridge Circuit

■ L298 chip & Circuit



Driving Mode



1/27/2014

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9



Goals

- Forward
- Backward
- Rotate clockwise
- Rotate anticlockwise

- Free running (Option)



Drive Forward

- All wheels
 - Same speed
 - Rotate forward



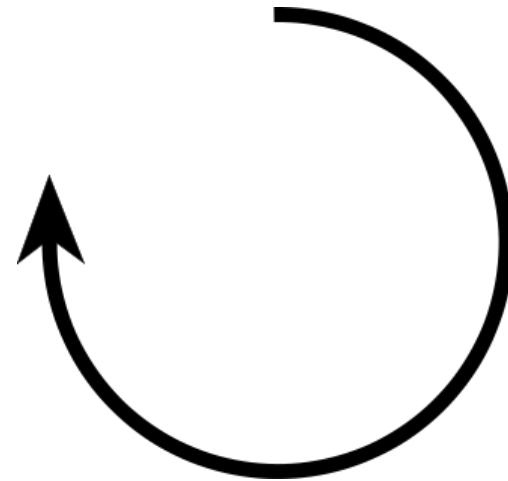
Drive Backward

- All wheels
 - Same speed
 - Rotate backward



Rotate Clockwise

- The left wheel
 - Same speed
 - Rotate clockwise
- The right wheels
 - Same speed
 - Rotate anticlockwise



Rotate Anticlockwise

- Two left wheels
 - Same speed
 - Rotate anticlockwise
- Two right wheels
 - Same speed
 - Rotate clockwise

