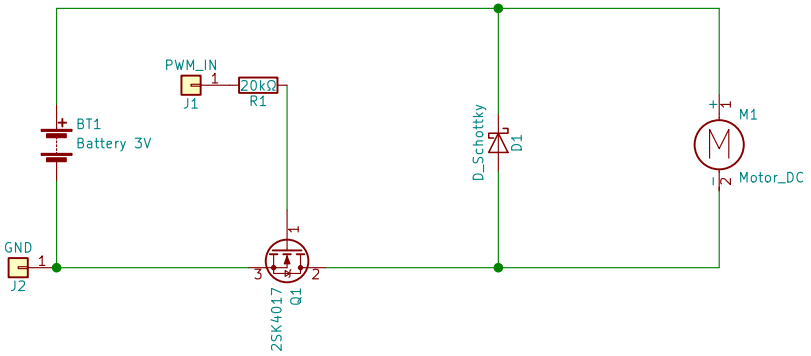
* Connect PWM_IN (J1) with GPIO 12 or 13 of Raspberry Pi (RasPi).
  RasPi's GPIO pins are driven with 3.3 volts. Don't apply 5 volts to PWM_IN (J1).
* Connect GND (J2) with any ground pin of RasPi.
* Q1 is a N-channel power MOSFET (enhancement mode).
  I used 2SK4017. Equivalents are needed to have enough drain current,
  on 3.3 volts of gate-source voltage.
* In this schematic, DC motor's (M1) voltage range should be 1.5 volts to 3.0 volts,
  and the normal voltage should be 3.0 volts.
  M1 is driven with 3.0 volts battery (2 of AA cells).
* M1 has enough inductance to make a low-pass filter,
  so you don't need another coil in series and a capacitor in parallel.
* Schottky diode's (D1) maximum average forward rectified current
  needs enough value compared to current consumption of a DC motor.
  For example, current consumption of a DC motor is 650 milliamperes,
  and a schottky diode you apply needs 650 milliamperes tolerance for its forward current.
  So the value, 1 ampere, is suitable as the diode's maximum average forward rectified current.

* Duty cycle is calculated as follows.
  D = Time of Pulse Width / Time of Pulse Width and Off Width
* Voltage on M1 is considered as follows ideally.
  Vmotor = D * Vbattery
* However, two losses of voltage exist in this circuit.
  One is drain-source of Q1 (Vds),
  and another is forward voltage of D1 (VFd).
  If you consider of these losses, voltage on M1 is calculated as follows.
  Vmotor = D * (Vbattery - Vds) - (1 - D) * VFd



N-channel MOSFET has stronger negative feedback than a NPN bipolar transistor.
To hide this effect place Q1 like this.

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Title: DC Motor Driver with Buck (Step-down) Converter

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