

n-mosfet (name : IRL8113)
1-gate
2-drain
3-source
4-drain(backplate)

absolute maximum ratings
Vds : 30 (V)
Vgs : 20 (V)
Id : 74 (A)

R(1) param
Qt : 58 (nC)
t : 5000 (nsec)
 $i = Qt/t = 0.0116$ (A)
 $R = V / i = 12 / 0.0116 = 1$ (kOhm)

R(2) param
 $R = R(1) * 10 = 1.2 * 10 = 12$ (kOhm)

R(3) param
LED Voltage drop : 2 (V)
LED current : 0.01 (A)
 $R = V / I = (12 - 2) / 0.01 = 1$ (kOhm)

R(4) and R(5) param
divider resistor for voltage sensor
output max voltage = 3 (V)
→ divider ratio = 9 : 1
⇒ R(4) = 91 (kOhm), R(5) = 10 (kOhm)

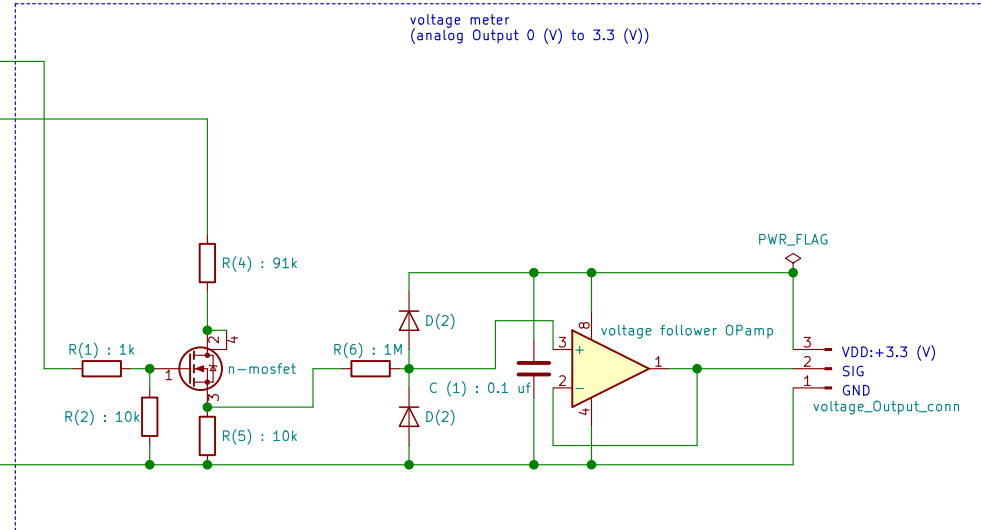
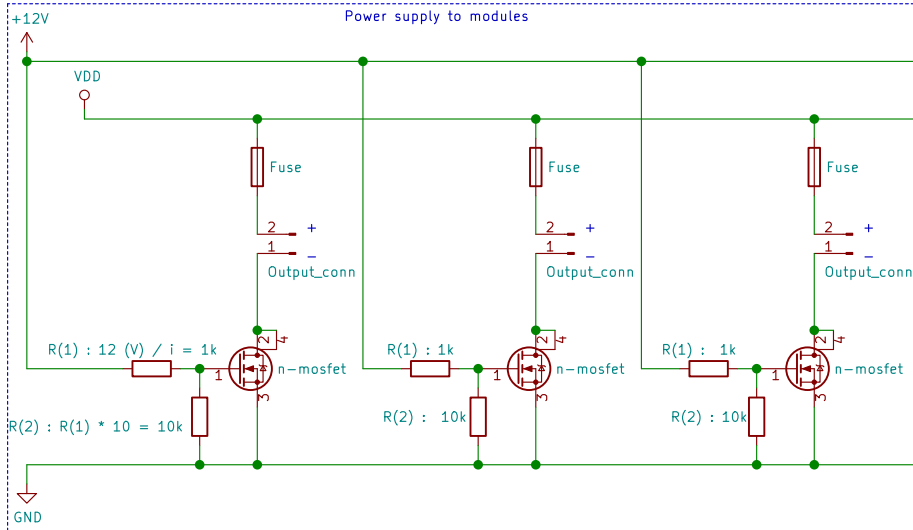
R(6) param
Current limiting resistor
need high impedance.
⇒ R(6) = 1 (MOhm)

C(1)
For high-frequency noise suppression
Basically, use a 0.1 uF capacitor

C(2)
For voltage stabilization

D(1)
Protection Diode
To release reverse voltage
caused by noise (ex: switch)

D(2)
Clamp diode
for Overvoltage protection



2021-07-02 tanaka designed
2021-07-07 tanaka updated

Please test before make PCB, and read reference, data sheet, and "readme.txt".

Sheet: /
File: switching_board.sch

Title: switching_board

Size: A4 Date: 2021-07-02

KiCad E.D.A. kicad (5.1.4)-1

Rev:
Id: 1/1