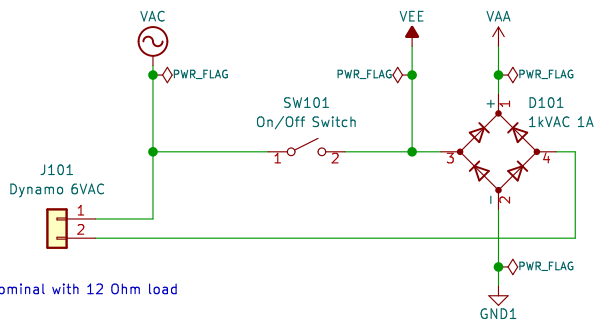


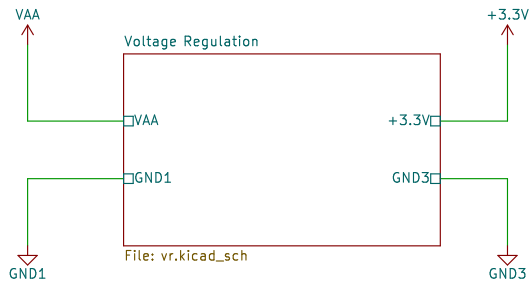
Input needs to be > 3.5 VAC RMS for the module to function properly



6 VAC nominal with 12 Ohm load

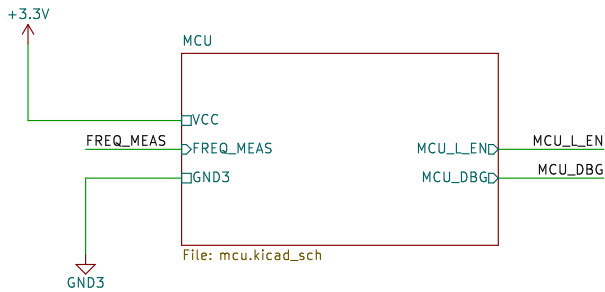
When testing this module on the bench ensure that VEE doesn't exceed 19 VAC RMS (\approx VAA - 25 VDC). When that threshold is exceeded the overvoltage protection will start to draw all the current available.

Power consumption (with UART disabled):
 steady state with power coming in and MCU in sleep mode: 4.3 mAAC @ 6 VAC / 5 Hz = 26 mW
 steady state with power coming in and MCU running : 5.6 mAAC @ 6 VAC / 100 Hz = 34 mW



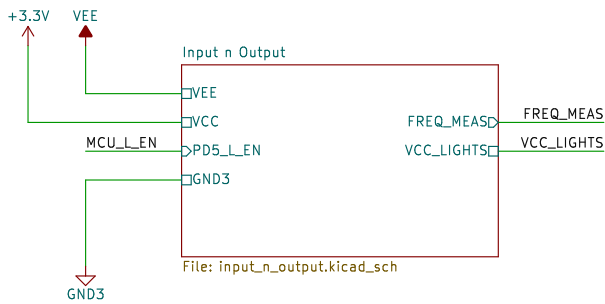
Voltage Regulation

File: vr.kicad_sch



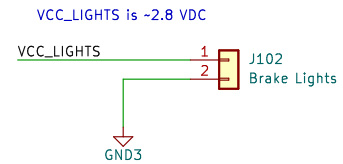
MCU

File: mcu.kicad_sch



Input n Output

File: input_n_output.kicad_sch

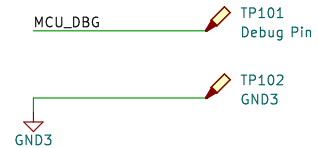


VCC_LIGHTS is ~2.8 VDC

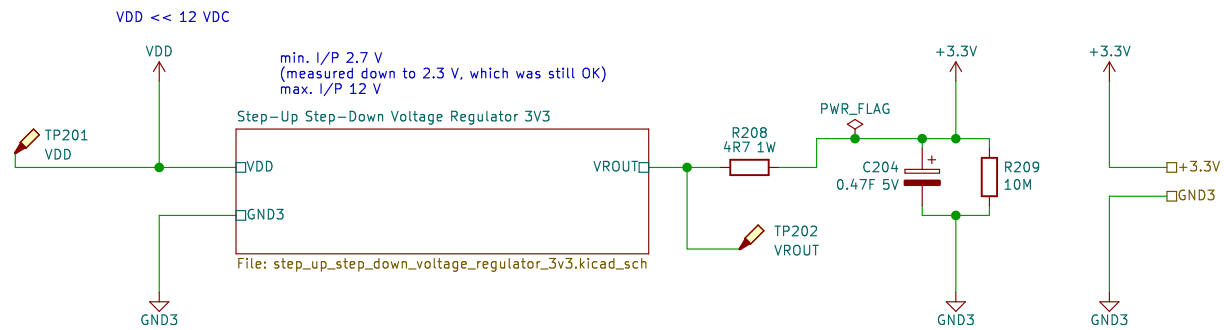
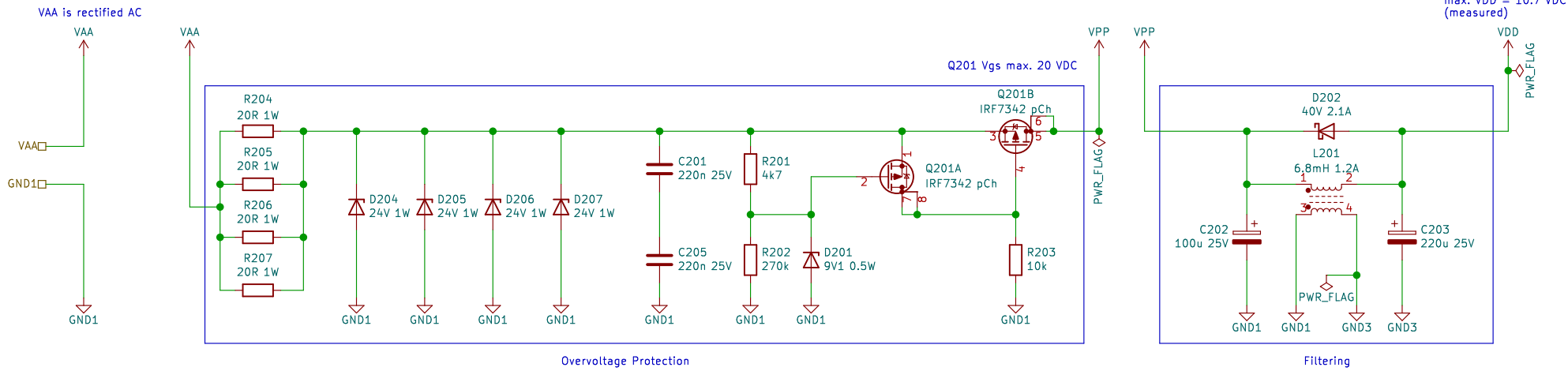
VCC_LIGHTS

Brakelights:
 4x LED:
 Kingbright L 53 SRC/D
 red, Vf 1.85 V, If 20 mA, D 5 mm, Iv 2000 mcd
 + series resistor:
 VCC_LIGHTS @2.8VDC: (4.7-4.7=)42.3 Ohm 19 mW

or:
 4x LED:
 Kingbright L-7104SEC-J3
 red, Vf 2.2 V, If 20 mA, D 3 mm, Iv 2000 mcd
 + series resistor:
 VCC_LIGHTS @2.8VDC: (30-4.7=)25.3 Ohm 12 mW



by TS		
Sheet:		
File: DEV-BrakeModule.kicad_sch		
Title: Bicycle Brakelight Module		
Size: A4	Date: 2023-01-26	Rev: vH7
KiCad E.D.A. kicad (7.0.0-0)		Id: 1/5



for LC-Filter see
<https://rf-tools.com/lc-filter/>
 (LowPass, Chebyshev, Shunt first, Order 3,
 Cutoff Frequency 115 Hz, Passband Ripple 0.02 dB,
 Input Impedance 5 Ohm, Output Impedance 56 Ohm,
 Component Values Standard)

Voltage Regulation
 by TS

Sheet:
 File: vr.kicad_sch

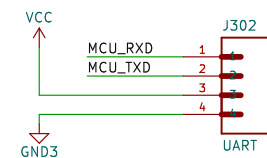
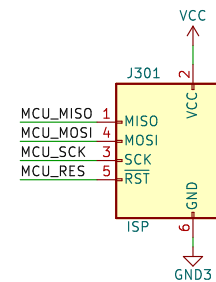
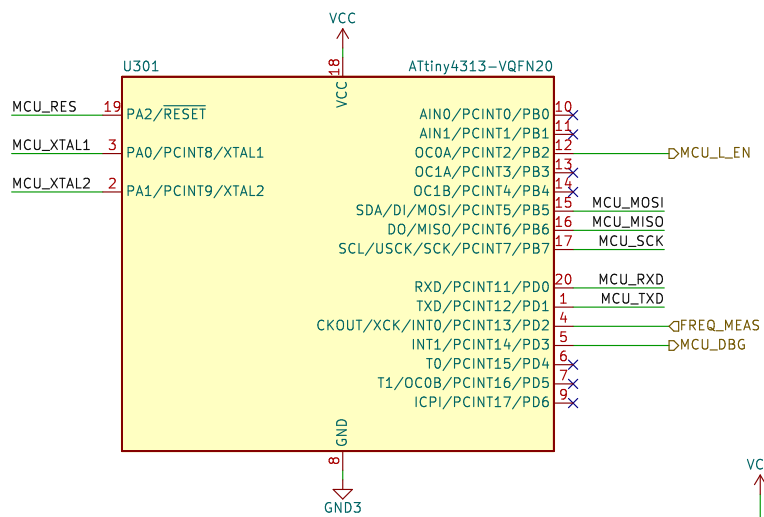
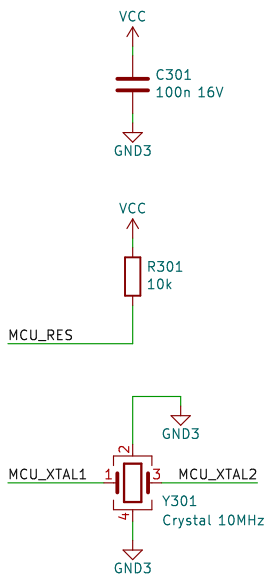
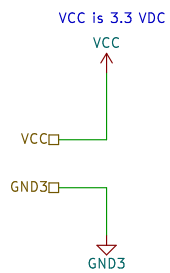
Title: Bicycle Brakelight Module

Size: A4 Date: 2023-01-26

KiCad E.D.A. kicad (7.0.0-0)

Rev: vH7

Id: 2/5



MCU
by TS
Sheet:
File: mcu.kicad_sch

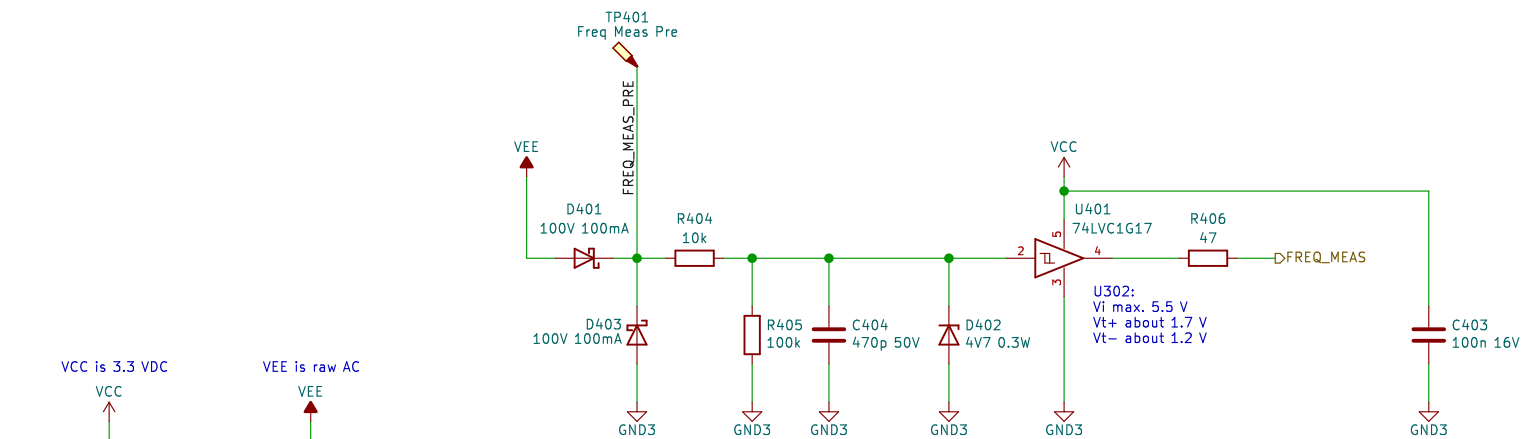
Title: Bicycle Brakelight Module

Size: A4 Date: 2023-01-26

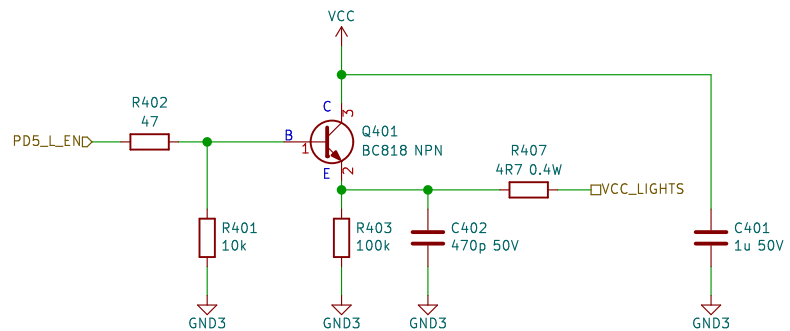
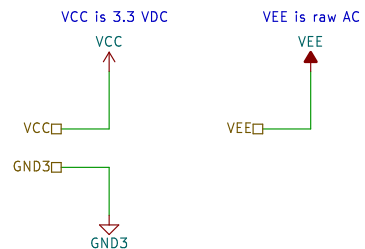
KiCad E.D.A. kicad (7.0.0-0)

Rev: vH7

Id: 3/5



Using VEE and GND3 together here is not optimal but shouldn't cause any problems



R403 is for Line Termination
(picked up the input AC voltage signal w/o R403)

Input + Output
by TS

Sheet:
File: input_n_output.kicad_sch

Title: Bicycle Brakelight Module

Size: A4 Date: 2023-01-26

KiCad E.D.A. kicad (7.0.0-0)

Rev: vH7

Id: 4/5

