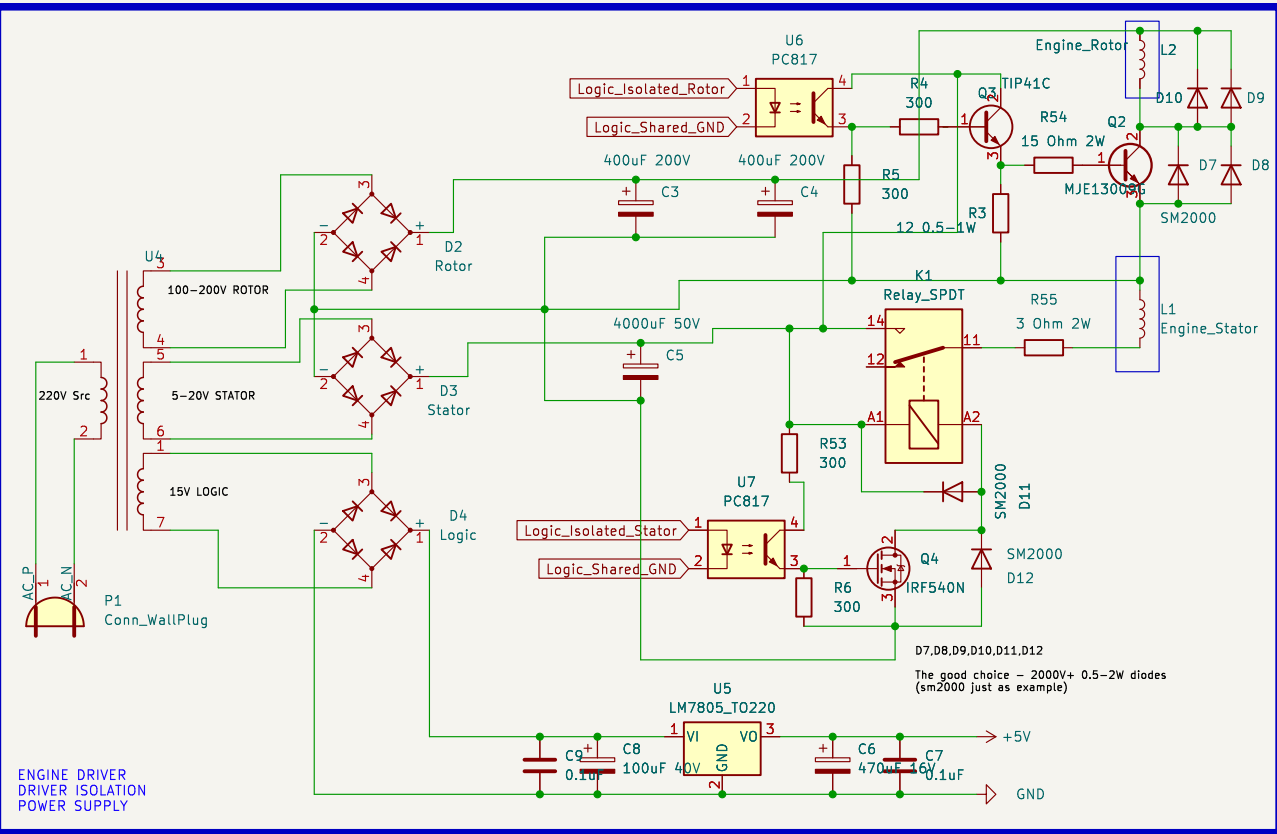


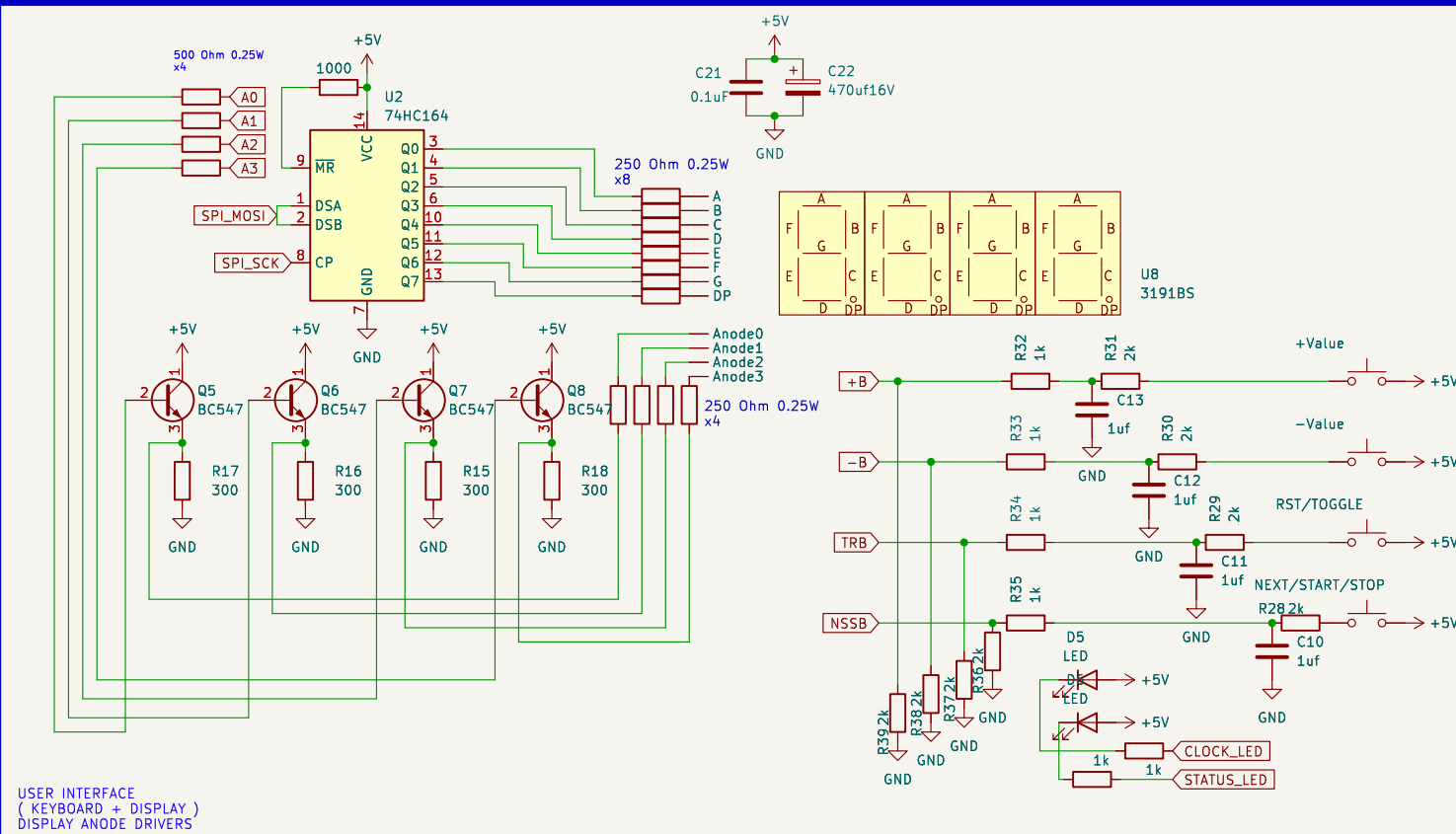
R3:
 V_a = Stator voltage (for me is 9V)
 I_a = any in rational range (for me is 0.75A)
 $R3 = V_a / I_a$

R54:
Ibase = Current throught Base→Emitter way on Q2 (on presented scheme – is ~0.5A)
Also, on scheme given a 15ohm, but, on my own hw I staled 18 Ohm for ~0.42A)
 $R54 = V_a - (0.7 \cdot 2) / I_{base}$

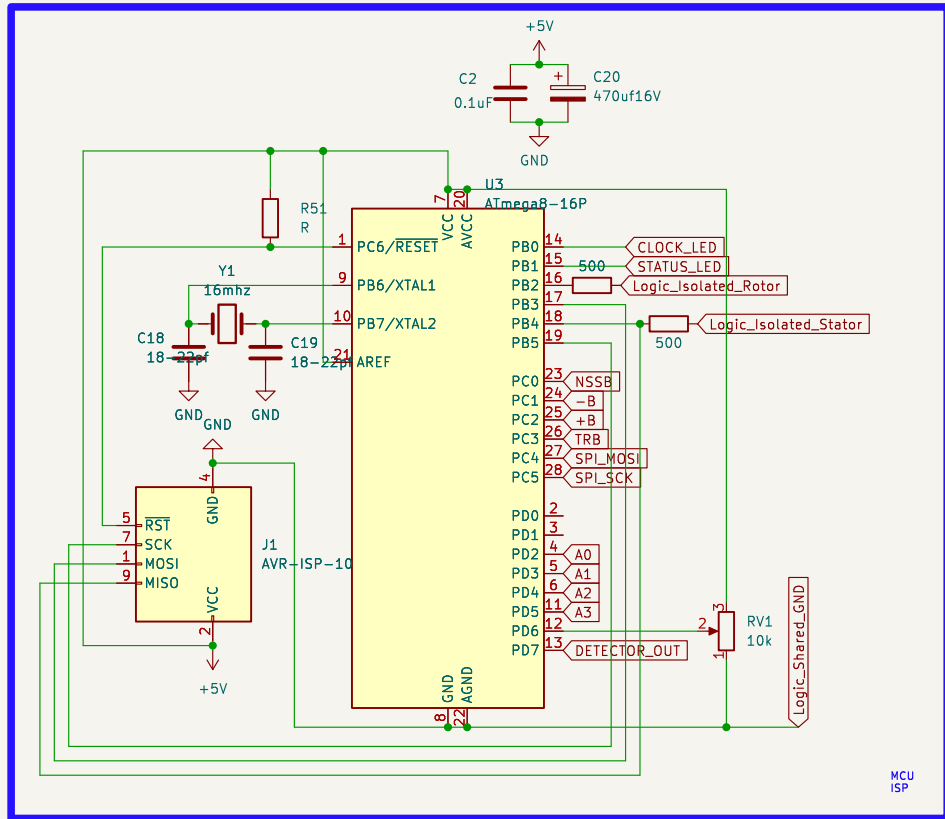
So then, current throught Collector→Emitter way on Q2 will be ~ IbaseQ2 * hfe21Q2
For my transistor (Philips BU508) HFE21 parameters is given in 5–10 range.
Then, I can get 2.1A+ throught that transistor when used that R54 value. I have (approx) 75V (amplitude, not rds) on rotor way src.
So, $LCE_{Q2} = 2.94A$ (hfe=7), then $75 \cdot 2.94 = \sim 220W$ on rotor.
Shortly – just try to install different vals on R54, but, keep know how much your transistor can take current throught C–E way.
For BU7508 is 8A
For 130009 is 12A
For D209L is 12A.



ENGINE DRIVER
DRIVER ISOLATION
POWER SUPPLY



USER INTERFACE
(KEYBOARD + DISPLAY)
DISPLAY ANODE DRIVERS



HYSTERESIS

R48, R49, R50

Src & calculations = <https://chipenable.ru/index.php/how-connection/101-raschet-komparatora-na-operatsionnom-uslilite.html>

For presented vals of these R

Uit = -1.13V

Uht = -1.95V

I.e. Hysteresis = -0.82 ~ 0.8

For my own detector, low is ~0.3–0.4V (when detector on 'black' place), and high is ~3.5–4V (when detector on reflection place) (presented levels showed BEFORE HYSTERESIS!!!)

Also, u should remember that scheme (point on output of last filter) has inverted signal. I.e., on output of hysteresis-comparator u get not-inverted signal (reflection = high, black = low).

Anyway, inverted or not-inverted means nothing.

Comparator in MCU works with fronts, not with levels.

FILTERS

R45, R46, R47 the same

C14, C16, C17 the same

Select R (any val, for example – between 2k and 10k)

Select target F (for example -> F = 133Hz) (F = maxRPM(8000) / 60)

Get C val -> C = 1 / (2 * pi * R * F)

I.e. $1 / (2 * pi * 5000 * 133) = 2.387 \times 10^{-6}$, I.e. ~238nF, so then for ~133Hz on ~3db ->

R45, R46, R47 = 50 Ohm

C14, C16, C17 = 233nF

(excuse me for empty vals on scheme, I just forgot the actual values of installed R & C. lol)

(but, my C & R was calculated for 15kHz. Anyway, its work fine, even when the target F is SO HIGH).

U1 = VCC

Usat = U1 - Uit

g1 = 1/R49

g2 = 1/R48

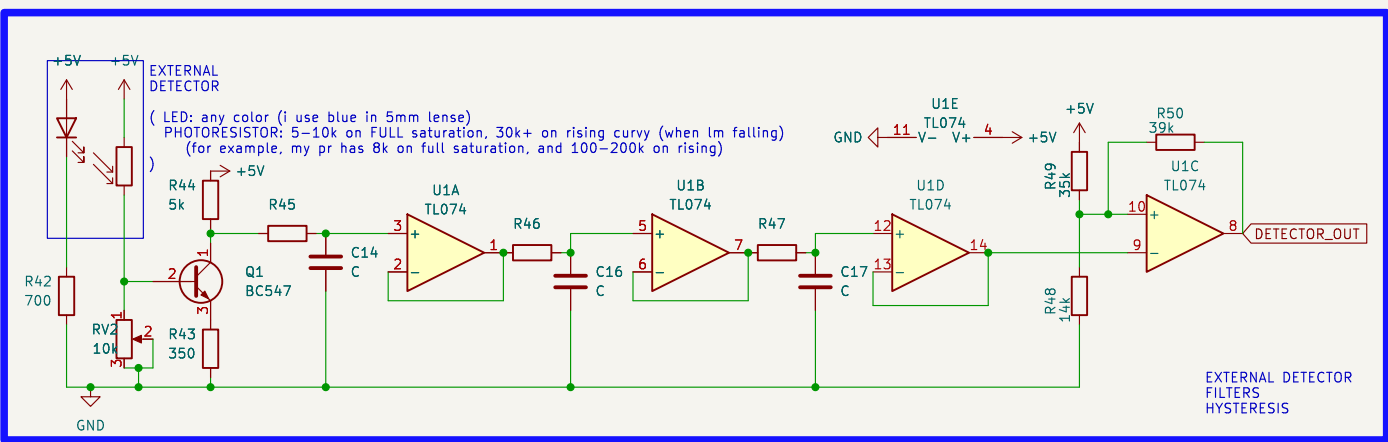
g3 = 1/R50

Uit = (U1 * g1) / (g1 + g2 + g3)

Uht = (U1 * g1 + Usat * g3) / (g1 + g2 + g3)

On first, select any value for R50 (g3 point) what u want.

then, shift R49 and R48 values, stop when Uit and Uht vals got your wants.



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KiCad E.D.A. 8.0.3

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