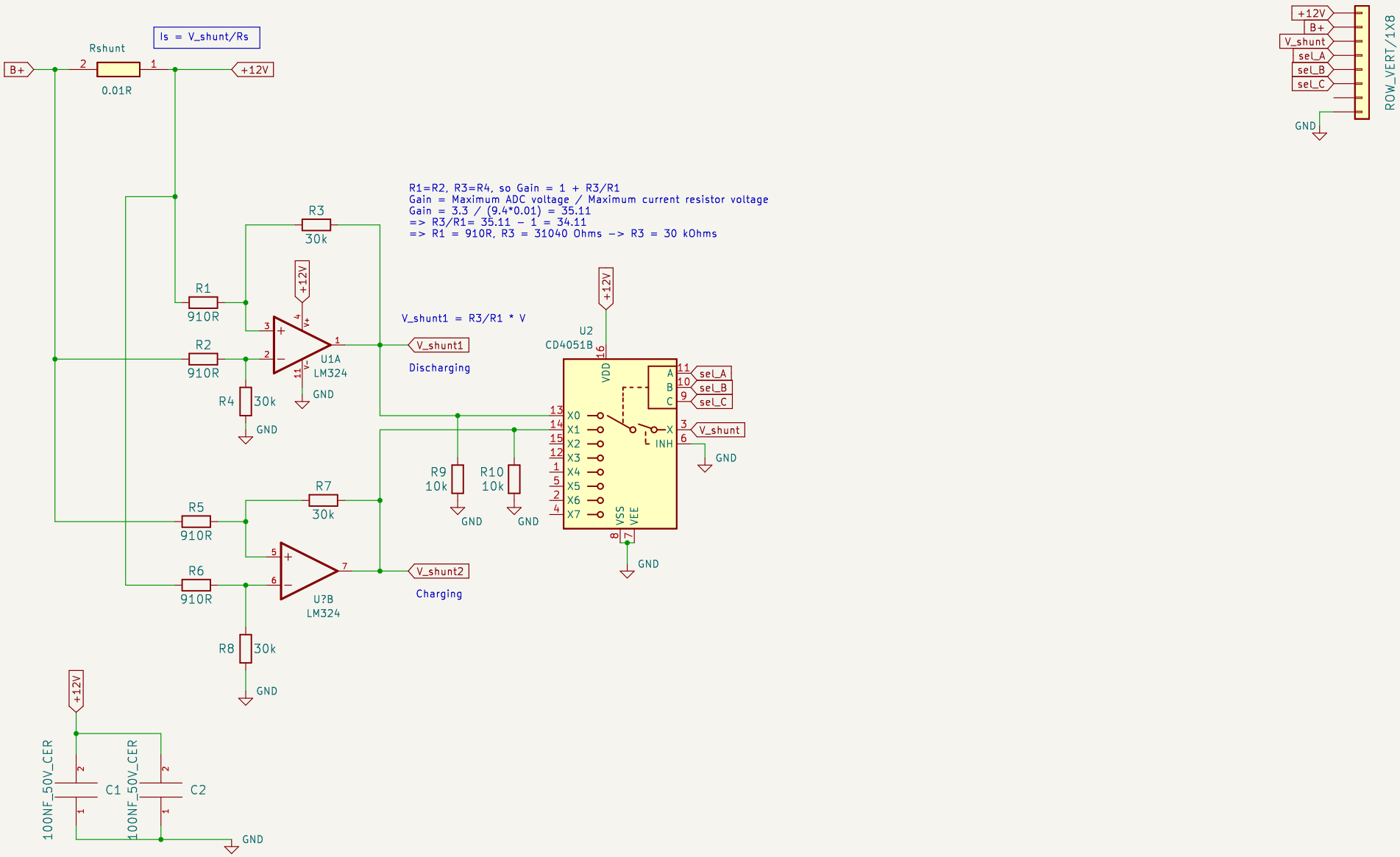
Is = V_shunt/Rs
Rshunt
0.01R
B+
+12V
R1=R2, R3=R4, so Gain = 1 + R3/R1
Gain = Maximum ADC voltage / Maximum current resistor voltage
Gain = 3.3 / (9.4*0.01) = 35.11
=> R3/R1= 35.11 - 1 = 34.11
=> R1 = 910R, R3 = 31040 Ohms -> R3 = 30 kOhms
R3
30k
R1
910R
R2
910R
R4
30k
U1A
LM324
GND
V_shunt1 = R3/R1 * V
V_shunt1
Discharging
U2
CD4051B
VDD
VSS
VEE
INH
X0
X1
X2
X3
X4
X5
X6
X7
A
B
C
sel_A
sel_B
sel_C
V_shunt
R9
10k
R10
10k
R5
910R
R6
910R
R7
30k
R8
30k
U?B
LM324
V_shunt2
Charging
100NF_50V_CER
C1
C2
ROW_VERT/1X8
Discharging: from B+ to +12V
Charging: from +12V to B+