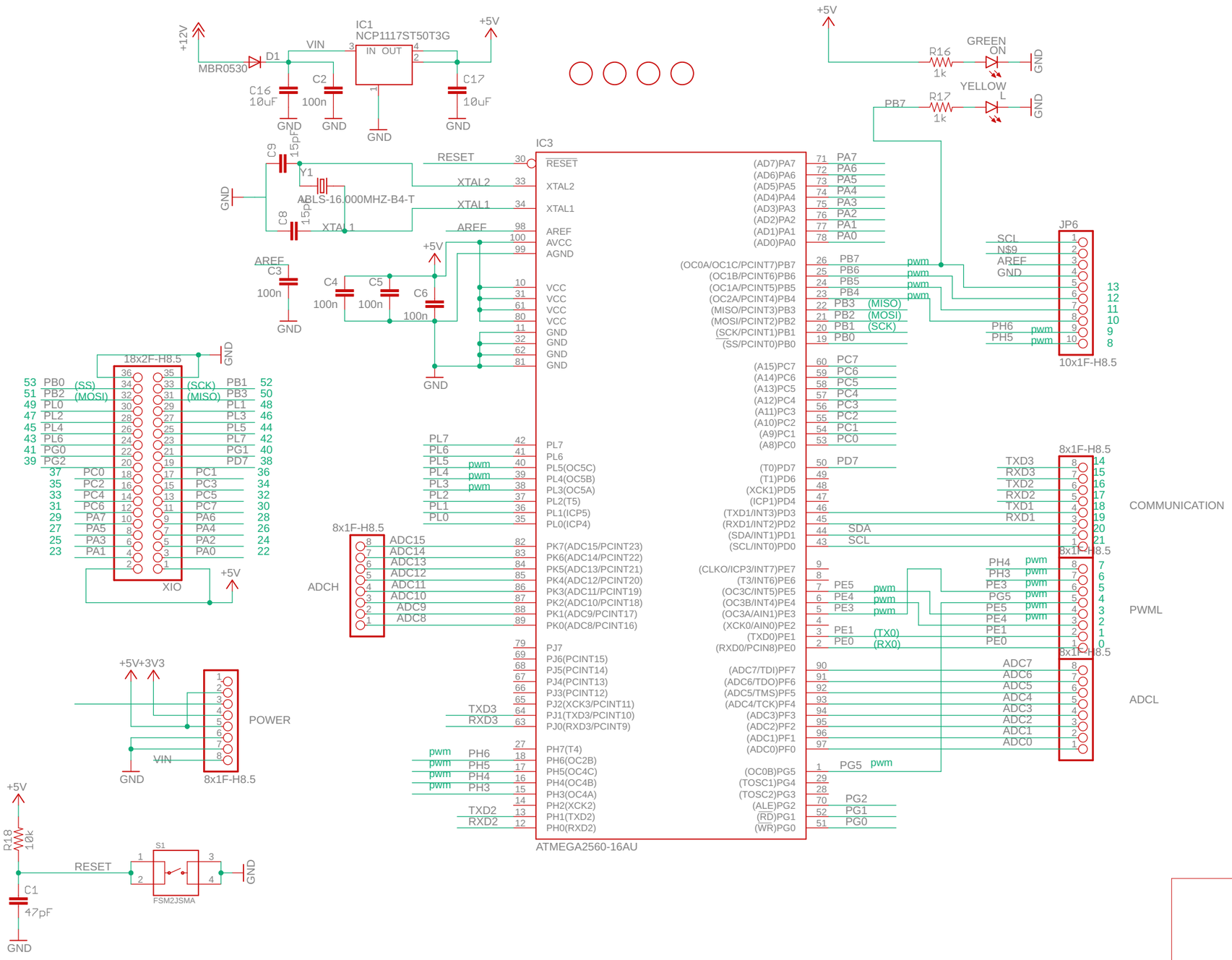
Notes:
elevator driver
make custom pins for mains 12 or 14 gauge wire
stepper motor load switching
Damping resistors on SPI for ICSP?

replace diode



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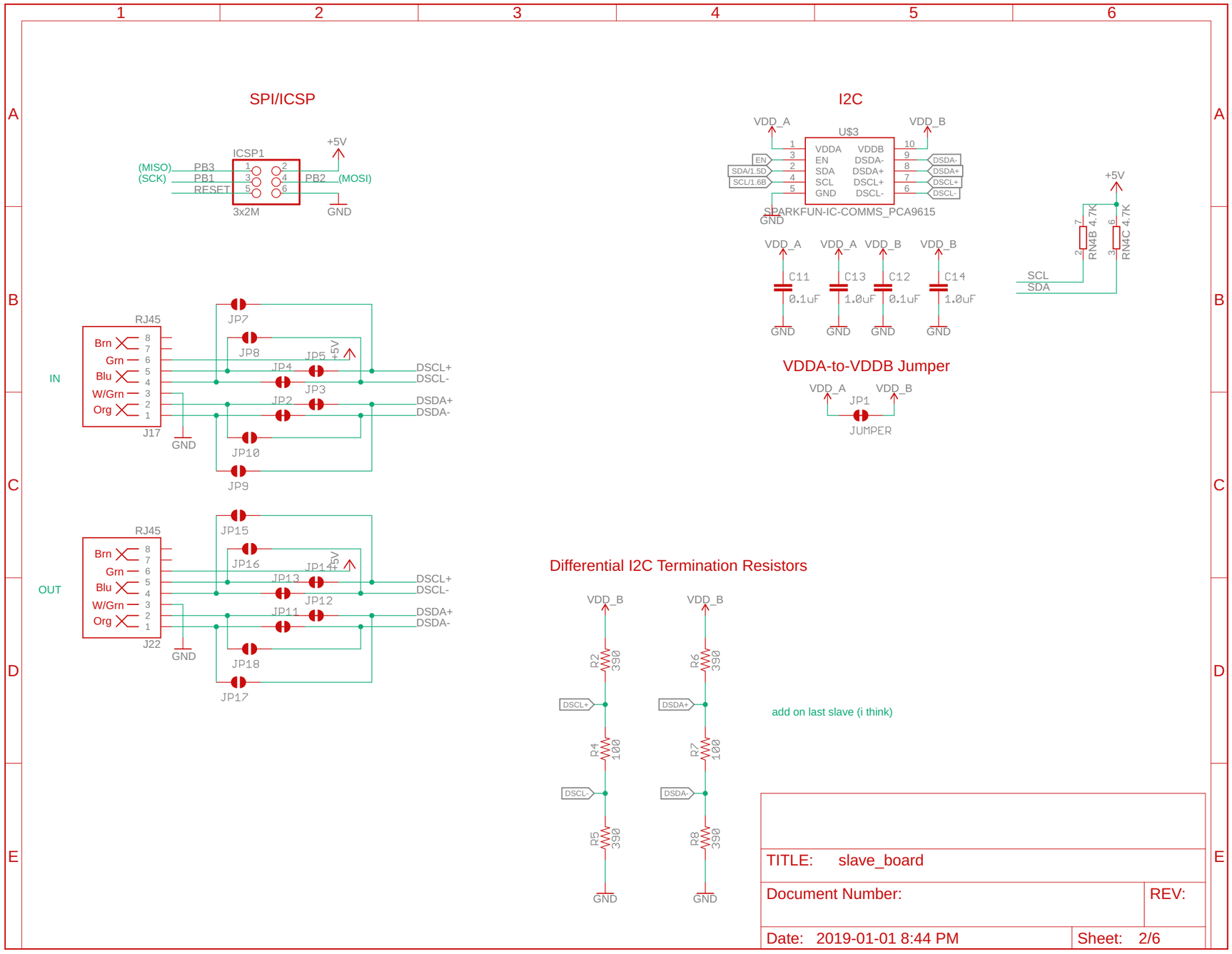

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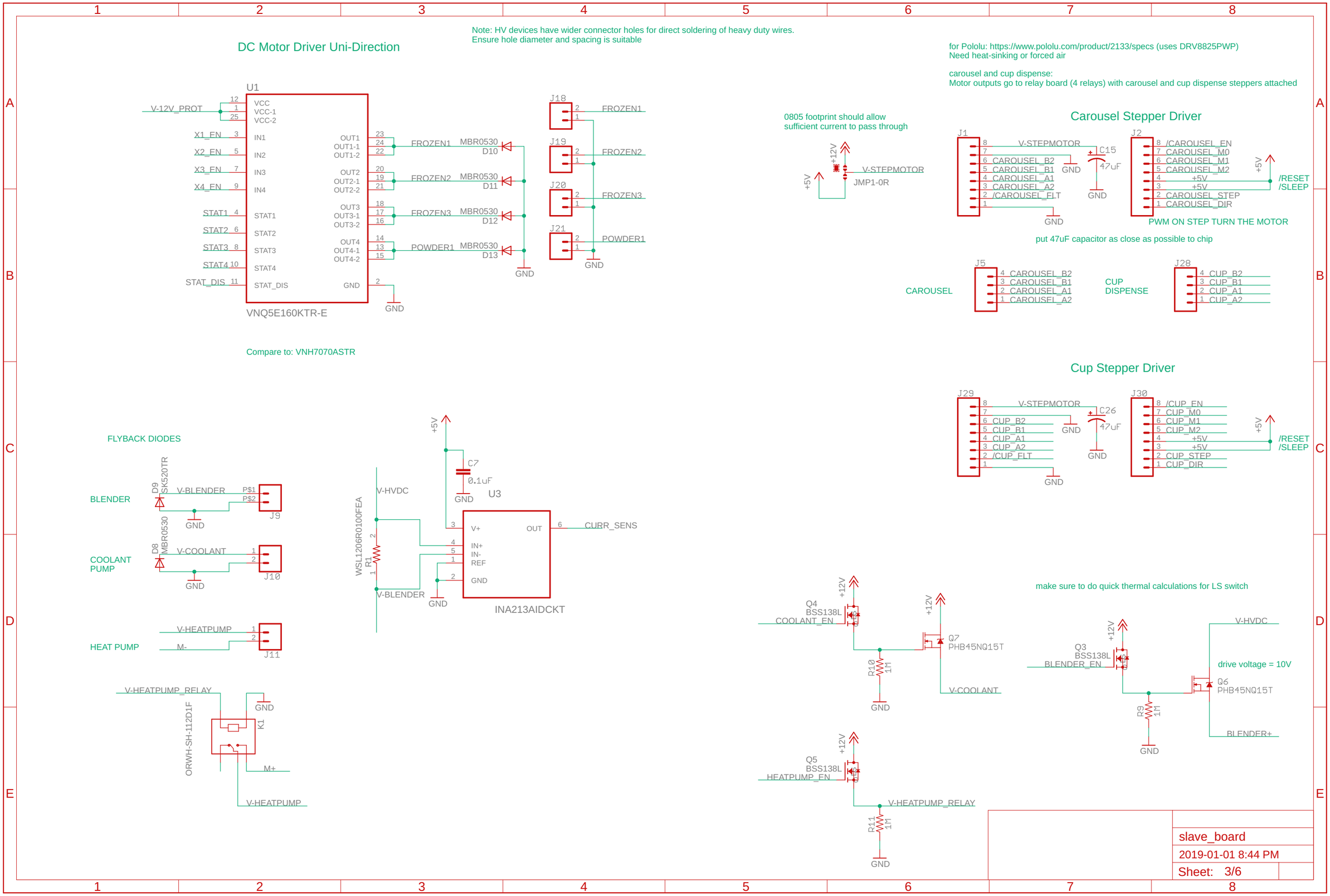
Note: HV devices have wider connector holes for direct soldering of heavy duty wires.
Ensure hole diameter and spacing is suitable
DC Motor Driver Uni-Direction
U1
VNQ5E160KTR-E
V-12V_PROT
X1_EN
X2_EN
X3_EN
X4_EN
STAT1
STAT2
STAT3
STAT4
STAT_DIS
FROZEN1
FROZEN2
FROZEN3
POWDER1
MBR0530
D10
D11
D12
D13
J18
J19
J20
J21
GND
Compare to: VNH7070ASTR
for Pololu: https://www.pololu.com/product/2133/specs (uses DRV8825PWP)
Need heat-sinking or forced air
carousel and cup dispense:
Motor outputs go to relay board (4 relays) with carousel and cup dispense steppers attached
0805 footprint should allow
sufficient current to pass through
+12V
+5V
V-STEPMOTOR
JMP1-0R
Carousel Stepper Driver
J1
J2
C15
47uF
CAROUSEL_B2
CAROUSEL_B1
CAROUSEL_A1
CAROUSEL_A2
/CAROUSEL_FLT
/CAROUSEL_EN
CAROUSEL_M0
CAROUSEL_M1
CAROUSEL_M2
CAROUSEL_STEP
CAROUSEL_DIR
/RESET
/SLEEP
PWM ON STEP TURN THE MOTOR
put 47uF capacitor as close as possible to chip
CAROUSEL
J5
CUP
DISPENSE
J28
CUP_B2
CUP_B1
CUP_A1
CUP_A2
Cup Stepper Driver
J29
J30
C26
/CUP_EN
CUP_M0
CUP_M1
CUP_M2
CUP_STEP
CUP_DIR
FLYBACK DIODES
BLENDER
COOLANT
PUMP
HEAT PUMP
D9
SK520TR
D8
MBR0530
V-BLENDER
V-COOLANT
V-HEATPUMP
M-
J9
J10
J11
C7
0.1uF
U3
V-HVDC
WSL1206R0100FEA
R1
CURR_SENS
INA213AIDCKT
make sure to do quick thermal calculations for LS switch
Q4
BSS138L
COOLANT_EN
Q7
PHB45NQ15T
R10
1M
Q3
BLENDER_EN
Q6
drive voltage = 10V
R9
BLENDER+
Q5
HEATPUMP_EN
R11
V-HEATPUMP_RELAY
ORWH-SH-112D1F
K1
M+
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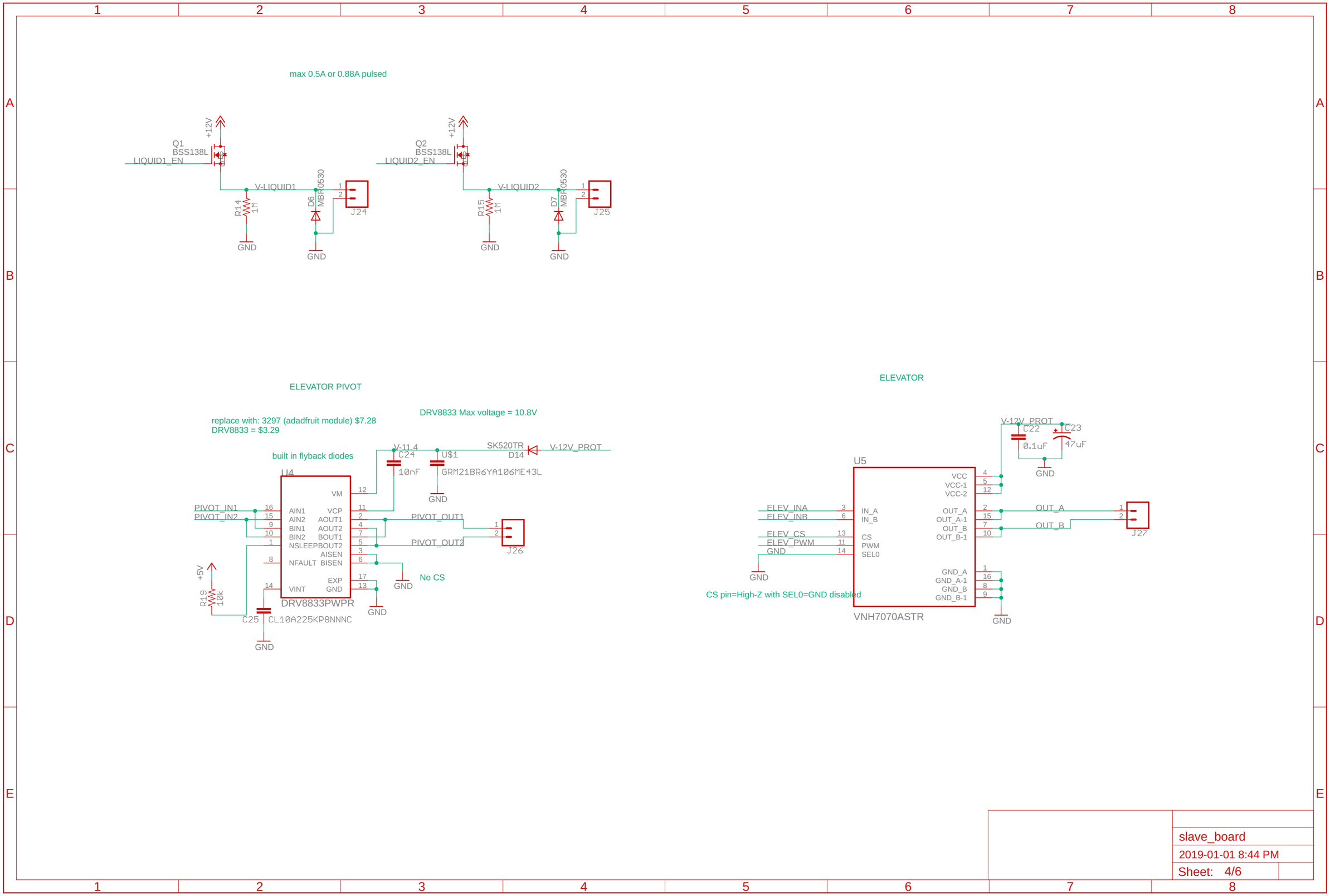

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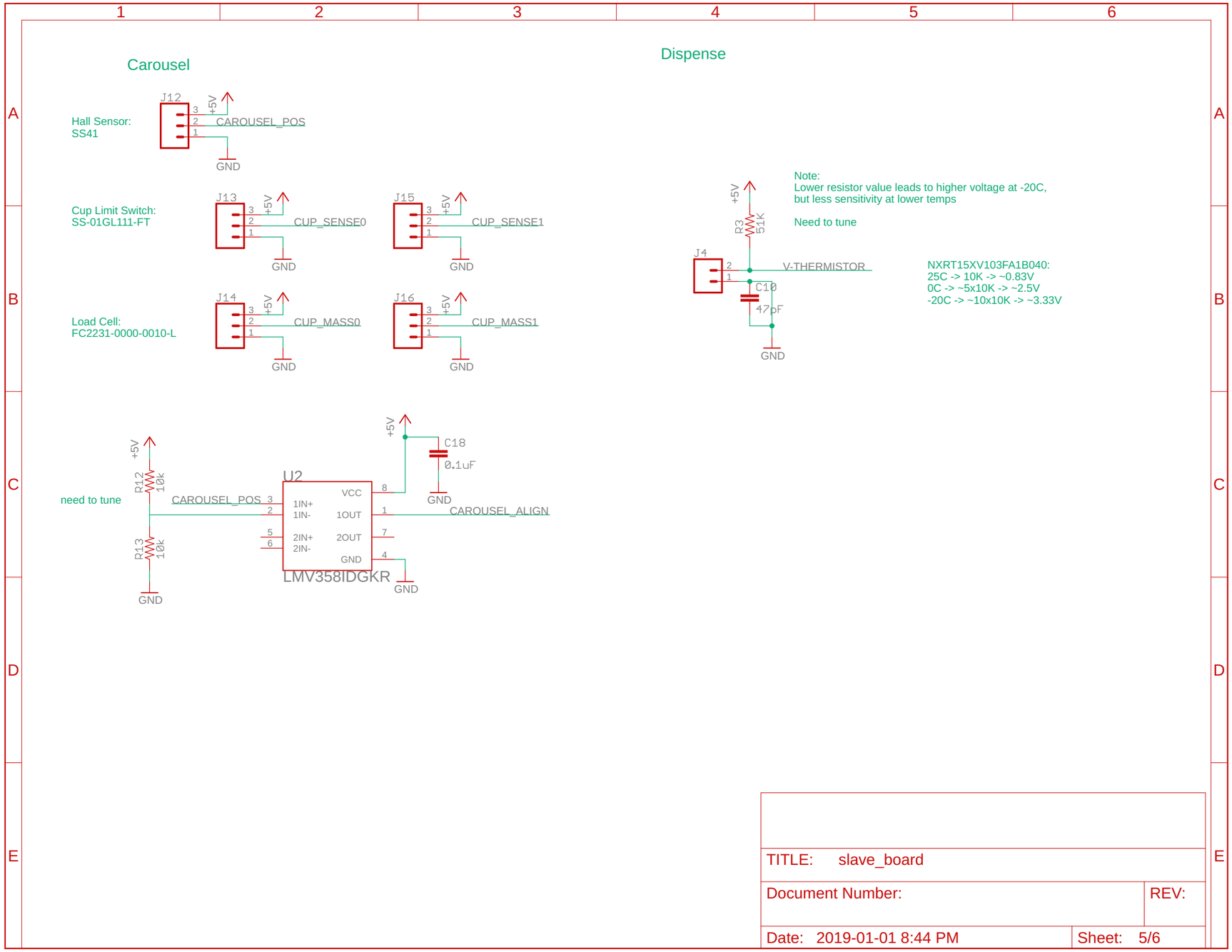
Carousel
Hall Sensor:
SS41
J12
+5V
CAROUSEL_POS
GND
Cup Limit Switch:
SS-01GL111-FT
J13
CUP_SENSE0
J15
CUP_SENSE1
Load Cell:
FC2231-0000-0010-L
J14
CUP_MASS0
J16
CUP_MASS1
need to tune
R12
10k
R13
10k
U2
LMV358IDGKR
1IN+
1IN-
2IN+
2IN-
VCC
1OUT
2OUT
C18
0.1uF
CAROUSEL_ALIGN
Dispense
R3
51K
J4
V-THERMISTOR
C10
47pF
Note:
Lower resistor value leads to higher voltage at -20C,
but less sensitivity at lower temps
Need to tune
NXRT15XV103FA1B040:
25C -> 10K -> ~0.83V
0C -> ~5x10K -> ~2.5V
-20C -> ~10x10K -> ~3.33V
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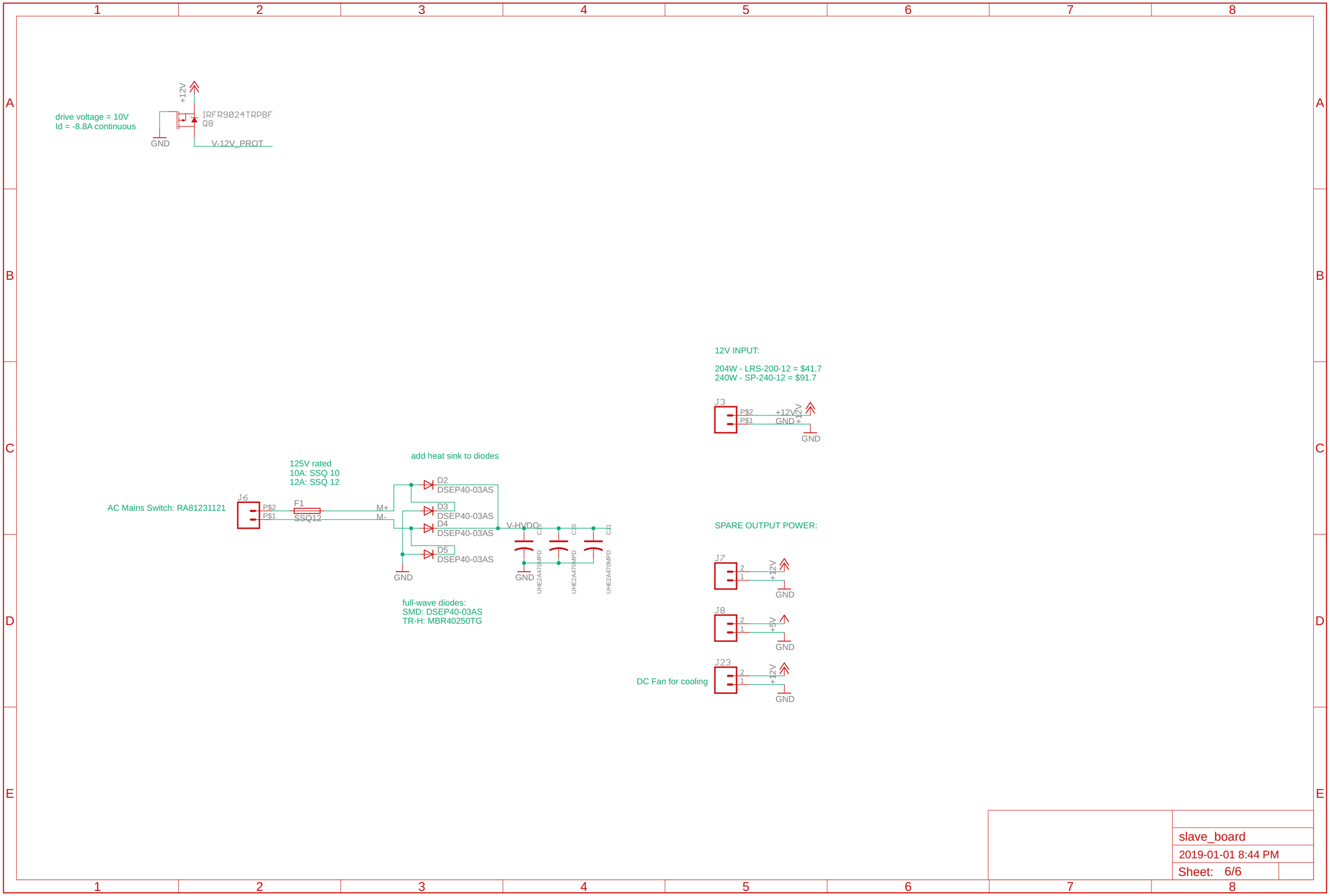
drive voltage = 10V
Id = -8.8A continuous
+12V
IRFR9024TRPBF
Q8
GND
V-12V_PROT
12V INPUT:
204W - LRS-200-12 = $41.7
240W - SP-240-12 = $91.7
J3
P$2
P$1
+12V
GND
GND
125V rated
10A: SSQ 10
12A: SSQ 12
add heat sink to diodes
AC Mains Switch: RA81231121
J6
P$2
P$1
F1
SSQ12
M+
M-
D2
DSEP40-03AS
D3
DSEP40-03AS
D4
DSEP40-03AS
D5
DSEP40-03AS
V-HVDC
C19
C20
C21
UHE2A470MPD
UHE2A470MPD
UHE2A470MPD
GND
GND
full-wave diodes:
SMD: DSEP40-03AS
TR-H: MBR40250TG
SPARE OUTPUT POWER:
J7
+12V
GND
J8
+5V
GND
J23
+12V
GND
DC Fan for cooling
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