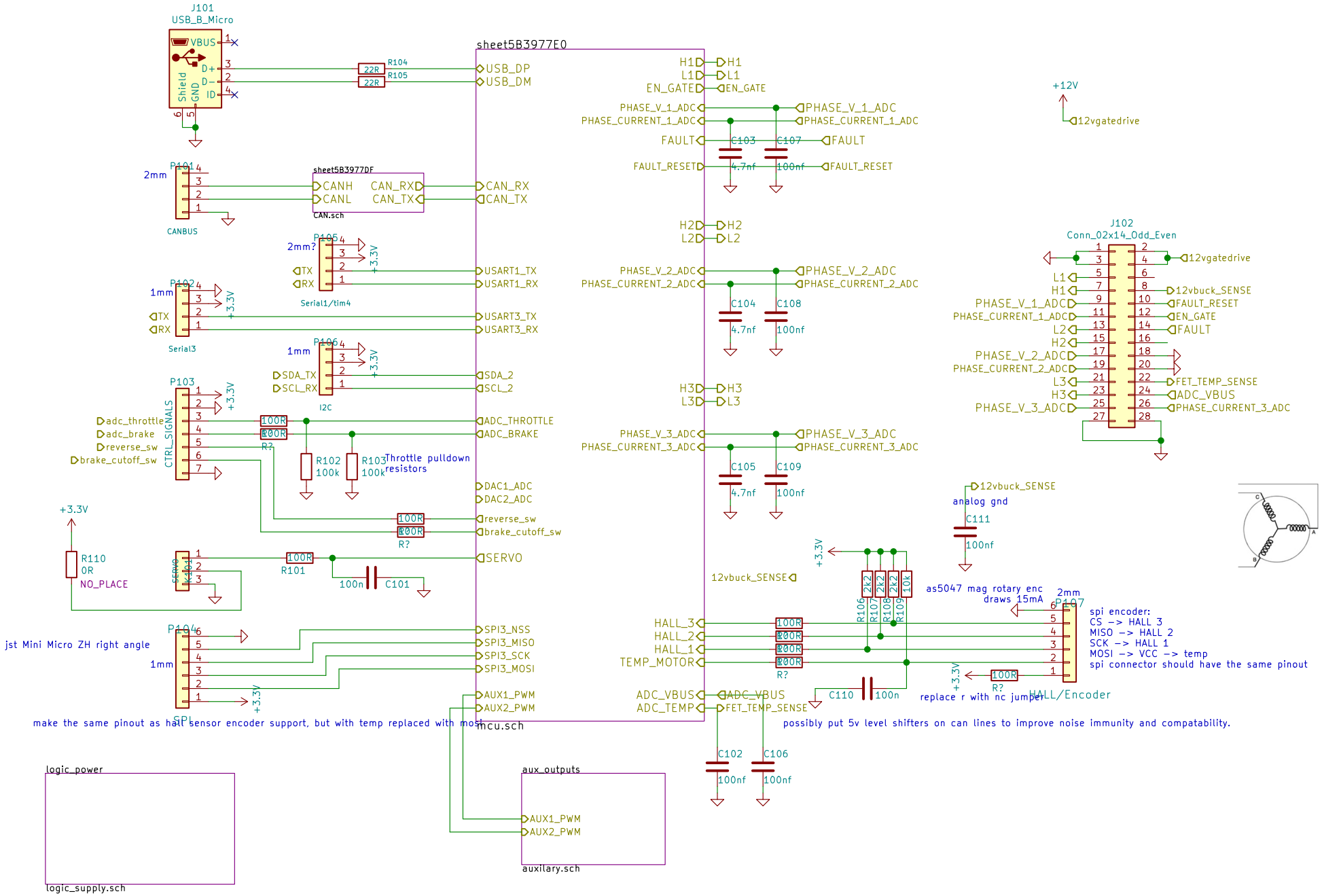
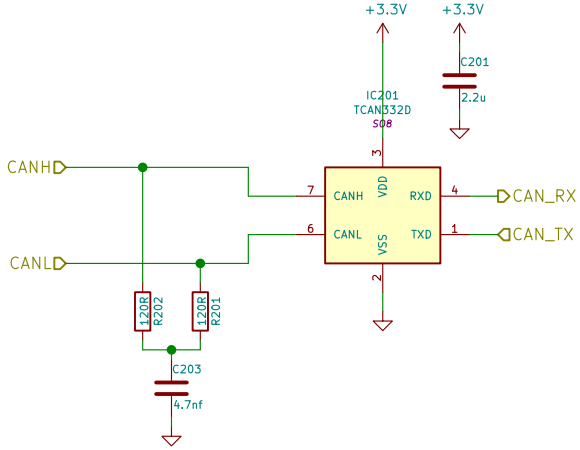
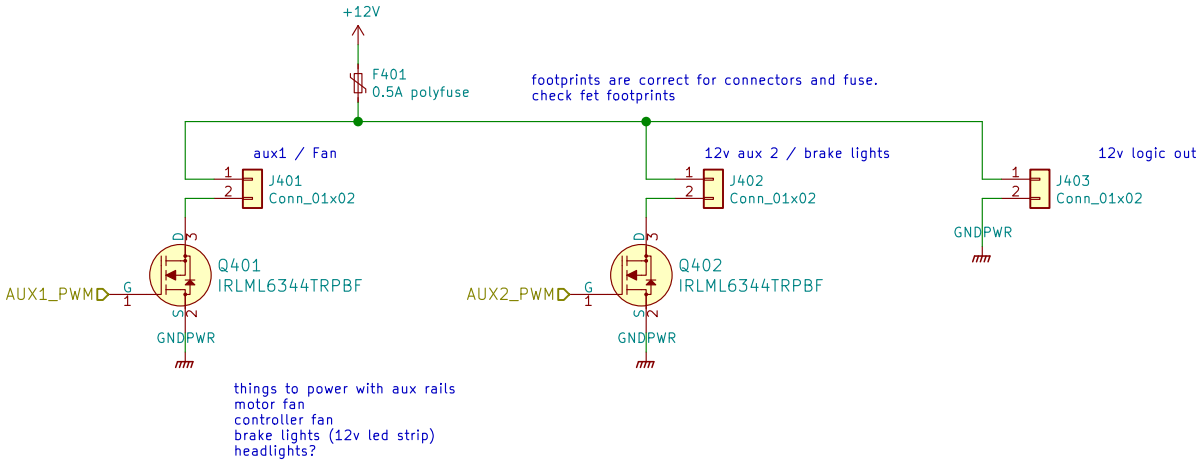
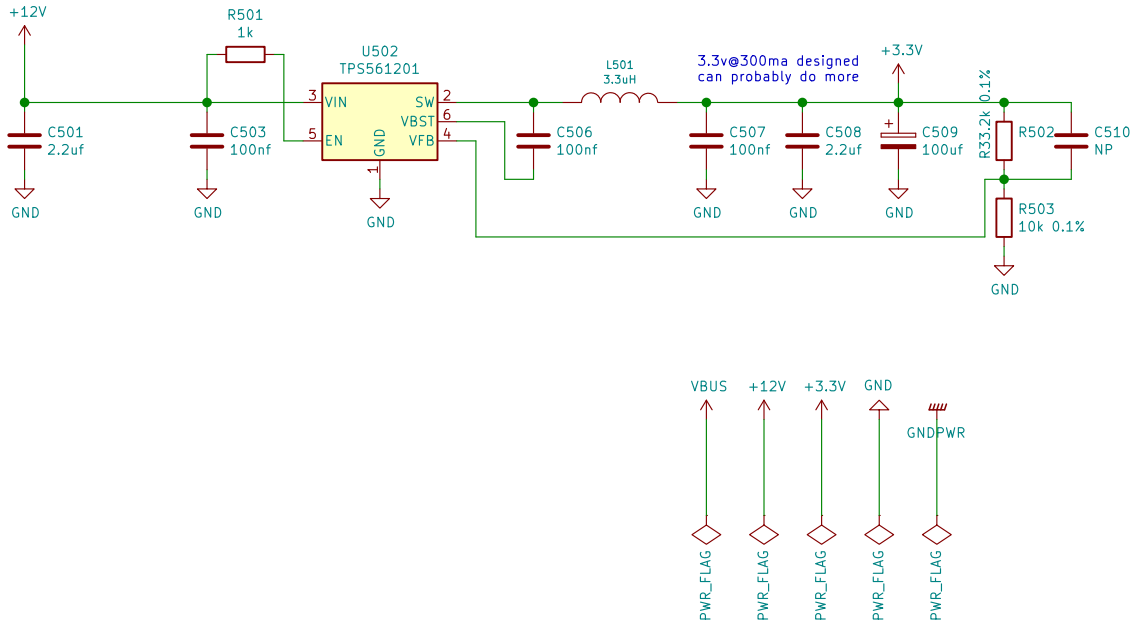
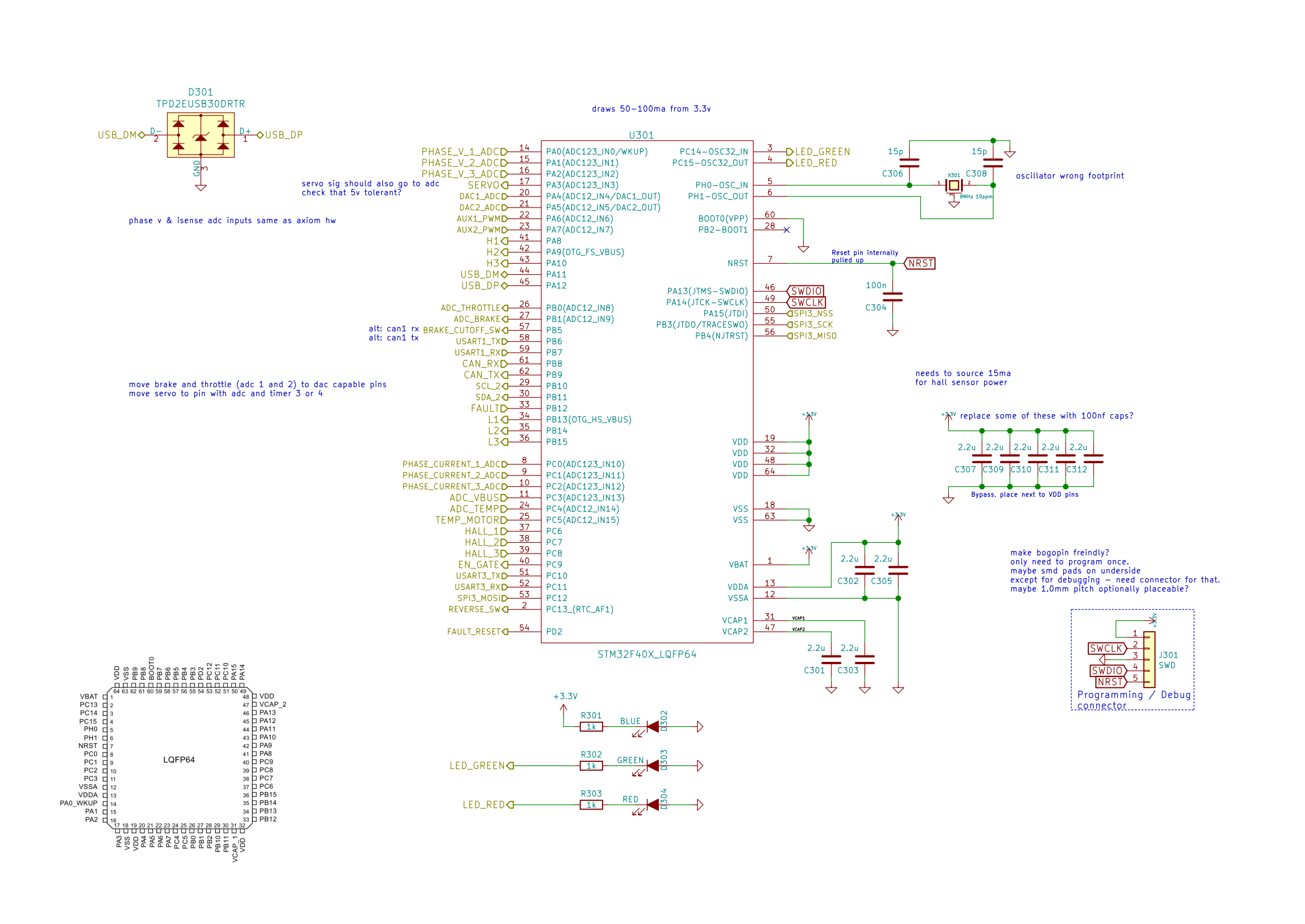
add pins for 4th phase to micro. not on this pcb, but maybe future one
2 servo input headers. put analog on these?
dedicated serial header. if can pins can also do rs322, put in resistors to bypass can ic? also, why does can need vcc?




+3.3V
+3.3V
C201
2.2u
IC201
TCAN332D
SO8
CANH
CANL
3
7
6
2
CANH
CANL
VDD
VSS
RXD
TXD
4
1
CAN_RX
CAN_TX
120R
R202
120R
R201
C203
4.7nf


+12V
F401
0.5A polyfuse
footprints are correct for connectors and fuse.
check fet footprints
aux1 / Fan
J401
Conn_01x02
12v aux 2 / brake lights
J402
Conn_01x02
12v logic out
J403
Conn_01x02
GNDPWR
Q401
IRLML6344TRPBF
AUX1_PWM
GNDPWR
Q402
IRLML6344TRPBF
AUX2_PWM
GNDPWR
things to power with aux rails
motor fan
controller fan
brake lights (12v led strip)
headlights?


+12V
R501
1k
U502
TPS561201
L501
3.3uH
3.3v@300ma designed
can probably do more
+3.3V
R33.2k 0.1%
C501
2.2uf
C503
100nf
VIN
EN
GND
SW
VBST
VFB
C506
100nf
C507
100nf
C508
2.2uf
C509
100uf
R502
C510
NP
R503
10k 0.1%
GND
VBUS
+12V
+3.3V
GND
GNDPWR
PWR_FLAG


D301
TPD2EUSB30DRTR
USB_DM
D-
2
D+
1
USB_DP
GND
3
draws 50-100ma from 3.3v
U301
servo sig should also go to adc
check that 5v tolerant?
phase v & isense adc inputs same as axiom hw
PHASE_V_1_ADC 14 PA0(ADC123_IN0/WKUP)
PHASE_V_2_ADC 15 PA1(ADC123_IN1)
PHASE_V_3_ADC 16 PA2(ADC123_IN2)
SERVO 17 PA3(ADC123_IN3)
DAC1_ADC 20 PA4(ADC12_IN4/DAC1_OUT)
DAC2_ADC 21 PA5(ADC12_IN5/DAC2_OUT)
AUX1_PWM 22 PA6(ADC12_IN6)
AUX2_PWM 23 PA7(ADC12_IN7)
H1 41 PA8
H2 42 PA9(OTG_FS_VBUS)
H3 43 PA10
USB_DM 44 PA11
USB_DP 45 PA12
move brake and throttle (adc 1 and 2) to dac capable pins
move servo to pin with adc and timer 3 or 4
ADC_THROTTLE 26 PB0(ADC12_IN8)
ADC_BRAKE 27 PB1(ADC12_IN9)
alt: can1 rx BRAKE_CUTOFF_SW 57 PB5
alt: can1 tx
USART1_TX 58 PB6
USART1_RX 59 PB7
CAN_RX 61 PB8
CAN_TX 62 PB9
SCL_2 29 PB10
SDA_2 30 PB11
FAULT 33 PB12
L1 34 PB13(OTG_HS_VBUS)
L2 35 PB14
L3 36 PB15
PHASE_CURRENT_1_ADC 8 PC0(ADC123_IN10)
PHASE_CURRENT_2_ADC 9 PC1(ADC123_IN11)
PHASE_CURRENT_3_ADC 10 PC2(ADC123_IN12)
ADC_VBUS 11 PC3(ADC123_IN13)
ADC_TEMP 24 PC4(ADC12_IN14)
TEMP_MOTOR 25 PC5(ADC12_IN15)
HALL_1 37 PC6
HALL_2 38 PC7
HALL_3 39 PC8
EN_GATE 40 PC9
USART3_TX 51 PC10
USART3_RX 52 PC11
SPI3_MOSI 53 PC12
REVERSE_SW 2 PC13_(RTC_AF1)
FAULT_RESET 54 PD2
PC14-OSC32_IN 3 LED_GREEN
PC15-OSC32_OUT 4 LED_RED
PH0-OSC_IN 5
PH1-OSC_OUT 6
BOOT0(VPP) 60
PB2-BOOT1 28
NRST 7
PA13(JTMS-SWDIO) 46 SWDIO
PA14(JTCK-SWCLK) 49 SWCLK
PA15(JTDI) 50 SPI3_NSS
PB3(JTDO/TRACESWO) 55 SPI3_SCK
PB4(NJTRST) 56 SPI3_MISO
VDD 19
VDD 32
VDD 48
VDD 64
VSS 18
VSS 63
VBAT 1
VDDA 13
VSSA 12
VCAP1 31
VCAP2 47
STM32F40X_LQFP64
15p C306
15p C308
X301
8MHz 10ppm
oscillator wrong footprint
Reset pin internally pulled up
NRST
100n C304
needs to source 15ma
for hall sensor power
+3.3V
replace some of these with 100nf caps?
2.2u C307
2.2u C309
2.2u C310
2.2u C311
2.2u C312
Bypass, place next to VDD pins
2.2u C302
2.2u C305
2.2u C301
2.2u C303
make bogopin freindly?
only need to program once.
maybe smd pads on underside
except for debugging - need connector for that.
maybe 1.0mm pitch optionally placeable?
SWCLK
SWDIO
NRST
J301
SWD
Programming / Debug connector
LQFP64
VBAT 1
PC13 2
PC14 3
PC15 4
PH0 5
PH1 6
NRST 7
PC0 8
PC1 9
PC2 10
PC3 11
VSSA 12
VDDA 13
PA0_WKUP 14
PA1 15
PA2 16
48 VDD
47 VCAP_2
46 PA13
45 PA12
44 PA11
43 PA10
42 PA9
41 PA8
40 PC9
39 PC8
38 PC7
37 PC6
36 PB15
35 PB14
34 PB13
33 PB12
+3.3V
R301 1k BLUE D302
LED_GREEN
R302 1k GREEN D303
LED_RED
R303 1k RED D304