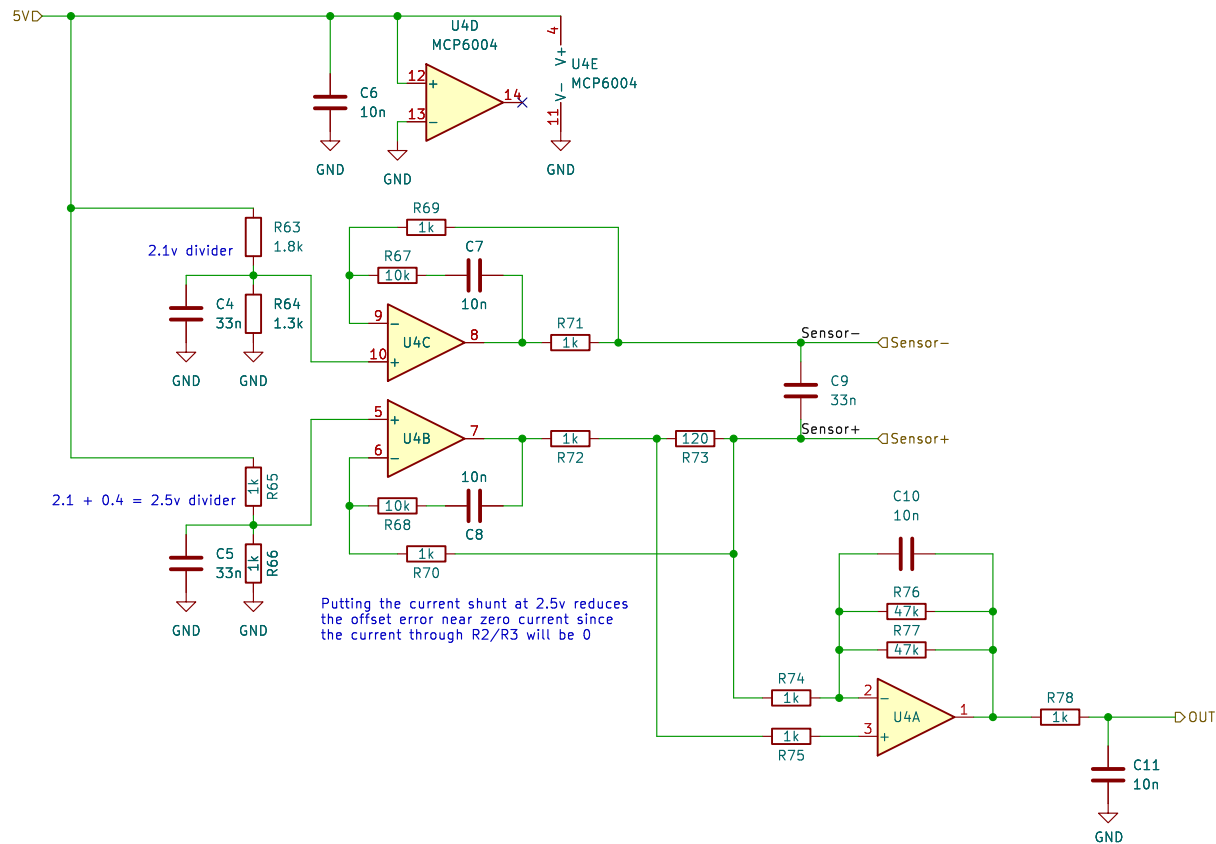


FOR OFF ROAD PURPOSES ONLY  
This is not for applications with  
emissions or safety regulations  
(AKA not for street use). This is  
for closed stages, track  
and equipment.  
<https://rusefi.com/s/hellen12shonda>

Board info  
Hellen-One-PCB-logs  
Efi  
rusEFI  
Sheet: /  
File: hellen12shonda.kicad\_sch  
Title: hellen12shonda  
Size: A2 Date: 2023-04-20 Rev: c  
KiCad E.D.A. kicad 7.0.1-115-g2ece2719d0 Id: 1/2

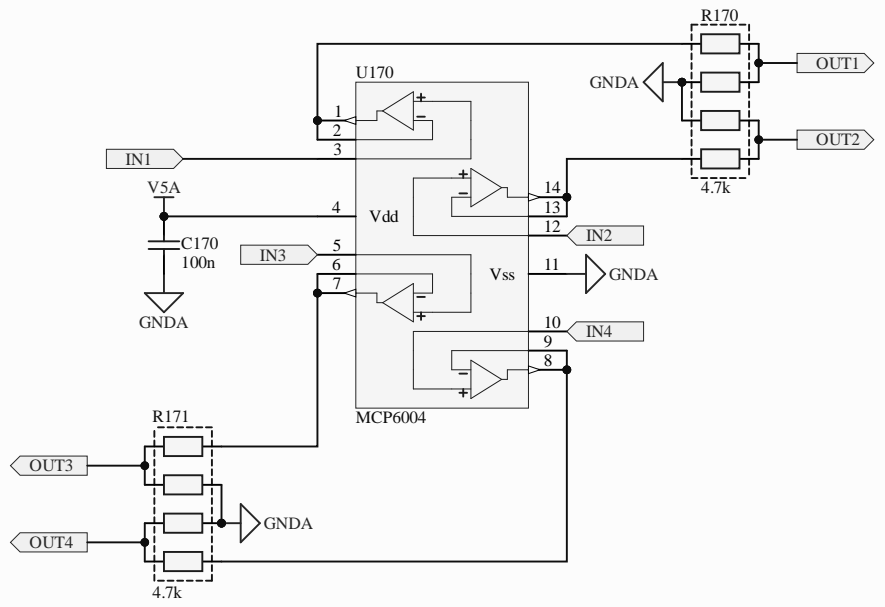


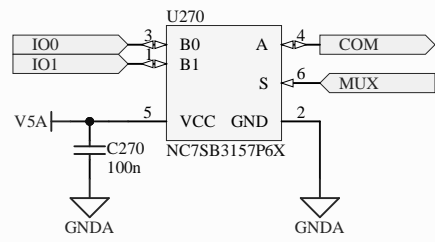
Sheet: /DENSO/  
 File: denso.kicad\_sch

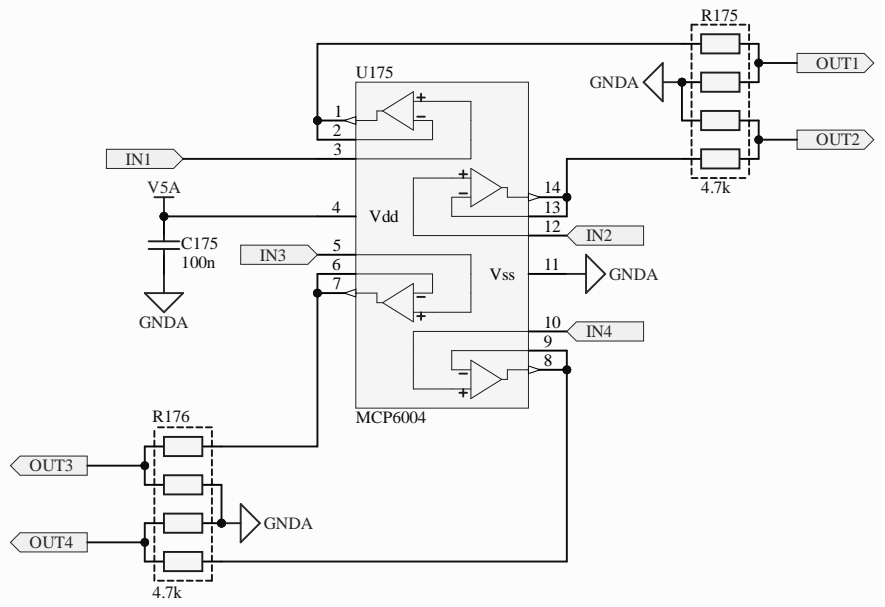
**Title:**

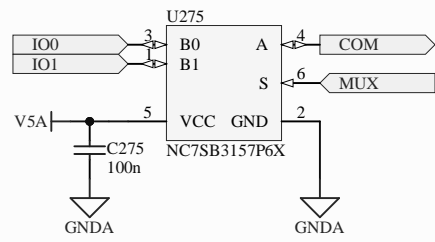
Size: A4  
 KiCad E.D.A. kicad 7.0.1-115-g2ece2719d0

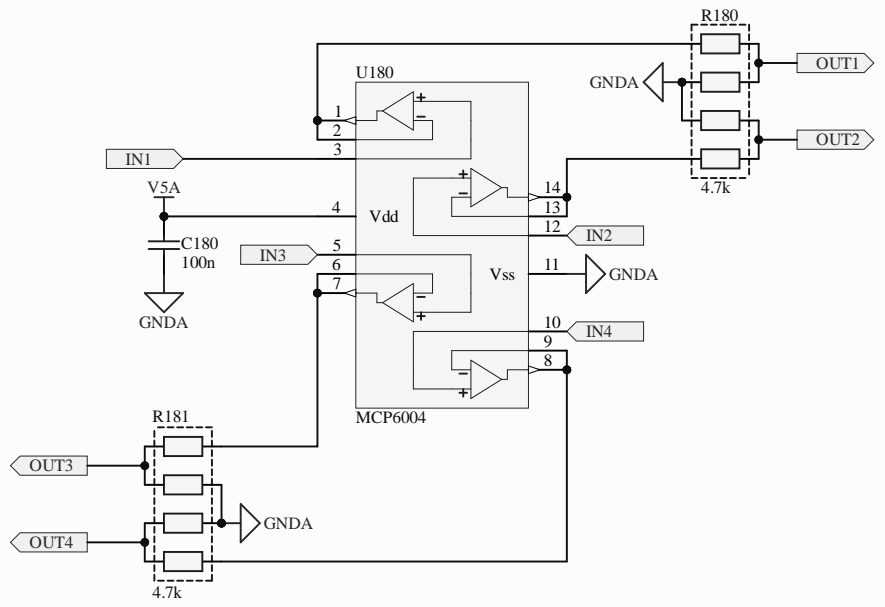
Date:  
 Rev:  
 Id: 2/2

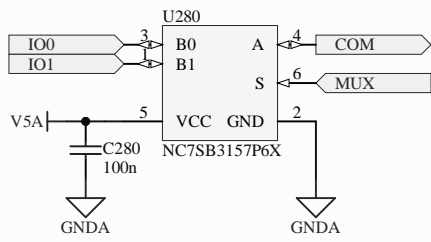




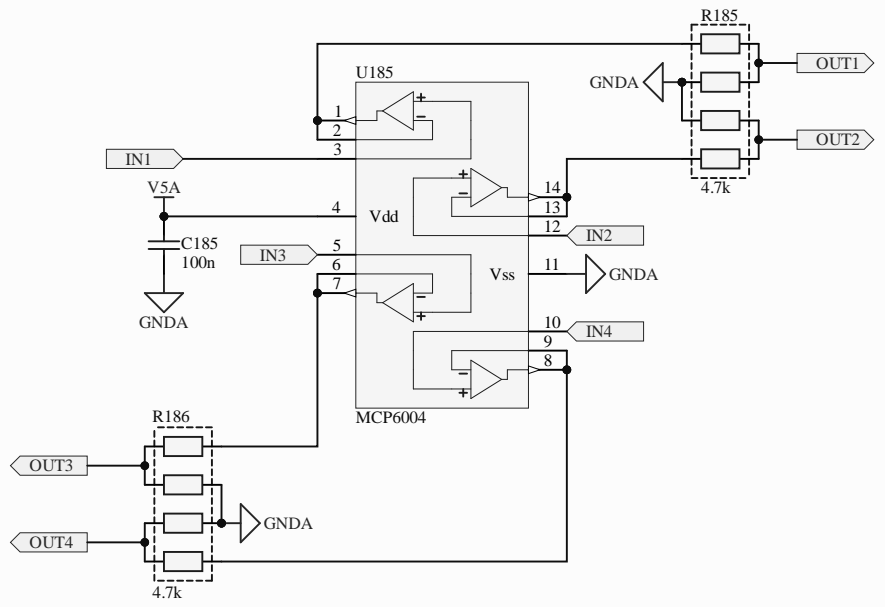


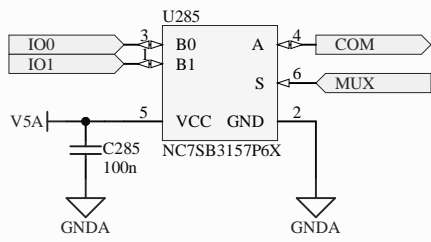


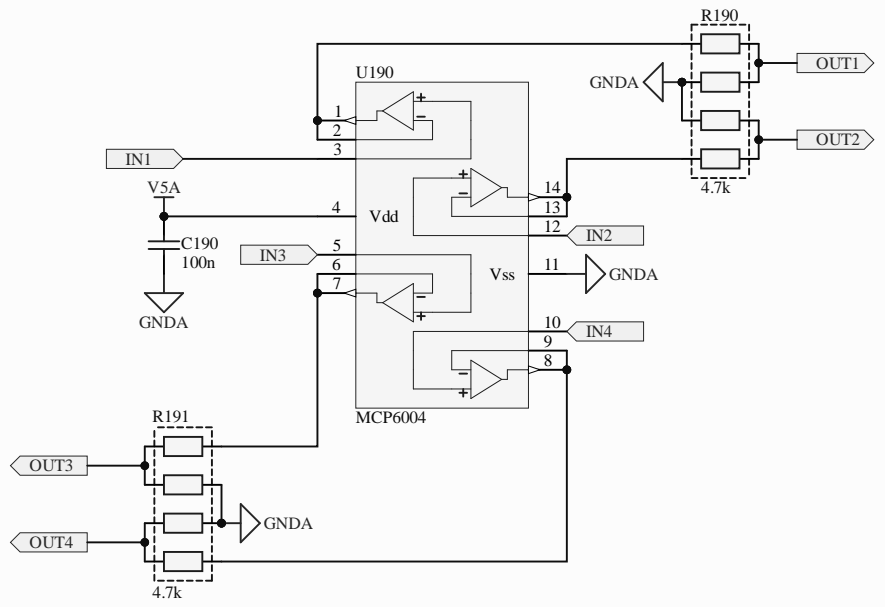


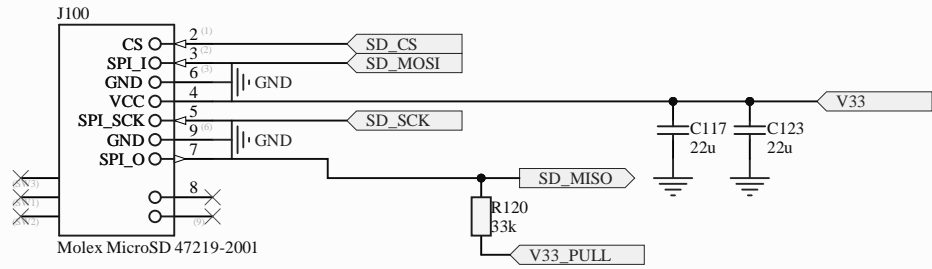


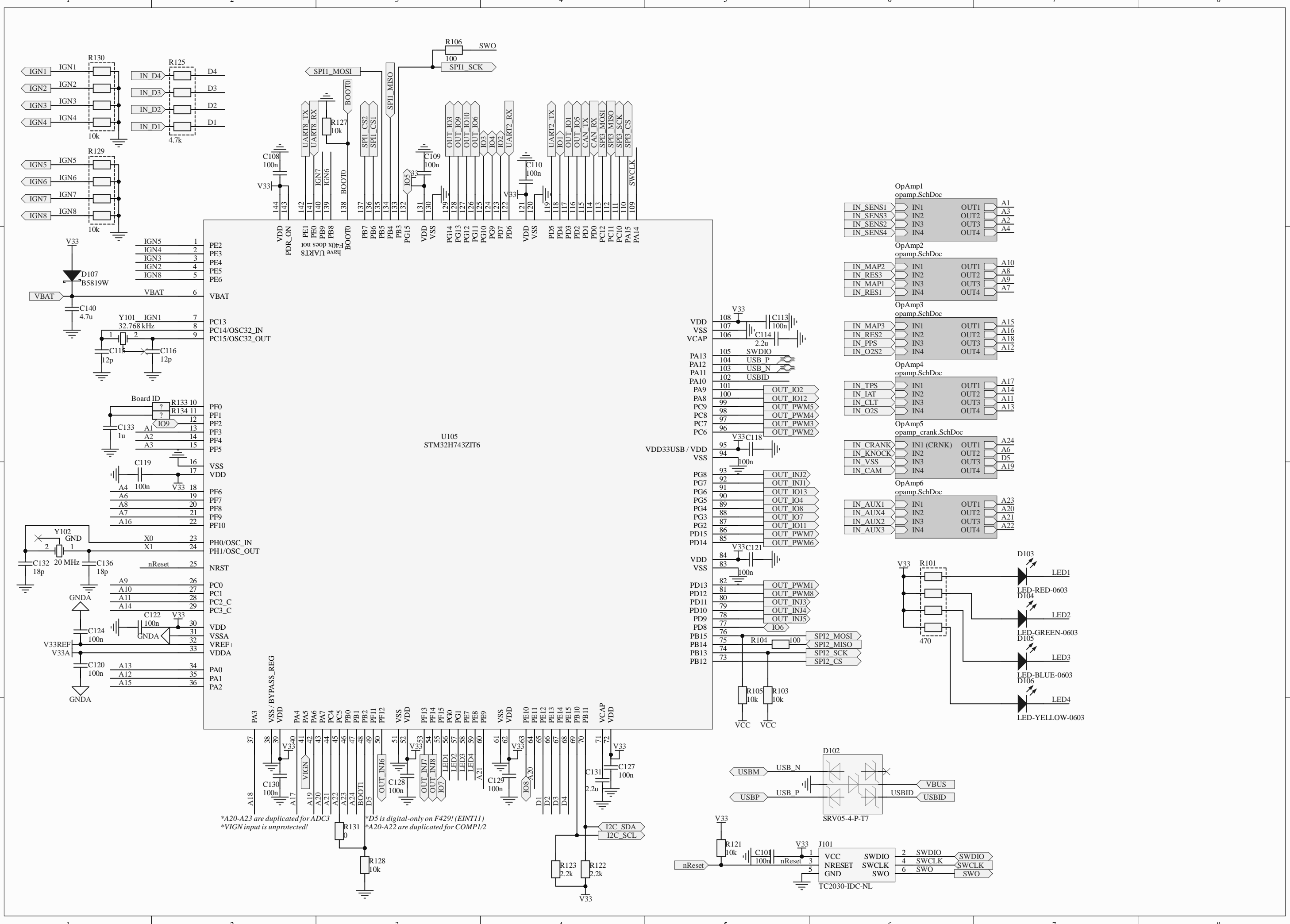








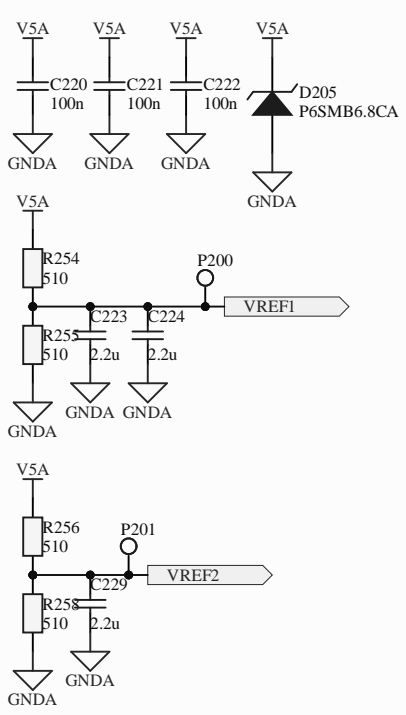
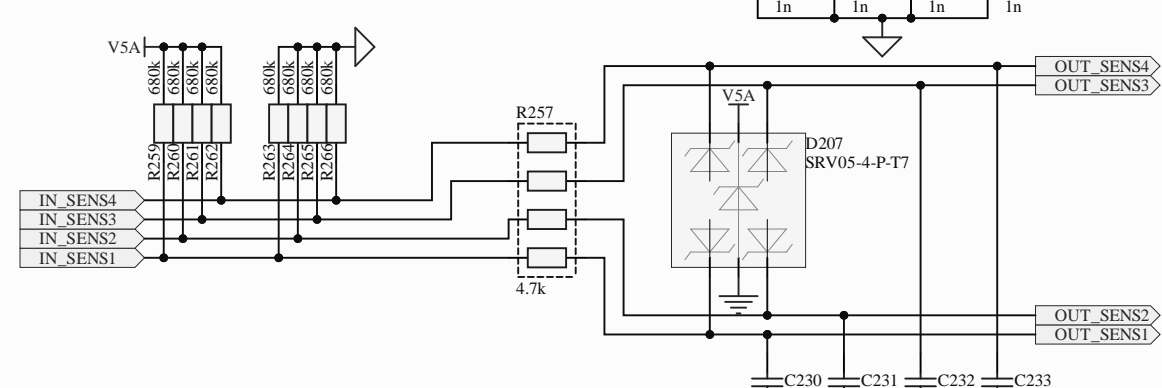
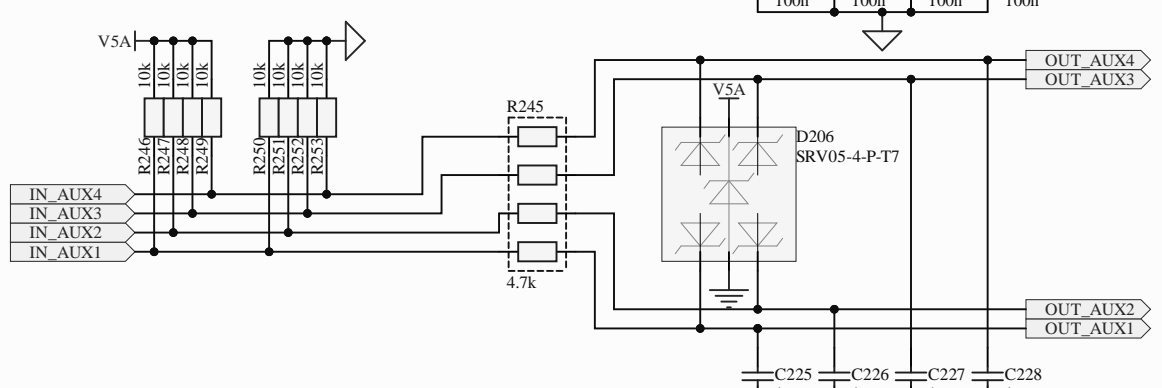
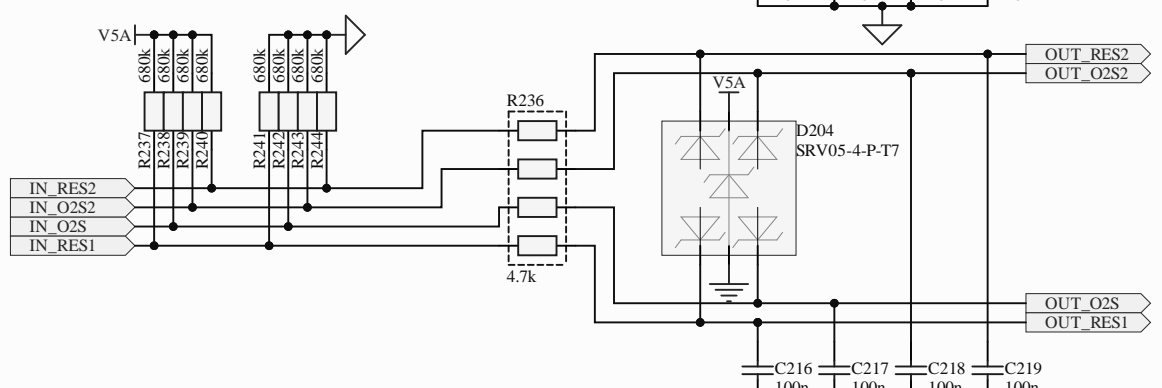
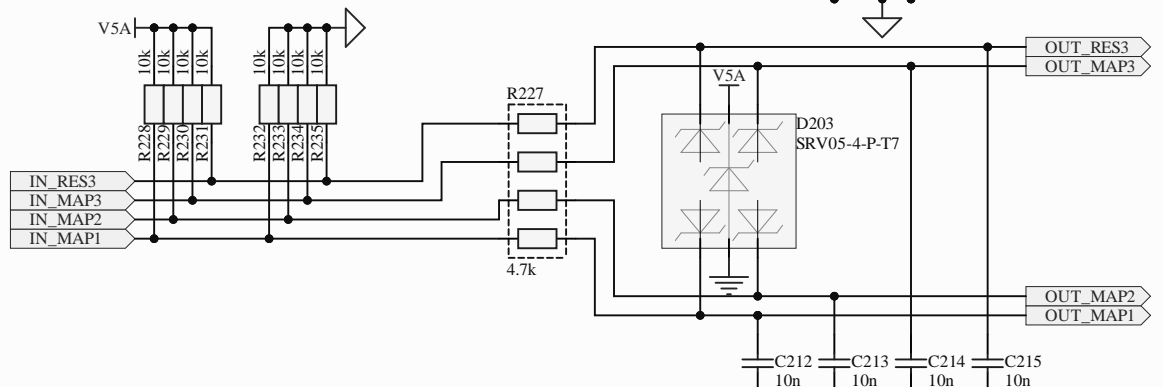
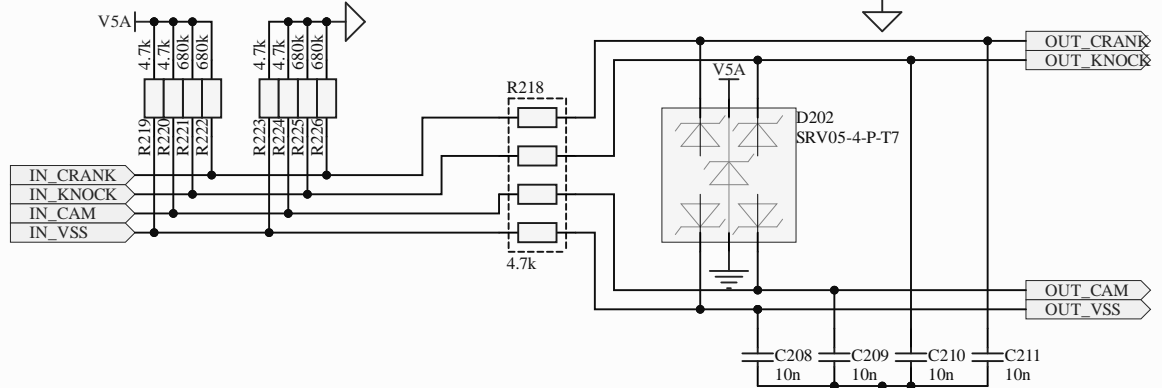
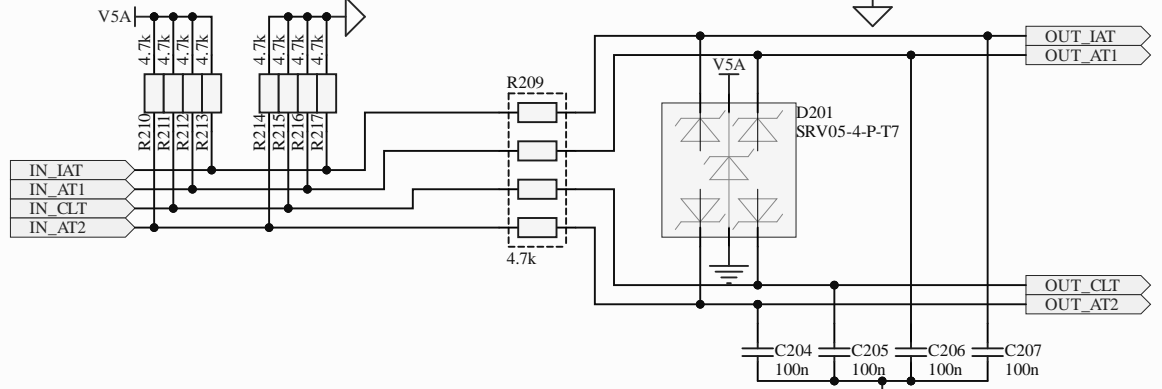
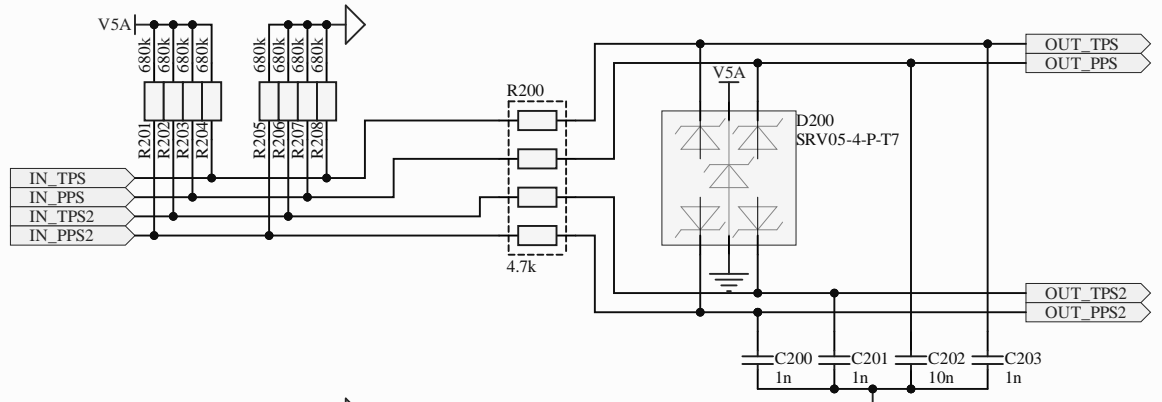


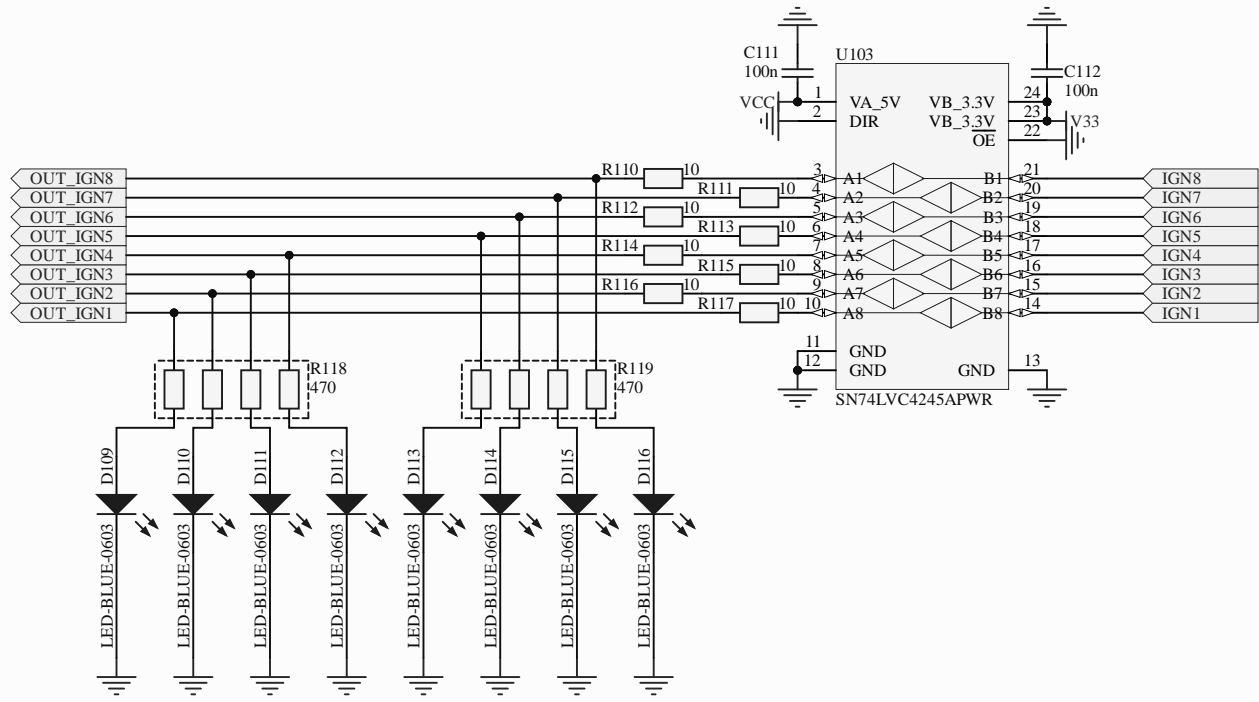


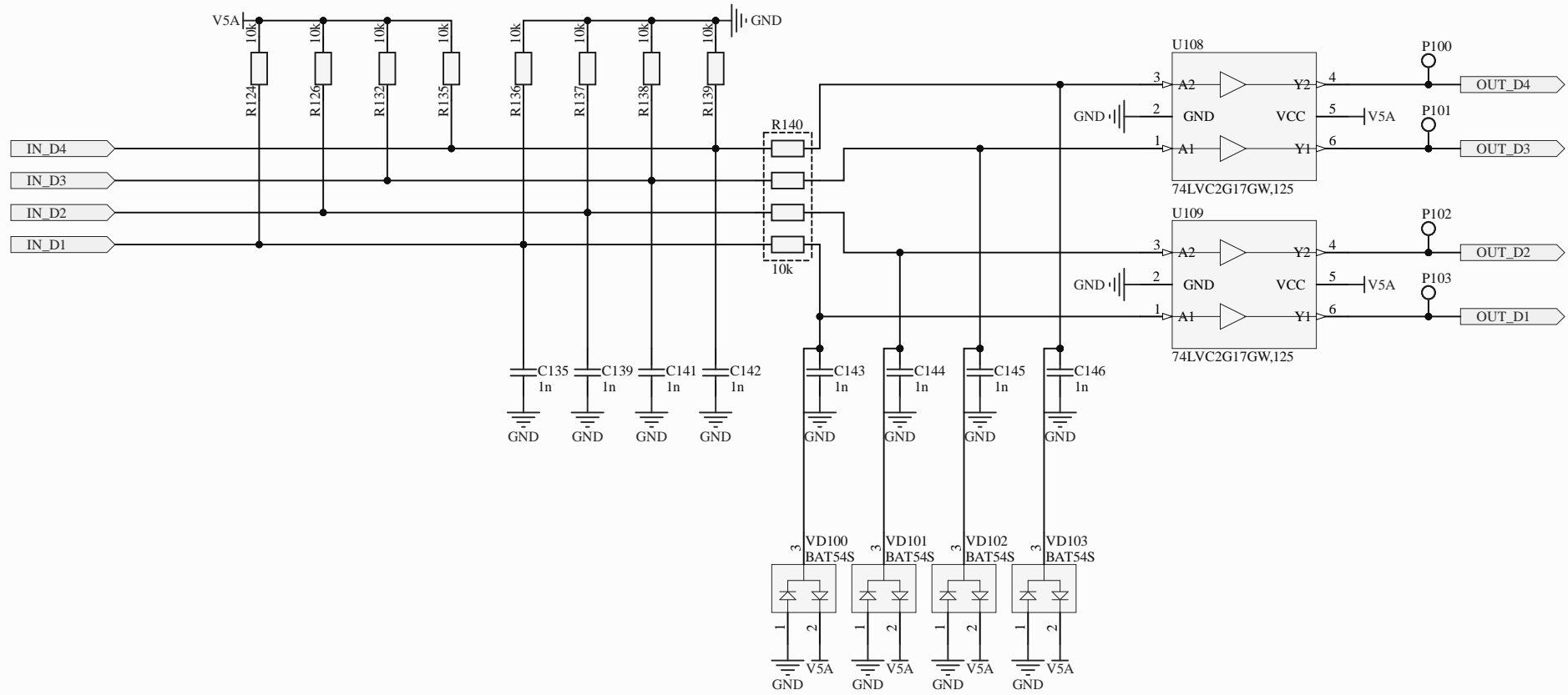
\*A20-A23 are duplicated for ADC3  
 \*VIGN input is unprotected!  
 \*D5 is digital-only on F429! (EINT11)  
 \*A20-A22 are duplicated for COMP1/2

A  
B  
C  
D  
E  
F  
G  
H

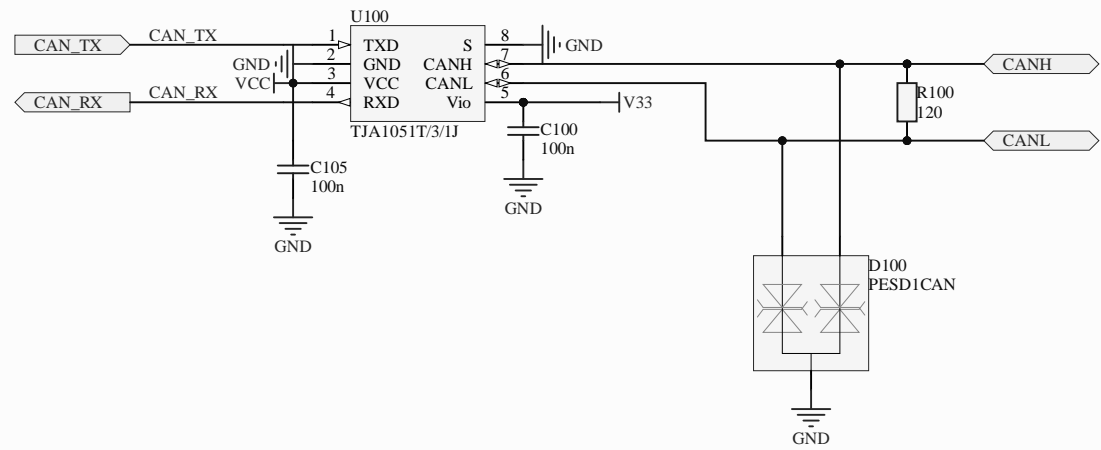
A  
B  
C  
D  
E  
F  
G  
H

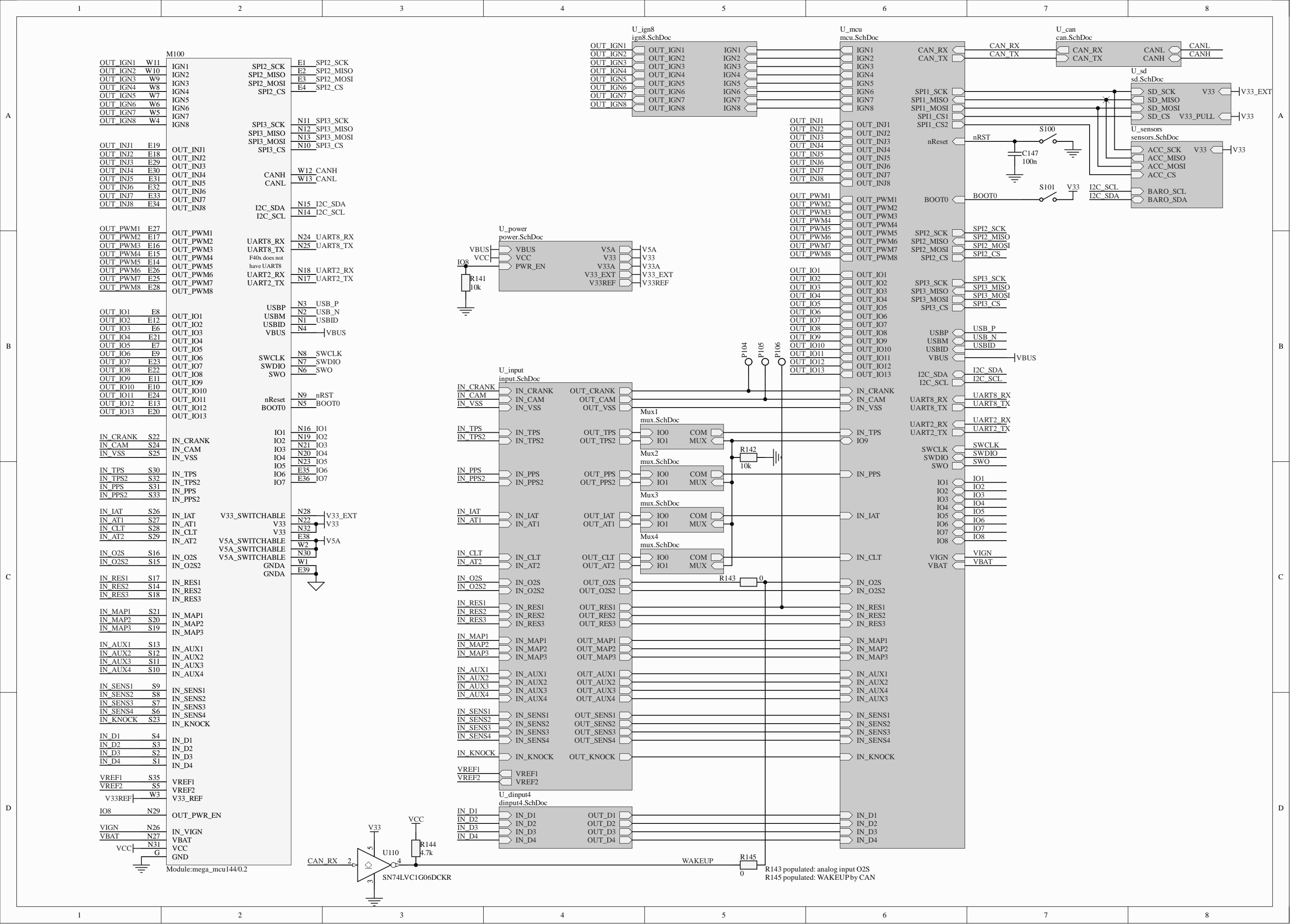






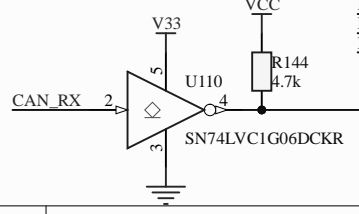
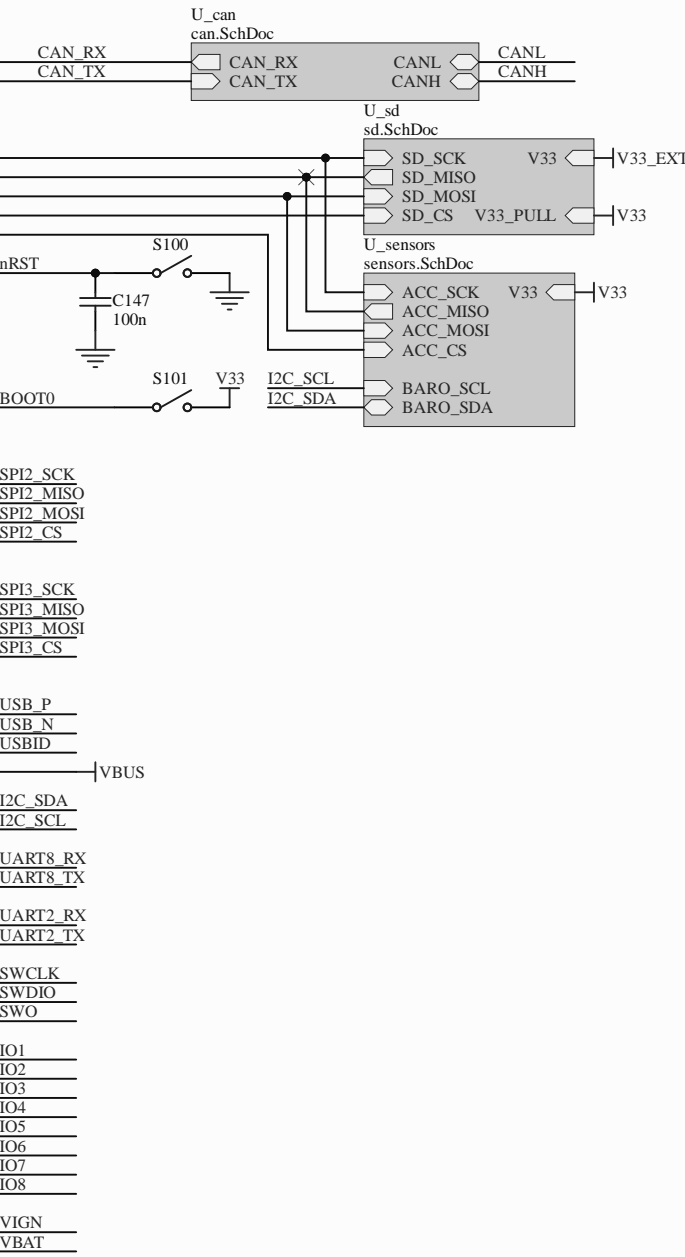
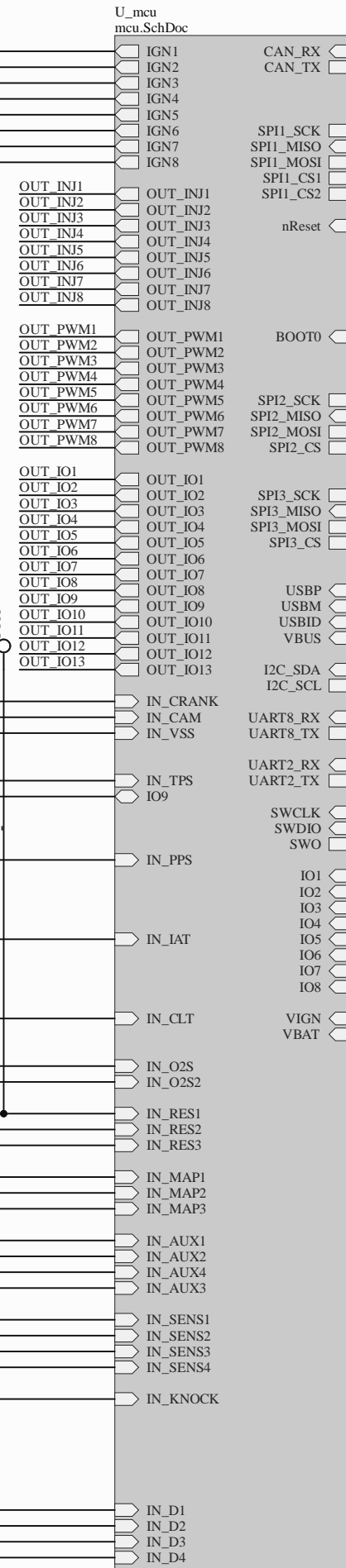
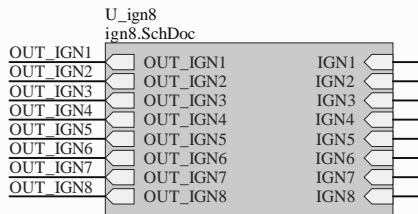
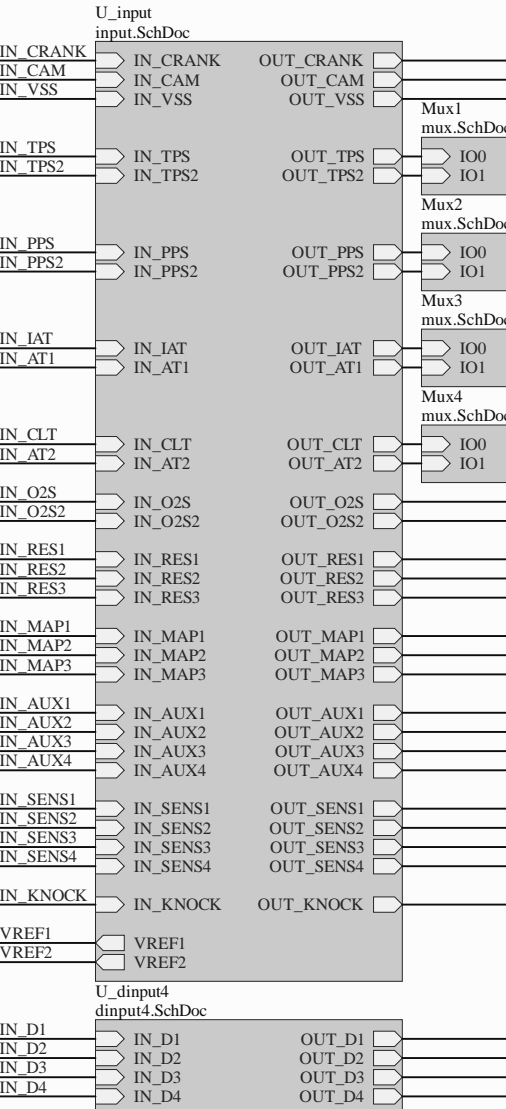
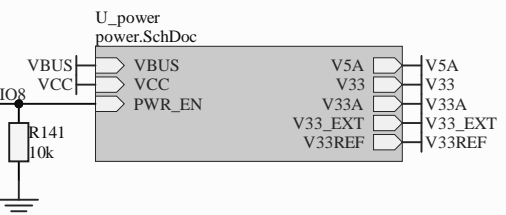






OUT_IGN1	W11	IGN1
OUT_IGN2	W10	IGN2
OUT_IGN3	W9	IGN3
OUT_IGN4	W8	IGN4
OUT_IGN5	W7	IGN5
OUT_IGN6	W6	IGN6
OUT_IGN7	W5	IGN7
OUT_IGN8	W4	IGN8
OUT_INJ1	E19	OUT_INJ1
OUT_INJ2	E18	OUT_INJ2
OUT_INJ3	E29	OUT_INJ3
OUT_INJ4	E30	OUT_INJ4
OUT_INJ5	E31	OUT_INJ5
OUT_INJ6	E32	OUT_INJ6
OUT_INJ7	E33	OUT_INJ7
OUT_INJ8	E34	OUT_INJ8
OUT_PWM1	E27	OUT_PWM1
OUT_PWM2	E17	OUT_PWM2
OUT_PWM3	E16	OUT_PWM3
OUT_PWM4	E15	OUT_PWM4
OUT_PWM5	E14	OUT_PWM5
OUT_PWM6	E26	OUT_PWM6
OUT_PWM7	E25	OUT_PWM7
OUT_PWM8	E28	OUT_PWM8
OUT_IO1	E8	OUT_IO1
OUT_IO2	E12	OUT_IO2
OUT_IO3	E6	OUT_IO3
OUT_IO4	E21	OUT_IO4
OUT_IO5	E7	OUT_IO5
OUT_IO6	E9	OUT_IO6
OUT_IO7	E23	OUT_IO7
OUT_IO8	E22	OUT_IO8
OUT_IO9	E11	OUT_IO9
OUT_IO10	E10	OUT_IO10
OUT_IO11	E24	OUT_IO11
OUT_IO12	E13	OUT_IO12
OUT_IO13	E20	OUT_IO13
IN_CRANK	S22	IN_CRANK
IN_CAM	S24	IN_CAM
IN_VSS	S25	IN_VSS
IN_TPS	S30	IN_TPS
IN_TPS2	S32	IN_TPS2
IN_PPS	S31	IN_PPS
IN_PPS2	S33	IN_PPS2
IN_IAT	S26	IN_IAT
IN_AT1	S27	IN_AT1
IN_CLT	S28	IN_CLT
IN_AT2	S29	IN_AT2
IN_O2S	S16	IN_O2S
IN_O2S2	S15	IN_O2S2
IN_RES1	S17	IN_RES1
IN_RES2	S14	IN_RES2
IN_RES3	S18	IN_RES3
IN_MAP1	S21	IN_MAP1
IN_MAP2	S20	IN_MAP2
IN_MAP3	S19	IN_MAP3
IN_AUX1	S13	IN_AUX1
IN_AUX2	S12	IN_AUX2
IN_AUX3	S11	IN_AUX3
IN_AUX4	S10	IN_AUX4
IN_SENS1	S9	IN_SENS1
IN_SENS2	S8	IN_SENS2
IN_SENS3	S7	IN_SENS3
IN_SENS4	S6	IN_SENS4
IN_KNOCK	S23	IN_KNOCK
IN_D1	S4	IN_D1
IN_D2	S3	IN_D2
IN_D3	S2	IN_D3
IN_D4	S1	IN_D4
VREF1	S35	VREF1
VREF2	S5	VREF2
V33REF	W3	V33_REF
IO8	N29	OUT_PWR_EN
VIGN	N26	IN_VIGN
VBAT	N27	VBAT
VCC	N31	VCC
GND	G	GND

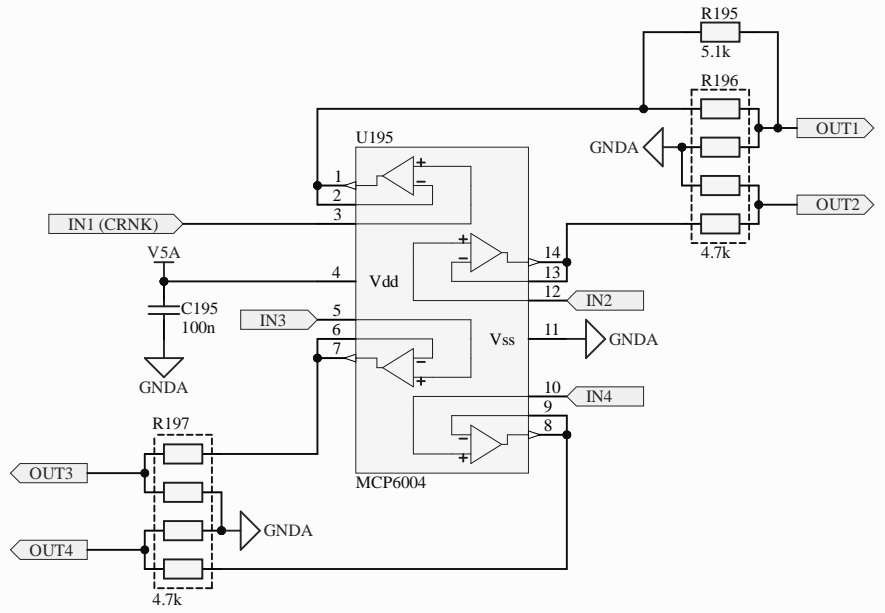
E1	SPI2_SCK	SPI2_SCK
E2	SPI2_MISO	SPI2_MISO
E3	SPI2_MOSI	SPI2_MOSI
E4	SPI2_CS	SPI2_CS
N11	SPI3_SCK	SPI3_SCK
N12	SPI3_MISO	SPI3_MISO
N13	SPI3_MOSI	SPI3_MOSI
N10	SPI3_CS	SPI3_CS
W12	CANH	CANH
W13	CANL	CANL
N15	I2C_SDA	I2C_SDA
N14	I2C_SCL	I2C_SCL
N24	UART8_RX	UART8_RX
N25	UART8_TX	UART8_TX
N18	UART2_RX	UART2_RX
N17	UART2_TX	UART2_TX
N3	USB_P	USB_P
N2	USB_N	USB_N
N1	USBID	USBID
N4	VBUS	VBUS
N8	SWCLK	SWCLK
N7	SWDIO	SWDIO
N6	SWO	SWO
N9	nRST	nRST
N5	BOOT0	BOOT0
N16	IO1	IO1
N19	IO2	IO2
N21	IO3	IO3
N20	IO4	IO4
N23	IO5	IO5
E35	IO6	IO6
E36	IO7	IO7
N28	V33_SWITCHABLE	V33
N22	V33	V33
N32	V33	V33
E38	V5A_SWITCHABLE	V5A
W2	V5A	V5A
N30	V5A_SWITCHABLE	V5A
W1	GND	GND
E39	GND	GND

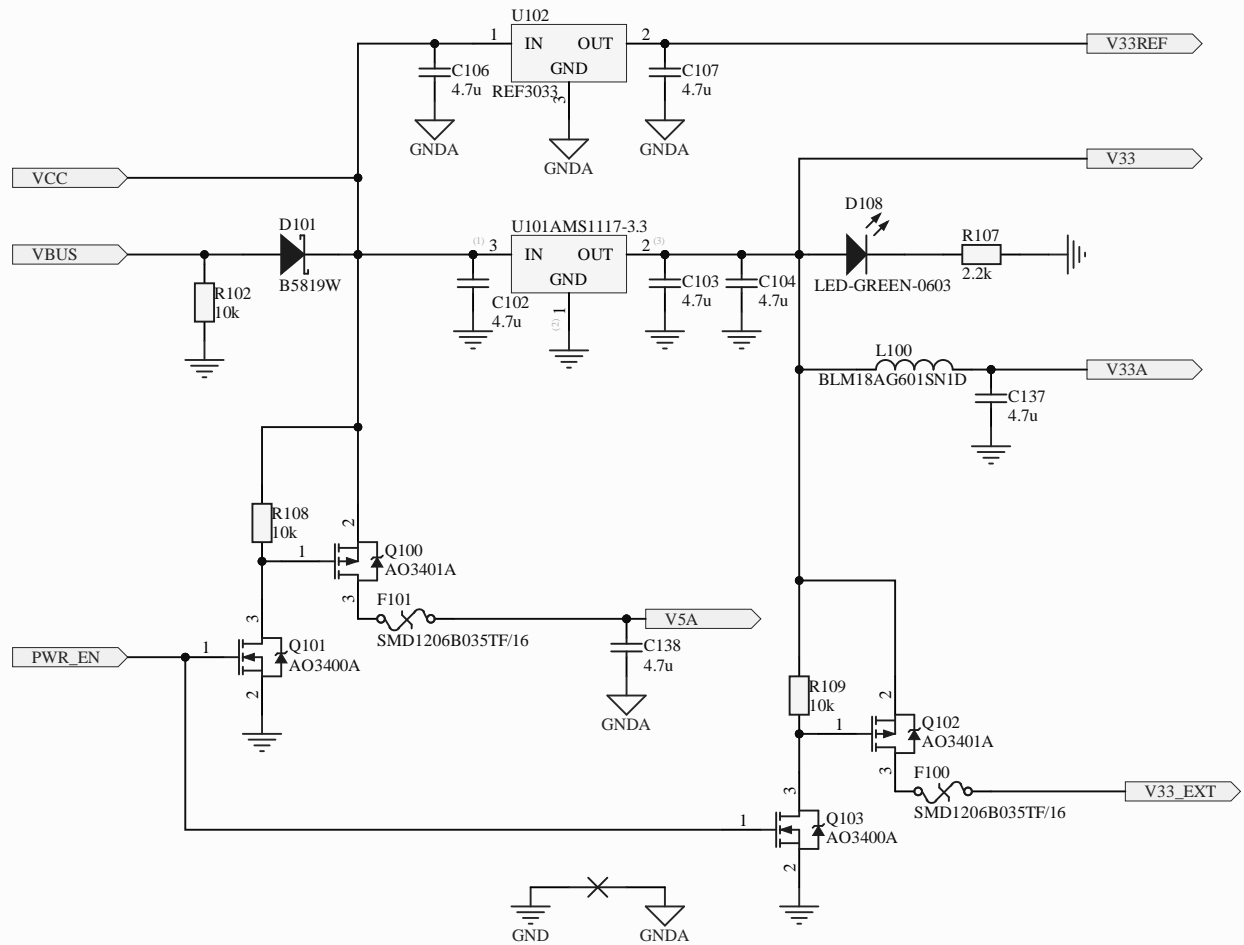


R143 populated: analog input O2S  
R145 populated: WAKEUP by CAN

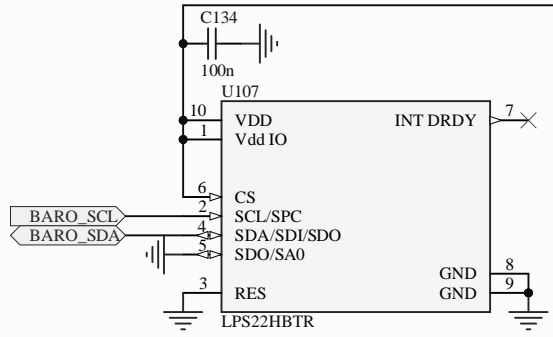
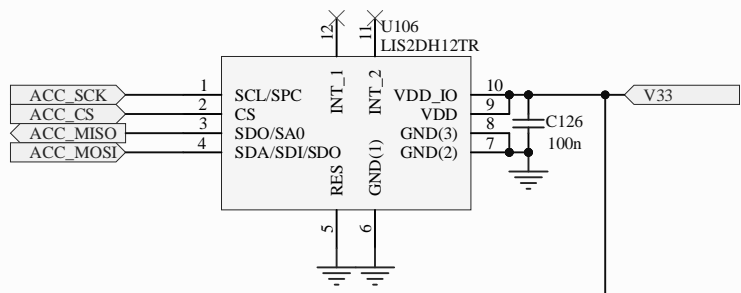
Module: mega\_mcu144/0.2

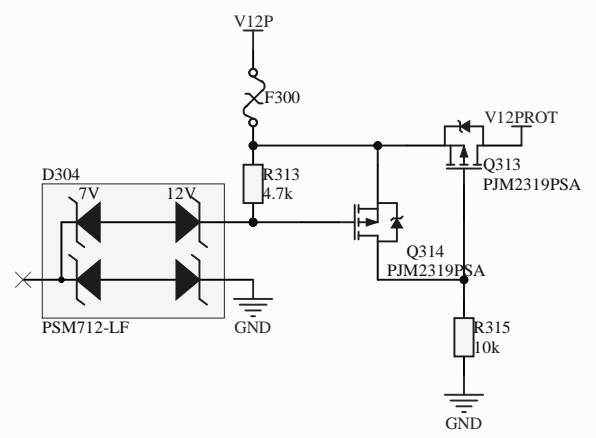
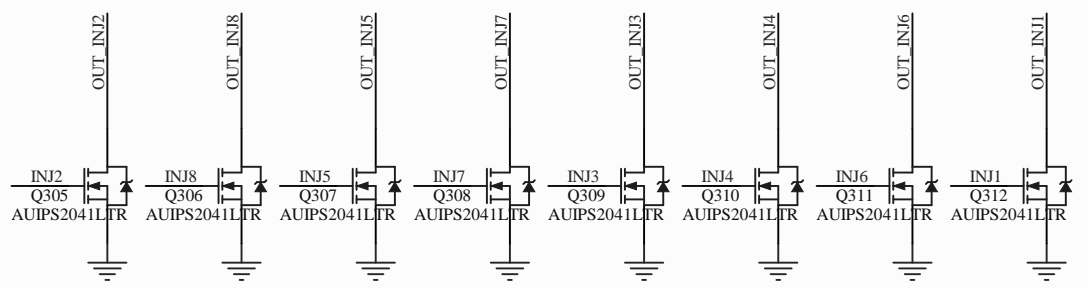
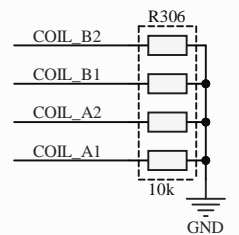
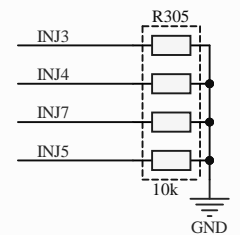
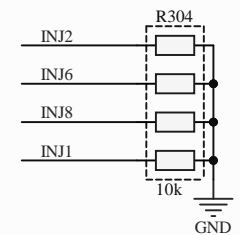
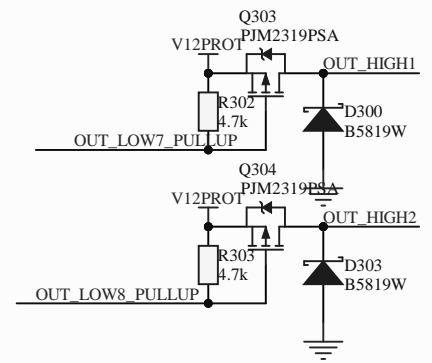
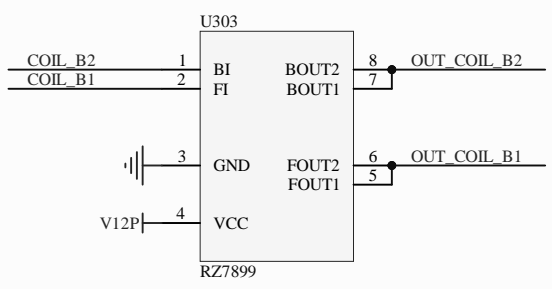
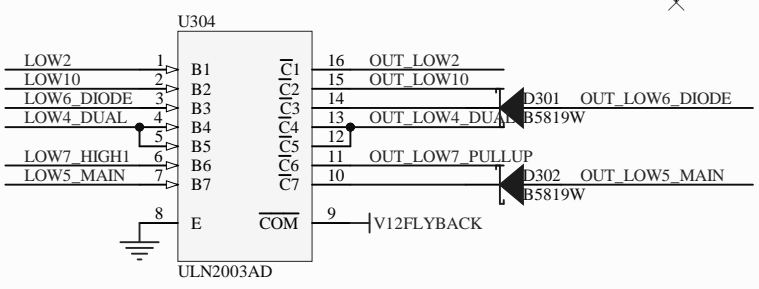
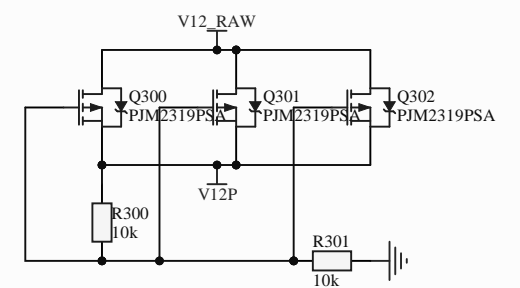
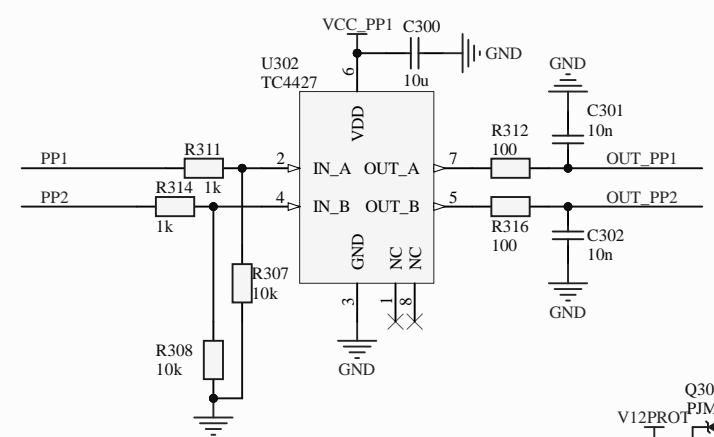
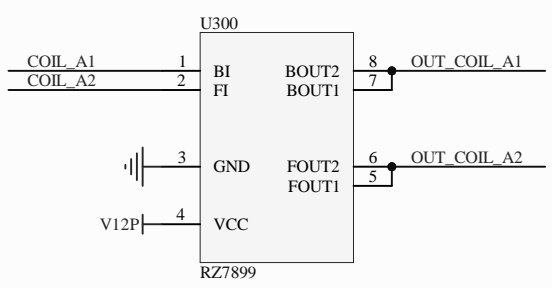
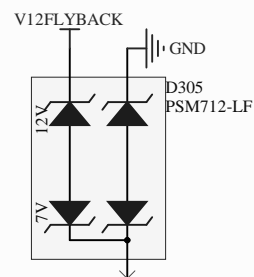
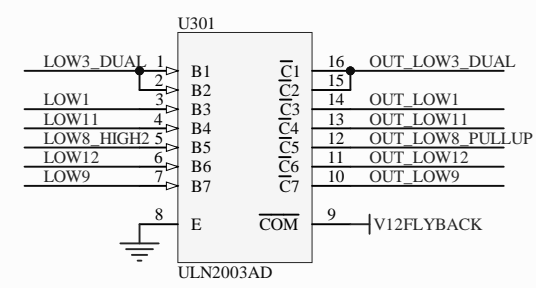
More accurate threshold for "raw" connection of VR sensors



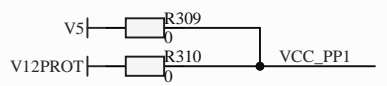
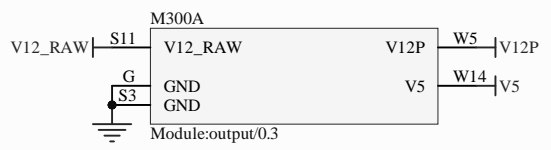
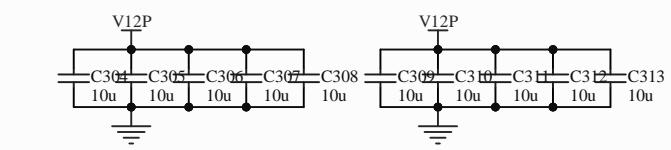


Title		
Size	Number	Revision
A4		
Date:	4.19.2023	Sheet of
File:	C:\Work\...\power.SchDoc	Drawn By:

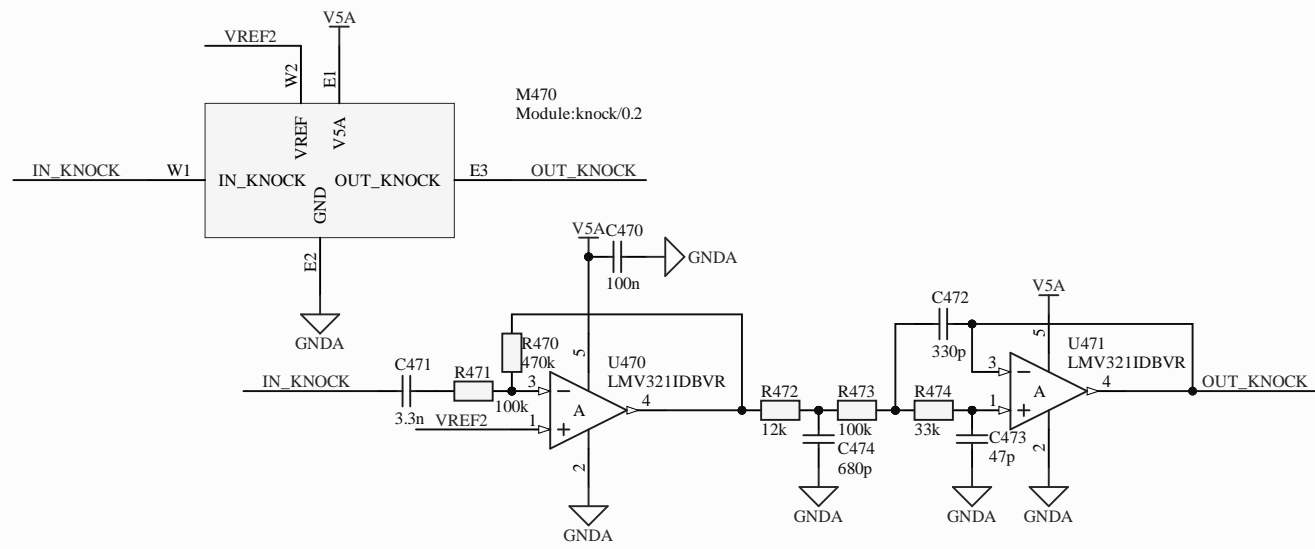


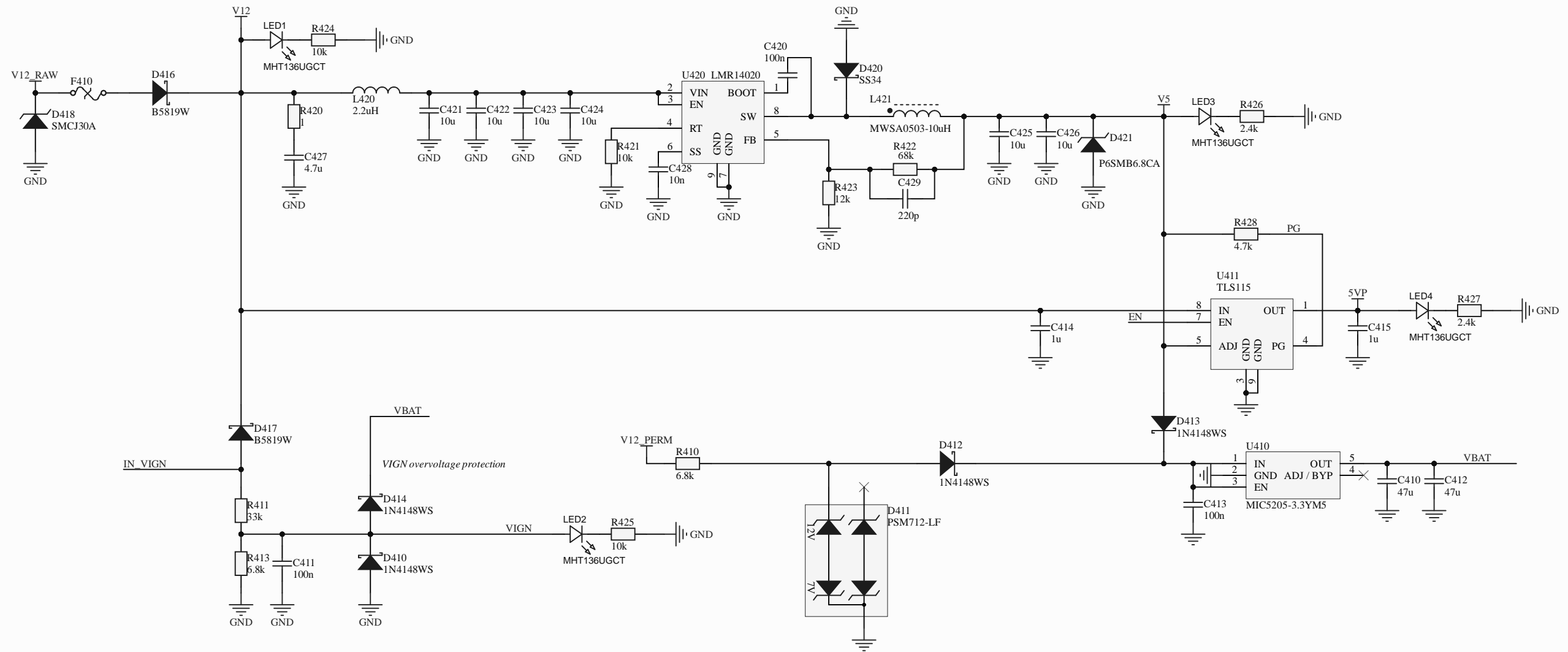
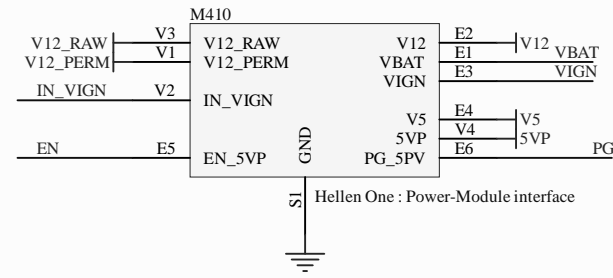


M300B		M300C	
INJ1	W24	OUT_INJ1	S18
INJ2	W23	OUT_INJ2	S16
INJ3	W20	OUT_INJ3	S17
INJ4	W19	OUT_INJ4	W7
INJ5	W18	OUT_INJ5	W10
INJ6	W17	OUT_INJ6	S15
INJ7	W16	OUT_INJ7	W12
INJ8	W15	OUT_INJ8	W11
PP1	W28	OUT_PP1	W6
PP2	W22	OUT_PP2	S6
COIL_A1	W33	OUT_SOLENOID_A1	S1
COIL_A2	W32	OUT_SOLENOID_A2	S2
COIL_B1	W31	OUT_SOLENOID_B1	S4
COIL_B2	W30	OUT_SOLENOID_B2	S5
LOW1	W21	OUT_LOW1	S8
LOW2	W29	OUT_LOW2	W1
LOW3_DUAL	W38	OUT_LOW3_DUAL	S7
LOW4_DUAL	W34	OUT_LOW4_DUAL	W4
LOW5_MAIN	W40	OUT_LOW4_DUAL	W13
LOW6_DIODE	W25	OUT_LOW5_MAIN	W3
LOW7_HIGH1	W39	OUT_LOW6_DIODE	W9
LOW8_HIGH2	W37	OUT_LOW7_PULLUP	S12
LOW9	W27	OUT_LOW8_PULLUP	S14
LOW10	W26	OUT_LOW9	W2
LOW11	W35	OUT_LOW10	S10
LOW12	W36	OUT_LOW11	S13
		OUT_LOW12	
		OUT_HIGH1	W8
		OUT_HIGH2	S9

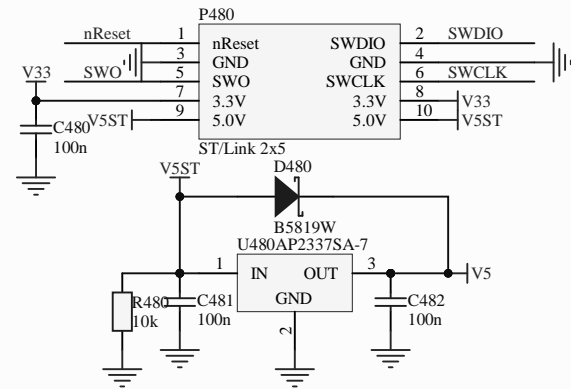
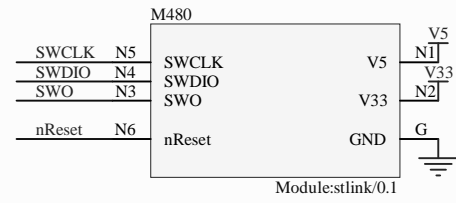


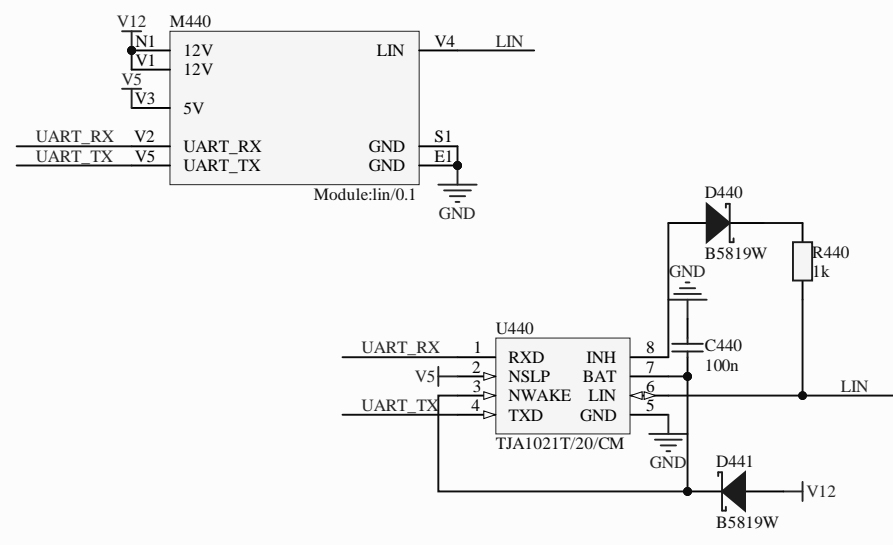
\* These can be removed in the board compilation file

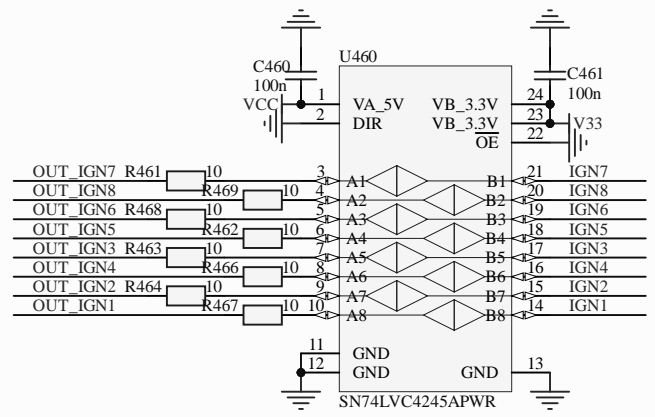
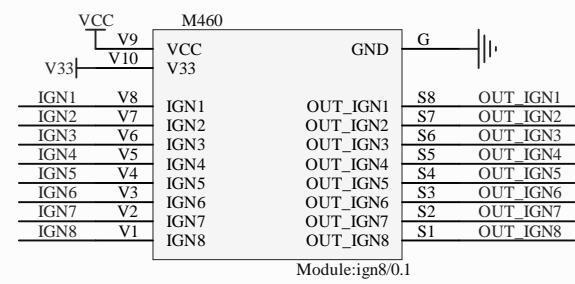


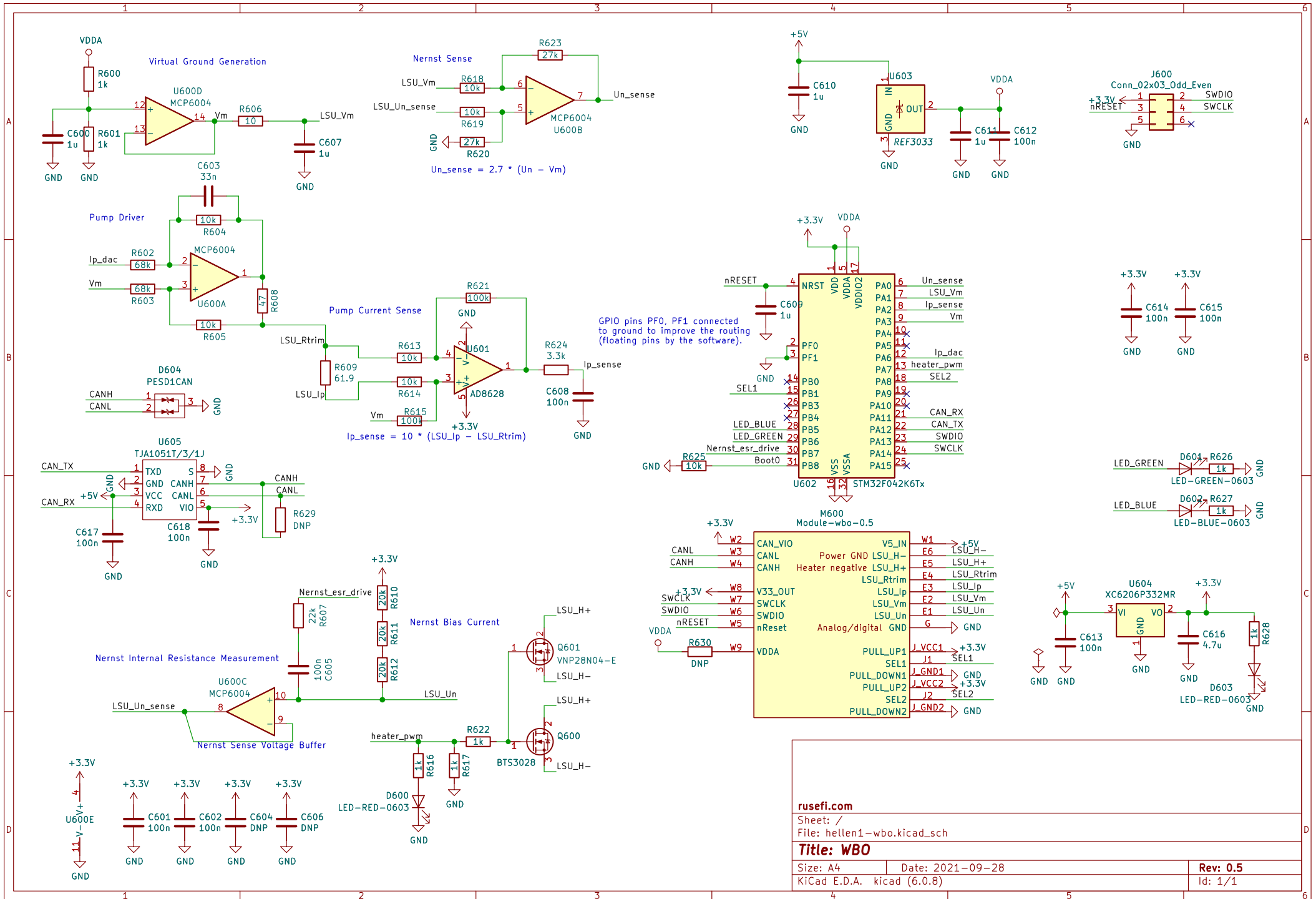












rusefi.com

Sheet: /  
 File: hellen1-wbo.kicad\_sch

**Title: WBO**

Size: A4  
 Date: 2021-09-28  
 KiCad E.D.A. kicad (6.0.8)

Rev: 0.5  
 Id: 1/1