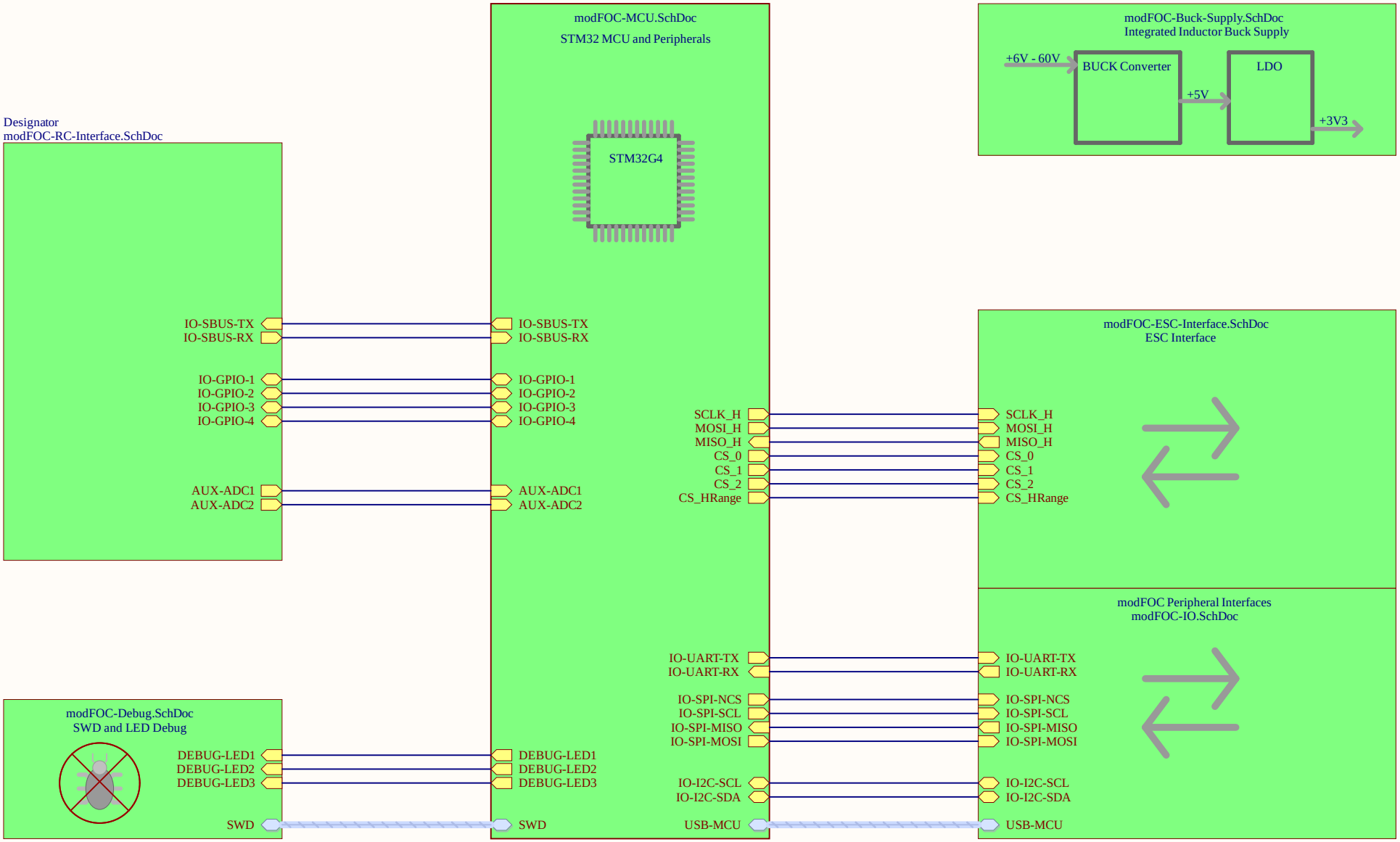

Title	***RcMPPT-Top SCC***		
Size: A4	Number: 1	Revision: 2.0	
Date: 17.03.2022	Time: 20:46:20	Sheet 1 of 7	
File: modFOC-Top.SchDoc			

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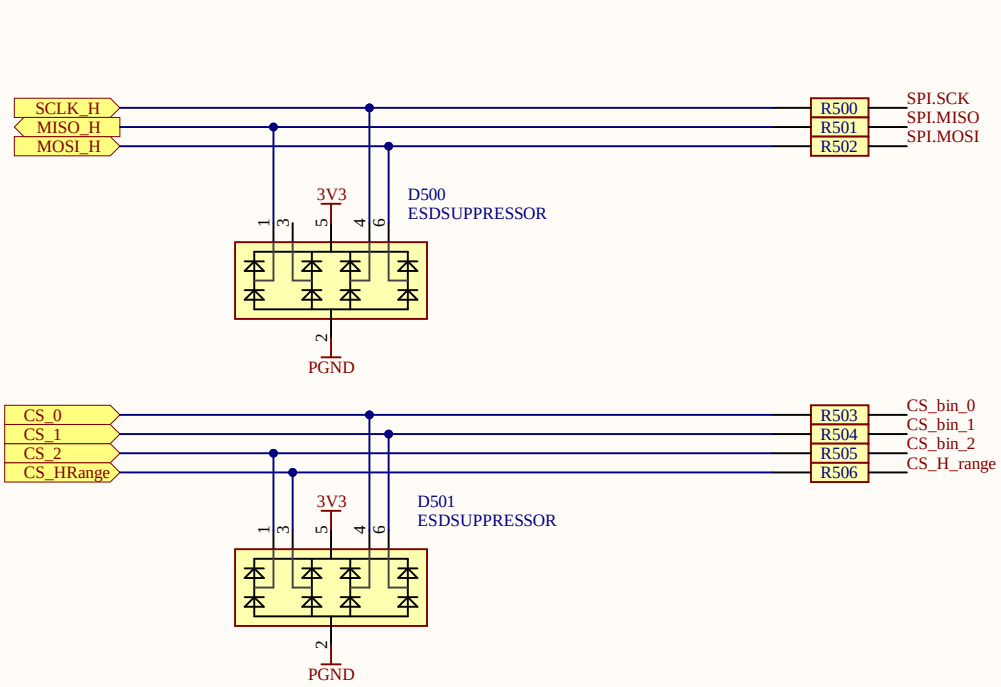
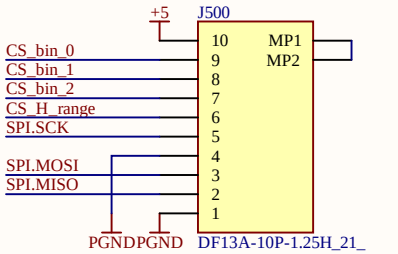
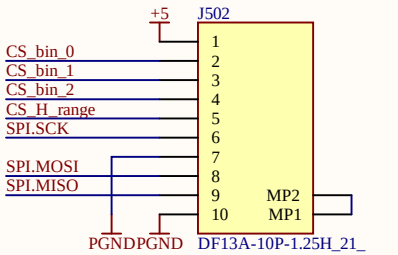
Board Interconnect
RcMPPT-BMS







Title	***RcMPPT-BMS-Interface***		
Size: A4	Number:8	Revision:2.0	
Date: 17.03.2022	Time: 20:46:20	Sheet 2 of 7	
File: modFOC-ESC-Interface.SchDoc			

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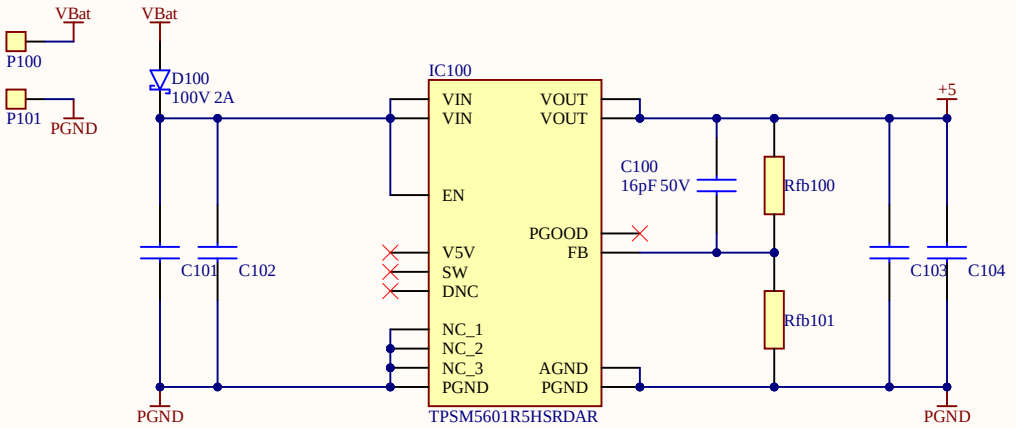
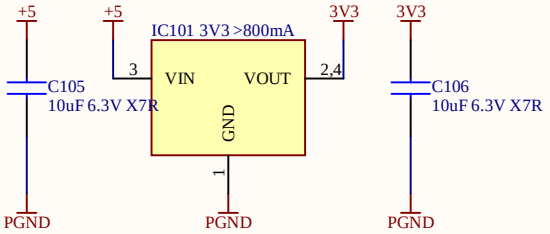
5V Buck Regulator
Integrated Inductor

VBat: 3-12S Lipo/LiIon/LiFePo
VPanel: 6-60V



3.3V Linear Regulator



Title	*RcMPPT-Buck-Supply*		
Size: A4	Number: 2	Revision: 2.0	
Date: 17.03.2022	Time: 20:46:20	Sheet 3 of 7	
File: modFOC-Buck-Supply.SchDoc			

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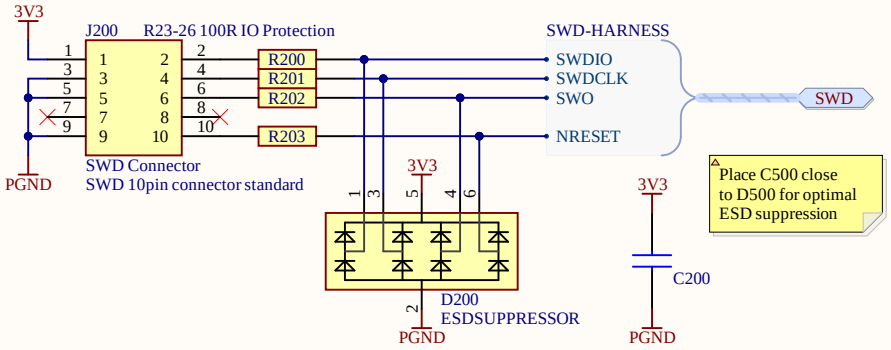
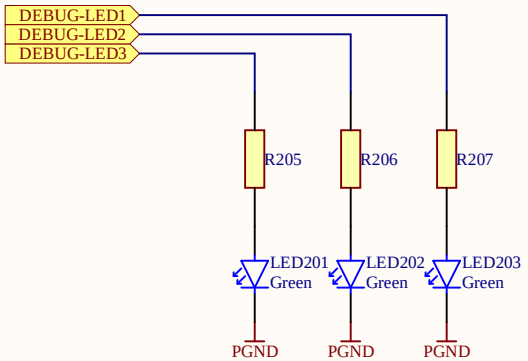
SWD



Indicator LEDs



Title	***RcMPPT-Debug***		
Size: A4	Number:6	Revision:2.0	
Date: 17.03.2022	Time: 20:46:21	Sheet 4 of 7	
File: modFOC-Debug.SchDoc			

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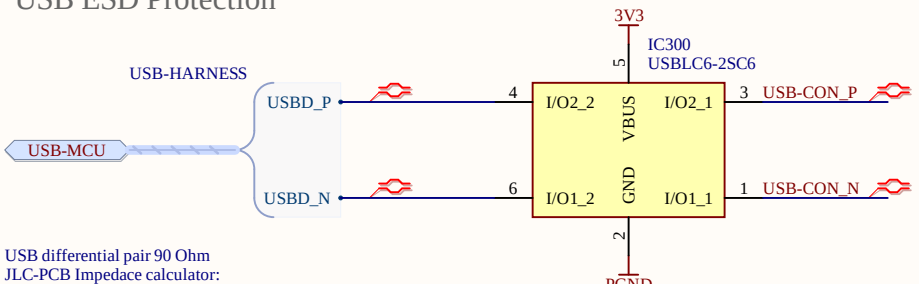
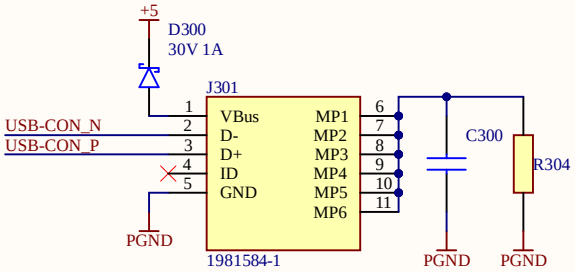
USB ESD Protection

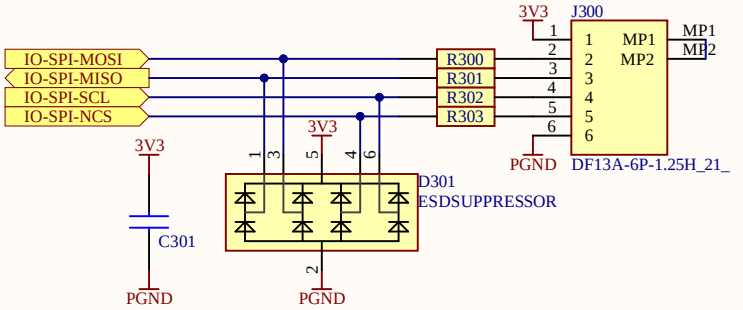


USB differential pair 90 Ohm
JLC-PCB Impedace calculator:
8 mil trace space, 10.28mil trace width
Do not connect shield at device side

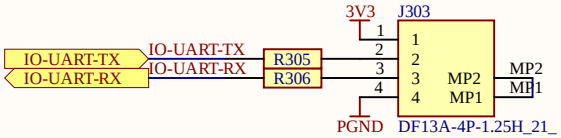
USB



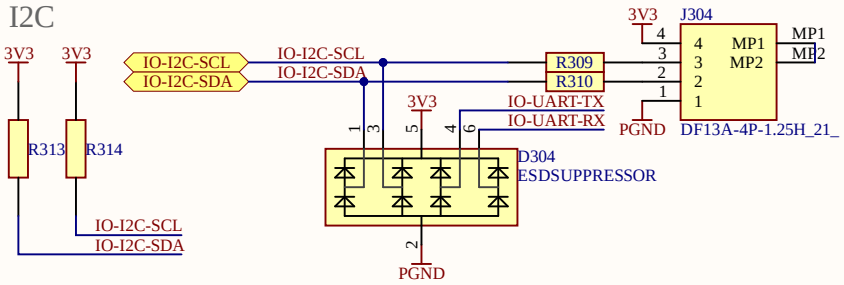
SPI



UART



I2C



Title	**RcMPPT-IO**		
Size: A4	Number: 5	Revision: 2.0	
Date: 17.03.2022	Time: 20:46:21	Sheet 5 of 7	
File: modFOC-IO.SchDoc			

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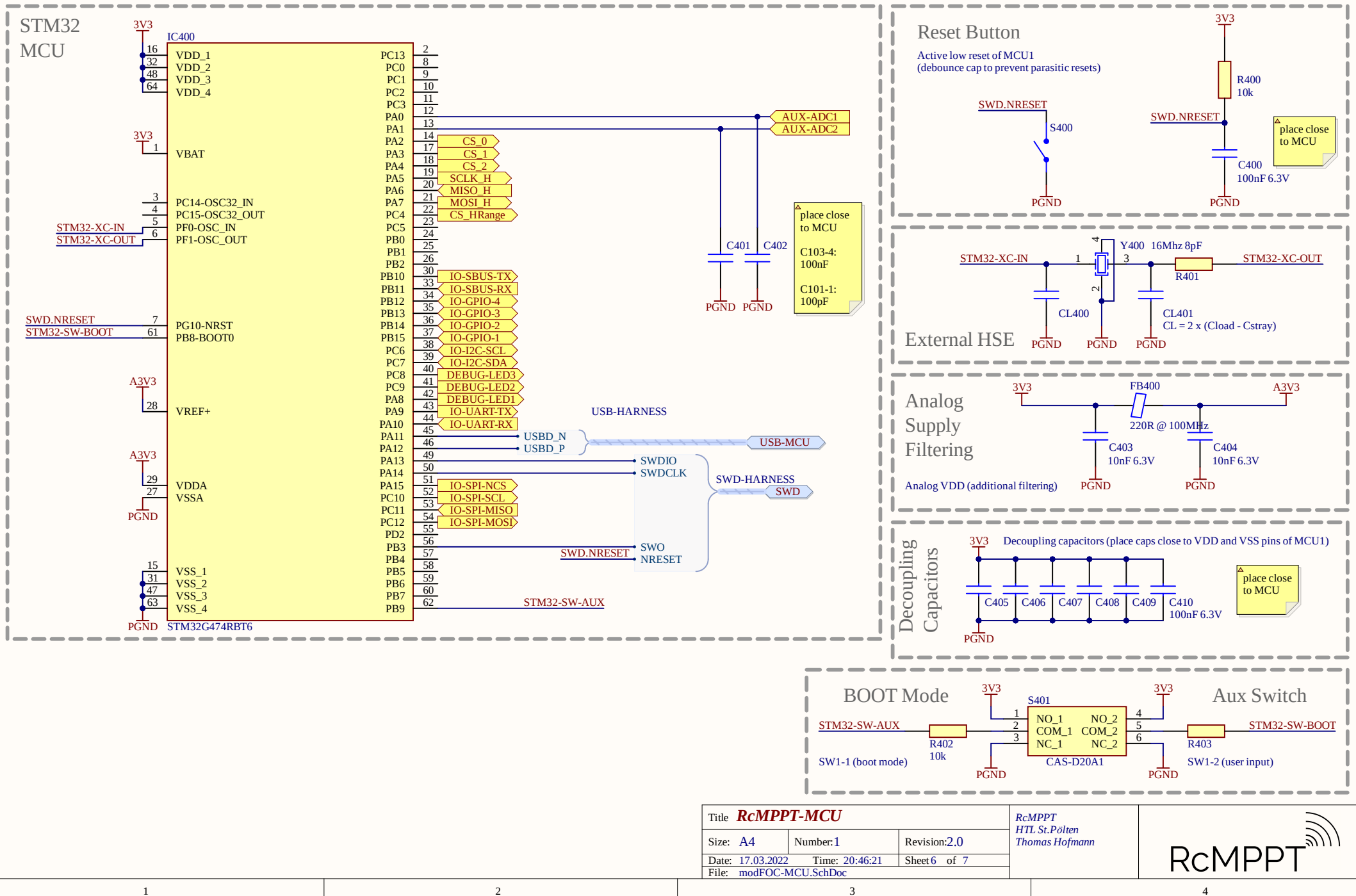
STM32 MCU
IC400
3V3
VDD_1
VDD_2
VDD_3
VDD_4
VBAT
PC14-OSC32_IN
PC15-OSC32_OUT
PF0-OSC_IN
PF1-OSC_OUT
STM32-XC-IN
STM32-XC-OUT
SWD.NRESET
STM32-SW-BOOT
PG10-NRST
PB8-BOOT0
A3V3
VREF+
VDDA
VSSA
PGND
VSS_1
VSS_2
VSS_3
VSS_4
STM32G474RBT6
PC13
PC0
PC1
PC2
PC3
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PC4
PC5
PB0
PB1
PB2
PB10
PB11
PB12
PB13
PB14
PB15
PC6
PC7
PC8
PC9
PA8
PA9
PA10
PA11
PA12
PA13
PA14
PA15
PC10
PC11
PC12
PD2
PB3
PB4
PB5
PB6
PB7
PB9
AUX-ADC1
AUX-ADC2
CS_0
CS_1
CS_2
SCLK_H
MISO_H
MOSI_H
CS_HRange
C401
C402
PGND PGND
place close to MCU
C103-4: 100nF
C101-1: 100pF
IO-SBUS-TX
IO-SBUS-RX
IO-GPIO-4
IO-GPIO-3
IO-GPIO-2
IO-GPIO-1
IO-I2C-SCL
IO-I2C-SDA
DEBUG-LED3
DEBUG-LED2
DEBUG-LED1
IO-UART-TX
IO-UART-RX
USB-HARNESS
USBD_N
USBD_P
USB-MCU
SWDIO
SWDCLK
SWD-HARNESS
SWD
IO-SPI-NCS
IO-SPI-SCL
IO-SPI-MISO
IO-SPI-MOSI
SWO
NRESET
SWD.NRESET
STM32-SW-AUX
Reset Button
Active low reset of MCU1
(debounce cap to prevent parasitic resets)
SWD.NRESET
S400
PGND
3V3
R400
10k
SWD.NRESET
place close to MCU
C400
100nF 6.3V
PGND
External HSE
STM32-XC-IN
Y400 16Mhz 8pF
STM32-XC-OUT
R401
CL400
CL401
CL = 2 x (Cload - Cstray)
PGND PGND PGND
Analog Supply Filtering
3V3
FB400
A3V3
220R @ 100MHz
C403
10nF 6.3V
C404
10nF 6.3V
PGND PGND
Analog VDD (additional filtering)
Decoupling Capacitors
3V3
Decoupling capacitors (place caps close to VDD and VSS pins of MCU1)
C405 C406 C407 C408 C409
C410
100nF 6.3V
place close to MCU
PGND
BOOT Mode
3V3
S401
NO_1 NO_2
COM_1 COM_2
NC_1 NC_2
CAS-D20A1
3V3
Aux Switch
STM32-SW-AUX
R402
10k
STM32-SW-BOOT
R403
SW1-1 (boot mode)
PGND
PGND
SW1-2 (user input)
Title RcMPPT-MCU
Size: A4
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Date: 17.03.2022
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Sheet 6 of 7
File: modFOC-MCU.SchDoc
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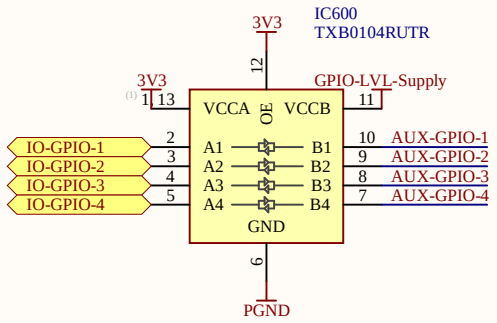
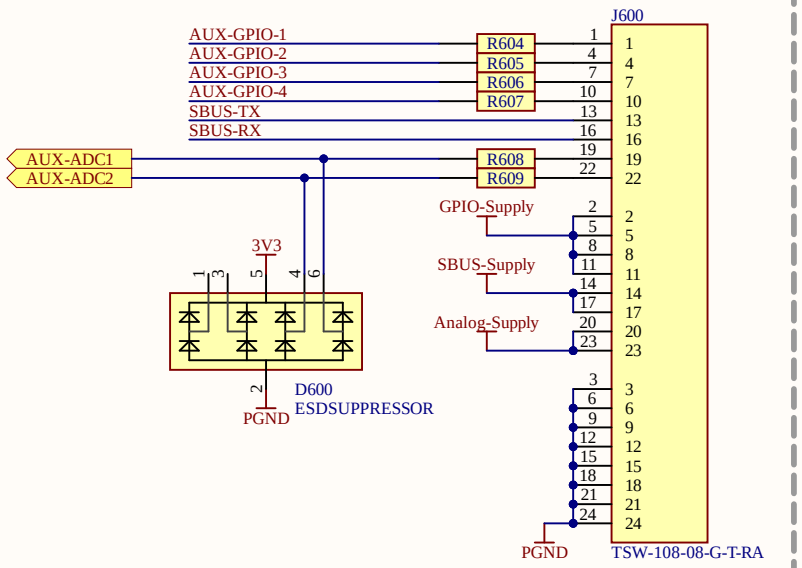
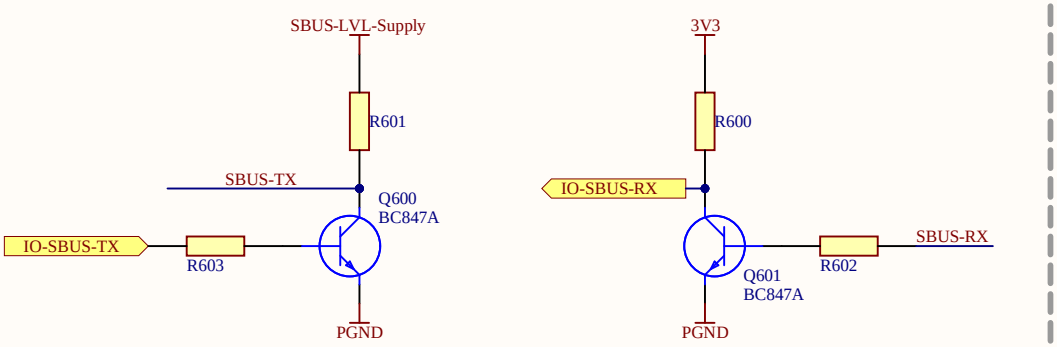
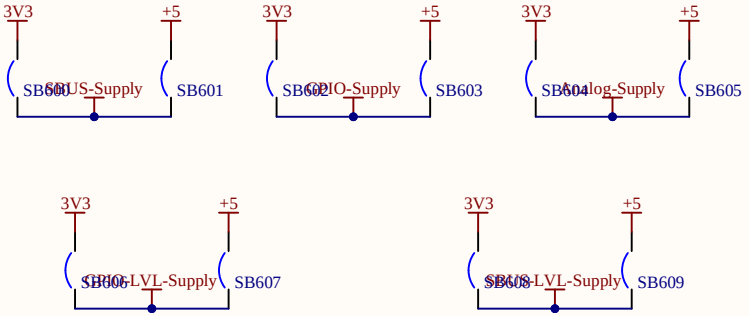
RcMPPT

GPIO Level Shift









Title	***modFOC-RC-Interface***		
Size: A4	Number: 7	Revision: 2.0	
Date: 17.03.2022	Time: 20:46:22	Sheet 7 of 7	
File: modFOC-RC-Interface.SchDoc			

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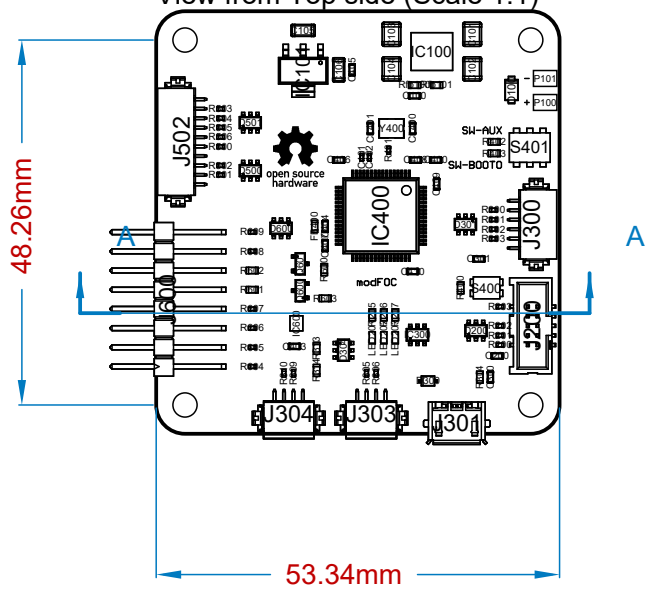
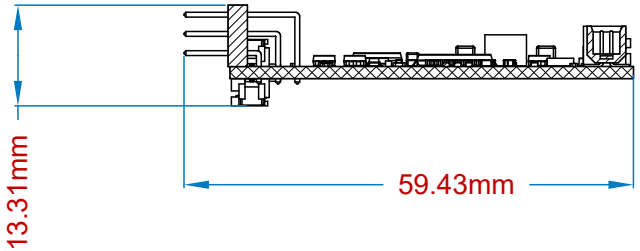
Thomas Hofmann

RcMPPT

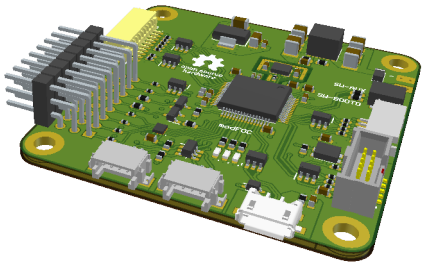
View from Top side (Scale 1:1)



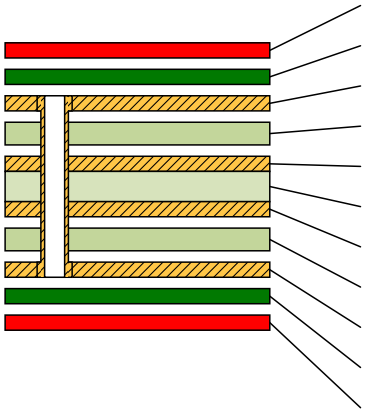
SECTION A-A (Scale 1:1)



Realistic View



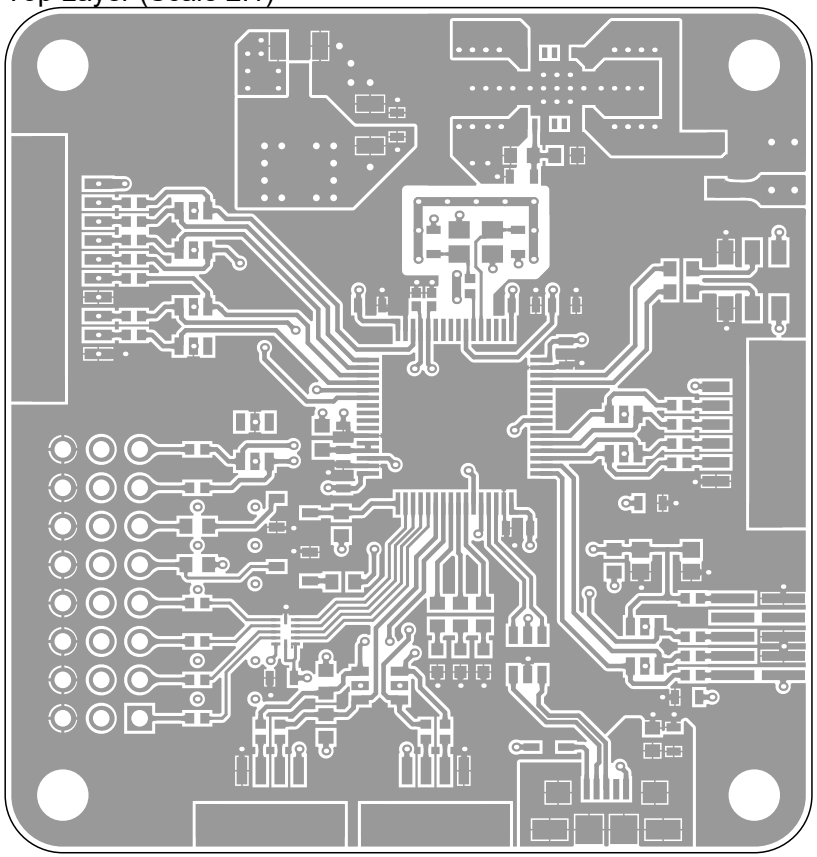
Layer Stack Legend



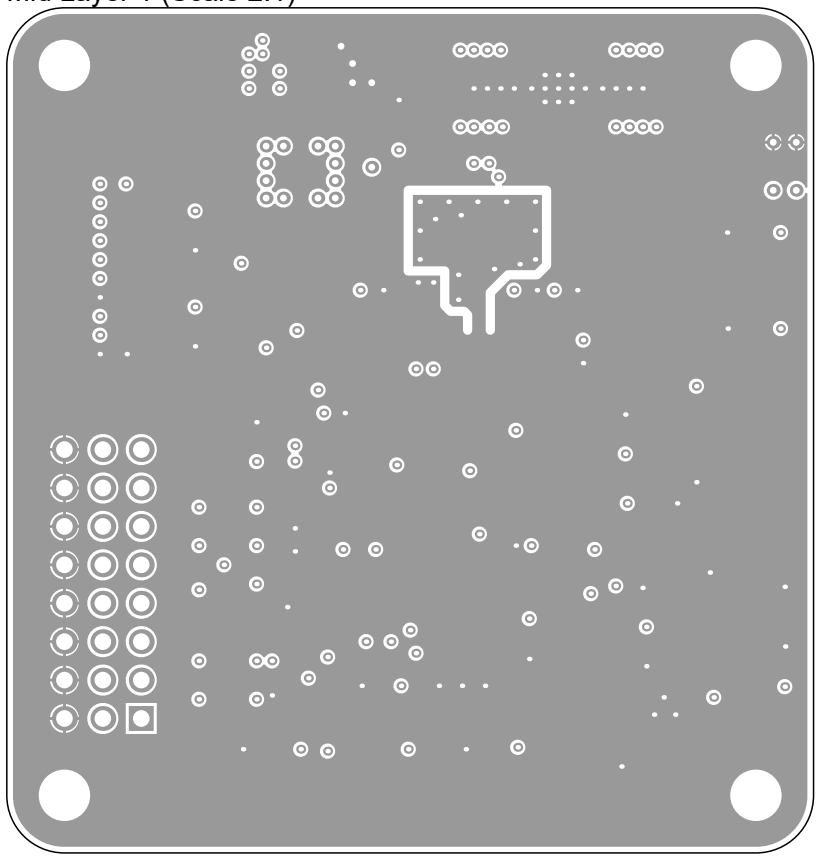
Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.01mm	SM-001	Solder Mask	GTS
Copper	**Top Layer**	**0.04mm**		**Signal**	**GTL**
Prepreg		*0.21mm*	*PP-022*	*Dielectric*	
Copper	**Mid Layer 1**	**0.02mm**		**Signal**	**G1**
Core		*1.06mm*	*Core-040*	*Dielectric*	
Copper	**Mid Layer 2**	**0.02mm**		**Signal**	**G2**
Prepreg		*0.21mm*	*PP-022*	*Dielectric*	
Copper	**Bottom Layer**	**0.04mm**		**Signal**	**GBL**
Surface Material	Bottom Solder	0.01mm	SM-001	Solder Mask	GBS
	Bottom Overlay			Legend	GBO

Total thickness: 1.61mm

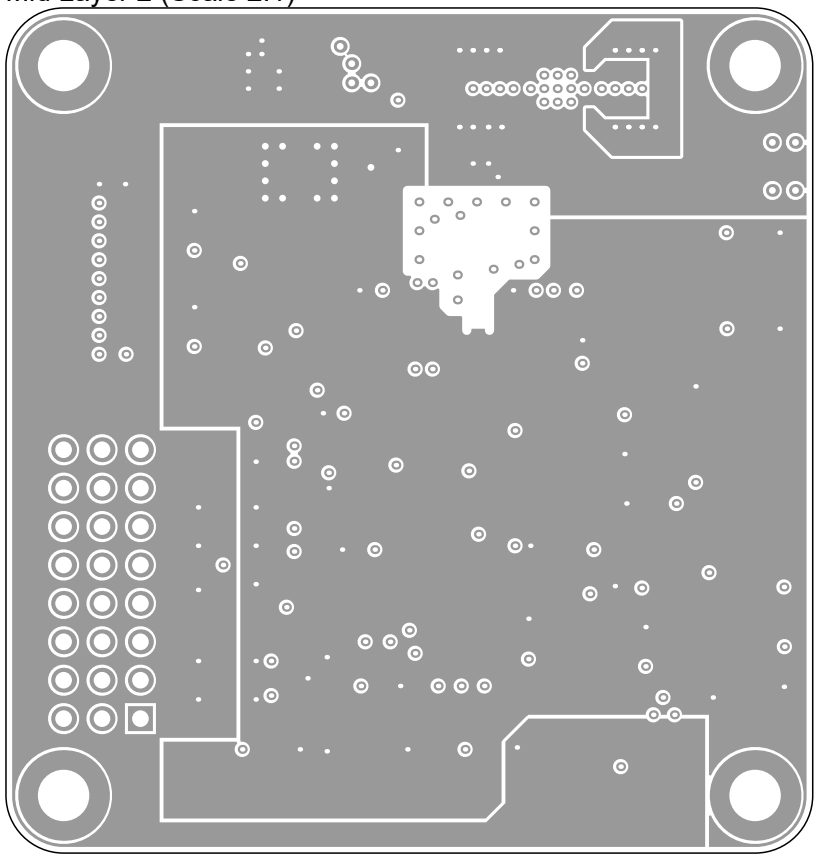
Top Layer (Scale 2:1)



Mid Layer 1 (Scale 2:1)



Mid Layer 2 (Scale 2:1)



Bottom Layer (Scale 2:1)