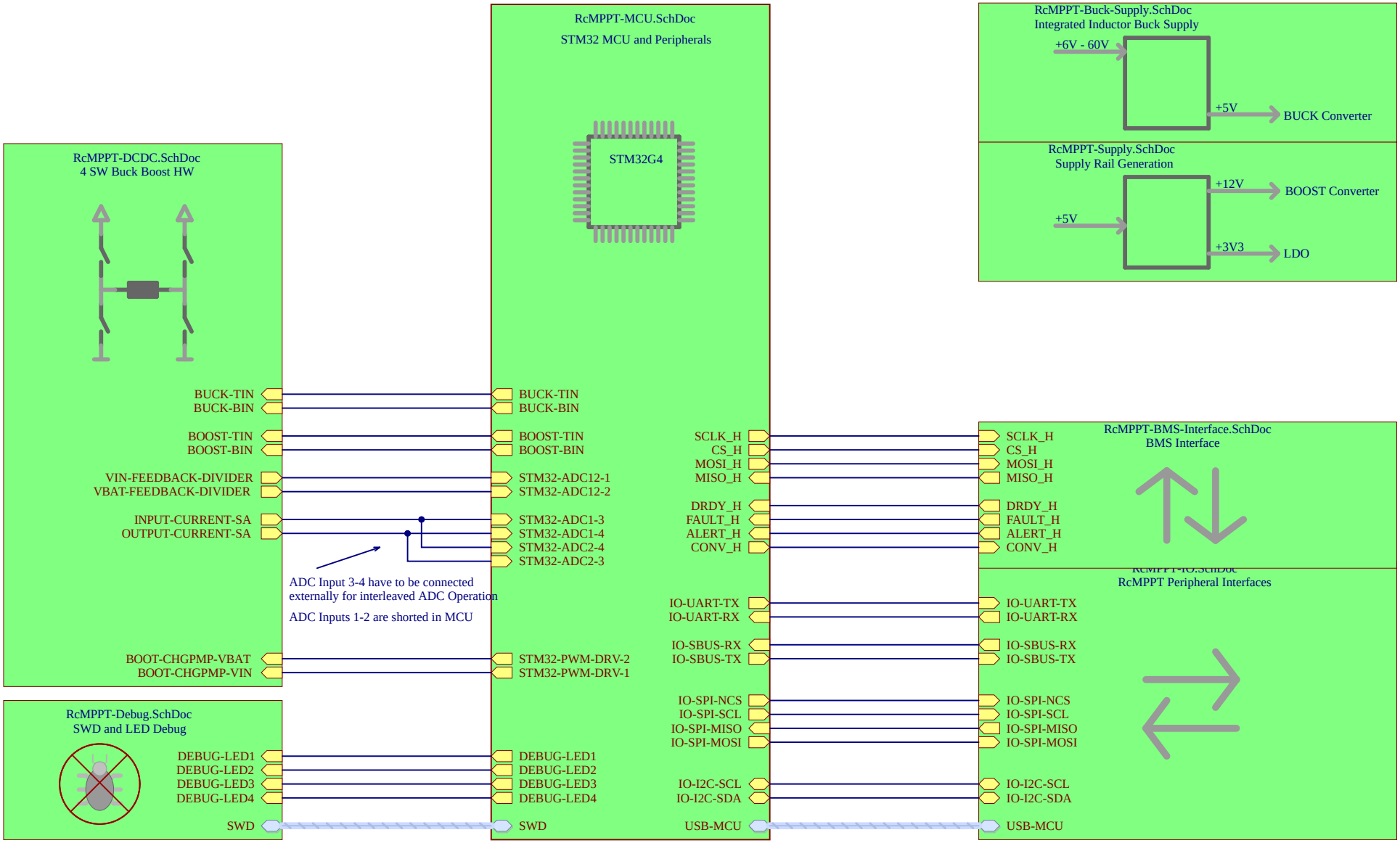

Title	***RcMPPT-Top SCC***		
Size: A4	Number:1	Revision:2.0	
Date: 28.03.2022	Time: 14:40:34	Sheet 1 of 8	
File: RcMPPT-Top.SchDoc			

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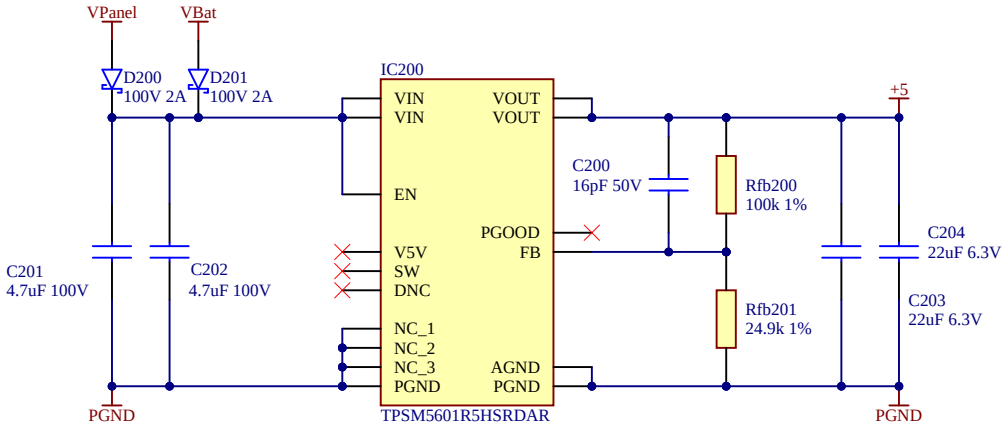
5V Buck Regulator
Integrated Inductor

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



Title	***RcMPPT-Buck-Supply***		
Size: A4	Number:2	Revision:2.0	
Date: 28.03.2022	Time: 14:40:34	Sheet 2 of 8	
File: RcMPPT-Buck-Supply.SchDoc			

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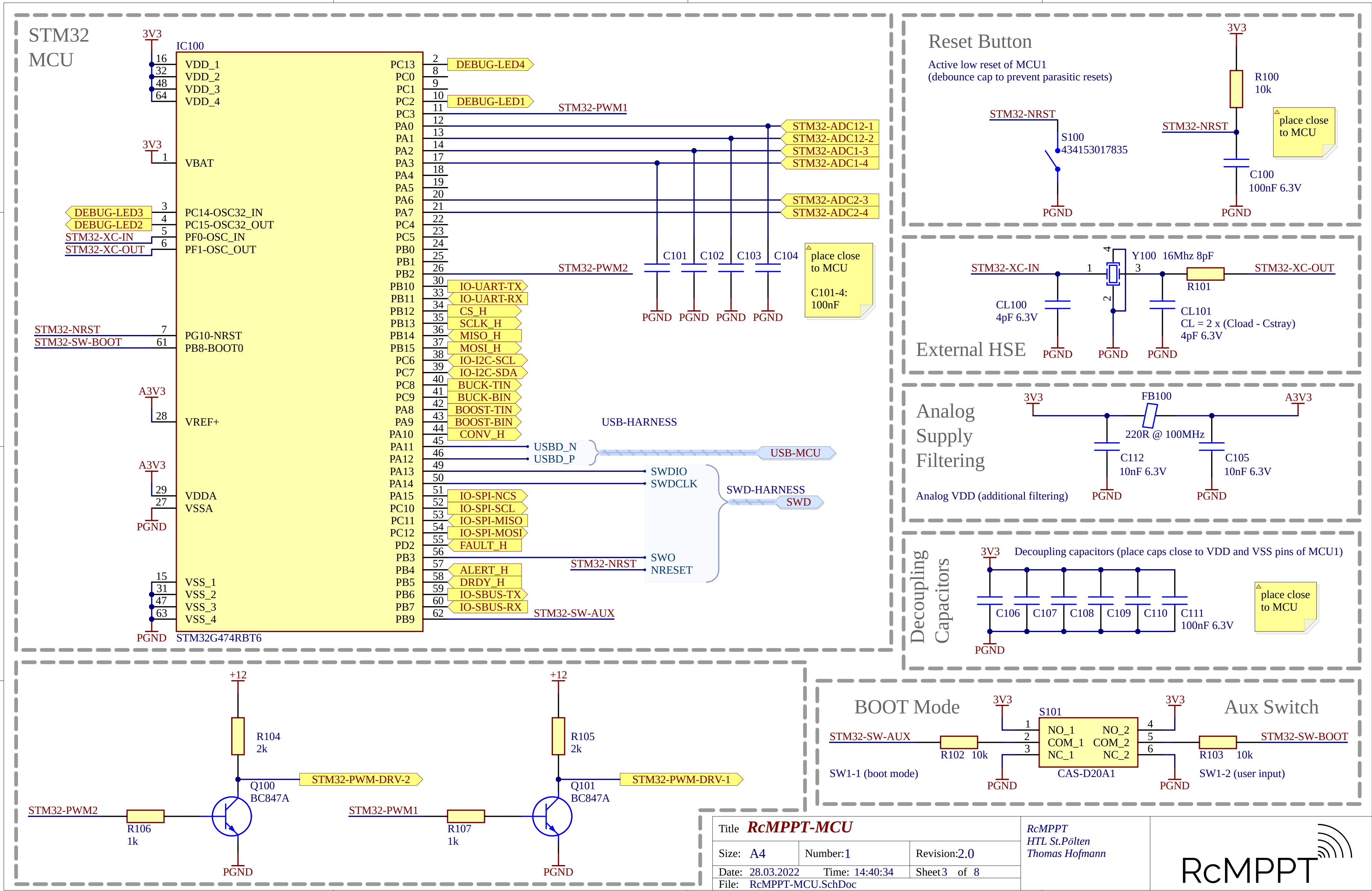
STM32 MCU
3V3
IC100
VDD_1
VDD_2
VDD_3
VDD_4
VBAT
PC14-OSC32_IN
PC15-OSC32_OUT
PF0-OSC_IN
PF1-OSC_OUT
PG10-NRST
PB8-BOOT0
A3V3
VREF+
VDDA
VSSA
VSS_1
VSS_2
VSS_3
VSS_4
PGND
STM32G474RBT6
DEBUG-LED3
DEBUG-LED2
STM32-XC-IN
STM32-XC-OUT
STM32-NRST
STM32-SW-BOOT
PC13
PC0
PC1
PC2
PC3
PA0
PA1
PA2
PA3
PA4
PA5
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
DEBUG-LED4
DEBUG-LED1
STM32-PWM1
STM32-ADC12-1
STM32-ADC12-2
STM32-ADC1-3
STM32-ADC1-4
STM32-ADC2-3
STM32-ADC2-4
STM32-PWM2
IO-UART-TX
IO-UART-RX
CS_H
SCLK_H
MISO_H
MOSI_H
IO-I2C-SCL
IO-I2C-SDA
BUCK-TIN
BUCK-BIN
BOOST-TIN
BOOST-BIN
CONV_H
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
FAULT_H
SWO
NRESET
ALERT_H
DRDY_H
IO-SBUS-TX
IO-SBUS-RX
STM32-SW-AUX
C101
C102
C103
C104
place close to MCU
C101-4: 100nF
Reset Button
Active low reset of MCU1
(debounce cap to prevent parasitic resets)
S100
434153017835
R100
10k
C100
100nF 6.3V
External HSE
Y100 16Mhz 8pF
R101
CL100
4pF 6.3V
CL101
CL = 2 x (Cload - Cstray)
4pF 6.3V
Analog Supply Filtering
FB100
220R @ 100MHz
C112
10nF 6.3V
C105
10nF 6.3V
Analog VDD (additional filtering)
Decoupling Capacitors
Decoupling capacitors (place caps close to VDD and VSS pins of MCU1)
C106
C107
C108
C109
C110
C111
100nF 6.3V
BOOT Mode
Aux Switch
S101
NO_1
COM_1
NC_1
NO_2
COM_2
NC_2
CAS-D20A1
R102 10k
R103 10k
SW1-1 (boot mode)
SW1-2 (user input)
+12
R104
2k
R105
2k
Q100
BC847A
Q101
BC847A
STM32-PWM-DRV-2
STM32-PWM-DRV-1
R106
1k
R107
1k
Title RcMPPT-MCU
Size: A4
Number: 1
Revision: 2.0
Date: 28.03.2022
Time: 14:40:34
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File: RcMPPT-MCU.SchDoc
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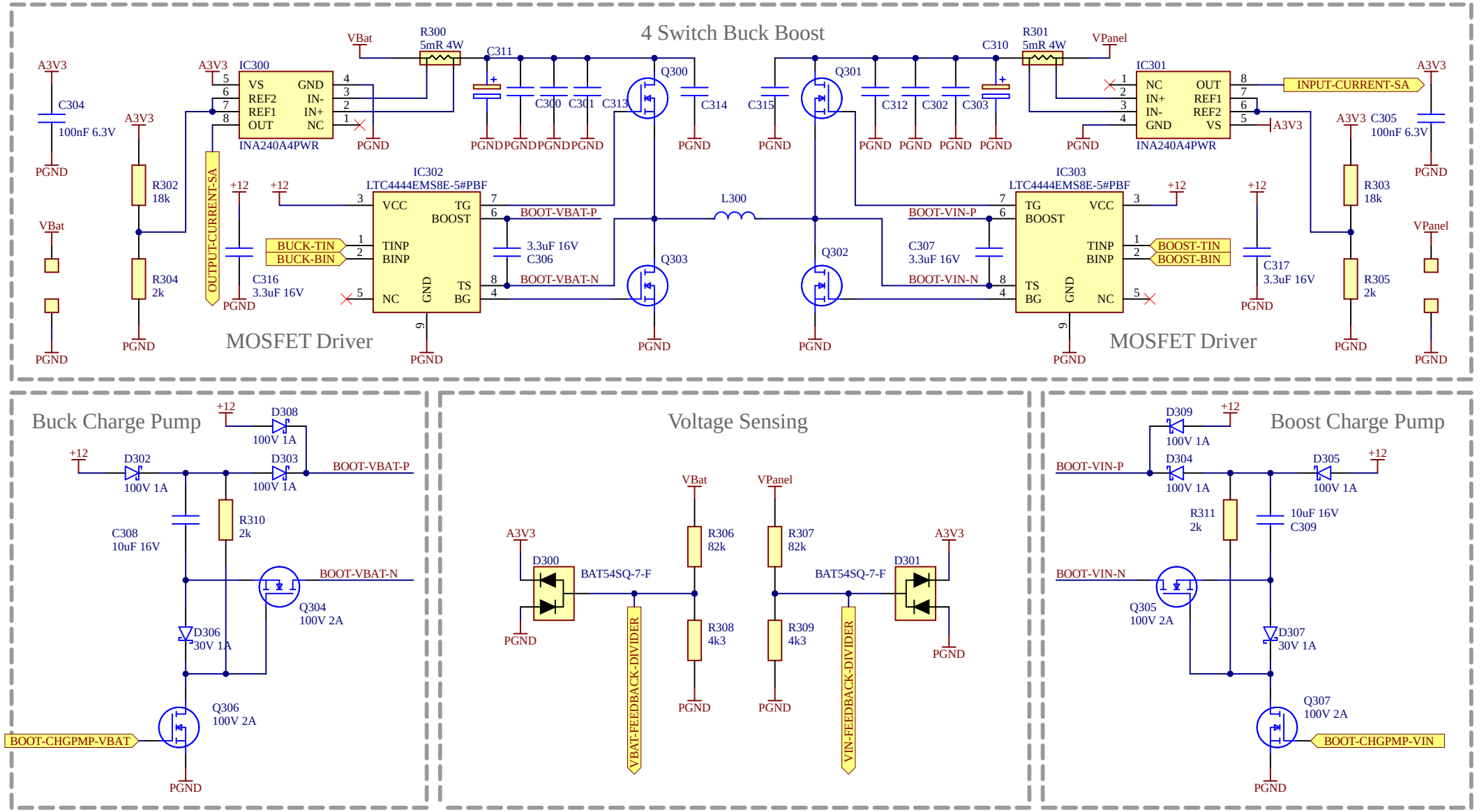

Title	**RcMPPT-DCDC**		
Size: A4	Number:4	Revision:2.0	
Date: 28.03.2022	Time: 14:40:35	Sheet 4 of 8	
File: RcMPPT-DCDC.SchDoc			

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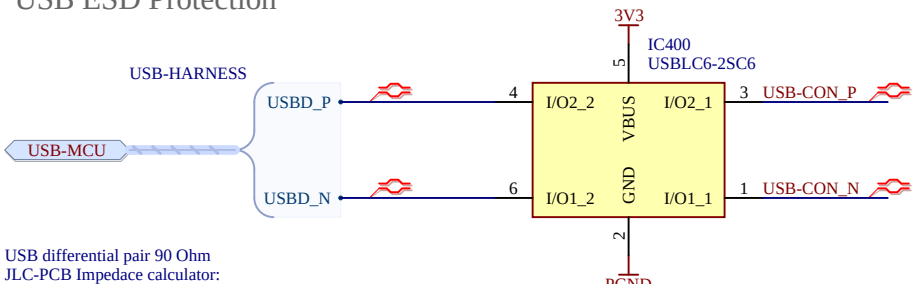
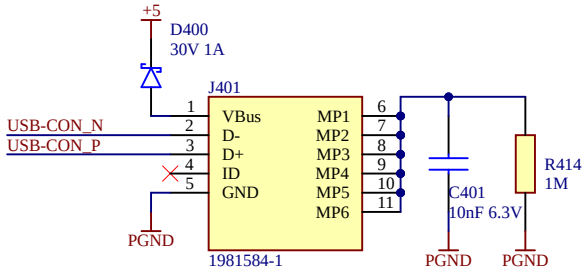
USB ESD Protection

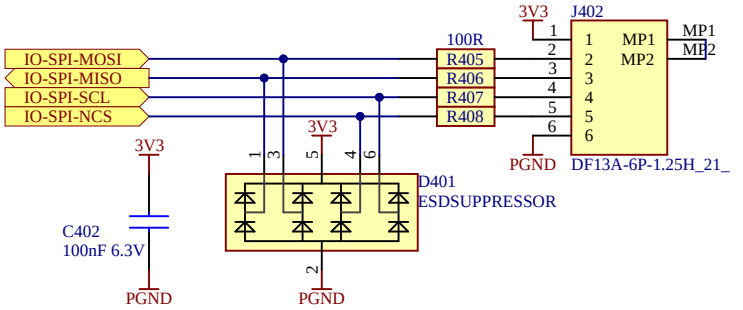


USB differential pair 90 Ohm
JLC-PCB Impedace calculator:
8 mil trace space, 10.28mil trace width
Do not connect shield at device side

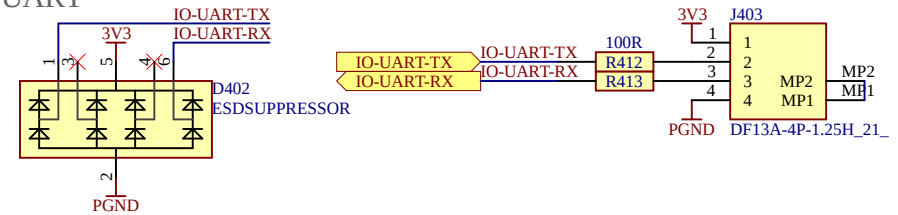
USB



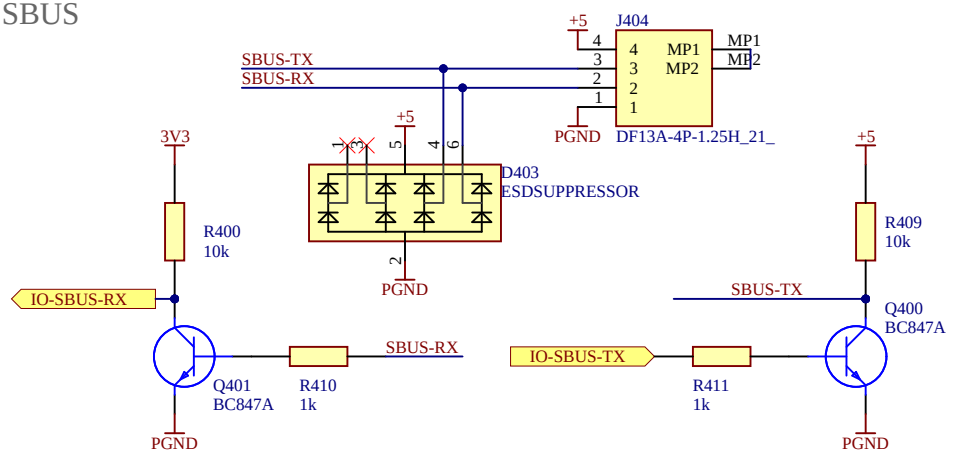
SPI



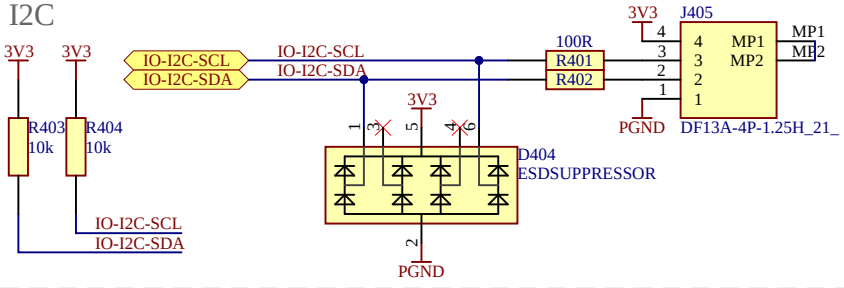
UART



SBUS



I2C



Title	**RcMPPT-IO**		
Size: A4	Number:5	Revision:2.0	
Date: 28.03.2022	Time: 14:40:35	Sheet 5 of 8	
File: RcMPPT-IO.SchDoc			

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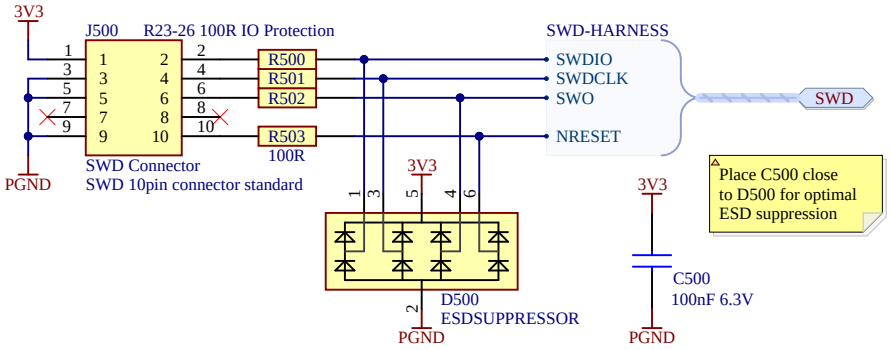
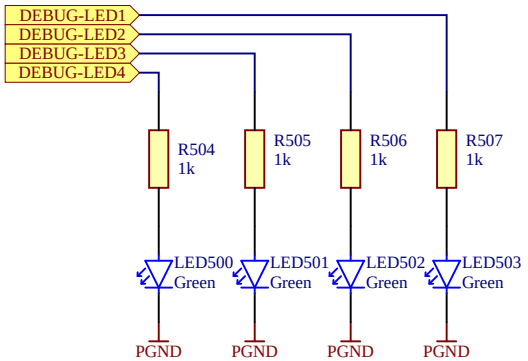
SWD



Indicator LEDs



Title	***RcMPPT-Debug***		
Size: A4	Number:6	Revision:2.0	
Date: 28.03.2022	Time: 14:40:36	Sheet 6 of 8	
File: RcMPPT-Debug.SchDoc			

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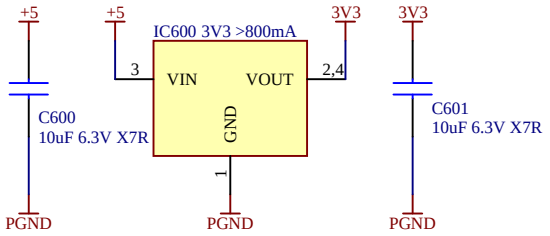
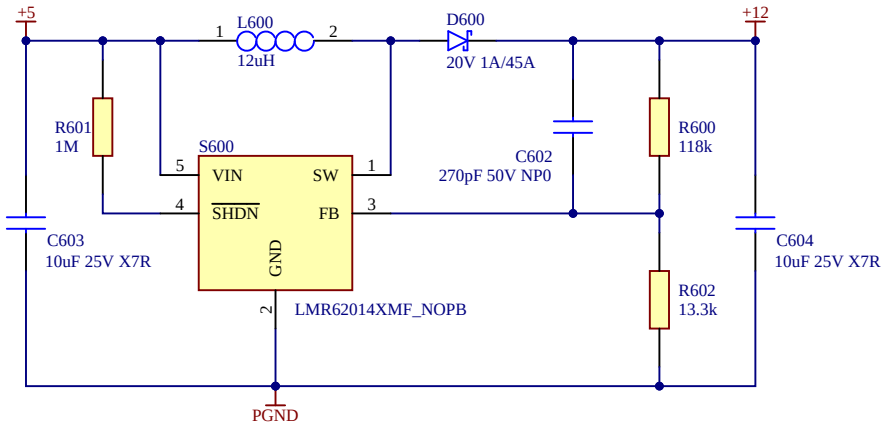
3.3V Linear Regulator



5V to 12V Boost Regulator



Title	***RcMPPT-Supply***		
Size: A4	Number:7	Revision:2.0	
Date: 28.03.2022	Time: 14:40:36	Sheet 7 of 8	
File: RcMPPT-Supply.SchDoc			

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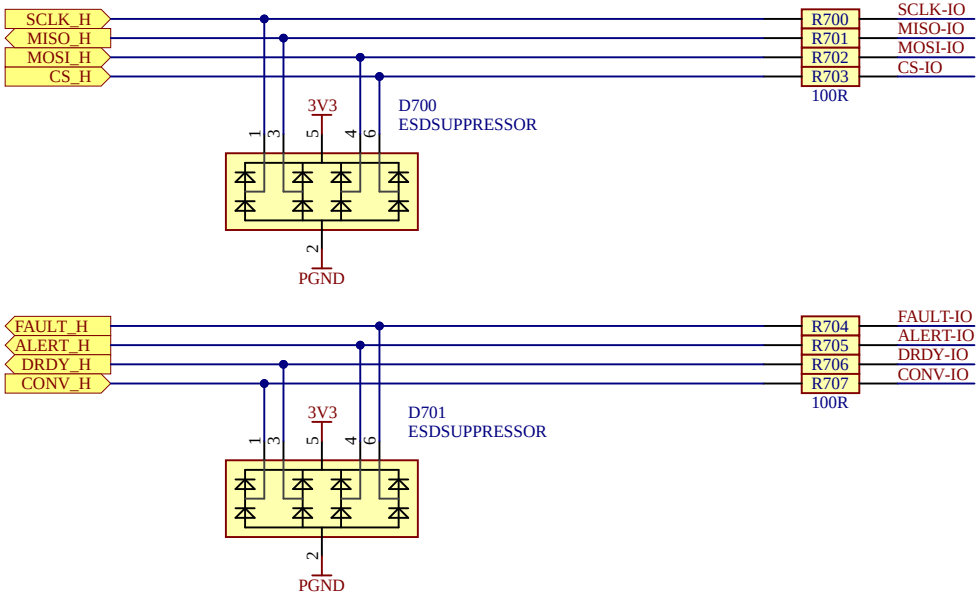
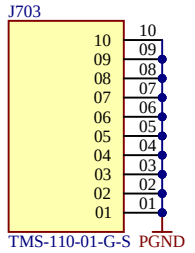
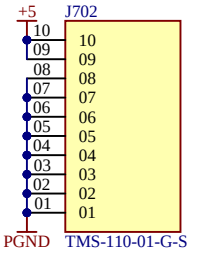
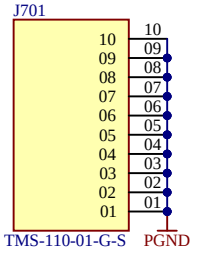
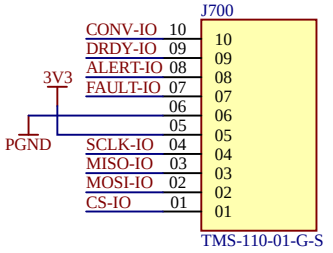
Board Interconnect
RcMPPT-BMS











Title	***RcMPPT-BMS-Interface***		
Size: A4	Number:8	Revision:2.0	
Date: 28.03.2022	Time: 14:40:37	Sheet 8 of 8	
File: RcMPPT-BMS-Interface.SchDoc			

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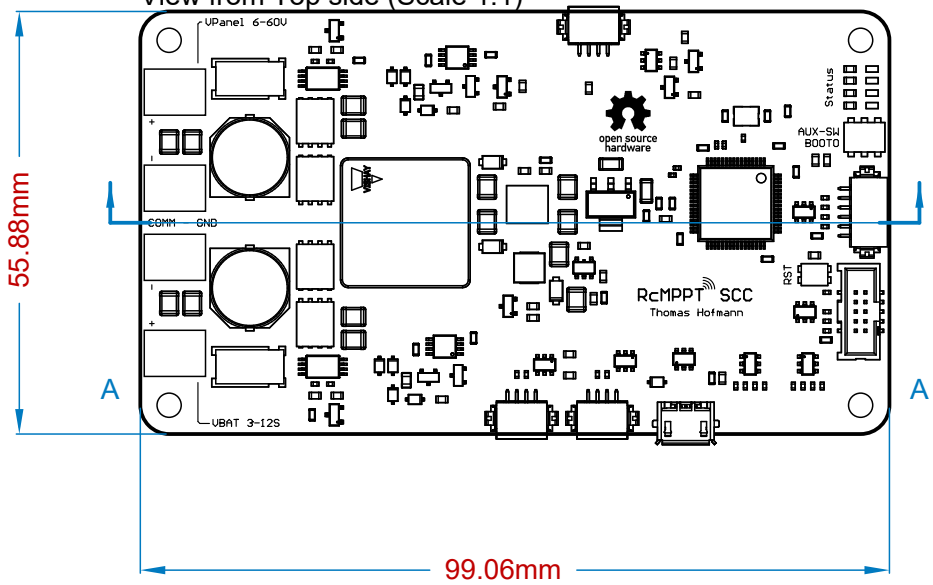
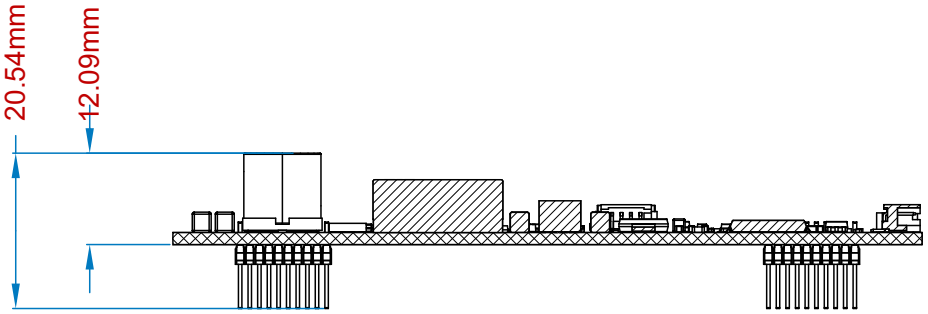
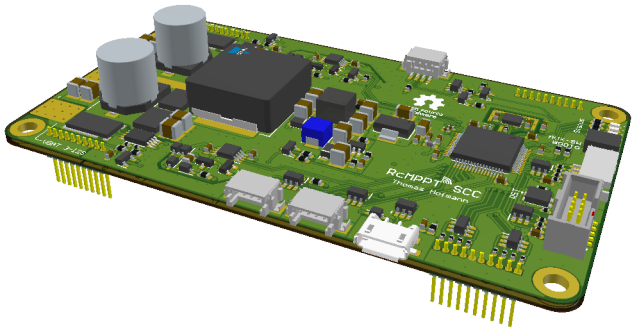
View from Top side (Scale 1:1)

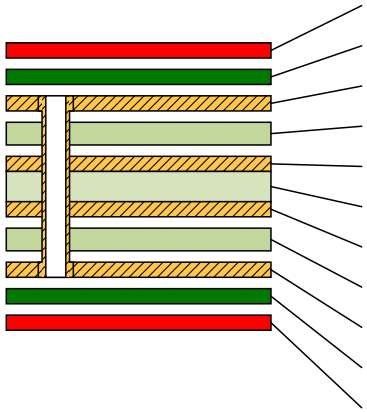




Realistic View



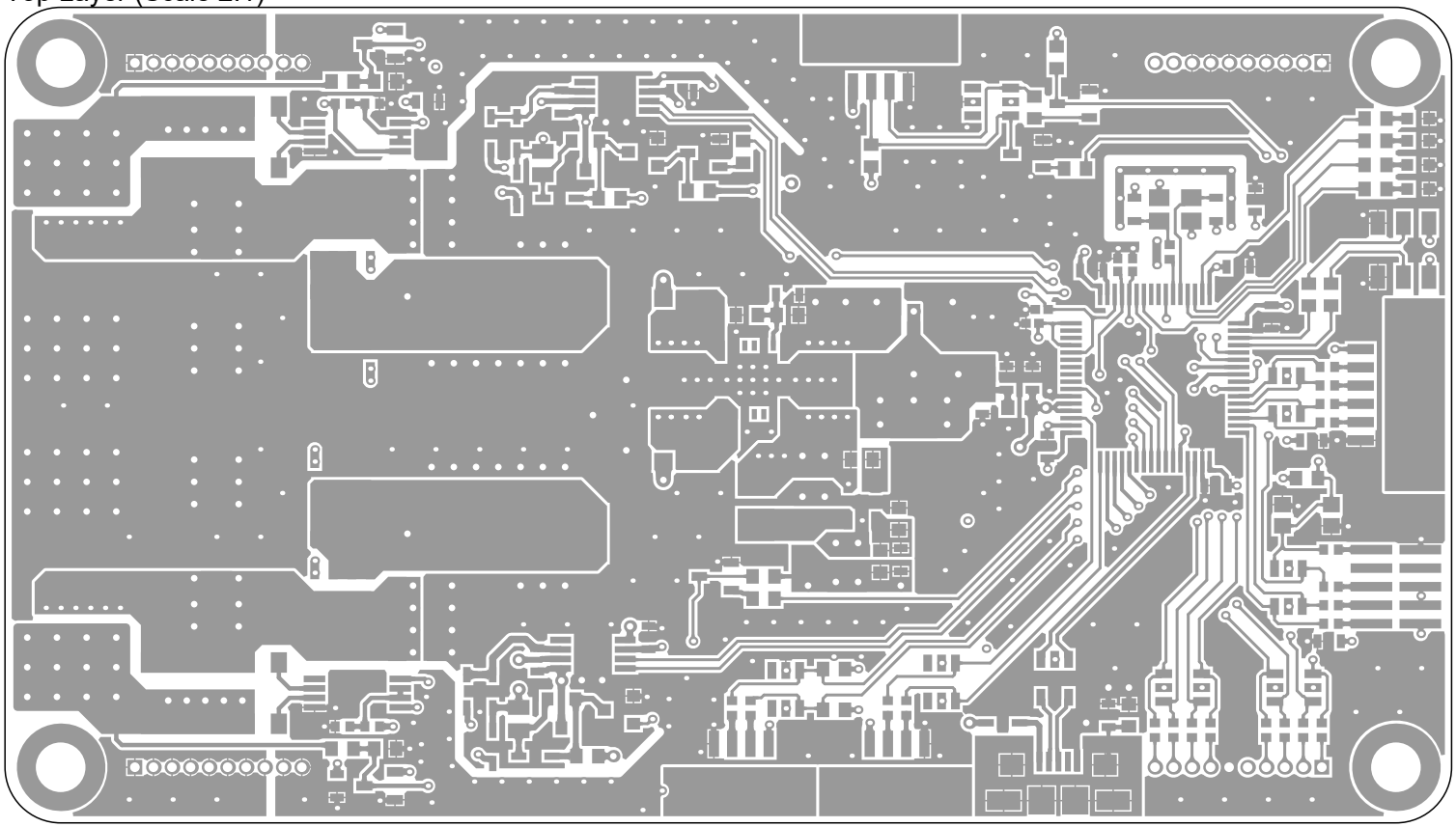
Layer Stack Legend



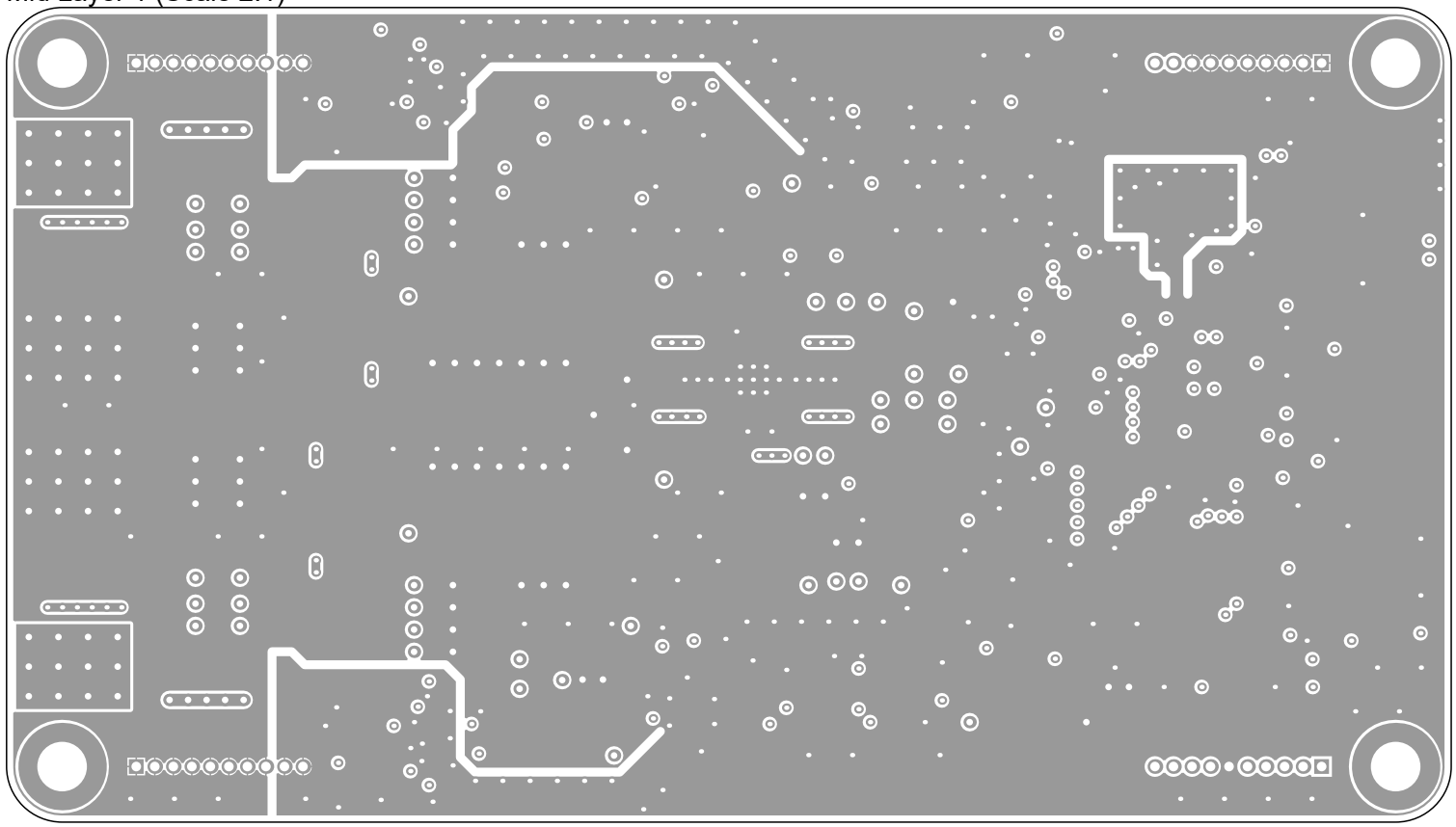
Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.01mm	SM-001	Solder Mask	GTS
Copper	**Top Layer**	**0.04mm**		**Signal**	**GTL**
Prepreg		*0.21mm*	*PP-022*	*Dielectric*	
Copper	**Mid Layer 1**	**0.02mm**		**Signal**	**G1**
Core		*1.06mm*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

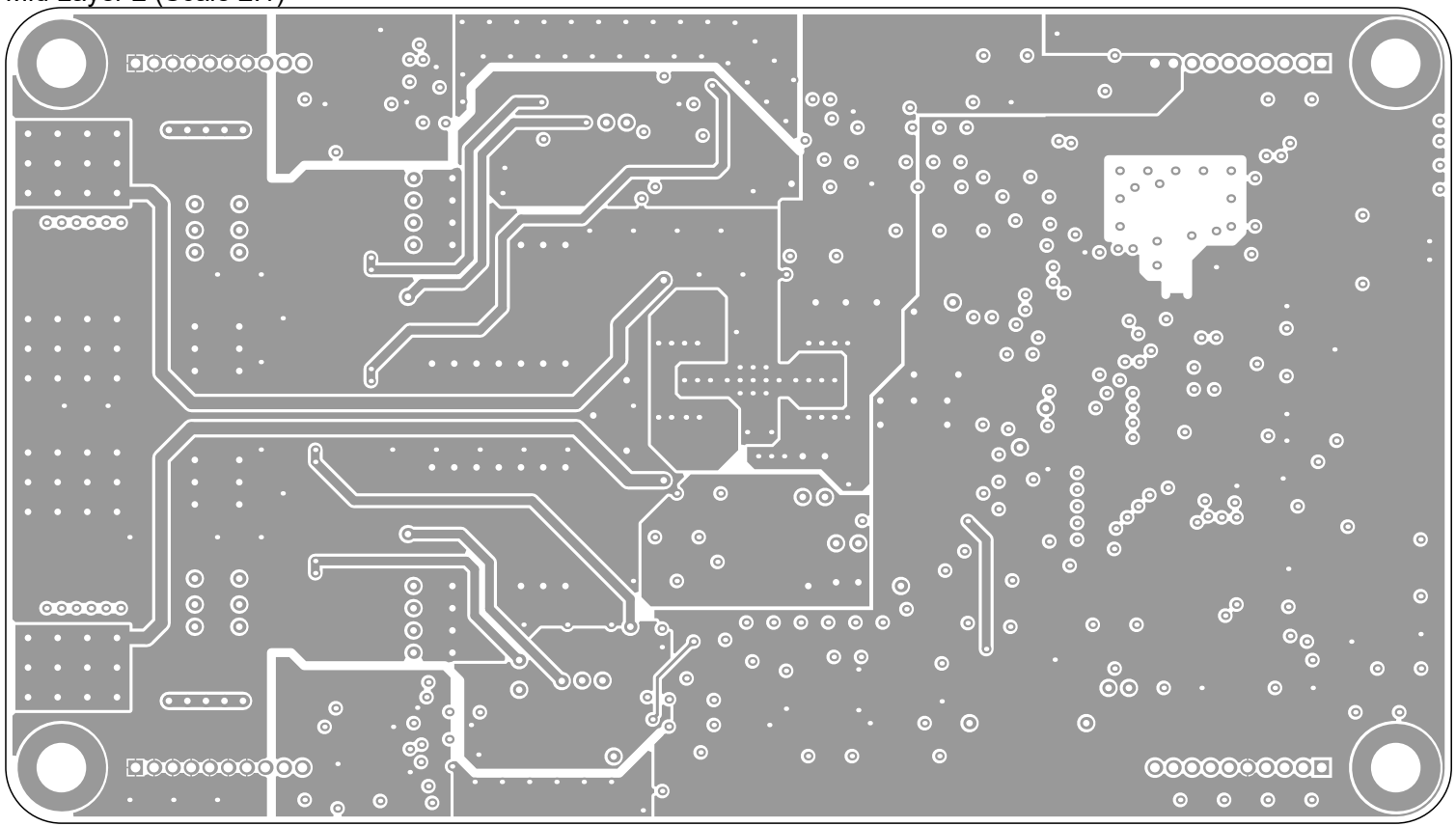
Top Layer (Scale 2:1)



Mid Layer 1 (Scale 2:1)



Mid Layer 2 (Scale 2:1)



Bottom Layer (Scale 2:1)