Version	Date	By	Change Dsecription	Approved
V1.0	2024-12-26	ASK		
	2024-12-30	ASK	1.Modify the GPS model 2.Added battery protection mechanism 3.Modify the system power section	
	2025-3-09	ASK	1.Simplified schematic 2.Partial GPIO redistribution	

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File: 01.Revision History.SchDoc		

RED Disabled

GPIO	LCD-Display	LCD-TP	I/O Expander	GPS	Sensor	IMU	USB	Battery	KEYS	Debug	System	
IO0											BOOT-SW3	
IO1	LCD_R7											
IO2	LCD_R6											
IO3	LCD_VS											
IO4	SPI_SCK				I2C1_SDA	I2C1_SDA						
IO5	SPI_MOSI				I2C1_SCL	I2C1_SCL						
IO6								ADC				
IO7	LCD_DE											
IO8	LCD_G3											
IO9	LCD_PCLK											
IO10	LCD_B3											
IO11	LCD_B4											
IO12	LCD_B5											
IO13	LCD_B6											
IO14	LCD_B7											
IO15		TP_INT										
IO16	LCD_G4											
IO17	LCD_RST			TXD1								
IO18	SPI_CS			RXD1								
IO19							USB_DM			USB_DM		
IO20							USB_DP			USB_DP		
IO21	LCD_G2											
IO38	LCD_G6											
IO39	LCD_G7											
IO40	LCD_R3											
IO41	LCD_R4											
IO42	LCD_R5											
IO45	LCD_G5											
IO46	LCD_HS											
IO47		TP_I2C0_SDA	I2C0_SDA		I2C0_SDA	I2C0_SDA						
IO48		TP_I2C0_SCL	I2C0_SCL		I2C0_SCL	I2C0_SCL						
RXD0				RXD0								
TXD0				TXD0								
EN											EN-SW2	
EX_P0												
EX_P1												
EX_P2												
EX_P3												
EX_P4	Backlight											
EX_P5		TP_RST										
EX_P6				1PPS								
EX_P7												
EX_P8												
EX_P9												
EX_P10												
EX_P11					VL_XS							
EX_P12					VL_IO1							
EX_P13												
EX_P14									SW1			
EX_P15									SW2			
EX_P16									SW3			
EX_P17												

Title		
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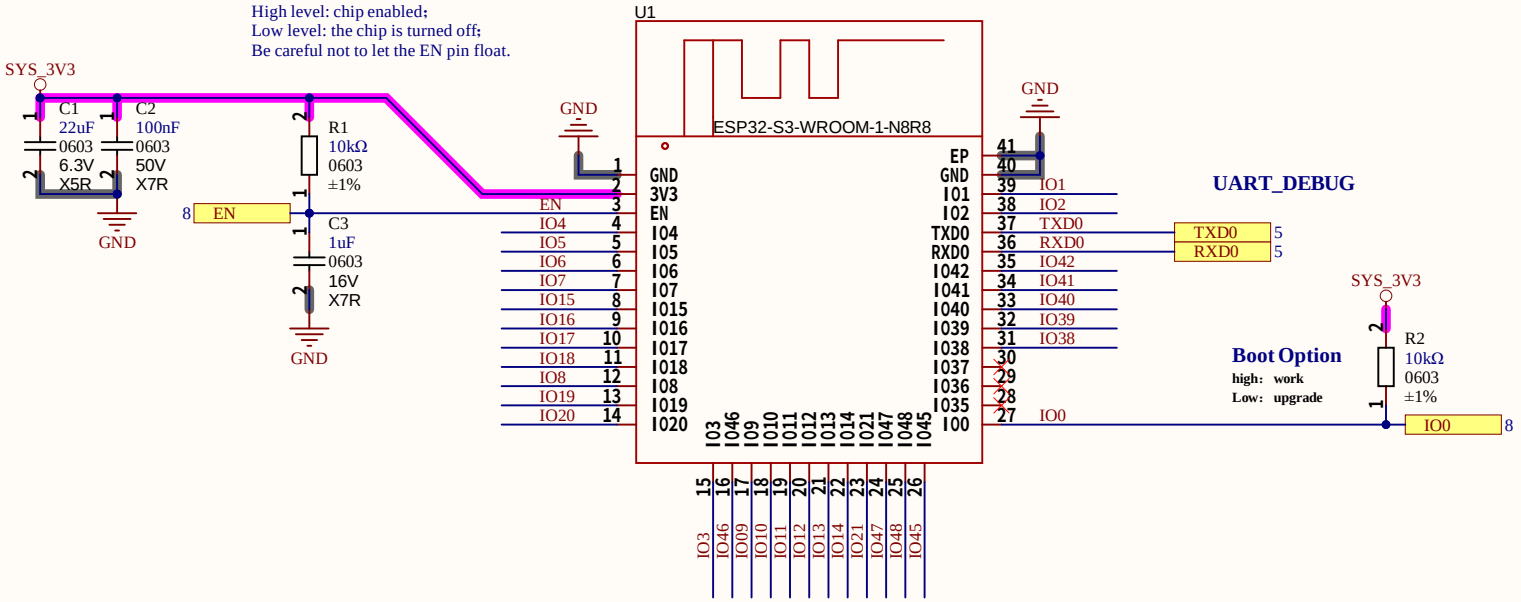
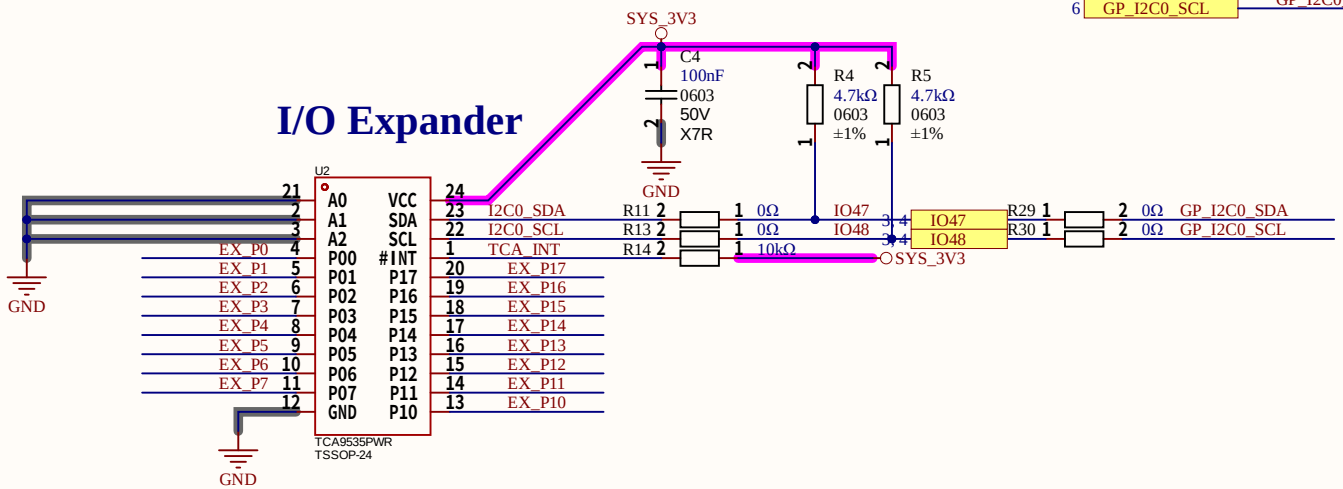
File: D:\SCH\..\02.GPIO.SchDoc		Drawn By:

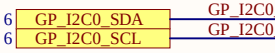
WiFi and Bluetooth

EN
High level: chip enabled;
Low level: the chip is turned off;
Be careful not to let the EN pin float.



I/O Expander





LCD

LCD_R7	IO1	IO1 4
LCD_R6	IO2	IO2 4
LCD_VS	IO3	IO3 4
LCD_G4	IO16	IO16 4
LCD_DE	IO7	IO7 4
LCD_G3	IO8	IO8 4
LCD_PCLK	IO09	IO09 4
LCD_B3	IO10	IO10 4
LCD_B4	IO11	IO11 4
LCD_B5	IO12	IO12 4
LCD_B6	IO13	IO13 4
LCD_B7	IO14	IO14 4
LCD_G2	IO21	IO21 4
LCD_G6	IO38	IO38 4
LCD_G7	IO39	IO39 4
LCD_R3	IO40	IO40 4
LCD_R4	IO41	IO41 4
LCD_R5	IO42	IO42 4
LCD_G4	IO45	IO45 4
LCD_HS	IO46	IO46 4
BL_PWM	EX_P0	EX_P0
SPI_CS	EX_P1	EX_P1 4
SPI_SCK	EX_P2	EX_P2 4
SPI_MOSI	EX_P3	EX_P3 4
BL_EN	EX_P4	EX_P4 4
LCD_V_EN	EX_P5	EX_P5 4
TP_INT	EX_P6	EX_P6 5
TP_RST	EX_P7	EX_P7
LCD_RST	EX_P10	EX_P10 4

VL

VL_XS	EX_P11	EX_P11 6
VL_IO1	EX_P12	EX_P12 6

Button

PWR_HOLD	EX_P13	EX_P13
PWR_KEY	EX_P14	EX_P14 8
UP	EX_P15	EX_P15 8
DOWN	EX_P16	EX_P16 8
	EX_P17	EX_P17

I2C0

I2C1_SDA	IO4	IO4 4
I2C1_SCL	IO5	IO5 4

UART1

TXD1	IO17	IO17 4, 5
RXD1	IO18	IO18 4, 5

USB

USB_DM	IO19	IO19 7
USB_DP	IO20	IO20 7

CHARGE

TP_INT	IO15	IO15 4
BAT_DET	IO6	IO6 7

I2C1

IO47		IO47 3, 4
IO48		IO48 3, 4

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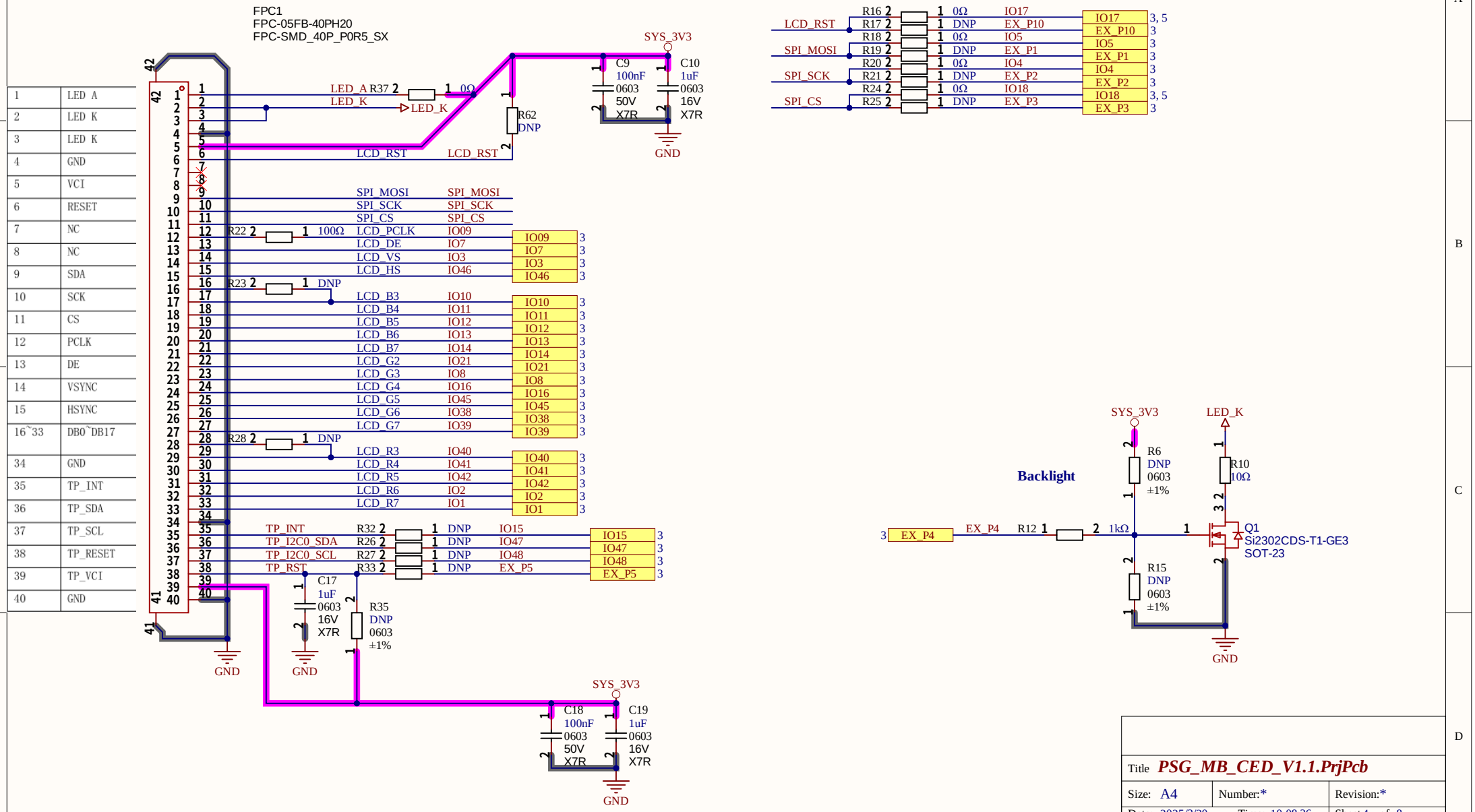
LCD_TFT



1	LED A
2	LED K
3	LED K
4	GND
5	VCI
6	RESET
7	NC
8	NC
9	SDA
10	SCK
11	CS
12	PCLK
13	DE
14	VSYNC
15	HSYNC
16~33	DB0~DB17
34	GND
35	TP_INT
36	TP_SDA
37	TP_SCL
38	TP_RESET
39	TP_VCI
40	GND

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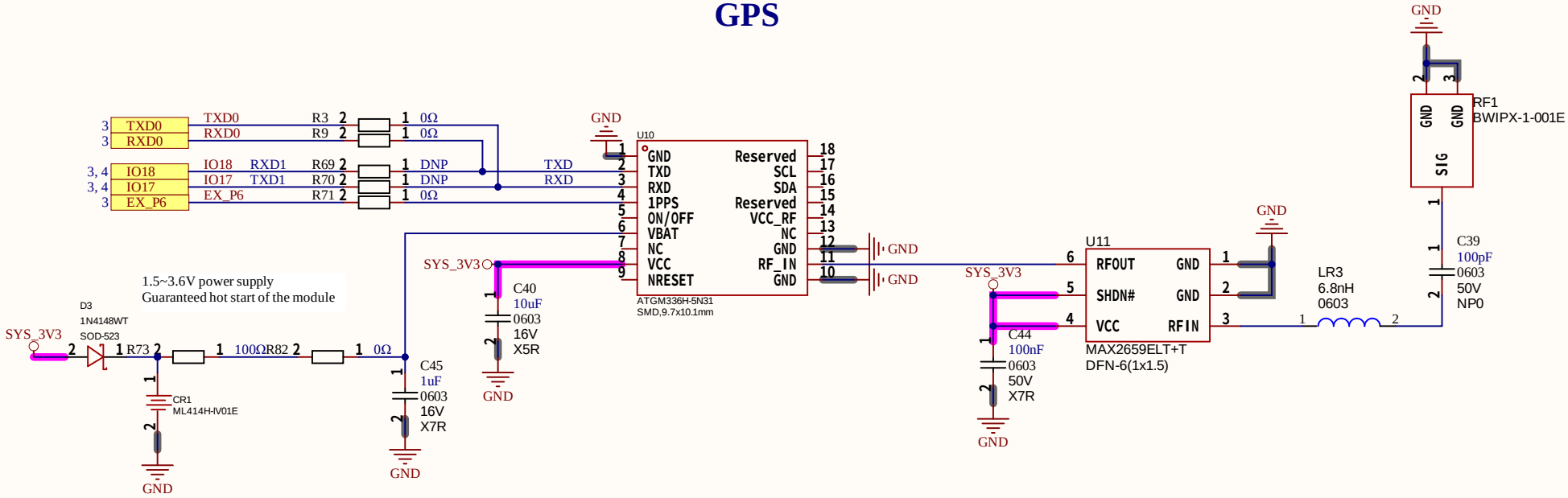
GPS



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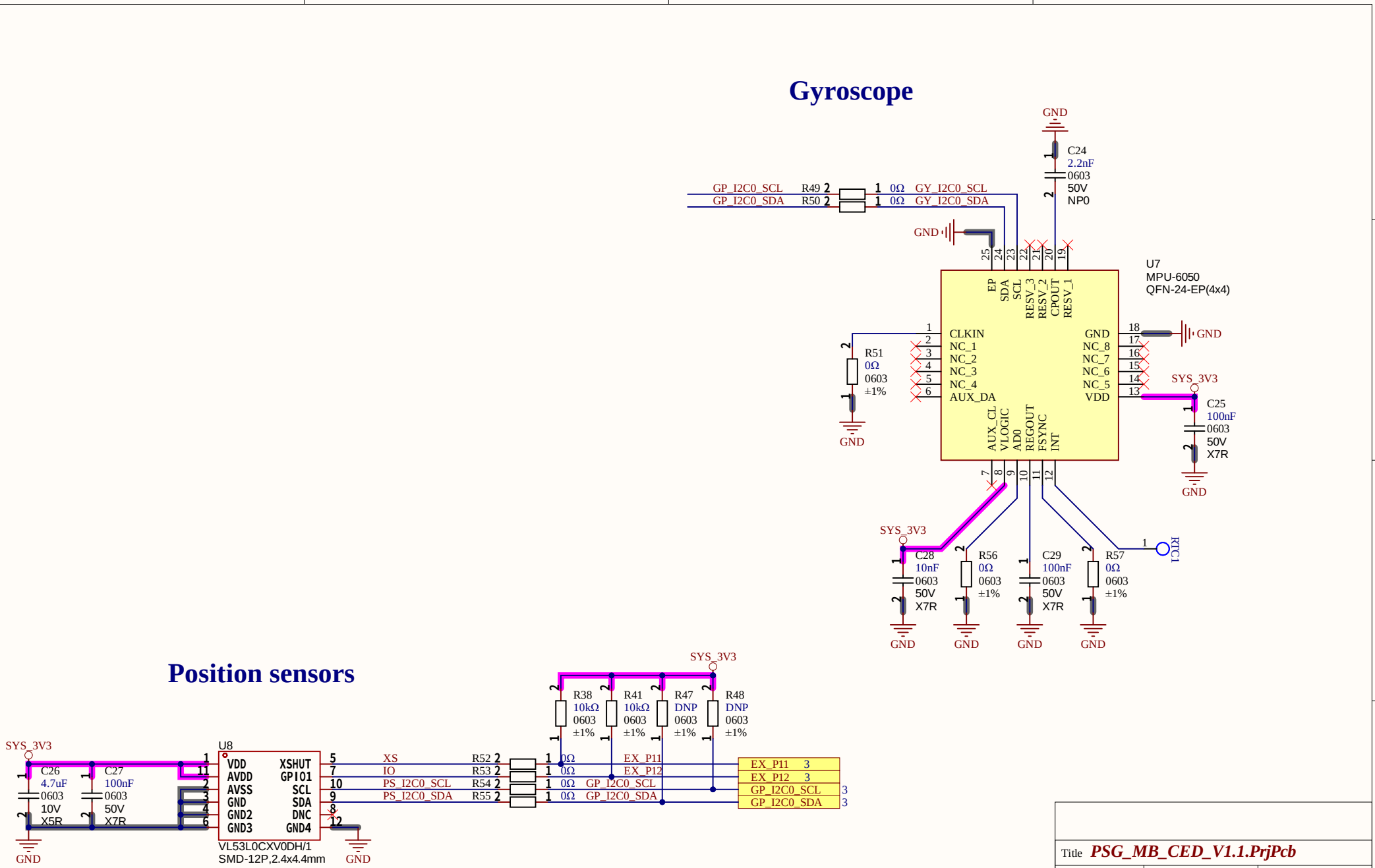
Gyroscope
GND
C24
2.2nF
0603
50V
NP0
GP_I2C0_SCL
GP_I2C0_SDA
R49
R50
0Ω
GY_I2C0_SCL
GY_I2C0_SDA
U7
MPU-6050
QFN-24-EP(4x4)
EP
SDA
SCL
RESV_3
RESV_2
CPOUT
RESV_1
CLKIN
NC_1
NC_2
NC_3
NC_4
AUX_DA
GND
NC_8
NC_7
NC_6
NC_5
VDD
AUX_CL
VLOGIC
AD0
REGOUT
FSYNC
INT
R51
0Ω
0603
±1%
SYS_3V3
C25
100nF
0603
50V
X7R
C28
10nF
0603
50V
X7R
R56
0Ω
0603
±1%
C29
100nF
0603
50V
X7R
R57
0Ω
0603
±1%
RTC1
Position sensors
SYS_3V3
U8
C26
4.7uF
0603
10V
X5R
C27
100nF
0603
50V
X7R
VDD
AVDD
AVSS
GND
GND2
GND3
XSHUT
GPIO1
SCL
SDA
DNC
GND4
VL53L0CXV0DH/1
SMD-12P,2.4x4.4mm
XS
IO
PS_I2C0_SCL
PS_I2C0_SDA
R52
R53
R54
R55
R38
10kΩ
R41
10kΩ
R47
DNP
R48
DNP
EX_P11
EX_P12
GP_I2C0_SCL
GP_I2C0_SDA
Title PSG_MB_CED_V1.1.PrjPcb
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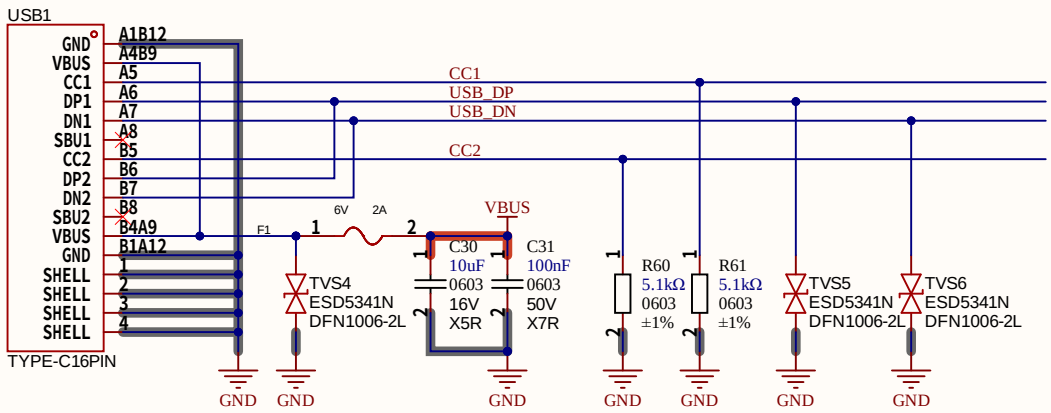
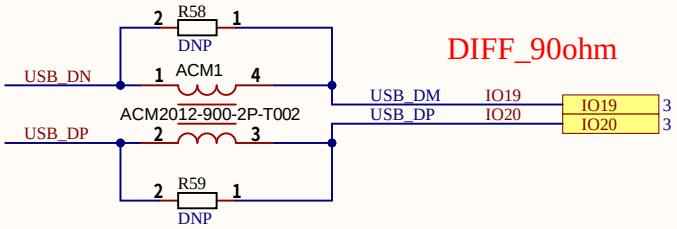
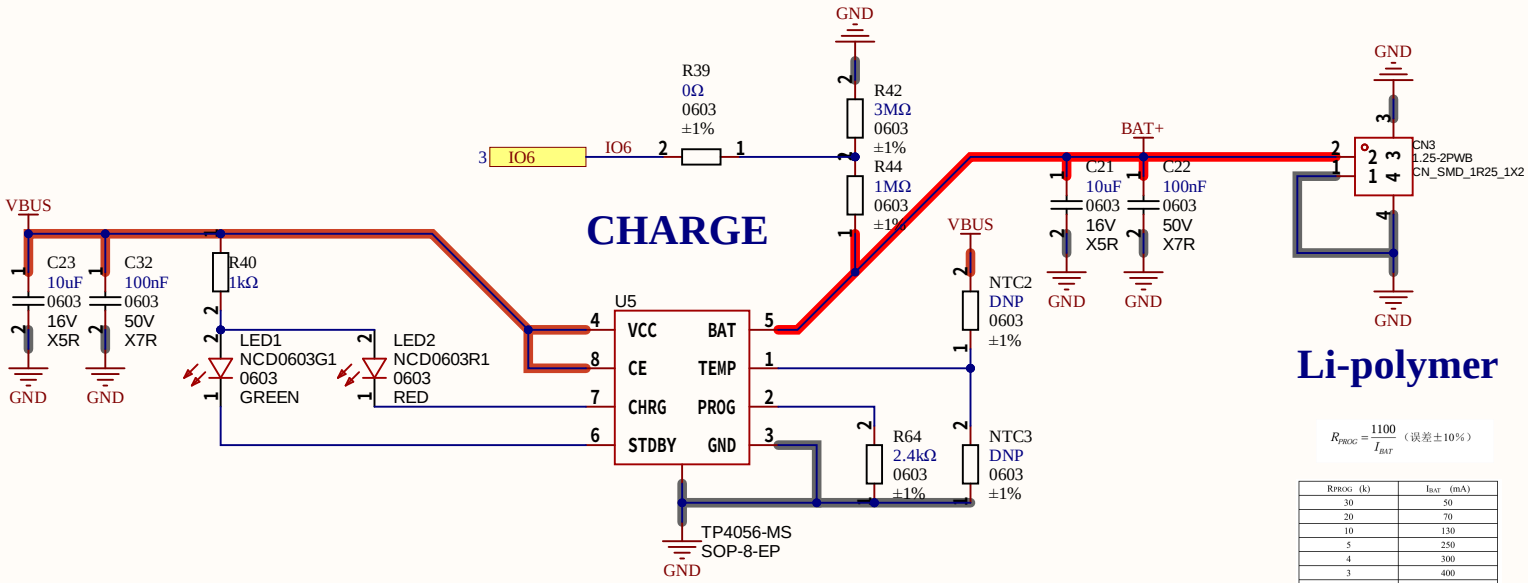
USB





CHARGE



BAT protection

Li-polymer

$$R_{PROG} = \frac{1100}{I_{BAT}} \text{（误差±10%）}$$

R_{PROG} (k)	I_{BAT} (mA)
30	50
20	70
10	130
5	250
4	300
3	400
2	580
1.6	690
1.4	780
1.2	900
1.1	1000

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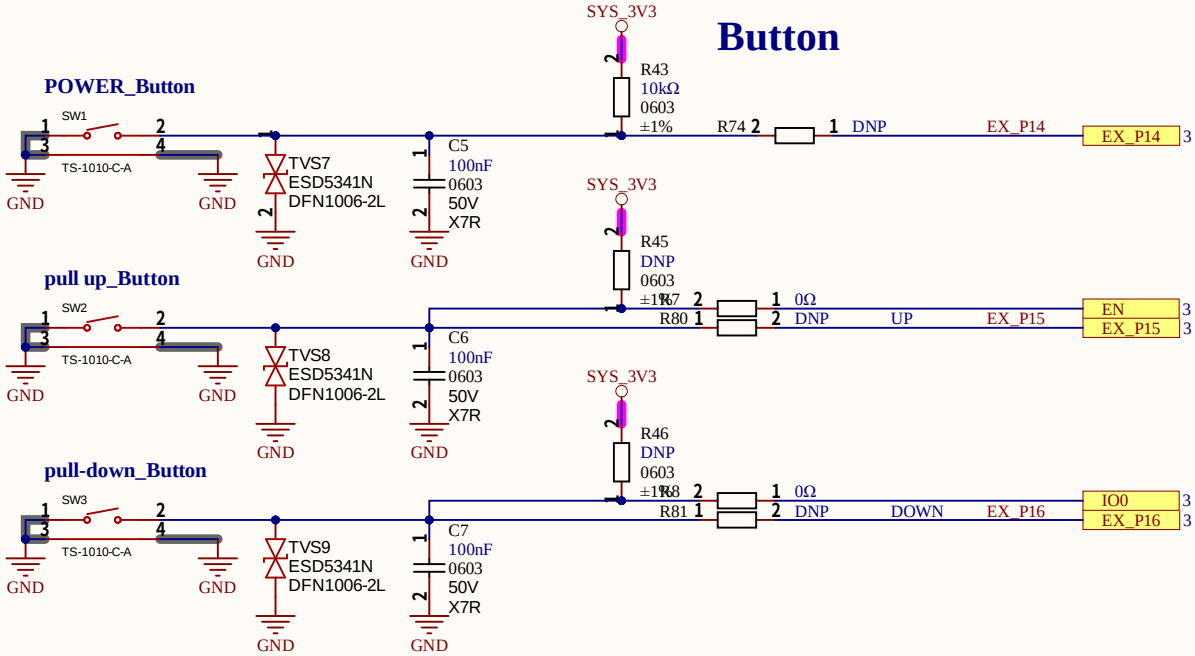
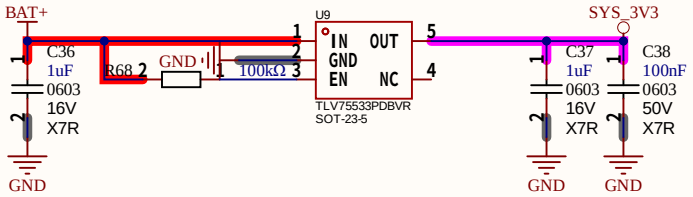
Button



M1 M2 M3 M4

LDO 5V to 3V3@1A



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