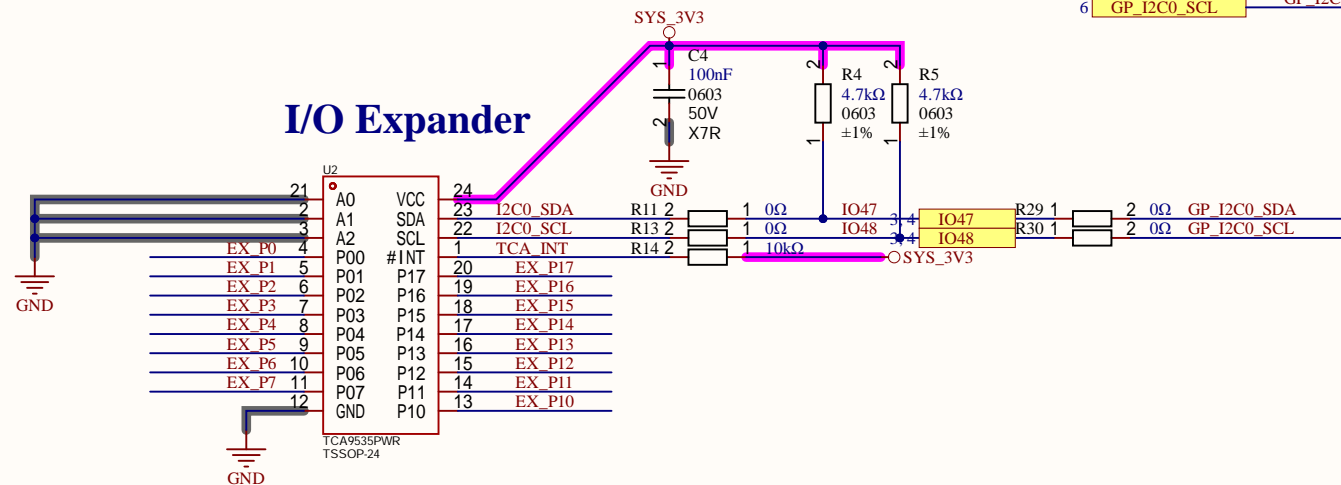
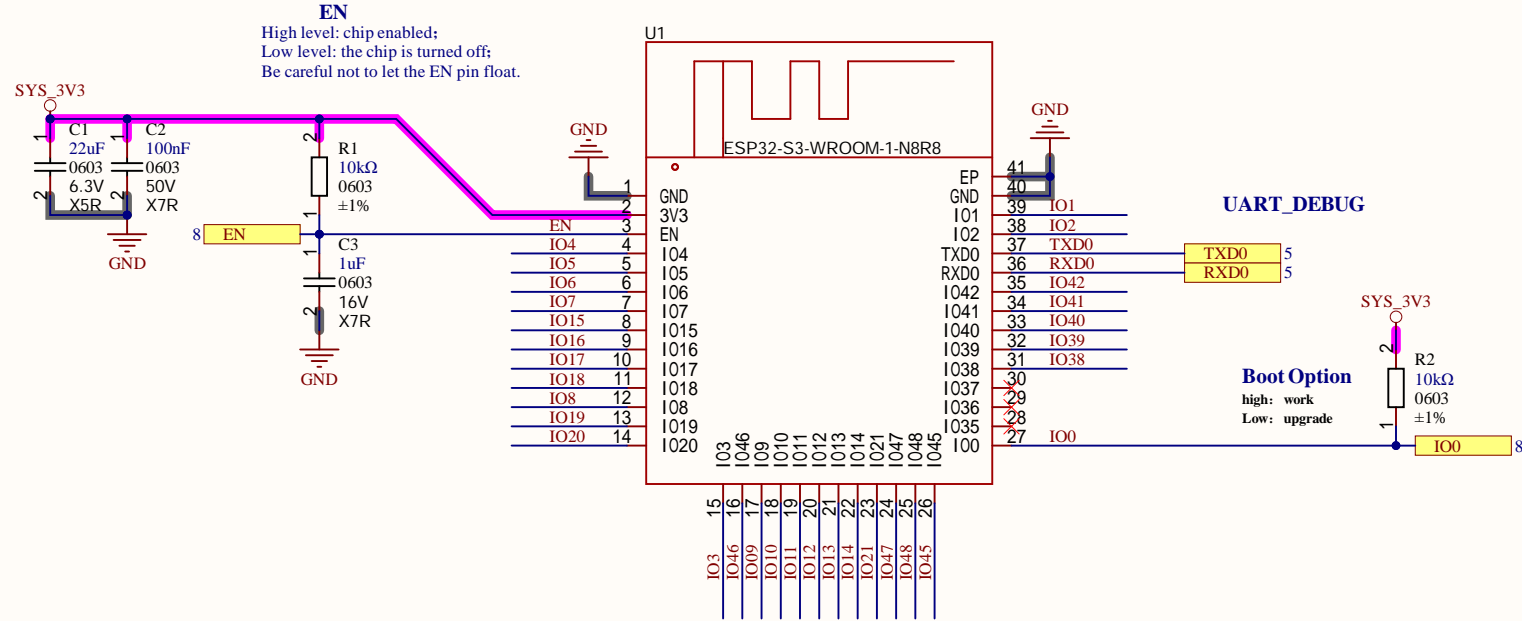


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A	<table><tr><th>Version</th><th>Date</th><th>By</th><th colspan="3">Change Dscription</th><th>Approved</th></tr><tr><td rowspan="2">V1.0</td><td>2024-12-26</td><td>ASK</td><td colspan="3"></td><td></td></tr><tr><td>2024-12-30</td><td>ASK</td><td colspan="3">1.Modify the GPS model 2.Added battery protection mechanism 3.Modify the system power section</td><td></td></tr><tr><td></td><td>2025-3-09</td><td>ASK</td><td colspan="3">1.Simplified schematic 2.Partial GPIO redistribution</td><td></td></tr><tr><td>B</td><td colspan="6"></td><td></td></tr><tr><td>C</td><td colspan="6"></td><td></td></tr><tr><td>D</td><td colspan="6"></td><td><table><tr><td colspan="3"></td></tr><tr><td colspan="3">Title <i>PSG_MB_CED_V1.1.PrjPcb</i></td></tr><tr><td>Size: A4</td><td>Number:*</td><td>Revision:*</td></tr><tr><td>Date: 2025/3/20</td><td>Time: 10:08:36</td><td>Sheet 1 of 8</td></tr><tr><td colspan="3">File: 01.Revision History.SchDoc</td></tr></table></td></tr></table> <tr><td colspan="2">1</td><td colspan="2">2</td><td colspan="2">3</td><td colspan="2">4</td></tr>							Version	Date	By	Change Dscription			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				B								C								D							<table><tr><td colspan="3"></td></tr><tr><td colspan="3">Title <i>PSG_MB_CED_V1.1.PrjPcb</i></td></tr><tr><td>Size: A4</td><td>Number:*</td><td>Revision:*</td></tr><tr><td>Date: 2025/3/20</td><td>Time: 10:08:36</td><td>Sheet 1 of 8</td></tr><tr><td colspan="3">File: 01.Revision History.SchDoc</td></tr></table>				Title <i>PSG_MB_CED_V1.1.PrjPcb</i>			Size: A4	Number:*	Revision:*	Date: 2025/3/20	Time: 10:08:36	Sheet 1 of 8	File: 01.Revision History.SchDoc			1		2		3		4	
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RED Disabled													
A	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											
B	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								
C	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											
D	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												
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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	4
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	5
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	8
PWR_KEY	EX_P14	EX_P14	8
UP	EX_P15	EX_P15	8
DOWN	EX_P16	EX_P16	8
	EX_P17	EX_P17	8

I2C0

0Ω I2C1_SDA	IO4	IO4	4
0Ω 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

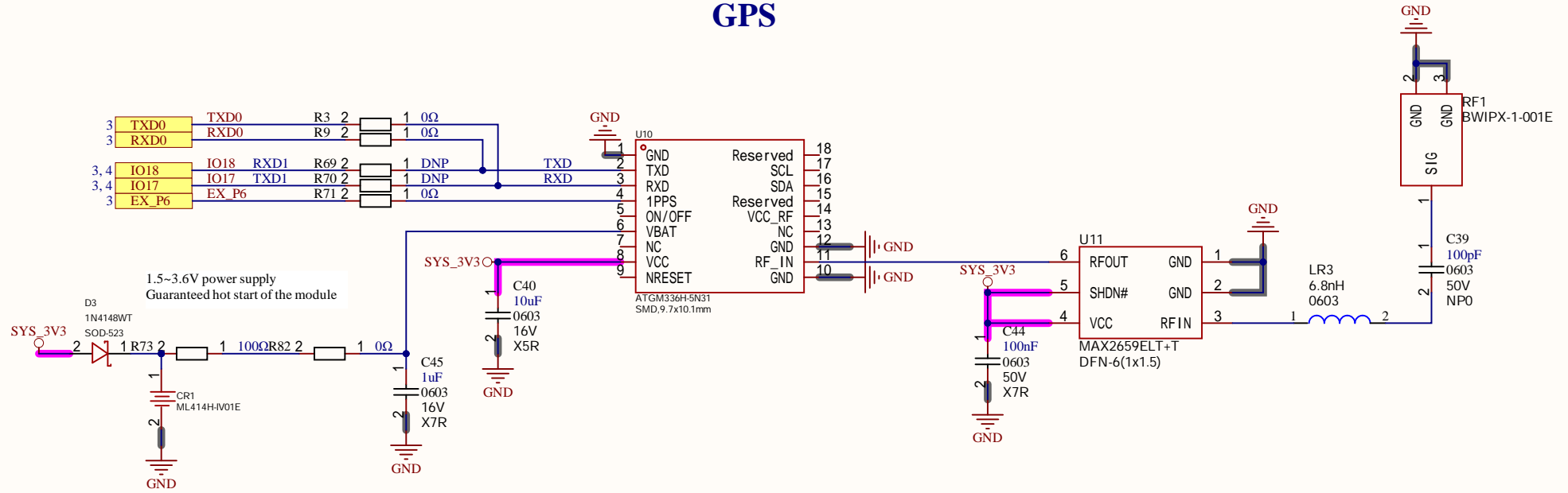
I2C1

	IO47	IO47	3, 4
	IO48	IO48	3, 4

[illegible]

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GPS



Title **PSG_MB_CED_V1.1.PrjPcb**

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File: **05.GPS.SchDoc**

The schematic diagram illustrates the internal components and connections of the MPU-6050 breakout board. The central component is the MPU-6050 chip (U7), which is a 24-pin package. The connections are as follows:

- Power and Ground:**
 - VDD (Pin 13):** Connected to the 3.3V output of the voltage regulator (U6).
 - GND (Pin 18):** Connected to ground.
 - NC pins (14, 15, 16, 17):** Not connected.
- Signal and Control:**
 - SDA (Pin 24):** Connected to the I2C SDA line (R49).
 - SCL (Pin 23):** Connected to the I2C SCL line (R50).
 - INT (Pin 12):** Connected to the interrupt pin (R57).
 - RESV_1 (Pin 19):** Connected to ground.
 - RESV_2 (Pin 20):** Connected to ground.
 - RESV_3 (Pin 21):** Connected to ground.
 - CPOUT (Pin 22):** Connected to ground.
 - EP (Pin 25):** Connected to ground.
- Other Connections:**
 - AUX_DA (Pin 6):** Connected to ground.
 - AUX_CL (Pin 7):** Connected to ground.
 - VLOGIC (Pin 8):** Connected to ground.
 - AD0 (Pin 9):** Connected to ground.
 - REGOUT (Pin 10):** Connected to ground.
 - FSYNC (Pin 11):** Connected to ground.

The external components include:

- Resistors:** R49 (10kΩ), R50 (10kΩ), R51 (0Ω), R56 (0Ω), R57 (0Ω).
- Capacitors:** C24 (2.2nF), C25 (100nF), C28 (10nF), C29 (100nF).
- Voltage Regulator:** U6 (MPU-6050).
- ICs:** U7 (MPU-6050), U8 (7805).

Position sensors

The diagram illustrates the electrical connections for position sensors. It includes a power supply section, a sensor chip (U8), and an I2C interface circuit.

Power Supply: A 3V3 supply (SYS_3V3) is connected to the VDD pin of the sensor chip (U8) through a 4.7uF capacitor (C26). The AVDD pin is connected to the same supply through a 100nF capacitor (C27). The AVSS pin is connected to ground (GND) through a 10V capacitor (X5R). The GND2 pin is connected to ground through a 50V capacitor (X7R).

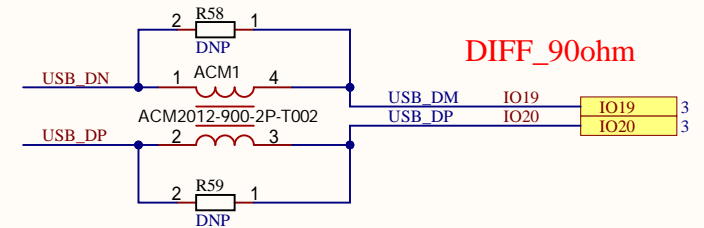
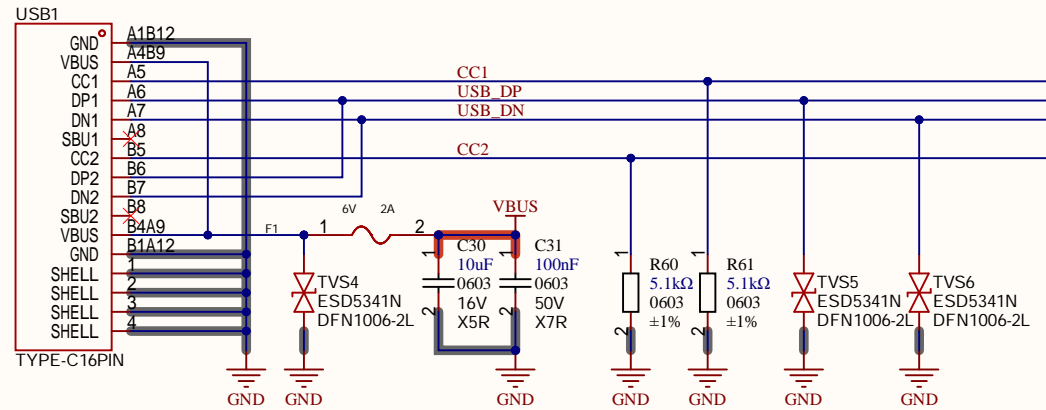
Sensor Chip (U8): The chip is a VL53L0CXV0DH/1, SMD-12P, 2.4x4.4mm. It has pins for VDD, AVDD, AVSS, GND, GND2, GND3, GND4, XSHUT, GP I/O1, SCL, SDA, DNC, and GND4.

I2C Interface: The I2C interface is connected to the SCL and SDA pins of the sensor chip. The SCL pin is connected to the EX_P11 pin of the I2C0 module. The SDA pin is connected to the EX_P12 pin of the I2C0 module. The I2C0 module has pins for EX_P11, EX_P12, GP I2C0_SCL, and GP I2C0_SDA.

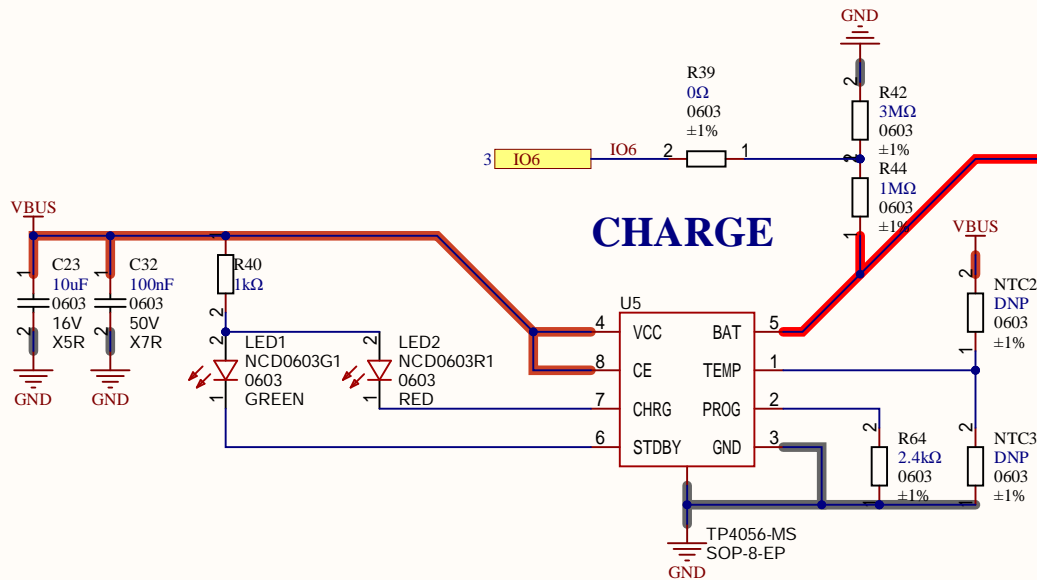
Resistors: The I2C interface circuit includes resistors R38 (10kΩ, 0603, ±1%), R41 (10kΩ, 0603, ±1%), R47 (10kΩ, 0603, ±1%), and R48 (DNP, 0603, ±1%).

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USB



CHARGE

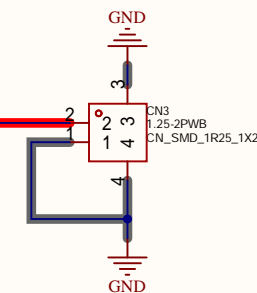


Li-polymer

$$R_{PROC} = \frac{1100}{I_{BAT}} \quad (\text{误差} \pm 10\%)$$

RPROC (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

BAT protection

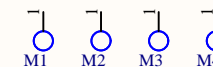
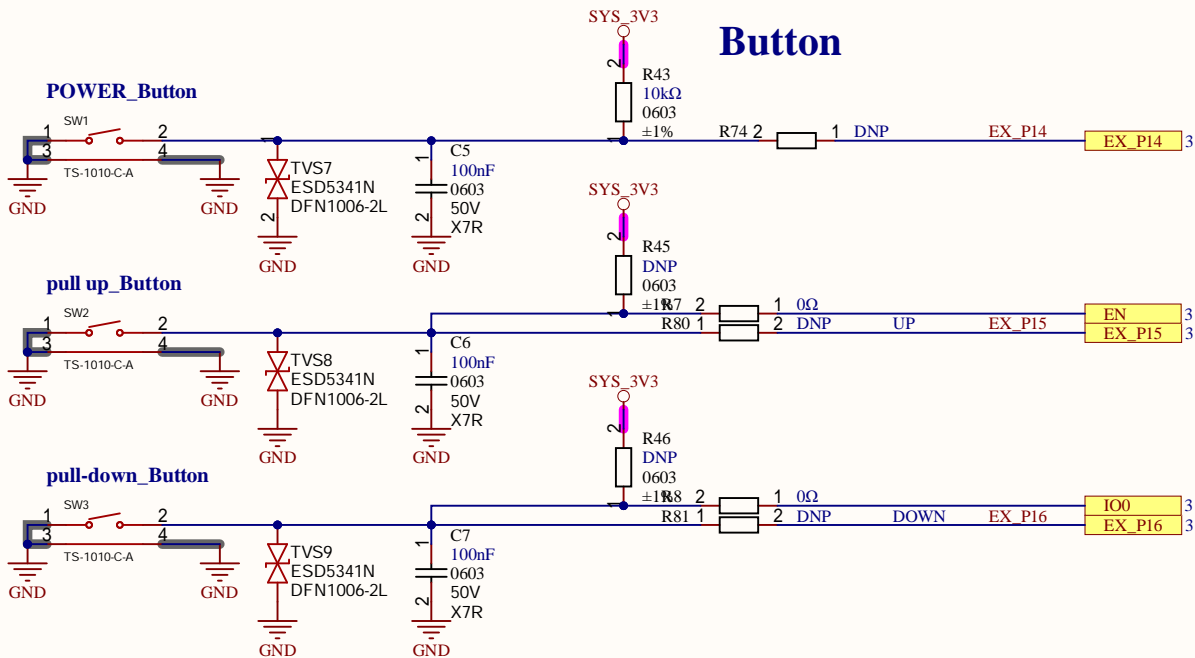


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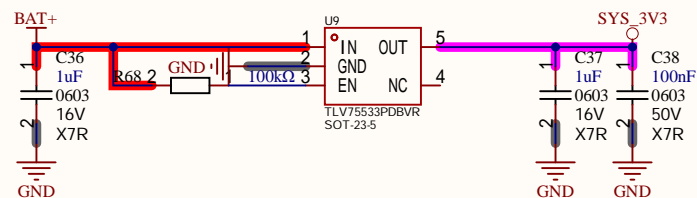
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LDO 5V to 3V3@1A



Title **PSG_MB_CED_V1.1.PrjPcb**

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