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Revision History

DATE	REVISION	DESCRIPTION
Aug. 16 2021	v0.1	1. Initial release
Sep. 6 2021	v0.2	1. Change USB Hub 2. Change 5V DCDC converter 3. Finish GPIO assignment
Sep. 17 2021	v0.3	1. Add Compass 2. Add GPS Connector 3. Remove 2 LEDs to release GPIOs for Compass
Sep. 24 2021	v0.4	1. Add EEPROM
Nov. 3 2021	v0.5	1. Replace TPS2054B with TPS2044D
Nov. 26 2021	v0.6	<p>1. Enable/disable Motor2/3/4 (DRV8873) with nSLEEP pin in place of DISABLE pin (also pull DISABLE pin down)</p> <p>2. add more test points (TP60C): VCC_IN, VDD_6V, VDD_5V, VDD_3V3, GND, motor control and feedback pins, QEP pins and ultrasonic ranger pins</p> <p>3. Reallocate P8,P9 pins:</p> <ul style="list-style-type: none"> - GPS TX/RX - > AG28/AG27 (USART4) - EEPROM SCL/SDA - > Y5/Y1 - LED3 - > AJ23 <p>Adjustments caused by:</p> <ul style="list-style-type: none"> - CPSS_INT - > AC25 - CAP_OE1#/2# - > AF21/AB23 - Motor4_IPROPI -> K27 (AIN5) - Motor2_PWM -> AG22 - Motor2_FAULT# -> AC23 - LED - > V27 <p>4. Add 3V3 indicate LED, change all LED's package to 0402</p> <p>5. Change USB power switch to TPS2044, add 1.5k pullup resistor to USB hub DP0 pin</p> <p>6. add backflow prevention circuit to VDD_5V</p> <p>7. add anti-reverse connection protection and anti-charging protection circuits to the DC and battery input</p> <p>8. Change QEP/Ultrasonic header to Grove</p> <p>9. Change QEP voltage supply to 5V (E6A2-CW3C), add pull up res to signals</p> <p>10. Correct SN74HC244's package and re-pinout</p> <p>11. Change the BAT's and MOTOR1's connector to 7.62mm to improve the current capability</p>

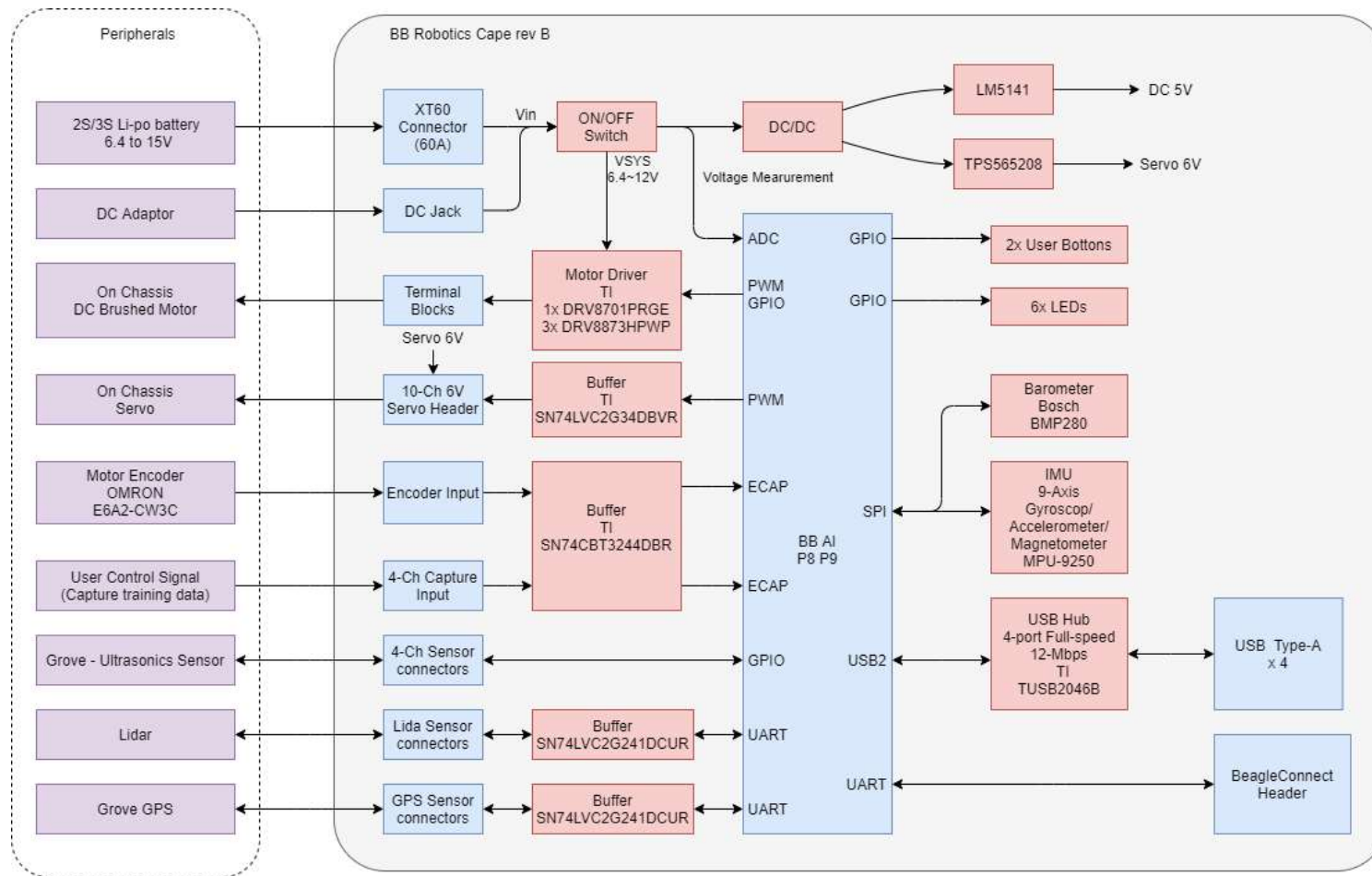
Layout notes:

All of the testpoints should be placed on the P8/P9 header side.
space = 2.54mm

Product

		https://www.seeedstudio.com	
		Title: Robotics Cap Rev2	
Size: A3	Document Number: 001_Title/Revision History	Rev: v0.6	
Draw By: Power Lin	Date: Wednesday, December 15, 2021	Sheet: 1 of 10	

System Block Diagram



Product



<https://www.seeedstudio.com>

Title: **Robotics Cap Rev2**

Size: **A3**

Document Number:

002_Block Diagram

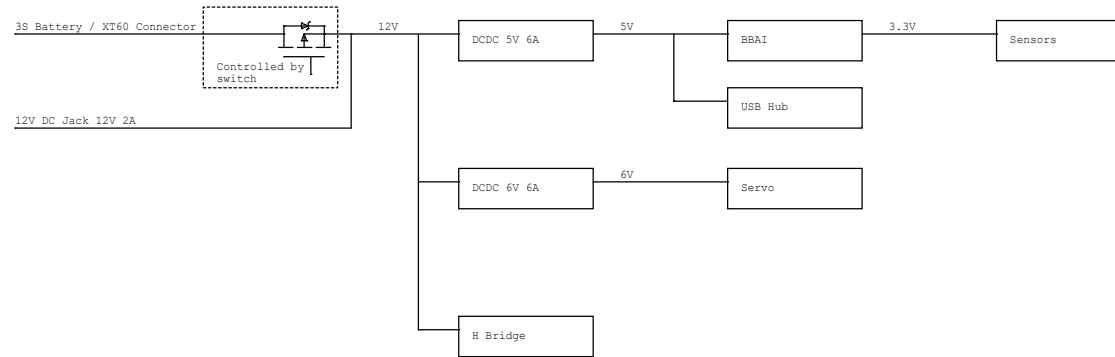
Rev: **v0.6**

Draw By: **Power Lin**

Date: **Friday, December 10, 2021**

Sheet: **2 of 10**

Power tree



Product



<https://www.seeedstudio.com>

Title: Robotics Cap Rev2

Size: A3

Document Number:

003_Power Tree Diagram

Rev:

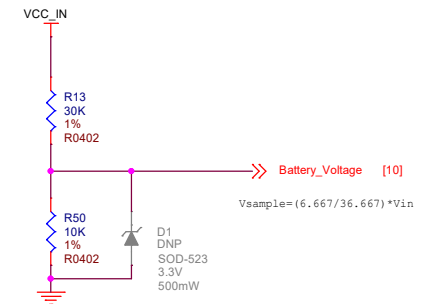
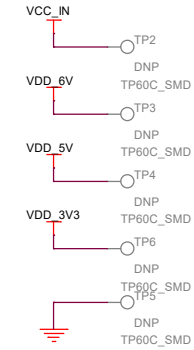
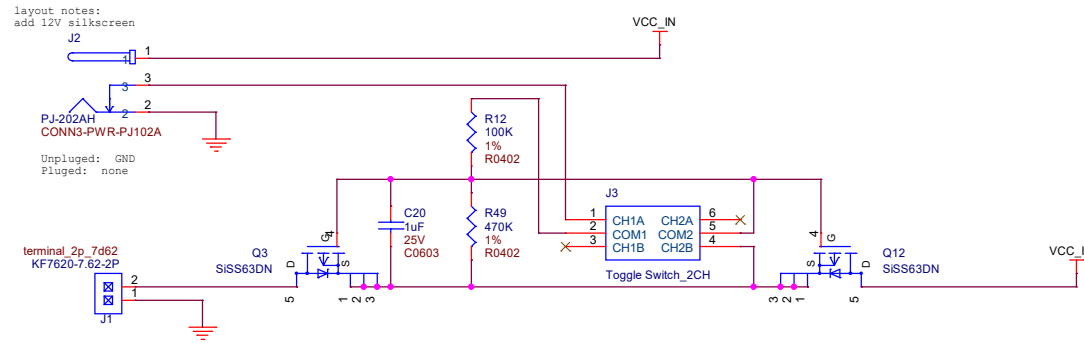
v0.6

Draw By: Power Lin

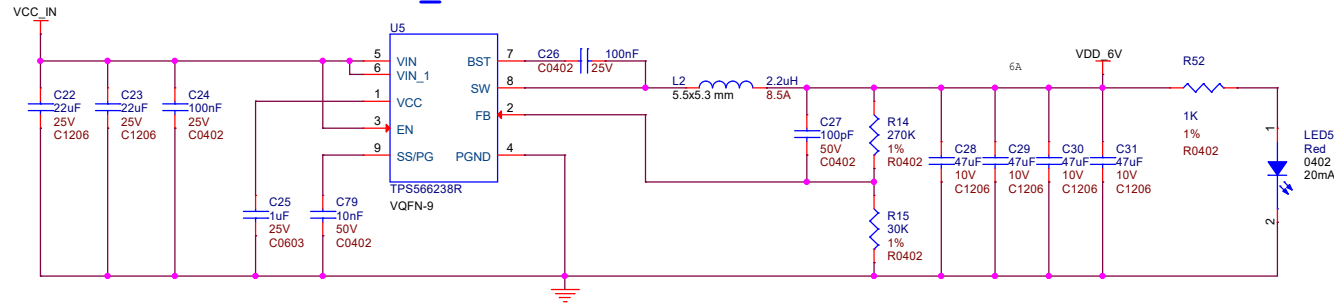
Date: Friday, December 10, 2021

Sheet: 3 of 10

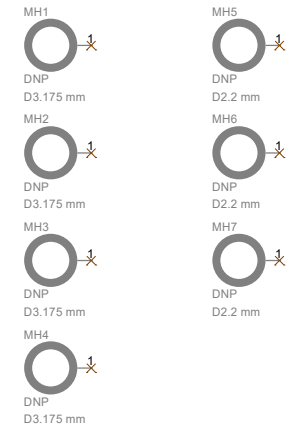
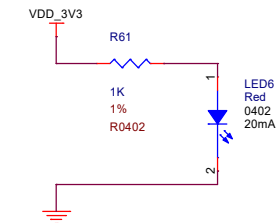
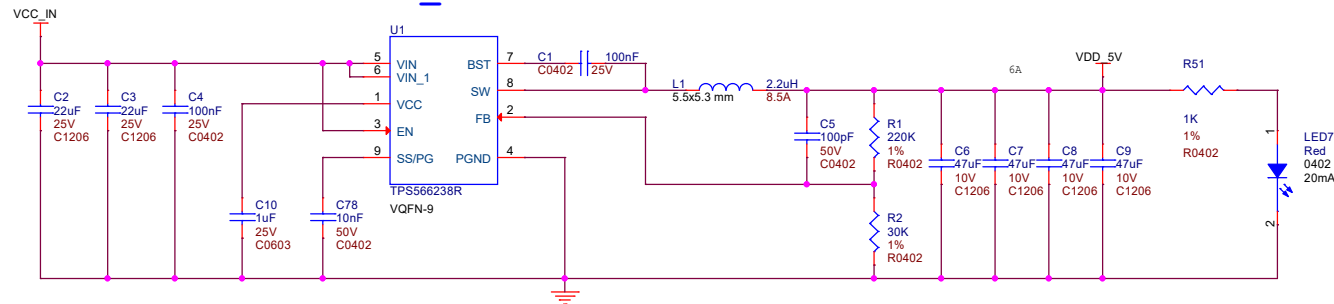
DC AND BATTERY INPUT SELECT




VDD_6V FOR SERVOS



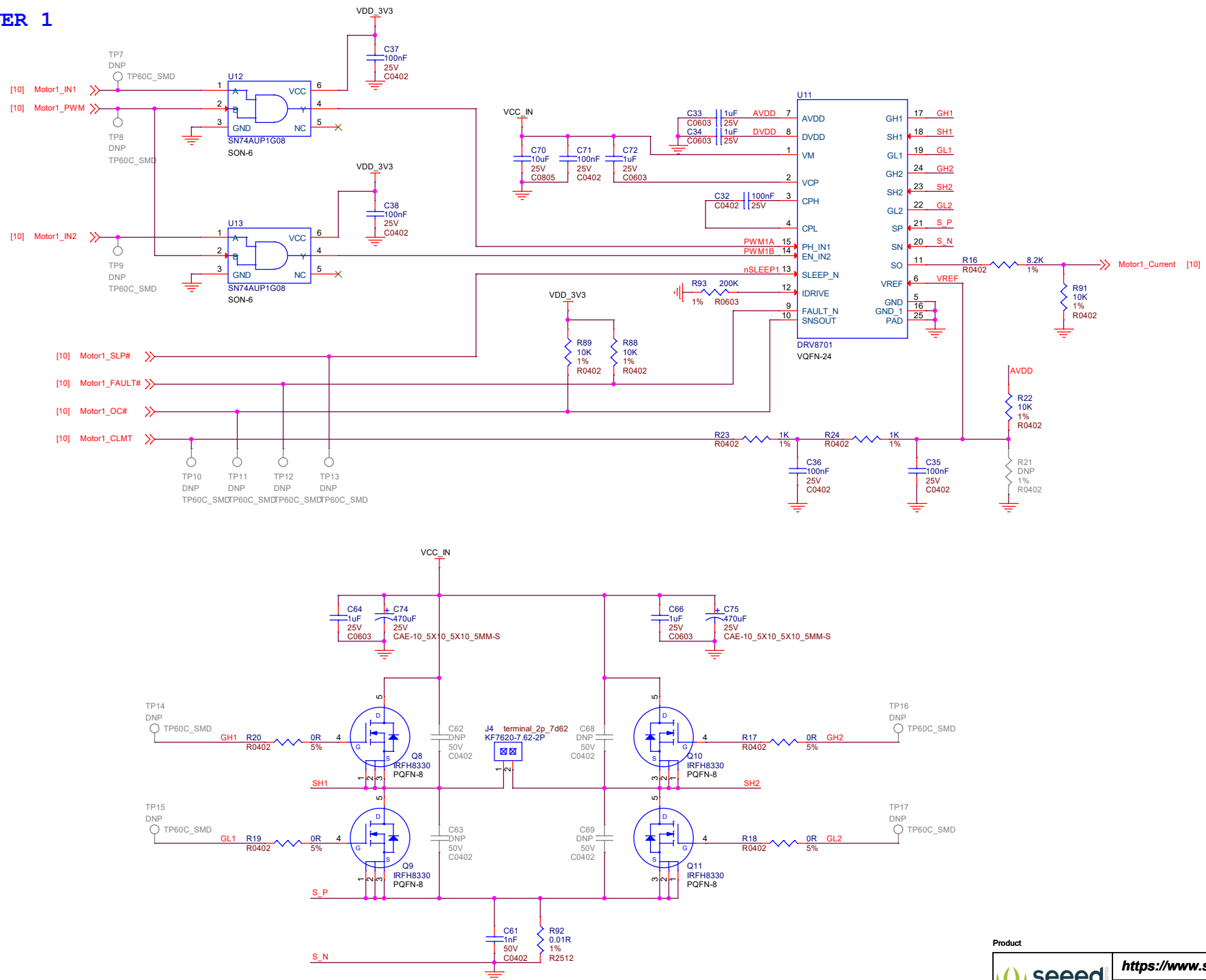
VDD_5V FOR Controller



Product

		https://www.seeedstudio.com	
Title: Robotics Cap Rev2		Rev: v0.6	
Size: A3	Document Number: 004_DC Input/DCDC	Rev: v0.6	
Draw By: Power Lin	Date: Monday, December 20, 2021	Sheet: 4 of 10	

MOTOR DRIVER 1



Product



<https://www.seeedstudio.com>

Title: Robotics Cap Rev2

Size: A3

Document Number:

005_Motor Driver 1

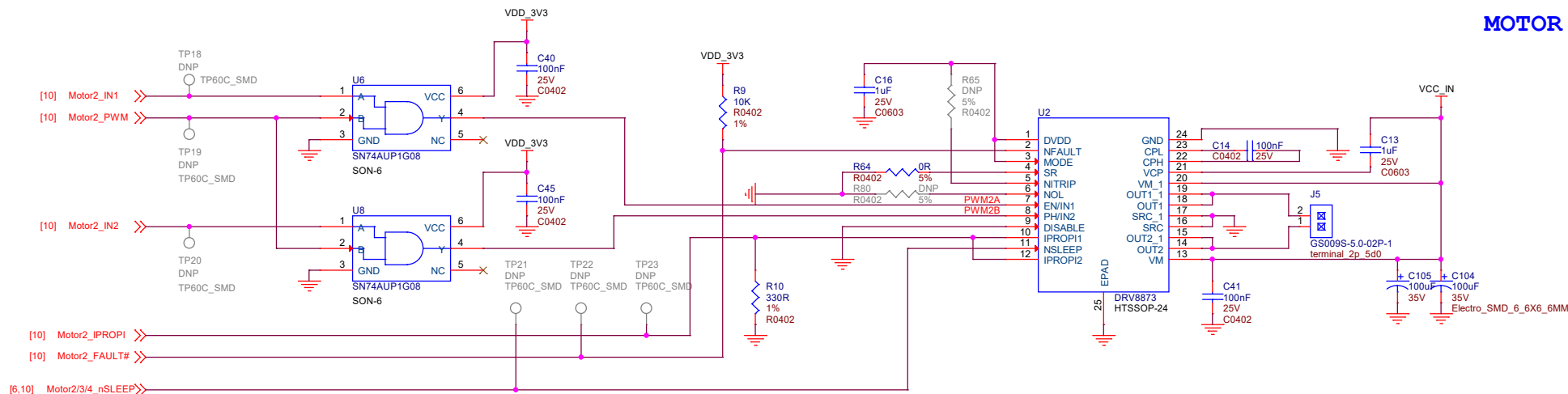
Rev: v0.6

Draw By: Power Lin

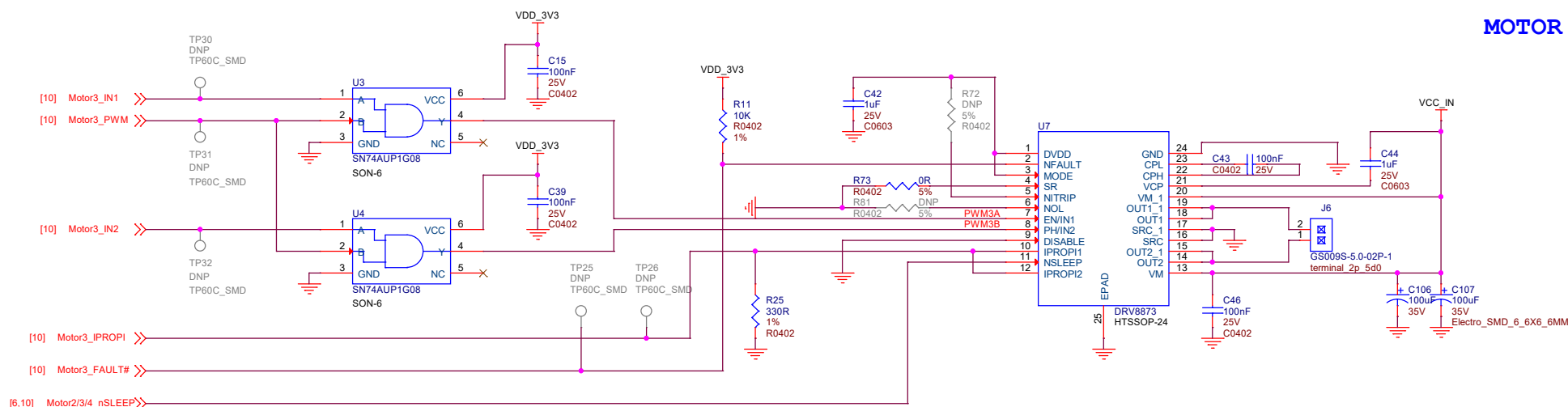
Date: Friday, December 10, 2021

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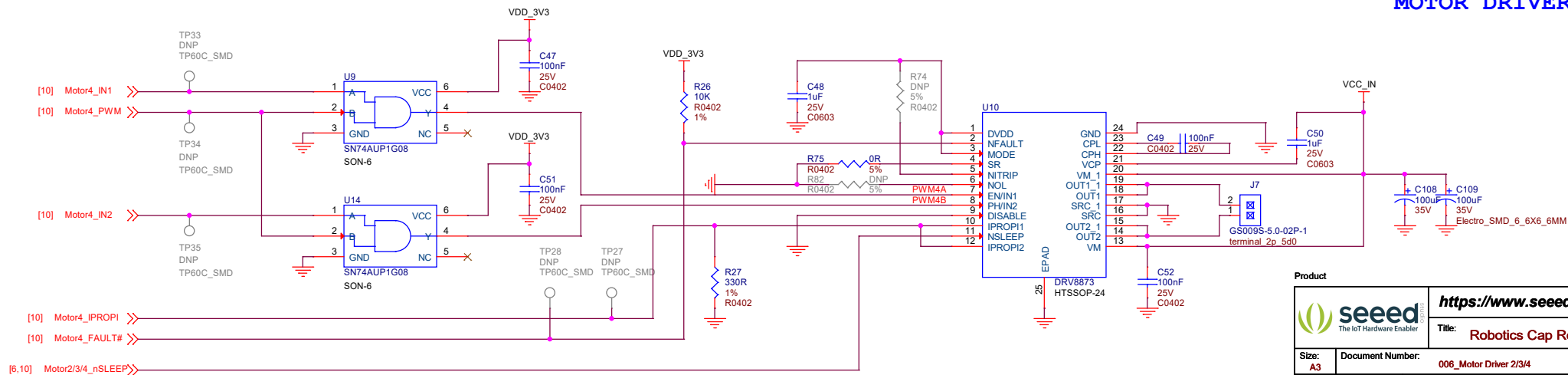
MOTOR DRIVER 2

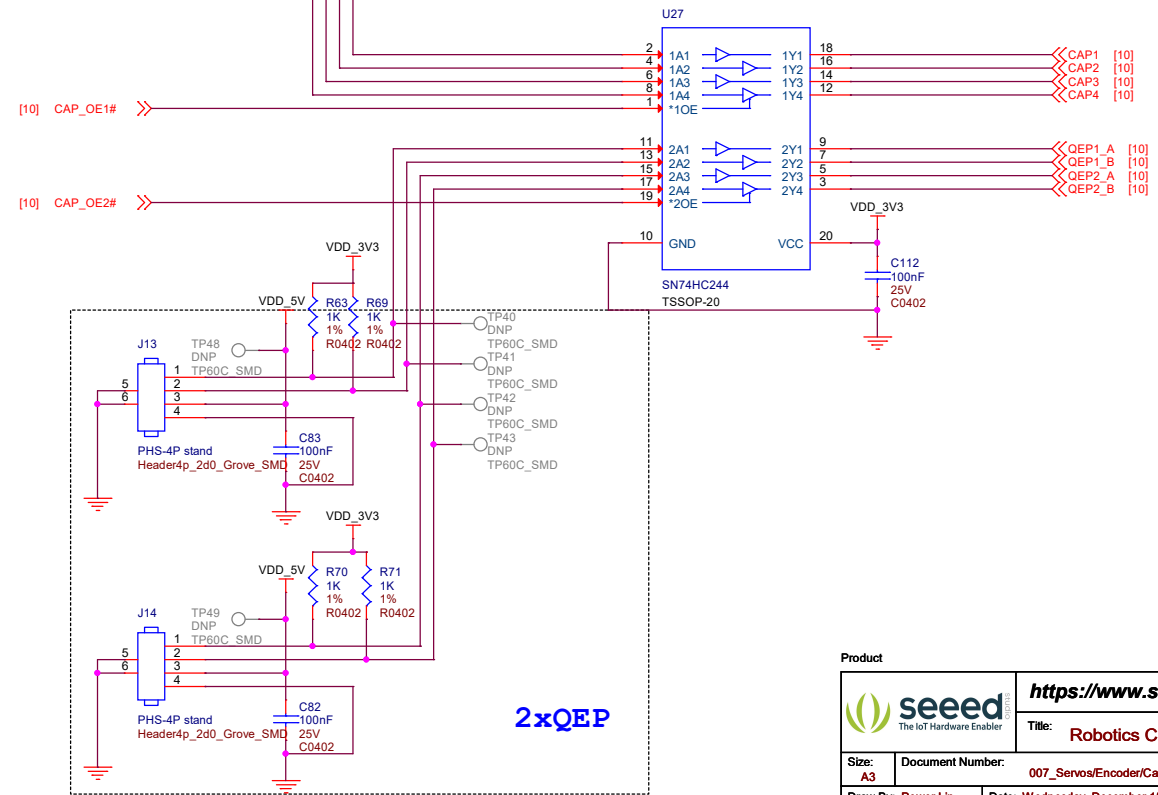
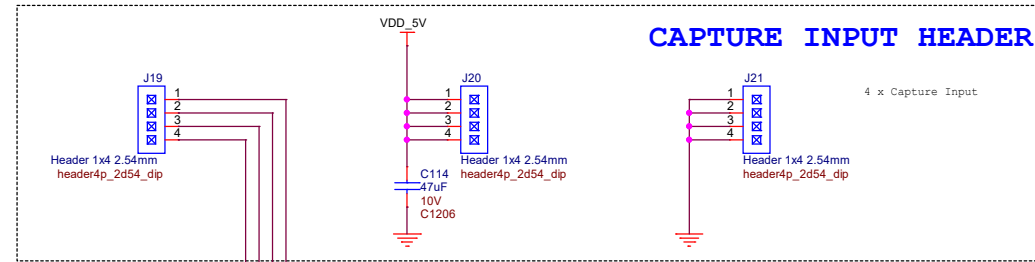
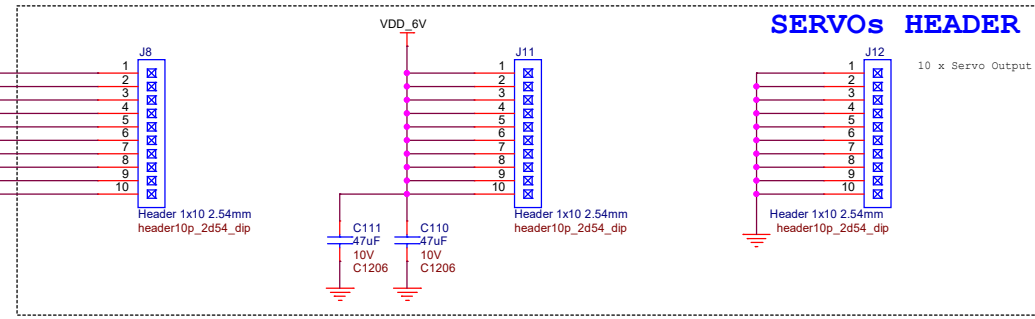
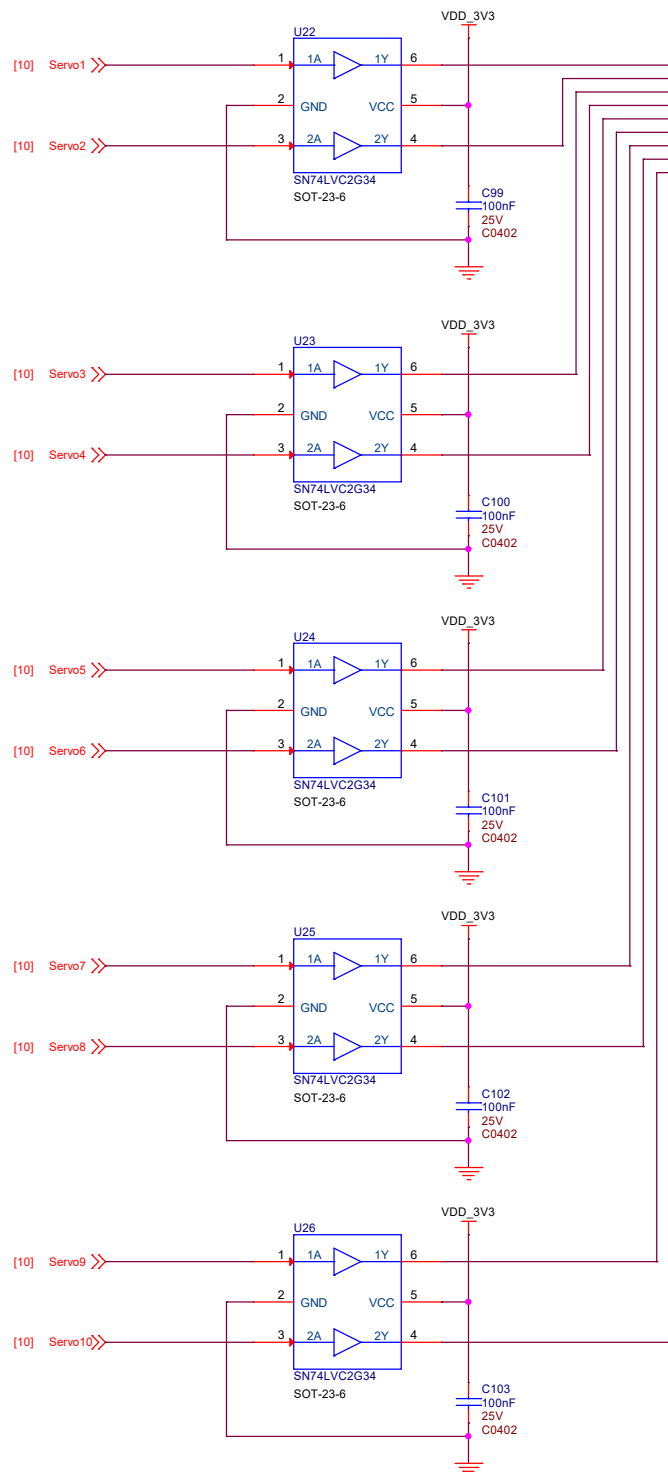


MOTOR DRIVER 3

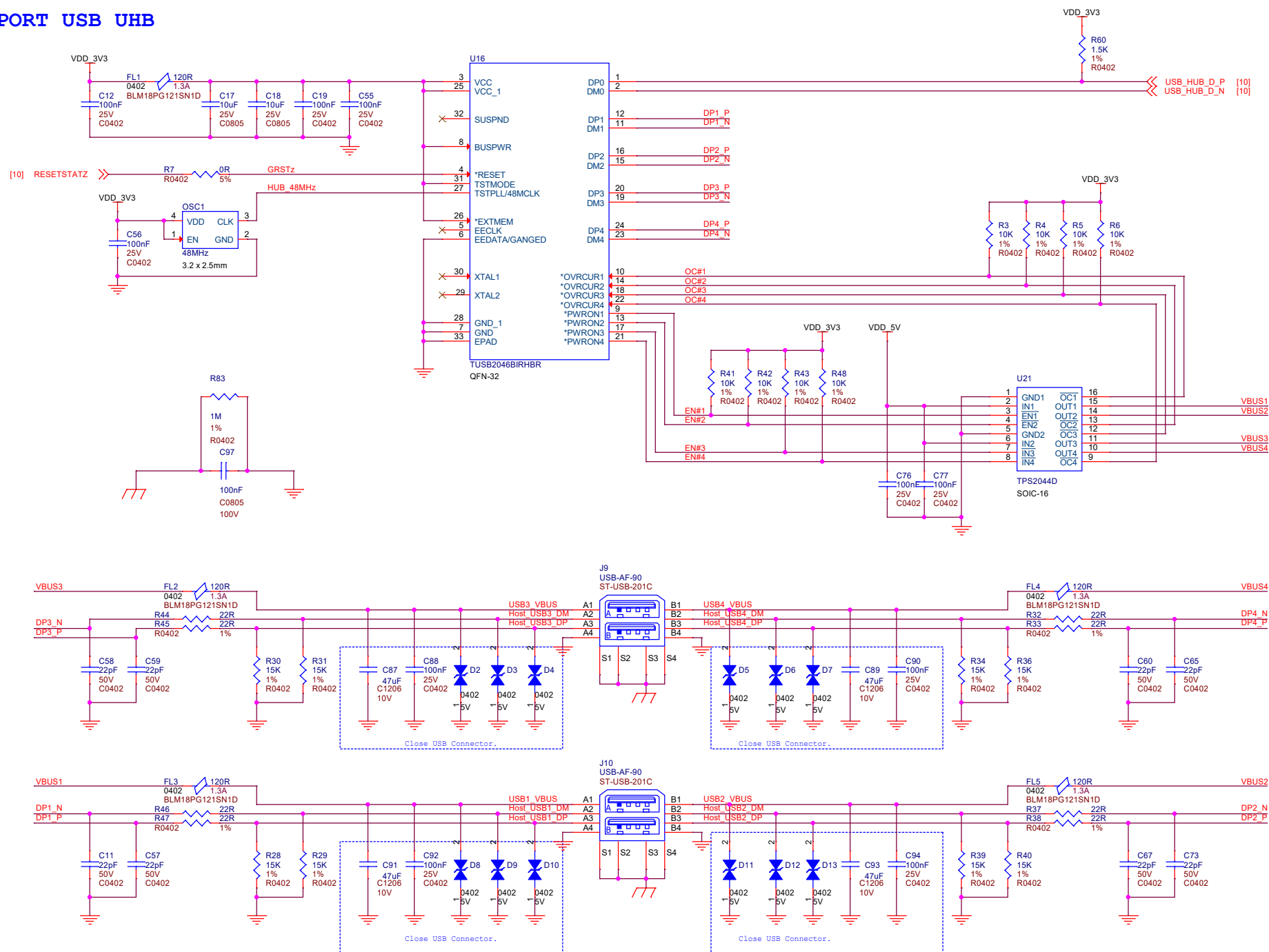


MOTOR DRIVER 4





4 PORT USB UHB



Product



<https://www.seeedstudio.com>

Title: **Robotics Cap Rev2**

Size:
A3

Document Number:

008_4 PORT USB UHB

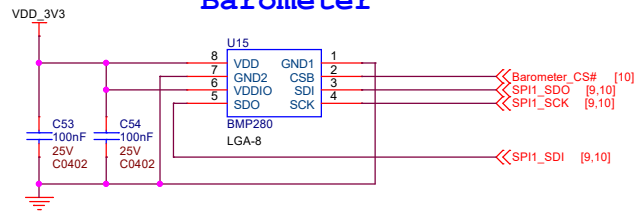
Rev:
v0.6

Draw By: **Power Lin**

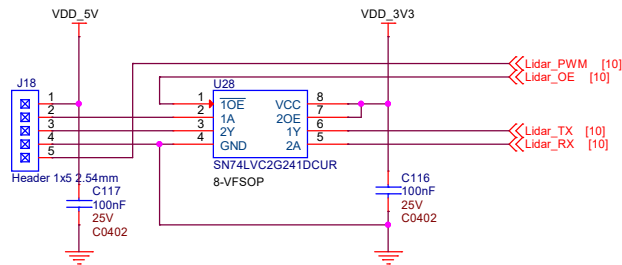
Date: Thursday, December 16, 2021

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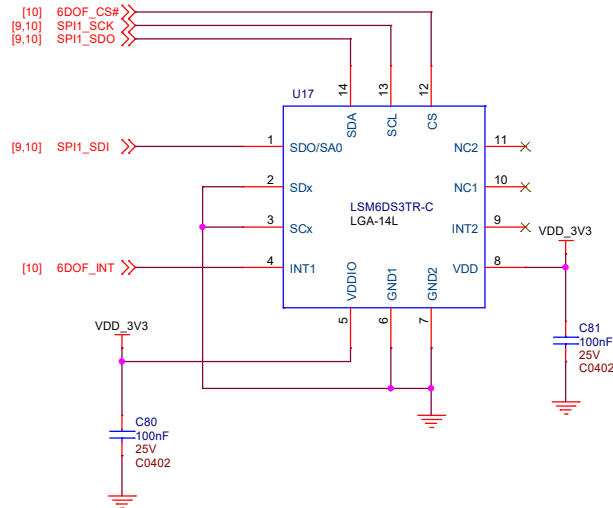
Barometer



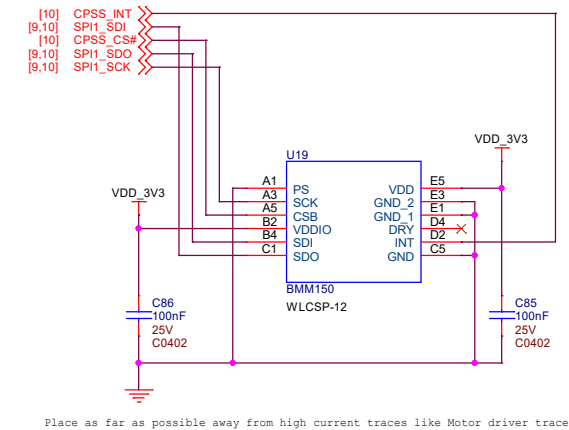
Lidar Interface



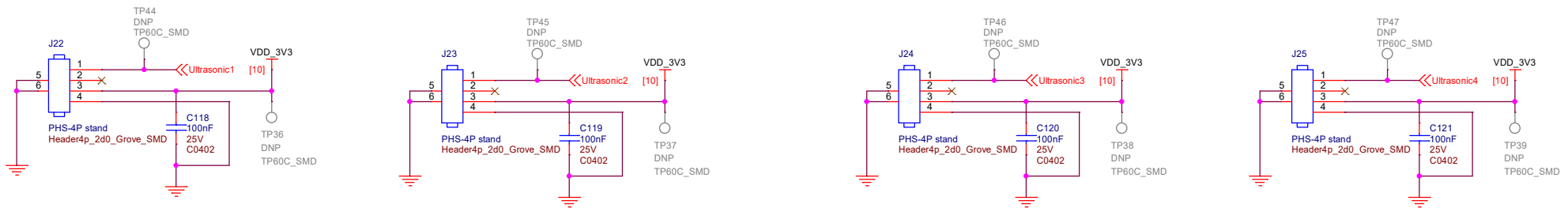
6-DOF Sensor



Compass

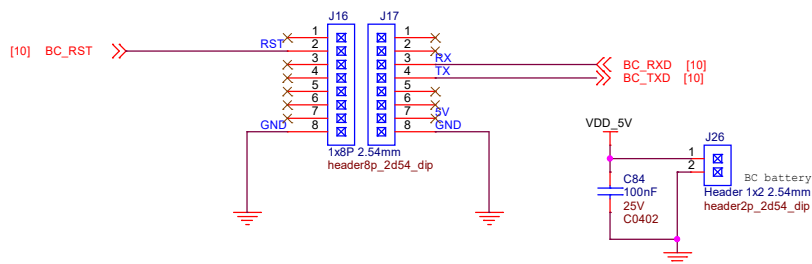


Ultrasonic Ranger Interface

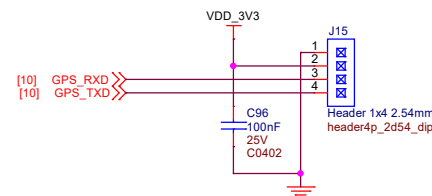


layout: testpoints needs to be placed on the bottom layer


BeagleConnect Header



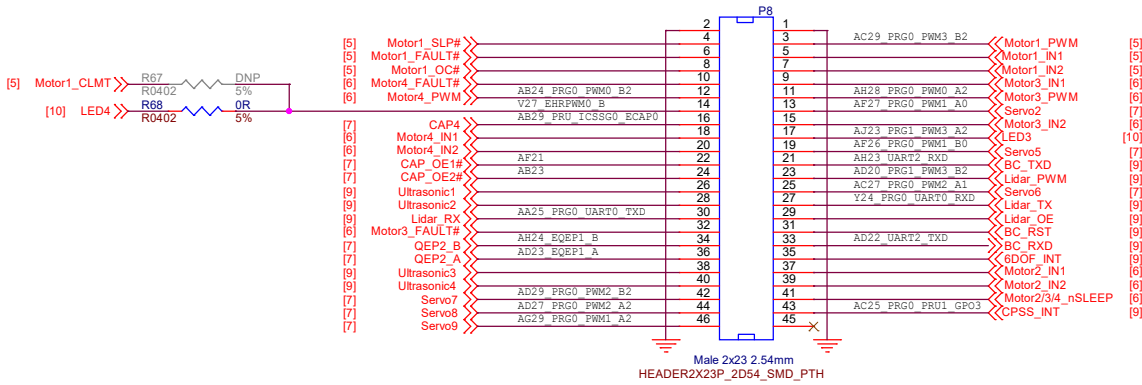
GPS Connector



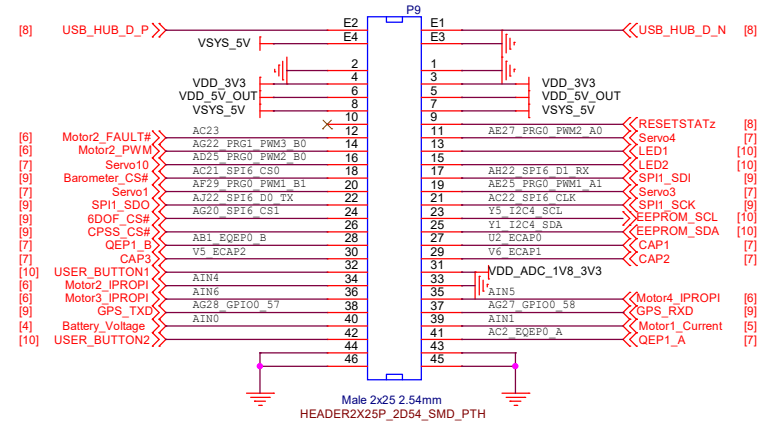
Product

		https://www.seeedstudio.com	
The IoT Hardware Enabler		Title: Robotics Cap Rev2	
Size: A3	Document Number: 009_Sensors	Rev: v0.6	
Draw By: Power Lin	Date: Friday, December 10, 2021	Sheet: 9 of 10	

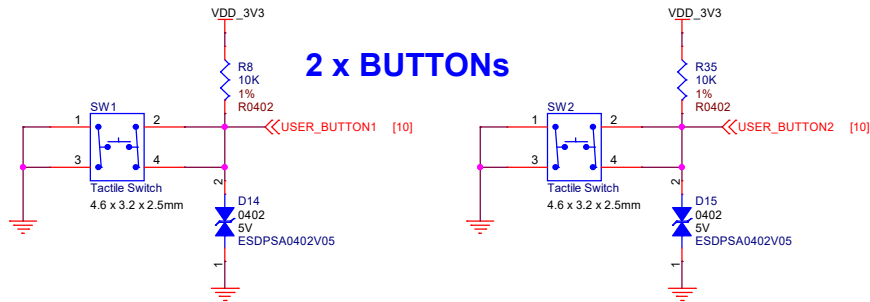
EXPANSION HEADER P8



EXPANSION HEADER P9



2 x BUTTONS



EEPROM

