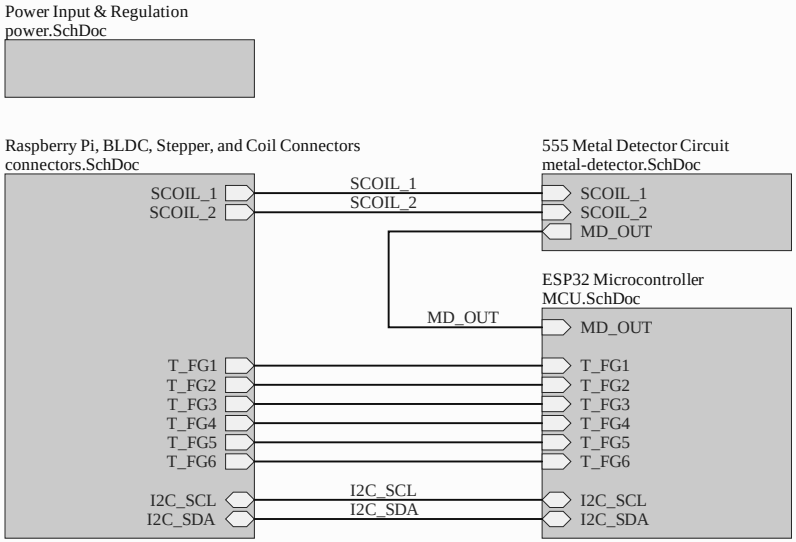
Comment	Description	Designator	Footprint	LibRef	Quantity
Breakout Pin 0603	0603 breakout pad	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24	BreakoutPin 0603	Breakout Pin 0603	24
TL3305AF260QG	Tactile Switch SPST-NO Top Actuated Surface Mount	BOOT1, RESET1	SW_TL3305AF260QG	SW PUSH TACT NO SMD	2
0.1uF 50V	Default Symbol for Capacitors	C1, C4, C9	0805	CAP 10uF 50V	3
10uF 50V	Default Symbol for Capacitors	C2, C3, C5, C6, C7, C8	0805	CAP 10uF 50V	6
33nF 50V	Default Symbol for Capacitors	C10	0805	CAP 33nF 50V	1
2.2uF	CAP CER 2.2UF 35V X7R 0603/0805	C11, C12	0805	CAP 2.2uF 35V	2
0.10uF	Default Symbol for Capacitors	C13, C15, C24, C25	0805	CAP 0.1uF 50V	4
0.10uF	CAP CER 0.10UF 35V X7R 0603	C14	0603	CAP 0.10uF 35V	1
4.7uF	CAP CER 4.7UF 35V X7R 0603/0805	C16	0805	CAP 4.7uF 35V	1
1.0uF	CAP CER 1.0UF 16V X5R 0603/0805	C17, C18, C19, C20, C21, C22, C23	0805	CAP 1.0uF 16V	7
SMAZ12-13-F	Zener Diode 12 V 1 W ±5% Surface Mount SMA	D1	SMA_DIO-L	DIODE ZENER 12V 1W	1
SML-LXT0805IW-TR	LED;Red;11mcd;0.061 In.Dia.;SMD;100mA;2 V Vf;635nm;140deg;SM D;White Diffused;5V Vr | Lumex SML-LXT0805IW-TR	D2, D3, D6, D7, D8, D9	LEDC2012X120N	SML-LXT0805IW-TR	6
SMS817PL-TP	Diode Schottky 20V 1A Surface Mount SOD-123FL	D4, D5	SOD-123	DIODE SCHOTTKY 20V 1A	2
Fuse 10A 1206	FUSE 10A 32V AC 63V DC 1206	F1	1206	FUSE 10A 63V SLOW	1
S5B-PH-K-S(LF)(SN)	Connector Header Through Hole, Right Angle 5 position 0.079 (2.00mm)	J1, J2, J4, J5, J6, J7, J8, J9	JST_S5B-PH-K-S(LF)(SN)	S5B-PH-K-S(LF)(SN)	8
CN HDR 40POS	40 Position Header Connector	J3	CN HDR 40POS 0.1 TH	CN HDR 40POS	1
S2B-PH-K-S(LF)(SN)	Connector Header Through Hole, Right Angle 2 position	J10, J11, J12	JST_S2B-PH-K-S(LF)(SN)	S2B-PH-K-S(LF)(SN)	3
61300411121	Connector Header Through Hole 4 position 0.100 (2.54mm)	J13	WURTH_61300411121	61300411121	1
PA4342.332NLT	Inductor Power Shielded/Molded Wirewound 3.3uH 20% 100KHz 11A 11.8mOhm DCR 4040 T/R	L1	IND_PA4342.332NLT	PA4342.332NLT	1
XT60	XT60 CONNECTORS FEMALE PAIR	P1	Amass_XT60PW-M	XT60 Connector	1
IPD85P04P4-07	P-Channel 40 V 85A (Tc) 88W (Tc) Surface Mount PG-TO252-3-313	Q1, Q2	DPAK (TO-252)	MOSFET IPD85P04P4-07	2
TN2130K1-G	N-Channel 300 V 85mA (Tj) 360mW (Tc) Surface Mount TO-236AB (SOT23)	Q3, Q4, Q5, Q6	SOT95P237X112-3N	MOSFET N-CH TN2130K1-G	4
100k	Default Resistor Symbol	R1, R2	0805	RES 100k 1/8W - 1%	2
0	Default Resistor Symbol	R3, R4, R5, R25	0805	RES 0 JUMPER 0603	4
53.6k	Default Resistor Symbol	R6	0805	RES 56.2k 1/10W	1
10.2k	Default Resistor Symbol	R7	0805	RES 10.2k 1/8W	1
47k	RES SMD 47K OHM 1% 1/8W 0603	R8	0805	RES 47k 1/8W - 1%	1
150	Default Resistor Symbol	R9, R14, R16, R18, R20	0805	RES 150.0 1/8W	5
1k	Default Resistor Symbol	R10	0805	RES 1.1k 1/8W	1
10k	RES SMD 10K OHM 1% 1/8W 0603	R11, R12	0805	RES 10k 1/8W - 1%	2
1k	RES SMD 1K OHM 1% 1/8W 0603	R13, R15	0603	RES 1k 1/8W	2
10k	RES SMD 10K OHM 5% 1/8W 0603	R17, R23	0603	RES 10k 1/8W - 5%	2
YC248-JR-070RL	No Description Available	R19, R24	RES_YC248_4X1P6_YAG-M	YC248-JR-070RL	2
4.7k	Default Resistor Symbol	R21, R22	0805	RES 4.7k 1/8W - 1%	2
SW SLIDE SMALL	Slide Switch SPDT Surface Mount, Right Angle	S1	SW SLIDE SMALL	SW SLIDE SMALL	1
SN74LVC4245APWR	24-TSSOP -40 – 85	U	SOP65P640X120-24N	SN74LVC4245APWR	1
TPS62933ODRLR	No Description Available	U1	SOT5X3-8_DRL_TEX	TPS62933ODRLR	1
NE555DR		U2	SOIC127P599X175-8N	NE555DR	1
A4988_STEPPER_MOTOR_DRIVER_CARRIER	Stepper motor controler; IC: A4988; 1A; Uin mot: 8Â÷35V	U3	MODULE_A4988_STEPPER_MOTOR_DRIVER_CARRIER	A4988_STEPPER_MOTOR_DRIVER_CARRIER	1
ESP32-PICO-D4	RX TX RX MOD WIFI SURFACE MOUNT	U4	PQFN50P700X700X104-49N - BigPads	ESP32-PICO-D4	1



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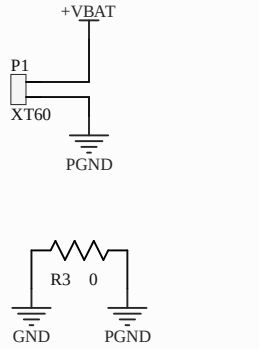
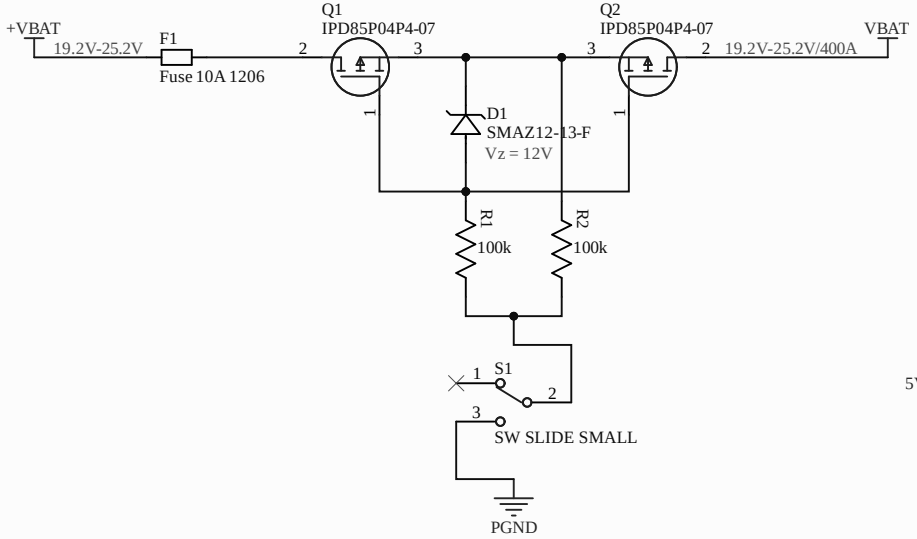
File: C:\Users\..\root.SchDoc		Drawn By:

Battery Connector

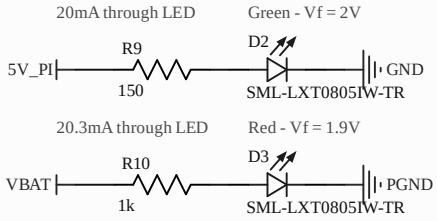
Input Power: 6S LiPo: 19.2V-25.2V



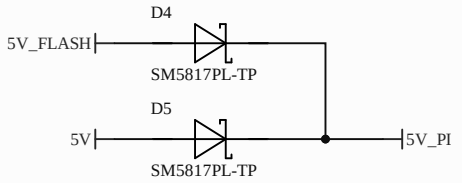
Reverse Polarity Protection



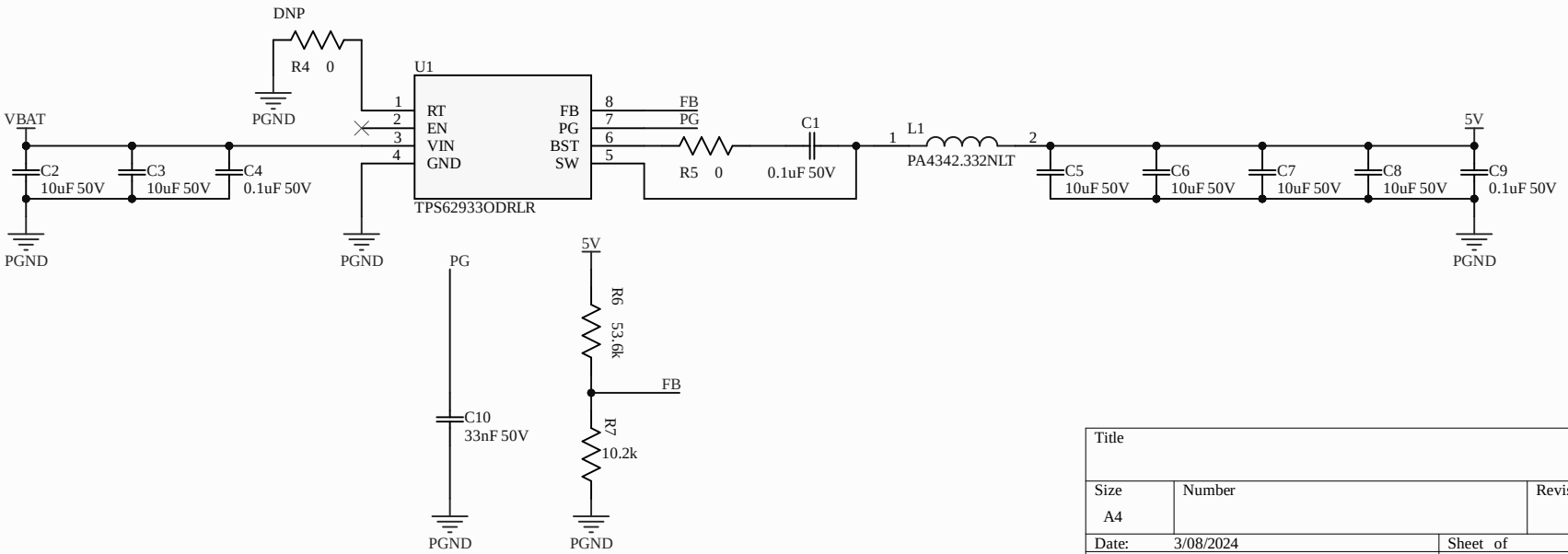
Power LEDs



Power Schottkys



5V DC/DC Converter



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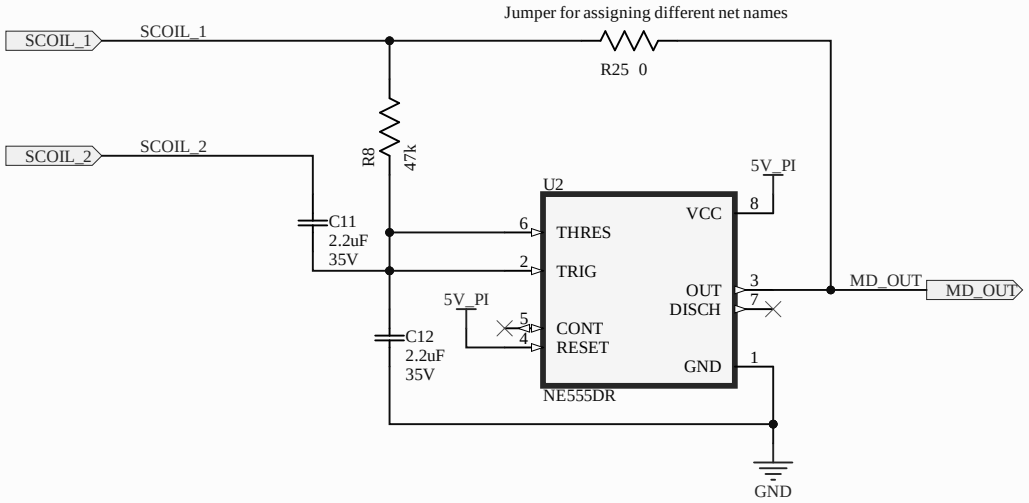

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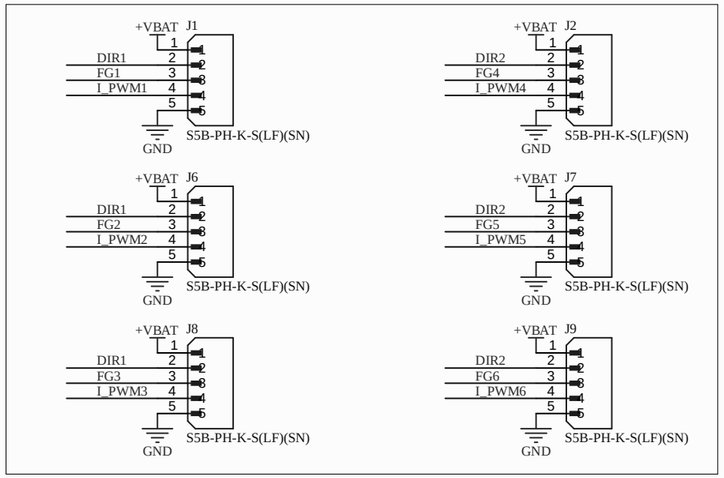
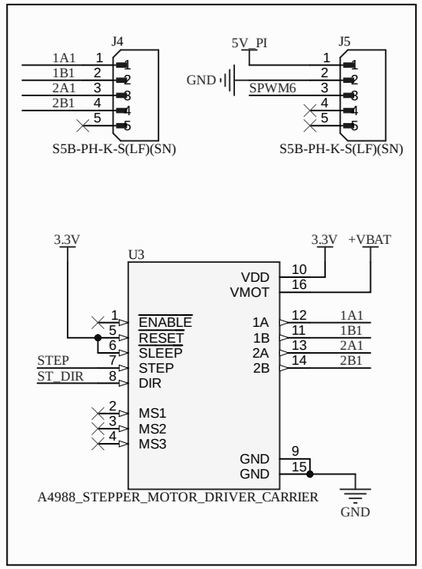
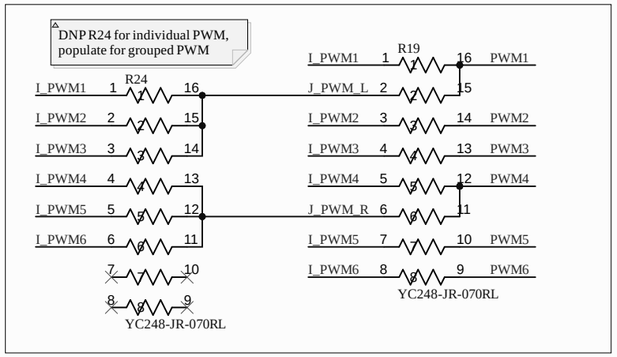
BLDC Motor Connectors



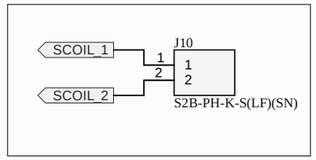
Stepper/Servo Motor Connector + Driver



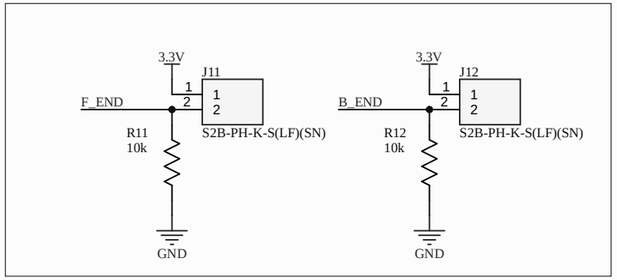
Grouped / Individually Addressable PWM



Search Coil Connector

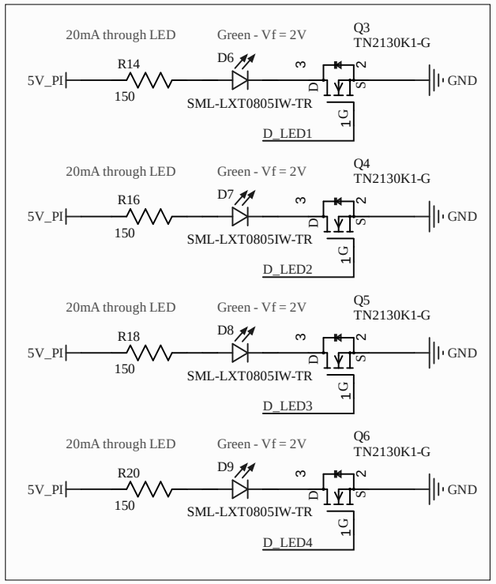


Endstop Connectors

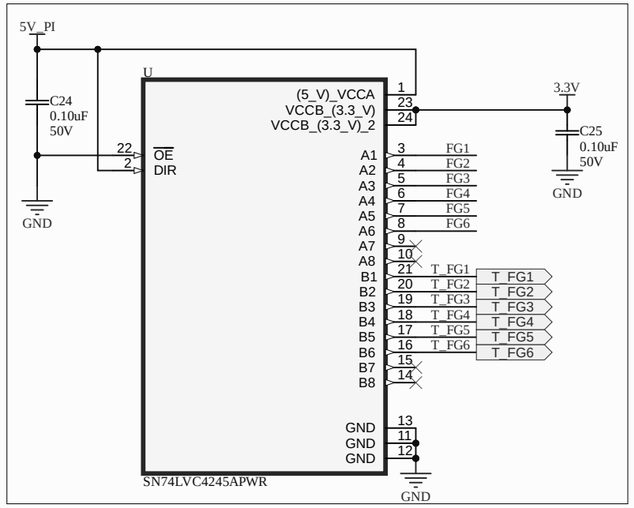


Debug LEDs

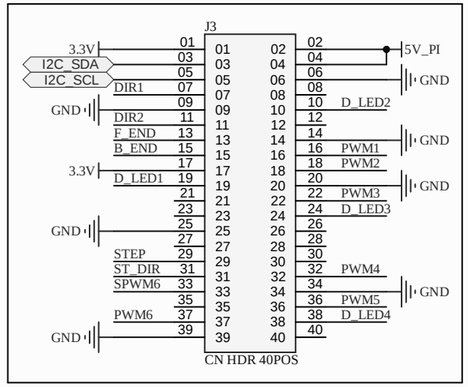
MOSFETs provided by JLC with T2N7002BK,LM



Speed Feedback Voltage Translation



Raspberry PConnectors



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FAB DWG:	
PCB DWG:	

PROJECT | PROJECT REVISION: | DOCUMENT REVISION: | DESIGN ITEM: 4d045ea05081d4105fd71b5a3b119a4c

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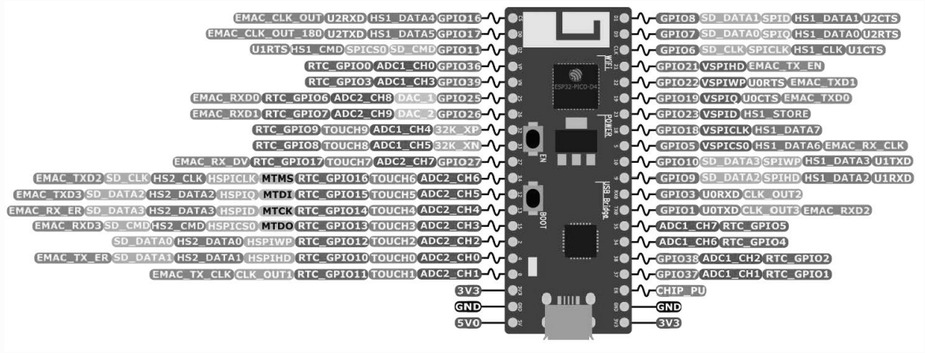
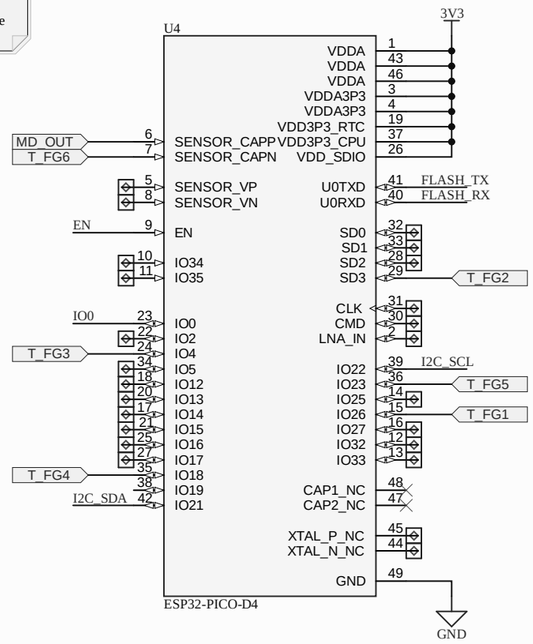
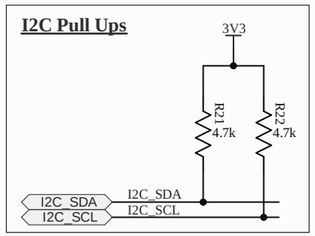


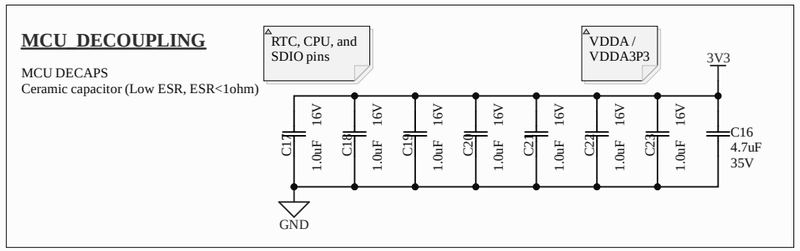
Note:
Strapping Pins:
GPIO0,GPIO2,GPIO5
GPIO15 (MTDO),GPIO12 (MTDI)
By pulling up or down these pins, you can
enter different modes for the chip. After the reset button is released then the strapping pins work as normal pins. We have observed that pulling up IO2 and IO12 causes the chip not to be able to flash. However, pulling up or down the IO5 and IO15 does not cause flash errors. IO15 controls whether debugging logs are printed on U0TXD during booting, and IO5 in combo with IO15 controls Timing of SDIO Slave (we are not using SDIO, so it should be okay)

To ensure the power supply to the ESP32 chip during power-up, it is advised to add an RC delay circuit at the EN pin. The recommended setting for the RC delay circuit is usually R = 10 kΩ and C = 1 µF. However, specific parameters should be adjusted based on the power-up timing of the SiP and the power-up and reset sequence timing of the chip.

10k and 0.1uF gives 1ms time constant which satisfies the minimum delay required by the Power-Up Timing

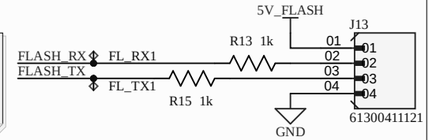


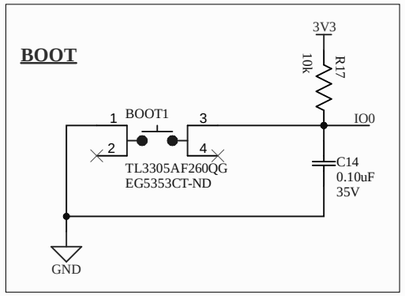


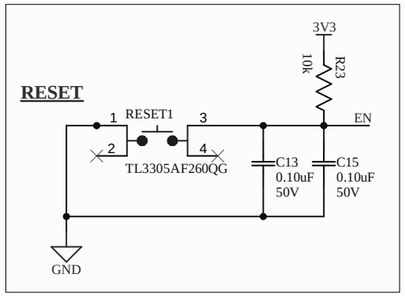


FLASHING

How to Flash:
1) plug in USB-UART adapter
2) Hold down BOOT button
3) Press EN button once
4) Once Device is detected in terminal, Release BOOT button







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FAB DWG:	
PCB DWG:	

PROJECT: Altium *

PROJECT REVISION: | DOCUMENT REVISION: Dannon Stum | DESIGN ITEM:

TITLE: *

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