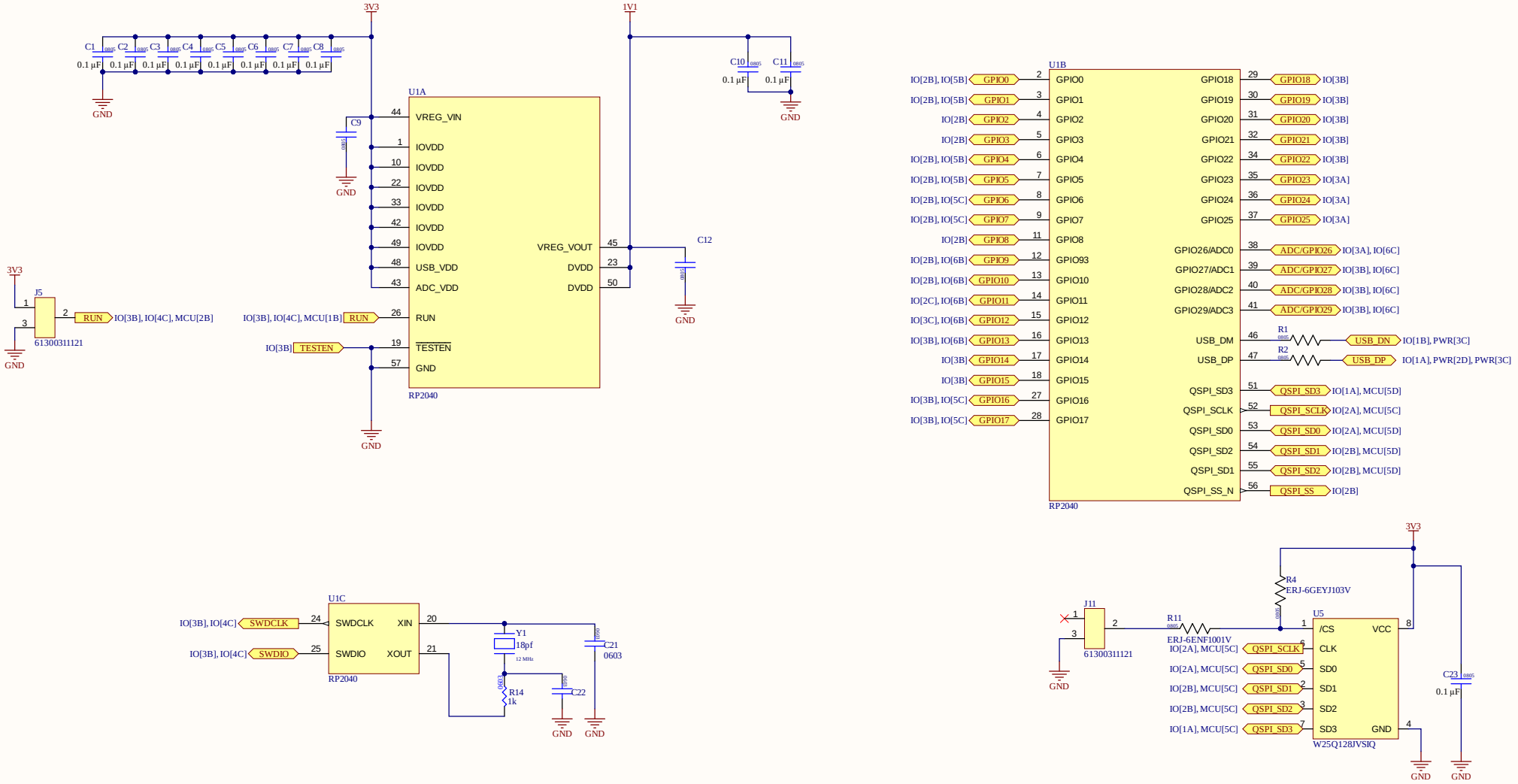
REVISION	DESCRIPTION	DATE	APPROVED

Microcontroller

Decoupling caps need to close to power pin in the layout (see hardware design requirement doc section 2.1.2 for more info)



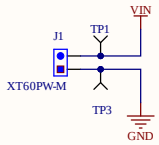
APPROVALS	DWG NO.	
ENG: Hardy Yu, Yuchen Lin, Nelson Mei	1	Altium
DSN: *	TITLE	RP2040 MCU
CHK: *		
REFERENCE DOCUMENTS		
Date 2024-06-25	SIZE A3 / PROJECT RP2040_development_board.PrjPcb	REV A
	FILE NAME MCU.SchDoc	SHEET 1 OF 3

REVISION	DESCRIPTION	DATE	APPROVED

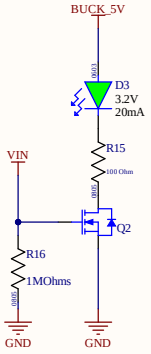
Battery Input (3s1p)

Input voltage range: 6-15V

TP is only for DMM voltage test. Load testing should use the 5V GPIO Rail

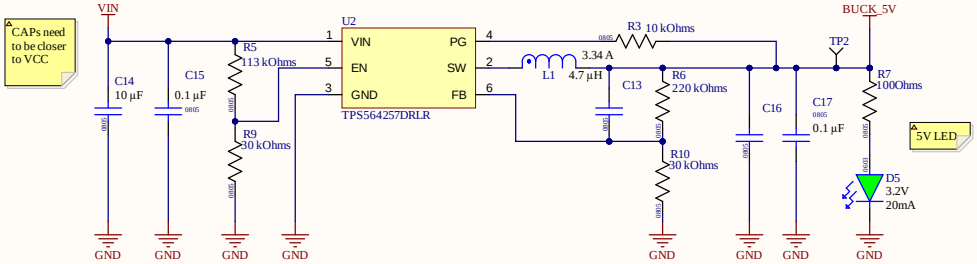


Extern Power Good Indicator



Vin to 5V Buck Converter @ 2A

CAPs need to be closer to VCC



$$V_{OUT} = V_{ref} \times \left[\frac{R2}{R3} + 1\right]$$

8.2.3.5.1 Inductor Selection

Use Equation 8 to calculate the minimum value of the output inductor (L_{MIN}).

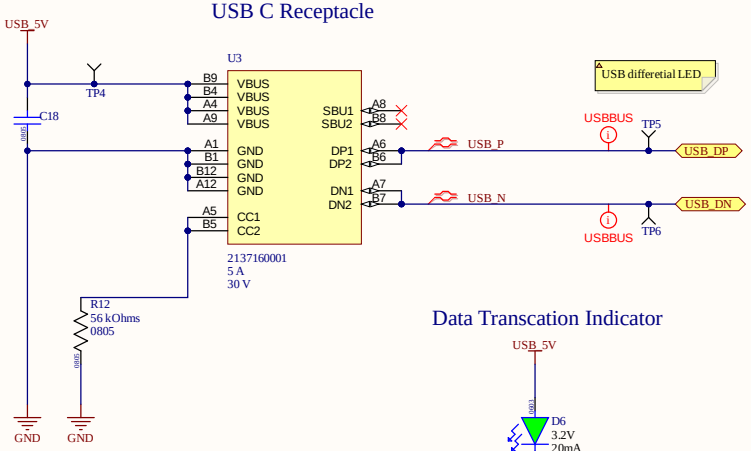
$$L_{MIN} = \frac{V_{OUT} \times \left(V_{IN(MAX)} - V_{OUT}\right)}{V_{IN(MAX)} \times K_{IND} \times I_{OUT} \times f_{sw}}$$

USB Input

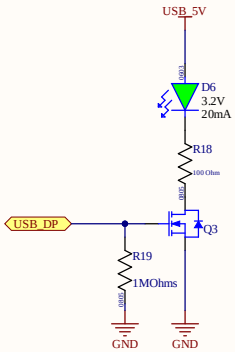
Input voltage range: 4.75-5.25V

USB C Receptacle

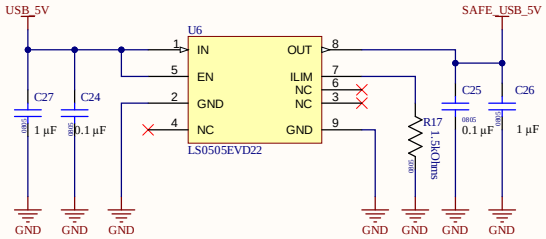
USB differetial LED



Data Transcation Indicator

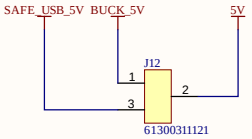


500mA Overcurrent Protection

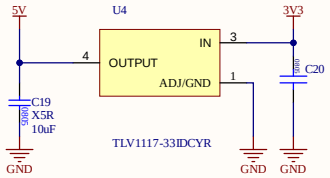


3.3V LDO

Power Source Selector
Pin 1 - battery power
Pin 3 - usb c power



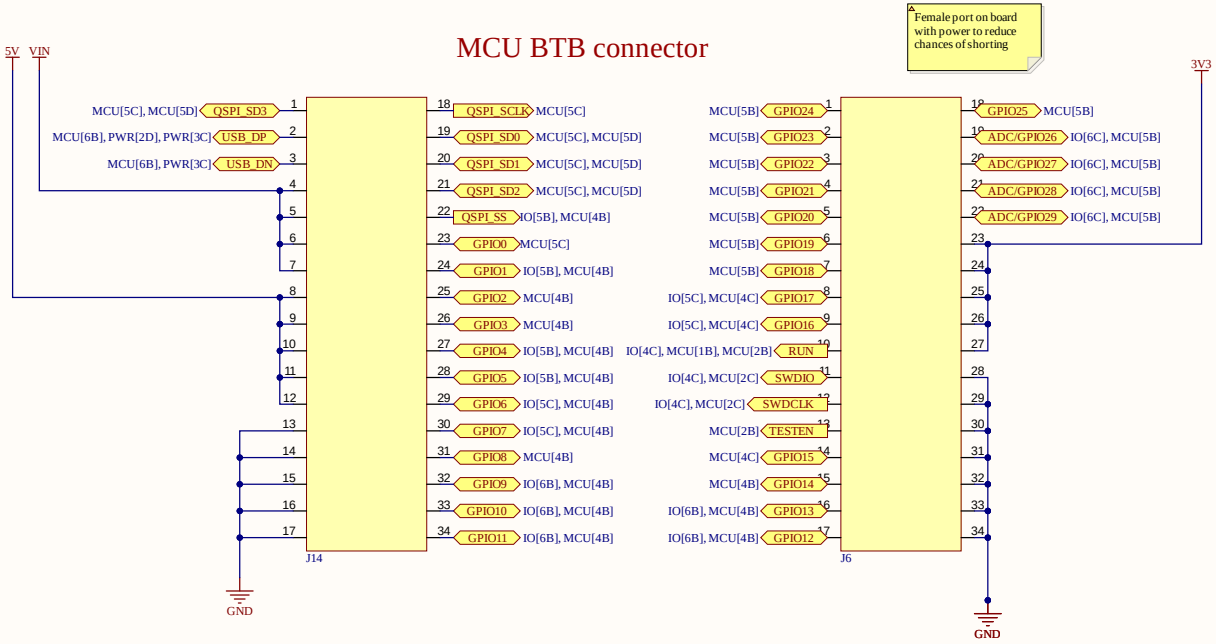
Vin: 5V
Vout: 3.3V 800mA



APPROVALS	DWG NO.	
ENG: Hardy Yu, Yuchen Lin, Nelson Mei	2	Altium
DSN: *	TITLE	RP2040 Power
CHK: *		
REFERENCE DOCUMENTS	SIZE / PROJECT	REV
Date 2024-06-25	A3 / RP2040_development_board.PrjPcb	A
	FILE NAME / SHEET	
	PWR.SchDoc / 2 OF 3	

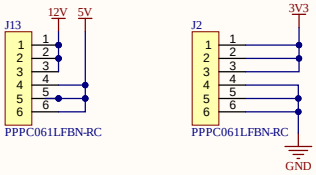
REVISION	DESCRIPTION	DATE	APPROVED

MCU BTB connector

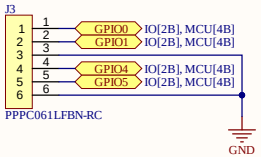


MCU GPIO connector

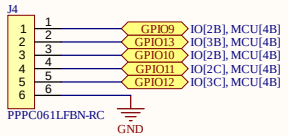
Power connector



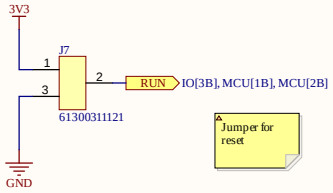
UART connector

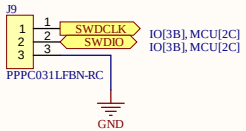


SPI connector

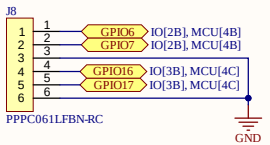


Debug

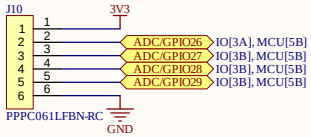




I2C connector



ADC/GPIO connector



APPROVALS	DWG NO.	
ENG: Hardy Yu, Yuchen Lin, Nelson Mei	3	Altium
DSN: *	TITLE	RP2040 IO interface
CHK: *		
REFERENCE DOCUMENTS		
Date 2024-06-25	SIZE A3 / PROJECT RP2040_development_board.PrjPcb	REV A
	FILE NAME IO.SchDoc	SHEET 3 OF 3

Board Stack Report