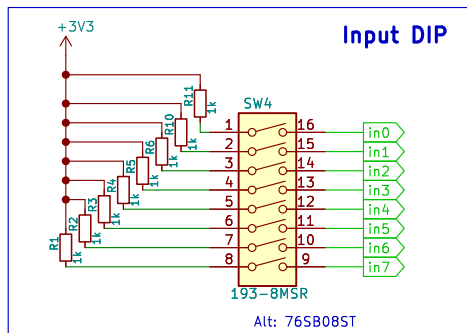
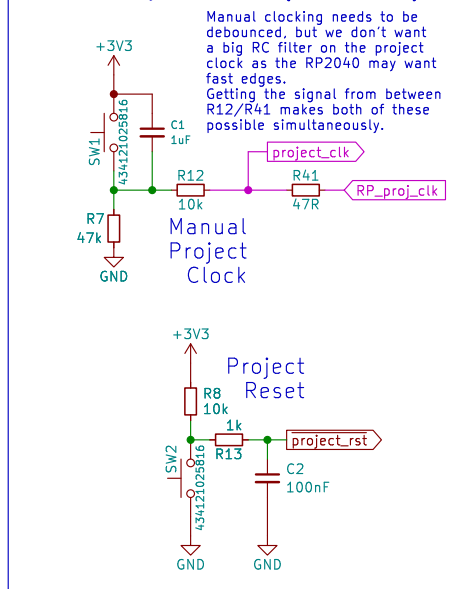


# Tiny Tapeout 06+ Demo Board

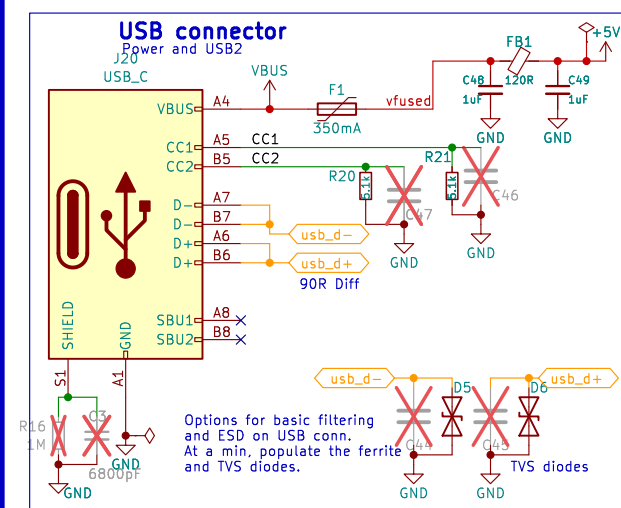
## User Input + Config



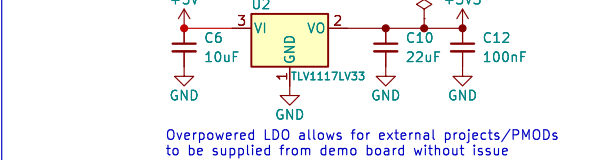
## Momentary Switches (debounced)



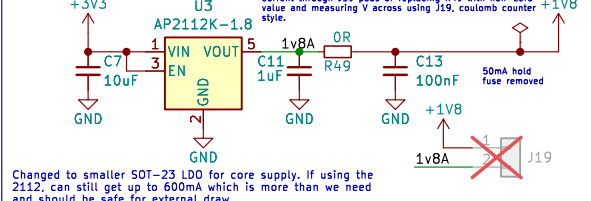
## Power



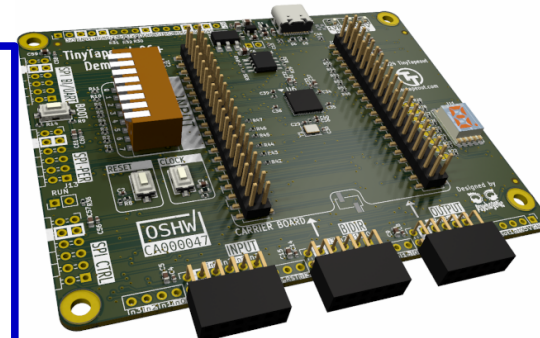
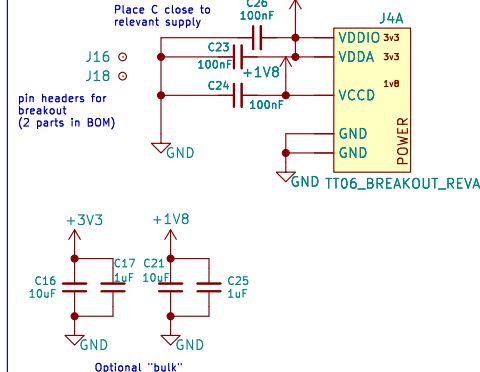
## 3V3 LDO



## 1.8V LDO



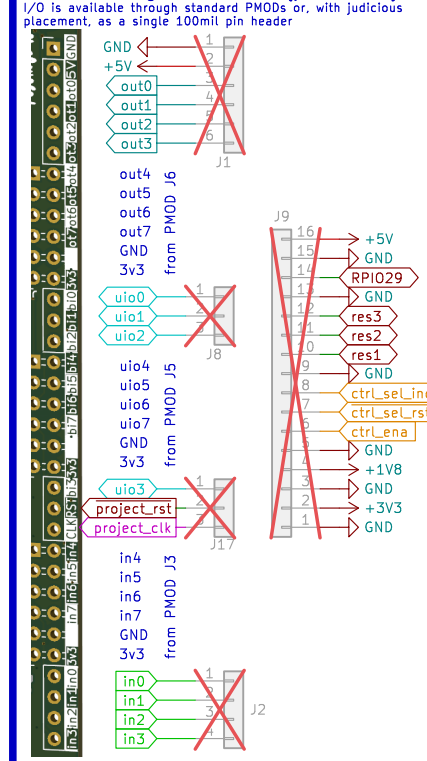
## TT Carrier Power



TT06+ Demoboard: complete re-organization, support for TT06+ new carrier pinout. For users, main difference is the new piano DIP input and the fact no MUX is in the way on demoboards.

<https://github.com/TinyTapeout/tt-demo-pcb>

## Board edge connectors (pinheaders)



# RP2040 Basic Support

IOVDD □ IOVDD

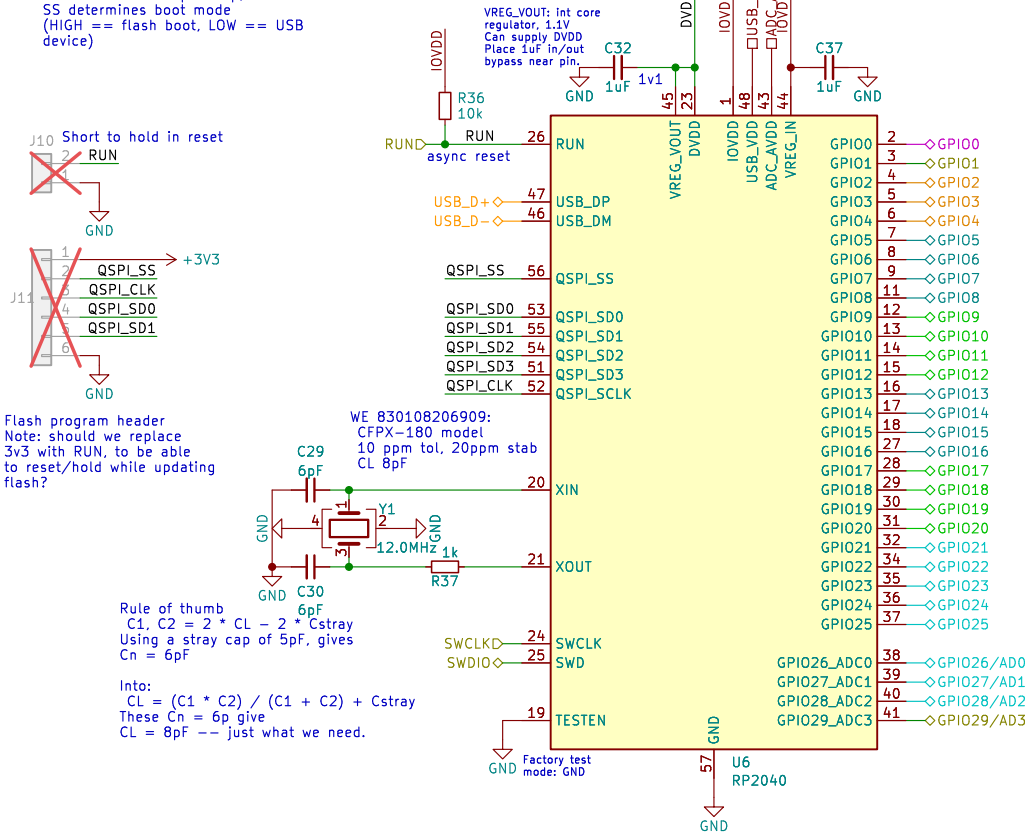
Logic supply, nominally 3v3.

BOOT\_MODE □ QSPL\_SS

When held low on powerup, flash SS determines boot mode  
(HIGH == flash boot, LOW == USB device)

USB\_VDD supplies USB PHY, nominal 3v3. If IOVDD is 3v3, can share supply.

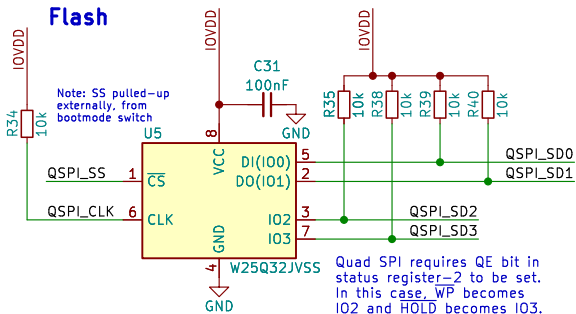
In fact, in this and many applications, IOVDD, USB\_VDD and ADC\_AVDD are all powered directly from a single 3v3 supply, with the 1v1 digital core being handle by on-board regulator.



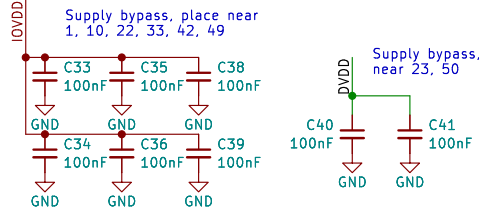
Flash program header  
Note: should we replace 3v3 with RUN, to be able to reset/hold while updating flash?

Rule of thumb  
 $C1, C2 = 2 * CL - 2 * C_{stray}$   
Using a stray cap of 5pF, gives  $C_n = 6pF$   
Into:  
 $CL = (C1 * C2) / (C1 + C2) + C_{stray}$   
These  $C_n = 6pF$  give  
 $CL = 8pF$  -- just what we need.

## Flash



Quad SPI requires QE bit in status register-2 to be set. In this case, WP becomes IO2 and HOLD becomes IO3.



Function		F1	F2	F3	F4	F5	F6	F7	F8	F9
GPIO										
0	SPI0 RX	UART0 TX	I2C0 SDA	PWM0 A	SIO	PI00	PI01			USB OVCUR DET
1	SPI0 CSn	UART0 RX	I2C0 SCL	PWM0 B	SIO	PI00	PI01			USB VBUS DET
2	SPI0 SCK	UART0 CTS	I2C1 SDA	PWM1 A	SIO	PI00	PI01			USB VBUS EN
3	SPI0 TX	UART0 RTS	I2C1 SCL	PWM1 B	SIO	PI00	PI01			USB OVCUR DET
4	SPI0 RX	UART1 TX	I2C0 SDA	PWM2 A	SIO	PI00	PI01			USB VBUS DET
5	SPI0 CSn	UART1 RX	I2C0 SCL	PWM2 B	SIO	PI00	PI01			USB VBUS EN
6	SPI0 SCK	UART1 CTS	I2C1 SDA	PWM3 A	SIO	PI00	PI01			USB OVCUR DET
7	SPI0 TX	UART1 RTS	I2C1 SCL	PWM3 B	SIO	PI00	PI01			USB VBUS DET
8	SPI1 RX	UART1 TX	I2C0 SDA	PWM4 A	SIO	PI00	PI01			USB VBUS EN
9	SPI1 CSn	UART1 RX	I2C0 SCL	PWM4 B	SIO	PI00	PI01			USB OVCUR DET
10	SPI1 SCK	UART1 CTS	I2C1 SDA	PWM5 A	SIO	PI00	PI01			USB VBUS DET
11	SPI1 TX	UART1 RTS	I2C1 SCL	PWM5 B	SIO	PI00	PI01			USB VBUS EN
12	SPI1 RX	UART0 TX	I2C0 SDA	PWM6 A	SIO	PI00	PI01			USB OVCUR DET
13	SPI1 CSn	UART0 RX	I2C0 SCL	PWM6 B	SIO	PI00	PI01			USB VBUS DET
14	SPI1 SCK	UART0 CTS	I2C1 SDA	PWM7 A	SIO	PI00	PI01			USB VBUS EN
15	SPI1 TX	UART0 RTS	I2C1 SCL	PWM7 B	SIO	PI00	PI01			USB OVCUR DET
16	SPI0 RX	UART0 TX	I2C0 SDA	PWM0 A	SIO	PI00	PI01			USB VBUS DET
17	SPI0 CSn	UART0 RX	I2C0 SCL	PWM0 B	SIO	PI00	PI01			USB VBUS EN
18	SPI0 SCK	UART0 CTS	I2C1 SDA	PWM1 A	SIO	PI00	PI01			USB OVCUR DET
19	SPI0 TX	UART0 RTS	I2C1 SCL	PWM1 B	SIO	PI00	PI01			USB VBUS DET
20	SPI0 RX	UART1 TX	I2C0 SDA	PWM2 A	SIO	PI00	PI01	CLOCK GPIN0		USB VBUS EN
21	SPI0 CSn	UART1 RX	I2C0 SCL	PWM2 B	SIO	PI00	PI01	CLOCK GPIN1		USB OVCUR DET
22	SPI0 SCK	UART1 CTS	I2C1 SDA	PWM3 A	SIO	PI00	PI01	CLOCK GPIN2		USB VBUS DET
23	SPI0 TX	UART1 RTS	I2C1 SCL	PWM3 B	SIO	PI00	PI01	CLOCK GPIN3		USB OVCUR DET
24	SPI1 RX	UART1 TX	I2C0 SDA	PWM4 A	SIO	PI00	PI01	CLOCK GPIN4		USB VBUS EN
25	SPI1 CSn	UART1 RX	I2C0 SCL	PWM4 B	SIO	PI00	PI01	CLOCK GPIN5		USB OVCUR DET
26	SPI1 SCK	UART1 CTS	I2C1 SDA	PWM5 A	SIO	PI00	PI01			USB VBUS DET
27	SPI1 TX	UART1 RTS	I2C1 SCL	PWM5 B	SIO	PI00	PI01			USB OVCUR DET
28	SPI1 RX	UART0 TX	I2C0 SDA	PWM6 A	SIO	PI00	PI01			USB VBUS DET
29	SPI1 CSn	UART0 RX	I2C0 SCL	PWM6 B	SIO	PI00	PI01			USB VBUS EN

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Psychogenic Technologies

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Title: Tiny Tapeout 4/5 Demo Board

Size: A4 Date: 2024-04-12

KiCad E.D.A. 8.0.8

Rev: 1.2.2

Id: 2/2