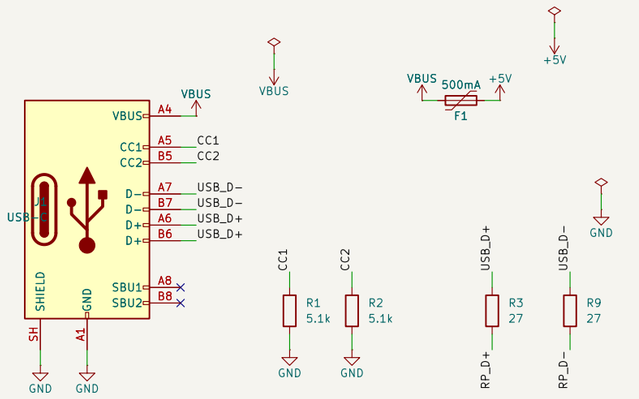
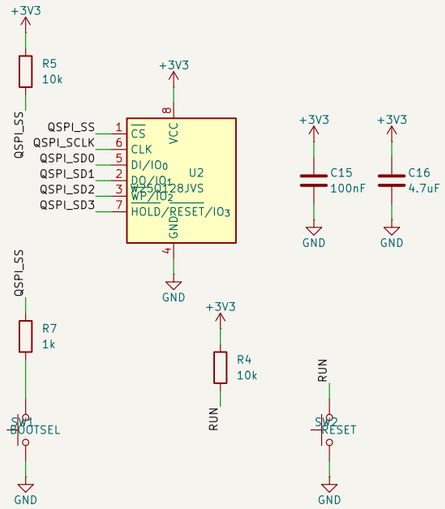
USB-C in and fuse



5.1k on CC1 and CC2, one each: "a device is here, give 5 V"

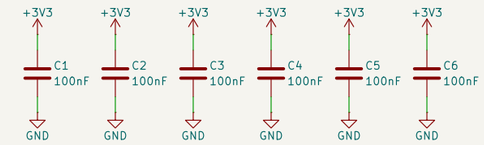
R3, R9 27 ohm in D+ and D−, close to the chip

Flash, BOOTSEL and reset

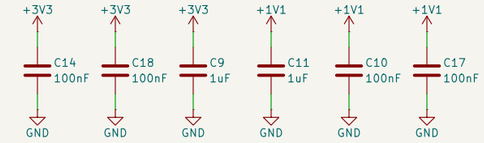


BOOTSEL held at start: QSPI_SS low, the chip shows a USB drive (UF2)

Decoupling: one capacitor at each supply pin

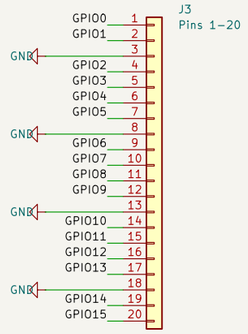


C1 to C6 at IOVDD 1, 10, 22, 33, 42, 49

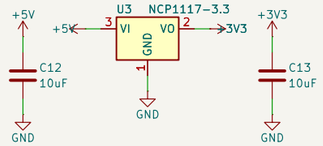


C14 at USB_VDD (48), C18 at ADC_AVDD (43), C9 1 uF at VREG_VIN (44); C11 1 uF at VREG_VOUT (45), C10 and C17 at DVDD 23 and 50: the 1.1 V comes from the chip's own regulator

GPIO headers, Pico order

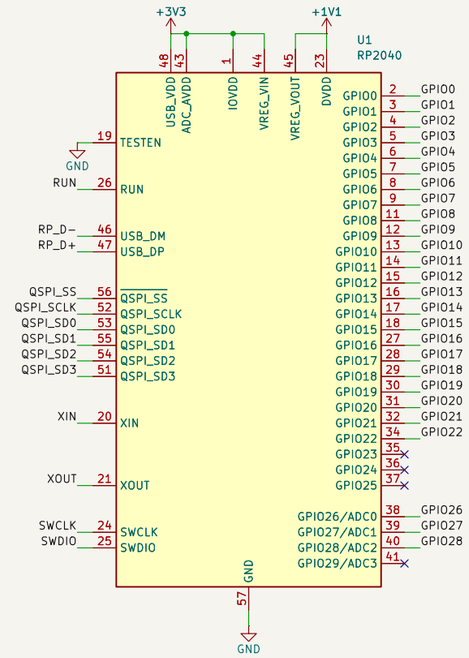


3.3 V regulator



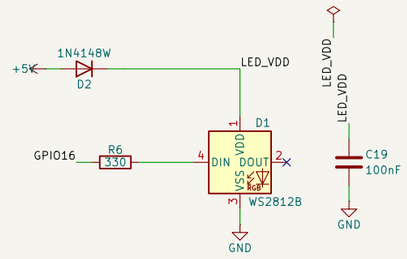
10 uF in and out, as its data sheet asks. Heat (5 − 3.3) V x I: 0.17 W at 100 mA

Microcontroller RP2040



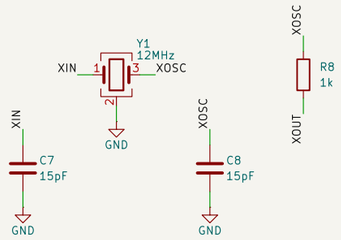
TESTEN (19) to GND. The exposed pad (57) is the only ground: solder it, with vias

RGB LED on GPIO16



5 V less one diode: about 4.2 V. DIN high above 0.7 x 4.2 = 2.9 V, under the 3.3 V of GPIO16

Clock: 12 MHz crystal



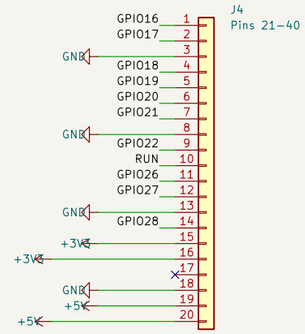
15 pF / 2 + 3 pF stray = 10.5 pF, for CL 10 pF. R8 1k keeps the crystal from being over-driven

SWD debug



Debug Probe order: SWCLK, GND, SWDIO

GPIO headers, Pico order



Pin 35 (ADC_VREF on a Pico) and 36: 3.3 V. Pin 37 (3V3_EN) open: the NCP1117 has no enable. Pins 39, 40: 5 V after the fuse

55 x 22 mm, four layers: signals / GND / 3.3 V / signals (JLC04161H-7628)
RP2040, W25Q128JV 16 MB QSPI flash, 12 MHz crystal, USB-C full speed, WS2812B
Created by siwit.co/PCB7 Approved by Dr. Sam Macharia
siliconwit.com

Sheet: /
File: rp2040-devboard.kicad_sch

Title: RP2040 USB-C Development Board

Size: A3	Date: 2026-11-19	**Rev: A**
KiCad E.D.A. 10.0.8		Id: 1/1