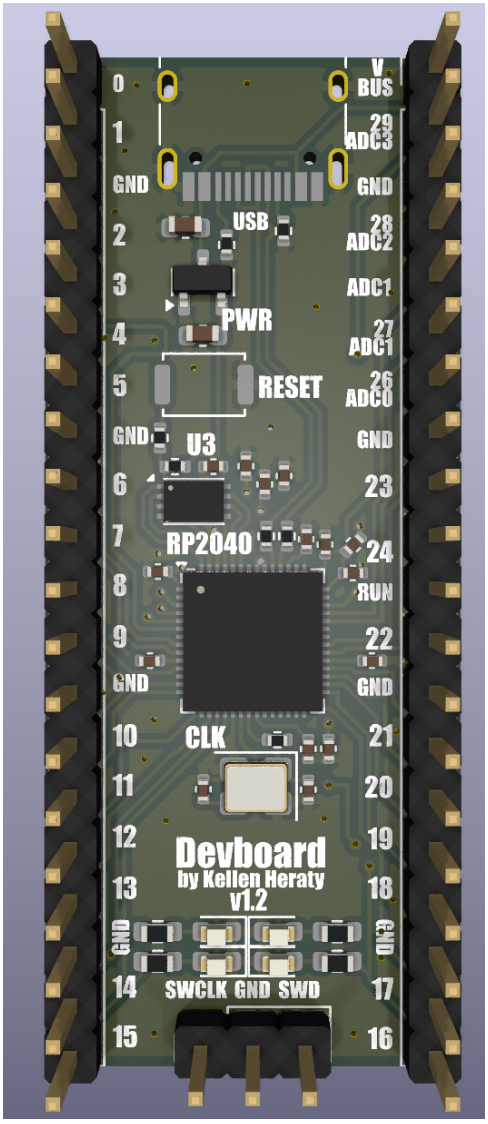
Devboard v1.2

RP2040 Development Platform



Designed by Kellen Heraty

https://github.com/kaileh57/devboard

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Product Overview

The **Devboard v1.2** is a compact, high-performance microcontroller board powered by the Raspberry Pi RP2040. It combines the power of dual Cortex-M0+ cores with a modern USB-C interface and a simplified GPIO layout.

1.1 Technical Specifications

- **MCU**: RP2040 (Dual-core ARM Cortex-M0+ @ 133MHz)
- **Flash Storage**: 2MB QSPI (Winbond W25Q16JV)
- **SRAM**: 264kB on-chip
- **Power Input**: 5V via USB-C
- **Operating Voltage**: 3.3V (Onboard MCP1700 LDO, 250mA Max)
- **GPIO**: 20x user-accessible pins (plus 4x LED pins)
- **Dimensions**: 40-pin DIP form factor (Standard 2.54mm pitch)

Pinout & Interfaces

The board features a 40-pin header layout designed for breadboard compatibility.

Left Function	GP	Pin	Pin	GP	Right Function
UART0 TX / I2C0 SDA	**0**	1	40	**VBUS**	5V Input
UART0 RX / I2C0 SCL	**1**	2	39	**29**	ADC3
Ground	GND	3	38	GND	Analog GND
I2C1 SDA	**2**	4	37	**28**	ADC2
I2C1 SCL	**3**	5	36	**27**	ADC1
SPI0 RX	**4**	6	35	**26**	ADC0
SPI0 CSn	**5**	7	34	GND	Ground
Ground	GND	8	33	**23**	User IO
SPI0 SCK	**6**	9	32	**24**	User IO
SPI0 TX	**7**	10	31	**RUN**	Reset/Enable
SPI1 RX	**8**	11	30	**22**	User IO
SPI1 CSn	**9**	12	29	GND	Ground
Ground	GND	13	28	**21**	I2C0 SCL
SPI1 SCK	**10**	14	27	**20**	I2C0 SDA
SPI1 TX	**11**	15	26	**19**	SPI0 TX
UART0 TX	**12**	16	25	**18**	SPI0 SCK
UART0 RX	**13**	17	24	GND	Ground
Ground	GND	18	23	**17**	**LED D4**
LED D1	**14**	19	22	**16**	**LED D3**
LED D2	**15**	20	21	-	(No Pin)

Table 1: Devboard v1.2 Pin Map

2.1 Status LEDs

Four red LEDs are connected to the lower GPIO pins. Writing `HIGH` to these pins turns the LED ON.

LED D1	**LED D2**	**LED D3**	**LED D4**
GPIO 14	GPIO 15	GPIO 16	GPIO 17

Schematic Diagram

The following schematic details the core RP2040 connections, USB-C interface, and power regulation circuit.

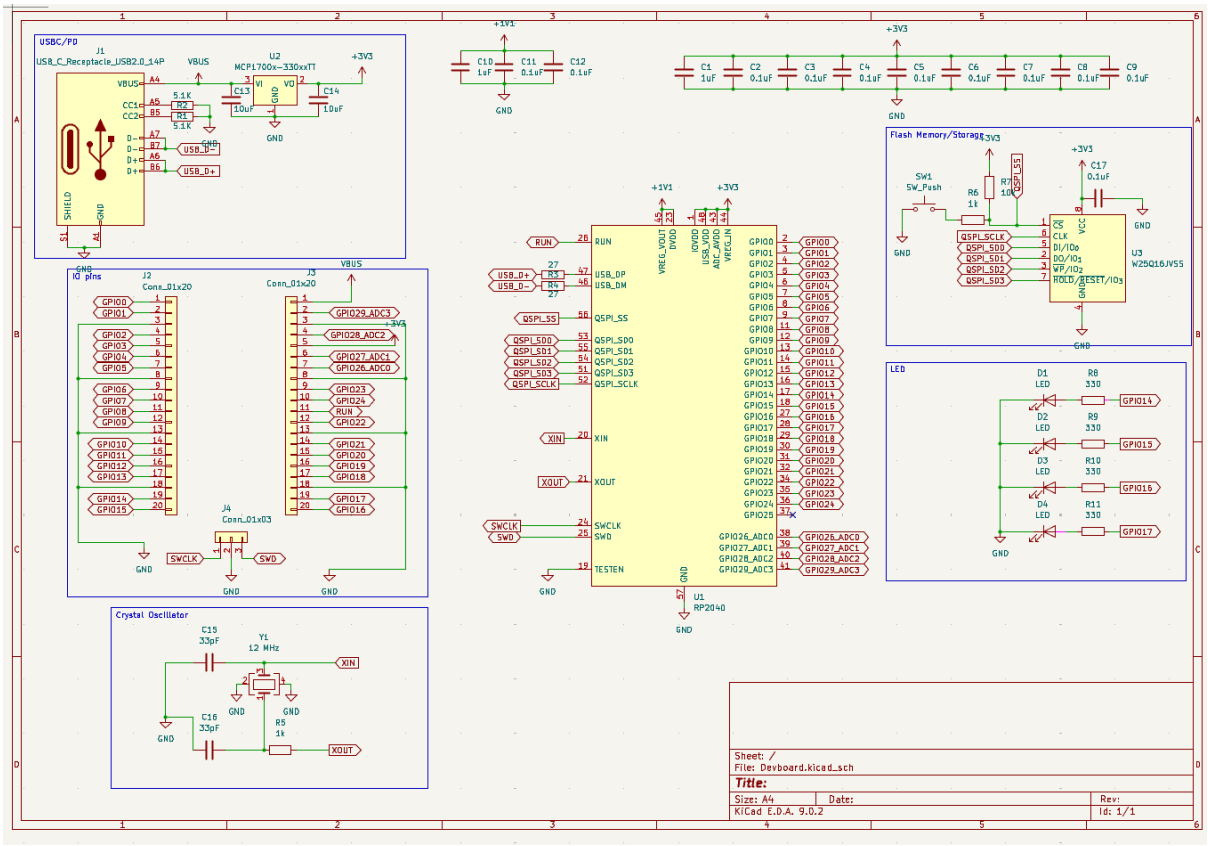

Figure 1: Full System Schematic

3.1 Design Notes

- **Crystal Oscillator**: 12MHz external crystal (Y1) with 33pF load capacitors.
- **USB Termination**: 27Ω series resistors on D+ and D- lines.
- **Flash Memory**: W25Q16JV connected via QSPI interface.
- **Bootloader**: Pulls CSn low via SW1 to enter USB Mass Storage mode.