RP2040 Stamp
Datasheet

Version v0.2 alpha

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1 Overview

The RP2040 Stamp is a highly integrated surface-mount module designed around the Raspberry Pi® RP2040 microcontroller.

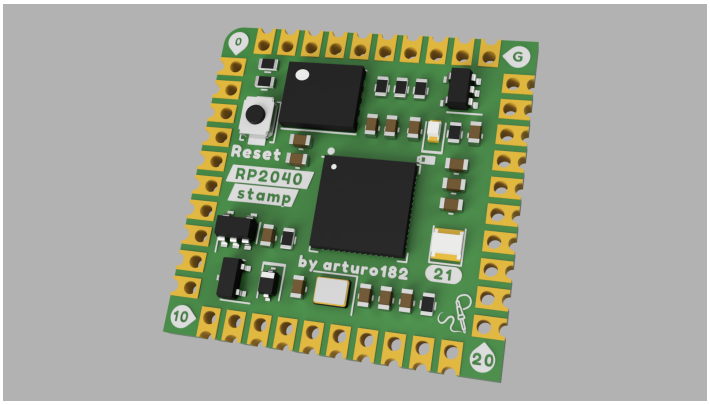

Figure 1: The RP2040 Stamp module

1.1 Block Diagram

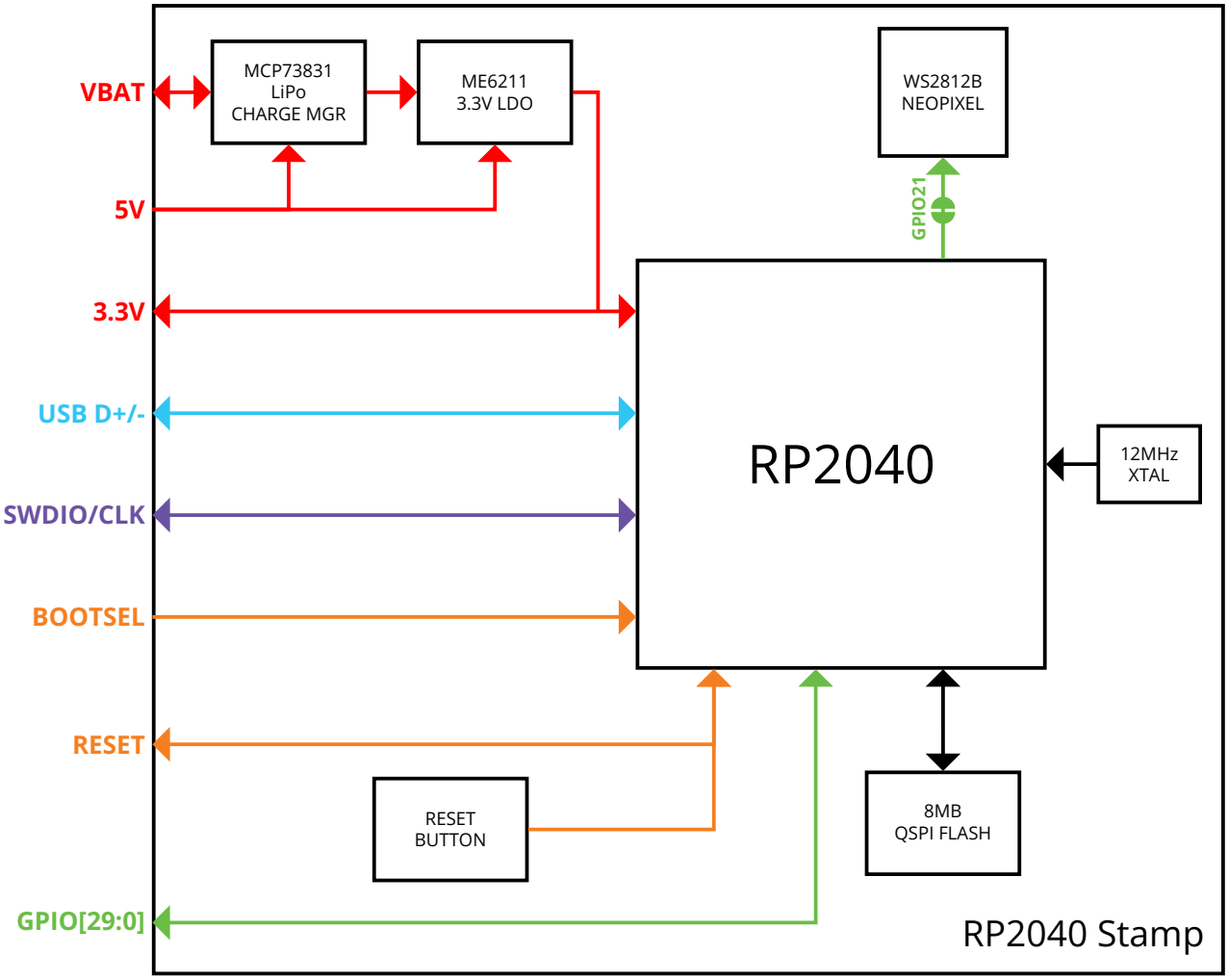

Figure 2: The RP2040 Stamp block diagram

2 Pin Description

2.1 Pin Layout

Figure 3: The pin layout of the RP2040 Stamp (Top View)

2.2 Pin Description

Pin	Name	Type	Description/Functions					
1	GPIO0	GPIO	GPIO0	SPI0 RX	UART0 TX	I2C0 SDA	PWM0 A	
2	GPIO1	GPIO	GPIO1	SPI0 CSn	UART0 RX	I2C0 SCL	PWM0 B	
3	GPIO2	GPIO	GPIO2	SPI0 SCK	UART0 CTS	I2C1 SDA	PWM1 A	
4	GPIO3	GPIO	GPIO3	SPI0 TX	UART0 RTS	I2C1 SCL	PWM1 B	
5	GPIO4	GPIO	GPIO4	SPI0 RX	UART1 TX	I2C0 SDA	PWM2 A	
6	GPIO5	GPIO	GPIO5	SPI0 CSn	UART1 RX	I2C0 SCL	PWM2 B	
7	GPIO6	GPIO	GPIO6	SPI0 SCK	UART1 CTS	I2C1 SDA	PWM3 A	
8	GPIO7	GPIO	GPIO7	SPI0 TX	UART1 RTS	I2C1 SCL	PWM3 B	
9	GPIO8	GPIO	GPIO8	SPI1 RX	UART1 TX	I2C0 SDA	PWM4 A	
10	GPIO9	GPIO	GPIO9	SPI1 CSn	UART1 RX	I2C0 SCL	PWM4 B	
11	GPIO10	GPIO	GPIO10	SPI1 SCK	UART1 CTS	I2C1 SDA	PWM5 A	
12	GPIO11	GPIO	GPIO11	SPI1 TX	UART1 RTS	I2C1 SCL	PWM5 B	
13	GPIO12	GPIO	GPIO12	SPI1 RX	UART0 TX	I2C0 SDA	PWM6 A	
14	GPIO13	GPIO	GPIO13	SPI1 CSn	UART0 RX	I2C0 SCL	PWM6 B	
15	GPIO14	GPIO	GPIO14	SPI1 SCK	UART0 CTS	I2C1 SDA	PWM7 A	
16	GPIO15	GPIO	GPIO15	SPI1 TX	UART0 RTS	I2C1 SCL	PWM7 B	
17	GPIO16	GPIO	GPIO16	SPI0 RX	UART0 TX	I2C0 SDA	PWM0 A	
18	GPIO17	GPIO	GPIO17	SPI0 CSn	UART0 RX	I2C0 SCL	PWM0 B	
19	GPIO18	GPIO	GPIO18	SPI0 SCK	UART0 CTS	I2C1 SDA	PWM1 A	
20	GPIO19	GPIO	GPIO19	SPI0 TX	UART0 RTS	I2C1 SCL	PWM1 B	
21	GPIO20	GPIO	GPIO20	SPI0 RX	UART1 TX	I2C0 SDA	PWM2 A	
22	GPIO21	GPIO	GPIO21	SPI0 CSn	UART1 RX	I2C0 SCL	PWM2 B	
23	GPIO22	GPIO	GPIO22	SPI0 SCK	UART1 CTS	I2C1 SDA	PWM3 A	
24	GPIO23	GPIO	GPIO23	SPI0 TX	UART1 RTS	I2C1 SCL	PWM3 B	
25	GPIO24	GPIO	GPIO24	SPI1 RX	UART1 TX	I2C0 SDA	PWM4 A	
26	GPIO25	GPIO	GPIO25	SPI1 CSn	UART1 RX	I2C0 SCL	PWM4 B	
27	GPIO26 / ADC0	GPIO / ADC	GPIO26	SPI1 SCK	UART1 CTS	I2C1 SDA	PWM5 A	ADC0
28	GPIO27 / ADC1	GPIO / ADC	GPIO27	SPI1 TX	UART1 RTS	I2C1 SCL	PWM5 B	ADC1
29	GPIO28 / ADC2	GPIO / ADC	GPIO28	SPI1 RX	UART0 TX	I2C0 SDA	PWM6 A	ADC2
30	GPIO29 / ADC3	GPIO / ADC	GPIO29	SPI1 CSn	UART0 RX	I2C0 SCL	PWM6 B	ADC3
31	GND	Power	Ground					

Pin	Name	Type	Description/Functions
32	VBAT	Power	Can be connected to the positive terminal of a single cell LiPo/LiIon. Voltage range 3.6V-4.2V
33	5V	Power Input	3.6V-6.5V main power input
34	3.3V	Power Output	3.3V±2% LDO power output, 500mA max
35	USB D-	I/O	USB D-
36	USB D+	I/O	USB D+
37	SWDIO	I/O	Serial Wire Debug Input/Output
38	SWCLK	Input	Serial Wire Debug Clock
39	$\overline{\text{RESET}}$	Input	RP2040 reset when driven LOW, run when driven HIGH. Pulled UP with a 10K resistor.
40	BOOTSEL	Input	If driven LOW during power-up, the RP2040 will enter USB boot mode. Pulled UP with a 10K resistor.

Table 1: The pin descriptions of the RP2040 Stamp

For more details about the GPIO and other pins of the RP2040, please consult the Raspberry Pi RP2040 Datasheet.

3 Functional Description

3.1 MCU

3.2 Memory

3.3 Crystal Oscillator

3.4 Interface Description

4 Electrical Characteristics

4.1 Electrical Characteristics

4.2 Power Consumption

5 Schematics

6 Peripheral Schematics

7 Dimensions

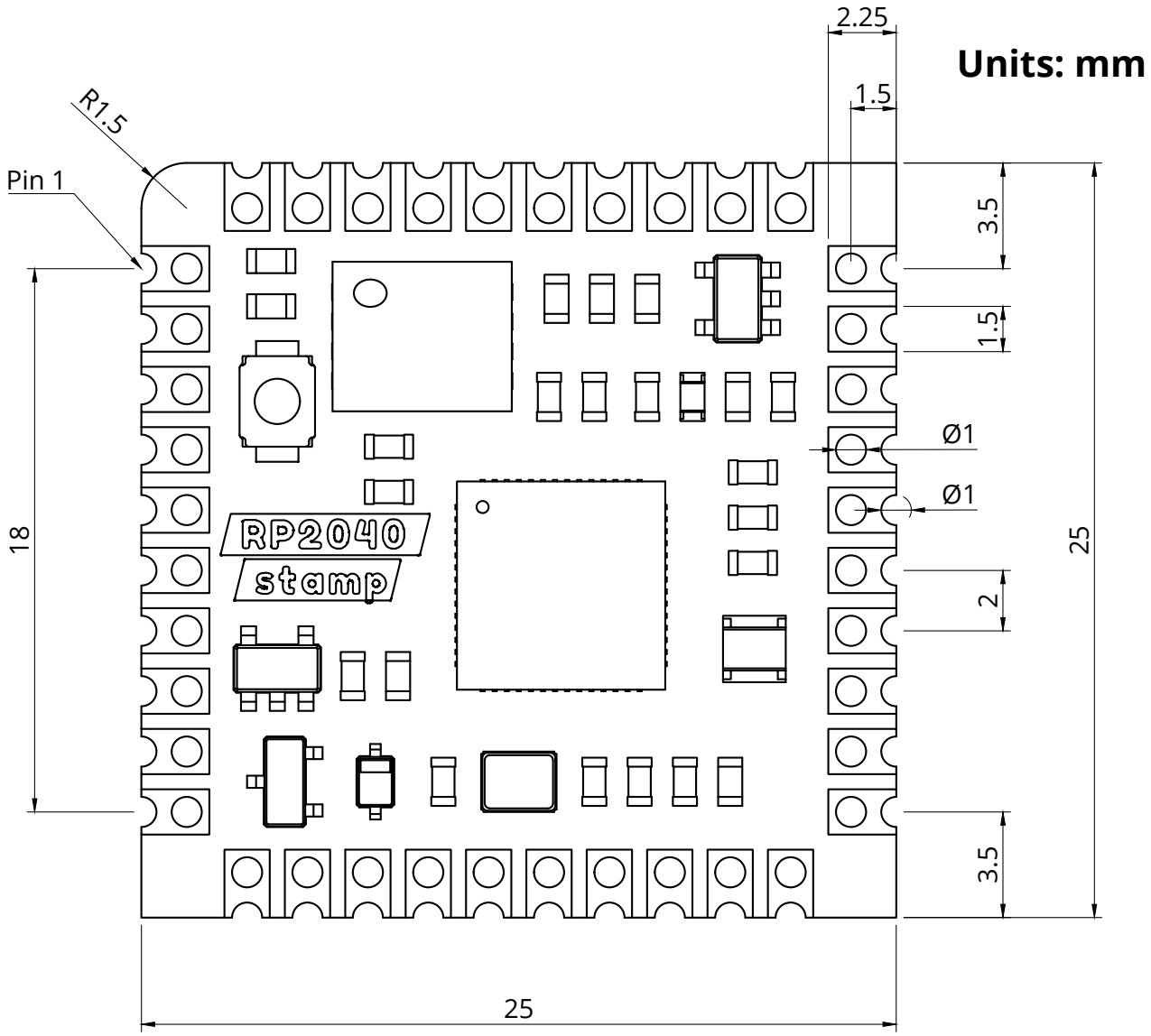

Figure 4: The dimensions of the RP2040 Stamp

8 Recommended PCB Land Pattern

9 Revision History

Revision	Date	Description
v0.2 alpha	December 2021	Update the LDO model
v0.1 alpha	May 2021	First release

10 Legal Notices

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