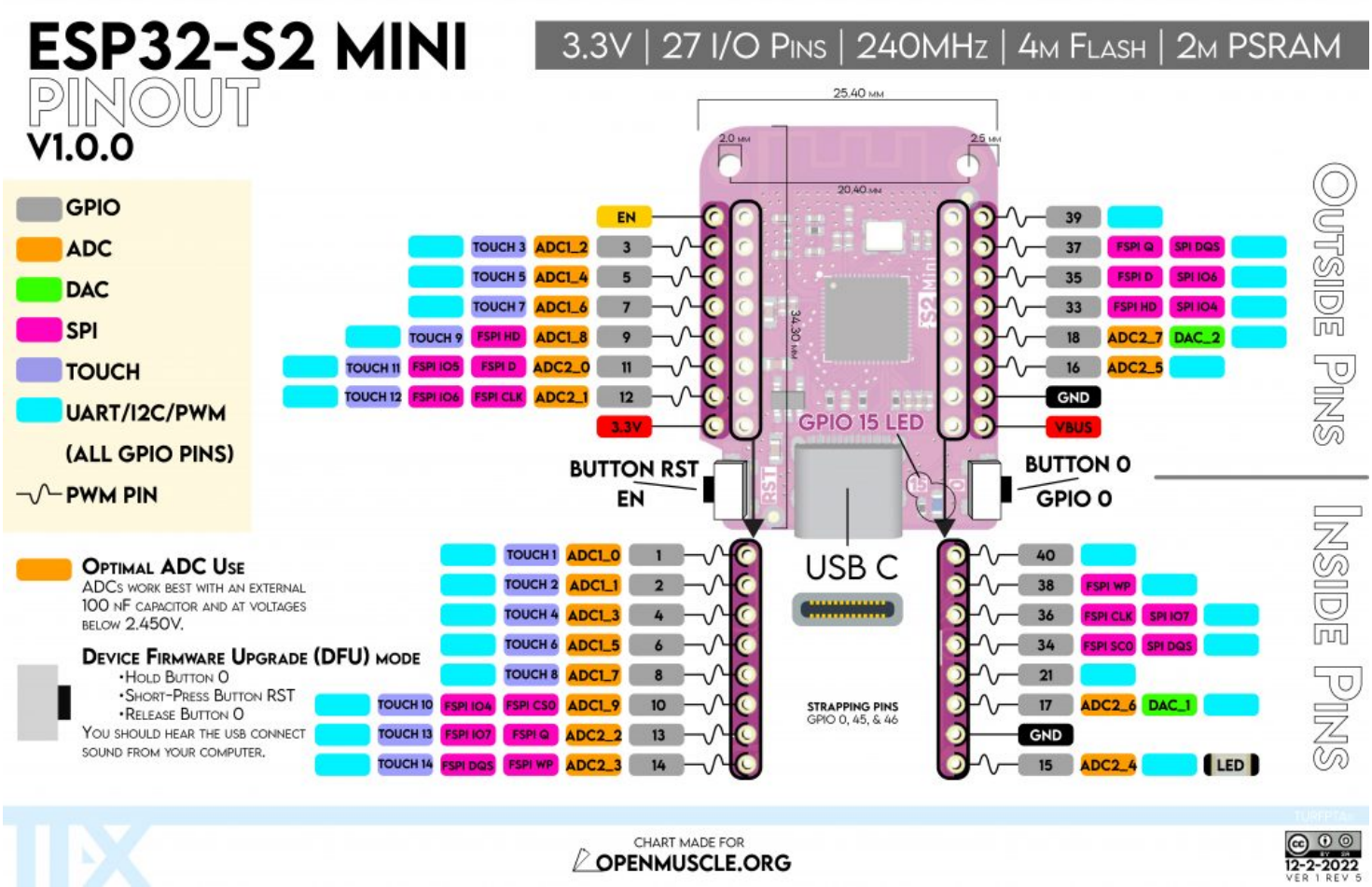
ESP32-S2 mini pinout from wemos. Includes Device Firmware Upgrade Mode and LED pins. Plus exhaustive pin list from Espresif Chip.



It was difficult to find the ESP32 S2 Mini pinout and even the wemos website does not specify what the pins are save for in the datasheet. According to the images The ESP32 S2 mini pinouts show pins 1-18,21,33-40 being accessible via the board.
Link to the datasheet: https://www.wemos.cc/en/latest/s2/s2_mini.html
Features of the board:

USB Type-C

4MB Flash

2MB PSRAM

20 ADCs 18 available through pins (These are run off of two ADC ICs at Signified by ADC1 and ADC2{Chips naming convention not ours [we count with 0 being the first]})

ESP32-S2 integrates two 13-bit SAR ADCs thus the ADC1 and ADC2

2 DACS

SPI, UART, and USB On The Go

The image shows the ESP32-S2 pinout numbers but doesn't specify any other information: which are ADCs which are I2C… etc.
We are currently using the ESP32 S2 pinout and the ESP32 C3 for our testing upcoming devices and will be publishing everything we find here on the site. Above you will find the ESP32 S2 diagram that we created for our use. We are also updating it as we continue to test the boards that we ordered a batch of.

The ESP32-S2 is a very promising chip that has all of the features we are looking for for the Open Muscle Prototype Version 3.
It is interesting that you can use any of the pins for SDA and SCL IIC comunicatons or I2C.
This post here had the same query: https://www.esp32.com/viewtopic.php?t=16416
More Chip information: https://www.espressif.com/en/products/socs/esp32-s2

Pin Description Table:

Pin#	No.	Type	Name	Function and Description of pins/pinouts
	1	Pa	VDDA	Analog Power Supply
	2	I/O	LNA_IN	RF input and output
	3	Pa	VDD3P3	Analog Power Supply
	4	Pa	VDD3P3	Analog power supply
0	5	I/O/T		GPIO0
1	6	I/O/T		GPIO1, Touch1, ADC1_CH0
2	7	I/O/T		GPIO2, Touch2, ADC1_CH1
3	8	I/O/T		GPIO3, Touch3, ADC1_CH2
4	9	I/O/T		GPIO4, Touch4, ADC1_CH3
5	10	I/O/T		GPIO5, Touch5, ADC1_CH4
6	11	I/O/T		GPIO6, Touch6, ADC1_CH5
7	12	I/O/T		GPIO7, Touch7, ADC1_CH6
8	13	I/O/T		GPIO8, Touch8, ADC1_CH7
9	14	I/O/T		GPIO9, Touch9, ADC1_CH8, FSPIHD
10	15	I/O/T		GPIO10, Touch10, ADC1_CH9, FSPICS0, FSPIIO4
11	16	I/O/T		GPIO11, Touch11, ADC2_CH0, FSPID, FSPIIO5
12	17	I/O/T		GPIO12, Touch12, ADC2_CH1, FSPICLK, FSPIIO6
13	18	I/O/T		GPIO13, Touch13, ADC2_CH2, FSPIQ, FSPIIO7
14	19	I/O/T		GPIO14, Touch14, ADC2_CH3, FSPIWP, FSPIDQS
	20	Pa	VDD3P3_RTC	Analog Power Supply
15	21		XTAL_32K_P	GPIO15, U0RTS, ADC2_CH4, XTAL_32K_P
16	22		XTAL_32K_N	GPIO16, U0CTS, ADC2_CH5, XTAL_32K_N
17	23		DAC_1	GPIO17, U1TXD, ADC2_CH6, DAC_1
18	24		DAC_2	GPIO18, U1RXD, ADC2_CH7, DAC_2, CLK_OUT3
~~19~~	25			GPIO19, U1RTS, ADC2_CH8, CLK_OUT2, USB_D-
~~20~~	26			GPIO20, U1CTS, ADC2_CH9, CLK_OUT1, USB_D+
	27	Pd	VDDP3P_RTC_IO	Input power supply for RTC IO
21	28	I/O/T		GPIO21
~~26~~	29	I/O/T		GPIO26, SPICS1 *(Used for embedded PSRAM)*
	30	Pd	VDD_SPI	Output power supply: 1.8 V or the same voltage as

				VDD3P3_RTC_IO
~~27~~	31	I/O/T	SPIHD	GPIO27, SPIHD *(Used for embedded flash)*
~~28~~	32	I/O/T	SPIWP	GPIO28, SPIWP *(Used for embedded flash)*
~~29~~	33	I/O/T	SPICS0	GPIO29, SPICS0 *(Used for embedded flash)*
~~30~~	34	I/O/T	SPICLK	GPIO30, SPICLK *(Used for embedded flash)*
~~31~~	35	I/O/T	SPIQ	GPIO31, SPIQ *(Used for embedded flash)*
~~32~~	36	I/O/T	SPID	GPIO32, SPID *(Used for embedded flash)*
33	37	I/O/T		GPIO33, SPIIO4, FSPIHD
34	38	I/O/T		GPIO34, SPIIO5, FSPICSO
35	39	I/O/T		GPIO35, SPIIO6, FSPID
36	40	Pd		GPIO36, SPIIO7, FSPICLK
37	41	I/O/T		GPIO37, SPIDQS, FSPIQ
38	42	I/O/T		GPIO38, FSPIWP
39	43	I/O/T	MTCK	GPIO39, MTCK, CLK_OUT3
40	44	I/O/T	MTDO	GPIO40, MTDO, CLK_OUT2
	45	Pd	VDD3P3_CPU	Input Power Supply for CPU IO
~~41~~	46	I/O/T	MTDI	GPIO41, MTDI, CLK_OUT1
~~42~~	47	I/O/T	MTMS	GPIO42, MTMS
~~43~~	48	I/O/T	U0TXD	GPIO43, U0TXD, CLK_OUT1
~~44~~	49	I/O/T	U0RXD	GPIO44, U0RXD, CLK_OUT2
~~45~~	50	I/O/T		GPIO45
	51	Pa	VDDA	Analog Power Supply
	52	–	XTAL_N	External crystal output
	53	–	XTAL_P	External crystal output
	54	Pa	VDDA	Analog power supply
~~46~~	55	I		GPIO46
	56	I	CHIP_PU	High: on, enables the chip Low: off, the chip powers off

ESP32-S2 Pinout gleaned from the data in this document:
https://www.espressif.com/sites/default/files/documentation/esp32-s2_datasheet_en.pdf

The pin values in **bold** can be found on the esp32-s2 mini v1.0.0 board the ones with a ~~strikethrough~~ where not routed to header pins. There will be more information posted as more testing is conducted.