ESP32 Pinbelegung (ESP32 38 Pins)

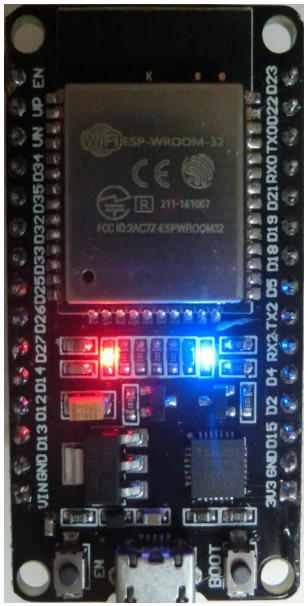
Quellen: https://www.espressif.com/sites/default/files/documentation/esp32_datasheet_en.pdf
https://randomnerdtutorials.com/esp32-pinout-reference-gpios/

				Input / Output	GP IO	Name	Nr.			Nr.		Name	GP IO	Input / Output				
			Power			**3V3**	1	19		19	1	**GND**				GND		
						EN	2	18		18	2	**P23**	23	In Out				VSPI_MOSI
RTC_GPIO0		ADC1_CH0	Sensor VP	In	36	**SVP**	3	17		17	3	**P22**	22	In Out			I2C_SCL	
RTC_GPIO3	INPUT ONLY	ADC1_CH3	Sensor VN	In	39	**SVN**	4	16		16	4	**TX**	1		UART_0_TX			
RTC_GPIO4		ADC1_CH6		In	34	**P34**	5	15		15	5	**RX**	3		UART_0_RX			
RTC_GPIO5		ADC1_CH7		In	35	**P35**	6	14		14	6	**P21**	21	In Out			I2C_SDA	
RTC_GPIO9		ADC1_CH4	Touch9	In Out	32	**P32**	7	13		13	7	**GND**				GND		
RTC_GPIO8		ADC1_CH5	Touch8	In Out	33	**P33**	8	12		12	8	**P19**	19	In Out				VSPI_MISO
RTC_GPIO6		ADC2_CH8	DAC1	In Out	25	**P25**	9	11		11	9	**P18**	18	In Out				VSPI_CLK
RTC_GPIO7		ADC2_CH9	DAC2	In Out	26	**P26**	10	10		10	10	**P5**	5	In Out				VSPI_CS0
RTC_GPIO17		ADC2_CH7	Touch7	In Out	27	**P27**	11	9		9	11	**P17**	17	In Out	UART_2_TX		I2C_SDA_2	
RTC_GPIO16	HSPI_CLK	ADC2_CH6	Touch6	In Out	14	**P14**	12	8		8	12	**P16**	16	In Out	UART_2_RX		I2C_SCL_2	
RTC_GPIO15	HSPI_MISO	ADC2_CH5	Touch5	Out	12	**P12**	13	7		7	13	**P4**	4	In Out	Touch0		ADC2_CH0	RTC_GPIO10
			GND			**GND**	14	6		6	14	**P0**	0		(Touch1)		(ADC2_CH1)	RTC_GPIO11
RTC_GPIO14	HSPI_MOSI	ADC2_CH4	Touch4	In Out	13	**P13**	15	5		5	15	**P2**	2	In Out	Touch2		ADC2_CH2	int. LED RTC_GPIO12
		DO NOT USE	*SHD*		*9*	*SD2*	16	*4*		4	16	**P15**	15	In Out	Touch3		ADC2_CH3	HSPI_CS0 RTC_GPIO13
			SWP		*10*	*SD3*	17	*3*		*3*	17	*SD1*	*8*					
			CSC		*11*	*CMD*	18	*2*		*2*	18	*SD0*	*7*				DO NOT USE	
			Power o. VIN			**5V**	19	1		*1*	19	*CLK*	*6*		*SCK*			

ADC	Analog to Digital Converter (12 bit Genauigkeit ; 0...4095)					
ADC2_CHx	sind bei Wifi-Betrieb nicht benutzbar; ausweichen auf ADC1_CHx					
DAC	Digital to Analog Converter (8 bit)					
TouchX	Kapazitive Touch-Sensoren					
RTC_GPIOx	für Aufwachen aus Deep-Sleep-Modus					
I2C	SCL = Serial Clock, SDA = Serial Data (standard mode (100 kbit/s) and fast mode (400 kbit/s))					
SPI		MOSI	MISO	CS0	CLK	(Master Output/Slave Input, Master Input/Slave Output, Chip Select, Clock)
	VSPI_	23	19	18	5	
	HSPI_	13	12	14	15	
Digital-Ausgänge für PWM/Pulsweitenmodulation: alle Output-Pins (max. 16)						
5V-Ausgang	nur wenn Versorgung per USB erfolgt					
GND	ggf. mit Masse von externer Spannungsquelle (z.B. für LEDs) verbinden (Potenzialausgleich)					

ESP32 Pinbelegung (ESP32 30 Pins)

Quellen: https://www.espressif.com/sites/default/files/documentation/esp32_datasheet_en.pdf
https://randomnerdtutorials.com/esp32-pinout-reference-gpios/

				Input / Output		GP IO	Name	Nr.			Nr.		Name	GP IO	Input / Output				
							EN	1	15		15	1	**D23**	23	In	Out			VSPI_MOSI
RTC_GPIO0	INPUT ONLY	ADC1_CH0	Sensor VP	In		36	**VP**	2	14		14	2	**D22**	22	In	Out		I2C_SCL	
RTC_GPIO3		ADC1_CH3	Sensor VN	In		39	**VN**	3	13		13	3	**TX0**	1			UART_0_TX		
RTC_GPIO4		ADC1_CH6		In		34	**D34**	4	12		12	4	**RX0**	3			UART_0_RX		
RTC_GPIO5		ADC1_CH7		In		35	**D35**	5	11		11	5	**D21**	21	In	Out		I2C_SDA	
RTC_GPIO9		ADC1_CH4	Touch9	In	Out	32	**D32**	6	10		10	6	**D19**	19	In	Out			VSPI_MISO
RTC_GPIO8		ADC1_CH5	Touch8	In	Out	33	**D33**	7	9		9	7	**D18**	18	In	Out			VSPI_CLK
RTC_GPIO6		ADC2_CH8	DAC1	In	Out	25	**D25**	8	8		8	8	**D5**	5	In	Out			VSPI_CS0
RTC_GPIO7		ADC2_CH9	DAC2	In	Out	26	**D26**	9	7		7	9	**TX2**	17	In	Out	UART_2_TX	I2C_SDA_2		
RTC_GPIO17		ADC2_CH7	Touch7	In	Out	27	**D27**	10	6		6	10	**RX2**	16	In	Out	UART_2_RX	I2C_SCL_2		
RTC_GPIO16	HSPI_CLK	ADC2_CH6	Touch6	In	Out	14	**D14**	11	5		5	11	**D4**	4	In	Out	Touch0	ADC2_CH0		RTC_GPIO10
RTC_GPIO15	HSPI_MISO	ADC2_CH5	Touch5		Out	12	**D12**	12	4		4	12	**D2**	2	In	Out	Touch2	ADC2_CH2	int. LED	RTC_GPIO12
RTC_GPIO14	HSPI_MOSI	ADC2_CH4	Touch4	In	Out	13	**D13**	13	3		3	13	**D15**	15	In	Out	Touch3	ADC2_CH3	HSPI_CS0	RTC_GPIO13
			GND				**GND**	14	2		2	14	**GND**				GND			
			Power o. VIN				**5V**	15	1		1	15	**3V3**				Power			

alternative Bezeichnungen:
ADC1_CHx → ADCx
ADC2_CHx → ADC1x

ADC	Analog to Digital Converter (12 bit Genauigkeit ; 0...4095)
ADC2_CHx	sind bei Wifi-Betrieb nicht benutzbar; ausweichen auf ADC1_CHx
DAC	Digital to Analog Converter (8 bit)
TouchX	Kapazitive Touch-Sensoren
RTC_GPIOx	für Aufwachen aus Deep-Sleep-Modus
I2C	SCL = Serial Clock, SDA = Serial Data (standard mode (100 kbit/s) and fast mode (400 kbit/s))
SPI	(Master Output/Slave Input, Master Input/Slave Output, Chip Select, Clock)

	MOSI	MISO	CS0	CLK
VSPI_	23	19	18	5
HSPI_	13	12	14	15

VSPI_CS0 → VSPI_SS (SS=Slave Select)
HSPI_x → SPI_x, HSPI_CS0 → SPI_SS

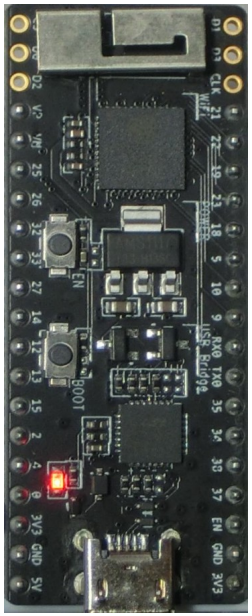
Digital-Ausgänge für PWM/Pulsweitenmodulation: alle Output-Pins (max. 16)

5V-Ausgang	nur wenn Versorgung per USB erfolgt
GND	ggf. mit Masse von externer Spannungsquelle (z.B. für LEDs) verbinden (Potenzialausgleich)

ESP32 Pinbelegung (ESP32 Pico Kit)

Quellen: https://docs.espressif.com/projects/esp-idf/en/latest/hw-reference/get-started-pico-kit.html#pin-descriptions
https://www.espressif.com/sites/default/files/documentation/esp32_datasheet_en.pdf
https://randomnerdtutorials.com/esp32-pinout-reference-gpios/

				Input / Output		GP IO	Name	Nr.			Nr.		Name	GP IO	Input / Output			
			UART_2_RX			*16*	*CS*						*D1*	*8*				
			UART_2_TX			*17*	*D0*						*D3*	*7*				
						11	*D2*						*CLK*	*6*				
RTC_GPIO0	INPUT ONLY	ADC1_CH0	Sensor VP	In		36	**VP**	1	17		17	1	**21**	21	In	Out	I2C_SDA	
RTC_GPIO3		ADC1_CH3	Sensor VN	In		39	**VN**	2	16		16	2	**22**	22	In	Out	I2C_SCL	
RTC_GPIO6		ADC2_CH8	DAC1	In	Out	25	**25**	3	15		15	3	**19**	19	In	Out		VSPI_MISO
RTC_GPIO7		ADC2_CH9	DAC2	In	Out	26	**26**	4	14		14	4	**23**	23	In	Out		VSPI_MOSI
RTC_GPIO9		ADC1_CH4	Touch9	In	Out	32	**32**	5	13		13	5	**18**	18	In	Out		VSPI_CLK
RTC_GPIO8		ADC1_CH5	Touch8	In	Out	33	**33**	6	12		12	6	**5**	5	In	Out		VSPI_CS0
RTC_GPIO17		ADC2_CH7	Touch7	In	Out	27	**27**	7	11		11	7	**10**	10	In	Out	UART_1_TX	
RTC_GPIO16	HSPI_CLK	ADC2_CH6	Touch6	In	Out	14	**14**	8	10		10	8	**9**	9	In	Out	UART_1_RX	
RTC_GPIO15	HSPI_MISO	ADC2_CH5	Touch5	In	Out	12	**12**	9	9		9	9	**RX0**	3	In	Out	UART_0_RX	
RTC_GPIO14	HSPI_MOSI	ADC2_CH4	Touch4	In	Out	13	**13**	10	8		8	10	**TX0**	1	In	Out	UART_0_TX	
RTC_GPIO13	HSPI_CS0	ADC2_CH3	Touch3	In	Out	15	**15**	11	7		7	11	**35**	35	In		ADC1_CH7	INPUT ONLY RTC_GPIO5
RTC_GPIO12		ADC2_CH2	Touch2	In	Out	2	**2**	12	6		6	12	**34**	34	In		ADC1_CH6	INPUT ONLY RTC_GPIO4
RTC_GPIO10		ADC2_CH0	Touch0	In	Out	4	**4**	13	5		5	13	**38**	38	In		ADC1_CH2	INPUT ONLY RTC_GPIO2
RTC_GPIO11		ADC2_CH1	Touch1	In	Out	0	**0**	14	4		4	14	**37**	37	In		ADC1_CH1	INPUT ONLY RTC_GPIO1
			Power				**3V3**	15	3		3	15	EN					
			GND				**GND**	16	2		2	16	**GND**			GND		
			Power o. VIN				**5V**	17	1		1	17	**3V3**			Power		
			CSC															



ADC	Analog to Digital Converter (12 bit Genauigkeit ; 0...4095)
ADC2_CHx	sind bei Wifi-Betrieb nicht benutzbar; ausweichen auf ADC1_CHx
DAC	Digital to Analog Converter (8 bit)
TouchX	Kapazitive Touch-Sensoren
RTC_GPIOx	für Aufwachen aus Deep-Sleep-Modus
I2C	SCL = Serial Clock, SDA = Serial Data (standard mode (100 kbit/s) and fast mode (400 kbit/s))
SPI	MOSI MISO CS0 CLK (Master Output/Slave Input, Master Input/Slave Output, Chip Select, Clock)
	VSPI_ 23 19 18 5
	HSPI_ 13 12 14 15
Digital-Ausgänge für PWM/Pulsweitenmodulation: alle Output-Pins (max. 16)	
5V-Ausgang	nur wenn Versorgung per USB erfolgt
GND	ggf. mit Masse von externer Spannungsquelle (z.B. für LEDs) verbinden (Potenzialausgleich)

https://unsinnsbasis.de/esp32-pin-belegung/