

# KS0413 keystudio ESP32 Core Board

From Keystudio Wiki

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## Description

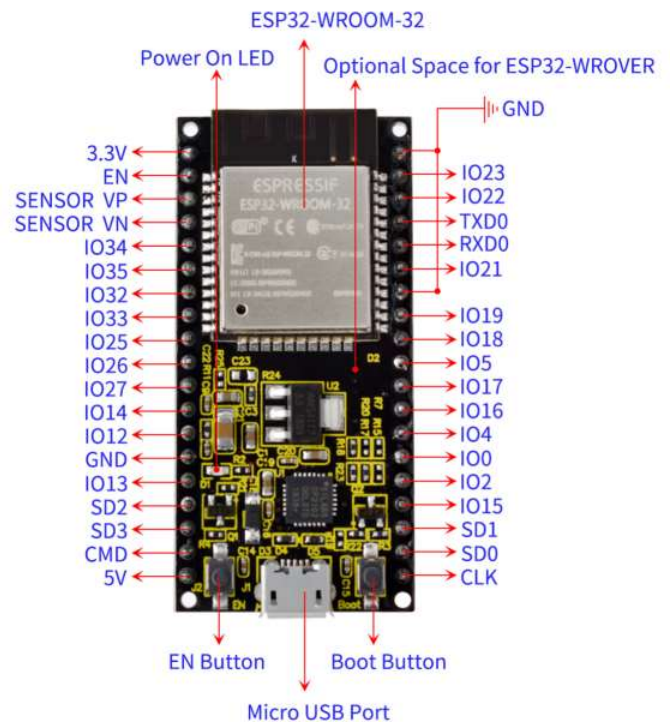
This keystudio ESP32 core board is a Mini development board based on the ESP-WROOM-32 module.

The board has brought out most I/O ports to pin headers of 2.54mm pitch. These provide an easy way of connecting peripherals according to your own needs.

When it comes to developing and debugging with the development board, the both side standard pin headers can make your operation more simple and handy.

The ESP-WROOM-32 module is the industry's leading integrated WiFi + Bluetooth solution with less than 10 external components.

It integrates antenna switch, RF balun, power amplifiers, low noise amplifiers, filters and power management modules. At the same time, it also integrates with TSMC's low-power 40nm technology, so that power performance and RF performance are safe and reliable, easy to expand to a variety of applications.

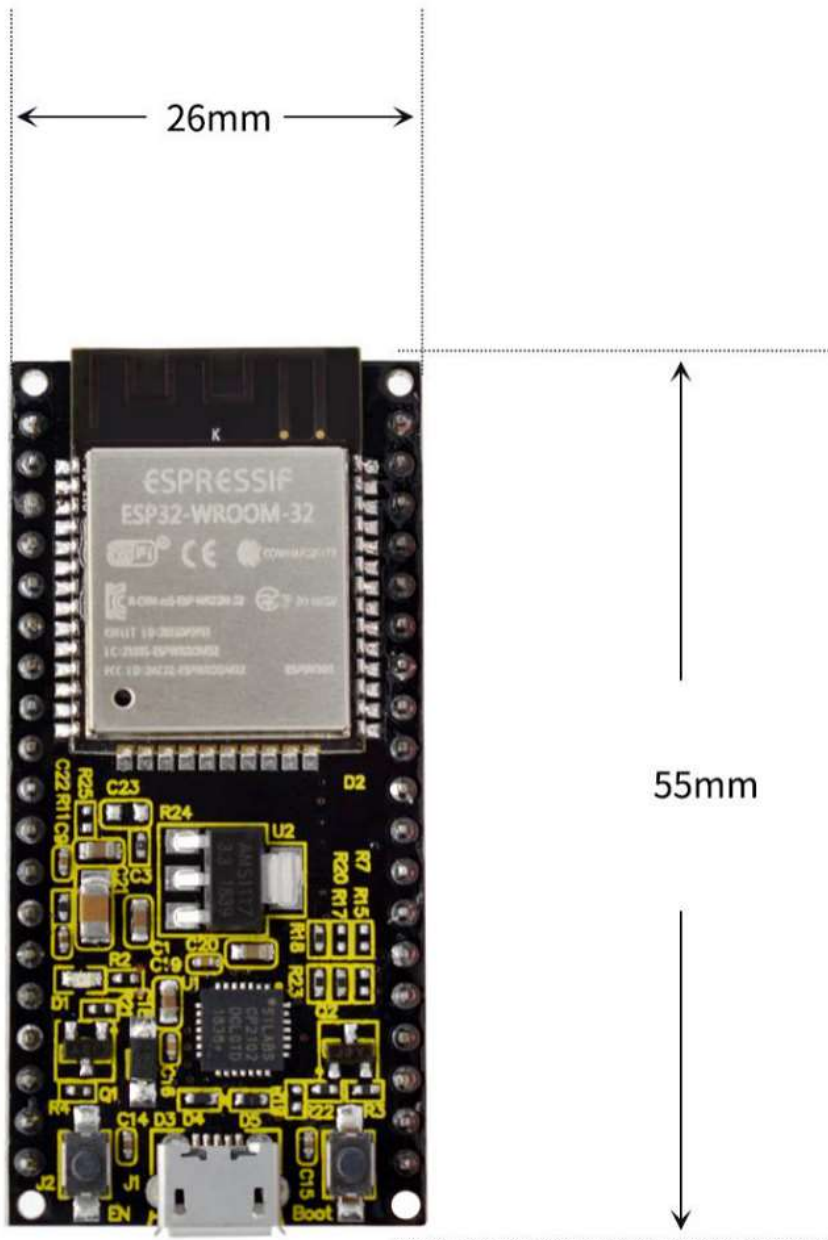


Keystudio ESP32 Core Board (Black and Eco-friendly)



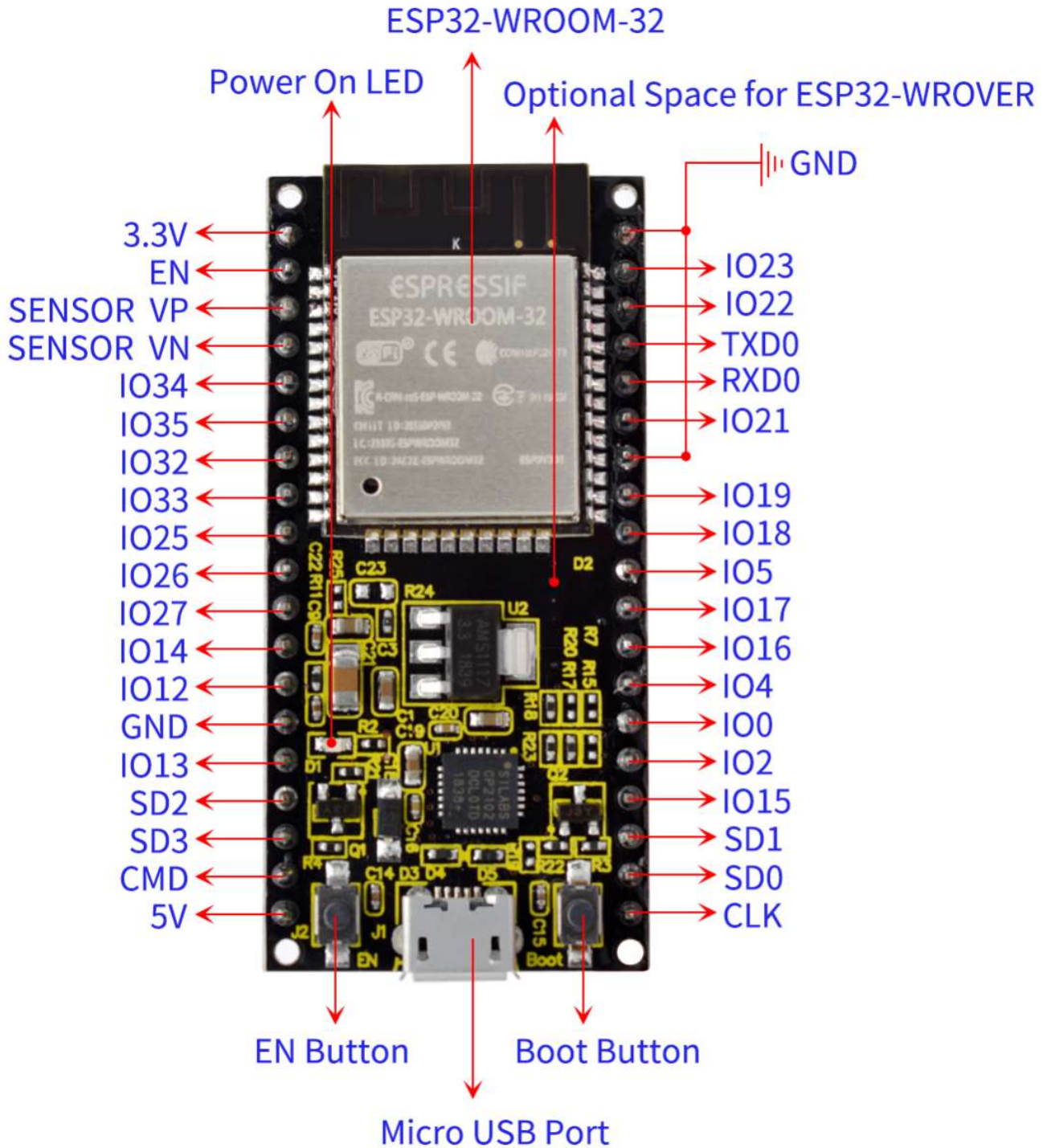
## Technical Details

- Microcontroller: ESP-WROOM-32 module
- USB to Serial Port Chip: CP2102-GMR
- Operating Voltage: DC 5V
- Operating Current: 80mA (average)
- Current Supply: 500mA (Minimum)
- Operating Temperature Range: -40°C ~ +85°C
- WiFi mode: Station/SoftAP/SoftAP+Station/P2P
- WiFi protocol: 802.11 b/g/n/e/i (802.11n, speed up to 150 Mbps)
- WiFi frequency range: 2.4 GHz ~ 2.5 GHz
- Bluetooth protocol: conform to Bluetooth v4.2 BR/EDR and BLE standards
- Dimensions: 55mm\*26mm\*13mm
- Weight: 9.3g



## Element and Interfaces

Here is an explanation of what every element and interface of the board has:



### Specialized Functions of Some Pins

PINS	EXPLANATIONS
<b>IO23</b>	VSPI MOSI/SPI MOSI
<b>IO22</b>	Wire SCL
<b>TXD0</b>	IO1/Serial TX
<b>RXD0</b>	IO3/Serial RX
<b>IO21</b>	Wire SDA
<b>IO19</b>	VSPI MISO/SPI MISO
<b>IO18</b>	VSPI SCK/SPI SCK
<b>IO5</b>	VSPI SS/SPI SS
<b>IO4</b>	ADC10/TOUCH0
<b>IO0</b>	ADC11/TOUCH1
<b>IO2</b>	ADC12/TOUCH2
<b>IO15</b>	HSPI SS/ADC13/TOUCH3/TDO
<b>SD1</b>	IO8/FLASH D1
<b>SD0</b>	IO7/FLASH D0
<b>CLK</b>	IO6/FLASH SCK
<b>CMD</b>	IO11/FLASH CMD
<b>SD3</b>	IO10/FLASH D3
<b>SD2</b>	IO9/FLASH D2
<b>IO13</b>	HSPI MOSI/ADC14/TOUCH4/TCK
<b>IO12</b>	HSPI MISO/ADC15/TOUCH5/TDI
<b>IO14</b>	HSPI SCK/ADC16/TOUCH6/TMS
<b>IO27</b>	ADC17/TOUCH7
<b>IO26</b>	ADC19/DAC2
<b>IO25</b>	ADC18/DAC1
<b>IO33</b>	ADC5/TOUCH8
<b>IO32</b>	ADC4/TOUCH9
<b>IO35</b>	ADC7
<b>IO34</b>	ADC6
<b>SENSOR VN</b>	IO39/ADC3
<b>SENSOR VP</b>	IO36/ADC0
<b>EN</b>	RESET