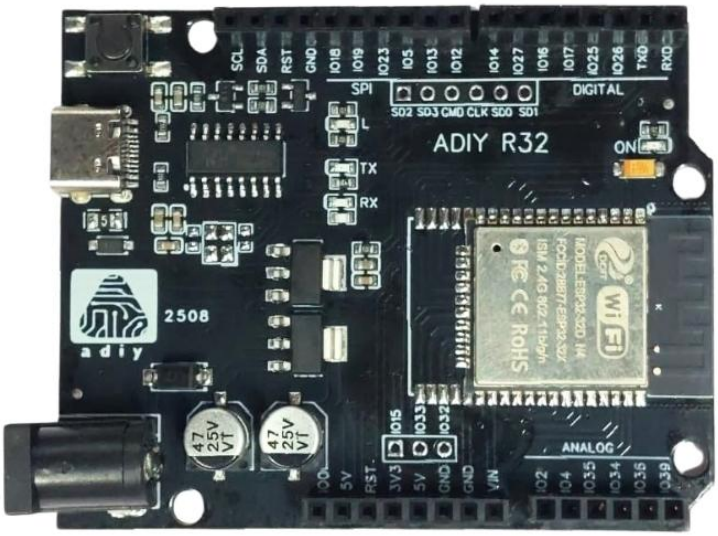
ADIY ESP32 Development Board Compatible with UNO



Description:

The ADIY D1 R32 is a powerful development board based on the ESP32-WROVER-32 module, designed to provide advanced wireless capabilities while retaining compatibility with the Arduino Uno form factor. With built-in support for Wi-Fi and Bluetooth (including BLE), this board is ideal for a wide range of applications, from IoT systems to robotics and beyond.

The board features a USB Type-C connector for programming and debugging, a CH340 USB-to-UART bridge, and a 3.3V voltage regulator to safely power the ESP32. Its 38 pins offer rich peripheral support, including GPIOs, ADC/DAC channels, PWM, I2C, SPI, UART, and capacitive touch sensors.

The design of the D1 R32 bridges the gap between Arduino's simplicity and ESP32's advanced features, providing a smooth learning curve for makers, students, and professionals alike. Whether you're building a web server, controlling devices remotely, or experimenting with real-time sensor data, the D1 R32 empowers you to bring your ideas to life with minimal hassle and maximum potential.

Also, we can remove the ESP32 Wroover module on the board and replace it with ESP32 Wroom as the pads were given for it .

Testing Parameters:

Product Name	ESP32 with ARDUINO
Power supply(Micro USB)	5V
Minimum Supply voltage(DC jack)	7V
Maximum Supply voltage(DC jack)	12V
Input/Output Pin Voltage	3.3V
Interface	C-Type USB
Wi-Fi	802.11 b/g/n/e/i
Wi-Fi Frequency	2.4Ghz-2.5Ghz
Functionality tested	Yes
USB Bridge IC	CH340C
SoC	ESP-Wrover-32
Working Temperature	-40 °c to 125°c
Wireless antenna	On PCB
Communication interfaces	SPI, I2C, UART, PWM
Flash	4MB
RAM	512Kb
ADC	16 (12 bit)
DAC	2 (8 bit)

Dimensions:

Size of PCB	68.5 x 53.34
PCB Color	Black

Features:

- Microcontroller: ESP32-WROOM-32 / ESP32-WROVER-32
- Wireless Connectivity:
    - Wi-Fi 802.11 b/g/n (2.4 GHz)
    - Bluetooth 4.2 (Classic and BLE)
- USB Interface: USB Type-C (for programming and debugging)
- USB-to-UART Bridge: CH340
- Operating Voltage: 3.3V
- Input Voltage (via USB): 5V
- GPIO Pins: 38 (digital, analog, touch, PWM, etc.)
- Analog Inputs: Multiple ADC channels (up to 12-bit resolution)
- Digital-to-Analog Outputs (DAC): 2 channels
- Capacitive Touch Pins: 10 channels
- PWM Channels: Up to 16 channels (LEDC)
- I2C, SPI, UART Support: Yes (multiple interfaces)
- Onboard Reset Button: Yes
- Onboard Antenna: Yes (for wireless communication)
- Logic Level: 3.3V (with 5V pin for peripherals)
- Programming Support: Arduino IDE, PlatformIO, ESP-IDF

Pin Configuration:

D1 R32 has digital Input/output pins (GPIO) pins. These works on fixed voltage of 3.3V.

➢ **Power & Control Pins:**

- **IO0:** Boot mode pin (used to enter bootloader mode)
- **5V:** 5V power output for peripherals
- **3.3V:** 3.3V power output (ESP32 logic level voltage)
- **GND:** Ground

- **VIN:** Analog input channel

➢ **Digital & Analog Pins:**

- **IO2:** GPIO/ADC/Touch (T2)
- **IO4:** GPIO/ADC/Touch (T0)
- **IO15:** Touch (T3)
- **IO13:** Touch (T4) / ADC14
- **IO12:** Touch (T5) / ADC15
- **IO14:** Touch (T6) / ADC16
- **IO27:** Touch (T7) / ADC17
- **IO33:** Touch (T8) / ADC18
- **IO32:** Touch (T9) / ADC19

➢ **SPI (Serial Peripheral Interface):**

- **IO18:** SPI Clock (SCK)
- **IO19:** SPI Master In, Slave Out (MISO)
- **IO23:** SPI Master Out, Slave In (MOSI)
- **IO5:** SPI Slave Select (SS)

➢ **UART (Serial Communication):**

- **TX0:** UART Transmit
- **RX0:** UART Receive

➢ **DAC (Digital-to-Analog Conversion):**

- **DAC1 (GPIO25):** DAC output channel 1
- **DAC2 (GPIO26):** DAC output channel 2

➢ **PWM (Pulse Width Modulation) Pins:**

- **IO2, IO4, IO5, IO12, IO13, IO14, IO15, IO18, IO19, IO21, IO22, IO23, IO25, IO26, IO27, IO32, IO33**
  (ESP32 supports PWM on almost any GPIO via LEDC — up to 16 channels)

The Strapping Pins:

Certain pins are used to control how the ESP32 starts up — whether it goes into normal mode or bootloader mode (for flashing new code). These pins are called **strapping pins**, and they need to be in specific states during boot:

- **GPIO0:** Must be LOW to enter flashing mode
- **GPIO2:** Must be LOW during boot
- **GPIO4:** Strapping pin (typically HIGH)
- **GPIO5:** Must be HIGH during boot
- **GPIO12:** Must be LOW during boot
- **GPIO15:** Must be HIGH during boot

Most development boards (like the D1 R32) handle these states automatically. However, if you have sensors or devices connected to these pins, they might interfere with the boot process. If you encounter issues uploading code, check if any peripherals are holding these pins in the wrong state. After the board finishes booting or flashing, these pins work as regular GPIOs.

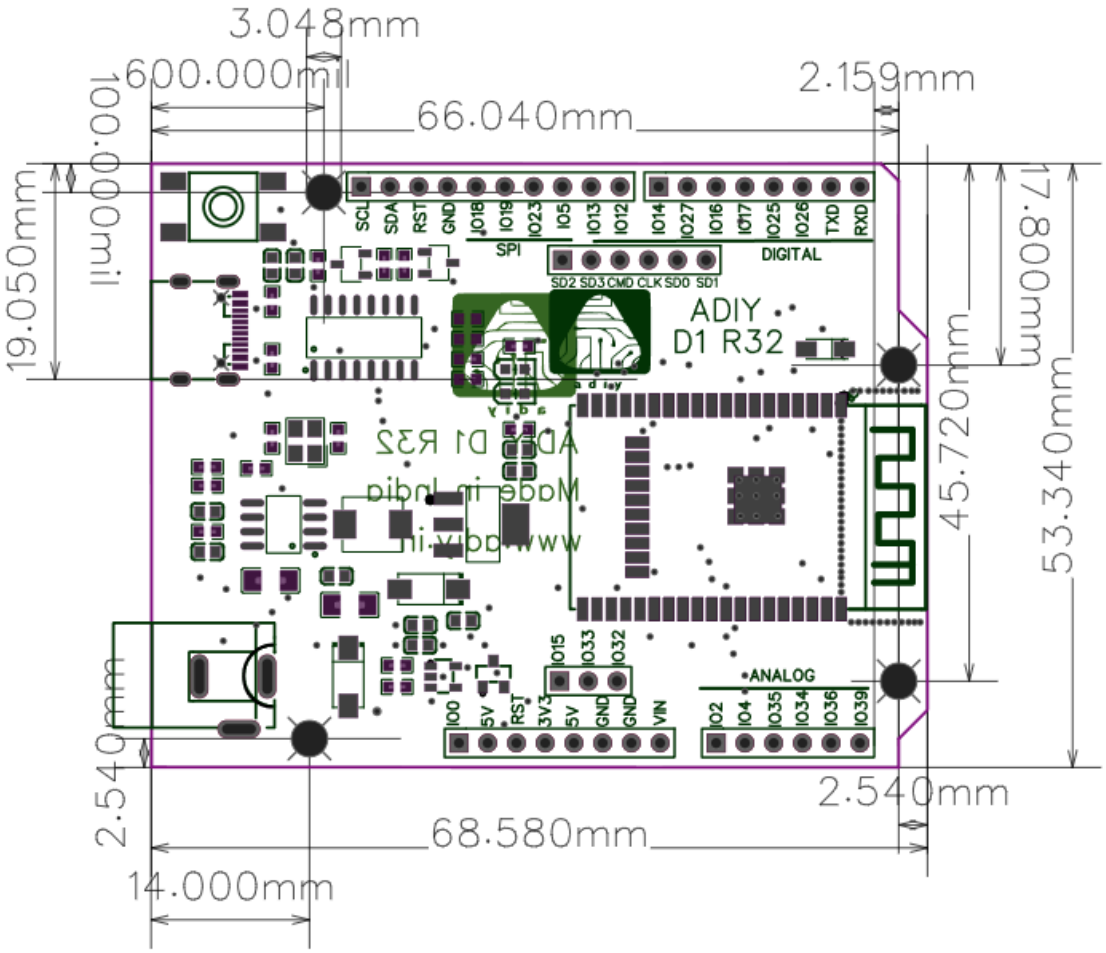
Applications:

- **Internet of Things (IoT):** Smart home systems, environmental monitoring, energy management
- **Wireless Sensor Networks:** Collect and transmit sensor data via Wi-Fi/Bluetooth
- **Home Automation:** Control appliances and lighting remotely
- **Web Servers & Dashboards:** Host web interfaces to interact with hardware
- **Robotics & Motor Control:** Build autonomous robots, RC vehicles, and more
- **Wearable Devices:** Bluetooth-enabled wearables and health monitors
- **Data Logging & Analysis:** Record sensor data to SD cards or upload to the cloud

***Note:** 5V voltage should not be connected to any esp32 chip pin.*

As the esp32 works on only 3.3V and not tolerant to 5V applying 5V voltage results in destroying chip.

Footprint:



The **ADIY D1 R32** bridges the gap between the simplicity of Arduino and the powerful capabilities of the ESP32. Whether you're a hobbyist, student, or professional developer, this board is an excellent tool for prototyping and building connected projects with minimal hassle and maximum potential.