## MEGO Development Board
## Product Datasheet



The MEGO is 32 bit microcontroller development board perfect for the prototyping & learning embedded systems. It has 16 Digital I/O, 8 Analog Input (12 bit), I2C, SPI and Serial. with RTC, SD card slot onboard and WiFi 2.4GHz capabilities.

At its heart, the Espressif ESP8266 WiFi SoC "WROOM-02" module. It is FCC, CE, TELEC, Wi-Fi Alliance, and SRRC certified module with an onboard antenna.
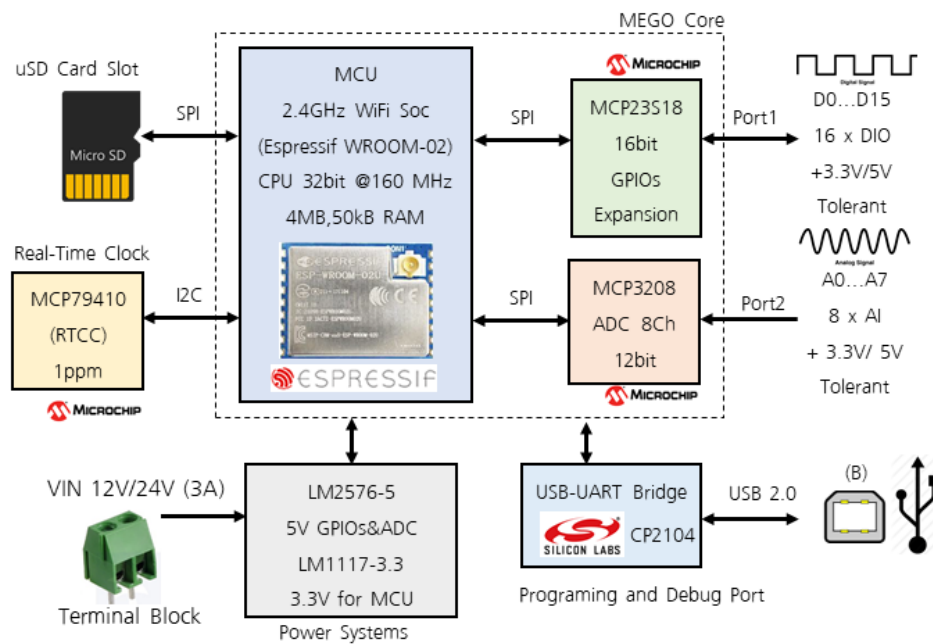


MEGO Board : Open Source Microcontroller Board
https://github.com/QWaveSystems/MEGO
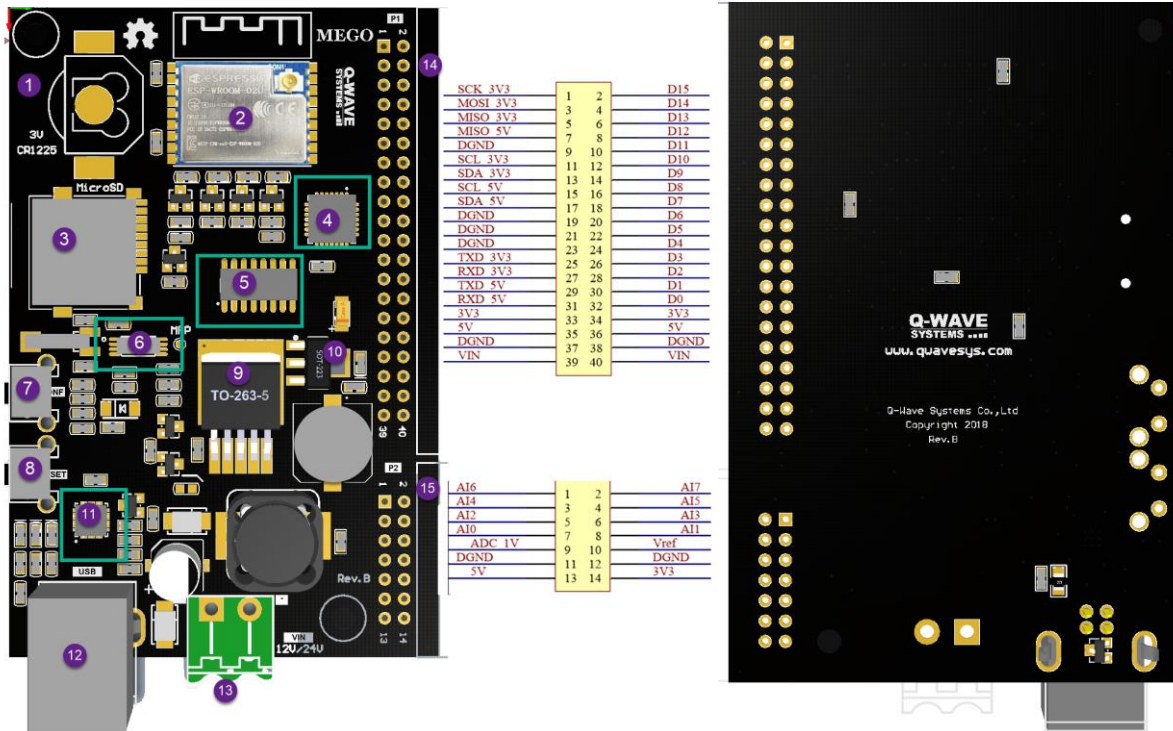MEGO Board Rev.B
amornthep@qwavesys.com

Espressif System's WROOM-02 is a low cost WiFi SoC, A 32-bit low power micro-controller with CPU clock of 160MHz, 50KB of user available RAM and an external 2MB of Flash memory with a full WiFi front-end (both as client and access point). There are two variants "02D" and "02U". ESP-WROOM-02D, come with onboard antenna and ESP-WROOM-02U integrates a U.FL connector.



ESP-WROOM-02D          ESP-WROOM-02U (integrates a U.FL connector)

## MEGO Specification

- Espressif MCU 32 bit @160 MHz (WROOM-02 ESP8266)
- WiFi 2.4GHz , Memory Flash 2MB, RAM 50k
- 8 Analog Input (A0-A7), 12 bit ADC (3.3/5V)
- 16 Digital (3.3V/5V) I/O (D0-D15) Supported (1-Wire,DHTxx,SoftSerial,SoftI2C)
- RTC (Real-Time Clock) Onboard
- Micro SD Card onboard
- Power Supply Input 12V/24V (3A)
- Onboard USB debug and programming (Speed 921600)
- SPI = 1 Port (3.3V/5V)
- I2C = 1 Port (3.3V/5V)
- Serial = 1 Port (3.3V/5V)
- Dimension 85mmx56.2mm

## Board Front& Bottom Side



| | | | |
|---|---|---|---|
| SCK_3V3 | 1 | 2 | D15 |
| MOSI_3V3 | 3 | 4 | D14 |
| MISO_3V3 | 5 | 6 | D13 |
| MISO_5V | 7 | 8 | D12 |
| DGND | 9 | 10 | D11 |
| SCL_3V3 | 11 | 12 | D10 |
| SDA_3V3 | 13 | 14 | D9 |
| SCL_5V | 15 | 16 | D8 |
| SDA_5V | 17 | 18 | D7 |
| DGND | 19 | 20 | D6 |
| DGND | 21 | 22 | D5 |
| DGND | 23 | 24 | D4 |
| TXD_3V3 | 25 | 26 | D3 |
| RXD_3V3 | 27 | 28 | D2 |
| TXD_5V | 29 | 30 | D1 |
| RXD_5V | 31 | 32 | D0 |
| 3V3 | 33 | 34 | 3V3 |
| 5V | 35 | 36 | 5V |
| DGND | 37 | 38 | DGND |
| VIN | 39 | 40 | VIN |

| | | | |
|---|---|---|---|
| AI6 | 1 | 2 | AI7 |
| AI4 | 3 | 4 | AI5 |
| AI2 | 5 | 6 | AI3 |
| AI0 | 7 | 8 | AI1 |
| ADC_1V | 9 | 10 | Vref |
| DGND | 11 | 12 | DGND |
| 5V | 13 | 14 | 3V3 |

1.Battery Holder CR12201225 (3.3V)

2.Espressif MCU WROOM-02

3.Micro-SD Card Slot

4.IC MCP23S18 (SPI) Expansion 16 bit GPIOs

5.IC MC3208 (SPI) ADC 12bit 8 Ch

6.IC RTCC Microchip MCP79410

7.User/Config Button

8.Reset Button

9.IC Switching Voltage Regulator LM2576-5 5V 3A

10.IC LDO Voltage Regulator LM1117 3.3V 1A

11.USB UART Bridge Silicon Labs CP2104

12.USB Type B Debug/Programming Port

13.Vin Connector DC 12V or 24V (Max 30V)

14.GPIO Port 1

15.GPIO Port 2

**Pin Definition**

**Port1: 40 Pin Connector**

| Description | Pin | Pin | Description |
|---|---|---|---|
| (SPI) SCK 3.3V | 1 | 2 | D15 |
| (SPI) MOSI 3.3V | 3 | 4 | D14 |
| (SPI) MISO 3.3V | 5 | 6 | D13 |
| (SPI) MISO 5V | 7 | 8 | D12 |
| GND | 9 | 10 | D11 |
| (I2C) SCL 3.3V | 11 | 12 | D10 |
| (I2C) SDA 3.3V | 13 | 14 | D9 |
| (I2C) SCL 5V | 15 | 16 | D8 |
| (I2C) SDA 5V | 17 | 18 | D7 |
| GND | 19 | 20 | D6 |
| GND | 21 | 22 | D5 |
| GND | 23 | 24 | D4 |
| (Serial) TX 3.3V | 25 | 26 | D3 |
| (Serial) RX 3.3V | 27 | 28 | D2 |
| (Serial) TX 5V | 29 | 30 | D1 |
| (Serial) RX 5V | 31 | 32 | D0 |
| 3.3V | 33 | 34 | 3.3V |
| 5V | 35 | 36 | 5V |
| GND | 37 | 38 | GND |
| Vin 12V/24V | 39 | 40 | Vin 12V/24V |

Port2: 14 Pin Connector

| Description | Pin | Pin | Description |
|---|---|---|---|
| Analog A6 | 1 | 2 | Analog A7 |
| Analog A4 | 3 | 4 | Analog A5 |
| Analog A2 | 5 | 6 | Analog A3 |
| Analog A0 | 7 | 8 | Analog A1 |
| (ESP) ADC 1V | 9 | 10 | ADC VRef |
| GND | 11 | 12 | GND |
| 5V | 13 | 14 | 3.3V |

## Software Development Tool

In addition, The MEGO Board can be programmed using established development tools, such as Arduino IDE, **LabVIEW** (Qwave MEGO Embedded Library), Python (uPython).
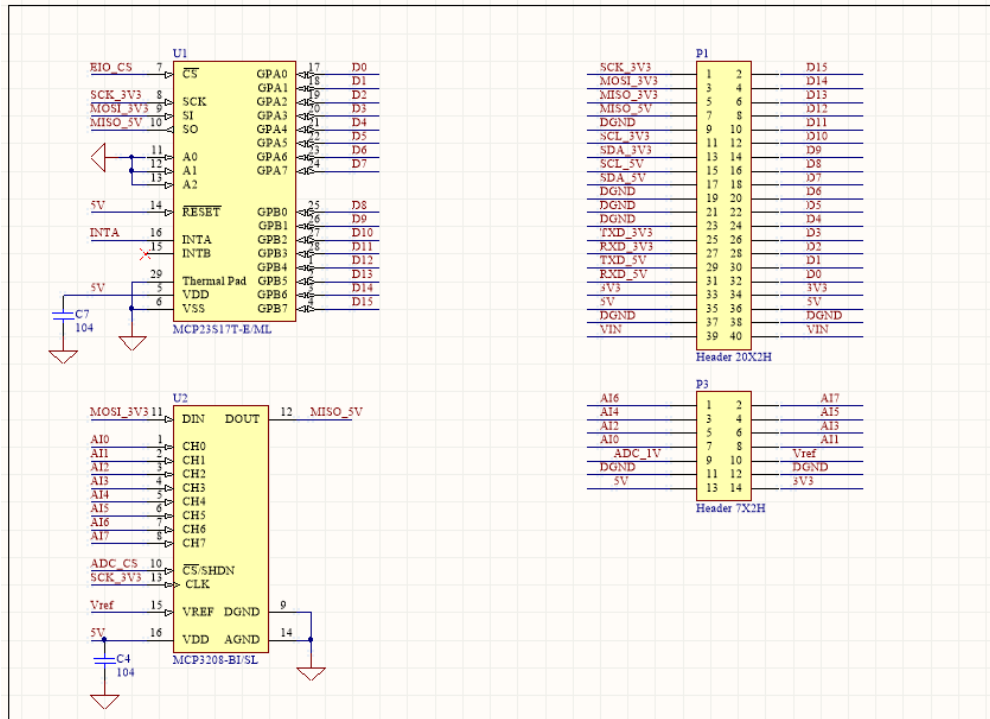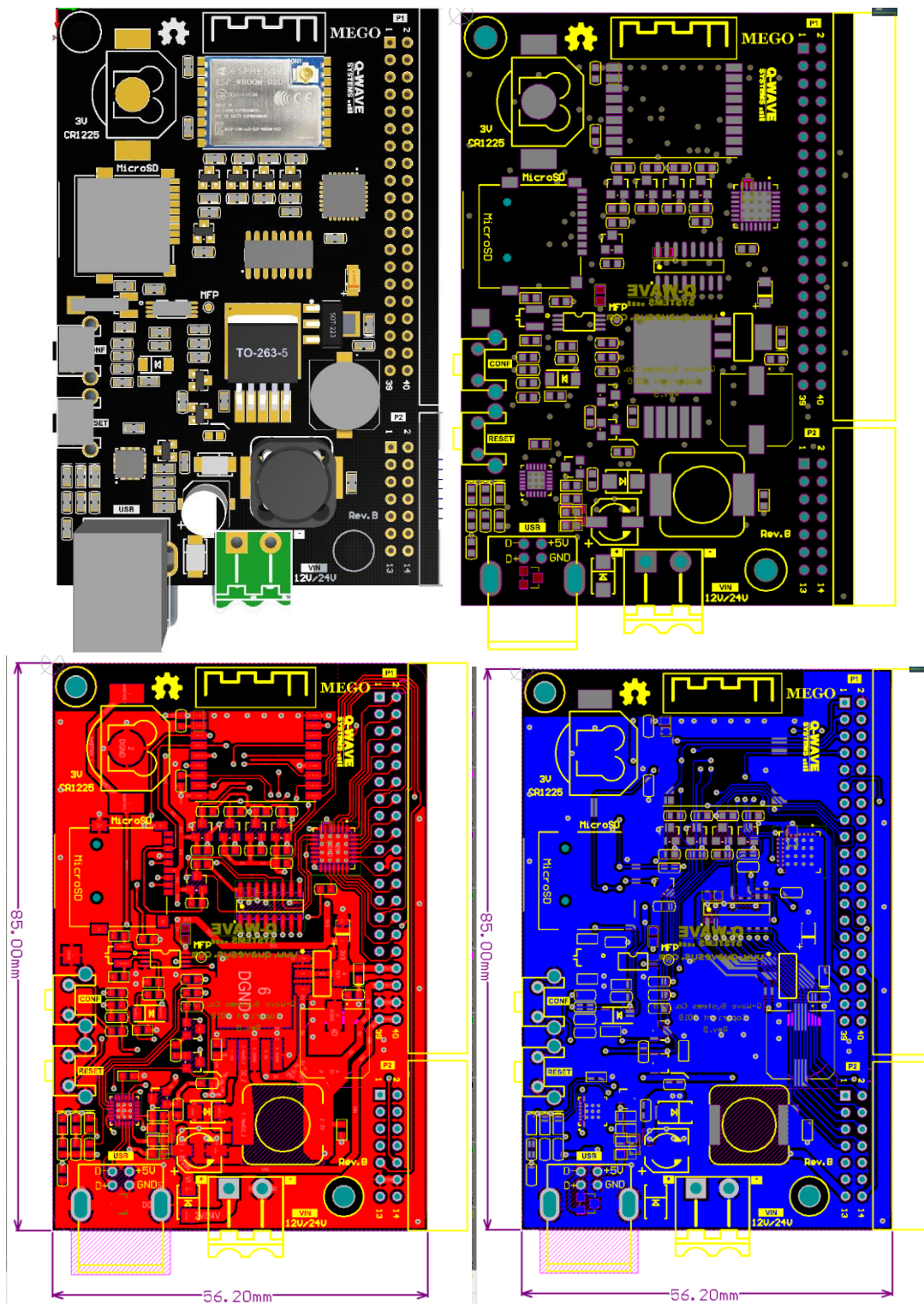
1.LabVIEW: MEGO Library (.vip)
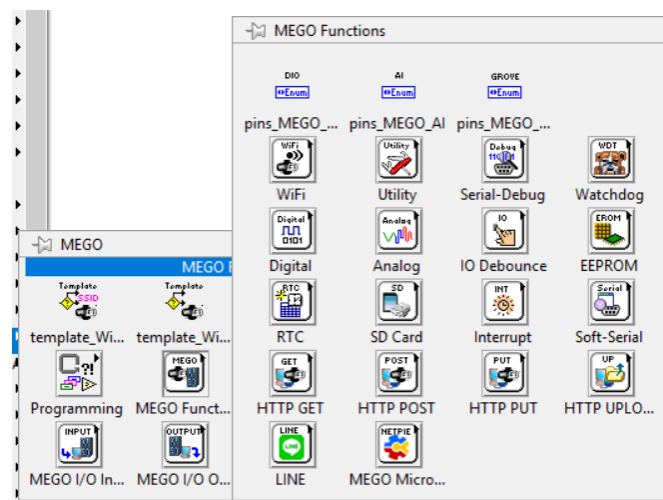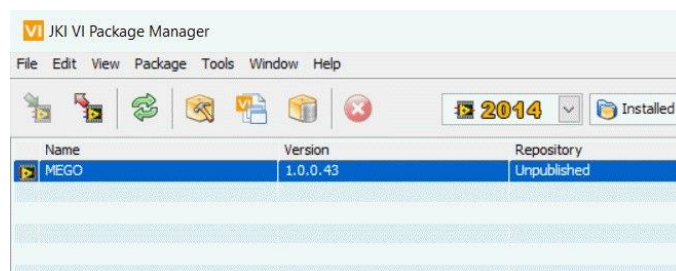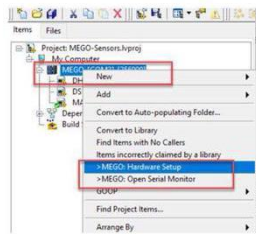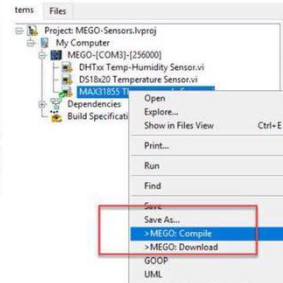
2.Arduino IDE you can write your own firmware running in MEGO board using Arduino IDE. The QwaveSys MEGO board package is required.

## Schematics
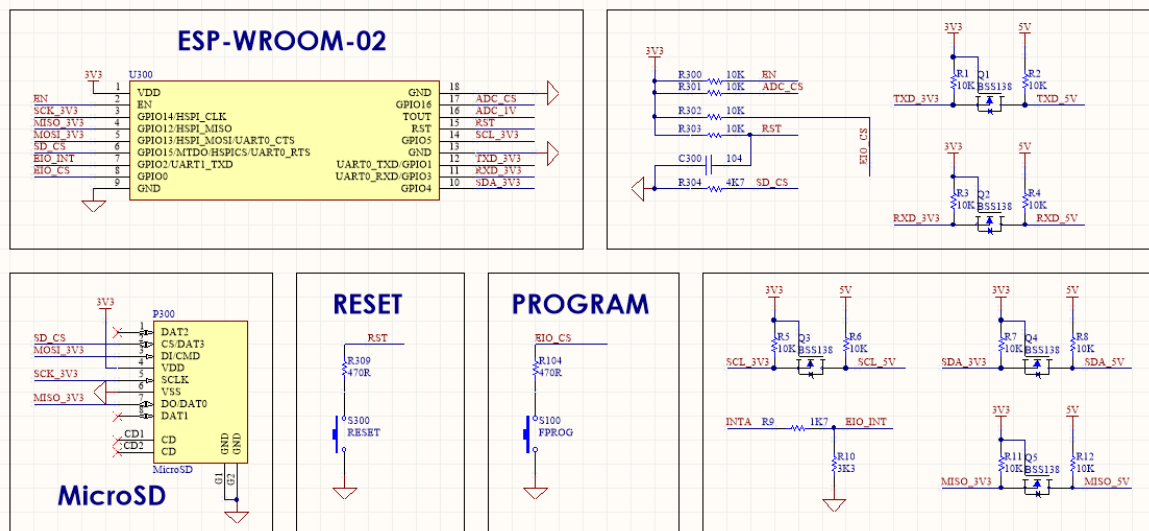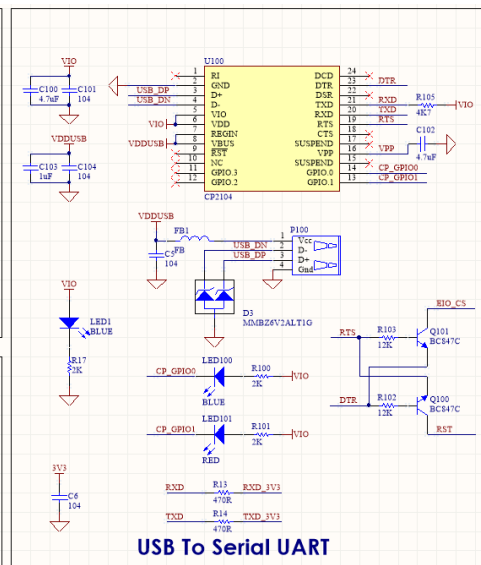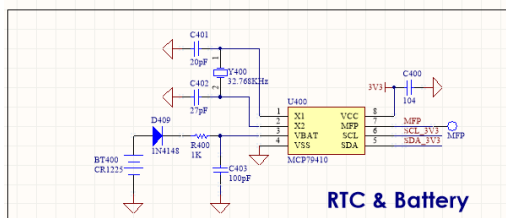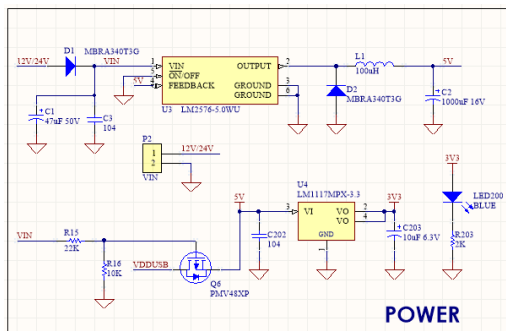
**Q-WAVE SYSTEMS**

**POWER**

**RTC & Battery**

**USB To Serial UART**

Board PCB Layout

## Download

https://github.com/QWaveSystems/MEGO

## MEGO Expansion Board



MEGO I/O Breadboard/Arduino Uno Shield Board



MEGO I/O Grove Board

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