DACMCU

ESP32 V3-02 WIFI/BLE

Figure 1: ESP32-PICO-V3-02 Block Diagram
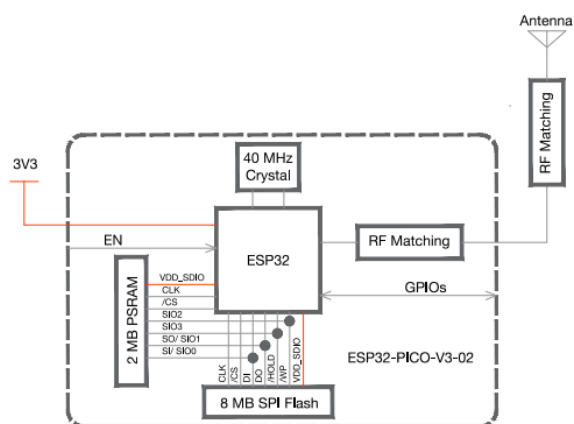
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INTRODUCTION:

DACMCU ESP32 V3-02 WIFI/BLE is a WIFI based microcontroller designed with the Espressif Systems' System-in-a-Package(SIP) chip: ESP32 Pico-V3-02. Ultimately, this chip is designed to be a microcontroller with wireless control capabilities and a full computational system that includes two core processors, 2MB of PSRAM and 8MB of flash memory. With this full computational system in one small package, which includes WiFi and Bluetooth, this chip can prove to be very useful in our everyday life. This full development board carries a type C connector for easy plug-and-play. While, DACMCU implemented this SIP into one of its microcontroller designs, engineers, makers and hobbyist will find this design and form factor to be significant when prototyping ideas.
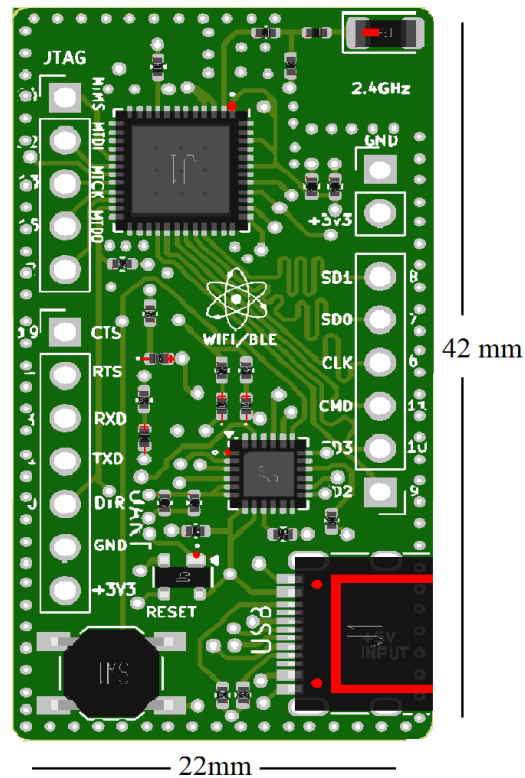
SPECIFICATIONS:

- ESP32 Pico-V3-02: System-In-A-Package(SIP)
- Microcontroller
- Dual Core
- 32 Bit
- 240MHz Microprocessor
- 448KB ROM
- 2MB PSRAM
- 8MB SPI Flash
- 40MHz Crystal Oscillator
- 2.4GHz Radio Frequency(Wifi/Bluetooth)
- Radiant Distance 95m
- Dimensions – 42mm x 22mm
- +3V3, +5V
- GPIO current 20 - 40mA
- SIP current 500 – 800mA
- 12 GPIO Pins
- Arduino IDE, Espressif IDF, MicroPython
- Type C Connector

The form-factor design for this board is significant from the dimensions to the pin access. The dimensions are significant to the design that enables a full radiant capacity for remote access through Wifi/BLE. Creating the ground plane layer with a surface area of 924mm^2 gives the chip antenna a significant amount of metal surface to bounce radio signals for remote access. The pins are labeled specifically to access the main and significant partitions of the chip's System-in-a-Package. This design should prove to be very intuitive with lots of space for prototype upgrades.

Note: Please adhere to all electrical notations for quick and easy plug-and-play. You will need a 2.4GHz wifi connection and a high amperage, +3.3V battery for the device to exhibit full functionality.

Applications:

- Generic Low-power IoT Sensor Hub
- Generic Low-power IoT Data Loggers
- Cameras for Video Streaming
- Over-the-top (OTT) Devices
- Speech Recognition
- Image Recognition
- Mesh Network
- Home Automation
- Smart Building
- Industrial Automation
- Smart Agriculture
- Audio Applications
- Health Care Applications
- Wi-Fi-enabled Toys
- Wearable Electronics
- Retail & Catering Applications

DACMCU ESP32 V3-02 device can extend to Wifi and Bluetooth applications but are not limited to these IoT or Low power implementations. This microcontroller unit includes 12 GPIO pins for programmable automated use. The GPIO pins can be access through a number of integrated development environment software: Espressif Systems' ESP32 IDF, Arduino IDE or MicroPython platform. This board was designed and engineered for creative, educational and prototyping purposes and can be implemented in real world applications.

DACMCU ESP32-V3-02 PINOUT:
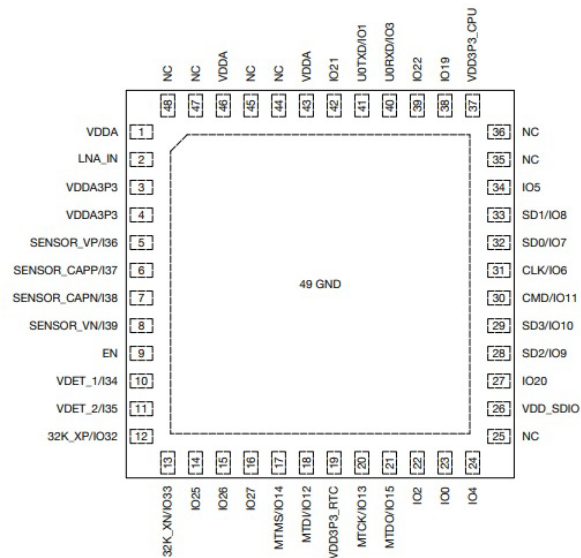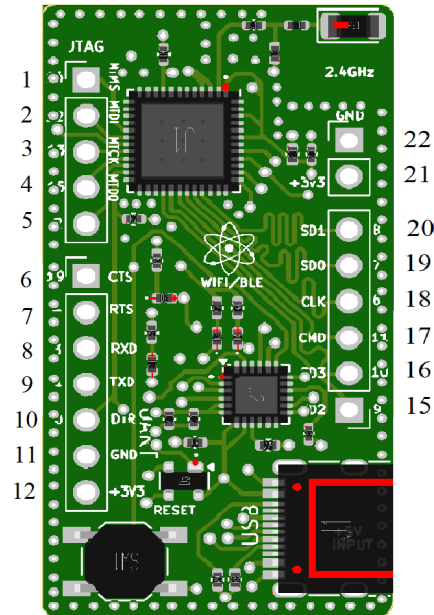
The pin-out access to the chip is based on the ESP32 Pico-V3-02 and will coincide:

Pins: 1 – 4 JTAG   Pins: 7 – 12 UART   Pins: 13, 14 USB   Pins: 15 – 20 Memory
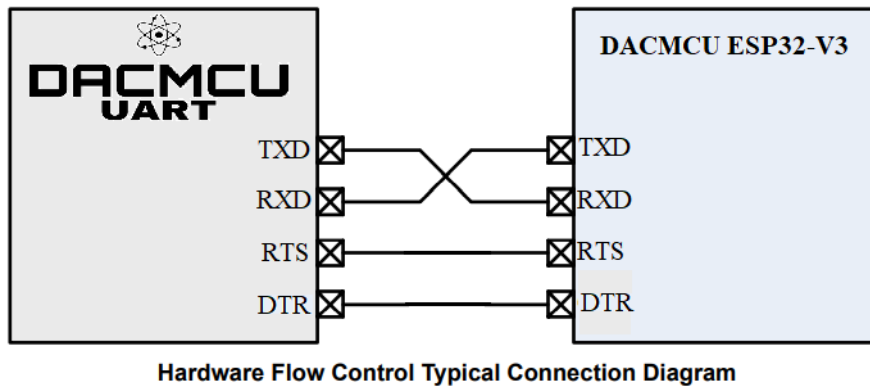
Note: The ESP32 PICO-V3-02 GPIO pin reference.

PIN REFERENCE:

PINS	GPIO	PERIPHERALS
1	14	JTAG
2	12	
3	13	
4	15	
5	2	GPIO
6	19	
7	-	UART
8	3	
9	1	
10	0	
11	GND	INPUT/OUTPUT
12	+3V3	
13	+5V	INPUT
14	GND	
15	9	MEMORY
16	10	
17	11	
18	6	
19	7	
20	8	
21	+3V3	INPUT/OUTPUT
22	GND	

PIN CONNECTION REFERENCE:

Hardware Flow Control Typical Connection Diagram

Note: This board is recognized as the ESP32-Pico-D4 board in the Arduino IDE
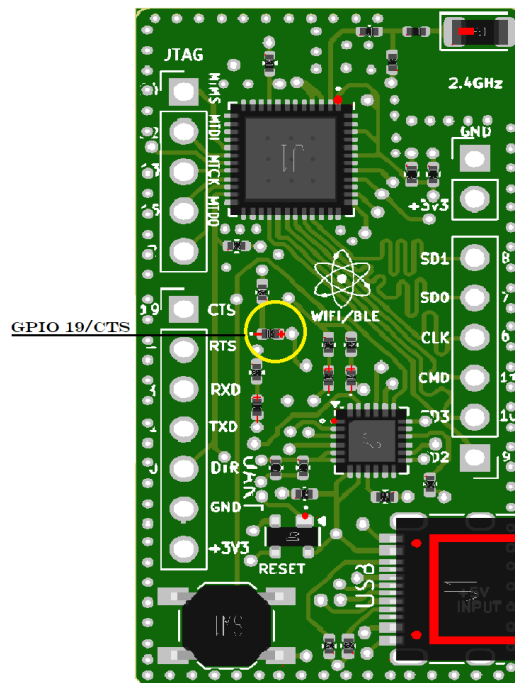
NOTE: A blue LED is embedded and connected to GPIO pin 19/CTS for testing and debugging