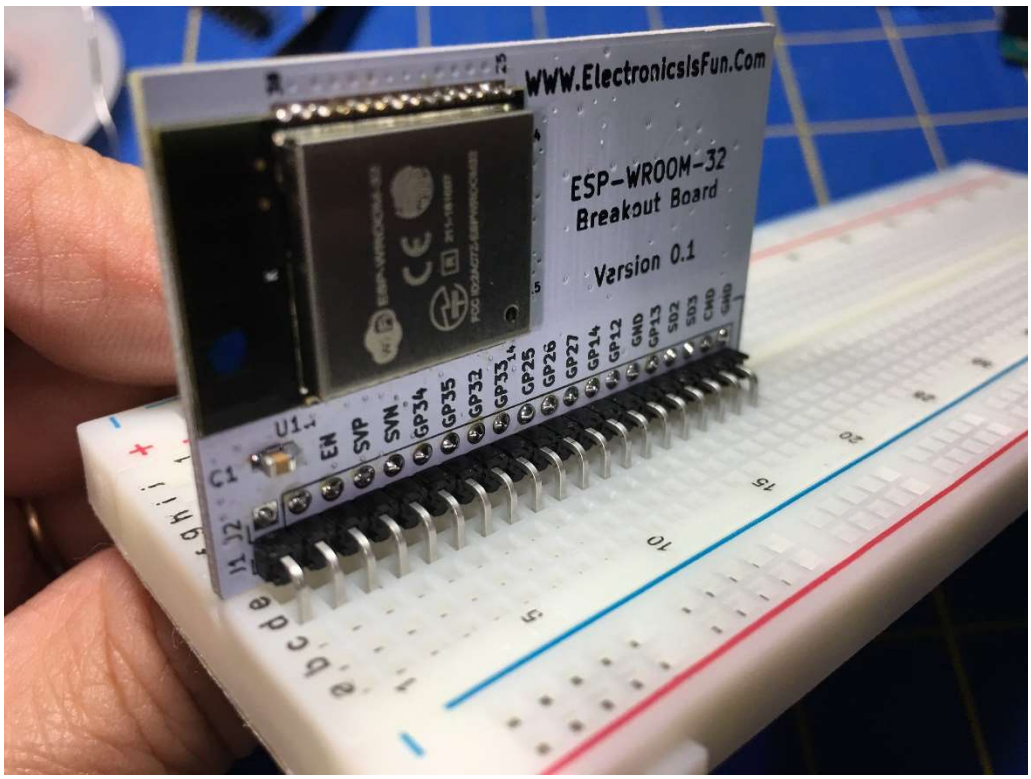
ESP32BOB

Breakout board for ESP32



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electronicsisfun.com
December 30, 2018

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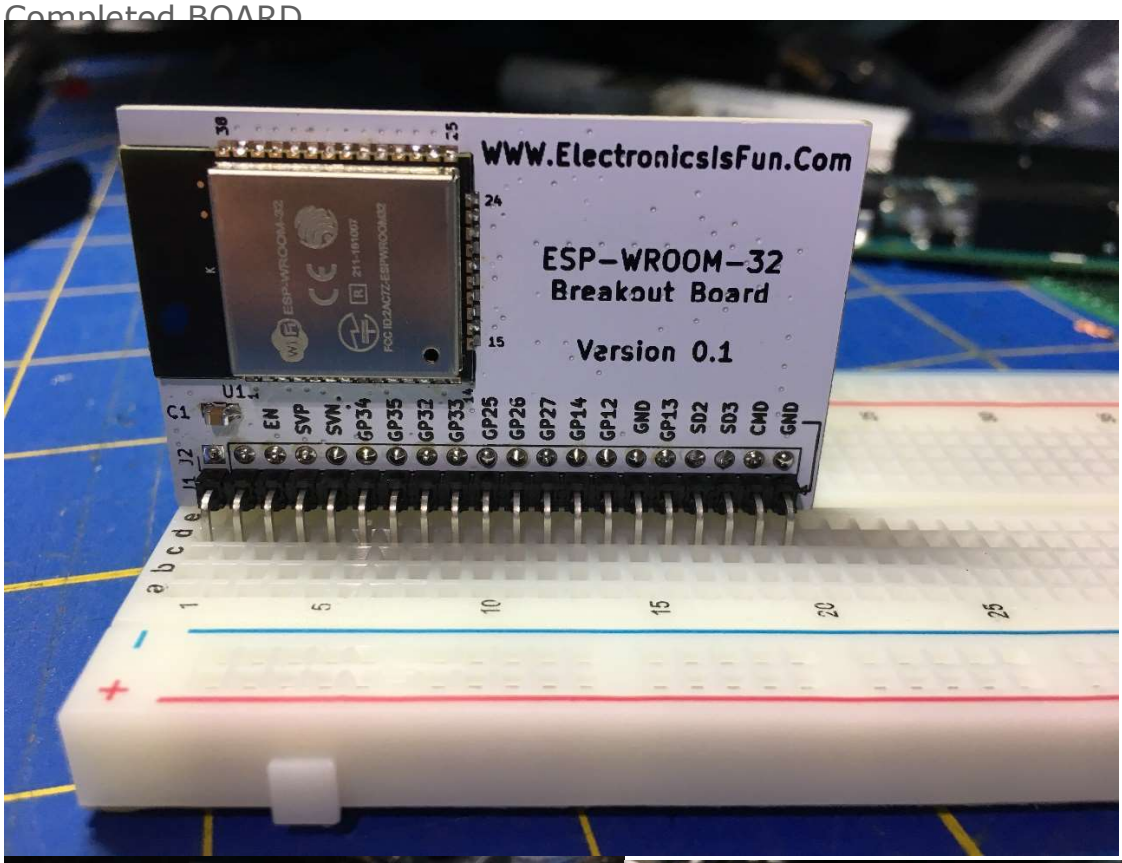
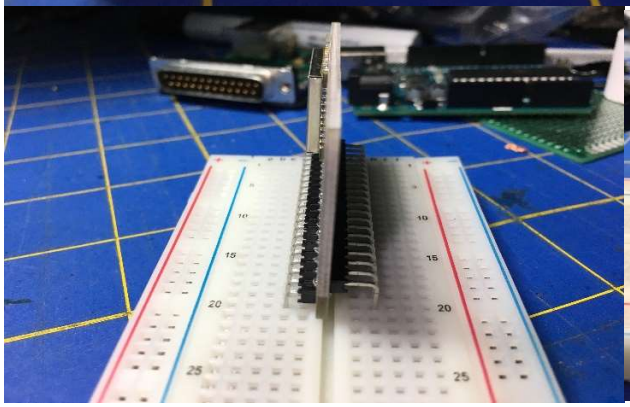
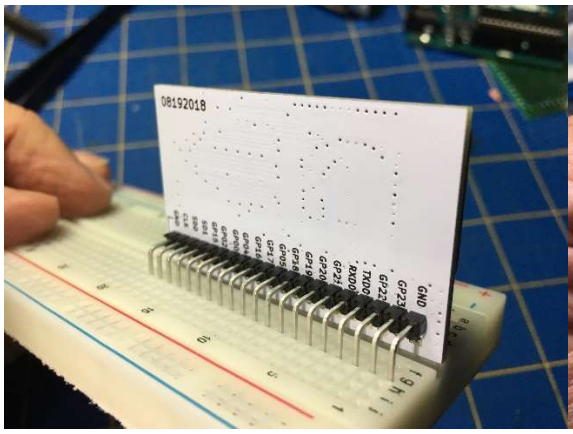
Completed BOARD



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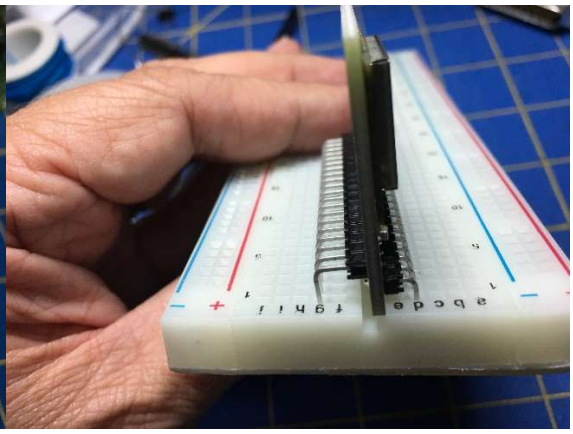


OVERVIEW
KIT

The ESP32BOB allows prototyping using a standard breadboard. The design is unique in that it allows the ESP32BOB to mount vertically on the center of the breadboard. This allows for rows on either side of the breadboard to be used for wire connections. Most ESP32 break out boards on the market are designed as dual in line modules that use almost all the space available on the breadboard. All of the pins of the ESP-WROOM-32 module are connected to J1 and J2, so there are no limitations on the use of the available signals. The pin names for all the pins are marked on the silkscreen.

The ESP32Bob kit consists of a bare PCB, ESP-WROOM-32 module, capacitor and two headers. The ESP32Bob supports an ESP-WROOM-32 module from Expresiff. The assembly of the kit requires some soldering skills on the part of the user.

CONTENTS OF KIT

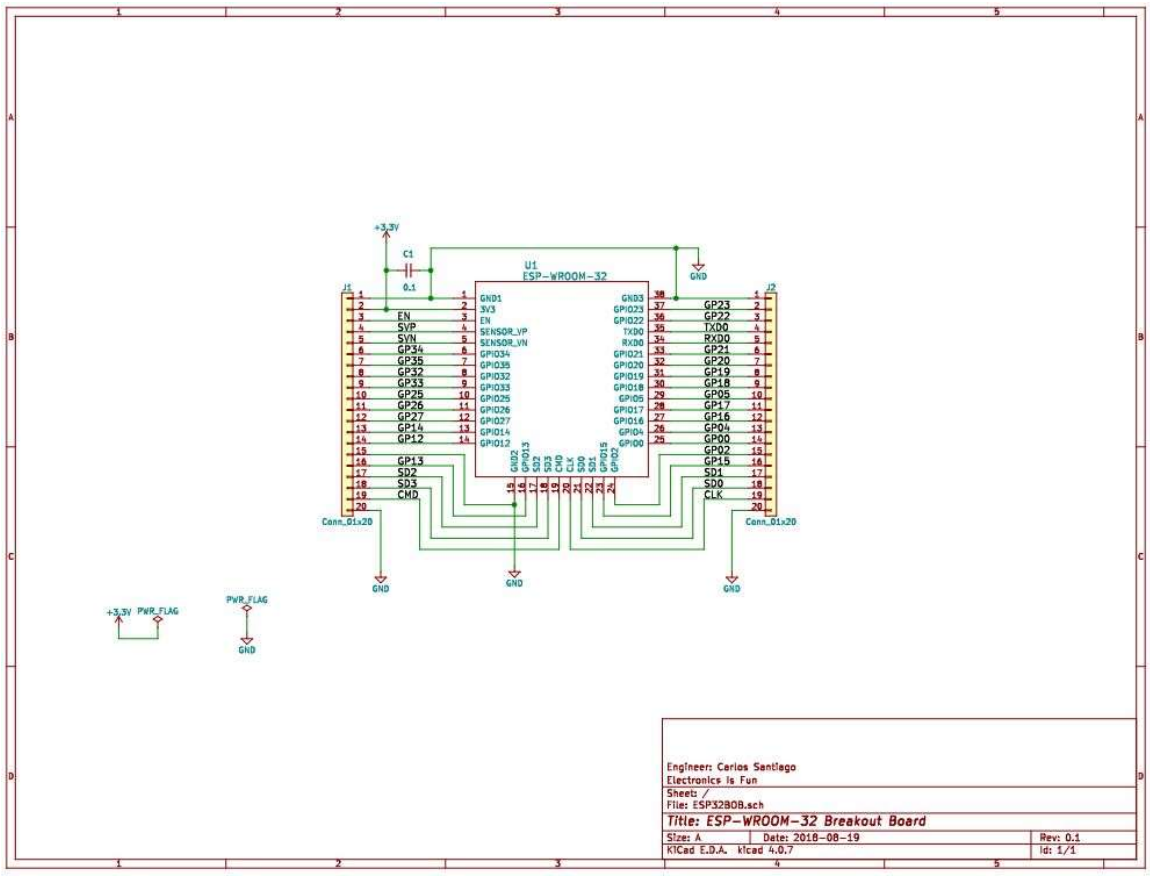
The kit contains the following parts:

1. *P1 headers*
2. *P2 header*
3. *ESP-WROOM-32 Module*
4. *A 0.1uF capacitor*
5. *The ESP32Bob PCB*

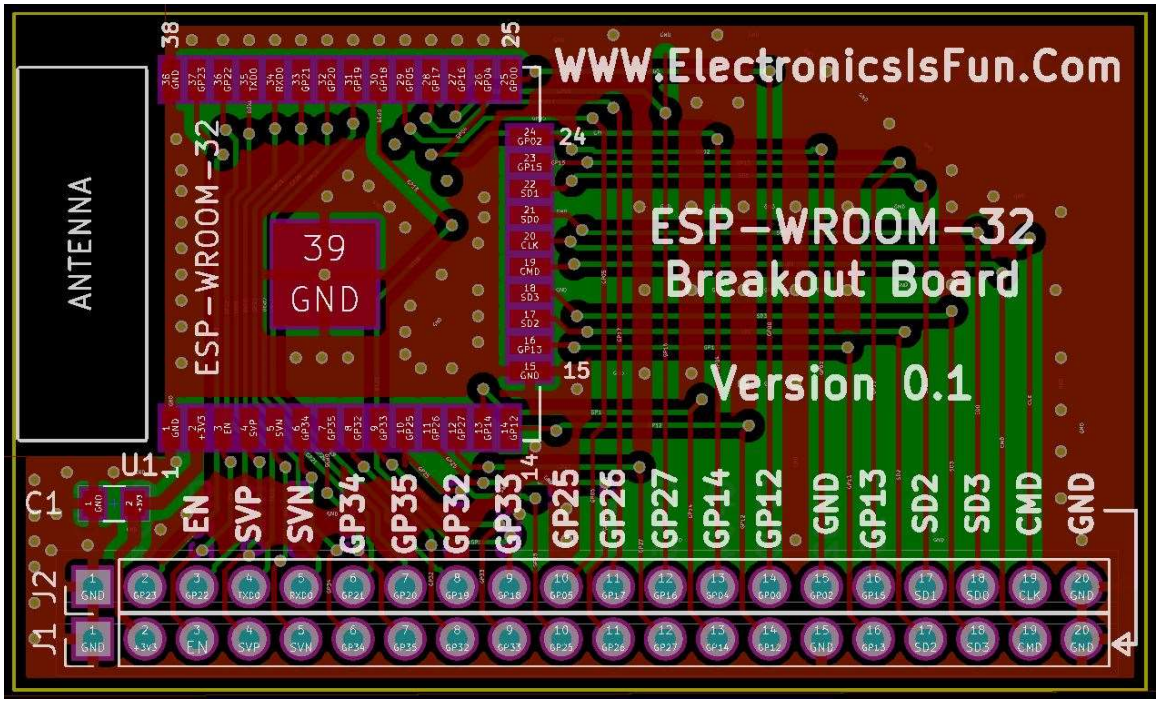
NOTE: The headers provided are different from on and other. Pay careful attention when installing them. Reference the picture in this document to ensure that the headers are installed in the proper positions.

The following schematic and PCB image show all the components of the ESP32Bob. These drawings will serve as a reference for the user building the kit.

SCHEMATIC


+3.3V
C1
0.1
U1
ESP-WROOM-32
GND
J1
J2
Conn_01x20
Conn_01x20
EN
SVP
SVN
GP34
GP35
GP32
GP33
GP25
GP26
GP27
GP14
GP12
GP13
SD2
SD3
CMD
GP23
GP22
TXD0
RXD0
GP21
GP20
GP19
GP18
GP05
GP17
GP16
GP04
GP00
GP02
GP15
SD1
SD0
CLK
+3.3V
PWR_FLAG
PWR_FLAG
GND
Engineer: Carlos Santiago
Electronics Is Fun
Sheet: /
File: ESP32BOB.sch
Title: ESP-WROOM-32 Breakout Board
Size: A
Date: 2018-08-19
Rev: 0.1
KiCad E.D.A. kicad 4.0.7
Id: 1/1

PCB LAYOUT



REQUIRED TOOLS AND MATERIALS

The following list of tools is required for hand assembly. If another method such as hot air or IR oven soldering is to be used, additional tools may be required.

- *Soldering iron and solder*
- *Tweezers*
- *Alcohol*
- *Cleaning swabs or brush*

ASSEMBLY

Review the pictures at the end of this document before starting assembly.

There **two** methods that can be used to solder the ESP-WROOM-32 modules. The **first method** is to use a standard soldering iron and solder. The **second method** is to use solder paste and a hot air soldering station or an IR oven. Both methods can be employed, but the use of the second is recommended because it will ensure that the large GND pad will be soldered. It is not possible to solder the GND pad using the first method.

NOTE: Soldering components on a PCB requires careful attention to the amount of heat applied. Use a lower temperature to start and increase the temperature as needed to melt the solder paste or solder.

FIRST METHOD (USING A SOLDERING IRON AND SOLDER)

1. *Place the ESP-WROOM-32 module on the PCB pads for U1. Align all the pads on the module with the pads on the PCB. Note: You will not be able to solder the center GND pad.*
2. *Apply solder to one of the pads on the module to anchor it to the board. Make sure that all the pads of the module remain aligned with the pads on the board.*
3. *Solder the rest of the pads on the module.*
4. *Place the 0.1uF capacitor at location C1 of the PCB, solder the two pads.*
5. *Insert the header for P1 as (shown in the photo) from the top side of the board. Ensure that you insert the proper header.*
6. *Solder a pin on the header and insure that that the header is flush and straight against the PCB.*

7. *Solder the rest of the pins on P1.*
8. *Insert the header for P2 as (shown in the photo) from the bottom side of the board. Ensure that you insert the proper header.*
9. *Solder a pin on the header and insure that that the header is flush and straight against the PCB.*
10. *Allow the board to cool.*
11. *Clean the solder connections using alcohol and a cleaning swab and/or a brush.*

SECOND METHOD (USING HOT AIR OR IR OVEN)

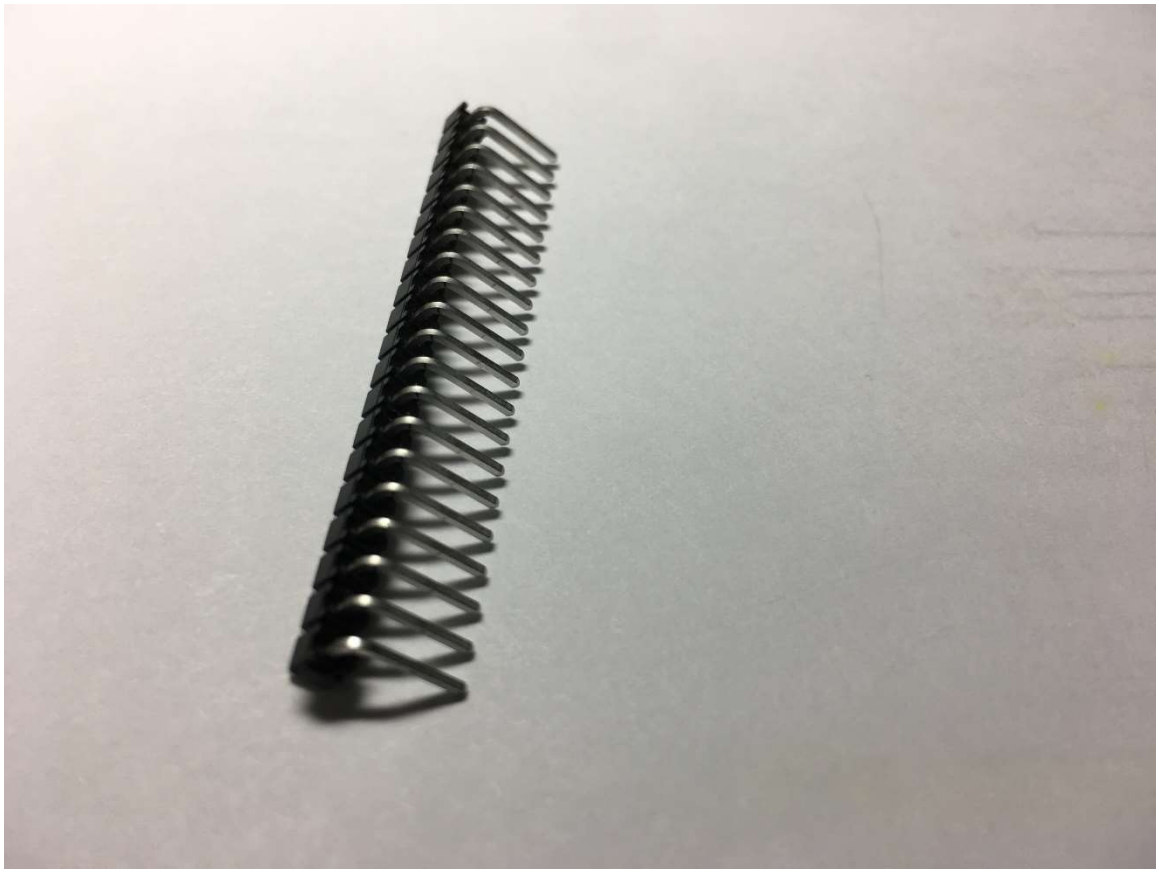
*NOTE: If an **IR** oven is used for soldering, the user should apply solder paste to the PCB. The ESP-WROOM-32 module and C1 should be placed on the board prior to placing the board in the oven. **DO NOT insert J1 or J2 at this time.** The user should reference the temperature requirements for the solder paste used and set the IR oven profile appropriately. Skip to step 8 to install J1 and J2.*

1. *Apply solder paste to the pads of U1 on the PCB including the center ground pad (GND).*
2. *Place the ESP-WROOM-32 module on the PCB. Align all the pads on the module with the pads on the PCB.*
3. *Using the hot air soldering station, heat the pads on the periphery of the module and from the bottom of the PCB opposite to the GND pad. Try to apply heat slowly and evenly. Avoid applying too much heat to the module and PCB by constantly moving the hot air source around the PCB and module.*

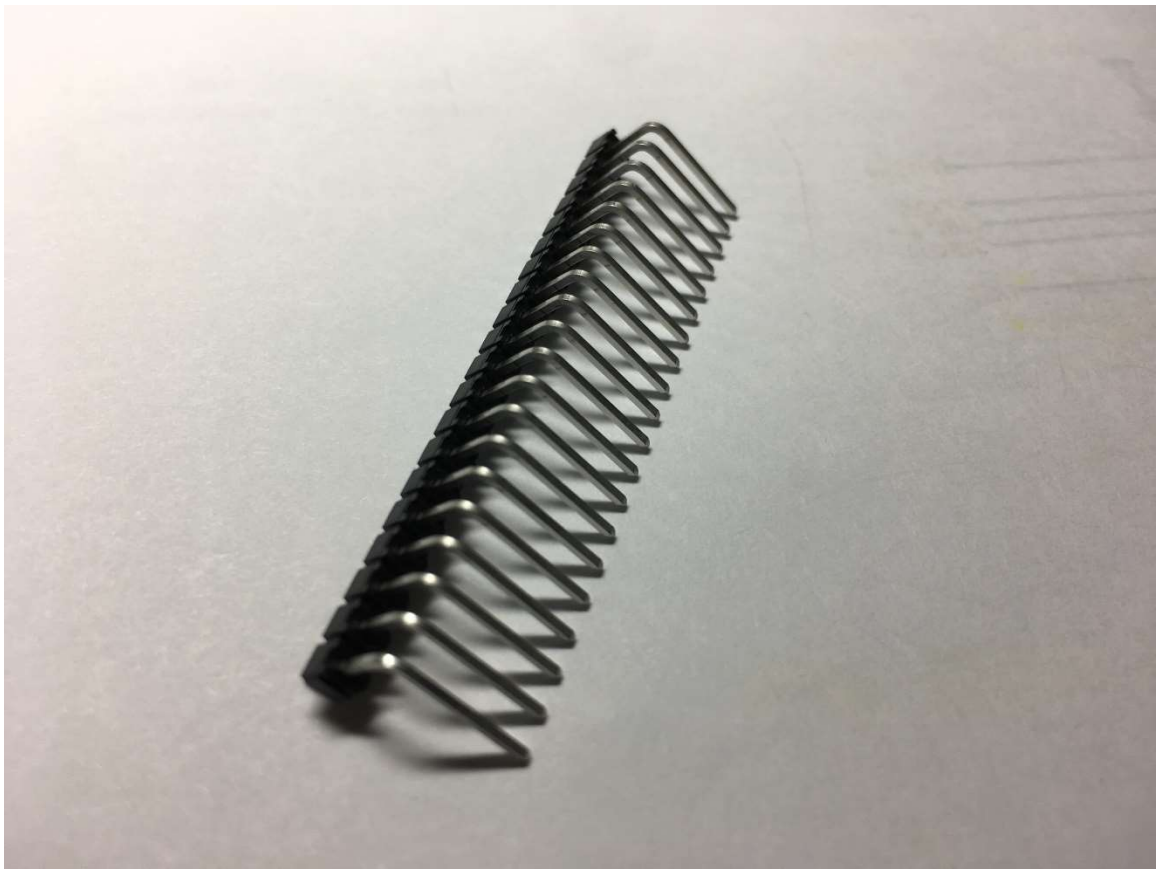
4. *Once the solder paste has melted and flowed under the pads, remove the heat and set the PCB aside to cool.*
5. *Check/inspect that all pads are soldered completely. If any pads are not soldered, use a soldering iron and solder to reflow any cold connections.*
6. *Add solder paste to the pads for C1 on the PCB. Place the 0.1uF capacitor at location C1.*
7. *Apply heat to the pads of C1 until the solder paste melts. Set the PCB aside to cool.*
8. *Insert the header for P1 as (shown in the photo) from the top side of the board. Ensure that you insert the proper header.*
9. *Solder a pin on the header and insure that that the header is flush and straight against the PCB.*
10. *Solder the rest of the pins on P1.*
11. *Insert the header for P2 as (shown in the photo) from the bottom side of the board. Ensure that you insert the proper header.*
12. *Solder a pin on the header and insure that that the header is flush and straight against the PCB.*
13. *Allow the board to cool.*
14. *Clean the solder connections using alcohol and a cleaning swab and/or a brush.*

PICTURES

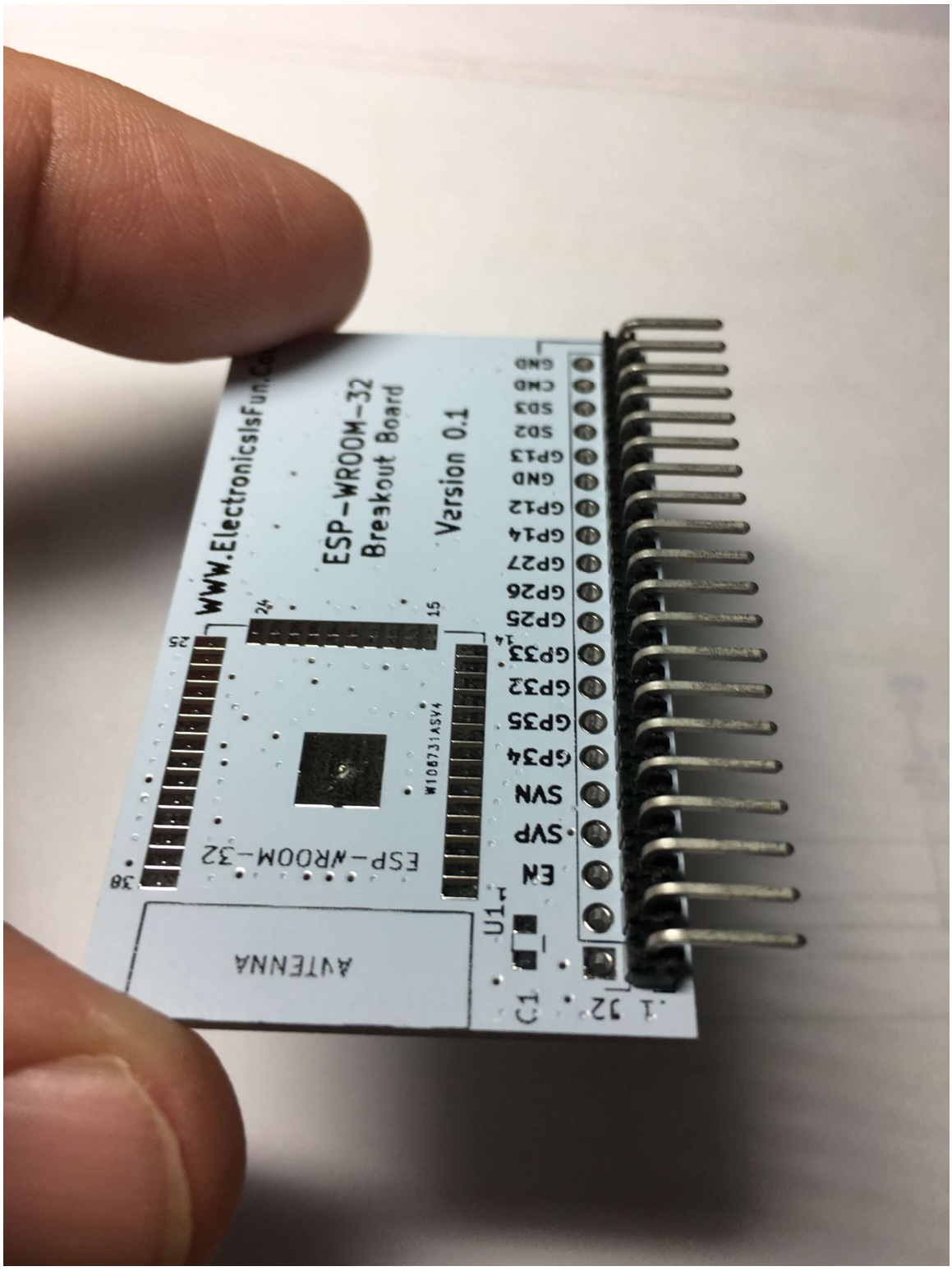
The following pictures of J1 and J2 along with the installation pictures will aid in assembling the ESP32Bob correctly.



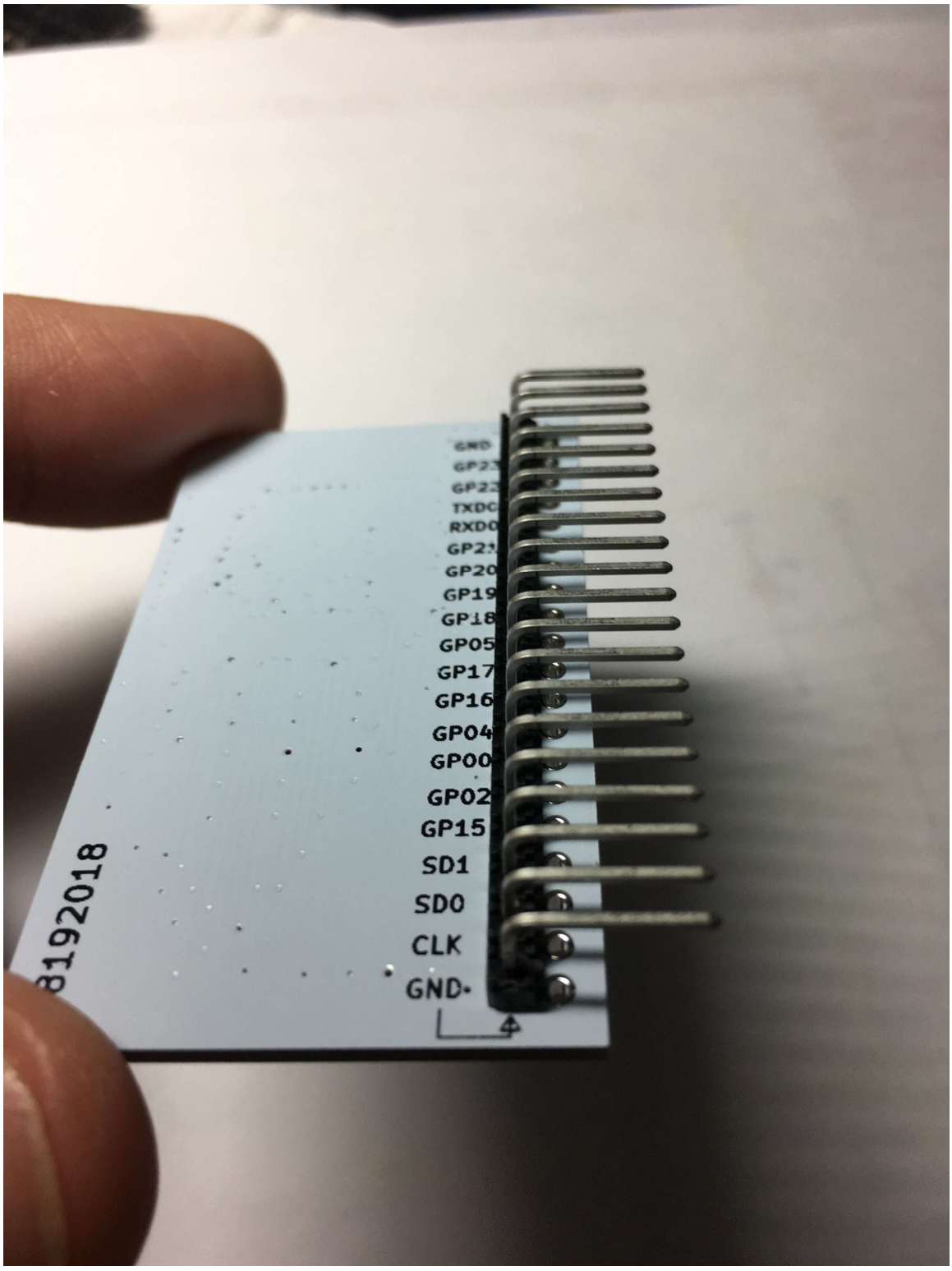
J1



J2



J1 installation



J2 Installation

COMPLETED BOARD