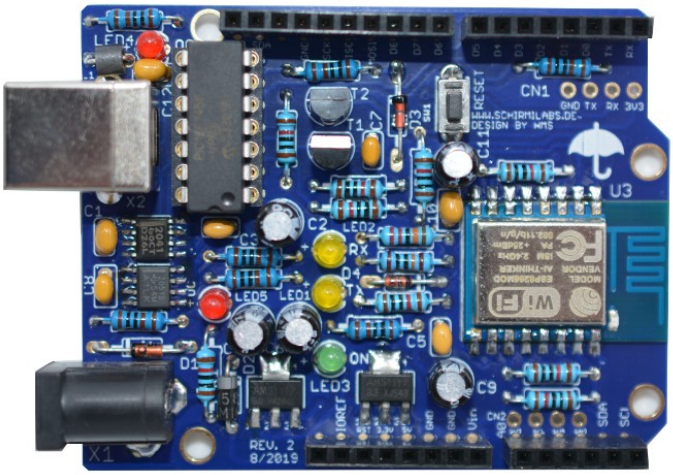
Eduino WiFi

Assembly manual



Arduino UNO compatible WiFi development board

based on the ESP8266EX

BYOD

BUILD YOUR OWN DEVICE

SCHIRMILABS

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Features

- 11 digital input/output pins. All pins have Interrupt, PWM, I2C and One-Wire (except for D0)
- 1 analog input (3.2V max input voltage)
- USB Type B connector
- Power jack, 6-12 V input voltage
- Compatible with Arduino
- Compatible with NodeMcu

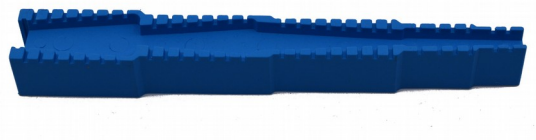
Technical specs

Microcontroller	ESP8266-EXM
Microcontroller USB to serial converter	PIC 16F1455
Operating voltage	3.3V
Digital I/O pins	11
Analog input pins	1 (Max. input voltage: 3.2V)
Clock speed	80MHz/160MHz
Flash	4M Bytes
Length	68.6 mm
Width	53.4 mm
Weight	29 g

Pin mapping

Pin	Function	ESP-8266 Pin
Tx	TXD	TXD
Rx	RXD	RXD
A0	Analog input	A0
D0	IO	GPIO16
D1	IO, SCL	GPIO5
D2	IO, SDA	GPIO4
D3	IO, 10k Pullup	GPIO0
D4	IO, 10k Pullup	GPIO2
D5	IO, SCK	GPIO14
D6	IO, MISO	GPIO12
D7	IO. MOSI	GPIO13
D8	IO, 10k Pulldown, SS	GPIO15
Gnd	Ground	GND
5V	5V	-
3.3V	3.3V	3.3V
RST	Reset	RST

Required tools

	Soldering iron or station
	Solder
	Side cutter
	Safety goggles
	Tweezers
	Lead bending tool (optional)
	Desoldering tool (optional)

Parts list

Component	Labeling	Quantity
Resistor 1k 1% 1/4W	R2, R4, R5, R7, R9, R10, R11	7
Resistor 10k 1% 1/4W	R1, R3, R6, R8, R12, R13, R14, R17, R18	9
Resistor 100k 1% 1/4W	R16	1
Resistor 220k 1% 1/4W	R15	1
Capacitor 100nF 2.54mm 50V	C1, C3, C5, C7, C8, C10, C12	7
Electrolytic Capacitor 10uF 5x7mm 16V	C2, C9	2
Electrolytic Capacitor 47uF 5x7mm 25V	C4, C6	2
Electrolytic Capacitor 100uF 5x7mm 16V	C11	1
LED 3mm green	LED3	1
LED 3mm yellow	LED1, LED2	2
LED 3mm red	LED4, LED5	2
Diode 1N4148	D4	1
Diode 1N5189	D2	1
Z-Diode ZPD 3.3	D3	1
Z-Diode ZPD 5.1	D1	1
Transistor BC 547	T1, T2	2
AMS 1117 3.3 SOT 223	U6	1
AMS 1117 5.0 SOT 223	U1	1
TPS2041BD SO-8	U2	1
TPS2051BD SO-8	U7	1
PIC16F1455 I/P DIL 14	U4	1
Header female 6 pin 2.54 mm	AD	1
Header female 8 pin 2.54 mm	IOL, POWER	2
Header female 10 pin 2.54 mm	IOH	1
USB 2.0 4 Pin Female Type-B Connector	X2	1
5.5-2.1 mm DC power socket	X1	1
Ferrite bead 3.5x3x0.8	L1	1
ESP12 module	U3	1
IC socket 14 pin		1
PCB Eduino WiFi		1

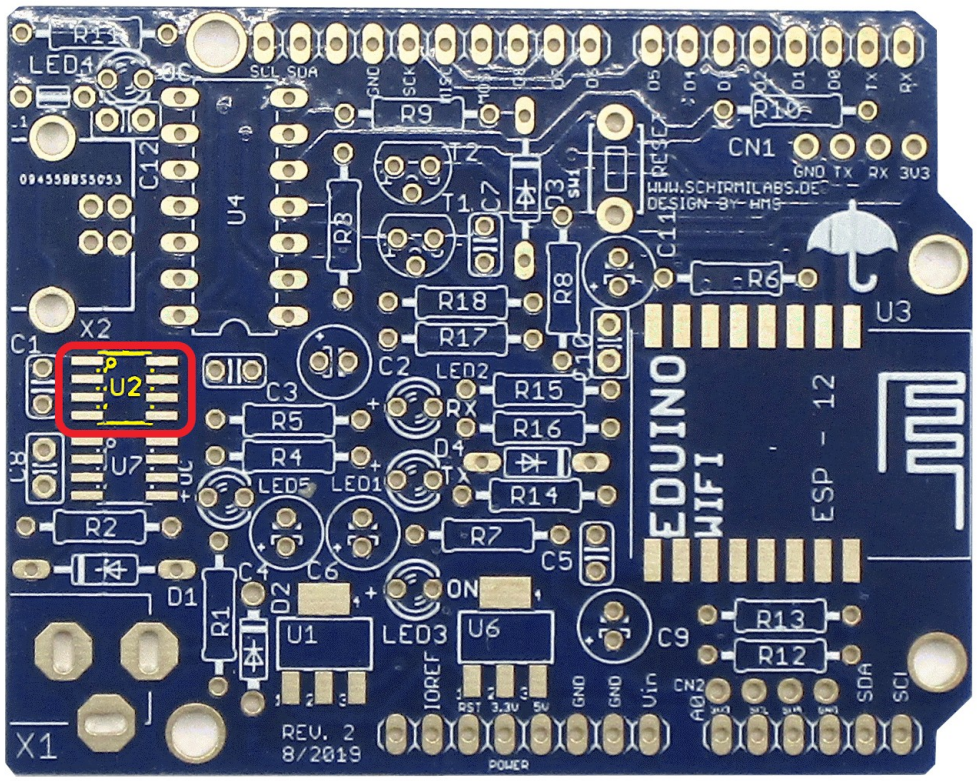
Component Orientation Terms used in this document:

The “Component side” of the board is referred as the “Top side”.
The “Solder side”of the board is referred to as the “Back side”.
Within the pictured steps, we use:

“Upwards and Downwards” for top and bottom.

“Left and Right” for left and right.

The components should be mounted on the Top side of the board, in the red enclosed areas designated in the assembly manual pictures.

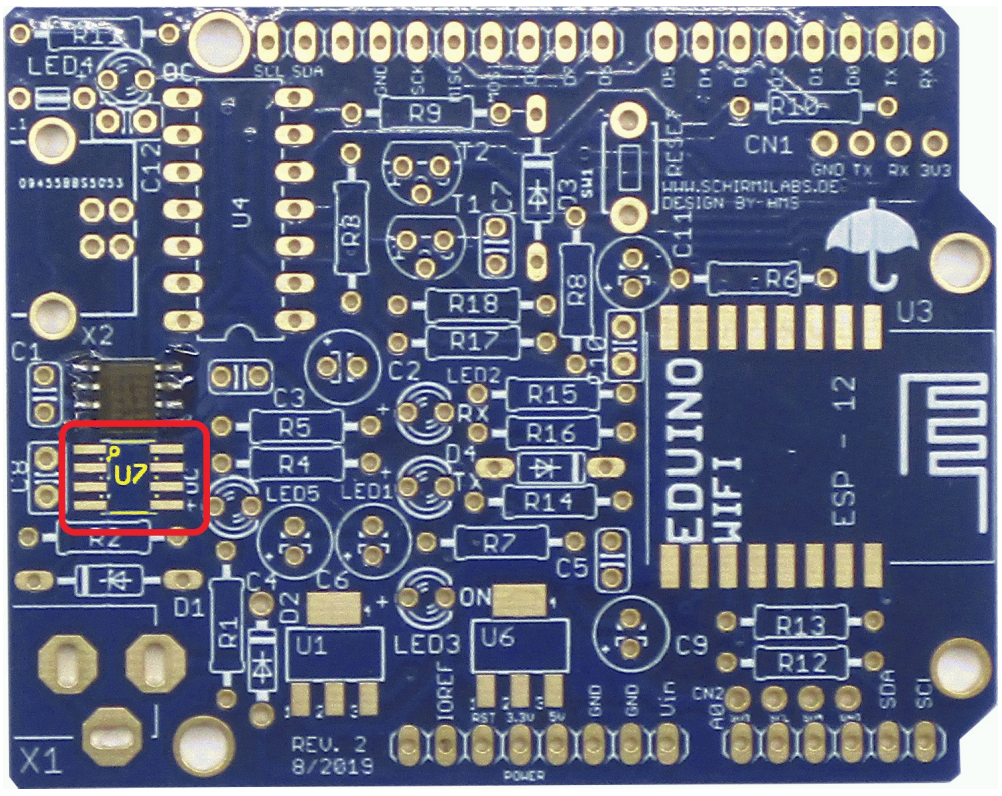


Step 1:

U2

TPS 2041

Check orientation!
The gray line on the IC has to be positioned upwards, at the little yellow circle inside of the red enclosed area.

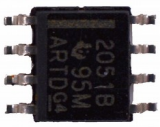


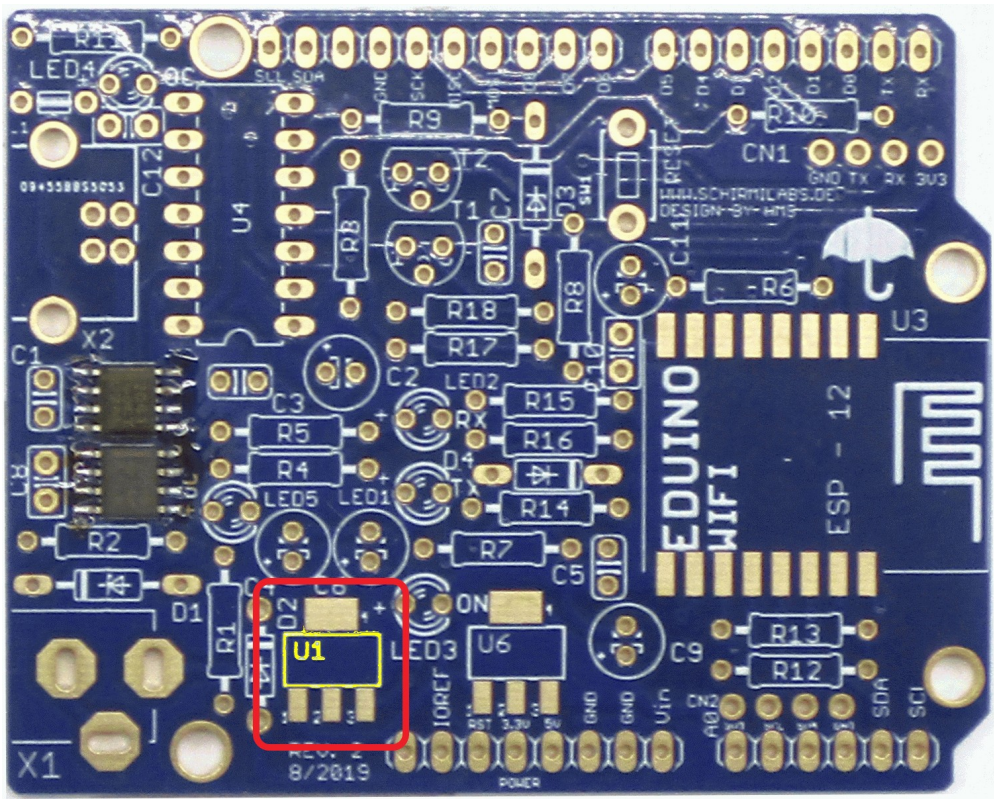
Step 2:

U7

TPS 2051

Check orientation!
The gray line on the IC has to be positioned upwards at the little yellow circle inside of the red enclosed area.

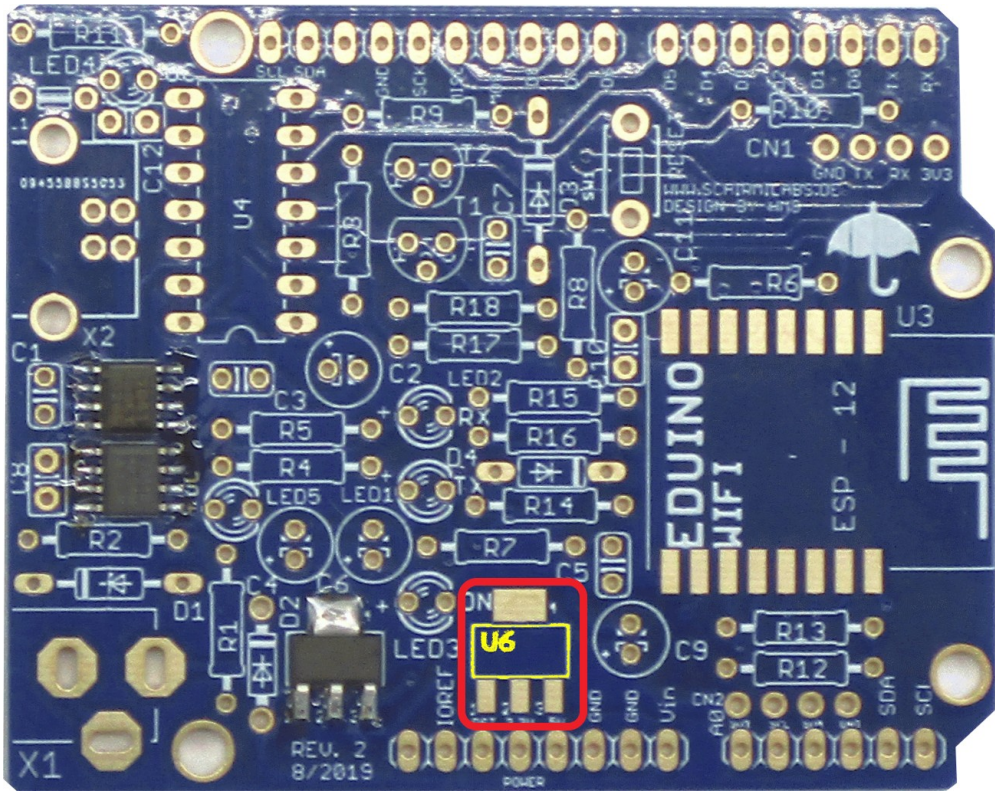




Step 3:

U1

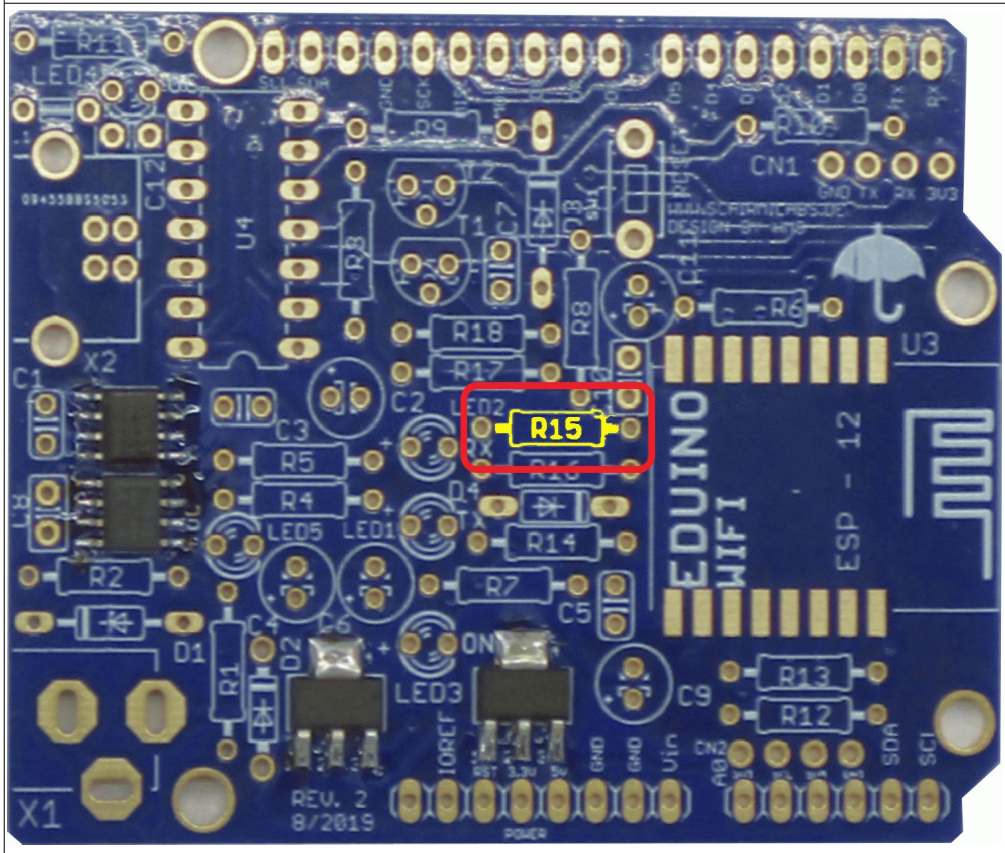
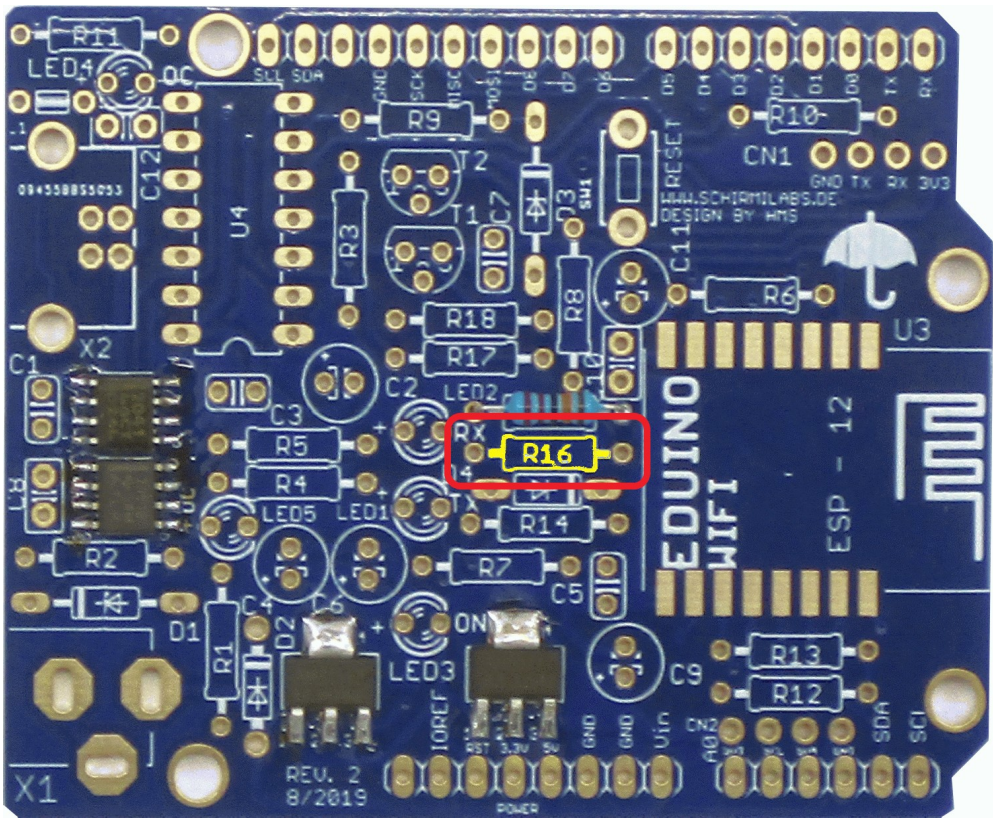
AMS 1117-5.0

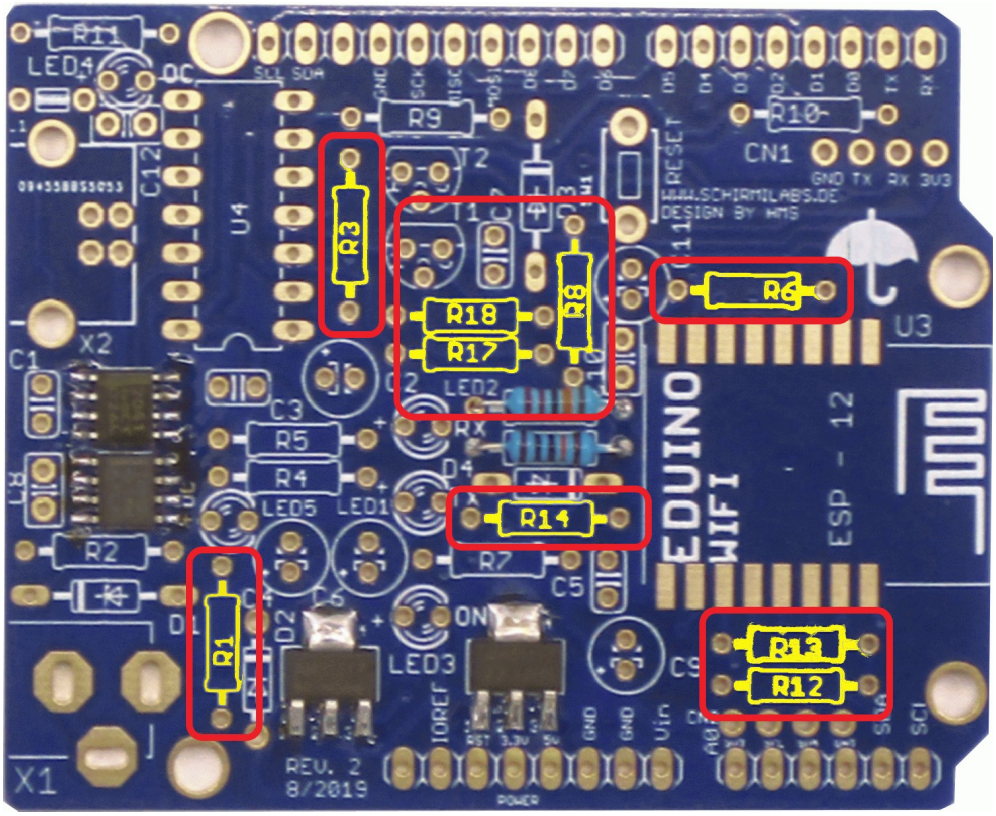


Step 4:

U6

AMS 1117-3.3

	Step 5: R15 Resistor 220k (red, red, black, orange, brown) 
	Step 6: R16 Resistor 100k (brown, brown, black, orange, brown) 

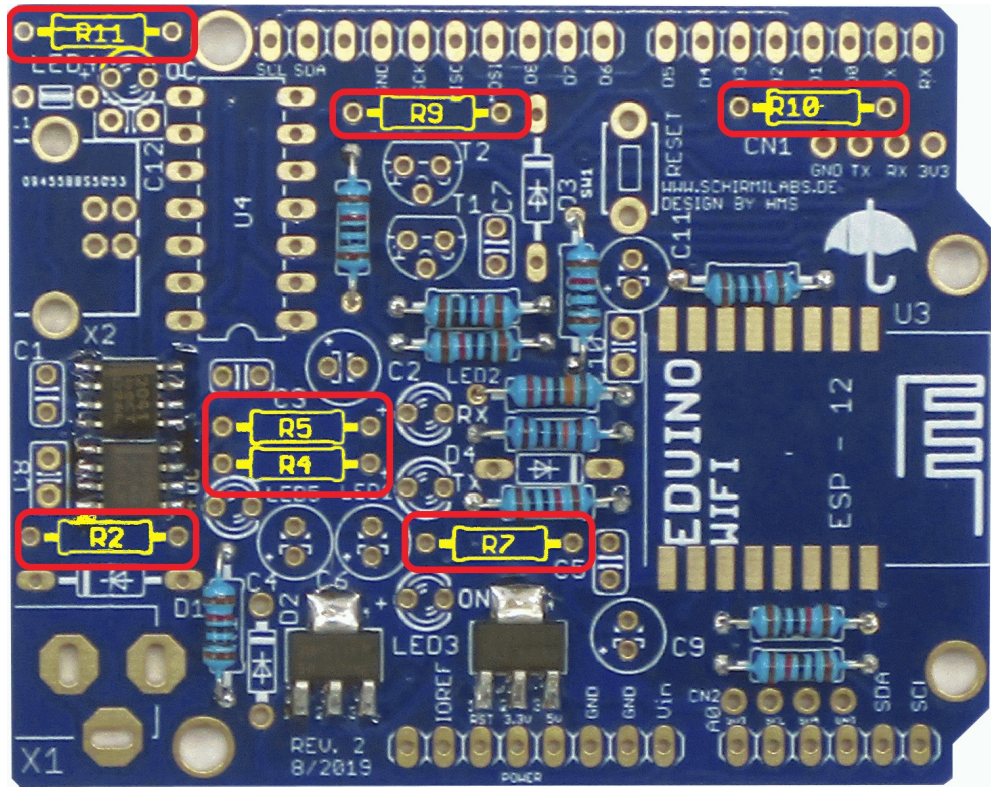


Step 7:

R1, R3, R6, R8, R12, R13, R14, R17, R18

Resistor 10k

(brown, black, black, red, brown)

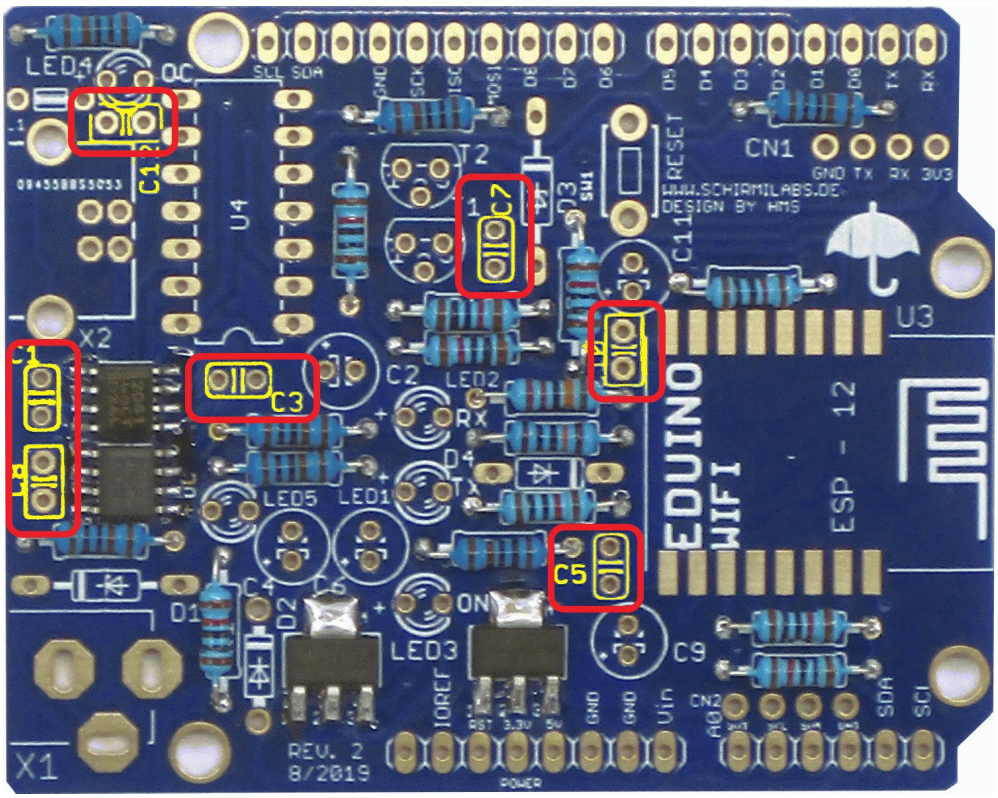


Schritt 8:

R2, R4, R5, R7, R9, R10, R11

Resistor 1k

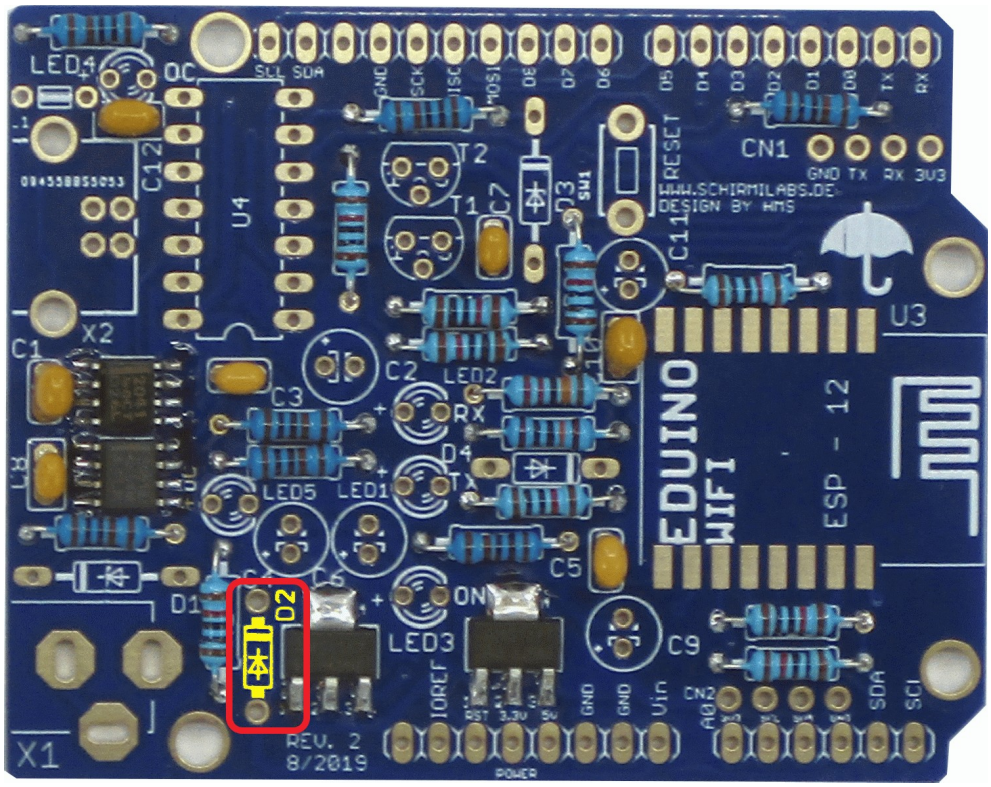
(brown, black, black, brown, brown)



Step 9:

C1, C3, C5, C7, C8, C10, C12

Capacitor
100 nF

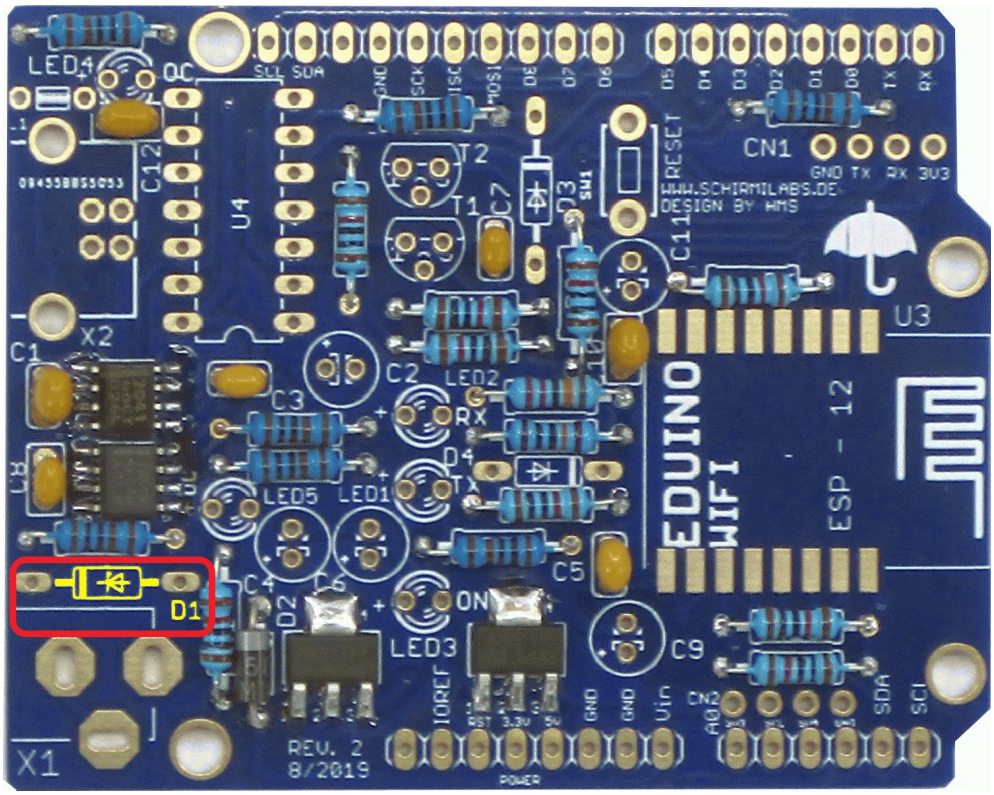


Step 10:
D2

Diode 1N5189

Check polarity !

The gray marking has to be positioned upwards.



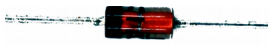
Step 11:

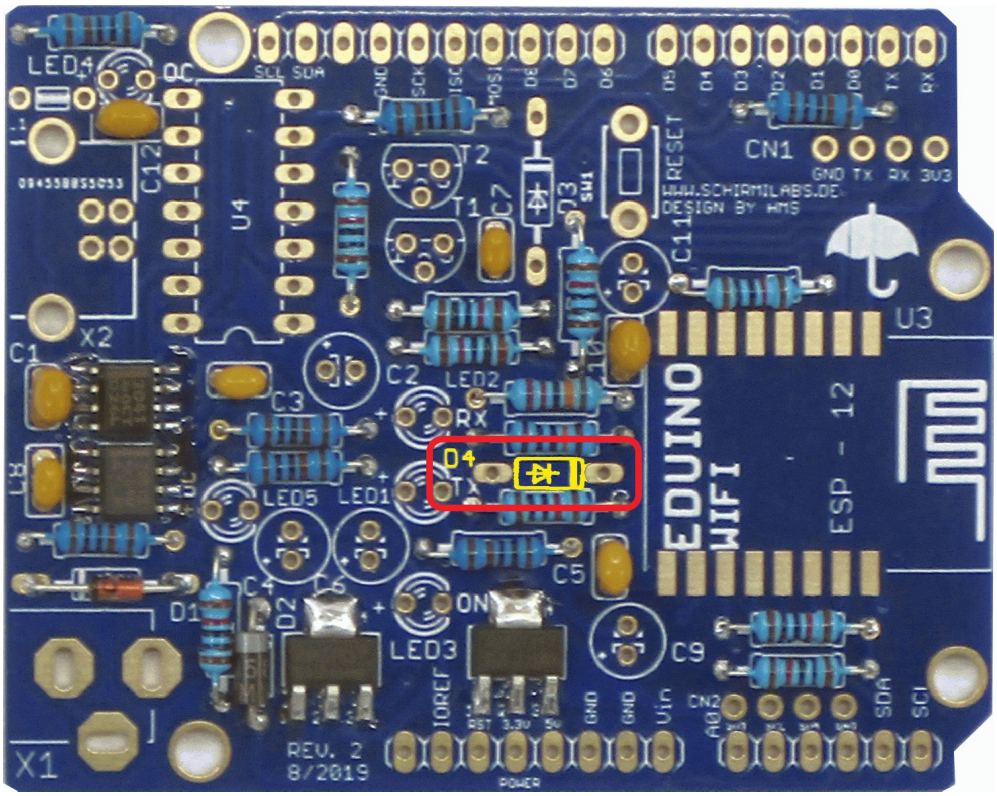
D1

Z-Diode ZPD 5.1

Check polarity !

The black marking has to be positioned on the left side





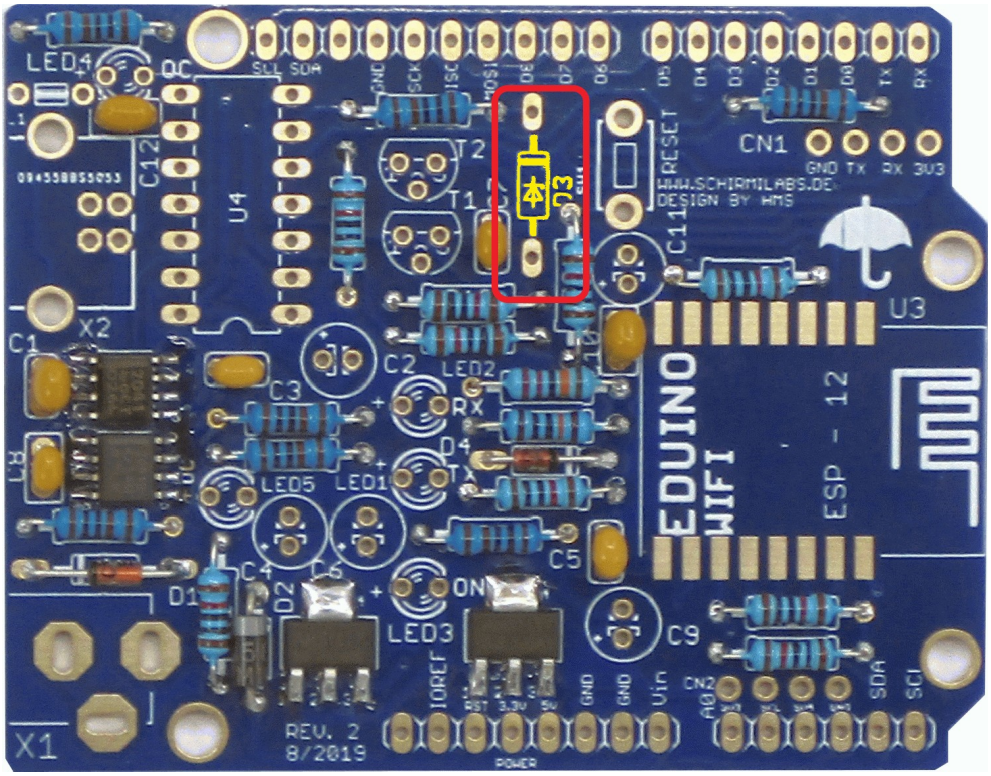
Step 12:

D4

Diode 1N4148

Check polarity !

The black marking hast to be positioned on the right side

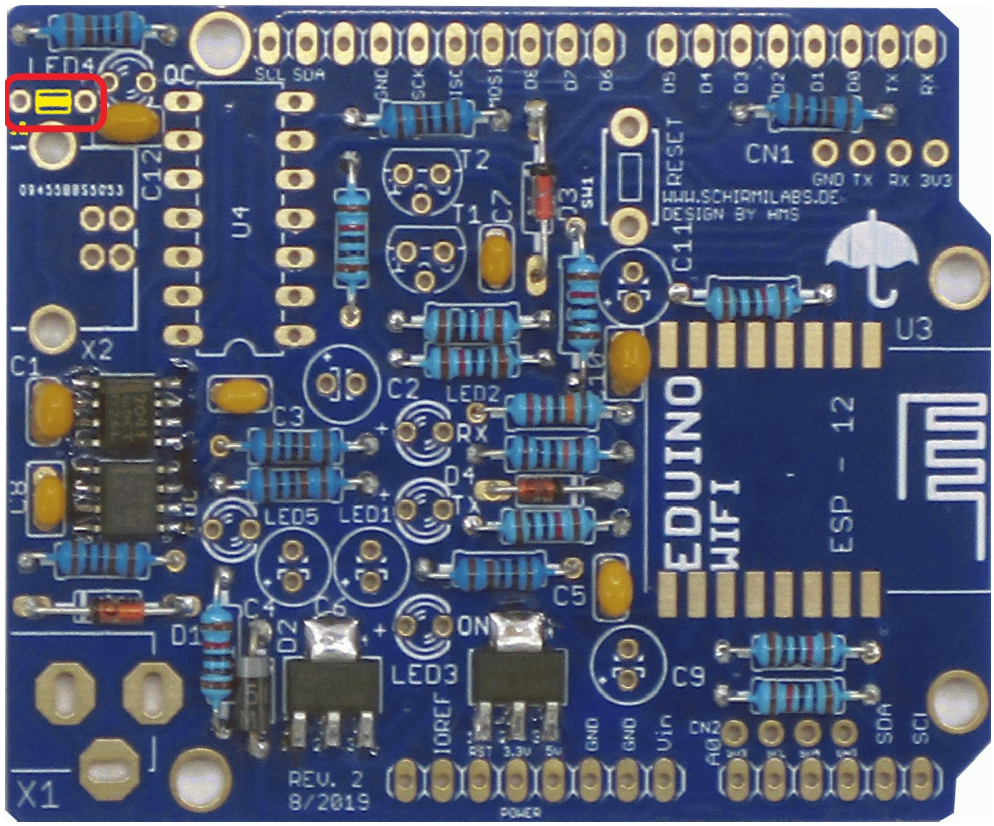


Step 13:
D3

Z-Diode ZPD 3.3

Check polarity !

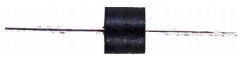
The black marking has to be positioned upwards.

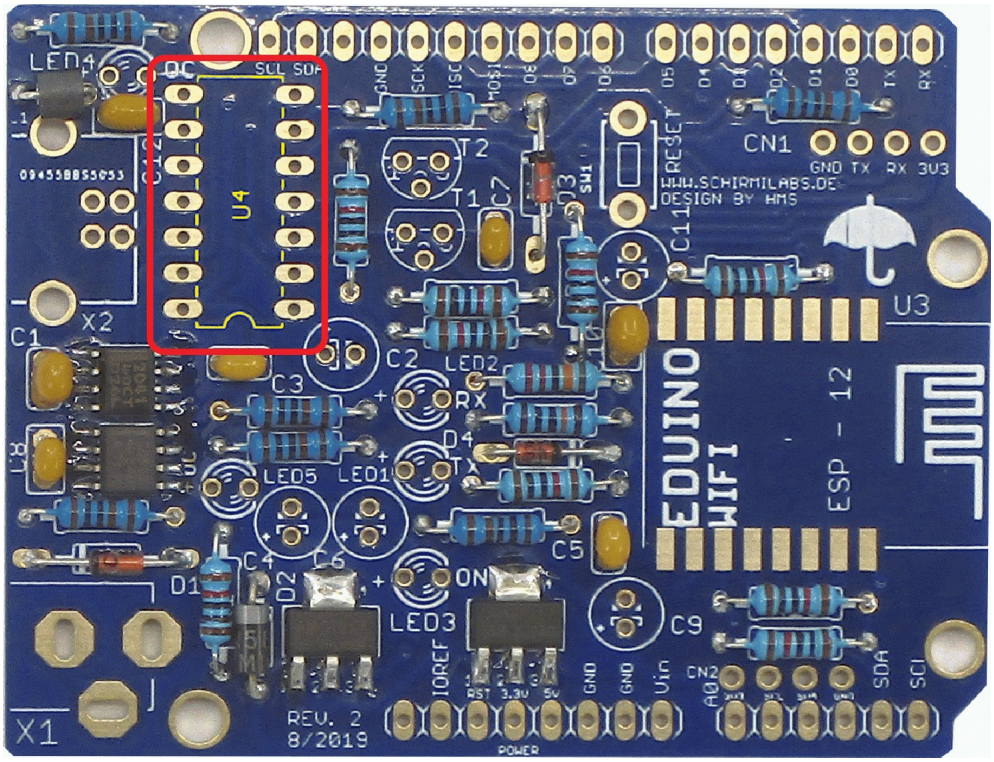


Step 14:

L1

Ferrit bead



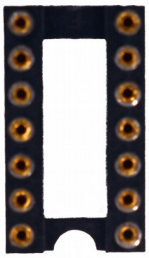


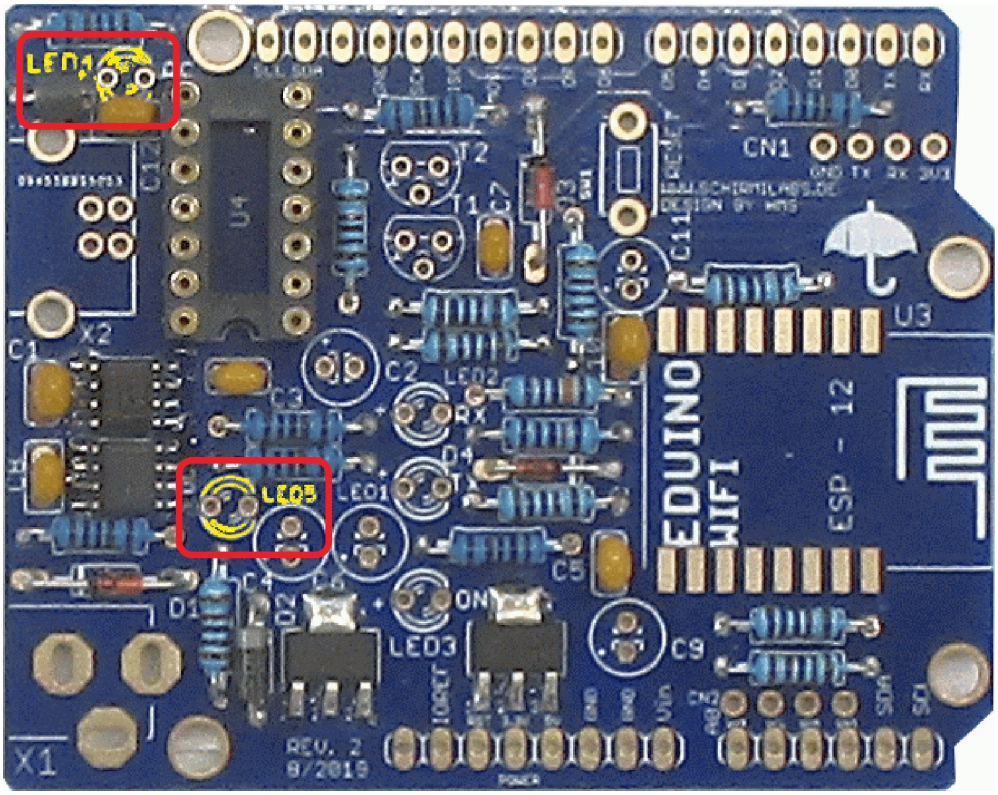
Step 15:

U4

IC socket 14 pins

The notch on the socket has to match the notch as stenciled on the board.



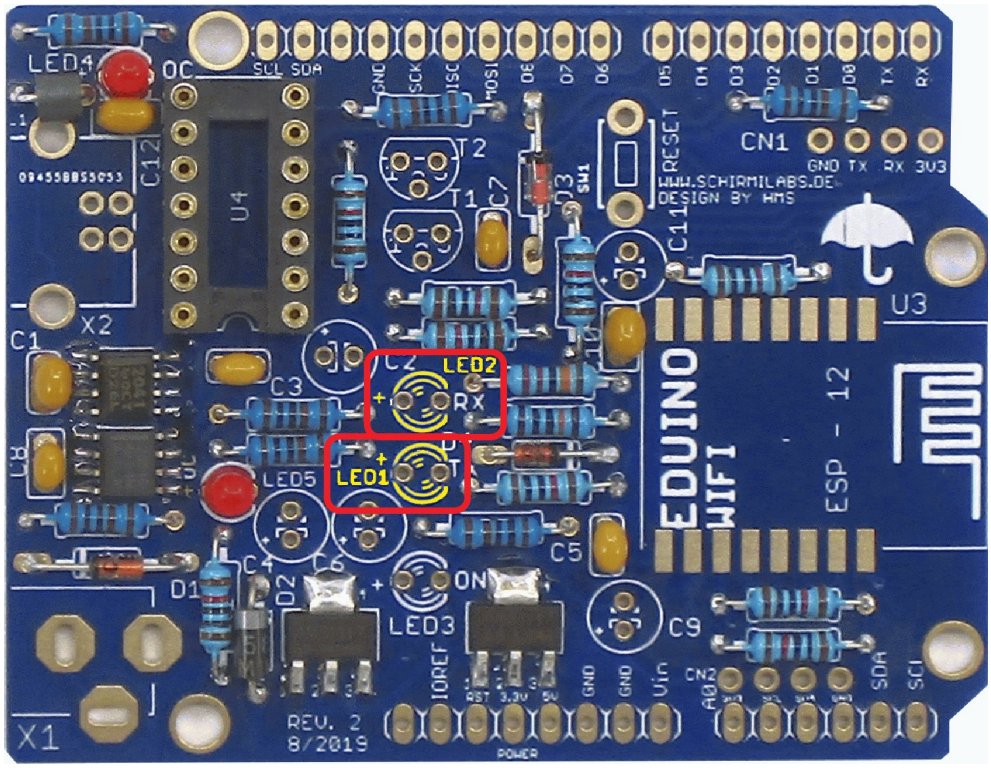


Step 16:

LED4, LED5

LED 3mm red

Check polarity !
The long leg has to be positioned on the left side (+ sign on the board)

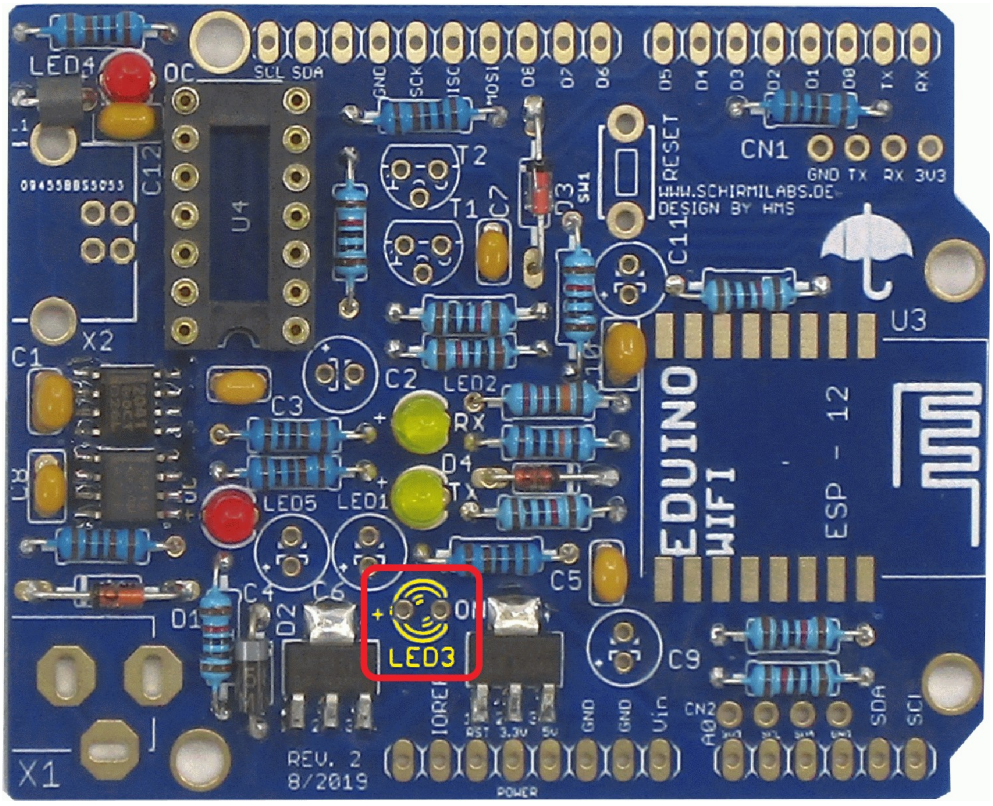


Step 17:

LED1, LED2

LED 3mm yellow

Check polarity !
The long leg has to be positioned on the left side (+ sign on the board)

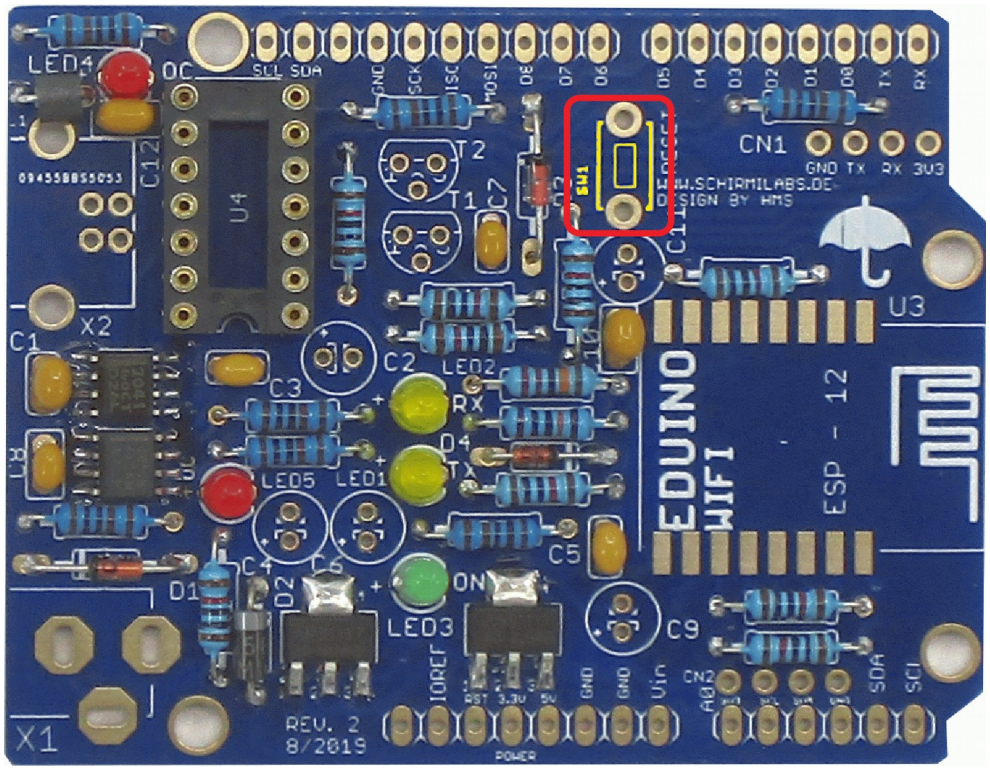


Step 18:

LED3

LED 3mm green

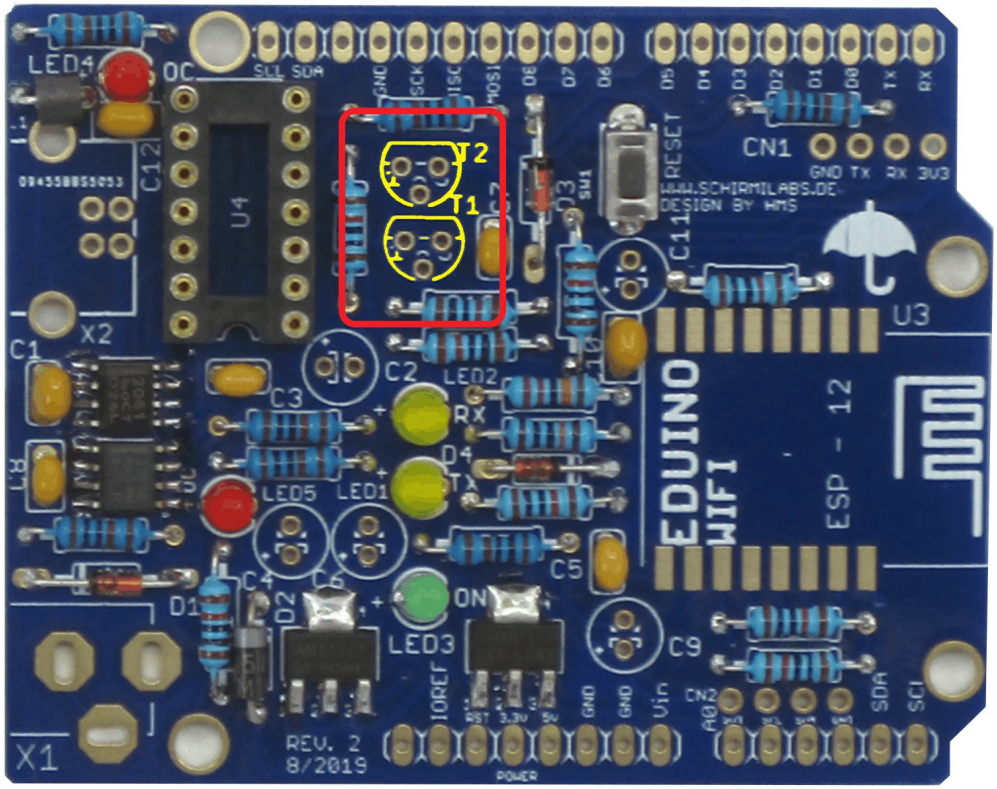
Check polarity !
The long leg has to be positioned on the left side (+ sign on the board)



Step 19:

SW1

Tact switch 3x6

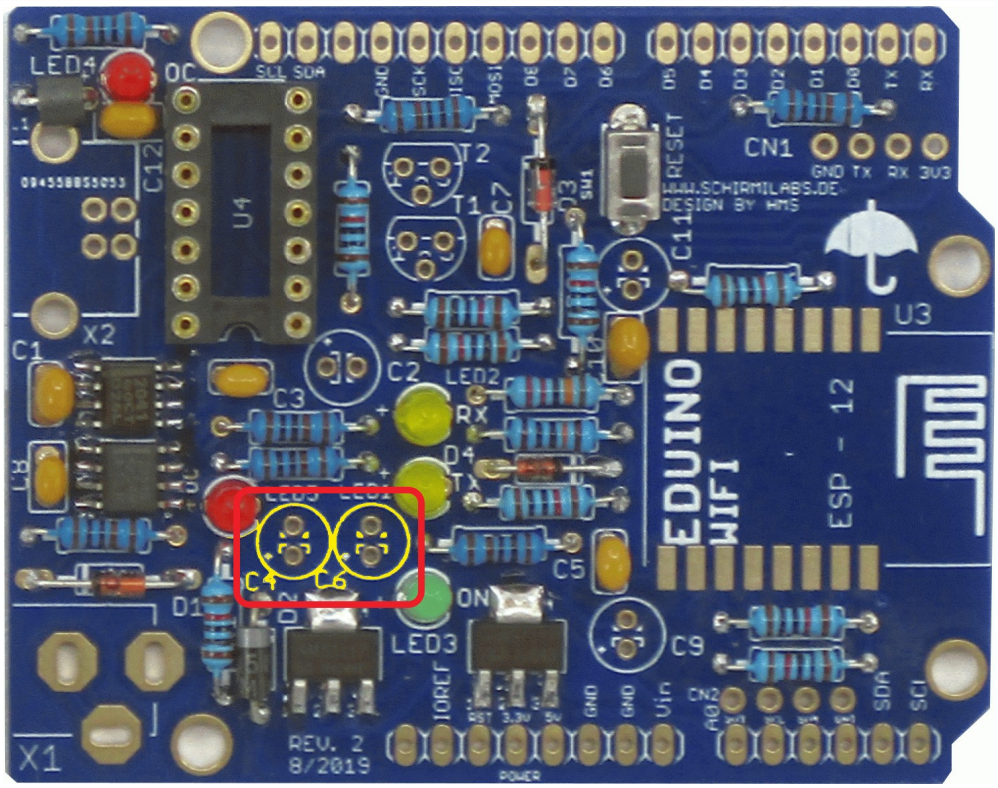


Step 20:

T1, T2

Transistor BC 547

The straight edge of the Transistor should match the straight edge of the stencil.
The middle pin has to be bent backwards before assembly.

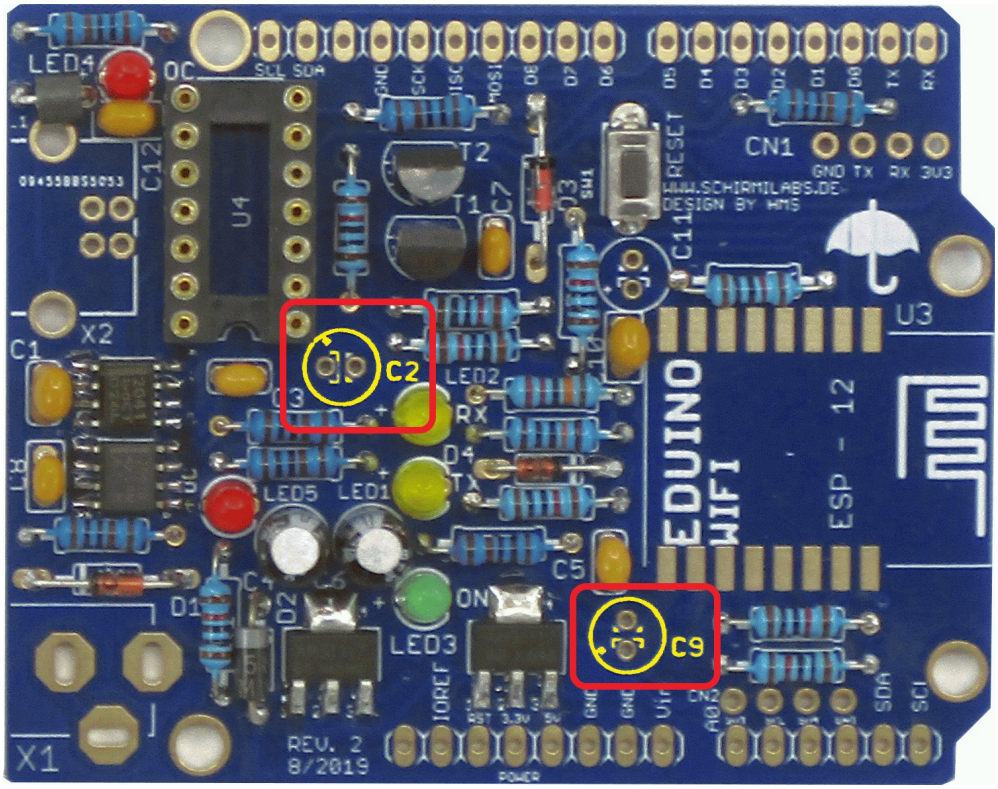


Step 21:

C4, C6

Electrolytic Capacitor 47uF

Check polarity !
The long leg has to be positioned downwards (+sign on the board)

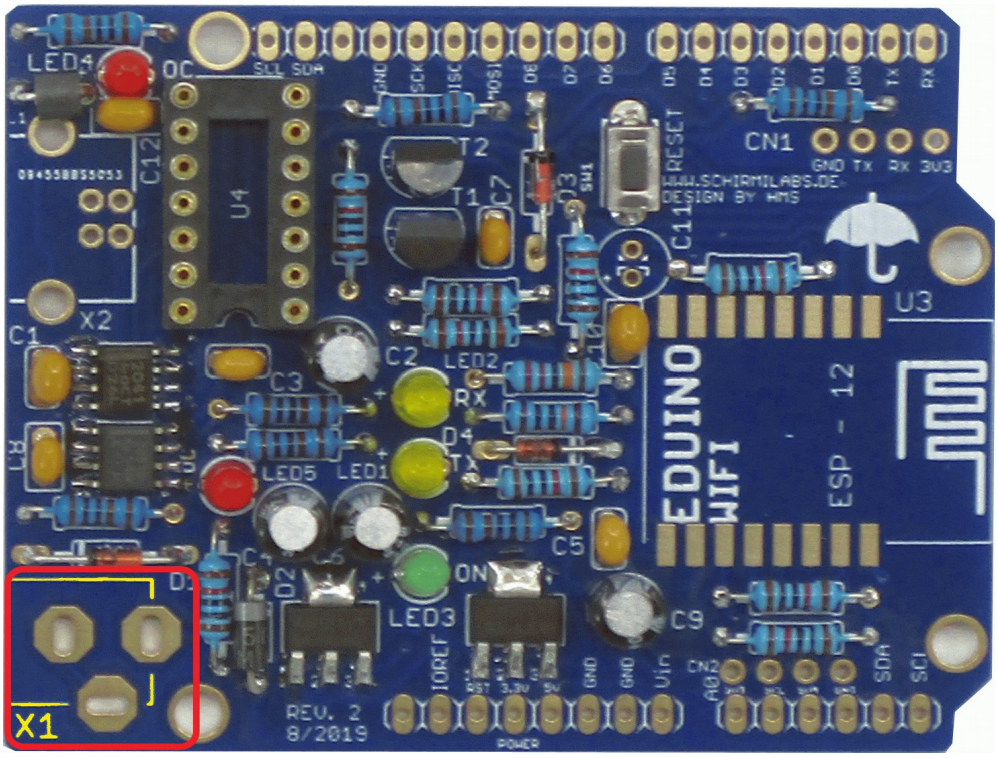


Step 22:

C2, C9

Electrolytic Capacitor 10uF

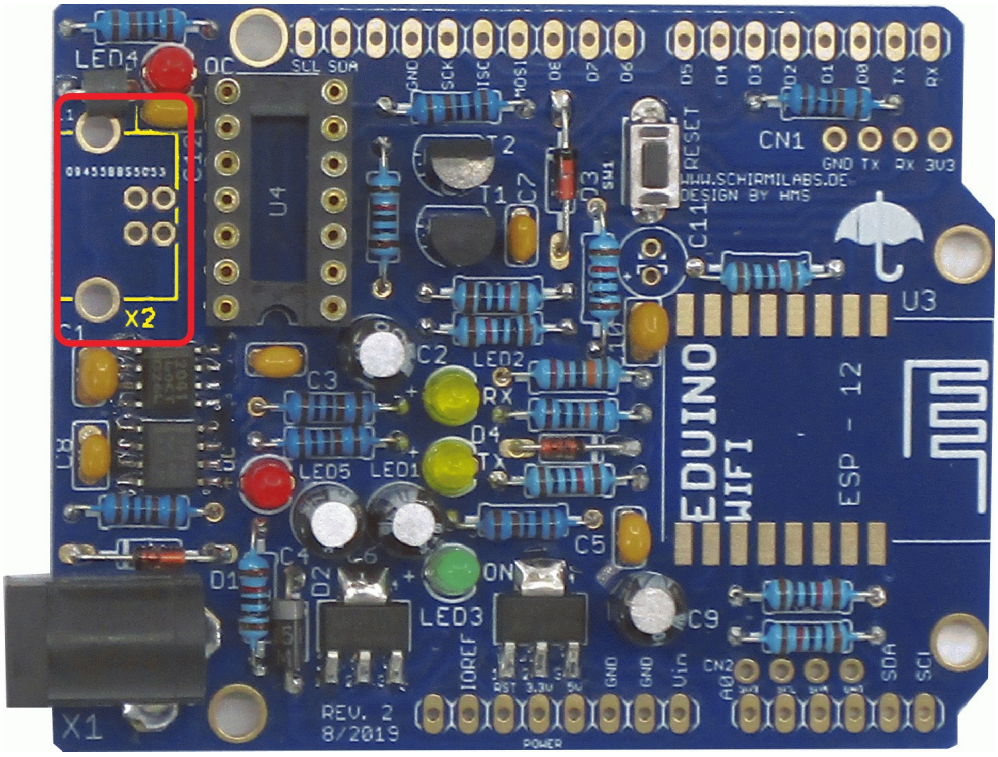
Check polarity !
The long leg has to be positioned on the left side at C2 (+sign on the board) and downwards at C9 (+sign on the board).



Step 23:

X1

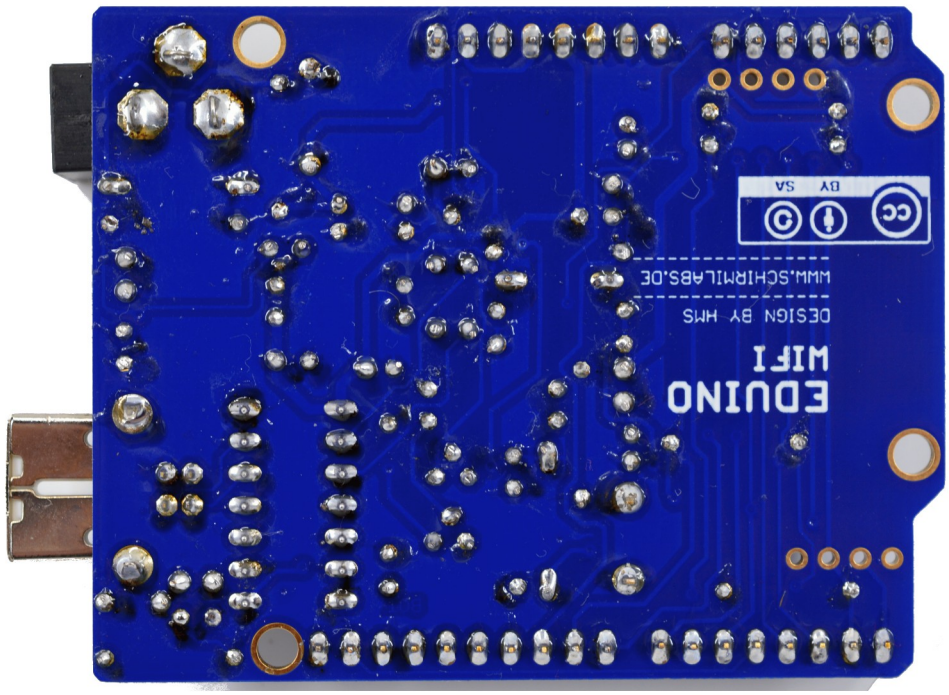
DC Power jack



Step 24:

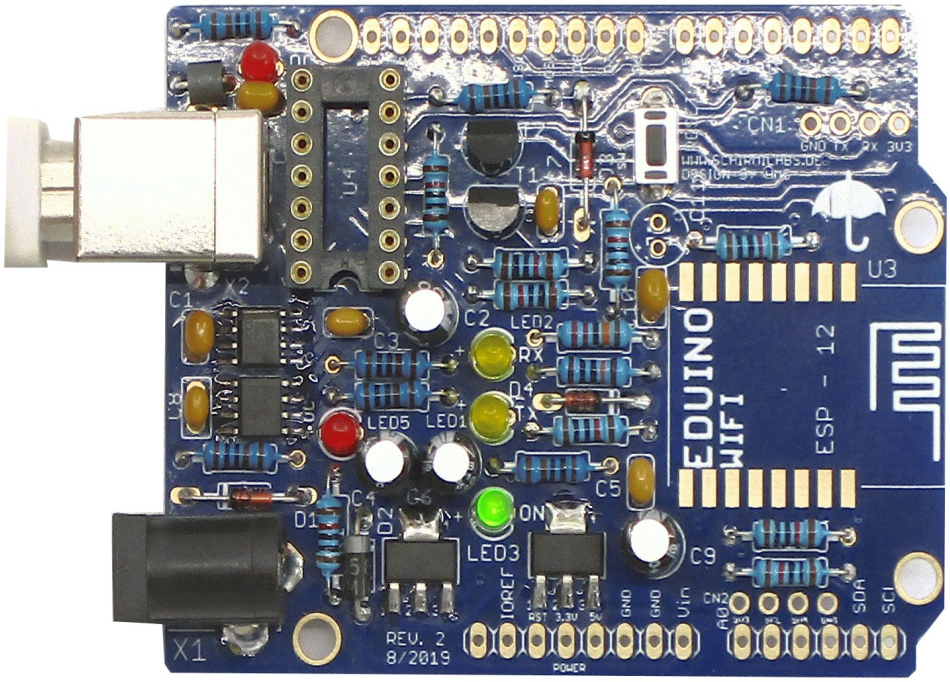
X2

USB Type B connector



Step 25:

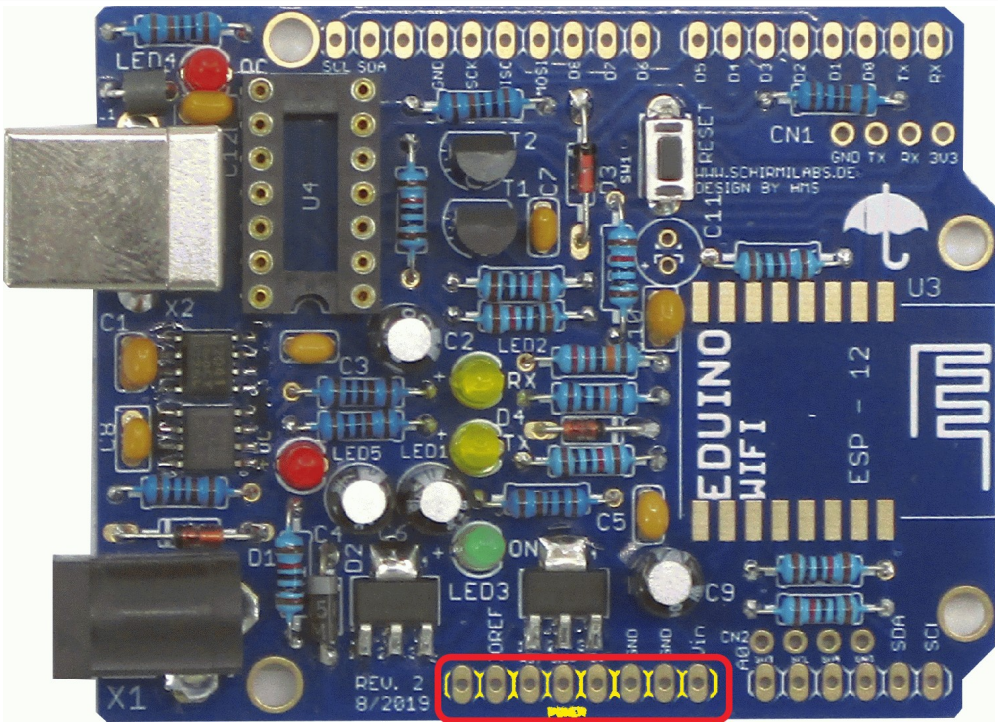
Check the bottom side for possible soldering short circuits



Step 26:

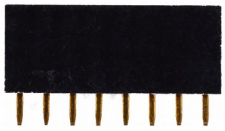
Power supply check

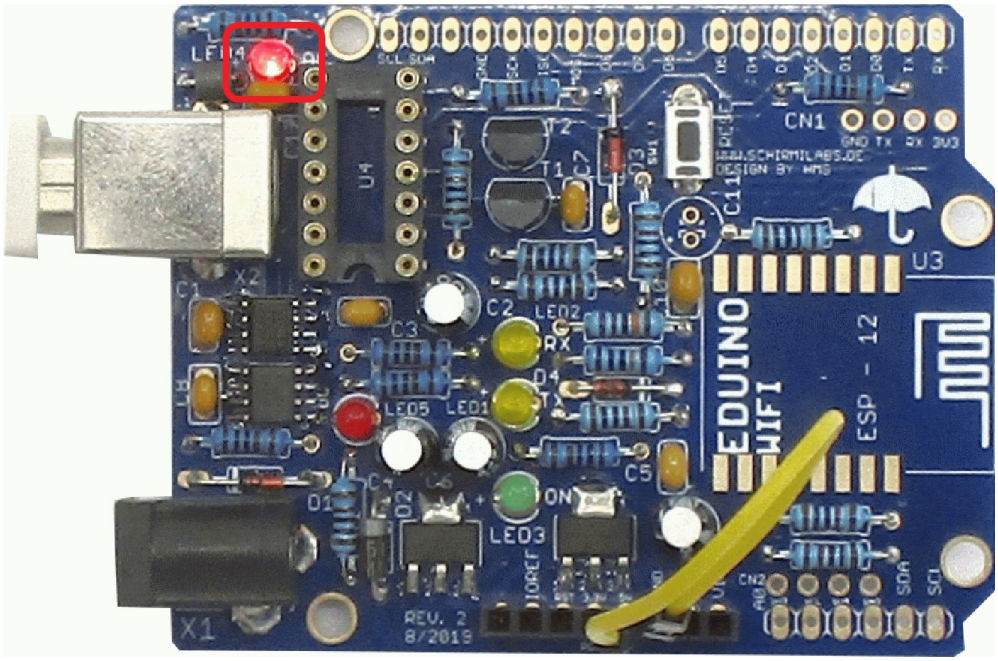
Connect the board with a PC or a USB charger via a USB-B cable.
The green LED should now light up.



Step 27:

Female header 8 pins



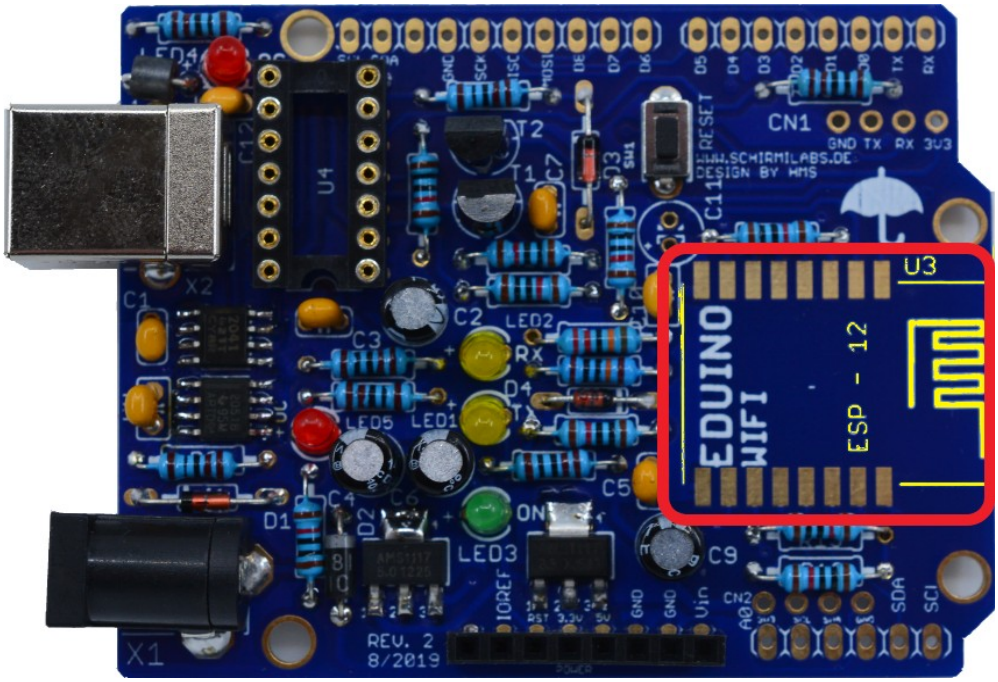


Step 28:

Short circuit test

Connect GND and +5V with a jumper wire cable

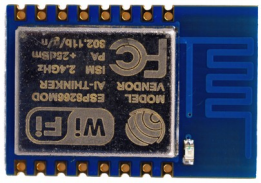
Then connect the board with a PC or a USB charger via a USB-B cable. The red LED on top should light up now (Overcurrent indicator)

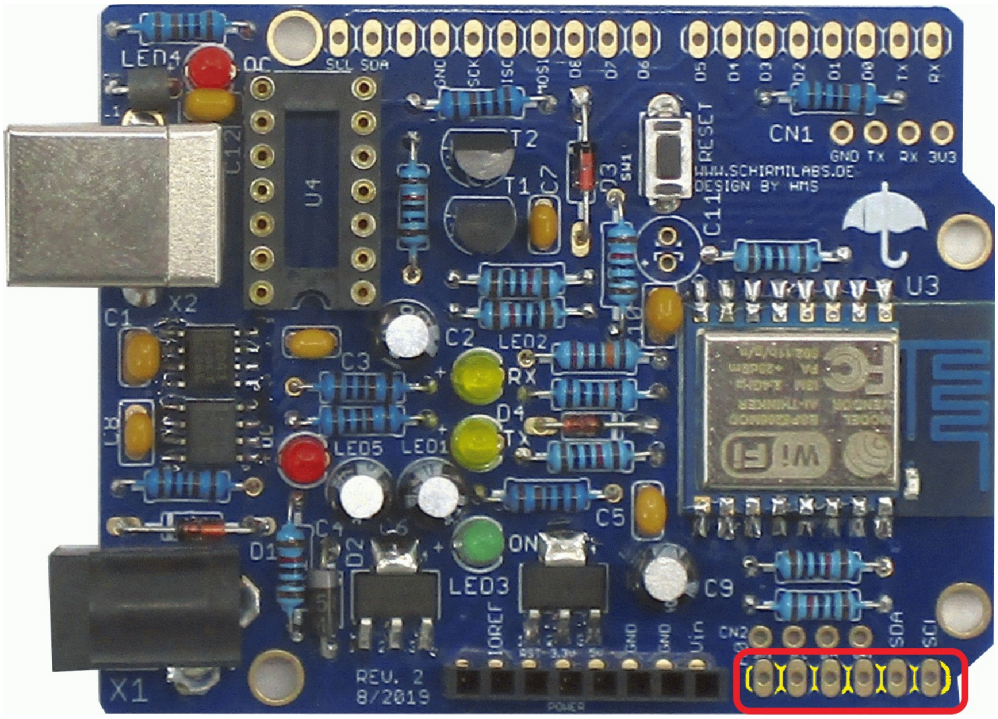


Step 29:

U3

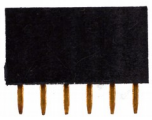
ESP-12 module

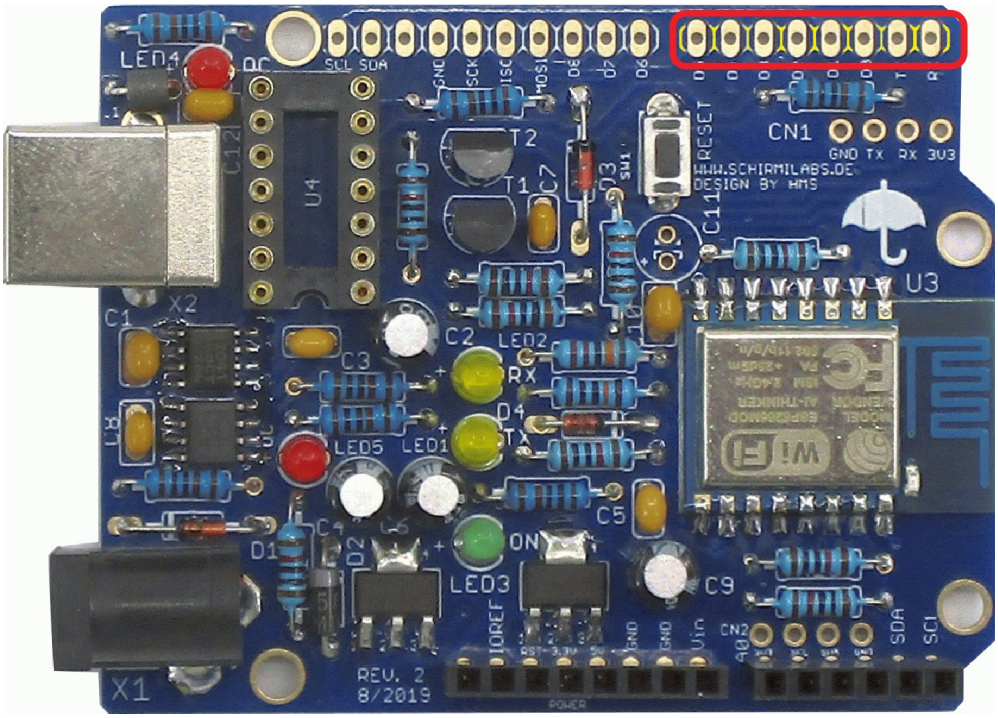




Step 30

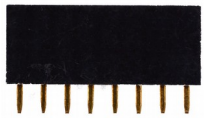
Female header 6 pins

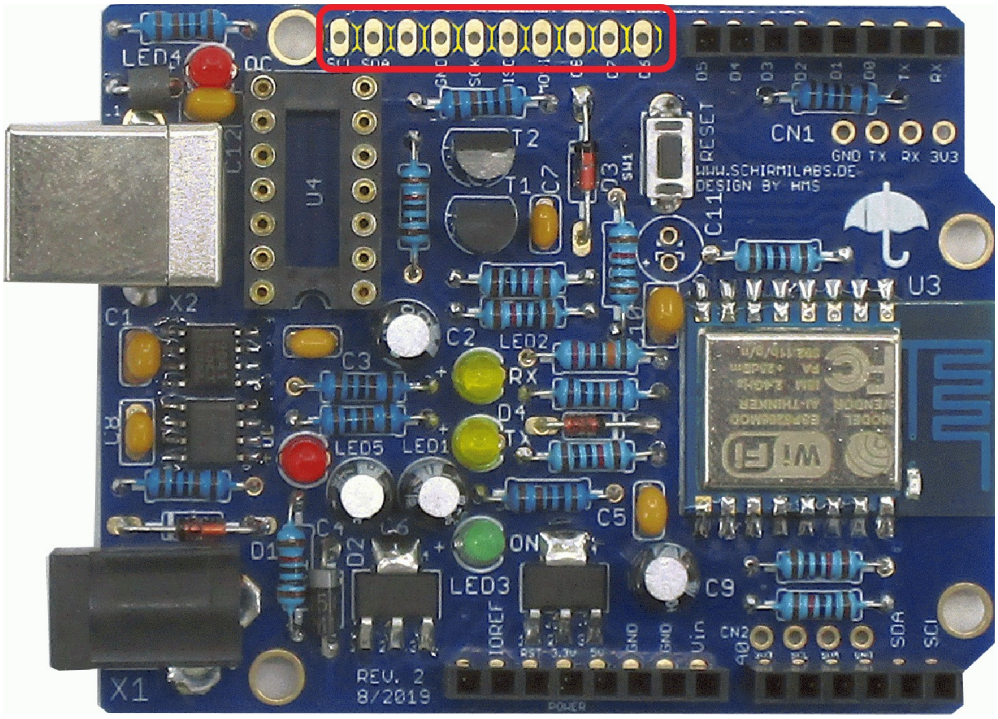




Step 31:

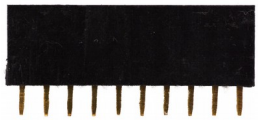
Female header 8 pins

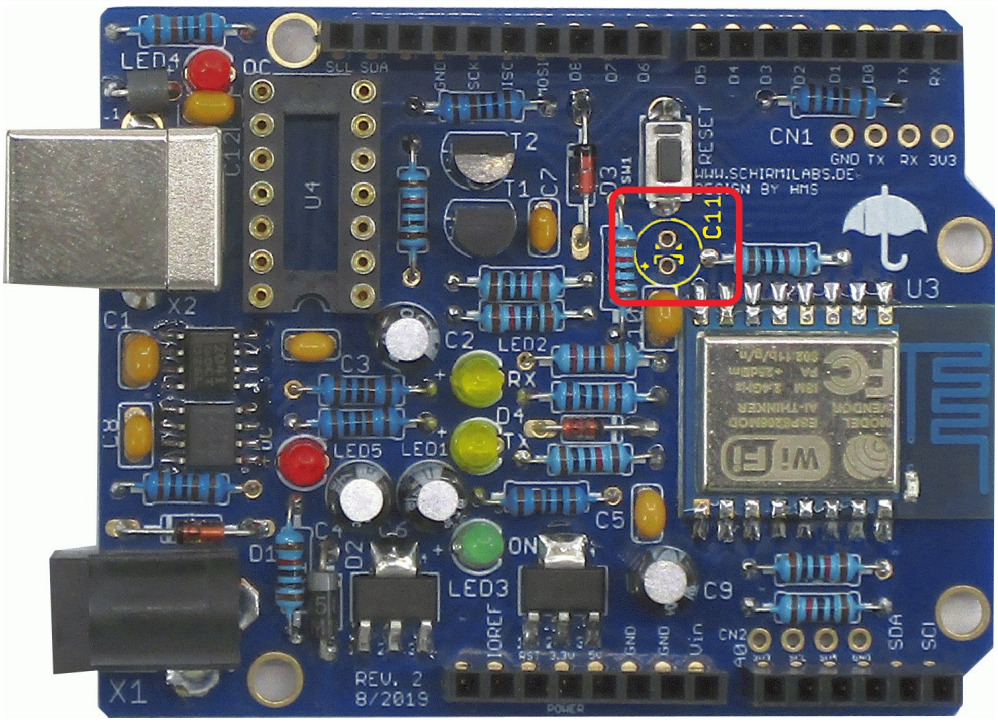




Step 32:

Female header 10 pins



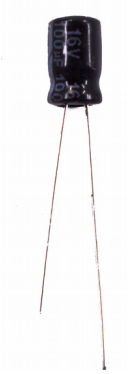


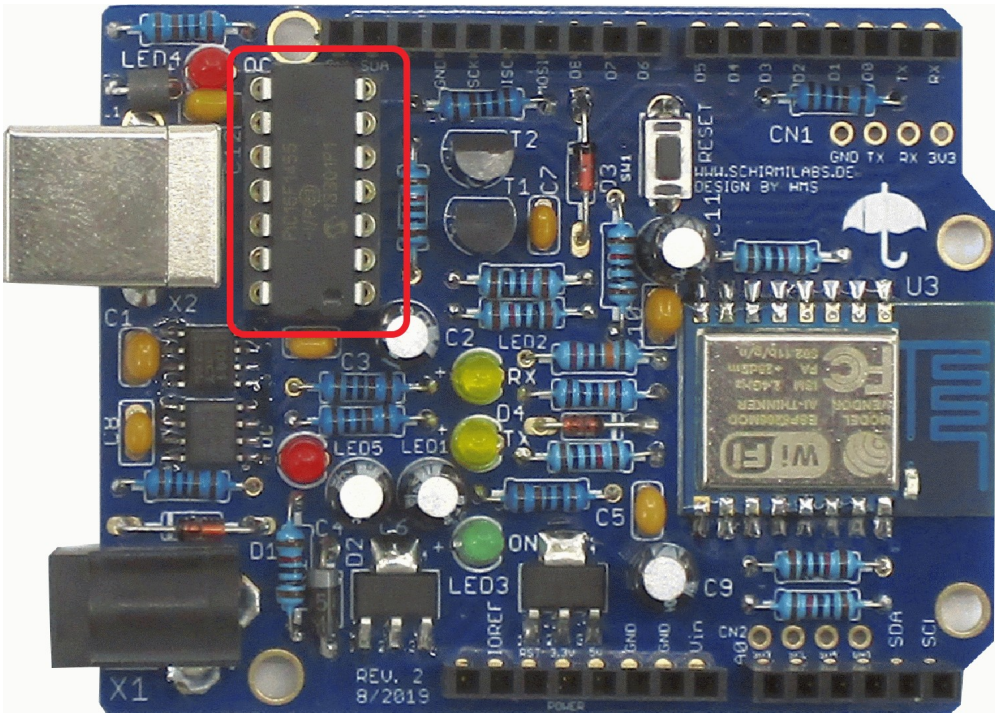
Step 33:

C11

Electrolytic Capacitor 100uF

Check polarity !
The long leg has to be positioned downwards (+sign on the board)





Step 34:

U4

PIC 16F1455

The IC has to be mounted carefully, with the notch in the IC matching the notch in the socket.