

## HS402 DIY Oscilloscope Components List

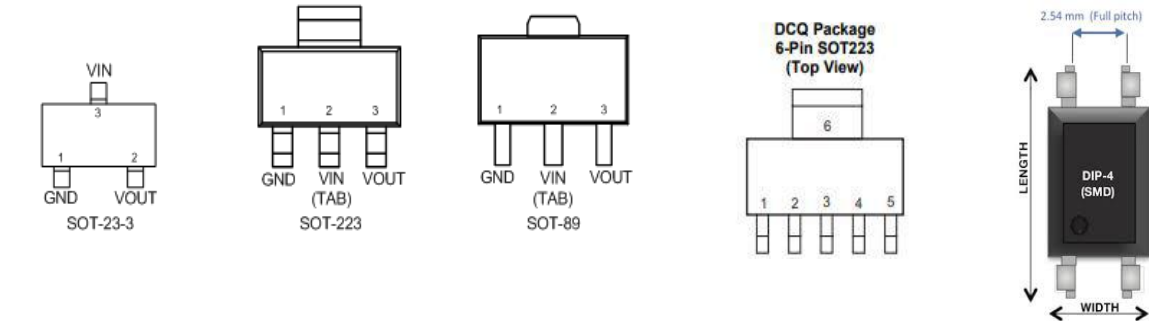
PCB Version: 3.0 (provisional)

| Designator | Quantity | Value       | Description                 | Footprint        | Comment   | Photo   |
|------------|----------|-------------|-----------------------------|------------------|---|---|
| R1, R4, R5 | 3        | 1K          | Resistor                    | C0805            |   |    |
| R2, R6     | 2        | 910K        | Resistor                    | C0805            |   |   |
| R3, R7     | 2        | 100K        | Resistor                    | C0805            |   |   |
| R9         | 1        | 1K          | Potentiometer               | VR5              |   |    |
| C1, C5     | 2        | 20pF var    | Adjustable Capacitor        | Capacitor Var    | 3*4mm   |    |
| C2, C6     | 2        | 100nF       | Capacitor                   | C0805            | use 1uF to improve AC bandwidth at lower frequencies (<100Hz) |    |
| C3, C7     | 2        | 47pF        | Capacitor                   | C0805            |   |   |
| C4         | 1        | 1uF         | Capacitor                   | C0805            | TBC   |   |
| C8         | 1        | 47uF - 6.3V | Capacitor                   | C0805            | TBC   |   |
| C9         | 1        | 470nF       | Capacitor                   | C0805            | TBC   |   |
| C10, C11   | 2        | 10uF        | Capacitor                   | C0805            | TBC   |   |
| D1, D2     | 2        | BAV99       | Diodes                      | SOT23            |   |   |
| U1, U3     | 2        | MCP6S21     | PGA                         | SOP-8 or SOIC-8  | MSOP-8 in V1.6  |  |
| U2         | 1        | AMS1117-1.2 | Linear Regulator            | SOT223           |   |  |
| U5         | 1        | AMS1117-3.3 | Linear Regulator            | SOT223           | Option 1  |  |
| U6         | 1        | TPS73733    | Linear Regulator            | SOT223-6         | Option 2  |  |
| K1, K2     | 2        | AQY210EH    | PhotoMOS                    | PNSC-DIP4(SMT)_V |   |  |
| MCU        | 1        | STM32F411   | STM32 Black Pill Dev. Board | Black Pill       | (or STM32F401)  |   |
| P2, P5     | 2        | BNC         | BNC Elbow Connector         | BNC              |   |  |
| IN         | 1        | Header 5    | Header, 5-Pin               | HDR1X5           | I2C Input Buttons Module                                      |   |
| OUT        | 1        | Header 4    | Header, 4-Pin               | HDR1X4           | I2C Modules (other)   |   |
| UART       | 1        | Header 4    | Header, 2-Pin               | HDR1X2           | Serial Port (flashing & Wifi module)                          |   |

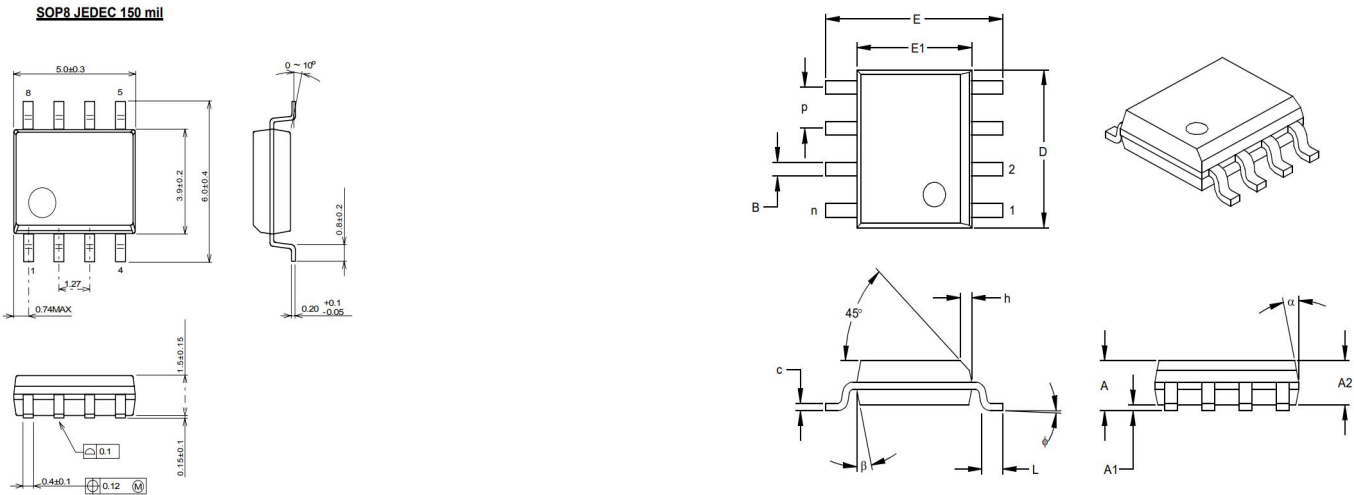
| Designator | Quantity | Value    | Description   | Footprint | Comment                | Photo |
|------------|----------|----------|---------------|-----------|------------------------|-------|
| PWM        | 1        | Header 2 | Header, 2-Pin | HDR1X2    | PWM Output             |       |
| BAT        | 1        | Header 2 | Header, 2-Pin | HDR1X2    | Battery power          |       |
| SPI        | 1        | Header 3 | Header, 3-Pin | HDR1X3    | SPI port (Wifi module) |       |

Revision History:

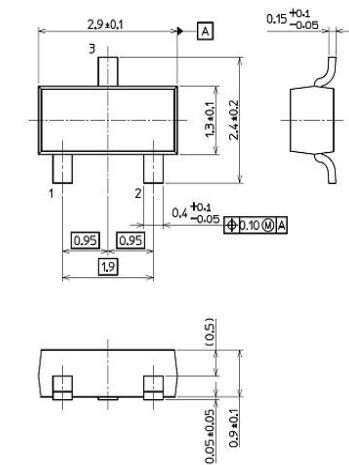
- V2.1: C1, C5 to 20pF since the value needed is quite low, some 30pF var capacitor do not allow to regulate around 6pF.
- V2.0: Removed J1, directly use PA2 pin for Vref, PWM become 2 pin header, added SP header (Serial Port), U1,U3 use SOP module.
- V1.6: Removed duplicated R8, Added comment for C2, C6.



8-Lead Plastic Small Outline (SN) – Narrow, 150 mil (SOIC) or SOP8




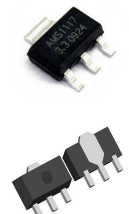



SOT-23



## WIFI Module Components List

PCB Version: 3.0 (provisional)

| Designator              | Quantity | Value           | Description      | Footprint          | Comment  | Photo   |
|-------------------------|----------|-----------------|------------------|--------------------|--|---|
| R10, R11, R12           | 3        | 5.1K            | Resistor         | C0805              |  |    |
| R13, R14, R15, R16, R17 | 5        | 20K             | Resistor         | C0805              |  |   |
| C20, C21, C22           | 3        | 1uF             | Capacitor        | C0805              |  |   |
| C23                     | 1        | 10uF            | Capacitor        | C0805              |  |   |
| C3, C7                  | 2        | 47pF            | Capacitor        | C0805              |  |   |
| S1                      | 1        | -               | Button           | 1206<br>(or 3x4mm) |  |    |
| U10                     | 1        | ESP32-WROOM-32D | MCU              | -                  | Older model is ok. New model ESP32-WROOM-32E not tested yet    |    |
| U11 (or U11-1)          | 1        | AMS1117-3.3     | Linear Regulator | SOT223 (or SOT89)  | Option 1 (to use when power with 5V)                           |  |
| U12                     | 1        | TPS73733        | Linear Regulator | SOT223-6           | Option 2 (to use when power directly with 3.7 Lithium battery) |  |

