

# STM32\_LEARNING\_KIT

## KEYSKING

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### Peripheral List

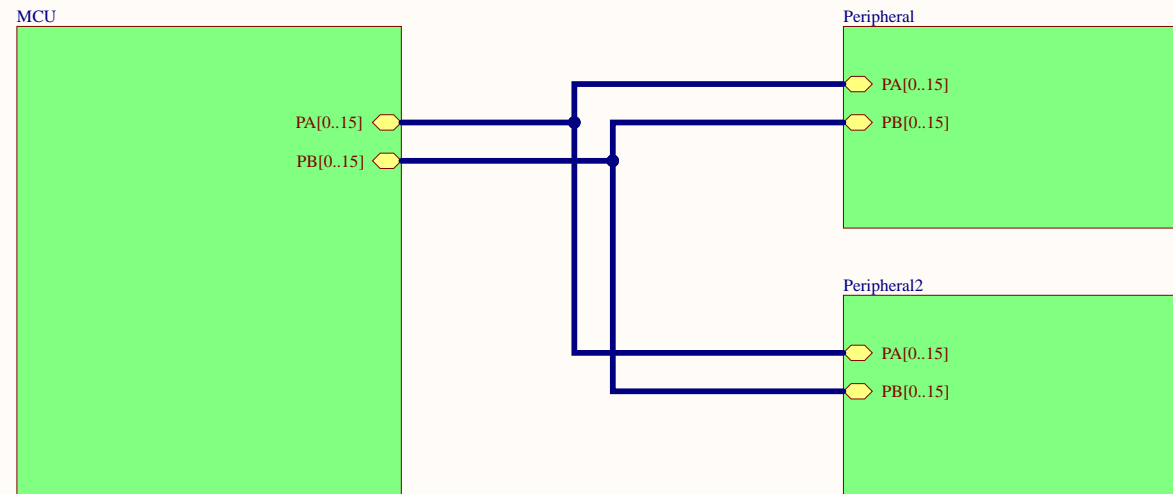
1 × RGB LED	1 × UltraSonic
2 × KEY	1 × Rotary Encoder
1 × TCRT5000	1 × DHT20
1 × Relay	1 × OLED Display
1 × Potentiometer ADC	1 × BLUETOOTH
1 × NTC Temperature Sensor	1 × TYPE-C
1 × DRV8833 Motor Driver	1 × CH343P USART to USB
1 × Servo	1 × WS2812 LED Array
1 × Passive Buzzer	1 × RTC Battery

### License

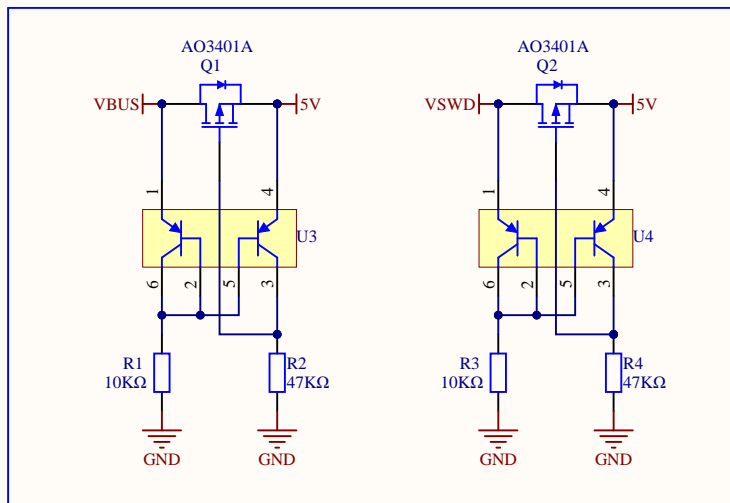
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TOP

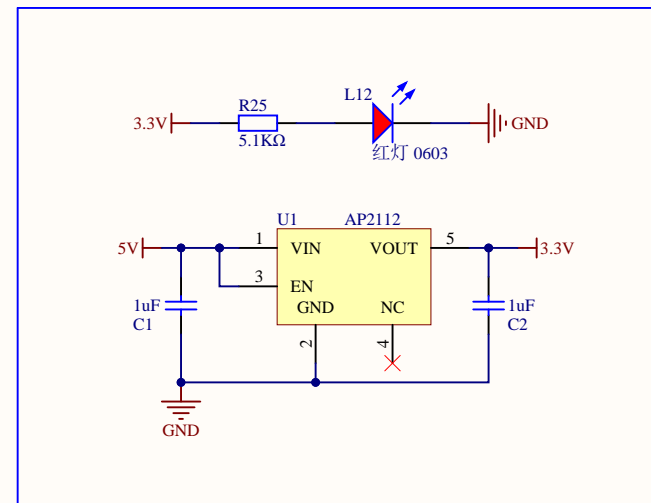


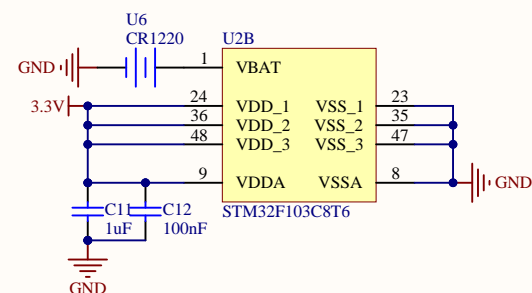
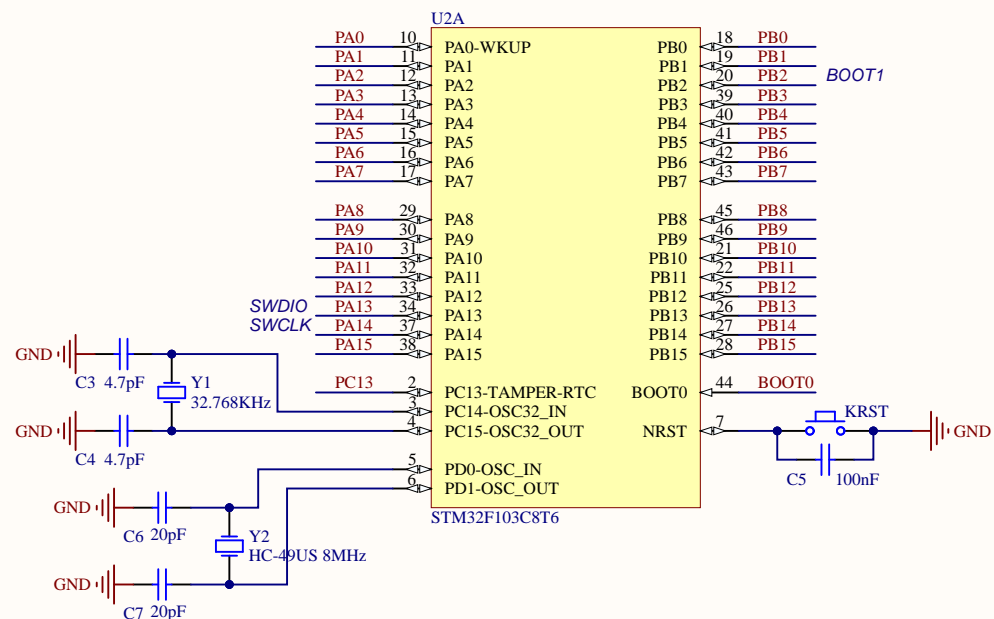
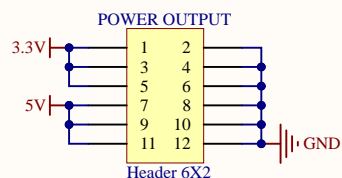
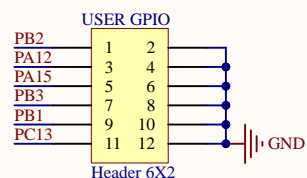
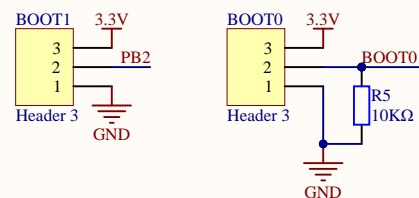


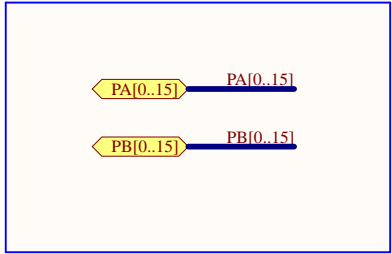
Anti-backflow protection




3.3V Power supply







# BLUETOOTH



The diagram shows a yellow rectangular Bluetooth module with four pins labeled 4, 3, 2, and 1. Pin 4 is connected to a 5V power source. Pin 3 is connected to a pin labeled PB11, which is also connected to a U3\_RX pin on a component labeled U3. Pin 2 is connected to a pin labeled PB10, which is also connected to a U3\_TX pin on the U3 component. Pin 1 is connected to a GND (ground) symbol.

BLUETOOTH

5V

GND

4

3

2

1

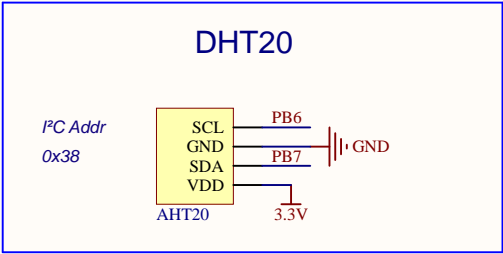
PB11

PB10

U3\_RX

U3\_TX

Header 4



### RGB LED

The diagram shows an RGB LED (L1, MHP5050RGBDT) with three pins connected to microcontroller pins (PA6, PA7, PB0) through resistors (R22, R23, R24). The LED pins are labeled 6, 5, and 4, and the microcontroller pins are labeled 3, 2, and 1. The resistors are labeled R22 (820Ω), R23 (2.2KΩ), and R24 (1.8KΩ). The LED is also connected to a common ground (GND).

# ADC TEST

Temperature sensor

3.3V

10KΩ  
R6

PA4

1  
2

NTC

GND

Variable resistor

3.3V

PA5

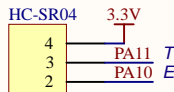
VOL

GND

# Photoelectric switch

The diagram illustrates a photoelectric switch circuit. A yellow rectangular component, labeled 'TCRT5000', represents the sensor module. It has three pins on its left side, labeled '3', '2', and '1' from top to bottom, which are collectively labeled 'Header 3'. Pin 3 is connected to a red wire labeled '3.3V'. Pin 2 is connected to a red wire labeled 'PB14'. Pin 1 is connected to a red wire labeled 'GND', which is also connected to a ground symbol (three horizontal lines of decreasing width). The entire circuit is enclosed in a blue rectangular frame.

# Ultrasonic



The diagram shows the wiring for an HC-SR04 ultrasonic sensor. The sensor is represented by a yellow rectangle with four pins labeled 1, 2, 3, and 4. Pin 4 is connected to a 3.3V supply. Pin 3 is connected to PA11, which is also labeled TRIG. Pin 2 is connected to PA10, which is also labeled ECHO. Pin 1 is connected to a common ground (GND) symbol. The label 'Header 4' is placed below the sensor.

HC-SR04

3.3V

4

3

2

1

Header 4

PA11

PA10

GND

TRIG

ECHO

# Relay

5V

U7

RELAY

CLOSE  
COM  
OPEN

D2 FR107

Q3 SS8050

R9 3K $\Omega$

PB5

GND

**! CAUTION**  
DO NOT operate high voltage  
More than 36V is DANGEROUS

### TYPE-C

The diagram illustrates the electrical connections for a Type-C connector. The central component is a yellow IC with pins labeled A1 through A12 and B1 through B12. The connections are as follows:

- Pin A1:** Connected to GND.
- Pin A4:** Connected to VBUS through a 5.1KΩ resistor (R7).
- Pin A5:** Connected to DN.
- Pin A6:** Connected to DP.
- Pin A7:** Connected to DN1.
- Pin A8:** Connected to SUB1.
- Pin A9:** Connected to VBUS.
- Pin A12:** Connected to GND.
- Pin B1:** Connected to GND.
- Pin B4:** Connected to VBUS through a 5.1KΩ resistor (R8).
- Pin B5:** Connected to CC2.
- Pin B6:** Connected to DN.
- Pin B7:** Connected to DP.
- Pin B8:** Connected to DN.
- Pin B9:** Connected to VBUS.
- Pin B12:** Connected to GND.

The IC is connected to a USB-C connector (J1) which has pins 1 through 12. The connections for J1 are:

- Pin 1:** Connected to GND.
- Pin 2:** Connected to DN.
- Pin 3:** Connected to DP.
- Pin 4:** Connected to DN.
- Pin 5:** Connected to DP.
- Pin 6:** Connected to DN.
- Pin 7:** Connected to DP.
- Pin 8:** Connected to DN.
- Pin 9:** Connected to DP.
- Pin 10:** Connected to DN.
- Pin 11:** Connected to DP.
- Pin 12:** Connected to DN.

Additional components include two LEDs (D3, D4) connected to pins 2 and 3, and one LED (D1) connected to pin 12.

# KEYS

The diagram shows two push buttons, KEY 1 and KEY 2, connected to a microcontroller. Both buttons have one terminal connected to a 3.3V supply through a 10KΩ pullup resistor (R11 for KEY 1, R12 for KEY 2). The other terminal of each button is connected to a microcontroller pin (PB12 for KEY 1, PB13 for KEY 2) and also to ground through a 100nF capacitor (C16 for KEY 1, C20 for KEY 2). The ground connection is shown as a common ground symbol.

*K2 has no external pullup  
Enable internal pullup*

The diagram illustrates the connection of a Servo motor to a breadboard. A yellow box labeled "SERVO" has three pins on its "Header 3": pin 3 is connected to the PB8 pin on the breadboard, pin 2 is connected to the 5V rail, and pin 1 is connected to the GND rail.

# Motor driver

DRV8833

Header 4

PA0

PA1

5V

GND

[illegible]

# CH343P

U8  
CH343P

16 15 14 13

GND CTS DSR RTS

12 11 10 9

DTR DCD ACT# VBUS

3.3V

GND

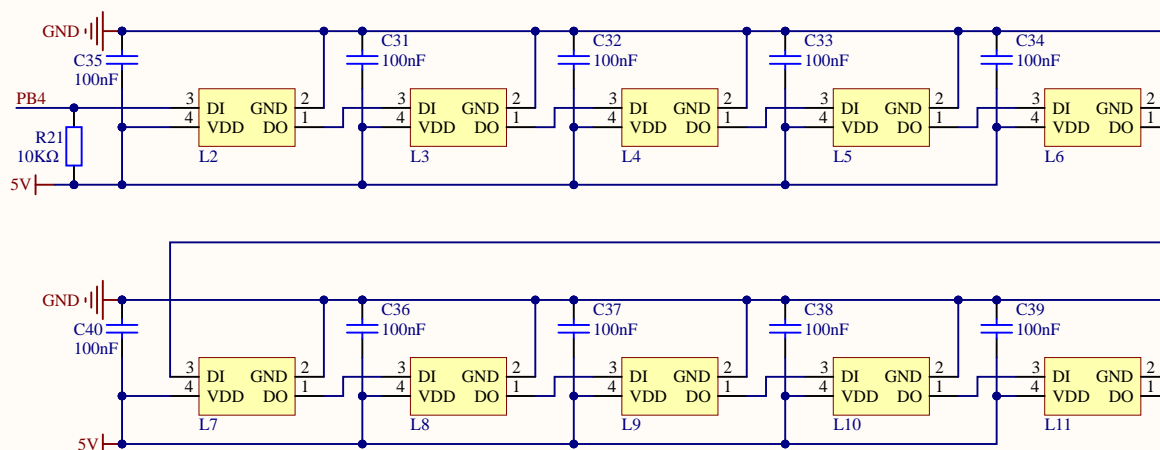
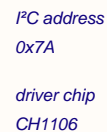
VBUS

PA3 PA2

C19 100nF

GND

DN DP



*PB4 is 5V tolerance PIN*

*Set to open-drain output mode*