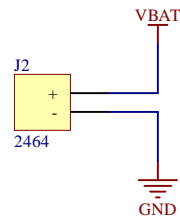
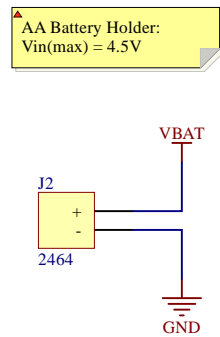
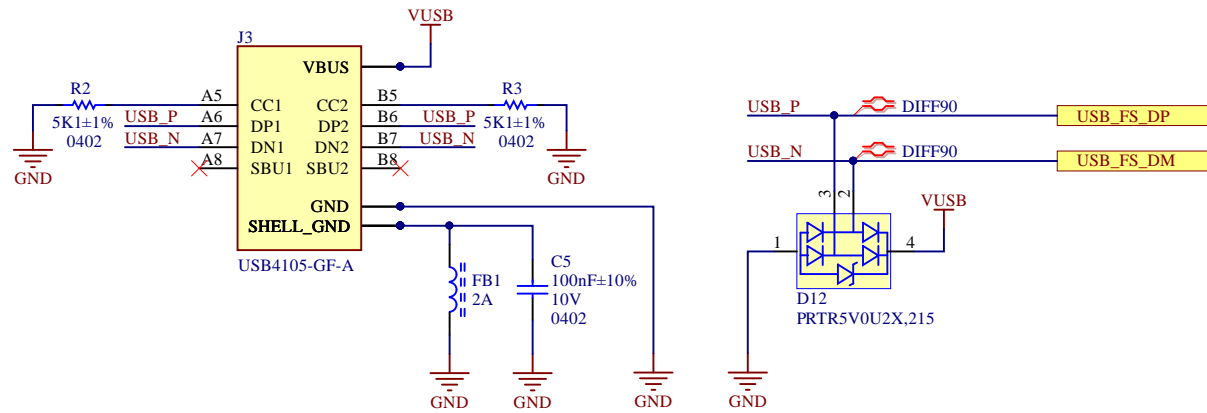


Dipro Technologies		Cannot open file C:\Users\Public\Documents\...	
Project: DIP006_EDUBOARD_IOTSENS.PrjPcb			
Size: A4	Document: MainSchematic.SchDoc		Rev: C
Engineer: M. García		Aproved by: A. Serrat	
Date: 10/06/2024	Sheet 1 of 12		

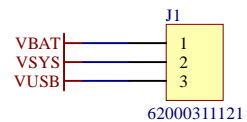
Battery Input



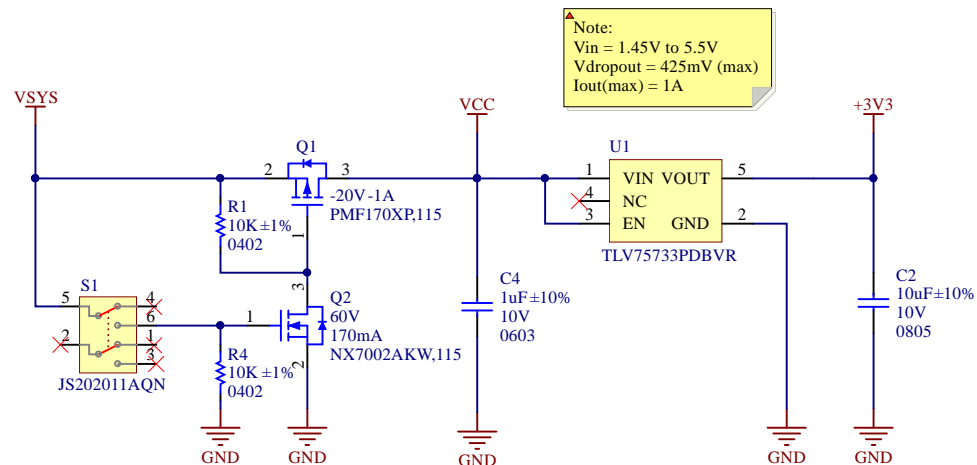
USB Input



Power Selector

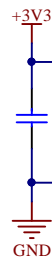


+3V3 Converter

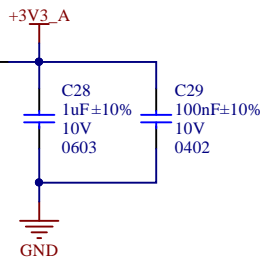


Decoupling Capacitors

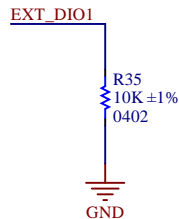
DIGITAL



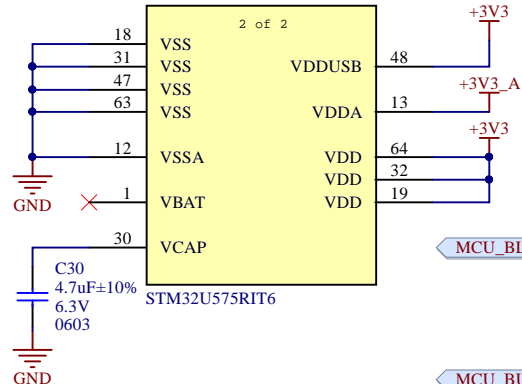
ANALOG



Bootloader



U7B



STM32U575RIT6

MCU_BLED

LED0 → BAR_LED0
LED1 → BAR_LED1
LED2 → BAR_LED2
LED3 → BAR_LED3
LED4 → BAR_LED4
LED5 → BAR_LED5

MCU_BUTTONS

UP → JOYSTICK_UP
DOWN → JOYSTICK_DO
LEFT → JOYSTICK_LE
RIGHT → JOYSTICK_RI

ACC_SPI

CLOCK → ACC_SPI_CLK
MOSI → ACC_SPI_MOSI
MISO → ACC_SPI_MISO
NCS → ACC_SPI_NCS

ACC_INT

ACC_INT

TMP_I2C

SCL → TMP_I2C_SCL
SDA → TMP_I2C_SDA

EXT_UART

TXD → EXT_UART_TX
RXD → EXT_UART_RX

Note 5: UART Direction
UART signals goes directly to an external connector.

EXT_SPI

CLOCK → EXT_SPI_CLK
MOSI → EXT_SPI_MOSI
MISO → EXT_SPI_MISO
NCS → EXT_SPI_NCS

EXT_I2C

SCL → EXT_I2C_SCL
SDA → EXT_I2C_SDA

EXT_DIO0

EXT_DIO0

EXT_DIO1

EXT_DIO1

USB_FS_DM

DIFF90 → USB_N

USB_FS_DP

DIFF90 → USB_P

EXT_ADC_IN0

EXT_ADC_IN0

EXT_ADC_IN1

EXT_ADC_IN1

Dipro Technologies

Cannot open file
C:\Users\Public\Documents\

Project: DIP006_EDUBOARD_1Q7SENS.PrjPcb

Size: A4

Document: Module_Microcontroller.SchDoc

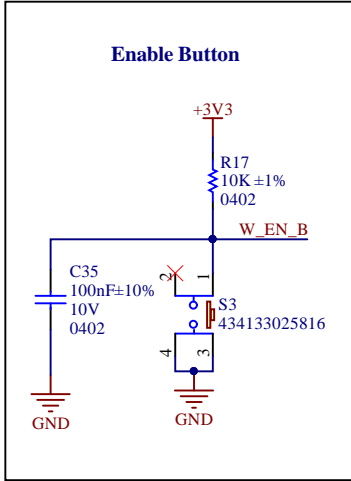
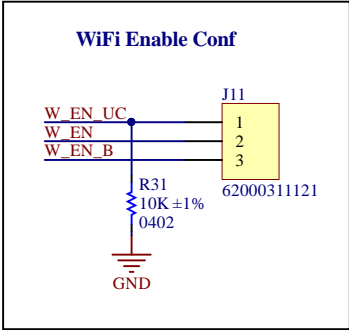
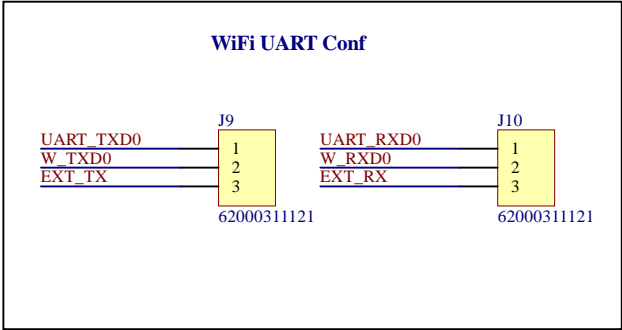
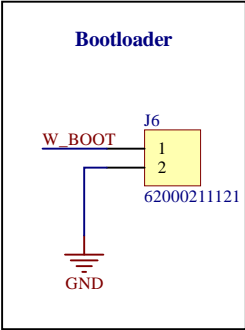
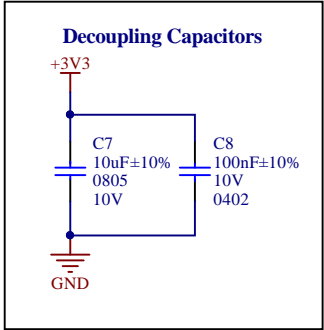
Rev: C

Engineer: M. García

Approved by: A. Serrat

Date: 10/06/2024

Sheet 3 of 12



Note 1: Enable Pin
When the enable pin is "1" enables the chip, and "0" it powers off. Do not leave the pin floating.

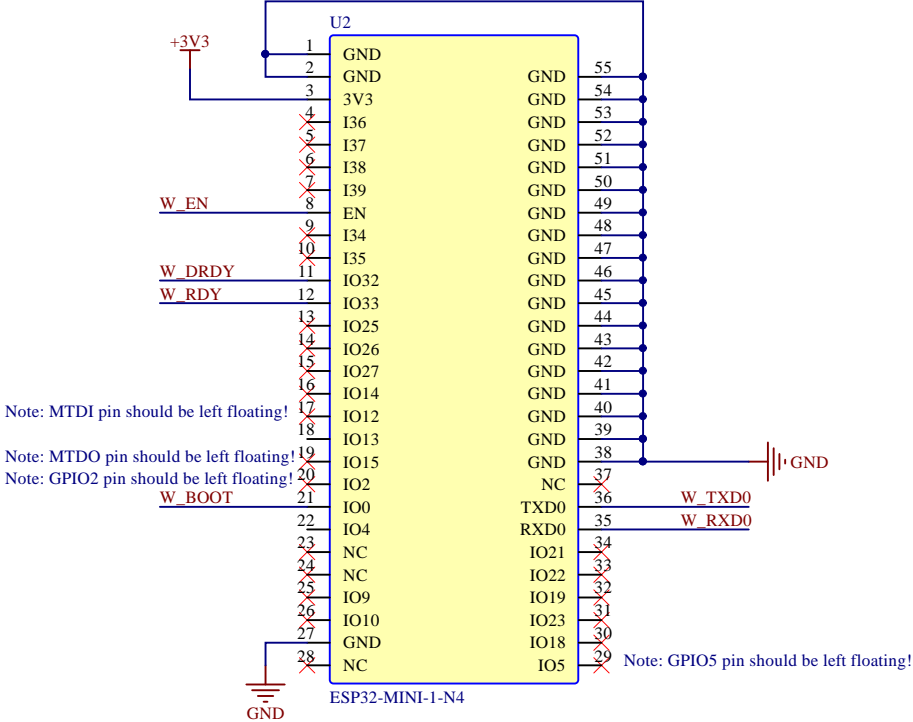


Note 2: UART Direction
UART signals are defined from Wi-Fi to MCU.



Note 3: UART Direction
UART signals goes directly to an external connector.

Note 4: Recommended Operating Conditions
Power supply voltage: 3.03.6V.
Current delivered by external power supply: 500 mA (Min).



Note: MTDI pin should be left floating!

Note: MTDO pin should be left floating!

Note: GPIO2 pin should be left floating!

Note: GPIO5 pin should be left floating!

Note 5: Strapping Pins
During the chip's system reset release (power-on-reset, RTC watchdog reset and brownout reset), the latches of the strapping pins sample the voltage level as strapping bits of "0" or "1", and hold these bits until the chip is powered down or shut down. The strapping bits configure the device's boot mode, the operating voltage of VDD_SDIO and other initial system settings. After reset release, the strapping pins work as normal-functions pins.

Table 3: Strapping Pins

Voltage of Internal LDO (VDD_SDIO)				
Pin	Default	3.3 V	1.8 V	
MTDI	Pull-down	0	1	
Bootling Mode				
Pin	Default	SPI Boot	Download Boot	
GPIO0	Pull-up	1	0	
GPIO2	Pull-down	Don't-care	0	
Enabling/Disabling Debugging Log Print over UOTXD During Bootling				
Pin	Default	UOTXD Active	UOTXD Silent	
MTDO	Pull-up	1	0	
Timing of SDIO Slave				
Pin	Default	FE Sampling FE Output	FE Sampling RE Output	RE Sampling RE Output
MTDO	Pull-up	0	0	1
GPIO5	Pull-up	0	1	0

* FE: falling-edge, RE: rising-edge
* Firmware can configure register bits to change the settings of "Voltage of Internal LDO (VDD_SDIO)" and "Timing of SDIO Slave", after bootling.
* The module integrates a 3.3 V SPI flash, so the pin MTDI cannot be set to 1 when the module is powered up.

Dipro Technologies

Cannot open file
C:\Users\Public\Documents\...

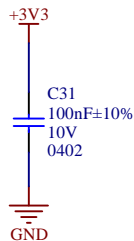
Project: DIP006_EDUBOARD_1Q7SENS.PrjPcb

Size: A4 | Document: Module_Wi-Fi.SchDoc | Rev: C

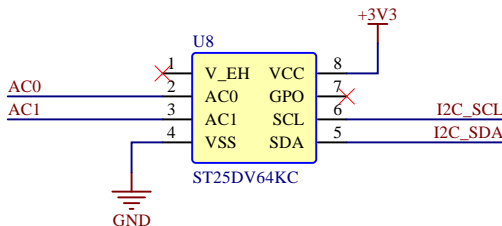
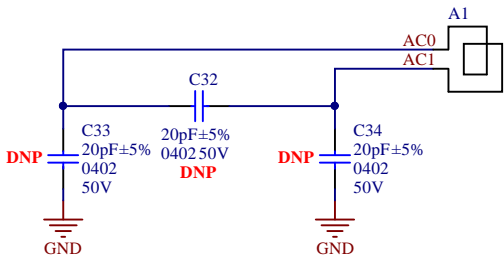
Engineer: M. García | Aproved by: A. Serrat

Date: 10/06/2024 | Sheet 4 of 12

Decoupling Capacitors



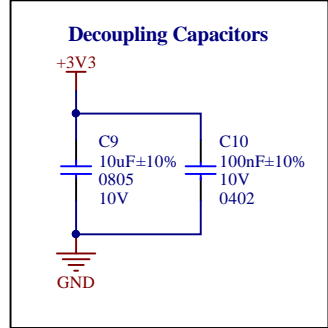
Antenna




Dipro Technologies

Cannot open file
C:\Users\Public\Documents\

Project: DIP006_EDUBOARD_IQSENS.PrjPcb		
Size: A4	Document: Module_NFC.SchDoc	Rev: C
Engineer: M. García		Aproved by: A. Serrat
Date: 10/06/2024	Sheet 5	of 12

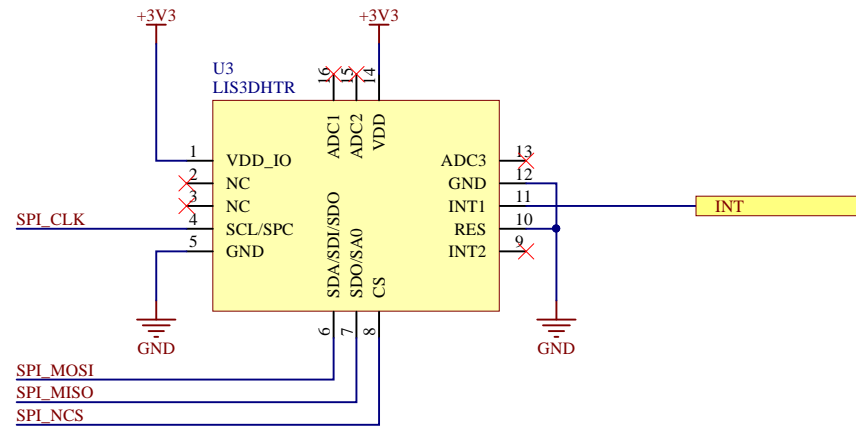
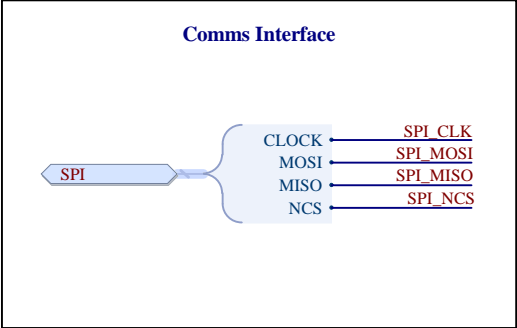


Comms Interface



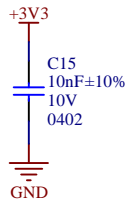
The diagram illustrates the SPI (Serial Peripheral Interface) communication interface. On the left, a light blue arrow-shaped block labeled "SPI" points towards a central light blue rectangular block. This central block is connected to four output lines on the right, each labeled with a signal name in red text: "CLOCK", "MOSI", "MISO", and "NCS". The output lines are blue arrows pointing to the right, with the signal names "SPI_CLK", "SPI_MOSI", "SPI_MISO", and "SPI_NCS" written in red text next to them.

```
graph LR; SPI[SPI] --- Bus; Bus --- CLOCK; Bus --- MOSI; Bus --- MISO; Bus --- NCS; CLOCK --- SPI_CLK[SPI_CLK]; MOSI --- SPI_MOSI[SPI_MOSI]; MISO --- SPI_MISO[SPI_MISO]; NCS --- SPI_NCS[SPI_NCS];
```

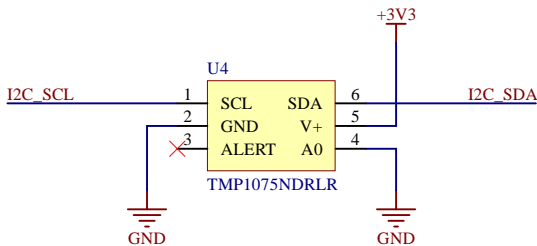
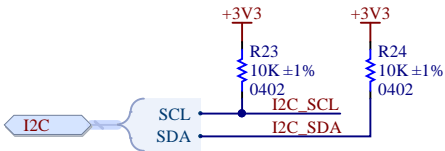


Dipro Technologies		Cannot open file C:\Users\Public\Documents\	
Project: DIP006_EDUBOARD_IGTSENS.PrjPcb			
Size: A4	Document: Module_Accelerometer.SchDoc		Rev: C
Engineer: M. García		Approved by: A. Serrat	
Date: 10/06/2024	Sheet 6 of 12		

Decoupling Capacitors



Comms Interface



Dipro Technologies

Cannot open file
C:\Users\Public\Documents\

Project: DIP006_EDUBOARD_IQTSENS.PrjPcb

Size: A4 Document: Module_Temperature.SchDoc

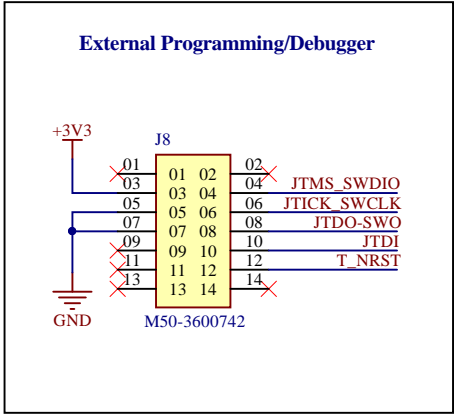
Rev: C

Engineer: M. García

Aproved by: A. Serrat

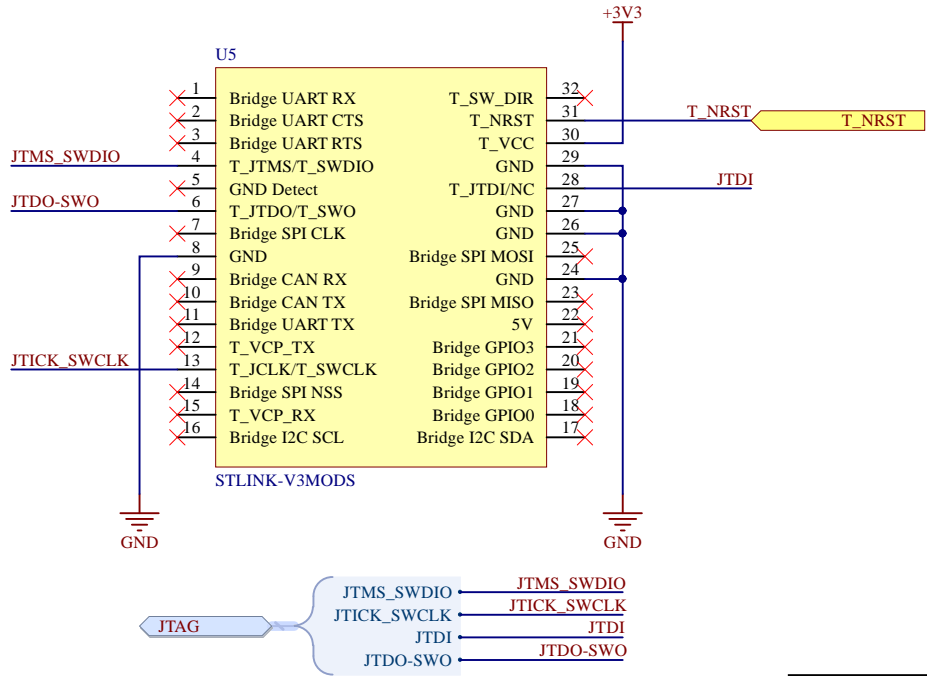
Date: 10/06/2024

Sheet 7 of 12

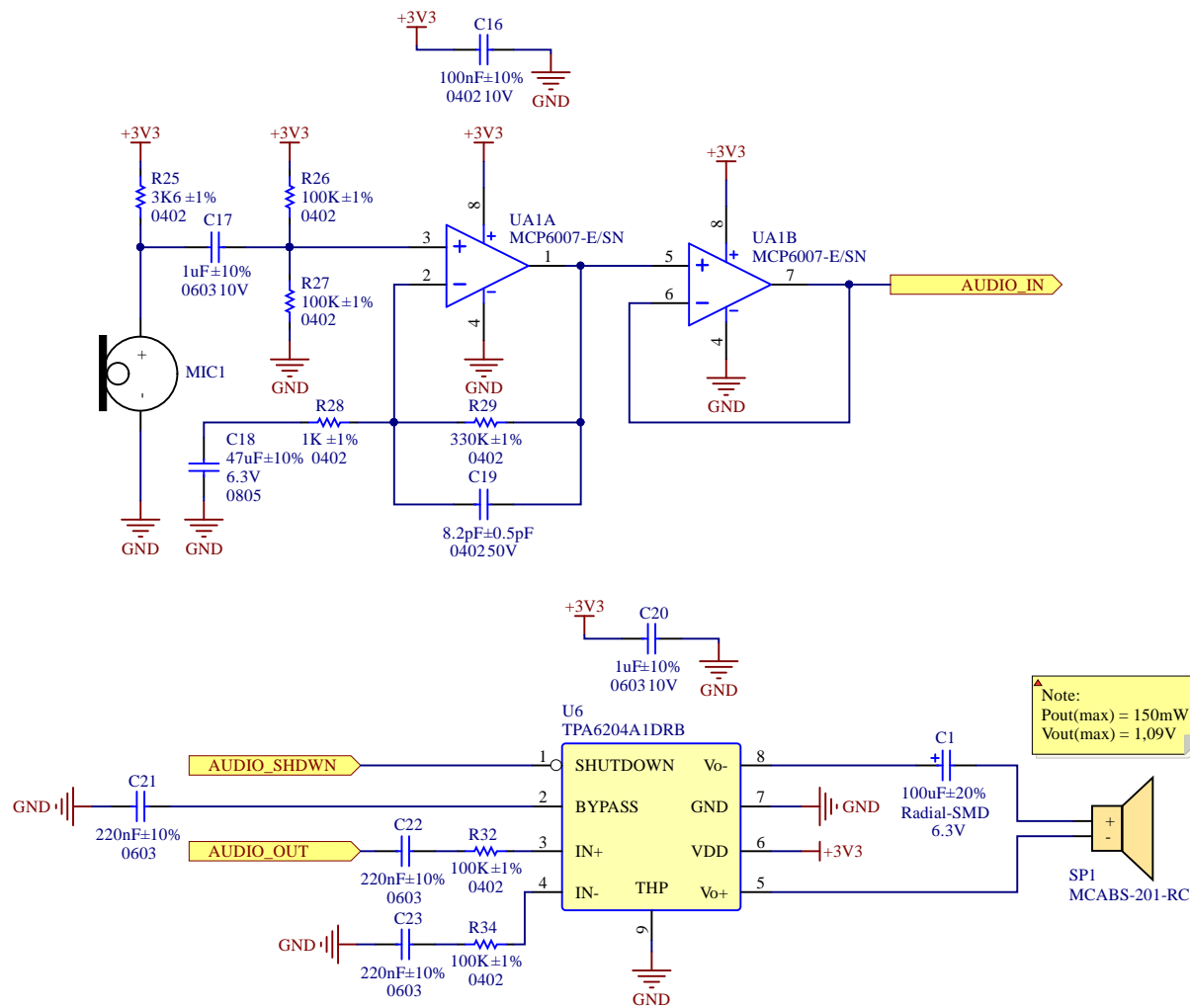


Note 1: 5V Output
* The LED is blinking red: the first USB enumeration with the PC

Note 1: 5V Output
* The LED is blinking red: the first USB enumeration with the PC is taking place. If an STLinkUpgrade application is running, the firmware is being programmed.
* The LED is red: the ST-LINK is in the idle state (the USB enumeration with the PC is finished and the ST-LINK is waiting for an application to connect).
* The LED is blinking green and red alternately: data is being exchanged between the target and the PC.
* The LED is green: the last communication with the target has been succesful.
* The LED is orange: the last communication with the target has failed.

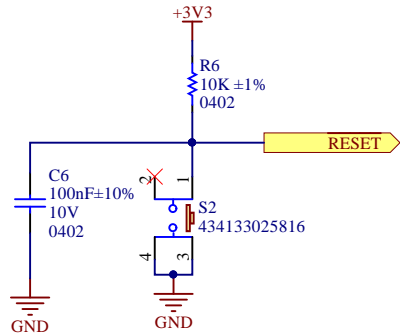


Dipro Technologies				Cannot open file C:\Users\Public\Documents\	
Project: DIP006_EDUBOARD_IQXSENS.PrjPcb					
Size: A4		Document: Module_JTAG.SchDoc			Rev: C
Engineer: M. García			Aproved by: A. Serrat		
Date: 10/06/2024			Sheet 8 of 12		

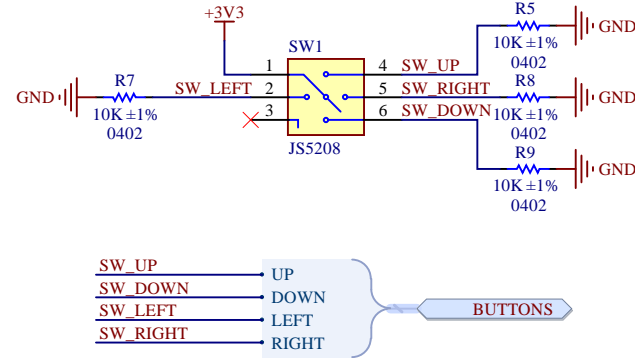


Dipro Technologies			Cannot open file C:\Users\Public\Documents\		
Project: DIP006_EDUBOARD_IOTSENS.PrjPcb					
Size: A4	Document: Module_Audio.SchDoc				Rev: C
Engineer: M. García			Aproved by: A. Serrat		
Date: 10/06/2024	Sheet 9 of 12				

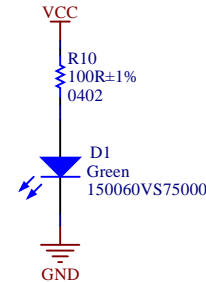
Reset Button



Joystick

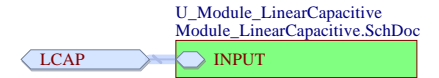


Power On LED



GREEN (50 mcd):
 $I = (4.5 - 2.1) / 96R = 0.025 \text{ A}$
 $P = R * I^2 = 96R * 0.025^2 = 0.06 \text{ W}$

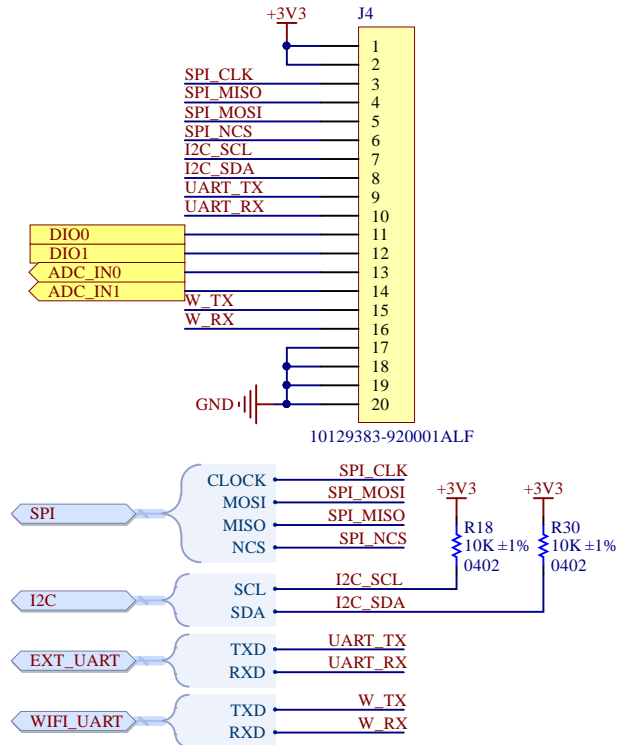
Linear Capacitive



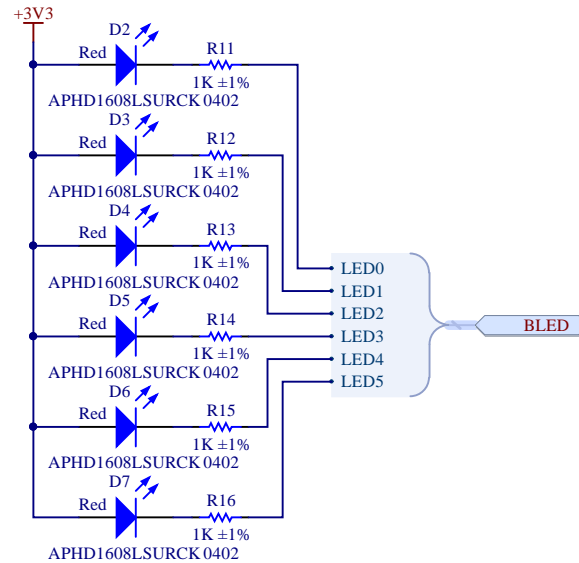
Note 1: TSC

1. ESD Serial resistors and sampling capacitors must be placed as close as possible to MCU device.
2. Sampling capacitors must be COG type or better.
3. A dedicated low drop voltage regulator powering the touch controller is recommended.

External GPIOs



Bar LEDs



RED (45 mcd):
 $I = (3.3 - 1.75) / 1K = 0.0015 \text{ A}$
 $P = R * I^2 = 1K * 0.0015^2 = 0.0024 \text{ W}$

Dipro Technologies

Cannot open file
C:\Users\Public\Documents\

Project: DIP006_EDUBOARD_IOTSSENS.PrjPcb

Size: A4 Document: Module_UserInterface.SchDoc

Rev: C

Engineer: M. García

Aproved by: A. Serrat

Date: 10/06/2024

Sheet 10 of 12

