STM32F103C8T6 Microcontroller Board

NRST is the reset pin. NRST means "negative reset."
This indicates it is an active-low input, meaning the device resets when the pin is pulled low. Typicall this pin is pulled high to make sure the MCU runs the software or program that is flashed to it.

This NRST contains internal pull-up resistors so we can actually leave it floating. External tactile switch can be attached to NRST to perform manual reset, or connect this to some sort of I/O pin.

C9 is a decoupling capacitor used to prevent spurios resets

Purpose of reset:
- Brings the MCU back to its initial state
- Halts all ongoing operation and restart the program

BOOT0 enables or disables the internal bootloader of this MCU. If not using ST-Link or serial debug like JTAG, we can pull this bootloader pin high to enable the internal bootloader to allow interfaces like USB or UART or I2C to program the MCU. Conversely, if the BOOT0 is pulled low, the MCU will the run the program that is flashed to it.

HSE_IN and HSE_OUT are for crystal connection
SWDIO and SWCLK are serial wire debug
USB_D+ and USB_D- are USB differential pair

KICAD recognize differential pair by identifying the - and + at the end with the same name in the front

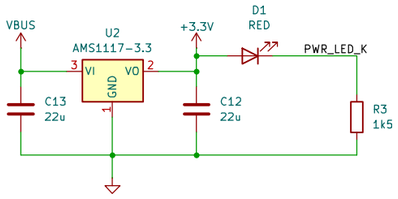
C5 is a bulk decoupling capacitor for the MCU (Not strictly required, but good practice)

For decoupling capacitors, you will need one 100nF capacitor per VBAT and VDD pin

VBAT received power from a backup power supply, usually for RTC (Real-Time Clock), but in this case we're not using it, so we just connect it with 3.3V

VDDA is for the analog section of this IC
The capacitors here provide additional filtering

Power Supply



VBUS from USB connector (nom. +5V) Min. 22uF input/output caps

1 and 3 are input and output
2 and 4 are GND
C10 and C11 are load capacitors
Capacitance of load capacitors:
2 * (Crystal capacitance - stray capacitance (3 ~ 5pF))

M2 Mounting Holes

Microcontroller (and USB)