MCU, HSE, Reset buttons

1)
One 100nF decoupling capacitor
close to every VDD input pin, excluding VBAT,
with a 10uF bulk capacitopr

2)
Analog supply rail is filtered per ST-Micro
 * 10nF decoupling cap close to pin
 * 1uF bulk cap after the ferrite bead
 * 120Ω at 100MHz Ferrite bead
 * 1uF bulk cap before the ferrite bead

3)
NRST is internally pulled up,
it can be pulled down using the reset button
(UI section) or via the SWD header.
A 100nF capacitor prevents spurious resets

4)
BOOT0 is used to select the boot mode.
During normal operation it is pulled down.
It can be pulled up by pressing
the boot button (UI section) for DFU mode.

 * BOOT0 to GND -> Normal Operation
 * BOOT0 to 3.3V -> DFU Mode

5)
A 16MHz external oscillator helps with stability
and can be used for many clock configurations

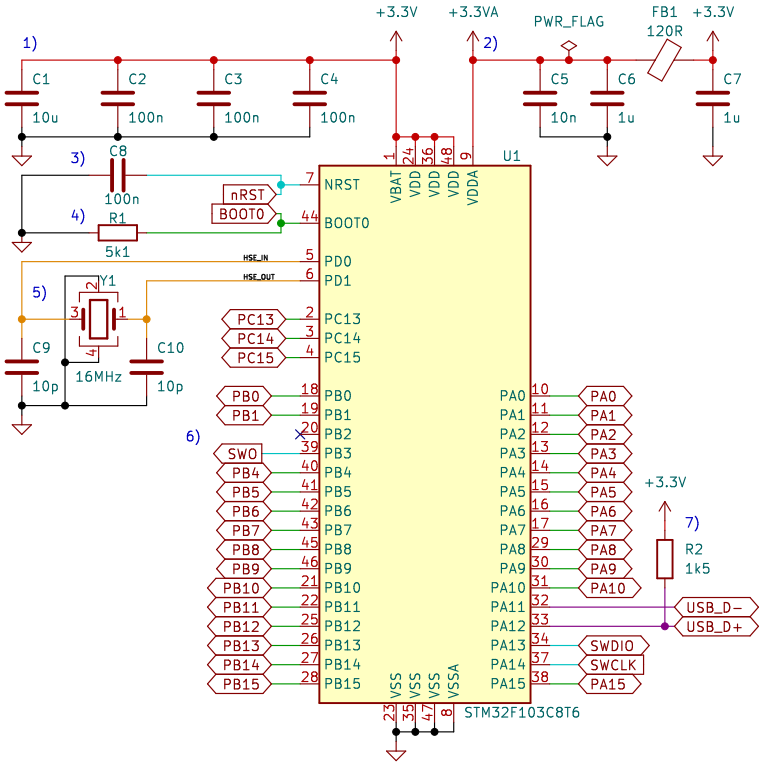
It is connected as per AN2867, feed resistor
was omitted as it is not necessary.

The crystal load capacitance is 10pF,
assuming 5pF stray capacitance a 10pF
load capacitor is used.

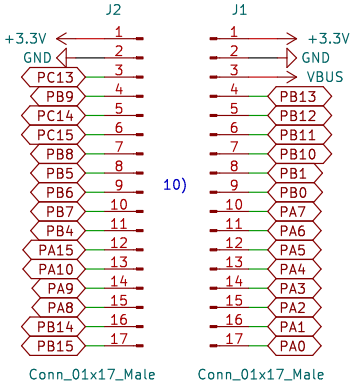
6)
PB2 is left unconnectd
as it selects an unwanted boot mode

7)
A 1.5kΩ resistor on USB_D+ to 3.3V is used
to set the USB Mode to 2.0 FS per AN3879

USB_D is a 90Ω differential pair

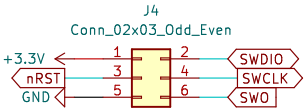


SWD, Pin headers



10)
Pin header pinout is copied from blue pill
dev kit. with some changes:

 * PA11 & PA12 (USB) are not broken out
 * VBAT is connected to 3.3V rail



11)
Tag-Connect SWD header is an array of
pads with alignment holes, it does not
have a BOM item

USB-C, Power Supply

8)
USB C UFP for 2.0 FS device mode

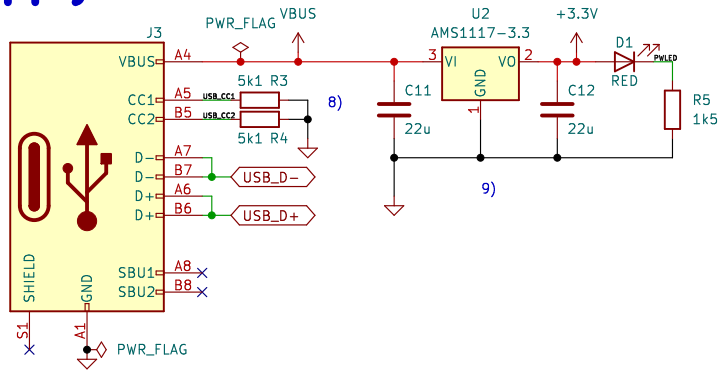
CC1 & CC2 pulled down with 5.1kΩ
to allow for drawing power

Shiled unconnected as this is a device

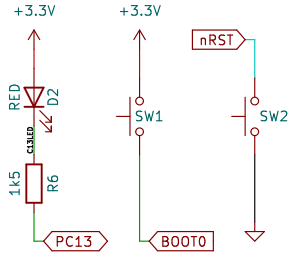
Tx/Rx & SBU unconnected as not needed

9)
AMS1117 Linear regulator requires 22uF
on input and output for stable opperation.

RED power-on LED is placed on the output
a 1.5kΩ resistor limits it's current to be
pretty dim



UI



Nets

Normal
USB
Power
SWD
GND
Crystal

Nico Schlüter
License: unlicense (public domain)
https://unlicense.org
Merpderp

Sheet: /
File: KiCad6STM32 .kicad_sch

Title: Bluer Pill STM32F107 dev board

Size: A4	Date: 2022-12-17	**Rev: A**
KiCad E.D.A. kicad (6.0.9-0)		Id: 1/1