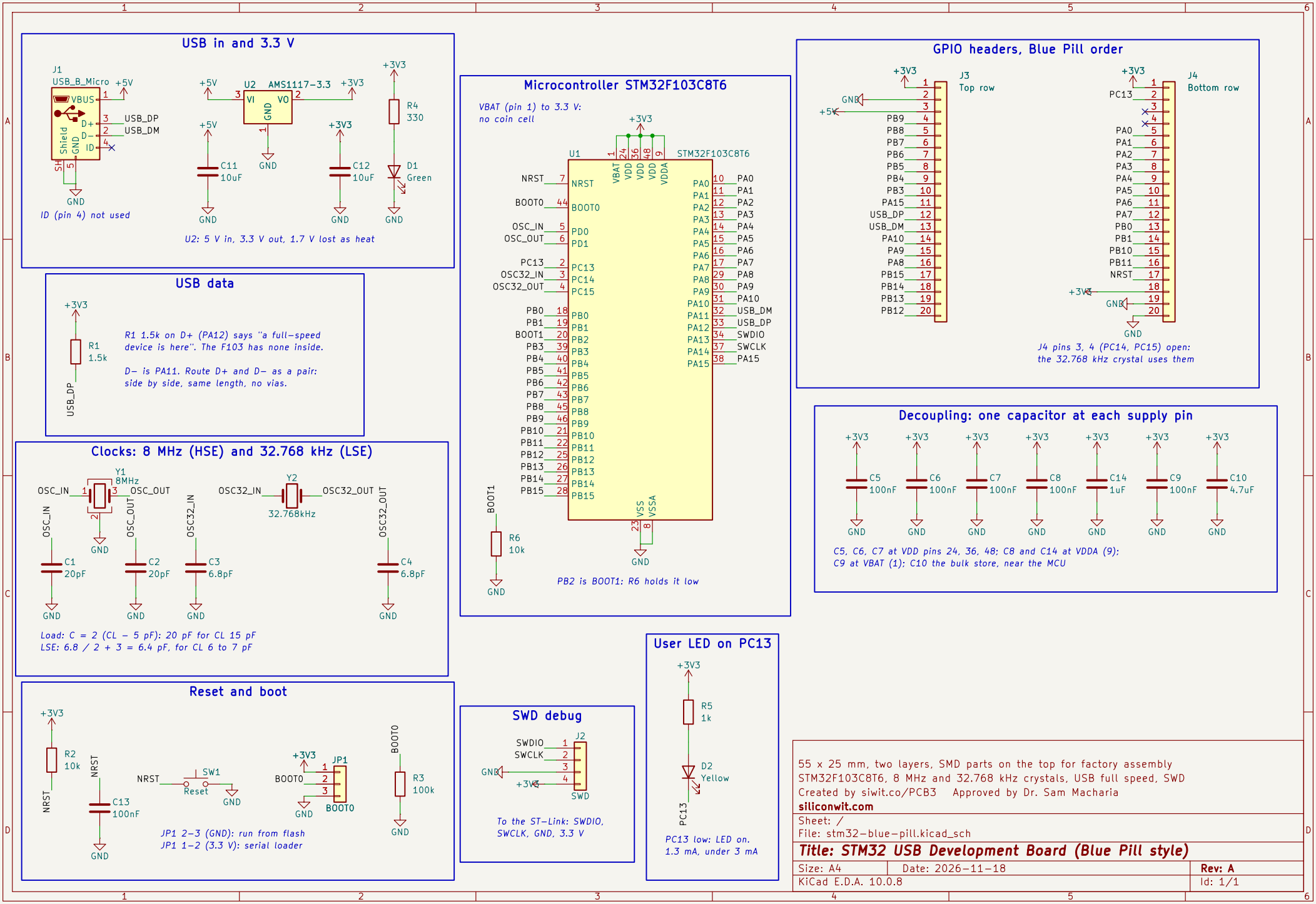

USB in and 3.3 V
J1
USB_B_Micro
VBUS
D+
D−
ID
Shield
GND
SH
+5V
USB_DP
USB_DM
ID (pin 4) not used
U2
AMS1117-3.3
VI
VO
GND
+3V3
C11
10uF
C12
10uF
R4
330
D1
Green
U2: 5 V in, 3.3 V out, 1.7 V lost as heat
USB data
R1
1.5k
USB_DP
R1 1.5k on D+ (PA12) says "a full-speed device is here". The F103 has none inside.
D− is PA11. Route D+ and D− as a pair: side by side, same length, no vias.
Clocks: 8 MHz (HSE) and 32.768 kHz (LSE)
Y1
8MHz
OSC_IN
OSC_OUT
Y2
32.768kHz
OSC32_IN
OSC32_OUT
C1
20pF
C2
20pF
C3
6.8pF
C4
6.8pF
Load: C = 2 (CL − 5 pF): 20 pF for CL 15 pF
LSE: 6.8 / 2 + 3 = 6.4 pF, for CL 6 to 7 pF
Reset and boot
R2
10k
NRST
SW1
Reset
C13
100nF
JP1
BOOT0
R3
100k
JP1 2–3 (GND): run from flash
JP1 1–2 (3.3 V): serial loader
Microcontroller STM32F103C8T6
VBAT (pin 1) to 3.3 V: no coin cell
U1
STM32F103C8T6
VBAT
VDD
VDDA
VSS
VSSA
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PA8
PA9
PA10
PA11
PA12
PA13
PA14
PA15
PB0
PB1
PB2
PB3
PB4
PB5
PB6
PB7
PB8
PB9
PB10
PB11
PB12
PB13
PB14
PB15
PC13
PC14
PC15
OSC_IN
OSC_OUT
BOOT0
BOOT1
USB_DM
USB_DP
SWDIO
SWCLK
R6
10k
PB2 is BOOT1: R6 holds it low
SWD debug
J2
SWDIO
SWCLK
SWD
To the ST-Link: SWDIO, SWCLK, GND, 3.3 V
User LED on PC13
R5
1k
D2
Yellow
PC13 low: LED on. 1.3 mA, under 3 mA
GPIO headers, Blue Pill order
J3
Top row
J4
Bottom row
J4 pins 3, 4 (PC14, PC15) open: the 32.768 kHz crystal uses them
Decoupling: one capacitor at each supply pin
C5
100nF
C6
100nF
C7
100nF
C8
100nF
C14
1uF
C9
100nF
C10
4.7uF
C5, C6, C7 at VDD pins 24, 36, 48; C8 and C14 at VDDA (9); C9 at VBAT (1); C10 the bulk store, near the MCU
55 x 25 mm, two layers, SMD parts on the top for factory assembly
STM32F103C8T6, 8 MHz and 32.768 kHz crystals, USB full speed, SWD
Created by siwit.co/PCB3 Approved by Dr. Sam Macharia
siliconwit.com
Sheet: /
File: stm32-blue-pill.kicad_sch
Title: STM32 USB Development Board (Blue Pill style)
Size: A4
Date: 2026-11-18
Rev: A
KiCad E.D.A. 10.0.8
Id: 1/1