STM32F103 Temp Sense

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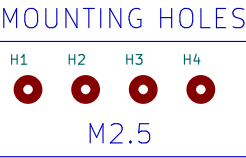
BLOCK DIAGRAM

MICRO B — 5V — LDO — 3V3 — STM32 — GPIO — LED, CONNS

MICRO B — USB — LDO

STM32 — I2C2 — Temp Sensor

629105150521

XC6206P332MR

STM32F103C8T6

TMP102AIDRLR

Fiducials

FID1 FID2 FID3

1.5mm pad,
3.0mm expansion

MOUNTING HOLES

H1 H2 H3 H4

M2.5
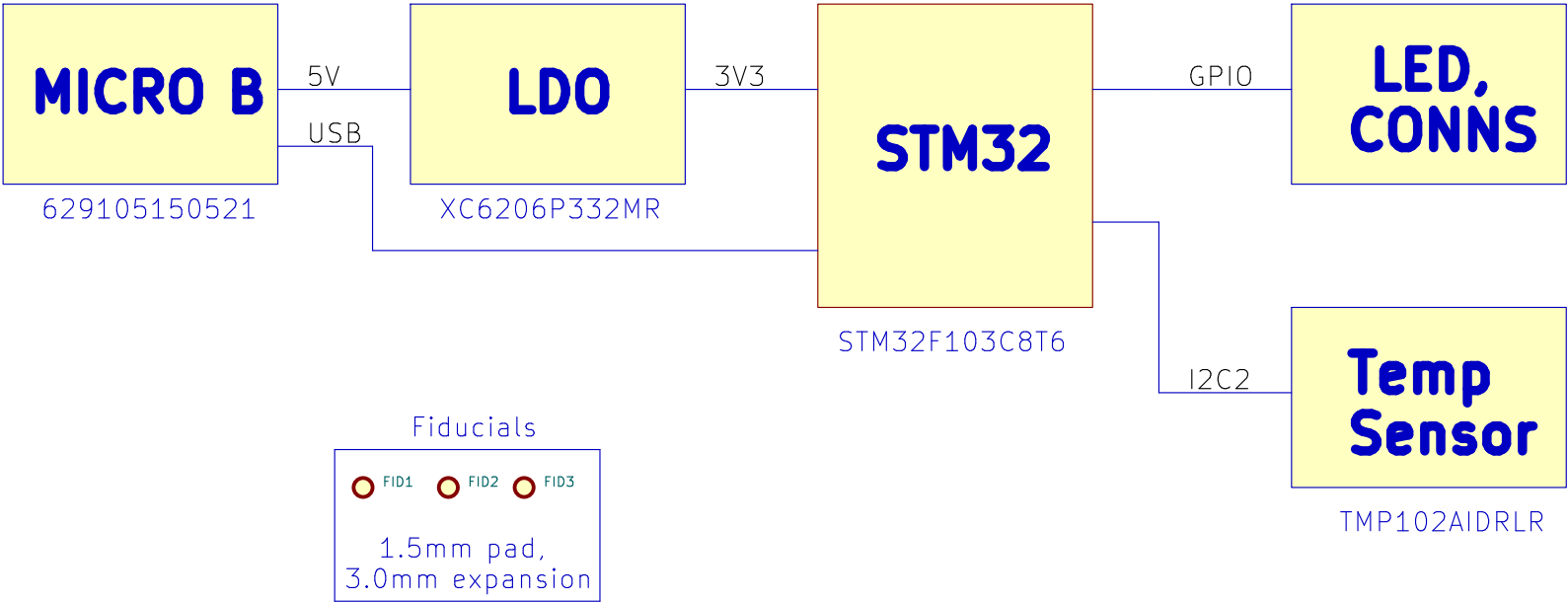
REVISION HISTORY

REVISION	DATE	DESCRIPTION
V 1 ‖ 1	3/10/2023	INITIAL VERSION

Sheet: /
File: STM32F103_Temp_Sense.kicad_sch
Title: STM32F103 Temp Sense
Size: A3   Date: 2023−03−10   Rev: 1
KiCad E.D.A. kicad (7.0.0)   Id: 1/2

STM32F103_Temp_Sense

USB and Regulator

3V3 regulator stable with 1uF output cap.

J1
10118193-0001LF
VUSB 1
D− 2 USB_D−
D+ 3 USB_D+
ID 4
GND 5
SHIELD SB

+5V TP1 FB1 100R TP2 VCC U1 XC6206P332MR +3.3V TP3 D1 GREEN LED_K_GRN
VI VO
GND
C8 1u
C9 1u
R1 1k5
TP4
GND
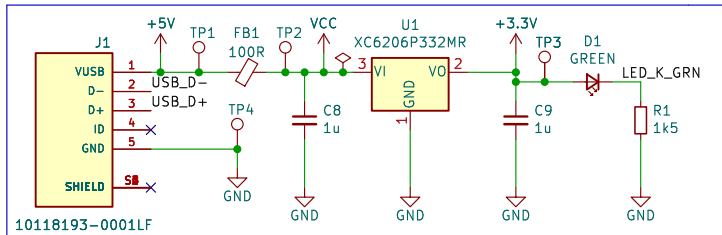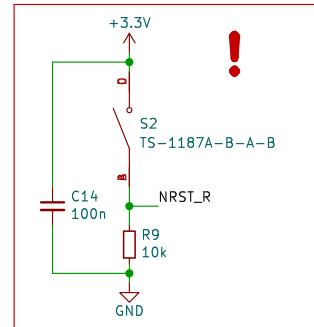
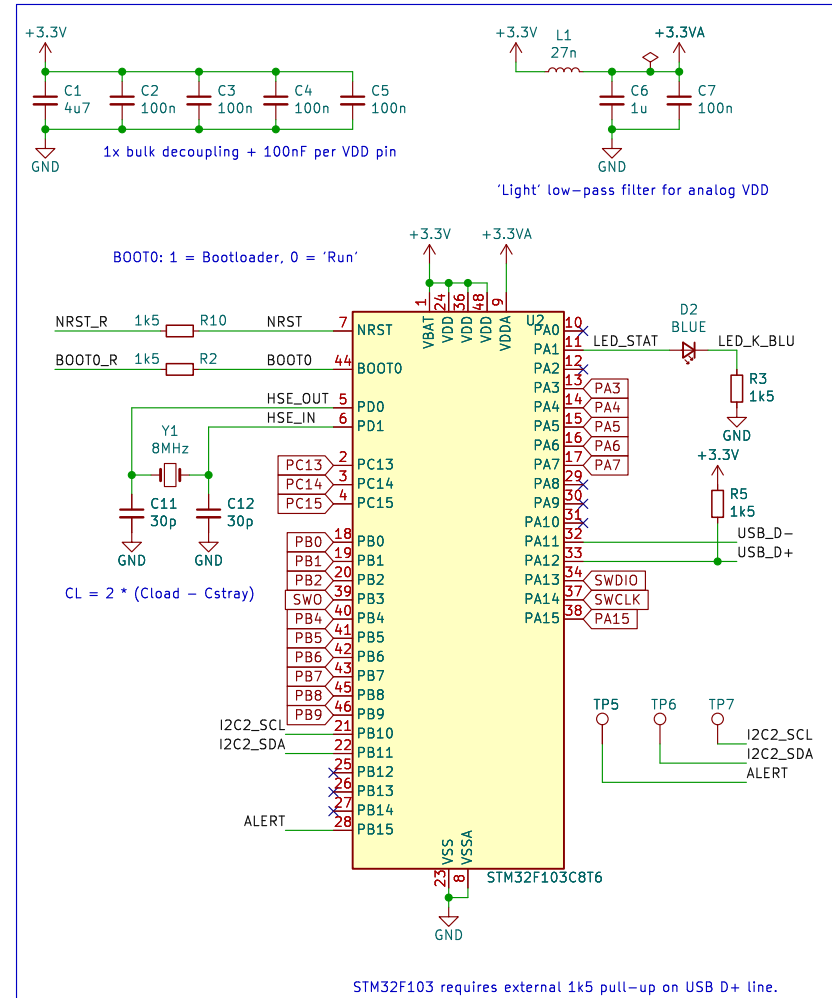USB device − leave shield floating (unless suitable enclosure available).

GPIO Headers

+3.3V 1
GND 2
SWDIO 3
SWCLK 4
PA15 5
SWO 6
PB4 7
PB5 8
PB6 9
PB7 10
PB8 11
PB9 12
PC13 13
PC14 14
PC15 15
J2 Conn_01x15

+3.3V 1
GND 2
3
4
5
6
7
PB2 8
PB1 9
PB0 10
PA7 11
PA6 12
PA5 13
PA4 14
PA3 15
J3 Conn_01x15
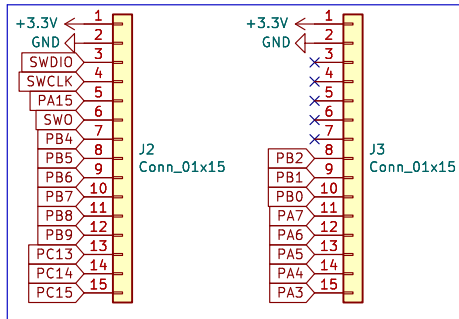
Ideally, should have GND between each signal pin and decoupling at 3V3 pins.

+3.3V
S1 TS-1187A-B-A-B
BOOT0_R
C10 100n
R4 10k
GND

+3.3V
S2 TS-1187A-B-A-B
!
NRST_R
C14 100n
R9 10k
GND
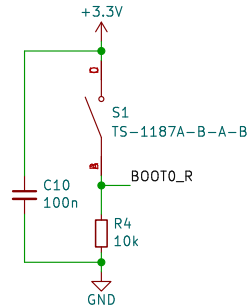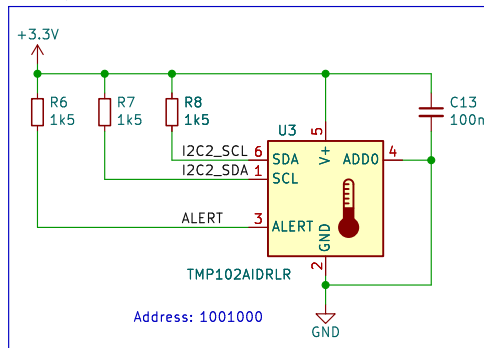
NRST_R must be connected to the other side of the push button instead

To be fixed in the next revision.

Temperature Sensor

+3.3V
R6 1k5
R7 1k5
R8 1k5
C13 100n
U3
SDA 6 I2C2_SCL
SCL 1 I2C2_SDA
ALERT 3
V+ 5
ADD0 4
ALERT
GND 2
TMP102AIDRLR
Address: 1001000
GND

STM32F1 Microcontroller

+3.3V
C1 4u7
C2 100n
C3 100n
C4 100n
C5 100n
GND

1x bulk decoupling + 100nF per VDD pin

+3.3V L1 27n +3.3VA
C6 1u
C7 100n
GND

'Light' low−pass filter for analog VDD

BOOT0: 1 = Bootloader, 0 = 'Run'

+3.3V +3.3VA

NRST_R 1k5 R10 NRST 7 NRST
BOOT0_R 1k5 R2 BOOT0 44 BOOT0
HSE_OUT 5 PD0
HSE_IN 6 PD1
Y1 8MHz
PC13 2 PC13
PC14 3 PC14
PC15 4 PC15
C11 30p
C12 30p
GND GND

CL = 2 * (Cload − Cstray)

U2
VBAT 1
VDD 24
VDD 36
VDD 48
VDDA 9
PA0 10
PA1 11 LED_STAT
PA2 12
PA3 13 PA3
PA4 14 PA4
PA5 15 PA5
PA6 16 PA6
PA7 17 PA7
PA8 29
PA9 30
PA10 31
PA11 32 USB_D−
PA12 33 USB_D+
PA13 34 SWDIO
PA14 37 SWCLK
PA15 38 PA15

D2 BLUE LED_K_BLU
R3 1k5
GND
+3.3V
R5 1k5
USB_D−
USB_D+

PB0 18 PB0
PB1 19 PB1
PB2 20 PB2
SWO 39 PB3
PB4 40 PB4
PB5 41 PB5
PB6 42 PB6
PB7 43 PB7
PB8 45 PB8
PB9 46 PB9
I2C2_SCL 21 PB10
I2C2_SDA 22 PB11
PB12 25
PB13 26
PB14 27
ALERT 28 PB15

VSS 23
VSSA 8
STM32F103C8T6
GND

TP5 TP6 TP7
I2C2_SCL
I2C2_SDA
ALERT

STM32F103 requires external 1k5 pull−up on USB D+ line.

Sheet: /01−Schematics/
File: 01−Schematics.kicad_sch
Title:
Size: A4 | Date:
KiCad E.D.A. kicad (7.0.0)
Rev:
Id: 2/2