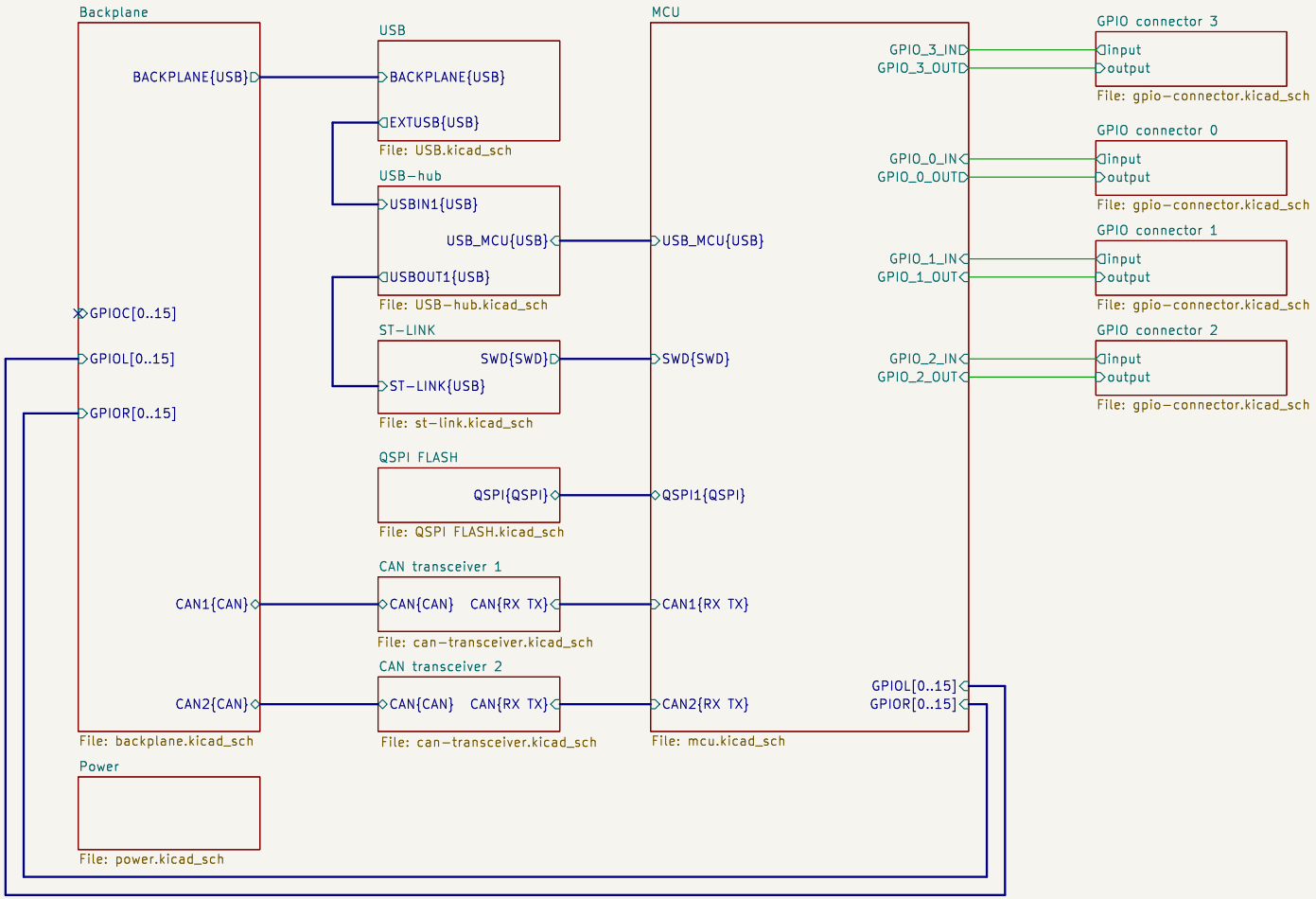
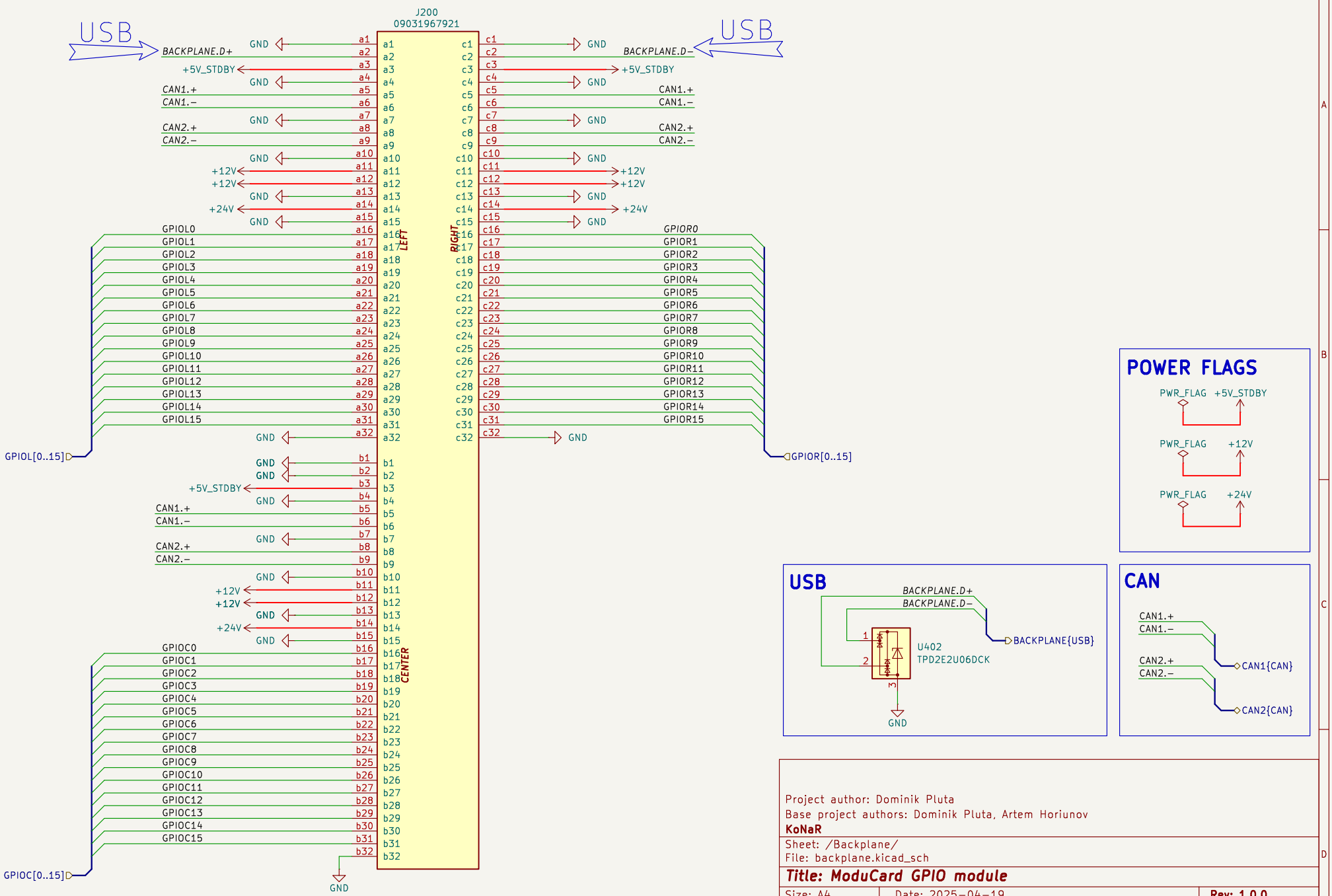


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /
File: gpio-module.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 1/18



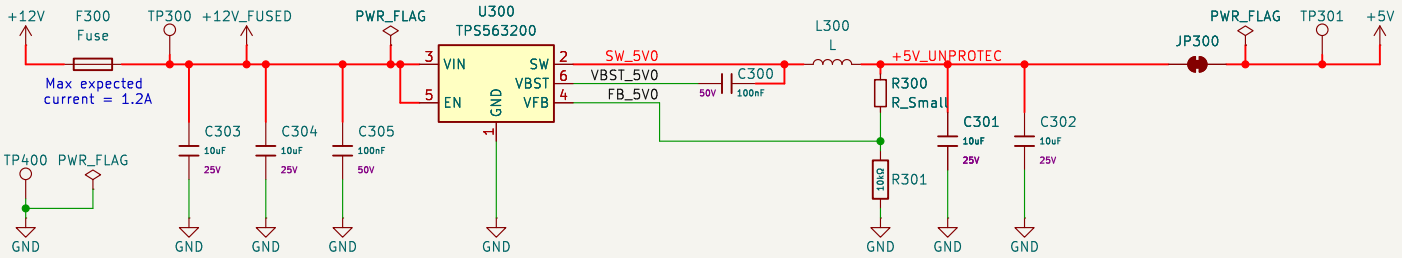
Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /Backplane/
File: backplane.kicad_sch

Title: ModuCard GPIO module

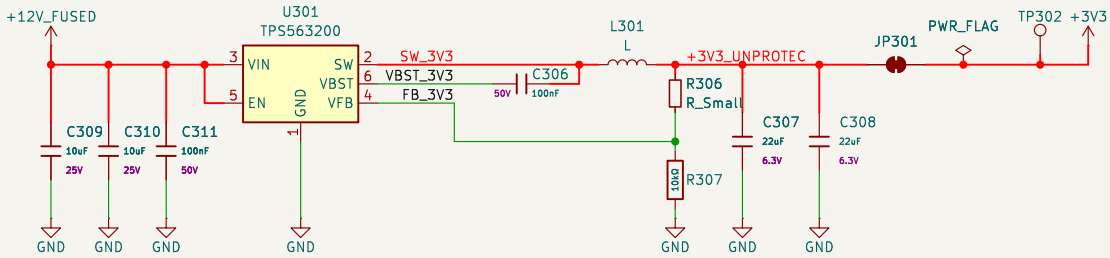
Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 2/18

5V DC/DC CONVERTER



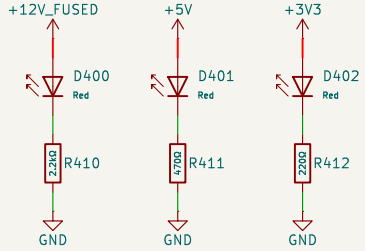
$V_{OUT} = 0.765*(1+R300/R301)$
$V_{OUT} = 0.765*(1+54k9/10k) = 4.96V$

3V3 DC/DC CONVERTER

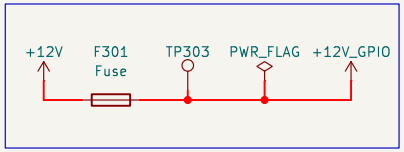


$V_{OUT} = 0.765*(1+R302/R307)$
$V_{OUT} = 0.765*(1+33k2/10k) = 3.3V$

POWER INDICATOR LEDs



Target I_{LED} = 5mA

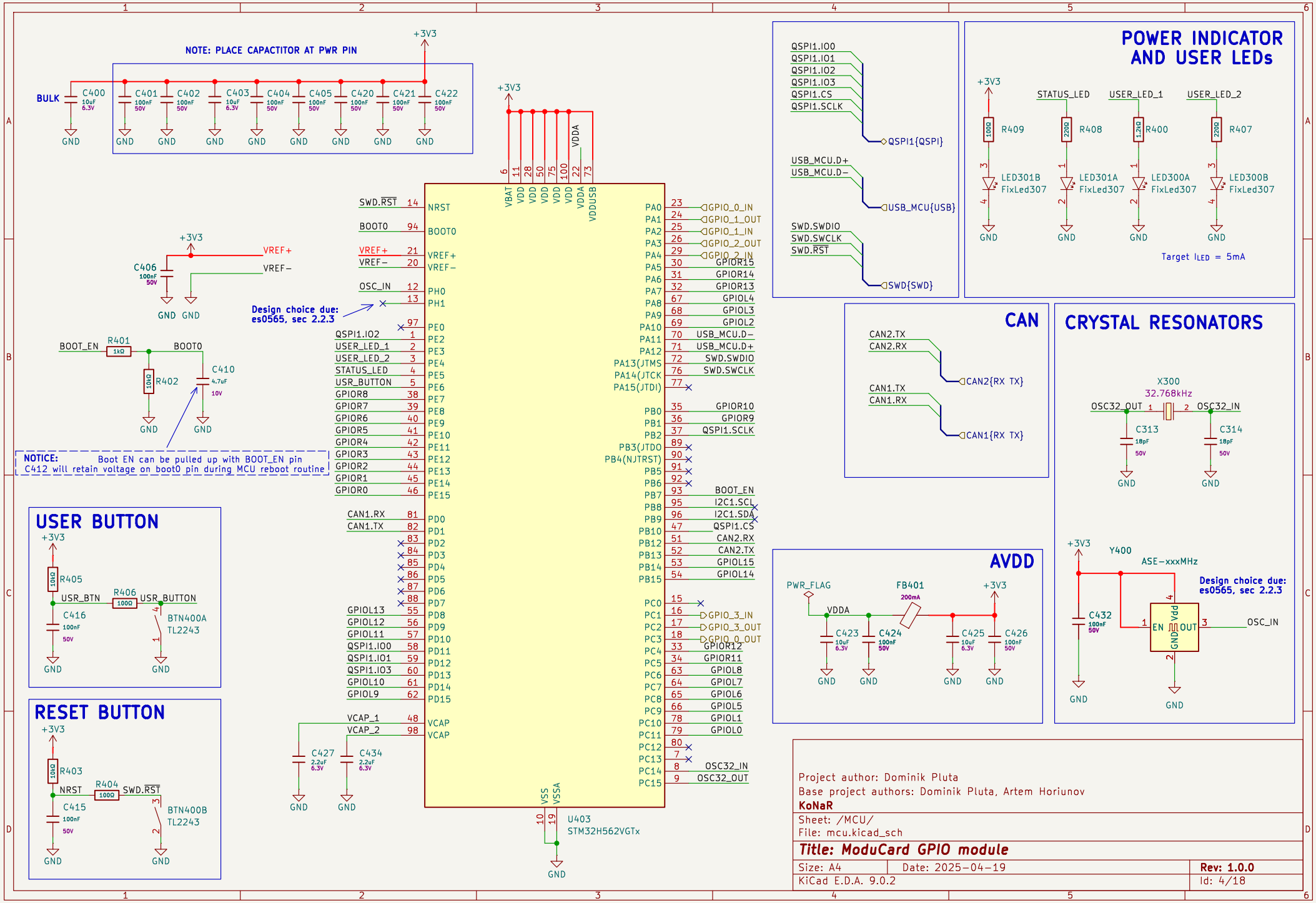


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

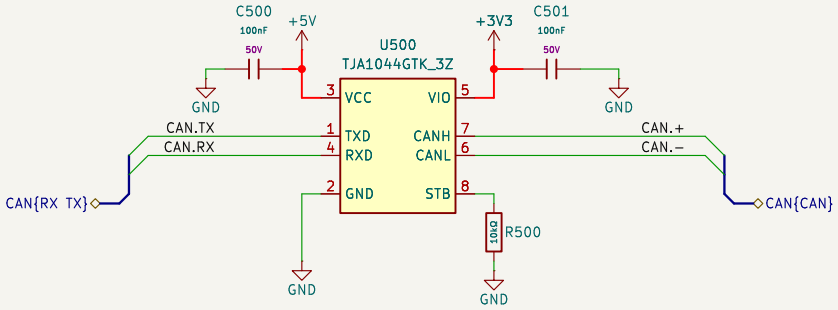
Sheet: /Power/
File: power.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 3/18


NOTE: PLACE CAPACTITOR AT PWR PIN
BULK
C400 10uF 6.3V
C401 100nF 50V
C402 100nF 50V
C403 10uF 6.3V
C404 100nF 50V
C405 100nF 50V
C420 100nF 50V
C421 100nF 50V
C422 100nF 50V
+3V3
GND
VDDA
VBAT
VDD
VSS
VSSA
VDDUSB
U403
STM32H562VGTx
SWD.RST
BOOT0
VREF+
VREF−
OSC_IN
QSPI1.IO2
USER_LED_1
USER_LED_2
STATUS_LED
USR_BUTTON
GPIOR8
GPIOR7
GPIOR6
GPIOR5
GPIOR4
GPIOR3
GPIOR2
GPIOR1
GPIOR0
CAN1.RX
CAN1.TX
GPIOL13
GPIOL12
GPIOL11
QSPI1.IO0
QSPI1.IO1
QSPI1.IO3
GPIOL10
GPIOL9
VCAP_1
VCAP_2
C427 2.2uF 6.3V
C434 2.2uF 6.3V
C406 100nF 50V
Design choice due: es0565, sec 2.2.3
BOOT_EN
R401 1kΩ
R402 10kΩ
C410 4.7uF 10V
NOTICE: Boot EN can be pulled up with BOOT_EN pin
C412 will retain voltage on boot0 pin during MCU reboot routine
USER BUTTON
R405 10kΩ
R406 100Ω
USR_BTN
USR_BUTTON
C416 100nF 50V
BTN400A TL2243
RESET BUTTON
R403 10kΩ
R404 100Ω
NRST
SWD.RST
C415 100nF 50V
BTN400B TL2243
PA0 GPIO_0_IN
PA1 GPIO_1_OUT
PA2 GPIO_1_IN
PA3 GPIO_2_OUT
PA4 GPIO_2_IN
PA5 GPIOR15
PA6 GPIOR14
PA7 GPIOR13
PA8 GPIOL4
PA9 GPIOL3
PA10 GPIOL2
PA11 USB_MCU.D−
PA12 USB_MCU.D+
PA13(JTMS) SWD.SWDIO
PA14(JTCK) SWD.SWCLK
PA15(JTDI)
PB0 GPIOR10
PB1 GPIOR9
PB2 QSPI1.SCLK
PB3(JTDO)
PB4(NJTRST)
PB5
PB6
PB7 BOOT_EN
PB8 I2C1.SCL
PB9 I2C1.SDA
PB10 QSPI1.CS
PB12 CAN2.RX
PB13 CAN2.TX
PB14 GPIOL15
PB15 GPIOL14
PC0
PC1 GPIO_3_IN
PC2 GPIO_3_OUT
PC3 GPIO_0_OUT
PC4 GPIOR12
PC5 GPIOR11
PC6 GPIOL8
PC7 GPIOL7
PC8 GPIOL6
PC9 GPIOL5
PC10 GPIOL1
PC11 GPIOL0
PC12
PC13
PC14 OSC32_IN
PC15 OSC32_OUT
QSPI1.IO0
QSPI1.IO1
QSPI1.IO2
QSPI1.IO3
QSPI1.CS
QSPI1.SCLK
QSPI1{QSPI}
USB_MCU.D+
USB_MCU.D−
USB_MCU{USB}
SWD.SWDIO
SWD.SWCLK
SWD.RST
SWD{SWD}
POWER INDICATOR AND USER LEDs
STATUS_LED
USER_LED_1
USER_LED_2
R409 100Ω
R408 220Ω
R400 1.2kΩ
R407 220Ω
LED301B FixLed307
LED301A FixLed307
LED300A FixLed307
LED300B FixLed307
Target ILED = 5mA
CAN
CAN2.TX
CAN2.RX
CAN1.TX
CAN1.RX
CAN2{RX TX}
CAN1{RX TX}
CRYSTAL RESONATORS
X300
32.768kHz
OSC32_OUT
OSC32_IN
C313 18pF 50V
C314 18pF 50V
Y400
ASE−xxxMHz
Design choice due: es0565, sec 2.2.3
C432 100nF 50V
EN
Vdd
GND
OUT
OSC_IN
AVDD
PWR_FLAG
FB401 200mA
VDDA
C423 10uF 6.3V
C424 100nF 50V
C425 10uF 6.3V
C426 100nF 50V
Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR
Sheet: /MCU/
File: mcu.kicad_sch
Title: ModuCard GPIO module
Size: A4
Date: 2025−04−19
Rev: 1.0.0
KiCad E.D.A. 9.0.2
Id: 4/18

CAN TRANSCEIVER



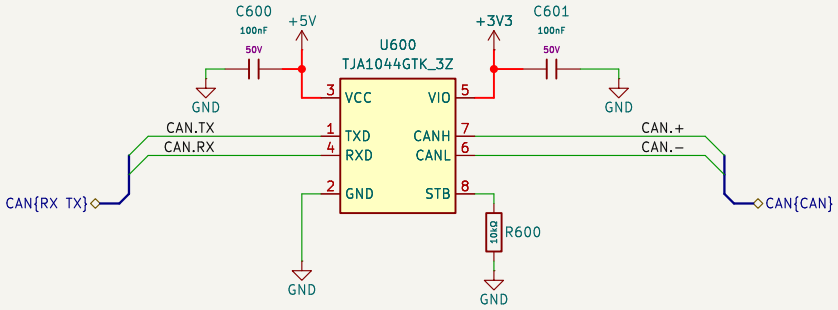
Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /CAN transceiver 1/
File: can-transceiver.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 5/18

CAN TRANSCEIVER

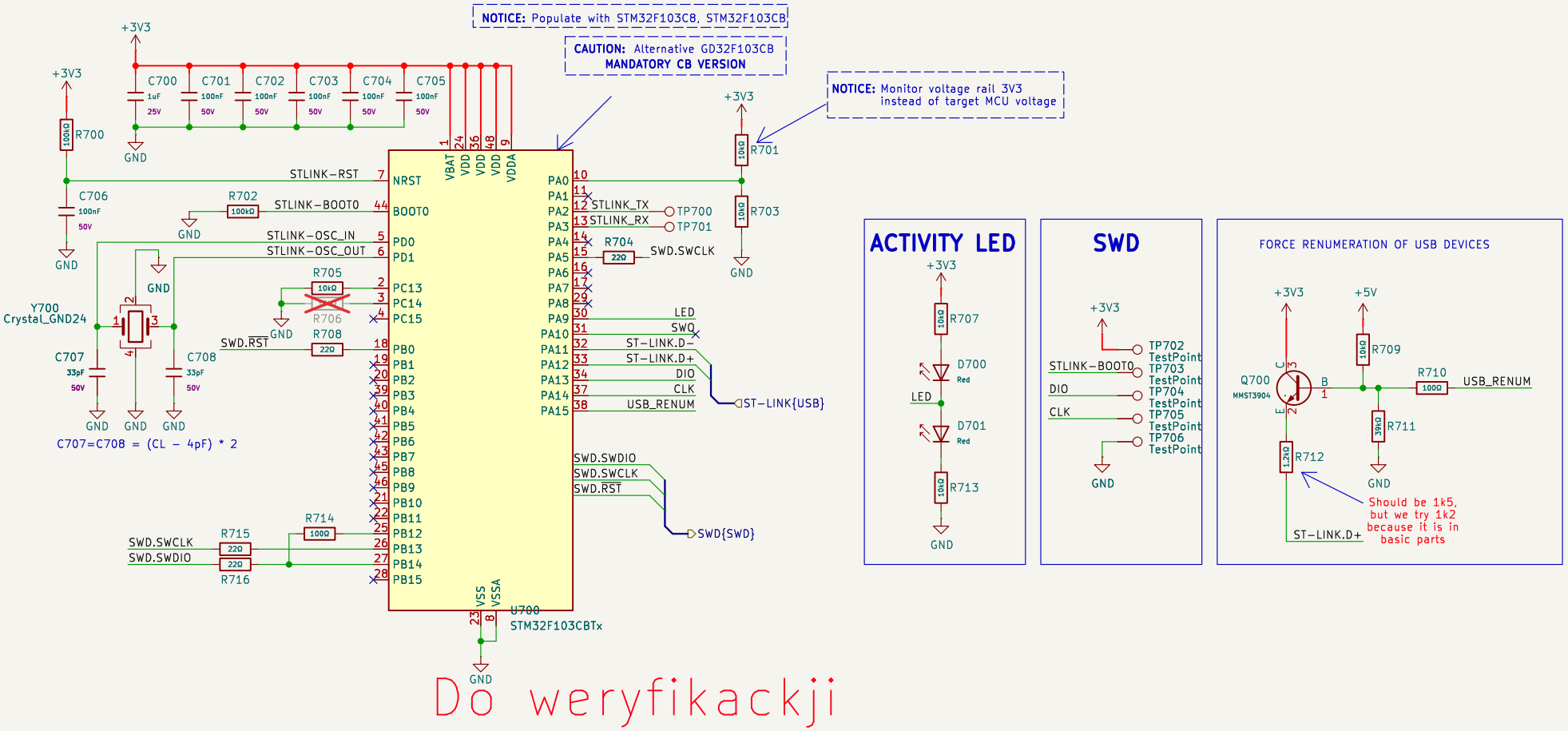


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /CAN transceiver 2/
File: can-transceiver.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 6/18



Do weryfikackji

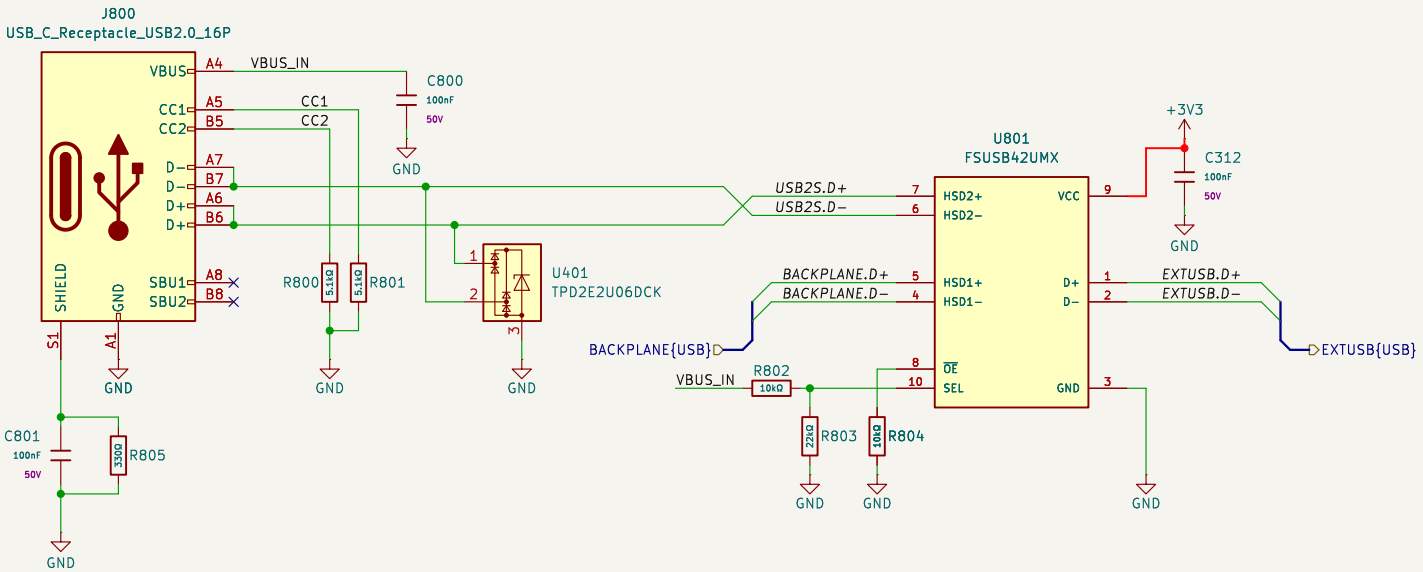
Credit to:
https://github.com/lbthomsen/st-link/tree/master
https://stm32world.com/wiki/DIY_STM32_Programmer_(ST-Link/V2-1)
for providing amazing reverse engeenering of ST-link

Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /ST-LINK/
File: st-link.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 7/18

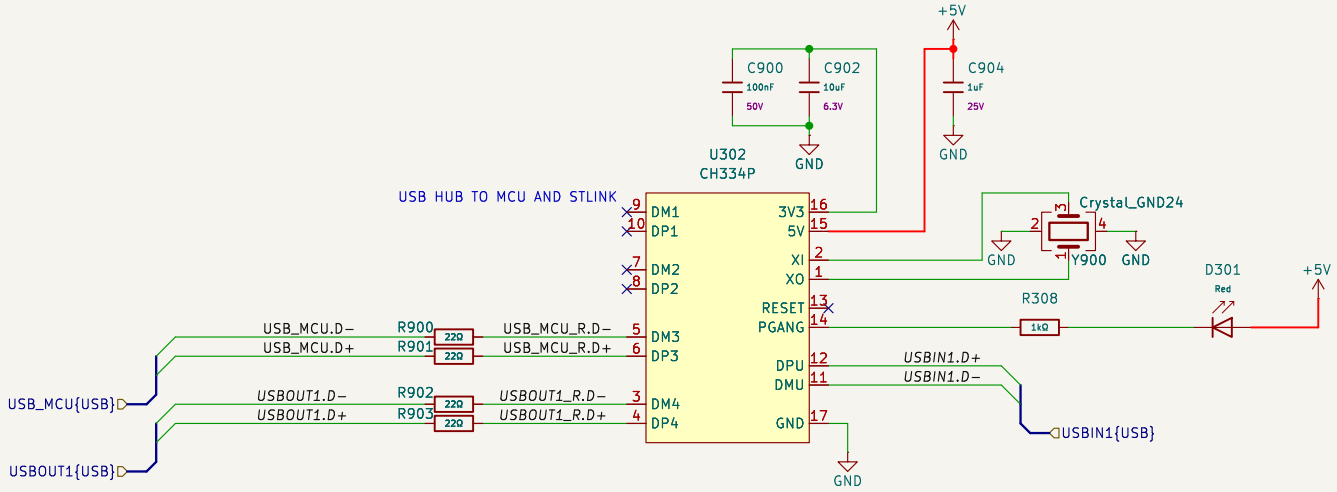


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /USB/
File: USB.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 8/18

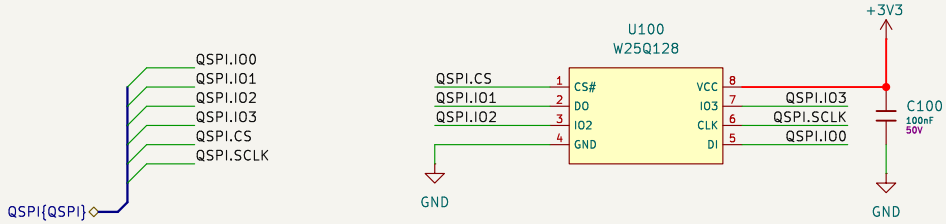


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /USB−hub/
File: USB−hub.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025−04−19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 9/18

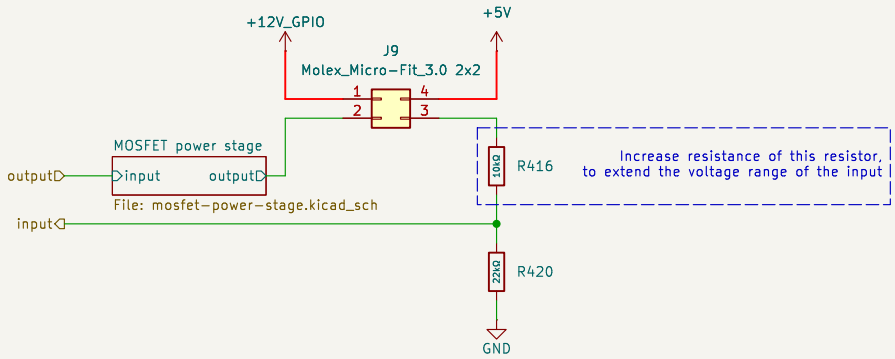


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /QSPI FLASH/
File: QSPI FLASH.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 10/18

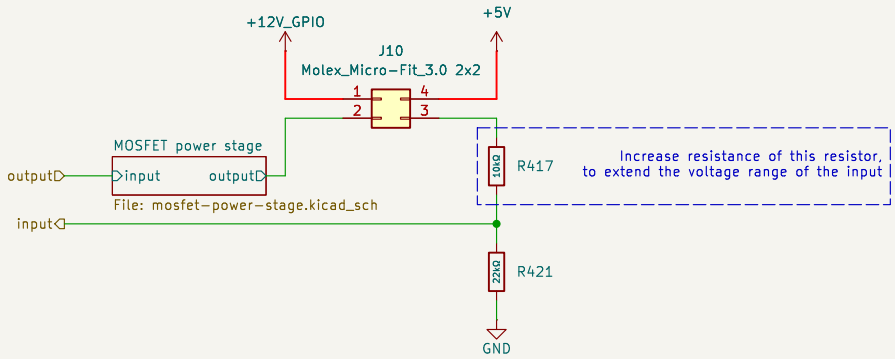


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /GPIO connector 0/
File: gpio-connector.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 15/18

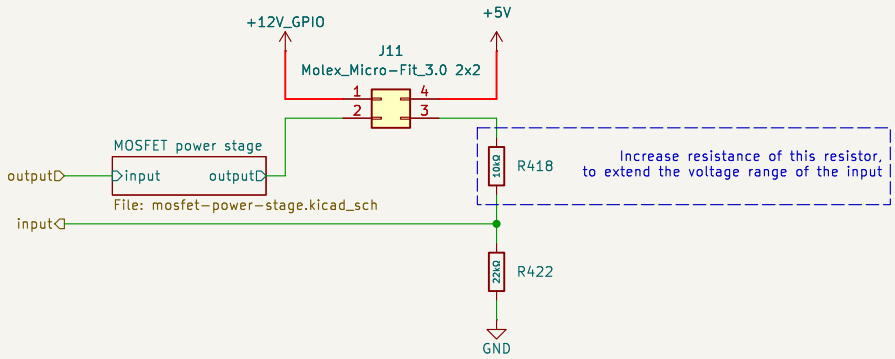


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /GPIO connector 1/
File: gpio-connector.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 16/18

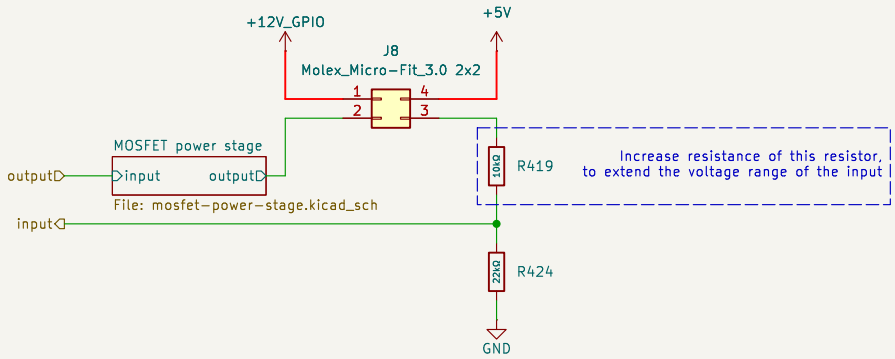


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /GPIO connector 2/
File: gpio-connector.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 19/18

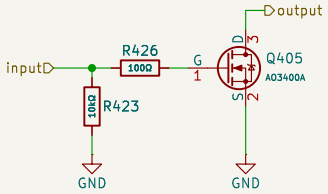


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /GPIO connector 3/
File: gpio-connector.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 21/18

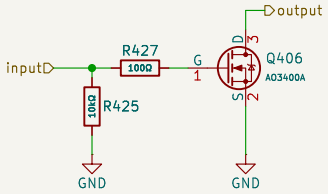


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /GPIO connector 0/MOSFET power stage/
File: mosfet-power-stage.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 17/18

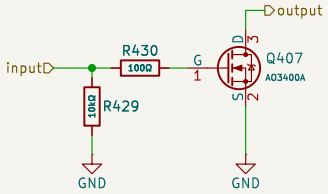


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /GPIO connector 1/MOSFET power stage/
File: mosfet-power-stage.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 18/18

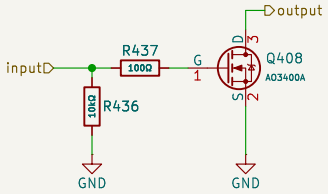


Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /GPIO connector 2/MOSFET power stage/
File: mosfet-power-stage.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 20/18



Project author: Dominik Pluta
Base project authors: Dominik Pluta, Artem Horiunov
KoNaR

Sheet: /GPIO connector 3/MOSFET power stage/
File: mosfet-power-stage.kicad_sch

Title: ModuCard GPIO module

Size: A4	Date: 2025-04-19	**Rev: 1.0.0**
KiCad E.D.A. 9.0.2		Id: 22/18