Schematic — Fasanvej Rev1

U? F1C200s (System-on-Chip)

Left side pins:
- 33 SVREF — DDR_VREF
- 80 AVCC — VCC_DRAM
- 67 UVCC — VCC_IO
- 22 VDD_CORE
- 71 VDD_CORE
- 35 VDD_CORE
- 34 VCC_DRAM
- 36 VCC_DRAM
- 32 VCC_DRAM
- 31 VCC_DRAM
- 30 VCC_DRAM
- 20 VCC_IO
- 5 VCC_IO
- 50 VCC_IO
- 68 USB_DM — USB_DM_HOST
- 69 USB_DP — USB_DP_HOST
- 70 RESET
- 1 HPL — HP_L
- 88 HP_R — HP_R
- 2 HPCOMFB
- 3 HPCOM — HP_COM
- 4 HPVCC — VCC_IO
- 6 PD0/LCD_D2/TWI0_SDA/RSB_SDA/EINTD0 — LCD_D2
- 7 PD1/LCD_D3/UART1_RTS/EINTD1 — LCD_D3
- 8 PD2/LCD_D4/UART1_CTS/EINTD2 — LCD_D4
- 9 PD3/LCD_D5/UART1_RX/EINTD3 — LCD_D5
- 10 PD4/LCD_D6/UART1_TX/EINTD4 — LCD_D6
- 11 PD5/LCD_D7/TWI1_SCK/EINTD5 — LCD_D7
- 12 PD6/LCD_D10/TWI1_SDA/EINTD6 — LCD_D10
- 13 PD7/LCD_D11/DA_MCLK/EINTD7 — LCD_D11
- 14 PD8/LCD_D12/DA_BCLK/EINTD8 — LCD_D12
- 15 PD9/LCD_D13/DA_LRCK/EINTD9 — LCD_D13
- 16 PD10/LCD_D14/DA_IN/EINTD10 — LCD_D14
- 17 PD11/LCD_D15/DA_OUT/EINTD11 — LCD_D15
- 18 PD12/LCD_D18/TWI0_SCK/RSB_SCK/EINTD12 — LCD_D18
- 19 PD13/LCD_D19/UART2_TX/EINTD13 — LCD_D19
- 21 PD14/LCD_D20/UART2_RX/EINTD14 — LCD_D20
- 23 PD15/LCD_D21/UART2_RTS/TWI2_SCK/EINTD15 — LCD_D21
- 24 PD16/LCD_D22/UART2_CTS/TWI2_SDA/EINTD16 — LCD_D22
- 25 PD17/LCD_D23/OWA_OUT/EINTD17 — LCD_D23
- 26 PD18/LCD_CLK/SPI0_CS/EINTD18 — LCD_DE
- 27 PD19/LCD_DE/SPI00_MOSI/EINTD19 — LCD_CLK
- 28 PD20/LCD_HSYNC/SPI00_CLK/EINTD20 — LCD_HSYNC
- 29 PD21/LCD_VSYNC/SPI00_MISO/EINTD21 — LCD_VSYNC
- 82 AGND — GND

Right side pins:
- 83 VRA2
- 81 VRA1
- 52 HOSCO
- 51 HOSCI
- 78 TV_IN2
- 77 TV_IN1
- 76 TV_VRP
- 75 TV_VRN
- 74 TV_GND
- 73 TV_VCC — VCC_IO
- 72 TV_OUT
- 79 LR_ADC0
- 87 MIC_IN
- 86 L_IN_L
- 66 TPX1 — TPX1
- 65 TPX2 — TPX2
- 64 TPY1 — TPY1
- 63 TPY2 — TPY2
- 85 FM_IN_R
- 84 FM_IN_L
- 62 PC3/SPI0_MOSI/UART0_TX — SPI_MOSI
- 61 PC2/SPI0_MISO/SDC1_D0 — SPI_MISO
- 60 PC1/SPI0_CS/SDC1_CMD — SPI_CS
- 59 PC0/SPI0_CLK/SDC1_CLK — SPI_CLK
- 58 PF0/SDC0_D1/DBG_MS/IR_RX/EINTF0 — SD_DAT1
- 57 PF1/SDC0_D0/DBG_DI/EINTF1 — SD_DAT0
- 56 PF2/SDC0_CLK/UART0_RX/EINTF2 — SD_CLK
- 55 PF3/SDC0_CMD/DBG_DO/EINTF3 — SD_CMD
- 54 PF4/SDC0_D3/UART0_TX/EINTF4 — SD_DAT3
- 53 PF5/SDC0_D2/DBG_CK/PWM1/EINTF5 — SD_DAT2
- 49 PE0/CSI_HSYNC_LCD_D0/TWI2_SCK/UART0_RX/EINTE0 — UART_RX
- 48 PE1/CSI_VSYNC/LCD_D1/TWI2_SDA/UART0_TX/EINTE1 — UART_TX
- 47 PE2/CSI_PCLK/LCD_D8/CLK_OUT/EINTE2
- 46 PE3/CSI_D0/LCD_D9/DA_BCLK/RSB_SCK/EINTE3
- 45 PE4/CSI_D1/LCD_D16/DA_LRCK/RSB_SDA/EINTE4
- 44 PE5/CSI_D2/LCD_D17/DA_IN/EINTE5
- 43 PE6/CSI_D3/PWM1/DA_OUT/OWA_OUT/EINTE6
- 42 PE7/CSI_D4/UART2_TX/SPI1_CS/EINTE7
- 41 PE8/CSI_D5/UART2_RX/SPI1_MOSI/EINTE8
- 40 PE9/CSI_D6/UART2_RTS/SPI1_CLK/EINTE9
- 39 PE10/CSI_D7/UART2_CTS/SPI1_MISO/EINTE10
- 38 PE11/CLK_OUT/TWI0_SCK/IR_RX/EINTE11 — I2C_SCL
- 37 PE12/DA_MCLK/TWI0_SDA/PWM0/EINTE12 — I2C_SDA
- 89 EXP_PAD — GND

Crystal: Y? 24.000 MHz, C? 16p, C? 16p

Power components:
- R? 2k 1% ×2
- C? 100n ×2
- SW? SW_Push
- R? 22k
- C? 100n

J? LCD_RGB_40P
- 5 LCD_DATA_R0 — LCD_D18
- 6 LCD_DATA_R1 — LCD_D19
- 7 LCD_DATA_R2 — LCD_D20
- 8 LCD_DATA_R3 — LCD_D21
- 9 LCD_DATA_R4 — LCD_D22
- 10 LCD_DATA_R5 — LCD_D23
- 11 LCD_DATA_R6
- 12 LCD_DATA_R7
- 13 LCD_DATA_G0 — LCD_D10
- 14 LCD_DATA_G1 — LCD_D11
- 15 LCD_DATA_G2 — LCD_D12
- 16 LCD_DATA_G3 — LCD_D13
- 17 LCD_DATA_G4 — LCD_D14
- 18 LCD_DATA_G5 — LCD_D15
- 19 LCD_DATA_G6
- 20 LCD_DATA_G7
- 21 LCD_DATA_B0 — LCD_D2
- 22 LCD_DATA_B1 — LCD_D3
- 23 LCD_DATA_B2 — LCD_D4
- 24 LCD_DATA_B3 — LCD_D5
- 25 LCD_DATA_B4 — LCD_D6
- 26 LCD_DATA_B5 — LCD_D7
- 27 LCD_DATA_B6
- 28 LCD_DATA_B7
- 30 DISP — +3V3
- 31 CLK — LCD_CLK
- 32 HSYNC — LCD_HSYNC
- 33 VSYNC — LCD_VSYNC
- 34 DE — LCD_DE
- 37 TP_XR — TPX1
- 38 TP_YD — TPY1
- 39 TP_XL — TPX2
- 40 TP_YU — TPY2
- 1 LEDK — LED_BACKLIGHT_K
- 2 LEDA — LED_BACKLIGHT_A
- 4 VCC — +3V3, C? 100n
- 3 GND / 29 GND / 36 GND

Test points: I2C_SCL TP?, I2C_SDA TP?, LCD_D11 TP?

J? AudioJack3
- S HP_COM
- R HP_RIGHT
- HP_LEFT

Speakers:
- LS? Soberton SP-1609-2 — SPK_LEFT / HP_COM
- LS? Soberton SP-1609-2 — SPK_RIGHT / HP_COM

Switches:
- SW?A SW_DPDT_x2 — SPK_LEFT / HP_LEFT / HP_L
- SW?B SW_DPDT_x2 — SPK_RIGHT / HP_RIGHT / HP_R
- RV? 1k

U? AT25SF081-SSHF-X
- 5 SI/IO0 — SPI_MOSI
- 6 SCK — SPI_CLK
- 1 CS — SPI_CS
- 3 WP/IO2
- 7 HOLD/IO3
- 8 VCC — +3V3, C? 100n GND
- 2 SO/IO1 — SPI_MISO
- 4 GND
- R? 3k3

J? Micro_SD_Card
- 1 DAT2 — SD_DAT2
- 2 DAT3/CD — SD_DAT3
- 3 CMD — SD_CMD
- 4 VDD — +3V3
- 5 CLK — SD_CLK
- 6 VSS — GND
- 7 DAT0 — SD_DAT0
- 8 DAT1 — SD_DAT1
- 9 SHIELD — GND
- C? 4u7, C? 100n

Hierarchical sheets:
- Power — File: Fasanvej Rev1 Power.kicad_sch
- Keyboard — File: Fasanvej Rev1 Keyboard.kicad_sch
  - USB_DM_KEYBOARD, USB_DP_KEYBOARD
- USB hub — File: Fasanvej Rev1 USB hub.kicad_sch
  - USB_DP_HOST → USB_DP_UPSTREAM
  - USB_DM_HOST → USB_DM_UPSTREAM
  - USB_DP_DOWNSTREAM1 / USB_DM_DOWNSTREAM1
  - USB_DP_DOWNSTREAM2 / USB_DM_DOWNSTREAM2 — USB_DP_WIFI / USB_DM_WIFI
  - USB_DP_DOWNSTREAM3 / USB_DM_DOWNSTREAM3 / USB_VBUS_DOWNSTREAM3D — USB_DP_EXTERNAL / USB_DM_EXTERNAL / USB_VBUS_EXTERNAL

J? USB_A
- 1 VBUS — USB_VBUS_EXTERNAL
- 3 D+
- 2 D−
- Shield / GND
- C? 4n5, R? 1M

U? USBLC6-2SC6
- USB_DM_EXTERNAL, USB_DP_EXTERNAL

Decoupling capacitors:
- +1V1: C? 100n, 100n, 100n — VDD_CORE
- +2V5: C? 100n, 1u, 1u — VCC_DRAM
- +3V3: C? 2u2, 100n, 100n, 100n, 100n — VCC_IO

Keyboard matrix schematic with columns COLUMN_1 through COLUMN_8 and rows ROW_1 through ROW_8, each cell containing a 1N4148 diode (D?) and an SW_Push switch (SW?). The microcontroller is a ATSAMD21J15B-A (U?) with power supply decoupling capacitors, a ferrite bead FB? (10u), and a Serial Wire Debug connector J?.
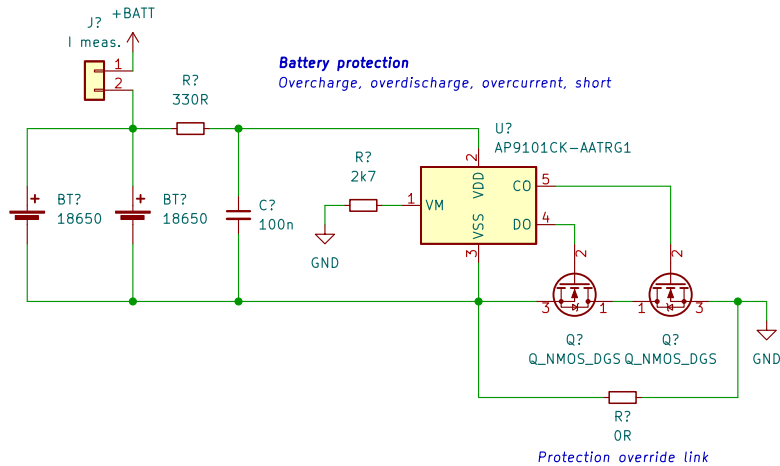
3.3 V buck–boost converter
Maximum output current 1200 mA
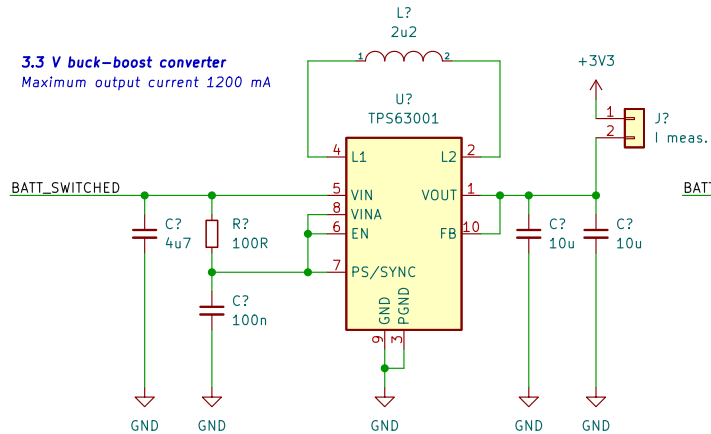
L?
2u2

U?
TPS63001

+3V3

J?
I meas.

BATT_SWITCHED

L1 L2
VIN VOUT
VINA
EN FB
PS/SYNC
GND PGND

C?
4u7

R?
100R

C?
100n

C?
10u

C?
10u

GND GND GND GND GND

2.5 V buck converter
Maximum output current 350 mA

U?
LM3670MF

L?
???

+2V5

J?
I meas.

BATT_SWITCHED

Vin SW
EN
GND FB

C?
4u7

C?
100n

R?
?

C?
100n

R?
?

C?
10u

GND GND GND GND GND

1.1 V buck converter
Maximum output current 350 mA

U?
LM3670MF

L?
???

J?
I meas.

+1V1

BATT_SWITCHED

Vin SW
EN
GND FB

C?
4u7

C?
100n

C?
100n

R?
?

C?
100n

R?
?

C?
10u

GND GND GND GND GND
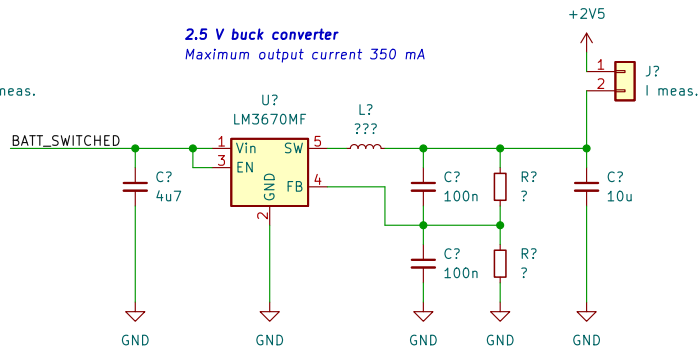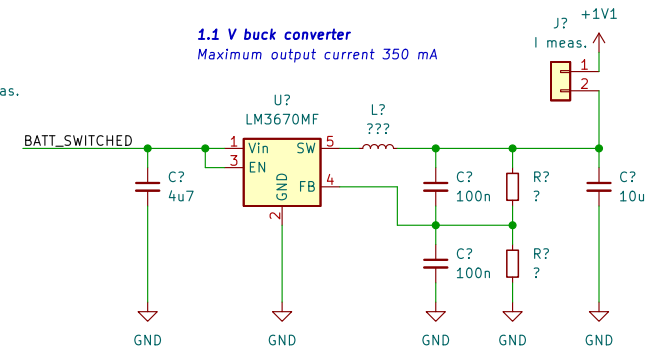
Battery protection
Overcharge, overdischarge, overcurrent, short

J?
I meas.

+BATT

R?
330R

U?
AP9101CK–AATRG1

BT?
18650

BT?
18650

C?
100n

R?
2k7

VM VDD
VSS
CO
DO

Q?
Q_NMOS_DGS

Q?
Q_NMOS_DGS

R?
0R

GND

GND

Protection override link

5.0 V boost converter
Maximum output current 1800 mA

R?
5R

C?
120p

D?
???

U?
TPS613222ADBV

+5V

J?
I meas.

L?
2u2

BATT_SWITCHED

SW VOUT
GND

C?
10u

C?
10u

C?
10u

GND GND GND GND
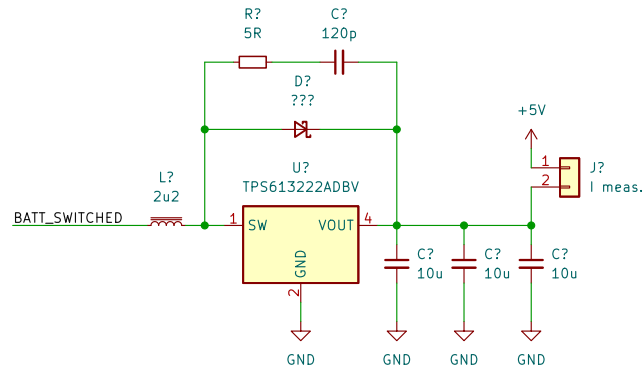
Backlight LED CC supply
Output current 20 mA

+BATT

L?
???

D?
D_Zener_Small

LED_BACKLIGHT_K

C?
1u

U?
AP5723WG–7

VIN SWS
EN OVP
GND FB

C?
1u

GND

R?
5R

LED_BACKLIGHT_A

GND GND
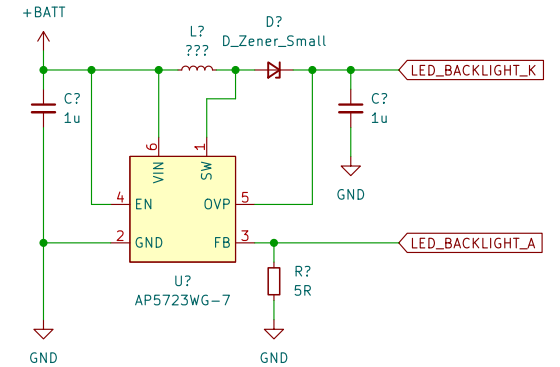
Battery charger
Charge current 500 mA

+BATT

U?
MCP73831–2–OT

CHG_USB_5V0

C?
4u7

CHG_STATUS

VBAT
STAT VSS VDD PROG

R?
470R

R?
2k

C?
4u7

D?
LED_Dual_KAKA

Red

CHG_STATUS

CHG_USB_5V0

CHG_STATUS

Green

GND GND GND GND
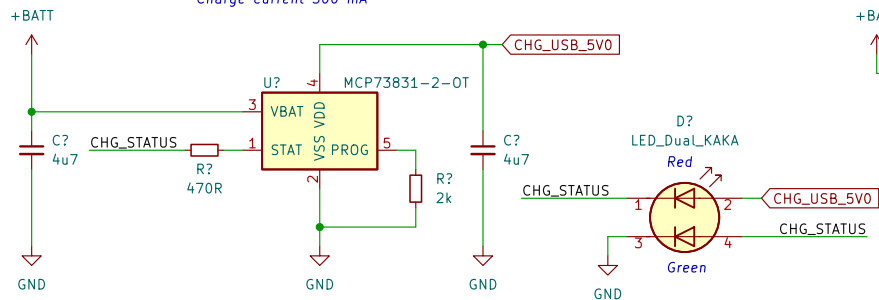
On/off slide switch
Permits battery charging while off

+BATT

SW?
SW_SPST

BATT_SWITCHED

Battery management and voltage regulators

A handheld Linux computer designed by
RISRES Ristila Research

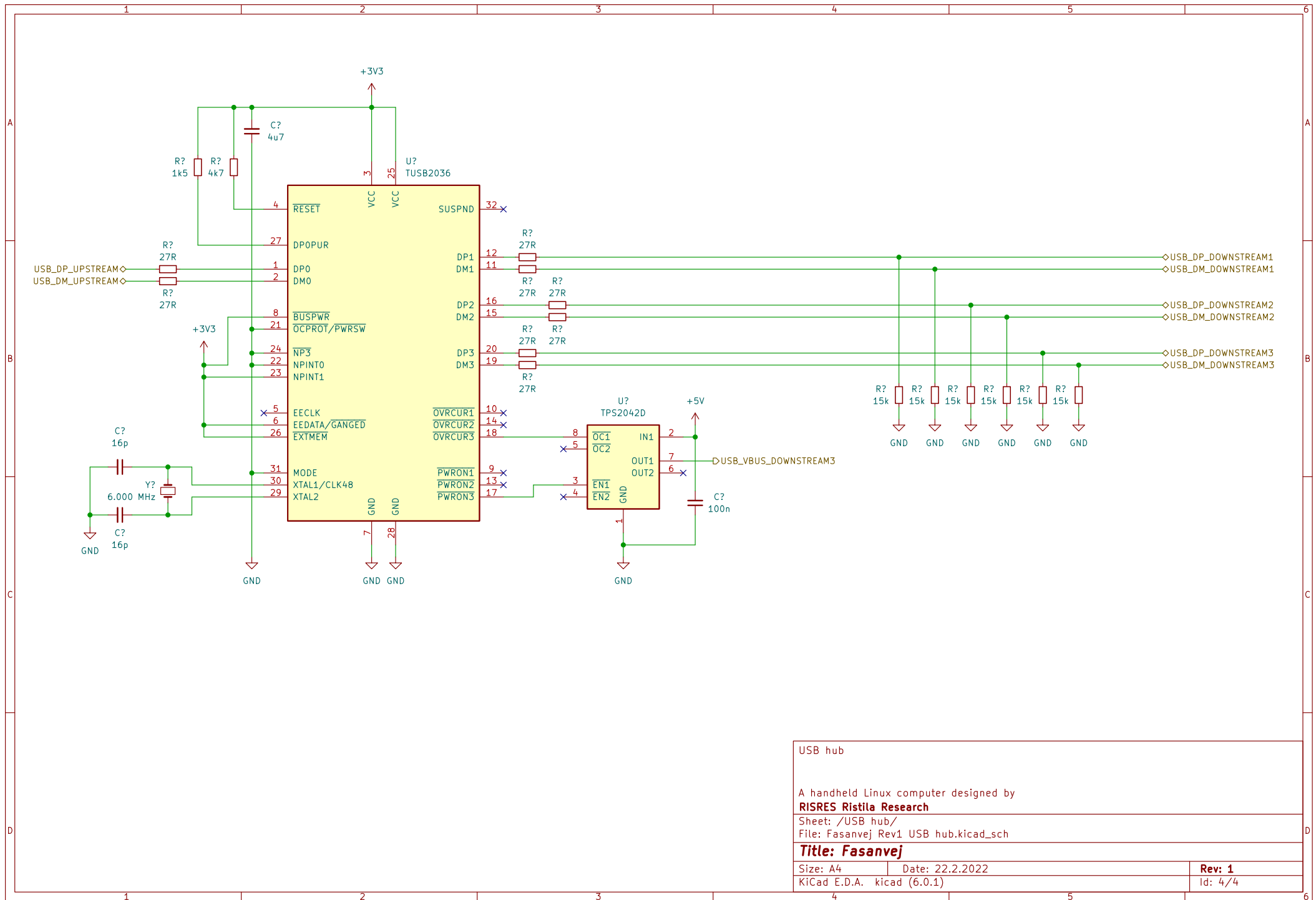Sheet: /Power/
File: Fasanvej Rev1 Power.kicad_sch

Title: Fasanvej

Size: A4   Date: 22.2.2022   Rev: 1
KiCad E.D.A. kicad (6.0.1)   Id: 3/4

+3V3

C?
4u7

R?
1k5

R?
4k7

U?
TUSB2036

3 VCC
25 VCC

4 RESET
27 DP0PUR

R?
27R
USB_DP_UPSTREAM
1 DP0
USB_DM_UPSTREAM
2 DM0
R?
27R

8 BUSPWR
21 OCPROT/PWRSW

+3V3

24 NP3
22 NPINT0
23 NPINT1

5 EECLK
6 EEDATA/GANGED
26 EXTMEM

C?
16p

Y?
6.000 MHz

C?
16p

GND

31 MODE
30 XTAL1/CLK48
29 XTAL2

GND

7 GND
28 GND

GND GND

SUSPND 32

DP1 12
DM1 11
R?
27R

DP2 16
DM2 15
R?
27R
R?
27R

DP3 20
DM3 19
R?
27R
R?
27R

R?
27R

OVRCUR1 10
OVRCUR2 14
OVRCUR3 18

PWRON1 9
PWRON2 13
PWRON3 17

U?
TPS2042D

+5V

8 OC1
5 OC2
3 EN1
4 EN2

IN1 2

OUT1 7
OUT2 6

GND
1

C?
100n

GND

USB_VBUS_DOWNSTREAM3

USB_DP_DOWNSTREAM1
USB_DM_DOWNSTREAM1

USB_DP_DOWNSTREAM2
USB_DM_DOWNSTREAM2

USB_DP_DOWNSTREAM3
USB_DM_DOWNSTREAM3

R?
15k
R?
15k
R?
15k
R?
15k
R?
15k
R?
15k

GND GND GND GND GND GND