Power

File: Power_V2.kicad_sch

LedDriver

File: LedDriver_V2.kicad_sch

TouchSens

File: TouchSens_V2.kicad_sch

FFC/FPC connector 1

FFC/FPC connector 2

FFC/FPC connector 3

FFC/FPC connector addressable leds

Microchip SAMD21D microcontroller

User adressable buttons

Reset button

2mb NOR SPI flash memory

WS2812B neopixel

I2C pullup resistors IO bus

Mountingholes M2.5

Fiducial markings

Powerled and status leds

Clock crystal with decoupling capacitors

I2C pullup resistors main bus

I2C pullup resistors main bus

Termination resistors USB bus

I2C connector for auxilary sensor

I2C connector main bus in

I2C connector main bus out

Debug connector

Author(s): Emiel Visser & Joris Bol

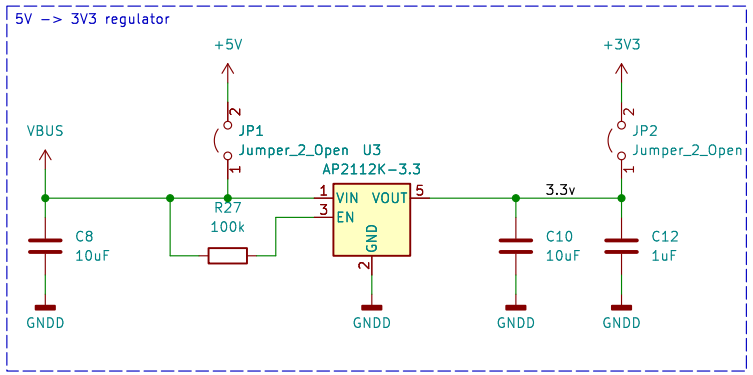
Health Concept Lab

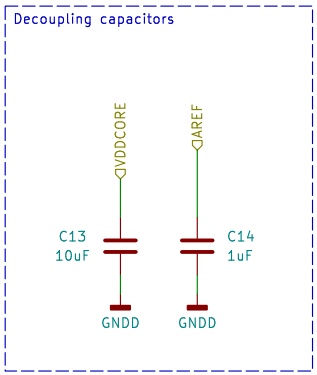
Sheet: /

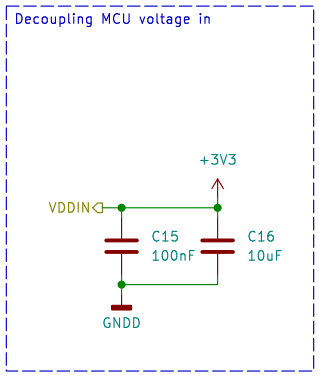
File: LedDriverBoard_V2.kicad_sch

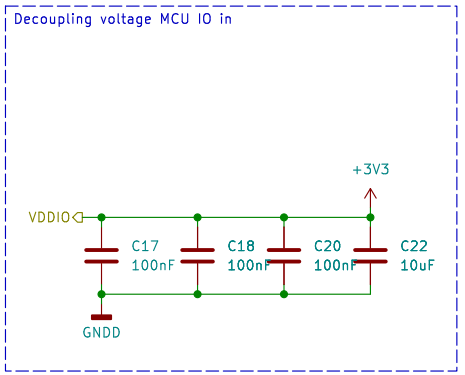
Title: Led driver board BabySim

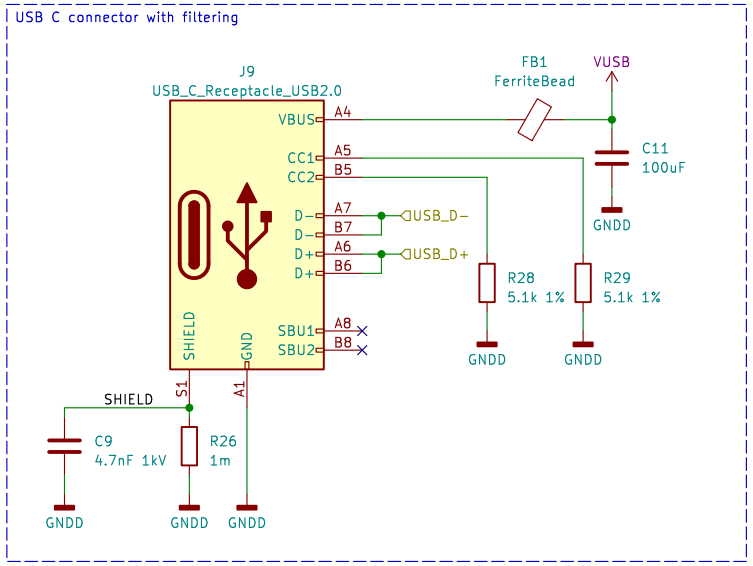
Size: A3	Date: 22-09-2023	**Rev: V1.0**
KiCad E.D.A. kicad 7.0.9		Id: 1/4

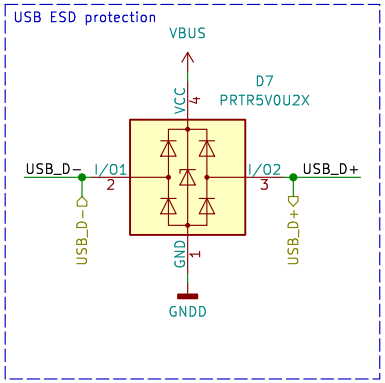


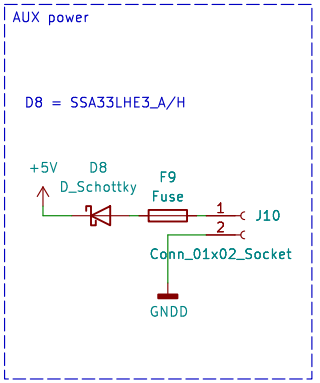


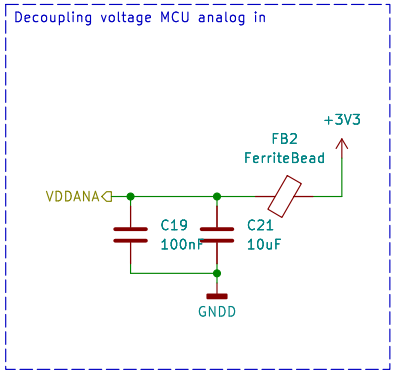












Author(s): Emiel Visser & Joris Bol
Health Concept Lab

Sheet: /Power/
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Size: A4	Date: 23-09-2023	**Rev: V1.0**
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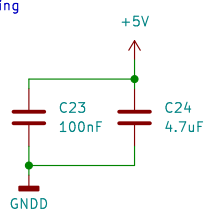
Decoupling



Calculation for IREF resistors

$I_{MAX} = (V_{(IREF)} / R_{(IREF)}) * 31.5$

$V_{(IREF)} = 5V$
$R_{(IREF)} = ?$
$I_{MAX} = 80mA$

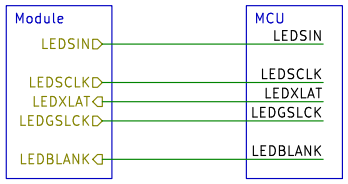
$80mA = (5V/R_{(IREF)}) * 31.5$ | /31.5

$80mA/31.5 = 5V/R_{(IREF)}$ | /5

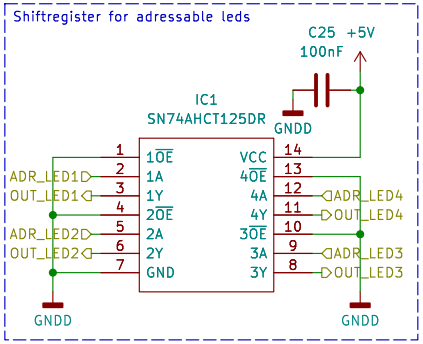
$5V/(80mA/31.5 = R_{(IREF)}$

$R_{(IREF)} = 1968.8\ ohm = 2Kohm$

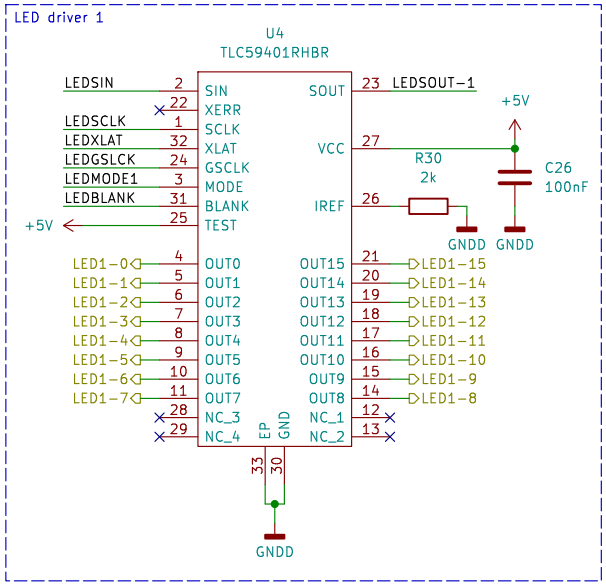
Bus connection



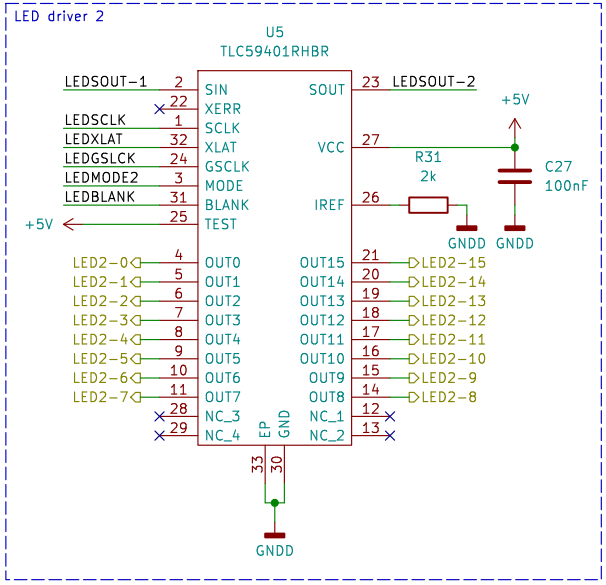
Shiftregister for adressable leds



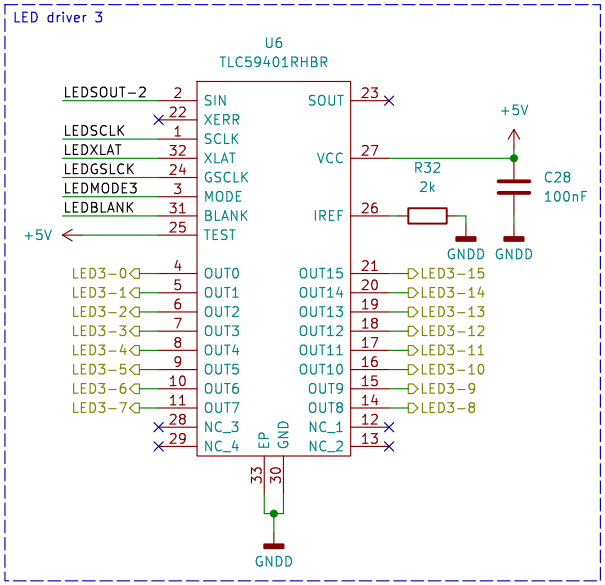
LED driver 1



LED driver 2

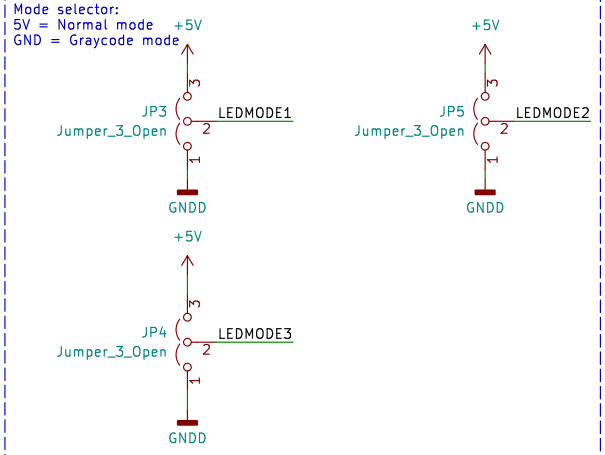


LED driver 3



Mode selector:

5V = Normal mode
GND = Graycode mode



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Health Concept Lab
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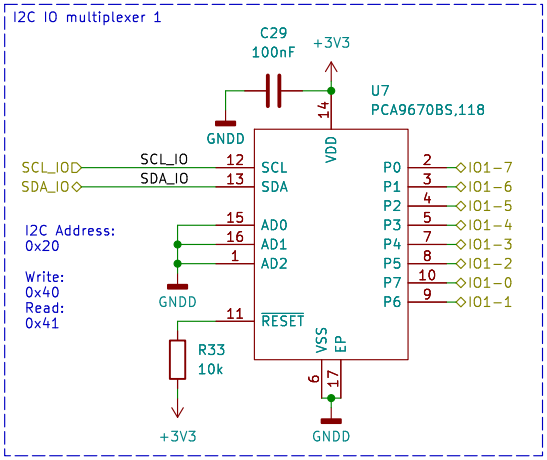
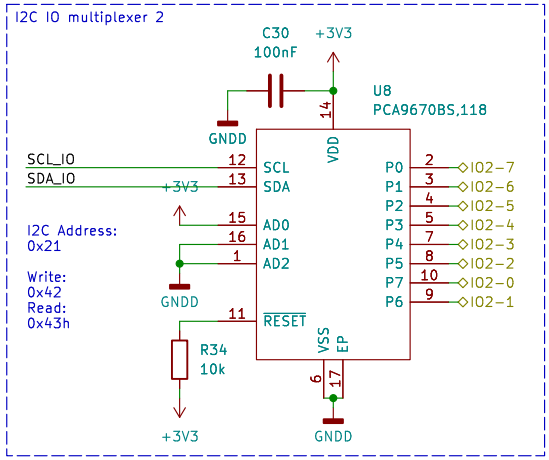
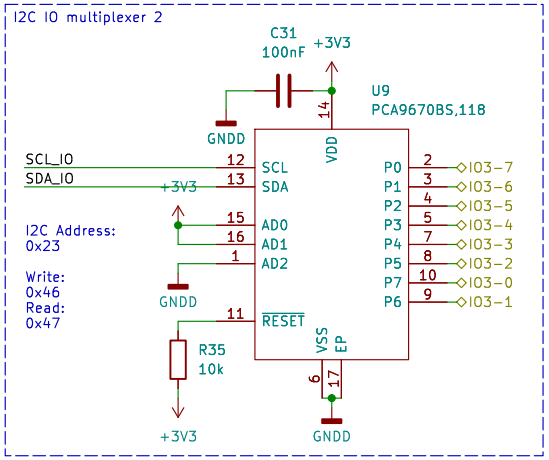
Title: Led driver board BabySim

Size: A4	Date: 18-09-2023	**Rev: V1.0**
KiCad E.D.A. kicad 7.0.9		Id: 3/4







Author(s): Emiel Visser & Joris Bol
Health Concept Lab

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Size: A4	Date: 18-09-2023	**Rev: V1.0**
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