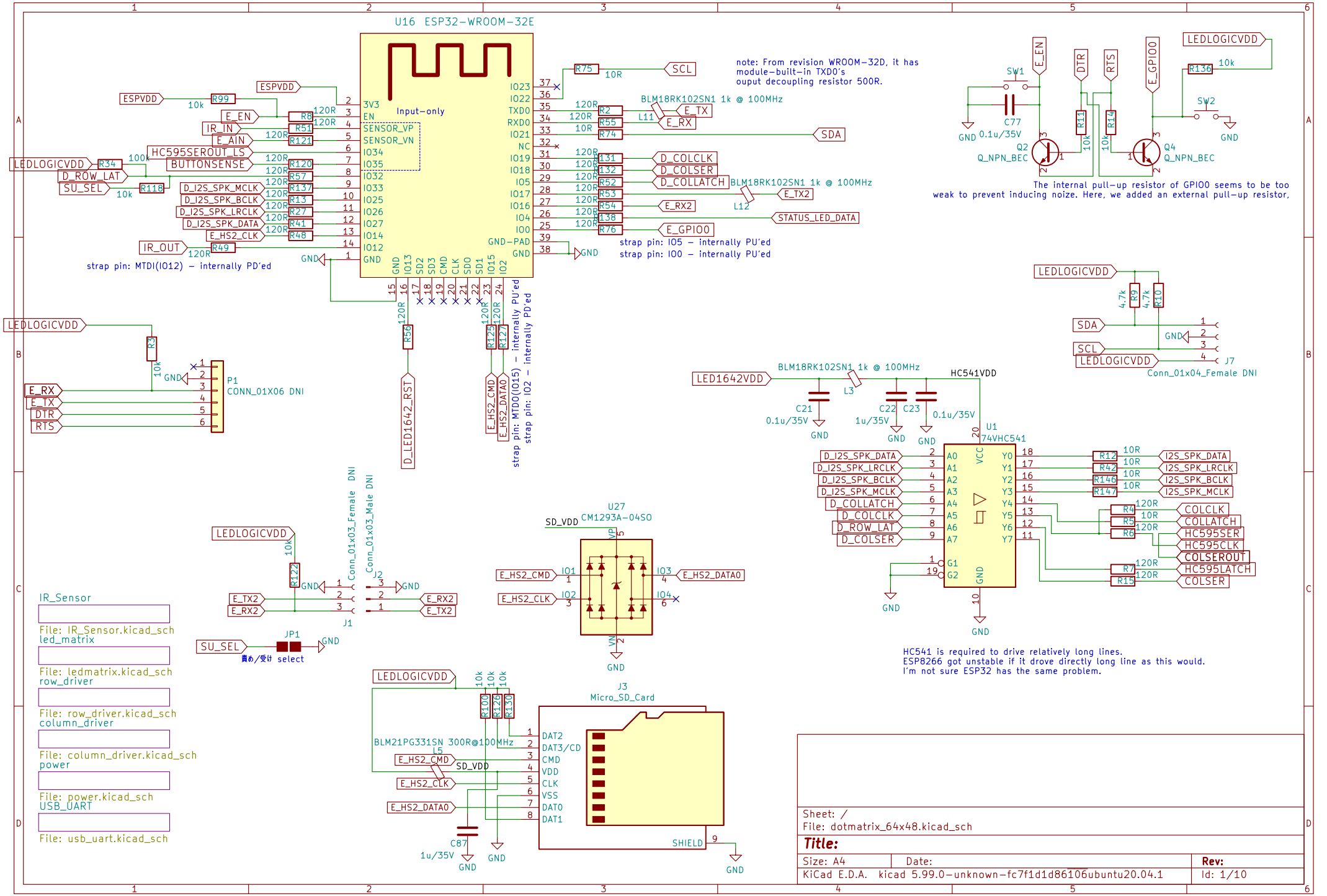
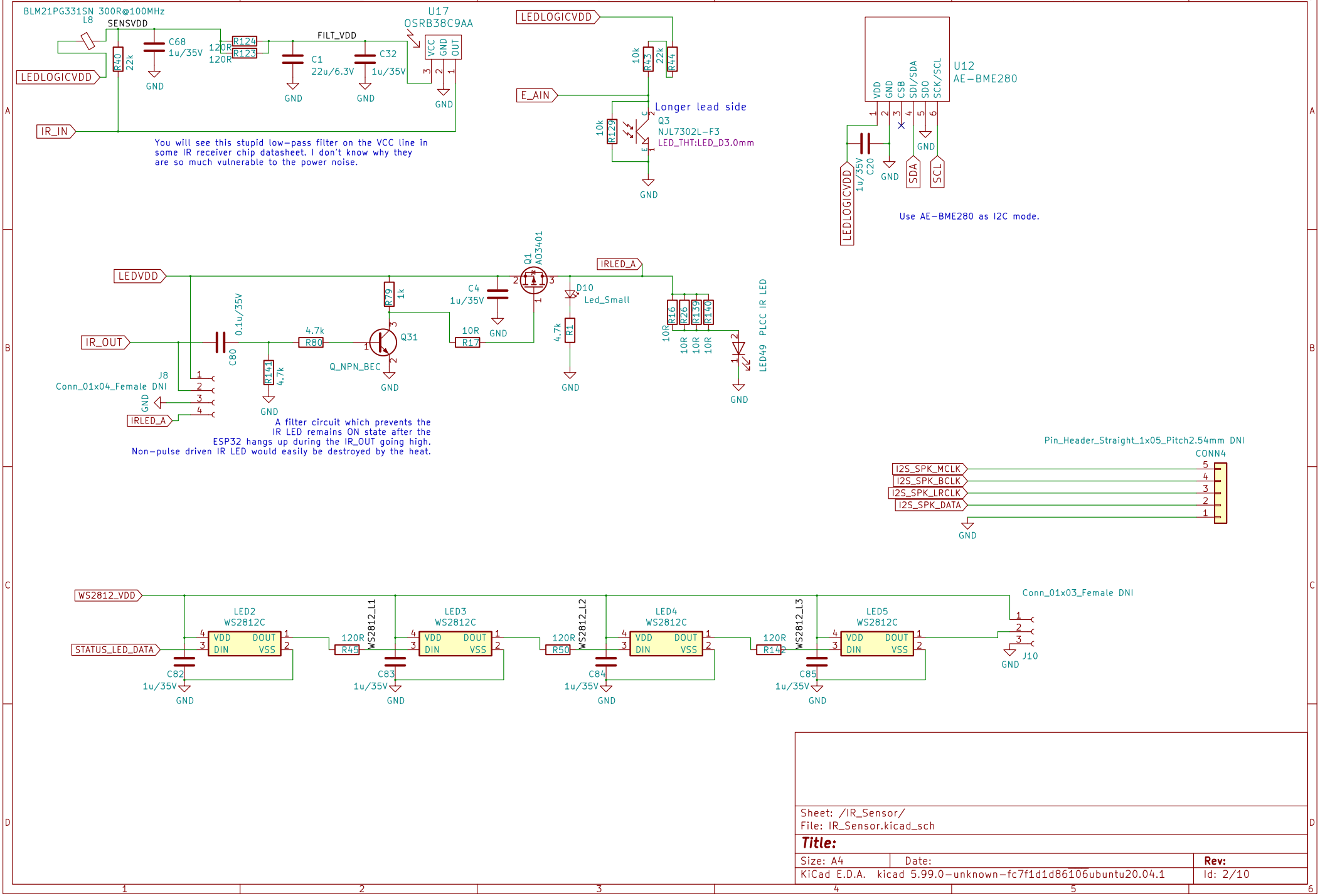
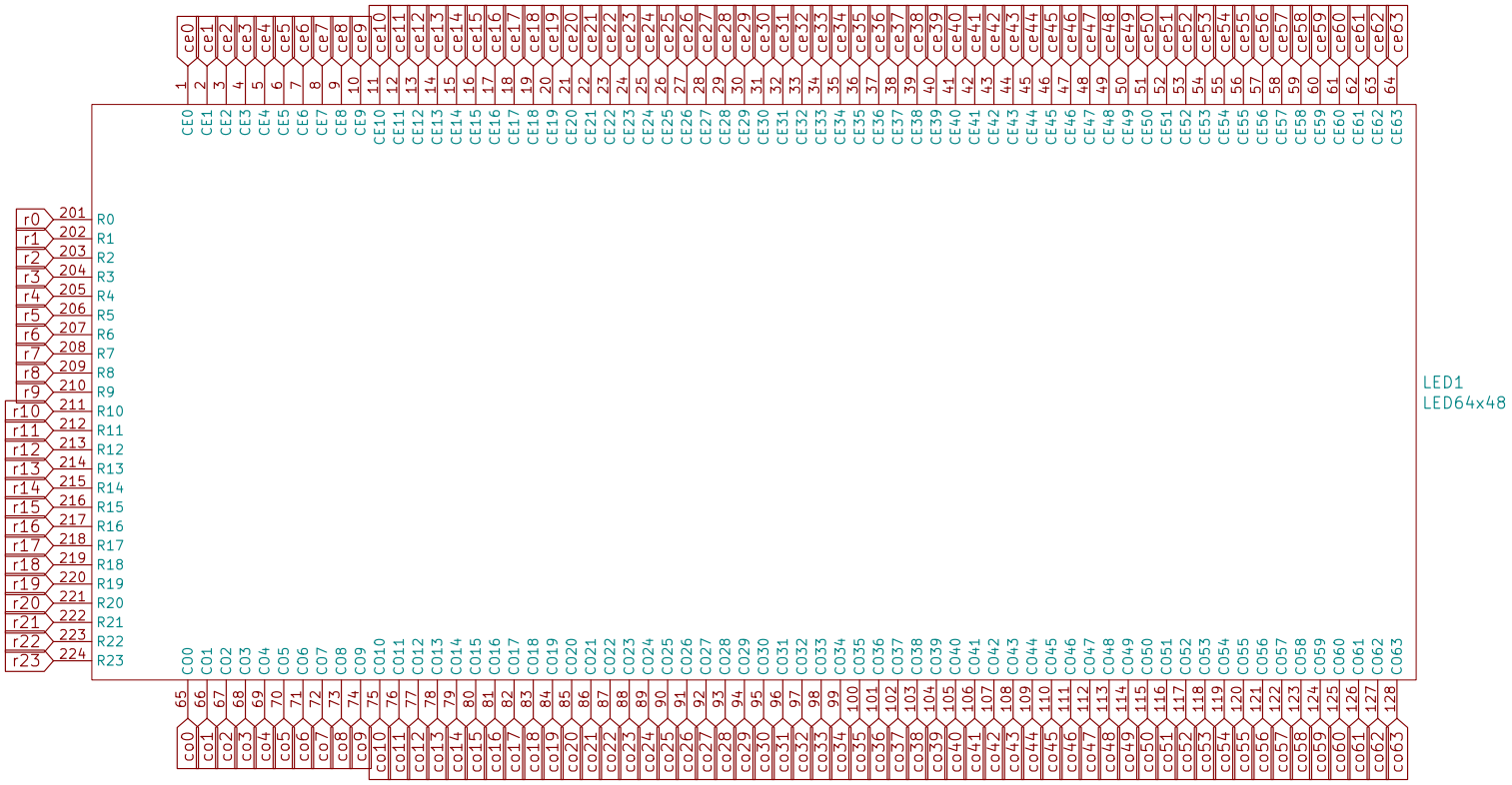

U16 ESP32-WROOM-32E
Input-only
note: From revision WROOM-32D, it has module-built-in TXD0's ouput decoupling resistor 500R.
strap pin: MTDI(IO12) - internally PD'ed
strap pin: IO5 - internally PU'ed
strap pin: IO0 - internally PU'ed
strap pin: MTDO(IO15) - internally PU'ed
strap pin: IO2 - internally PD'ed
BLM18RK102SN1 1k @ 100MHz
The internal pull-up resistor of GPIO0 seems to be too weak to prevent inducing noize. Here, we added an external pull-up resistor,
HC541 is required to drive relatively long lines.
ESP8266 got unstable if it drove directly long line as this would.
I'm not sure ESP32 has the same problem.
P1
CONN_01X06 DNI
J7
Conn_01x04_Female DNI
J1
Conn_01x03_Female DNI
Conn_01x03_Male DNI
U1
74VHC541
U27
CM1293A-04SO
J3
Micro_SD_Card
JP1
SU_SEL
書め/受け select
IR_Sensor
File: IR_Sensor.kicad_sch
led_matrix
File: ledmatrix.kicad_sch
row_driver
File: row_driver.kicad_sch
column_driver
File: column_driver.kicad_sch
power
File: power.kicad_sch
USB_UART
File: usb_uart.kicad_sch
Sheet: /
File: dotmatrix_64x48.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad 5.99.0-unknown-fc7f1d1d86106ubuntu20.04.1
Id: 1/10


BLM21PG331SN 300R@100MHz
L8
SENSVDD
C68
1u/35V
R40
22k
LEDLOGICVDD
IR_IN
GND
120R
120R
R124
R123
FILT_VDD
C1
22u/6.3V
C32
1u/35V
U17
OSRB38C9AA
VCC
GND
OUT
You will see this stupid low-pass filter on the VCC line in some IR receiver chip datasheet. I don't know why they are so much vulnerable to the power noise.
LEDLOGICVDD
10k
R43
22k
R44
E_AIN
10k
R129
Longer lead side
Q3
NJL7302L-F3
LED_THT:LED_D3.0mm
U12
AE-BME280
VDD
GND
CSB
SDI/SDA
SDO
SCK/SCL
C20
1u/35V
SDA
SCL
Use AE-BME280 as I2C mode.
LEDVDD
IR_OUT
0.1u/35V
C80
4.7k
R80
R141
4.7k
Q31
Q_NPN_BEC
R79
1k
C4
1u/35V
10R
R17
Q1
AO3401
D10
Led_Small
4.7k
R1
IRLED_A
10R
R16
R26
R139
R140
LED49 PLCC IR LED
J8
Conn_01x04_Female DNI
A filter circuit which prevents the IR LED remains ON state after the ESP32 hangs up during the IR_OUT going high.
Non-pulse driven IR LED would easily be destroyed by the heat.
Pin_Header_Straight_1x05_Pitch2.54mm DNI
CONN4
I2S_SPK_MCLK
I2S_SPK_BCLK
I2S_SPK_LRCLK
I2S_SPK_DATA
WS2812_VDD
STATUS_LED_DATA
LED2
WS2812C
LED3
WS2812C
LED4
WS2812C
LED5
WS2812C
VDD
DIN
DOUT
VSS
120R
R45
R50
R142
WS2812_L1
WS2812_L2
WS2812_L3
C82
C83
C84
C85
1u/35V
Conn_01x03_Female DNI
J10
Sheet: /IR_Sensor/
File: IR_Sensor.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad 5.99.0-unknown-fc7f1d1d86106ubuntu20.04.1
Id: 2/10

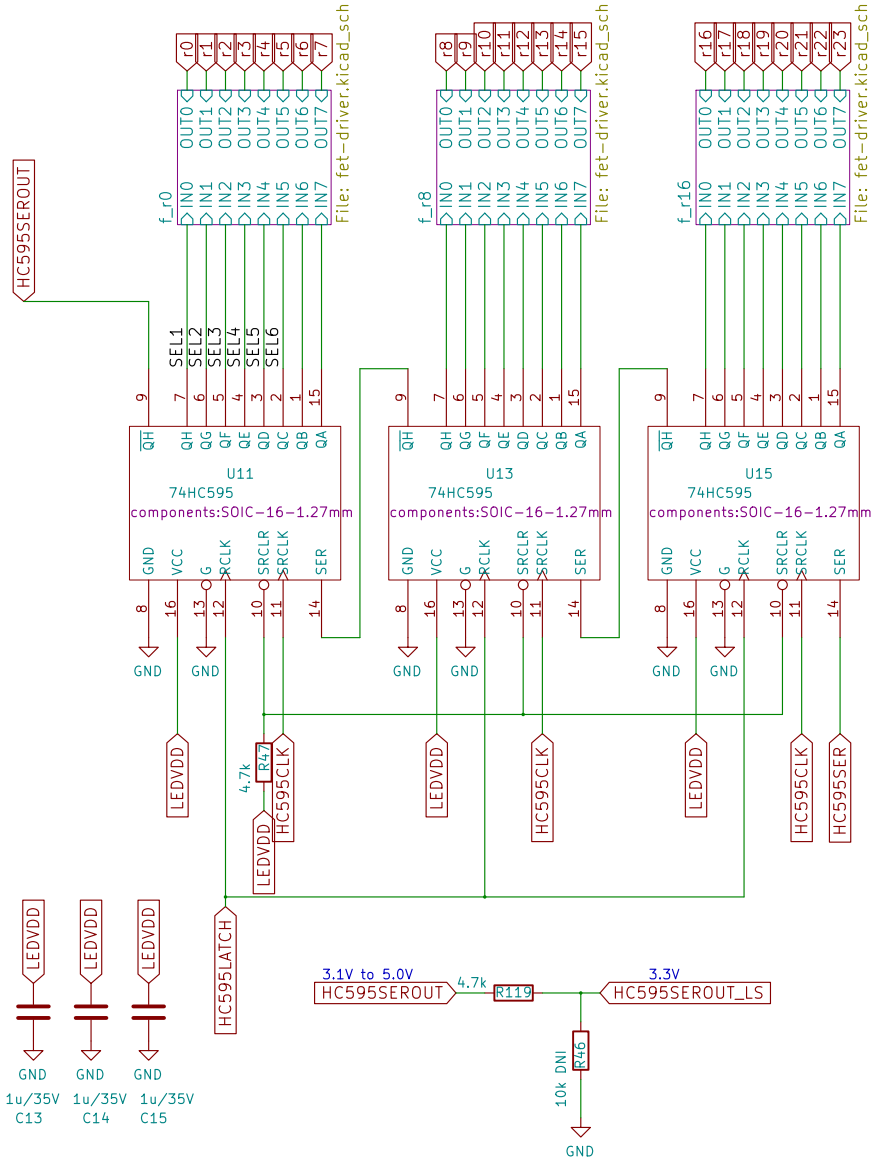


Sheet: /led_matrix/
File: ledmatrix.kicad_sch

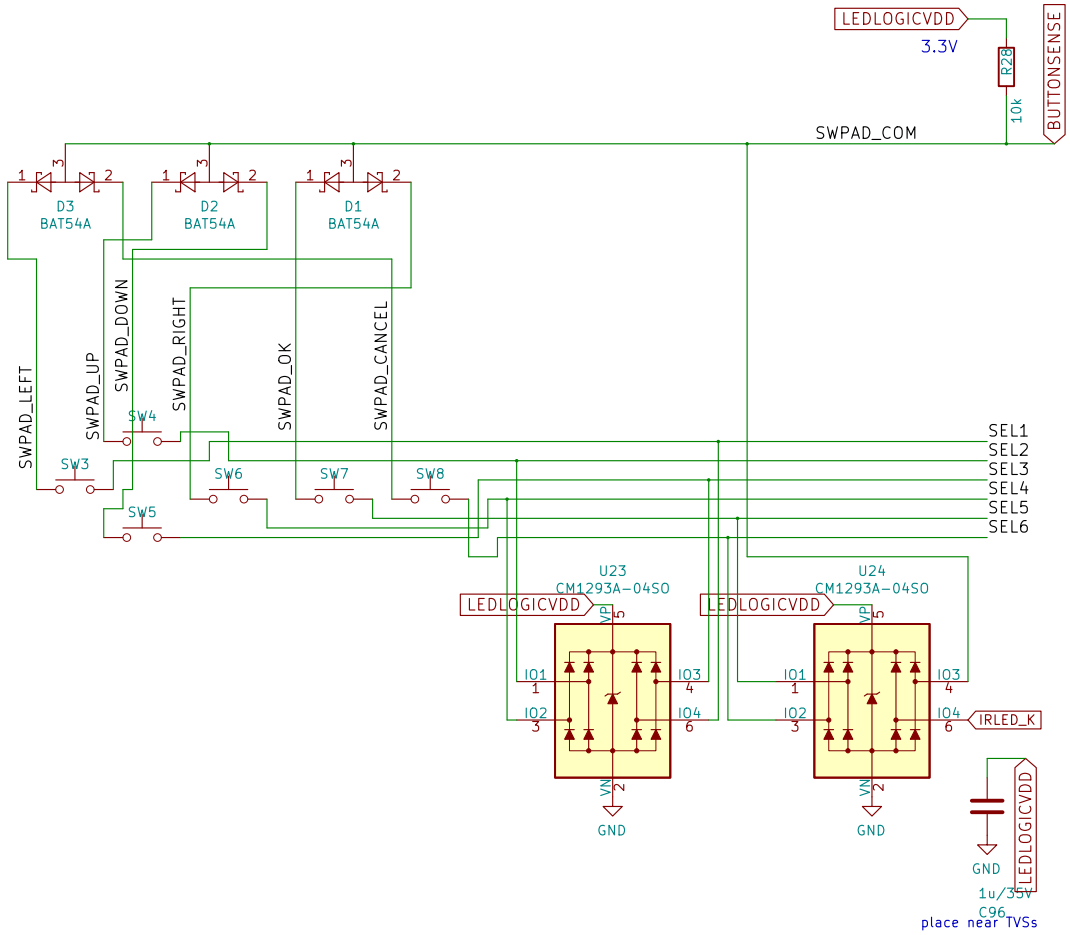
Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.99.0-unknown-fc7f1d1d86106ubuntu20.04.1		Id: 3/10

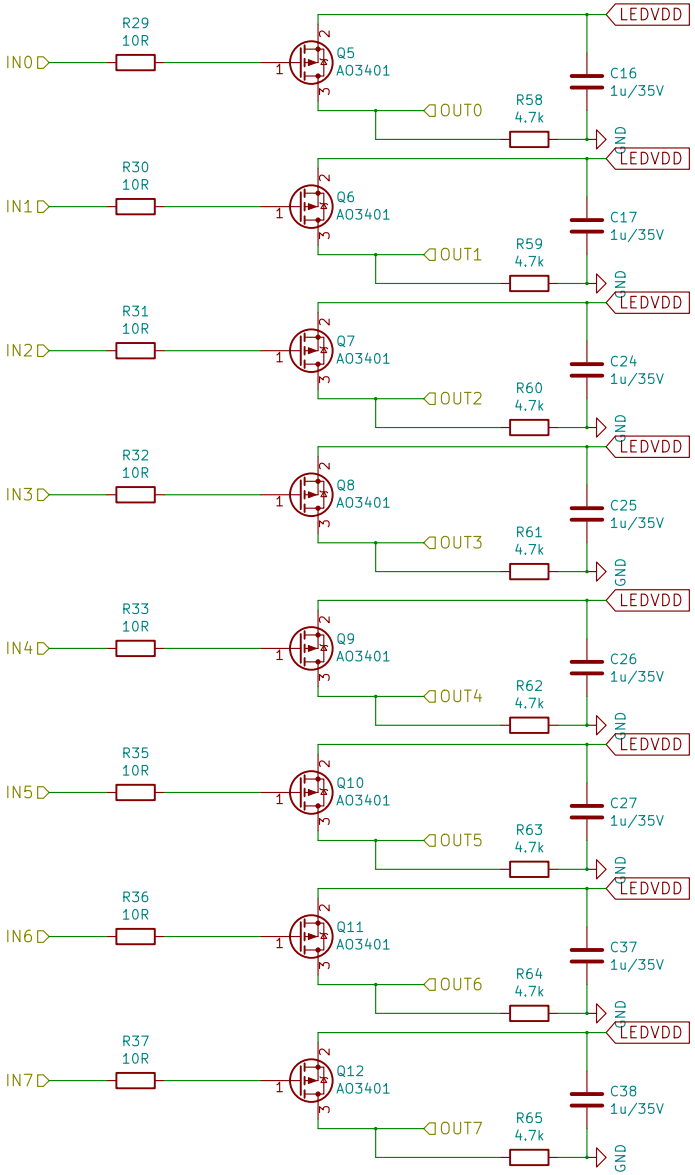
HC595SER is a 3.3V logic while HC595 runs on LEDVDD which is between 3.1V to 5.0V depending on
LED color you use. The default kit's LED color is red, and the LEDVDD is 3.1V.
Always check the logic level is compatible.
for LEDVDD > 4.5V : use 74HCT595; otherwise use 74HC595



R46 must be installed when HC595SEROUT does not match to 3.3V levels

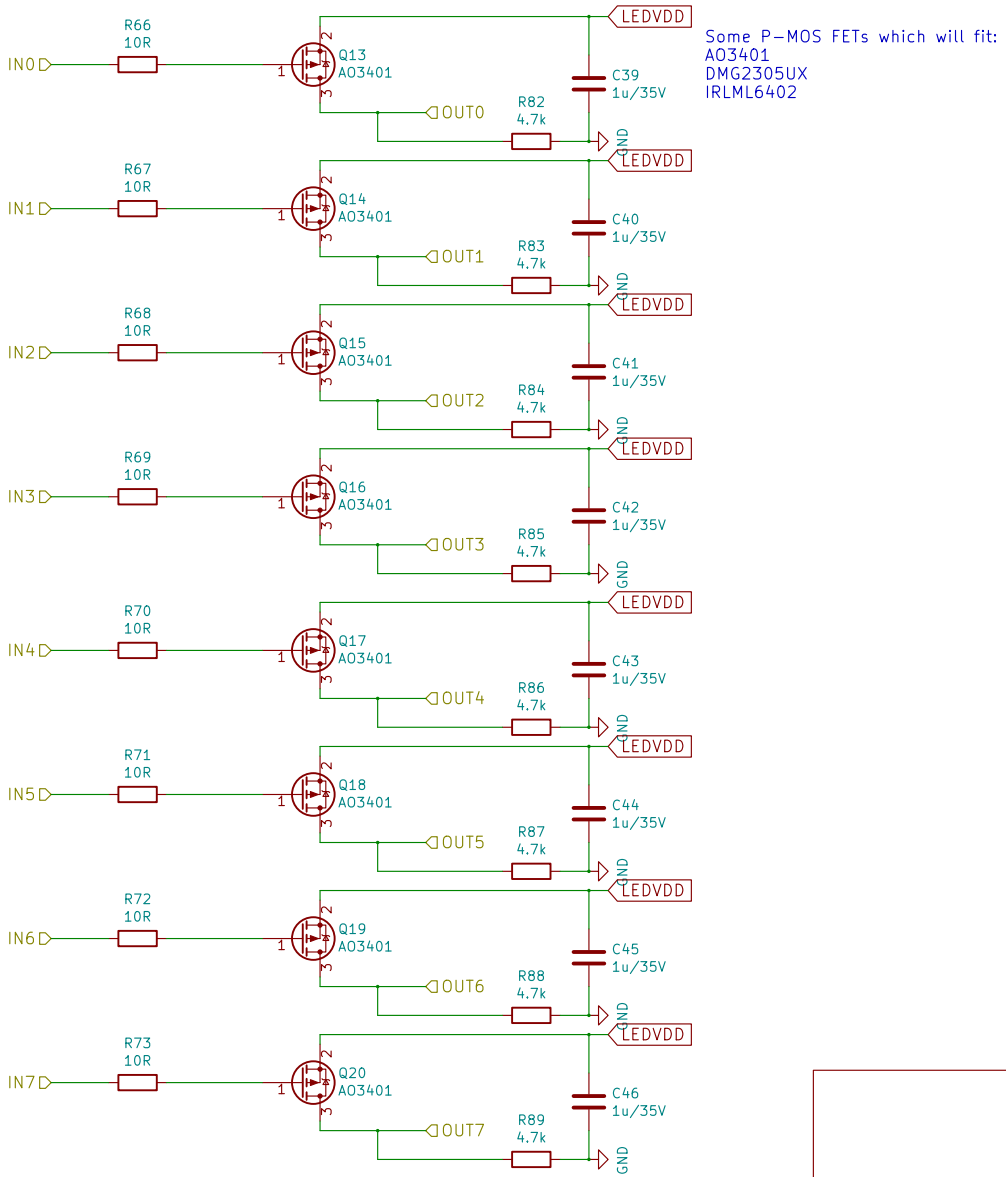


Sheet: /row_driver/		
File: row_driver.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.99.0-unknown-fc7f1d1d86106ubuntu20.04.1		Id: 4/10



Some P-MOS FETs which will fit:
AO3401
DMG2305UX
IRLML6402

Sheet: /row_driver/f_r0/ File: fet-driver.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.99.0-unknown-fc7f1d1d86106ubuntu20.04.1		Id: 5/10



Some P-MOS FETs which will fit:
AO3401
DMG2305UX
IRLML6402

Sheet: /row_driver/f_r8/ File: fet-driver.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
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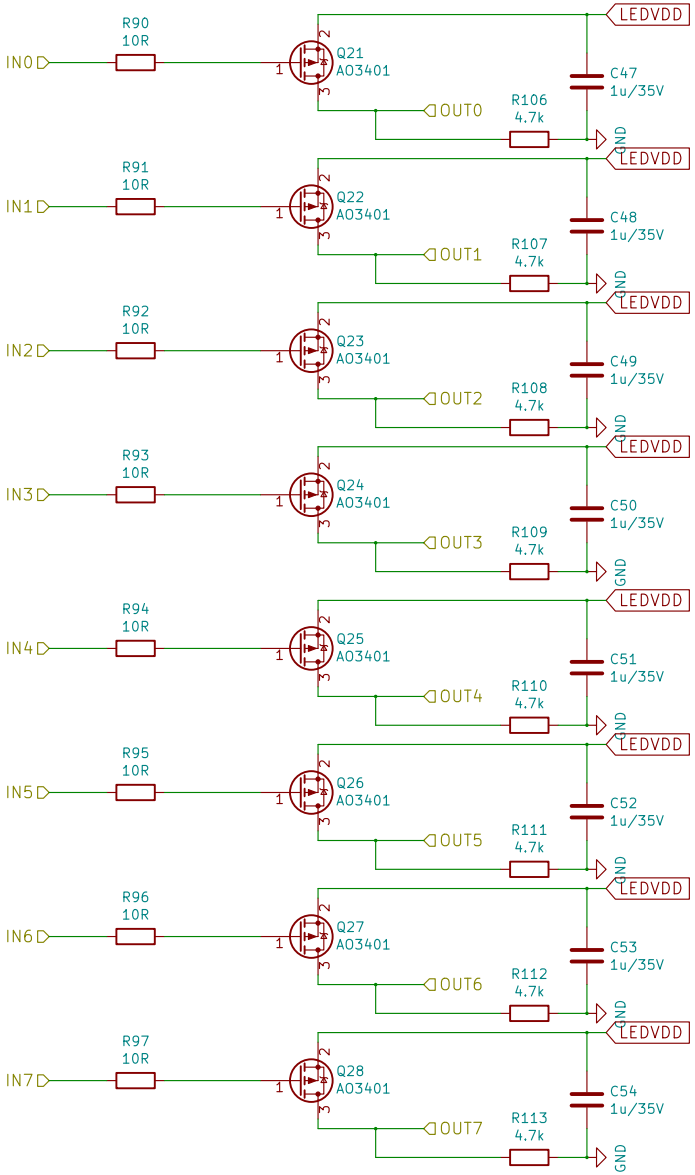
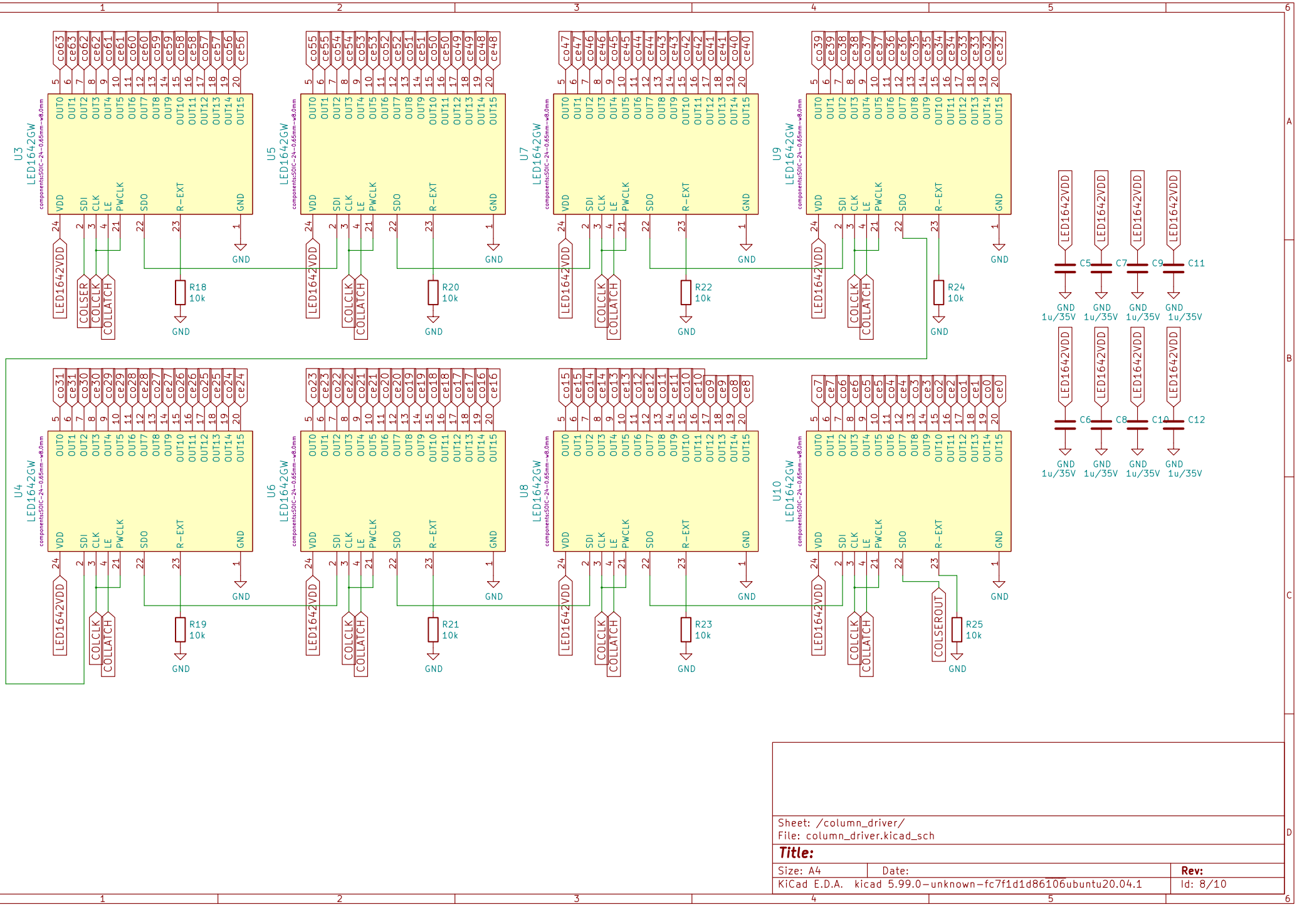
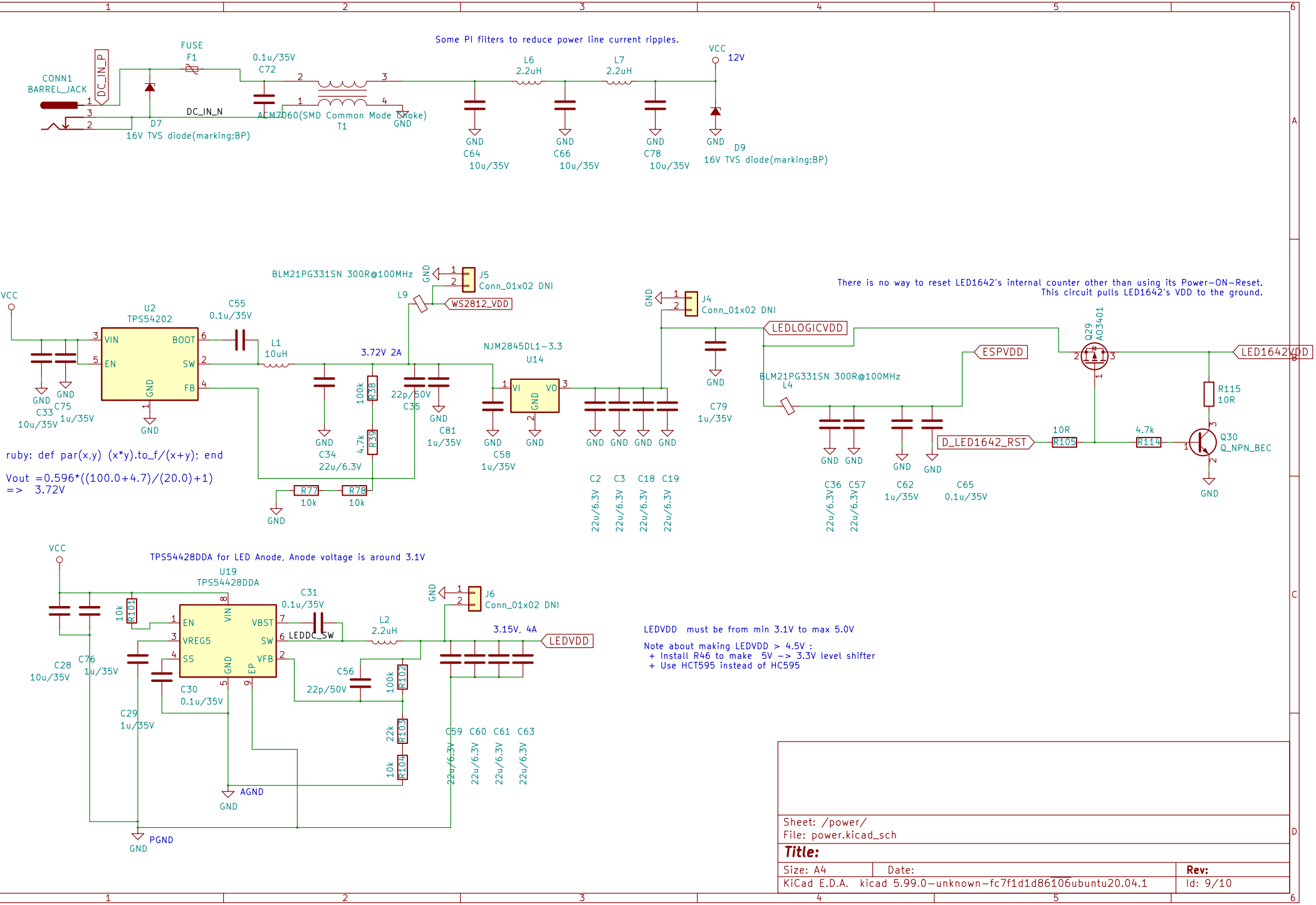


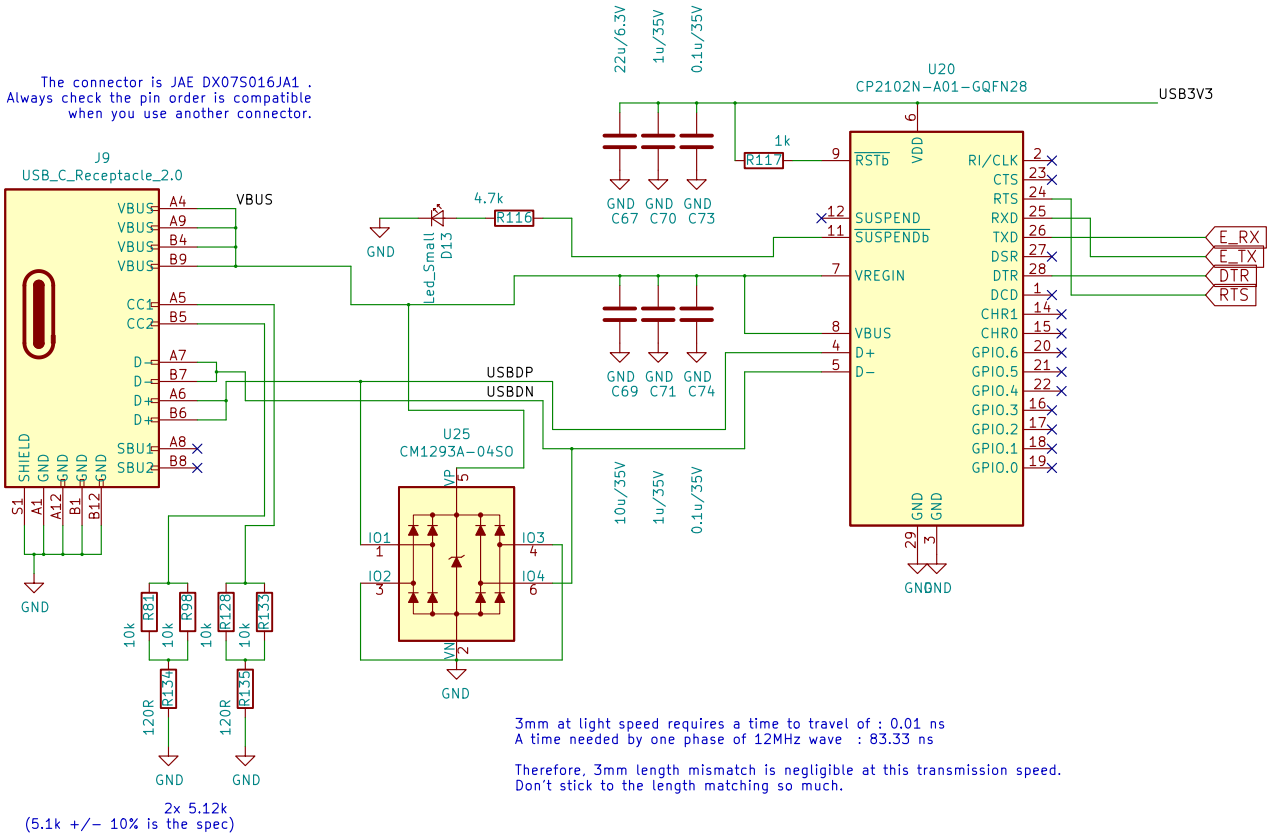
Some P-MOS FETs which will fit:
AO3401
DMG2305UX
IRLML6402

Sheet: /row_driver/f_r16/ File: fet-driver.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.99.0-unknown-fc7f1d1d86106ubuntu20.04.1		Id: 7/10



Sheet: /column_driver/		
File: column_driver.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.99.0-unknown-fc7f1d1d86106ubuntu20.04.1		Id: 8/10


Some PI filters to reduce power line current ripples.
CONN1
BARREL_JACK
DC_IN_P
FUSE
F1
0.1u/35V
C72
DC_IN_N
D7
16V TVS diode(marking:BP)
ACM7060(SMD Common Mode Choke)
T1
L6
2.2uH
L7
2.2uH
VCC
12V
GND
C64
10u/35V
C66
10u/35V
C78
10u/35V
D9
16V TVS diode(marking:BP)
BLM21PG331SN 300R@100MHz
J5
Conn_01x02 DNI
WS2812_VDD
L9
U2
TPS54202
VIN
BOOT
EN
SW
GND
FB
C55
0.1u/35V
L1
10uH
3.72V 2A
C33
10u/35V
C75
1u/35V
C34
22u/6.3V
100k
R38
4.7k
R39
22p/50V
C35
C81
1u/35V
NJM2845DL1-3.3
U14
VI
VO
C58
1u/35V
R77
10k
R78
10k
ruby: def par(x,y) (x*y).to_f/(x+y); end
Vout =0.596*((100.0+4.7)/(20.0)+1)
=> 3.72V
J4
Conn_01x02 DNI
LEDLOGICVDD
C79
1u/35V
C2
C3
C18
C19
22u/6.3V
There is no way to reset LED1642's internal counter other than using its Power-ON-Reset.
This circuit pulls LED1642's VDD to the ground.
ESPVDD
BLM21PG331SN 300R@100MHz
L4
Q29
AO3401
LED1642VDD
R115
10R
D_LED1642_RST
10R
R105
4.7k
R114
Q30
Q_NPN_BEC
C36
C57
C62
1u/35V
C65
0.1u/35V
TPS54428DDA for LED Anode, Anode voltage is around 3.1V
U19
TPS54428DDA
EN
VIN
VREG5
VBST
SW
SS
GND
VFB
EP
LEDDC_SW
C31
0.1u/35V
L2
2.2uH
J6
Conn_01x02 DNI
3.15V, 4A
LEDVDD
R101
10k
C28
10u/35V
C76
1u/35V
C30
0.1u/35V
C29
1u/35V
C56
22p/50V
R102
100k
R103
22k
R104
10k
AGND
PGND
C59
C60
C61
C63
22u/6.3V
LEDVDD must be from min 3.1V to max 5.0V
Note about making LEDVDD > 4.5V :
+ Install R46 to make 5V -> 3.3V level shifter
+ Use HCT595 instead of HC595
Sheet: /power/
File: power.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad 5.99.0-unknown-fc7f1d1d86106ubuntu20.04.1
Id: 9/10



Sheet: /USB_UART/		
File: usb_uart.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.99.0-unknown-fc7f1d1d86106ubuntu20.04.1		Id: 10/10