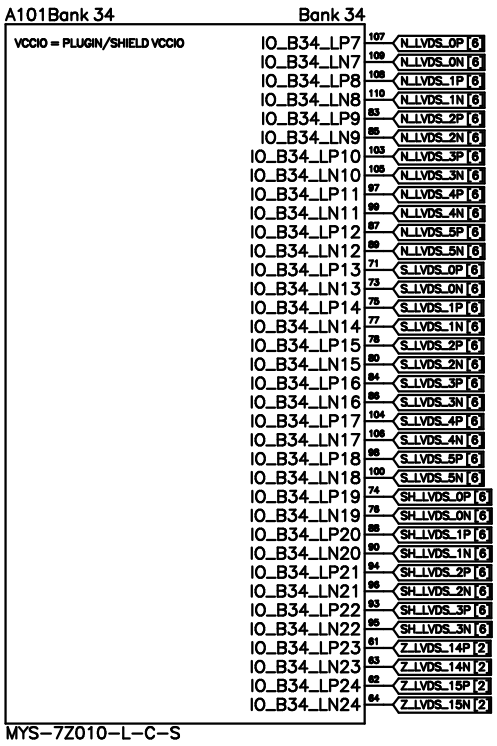
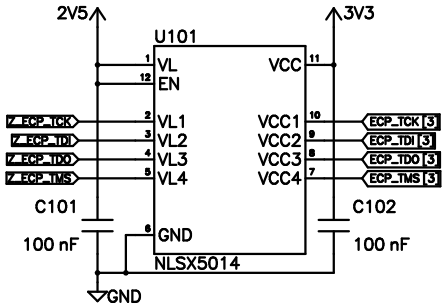
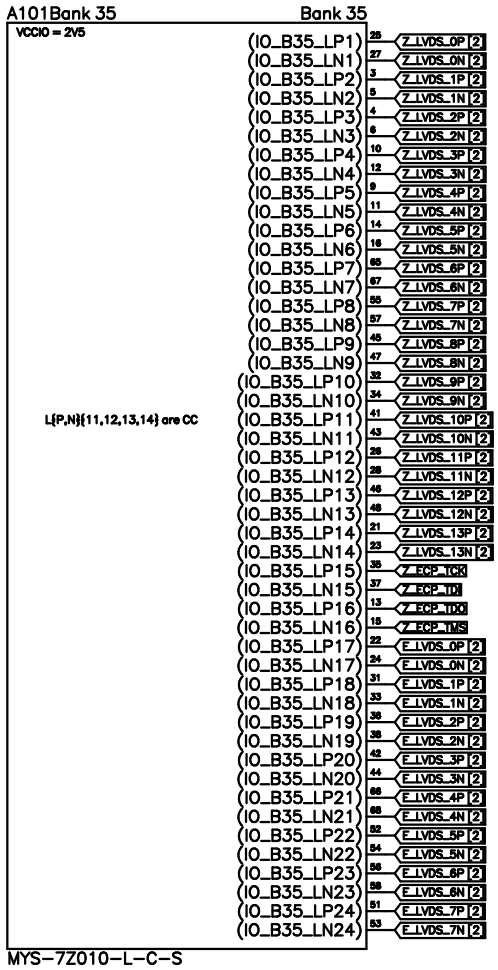
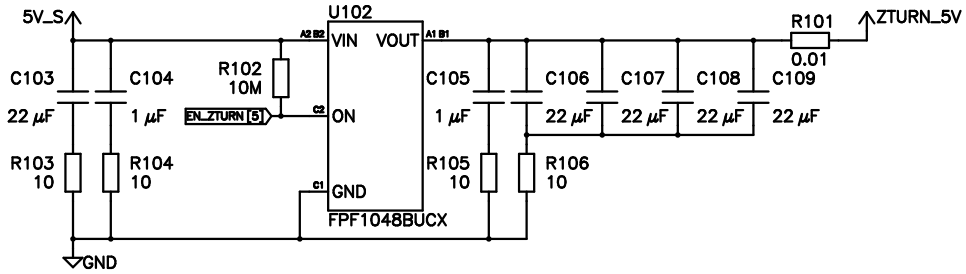
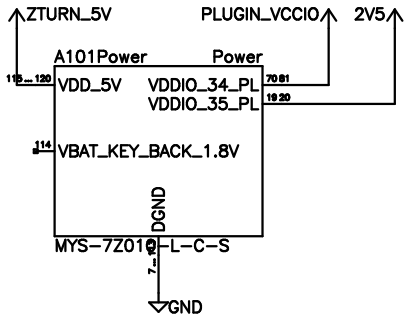
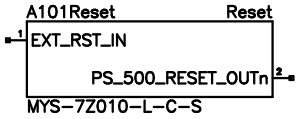




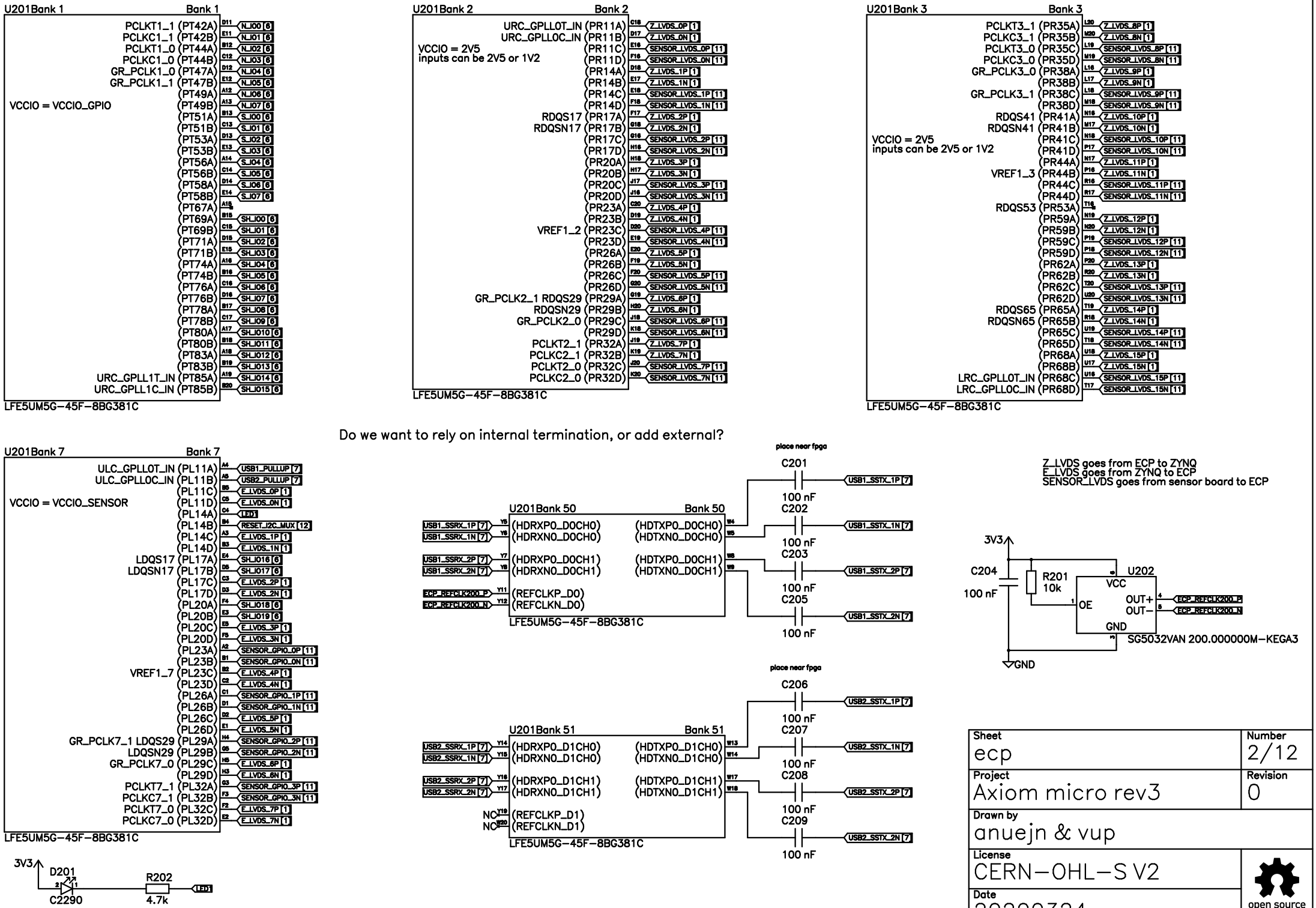


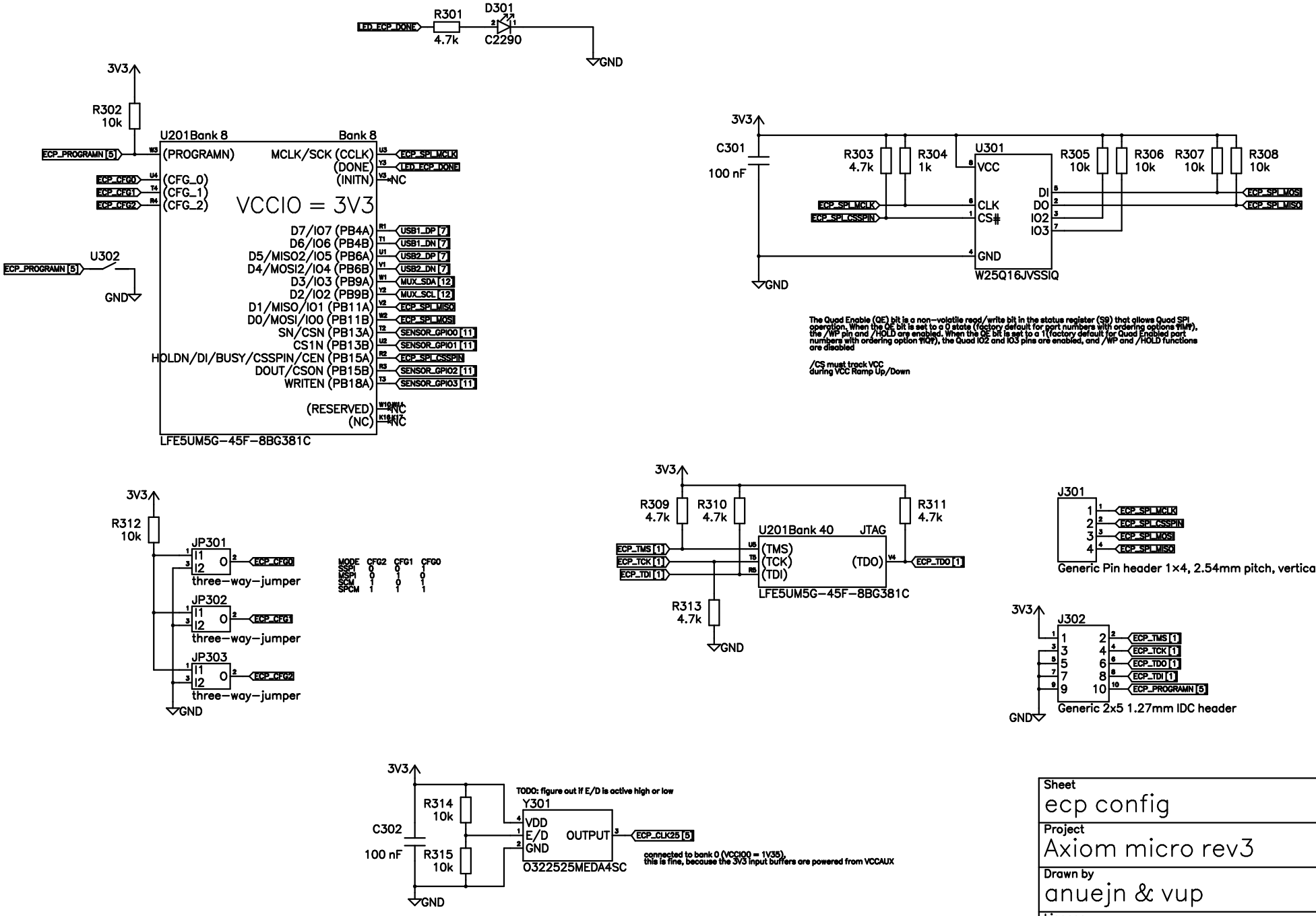






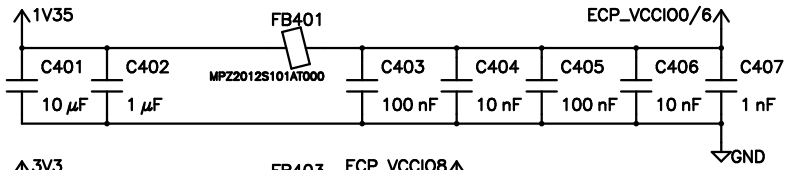
Sheet: zturn lite	Number: 1/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN-OHL-S V2	open source hardware
Date: 20200324	

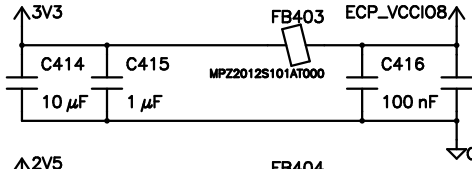

U201Bank 1
Bank 1
PCLKT1_1 (PT42A)
PCLKC1_1 (PT42B)
PCLKT1_0 (PT44A)
PCLKC1_0 (PT44B)
GR_PCLK1_0 (PT47A)
GR_PCLK1_1 (PT47B)
(PT49A)
VCCIO = VCCIO_GPIO
(PT49B)
(PT51A)
(PT51B)
(PT53A)
(PT53B)
(PT56A)
(PT56B)
(PT58A)
(PT58B)
(PT67A)
(PT69A)
(PT69B)
(PT71A)
(PT71B)
(PT74A)
(PT74B)
(PT76A)
(PT76B)
(PT78A)
(PT78B)
(PT80A)
(PT80B)
(PT83A)
(PT83B)
URC_GPLL1T_IN (PT85A)
URC_GPLL1C_IN (PT85B)
LFE5UM5G-45F-8BG381C
U201Bank 2
Bank 2
URC_GPLL0T_IN (PR11A)
URC_GPLL0C_IN (PR11B)
VCCIO = 2V5
inputs can be 2V5 or 1V2
(PR11C)
(PR11D)
(PR14A)
(PR14B)
(PR14C)
(PR14D)
RDQS17 (PR17A)
RDQSN17 (PR17B)
(PR17C)
(PR17D)
(PR20A)
(PR20B)
(PR20C)
(PR20D)
(PR23A)
(PR23B)
VREF1_2 (PR23C)
(PR23D)
(PR26A)
(PR26B)
(PR26C)
(PR26D)
GR_PCLK2_1 RDQS29 (PR29A)
RDQSN29 (PR29B)
GR_PCLK2_0 (PR29C)
(PR29D)
PCLKT2_1 (PR32A)
PCLKC2_1 (PR32B)
PCLKT2_0 (PR32C)
PCLKC2_0 (PR32D)
LFE5UM5G-45F-8BG381C
U201Bank 3
Bank 3
PCLKT3_1 (PR35A)
PCLKC3_1 (PR35B)
PCLKT3_0 (PR35C)
PCLKC3_0 (PR35D)
GR_PCLK3_0 (PR38A)
(PR38B)
GR_PCLK3_1 (PR38C)
(PR38D)
RDQS41 (PR41A)
RDQSN41 (PR41B)
VCCIO = 2V5
inputs can be 2V5 or 1V2
(PR41C)
(PR41D)
(PR44A)
VREF1_3 (PR44B)
(PR44C)
(PR44D)
RDQS53 (PR53A)
(PR59A)
(PR59B)
(PR59C)
(PR59D)
(PR62A)
(PR62B)
(PR62C)
(PR62D)
RDQS65 (PR65A)
RDQSN65 (PR65B)
(PR65C)
(PR65D)
(PR68A)
(PR68B)
LRC_GPLL0T_IN (PR68C)
LRC_GPLL0C_IN (PR68D)
LFE5UM5G-45F-8BG381C
Do we want to rely on internal termination, or add external?
U201Bank 7
Bank 7
ULC_GPLL0T_IN (PL11A)
ULC_GPLL0C_IN (PL11B)
(PL11C)
VCCIO = VCCIO_SENSOR
(PL11D)
(PL14A)
(PL14B)
(PL14C)
(PL14D)
LDQS17 (PL17A)
LDQSN17 (PL17B)
(PL17C)
(PL17D)
(PL20A)
(PL20B)
(PL20C)
(PL20D)
(PL23A)
(PL23B)
VREF1_7 (PL23C)
(PL23D)
(PL26A)
(PL26B)
(PL26C)
(PL26D)
GR_PCLK7_1 LDQS29 (PL29A)
LDQSN29 (PL29B)
GR_PCLK7_0 (PL29C)
(PL29D)
PCLKT7_1 (PL32A)
PCLKC7_1 (PL32B)
PCLKT7_0 (PL32C)
PCLKC7_0 (PL32D)
LFE5UM5G-45F-8BG381C
3V3
D201
C2290
R202
4.7k
LED1
place near fpga
C201
100 nF
C202
100 nF
C203
100 nF
C205
100 nF
U201Bank 50
Bank 50
(HDRXP0_D0CH0)
(HDRXN0_D0CH0)
(HDRXP0_D0CH1)
(HDRXN0_D0CH1)
(REFCLKP_D0)
(REFCLKN_D0)
(HDTXP0_D0CH0)
(HDTXN0_D0CH0)
(HDTXP0_D0CH1)
(HDTXN0_D0CH1)
LFE5UM5G-45F-8BG381C
place near fpga
C206
100 nF
C207
100 nF
C208
100 nF
C209
100 nF
U201Bank 51
Bank 51
(HDRXP0_D1CH0)
(HDRXN0_D1CH0)
(HDRXP0_D1CH1)
(HDRXN0_D1CH1)
(REFCLKP_D1)
(REFCLKN_D1)
(HDTXP0_D1CH0)
(HDTXN0_D1CH0)
(HDTXP0_D1CH1)
(HDTXN0_D1CH1)
LFE5UM5G-45F-8BG381C
Z_LVDS goes from ECP to ZYNQ
E_LVDS goes from ZYNQ to ECP
SENSOR_LVDS goes from sensor board to ECP
3V3
C204
100 nF
R201
10k
U202
VCC
OE
GND
OUT+
OUT-
SG5032VAN 200.000000M-KEGA3
GND
Sheet
ecp
Number
2/12
Project
Axiom micro rev3
Revision
0
Drawn by
anuejn & vup
License
CERN-OHL-S V2
Date
20200324
open source hardware

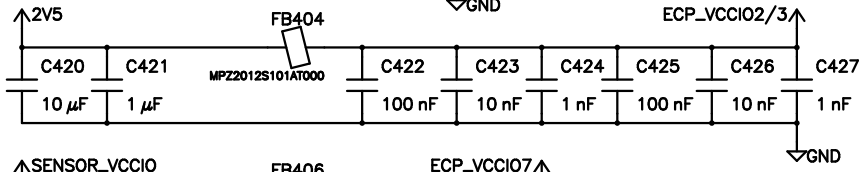


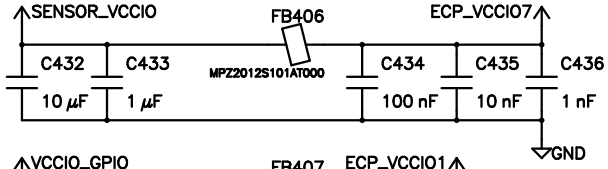
Sheet: ecp config	Number: 3/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN-OHL-S V2	open source hardware
Date: 20200324	

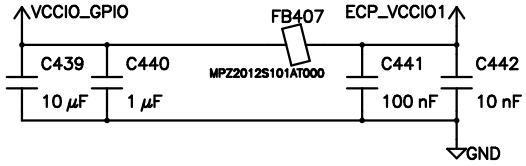
Place decoupling near FPGA, alternate 100n and 10n per pad per rail

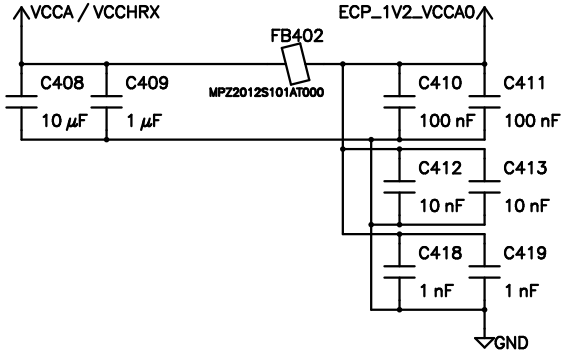


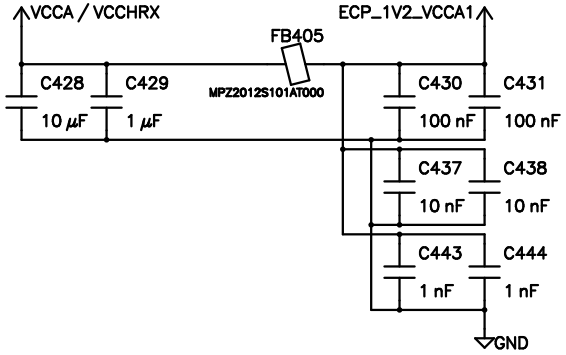


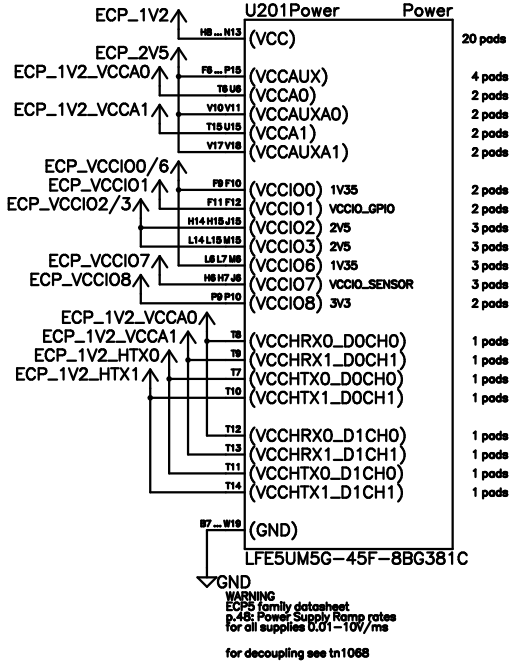


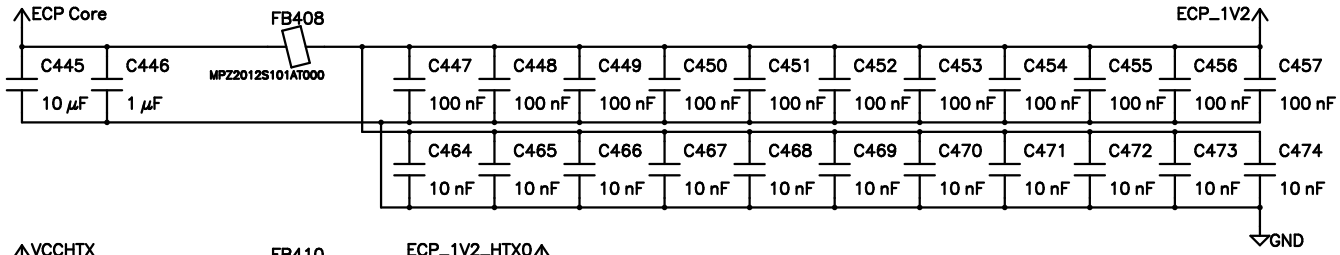


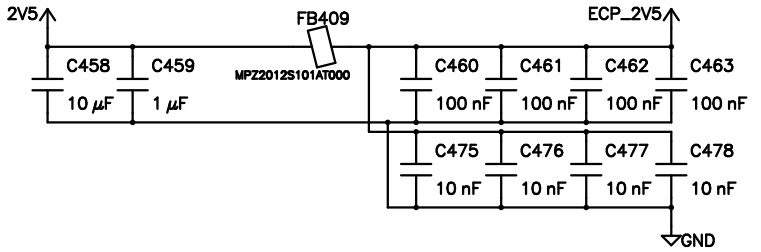


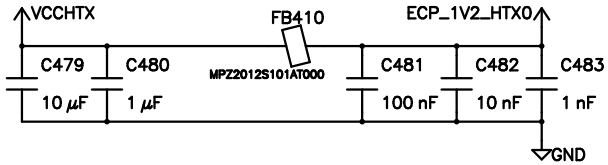


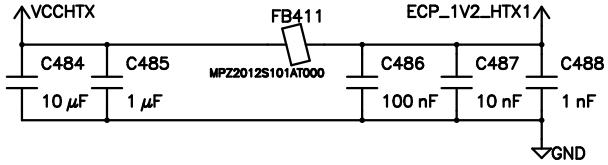




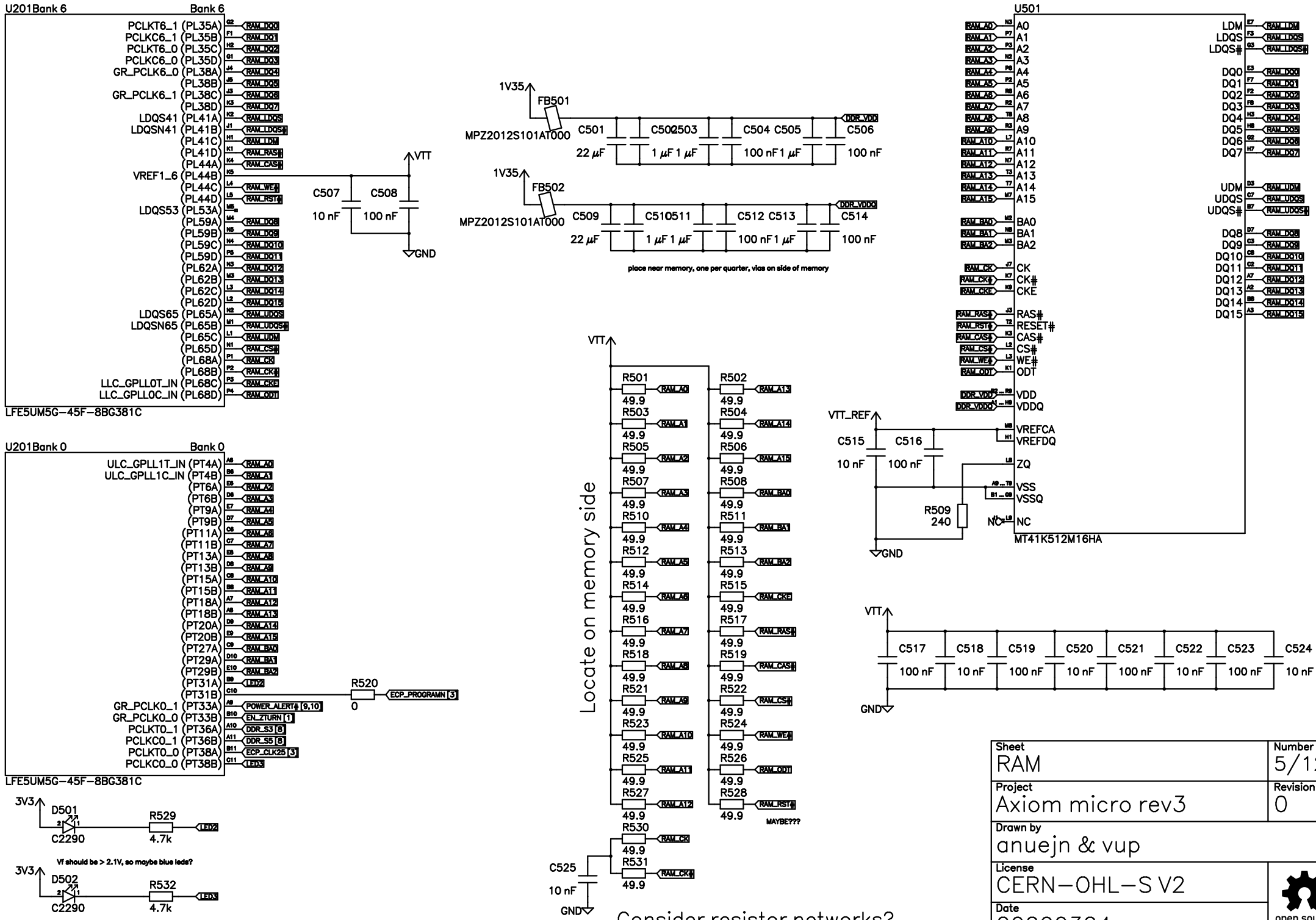




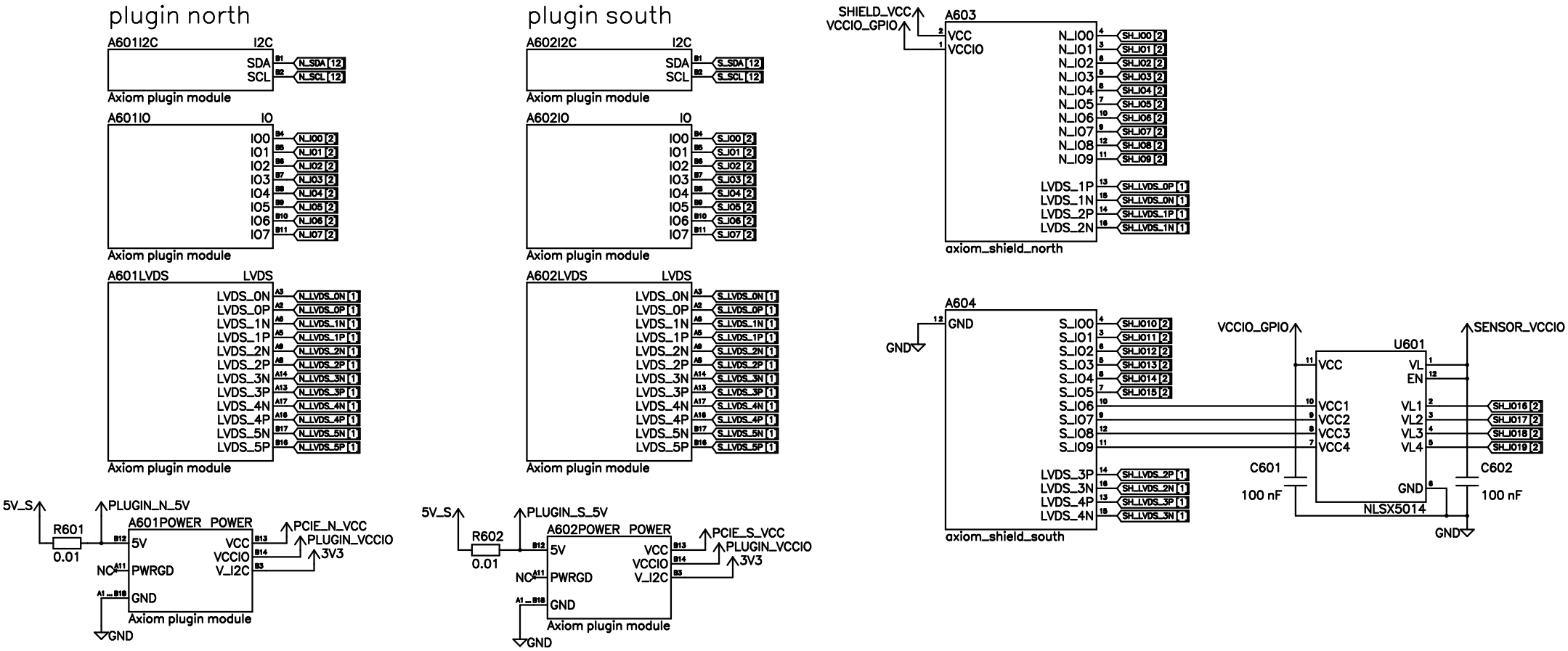




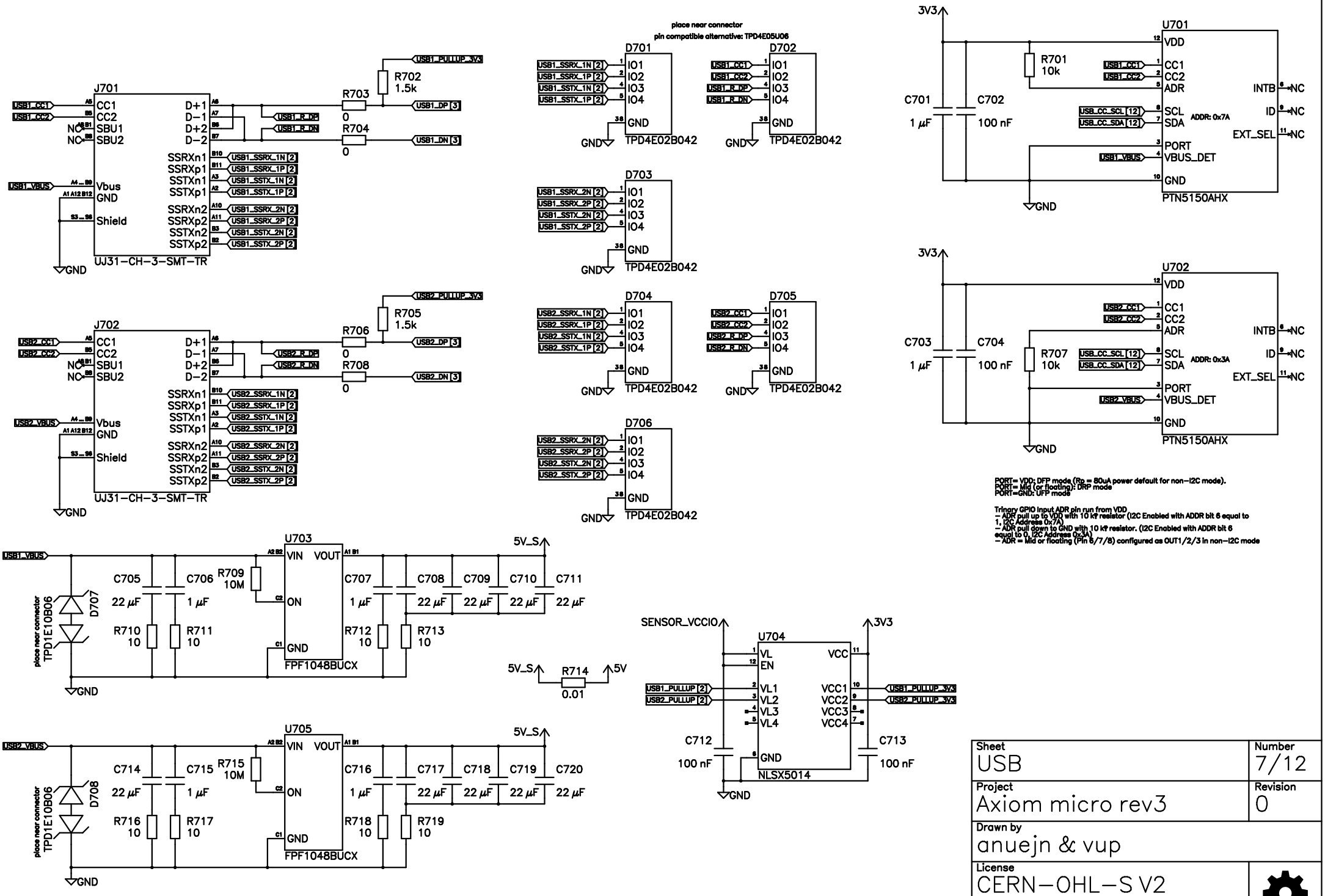
Sheet: ecp power	Number: 4/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN-OHL-S V2	open source hardware
Date: 20200324	



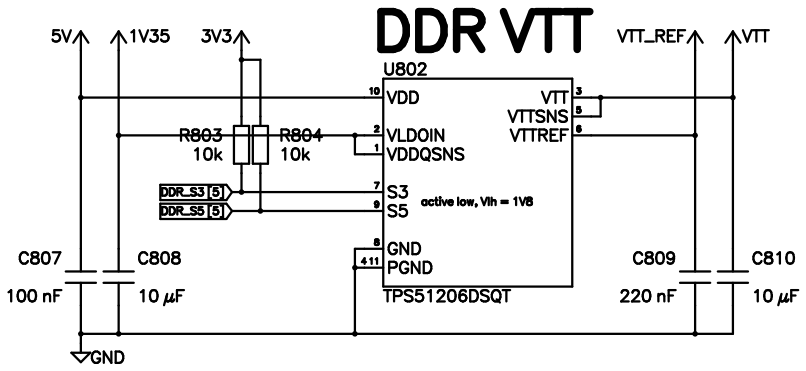
Sheet: RAM	Number: 5/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN-OHL-S V2	open source hardware
Date: 20200324	



Sheet: plugins / shield	Number: 6/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN-OHL-S V2	open source hardware
Date: 20200324	

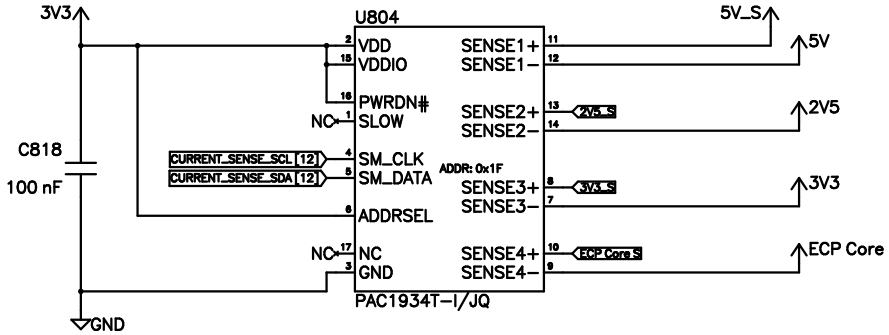


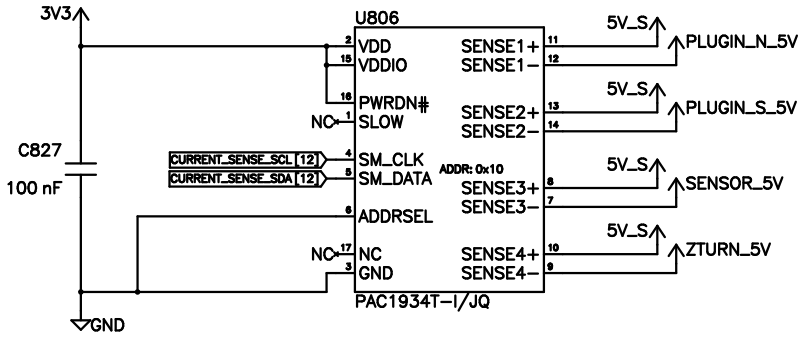
Sheet: USB	Number: 7/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN−OHL−S V2	
Date: 20200324	open source hardware

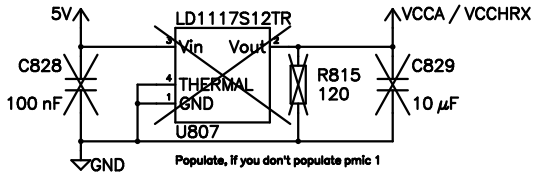


positive terminal of the VTT pin output capacitor(s) as a separate trace from the high–current path from VTT. Consider adding a low–pass R–C filter at the VTTSNS pin in case the ESR of the VTT output capacitor(s) is larger than 2 mΩ. The R–C filter time constant should be approximately the same or slightly lower than the time constant of the VTT output capacitance and ESR.

current sense resistors: 0805W8F100MT5E or CS05W8F100MT5E



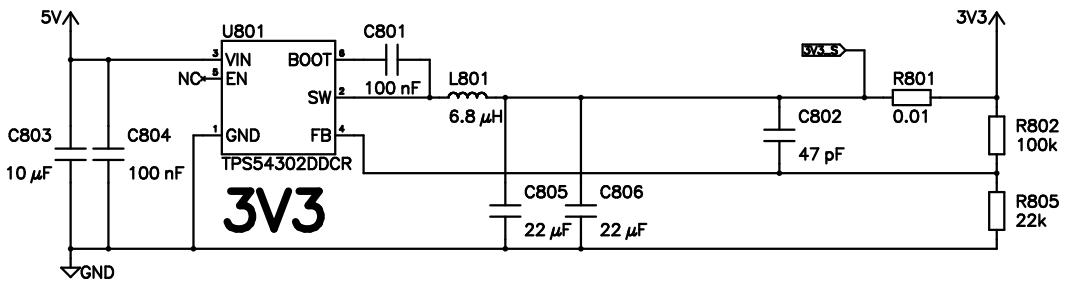


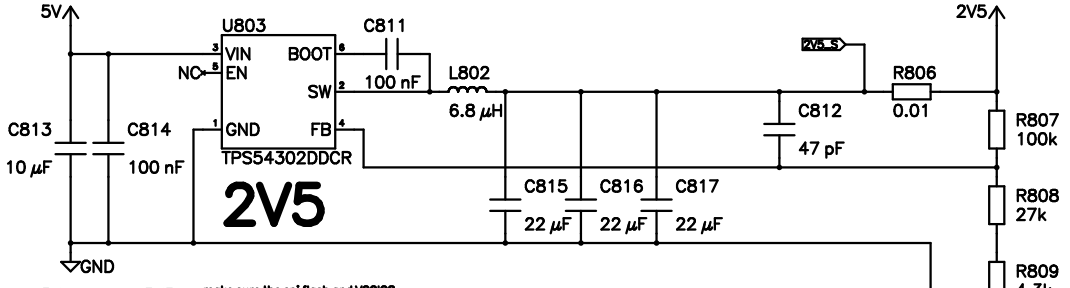


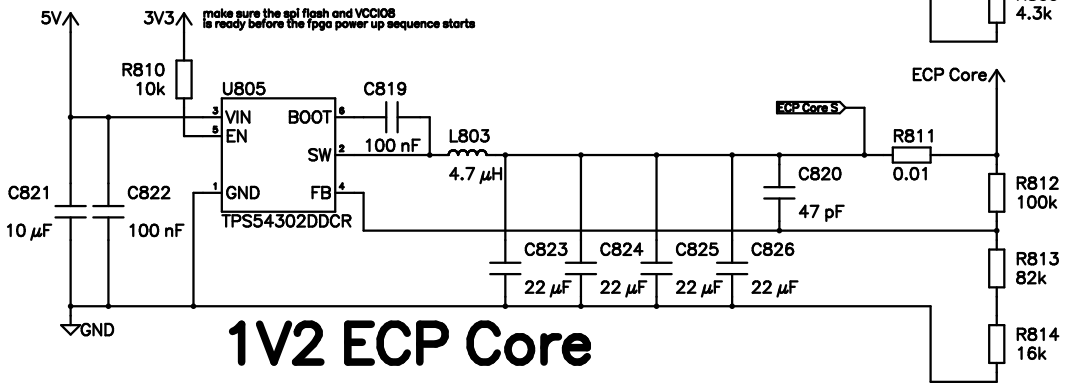
Populate, if you don't populate pmic 1

1V2 VCCA / VCCHRX

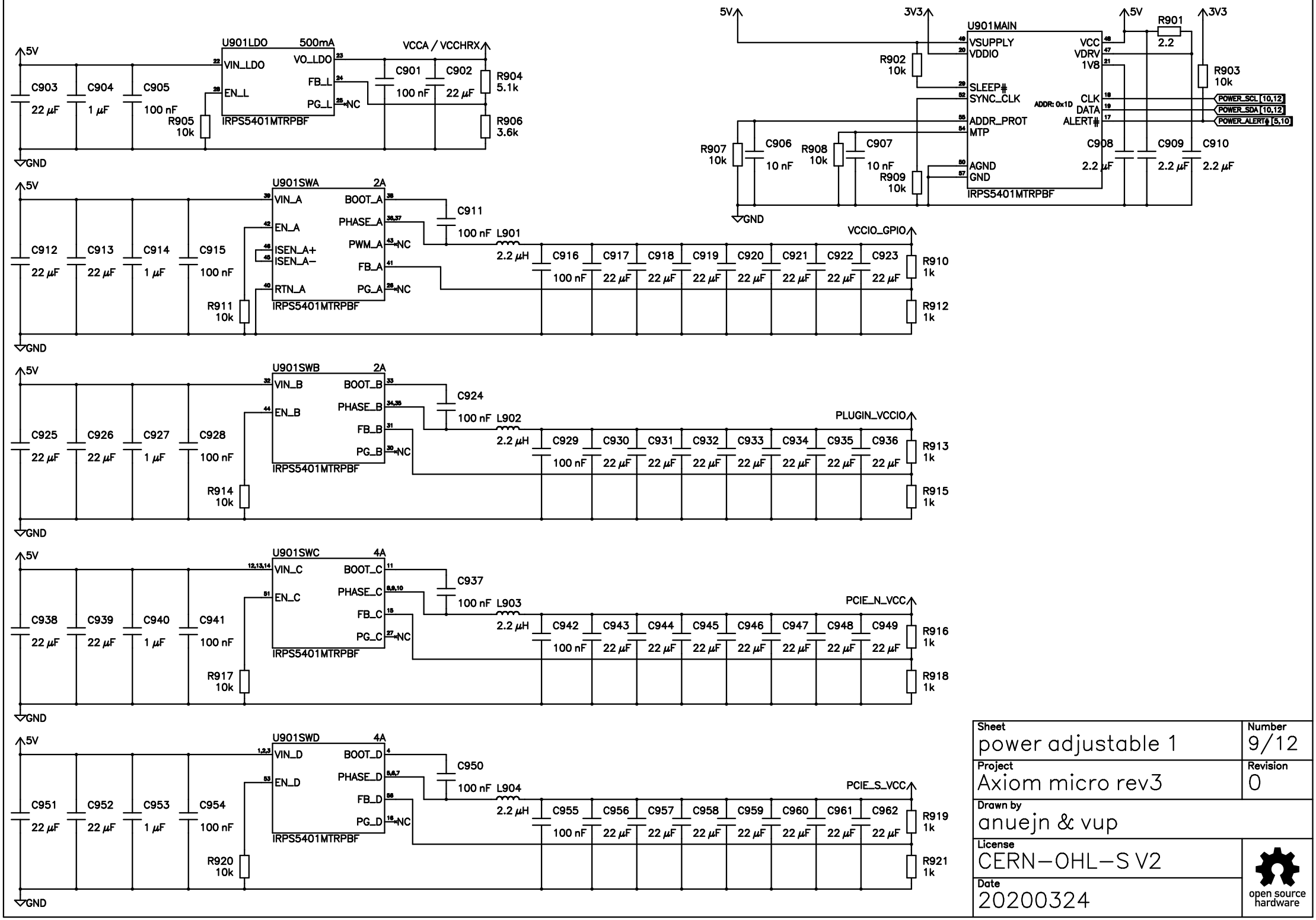
maybe add DNP resistor footprints for adjustable version?



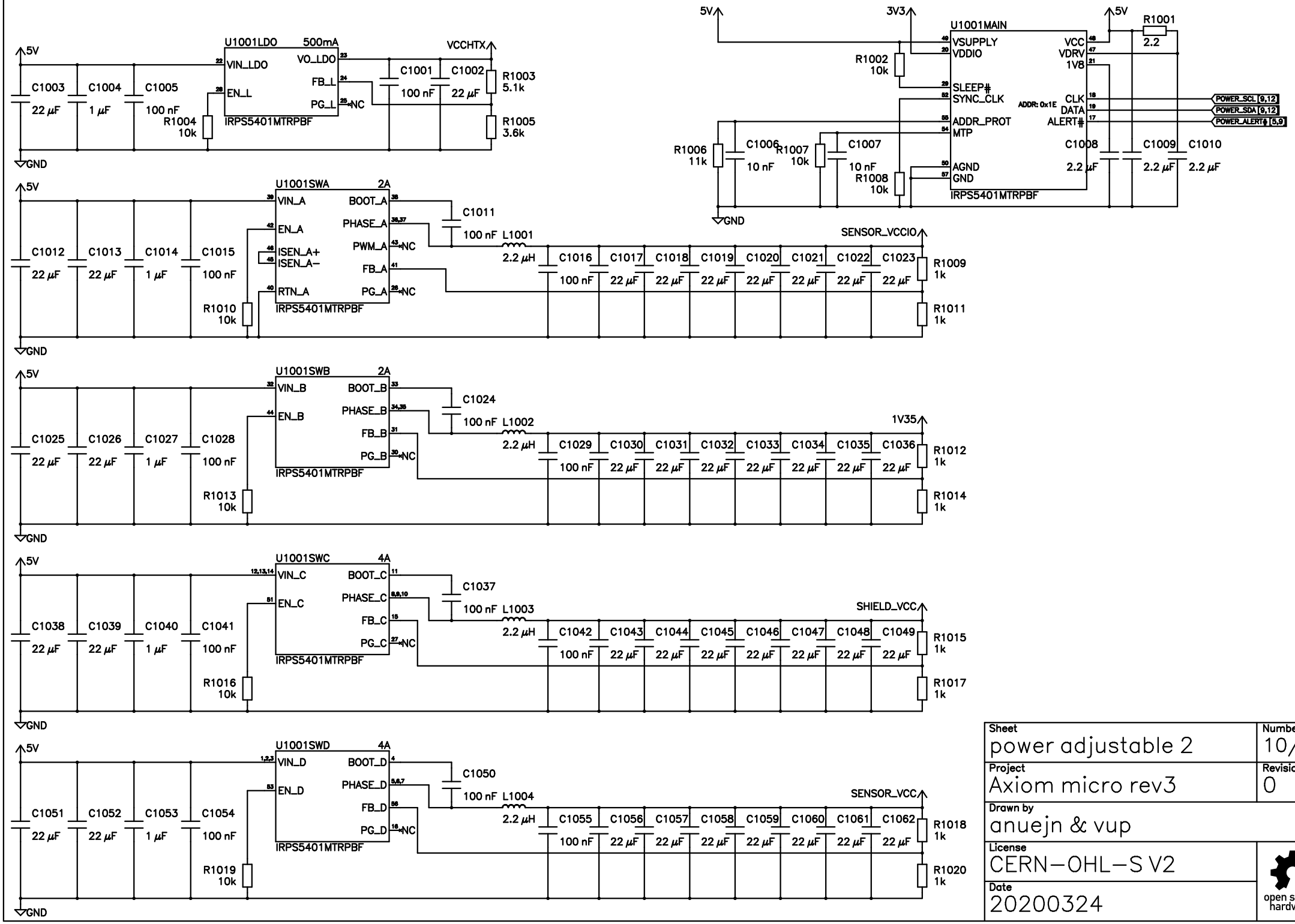




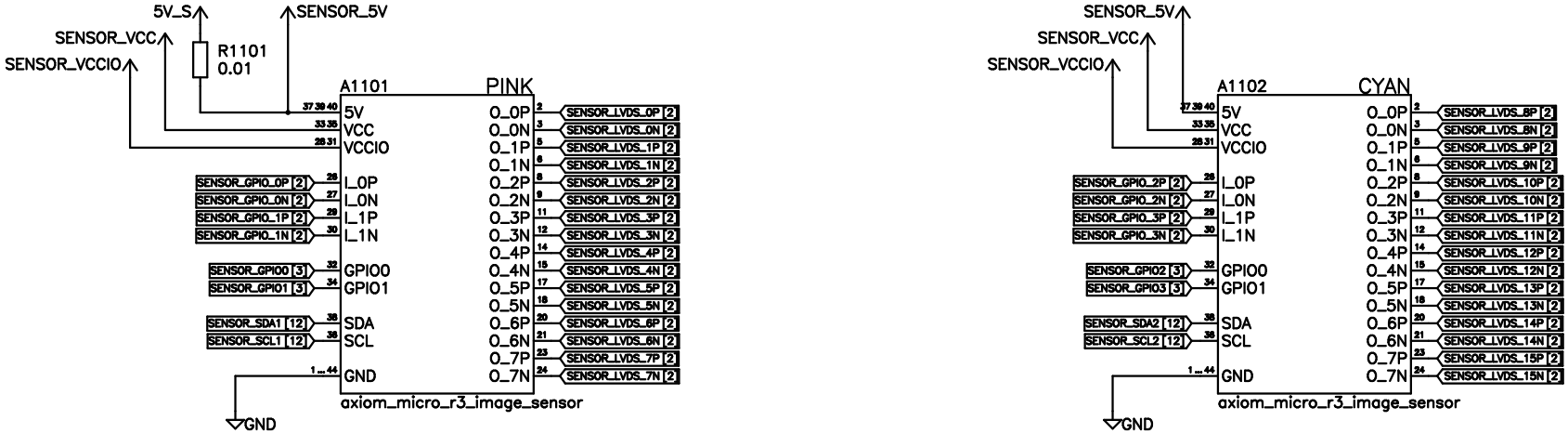
Sheet: power fixed / current sense	Number: 8/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN–OHL–S V2	open source hardware
Date: 20200324	

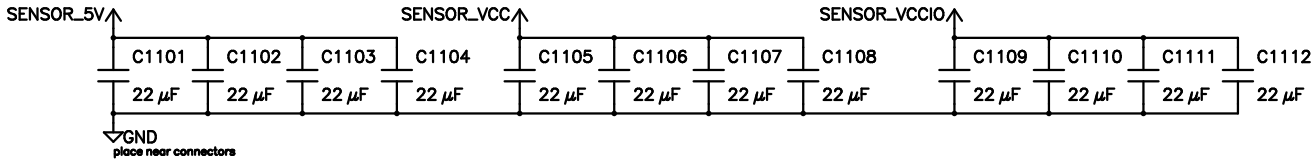


Sheet: power adjustable 1	Number: 9/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN−OHL−S V2	open source hardware
Date: 20200324	

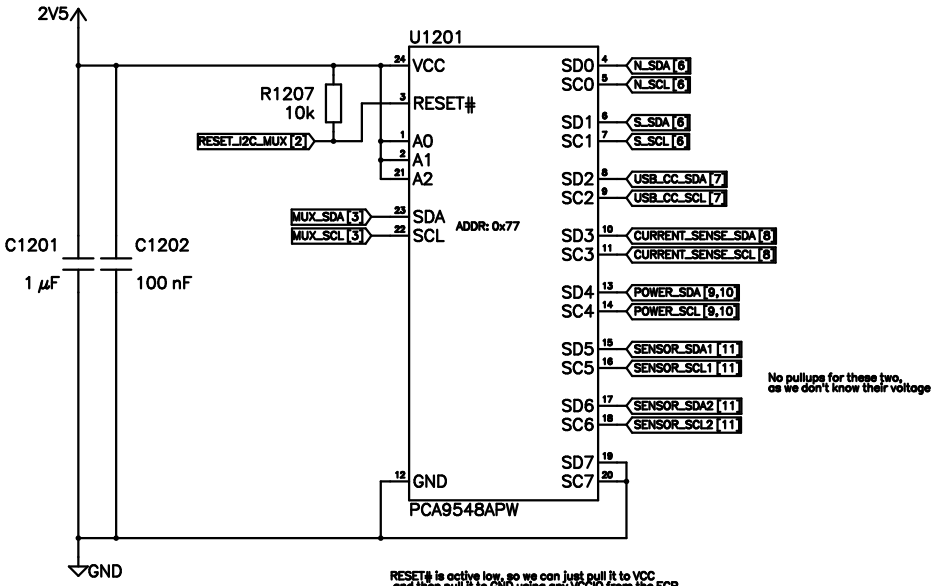


Sheet: power adjustable 2	Number: 10/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN−OHL−S V2	
Date: 20200324	open source hardware





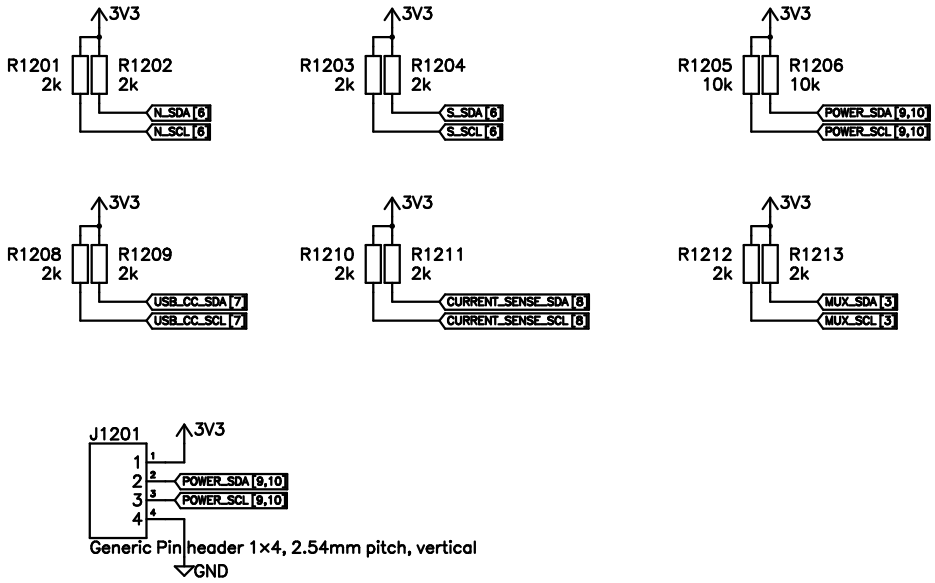
Sheet: image sensor	Number: 11/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN–OHL–S V2	open source hardware
Date: 20200324	



RESET# is active low, so we can just pull it to VCC
and then pull it to GND using any VCCIO from the ECP.
attention has to be paid to not make RESET# get over VCC,
as otherwise current flows from the RESET pin to the VCC pin.
this should be accomplishable by just making the fpga output HI-Z
if it is not pullen low

2V5 VCC means about 1V8 voltage clamping by the pass through translators
That sholud work for most applications, we just need to be careful with nothing with 1V2 is on the bus

Unused channels have to be tied to GND or VCC



Sheet: i2c mux	Number: 12/12
Project: Axiom micro rev3	Revision: 0
Drawn by: anuejn & vup	
License: CERN-OHL-S V2	open source hardware
Date: 20200324	