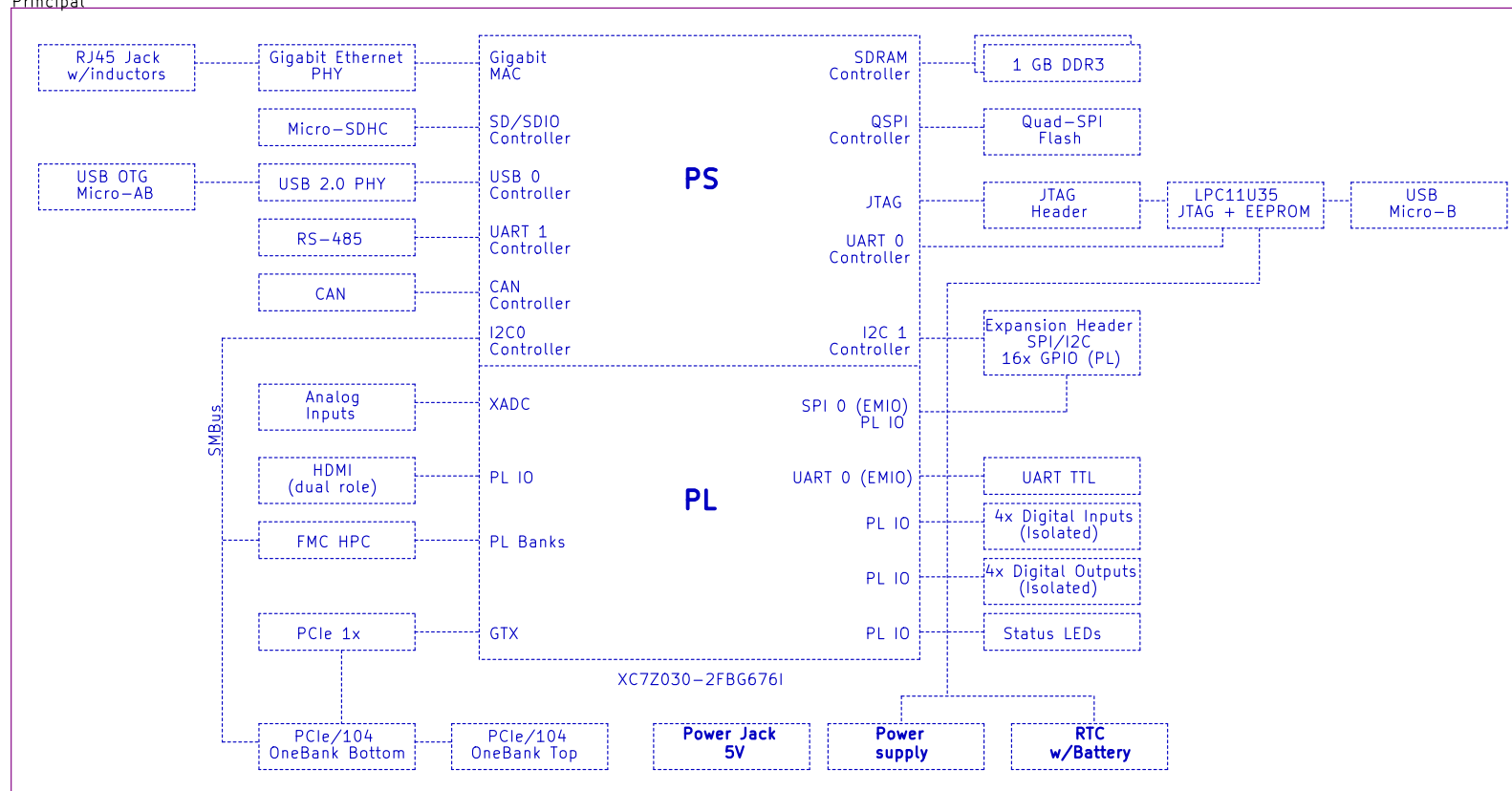


# Computadora Industrial Abierta Argentina

## CIAA-ACC

### Xilinx XC7Z030 (2x Cortex A9 + Kintex-7 FPGA)

Principal



Principal.sch



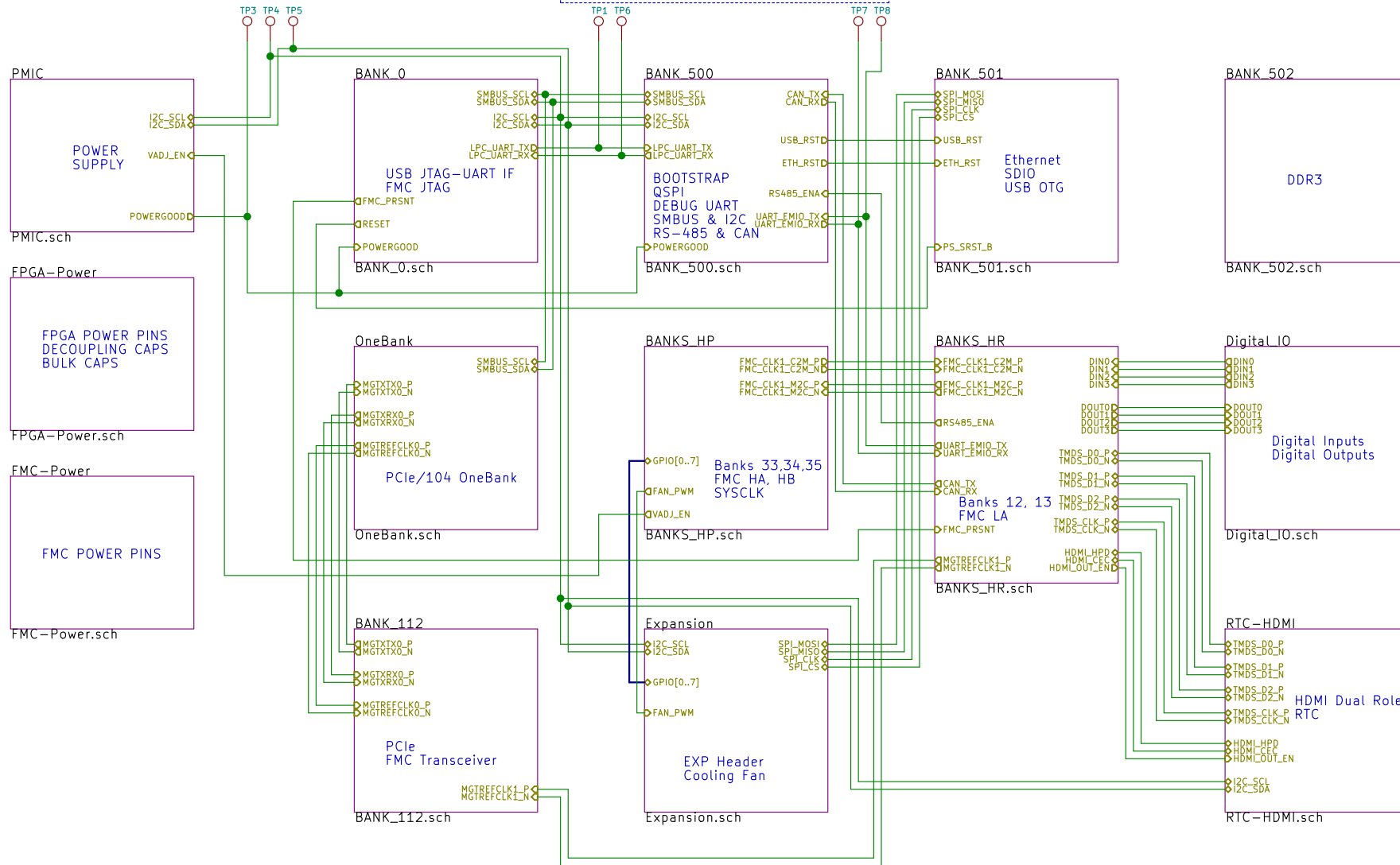
Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA\_CIAA\_ACC.txt' file.  
**COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)**

Sheet: /  
 File: ciao\_acc.sch

**Title: CIAA-ACC Block Diagram**

Size: A4 Date: 2016-10-17 Rev: V1.1  
 KiCad E.D.A. kicad (5.0.0-rc2-dev-37-g2c85de3ab) Id: 1/16

## Hierarchical Schematic



### FMC COMPATIBILITY NOTE:

Currents:  
3.3V: 3A  
VADJ: 2A  
12V: Not implemented

VIO\_B\_M2C: Not implemented  
VADJ: Powers the LA bank only  
Banks HA & HB: 1.5/1.8V only, selectable by switch

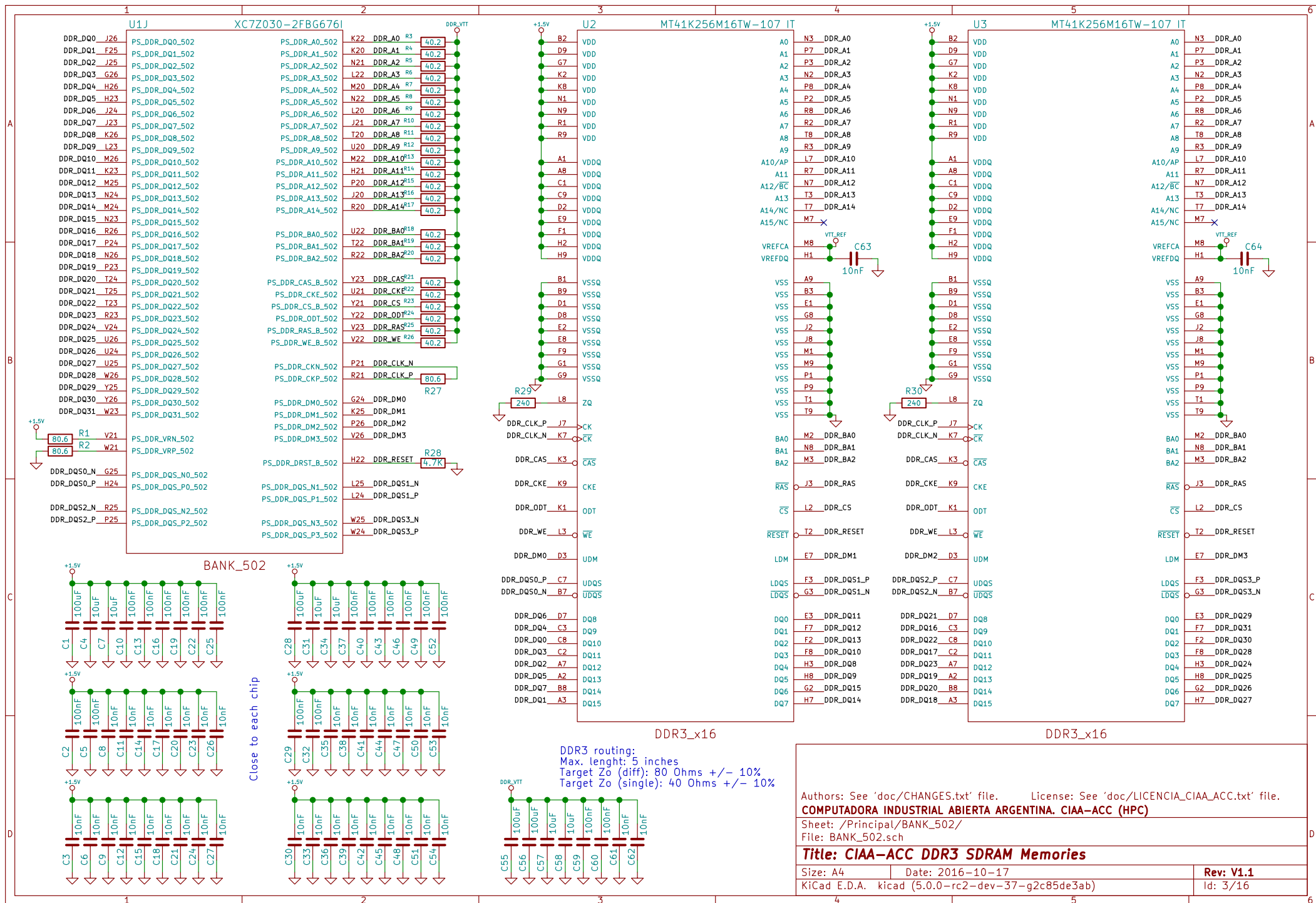
Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA\_CIAA\_ACC.txt' file.  
**COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)**

Sheet: /Principal/  
File: Principal.sch

**Title: CIAA-ACC Hierarchical schematic**

Size: A4 Date: 2016-10-17  
KiCad E.D.A. kicad (5.0.0-rc2-dev-37-g2c85de3ab)

Rev: V1.1  
Id: 2/16



**+1.0V 25A**

**DC Input +5V 10A**

**DDR\_VTT +0.75V**

**VADJ 2A**

**Power Supply**

- +1.8V 2A**: Circuit diagram using TPS65400.
- +3.3V 3.5A**: Circuit diagram using TPS65400.
- +1.2V 0.5A**: Circuit diagram using TPS65400.
- +1.5V 2A**: Circuit diagram using TPS65400.
- U9E**: I2C Address: 0x69. Last POWERGOOD signal, when it is active all voltages are in the right level.

Voltage	Power
+1V	25W
+1.2V	0.6W
+1.5V	3W
+1.8V	3.6W
+3.3V	11.55W
VADJ	6.6W
Total	50W

Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA\_CIAA\_ACC.txt' file.  
**COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)**  
Sheet: /Principal/PMIC/  
File: PMIC.sch  
**Title: CIAA-ACC Power supply**  
Size: A4 Date: 2016-10-17 Rev: V1.1  
KiCad E.D.A. kicad (5.0.0-rc2-dev-37-g2c85de3ab) Id: 4/16

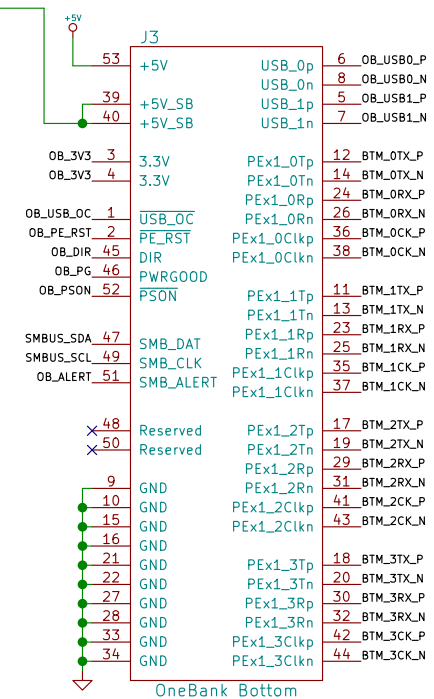
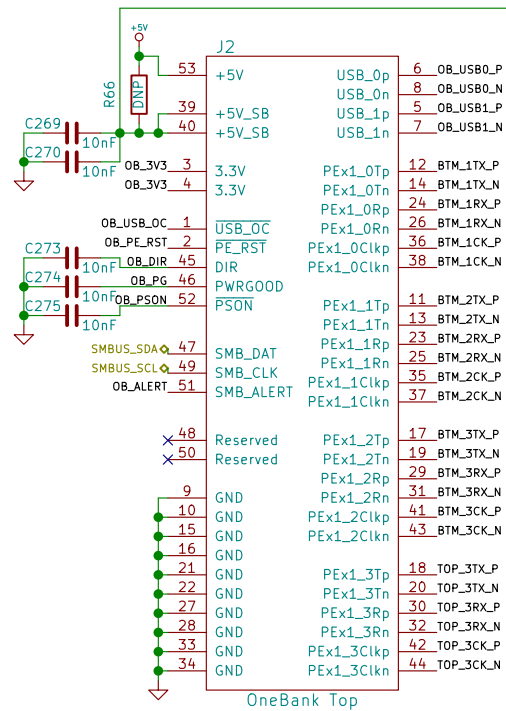
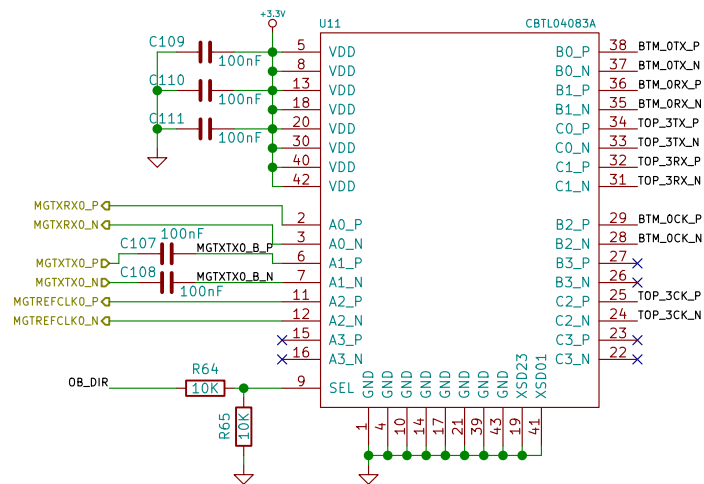
Voltage	Power
+1V	25W
+1.2V	0.6W
+1.5V	3W
+1.8V	3.6W
+3.3V	11.55W
VADJ	6.6W
Total	50W

Id: 4/16

## PCIe/104 OneBank Connector

H1 H3  
H2 H4  
Holes PCIe 104

## Mux/Demux Switch



PCIe OneBank device routing:  
Max. length: 4 inches  
Target Zo (diff): 85 Ohms +/- 15%  
Spacing between links: 20 mills  
Matching tolerance (intra-pair): 5 mills  
Matching tolerance (inter-pair): Not required

Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA\_CIAA\_ACC.txt' file.  
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

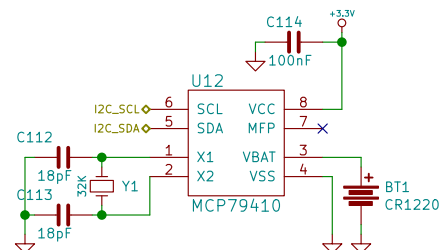
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File: OneBank.sch

**Title: CIAA-ACC PCIe/104 OneBank Connector**

Size: A4	Date: 2016-10-17
KiCad E.D.A. <a href="#">kicad (5.0.0-rc2-dev-37-g2c85de3ab)</a>	

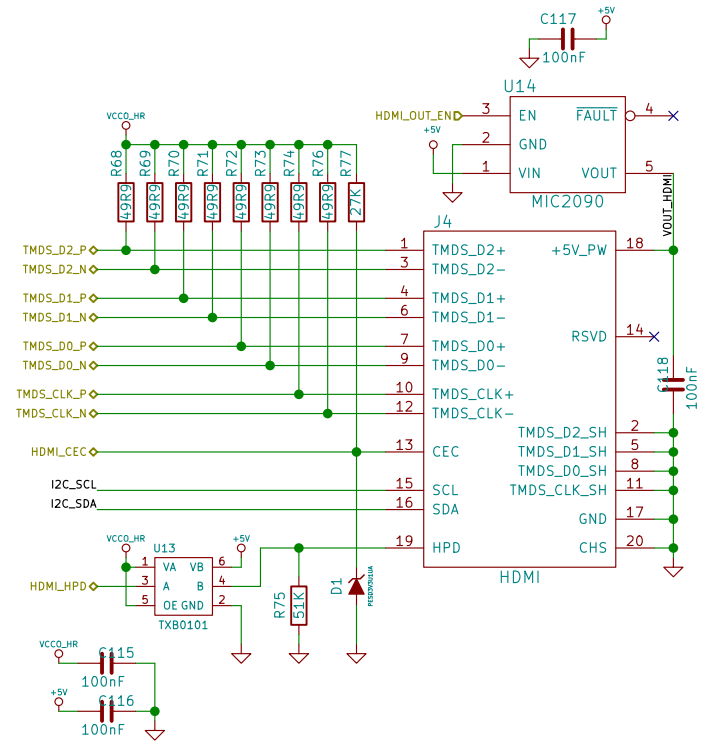
Rev: V1.1  
Id: 5/16

## HDMI / RTC



I2C Addresses: 0x6F & 0x57

## Real Time Clock



## HDMI DUAL ROLE

Note for HDMI: VCCO\_HR must be 3.3V

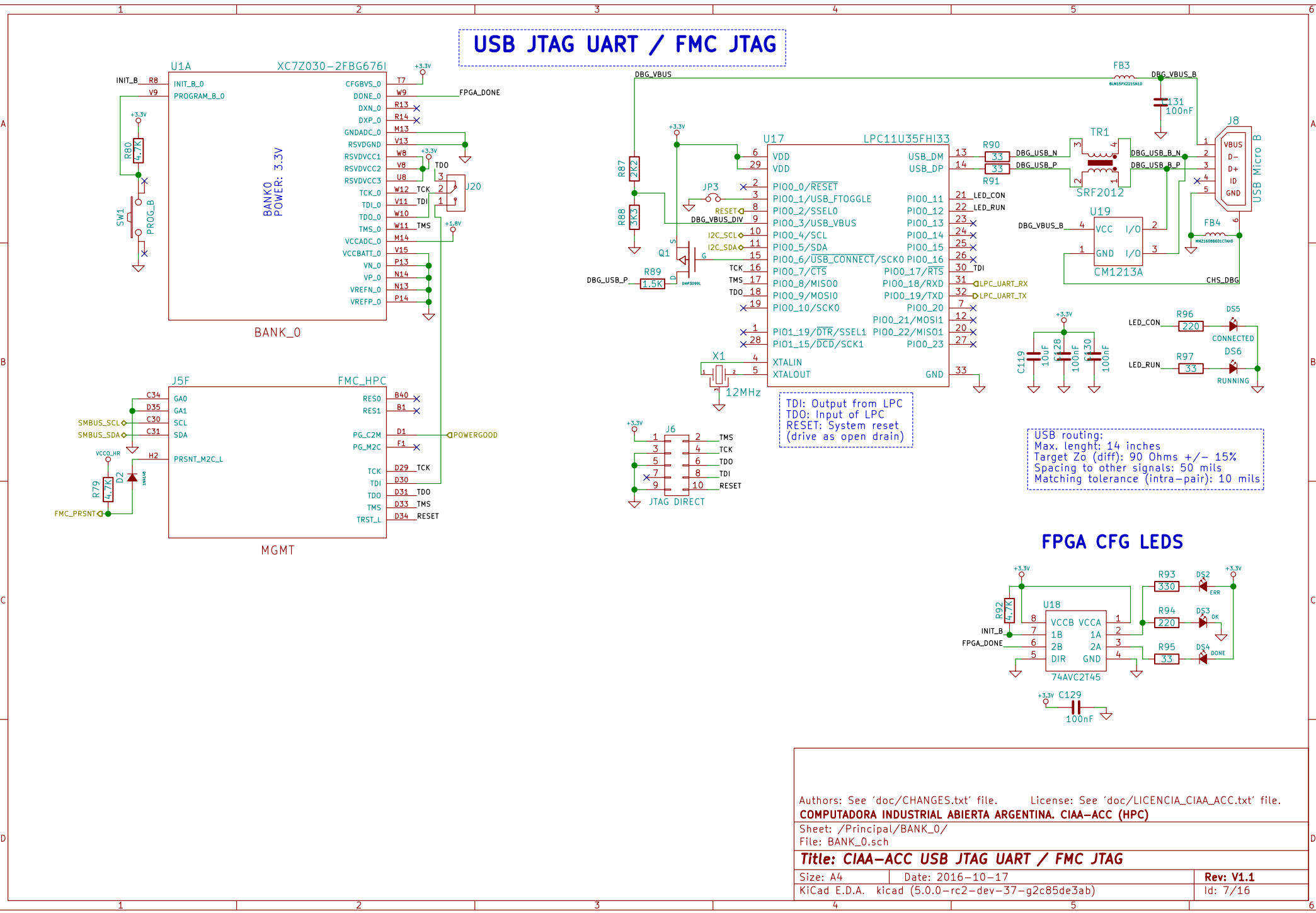
Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA\_CIAA\_ACC.txt' file.  
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

Sheet: /Principal/RTC-HDMI/  
File: RTC-HDMI.sch

Title: CIIA-ACC HDMI Dual Role

Size: A4	Date: 2016-10-17
KiCad E.D.A. kicad (5.0.0-rc2-dev-37-g2c85de3ab)	

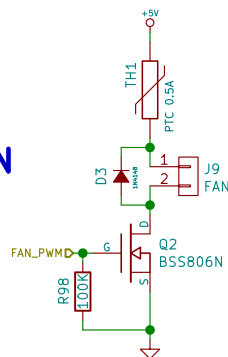
Rev: V1.1  
Id: 6/16



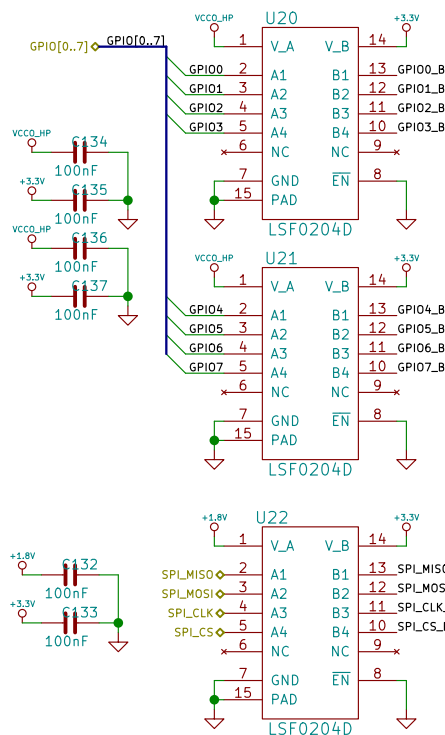
Id: 7/16

## Expansion Header / FAN Connector

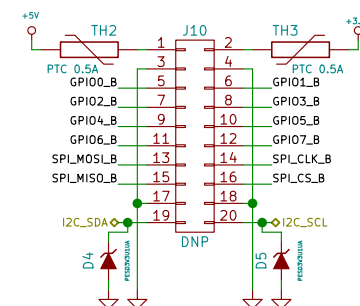
FAN



## Voltage level translator



## Expansion Header



GPIO Only available when  
VCCO\_HP = 1.8V



Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA\_CIAA\_ACC.txt' file.  
**COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)**

Sheet: /Principal/Expansion/  
File: Expansion.sch

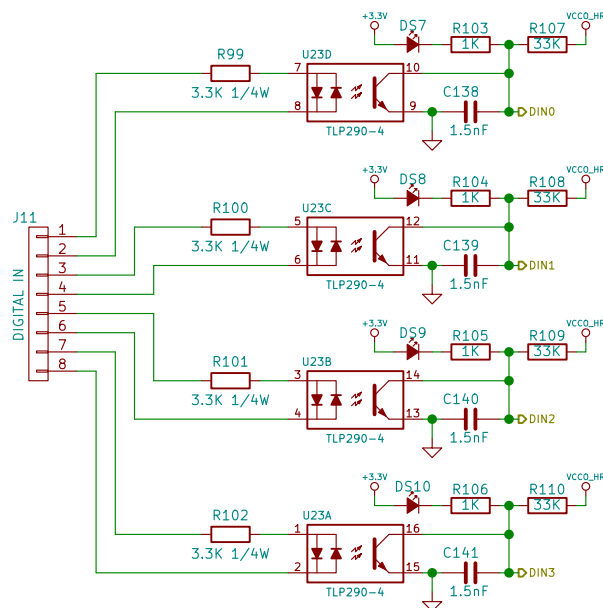
**Title: CIAA-ACC Expansion Header (GPIO, SPI, I2C) / FAN Connector**

Size: A4 Date: 2016-10-17  
KiCad E.D.A. kicad (5.0.0-rc2-dev-37-g2c85de3ab)

Rev: V1.1  
Id: 8/16

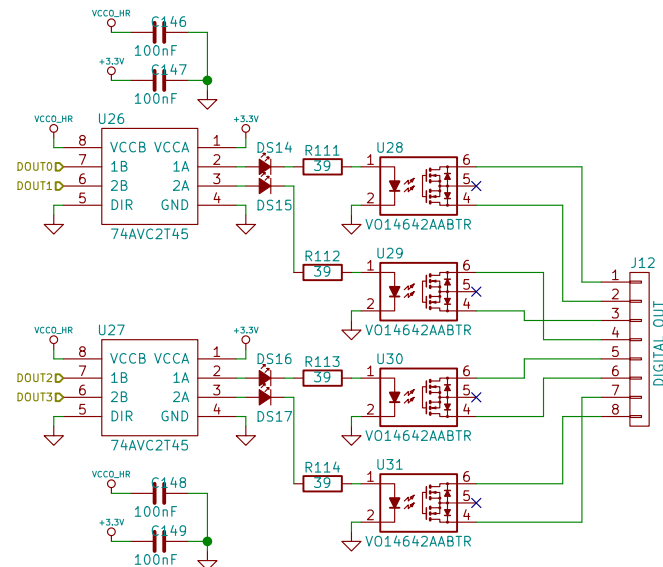


## Digital Inputs and Outputs



### ISOLATED DIGITAL INPUTS

Range: 12 to 24 V



### ISOLATED DIGITAL OUTPUTS

Range: up to 60 V

Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA\_CIAA\_ACC.txt' file.

**COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)**

Sheet: /Principal/Digital\_I/O/

File: Digital\_I/O.sch

**Title: CIAA-ACC Digital Inputs and Outputs**

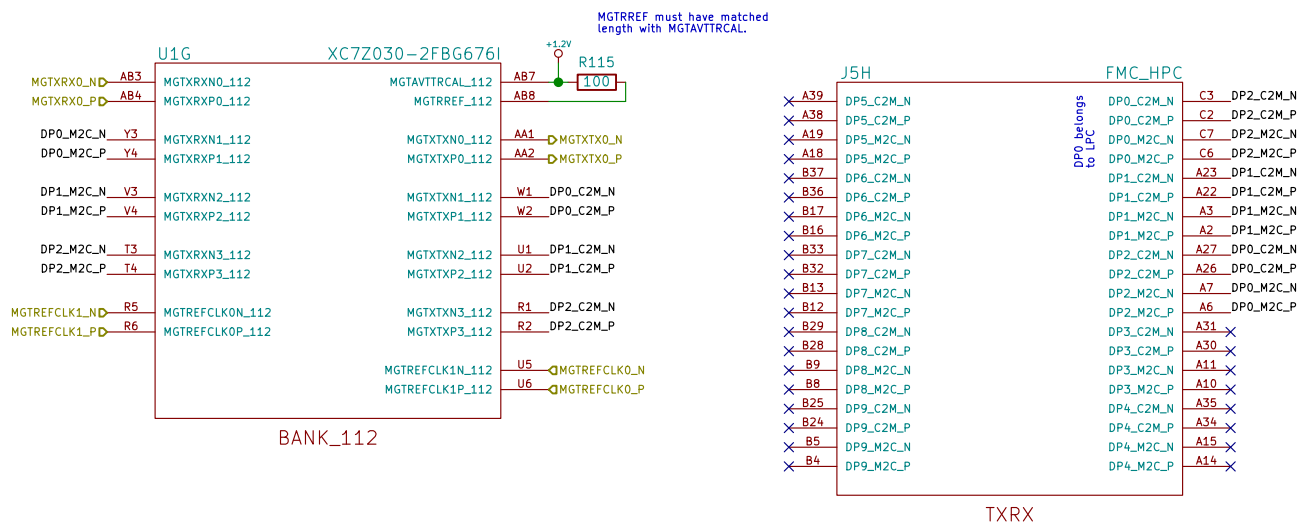
Size: A4 Date: 2016-10-17

KiCad E.D.A. kicad (5.0.0-rc2-dev-37-g2c85de3ab)

**Rev: V1.1**

Id: 9/16

## PCIe / FMC Transceiver



Coupling capacitor for transceivers must be in FMC mezzanine card.

PCIe routing:  
Target Zo (diff): 85 Ohms +/- 15%  
Spacing between links: 20 mils  
Matching tolerance (intra-pair): 5 mils  
Matching tolerance (inter-pair): Not required

Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA\_CIAA\_ACC.txt' file.

**COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)**

Sheet: /Principal/BANK\_112/

File: BANK\_112.sch

**Title: CIAA-ACC FPGA PCIe / FMC transceiver**

Size: A4

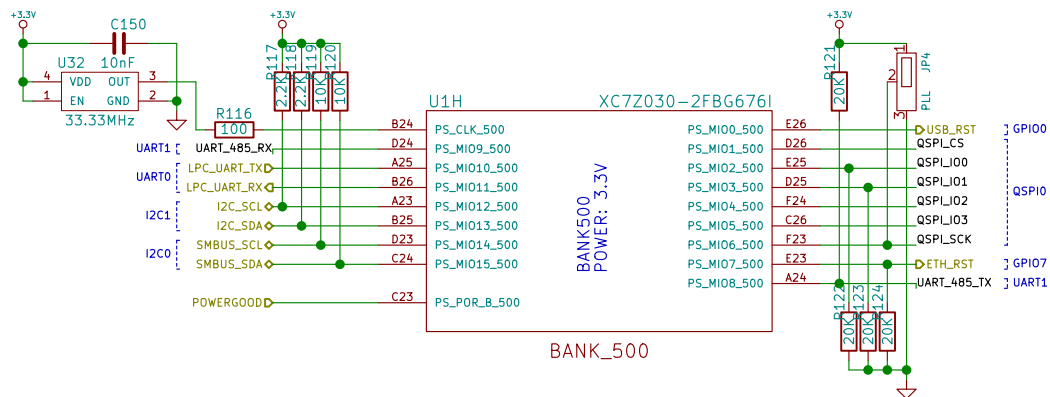
Date: 2016-10-17

Rev: V1.1

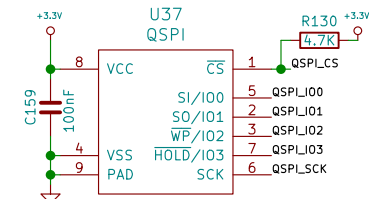
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Id: 10/16

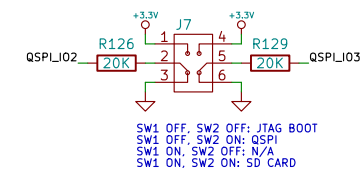
**UART, QSPI, I2C, CAN, RS485**



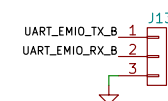
## QSPI



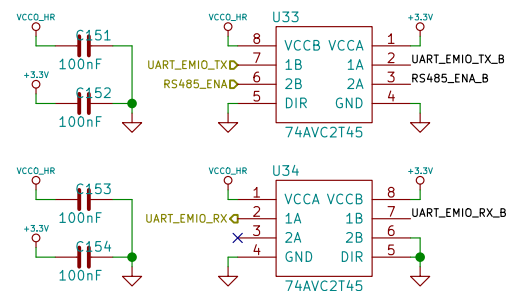
QSPI Routing:  
Target Zo: 50 Ohms +/- 5%  
Spacing to other signals: 3w  
Matching tolerance: 3 mm



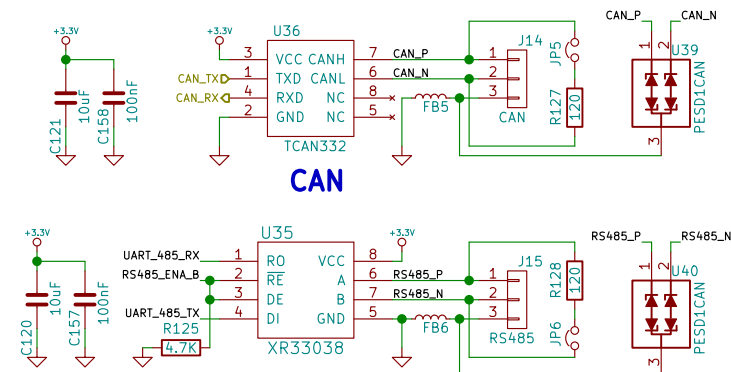
## EMIO UART



## BOOT SELECTOR



## RS-485



Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA\_CIAA\_ACC.txt' file.

COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

Sheet: /Principal/BANK\_500/

File: BANK\_500.sch

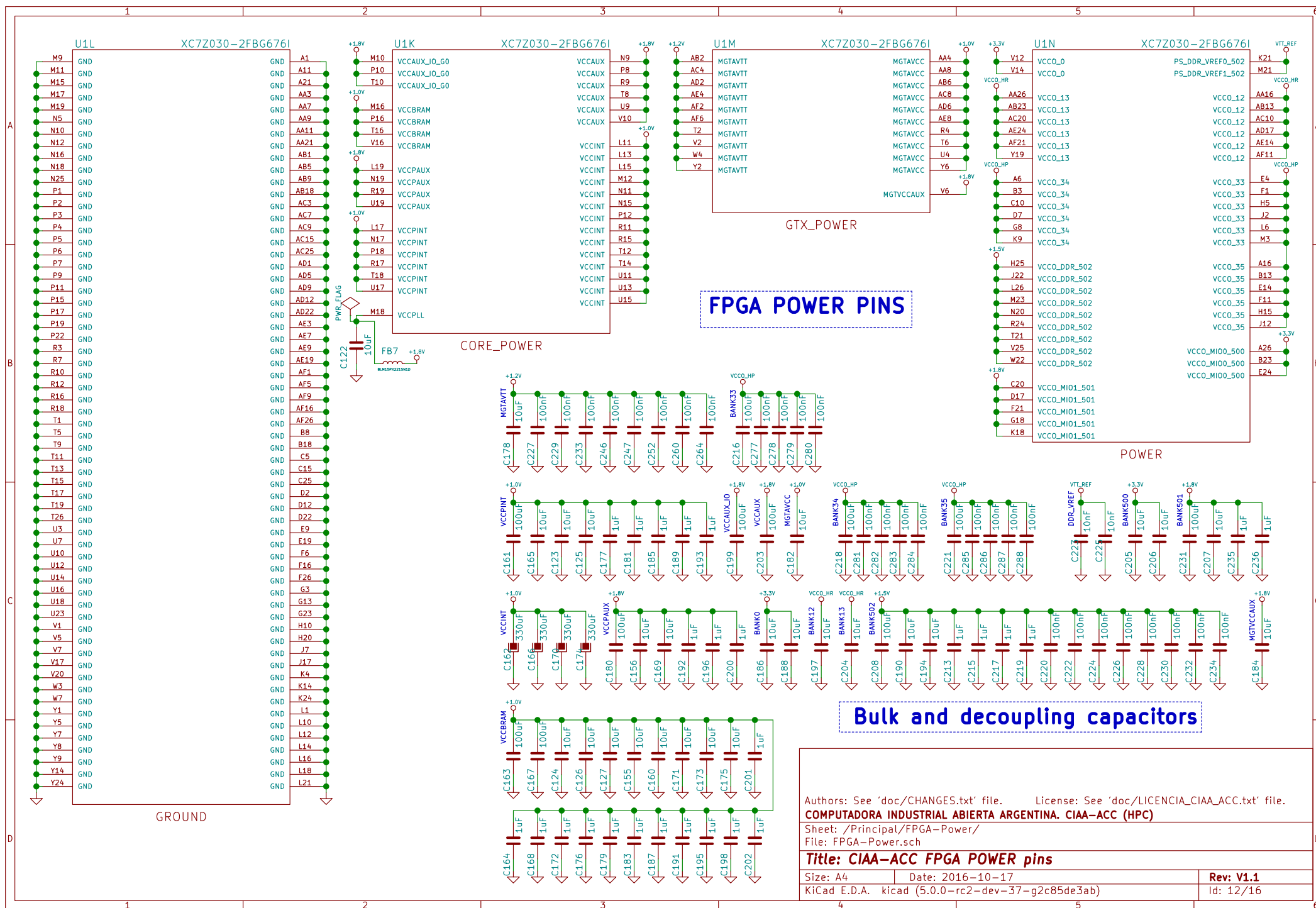
**Title: CIAA-ACC UART, QSPI, I2C, CAN, RS485**

Size: A4	Date: 2016-10-17
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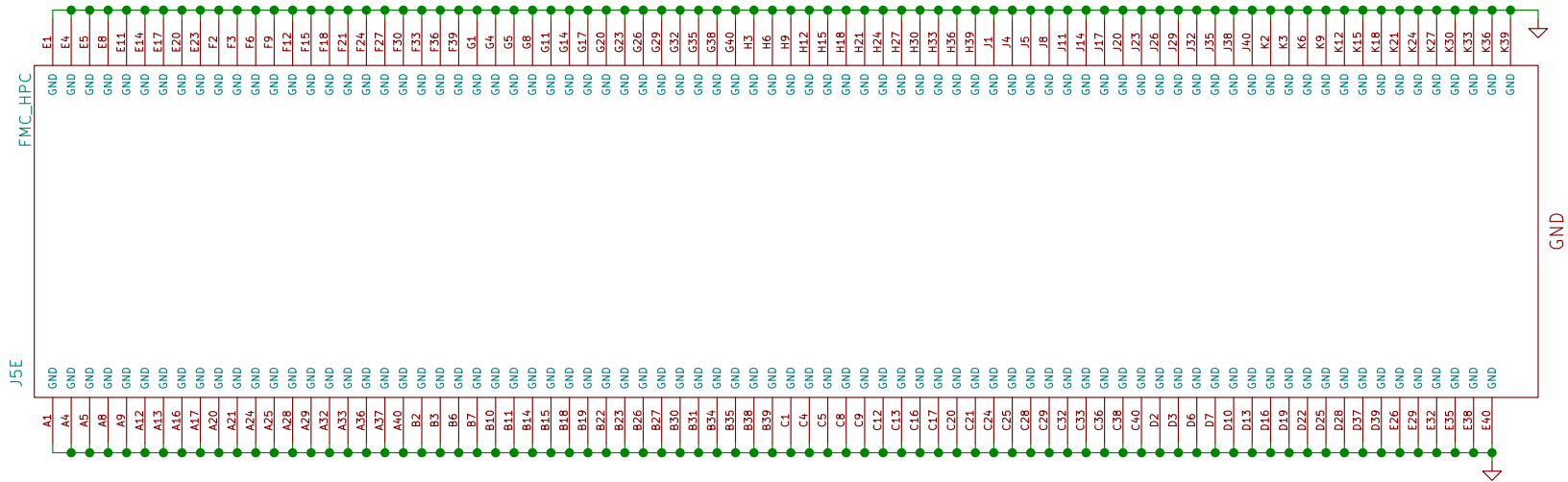
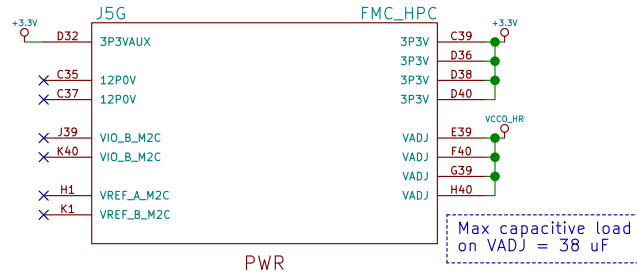
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KiCad E.D.A.	kiCad (5.0.0-rc2-dev-37-g2c85de3ab)

Rev: V1.1

Id: 11/16



## FMC POWER PINS



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**COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)**

Sheet: /Principal/FMC-Power/

File: FMC-Power.sch

**Title: CIAA-ACC FMC POWER pins**

Size: A4

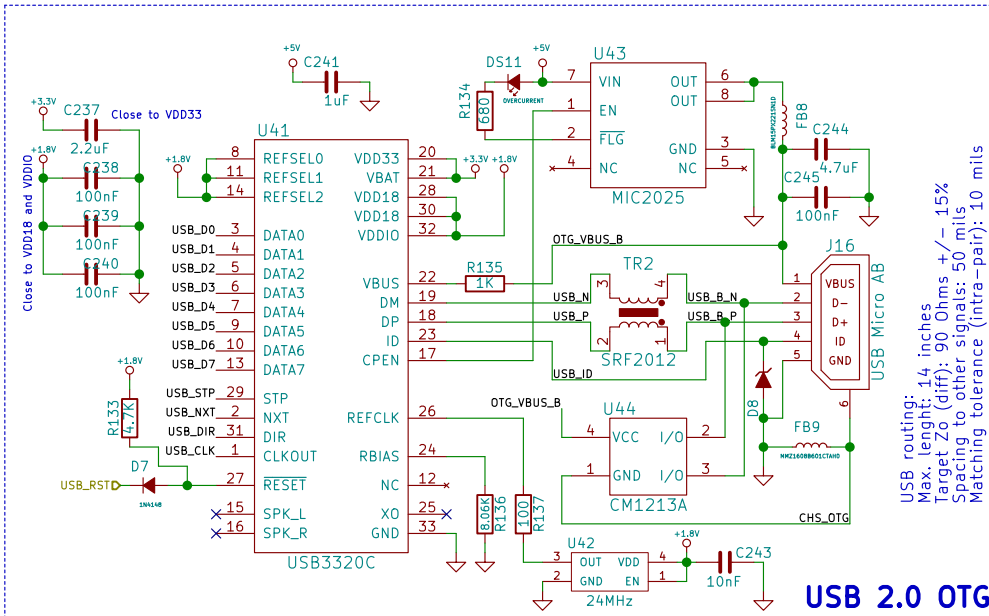
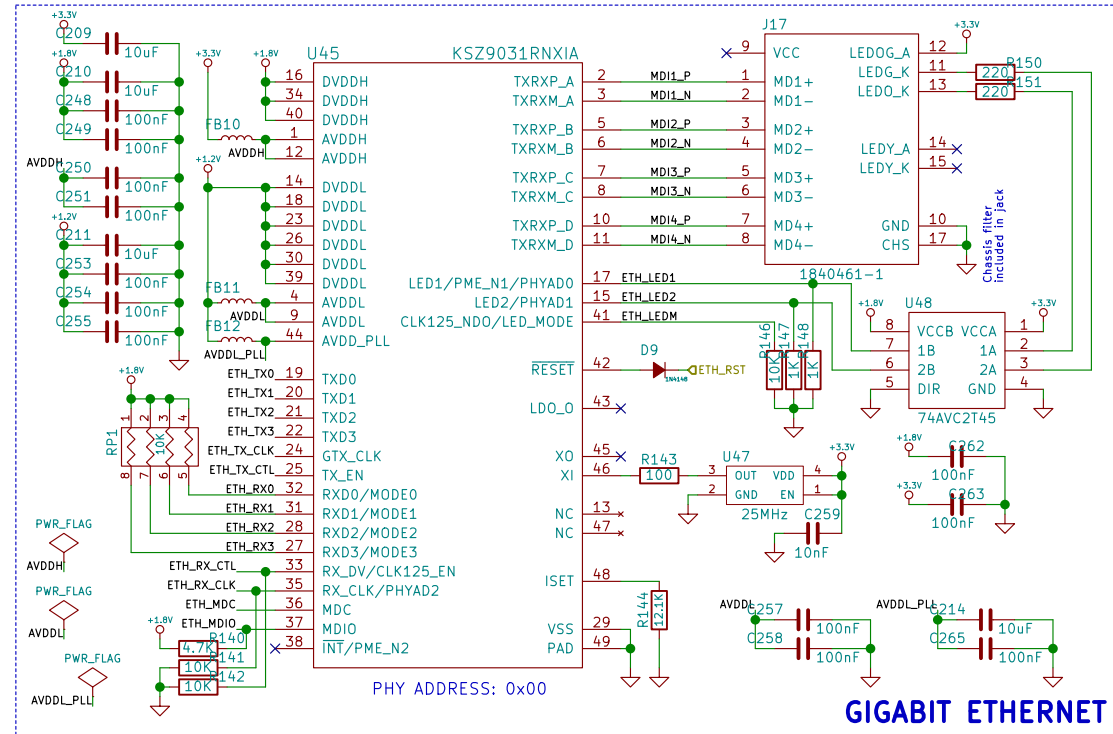
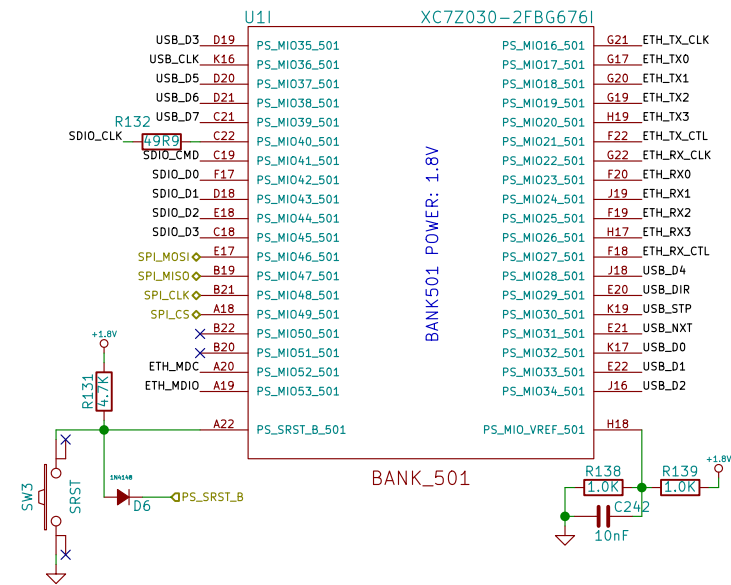
Date: 2016-10-17

Rev: V1.1

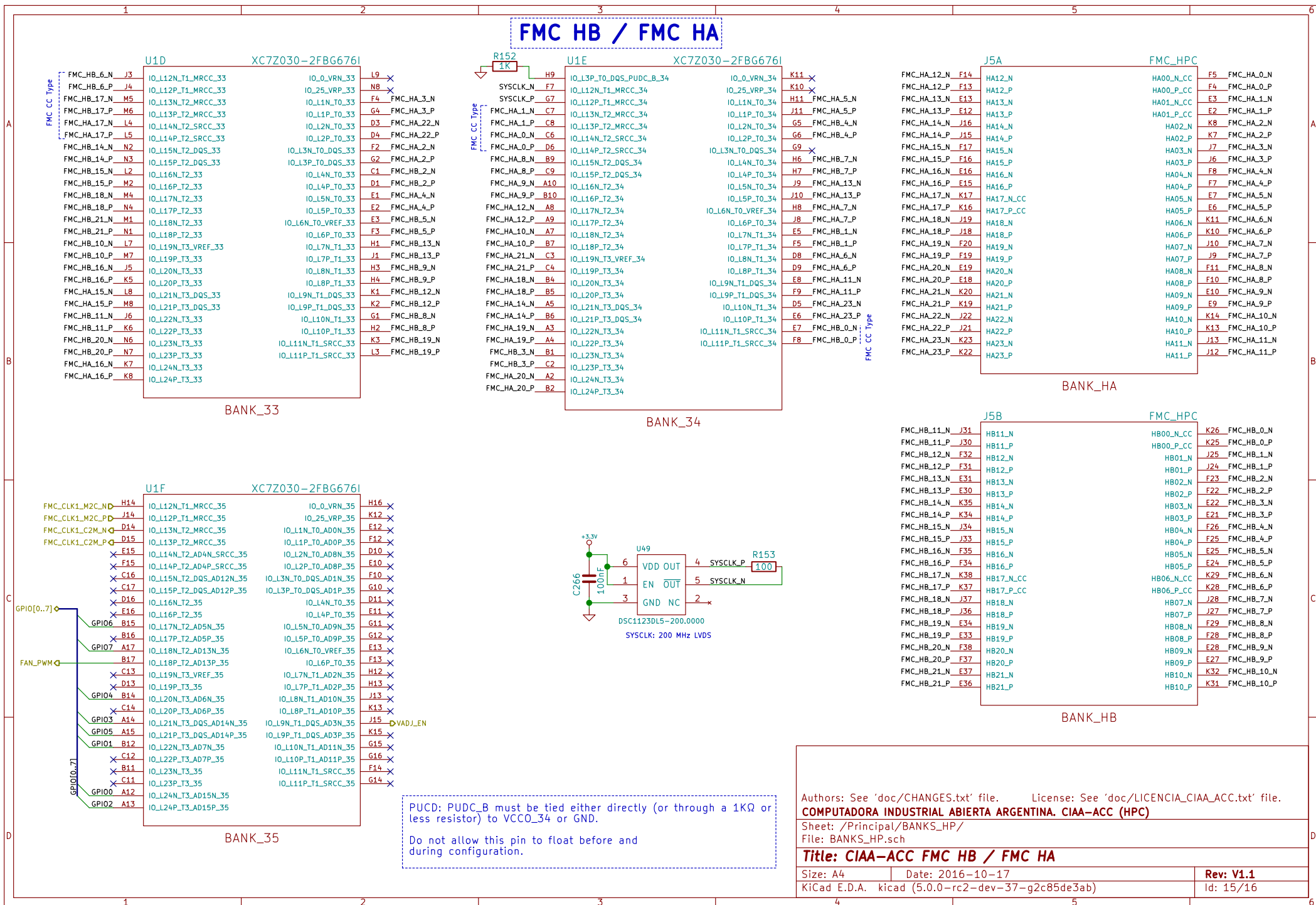
KiCad E.D.A. kicad (5.0.0-rc2-dev-37-g2c85de3ab)

Id: 13/16

## ETH, SDIO, USB OTG

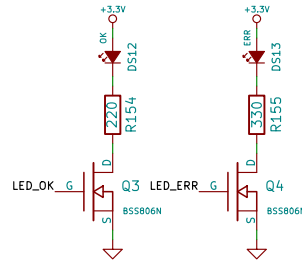


# FMC HB / FMC HA





# FMC LA / FPGA BANKS 12, 13



U1B XC7Z030-2FBG6761	
FMC_LA_1_N AD13	IO_L12N_T1_MRCC_12
FMC_LA_1_P AC13	IO_L12P_T1_MRCC_12
FMC_CLK0_C2M_P AD14	IO_L13N_T2_MRCC_12
FMC_CLK0_M2C_N AB14	IO_L13P_T2_MRCC_12
FMC_CLK0_M2C_P AB15	IO_L14N_T2_SRCC_12
FMC_LA_30_N AD15	IO_L14P_T2_SRCC_12
FMC_LA_30_P AD16	IO_L15N_T2_DQS_12
FMC_LA_20_N AF14	IO_L15P_T2_DQS_12
FMC_LA_20_P AF15	IO_L16N_T2_12
FMC_LA_28_N AE15	IO_L16P_T2_12
FMC_LA_28_P AE16	IO_L17N_T2_12
FMC_LA_33_N AF17	IO_L17P_T2_12
FMC_LA_33_P AE17	IO_L18N_T2_12
FMC_LA_11_N AA17	IO_L18P_T2_12
FMC_LA_11_P Y17	IO_L19N_T3_VREF_12
FMC_LA_23_N AB16	IO_L19P_T3_12
FMC_LA_23_P AB17	IO_L20N_T3_12
FMC_LA_25_N AC16	IO_L20P_T3_12
FMC_LA_25_P AC17	IO_L21N_T3_DQS_12
FMC_LA_10_N AA14	IO_L21P_T3_DQS_12
FMC_LA_10_P AA15	IO_L22N_T3_12
FMC_LA_19_N Y15	IO_L22P_T3_12
FMC_LA_19_P Y16	IO_L23N_T3_12
FMC_LA_12_N W15	IO_L23P_T3_12
FMC_LA_12_P W16	IO_L24N_T3_12
	IO_L24P_T3_12

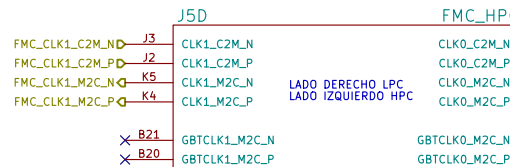
BANK\_12

U1C XC7Z030-2FBG6761	
FMC_LA_18_N AC24	IO_L12N_T1_MRCC_13
FMC_LA_18_P AC23	IO_L12P_T1_MRCC_13
FMC_LA_17_N AD21	IO_L13N_T2_MRCC_13
FMC_LA_17_P AD20	IO_L13P_T2_MRCC_13
FMC_LA_26_N AC22	IO_L14N_T2_SRCC_13
FMC_LA_26_P AC21	IO_L14P_T2_SRCC_13
FMC_PRSNTD AF19	IO_L15N_T2_DQS_13
FMC_LA_21_N AE21	IO_L15P_T2_DQS_13
FMC_LA_21_P AE20	IO_L16N_T2_13
FMC_LA_31_N AD19	IO_L16P_T2_13
FMC_LA_31_P AD18	IO_L17N_T2_13
FMC_LA_27_N AF18	IO_L17P_T2_13
FMC_LA_27_P AE18	IO_L18N_T2_13
FMC_LA_22_N Y20	IO_L18P_T2_13
FMC_LA_22_P W20	IO_L19N_T3_VREF_13
FMC_LA_29_N AB20	IO_L19P_T3_13
FMC_LA_29_P AA20	IO_L20N_T3_13
FMC_LA_32_N AC19	IO_L20P_T3_13
FMC_LA_32_P AC18	IO_L21N_T3_DQS_13
FMC_LA_24_N AB19	IO_L21P_T3_DQS_13
FMC_LA_24_P AA19	IO_L22N_T3_13
FMC_LA_15_N W19	IO_L22P_T3_13
FMC_LA_15_P W18	IO_L23N_T3_13
FMC_LA_16_N AA18	IO_L23P_T3_13
FMC_LA_16_P Y18	IO_L24N_T3_13
	IO_L24P_T3_13

BANK\_13

J5C FMC_HPC	
FMC_LA_17_N D21	LA17_N_CC
FMC_LA_17_P D20	LA17_P_CC
FMC_LA_18_N C23	LA18_N_CC
FMC_LA_18_P C22	LA18_P_CC
FMC_LA_19_N H23	LA19_N
FMC_LA_19_P H22	LA19_P
FMC_LA_20_N G22	LA20_N
FMC_LA_20_P G21	LA20_P
FMC_LA_21_N H26	LA21_N
FMC_LA_21_P H25	LA21_P
FMC_LA_22_N G25	LA22_N
FMC_LA_22_P G24	LA22_P
FMC_LA_23_N D24	LA23_N
FMC_LA_23_P D23	LA23_P
FMC_LA_24_N H29	LA24_N
FMC_LA_24_P H28	LA24_P
FMC_LA_25_N G28	LA25_N
FMC_LA_25_P G27	LA25_P
FMC_LA_26_N D27	LA26_N
FMC_LA_26_P D26	LA26_P
FMC_LA_27_N C27	LA27_N
FMC_LA_27_P C26	LA27_P
FMC_LA_28_N H32	LA28_N
FMC_LA_28_P H31	LA28_P
FMC_LA_29_N G31	LA29_N
FMC_LA_29_P G30	LA29_P
FMC_LA_30_N H35	LA30_N
FMC_LA_30_P H34	LA30_P
FMC_LA_31_N G34	LA31_N
FMC_LA_31_P G33	LA31_P
FMC_LA_32_N H38	LA32_N
FMC_LA_32_P H37	LA32_P
FMC_LA_33_N G37	LA33_N
FMC_LA_33_P G36	LA33_P

BANK\_LA



CLK

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COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

Sheet: /Principal/BANKS\_HR/  
File: BANKS\_HR.sch

Title: CIAA-ACC FMC LA / FPGA BANKS 12, 13

Size: A4 Date: 2016-10-17 Rev: V1.1  
KiCad E.D.A. kicad (5.0.0-rc2-dev-37-g2c85de3ab) Id: 16/16