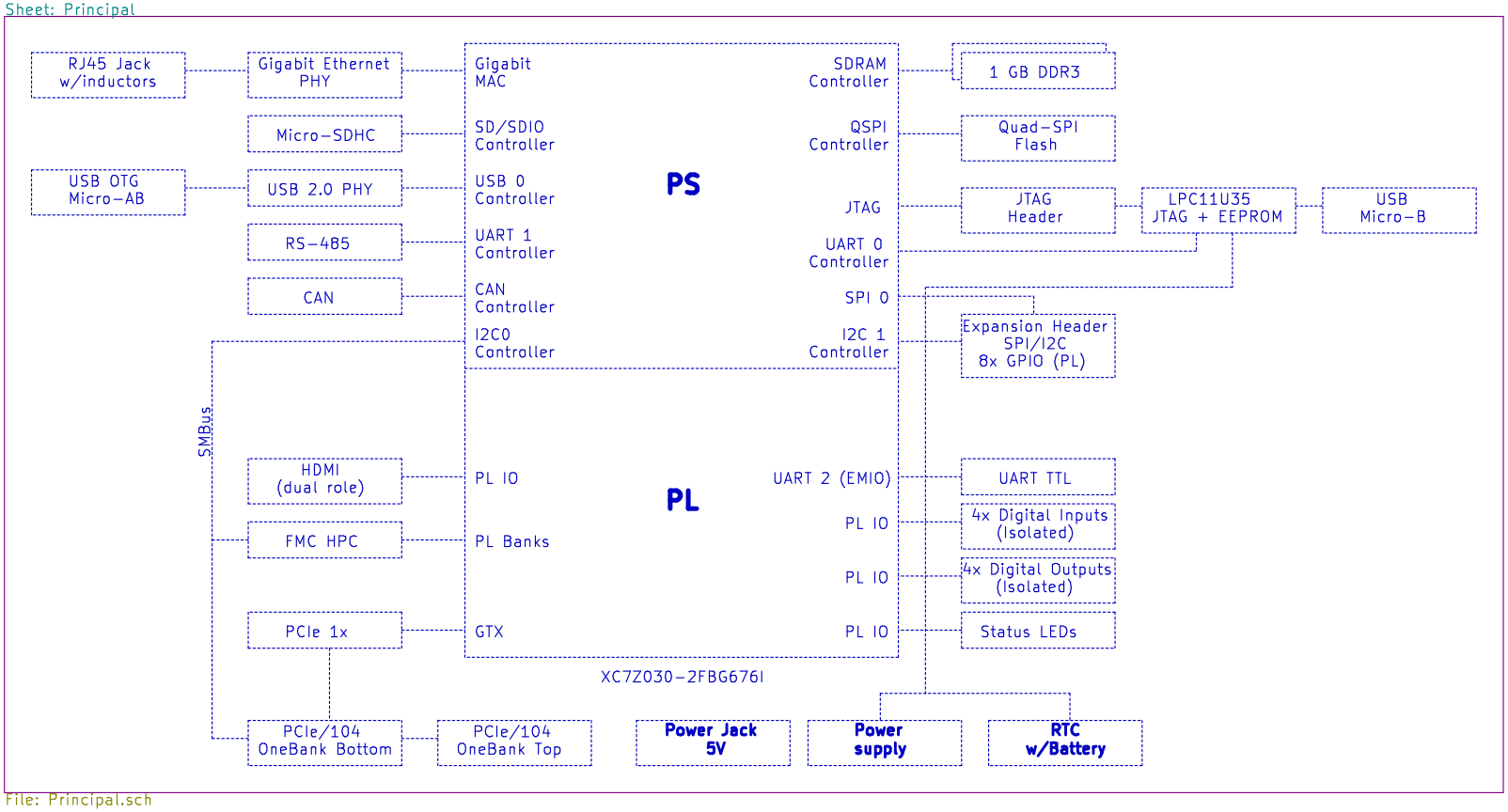
Computadora Industrial Abierta Argentina
CIAA–ACC
Xilinx XC7Z030 (2x Cortex A9 + Kintex–7 FPGA)

Sheet: Principal



File: Principal.sch

INTI

CIAA

open source hardware

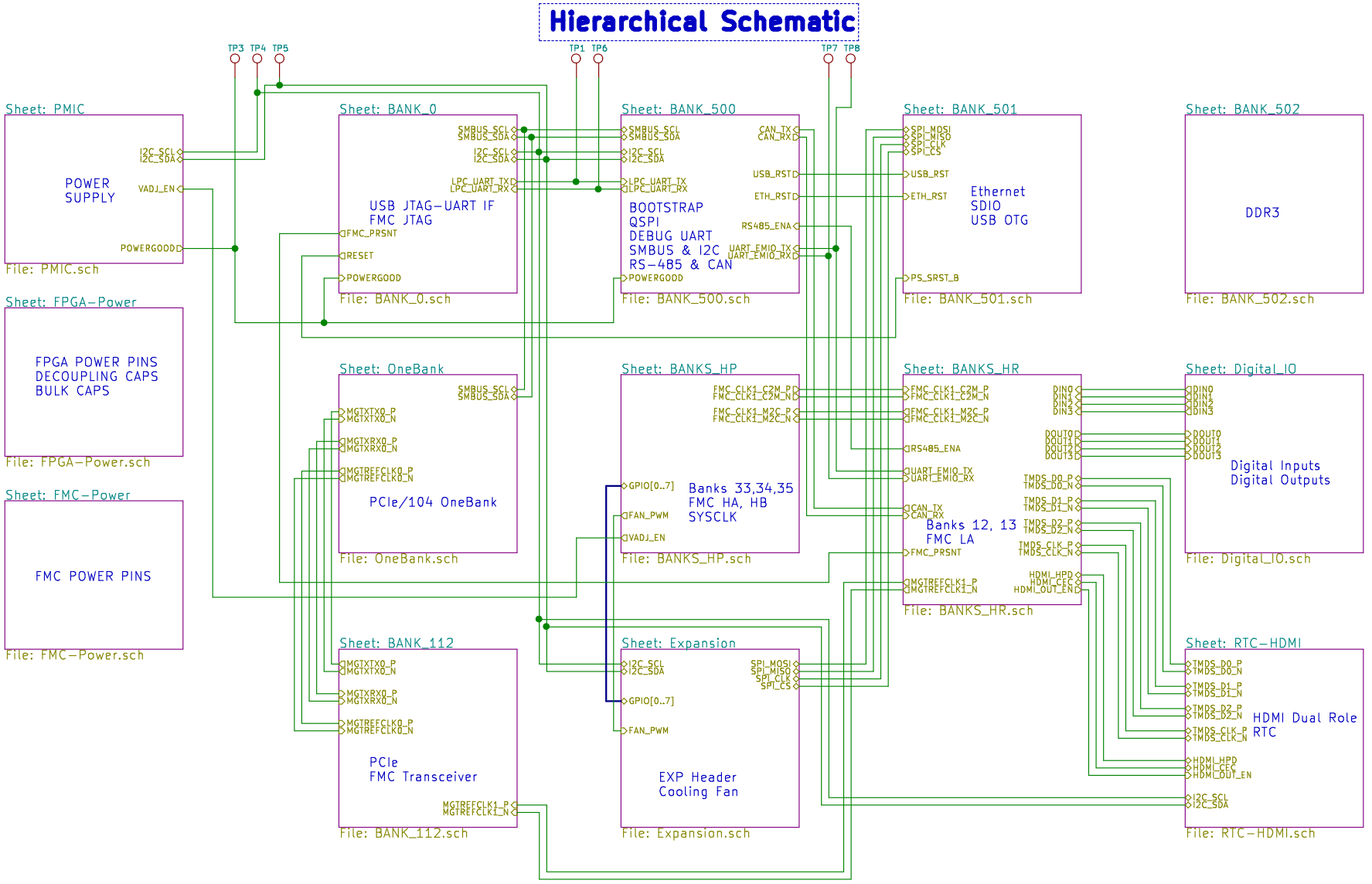
Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA_CIAA_ACC.txt' file.

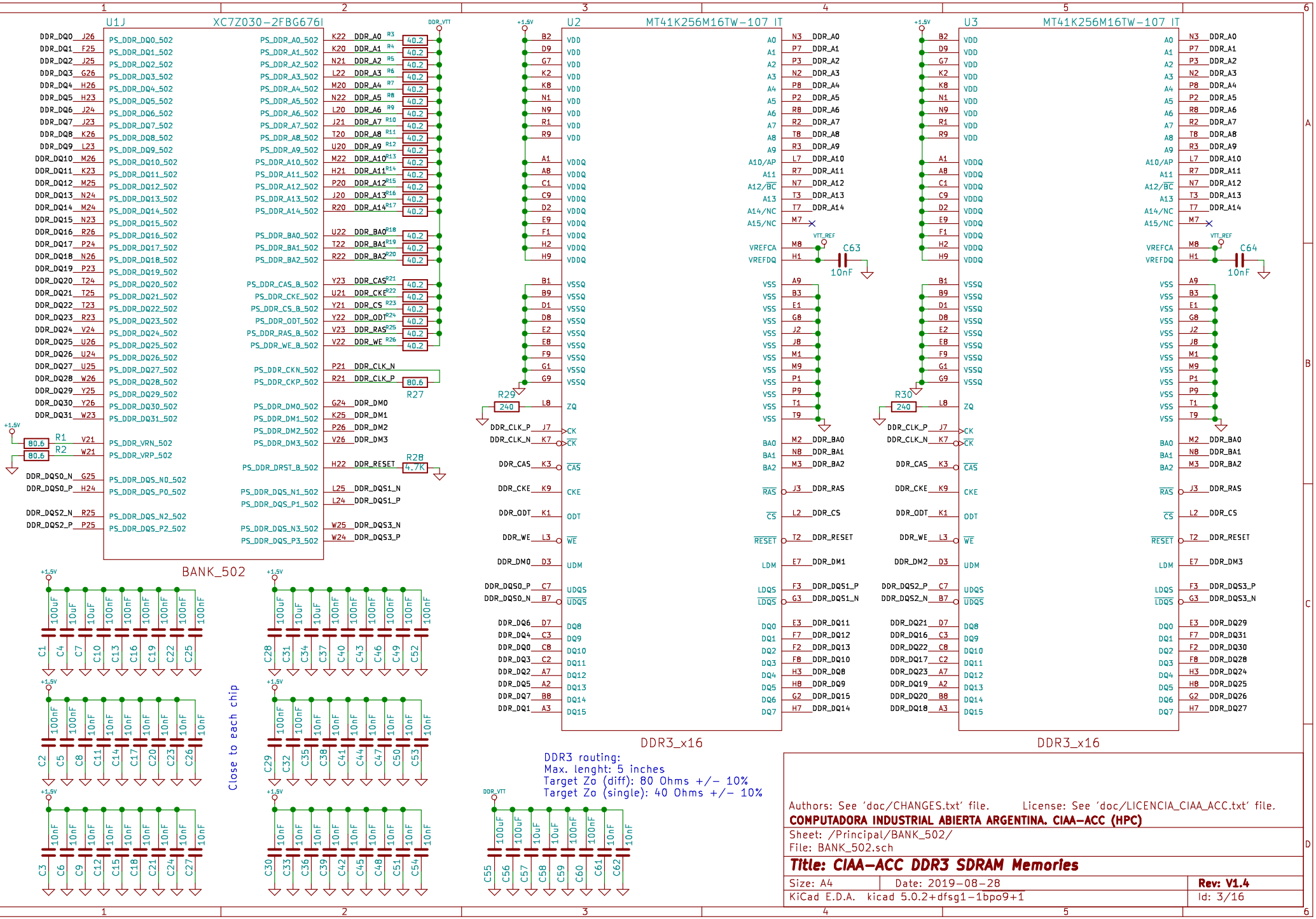
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA–ACC (HPC)

Sheet: /
File: ciaa_acc.sch

Title: CIAA–ACC Block Diagram

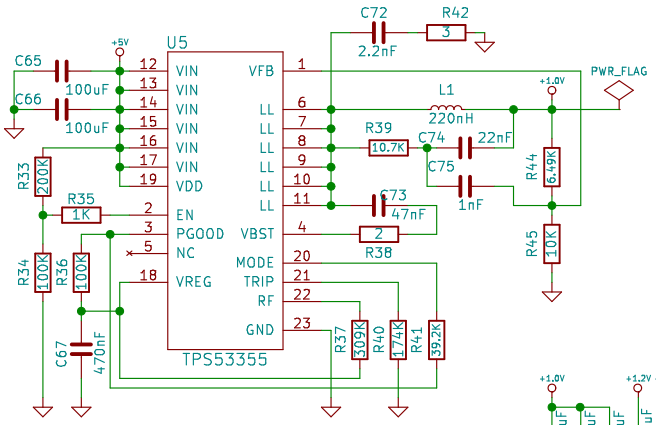
Size: A4	Date: 2019–08–28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1–1bpo9+1		Id: 1/16


Hierarchical Schematic
TP3 TP4 TP5
TP1 TP6
TP7 TP8
Sheet: PMIC
POWER SUPPLY
I2C_SCL
I2C_SDA
VADJ_EN
POWERGOOD
File: PMIC.sch
Sheet: BANK_0
SMBUS_SCL
SMBUS_SDA
I2C_SCL
I2C_SDA
LPC_UART_TX
LPC_UART_RX
USB JTAG-UART IF
FMC JTAG
FMC_PRSNT
RESET
POWERGOOD
File: BANK_0.sch
Sheet: BANK_500
SMBUS_SCL
SMBUS_SDA
I2C_SCL
I2C_SDA
LPC_UART_TX
LPC_UART_RX
POWERGOOD
CAN_TX
CAN_RX
USB_RST
ETH_RST
RS485_ENA
UART_EMIO_TX
UART_EMIO_RX
BOOTSTRAP
QSPI
DEBUG UART
SMBUS & I2C
RS-485 & CAN
File: BANK_500.sch
Sheet: BANK_501
SPI_MOSI
SPI_MISO
SPI_CLK
SPI_CS
USB_RST
ETH_RST
PS_SRST_B
Ethernet
SDIO
USB OTG
File: BANK_501.sch
Sheet: BANK_502
DDR3
File: BANK_502.sch
Sheet: FPGA-Power
FPGA POWER PINS
DECOUPLING CAPS
BULK CAPS
File: FPGA-Power.sch
Sheet: FMC-Power
FMC POWER PINS
File: FMC-Power.sch
Sheet: OneBank
SMBUS_SCL
SMBUS_SDA
MGTXTX0_P
MGTXTX0_N
MGTXRX0_P
MGTXRX0_N
MGTREFCLK0_P
MGTREFCLK0_N
PCIe/104 OneBank
File: OneBank.sch
Sheet: BANKS_HP
FMC_CLK1_C2M_P
FMC_CLK1_C2M_N
FMC_CLK1_M2C_P
FMC_CLK1_M2C_N
GPIO[0..7]
FAN_PWM
VADJ_EN
Banks 33,34,35
FMC HA, HB
SYSCLK
File: BANKS_HP.sch
Sheet: BANKS_HR
FMC_CLK1_C2M_P
FMC_CLK1_C2M_N
FMC_CLK1_M2C_P
FMC_CLK1_M2C_N
RS485_ENA
UART_EMIO_TX
UART_EMIO_RX
CAN_TX
CAN_RX
FMC_PRSNT
MGTREFCLK1_P
MGTREFCLK1_N
DIN0
DIN1
DIN2
DIN3
DOUT0
DOUT1
DOUT2
DOUT3
TMDS_D0_P
TMDS_D0_N
TMDS_D1_P
TMDS_D1_N
TMDS_D2_P
TMDS_D2_N
TMDS_CLK_P
TMDS_CLK_N
HDMI_HPD
HDMI_CEC
HDMI_OUT_EN
Banks 12, 13
FMC LA
File: BANKS_HR.sch
Sheet: Digital_IO
DIN0
DIN1
DIN2
DIN3
DOUT0
DOUT1
DOUT2
DOUT3
Digital Inputs
Digital Outputs
File: Digital_IO.sch
Sheet: BANK_112
MGTXTX0_P
MGTXTX0_N
MGTXRX0_P
MGTXRX0_N
MGTREFCLK0_P
MGTREFCLK0_N
PCIe
FMC Transceiver
MGTREFCLK1_P
MGTREFCLK1_N
File: BANK_112.sch
Sheet: Expansion
I2C_SCL
I2C_SDA
SPI_MOSI
SPI_MISO
SPI_CLK
SPI_CS
GPIO[0..7]
FAN_PWM
EXP Header
Cooling Fan
File: Expansion.sch
Sheet: RTC-HDMI
TMDS_D0_P
TMDS_D0_N
TMDS_D1_P
TMDS_D1_N
TMDS_D2_P
TMDS_D2_N
TMDS_CLK_P
TMDS_CLK_N
HDMI_HPD
HDMI_CEC
HDMI_OUT_EN
I2C_SCL
I2C_SDA
HDMI Dual Role
RTC
File: RTC-HDMI.sch
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: 2019-08-28
Rev: V1.4
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1
Id: 2/16

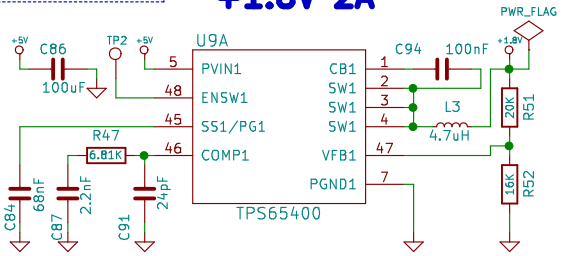

U1J
XC7Z030-2FBG676I
BANK_502
U2
MT41K256M16TW-107 IT
DDR3_x16
U3
MT41K256M16TW-107 IT
DDR3_x16
DDR3 routing:
Max. lenght: 5 inches
Target Zo (diff): 80 Ohms +/- 10%
Target Zo (single): 40 Ohms +/- 10%
Close to each chip
Authors: See 'doc/CHANGES.txt' file.
License: See 'doc/LICENCIA_CIAA_ACC.txt' file.
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)
Sheet: /Principal/BANK_502/
File: BANK_502.sch
Title: CIAA-ACC DDR3 SDRAM Memories
Size: A4
Date: 2019-08-28
Rev: V1.4
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1
Id: 3/16

Power Supply

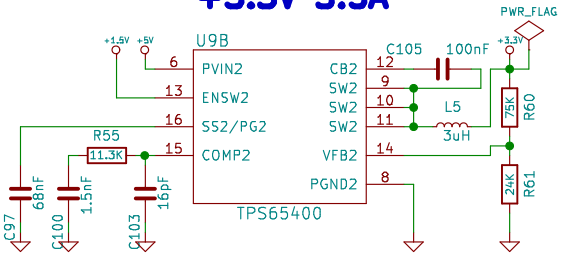
+1.0V 25A



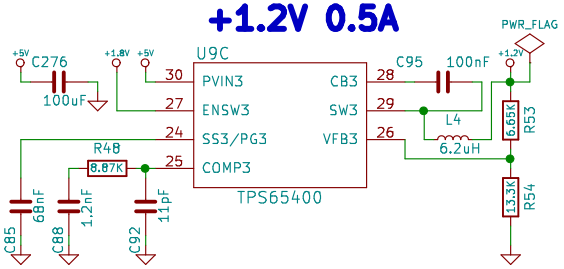
+1.8V 2A



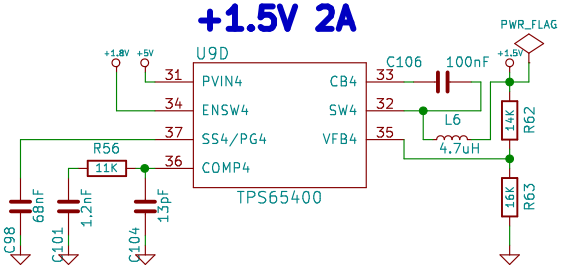
+3.3V 3.5A



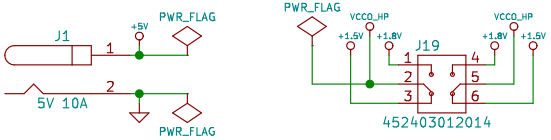
+1.2V 0.5A

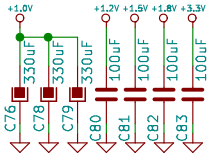


+1.5V 2A

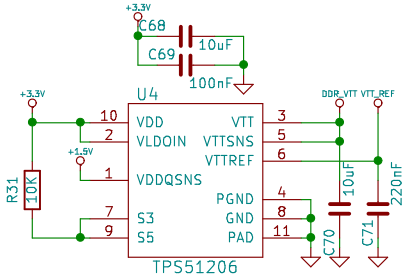


DC Input +5V 10A

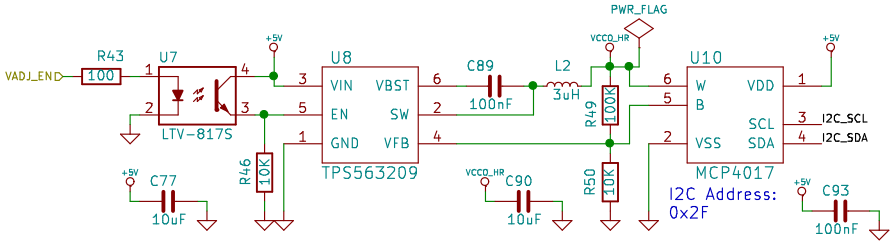




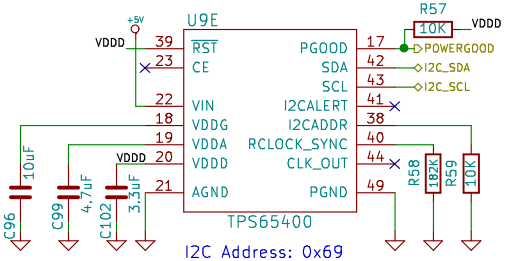
DDR_VTT +0.75V



VADJ 2A



"EN" del TPS563209:
Conectado a pines del FPGA para apagar antes de cambiar feedback.
ver si va con 1.5V o poner transistor



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

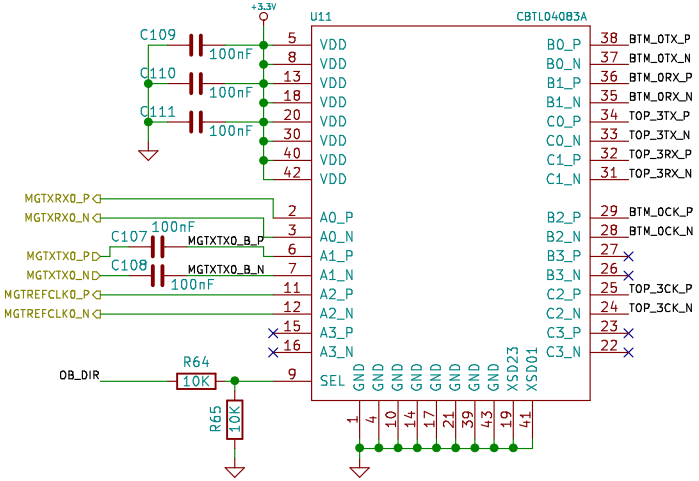
Title: CIAA-ACC Power supply

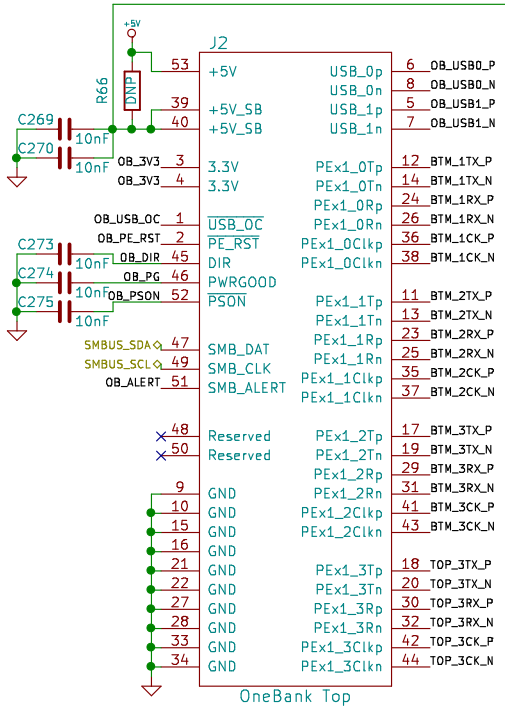
Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 4/16

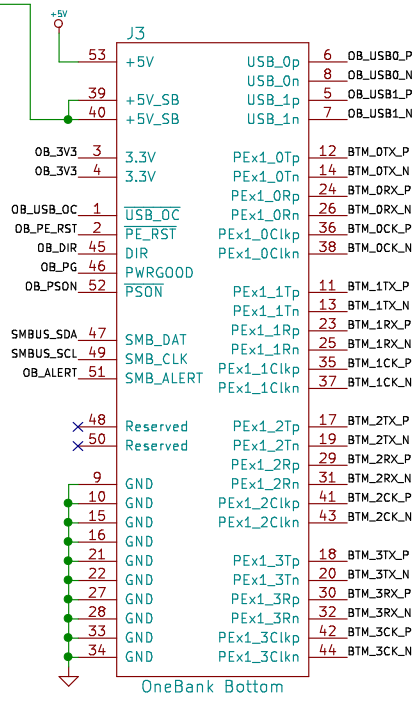
PCIe/104 OneBank Connector

H1 H3
H2 H4
Holes PCIe 104

Mux/Demux Switch







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

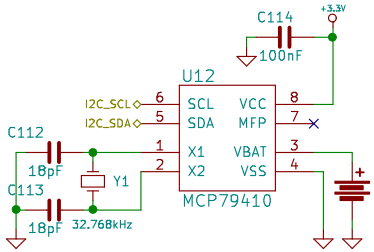
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

Sheet: /Principal/OneBank/
File: OneBank.sch

Title: CIAA-ACC PCIe/104 OneBank Connector

Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 5/16

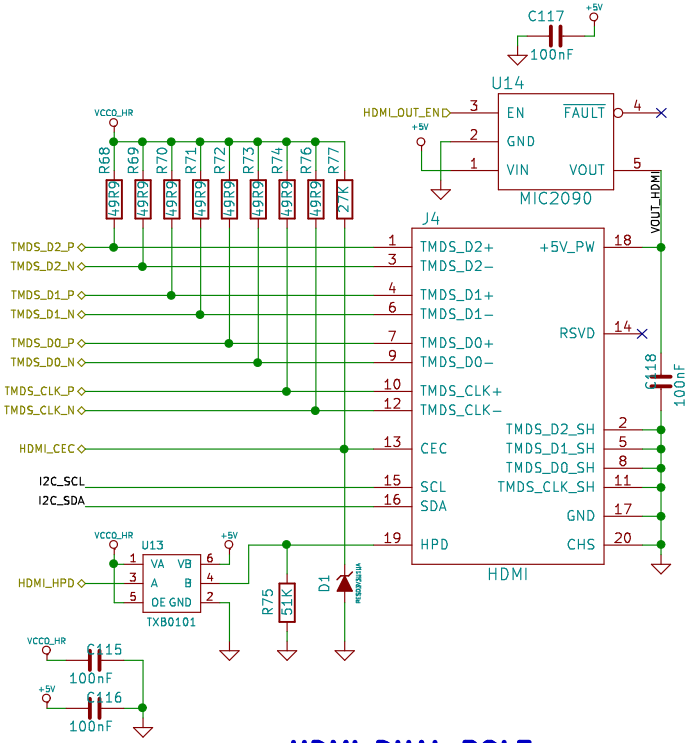
HDMI / RTC



Mounting indication:
Please remove battery
holder pins before solder.

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.

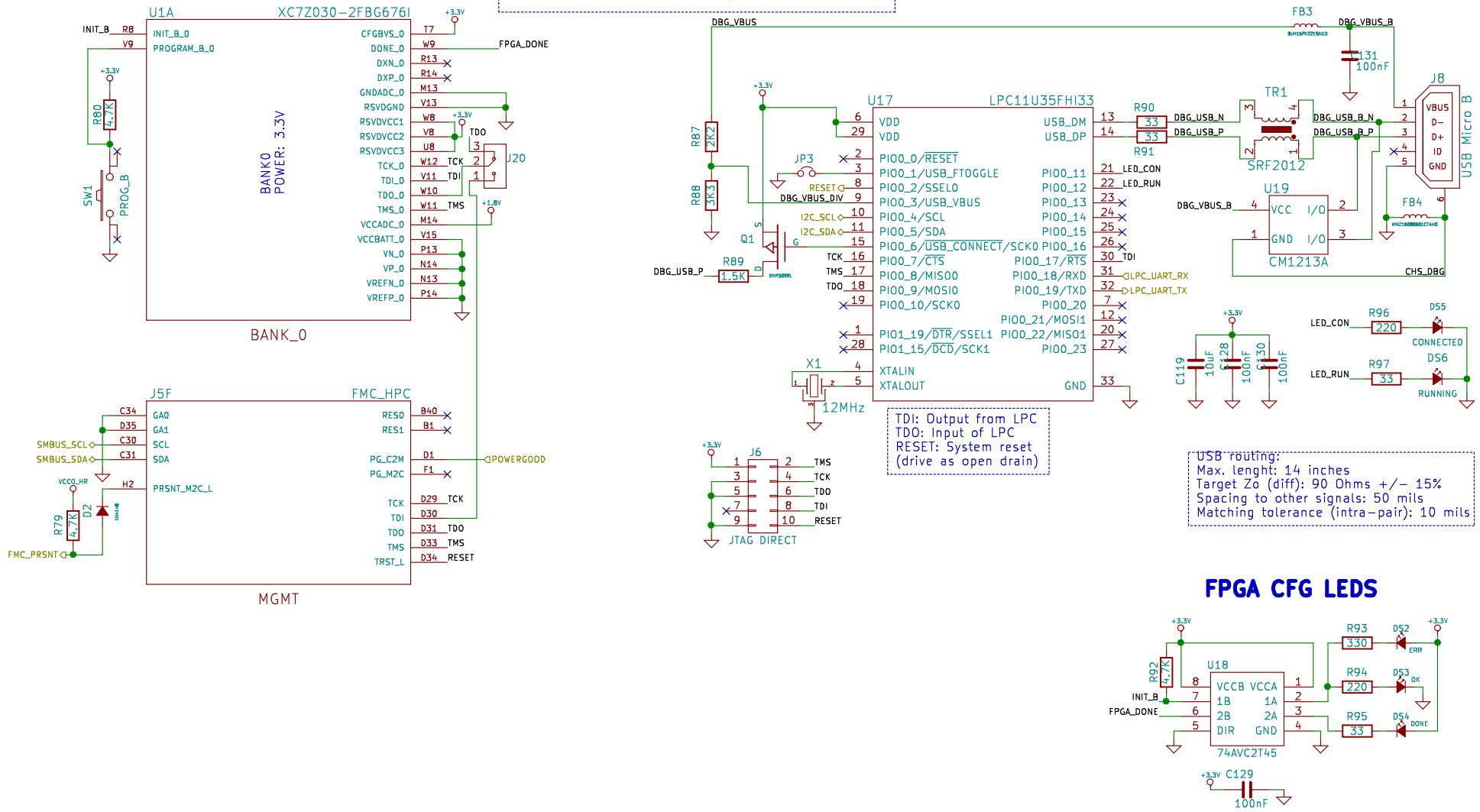
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

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

Title: CIAA-ACC HDMI Dual Role

Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 6/16

USB JTAG UART / FMC JTAG



Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA_CIAA_ACC.txt' file.

COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

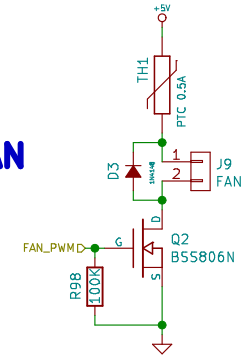
Sheet: /Principal/BANK_0/
File: BANK_0.sch

Title: CIAA-ACC USB JTAG UART / FMC JTAG

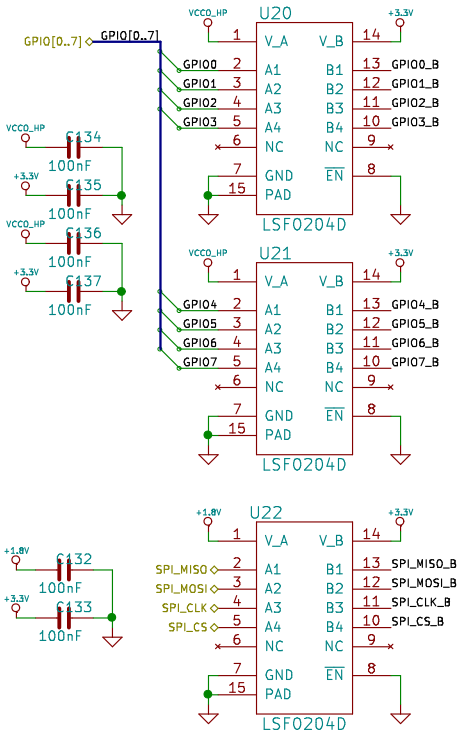
Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 7/16

Expansion Header / FAN Connector

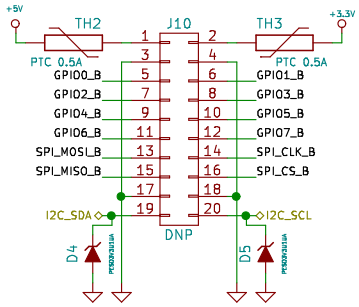
FAN



Voltage level translator



Expansion Header



GPIO Only available when VCCO_HP = 1.8V

F1 F2 F3 F4

Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA_CIAA_ACC.txt' file.

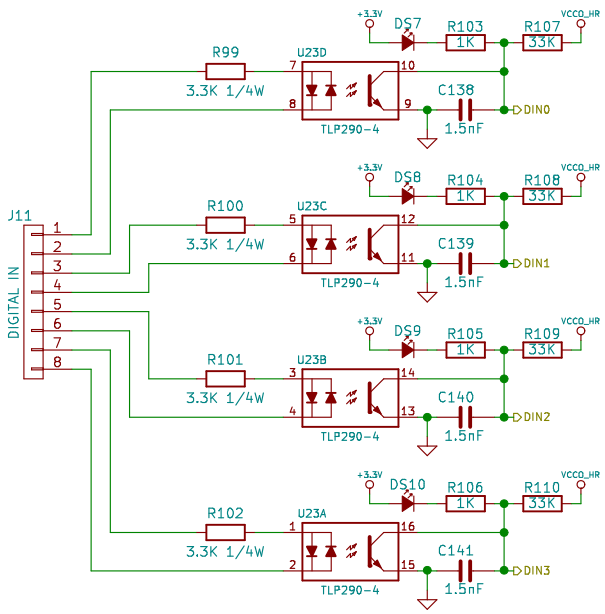
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

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

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

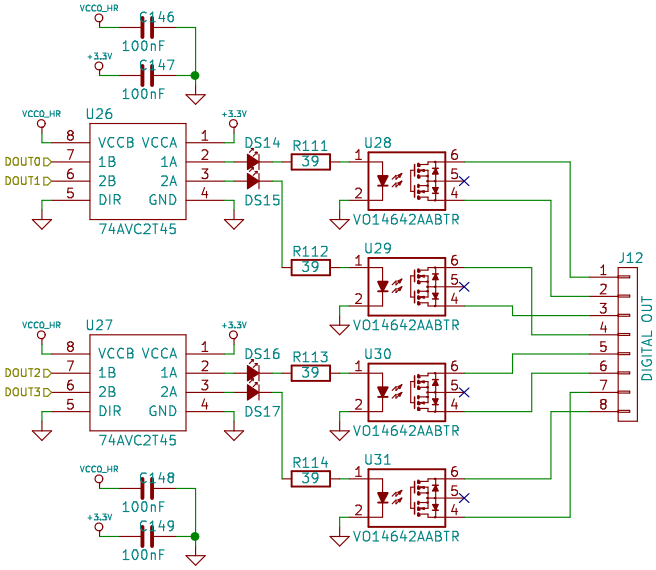
Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 8/16

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.

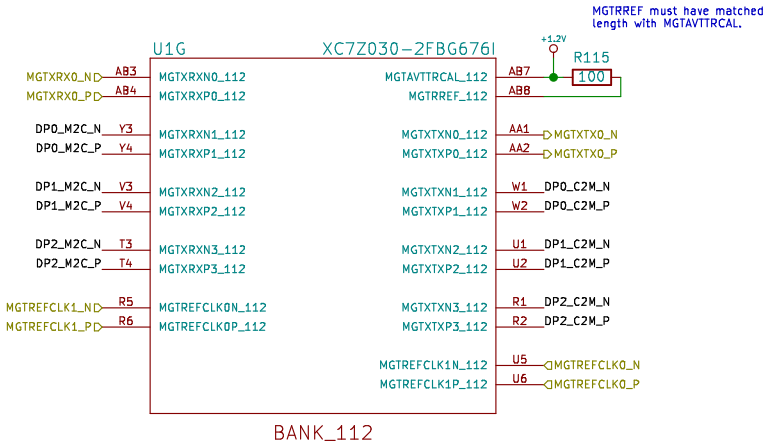
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

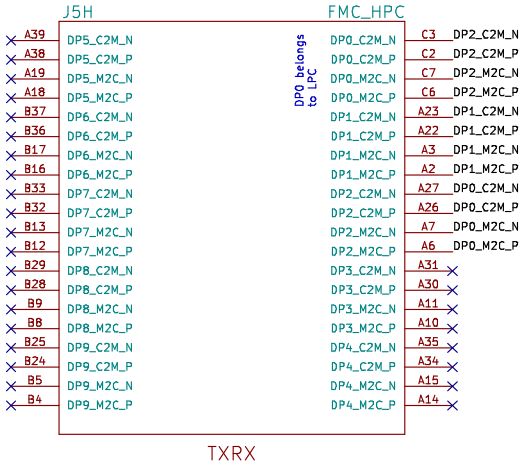
Sheet: /Principal/Digital_IO/
File: Digital_IO.sch

Title: CIAA-ACC Digital Inputs and Outputs

Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+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.

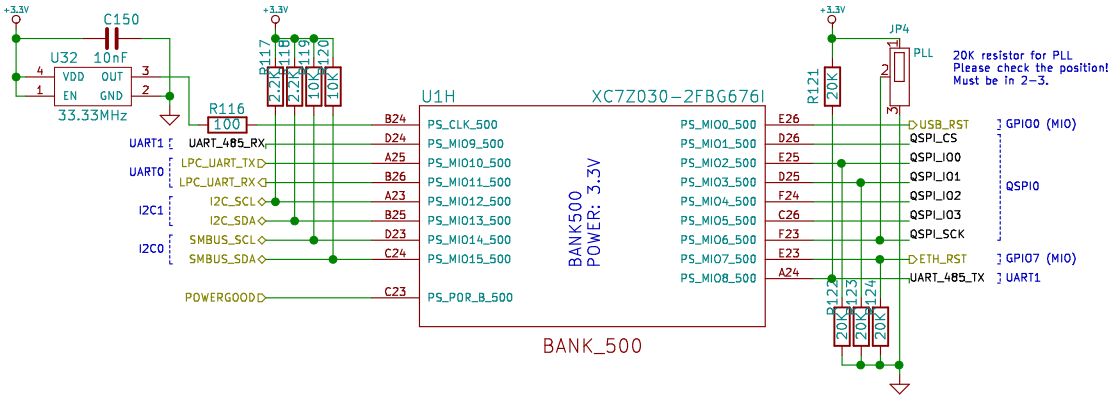
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

Sheet: /Principal/BANK_112/
File: BANK_112.sch

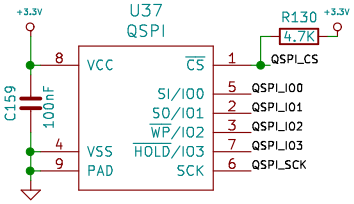
Title: CIAA-ACC FPGA PCIe / FMC transceiver

Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 10/16

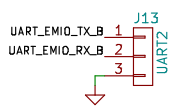
UART, QSPI, I2C, CAN, RS485



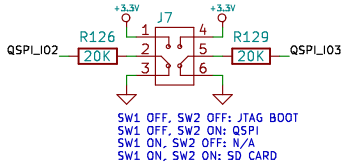
QSPI



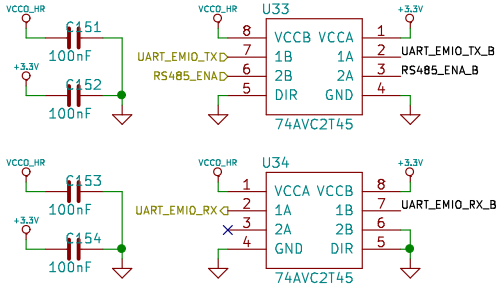
QSPI Routing:
Target Zo: 50 Ohms +/- 5%
Spacing to other signals: 3w
Matching tolerance: 3 mm

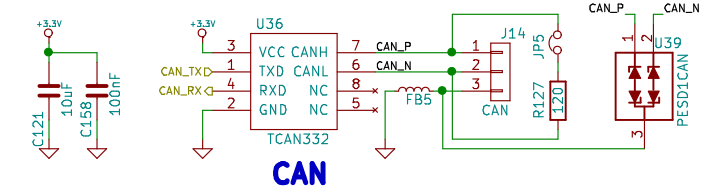


UART 2

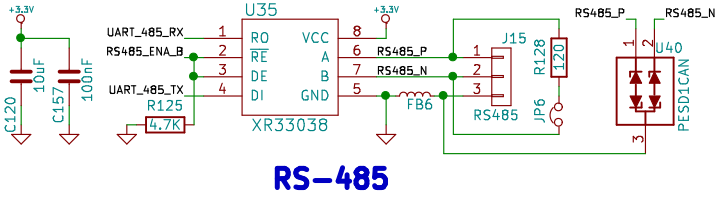


BOOT SELECTOR





CAN



RS-485

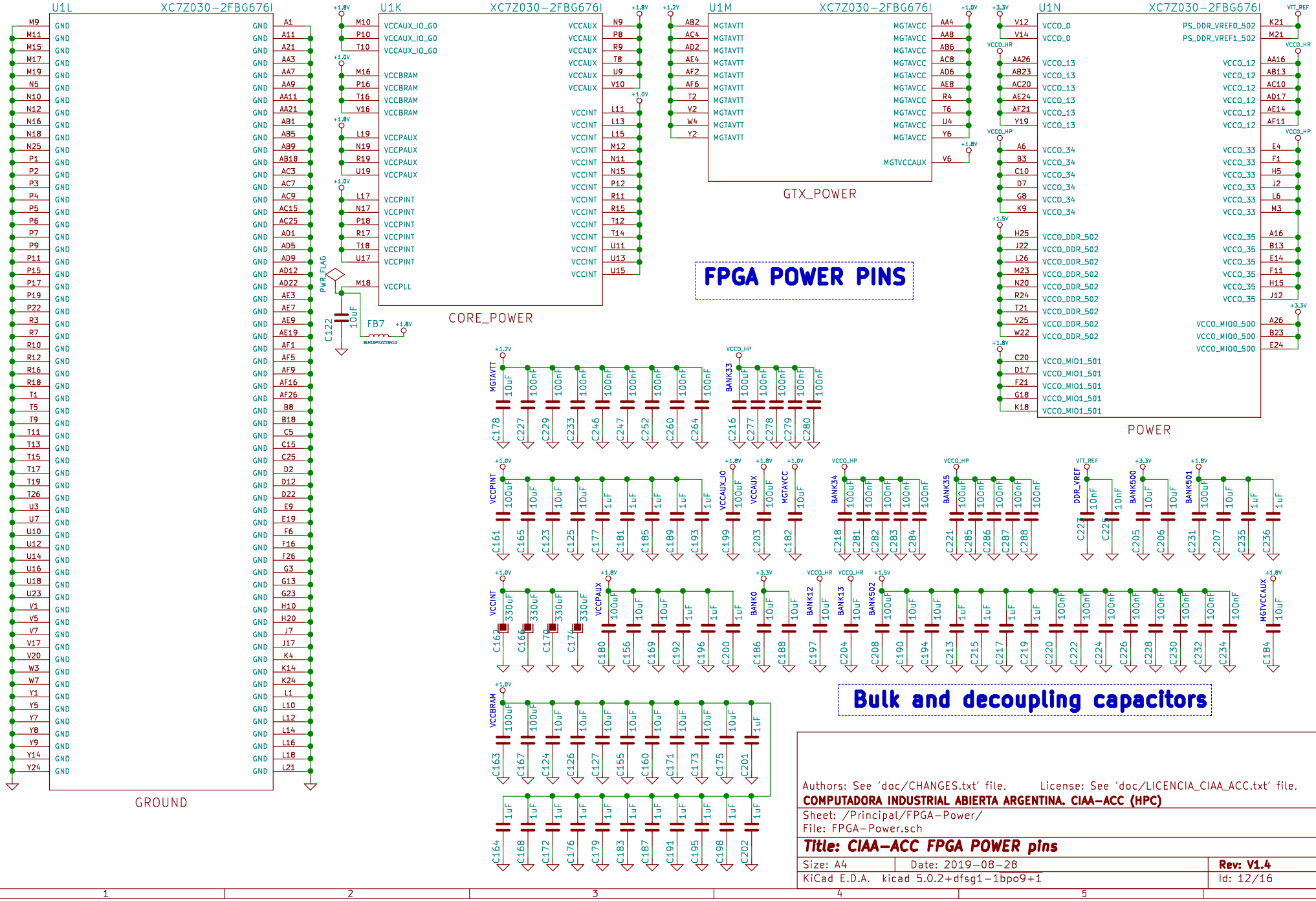
Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA_CIAA_ACC.txt' file.

COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

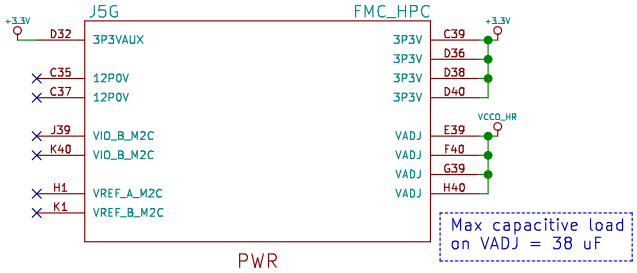
Sheet: /Principal/BANK_500/
File: BANK_500.sch

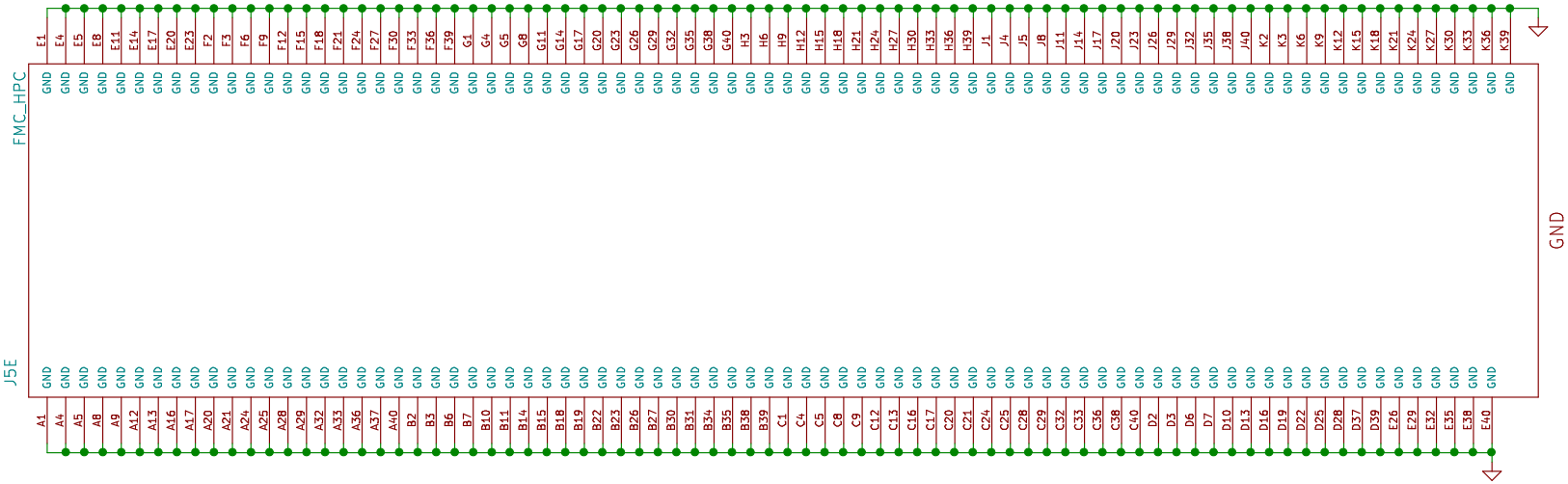
Title: CIAA-ACC UART, QSPI, I2C, CAN, RS485

Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 11/16


U1L XC7Z030-2FBG676I
GROUND
U1K XC7Z030-2FBG676I
CORE_POWER
U1M XC7Z030-2FBG676I
GTX_POWER
U1N XC7Z030-2FBG676I
POWER
PWR_FLAG
C122 10uF
FB7
FPGA POWER PINS
Bulk and decoupling capacitors
Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA_CIAA_ACC.txt' file.
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)
Sheet: /Principal/FPGA-Power/
File: FPGA-Power.sch
Title: CIAA-ACC FPGA POWER pins
Size: A4
Date: 2019-08-28
Rev: V1.4
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1
Id: 12/16

FMC POWER PINS





Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA_CIAA_ACC.txt' file.

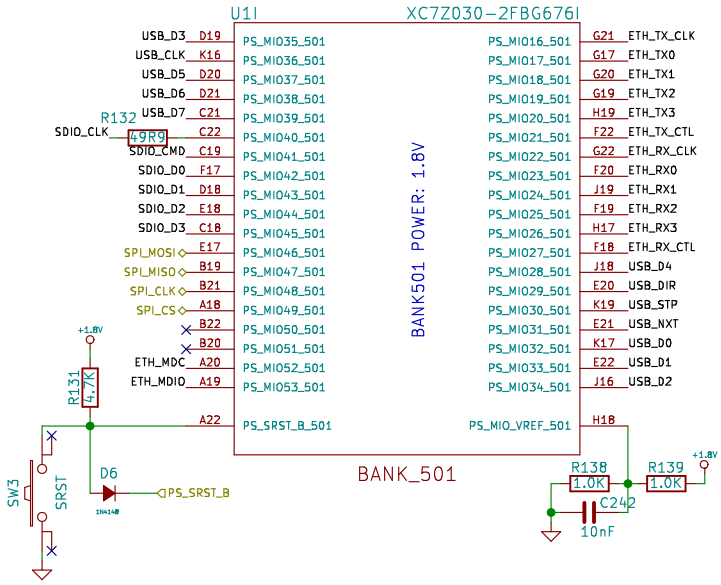
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

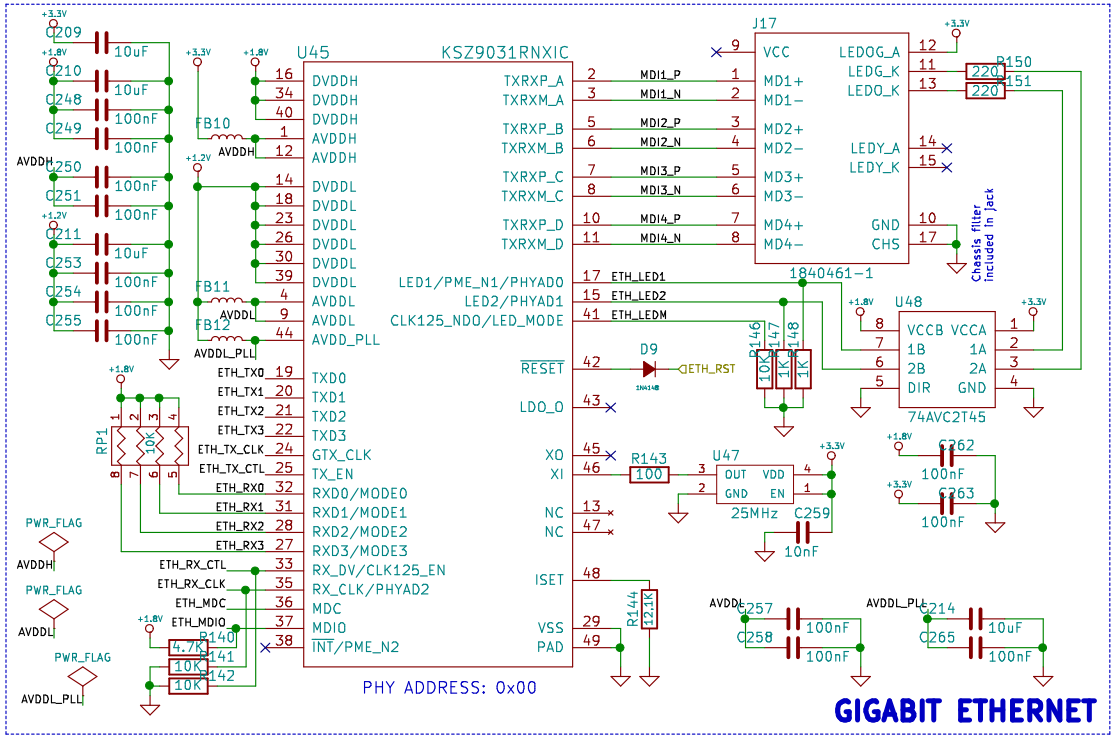
Sheet: /Principal/FMC-Power/
File: FMC-Power.sch

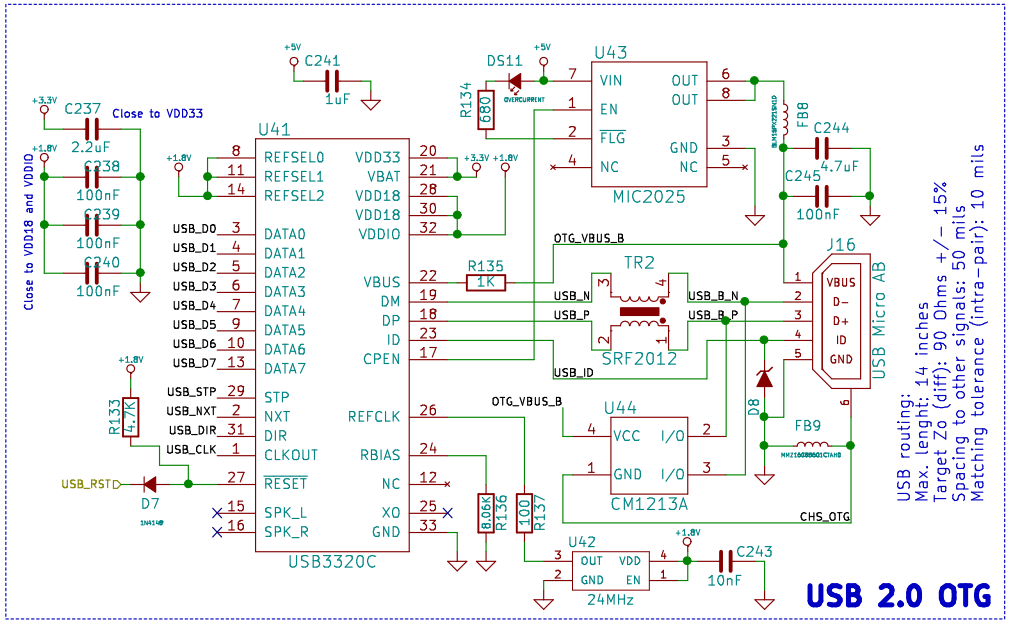
Title: CIAA-ACC FMC POWER pins

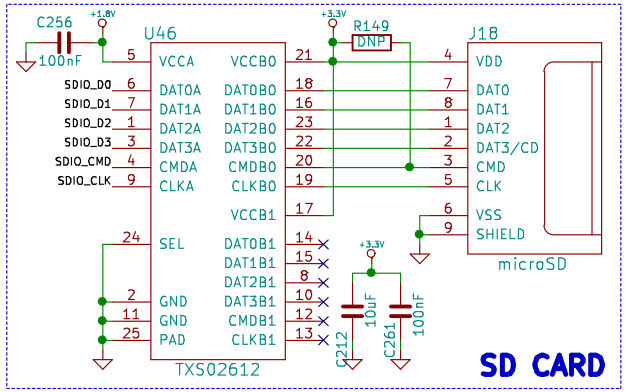
Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 13/16

ETH, SDIO, USB OTG









Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA_CIAA_ACC.txt' file.

COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

Sheet: /Principal/BANK_501/
File: BANK_501.sch

Title: CIAA-ACC Ethernet, SDIO, USB OTG

Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 14/16

FMC HB / FMC HA

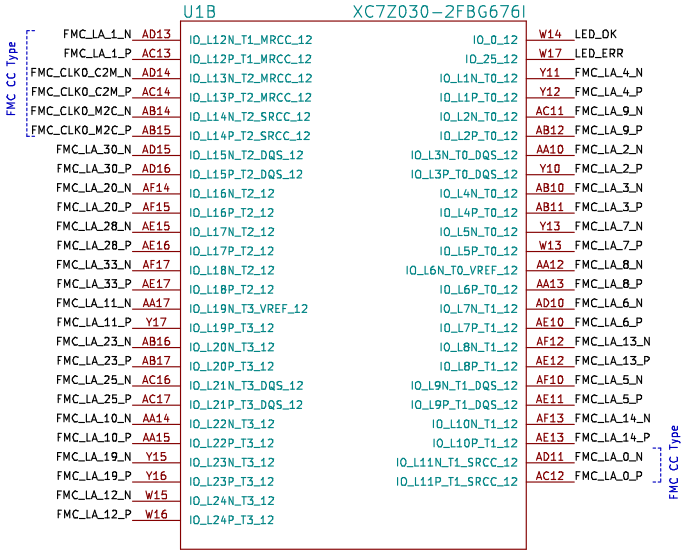
COMPUTADORA INDUSTRIAL ABIERTA ARGENTINA. CIAA-ACC (HPC)

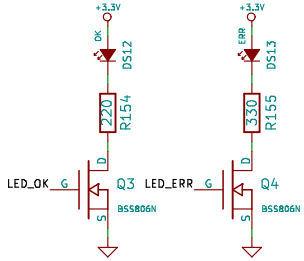
Sheet: /Principal/BANKS_HP/
File: BANKS_HP.sch

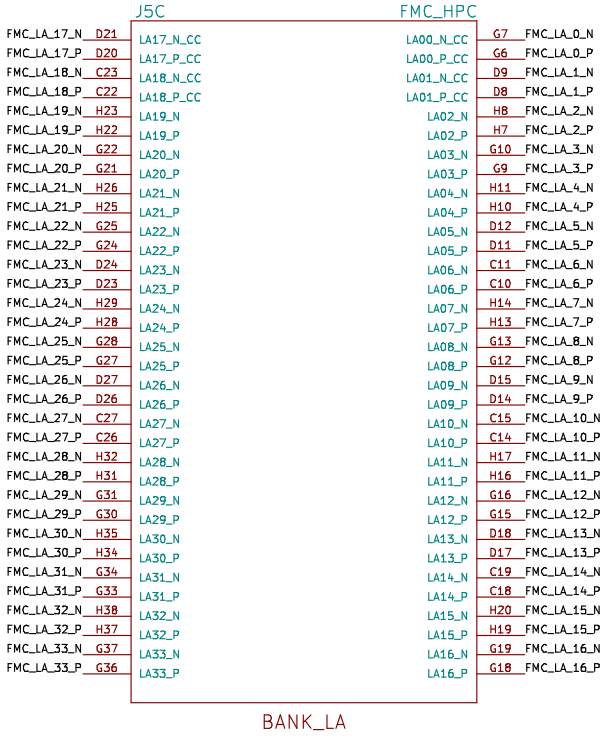
Title: CIAA-ACC FMC HB / FMC HA

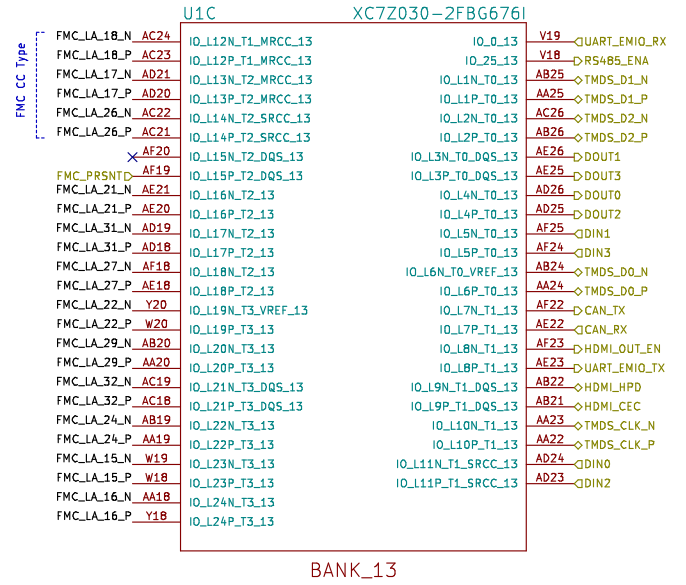
Size: A4	Date: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 15/16

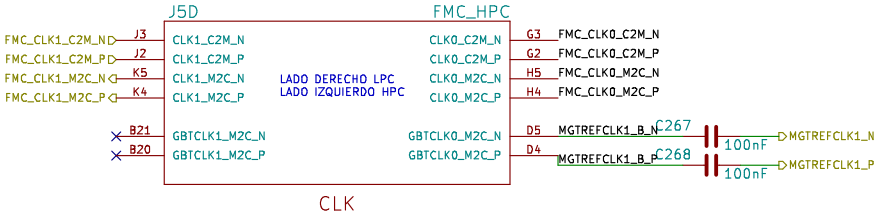
FMC LA / FPGA BANKS 12, 13











Authors: See 'doc/CHANGES.txt' file. License: See 'doc/LICENCIA_CIAA_ACC.txt' file.

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: 2019-08-28	**Rev: V1.4**
KiCad E.D.A. kicad 5.0.2+dfsg1-1bpo9+1		Id: 16/16