Achro-i.MX6Q
Base Board

For Freescale i.MX 6 Quadcore

Revision_1.1

2014.8.29

Base Board for Automotive &
Smart Device Platform

Table of Contents

HUINS
U-Space2 B-dong #605, 670Daewangpangyo-ro Bundang-Gu,Seongnam-Si,Gyeonggi-Do,463-825, Korea

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REVISION HISTORY

X15 - David B Nov 12, 2012

Throughout doc - Changed all sheets from
FIUO (Freescale Internal Use Only) to PUBI (Public Information).

Revision Summary

Rev A - released Jun 2010
Rev B1 - released Jan 2011
Rev C - internal prototype only
Rev D - internal design review
Rev E - released Sep 2012

U-Space2 B-dong #605, 670Daewangpangyo-ro
Bundang-Gu,Seongnam-Si,Gyeonggi-
Do,463-825, Korea

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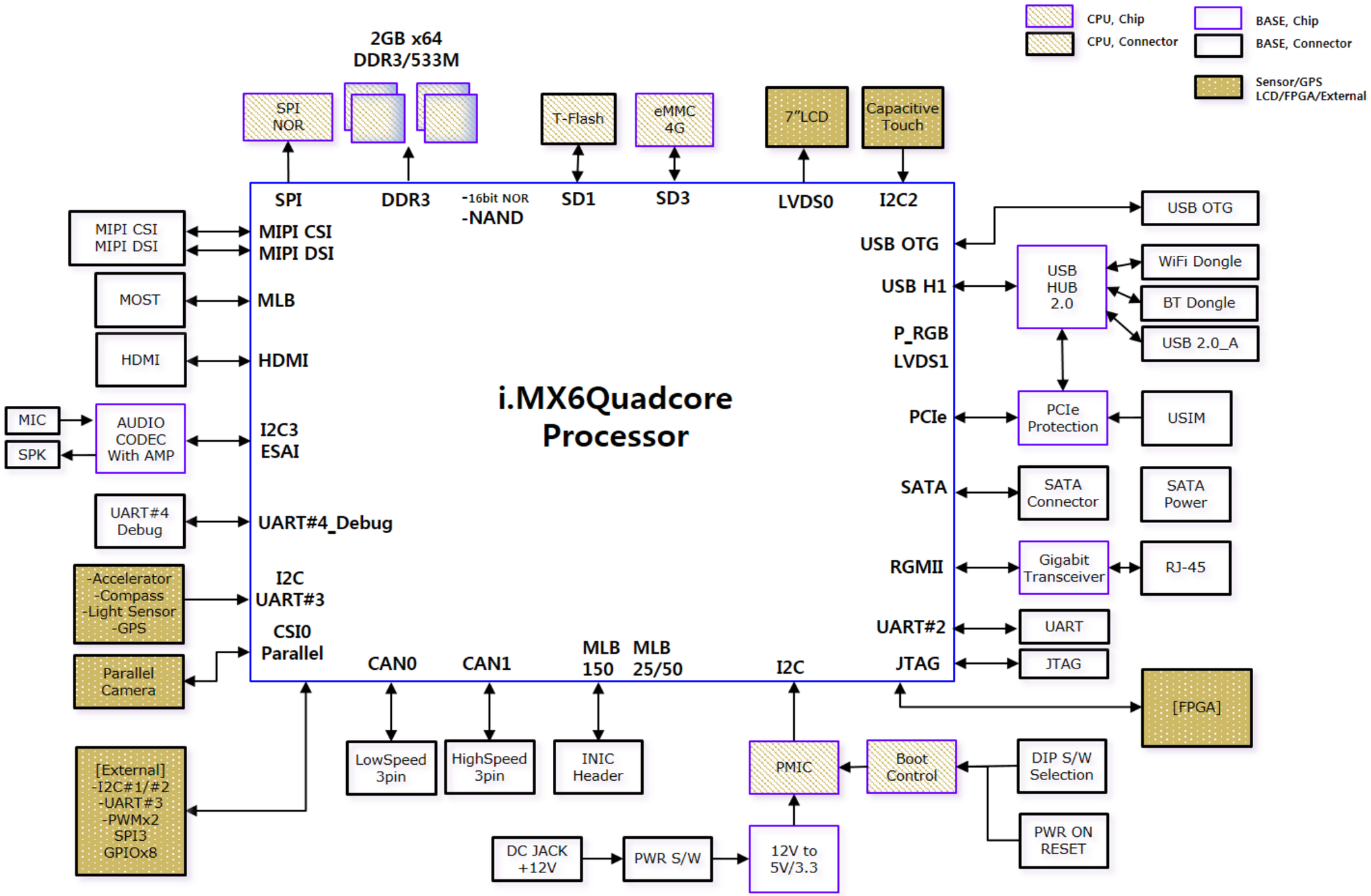
Block Diagram



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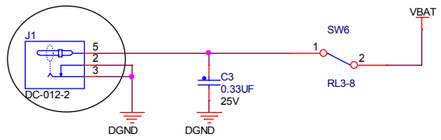
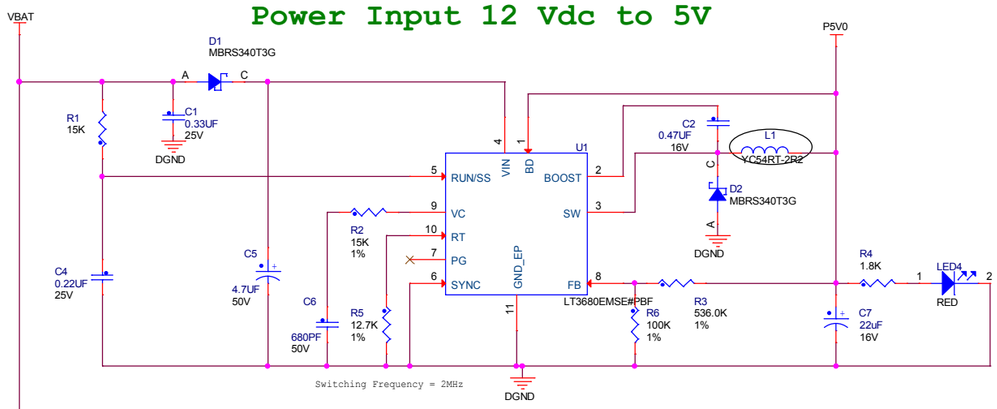
Power Supplies

Power Input 12 Vdc typical

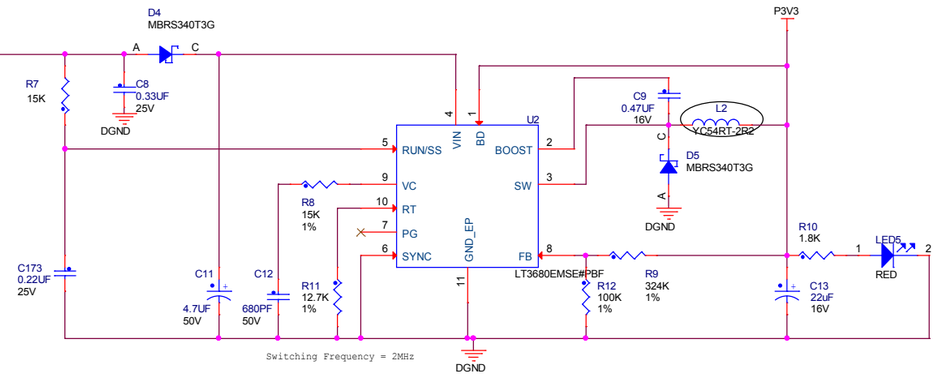
+12V - 5.5A DC supply with integrated protection



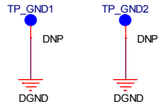
Power Input 12 Vdc to 5V



Power Input 12 Vdc to 3.3V



Ground Points



Notes:

1. CAN_STBY forces 3V3_MAIN off at the same time as the 3.3 V supply on the CPU Card to avoid supply backfeed/leakage issues.

2. To enable CAN wake up, fit 0 ohms to R37 and R38, remove R290. Users could consider use of values higher than 0 ohms for soft start.

Reverse to return to default, always-powered mode.

3. Although the 3 switchers can support up to 36 volt input, the external component selection has been set up on the assumption of a 12 to 14 volt nominal input.

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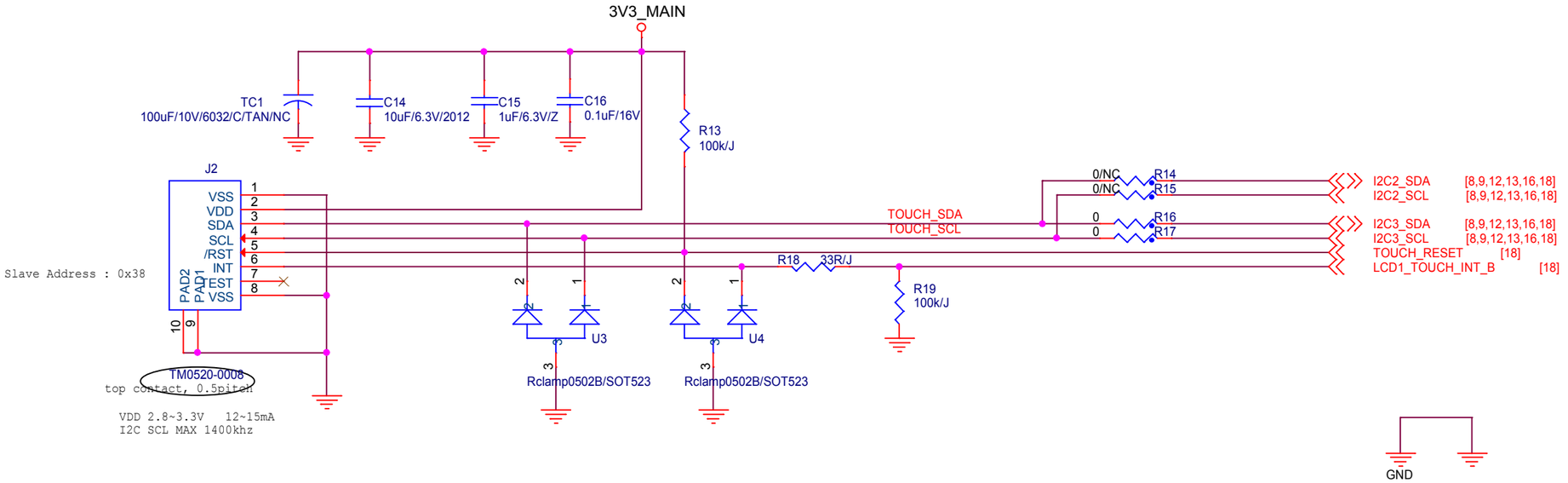
LCD Touch



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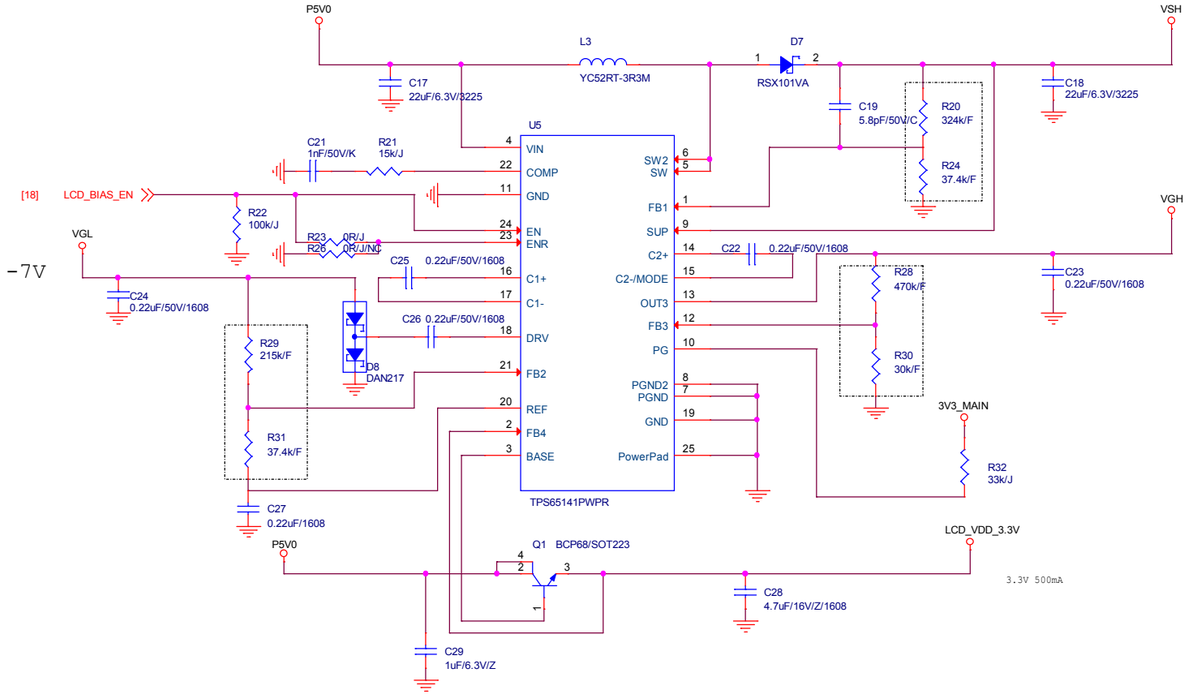
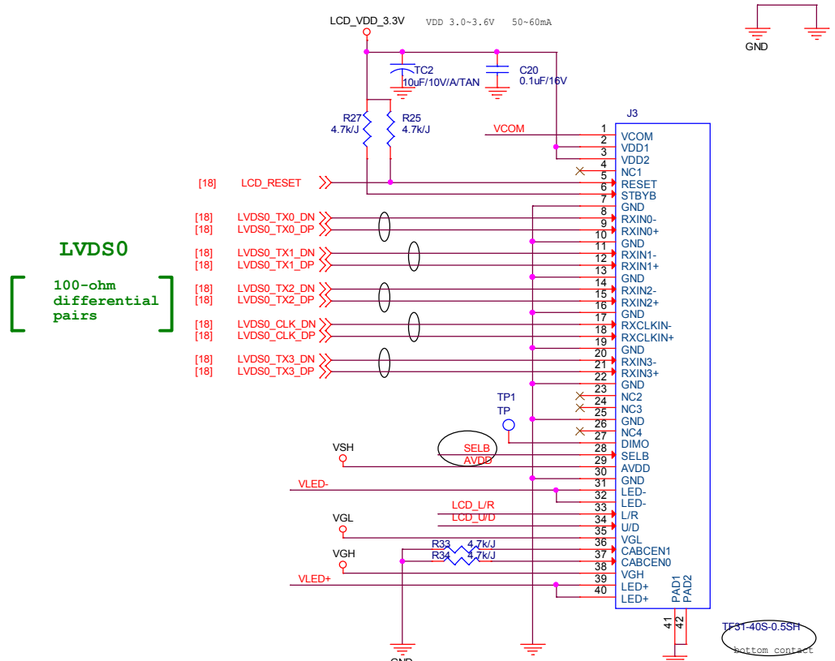
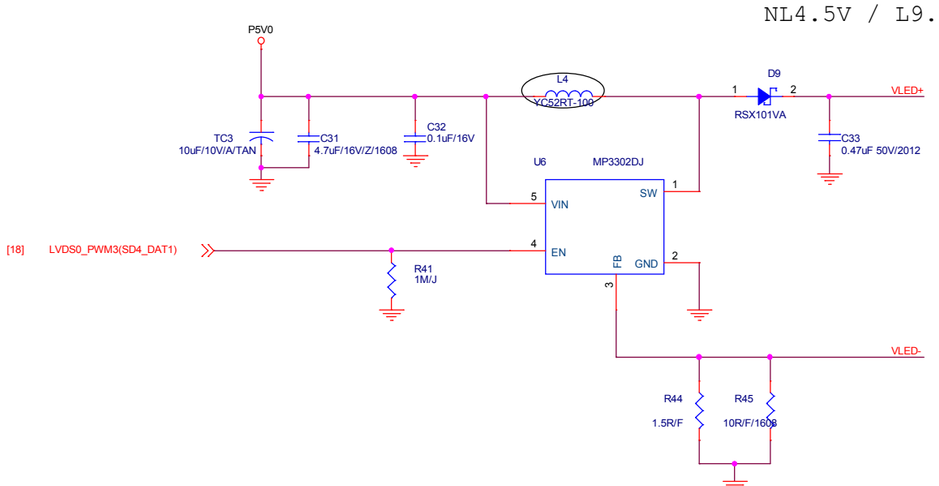
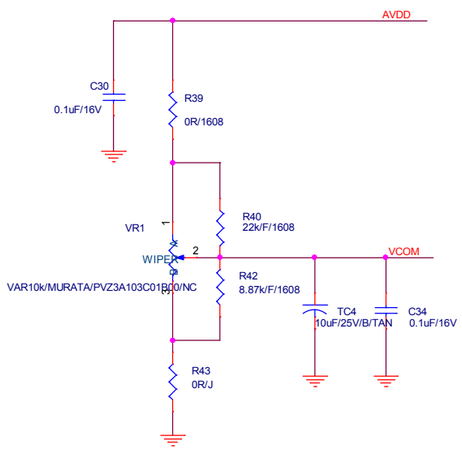
LVDS Displays (7"LCD & Power)

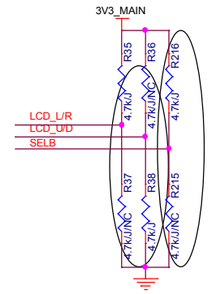


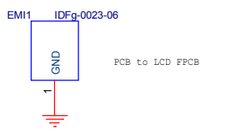


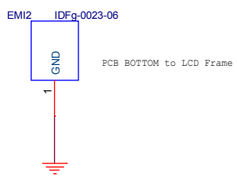
NL4.5V / L9.3V 165mA











Depending on the cable and display, the touch interrupt may be noisy. If erroneous interrupts occur, adopters could consider adding a 0.22 uF capacitor to GND at U1514 pin 2. For mass production, a better solution is an R-C filter on the interrupt line feeding U1514 pin 2. Designers should check their preferred display's interrupt with an oscilloscope.

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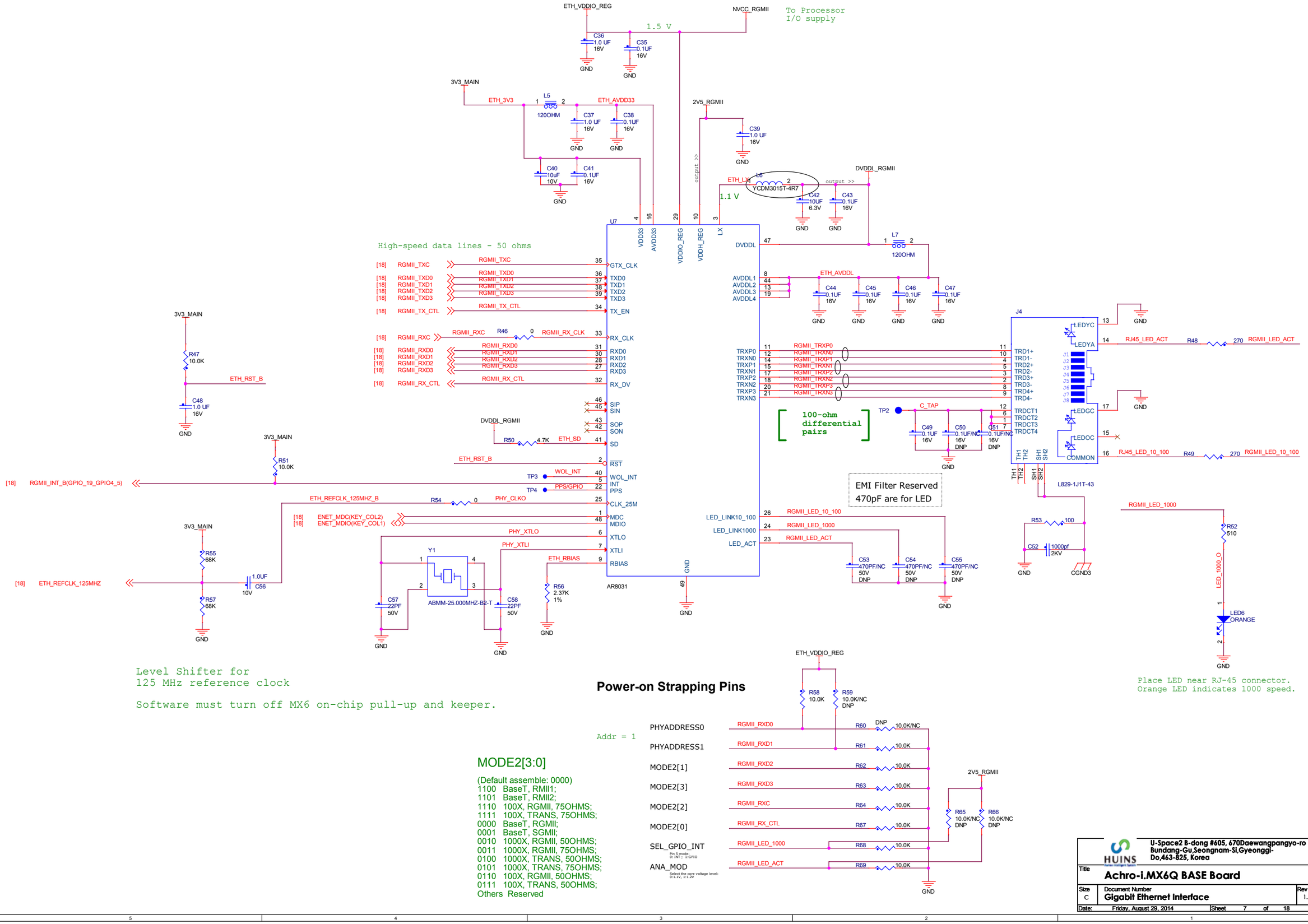
Gigabit Ethernet Interface



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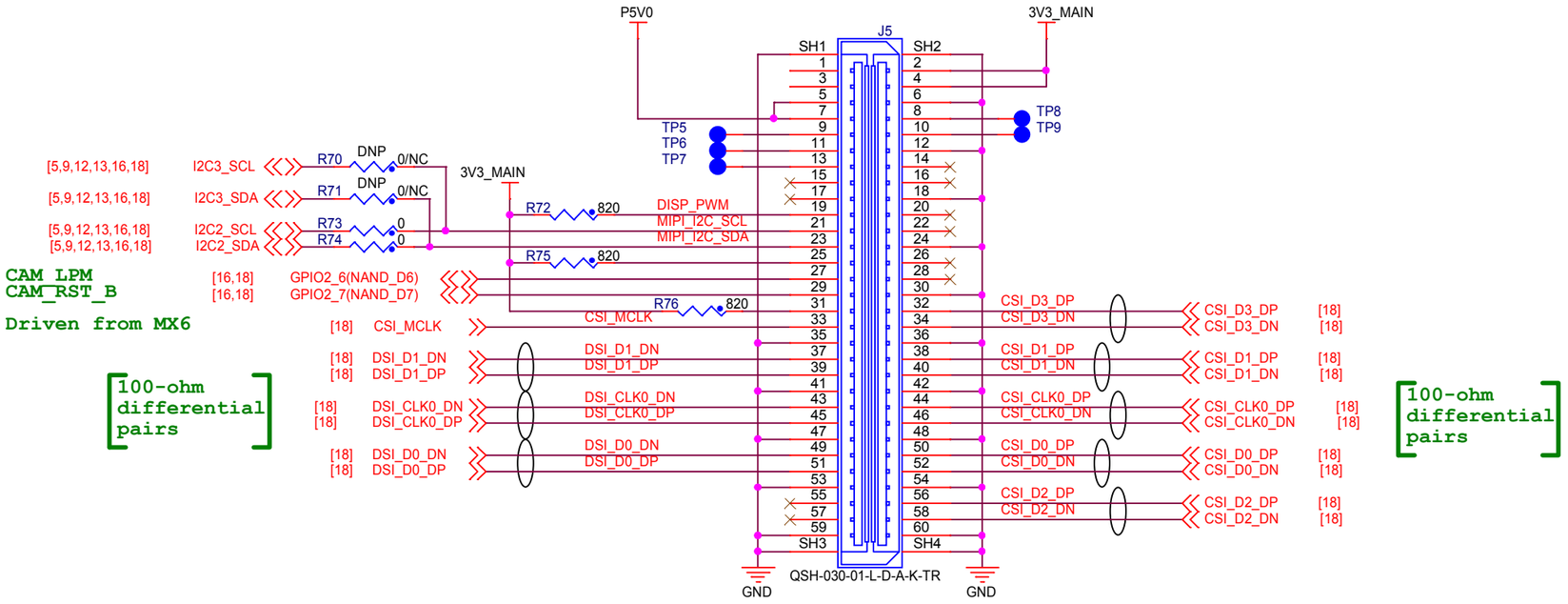
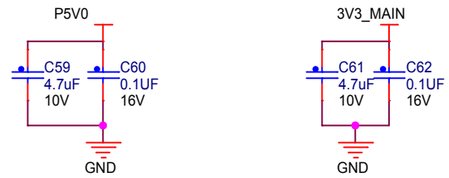
MIPI CSI & DSI Connector





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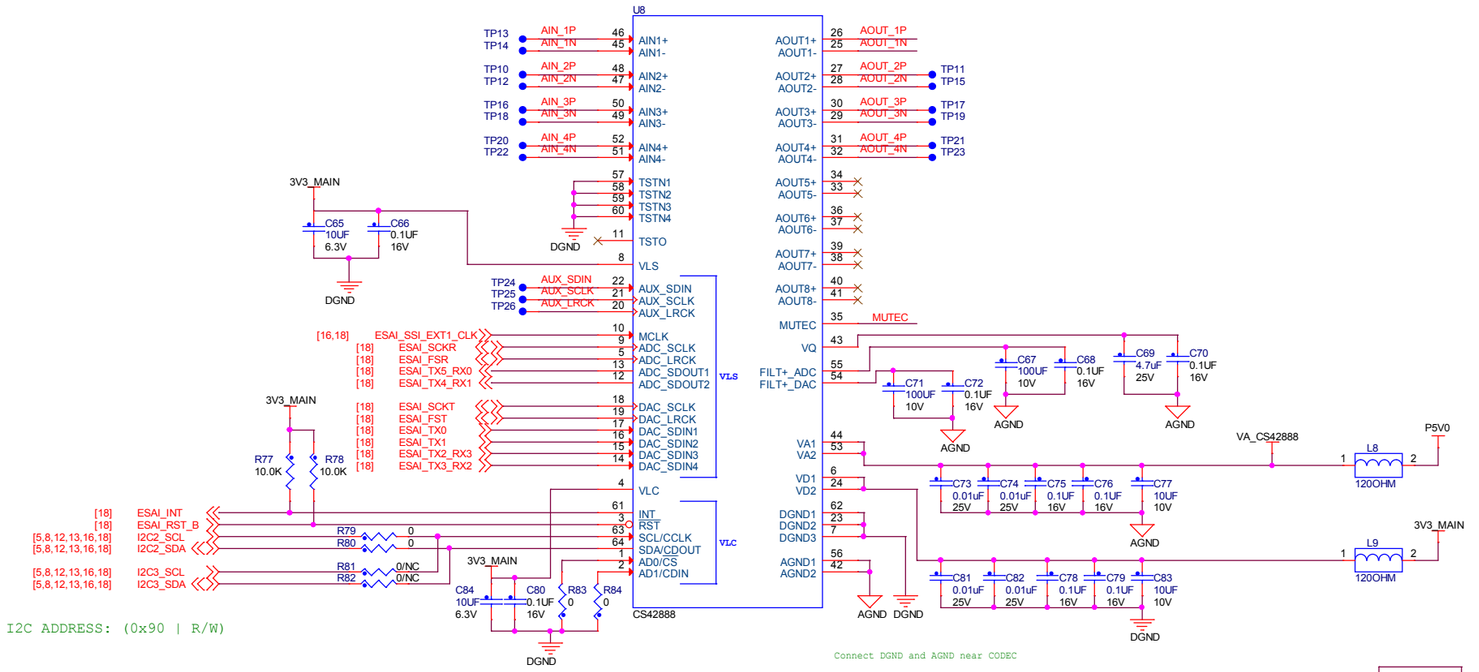
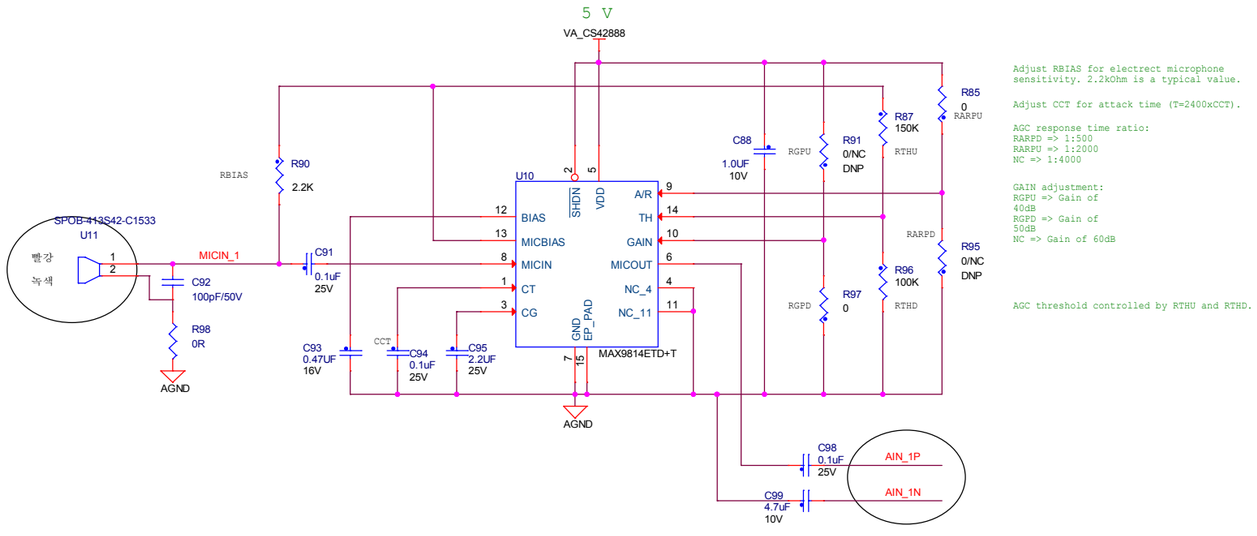
Audio CODEC



Microphone



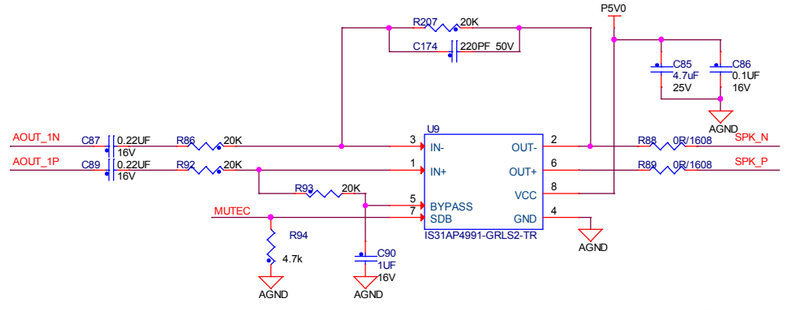
Adjust RBIAS for electrect microphone sensitivity. 2.2kOhm is a typical value.

Adjust CCT for attack time (T=2400xCCT).

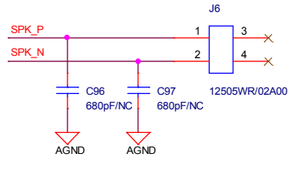
AGC response time ratio:
RARPD => 1:500
RARPU => 1:2000
NC => 1:4000

GAIN adjustment:
RGPU => Gain of 40dB
RGPD => Gain of 50dB
NC => Gain of 60dB

AGC threshold controlled by RTHU and RTHD.



Speaker



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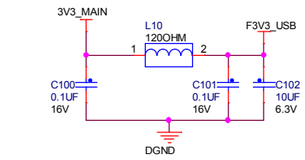
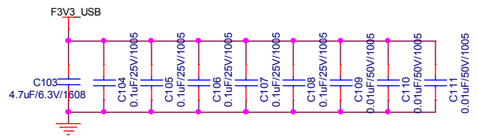
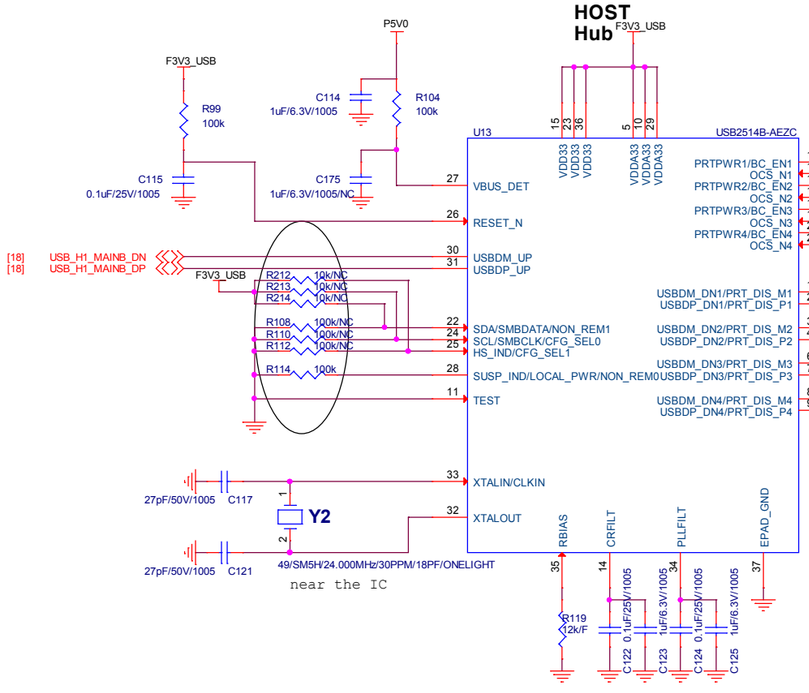
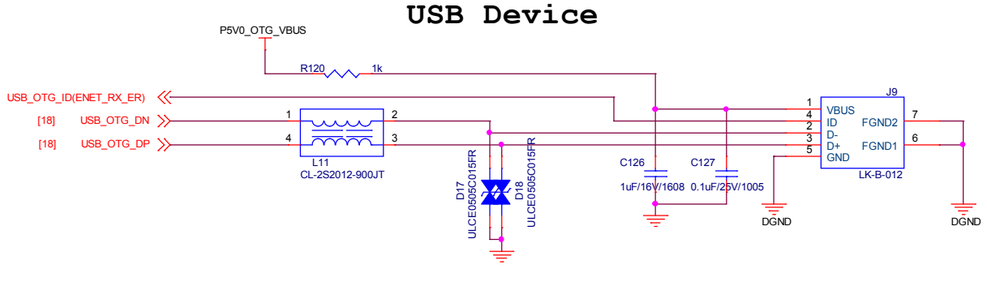
USB HUB/HOST ports









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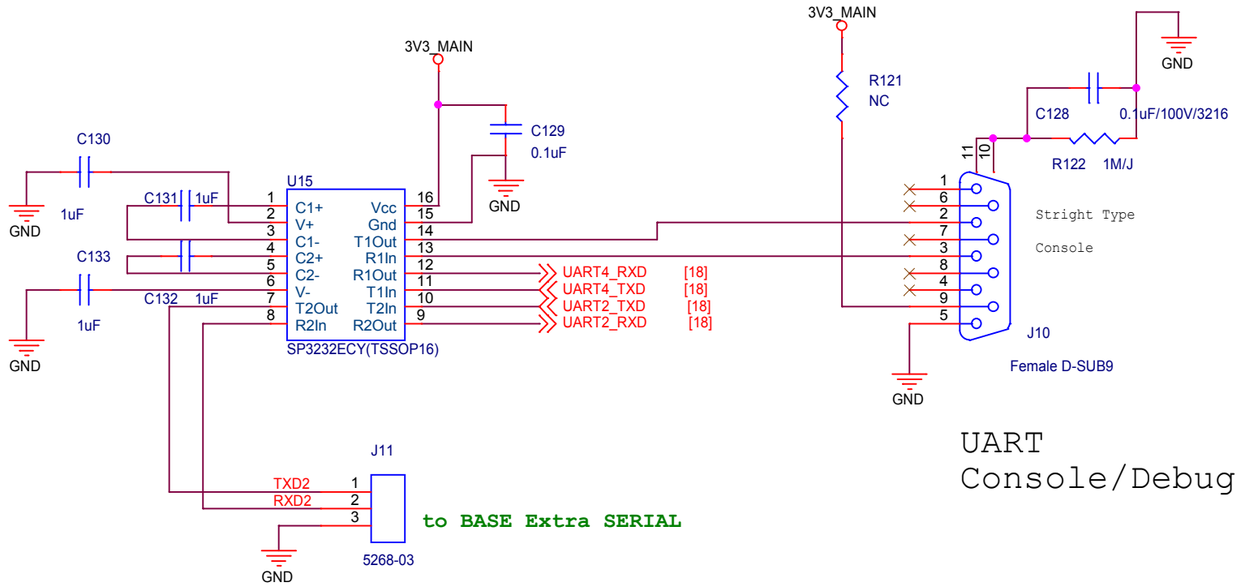
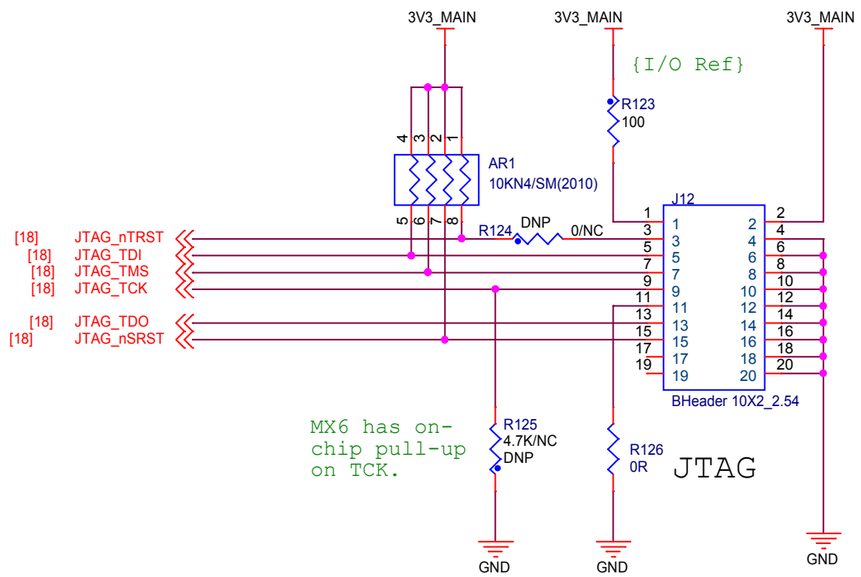
SERIAL/Debug Connector



JTAG Connector



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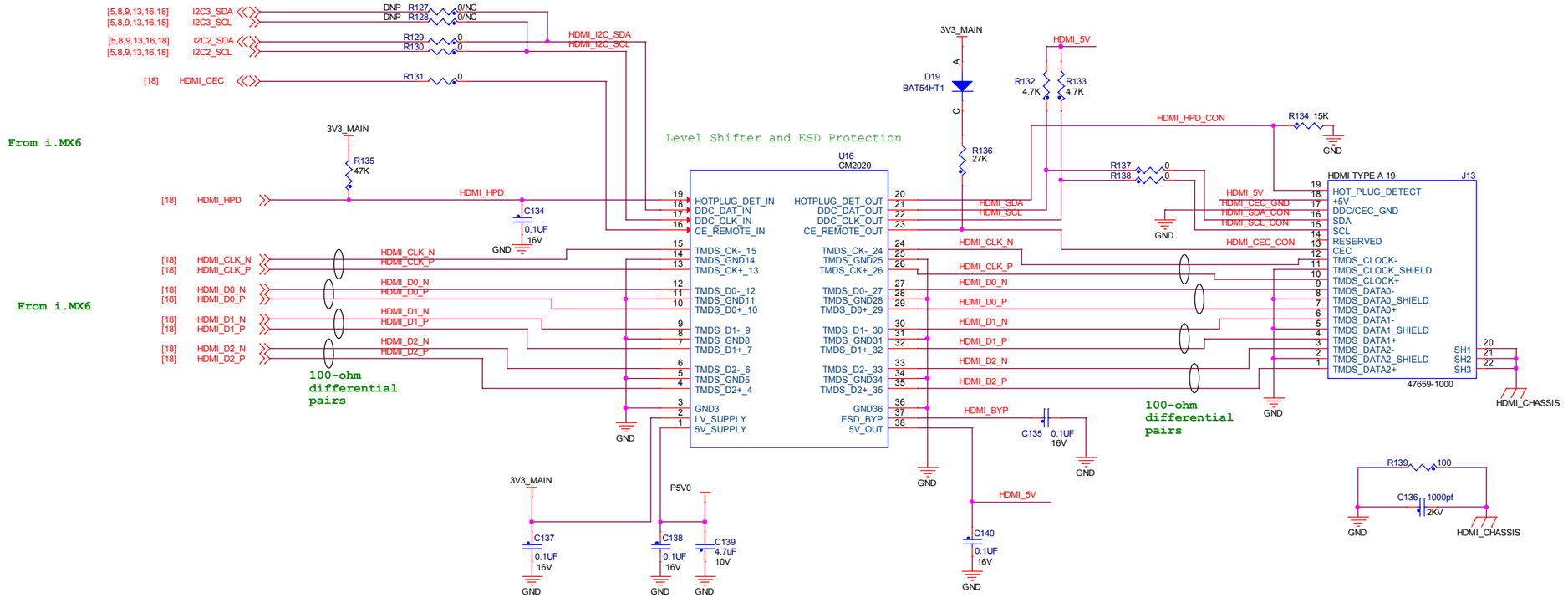
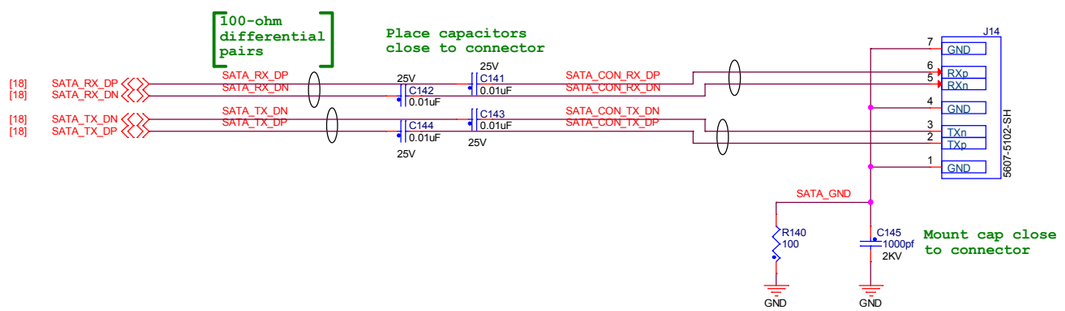
HDMI

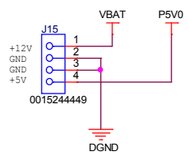


SATA



Power for SATA

SATA 5 V supply source provided by connector on Base Board.



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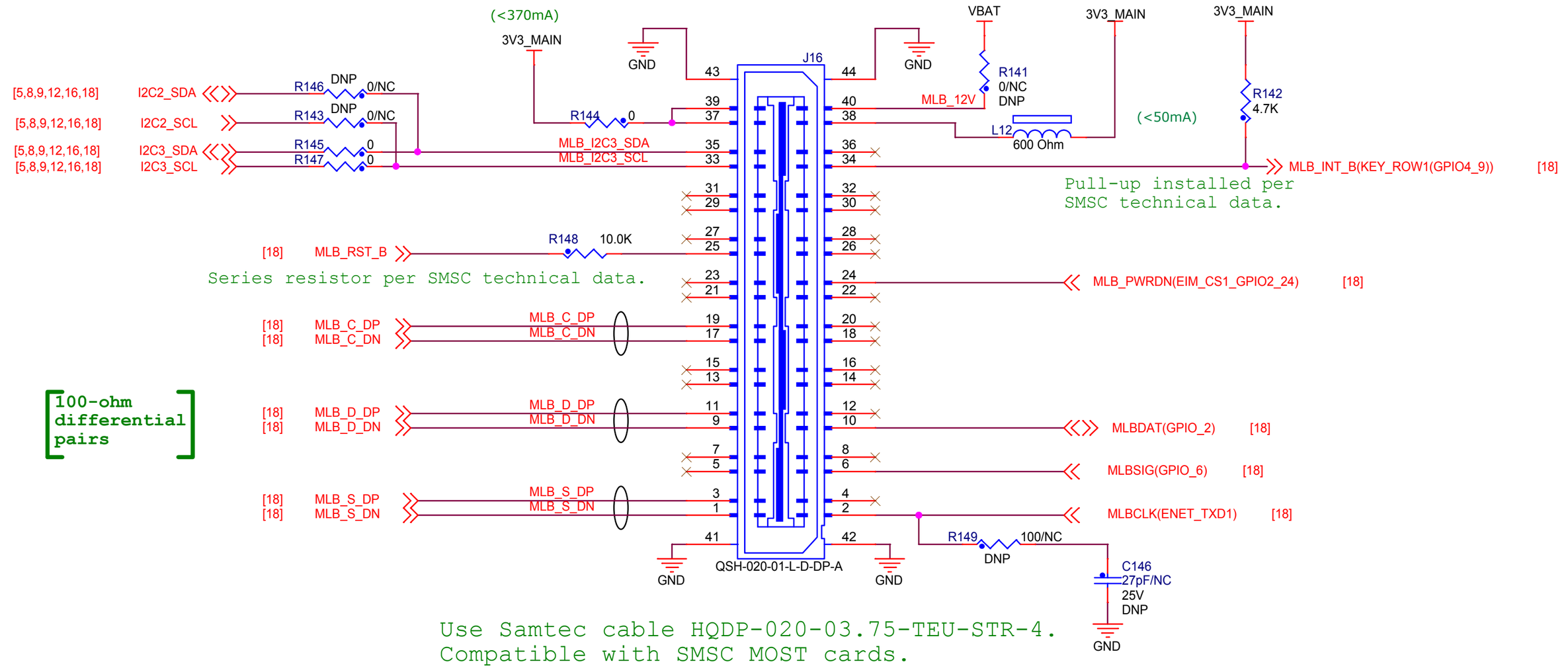
MLB (MOST) Connector



Use Samtec cable HQDP-020-03.75-TEU-STR-4.
Compatible with SMSC MOST cards.

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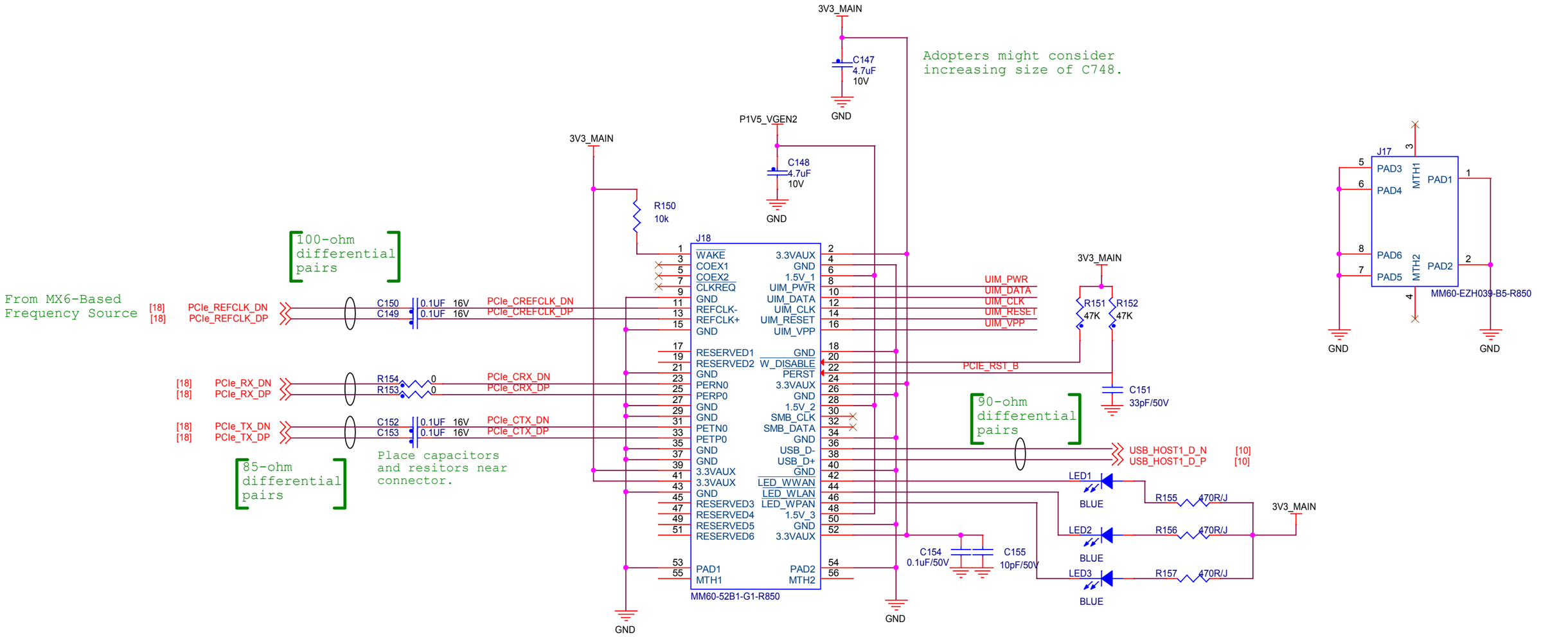
Mini PCIE Connector



PCIe provided to support USB3.0.

Layout considerations

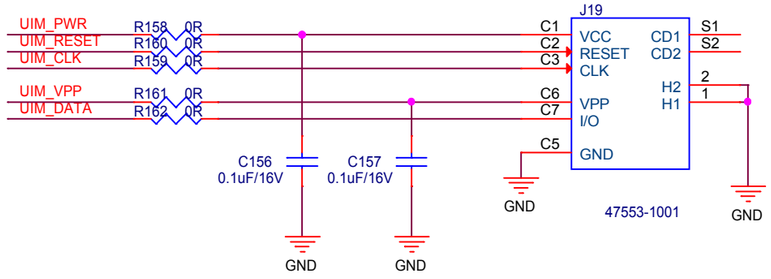
TX pairs are usually routed on top layer

Length/skew compensation (trace serpentines)
are not required for this Bus

Please remove ref plane under edgefinger pads

Use wide pair-to-pair spacing
(At least 5H TX vs TX and RX vs RX
use at least 7H for RX vs RX

USIM Connector



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CAN Interface

Local CAN Wake-Up

Consult NXP applications note AN00094 Figure 24.
Voltage hold capacitor is on CPU Card rev C schematic PMIC sheet.

i.MX GPIO CAN wake-up control

MX_CAN_WAKE_PULSE

Voltage and current requirements
Vbat = 5.5 to 27 Volts, Imax = 6 mA
VIO = 3.3 Volts, Imax = 1 mA

CAN1

Straight 3Pin Male
2.5mm

CAN2

The 30-ohm termination resistors are appropriate
for point-to-point testing. In an actual system,
60-ohm termination is appropriate.

Secondary CAN port

Primary CAN port

Depending on the amount of available GPIO, the CAN interfaces require 6 GPIO to allow two independent networks. However, with 4 GPIO the STBY and EN signals can be common, with the restriction being that both interfaces are always in the same state.

Because CAN2 is the primary CAN port when the MX6 CPU Card is utilized, users could consider removing R319 and installing R220.

30 V MOSFET.
Adopters should consider 50 V upgrade.

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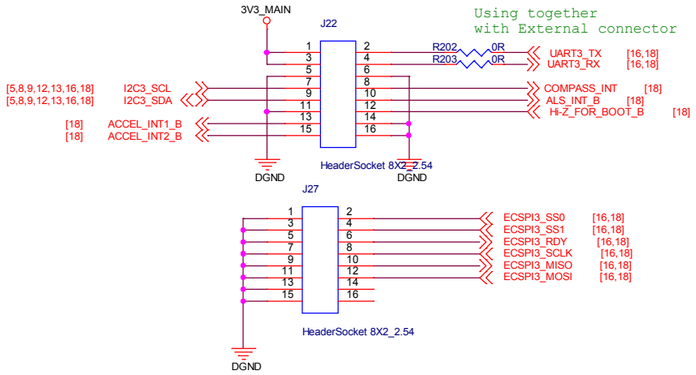
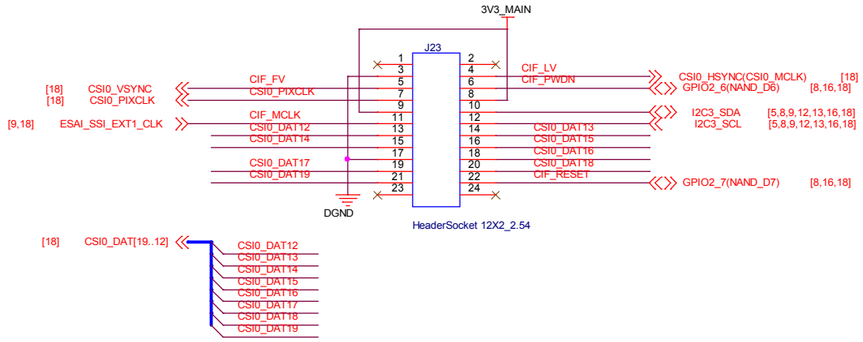
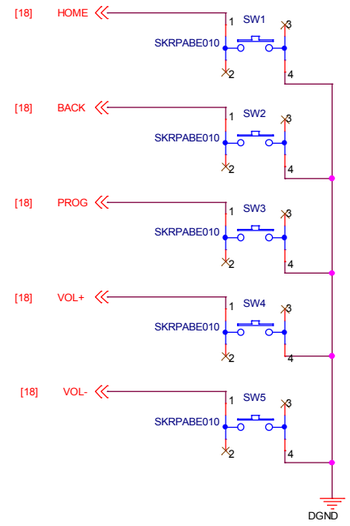
Sensor B'd Connector



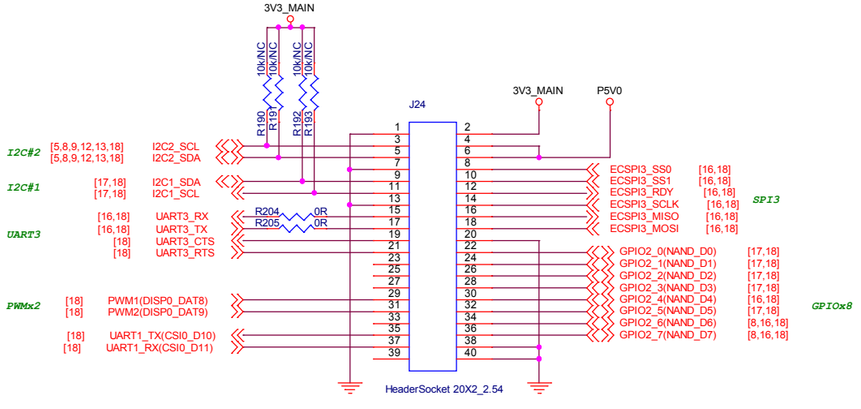
Parallel Camera Connector



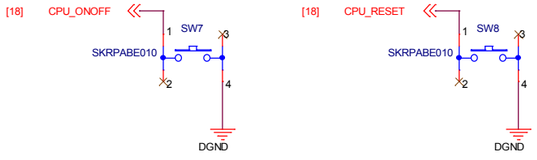
Android Keys



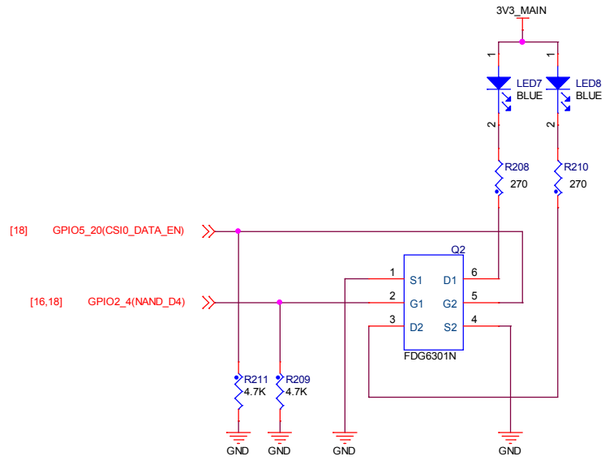
External Connector



System Keys



Status LEDs



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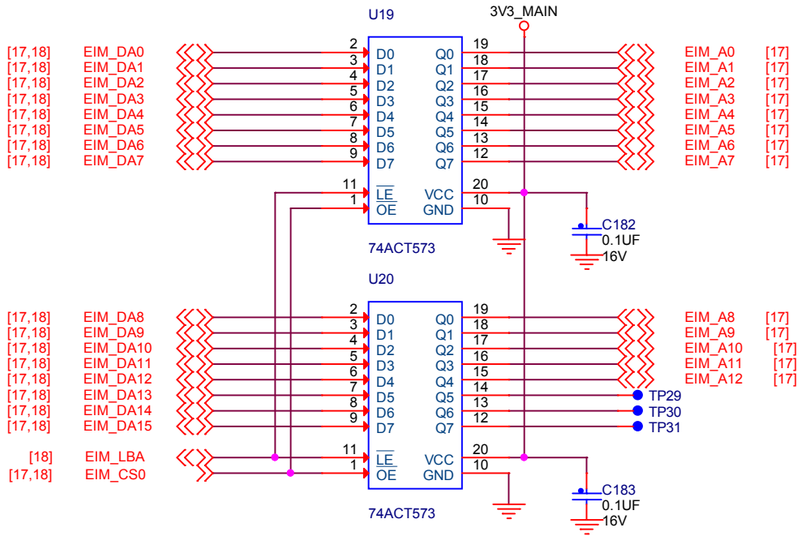
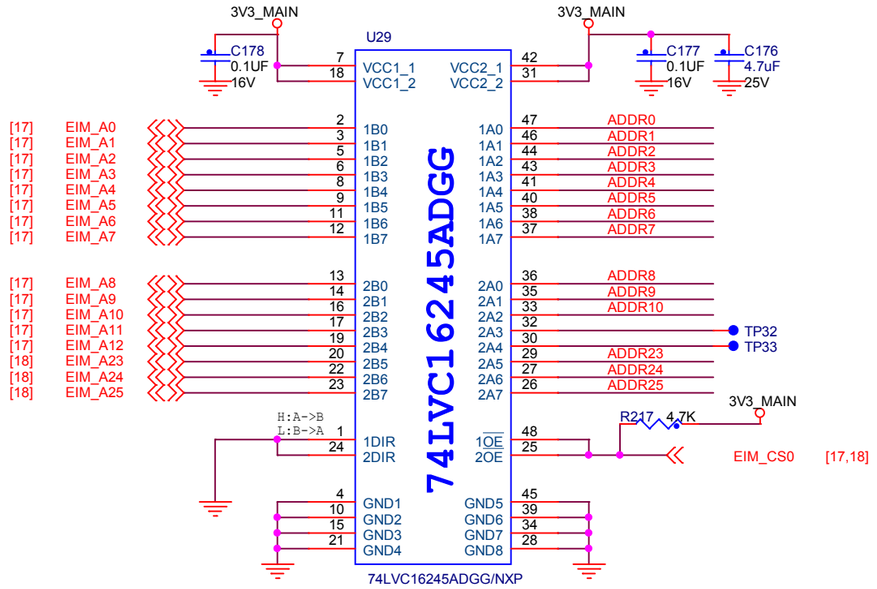
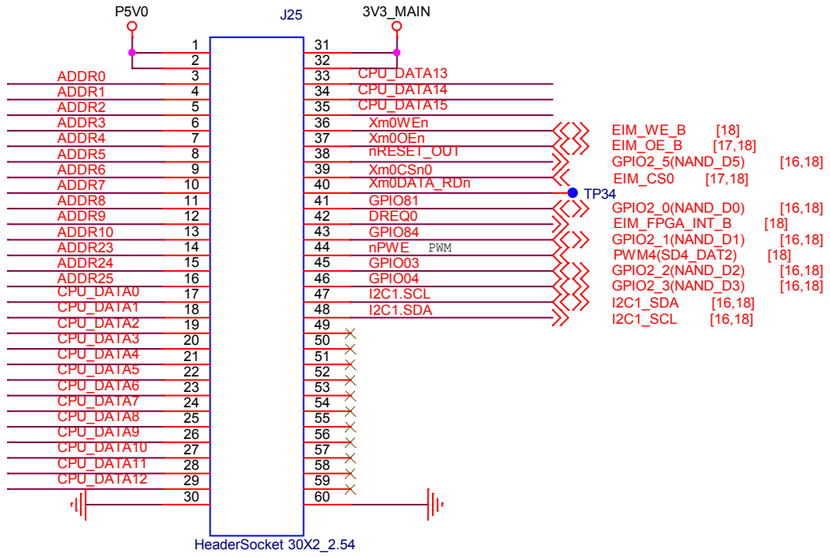
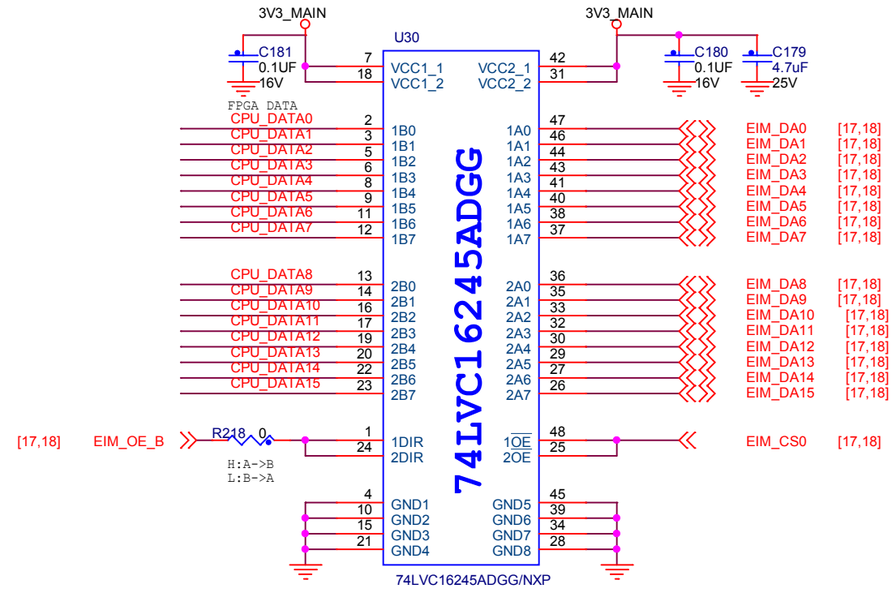
FPGA Connector









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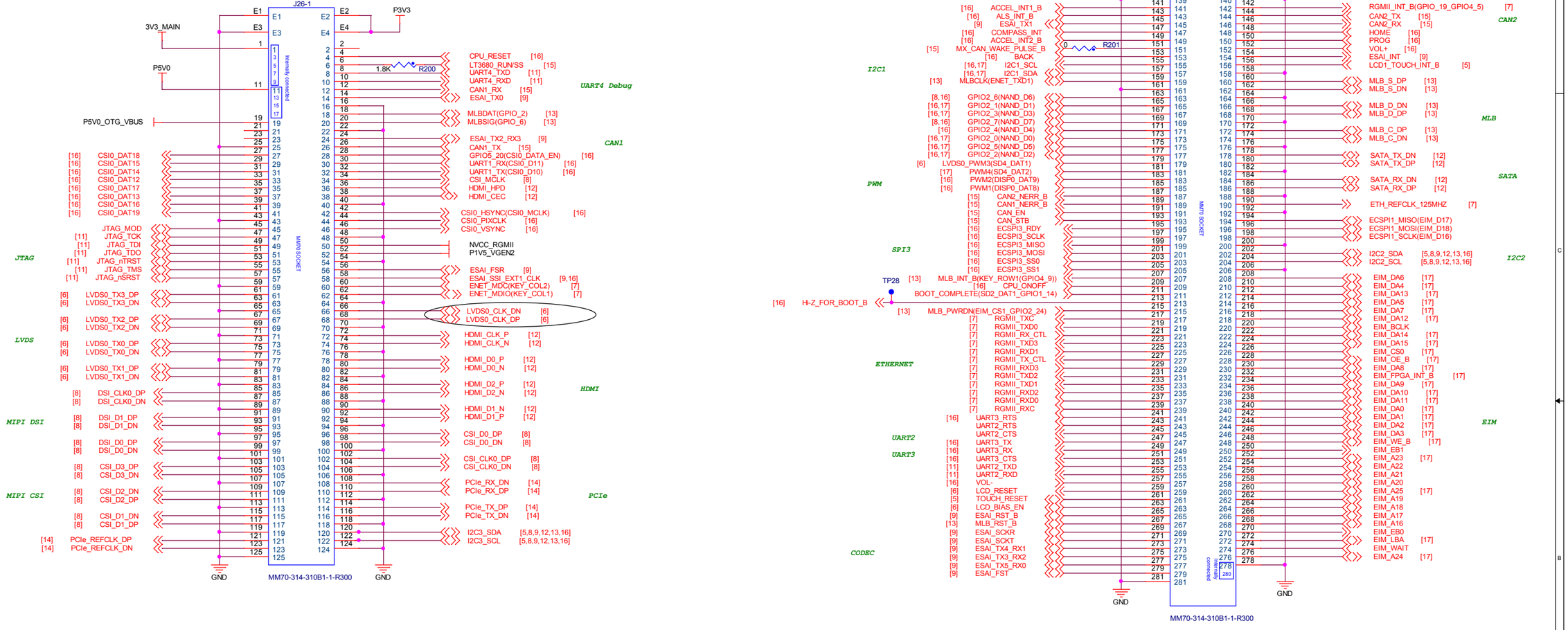
Board to Board Connector



CPU Card Connector, Reset, Expansion Connector

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