TILE 0

TILE 1

TILE 1

XTAGin / xSYS header

XTAGout

Power on reset

Pin 5(XMOS TDI),7,9,13,15 must be connected for xCORE-200.
Pin 11 for multi-PCB debug events.
XTAG does not power any device.

TDI to pin 5 of the xSYS header
TMS to pin 7 of the xSYS header
TCK to pin 9 of the xSYS header
DEBUG_N to pin 11 of the xSYS header
TDO to pin 13 of the xSYS header

TDO from this XMOS chip
TDO_RETURN
TDO from last XMOS chip in chain

A connected device will ground this pin

All one-way data flow wires has inverted direction in FEMALE connector to mate with MALE

Boot from QSPI-FLASH or XLINK-0

u = Port unavailable if USB enabled on that tile

2 x 3 phase + watchdog =7 pins

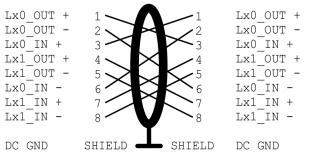
CT(nF) = [tD(s) - 0.5E-3] * 175 = 0.78nF
valid for CT>100pF

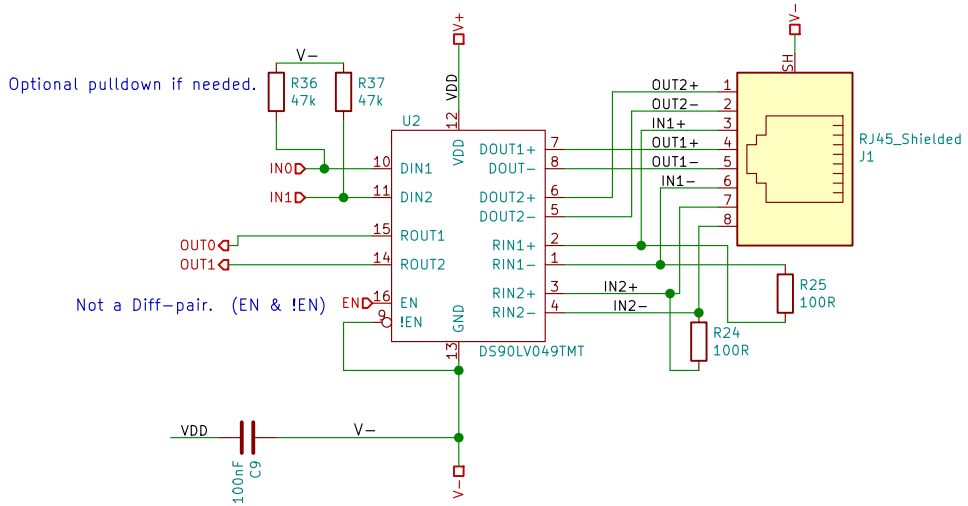
Open Source		
openPnP		
Sheet: /		
File: test.sch		
Title: XMOS top level		
Size: A3	Date: 2018-12-31	Rev: BETA
KiCad E.D.A. kicad (5.0.2)-1		Id: 1/10

RJ45 PINOUT:

1/2	Lx0_OUT +/-
3/6	Lx0_IN +/-
4/5	Lx1_OUT +/-
7/8	Lx1_IN +/-

CAT 5e / CAT 6 CROSS WIRED STP PATCH CABLE





Unconnected LVDS input gives HI out on TTL side.
Active XLinks input should be LO during reset.
XMOS pins has internal pulldown.
Transciever needs to be in HiZ during XMOS reset.

This should give hardware support for hotswap with unconnected active XLinks, with bootloader in Flash.

Open Source
openPnP

Sheet: /LVDS0/
File: file5C2628B0.sch

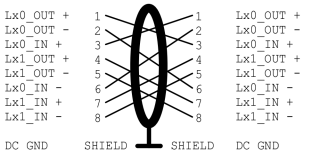
Title: LVDS <–> Xlinks

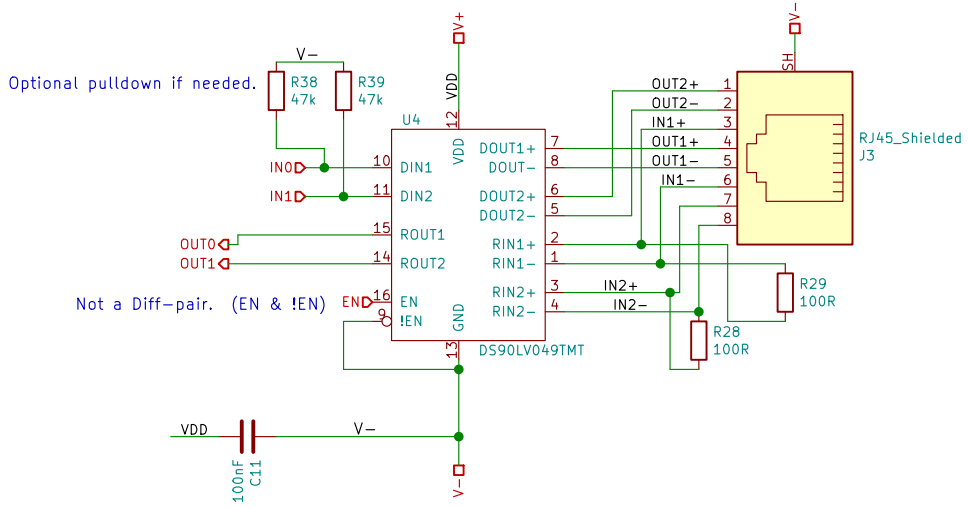
Size: A4	Date: 2018–12–31	**Rev: BETA**
KiCad E.D.A. kicad (5.0.2)–1		Id: 2/10

RJ45 PINOUT:

1/2	Lx0_OUT +/-
3/6	Lx0_IN +/-
4/5	Lx1_OUT +/-
7/8	Lx1_IN +/-

CAT 5e / CAT 6 CROSS WIRED STP PATCH CABLE





Unconnected LVDS input gives HI out on TTL side.
Active XLinks input should be LO during reset.
XMOS pins has internal pulldown.
Transciever needs to be in HiZ during XMOS reset.

This should give hardware support for hotswap with unconnected active XLinks, with bootloader in Flash.

Open Source
openPnP

Sheet: /LVDS4/
File: file5C2628B0.sch

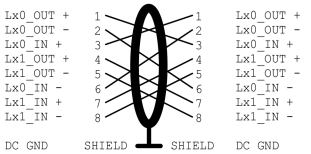
Title: LVDS <−> Xlinks

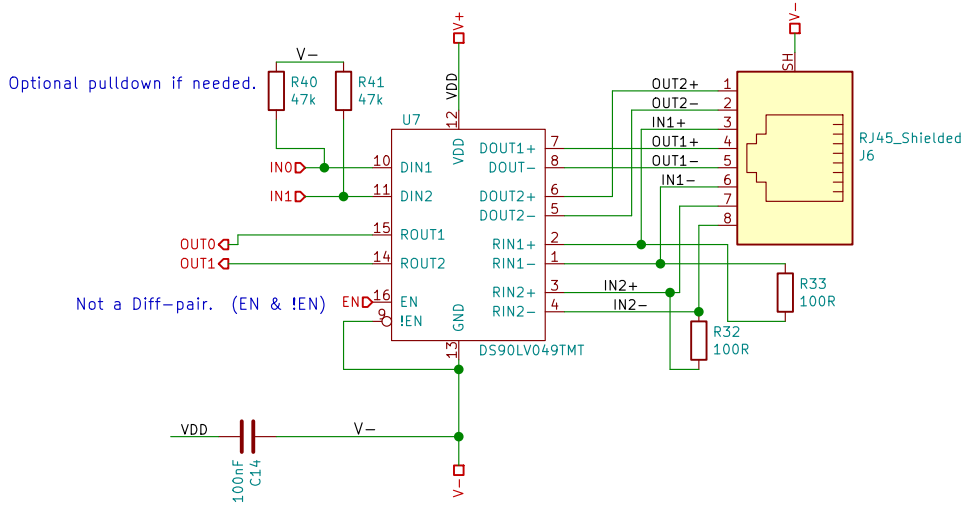
Size: A4	Date: 2018−12−31	**Rev: BETA**
KiCad E.D.A. kicad (5.0.2)−1		Id: 3/10

RJ45 PINOUT:

1/2	Lx0_OUT +/-
3/6	Lx0_IN +/-
4/5	Lx1_OUT +/-
7/8	Lx1_IN +/-

CAT 5e / CAT 6 CROSS WIRED STP PATCH CABLE





Unconnected LVDS input gives HI out on TTL side.
Active XLinks input should be LO during reset.
XMOS pins has internal pulldown.
Transciever needs to be in HiZ during XMOS reset.

This should give hardware support for hotswap with unconnected active XLinks, with bootloader in Flash.

Open Source
openPnP

Sheet: /LVDS6/
File: file5C2628B0.sch

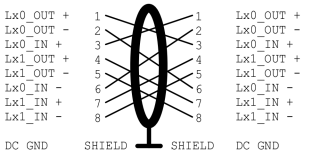
Title: LVDS <–> Xlinks

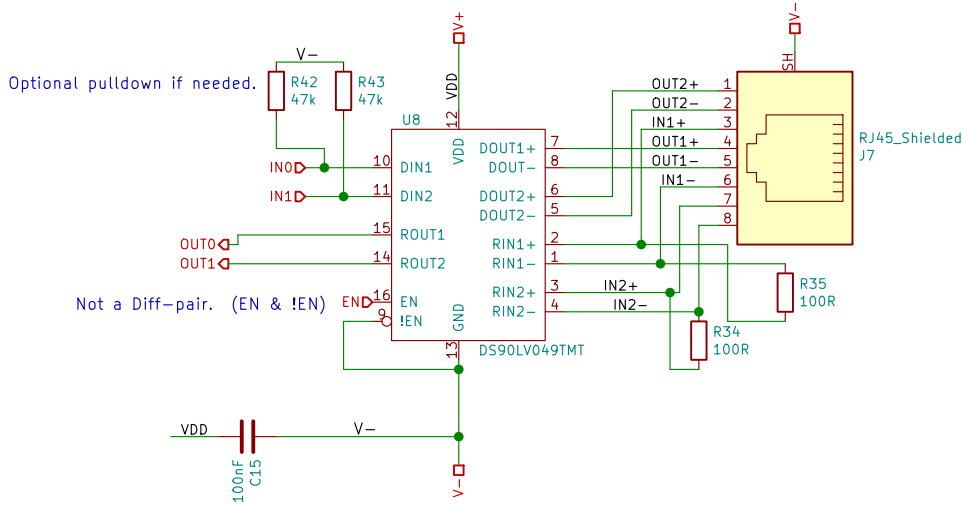
Size: A4	Date: 2018−12−31	**Rev: BETA**
KiCad E.D.A. kicad (5.0.2)−1		Id: 4/10

RJ45 PINOUT:

1/2	Lx0_OUT +/-
3/6	Lx0_IN +/-
4/5	Lx1_OUT +/-
7/8	Lx1_IN +/-

CAT 5e / CAT 6 CROSS WIRED STP PATCH CABLE





Unconnected LVDS input gives HI out on TTL side.
Active XLinks input should be LO during reset.
XMOS pins has internal pulldown.
Transciever needs to be in HiZ during XMOS reset.

This should give hardware support for hotswap with unconnected active XLinks, with bootloader in Flash.

Open Source
openPnP

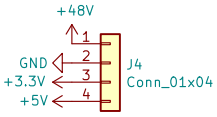
Sheet: /LVDS7/
File: file5C2628B0.sch

Title: LVDS <−> Xlinks

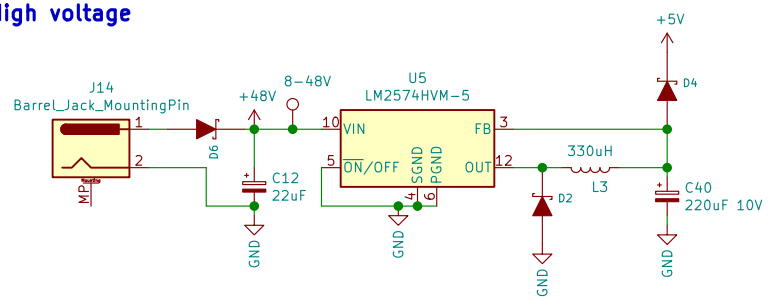
Size: A4	Date: 2018−12−31	**Rev: BETA**
KiCad E.D.A. kicad (5.0.2)−1		Id: 5/10

Cards can be power by USB or by the barrel jack 8–48V.
Alternative "+48V" can come from a connected daugther card.
Both USB and +48V should not be connected on the same PCB.
USB ground should be isolated from power ground for PC safety.

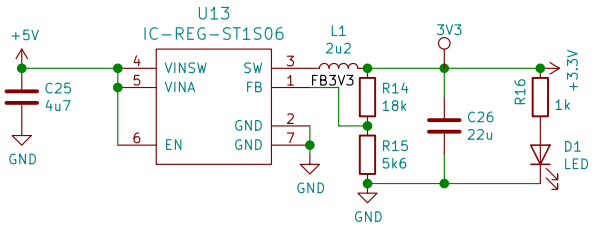
Power ports are Global in the schematics.



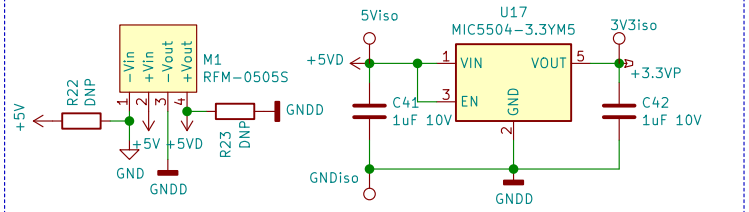
High voltage



DC–DC



DC–DC isolation

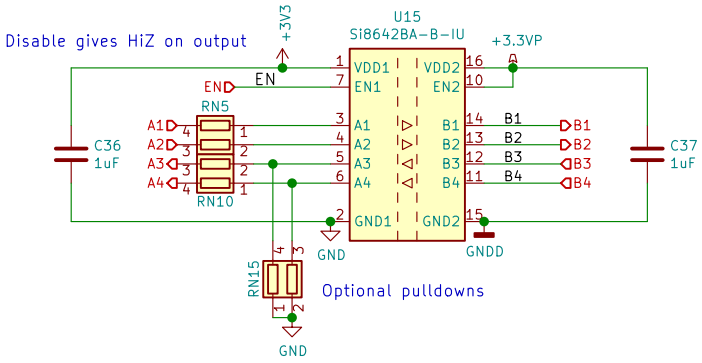


VDDIO/OTP_VCC and VDD can ramp up independently.
In order to reduce stresses on the device, it is preferable to make them ramp up in a short time frame of each other, no more than 50 ms apart.
RST_N and TRST_N should be kept low until all power supplies are stable and within tolerances of their final voltage.
If your design is powered by VBUS, then RST_N should go high within 10 ms of attaching to VBUS in order to ensure that USB timings are met.
RST_N should be at least 1 ms after VDDIO good to enable the built–in flash to settle

Open Source
openPnP
Sheet: /POWER/
File: file5C95FA9D.sch

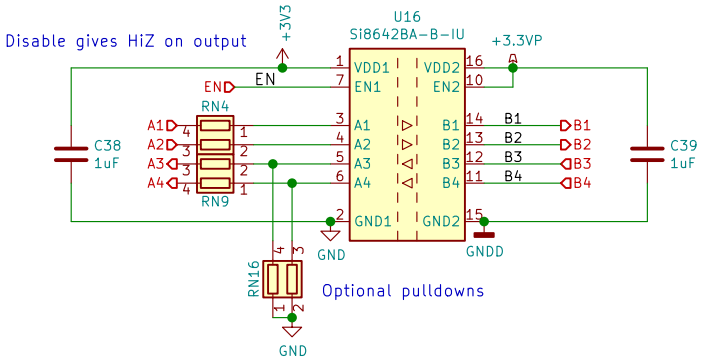
Title: Power

Size: A4	Date: 2018–12–31	**Rev: BETA**
KiCad E.D.A. kicad (5.0.2)–1		Id: 6/10



On XLinks-2 wire, only one transition per clock cycle can happen within the pair, to avoid jitter/skew sensitivity.

Open Source **openPnP**		
Sheet: /ISOLATION_0/ File: file5D2AE1E1.sch		
Title: Isolation		
Size: A4	Date: 2018-12-31	**Rev: BETA**
KiCad E.D.A. kicad (5.0.2)-1		Id: 7/10



On XLinks-2 wire, only one transition per clock cycle can happen within the pair, to avoid jitter/skew sensitivity.

Open Source
openPnP

Sheet: /ISOLATION_1/
File: file5D2AE1E1.sch

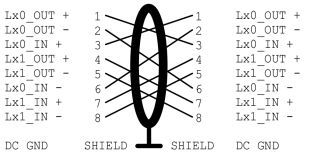
Title: Isolation

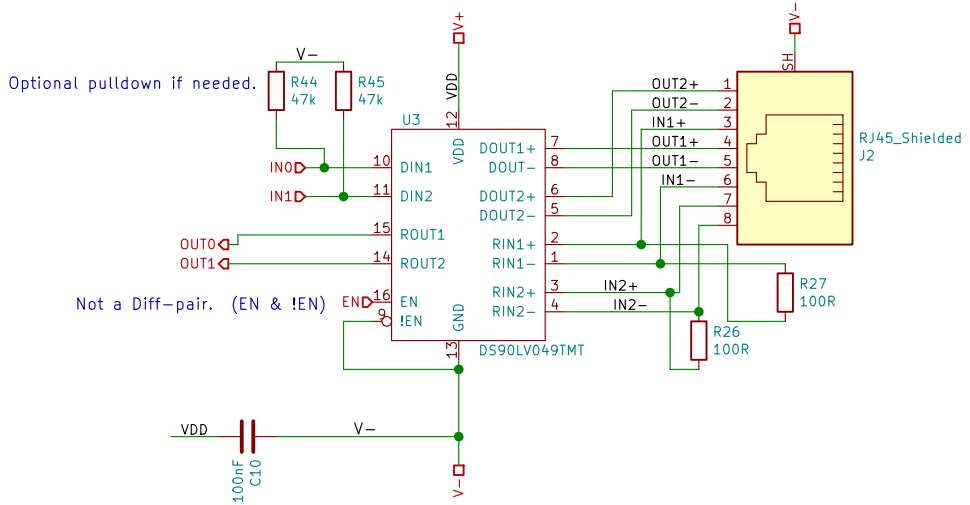
Size: A4	Date: 2018-12-31	**Rev: BETA**
KiCad E.D.A. kicad (5.0.2)-1		Id: 8/10

RJ45 PINOUT:

1/2	Lx0_OUT +/-
3/6	Lx0_IN +/-
4/5	Lx1_OUT +/-
7/8	Lx1_IN +/-

CAT 5e / CAT 6 CROSS WIRED STP PATCH CABLE





Unconnected LVDS input gives HI out on TTL side.
Active XLinks input should be LO during reset.
XMOS pins has internal pulldown.
Transciever needs to be in HiZ during XMOS reset.

This should give hardware support for hotswap with unconnected active XLinks, with bootloader in Flash.

Open Source
openPnP

Sheet: /LVDS1/
File: file5C2628B0.sch

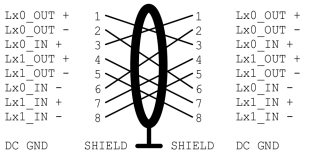
Title: LVDS <−> Xlinks

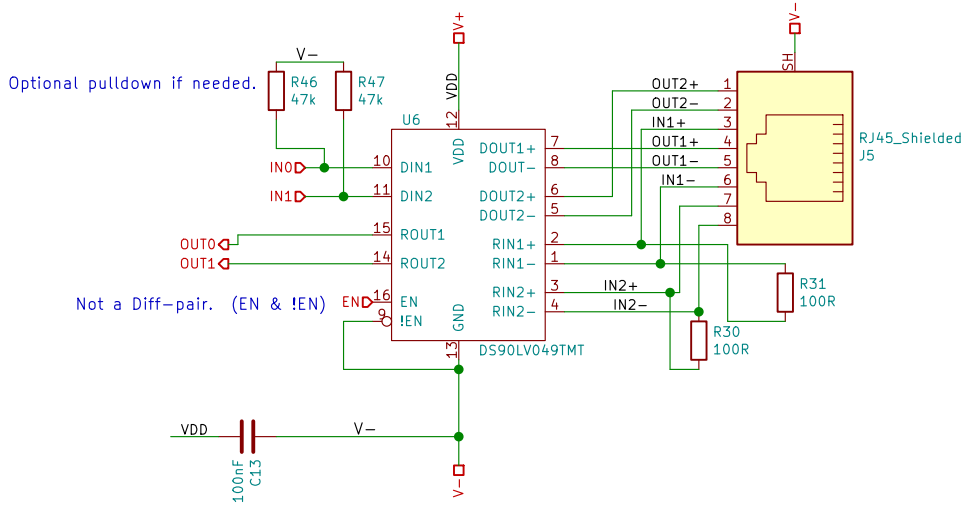
Size: A4	Date: 2018−12−31	**Rev: BETA**
KiCad E.D.A. kicad (5.0.2)−1		Id: 9/10

RJ45 PINOUT:

1/2	Lx0_OUT +/-
3/6	Lx0_IN +/-
4/5	Lx1_OUT +/-
7/8	Lx1_IN +/-

CAT 5e / CAT 6 CROSS WIRED STP PATCH CABLE





Unconnected LVDS input gives HI out on TTL side.
Active XLinks input should be LO during reset.
XMOS pins has internal pulldown.
Transciever needs to be in HiZ during XMOS reset.

This should give hardware support for hotswap with unconnected active XLinks, with bootloader in Flash.

Open Source
openPnP

Sheet: /LVDS5/
File: file5C2628B0.sch

Title: LVDS <−> Xlinks

Size: A4	Date: 2018−12−31	**Rev: BETA**
KiCad E.D.A. kicad (5.0.2)−1		Id: 10/10