

CYCLONE V GPU SCHEMATICS

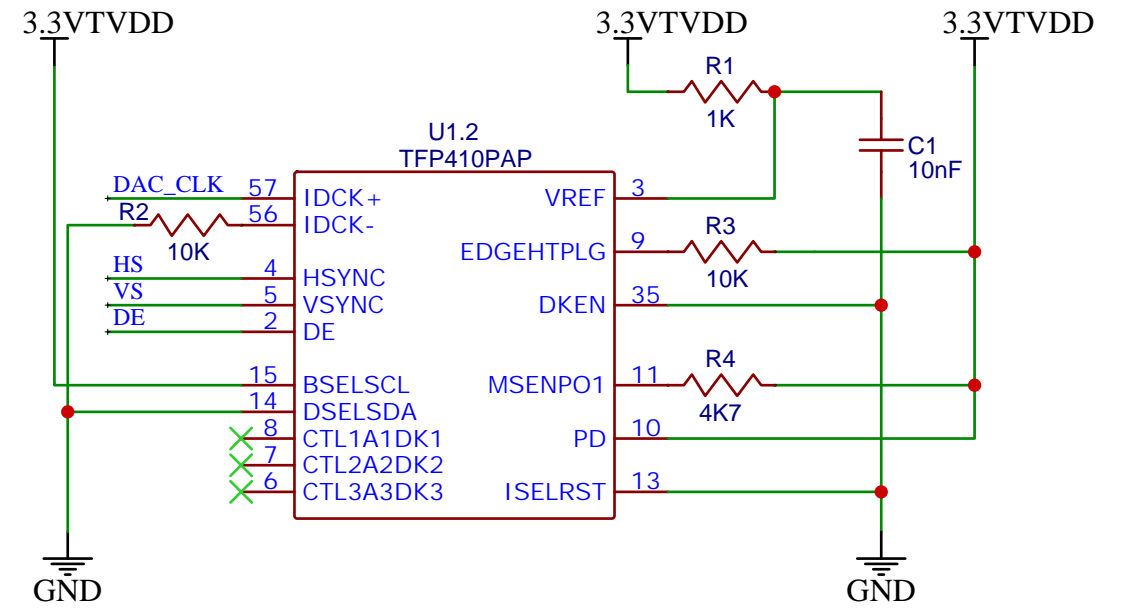
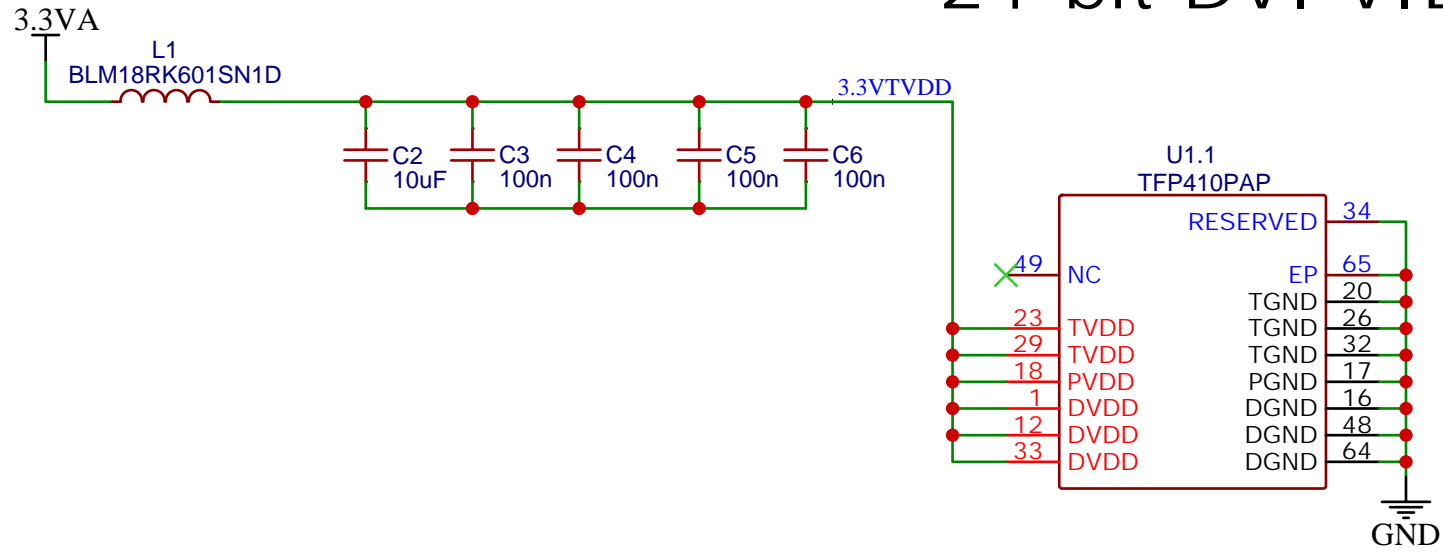
REVISIONS

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| 1.0 - Initial draft |
| 1.1 - Replaced MAX5101 DAC with PCM5101A. Replaced wire-wound chokes with fixed inductors. |
| 1.2 - Added decoupling and supply isolation for TFP410. |
| 1.3 - Removed decoupling and supply isolation for TFP410. Added external memory. |
| 1.4 - 10u caps and 100k pull-downs added to audio DAC output. Fixed micro-SD pullups. Corrected DDR-RAM clock pins. Variable-voltage added to U19. |

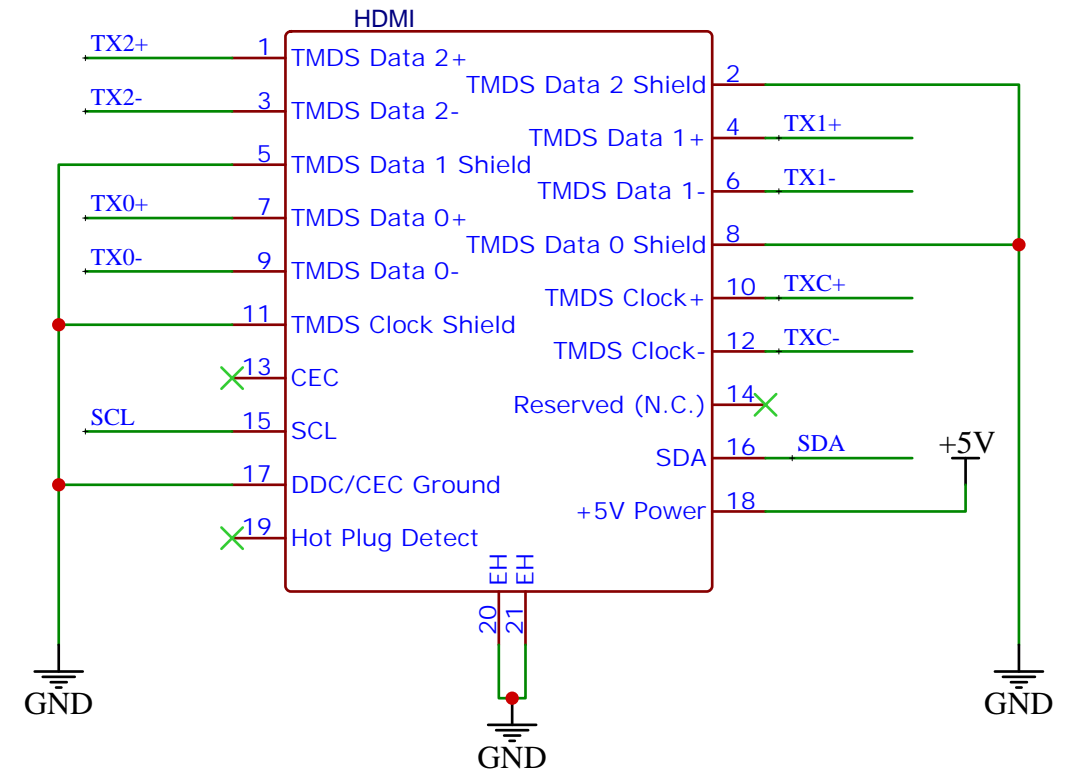
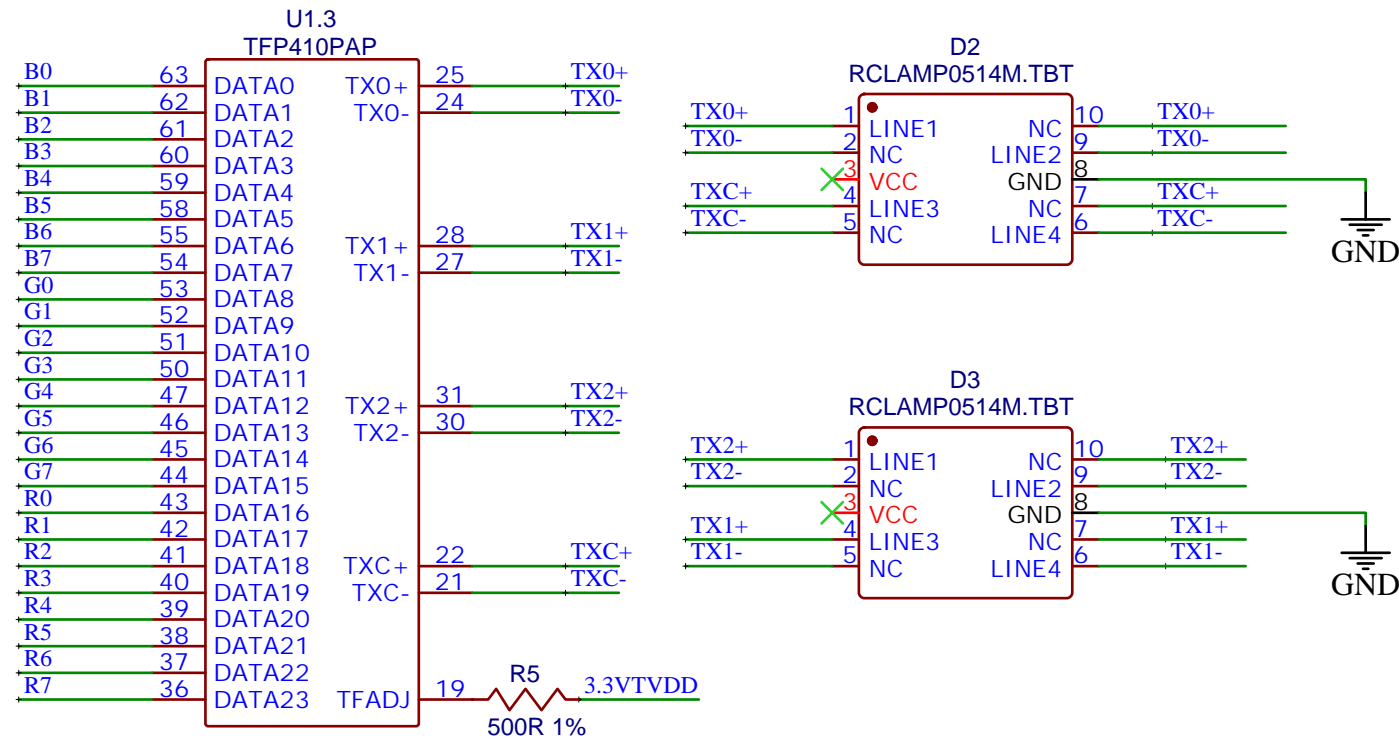
PAGE CONTENT

| | |
|-----|----------------------------|
| 1. | INDEX |
| 2. | DVI OUTPUT |
| 3. | VGA OUTPUT |
| 4. | 5V TO 3.3V BUS CONVERSION |
| 5. | CLOCK & FPGA CONFIGURATION |
| 6. | FPGA CONNECTIONS |
| 7. | GPU BOARD PERIPHERALS |
| 8. | POWER SUPPLIES |
| 9. | DECOUPLING |
| 10. | FPGA EXTERNAL MEMORY |
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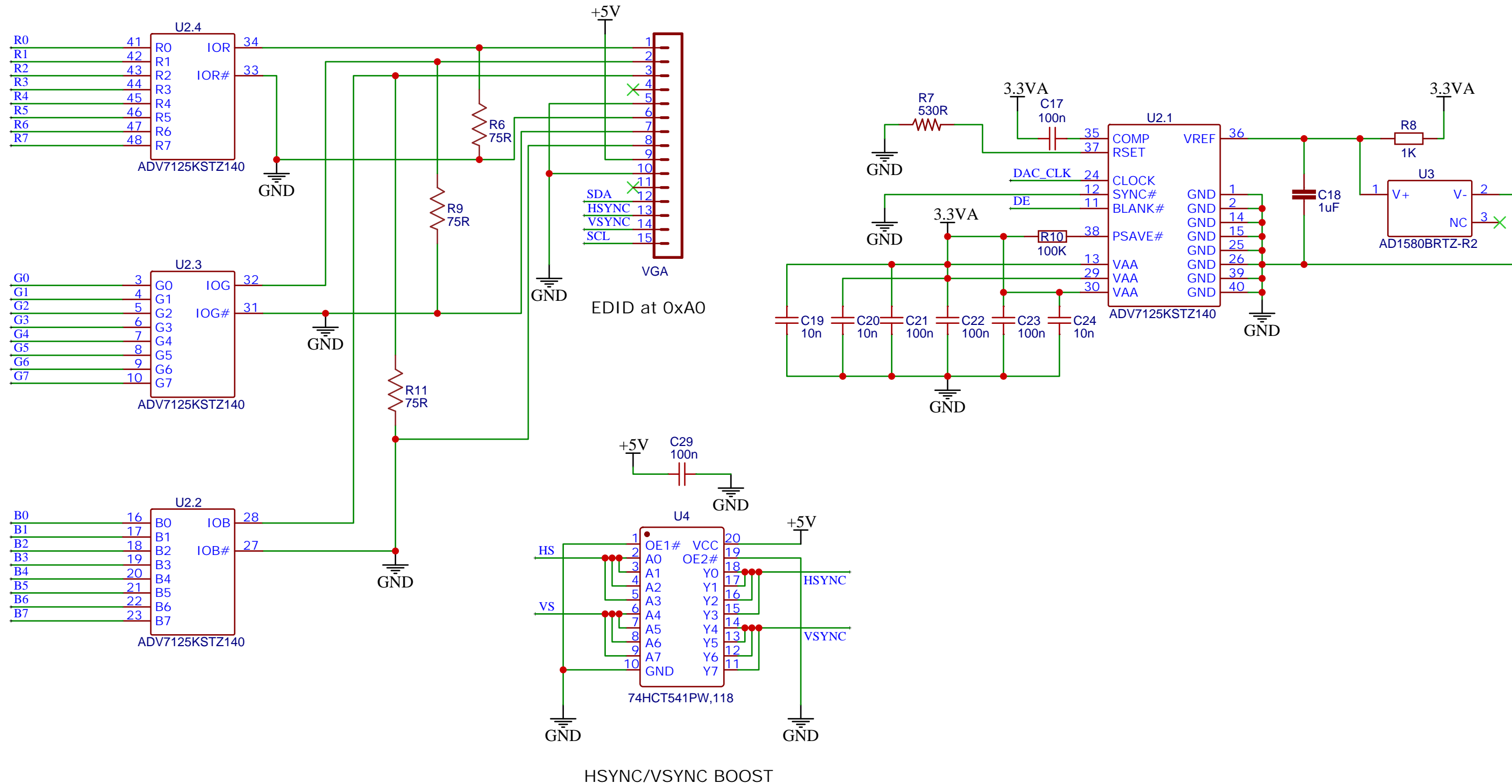
24-bit DVI VIDEO OUTPUT



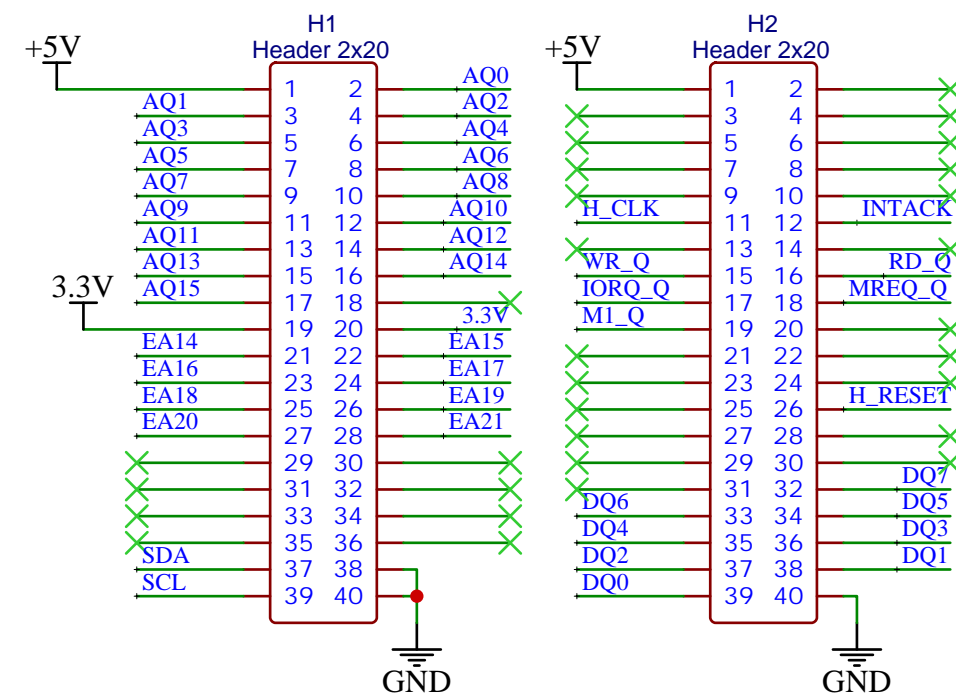
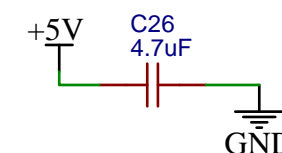
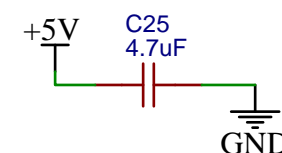
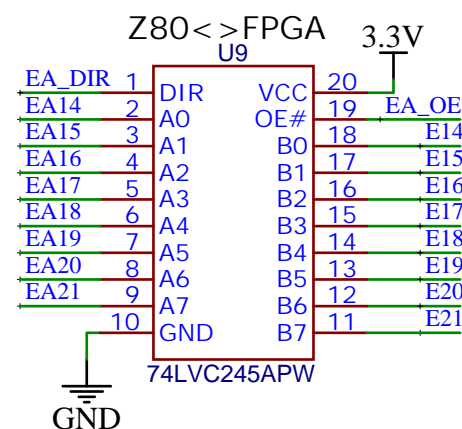
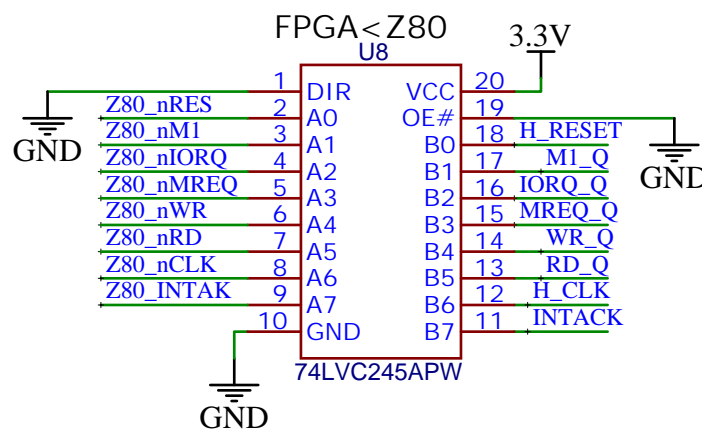
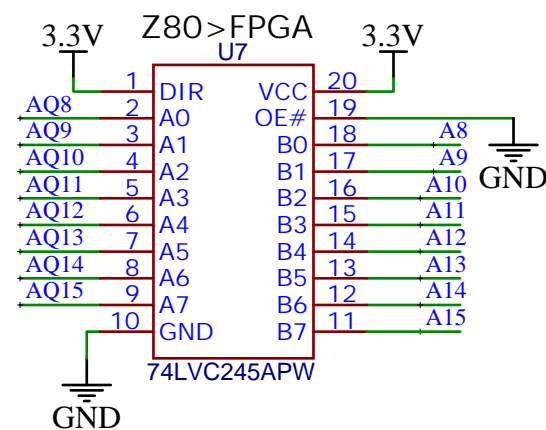
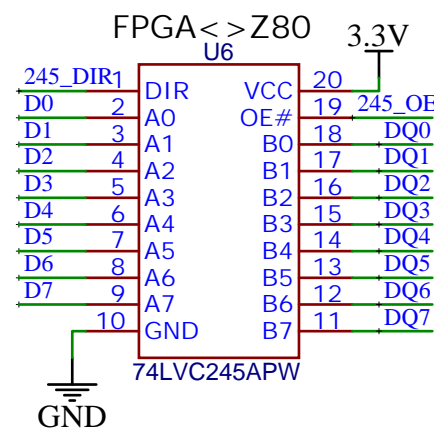
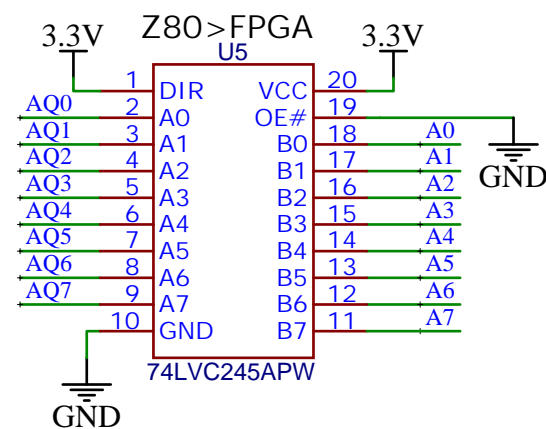
| | | | |
|--------|-------------|--------|--------------|
| Width | Latch Mode | Edge | Clock Mode |
| 24-bit | Single-edge | Rising | Single-ended |



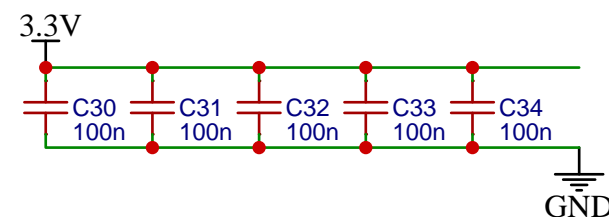
24-bit VGA VIDEO OUTPUT



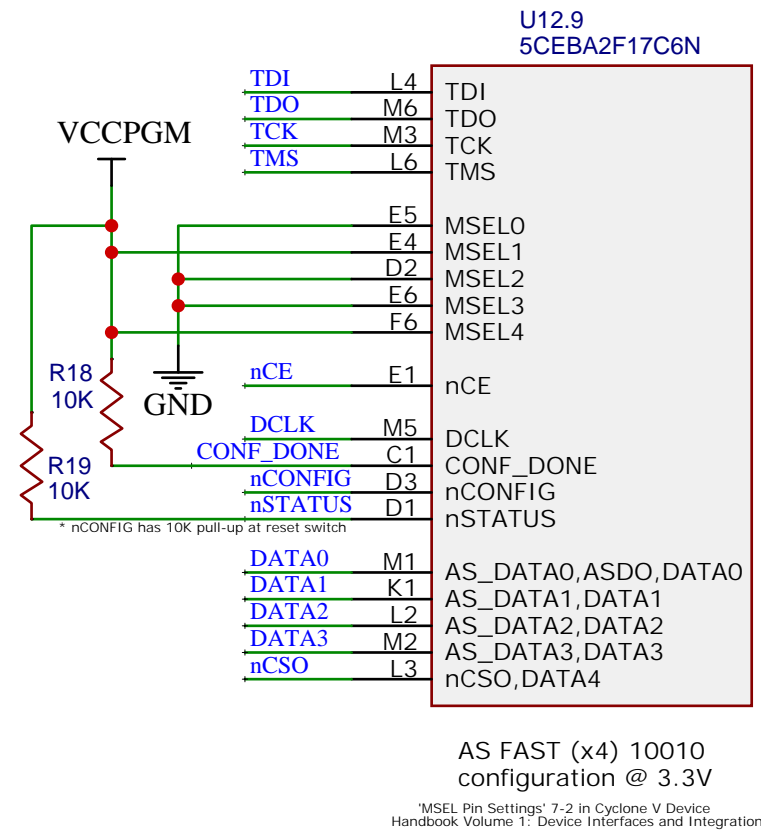
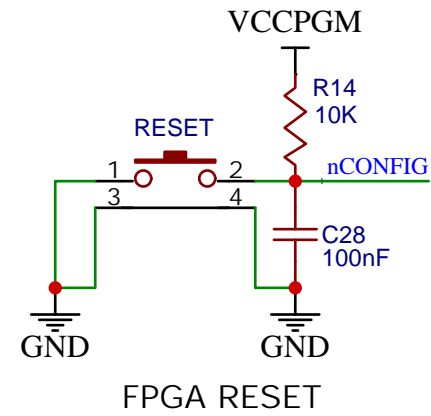
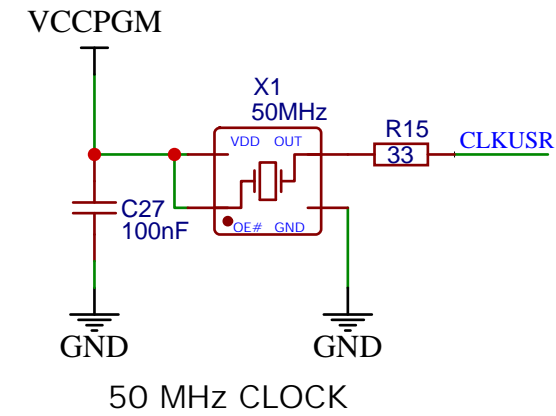
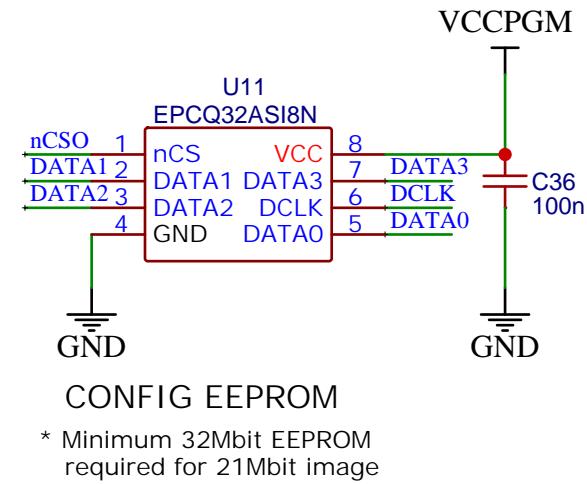
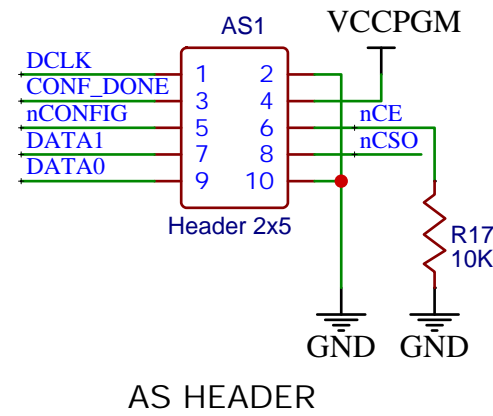
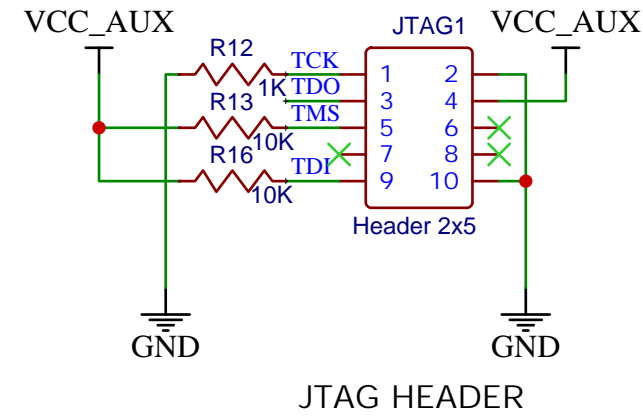
5V<->3.3V SYSTEM BUS CONVERTERS



SYSTEM BUS HEADERS

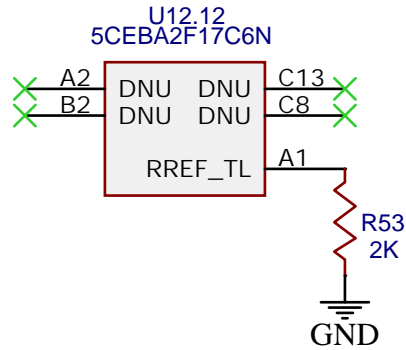
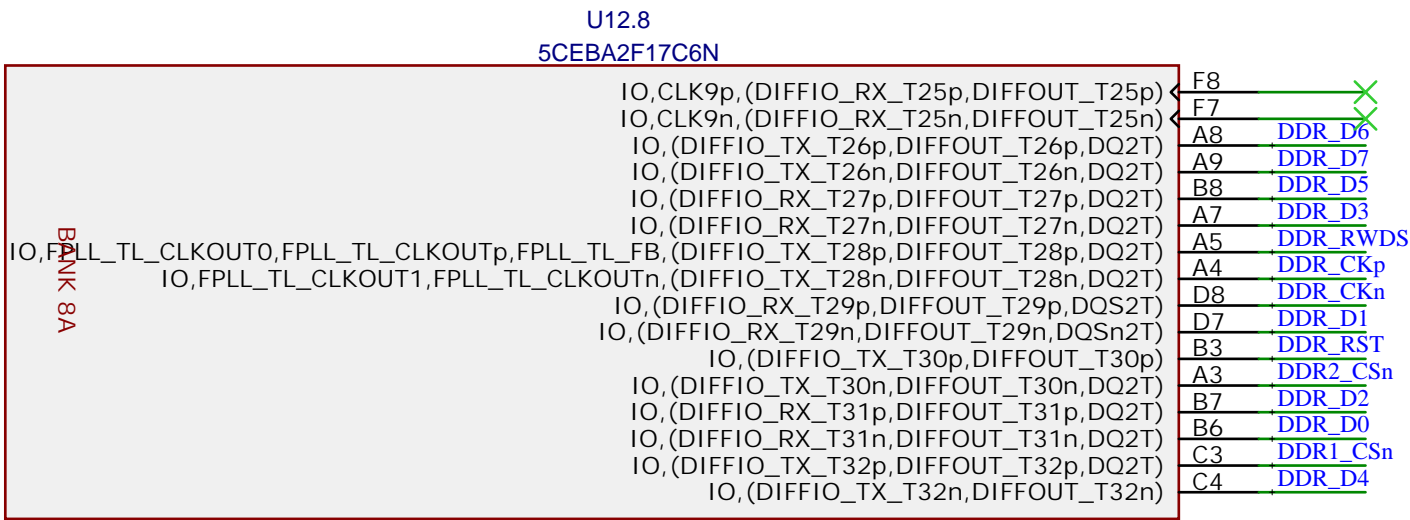
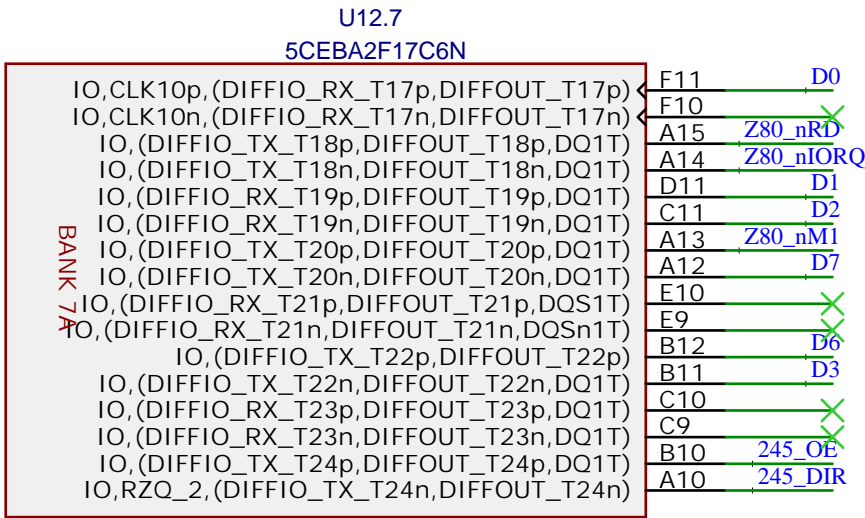
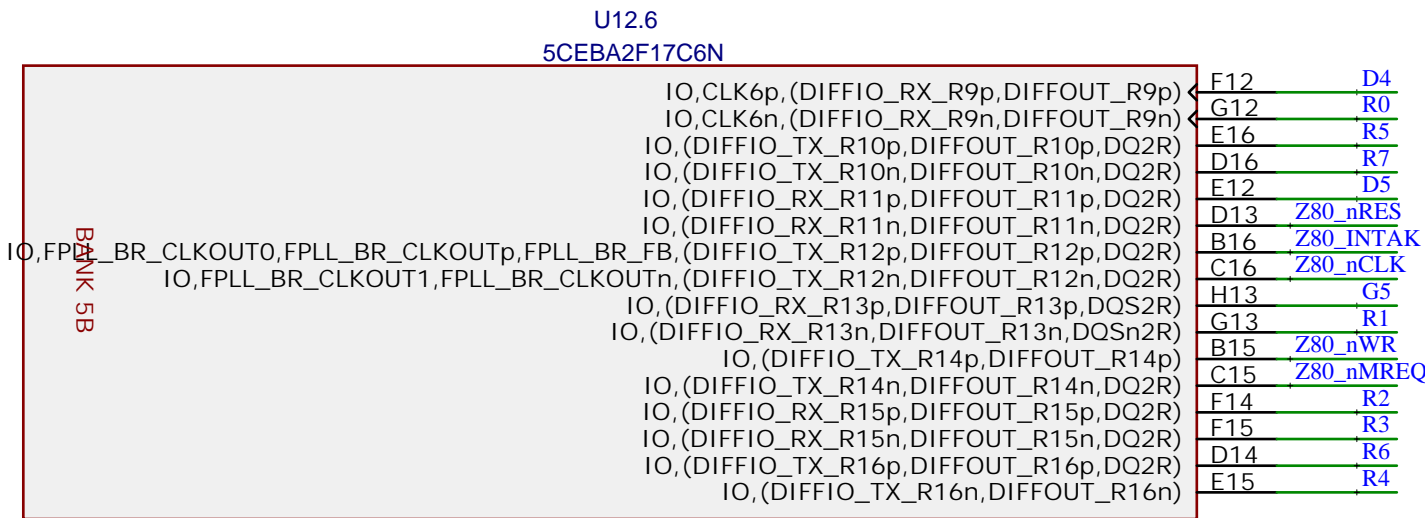
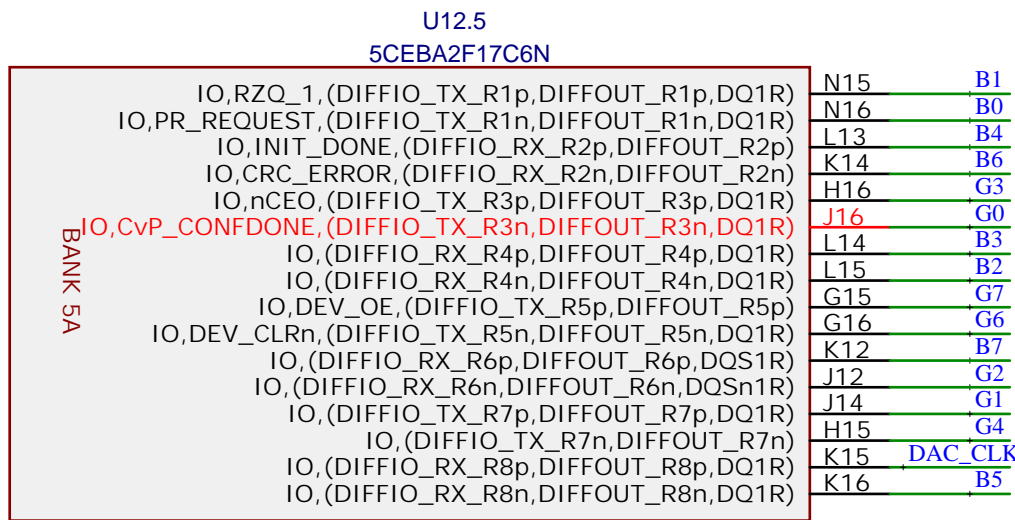
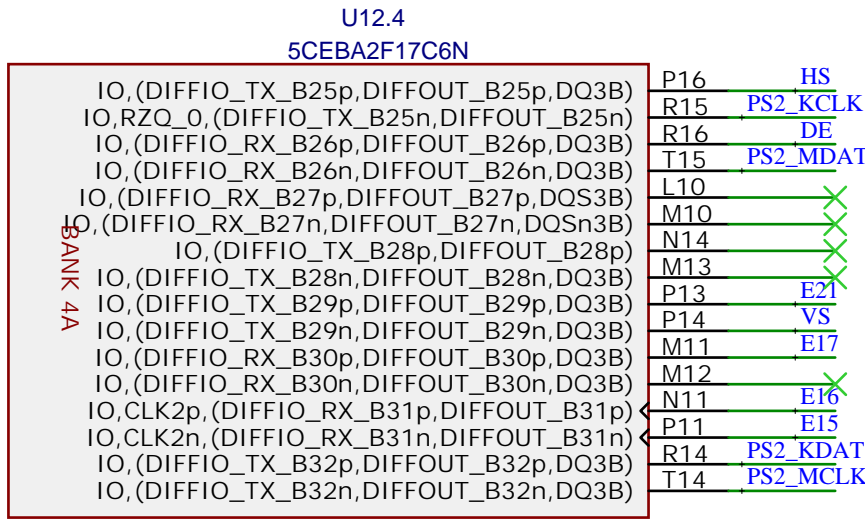
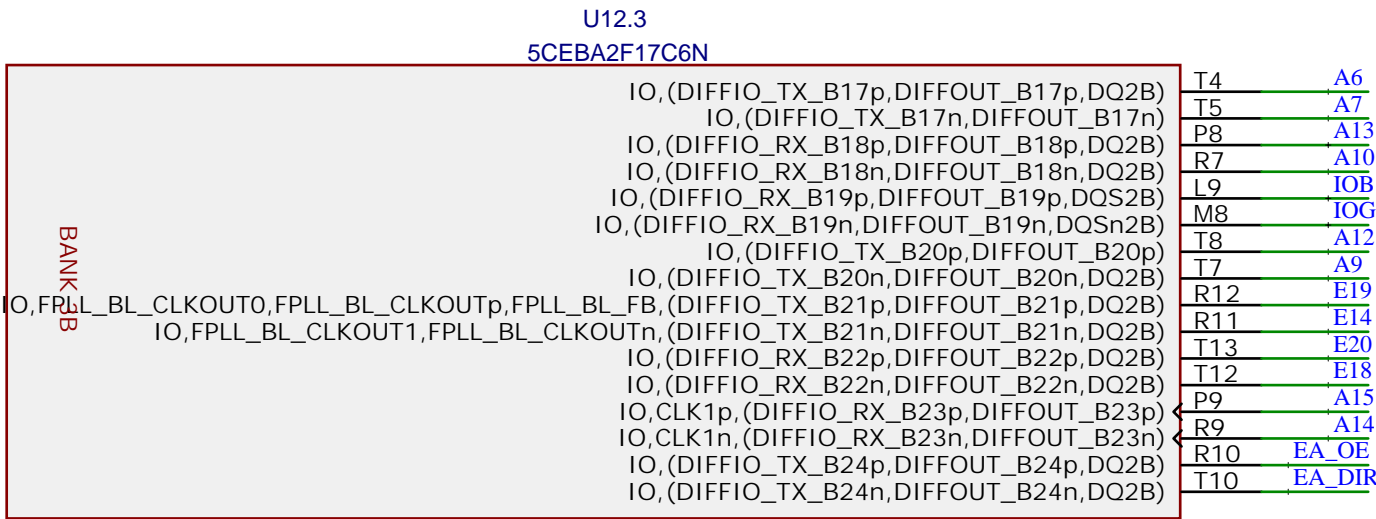
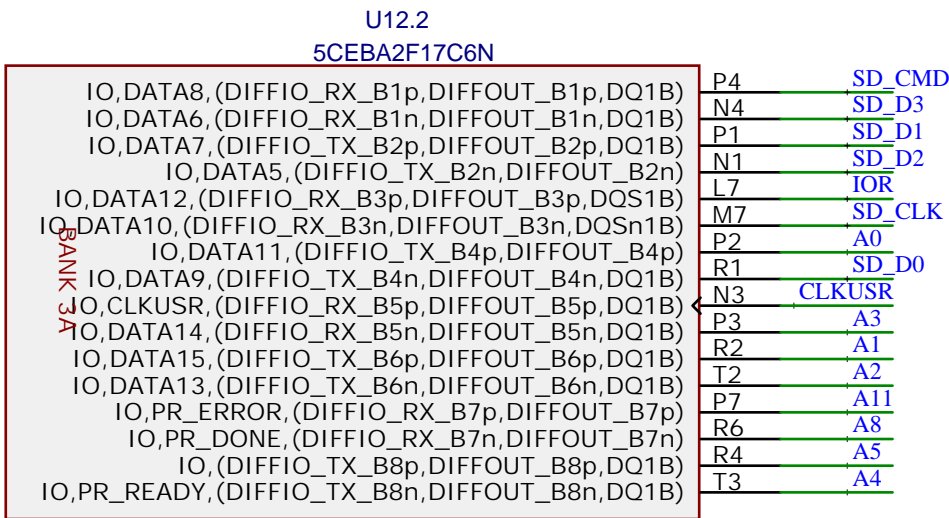
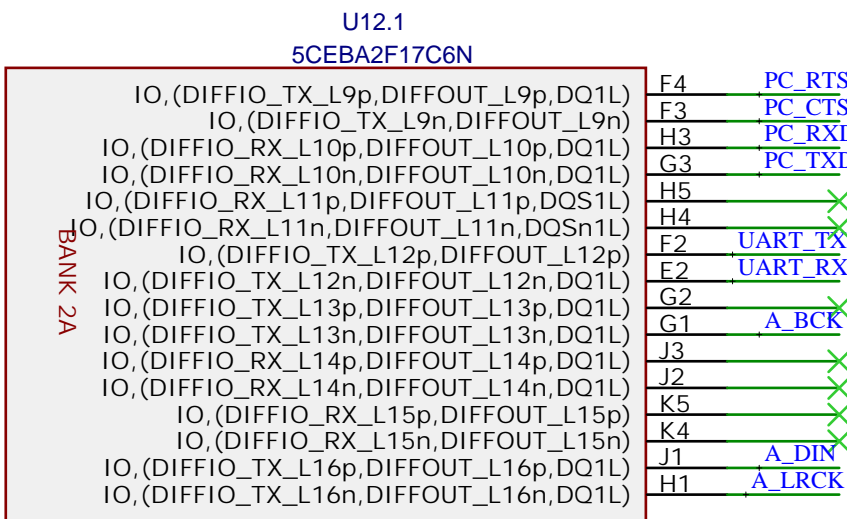


CLOCK & FPGA CONFIGURATION

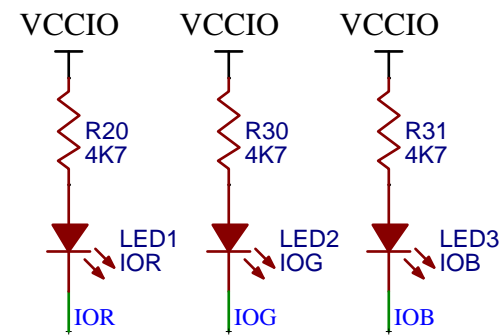


Cyclone V FPGA

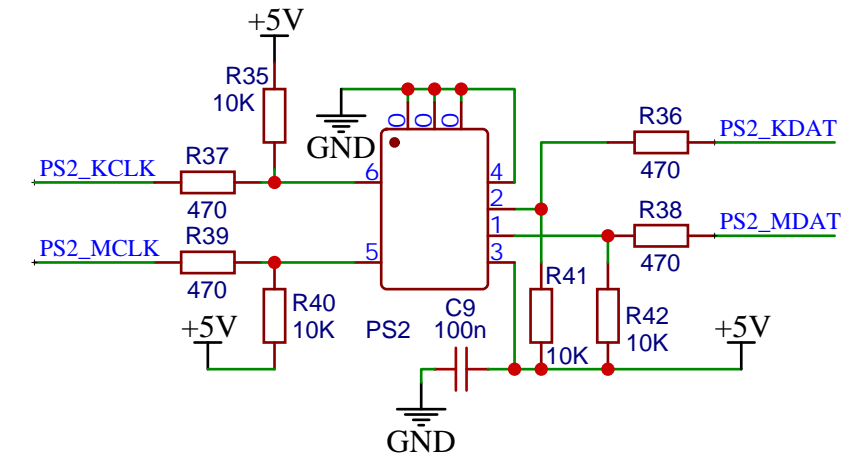
NOTE: Cyclone V A2 and A4 versions are pin-compatible and interchangeable on this PCB design.



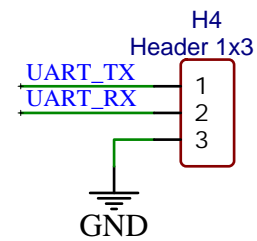
PERIPHERALS



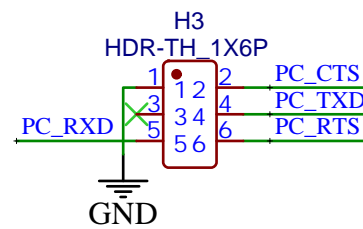
GPIO LEDS



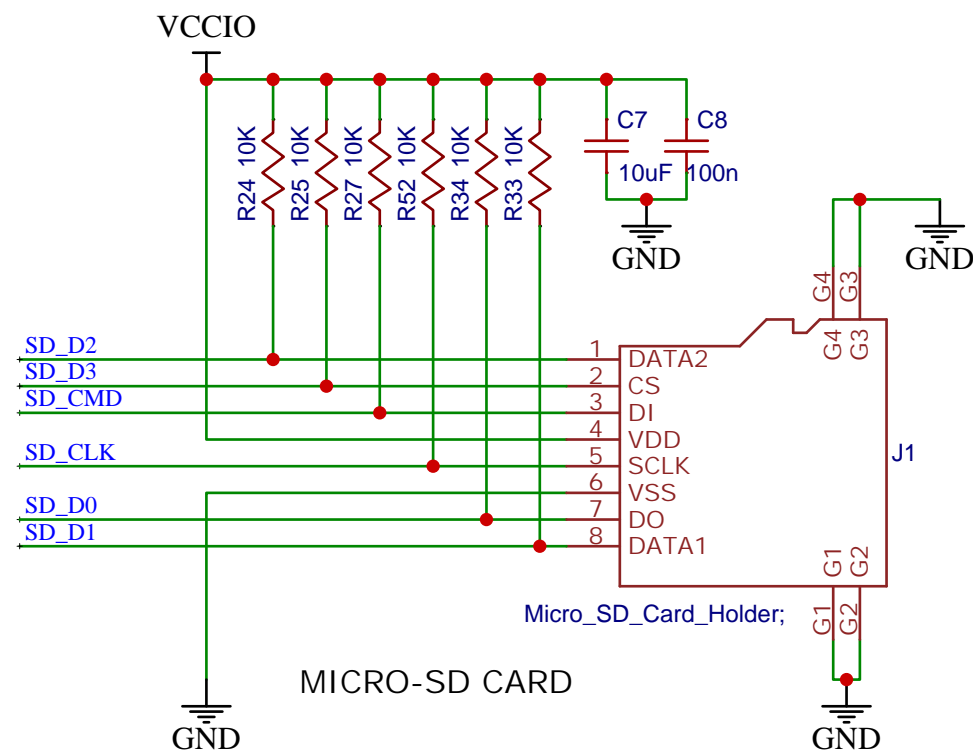
PS2 KEYBOARD/MOUSE



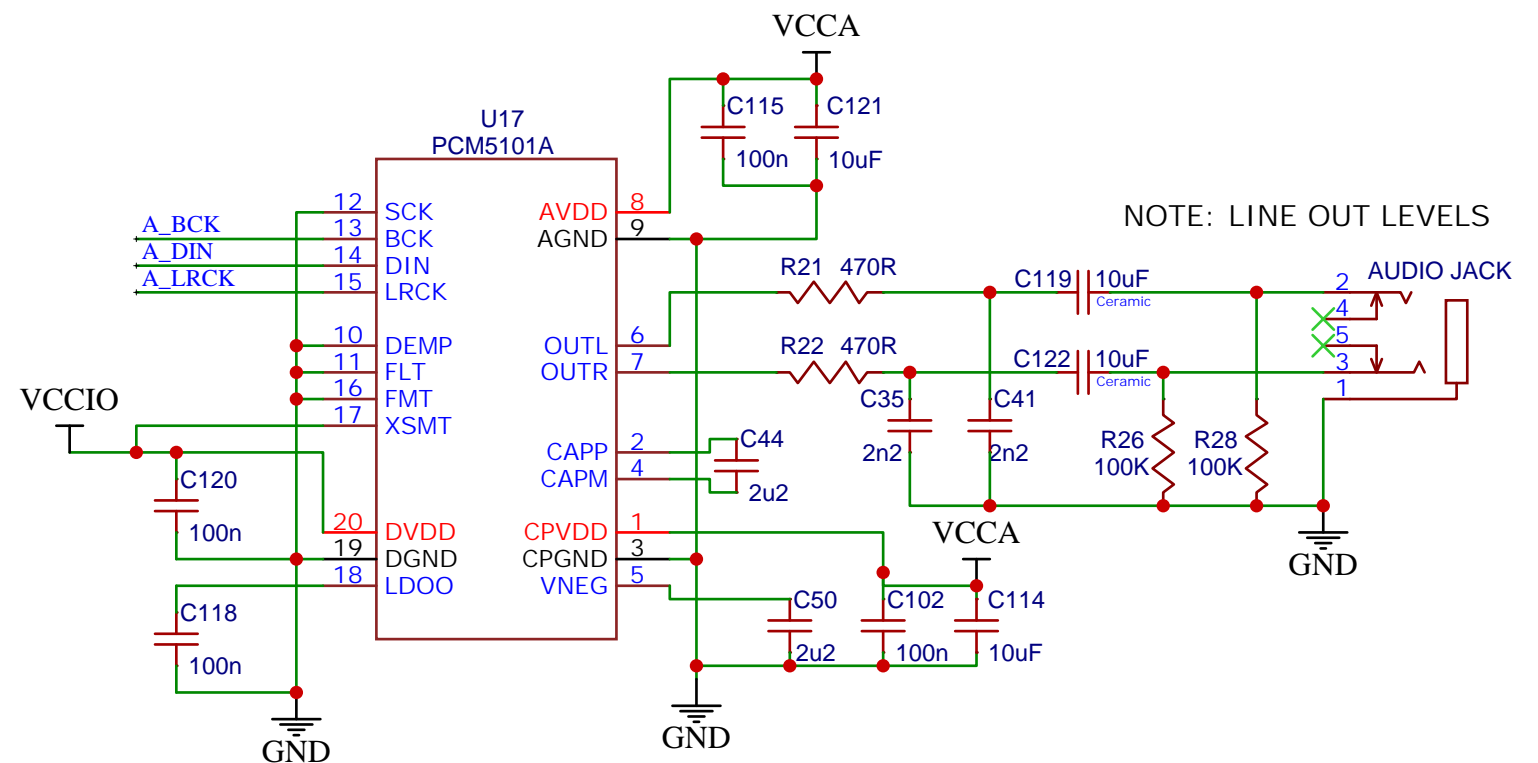
3.3V SERIAL DEBUG PORT




PC SERIAL PORT



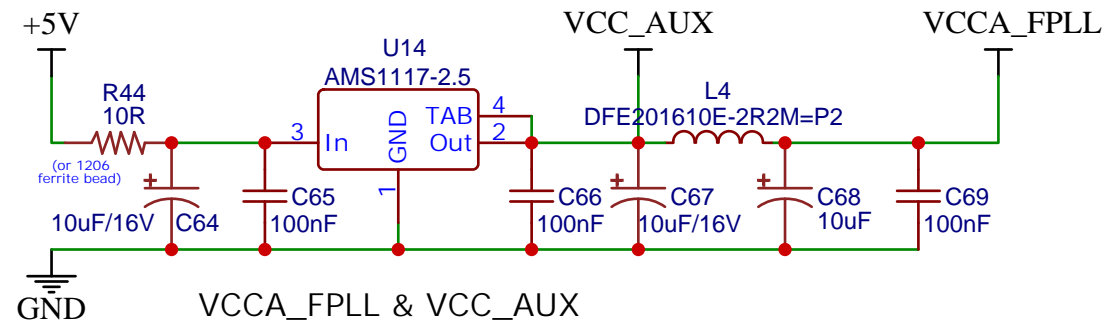
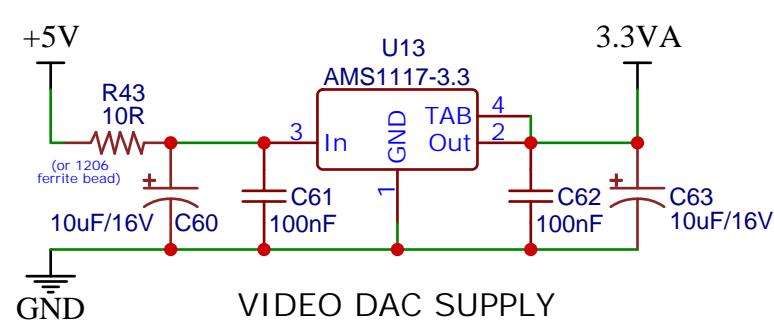
MICRO-SD CARD



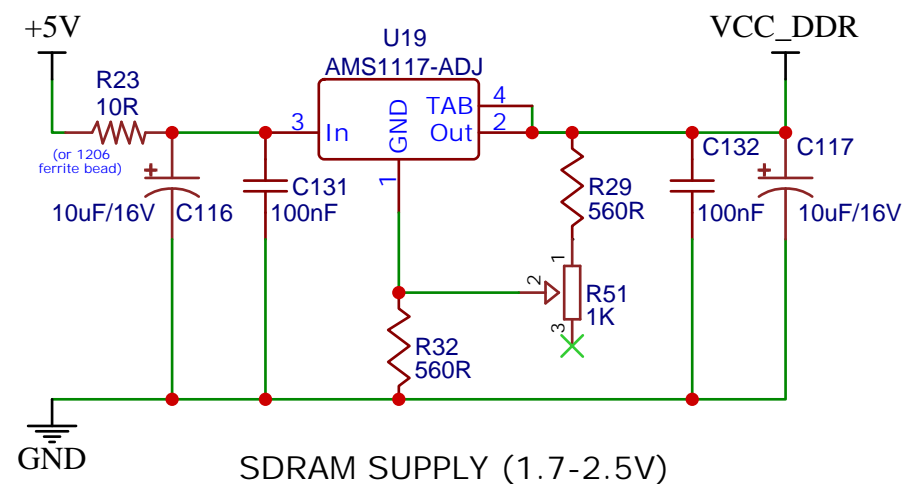
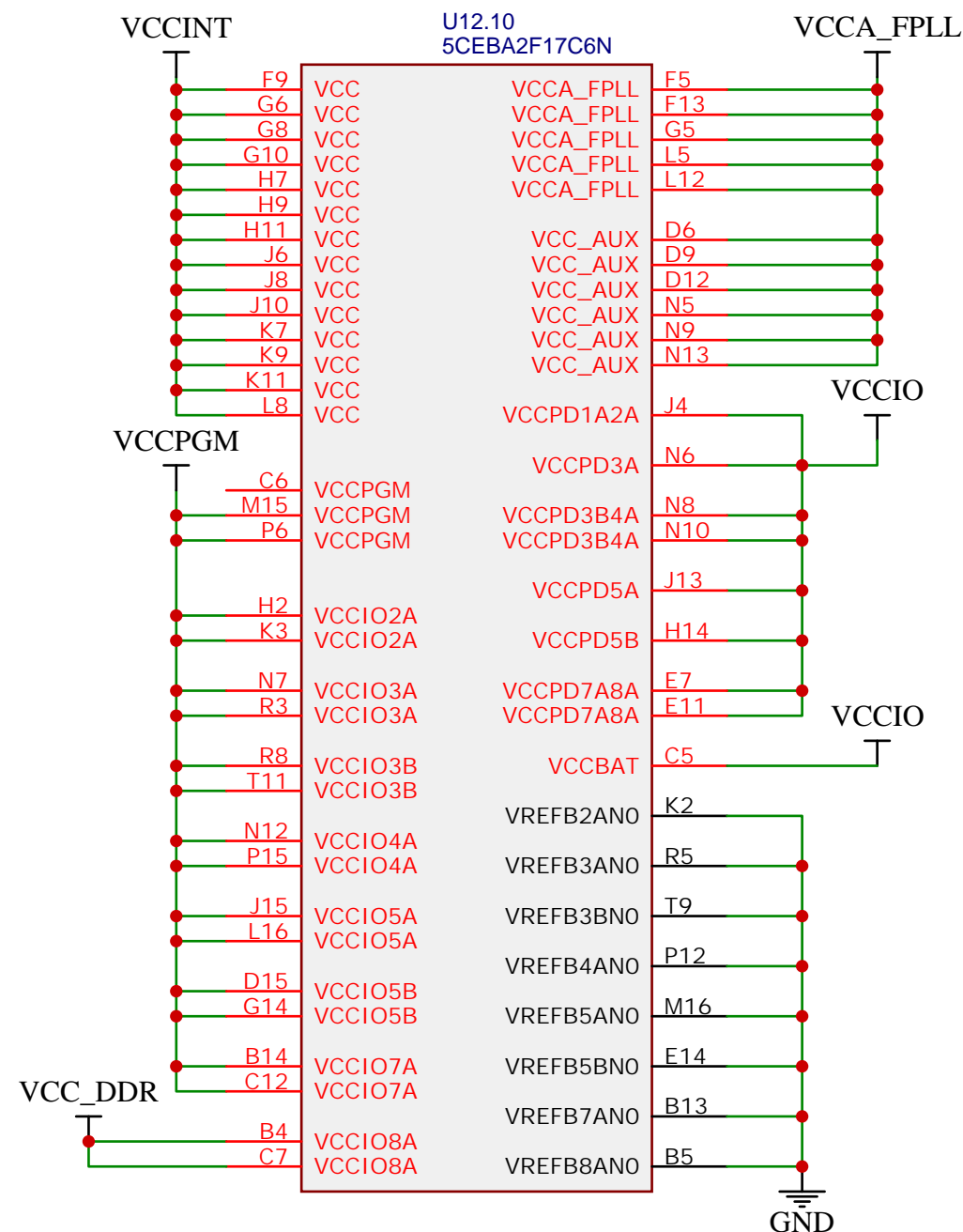
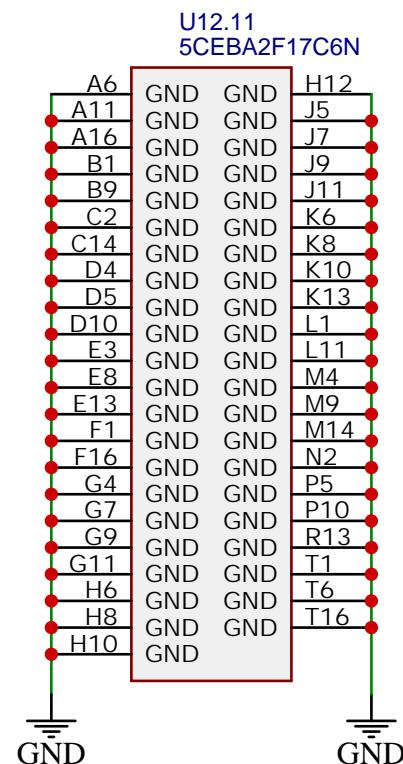
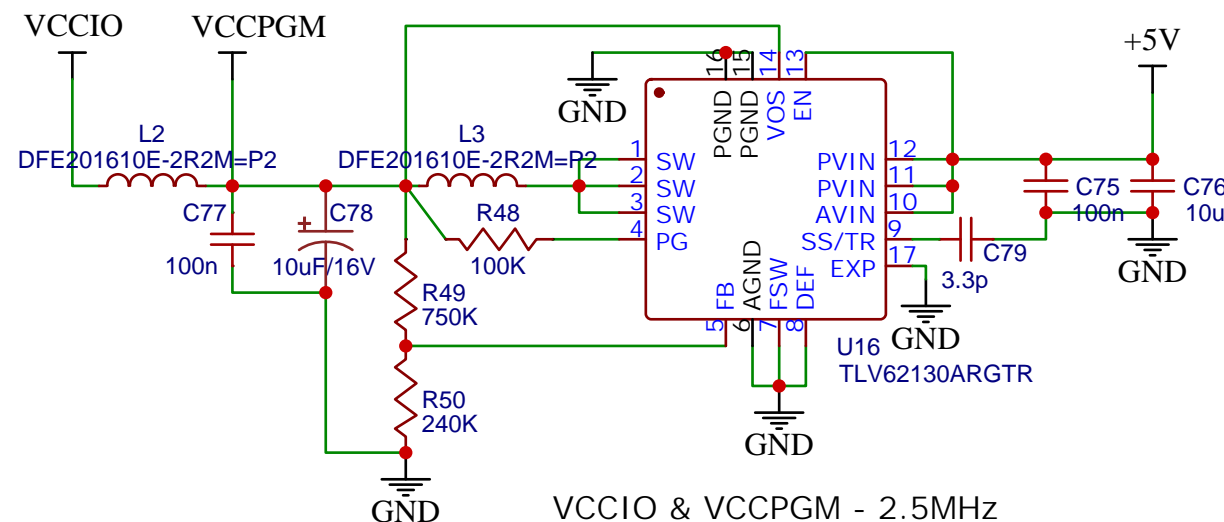
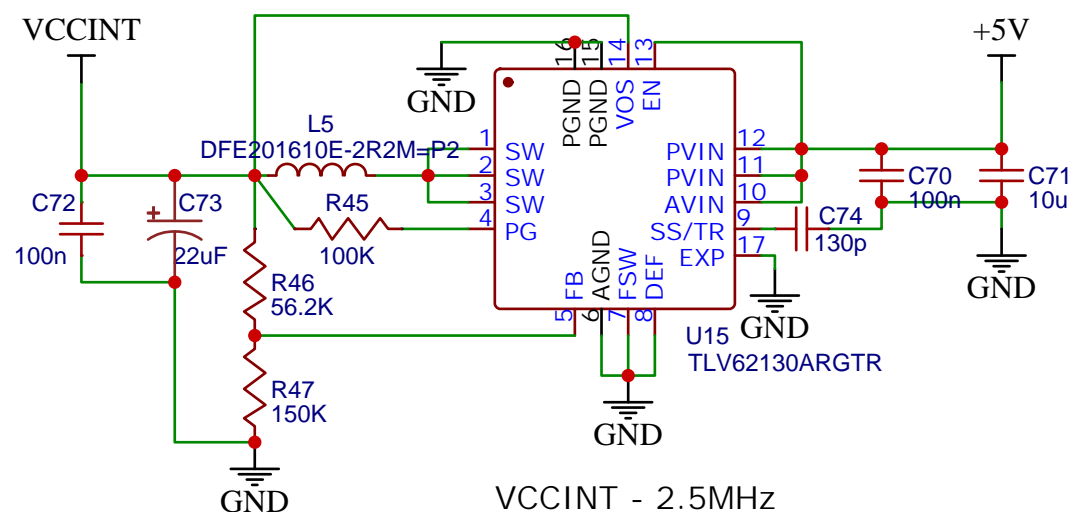
24-bit AUDIO DAC

| | | |
|---|---|------------|
| TITLE: Cyclone V GPU | | REV: 1.4 |
|  | Company: 10103 | Sheet: 1/1 |
| | Date: 2020-08-23 Drawn By: nockieboy | |

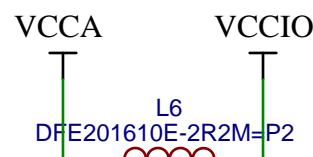
POWER SUPPLIES



DESIGN NOTE: All 10uF/22uF components are SMD 3216 tantalum caps.



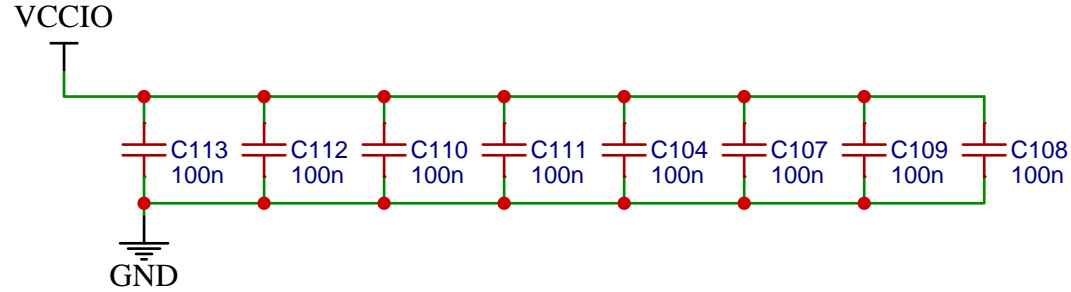
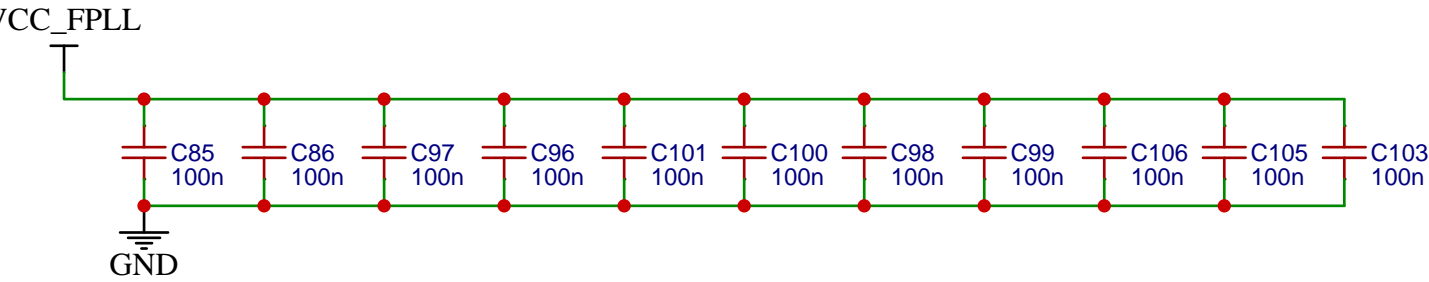
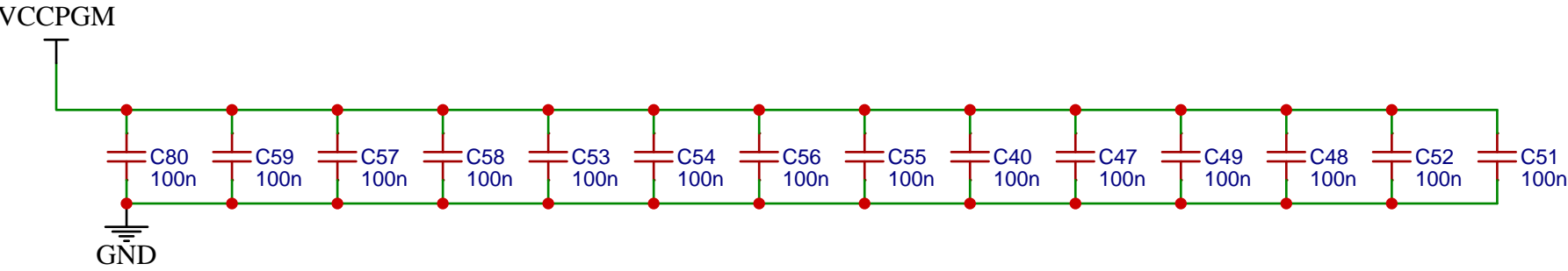
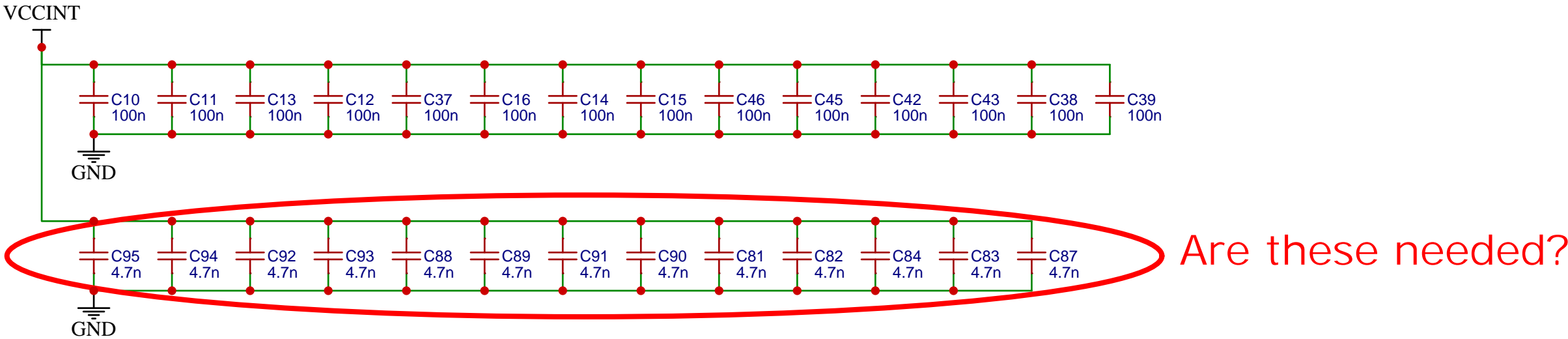
Supplies: U13 - 3.3V supply (3.3VA)
 U14 - 2.5V supply (VCCA_FPLL, VCC_AUX)
 U15 - 1.1V supply (VCCINT)
 U16 - 3.3V supply (VCCIO, VCCPGM, VCCA)
 U19 - 1.8V supply (VCC_DDR)




| | | |
|----------------------|------------------|---------------------|
| TITLE: Cyclone V GPU | | REV: 1.4 |
| EasyEDA | Company: 10103 | Sheet: 1/1 |
| | Date: 2020-10-03 | Drawn By: nockieboy |

FPGA DECOUPLING

Note: Place capacitors near FPGA pins



| | | |
|---|--------------------------------------|------------|
| TITLE: Cyclone V GPU | | REV: 1.0 |
|  | Company: 10103 | Sheet: 1/1 |
| | Date: 2020-10-20 Drawn By: nockieboy | |

FPGA EXTERNAL MEMORY

