

# CYCLONE V GPU SCHEMATICS

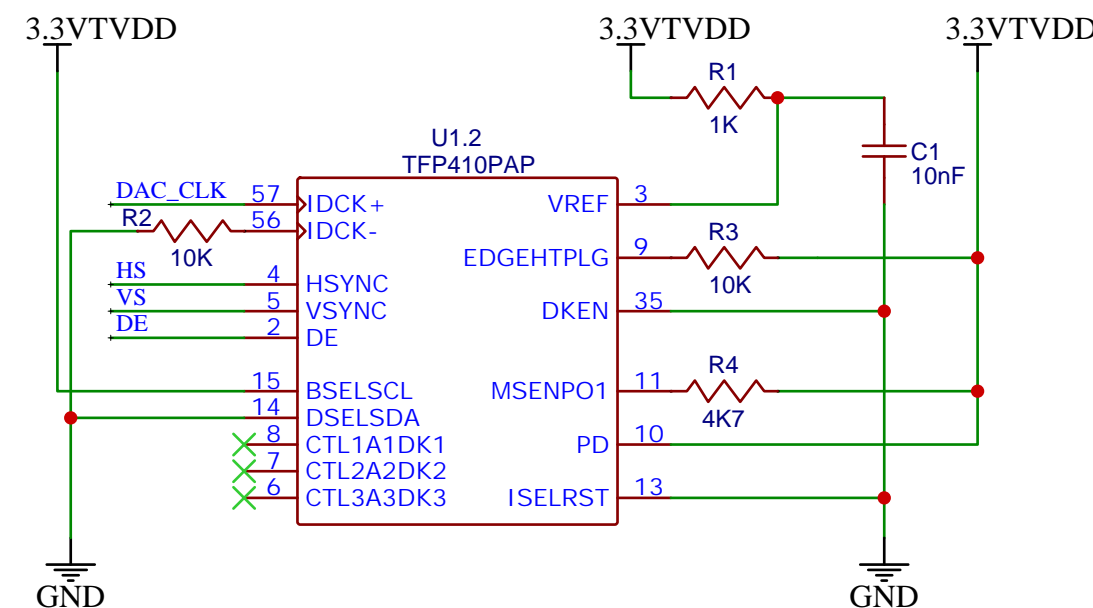
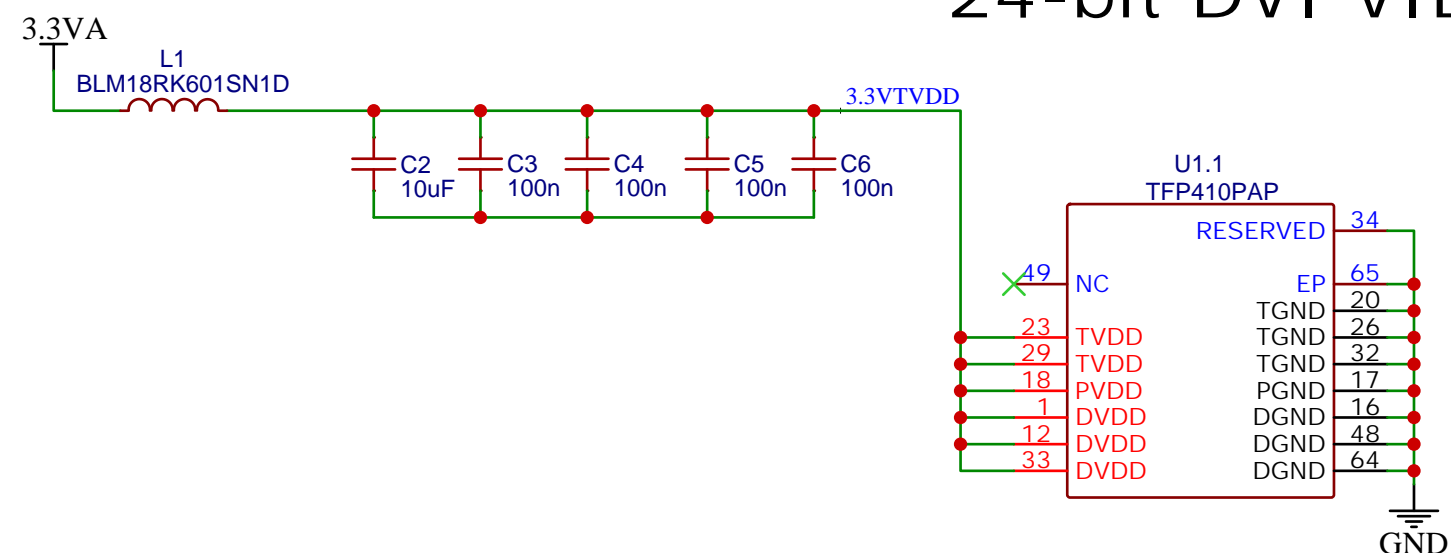
## REVISIONS

- 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.

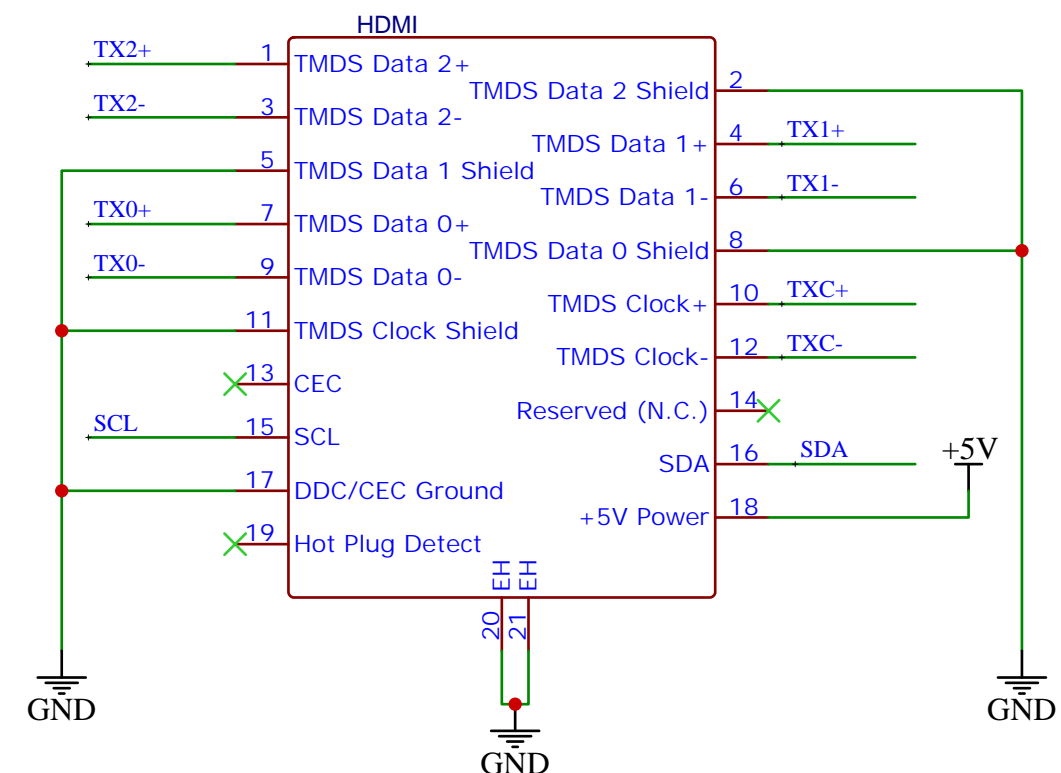
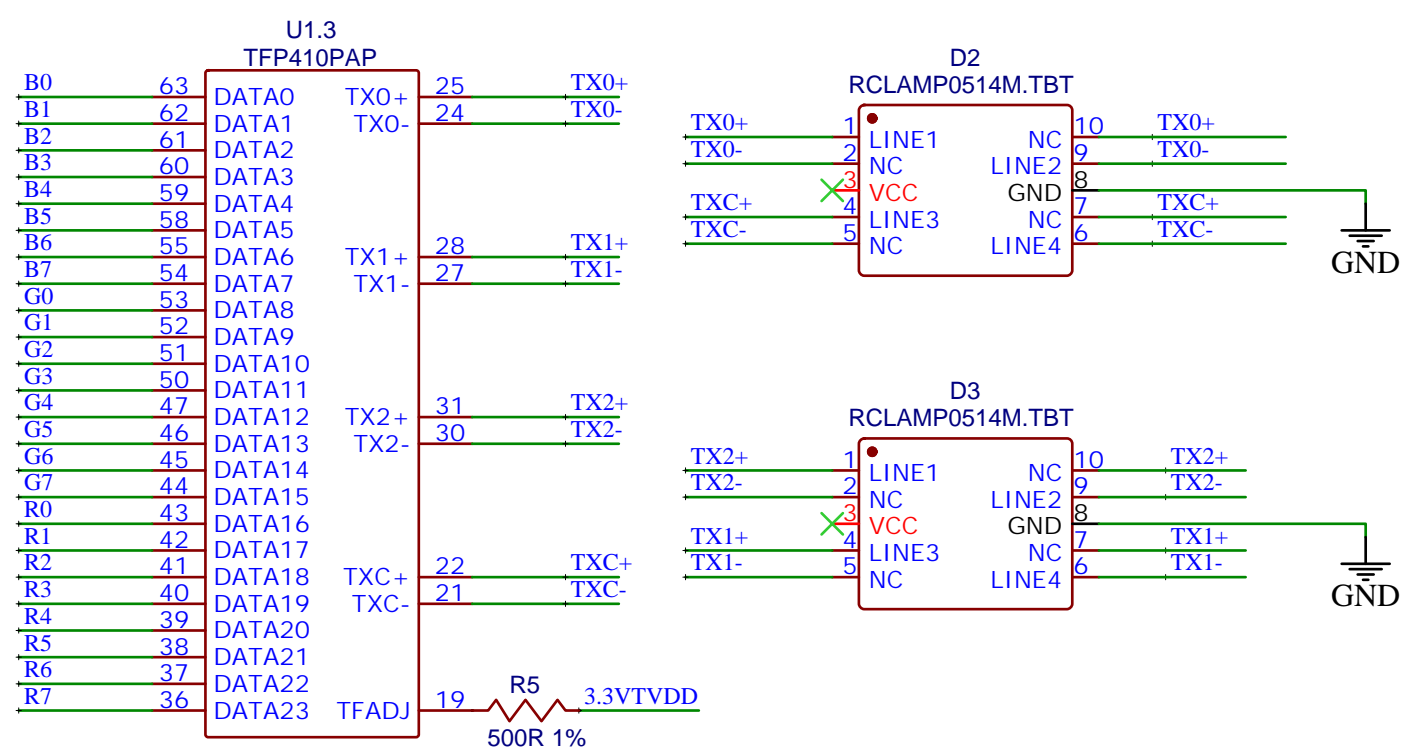
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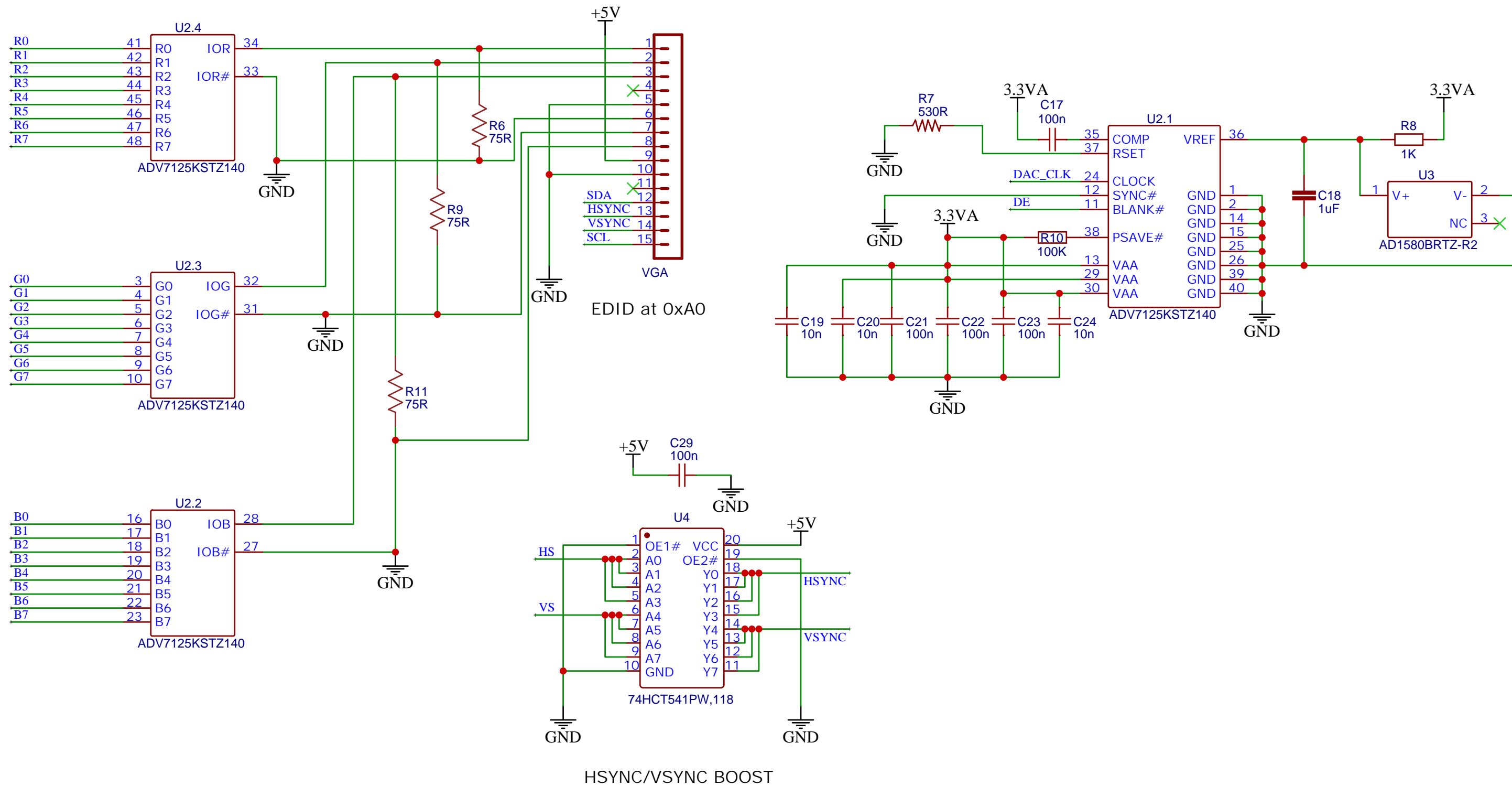
# 24-bit DVI VIDEO OUTPUT



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

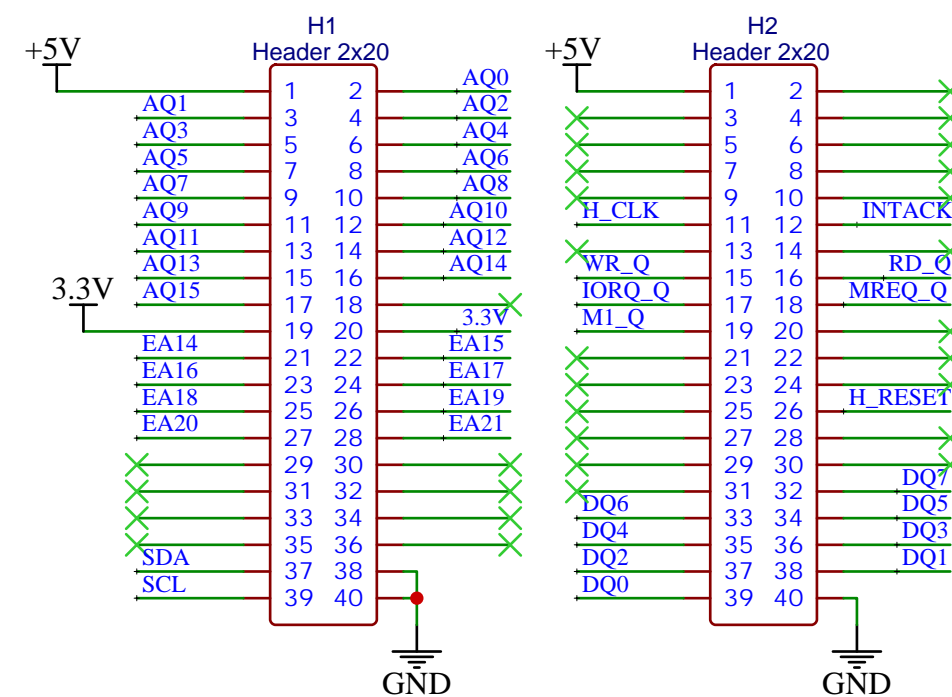
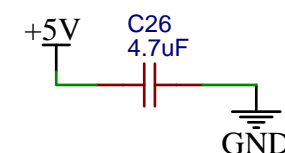
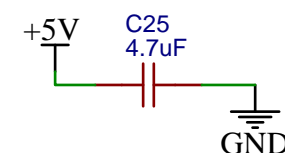
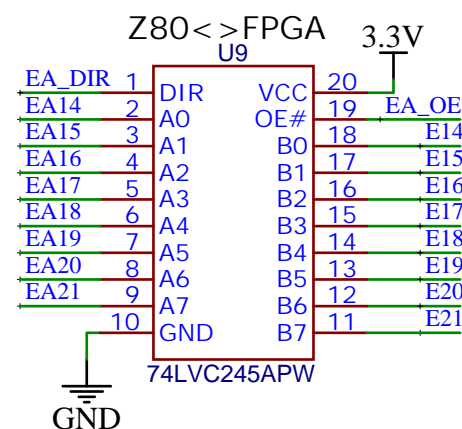
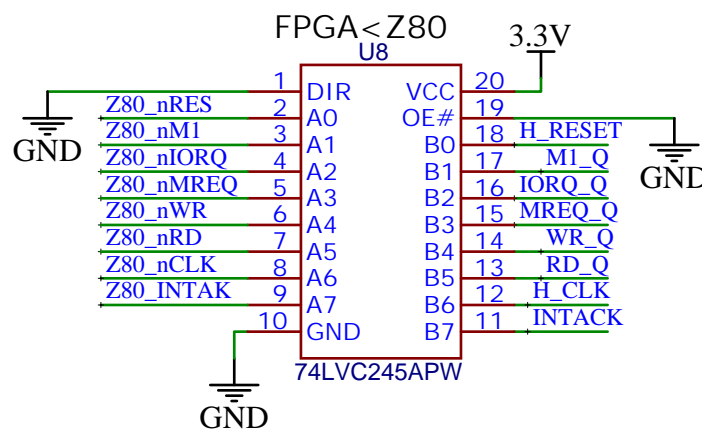
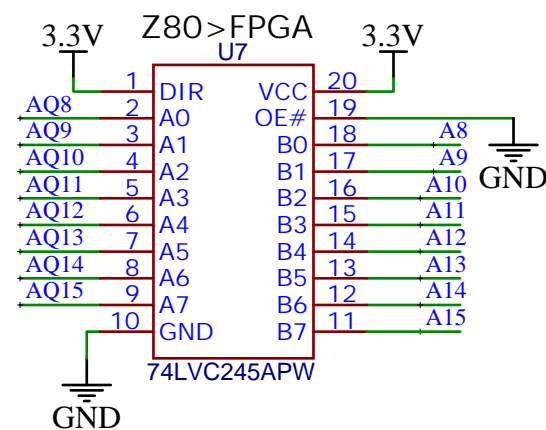
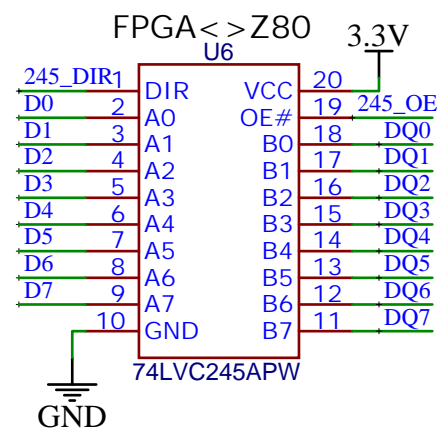
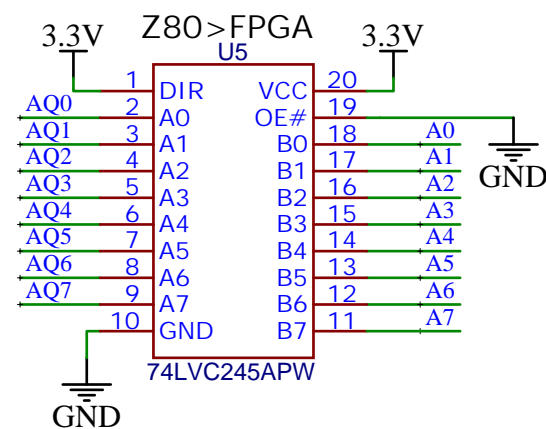


# 24-bit VGA VIDEO OUTPUT

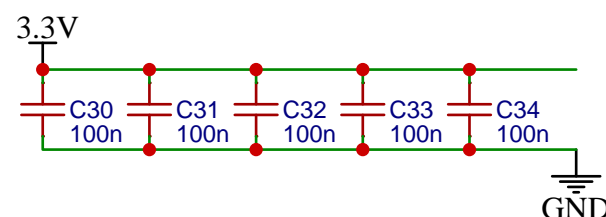


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	Date: 2020-08-23	Drawn By: nockieboy

# 5V<->3.3V SYSTEM BUS CONVERTERS

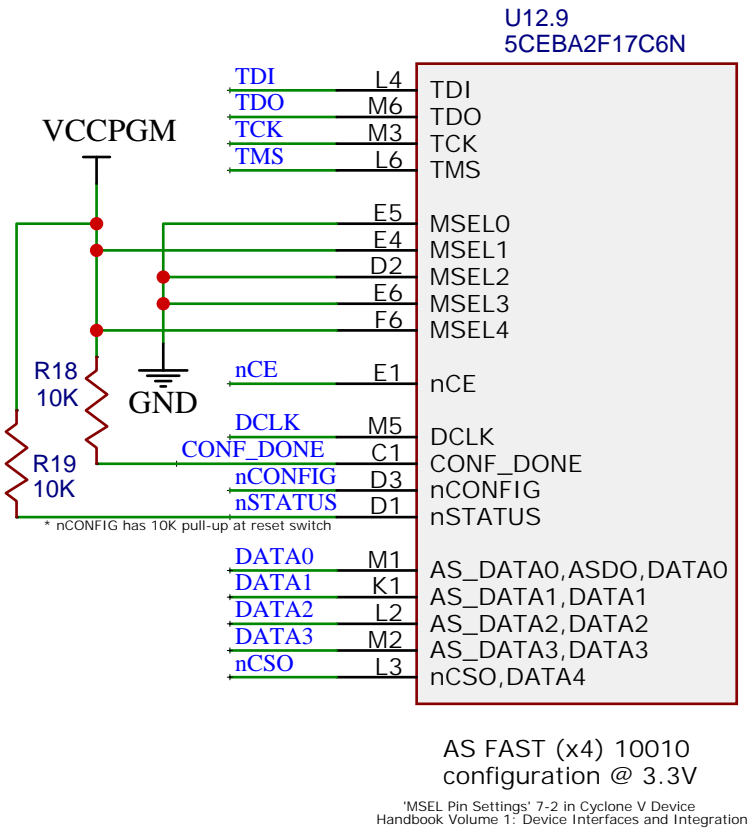
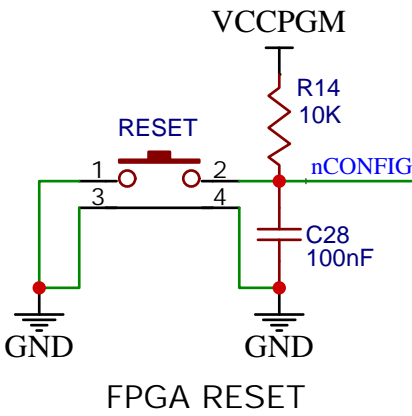
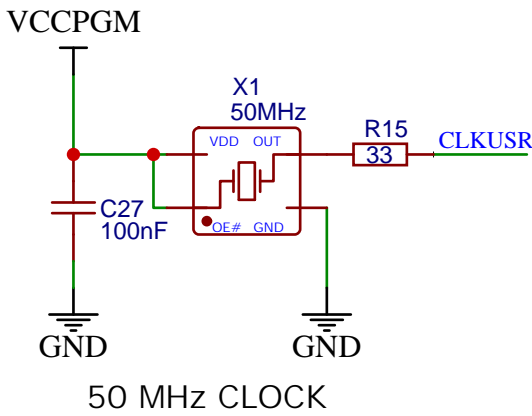
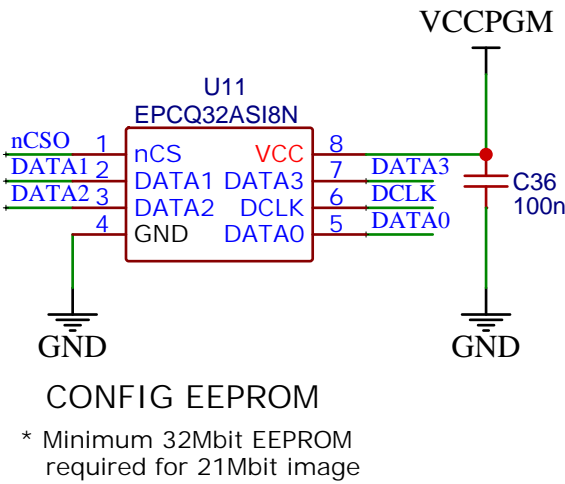
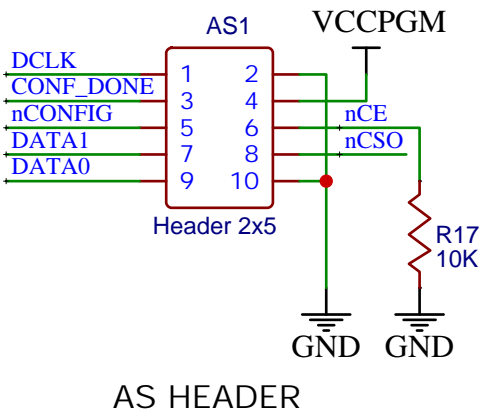
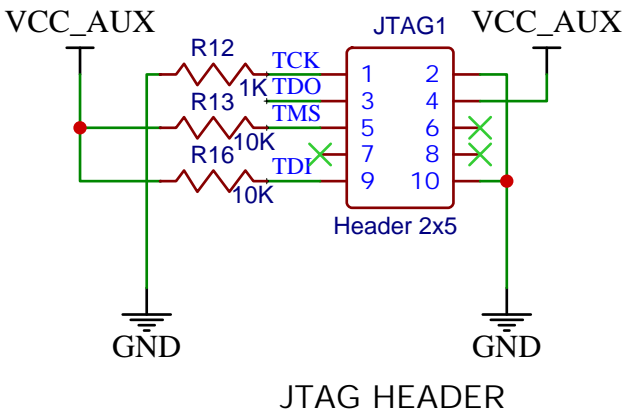


SYSTEM BUS HEADERS



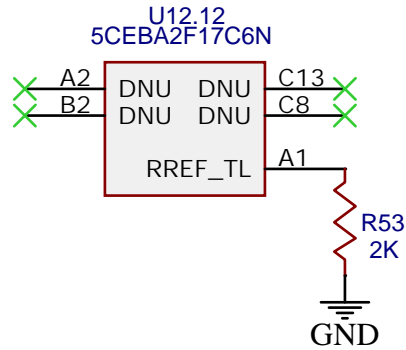
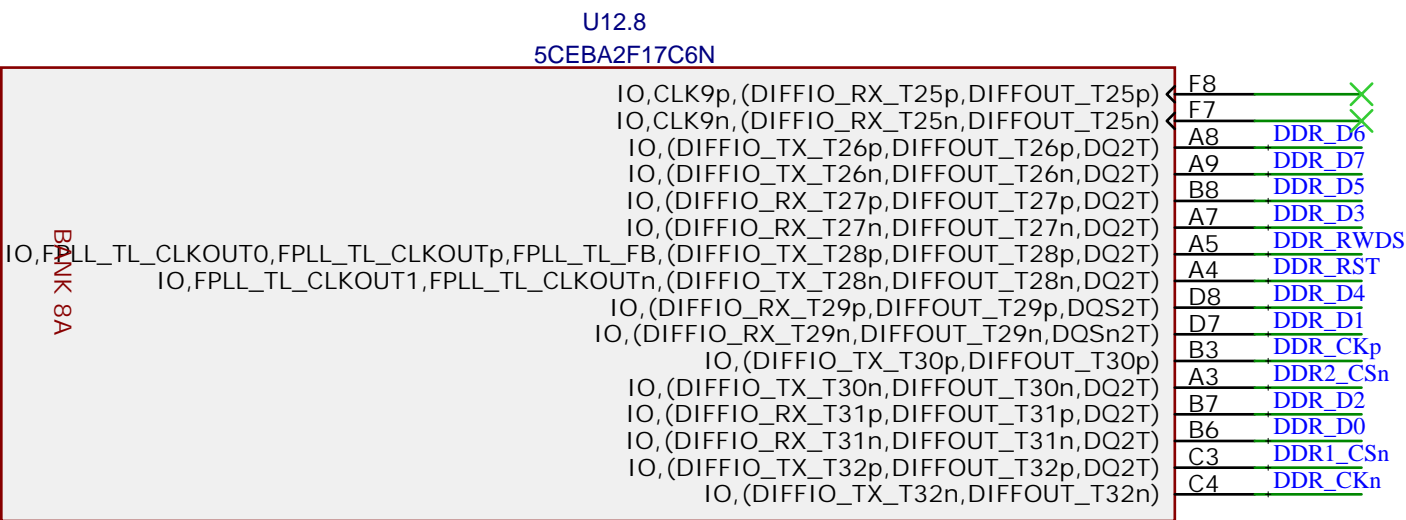
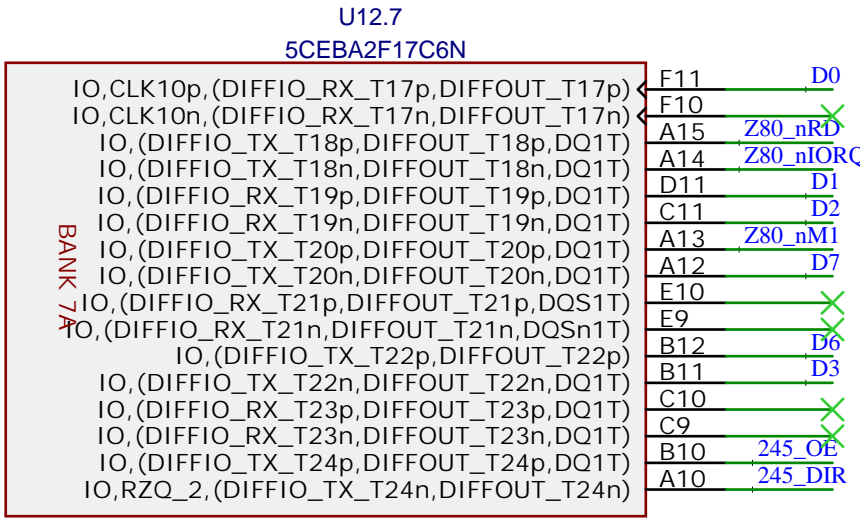
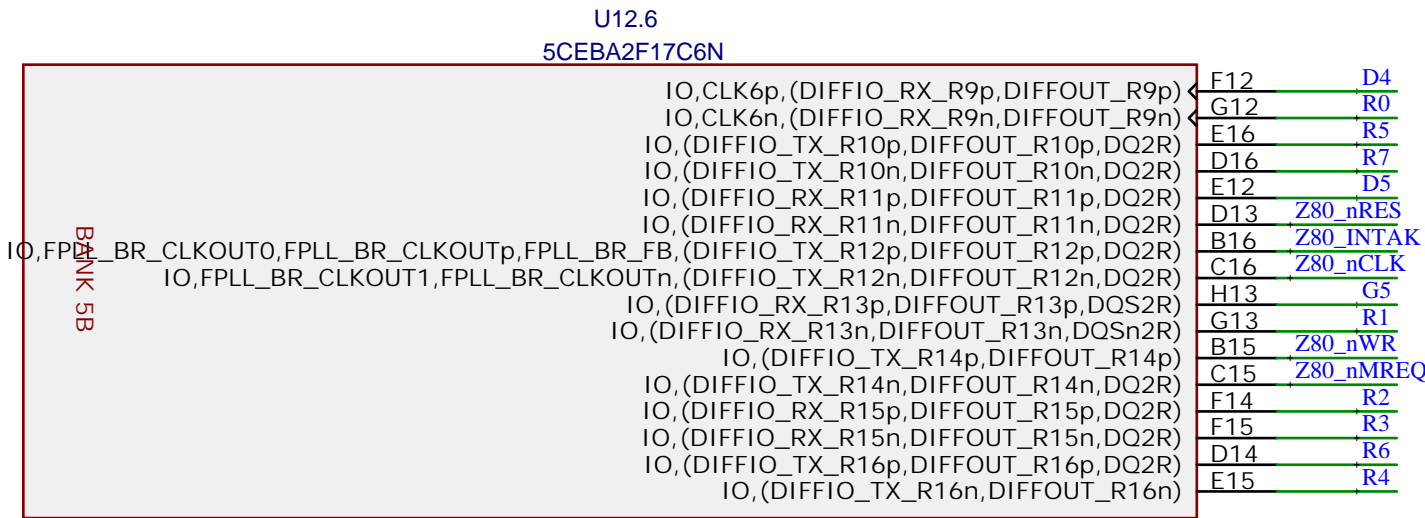
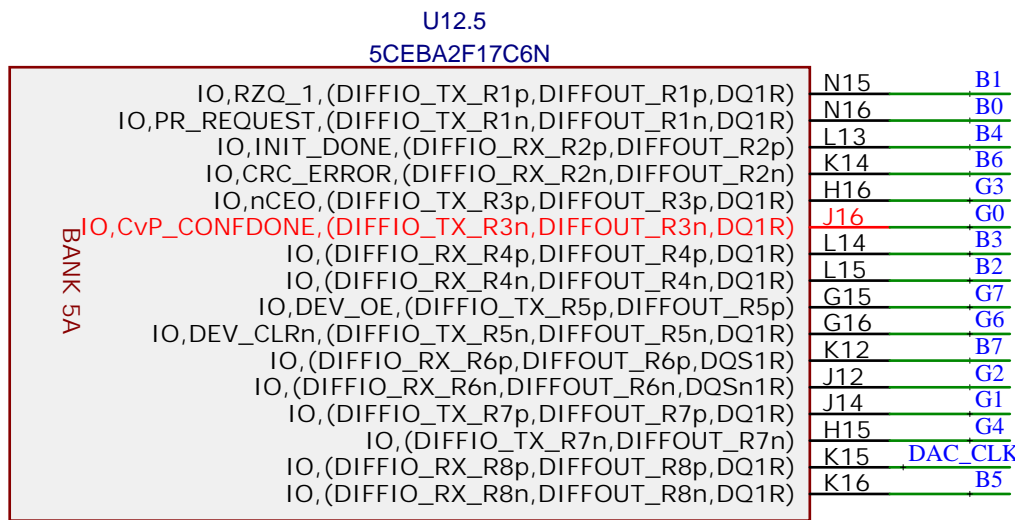
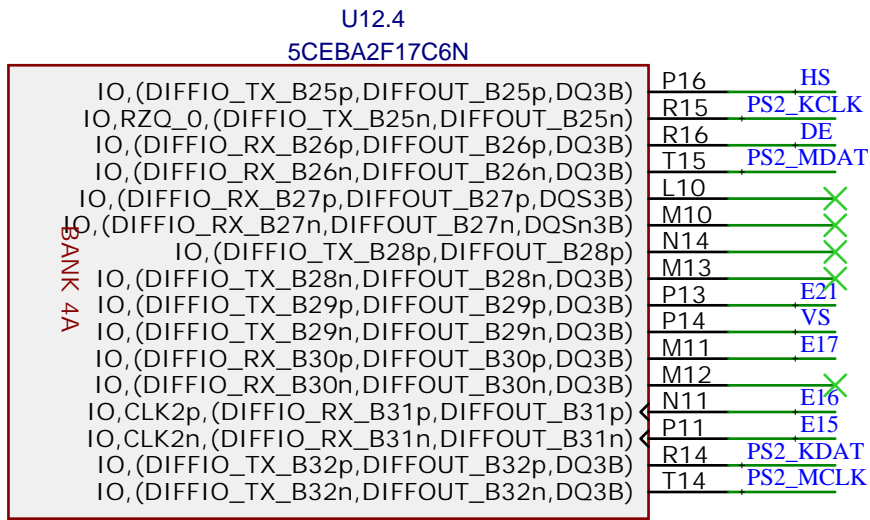
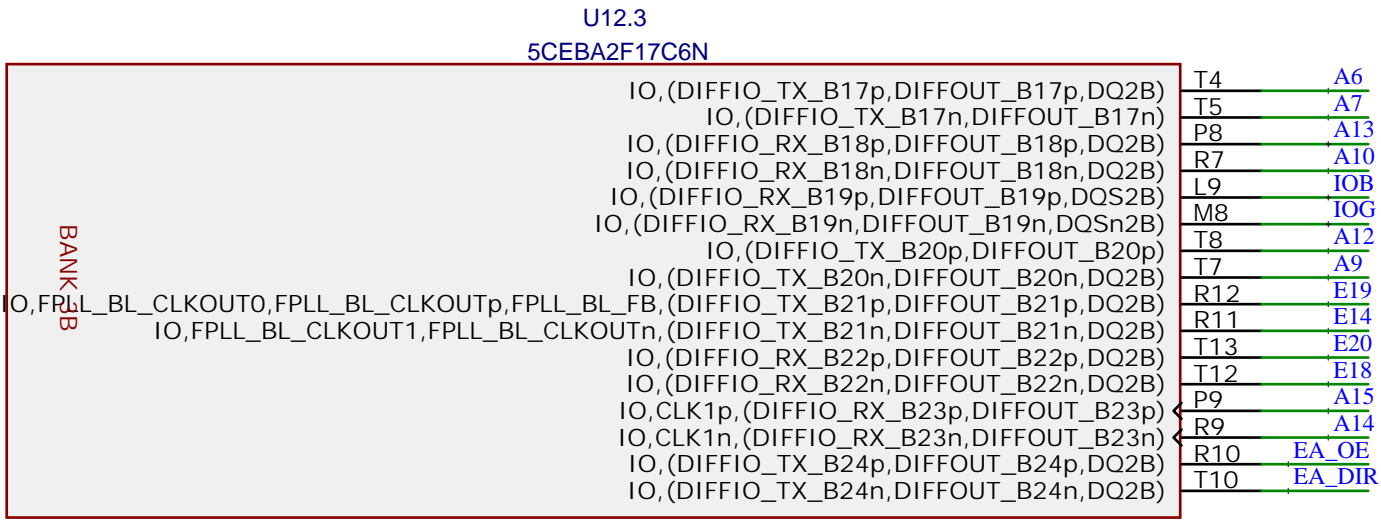
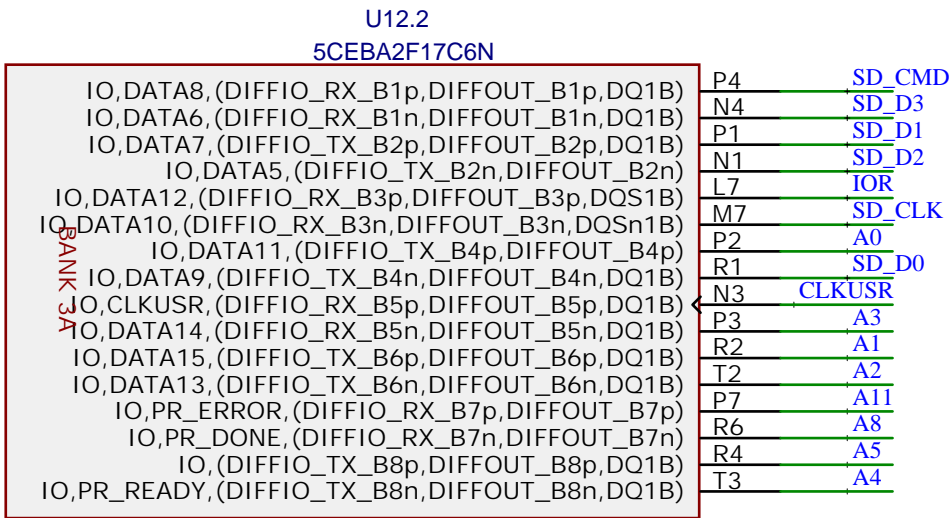
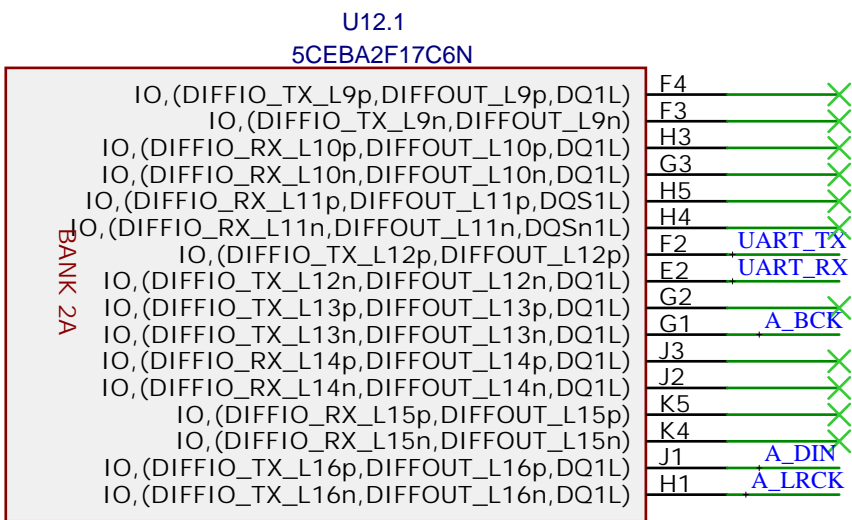
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# CLOCK & FPGA CONFIGURATION



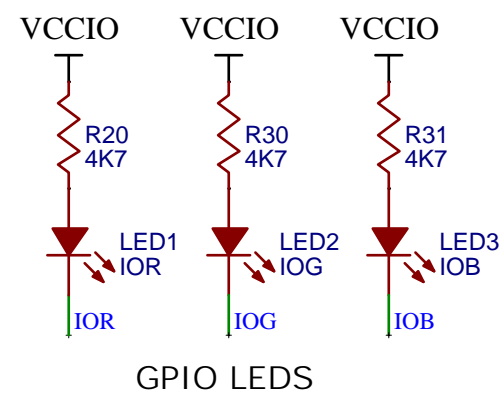
# Cyclone V FPGA

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

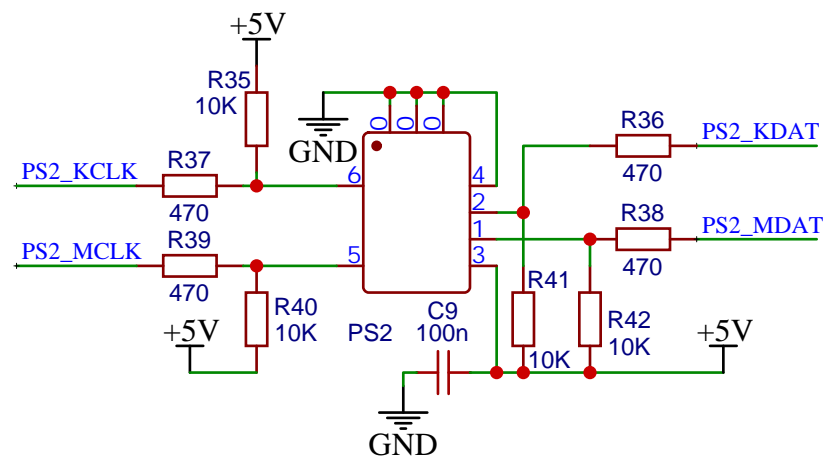




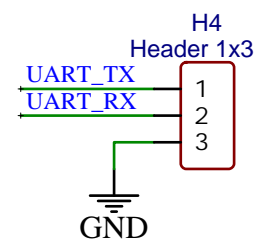
# PERIPHERALS



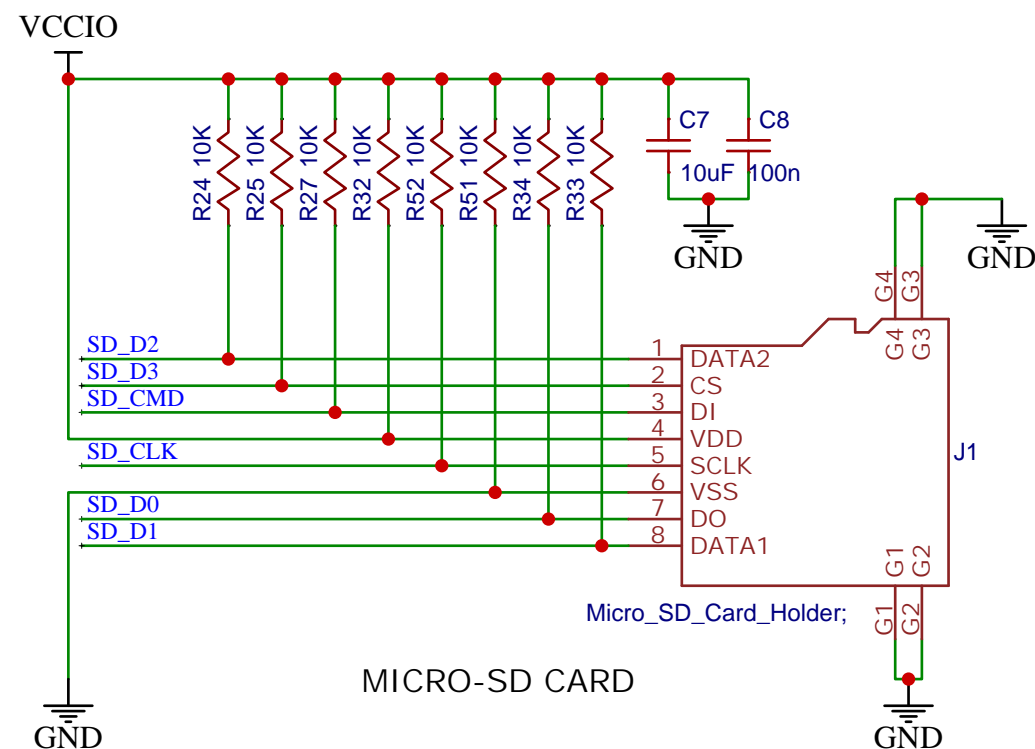
## GPIO LEDS



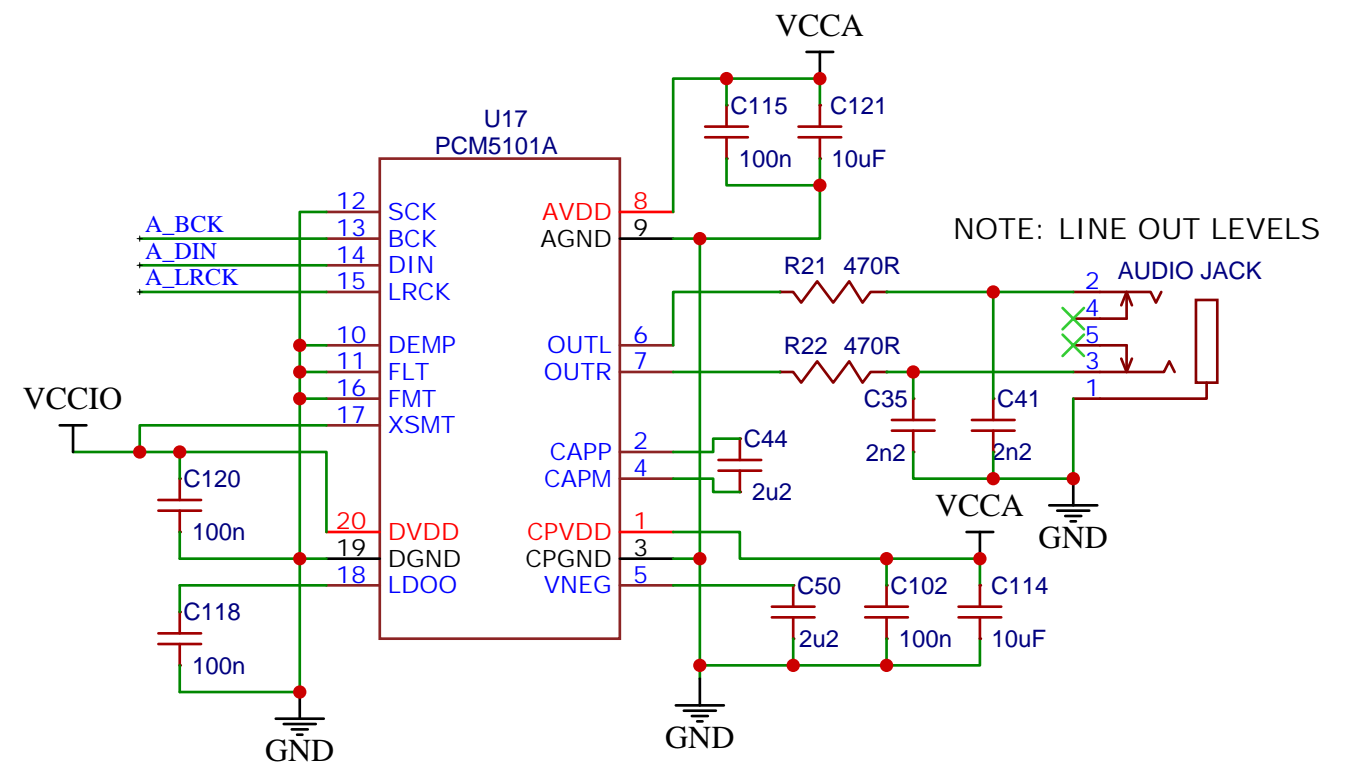
PS2 KEYBOARD/MOUSE




### 3.3V SERIAL DEBUG PORT



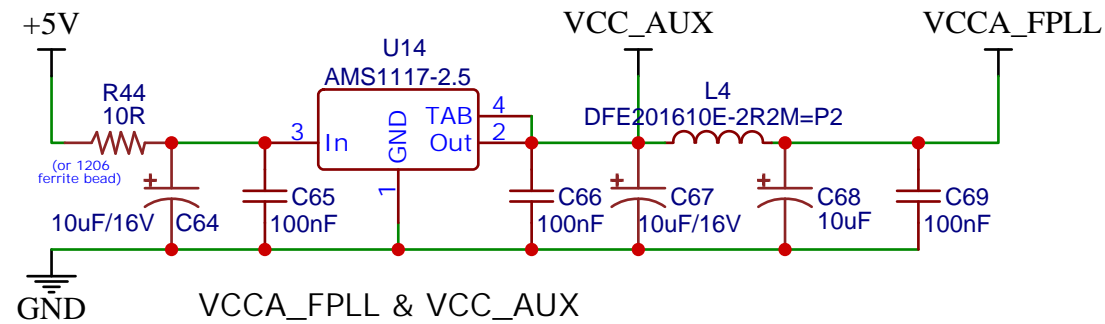
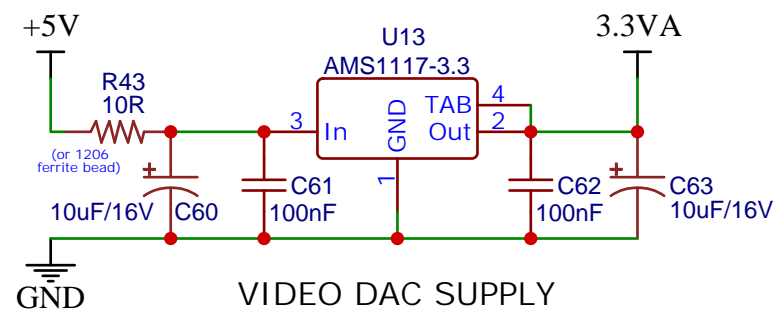
MICRO-SD CARD



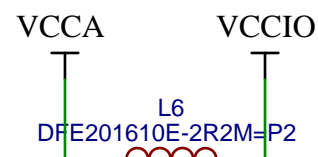
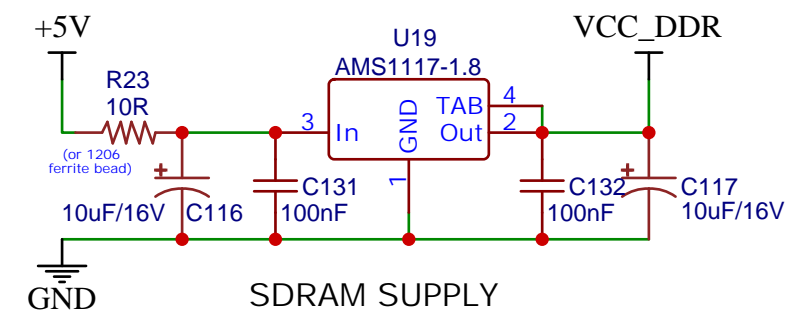
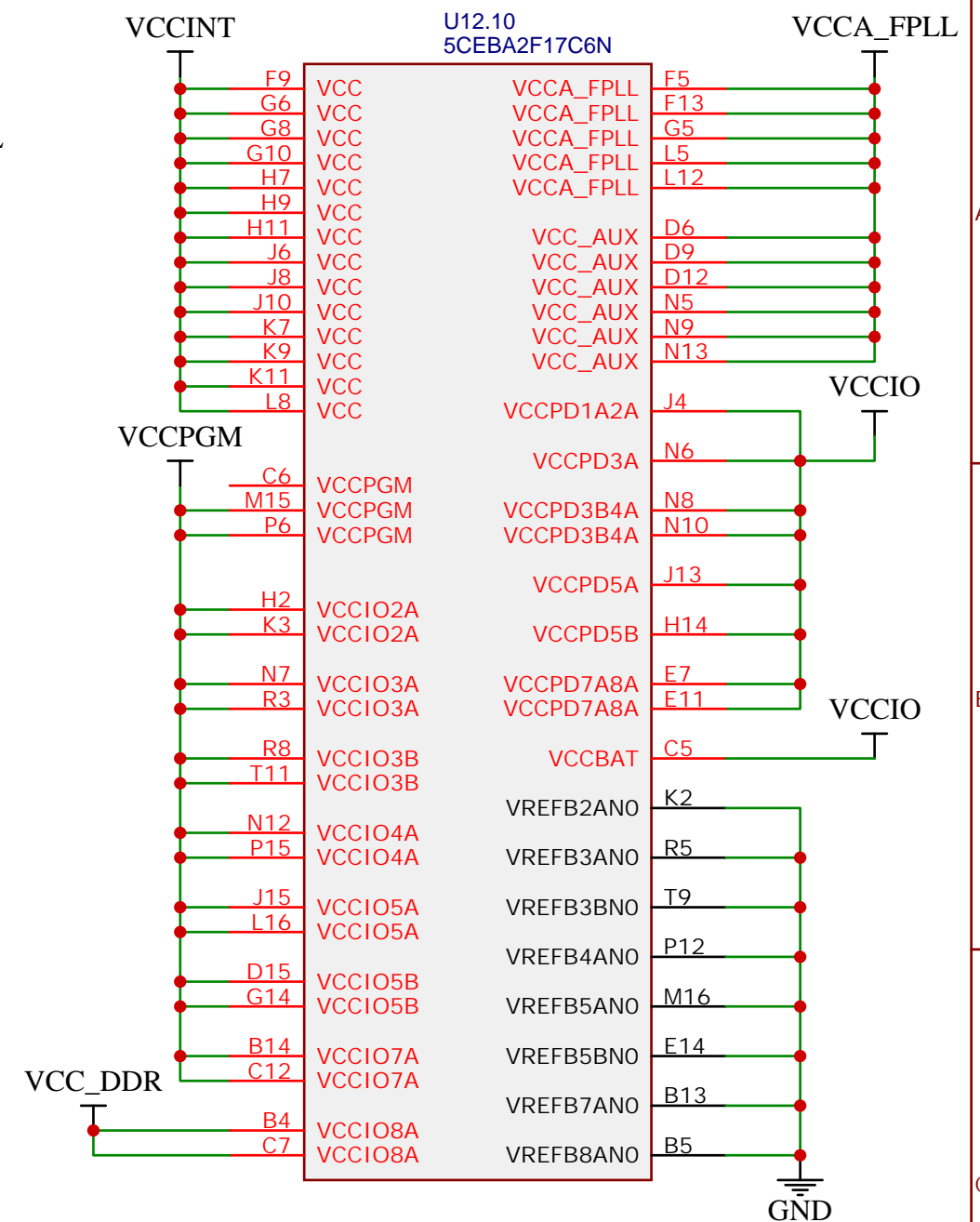
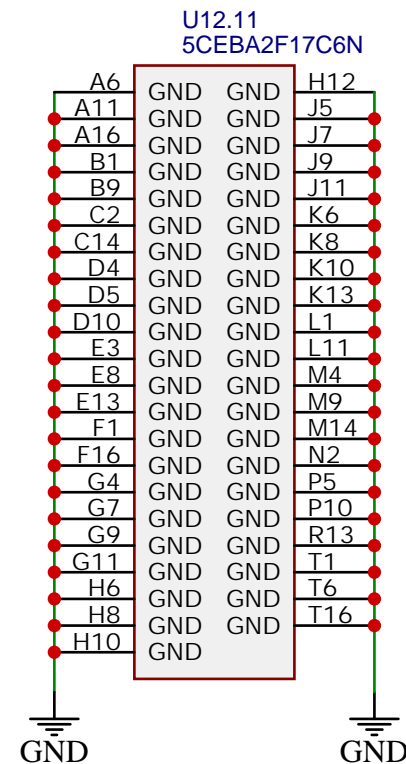
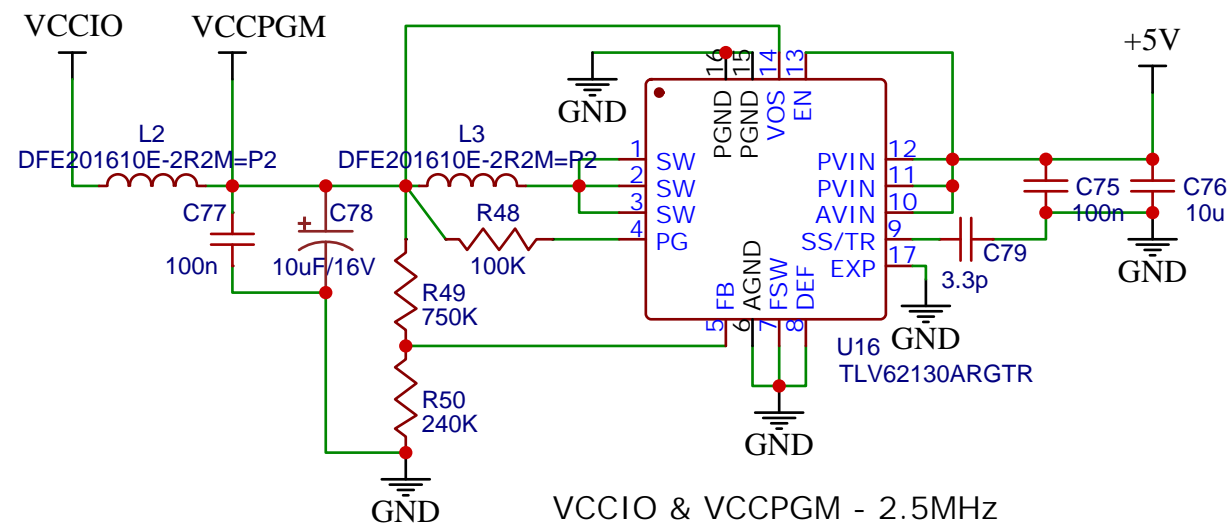
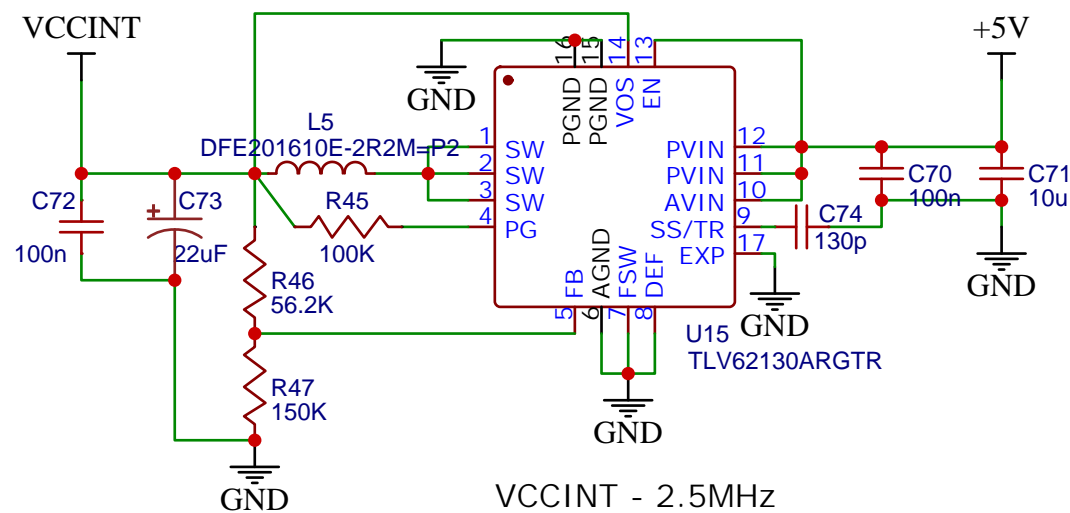
24-bit AUDIO DAC

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# POWER SUPPLIES



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



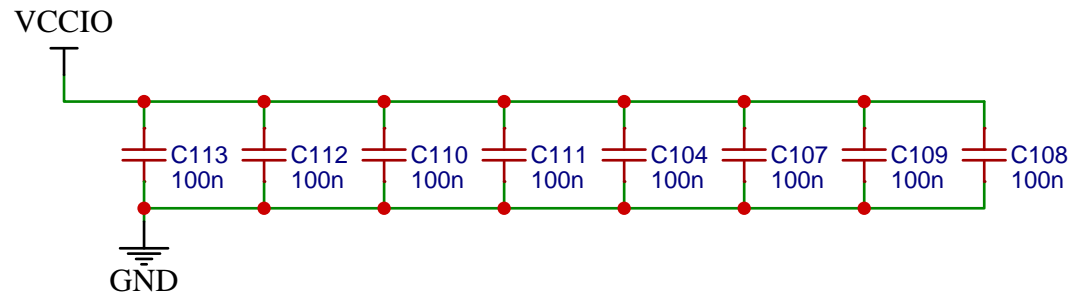
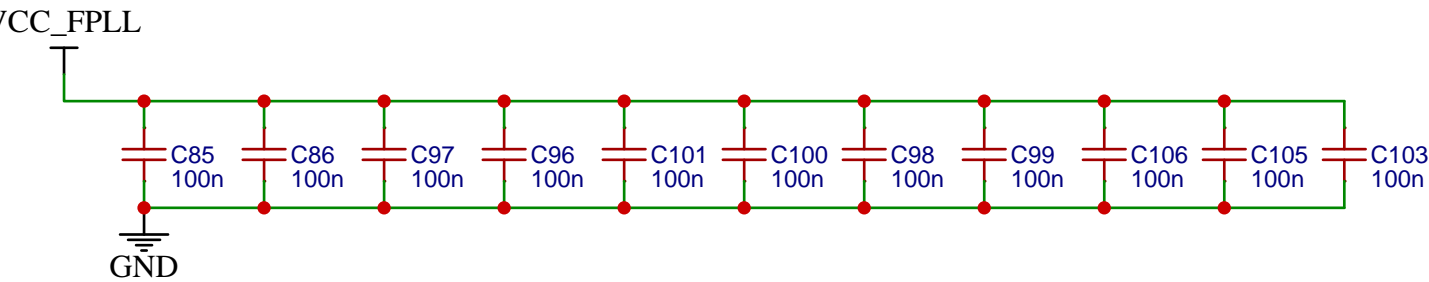
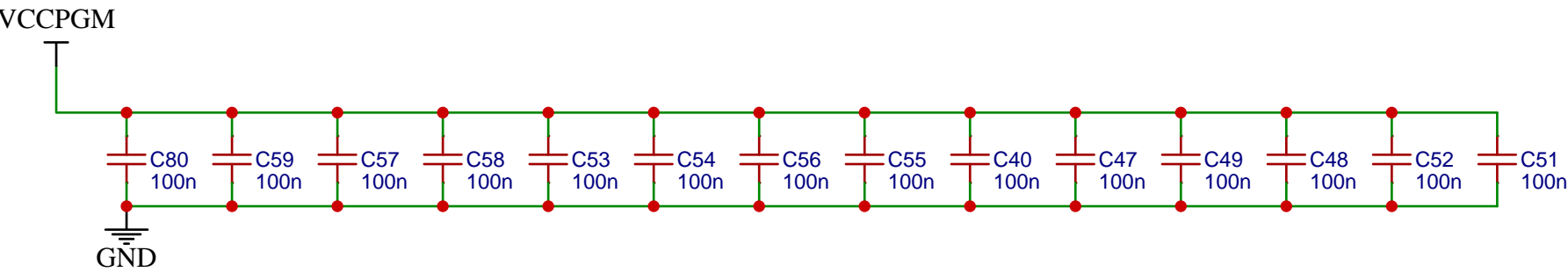
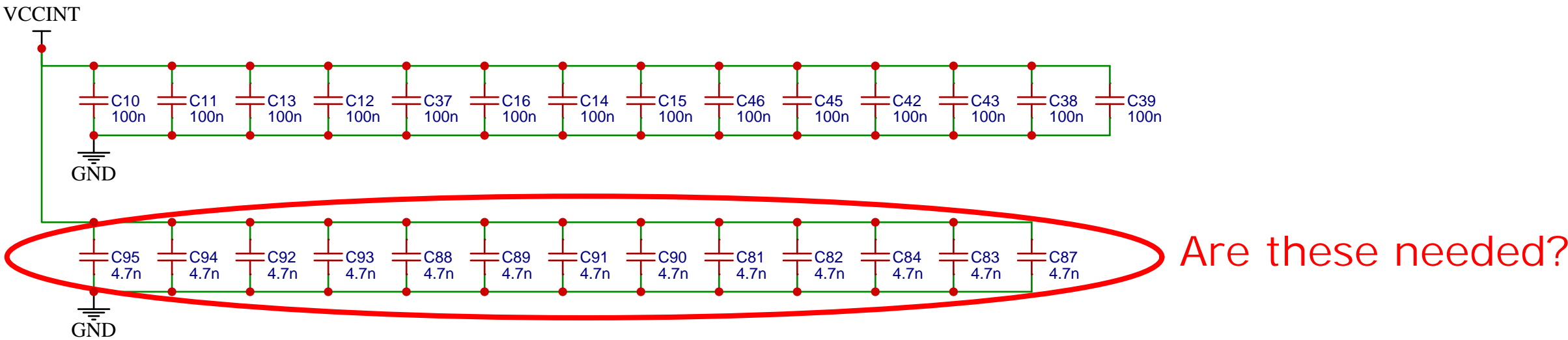
Supplies: U13 - 3.3V supply ( 3.3VA )  
 U14 - 2.5V supply ( VCCA\_FPLL, VCC\_AUX )  
 U15 - 1.1V supply ( VCCINT )  
 U16 - 3.3V supply ( VCCIO, VCCPGM, VCCA )  
 U19 - 1.8V supply ( VCC\_DDR )


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# FPGA DECOUPLING

Note: Place capacitors near FPGA pins



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# FPGA EXTERNAL MEMORY

