

Sheet: Core Timing



File: coretiming.sch

Sheet: Vertical Timing



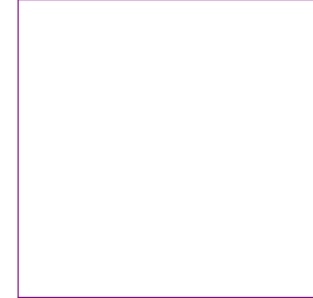
File: vtiming.sch

Sheet: Horizontal Timing



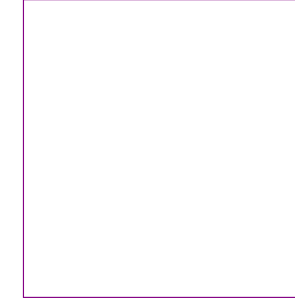
File: htiming.sch

Sheet: Coordinate Counting



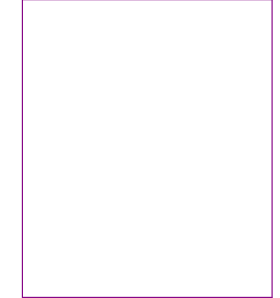
File: coordinates.sch

Sheet: Memory Controller

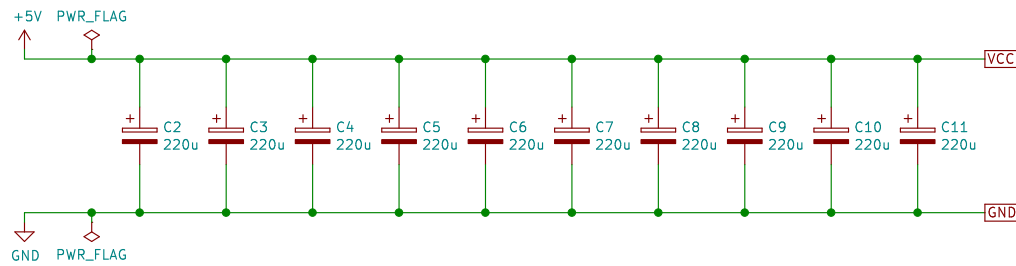


File: memorycontroller.sch

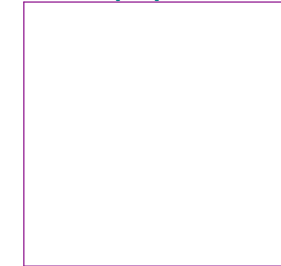
Sheet: CPU etc



File: cpu.sch

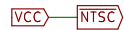


Sheet: Timing Diagrams

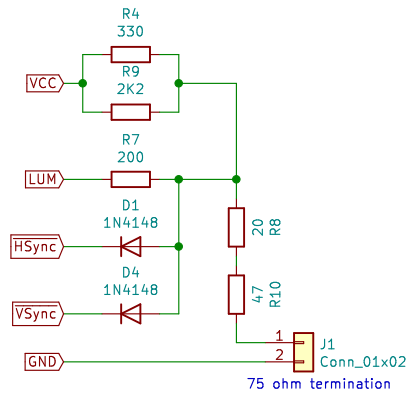


File: timingdiagrams.sch

NTSC vs PAL option



Composite video output



Sheet: /
File: simplevideo.sch

Title:

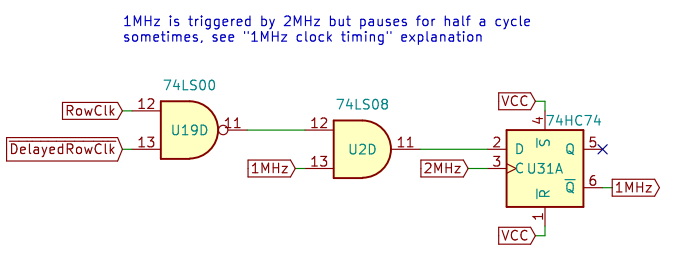
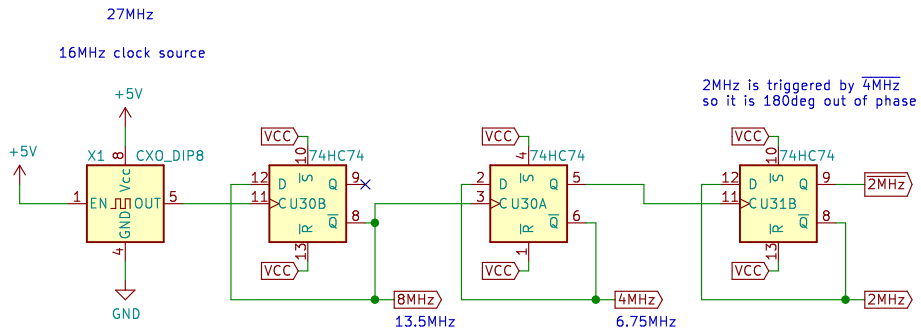
Size: A4

Date:

KiCad E.D.A. kicad (5.1.6)-1

Rev:

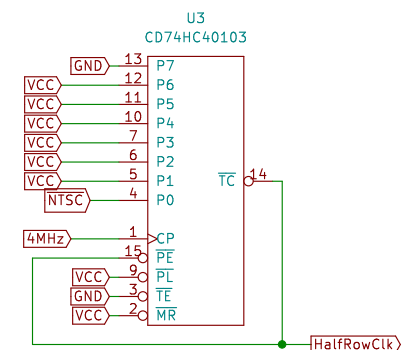
Id: 1/8



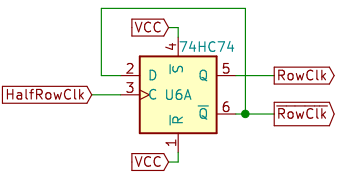
Divide 4MHz clock to make HalfRowClk

PAL: $32\mu s = 128 \text{ ticks @ } 4\text{MHz}$

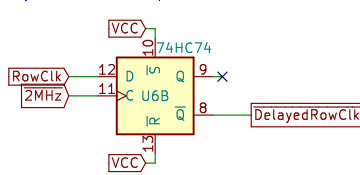
NTSC: $-31.75\mu s = 127 \text{ ticks @ } 4\text{MHz}$



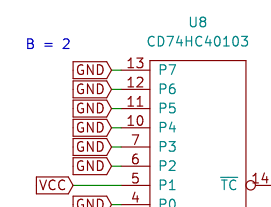
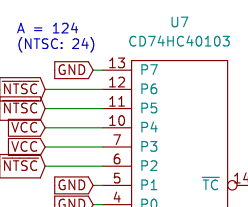
Divide HalfRowClk to make RowClk



Delayed RowClk to help detect when it starts

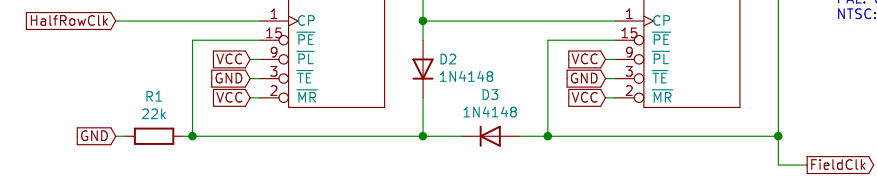
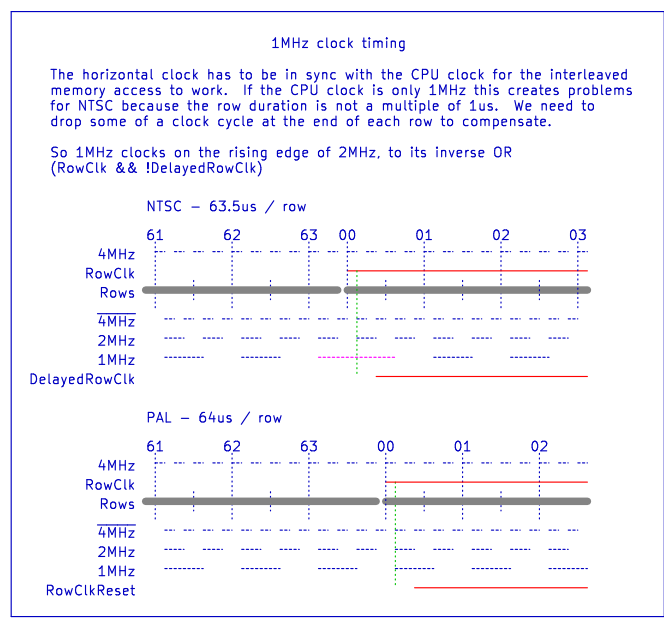


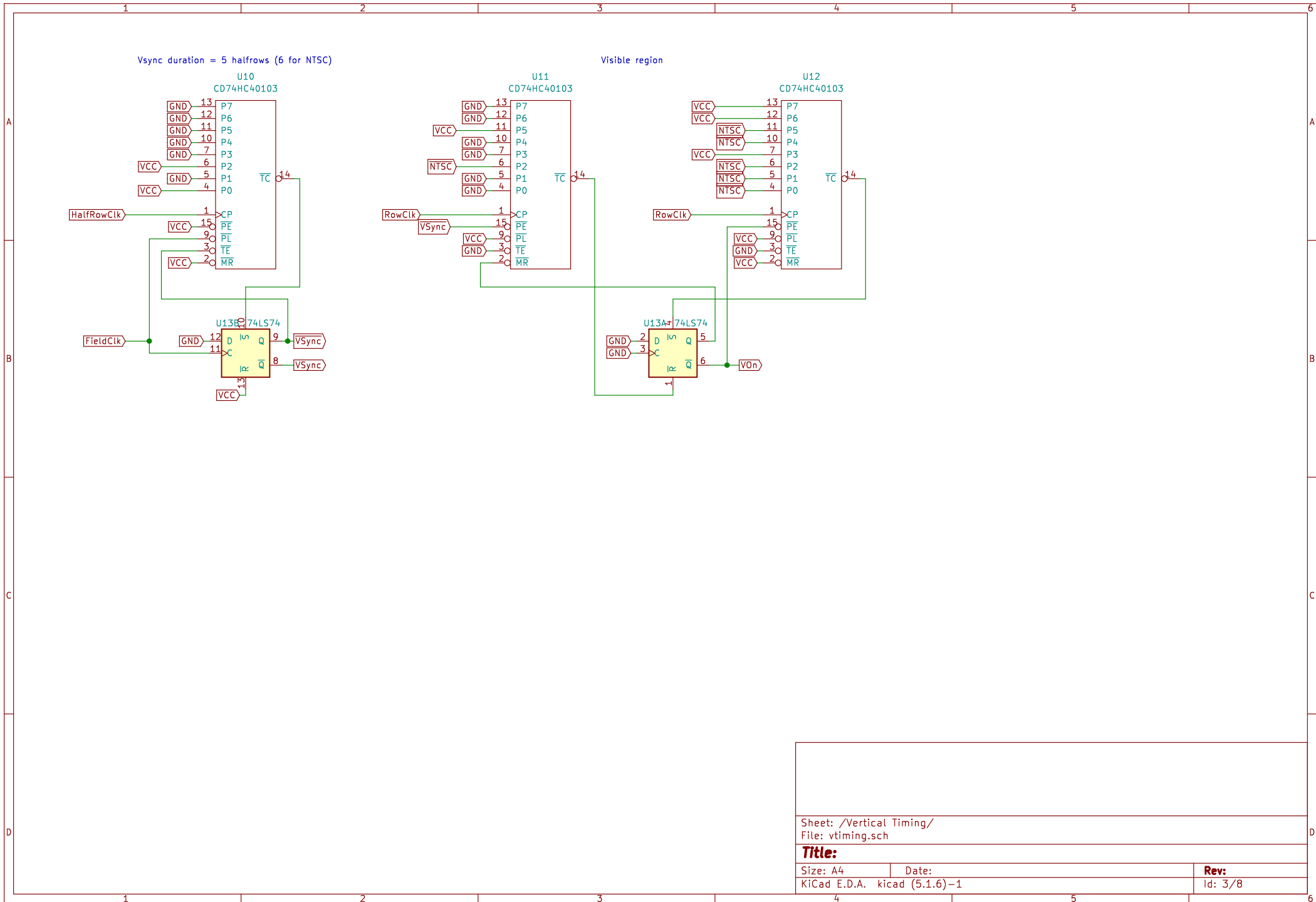
Count fields - num halfrows = A + 256*B

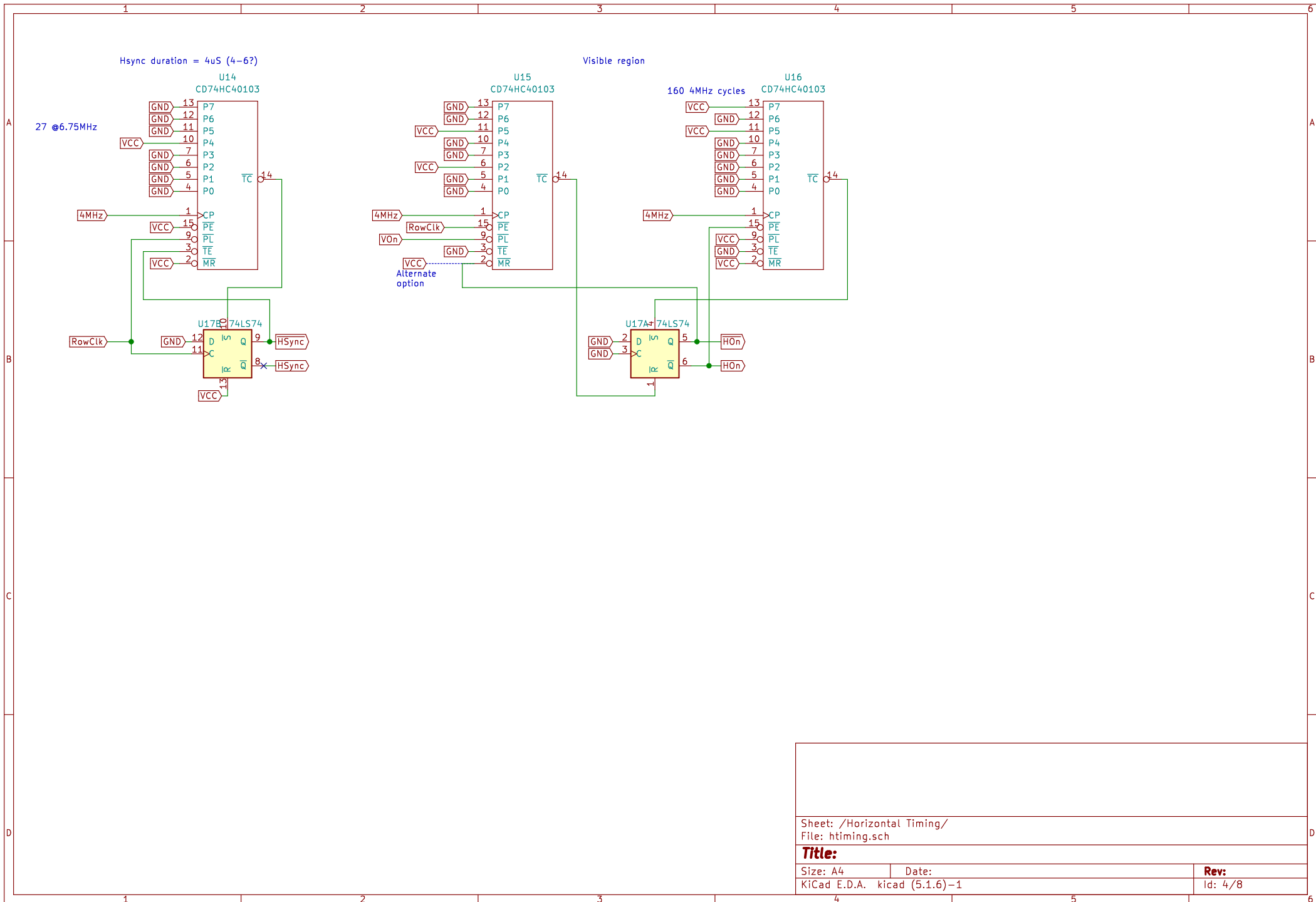


Full field (interlaced):
PAL: $625 \text{ halfrows} = 256 * 2 + 123$
NTSC: $525 \text{ halfrows} = 256 * 2 + 13$

Full field (non-interlaced):
PAL: $626 \text{ halfrows} = 256 * 2 + 124$
NTSC: $526 \text{ halfrows} = 256 * 2 + 14$





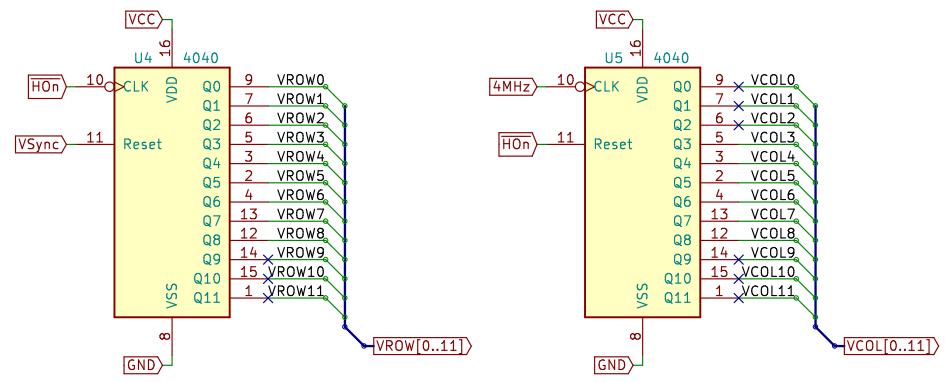


Sheet: /Horizontal Timing/
 File: htiming.sch

Title:

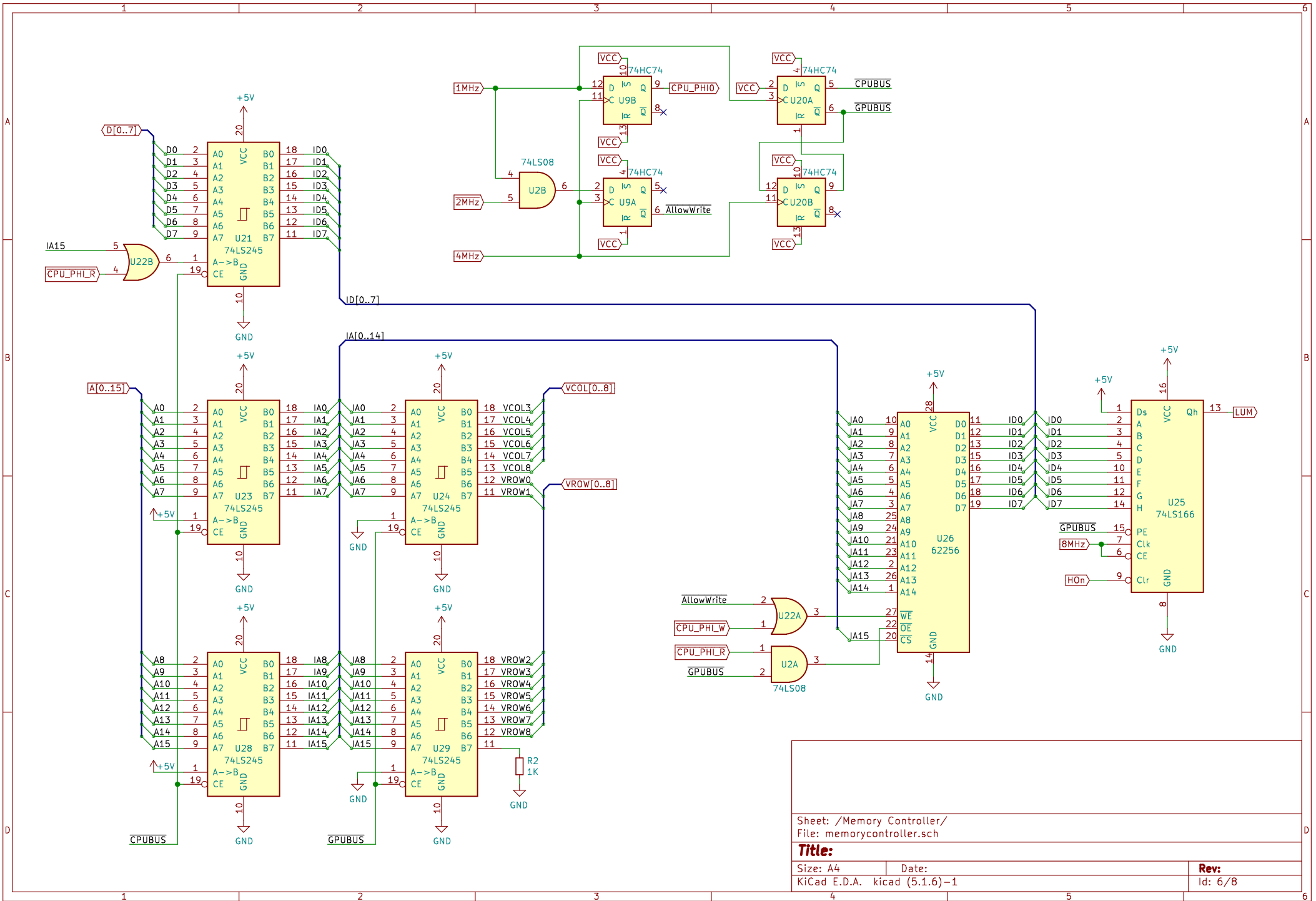
Size: A4 Date:
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Rev:
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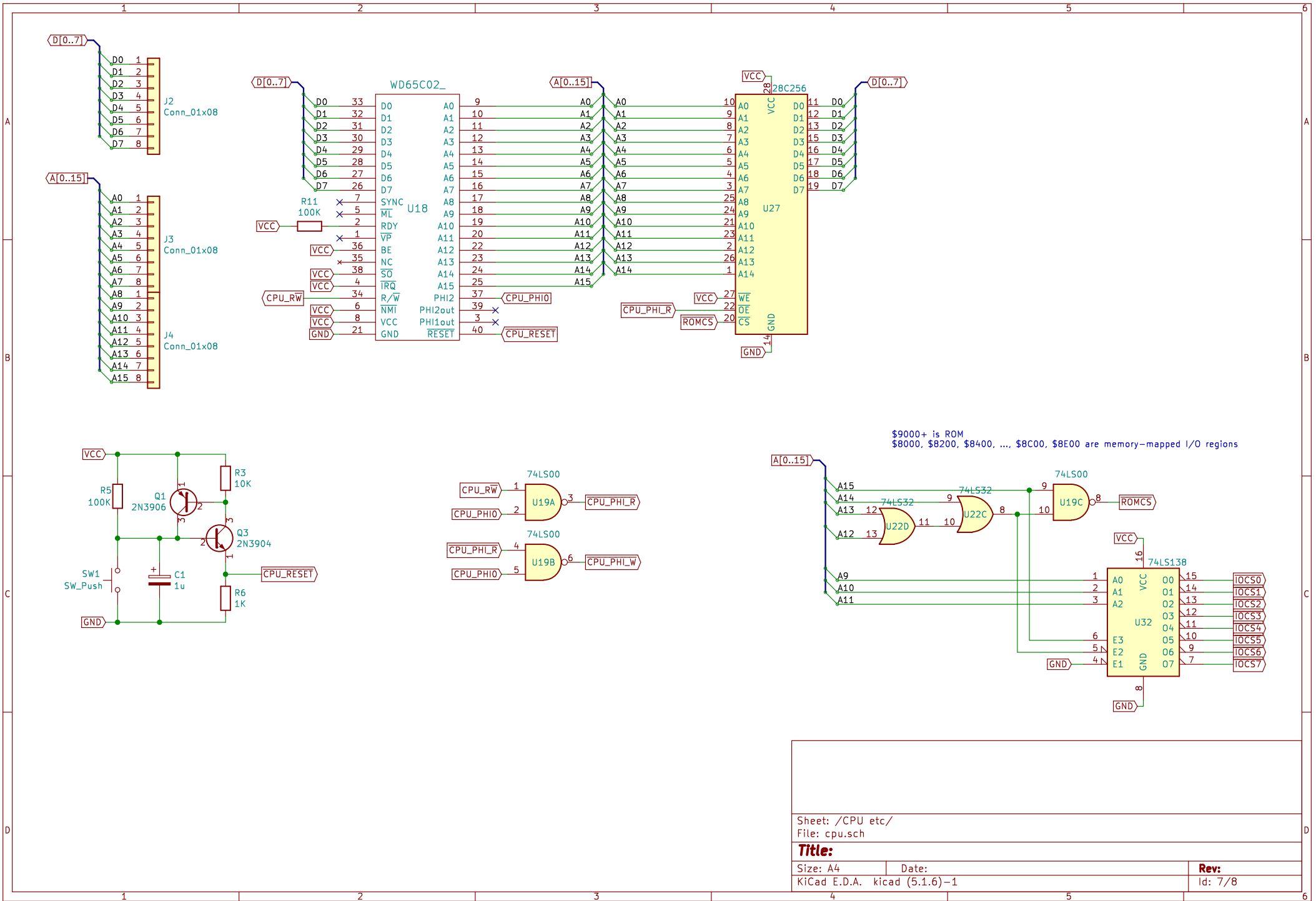
Sheet: /Coordinate Counting/
 File: coordinates.sch

Title:		Rev:	
Size: A4	Date:		
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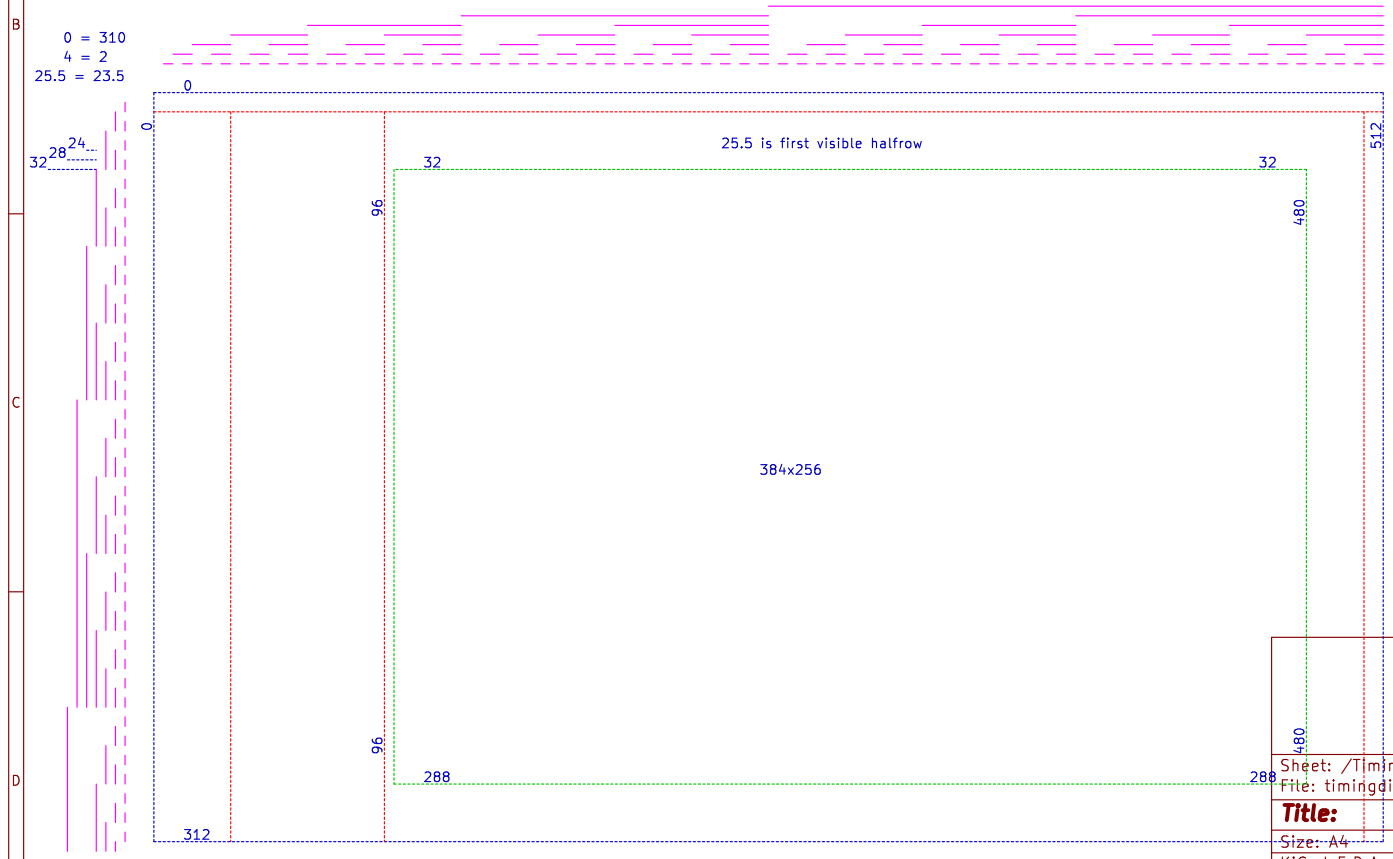


Sheet: /Memory Controller/
 File: memorycontroller.sch

Title:		Date:		Rev:	
Size: A4		KiCad E.D.A. kicad (5.1.6)-1		Id: 6/8	



Sheet: /CPU etc/
 File: cpu.sch
Title:
 Size: A4 Date:
 KiCad E.D.A. kicad (5.1.6)-1 **Rev:**
 Id: 7/8



Sheet: /Timing Diagrams/		Date:	
File: timingdiagrams.sch		Rev:	
Title:			
Size: A4	KiCad E.D.A. kicad (5.1.6)-1		Id: 8/8