

daveho hacks

Sheet: /HCount/

File: HCount.kicad\_sch

**Title: Horizontal count**

Size: USLetter

Date:

KiCad E.D.A. 8.0.3

Rev:

Id: 1/7



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Sheet: /VCount/

File: VCount.kicad\_sch

**Title: Vertical count**

Size: USLetter Date:

KiCad E.D.A. 8.0.3

Rev:

Id: 1/7



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Sheet: /Output/

File: Output.kicad\_sch

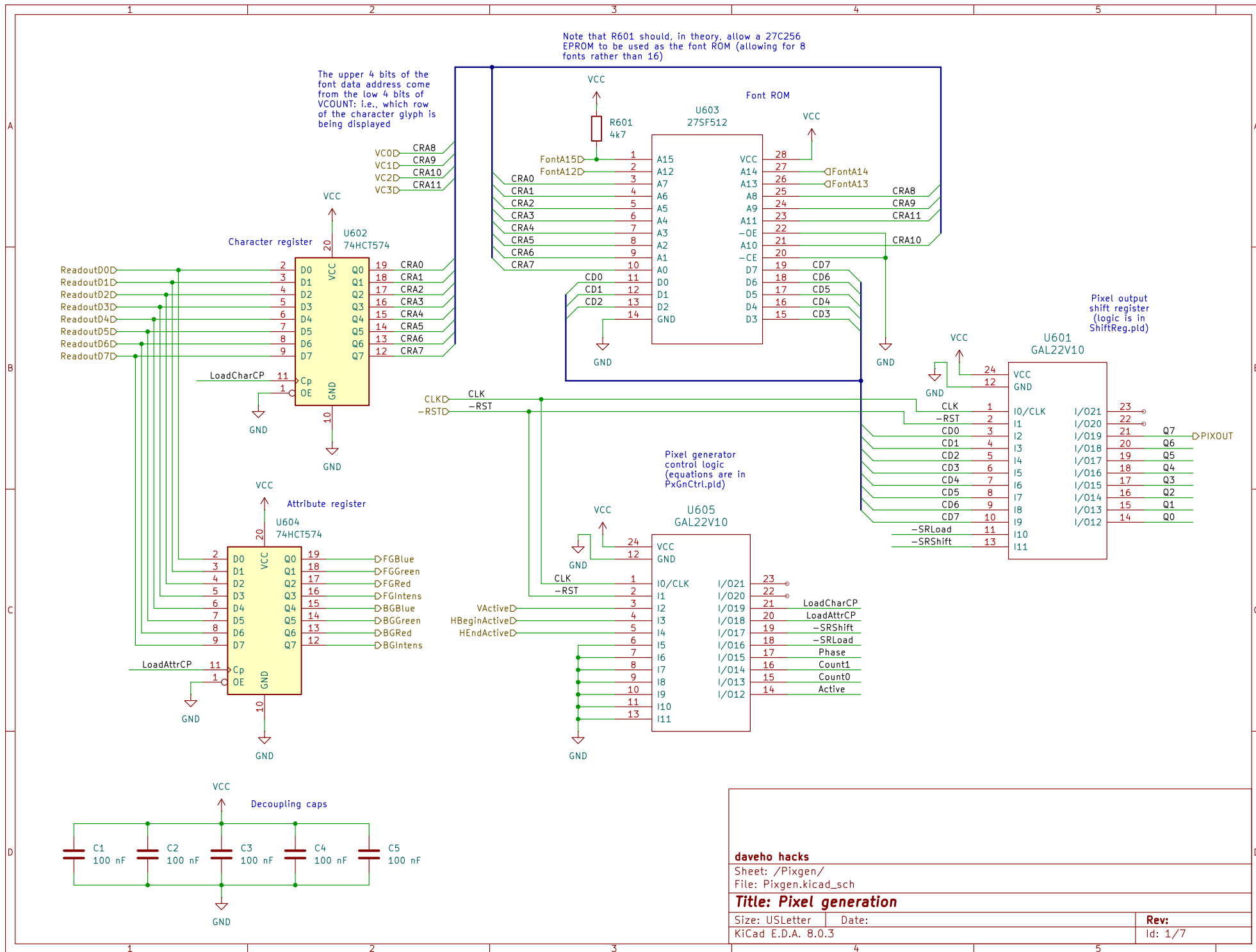
**Title: Output**

Size: USLetter Date:

KiCad E.D.A. 8.0.3

**Rev:**

Id: 4/7



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Sheet: /Pixgen/

File: Pixgen.kicad\_sch

**Title: Pixel generation**

Size: USLetter Date:

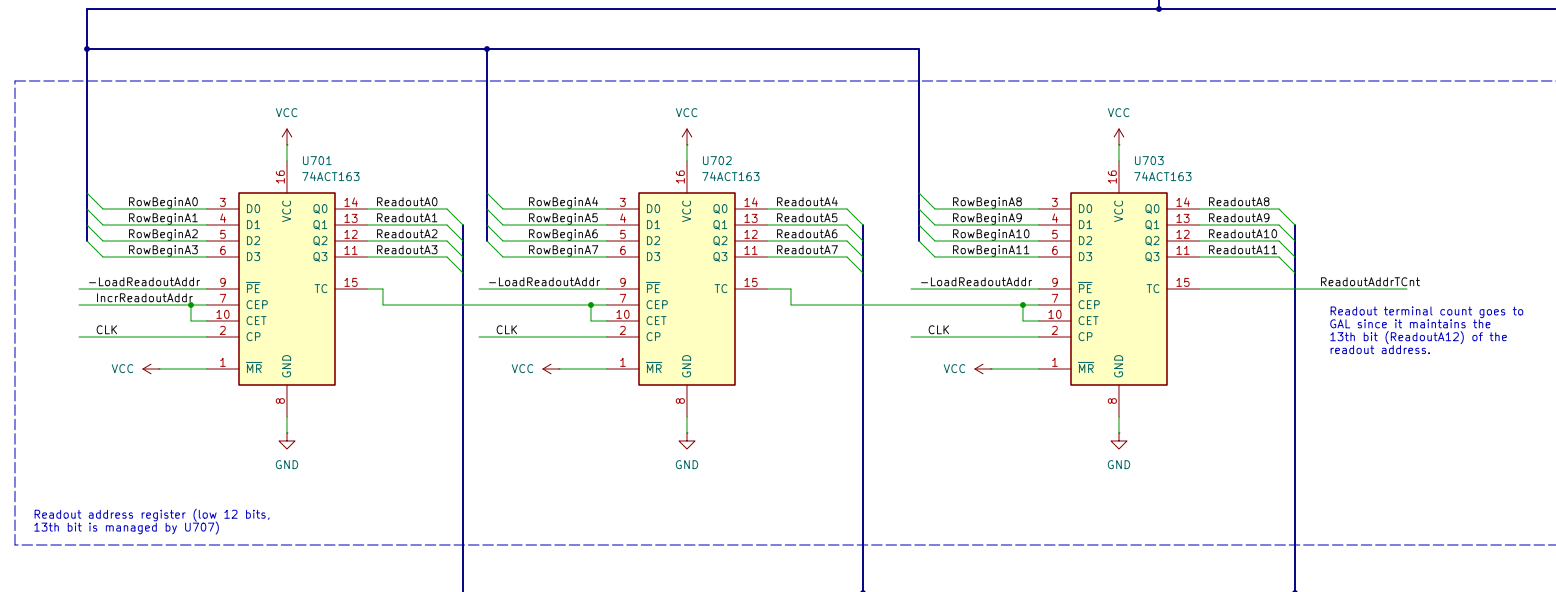
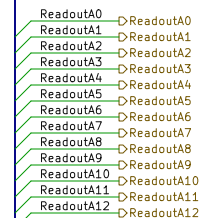
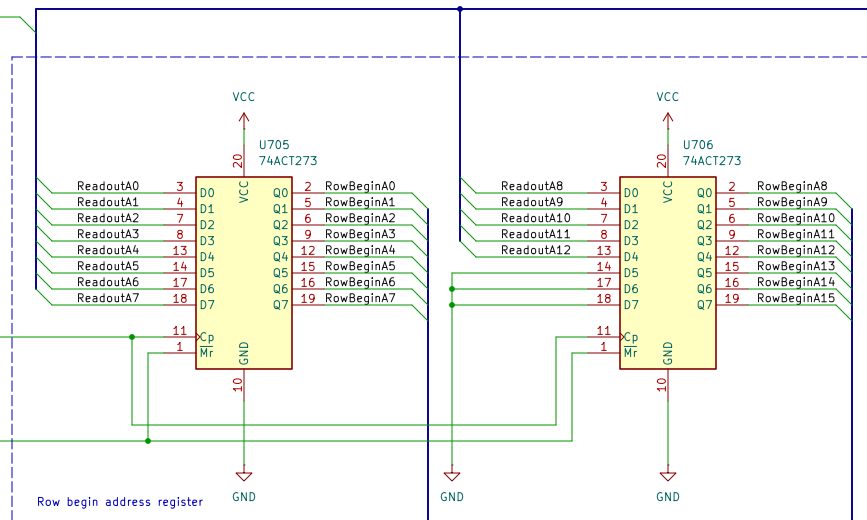
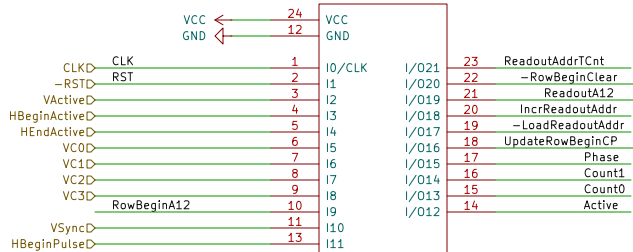
KiCad E.D.A. 8.0.3

Rev:

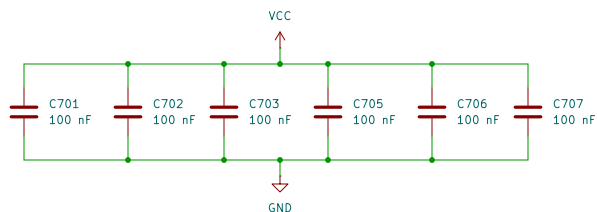
Id: 1/7

Logic is defined in  
R0utCtrl.pld

U707  
GAL22V10



Readout terminal count goes to GAL since it maintains the 13th bit (ReadoutA12) of the readout address.



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Sheet: /Readout/  
File: Readout.kicad\_sch

Title: Readout

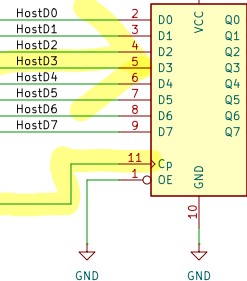
Size: User Date:  
KiCad E.D.A. 8.0.3

Rev:  
Id: 1/7

HostD0  
HostD1  
HostD2  
HostD3  
HostD4  
HostD5  
HostD6  
HostD7

Host can read and write video memory and can write the contents of the VRAM bank register

VBankRegCP



VRAM bank register: selects which 2K bank the host is accessing, and also selects which font in the font ROM is in use

Q0 19 BankA11  
Q1 18 BankA12  
Q2 17  
Q3 16  
Q4 15  
Q5 14  
Q6 13  
Q7 12  
FontA12  
FontA13  
FontA14  
FontA15

Host writes data byte

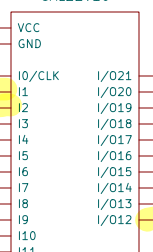
HostA0D  
HostA1D  
HostA2D  
HostA3D  
HostA4D  
HostA5D  
HostA6D  
HostA7D  
HostA8D  
HostA9D  
HostA10D  
HostA11D  
HostA12D  
HostA13D  
HostA14D  
HostA15D

All host address lines are used because the VRAM hardware does its own address decoding (to know when video memory is being accessed by the host)

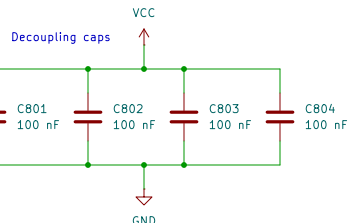
-HostRMEMD  
-HostWMEMD  
-VBankRegEND

Decode host control signals, generate control signals for VRAM and bank reg; logic is in VRAMCtrl.pld

U803 GAL22V10



Note that the "inversion" of ReadoutA12 (generated by the control signal GAL) is used to select the high VRAM chip and enable its output.

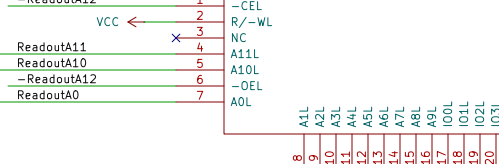
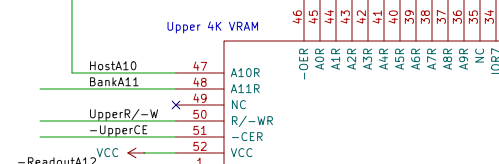
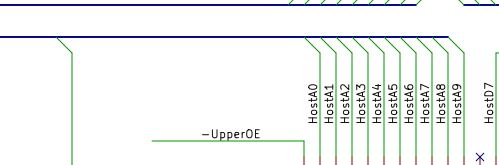
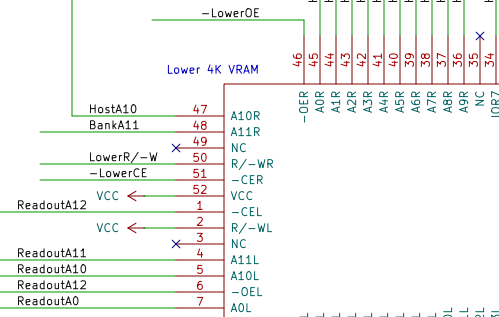


The readout address signals select which byte of video memory the memory fetch hardware wants to access. ReadoutA12 (the highest address line) is used to select the lower or upper VRAM chip.

ReadoutA0D ReadoutA0  
ReadoutA1D ReadoutA1  
ReadoutA2D ReadoutA2  
ReadoutA3D ReadoutA3  
ReadoutA4D ReadoutA4  
ReadoutA5D ReadoutA5  
ReadoutA6D ReadoutA6  
ReadoutA7D ReadoutA7  
ReadoutA8D ReadoutA8  
ReadoutA9D ReadoutA9  
ReadoutA10D ReadoutA10  
ReadoutA11D ReadoutA11  
ReadoutA12D ReadoutA12

Data values read from VRAM (to be used for rasterization)

ReadoutD0  
ReadoutD1  
ReadoutD2  
ReadoutD3  
ReadoutD4  
ReadoutD5  
ReadoutD6  
ReadoutD7



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Sheet: /VRAM/  
File: VRAM.kicad\_sch

Title: VRAM

Size: User Date:  
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