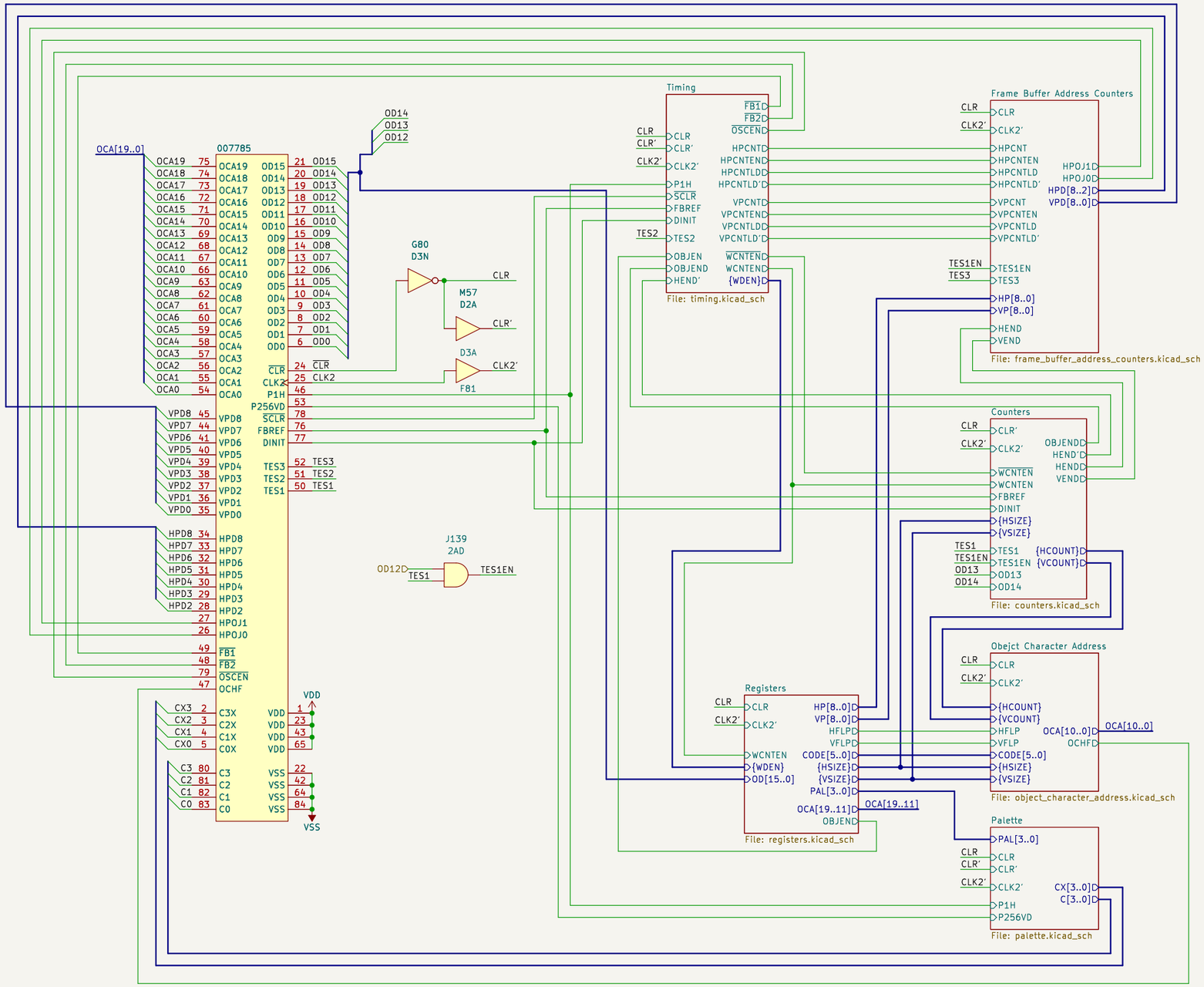
The 007786 scans for valid object data:
– Object (sprite) code,
– palette,
– position and
– attributes

It translates it into:
– individual object character (tiles) color code,
– Palette values
– object character address

This is copied into the frame buffers with the 007786.

1. $\overline{SCLR}$ ($\overline{OSCANCLR}$) starts the obejct scanning process.
2. $\overline{OSCEN}$ is activated when each of the four words to be scanned are to be read. The 007783 increments the address.

The 007786 uses an OKI 79V000 gate cell array with 3289 unit cells.



Ulf Skutnabba, twitter: @skutis77

Sheet: /
File: 007785.kicad_sch

Title: Konami 007785

Size: A3	Date: 2023-12-22	**Rev:**
KiCad E.D.A. 8.0.4		Id: 1/7

Object Character Addressing

Horizontal Position

Vertical Position

OD[15..0]

OD0 OD1 OD2 OD3 OD4 OD5 OD6 OD7 OD8 OD9 OD10 OD11 OD12 OD13 OD14

WOEN — C122 220 — B104 DFF — C71 DFR — CODE0

WOEN — O138 220 — O123 DFF — M103 DFR — CODE1

WOEN — G132 220 — F123 DFF — G89 DFR — CODE2

WOEN — B113 220 — C113 DFF — E95 DFR — CODE3

WOEN — F108 220 — E105 DFF — E69 DFR — CODE4

WOEN — F138 220 — E113 DFF — F70 DFR — CODE5

CODE[5..0]

WOEN — J129 220 — K120 DFF — Q107 DFR — OCA11

WOEN — M114 220 — O114 DFF — N90 DFR — OCA12

WOEN — P137 220 — N123 DFF — W108 DFR — OCA13

WOEN — Q138 220 — Q123 DFF — U106 DFR — OCA14

WOEN — C102 220 — D114 DFF — C81 DFR — OCA15

WOEN — G111 220 — G117 DFF — N112 DFR — OCA16

WOEN — K138 220 — K112 DFF — O98 DFR — OCA17

WOEN — R137 220 — T129 DFF — U95 DFR — OCA18

WOEN — I133 220 — J116 DFF — I55 DFR — OCA19

OCA[19..11]

CLK2'' — WCNTEND — CLRD

W1EN — E121 220 — F114 DFF — Q80 DFR — HP0

W1EN — M138 220 — M129 DFF — P106 DFR — HP1

W1EN — L138 220 — L123 DFF — K102 DFR — HP2

W1EN — I114 220 — H115 DFF — I92 DFR — HP3

W1EN — G126 220 — H106 DFF — F93 DFR — HP4

W1EN — H133 220 — H124 DFF — H95 DFR — HP5

W1EN — L132 220 — K129 DFF — L112 DFR — HP6

W1EN — J124 220 — I124 DFF — L101 DFR — HP7

W1EN — B119 220 — D123 DFF — D96 DFR — HP8

HP[8..0]

W2EN — U132 220 — V129 DFF — I81 DFR — VP0

W2EN — N132 220 — M120 DFF — J92 DFR — VP1

W2EN — S132 220 — S123 DFF — Q96 DFR — VP2

W2EN — O132 220 — P127 DFF — D86 DFR — VP3

W2EN — S138 220 — P117 DFF — S106 DFR — VP4

W2EN — U138 220 — U123 DFF — M81 DFR — VP5

W2EN — W133 220 — W124 DFF — R85 DFR — VP6

W2EN — T138 220 — T120 DFF — T98 DFR — VP7

W2EN — Q132 220 — R127 DFF — N101 DFR — VP8

VP[8..0]

W3EN — V101 220 — V107 DFF — PAL0 DFR

W3EN — U117 220 — R115 DFF — PAL1 DFR

W3EN — S100 220 — R103 DFF — PAL2 DFR

W3EN — O81 220 — O87 DFF — PAL3 DFR

PAL[3..0]

W3EN — T75 220 — T87 DFF — T28 INV — HSIZE0 HSIZE0

W3EN — V73 220 — V79 DFF — U35 INV — HSIZE1 HSIZE1

U21 INV — HSIZE1'

{HSIZE}

W3EN — V67 220 — U67 DFF — W33 INV — VSIZE0 VSIZE0

W3EN — U61 220 — S83 DFF — W24 INV — VSIZE1 VSIZE1

{VSIZE}

W3EN — S94 220 — T109 DFF — HFLP

W3EN — S117 220 — V118 DFF — VFLP

W3EN — T81 220 — R73 DFF — OBJEN

{WDEN} — WOEN W1EN W2EN W3EN

CLK2'D — Q118 D1A — CLK2'' — W119 D1A — CLK2''' — Q63 D1A — CLK2''''

Sheet: /Registers/		
File: registers.kicad_sch		
Title:		
Size: A3	Date: 2023-12-22	**Rev:**
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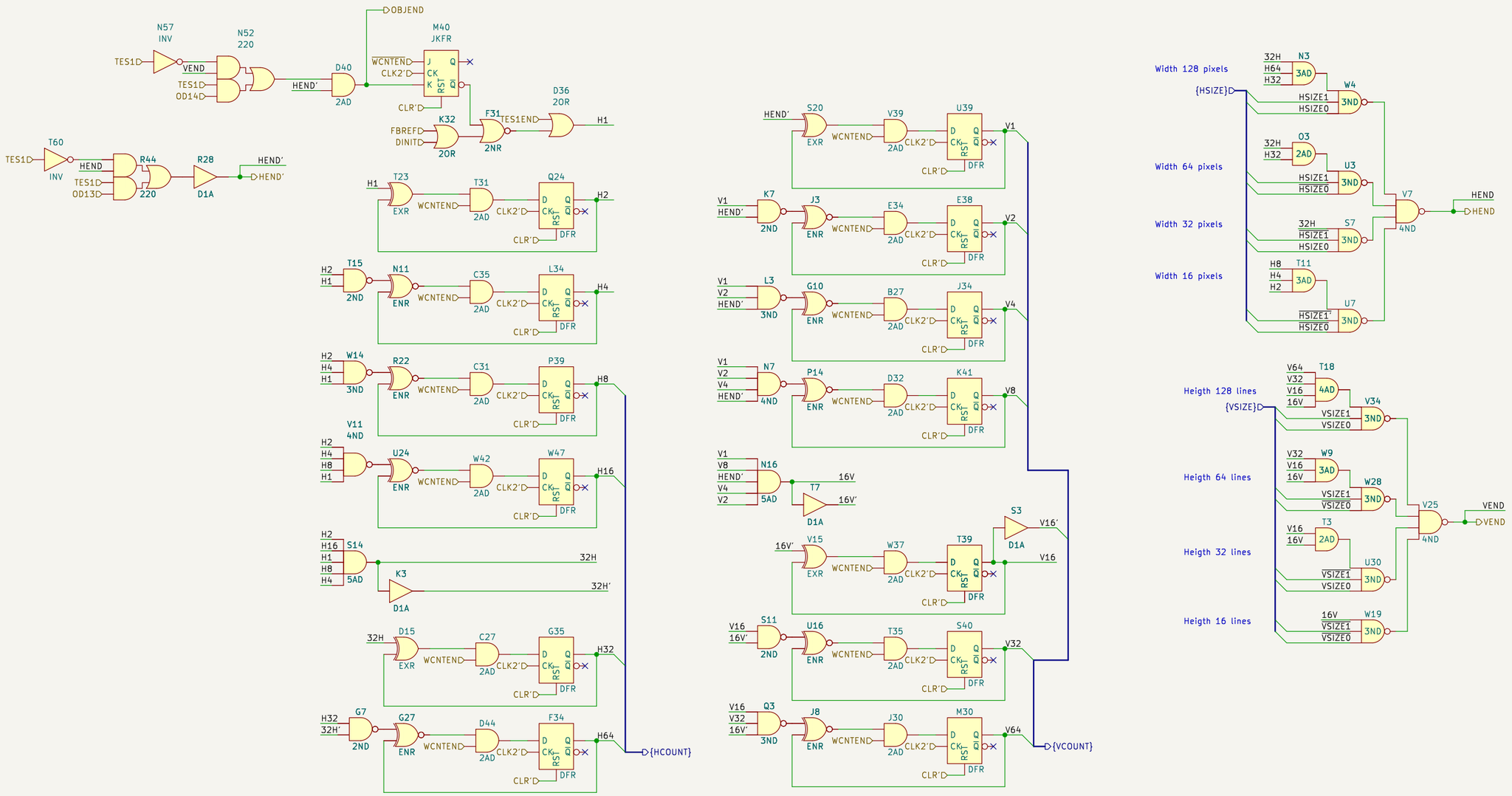

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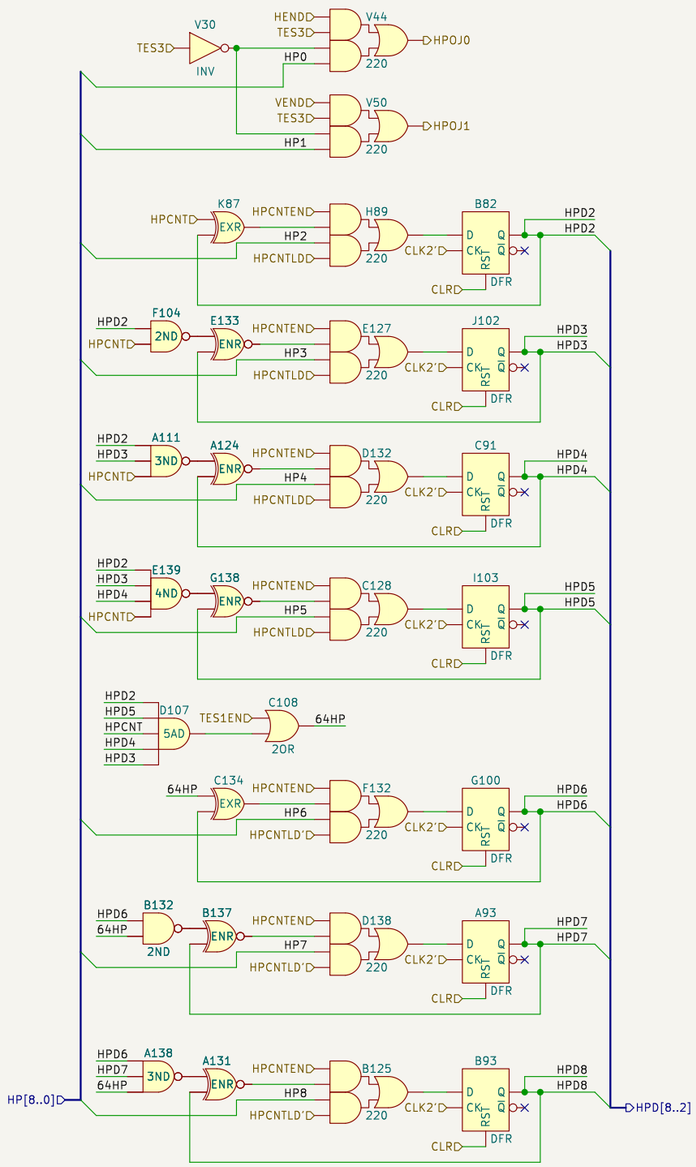
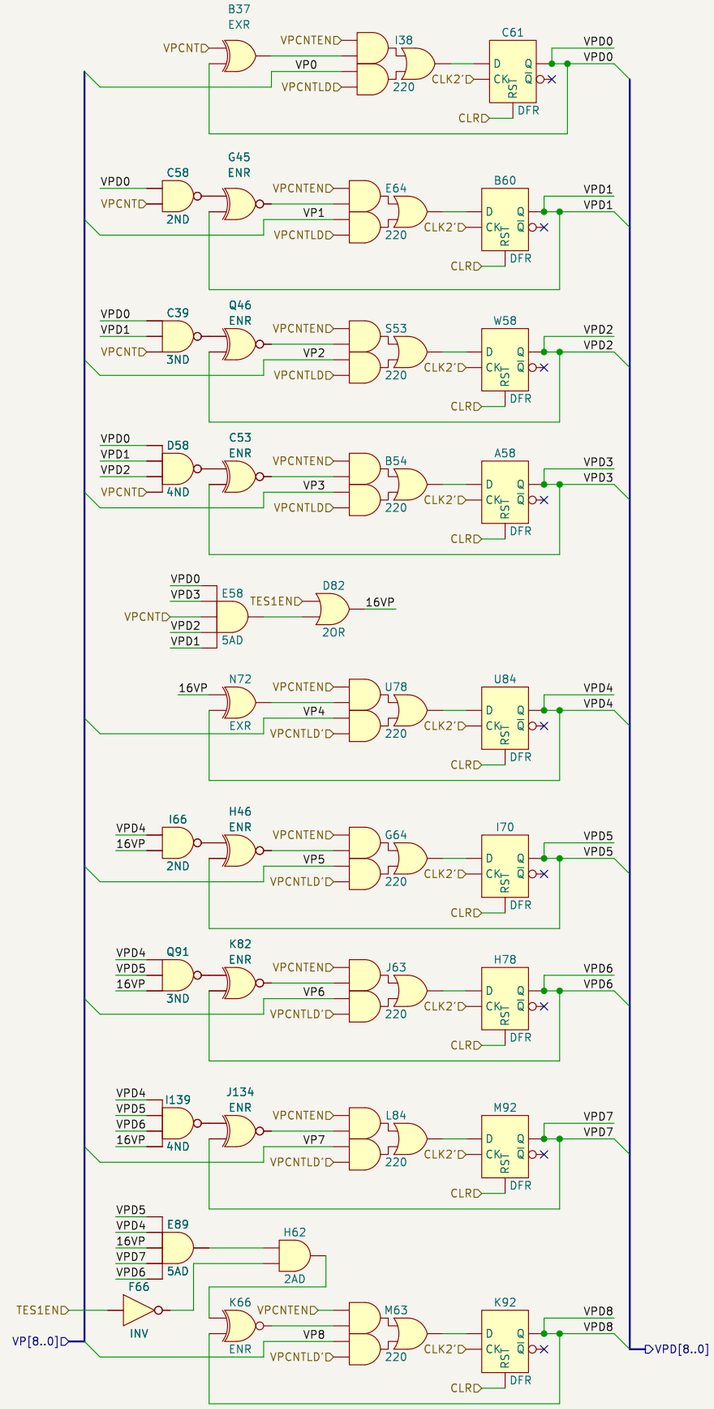
File: counters.kicad_sch		
Title:		
Size: A3	Date: 2023-12-22	**Rev:**
KiCad E.D.A. 8.0.4		Id: 3/7

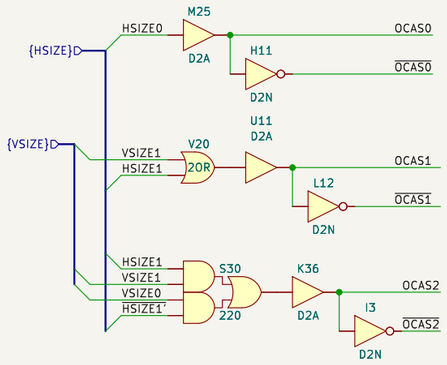




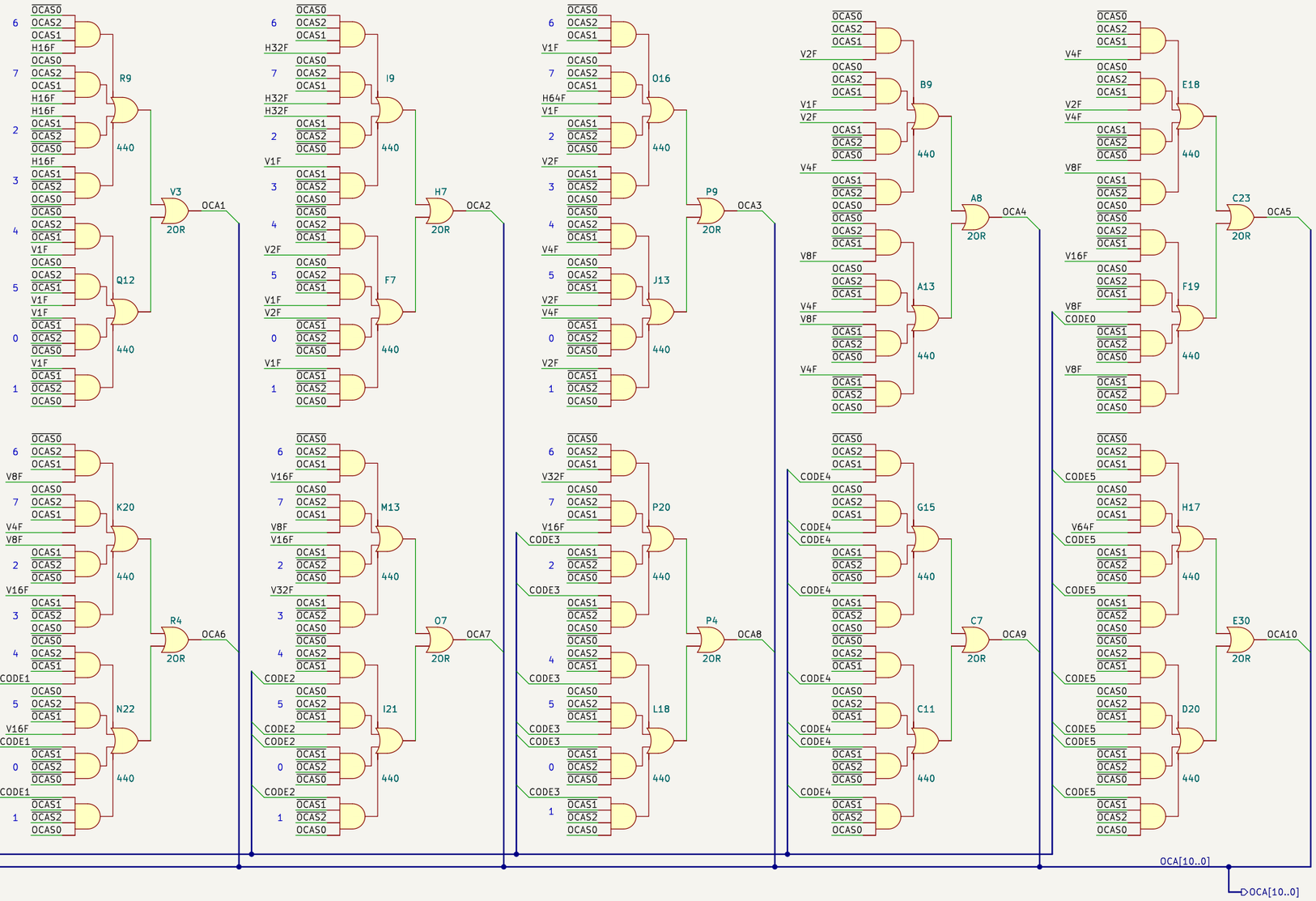
Sheet: /Frame Buffer Address Counters/		
File: frame_buffer_address_counters.kicad_sch		
Title:		
Size: A3	Date: 2023-12-22	**Rev:**
KiCad E.D.A. 8.0.4		Id: 4/7

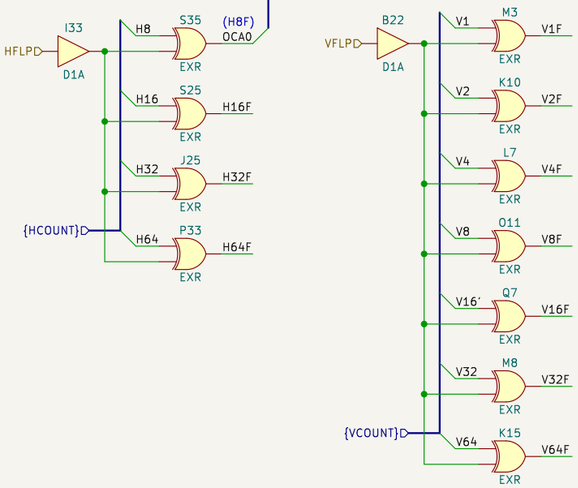
Object Character Select Address

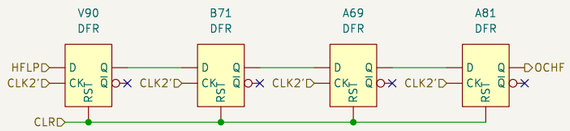
Object (Sprite) tiles are called characters on the twin16 platform.



VSIZE1	VSIZE0	VSIZE	HSIZE1	HSIZE0	HSIZE	OCAS2	OCAS1	OCAS0			
0	0	16	0	0	16	0	0	0	0	16H16V	256
0	0	16	0	1	32	0	0	1	1	32H16V	512
0	0	16	1	0	64	0	1	0	2	64H16V	1024
0	0	16	1	1	128	0	1	1	3	128H16V	2048
0	1	32	0	0	16	1	0	0	4	16H32V	512
0	1	32	0	1	32	1	0	1	5	32H32V	1024
0	1	32	1	0	64	0	1	0	2	64H32V	2048
0	1	32	1	1	128	0	1	1	3	128H32V	4096
1	0	64	0	0	16	0	1	0	2	16H64V	1024
1	0	64	0	1	32	0	1	1	3	32H64V	2048
1	0	64	1	0	64	1	1	0	6	64H64V	4096
1	0	64	1	1	128	1	1	1	7	128H64V	8192
1	1	128	0	0	16	1	1	0	6	16H128V	2048
1	1	128	0	1	32	1	1	1	7	32H128V	4096
1	1	128	1	0	64	1	1	0	6	64H128V	8192
1	1	128	1	1	128	1	1	1	7	128H128V	16384







Sheet: /Obejct Character Address/	
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Title:	
Size: A3	Date: 2023-12-22
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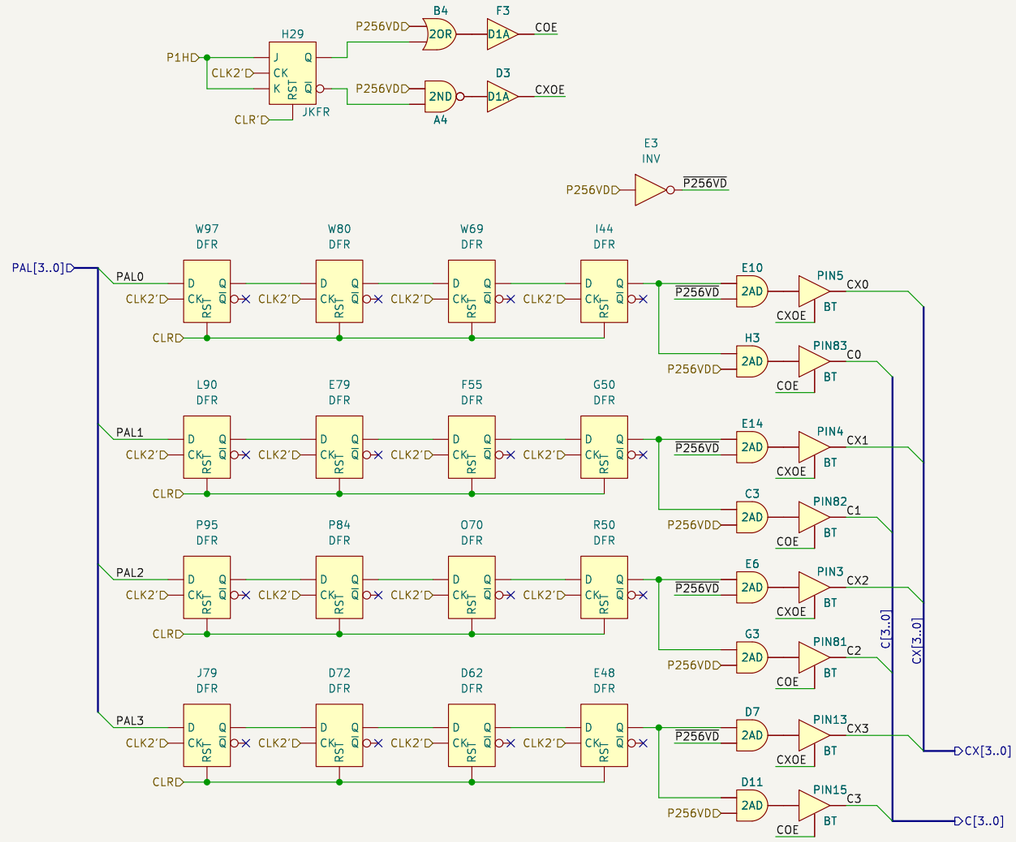

Sheet: /Palette/		
File: palette.kicad_sch		
Title:		
Size: A3	Date: 2023-12-22	**Rev:**
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Word W0: Code
Word W1: HPOS
Word W2: VPOS
Word W3: Params and sprten

Horizontal counter is running while:
~FBREF & ~DINIT

HPCNTEN = ~HEND' & WCNTEN
HPCNTLD = HEND' | ~WCNTEN
HPCNTEN = ~HPCNTLD

Signals delayed four pixelclocks

VPCNTEN = WCNTEN, delayed four pixelclocks

Sheet: /Timing/	
File: timing.kicad_sch	
Title:	
Size: A3	Date: 2023-12-22
KiCad E.D.A. 8.0.4	Id: 7/7