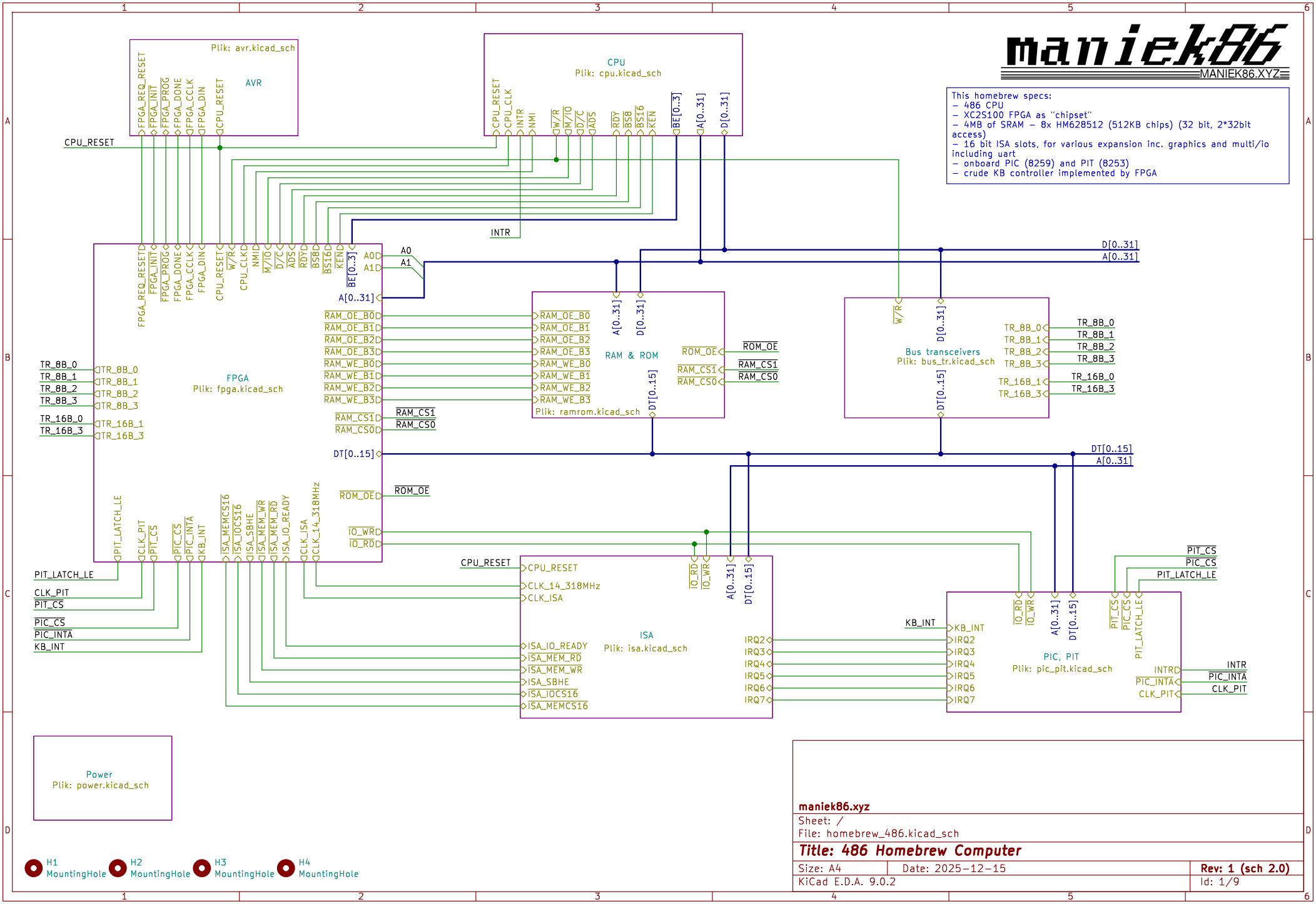
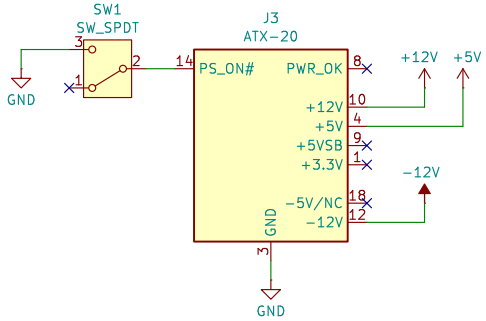
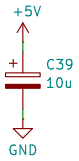
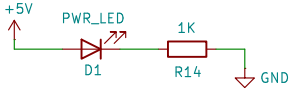
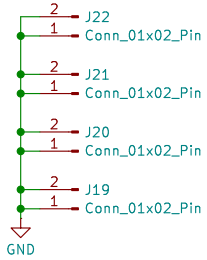
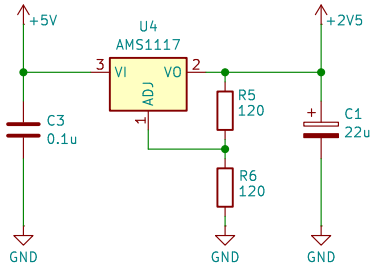

maniek86
MANIEK86.XYZ
This homebrew specs:
– 486 CPU
– XC2S100 FPGA as "chipset"
– 4MB of SRAM – 8x HM628512 (512KB chips) (32 bit, 2*32bit access)
– 16 bit ISA slots, for various expansion inc. graphics and multi/io including uart
– onboard PIC (8259) and PIT (8253)
– crude KB controller implemented by FPGA
Plik: avr.kicad_sch
AVR
CPU
Plik: cpu.kicad_sch
FPGA
Plik: fpga.kicad_sch
RAM & ROM
Plik: ramrom.kicad_sch
Bus transceivers
Plik: bus_tr.kicad_sch
ISA
Plik: isa.kicad_sch
PIC, PIT
Plik: pic_pit.kicad_sch
Power
Plik: power.kicad_sch
CPU_RESET
INTR
A0
A1
A[0..31]
D[0..31]
DT[0..15]
RAM_CS1
RAM_CS0
ROM_OE
IO_WR
IO_RD
PIT_LATCH_LE
CLK_PIT
PIT_CS
PIC_CS
PIC_INTA
KB_INT
TR_8B_0
TR_8B_1
TR_8B_2
TR_8B_3
TR_16B_0
TR_16B_1
TR_16B_3
CLK_14_318MHz
CLK_ISA
ISA_IO_READY
ISA_MEM_RD
ISA_MEM_WR
ISA_SBHE
ISA_IOCS16
ISA_MEMCS16
IRQ2
IRQ3
IRQ4
IRQ5
IRQ6
IRQ7
INTR
H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole
maniek86.xyz
Sheet: /
File: homebrew_486.kicad_sch
Title: 486 Homebrew Computer
Size: A4
Date: 2025-12-15
Rev: 1 (sch 2.0)
KiCad E.D.A. 9.0.2
Id: 1/9

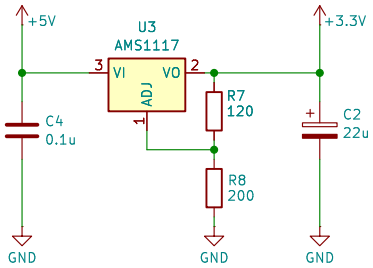












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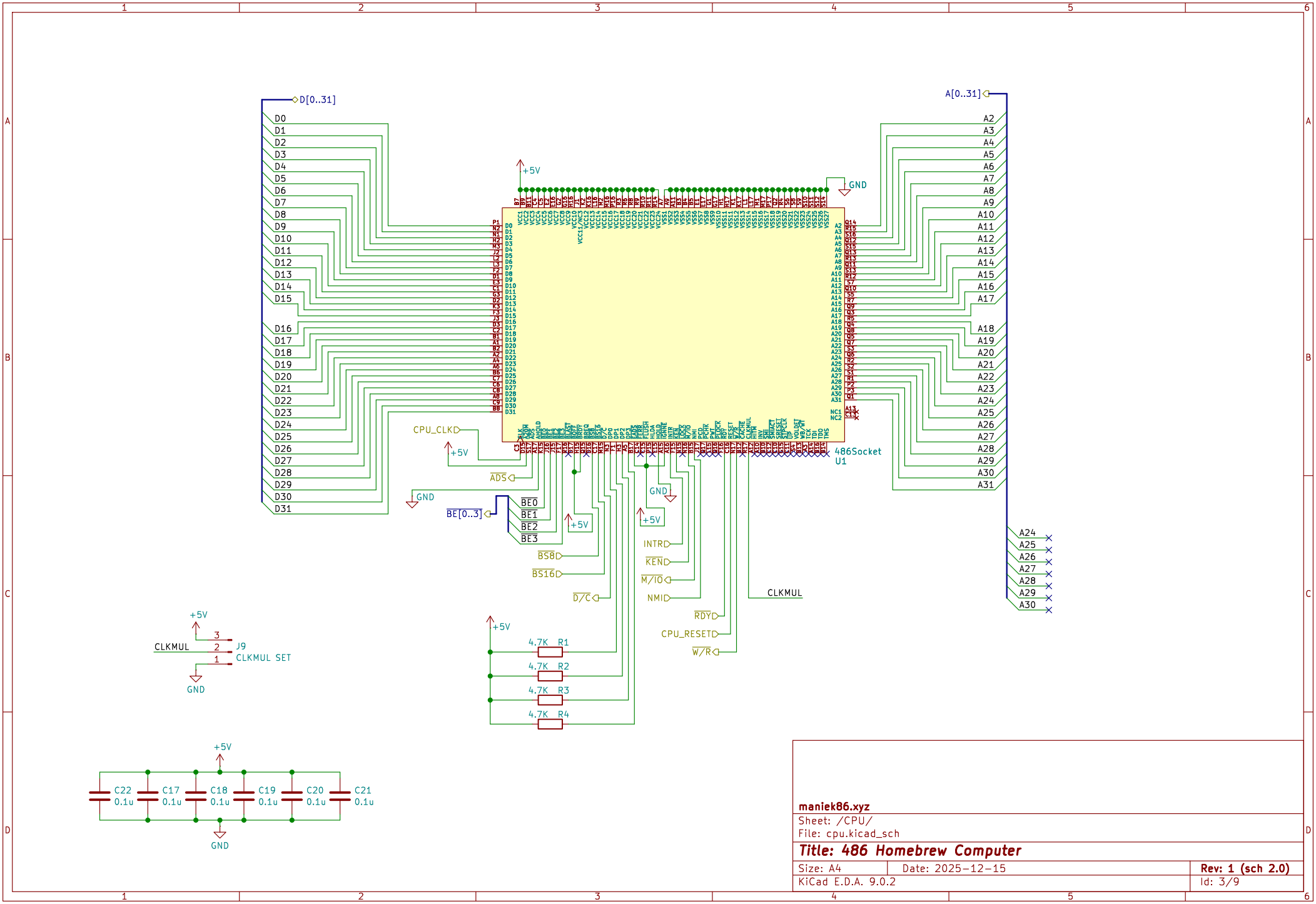
Sheet: /Power/
File: power.kicad_sch

Title: 486 Homebrew Computer

Size: A4	Date: 2025-12-15	**Rev: 1 (sch 2.0)**
KiCad E.D.A. 9.0.2		Id: 2/9



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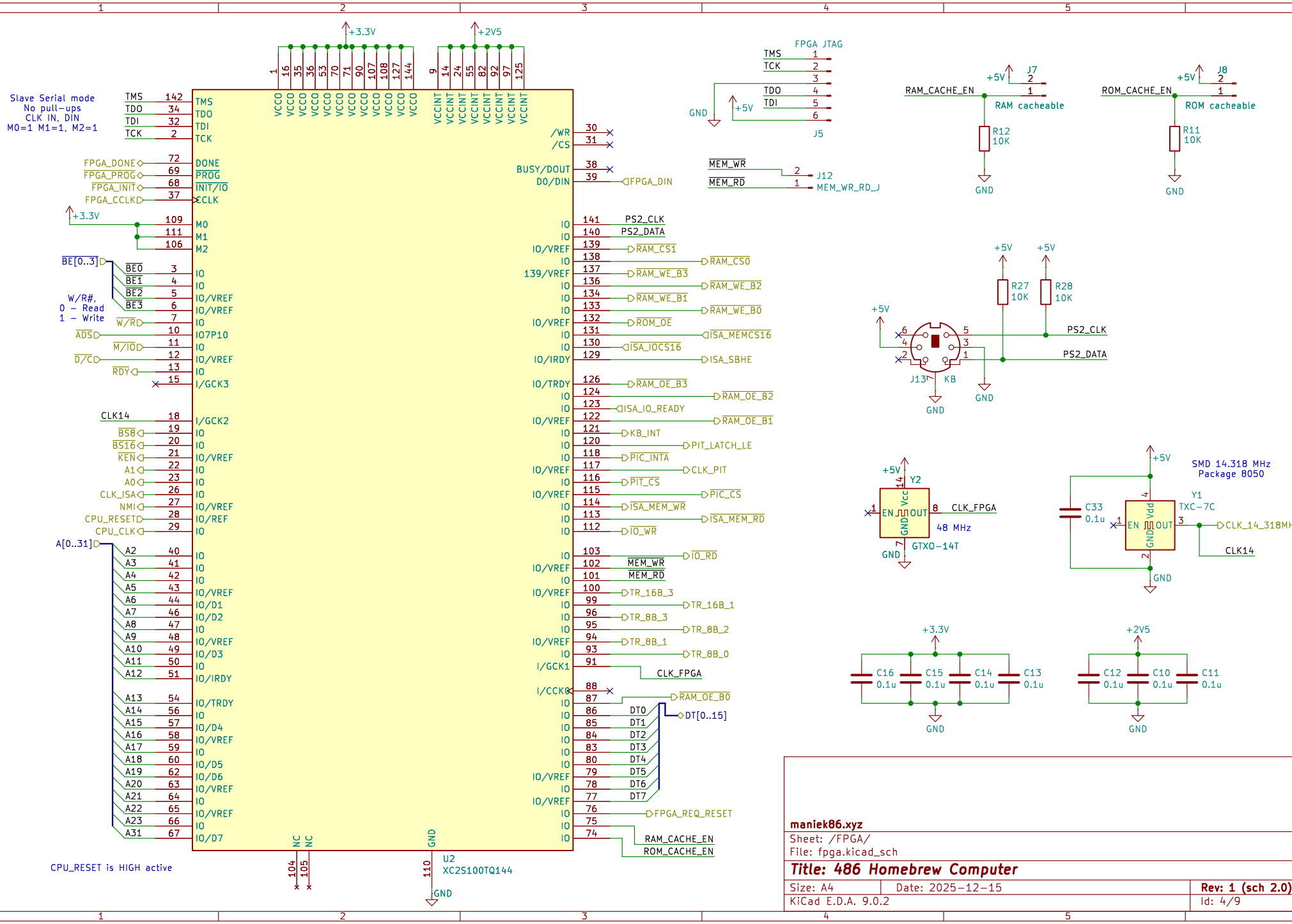
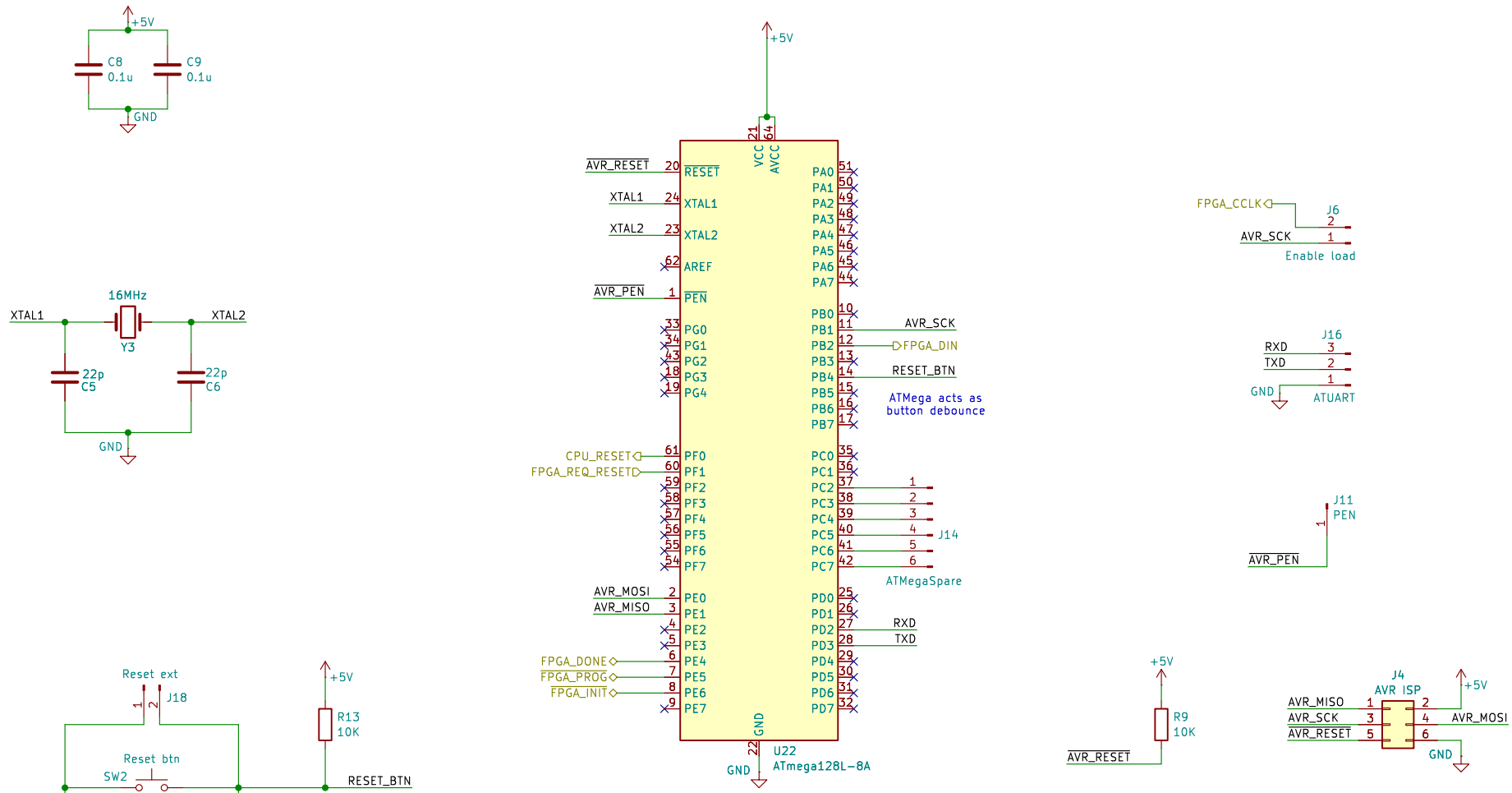
Sheet: /CPU/

File: cpu.kicad_sch

Title: 486 Homebrew Computer

Size: A4	Date: 2025-12-15	**Rev: 1 (sch 2.0)**
KiCad E.D.A. 9.0.2		Id: 3/9


Slave Serial mode
No pull-ups
CLK IN, DIN
M0=1 M1=1, M2=1
W/R#,
0 – Read
1 – Write
CPU_RESET is HIGH active
U2
XC2S100TQ144
FPGA JTAG
J5
J12
MEM_WR_RD_J
RAM_CACHE_EN
RAM cacheable
ROM_CACHE_EN
ROM cacheable
R12 10K
R11 10K
R27 10K
R28 10K
PS2_CLK
PS2_DATA
J13
KB
Y2
48 MHz
GTXO-14T
CLK_FPGA
SMD 14.318 MHz
Package 8050
Y1
TXC-7C
CLK_14_318MHz
CLK14
C33 0.1u
C16 0.1u
C15 0.1u
C14 0.1u
C13 0.1u
C12 0.1u
C10 0.1u
C11 0.1u
maniek86.xyz
Sheet: /FPGA/
File: fpga.kicad_sch
Title: 486 Homebrew Computer
Size: A4
Date: 2025-12-15
Rev: 1 (sch 2.0)
KiCad E.D.A. 9.0.2
Id: 4/9



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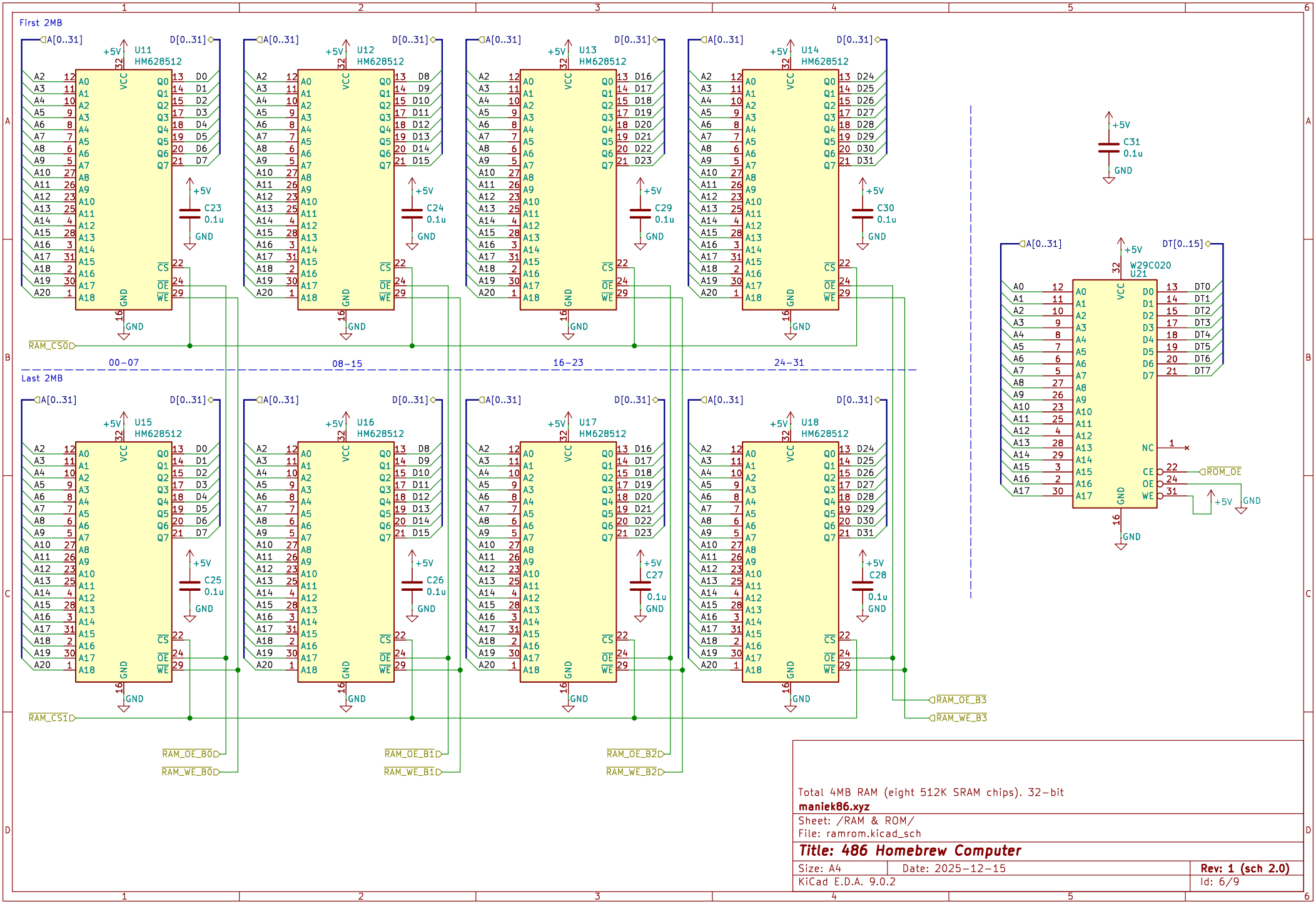
Sheet: /AVR/

File: avr.kicad_sch

Title: 486 Homebrew Computer

Size: A4	Date: 2025-12-15	**Rev: 1 (sch 2.0)**
KiCad E.D.A. 9.0.2		Id: 5/9



Total 4MB RAM (eight 512K SRAM chips). 32-bit

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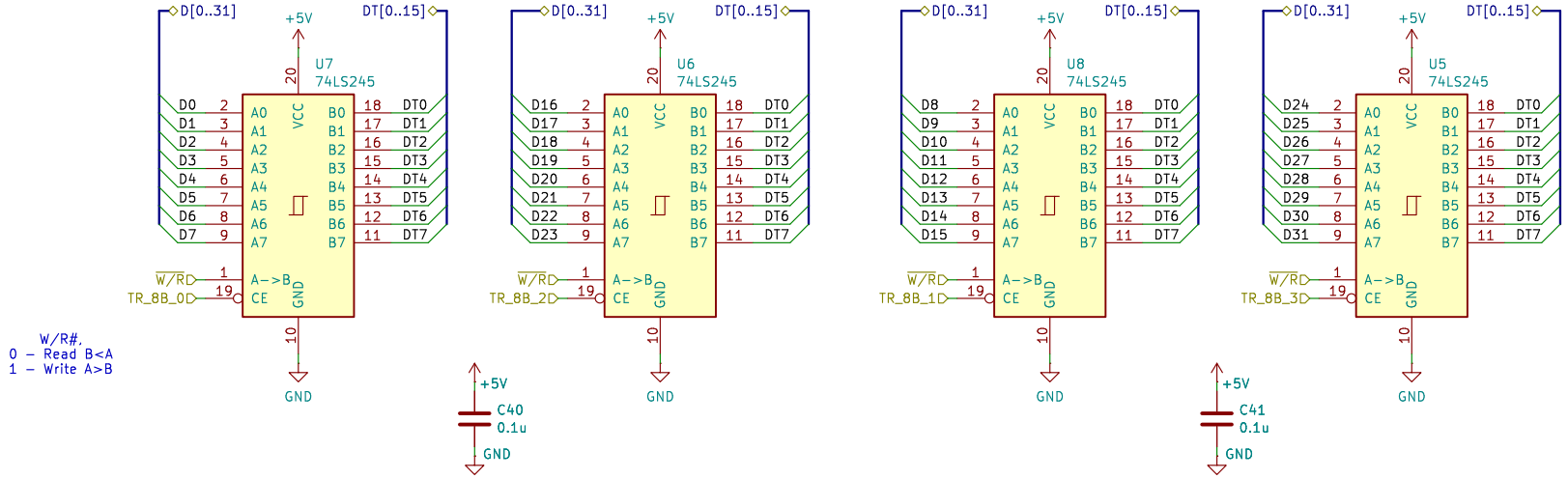
Sheet: /RAM & ROM/

File: ramrom.kicad_sch

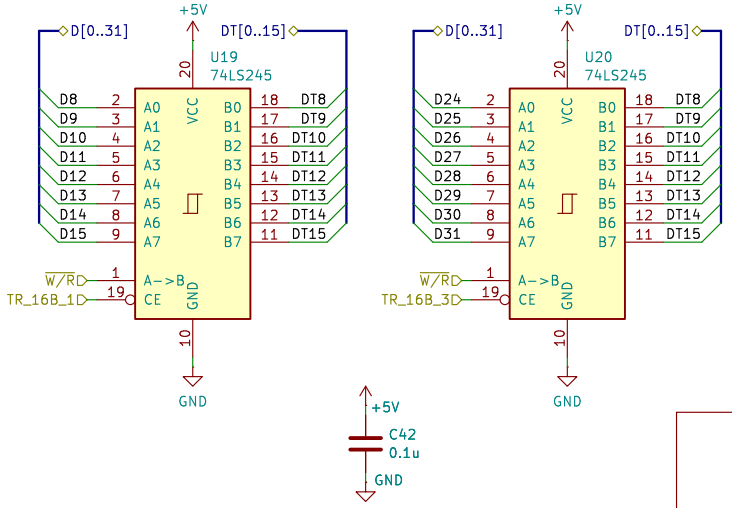
Title: 486 Homebrew Computer

Size: A4	Date: 2025-12-15	**Rev: 1 (sch 2.0)**
KiCad E.D.A. 9.0.2		Id: 6/9

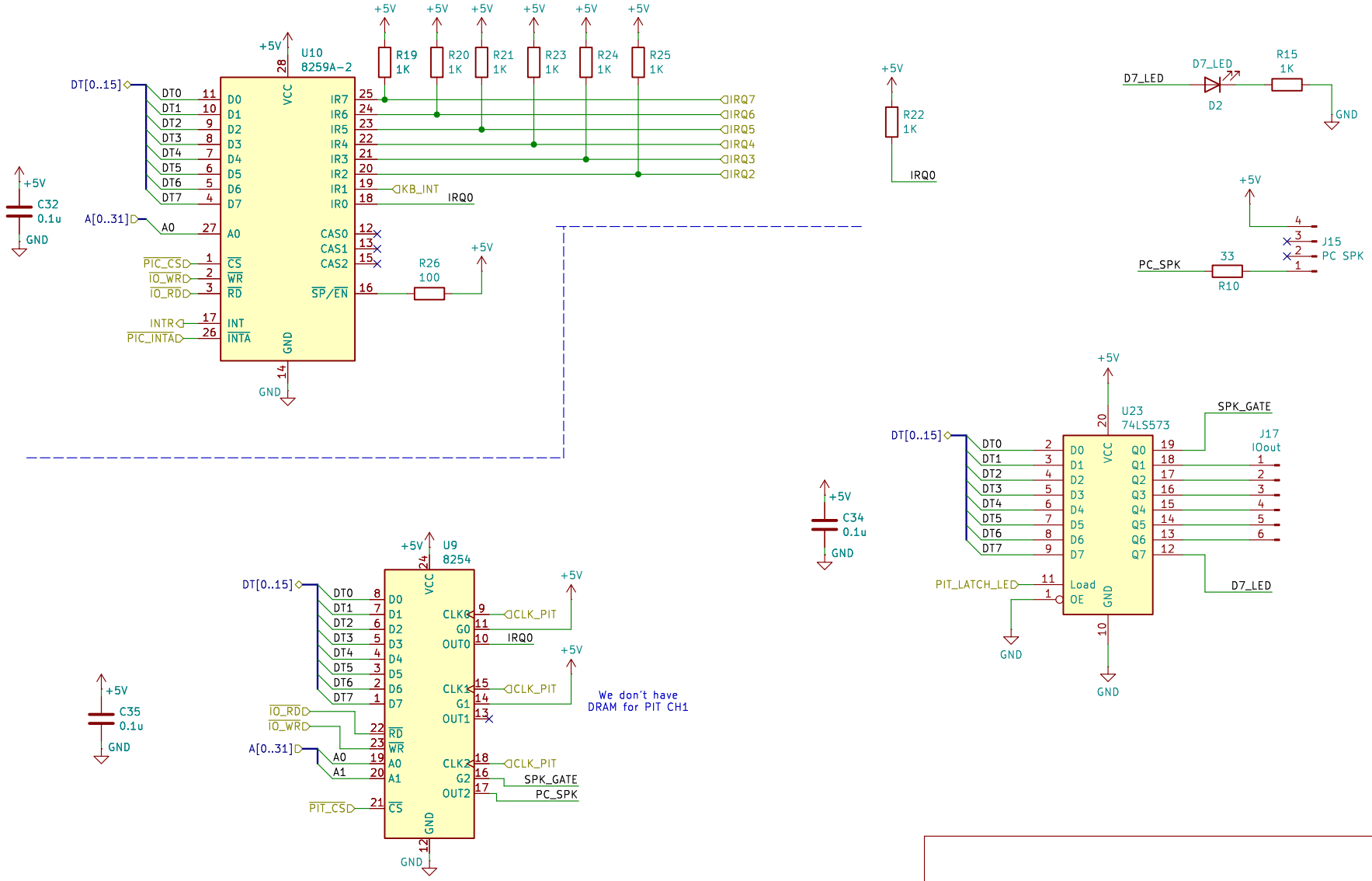


BS8 transceivers

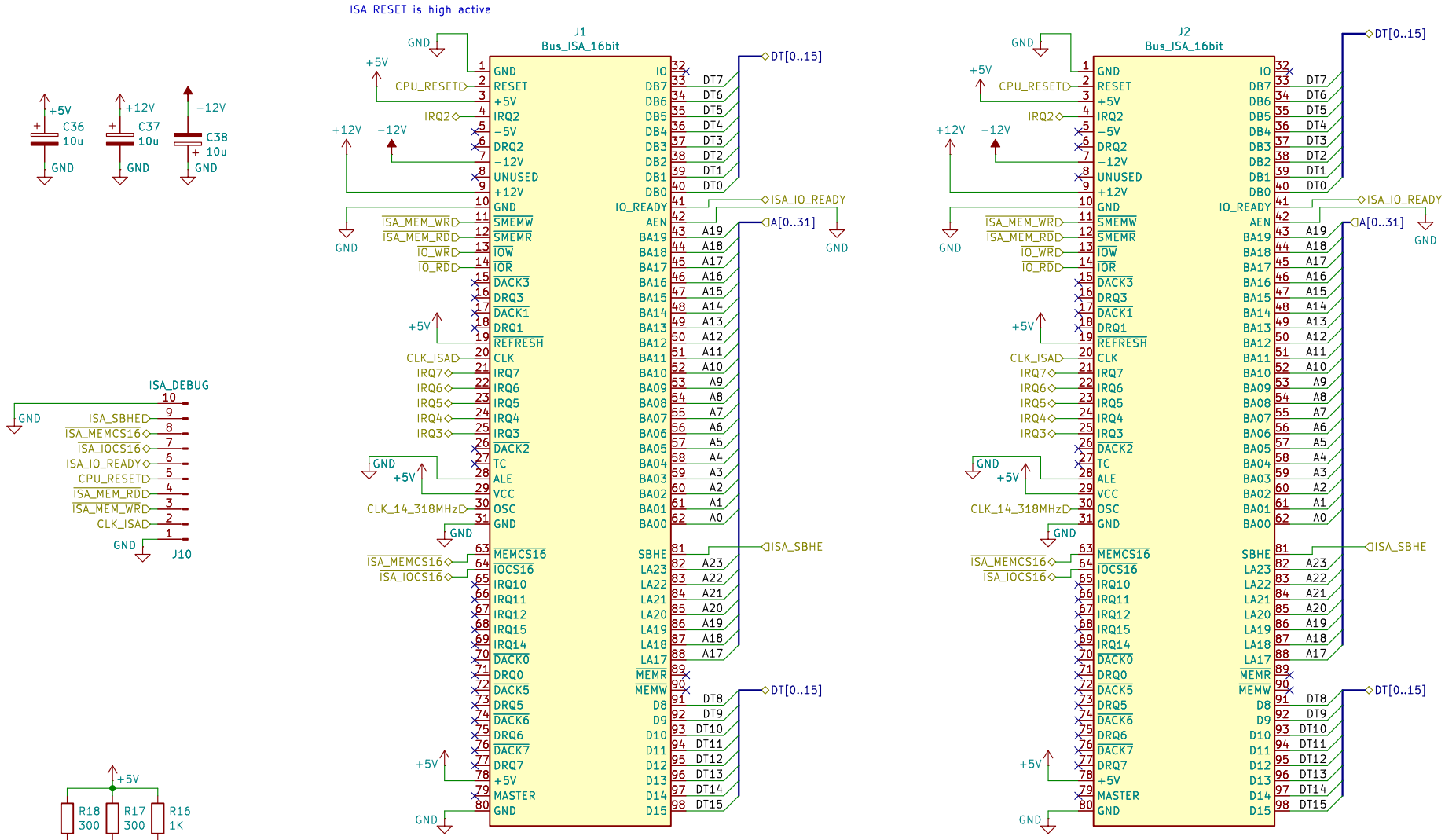
BS16 transceivers



maniek86.xyz		
Sheet: /Bus transceivers/		
File: bus_tr.kicad_sch		
Title: 486 Homebrew Computer		
Size: A4	Date: 2025-12-15	**Rev: 1 (sch 2.0)**
KiCad E.D.A. 9.0.2		Id: 7/9



maniek86.xyz	
Sheet: /PIC, PIT/	
File: pic_pit.kicad_sch	
Title: 486 Homebrew Computer	
Size: A4	Date: 2025-12-15
KiCad E.D.A. 9.0.2	Rev: 1 (sch 2.0)
	Id: 8/9


ISA RESET is high active
J1
Bus_ISA_16bit
J2
Bus_ISA_16bit
C36 10u
C37 10u
C38 10u
+5V
+12V
-12V
GND
ISA_DEBUG
J10
ISA_SBHE
ISA_MEMCS16
ISA_IOCS16
ISA_IO_READY
CPU_RESET
ISA_MEM_RD
ISA_MEM_WR
CLK_ISA
R18 300
R17 300
R16 1K
IRQ2
IRQ3
IRQ4
IRQ5
IRQ6
IRQ7
IO_WR
IO_RD
CLK_14_318MHz
DT[0..15]
A[0..31]
GND
+5V
+12V
-12V
1 GND
2 RESET
3 +5V
4 IRQ2
5 -5V
6 DRQ2
7 -12V
8 UNUSED
9 +12V
10 GND
11 SMEMW
12 SMEMR
13 IOW
14 IOR
15 DACK3
16 DRQ3
17 DACK1
18 DRQ1
19 REFRESH
20 CLK
21 IRQ7
22 IRQ6
23 IRQ5
24 IRQ4
25 IRQ3
26 DACK2
27 TC
28 ALE
29 VCC
30 OSC
31 GND
63 MEMCS16
64 IOCS16
65 IRQ10
66 IRQ11
67 IRQ12
68 IRQ15
69 IRQ14
70 DACK0
71 DRQ0
72 DACK5
73 DRQ5
74 DACK6
75 DRQ6
76 DACK7
77 DRQ7
78 +5V
79 MASTER
80 GND
32 IO
33 DB7 DT7
34 DB6 DT6
35 DB5 DT5
36 DB4 DT4
37 DB3 DT3
38 DB2 DT2
39 DB1 DT1
40 DB0 DT0
41 IO_READY
42 AEN
43 BA19 A19
44 BA18 A18
45 BA17 A17
46 BA16 A16
47 BA15 A15
48 BA14 A14
49 BA13 A13
50 BA12 A12
51 BA11 A11
52 BA10 A10
53 BA09 A9
54 BA08 A8
55 BA07 A7
56 BA06 A6
57 BA05 A5
58 BA04 A4
59 BA03 A3
60 BA02 A2
61 BA01 A1
62 BA00 A0
81 SBHE
82 LA23 A23
83 LA22 A22
84 LA21 A21
85 LA20 A20
86 LA19 A19
87 LA18 A18
88 LA17 A17
89 MEMR
90 MEMW
91 D8 DT8
92 D9 DT9
93 D10 DT10
94 D11 DT11
95 D12 DT12
96 D13 DT13
97 D14 DT14
98 D15 DT15
1 GND
2 CPU_RESET
3 +5V
4 IRQ2
5 -5V
6 DRQ2
7 -12V
8 UNUSED
9 +12V
10 GND
11 ISA_MEM_WR
12 ISA_MEM_RD
13 IO_WR
14 IO_RD
15 DACK3
16 DRQ3
17 DACK1
18 DRQ1
19 REFRESH
20 CLK_ISA
21 IRQ7
22 IRQ6
23 IRQ5
24 IRQ4
25 IRQ3
26 DACK2
27 TC
28 ALE
29 VCC
30 CLK_14_318MHz
31 GND
63 ISA_MEMCS16
64 ISA_IOCS16
65 IRQ10
66 IRQ11
67 IRQ12
68 IRQ15
69 IRQ14
70 DACK0
71 DRQ0
72 DACK5
73 DRQ5
74 DACK6
75 DRQ6
76 DACK7
77 DRQ7
78 +5V
79 MASTER
80 GND
32 IO
33 DB7 DT7
34 DB6 DT6
35 DB5 DT5
36 DB4 DT4
37 DB3 DT3
38 DB2 DT2
39 DB1 DT1
40 DB0 DT0
41 IO_READY
42 AEN
43 BA19 A19
44 BA18 A18
45 BA17 A17
46 BA16 A16
47 BA15 A15
48 BA14 A14
49 BA13 A13
50 BA12 A12
51 BA11 A11
52 BA10 A10
53 BA09 A9
54 BA08 A8
55 BA07 A7
56 BA06 A6
57 BA05 A5
58 BA04 A4
59 BA03 A3
60 BA02 A2
61 BA01 A1
62 BA00 A0
81 SBHE
82 LA23 A23
83 LA22 A22
84 LA21 A21
85 LA20 A20
86 LA19 A19
87 LA18 A18
88 LA17 A17
89 MEMR
90 MEMW
91 D8 DT8
92 D9 DT9
93 D10 DT10
94 D11 DT11
95 D12 DT12
96 D13 DT13
97 D14 DT14
98 D15 DT15
maniek86.xyz
Sheet: /ISA/
File: isa.kicad_sch
Title: 486 Homebrew Computer
Size: A4
Date: 2025-12-15
Rev: 1 (sch 2.0)
KiCad E.D.A. 9.0.2
Id: 9/9