Processor

File: Processor.kicad_sch

Expansion Memory

File: ExpansionMemory.kicad_sch

Card Edge

File: Card Edge.kicad_sch

Power and Spares

File: Power.kicad_sch

Logic

File: Logic.kicad_sch

Base Memory

File: BaseMemory.kicad_sch

CPLD 1

File: CPLD1.kicad_sch

Sheet: /
File: N2360.kicad_sch

Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 6.0.2-378541a8eb~116~ubuntu20.04.1		Id: 1/8

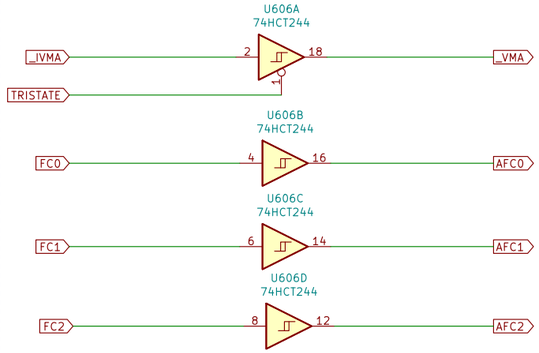
PROCESSOR

Sheet: /Processor/
File: Processor.kicad_sch

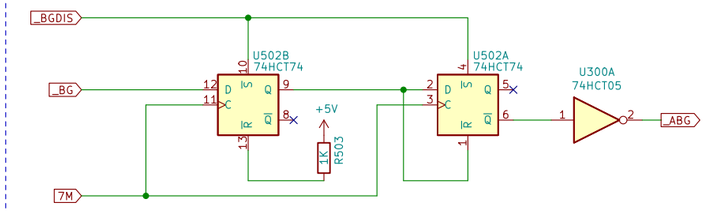
Title: N2630

Size: B | Date: | **Rev: 1.0**
KiCad E.D.A. kicad 6.0.2-378541a8eb-116-ubuntu20.04.1 | Id: 2/8

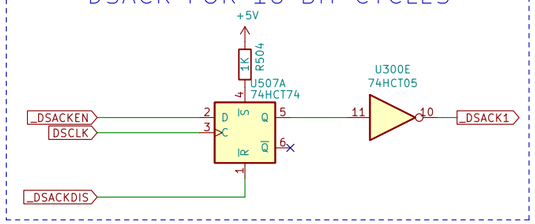
OUTPUT TO AMIGA BUFFER



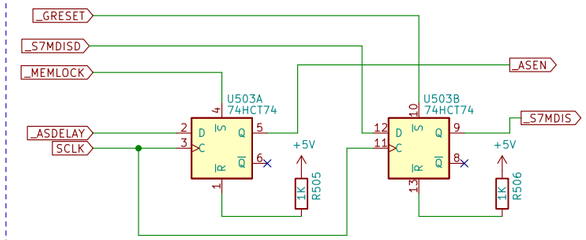
BUS GRANT ENABLE/DISABLE



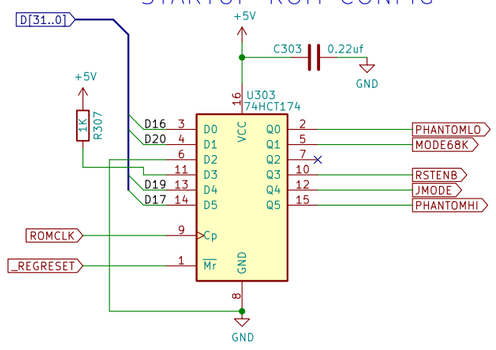
DSACK FOR 16 BIT CYCLES



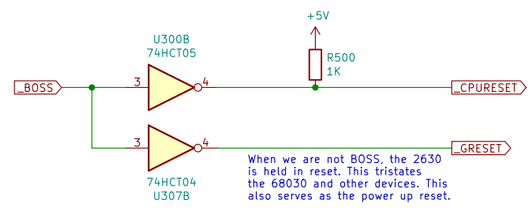
STATE MACHINE



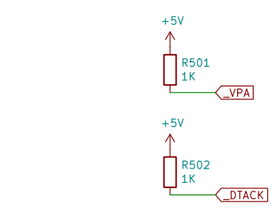
STARTUP ROM CONFIG

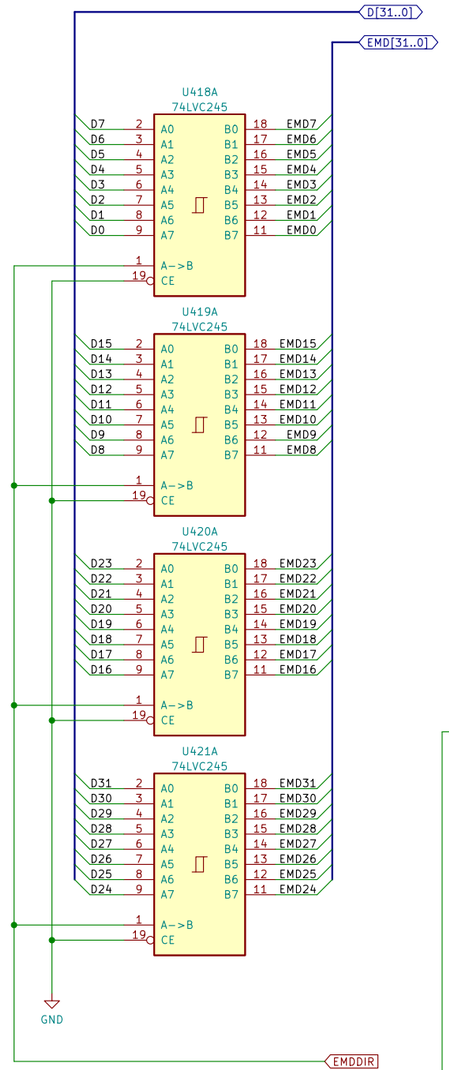


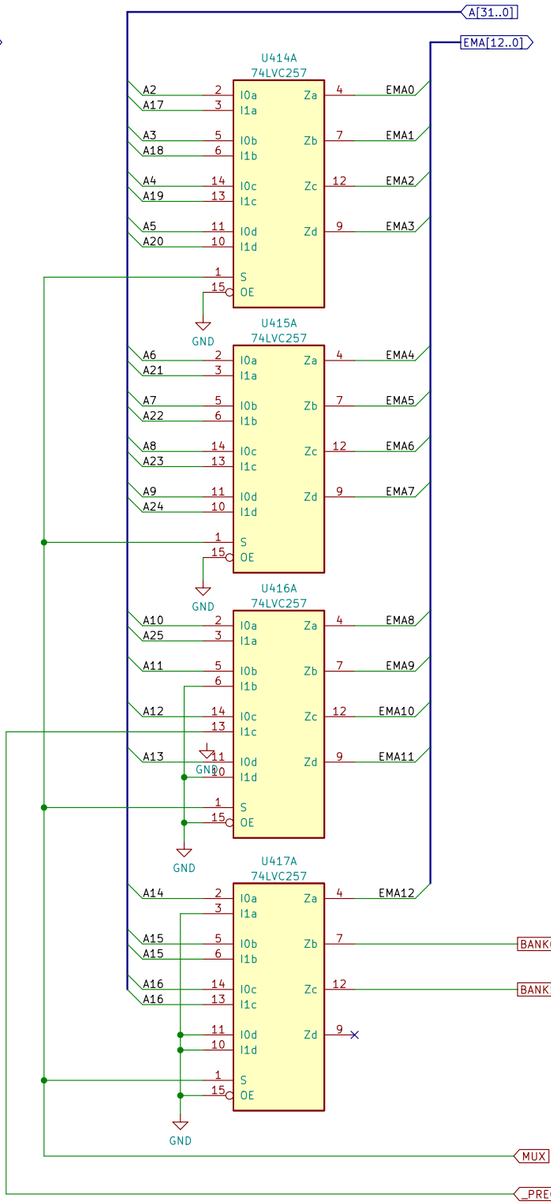
RESET

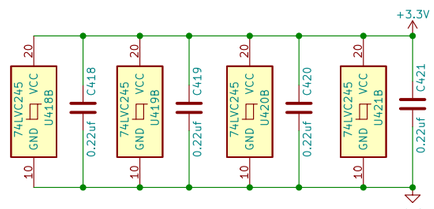


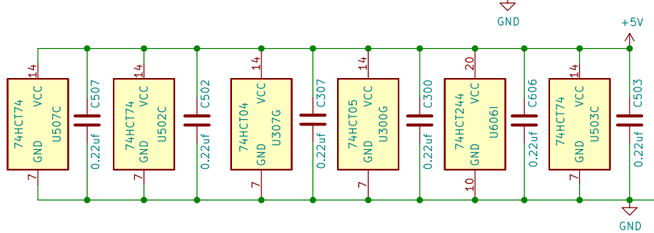
PULL UP/DOWN

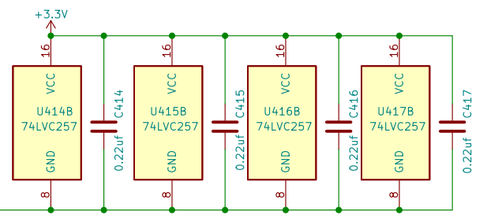












DISCRETE LOGIC STUFF

Sheet: /Logic/ File: Logic.kicad_sch		
Title:		
Size: B	Date:	**Rev:**
KiCad E.D.A. kicad 6.0.2-378541a8eb-116-ubuntu20.04.1		Id: 3/8

This is Zorro 3 memory, so it is always treated as 32 bit memory and cannot be used by the Amiga 2000 chip set and cannot be used by anything on the Zorro 2 bus. It can only be used by the 68030.

BANK0

BANK1

LOW_WORD

HIGH_WORD

ROMs

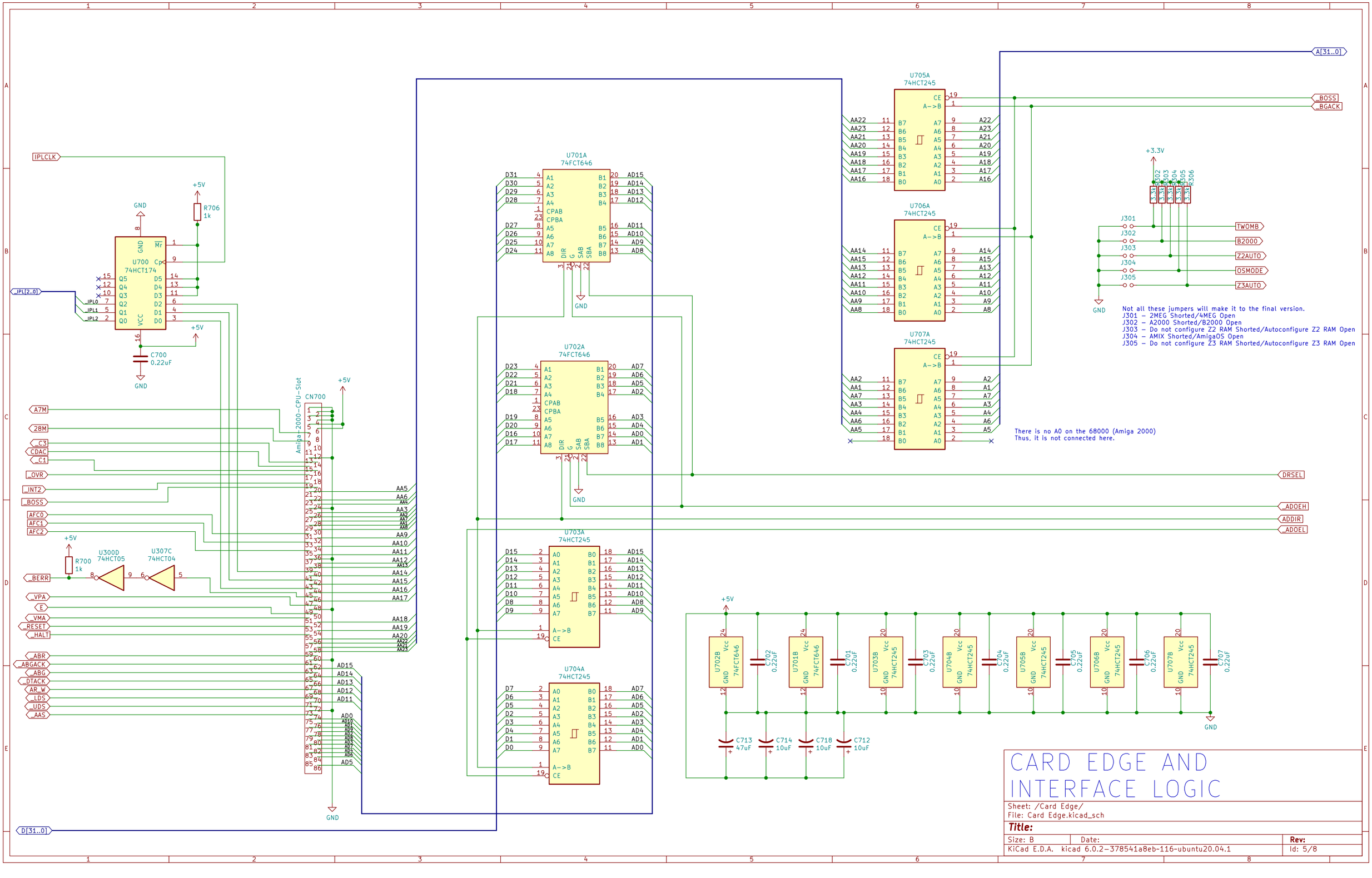
CKE..The next rising edge of the CLK signal is valid when CKE is high and invalid when it is low. When CKE is LOW, the device will be in power-down mode, clock suspend mode or self-refresh mode
JN: Might be able to refresh one bank when the other is being accessed?

JN Notes: put row addresses 14..2 on the EMA bus and A16..15 on the bank select. Signal RAS (SDRAM BANKACTIVATE). Put column address 25..17 on the EMA bus and signal CAS. A26 is used to determine whether we are in the first 64MB or the second 64MB.

BANK0 = First 64MB
BANK1 = Second 64MB

ZORRO 3 MEMORY

Sheet: /Expansion Memory/		
File: ExpansionMemory.kicad_sch		
Title:		
Size: B	Date:	**Rev:**
KiCad E.D.A. kicad 6.0.2-378541a8eb-116-ubuntu20.04.1		Id: 4/8


IPLCLK
+5V
GND
R706
1k
U700
74HCT174
IPL[2..0]
IPL0
IPL1
IPL2
C700
0.22uF
CN700
Amiga-2000-CPU-Slot
A7M
28M
_C3
CDAC
_C1
_OVR
_INT2
_BOSS
AFC0
AFC1
AFC2
R700
1k
U300D
74HCT05
U307C
74HCT04
_BERR
_VPA
E
_VMA
_RESET
_HALT
_ABR
_ABGACK
_ABG
_DTACK
AR_W
_LDS
_UDS
_AAS
D[31..0]
U701A
74FCT646
U702A
74FCT646
U703A
74HCT245
U704A
74HCT245
A[31..0]
U705A
74HCT245
U706A
74HCT245
U707A
74HCT245
_BOSS
_BGACK
+3.3V
R302
R303
R304
R305
R306
3.3K
J301
J302
J303
J304
J305
TWOMB
B2000
Z2AUTO
OSMODE
Z3AUTO
Not all these jumpers will make it to the final version.
J301 – 2MEG Shorted/4MEG Open
J302 – A2000 Shorted/B2000 Open
J303 – Do not configure Z2 RAM Shorted/Autoconfigure Z2 RAM Open
J304 – AMIX Shorted/AmigaOS Open
J305 – Do not configure Z3 RAM Shorted/Autoconfigure Z3 RAM Open
There is no A0 on the 68000 (Amiga 2000)
Thus, it is not connected here.
DRSEL
_ADOEH
ADDIR
_ADOEL
U702B
U701B
U703B
U704B
U705B
U706B
U707B
C702
C701
C703
C704
C705
C706
C707
0.22uF
C713
47uF
C714
C718
C712
10uF
CARD EDGE AND INTERFACE LOGIC
Sheet: /Card Edge/
File: Card Edge.kicad_sch
Title:
Size: B
Date:
Rev:
KiCad E.D.A. kicad 6.0.2-378541a8eb-116-ubuntu20.04.1
Id: 5/8

This is Zorro 2 memory, so it is always treated as 16 bit, even though it is 32 bits wide.

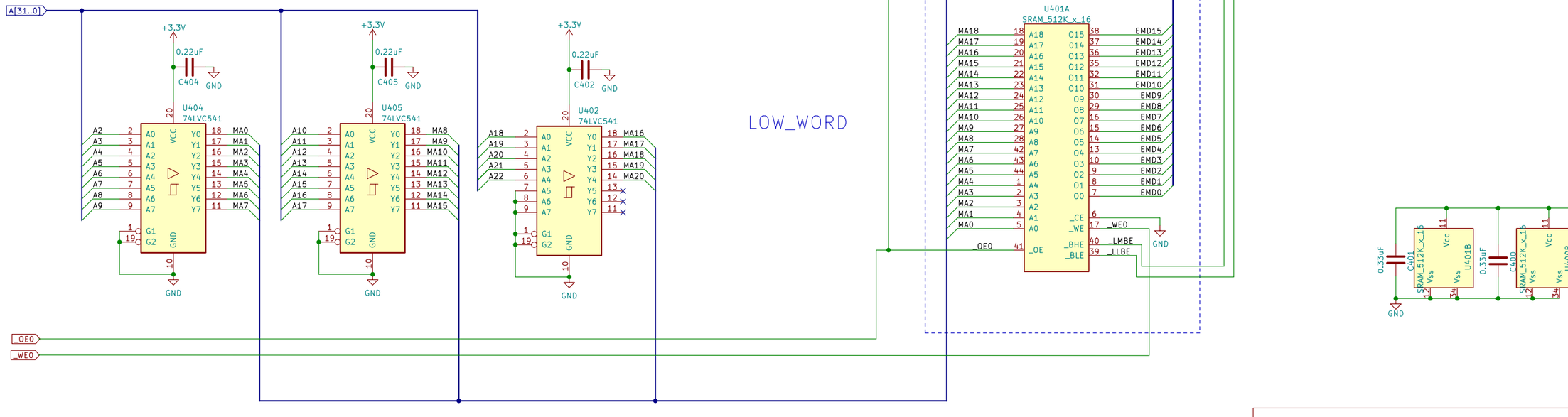
This is 2MB of SRAM to get the prototype working. Final version will have 8MB SDRAM.

HIGH_WORD

LOW_WORD

BANK0

BANK0 = First 2 megabytes

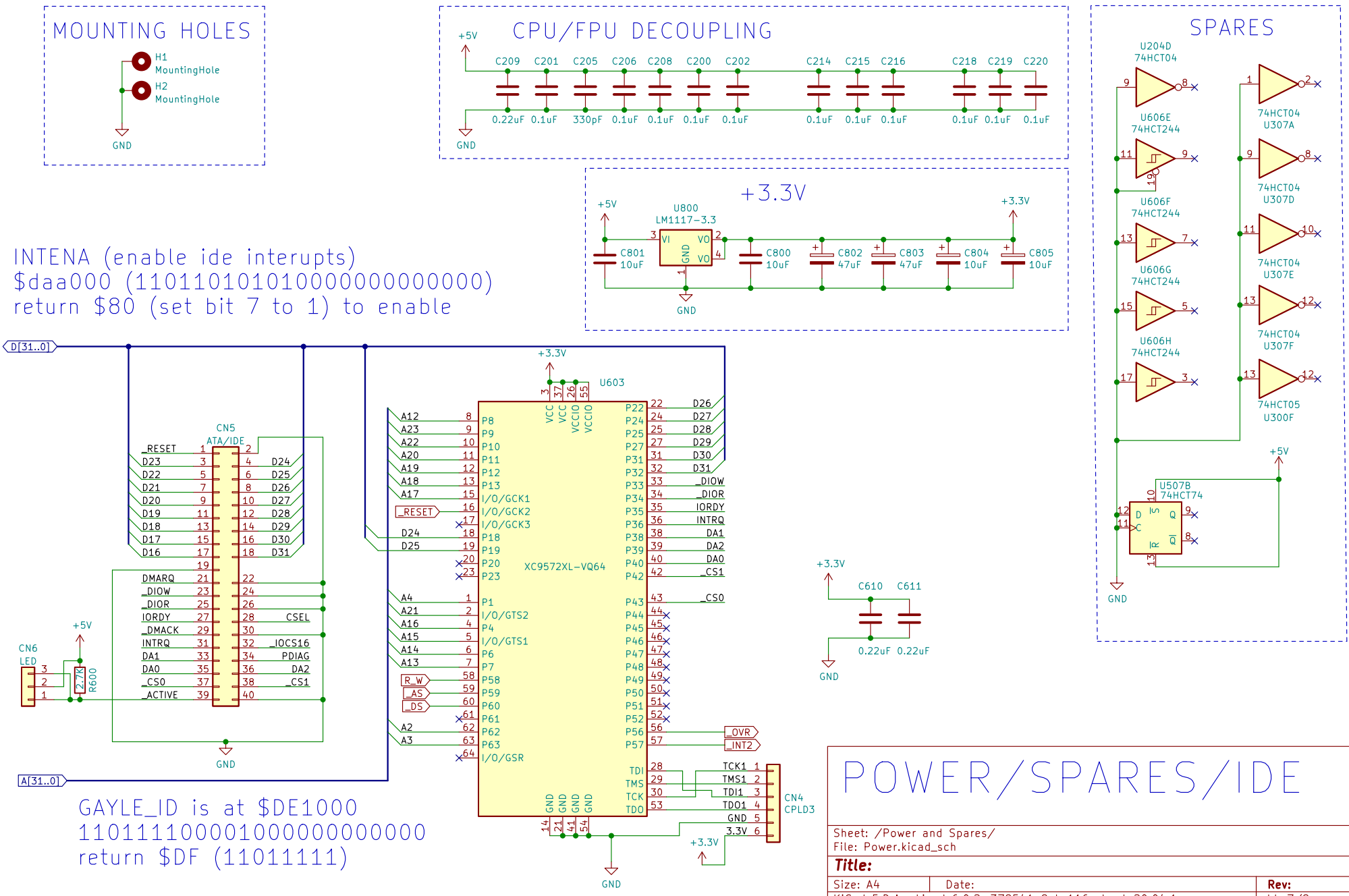


ZORRO 2 MEMORY

Sheet: /Base Memory/
File: BaseMemory.kicad_sch

Title:

Size: B	Date:	**Rev:**
KiCad E.D.A. kicad 6.0.2-378541a8eb-116-ubuntu20.04.1		Id: 6/8


MOUNTING HOLES
H1
MountingHole
H2
MountingHole
GND
CPU/FPU DECOUPLING
+5V
C209 C201 C205 C206 C208 C200 C202 C214 C215 C216 C218 C219 C220
0.22uF 0.1uF 330pF 0.1uF 0.1uF 0.1uF 0.1uF 0.1uF 0.1uF 0.1uF 0.1uF 0.1uF 0.1uF
GND
+3.3V
U800
LM1117-3.3
C801 10uF
C800 10uF
C802 47uF
C803 47uF
C804 10uF
C805 10uF
SPARES
U204D 74HCT04
U606E 74HCT244
U606F 74HCT244
U606G 74HCT244
U606H 74HCT244
74HCT04 U307A
74HCT04 U307D
74HCT04 U307E
74HCT04 U307F
74HCT05 U300F
U507B 74HCT74
INTENA (enable ide interupts)
$daa000 (11011010101000000000000)
return $80 (set bit 7 to 1) to enable
D[31..0]
A[31..0]
CN5
ATA/IDE
_RESET D23 D22 D21 D20 D19 D18 D17 D16
D24 D25 D26 D27 D28 D29 D30 D31
DMARQ _DIOW _DIOR IORDY _DMACK INTRQ DA1 DA0 _CS0 _ACTIVE
CSEL _IOCS16 PDIAG DA2 _CS1
CN6
LED
2.7K
R600
U603
XC9572XL-VQ64
A12 A23 A22 A20 A19 A18 A17 _RESET D24 D25
A4 A21 A16 A15 A14 A13 R_W _AS _DS A2 A3
D26 D27 D28 D29 D30 D31 _DIOW _DIOR IORDY INTRQ DA1 DA2 DA0 _CS1 _CS0
_OVR _INT2
TDI TMS TCK TDO
CN4
CPLD3
TCK1 TMS1 TDI1 TDO1 GND 3.3V
C610 C611
0.22uF 0.22uF
POWER/SPARES/IDE
GAYLE_ID is at $DE1000
11011110000100000000000
return $DF (11011111)
Sheet: /Power and Spares/
File: Power.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad 6.0.2-378541a8eb-116-ubuntu20.04.1
Id: 7/8

When A26 is HIGH, we are in the second 64 MB memory space.

A[31..0]

D[31..0]

+3.3V

U600 XC9572XL-TQ100

ADDIR	13	P13	
DRSEL	14	P14	
_ADOEH	15	P15	
7M	16	P16	
_C1	17	P17	
_C3	18	P18	
_ADOEL	20	P20	
_AAS	22	I/O/GCK1	
_UDS	23	I/O/GCK2	
_LDS	25	P25	
	27	I/O/GCK3	
_DTACK	28	P28	
_ABG	29	P29	
_ABGACK	30	P30	
_ABR	33	P33	
E	36	P36	
_OVR	39	P39	
_BGACK	40	P40	
_S7MDISD	1	I/O/GTS3	
SCLK	3	I/O/GTS1	
_S7MDIS	4	I/O/GTS2	
_BOSS	6	P6	
ASDELAY	8	P8	
_DSACKDIS	9	P9	
IPLCLK	10	P10	
_DSACKEN	11	P11	
DSCLK	12	P12	
_STERM	87	P87	
	91	P91	
_DSACK1	92	P92	
_DSACK0	93	P93	
RSTENB	94	P94	
JMODE	95	P95	
MODE68K	96	P96	
_REGRESET	97	P97	
	99	I/O/GSR	

R702 47 (7M)

R701 47 (SCLK)

R704 47 (IPLCLK)

R705 47 (DSCLK)

	32	P32	
_RESET	35	P35	
_VPA	37	P37	
_IVMA	41	P41	
B2000	42	P42	
TRISTATE	49	P49	
CONFIGED	50	P50	
AR_W	52	P52	
CDAC	53	P53	
A7M	54	P54	
MEMACCESS	55	P55	
	56	P56	
_BGDIS	58	P58	
	59	P59	
_CYCEND	60	P60	
_DSEN	61	P61	
_ONBOARD	63	P63	
_MEMSEL	64	P64	
_EXTERN	65	P65	
_ASEN	66	P66	
CPUCLK_A	67	P67	
_CPURESET	68	P68	
EXTSEL	70	P70	
FC2	71	P71	
FC1	72	P72	
FC0	74	P74	
	76	P76	
	77	P77	
	78	P78	
	79	P79	
	81	P81	
	82	P82	
_AS	85	P85	
R_W	86	P86	
A1	89	P89	
_HALT	90	P90	

VCC ×5, VCCIO ×4

GND ×8

TDI, TMS, TCK, TDO

CN1 CPLD0: TCK0 1, TMS0 2, TDI0 3, TDO0 4, GND 5, 3.3V 6

U601 XC9572XL-TQ100

_BERR	13	P13	
_CPURESET	14	P14	
_ONBOARD	15	P15	
_MEMLOCK	16	P16	
_ASEN	17	P17	
_EXTERN	18	P18	
_MEMSEL	20	P20	
CPUCLK_A	22	I/O/GCK1	
_DSEN	23	I/O/GCK2	
_CYCEND	25	P25	
CONFIGED	27	I/O/GCK3	
AR_W	28	P28	
TRISTATE	29	P29	
_UDS	30	P30	
_LDS	33	P33	
Z2AUTO	36	P36	
MEMACCESS	39	P39	
MODE68K	40	P40	
_BGACK	1	I/O/GTS3	
EXTSEL	3	I/O/GTS1	
PHANTOMLO	4	I/O/GTS2	
PHANTOMHI	6	P6	
FC0	8	P8	
FC1	9	P9	
	10	P10	
	11	P11	
_SENSE	12	P12	
_CIIN	87	P87	
	91	P91	
_AVEC	92	P92	
_DS	93	P93	
_AS	94	P94	
R_W	95	P95	
_FPUCS	96	P96	
_CSROM	97	P97	
ROMCLK	99	I/O/GSR	

D30

	32	P32	
TWOMB	35	P35	
_RESET	37	P37	
	41	P41	
OSMODE	42	P42	
_OE0	49	P49	
_LMBE	50	P50	
_LLBE	52	P52	
_UUBE	53	P53	
_UMBE	54	P54	
_WE0	55	P55	
SIZ0	56	P56	
SIZ1	58	P58	
EMDDIR	59	P59	
A0	60	P60	
A1	61	P61	
A2	63	P63	
A3	64	P64	
A4	65	P65	
A5	66	P66	
A6	67	P67	
A13	68	P68	
A14	70	P70	
A15	71	P71	
A16	72	P72	
A17	74	P74	
A18	76	P76	
A19	77	P77	
A20	78	P78	
A21	79	P79	
A22	81	P81	
A23	82	P82	
D29	85	P85	
D28	86	P86	
D31	89	P89	
FC2	90	P90	

VCC ×5, VCCIO ×4

GND ×8

TDI, TMS, TCK, TDO

CN2 CPLD1: TCK1 1, TMS1 2, TDI1 3, TDO1 4, GND 5, 3.3V 6

U602 XC9572XL-TQ100

A1	13	P13	
A2	14	P14	
A3	15	P15	
A4	16	P16	
A5	17	P17	
A6	18	P18	
A8	20	P20	
A0	22	I/O/GCK1	
FC0	23	I/O/GCK2	
FC1	25	P25	
FC2	27	I/O/GCK3	
_DSACK0	28	P28	
_DSACK1	29	P29	
_STERM	30	P30	
_AS	33	P33	
_BERR	36	P36	
_BGACK	39	P39	
_EM1LLBE	40	P40	
Z3AUTO	1	I/O/GTS3	
D26	3	I/O/GTS1	
D25	4	I/O/GTS2	
D24	6	P6	
D27	8	P8	
D28	9	P9	
D29	10	P10	
D30	11	P11	
D31	12	P12	
_EMOLMBE	87	P87	
_CAS0	91	P91	
EM0CLKE	92	P92	
_RAS0	93	P93	
_EMOCS	94	P94	
SIZ0	95	P95	
SIZ1	96	P96	
_CBREQ	97	P97	
_CBACK	99	I/O/GSR	

	32	P32	
R_W	35	P35	
_DS	37	P37	
EXTSEL	41	P41	
_EM1UMBE	42	P42	
_EM1LMBE	49	P49	
_EM1UUBE	50	P50	
EM1R_W	52	P52	
CAS1	53	P53	
EM1CLKE	54	P54	
RAS1	55	P55	
_EM1CS	56	P56	
_PRECHARGE	58	P58	
MUX	59	P59	
A22	60	P60	
A23	61	P61	
A24	63	P63	
A25	64	P64	
A26	65	P65	
A27	66	P66	
A28	67	P67	
A29	68	P68	
A30	70	P70	
A31	71	P71	
	72	P72	
	74	P74	
	76	P76	
	77	P77	
	78	P78	
	79	P79	
CPUCLK_A	81	P81	
_GRESET	82	P82	
_EMOLLBE	85	P85	
_EMOUUBE	86	P86	
_EMOUMBE	89	P89	
EM0R_W	90	P90	

VCC ×5, VCCIO ×4

GND ×8

TDI, TMS, TCK, TDO

CN3 CPLD2: TCK2 1, TMS2 3, TDI2 3, TDO2 4, GND 5, 3.3V 6

+3.3V

C600 C601 C602 C603 C604 C605 C607 C608 C609

0.22uF ×9

GND

zorro 3 autoconfig

```
33222222222211111111110000000000
10987654321098765432109876543210

FF000000
11111111000000000000000000000000
FF000100
11111111000000000000000100000000
FF000004
11111111000000000000000000000100
FF000104
11111111000000000000000100000100
FF000008
11111111000000000000000000001000
FF000108
11111111000000000000000100001000
```

CPLDs

Sheet: /CPLD 1/
File: CPLD1.kicad_sch

Title:

Size: B	Date:	**Rev:**
KiCad E.D.A. kicad 6.0.2-378541a8eb-116-ubuntu20.04.1		Id: 8/8