THIS IS A

PETITE (T2) SCHEMATIC BOOK

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VERSION B

BOOK No._____

VOLUME II

DATE 2/85

PERQ

PETITE (T2)

P.C. BOARD SCHEMATIC BOOK DIRECTORY

VOLUME II

BOARD TYPE	CURRENT P.C. BOARD REVISIONS	PART NUMBER
DIRECTORY		
REVISION CONTROL SHEET		
LANDSCAPE/2 MEGABYTE MEMORY (2 MEG LAND w/128k)	U	110197-02
LANDSCAPE/1 MEGABYTE MEMORY (1 MEG LAND w/64k)	U	110241-02
PORTRAIT/2 MEGABYTE MEMORY (1 MEG PORT w/64k)	E	100048-02
DIAGNOSTIC DISPLAY (DDS)	A	111216-02
5 1/4 DISK ADAPTER (MICROPOLIS)	J	110224-02
5 1/4 DISK ADAPTER (MAXTOR)	H	110269-02
PORTRAIT MONITOR (PORT MONITOR)	L	110214-02
MONITERM LANDSCAPE MONITOR (LAND MONITOR)		
PORTRAIT TABLET (PORT TABLET)	E	100247-02
LANSCAPE TABLET (LAND TABLET)	C	110180-02
OPTION I/O ETHERNET (OIO-001)	H	100225-02
OPTION I/O ETHERNET/CANON (OIO-002)	J	100226-02
OPTION I/O CANON (OIO-003)	C	100227-02
NOTES		

PERQ PETITE REVISION CONTROL SHEET

SCHEMATIC PAGE NUMBER	MOM 111205-00	16K CPU 111332-00	EIO 110005-00	MIO 110198-00	2 MEG MEMORY/LAND W/256K RAM 110245-00	1 MEG MEMORY/LAND 110241-00	2 MEG MEMORY/LAND 110197-00	5 1/4 DISK/MICROP 110224-00	5 1/4 DISK/MAXTOR 110269-00	PORTRAIT MONITOR 110214-00	MONITERM LANDSCAPE MONITOR	PORTRAIT TABLET 100247-00	LANDSCAPE TABLET 110100-00	DDS 111216-00	OPTION I/O /ETHERNET 100225-00	OPTION I/O /ETHERNET/CANON 100226-00	OPTION I/O /CANON 100227-00			
	CURRENT PAGE REVISION LETTER																			
1	B	A	AN	T	A	Q	Q	G	F	L		D	B	A	H	J	C			
2	B	A	AN	T	A	Q	Q	G	F	K		D	B		H	J	C			
3	B	A	AN	T	A	F	C	G	F	J		D	B		H	J	C			
4		A	AS	Y	A	F	C	J	H	E					H	J	C			
5		A	AS	Y	A	F	C	G	F						H	J	C			
6		A	AS	Y	A	F	C	H	G						H	J	C			
7		A	AN	T	A	F	C	J	H						H	J	C			
8		A	AN	T	A	F	C	G	F						H	J	C			
9		A	AN	T	A	F	C								H	J	C			
10		A	AN	T	A	F	C								H	J	C			
11		A	AN	T	A	P	P								H	J	C			
12		A	AN	T	A	P	P								H	J				
13		A	AN	T	A	Q	Q								H	J				
14		A	AN	T	A	Q	Q								H	J				
15		A	AP	V	A	Q	Q								H	J				
16		A	AP	V	A	Q	Q								H	J				
17		B	AN	T	A	F	C								H	J				
18		A	AN	T	A	F	C								H	J				
19		A	AN	T	A	F	C								H	J				
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25		A	AN	T	A	Q	Q								H	J				
26		A	AN	T	D	C	C									J				
27		A	AN	T	E	Q	Q									J				
28		C	AN	T		Q	Q									J				
29		A	AN	T		Q	Q									J				
30		A	AN	T		L	L									J				
31		A	AN	T		Q	Q									J				
32		D	AN	T		Q	Q													
33		A	AN	T		T	T													
34		A	AN	T		U	U													
35		A	AN	T																
36		A	AN	T																
37		A	AN	X																
38		A	AN	T																
39		A	AN	T																
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47			AN																	
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51			AN																	
52			AN																	
53			AN																	
54			AN																	
55			AN																	
56			AN																	

MULTI / MEB / LANDSCAPE		Word 0		Word 1		Word 2		Word 3	
		MEM <4>	MEM <0>	MEM <5>	MEM <1>	MEM <6>	MEM <2>	MEM <7>	MEM <3>
		RAS 0	RAS 1	RAS 0	RAS 1	RAS 0	RAS 1	RAS 0	RAS 1
		CAS A 1 | 0	CAS B 1 | 0	CAS A 1 | 0	CAS B 1 | 0	CAS A 1 | 0	CAS B 1 | 0	CAS A 1 | 0	CAS B 1 | 0
BITS	DATA	BANK A	BANK B	BANK A	BANK B	BANK A	BANK B	BANK A	BANK B
0	1	U1	U2	U3	U4	U5	U6	U7	U8
1	2	U14	U15	U16	U17	U18	U19	U20	U21
2	4	U27	U28	U29	U30	U31	U32	U33	U34
3	10	U40	U41	U42	U43	U44	U45	U46	U47
4	20	U53	U54	U55	U56	U57	U58	U59	U60
5	40	U65	U66	U67	U68	U69	U70	U71	U72
6	100	U78	U79	U80	U81	U82	U83	U84	U85
7	200	U91	U92	U93	U94	U95	U96	U97	U98
8	400	U104	U105	U106	U107	U108	U109	U110	U111
9	1K	U117	U118	U119	U120	U121	U122	U123	U124
10	2K	U131	U132	U133	U134	U135	U136	U137	U138
11	4K	U144	U145	U146	U147	U148	U149	U150	U151
12	10K	U157	U158	U159	U160	U161	U162	U163	U164
13	20K	U170	U171	U172	U173	U174	U175	U176	U177
14	40K	U182	U183	U184	U185	U186	U187	U188	U189
15	100K	U196	U197	U198	U199	U200	U201	U202	U203
P	PAR	U209	U210	U211	U212	U213	U214	U215	U216

TITLE: 2 Meg Memory Array

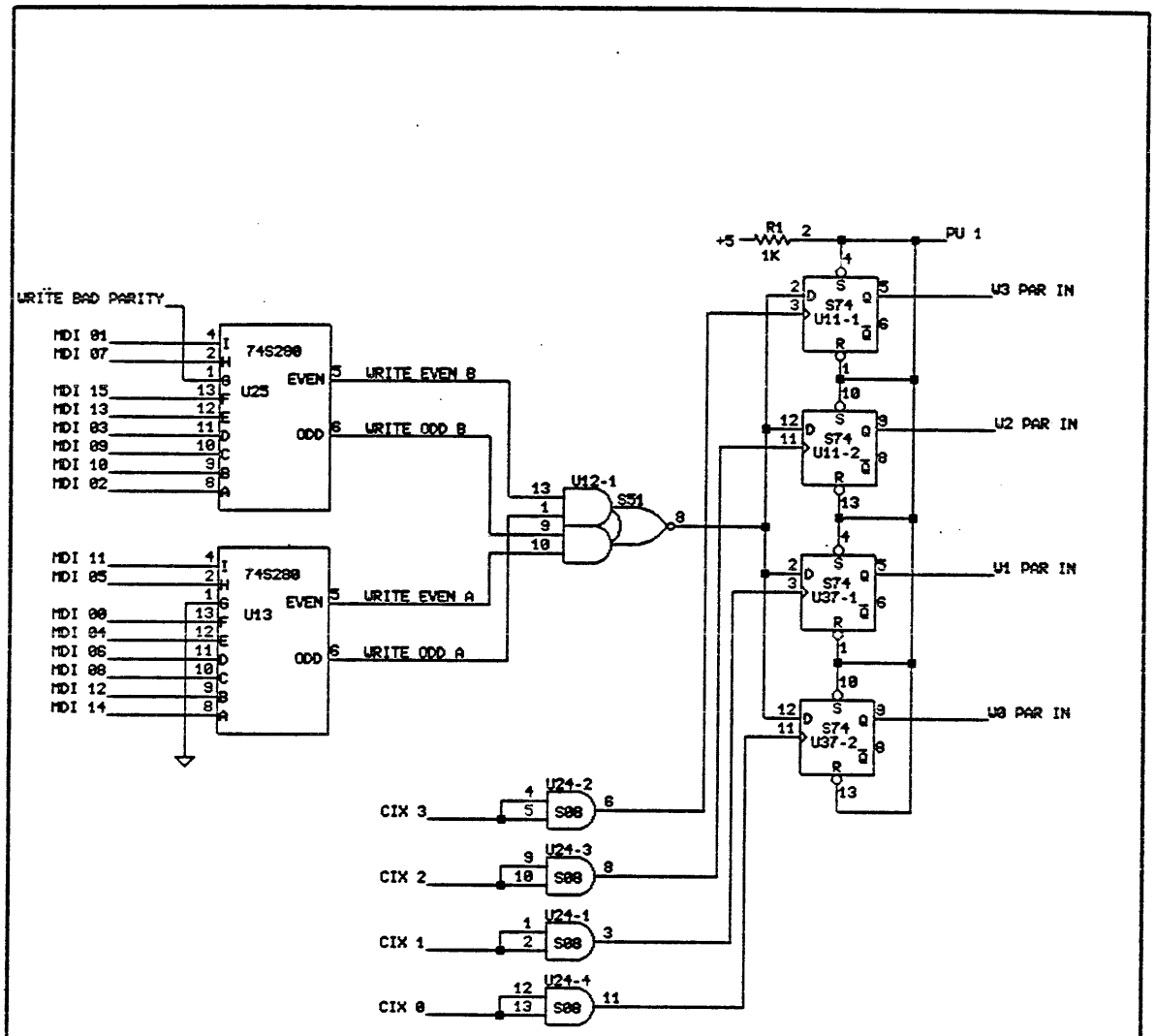
LMEM 35

PERQ

DESIGNED	BILL HULLEY		
DRAWN	CERTICH	22 Mar 84	
UPDATED	CERTICH	24 Oct 84	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197	02	C

PROJ : 2 MEGABYTE LANDSCAPE / MEMORY



TITLE: MEMORY DATA IN PARITY CALCULATION

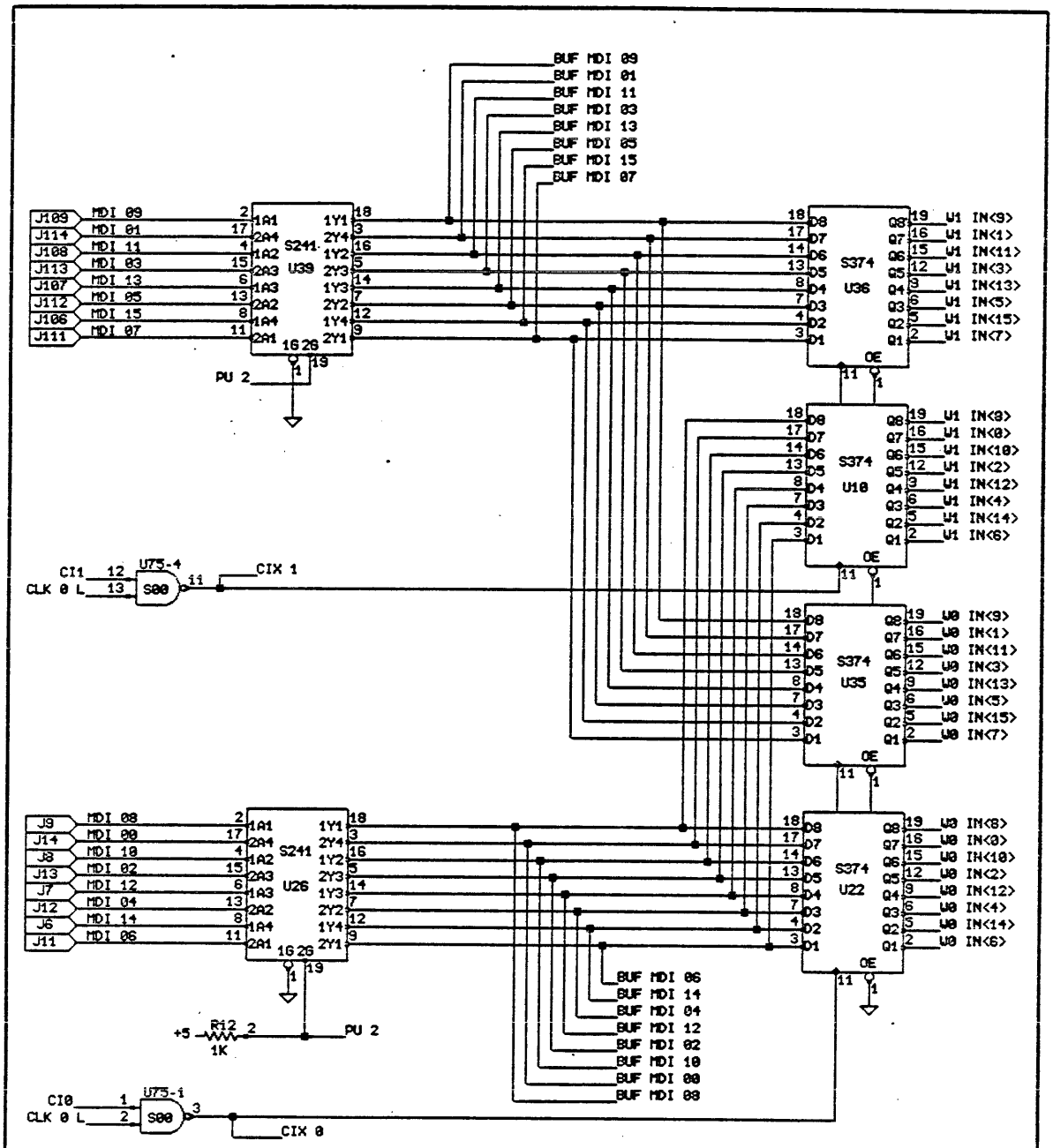
LMEM31

PERQ

DESIGNED	BILL HULLEY	
DRAWN	25 Apr 83	SBokse
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	8197-	02	Q

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



TITLE: MEMORY DATA INPUT REGISTERS : WORDS 0 AND 1

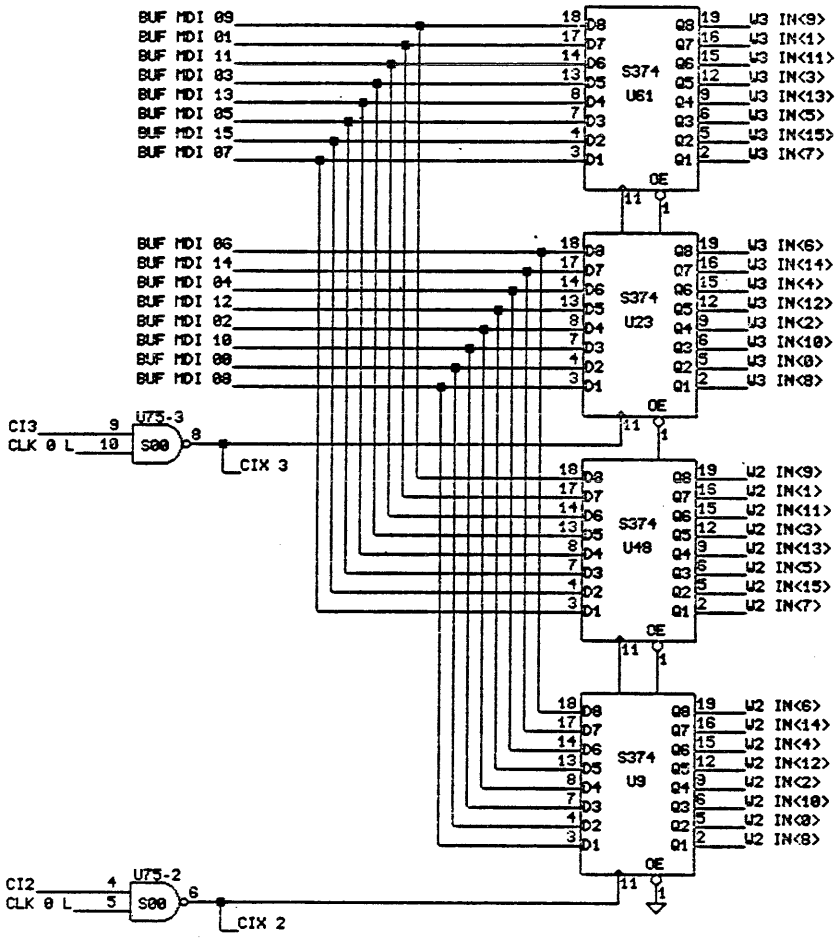
LMEM02

PERQ

DESIGNED	BILL HULLEY		
DRAWN	25 Apr 83	SBokse	
UPDATED	14 Jan 85	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	Q

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



TITLE: MEMORY DATA INPUT REGISTERS : WORDS 2 AND 3

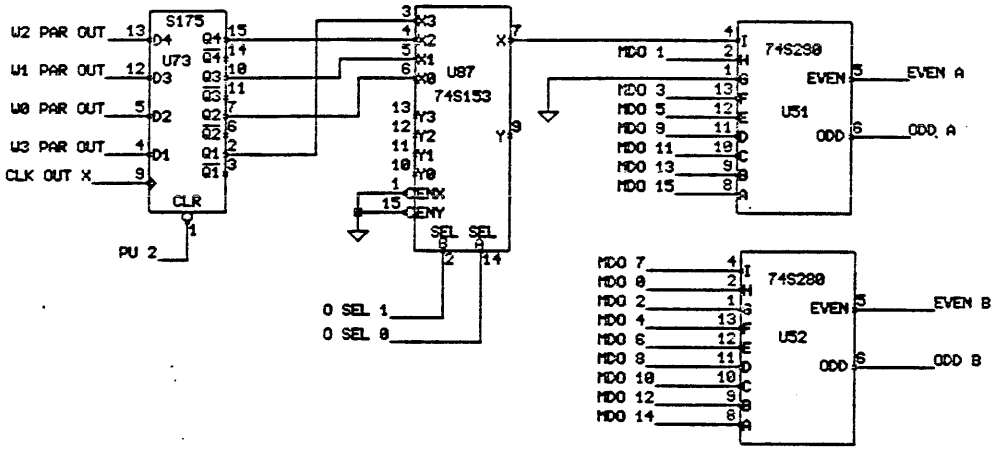
LMEM03

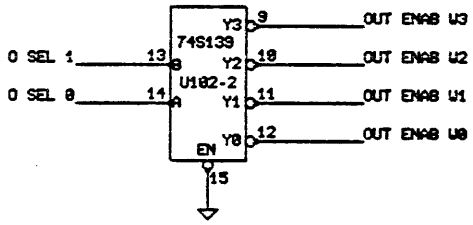
PERQ

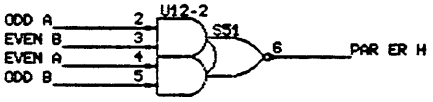
DESIGNED	BILL HULLEY		
DRAWN	25 Apr 83	SSokse	
UPDATED	11 Jan 84	Z.Vajta	

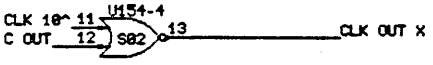
SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	C

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY

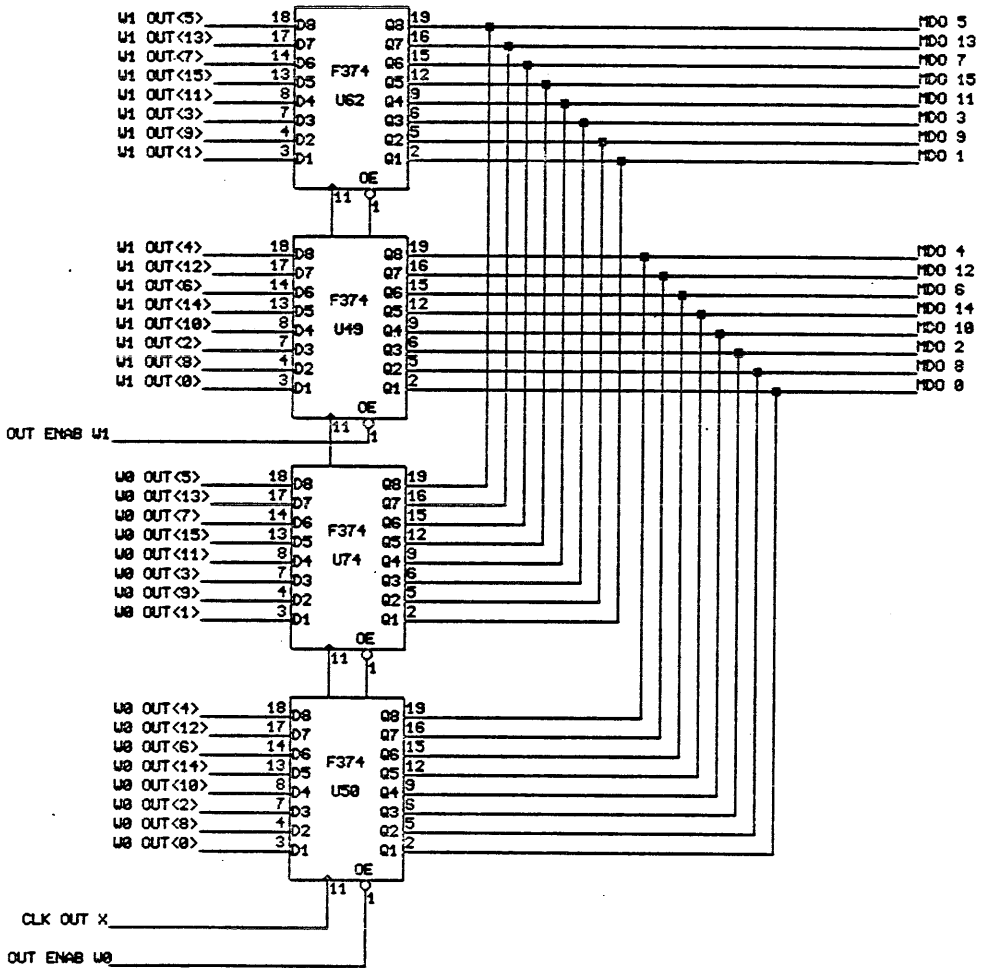








PERQ	TITLE	MEMORY DATA OUTPUT					LMEM04	
	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	28 Aug 83	WCH	A	11	0197-	02	C
	UPDATED	31 Jul 84		PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 4 OF 34	



TITLE: DATA OUTPUT REGISTERS : WORDS 0 AND 1

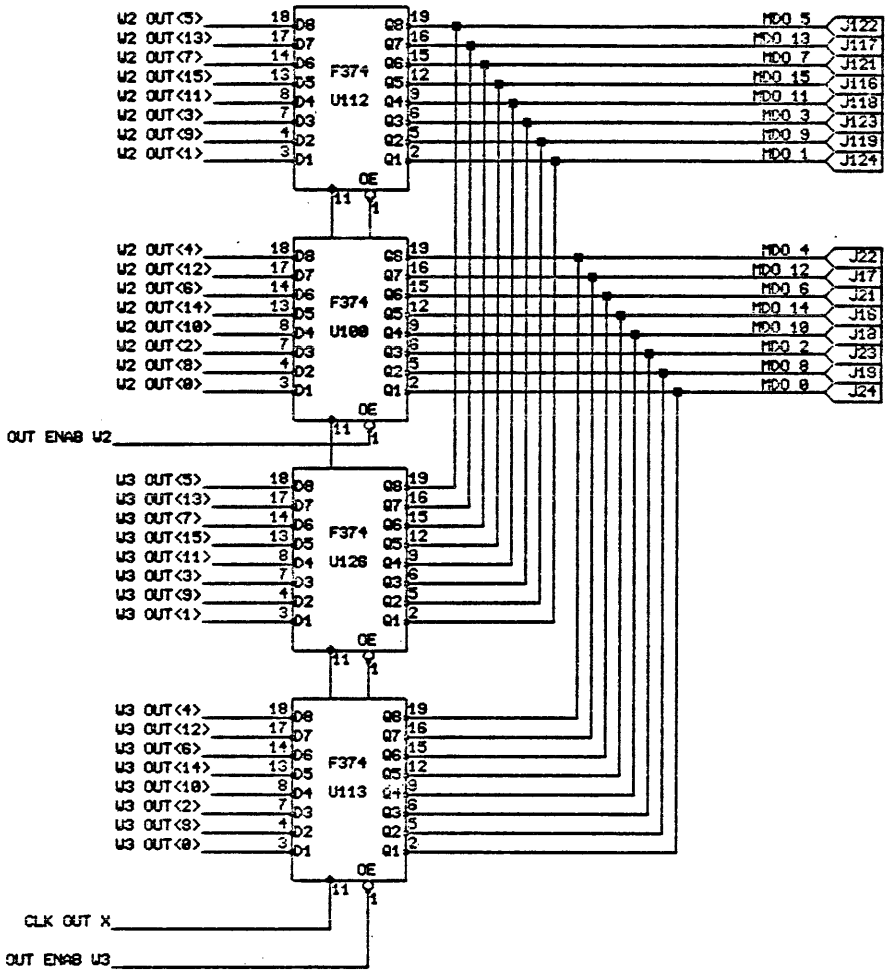
LMEM05

PERQ

DESIGNED	BILL HULLEY	
DRAWN	12 Oct 83	WCH
UPDATED	11 Jan 84	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	C

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



TITLE: DATA OUTPUT REGISTERS : WORDS 2 AND 3

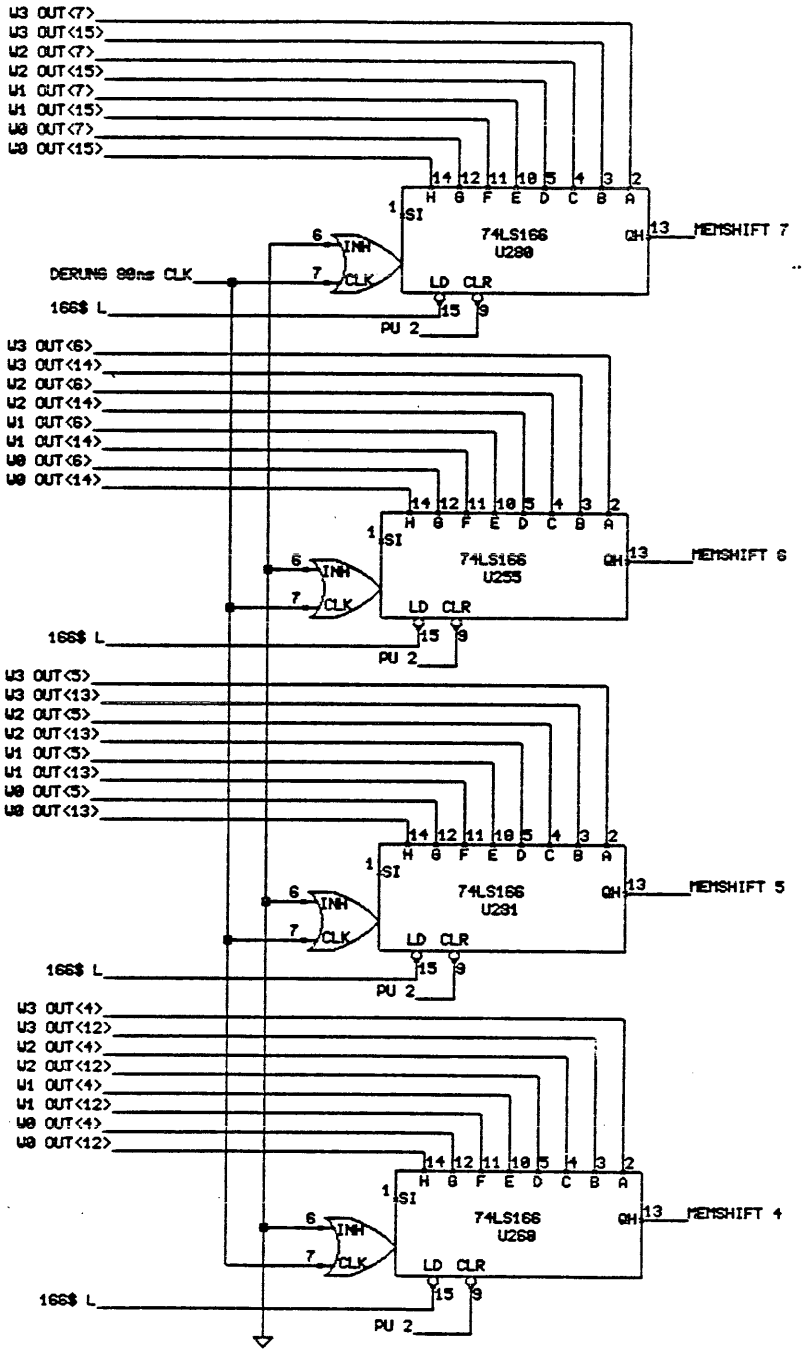
LMEM0S

PERQ

DESIGNED	BILL HULLEY	
DRAWN	11 Oct 83	UCH
UPDATED	11 Jan 84	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	C

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



TITLE: MEMORY WORD MUX - 64 BITS to 8 BITS

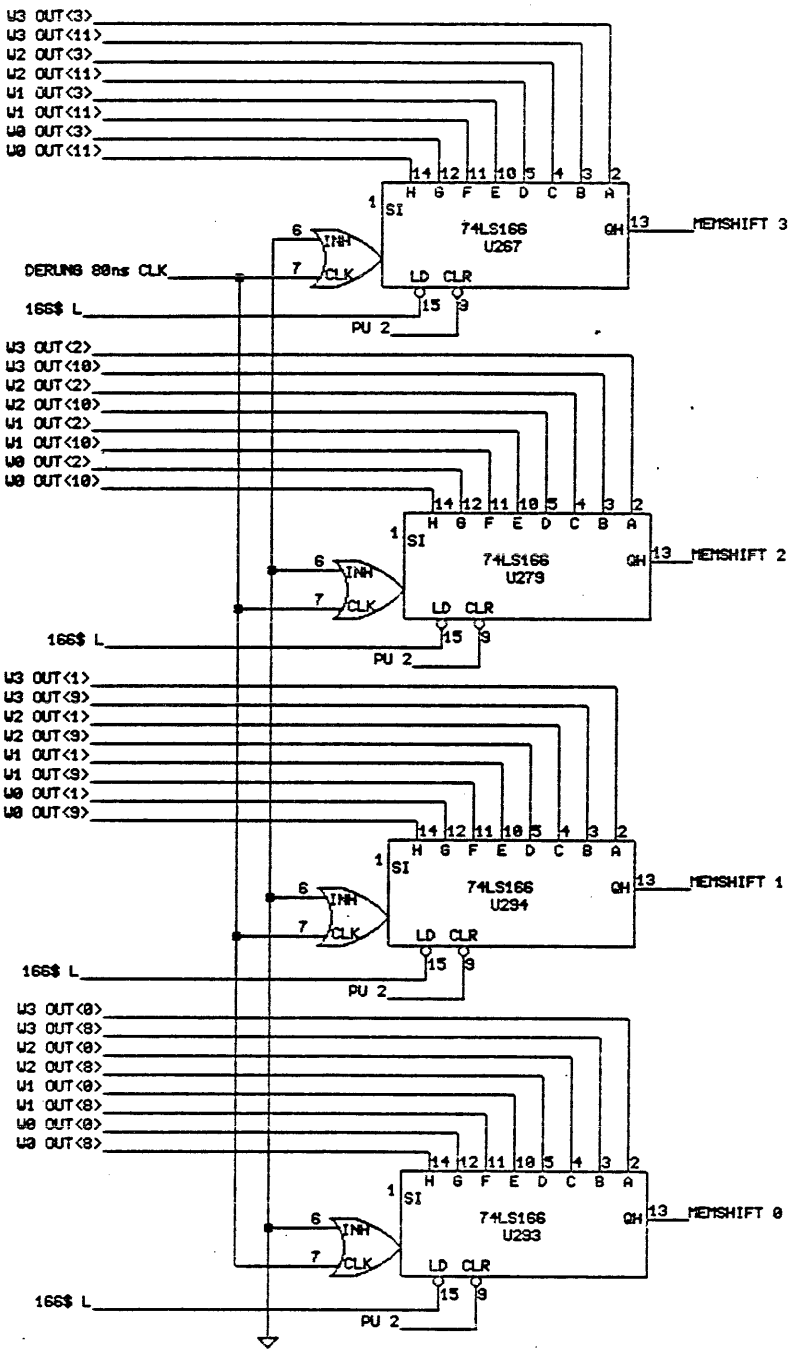
LMEM07

PERQ

DESIGNED	BILL HULLEY		
DRAWN	25 Apr 83	SBokse	
UPDATED	11 Jan 84	Z. Vavra	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	c

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



TITLE: MEMORY WORD MUX - 64 BITS to 8 BITS

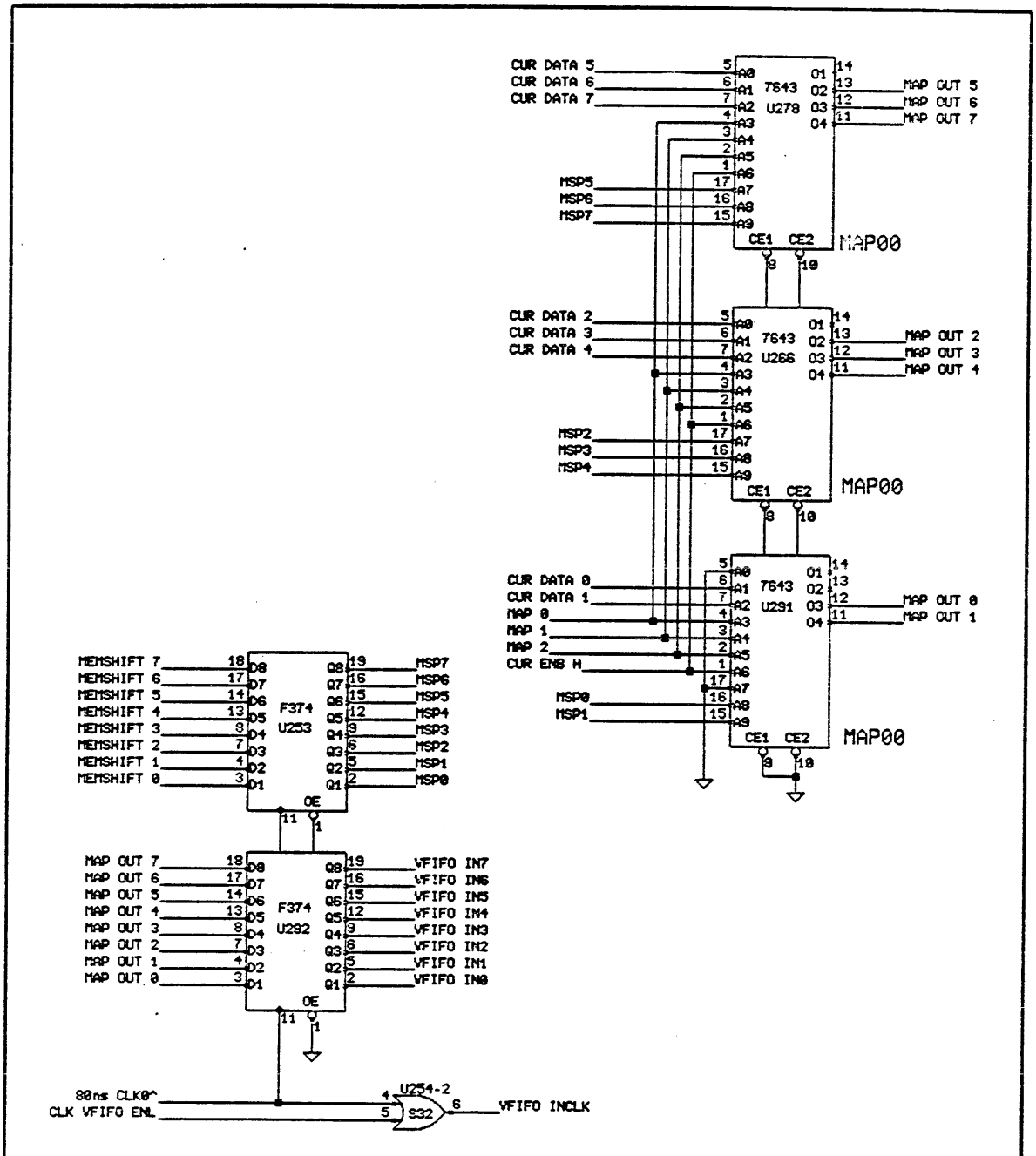
LMEM38

PERQ

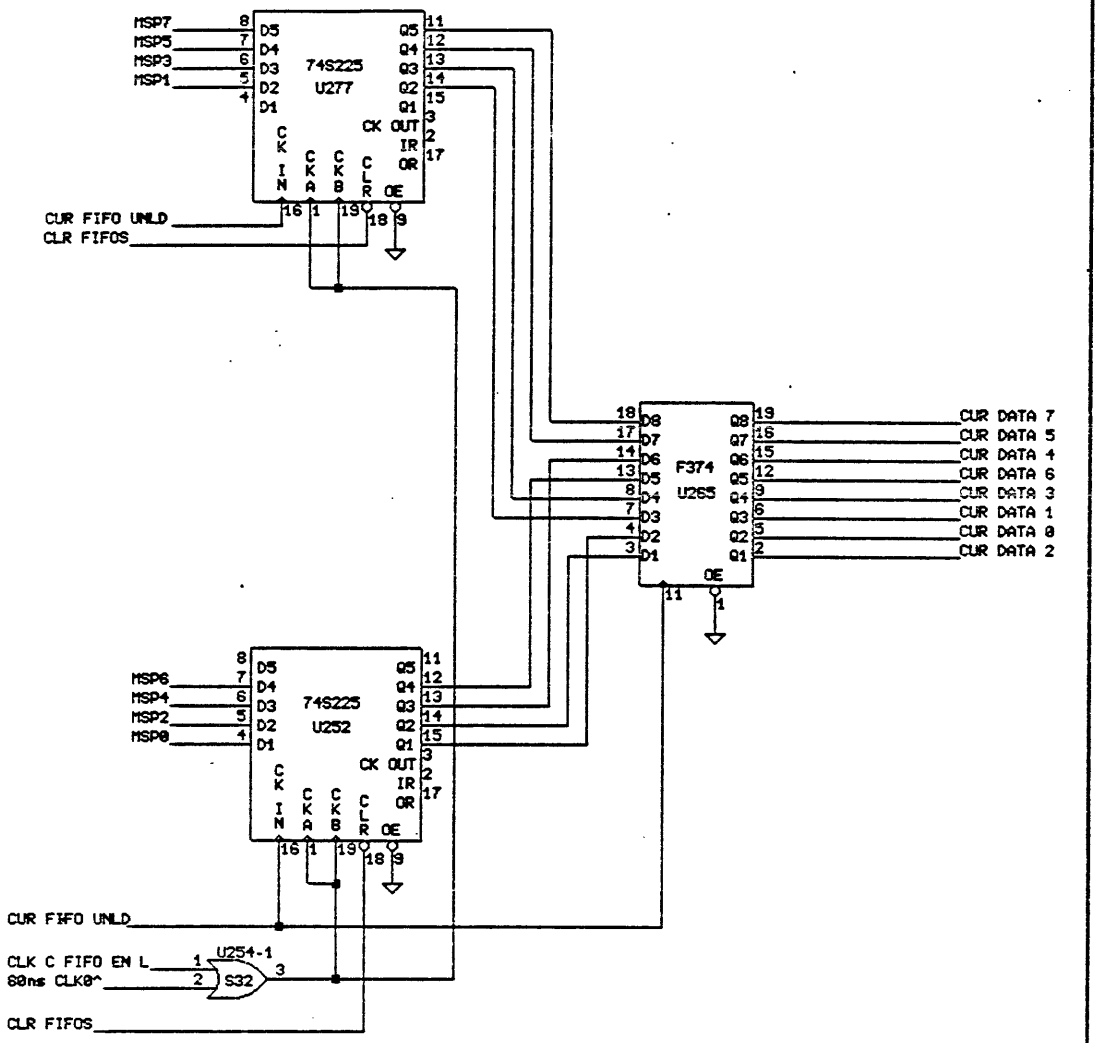
DESIGNED	BILL HULLEY	
DRAWN	25 Apr 83	SBokse
UPDATED	11 Jan 84	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	C

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



TITLE	MEMORY - CURSOR DATA MIXER FOR VIDEO					LME109	
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	25 Apr 83	SBokse	A	11	8197-	02	C
	UPDATED			PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 9	OF 34

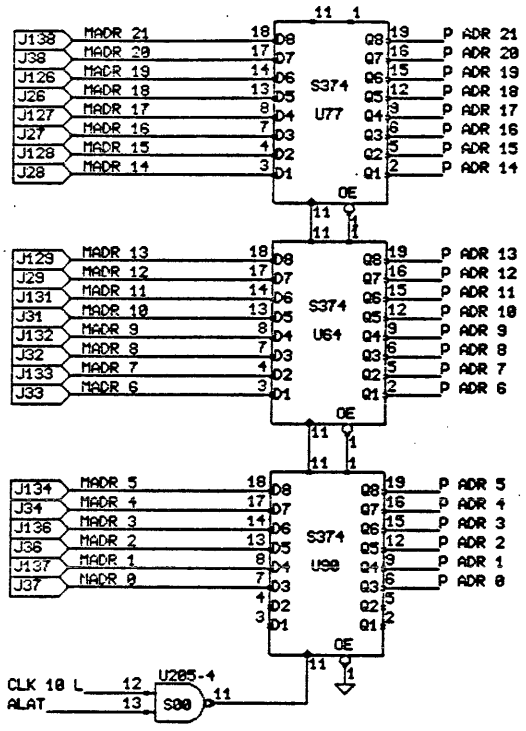


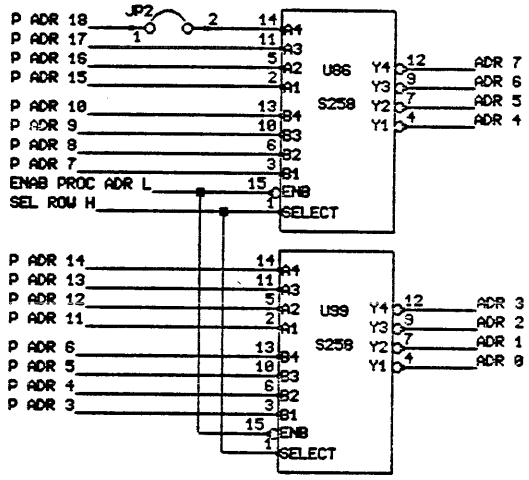
TITLE: CURSOR DATA FIFO

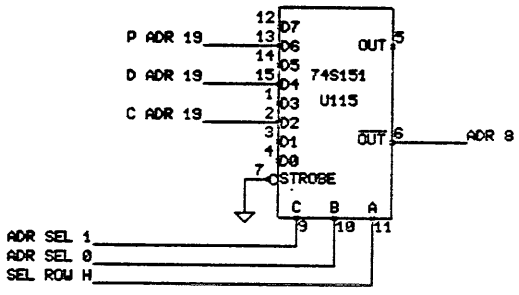
LMEM10

PERQ

DESIGNED	BILL MULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	25 Apr 83	SBokse	A	11	0197-	02	C
UPDATED	11 Jan 84		PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 10 OF 34	







SEL ROW H	ADR SEL 1	ADR SEL 0	ADDRESS SOURCE
0	0	0	NO CONNECT
0	0	1	CURSOR COUNTER (19)
0	1	0	DISPLAY COUNTER (19)
0	1	1	PROCESSOR (19)
1	0	0	NO CONNECT
1	0	1	CURSOR COUNTER (20) or (2)
1	1	0	DISPLAY COUNTER (20) or (2)
1	1	1	PROCESSOR (20) or (2)

TITLE: PROCESSOR/IO MEMORY ADRESS MUX

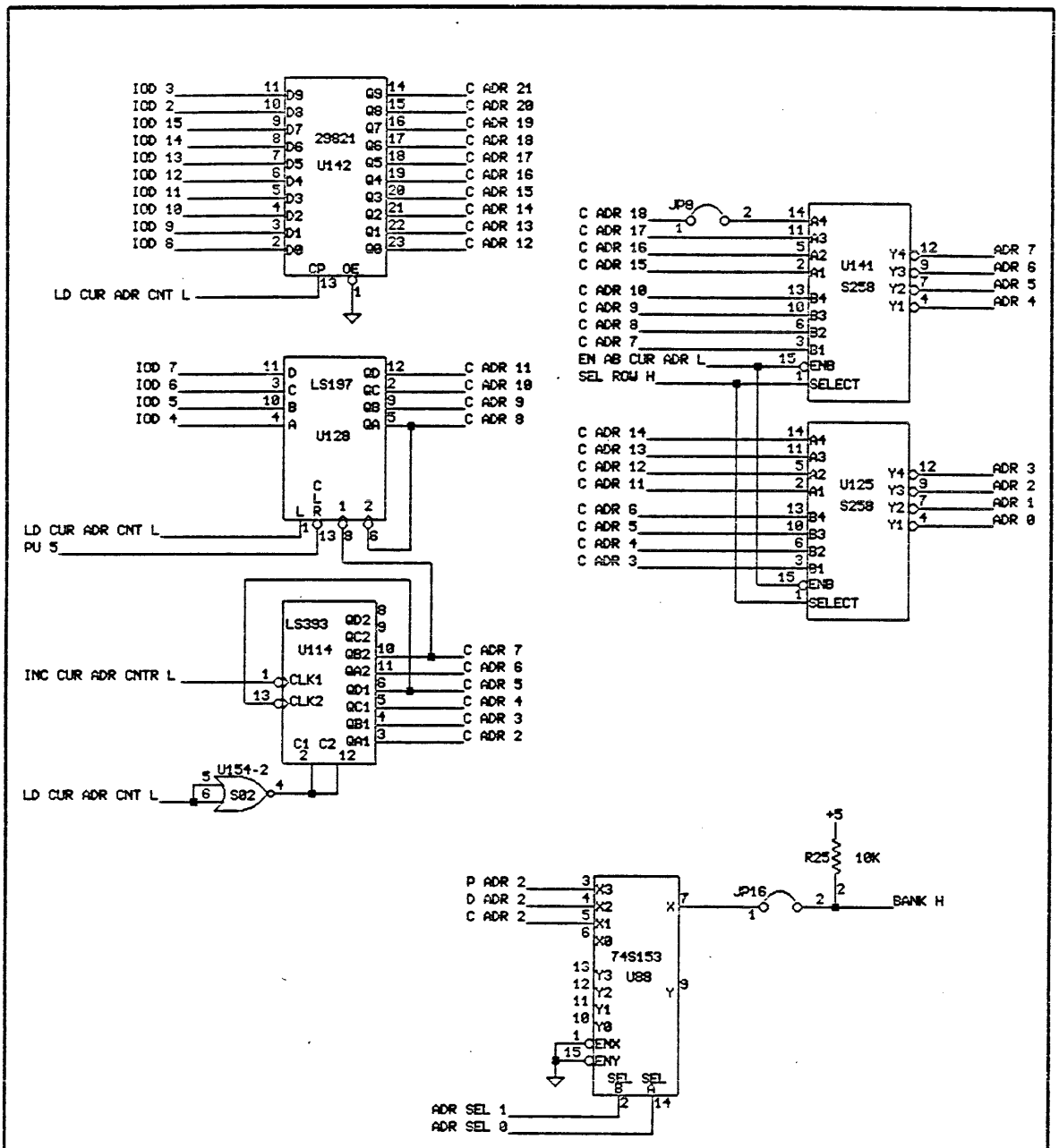
LMEM11

PERQ

DESIGNED	BILL HULLEY	
DRAWN	09 May 83	WCH
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	P

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY

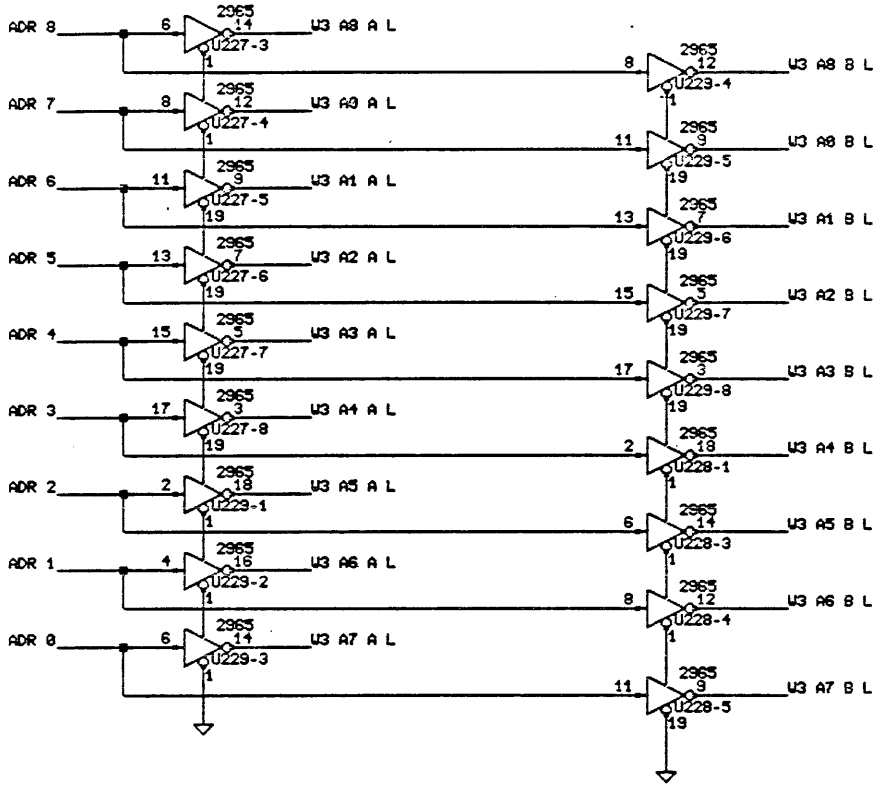


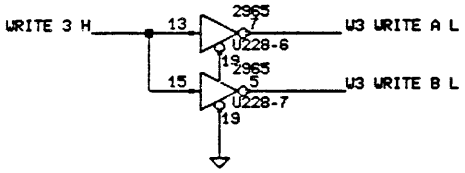
TITLE: CURSOR ADDRESS GENERATION AND MUX

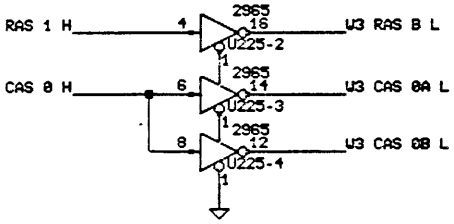
LMEM12

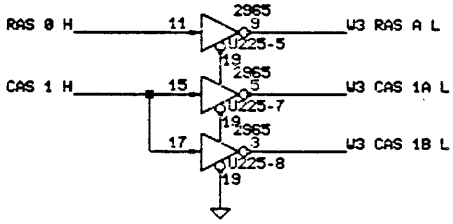
PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	27 Apr 83	UCH	A	11	0197-	02	P
UPDATED	14 Jan 85	STECK	PROJ : 2 MEGABYTE LANDSCAPE/MEMORY			PAGE 12 OF 34	

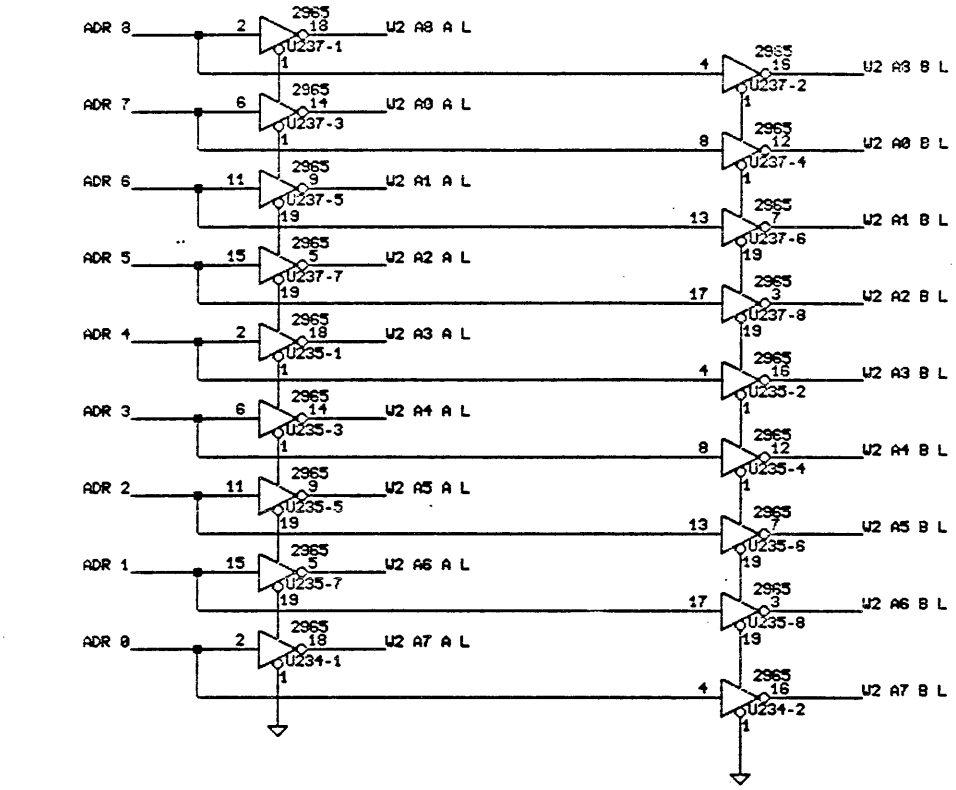


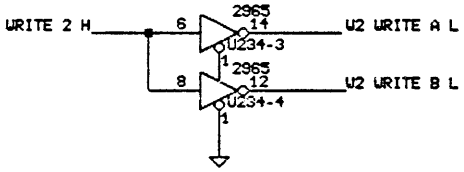


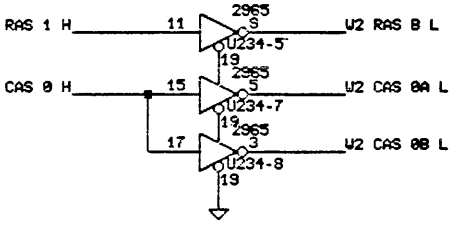


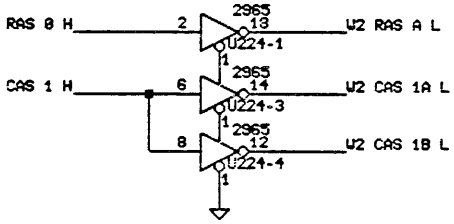


TITLE	MEMORY ADDRESS DRIVER WORD 3							LMEM13
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	21 Apr 83	WCH	A	11	0197-	02	Q
	UPDATED	14 Jan 85	STECK	PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 13	OF 34

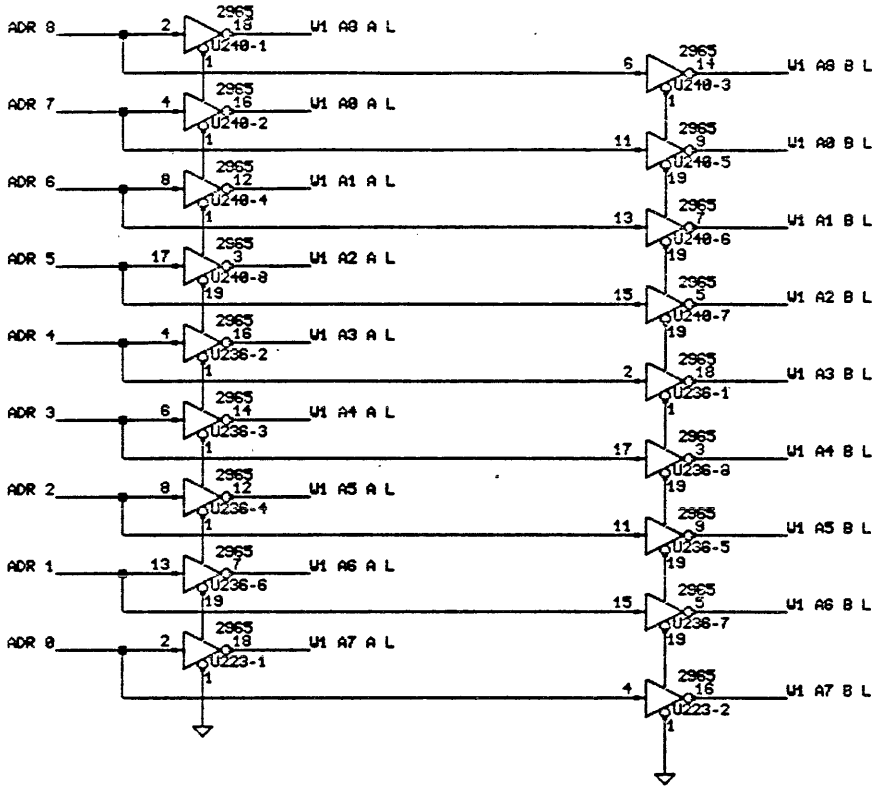


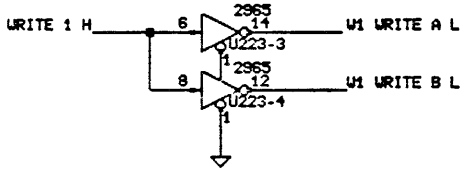


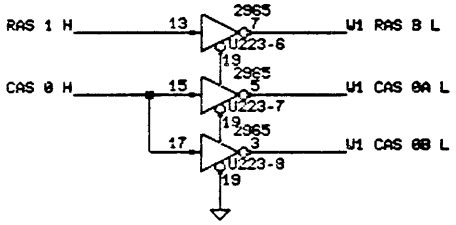


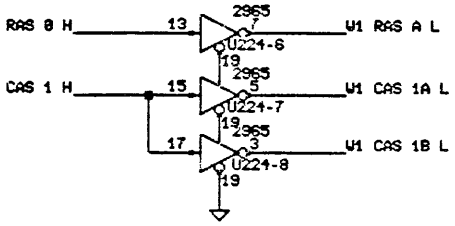


TITLE	MEMORY ADDRESS DRIVER WORD 2						LMEM14
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	21 Apr 83	WCH	A	11	0197-	02	Q
	UPDATED	14 Jan 85	STECK	PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 14 OF 34	









TITLE: MEMORY ADDRESS DRIVER WORD 1

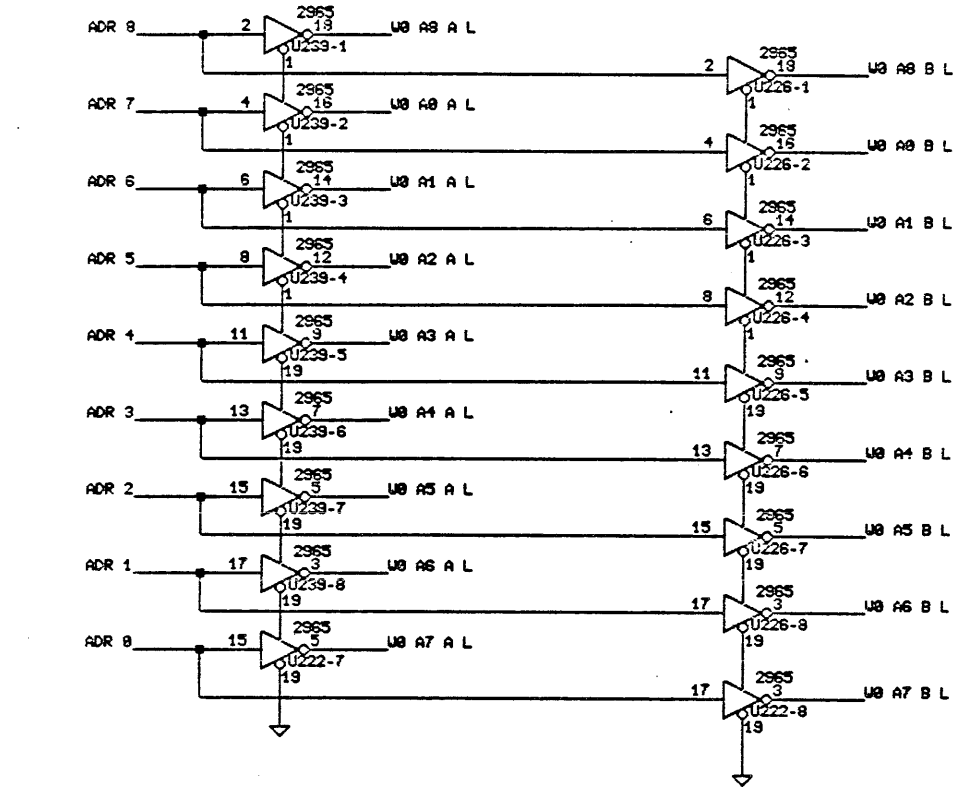
LMEM15

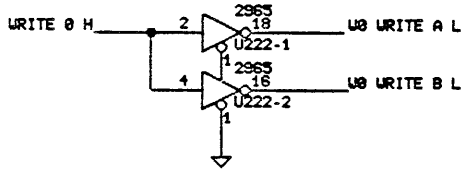
PERQ

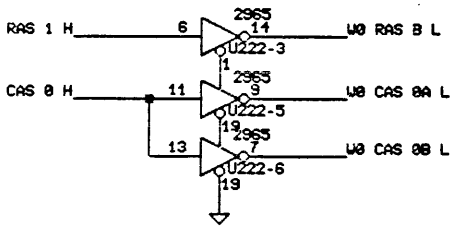
DESIGNED	BILL HULLEY		
DRAWN	21 Apr 83	UCH	
UPDATED	14 Jan 85	STECK	

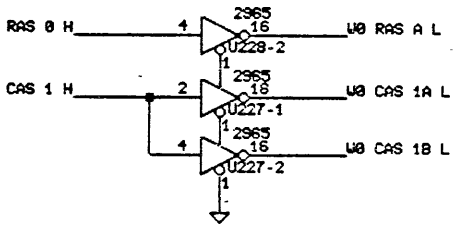
SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	0

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY









TITLE: MEMORY ADDRESS DRIVER WORD 0

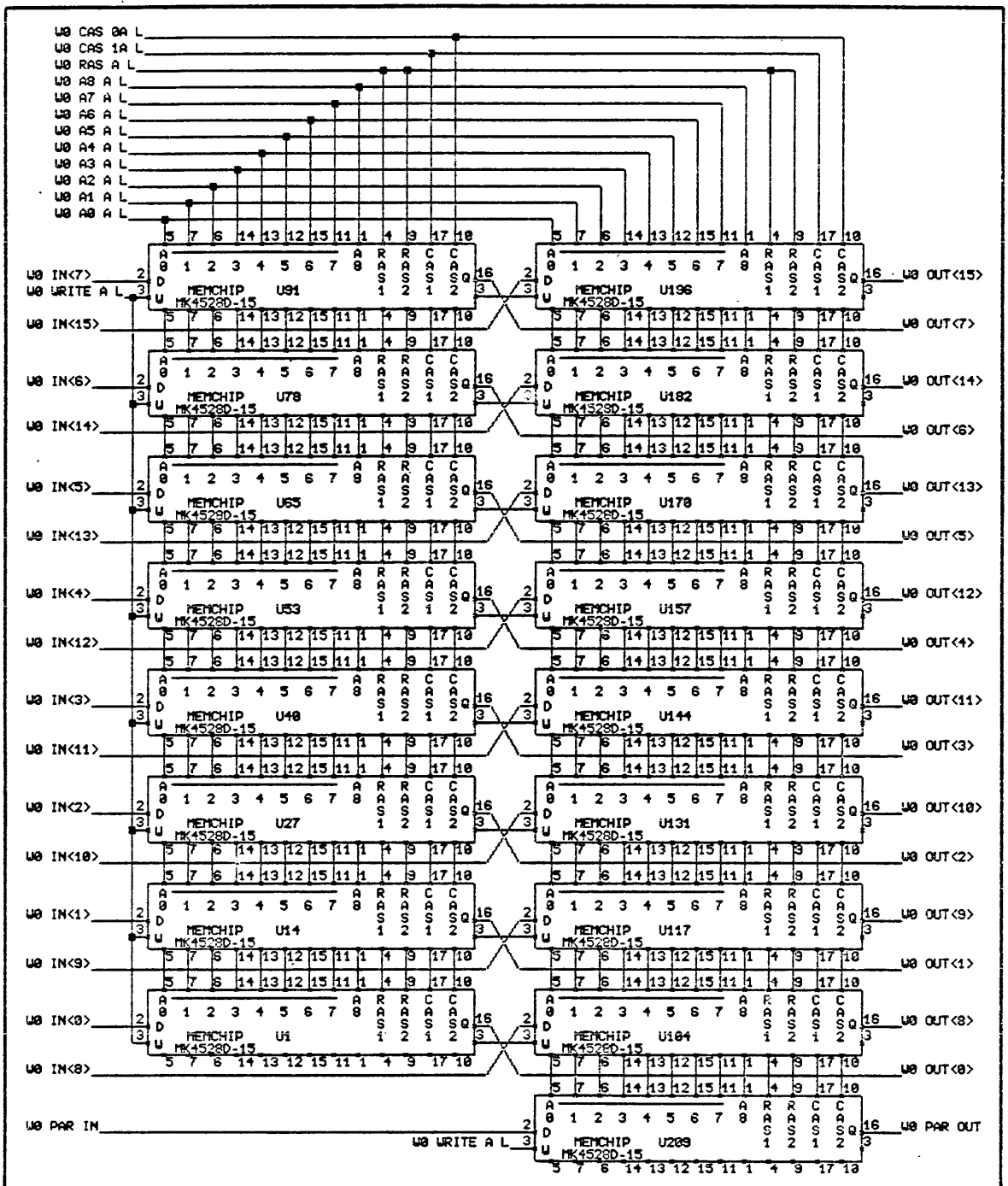
LMEM1S

PERQ

DESIGNED	BILL HULLEY	
DRAWN	21 Apr 83	WCH
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	0

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



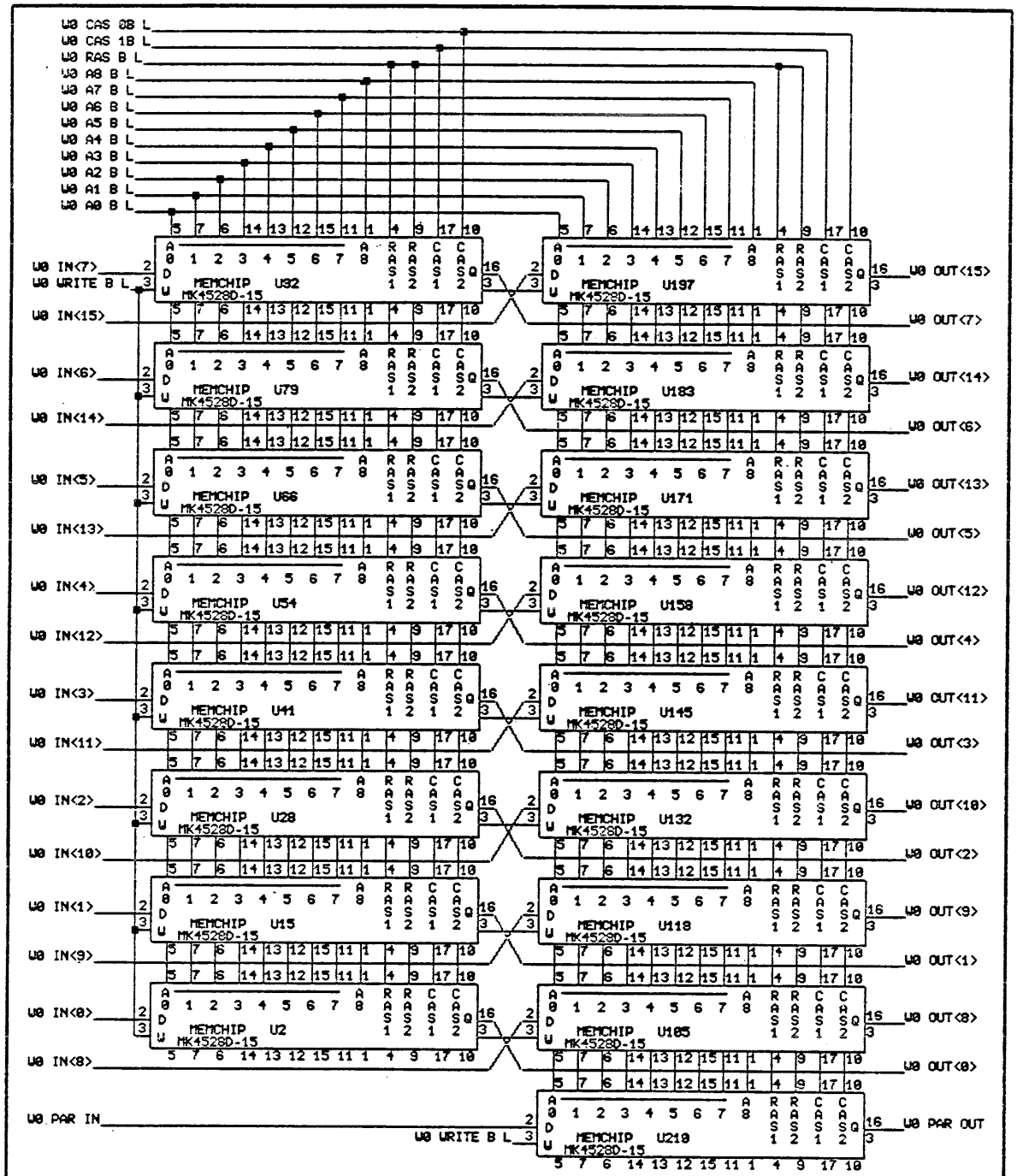
* ALL MEMCHIPS SHOWN ARE 128K RAM.

TITLE: UCRO 0 BANK A

LMEM17

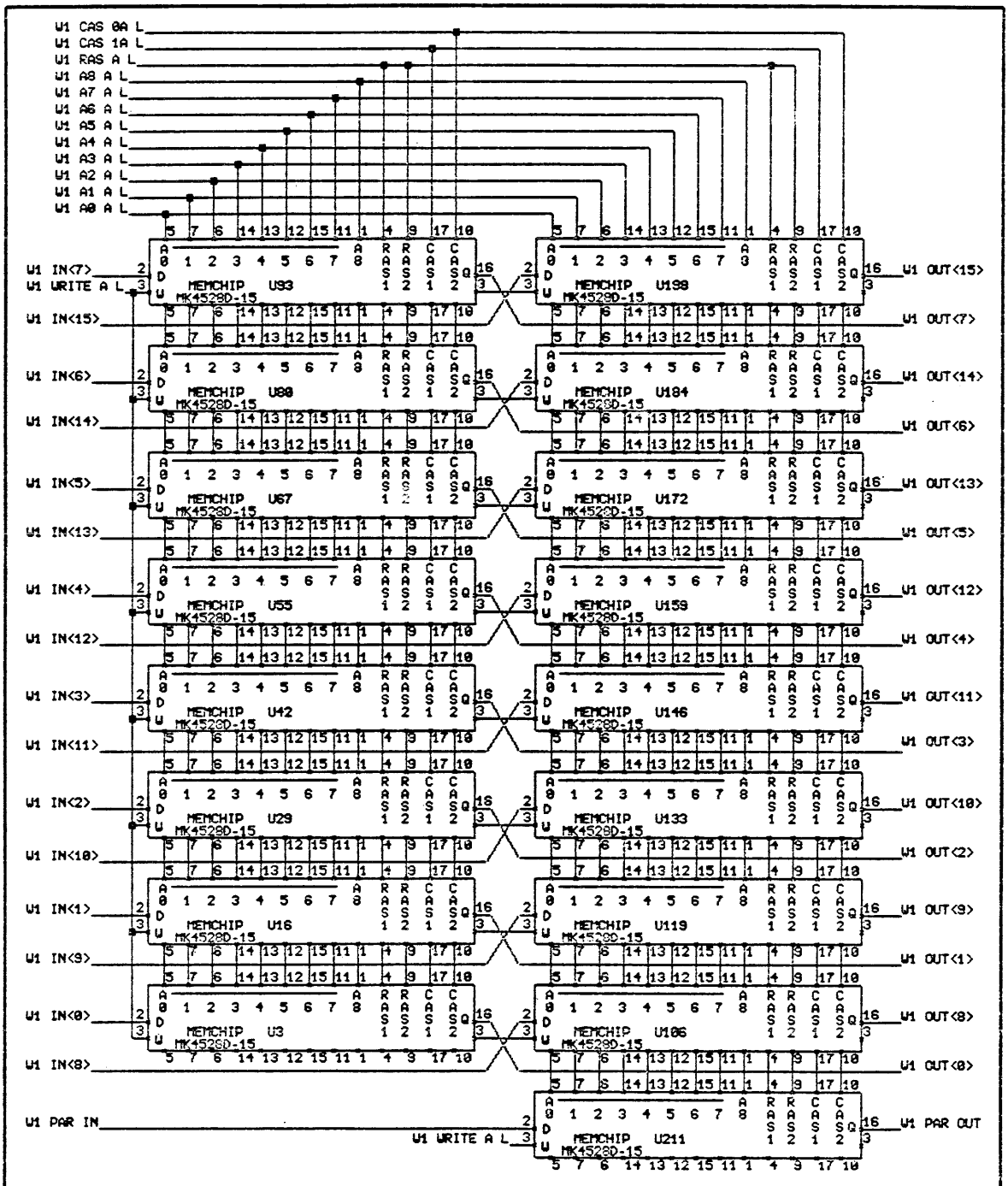
PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	23 Apr 83	UCH	A	11	0197-	02	C
UPDATED	22 May 84	STECK	PROJ : 2 MEGABYTE LANDSCAPE/MEMORY			PAGE 17 OF 34	



ALL MEMCHIPS SHOWN ARE 128K RAM.

TITLE	WORD 0 BANK B						LMEM18
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	25 Apr 83	UCH	A	11	0197-	02	C
	UPDATED	22 May 84	STECK	PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE	18 OF 34



* ALL MEMCHIPS SHOWN ARE 128K RAM.

TITLE: WORD 1 BANK A

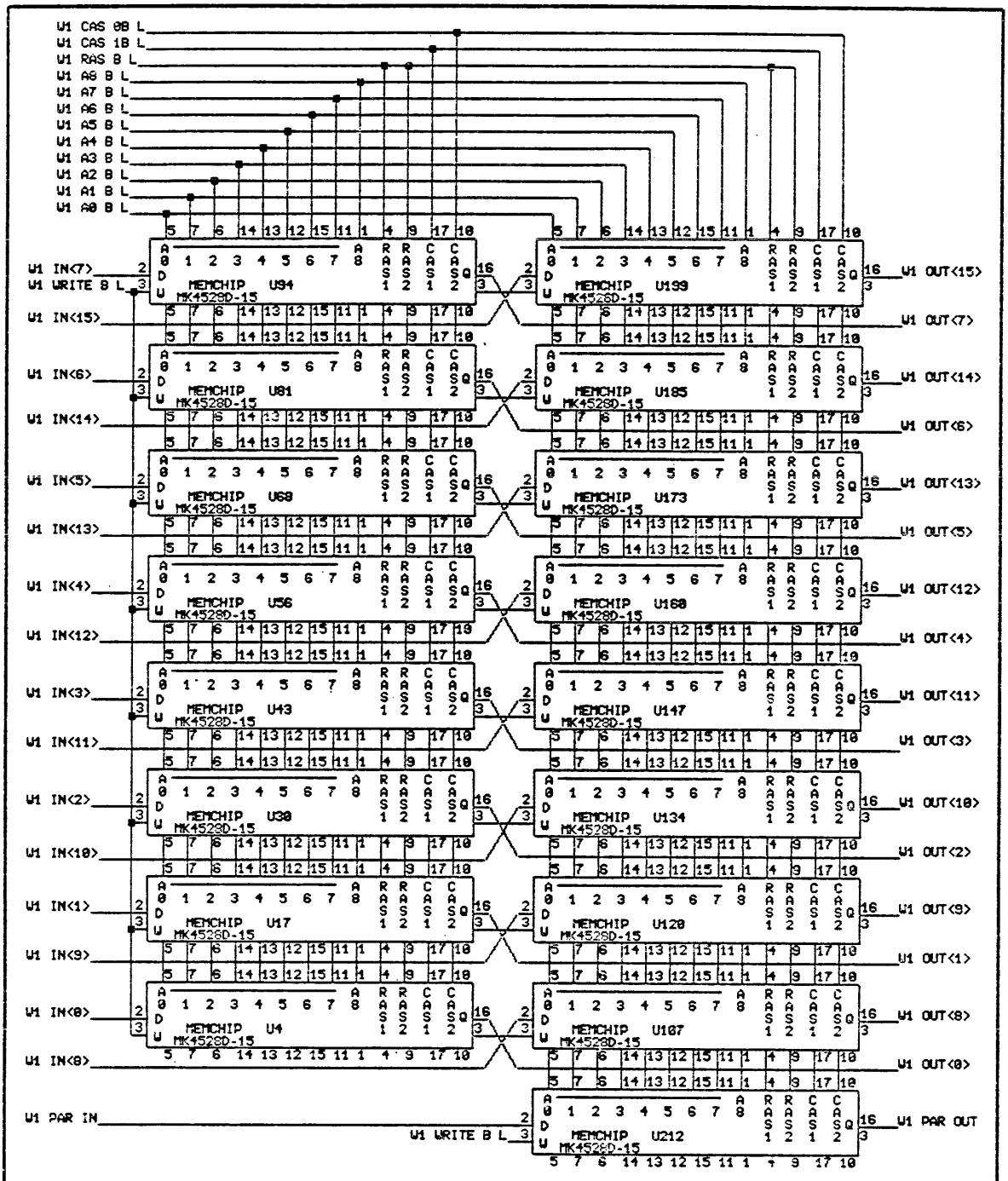
LMEM19

PERQ

DESIGNED	BILL HULLEY		
DRAWN	25 Apr 83	WCH	
UPDATED	22 May 84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	9197-	02	C

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



ALL MEMCHIPS SHOWN ARE 128K RAM.

TITLE: WORD 1 BANK B

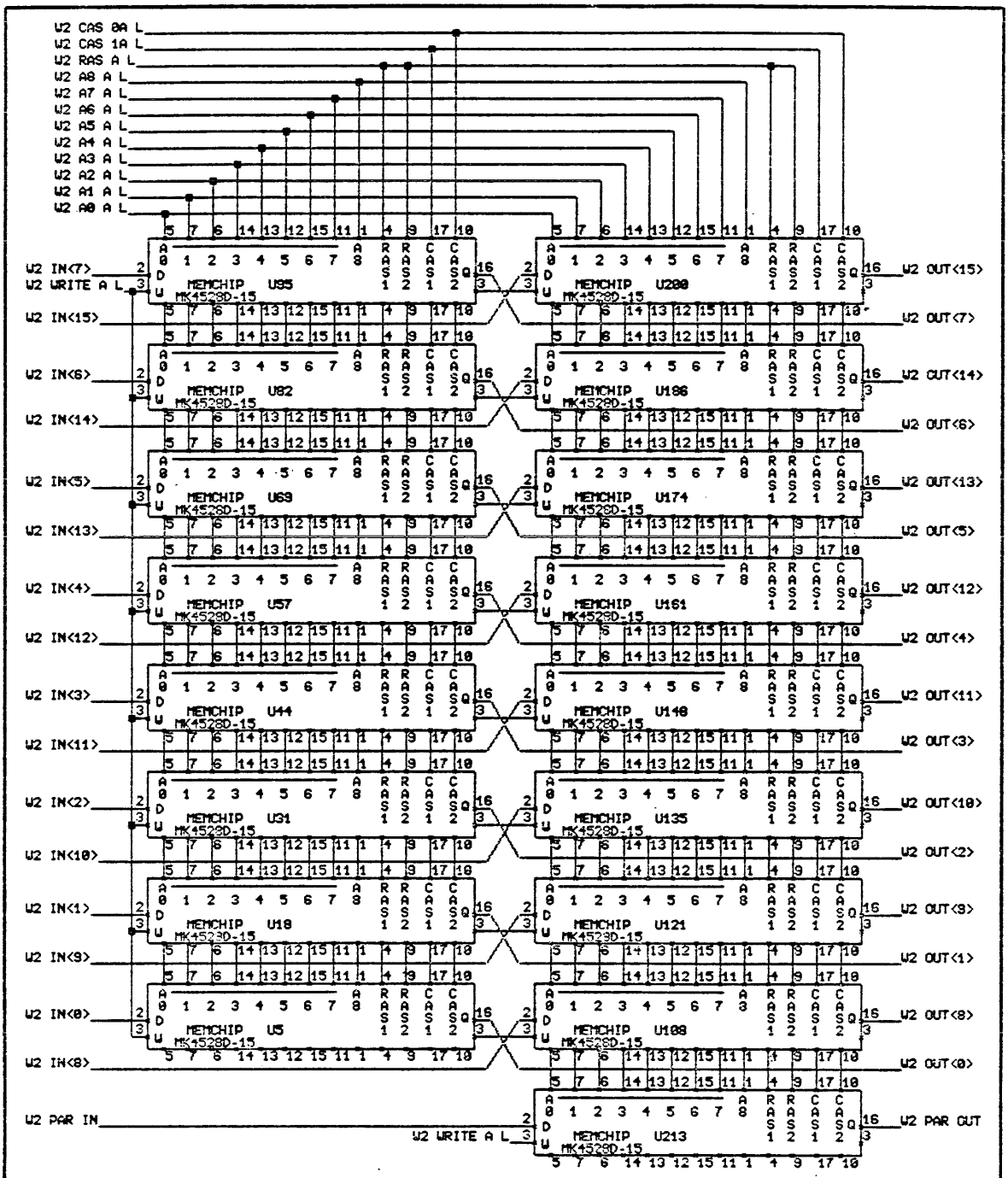
LMEM20

PERQ

DESIGNED	BILL HULLEY		
DRAWN	25 Apr 83	UCH	
UPDATED	22 May 84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	C

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



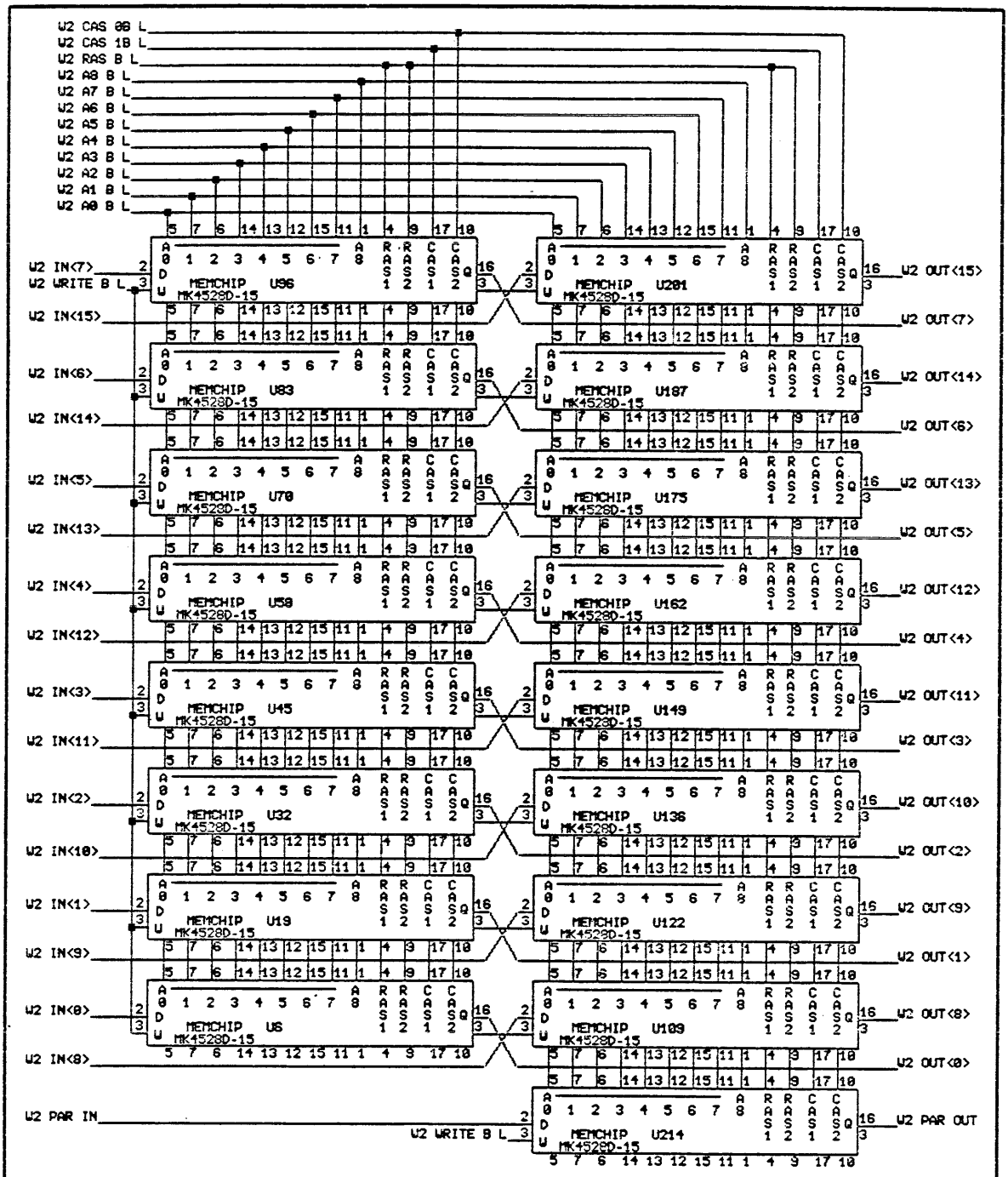
ALL MEMCHIPS SHOWN ARE 128K RAM.

TITLE: WORD 2 BANK A

ITEM21

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	25 Apr 83	UCH	A	11	0197-	02	C
UPDATED	22 May 84	STECK	PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 21 OF 34	



* ALL MEMCHIPS SHOWN ARE 128K RAM.

TITLE: WORD 2 BANK B

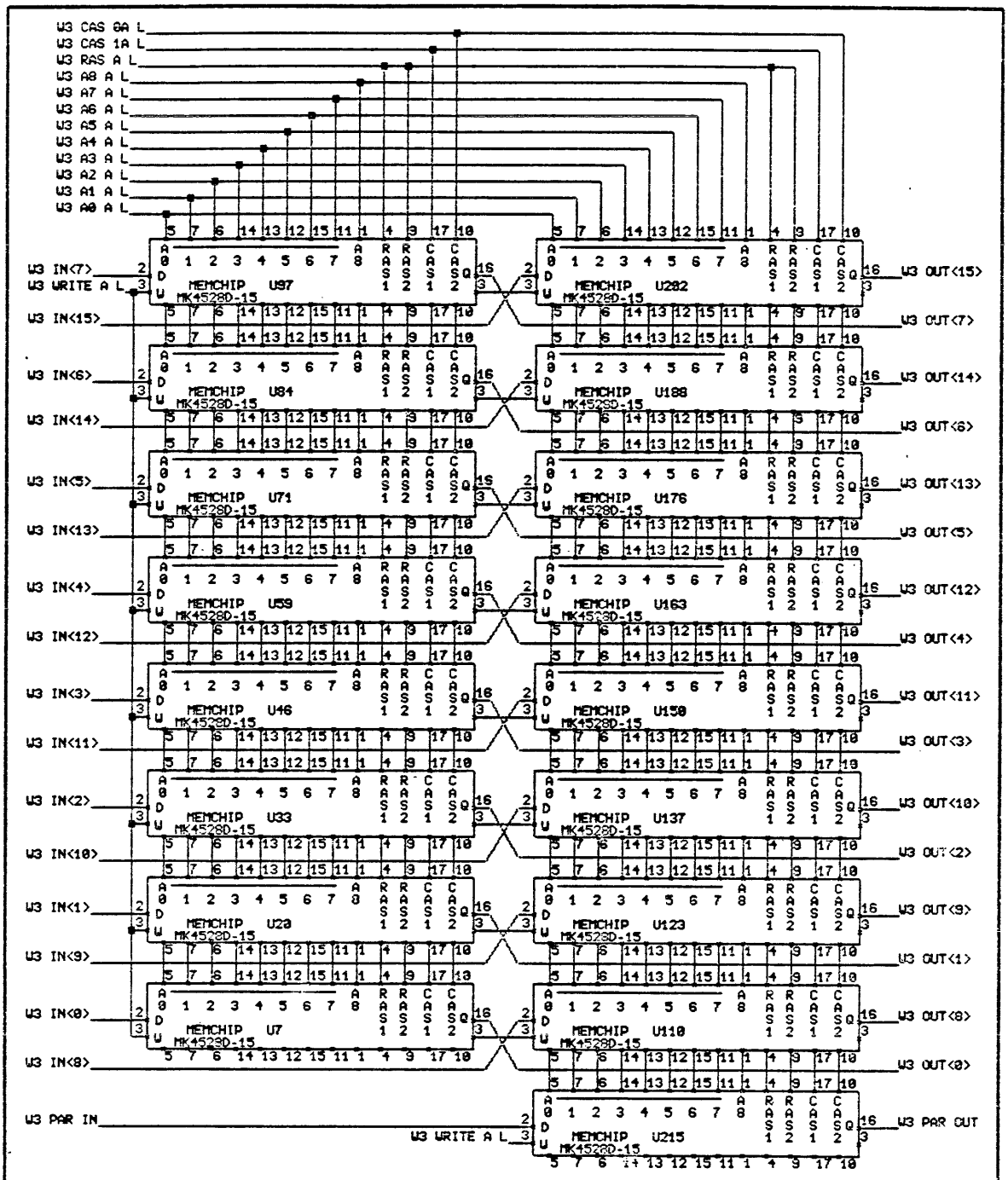
LMEM22

PERQ

DESIGNED	BILL HULLEY	
DRAWN	25 Apr 83	WCH
UPDATED	22 May 84	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	C

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



* ALL MEMCHIPS SHOWN ARE 128K RAM.

TITLE: WORD 3 BANK A

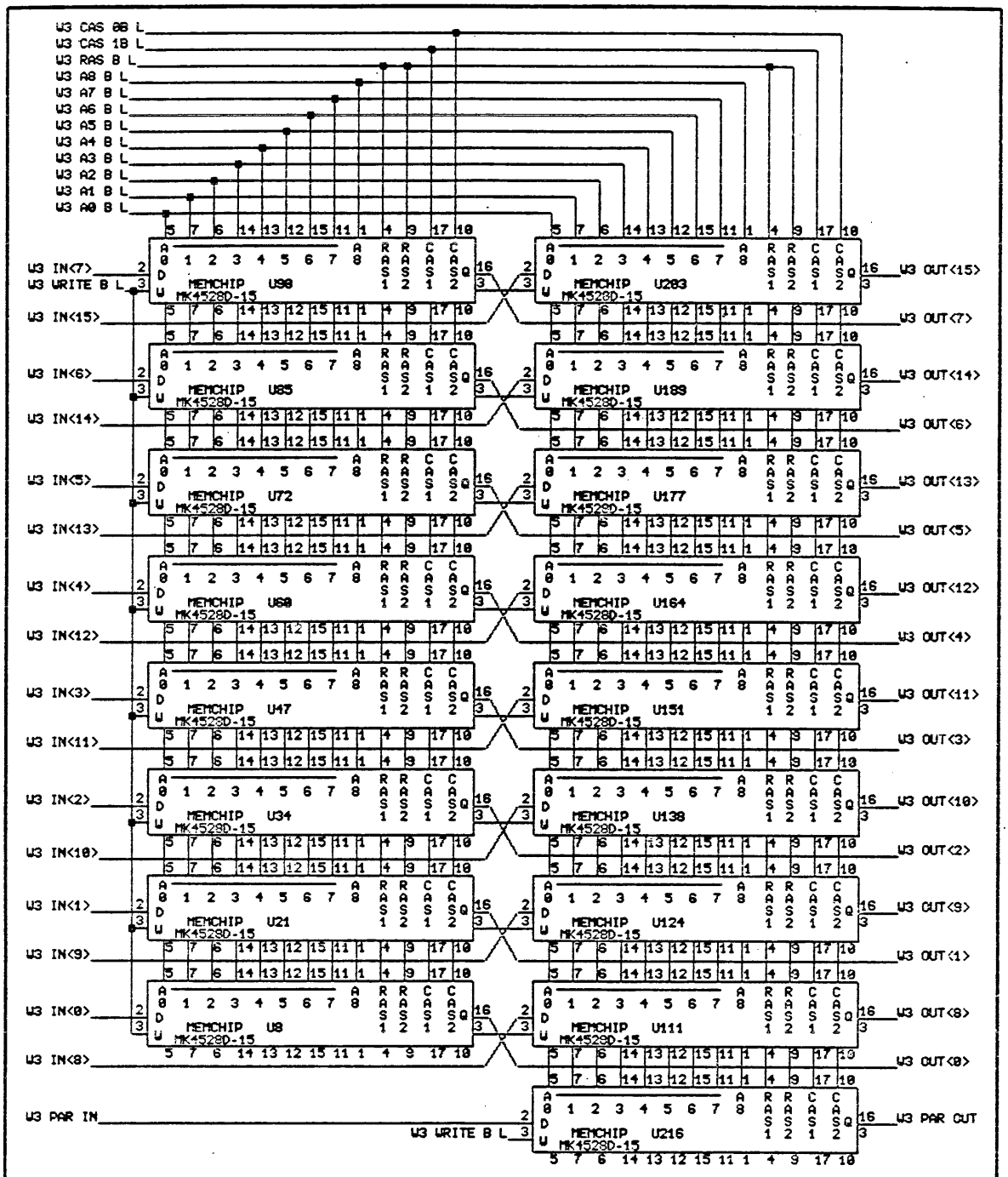
LMEM23

PERQ

DESIGNED	BILL HULLEY		
DRAWN	25 Apr 83	WCH	
UPDATED	22 May 84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	8197-	02	C

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



* ALL MEMCHIPS SHOWN ARE 128K RAM.

TITLE: WORD 3 BANK B

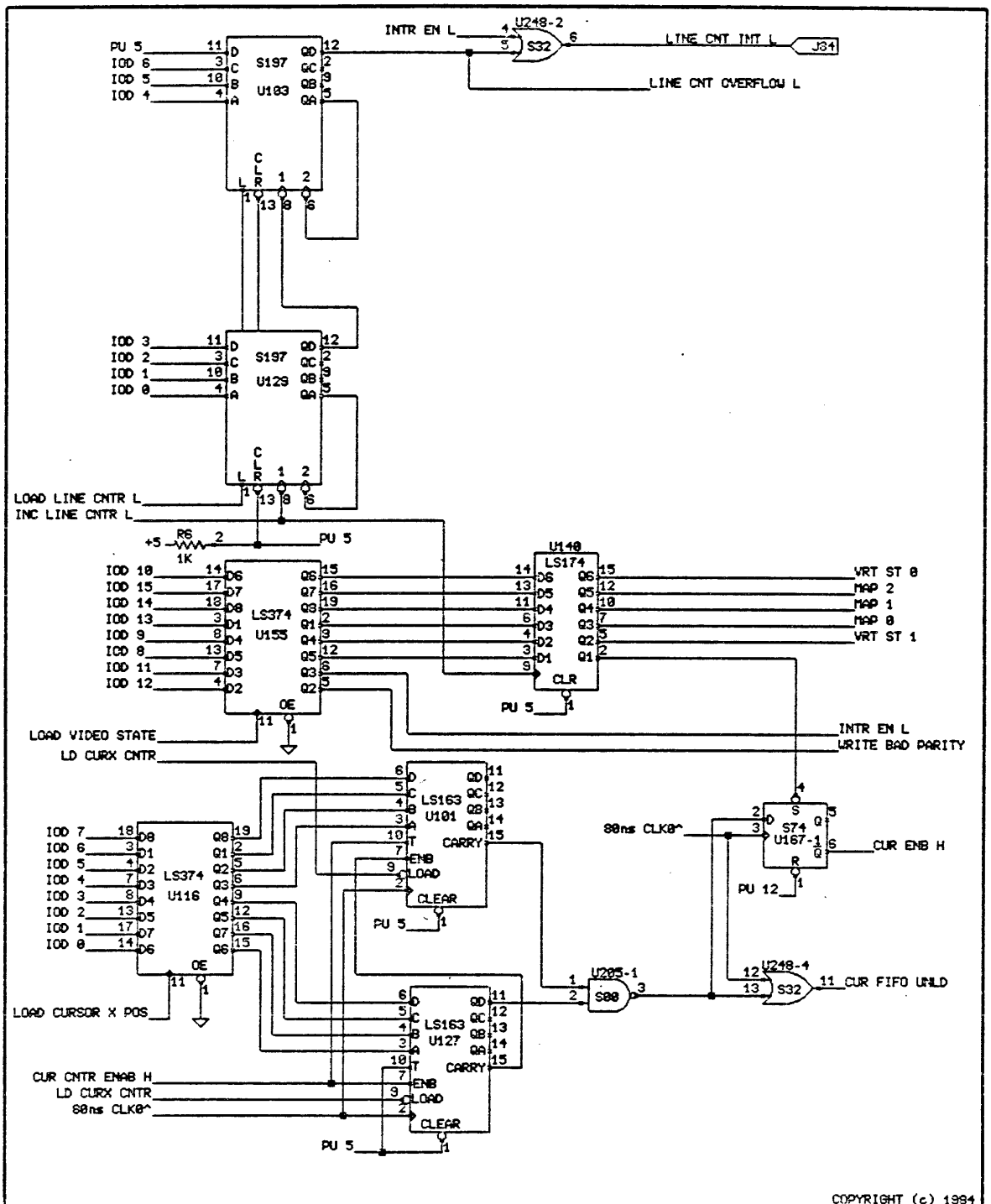
LMEM24

PERQ

DESIGNED	BILL HULLEY		
DRAWN	25 Apr 83	UCH	
UPDATED	22 May 84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	C

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY

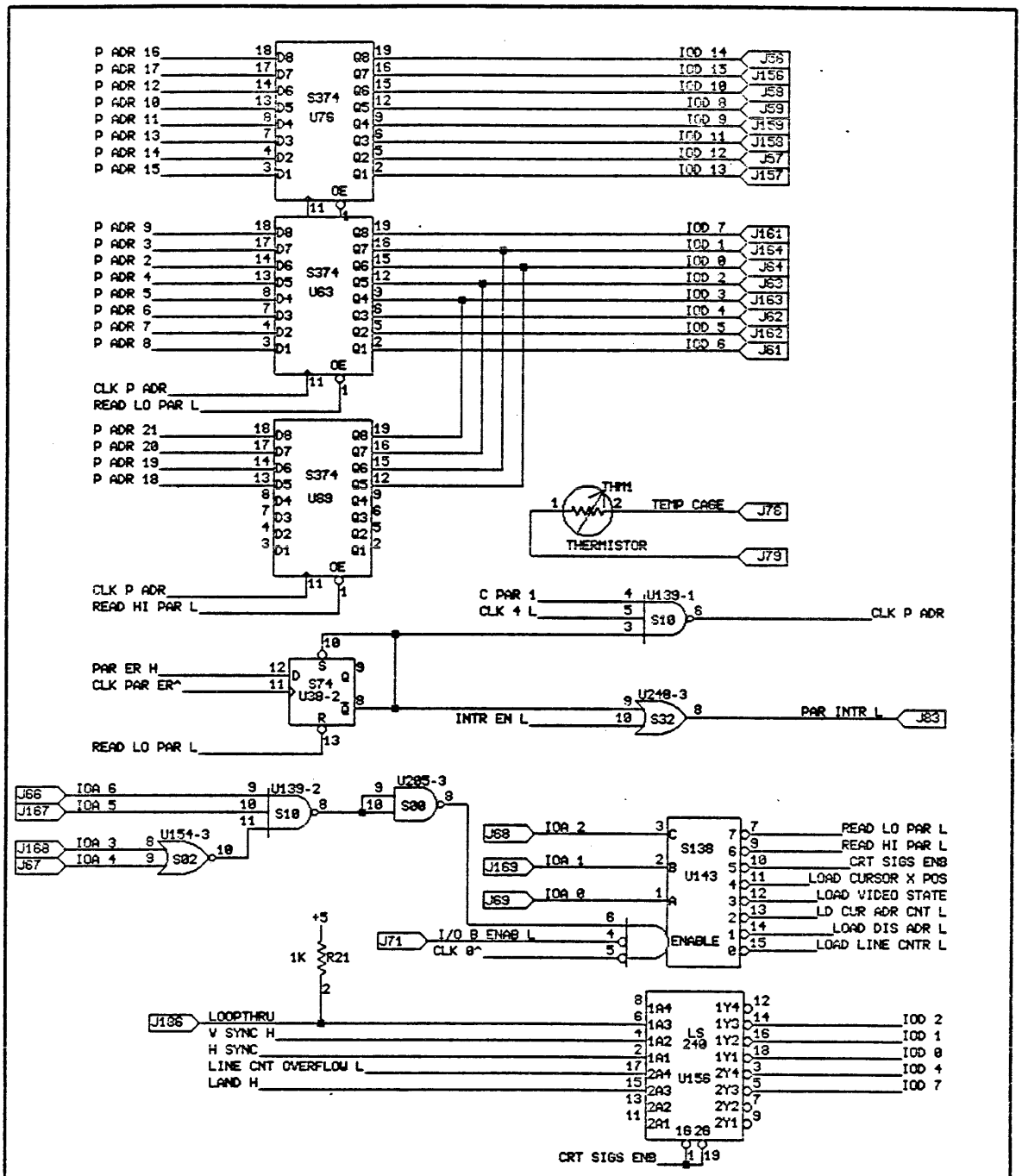


TITLE: IOB VIDEO CONTROL REGISTERS

LMEM25

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	21 APR 83	WCH	A	11	8197	02	Q
UPDATED	14 Jan 85	STECK	PROJ : 2 MEGABYTE LANDSCAPE/MEMORY			PAGE 25 OF 34	

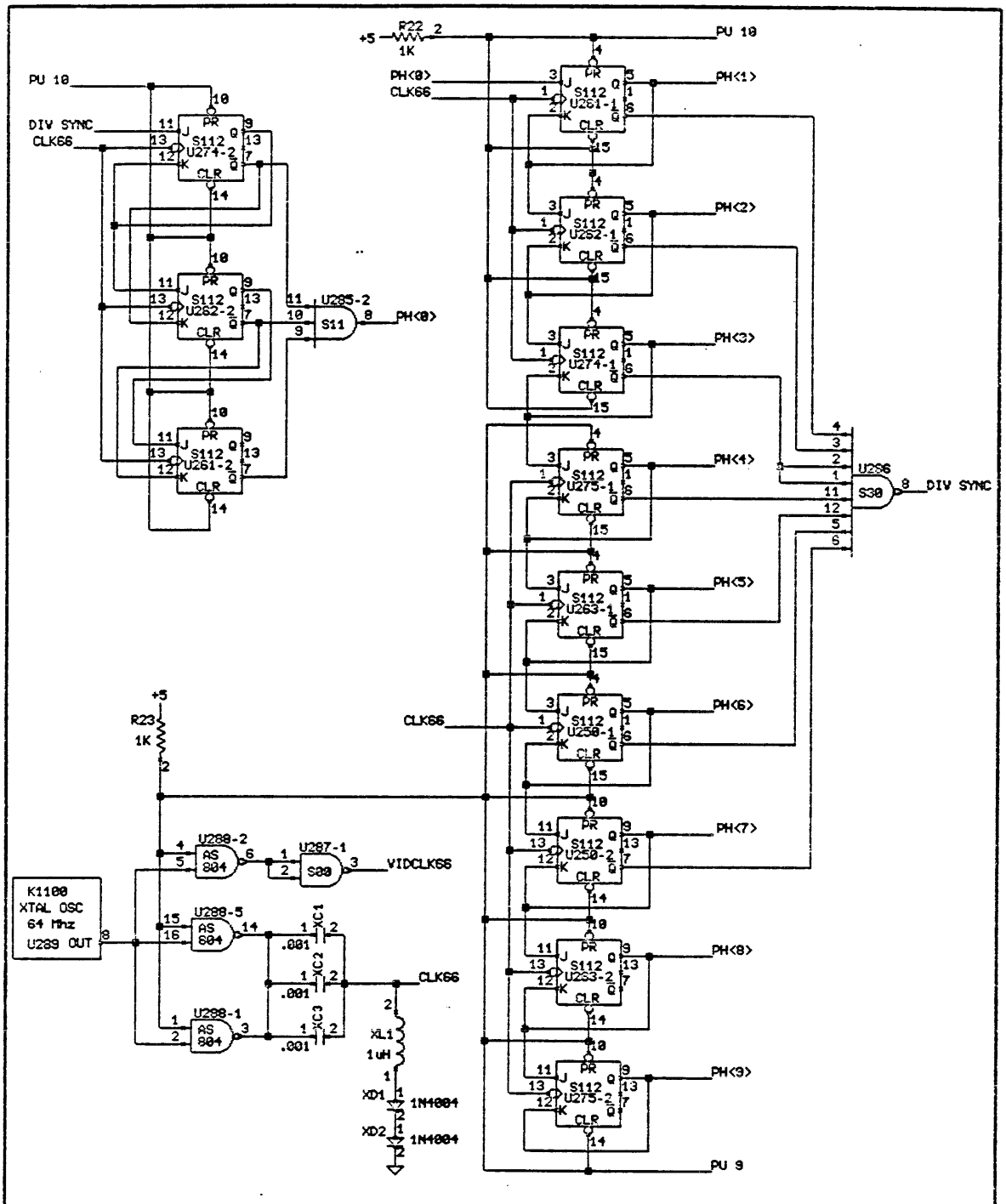


TITLE: I/O STATUS REGISTERS

LMEM26

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	28 Apr 83	UCH	A	11	0197-	02	C
UPDATED	12 Jan 84		PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 28 OF 34	



TITLE: CLOCK PHASE GENERATION LOGIC

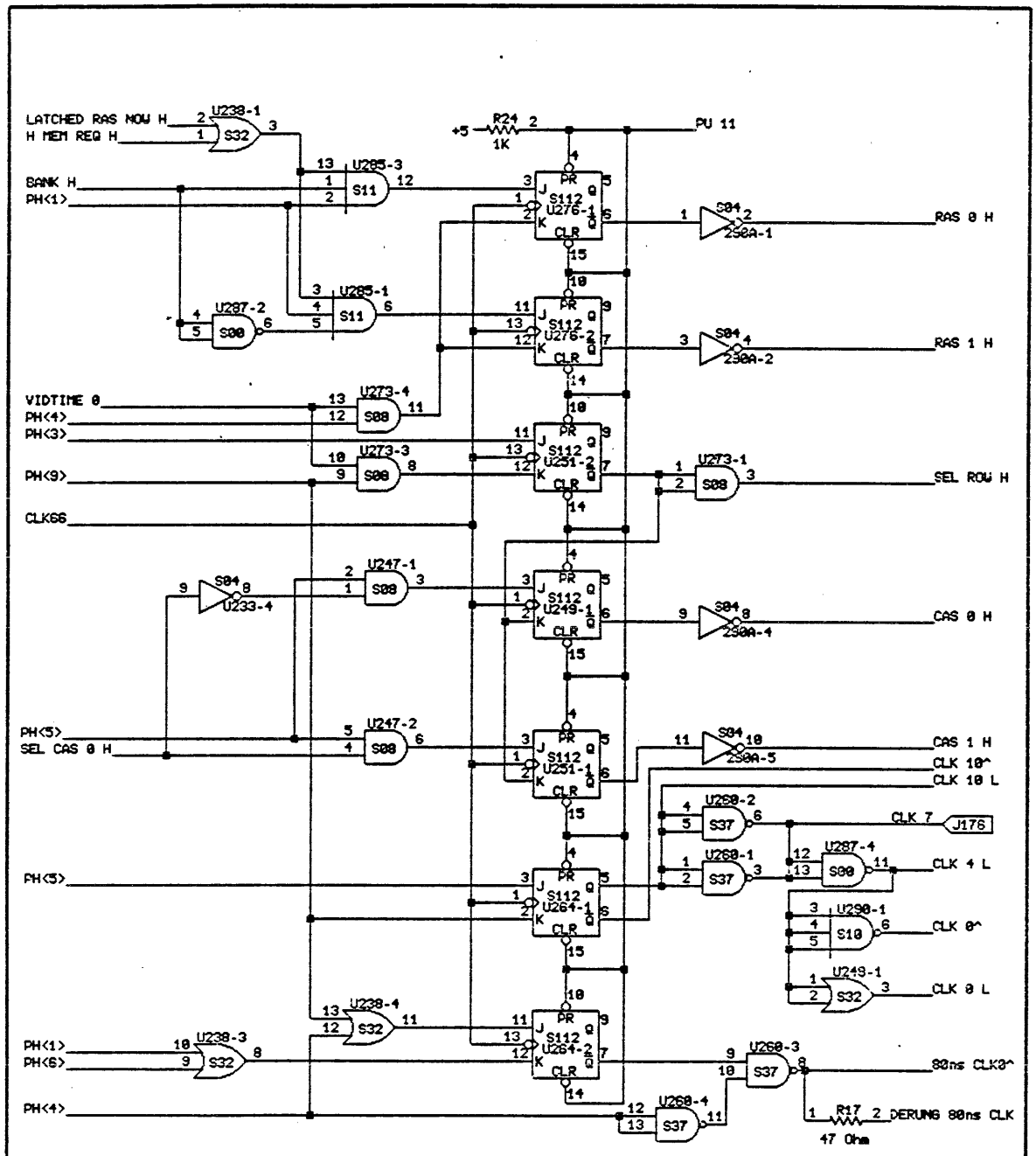
LMEM27

PERQ

DESIGNED	BILL HULLEY	
DRAWN	25 Apr 83	SBokse
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	Q

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY

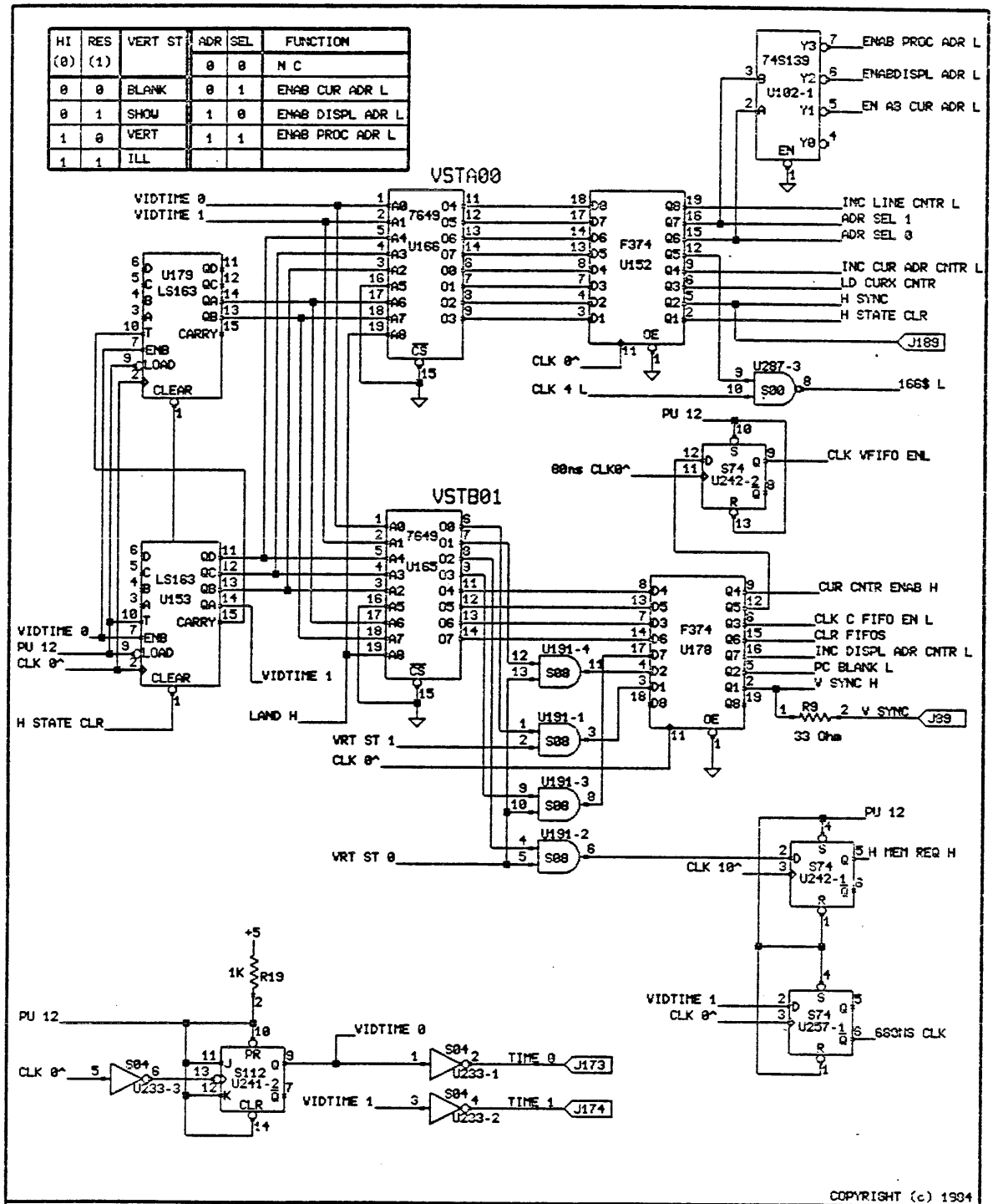


TITLE: CLOCK GENERATION

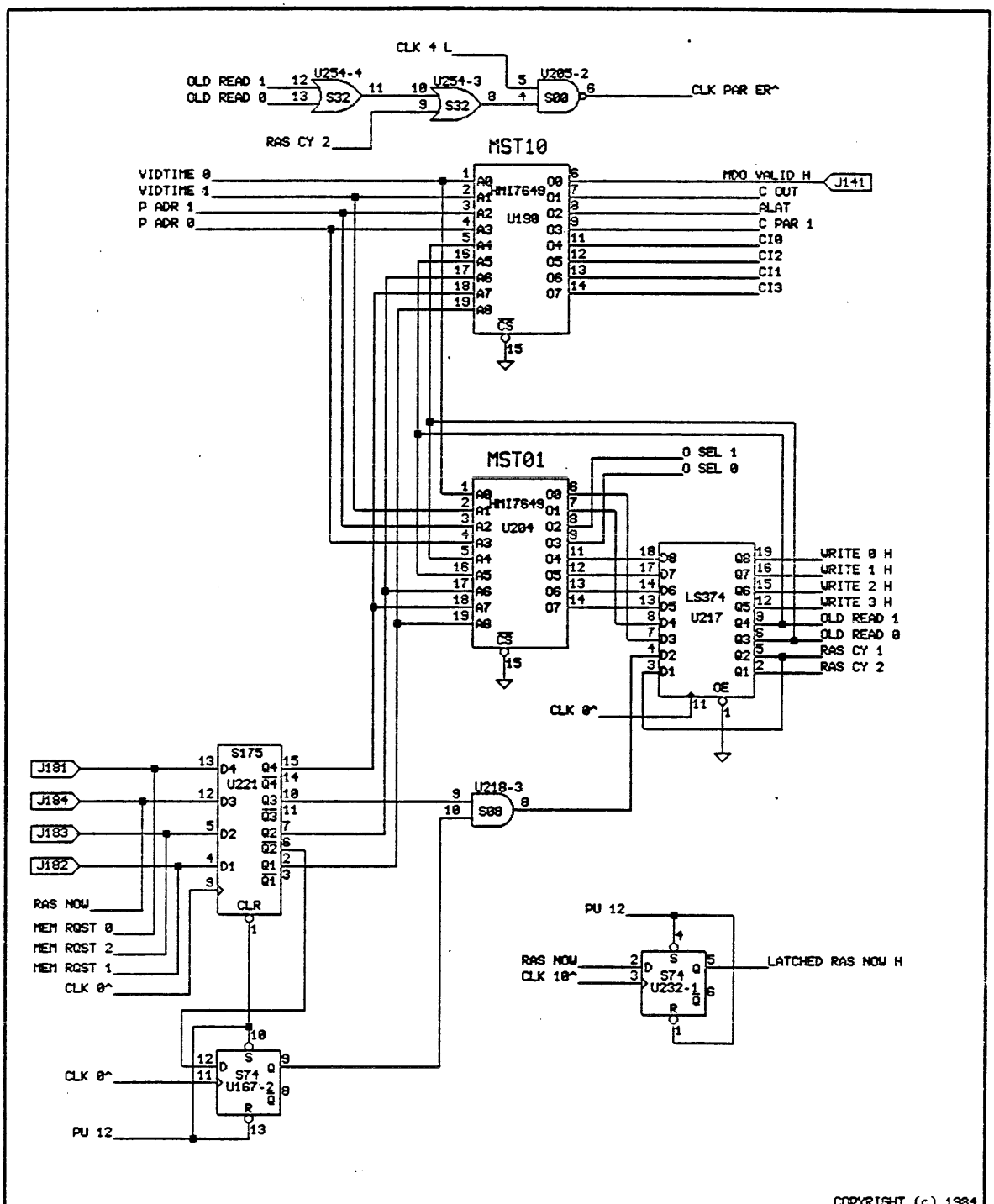
LMEM23

PERQ

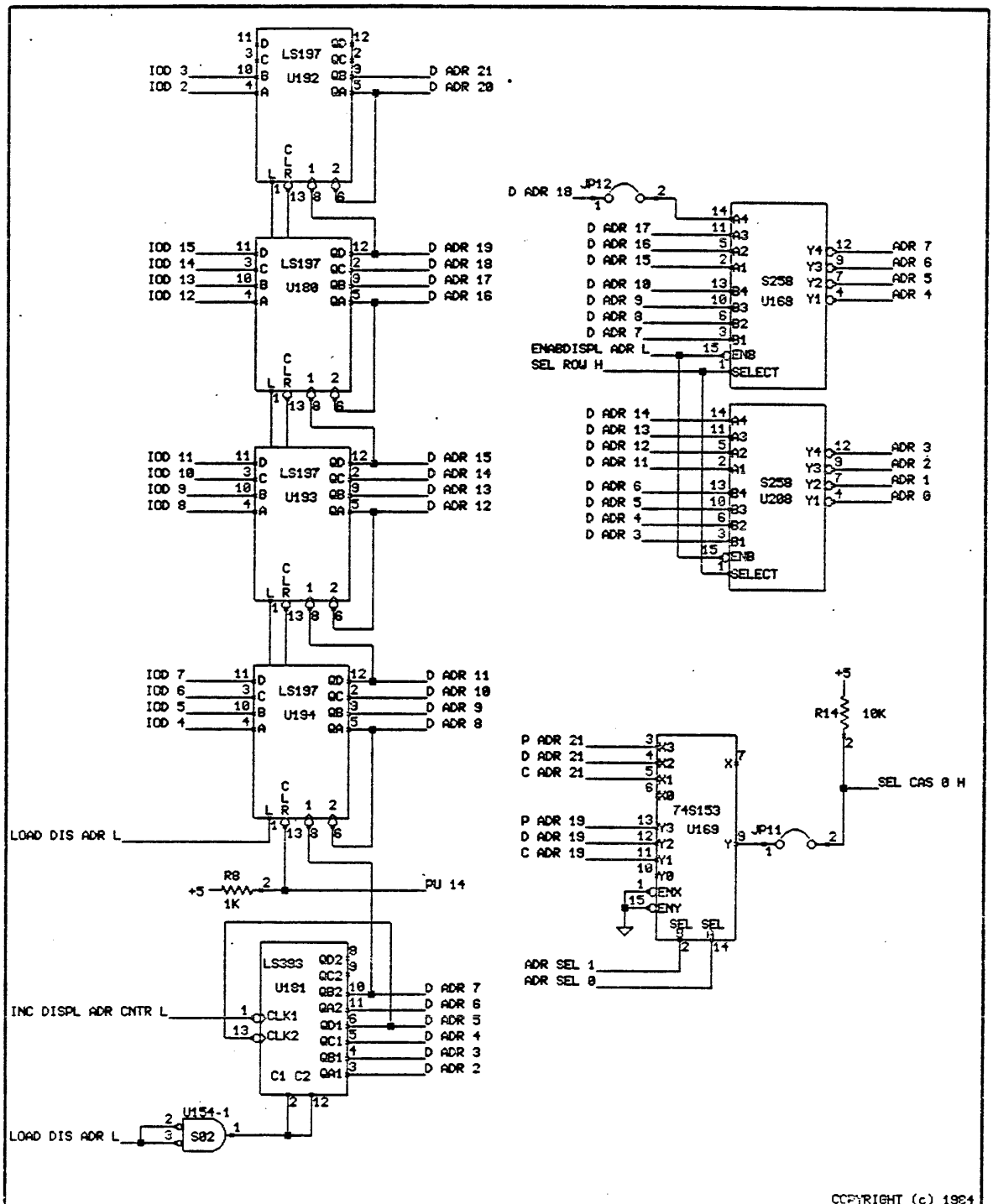
DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	27 APR 83	WCH	A	11	0197-	02	Q
UPDATED	14 Jan 85	STECK	PROJ : 2 MEGABYE LANDSCAPE/MEMORY			PAGE 28 OF 34	



TITLE	HORIZONTAL STATE					LMEM29	
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	09 May 83	UCH	A	11	0197-	02	Q
	UPDATED	14 Jan 85	STECK	PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 29 OF 34	



TITLE	MEMORY STATE						LMEM30
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	27 Oct 83	WCH	A	11	0197-	02	L
	UPDATED	25 June 84	STECK	PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 30 OF 34	



TITLE: DISPLAY ADDRESS COUNTERS AND MUX

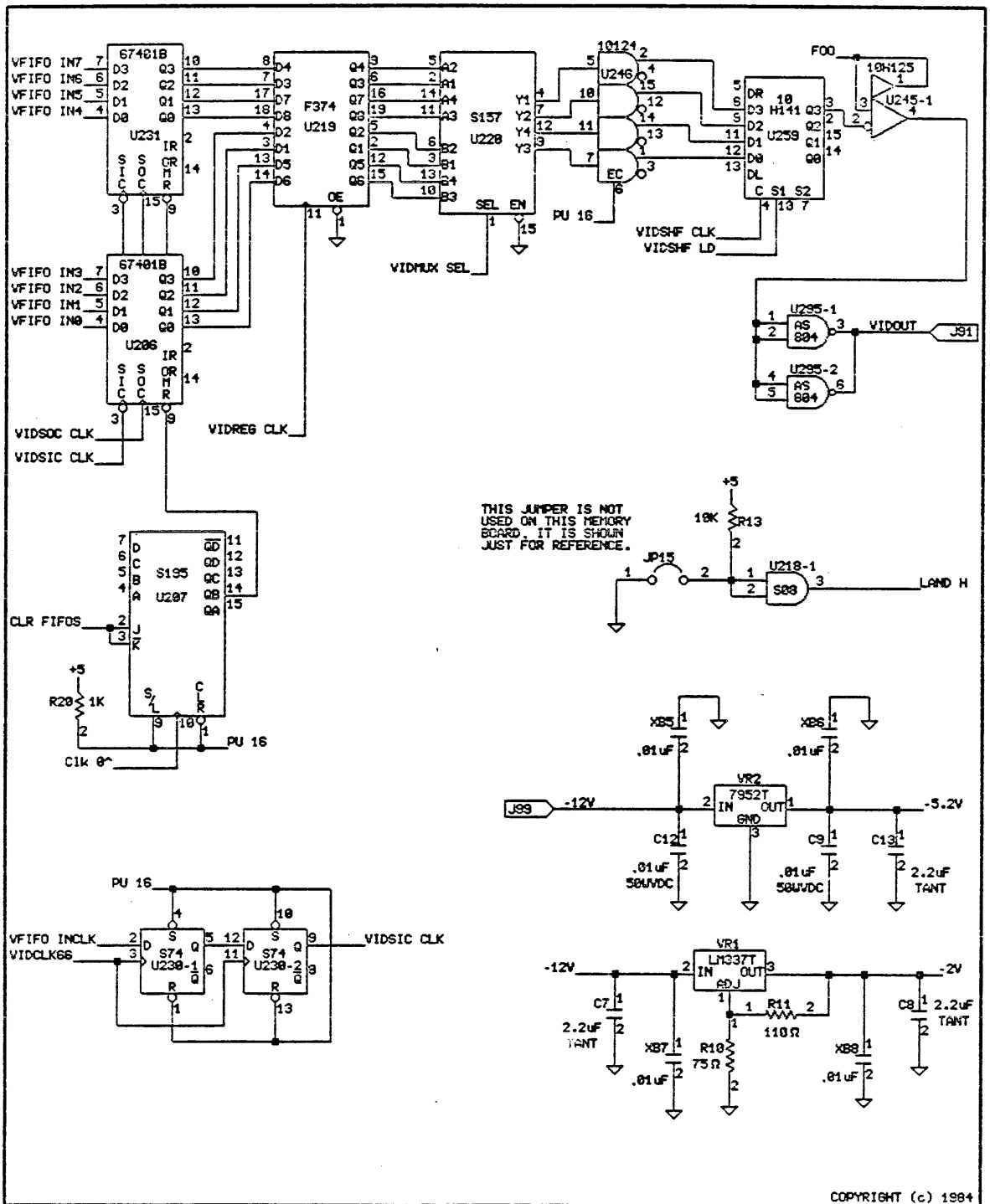
LMEM31

PERQ

DESIGNED	BILL HULLEY	
DRAWN	19 Apr 83	WCH
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0197-	02	Q

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



TITLE: VIDEO OUT DATA PATH - -5.2V and -2V REGULATORS

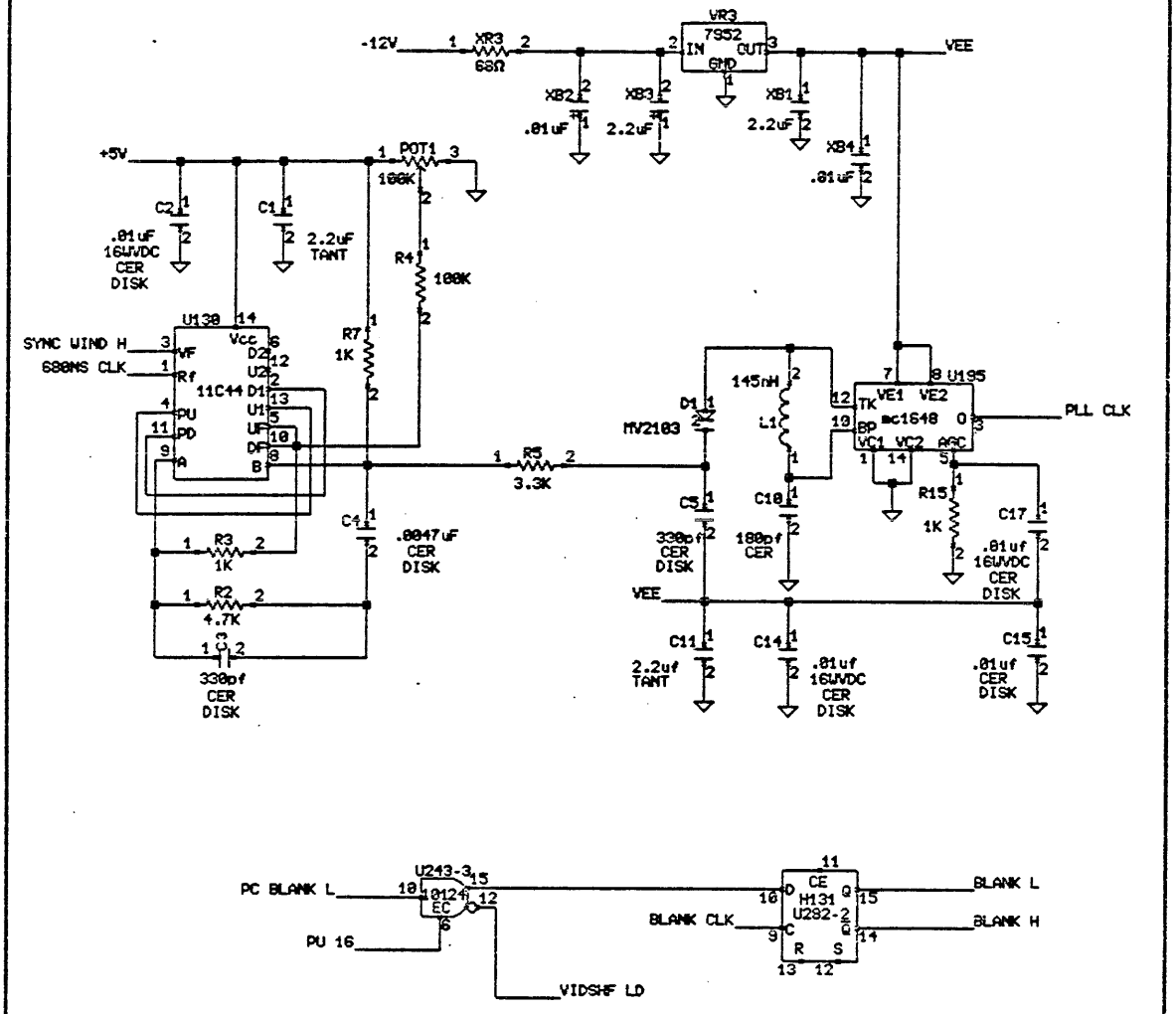
LMEM32

PERQ

DESIGNED	BILL HULLEY	
DRAWN	26 Apr 83	SSokse
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	WAR	REV
A	11	8197-	02	Q

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



TITLE: PHASE LOCK LOOP - VCO AND PHASE COMPARATOR

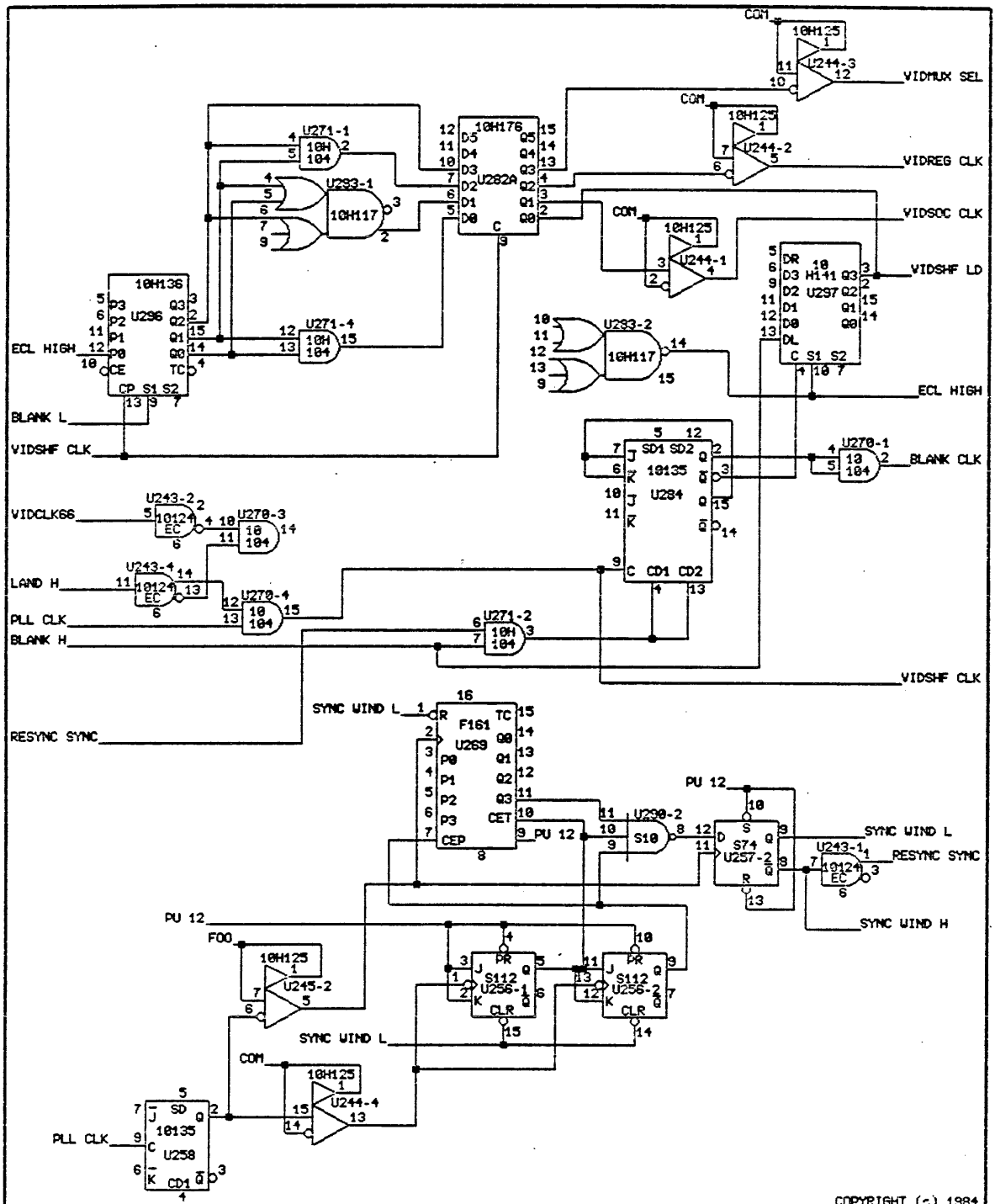
LMEM33

PERQ

DESIGNED	BILL HULLEY	
DRAWN	25 Apr 83	SBokse
UPDATED	17 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	8197-	02	T

PROJ : 2 MEGABYTE LANDSCAPE/MEMORY



THIS DOCUMENT IS NOT TO BE REPRODUCED IN ANY FORM OR TRANSMITTED IN WHOLE OR IN PART, WITHOUT PRIOR WRITTEN AUTHORIZATION OF PERQ SYSTEMS CORPORATION.			TITLE	VIDEO CLOCK SYNC AND VIDEO OUT CONTROL			LME134
PERQ	DESIGNED	BILL HULLEY	SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	25 Apr 83 SBokse	A	11	0197-	02	U
	UPDATED	17 Jan 85 STECK	PROJ :	2 MEGABYTE LANDSCAPE/MEMORY		PAGE 34 OF 34	

Part/Page Cross Reference 17 Jan 85 15:39:07

Using Files: LMEM01.WL to LMEM34.WL

PART	TYPE	Pages Numbers
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U2	MEMCHIP	18
U3	MEMCHIP	19
U4	MEMCHIP	20
U5	MEMCHIP	21
U6	MEMCHIP	22
U7	MEMCHIP	23
U8	MEMCHIP	24
U9	74S374	3
U10	74S374	2
U11	74S74	1 1
U12	74S51	4 1
U13	74S280	1
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W3 WRITE A L.........23 23 13
W3 WRITE B L.........24 24 13
WRITE 0 H............30 16
WRITE 1 H............30 15
WRITE 2 H............30 14
WRITE 3 H............30 13
WRITE BAD PARITY.....25  1
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This Run Was made using the following files:

110197.PART
1mem34.WL
1mem33.WL
1mem32.WL
1mem31.WL
1mem30.WL
1mem29.WL
1mem28.WL
1mem27.WL
1mem26.WL
1mem25.WL
1mem24.WL
1mem23.WL
1mem22.WL
1mem21.WL
1mem20.WL
1mem19.WL
1mem18.WL
1mem17.WL
1mem16.WL
1mem15.WL
1mem14.WL
1mem13.WL
1mem12.WL
1mem11.WL
1mem10.WL
1mem09.WL
1mem08.WL
1mem07.WL
1mem06.WL
1mem05.WL
1mem04.WL
1mem03.WL
1mem02.WL
1mem01.WL

Number Of Nets = 795
Begin Wirelist

1: U13-1 U22-1 U35-1 U10-1 U36-1 U26-1
1: U39-1 U61-1 U23-1 U48-1 U9-1 U102-15
1: U51-1 U87-15 U87-1 U255-6 U280-6
1: U281-6 U268-6 U279-6 U267-6 U294-6
1: U293-6 U291-17 U291-5 U291-8 U266-8
1: U278-8 U291-10 U266-10 U278-10 U292-1
1: U253-1 U265-1 U252-9 U277-9 U115-7
1: U90-1 U64-1 U77-1 U142-1 U88-15 U88-1
1: U229-19 U228-19 U225-19 U229-1 U227-19
1: U225-1 U235-19 U235-1 U237-19 U237-1

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 1: U234-19 U224-1 U234-1 U223-1 U236-19
 1: U236-1 U240-19 U240-1 U223-19 U224-19
 1: U239-19 U227-1 U222-19 U226-19 U226-1
 1: U222-1 U228-1 U239-1 U155-1 U116-1
 1: XD2-2 U102-1 U166-16 U165-16 U178-1
 1: U152-1 U165-15 U166-15 U217-1 U190-15
 1: U204-15 U169-1 U169-15 R10-2 XB5-1
 1: XB6-1 C12-2 XB7-2 XB8-2 C7-2 C8-2
 1: C13-2 U219-1 U220-15 C9-2 VR2-3 XB2-1
 1: C10-2 C14-2 C1-2 C2-2 U195-1 R15-2
 1: POT1-3 C15-2 C11-2 XB4-2 XB1-2 XB3-1
 1: VR3-1 U195-14                        .!GND

 2: U244-3 282A-3                        .%282A-3

 3: U251-6 290A-11                       .%290A-11

 4: U195-10 L1-1 C10-1                   .%C10-1

 5: C4-2 R2-2 C3-2                       .%C3-2

 6: U195-12 L1-2 D1-1                    .%D1-1

 7: R5-2 C5-1 D1-2                       .%D1-2

 8: U88-7 JP16-1                         .%JP16-1

 9: U141-14 JP8-2                        .%JP8-2

10: R11-1 VR1-1 R10-1                    .%R10-1

11: U218-2 R13-2                         .%R13-2

12: POT1-2 R4-1                          .%R4-1

13: U130-8 C4-1 R7-2 R5-1                .%R5-1

14: J79-1 THM1-1                         .%THM1-1

15: U205-1 U101-15                       .%U101-15

16: U116-5 U101-4                        .%U101-4

17: U127-15 U101-7                       .%U101-7

18: U103-5 U103-6                        .%U103-6

19: U129-12 U103-8                       .%U103-8

20: U24-8 U11-11                         .%U11-11

21: U24-6 U11-3                          .%U11-3
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22: U154-4 U114-2 U114-12	.%U114-12
23: U127-5 U116-12	.%U116-12
24: U127-3 U116-15	.%U116-15
25: U127-4 U116-16	.%U116-16
26: U101-6 U116-19	.%U116-19
27: U101-5 U116-2	.%U116-2
28: U101-3 U116-6	.%U116-6
29: U127-6 U116-9	.%U116-9
30: U25-5 U12-13	.%U12-13
31: U11-2 U37-12 U37-2 U11-12 U12-8	.%U12-8
32: U129-5 U129-6	.%U129-6
33: U12-10 U13-5	.%U13-5
34: U12-1 U13-6	.%U13-6
35: R4-2 R3-2 U130-5 U130-10	.%U130-10
36: U130-4 U130-13	.%U130-13
37: U130-11 U130-2	.%U130-2
38: R3-1 C3-1 R2-1 U130-9	.%U130-9
39: U205-8 U143-6	.%U143-6
40: U166-14 U152-13	.%U152-13
41: U166-13 U152-14	.%U152-14
42: U166-12 U152-17	.%U152-17
43: U166-11 U152-18	.%U152-18
44: U166-9 U152-3	.%U152-3
45: U166-8 U152-4	.%U152-4
46: U166-7 U152-7	.%U152-7
47: U166-6 U152-8	.%U152-8

48: U166-5 U165-5 U153-11 .%U153-11

49: U166-4 U165-4 U153-12 .%U153-12

50: U166-3 U165-3 U153-13 .%U153-13

51: U139-11 U154-10 .%U154-10

52: U140-3 U155-12 .%U155-12

53: U140-14 U155-15 .%U155-15

54: U140-13 U155-16 .%U155-16

55: U140-11 U155-19 .%U155-19

56: U140-6 U155-2 .%U155-2

57: U140-4 U155-9 .%U155-9

58: U166-17 U179-14 U165-17 .%U165-17

59: U166-18 U179-13 U165-18 .%U165-18

60: U191-12 U165-7 .%U165-7

61: U191-9 U165-9 .%U165-9

62: U221-6 U167-12 .%U167-12

63: U140-2 U167-4 .%U167-4

64: U218-10 U167-9 .%U167-9

65: JP12-2 U168-14 .%U168-14

66: JP11-1 U169-9 .%U169-9

67: U165-12 U178-13 .%U178-13

68: U165-14 U178-14 .%U178-14

69: U191-8 U178-17 .%U178-17

70: U191-3 U178-3 .%U178-3

71: U191-11 U178-4 .%U178-4

72: U165-13 U178-7 .%U178-7

73: U165-11 U178-8 .%U178-8

74: U153-15 U179-10	.%U179-10
75: U154-1 U181-12 U181-2	.%U181-2
76: U165-6 U191-1	.%U191-1
77: U165-8 U191-4	.%U191-4
78: C17-1 R15-1 U195-5	.%U195-5
79: U217-18 U204-11	.%U204-11
80: U217-17 U204-12	.%U204-12
81: U217-14 U204-13	.%U204-13
82: U217-13 U204-14	.%U204-14
83: U217-7 U204-6	.%U204-6
84: U205-9 U139-8 U205-10	.%U205-10
85: U127-11 U205-2	.%U205-2
86: U167-2 U248-13 U205-3	.%U205-3
87: U254-8 U205-4	.%U205-4
88: U204-7 U217-8	.%U217-8
89: U217-4 U218-8	.%U218-8
90: U206-12 U219-13	.%U219-13
91: U206-13 U219-14	.%U219-14
92: U220-10 U219-15	.%U219-15
93: U206-11 U219-3	.%U219-3
94: U206-10 U219-4	.%U219-4
95: U219-19 U220-11	.%U220-11
96: U246-11 U220-12	.%U220-12
97: U219-12 U220-13	.%U220-13
98: U219-16 U220-14	.%U220-14
99: U219-6 U220-2	.%U220-2

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100: U219-2 U220-3                          .%U220-3
101: U246-5 U220-4                          .%U220-4
102: U219-9 U220-5                          .%U220-5
103: U219-5 U220-6                          .%U220-6
104: U218-9 U221-10                         .%U221-10
105: U204-18 U190-18 U221-15                .%U221-15
106: U204-19 U190-19 U221-2                 .%U221-2
107: U204-17 U190-17 U221-7                 .%U221-7
108: U230-5 U230-12                         .%U230-12
109: U219-8 U231-10                         .%U231-10
110: U219-7 U231-11                         .%U231-11
111: U219-17 U231-12                        .%U231-12
112: U219-18 U231-13                        .%U231-13
113: U206-9 U207-14 U231-9                  .%U231-9
114: U233-6 U241-13                         .%U241-13
115: U178-12 U242-12                        .%U242-12
116: U191-6 U242-2                          .%U242-2
117: U270-12 U243-14                        .%U243-14
118: U282-10 U243-15                        .%U243-15
119: 282A-13 U244-10                        .%U244-10
120: U256-13 U256-1 U244-13                 .%U244-13
121: U245-6 U258-2 U244-15                  .%U244-15
122: 282A-4 U244-6                          .%U244-6
123: U259-3 U245-2                          .%U245-2
124: U295-1 U295-2 U295-5 U295-4 U245-4
124:                                        .%U245-4
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125: U259-12 U246-1	.%U246-1
126: U220-7 U246-10	.%U246-10
127: U220-9 U246-7	.%U246-7
128: U233-8 U247-1	.%U247-1
129: U249-3 U247-3	.%U247-3
130: U251-3 U247-6	.%U247-6
131: 290A-9 U249-6	.%U249-6
132: U12-9 U25-6	.%U25-6
133: U265-13 U252-12	.%U252-12
134: U265-14 U252-13	.%U252-13
135: U265-3 U252-14	.%U252-14
136: U265-4 U252-15	.%U252-15
137: U254-10 U254-11	.%U254-11
138: U246-14 U259-11	.%U259-11
139: U246-2 U259-6	.%U259-6
140: U246-15 U259-9	.%U259-9
141: U260-11 U260-10	.%U260-10
142: U262-7 U285-10 U261-12	.%U261-12
143: U286-4 U261-6	.%U261-6
144: U286-3 U262-6	.%U262-6
145: U261-11 U262-9	.%U262-9
146: U238-11 U264-11	.%U264-11
147: U238-8 U264-12	.%U264-12
148: U260-9 U264-7	.%U264-7
149: U290-11 U269-11	.%U269-11
150: U245-5 U257-11 U269-2	.%U269-2

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151: U243-4 U270-10                          .%U270-10

152: U243-13 U270-11                         .%U270-11

153: U284-2 U270-4 U270-5                    .%U270-5

154: 282A-5 U271-15                          .%U271-15

155: 282A-7 U271-2                           .%U271-2

156: U283-6 282A-10 U296-2 U271-4            .%U271-4

157: U296-15 U271-12 U283-4 U271-5           .%U271-5

158: U249-2 U251-2 U273-2 U251-7 U273-1
158:                                         .%U273-1

159: U251-12 U273-8                          .%U273-8

160: U274-9 U262-11 U274-12                  .%U274-12

161: U286-11 U275-6                          .%U275-6

162: U273-11 U276-2 U276-12                  .%U276-12

163: U285-12 U276-3                          .%U276-3

164: 290A-1 U276-6                           .%U276-6

165: 290A-3 U276-7                           .%U276-7

166: U265-18 U277-11                         .%U277-11

167: U265-17 U277-12                         .%U277-12

168: U265-8 U277-13                          .%U277-13

169: U265-7 U277-14                          .%U277-14

170: U252-19 U252-1 U254-3 U277-1 U277-19
170:                                         .%U277-19

171: 282A-6 U283-2                           .%U283-2

172: U296-14 U271-13 U283-5                  .%U283-5

173: U297-4 U284-3                           .%U284-3

174: U271-3 U284-13 U284-4                   .%U234-4

175: U284-15 U284-6 U284-7                   .%U284-7
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 176: U262-12 U274-7 U285-11                .%U285-11

 177: U285-3 U238-3 U285-13                 .%U285-13

 178: U276-11 U285-6                        .%U285-6

 179: U261-7 U285-9                         .%U285-9

 180: U263-6 U286-12                        .%U286-12

 181: U274-6 U286-1 U286-2                  .%U286-2

 182: U250-6 U286-5                         .%U286-5

 183: U250-7 U286-6                         .%U286-6

 184: U288-6 U287-1 U287-2                  .%U287-2

 185: U285-5 U287-6                         .%U287-6

 186: U152-12 U287-9                        .%U287-9

 187: XC1-1 U288-14 XC2-1 XC3-1 U288-3
 187:                                       .%U288-3
*** Run has multiple outputs

 188: U288-16 U289-8 U288-2 U288-5          .%U288-5

 189: U256-9 U290-9 U269-7 U269-10 U256-11
 189: U256-5 U256-12 U290-10                .%U290-10
*** Run has multiple outputs

 190: U257-12 U290-8                        .%U290-8

 191: U24-11 U37-11                         .%U37-11

 192: U24-3 U37-3                           .%U37-3

 193: U38-8 U248-9 U139-3 U38-10            .%U38-10

 194: U87-4 U73-15                          .%U73-15

 195: U87-3 U73-2                           .%U73-2

 196: U87-6 U73-7                           .%U73-7

 197: U64-11 U90-11 U205-11 U77-11          .%U77-11

 198: JP2-2 U86-14                          .%U86-14

 199: U73-10 U87-5                          .%U87-5
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200: U51-4 U87-7                          .%U87-7

201: XB2-2 VR3-2 XR3-2 XB3-2              .%XB3-2

202: XL1-1 XD1-1                          .%XD1-1

203: XD2-1 XD1-2                          .%XD1-2

204: R7-1 POT1-1 U130-14 C1-1 C2-1        .+5V

205: VR1-2 VR2-2 J99-1 C12-1 XB5-2 C7-1
205: XB7-1 XR3-1                          .-12V

206: R11-2 VR1-3 C8-1 XB8-1               .-2V

207: C9-1 VR2-1 C13-1 XB6-2               .-5.2V

208: U268-15 U281-15 U280-15 U255-15 U293-15
208: U279-15 U267-15 U294-15 U287-8       .166$ L

209: U257-6 U130-1                        .680NS CLK

210: U254-4 U292-11 U253-11 U254-2 U248-12
210: U101-2 U127-2 U167-3 R17-1 U260-8
210: U242-11                              .80NS CLK0^

211: U99-4 U125-4 U229-6 U228-11 U234-4
211: U234-2 U223-4 U223-2 U222-17 U222-15
211: U208-4                               .ADR 0

212: U99-7 U125-7 U229-4 U228-8 U235-17
212: U235-15 U236-15 U236-13 U226-17 U239-17
212: U208-7                               .ADR 1

213: U99-9 U125-9 U228-6 U229-2 U235-11
213: U235-13 U236-8 U236-11 U239-15 U226-15
213: U208-9                               .ADR 2

214: U99-12 U125-12 U228-2 U227-17 U235-6
214: U235-8 U236-6 U236-17 U239-13 U226-13
214: U208-12                              .ADR 3

215: U86-4 U141-4 U227-15 U229-17 U235-4
215: U235-2 U236-2 U236-4 U226-11 U239-11
215: U168-4                               .ADR 4

216: U86-7 U141-7 U229-15 U227-13 U237-15
216: U237-17 U240-17 U240-15 U239-8 U226-8
216: U168-7                               .ADR 5

217: U86-9 U141-9 U229-13 U227-11 U237-11
217: U237-13 U240-8 U240-13 U239-6 U226-6
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217: U168-9                                .ADR 6

218: U86-12 U141-12 U229-11 U227-8 U237-6
218: U237-8 U240-4 U240-11 U239-4 U226-4
218: U168-12                               .ADR 7

219: U115-6 U227-6 U229-8 U237-4 U237-2
219: U240-6 U240-2 U226-2 U239-2           .ADR 8

220: U115-10 U88-14 U102-2 U152-15 U169-14
220:                                       .ADR SEL 0

221: U115-9 U88-2 U102-3 U152-16 U169-2
221:                                       .ADR SEL 1

222: U205-13 U190-8                        .ALAT

223: R25-2 JP16-2 U287-4 U287-5 U285-1
223:                                       .BANK H

224: U282-9 U270-2                         .BLANK CLK

225: U282-14 U271-7 U297-13                .BLANK H

226: U282-15 U296-9                        .BLANK L

227: U22-17 U26-3 U10-17 U23-4 U9-4        .BUF MDI 00

228: U36-17 U39-3 U35-17 U48-17 U61-17
228:                                       .BUF MDI 01

229: U22-13 U26-5 U10-13 U23-8 U9-8        .BUF MDI 02

230: U36-13 U39-5 U35-13 U48-13 U61-13
230:                                       .BUF MDI 03

231: U22-7 U26-7 U10-7 U23-14 U9-14        .BUF MDI 04

232: U36-7 U39-7 U35-7 U48-7 U61-7         .BUF MDI 05

233: U22-3 U26-9 U10-3 U23-18 U9-18        .BUF MDI 06

234: U36-3 U39-9 U35-3 U61-3 U48-3         .BUF MDI 07

235: U22-18 U26-18 U10-18 U9-3 U23-3       .BUF MDI 08

236: U36-18 U39-18 U35-18 U48-18 U61-18
236:                                       .BUF MDI 09

237: U22-14 U26-16 U10-14 U23-7 U9-7       .BUF MDI 10

238: U36-14 U39-16 U35-14 U48-14 U61-14
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238:                                    .BUF MDI 11
239: U22-8 U26-14 U10-8 U23-13 U9-13    .BUF MDI 12
240: U36-8 U39-14 U35-8 U48-8 U61-8     .BUF MDI 13
241: U22-4 U26-12 U10-4 U23-17 U9-17    .BUF MDI 14
242: U36-4 U39-12 U35-4 U48-4 U61-4     .BUF MDI 15
243: U128-2 U141-13                     .C ADR 10
244: U128-12 U125-2                     .C ADR 11
245: U142-23 U125-5                     .C ADR 12
246: U142-22 U125-11                    .C ADR 13
247: U142-21 U125-14                    .C ADR 14
248: U142-20 U141-2                     .C ADR 15
249: U142-19 U141-5                     .C ADR 16
250: U142-18 U141-11                    .C ADR 17
251: U142-17 JP8-1                      .C ADR 18
252: U115-2 U142-16 U169-11             .C ADR 19
253: U114-3 U88-5                       .C ADR 2
254: U142-15                            .C ADR 20
*** Only one pin in net
255: U142-14 U169-5                     .C ADR 21
256: U114-4 U125-3                      .C ADR 3
257: U114-5 U125-6                      .C ADR 4
258: U114-6 U114-13 U125-10             .C ADR 5
259: U114-11 U125-13                    .C ADR 6
260: U114-10 U141-3 U128-8              .C ADR 7
261: U128-5 U141-6 U128-6               .C ADR 8
262: U128-9 U141-10                     .C ADR 9
263: U154-12 U190-7                     .C OUT
```

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264: U139-4 U190-9                          .C PAR 1

265: U225-8 U225-6 U234-15 U234-17 U223-15
265: U223-17 U222-11 U222-13 290A-8         .CAS 0 H

266: U225-17 U225-15 U224-6 U224-8 U224-15
266: U224-17 U227-2 U227-4 290A-10          .CAS 1 H

267: U75-1 U190-11                          .CI0

268: U75-12 U190-13                         .CI1

269: U75-4 U190-12                          .CI2

270: U75-9 U190-14                          .CI3

271: U24-13 U24-12 U75-3 U22-11 U35-11
271:                                        .CIX 0

272: U24-2 U24-1 U75-11 U10-11 U36-11
272:                                        .CIX 1

273: U24-10 U24-9 U75-6 U9-11 U48-11        .CIX 2

274: U24-5 U24-4 U61-11 U23-11 U75-8        .CIX 3

275: U75-2 U75-13 U75-5 U75-10 U248-3
275:                                        .CLK 0 L

276: U143-5 U290-6 U178-11 U233-5 U152-11
276: U179-2 U153-2 U257-3 U221-9 U167-11
276: U217-11 U207-10                        .CLK 0^

277: U205-12 U260-4 U260-5 U260-1 U264-5
277: U260-2                                 .CLK 10 L

278: U154-11 U264-6 U242-3 U232-3           .CLK 10^

279: U139-5 U287-11 U290-3 U248-2 U248-1
279: U290-4 U290-5 U287-10 U205-5           .CLK 4 L

280: U287-12 U260-6 J176-1 U287-13 U260-3
280:                                        .CLK 7
*** Run has multiple outputs

281: U254-1 U178-6                          .CLK C FIFO EN L

282: U154-13 U73-9 U74-11 U50-11 U49-11
282: U62-11 U126-11 U113-11 U100-11 U112-11
282:                                        .CLK OUT X
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283: U139-6 U63-11 U76-11 U89-11          .CLK P ADR

284: U38-11 U205-6                        .CLK PAR ER^

285: U254-5 U242-9                        .CLK VFIFO ENL

286: XC2-2 XC3-2 U274-1 U262-1 U261-1
286: U262-13 U261-13 U274-13 XC1-2 XL1-2
286: U275-1 U263-13 U275-13 U263-1 U250-1
286: U250-13 U276-1 U251-13 U276-13 U251-1
286: U264-13 U264-1 U249-1                .CLK66

287: U252-18 U277-18 U178-15 U207-3 U207-2
287:                                      .CLR FIFOS

288: U244-14 U244-11 U244-1 U244-7 U244-2
288:                                      .COM

289: U143-10 U156-1 U156-19               .CRT SIGS ENB

290: U101-10 U127-7 U178-9                .CUR CNTR ENAB H

291: U291-6 U265-5                        .CUR DATA 0

292: U291-7 U265-6                        .CUR DATA 1

293: U266-5 U265-2                        .CUR DATA 2

294: U266-6 U265-9                        .CUR DATA 3

295: U266-7 U265-15                       .CUR DATA 4

296: U278-5 U265-16                       .CUR DATA 5

297: U278-6 U265-12                       .CUR DATA 6

298: U278-7 U265-19                       .CUR DATA 7

299: U278-1 U266-1 U291-1 U167-6          .CUR ENB H

300: U277-16 U265-11 U252-16 U248-11      .CUR FIFO UNLD

301: U168-13 U194-2                       .D ADR 10

302: U208-2 U194-12 U193-8                .D ADR 11

303: U208-5 U193-5 U193-6                 .D ADR 12

304: U208-11 U193-9                       .D ADR 13

305: U208-14 U193-2                       .D ADR 14
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306: U168-2 U193-12 U180-8 .D ADR 15

307: U168-5 U180-5 U180-6 .D ADR 16

308: U168-11 U180-9 .D ADR 17

309: JP12-1 U180-2 .D ADR 18

310: U115-15 U180-12 U169-12 U192-8 .D ADR 19

311: U88-4 U181-3 .D ADR 2

312: U192-5 U192-6 .D ADR 20

313: U192-9 U169-4 .D ADR 21

314: U208-3 U181-4 .D ADR 3

315: U208-6 U181-5 .D ADR 4

316: U208-10 U181-6 U181-13 .D ADR 5

317: U208-13 U181-11 .D ADR 6

318: U168-3 U181-10 U194-8 .D ADR 7

319: U168-6 U194-5 U194-6 .D ADR 8

320: U168-10 U194-9 .D ADR 9

321: U280-7 U255-7 U281-7 U268-7 U279-7
321: U267-7 U294-7 U293-7 R17-2 .DERUNG 80NS CLK

322: U274-11 U286-8 .DIV SYNC

323: U283-14 U296-12 U297-10 .ECL HIGH

324: U125-15 U141-15 U102-5 .EN AB CUR ADR L

325: U86-15 U99-15 U102-7 .ENAB PROC ADR L

326: U102-6 U208-15 U168-15 .ENABDISPL ADR L

327: U12-4 U51-5 .EVEN A

328: U12-3 U52-5 .EVEN B

329: U245-3 U245-7 U245-1 .FOO

330: U238-1 U242-5 .H MEM REQ H

331: U152-2 U153-1 U179-1 .H STATE CLR

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332: U156-2 U152-5 J189-1                    .H SYNC

333: J71-1 U143-4                            .I/O B ENAB L

334: U114-1 U152-9                           .INC CUR ADR CNTR L

335: U178-16 U181-1                          .INC DISPL ADR CNTR

336: U140-9 U129-8 U152-19                   .INC LINE CNTR L

337: U248-4 U155-6 U248-10                   .INTR EN L

338: J69-1 U143-1                            .IOA 0

339: J169-1 U143-2                           .IOA 1

340: J68-1 U143-3                            .IOA 2

341: J168-1 U154-8                           .IOA 3

342: J67-1 U154-9                            .IOA 4

343: J167-1 U139-10                          .IOA 5

344: J66-1 U139-9                            .IOA 6

345: U116-14 U129-4 U156-18 U63-15 J64-1
345: U89-12                                  .IOD 0

346: U116-17 U129-10 U156-16 U63-16 J164-1
346: U89-15                                  .IOD 1

347: U142-4 U155-14 U76-15 J58-1 U193-3
347:                                         .IOD 10

348: U142-5 U155-7 U76-6 J158-1 U193-11
348:                                         .IOD 11

349: U142-6 U155-4 U76-5 J57-1 U180-4
349:                                         .IOD 12

350: U142-7 U155-3 U76-2 J157-1 U180-10
350:                                         .IOD 13

351: U142-8 U155-18 U76-19 J56-1 U180-3
351:                                         .IOD 14

352: U142-9 U155-17 U76-16 J156-1 U180-11
352:                                         .IOD 15

353: U142-10 U116-13 U129-3 U156-14 U63-12
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353: J63-1 U89-16 U192-4                    .IOD 2

354: U142-11 U116-8 U129-11 U63-9 J163-1
354: U89-19 U192-10                         .IOD 3

355: U128-4 U116-7 U103-4 U156-3 U63-6
355: J62-1 U194-4                           .IOD 4

356: U128-10 U116-4 U103-10 U63-5 J162-1
356: U194-10                                .IOD 5

357: U128-3 U116-3 U103-3 U63-2 J61-1
357: U194-3                                 .IOD 6

358: U128-11 U116-18 U156-5 U63-19 J161-1
358: U194-11                                .IOD 7

359: U142-2 U155-13 U76-12 J59-1 U193-4
359:                                        .IOD 8

360: U142-3 U155-8 U76-9 J159-1 U193-10
360:                                        .IOD 9

361: U156-15 U166-19 U165-19 U218-3 U243-11
361:                                        .LAND H

362: U238-2 U232-5                          .LATCHED RAS NOW H

363: U154-6 U154-5 U128-1 U142-13 U143-13
363:                                        .LD CUR ADR CNT L

364: U127-9 U101-9 U152-6                   .LD CURX CNTR

365: J84-1 U248-6                           .LINE CNT INT L

366: U248-5 U103-12 U156-17                 .LINE CNT OVERFLOW L

367: U116-11 U143-11                        .LOAD CURSOR X POS

368: U143-14 U154-3 U154-2 U194-1 U193-1
368: U180-1 U192-1                          .LOAD DIS ADR L

369: U129-1 U103-1 U143-15                  .LOAD LINE CNTR L

370: U155-11 U143-12                        .LOAD VIDEO STATE

371: U156-6 J186-1 R21-2                    .LOOPTHRU

372: U90-7 J37-1                            .MADR 0

373: U90-8 J137-1                           .MADR 1
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374: U64-13 J31-1 .MADR 10

375: U64-14 J131-1 .MADR 11

376: U64-17 J29-1 .MADR 12

377: U64-18 J129-1 .MADR 13

378: U77-3 J28-1 .MADR 14

379: U77-4 J128-1 .MADR 15

380: U77-7 J27-1 .MADR 16

381: U77-8 J127-1 .MADR 17

382: U77-13 J26-1 .MADR 18

383: U77-14 J126-1 .MADR 19

384: U90-13 J36-1 .MADR 2

385: U77-17 J38-1 .MADR 20

386: U77-18 J138-1 .MADR 21

387: U90-14 J136-1 .MADR 3

388: U90-17 J34-1 .MADR 4

389: U90-18 J134-1 .MADR 5

390: U64-3 J33-1 .MADR 6

391: U64-4 J133-1 .MADR 7

392: U64-7 J32-1 .MADR 8

393: U64-8 J132-1 .MADR 9

394: U278-4 U291-4 U266-4 U140-7 .MAP 0

395: U278-3 U291-3 U266-3 U140-10 .MAP 1

396: U278-2 U291-2 U266-2 U140-12 .MAP 2

397: U291-12 U292-3 .MAP OUT 0

398: U291-11 U292-4 .MAP OUT 1

399: U266-13 U292-7 .MAP OUT 2

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400: U266-12 U292-8                          .MAP OUT 3

401: U266-11 U292-13                         .MAP OUT 4

402: U278-13 U292-14                         .MAP OUT 5

403: U278-12 U292-17                         .MAP OUT 6

404: U278-11 U292-18                         .MAP OUT 7

405: U13-13 J14-1 U26-17                     .MDI 00

406: U25-4 J114-1 U39-17                     .MDI 01

407: U25-8 J13-1 U26-15                      .MDI 02

408: U25-11 J113-1 U39-15                    .MDI 03

409: U13-12 J12-1 U26-13                     .MDI 04

410: U13-2 J112-1 U39-13                     .MDI 05

411: U13-11 J11-1 U26-11                     .MDI 06

412: U25-2 J111-1 U39-11                     .MDI 07

413: U13-10 J9-1 U26-2                       .MDI 08

414: U25-10 J109-1 U39-2                     .MDI 09

415: U25-9 J8-1 U26-4                        .MDI 10

416: U13-4 J108-1 U39-4                      .MDI 11

417: U13-9 J7-1 U26-6                        .MDI 12

418: U25-12 J107-1 U39-6                     .MDI 13

419: U13-8 J6-1 U26-8                        .MDI 14

420: U25-13 J106-1 U39-8                     .MDI 15

421: U52-2 U50-2 U49-2 U113-2 U100-2 J24-1
421:                                         .MDO 0

422: U51-2 U74-2 U62-2 U126-2 U112-2 J124-1
422:                                         .MDO 1

423: U52-10 U50-9 U49-9 U113-9 U100-9
423: J18-1                                   .MDO 10

424: U51-10 U74-9 U62-9 U126-9 U112-9
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424: J118-1                                  .MDO 11

425: U52-9 U50-16 U49-16 U113-16 U100-16
425: J17-1                                   .MDO 12

426: U51-9 U74-16 U62-16 U126-16 U112-16
426: J117-1                                  .MDO 13

427: U52-8 U50-12 U49-12 U113-12 U100-12
427: J16-1                                   .MDO 14

428: U51-8 U74-12 U62-12 U126-12 U112-12
428: J116-1                                  .MDO 15

429: U52-1 U50-6 U49-6 U113-6 U100-6 J23-1
429:                                         .MDO 2

430: U51-13 U74-6 U62-6 U126-6 U112-6
430: J123-1                                  .MDO 3

431: U52-13 U50-19 U49-19 U113-19 U100-19
431: J22-1                                   .MDO 4

432: U51-12 U74-19 U62-19 U126-19 U112-19
432: J122-1                                  .MDO 5

433: U52-12 U50-15 U49-15 U113-15 U100-15
433: J21-1                                   .MDO 6

434: U52-4 U74-15 U62-15 U126-15 U112-15
434: J121-1                                  .MDO 7

435: U52-11 U50-5 U49-5 U113-5 U100-5
435: J19-1                                   .MDO 8

436: U51-11 U74-5 U62-5 U126-5 U112-5
436: J119-1                                  .MDO 9

437: J141-1 U190-6                           .MDO VALID H

438: U221-13 J181-1                          .MEM RQST 0

439: U221-4 J182-1                           .MEM RQST 1

440: U221-5 J183-1                           .MEM RQST 2

441: U293-13 U253-3                          .MEMSHIFT 0

442: U294-13 U253-4                          .MEMSHIFT 1

443: U279-13 U253-7                          .MEMSHIFT 2
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444: U267-13 U253-8 .MEMSHIFT 3

445: U268-13 U253-13 .MEMSHIFT 4

446: U281-13 U253-14 .MEMSHIFT 5

447: U255-13 U253-17 .MEMSHIFT 6

448: U280-13 U253-18 .MEMSHIFT 7

449: U291-16 U253-2 U252-4 .MSP0

450: U291-15 U253-5 U277-5 .MSP1

451: U266-17 U253-6 U252-5 .MSP2

452: U266-16 U253-9 U277-6 .MSP3

453: U266-15 U253-12 U252-6 .MSP4

454: U278-17 U253-15 U277-7 .MSP5

455: U278-16 U253-16 U252-7 .MSP6

456: U278-15 U253-19 U277-8 .MSP7

457: U102-14 U87-14 U204-9 .O SEL 0

458: U102-13 U87-2 U204-8 .O SEL 1

459: U12-2 U51-6 .ODD A

460: U12-5 U52-6 .ODD B

461: U204-5 U190-5 U217-6 U254-13 .OLD READ 0

462: U217-9 U254-12 U204-16 U190-16 .OLD READ 1

463: U102-12 U50-1 U74-1 .OUT ENAB W0

464: U102-11 U49-1 U62-1 .OUT ENAB W1

465: U102-10 U100-1 U112-1 .OUT ENAB W2

466: U102-9 U113-1 U126-1 .OUT ENAB W3

467: U90-6 U204-4 U190-4 .P ADR 0

468: U90-9 U204-3 U190-3 .P ADR 1

469: U86-13 U64-12 U76-13 .P ADR 10

470: U99-2 U64-15 U76-8 .P ADR 11

471: U99-5 U64-16 U76-14 .P ADR 12

472: U99-11 U64-19 U76-7 .P ADR 13

473: U99-14 U77-2 U76-4 .P ADR 14

474: U86-2 U77-5 U76-3 .P ADR 15

475: U77-6 U86-5 U76-18 .P ADR 16

476: U86-11 U77-9 U76-17 .P ADR 17

477: JP2-1 U77-12 U89-13 .P ADR 18

478: U115-13 U77-15 U89-14 U169-13 .P ADR 19

479: U90-12 U88-3 U63-14 .P ADR 2

480: U77-16 U89-17 .P ADR 20

481: U77-19 U89-18 U169-3 .P ADR 21

482: U99-3 U90-15 U63-17 .P ADR 3

483: U99-6 U90-16 U63-13 .P ADR 4

484: U99-10 U90-19 U63-8 .P ADR 5

485: U99-13 U64-2 U63-7 .P ADR 6

486: U86-3 U64-5 U63-4 .P ADR 7

487: U86-6 U64-6 U63-3 .P ADR 8

488: U86-10 U64-9 U63-18 .P ADR 9

489: U12-6 U38-12 .PAR ER H

490: J83-1 U248-8 .PAR INTR L

491: U178-5 U243-10 .PC BLANK L

492: U285-8 U261-3 .PH<0>

493: U261-5 U262-3 U261-2 U285-4 U285-2
493: U238-10 .PH<1>

494: U274-3 U262-5 U262-2 .PH<2>

495: U274-5 U275-3 U274-2 U251-11 .PH<3>

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496: U275-2 U263-3 U275-5 U238-12 U260-12
496: U273-12 U260-13                        .PH<4>

497: U263-5 U250-3 U263-2 U247-2 U247-5
497: U264-3                                 .PH<5>

498: U250-2 U250-11 U250-5 U238-9           .PH<6>

499: U263-11 U250-9 U250-12                 .PH<7>

500: U263-12 U275-11 U263-9                 .PH<8>

501: U275-12 U275-9 U273-9 U238-13 U264-2
501:                                        .PH<9>

502: U195-3 U258-9 U270-13                  .PLL CLK

503: R1-2 U11-4 U37-13 U37-1 U37-10 U37-4
503: U11-13 U11-10 U11-1                    .PU 1

504: U262-10 U274-14 U261-14 U274-10 R22-2
504: U262-15 U274-4 U261-15 U262-4 U274-15
504: U261-4 U262-14 U261-10                 .PU 10

505: U276-10 U276-15 U249-15 U251-4 R24-2
505: U276-4 U276-14 U251-10 U249-4 U251-14
505: U264-10 U264-15 U264-4 U251-15 U264-14
505:                                        .PU 11

506: U167-1 U242-4 U241-10 R19-2 U242-13
506: U242-10 U241-12 U241-11 U241-14 U179-9
506: U153-10 U153-9 U257-1 U257-4 U242-1
506: U167-10 U221-1 U167-13 U232-4 U232-1
506: U257-13 U256-10 U256-4 U256-3 U256-2
506: U269-9 U257-10                         .PU 12

507: R8-2 U194-13 U193-13 U180-13 U192-13
507:                                        .PU 14

508: U230-13 U230-1 U230-10 U246-6 U207-9
508: U207-1 R20-2 U230-4 U243-6             .PU 16

509: R12-2 U39-19 U26-19 U73-1 U268-9
509: U281-9 U280-9 U255-9 U293-9 U279-9
509: U267-9 U294-9                          .PU 2

510: U128-13 U140-1 R6-2 U103-11 U129-13
510: U103-13 U101-1 U127-1 U127-10          .PU 5

511: R23-2 U288-15 U288-1 U288-4 U275-4
511: U275-14 U263-14 U275-10 U263-10 U250-14
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511: U250-10 U250-15 U250-4 U263-15 U263-4
511: U275-15                              .PU 9

512: U225-11 U224-2 U224-13 U228-4 290A-2
512:                                      .RAS 0 H

513: U225-4 U234-11 U223-13 U222-6 290A-4
513:                                      .RAS 1 H

514: U217-3 U217-5                        .RAS CY 1

515: U217-2 U254-9                        .RAS CY 2

516: U221-12 J184-1 U232-2                .RAS NOW

517: U143-9 U89-1                         .READ HI PAR L

518: U38-13 U143-7 U63-1 U76-1            .READ LO PAR L

519: U243-1 U271-6                        .RESYNC SYNC

520: U233-9 U247-4 R14-2 JP11-2           .SEL CAS 0 H

521: U99-1 U86-1 U115-11 U125-1 U141-1
521: U273-3 U168-1 U208-1                 .SEL ROW H

522: U130-3 U257-8 U243-7                 .SYNC WIND H

523: U257-9 U256-15 U269-1 U256-14        .SYNC WIND L

524: THM1-2 J78-1                         .TEMP CAGE

525: J173-1 U233-2                        .TIME 0

526: J174-1 U233-4                        .TIME 1

527: R9-2 J89-1                           .V SYNC

528: U156-4 R9-1 U178-2                   .V SYNC H

529: XB1-1 VR3-3 XB4-1 C11-1 C5-2 C17-2
529: C15-1 C14-1 U195-7 U195-8            .VEE

530: U292-2 U206-4                        .VFIFO IN0

531: U292-5 U206-5                        .VFIFO IN1

532: U292-6 U206-6                        .VFIFO IN2

533: U292-9 U206-7                        .VFIFO IN3

534: U292-12 U231-4                       .VFIFO IN4
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 535: U292-15 U231-5                        .VFIFO IN5

 536: U292-16 U231-6                        .VFIFO IN6

 537: U292-19 U231-7                        .VFIFO IN7

 538: U254-6 U230-2                         .VFIFO INCLK

 539: U287-3 U230-11 U230-3 U243-5          .VIDCLK66

 540: U220-1 U244-12                        .VIDMUX SEL

 541: J91-1 U295-3 U295-6                   .VIDOUT
*** Run has multiple outputs

 542: U219-11 U244-5                        .VIDREG CLK

 543: U259-4 282A-9 U296-13 U284-9 U270-15
 543:                                       .VIDSHF CLK

 544: U259-10 U243-12 282A-2 U297-3         .VIDSHF LD
*** Run has multiple outputs

 545: U230-9 U206-3 U231-3                  .VIDSIC CLK

 546: U206-15 U231-15 U244-4                .VIDSOC CLK
*** Run has multiple outputs

 547: U273-10 U273-13 U166-1 U241-9 U233-1
 547: U179-7 U153-7 U165-1 U204-1 U190-1
 547:                                       .VIDTIME 0

 548: U257-2 U166-2 U165-2 U233-3 U153-14
 548: U204-2 U190-2                         .VIDTIME 1

 549: U140-15 U191-10 U191-13 U191-5        .VRT ST 0

 550: U140-5 U191-2                         .VRT ST 1

 551: U239-16 U157-5 U170-5 U182-5 U196-5
 551: U91-5 U78-5 U65-5 U53-5 U40-5 U27-5
 551: U14-5 U1-5 U144-5 U131-5 U117-5 U104-5
 551: U209-5                                .WO A0 A L

 552: U226-16 U54-5 U66-5 U79-5 U92-5 U197-5
 552: U183-5 U171-5 U158-5 U145-5 U132-5
 552: U118-5 U105-5 U210-5 U41-5 U28-5
 552: U15-5 U2-5                            .WO A0 B L

 553: U239-14 U157-7 U170-7 U182-7 U196-7
 553: U91-7 U78-7 U65-7 U53-7 U40-7 U27-7
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553: U14-7 U1-7 U144-7 U131-7 U117-7 U104-7
553: U209-7                                .W0 A1 A L

554: U226-14 U54-7 U66-7 U79-7 U92-7 U197-7
554: U183-7 U171-7 U158-7 U145-7 U132-7
554: U118-7 U105-7 U210-7 U41-7 U28-7
554: U15-7 U2-7                            .W0 A1 B L

555: U239-12 U157-6 U170-6 U182-6 U196-6
555: U91-6 U78-6 U65-6 U53-6 U40-6 U27-6
555: U14-6 U1-6 U144-6 U131-6 U117-6 U104-6
555: U209-6                                .W0 A2 A L

556: U226-12 U54-6 U66-6 U79-6 U92-6 U197-6
556: U183-6 U171-6 U158-6 U145-6 U132-6
556: U118-6 U105-6 U210-6 U41-6 U28-6
556: U15-6 U2-6                            .W0 A2 B L

557: U239-9 U157-14 U170-14 U182-14 U196-14
557: U91-14 U78-14 U65-14 U53-14 U40-14
557: U27-14 U14-14 U1-14 U144-14 U131-14
557: U117-14 U104-14 U209-14               .W0 A3 A L

558: U226-9 U54-14 U66-14 U79-14 U92-14
558: U197-14 U183-14 U171-14 U158-14 U145-14
558: U132-14 U118-14 U105-14 U210-14 U41-14
558: U28-14 U15-14 U2-14                   .W0 A3 B L

559: U239-7 U157-13 U170-13 U182-13 U196-13
559: U91-13 U78-13 U65-13 U53-13 U40-13
559: U27-13 U14-13 U1-13 U144-13 U131-13
559: U117-13 U104-13 U209-13               .W0 A4 A L

560: U226-7 U54-13 U66-13 U79-13 U92-13
560: U197-13 U183-13 U171-13 U158-13 U145-13
560: U132-13 U118-13 U105-13 U210-13 U41-13
560: U28-13 U15-13 U2-13                   .W0 A4 B L

561: U239-5 U157-12 U170-12 U182-12 U196-12
561: U91-12 U78-12 U65-12 U53-12 U40-12
561: U27-12 U14-12 U1-12 U144-12 U131-12
561: U117-12 U104-12 U209-12               .W0 A5 A L

562: U226-5 U54-12 U66-12 U79-12 U92-12
562: U197-12 U183-12 U171-12 U158-12 U145-12
562: U132-12 U118-12 U105-12 U210-12 U41-12
562: U28-12 U15-12 U2-12                   .W0 A5 B L

563: U239-3 U157-15 U170-15 U182-15 U196-15
563: U91-15 U78-15 U65-15 U53-15 U40-15
563: U27-15 U14-15 U1-15 U144-15 U131-15
563: U117-15 U104-15 U209-15               .W0 A6 A L
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564: U226-3 U54-15 U66-15 U79-15 U92-15
564: U197-15 U183-15 U171-15 U158-15 U145-15
564: U132-15 U118-15 U105-15 U210-15 U41-15
564: U28-15 U15-15 U2-15                    .WO A6 B L

565: U222-5 U157-11 U170-11 U182-11 U196-11
565: U91-11 U78-11 U65-11 U53-11 U40-11
565: U27-11 U14-11 U1-11 U144-11 U131-11
565: U117-11 U104-11 U209-11                .WO A7 A L

566: U222-3 U54-11 U66-11 U79-11 U92-11
566: U197-11 U183-11 U171-11 U158-11 U145-11
566: U132-11 U118-11 U105-11 U210-11 U41-11
566: U28-11 U15-11 U2-11                    .WO A7 B L

567: U239-18 U157-1 U170-1 U182-1 U196-1
567: U91-1 U78-1 U65-1 U53-1 U40-1 U27-1
567: U14-1 U1-1 U144-1 U131-1 U117-1 U104-1
567: U209-1                                 .WO A8 A L

568: U226-18 U54-1 U66-1 U79-1 U92-1 U197-1
568: U183-1 U171-1 U158-1 U145-1 U132-1
568: U118-1 U105-1 U210-1 U41-1 U28-1
568: U15-1 U2-1                             .WO A8 B L

569: U222-9 U196-10 U182-10 U170-10 U157-10
569: U144-10 U131-10 U117-10 U104-10 U209-10
569: U91-10 U78-10 U65-10 U53-10 U40-10
569: U27-10 U14-10 U1-10                    .WO CAS 0A L

570: U222-7 U197-10 U183-10 U171-10 U158-10
570: U145-10 U132-10 U118-10 U105-10 U210-10
570: U92-10 U79-10 U66-10 U54-10 U41-10
570: U28-10 U15-10 U2-10                    .WO CAS 0B L

571: U227-18 U157-17 U170-17 U182-17 U196-17
571: U91-17 U78-17 U65-17 U53-17 U40-17
571: U27-17 U14-17 U1-17 U144-17 U131-17
571: U117-17 U104-17 U209-17                .WO CAS 1A L

572: U227-16 U54-17 U66-17 U79-17 U92-17
572: U197-17 U183-17 U171-17 U158-17 U145-17
572: U132-17 U118-17 U105-17 U210-17 U41-17
572: U28-17 U15-17 U2-17                    .WO CAS 1B L

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581: U22-12 U27-2 U28-2 .WO IN<2>

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583: U22-6 U53-2 U54-2 .WO IN<4>

584: U35-6 U65-2 U66-2 .WO IN<5>

585: U22-2 U78-2 U79-2 .WO IN<6>

586: U35-2 U91-2 U92-2 .WO IN<7>

587: U22-19 U104-2 U105-2 .WO IN<8>

588: U35-19 U117-2 U118-2 .WO IN<9>

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590: U50-8 U279-14 U131-16 U132-16 .WO OUT<10>

591: U74-8 U267-14 U144-16 U145-16 .WO OUT<11>

592: U50-17 U268-14 U157-16 U158-16 .WO OUT<12>

593: U74-17 U281-14 U170-16 U171-16 .WO OUT<13>

594: U50-13 U255-14 U182-16 U183-16 .WO OUT<14>

595: U74-13 U280-14 U196-16 U197-16 .WO OUT<15>

596: U74-3 U294-12 U14-16 U15-16 .WO OUT<1>

597: U50-7 U279-12 U27-16 U28-16 .WO OUT<2>

598: U74-7 U267-12 U40-16 U41-16 .WO OUT<3>

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607: U104-9 U209-9 U144-4 U131-4 U117-4
607: U104-4 U209-4                         .WO RAS A L

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608: U118-4 U105-4 U210-4 U197-9 U183-9
608: U171-9 U158-9 U145-9 U132-9 U118-9
608: U105-9 U210-9 U92-4 U79-4 U66-4 U54-4
608: U41-4 U28-4 U15-4 U2-4 U41-9 U28-9
608: U15-9 U2-9                            .WO RAS B L

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609: U1-3 U104-3                           .WO WRITE A L

610: U222-16 U2-3 U105-3 U41-3 U145-3
610: U28-3 U132-3 U15-3 U118-3 U210-3
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611: U211-5                                .W1 A0 A L

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612: U185-5 U173-5 U160-5 U147-5 U134-5
612: U120-5 U107-5 U212-5 U43-5 U30-5
612: U17-5 U4-5                            .W1 A0 B L

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613: U16-7 U3-7 U146-7 U133-7 U119-7 U106-7
613: U211-7                                .W1 A1 A L

614: U240-7 U56-7 U68-7 U81-7 U94-7 U199-7
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615: U211-6                              .W1 A2 A L

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616: U17-6 U4-6                          .W1 A2 B L

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618: U30-14 U17-14 U4-14                 .W1 A3 B L

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619: U119-13 U106-13 U211-13             .W1 A4 A L

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620: U30-13 U17-13 U4-13                 .W1 A4 B L

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621: U184-12 U172-12 U159-12 U146-12 U133-12
621: U119-12 U106-12 U211-12             .W1 A5 A L

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622: U30-12 U17-12 U4-12                 .W1 A5 B L

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623: U184-15 U172-15 U159-15 U146-15 U133-15
623: U119-15 U106-15 U211-15             .W1 A6 A L

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625: U119-11 U106-11 U211-11                .W1 A7 A L

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626: U30-11 U17-11 U4-11                    .W1 A7 B L

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629: U29-10 U16-10 U3-10                    .W1 CAS 0A L

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630: U30-10 U17-10 U4-10                    .W1 CAS 0B L

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631: U119-17 U106-17 U211-17                .W1 CAS 1A L

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632: U30-17 U17-17 U4-17                    .W1 CAS 1B L

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637: U36-9 U172-2 U173-2                    .W1 IN<13>
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642: U36-12 U42-2 U43-2 .W1 IN<3>

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644: U36-6 U67-2 U68-2 .W1 IN<5>

645: U10-2 U80-2 U81-2 .W1 IN<6>

646: U36-2 U93-2 U94-2 .W1 IN<7>

647: U10-19 U106-2 U107-2 .W1 IN<8>

648: U36-19 U119-2 U120-2 .W1 IN<9>

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650: U49-8 U279-11 U133-16 U134-16 .W1 OUT<10>

651: U62-8 U267-11 U146-16 U147-16 .W1 OUT<11>

652: U49-17 U268-11 U159-16 U160-16 .W1 OUT<12>

653: U62-17 U281-11 U172-16 U173-16 .W1 OUT<13>

654: U49-13 U255-11 U184-16 U185-16 .W1 OUT<14>

655: U62-13 U280-11 U198-16 U199-16 .W1 OUT<15>

656: U62-3 U294-10 U16-16 U17-16 .W1 OUT<1>

657: U49-7 U279-10 U29-16 U30-16 .W1 OUT<2>

658: U62-7 U267-10 U42-16 U43-16 .W1 OUT<3>

659: U49-18 U268-10 U55-16 U56-16 .W1 OUT<4>

660: U62-18 U281-10 U67-16 U68-16 .W1 OUT<5>

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668: U17-9 U4-9                           .W1 RAS B L

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669: U3-3 U106-3                          .W1 WRITE A L

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671: U18-5 U5-5                           .W2 A0 A L

672: U237-12 U58-5 U70-5 U83-5 U96-5 U201-5
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672: U19-5 U6-5                           .W2 A0 B L

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674: U122-7 U109-7 U214-7 U45-7 U32-7
674: U19-7 U6-7                           .W2 A1 B L
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685: U82-11 U69-11 U57-11 U44-11 U31-11
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690: U32-10 U19-10 U6-10                  .W2 CAS 0B L

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691: U31-17 U18-17 U5-17                  .W2 CAS 1A L

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692: U136-17 U122-17 U109-17 U214-17 U45-17
692: U32-17 U19-17 U6-17                  .W2 CAS 1B L

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698: U9-16 U186-2 U187-2                  .W2 IN<14>

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703: U9-15 U57-2 U58-2 .W2 IN<4>

704: U48-6 U69-2 U70-2 .W2 IN<5>

705: U9-19 U82-2 U83-2 .W2 IN<6>

706: U48-2 U95-2 U96-2 .W2 IN<7>

707: U9-2 U108-2 U109-2 .W2 IN<8>

708: U48-19 U121-2 U122-2 .W2 IN<9>

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711: U112-8 U267-5 U148-16 U149-16 .W2 OUT<11>

712: U100-17 U268-5 U161-16 U162-16 .W2 OUT<12>

713: U112-17 U281-5 U174-16 U175-16 .W2 OUT<13>

714: U100-13 U255-5 U186-16 U187-16 .W2 OUT<14>

715: U112-13 U280-5 U200-16 U201-16 .W2 OUT<15>

716: U112-3 U294-4 U18-16 U19-16 .W2 OUT<1>

717: U100-7 U279-4 U31-16 U32-16 .W2 OUT<2>

718: U112-7 U267-4 U44-16 U45-16 .W2 OUT<3>

719: U100-18 U268-4 U57-16 U58-16 .W2 OUT<4>

720: U112-18 U281-4 U69-16 U70-16 .W2 OUT<5>

721: U100-14 U255-4 U82-16 U83-16 .W2 OUT<6>

722: U112-14 U280-4 U95-16 U96-16 .W2 OUT<7>

723: U100-4 U293-5 U108-16 U109-16 .W2 OUT<8>

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725: U11-9 U213-2 U214-2 .W2 PAR IN

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727: U186-4 U174-4 U161-4 U148-4 U135-4
727: U121-4 U108-4 U213-4 U200-9 U186-9
727: U174-9 U161-9 U148-9 U135-9 U121-9
727: U108-9 U213-9 U95-4 U82-4 U69-4 U57-4
727: U44-4 U31-4 U18-4 U5-4 U44-9 U31-9
727: U18-9 U5-9                            .W2 RAS A L

728: U234-9 U58-9 U70-9 U83-9 U96-9 U201-4
728: U187-4 U175-4 U162-4 U149-4 U136-4
728: U122-4 U109-4 U214-4 U201-9 U187-9
728: U175-9 U162-9 U149-9 U136-9 U122-9
728: U109-9 U214-9 U96-4 U83-4 U70-4 U58-4
728: U45-4 U32-4 U19-4 U6-4 U45-9 U32-9
728: U19-9 U6-9                            .W2 RAS B L

729: U234-14 U5-3 U108-3 U44-3 U148-3
729: U31-3 U135-3 U18-3 U121-3 U213-3
729: U95-3 U200-3 U82-3 U186-3 U69-3 U174-3
729: U57-3 U161-3                          .W2 WRITE A L

730: U234-12 U6-3 U109-3 U45-3 U149-3
730: U32-3 U136-3 U19-3 U122-3 U214-3
730: U96-3 U201-3 U83-3 U187-3 U70-3 U175-3
730: U58-3 U162-3                          .W2 WRITE B L

731: U227-12 U163-5 U176-5 U188-5 U202-5
731: U97-5 U84-5 U71-5 U59-5 U46-5 U33-5
731: U20-5 U7-5 U150-5 U137-5 U123-5 U110-5
731: U215-5                                .W3 A0 A L

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732: U189-5 U177-5 U164-5 U151-5 U138-5
732: U124-5 U111-5 U216-5 U47-5 U34-5
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733: U227-9 U163-7 U176-7 U188-7 U202-7
733: U97-7 U84-7 U71-7 U59-7 U46-7 U33-7
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733: U215-7                                .W3 A1 A L

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734: U124-7 U111-7 U216-7 U47-7 U34-7
734: U21-7 U8-7                            .W3 A1 B L

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735: U20-6 U7-6 U150-6 U137-6 U123-6 U110-6
735: U215-6                                .W3 A2 A L
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736: U21-6 U8-6                          .W3 A2 B L

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737: U97-14 U84-14 U71-14 U59-14 U46-14
737: U33-14 U20-14 U7-14 U150-14 U137-14
737: U123-14 U110-14 U215-14             .W3 A3 A L

738: U229-3 U60-14 U72-14 U85-14 U98-14
738: U203-14 U189-14 U177-14 U164-14 U151-14
738: U138-14 U124-14 U111-14 U216-14 U47-14
738: U34-14 U21-14 U8-14                 .W3 A3 B L

739: U227-3 U163-13 U176-13 U188-13 U202-13
739: U97-13 U84-13 U71-13 U59-13 U46-13
739: U33-13 U20-13 U7-13 U150-13 U137-13
739: U123-13 U110-13 U215-13             .W3 A4 A L

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740: U203-13 U189-13 U177-13 U164-13 U151-13
740: U138-13 U124-13 U111-13 U216-13 U47-13
740: U34-13 U21-13 U8-13                 .W3 A4 B L

741: U229-18 U163-12 U176-12 U188-12 U202-12
741: U97-12 U84-12 U71-12 U59-12 U46-12
741: U33-12 U20-12 U7-12 U150-12 U137-12
741: U123-12 U110-12 U215-12             .W3 A5 A L

742: U228-14 U60-12 U72-12 U85-12 U98-12
742: U203-12 U189-12 U177-12 U164-12 U151-12
742: U138-12 U124-12 U111-12 U216-12 U47-12
742: U34-12 U21-12 U8-12                 .W3 A5 B L

743: U229-16 U163-15 U176-15 U188-15 U202-15
743: U97-15 U84-15 U71-15 U59-15 U46-15
743: U33-15 U20-15 U7-15 U150-15 U137-15
743: U123-15 U110-15 U215-15             .W3 A6 A L

744: U228-12 U60-15 U72-15 U85-15 U98-15
744: U203-15 U189-15 U177-15 U164-15 U151-15
744: U138-15 U124-15 U111-15 U216-15 U47-15
744: U34-15 U21-15 U8-15                 .W3 A6 B L

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745: U33-11 U20-11 U7-11 U150-11 U137-11
745: U123-11 U110-11 U215-11             .W3 A7 A L

746: U228-9 U60-11 U72-11 U85-11 U98-11
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746: U138-11 U124-11 U111-11 U216-11 U47-11
746: U34-11 U21-11 U8-11                    .W3 A7 B L

747: U227-14 U163-1 U176-1 U188-1 U202-1
747: U97-1 U84-1 U71-1 U59-1 U46-1 U33-1
747: U20-1 U7-1 U150-1 U137-1 U123-1 U110-1
747: U215-1                                 .W3 A8 A L

748: U229-12 U60-1 U72-1 U85-1 U98-1 U203-1
748: U189-1 U177-1 U164-1 U151-1 U138-1
748: U124-1 U111-1 U216-1 U47-1 U34-1
748: U21-1 U8-1                             .W3 A8 B L

749: U225-14 U110-10 U123-10 U137-10 U150-10
749: U163-10 U176-10 U188-10 U202-10 U97-10
749: U84-10 U71-10 U59-10 U46-10 U33-10
749: U20-10 U7-10 U215-10                   .W3 CAS 0A L

750: U225-12 U203-10 U189-10 U177-10 U164-10
750: U151-10 U138-10 U124-10 U111-10 U216-10
750: U98-10 U85-10 U72-10 U60-10 U47-10
750: U34-10 U21-10 U8-10                    .W3 CAS 0B L

751: U225-5 U163-17 U176-17 U188-17 U202-17
751: U97-17 U84-17 U71-17 U59-17 U46-17
751: U33-17 U20-17 U7-17 U150-17 U137-17
751: U123-17 U110-17 U215-17                .W3 CAS 1A L

752: U225-3 U60-17 U72-17 U85-17 U98-17
752: U203-17 U189-17 U177-17 U164-17 U151-17
752: U138-17 U124-17 U111-17 U216-17 U47-17
752: U34-17 U21-17 U8-17                    .W3 CAS 1B L

753: U23-5 U7-2 U8-2                        .W3 IN<0>

754: U23-6 U137-2 U138-2                    .W3 IN<10>

755: U61-15 U150-2 U151-2                   .W3 IN<11>

756: U23-12 U163-2 U164-2                   .W3 IN<12>

757: U61-9 U176-2 U177-2                    .W3 IN<13>

758: U23-16 U188-2 U189-2                   .W3 IN<14>

759: U61-5 U202-2 U203-2                    .W3 IN<15>

760: U61-16 U20-2 U21-2                     .W3 IN<1>

761: U23-9 U33-2 U34-2                      .W3 IN<2>
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765: U23-19 U84-2 U85-2 .W3 IN<6>

766: U61-2 U97-2 U98-2 .W3 IN<7>

767: U23-2 U110-2 U111-2 .W3 IN<8>

768: U61-19 U123-2 U124-2 .W3 IN<9>

769: U113-3 U293-2 U7-16 U8-16 .W3 OUT<0>

770: U113-8 U279-3 U137-16 U138-16 .W3 OUT<10>

771: U126-8 U267-3 U150-16 U151-16 .W3 OUT<11>

772: U113-17 U268-3 U163-16 U164-16 .W3 OUT<12>

773: U126-17 U281-3 U176-16 U177-16 .W3 OUT<13>

774: U113-13 U255-3 U188-16 U189-16 .W3 OUT<14>

775: U126-13 U280-3 U202-16 U203-16 .W3 OUT<15>

776: U126-3 U294-2 U20-16 U21-16 .W3 OUT<1>

777: U113-7 U279-2 U33-16 U34-16 .W3 OUT<2>

778: U126-7 U267-2 U46-16 U47-16 .W3 OUT<3>

779: U113-18 U268-2 U59-16 U60-16 .W3 OUT<4>

780: U126-18 U281-2 U71-16 U72-16 .W3 OUT<5>

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782: U126-14 U280-2 U97-16 U98-16 .W3 OUT<7>

783: U113-4 U293-3 U110-16 U111-16 .W3 OUT<8>

784: U126-4 U294-3 U123-16 U124-16 .W3 OUT<9>

785: U11-5 U215-2 U216-2 .W3 PAR IN

786: U73-4 U215-16 U216-16 .W3 PAR OUT

787: U225-9 U163-4 U176-4 U188-4 U202-4
787: U97-4 U84-4 U71-4 U59-4 U46-4 U33-4

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787: U20-4 U7-4 U97-9 U84-9 U71-9 U59-9
787: U46-9 U33-9 U20-9 U7-9 U202-9 U188-9
787: U176-9 U163-9 U150-9 U137-9 U123-9
787: U110-9 U215-9 U150-4 U137-4 U123-4
787: U110-4 U215-4                      .W3 RAS A L

788: U225-16 U60-9 U72-9 U85-9 U98-9 U203-4
788: U189-4 U177-4 U164-4 U151-4 U138-4
788: U124-4 U111-4 U216-4 U203-9 U189-9
788: U177-9 U164-9 U151-9 U138-9 U124-9
788: U111-9 U216-9 U98-4 U85-4 U72-4 U60-4
788: U47-4 U34-4 U21-4 U8-4 U47-9 U34-9
788: U21-9 U8-9                         .W3 RAS B L

789: U228-7 U163-3 U59-3 U71-3 U176-3
789: U84-3 U188-3 U215-3 U97-3 U202-3
789: U20-3 U123-3 U33-3 U137-3 U46-3 U150-3
789: U7-3 U110-3                        .W3 WRITE A L

790: U228-5 U8-3 U111-3 U47-3 U151-3 U34-3
790: U138-3 U21-3 U124-3 U216-3 U98-3
790: U203-3 U85-3 U189-3 U72-3 U177-3
790: U60-3 U164-3                       .W3 WRITE B L

791: U222-4 U222-2 U217-19              .WRITE 0 H

792: U223-8 U223-6 U217-16              .WRITE 1 H

793: U234-8 U234-6 U217-15              .WRITE 2 H

794: U228-13 U228-15 U217-12            .WRITE 3 H

795: U25-1 U155-5                       .WRITE BAD PARITY
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1 MEG LAND

BITS	DATA	Word 0 MEM <4> RAS 0 CAS A 1 | 0 BANK A	Word 0 MEM <0> RAS 1 CAS B 1 | 0 BANK B	Word 1 MEM <5> RAS 0 CAS A 1 | 0 BANK A	Word 1 MEM <1> RAS 1 CAS B 1 | 0 BANK B	Word 2 MEM <6> RAS 0 CAS A 1 | 0 BANK A	Word 2 MEM <2> RAS 1 CAS B 1 | 0 BANK B	Word 3 MEM <7> RAS 0 CAS A 1 | 0 BANK A	Word 3 MEM <3> RAS 1 CAS B 1 | 0 BANK B
0	1	U1	U2	U3	U4	U5	U6	U7	U8
1	2	U14	U15	U16	U17	U18	U19	U20	U21
2	4	U27	U28	U29	U30	U31	U32	U33	U34
3	10	U40	U41	U42	U43	U44	U45	U46	U47
4	20	U53	U54	U55	U56	U57	U58	U59	U60
5	40	U65	U66	U67	U68	U69	U70	U71	U72
6	100	U78	U79	U80	U81	U82	U83	U84	U85
7	200	U91	U92	U93	U94	U95	U96	U97	U98
8	400	U104	U105	U106	U107	U108	U109	U110	U111
9	1K	U117	U118	U119	U120	U121	U122	U123	U124
10	2K	U131	U132	U133	U134	U135	U136	U137	U138
11	4K	U144	U145	U146	U147	U148	U149	U150	U151
12	10K	U157	U158	U159	U160	U161	U162	U163	U164
13	20K	U170	U171	U172	U173	U174	U175	U176	U177
14	40K	U182	U183	U184	U185	U186	U187	U188	U189
15	100K	U196	U197	U198	U199	U200	U201	U202	U203
P	PAR	U209	U210	U211	U212	U213	U214	U215	U216

TITLE: 1 Meg Memory Array

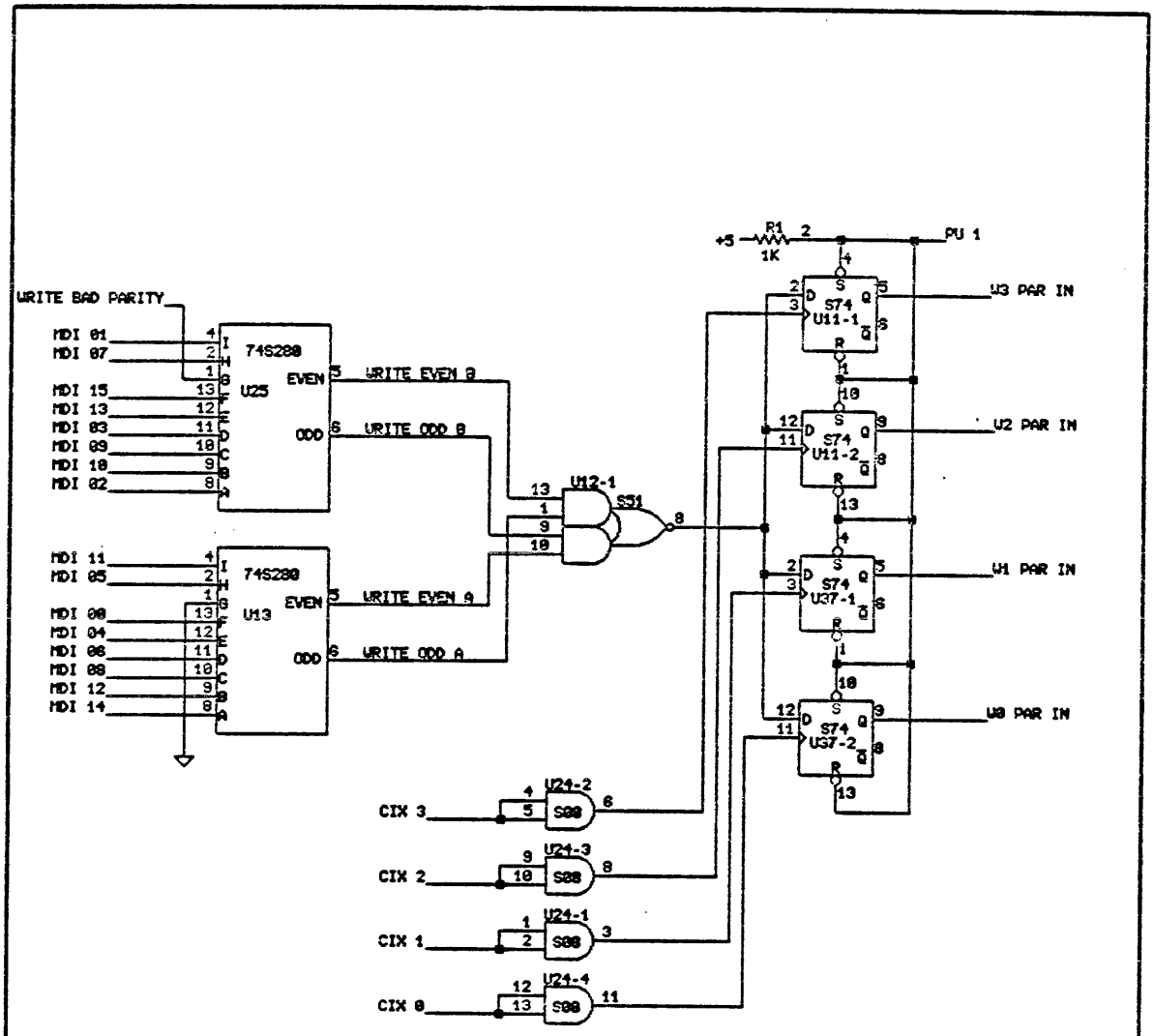
array.db

PERQ

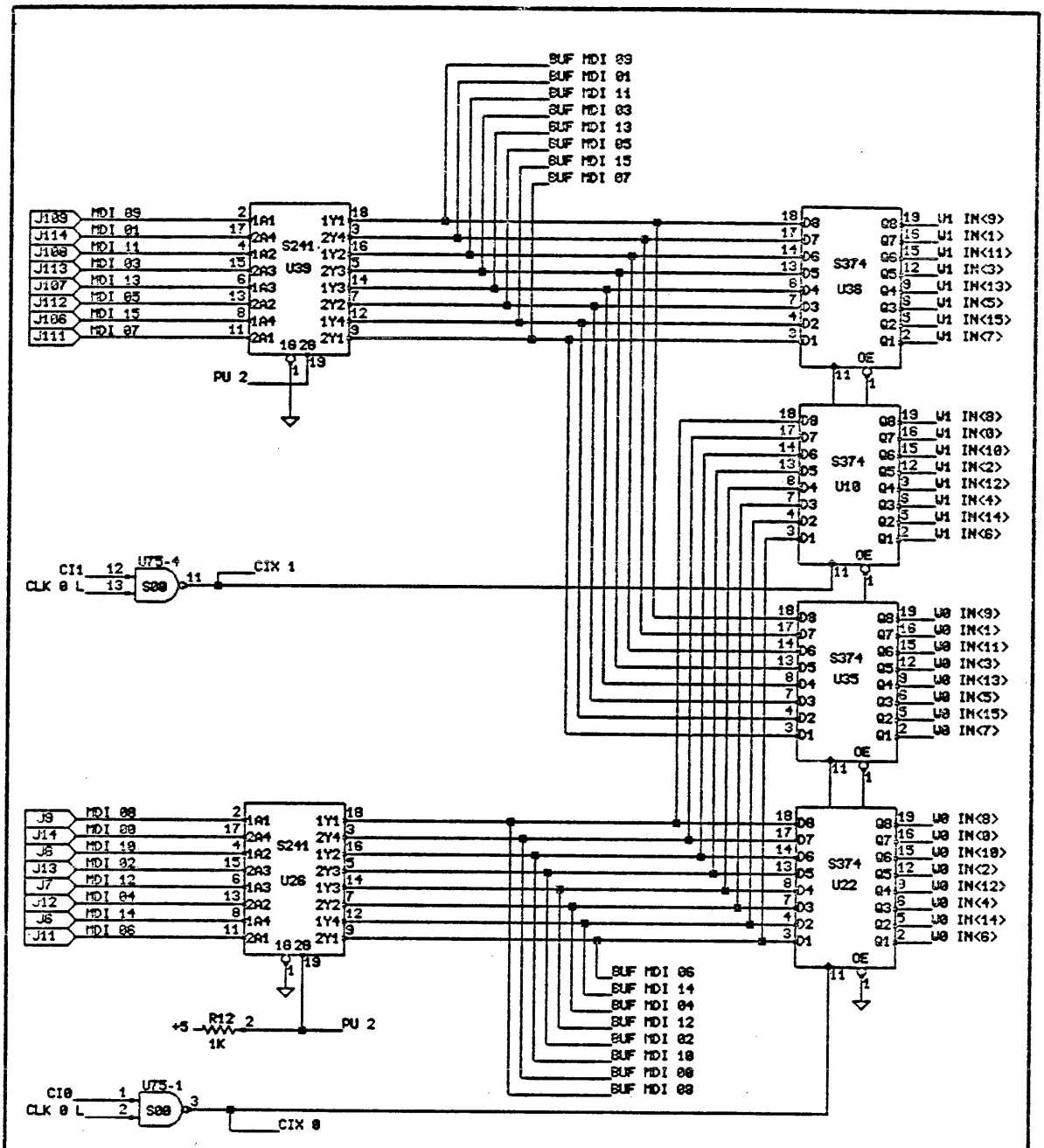
DESIGNED	BILL HULLEY	
DRAWN	CERTICH	22 Mar 84
UPDATED	CERTICH	22 Mar 84

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	01	A

PROJ : 1 MEGABYTE LANDSCAPE / MEMORY



TITLE	MEMORY DATA IN PARITY CALCULATION					LMEM01	
PERQ	DESIGNED	BILL MULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	25 Apr 83	SBokse	A	1 1	0 2 4 1 -	0 2	Q
	UPDATED	14 Jan 85	STECK	PROJ : 1 MEGABYTE LANDSCAPE/MEMORY			PAGE 1	OF 34

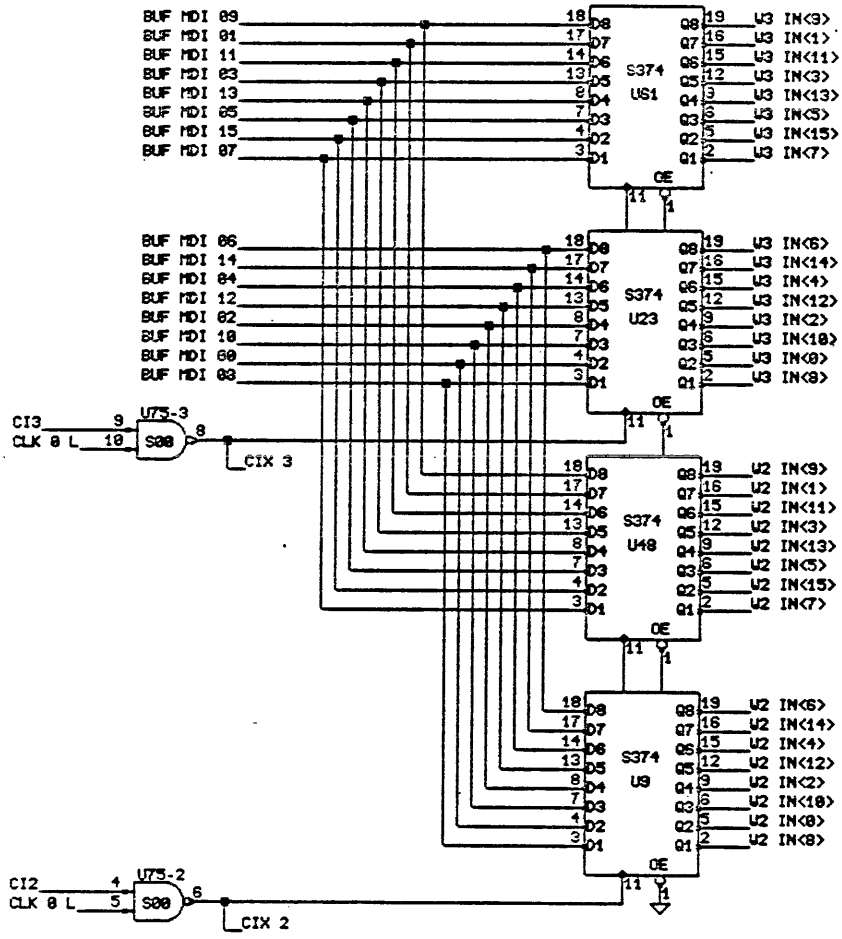


TITLE: MEMORY DATA INPUT REGISTERS : WORDS 0 AND 1

LMEM02

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	25 Apr 83	SBolsse	A	11	0241-	02	0
UPDATED	14 Jan 85	STECK	PROJ : 1 MEGABYTE LANDSCAPE/MEMORY			PAGE 2	OF 34



TITLE: MEMORY DATA INPUT REGISTERS : WORDS 2 AND 3

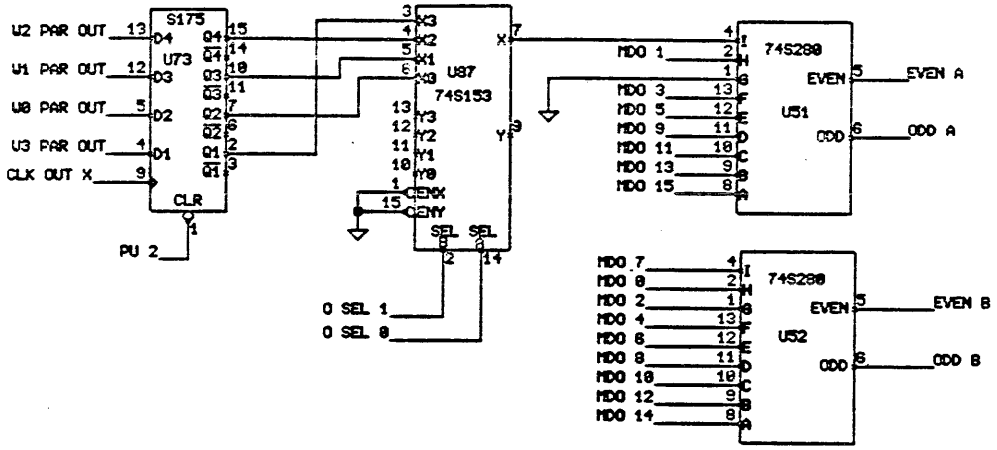
LMEM03

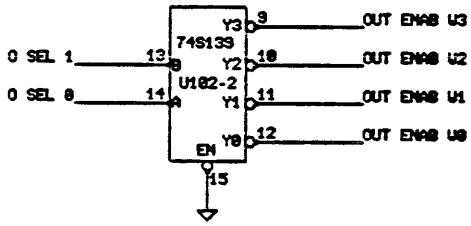
PERQ

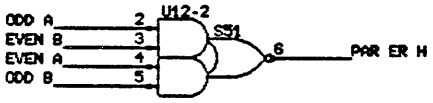
DESIGNED	BILL HULLEY	
DRAWN	25 Apr 83	SBokse
UPDATED	11 Jan 84	Z.Vávra

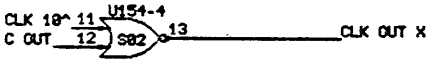
SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	02	F

PROJ : 1 MEGABYTE LANDSCAPE/MEMORY

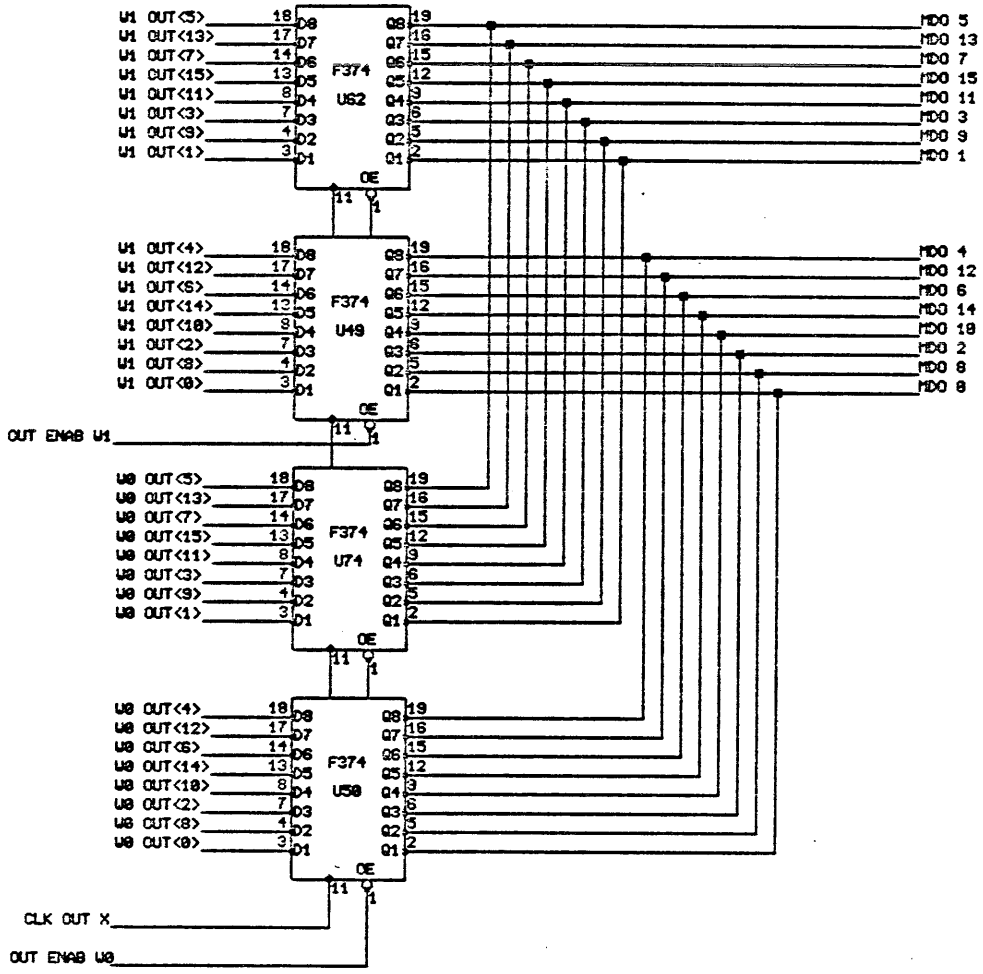








TITLE	MEMORY DATA OUTPUT					LMEM04	
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR / REV
	DRAWN	28 Aug 83	WCH	A	1 1	0 2 4 1 -	0 2 / F
	UPDATED	31 Jul 84		PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 4 OF 34

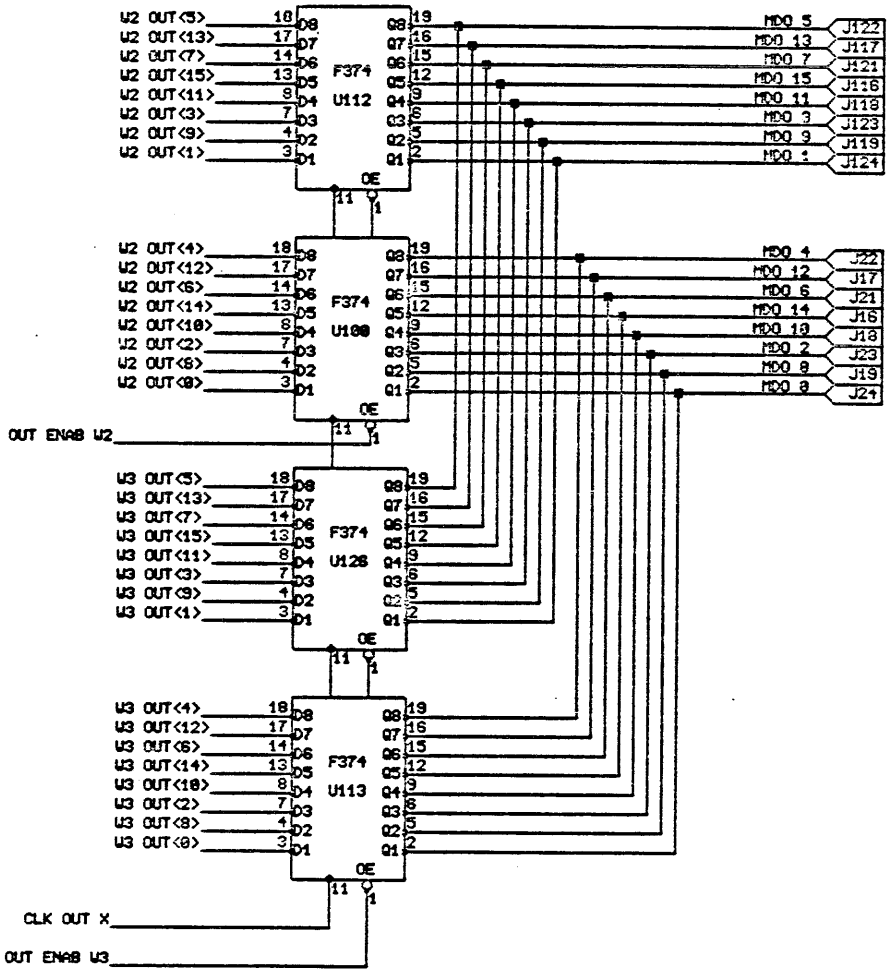


TITLE: DATA OUTPUT REGISTERS : WORDS 0 AND 1

LMEM05

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	12 Oct 83	UCH	A	1 1	0 2 4 1 -	0 2	F
UPDATED	11 Jan 84		PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 5	OF 34

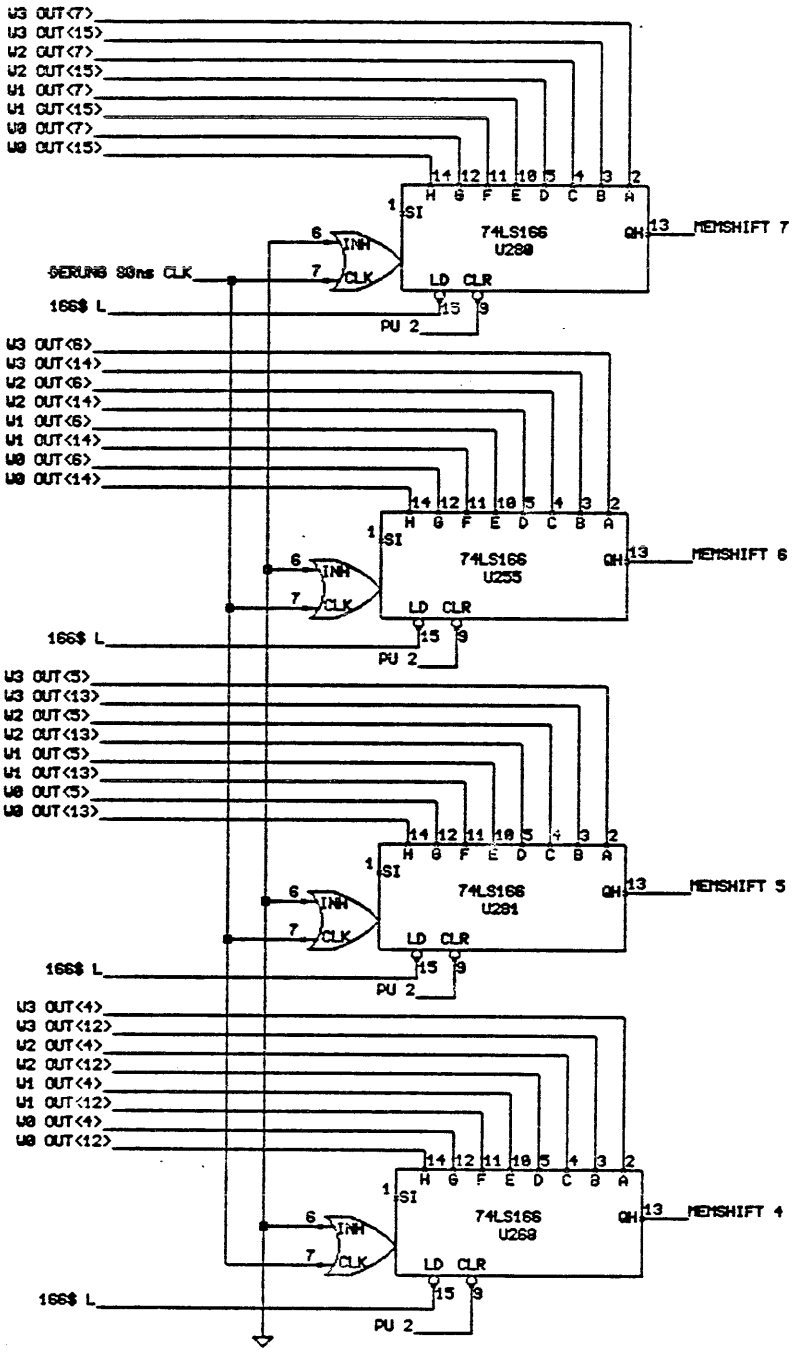


TITLE: DATA OUTPUT REGISTERS : WORDS 2 AND 3

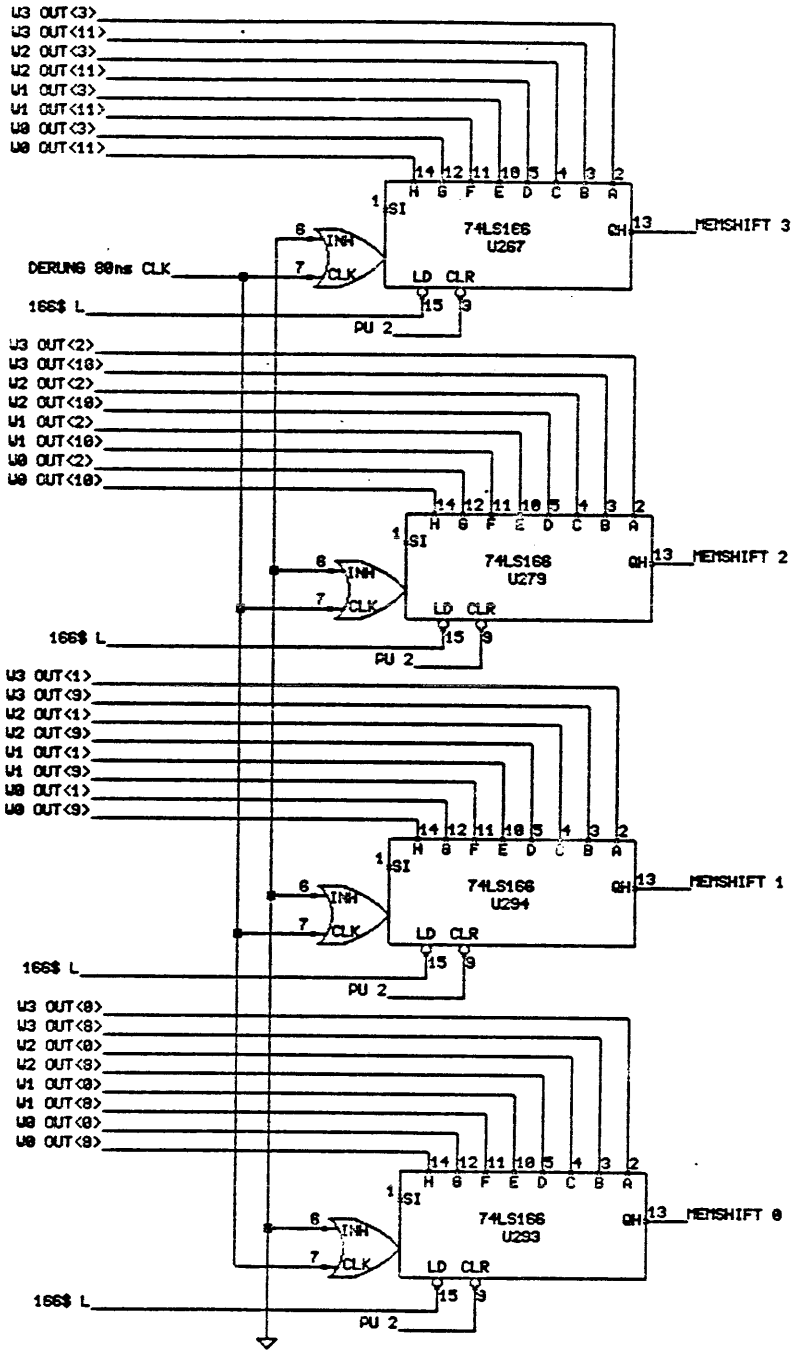
LMEM06

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	11 Oct 83	UCH	A	11	0241-	02	F
UPDATED	11 Jan 84	J.Valva	PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 6 OF 34	



TITLE	MEMORY WORD MUX - 64 BITS to 8 BITS					LMEM37	
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	25 Apr 83	SBokse	A	11	0241-	02	F
	UPDATED	11 Jan 84		PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 7 OF 34	

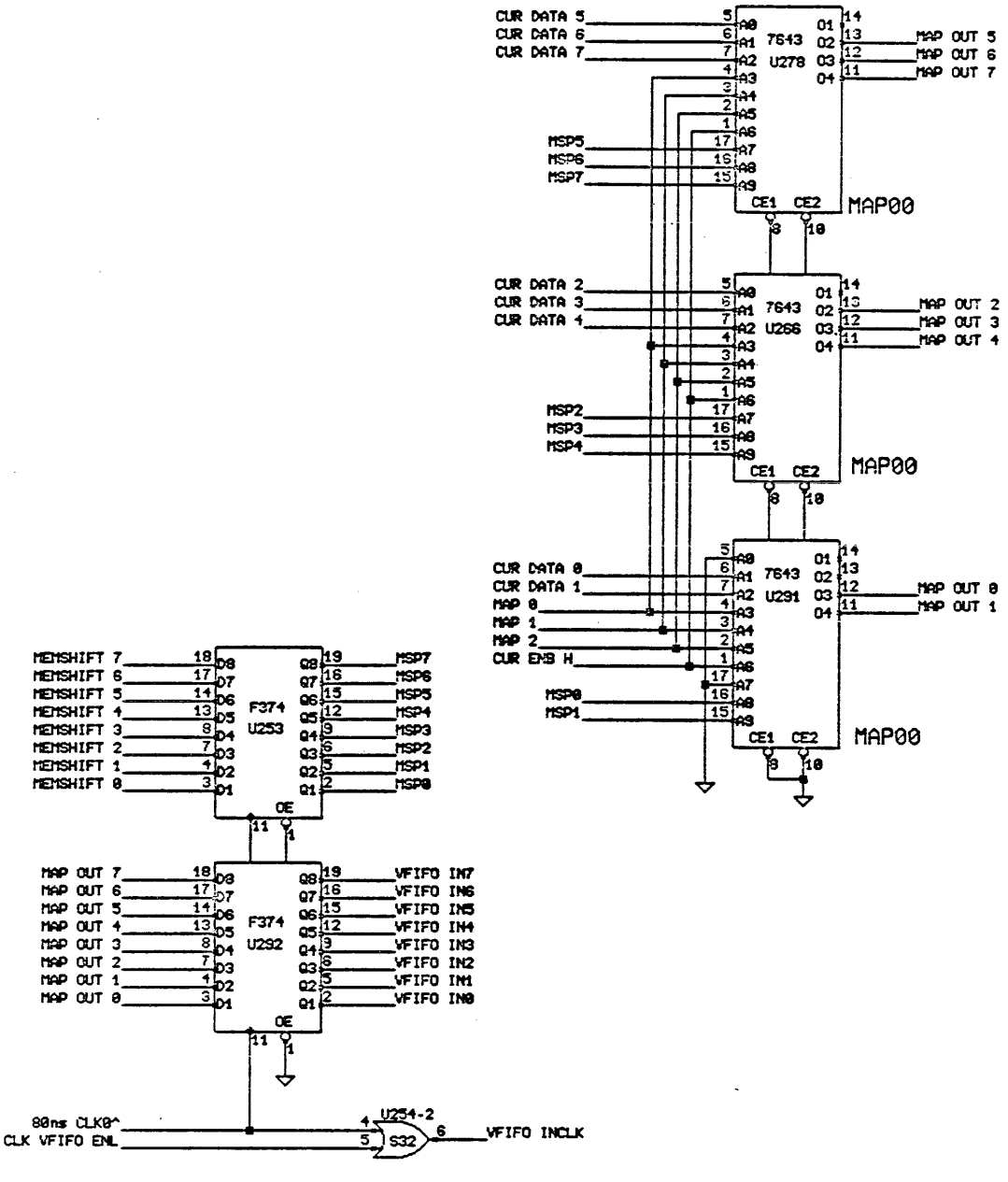


TITLE: MEMORY WORD MUX - 64 BITS to 8 BITS

LMEM09

PERQ

DESIGNED	BILL MULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	25 Apr 83	SBolsse	A	1 1	0 2 4 1 -	0 2	F
UPDATED	11 Jan 84		PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 8	OF 34



TITLE: MEMORY - CURSOR DATA MIXER FOR VIDEO

LMEM09

PERQ

DESIGNED	BILL HULLEY		
DRAWN	25 Apr 83	SBakse	
UPDATED			

SIZE	CODE	IDENTIFICATION	VAR	REV
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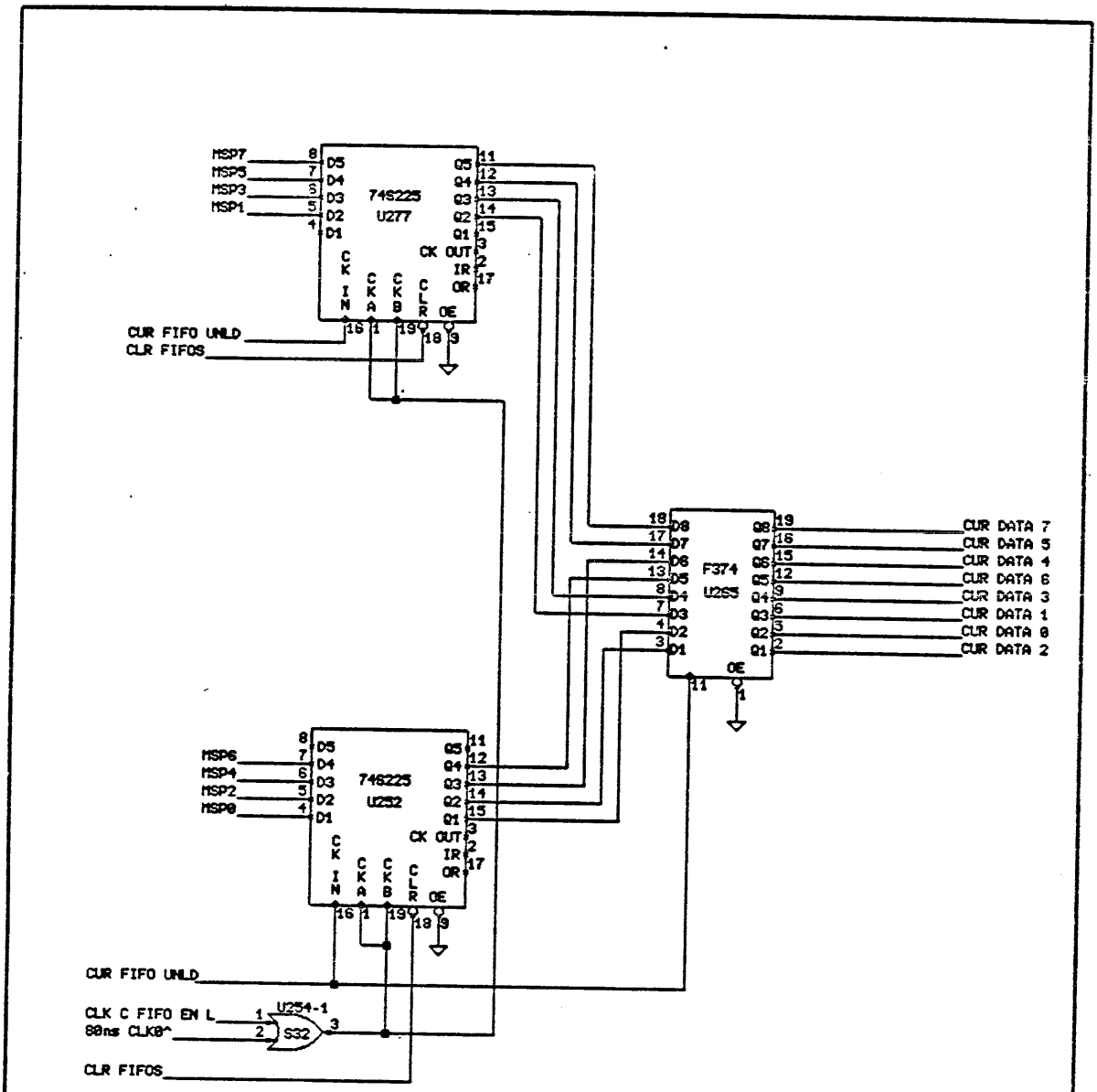
PROJ : 1 MEGABYTE LANDSCAPE/MEMORY

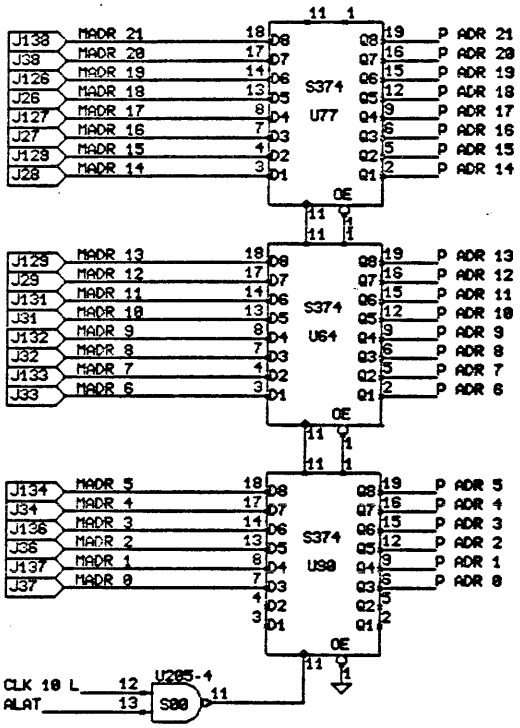


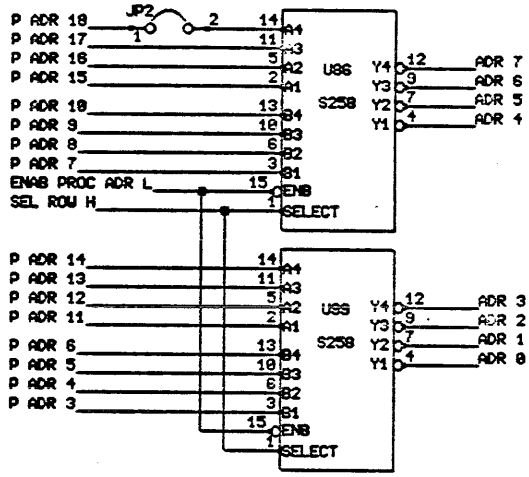
TITLE: CURSOR DATA FIFO

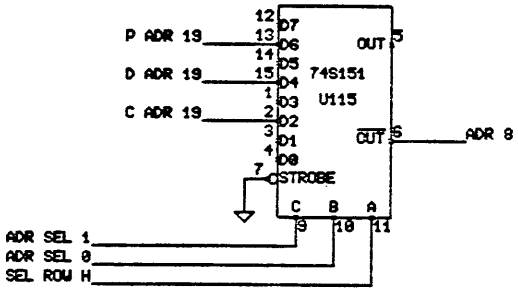
LMEM10

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	25 Apr 83	SBokse	A	1 1	0 2 4 1 -	0 2	F
UPDATED	11 Jan 84	R.Vaifa	PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 10 OF 34	







SEL ROW H	ADR SEL 1	ADR SEL 0	ADDRESS SOURCE
0	0	0	NO CONNECT
0	0	1	CURSOR COUNTER (19)
0	1	0	DISPLAY COUNTER (19)
0	1	1	PROCESSOR (19)
1	0	0	NO CONNECT
1	0	1	CURSOR COUNTER (20) or (2)
1	1	0	DISPLAY COUNTER (20) or (2)
1	1	1	PROCESSOR (20) or (2)

TITLE: PROCESSOR/IO MEMORY ADRESS MUX

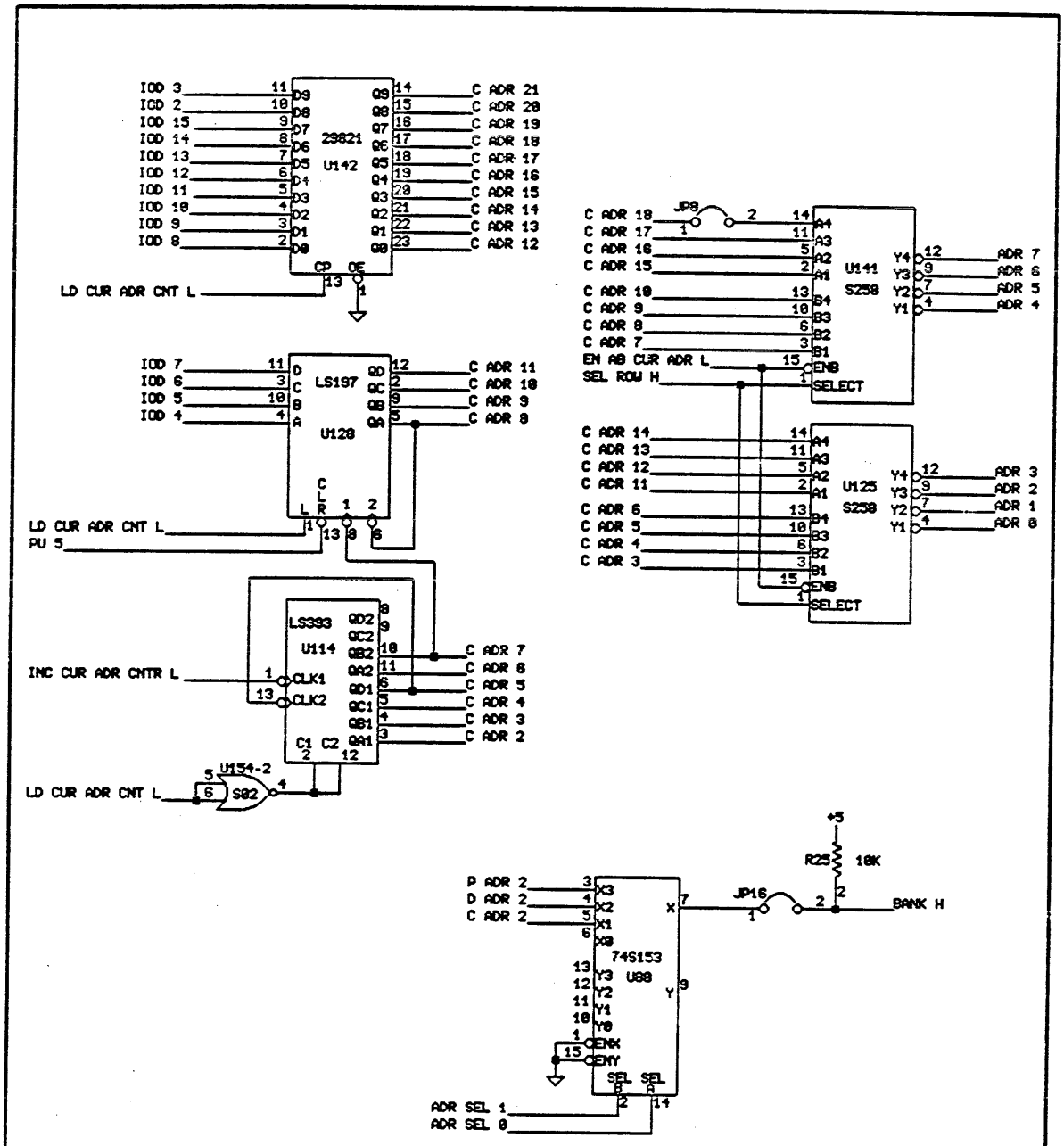
LMEM11

PERQ

DESIGNED	BILL HULLEY	
DRAWN	09 May 83	UCH
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	02	P

PROJ : 1 MEGABYTE LANDSCAPE/MEMORY



TITLE: CURSOR ADDRESS GENERATION AND MUX

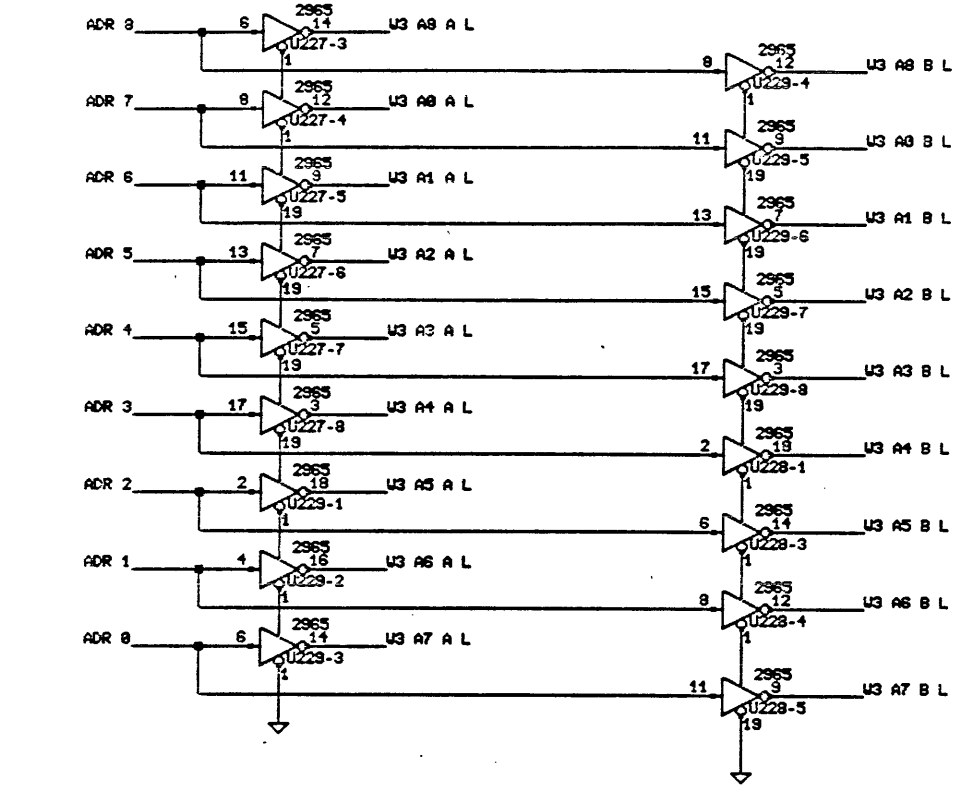
LMEM12

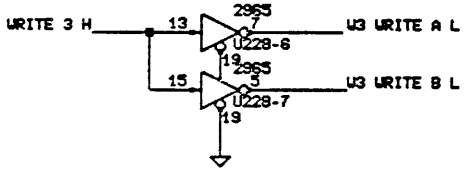
PERQ

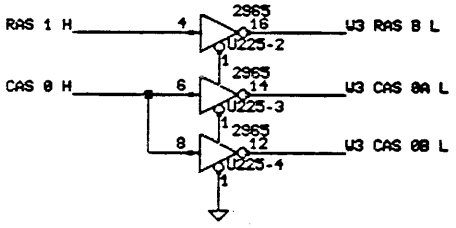
DESIGNED	BILL HULLEY		
DRAWN	27 Apr 83	UCH	
UPDATED	14 Jan 85	STECK	

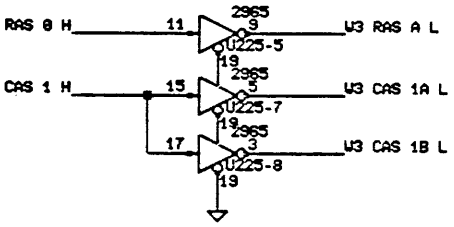
SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	02	P

PROJ : 1 MEGABYTE LANDSCAPE/MEMORY







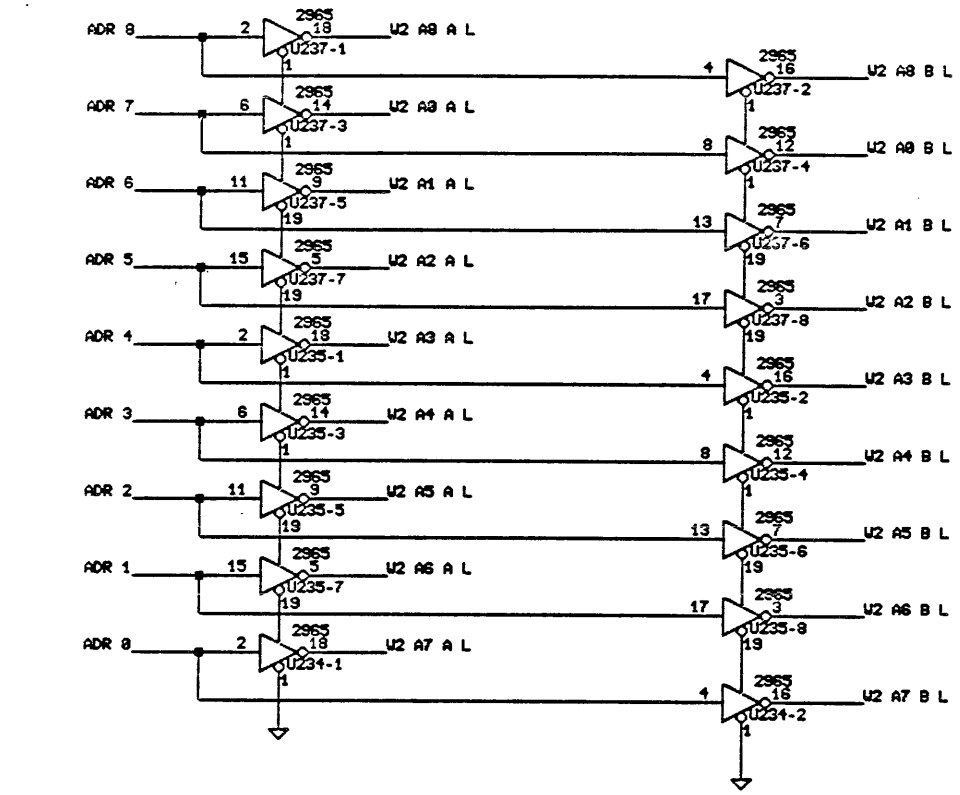


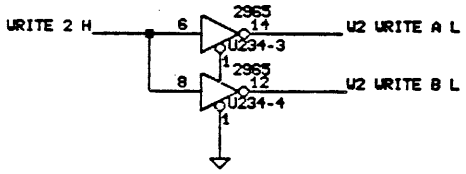
TITLE: MEMORY ADDRESS DRIVER WORD 3

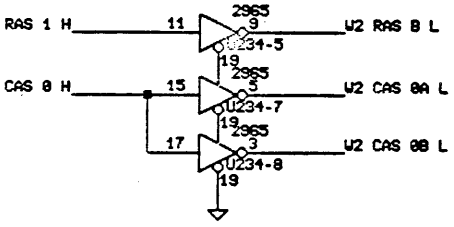
LMEM13

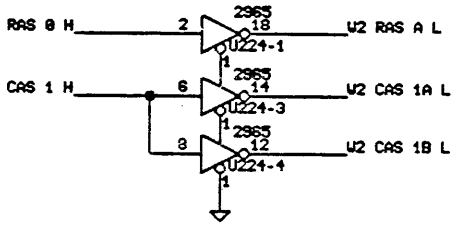
PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	21 Apr 83	UCH	A	11	0241-	02	Q
UPDATED	14 Jan 85	STECK	PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 13 OF 34	

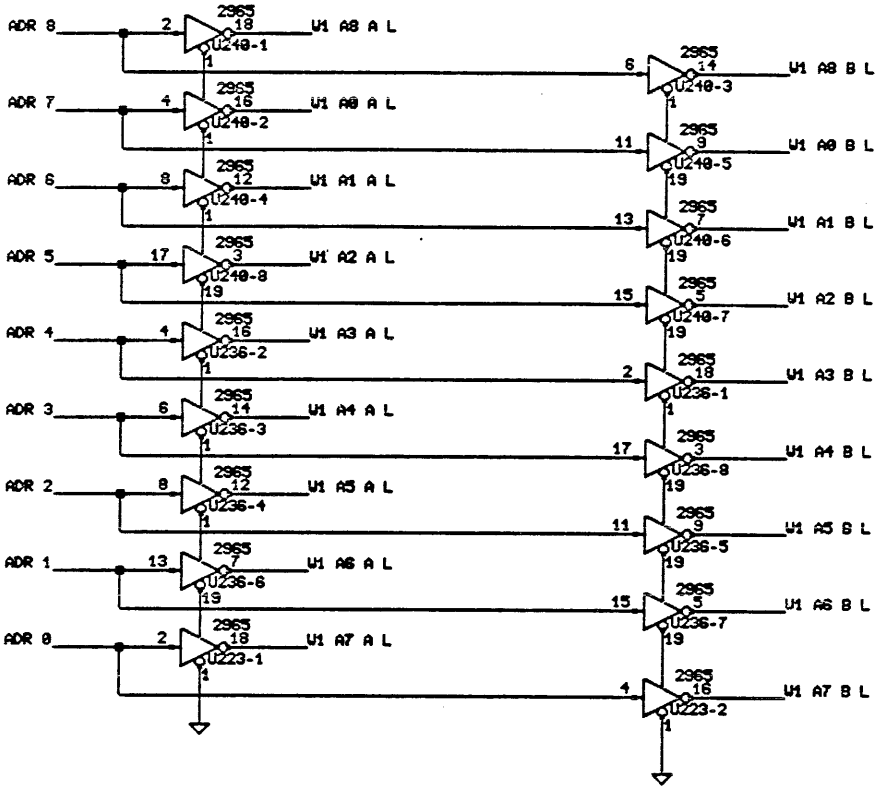


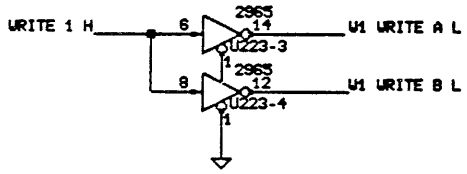


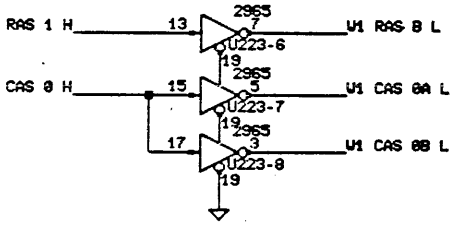


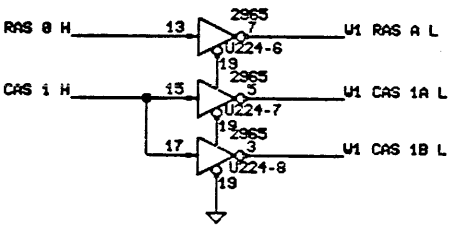


TITLE	MEMORY ADDRESS DRIVER WORD 2					LMEM14	
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	21 Apr 83	UCH	A	11	0241-	02	Q
	UPDATED	14 Jan 85	STECK	PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 14 OF 34	

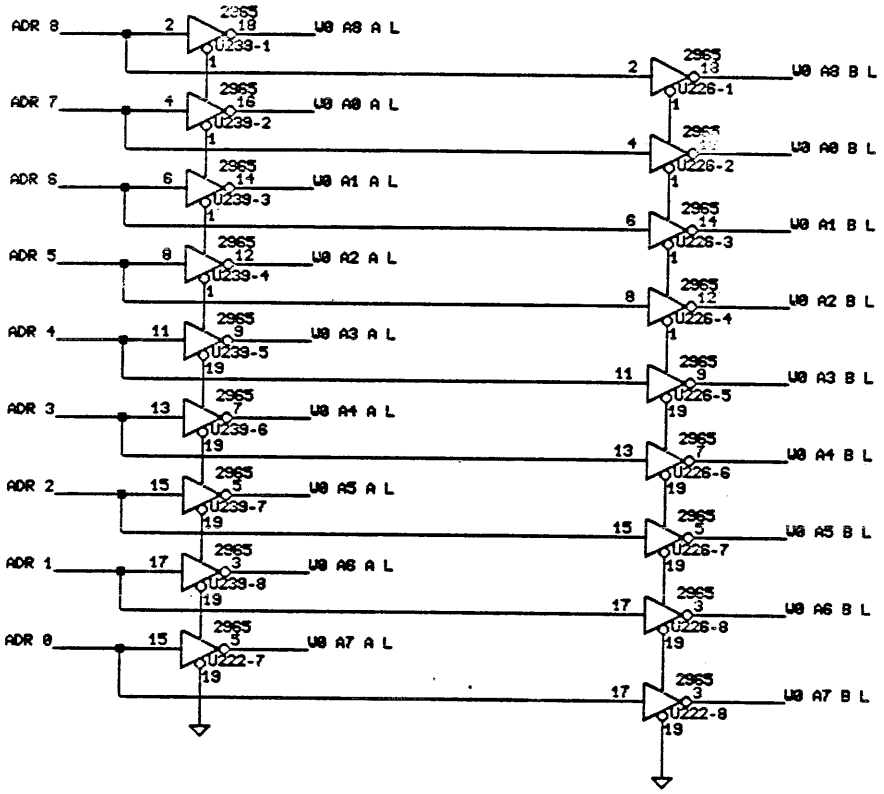


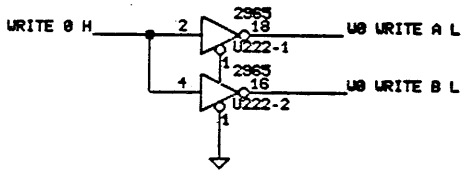


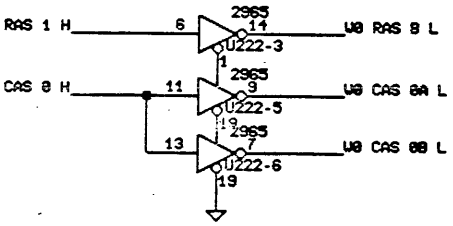


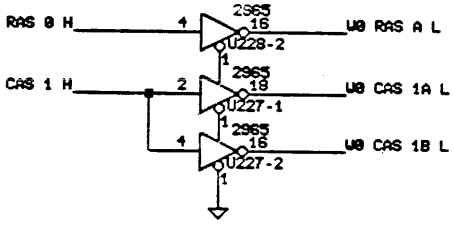


TITLE	MEMORY ADDRESS DRIVER WORD 1						UMEM15
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	21 Apr 83	UCH	A	11	0241-	02	Q
	UPDATED	14 Jan 85	STECK	PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 15	OF 34





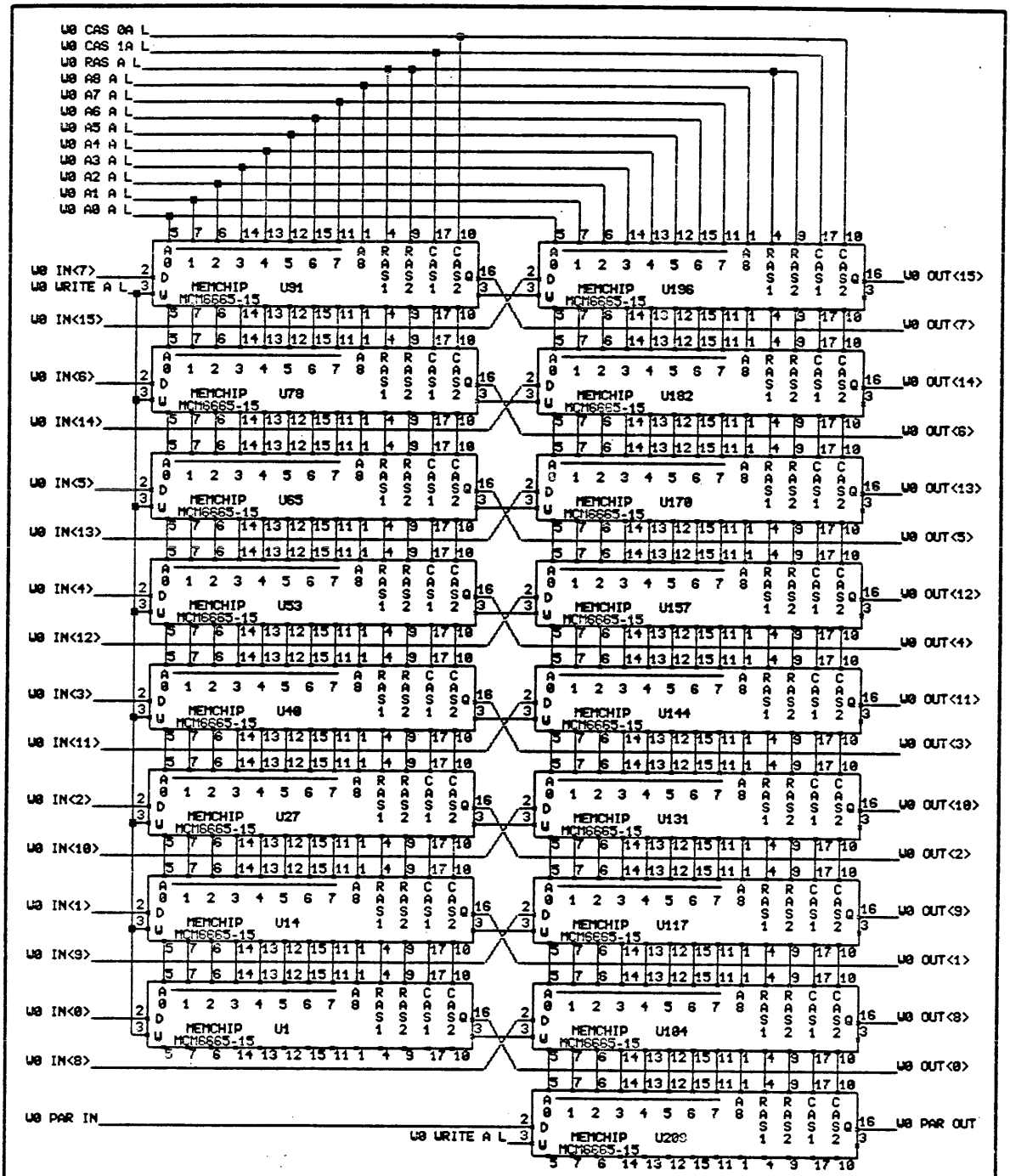




TITLE	MEMORY ADDRESS DRIVER WORD 0		LMEM16

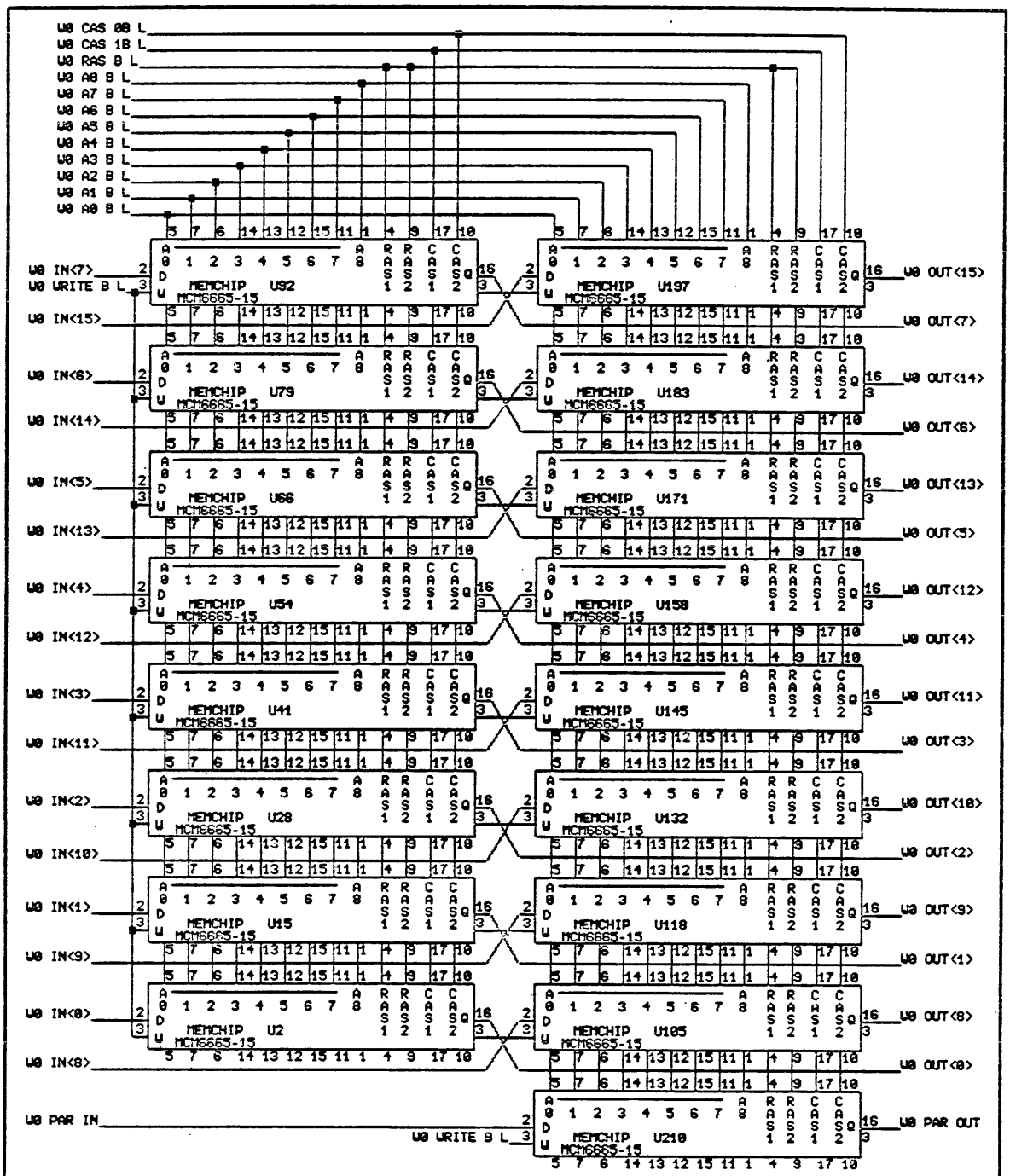
PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	21 Apr 83	UCH	A	1 1	0 2 4 1 -	0 2	Q
UPDATED	14 Jan 85	STECK	PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 16 OF 34	



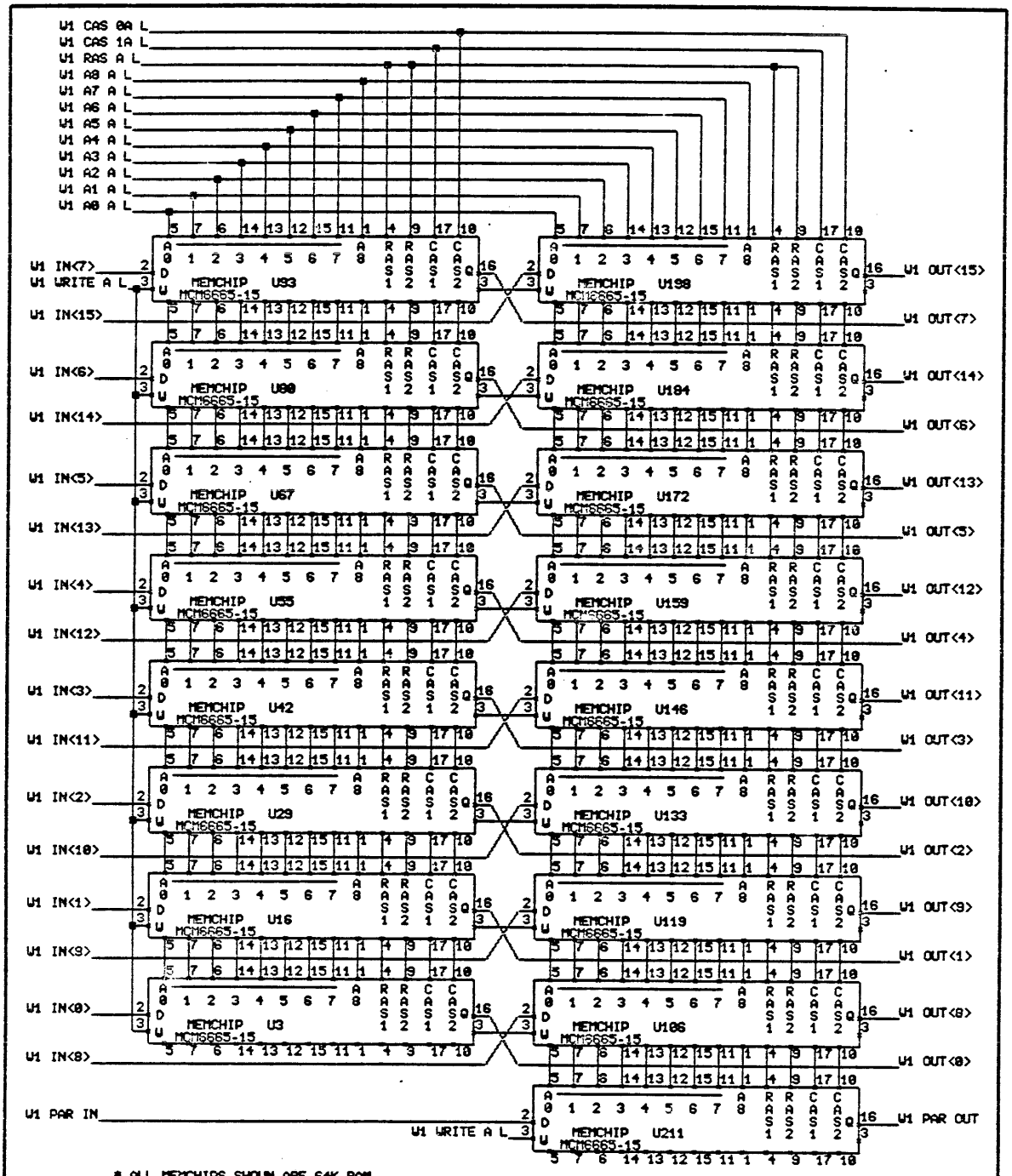
* ALL MEMCHIPS SHOWN ARE 64K RAM.

TITLE	WORD 0 BANK A						LMEM17
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR / REV
	DRAWN	23 Apr 83	UCH	A	11	0241-	02 / F
	UPDATED	22 May 84	STECK	PROJ : 1 MEGABYTE LANSCAPE/MEMORY			PAGE 17 OF 34



* ALL MEMCHIPS SHOWN ARE 64K RAM.

TITLE	WORD 0 BANK B					LMEM18	
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	WAR	REV
	DRAWN	25 Apr 83	UCH	A	11	0241-	02	F
	UPDATED	22 May 84	STECK	PROJ :	1 MEGABYTE LANSCAPE/MEMORY		PAGE	18 OF 34



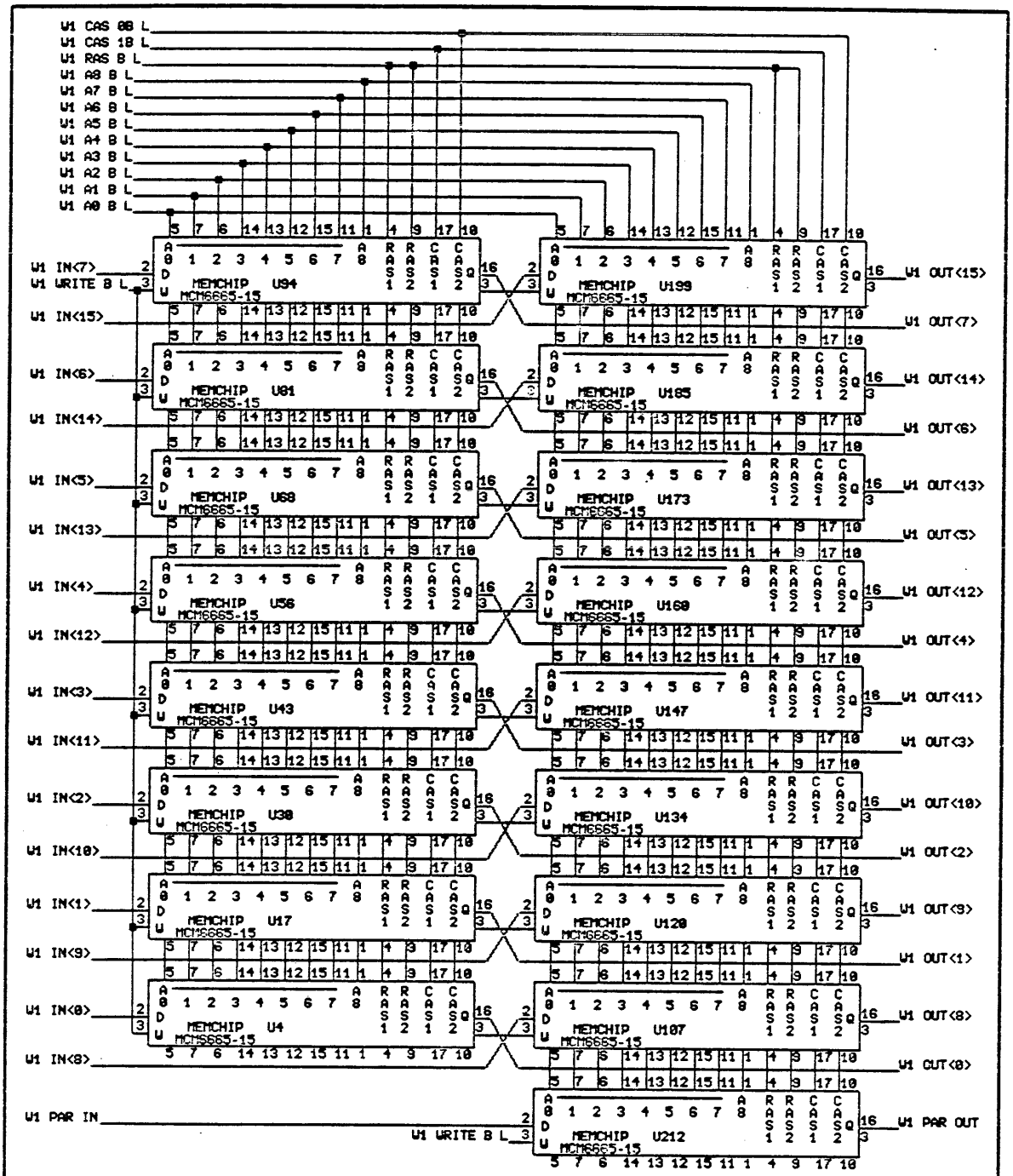
* ALL MEMCHIPS SHOWN ARE 64K RAM.

TITLE: WORD 1 BANK A

LMEM19

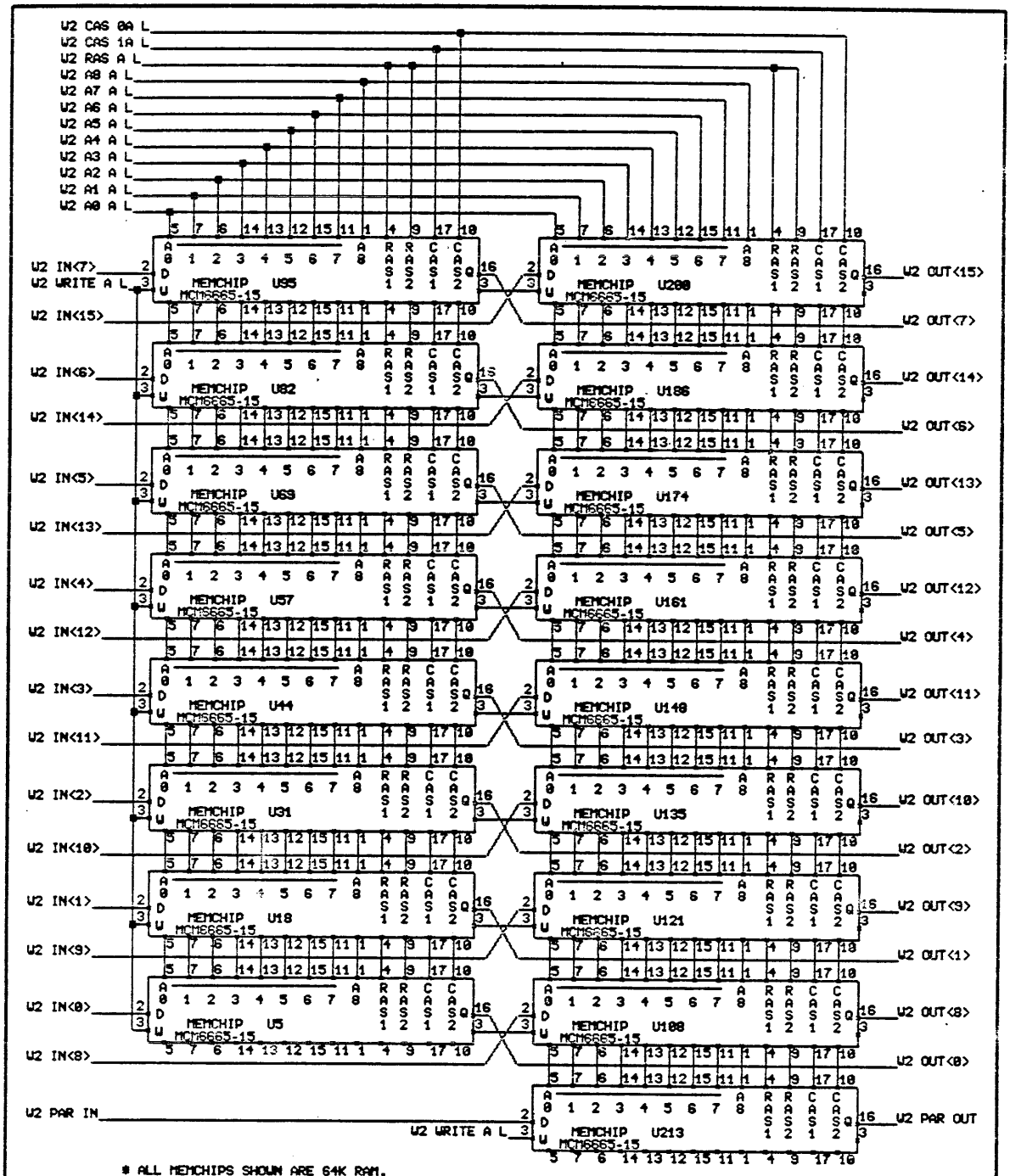
PERQ

DESIGNED	BILL MULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	25 Apr 83	UCH	A	11	0241-	02	F
UPDATED	22 May 84	STECK	PROJ : 1 MEGABYTE LANSCAPE/MEMORY			PAGE 19 OF 34	



* ALL MEMCHIPS SHOWN ARE 64K RAM.

TITLE	WORD 1 BANK B					LMEM20	
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	25 Apr 83	UCH	A	11	0241-	02	F
	UPDATED	22 May 84	STECK	PROJ : 1 MEGABYTE LANSCAPE/MEMORY			PAGE 28 OF 34	



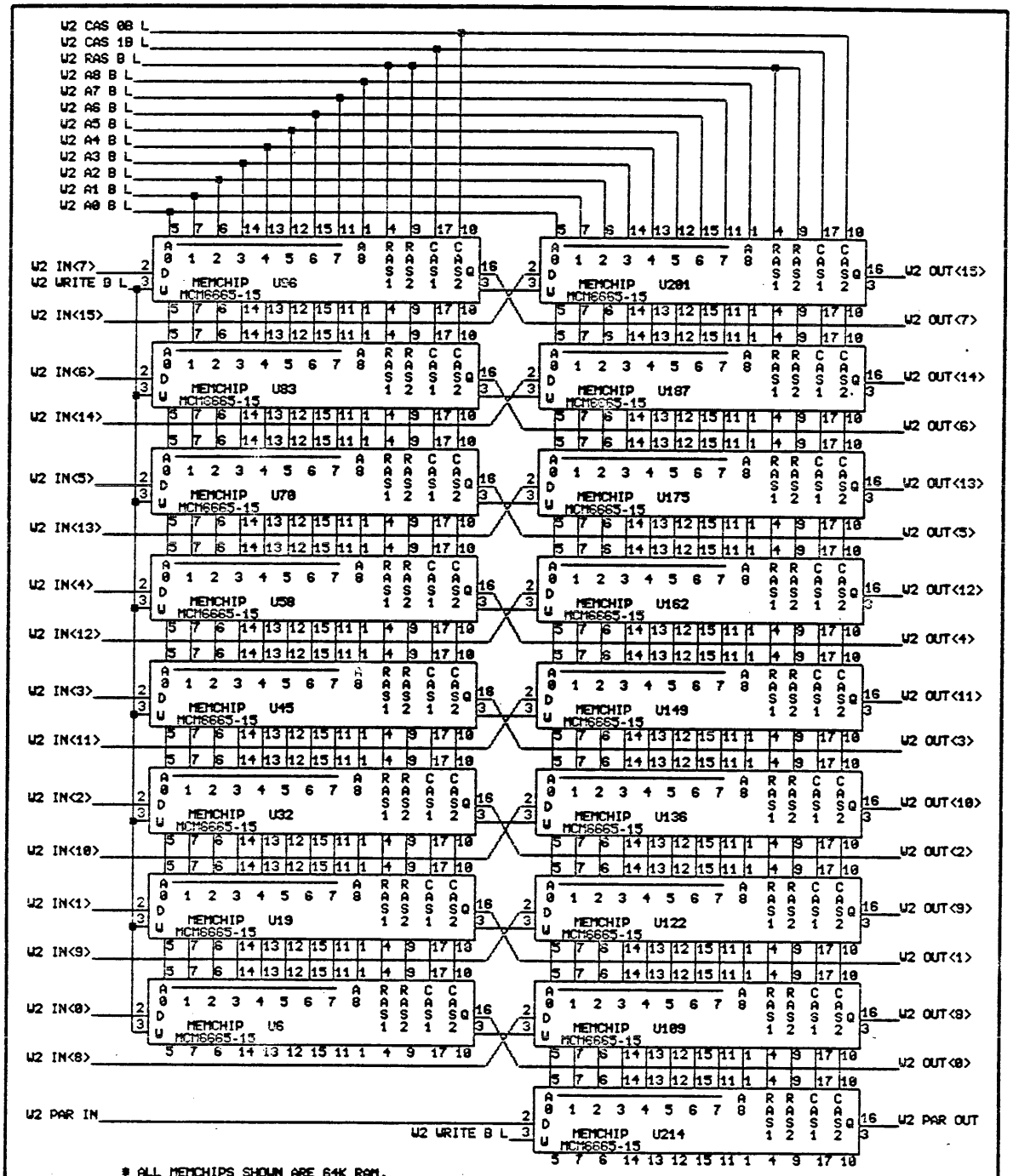
ALL MEMCHIPS SHOWN ARE 64K RAM.

TITLE: WORD 2 BANK A

LMEM21

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR / REV
DRAWN	25 Apr 83	UCH	A	11	0241-	02 / F
UPDATED	22 May 84	STECK	PROJ : 1 MEGABYTE LANSCAPE/MEMORY			PAGE 21 OF 34



* ALL MEMCHIPS SHOWN ARE 64K RAM.

TITLE: WORD 2 BANK B

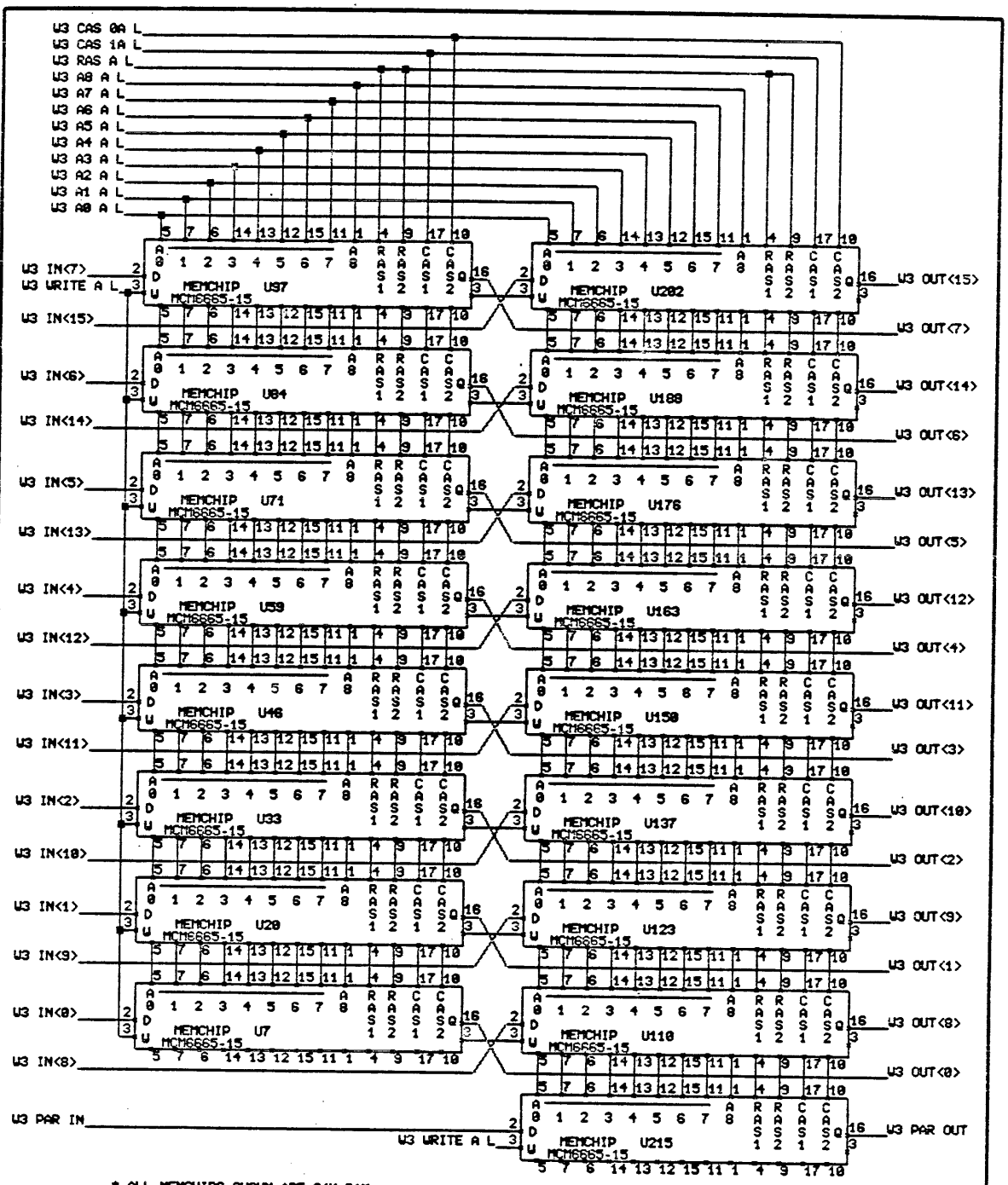
LMEM22

PERQ

DESIGNED	BILL HULLEY		
DRAWN	25 Apr 83	WCH	
UPDATED	22 May 84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	02	F

PROJ : 1 MEGABYTE LANDSCAPE/MEMORY



* ALL MEMCHIPS SHOWN ARE 64K RAM.

TITLE: WORD 3 BANK A

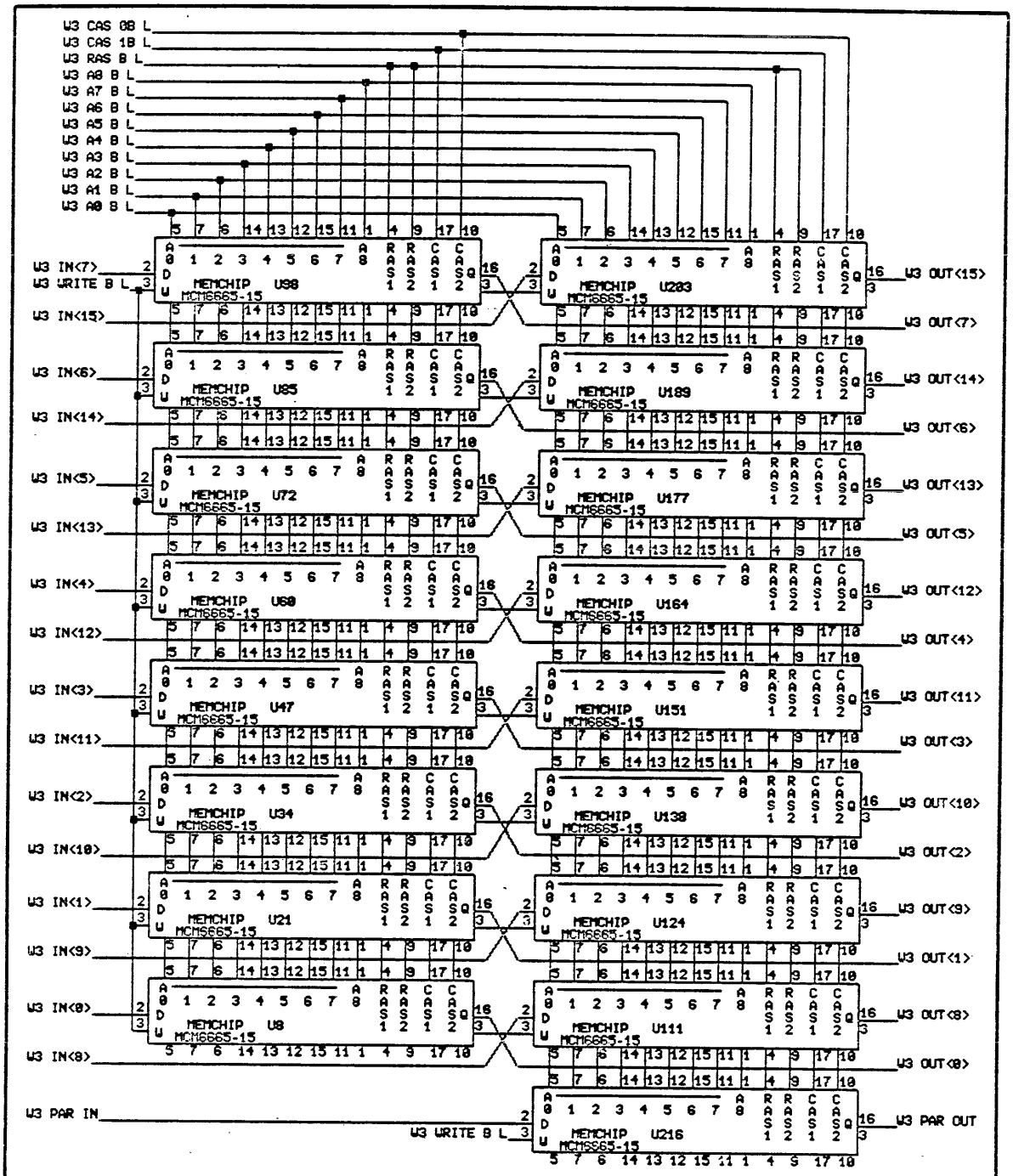
LMEM23

PERQ

DESIGNED	BILL HULLEY	
DRAWN	25 Apr 83	UCH
UPDATED	22 May 84	STECK

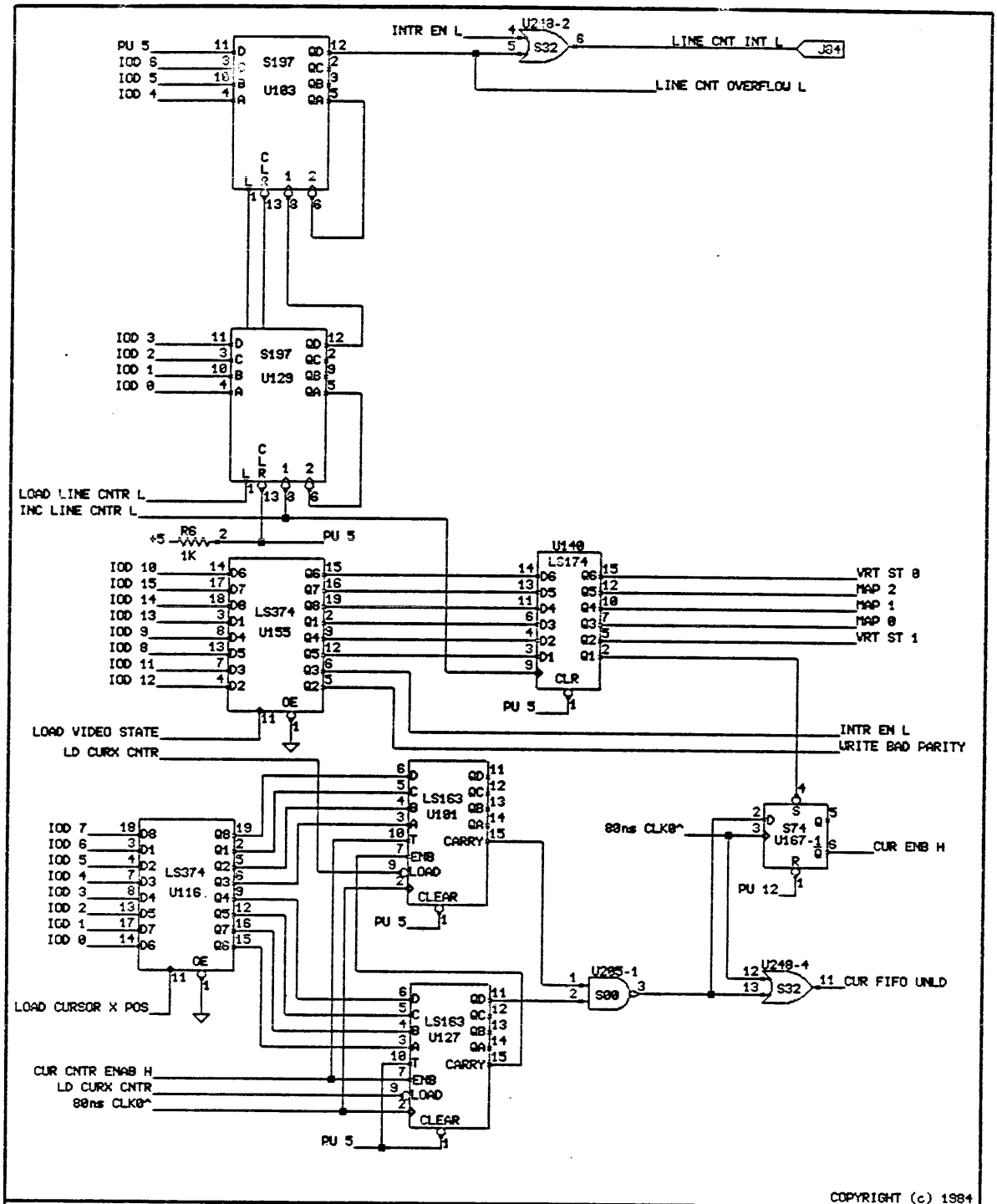
SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	02	F

PROJ : 1 MEGABYTE LANSCAPE/MEMORY



* ALL MEMCHIPS SHOWN ARE 64K RAM.

TITLE	WCRD 3 BANK B							LMEM24
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	25 Apr 83	UCH	A	11	0241-	02	F
	UPDATED	22 May 84	STECK	PROJ : 1 MEGABYTE LANSCAPE/MEMORY			PAGE 24 OF 34	



TITLE: IOB VIDEO CONTROL REGISTERS

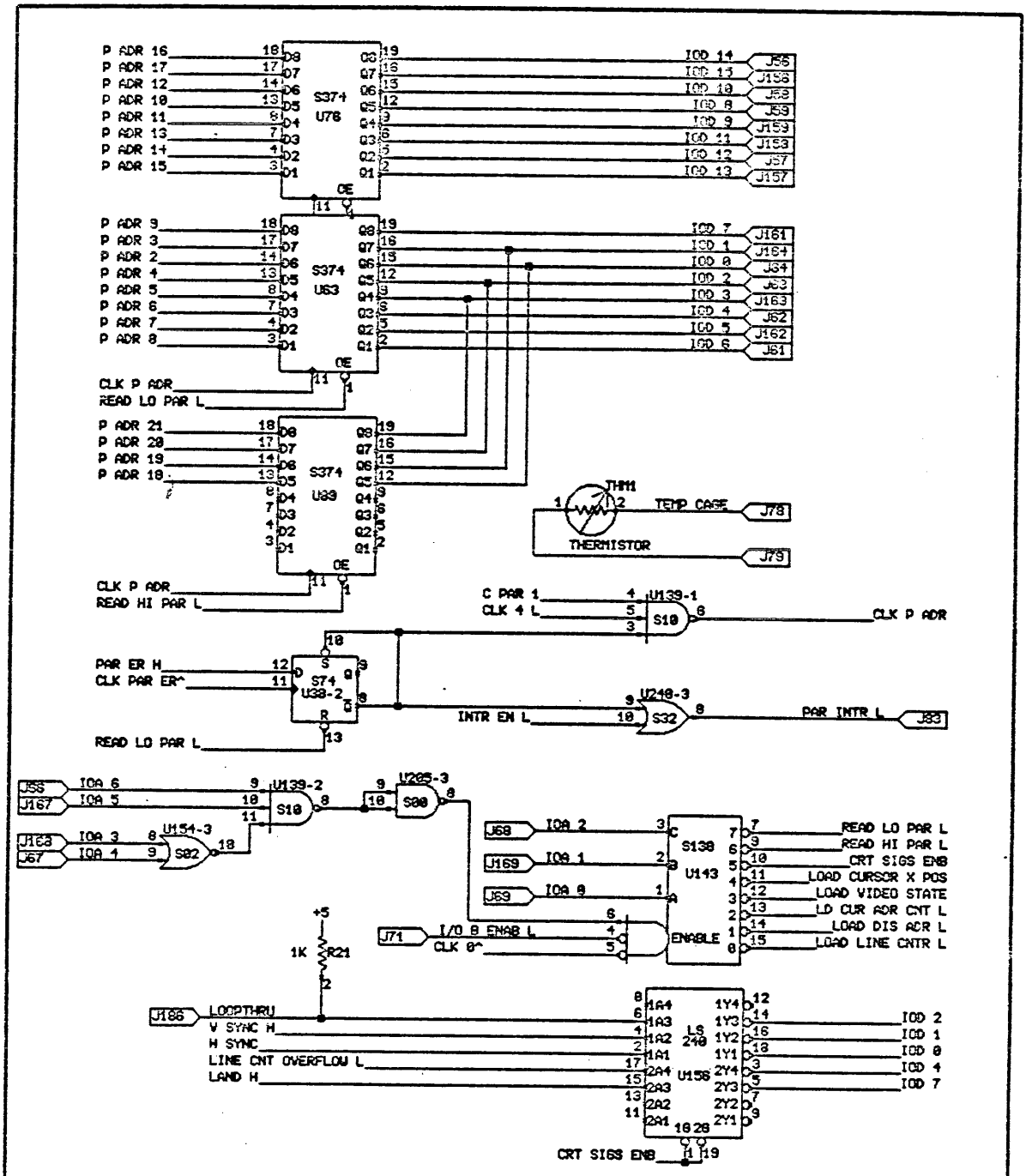
LMEM25

PERQ

DESIGNED	BILL HULLEY	
DRAWN	21 APR 83	UCH
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	9241-	02	Q

PROJ : 1 MEGABYTE LANDSCAPE/MEMORY

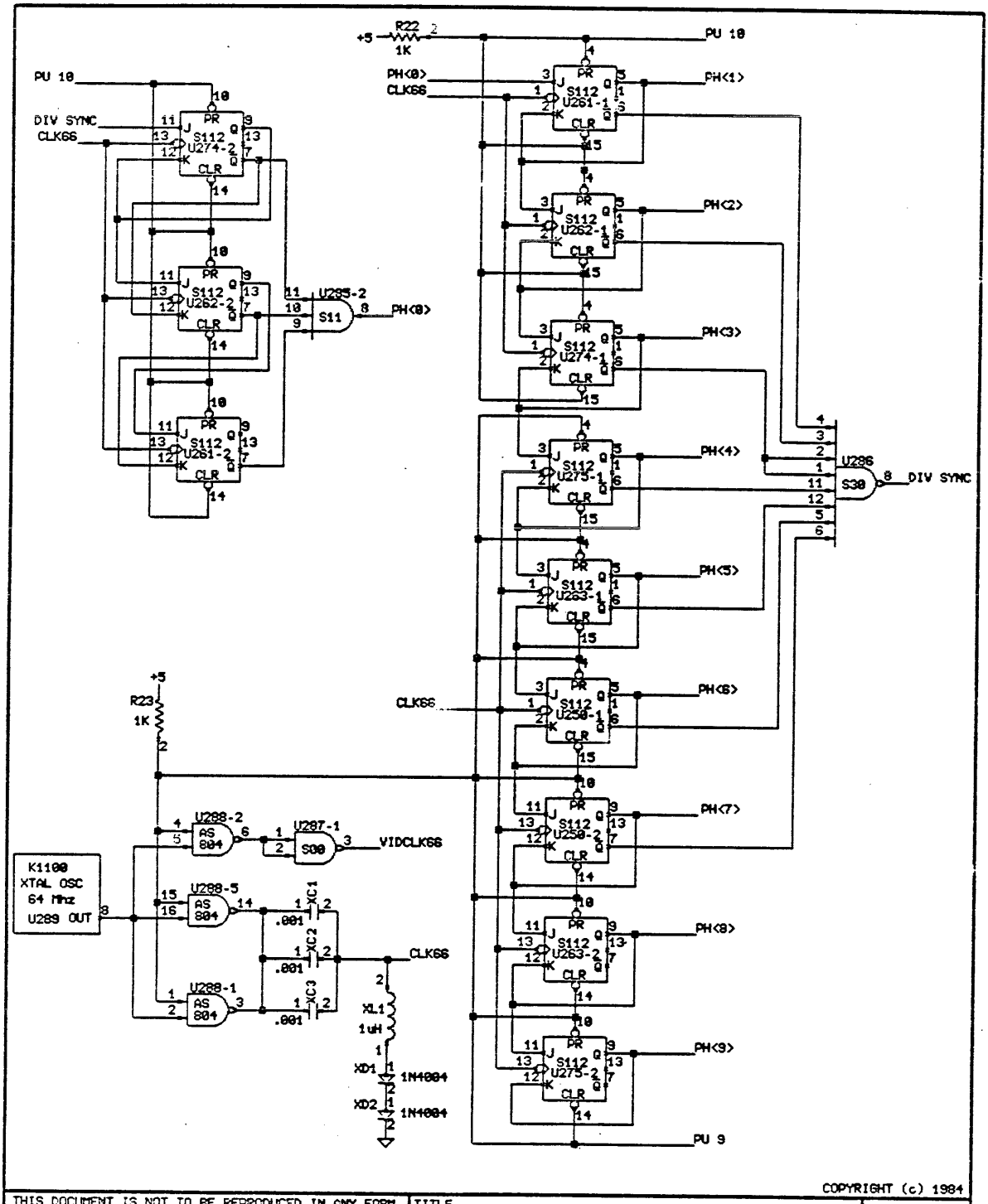


TITLE: I/O STATUS REGISTERS

LMEM26

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	29 Apr 83	WCH	A	11	8241-	02	F
UPDATED	12 Jan 84		PROJ : 1 MEGABYTE LANDSCAPE/MEMORY			PAGE 26 OF 34	



TITLE: CLOCK PHASE GENERATION LOGIC

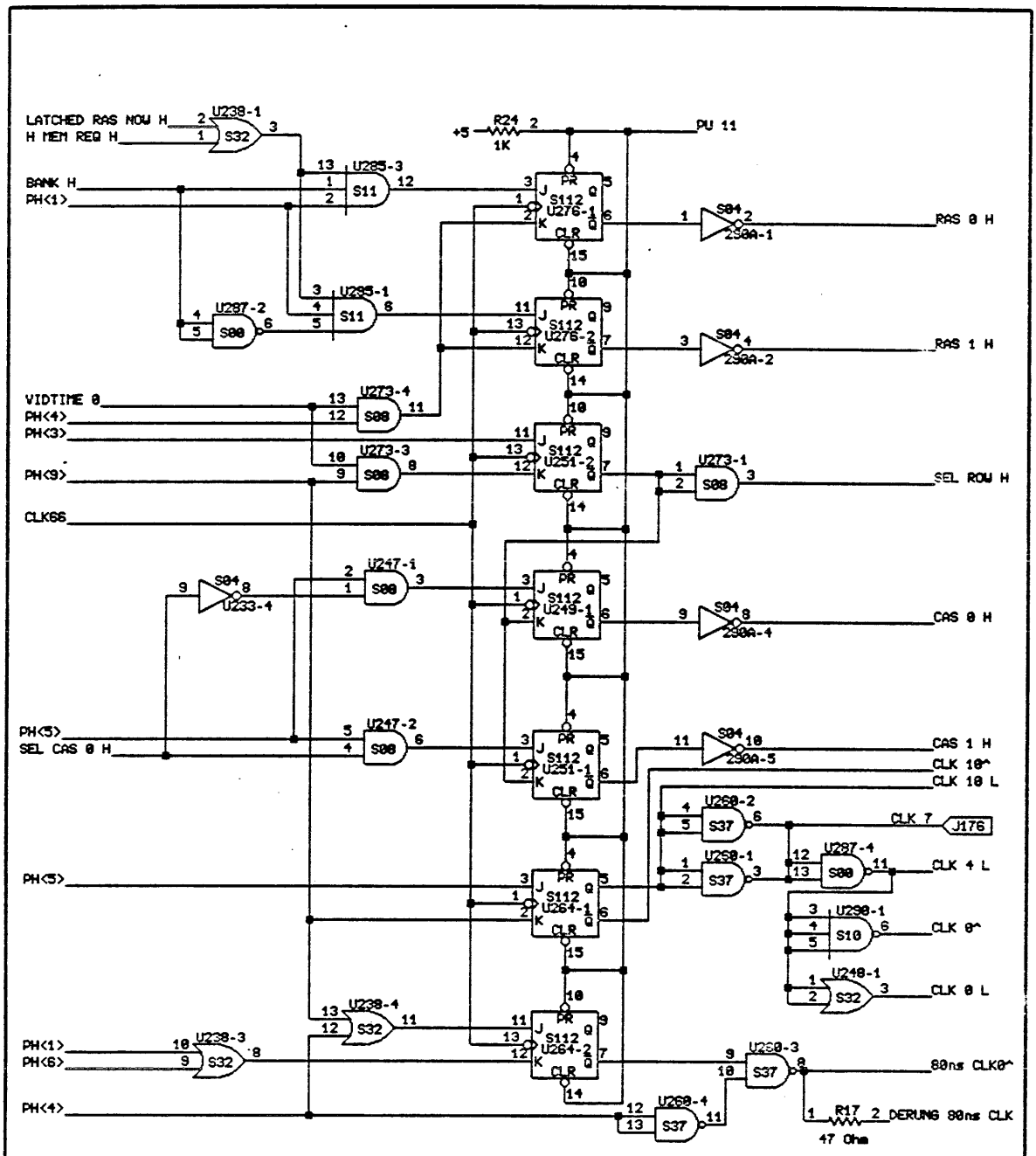
LMEM127

PERQ

DESIGNED	BILL HULLEY	
DRAWN	25 Apr 83	SBokse
UPDATED	14 Jan 85	STECK

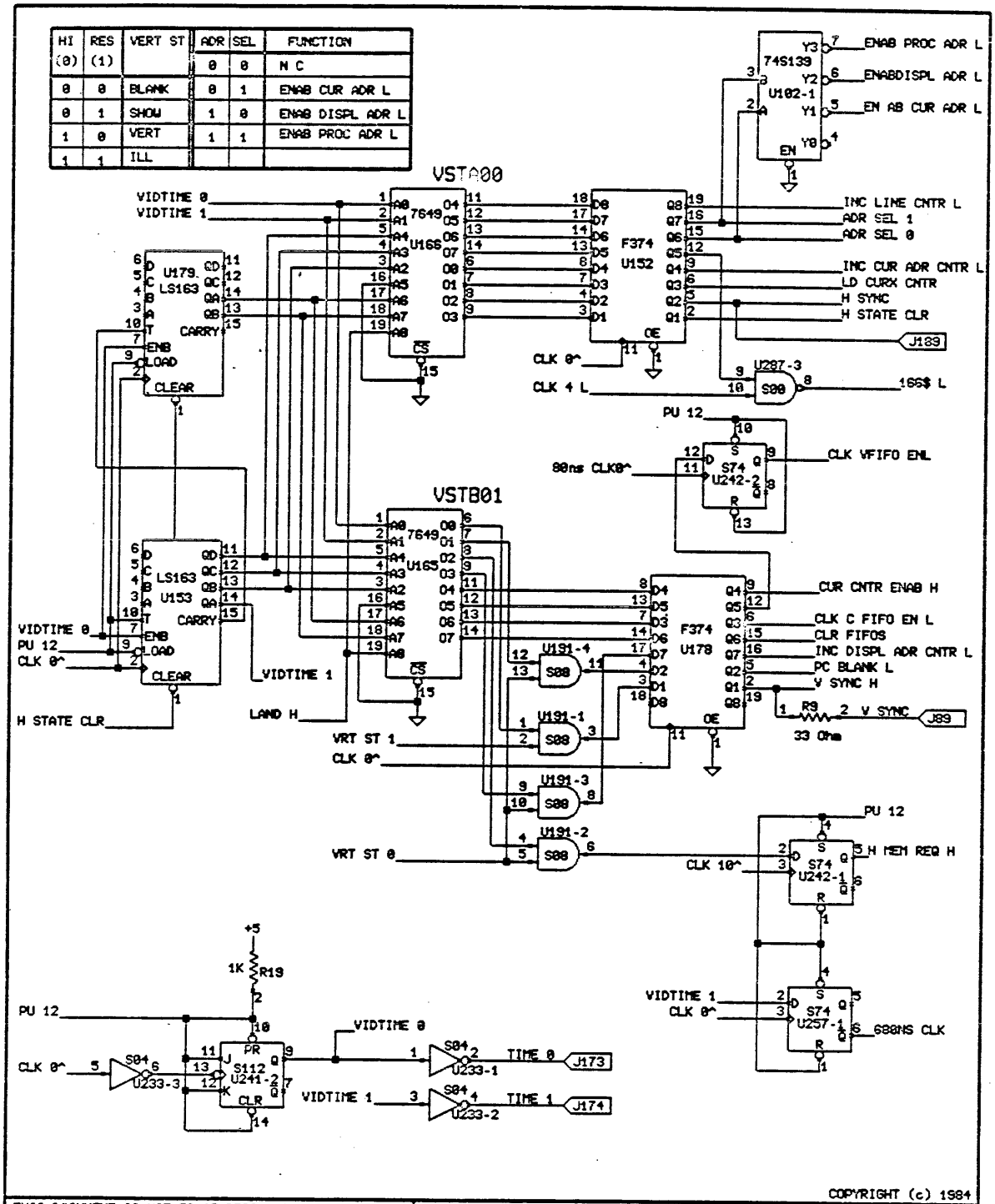
SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	02	Q

PROJ : 1 MEGABYTE LANDSCAPE/MEMORY



TITLE	CLOCK GENERATION						LMEM28
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	27 APR 83	UCH	A	1 1	0 2 4 1 -	0 2	Q
	UPDATED	14 Jan 85	STECK	PROJ :	1 MEGABYTE LANDSCAPE/MEMORY		PAGE 23 OF 34	

HI (0)	RES (1)	VERT ST	ADR	SEL	FUNCTION
			0	0	N C
0	0	BLANK	0	1	ENAB CUR ADR L
0	1	SHOW	1	0	ENAB DISPL ADR L
1	0	VERT	1	1	ENAB PROC ADR L
1	1	ILL			



TITLE: HORIZONTAL STATE

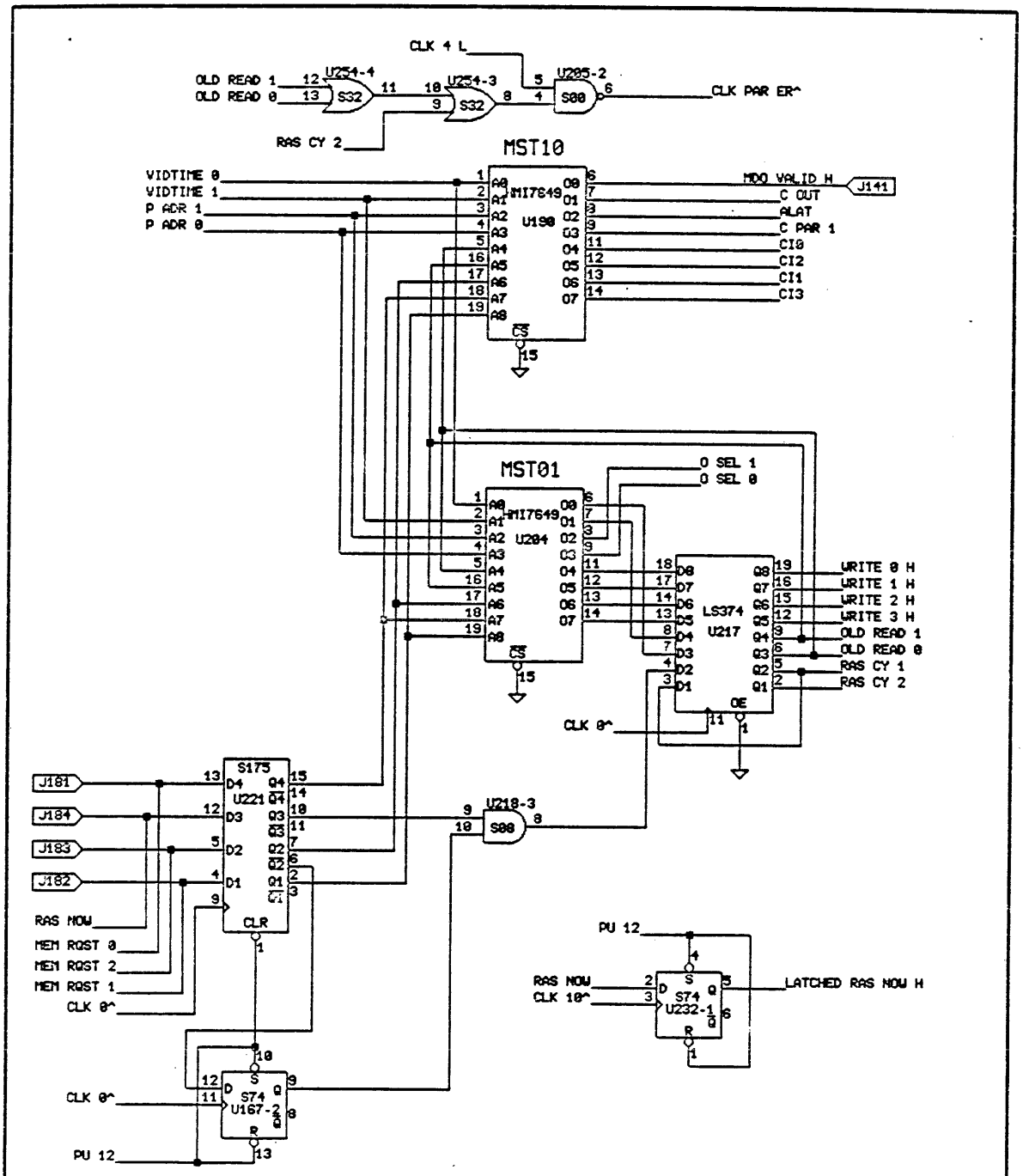
LMEM29

PERQ

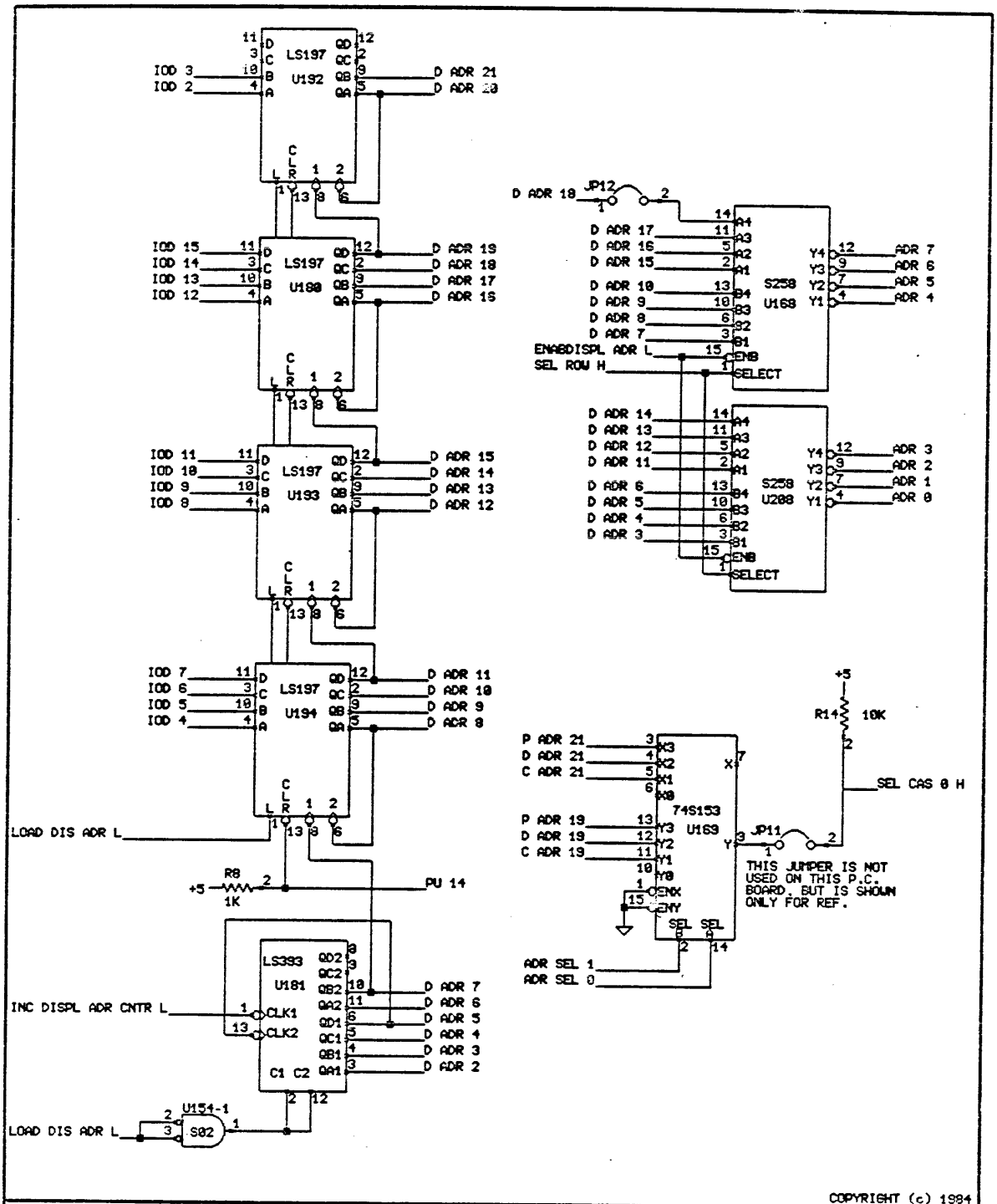
DESIGNED	BILL HULLEY	
DRAWN	09 May 83	WCH
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	02	Q

PROJ : 1 MEGABYTE LANDSCAPE/MEMORY



TITLE	MEMORY STATE					LMEM30	
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	27 Oct 83	WCH	A	11	0241-	02	L
	UPDATED	25 June 84	STECK	PROJ : 1 MEGABYTE LANDSCAPE/MEMORY			PAGE 38 OF 34	



TITLE: DISPLAY ADDRESS COUNTERS AND MUX

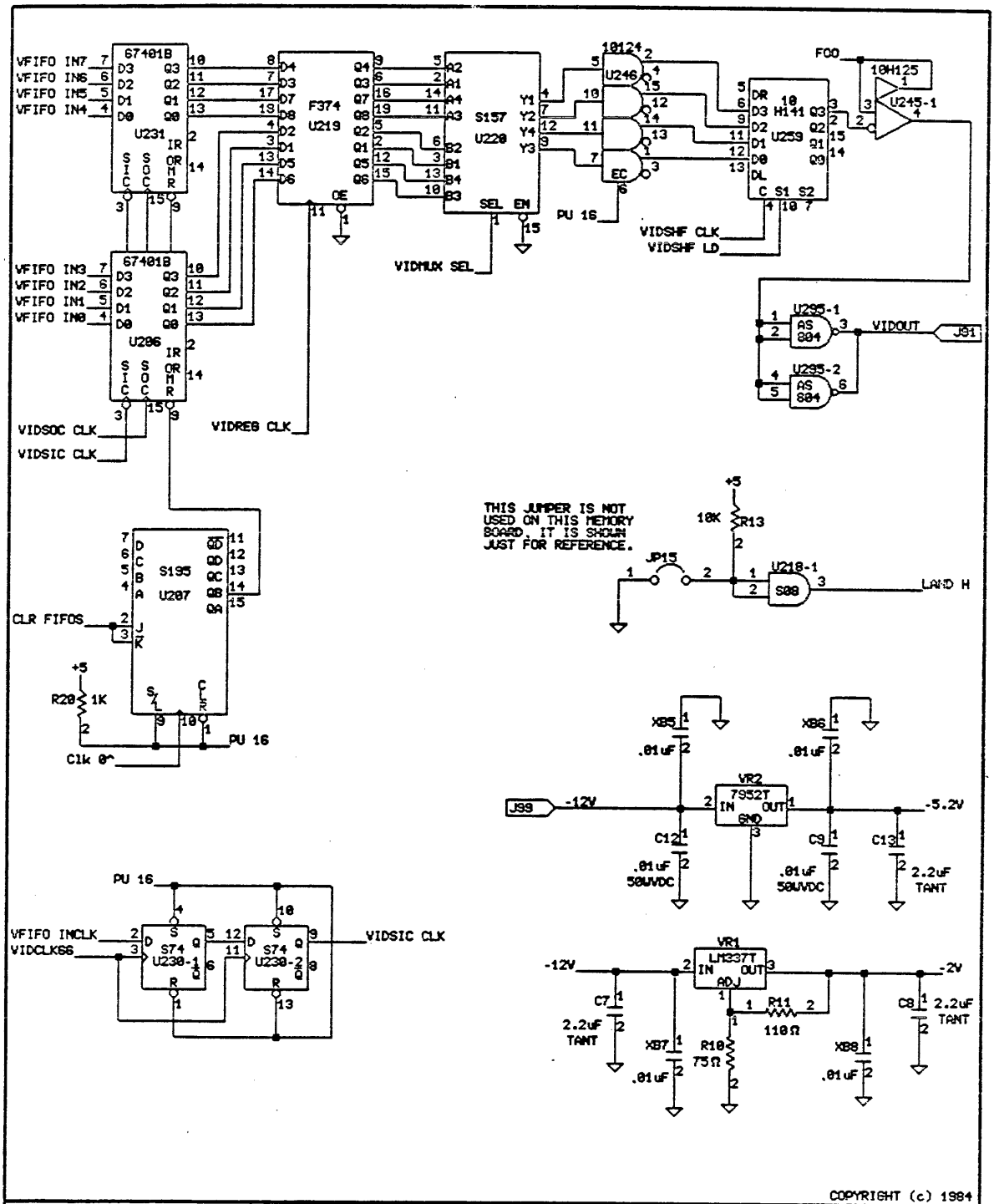
LMEM31

PERQ

DESIGNED	BILL HULLEY	
DRAWN	19 Apr 83	UCH
UPDATED	14 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	02	Q

PROJ : 1 MEGABYTE LANDSCAPE/MEMORY

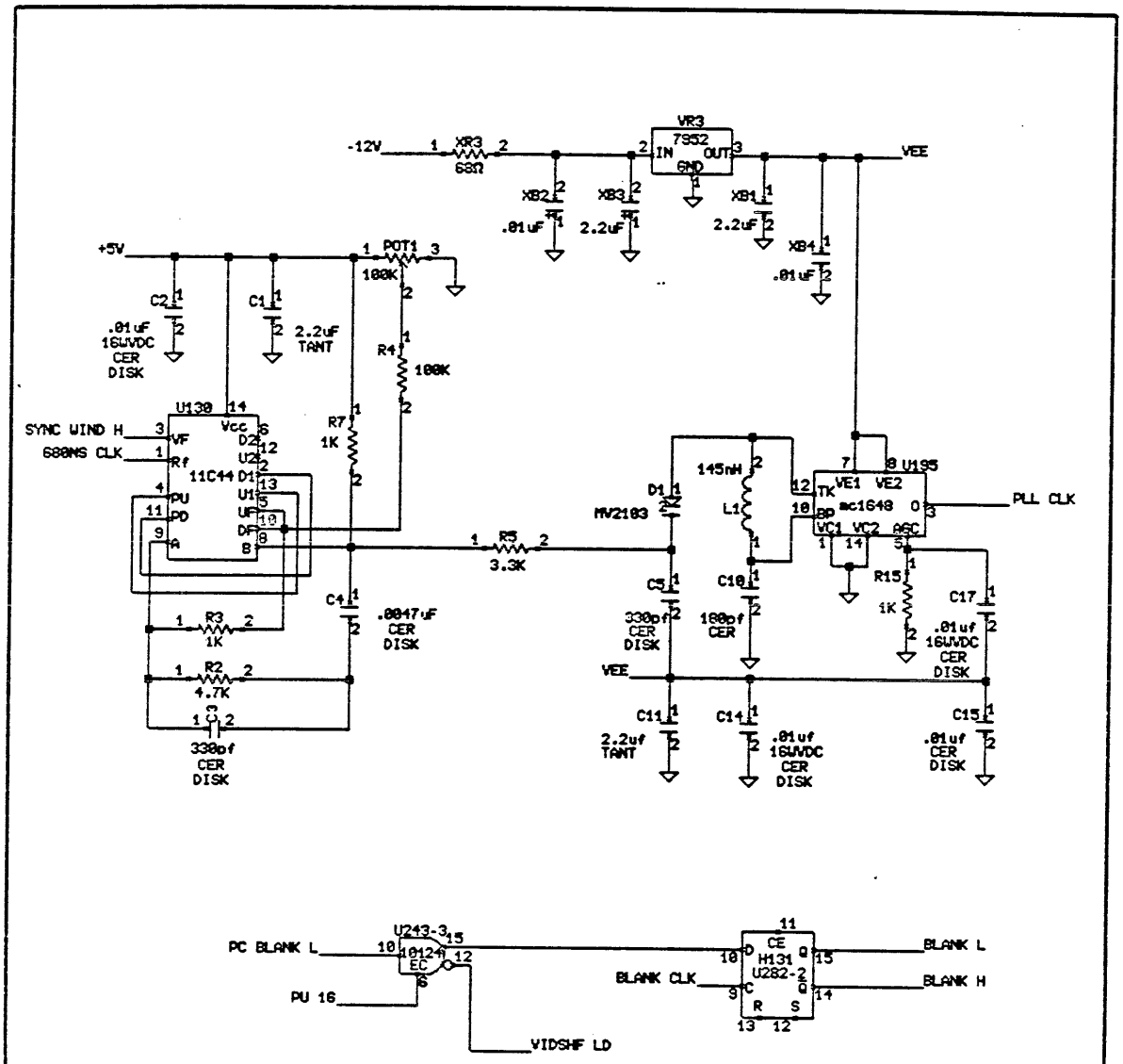


TITLE: VIDEO OUT DATA PATH - -5.2V and -2V REGULATORS

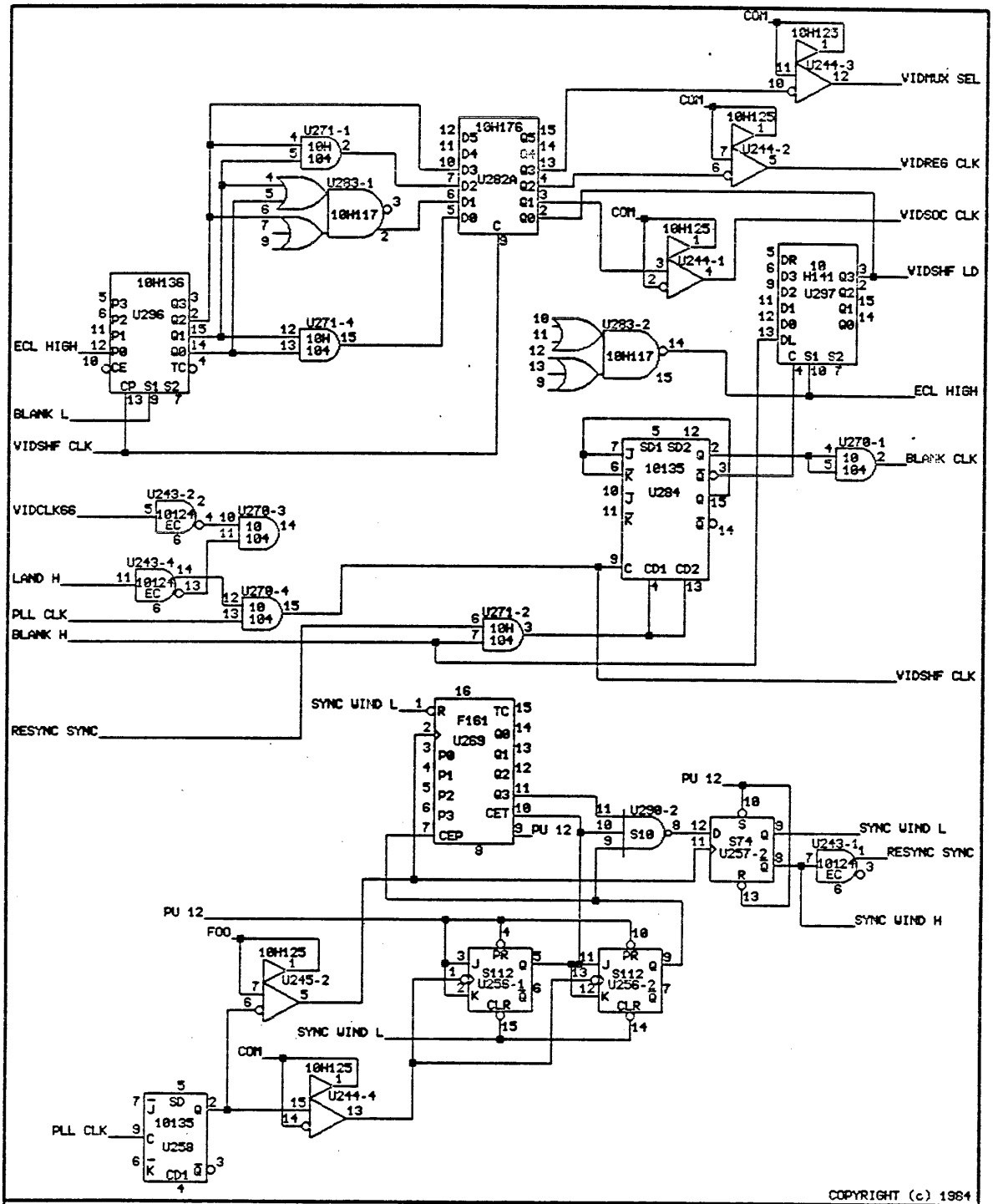
LMEM32

PERQ

DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	26 Apr 83	SBokse	A	11	8241-	02	Q
UPDATED	14 Jan 85	STECK	PROJ : 1 MEGABYTE LANDSCAPE/MEMORY			PAGE 32 OF 34	



TITLE	PHASE LOCK LOOP - VCO AND PHASE COMPARATOR					LMEM33	
PERQ	DESIGNED	BILL HULLEY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	25 Apr 83	SBokse	A	11	0241-	02	T
	UPDATED	17 Jan 85	STECK	PROJ : 1 MEGABYTE LANDSCAPE/MEMORY			PAGE 33 OF 34	



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TITLE: VIDEO CLOCK SYNC AND VIDEO OUT CONTROL

LMEM34

PERQ

DESIGNED	BILL HULLEY	
DRAWN	25 Apr 83	SBoker
UPDATED	17 Jan 85	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0241-	02	U

PROJ : 1 MEGABYTE LANDSCAPE/MEMORY

Part/Page Cross Reference 23 Jan 85 09:59:27

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U8	MEMCHIP	24
U9	74S374	3
U10	74S374	2
U11	74S74	1 1
U12	74S51	4 1
U13	74S280	1
U14	MEMCHIP	17
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WO IN<9>...............18 17  2
WO OUT<0>..............18 17  8  5
WO OUT<10>.............18 17  8  5
WO OUT<11>.............18 17  8  5
WO OUT<12>.............18 17  7  5
WO OUT<13>.............18 17  7  5
WO OUT<14>.............18 17  7  5
WO OUT<15>.............18 17  7  5
WO OUT<1>..............18 17  8  5
WO OUT<2>..............18 17  8  5
WO OUT<3>..............18 17  8  5
WO OUT<4>..............18 17  7  5
WO OUT<5>..............18 17  7  5
WO OUT<6>..............18 17  7  5
WO OUT<7>..............18 17  7  5
WO OUT<8>..............18 17  8  5
WO OUT<9>..............18 17  8  5
WO PAR IN..............18 17  1
WO PAR OUT.............18 17  4
WO RAS A L.............17 17 17 17 16
WO RAS B L.............18 18 18 18 16
WO WRITE A L...........17 17 16
```

```
W0 WRITE B L.....18 18 16
W1 A0 A L.....19 19 15
W1 A0 B L.....20 20 15
W1 A1 A L.....19 19 15
W1 A1 B L.....20 20 15
W1 A2 A L.....19 19 15
W1 A2 B L.....20 20 15
W1 A3 A L.....19 19 15
W1 A3 B L.....20 20 15
W1 A4 A L.....19 19 15
W1 A4 B L.....20 20 15
W1 A5 A L.....19 19 15
W1 A5 B L.....20 20 15
W1 A6 A L.....19 19 15
W1 A6 B L.....20 20 15
W1 A7 A L.....19 19 15
W1 A7 B L.....20 20 15
W1 A8 A L.....19 19 15
W1 A8 B L.....20 20 15
W1 CAS 0A L.....19 19 15
W1 CAS 0B L.....20 20 15
W1 CAS 1A L.....19 19 15
W1 CAS 1B L.....20 20 15
W1 IN<0>.....20 19  2
W1 IN<10>.....20 19  2
W1 IN<11>.....20 19  2
W1 IN<12>.....20 19  2
W1 IN<13>.....20 19  2
W1 IN<14>.....20 19  2
W1 IN<15>.....20 19  2
W1 IN<1>.....20 19  2
W1 IN<2>.....20 19  2
W1 IN<3>.....20 19  2
W1 IN<4>.....20 19  2
W1 IN<5>.....20 19  2
W1 IN<6>.....20 19  2
W1 IN<7>.....20 19  2
W1 IN<8>.....20 19  2
W1 IN<9>.....20 19  2
W1 OUT<0>.....20 19  8  5
W1 OUT<10>.....20 19  8  5
W1 OUT<11>.....20 19  8  5
W1 OUT<12>.....20 19  7  5
W1 OUT<13>.....20 19  7  5
W1 OUT<14>.....20 19  7  5
W1 OUT<15>.....20 19  7  5
W1 OUT<1>.....20 19  8  5
W1 OUT<2>.....20 19  8  5
W1 OUT<3>.....20 19  8  5
W1 OUT<4>.....20 19  7  5
W1 OUT<5>.....20 19  7  5
W1 OUT<6>.....20 19  7  5
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W1 OUT<7>.............20 19  7  5
W1 OUT<8>.............20 19  8  5
W1 OUT<9>.............20 19  8  5
W1 PAR IN.............20 19  1
W1 PAR OUT............20 19  4
W1 RAS A L............19 19 19 19 15
W1 RAS B L............20 20 20 20 15
W1 WRITE A L..........19 19 15
W1 WRITE B L..........20 20 15
W2 A0 A L.............21 21 14
W2 A0 B L.............22 22 14
W2 A1 A L.............21 21 14
W2 A1 B L.............22 22 14
W2 A2 A L.............21 21 14
W2 A2 B L.............22 22 14
W2 A3 A L.............21 21 14
W2 A3 B L.............22 22 14
W2 A4 A L.............21 21 14
W2 A4 B L.............22 22 14
W2 A5 A L.............21 21 14
W2 A5 B L.............22 22 14
W2 A6 A L.............21 21 14
W2 A6 B L.............22 22 14
W2 A7 A L.............21 21 14
W2 A7 B L.............22 22 14
W2 A8 A L.............21 21 14
W2 A8 B L.............22 22 14
W2 CAS 0A L...........21 21 14
W2 CAS 0B L...........22 22 14
W2 CAS 1A L...........21 21 14
W2 CAS 1B L...........22 22 14
W2 IN<0>..............22 21  3
W2 IN<10>.............22 21  3
W2 IN<11>.............22 21  3
W2 IN<12>.............22 21  3
W2 IN<13>.............22 21  3
W2 IN<14>.............22 21  3
W2 IN<15>.............22 21  3
W2 IN<1>..............22 21  3
W2 IN<2>..............22 21  3
W2 IN<3>..............22 21  3
W2 IN<4>..............22 21  3
W2 IN<5>..............22 21  3
W2 IN<6>..............22 21  3
W2 IN<7>..............22 21  3
W2 IN<8>..............22 21  3
W2 IN<9>..............22 21  3
W2 OUT<0>.............22 21  8  6
W2 OUT<10>............22 21  8  6
W2 OUT<11>............22 21  8  6
W2 OUT<12>............22 21  7  6
W2 OUT<13>............22 21  7  6
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W2 OUT<14>.....22 21 7 6
W2 OUT<15>.....22 21 7 6
W2 OUT<1>.....22 21 8 6
W2 OUT<2>.....22 21 8 6
W2 OUT<3>.....22 21 8 6
W2 OUT<4>.....22 21 7 6
W2 OUT<5>.....22 21 7 6
W2 OUT<6>.....22 21 7 6
W2 OUT<7>.....22 21 7 6
W2 OUT<8>.....22 21 8 6
W2 OUT<9>.....22 21 8 6
W2 PAR IN.....22 21 1
W2 PAR OUT.....22 21 4
W2 RAS A L.....21 21 21 21 14
W2 RAS B L.....22 22 22 22 14
W2 WRITE A L.....21 21 14
W2 WRITE B L.....22 22 14
W3 A0 A L.....23 23 13
W3 A0 B L.....24 24 13
W3 A1 A L.....23 23 13
W3 A1 B L.....24 24 13
W3 A2 A L.....23 23 13
W3 A2 B L.....24 24 13
W3 A3 A L.....23 23 13
W3 A3 B L.....24 24 13
W3 A4 A L.....23 23 13
W3 A4 B L.....24 24 13
W3 A5 A L.....23 23 13
W3 A5 B L.....24 24 13
W3 A6 A L.....23 23 13
W3 A6 B L.....24 24 13
W3 A7 A L.....23 23 13
W3 A7 B L.....24 24 13
W3 A8 A L.....23 23 13
W3 A8 B L.....24 24 13
W3 CAS 0A L.....23 23 13
W3 CAS 0B L.....24 24 13
W3 CAS 1A L.....23 23 13
W3 CAS 1B L.....24 24 13
W3 IN<0>.....24 23 3
W3 IN<10>.....24 23 3
W3 IN<11>.....24 23 3
W3 IN<12>.....24 23 3
W3 IN<13>.....24 23 3
W3 IN<14>.....24 23 3
W3 IN<15>.....24 23 3
W3 IN<1>.....24 23 3
W3 IN<2>.....24 23 3
W3 IN<3>.....24 23 3
W3 IN<4>.....24 23 3
W3 IN<5>.....24 23 3
W3 IN<6>.....24 23 3

```
W3 IN<7>.....24 23  3
W3 IN<8>.....24 23  3
W3 IN<9>.....24 23  3
W3 OUT<0>.....24 23  8  6
W3 OUT<10>.....24 23  8  6
W3 OUT<11>.....24 23  8  6
W3 OUT<12>.....24 23  7  6
W3 OUT<13>.....24 23  7  6
W3 OUT<14>.....24 23  7  6
W3 OUT<15>.....24 23  7  6
W3 OUT<1>.....24 23  8  6
W3 OUT<2>.....24 23  8  6
W3 OUT<3>.....24 23  8  6
W3 OUT<4>.....24 23  7  6
W3 OUT<5>.....24 23  7  6
W3 OUT<6>.....24 23  7  6
W3 OUT<7>.....24 23  7  6
W3 OUT<8>.....24 23  8  6
W3 OUT<9>.....24 23  8  6
W3 PAR IN.....24 23  1
W3 PAR OUT.....24 23  4
W3 RAS A L.....23 23 23 23 13
W3 RAS B L.....24 24 24 24 13
W3 WRITE A L.....23 23 13
W3 WRITE B L.....24 24 13
WRITE 0 H.....30 16
WRITE 1 H.....30 15
WRITE 2 H.....30 14
WRITE 3 H.....30 13
WRITE BAD PARITY.....25  1
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This Run Was made using the following files:

110241.PART
lmem34.WL
lmem33.WL
lmem32.WL
lmem31.WL
lmem30.WL
lmem29.WL
lmem28.WL
lmem27.WL
lmem26.WL
lmem25.WL
lmem24.WL
lmem23.WL
lmem22.WL
lmem21.WL
lmem20.WL
lmem19.WL
lmem18.WL
lmem17.WL
lmem16.WL
lmem15.WL
lmem14.WL
lmem13.WL
lmem12.WL
lmem11.WL
lmem10.WL
lmem09.WL
lmem08.WL
lmem07.WL
lmem06.WL
lmem05.WL
lmem04.WL
lmem03.WL
lmem02.WL
lmem01.WL

Number Of Nets = 794
Begin Wirelist

1: U244-10 282A-13 .%282A-13

2: U13-1 U39-1 U26-1 U22-1 U35-1 U10-1
2: U36-1 U23-1 U61-1 U48-1 U9-1 U51-1
2: U102-15 U87-1 U87-15 U268-6 U281-6
2: U280-6 U255-6 U293-6 U294-6 U267-6
2: U279-6 U253-1 U292-1 U291-5 U291-8
2: U266-8 U278-8 U291-10 U266-10 U278-10
2: U291-17 U252-9 U265-1 U277-9 U90-1
2: U115-7 U64-1 U77-1 U88-1 U88-15 U142-1

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 2: U229-19 U225-19 U225-1 U228-19 U229-1
 2: U227-19 U235-19 U235-1 U237-19 U234-1
 2: U224-1 U234-19 U237-1 U236-19 U236-1
 2: U240-19 U223-1 U224-19 U223-19 U240-1
 2: U226-19 U239-19 U239-1 U227-1 U228-1
 2: U222-19 U222-1 U226-1 U155-1 U116-1
 2: XD2-2 U166-16 U102-1 U178-1 U152-1
 2: U165-16 U165-15 U166-15 U204-15 U217-1
 2: U190-15 U169-15 U169-1 XB5-1 R10-2
 2: VR2-3 C9-2 U220-15 U219-1 C13-2 C8-2
 2: C7-2 XB8-2 XB7-2 C12-2 XB6-1 C1-2
 2: VR3-1 XB2-1 XB3-1 XB1-2 XB4-2 C11-2
 2: C15-2 POT1-3 R15-2 U195-14 C2-2 C14-2
 2: C10-2 U195-1                          .!GND

 3: U244-6 282A-4                         .%282A-4

 4: U271-15 282A-5                        .%282A-5

 5: U283-2 282A-6                         .%282A-6

 6: U271-2 282A-7                         .%282A-7

 7: U276-6 290A-1                         .%290A-1

 8: U276-7 290A-3                         .%290A-3

 9: U249-6 290A-9                         .%290A-9

10: U195-5 R15-1 C17-1                    .%C17-1

11: THM1-1 J79-1                          .%J79-1

12: U168-14 JP12-2                        .%JP12-2

13: U86-14 JP2-2                          .%JP2-2

14: R4-1 POT1-2                           .%POT1-2

15: R10-1 VR1-1 R11-1                     .%R11-1

16: C3-2 C4-2 R2-2                        .%R2-2

17: U130-9 R2-1 C3-1 R3-1                 .%R3-1

18: U130-10 U130-5 R3-2 R4-2              .%R4-2

19: D1-2 C5-1 R5-2                        .%R5-2

20: U116-6 U101-3                         .%U101-3

21: U116-2 U101-5                         .%U101-5
```

22: U116-19 U101-6 .%U101-6

23: U127-15 U101-7 .%U101-7

24: U103-5 U103-6 .%U103-6

25: U129-12 U103-8 .%U103-8

26: U24-8 U11-11 .%U11-11

27: U12-8 U11-12 U37-2 U37-12 U11-2 .%U11-2

28: U24-6 U11-3 .%U11-3

29: U114-12 U154-4 U114-2 .%U114-2

30: U101-4 U116-5 .%U116-5

31: U13-6 U12-1 .%U12-1

32: U13-5 U12-10 .%U12-10

33: U25-6 U12-9 .%U12-9

34: U205-2 U127-11 .%U127-11

35: U116-15 U127-3 .%U127-3

36: U116-16 U127-4 .%U127-4

37: U116-12 U127-5 .%U127-5

38: U116-9 U127-6 .%U127-6

39: U129-6 U129-5 .%U129-5

40: U130-4 U130-13 .%U130-13

41: U130-11 U130-2 .%U130-2

42: R5-1 R7-2 C4-1 U130-8 .%U130-8

43: U154-10 U139-11 .%U139-11

44: U155-19 U140-11 .%U140-11

45: U155-16 U140-13 .%U140-13

46: U155-15 U140-14 .%U140-14

47: U167-4 U140-2 .%U140-2

48: U155-12 U140-3	.%U140-3
49: U155-9 U140-4	.%U140-4
50: U155-2 U140-6	.%U140-6
51: JP8-2 U141-14	.%U141-14
52: U287-9 U152-12	.%U152-12
53: U179-10 U153-15	.%U153-15
54: U178-8 U165-11	.%U165-11
55: U178-13 U165-12	.%U165-12
56: U178-7 U165-13	.%U165-13
57: U178-14 U165-14	.%U165-14
58: U191-1 U165-6	.%U165-6
59: U191-4 U165-8	.%U165-8
60: U152-18 U166-11	.%U166-11
61: U152-17 U166-12	.%U166-12
62: U152-14 U166-13	.%U166-13
63: U152-13 U166-14	.%U166-14
64: U165-17 U179-14 U166-17	.%U166-17
65: U165-18 U179-13 U166-18	.%U166-18
66: U153-13 U165-3 U166-3	.%U166-3
67: U153-12 U165-4 U166-4	.%U166-4
68: U153-11 U165-5 U166-5	.%U166-5
69: U152-8 U166-6	.%U166-6
70: U152-7 U166-7	.%U166-7
71: U152-4 U166-8	.%U166-8
72: U152-3 U166-9	.%U166-9
73: U205-3 U248-13 U167-2	.%U167-2

74: U181-2 U154-1 U181-12 .%U181-12

75: U178-4 U191-11 .%U191-11

76: U165-7 U191-12 .%U191-12

77: U178-3 U191-3 .%U191-3

78: U242-2 U191-6 .%U191-6

79: U178-17 U191-8 .%U191-8

80: U165-9 U191-9 .%U191-9

81: C10-1 L1-1 U195-10 .%U195-10

82: D1-1 L1-2 U195-12 .%U195-12

83: U221-7 U190-17 U204-17 .%U204-17

84: U221-15 U190-18 U204-18 .%U204-18

85: U221-2 U190-19 U204-19 .%U204-19

86: U217-8 U204-7 .%U204-7

87: U101-15 U205-1 .%U205-1

88: U143-6 U205-8 .%U205-8

89: U205-10 U139-8 U205-9 .%U205-9

90: U219-4 U206-10 .%U206-10

91: U219-3 U206-11 .%U206-11

92: U219-13 U206-12 .%U206-12

93: U219-14 U206-13 .%U206-13

94: U204-14 U217-13 .%U217-13

95: U204-13 U217-14 .%U217-14

96: U204-12 U217-17 .%U217-17

97: U204-11 U217-18 .%U217-18

98: U218-8 U217-4 .%U217-4

99: U204-6 U217-7 .%U217-7

100: U167-9 U218-10	.%U218-10
101: R13-2 U218-2	.%U218-2
102: U221-10 U218-9	.%U218-9
103: U220-13 U219-12	.%U219-12
104: U220-14 U219-16	.%U219-16
105: U231-12 U219-17	.%U219-17
106: U231-13 U219-18	.%U219-18
107: U220-11 U219-19	.%U219-19
108: U220-3 U219-2	.%U219-2
109: U220-6 U219-5	.%U219-5
110: U220-2 U219-6	.%U219-6
111: U231-11 U219-7	.%U219-7
112: U231-10 U219-8	.%U219-8
113: U220-5 U219-9	.%U219-9
114: U219-15 U220-10	.%U220-10
115: U246-10 U220-7	.%U220-7
116: U246-7 U220-9	.%U220-9
117: U167-12 U221-6	.%U221-6
118: U230-12 U230-5	.%U230-5
119: U207-14 U206-9 U231-9	.%U231-9
120: U247-1 U233-8	.%U233-8
121: U264-11 U238-11	.%U238-11
122: U264-12 U238-8	.%U238-8
123: U233-6 U241-13	.%U241-13
124: U178-12 U242-12	.%U242-12
125: U270-11 U243-13	.%U243-13

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126: U270-10 U243-4                          .%U243-4

127: 282A-3 U244-3                           .%U244-3

128: U269-2 U257-11 U245-5                   .%U245-5

129: U244-15 U258-2 U245-6                   .%U245-6

130: U220-12 U246-11                         .%U246-11

131: U259-11 U246-14                         .%U246-14

132: U259-9 U246-15                          .%U246-15

133: U259-6 U246-2                           .%U246-2

134: U220-4 U246-5                           .%U246-5

135: U247-3 U249-3                           .%U249-3

136: U12-13 U25-5                            .%U25-5

137: U286-5 U250-6                           .%U250-6

138: U286-6 U250-7                           .%U250-7

139: U273-8 U251-12                          .%U251-12

140: U247-6 U251-3                           .%U251-3

141: 290A-11 U251-6                          .%U251-6

142: U254-3 U277-19 U277-1 U252-19 U252-1
142:                                         .%U252-1

143: U254-11 U254-10                         .%U254-10

144: U205-4 U254-8                           .%U254-8

145: U269-10 U269-7 U290-9 U256-9 U290-10
145: U256-5 U256-11 U256-12                  .%U256-12
*** Run has multiple outputs

146: U244-13 U256-1 U256-13                  .%U256-13

147: U290-8 U257-12                          .%U257-12

148: U246-1 U259-12                          .%U259-12

149: U245-2 U259-3                           .%U259-3
```

150: U260-10 U260-11	.%U260-11
151: U264-7 U260-9	.%U260-9
152: U285-9 U261-7	.%U261-7
153: U274-9 U274-12 U262-11	.%U262-11
154: U285-11 U274-7 U262-12	.%U262-12
155: U261-12 U285-10 U262-7	.%U262-7
156: U261-11 U262-9	.%U262-9
157: U286-12 U263-6	.%U263-6
158: U252-12 U265-13	.%U265-13
159: U252-13 U265-14	.%U265-14
160: U277-12 U265-17	.%U265-17
161: U277-11 U265-18	.%U265-18
162: U252-14 U265-3	.%U265-3
163: U252-15 U265-4	.%U265-4
164: U277-14 U265-7	.%U265-7
165: U277-13 U265-8	.%U265-8
166: U243-14 U270-12	.%U270-12
167: U276-12 U276-2 U273-11	.%U273-11
168: U251-2 U249-2 U273-1 U251-7 U273-2 168:	.%U273-2
169: U286-2 U286-1 U274-6	.%U274-6
170: U285-6 U276-11	.%U276-11
171: U243-15 U282-10	.%U282-10
172: U271-4 U296-2 282A-10 U283-6	.%U283-6
173: U284-4 U271-3 U284-13	.%U284-13
174: U284-7 U284-6 U284-15	.%U284-15
175: U270-5 U270-4 U284-2	.%U284-2

176: U276-3 U285-12 .%U285-12

177: U285-13 U238-3 U285-3 .%U285-3

178: U287-6 U285-5 .%U285-5

179: U275-6 U286-11 .%U286-11

180: U262-6 U286-3 .%U286-3

181: U261-6 U286-4 .%U286-4

182: U289-8 U288-16 U288-5 U288-2 .%U288-2

183: U287-2 U287-1 U288-6 .%U288-6

184: U269-11 U290-11 .%U290-11

185: U245-4 U295-4 U295-5 U295-2 U295-1
185: .%U295-1

186: U283-5 U271-13 U296-14 .%U296-14

187: U271-5 U283-4 U271-12 U296-15 .%U296-15

188: U284-3 U297-4 .%U297-4

189: U24-11 U37-11 .%U37-11

190: U24-3 U37-3 .%U37-3

191: U38-10 U139-3 U248-9 U38-8 .%U38-8

192: U87-7 U51-4 .%U51-4

193: U87-5 U73-10 .%U73-10

194: U205-11 U90-11 U64-11 U77-11 .%U77-11

195: U73-2 U87-3 .%U87-3

196: U73-15 U87-4 .%U87-4

197: U73-7 U87-6 .%U87-6

198: JP16-1 U88-7 .%U88-7

199: XR3-2 VR3-2 XB3-2 XB2-2 .%XB2-2

200: U288-14 XC1-1 U288-3 XC3-1 XC2-1
200: .%XC2-1

*** Run has multiple outputs

```
201: XD1-2 XD2-1                              .%XD2-1

202: XD1-1 XL1-1                              .%XL1-1

203: C2-1 POT1-1 C1-1 U130-14 R7-1            .+5V

204: XB5-2 C12-1 J99-1 VR2-2 VR1-2 XB7-1
204: C7-1 XR3-1                               .-12V

205: XB8-1 VR1-3 C8-1 R11-2                   .-2V

206: XB6-2 VR2-1 C13-1 C9-1                   .-5.2V

207: U255-15 U280-15 U281-15 U268-15 U294-15
207: U267-15 U279-15 U293-15 U287-8           .166$ L

208: U257-6 U130-1                            .680NS CLK

209: U253-11 U292-11 U254-4 U254-2 U248-12
209: U167-3 U127-2 U101-2 U260-8 R17-1
209: U242-11                                  .80NS CLK0^

210: U99-4 U125-4 U228-11 U229-6 U234-2
210: U234-4 U223-2 U223-4 U222-15 U222-17
210: U208-4                                   .ADR 0

211: U99-7 U125-7 U228-8 U229-4 U235-15
211: U235-17 U236-13 U236-15 U239-17 U226-17
211: U208-7                                   .ADR 1

212: U99-9 U125-9 U229-2 U228-6 U235-13
212: U235-11 U236-11 U236-8 U226-15 U239-15
212: U208-9                                   .ADR 2

213: U99-12 U125-12 U227-17 U228-2 U235-8
213: U235-6 U236-17 U236-6 U226-13 U239-13
213: U208-12                                  .ADR 3

214: U86-4 U141-4 U229-17 U227-15 U235-2
214: U235-4 U236-4 U236-2 U239-11 U226-11
214: U168-4                                   .ADR 4

215: U86-7 U141-7 U227-13 U229-15 U237-17
215: U237-15 U240-15 U240-17 U226-8 U239-8
215: U168-7                                   .ADR 5

216: U86-9 U141-9 U227-11 U229-13 U237-13
216: U237-11 U240-13 U240-8 U226-6 U239-6
216: U168-9                                   .ADR 6
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217: U86-12 U141-12 U227-8 U229-11 U237-8
217: U237-6 U240-11 U240-4 U226-4 U239-4
217: U168-12                              .ADR 7

218: U115-6 U229-8 U227-6 U237-2 U237-4
218: U240-2 U240-6 U239-2 U226-2          .ADR 8

219: U115-10 U88-14 U152-15 U102-2 U169-14
219:                                      .ADR SEL 0

220: U115-9 U88-2 U152-16 U102-3 U169-2
220:                                      .ADR SEL 1

221: U205-13 U190-8                       .ALAT

222: JP16-2 R25-2 U285-1 U287-5 U287-4
222:                                      .BANK H

223: U282-9 U270-2                        .BLANK CLK

224: U282-14 U297-13 U271-7               .BLANK H

225: U282-15 U296-9                       .BLANK L

226: U10-17 U26-3 U22-17 U9-4 U23-4       .BUF MDI 00

227: U35-17 U39-3 U36-17 U61-17 U48-17
227:                                      .BUF MDI 01

228: U10-13 U26-5 U22-13 U9-8 U23-8       .BUF MDI 02

229: U35-13 U39-5 U36-13 U61-13 U48-13
229:                                      .BUF MDI 03

230: U10-7 U26-7 U22-7 U9-14 U23-14       .BUF MDI 04

231: U35-7 U39-7 U36-7 U61-7 U48-7        .BUF MDI 05

232: U10-3 U26-9 U22-3 U9-18 U23-18       .BUF MDI 06

233: U35-3 U39-9 U36-3 U48-3 U61-3        .BUF MDI 07

234: U10-18 U26-18 U22-18 U23-3 U9-3      .BUF MDI 08

235: U35-18 U39-18 U36-18 U61-18 U48-18
235:                                      .BUF MDI 09

236: U10-14 U26-16 U22-14 U9-7 U23-7      .BUF MDI 10

237: U35-14 U39-16 U36-14 U61-14 U48-14
237:                                      .BUF MDI 11
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238: U10-8 U26-14 U22-8 U9-13 U23-13 .BUF MDI 12

239: U35-8 U39-14 U36-8 U61-8 U48-8 .BUF MDI 13

240: U10-4 U26-12 U22-4 U9-17 U23-17 .BUF MDI 14

241: U35-4 U39-12 U36-4 U61-4 U48-4 .BUF MDI 15

242: U141-13 U128-2 .C ADR 10

243: U125-2 U128-12 .C ADR 11

244: U125-5 U142-23 .C ADR 12

245: U125-11 U142-22 .C ADR 13

246: U125-14 U142-21 .C ADR 14

247: U141-2 U142-20 .C ADR 15

248: U141-5 U142-19 .C ADR 16

249: U141-11 U142-18 .C ADR 17

250: JP8-1 U142-17 .C ADR 18

251: U115-2 U142-16 U169-11 .C ADR 19

252: U88-5 U114-3 .C ADR 2

253: U142-15 .C ADR 20
*** Only one pin in net

254: U142-14 U169-5 .C ADR 21

255: U125-3 U114-4 .C ADR 3

256: U125-6 U114-5 .C ADR 4

257: U125-10 U114-6 U114-13 .C ADR 5

258: U125-13 U114-11 .C ADR 6

259: U141-3 U114-10 U128-8 .C ADR 7

260: U141-6 U128-5 U128-6 .C ADR 8

261: U141-10 U128-9 .C ADR 9

262: U154-12 U190-7 .C OUT

263: U139-4 U190-9 .C PAR 1

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264: U225-6 U225-8 U234-17 U234-15 U223-17
264: U223-15 U222-13 U222-11 290A-8      .CAS 0 H

265: U225-15 U225-17 U224-8 U224-6 U224-17
265: U224-15 U227-4 U227-2 290A-10       .CAS 1 H

266: U75-1 U190-11                       .CI0

267: U75-12 U190-13                      .CI1

268: U75-4 U190-12                       .CI2

269: U75-9 U190-14                       .CI3

270: U24-12 U24-13 U75-3 U22-11 U35-11
270:                                     .CIX 0

271: U24-1 U24-2 U75-11 U10-11 U36-11
271:                                     .CIX 1

272: U24-9 U24-10 U75-6 U9-11 U48-11     .CIX 2

273: U24-4 U24-5 U75-8 U23-11 U61-11     .CIX 3

274: U75-13 U75-2 U75-10 U75-5 U248-3
274:                                     .CLK 0 L

275: U143-5 U290-6 U233-5 U178-11 U257-3
275: U179-2 U153-2 U152-11 U221-9 U217-11
275: U167-11 U207-10                     .CLK 0^

276: U205-12 U260-2 U264-5 U260-1 U260-5
276: U260-4                              .CLK 10 L

277: U154-11 U264-6 U242-3 U232-3        .CLK 10^

278: U139-5 U290-5 U290-4 U248-1 U248-2
278: U287-11 U290-3 U287-10 U205-5       .CLK 4 L

279: U260-3 U287-13 J176-1 U260-6 U287-12
279:                                     .CLK 7
*** Run has multiple outputs

280: U254-1 U178-6                       .CLK C FIFO EN L

281: U73-9 U154-13 U74-11 U49-11 U62-11
281: U50-11 U113-11 U126-11 U100-11 U112-11
281:                                     .CLK OUT X

282: U139-6 U89-11 U63-11 U76-11         .CLK P ADR
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283: U38-11 U205-6                          .CLK PAR ER^

284: U254-5 U242-9                          .CLK VFIFO ENL

285: XL1-2 U250-13 U263-1 U275-13 U263-13
285: U275-1 U250-1 U261-13 U262-13 U274-13
285: U262-1 U274-1 U261-1 XC1-2 XC2-2
285: XC3-2 U264-1 U264-13 U251-1 U276-13
285: U251-13 U276-1 U249-1                  .CLK66

286: U252-18 U277-18 U178-15 U207-2 U207-3
286:                                        .CLR FIFOS

287: U244-11 U244-7 U244-2 U244-14 U244-1
287:                                        .COM

288: U143-10 U156-1 U156-19                 .CRT SIGS ENB

289: U101-10 U127-7 U178-9                  .CUR CNTR ENAB H

290: U291-6 U265-5                          .CUR DATA 0

291: U291-7 U265-6                          .CUR DATA 1

292: U266-5 U265-2                          .CUR DATA 2

293: U266-6 U265-9                          .CUR DATA 3

294: U266-7 U265-15                         .CUR DATA 4

295: U278-5 U265-16                         .CUR DATA 5

296: U278-6 U265-12                         .CUR DATA 6

297: U278-7 U265-19                         .CUR DATA 7

298: U291-1 U266-1 U278-1 U167-6            .CUR ENB H

299: U252-16 U265-11 U277-16 U248-11        .CUR FIFO UNLD

300: U194-2 U168-13                         .D ADR 10

301: U194-12 U208-2 U193-8                  .D ADR 11

302: U193-5 U208-5 U193-6                   .D ADR 12

303: U193-9 U208-11                         .D ADR 13

304: U193-2 U208-14                         .D ADR 14

305: U193-12 U168-2 U180-8                  .D ADR 15
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306: U180-5 U168-5 U180-6 .D ADR 16

307: U180-9 U168-11 .D ADR 17

308: U180-2 JP12-1 .D ADR 18

309: U115-15 U169-12 U180-12 U192-8 .D ADR 19

310: U88-4 U181-3 .D ADR 2

311: U192-5 U192-6 .D ADR 20

312: U169-4 U192-9 .D ADR 21

313: U181-4 U208-3 .D ADR 3

314: U181-5 U208-6 .D ADR 4

315: U181-13 U181-6 U208-10 .D ADR 5

316: U181-11 U208-13 .D ADR 6

317: U181-10 U168-3 U194-8 .D ADR 7

318: U194-5 U168-6 U194-6 .D ADR 8

319: U194-9 U168-10 .D ADR 9

320: U255-7 U280-7 U281-7 U268-7 U267-7
320: U279-7 U294-7 U293-7 R17-2 .DERUNG 80NS CLK

321: U286-8 U274-11 .DIV SYNC

322: U297-10 U296-12 U283-14 .ECL HIGH

323: U141-15 U125-15 U102-5 .EN AB CUR ADR L

324: U86-15 U99-15 U102-7 .ENAB PROC ADR L

325: U102-6 U168-15 U208-15 .ENABDISPL ADR L

326: U51-5 U12-4 .EVEN A

327: U52-5 U12-3 .EVEN B

328: U245-3 U245-1 U245-7 .FOO

329: U238-1 U242-5 .H MEM REQ H

330: U152-2 U153-1 U179-1 .H STATE CLR

331: U156-2 J189-1 U152-5 .H SYNC

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332: U143-4 J71-1                          .I/O B ENAB L

333: U114-1 U152-9                         .INC CUR ADR CNTR L

334: U178-16 U181-1                        .INC DISPL ADR CNTR

335: U129-8 U140-9 U152-19                 .INC LINE CNTR L

336: U248-4 U155-6 U248-10                 .INTR EN L

337: U143-1 J69-1                          .IOA 0

338: U143-2 J169-1                         .IOA 1

339: U143-3 J68-1                          .IOA 2

340: U154-8 J168-1                         .IOA 3

341: U154-9 J67-1                          .IOA 4

342: U139-10 J167-1                        .IOA 5

343: U139-9 J66-1                          .IOA 6

344: U129-4 U116-14 U89-12 J64-1 U63-15
344: U156-18                               .IOD 0

345: U129-10 U116-17 U89-15 J164-1 U63-16
345: U156-16                               .IOD 1

346: U142-4 U155-14 J58-1 U76-15 U193-3
346:                                       .IOD 10

347: U142-5 U155-7 J158-1 U76-6 U193-11
347:                                       .IOD 11

348: U142-6 U155-4 J57-1 U76-5 U180-4
348:                                       .IOD 12

349: U142-7 U155-3 J157-1 U76-2 U180-10
349:                                       .IOD 13

350: U142-8 U155-18 J56-1 U76-19 U180-3
350:                                       .IOD 14

351: U142-9 U155-17 J156-1 U76-16 U180-11
351:                                       .IOD 15

352: U142-10 U129-3 U116-13 U89-16 J63-1
352: U63-12 U156-14 U192-4                 .IOD 2
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353: U142-11 U129-11 U116-8 U89-19 J163-1
353: U63-9 U192-10                          .IOD 3

354: U128-4 U103-4 U116-7 J62-1 U63-6
354: U156-3 U194-4                          .IOD 4

355: U128-10 U103-10 U116-4 J162-1 U63-5
355: U194-10                                .IOD 5

356: U128-3 U103-3 U116-3 J61-1 U63-2
356: U194-3                                 .IOD 6

357: U128-11 U116-18 J161-1 U63-19 U156-5
357: U194-11                                .IOD 7

358: U142-2 U155-13 J59-1 U76-12 U193-4
358:                                        .IOD 8

359: U142-3 U155-8 J159-1 U76-9 U193-10
359:                                        .IOD 9

360: U156-15 U165-19 U166-19 U218-3 U243-11
360:                                        .LAND H

361: U238-2 U232-5                          .LATCHED RAS NOW H

362: U154-6 U154-5 U142-13 U128-1 U143-13
362:                                        .LD CUR ADR CNT L

363: U101-9 U127-9 U152-6                   .LD CURX CNTR

364: U248-6 J84-1                           .LINE CNT INT L

365: U103-12 U248-5 U156-17                 .LINE CNT OVERFLOW L

366: U116-11 U143-11                        .LOAD CURSOR X POS

367: U143-14 U154-3 U154-2 U194-1 U193-1
367: U180-1 U192-1                          .LOAD DIS ADR L

368: U129-1 U103-1 U143-15                  .LOAD LINE CNTR L

369: U155-11 U143-12                        .LOAD VIDEO STATE

370: R21-2 J186-1 U156-6                    .LOOPTHRU

371: J37-1 U90-7                            .MADR 0

372: J137-1 U90-8                           .MADR 1

373: J31-1 U64-13                           .MADR 10
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374: J131-1 U64-14	.MADR 11
375: J29-1 U64-17	.MADR 12
376: J129-1 U64-18	.MADR 13
377: J28-1 U77-3	.MADR 14
378: J128-1 U77-4	.MADR 15
379: J27-1 U77-7	.MADR 16
380: J127-1 U77-8	.MADR 17
381: J26-1 U77-13	.MADR 18
382: J126-1 U77-14	.MADR 19
383: J36-1 U90-13	.MADR 2
384: J38-1 U77-17	.MADR 20
385: J138-1 U77-18	.MADR 21
386: J136-1 U90-14	.MADR 3
387: J34-1 U90-17	.MADR 4
388: J134-1 U90-18	.MADR 5
389: J33-1 U64-3	.MADR 6
390: J133-1 U64-4	.MADR 7
391: J32-1 U64-7	.MADR 8
392: J132-1 U64-8	.MADR 9
393: U266-4 U291-4 U278-4 U140-7	.MAP 0
394: U266-3 U291-3 U278-3 U140-10	.MAP 1
395: U266-2 U291-2 U278-2 U140-12	.MAP 2
396: U292-3 U291-12	.MAP OUT 0
397: U292-4 U291-11	.MAP OUT 1
398: U292-7 U266-13	.MAP OUT 2
399: U292-8 U266-12	.MAP OUT 3

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400: U292-13 U266-11                    .MAP OUT 4

401: U292-14 U278-13                    .MAP OUT 5

402: U292-17 U278-12                    .MAP OUT 6

403: U292-18 U278-11                    .MAP OUT 7

404: U13-13 U26-17 J14-1                .MDI 00

405: U25-4 U39-17 J114-1                .MDI 01

406: U25-8 U26-15 J13-1                 .MDI 02

407: U25-11 U39-15 J113-1               .MDI 03

408: U13-12 U26-13 J12-1                .MDI 04

409: U13-2 U39-13 J112-1                .MDI 05

410: U13-11 U26-11 J11-1                .MDI 06

411: U25-2 U39-11 J111-1                .MDI 07

412: U13-10 U26-2 J9-1                  .MDI 08

413: U25-10 U39-2 J109-1                .MDI 09

414: U25-9 U26-4 J8-1                   .MDI 10

415: U13-4 U39-4 J108-1                 .MDI 11

416: U13-9 U26-6 J7-1                   .MDI 12

417: U25-12 U39-6 J107-1                .MDI 13

418: U13-8 U26-8 J6-1                   .MDI 14

419: U25-13 U39-8 J106-1                .MDI 15

420: U52-2 U49-2 U50-2 J24-1 U100-2 U113-2
420:                                    .MDO 0

421: U51-2 U62-2 U74-2 J124-1 U112-2 U126-2
421:                                    .MDO 1

422: U52-10 U49-9 U50-9 J18-1 U100-9 U113-9
422:                                    .MDO 10

423: U51-10 U62-9 U74-9 J118-1 U112-9
423: U126-9                             .MDO 11
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424: U52-9 U49-16 U50-16 J17-1 U100-16
424: U113-16                                .MDO 12

425: U51-9 U62-16 U74-16 J117-1 U112-16
425: U126-16                                .MDO 13

426: U52-8 U49-12 U50-12 J16-1 U100-12
426: U113-12                                .MDO 14

427: U51-8 U62-12 U74-12 J116-1 U112-12
427: U126-12                                .MDO 15

428: U52-1 U49-6 U50-6 J23-1 U100-6 U113-6
428:                                        .MDO 2

429: U51-13 U62-6 U74-6 J123-1 U112-6
429: U126-6                                 .MDO 3

430: U52-13 U49-19 U50-19 J22-1 U100-19
430: U113-19                                .MDO 4

431: U51-12 U62-19 U74-19 J122-1 U112-19
431: U126-19                                .MDO 5

432: U52-12 U49-15 U50-15 J21-1 U100-15
432: U113-15                                .MDO 6

433: U52-4 U62-15 U74-15 J121-1 U112-15
433: U126-15                                .MDO 7

434: U52-11 U49-5 U50-5 J19-1 U100-5 U113-5
434:                                        .MDO 8

435: U51-11 U62-5 U74-5 J119-1 U112-5
435: U126-5                                 .MDO 9

436: U190-6 J141-1                          .MDO VALID H

437: J181-1 U221-13                         .MEM RQST 0

438: J182-1 U221-4                          .MEM RQST 1

439: J183-1 U221-5                          .MEM RQST 2

440: U293-13 U253-3                         .MEMSHIFT 0

441: U294-13 U253-4                         .MEMSHIFT 1

442: U279-13 U253-7                         .MEMSHIFT 2

443: U267-13 U253-8                         .MEMSHIFT 3
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444: U268-13 U253-13 .MEMSHIFT 4

445: U281-13 U253-14 .MEMSHIFT 5

446: U255-13 U253-17 .MEMSHIFT 6

447: U280-13 U253-18 .MEMSHIFT 7

448: U253-2 U291-16 U252-4 .MSP0

449: U253-5 U291-15 U277-5 .MSP1

450: U253-6 U266-17 U252-5 .MSP2

451: U253-9 U266-16 U277-6 .MSP3

452: U253-12 U266-15 U252-6 .MSP4

453: U253-15 U278-17 U277-7 .MSP5

454: U253-16 U278-16 U252-7 .MSP6

455: U253-19 U278-15 U277-8 .MSP7

456: U102-14 U87-14 U204-9 .O SEL 0

457: U102-13 U87-2 U204-8 .O SEL 1

458: U51-6 U12-2 .ODD A

459: U52-6 U12-5 .ODD B

460: U254-13 U217-6 U190-5 U204-5 .OLD READ 0

461: U254-12 U217-9 U190-16 U204-16 .OLD READ 1

462: U102-12 U74-1 U50-1 .OUT ENAB W0

463: U102-11 U49-1 U62-1 .OUT ENAB W1

464: U102-10 U100-1 U112-1 .OUT ENAB W2

465: U102-9 U113-1 U126-1 .OUT ENAB W3

466: U90-6 U190-4 U204-4 .P ADR 0

467: U90-9 U190-3 U204-3 .P ADR 1

468: U64-12 U86-13 U76-13 .P ADR 10

469: U64-15 U99-2 U76-8 .P ADR 11

470: U64-16 U99-5 U76-14 .P ADR 12

471: U64-19 U99-11 U76-7 .P ADR 13

472: U77-2 U99-14 U76-4 .P ADR 14

473: U77-5 U86-2 U76-3 .P ADR 15

474: U86-5 U77-6 U76-18 .P ADR 16

475: U77-9 U86-11 U76-17 .P ADR 17

476: U77-12 JP2-1 U89-13 .P ADR 18

477: U77-15 U115-13 U89-14 U169-13 .P ADR 19

478: U90-12 U88-3 U63-14 .P ADR 2

479: U77-16 U89-17 .P ADR 20

480: U77-19 U89-18 U169-3 .P ADR 21

481: U90-15 U99-3 U63-17 .P ADR 3

482: U90-16 U99-6 U63-13 .P ADR 4

483: U90-19 U99-10 U63-8 .P ADR 5

484: U64-2 U99-13 U63-7 .P ADR 6

485: U64-5 U86-3 U63-4 .P ADR 7

486: U64-6 U86-6 U63-3 .P ADR 8

487: U64-9 U86-10 U63-18 .P ADR 9

488: U12-6 U38-12 .PAR ER H

489: U248-8 J83-1 .PAR INTR L

490: U178-5 U243-10 .PC BLANK L

491: U261-3 U285-8 .PH<0>

492: U261-2 U261-5 U262-3 U238-10 U285-2
492: U285-4 .PH<1>

493: U262-5 U262-2 U274-3 .PH<2>

494: U274-2 U274-5 U275-3 U251-11 .PH<3>

495: U275-5 U263-3 U275-2 U260-12 U260-13

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495: U273-12 U238-12                          .PH<4>

496: U263-2 U263-5 U250-3 U264-3 U247-5
496: U247-2                                   .PH<5>

497: U250-5 U250-11 U250-2 U238-9             .PH<6>

498: U250-9 U250-12 U263-11                   .PH<7>

499: U263-9 U275-11 U263-12                   .PH<8>

500: U275-9 U275-12 U264-2 U238-13 U273-9
500:                                          .PH<9>

501: U195-3 U270-13 U258-9                    .PLL CLK

502: U11-13 U37-4 U37-10 U37-1 U37-13
502: R1-2 U11-4 U11-1 U11-10                  .PU 1

503: U261-15 U262-4 R22-2 U261-4 U274-10
503: U261-14 U274-14 U262-10 U261-10 U262-14
503: U274-15 U274-4 U262-15                   .PU 10

504: U264-14 U251-15 U264-4 U264-15 U264-10
504: U251-14 U249-4 U251-10 U276-14 U276-15
504: U276-10 R24-2 U276-4 U251-4 U249-15
504:                                          .PU 11

505: U167-1 U242-13 U242-10 U241-14 U153-10
505: U242-4 U257-1 U242-1 U257-4 U179-9
505: U153-9 U241-11 U241-12 R19-2 U241-10
505: U232-1 U232-4 U221-1 U167-10 U167-13
505: U257-10 U269-9 U257-13 U256-2 U256-3
505: U256-4 U256-10                           .PU 12

506: U192-13 U180-13 U193-13 U194-13 R8-2
506:                                          .PU 14

507: R20-2 U246-6 U230-4 U230-10 U230-1
507: U230-13 U207-1 U207-9 U243-6             .PU 16

508: R12-2 U26-19 U39-19 U73-1 U255-9
508: U280-9 U281-9 U268-9 U294-9 U267-9
508: U279-9 U293-9                            .PU 2

509: U128-13 U103-13 U129-13 R6-2 U103-11
509: U127-10 U140-1 U127-1 U101-1             .PU 5

510: U263-15 U250-4 U250-15 U250-10 R23-2
510: U288-4 U288-1 U288-15 U250-14 U263-10
510: U275-10 U263-14 U275-14 U275-4 U275-15
510: U263-4                                   .PU 9
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511: U225-11 U224-2 U224-13 U228-4 290A-2
511:                                        .RAS 0 H

512: U225-4 U234-11 U223-13 U222-6 290A-4
512:                                        .RAS 1 H

513: U217-5 U217-3                          .RAS CY 1

514: U254-9 U217-2                          .RAS CY 2

515: U232-2 J184-1 U221-12                  .RAS NOW

516: U143-9 U89-1                           .READ HI PAR L

517: U143-7 U38-13 U63-1 U76-1              .READ LO PAR L

518: U271-6 U243-1                          .RESYNC SYNC

519: U247-4 U233-9                          .SEL CAS 0 H
*** Run Has no outputs

520: U115-11 U86-1 U99-1 U125-1 U141-1
520: U273-3 U168-1 U208-1                   .SEL ROW H

521: U130-3 U243-7 U257-8                   .SYNC WIND H

522: U269-1 U256-14 U257-9 U256-15          .SYNC WIND L

523: J78-1 THM1-2                           .TEMP CAGE

524: U233-2 J173-1                          .TIME 0

525: U233-4 J174-1                          .TIME 1

526: J89-1 R9-2                             .V SYNC

527: U156-4 U178-2 R9-1                     .V SYNC H

528: C15-1 C14-1 VR3-3 U195-7 U195-8 XB4-1
528: XB1-1 C5-2 C11-1 C17-2                 .VEE

529: U292-2 U206-4                          .VFIFO IN0

530: U292-5 U206-5                          .VFIFO IN1

531: U292-6 U206-6                          .VFIFO IN2

532: U292-9 U206-7                          .VFIFO IN3

533: U292-12 U231-4                         .VFIFO IN4
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 534: U292-15 U231-5                        .VFIFO IN5

 535: U292-16 U231-6                        .VFIFO IN6

 536: U292-19 U231-7                        .VFIFO IN7

 537: U254-6 U230-2                         .VFIFO INCLK

 538: U287-3 U230-3 U230-11 U243-5          .VIDCLK66

 539: U220-1 U244-12                        .VIDMUX SEL

 540: U295-6 U295-3 J91-1                   .VIDOUT
*** Run has multiple outputs

 541: U219-11 U244-5                        .VIDREG CLK

 542: U259-4 U296-13 U284-9 U270-15 282A-9
 542:                                       .VIDSHF CLK

 543: U259-10 U243-12 U297-3 282A-2         .VIDSHF LD
*** Run has multiple outputs

 544: U230-9 U231-3 U206-3                  .VIDSIC CLK

 545: U231-15 U206-15 U244-4                .VIDSOC CLK
*** Run has multiple outputs

 546: U273-13 U273-10 U166-1 U165-1 U179-7
 546: U153-7 U233-1 U241-9 U190-1 U204-1
 546:                                       .VIDTIME 0

 547: U153-14 U233-3 U166-2 U165-2 U257-2
 547: U190-2 U204-2                         .VIDTIME 1

 548: U140-15 U191-5 U191-13 U191-10        .VRT ST 0

 549: U140-5 U191-2                         .VRT ST 1

 550: U239-16 U157-5 U170-5 U182-5 U196-5
 550: U91-5 U78-5 U65-5 U53-5 U40-5 U27-5
 550: U14-5 U1-5 U144-5 U131-5 U117-5 U104-5
 550: U209-5                                .WO A0 A L

 551: U226-16 U54-5 U66-5 U79-5 U92-5 U197-5
 551: U183-5 U171-5 U158-5 U145-5 U132-5
 551: U118-5 U105-5 U210-5 U41-5 U28-5
 551: U15-5 U2-5                            .WO A0 B L

 552: U239-14 U157-7 U170-7 U182-7 U196-7
 552: U91-7 U78-7 U65-7 U53-7 U40-7 U27-7
 552: U14-7 U1-7 U144-7 U131-7 U117-7 U104-7
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552: U209-7                                   .W0 A1 A L

553: U226-14 U54-7 U66-7 U79-7 U92-7 U197-7
553: U183-7 U171-7 U158-7 U145-7 U132-7
553: U118-7 U105-7 U210-7 U41-7 U28-7
553: U15-7 U2-7                               .W0 A1 B L

554: U239-12 U157-6 U170-6 U182-6 U196-6
554: U91-6 U78-6 U65-6 U53-6 U40-6 U27-6
554: U14-6 U1-6 U144-6 U131-6 U117-6 U104-6
554: U209-6                                   .W0 A2 A L

555: U226-12 U54-6 U66-6 U79-6 U92-6 U197-6
555: U183-6 U171-6 U158-6 U145-6 U132-6
555: U118-6 U105-6 U210-6 U41-6 U28-6
555: U15-6 U2-6                               .W0 A2 B L

556: U239-9 U157-14 U170-14 U182-14 U196-14
556: U91-14 U78-14 U65-14 U53-14 U40-14
556: U27-14 U14-14 U1-14 U144-14 U131-14
556: U117-14 U104-14 U209-14                  .W0 A3 A L

557: U226-9 U118-14 U132-14 U145-14 U158-14
557: U171-14 U183-14 U197-14 U92-14 U79-14
557: U66-14 U54-14 U41-14 U28-14 U15-14
557: U2-14 U105-14 U210-14                    .W0 A3 B L

558: U239-7 U157-13 U170-13 U182-13 U196-13
558: U91-13 U78-13 U65-13 U53-13 U40-13
558: U27-13 U14-13 U1-13 U144-13 U131-13
558: U117-13 U104-13 U209-13                  .W0 A4 A L

559: U226-7 U54-13 U66-13 U79-13 U92-13
559: U197-13 U183-13 U171-13 U158-13 U145-13
559: U132-13 U118-13 U105-13 U210-13 U41-13
559: U28-13 U15-13 U2-13                      .W0 A4 B L

560: U239-5 U157-12 U170-12 U182-12 U196-12
560: U91-12 U78-12 U65-12 U53-12 U40-12
560: U27-12 U14-12 U1-12 U144-12 U131-12
560: U117-12 U104-12 U209-12                  .W0 A5 A L

561: U226-5 U54-12 U66-12 U79-12 U92-12
561: U197-12 U183-12 U171-12 U158-12 U145-12
561: U132-12 U118-12 U105-12 U210-12 U41-12
561: U28-12 U15-12 U2-12                      .W0 A5 B L

562: U239-3 U157-15 U170-15 U182-15 U196-15
562: U91-15 U78-15 U65-15 U53-15 U40-15
562: U27-15 U14-15 U1-15 U144-15 U131-15
562: U117-15 U104-15 U209-15                  .W0 A6 A L
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563: U197-15 U183-15 U171-15 U158-15 U145-15
563: U132-15 U118-15 U105-15 U210-15 U41-15
563: U28-15 U15-15 U2-15                    .WO A6 B L

564: U222-5 U157-11 U170-11 U182-11 U196-11
564: U91-11 U78-11 U65-11 U53-11 U40-11
564: U27-11 U14-11 U1-11 U144-11 U131-11
564: U117-11 U104-11 U209-11                .WO A7 A L

565: U222-3 U54-11 U66-11 U79-11 U92-11
565: U197-11 U183-11 U171-11 U158-11 U145-11
565: U132-11 U118-11 U105-11 U210-11 U41-11
565: U28-11 U15-11 U2-11                    .WO A7 B L

566: U239-18 U157-1 U170-1 U182-1 U196-1
566: U91-1 U78-1 U65-1 U53-1 U40-1 U27-1
566: U14-1 U1-1 U144-1 U131-1 U117-1 U104-1
566: U209-1                                 .WO A8 A L

567: U226-18 U54-1 U66-1 U79-1 U92-1 U197-1
567: U183-1 U171-1 U158-1 U145-1 U132-1
567: U118-1 U105-1 U210-1 U41-1 U28-1
567: U15-1 U2-1                             .WO A8 B L

568: U222-9 U196-10 U182-10 U170-10 U157-10
568: U144-10 U131-10 U117-10 U104-10 U209-10
568: U91-10 U78-10 U65-10 U53-10 U40-10
568: U27-10 U14-10 U1-10                    .WO CAS 0A L

569: U222-7 U197-10 U183-10 U171-10 U158-10
569: U145-10 U132-10 U118-10 U105-10 U210-10
569: U92-10 U79-10 U66-10 U54-10 U41-10
569: U28-10 U15-10 U2-10                    .WO CAS 0B L

570: U227-18 U157-17 U170-17 U182-17 U196-17
570: U91-17 U78-17 U65-17 U53-17 U40-17
570: U27-17 U14-17 U1-17 U144-17 U131-17
570: U117-17 U104-17 U209-17                .WO CAS 1A L

571: U227-16 U54-17 U66-17 U79-17 U92-17
571: U197-17 U183-17 U171-17 U158-17 U145-17
571: U132-17 U118-17 U105-17 U210-17 U41-17
571: U28-17 U15-17 U2-17                    .WO CAS 1B L

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574: U35-15 U144-2 U145-2                   .WO IN<11>

575: U22-9 U157-2 U158-2                    .WO IN<12>
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576: U35-9 U170-2 U171-2 .WO IN<13>

577: U22-5 U182-2 U183-2 .WO IN<14>

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579: U35-16 U14-2 U15-2 .WO IN<1>

580: U22-12 U27-2 U28-2 .WO IN<2>

581: U35-12 U40-2 U41-2 .WO IN<3>

582: U22-6 U53-2 U54-2 .WO IN<4>

583: U35-6 U65-2 U66-2 .WO IN<5>

584: U22-2 U78-2 U79-2 .WO IN<6>

585: U35-2 U91-2 U92-2 .WO IN<7>

586: U22-19 U104-2 U105-2 .WO IN<8>

587: U35-19 U117-2 U118-2 .WO IN<9>

588: U50-3 U293-12 U1-16 U2-16 .WO OUT<0>

589: U50-8 U279-14 U131-16 U132-16 .WO OUT<10>

590: U74-8 U267-14 U144-16 U145-16 .WO OUT<11>

591: U50-17 U268-14 U157-16 U158-16 .WO OUT<12>

592: U74-17 U281-14 U170-16 U171-16 .WO OUT<13>

593: U50-13 U255-14 U182-16 U183-16 .WO OUT<14>

594: U74-13 U280-14 U196-16 U197-16 .WO OUT<15>

595: U74-3 U294-12 U14-16 U15-16 .WO OUT<1>

596: U50-7 U279-12 U27-16 U28-16 .WO OUT<2>

597: U74-7 U267-12 U40-16 U41-16 .WO OUT<3>

598: U50-18 U268-12 U53-16 U54-16 .WO OUT<4>

599: U74-18 U281-12 U65-16 U66-16 .WO OUT<5>

600: U50-14 U255-12 U78-16 U79-16 .WO OUT<6>

601: U74-14 U280-12 U91-16 U92-16 .WO OUT<7>

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602: U50-4 U293-14 U104-16 U105-16        .WO OUT<8>

603: U74-4 U294-14 U117-16 U118-16        .WO OUT<9>

604: U37-9 U209-2 U210-2                  .WO PAR IN

605: U73-5 U209-16 U210-16                .WO PAR OUT

606: U228-16 U157-4 U170-4 U182-4 U196-4
606: U91-4 U78-4 U65-4 U53-4 U40-4 U27-4
606: U14-4 U1-4 U91-9 U78-9 U65-9 U53-9
606: U40-9 U27-9 U14-9 U1-9 U196-9 U182-9
606: U170-9 U157-9 U144-9 U131-9 U117-9
606: U104-9 U209-9 U144-4 U131-4 U117-4
606: U104-4 U209-4                        .WO RAS A L

607: U222-14 U54-9 U66-9 U79-9 U92-9 U197-4
607: U183-4 U171-4 U158-4 U145-4 U132-4
607: U118-4 U105-4 U210-4 U197-9 U183-9
607: U171-9 U158-9 U145-9 U132-9 U118-9
607: U105-9 U210-9 U92-4 U79-4 U66-4 U54-4
607: U41-4 U28-4 U15-4 U2-4 U41-9 U28-9
607: U15-9 U2-9                           .WO RAS B L

608: U222-18 U157-3 U53-3 U65-3 U170-3
608: U78-3 U182-3 U209-3 U91-3 U196-3
608: U14-3 U117-3 U27-3 U131-3 U40-3 U144-3
608: U1-3 U104-3                          .WO WRITE A L

609: U222-16 U2-3 U105-3 U41-3 U145-3
609: U28-3 U132-3 U15-3 U118-3 U210-3
609: U92-3 U197-3 U79-3 U183-3 U66-3 U171-3
609: U54-3 U158-3                         .WO WRITE B L

610: U240-16 U159-5 U172-5 U184-5 U198-5
610: U93-5 U80-5 U67-5 U55-5 U42-5 U29-5
610: U16-5 U3-5 U146-5 U133-5 U119-5 U106-5
610: U211-5                               .W1 A0 A L

611: U240-9 U56-5 U68-5 U81-5 U94-5 U199-5
611: U185-5 U173-5 U160-5 U147-5 U134-5
611: U120-5 U107-5 U212-5 U43-5 U30-5
611: U17-5 U4-5                           .W1 A0 B L

612: U240-12 U159-7 U172-7 U184-7 U198-7
612: U93-7 U80-7 U67-7 U55-7 U42-7 U29-7
612: U16-7 U3-7 U146-7 U133-7 U119-7 U106-7
612: U211-7                               .W1 A1 A L

613: U240-7 U56-7 U68-7 U81-7 U94-7 U199-7
613: U185-7 U173-7 U160-7 U147-7 U134-7
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613: U120-7 U107-7 U212-7 U43-7 U30-7
613: U17-7 U4-7                          .W1 A1 B L

614: U240-3 U159-6 U172-6 U184-6 U198-6
614: U93-6 U80-6 U67-6 U55-6 U42-6 U29-6
614: U16-6 U3-6 U146-6 U133-6 U119-6 U106-6
614: U211-6                              .W1 A2 A L

615: U240-5 U56-6 U68-6 U81-6 U94-6 U199-6
615: U185-6 U173-6 U160-6 U147-6 U134-6
615: U120-6 U107-6 U212-6 U43-6 U30-6
615: U17-6 U4-6                          .W1 A2 B L

616: U236-16 U159-14 U172-14 U184-14 U198-14
616: U93-14 U80-14 U67-14 U55-14 U42-14
616: U29-14 U16-14 U3-14 U146-14 U133-14
616: U119-14 U106-14 U211-14             .W1 A3 A L

617: U236-18 U56-14 U68-14 U81-14 U94-14
617: U199-14 U185-14 U173-14 U160-14 U147-14
617: U134-14 U120-14 U107-14 U212-14 U43-14
617: U30-14 U17-14 U4-14                 .W1 A3 B L

618: U236-14 U67-13 U55-13 U42-13 U29-13
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618: U119-13 U106-13 U211-13             .W1 A4 A L

619: U236-3 U56-13 U68-13 U81-13 U94-13
619: U199-13 U185-13 U173-13 U160-13 U147-13
619: U134-13 U120-13 U107-13 U212-13 U43-13
619: U30-13 U17-13 U4-13                 .W1 A4 B L

620: U236-12 U67-12 U55-12 U42-12 U29-12
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620: U119-12 U106-12 U211-12             .W1 A5 A L

621: U236-9 U56-12 U68-12 U81-12 U94-12
621: U199-12 U185-12 U173-12 U160-12 U147-12
621: U134-12 U120-12 U107-12 U212-12 U43-12
621: U30-12 U17-12 U4-12                 .W1 A5 B L

622: U236-7 U67-15 U55-15 U42-15 U29-15
622: U16-15 U3-15 U80-15 U93-15 U198-15
622: U184-15 U172-15 U159-15 U146-15 U133-15
622: U119-15 U106-15 U211-15             .W1 A6 A L

623: U236-5 U56-15 U68-15 U81-15 U94-15
623: U199-15 U185-15 U173-15 U160-15 U147-15
623: U134-15 U120-15 U107-15 U212-15 U43-15
623: U30-15 U17-15 U4-15                 .W1 A6 B L
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624: U119-11 U106-11 U211-11                .W1 A7 A L

625: U223-16 U56-11 U68-11 U81-11 U94-11
625: U199-11 U185-11 U173-11 U160-11 U147-11
625: U134-11 U120-11 U107-11 U212-11 U43-11
625: U30-11 U17-11 U4-11                    .W1 A7 B L

626: U240-18 U159-1 U172-1 U184-1 U198-1
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626: U211-1                                 .W1 A8 A L

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627: U17-1 U4-1                             .W1 A8 B L

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628: U29-10 U16-10 U3-10                    .W1 CAS 0A L

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629: U30-10 U17-10 U4-10                    .W1 CAS 0B L

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630: U29-17 U16-17 U3-17 U146-17 U133-17
630: U119-17 U106-17 U211-17                .W1 CAS 1A L

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631: U199-17 U185-17 U173-17 U160-17 U147-17
631: U134-17 U120-17 U107-17 U212-17 U43-17
631: U30-17 U17-17 U4-17                    .W1 CAS 1B L

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634: U36-15 U146-2 U147-2                   .W1 IN<11>

635: U10-9 U159-2 U160-2                    .W1 IN<12>

636: U36-9 U172-2 U173-2                    .W1 IN<13>

637: U10-5 U184-2 U185-2                    .W1 IN<14>
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640: U10-12 U29-2 U30-2 .W1 IN<2>

641: U36-12 U42-2 U43-2 .W1 IN<3>

642: U10-6 U55-2 U56-2 .W1 IN<4>

643: U36-6 U67-2 U68-2 .W1 IN<5>

644: U10-2 U80-2 U81-2 .W1 IN<6>

645: U36-2 U93-2 U94-2 .W1 IN<7>

646: U10-19 U106-2 U107-2 .W1 IN<8>

647: U36-19 U119-2 U120-2 .W1 IN<9>

648: U49-3 U293-10 U3-16 U4-16 .W1 OUT<0>

649: U49-8 U279-11 U133-16 U134-16 .W1 OUT<10>

650: U62-8 U267-11 U146-16 U147-16 .W1 OUT<11>

651: U49-17 U268-11 U159-16 U160-16 .W1 OUT<12>

652: U62-17 U281-11 U172-16 U173-16 .W1 OUT<13>

653: U49-13 U255-11 U184-16 U185-16 .W1 OUT<14>

654: U62-13 U280-11 U198-16 U199-16 .W1 OUT<15>

655: U62-3 U294-10 U16-16 U17-16 .W1 OUT<1>

656: U49-7 U279-10 U29-16 U30-16 .W1 OUT<2>

657: U62-7 U267-10 U42-16 U43-16 .W1 OUT<3>

658: U49-18 U268-10 U55-16 U56-16 .W1 OUT<4>

659: U62-18 U281-10 U67-16 U68-16 .W1 OUT<5>

660: U49-14 U255-10 U80-16 U81-16 .W1 OUT<6>

661: U62-14 U280-10 U93-16 U94-16 .W1 OUT<7>

662: U49-4 U293-11 U106-16 U107-16 .W1 OUT<8>

663: U62-4 U294-11 U119-16 U120-16 .W1 OUT<9>

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664: U37-5 U211-2 U212-2                    .W1 PAR IN

665: U73-12 U211-16 U212-16                 .W1 PAR OUT

666: U224-7 U159-4 U172-4 U184-4 U198-4
666: U93-4 U80-4 U67-4 U55-4 U42-4 U29-4
666: U16-4 U3-4 U93-9 U80-9 U67-9 U55-9
666: U42-9 U29-9 U16-9 U3-9 U198-9 U184-9
666: U172-9 U159-9 U146-9 U133-9 U119-9
666: U106-9 U211-9 U146-4 U133-4 U119-4
666: U106-4 U211-4                          .W1 RAS A L

667: U223-7 U56-9 U68-9 U81-9 U94-9 U199-4
667: U185-4 U173-4 U160-4 U147-4 U134-4
667: U120-4 U107-4 U212-4 U199-9 U185-9
667: U173-9 U160-9 U147-9 U134-9 U120-9
667: U107-9 U212-9 U94-4 U81-4 U68-4 U56-4
667: U43-4 U30-4 U17-4 U4-4 U43-9 U30-9
667: U17-9 U4-9                             .W1 RAS B L

668: U223-14 U159-3 U55-3 U67-3 U172-3
668: U80-3 U184-3 U211-3 U93-3 U198-3
668: U16-3 U119-3 U29-3 U133-3 U42-3 U146-3
668: U3-3 U106-3                            .W1 WRITE A L

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669: U30-3 U134-3 U17-3 U120-3 U212-3
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669: U56-3 U160-3                           .W1 WRITE B L

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670: U18-5 U5-5 U148-5 U135-5 U121-5 U108-5
670: U213-5                                 .W2 A0 A L

671: U237-12 U162-5 U175-5 U187-5 U201-5
671: U96-5 U83-5 U70-5 U58-5 U45-5 U32-5
671: U19-5 U6-5 U149-5 U136-5 U122-5 U109-5
671: U214-5                                 .W2 A0 B L

672: U237-9 U161-7 U174-7 U186-7 U200-7
672: U95-7 U82-7 U69-7 U57-7 U44-7 U31-7
672: U18-7 U5-7 U148-7 U135-7 U121-7 U108-7
672: U213-7                                 .W2 A1 A L

673: U237-7 U162-7 U175-7 U187-7 U201-7
673: U96-7 U83-7 U70-7 U58-7 U45-7 U32-7
673: U19-7 U6-7 U149-7 U136-7 U122-7 U109-7
673: U214-7                                 .W2 A1 B L

674: U237-5 U161-6 U174-6 U186-6 U200-6
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674: U95-6 U82-6 U69-6 U57-6 U44-6 U31-6
674: U18-6 U5-6 U148-6 U135-6 U121-6 U108-6
674: U213-6                                  .W2 A2 A L

675: U237-3 U162-6 U175-6 U187-6 U201-6
675: U96-6 U83-6 U70-6 U58-6 U45-6 U32-6
675: U19-6 U6-6 U149-6 U136-6 U122-6 U109-6
675: U214-6                                  .W2 A2 B L

676: U235-18 U161-14 U174-14 U186-14 U200-14
676: U95-14 U82-14 U69-14 U57-14 U44-14
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676: U121-14 U108-14 U213-14                 .W2 A3 A L

677: U235-16 U162-14 U175-14 U187-14 U201-14
677: U96-14 U83-14 U70-14 U58-14 U45-14
677: U32-14 U19-14 U6-14 U149-14 U136-14
677: U122-14 U109-14 U214-14                 .W2 A3 B L

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678: U148-13 U135-13 U121-13 U108-13 U213-13
678: U95-13 U82-13 U69-13 U57-13 U44-13
678: U31-13 U18-13 U5-13                     .W2 A4 A L

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679: U96-13 U83-13 U70-13 U58-13 U45-13
679: U32-13 U19-13 U6-13 U149-13 U136-13
679: U122-13 U109-13 U214-13                 .W2 A4 B L

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680: U31-12 U18-12 U5-12                     .W2 A5 A L

681: U235-7 U162-12 U175-12 U187-12 U201-12
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681: U122-12 U109-12 U214-12                 .W2 A5 B L

682: U235-5 U200-15 U186-15 U174-15 U161-15
682: U148-15 U135-15 U121-15 U108-15 U213-15
682: U95-15 U82-15 U69-15 U57-15 U44-15
682: U31-15 U18-15 U5-15                     .W2 A6 A L

683: U235-3 U162-15 U175-15 U187-15 U201-15
683: U96-15 U83-15 U70-15 U58-15 U45-15
683: U32-15 U19-15 U6-15 U149-15 U136-15
683: U122-15 U109-15 U214-15                 .W2 A6 B L

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684: U148-11 U135-11 U121-11 U108-11 U213-11
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685: U32-11 U19-11 U6-11 U149-11 U136-11
685: U122-11 U109-11 U214-11                .W2 A7 B L

686: U237-18 U161-1 U174-1 U186-1 U200-1
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686: U213-1                                 .W2 A8 A L

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688: U18-10 U5-10 U213-10                   .W2 CAS 0A L

689: U234-3 U109-10 U122-10 U136-10 U149-10
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689: U83-10 U70-10 U58-10 U45-10 U32-10
689: U19-10 U6-10 U214-10                   .W2 CAS 0B L

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690: U95-17 U82-17 U69-17 U57-17 U44-17
690: U31-17 U18-17 U5-17 U148-17 U135-17
690: U121-17 U108-17 U213-17                .W2 CAS 1A L

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691: U96-17 U83-17 U70-17 U58-17 U45-17
691: U32-17 U19-17 U6-17 U149-17 U136-17
691: U122-17 U109-17 U214-17                .W2 CAS 1B L

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695: U9-12 U161-2 U162-2                    .W2 IN<12>

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703: U48-6 U69-2 U70-2 .W2 IN<5>

704: U9-19 U82-2 U83-2 .W2 IN<6>

705: U48-2 U95-2 U96-2 .W2 IN<7>

706: U9-2 U108-2 U109-2 .W2 IN<8>

707: U48-19 U121-2 U122-2 .W2 IN<9>

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709: U100-8 U279-5 U135-16 U136-16 .W2 OUT<10>

710: U112-8 U267-5 U148-16 U149-16 .W2 OUT<11>

711: U100-17 U268-5 U161-16 U162-16 .W2 OUT<12>

712: U112-17 U281-5 U174-16 U175-16 .W2 OUT<13>

713: U100-13 U255-5 U186-16 U187-16 .W2 OUT<14>

714: U112-13 U280-5 U200-16 U201-16 .W2 OUT<15>

715: U112-3 U294-4 U18-16 U19-16 .W2 OUT<1>

716: U100-7 U279-4 U31-16 U32-16 .W2 OUT<2>

717: U112-7 U267-4 U44-16 U45-16 .W2 OUT<3>

718: U100-18 U268-4 U57-16 U58-16 .W2 OUT<4>

719: U112-18 U281-4 U69-16 U70-16 .W2 OUT<5>

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721: U112-14 U280-4 U95-16 U96-16 .W2 OUT<7>

722: U100-4 U293-5 U108-16 U109-16 .W2 OUT<8>

723: U112-4 U294-5 U121-16 U122-16 .W2 OUT<9>

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725: U73-13 U213-16 U214-16 .W2 PAR OUT

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726: U174-9 U161-9 U148-9 U135-9 U121-9
726: U108-9 U213-9 U148-4 U135-4 U121-4
726: U108-4 U213-4                          .W2 RAS A L

727: U234-9 U162-4 U175-4 U187-4 U201-4
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727: U175-9 U162-9 U149-9 U136-9 U122-9
727: U109-9 U214-9 U149-4 U136-4 U122-4
727: U109-4 U214-4                          .W2 RAS B L

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729: U6-3 U109-3                            .W2 WRITE B L

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730: U123-5 U110-5 U215-5 U46-5 U33-5
730: U20-5 U7-5                             .W3 A0 A L

731: U229-9 U164-5 U177-5 U189-5 U203-5
731: U98-5 U85-5 U72-5 U60-5 U47-5 U34-5
731: U21-5 U8-5 U151-5 U138-5 U124-5 U111-5
731: U216-5                                 .W3 A0 B L

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732: U188-7 U176-7 U163-7 U150-7 U137-7
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732: U20-7 U7-7                             .W3 A1 A L

733: U229-7 U164-7 U177-7 U189-7 U203-7
733: U98-7 U85-7 U72-7 U60-7 U47-7 U34-7
733: U21-7 U8-7 U151-7 U138-7 U124-7 U111-7
733: U216-7                                 .W3 A1 B L

734: U227-7 U59-6 U71-6 U84-6 U97-6 U202-6
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734: U20-6 U7-6                             .W3 A2 A L
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735: U229-5 U164-6 U177-6 U189-6 U203-6
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735: U216-6 .W3 A2 B L

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736: U202-14 U188-14 U176-14 U163-14 U150-14
736: U137-14 U123-14 U110-14 U215-14 U46-14
736: U33-14 U20-14 U7-14 .W3 A3 A L

737: U229-3 U164-14 U177-14 U189-14 U203-14
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737: U34-14 U21-14 U8-14 U151-14 U138-14
737: U124-14 U111-14 U216-14 .W3 A3 B L

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742: U33-15 U20-15 U7-15 .W3 A6 A L

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746: U20-1 U7-1                             .W3 A8 A L

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747: U216-1                                 .W3 A8 B L

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748: U97-10 U84-10 U71-10 U59-10 U46-10
748: U33-10 U20-10 U7-10                    .W3 CAS 0A L

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749: U21-10 U8-10 U216-10                   .W3 CAS 0B L

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750: U33-17 U20-17 U7-17                    .W3 CAS 1A L

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751: U124-17 U111-17 U216-17                .W3 CAS 1B L

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768: U113-3 U293-2 U7-16 U8-16 .W3 OUT<0>

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771: U113-17 U268-3 U163-16 U164-16 .W3 OUT<12>

772: U126-17 U281-3 U176-16 U177-16 .W3 OUT<13>

773: U113-13 U255-3 U188-16 U189-16 .W3 OUT<14>

774: U126-13 U280-3 U202-16 U203-16 .W3 OUT<15>

775: U126-3 U294-2 U20-16 U21-16 .W3 OUT<1>

776: U113-7 U279-2 U33-16 U34-16 .W3 OUT<2>

777: U126-7 U267-2 U46-16 U47-16 .W3 OUT<3>

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782: U113-4 U293-3 U110-16 U111-16 .W3 OUT<8>

783: U126-4 U294-3 U123-16 U124-16 .W3 OUT<9>

784: U11-5 U215-2 U216-2 .W3 PAR IN

785: U73-4 U215-16 U216-16 .W3 PAR OUT

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786: U123-4 U110-4 U215-4 U202-9 U188-9

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786: U20-9 U7-9                          .W3 RAS A L

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787: U21-4 U8-4 U98-9 U85-9 U72-9 U60-9
787: U47-9 U34-9 U21-9 U8-9 U203-9 U189-9
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787: U111-9 U216-9 U151-4 U138-4 U124-4
787: U111-4 U216-4                       .W3 RAS B L

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788: U59-3 U163-3                        .W3 WRITE A L

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789: U85-3 U189-3 U216-3 U98-3 U203-3
789: U21-3 U124-3 U34-3 U138-3 U47-3 U151-3
789: U8-3 U111-3                         .W3 WRITE B L

790: U222-2 U222-4 U217-19               .WRITE 0 H

791: U223-6 U223-8 U217-16               .WRITE 1 H

792: U234-6 U234-8 U217-15               .WRITE 2 H

793: U228-15 U228-13 U217-12             .WRITE 3 H

794: U25-1 U155-5                        .WRITE BAD PARITY
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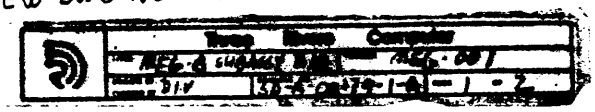
MEG-B SUBASSEMBLY
DIRECTORY

DRAWING NUMBER	DRAWING TITLE
PRQ-MD-0061-B	KEYWAY AND STIFFENER
PRQ-MD-0542-A	KEYWAY ROUTING
MD-D-00166-01-A	MEG-B DRILL DETAIL
PL-A-00179-01-A	MEG-B PARTS LIST
PL-A-00179-02-A	MEG-B PARTS LIST
PL-A-00179-03-A	MEG-B PARTS LIST
PL-A-00179-04-A	MEG-B PARTS LIST
PL-A-00179-05-A	MEG-B PARTS LIST
PL-A-00179-06-A	MEG-B PARTS LIST
PL-A-00179-07-A	MEG-B PARTS LIST
PL-A-00179-08-A	MEG-B PARTS LIST
PL-A-00179-09-A	MEG-B PARTS LIST
PL-A-00179-10-A	MEG-B PARTS LIST
PL-A-00179-11-A	MEG-B PARTS LIST
PL-A-00179-12-A	MEG-B PARTS LIST
PL-A-00179-13-A	MEG-B PARTS LIST
PL-A-00179-14-A	MEG-B PARTS LIST
SC-A-00179-01-A	MEG BLOCK DIAGRAM
SC-A-00179-02-A	MEG BLOCK DIAGRAM
SC-A-00179-03-A	DATA INPUT - PARITY
SC-A-00179-04-A	DATA INPUT: W0,W1
SC-A-00179-05-A	DATA INPUT: W2,W3
SC-A-00170-06-A	DATA OUTPUT
SC-A-00179-07-A	DATA OUTPUT
SC-A-00179-08-A	DATA OUTPUT
SC-A-00179-09-A	MEMORY SHIFTER
SC-A-00179-10-A	MEMORY SHIFTER
SC-A-00179-11-A	VIDEO OUTPUT
SC-A-00179-12-A	VIDEO OUTPUT
SC-A-00179-13-A	VIDEO OUTPUT

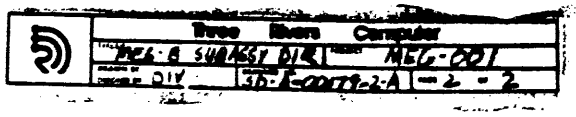
OLD DWG NO: SD-A-00179-1-A
NEW DWG NO: 100048-02 B

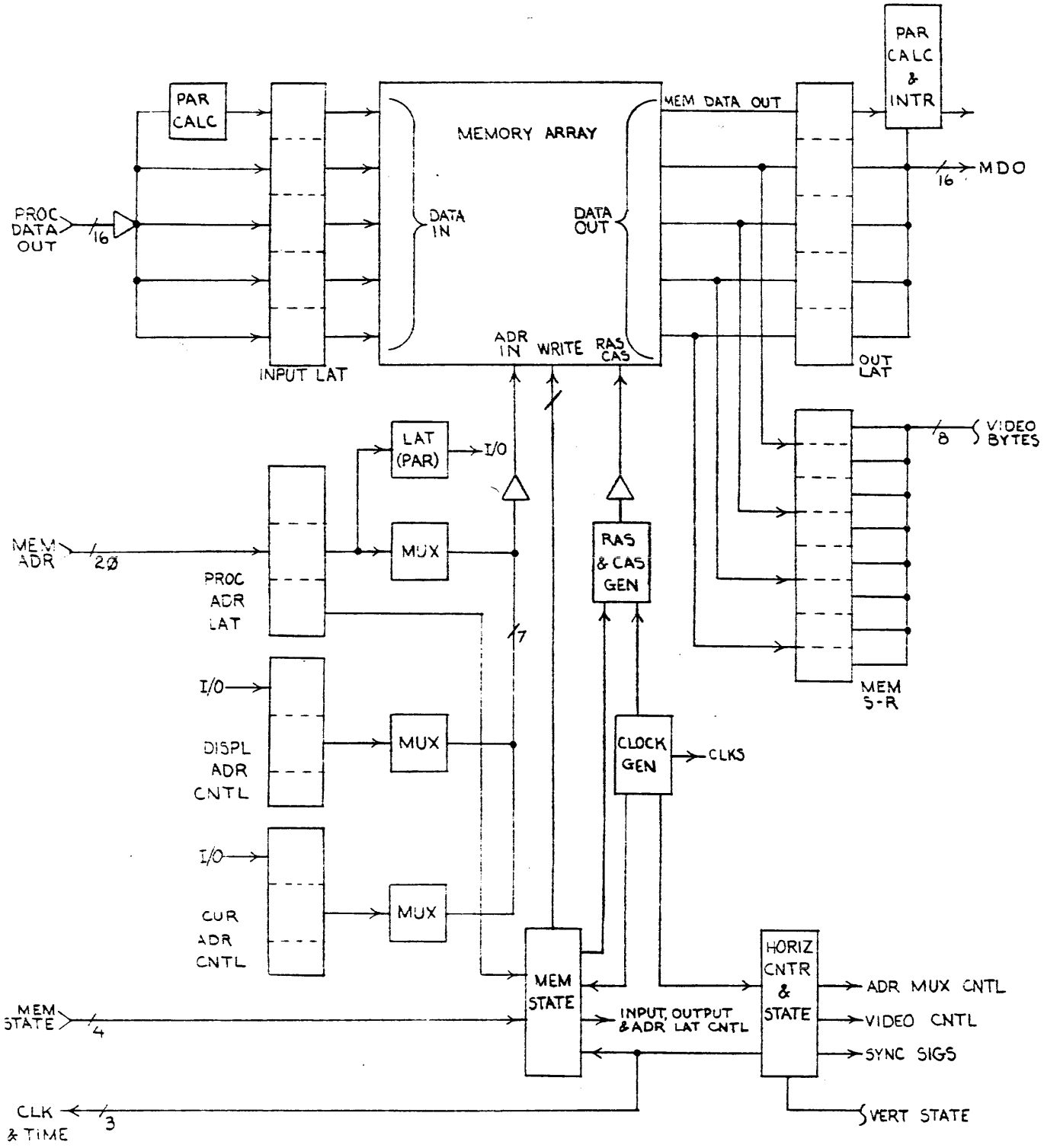


MEG-B SUBASSEMBLY
DIRECTORY

DRAWING NUMBER	DRAWING TITLE
SC-A-00179-14-A	MEM ADR SEL
SC-A-00179-15-A	MEM ADR SEL
SC-A-00179-16-A	MEM DRIVERS 3
SC-A-00179-17-A	MEM DRIVERS 2
SC-A-00179-18-A	MEM DRIVERS 0
SC-A-00179-19-A	MEM DRIVERS 1
SC-A-00179-20-A	TYP RAM AND JC
SC-A-00179-21-A	MEG RAM ARRAY
SC-A-00179-22-A	I/O REGISTERS
SC-A-00179-23-A	I/O REGISTERS
SC-A-00179-24-A	CLOCK GENERATOR
SC-A-00179-25-A	CLK GEN
SC-A-00179-26-A	HORIZONTAL STATE
SC-A-00179-27-A	MEMORY STATE
SC-A-00179-28-A	
MD-D-00171-01-A	MEG-B ASSEMBLY PROCEDURE
LB-A-00175-01-A	MEG-001 BOARD LABEL
SD-A-00179-01-A	MEG-B SUBASSEMBLY DIR
SD-A-00179-02-A	MEG-B SUBASSEMBLY DIR

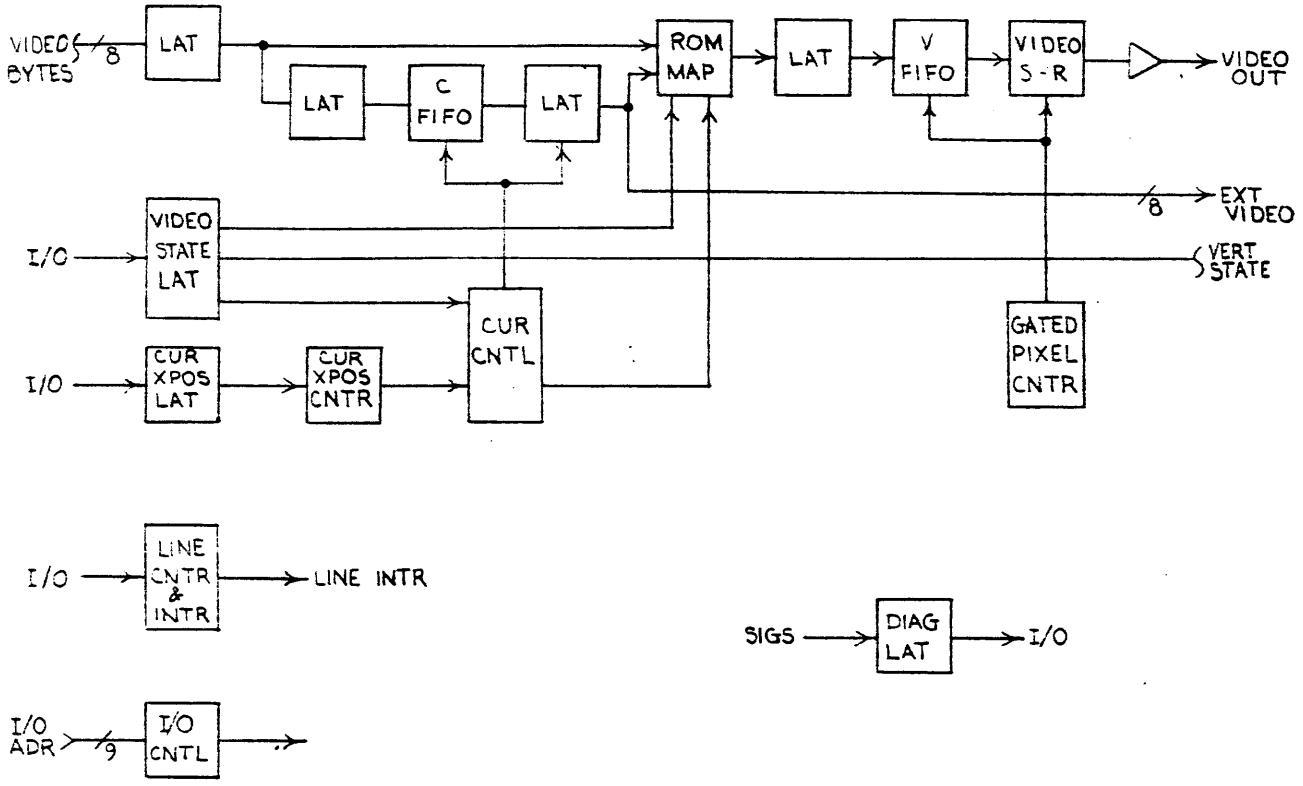
OLD# SD-A-00179-2A
NEW# 100048-02 B





NEW# 100048-02B
OLD= SC-A-00179-1-A

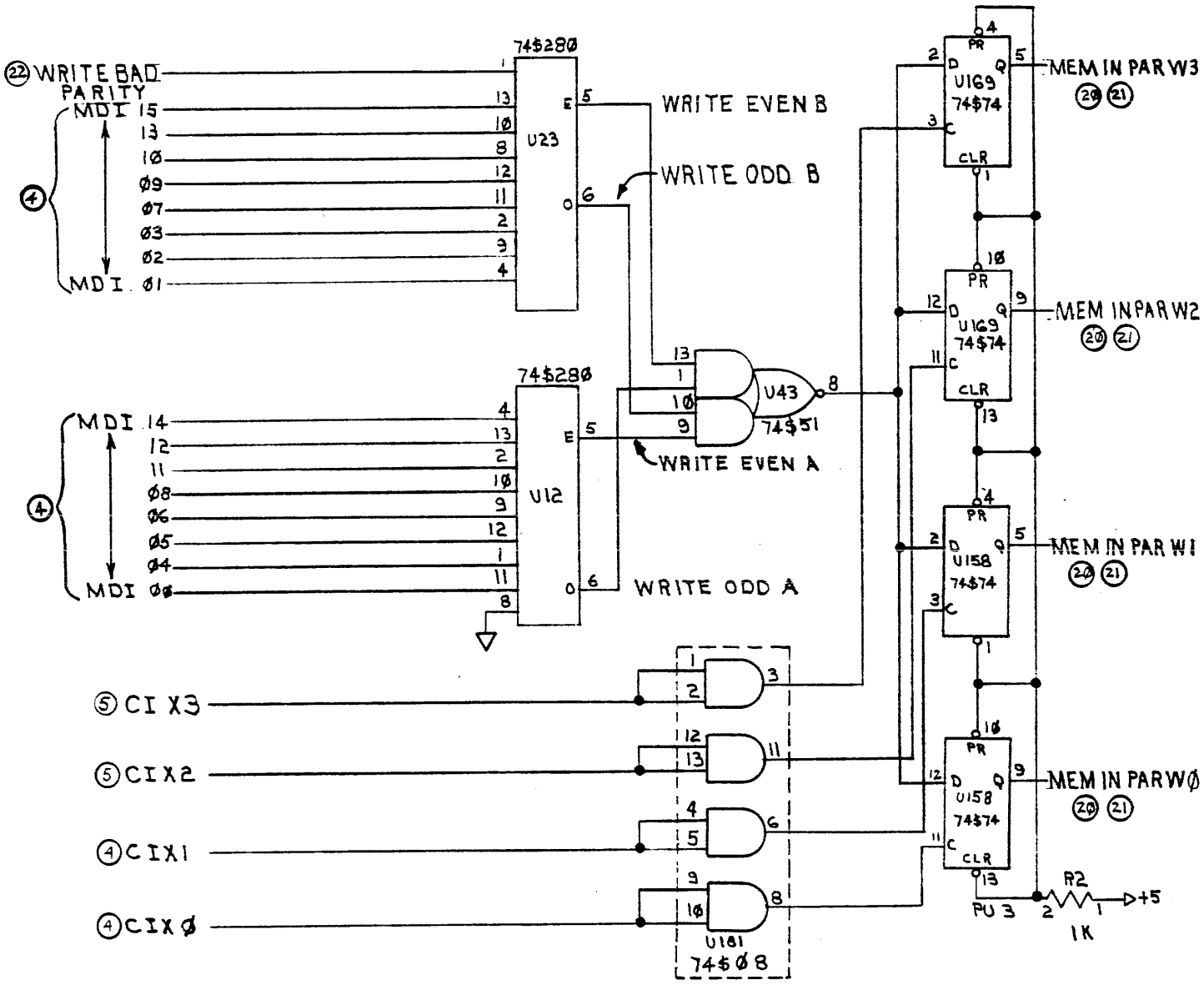
Three Rivers Computer	
MEG-001 BLOCK DIAG	MEG-001
SB 10/79 SC-A-00179-1-A	1 - 20



NEW # 100048-02 B

OLD # SC-A-001792-A

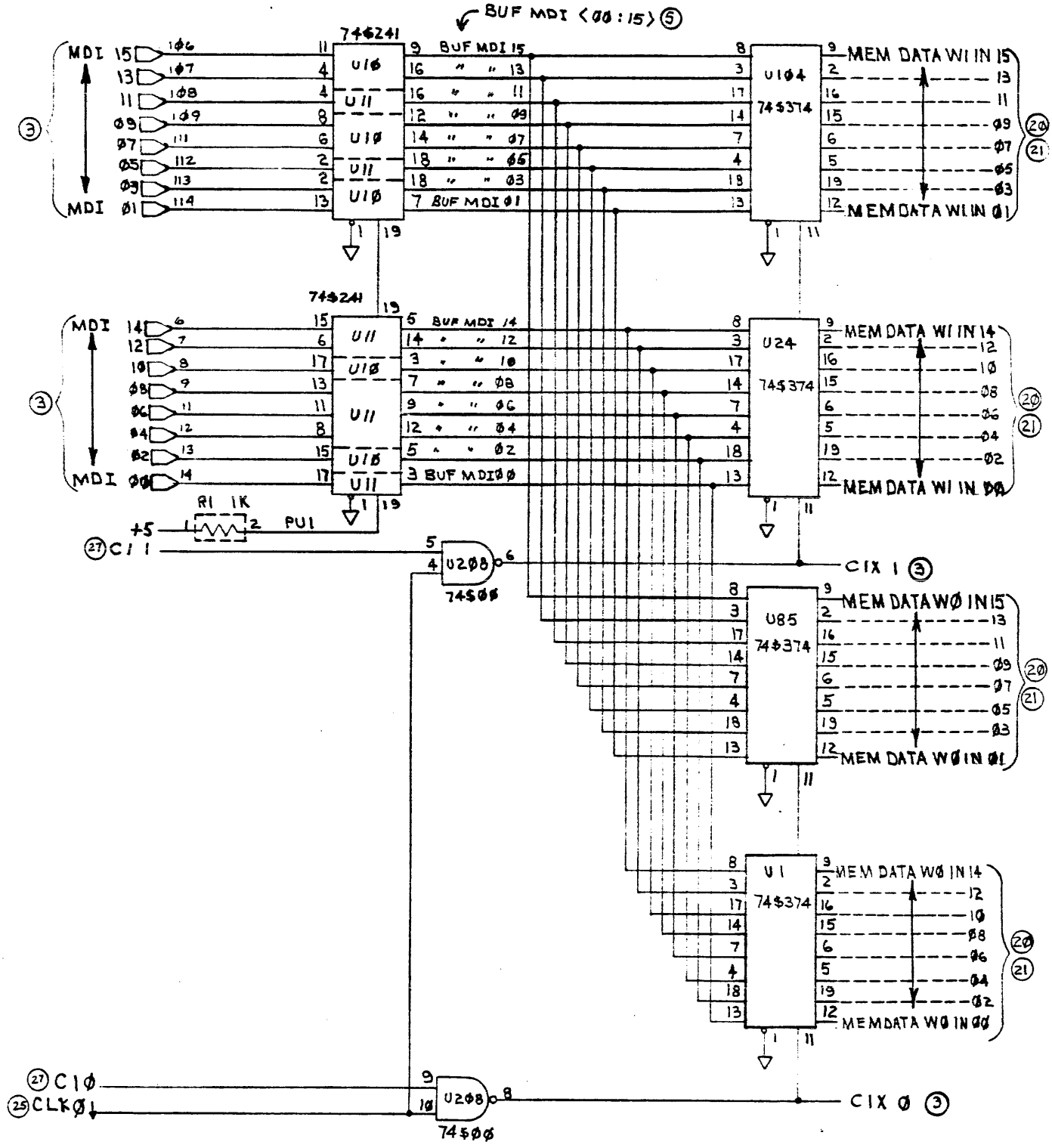
Three Rivers Computer	
VMEG BLOCK DIAGRAM	MEG-001
CD 1979 SC-A-001792-A	- 2 - 28



NEW # 100048-02B

OLD # SC-A-00179-3-A

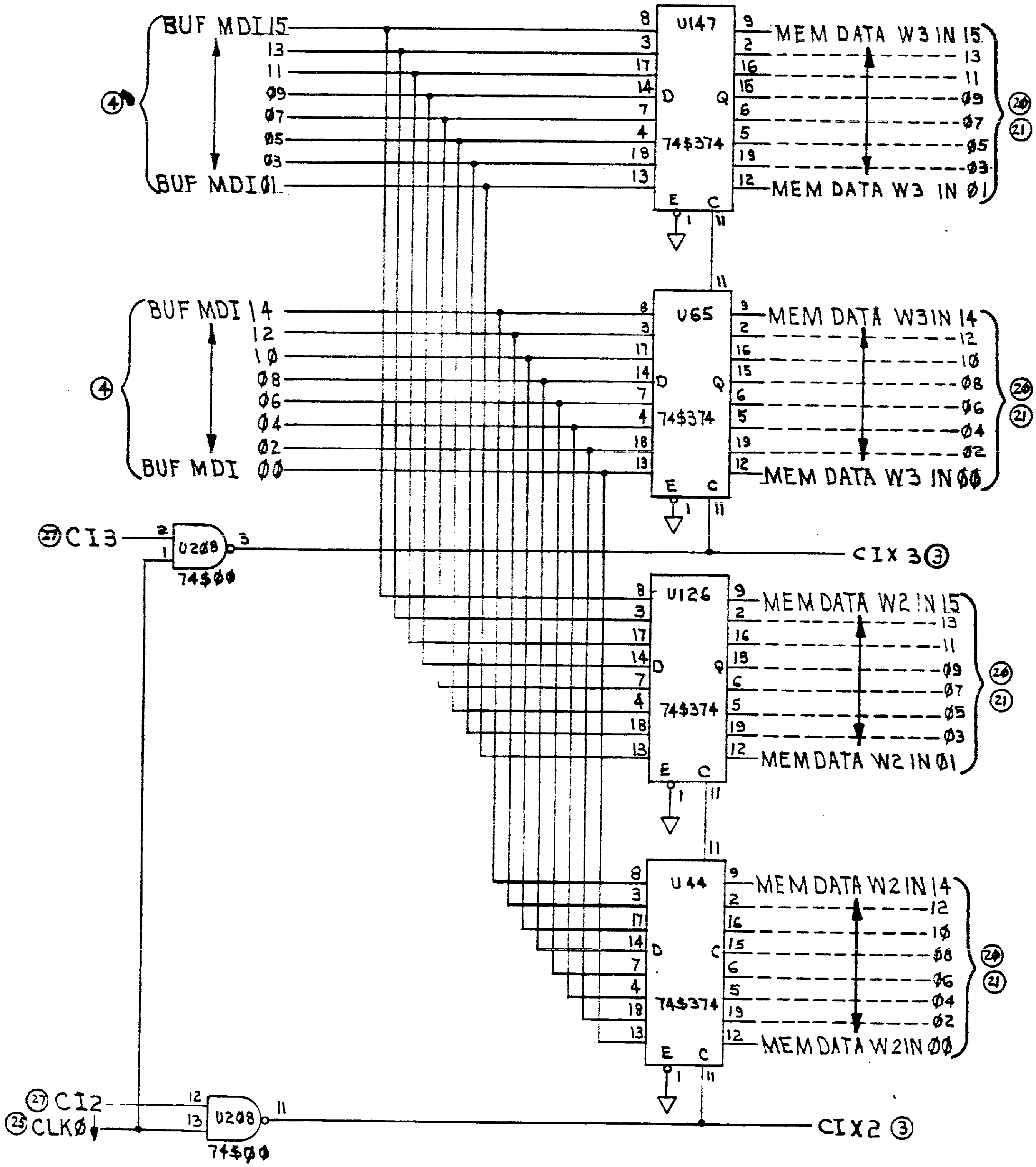
Tree Rivers Computer	
DATA INPUT - PARITY	MEG-001
T.J.T. 6-20-81	SC-A-00179-3-A — 3 - 28



NEW = 100048-02-B

OLD = SC-A-00179-4-A

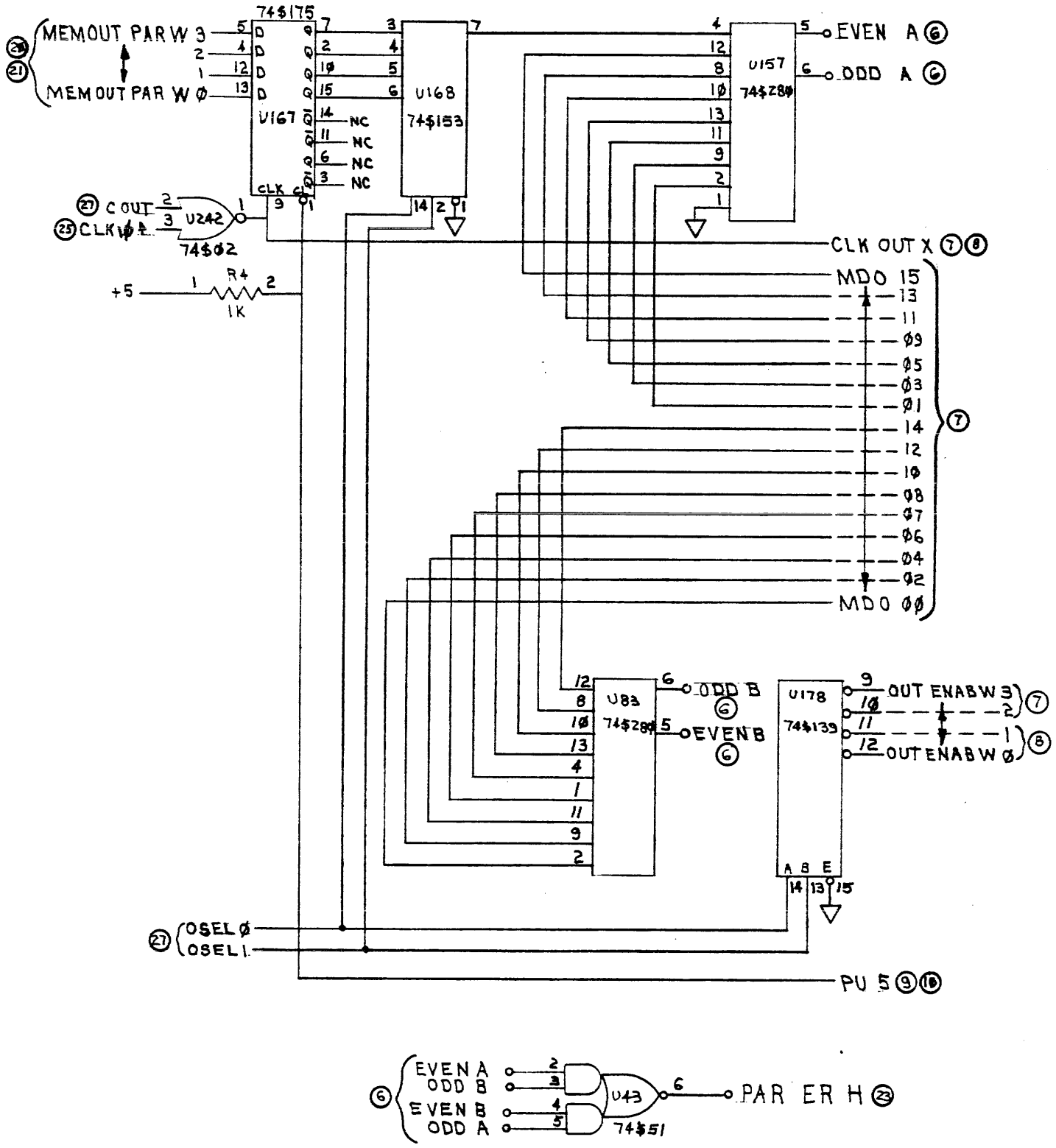
Three Rivers Computer	
DATA INPUT: WØ, W1	NEG-ØØ1
SC-A-00179-4-A	4-28



NEW # 100048-02B

OLD # SC-A-00179-5-A

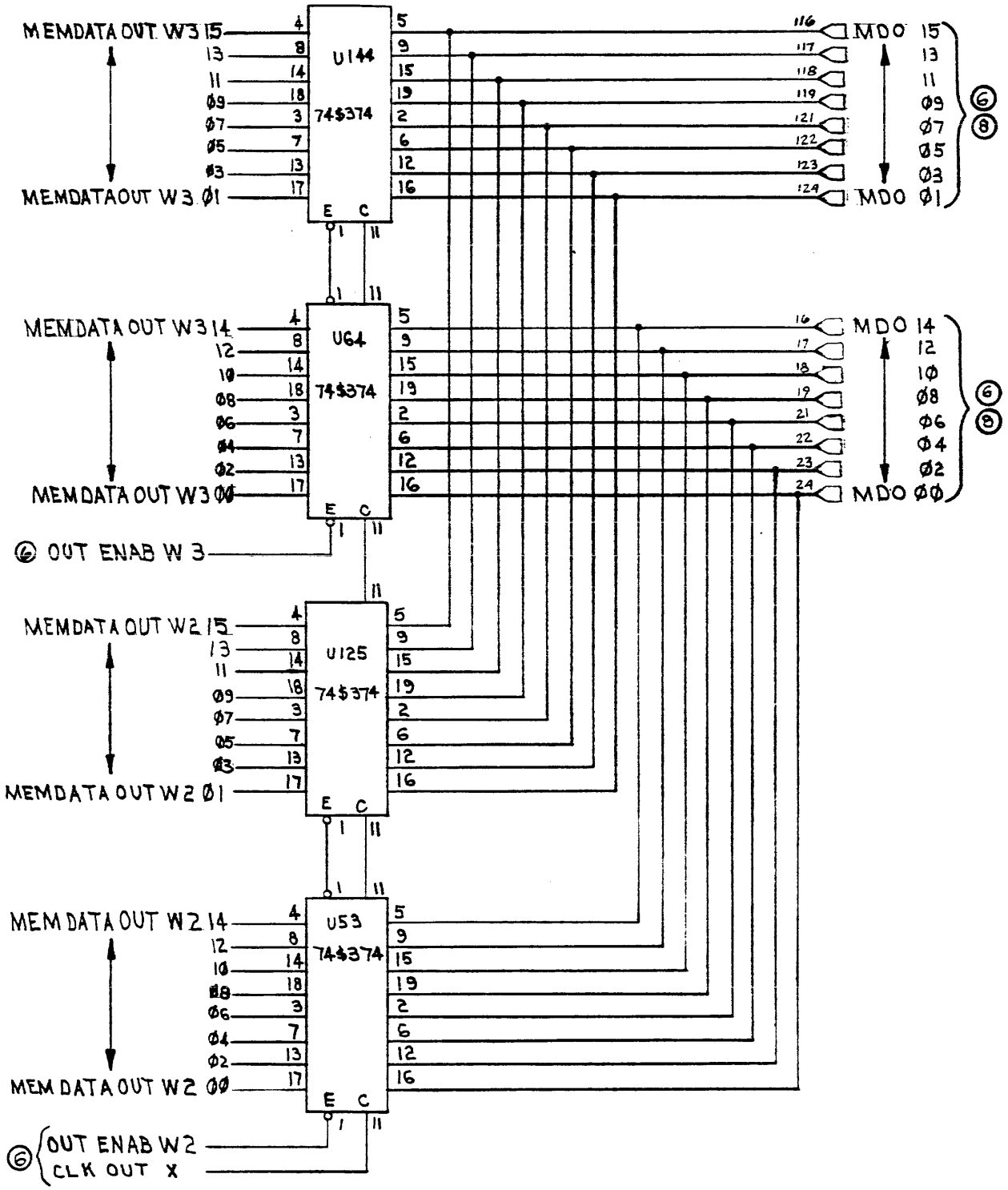
	Three Rivers Computer
DATA INPUT: W2, W3	MEG-ØØ1
SC-A-00179-5-A	5 • 28



NEW# 100048-02 B

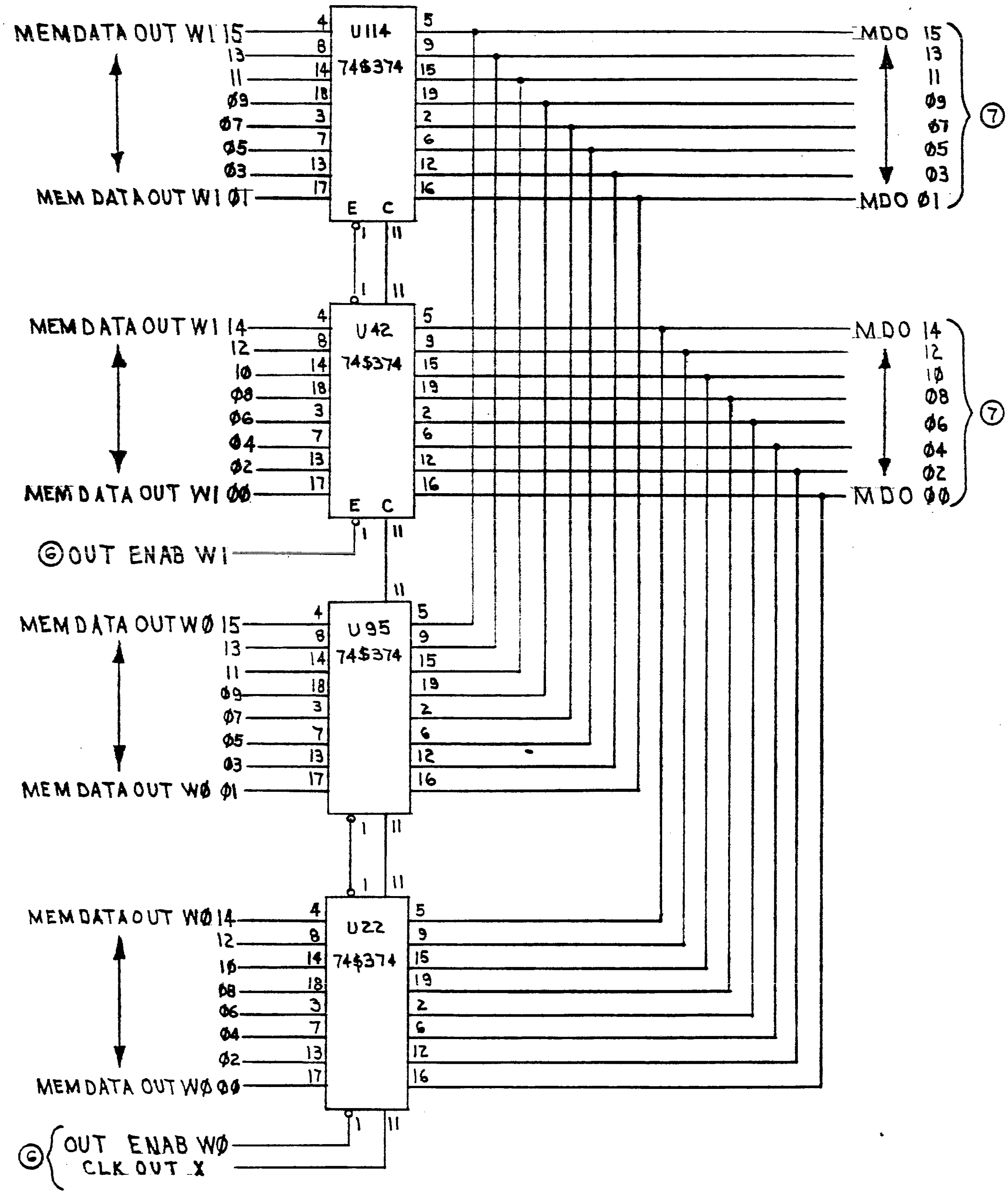
OLD# SC-A-00179-6-A

Three Rivers Computer	
DATA OUTPUT	MEG-001
T.J.L	SC-A-00179-6B — 6 - 28



NEW# 100048-02B
OLD# SC-A-00179-7-A

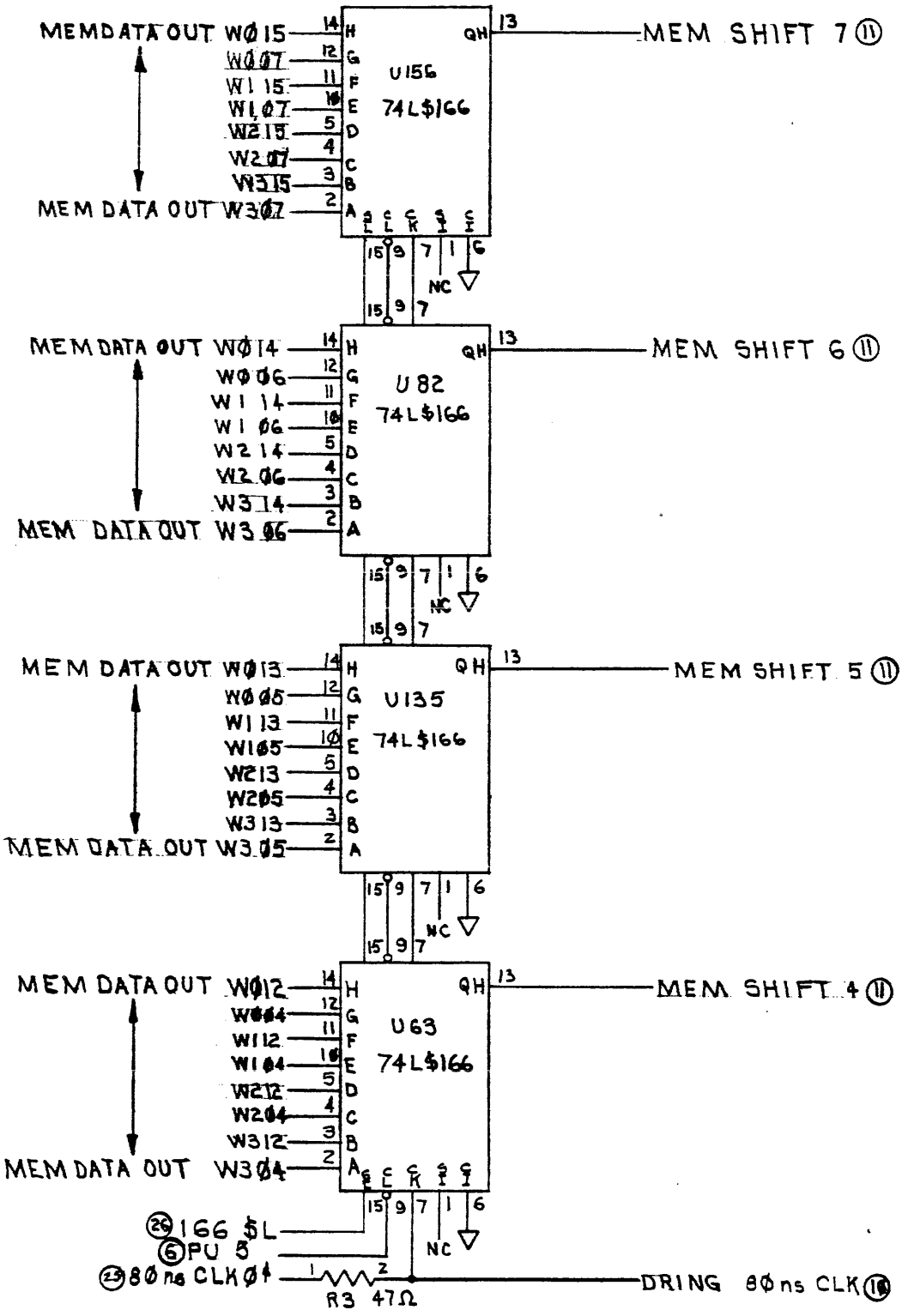
Three Rivers Computer	
DATA OUTPUT	MEG-001
R.S.V.	SC-A-00179-7-A — 7 - 2A



OLD # SC-A-00179-8-A

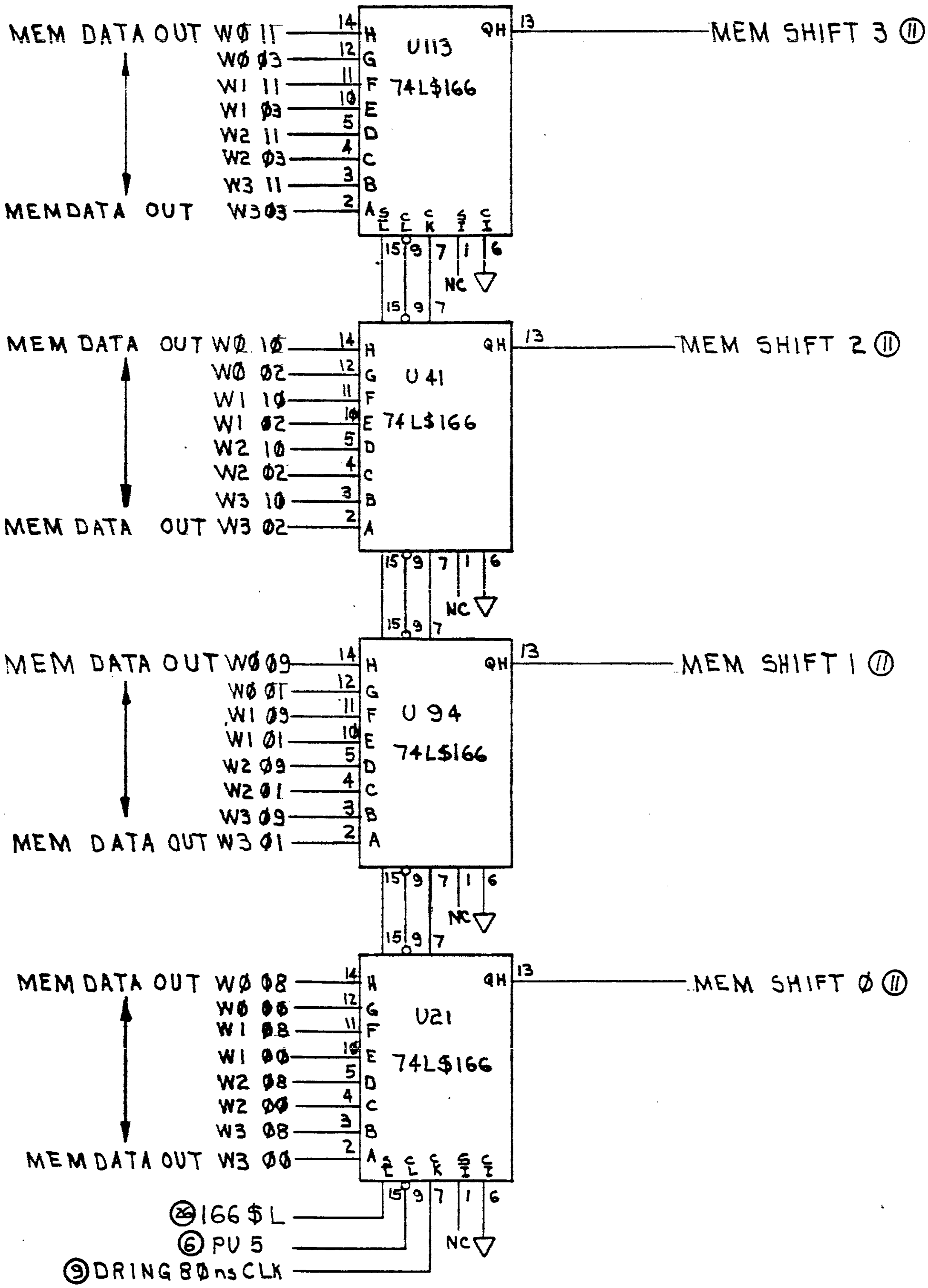
NEW # 100048-02 B

Three Rivers Computer		
DATA OUTPUT		MEG-ØØ1
T.S.T.	SC-A-00179-8-A	8-78



NEW# 100048-02B
OLD# SC-A-00179-9-A

Tree Town Computer		
MEMORY SHIFTER	MEG-001	
T.J.T.	REV: 00179-9-A	9-28



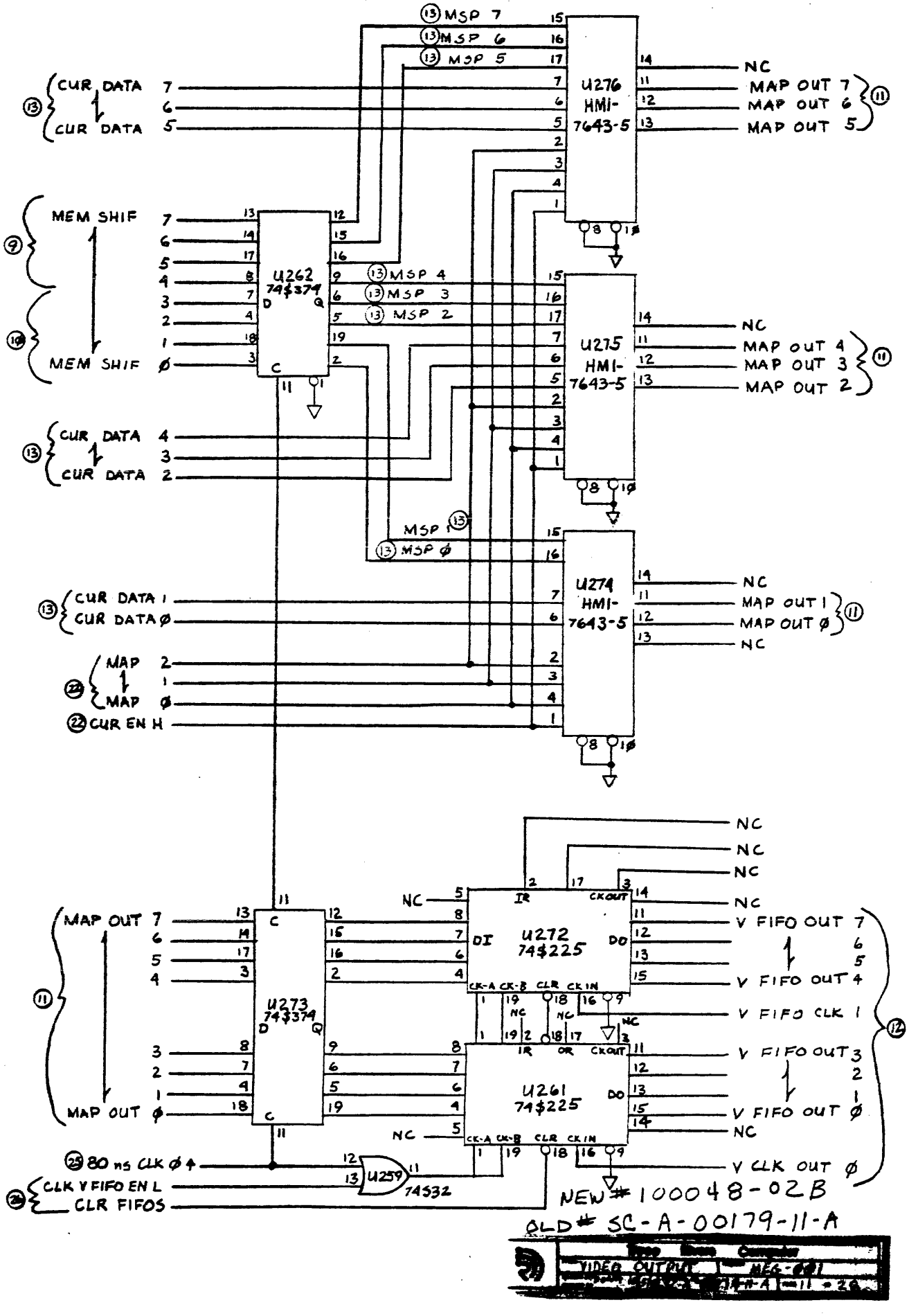
NEW# 100048-02 B

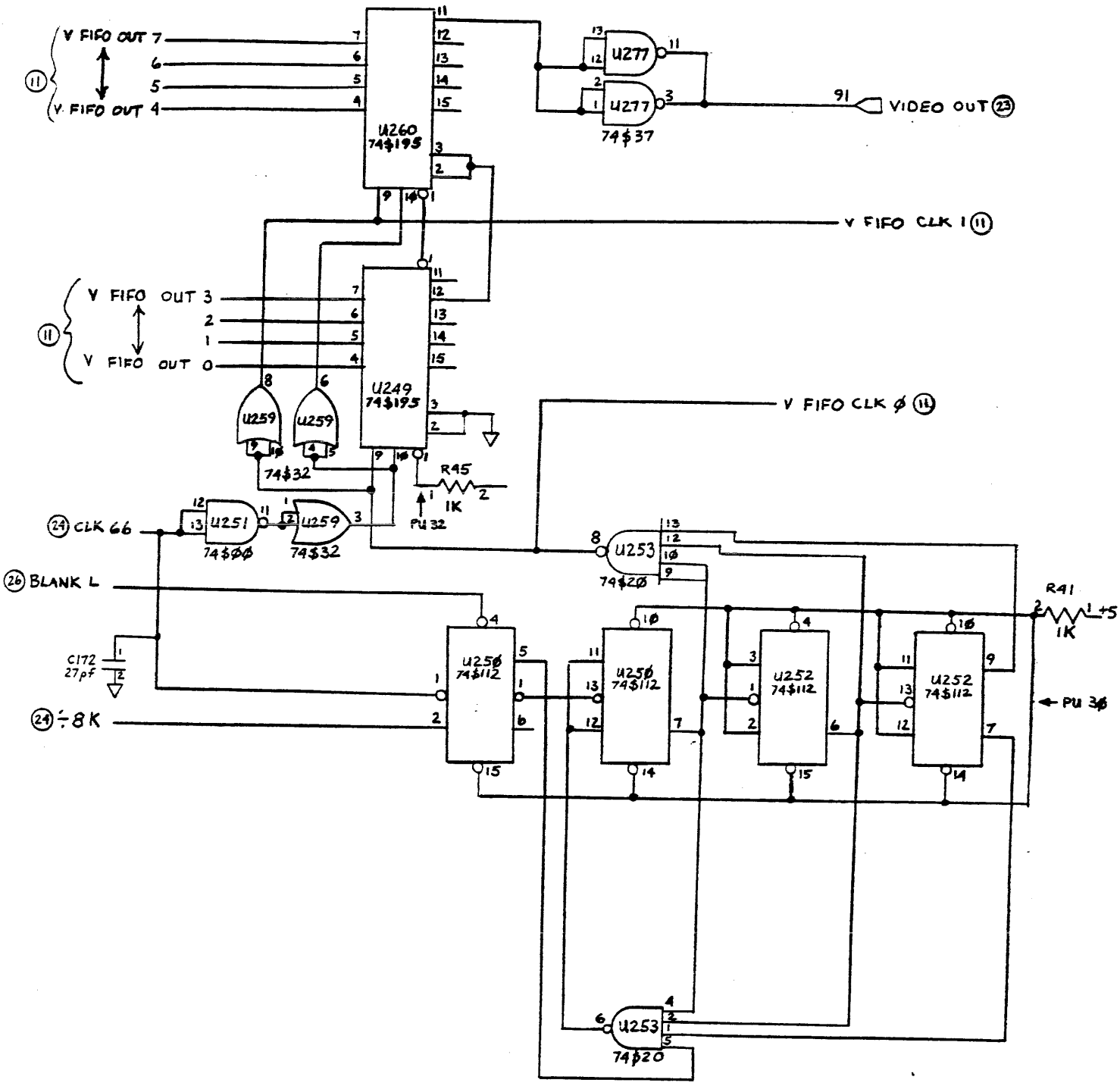
OLD# SC-A-00179-10-A

Three Rivers Computer

MEMORY SHIFTER | MEG-001

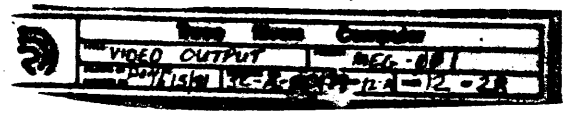
T3T | SC-A-00179-10-A | 10-28

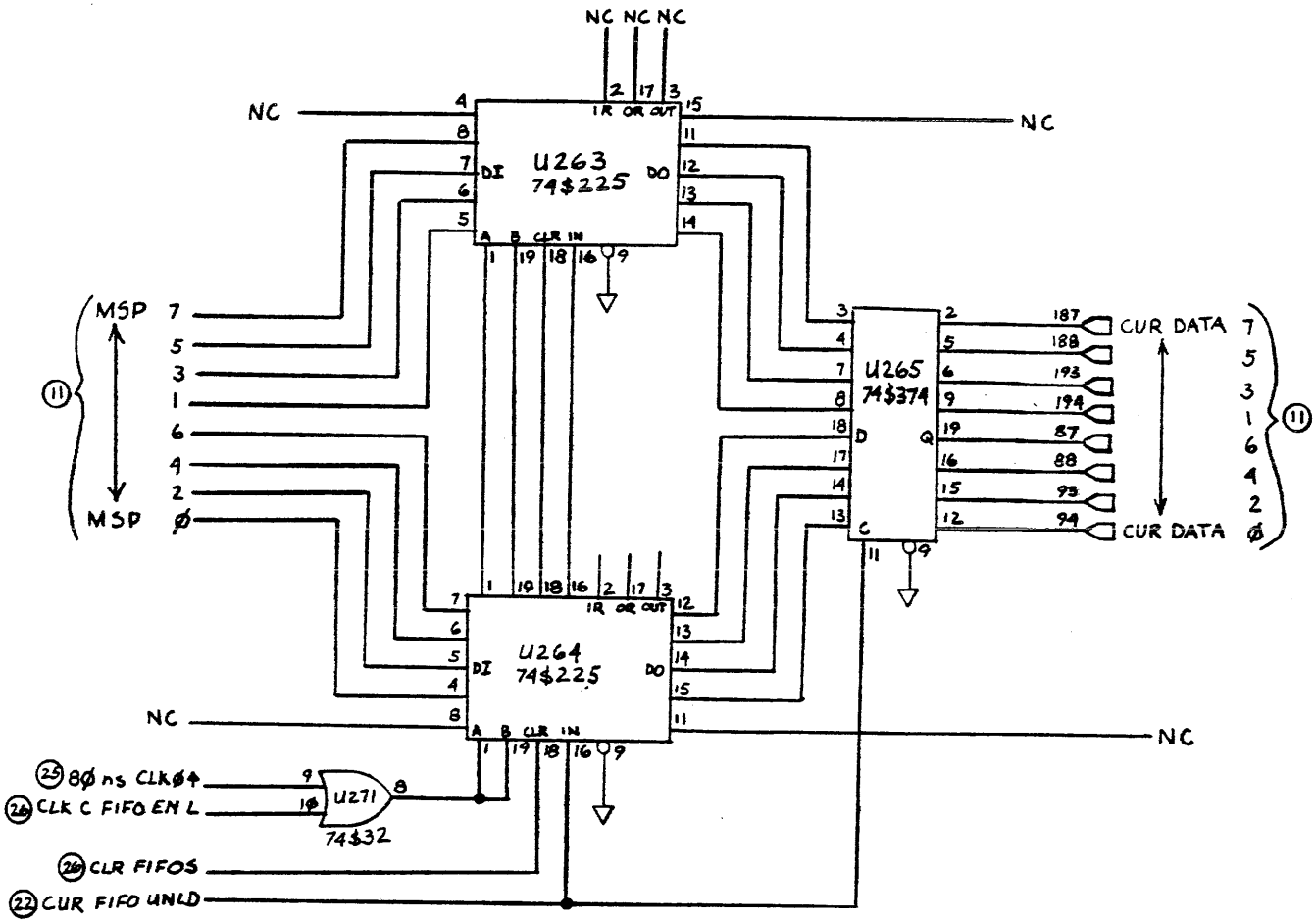

(13) MSP 7
(13) MSP 6
(13) MSP 5
(13) CUR DATA 7
6
CUR DATA 5
U276 HMI-7643-5
NC
MAP OUT 7
MAP OUT 6
MAP OUT 5
(11)
(9) MEM SHIF 7
6
5
4
3
2
1
(10) MEM SHIF Ø
U262 74S374
(13) MSP 4
(13) MSP 3
(13) MSP 2
U275 HMI-7643-5
NC
MAP OUT 4
MAP OUT 3
MAP OUT 2
(13) CUR DATA 4
3
CUR DATA 2
(13) MSP 1
(13) MSP Ø
U274 HMI-7643-5
(13) CUR DATA 1
CUR DATA Ø
MAP OUT 1
MAP OUT Ø
(22) MAP 2
1
MAP Ø
(22) CUR EN H
MAP OUT 7
6
5
4
3
2
1
MAP OUT Ø
U273 74S374
NC
U272 74S225
V FIFO OUT 7
6
5
V FIFO OUT 4
V FIFO CLK 1
U261 74S225
V FIFO OUT 3
2
1
V FIFO OUT Ø
V CLK OUT Ø
(12)
(25) 80 ns CLK Ø
(26) CLK V FIFO EN L
CLR FIFOS
U259 74S32
NEW # 100048-02B
OLD # SC-A-00179-11-A



NEW # 100048-02B

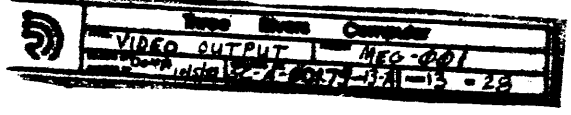
OLD # SC-A-00179-12-A

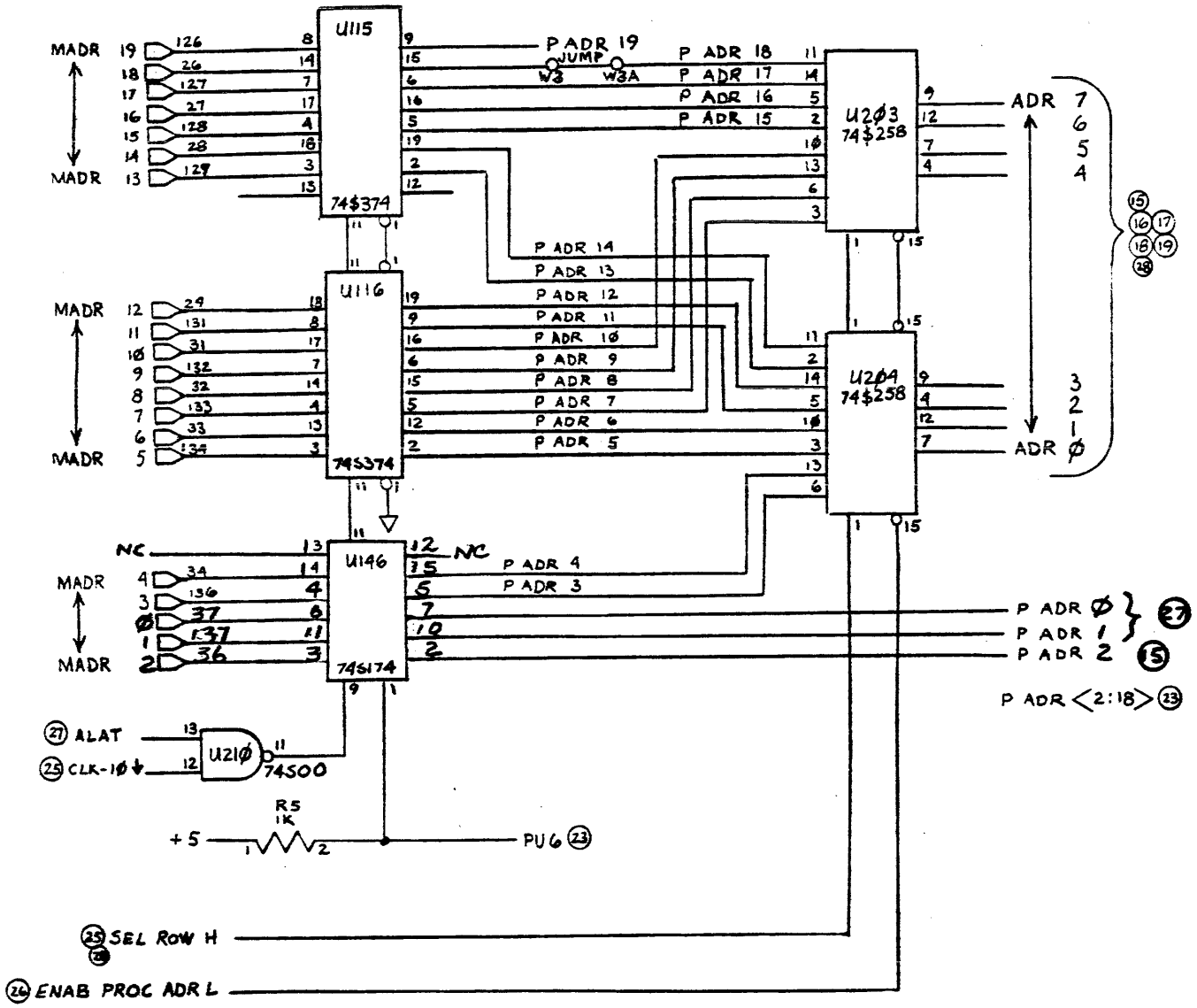




NEW# 100048-02 B

OLD# SC-A-00179-13-A

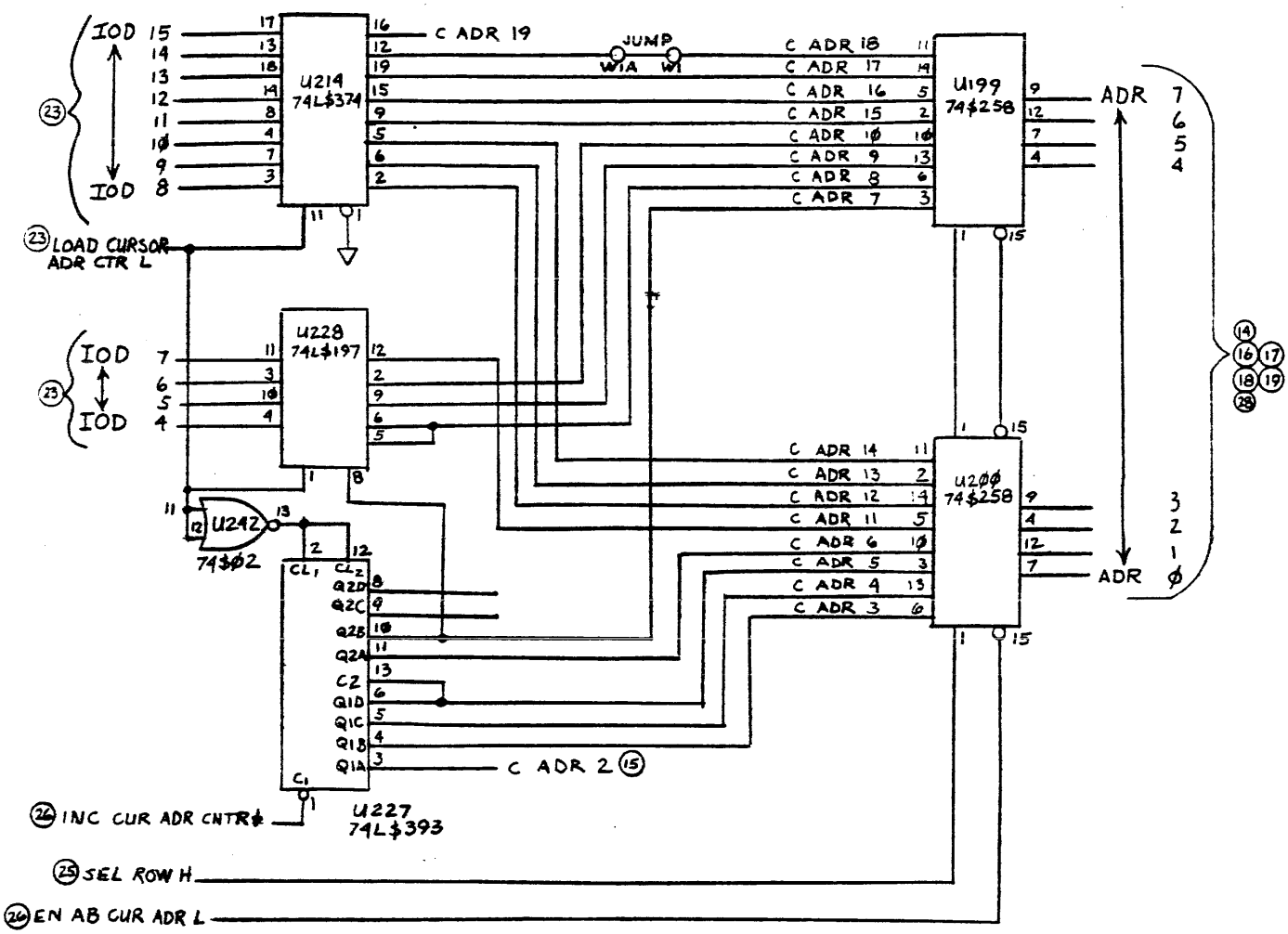


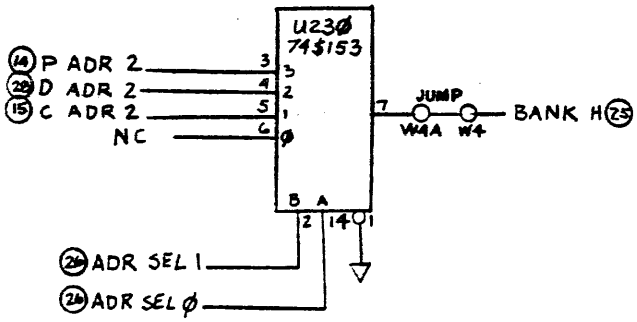


NEW# 100048-02B

OLD# SC-A-00179-14-A

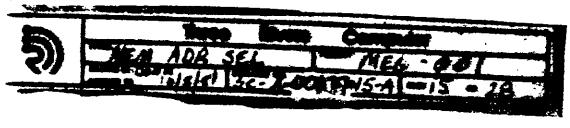
	MEM ADR SEL	MEG-001

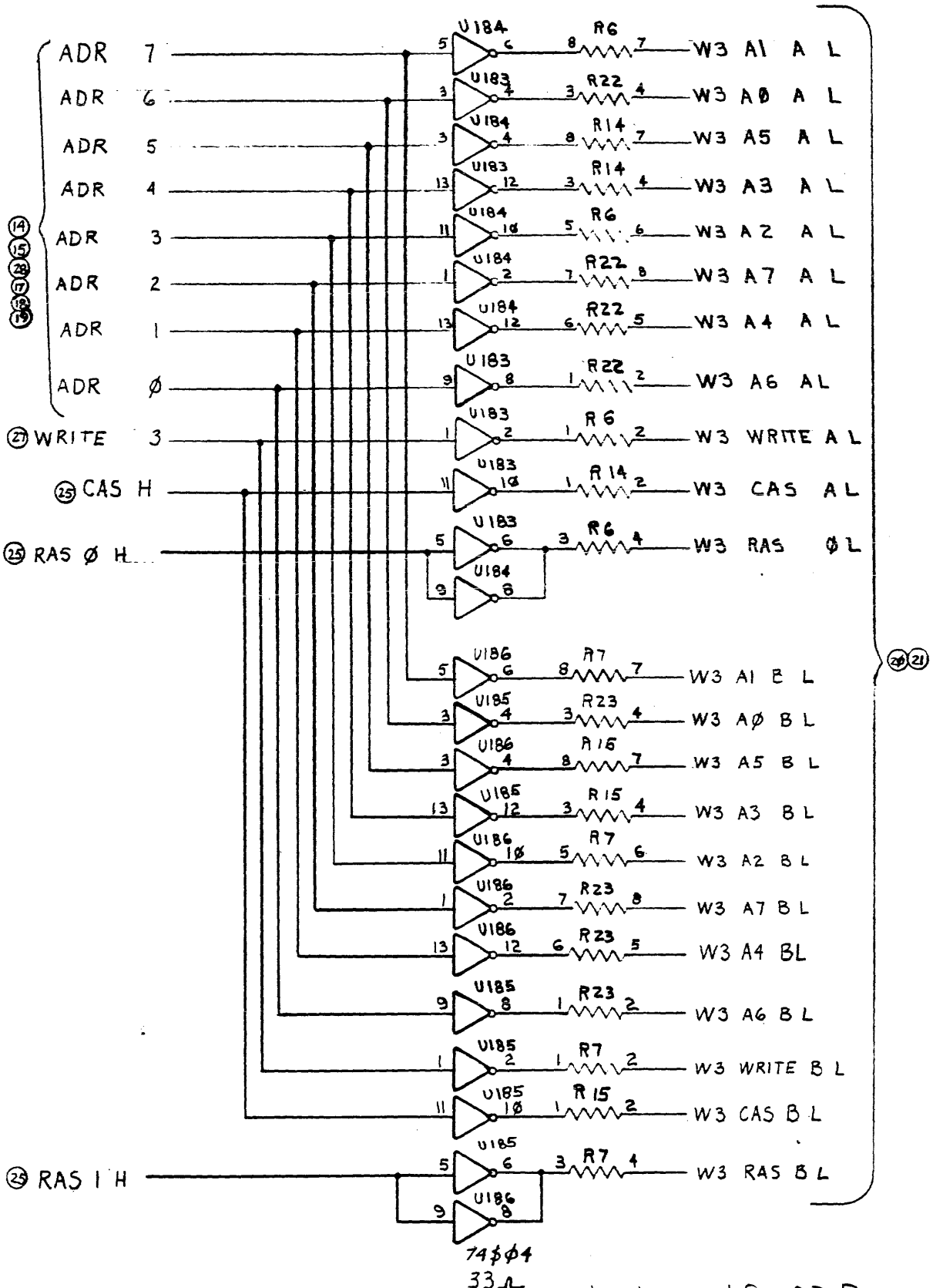




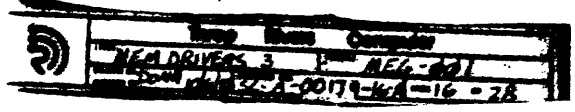
NEW # 100048-02B

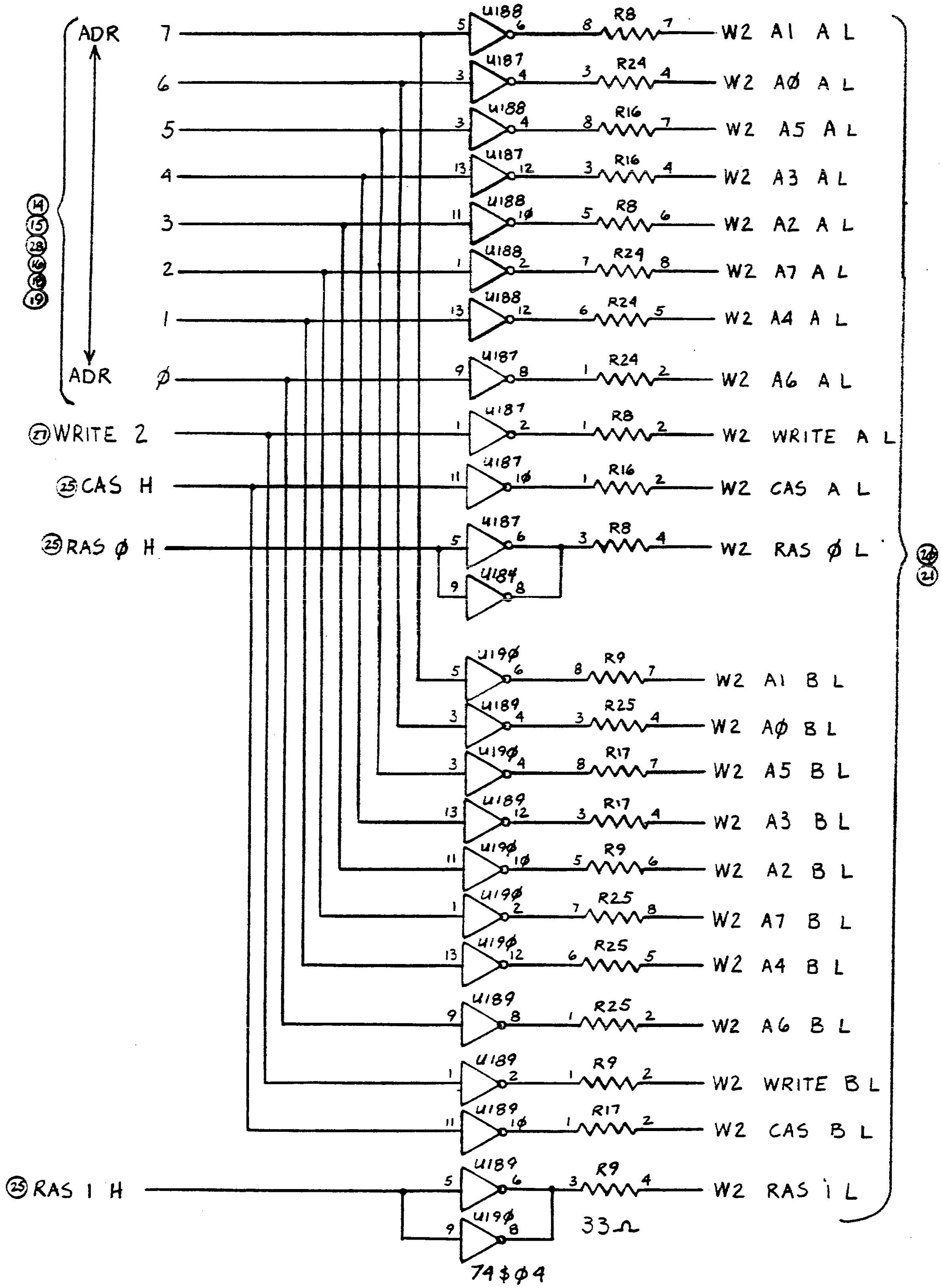
OLD # SC-A-00179-15-A





NEW# 100048-02B
OLD# SC-A-00179-16-A

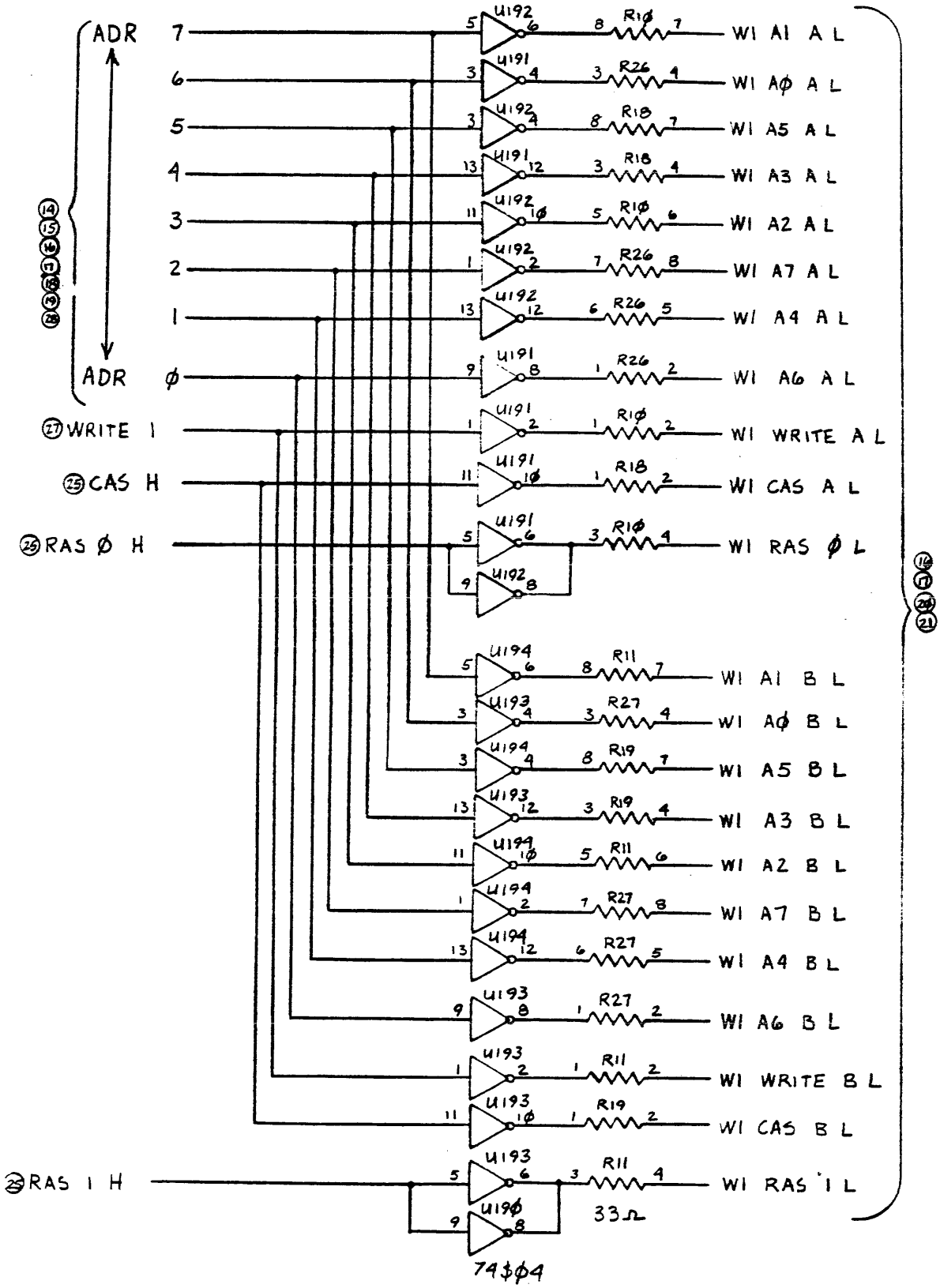




NEW# 100048-02B

OLD# SC-A-00179-17-A

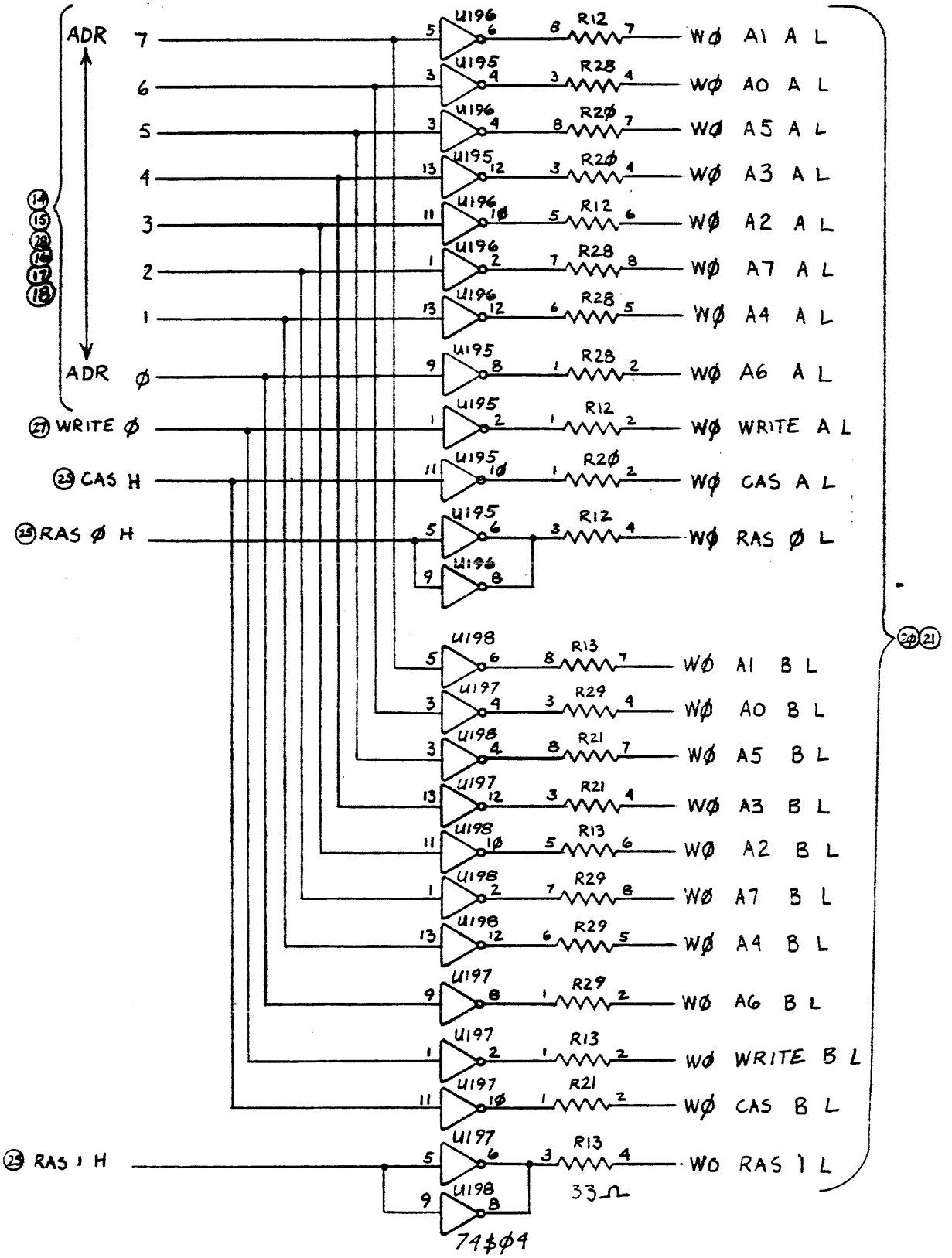
Three Rivers Computer	
MEM DRIVERS 2	MEG-ØØ1
10/1/79 SC-A-00179-17-A	17 - 28



NEW# 100048-02B

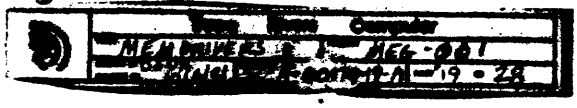
OLD# SC-A-00179-18-A

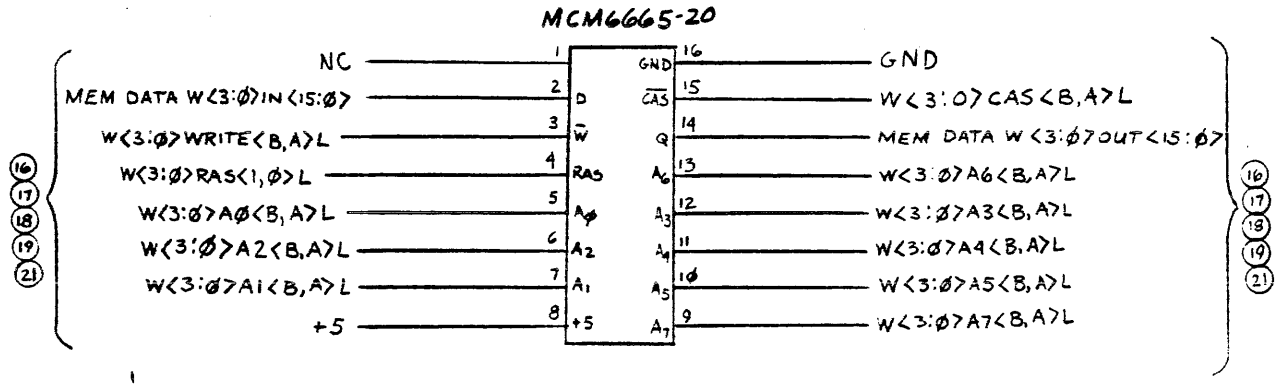
REG DRIVERS Ø	REG-001
	SC-A-00179-18-A — 18 - 28



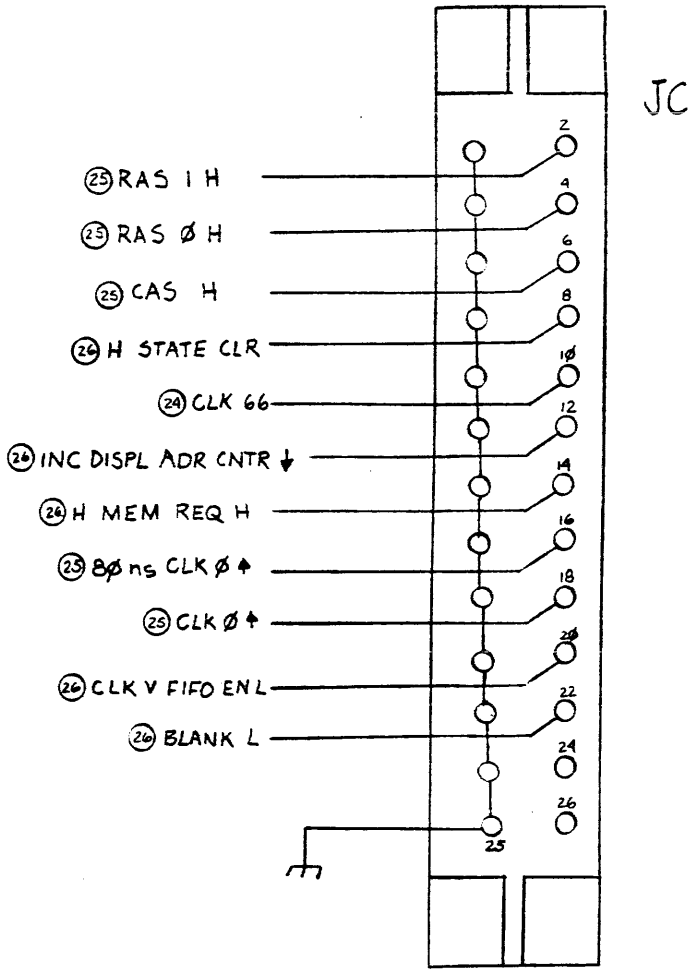
NEW# 100048-02B

OLD# SC-A-00179-19-A





NOTE: I C TYPICAL 136 LOCATIONS ON RAM ARRAY PAGE (21)



NEW # 100048-02 B

OLD # SC-A-00179-20-A

REVISIONS			
LTR		DATE	APPV'D

	WORD 3		WORD 2		WORD 1		WORD 0		
	RAS 0 M<3> AL	RAS 1 M<7> BL	RAS 0 M<2> AL	RAS 1 M<6> BL	RAS 0 M<1> AL	RAS 1 M<5> BL	RAS 0 M<0> AL	RAS 1 M<4> BL	
C1	U2	U3	U4	U5	U6	U7	U8	U9	BIT 8
C6	U13	U14	U15	U16	U17	U18	U19	U20	BIT 0
C12	U25	U26	U27	U28	U29	U30	U31	U32	BIT 10
C19	U33	U34	U35	U36	U37	U38	U39	U40	BIT 2
C26	U45	U46	U47	U48	U49	U50	U51	U52	BIT 12
C33	U55	U56	U57	U58	U59	U60	U61	U62	BIT 4
C38	U66	U67	U68	U69	U70	U71	U72	U73	BIT 14
C45	U74	U75	U76	U77	U78	U79	U80	U81	BIT 6
C52	U86	U87	U88	U89	U90	U91	U92	U93	BIT 9
C59	U96	U97	U98	U99	U100	U101	U102	U103	BIT 1
C64	U105	U106	U107	U108	U109	U110	U111	U112	BIT 11
C71	U117	U118	U119	U120	U121	U122	U123	U124	BIT 3
C79	U127	U128	U129	U130	U131	U132	U133	U134	BIT 13
C86	U136	U137	U138	U139	U140	U141	U142	U143	BIT 5
C92	U148	U149	U150	U151	U152	U153	U154	U155	BIT 15
C100	U159	U160	U161	U162	U163	U164	U165	U166	BIT 7
C106	U170	U171	U172	U173	U174	U175	U176	U177	BIT P
C108									CAS, A<6:0>

RAS 0 = BANK 0 BANK = M[2]
RAS 1 = BANK 1

OLD DWG NO: SC-00179-21-A

NEXT ASSY MEG-001

TITLE MEG RAM ARRAY

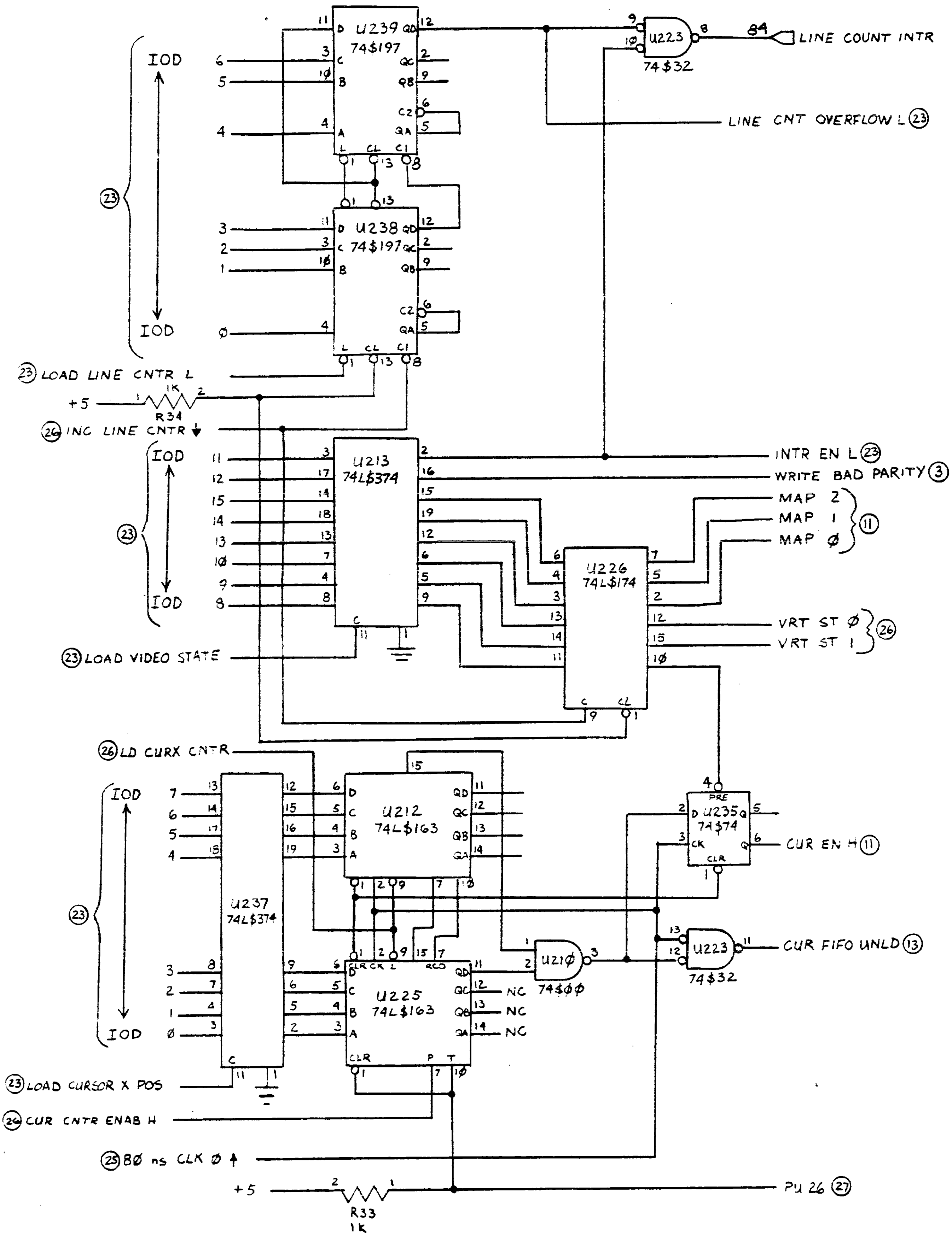
Three Rivers Computer

DRAWN	DIV	11-18-81
CHECKED		
APPV'D		

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0048	02	B

PROJ PERQ

SHT 21 OF 28



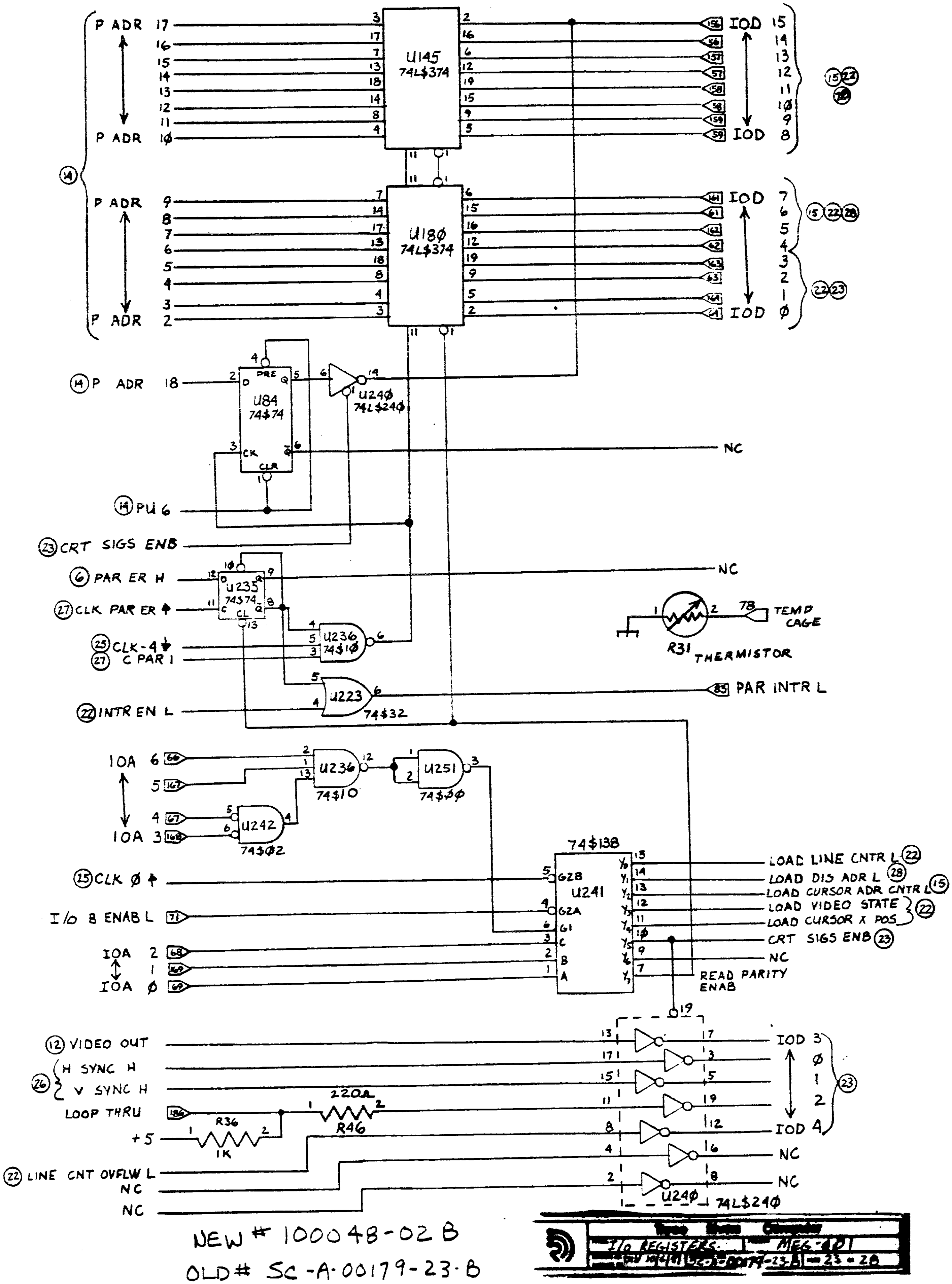
ECO# 00099

OLD# SCA-00179-22-A

NEW# 100048-02 B

I/O REGISTERS

REV B = ECO # 00035 DIV 1-8-82

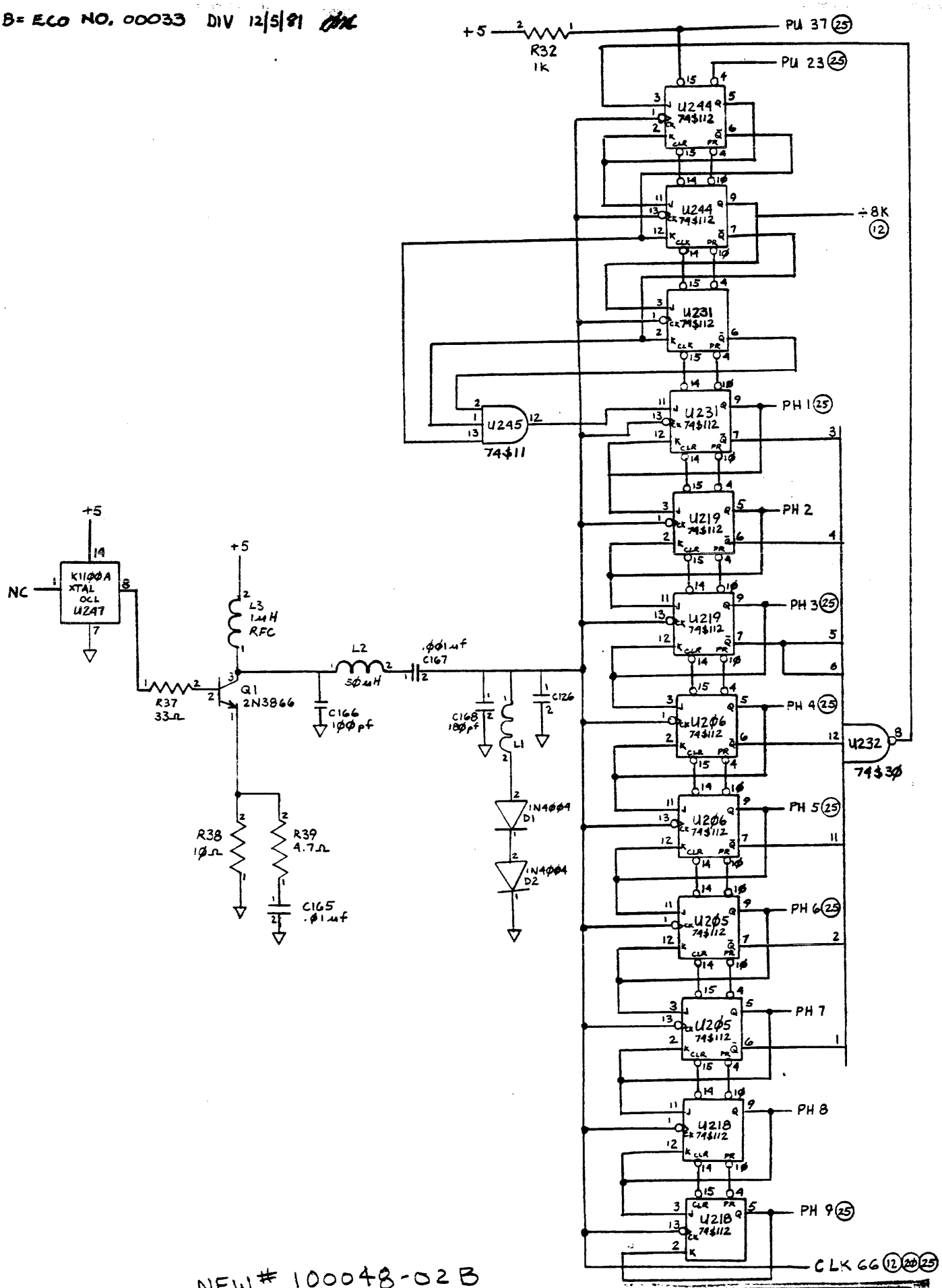


P ADR 17
P ADR 10
P ADR 9
P ADR 2
U145
74LS374
U180
74LS374
IOD 15
IOD 8
IOD 7
IOD 0
P ADR 18
U84
74S74
U240
74LS240
PU 6
CRT SIGS ENB
NC
PAR ER H
U235
74S74
CLK PAR ER
CLK-4
C PAR 1
U236
74S10
U223
74S32
PAR INTR L
INTR EN L
R31 THERMISTOR
TEMP CAGE
IOA 6
IOA 3
U242
74S02
U251
74S00
74S138
U241
CLK 0
I/O B ENAB L
IOA 2
IOA 0
LOAD LINE CNTR L
LOAD DIS ADR L
LOAD CURSOR ADR CNTR L
LOAD VIDEO STATE
LOAD CURSOR X POS
CRT SIGS ENB
READ PARITY ENAB
VIDEO OUT
H SYNC H
V SYNC H
LOOP THRU
+5
R36
1K
220Ω
R46
LINE CNT OVFLW L
IOD 3
IOD 4
U240
74LS240
I/O REGISTERS

NEW # 100048-02 B

OLD # SC-A-00179-23-B

B= ECO NO. 00033 DIV 12/5/81 DMC



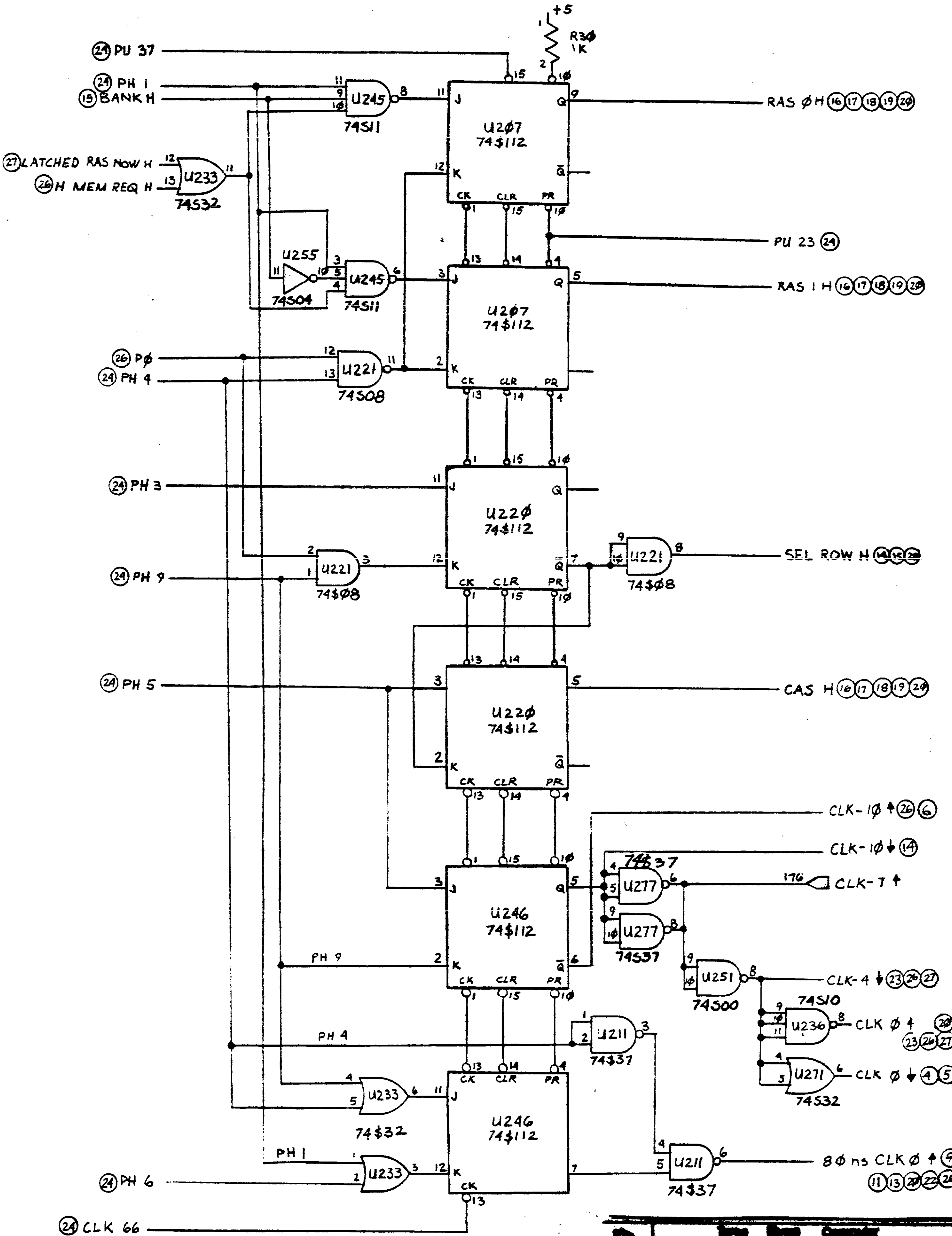
NEW# 100048-02 B

OLD# SC-A-00179-24-B

Three Rivers Computer

CLOCK GEN MEG-001

24-2H



OLD # SC-A-00179-25A

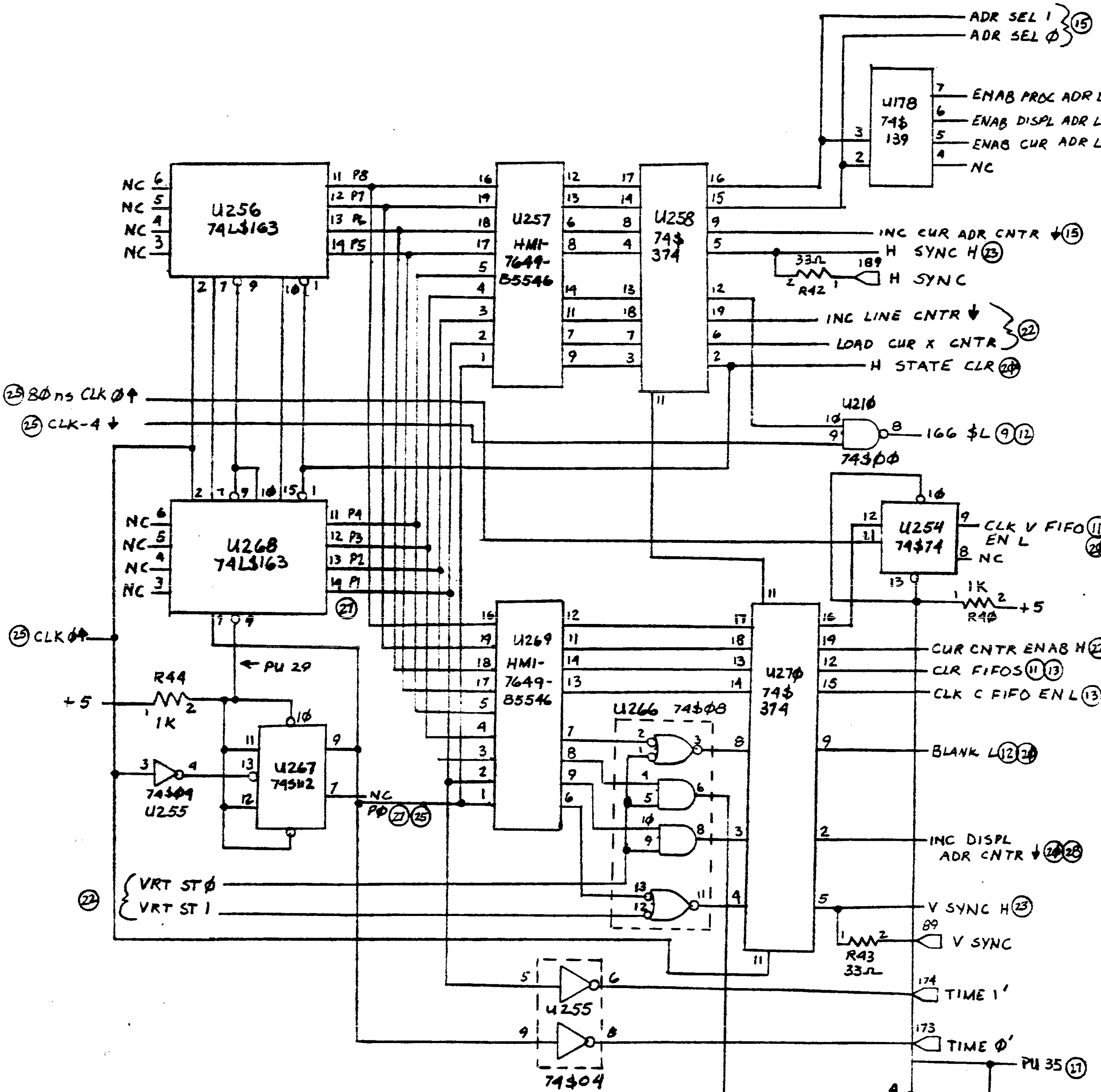
NEW # 10004?-07 B

CLK GEN

MEG-ØØ1

SC-A-00179-25B

25 • 28

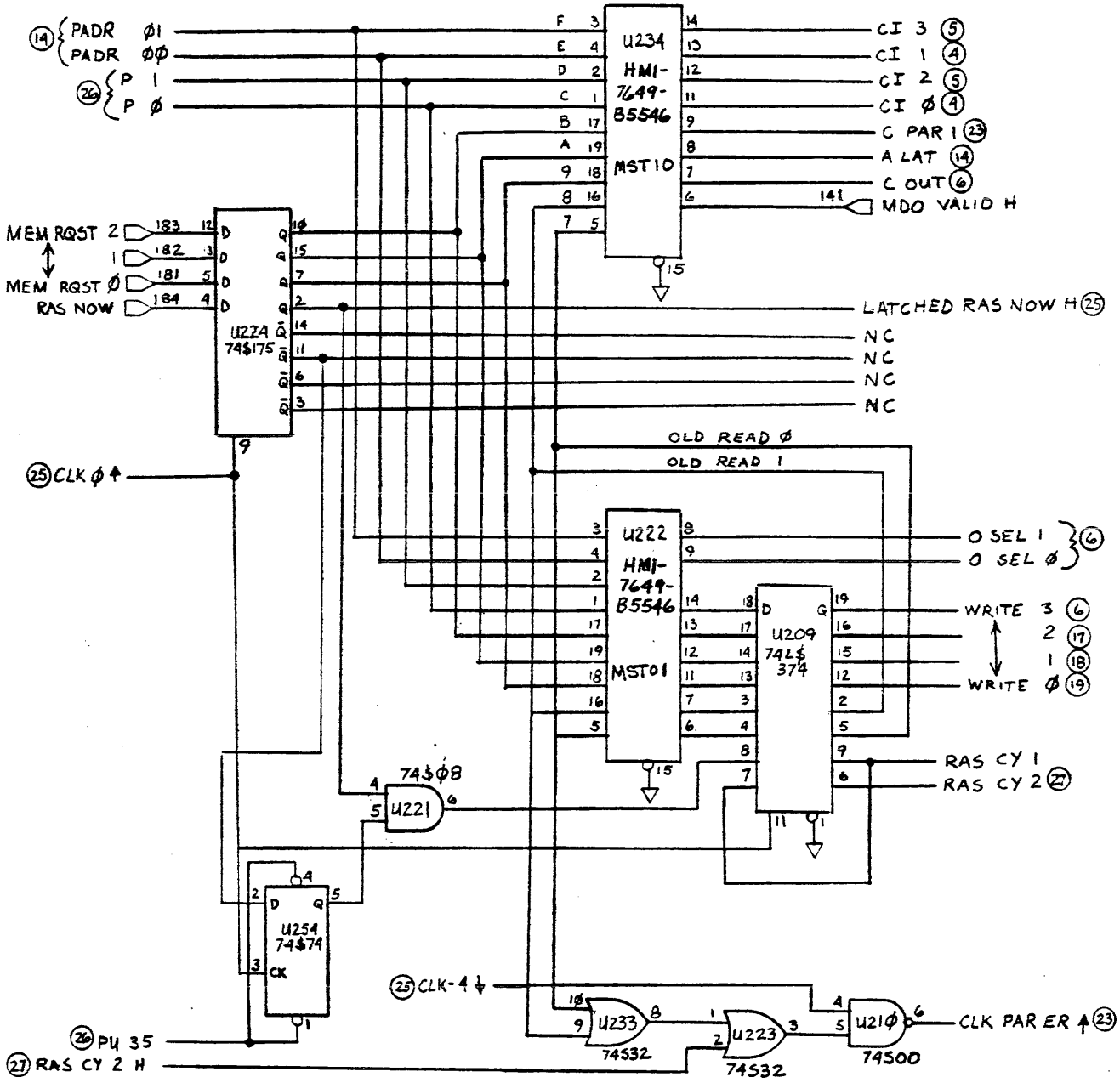


HI (1)	RES VERT ST. (Ø)	
Ø	Ø	BLANK
Ø	1	SHOW
1	Ø	VERT
1	1	ILLEGAL

ADR SEL		FUNCTION
Ø	Ø	NC
Ø	1	ENAB CUR ADR L
1	Ø	ENAB DISPL ADR L
1	1	ENAB PROC ADR L

NEW# 100048-02-B
OLD# SC-A-00179-26-A

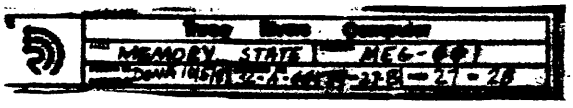
Three Rivers Computer
HORIZONTAL STATE | MEG-ØØ1
SC-A-00179-26-B | -26 -28

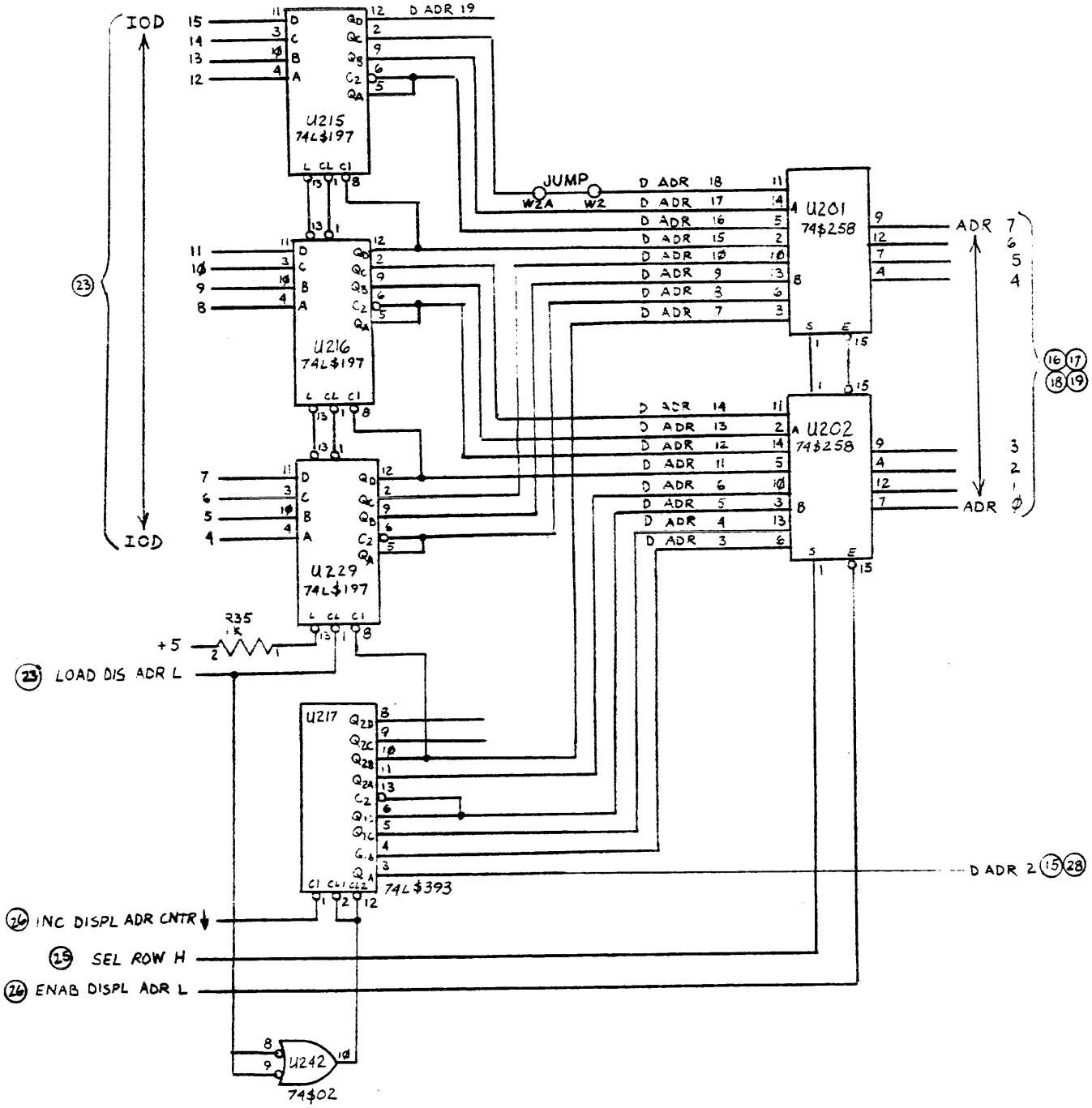


NEW# 100048-02 B

OLD # SC-A-00179-27 B

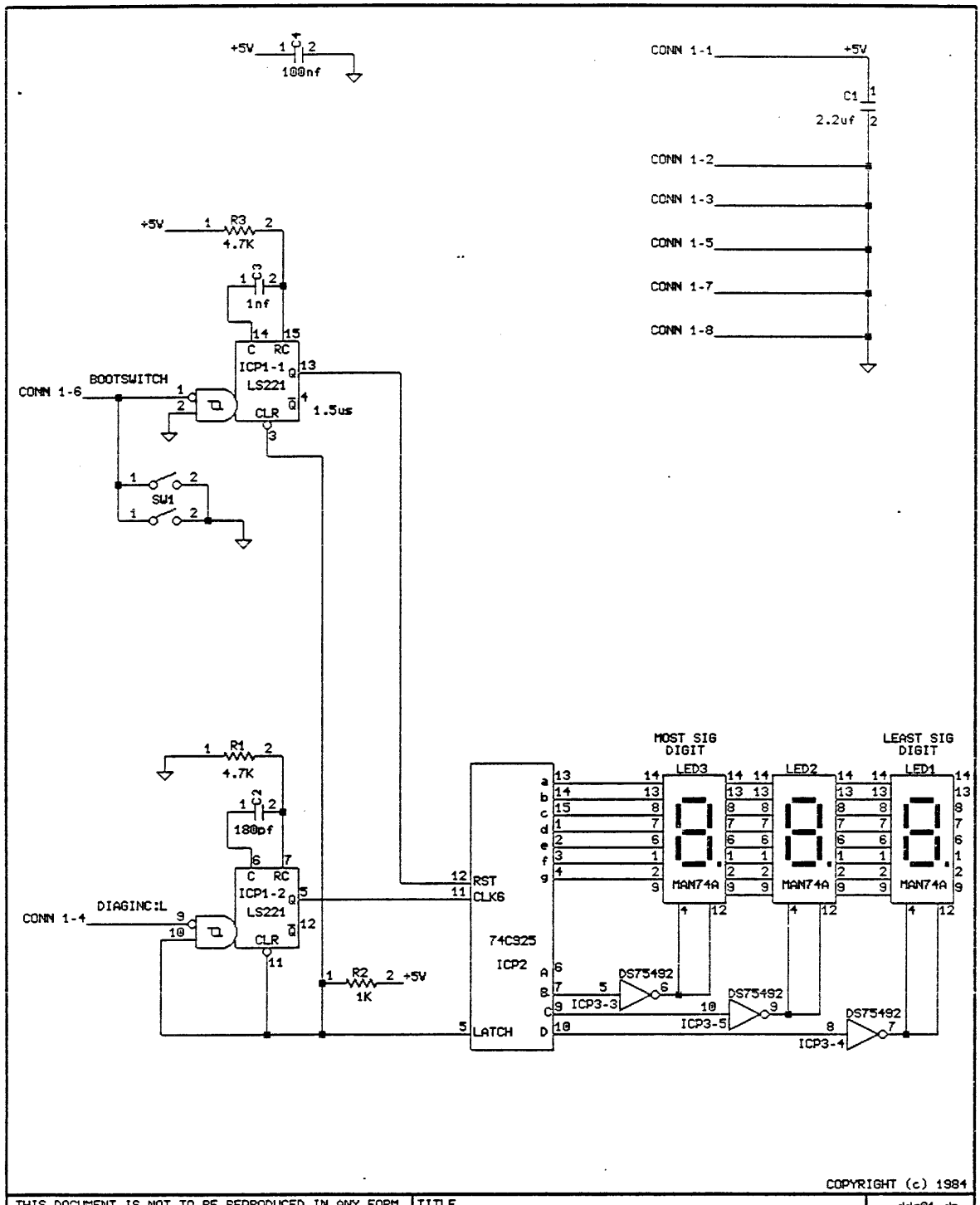
ECO # 118 ED 4/82
ECO # 170 ED 8/82





NEW= 100048-02B

OLD# SC-A-00179-28-A



TITLE	DIAGNOSTIC DISPLAY					dds01.dp	
PERQ	DESIGNED	I.C.L. KIDSGROVE #8880814999		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	APR/04/84	STECK	A	11	1216-	02	A
	UPDATED	APR/24/84	STECK	PROJ :	DDS PETITE (T2)		PAGE 1 OF 1	

13 May 84 15:10:16 dds01.real.dp

Part/Page Cross Reference 13 May 84 15:14:39

Using Files: DDS01.WL to DDS01.WL

PART..TYPE.....Pages Numbers			
C1....CAP.....	1		
C2....CAP.....	1		
C3....CAP.....	1		
C4....CAP.....	1		
ICP1..74LS221.....	1	1	
ICP2..74C925.....	1		
ICP3..DS75492/1.....	1	1	1
LED1..MAN74A.....	1		
LED2..MAN74A.....	1		
LED3..MAN74A.....	1		
R1....RES.....	1		
R2....RES.....	1		
R3....RES.....	1		
SW1...DPST.....	1		

Signal/Page Cross Reference 13 May 84 15:14:39

Using Files: DDS01.WL to DDS01.WL

SIGNAL NAME.....Pages Numbers

+5V..... 1
CONN 1-2..... 1
CONN 1-4..... 1
CONN 1-6..... 1

111216.wlist from [Ed] Printed 08 May 84 08:55:18

This Run Was made using the following files:

111216.PART
dds01.WL

Number Of Nets = 25
Begin Wirelist

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   1: ICP1-6 C2-1                                .%C2-1

   2: ICP1-7 R1-2 C2-2                           .%C2-2

   3: C3-1 ICP1-14                               .%ICP1-14

   4: ICP1-10 ICP2-5 ICP1-11 R2-1 ICP1-3
   4:                                            .%ICP1-3

   5: ICP2-11 ICP1-5                             .%ICP1-5

   6: ICP1-13 ICP2-12                            .%ICP2-12

   7: ICP2-9 ICP3-10                             .%ICP3-10

   8: ICP2-7 ICP3-5                              .%ICP3-5

   9: ICP2-10 ICP3-8                             .%ICP3-8

  10: LED2-1 LED3-1 ICP2-3 LED1-1                .%LED1-1

  11: LED1-4 ICP3-7 LED1-12                      .%LED1-12

  12: LED2-13 LED3-13 ICP2-14 LED1-13            .%LED1-13

  13: LED2-14 LED3-14 ICP2-13 LED1-14            .%LED1-14

  14: LED2-2 LED3-2 ICP2-4 LED1-2                .%LED1-2

  15: LED2-6 LED3-6 ICP2-2 LED1-6                .%LED1-6

  16: LED2-7 LED3-7 ICP2-1 LED1-7                .%LED1-7

  17: LED2-8 LED3-8 ICP2-15 LED1-8               .%LED1-8

  18: LED2-9 LED3-9 LED1-9                       .%LED1-9
*** Run Has no outputs

  19: LED2-4 ICP3-9 LED2-12                      .%LED2-12

  20: ICP3-6 LED3-4 LED3-12                      .%LED3-12

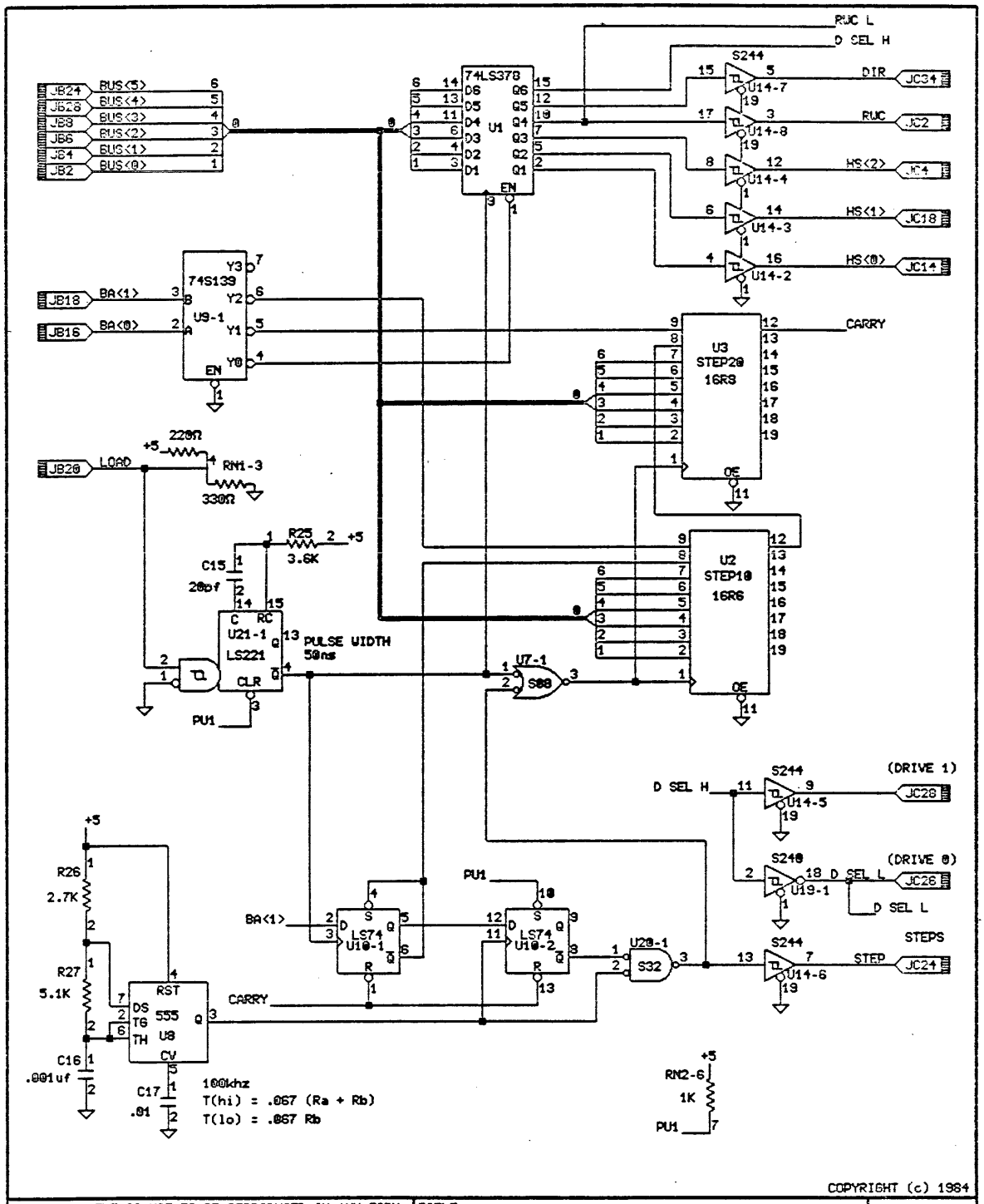
  21: C3-2 ICP1-15 R3-2                          .%R3-2
```

22: C1-1 R2-2 R3-1 C4-1 .+5V

23: R1-1 C1-2 C4-2 ICP1-2 SW1-1 .CONN 1-2

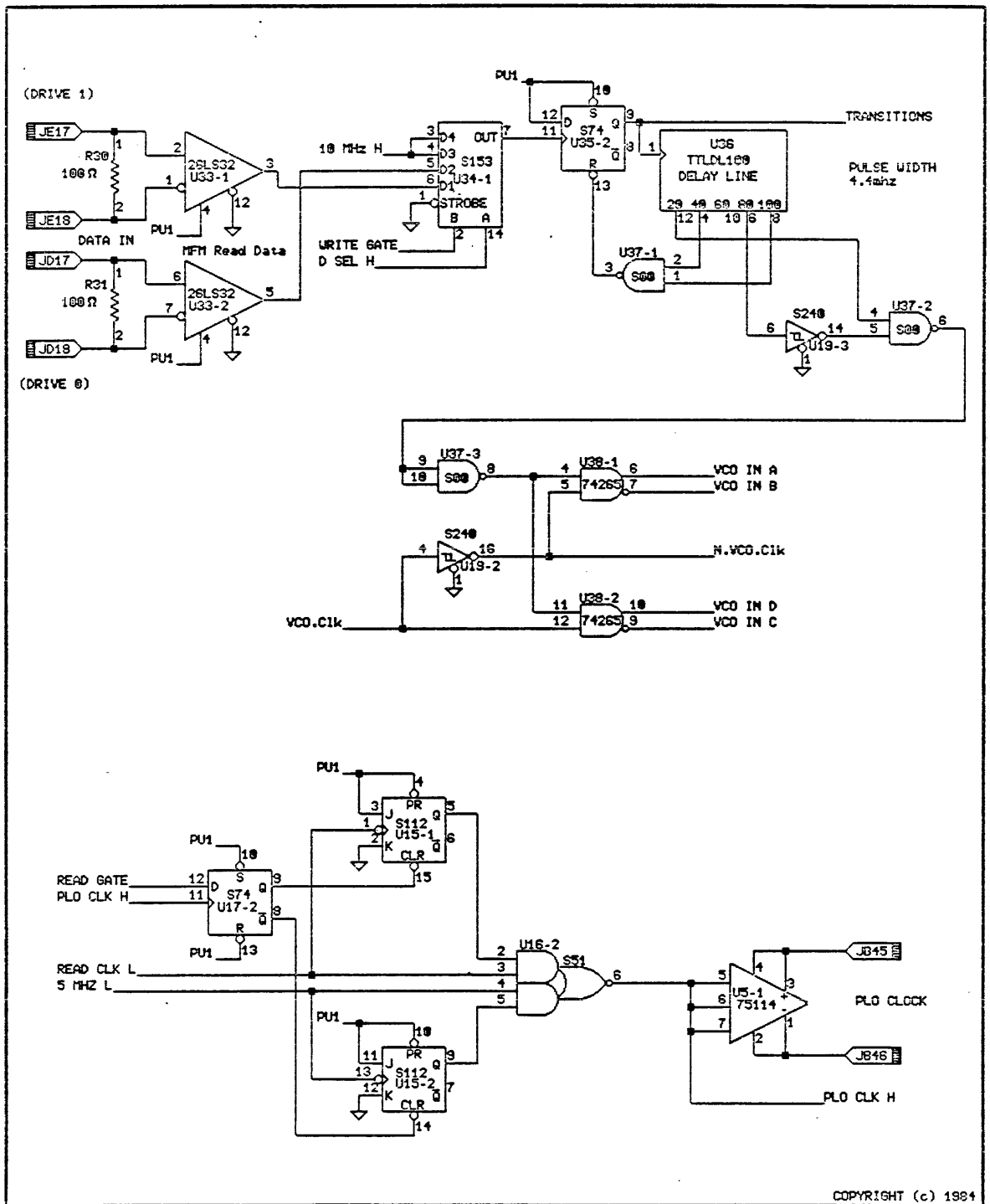
24: ICP1-9 .CONN 1-4
*** Only one pin in net
*** Run Has no outputs

25: SW1-2 ICP1-1 .CONN 1-6



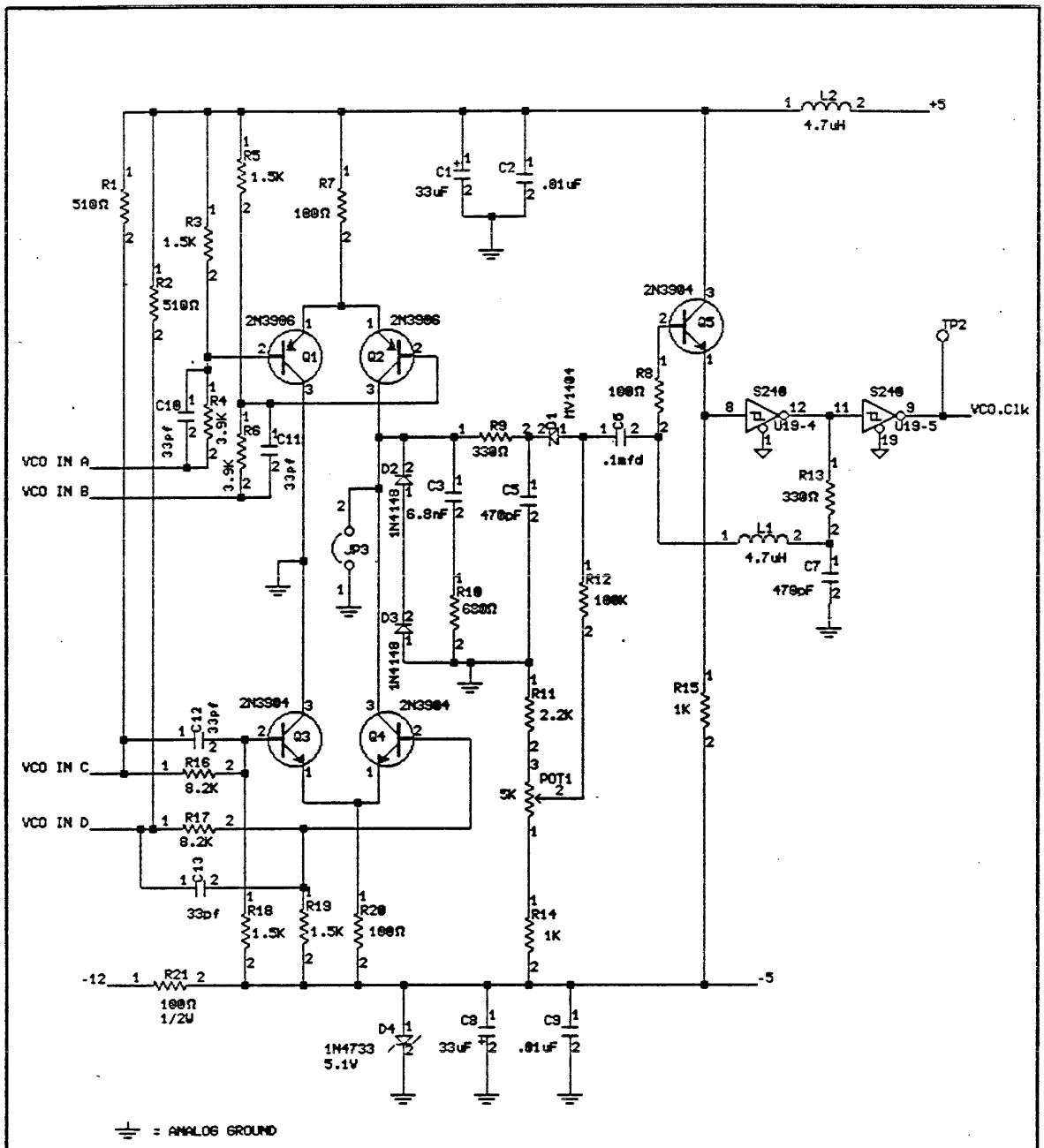
TITLE: CONTROLLER BUS REGISTERS						adap01.db	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	14 Jul 83 09:42:56	Z.Vafra	A	11	0224-	02	G
	UPDATED	APR/27/84	STECK	PROJ : DSK3INCH Version B			PAGE 1	OF 8

09 Aug 84 10:22:10 adap01.real.db



TITLE	READ DATA PHASE COMPARATOR					adap02.dp	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	14 Jul 83 09:50:01	ZValfa	A	11	0224-	02	G
	UPDATED	APR/27/84	STECK	PROJ :	DSK5INCH Version B		PAGE 2 OF 8	

09 Aug 84 10:23:03 adap02.real.dp



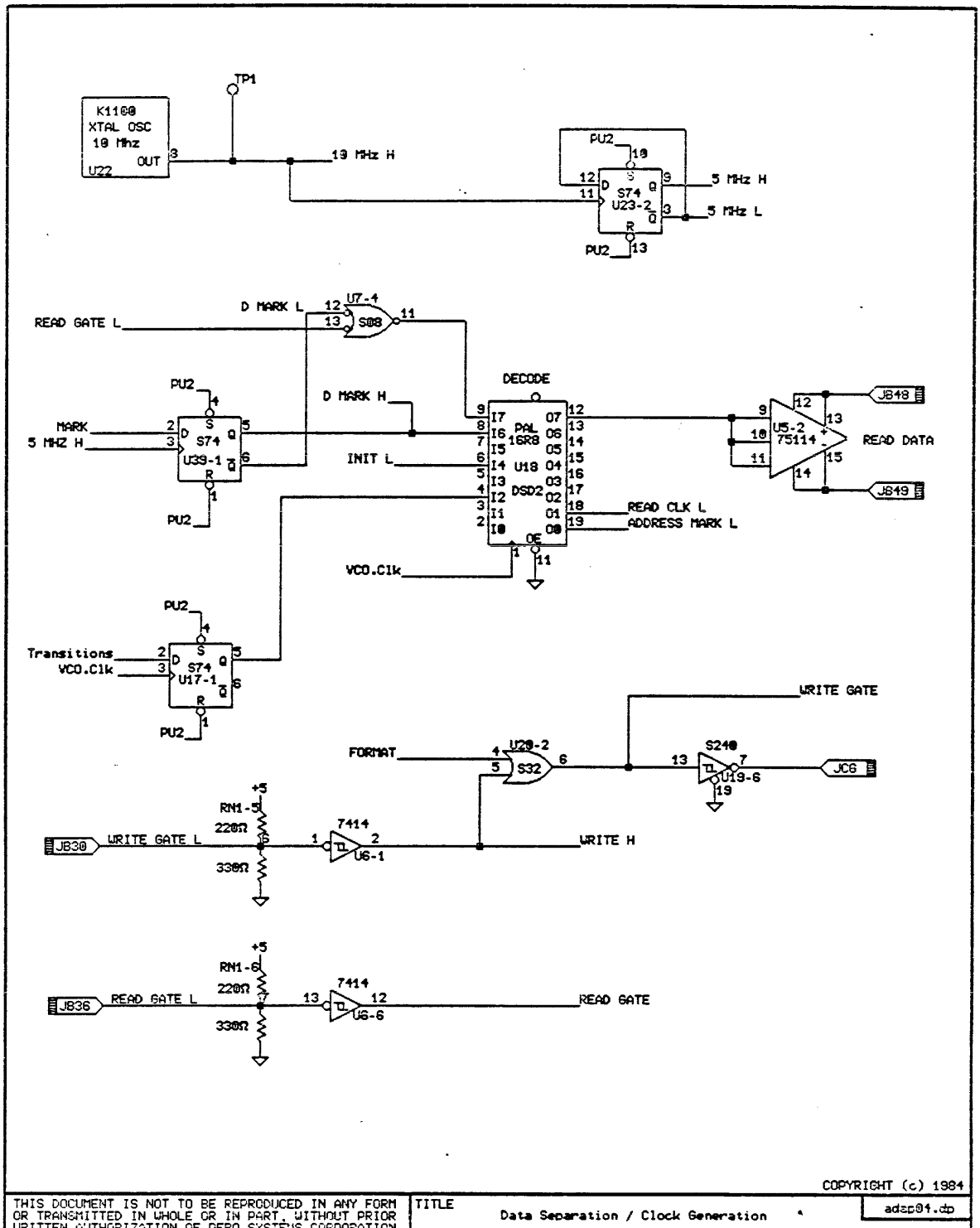
TITLE: VCO

adap03.db

PERQ

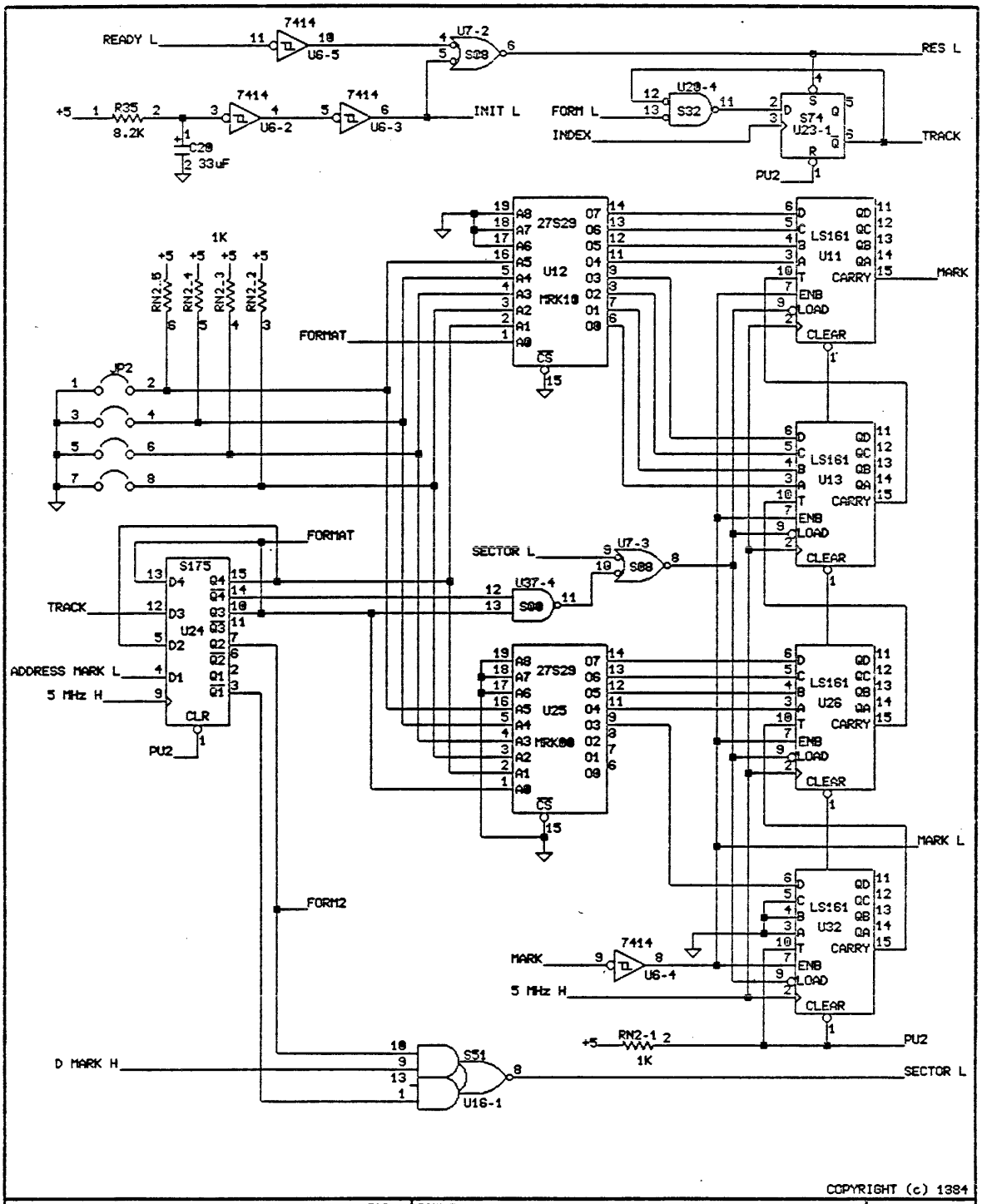
DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	14 Jul 83 09:52:01	Valfa	A	11	0224-	02	G
UPDATED	APR/27/84	STECK	PROJ : DSK5INCH Version B			PAGE 3	OF 8

09 Aug 84 10:23:59 adap03.real.db



TITLE: Data Separation / Clock Generation						adap04.dp	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	14 Jul 83 09:57:24	Z.Vavra	A	11	0224-	02	J
	UPDATED	12/July/84	STECK	PROJ : DSK5INCH Version B			PAGE 4	OF 8

09 Aug 84 10:24:44 adap04.real.dp

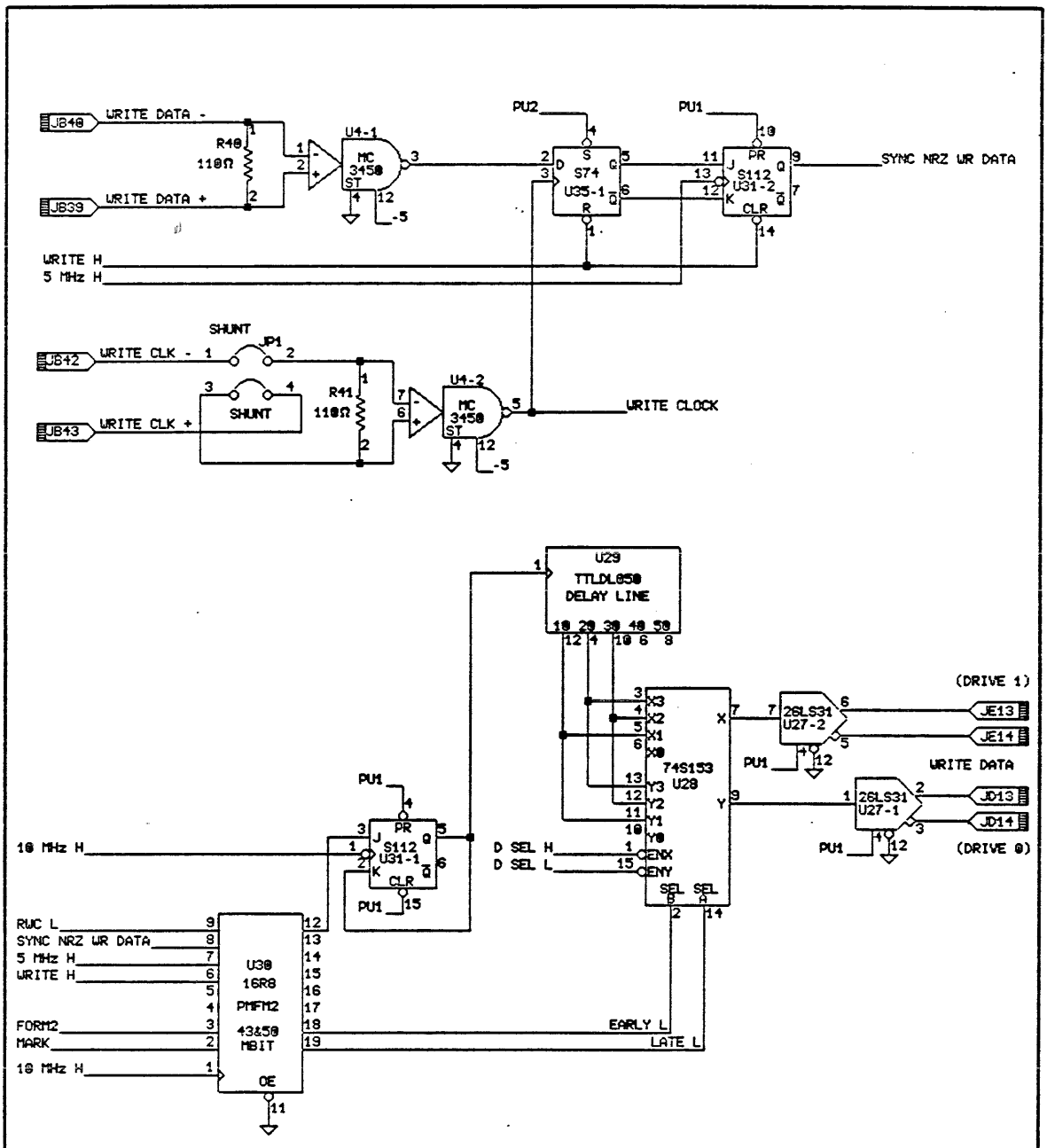


TITLE: SECTOR MARK LOGIC

adap05.dp

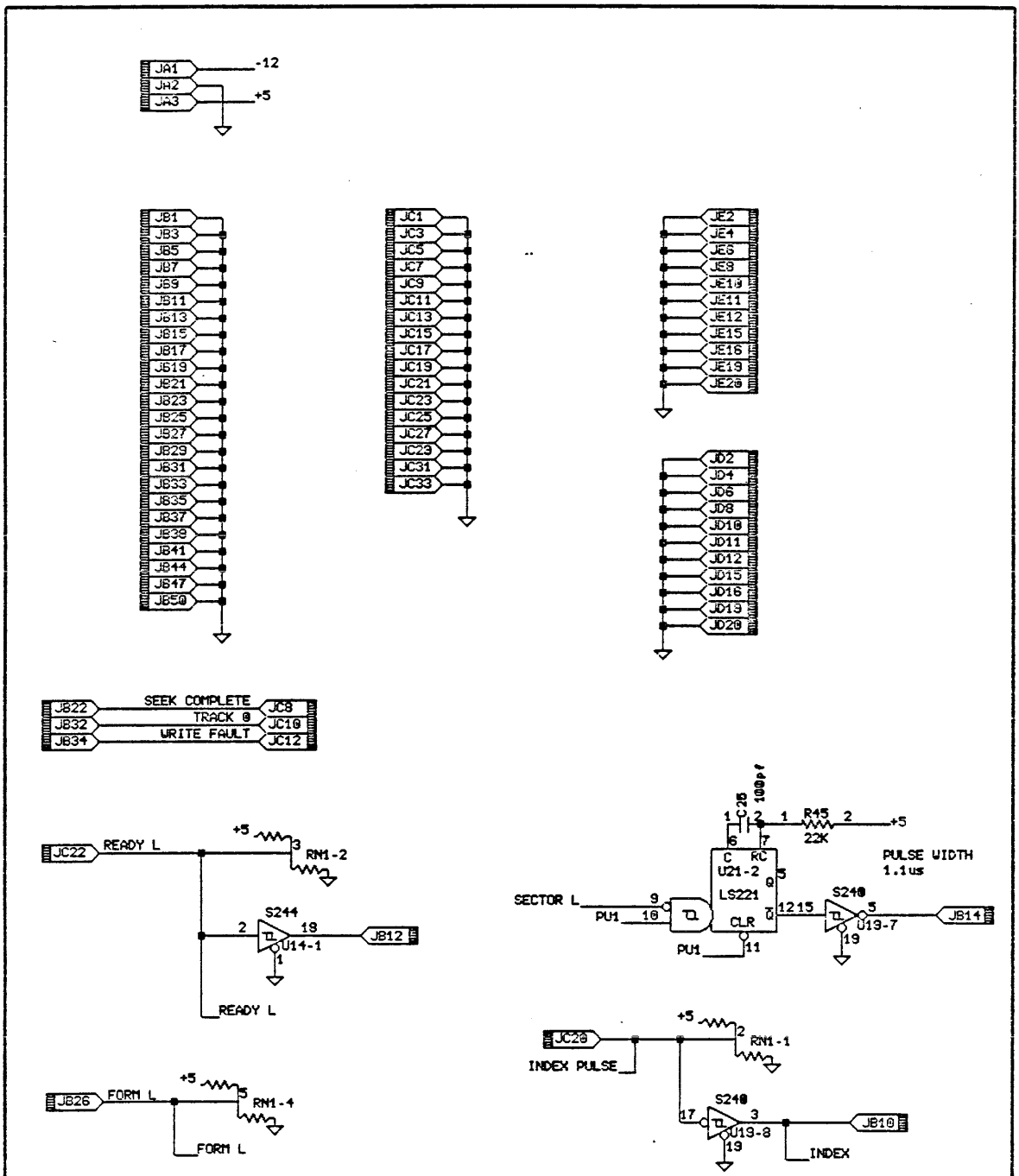
PERQ

DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	14 Jul 83 10:16:36	Z.Vafa	A	11	0224-	02	G
UPDATED	12/July/84	STECK	PROJ : DSK5INCH Version B			PAGE 5	OF 8



TITLE: WRITE LOGIC							adap06.db	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	14 Jul 83 10:20:22	Z.Varfa	A	11	8224-	02	H
	UPDATED	05/July/84	STECK	PROJ : DSK5INCH Version 8			PAGE 6 OF 8	

09 Aug 84 10:26:29 adap06.real.db

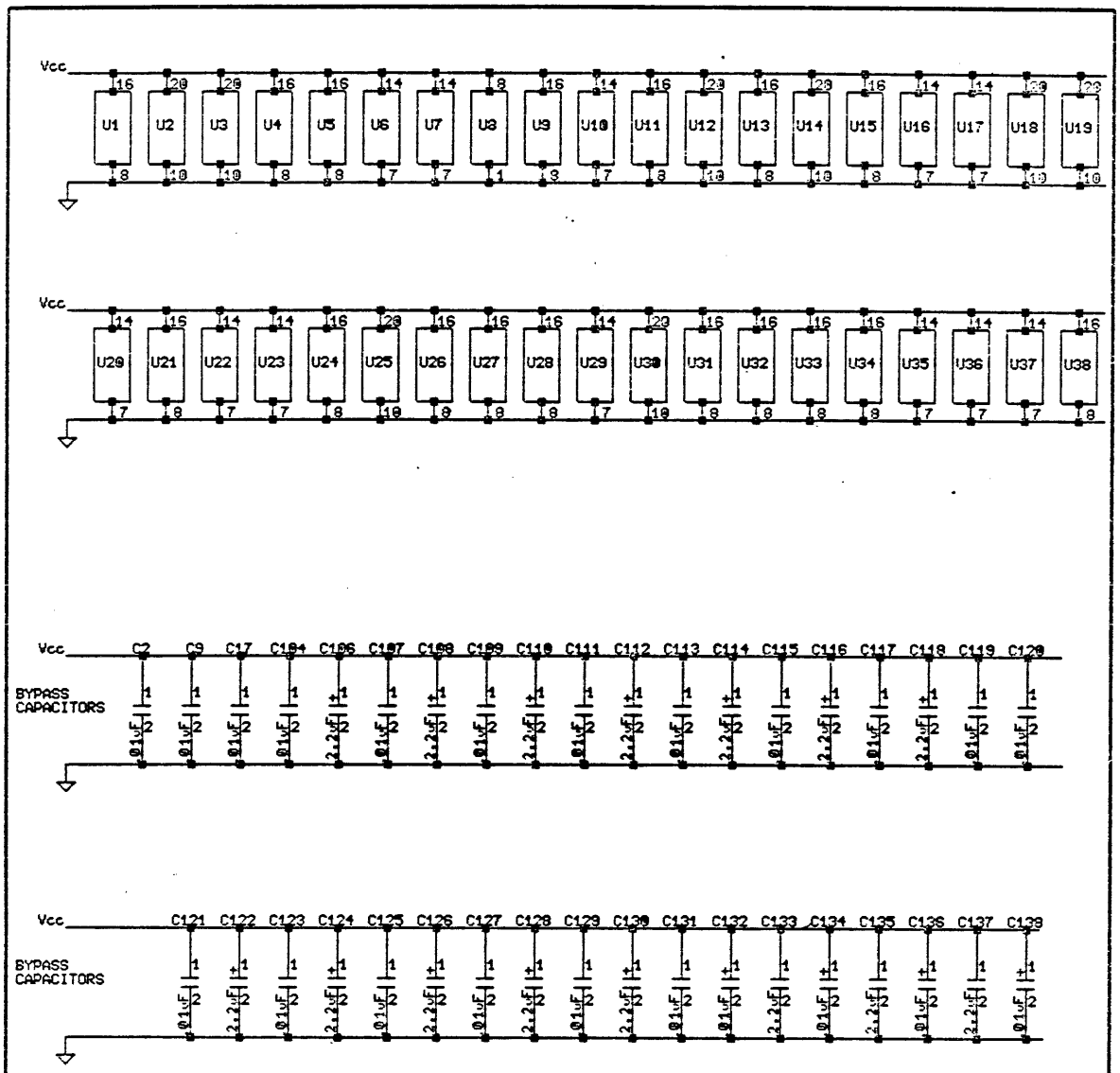


TITLE: Power and control circuits

adap07.dp

PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR / REV
	DRAWN	14 Jul 83 10:24:31	Z.Vavra	A	1 1	0 2 2 4 -	0 2 / J
	UPDATED	16/July/84	STECK	PROJ : DSK5INCH Version B			PAGE 7 OF 8

09 Aug 84 10:27:19 adap07.real.dp



TITLE	Power and Ground circuits					adap08.db	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	JAN 10 84	STECK	A	11	0224-	02	G
	UPDATED	APR/27/84	STECK	PROJ :	DSK5INCH Version B		PAGE 8 OF 8	

09 Aug 84 10:28:46 adap08.db

Part/Page Cross Reference 16 Jul 84 10:02:35

Using Files: ADAP01.WL to ADAP07.WL

PART..TYPE.....Pages	Numbers							
U1....74LS378..... 1								
U2....PAL16R6..... 1								
U3....PAL16R8..... 1								
U4....MC3450..... 6	6							
U5....75114..... 4	2							
U6....7414..... 5	5	5	5	4	4			
U7....74S08..... 5	5	4	1					
U8....555..... 1								
U9....74S139..... 1								
U10...74LS74..... 1	1							
U11...74LS161..... 5								
U12...27S29..... 5								
U13...74LS161..... 5								
U14...74S244/1..... 7	1	1	1	1	1	1	1	
U15...74S112..... 2	2							
U16...74S51..... 5	2							
U17...74S74..... 4	2							
U18...PAL16R8..... 4								
U19...74S240/1..... 7	7	4	3	3	2	2	1	
U20...74S32..... 5	4	1						
U21...74LS221..... 7	1							
U22...K1100..... 4								
U23...74S74..... 5	4							
U24...74S175..... 5								
U25...27S29..... 5								
U26...74LS161..... 5								
U27...26LS31..... 6	6							
U28...74S153..... 6								
U29...TTLDL050..... 6								
U30...PAL16R8..... 6								
U31...74S112..... 6	6							
U32...74LS161..... 5								
U33...26LS32..... 2	2							
U34...74S153/1..... 2								
U35...74S74..... 6	2							
U36...TTLDL100..... 2								
U37...74S00..... 5	2	2	2					
U38...74265..... 2	2							
U39...74S74..... 4								
C1....CAP..... 3								
C2....CAP..... 3								
C3....CAP..... 3								
C5....CAP..... 3								
C6....CAP..... 3								
C7....CAP..... 3								

C8....CAP..... 3
C9....CAP..... 3
C10...CAP..... 3
C11...CAP..... 3
C12...CAP..... 3
C13...CAP..... 3
C15...CAP..... 1
C16...CAP..... 1
C17...CAP..... 1
C20...CAP..... 5
C25...CAP..... 7
D1....DIODE..... 3
D2....DIODE..... 3
D3....DIODE..... 3
D4....ZENER..... 3
L1....COIL..... 3
L2....COIL..... 3
POT1..POT..... 3
Q1....PNP..... 3
Q2....PNP..... 3
Q3....NPN..... 3
Q4....NPN..... 3
Q5....NPN..... 3
R1....RES..... 3
R2....RES..... 3
R3....RES..... 3
R4....RES..... 3
R5....RES..... 3
R6....RES..... 3
R7....RES..... 3
R8....RES..... 3
R9....RES..... 3
R10...RES..... 3
R11...RES..... 3
R12...RES..... 3
R13...RES..... 3
R14...RES..... 3
R15...RES..... 3
R16...RES..... 3
R17...RES..... 3
R18...RES..... 3
R19...RES..... 3
R20...RES..... 3
R21...RES..... 3
R25...RES..... 1
R26...RES..... 1
R27...RES..... 1
R30...RES..... 2
R31...RES..... 2
R35...RES..... 5
R40...RES..... 6
R41...RES..... 6

```
R45...RES..... 7
RN1...TERM8/1..... 7  7  7  4  4  1
RN2...COM8/1..... 5  5  5  5  5  1
TP1...TESTPIN..... 4
TP2...TESTPIN..... 3
JA1...CABLE..... 7
JA2...CABLE..... 7
JA3...CABLE..... 7
JB1...CABLE..... 7
JB2...CABLE..... 1
JB3...CABLE..... 7
JB4...CABLE..... 1
JB5...CABLE..... 7
JB6...CABLE..... 1
JB7...CABLE..... 7
JB8...CABLE..... 1
JB9...CABLE..... 7
JB10..CABLE..... 7
JB11..CABLE..... 7
JB12..CABLE..... 7
JB13..CABLE..... 7
JB14..CABLE..... 7
JB15..CABLE..... 7
JB16..CABLE..... 1
JB17..CABLE..... 7
JB18..CABLE..... 1
JB19..CABLE..... 7
JB20..CABLE..... 1
JB21..CABLE..... 7
JB22..CABLE..... 7
JB23..CABLE..... 7
JB24..CABLE..... 1
JB25..CABLE..... 7
JB26..CABLE..... 7
JB27..CABLE..... 7
JB28..CABLE..... 1
JB29..CABLE..... 7
JB30..CABLE..... 4
JB31..CABLE..... 7
JB32..CABLE..... 7
JB33..CABLE..... 7
JB34..CABLE..... 7
JB35..CABLE..... 7
JB36..CABLE..... 4
JB37..CABLE..... 7
JB38..CABLE..... 7
JB39..CABLE..... 6
JB40..CABLE..... 6
JB41..CABLE..... 7
JB42..CABLE..... 6
JB43..CABLE..... 6
JB44..CABLE..... 7
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JB45..CABLE..... 2
JB46..CABLE..... 2
JB47..CABLE..... 7
JB48..CABLE..... 4
JB49..CABLE..... 4
JB50..CABLE..... 7
JC1...CABLE..... 7
JC2...CABLE..... 1
JC3...CABLE..... 7
JC4...CABLE..... 1
JC5...CABLE..... 7
JC6...CABLE..... 4
JC7...CABLE..... 7
JC8...CABLE..... 7
JC9...CABLE..... 7
JC10..CABLE..... 7
JC11..CABLE..... 7
JC12..CABLE..... 7
JC13..CABLE..... 7
JC14..CABLE..... 1
JC15..CABLE..... 7
JC17..CABLE..... 7
JC18..CABLE..... 1
JC19..CABLE..... 7
JC20..CABLE..... 7
JC21..CABLE..... 7
JC22..CABLE..... 7
JC23..CABLE..... 7
JC24..CABLE..... 1
JC25..CABLE..... 7
JC26..CABLE..... 1
JC27..CABLE..... 7
JC28..CABLE..... 1
JC29..CABLE..... 7
JC31..CABLE..... 7
JC33..CABLE..... 7
JC34..CABLE..... 1
JD2...CABLE..... 7
JD4...CABLE..... 7
JD6...CABLE..... 7
JD8...CABLE..... 7
JD10..CABLE..... 7
JD11..CABLE..... 7
JD12..CABLE..... 7
JD13..CABLE..... 6
JD14..CABLE..... 6
JD15..CABLE..... 7
JD16..CABLE..... 7
JD17..CABLE..... 2
JD18..CABLE..... 2
JD19..CABLE..... 7
JD20..CABLE..... 7

JE2...CABLE..... 7
JE4...CABLE..... 7
JE6...CABLE..... 7
JE8...CABLE..... 7
JE10..CABLE..... 7
JE11..CABLE..... 7
JE12..CABLE..... 7
JE13..CABLE..... 6
JE14..CABLE..... 6
JE15..CABLE..... 7
JE16..CABLE..... 7
JE17..CABLE..... 2
JE18..CABLE..... 2
JE19..CABLE..... 7
JE20..CABLE..... 7
JP1...JUMP2..... 6
JP2...JUMP4..... 5
JP3...JUMPER..... 3

Signal/Page Cross Reference 16 Jul 84 10:02:35

Using Files: ADAP01.WL to ADAP07.WL

SIGNAL NAME	Pages Numbers
+5	7 5 3 1
-12	7 3
-5	6 3
10 MHz H	6 4 2
5 MHZ H	4
5 MHZ L	2
5 MHz H	6 5 4
5 MHz L	4
ADDRESS MARK L	5 4
BA<0>	1
BA<1>	1
BUS<0>	1
BUS<1>	1
BUS<2>	1
BUS<3>	1
BUS<4>	1
BUS<5>	1
CARRY	1
D MARK H	5 4
D MARK L	4
D SEL H	6 2 1
D SEL L	6 1
DIR	1
EARLY L	6
FORM L	7 5
FORM2	6 5
FORMAT	5 4
GND	7 7 7 7 7 7 7 6 5 5 4 3 3 2 1 1
HS<0>	1
HS<1>	1
HS<2>	1
INDEX	7 5
INDEX PULSE	7
INIT L	5 4
LATE L	6
LOAD	1
MARK	6 5 4
MARK L	5
N.VCO.Clk	2
PLO CLK H	2
PU1	7 6 2 1
PU2	6 5 4
READ CLK L	4 2
READ GATE	4 2
READ GATE L	4

READY L..... 7 5
RES L..... 5
RWC..... 1
RWC L..... 6 1
SECTOR L..... 7 5
SEEK COMPLETE..... 7
STEP..... 1
SYNC NRZ WR DATA..... 6
TRACK..... 5
TRACK 0..... 7
TRANSITIONS..... 2
Transitions..... 4
VCO IN A..... 3 2
VCO IN B..... 3 2
VCO IN C..... 3 2
VCO IN D..... 3 2
VCO.Clk..... 4 3 2
WRITE CLK +..... 6
WRITE CLK -..... 6
WRITE CLOCK..... 6
WRITE DATA +..... 6
WRITE DATA -..... 6
WRITE FAULT..... 7
WRITE GATE..... 4 2
WRITE GATE L..... 4
WRITE H..... 6 4

This Run Was made using the following files:

110224.PART
adap07.WL
adap06.WL
adap05.WL
adap04.WL
adap03.WL
adap02.WL
adap01.WL

Number Of Nets = 186
Begin Wirelist

```
   1: U21-1 C17-2 C16-2 U2-11 U3-11 U9-1
   1: U14-19 U15-2 U34-1 U15-12 U33-12
   1: R10-2 C5-2 R11-1 D3-1 D4-2 C8-2 C9-2
   1: Q1-3 Q3-3 JP3-1 C1-2 C7-2 U19-1 C2-2
   1: U18-11 JP2-7 JP2-5 JP2-1 JP2-3 C20-2
   1: U32-3 U32-4 U12-19 U12-18 U25-17
   1: U25-18 U25-19 U25-15 U12-15 U12-17
   1: U32-5 U30-11 U27-12 U4-4 JB15-1 JB13-1
   1: JB17-1 JB19-1 JB11-1 JB25-1 JB23-1
   1: JB27-1 JB29-1 JB21-1 JB41-1 JB50-1
   1: JB44-1 JB47-1 JB35-1 JB33-1 JB37-1
   1: JB38-1 JB31-1 JB9-1 JB5-1 JB3-1 JB7-1
   1: JB1-1 U19-19 JA2-1 U14-1 JD20-1 JE10-1
   1: JC9-1 JC5-1 JC3-1 JC7-1 JC1-1 JC31-1
   1: JC33-1 JC21-1 JC29-1 JC27-1 JC23-1
   1: JC25-1 JC11-1 JC19-1 JC17-1 JC13-1
   1: JC15-1 JE11-1 JE12-1 JE15-1 JE2-1
   1: JE4-1 JE6-1 JE8-1 JE16-1 JE19-1 JE20-1
   1: JD19-1 JD16-1 JD15-1 JD12-1 JD11-1
   1: JD10-1 JD2-1 JD4-1 JD6-1 JD8-1      .!GND

   2: R16-2 R18-1 Q3-2 C12-2              .%C12-2

   3: R17-2 Q4-2 R19-1 C13-2              .%C13-2

   4: U21-14 C15-2                        .%C15-2

   5: R9-1 Q2-3 Q4-3 JP3-2 D2-2 C3-1      .%C3-1

   6: D1-2 R9-2 C5-1                      .%C5-1

   7: R12-1 C6-1 D1-1                     .%D1-1

   8: D2-1 D3-2                           .%D3-2

   9: U14-18 JB12-1                       .%JB12-1
```

10: U19-5 JB14-1 .%JB14-1

11: U14-9 JC28-1 .%JC28-1

12: U19-7 JC6-1 .%JC6-1

13: U27-2 JD13-1 .%JD13-1

14: U27-3 JD14-1 .%JD14-1

15: R13-2 C7-1 L1-2 .%L1-2

16: R14-1 POT1-1 .%POT1-1

17: R12-2 POT1-2 .%POT1-2

18: C10-1 R4-1 R3-2 Q1-2 .%Q1-2

19: C3-2 R10-1 .%R10-1

20: POT1-3 R11-2 .%R11-2

21: U19-11 U19-12 R13-1 .%R13-1

22: Q4-1 Q3-1 R20-1 .%R20-1

23: U8-7 R27-1 R26-2 .%R26-2

24: U8-2 U8-6 C16-1 R27-2 .%R27-2

25: U33-6 JD17-1 R31-1 .%R31-1

26: U33-7 JD18-1 R31-2 .%R31-2

27: C20-1 U6-3 R35-2 .%R35-2

28: C11-1 Q2-2 R6-1 R5-2 .%R5-2

29: R3-1 L2-1 R5-1 Q5-3 C2-1 C1-1 R1-1
29: R2-1 R7-1 .%R7-1

30: Q1-1 Q2-1 R7-2 .%R7-2

31: Q5-2 R8-1 .%R8-1

32: L1-1 C6-2 R8-2 .%R8-2

33: U9-4 U1-1 .%U1-1

34: U14-4 U1-2 .%U1-2

35: U14-6 U1-5 .%U1-5

36: U14-8 U1-7	.%U1-7
37: U20-2 U8-3 U10-11	.%U10-11
38: U10-5 U10-12	.%U10-12
39: U21-4 U7-1 U1-9 U10-3	.%U10-3
40: U2-8 U10-4 U10-6	.%U10-6
41: U20-1 U10-8	.%U10-8
42: U11-3 U12-11	.%U12-11
43: U11-4 U12-12	.%U12-12
44: U11-5 U12-13	.%U12-13
45: U11-6 U12-14	.%U12-14
46: JP2-2 RN2-6 U25-16 U12-16	.%U12-16
47: JP2-6 RN2-4 U25-4 U12-4	.%U12-4
48: JP2-4 RN2-5 U25-5 U12-5	.%U12-5
49: U13-3 U12-6	.%U12-6
50: U13-4 U12-7	.%U12-7
51: U13-5 U12-8	.%U12-8
52: U13-6 U12-9	.%U12-9
53: U11-10 U13-15	.%U13-15
54: U1-12 U14-15	.%U14-15
55: U17-8 U15-14	.%U15-14
56: U17-9 U15-15	.%U15-15
57: U16-2 U15-5	.%U15-5
58: U16-5 U15-9	.%U15-9
59: U17-5 U18-4	.%U18-4
60: U37-5 U19-14	.%U19-14
61: U36-6 U19-6	.%U19-6

62: Q5-1 R15-1 U19-8 .%U19-8

63: U3-8 U2-12 .%U2-12

64: U9-6 U2-9 .%U2-9

65: U7-2 U14-13 U20-3 .%U20-3

66: U19-15 U21-12 .%U21-12

67: R25-1 C15-1 U21-15 .%U21-15

68: C25-1 U21-6 .%U21-6

69: R45-1 C25-2 U21-7 .%U21-7

70: U20-11 U23-2 .%U23-2

71: U16-1 U24-3 .%U24-3

72: U26-3 U25-11 .%U25-11

73: U26-4 U25-12 .%U25-12

74: U26-5 U25-13 .%U25-13

75: U26-6 U25-14 .%U25-14

76: U12-2 U24-15 U24-5 U25-2 .%U25-2

77: RN2-3 JP2-8 U12-3 U25-3 .%U25-3

78: U13-10 U26-15 .%U26-15

79: JE14-1 U27-5 .%U27-5

80: JE13-1 U27-6 .%U27-6

81: U29-4 U28-13 U28-3 .%U28-3

82: U29-10 U28-12 U28-4 .%U28-4

83: U28-11 U29-12 U28-5 .%U28-5

84: U27-7 U28-7 .%U28-7

85: U27-1 U28-9 .%U28-9

86: U31-5 U31-2 U29-1 .%U29-1

87: U7-3 U2-1 U3-1 .%U3-1

88: U31-3 U30-12 .%U30-12

89: U26-10 U32-15 .%U32-15

90: U25-9 U32-6 .%U32-6

91: U7-8 U11-9 U13-9 U26-9 U32-9 .%U32-9

92: JE18-1 R30-2 U33-1 .%U33-1

93: JE17-1 R30-1 U33-2 .%U33-2

94: U34-6 U33-3 .%U33-3

95: U34-5 U33-5 .%U33-5

96: U34-7 U35-11 .%U35-11

97: U37-3 U35-13 .%U35-13

98: U4-3 U35-2 .%U35-2

99: U31-11 U35-5 .%U35-5

100: U31-12 U35-6 .%U35-6

101: U36-8 U37-1 .%U37-1

102: U24-14 U37-12 .%U37-12

103: U36-4 U37-2 .%U37-2

104: U36-12 U37-4 .%U37-4

105: U37-10 U37-9 U37-6 .%U37-6

106: U38-11 U37-8 U38-4 .%U38-4

107: JP1-3 R41-2 U4-6 .%U4-6

108: JP1-2 R41-1 U4-7 .%U4-7

109: U5-12 JB48-1 U5-13 .%U5-13

110: U5-14 JB49-1 U5-15 .%U5-15

111: U5-1 JB46-1 U5-2 .%U5-2

112: U5-3 JB45-1 U5-4 .%U5-4

113: U5-11 U5-10 U18-12 U5-9 .%U5-9

```
114: U7-4 U6-10                          .%U6-10

115: U6-4 U6-5                           .%U6-5

116: U37-11 U7-10                        .%U7-10

117: U18-9 U7-11                         .%U7-11

118: C17-1 U8-5                          .%U8-5

119: U3-9 U9-5                           .%U9-5

120: U8-4 R26-1 R25-2 L2-2 R35-1 JA3-1
120: R45-2                               .+5

121: R21-1 JA1-1                         .-12

122: R15-2 R21-2 R18-2 D4-1 C9-1 C8-1
122: R14-2 R20-2 R19-2 U4-12             .-5

123: U34-3 U34-4 U22-8 TP1-1 U23-11 U30-1
123: U31-1                               .10 MHZ H

124: U39-3 U23-9 U24-9 U26-2 U13-2 U11-2
124: U32-2 U30-7 U31-13                  .5 MHZ H

125: U16-4 U15-13 U23-12 U23-8           .5 MHZ L

126: U18-19 U24-4                        .ADDRESS MARK L

127: U9-2 JB16-1                         .BA<0>

128: U9-3 JB18-1 U10-2                   .BA<1>

129: U3-2 U2-2 U1-3 JB2-1                .BUS<0>

130: U3-3 U2-3 U1-4 JB4-1                .BUS<1>

131: U3-4 U2-4 U1-6 JB6-1                .BUS<2>

132: U3-5 U2-5 U1-11 JB8-1               .BUS<3>

133: U3-6 U2-6 U1-13 JB28-1              .BUS<4>

134: U3-7 U2-7 U1-14 JB24-1              .BUS<5>

135: U3-12 U10-13 U10-1                  .CARRY

136: U18-8 U39-5 U16-9                   .D MARK H

137: U7-12 U39-6                         .D MARK L
```

138: U1-15 U14-11 U19-2 U34-14 U28-1 .D SEL H

139: U19-18 JC26-1 U28-15 .D SEL L

140: U14-5 JC34-1 .DIR

141: U30-18 U28-2 .EARLY L

142: U20-13 JB26-1 RN1-5 .FORM L

143: U16-10 U24-7 U30-3 .FORM2

144: U20-4 U24-13 U12-1 U24-10 U37-13
144: U25-1 .FORMAT

145: U14-16 JC14-1 .HS<0>

146: U14-14 JC18-1 .HS<1>

147: U14-12 JC4-1 .HS<2>

148: U23-3 U19-3 JB10-1 .INDEX

149: JC20-1 RN1-2 .INDEX PULSE

150: U18-6 U7-5 U6-6 .INIT L

151: U30-19 U28-14 .LATE L

152: RN1-4 U21-2 JB20-1 .LOAD

153: U39-2 U11-15 U6-9 U30-2 .MARK

154: U6-8 U32-7 U13-7 U26-7 U11-7 .MARK L

155: U19-16 U38-5 .N.VCO.CLK

156: U5-6 U16-6 U5-5 U17-11 U5-7 .PLO CLK H

157: RN2-7 U10-10 U21-3 U33-4 U15-10 U15-3
157: U17-10 U17-13 U35-12 U35-10 U15-4
157: U15-11 U31-10 U31-15 U31-4 U27-4
157: U21-11 U21-10 .PU1

158: U17-4 U17-1 U23-13 U23-10 U39-4 U39-1
158: U24-1 RN2-2 U23-1 U32-1 U26-1 U13-1
158: U11-1 U32-10 U35-4 .PU2

159: U16-3 U15-1 U18-18 .READ CLK L

160: U17-12 U6-12 .READ GATE

161: U7-13 JB36-1 U6-13 RN1-7 .READ GATE L

162: U6-11 JC22-1 RN1-3 U14-2 .READY L

163: U7-6 U23-4 .RES L

164: U14-3 JC2-1 .RWC

165: U1-10 U14-17 U30-9 .RWC L

166: U16-8 U7-9 U21-9 .SECTOR L

167: JC8-1 JB22-1 .SEEK COMPLETE

168: U14-7 JC24-1 .STEP

169: U31-9 U30-8 .SYNC NRZ WR DATA

170: U24-12 U23-6 U20-12 .TRACK

171: JC10-1 JB32-1 .TRACK 0

172: U36-1 U35-9 U17-2 .TRANSITIONS

173: U38-6 C10-2 R4-2 .VCO IN A

174: U38-7 C11-2 R6-2 .VCO IN B

175: U38-9 R16-1 R1-2 C12-1 .VCO IN C

176: U38-10 R17-1 R2-2 C13-1 .VCO IN D

177: U19-4 U38-12 U19-9 TP2-1 U18-1 U17-3
177: .VCO.CLK

178: JP1-4 JB43-1 .WRITE CLK +

179: JB42-1 JP1-1 .WRITE CLK -

180: U4-5 U35-3 .WRITE CLOCK

181: R40-2 JB39-1 U4-2 .WRITE DATA +

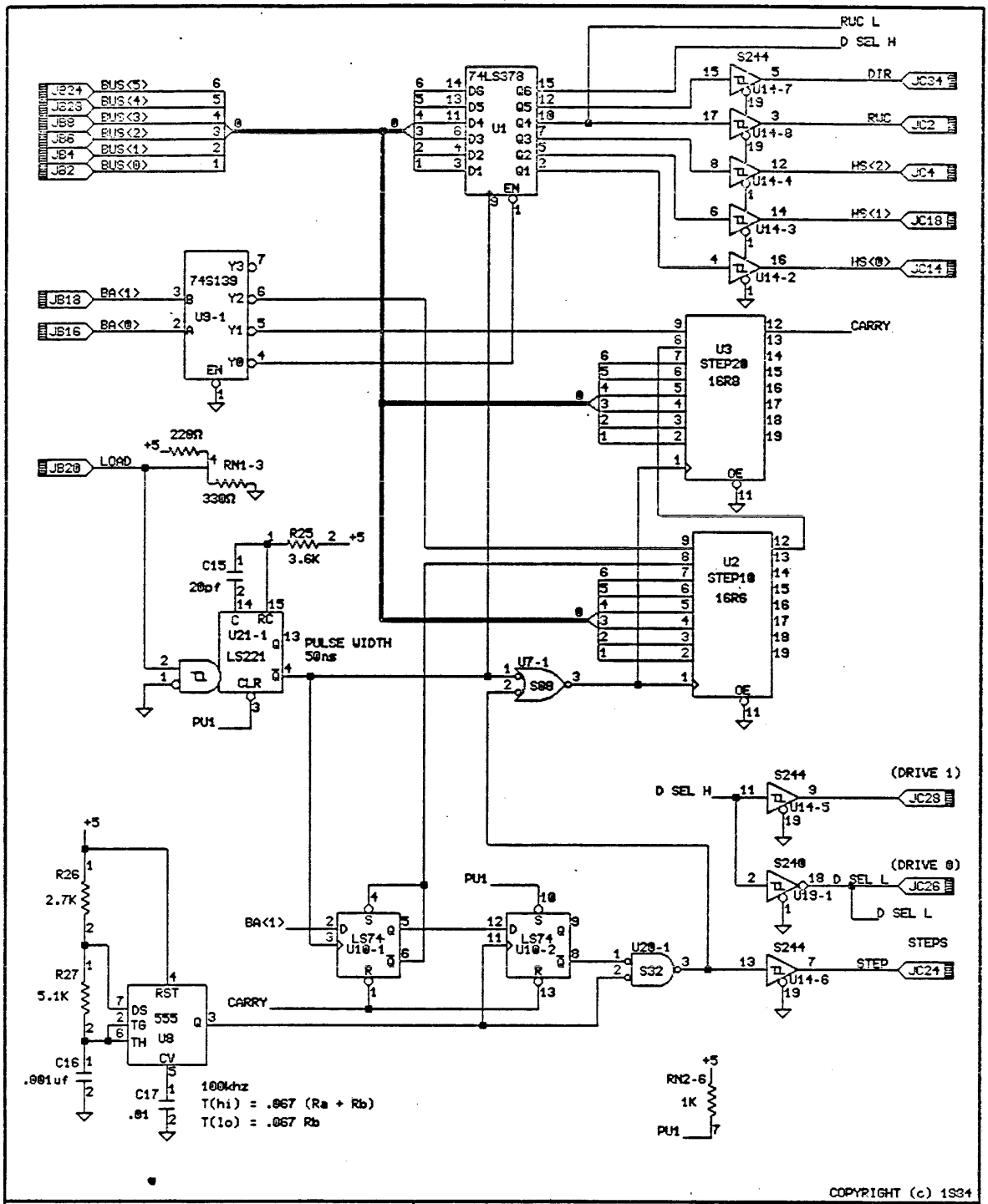
182: R40-1 JB40-1 U4-1 .WRITE DATA -

183: JC12-1 JB34-1 .WRITE FAULT

184: U34-2 U19-13 U20-6 .WRITE GATE

185: U6-1 JB30-1 RN1-6 .WRITE GATE L

186: U20-5 U6-2 U35-1 U31-14 U30-6 .WRITE H



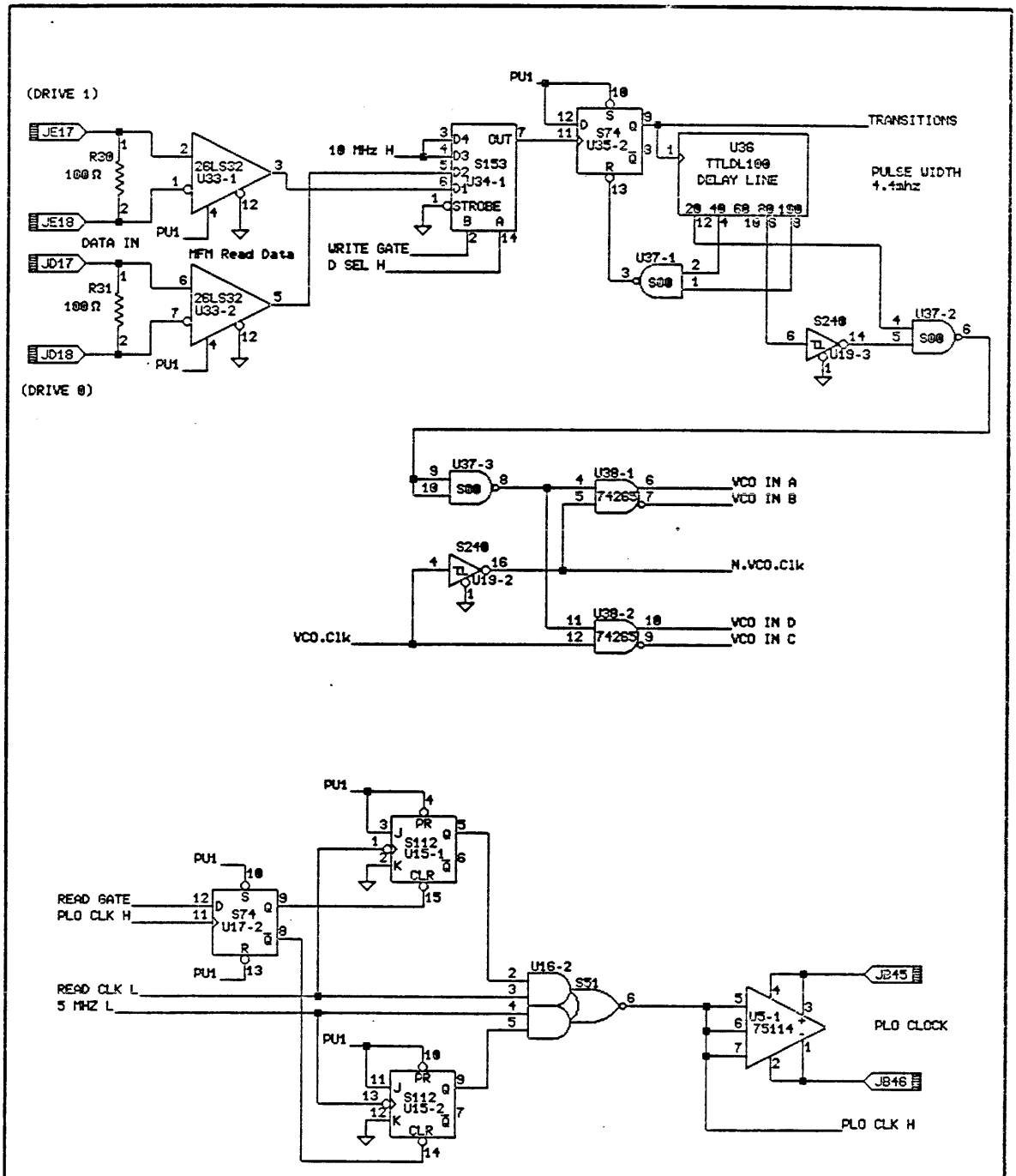
TITLE: CONTROLLER BUS REGISTERS

adap01.db

PERQ

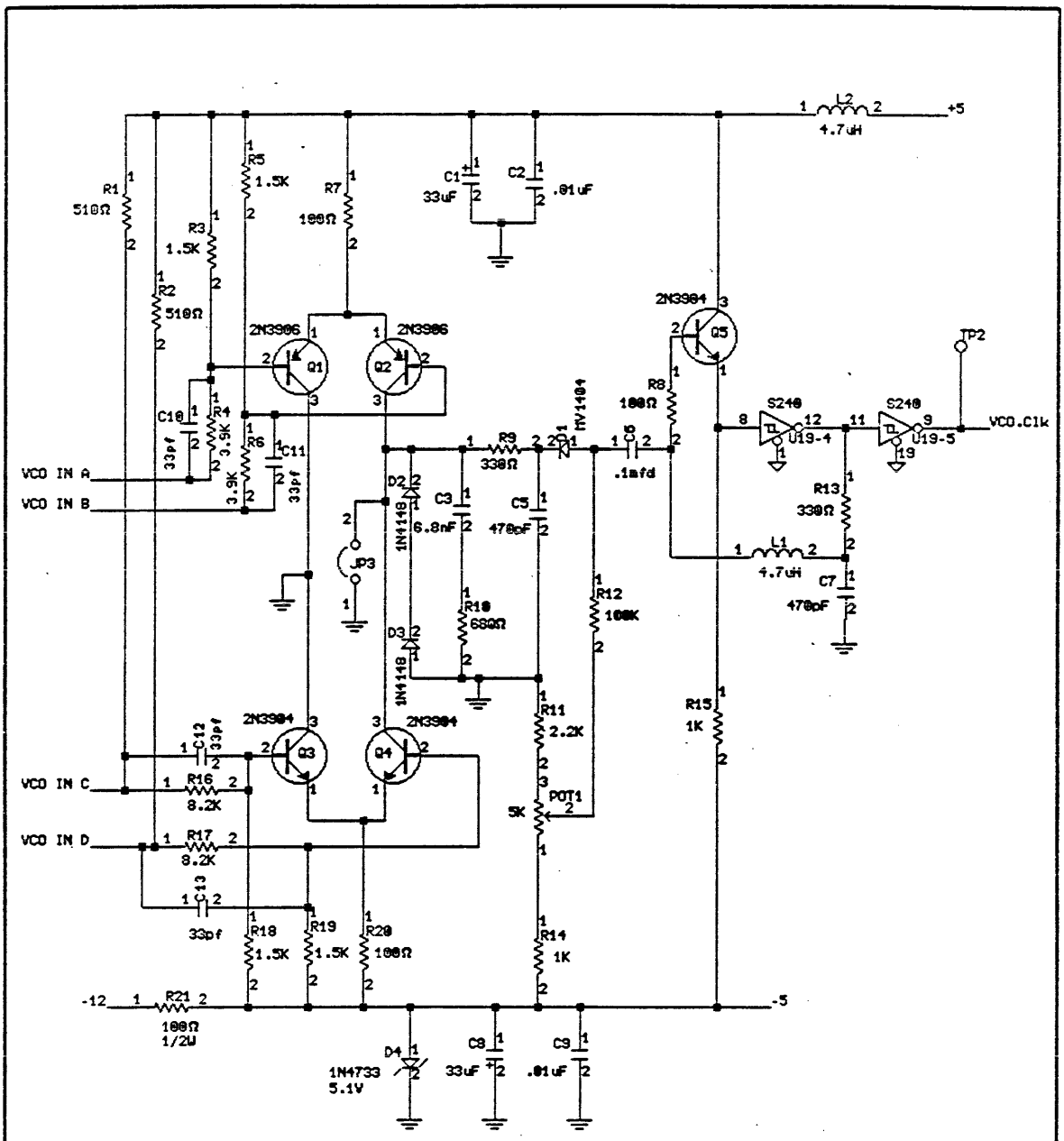
DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	14 Jul 83 09:42:55	J.Varfa	A	11	0269-	02	F
UPDATED	APR/27/84	STECK	PROJ : DSK5INCH MAXTOR Version B			PAGE 1	OF 8

09 Aug 84 10:35:37 adap01.real.dp

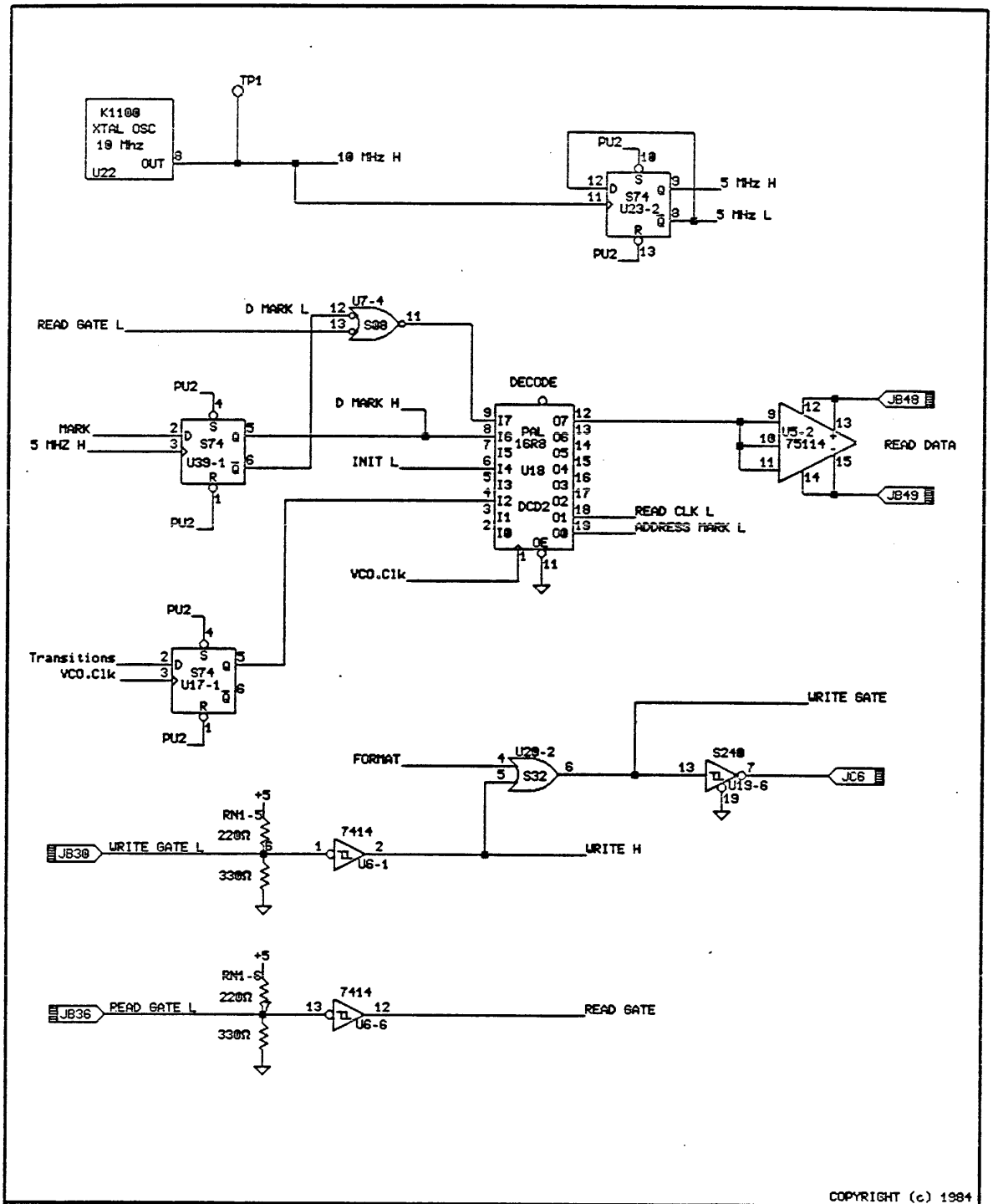


TITLE	READ DATA PHASE COMPARATOR					adap02.do	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	14 Jul 83 03:50:01	ZValfra	A	11	0269-	02	F
	UPDATED	APR/27/84	STECK	PROJ :	DSK5INCH MAXTOR Version B		PAGE 2 OF 8	

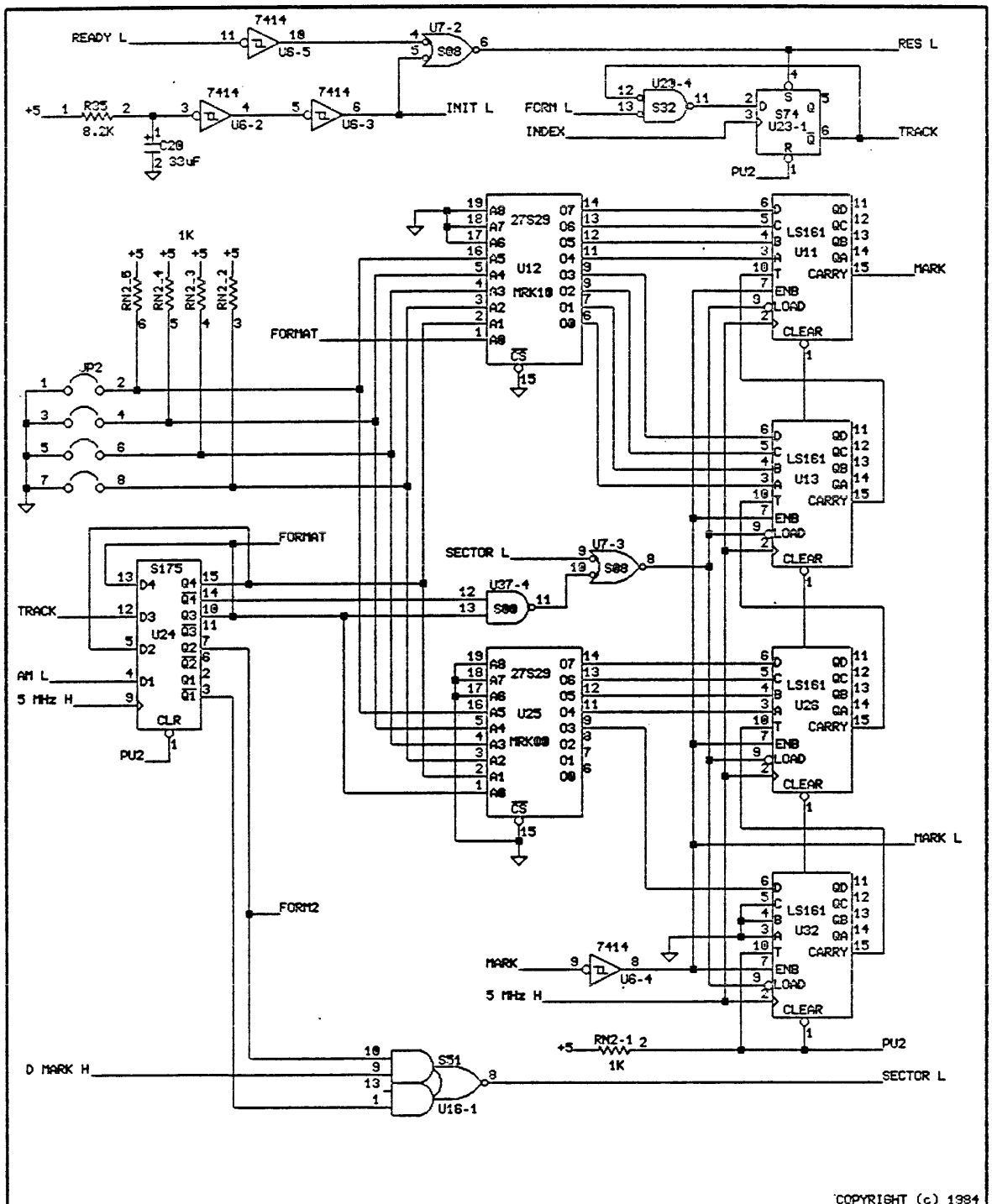
09 Aug 84 10:37:30 adap02.real.db



TITLE	VCO					adap03.do	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	14 Jul 83 09:52:31	ZValfra	A	11	8269-	02	F
	UPDATED	APR/27/84	STECK	PROJ :	DSK5INCH MAXTOR Version B		PAGE 3 OF 8	

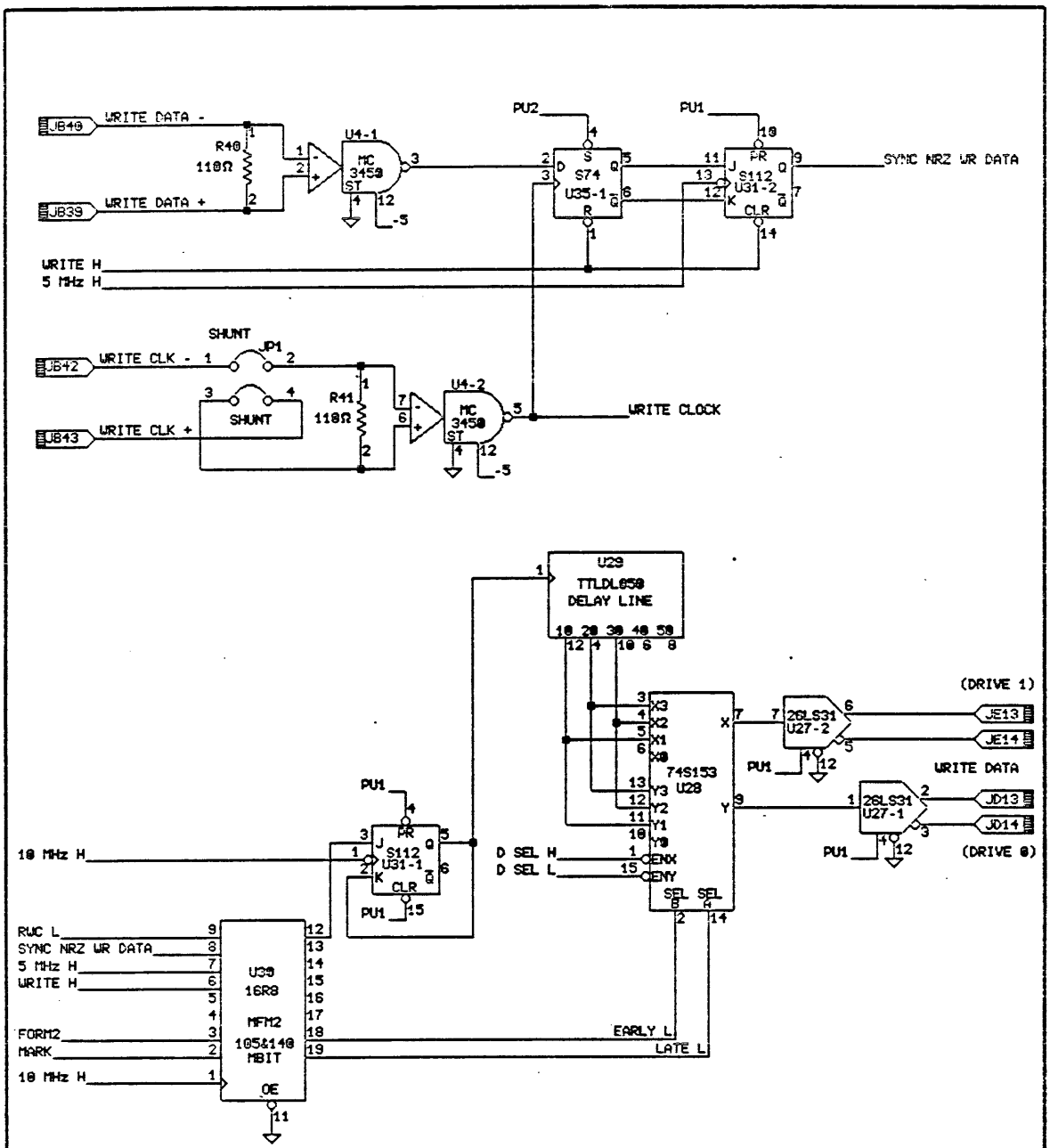


TITLE	Data Separation / Clock Generation					adap04.dp	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	14 Jul 83 09:57:24	Valra	A	11	0269-	02	H
	UPDATED	16/July/84	STECK	PROJ :	DSK5INCH MAXTOR Version B		PAGE 4	OF 8

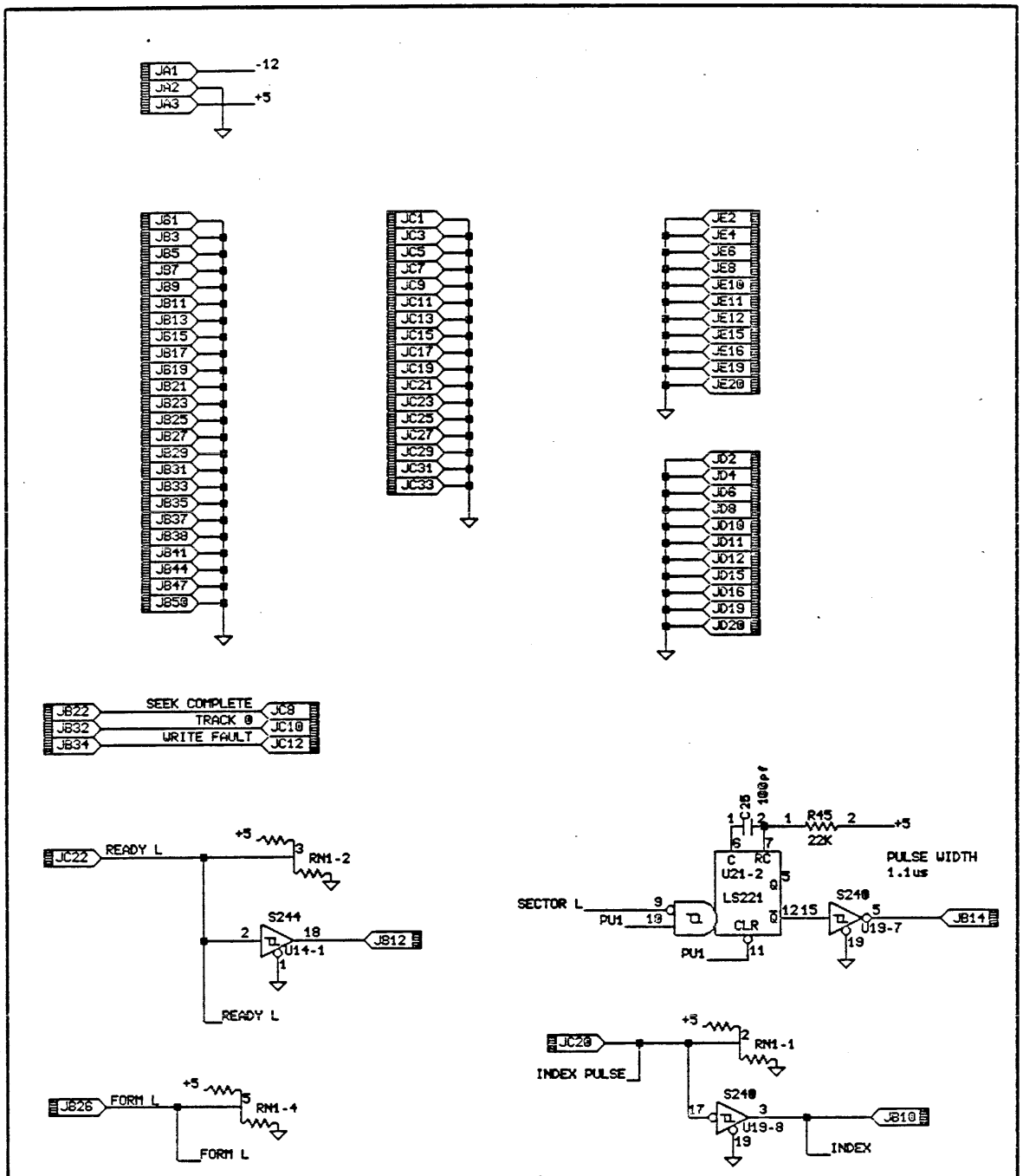


TITLE	SECTOR MARK LOGIC					adap65.do	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	WAR	REV
	DRAWN	14 Jul 83 10:16:36	Z.Vafra	A	11	8269-	82	F
	UPDATED	16/JULY/84	STECK	PROJ :	DSK3INCH MAXTOR Version B		PAGE 5 OF 8	

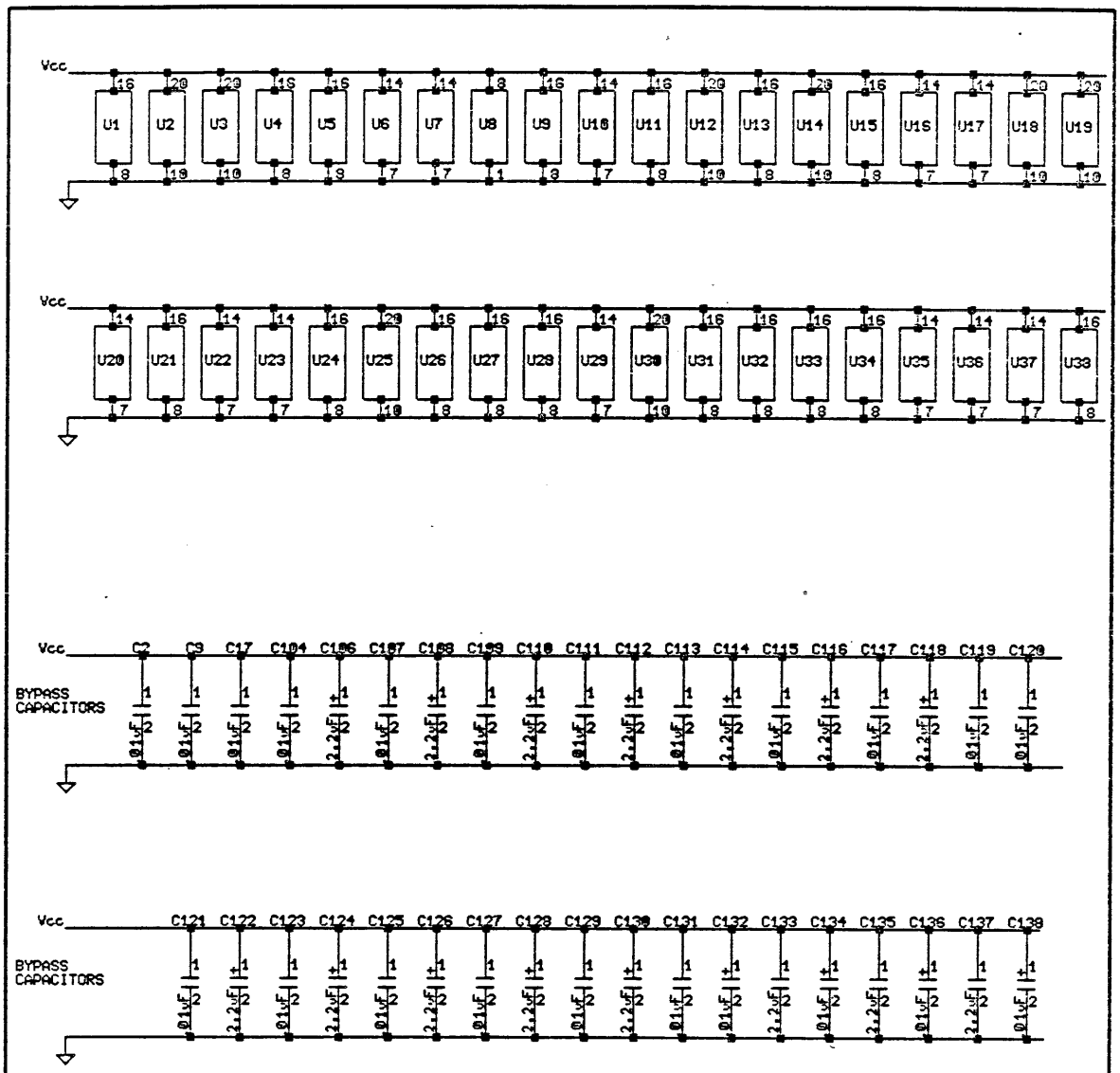
09 Aug 84 10:40:07 adap65.real.dp



TITLE	WRITE LOGIC					adap06.dp	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	14 Jul 83 10:20:22	Z.Vavra	A	11	8269-	02	G
	UPDATED	05/July/84	STECK	PROJ :	DSK3INCH MAXTOR Version B		PAGE 6 OF 8	



PERQ	DESIGNED	SDC		TITLE: Power and control circuits			adap07.db
	DRAWN	14 Jul 83 10:24:31	J.Vavra	SIZE: A	CODE: 1 1	IDENTIFICATION: 0 2 6 9 -	VAR: 0 2 / REV: H
	UPDATED	16/July/84	STECK	PROJ : DSK5INCH MAXTOR Version B			PAGE 7 OF 8



TITLE	Power and Ground circuits					sdap08.db	
PERQ	DESIGNED	SDC		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	JAN 18 84	STECK	A	11	0269-	02	F
	UPDATED	APR/27/84	STECK	PROJ :	DSK5INCH MAXTOR Version B		PAGE 8 OF 8	

Part/Page Cross Reference 16 Jul 84 10:46:20

Using Files: ADAP01.WL to ADAP07.WL

PART..TYPE.....Pages	Numbers
U1....74LS378.....	1
U2....PAL16R6.....	1
U3....PAL16R8.....	1
U4....MC3450.....	6 6
U5....75114.....	4 2
U6....7414.....	5 5 5 5 4 4
U7....74S08.....	5 5 4 1
U8....555.....	1
U9....74S139.....	1
U10...74LS74.....	1 1
U11...74LS161.....	5
U12...27S29.....	5
U13...74LS161.....	5
U14...74S244/1.....	7 1 1 1 1 1 1 1
U15...74S112.....	2 2
U16...74S51.....	5 2
U17...74S74.....	4 2
U18...PAL16R8.....	4
U19...74S240/1.....	7 7 4 3 3 2 2 1
U20...74S32.....	5 4 1
U21...74LS221.....	7 1
U22...K1100.....	4
U23...74S74.....	5 4
U24...74S175.....	5
U25...27S29.....	5
U26...74LS161.....	5
U27...26LS31.....	6 6
U28...74S153.....	6
U29...TTLDL050.....	6
U30...PAL16R8.....	6
U31...74S112.....	6 6
U32...74LS161.....	5
U33...26LS32.....	2 2
U34...74S153/1.....	2
U35...74S74.....	6 2
U36...TTLDL100.....	2
U37...74S00.....	5 2 2 2
U38...74265.....	2 2
U39...74S74.....	4
C1....CAP.....	3
C2....CAP.....	3
C3....CAP.....	3
C5....CAP.....	3
C6....CAP.....	3
C7....CAP.....	3

C8....CAP..... 3
C9....CAP..... 3
C10...CAP..... 3
C11...CAP..... 3
C12...CAP..... 3
C13...CAP..... 3
C15...CAP..... 1
C16...CAP..... 1
C17...CAP..... 1
C20...CAP..... 5
C25...CAP..... 7
D1....DIODE..... 3
D2....DIODE..... 3
D3....DIODE..... 3
D4....ZENER..... 3
L1....COIL..... 3
L2....COIL..... 3
POT1..POT..... 3
Q1....PNP..... 3
Q2....PNP..... 3
Q3....NPN..... 3
Q4....NPN..... 3
Q5....NPN..... 3
R1....RES..... 3
R2....RES..... 3
R3....RES..... 3
R4....RES..... 3
R5....RES..... 3
R6....RES..... 3
R7....RES..... 3
R8....RES..... 3
R9....RES..... 3
R10...RES..... 3
R11...RES..... 3
R12...RES..... 3
R13...RES..... 3
R14...RES..... 3
R15...RES..... 3
R16...RES..... 3
R17...RES..... 3
R18...RES..... 3
R19...RES..... 3
R20...RES..... 3
R21...RES..... 3
R25...RES..... 1
R26...RES..... 1
R27...RES..... 1
R30...RES..... 2
R31...RES..... 2
R35...RES..... 5
R40...RES..... 6
R41...RES..... 6

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R45...RES..... 7
RN1...TERM8/1..... 7  7  7  4  4  1
RN2...COM8/1..... 5  5  5  5  5  1
TP1...TESTPIN..... 4
TP2...TESTPIN..... 3
JA1...CABLE..... 7
JA2...CABLE..... 7
JA3...CABLE..... 7
JB1...CABLE..... 7
JB2...CABLE..... 1
JB3...CABLE..... 7
JB4...CABLE..... 1
JB5...CABLE..... 7
JB6...CABLE..... 1
JB7...CABLE..... 7
JB8...CABLE..... 1
JB9...CABLE..... 7
JB10..CABLE..... 7
JB11..CABLE..... 7
JB12..CABLE..... 7
JB13..CABLE..... 7
JB14..CABLE..... 7
JB15..CABLE..... 7
JB16..CABLE..... 1
JB17..CABLE..... 7
JB18..CABLE..... 1
JB19..CABLE..... 7
JB20..CABLE..... 1
JB21..CABLE..... 7
JB22..CABLE..... 7
JB23..CABLE..... 7
JB24..CABLE..... 1
JB25..CABLE..... 7
JB26..CABLE..... 7
JB27..CABLE..... 7
JB28..CABLE..... 1
JB29..CABLE..... 7
JB30..CABLE..... 4
JB31..CABLE..... 7
JB32..CABLE..... 7
JB33..CABLE..... 7
JB34..CABLE..... 7
JB35..CABLE..... 7
JB36..CABLE..... 4
JB37..CABLE..... 7
JB38..CABLE..... 7
JB39..CABLE..... 6
JB40..CABLE..... 6
JB41..CABLE..... 7
JB42..CABLE..... 6
JB43..CABLE..... 6
JB44..CABLE..... 7
```

JB45..CABLE..... 2
JB46..CABLE..... 2
JB47..CABLE..... 7
JB48..CABLE..... 4
JB49..CABLE..... 4
JB50..CABLE..... 7
JC1...CABLE..... 7
JC2...CABLE..... 1
JC3...CABLE..... 7
JC4...CABLE..... 1
JC5...CABLE..... 7
JC6...CABLE..... 4
JC7...CABLE..... 7
JC8...CABLE..... 7
JC9...CABLE..... 7
JC10..CABLE..... 7
JC11..CABLE..... 7
JC12..CABLE..... 7
JC13..CABLE..... 7
JC14..CABLE..... 1
JC15..CABLE..... 7
JC17..CABLE..... 7
JC18..CABLE..... 1
JC19..CABLE..... 7
JC20..CABLE..... 7
JC21..CABLE..... 7
JC22..CABLE..... 7
JC23..CABLE..... 7
JC24..CABLE..... 1
JC25..CABLE..... 7
JC26..CABLE..... 1
JC27..CABLE..... 7
JC28..CABLE..... 1
JC29..CABLE..... 7
JC31..CABLE..... 7
JC33..CABLE..... 7
JC34..CABLE..... 1
JD2...CABLE..... 7
JD4...CABLE..... 7
JD6...CABLE..... 7
JD8...CABLE..... 7
JD10..CABLE..... 7
JD11..CABLE..... 7
JD12..CABLE..... 7
JD13..CABLE..... 6
JD14..CABLE..... 6
JD15..CABLE..... 7
JD16..CABLE..... 7
JD17..CABLE..... 2
JD18..CABLE..... 2
JD19..CABLE..... 7
JD20..CABLE..... 7

JE2...CABLE..... 7
JE4...CABLE..... 7
JE6...CABLE..... 7
JE8...CABLE..... 7
JE10..CABLE..... 7
JE11..CABLE..... 7
JE12..CABLE..... 7
JE13..CABLE..... 6
JE14..CABLE..... 6
JE15..CABLE..... 7
JE16..CABLE..... 7
JE17..CABLE..... 2
JE18..CABLE..... 2
JE19..CABLE..... 7
JE20..CABLE..... 7
JP1...JUMP2..... 6
JP2...JUMP4..... 5
JP3...JUMPER..... 3

Signal/Page Cross Reference 16 Jul 84 11:07:26

Using Files: ADAP01.WL to ADAP07.WL

SIGNAL NAME	Pages Numbers
+5	7 5 3 1
-12	7 3
-5	6 3
10 MHz H	6 4 2
5 MHZ H	4
5 MHZ L	2
5 MHz H	6 5 4
5 MHz L	4
ADDRESS MARK L	4
AM L	5
BA<0>	1
BA<1>	1
BUS<0>	1
BUS<1>	1
BUS<2>	1
BUS<3>	1
BUS<4>	1
BUS<5>	1
CARRY	1
D MARK H	5 4
D MARK L	4
D SEL H	6 2 1
D SEL L	6 1
DIR	1
EARLY L	6
FORM L	7 5
FORM2	6 5
FORMAT	5 4
GND	7 7 7 7 7 7 7 6 5 5 4 3 3 2 1 1
HS<0>	1
HS<1>	1
HS<2>	1
INDEX	7 5
INDEX PULSE	7
INIT L	5 4
LATE L	6
LOAD	1
MARK	6 5 4
MARK L	5
N.VCO.Clk	2
PLO CLK H	2
PU1	7 6 2 1
PU2	6 5 4
READ CLK L	4 2
READ GATE	4 2

READ GATE L..... 4
READY L..... 7 5
RES L..... 5
RWC..... 1
RWC L..... 6 1
SECTOR L..... 7 5
SEEK COMPLETE..... 7
STEP..... 1
SYNC NRZ WR DATA..... 6
TRACK..... 5
TRACK 0..... 7
TRANSITIONS..... 2
Transitions..... 4
VCO IN A..... 3 2
VCO IN B..... 3 2
VCO IN C..... 3 2
VCO IN D..... 3 2
VCO.Clk..... 4 3 2
WRITE CLK +..... 6
WRITE CLK -..... 6
WRITE CLOCK..... 6
WRITE DATA +..... 6
WRITE DATA -..... 6
WRITE FAULT..... 7
WRITE GATE..... 4 2
WRITE GATE L..... 4
WRITE H..... 6 4

This Run Was made using the following files:

110269.PART
adap07.WL
adap06.WL
adap05.WL
adap04.WL
adap03.WL
adap02.WL
adap01.WL

Number Of Nets = 187
Begin Wirelist

```
   1: R3-2 R4-1 Q1-2 C10-1                .%C10-1

   2: U21-1 U9-1 U3-11 U2-11 C16-2 C17-2
   2: U14-19 U33-12 U15-12 U34-1 U15-2
   2: C8-2 U19-1 C7-2 C2-2 D3-1 JP3-1 Q3-3
   2: Q1-3 C9-2 D4-2 R11-1 C5-2 R10-2 C1-2
   2: U18-11 C20-2 JP2-3 U25-19 U12-15
   2: U12-19 U12-17 U32-3 U32-5 U32-4 U12-18
   2: U25-18 U25-17 U25-15 JP2-1 JP2-5
   2: JP2-7 U30-11 U4-4 U27-12 U14-1 JB1-1
   2: JC15-1 JE20-1 JD8-1 U19-19 JA2-1
   2: JD6-1 JD4-1 JD2-1 JD10-1 JD11-1 JD12-1
   2: JD15-1 JD16-1 JD19-1 JD20-1 JE19-1
   2: JE16-1 JE8-1 JE6-1 JE4-1 JE2-1 JE15-1
   2: JE12-1 JE11-1 JE10-1 JC13-1 JC17-1
   2: JC19-1 JC11-1 JC25-1 JC23-1 JC27-1
   2: JC29-1 JC21-1 JC33-1 JC31-1 JC1-1
   2: JC7-1 JC3-1 JC5-1 JC9-1 JB7-1 JB3-1
   2: JB5-1 JB9-1 JB31-1 JB38-1 JB37-1
   2: JB33-1 JB35-1 JB47-1 JB44-1 JB50-1
   2: JB41-1 JB21-1 JB29-1 JB27-1 JB23-1
   2: JB25-1 JB11-1 JB19-1 JB17-1 JB13-1
   2: JB15-1                              .!GND

   3: R5-2 R6-1 Q2-2 C11-1                .%C11-1

   4: U21-15 R25-1 C15-1                  .%C15-1

   5: U8-5 C17-1                          .%C17-1

   6: R35-2 U6-3 C20-1                    .%C20-1

   7: U21-6 C25-1                         .%C25-1

   8: R10-1 C3-2                          .%C3-2

   9: C5-1 R9-2 D1-2                      .%D1-2
```

10: D3-2 D2-1	.%D2-1
11: JP3-2 Q4-3 Q2-3 R9-1 C3-1 D2-2	.%D2-2
12: U14-18 JB12-1	.%JB12-1
13: U14-9 JC28-1	.%JC28-1
14: U27-6 JE13-1	.%JE13-1
15: U27-5 JE14-1	.%JE14-1
16: U4-6 R41-2 JP1-3	.%JP1-3
17: R8-2 C6-2 L1-1	.%L1-1
18: R11-2 POT1-3	.%POT1-3
19: R7-2 Q2-1 Q1-1	.%Q1-1
20: R20-1 Q3-1 Q4-1	.%Q4-1
21: R19-1 C13-2 R17-2 Q4-2	.%Q4-2
22: U19-8 R15-1 Q5-1	.%Q5-1
23: R8-1 Q5-2	.%Q5-2
24: D1-1 C6-1 R12-1	.%R12-1
25: POT1-2 R12-2	.%R12-2
26: L1-2 C7-1 R13-2	.%R13-2
27: POT1-1 R14-1	.%R14-1
28: C12-2 Q3-2 R18-1 R16-2	.%R16-2
29: R7-1 L2-1 R2-1 R1-1 C1-1 C2-1 Q5-3 29: R5-1 R3-1	.%R3-1
30: U33-2 JE17-1 R30-1	.%R30-1
31: U33-1 JE18-1 R30-2	.%R30-2
32: U4-7 JP1-2 R41-1	.%R41-1
33: U21-7 C25-2 R45-1	.%R45-1
34: U25-3 U12-3 JP2-8 RN2-3	.%RN2-3

35: U12-4 U25-4 JP2-6 RN2-4 .%RN2-4

36: U12-5 U25-5 JP2-4 RN2-5 .%RN2-5

37: U12-16 U25-16 JP2-2 RN2-6 .%RN2-6

38: U9-4 U1-1 .%U1-1

39: U14-15 U1-12 .%U1-12

40: U7-1 U21-4 U10-3 U1-9 .%U1-9

41: U8-3 U20-2 U10-11 .%U10-11

42: U10-12 U10-5 .%U10-5

43: U13-15 U11-10 .%U11-10

44: U12-11 U11-3 .%U11-3

45: U12-12 U11-4 .%U11-4

46: U12-13 U11-5 .%U11-5

47: U12-14 U11-6 .%U11-6

48: U24-5 U24-15 U25-2 U12-2 .%U12-2

49: U26-15 U13-10 .%U13-10

50: U12-6 U13-3 .%U13-3

51: U12-7 U13-4 .%U13-4

52: U12-8 U13-5 .%U13-5

53: U12-9 U13-6 .%U13-6

54: U1-2 U14-4 .%U14-4

55: U1-5 U14-6 .%U14-6

56: U1-7 U14-8 .%U14-8

57: U24-3 U16-1 .%U16-1

58: U15-5 U16-2 .%U16-2

59: U15-9 U16-5 .%U16-5

60: U18-4 U17-5 .%U17-5

61: U15-14 U17-8	.%U17-8
62: U15-15 U17-9	.%U17-9
63: U7-11 U18-9	.%U18-9
64: R13-1 U19-12 U19-11	.%U19-11
65: U21-12 U19-15	.%U19-15
66: JB14-1 U19-5	.%U19-5
67: JC6-1 U19-7	.%U19-7
68: U10-4 U10-6 U2-8	.%U2-8
69: U10-8 U20-1	.%U20-1
70: U23-2 U20-11	.%U20-11
71: C15-2 U21-14	.%U21-14
72: U37-12 U24-14	.%U24-14
73: U32-6 U25-9	.%U25-9
74: U32-15 U26-10	.%U26-10
75: U25-11 U26-3	.%U26-3
76: U25-12 U26-4	.%U26-4
77: U25-13 U26-5	.%U26-5
78: U25-14 U26-6	.%U26-6
79: U28-9 U27-1	.%U27-1
80: JD13-1 U27-2	.%U27-2
81: JD14-1 U27-3	.%U27-3
82: U28-7 U27-7	.%U27-7
83: U29-12 U28-5 U28-11	.%U28-11
84: U28-4 U29-10 U28-12	.%U28-12
85: U28-3 U29-4 U28-13	.%U28-13
86: U7-3 U2-1 U3-1	.%U3-1

87: U2-12 U3-8	.%U3-8
88: U9-5 U3-9	.%U3-9
89: U35-5 U31-11	.%U31-11
90: U35-6 U31-12	.%U31-12
91: U30-12 U31-3	.%U31-3
92: U29-1 U31-2 U31-5	.%U31-5
93: JD17-1 R31-1 U33-6	.%U33-6
94: JD18-1 R31-2 U33-7	.%U33-7
95: U33-5 U34-5	.%U34-5
96: U33-3 U34-6	.%U34-6
97: U34-7 U35-11	.%U35-11
98: U37-4 U36-12	.%U36-12
99: U37-2 U36-4	.%U36-4
100: U19-6 U36-6	.%U36-6
101: U37-1 U36-8	.%U36-8
102: U37-6 U37-9 U37-10	.%U37-10
103: U7-10 U37-11	.%U37-11
104: U35-13 U37-3	.%U37-3
105: U19-14 U37-5	.%U37-5
106: U38-4 U37-8 U38-11	.%U38-11
107: U35-2 U4-3	.%U4-3
108: JB46-1 U5-2 U5-1	.%U5-1
109: U5-9 U18-12 U5-10 U5-11	.%U5-11
110: U5-13 JB48-1 U5-12	.%U5-12
111: U5-15 JB49-1 U5-14	.%U5-14
112: JB45-1 U5-4 U5-3	.%U5-3

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 113: U7-4 U6-10                          .%U6-10

 114: U6-5 U6-4                           .%U6-4

 115: U20-3 U14-13 U7-2                   .%U7-2

 116: U32-9 U26-9 U13-9 U11-9 U7-8        .%U7-8

 117: R27-2 C16-1 U8-6 U8-2               .%U8-2

 118: R26-2 R27-1 U8-7                    .%U8-7

 119: U2-9 U9-6                           .%U9-6

 120: R25-2 R26-1 U8-4 L2-2 R35-1 R45-2
 120: JA3-1                               .+5

 121: R21-1 JA1-1                         .-12

 122: R19-2 R21-2 R20-2 R14-2 C8-1 C9-1
 122: D4-1 R18-2 R15-2 U4-12              .-5

 123: U34-4 U34-3 U22-8 TP1-1 U23-11 U30-1
 123: U31-1                               .10 MHZ H

 124: U23-9 U39-3 U11-2 U13-2 U26-2 U24-9
 124: U32-2 U30-7 U31-13                  .5 MHZ H

 125: U16-4 U15-13 U23-8 U23-12           .5 MHZ L

 126: U18-19                              .ADDRESS MARK L
*** Only one pin in net

 127: U24-4                               .AM L
*** Only one pin in net
*** Run Has no outputs

 128: U9-2 JB16-1                         .BA<0>

 129: U10-2 U9-3 JB18-1                   .BA<1>

 130: U1-3 JB2-1 U3-2 U2-2                .BUS<0>

 131: U1-4 JB4-1 U3-3 U2-3                .BUS<1>

 132: U1-6 JB6-1 U3-4 U2-4                .BUS<2>

 133: U1-11 JB8-1 U3-5 U2-5               .BUS<3>

 134: U1-13 JB28-1 U3-6 U2-6              .BUS<4>

 135: U1-14 U3-7 U2-7 JB24-1              .BUS<5>
```

```
136: U10-1 U10-13 U3-12                    .CARRY

137: U39-5 U18-8 U16-9                     .D MARK H

138: U39-6 U7-12                           .D MARK L

139: U14-11 U1-15 U19-2 U34-14 U28-1       .D SEL H

140: U19-18 JC26-1 U28-15                  .D SEL L

141: U14-5 JC34-1                          .DIR

142: U30-18 U28-2                          .EARLY L

143: U20-13 RN1-5 JB26-1                   .FORM L

144: U24-7 U16-10 U30-3                    .FORM2

145: U20-4 U25-1 U37-13 U24-10 U12-1 U24-13
145:                                       .FORMAT

146: U14-16 JC14-1                         .HS<0>

147: U14-14 JC18-1                         .HS<1>

148: U14-12 JC4-1                          .HS<2>

149: U23-3 JB10-1 U19-3                    .INDEX

150: RN1-2 JC20-1 U19-17                   .INDEX PULSE

151: U18-6 U6-6 U7-5                       .INIT L

152: U30-19 U28-14                         .LATE L

153: U21-2 RN1-4 JB20-1                    .LOAD

154: U39-2 U6-9 U11-15 U30-2               .MARK

155: U26-7 U13-7 U6-8 U32-7 U11-7          .MARK L

156: U38-5 U19-16                          .N.VCO.CLK

157: U5-5 U16-6 U5-6 U5-7 U17-11           .PLO CLK H

158: U21-3 U10-10 RN2-7 U35-12 U35-10
158: U17-13 U17-10 U15-4 U15-11 U33-4
158: U15-10 U15-3 U27-4 U31-15 U31-10
158: U31-4 U21-10 U21-11                   .PU1

159: U39-4 U23-10 U23-13 U17-1 U17-4 U39-1
```

159: U23-1 RN2-2 U32-10 U24-1 U32-1 U26-1
159: U13-1 U11-1 U35-4 .PU2

160: U16-3 U15-1 U18-18 .READ CLK L

161: U17-12 U6-12 .READ GATE

162: U6-13 RN1-7 JB36-1 U7-13 .READ GATE L

163: U6-11 U14-2 RN1-3 JC22-1 .READY L

164: U23-4 U7-6 .RES L

165: U14-3 JC2-1 .RWC

166: U14-17 U1-10 U30-9 .RWC L

167: U7-9 U16-8 U21-9 .SECTOR L

168: JB22-1 JC8-1 .SEEK COMPLETE

169: U14-7 JC24-1 .STEP

170: U30-8 U31-9 .SYNC NRZ WR DATA

171: U20-12 U23-6 U24-12 .TRACK

172: JB32-1 JC10-1 .TRACK 0

173: U35-9 U36-1 U17-2 .TRANSITIONS

174: U38-6 R4-2 C10-2 .VCO IN A

175: U38-7 R6-2 C11-2 .VCO IN B

176: U38-9 C12-1 R1-2 R16-1 .VCO IN C

177: U38-10 C13-1 R17-1 R2-2 .VCO IN D

178: U38-12 U19-4 TP2-1 U19-9 U17-3 U18-1
178: .VCO.CLK

179: JB43-1 JP1-4 .WRITE CLK +

180: JP1-1 JB42-1 .WRITE CLK -

181: U35-3 U4-5 .WRITE CLOCK

182: JB39-1 U4-2 R40-2 .WRITE DATA +

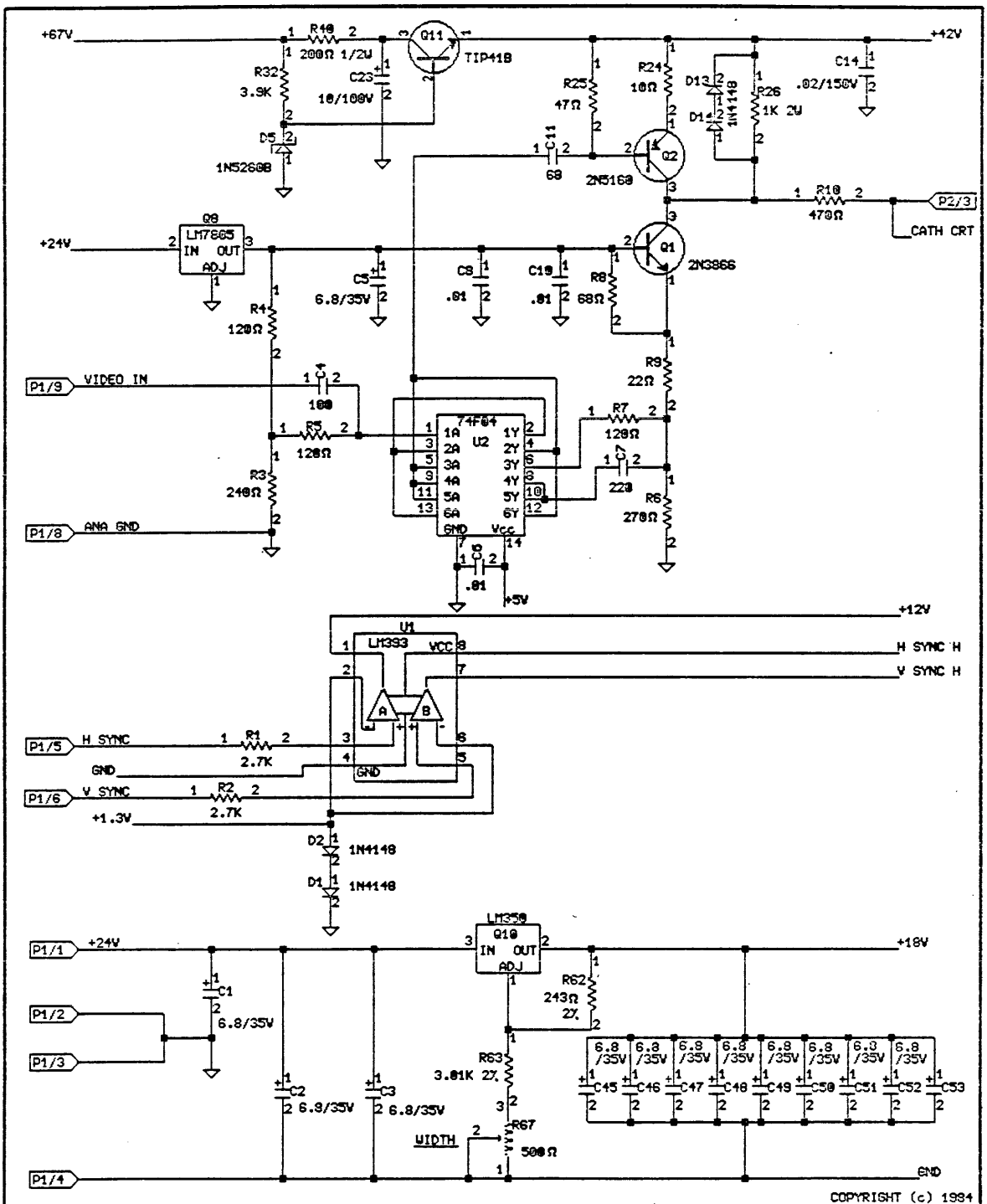
183: JB40-1 U4-1 R40-1 .WRITE DATA -

184: JB34-1 JC12-1 .WRITE FAULT

185: U34-2 U20-6 U19-13 .WRITE GATE

186: JB30-1 RN1-6 U6-1 .WRITE GATE L

187: U6-2 U20-5 U30-6 U31-14 U35-1 .WRITE H



TITLE: VIDEO, SYNC & POWER

kp01.db

PERQ

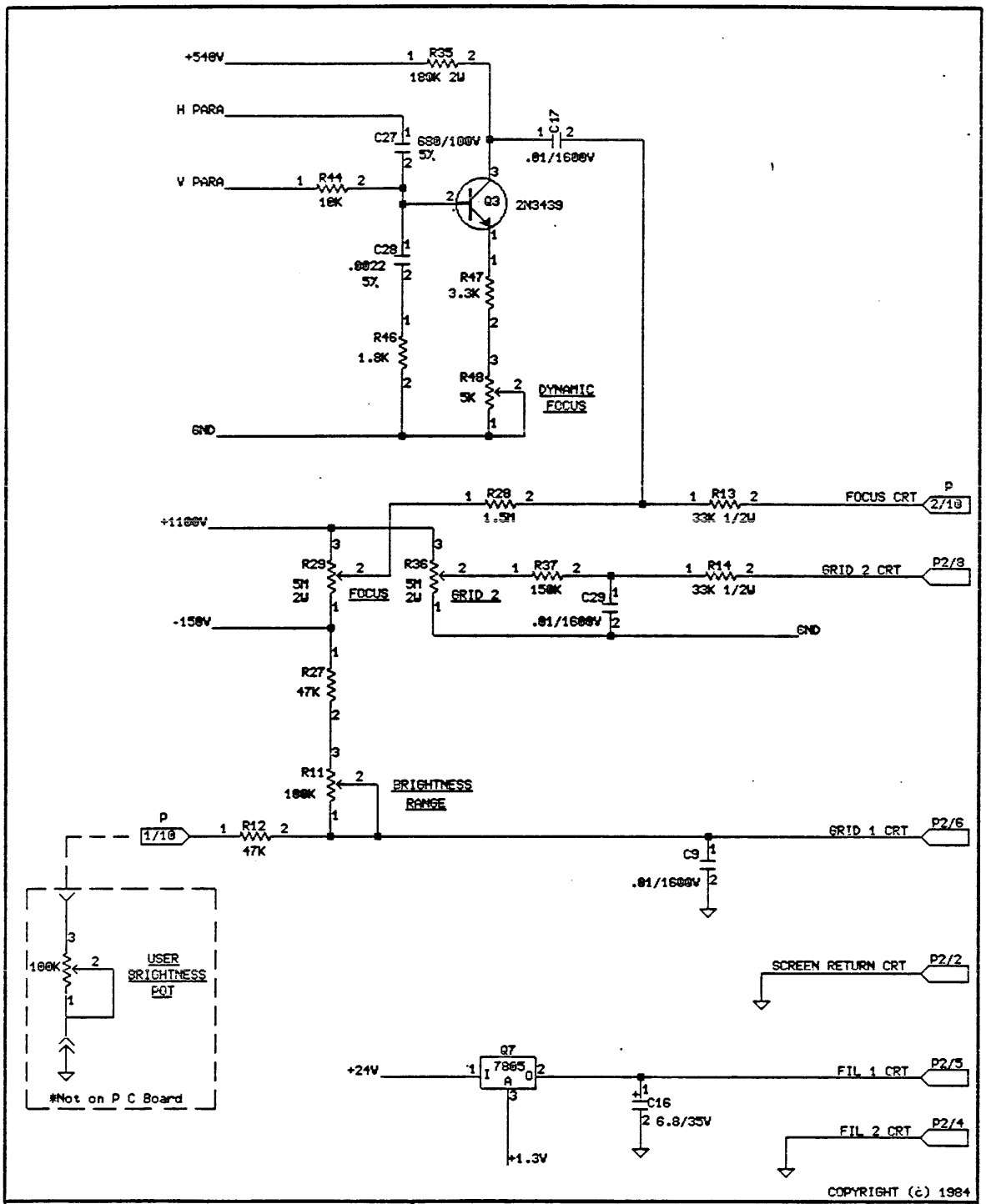
DESIGNED	JSK	22 JAN 83
DRAWN	JSK	11 APR 83
UPDATED	STECK	16 JULY 84

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0214-	02	L

PROJ : KRIZ MONITOR/PORTRAIT

PAGE 1 OF 4

09 Aug 84 10:45:19 kp01.real.db



TITLE: CRT VOLTAGES

kp02.db

PERQ

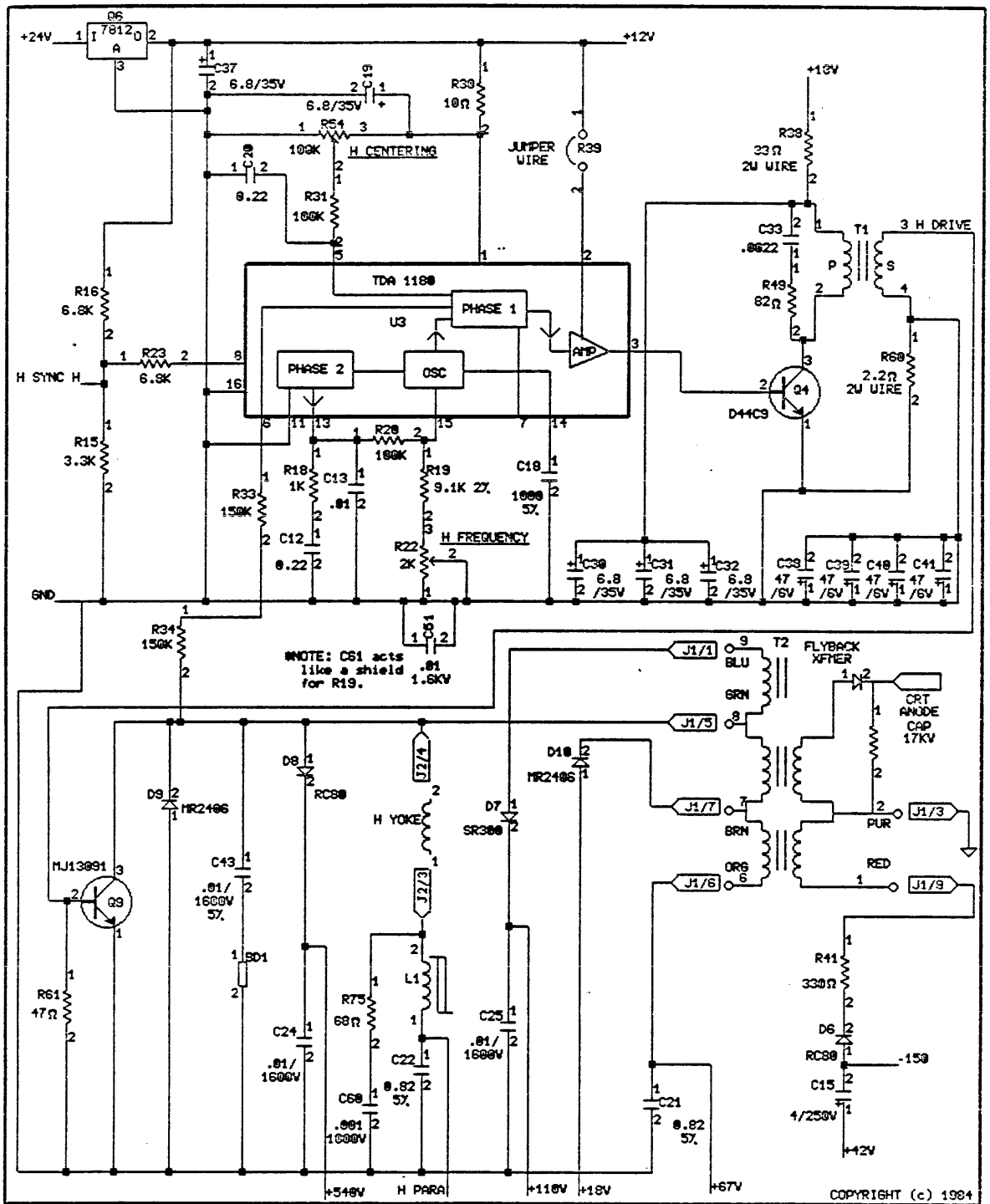
DESIGNED	AFH	22 JAN 83
DRAWN	JSK	11 APR 83
UPDATED	STECK	13 JULY 84

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	8214-	02	K

PROJ : KRIZ MONITOR/PORTRAIT

PAGE 2 OF 4

09 Aug 84 10:46:02 kp02.real.db



TITLE: HORIZONTAL

kb03.db

PERQ

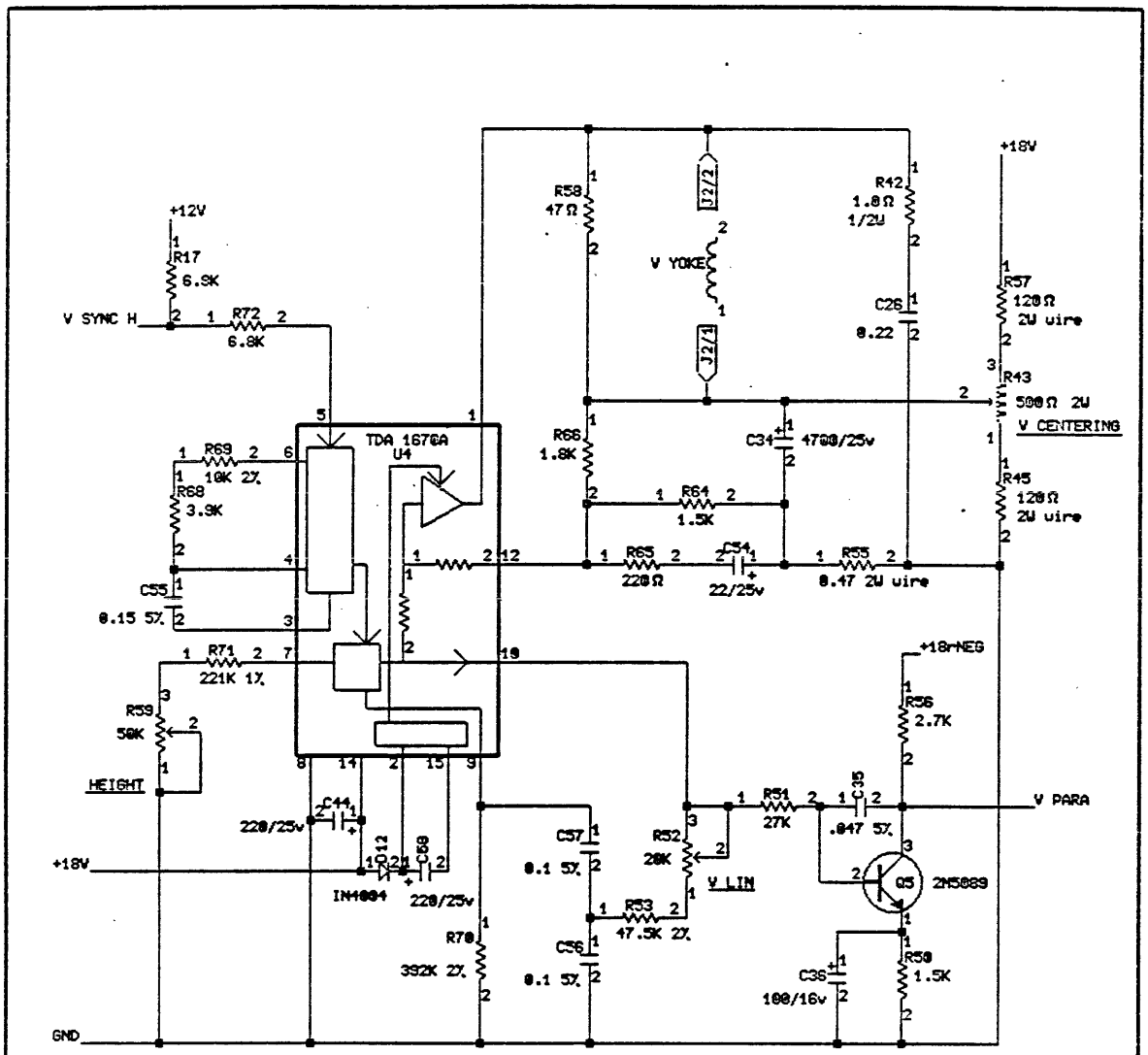
DESIGNED	JSK	11 APR 83
DRAWN	AFH	22 JAN 83
UPDATED	STECK	13 JULY 84

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	8214-	02	J

PROJ : KRIZ MONITOR/PORTRAIT

PAGE 3 OF 4

09 Aug 84 10:47:06 kb03.real.db



TITLE: VERTICAL

kp04.db

PERQ

DESIGNED	JSK	11 APR 83
DRAWN	AFH	22 JAN 83
UPDATED	STECK	12 JULY 84

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0214-	02	E

PROJ : KRIZ MONITOR/PORTRAIT

PAGE 4 OF 4

09 Aug 84 10:47:54 kp04.real.db

Part/Page Cross Reference 16 Jul 84 09:28:41

Using Files: KP01.WL to KP04.WL

PART	TYPE	Pages Numbers
U1	LM393	1
U2	74F04	1
U3	TDA1180	3
U4	TDA1670A	4
1/10	EDGE	2
2/10	EDGE	2
BD1	BEAD	3
C1	CAP	1
C2	CAP	1
C3	CAP	1
C4	CAP	1
C5	CAP	1
C6	CAP	1
C7	CAP	1
C8	CAP	1
C9	CAP	2
C10	CAP	1
C11	CAP	1
C12	CAP	3
C13	CAP	3
C14	CAP	1
C15	CAP	3
C16	CAP	2
C17	CAP	2
C18	CAP	3
C19	CAP	3
C20	CAP	3
C21	CAP	3
C22	CAP	3
C23	CAP	1
C24	CAP	3
C25	CAP	3
C26	CAP	4
C27	CAP	2
C28	CAP	2
C29	CAP	2
C30	CAP	3
C31	CAP	3
C32	CAP	3
C33	CAP	3
C34	CAP	4
C35	CAP	4
C36	CAP	4
C37	CAP	3
C38	CAP	3

C39...CAP..... 3
C40...CAP..... 3
C41...CAP..... 3
C43...CAP..... 3
C44...CAP..... 4
C45...CAP..... 1
C46...CAP..... 1
C47...CAP..... 1
C48...CAP..... 1
C49...CAP..... 1
C50...CAP..... 1
C51...CAP..... 1
C52...CAP..... 1
C53...CAP..... 1
C54...CAP..... 4
C55...CAP..... 4
C56...CAP..... 4
C57...CAP..... 4
C58...CAP..... 4
C60...CAP..... 3
C61...CAP..... 3
D1....DIODE..... 1
D2....DIODE..... 1
D5....ZENER..... 1
D6....DIODE..... 3
D7....DIODE..... 3
D8....DIODE..... 3
D9....DIODE..... 3
D10...DIODE..... 3
D12...DIODE..... 4
D13...DIODE..... 1
D14...DIODE..... 1
L1....COIL..... 3
P1/1..EDGE..... 1
P1/2..EDGE..... 1
P1/3..EDGE..... 1
P1/4..EDGE..... 1
P1/5..EDGE..... 1
P1/6..EDGE..... 1
P1/8..EDGE..... 1
P1/9..EDGE..... 1
P2/2..EDGE..... 2
P2/3..EDGE..... 1
P2/4..EDGE..... 2
P2/5..EDGE..... 2
P2/6..EDGE..... 2
P2/8..EDGE..... 2
Q1....NPN..... 1
Q2....PNP..... 1
Q3....NPN..... 2
Q4....NPN..... 3
Q5....NPN..... 4

Q6....LM7812..... 3
Q7....LM7805..... 2
Q8....LM7805..... 1
Q9....NPN..... 3
Q10...LM350..... 1
Q11...NPN..... 1
R1....RES..... 1
R2....RES..... 1
R3....RES..... 1
R4....RES..... 1
R5....RES..... 1
R6....RES..... 1
R7....RES..... 1
R8....RES..... 1
R9....RES..... 1
R10...RES..... 1
R11...POT..... 2
R12...RES..... 2
R13...RES..... 2
R14...RES..... 2
R15...RES..... 3
R16...RES..... 3
R17...RES..... 4
R18...RES..... 3
R19...RES..... 3
R20...RES..... 3
R22...POT..... 3
R23...RES..... 3
R24...RES..... 1
R25...RES..... 1
R26...RES..... 1
R27...RES..... 2
R28...RES..... 2
R29...POT..... 2
R30...RES..... 3
R31...RES..... 3
R32...RES..... 1
R33...RES..... 3
R34...RES..... 3
R35...RES..... 2
R36...POT..... 2
R37...RES..... 2
R38...RES..... 3
R39...JUMPER..... 3
R40...RES..... 1
R41...RES..... 3
R42...RES..... 4
R43...POT..... 4
R44...RES..... 2
R45...RES..... 4
R46...RES..... 2
R47...RES..... 2

R48...POT..... 2
R49...RES..... 3
R50...RES..... 4
R51...RES..... 4
R52...POT..... 4
R53...RES..... 4
R54...POT..... 3
R55...RES..... 4
R56...RES..... 4
R57...RES..... 4
R58...RES..... 4
R59...POT..... 4
R60...RES..... 3
R61...RES..... 3
R62...RES..... 1
R63...RES..... 1
R64...RES..... 4
R65...RES..... 4
R66...RES..... 4
R67...POT..... 1
R68...RES..... 4
R69...RES..... 4
R70...RES..... 4
R71...RES..... 4
R72...RES..... 4
R75...RES..... 3
T1....XFMR..... 3
J1/1..EDGE..... 3
J1/3..EDGE..... 3
J1/5..EDGE..... 3
J1/6..EDGE..... 3
J1/7..EDGE..... 3
J1/9..EDGE..... 3
J2/1..EDGE..... 4
J2/2..EDGE..... 4
J2/3..EDGE..... 3
J2/4..EDGE..... 3

Signal/Page Cross Reference 16 Jul 84 09:28:41

Using Files: KP01.WL to KP04.WL

SIGNAL NAME.....	Pages Numbers
+1.3V.....	2 1
+1100V.....	2
+110V.....	3
+12V.....	4 3 1
+18V.....	4 3 1
+18rNEG.....	4
+24V.....	3 2 1
+42V.....	3 1
+540V.....	3 2
+5V.....	1
+67V.....	3 1
-150.....	3
-150V.....	2
ANA GND.....	1 1 1
CATH CRT.....	1
FIL 1 CRT.....	2
FOCUS CRT.....	2
GND.....	4 3 3 3
GRID 1 CRT.....	2
H DRIVE.....	3
H PARA.....	3 2
H SYNC.....	1
H SYNC H.....	3 1
SCREEN RETURN CRT.....	2
V PARA.....	4 2
V SYNC.....	1
V SYNC H.....	4 1
VIDEO IN.....	1

This Run Was made using the following files:

110214.PART
kp04.WL
kp03.WL
kp02.WL
kp01.WL

Number Of Nets = 109
Begin Wirelist

```
  1: C39-1 C40-1 J1/3-1 C41-1 C38-1 C32-2
  1: C31-2 C30-2 R15-2 C18-2 R22-1 R22-2
  1: C12-2 C37-2 Q6-3 C20-1 C19-2 R54-1
  1: U3-11 U3-16 C61-2 C61-1 C13-2 C39-2
  1: C40-2 C41-2 C38-2 R60-1 T1-4 Q4-1
  1: R60-2 R45-2 C36-2 R50-2 C56-2 R70-2
  1: R59-1 R59-2 U4-8 C44-2 R55-2 C26-2
  1:                                      .!GND

  2: R12-1 1/10-1                         .%1/10-1

  3: C24-2 C22-2 Q9-1 R61-2 C25-2 C21-2
  3: C60-2 BD1-2                          .%BD1-2

  4: R18-2 C12-1                          .%C12-1

  5: R20-1 R18-1 U3-13 C13-1              .%C13-1

  6: R28-2 R13-1 C17-2                    .%C17-2

  7: R40-2 Q11-3 C23-1                    .%C23-1

  8: R46-1 C28-2                          .%C28-2

  9: C32-1 C30-1                          .%C30-1

 10: R49-1 C33-1                          .%C33-1

 11: J2/1-1 R43-2 R58-2 R66-1 C34-1       .%C34-1

 12: Q5-2 R51-2 C35-1                     .%C35-1

 13: U2-1 R5-2 C4-2                       .%C4-2

 14: BD1-1 C43-2                          .%C43-2

 15: Q8-3 Q1-2 R8-1 C10-1 C8-1 R4-1 C5-1
 15:                                      .%C5-1

 16: R65-2 C54-2                          .%C54-2
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17: U4-4 R68-2 C55-1                          .%C55-1

18: U4-3 C55-2                                .%C55-2

19: R53-1 C57-2 C56-1                         .%C56-1

20: U4-15 C58-2                               .%C58-2

21: R75-2 C60-1                               .%C60-1

22: R6-1 R9-2 R7-2 C7-2                       .%C7-2

23: D2-2 D1-1                                 .%D1-1

24: J1/7-1 D10-2                              .%D10-2

25: D13-1 D14-2                               .%D14-2

26: Q11-2 R32-2 D5-2                          .%D5-2

27: R41-2 D6-2                                .%D6-2

28: J1/1-1 D7-1                               .%D7-1

29: D8-1 J1/5-1 J2/4-1 Q9-3 R34-2 C43-1
29: D9-2                                      .%D9-2

30: R14-2 P2/8-1                              .%P2/8-1

31: D14-1 R26-2 R10-1 Q2-3 Q1-3               .%Q1-3

32: R24-2 Q2-1                                .%Q2-1

33: R44-2 C28-1 C27-2 Q3-2                    .%Q3-2

34: U1-3 R1-2                                 .%R1-2

35: R27-2 R11-3                               .%R11-3

36: U3-15 R20-2 R19-1                         .%R19-1

37: R22-3 R19-2                               .%R19-2

38: U1-5 R2-2                                 .%R2-2

39: C11-2 Q2-2 R25-2                          .%R25-2

40: R29-2 R28-1                               .%R28-1

41: C19-1 R54-3 U3-1 R30-2                    .%R30-2
```

42: R54-2 R31-1 .%R31-1

43: U3-6 R33-1 .%R33-1

44: R33-2 R34-1 .%R34-1

45: C17-1 Q3-3 R35-2 .%R35-2

46: R36-2 R37-1 .%R37-1

47: C29-1 R14-1 R37-2 .%R37-2

48: U3-2 R39-2 .%R39-2

49: J1/9-1 R41-1 .%R41-1

50: C26-1 R42-2 .%R42-2

51: R43-1 R45-1 .%R45-1

52: Q3-1 R47-1 .%R47-1

53: R48-3 R47-2 .%R47-2

54: R4-2 R3-1 R5-1 .%R5-1

55: C36-1 Q5-1 R50-1 .%R50-1

56: R52-1 R53-2 .%R53-2

57: R43-3 R57-2 .%R57-2

58: J2/2-1 R42-1 U4-1 R58-1 .%R58-1

59: R63-1 Q10-1 R62-2 .%R62-2

60: R65-1 U4-12 R66-2 R64-1 .%R64-1

61: R55-1 C54-1 C34-2 R64-2 .%R64-2

62: R63-2 R67-3 .%R67-3

63: R68-1 R69-1 .%R69-1

64: R59-3 R71-1 .%R71-1

65: U4-5 R72-2 .%R72-2

66: L1-2 J2/3-1 R75-1 .%R75-1

67: R9-1 Q1-1 R8-2 .%R8-2

```
  68: C31-1 C33-2 R38-2 T1-1                .%T1-1

  69: R49-2 Q4-3 T1-2                       .%T1-2

  70: U2-13 U2-2 U2-3                       .%U2-3

  71: C11-1 U2-11 U2-9 U2-5 U2-12 U2-4
  71:                                       .%U2-4
*** Run has multiple outputs

  72: R7-1 U2-6                             .%U2-6

  73: C7-1 U2-10 U2-8                       .%U2-8
*** Run has multiple outputs

  74: C18-1 U3-14                           .%U3-14

  75: Q4-2 U3-3                             .%U3-3

  76: C20-2 R31-2 U3-5                      .%U3-5

  77: R23-2 U3-8                            .%U3-8

  78: R52-2 R51-1 R52-3 U4-10               .%U4-10

  79: C58-1 D12-2 U4-2                      .%U4-2

  80: R69-2 U4-6                            .%U4-6

  81: R71-2 U4-7                            .%U4-7

  82: C57-1 R70-1 U4-9                      .%U4-9

  83: U1-2 D2-1 U1-6 Q7-3                   .+1.3V

  84: R36-3 R29-3                           .+1100V

  85: C25-1 D7-2                            .+110V

  86: U1-1 R39-1 Q6-2 R30-1 C37-1 R16-1
  86: R17-1                                 .+12V

  87: R56-1                                 .+18RNEG
*** Only one pin in net

  88: C51-1 C50-1 C52-1 C53-1 C49-1 C48-1
  88: C47-1 C46-1 C45-1 Q10-2 R62-1 R38-1
  88: D10-1 R57-1 D12-1 U4-14 C44-1         .+18V

  89: Q8-2 P1/1-1 Q10-3 C1-1 C2-1 C3-1
  89: Q7-1 Q6-1                             .+24V
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```
90: D13-2 R26-1 Q11-1 C14-1 R25-1 R24-1
90: C15-1                                   .+42V

91: R35-1 C24-1 D8-2                        .+540V

92: C6-2 U2-14                              .+5V

93: R32-1 R40-1 J1/6-1 C21-1                .+67V

94: C15-2 D6-1                              .-150

95: R27-1 R29-1                             .-150V

96: C14-2 P1/4-1 U1-4 C23-2 D1-2 C5-2
96: C1-2 P1/2-1 Q8-1 D5-1 U2-7 C6-1 C8-2
96: C10-2 R6-2 R3-2 P1/8-1 P1/3-1 C51-2
96: C50-2 C52-2 C53-2 C49-2 C48-2 C47-2
96: C46-2 C45-2 R67-1 R67-2 C2-2 C3-2
96:                                         .ANA GND

97: P2/3-1 R10-2                            .CATH CRT

98: C16-1 Q7-2 P2/5-1                       .FIL 1 CRT

99: R13-2 2/10-1                            .FOCUS CRT

100: R11-2 R12-2 P2/6-1 R11-1 C9-1          .GRID 1 CRT

101: R61-1 T1-3                             .H DRIVE

102: C27-1 L1-1 C22-1                       .H PARA

103: P1/5-1 R1-1                            .H SYNC

104: U1-8 R15-1 R16-2 R23-1                 .H SYNC H

105: C9-2 R36-1 R46-2 P2/4-1 P2/2-1 C16-2
105: R48-1 R48-2 C29-2                      .SCREEN RETURN CRT

106: R44-1 Q5-3 R56-2 C35-2                 .V PARA

107: R2-1 P1/6-1                            .V SYNC

108: U1-7 R17-2 R72-1                       .V SYNC H

109: C4-1 P1/9-1                            .VIDEO IN
```

MONITERM CORPORATION

OPERATING MANUAL

VR-SERIES

7180 SHADY OAK ROAD EDEN PRAIRIE, MINNESOTA 55344

(612) 941-8383

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I. GENERAL

The Moniterm VR series display monitor utilizes the latest advances in integrated circuits and switching technology teamed with a high performance CRT. Horizontal frequencys are available from 32 KHZ to 68 KHZ and retrace times as low as 2.8 u seconds.

A separate modular high voltage supply allows wide variations in displayed video without changing brightness levels or display blooming, allowing the display designer to use visual attributes such as; reverse video, blink, and reverse blinking video without ill effects. This high voltage supply also allows a wide range of horizontal retrace times. This is very helpful in applications where the display drive logic has bandwidth limitations.

Environmental

Temperature Range: Operating: 10C to 50C (50F to 122F)
Transit storage: -40C to 85C (-40F to 185F)
Humidity: 5% to 90% (non-condensing)
Altitude: Operating: up to 10,000ft (3.0 km)
Transit Altitude: up to 40,000ft. (12.2 km)
X-RADIATION
The monitors comply with DHEW standard 21-CFR-sub chapter J when the monitor is operated within the specified input voltage limits.

WEIGHTS	FULL BODYSHIELD
VR-15-21	VR-15 2.5 pounds
VR-17-27	VR-17 4.0 pounds
VR-19-33	VR-19 5.25 pounds

Low Voltage Power Supply: 6 pounds
Low Voltage Power Supply Shield: 1 pound

Geometric Distortion - sweep non-linearities and pin cushion distortion exceed the requirements of EIA STD RS-375A.

Internal Controls (See Adjustment Section)

Horizontal width	Horizontal Hold
Horizontal Linearity	Horizontal Dynamic Focus
Vertical Hold	Vertical Size
Vertical Top Bottom Linearity	Vertical Linearity
Vertical D.C. Centering	Vertical Dynamic Focus
Final Anode Voltage	D.C. Focus
Brightness	Video Contrast

Optional Controls

Remote Brightness: 100K 1/2watt potentiometer.With the remote brightness option the internal brightness control is a range control.
Remote Contrast: TTL Video 5K ohm 1 watt potentiometer
ECL Video 500 ohm 5 watt potentiometer

II. POWER INPUT

The monitor's power input connector is a Molex #22-27-2041 4 pin connector configured as follows:

Pin # 1	+48vDC
Pin # 2	GND
Pin # 3	GND
Pin # 4	+32vDC

*For Power requirements see the power dissipation chart

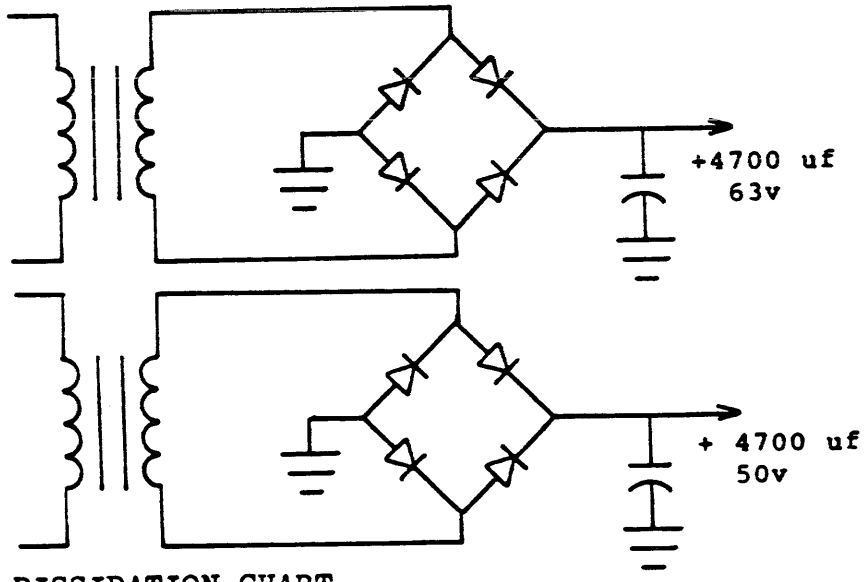
III. MATING CONNECTOR

The power input connector should be mated to Molex #22-01-2045

The Molex pin for this connector is #08-50-0136

IV. POWER SUPPLY CIRCUIT

Since the deflection board has on board regulators, the raw D.C. power circuit shown below is satisfactory.



V. POWER DISSIPATION CHART

Average D.C. Power	15P	15L	17P	17L	20P	20L
+48v ± 10% (50 KHZ Horizontal)	875ma	1.0a	950ma	1.0a	950ma	1.1a
+32v ± 10% (50 KHZ Horizontal)	650ma	550ma	750ma	600ma	800ma	650ma
+48v ± 10% (64 KHZ Horizontal)	875ma	1.1a	950ma	1.1a	950ma	1.1a
+32v ± 10% (64 KHZ Horizontal)	650ma	550ma	750ma	600ma	800ma	650ma

Moniterm supplied low voltage power supply

Input voltage 100v, 120v, 220v, 240v, RMS 50/60 HZ
programming card selectable

VI TTL INTERFACE SPECIFICATIONS

(Connector Molex #09-75-1061)

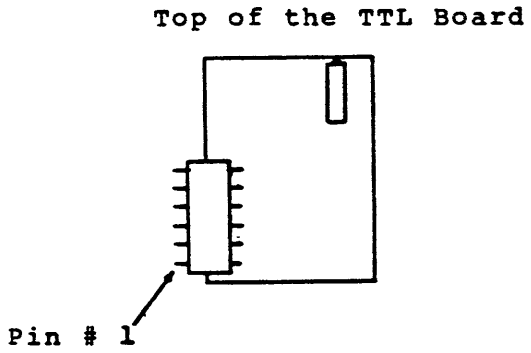
Pin out	
Vertical Sync	1
GND	2
Horizontal Sync	3
GND	4
Video (1 Banks)	5
GND	6

For Sync Specifications see separate Syncs

MATING CONNECTOR

Molex #09-50-3061

Molex Pin # 08-50-0106



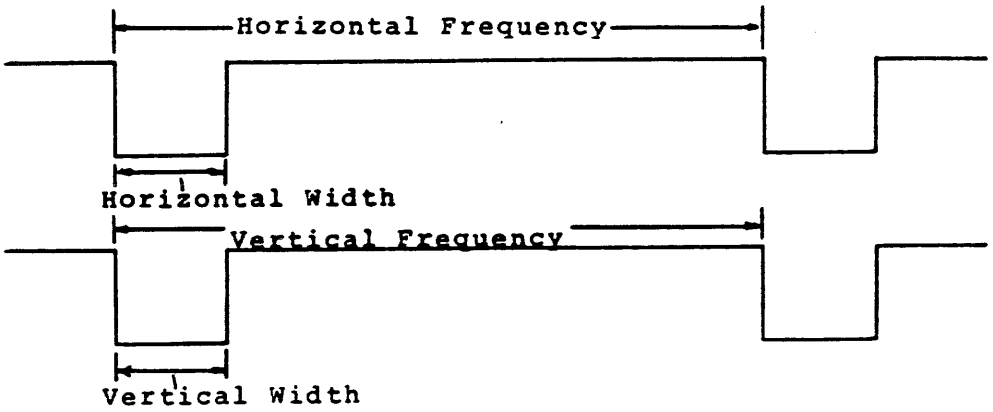
TTL VIDEO

Amplitude	Input Impedance	Video Rise and Fall Time
Low Level (0.0 to 0.8v)=white	220/330ohm Termination to +5v (130ohm)	4 n sec
High Level (+2.0v to +5.2v)=black		

VII SEPARATE SYNCS SPECIFICATION

	Amplitude	Input Impedence	Frequency	Width	Rise and Fall Time
Horizontal Sync	TTL compatible phase locks to negative edge LL=0.0 to 0.8v HL=2.0 to 5.2v	220/330ohm termination to +5v (130ohm)		150ns-5us	TTL comp.
Vertical Sync	TTL compatible negative edge Sync LL=0.0 to 0.8v HL=2.0 to 5.2v	220/330ohm termination to +5v (130ohm)	45-65HZ* (other frequencies available as an option	100ms-300ms	TTL comp.

* If a refresh rate of anything other than 60.0HZ is chosen the low voltage power supply transformer must be shielded with a mumetal shield to prevent a vertical swim problem in the monitor. For countries with 50HZ power, the refresh rate must be 50HZ to prevent the same problem.



VIII ECL INTERFACE SPECIFICATIONS

Specifications: Logic levels shown below gives video on=white, reverse levels for video off=black

Signal	Connector
Most significant (2^2) bit outer shell is high (-.96v to -.81v) Center is low (-1.85v to -1.65v)	J1
Second most significant (2^1) bit outer shell is High (-.96v to -.81v) Center is low (-1.85v to -1.65v)	J2
Least significant (2^0) bit outer shell is high (-.96v to -.81v) Center is low (-1.85v to -1.65v)	J3

J1,J2,J3, are BNC connectors

ECL VIDEO

Amplitude	Input Impedance	Video Bandwidth	Rise and Fall Time Video Amp
Center conductor (-1.85v to -1.65v)	75ohm without -2v or -5.2v Pulldown	82 MHZ	(10% to 90%) 4.5n sec

Outer shell
(-.96v to -.81v)

Logic levels above video on = white
Reverse levels for video off = black

IX SEPARATE SYNCS - ECL VIDEO BOARD

Signal	Connector Molex (#09-75-1061)J7	Amplitude	Input impedance
Vertical Sync Input	1	TTL compatible negative edge sync	120/180 ohm termination to +5v (72ohm)
GND	2		
Horizontal Sync Input	3	TTL compatible Phase locks to neg. edge	120/180ohm termination to +5v (72ohm)
+5v output (100ma max)	4		
GND	5		
-5v output (100ma max)	6		

J7 Mating connector
Molex # 09-50-3061
Molex Pin # 08-50-0106
See silkscreen drawing for connector layout
See separate syncs page for sync specifications
See ECL interface page for video specifications

X COMPOSITE SYNC - ECL VIDEO BOARD

Signal	Connector	Amplitude	Input impedance
Vertical Sync & Horizontal Sync	(BNC)J4	TTL compatible *LL=0.0 to 0.8v *HL=+2.0 to +5.2v	120/180 ohm termination to +5v (72ohm)

*Low Level *High Level

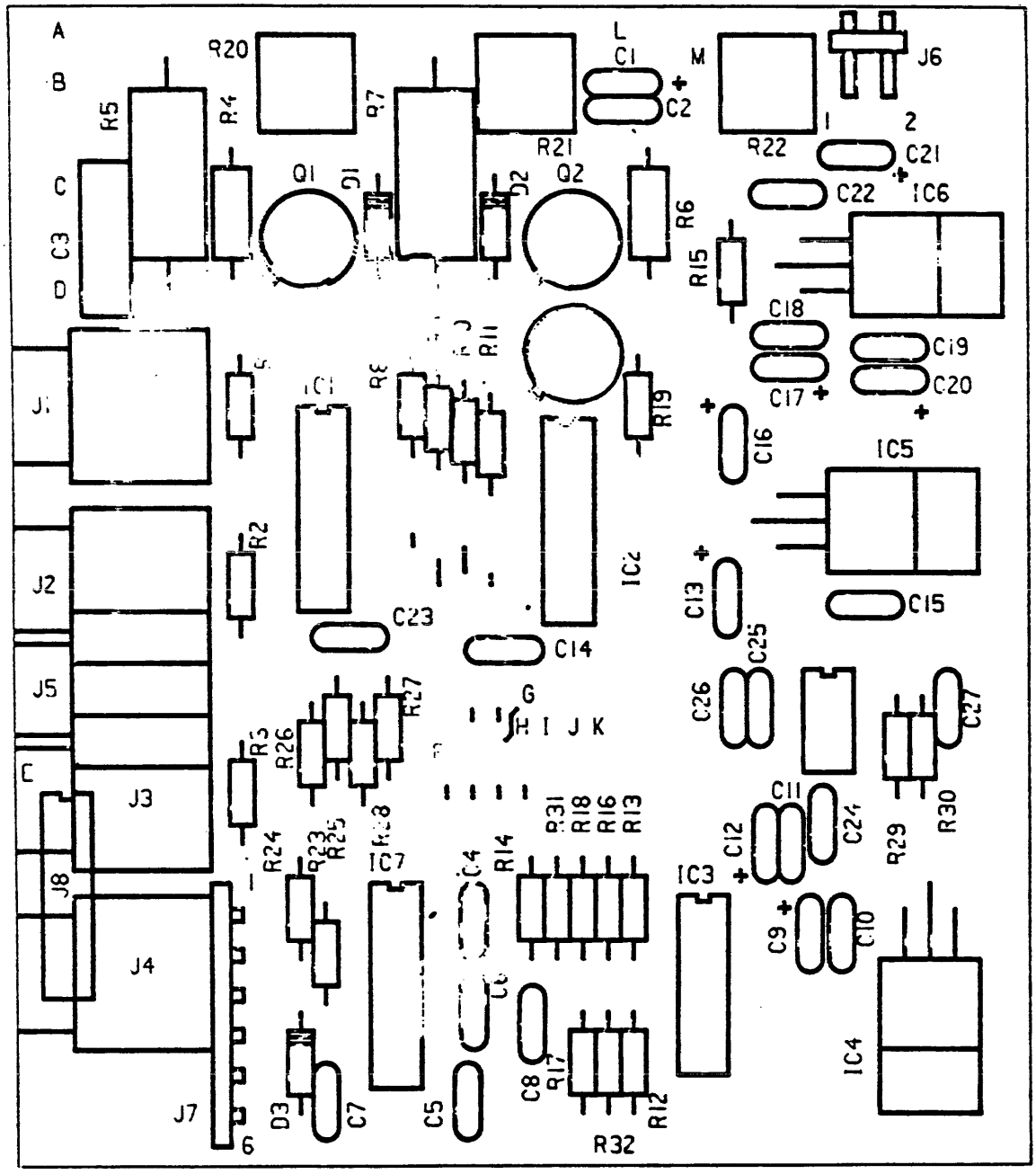
See composite Sync wave form

XI TWO LEVEL COMPOSITE VIDEO

Signal	Connector	Amplitude	Input impedance
Two level composite video	(BNC) J4	Video-Two comparators adjustable from +2.5v to -3.5v Sync-comparator adjustable from +3.5v to -3.5v	75ohm to GND DC coupled

See Two Level Composite Video Option write up

XII ECL BOARD ASSEMBLY



DTL820501 SILKSCREEN

SECTION B DISPLAY TIMING

I Horizontal Timing

The Moniterm Specification includes "back porch" retrace and "front porch" intervals. Since the retrace is phase locked to the falling edge of the sync pulse, and actually starts slightly before it, at least one blank character after the last display character position is recommended. Delaying the horizontal sync additional time causes the display to shift left; thus the user can center the display external to the monitor.

Horizontal Scan	Retrace Time	Video Time
64KHZ ± 5%	*3.5 u sec max	11.5 u sec
50 KHZ ±5%	*5 u sec max	15 u sec

*These retrace times are maximum numbers. Since we are using a regulated High Voltage supply, faster retrace times are available. The retrace time and horizontal frequency can be customized to the customer's requirements.

II Vertical Timing

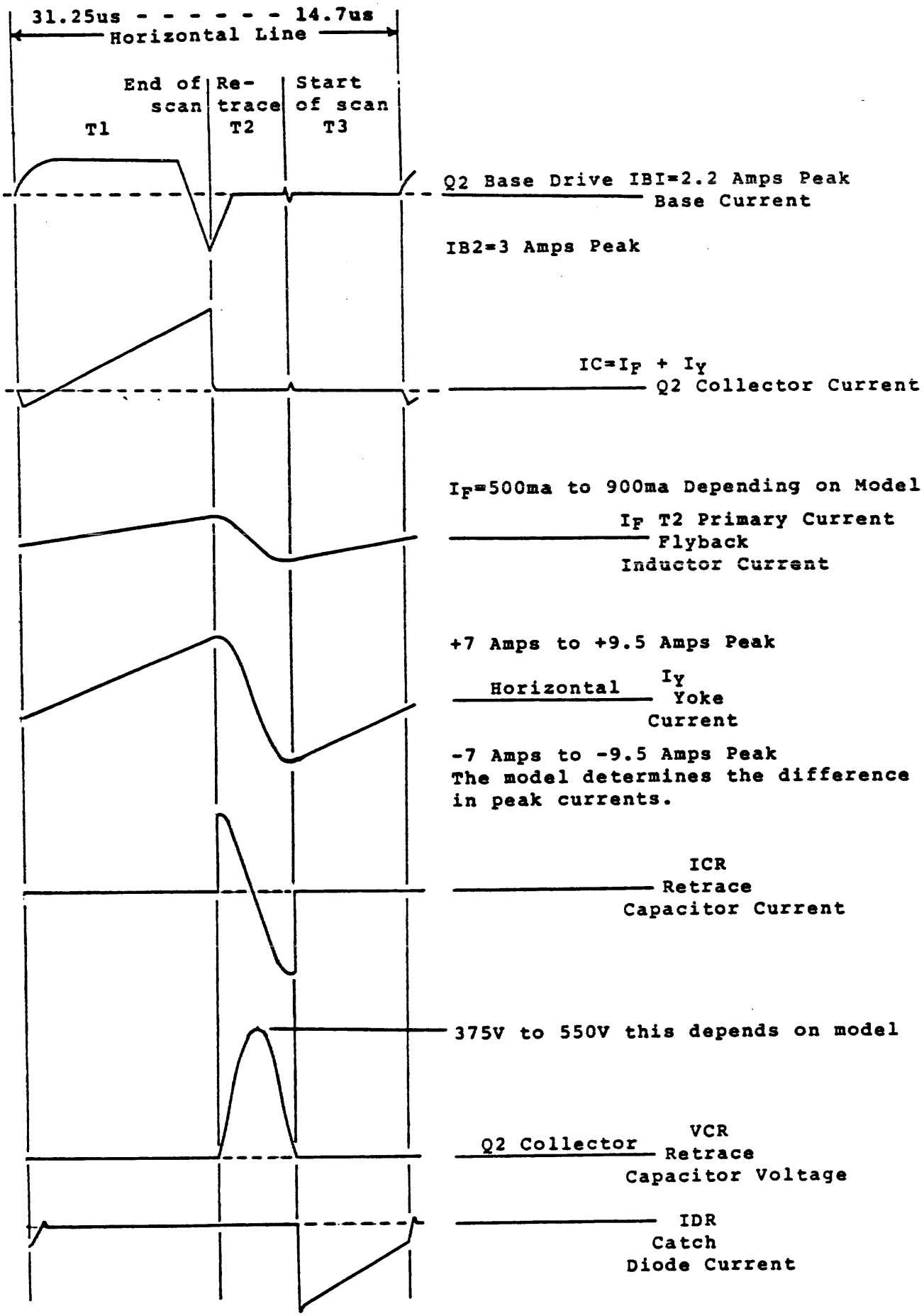
The vertical retrace is initiated on the falling edge of the vertical sync. Best results are obtained if this coincides with the horizontal sync or occurs during horizontal sync. For an interlaced display on alternate frames vertical sync is delayed one half the horizontal time, 7.5us for a 64KHZ horizontal. In any case, total vertical refresh should be a discrete function of the horizontal scan.

The vertical retrace interval is specified at 667us of which approximately 1/2 is beam retrace and 1/2 is settling time. The display is blanked only during the retrace interval. The additional raster lines are available for display although non-linearities are present.

Vertical sync can occur immediately after the last scan of the last display row. Delaying vertical sync additional scan times causes the display to move upward which can facilitate vertical centering or a very smooth scroll, raster by raster (panning).

The vertical oscillator free runs and is factory preset at 7% lower than nominal and will sync to signals initially + 7% from nominal. As with the horizontal setting, any unit for utilization at other than 60HZ should be specified so that vertical lock can be assured.

For the height, sync, and linearity adjustments, see the adjustment section.



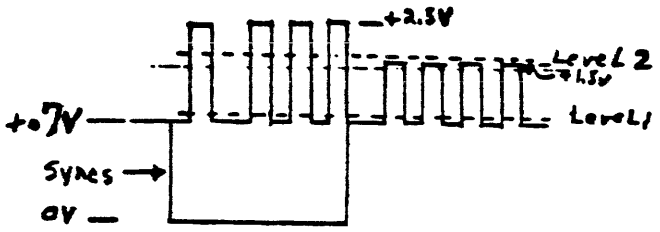
Basic Horizontal Output Waveforms

III TWO LEVEL COMPOSITE VIDEO OPTION

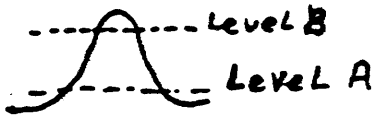
The Two Level Composite Video Interface uses an ECL comparator to sense two discrete video levels. These two levels are set by potentiometers R20 and R21 and can be adjusted between +2.5 to -3.5V.

The Sync is also sensed by a comparator and adjusted by potentiometer R22. The level may be adjusted between +3.5 to -3.5V.

To adjust the Video Comparators, set channel 1 to Video and channel 2 to D.C. potentiometer level. IC7 pin 5 is Level 1 and IC 7 pin 11 is Level 2.



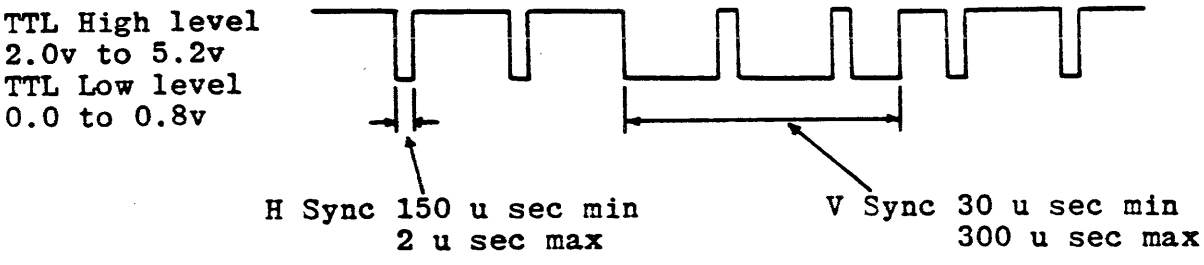
For the example shown, Level 1 would be adjusted to +0.7 V plus the noise level. Level 2 would be +1.5 V plus the noise level. For best rise and fall time of the video the comparators should be adjusted as close to the beginning of the desired video level as possible. An example is shown below.



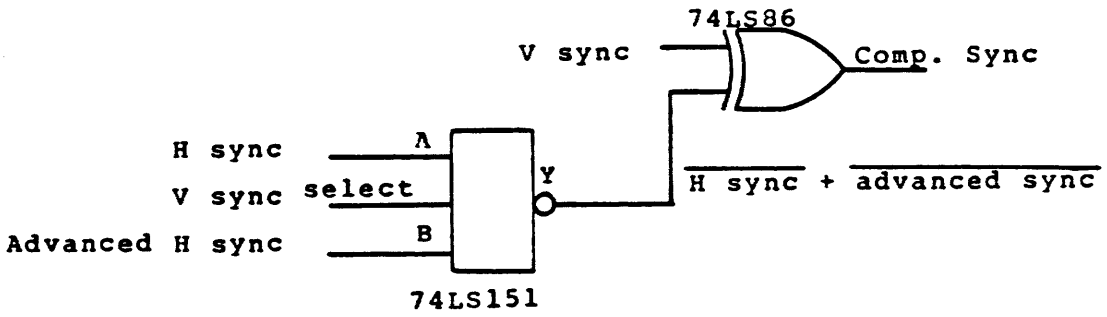
If the video is adjusted to Level A, the single dot characters and the double dot characters will appear the same intensity level. However, if the comparator were set to Level B, the double dot characters would be brighter than the single dot characters.

IV COMPOSITE VIDEO SYNC

The Sync should be provided as shown below



Note that the Horizontal Sync is advanced by the pulse width of the Horizontal Sync during Vertical Sync. This is done so the Phase Lock isn't out of lock at the end of Vertical Sync. The Phase Lock requires several scan lines to sync up once it is out of lock. A possible curcuit is shown below.



C. THEORY OF OPERATION

I. Horizontal Section

IC 3 CD4046 is a phase lock loop (PLL) that drives the horizontal section. The internal oscillator frequency of the PLL is controlled by P2, R9, and C5. The sync input to the PLL is capacitively coupled from Pin G on the video board into Pin 14. The PLL syncs on the positive edge of the H sync pulse. The output of the PLL drives (Pin 4) the gate of the power MOS FET transistor, Q_1.

The drain current of Q_1 is transformer coupled through T1 which provides the base drive for Q_2 (the horizontal output transistor). The horizontal retrace pulse from Q_2 is coupled through the voltage divider of R14 and R11 and is clamped to +12v by Zener diode D4.

This +12v pulse is brought back into the phase comparator of the PLL via Pin 3 of IC3. The output of the phase compactor is low pass filtered at Pin 13 of the PLL by the combination of R6, R10, and C17. The error voltage of the low pass filter is brought into Pin 9, the input to the PLL voltage controlled oscillator (VCO). The VCO sets the frequency of the PLL output (Pin 4). This horizontal drive is directly proportional to the input voltage.

The horizontal yoke has a saw tooth current that swings from +7 amps to -7 amps peak for 15" portrait models, and +9.5 amps to -9.5 amps for the Landscape models. Q_2 clamps the positive yoke voltage to the saturation voltage of the transistor during the positive yoke current. Catch diode D6 clamps the negative yoke voltage during the negative yoke current. When Q2 is turned off the transition from + to - yoke current C23, 24, and 25 in combination with the horizontal yoke inductance sets the horizontal retrace time. The retrace time voltage wave form is half sine wave called the flyback pulse. The flyback pulse in combination with D5, T2 primary inductance, and C21, determines the boost voltage for the horizontal drive. The boost voltage sets the horizontal energy level and determines the horizontal width. The flyback pulse is stepped down through T2 to provide raw +10v and -10v. The +10v is regulated through IC4 which provides +6v for the CRT filament. The raw +10v and -10v are provided to the video boards via pins I and K respectively. The +10v is regulated on the video board to provide +5v for the TTL logic. The -10v is regulated to -5.2v for the ECL logic.

Horizontal Section Continued

The horizontal yoke current goes through the linearity coil L1 through S caps C31 and C32 (which help control horizontal linearity) into the horizontal dynamic focus section where the S correction voltage is capacitively coupled through C33 into the primary of T3. The horizontal dynamic focus voltage is stepped up in the secondary of T 3 to approximately 300v and capacitively coupled into the focus grid through C 34 via blue wire 4.

The vertical dynamic focus is brought off C40 and capacitively coupled into the base of the transistor Q_3. The collector of Q_3 drives producing approximately 250v of vertical dynamic focus.

Power to the horizontal section is provided by the output of IC 1 which provides a maximum of 40v, adjusted by the horizontal width pot P1.

The high voltage power supply provides +1000v and -110v. The 1000v is divided to approximately 500v through P8 and R28 to drive the brightness grid on red wire 3. Also the brightness voltage can be controlled through the brightness transistor Q_4, which is controlled by the op amp IC6 and the remote brightness pot. The 1000v is also divided by R27 and P7 to provide approximately 350v of focus voltage on blue wire 4. The -110v goes through D10, R11, and Zener D11 to control grid green wire 2, which is at about -57v at full contrast. The -110v has a "spot killer" circuit consisting of R31, C48, and D10, that holds a negative voltage on the control grid to avoid burning a spot in the CRT after AC power is removed. Power to the high voltage supply is provided by the output of regulator IC2 at approximately 25v.

II VERTICAL SECTION

VERTICAL DEFLECTION CIRCUIT

The heart of the vertical deflection circuit is IC5, the TDA 1170. The IC performs four major functions.
A Power Amplifier and Ramp Generator
Internal Oscillator
Voltage Doubler
Sync Input
The power amplifier provides the power to the vertical yoke from pin 4 of IC5. A current of 1 amp p-p is supplied to the vertical section of the yoke. The yoke current is capacitively coupled through C40 into the sense resister R21. The sense resistor converts the yoke current into a 1v p-p voltage which is compared against the ramp out of pin 10, and includes the S correction for the vertical axis. This S correction is adjusted by the linearity correction pots P5 and P6.
The Internal Oscillator is set by the RC network R23, C43, and P3. It normally runs in the range from 45-63 Hz.
The input voltage of 25 volts on pin 2 from regulator ICI, is doubled to 50 volts in the doubling circuit D9, C36, and C35. The 50 volt output on pin 3 is used for the vertical flyback. Vertical sync input comes in on pin 8 from pin F on the video board connector which is driven by the LS14 on the video board. This vertical sync input IC4 clamps the sync voltage at .7 volts.

Power to the vertical section is provided by the output of IC2 which generates a voltage of approximately 25 volts.

III TTL VIDEO BOARD THEORY OF OPERATION

The TTL video board has a video driver transistor Q1, collector supply voltage regulator IC1, and input buffer IC3, sync buffer IC4, and a +5v regulator (IC2) to drive IC3 & IC4.

The video driver transistor Q1 is a common emitter driver that swings between +30v and +1.8v. The +30v is produced by regulator IC1, TI 783CKC. The regulator is adjustable from 0v to +30v with the contrast Pot P1. This produces the same voltage swing on the cathode (collector of Q1) and also adjusts the control grid G1 from -91v to -61v.

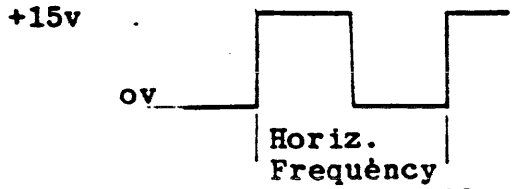
Q1 is kept out of saturation (VCE +1.8v) by the combination of clamp diodes D3 & D4 & the VBE drop of Q1. Peaking inductor L1 speeds up the transistion time from +1.8v to +30v. IC3 (74S04) provides the base drive for Q1.

IC4 (74S14) inverts the horizontal and vertical sync inputs and drives the horizontal phase lock (CD4046) and the vertical deflection IC (TDA1170) on the deflection board. The TDA1170 clamps sync inputs to +.7v and R5 limits the current draw from IC4.

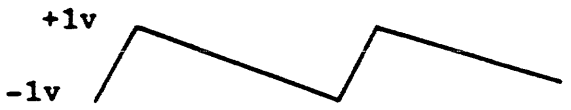
IV ECL VIDEO THEORY OF OPERATION

The ECL video board has a common base video transistor Q1 that drives the cathode and a second common base video transistor Q2 that is capacatively coupled into the control grid (G1). The emitter current of Q1 & Q2 is controlled by IC1 & IC2 (MC10115) defferential input ECL receivers. The emitter follower outputs of IC1 & IC2 are wire-ored, this keeps Q2 off when Q1 is on. Three discrete emitter current levels (60ma, 30ma, 15ma) can be switched into eight different combinations. This emitter current is translated into a voltage change by collector load resistors R4 & R7. As the cathode voltage (Q1 collector) goes from +25v to +9v the control grid voltage (D) goes from -82v to -67v. This collector voltage swing, produced by 100ma of current, gives a differential voltage swing of approximately 30v.

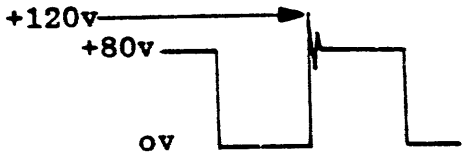
Also on the board are a series of 74LS14 inverters that are used to drive the horizontal and vertical sync inputs.



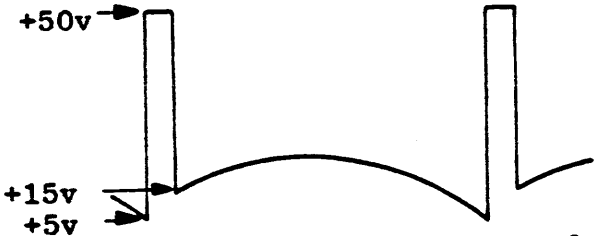
Pin 4 of IC3 and
Gate of Q1



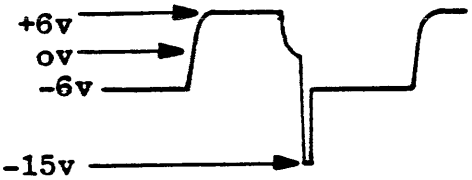
Vert. Freq.
R21 or - side of C40



Pin 2 of T1 or
Q1 drain



Ic5 Pin 4 or function of C39 and R17

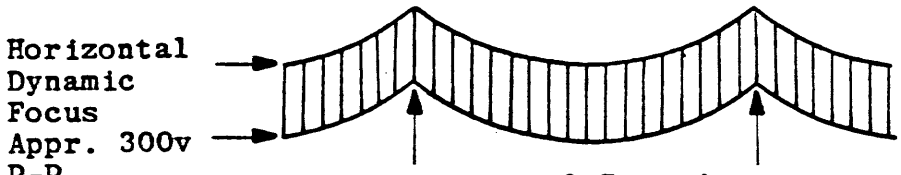


Pin 6 of T1 or Transformer
side of R30, R42, R43

+ side of C40 or yoke side of R16

C31 and C32 or Lin coil side
of C51

Collector of Q3

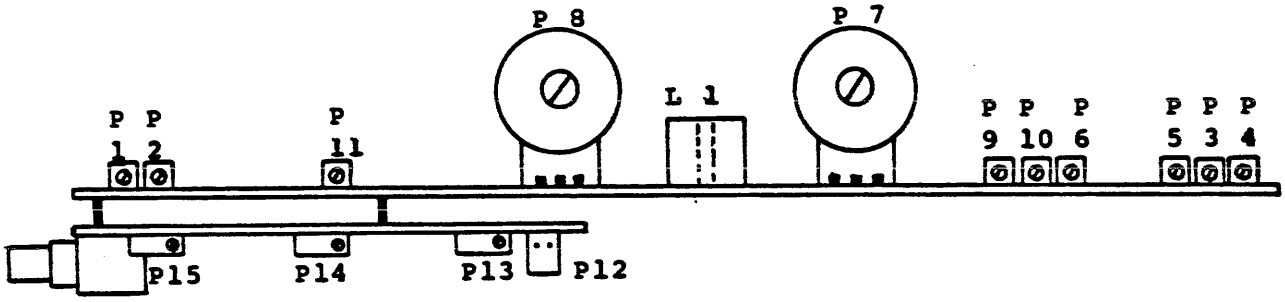


Vertical Dynamic
Focus Appr. 250v P-P

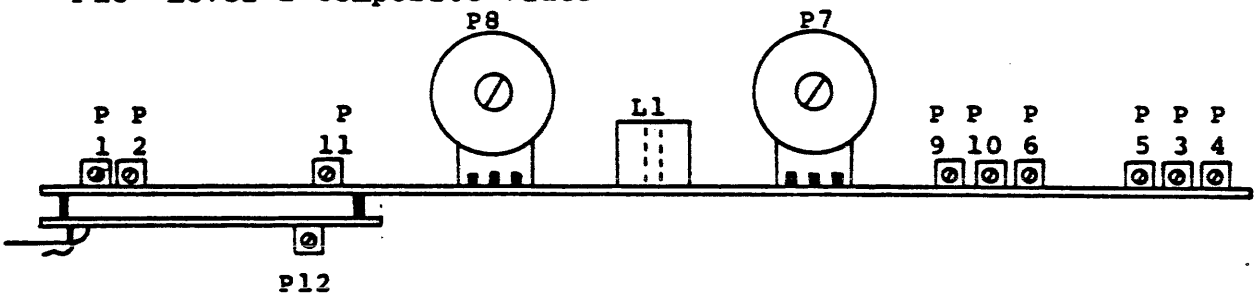
The dynamic focus voltages vary somewhat from model to model.
Wave form at the junction of C34 and R26.

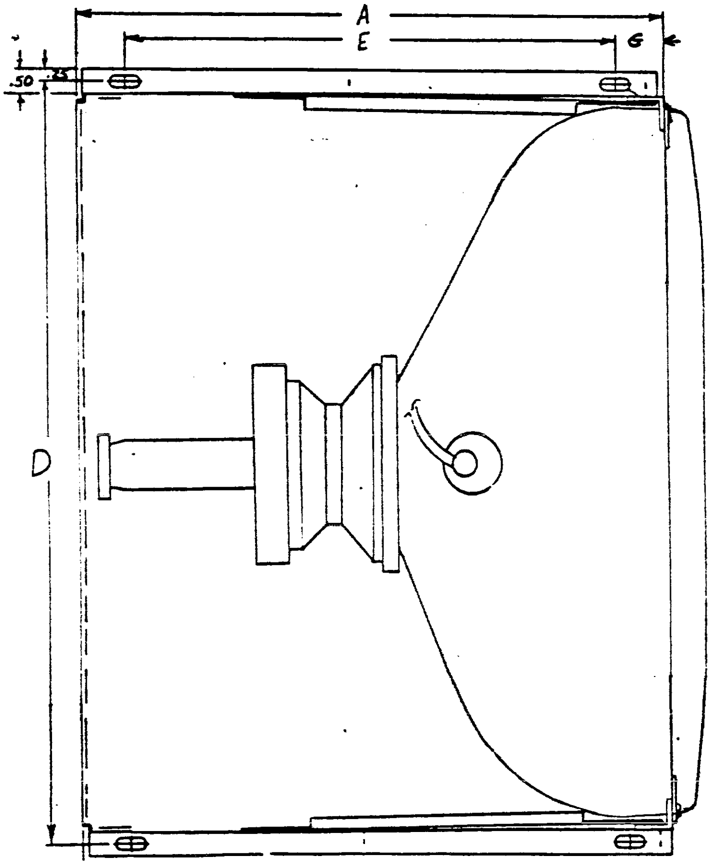
P1 Horizontal Width
P2 Horizontal Hold
P3 Vertical Hold
P4 Vertical Size
P5 Vertical Top Bottom Linearity
P6 Vertical Linearity
P7 D.C. Focus
P8 Brightness
P9 Vertical D.C. Centering
P10 Vertical Dynamic Focus
P11 Horizontal Dynamic Focus
P12 Video Contrast Connector
P13 Composite Sync Level
P14 Level 1 Composite Video
P15 Level 2 Composite Video

L1 Horizontal Linearity

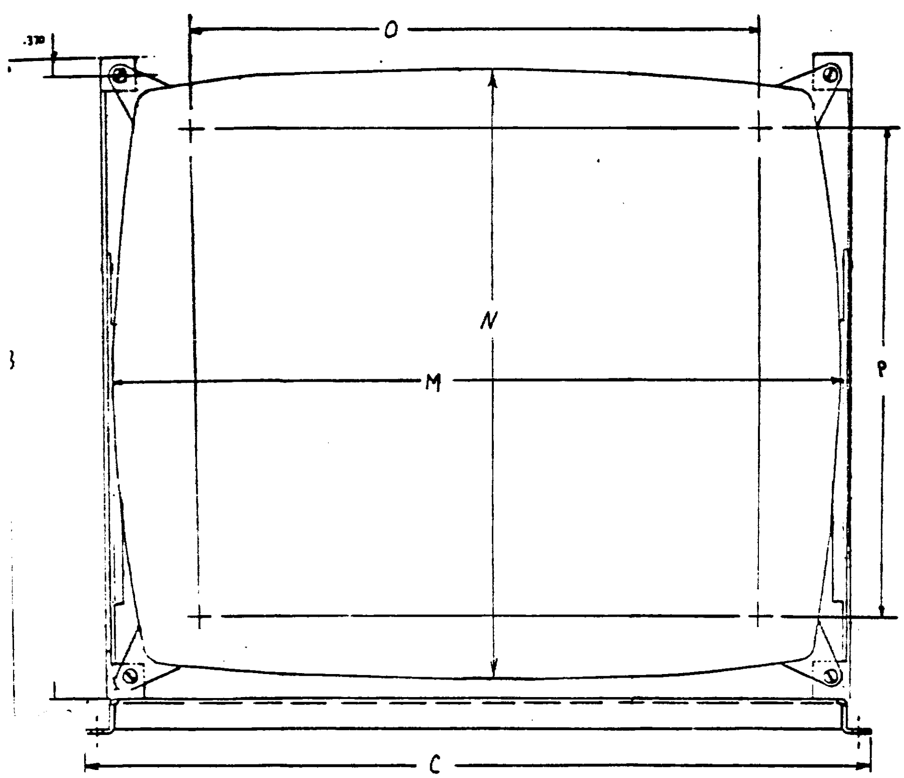


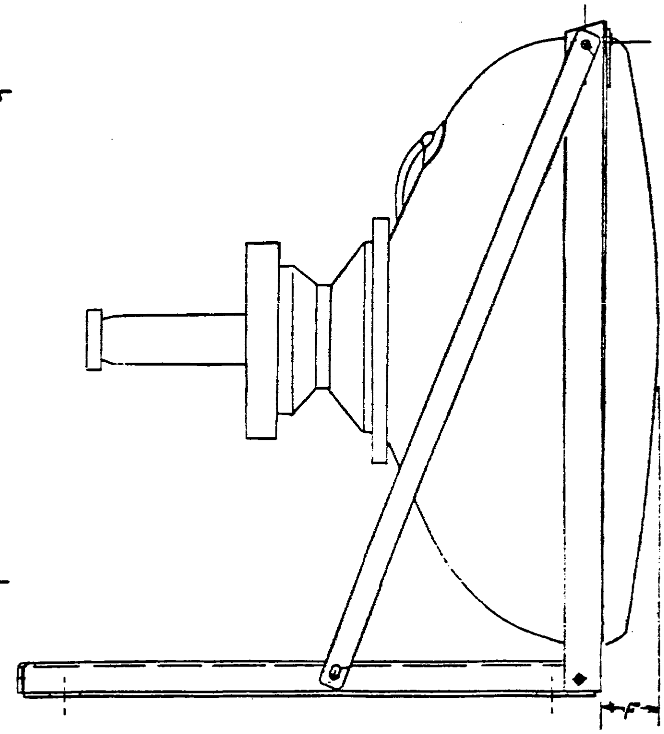
P1	Horizontal Width	L1	Horizontal Linearity
P2	Horizontal Hold		
P3	Vertical Hold		
P4	Vertical Size		
P5	Vertical Top Bottom Linearity		
P6	Vertical Linearity		
P7	D.C. Focus		
P8	Brightness		
P9	Vertical D.C. Centering		
P10	Vertical Dynamic Focus		
P11	Horizontal Dynamic Focus		
P12	Video Contrast Connector		
P13	Composite Sync Level		
P14	Level 1 Composite Video		
P15	Level 2 Composite Video		





		15"	17"	20"
A		12.25	13.25	13.25
B		11.40	12.50	14.60
C		14.10	16.50	18.20
D		13.60	16.00	17.70
E		9.00	10.25	10.25
F		1.25	2.25	2.40
G		2.25	2.00	2.00
M		13.00	15.00	17.00
N		10.00	12.00	12.90
O		10.14	12.15	13.50
P		7.56	9.10	1.17





Rev. C

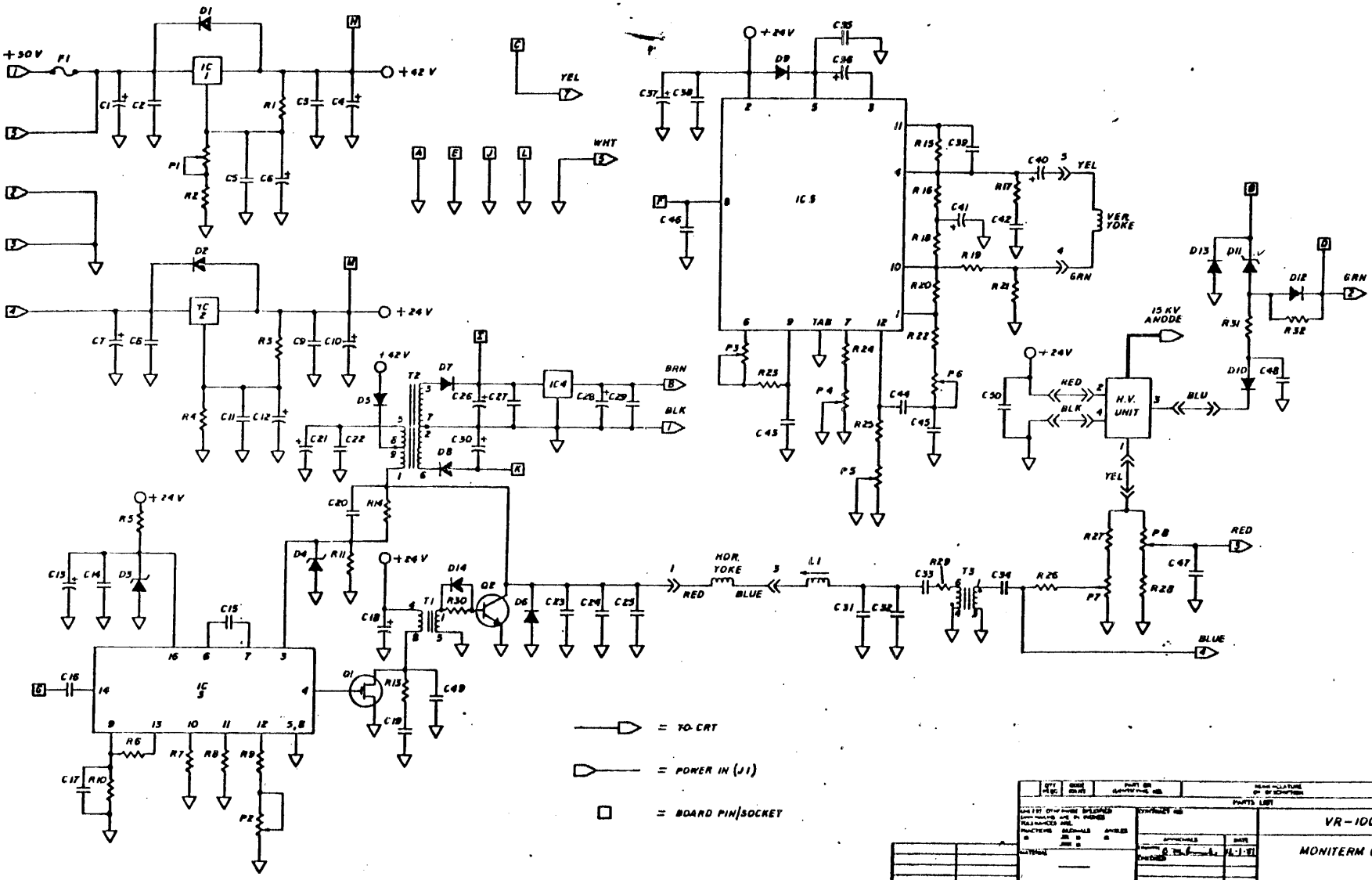
MONITERM CORPORATION

CRT MONITOR

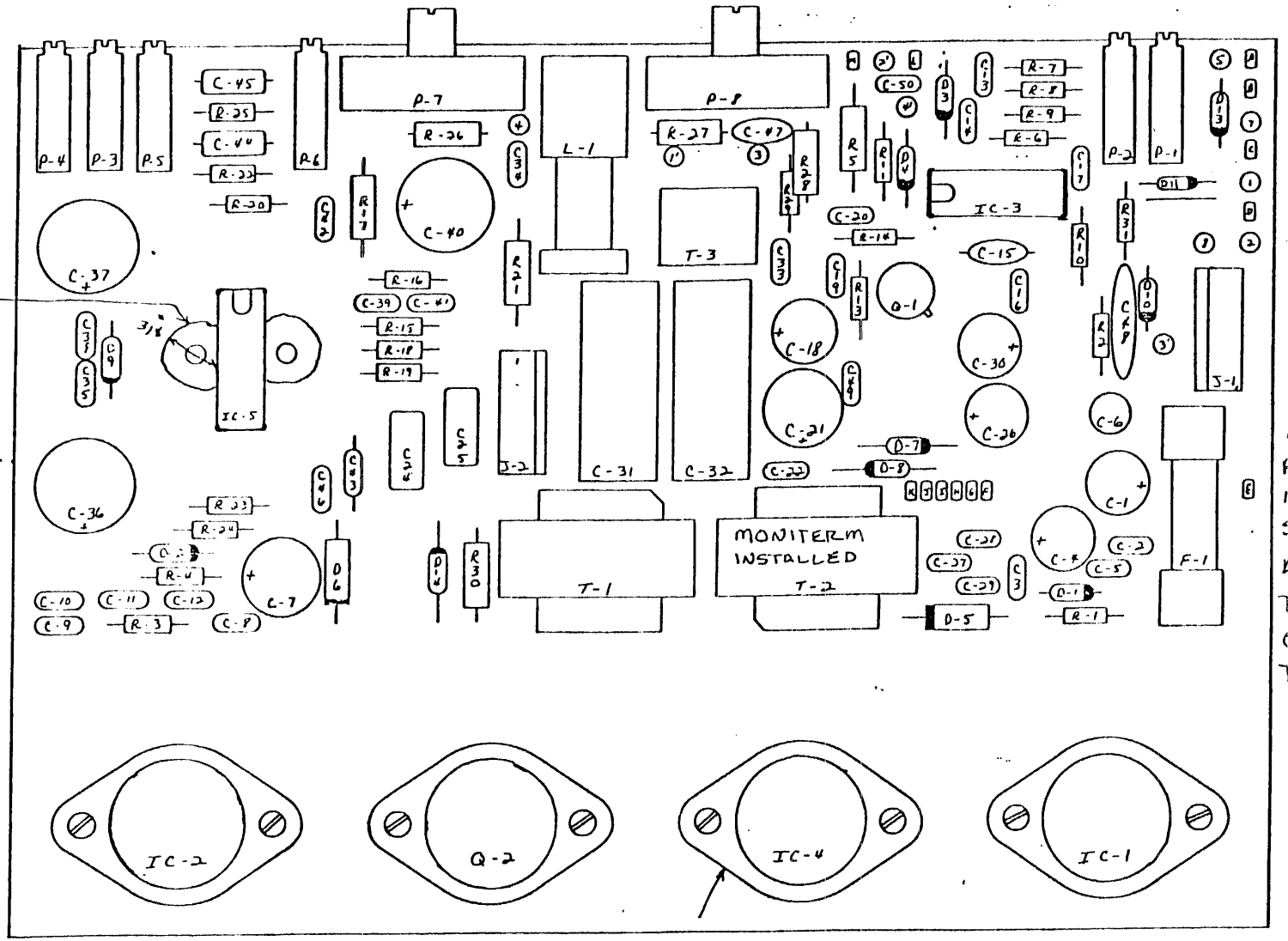
.093 Alum.

BLACK ANODIZE 110_SERIES

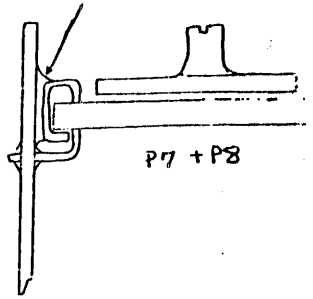
80010L



VR-1000	
MONITERM CORP.	
81001	



SOLDER HERE



SOLDER
3/8" DIA.
AROUND

NOTE!
REMOVE SOLDER MASK FROM SOLDER SIDE OF BOARD SO T1 AND T2 MOUNTING TABS CAN BE BENT OVER AND SOLDERED TO GROUND PLANE.

NO INSULATING PAD UNDER IC-4

TOLERANCES	REVISIONS	Moniterm	
		DEFLECTION BOARD - ASSEMBLY	
			80100-C

Rev C 12-8-82

PARTS LISTINGS
BILL OF MATERIALS
PART NUMBER ORDER

7-15-82
Rev E

BOM	QTY	Part Number	Reference Designation	Description	Manufacturers & Parts Number
A	1	140-1076-00	C7	CAP 100mf 63V ALUMINUM	SPRAGUE(503D107G063PE) or equiv.
A	2	140-2271-00	C26,C30	CAP 220mf 16V ALUMINUM	SPRAGUE(503D220F06ND) or equiv.
A	2	140-2275-00	C4,C18	CAP 22mf 50V ALUMINUM	SPRAGUE(672D226H050CG5C) or equiv.
A	1	140-2761-00	C21	CAP 27mf 100V ALUMINUM	SPRAGUE(672D276H100DM5C) or equiv.
A	1	140-3366-00	C1	CAP 33mf 63V ALUMINUM	SPRAGUE(503D336F063NC) or equiv.
A	1	140-4756-00	C6	CAP 4.7mf 63V ALUMINUM	WIMA (503D475G063LA) or equiv.
A	3	140-4775-00	C36,C37,C40	CAP 470mf 50V ALUMINUM	SPRAGUE(503D477F050QG) or equiv.
A	1	142-0221-00	C39	CAP 22pf 1KV CERAMIC	CENTRALAB(DD-220) or equiv.
A	1	142-1021-00	C46	CAP 1000pf 1KV CERAMIC	CENTRALAB(DD-102) or equiv.
A	2	142-1031-00	C16,C19	CAP .01mf 100V CERAMIC	SPRAGUE(TG-S10) or equiv.
A	1	142-1033-00	C47	CAP .01mf 3KV CERAMIC	SPRAGUE BLS-10
A	15	142-1041-00	C2,C3,C5,C8,C9,C11,C14,C22,C27,C29 C33,C42,C35,C38,C50	CAP .1mf 100V CERAMIC	ERIE(8131-100-651-104m) or equiv.
A	1	142-1045-00	C48	CAP .1mf 500V CERAMIC	SPRAGUE(5GA-P10) or equiv.
A	2	142-2211-00	C17,C49	CAP 220pf 1KV CERAMIC	CENTRALAB(DD-221) or equiv.
A	1	142-4711-00	C34	CAP 470pf 1KV CERAMIC	CENTRALAB(DD-471) or equiv.
A	2	144-1062-00	C13,C28	CAP 10mf 25V TANTALUM	SPRAGUE(196D106X9025KA1) or equiv.
A	1	144-2261-00	C41	CAP 22mf 16V TANTALUM	SPRAGUE(196D226X9016KA1) or equiv.
A	2	144-4755-00	C10,C12	CAP 4.7mf 50V TANTALUM	SPRAGUE(196D475X9050KA1) or equiv.
A	2	146-1500-00	C31,C32 (Test-Select all units)	CAP 1.5mf 250V FILM	WIMA MKP10 (See amendment)
A	3	146-6836-00	C23,C24,C25(Test-Select all units)	CAP .0068mf 600V FILM	SPRAGUE(715P68256JD3) or equiv. (See Amendment)
A	3	146-1041-00	C43,C44,C45	CAP .1mf 5% 100V FILM	SPRAGUE(225P10451WD3)
A	1	148-1021-00	C15	CAP 1000pf 5% MICA	CDE19FD102J03) only
A	5	160-4004-00	D1,D2,D9,D10,D13	DIODE IN4004	ANY
A	3	160-4933-00	D7,D8,D14	DIODE IN4933	ANY
A	2	160-8560-00	D5,D6	DIODE MR856	MOTOROLA or equiv.
A	1	164-5240-00	D4	DIODE IN5240A	ANY
A	1	164-5242-00	D3	DIODE IN5242B	ANY
A	1	164-5270-00	D11	DIODE IN5270A	ANY

PART NUMBER ORDER

BOM	QTY	Part Number	Reference Designation	Description	Manufacturers & Parts Number
A	1	200-3002-00	F1	Fuse 2A SLO-BLO	Little Fuse (313002) or equiv.
A	4	282-0874-00		Pins male	AMP #60874-1
A	2	280-1051-00	J1,J2	Connector(5 pin)	MOLEX 09-65-1051
A	13	282-2202-00		Pins (female)	SAMTEK SS-220-T-2 or equiv.
A	1	284-2160-00	S1	Socket I.C. 6 Pin	AUGAT (216-AG 29D) or equiv.
A	1	320-0430-00	L1	Linearity Coil	Coil Craft (C043)
A	2	400-1040-00	P3,P4	POT 100K	BOURNS 3006-P or equiv.
A	1	400-5020-00	P1	POT 5K	BOURNS 3006-P or equiv.
A	3	400-5030-00	P2,P5,P6	POT 50K	BOURNS 3006-P or equiv.
A	2	402-2550-00	P7,P8	POT 2.5M 1 Turn	CTS (HR 3454) only
A	1	422-1016-00	Q2	TRANSISTOR MJ10016	MOTOROLA only
A	1	424-9000-00	Q1	TRANSISTOR VN90AB	SILICONIX or equiv.
A	1	440-0135000	R21	RES 1 ohm 5% 3W W.W.	SPRAGUE (242E1ROJ) or equiv.
A	1	440-0335-00	R17	RES 3.3 ohm 5% 1W CAR.	ANY RC32
A	1	442-0104-00	R29	RES 10 ohm 5% ¼W CAR.	ANY RC07
A	1	442-0825-00	R30	RES 82 ohm 5% ¼W CAR.	ANY RC20
A	1	442-1022-00	R5	RES 1K ohm 5% ¼W CAR.	ANY RC20
A	1	442-1034-00	R11	RES 10K ohm 5% ¼W CAR.	ANY RC07
A	3	442-1052-00	R26,R27,R28	RES 1M 5% ¼W CAR.	ANY RC20
A	1	442-2212-00	R13	RES 220 ohm 5% ¼W CAR.	ANY RC20
A	2	442-2244-00	R10,R15	RES 220K ohm 5% ¼W CAR.	ANY RC07
A	1	442-3334-00	R31	RES 33K ohm 5% ¼W CAR	ANY RC07
A	1	442-4724-00	R6	RES 4.7K ohm 5% ¼W CAR.	ANY RC07
A	2	442-4734-00	R7,R14	RES 47K ohm 5% ¼W CAR.	ANY RC07
A	1	444-1002-00	R22	RES 10K ohm 1% ¼W FILM	ANY RN55D
A	1	444-1003-00	R24	RES 100K ohm 1% ¼W CAR.	ANY RN55D
A	2	444-1913-00	R23,R25	RES 191K ohm 1% ¼W FILM	ANY RN55D
A	2	444-2002-00	R16,R18	RES 20K ohm 1% ¼W FILM	ANY RN55D (See Amendment)
A	2	444-2431-00	R1,R3	RES 243 ohm 1% ¼ FILM	ANY RN55D
A	2	444-4531-00	R2,R4	RES 4.53K ohm 1% ¼W FILM	ANY RN55D
A	1	444-4752-00	R20	RES 47.5K ohm 1% ¼W FILM	ANY RN55D
A	1	444-4993-00	R8	RES 499K ohm 1% ¼W FILM	ANY RN55D

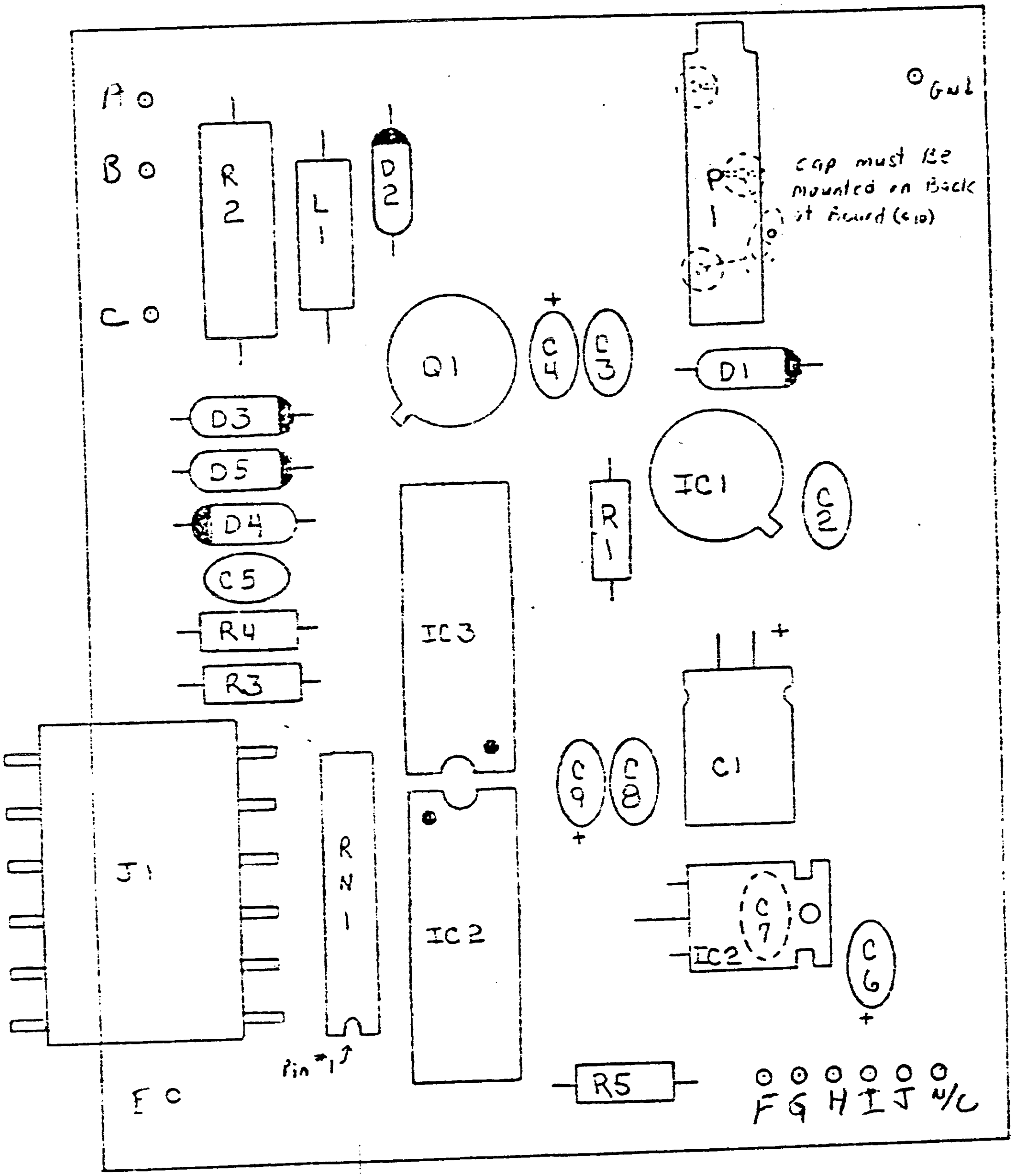
PARTS LISTINGS
BILL OF MATERIALS
PART NUMBER ORDER

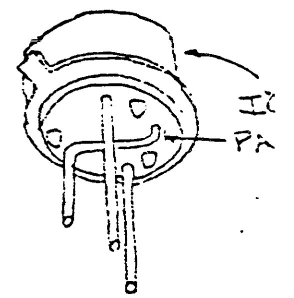
7-15-82

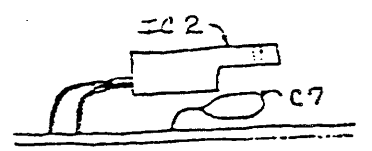
BOM	QTY	Part Number	Reference Designation	Description	Manufacturers & Parts Number
A	1	444-5621-00	R19	RES 5.62K ohm 1% ¼W FILM	ANY RN55D
* A	1	480-4406-01	T2-1 (50KHZ)	TRANSFORMER CUSTOM	(Single Secondary) (See Amendment)
* A	1	480-4422-02	T2-2 (64KHz)	TRANSFORMER CUSTOM	(Single Secondary) (See Amendment)
A	1	480-6220-00	T3	TRANSFORMER CUSTOM	(Dynamic Focus)
A	1	480-6390-00	T1	TRANSFORMER CUSTOM	(Triple Secondary)
* A	1	510-4046-00	IC3	I.C. CD4046B	MOTOROLA ONLY
A	1	520-1170-00	IC5	I.C. TDA1170SH	AEG Telefunken or S.G.S. Ates
A	1	520-3171-00	IC1, IC2	I.C. LM317HVK	National Semiconductor or equiv.
A	1	520-7806-00	IC4	I.C. MC7806CK	MOTOROLA or equiv.
A	10	602-0632-00		NUT #6 - 32	Zinc any
A	10	600-0634-00		SCREW 6-32x¼"	Zinc only
A	10	604-0600-00		Lookwasher (internal) #6	Zinc any
A	2	606-2140-00		Standoff Metal	Amatom #9222-B140 or equiv.
A	1	630-2194-00		HeatsINK for I.C. 5	Staver (V2-1.940)
A	4	630-4803-00		HeatsINK TO-3	Heatshrinks Plus 480-TO-3 or equiv.
A	1	630-8028-00		HeatsINK Extrusion	Aham-Tor(58028-8) Modfd. to print (81003)
A	1	632-0110-00		Transistor stand off	Waldom-Bivar 510-110 or equiv.
A	3	632-0906-00		Sil Pads	Sil Pads #7403-09FR-06
A	2	632-6000-00		Nylon Washer	
A	1	[illegible]		LM 317 K	
A	1	670-[illegible]		Deflection Board	
A	1	280-8010-00		CRT Socket	
A	2	640-2011-00		Fuse Clip	
A	8	632-0001-00		NYLON STAND-OFF	

+50 V
475 CAP

NOTE: PAD UNDER Q1







Pin #1 of RN1 must Be to ground

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

CONTRACT NO.

APPROVALS	DATE
DRAWN BMC.	6 82
CHECKED	6/7/82

MATERIAL ~

FINISH ~

MONITERM CORPORATION

TTL BOARD

ASSEMBLY DWG.

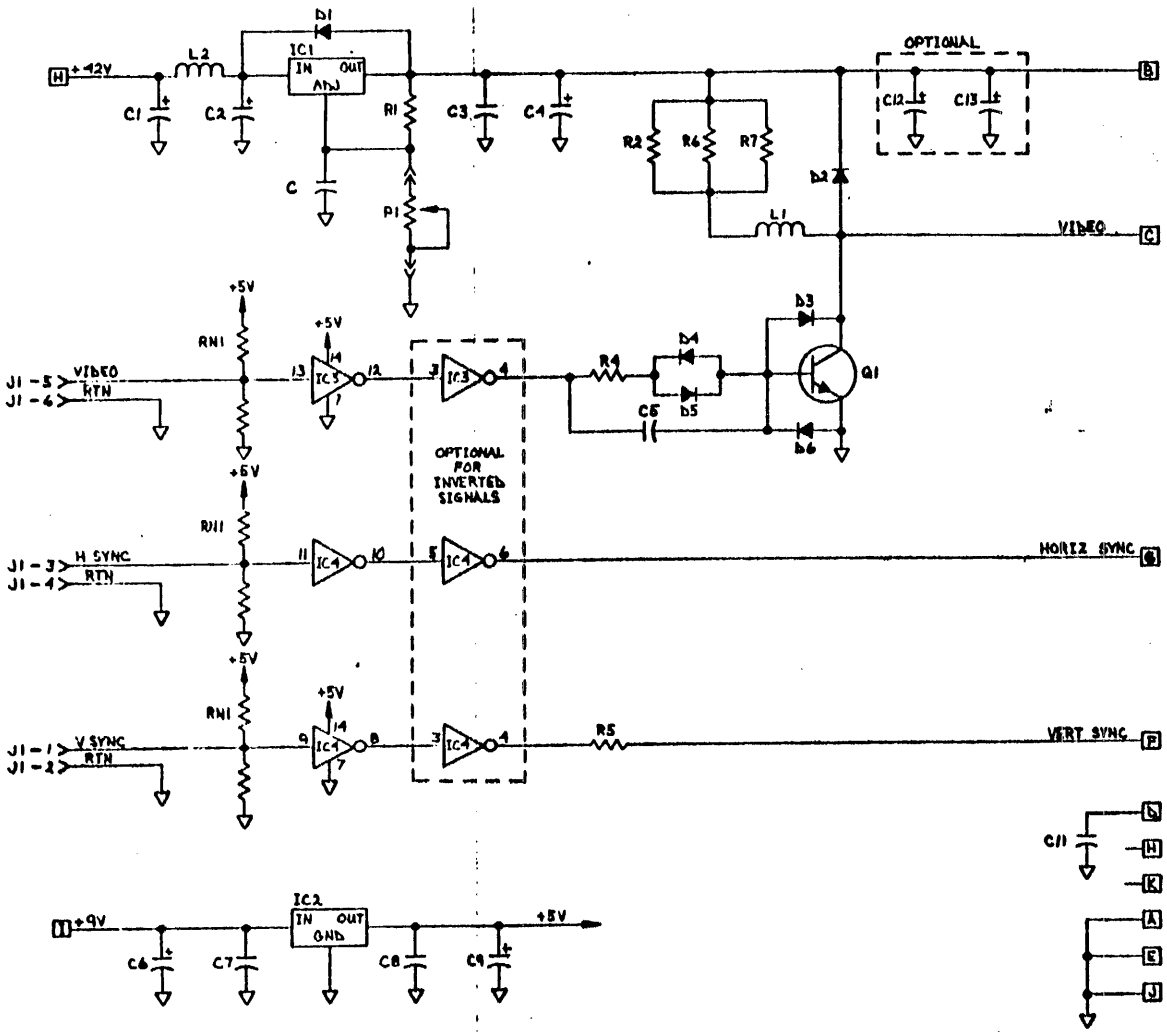
SIZE | CODE IDENT NO. | DRAWING NO. 82200

SCALE 2:1 | SHEET 1 OF 1

NEXT ASSY | USED ON

APPLICATION

DO NOT SCALE DRAWING



APPROVALS		
DEPT	BY	DATE
ENG.		
Q.A.		
MFG.		
PUR.		
P.B.		

MONITERM CORPORATION

Description: TTL INTERFACE BOARD

Drawing no.

Drawn By: D. HORN

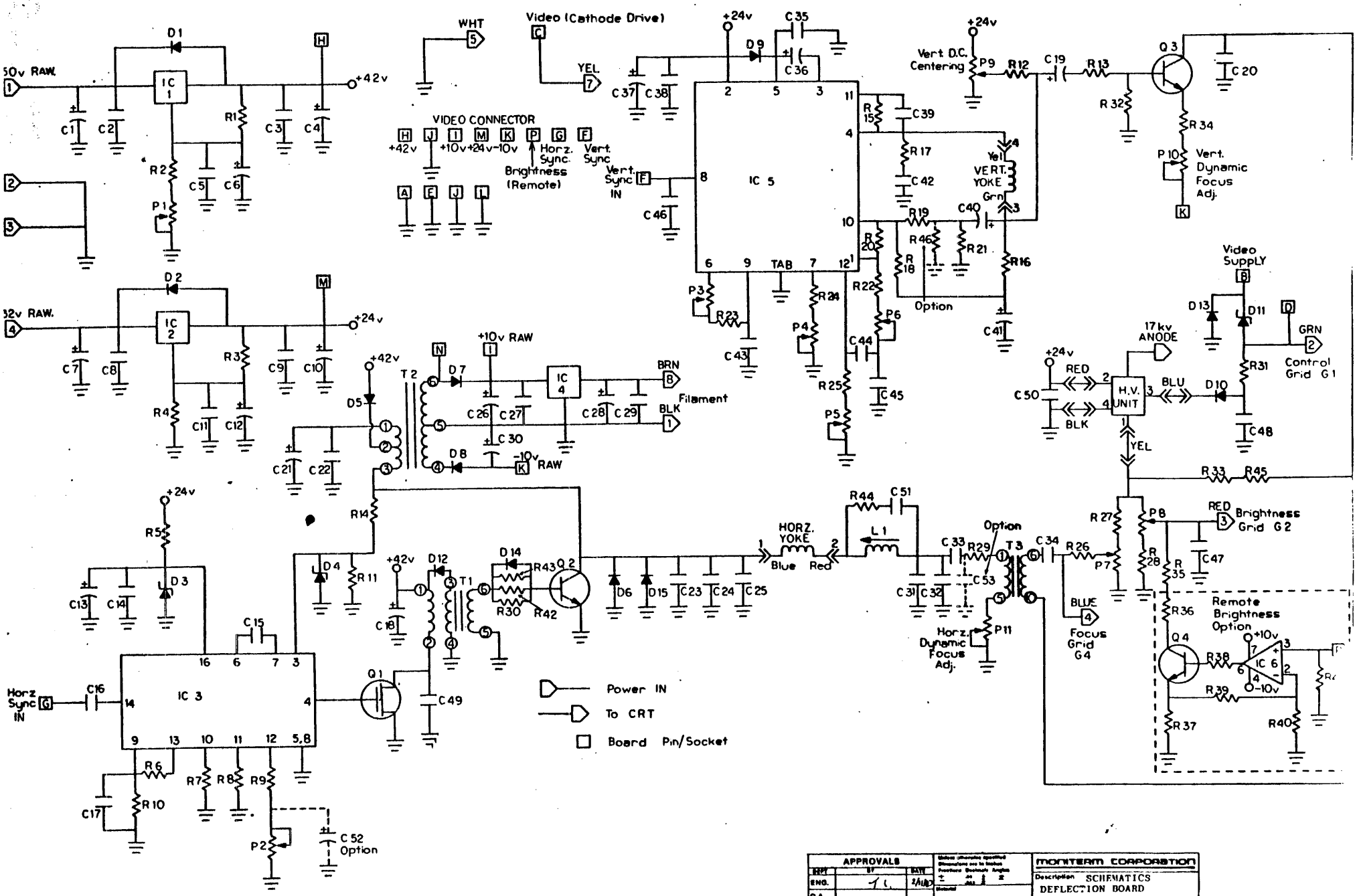
Part no. 997-1001-00

Drawing Size: C

REV.

SCALE

SHEET OF



APPROVALS	BY	DATE
ENG.	T.	2/11/93
Q.A.		
MFG.	R.C.	2/16/93
PUR.		
P.E.	M.M.	2/16/93

Monterm Corporation

Description: SCHEMATICS DEFLECTION BOARD

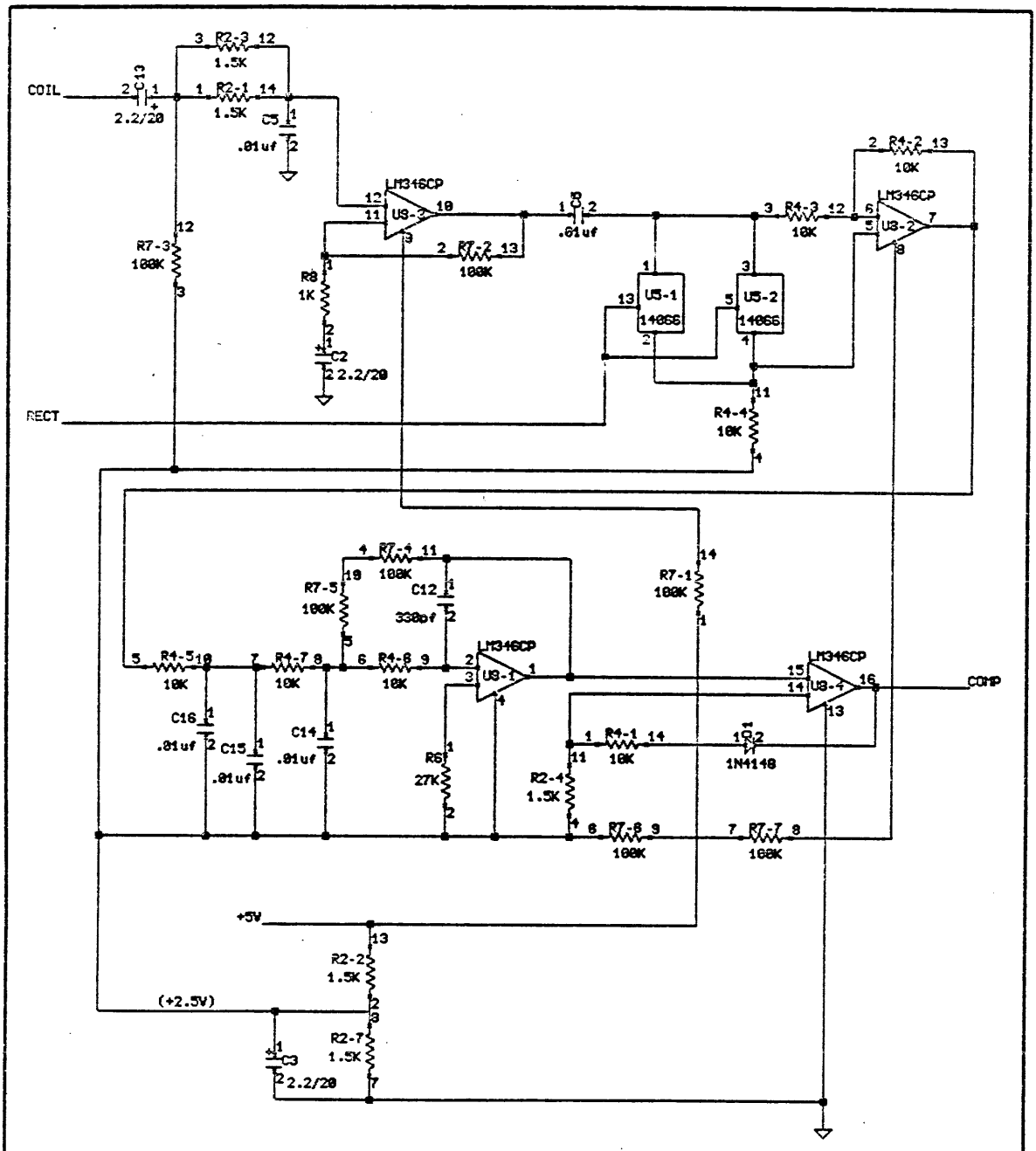
Drawing no. 00112

Drawn by Mark E.

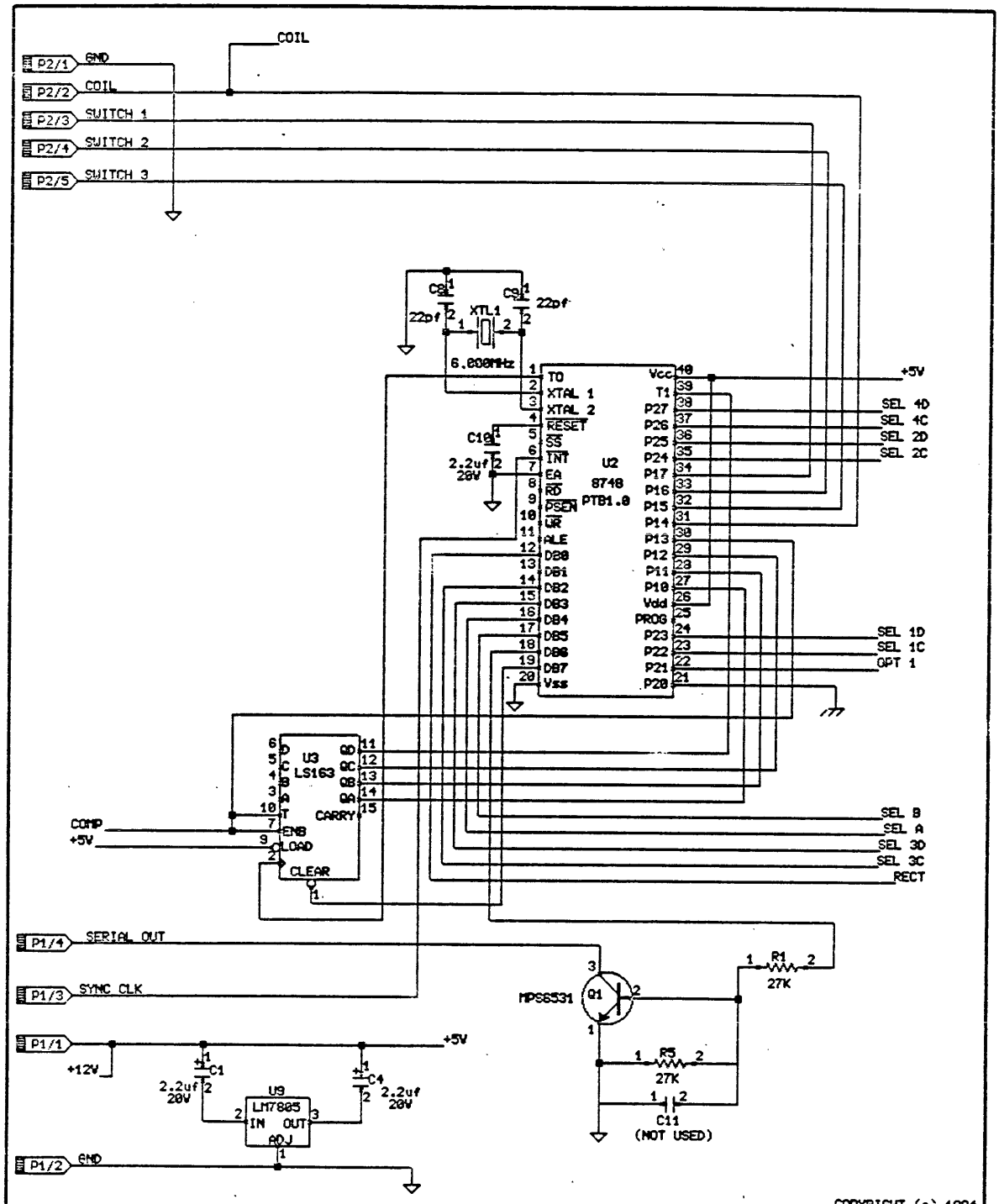
Part no. 670-1100-00

REV. C A

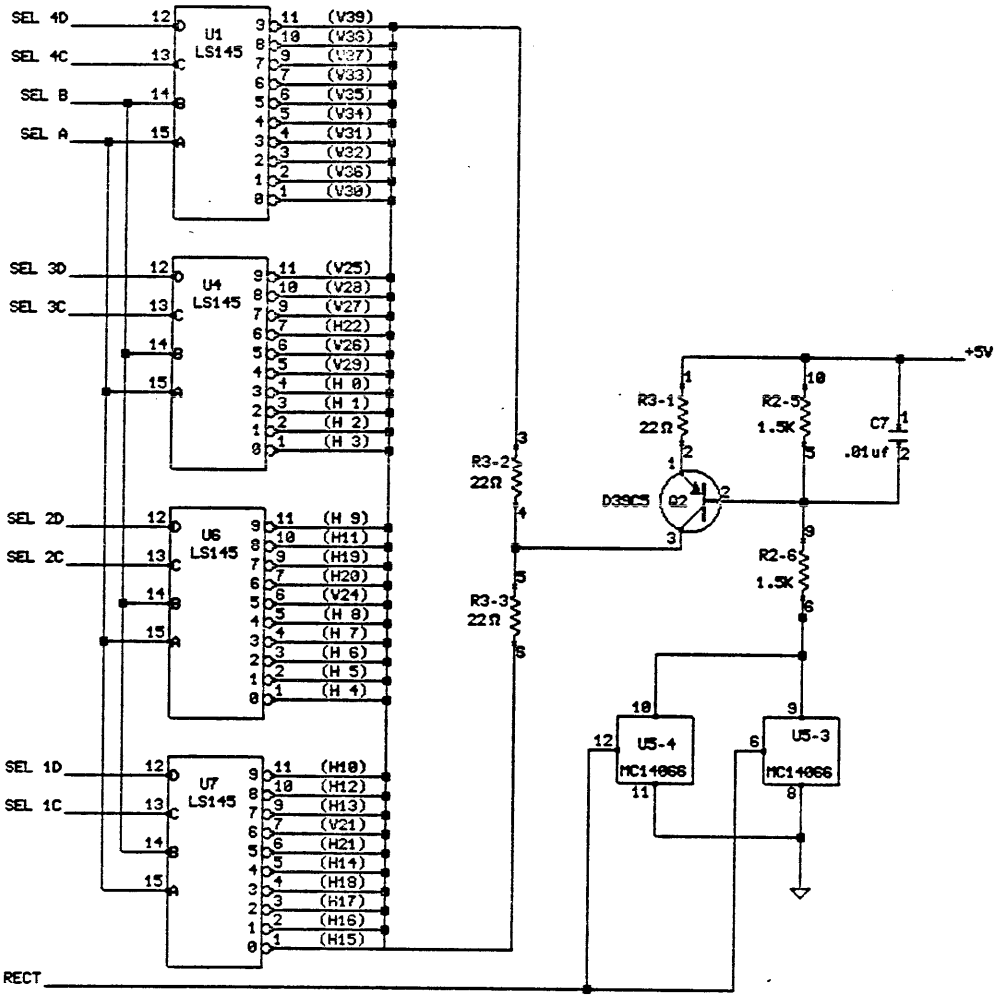
SCALE 2-1 SHEET 1 OF 1



TITLE	ELECTROMAGNETIC TABLET					ptab01.dp	
PERQ	DESIGNED	KRIZ		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	MAY/18/83	STECK	A	10	0247-	02	E
	UPDATED	25 Jan 85	STECK	PROJ :	PERQ PORTRAT TABLET		PAGE 1 OF 3	



TITLE	ELECTROMAGNETIC TABLET						ptab02.db
PERQ	DESIGNED	KRIZ		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	MAY/18/83	STECK	A	10	0247-	02	D
	UPDATED	25 Jan 85	STECK	PROJ :	PERQ PORTRAIT TABLET		PAGE 2 OF 3	



TITLE	ELECTROMAGNETIC TABLET					ptab03.dp	
PERQ	DESIGNED	KRIZ		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	MAY/18/83	STECK	A	10	0247-	02	D
	UPDATED	25 Jan 85	STECK	PROJ :	PERQ PORTRAT TABLET		PAGE 3 OF 3	

Part/Page Cross Reference 25 Jan 85 16:08:49

Using Files: PTAB01.WL to PTAB03.WL

PART..TYPE.....Pages Numbers							
U1....74LS145.....	3						
U2....8748.....	2						
U3....74LS163.....	2						
U4....74LS145.....	3						
U5....MC14066B.....	3	3	1	1			
U6....74LS145.....	3						
U7....74LS145.....	3						
U8....LM346/1.....	1	1	1	1			
U9....LM7805.....	2						
C1....CAP.....	2						
C2....CAP.....	1						
C3....CAP.....	1						
C4....CAP.....	2						
C5....CAP.....	1						
C6....CAP.....	1						
C7....CAP.....	3						
C8....CAP.....	2						
C9....CAP.....	2						
C10...CAP.....	2						
C12...CAP.....	1						
C13...CAP.....	1						
C14...CAP.....	1						
C15...CAP.....	1						
C16...CAP.....	1						
D1....DIODE.....	1						
P1/1..CABLE.....	2						
P1/2..CABLE.....	2						
P1/3..CABLE.....	2						
P1/4..CABLE.....	2						
P2/1..CABLE.....	2						
P2/2..CABLE.....	2						
P2/3..CABLE.....	2						
P2/4..CABLE.....	2						
P2/5..CABLE.....	2						
Q1....NPN.....	2						
Q2....PNP.....	3						
R1....RES.....	2						
R2....SEP14/1.....	3	3	1	1	1	1	1
R3....SEP6/1.....	3	3	3				
R4....SEP14/1.....	1	1	1	1	1	1	1
R5....RES.....	2						
R6....RES.....	1						
R7....SEP14/1.....	1	1	1	1	1	1	1
R8....RES.....	1						
XTL1..XTAL.....	2						

Signal/Page Cross Reference 25 Jan 85 16:08:49

Using Files: PTAB01.WL to PTAB03.WL

SIGNAL NAME.....	Pages Numbers
+12V.....	2
+5V.....	3 1
COIL.....	2 1
COMP.....	2 1
GND.....	3 2 1
OPT 1.....	2
RECT.....	3 2 1
SEL 1C.....	3 2
SEL 1D.....	3 2
SEL 2C.....	3 2
SEL 2D.....	3 2
SEL 3C.....	3 2
SEL 3D.....	3 2
SEL 4C.....	3 2
SEL 4D.....	3 2
SEL A.....	3 2
SEL B.....	3 2
SWITCH 1.....	2
SWITCH 2.....	2
SWITCH 3.....	2
SYNC CLK.....	2

This Run Was made using the following files:

100247.PART
ptab03.WL
ptab02.WL
ptab01.WL

Number Of Nets = 63
Begin Wirelist

```
  1: U9-2 C1-2                              .%C1-2

  2: U8-13 C3-2 R2-7 C2-2 C5-2 C9-1 C8-1
  2: P1/2-1 P2/1-1 U2-21 U2-20 C10-2 U2-7
  2: Q1-1 R5-1 U9-1 U5-11 U5-8              .!GND

  3: U8-1 R7-11 C12-1                       .%C12-1

  4: R4-9 U8-2 C12-2                        .%C12-2

  5: R7-5 R4-6 R4-8 C14-1                   .%C14-1

  6: R4-10 R4-7 C15-1 C16-1                 .%C16-1

  7: U8-4 R7-6 R2-4 C14-2 R6-2 C3-1 R4-4
  7: R7-3 C15-2 C16-2                       .%C16-2

  8: R8-2 C2-1                              .%C2-1

  9: U9-3 C4-2                              .%C4-2

 10: Q2-2 R2-5 R2-9 C7-2                    .%C7-2

 11: R4-14 D1-1                             .%D1-1

 12: R1-1 R5-2 Q1-2                         .%Q1-2

 13: P1/4-1 Q1-3                            .%Q1-3

 14: R3-2 Q2-1                              .%Q2-1

 15: R3-4 R3-5 Q2-3                         .%Q2-3

 16: U2-18 R1-2                             .%R1-2

 17: R2-14 C5-1 R2-12                       .%R2-12

 18: R7-12 R2-1 C13-1 R2-3                  .%R2-3

 19: U5-10 U5-9 R2-6                        .%R2-6
```

```
  20: R2-2 R2-8                          .%R2-8

  21: U7-1 R3-6                          .%R3-6

  22: R2-11 R4-1                         .%R4-1

  23: R4-5 U8-7 R4-13                    .%R4-13

  24: R7-4 R7-10                         .%R7-10

  25: C6-1 R7-13                         .%R7-13

  26: U8-9 R7-14                         .%R7-14

  27: R7-7 R7-9                          .%R7-9

  28: R7-2 R8-1                          .%R8-1

  29: U3-2 U2-1                          .%U2-1
*** Run Has no outputs

  30: XTL1-1 C8-2 U2-2                   .%U2-2

  31: U3-11 U2-39                        .%U2-39

  32: C10-1 U2-4                         .%U2-4

  33: U2-19 U3-1                         .%U3-1

  34: U2-29 U3-12                        .%U3-12
*** Run has multiple outputs

  35: U2-28 U3-13                        .%U3-13
*** Run has multiple outputs

  36: U2-27 U3-14                        .%U3-14
*** Run has multiple outputs

  37: U5-3 R4-3 C6-2 U5-1                .%U5-1

  38: R3-3 U1-11 U1-10 U1-9 U1-7 U1-6 U1-5
  38: U1-4 U1-3 U1-2 U1-1 U4-11 U4-10 U4-9
  38: U4-7 U4-6 U4-5 U4-4 U4-3 U4-2 U4-1
  38: U6-11 U6-10 U6-9 U6-7 U6-6 U6-5 U6-4
  38: U6-3 U6-2 U6-1 U7-11 U7-10 U7-9 U7-7
  38: U7-6 U7-5 U7-4 U7-3 U7-2           .%U7-2
*** Run has multiple outputs

  39: R6-1 U8-3                          .%U8-3

  40: U5-2 U5-4 R4-11 U8-5               .%U8-5
```

```
  41: R4-2 R4-12 U8-6                          .%U8-6

  42: R7-8 U8-8                                .%U8-8

  43: U2-3 C9-2 XTL1-2                         .%XTL1-2

  44: P1/1-1 C1-1 U2-40 U2-26 U3-9 C4-1
  44:                                          .+12V

  45: R7-1 R2-13 R3-1 R2-10 C7-1               .+5V

  46: C13-2 P2/2-1 U2-31                       .COIL

  47: D1-2 U3-7 U3-10 U2-30                    .COMP

  48: U2-22                                    .OPT 1
*** Only one pin in net

  49: U5-5 U5-13 U2-12 U5-12 U5-6              .RECT

  50: U2-23 U7-13                              .SEL 1C

  51: U2-24 U7-12                              .SEL 1D

  52: U2-35 U6-13                              .SEL 2C

  53: U2-36 U6-12                              .SEL 2D

  54: U2-14 U4-13                              .SEL 3C

  55: U2-15 U4-12                              .SEL 3D

  56: U2-37 U1-13                              .SEL 4C

  57: U2-38 U1-12                              .SEL 4D

  58: U2-16 U1-15 U4-15 U7-15 U6-15            .SEL A

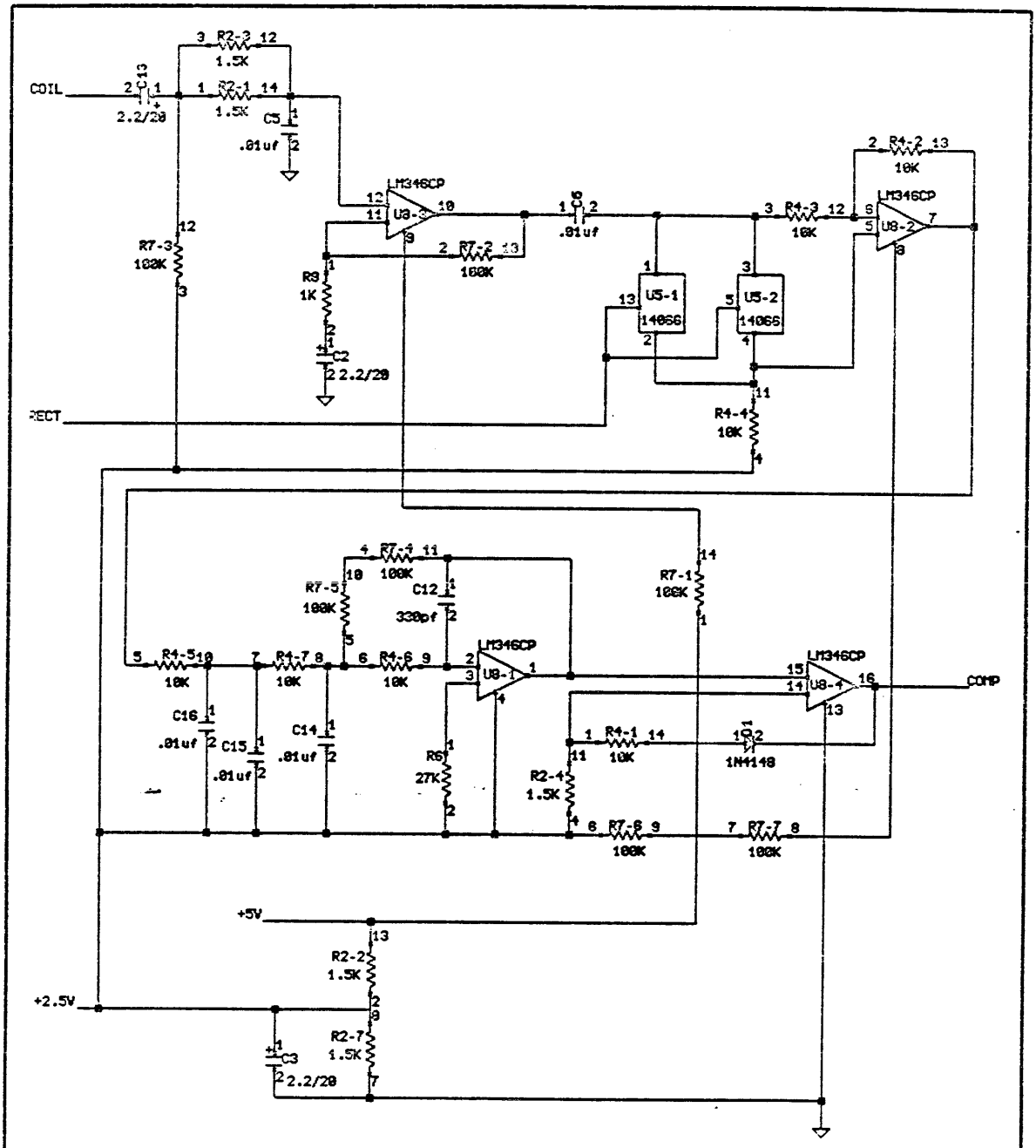
  59: U2-17 U4-14 U1-14 U7-14 U6-14            .SEL B

  60: U2-34 P2/3-1                             .SWITCH 1

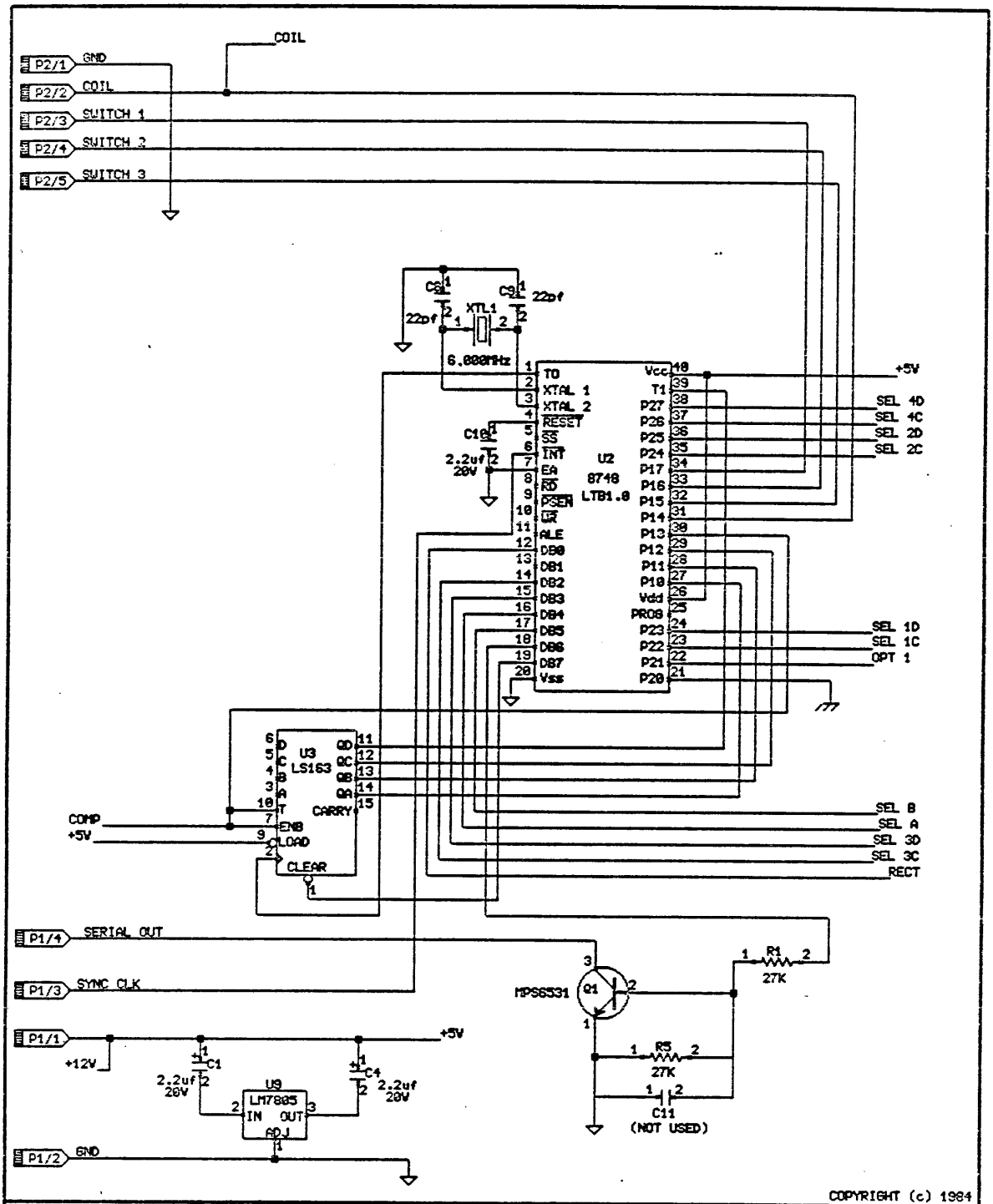
  61: U2-33 P2/4-1                             .SWITCH 2

  62: U2-32 P2/5-1                             .SWITCH 3

  63: P1/3-1 U2-6                              .SYNC CLK
```



TITLE	ELECTROMAGNETIC TABLET						ltab01.db
PERQ	DESIGNED	KRIZ		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	MAY/18/83	STECK	A	11	0180-	02	C
	UPDATED	25 Jan 85	STECK	PROJ :	PERQ LANDSCAPE TABLET		PAGE 1 OF 3	



TITLE: ELECTROMAGNETIC TABLET

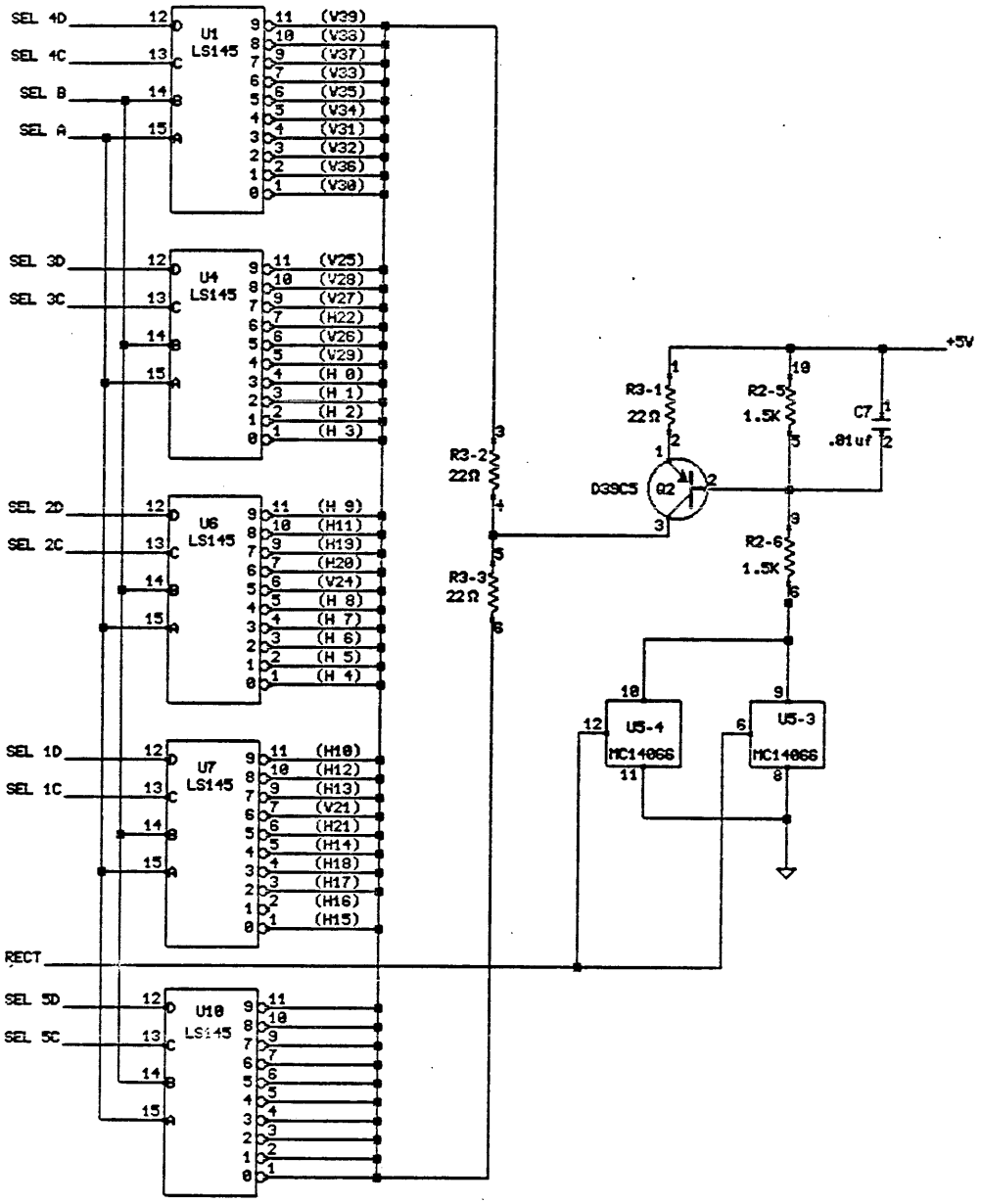
ltab02.dp

PERQ

DESIGNED	KRIZ		
DRAWN	MAY/18/83	STECK	
UPDATED	25 Jan 85	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	11	0180-	02	B

PROJ : PERQ LANDSCAPE TABLET



TITLE	ELECTROMAGNETIC TABLET						ltab03.db
PERQ	DESIGNED	KRIZ		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	MAY/18/83	STECK	A	11	0180-	02	B
	UPDATED	25 Jan 85	STECK	PROJ :	PERQ LANDSCAPE TABLET		PAGE 3 OF 3	

Part/Page Cross Reference 25 Jan 85 15:32:46

Using Files: LTAB01.WL to LTAB03.WL

PART..TYPE.....Pages Numbers							
U1....74LS145.....	3						
U2....8748.....	2						
U3....74LS163.....	2						
U4....74LS145.....	3						
U5....MC14066B.....	3	3	1	1			
U6....74LS145.....	3						
U7....74LS145.....	3						
U8....LM346/1.....	1	1	1	1			
U9....LM7805.....	2						
U10...74LS145.....	3						
C1....CAP.....	2						
C2....CAP.....	1						
C3....CAP.....	1						
C4....CAP.....	2						
C5....CAP.....	1						
C6....CAP.....	1						
C7....CAP.....	3						
C8....CAP.....	2						
C9....CAP.....	2						
C10...CAP.....	2						
C12...CAP.....	1						
C13...CAP.....	1						
C14...CAP.....	1						
C15...CAP.....	1						
C16...CAP.....	1						
D1....DIODE.....	1						
P1/1..CABLE.....	2						
P1/2..CABLE.....	2						
P1/3..CABLE.....	2						
P1/4..CABLE.....	2						
P2/1..CABLE.....	2						
P2/2..CABLE.....	2						
P2/3..CABLE.....	2						
P2/4..CABLE.....	2						
P2/5..CABLE.....	2						
Q1....NPN.....	2						
Q2....PNP.....	3						
R1....RES.....	2						
R2....SEP14/1.....	3	3	1	1	1	1	1
R3....SEP6/1.....	3	3	3				
R4....SEP14/1.....	1	1	1	1	1	1	1
R5....RES.....	2						
R6....RES.....	1						
R7....SEP14/1.....	1	1	1	1	1	1	1
R8....RES.....	1						

XTL1..XTAL..... 2

Signal/Page Cross Reference 25 Jan 85 15:32:46

Using Files: LTAB01.WL to LTAB03.WL

SIGNAL NAME.....	Pages Numbers
+2.5V.....	1
+5V.....	3 2 1
COIL.....	2 1
COMP.....	2 1
GND.....	3 2 1
OPT 1.....	2
RECT.....	3 2 1
SEL 1C.....	3 2
SEL 1D.....	3 2
SEL 2C.....	3 2
SEL 2D.....	3 2
SEL 3C.....	3 2
SEL 3D.....	3 2
SEL 4C.....	3 2
SEL 4D.....	3 2
SEL 5C.....	3
SEL 5D.....	3
SEL A.....	3 2
SEL B.....	3 2
SWITCH 1.....	2
SWITCH 2.....	2
SWITCH 3.....	2
SYNC CLK.....	2

This Run Was made using the following files:

110180.PART
ltab03.WL
ltab02.WL
ltab01.WL

Number Of Nets = 63
Begin Wirelist

```
   1: C2-2 U8-13 R2-7 C5-2 C3-2 U2-21 P2/1-1
   1: P1/2-1 U9-1 C8-1 Q1-1 R5-1 C10-2
   1: U2-7 U2-20 C9-1 U5-8 U5-11          .!GND

   2: U2-4 C10-1                          .%C10-1

   3: C16-1 R4-7 R4-10 C15-1              .%C15-1

   4: R7-13 C6-1                          .%C6-1

   5: R2-9 R2-5 Q2-2 C7-2                 .%C7-2

   6: Q1-3 P1/4-1                         .%P1/4-1

   7: Q1-2 R5-2 R1-1                      .%R1-1

   8: R2-12 C5-1 R2-14                    .%R2-14

   9: R2-8 R2-2                           .%R2-2

  10: Q2-1 R3-2                           .%R3-2

  11: U10-2 U10-3 U10-4 U10-5 U10-6 U10-7
  11: U10-9 U10-10 U10-11 U7-1 U10-1 R3-6
  11: U7-3 U7-4 U7-5 U7-6 U7-7 U7-9 U7-10
  11: U7-11 U6-1 U6-2 U6-3 U6-4 U6-5 U6-6
  11: U6-7 U6-9 U6-10 U6-11 U4-1 U4-2 U4-3
  11: U4-4 U4-5 U4-6 U4-7 U4-9 U4-10 U4-11
  11: U1-1 U1-2 U1-3 U1-4 U1-5 U1-6 U1-7
  11: U1-9 U1-10 U1-11 R3-3              .%R3-3
*** Run has multiple outputs

  12: Q2-3 R3-5 R3-4                      .%R3-4

  13: R2-11 R4-1                          .%R4-1

  14: D1-1 R4-14                          .%R4-14

  15: U8-6 R4-12 R4-2                     .%R4-2

  16: R4-13 U8-7 R4-5                     .%R4-5
```

17: C12-2 U8-2 R4-9	.%R4-9
18: U8-3 R6-1	.%R6-1
19: R2-3 C13-1 R2-1 R7-12	.%R7-12
20: R8-1 R7-2	.%R7-2
21: R7-10 R7-4	.%R7-4
22: R4-8 R4-6 C14-1 R7-5	.%R7-5
23: R7-9 R7-7	.%R7-7
24: U8-8 R7-8	.%R7-8
25: C2-1 R8-2	.%R8-2
26: R1-2 U2-18	.%U2-18
27: U3-14 U2-27 *** Run has multiple outputs	.%U2-27
28: U3-13 U2-28 *** Run has multiple outputs	.%U2-28
29: U3-12 U2-29 *** Run has multiple outputs	.%U2-29
30: C9-2 XTL1-2 U2-3	.%U2-3
31: U2-19 U3-1	.%U3-1
32: U2-39 U3-11	.%U3-11
33: U2-1 U3-2 *** Run Has no outputs	.%U3-2
34: R2-6 U5-9 U5-10	.%U5-10
35: U8-5 R4-11 U5-4 U5-2	.%U5-2
36: C6-2 R4-3 U5-1 U5-3	.%U5-3
37: C12-1 R7-11 U8-1	.%U8-1
38: R7-14 U8-9	.%U8-9
39: C1-2 U9-2	.%U9-2
40: C4-2 U9-3	.%U9-3

```
  41: U2-2 C8-2 XTL1-1                          .%XTL1-1

  42: C16-2 R7-6 C15-2 R7-3 R4-4 C3-1 R6-2
  42: C14-2 R2-4 U8-4                           .+2.5V

  43: R2-13 R7-1 P1/1-1 U2-40 U2-26 U3-9
  43: C4-1 C1-1 C7-1 R2-10 R3-1                 .+5V

  44: C13-2 P2/2-1 U2-31                        .COIL

  45: D1-2 U3-10 U2-30 U3-7                     .COMP

  46: U2-22                                     .OPT 1
*** Only one pin in net

  47: U5-13 U5-5 U2-12 U5-6 U5-12               .RECT

  48: U2-23 U7-13                               .SEL 1C

  49: U2-24 U7-12                               .SEL 1D

  50: U2-35 U6-13                               .SEL 2C

  51: U2-36 U6-12                               .SEL 2D

  52: U2-14 U4-13                               .SEL 3C

  53: U2-15 U4-12                               .SEL 3D

  54: U2-37 U1-13                               .SEL 4C

  55: U2-38 U1-12                               .SEL 4D

  56: U10-13                                    .SEL 5C
*** Only one pin in net
*** Run Has no outputs

  57: U10-12                                    .SEL 5D
*** Only one pin in net
*** Run Has no outputs

  58: U2-16 U7-15 U6-15 U10-15 U4-15 U1-15
  58:                                           .SEL A

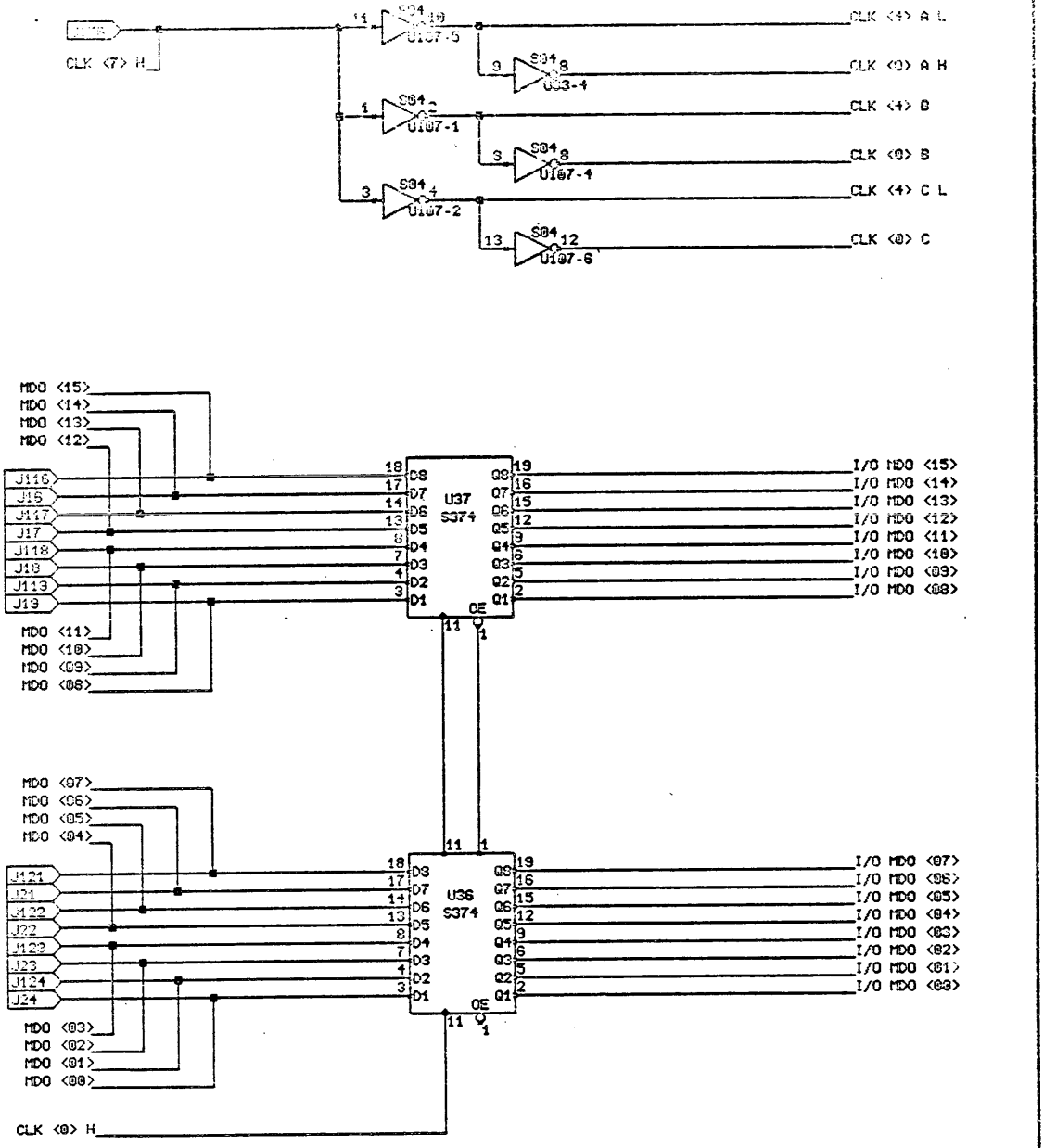
  59: U2-17 U7-14 U6-14 U10-14 U1-14 U4-14
  59:                                           .SEL B

  60: P2/3-1 U2-34                              .SWITCH 1

  61: P2/4-1 U2-33                              .SWITCH 2
```

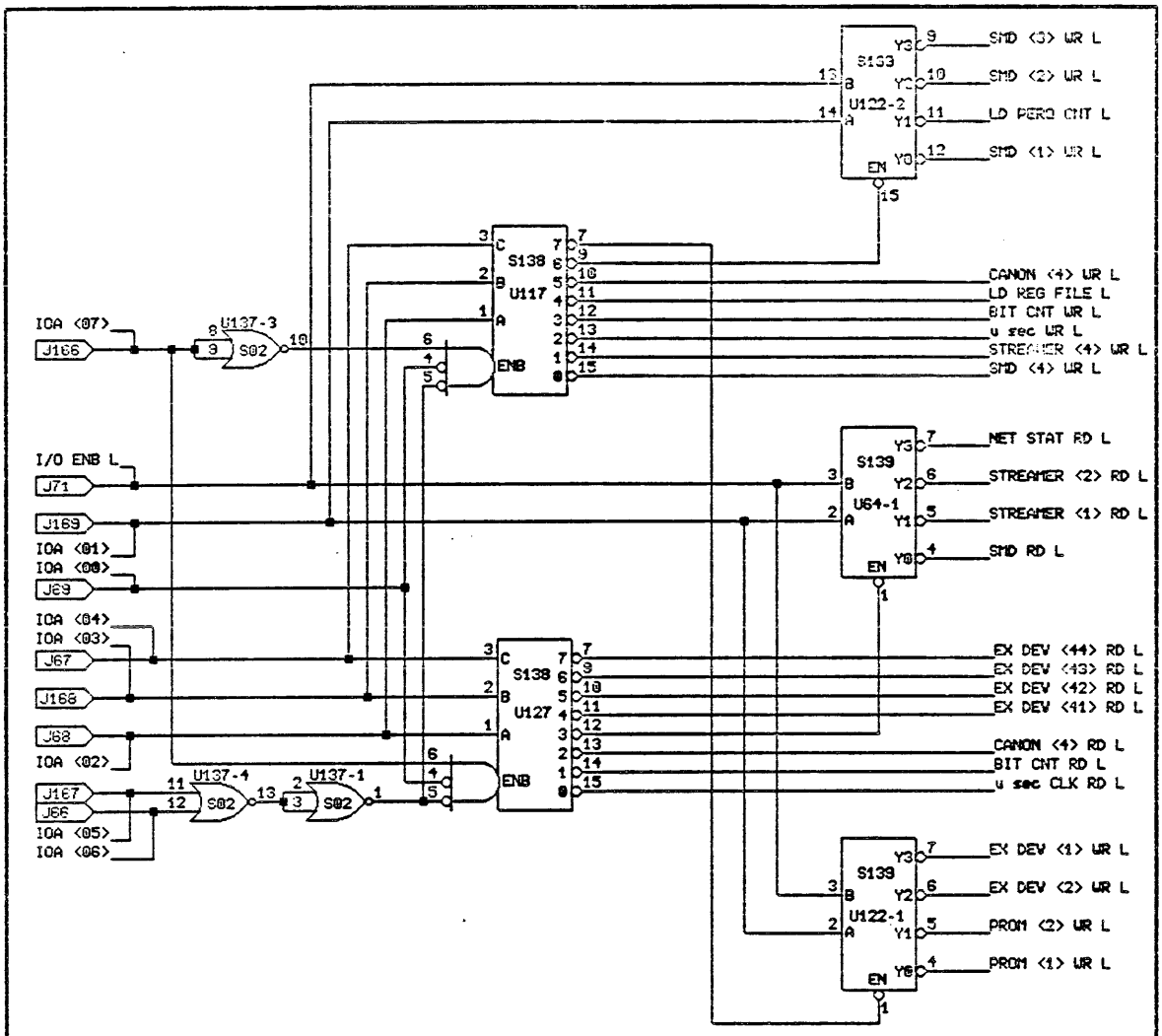
62: P2/5-1 U2-32 .SWITCH 3

63: U2-6 P1/3-1 .SYNC CLK



TITLE: I/O MDO BUFFERED						IO01.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-001)			PAGE 1 OF 25	

24 Jul 84 09:38:47 io01.real.db



I/O ADDRESS	SIGNAL NAME
200:203	SMD <4> WR L
204:207	STREAMER <4> WR L
214:217	BIT CNT WR L
224:227	CANON <4> WR L
230	SMD WR L
231	LD PERQ CNT L
232	SMD <2> WR L
233	SMD <3> WR L
234	PROM <1> WR L
235	PROM <2> WR L
236	EX DEV <1> WR L
237	EX DEV <2> WR L

I/O ADDRESS	SIGNAL NAME
010:013	CANON <4> RD L
014	SMD RD L
015	STREAMER <1> RD L
016	STREAMER <2> RD L
017	NET STAT RD
020:023	EX DEV <41> RD L
024:027	EX DEV <42> RD L
030:033	EX DEV <43> RD L
034:037	EX DEV <44> RD L

TITLE: I/O ADDRESS DECODES

IO02.dp

PERQ

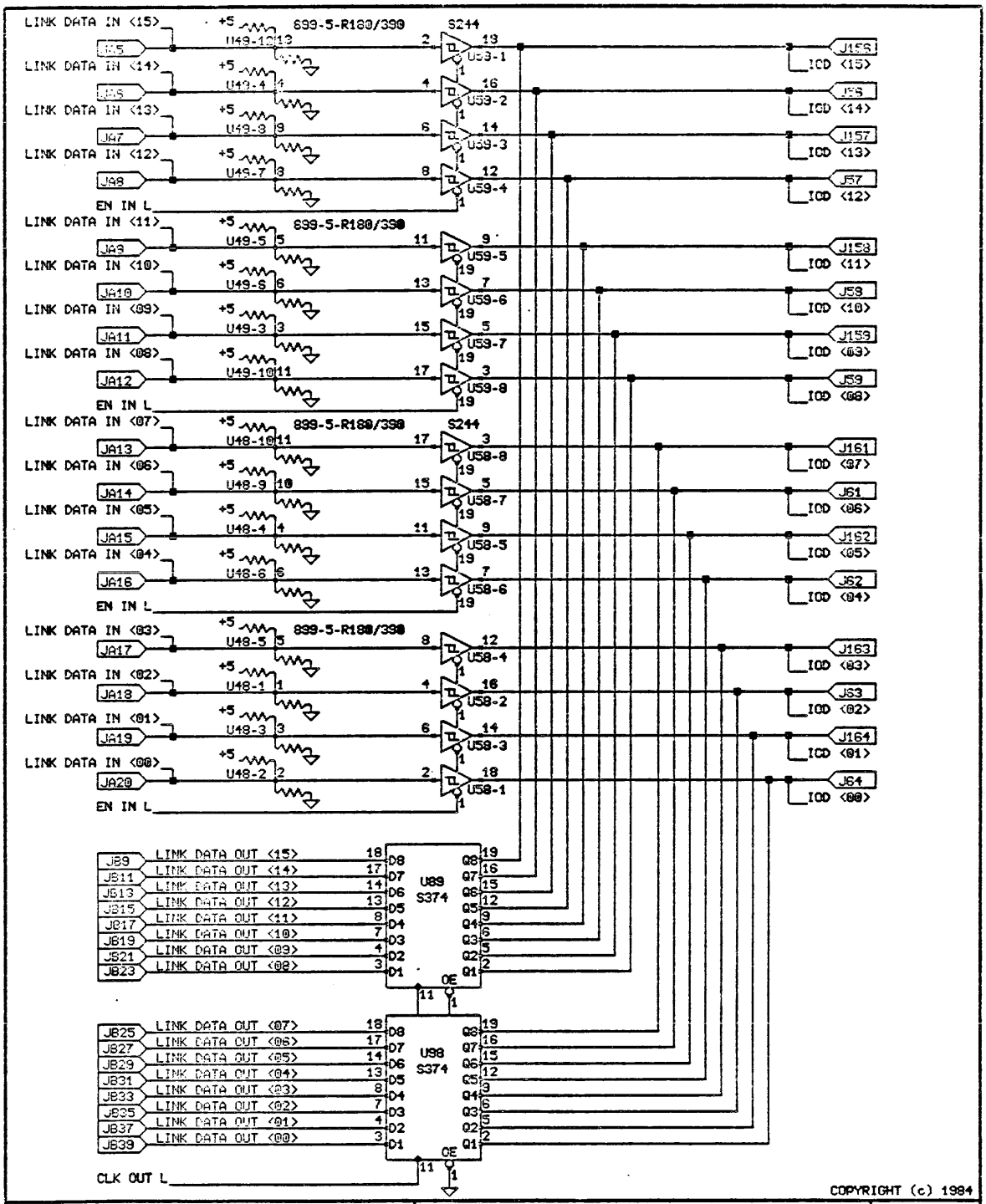
DESIGNED	P. REDDY		
DRAWN	23/JULY/84	STECK	
UPDATED	23/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0225-	02	H

PROJ : OPTION I/O ETHERNET (010-001)

PAGE 2 OF 25

24 Jul 84 09:09:31 io02.real.dp



TITLE: INPUT/OUTPUT

IO03.db

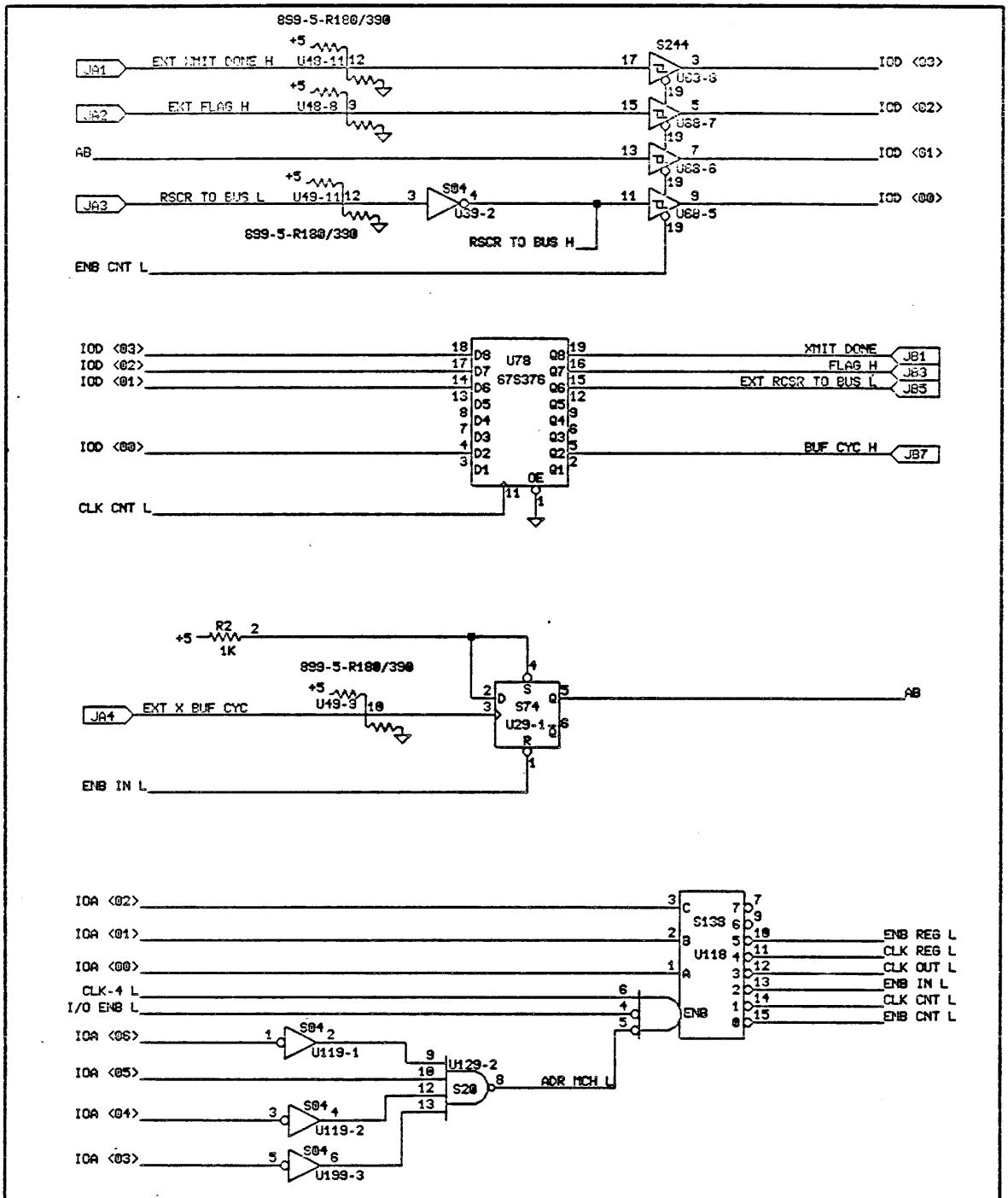
PERQ

DESIGNED	P. REDDY		
DRAWN	23/JULY/84	STECK	
UPDATED	23/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0225-	02	H

PROJ : OPTION I/O ETHERNET (OIO-001)

24 Jul 84 09:10:41 _io03.real.db



TITLE: CONTROL

IO04.dp

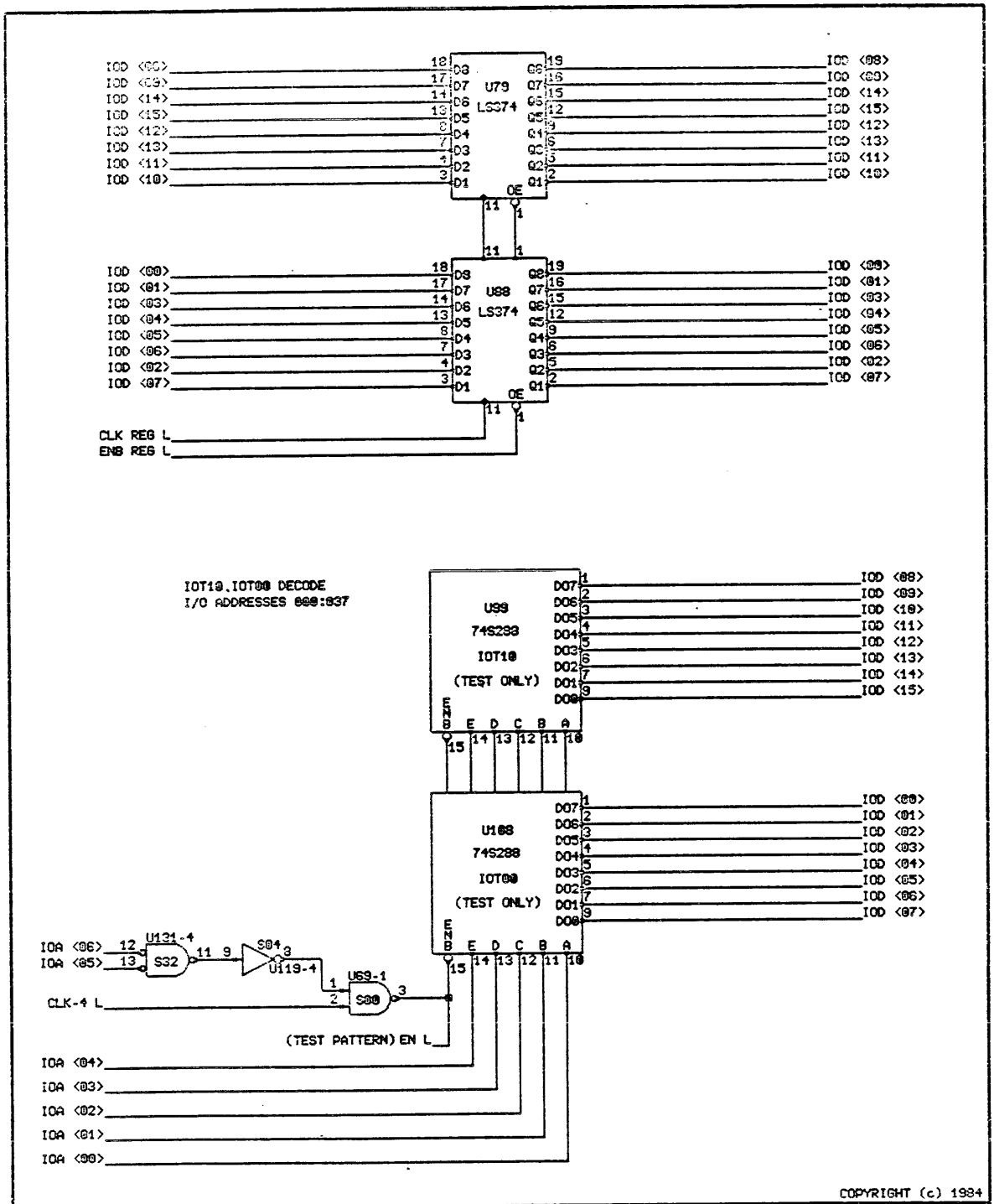
PERQ

DESIGNED	P. REDDY		
DRAWN	23/JULY/84	STECK	
UPDATED	23/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0225-	02	H

PROJ : OPTION I/O ETHERNET (OIO-001) PAGE 4 OF 25

24 Jul 84 09:11:28 io04.real.dp



TITLE: I/O ECHO & I/O PATTERNS

IO05.db

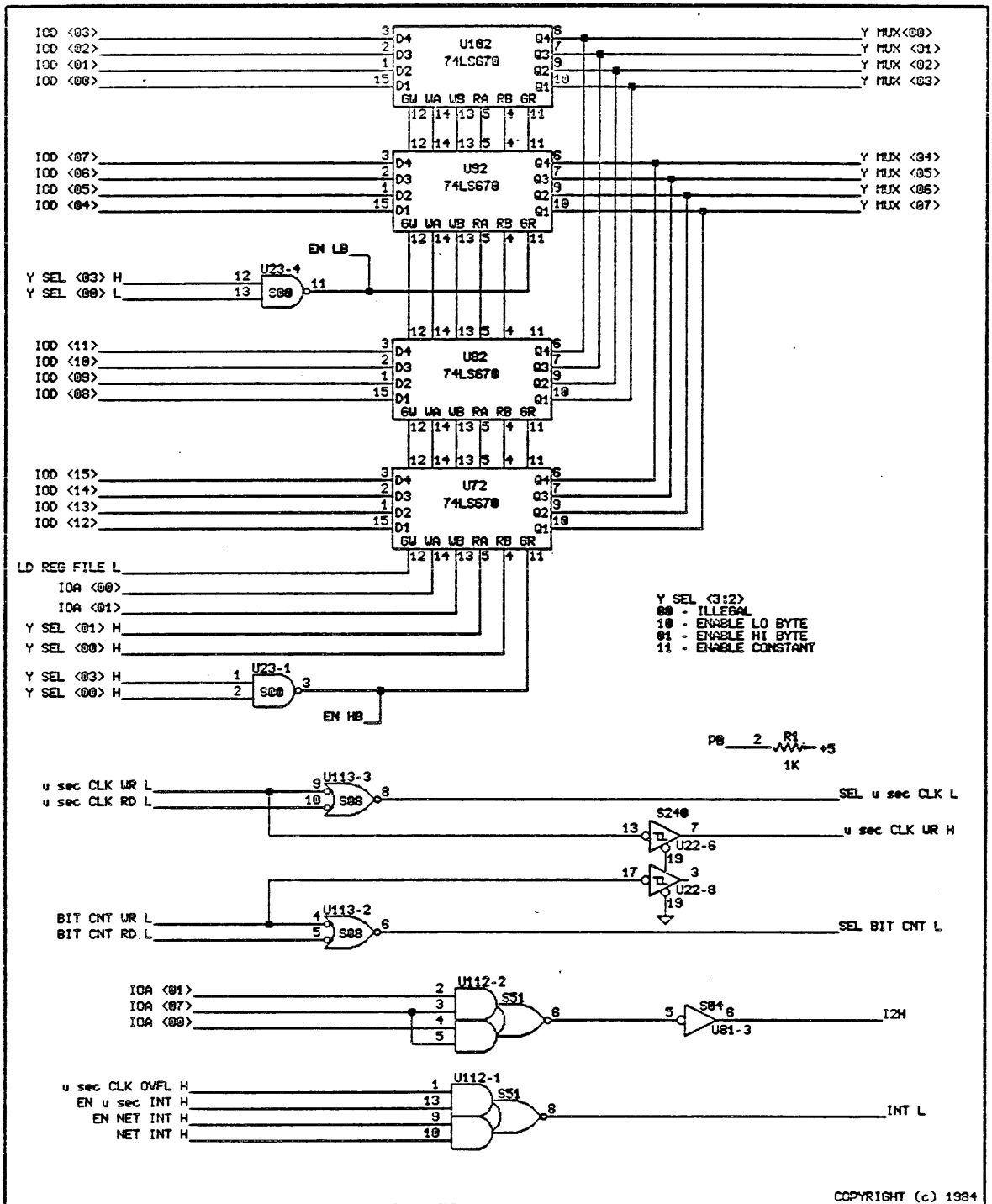
PERQ

DESIGNED	P. REDDY		
DRAWN	23/JULY/84	STECK	
UPDATED	23/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0225-	02	H

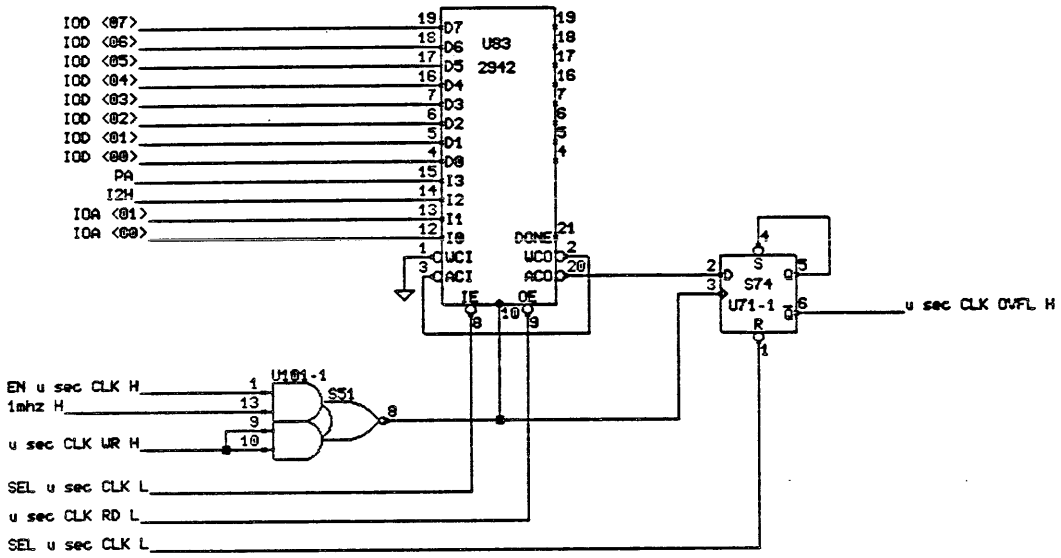
PROJ : OPTION I/O ETHERNET (OIO-001)

24 Jul 84 09:12:08 io05.real.dp

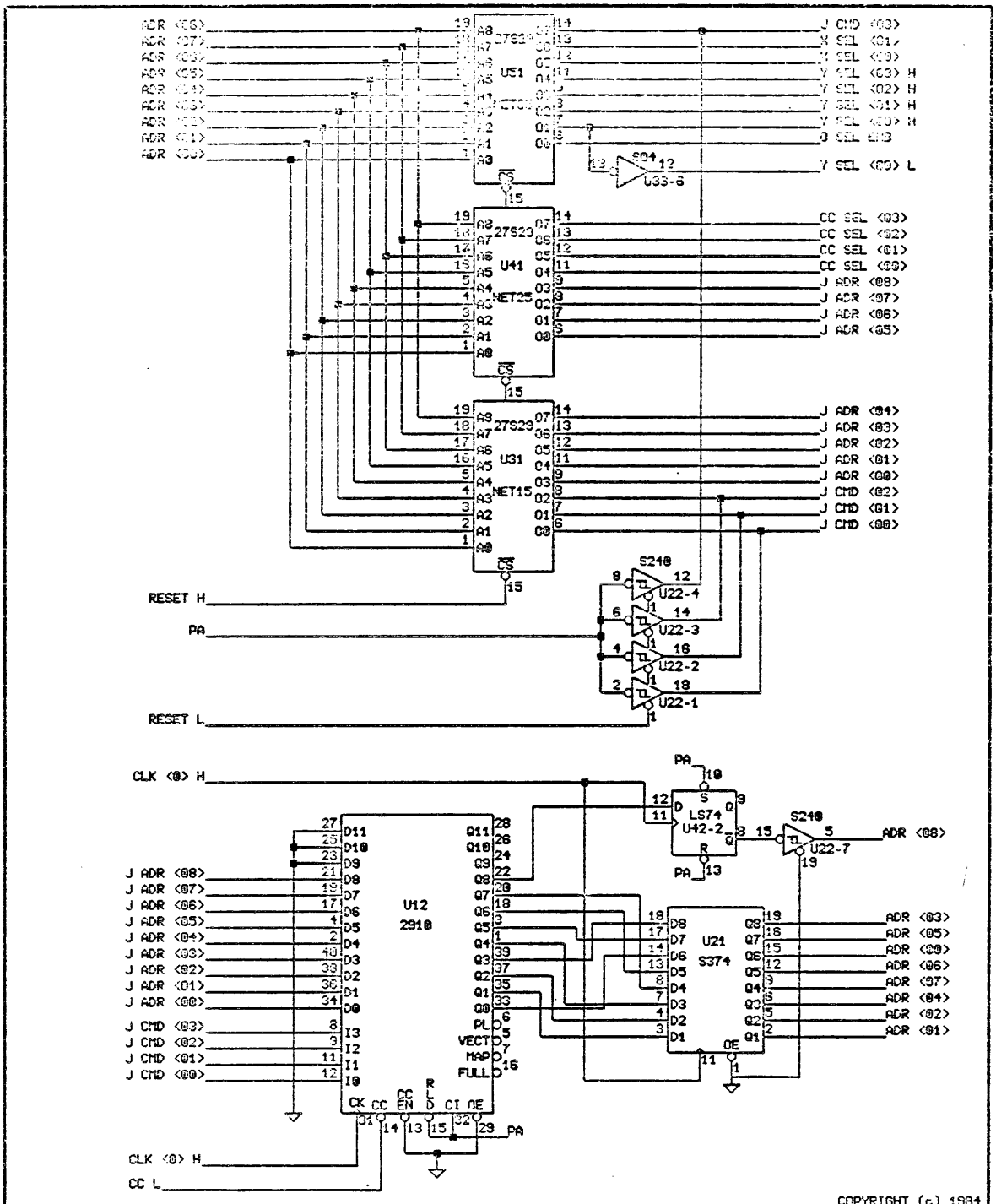


TITLE: NET CONTROLER						IO06.dp	
PERQ	DESIGNED	P. REDDY		SIZE: A	CODE: 10	IDENTIFICATION: 0225-	VAR: 02 REV: H
	DRAWN	23/JULY/84	STECK				
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-001)			PAGE 6 OF 25

24 Jul 84 09:12:54 io06.real.dp



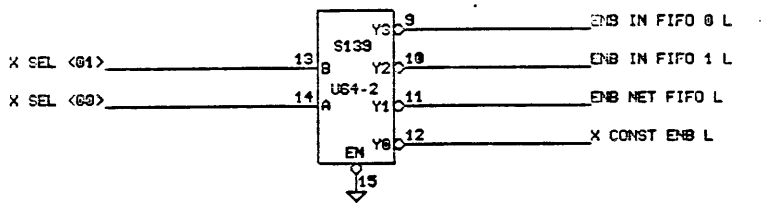
TITLE	BASED REAL TIME OUT					IO@7.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (010-001)			PAGE 7 OF 25	



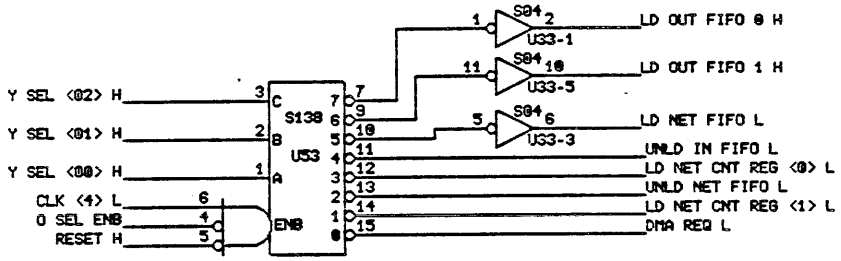
TITLE: STATE MACHINE							IC03.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	WAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	31/JULY/84	STECK	PROJ :	OPTION I/O ETHERNET (OIO-001)		PAGE 8 OF 25	

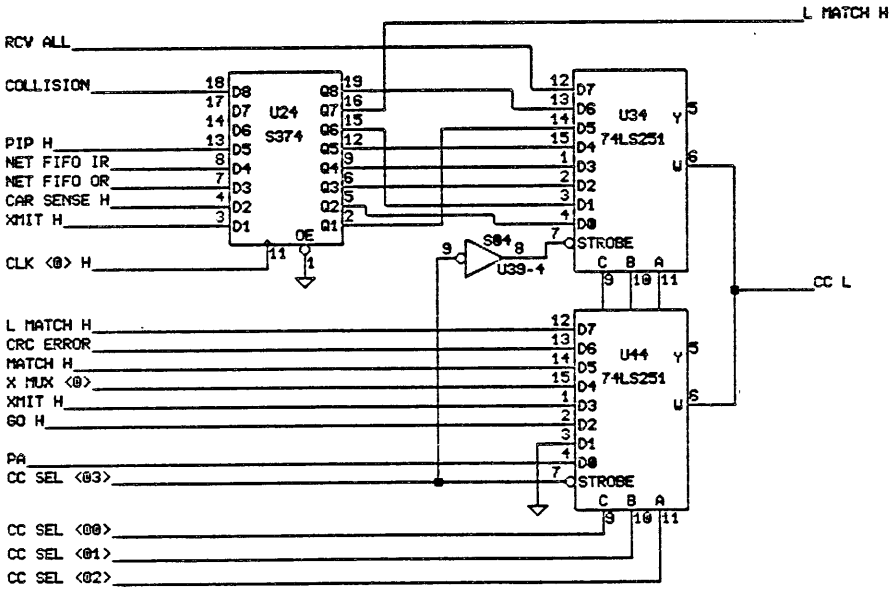
02 Aug 84 10:23:20 ic03.real.db

X DECODE



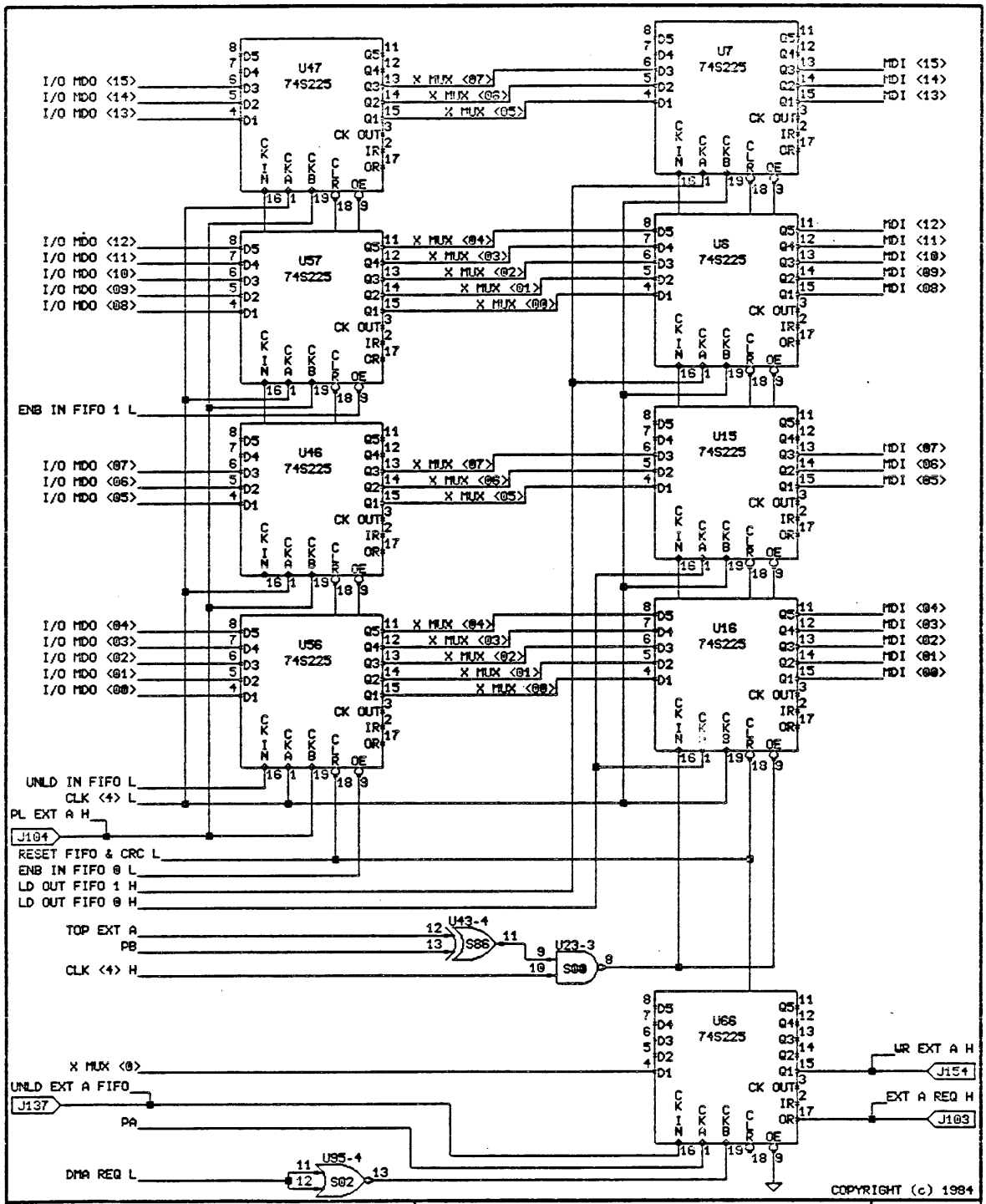
0 SEL DECODE





TITLE	STATE MACHINE		IO09.db
PERQ	DESIGNED	P. REDDY	
	DRAWN	23/JULY/84	STECK
	UPDATED	23/JULY/84	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0225-	02	H
PROJ : OPTION I/O ETHERNET (010-001)			PAGE 9 OF 25	



TITLE: MEMORY DATA INTERFACE

IO10.db

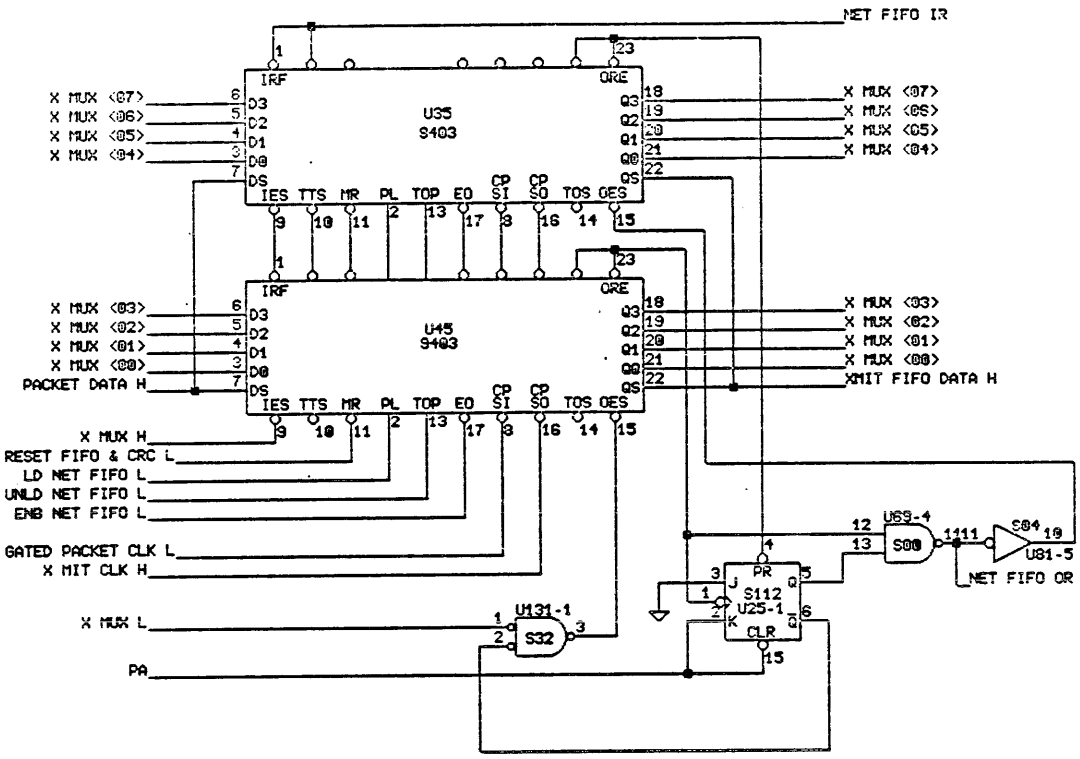
PERQ

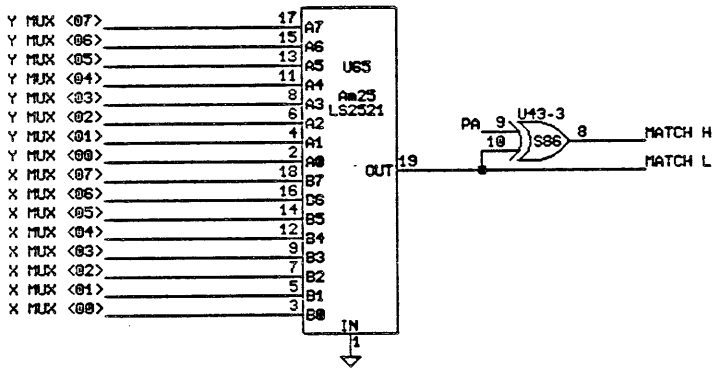
DESIGNED	P. REDDY		
DRAWN	23/JULY/84	STECK	
UPDATED	23/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	8225-	02	H

PROJ : OPTION I/O ETHERNET (OIO-001) PAGE 10 OF 25

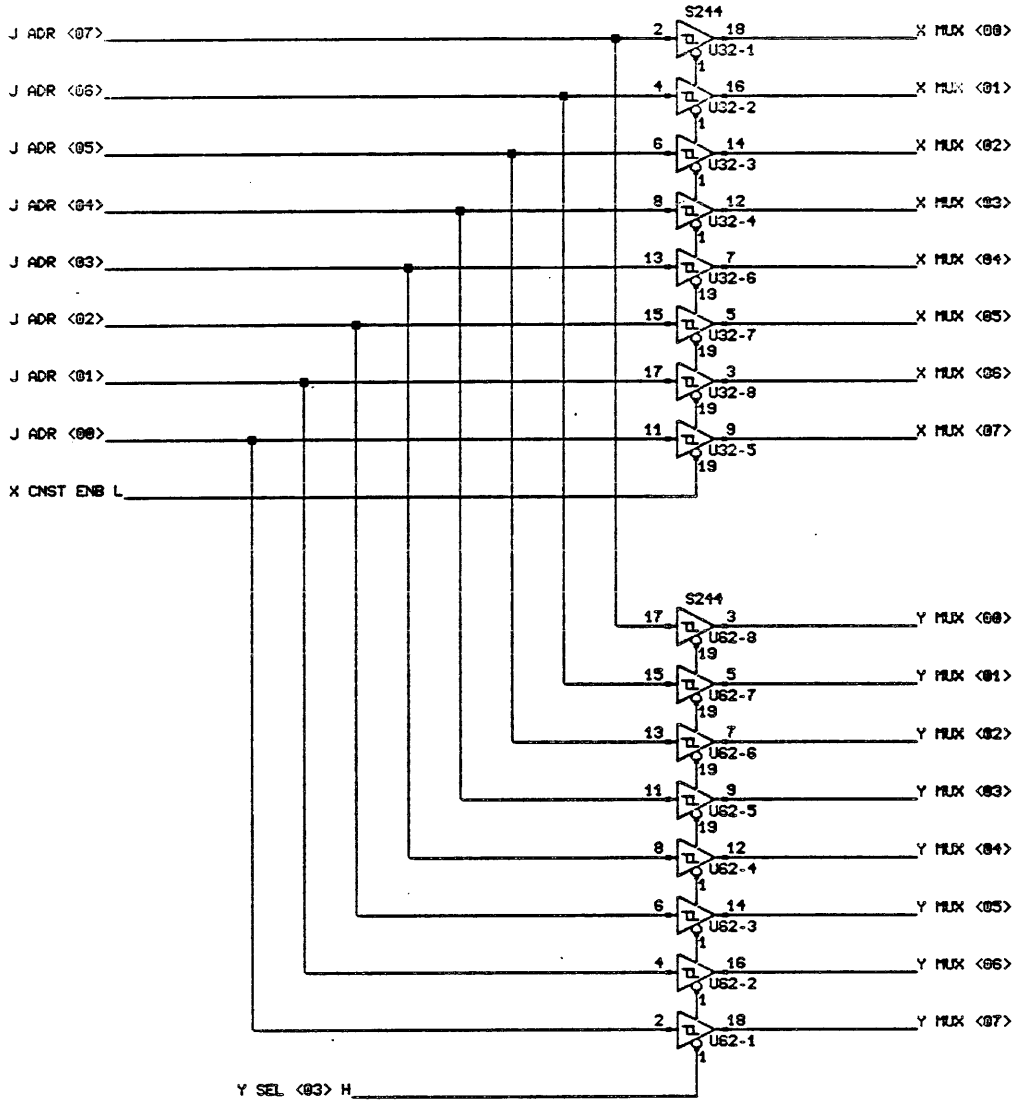
24 Jul 84 09:16:02 io10.real.db





TITLE: NET FIFO						IO11.dp	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR / REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02 / H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-001)			PAGE 11 OF 25

24 Jul 84 09:16:49 io11.real.dp



TITLE: CONSTANTS

IO12.db

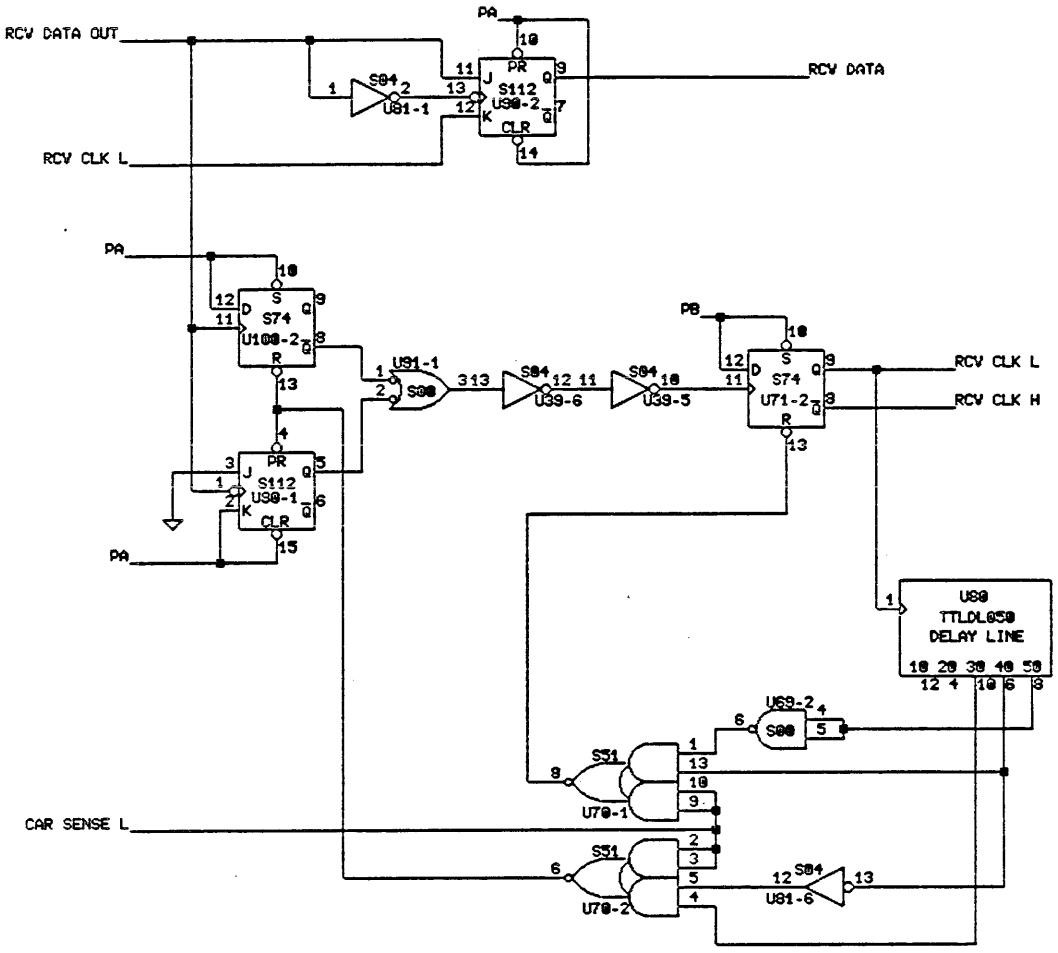
PERQ

DESIGNED	P. REDDY	
DRAWN	23/JULY/84	STECK
UPDATED	23/JULY/84	STECK

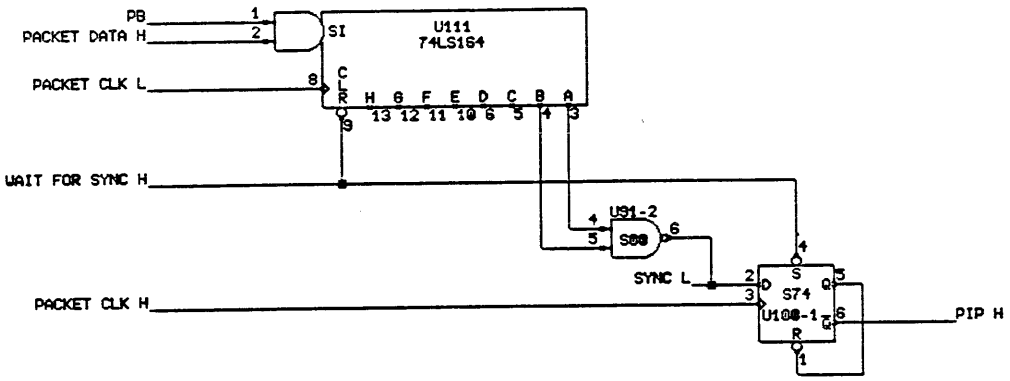
SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0225-	02	H

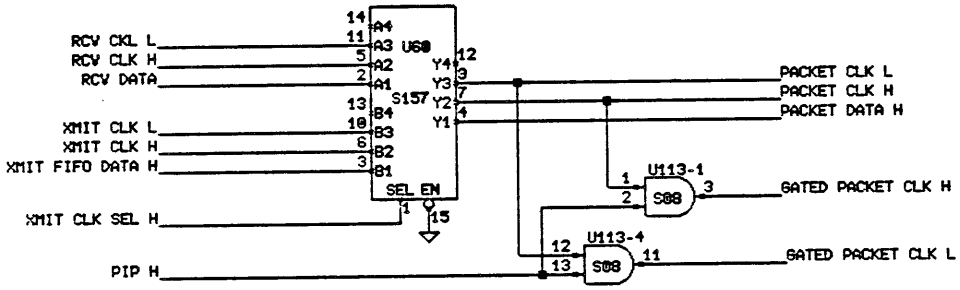
PROJ : OPTION I/O ETHERNET (OIO-001) PAGE 12 OF 25

24 Jul 84 09:17:26 io12.real.db



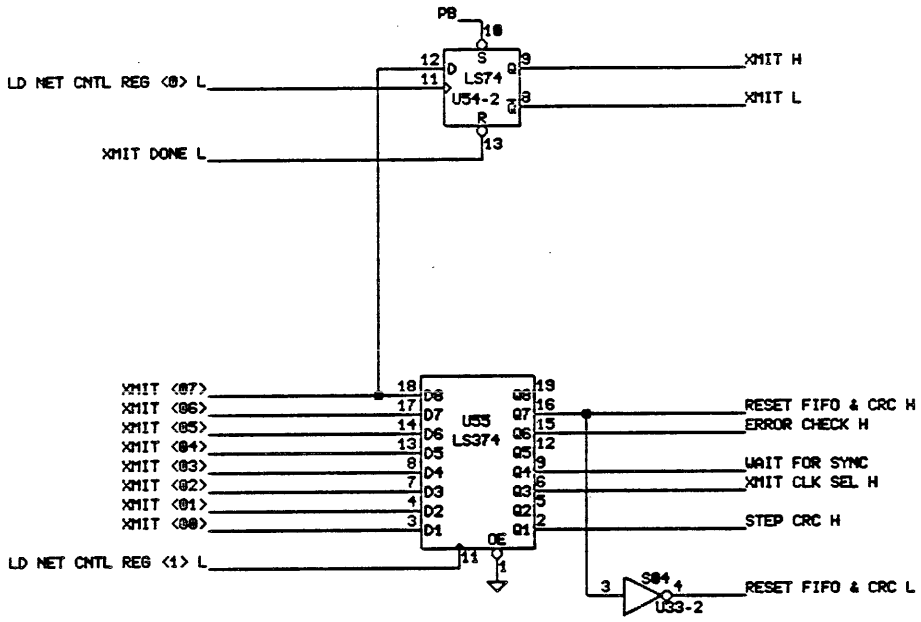
TITLE: DATA RECOVERY								IO13.dp
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-001)			PAGE 13 OF 25	



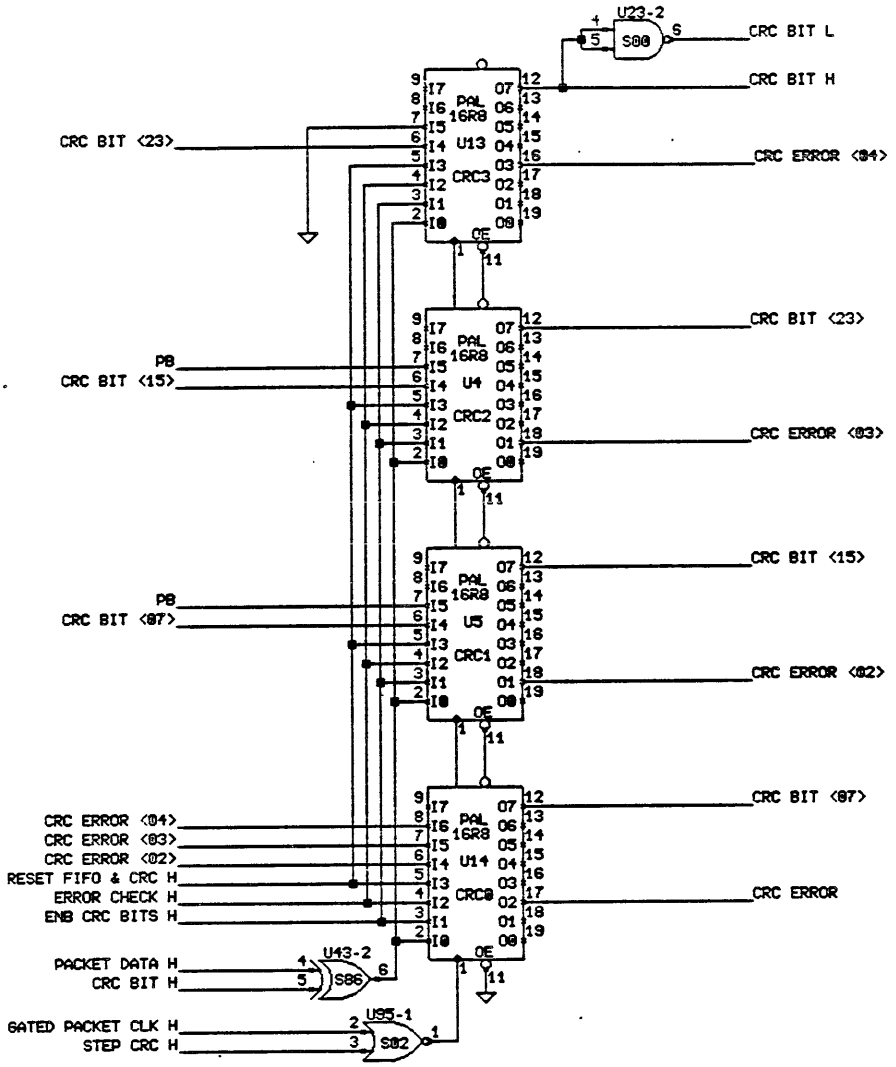


NOTE: DETECT FIRST 2 COSECUTIVE
DURING TRANSMIT OR RECIEVE.

PERQ			TITLE: SYNC DETECT				IO14.db
	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR / REV
	DRAWN	23/JULY/84	STECK	A	1 0	0 2 2 5 -	0 2 / H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-001)			PAGE 14 OF 25

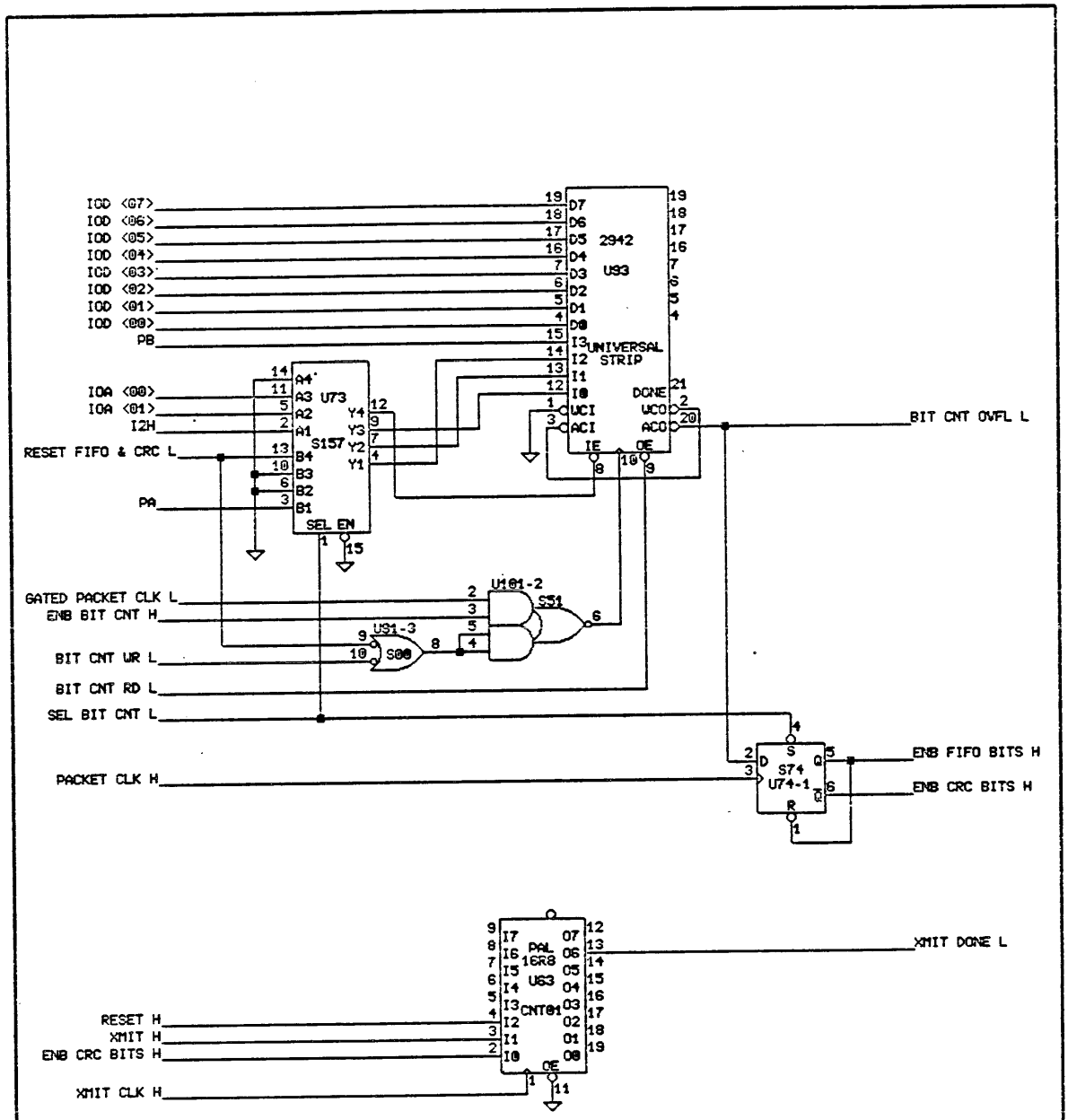


TITLE: NET CONTROL						I015.dp	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-001)			PAGE 15 OF 25	



TITLE	ETHERNET CRC						IO16.dp	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	1 0	0 2 2 5 -	0 2	H
	UPDATED	23/JULY/84	STECK	PROJ :	OPTION I/O ETHERNET (OIO-001)		PAGE 16 OF 25	

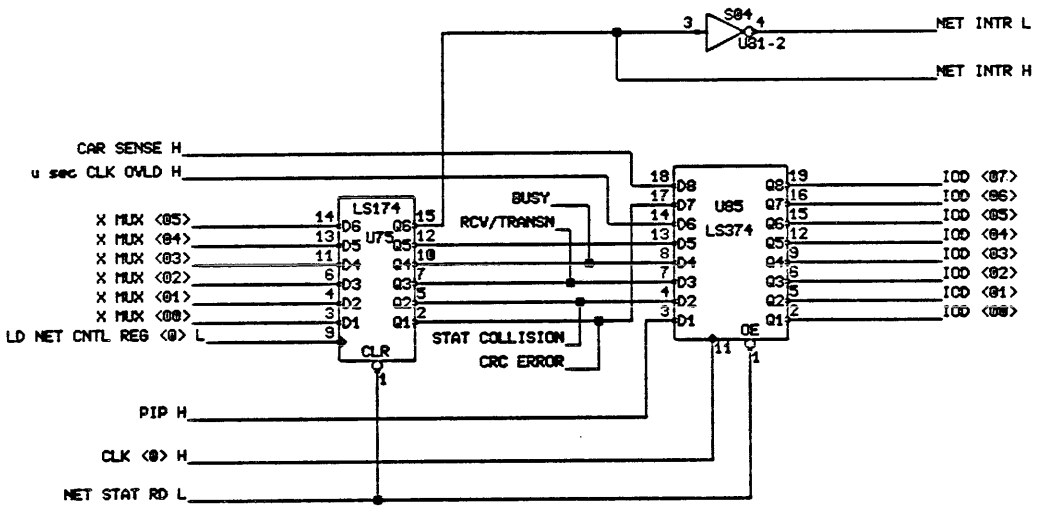
24 Jul 84 09:19:39 io16.real.dp



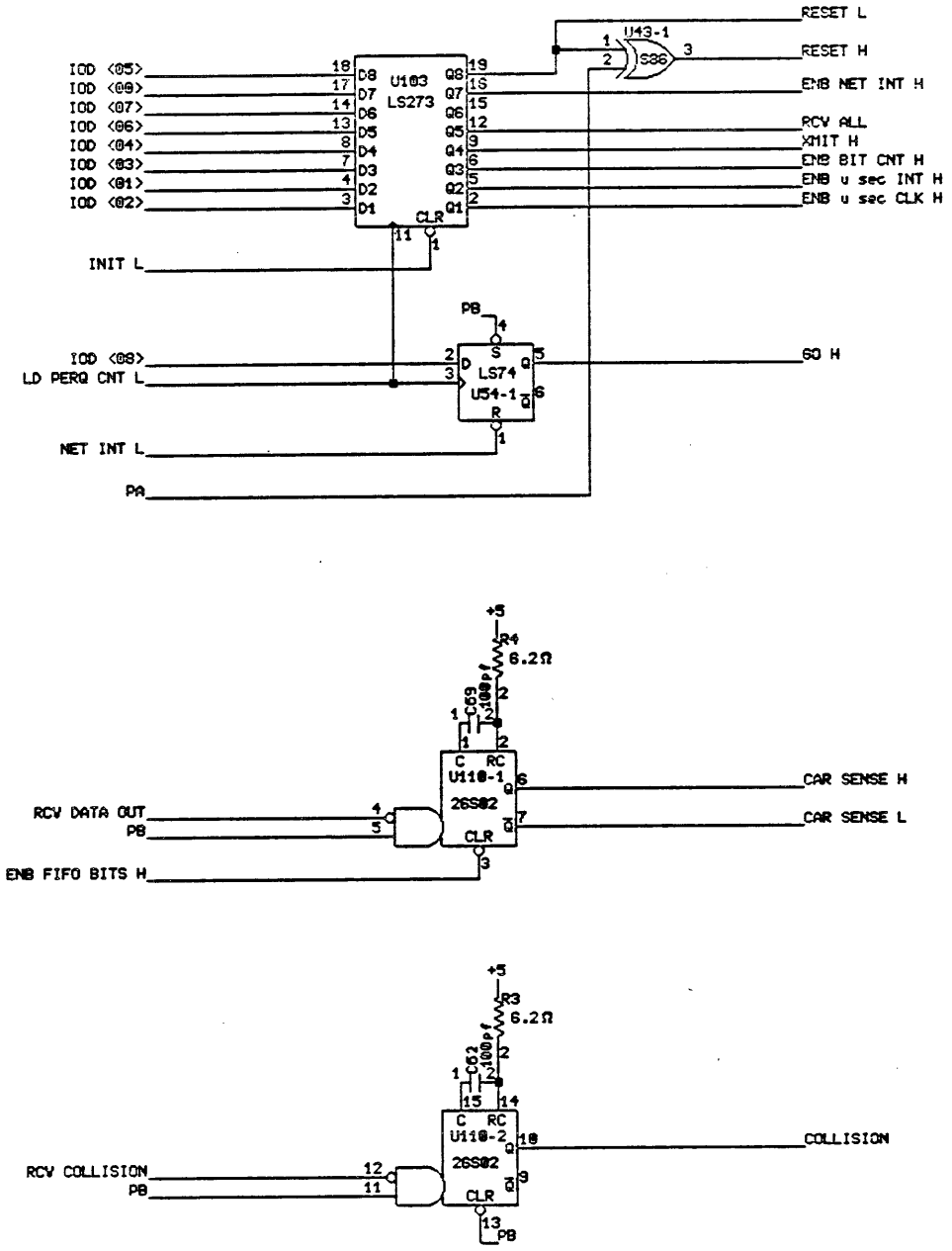
TITLE	NET BIT COUNTER		IO17.db
SIZE	CODE	IDENTIFICATION	VAR / REV
A	10	0225-	02 / H
PROJ :	OPTION I/O ETHERNET (OIO-001)		PAGE 17 OF 25

PERQ	DESIGNED	P. REDDY	
	DRAWN	23/JULY/84	STECK
	UPDATED	23/JULY/84	STECK

24 Jul 84 09:20:18 io17.real.db

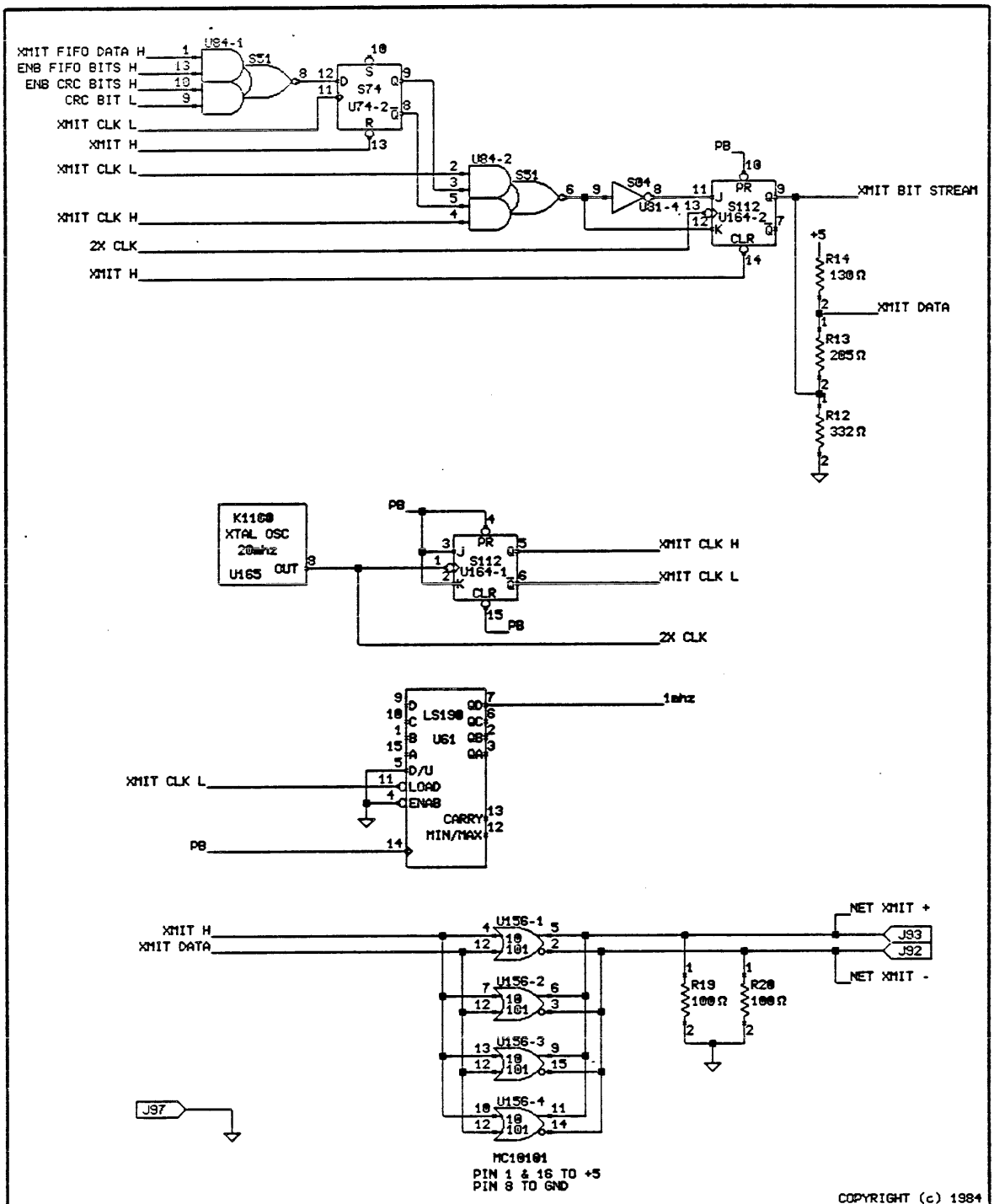


TITLE: NET STATUS						IO18.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-001)			PAGE 18 OF 25	



TITLE	PERQ CONTROL REGISTER					IO19.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (CIO-001)			PAGE 19 OF 25	

24 Jul 84 09:21:27 io19.real.db



TITLE: TRANSMIT ENCODE

IO20.dp

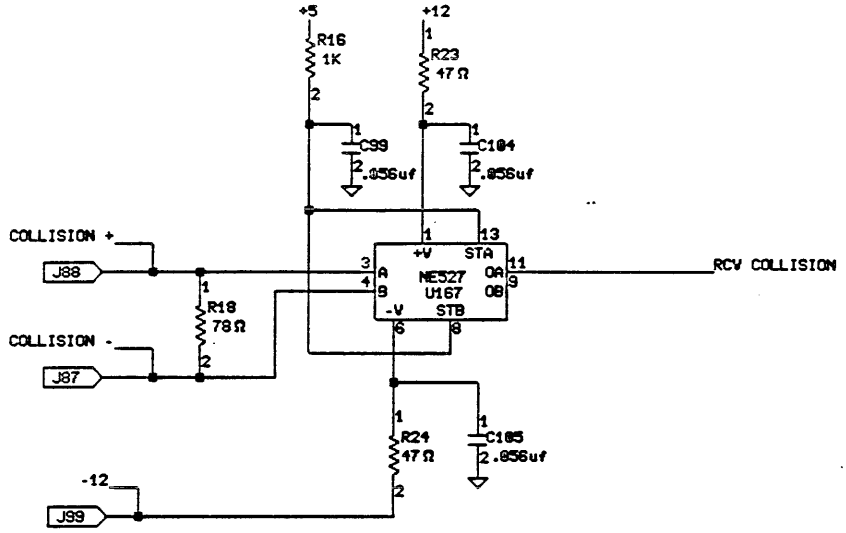
PERQ

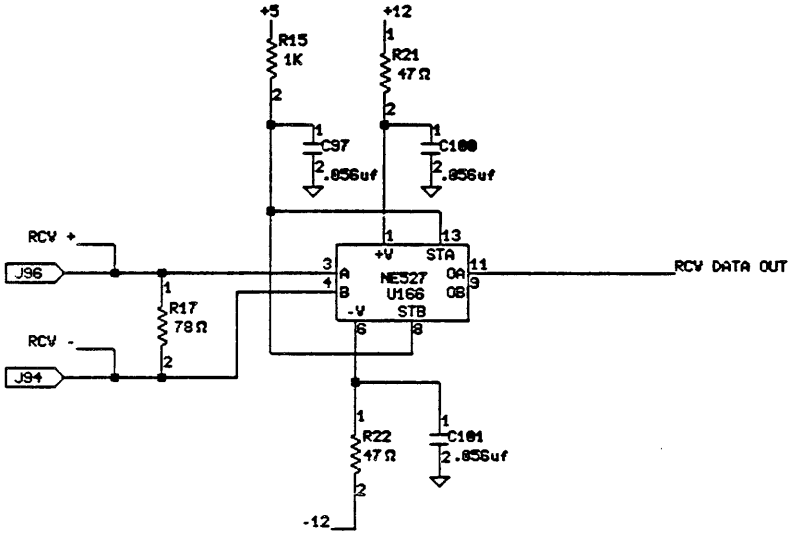
DESIGNED	P. REDDY		
DRAWN	23/JULY/84	STECK	
UPDATED	23/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	8225--	02	H

PROJ : OPTION I/O ETHERNET (OIO-001)

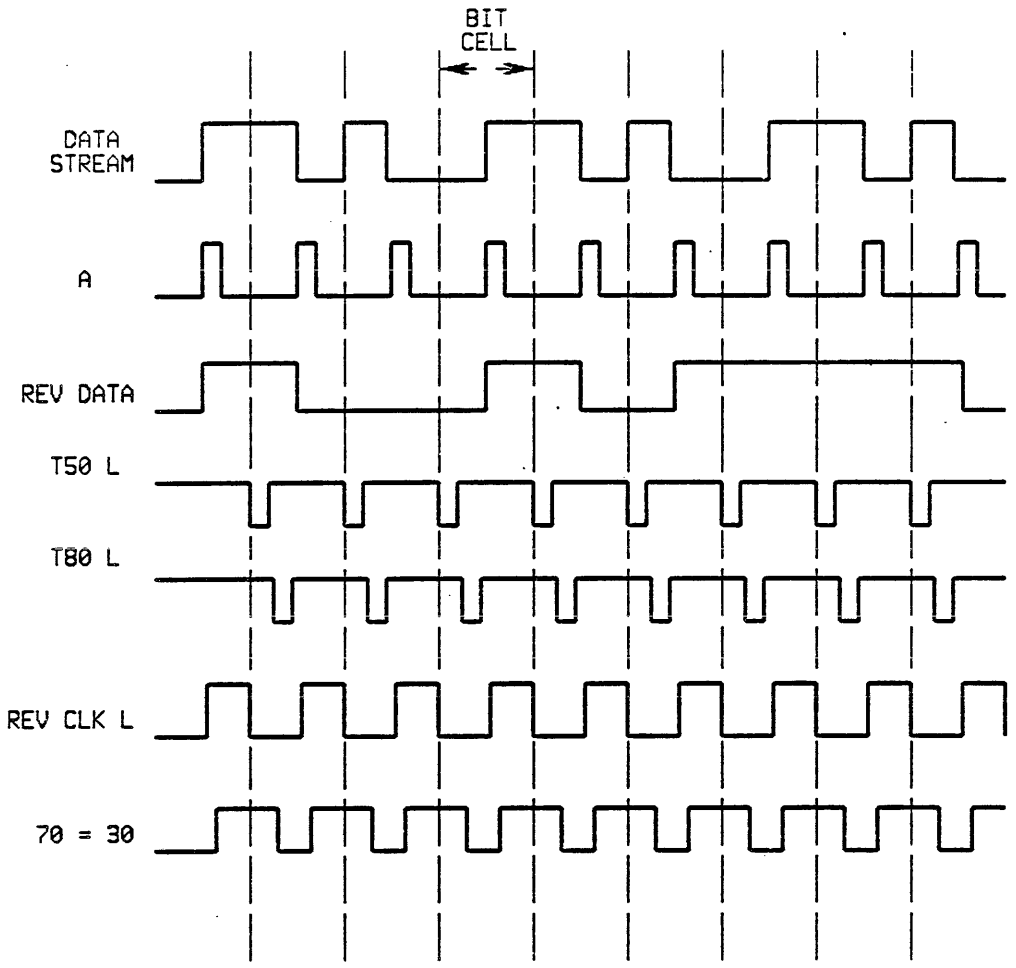
24 Jul 84 09:22:13 io20.real.dp



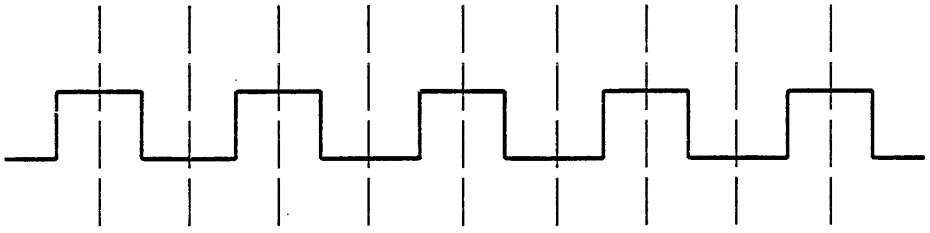


TITLE	DATA RECOVERY						IO21.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	23/JULY/84	STECK	PROJ :	OPTION I/O ETHERNET (OIO-001)		PAGE 21 OF 25	

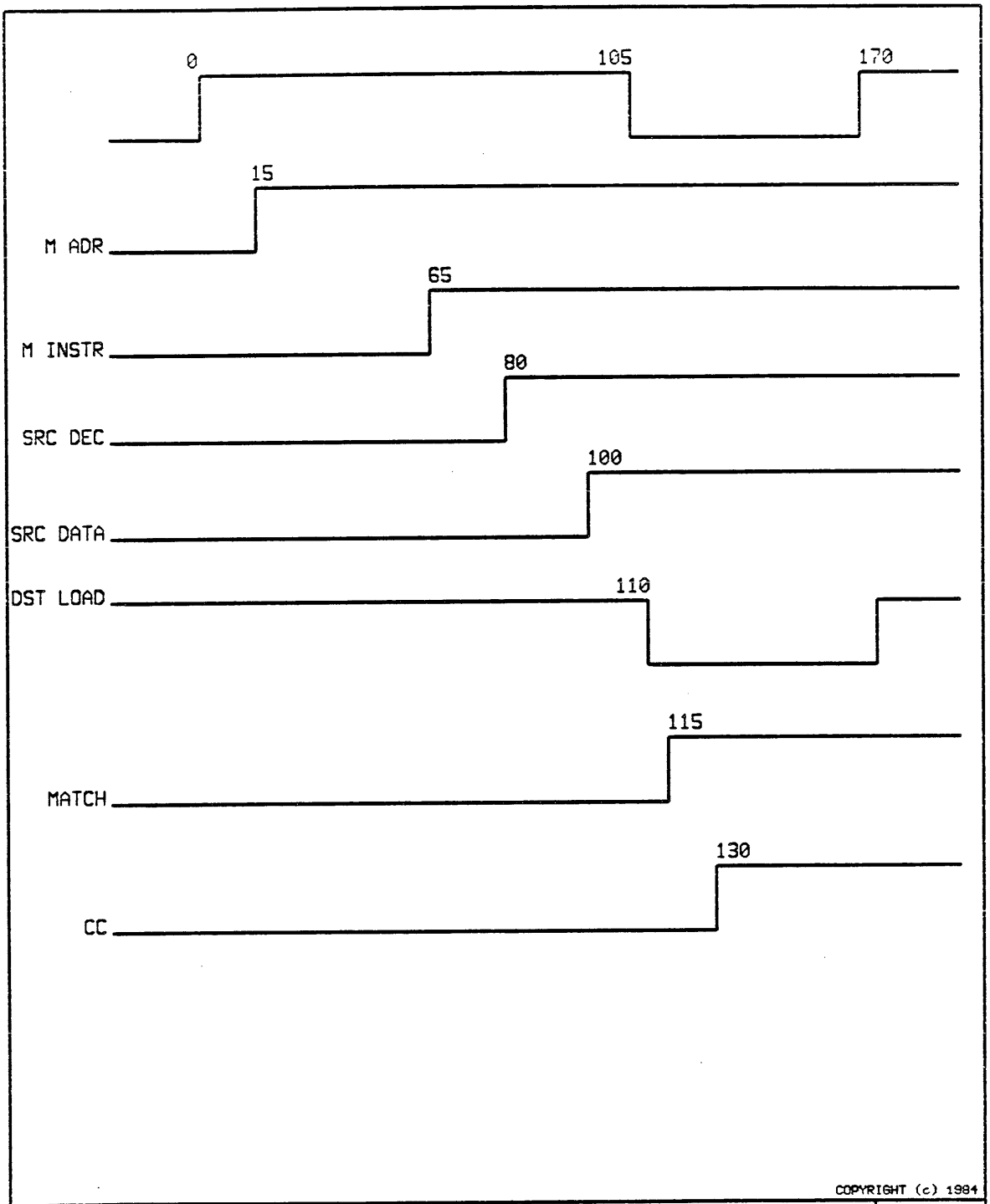
24 Jul 84 09:22:53 io21.real.db



SYNCHRONIZATION

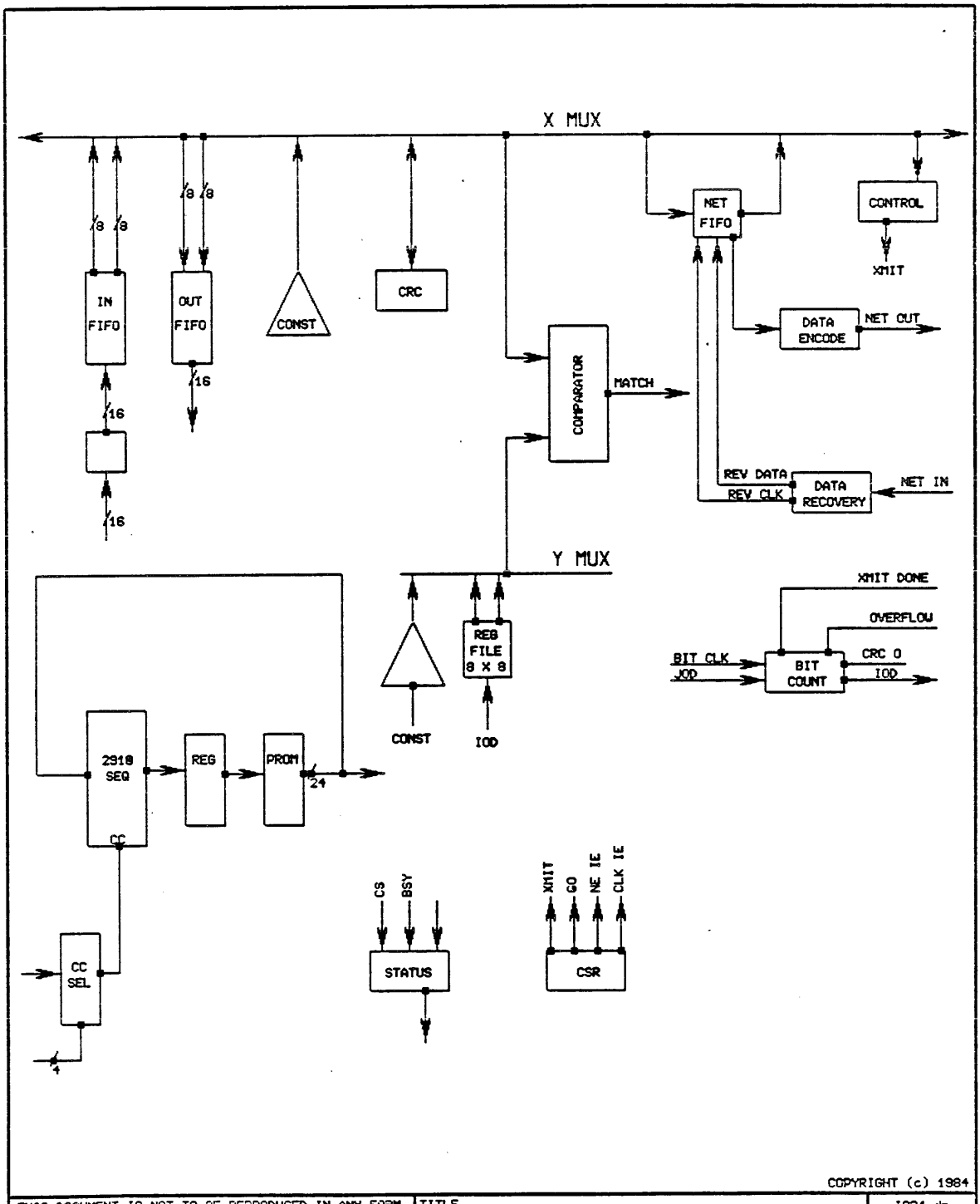


TITLE: TIMING							I022.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-091)			PAGE 22 OF 25	



TITLE	TIMING FOR DATA LOOP						I023.dp
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02	H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-001)			PAGE 23 OF 25	

24 Jul 84 09:25:00 io23.dp



TITLE: ETHERNET BLOCK DIAGRAM

IO24.db

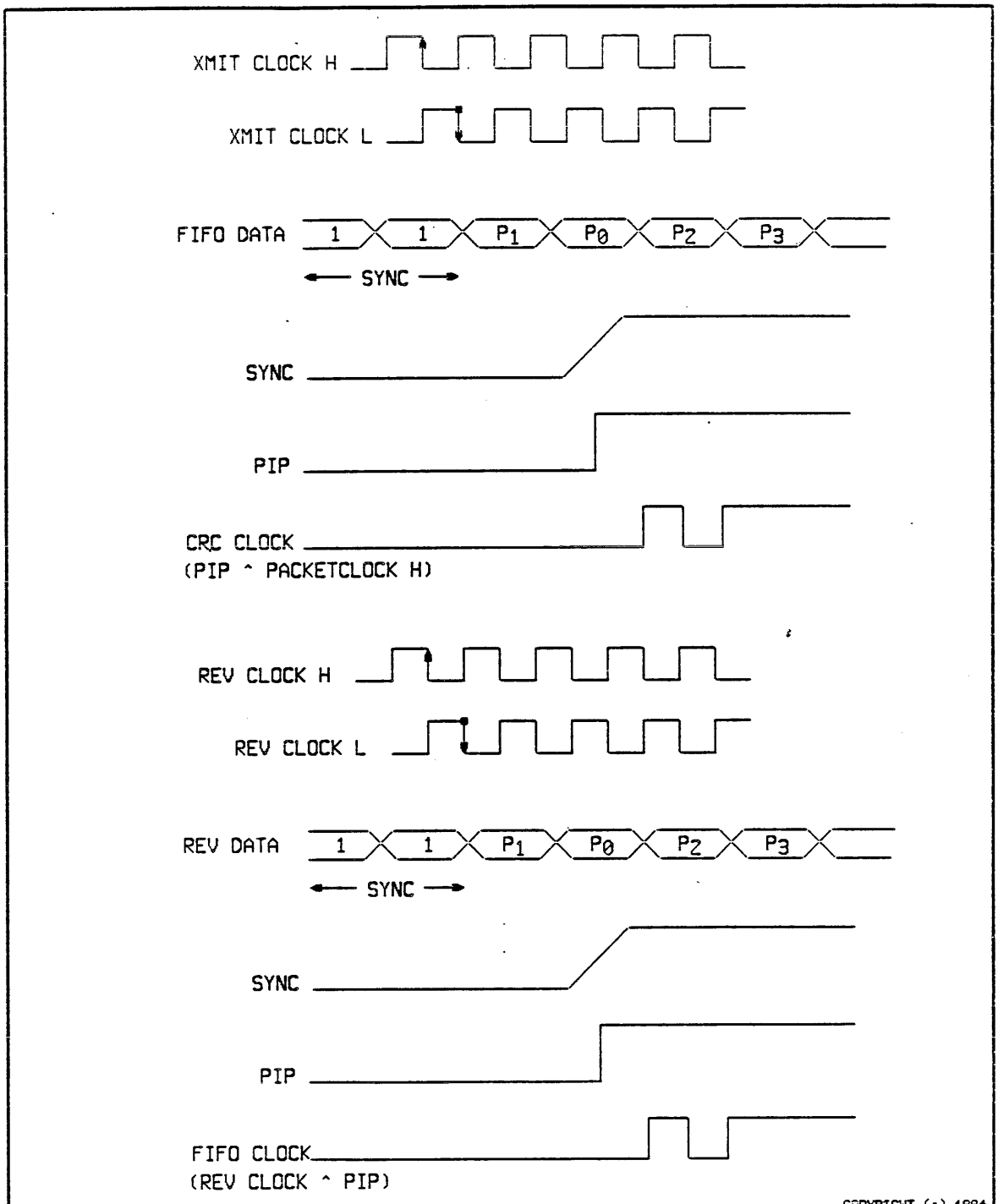
PERQ

DESIGNED	P. REDDY	
DRAWN	23/JULY/84	STECK
UPDATED	23/JULY/84	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0225-	02	H

PROJ : OPTION I/O ETHERNET (OIO-001)

24 Jul 84 09:25:42 io24.db



TITLE: TRANSMIT & REV TIMING						IO25.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR / REV
	DRAWN	23/JULY/84	STECK	A	10	0225-	02 / H
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O ETHERNET (OIO-001)			PAGE 25 OF 25

24 Jul 84 09:26:29 io25.db

Part/Page Cross Reference 23 Jul 84 18:14:47

Using Files: I001.WL to I021.WL

PART..TYPE.....Pages Numbers

U4....PAL16R8.....16
U5....PAL16R8.....16
U6....74S225.....10
U7....74S225.....10
U12...2910..... 8
U13...PAL16R8.....16
U14...PAL16R8.....16
U15...74S225.....10
U16...74S225.....10
U21...74S374..... 8
U22...74S240/1..... 8 8 8 8 8 6 6
U23...74S00.....16 10 6 6
U24...74S374..... 9
U25...74S112.....11
U29...74S74..... 4
U31...27S29..... 8
U32...74S244/1.....12 12 12 12 12 12 12 12
U33...74S04.....15 9 9 9 8 1
U34...74LS251..... 9
U35...9403.....11
U36...74S374/1..... 1
U37...74S374..... 1
U39...74S04.....13 13 9 4
U41...27S29..... 8
U42...74LS74..... 8
U43...74S86.....19 16 11 10
U44...74LS251..... 9
U45...9403.....11
U46...74S225.....10
U47...74S225.....10
U48...TERM14/1..... 4 4 3 3 3 3 3 3 3 3
U49...TERM14/1..... 4 4 3 3 3 3 3 3 3 3
U51...27S29..... 8
U53...74S138..... 9
U54...74LS74.....19 15
U55...74LS374.....15
U56...74S225.....10
U57...74S225.....10
U58...74S244/1..... 3 3 3 3 3 3 3 3
U59...74S244/1..... 3 3 3 3 3 3 3 3
U60...74S157.....14
U61...74LS190.....20
U62...74S244/1.....12 12 12 12 12 12 12 12
U63...PAL16R8.....17
U64...74S139..... 9 2

U65...25LS2521.....11
U66...74S225.....10
U68...74S244/1..... 4 4 4 4
U69...74S00.....13 11 5
U70...74S51.....13 13
U71...74S74.....13 7
U72...74LS670/1..... 6
U73...74S157.....17
U74...74S74.....20 17
U75...74LS174.....18
U78...67S376..... 4
U79...74LS374..... 5
U80...TTLDL050.....13
U81...74S04.....20 18 13 13 11 6
U82...74LS670/1..... 6
U83...2942..... 7
U84...74S51.....20 20
U85...74LS374.....18
U88...74LS374/1..... 5
U89...74S374..... 3
U90...74S112.....13 13
U91...74S00.....17 14 13
U92...74LS670/1..... 6
U93...2942.....17
U95...74S02.....16 10
U98...74S374..... 3
U99...74S288..... 5
U100..74S74.....14 13
U101..74S51.....17 7
U102..74LS670..... 6
U103..74LS273.....19
U107..74S04..... 1 1 1 1 1
U108..74S288..... 5
U110..26S02.....19 19
U111..74LS164.....14
U112..74S51..... 6 6
U113..74S08.....14 14 6 6
U117..74S138..... 2
U118..74S138..... 4
U119..74S04..... 5 4 4
U122..74S139..... 2 2
U127..74S138..... 2
U129..74S20..... 4
U131..74S32.....11 5
U137..74S02..... 2 2 2
U156..10101/1.....20 20 20 20
U164..74S112.....20 20
U165..K1100.....20
U166..NE527.....21
U167..NE527.....21
U199..74S04..... 4
C62...CAP.....19

C69...CAP.....19
C97...CAP.....21
C99...CAP.....21
C100..CAP.....21
C101..CAP.....21
C104..CAP.....21
C105..CAP.....21
R1....RES+5..... 6
R2....RES+5..... 4
R3....RES+5.....19
R4....RES+5.....19
R12...RES.....20
R13...RES.....20
R14...RES+5.....20
R15...RES+5.....21
R16...RES+5.....21
R17...RES.....21
R18...RES.....21
R19...RES.....20
R20...RES.....20
R21...RES.....21
R22...RES.....21
R23...RES.....21
R24...RES.....21
J16...EDGE..... 1
J17...EDGE..... 1
J18...EDGE..... 1
J19...EDGE..... 1
J21...EDGE..... 1
J22...EDGE..... 1
J23...EDGE..... 1
J24...EDGE..... 1
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J58...EDGE..... 3
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JA19..EDGE..... 3
JA20..EDGE..... 3
JB1...EDGE..... 4
JB3...EDGE..... 4
JB5...EDGE..... 4
JB7...EDGE..... 4
JB9...EDGE..... 3
JB11..EDGE..... 3

JB13..EDGE..... 3
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JB17..EDGE..... 3
JB19..EDGE..... 3
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JB23..EDGE..... 3
JB25..EDGE..... 3
JB27..EDGE..... 3
JB29..EDGE..... 3
JB31..EDGE..... 3
JB33..EDGE..... 3
JB35..EDGE..... 3
JB37..EDGE..... 3
JB39..EDGE..... 3

Signal/Page Cross Reference 02 Aug 84 10:32:35

Using Files: I001.WL to I021.WL

SIGNAL NAME.....Pages Numbers

+12.....21
-12.....21
1mhz.....20
1mhz H..... 7
2X CLK.....20
AB..... 4
ADR <00>..... 8
ADR <01>..... 8
ADR <02>..... 8
ADR <03>..... 8
ADR <04>..... 8
ADR <05>..... 8
ADR <06>..... 8
ADR <07>..... 8
ADR <08>..... 8
ADR MCH L..... 4
BIT CNT OVFL L.....17
BIT CNT RD L.....17 6 2
BIT CNT WR L.....17 6 2
BUF CYC H..... 4
BUSY.....18
CANON <4> RD L..... 2
CANON <4> WR L..... 2
CAR SENSE H.....19 18 9
CAR SENSE L.....19 13
CC L..... 9 8
CC SEL <00>..... 9 8
CC SEL <01>..... 9 8
CC SEL <02>..... 9 8
CC SEL <03>..... 9 8
CLK <0> A H..... 1
CLK <0> B..... 1
CLK <0> C..... 1
CLK <0> H.....18 9 8 1
CLK <4> A L..... 1
CLK <4> B..... 1
CLK <4> C L..... 1
CLK <4> H.....10
CLK <4> L.....10 9
CLK <7> H..... 1
CLK CNT L..... 4
CLK OUT L..... 4 3
CLK REG L..... 5 4
CLK-4 L..... 5 4
COLLISION.....19 9

COLLISION +.....21
COLLISION -.....21
CRC BIT <07>.....16
CRC BIT <15>.....16
CRC BIT <23>.....16
CRC BIT H.....16
CRC BIT L.....20 16
CRC ERROR.....18 16 9
CRC ERROR <02>.....16
CRC ERROR <03>.....16
CRC ERROR <04>.....16
DMA REQ L.....10 9
EN HB..... 6
EN IN L..... 3 3
EN L..... 5
EN LB..... 6
EN NET INT H..... 6
EN u sec CLK H..... 7
EN u sec INT H..... 6
ENB BIT CNT H.....19 17
ENB CNT L..... 4
ENB CRC BITS H.....20 17 16
ENB FIFO BITS H.....20 19 17
ENB IN FIFO 0 L.....10 9
ENB IN FIFO 1 L.....10 9
ENB IN L..... 4
ENB NET FIFO L.....11 9
ENB NET INT H.....19
ENB REG L..... 5 4
ENB u sec CLK H.....19
ENB u sec INT H.....19
ERROR CHECK H.....16 15
EX DEV <1> WR L..... 2
EX DEV <2> WR L..... 2
EX DEV <41> RD L..... 2
EX DEV <42> RD L..... 2
EX DEV <43> RD L..... 2
EX DEV <44> RD L..... 2
EXT A REQ H.....10
EXT RCSR TO BUS L..... 4
EXT X BUF CYC..... 4
FLAG H..... 4
GATED PACKET CLK H.....16 14
GATED PACKET CLK L.....17 14 11
GND.....21 20 17 16 15 14 13 11 10 9 8 7 6 4 3
GO H.....19 9
I/O ENB L..... 4 2
I/O MDO <00>.....10 1
I/O MDO <01>.....10 1
I/O MDO <02>.....10 1
I/O MDO <03>.....10 1
I/O MDO <04>.....10 1

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I/O MDO <06>.....10  1
I/O MDO <07>.....10  1
I/O MDO <08>.....10  1
I/O MDO <09>.....10  1
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I/O MDO <11>.....10  1
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I/O MDO <13>.....10  1
I/O MDO <14>.....10  1
I/O MDO <15>.....10  1
I2H.....17  7  6
INIT L.....19
INT L..... 6
IOA <00>.....17  7  6  5  4  2
IOA <01>.....17  7  6  5  4  2
IOA <02>..... 5  4  2
IOA <03>..... 5  4  2
IOA <04>..... 5  4  2
IOA <05>..... 5  4  2
IOA <06>..... 5  4  2
IOA <07>..... 6  2
IOD <00>.....19 18 17  7  6  5  4  3
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IOD <08>.....19  6  5  3
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IOD <15>..... 6  5  3
J ADR <00>.....12  8
J ADR <01>.....12  8
J ADR <02>.....12  8
J ADR <03>.....12  8
J ADR <04>.....12  8
J ADR <05>.....12  8
J ADR <06>.....12  8
J ADR <07>.....12  8
J ADR <08>..... 8
J CMD <00>..... 8
J CMD <01>..... 8
J CMD <02>..... 8
J CMD <03>..... 8
L MATCH H..... 9
```

```
LD NET CNT REG <0> .... 9
LD NET CNT REG <1> .... 9
LD NET CNTL REG <0>....18 15
LD NET CNTL REG <1>....15
LD NET FIFO L.....11  9
LD OUT FIFO 0 H.....10  9
LD OUT FIFO 1 H.....10  9
LD PERQ CNT L.....19  2
LD REG FILE L..... 6  2
LINK DATA IN <00>..... 3
LINK DATA IN <01>..... 3
LINK DATA IN <02>..... 3
LINK DATA IN <03>..... 3
LINK DATA IN <04>..... 3
LINK DATA IN <05>..... 3
LINK DATA IN <06>..... 3
LINK DATA IN <07>..... 3
LINK DATA IN <08>..... 3
LINK DATA IN <09>..... 3
LINK DATA IN <10>..... 3
LINK DATA IN <11>..... 3
LINK DATA IN <12>..... 3
LINK DATA IN <13>..... 3
LINK DATA IN <14>..... 3
LINK DATA IN <15>..... 3
LINK DATA OUT <00>..... 3
LINK DATA OUT <01>..... 3
LINK DATA OUT <02>..... 3
LINK DATA OUT <03>..... 3
LINK DATA OUT <04>..... 3
LINK DATA OUT <05>..... 3
LINK DATA OUT <06>..... 3
LINK DATA OUT <07>..... 3
LINK DATA OUT <08>..... 3
LINK DATA OUT <09>..... 3
LINK DATA OUT <10>..... 3
LINK DATA OUT <11>..... 3
LINK DATA OUT <12>..... 3
LINK DATA OUT <13>..... 3
LINK DATA OUT <14>..... 3
LINK DATA OUT <15>..... 3
MATCH H.....11  9
MATCH L.....11
MDI <00>.....10
MDI <01>.....10
MDI <02>.....10
MDI <03>.....10
MDI <04>.....10
MDI <05>.....10
MDI <06>.....10
MDI <07>.....10
MDI <08>.....10
```

```
MDI <09>.............10
MDI <10>.............10
MDI <11>.............10
MDI <12>.............10
MDI <13>.............10
MDI <14>.............10
MDI <15>.............10
MDO <00>.............. 1
MDO <01>.............. 1
MDO <02>.............. 1
MDO <03>.............. 1
MDO <04>.............. 1
MDO <05>.............. 1
MDO <06>.............. 1
MDO <07>.............. 1
MDO <08>.............. 1
MDO <09>.............. 1
MDO <10>.............. 1
MDO <11>.............. 1
MDO <12>.............. 1
MDO <13>.............. 1
MDO <14>.............. 1
MDO <15>.............. 1
NET FIFO IR..........11  9
NET FIFO OR..........11  9
NET INT H............. 6
NET INT L............19
NET INTR H...........18
NET INTR L...........18
NET STAT RD L........18  2
NET XMIT +...........20
NET XMIT -...........20
O SEL ENB............. 9  8
PA...................19 17 13 11 10  9  8  7
PACKET CLK H.........17 14
PACKET CLK L.........14
PACKET DATA H........16 14 11
PB...................20 19 17 16 15 14 13 10  6
PIP H................18 14  9
PL EXT A H...........10
PROM <1> WR L......... 2
PROM <2> WR L......... 2
RCV +................21
RCV -................21
RCV ALL..............19  9
RCV CKL L............14
RCV CLK H............14 13
RCV CLK L............13
RCV COLLISION........21 19
RCV DATA.............14 13
RCV DATA OUT.........21 19 13
RCV/TRANSN...........18
```

```
RESET FIFO & CRC H.....16 15
RESET FIFO & CRC L.....17 15 11 10 10
RESET H................19 17  9  8
RESET L................19  8
RSCR TO BUS H..........  4
SEL BIT CNT L..........17  6
SEL u sec CLK L........  7  6
SMD <1> WR L...........  2
SMD <2> WR L...........  2
SMD <3> WR L...........  2
SMD <4> WR L...........  2
SMD RD L...............  2
STAT COLLISION.........18
STEP CRC H.............16 15
STREAMER <1> RD L......  2
STREAMER <2> RD L......  2
STREAMER <4> WR L......  2
SYNC L.................14
TOP EXT A..............10
UNLD EXT A FIFO........10
UNLD IN FIFO L.........10  9
UNLD NET FIFO L........11  9
WAIT FOR SYNC..........15
WAIT FOR SYNC H........14
WR EXT A H.............10
X CNST ENB L...........12
X CONST ENB L..........  9
X MIT CLK H............11
X MUX <00>.............18 12 11 10
X MUX <01>.............18 12 11 10
X MUX <02>.............18 12 11 10
X MUX <03>.............18 12 11 10
X MUX <04>.............18 12 11 10
X MUX <05>.............18 12 11 10
X MUX <06>.............12 11 10
X MUX <07>.............12 11 10
X MUX <0>..............10  9
X MUX H................11
X MUX L................11
X SEL <00>.............  9  8
X SEL <01>.............  9  8
XMIT <00>..............15
XMIT <01>..............15
XMIT <02>..............15
XMIT <03>..............15
XMIT <04>..............15
XMIT <05>..............15
XMIT <06>..............15
XMIT <07>..............15
XMIT BIT STREAM........20
XMIT CLK H.............20 17 14
XMIT CLK L.............20 14
```

```
XMIT CLK SEL H.....15 14
XMIT DATA..........20
XMIT DONE.......... 4
XMIT DONE L........17 15
XMIT FIFO DATA H...20 14 11
XMIT H.............20 19 17 15  9
XMIT L.............15
Y MUX <00>.........12 11
Y MUX <01>.........12 11  6
Y MUX <02>.........12 11  6
Y MUX <03>.........12 11  6
Y MUX <04>.........12 11  6
Y MUX <05>.........12 11  6
Y MUX <06>.........12 11  6
Y MUX <07>.........12 11  6
Y MUX<00>.......... 6
Y SEL <00> H....... 9  8  6
Y SEL <00> L....... 8  6
Y SEL <01> H....... 9  8  6
Y SEL <02> H....... 9  8
Y SEL <03> H.......12  8  6
u sec CLK OVFL H... 7  6
u sec CLK OVLD H...18
u sec CLK RD L..... 7  6  2
u sec CLK WR H..... 7  6
u sec CLK WR L..... 6
u sec WR L......... 2
```

This Run Was made using the following files:

100225.PART
io21.WL
io20.WL
io19.WL
io18.WL
io17.WL
io16.WL
io15.WL
io14.WL
io13.WL
io12.WL
io11.WL
io10.WL
io09.WL
io08.WL
io07.WL
io06.WL
io05.WL
io04.WL
io03.WL
io02.WL
io01.WL

Number Of Nets = 426
Begin Wirelist

```
   1: U110-15 C62-1                          .%C62-1

   2: U98-1 U89-1 U78-1 U83-1 U12-25 U12-23
   2: U12-27 U12-13 U22-19 U21-1 U12-29
   2: U44-3 U24-1 U64-15 U66-9 U65-1 U25-3
   2: U90-3 U60-15 U55-1 U4-11 U5-11 U14-11
   2: U13-7 U13-11 U63-11 U93-1 U73-14
   2: U73-6 U73-10 U73-15 R12-2 R20-2 J97-1
   2: R19-2 U61-5 U61-4 C99-2 C97-2 C100-2
   2: C101-2 C105-2 C104-2                   .!GND

   3: U110-14 R3-2 C62-2                     .%C62-2

   4: C69-2 U110-2 R4-2                      .%R4-2

   5: U100-5 U100-1                          .%U100-1

   6: U101-4 U91-8 U101-5                    .%U101-5

   7: C69-1 U110-1                           .%U110-1

   8: U91-4 U111-3                           .%U111-3
```

9: U91-5 U111-4	.%U111-4
10: U81-5 U112-6	.%U112-6
11: U137-1 U127-5 U117-5	.%U117-5
12: U129-9 U119-2	.%U119-2
13: U129-12 U119-4	.%U119-4
14: U69-1 U119-8	.%U119-8
15: U21-7 U12-1	.%U12-1
16: U21-13 U12-18	.%U12-18
17: U21-8 U12-20	.%U12-20
18: U42-12 U12-22	.%U12-22
19: U21-17 U12-3	.%U12-3
20: U21-3 U12-35	.%U12-35
21: U21-4 U12-37	.%U12-37
22: U21-18 U12-39	.%U12-39
23: U117-7 U122-1	.%U122-1
24: U117-9 U122-15	.%U122-15
25: U4-1 U5-1 U14-1 U95-1 U13-1	.%U13-1
26: U119-9 U131-11	.%U131-11
27: U117-6 U137-10	.%U137-10
28: U137-2 U137-3 U137-13	.%U137-13
29: U81-8 U164-11	.%U164-11
30: U81-9 U84-6 U164-12	.%U164-12
31: R21-2 C100-1 U166-1	.%U166-1
32: R15-2 C97-1 U166-8 U166-13	.%U166-13
33: R22-1 C101-1 U166-6	.%U166-6
34: C104-1 R23-2 U167-1	.%U167-1

```
 35: R16-2 U167-8 C99-1 U167-13          .%U167-13
 36: C105-1 R24-1 U167-6                 .%U167-6
 37: U129-13 U199-6                      .%U199-6
 38: U12-33 U21-14                       .%U21-14
 39: U42-8 U22-15                        .%U22-15
 40: U34-15 U24-12                       .%U24-12
 41: U34-13 U24-19                       .%U24-19
 42: U34-2 U24-6                         .%U24-6
 43: U34-1 U24-9                         .%U24-9
 44: U69-13 U25-5                        .%U25-5
 45: U131-2 U25-6                        .%U25-6
 46: U29-4 R2-2 U29-2                    .%U29-2
 47: U53-7 U33-1                         .%U33-1
 48: U53-9 U33-11                        .%U33-11
 49: U53-10 U33-5                        .%U33-5
 50: U24-2 U34-14                        .%U34-14
 51: U24-15 U34-3                        .%U34-3
 52: U24-5 U34-4                         .%U34-4
 53: U39-8 U34-7                         .%U34-7
 54: U25-4 U35-23 U35-14                 .%U35-14
 55: U81-10 U35-15                       .%U35-15
 56: U45-1 U35-9                         .%U35-9
 57: U37-1 U36-1                         .%U36-1
*** Run Has no outputs
 58: U39-12 U39-11                       .%U39-11
 59: JA3-1 U39-3                         .%U39-3
 60: U23-9 U43-11                        .%U43-11
```

61: U69-12 U25-1 U45-23 U45-14 .%U45-14

62: U131-3 U45-15 .%U45-15

63: U47-16 U57-16 U46-16 .%U46-16
*** Run Has no outputs

64: U14-2 U43-6 U13-2 U4-2 U5-2 .%U5-2

65: U127-12 U64-1 .%U64-1

66: U95-13 U66-19 .%U66-19

67: JA2-1 U68-15 .%U68-15

68: JA1-1 U68-17 .%U68-17

69: U70-1 U69-6 .%U69-6

70: U6-9 U15-9 U16-9 U23-8 U16-16 U15-16
70: U6-16 U7-16 U7-9 .%U7-9

71: U80-10 U70-4 .%U70-4

72: U81-12 U70-5 .%U70-5

73: U90-4 U100-13 U70-6 .%U70-6

74: U71-13 U70-8 .%U70-8

75: U39-10 U71-11 .%U71-11

76: U101-8 U83-10 U71-3 .%U71-3

77: U71-4 U71-5 .%U71-5

78: U93-8 U73-12 .%U73-12

79: U84-8 U74-12 .%U74-12

80: U84-5 U74-8 .%U74-8

81: U85-13 U75-12 .%U75-12

82: U69-4 U69-5 U80-8 .%U80-8

83: U70-13 U80-6 U81-13 .%U81-13

84: U71-2 U83-20 .%U83-20

85: U83-2 U83-3 .%U83-3

```
 86: U74-9 U84-3                          .%U84-3

 87: U81-2 U90-13                         .%U90-13

 88: U100-8 U91-1                         .%U91-1

 89: U90-5 U91-2                          .%U91-2

 90: U39-13 U91-3                         .%U91-3

 91: U101-6 U93-10                        .%U93-10

 92: U73-9 U93-12                         .%U93-12

 93: U73-7 U93-13                         .%U93-13

 94: U73-4 U93-14                         .%U93-14

 95: U93-2 U93-3                          .%U93-3

 96: R23-1 R21-1                          .+12

 97: R22-2 J99-1 R24-2                    .-12

 98: U61-7                                .1MHZ
*** Only one pin in net

 99: U101-13                              .1MHZ H
*** Only one pin in net
*** Run Has no outputs

100: U164-13 U164-1 U165-8                .2X CLK

101: U68-13 U29-5                         .AB

102: U21-15 U51-1 U41-1 U31-1             .ADR <00>

103: U21-2 U51-2 U41-2 U31-2              .ADR <01>

104: U21-5 U51-3 U41-3 U31-3              .ADR <02>

105: U21-19 U51-4 U31-4                   .ADR <03>

106: U21-6 U51-5 U41-5 U31-5              .ADR <04>

107: U21-16 U51-16 U41-16 U31-16          .ADR <05>

108: U21-12 U51-17 U41-17 U31-17          .ADR <06>

109: U21-9 U51-18 U41-18 U31-18           .ADR <07>
```

```
 110: U22-5 U51-19 U41-19 U31-19          .ADR <08>

 111: U129-8 U118-5                       .ADR MCH L

 112: U74-2 U93-20                        .BIT CNT OVFL L

 113: U127-14 U113-5 U93-9                .BIT CNT RD L

 114: U117-12 U113-4 U22-17 U91-10        .BIT CNT WR L

 115: JB7-1 U78-5                         .BUF CYC H

 116: U85-8 U75-10                        .BUSY

 117: U127-13                             .CANON <4> RD L
*** Only one pin in net

 118: U117-10                             .CANON <4> WR L
*** Only one pin in net

 119: U24-4 U85-18 U110-6                 .CAR SENSE H

 120: U70-10 U70-9 U70-3 U70-2 U110-7     .CAR SENSE L

 121: U12-14 U34-6 U44-6                  .CC L

 122: U41-11 U34-9 U44-9                  .CC SEL <00>

 123: U41-12 U34-10 U44-10                .CC SEL <01>

 124: U41-13 U34-11 U44-11                .CC SEL <02>

 125: U41-14 U39-9 U44-7                  .CC SEL <03>

 126: U33-8                               .CLK <0> A H
*** Only one pin in net

 127: U107-8                              .CLK <0> B
*** Only one pin in net

 128: U107-12                             .CLK <0> C
*** Only one pin in net

 129: U36-11 U37-11 U21-11 U12-31 U42-11
 129: U24-11 U85-11                       .CLK <0> H
*** Run Has no outputs

 130: U107-10 U33-9                       .CLK <4> A L

 131: U107-2 U107-9                       .CLK <4> B

 132: U107-13 U107-4                      .CLK <4> C L
```

```
 133: U23-10                                .CLK <4> H
*** Only one pin in net
*** Run Has no outputs

 134: U53-6 U16-19 U15-19 U6-19 U7-19 U56-1
 134: U47-1 U57-1 U46-1                     .CLK <4> L
*** Run Has no outputs

 135: U107-11 J176-1 U107-1 U107-3          .CLK <7> H

 136: U118-14 U78-11                        .CLK CNT L

 137: U98-11 U89-11 U118-12                 .CLK OUT L

 138: U118-11 U79-11 U88-11                 .CLK REG L

 139: U118-6 U69-2                          .CLK-4 L
*** Run Has no outputs

 140: U24-18 U110-10                        .COLLISION

 141: J88-1 U167-3 R18-1                    .COLLISION +

 142: J87-1 R18-2 U167-4                    .COLLISION -

 143: U5-6 U14-12                           .CRC BIT <07>

 144: U4-6 U5-12                            .CRC BIT <15>

 145: U13-6 U4-12                           .CRC BIT <23>

 146: U43-5 U13-12 U23-4 U23-5              .CRC BIT H

 147: U23-6 U84-9                           .CRC BIT L

 148: U44-13 U14-17 U75-2 U85-17            .CRC ERROR
*** Run has multiple outputs

 149: U14-6 U5-18                           .CRC ERROR <02>

 150: U14-7 U4-18                           .CRC ERROR <03>

 151: U14-8 U13-16                          .CRC ERROR <04>

 152: U53-15 U95-11 U95-12                  .DMA REQ L

 153: U23-3 U72-11 U82-11                   .EN HB

 154: U59-1 U58-1 U58-19 U59-19             .EN IN L
*** Run Has no outputs
```

155: U99-15 U108-15 U69-3 .EN L

156: U23-11 U92-11 U102-11 .EN LB

157: U112-9 .EN NET INT H
*** Only one pin in net
*** Run Has no outputs

158: U101-1 .EN U SEC CLK H
*** Only one pin in net
*** Run Has no outputs

159: U112-13 .EN U SEC INT H
*** Only one pin in net
*** Run Has no outputs

160: U101-3 U103-6 .ENB BIT CNT H

161: U118-15 U68-19 .ENB CNT L

162: U14-3 U13-3 U4-3 U5-3 U63-2 U74-6
162: U84-10 .ENB CRC BITS H

163: U74-1 U74-5 U110-3 U84-13 .ENB FIFO BITS H

164: U64-9 U56-9 U46-9 .ENB IN FIFO 0 L

165: U64-10 U57-9 U47-9 .ENB IN FIFO 1 L

166: U29-1 U118-13 .ENB IN L

167: U64-11 U45-17 U35-17 .ENB NET FIFO L

168: U103-16 .ENB NET INT H
*** Only one pin in net

169: U118-10 U79-1 U88-1 .ENB REG L

170: U103-2 .ENB U SEC CLK H
*** Only one pin in net

171: U103-5 .ENB U SEC INT H
*** Only one pin in net

172: U55-15 U14-4 U13-4 U4-4 U5-4 .ERROR CHECK H

173: U122-7 .EX DEV <1> WR L
*** Only one pin in net

174: U122-6 .EX DEV <2> WR L
*** Only one pin in net

```
 175: U127-11                                .EX DEV <41> RD L
*** Only one pin in net

 176: U127-10                                .EX DEV <42> RD L
*** Only one pin in net

 177: U127-9                                 .EX DEV <43> RD L
*** Only one pin in net

 178: U127-7                                 .EX DEV <44> RD L
*** Only one pin in net

 179: J103-1 U66-17                          .EXT A REQ H

 180: JB5-1 U78-15                           .EXT RCSR TO BUS L

 181: JA4-1 U29-3                            .EXT X BUF CYC

 182: JB3-1 U78-16                           .FLAG H

 183: U113-3 U95-2                           .GATED PACKET CLK H

 184: U45-8 U35-8 U113-11 U101-2             .GATED PACKET CLK L

 185: U44-2 U54-5                            .GO H

 186: U122-13 J71-1 U64-3 U122-3 U118-4
 186:                                        .I/O ENB L

 187: U36-2 U56-4                            .I/O MDO <00>

 188: U36-5 U56-5                            .I/O MDO <01>

 189: U36-6 U56-6                            .I/O MDO <02>

 190: U36-9 U56-7                            .I/O MDO <03>

 191: U36-12 U56-8                           .I/O MDO <04>

 192: U36-15 U46-4                           .I/O MDO <05>

 193: U36-16 U46-5                           .I/O MDO <06>

 194: U36-19 U46-6                           .I/O MDO <07>

 195: U37-2 U57-4                            .I/O MDO <08>

 196: U37-5 U57-5                            .I/O MDO <09>

 197: U37-6 U57-6                            .I/O MDO <10>

 198: U37-9 U57-7                            .I/O MDO <11>
```

```
199: U37-12 U57-8                          .I/O MDO <12>

200: U37-15 U47-4                          .I/O MDO <13>

201: U37-16 U47-5                          .I/O MDO <14>

202: U37-19 U47-6                          .I/O MDO <15>

203: U81-6 U83-14 U73-2                    .I2H

204: U103-1                                .INIT L
*** Only one pin in net
*** Run Has no outputs

205: U112-8                                .INT L
*** Only one pin in net

206: U117-4 U127-4 J69-1 U118-1 U99-10
206: U108-10 U112-4 U72-14 U82-14 U92-14
206: U102-14 U83-12 U73-11                 .IOA <00>

207: U122-14 J169-1 U64-2 U122-2 U118-2
207: U99-11 U108-11 U112-2 U72-13 U82-13
207: U92-13 U102-13 U83-13 U73-5           .IOA <01>

208: U117-1 J68-1 U127-1 U118-3 U99-12
208: U108-12                               .IOA <02>

209: U117-2 J168-1 U127-2 U199-5 U99-13
209: U108-13                               .IOA <03>

210: U117-3 J67-1 U127-3 U119-3 U99-14
210: U108-14                               .IOA <04>

211: J167-1 U137-11 U129-10 U131-13        .IOA <05>

212: J66-1 U137-12 U119-1 U131-12          .IOA <06>

213: U127-6 J166-1 U137-9 U137-8 U112-3
213: U112-5                                .IOA <07>

214: U98-2 J64-1 U58-18 U68-9 U78-4 U88-18
214: U108-1 U88-19 U102-15 U83-4 U93-4
214: U85-2 U103-17                         .IOD <00>

215: U98-5 J164-1 U58-14 U68-7 U78-14
215: U88-17 U108-2 U88-16 U102-1 U83-5
215: U93-5 U85-5 U103-4                    .IOD <01>

216: U98-6 J63-1 U58-16 U68-5 U78-17 U88-4
216: U108-3 U88-5 U102-2 U83-6 U93-6 U85-6
```

```
216: U103-3                                .IOD <02>

217: U98-9 J163-1 U58-12 U68-3 U78-18
217: U88-14 U108-4 U88-15 U102-3 U83-7
217: U93-7 U85-9 U103-7                    .IOD <03>

218: U98-12 J62-1 U58-7 U88-13 U108-5
218: U88-12 U92-15 U83-16 U93-16 U85-12
218: U103-8                                .IOD <04>

219: U98-15 J162-1 U58-9 U88-8 U108-6
219: U88-9 U92-1 U83-17 U93-17 U85-15
219: U103-18                               .IOD <05>

220: U98-16 U58-5 J61-1 U88-7 U108-7 U88-6
220: U92-2 U83-18 U93-18 U85-16 U103-13
220:                                       .IOD <06>

221: U98-19 J161-1 U58-3 U88-3 U108-9
221: U88-2 U92-3 U83-19 U93-19 U85-19
221: U103-14                               .IOD <07>

222: U89-2 U59-3 J59-1 U79-18 U99-1 U79-19
222: U82-15 U54-2                          .IOD <08>

223: U89-5 U59-5 J159-1 U79-17 U99-2 U79-16
223: U82-1                                 .IOD <09>

224: U89-6 U59-7 J58-1 U79-3 U99-3 U79-2
224: U82-2                                 .IOD <10>

225: U89-9 U59-9 J158-1 U79-4 U99-4 U79-5
225: U82-3                                 .IOD <11>

226: U89-12 U59-12 J57-1 U79-8 U99-5 U79-9
226: U72-15                                .IOD <12>

227: U89-15 U59-14 J157-1 U79-7 U99-6
227: U79-6 U72-1                           .IOD <13>

228: U89-16 U59-16 J56-1 U79-14 U99-7
228: U79-15 U72-2                          .IOD <14>

229: U89-19 U59-18 J156-1 U79-13 U99-9
229: U79-12 U72-3                          .IOD <15>

230: U12-34 U31-9 U62-2 U32-11             .J ADR <00>

231: U12-36 U31-11 U62-4 U32-17            .J ADR <01>

232: U12-38 U31-12 U62-6 U32-15            .J ADR <02>
```

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 233: U12-40 U31-13 U62-8 U32-13          .J ADR <03>

 234: U12-2 U31-14 U62-11 U32-8           .J ADR <04>

 235: U12-4 U41-6 U62-13 U32-6            .J ADR <05>

 236: U12-17 U41-7 U62-15 U32-4           .J ADR <06>

 237: U12-19 U41-8 U62-17 U32-2           .J ADR <07>

 238: U12-21 U41-9                        .J ADR <08>

 239: U12-12 U31-6 U22-18                 .J CMD <00>

 240: U12-11 U31-7 U22-16                 .J CMD <01>

 241: U12-9 U31-8 U22-14                  .J CMD <02>

 242: U12-8 U51-14 U22-12                 .J CMD <03>

 243: U24-16 U44-12                       .L MATCH H

 244: U53-12                              .LD NET CNT REG <0>
*** Only one pin in net

 245: U53-14                              .LD NET CNT REG <1>
*** Only one pin in net

 246: U54-11 U75-9                        .LD NET CNTL REG <0>
*** Run Has no outputs

 247: U55-11                              .LD NET CNTL REG <1>
*** Only one pin in net
*** Run Has no outputs

 248: U33-6 U45-2 U35-2                   .LD NET FIFO L

 249: U33-2 U15-1 U16-1                   .LD OUT FIFO 0 H

 250: U33-10 U6-1 U7-1                    .LD OUT FIFO 1 H

 251: U122-11 U103-11 U54-3               .LD PERQ CNT L

 252: U117-11 U72-12 U82-12 U92-12 U102-12
 252:                                     .LD REG FILE L

 253: U58-2 JA20-1                        .LINK DATA IN <00>

 254: JA19-1 U58-6                        .LINK DATA IN <01>

 255: JA18-1 U58-4                        .LINK DATA IN <02>
```

256: JA17-1 U58-8 .LINK DATA IN <03>

257: JA16-1 U58-13 .LINK DATA IN <04>

258: JA15-1 U58-11 .LINK DATA IN <05>

259: U58-15 JA14-1 .LINK DATA IN <06>

260: JA13-1 U58-17 .LINK DATA IN <07>

261: JA12-1 U59-17 .LINK DATA IN <08>

262: U59-15 JA11-1 .LINK DATA IN <09>

263: U59-13 JA10-1 .LINK DATA IN <10>

264: U59-11 JA9-1 .LINK DATA IN <11>

265: U59-8 JA8-1 .LINK DATA IN <12>

266: U59-6 JA7-1 .LINK DATA IN <13>

267: U59-4 JA6-1 .LINK DATA IN <14>

268: U59-2 JA5-1 .LINK DATA IN <15>

269: JB39-1 U98-3 .LINK DATA OUT <00>

270: JB37-1 U98-4 .LINK DATA OUT <01>

271: JB35-1 U98-7 .LINK DATA OUT <02>

272: JB33-1 U98-8 .LINK DATA OUT <03>

273: JB31-1 U98-13 .LINK DATA OUT <04>

274: JB29-1 U98-14 .LINK DATA OUT <05>

275: JB27-1 U98-17 .LINK DATA OUT <06>

276: JB25-1 U98-18 .LINK DATA OUT <07>

277: JB23-1 U89-3 .LINK DATA OUT <08>

278: JB21-1 U89-4 .LINK DATA OUT <09>

279: JB19-1 U89-7 .LINK DATA OUT <10>

280: JB17-1 U89-8 .LINK DATA OUT <11>

281: JB15-1 U89-13 .LINK DATA OUT <12>

282: JB13-1 U89-14 .LINK DATA OUT <13>

283: JB11-1 U89-17 .LINK DATA OUT <14>

284: JB9-1 U89-18 .LINK DATA OUT <15>

285: U44-14 U43-8 .MATCH H

286: U43-10 U65-19 .MATCH L

287: U16-15 .MDI <00>
*** Only one pin in net

288: U16-14 .MDI <01>
*** Only one pin in net

289: U16-13 .MDI <02>
*** Only one pin in net

290: U16-12 .MDI <03>
*** Only one pin in net

291: U16-11 .MDI <04>
*** Only one pin in net

292: U15-15 .MDI <05>
*** Only one pin in net

293: U15-14 .MDI <06>
*** Only one pin in net

294: U15-13 .MDI <07>
*** Only one pin in net

295: U6-15 .MDI <08>
*** Only one pin in net

296: U6-14 .MDI <09>
*** Only one pin in net

297: U6-13 .MDI <10>
*** Only one pin in net

298: U6-12 .MDI <11>
*** Only one pin in net

299: U6-11 .MDI <12>
*** Only one pin in net

300: U7-15 .MDI <13>
*** Only one pin in net

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 301: U7-14                                .MDI <14>
*** Only one pin in net

 302: U7-13                                .MDI <15>
*** Only one pin in net

 303: J24-1 U36-3                          .MDO <00>

 304: J124-1 U36-4                         .MDO <01>

 305: J23-1 U36-7                          .MDO <02>

 306: J123-1 U36-8                         .MDO <03>

 307: J22-1 U36-13                         .MDO <04>

 308: J122-1 U36-14                        .MDO <05>

 309: J21-1 U36-17                         .MDO <06>

 310: J121-1 U36-18                        .MDO <07>

 311: U37-3 J19-1                          .MDO <08>

 312: U37-4 J119-1                         .MDO <09>

 313: U37-7 J18-1                          .MDO <10>

 314: U37-8 J118-1                         .MDO <11>

 315: U37-13 J17-1                         .MDO <12>

 316: U37-14 J117-1                        .MDO <13>

 317: U37-17 J16-1                         .MDO <14>

 318: U37-18 J116-1                        .MDO <15>

 319: U24-8 U35-10 U45-10 U35-1            .NET FIFO IR

 320: U24-7 U69-11 U81-11                  .NET FIFO OR

 321: U112-10                              .NET INT H
*** Only one pin in net
*** Run Has no outputs

 322: U54-1                                .NET INT L
*** Only one pin in net
*** Run Has no outputs

 323: U81-3 U75-15                         .NET INTR H
```

```
 324: U81-4                                .NET INTR L
*** Only one pin in net

 325: U64-7 U75-1 U85-1                    .NET STAT RD L

 326: J93-1 U156-5 U156-11 U156-6 U156-9
 326: R19-1                                .NET XMIT +
*** Run has multiple outputs

 327: J92-1 U156-2 U156-14 U156-3 U156-15
 327: R20-1                                .NET XMIT -
*** Run has multiple outputs

 328: U51-6 U53-4                          .O SEL ENB

 329: U83-15 U12-32 U12-15 U42-10 U42-13
 329: U22-6 U22-4 U22-2 U22-8 U44-4 U66-1
 329: U43-9 U25-15 U25-2 U90-10 U90-14
 329: U100-10 U90-15 U90-2 U100-12 U73-3
 329: U43-2                                .PA
*** Run Has no outputs

 330: U60-7 U113-1 U100-3 U74-3            .PACKET CLK H

 331: U111-8 U60-9 U113-12                 .PACKET CLK L

 332: U35-7 U45-7 U111-2 U60-4 U43-4       .PACKET DATA H

 333: R1-2 U43-13 U71-10 U71-12 U111-1
 333: U54-10 U4-7 U5-7 U93-15 U110-5 U110-11
 333: U110-13 U54-4 U164-10 U164-2 U164-15
 333: U61-14 U164-3 U164-4                 .PB

 334: U24-13 U100-6 U113-13 U113-2 U85-3
 334:                                      .PIP H

 335: J104-1 U56-19 U57-19 U46-19 U47-19
 335:                                      .PL EXT A H

 336: U122-4                               .PROM <1> WR L
*** Only one pin in net

 337: U122-5                               .PROM <2> WR L
*** Only one pin in net

 338: U166-3 J96-1 R17-1                   .RCV +

 339: U166-4 J94-1 R17-2                   .RCV -

 340: U34-12 U103-12                       .RCV ALL

 341: U60-11                               .RCV CKL L
```

```
*** Only one pin in net
*** Run Has no outputs

 342: U71-8 U60-5                                .RCV CLK H

 343: U90-12 U71-9 U80-1                         .RCV CLK L

 344: U110-12 U167-11                            .RCV COLLISION

 345: U90-9 U60-2                                .RCV DATA

 346: U81-1 U100-11 U90-1 U90-11 U110-4
 346: U166-11                                    .RCV DATA OUT

 347: U85-7 U75-7                                .RCV/TRANSN

 348: U55-16 U33-3 U14-5 U13-5 U4-5 U5-5
 348:                                            .RESET FIFO & CRC H

 349: U47-18 U57-18 U46-18 U56-18 U16-18
 349: U15-18 U6-18 U7-18 U66-18 U45-11
 349: U35-11 U33-4 U91-9 U73-13                  .RESET FIFO & CRC L

 350: U51-15 U41-15 U31-15 U53-5 U63-4
 350: U43-3                                      .RESET H

 351: U22-1 U43-1 U103-19                        .RESET L

 352: U68-11 U39-4                               .RSCR TO BUS H

 353: U113-6 U74-4 U73-1                         .SEL BIT CNT L

 354: U113-8 U83-8 U71-1                         .SEL U SEC CLK L

 355: U122-12                                    .SMD <1> WR L
*** Only one pin in net

 356: U122-10                                    .SMD <2> WR L
*** Only one pin in net

 357: U122-9                                     .SMD <3> WR L
*** Only one pin in net

 358: U117-15                                    .SMD <4> WR L
*** Only one pin in net

 359: U64-4                                      .SMD RD L
*** Only one pin in net

 360: U85-4 U75-5                                .STAT COLLISION

 361: U55-2 U95-3                                .STEP CRC H
```

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 362: U64-5                          .STREAMER <1> RD L
*** Only one pin in net

 363: U64-6                          .STREAMER <2> RD L
*** Only one pin in net

 364: U117-14                        .STREAMER <4> WR L
*** Only one pin in net

 365: U91-6 U100-2                   .SYNC L

 366: U43-12                         .TOP EXT A
*** Only one pin in net
*** Run Has no outputs

 367: U112-1 U71-6                   .U SEC CLK OVFL H

 368: U85-14                         .U SEC CLK OVLD H
*** Only one pin in net
*** Run Has no outputs

 369: U127-15 U113-10 U83-9          .U SEC CLK RD L

 370: U22-7 U101-10 U101-9           .U SEC CLK WR H

 371: U22-13 U113-9                  .U SEC CLK WR L
*** Run Has no outputs

 372: U117-13                        .U SEC WR L
*** Only one pin in net

 373: J137-1 U66-16                  .UNLD EXT A FIFO

 374: U53-11 U56-16                  .UNLD IN FIFO L

 375: U53-13 U45-13 U35-13           .UNLD NET FIFO L

 376: U55-9                          .WAIT FOR SYNC
*** Only one pin in net

 377: U100-4 U111-9                  .WAIT FOR SYNC H
*** Run Has no outputs

 378: J154-1 U66-15                  .WR EXT A H

 379: U32-19 U32-1                   .X CNST ENB L
*** Run Has no outputs

 380: U64-12                         .X CONST ENB L
*** Only one pin in net
```

```
 381: U45-16 U35-16                          .X MIT CLK H
*** Run Has no outputs

 382: U16-4 U56-15 U57-15 U6-4 U65-3 U45-3
 382: U45-21 U32-18 U75-3                    .X MUX <00>

 383: U16-5 U56-14 U57-14 U6-5 U65-5 U45-4
 383: U45-20 U32-16 U75-4                    .X MUX <01>

 384: U16-6 U56-13 U57-13 U6-6 U65-7 U45-5
 384: U45-19 U32-14 U75-6                    .X MUX <02>

 385: U16-7 U56-12 U57-12 U6-7 U65-9 U45-6
 385: U45-18 U32-12 U75-11                   .X MUX <03>

 386: U16-8 U56-11 U57-11 U6-8 U65-12 U35-3
 386: U35-21 U32-7 U75-13                    .X MUX <04>

 387: U15-4 U46-15 U47-15 U7-4 U65-14 U35-4
 387: U35-20 U32-5 U75-14                    .X MUX <05>

 388: U15-5 U46-14 U47-14 U7-5 U65-16 U35-5
 388: U35-19 U32-3                           .X MUX <06>

 389: U15-6 U46-13 U47-13 U7-6 U65-18 U35-6
 389: U35-18 U32-9                           .X MUX <07>

 390: U44-15 U66-4                           .X MUX <0>
*** Run Has no outputs

 391: U45-9                                  .X MUX H
*** Only one pin in net
*** Run Has no outputs

 392: U131-1                                 .X MUX L
*** Only one pin in net
*** Run Has no outputs

 393: U51-12 U64-14                          .X SEL <00>

 394: U51-13 U64-13                          .X SEL <01>

 395: U55-3                                  .XMIT <00>
*** Only one pin in net
*** Run Has no outputs

 396: U55-4                                  .XMIT <01>
*** Only one pin in net
*** Run Has no outputs

 397: U55-7                                  .XMIT <02>
*** Only one pin in net
```

*** Run Has no outputs

398: U55-8 .XMIT <03>
*** Only one pin in net
*** Run Has no outputs

399: U55-13 .XMIT <04>
*** Only one pin in net
*** Run Has no outputs

400: U55-14 .XMIT <05>
*** Only one pin in net
*** Run Has no outputs

401: U55-17 .XMIT <06>
*** Only one pin in net
*** Run Has no outputs

402: U54-12 U55-18 .XMIT <07>
*** Run Has no outputs

403: U164-9 R13-2 R12-1 .XMIT BIT STREAM

404: U60-6 U63-1 U84-4 U164-5 .XMIT CLK H

405: U60-10 U84-2 U164-6 U61-11 U74-11
405: .XMIT CLK L

406: U60-1 U55-6 .XMIT CLK SEL H

407: R13-1 R14-2 U156-12 .XMIT DATA

408: JB1-1 U78-19 .XMIT DONE

409: U54-13 U63-13 .XMIT DONE L

410: U45-22 U35-22 U60-3 U84-1 .XMIT FIFO DATA H

411: U24-3 U44-1 U54-9 U63-3 U103-9 U74-13
411: U164-14 U156-4 U156-10 U156-7 U156-13
411: .XMIT H
*** Run has multiple outputs

412: U54-8 .XMIT L
*** Only one pin in net

413: U65-2 U62-3 .Y MUX <00>

414: U82-7 U102-7 U65-4 U62-5 .Y MUX <01>

415: U82-9 U102-9 U65-6 U62-7 .Y MUX <02>

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416: U82-10 U102-10 U65-8 U62-9          .Y MUX <03>

417: U72-6 U92-6 U65-11 U62-12           .Y MUX <04>

418: U72-7 U92-7 U65-13 U62-14           .Y MUX <05>

419: U72-9 U92-9 U65-15 U62-16           .Y MUX <06>

420: U72-10 U92-10 U65-17 U62-18         .Y MUX <07>

421: U82-6 U102-6                        .Y MUX<00>

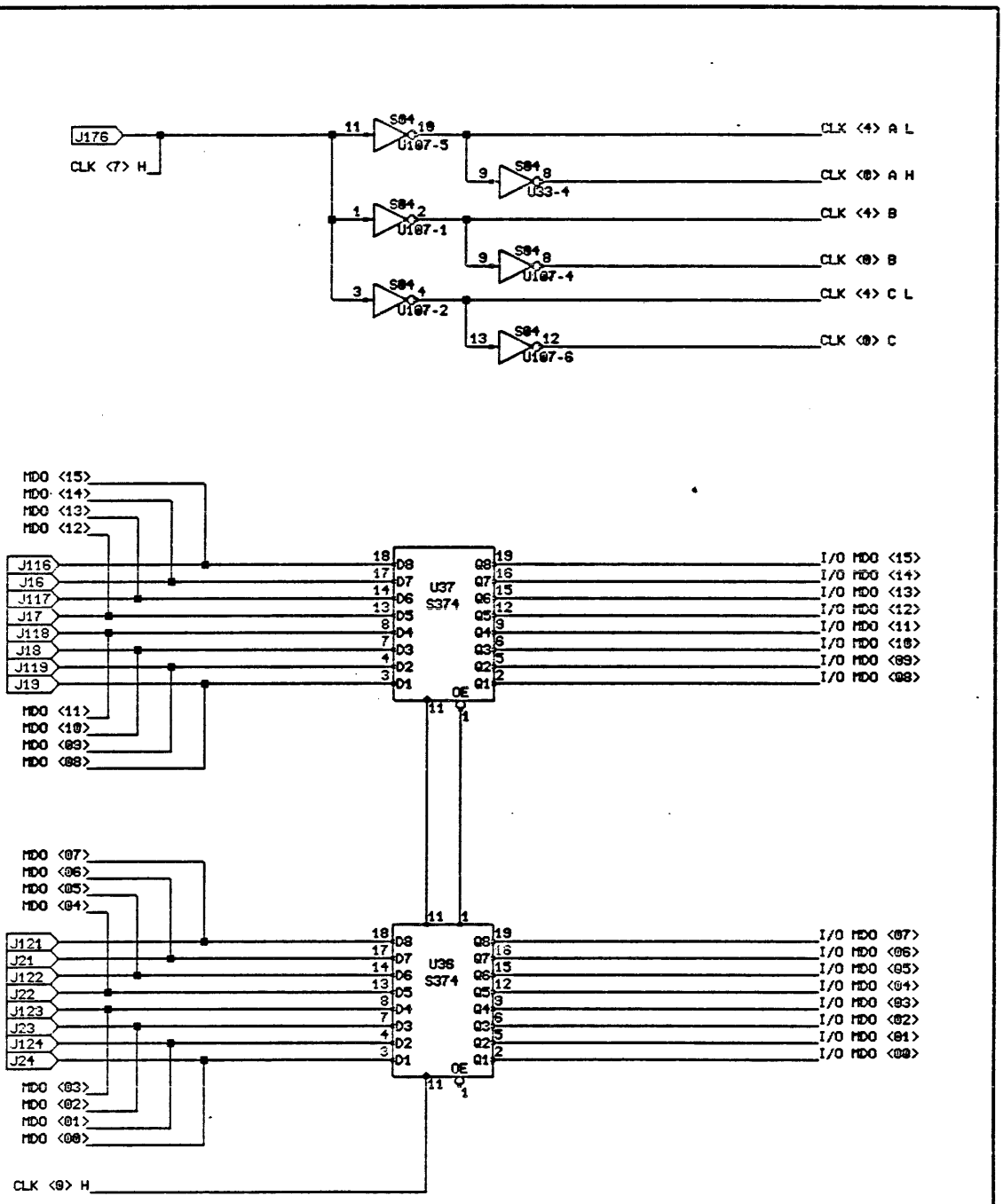
422: U23-2 U72-4 U82-4 U92-4 U102-4 U33-13
422: U51-7 U53-1                         .Y SEL <00> H

423: U23-13 U33-12                       .Y SEL <00> L

424: U72-5 U82-5 U92-5 U102-5 U51-8 U53-2
424:                                     .Y SEL <01> H

425: U51-9 U53-3                         .Y SEL <02> H

426: U23-1 U23-12 U51-11 U62-1 U62-19
426:                                     .Y SEL <03> H
```



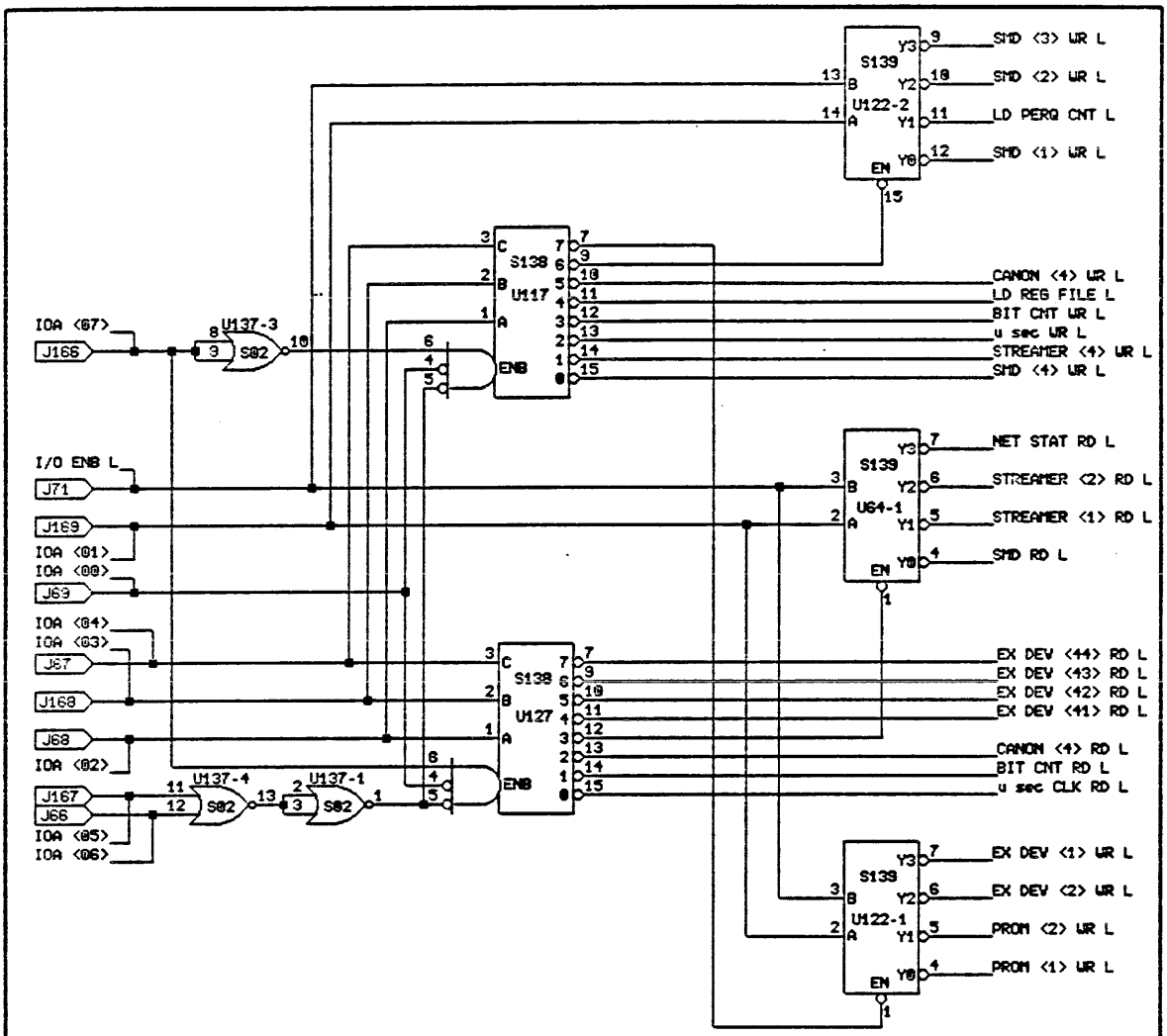
TITLE: I/O MDO BUFFERED

IO01.dp

PERQ

DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	17/JULY/84	STECK	A	10	0226-	02	J
UPDATED	17/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (CIO-002)			PAGE 1 OF 31	

23 Jul 84 14:40:34 io01.real.dp



I/O ADDRESS	SIGNAL NAME
200:203	SMD <4> WR L
204:207	STREAMER <4> WR L
214:217	BIT CNT WR L
224:227	CANON <4> WR L
230	SMD WR L
231	LD PERQ CNT L
232	SMD <2> WR L
233	SMD <3> WR L
234	PROM <1> WR L
235	PROM <2> WR L
236	EX DEV <1> WR L
237	EX DEV <2> WR L

I/O ADDRESS	SIGNAL NAME
810:813	CANON <4> RD L
814	SMD RD L
815	STREAMER <1> RD L
816	STREAMER <2> RD L
817	NET STAT RD
820:823	EX DEV <41> RD L
824:827	EX DEV <42> RD L
830:833	EX DEV <43> RD L
834:837	EX DEV <44> RD L

TITLE: I/O ADDRESS DECODES

io02.db

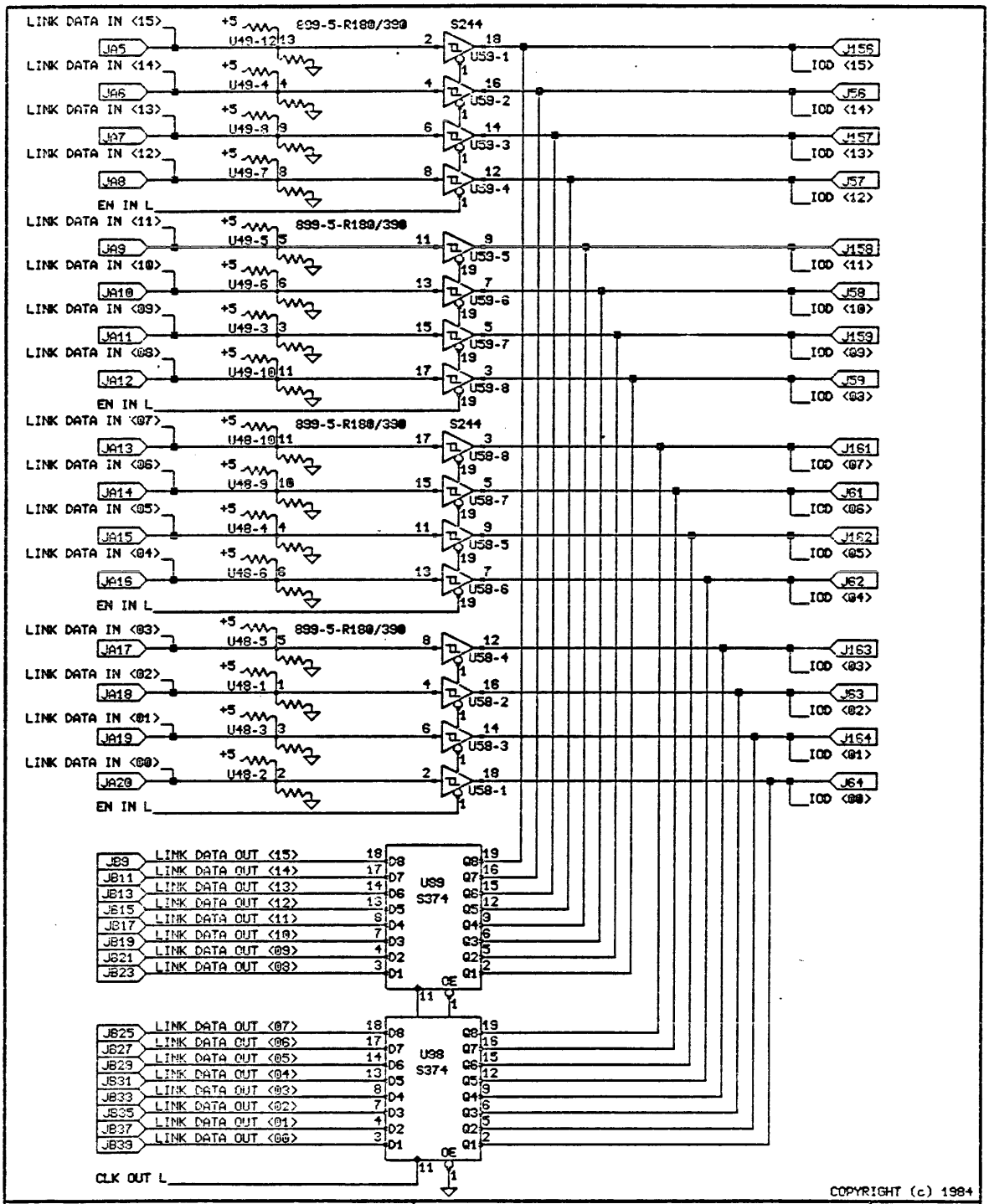
PERQ

DESIGNED	P. REDDY		
DRAWN	17/JULY/84	STECK	
UPDATED	17/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	1 0	0 2 2 6 -	0 2	J

PROJ : OPTION I/O ETHERNET/CANON (OIO-002)

23 Jul 84 14:41:18 io02.real.db



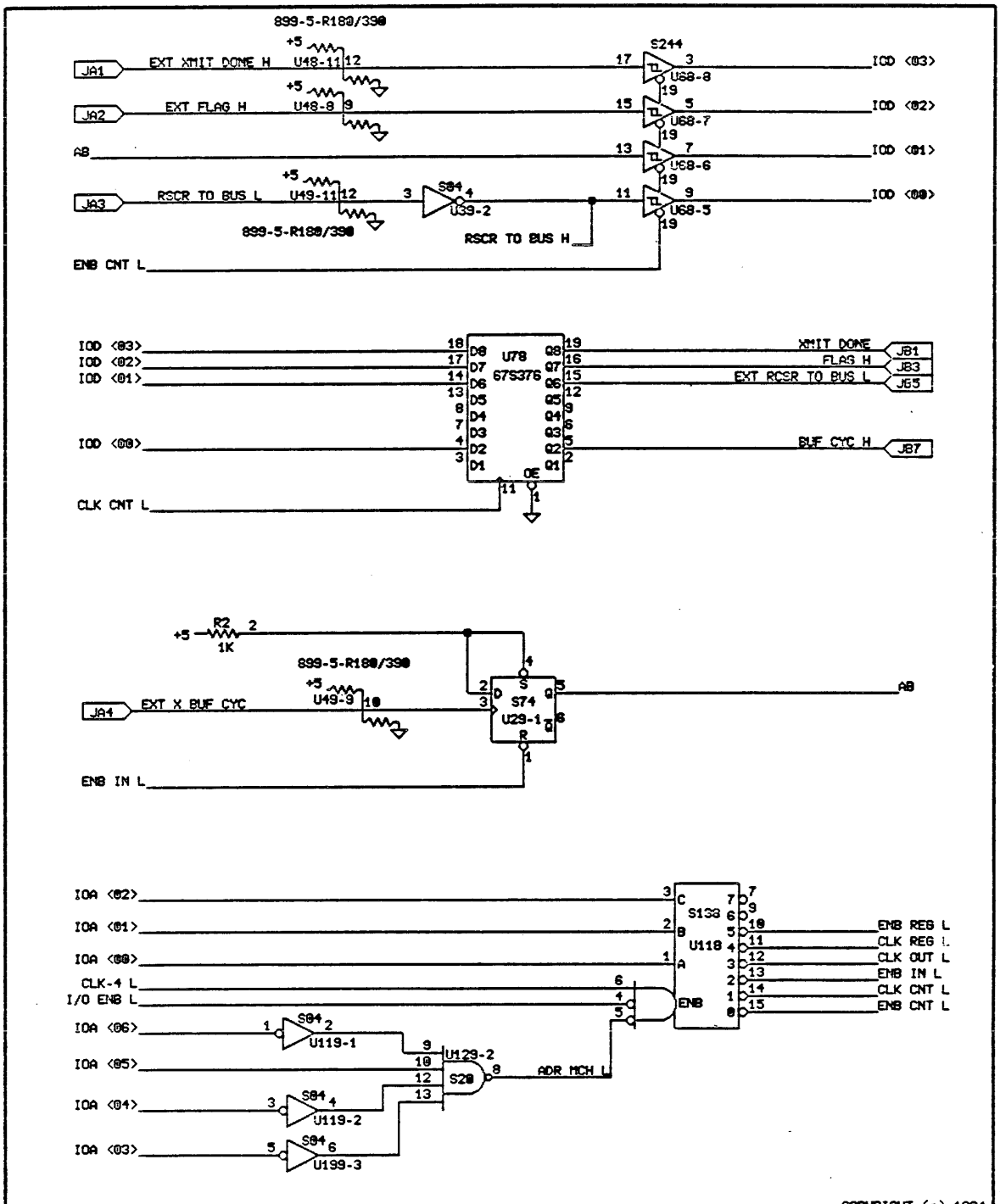
TITLE: INPUT/OUTPUT

IO03.db

PERQ

DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	17/JULY/84	STECK	A	10	0226-	02	J
UPDATED	17/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANNON (OIO-002)			PAGE 3 OF 31	

23 Jul 84 14:42:28 io03.real.db

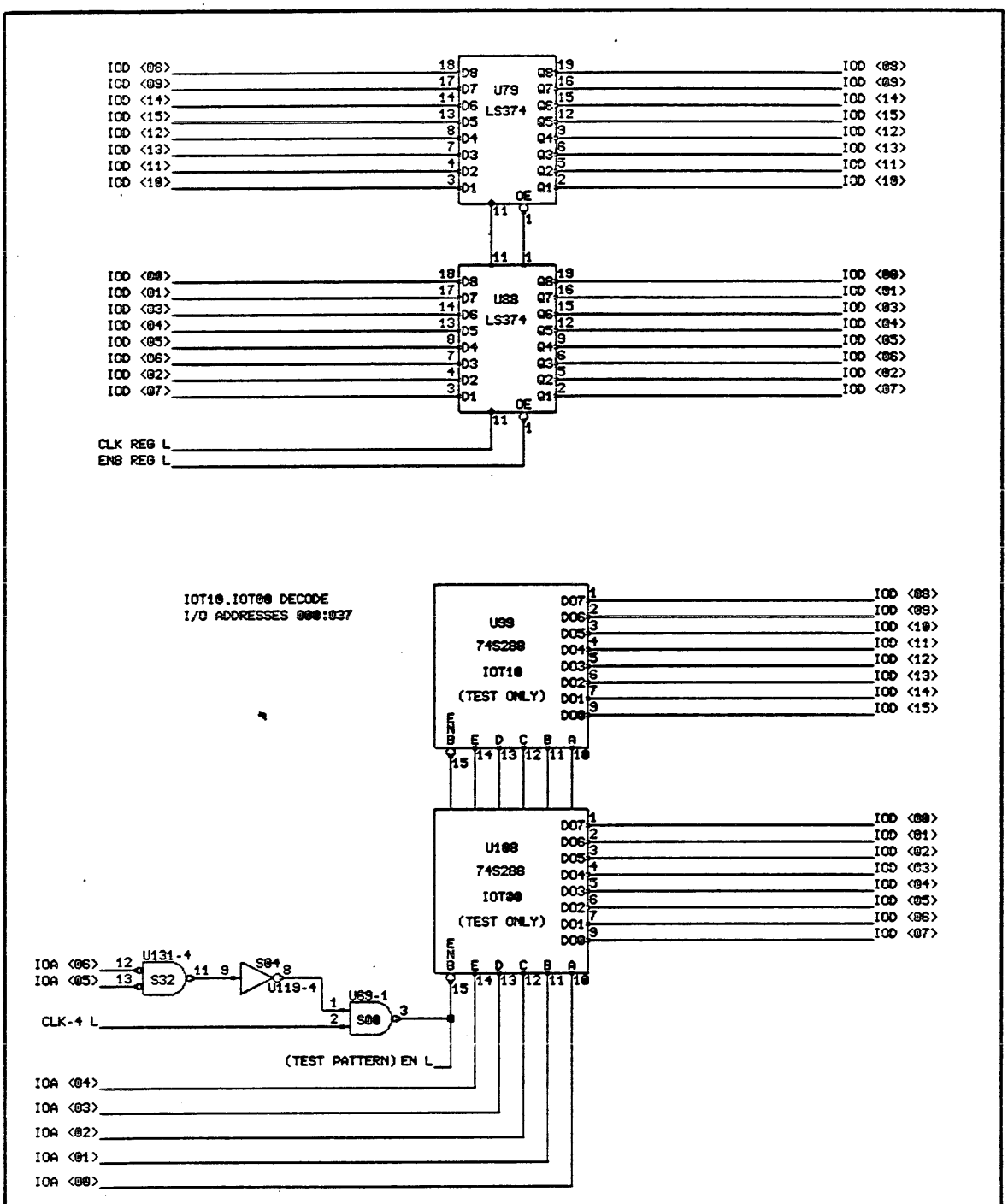


TITLE: CONTROL

IO04.db

PERQ

DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	17/JULY/84	STECK	A	10	0226-	02	J
UPDATED	17/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (010-002)			PAGE 4 OF 31	



TITLE: I/O ECHO & I/O PATTERNS

IO05.db

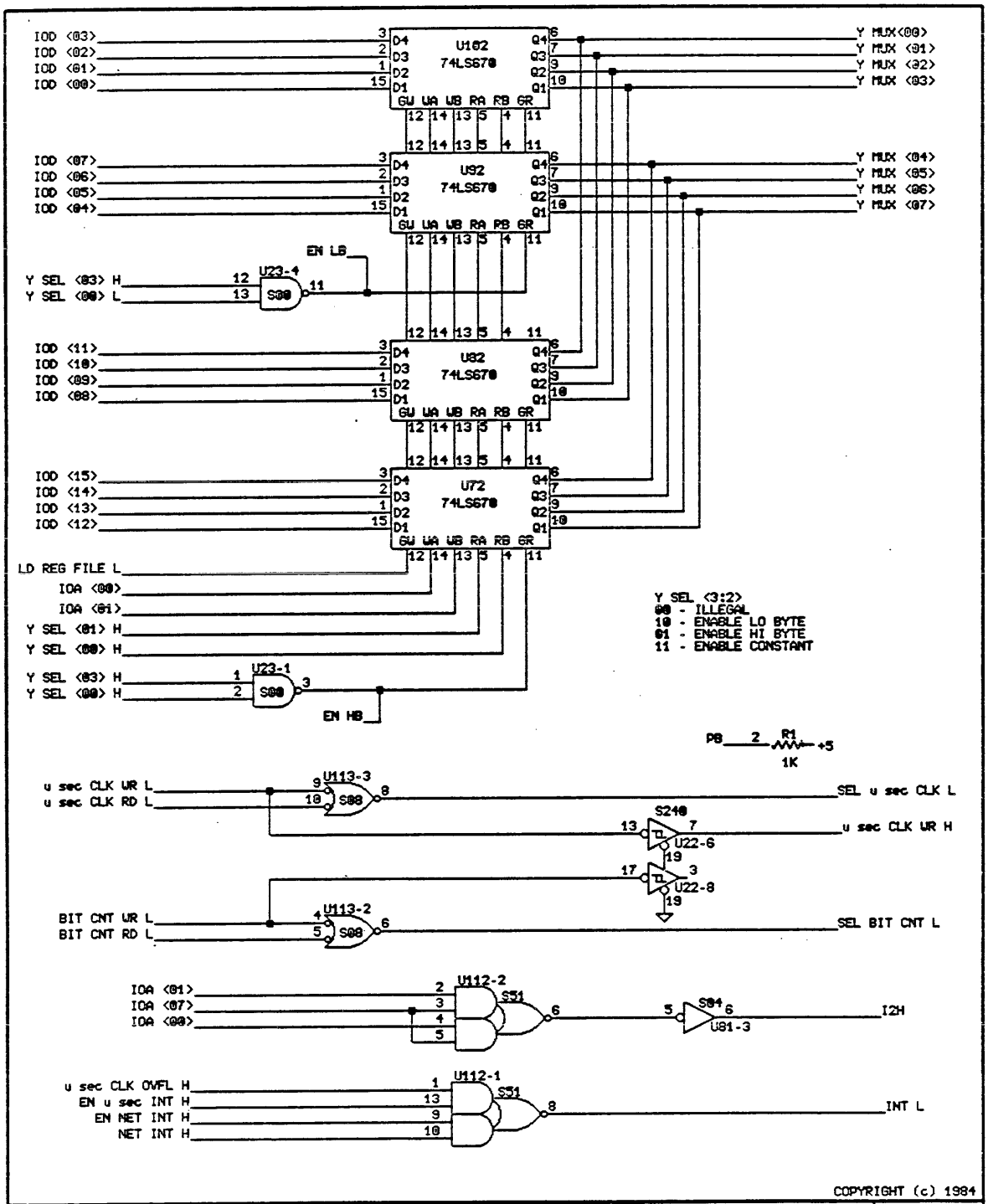
PERQ

DESIGNED	P. REDDY		
DRAWN	17/JULY/84	STECK	
UPDATED	17/JULY/84	STECK	

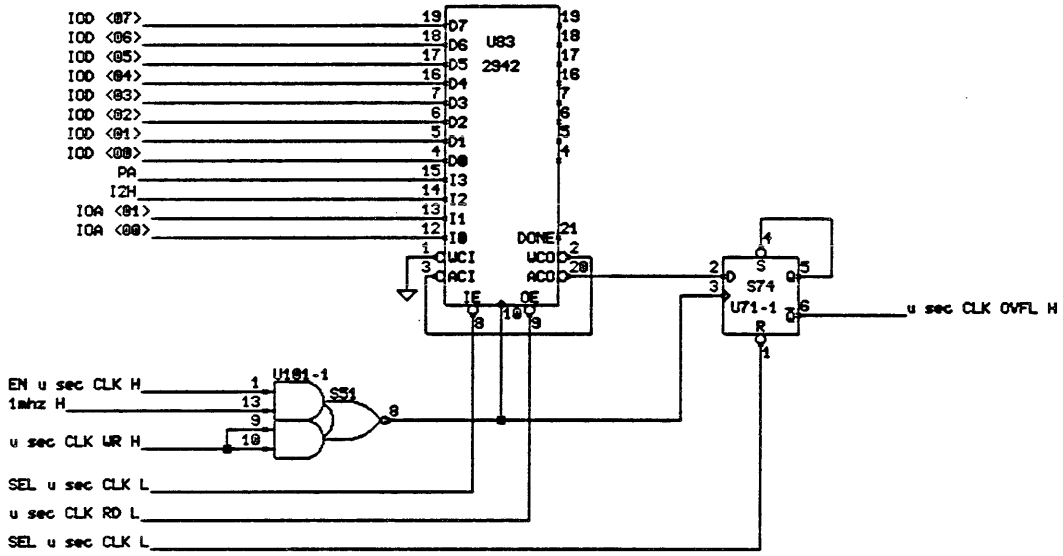
SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0226-	02	J

PROJ : OPTION I/O ETHERNET/CANON (OIO-002)

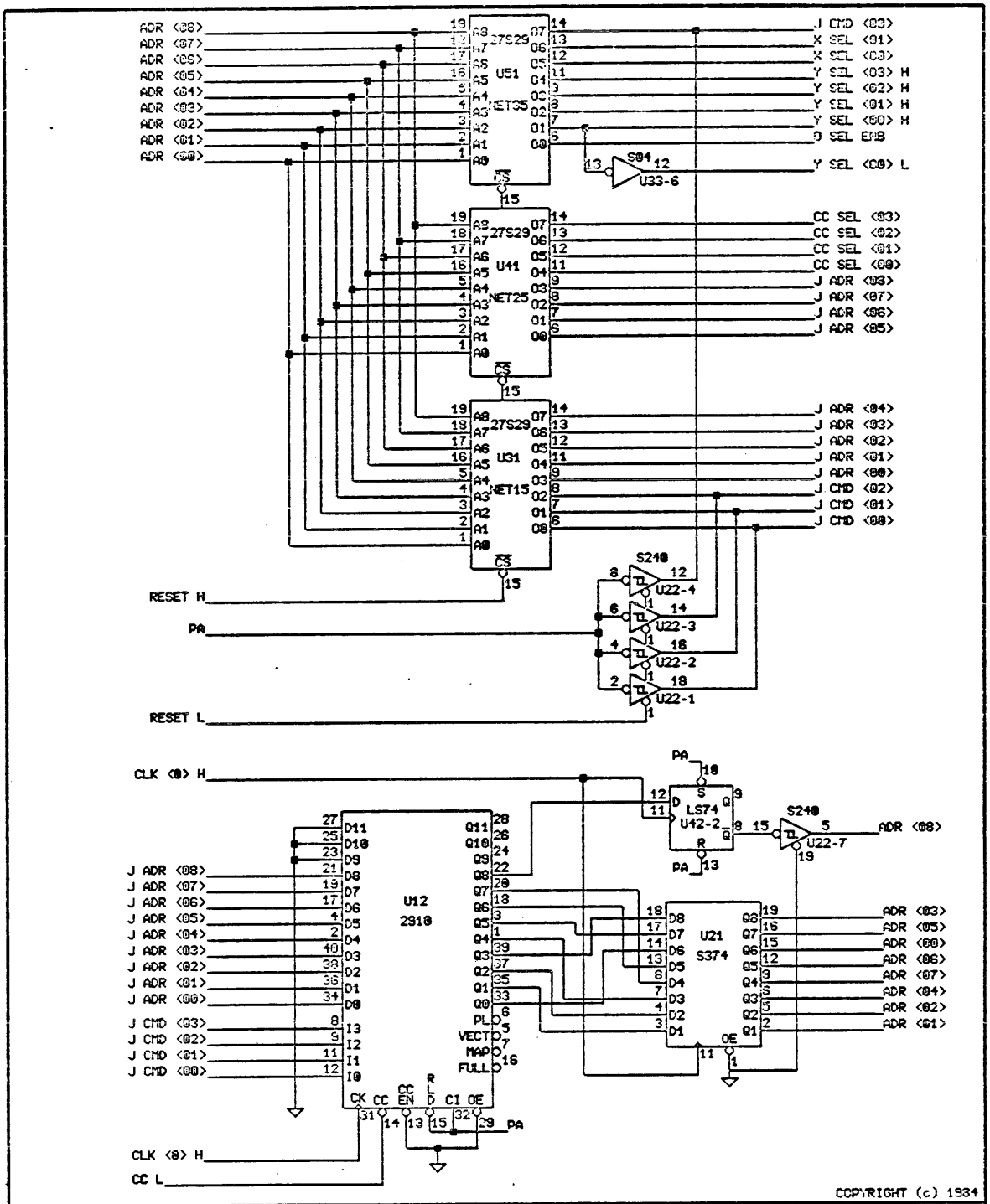
23 Jul 84 14:43:55 io05.real.db



TITLE	NET CONTROLER					IO86.dp	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	17/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	17/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (OIO-002)			PAGE 6 OF 31	

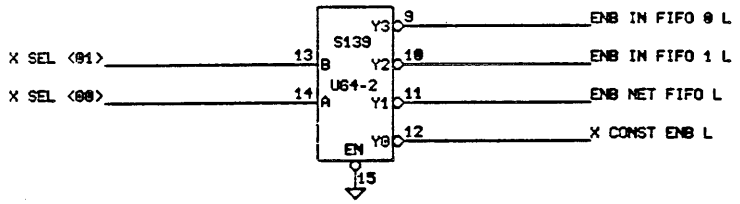


TITLE	BASED REAL TIME OUT					IO07.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	18/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	18/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (OIO-002)			PAGE 7 OF 31	

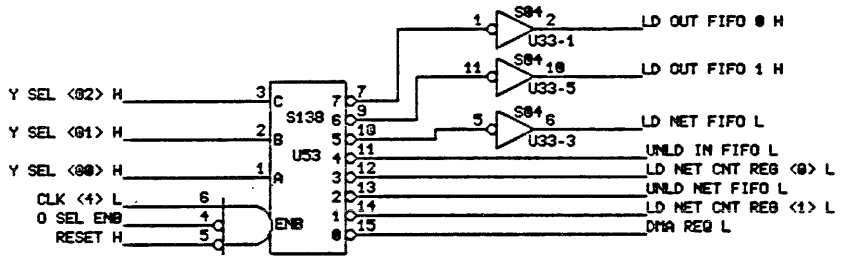


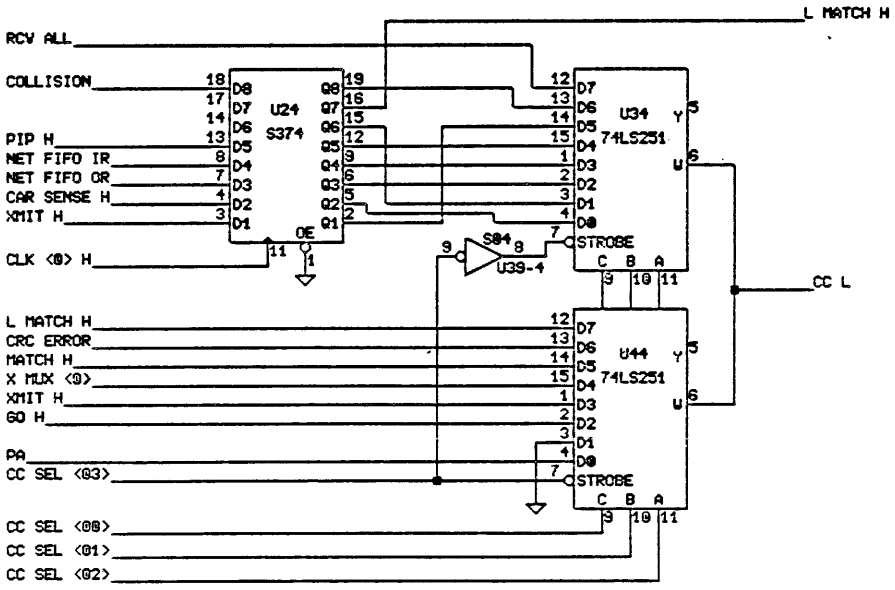
02 Aug 84 08:52:54 io08.real.db

X DECODE

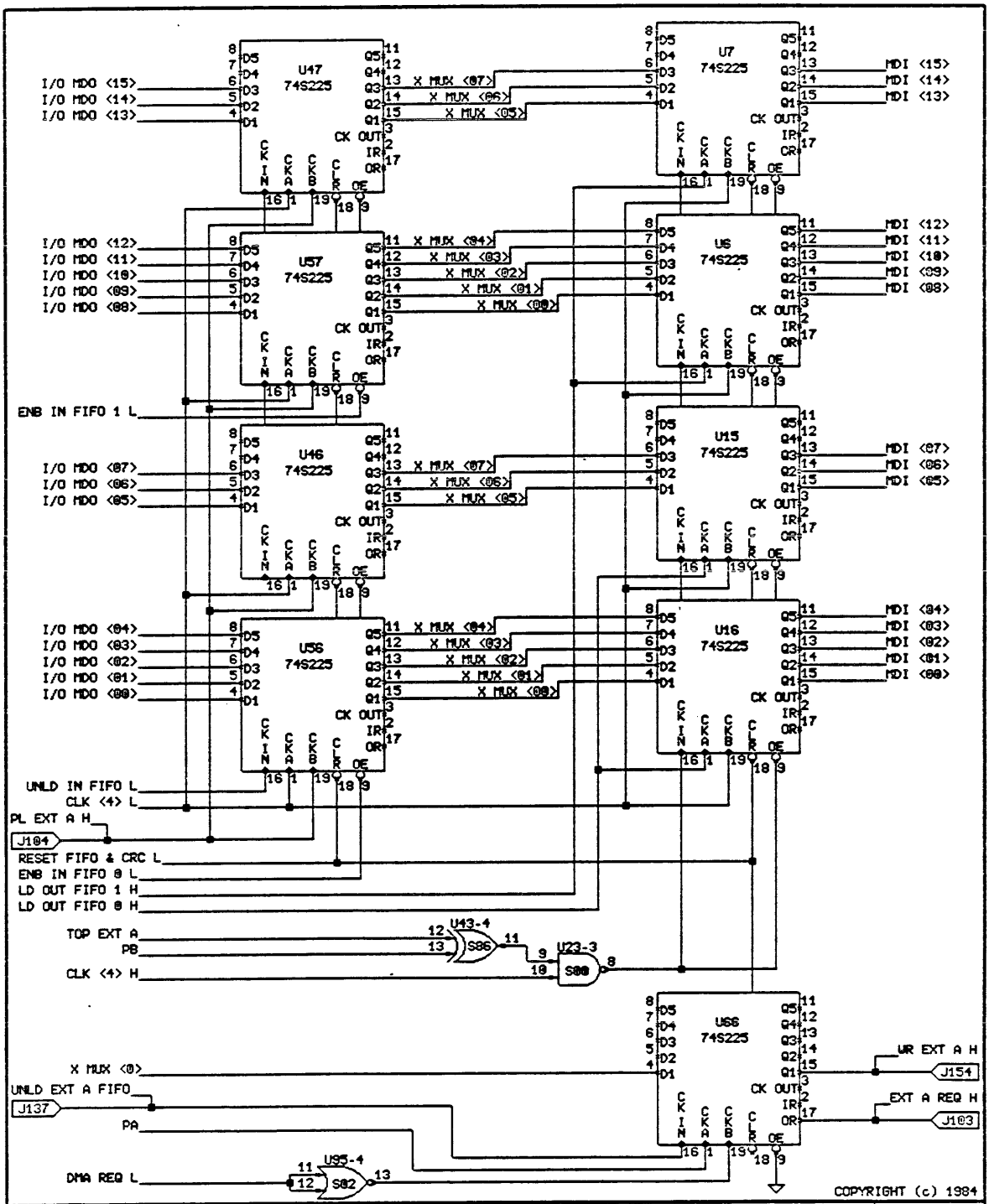


0 SEL DECODE

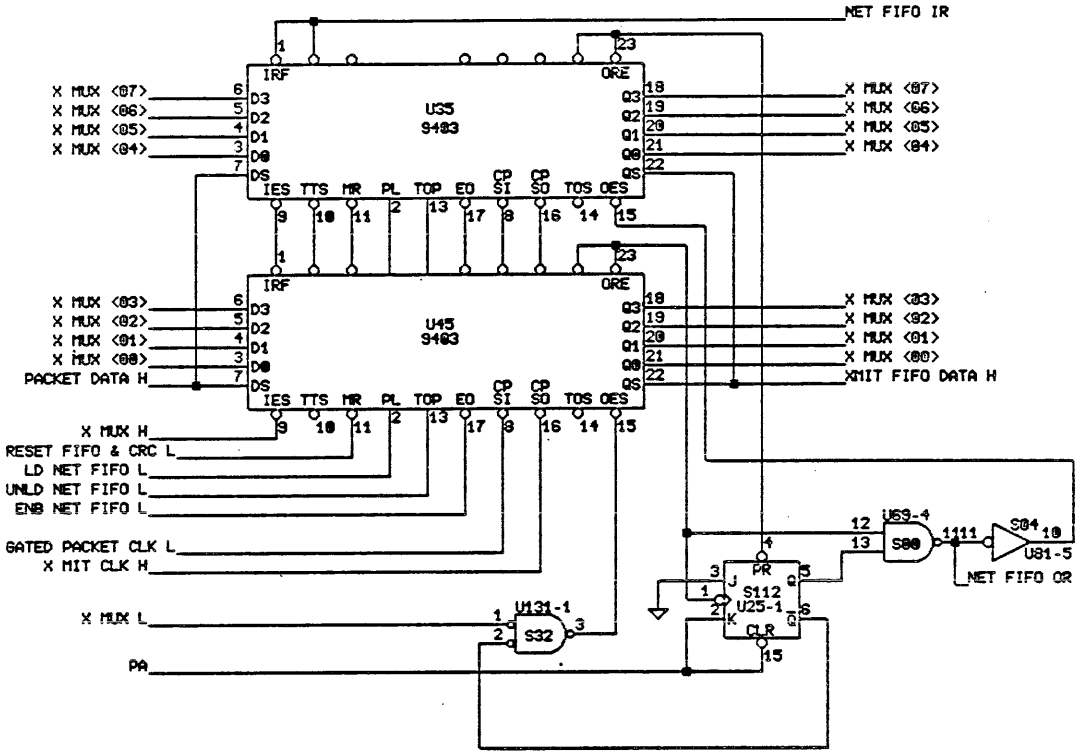


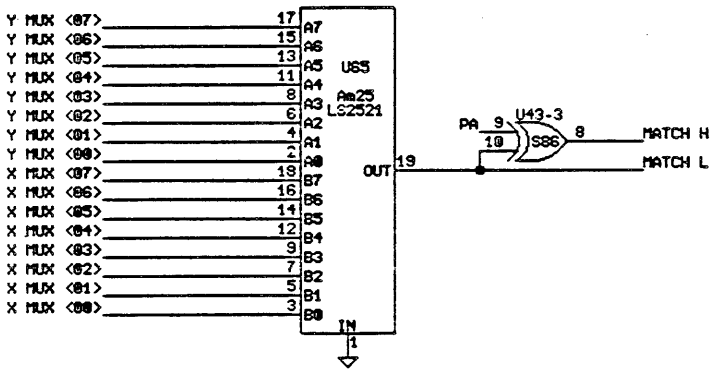


TITLE: STATE MACHINE							IO09.db
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR / REV
	DRAWN	18/JULY/84	STECK	A	10	0226-	02 / J
	UPDATED	19/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (CIO-002)			PAGE 9 OF 31

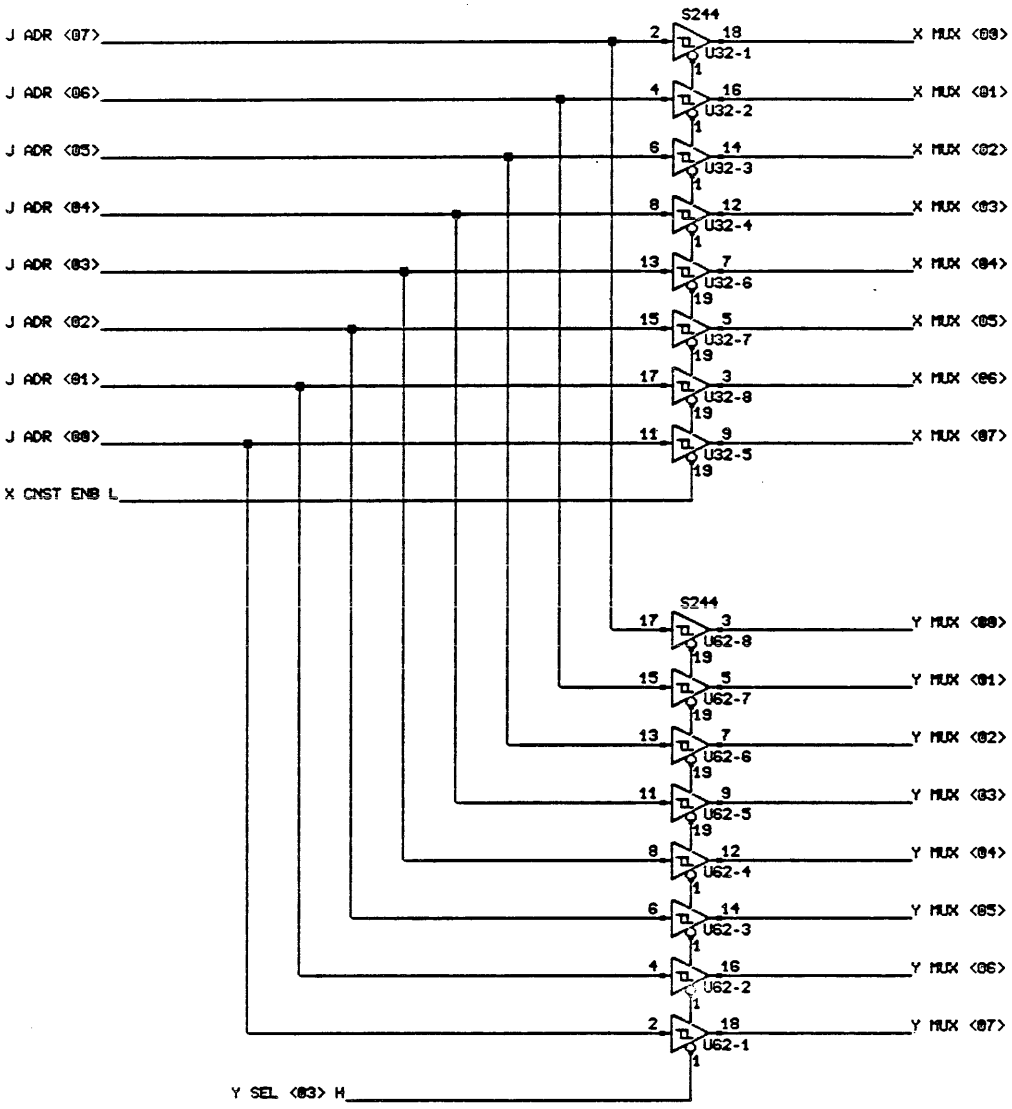


TITLE					
MEMORY DATA INTERFACE					IO10.db
PERQ	DESIGNED	P. REDDY	SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	18/JULY/84 STECK	A	10	0226-	02	J
	UPDATED	18/JULY/84 STECK	PROJ : OPTION I/O ETHERNET/CANON (OIO-002)			PAGE 19 OF 31	

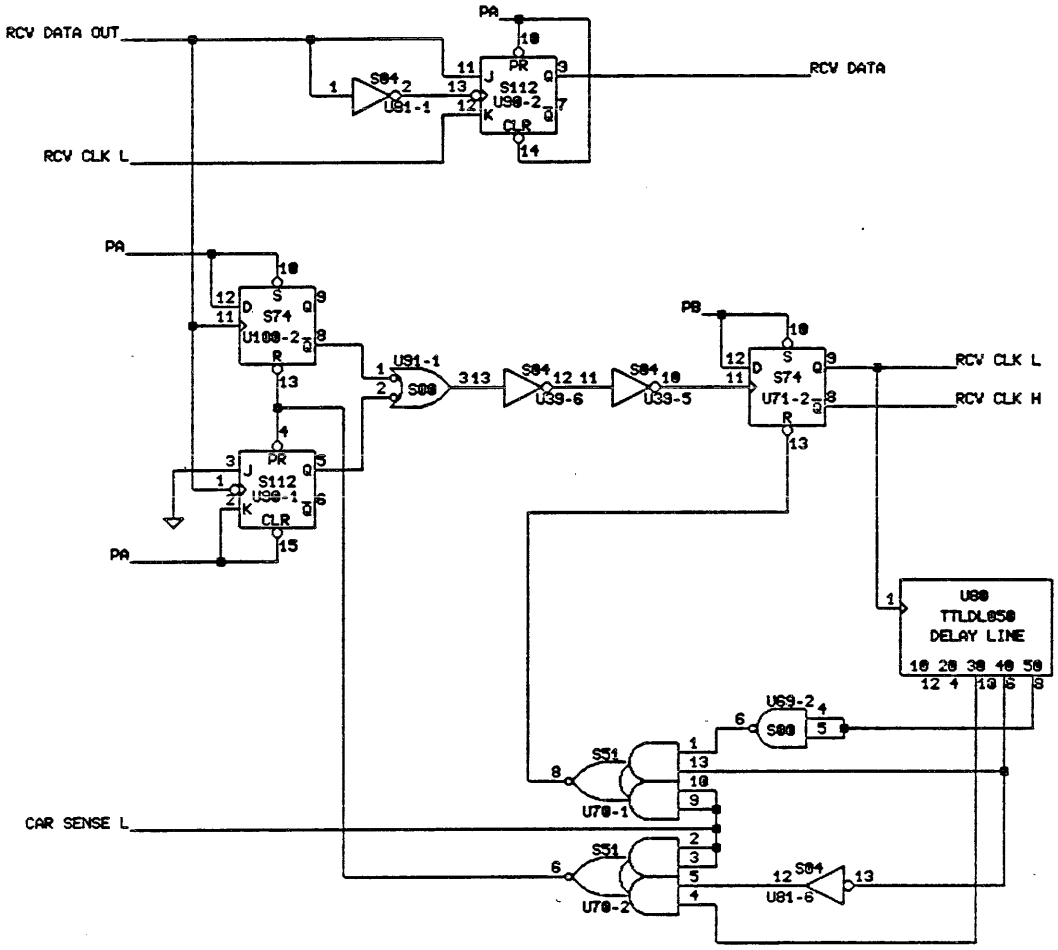




PERQ	TITLE: NET FIFO						IO11.dp	
	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	18/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	18/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (CIO-002)			PAGE 11 OF 31	

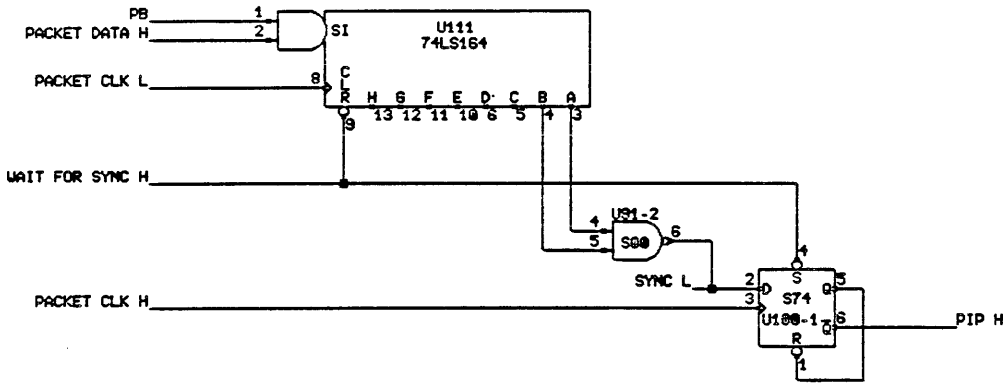


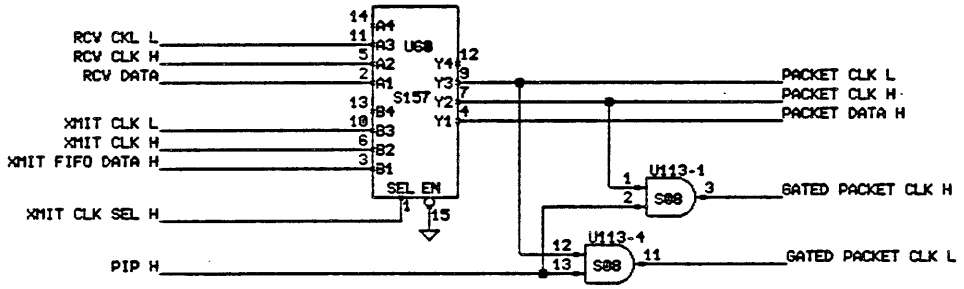
TITLE	CONSTANTS						IO12.dp	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	18/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	18/JULY/84	STECK	PROJ :	OPTION I/O ETHERNET/CANON (OIO-002)		PAGE 12 OF 31	



TITLE						
DATA RECOVERY						IO13.db
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	18/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	18/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (OIO-002)			PAGE 13 OF 31	

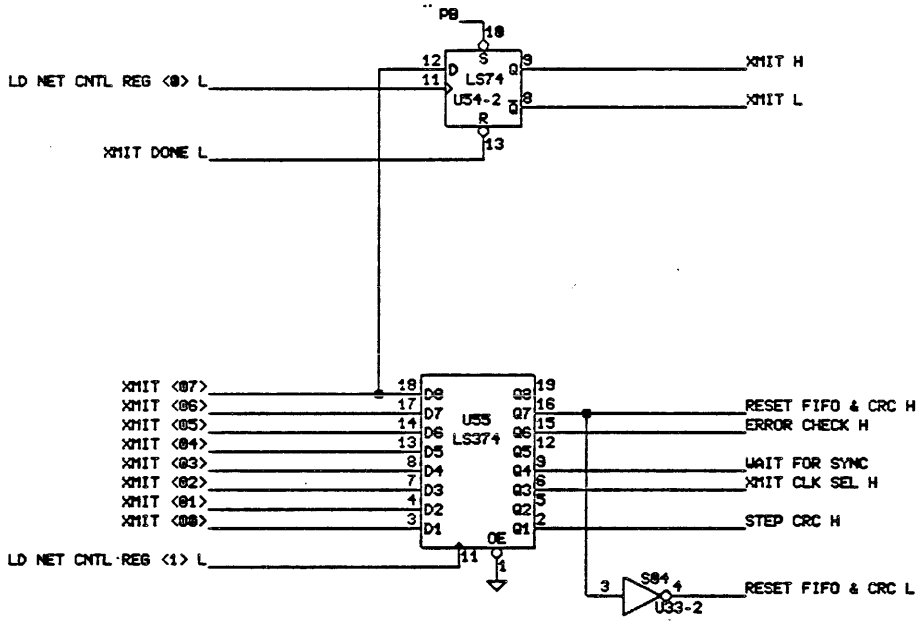
23 Jul 84 14:49:51 io13.real.db





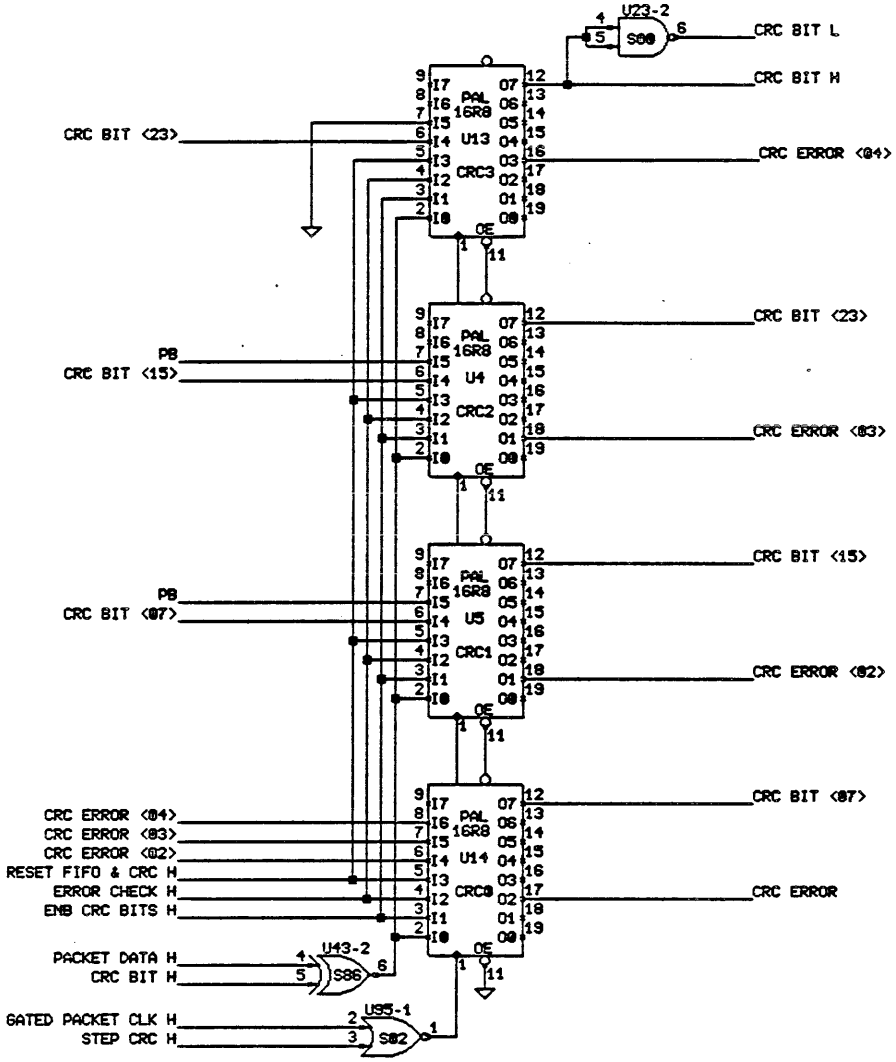
NOTE: DETECT FIRST 2 COSECUTIVE
DURING TRANSMIT OR RECIEVE.

TITLE						
SYNC DETECT						IO14.db
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	18/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	18/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (010-002)			PAGE 14 OF 31	



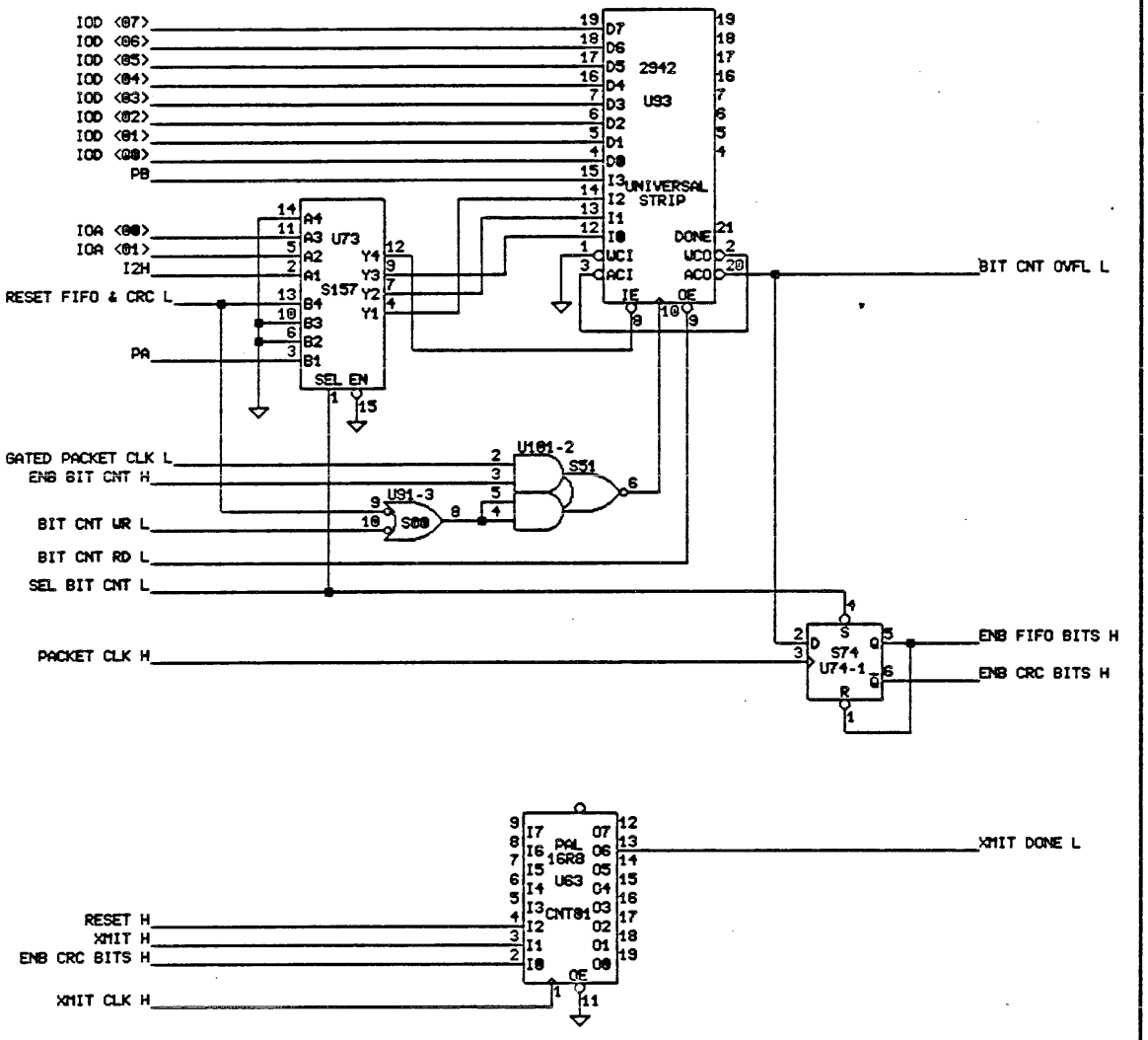
TITLE	NET CONTROL						I015.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	18/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	18/JULY/84	STECK	PROJ :	OPTION I/O ETHERNET/CANON (OIO-002)		PAGE 15 OF 31	

23 Jul 84 14:50:55 io15.real.db



TITLE	ETHERNET CRC					IO16.dp	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	18/JULY/84	STECK	A	16	0226-	02	J
	UPDATED	18/JULY/84	STECK	PROJ :	OPTION I/O ETHERNET/CANON (OIO-002)		PAGE 16 OF 31	

23 Jul 84 14:51:26 io16.real.dp



TITLE: NET BIT COUNTER

IO17.db

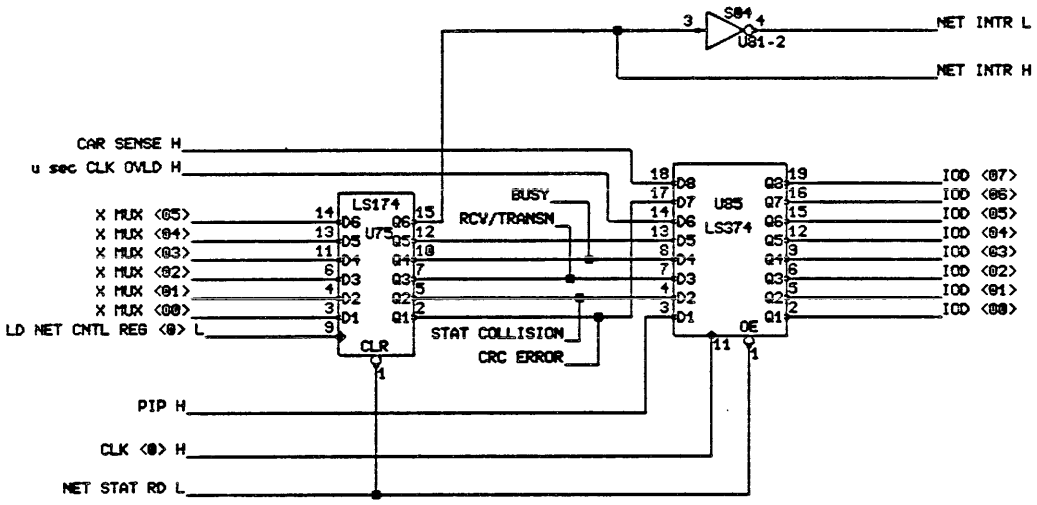
PERQ

DESIGNED	P. REDDY		
DRAWN	19/JULY/84	STECK	
UPDATED	19/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0226-	02	J

PROJ : OPTION I/O ETHERNET/CANON (010-002)

23 Jul 84 14:52:05 io17.real.db



TITLE: NET STATUS								IO18.db
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
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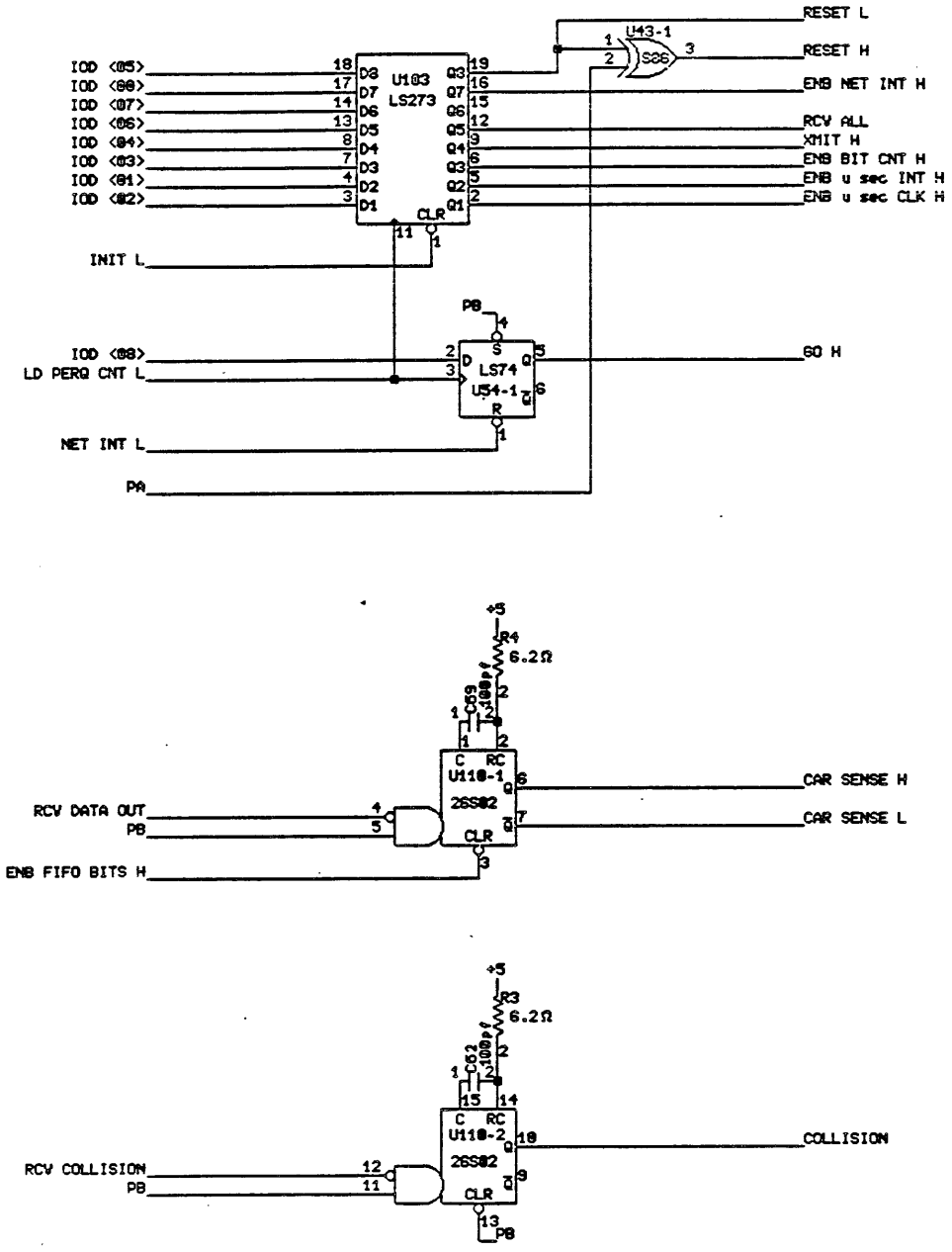
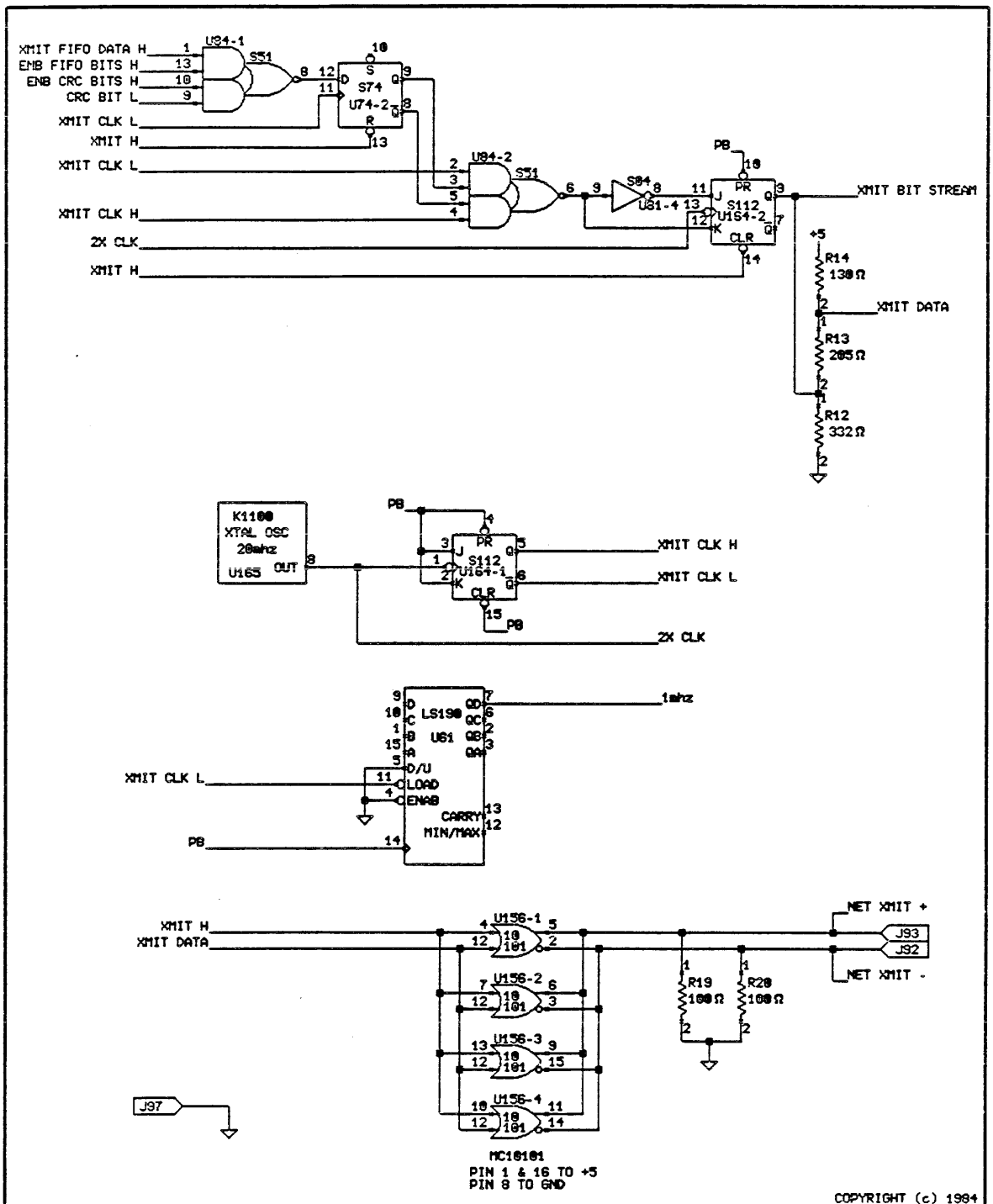
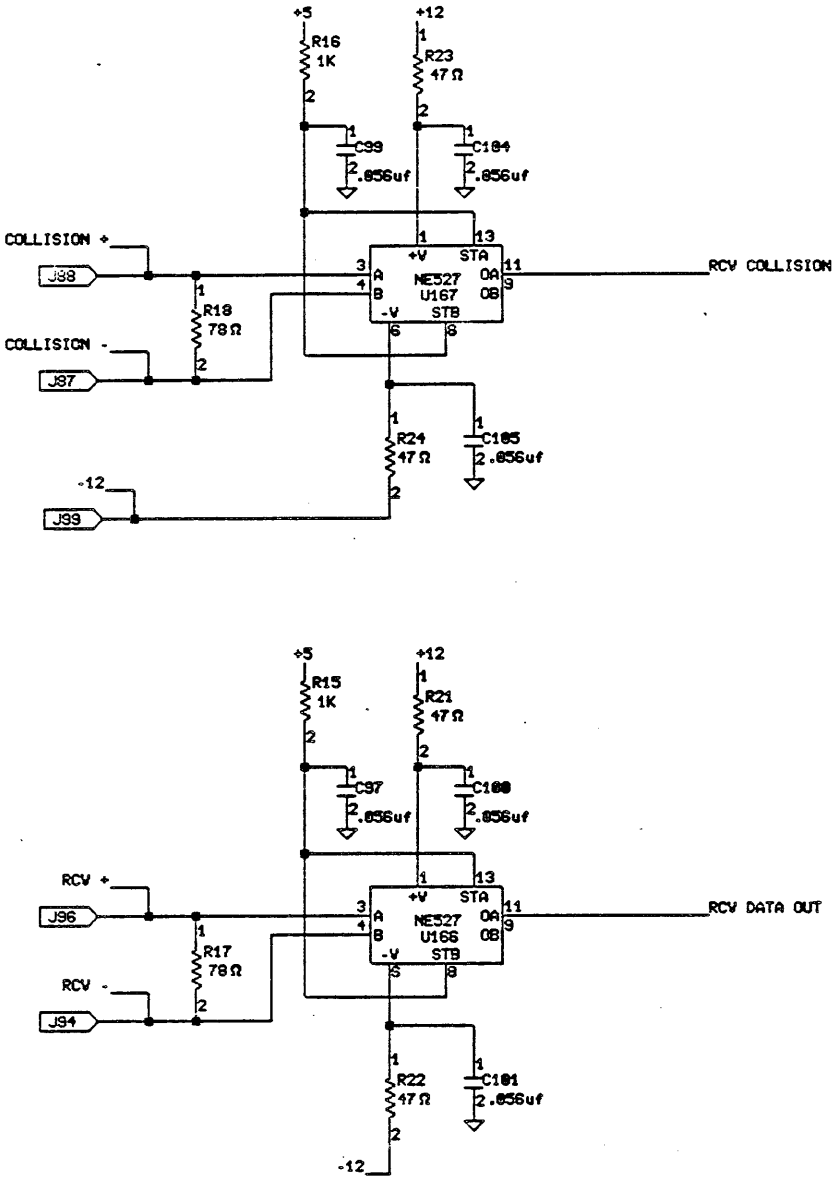
	UPDATED	19/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (OIO-002)			PAGE 18 OF 31	



TITLE	PERQ CONTROL REGISTER						IO19.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	19/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	19/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (OIO-002)			PAGE 19 OF 31	



TITLE	TRANSMIT ENCODE						IO20.dp	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	19/JULY/84	STECK	A	18	0226-	02	J
	UPDATED	19/JULY/84	STECK	PROJ :	OPTION I/O ETHERNET/CANON (OIO-002)		PAGE 20 OF 31	



TITLE: DATA RECOVERY

IO21.db

PERQ

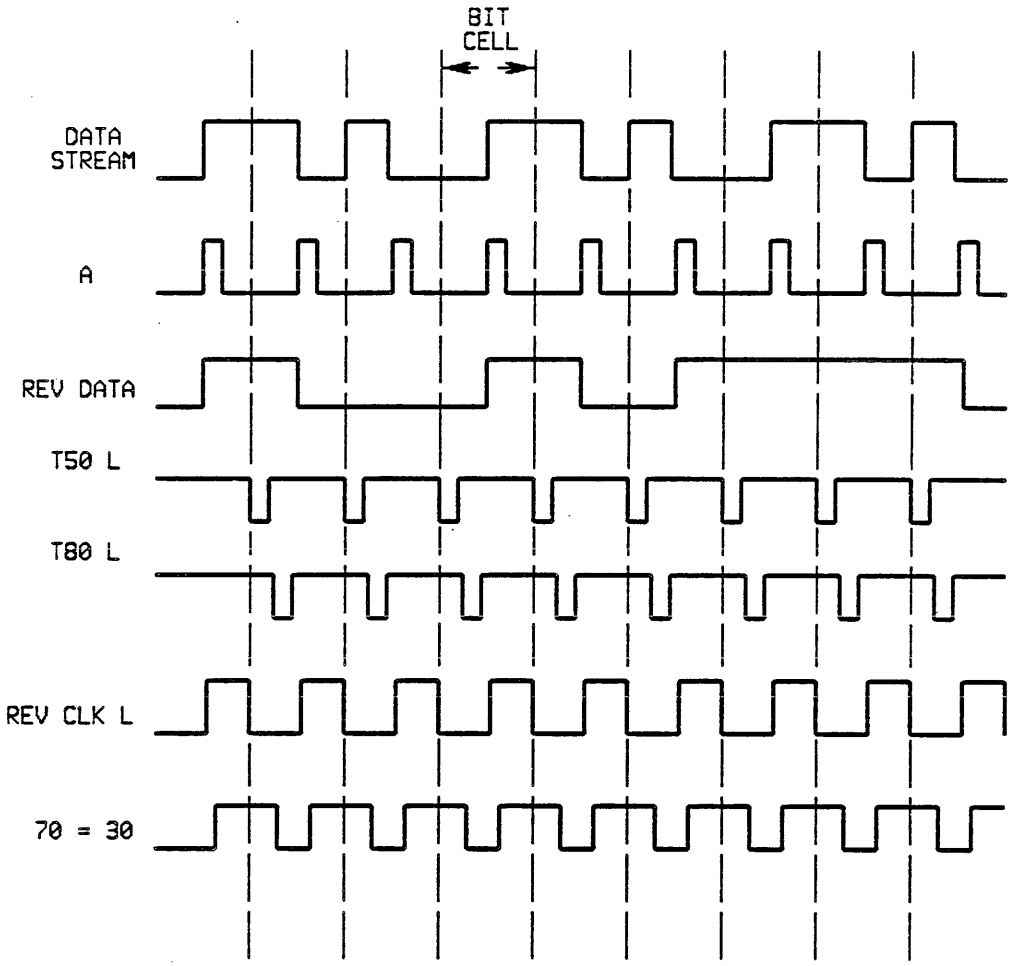
DESIGNED	P. REDDY	
DRAWN	19/JULY/84	STECK
UPDATED	19/JULY/84	STECK

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	8226-	02	J

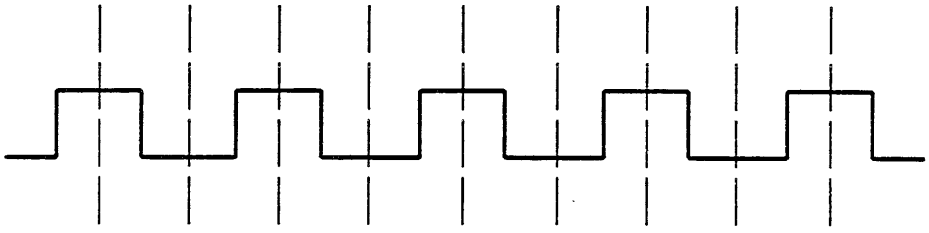
PROJ : OPTION I/O ETHERNET/CANON (OIO-002)

PAGE 21 OF 31

23 Jul 84 14:54:40 io21.real.dp

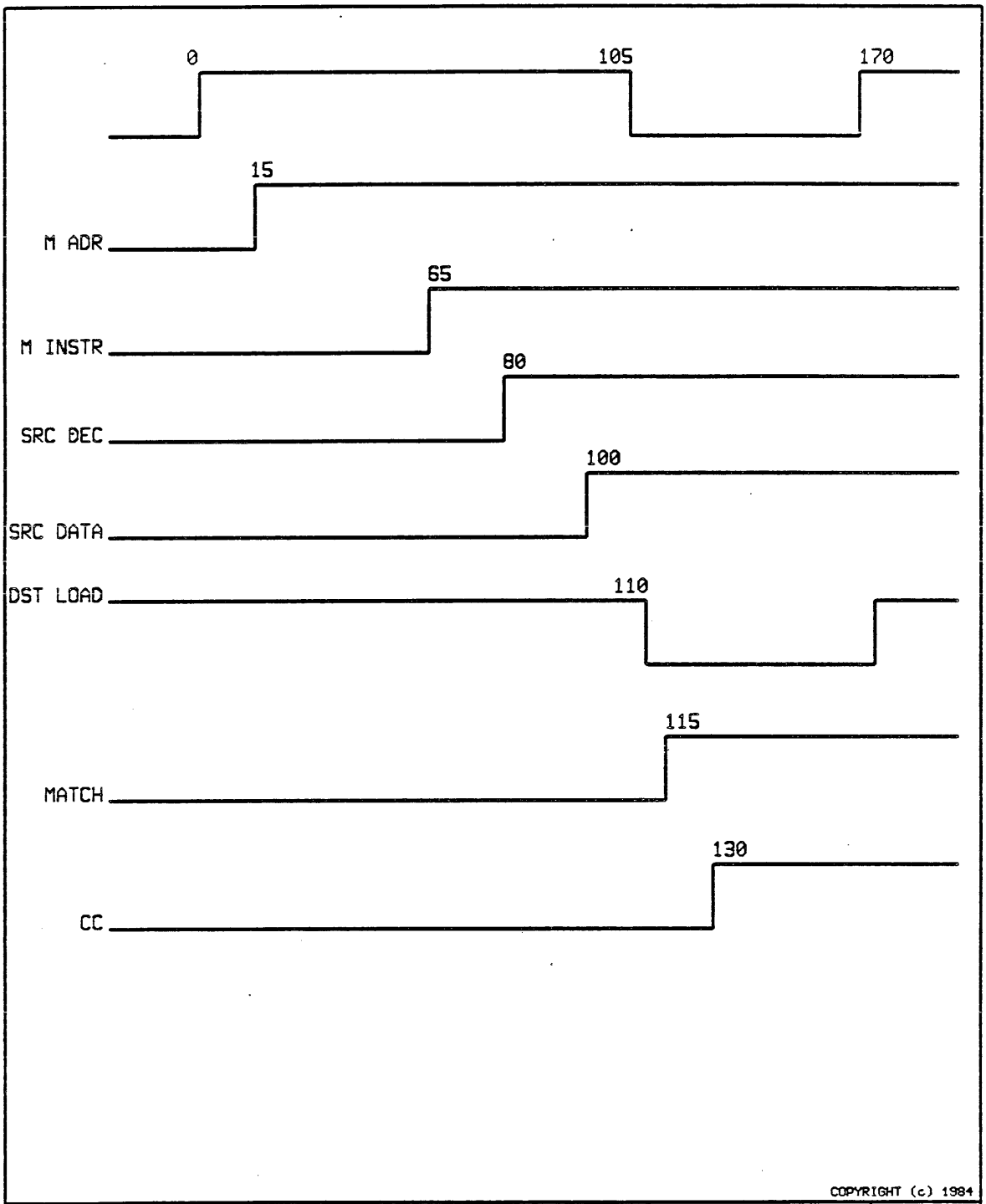


SYNCHRONIZATION

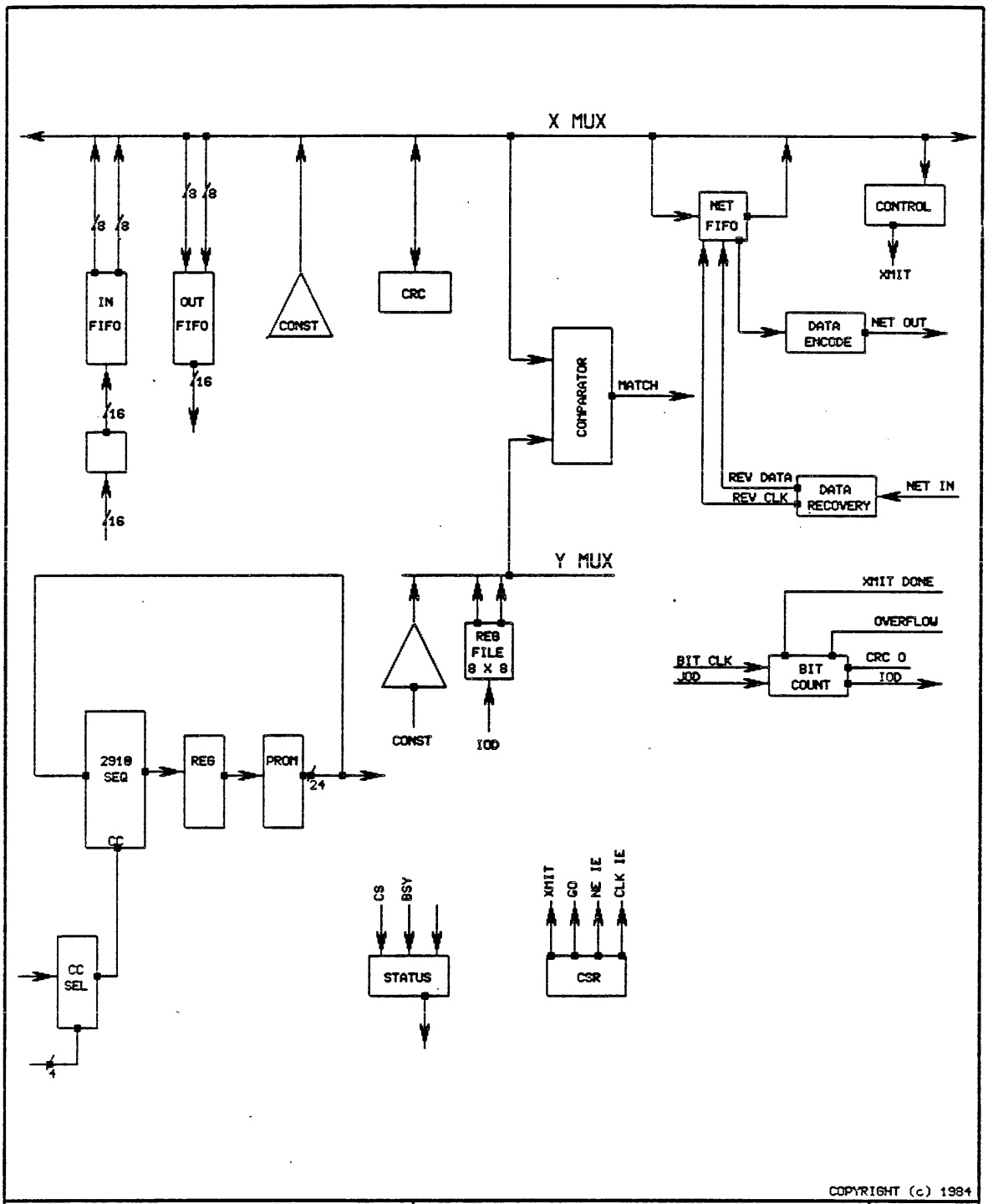


TITLE: TIMING								IO22.db
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	19/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	19/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (OIO-002)			PAGE 22 OF 31	

23 Jul 84 14:56:18 io22.db



TITLE: TIMING FOR DATA LOOP								IO23.db
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	19/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	19/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (OIO-002)			PAGE 23 OF 31	



TITLE: ETHERNET BLOCK DIAGRAM

IO24.db

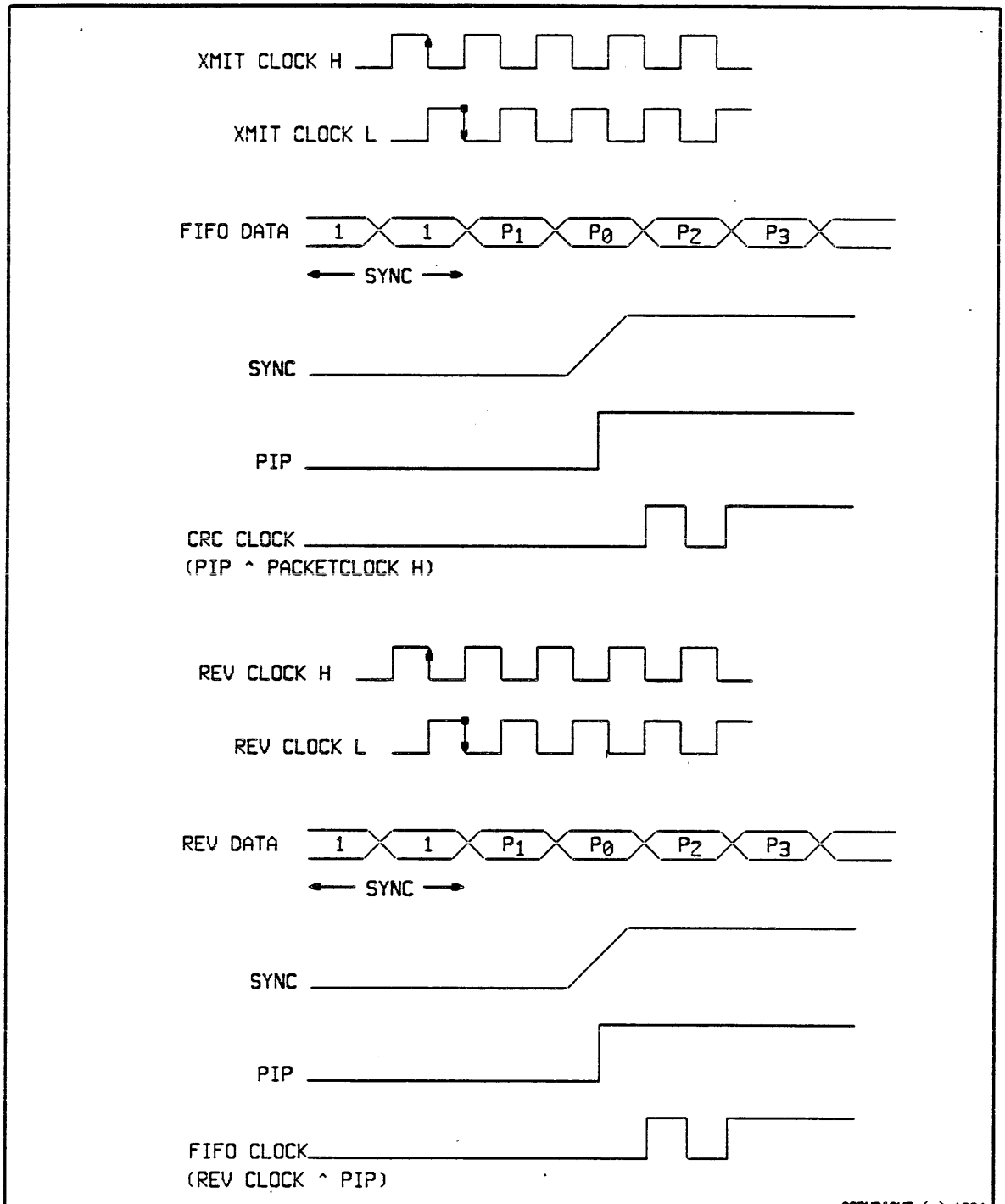
PERQ

DESIGNED	P. REDDY		
DRAWN	19/JULY/84	STECK	
UPDATED	19/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0226-	02	J

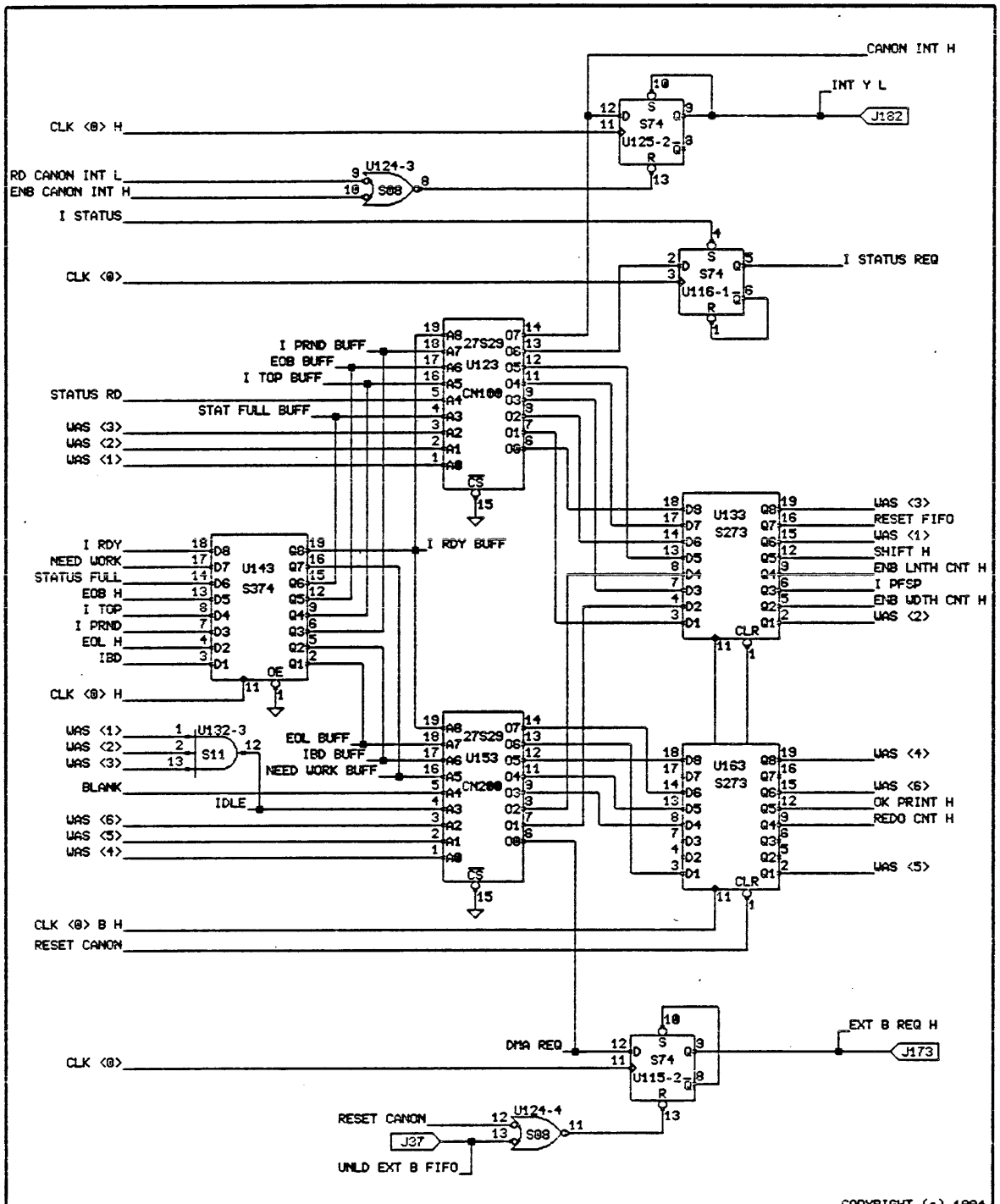
PROJ : OPTION I/O ETHERNET/CANON (OIO-002) PAGE 24 OF 31

23 Jul 84 14:57:28 io24.db



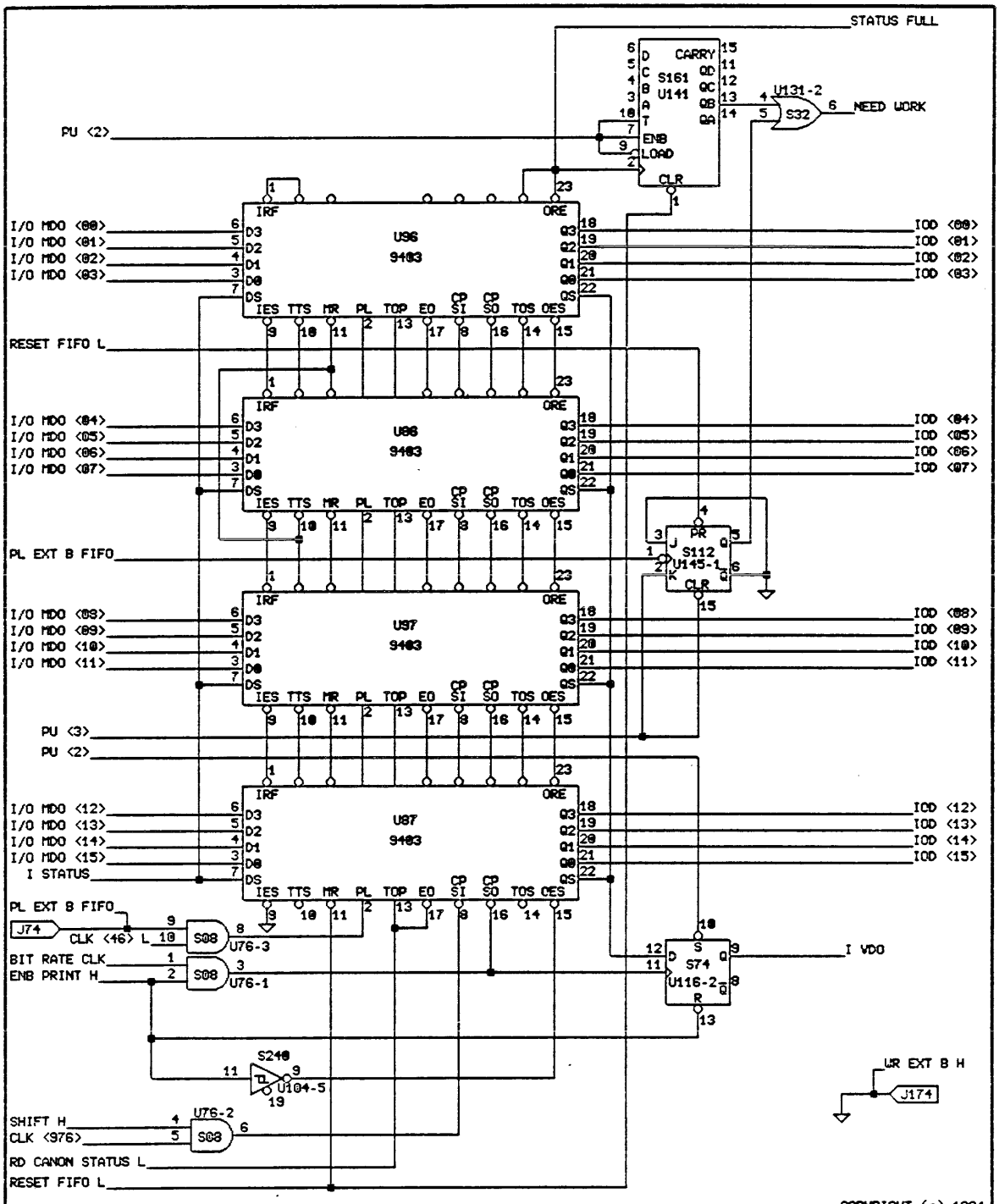
TITLE	TRANSMIT & REV TIMING						1025.db
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	19/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	19/JULY/84	STECK	PROJ :	OPTION I/O ETHERNET/CANON (OIO-002)		PAGE 25 OF 31	

23 Jul 84 14:58:16 io25.db

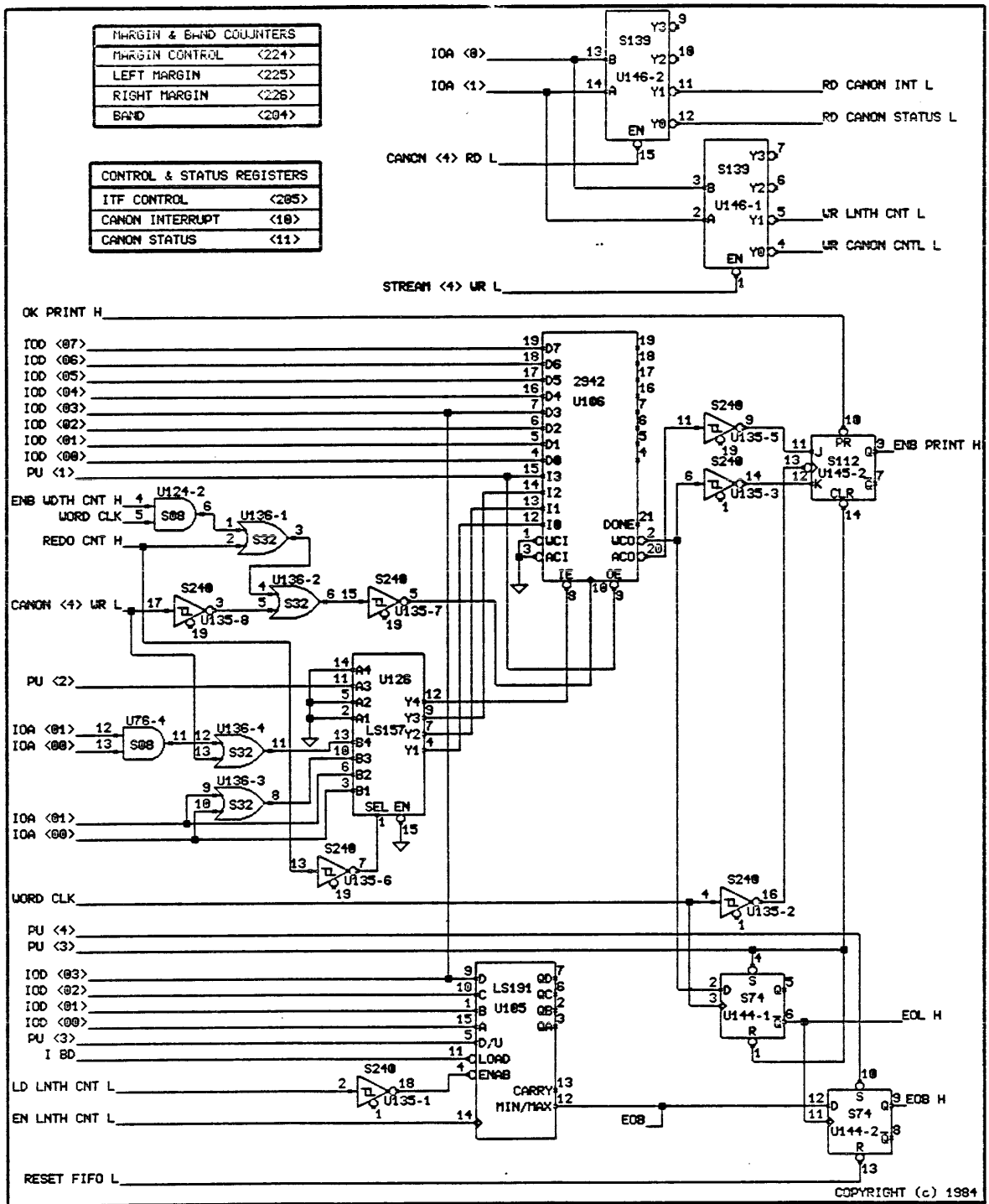


TITLE	STATE MACHINE						IO26.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	20/JULY/84	STECK	A	10	0226-	02	J
	UPDATED	20/JULY/84	STECK	PROJ :	OPTION I/O ETHERNET/CANON (OIO-002)		PAGE 26 OF 31	

23 Jul 84 14:59:07 io26.real.db



TITLE	DATA & STATUS FIFO						IO27.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	20/JULY/84	STECK	A	10	8226-	02	J
	UPDATED	20/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (010-002)			PAGE 27 OF 31	



TITLE: MARGIN DECODES

IO28.dp

PERQ

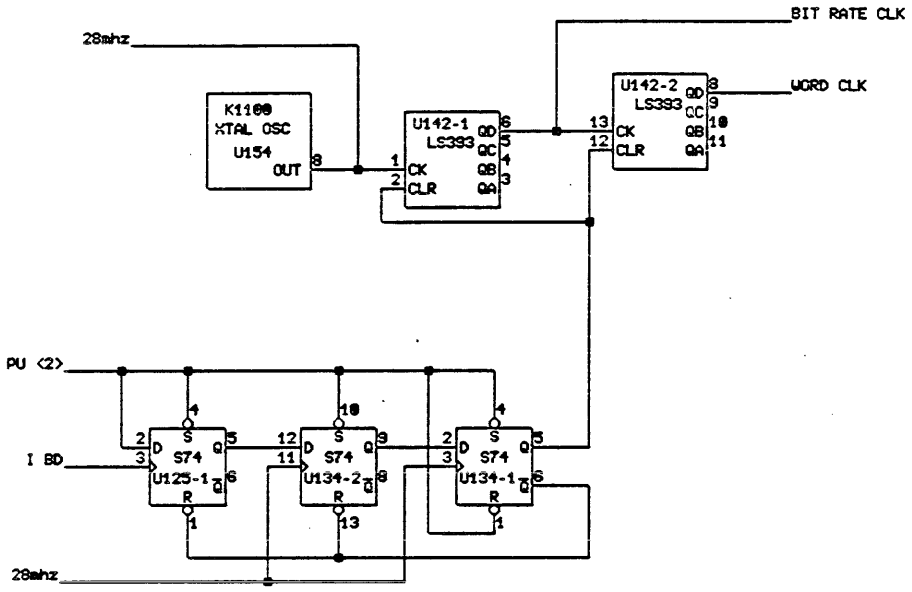
DESIGNED	P. REDDY		
DRAWN	20/JULY/84	STECK	
UPDATED	20/JULY/84	STECK	

SIZE	CODE	IDENTIFICATION	VAR	REV
A	10	0226-	02	J

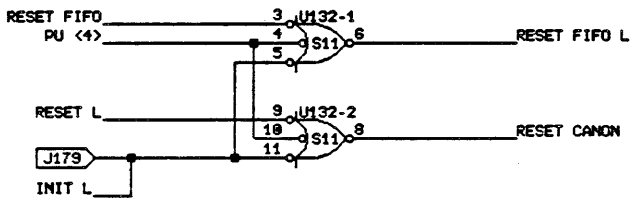
PROJ : OPTION I/O ETHERNET/CANON (OIO-002)

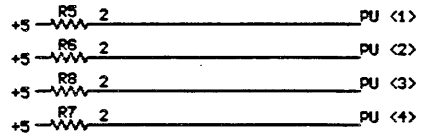
23 Jul 84 15:00:59 io28.real.dp

CLOCK SYNC CIRCUIT



RESET CIRCUIT





TITLE: CLOCK SYNC & RESET						IO29.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
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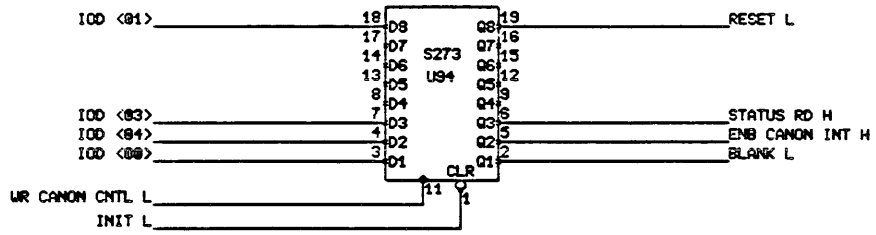
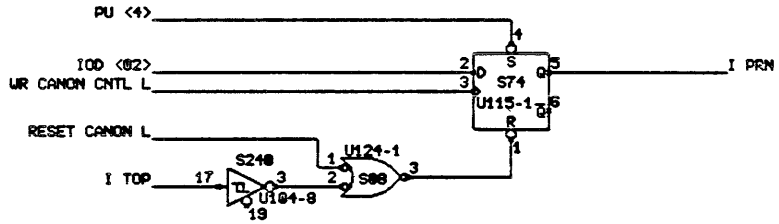
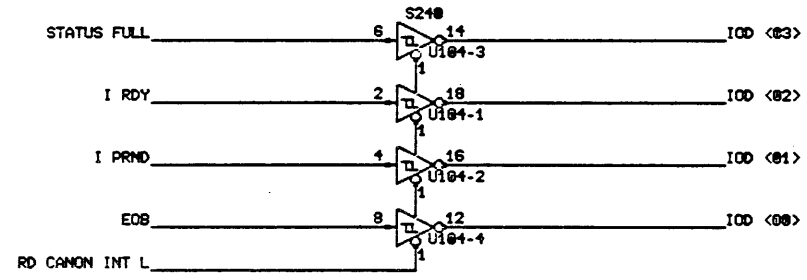
	UPDATED	20/JULY/84	STECK	PROJ : OPTION I/O ETHERNET/CANON (OIO-002)			PAGE 29 OF 31	







PERQ	DESIGNED	P. REDDY		TITLE	INTERFACE STATUS & CONTROL		IO30.db	
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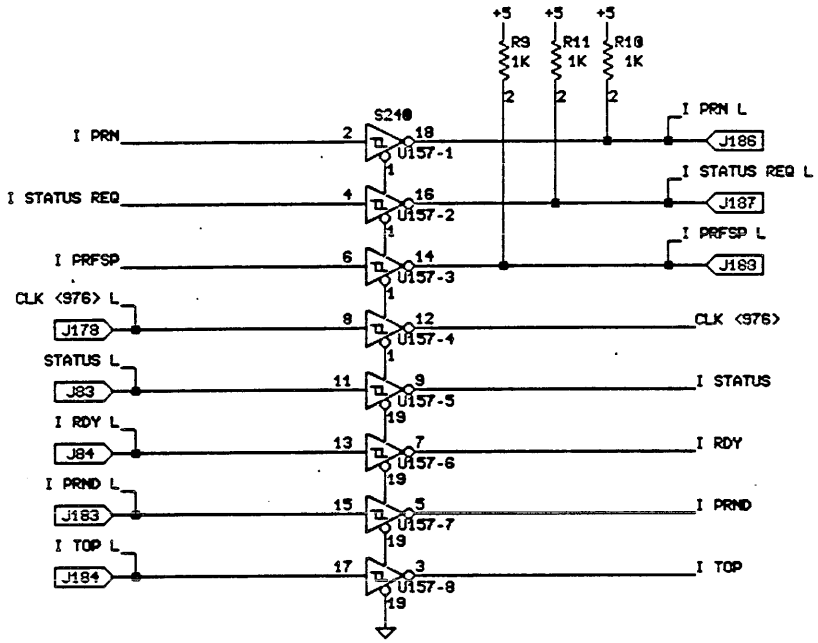
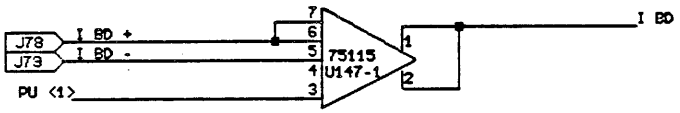
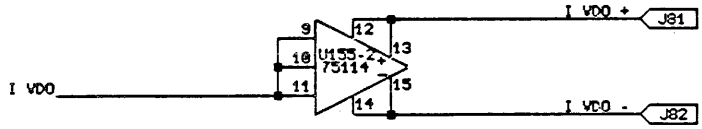
	UPDATED	20/JULY/84	STECK	A	10	0226-	02	J
				PROJ :	OPTION I/O ETHERNET/CANON (OIO-002)		PAGE 30 OF 31	







TITLE					
PRINTER CONTROL LINE DRIVERS					IO31.db
PERQ	SIZE	CODE	IDENTIFICATION	VAR	REV
	A	10	0226-	02	J
PROJ : OPTION I/O ETHERNET/CANON (OIO-002)				PAGE 31 OF 31	

DESIGNED	P. REDDY		
DRAWN	20/JULY/84	STECK	
UPDATED	20/JULY/84	STECK	

Part/Page Cross Reference 26 Jul 84 09:01:28

Using Files: I001.WL to I031.WL

PART..TYPE.....Pages Numbers								
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U5....PAL16R8.....16								
U6....74S225.....10								
U7....74S225.....10								
U12...2910..... 8								
U13...PAL16R8.....16								
U14...PAL16R8.....16								
U15...74S225.....10								
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U25...74S112.....11								
U29...74S74..... 4								
U31...27S29..... 8								
U32...74S244/1.....12	12	12	12	12	12	12	12	
U33...74S04.....15	9	9	9	8	1			
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U35...9403.....11								
U36...74S374/1..... 1								
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U39...74S04.....13	13	9	4					
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U42...74LS74..... 8								
U43...74S86.....19	16	11	10					
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U45...9403.....11								
U46...74S225.....10								
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U74...74S74.....20 17
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U112..74S51..... 6  6
U113..74S08.....14 14  6  6
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J121..EDGE..... 1
J122..EDGE..... 1
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IOD <07>.........28 27 19 18 17  7  6  5  3
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LINK DATA OUT <08>.....  3
LINK DATA OUT <09>.....  3
LINK DATA OUT <10>.....  3
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MDI <11>.............10
MDI <12>.............10
MDI <13>.............10
MDI <14>.............10
MDI <15>.............10
MDO <00>............. 1
MDO <01>............. 1
MDO <02>............. 1
MDO <03>............. 1
MDO <04>............. 1
MDO <05>............. 1
MDO <06>............. 1
MDO <07>............. 1
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MDO <09>............. 1
MDO <10>............. 1
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X MUX <02>.....18 12 11 10
X MUX <03>.....18 12 11 10
X MUX <04>.....18 12 11 10
X MUX <05>.....18 12 11 10
X MUX <06>.....12 11 10
X MUX <07>.....12 11 10
X MUX <0>.....10 9
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Y MUX <03>.....12 11 6
Y MUX <04>.....12 11 6
Y MUX <05>.....12 11 6
Y MUX <06>.....12 11 6
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```

This Run Was made using the following files:

100226.PART
io31.WL
io30.WL
io29.WL
io28.WL
io27.WL
io26.WL
io21.WL
io20.WL
io19.WL
io18.WL
io17.WL
io16.WL
io15.WL
io14.WL
io13.WL
io12.WL
io11.WL
io10.WL
io09.WL
io08.WL
io07.WL
io06.WL
io05.WL
io04.WL
io03.WL
io02.WL
io01.WL

Number Of Nets = 567
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   1: U98-1 U89-1 U78-1 U83-1 U22-19 U12-27
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   1: U44-3 U24-1 U64-15 U66-9 U65-1 U25-3
   1: U90-3 U60-15 U55-1 U4-11 U5-11 U14-11
   1: U13-7 U13-11 U63-11 U93-1 U73-14
   1: U73-6 U73-10 U73-15 R12-2 R20-2 J97-1
   1: R19-2 U61-5 U61-4 C99-2 C97-2 C100-2
   1: C101-2 C105-2 C104-2 U153-15 U123-15
   1: U143-1 U126-5 U126-14 U126-2 U126-15
   1: U106-3 U106-1 U157-1 U157-19          .!GND

   2: U110-15 C62-1                         .%C62-1

   3: U110-14 R3-2 C62-2                    .%C62-2

   4: C69-2 U110-2 R4-2                     .%R4-2
```

5: U100-5 U100-1 .%U100-1

6: U101-4 U91-8 U101-5 .%U101-5

7: U124-2 U104-3 .%U104-3

8: U87-15 U104-9 .%U104-9

9: U135-18 U105-4 .%U105-4

10: U135-5 U106-10 .%U106-10

11: U126-7 U106-13 .%U106-13

12: U126-12 U106-8 .%U106-8

13: C69-1 U110-1 .%U110-1

14: U91-4 U111-3 .%U111-3

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34: U133-14 U123-8 .%U123-8

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36: U124-8 U125-13 .%U125-13

37: U135-7 U126-1 .%U126-1

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39: U136-11 U126-13 .%U126-13

40: U106-12 U126-4 .%U126-4

41: U106-14 U126-9 .%U126-9

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48: U125-5 U134-12 .%U134-12

49: U134-13 U125-1 U134-6 .%U134-6

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69: U163-8 U153-9 .%U153-9

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71: U81-8 U164-11 .%U164-11

72: U81-9 U84-6 U164-12 .%U164-12

73: R21-2 C100-1 U166-1 .%U166-1

74: R15-2 C97-1 U166-8 U166-13 .%U166-13

75: R22-1 C101-1 U166-6 .%U166-6

76: C104-1 R23-2 U167-1 .%U167-1

77: R16-2 U167-8 C99-1 U167-13 .%U167-13

78: C105-1 R24-1 U167-6 .%U167-6

79: U129-13 U199-6 .%U199-6

80: U12-18 U21-13 .%U21-13

81: U12-3 U21-17 .%U21-17

```
 82: U12-39 U21-13                    .%U21-18
 83: U12-35 U21-3                     .%U21-3
 84: U12-37 U21-4                     .%U21-4
 85: U12-1 U21-7                      .%U21-7
 86: U12-20 U21-8                     .%U21-8
 87: U34-15 U24-12                    .%U24-12
 88: U34-13 U24-19                    .%U24-19
 89: U34-2 U24-6                      .%U24-6
 90: U34-1 U24-9                      .%U24-9
 91: U29-4 R2-2 U29-2                 .%U29-2
 92: U53-7 U33-1                      .%U33-1
 93: U53-9 U33-11                     .%U33-11
 94: U53-10 U33-5                     .%U33-5
 95: U24-2 U34-14                     .%U34-14
 96: U24-15 U34-3                     .%U34-3
 97: U24-5 U34-4                      .%U34-4
 98: U39-8 U34-7                      .%U34-7
 99: U35-23 U25-4 U35-14              .%U35-14
100: U37-1 U36-1                      .%U36-1
*** Run Has no outputs
101: U39-12 U39-11                    .%U39-11
102: JA3-1 U39-3                      .%U39-3
103: U12-22 U42-12                    .%U42-12
104: U22-15 U42-8                     .%U42-8
105: U23-9 U43-11                     .%U43-11
106: U35-9 U45-1                      .%U45-1
107: U45-23 U25-1 U69-12 U45-14       .%U45-14
```

```
 108: U47-16 U57-16 U46-16                    .%U46-16
%%% Run Has no outputs

 109: U14-2 U43-6 U13-2 U4-2 U5-2             .%U5-2

 110: U127-12 U64-1                           .%U64-1

 111: U95-13 U66-19                           .%U66-19

 112: JA2-1 U68-15                            .%U68-15

 113: JA1-1 U68-17                            .%U68-17

 114: U25-5 U69-13                            .%U69-13

 115: U70-1 U69-6                             .%U69-6

 116: U6-9 U15-9 U16-9 U23-8 U16-16 U15-16
 116: U6-16 U7-16 U7-9                        .%U7-9

 117: U80-10 U70-4                            .%U70-4

 118: U81-12 U70-5                            .%U70-5

 119: U90-4 U100-13 U70-6                     .%U70-6

 120: U71-13 U70-8                            .%U70-8

 121: U39-10 U71-11                           .%U71-11

 122: U101-8 U83-10 U71-3                     .%U71-3

 123: U71-4 U71-5                             .%U71-5

 124: U93-8 U73-12                            .%U73-12

 125: U84-8 U74-12                            .%U74-12

 126: U84-5 U74-8                             .%U74-8

 127: U85-13 U75-12                           .%U75-12

 128: U136-12 U76-11                          .%U76-11

 129: U96-8 U86-8 U97-8 U87-8 U76-6           .%U76-6

 130: U96-2 U86-2 U97-2 U87-2 U76-8           .%U76-8

 131: U69-4 U69-5 U80-8                       .%U80-8

 132: U35-15 U81-10                           .%U81-10
```

133: U70-13 U80-6 U81-13 .%U81-13

134: U71-2 U83-20 .%U83-20

135: U83-2 U83-3 .%U83-3

136: U74-9 U84-3 .%U84-3

137: U96-9 U86-1 .%U86-1

138: U96-15 U86-23 .%U86-23

139: U97-9 U87-1 .%U87-1

140: U97-15 U87-23 .%U87-23

141: U81-2 U90-13 .%U90-13

142: U100-8 U91-1 .%U91-1

143: U90-5 U91-2 .%U91-2

144: U39-13 U91-3 .%U91-3

145: U101-6 U93-10 .%U93-10

146: U73-9 U93-12 .%U93-12

147: U73-7 U93-13 .%U93-13

148: U73-4 U93-14 .%U93-14

149: U93-2 U93-3 .%U93-3

150: U86-9 U97-1 .%U97-1

151: U86-15 U97-23 .%U97-23

152: R23-1 R21-1 .+12

153: R22-2 J99-1 R24-2 .-12

154: U61-7 .1MHZ
*** Only one pin in net

155: U101-13 .1MHZ H
*** Only one pin in net
*** Run Has no outputs

156: U134-11 U134-3 U154-8 U142-1 .28MHZ

157: U164-13 U164-1 U165-8 .2X CLK

158: U68-13 U29-5 .AB

159: U51-1 U31-1 U21-15 U41-1 .ADR <00>

160: U31-2 U51-2 U21-2 U41-2 .ADR <01>

161: U51-3 U31-3 U21-5 U41-3 .ADR <02>

162: U51-4 U31-4 U21-19 .ADR <03>

163: U51-5 U31-5 U21-6 U41-5 .ADR <04>

164: U51-16 U31-16 U21-16 U41-16 .ADR <05>

165: U51-17 U31-17 U21-12 U41-17 .ADR <06>

166: U51-18 U31-18 U21-9 U41-18 .ADR <07>

167: U51-19 U31-19 U22-5 U41-19 .ADR <08>

168: U129-8 U118-5 .ADR MCH L

169: U74-2 U93-20 .BIT CNT OVFL L

170: U127-14 U113-5 U93-9 .BIT CNT RD L

171: U117-12 U113-4 U22-17 U91-10 .BIT CNT WR L

172: U76-1 U142-13 U142-6 .BIT RATE CLK

173: U153-5 .BLANK
*** Only one pin in net
*** Run Has no outputs

174: U94-2 .BLANK L
*** Only one pin in net

175: JB7-1 U78-5 .BUF CYC H

176: U85-8 U75-10 .BUSY

177: U127-13 U146-15 .CANON <4> RD L

178: U117-10 U136-13 U135-17 .CANON <4> WR L

179: U123-14 U125-12 .CANON INT H

180: U24-4 U85-18 U110-6 .CAR SENSE H

181: U70-10 U70-9 U70-3 U70-2 U110-7 .CAR SENSE L

```
 182: U12-14 U34-6 U44-6                    .CC L

 183: U41-11 U34-9 U44-9                    .CC SEL <00>

 184: U41-12 U34-10 U44-10                  .CC SEL <01>

 185: U41-13 U34-11 U44-11                  .CC SEL <02>

 186: U41-14 U39-9 U44-7                    .CC SEL <03>

 187: U116-3 U115-11                        .CLK <0>
*** Run Has no outputs

 188: U33-8                                 .CLK <0> A H
*** Only one pin in net

 189: U107-8                                .CLK <0> B
*** Only one pin in net

 190: U163-11 U133-11                       .CLK <0> B H
*** Run Has no outputs

 191: U107-12                               .CLK <0> C
*** Only one pin in net

 192: U36-11 U37-11 U12-31 U42-11 U21-11
 192: U24-11 U85-11 U125-11 U143-11         .CLK <0> H
*** Run Has no outputs

 193: U76-10                                .CLK <46> L
*** Only one pin in net
*** Run Has no outputs

 194: U107-10 U33-9                         .CLK <4> A L

 195: U107-2 U107-9                         .CLK <4> B

 196: U107-13 U107-4                        .CLK <4> C L

 197: U23-10                                .CLK <4> H
*** Only one pin in net
*** Run Has no outputs

 198: U53-6 U16-19 U15-19 U6-19 U7-19 U56-1
 198: U47-1 U57-1 U46-1                     .CLK <4> L
*** Run Has no outputs

 199: U107-11 J176-1 U107-1 U107-3          .CLK <7> H

 200: U76-5 U157-12                         .CLK <976>
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 201: J178-1 U157-8                    .CLK <976> L

 202: U118-14 U78-11                   .CLK CNT L

 203: U98-11 U89-11 U118-12            .CLK OUT L

 204: U118-11 U79-11 U88-11            .CLK REG L

 205: U118-6 U69-2                     .CLK-4 L
*** Run Has no outputs

 206: U24-18 U110-10                   .COLLISION

 207: J88-1 U167-3 R18-1               .COLLISION +

 208: J87-1 R18-2 U167-4               .COLLISION -

 209: U5-6 U14-12                      .CRC BIT <07>

 210: U4-6 U5-12                       .CRC BIT <15>

 211: U13-6 U4-12                      .CRC BIT <23>

 212: U43-5 U13-12 U23-4 U23-5         .CRC BIT H

 213: U23-6 U84-9                      .CRC BIT L

 214: U44-13 U14-17 U75-2 U85-17       .CRC ERROR
*** Run has multiple outputs

 215: U14-6 U5-18                      .CRC ERROR <02>

 216: U14-7 U4-18                      .CRC ERROR <03>

 217: U14-8 U13-16                     .CRC ERROR <04>

 218: U153-6 U115-12                   .DMA REQ

 219: U53-15 U95-11 U95-12             .DMA REQ L

 220: U23-3 U72-11 U82-11              .EN HB

 221: U59-1 U58-1 U58-19 U59-19        .EN IN L
*** Run Has no outputs

 222: U99-15 U108-15 U69-3             .EN L

 223: U23-11 U92-11 U102-11            .EN LB

 224: U105-14                          .EN LNTH CNT L
*** Only one pin in net
*** Run Has no outputs
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 225: U112-9                                .EN NET INT H
*** Only one pin in net
*** Run Has no outputs

 226: U101-1                                .EN U SEC CLK H
*** Only one pin in net
*** Run Has no outputs

 227: U112-13                               .EN U SEC INT H
*** Only one pin in net
*** Run Has no outputs

 228: U101-3 U103-6                         .ENB BIT CNT H

 229: U124-10 U94-5                         .ENB CANON INT H

 230: U118-15 U68-19                        .ENB CNT L

 231: U14-3 U13-3 U4-3 U5-3 U63-2 U74-6
 231: U84-10                                .ENB CRC BITS H

 232: U74-1 U74-5 U110-3 U84-13             .ENB FIFO BITS H

 233: U64-9 U56-9 U46-9                     .ENB IN FIFO 0 L

 234: U64-10 U57-9 U47-9                    .ENB IN FIFO 1 L

 235: U29-1 U118-13                         .ENB IN L

 236: U133-9                                .ENB LNTH CNT H
*** Only one pin in net

 237: U64-11 U35-17 U45-17                  .ENB NET FIFO L

 238: U103-16                               .ENB NET INT H
*** Only one pin in net

 239: U116-13 U76-2 U104-11 U145-9          .ENB PRINT H

 240: U118-10 U79-1 U88-1                   .ENB REG L

 241: U103-2                                .ENB U SEC CLK H
*** Only one pin in net

 242: U103-5                                .ENB U SEC INT H
*** Only one pin in net

 243: U133-5 U124-4                         .ENB WDTH CNT H

 244: U105-12 U144-12 U104-8                .EOB
```

245: U123-17 U143-12 .EOB BUFF

246: U143-13 U144-9 .EOB H

247: U153-18 U143-2 .EOL BUFF

248: U143-4 U144-11 U144-6 .EOL H

249: U55-15 U14-4 U13-4 U4-4 U5-4 .ERROR CHECK H

250: U122-7 .EX DEV <1> WR L
*** Only one pin in net

251: U122-6 .EX DEV <2> WR L
*** Only one pin in net

252: U127-11 .EX DEV <41> RD L
*** Only one pin in net

253: U127-10 .EX DEV <42> RD L
*** Only one pin in net

254: U127-9 .EX DEV <43> RD L
*** Only one pin in net

255: U127-7 .EX DEV <44> RD L
*** Only one pin in net

256: J103-1 U66-17 .EXT A REQ H

257: J173-1 U115-9 .EXT B REQ H

258: JB5-1 U78-15 .EXT RCSR TO BUS L

259: JA4-1 U29-3 .EXT X BUF CYC

260: JB3-1 U78-16 .FLAG H

261: U113-3 U95-2 .GATED PACKET CLK H

262: U35-8 U45-8 U113-11 U101-2 .GATED PACKET CLK L

263: U44-2 U54-5 .GO H

264: U105-11 U125-3 U147-2 U147-1 .I BD

265: U147-7 U147-6 J78-1 .I BD +

266: U147-5 J79-1 .I BD -

267: U133-6 .I PFSP
*** Only one pin in net

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268: U157-6                                  .I PRFSP
*** Only one pin in net
*** Run Has no outputs

269: J188-1 U157-14 R9-2                     .I PRFSP L

270: U115-5 U157-2                           .I PRN

271: U157-18 J186-1 R10-2                    .I PRN L

272: U143-7 U104-4 U157-5                    .I PRND

273: U123-18 U143-6                          .I PRND BUFF

274: U157-15 J183-1                          .I PRND L

275: U143-18 U104-2 U157-7                   .I RDY

276: U143-19 U153-19 U123-19                 .I RDY BUFF

277: U157-13 J84-1                           .I RDY L

278: U116-4 U96-7 U87-7 U97-7 U86-7 U157-9
278:                                         .I STATUS

279: U116-5 U157-4                           .I STATUS REQ

280: U157-16 J187-1 R11-2                    .I STATUS REQ L

281: U143-8 U104-17 U157-3                   .I TOP

282: U123-16 U143-9                          .I TOP BUFF

283: J184-1 U157-17                          .I TOP L

284: U116-9 U155-10 U155-9 U155-11           .I VDO

285: U155-13 J81-1 U155-12                   .I VDO +

286: U155-14 J82-1 U155-15                   .I VDO -

287: U122-13 J71-1 U64-3 U122-3 U118-4
287:                                         .I/O ENB L

288: U36-2 U56-4 U96-6                       .I/O MDO <00>

289: U36-5 U56-5 U96-5                       .I/O MDO <01>

290: U36-6 U56-6 U96-4                       .I/O MDO <02>

291: U36-9 U56-7 U96-3                       .I/O MDO <03>
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292: U36-12 U56-8 U86-6                 .I/O MDO <04>

293: U36-15 U46-4 U86-5                 .I/O MDO <05>

294: U36-16 U46-5 U86-4                 .I/O MDO <06>

295: U36-19 U46-6 U86-3                 .I/O MDO <07>

296: U37-2 U57-4 U97-6                  .I/O MDO <08>

297: U37-5 U57-5 U97-5                  .I/O MDO <09>

298: U37-6 U57-6 U97-4                  .I/O MDO <10>

299: U37-9 U57-7 U97-3                  .I/O MDO <11>

300: U37-12 U57-8 U87-6                 .I/O MDO <12>

301: U37-15 U47-4 U87-5                 .I/O MDO <13>

302: U37-16 U47-5 U87-4                 .I/O MDO <14>

303: U37-19 U47-6 U87-3                 .I/O MDO <15>

304: U81-6 U83-14 U73-2                 .I2H

305: U143-3                             .IBD
*** Only one pin in net
*** Run Has no outputs

306: U153-17 U143-5                     .IBD BUFF

307: U132-12 U153-4                     .IDLE

308: U103-1 U132-11 J179-1 U132-5 U94-1
308:                                    .INIT L

309: U112-8                             .INT L
*** Only one pin in net

310: U125-9 J182-1 U125-10              .INT Y L

311: U117-4 U127-4 J69-1 U118-1 U99-10
311: U108-10 U112-4 U72-14 U82-14 U92-14
311: U102-14 U83-12 U73-11 U76-13 U136-10
311: U126-3                             .IOA <00>

312: U122-14 J169-1 U64-2 U122-2 U118-2
312: U99-11 U108-11 U112-2 U72-13 U82-13
312: U92-13 U102-13 U83-13 U73-5 U76-12
312: U136-9 U126-6                      .IOA <01>
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313: U117-1 J68-1 U127-1 U118-3 U99-12
313: U108-12                              .IOA <02>

314: U117-2 J168-1 U127-2 U199-5 U99-13
314: U108-13                              .IOA <03>

315: U117-3 J67-1 U127-3 U119-3 U99-14
315: U108-14                              .IOA <04>

316: J167-1 U137-11 U129-10 U131-13       .IOA <05>

317: J66-1 U137-12 U119-1 U131-12         .IOA <06>

318: U127-6 J166-1 U137-9 U137-8 U112-3
318: U112-5                               .IOA <07>

319: U146-3 U146-13                       .IOA <0>
*** Run Has no outputs

320: U146-2 U146-14                       .IOA <1>
*** Run Has no outputs

321: U98-2 J64-1 U58-18 U68-9 U78-4 U88-18
321: U108-1 U88-19 U102-15 U83-4 U93-4
321: U85-2 U103-17 U96-18 U105-15 U106-4
321: U104-12 U94-3                        .IOD <00>

322: U98-5 J164-1 U58-14 U68-7 U78-14
322: U88-17 U108-2 U88-16 U102-1 U83-5
322: U93-5 U85-5 U103-4 U96-19 U105-1
322: U106-5 U104-16 U94-18                .IOD <01>

323: U98-6 J63-1 U58-16 U68-5 U78-17 U88-4
323: U108-3 U88-5 U102-2 U83-6 U93-6 U85-6
323: U103-3 U96-20 U105-10 U106-6 U104-18
323: U115-2                               .IOD <02>

324: U98-9 J163-1 U58-12 U68-3 U78-18
324: U88-14 U108-4 U88-15 U102-3 U83-7
324: U93-7 U85-9 U103-7 U96-21 U105-9
324: U106-7 U104-14 U94-7                 .IOD <03>

325: U98-12 J62-1 U58-7 U88-13 U108-5
325: U88-12 U92-15 U83-16 U93-16 U85-12
325: U103-8 U86-18 U106-16 U94-4          .IOD <04>

326: U98-15 J162-1 U58-9 U88-8 U108-6
326: U88-9 U92-1 U83-17 U93-17 U85-15
326: U103-18 U86-19 U106-17               .IOD <05>

327: U98-16 U58-5 J61-1 U88-7 U108-7 U88-6
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327: U92-2 U83-18 U93-18 U85-16 U103-13
327: U86-20 U106-18                    .IOD <06>

328: U98-19 J161-1 U58-3 U88-3 U108-9
328: U88-2 U92-3 U83-19 U93-19 U85-19
328: U103-14 U86-21 U106-19            .IOD <07>

329: U89-2 U59-3 J59-1 U79-18 U99-1 U79-19
329: U82-15 U54-2 U97-18               .IOD <08>

330: U89-5 U59-5 J159-1 U79-17 U99-2 U79-16
330: U82-1 U97-19                      .IOD <09>

331: U89-6 U59-7 J58-1 U79-3 U99-3 U79-2
331: U82-2 U97-20                      .IOD <10>

332: U89-9 U59-9 J158-1 U79-4 U99-4 U79-5
332: U82-3 U97-21                      .IOD <11>

333: U89-12 U59-12 J57-1 U79-8 U99-5 U79-9
333: U72-15 U87-18                     .IOD <12>

334: U89-15 U59-14 J157-1 U79-7 U99-6
334: U79-6 U72-1 U87-19                .IOD <13>

335: U89-16 U59-16 J56-1 U79-14 U99-7
335: U79-15 U72-2 U87-20               .IOD <14>

336: U89-19 U59-18 J156-1 U79-13 U99-9
336: U79-12 U72-3 U87-21               .IOD <15>

337: U31-9 U12-34 U62-2 U32-11         .J ADR <00>

338: U31-11 U12-36 U62-4 U32-17        .J ADR <01>

339: U31-12 U12-38 U62-6 U32-15        .J ADR <02>

340: U31-13 U12-40 U62-8 U32-13        .J ADR <03>

341: U31-14 U12-2 U62-11 U32-8         .J ADR <04>

342: U41-6 U12-4 U62-13 U32-6          .J ADR <05>

343: U41-7 U12-17 U62-15 U32-4         .J ADR <06>

344: U41-8 U12-19 U62-17 U32-2         .J ADR <07>

345: U41-9 U12-21                      .J ADR <08>

346: U31-6 U22-18 U12-12               .J CMD <00>

347: U31-7 U22-16 U12-11               .J CMD <01>
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 348: U31-8 U22-14 U12-9                    .J CMD <02>

 349: U51-14 U22-12 U12-8                   .J CMD <03>

 350: U24-16 U44-12                         .L MATCH H

 351: U135-2                                .LD LNTH CNT L
*** Only one pin in net
*** Run Has no outputs

 352: U53-12                                .LD NET CNT REG <0>
*** Only one pin in net

 353: U53-14                                .LD NET CNT REG <1>
*** Only one pin in net

 354: U54-11 U75-9                          .LD NET CNTL REG <0>
*** Run Has no outputs

 355: U55-11                                .LD NET CNTL REG <1>
*** Only one pin in net
*** Run Has no outputs

 356: U33-6 U35-2 U45-2                     .LD NET FIFO L

 357: U33-2 U15-1 U16-1                     .LD OUT FIFO 0 H

 358: U33-10 U6-1 U7-1                      .LD OUT FIFO 1 H

 359: U122-11 U103-11 U54-3                 .LD PERQ CNT L

 360: U117-11 U72-12 U82-12 U92-12 U102-12
 360:                                       .LD REG FILE L

 361: U58-2 JA20-1                          .LINK DATA IN <00>

 362: JA19-1 U58-6                          .LINK DATA IN <01>

 363: JA18-1 U58-4                          .LINK DATA IN <02>

 364: JA17-1 U58-8                          .LINK DATA IN <03>

 365: JA16-1 U58-13                         .LINK DATA IN <04>

 366: JA15-1 U58-11                         .LINK DATA IN <05>

 367: U58-15 JA14-1                         .LINK DATA IN <06>

 368: JA13-1 U58-17                         .LINK DATA IN <07>

 369: JA12-1 U59-17                         .LINK DATA IN <08>
```

370: U59-15 JA11-1 .LINK DATA IN <09>

371: U59-13 JA10-1 .LINK DATA IN <10>

372: U59-11 JA9-1 .LINK DATA IN <11>

373: U59-8 JA8-1 .LINK DATA IN <12>

374: U59-6 JA7-1 .LINK DATA IN <13>

375: U59-4 JA6-1 .LINK DATA IN <14>

376: U59-2 JA5-1 .LINK DATA IN <15>

377: JB39-1 U98-3 .LINK DATA OUT <00>

378: JB37-1 U98-4 .LINK DATA OUT <01>

379: JB35-1 U98-7 .LINK DATA OUT <02>

380: JB33-1 U98-8 .LINK DATA OUT <03>

381: JB31-1 U98-13 .LINK DATA OUT <04>

382: JB29-1 U98-14 .LINK DATA OUT <05>

383: JB27-1 U98-17 .LINK DATA OUT <06>

384: JB25-1 U98-18 .LINK DATA OUT <07>

385: JB23-1 U89-3 .LINK DATA OUT <08>

386: JB21-1 U89-4 .LINK DATA OUT <09>

387: JB19-1 U89-7 .LINK DATA OUT <10>

388: JB17-1 U89-8 .LINK DATA OUT <11>

389: JB15-1 U89-13 .LINK DATA OUT <12>

390: JB13-1 U89-14 .LINK DATA OUT <13>

391: JB11-1 U89-17 .LINK DATA OUT <14>

392: JB9-1 U89-18 .LINK DATA OUT <15>

393: U44-14 U43-8 .MATCH H

394: U65-19 U43-10 .MATCH L

395: U16-15 .MDI <00>

*** Only one pin in net

396: U16-14 .MDI <01>
*** Only one pin in net

397: U16-13 .MDI <02>
*** Only one pin in net

398: U16-12 .MDI <03>
*** Only one pin in net

399: U16-11 .MDI <04>
*** Only one pin in net

400: U15-15 .MDI <05>
*** Only one pin in net

401: U15-14 .MDI <06>
*** Only one pin in net

402: U15-13 .MDI <07>
*** Only one pin in net

403: U6-15 .MDI <08>
*** Only one pin in net

404: U6-14 .MDI <09>
*** Only one pin in net

405: U6-13 .MDI <10>
*** Only one pin in net

406: U6-12 .MDI <11>
*** Only one pin in net

407: U6-11 .MDI <12>
*** Only one pin in net

408: U7-15 .MDI <13>
*** Only one pin in net

409: U7-14 .MDI <14>
*** Only one pin in net

410: U7-13 .MDI <15>
*** Only one pin in net

411: J24-1 U36-3 .MDO <00>

412: J124-1 U36-4 .MDO <01>

413: J23-1 U36-7 .MDO <02>

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414: J123-1 U36-8                          .MDO <03>

415: J22-1 U36-13                          .MDO <04>

416: J122-1 U36-14                         .MDO <05>

417: J21-1 U36-17                          .MDO <06>

418: J121-1 U36-18                         .MDO <07>

419: U37-3 J19-1                           .MDO <08>

420: U37-4 J119-1                          .MDO <09>

421: U37-7 J18-1                           .MDO <10>

422: U37-8 J118-1                          .MDO <11>

423: U37-13 J17-1                          .MDO <12>

424: U37-14 J117-1                         .MDO <13>

425: U37-17 J16-1                          .MDO <14>

426: U37-18 J116-1                         .MDO <15>

427: U143-17 U131-6                        .NEED WORK

428: U153-16 U143-16                       .NEED WORK BUFF

429: U24-8 U35-10 U35-1 U45-10             .NET FIFO IR

430: U24-7 U81-11 U69-11                   .NET FIFO OR

431: U112-10                               .NET INT H
*** Only one pin in net
*** Run Has no outputs

432: U54-1                                 .NET INT L
*** Only one pin in net
*** Run Has no outputs

433: U81-3 U75-15                          .NET INTR H

434: U81-4                                 .NET INTR L
*** Only one pin in net

435: U64-7 U75-1 U85-1                     .NET STAT RD L

436: J93-1 U156-5 U156-11 U156-6 U156-9
436: R19-1                                 .NET XMIT +
```

```
*** Run has multiple outputs

 437: J92-1 U156-2 U156-14 U156-3 U156-15
 437: R20-1                                .NET XMIT -
*** Run has multiple outputs

 438: U51-6 U53-4                          .O SEL ENB

 439: U163-12 U145-10                      .OK PRINT H

 440: U83-15 U22-8 U22-2 U22-4 U22-6 U42-13
 440: U42-10 U12-15 U12-32 U44-4 U66-1
 440: U25-2 U43-9 U25-15 U90-10 U90-14
 440: U100-10 U90-15 U90-2 U100-12 U73-3
 440: U43-2                                .PA
*** Run Has no outputs

 441: U60-7 U113-1 U100-3 U74-3            .PACKET CLK H

 442: U111-8 U60-9 U113-12                 .PACKET CLK L

 443: U45-7 U35-7 U111-2 U60-4 U43-4       .PACKET DATA H

 444: R1-2 U43-13 U71-10 U71-12 U111-1
 444: U54-10 U4-7 U5-7 U93-15 U110-5 U110-11
 444: U110-13 U54-4 U164-10 U164-2 U164-15
 444: U61-14 U164-3 U164-4                 .PB

 445: U24-13 U100-6 U113-13 U113-2 U85-3
 445:                                      .PIP H

 446: J104-1 U56-19 U57-19 U46-19 U47-19
 446:                                      .PL EXT A H

 447: U145-1 U76-9 J74-1                   .PL EXT B FIFO

 448: U122-4                               .PROM <1> WR L
*** Only one pin in net

 449: U122-5                               .PROM <2> WR L
*** Only one pin in net

 450: U106-9 U106-15 R5-2 U147-3           .PU <1>

 451: U116-10 U141-9 U141-10 U141-7 U126-11
 451: U134-1 R6-2 U125-2 U134-10 U125-4
 451: U134-4                               .PU <2>

 452: U145-15 U145-2 U144-4 U145-14 U144-1
 452: U105-5 R8-2                          .PU <3>

 453: U144-10 R7-2 U132-4 U132-10 U115-4
```

```
 453:                                        .PU <4>

 454: U166-3 J96-1 R17-1                     .RCV +

 455: U166-4 J94-1 R17-2                     .RCV -

 456: U34-12 U103-12                         .RCV ALL

 457: U60-11                                 .RCV CKL L
*** Only one pin in net
*** Run Has no outputs

 458: U71-8 U60-5                            .RCV CLK H

 459: U90-12 U71-9 U80-1                     .RCV CLK L

 460: U110-12 U167-11                        .RCV COLLISION

 461: U90-9 U60-2                            .RCV DATA

 462: U81-1 U100-11 U90-1 U90-11 U110-4
 462: U166-11                                .RCV DATA OUT

 463: U85-7 U75-7                            .RCV/TRANSN

 464: U124-9 U146-11 U104-1                  .RD CANON INT L

 465: U96-13 U86-13 U97-13 U87-13 U87-17
 465: U97-17 U86-17 U96-17 U146-12           .RD CANON STATUS L

 466: U163-9 U136-2 U135-13                  .REDO CNT H

 467: U124-12 U163-1 U133-1 U132-8           .RESET CANON

 468: U124-1                                 .RESET CANON L
*** Only one pin in net
*** Run Has no outputs

 469: U133-16 U132-3                         .RESET FIFO

 470: U55-16 U33-3 U14-5 U13-5 U4-5 U5-5
 470:                                        .RESET FIFO & CRC H

 471: U47-18 U57-18 U46-18 U56-18 U16-18
 471: U15-18 U6-18 U7-18 U66-18 U35-11
 471: U45-11 U33-4 U91-9 U73-13              .RESET FIFO & CRC L

 472: U145-4 U87-11 U97-11 U86-11 U86-10
 472: U96-10 U96-1 U97-10 U87-10 U96-11
 472: U141-1 U144-13 U132-6                  .RESET FIFO L
*** Run has multiple outputs
```

```
 473: U31-15 U41-15 U51-15 U53-5 U63-4
 473: U43-3                                .RESET H

 474: U22-1 U43-1 U103-19 U132-9 U94-19
 474:                                      .RESET L
*** Run has multiple outputs

 475: U68-11 U39-4                         .RSCR TO BUS H

 476: U113-6 U74-4 U73-1                   .SEL BIT CNT L

 477: U113-8 U83-8 U71-1                   .SEL U SEC CLK L

 478: U133-12 U76-4                        .SHIFT H

 479: U122-12                              .SMD <1> WR L
*** Only one pin in net

 480: U122-10                              .SMD <2> WR L
*** Only one pin in net

 481: U122-9                               .SMD <3> WR L
*** Only one pin in net

 482: U117-15                              .SMD <4> WR L
*** Only one pin in net

 483: U64-4                                .SMD RD L
*** Only one pin in net

 484: U85-4 U75-5                          .STAT COLLISION

 485: U123-4 U143-15                       .STAT FULL BUFF

 486: U143-14 U96-23 U141-2 U96-14 U86-14
 486: U97-14 U87-14 U104-6                 .STATUS FULL

 487: U157-11 J83-1                        .STATUS L

 488: U123-5                               .STATUS RD
*** Only one pin in net
*** Run Has no outputs

 489: U94-6                                .STATUS RD H
*** Only one pin in net

 490: U55-2 U95-3                          .STEP CRC H

 491: U146-1                               .STREAM <4> WR L
*** Only one pin in net
*** Run Has no outputs
```

```
 492: U64-5                          .STREAMER <1> RD L
*** Only one pin in net

 493: U64-6                          .STREAMER <2> RD L
*** Only one pin in net

 494: U117-14                        .STREAMER <4> WR L
*** Only one pin in net

 495: U91-6 U100-2                   .SYNC L

 496: U43-12                         .TOP EXT A
*** Only one pin in net
*** Run Has no outputs

 497: U112-1 U71-6                   .U SEC CLK OVFL H

 498: U85-14                         .U SEC CLK OVLD H
*** Only one pin in net
*** Run Has no outputs

 499: U127-15 U113-10 U83-9          .U SEC CLK RD L

 500: U22-7 U101-10 U101-9           .U SEC CLK WR H

 501: U22-13 U113-9                  .U SEC CLK WR L
*** Run Has no outputs

 502: U117-13                        .U SEC WR L
*** Only one pin in net

 503: J137-1 U66-16                  .UNLD EXT A FIFO

 504: J37-1 U124-13                  .UNLD EXT B FIFO

 505: U53-11 U56-16                  .UNLD IN FIFO L

 506: U53-13 U35-13 U45-13           .UNLD NET FIFO L

 507: U55-9                          .WAIT FOR SYNC
*** Only one pin in net

 508: U100-4 U111-9                  .WAIT FOR SYNC H
*** Run Has no outputs

 509: U132-1 U133-15 U123-1          .WAS <1>

 510: U132-2 U133-2 U123-2           .WAS <2>

 511: U132-13 U133-19 U123-3         .WAS <3>

 512: U153-1 U163-19                 .WAS <4>
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 513: U153-2 U163-2                          .WAS <5>

 514: U153-3 U163-15                         .WAS <6>

 515: U124-5 U135-4 U144-3 U142-8            .WORD CLK

 516: U146-4 U94-11 U115-3                   .WR CANON CNTL L

 517: J154-1 U66-15                          .WR EXT A H

 518: U145-6 U145-3 J174-1 U87-9             .WR EXT B H

 519: U146-5                                 .WR LNTH CNT L
*** Only one pin in net

 520: U32-19 U32-1                           .X CNST ENB L
*** Run Has no outputs

 521: U64-12                                 .X CONST ENB L
*** Only one pin in net

 522: U35-16 U45-16                          .X MIT CLK H
*** Run Has no outputs

 523: U16-4 U56-15 U57-15 U6-4 U45-21 U45-3
 523: U65-3 U32-18 U75-3                     .X MUX <00>

 524: U16-5 U56-14 U57-14 U6-5 U45-20 U45-4
 524: U65-5 U32-16 U75-4                     .X MUX <01>

 525: U16-6 U56-13 U57-13 U6-6 U45-19 U45-5
 525: U65-7 U32-14 U75-6                     .X MUX <02>

 526: U16-7 U56-12 U57-12 U6-7 U45-18 U45-6
 526: U65-9 U32-12 U75-11                    .X MUX <03>

 527: U16-8 U56-11 U57-11 U6-8 U35-21 U35-3
 527: U65-12 U32-7 U75-13                    .X MUX <04>

 528: U15-4 U46-15 U47-15 U7-4 U35-20 U35-4
 528: U65-14 U32-5 U75-14                    .X MUX <05>

 529: U15-5 U46-14 U47-14 U7-5 U35-19 U35-5
 529: U65-16 U32-3                           .X MUX <06>

 530: U15-6 U46-13 U47-13 U7-6 U35-18 U35-6
 530: U65-18 U32-9                           .X MUX <07>

 531: U44-15 U66-4                           .X MUX <0>
*** Run Has no outputs
```

```
 532: U45-9                                .X MUX H
*** Only one pin in net
*** Run Has no outputs

 533: U131-1                               .X MUX L
*** Only one pin in net
*** Run Has no outputs

 534: U51-12 U64-14                        .X SEL <00>

 535: U51-13 U64-13                        .X SEL <01>

 536: U55-3.                               .XMIT <00>
*** Only one pin in net
*** Run Has no outputs

 537: U55-4                                .XMIT <01>
*** Only one pin in net
*** Run Has no outputs

 538: U55-7                                .XMIT <02>
*** Only one pin in net
*** Run Has no outputs

 539: U55-8                                .XMIT <03>
*** Only one pin in net
*** Run Has no outputs

 540: U55-13                               .XMIT <04>
*** Only one pin in net
*** Run Has no outputs

 541: U55-14                               .XMIT <05>
*** Only one pin in net
*** Run Has no outputs

 542: U55-17                               .XMIT <06>
*** Only one pin in net
*** Run Has no outputs

 543: U54-12 U55-18                        .XMIT <07>
*** Run Has no outputs

 544: U164-9 R13-2 R12-1                   .XMIT BIT STREAM

 545: U60-6 U63-1 U84-4 U164-5             .XMIT CLK H

 546: U60-10 U84-2 U164-6 U61-11 U74-11
 546:                                      .XMIT CLK L

 547: U60-1 U55-6                          .XMIT CLK SEL H
```

```
 548: R13-1 R14-2 U156-12                    .XMIT DATA

 549: JB1-1 U78-19                           .XMIT DONE

 550: U54-13 U63-13                          .XMIT DONE L

 551: U35-22 U45-22 U60-3 U84-1              .XMIT FIFO DATA H

 552: U24-3 U44-1 U54-9 U63-3 U103-9 U74-13
 552: U164-14 U156-4 U156-10 U156-7 U156-13
 552:                                        .XMIT H
*** Run has multiple outputs

 553: U54-8                                  .XMIT L
*** Only one pin in net

 554: U65-2 U62-3                            .Y MUX <00>

 555: U82-7 U102-7 U65-4 U62-5               .Y MUX <01>

 556: U82-9 U102-9 U65-6 U62-7               .Y MUX <02>

 557: U82-10 U102-10 U65-8 U62-9             .Y MUX <03>

 558: U72-6 U92-6 U65-11 U62-12              .Y MUX <04>

 559: U72-7 U92-7 U65-13 U62-14              .Y MUX <05>

 560: U72-9 U92-9 U65-15 U62-16              .Y MUX <06>

 561: U72-10 U92-10 U65-17 U62-18            .Y MUX <07>

 562: U82-6 U102-6                           .Y MUX<00>

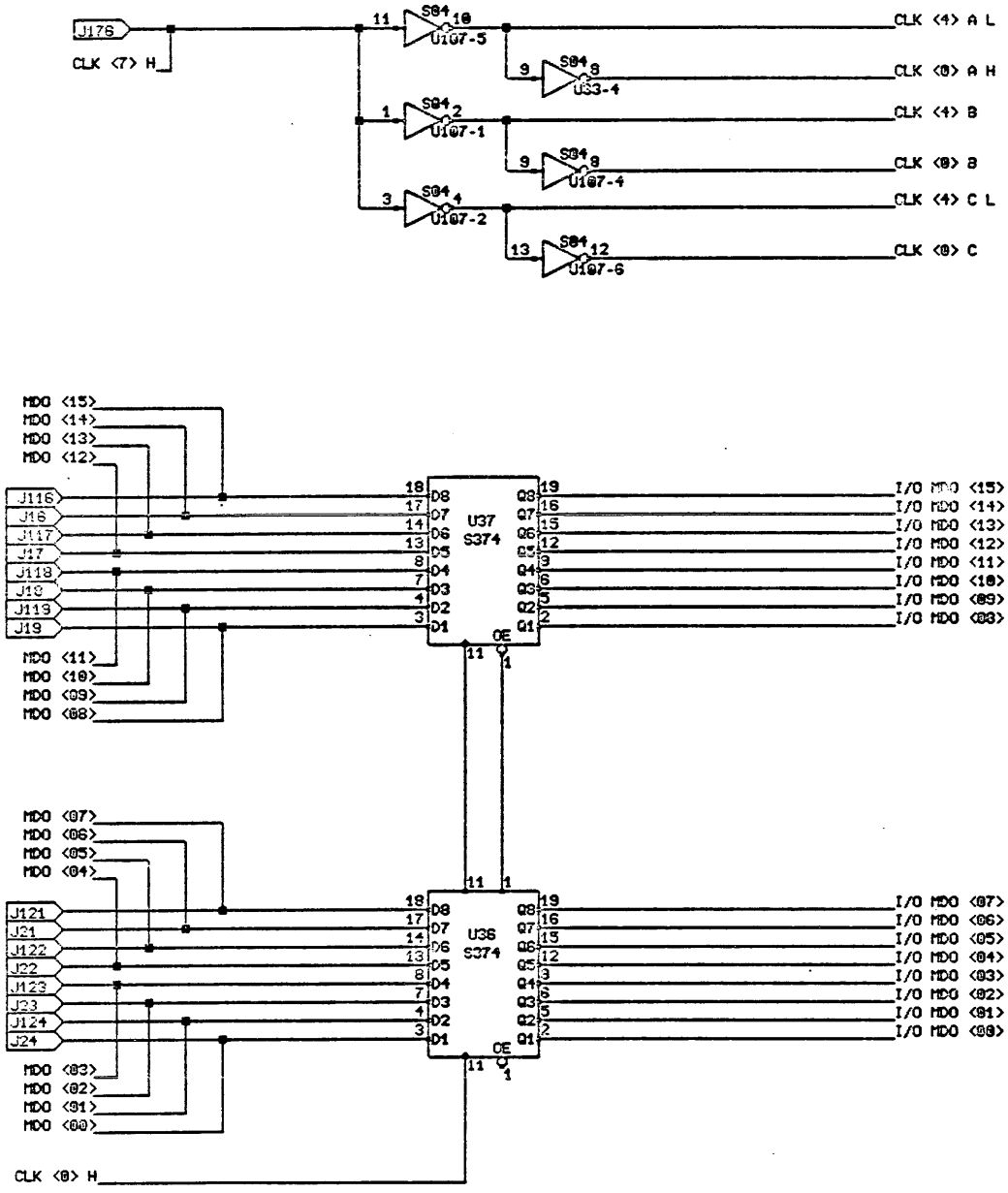
 563: U23-2 U72-4 U82-4 U92-4 U102-4 U51-7
 563: U33-13 U53-1                           .Y SEL <00> H

 564: U23-13 U33-12                          .Y SEL <00> L

 565: U72-5 U82-5 U92-5 U102-5 U51-8 U53-2
 565:                                        .Y SEL <01> H

 566: U51-9 U53-3                            .Y SEL <02> H

 567: U23-1 U23-12 U51-11 U62-1 U62-19
 567:                                        .Y SEL <03> H
```



TITLE: I/O MDO BUFFERED

IO01.dp

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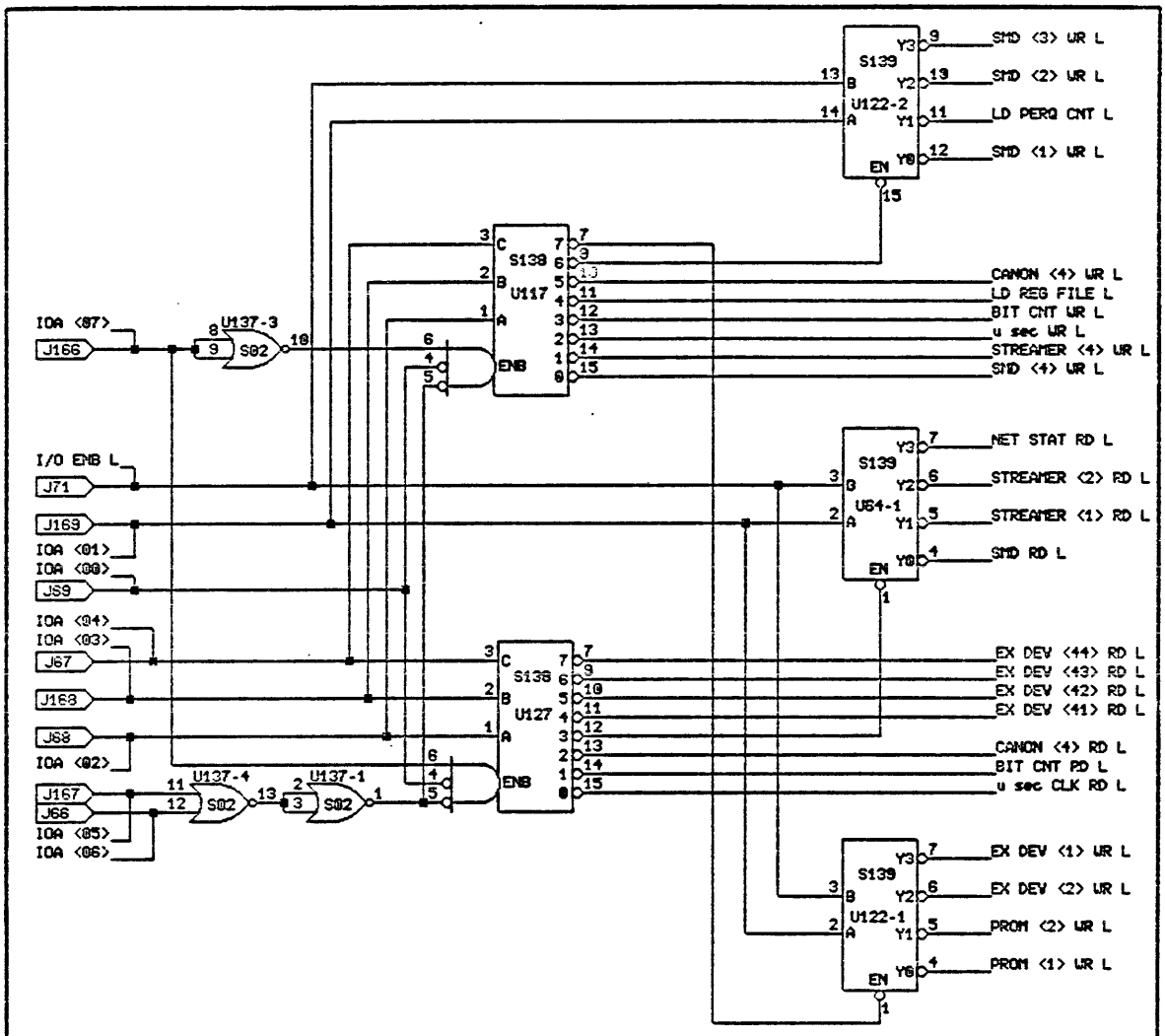
PERQ	DRAWN	23/JULY/84	STECK	A	10	0227-	02	C
	UPDATED	23/JULY/84	STECK	PROJ :	OPTION I/O CANON (OIO-003)		PAGE 1	OF 11

24 Jul 84 14:24:56 ic01.real.dp

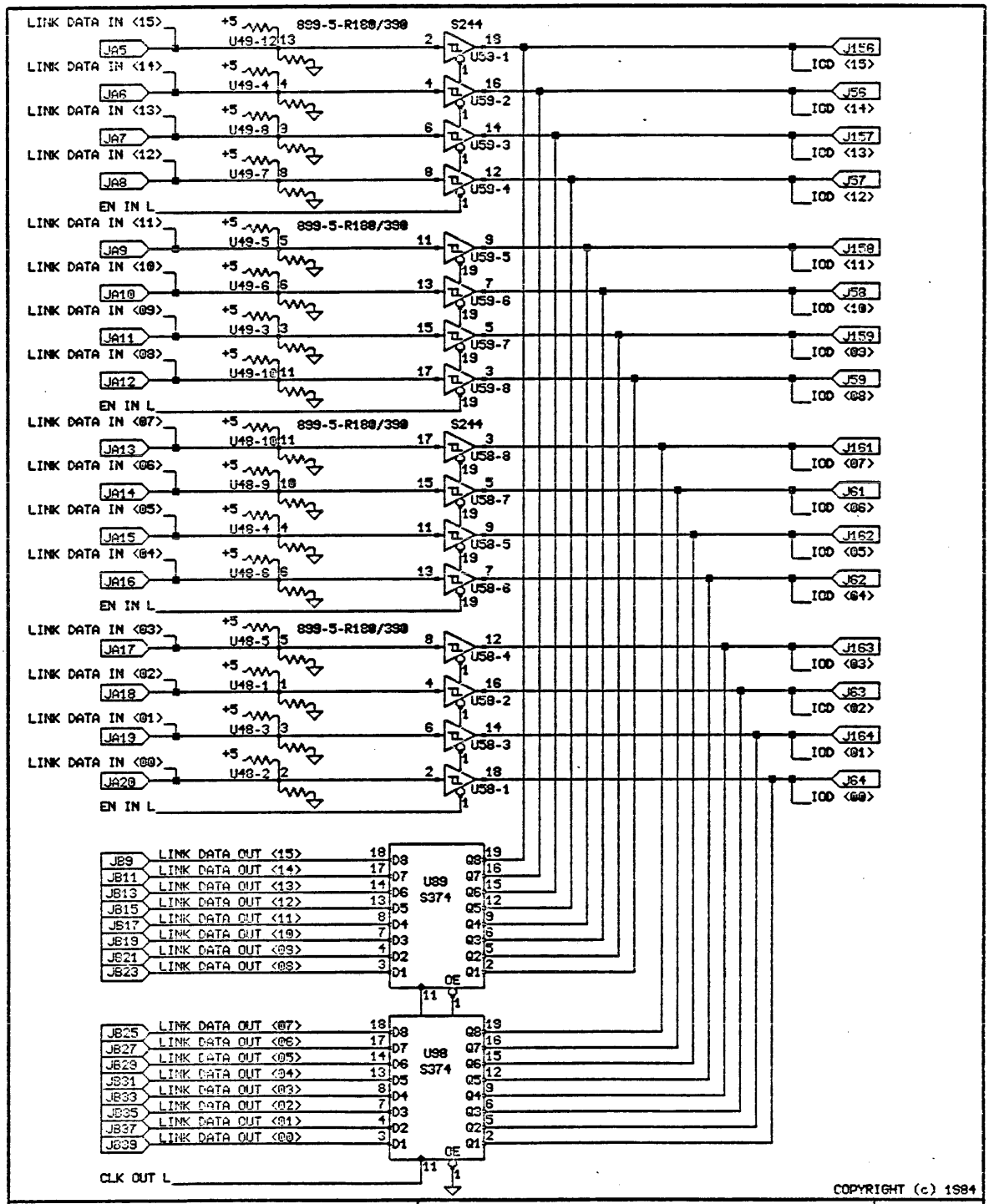


I/O ADDRESS	SIGNAL NAME
200:203	SMD <4> WR L
204:207	STREAMER <4> WR L
214:217	BIT CNT WR L
224:227	CANON <4> WR L
230	SMD WR L
231	LD PERQ CNT L
232	SMD <2> WR L
233	SMD <3> WR L
234	PROM <1> WR L
235	PROM <2> WR L
236	EX DEV <1> WR L
237	EX DEV <2> WR L

I/O ADDRESS	SIGNAL NAME
010:013	CANON <4> RD L
014	SMD RD L
015	STREAMER <1> RD L
016	STREAMER <2> RD L
017	NET STAT RD
020:023	EX DEV <41> RD L
024:027	EX DEV <42> RD L
030:033	EX DEV <43> RD L
034:037	EX DEV <44> RD L

TITLE		
I/O ADDRESS DECODES		io02.db

				SIZE	CODE	IDENTIFICATION	VAR	REV
PERQ	DESIGNED	P. REDDY		A	10	0227	02	C
	DRAWN	23/JULY/84	STECK					
	UPDATED	23/JULY/84	STECK	PROJ :	OPTION I/O CANON (OIO-003)		PAGE 2	OF 11



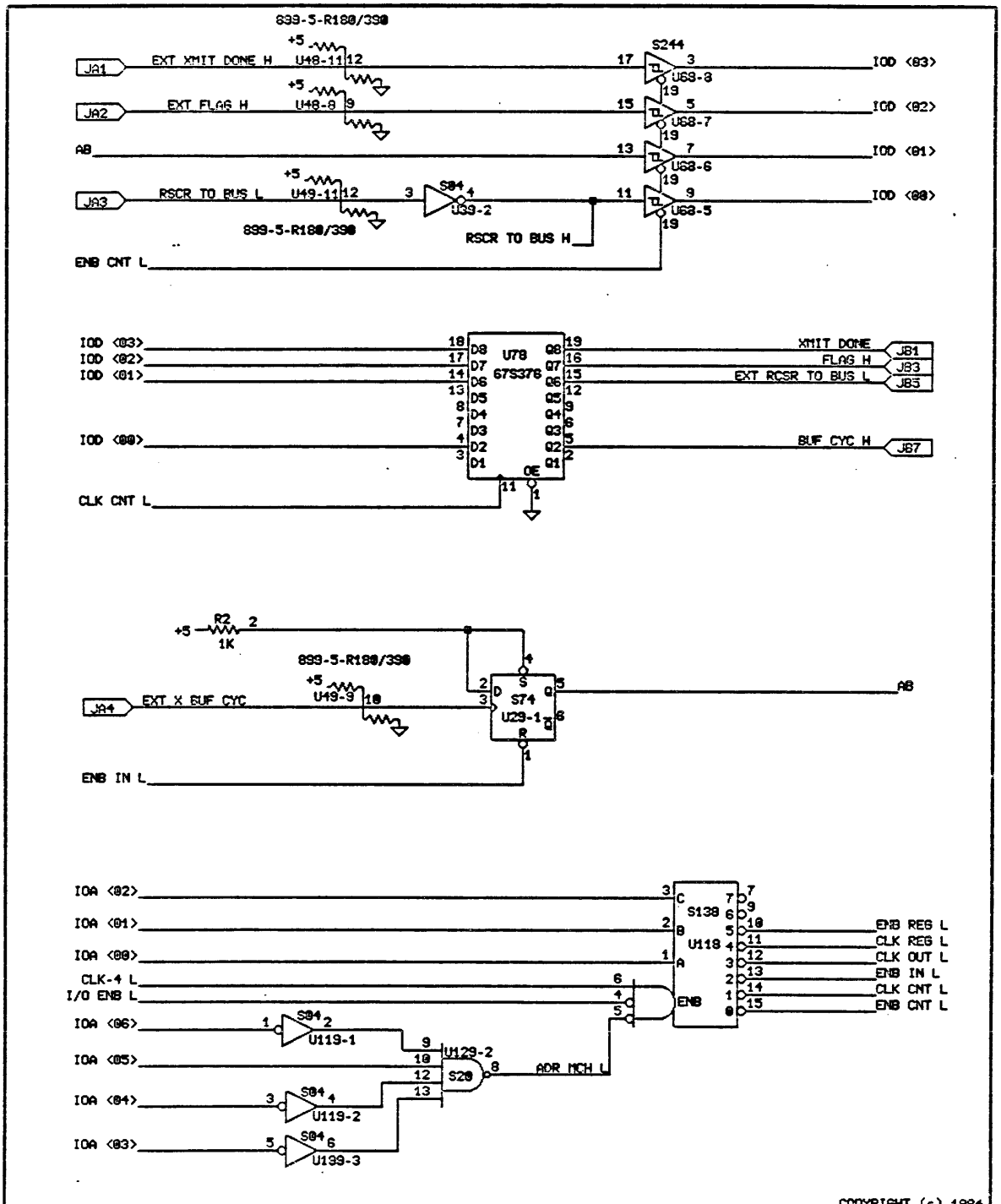
TITLE: INPUT/OUTPUT

IO03.db

PERQ

DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	23/JULY/84	STECK	A	10	0227-	02	C
UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O CANON (OIO-003)			PAGE 3 OF 11	

24 Jul 84 14:26:49 io03.real.db



TITLE	CONTROL						IO84.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
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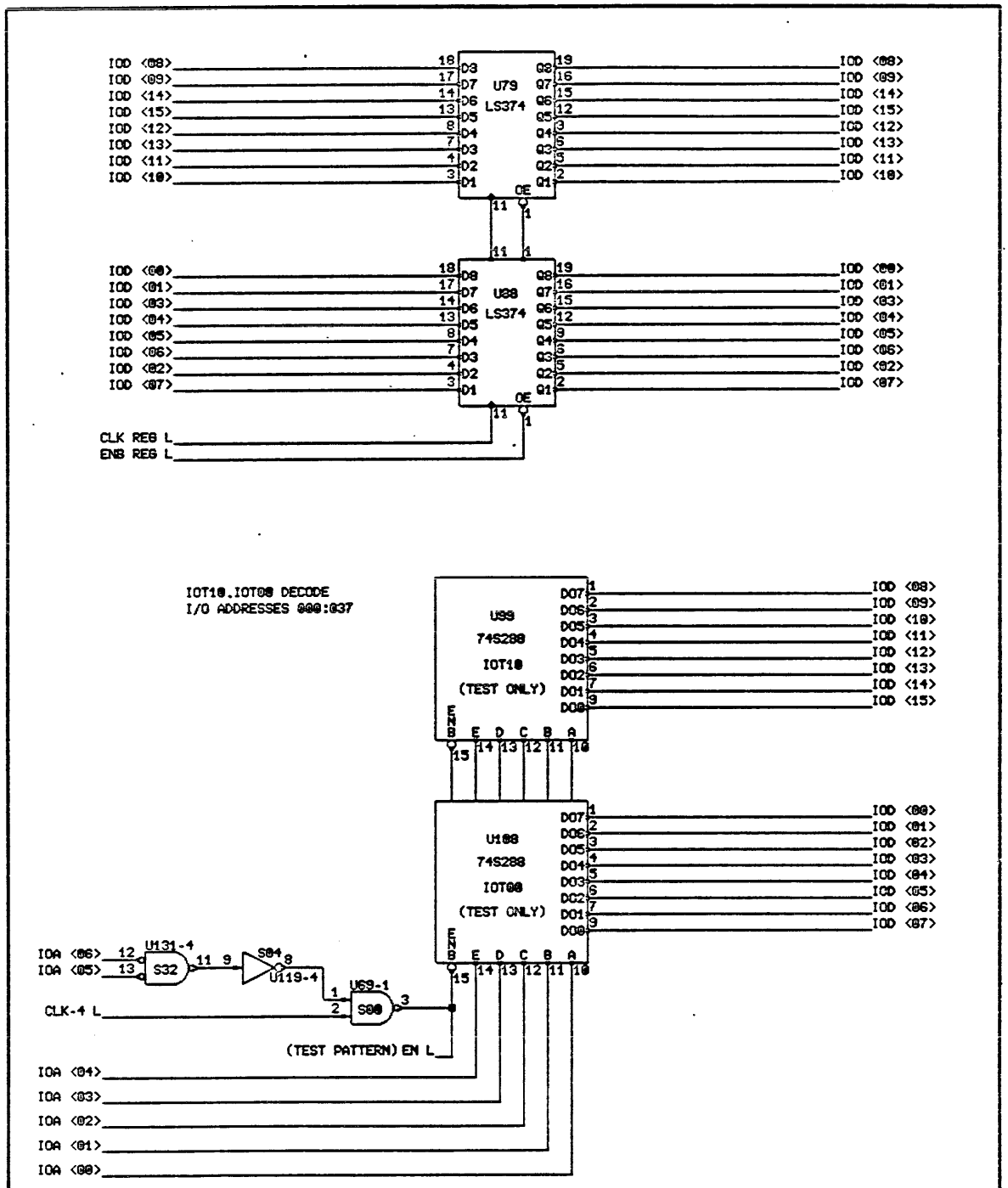
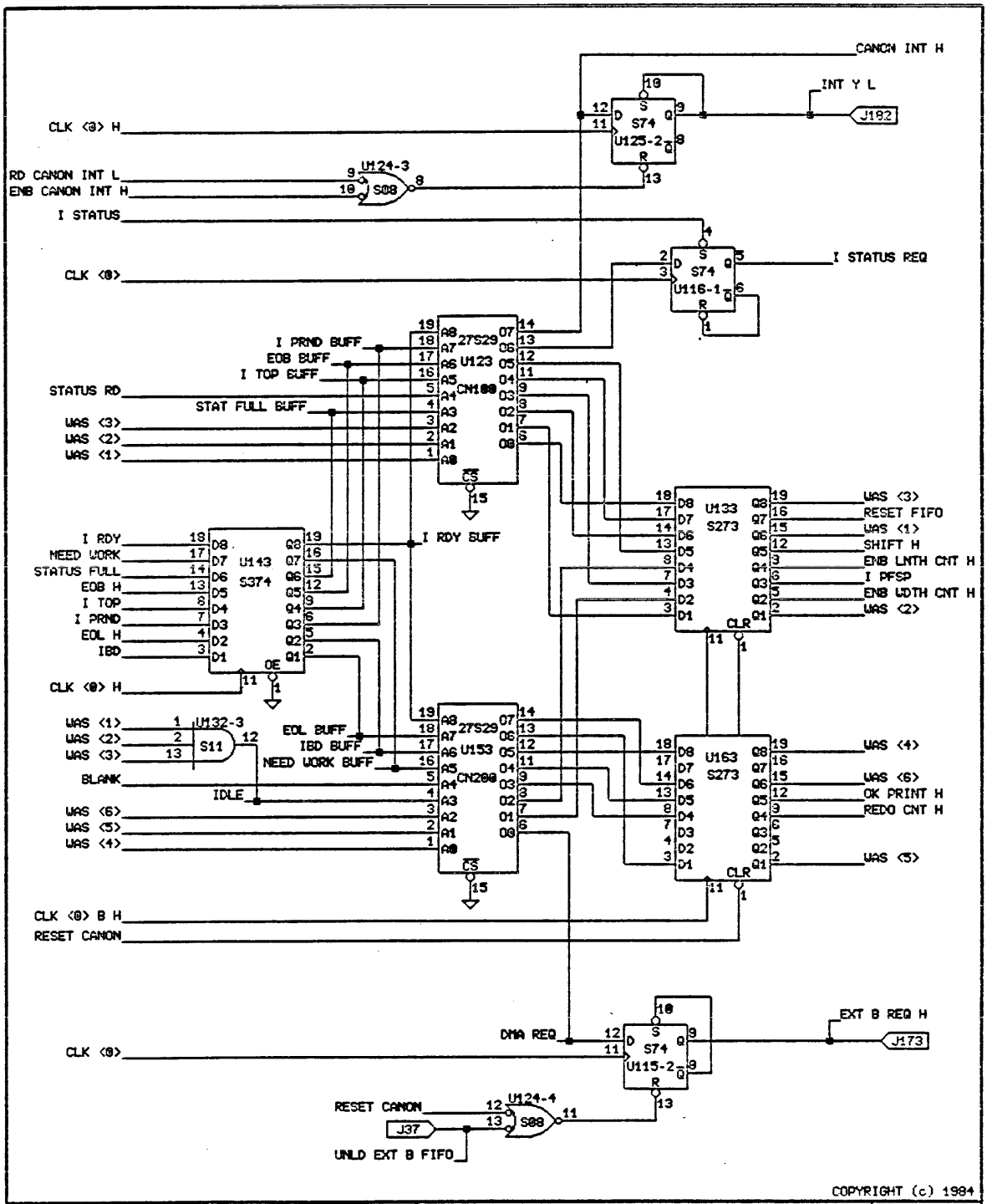
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O CANON (OIO-003)			PAGE 4 OF 11	

24 Jul 84 14:27:36 io84.real.db



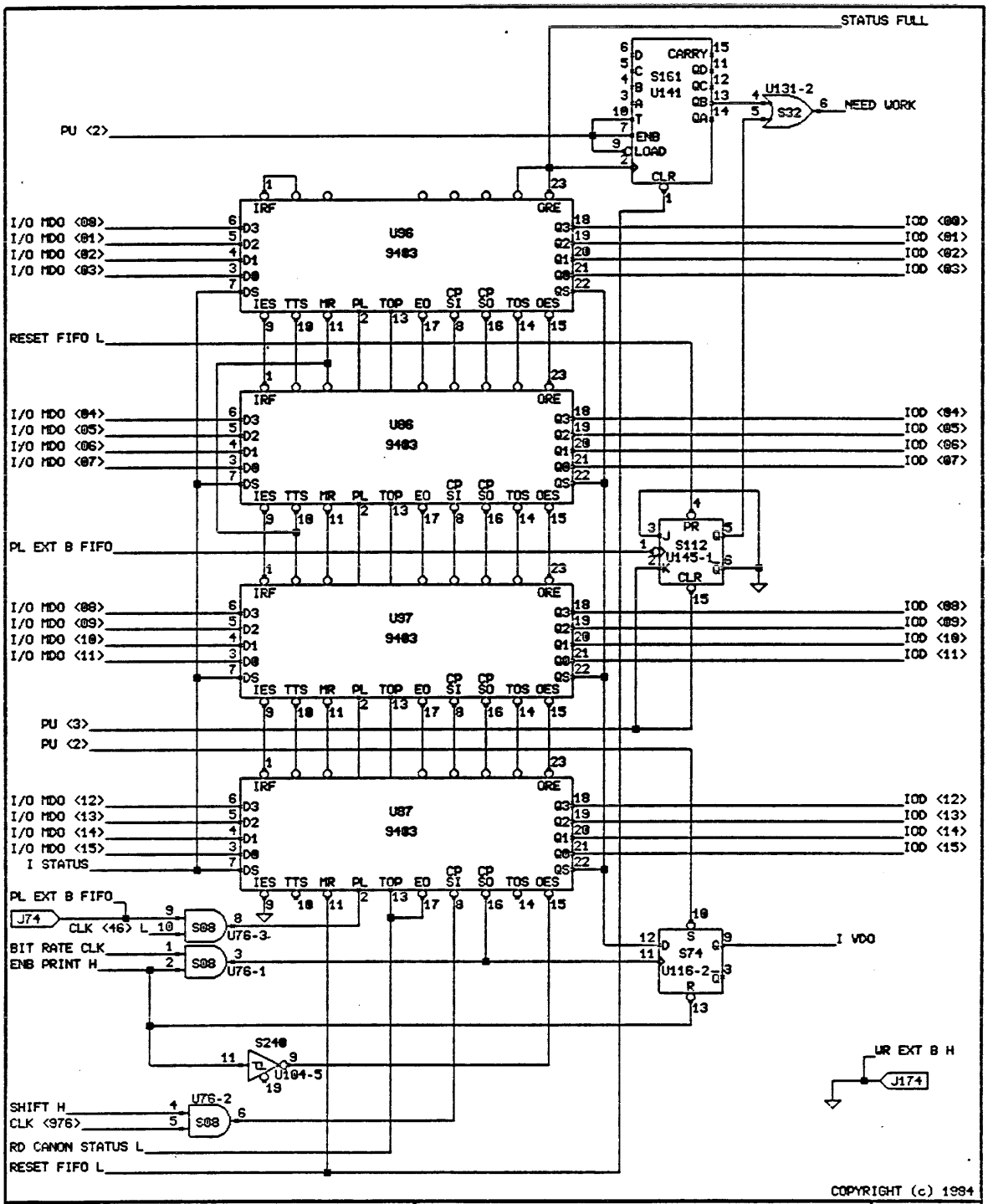
TITLE	I/O ECHO & I/O PATTERNS						IO05.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0227-	02	C
	UPDATED	23/JULY/84	STECK	PROJ :	OPTION I/O CANON (010-003)		PAGE 5 OF 11	

24 Jul 84 14:28:16 io05.real.db



TITLE	STATE MACHINE					I006.db	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	18	8227-	02	C
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O CANON (OIO-003)			PAGE 6	OF 11

24 Jul 84 14:29:09 io06.real.db



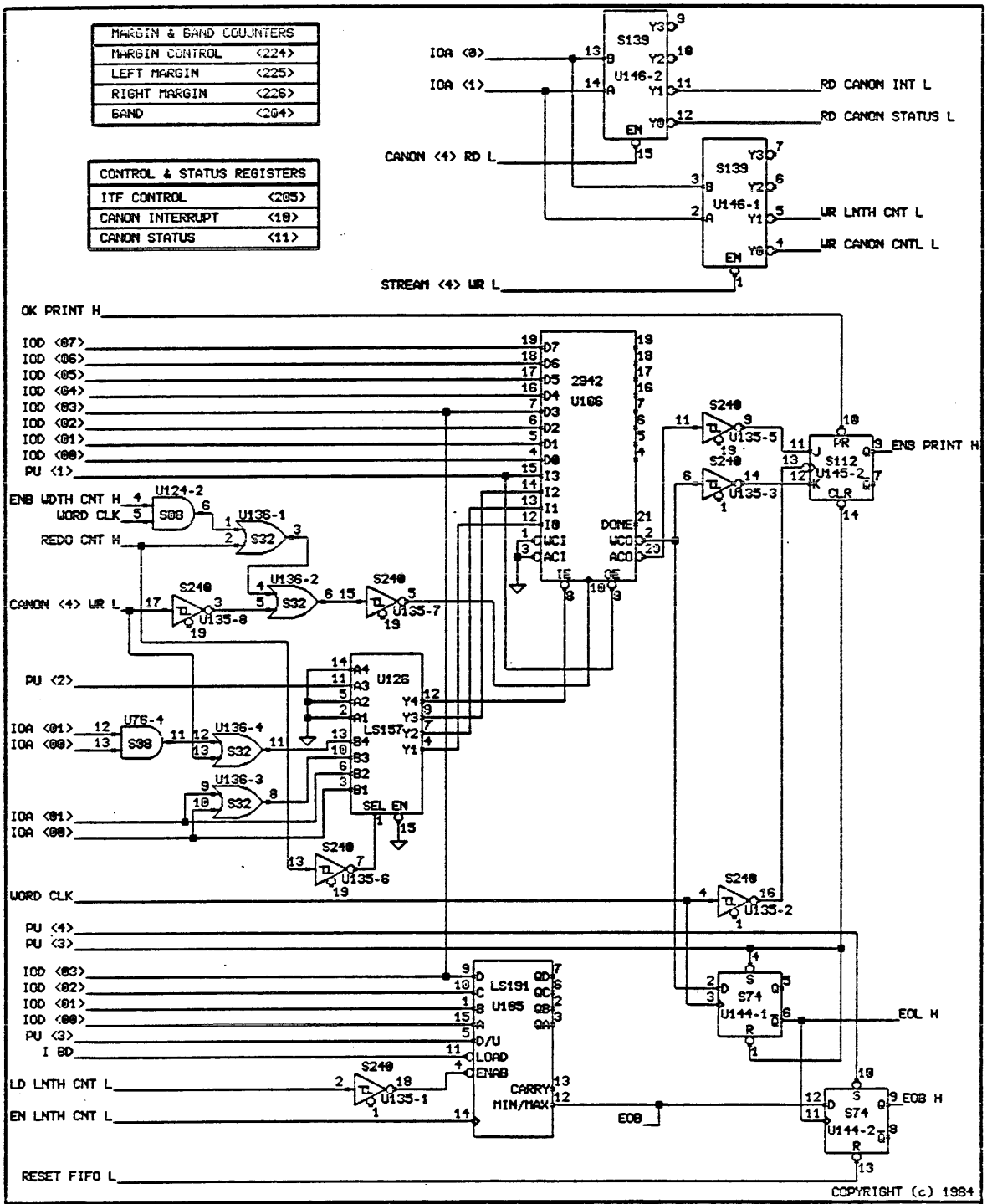
TITLE: DATA & STATUS FIFO

IO07.do

PERQ

DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
DRAWN	23/JULY/84	STECK	A	10	8227-	02	C
UPDATED	23/JULY/84	STECK	PROJ :	OPTION I/O CANON (OIO-003)		PAGE 7	OF 11

24 Jul 84 14:30:02 io07.real.db



TITLE: MARGIN DECODES

I008.db

PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
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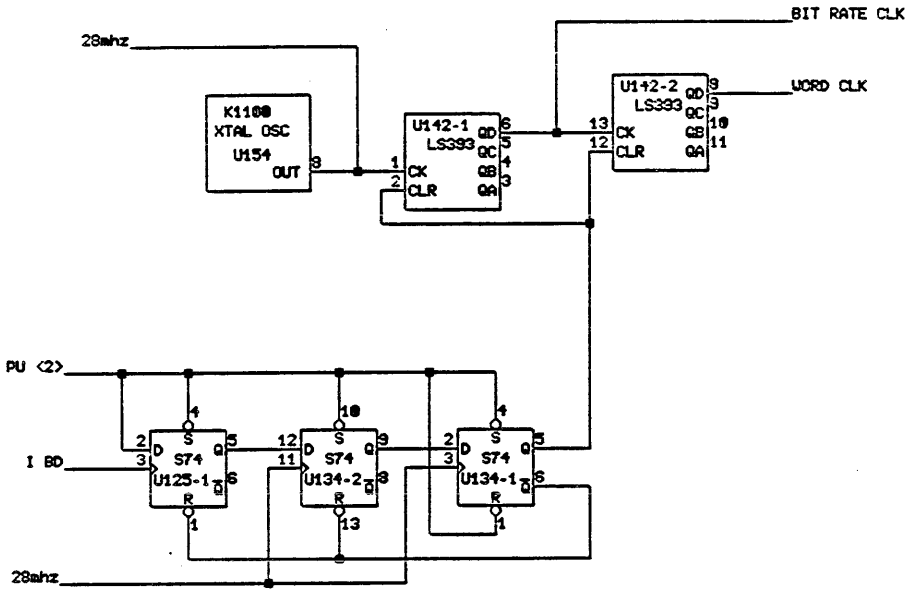
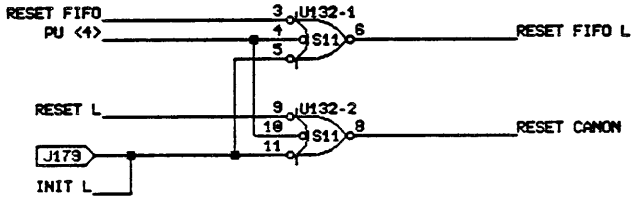
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O CANON (OIO-003)			PAGE 8	OF 11

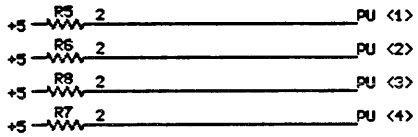
24 Jul 84 14:30:58 io08.real.db

CLOCK SYNC CIRCUIT



RESET CIRCUIT





TITLE						
CLOCK SYNC & RESET						IO09.db
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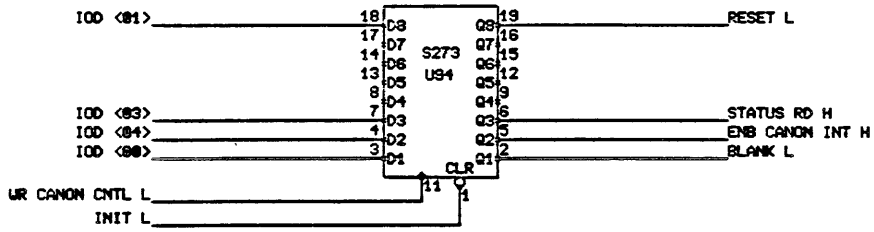
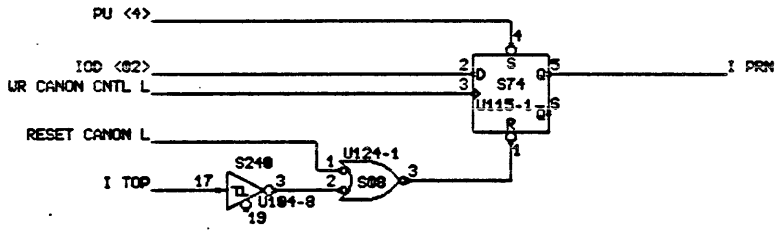
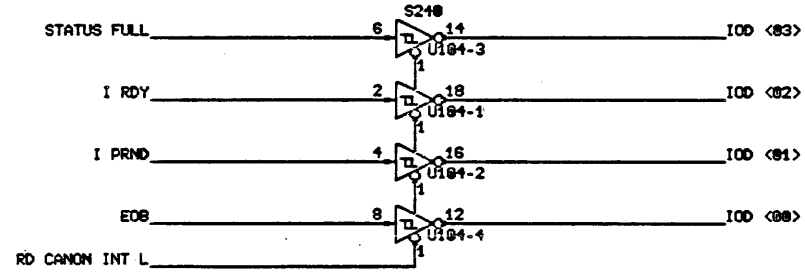
	UPDATED	23/JULY/84	STECK	PROJ : OPTION I/O CANON (OIO-003)			PAGE 9 OF 11	

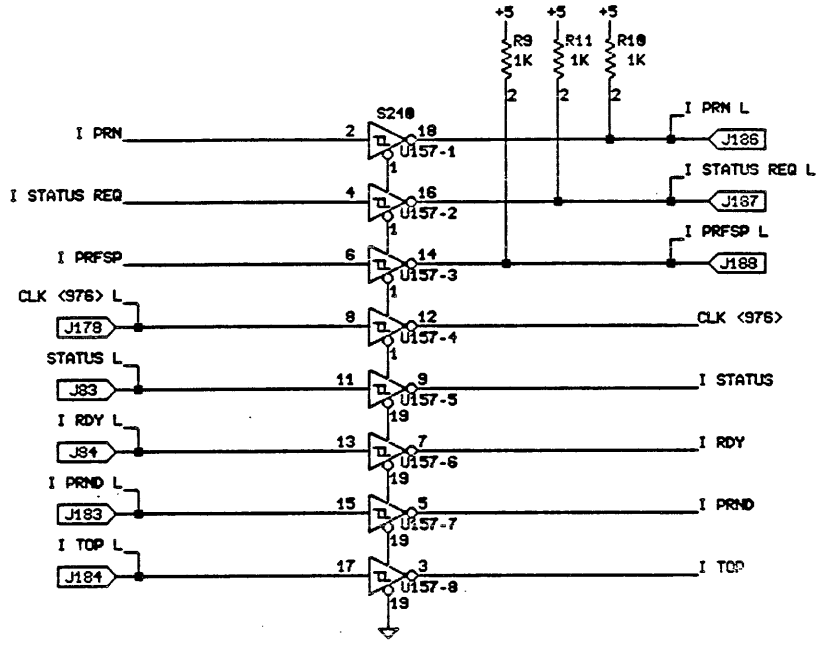


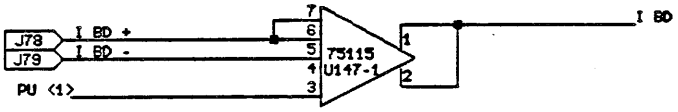


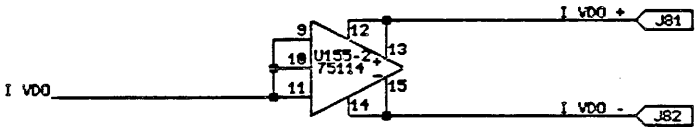


TITLE	INTERFACE STATUS & CONTROL						IO10.dp	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	8227-	02	C
	UPDATED	23/JULY/84	STECK	PROJ :	OPTION I/O CANON (OIO-003)		PAGE 10 OF 11	

24 Jul 84 14:32:10 io10.real.dp







TITLE	PRINTER CONTROL LINE DRIVERS						IO11.dp	
PERQ	DESIGNED	P. REDDY		SIZE	CODE	IDENTIFICATION	VAR	REV
	DRAWN	23/JULY/84	STECK	A	10	0227-	02	C
	UPDATED	23/JULY/84	STECK	PROJ :	OPTION I/O CANON (OIO-003)		PAGE 11 OF 11	

24 Jul 84 14:32:48 io11.real.dp

Part/Page Cross Reference 24 Jul 84 14:22:42

Using Files: I001.WL to I011.WL

PART..TYPE.....Pages	Numbers								
U29...74S74..... 4									
U33...74S04..... 1									
U36...74S374/1..... 1									
U37...74S374..... 1									
U39...74S04..... 4									
U48...TERM14/1..... 4	4	3	3	3	3	3	3	3	3
U49...TERM14/1..... 4	4	3	3	3	3	3	3	3	3
U58...74S244/1..... 3	3	3	3	3	3	3	3		
U59...74S244/1..... 3	3	3	3	3	3	3	3		
U64...74S139..... 2									
U68...74S244/1..... 4	4	4	4						
U69...74S00..... 5									
U76...74S08..... 8	7	7	7						
U78...67S376..... 4									
U79...74LS374..... 5									
U86...9403..... 7									
U87...9403..... 7									
U88...74LS374/1..... 5									
U89...74S374..... 3									
U94...74S273.....10									
U96...9403..... 7									
U97...9403..... 7									
U98...74S374..... 3									
U99...74S288..... 5									
U104..74S240/1.....10	10	10	10	10	7				
U105..74LS191..... 8									
U106..2942..... 8									
U107..74S04..... 1	1	1	1	1					
U108..74S288..... 5									
U115..74S74.....10	6								
U116..74S74..... 7	6								
U117..74S138..... 2									
U118..74S138..... 4									
U119..74S04..... 5	4	4							
U122..74S139..... 2	2								
U123..27S29..... 6									
U124..74S08.....10	8	6	6						
U125..74S74..... 9	6								
U126..74LS157..... 8									
U127..74S138..... 2									
U129..74S20..... 4									
U131..74S32..... 7	5								
U132..74S11..... 9	9	6							
U133..74S273..... 6									
U134..74S74..... 9	9								

U135..74S240/1..... 8 8 8 8 8 8 8
U136..74S32..... 8 8 8 8
U137..74S02..... 2 2 2
U141..74S161..... 7
U142..74LS393..... 9 9
U143..74S374..... 6
U144..74S74..... 8 8
U145..74S112..... 8 7
U146..74S139..... 8 8
U147..75115.....11
U153..27S29..... 6
U154..K1100..... 9
U155..75114.....11
U157..74S240/1.....11 11 11 11 11 11 11 11
U163..74S273..... 6
U199..74S04..... 4
R2....RES+5..... 4
R5....RES+5..... 9
R6....RES+5..... 9
R7....RES+5..... 9
R8....RES+5..... 9
R9....RES+5.....11
R10...RES+5.....11
R11...RES+5.....11
J16...EDGE..... 1
J17...EDGE..... 1
J18...EDGE..... 1
J19...EDGE..... 1
J21...EDGE..... 1
J22...EDGE..... 1
J23...EDGE..... 1
J24...EDGE..... 1
J37...EDGE..... 6
J56...EDGE..... 3
J57...EDGE..... 3
J58...EDGE..... 3
J59...EDGE..... 3
J61...EDGE..... 3
J62...EDGE..... 3
J63...EDGE..... 3
J64...EDGE..... 3
J66...EDGE..... 2
J67...EDGE..... 2
J68...EDGE..... 2
J69...EDGE..... 2
J71...EDGE..... 2
J74...EDGE..... 7
J78...EDGE.....11
J79...EDGE.....11
J81...EDGE.....11
J82...EDGE.....11
J83...EDGE.....11

J84...EDGE.....11
J116..EDGE..... 1
J117..EDGE..... 1
J118..EDGE..... 1
J119..EDGE..... 1
J121..EDGE..... 1
J122..EDGE..... 1
J123..EDGE..... 1
J124..EDGE..... 1
J156..EDGE..... 3
J157..EDGE..... 3
J158..EDGE..... 3
J159..EDGE..... 3
J161..EDGE..... 3
J162..EDGE..... 3
J163..EDGE..... 3
J164..EDGE..... 3
J166..EDGE..... 2
J167..EDGE..... 2
J168..EDGE..... 2
J169..EDGE..... 2
J173..EDGE..... 6
J174..EDGE..... 7
J176..EDGE..... 1
J178..EDGE.....11
J179..EDGE..... 9
J182..EDGE..... 6
J183..EDGE.....11
J184..EDGE.....11
J186..EDGE.....11
J187..EDGE.....11
J188..EDGE.....11
JA1...EDGE..... 4
JA2...EDGE..... 4
JA3...EDGE..... 4
JA4...EDGE..... 4
JA5...EDGE..... 3
JA6...EDGE..... 3
JA7...EDGE..... 3
JA8...EDGE..... 3
JA9...EDGE..... 3
JA10..EDGE..... 3
JA11..EDGE..... 3
JA12..EDGE..... 3
JA13..EDGE..... 3
JA14..EDGE..... 3
JA15..EDGE..... 3
JA16..EDGE..... 3
JA17..EDGE..... 3
JA18..EDGE..... 3
JA19..EDGE..... 3
JA20..EDGE..... 3

JB1...EDGE..... 4
JB3...EDGE..... 4
JB5...EDGE..... 4
JB7...EDGE..... 4
JB9...EDGE..... 3
JB11..EDGE..... 3
JB13..EDGE..... 3
JB15..EDGE..... 3
JB17..EDGE..... 3
JB19..EDGE..... 3
JB21..EDGE..... 3
JB23..EDGE..... 3
JB25..EDGE..... 3
JB27..EDGE..... 3
JB29..EDGE..... 3
JB31..EDGE..... 3
JB33..EDGE..... 3
JB35..EDGE..... 3
JB37..EDGE..... 3
JB39..EDGE..... 3

Signal/Page Cross Reference 24 Jul 84 14:22:42

Using Files: I001.WL to I011.WL

SIGNAL NAME.....Pages Numbers

I STATUS..... 6
IBD..... 6
IBD BUFF..... 6
28mhz..... 9
AB..... 4
ADR MCH L..... 4
BIT CNT RD L..... 2
BIT CNT WR L..... 2
BIT RATE CLK..... 9 7
BLANK..... 6
BLANK L.....10
BUF CYC H..... 4
CANON <4> RD L..... 8 2
CANON <4> WR L..... 8 2
CANON INT H..... 6
CLK <0>..... 6
CLK <0> A H..... 1
CLK <0> B..... 1
CLK <0> B H..... 6
CLK <0> C..... 1
CLK <0> H..... 6 1
CLK <46> L..... 7
CLK <4> A L..... 1
CLK <4> B..... 1
CLK <4> C L..... 1
CLK <7> H..... 1
CLK <976>.....11 7
CLK <976> L.....11
CLK CNT L..... 4
CLK OUT L..... 4 3
CLK REG L..... 5 4
CLK-4 L..... 5 4
DMA REQ..... 6
EN IN L..... 3 3
EN L..... 5
EN LNTH CNT L..... 8
ENB CANON INT H.....10 6
ENB CNT L..... 4
ENB IN L..... 4
ENB LNTH CNT H..... 6
ENB PRINT H..... 8 7
ENB REG L..... 5 4
ENB WDTH CNT H..... 8 6
EOB.....10 8
EOB BUFF..... 6

EOB H..... 8 6
EOL BUFF..... 6
EOL H..... 8 6
EX DEV <1> WR L..... 2
EX DEV <2> WR L..... 2
EX DEV <41> RD L..... 2
EX DEV <42> RD L..... 2
EX DEV <43> RD L..... 2
EX DEV <44> RD L..... 2
EXT B REQ H..... 6
EXT RCSR TO BUS L..... 4
EXT X BUF CYC..... 4
FLAG H..... 4
GND.....11 8 7 6 4 3
I BD.....11 9 8
I BD +.....11
I BD -.....11
I PFSP..... 6
I PRFSP.....11
I PRFSP L.....11
I PRN.....11 10
I PRN L.....11
I PRND.....11 10 6
I PRND BUFF..... 6
I PRND L.....11
I RDY.....11 10 6
I RDY BUFF..... 6
I RDY L.....11
I STATUS.....11 7
I STATUS REQ.....11 6
I STATUS REQ L.....11
I TOP.....11 10 6
I TOP BUFF..... 6
I TOP L.....11
I VDO.....11 7
I VDO +.....11
I VDO -.....11
I/O ENB L..... 4 2
I/O MDO <00>..... 7 1
I/O MDO <01>..... 7 1
I/O MDO <02>..... 7 1
I/O MDO <03>..... 7 1
I/O MDO <04>..... 7 1
I/O MDO <05>..... 7 1
I/O MDO <06>..... 7 1
I/O MDO <07>..... 7 1
I/O MDO <08>..... 7 1
I/O MDO <09>..... 7 1
I/O MDO <10>..... 7 1
I/O MDO <11>..... 7 1
I/O MDO <12>..... 7 1
I/O MDO <13>..... 7 1

```
I/O MDO <14>..... 7  1
I/O MDO <15>..... 7  1
IDLE..... 6
INIT L.....10  9
INT Y L..... 6
IOA <00>..... 8  5  4  2
IOA <01>..... 8  5  4  2
IOA <02>..... 5  4  2
IOA <03>..... 5  4  2
IOA <04>..... 5  4  2
IOA <05>..... 5  4  2
IOA <06>..... 5  4  2
IOA <07>..... 2
IOA <0>..... 8
IOA <1>..... 8
IOD <00>.....10  8  7  5  4  3
IOD <01>.....10  8  7  5  4  3
IOD <02>.....10  8  7  5  4  3
IOD <03>.....10  8  7  5  4  3
IOD <04>.....10  8  7  5  3
IOD <05>..... 8  7  5  3
IOD <06>..... 8  7  5  3
IOD <07>..... 8  7  5  3
IOD <08>..... 7  5  3
IOD <09>..... 7  5  3
IOD <10>..... 7  5  3
IOD <11>..... 7  5  3
IOD <12>..... 7  5  3
IOD <13>..... 7  5  3
IOD <14>..... 7  5  3
IOD <15>..... 7  5  3
LD LNTH CNT L..... 8
LD PERQ CNT L..... 2
LD REG FILE L..... 2
LINK DATA IN <00>..... 3
LINK DATA IN <01>..... 3
LINK DATA IN <02>..... 3
LINK DATA IN <03>..... 3
LINK DATA IN <04>..... 3
LINK DATA IN <05>..... 3
LINK DATA IN <06>..... 3
LINK DATA IN <07>..... 3
LINK DATA IN <08>..... 3
LINK DATA IN <09>..... 3
LINK DATA IN <10>..... 3
LINK DATA IN <11>..... 3
LINK DATA IN <12>..... 3
LINK DATA IN <13>..... 3
LINK DATA IN <14>..... 3
LINK DATA IN <15>..... 3
LINK DATA OUT <00>..... 3
LINK DATA OUT <01>..... 3
```

LINK DATA OUT <02>..... 3
LINK DATA OUT <03>..... 3
LINK DATA OUT <04>..... 3
LINK DATA OUT <05>..... 3
LINK DATA OUT <06>..... 3
LINK DATA OUT <07>..... 3
LINK DATA OUT <08>..... 3
LINK DATA OUT <09>..... 3
LINK DATA OUT <10>..... 3
LINK DATA OUT <11>..... 3
LINK DATA OUT <12>..... 3
LINK DATA OUT <13>..... 3
LINK DATA OUT <14>..... 3
LINK DATA OUT <15>..... 3
MDO <00>..... 1
MDO <01>..... 1
MDO <02>..... 1
MDO <03>..... 1
MDO <04>..... 1
MDO <05>..... 1
MDO <06>..... 1
MDO <07>..... 1
MDO <08>..... 1
MDO <09>..... 1
MDO <10>..... 1
MDO <11>..... 1
MDO <12>..... 1
MDO <13>..... 1
MDO <14>..... 1
MDO <15>..... 1
NEED WORK..... 7 6
NEED WORK BUFF..... 6
NET STAT RD L..... 2
OK PRINT H..... 8 6
PL EXT B FIFO..... 7
PROM <1> WR L..... 2
PROM <2> WR L..... 2
PU <1>.....11 9 8
PU <2>..... 9 8 7
PU <3>..... 9 8 7
PU <4>.....10 9 8
RD CANON INT L.....10 8 6
RD CANON STATUS L..... 8 7
REDO CNT H..... 8 6
RESET CANON..... 9 6
RESET CANON L.....10
RESET FIFO..... 9 6
RESET FIFO L..... 9 8 7 7
RESET L.....10 9
RSCR TO BUS H..... 4
SHIFT H..... 7 6
SMD <1> WR L..... 2

SMD <2> WR L..... 2
SMD <3> WR L..... 2
SMD <4> WR L..... 2
SMD RD L..... 2
STAT FULL BUFF..... 6
STATUS FULL.....10 7 6
STATUS L.....11
STATUS RD..... 6
STATUS RD H.....10
STREAM <4> WR L..... 8
STREAMER <1> RD L..... 2
STREAMER <2> RD L..... 2
STREAMER <4> WR L..... 2
UNLD EXT B FIFO..... 6
WAS <1>..... 6
WAS <2>..... 6
WAS <3>..... 6
WAS <4>..... 6
WAS <5>..... 6
WAS <6>..... 6
WORD CLK..... 9 8
WR CANON CNTL L.....10 8
WR LNTH CNT L..... 8
XMIT DONE..... 4
u sec CLK RD L..... 2
u sec WR L..... 2

This Run Was made using the following files:

100227.PART
io11.WL
io10.WL
io09.WL
io08.WL
io07.WL
io06.WL
io05.WL
io04.WL
io03.WL
io02.WL
io01.WL

Number Of Nets = 298
Begin Wirelist

```
   1: U68-17 JA1-1                          .%JA1-1

   2: U98-1 U89-1 U78-1 U153-15 U123-15
   2: U143-1 J174-1 U145-3 U87-9 U145-6
   2: U106-1 U106-3 U126-2 U126-15 U126-14
   2: U126-5 U157-1 U157-19                 .!GND

   3: U68-15 JA2-1                          .%JA2-1

   4: U39-3 JA3-1                           .%JA3-1

   5: U135-18 U105-4                        .%U105-4

   6: U126-4 U106-12                        .%U106-12

   7: U126-9 U106-14                        .%U106-14

   8: U135-11 U106-20                       .%U106-20

   9: U115-8 U115-10                        .%U115-10

  10: U124-11 U115-13                       .%U115-13

  11: U123-13 U116-2                        .%U116-2

  12: U116-1 U116-6                         .%U116-6

  13: U137-10 U117-6                        .%U117-6

  14: U122-1 U117-7                         .%U117-7

  15: U131-11 U119-9                        .%U119-9
```

16: U117-9 U122-15 .%U122-15

17: U133-17 U123-11 .%U123-11

18: U133-13 U123-12 .%U123-12

19: U133-3 U123-7 .%U123-7

20: U133-14 U123-8 .%U123-8

21: U133-7 U123-9 .%U123-9

22: U104-3 U124-2 .%U124-2

23: U115-1 U124-3 .%U124-3

24: U136-1 U124-6 .%U124-6

25: U124-8 U125-13 .%U125-13

26: U134-12 U125-5 .%U125-5

27: U135-7 U126-1 .%U126-1

28: U106-8 U126-12 .%U126-12

29: U106-13 U126-7 .%U126-7

30: U119-4 U129-12 .%U129-12

31: U199-6 U129-13 .%U129-13

32: U119-2 U129-9 .%U129-9

33: U145-5 U131-5 .%U131-5

34: U123-6 U133-18 .%U133-18

35: U134-6 U125-1 U134-13 .%U134-13

36: U134-9 U134-2 .%U134-2

37: U142-2 U142-12 U134-5 .%U134-5

38: U145-13 U135-16 .%U135-16

39: U106-10 U135-5 .%U135-5

40: U126-13 U136-11 .%U136-11

41: U76-11 U136-12 .%U136-12

42: U136-4 U136-3 .%U136-3

43: U135-3 U136-5 .%U136-5

44: U135-15 U136-6 .%U136-6

45: U126-10 U136-8 .%U136-8

46: U117-5 U127-5 U137-1 .%U137-1

47: U137-13 U137-3 U137-2 .%U137-2

48: U131-4 U141-13 .%U141-13

49: U135-6 U106-2 U144-2 .%U144-2

50: U135-9 U145-11 .%U145-11

51: U135-14 U145-12 .%U145-12

52: U163-13 U153-11 .%U153-11

53: U163-3 U153-13 .%U153-13

54: U163-14 U153-14 .%U153-14

55: U133-4 U153-7 .%U153-7

56: U133-8 U153-8 .%U153-8

57: U163-8 U153-9 .%U153-9

58: U153-12 U163-18 .%U163-18

59: U29-2 R2-2 U29-4 .%U29-4

60: U36-1 U37-1 .%U37-1

*** Run Has no outputs

61: U127-12 U64-1 .%U64-1

62: U119-8 U69-1 .%U69-1

63: U97-23 U86-15 .%U86-15

64: U97-1 U86-9 .%U86-9

65: U104-9 U87-15 .%U87-15

66: U86-23 U96-15 .%U96-15

67: U76-3 U116-11 U87-16 U97-16 U86-16

```
  67: U96-16                                .%U96-16

  68: U76-8 U87-2 U97-2 U86-2 U96-2         .%U96-2

  69: U116-12 U97-22 U87-22 U86-22 U96-22
  69:                                       .%U96-22

  70: U76-6 U87-8 U97-8 U86-8 U96-8         .%U96-8

  71: U86-1 U96-9                           .%U96-9

  72: U87-23 U97-15                         .%U97-15

  73: U87-1 U97-9                           .%U97-9

  74: U142-1 U154-8 U134-3 U134-11          .28MHZ

  75: U29-5 U68-13                          .AB

  76: U118-5 U129-8                         .ADR MCH L

  77: U127-14                               .BIT CNT RD L
*** Only one pin in net

  78: U117-12                               .BIT CNT WR L
*** Only one pin in net

  79: U76-1 U142-6 U142-13                  .BIT RATE CLK

  80: U153-5                                .BLANK
*** Only one pin in net
*** Run Has no outputs

  81: U94-2                                 .BLANK L
*** Only one pin in net

  82: U78-5 JB7-1                           .BUF CYC H

  83: U127-13 U146-15                       .CANON <4> RD L

  84: U117-10 U136-13 U135-17               .CANON <4> WR L

  85: U123-14 U125-12                       .CANON INT H

  86: U116-3 U115-11                        .CLK <0>
*** Run Has no outputs

  87: U33-8                                 .CLK <0> A H
*** Only one pin in net

  88: U107-8                                .CLK <0> B
*** Only one pin in net
```

```
  89: U163-11 U133-11                    .CLK <0> B H
*** Run Has no outputs

  90: U107-12                            .CLK <0> C
*** Only one pin in net

  91: U36-11 U37-11 U125-11 U143-11      .CLK <0> H
*** Run Has no outputs

  92: U76-10                             .CLK <46> L
*** Only one pin in net
*** Run Has no outputs

  93: U33-9 U107-10                      .CLK <4> A L

  94: U107-9 U107-2                      .CLK <4> B

  95: U107-4 U107-13                     .CLK <4> C L

  96: U107-3 U107-1 J176-1 U107-11       .CLK <7> H

  97: U76-5 U157-12                      .CLK <976>

  98: J178-1 U157-8                      .CLK <976> L

  99: U118-14 U78-11                     .CLK CNT L

 100: U98-11 U89-11 U118-12              .CLK OUT L

 101: U118-11 U88-11 U79-11              .CLK REG L

 102: U118-6 U69-2                       .CLK-4 L
*** Run Has no outputs

 103: U153-6 U115-12                     .DMA REQ

 104: U59-1 U59-19 U58-19 U58-1          .EN IN L
*** Run Has no outputs

 105: U69-3 U108-15 U99-15               .EN L

 106: U105-14                            .EN LNTH CNT L
*** Only one pin in net
*** Run Has no outputs

 107: U124-10 U94-5                      .ENB CANON INT H

 108: U68-19 U118-15                     .ENB CNT L

 109: U118-13 U29-1                      .ENB IN L
```

110: U133-9 .ENB LNTH CNT H
*** Only one pin in net

111: U104-11 U76-2 U116-13 U145-9 .ENB PRINT H

112: U118-10 U88-1 U79-1 .ENB REG L

113: U133-5 U124-4 .ENB WDTH CNT H

114: U144-12 U105-12 U104-8 .EOB

115: U123-17 U143-12 .EOB BUFF

116: U143-13 U144-9 .EOB H

117: U153-18 U143-2 .EOL BUFF

118: U143-4 U144-6 U144-11 .EOL H

119: U122-7 .EX DEV <1> WR L
*** Only one pin in net

120: U122-6 .EX DEV <2> WR L
*** Only one pin in net

121: U127-11 .EX DEV <41> RD L
*** Only one pin in net

122: U127-10 .EX DEV <42> RD L
*** Only one pin in net

123: U127-9 .EX DEV <43> RD L
*** Only one pin in net

124: U127-7 .EX DEV <44> RD L
*** Only one pin in net

125: J173-1 U115-9 .EXT B REQ H

126: U78-15 JB5-1 .EXT RCSR TO BUS L

127: JA4-1 U29-3 .EXT X BUF CYC

128: U78-16 JB3-1 .FLAG H

129: U105-11 U125-3 U147-2 U147-1 .I BD

130: U147-7 U147-6 J78-1 .I BD +

131: U147-5 J79-1 .I BD -

132: U133-6 .I PFSP

*** Only one pin in net

133: U157-6 .I PRFSP
*** Only one pin in net
*** Run Has no outputs

134: J188-1 U157-14 R9-2 .I PRFSP L

135: U115-5 U157-2 .I PRN

136: U157-18 J186-1 R10-2 .I PRN L

137: U143-7 U104-4 U157-5 .I PRND

138: U123-18 U143-6 .I PRND BUFF

139: U157-15 J183-1 .I PRND L

140: U143-18 U104-2 U157-7 .I RDY

141: U143-19 U153-19 U123-19 .I RDY BUFF

142: U157-13 J84-1 .I RDY L

143: U116-4 U86-7 U97-7 U87-7 U96-7 U157-9
143: .I STATUS

144: U116-5 U157-4 .I STATUS REQ

145: U157-16 J187-1 R11-2 .I STATUS REQ L

146: U143-8 U104-17 U157-3 .I TOP

147: U123-16 U143-9 .I TOP BUFF

148: J184-1 U157-17 .I TOP L

149: U116-9 U155-10 U155-9 U155-11 .I VDO

150: U155-13 J81-1 U155-12 .I VDO +

151: U155-14 J82-1 U155-15 .I VDO -

152: U64-3 J71-1 U122-3 U122-13 U118-4
152: .I/O ENB L

153: U36-2 U96-6 .I/O MDO <00>

154: U36-5 U96-5 .I/O MDO <01>

155: U36-6 U96-4 .I/O MDO <02>

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156: U36-9 U96-3                          .I/O MDO <03>

157: U36-12 U86-6                         .I/O MDO <04>

158: U36-15 U86-5                         .I/O MDO <05>

159: U36-16 U86-4                         .I/O MDO <06>

160: U36-19 U86-3                         .I/O MDO <07>

161: U37-2 U97-6                          .I/O MDO <08>

162: U37-5 U97-5                          .I/O MDO <09>

163: U37-6 U97-4                          .I/O MDO <10>

164: U37-9 U97-3                          .I/O MDO <11>

165: U37-12 U87-6                         .I/O MDO <12>

166: U37-15 U87-5                         .I/O MDO <13>

167: U37-16 U87-4                         .I/O MDO <14>

168: U37-19 U87-3                         .I/O MDO <15>

169: U143-3                               .IBD
*** Only one pin in net
*** Run Has no outputs

170: U153-17 U143-5                       .IBD BUFF

171: U132-12 U153-4                       .IDLE

172: J179-1 U132-11 U132-5 U94-1          .INIT L

173: U125-9 J182-1 U125-10                .INT Y L

174: J69-1 U127-4 U117-4 U118-1 U108-10
174: U99-10 U126-3 U136-10 U76-13         .IOA <00>

175: U64-2 J169-1 U122-2 U122-14 U118-2
175: U108-11 U99-11 U126-6 U136-9 U76-12
175:                                      .IOA <01>

176: U127-1 J68-1 U117-1 U118-3 U108-12
176: U99-12                               .IOA <02>

177: U127-2 J168-1 U117-2 U199-5 U108-13
177: U99-13                               .IOA <03>

178: U127-3 J67-1 U117-3 U119-3 U108-14
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178: U99-14                                  .IOA <04>

179: U137-11 J167-1 U129-10 U131-13          .IOA <05>

180: U137-12 J66-1 U119-1 U131-12            .IOA <06>

181: J166-1 U137-8 U137-9 U127-6             .IOA <07>

182: U146-13 U146-3                          .IOA <0>
*** Run Has no outputs

183: U146-14 U146-2                          .IOA <1>
*** Run Has no outputs

184: U58-18 J64-1 U98-2 U78-4 U68-9 U88-19
184: U108-1 U88-18 U96-18 U105-15 U106-4
184: U94-3 U104-12                           .IOD <00>

185: U58-14 J164-1 U98-5 U78-14 U68-7
185: U88-16 U108-2 U88-17 U96-19 U105-1
185: U106-5 U94-18 U104-16                   .IOD <01>

186: U58-16 J63-1 U98-6 U78-17 U68-5 U88-5
186: U108-3 U88-4 U96-20 U105-10 U106-6
186: U115-2 U104-18                          .IOD <02>

187: U58-12 J163-1 U98-9 U78-18 U68-3
187: U88-15 U108-4 U88-14 U96-21 U105-9
187: U106-7 U94-7 U104-14                    .IOD <03>

188: U58-7 J62-1 U98-12 U88-12 U108-5
188: U88-13 U86-18 U106-16 U94-4             .IOD <04>

189: U58-9 J162-1 U98-15 U88-9 U108-6
189: U88-8 U86-19 U106-17                    .IOD <05>

190: J61-1 U58-5 U98-16 U88-6 U108-7 U88-7
190: U86-20 U106-18                          .IOD <06>

191: U58-3 J161-1 U98-19 U88-2 U108-9
191: U88-3 U86-21 U106-19                    .IOD <07>

192: J59-1 U59-3 U89-2 U79-19 U99-1 U79-18
192: U97-18                                  .IOD <08>

193: J159-1 U59-5 U89-5 U79-16 U99-2 U79-17
193: U97-19                                  .IOD <09>

194: J58-1 U59-7 U89-6 U79-2 U99-3 U79-3
194: U97-20                                  .IOD <10>

195: J158-1 U59-9 U89-9 U79-5 U99-4 U79-4
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195: U97-21                                  .IOD <11>

196: J57-1 U59-12 U89-12 U79-9 U99-5 U79-8
196: U87-18                                  .IOD <12>

197: J157-1 U59-14 U89-15 U79-6 U99-6
197: U79-7 U87-19                            .IOD <13>

198: J56-1 U59-16 U89-16 U79-15 U99-7
198: U79-14 U87-20                           .IOD <14>

199: J156-1 U59-18 U89-19 U79-12 U99-9
199: U79-13 U87-21                           .IOD <15>

200: U135-2                                  .LD LNTH CNT L
*** Only one pin in net
*** Run Has no outputs

201: U122-11                                 .LD PERQ CNT L
*** Only one pin in net

202: U117-11                                 .LD REG FILE L
*** Only one pin in net

203: JA20-1 U58-2                            .LINK DATA IN <00>

204: U58-6 JA19-1                            .LINK DATA IN <01>

205: U58-4 JA18-1                            .LINK DATA IN <02>

206: U58-8 JA17-1                            .LINK DATA IN <03>

207: U58-13 JA16-1                           .LINK DATA IN <04>

208: U58-11 JA15-1                           .LINK DATA IN <05>

209: JA14-1 U58-15                           .LINK DATA IN <06>

210: U58-17 JA13-1                           .LINK DATA IN <07>

211: U59-17 JA12-1                           .LINK DATA IN <08>

212: JA11-1 U59-15                           .LINK DATA IN <09>

213: JA10-1 U59-13                           .LINK DATA IN <10>

214: JA9-1 U59-11                            .LINK DATA IN <11>

215: JA8-1 U59-8                             .LINK DATA IN <12>

216: JA7-1 U59-6                             .LINK DATA IN <13>
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217: JA6-1 U59-4	.LINK DATA IN <14>
218: JA5-1 U59-2	.LINK DATA IN <15>
219: U98-3 JB39-1	.LINK DATA OUT <00>
220: U98-4 JB37-1	.LINK DATA OUT <01>
221: U98-7 JB35-1	.LINK DATA OUT <02>
222: U98-8 JB33-1	.LINK DATA OUT <03>
223: U98-13 JB31-1	.LINK DATA OUT <04>
224: U98-14 JB29-1	.LINK DATA OUT <05>
225: U98-17 JB27-1	.LINK DATA OUT <06>
226: U98-18 JB25-1	.LINK DATA OUT <07>
227: U89-3 JB23-1	.LINK DATA OUT <08>
228: U89-4 JB21-1	.LINK DATA OUT <09>
229: U89-7 JB19-1	.LINK DATA OUT <10>
230: U89-8 JB17-1	.LINK DATA OUT <11>
231: U89-13 JB15-1	.LINK DATA OUT <12>
232: U89-14 JB13-1	.LINK DATA OUT <13>
233: U89-17 JB11-1	.LINK DATA OUT <14>
234: U89-18 JB9-1	.LINK DATA OUT <15>
235: U36-3 J24-1	.MDO <00>
236: U36-4 J124-1	.MDO <01>
237: U36-7 J23-1	.MDO <02>
238: U36-8 J123-1	.MDO <03>
239: U36-13 J22-1	.MDO <04>
240: U36-14 J122-1	.MDO <05>
241: U36-17 J21-1	.MDO <06>
242: U36-18 J121-1	.MDO <07>

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243: J19-1 U37-3                          .MDO <08>

244: J119-1 U37-4                         .MDO <09>

245: J18-1 U37-7                          .MDO <10>

246: J118-1 U37-8                         .MDO <11>

247: J17-1 U37-13                         .MDO <12>

248: J117-1 U37-14                        .MDO <13>

249: J16-1 U37-17                         .MDO <14>

250: J116-1 U37-18                        .MDO <15>

251: U143-17 U131-6                       .NEED WORK

252: U153-16 U143-16                      .NEED WORK BUFF

253: U64-7                                .NET STAT RD L
*** Only one pin in net

254: U163-12 U145-10                      .OK PRINT H

255: U145-1 J74-1 U76-9                   .PL EXT B FIFO

256: U122-4                               .PROM <1> WR L
*** Only one pin in net

257: U122-5                               .PROM <2> WR L
*** Only one pin in net

258: U106-15 U106-9 R5-2 U147-3           .PU <1>

259: U141-9 U116-10 U141-7 U141-10 U126-11
259: U134-4 U125-4 R6-2 U134-10 U125-2
259: U134-1                               .PU <2>

260: U145-2 U145-15 U145-14 U144-4 U105-5
260: U144-1 R8-2                          .PU <3>

261: U144-10 U132-10 U132-4 R7-2 U115-4
261:                                      .PU <4>

262: U124-9 U146-11 U104-1                .RD CANON INT L

263: U87-17 U97-17 U86-17 U96-17 U87-13
263: U97-13 U86-13 U96-13 U146-12         .RD CANON STATUS L

264: U163-9 U135-13 U136-2                .REDO CNT H
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 265: U124-12 U163-1 U133-1 U132-8          .RESET CANON

 266: U124-1                                .RESET CANON L
*** Only one pin in net
*** Run Has no outputs

 267: U133-16 U132-3                        .RESET FIFO

 268: U96-1 U96-10 U86-10 U86-11 U97-11
 268: U87-11 U145-4 U141-1 U96-11 U97-10
 268: U87-10 U144-13 U132-6                 .RESET FIFO L
*** Run has multiple outputs

 269: U132-9 U94-19                         .RESET L

 270: U39-4 U68-11                          .RSCR TO BUS H

 271: U133-12 U76-4                         .SHIFT H

 272: U122-12                               .SMD <1> WR L
*** Only one pin in net

 273: U122-10                               .SMD <2> WR L
*** Only one pin in net

 274: U122-9                                .SMD <3> WR L
*** Only one pin in net

 275: U117-15                               .SMD <4> WR L
*** Only one pin in net

 276: U64-4                                 .SMD RD L
*** Only one pin in net

 277: U123-4 U143-15                        .STAT FULL BUFF

 278: U143-14 U87-14 U97-14 U86-14 U96-14
 278: U96-23 U141-2 U104-6                  .STATUS FULL

 279: U157-11 J83-1                         .STATUS L

 280: U123-5                                .STATUS RD
*** Only one pin in net
*** Run Has no outputs

 281: U94-6                                 .STATUS RD H
*** Only one pin in net

 282: U146-1                                .STREAM <4> WR L
*** Only one pin in net
*** Run Has no outputs
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283: U64-5 .STREAMER <1> RD L
*** Only one pin in net

284: U64-6 .STREAMER <2> RD L
*** Only one pin in net

285: U117-14 .STREAMER <4> WR L
*** Only one pin in net

286: U127-15 .U SEC CLK RD L
*** Only one pin in net

287: U117-13 .U SEC WR L
*** Only one pin in net

288: J37-1 U124-13 .UNLD EXT B FIFO

289: U132-1 U133-15 U123-1 .WAS <1>

290: U132-2 U133-2 U123-2 .WAS <2>

291: U132-13 U133-19 U123-3 .WAS <3>

292: U153-1 U163-19 .WAS <4>

293: U153-2 U163-2 .WAS <5>

294: U153-3 U163-15 .WAS <6>

295: U135-4 U124-5 U144-3 U142-8 .WORD CLK

296: U146-4 U115-3 U94-11 .WR CANON CNTL L

297: U146-5 .WR LNTH CNT L
*** Only one pin in net

298: U78-19 JB1-1 .XMIT DONE