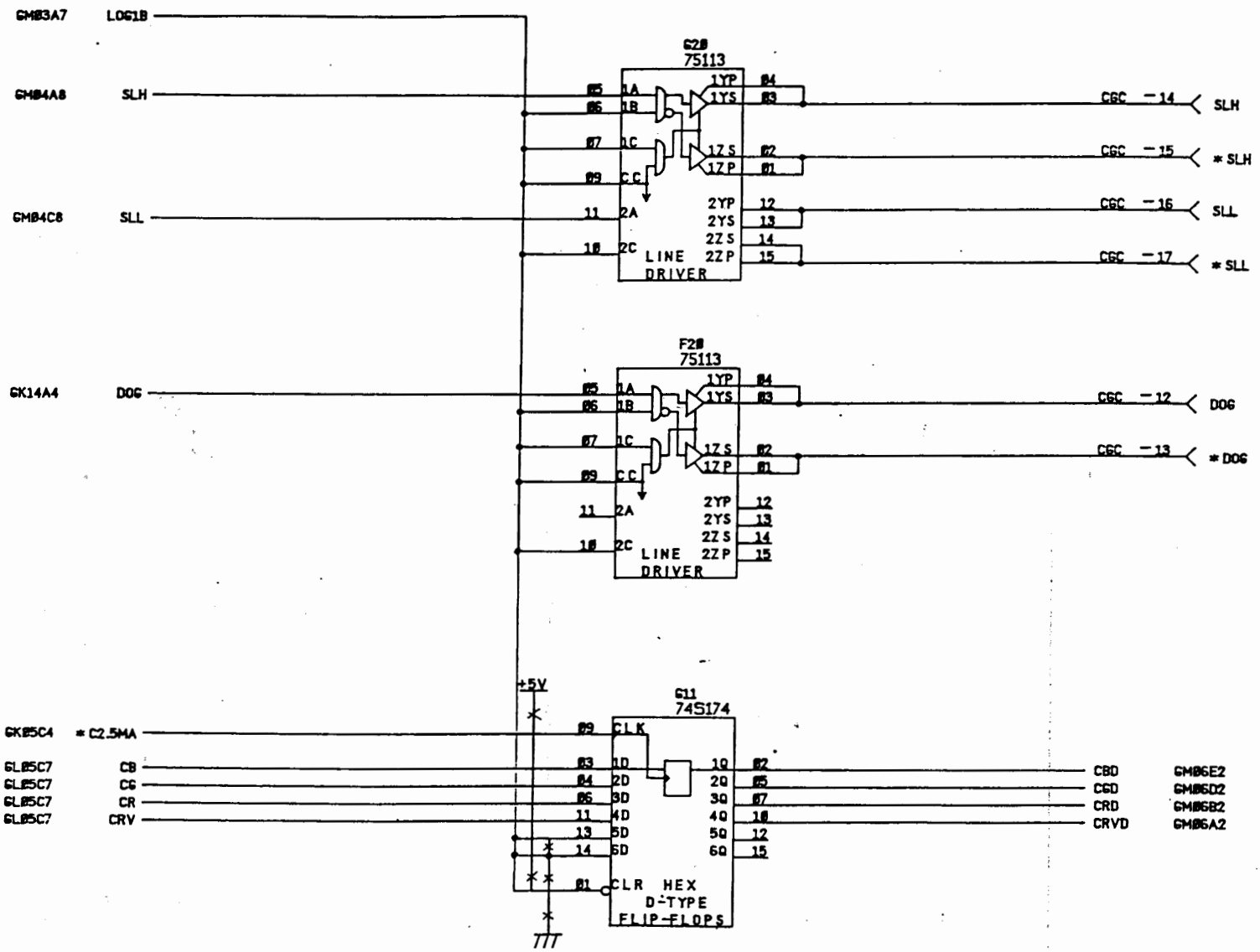


GRAPHIC OUTPUT CONTROL

GM06

						TITLE	
						DRAW NO	
						A20C-1000-0480/01	
DES.	CHK.	REV.	CHK.	DESIGN	DATE	FANUC LTD	
						SHEET 033 /	

160  
150  
F



NC INTERFACE

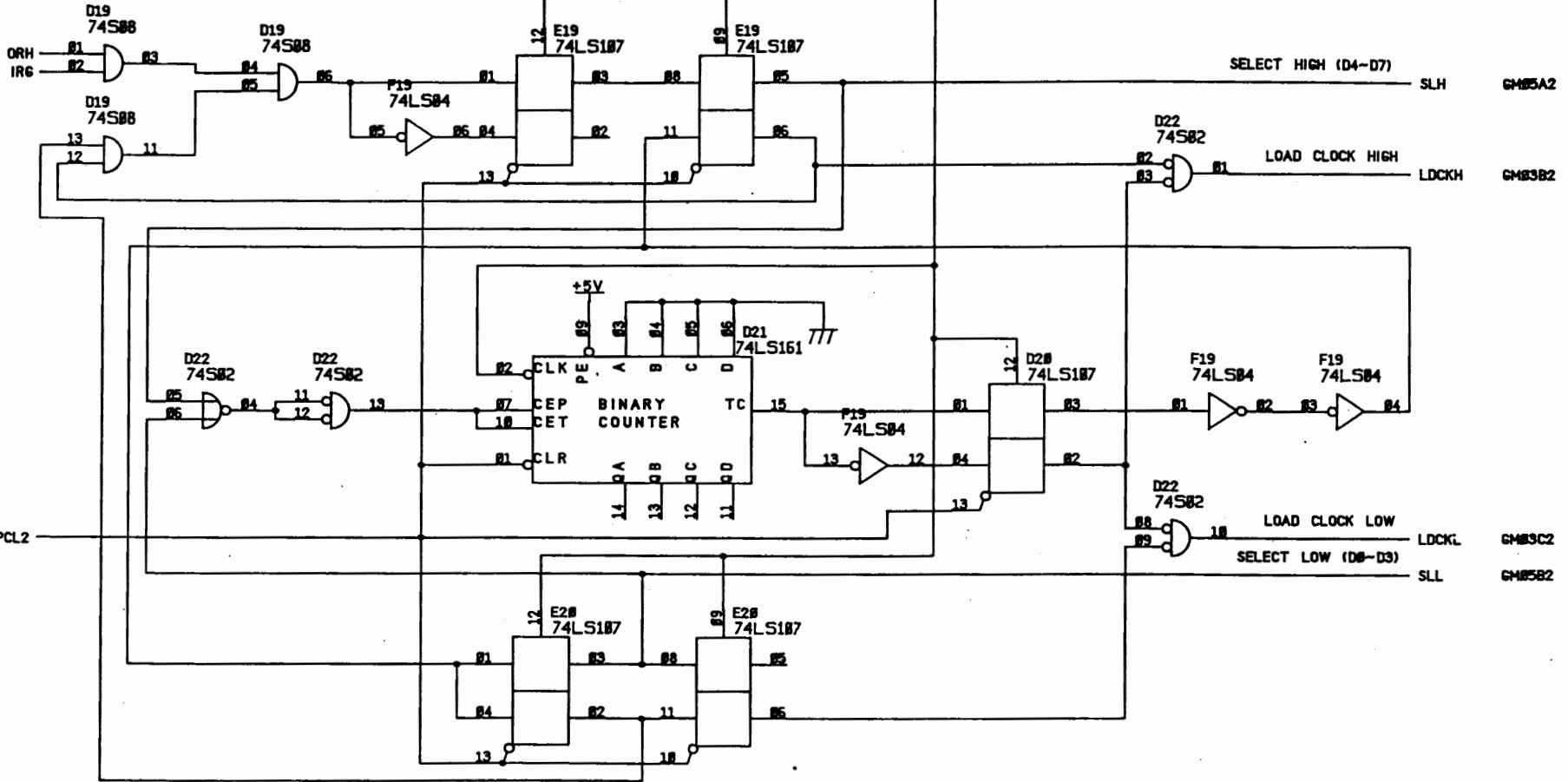

GM05

A20C-1000-0480/01

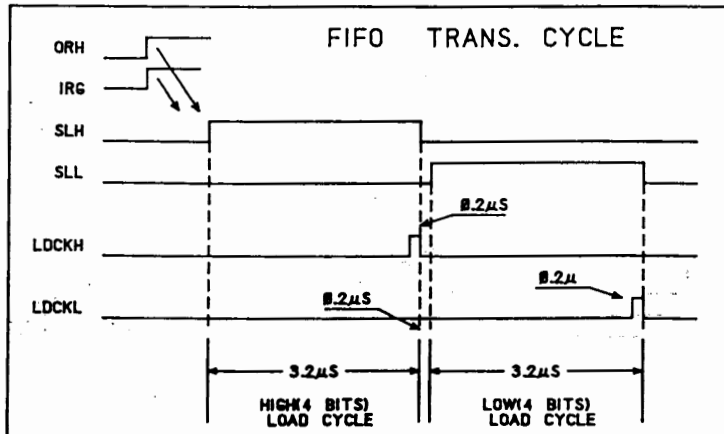
1/59  
1/58

GK05E4 \* CKCPU

GM02E7  
GM03B7

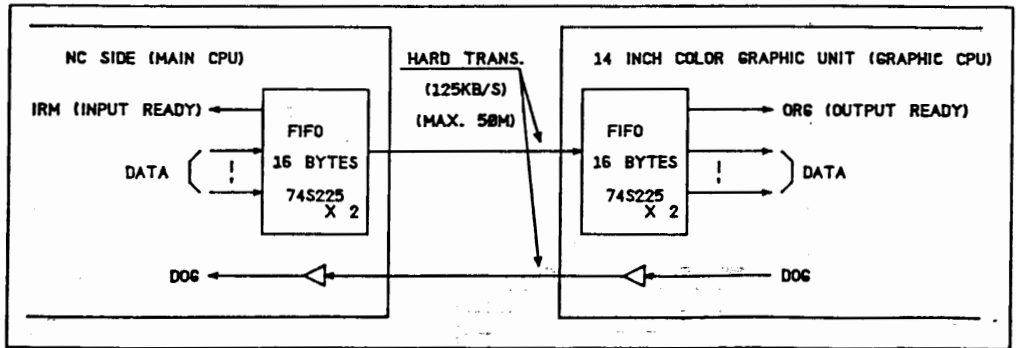
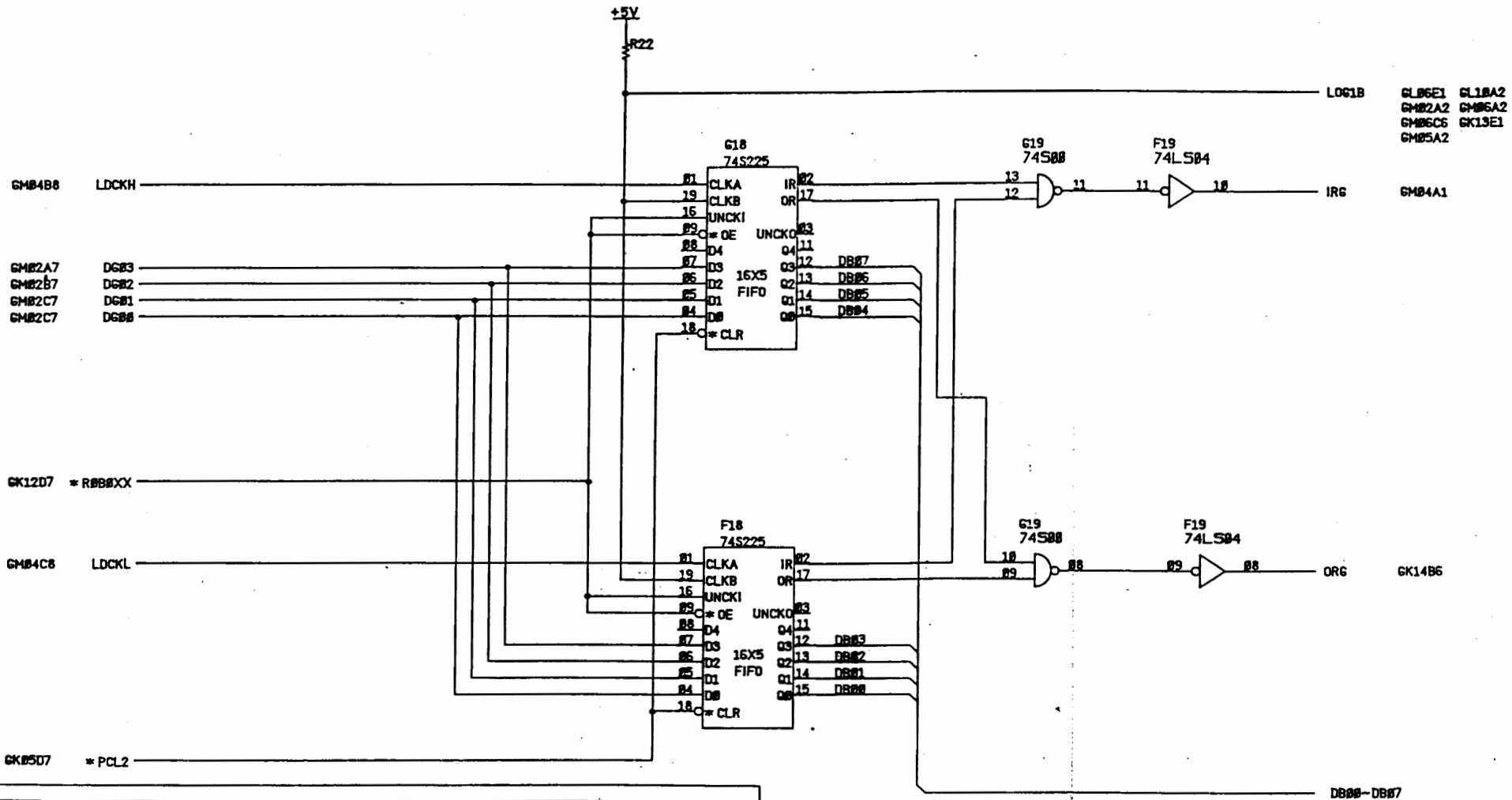


GK0507 \* PCL2



FIFO CONTROL


GM04



FIFO

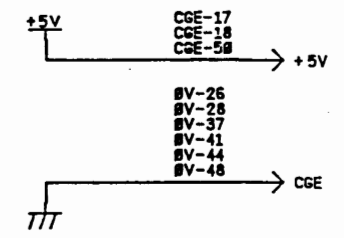
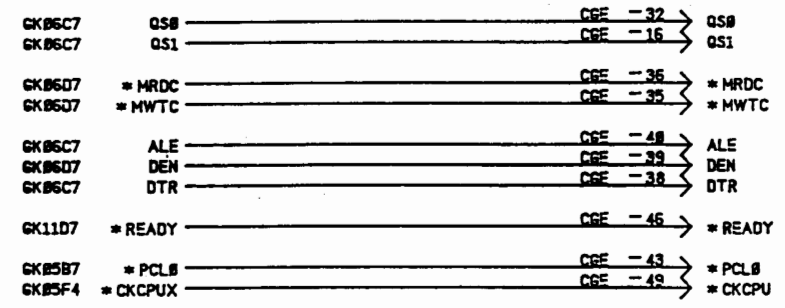
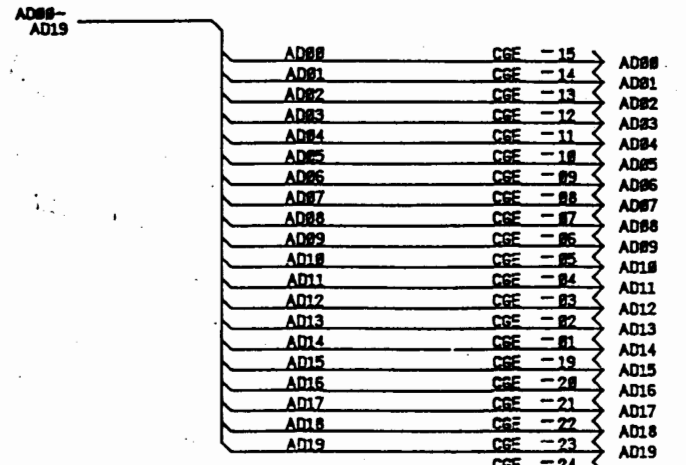
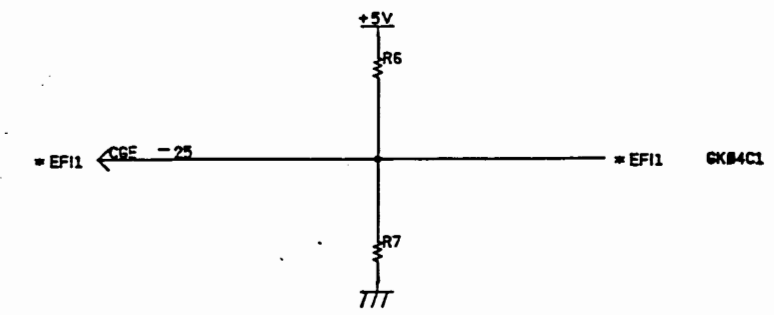
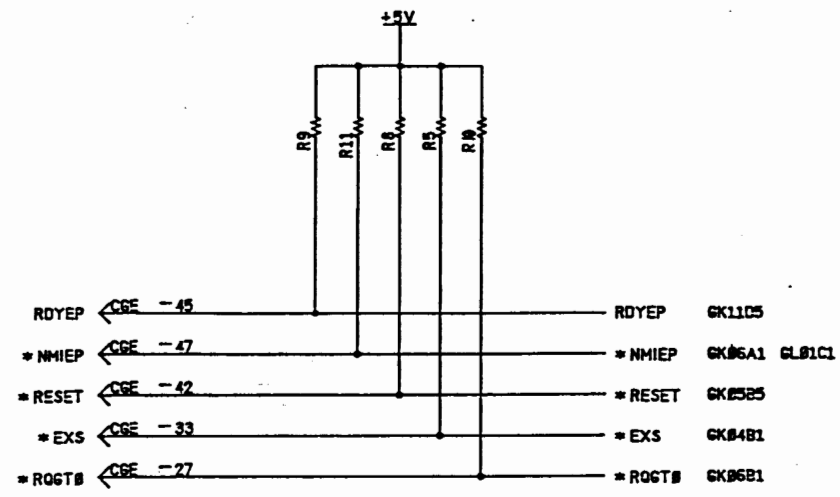
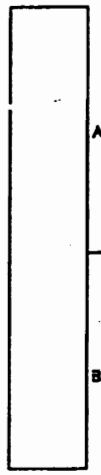
GM03


A20C-1000-0480/01

157

NOTE





ENGINEERING PANEL INTERFACE

GM01


155  
151



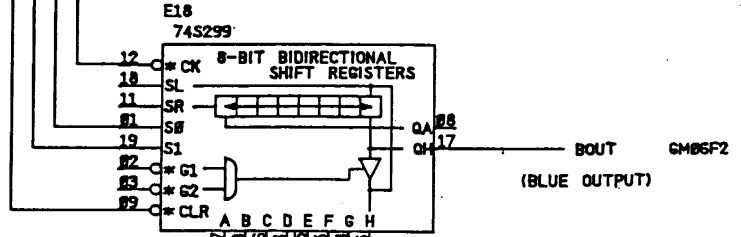
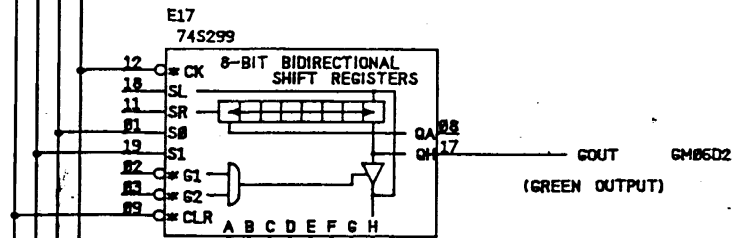
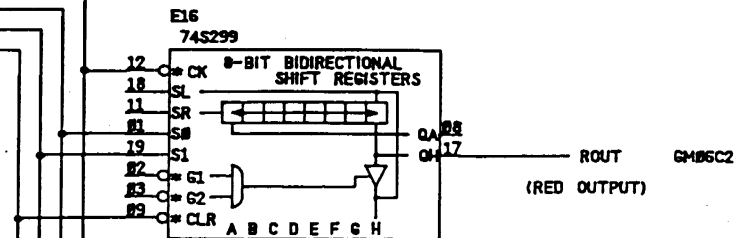
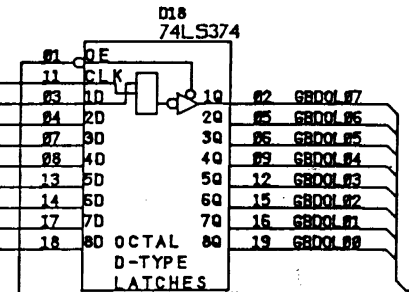
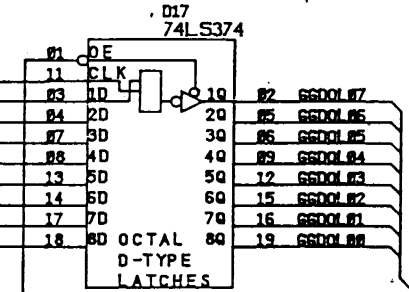
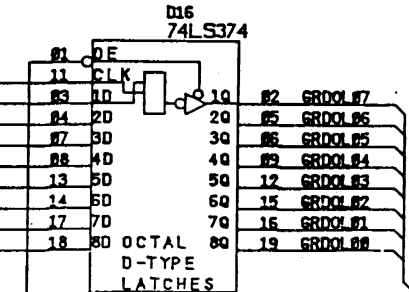
GK85A4 = C28MA  
 GK85A7 LOC1B  
 GK85C4 T7  
 GK85C7 = PCL1

GK85C4 = CGCK

GRD008-GRD007

GGD008-GGD007

GBD008-GBD007



GRAPHIC OUTPUT

GL10


NOTE  
 G8D008-G8D007 GL11 GL99

153  
 749

A20C-1000-0480/01



GK1508 \* WB03  
 GK1508 \* WB02  
 GK1508 \* WB01  
 GK0406 LOG1A  
 GL0207 \* CAS3  
 GL02E7 \* RAS3

GRA00-  
 GRA07

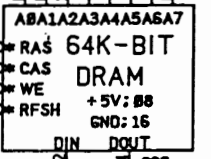
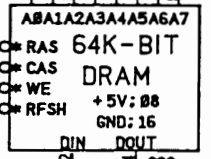
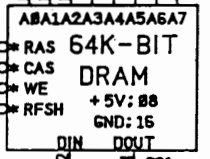
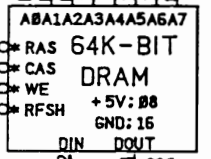
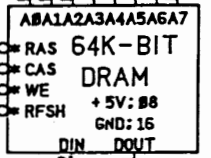
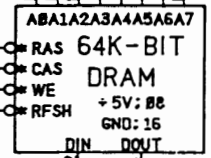
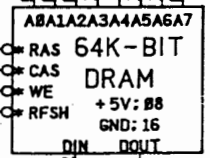
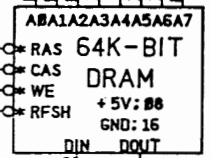
GK15C8 \* WB00

GL02D4 DINB

GK15E8 \* WB07  
 GK15E8 \* WB06  
 GK15E8 \* WB05

GRA00-  
 GRA07

GK15E8 \* WB04



GRAPHIC RAM (BLUE)

GL09



A20C-1000-0480/01

NOTE

152  
 150

GK15B8 \* WG83  
 GK15B8 \* WG82  
 GK15A8 \* WG81  
 GK84D6 LOG1A  
 GLB2D7 \* CAS2  
 GLB2E7 \* RAS2

GRAB8-  
 GRAB7

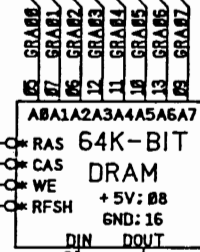
GK15A8 \* WG88

GLB2D4 DING

GK15C8 \* WG87  
 GK15C8 \* WG86  
 GK15B8 \* WG85

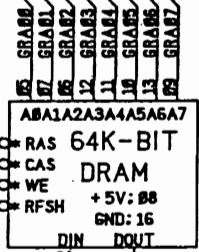
GRAB8-  
 GRAB7

GK15B8 \* WG84



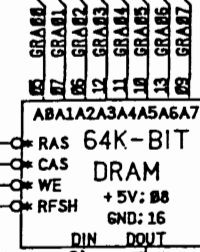
B16  
 MB8265-18

GGD080



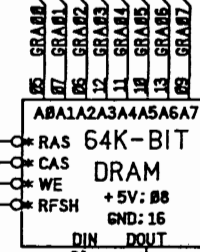
B17  
 MB8265-18

GGD081



B18  
 MB8265-18

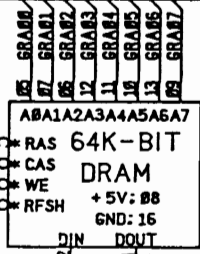
GGD082



B19  
 MB8265-18

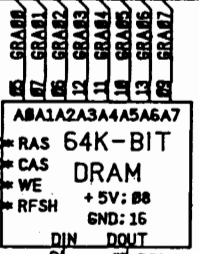
GGD083

GGD080-  
 GGD087



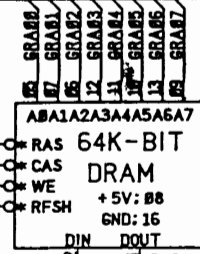
B20  
 MB8265-18

GGD084



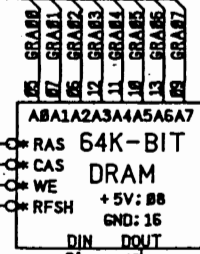
B21  
 MB8265-18

GGD085



B22  
 MB8265-18

GGD086



B23  
 MB8265-18

GGD087

GRAPHIC RAM (GREEN)

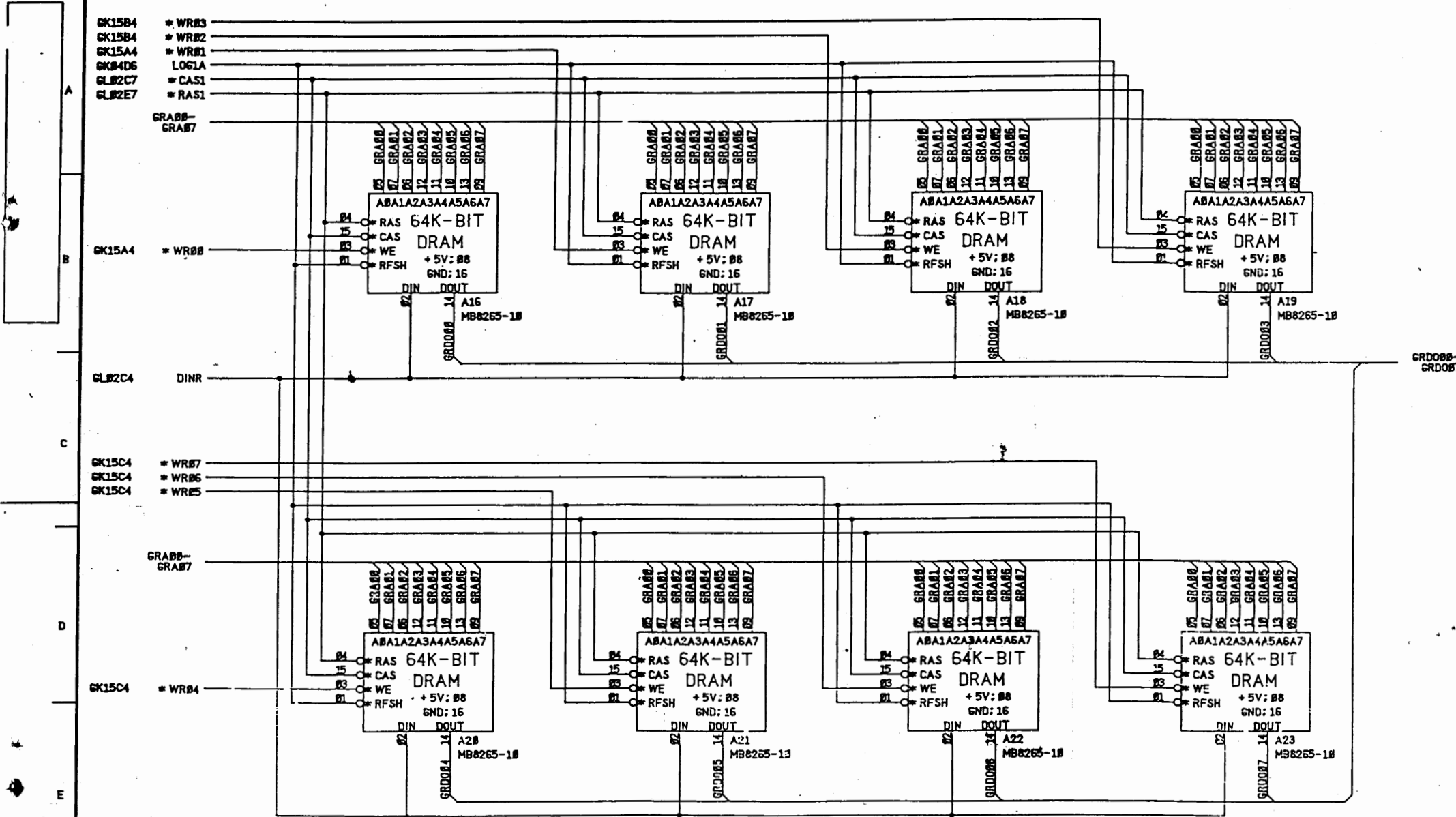
GL08



A20C-1000-0480/01~

151  
 757

NOTE  
 GGD086-CCD087 GL18 GL11



GK15B4 \* WRB3  
GK15B4 \* WRB2  
GK15A4 \* WRB1  
GK15D6 LOG1A  
GLB2C7 \* CAS1  
GLB2E7 \* RA51

GK15A4 \* WRB8

GLB2C4 DINR

GK15C4 \* WRB7  
GK15C4 \* WRB6  
GK15C4 \* WRB5

GK15C4 \* WRB4

GRAB8-  
GRAB7

GRAB8-  
GRAB7

ABA1A2A3A4A5A6A7  
RAS 64K-BIT  
CAS  
WE  
RFSH  
+5V: 08  
GND: 16  
DIN DOUT

ABA1A2A3A4A5A6A7  
RAS 64K-BIT  
CAS  
WE  
RFSH  
+5V: 08  
GND: 16  
DIN DOUT

ABA1A2A3A4A5A6A7  
RAS 64K-BIT  
CAS  
WE  
RFSH  
+5V: 08  
GND: 16  
DIN DOUT

ABA1A2A3A4A5A6A7  
RAS 64K-BIT  
CAS  
WE  
RFSH  
+5V: 08  
GND: 16  
DIN DOUT

ABA1A2A3A4A5A6A7  
RAS 64K-BIT  
CAS  
WE  
RFSH  
+5V: 08  
GND: 16  
DIN DOUT

ABA1A2A3A4A5A6A7  
RAS 64K-BIT  
CAS  
WE  
RFSH  
+5V: 08  
GND: 16  
DIN DOUT

ABA1A2A3A4A5A6A7  
RAS 64K-BIT  
CAS  
WE  
RFSH  
+5V: 08  
GND: 16  
DIN DOUT

ABA1A2A3A4A5A6A7  
RAS 64K-BIT  
CAS  
WE  
RFSH  
+5V: 08  
GND: 16  
DIN DOUT

GRAPHIC RAM (RED)

GL07

NOTE				A20C-1000-0480/ 01

150  
146  
21

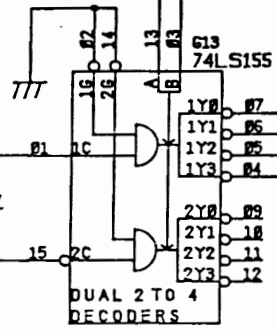
GL05C7  
GL05D7

CO018  
CO009

GK04E6

Q3

+5V



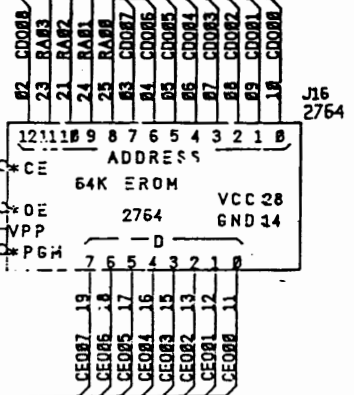
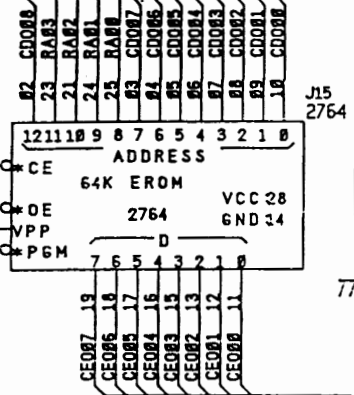
RAB8-  
RA03  
CO008-  
CO008

\* OECG1  
GL06C4  
\* OECG2  
GL06C4  
\* OECG3  
GL06E1  
\* OECG4  
GL06E1

GL06A3 \* OECG1  
GL06A3 \* OECG2

+5V

+5V

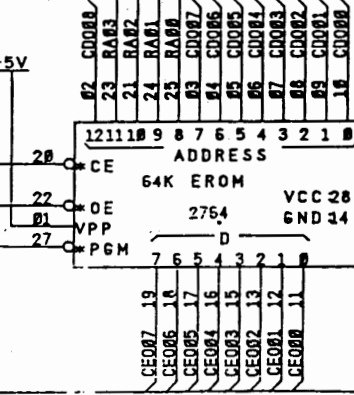
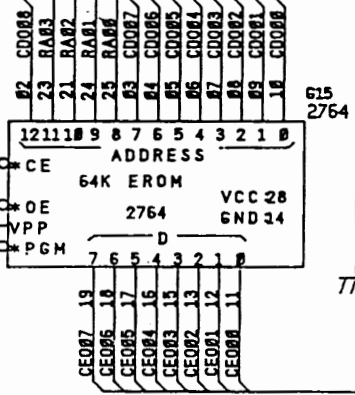


GK05A4 = C20MA  
GK05C4 T7

RAB8-  
RA03  
CO008-  
CO008

+5V

+5V



J18  
74S299

8-BIT BIDIRECTIONAL  
SHIFT REGISTERS

Q17  
COUT GK05B2

GL06B3 \* OECG3  
GL06B3 \* OECG4  
GM03A7 L0613  
GK05D7 \* PCL2

CHARA. PATTERN OUTPUT

GL06

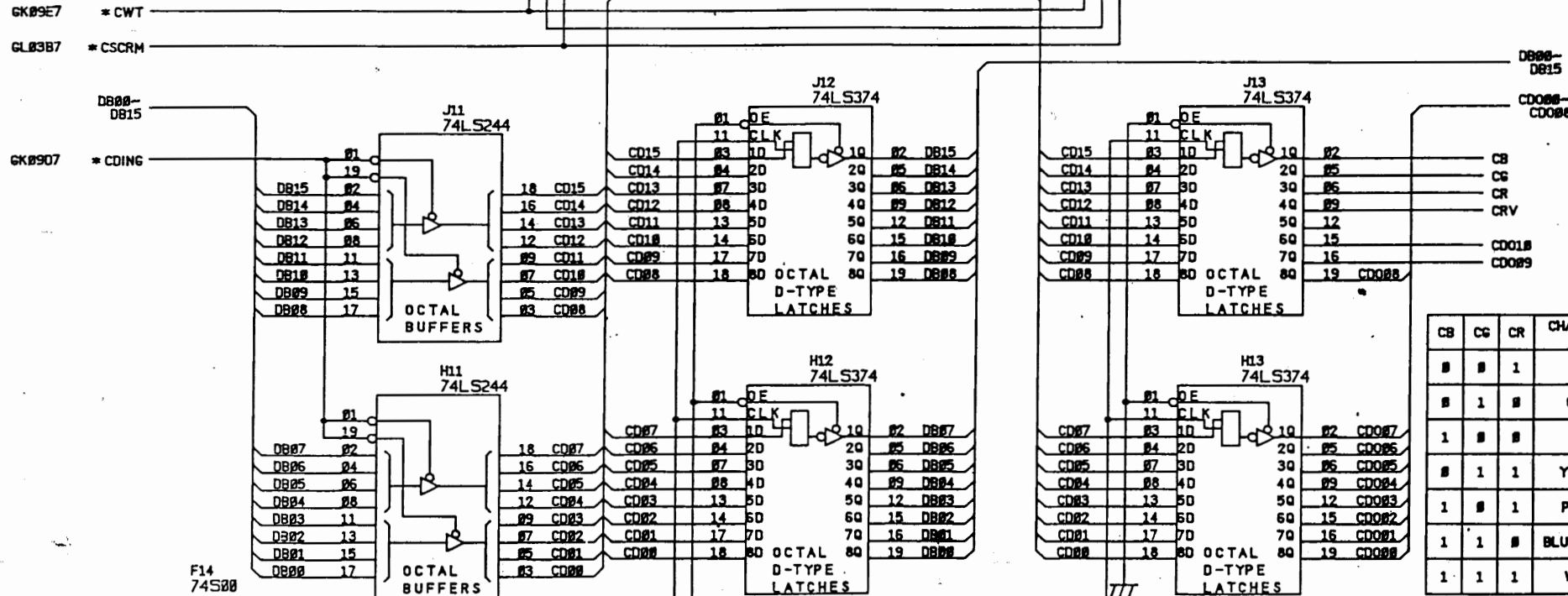
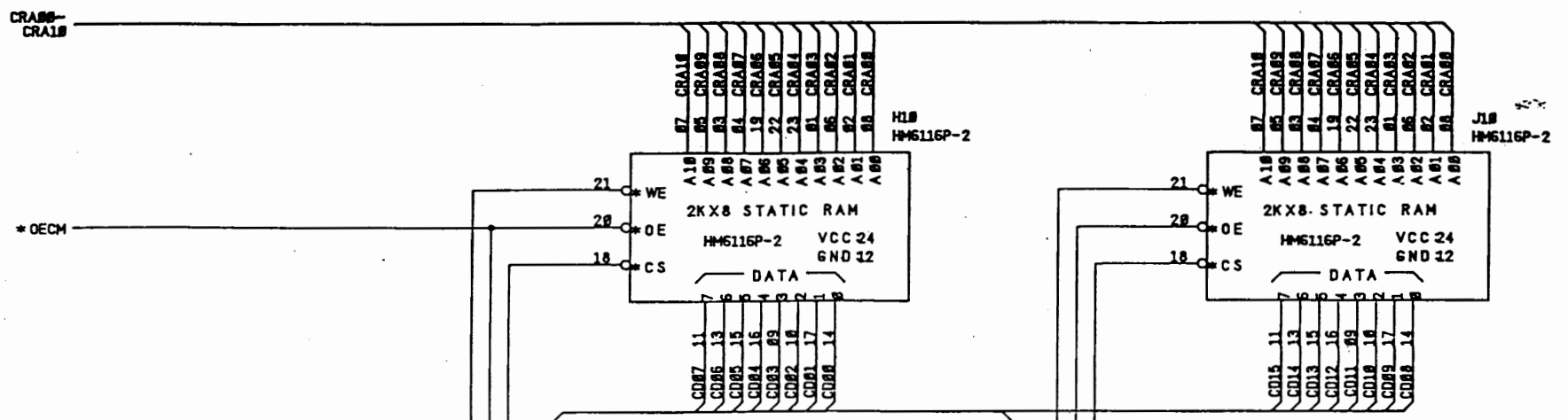
Table with 4 columns and multiple rows, likely for data recording or testing.

NOTE

RA08-RA03 GL01

A20C-1000-0480/01

149  
45

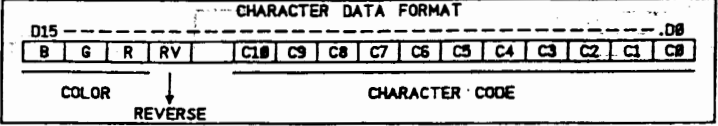


CB	CG	CR	CHARACTER COLOR
0	0	1	RED
0	1	0	GREEN
1	0	0	BLUE
0	1	1	YELLOW
1	0	1	PURPLE
1	1	0	BLUE-GREEN
1	1	1	WHITE

CRV--- CHARACTER DISPLAY REVERSE

CHARA. RAM

GL05

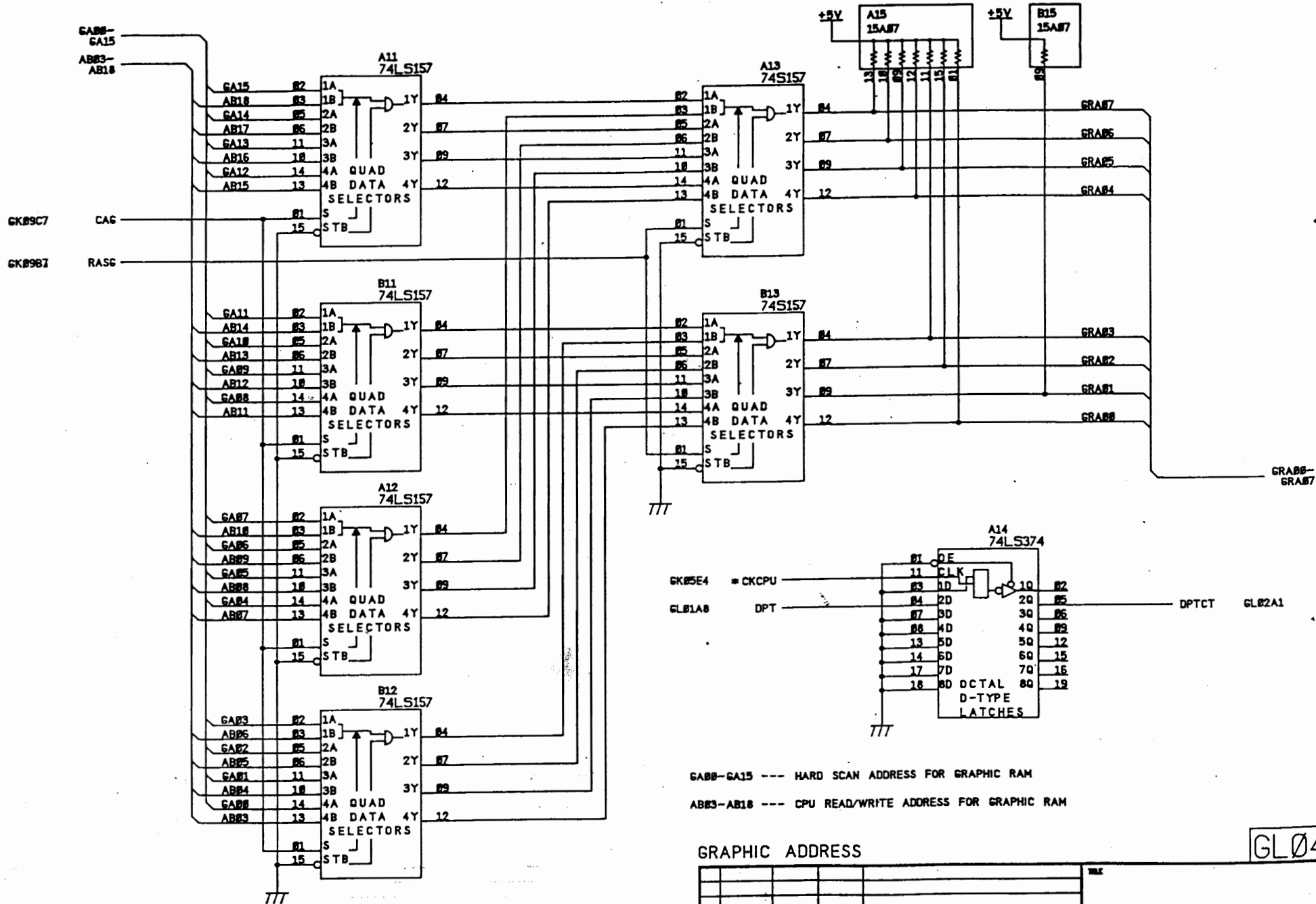


GK04E6 C2 09  
 GK11A7 CCRW 10  
 GK12E7 \*OECRAM  
 GK05C4 \*C2.5MA

NOTE  
 CD008-CD088 GL06

D15		D14		D13		D12		D11		D10		D9		D8	
B	G	R	RV	C10	C9	C8	C7	C6	C5	C4	C3	C2	C1	C0	
COLOR REVERSE				CHARACTER CODE											

A20C-1000-0480/01



147  
43

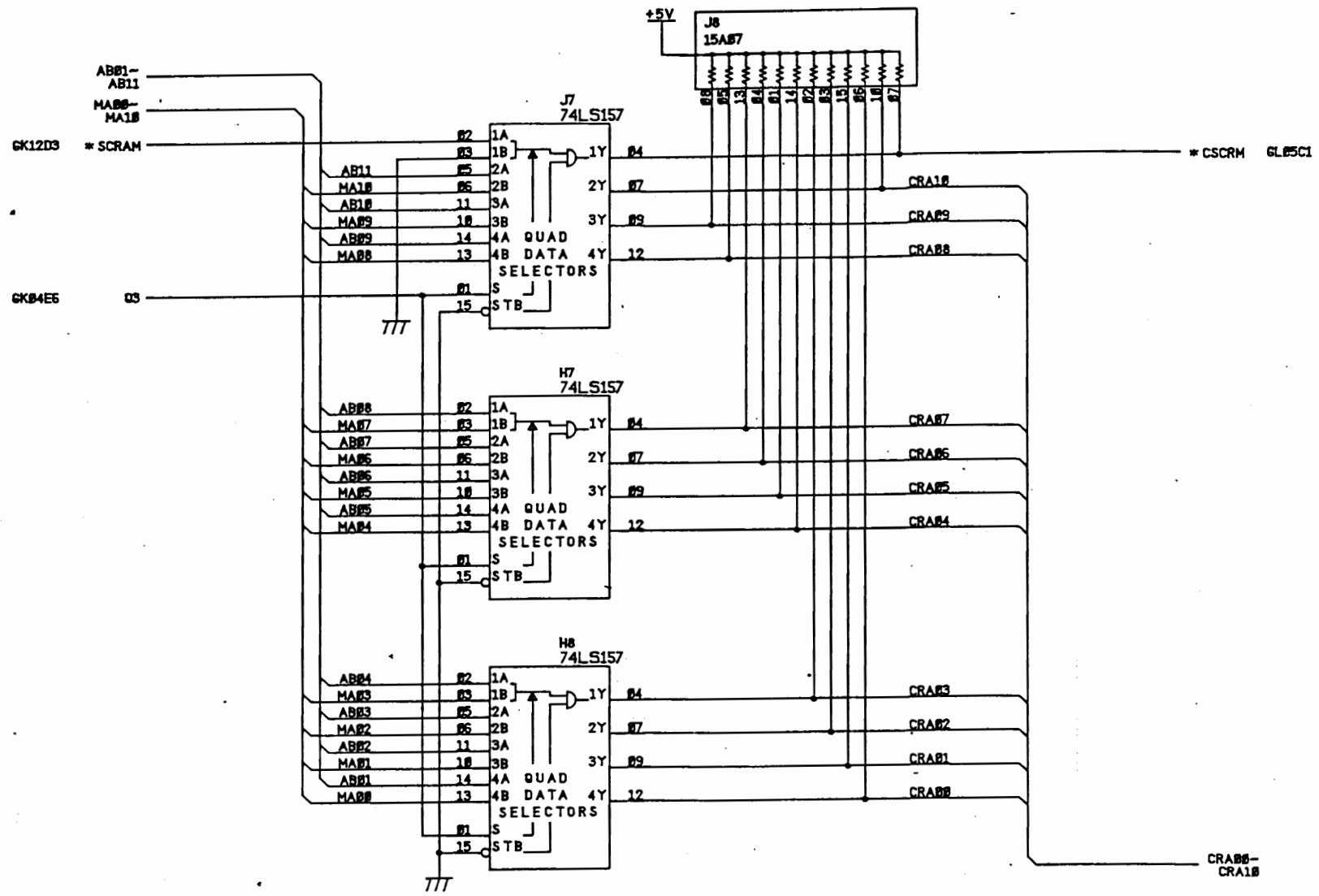
NOTE  
 CRAB8-CRAB7 CL07 CL08 CL09  
 AB00-AB19 CK07 GK12 GK13 GK15 CL01 CL02 CL03

GA00-GA15 --- HARD SCAN ADDRESS FOR GRAPHIC RAM  
 AB00-AB18 --- CPU READ/WRITE ADDRESS FOR GRAPHIC RAM

GRAPHIC ADDRESS

A20C-1000-0480/01~

A  
B  
C  
D  
E



CHARA. ADDRESS

GL03


NOTE  
 CRA8-CRA18 GL05  
 ABB8-AB19 GL04 GK07 GK12 GK13 GK15 GL01 GL02

A20C-1000-0480/ 01~

GLB188  
GK1484

\* VSYD  
6SS2

GK85C4

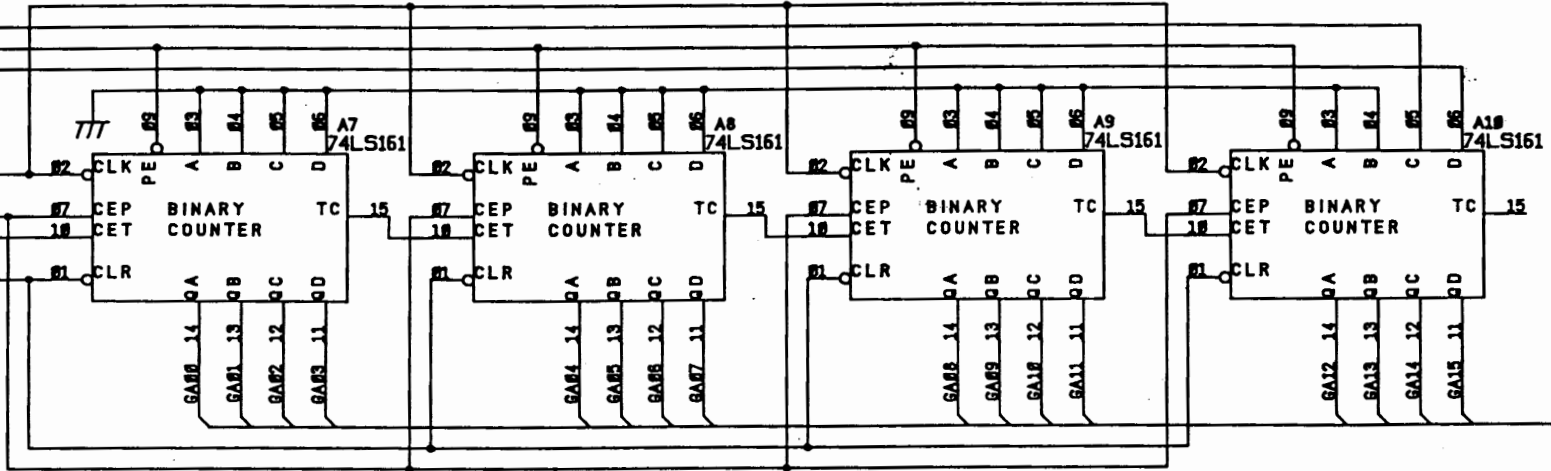
\* CGCK

GLB407  
GK84D6

DPTCT  
LOG1A

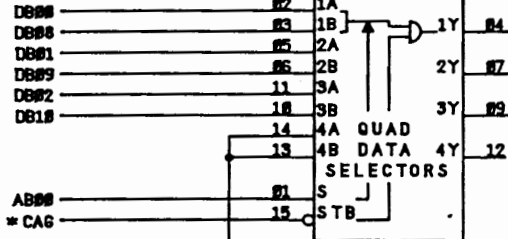
GK85C7

\* PCL1



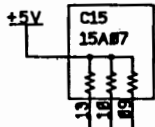
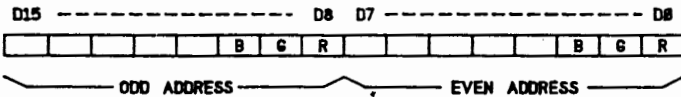
GA00-  
GA15

NOTE  
NOTE  
NOTE  
NOTE  
NOTE  
NOTE



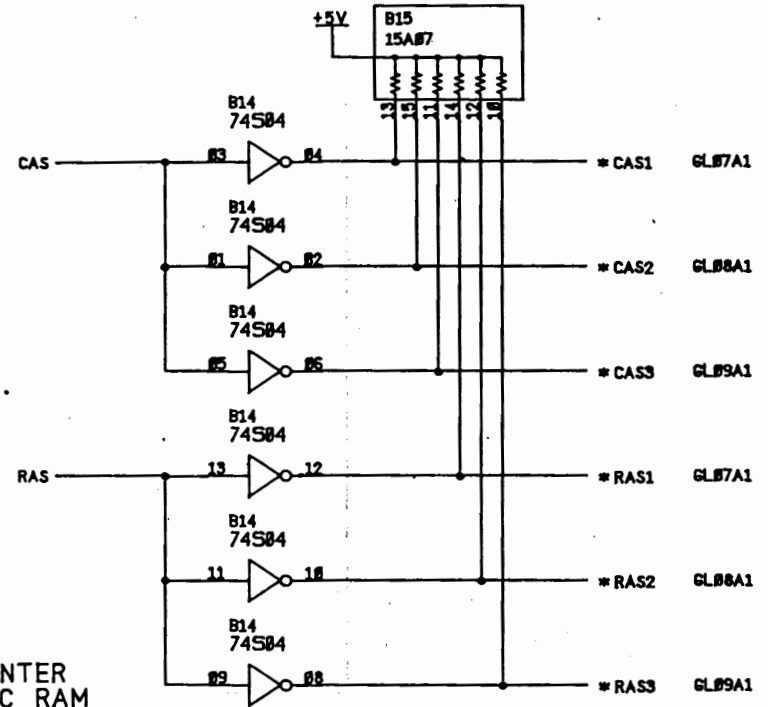
NOTE  
GK89C7

GRAPHIC WRITE DATA FORMAT



GK89A7  
GL87C1  
GL88C1  
GL89C1

GK89B7



ADDRESS COUNTER  
FOR GRAPHIC RAM

GL02

NOTE

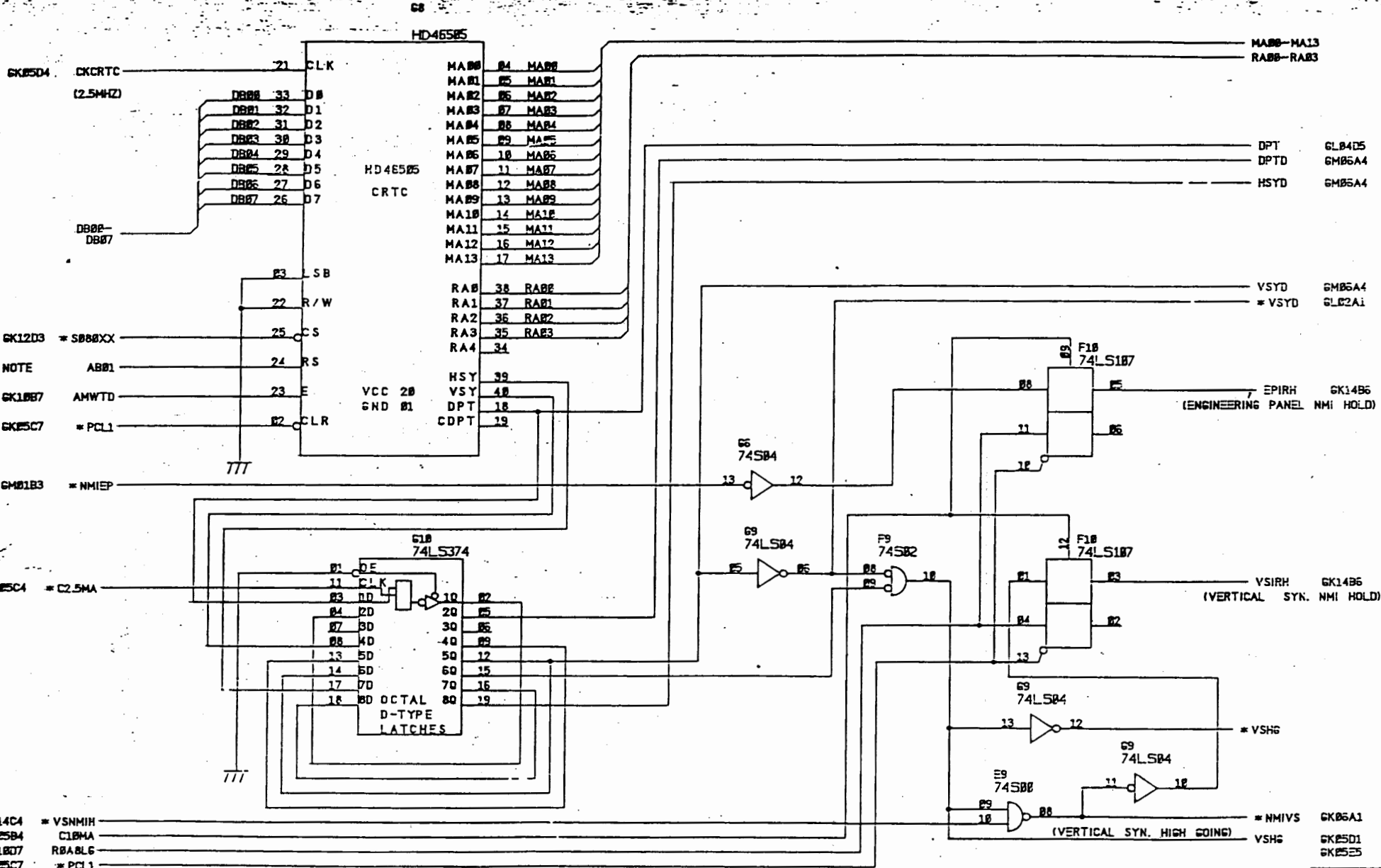
AB00-AB19 GL83 GL84 GK07 GK12 GK13 GK15 GL01  
DB00-DB15 GL05 GL11 GM03 GK08 GK13 GK14 GL01

REV. NO.

A20C-1000-0480/01

145  
78





CHARA. ADDRESS CONTROLLER

GL01

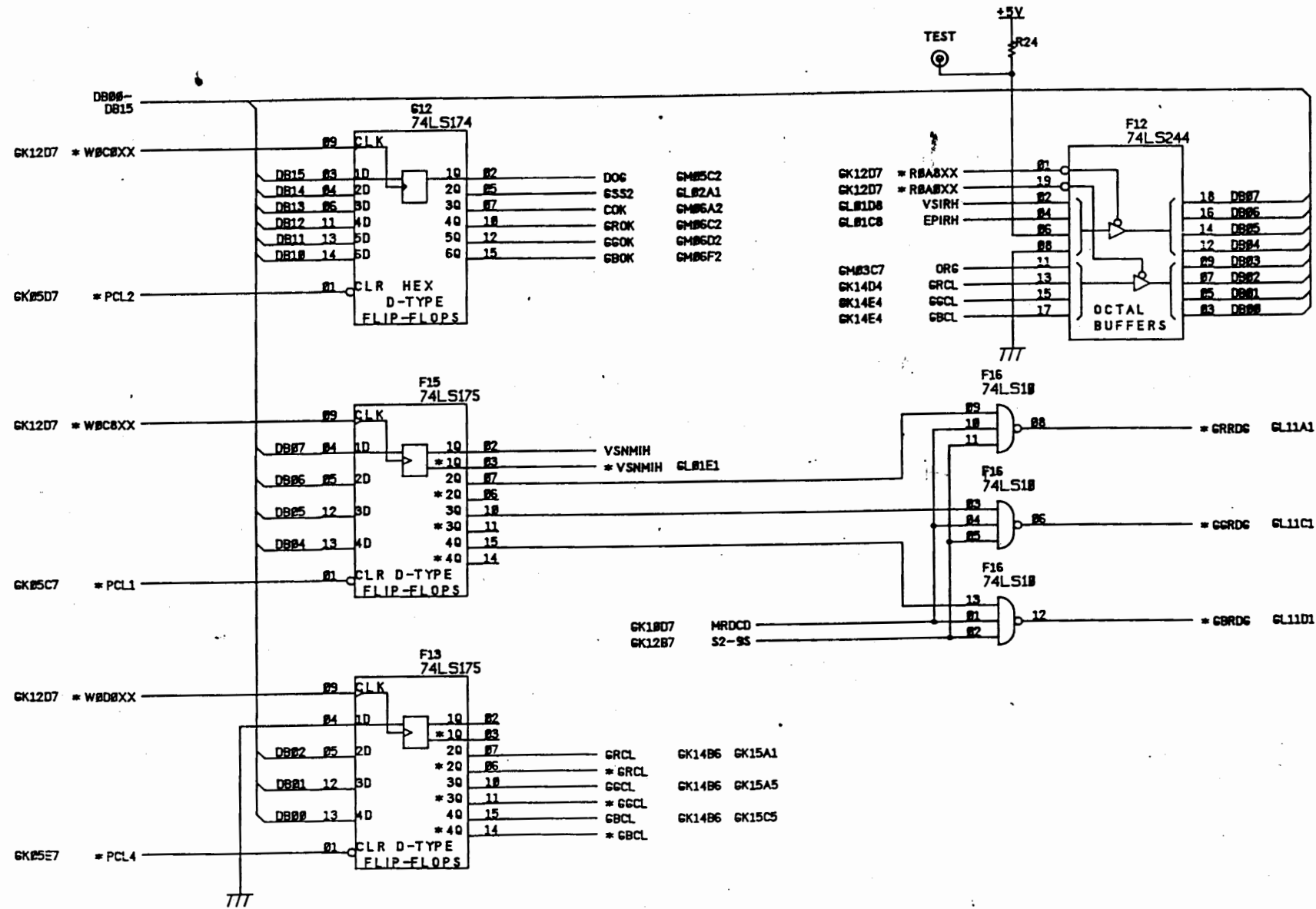
NOTE  
 AB00-AB19 CLB2 CLB3 CLB4 GK07 GK12 GK13 GK15  
 RA00-RA03 CLB6  
 MA00-MA13 CLB3  
 DB00-DB07

TITLE				

FORM NO. A20C-1000-0480/01



A  
B  
C  
D  
E  
F



DO/DI

GK14

				TALK	
				PART NO.	
				A20C-1000-0480/01~	
REV	DATE	BY	CHK	REVISION	

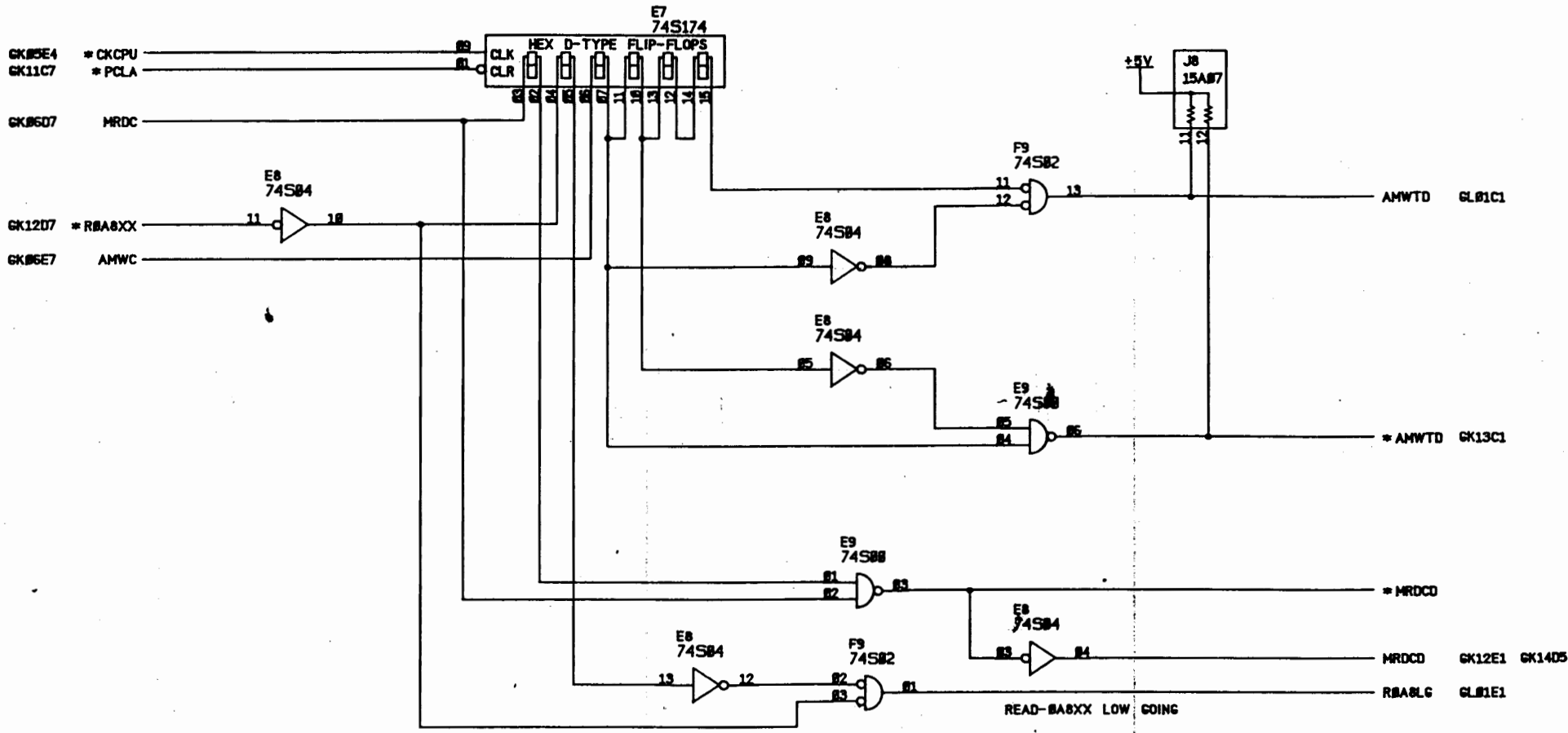
NOTE  
DB00-DB15

Handwritten notes and signatures in the bottom left corner.



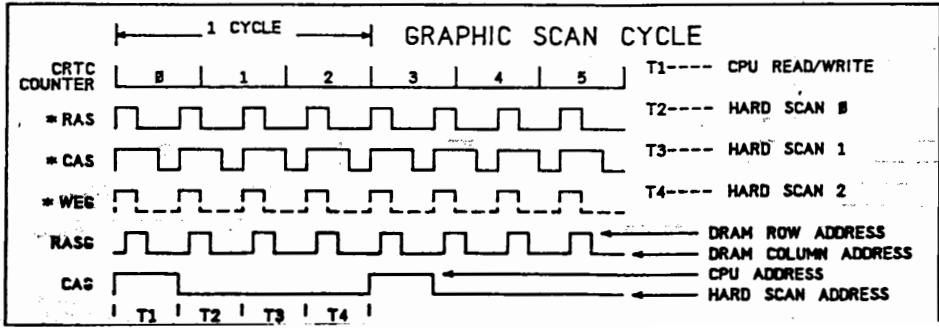
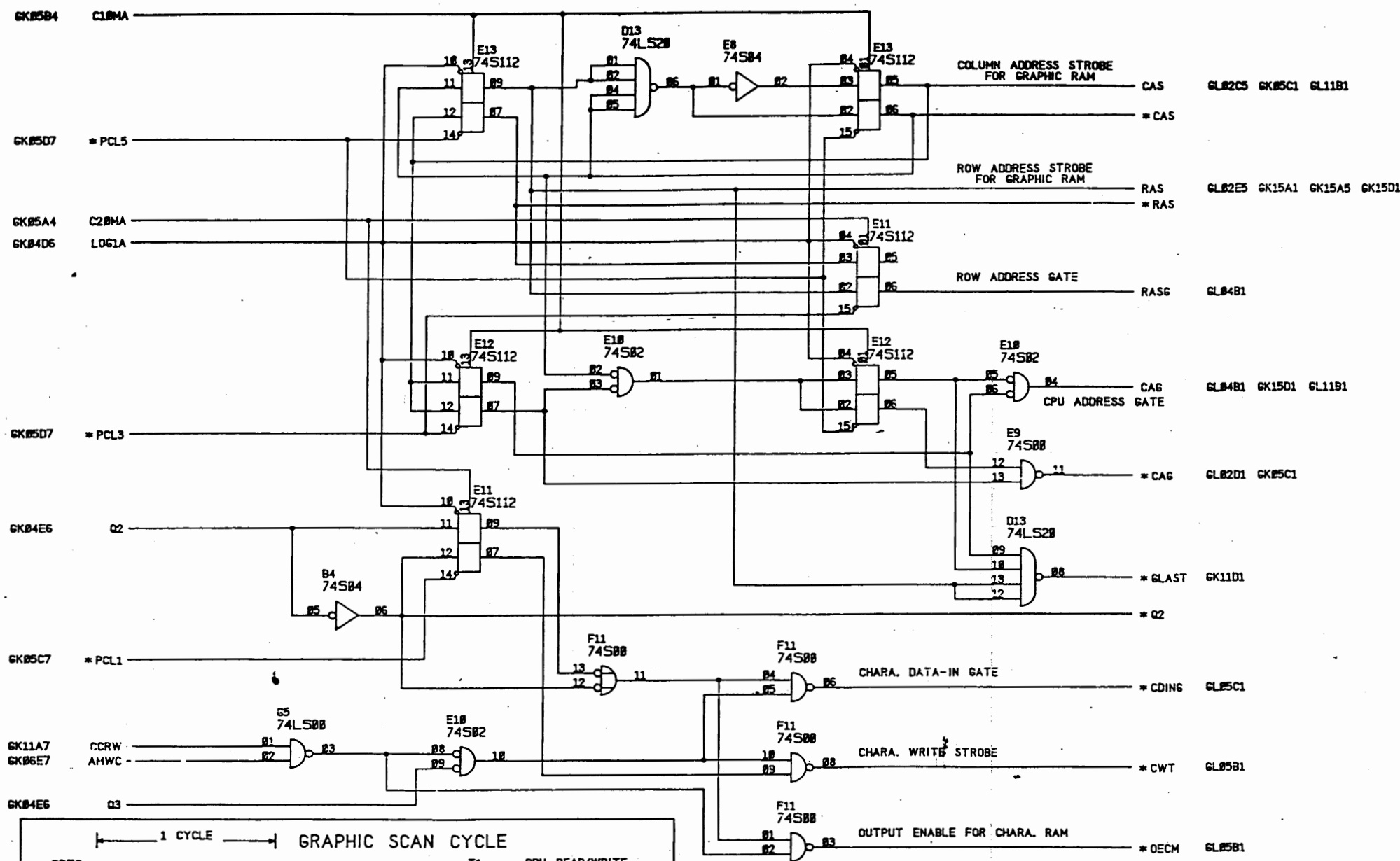






READ/WRITE SIGNAL					GK10	
DATE	TIME	BY	CHK	REV	REV	
					A20C-1000-0480/01~	

7/8 E



CHARA. AND GRAPHIC RAM CONTROL

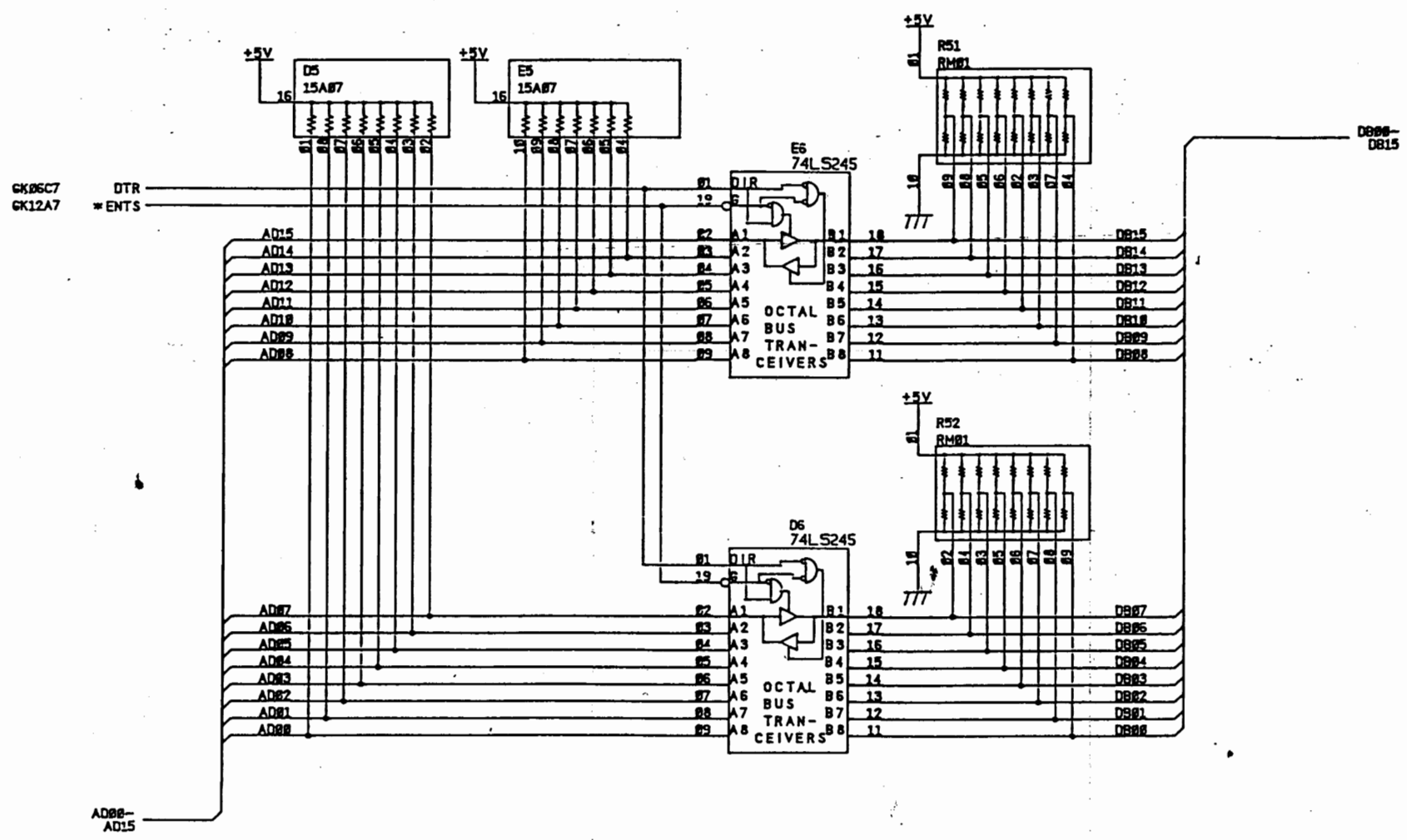

**GK09**

TITLE	
DATE	
DRAWN BY	
CHKD BY	
DESIGN NO.	A20C-1000-0480/01
MANUFACTURED BY	SANILUX LTD

137 F  
133  
13



A  
B  
C  
D  
E



DATA BUS TRANCEIVER

GK08


TITLE	
DATE	
REV. NO.	A20C-1000-0480/01

NOTE

136  
132

A  
B

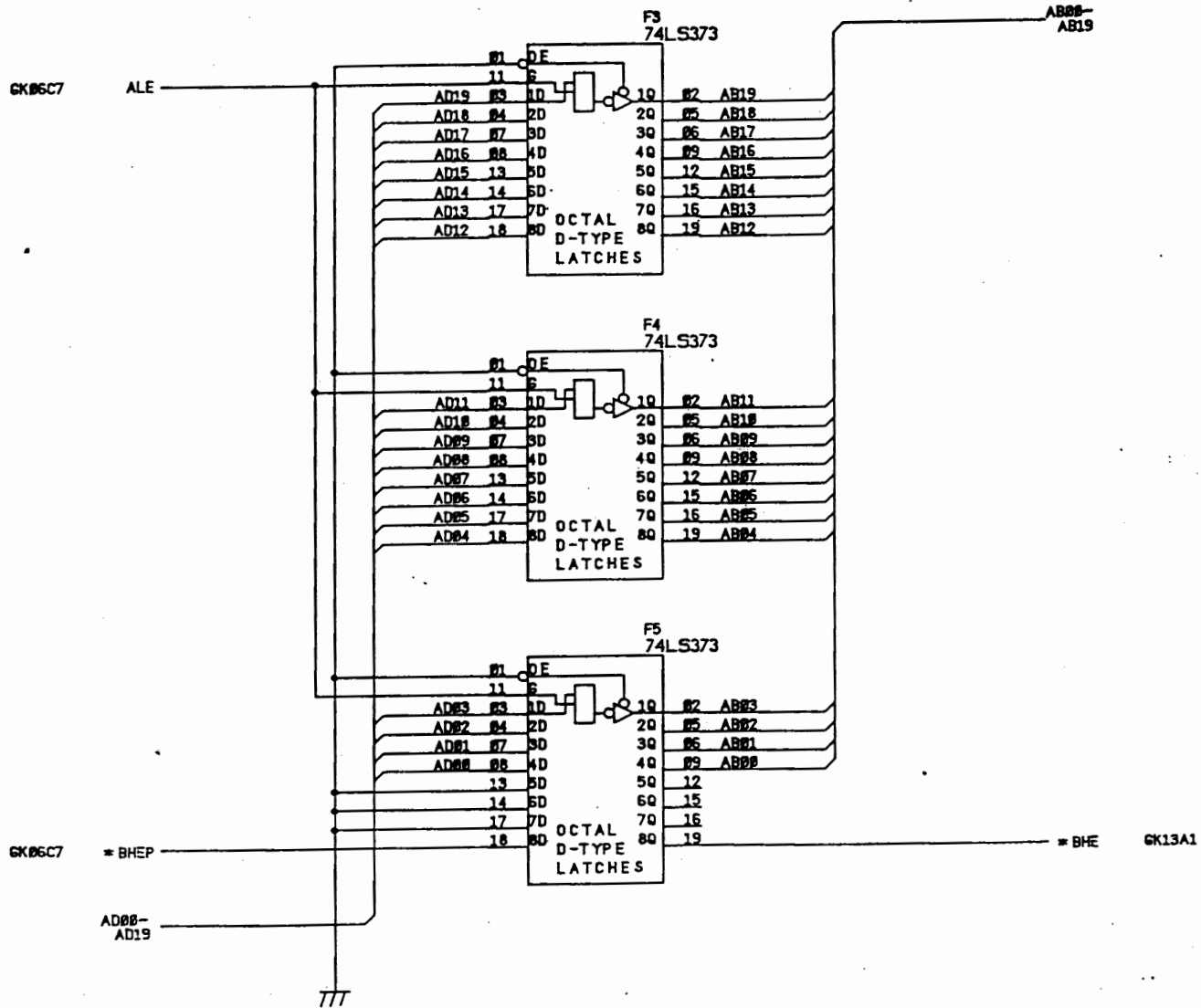
C

D

E

F

V3 4 5 V 6 7 8



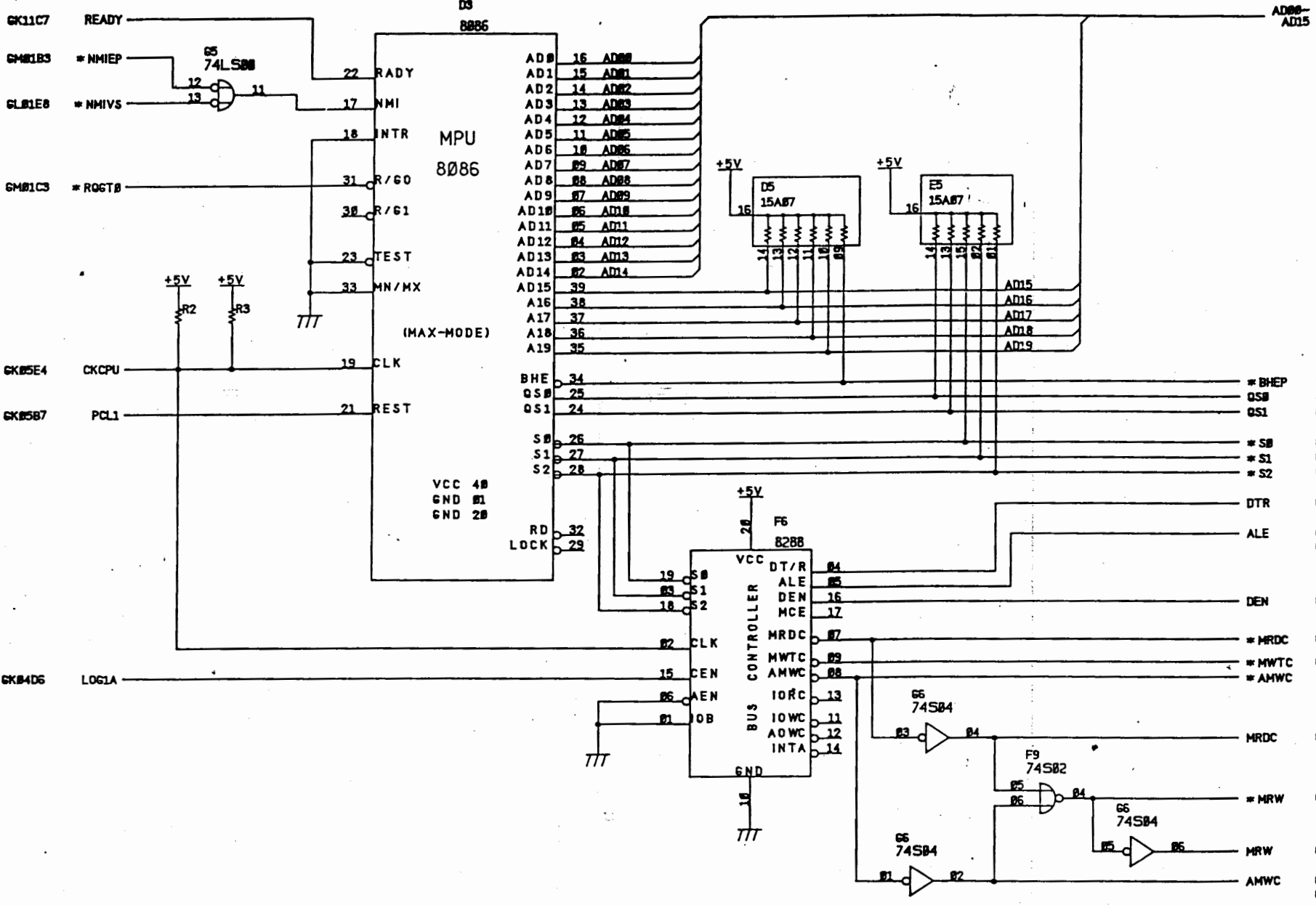
ADDRESS LATCH


GK07

NOTE  
AB88-AB19 GK12 GK13 GK15 GL81 GL82 GL83 GL84

A20C-1000-0480/ 01

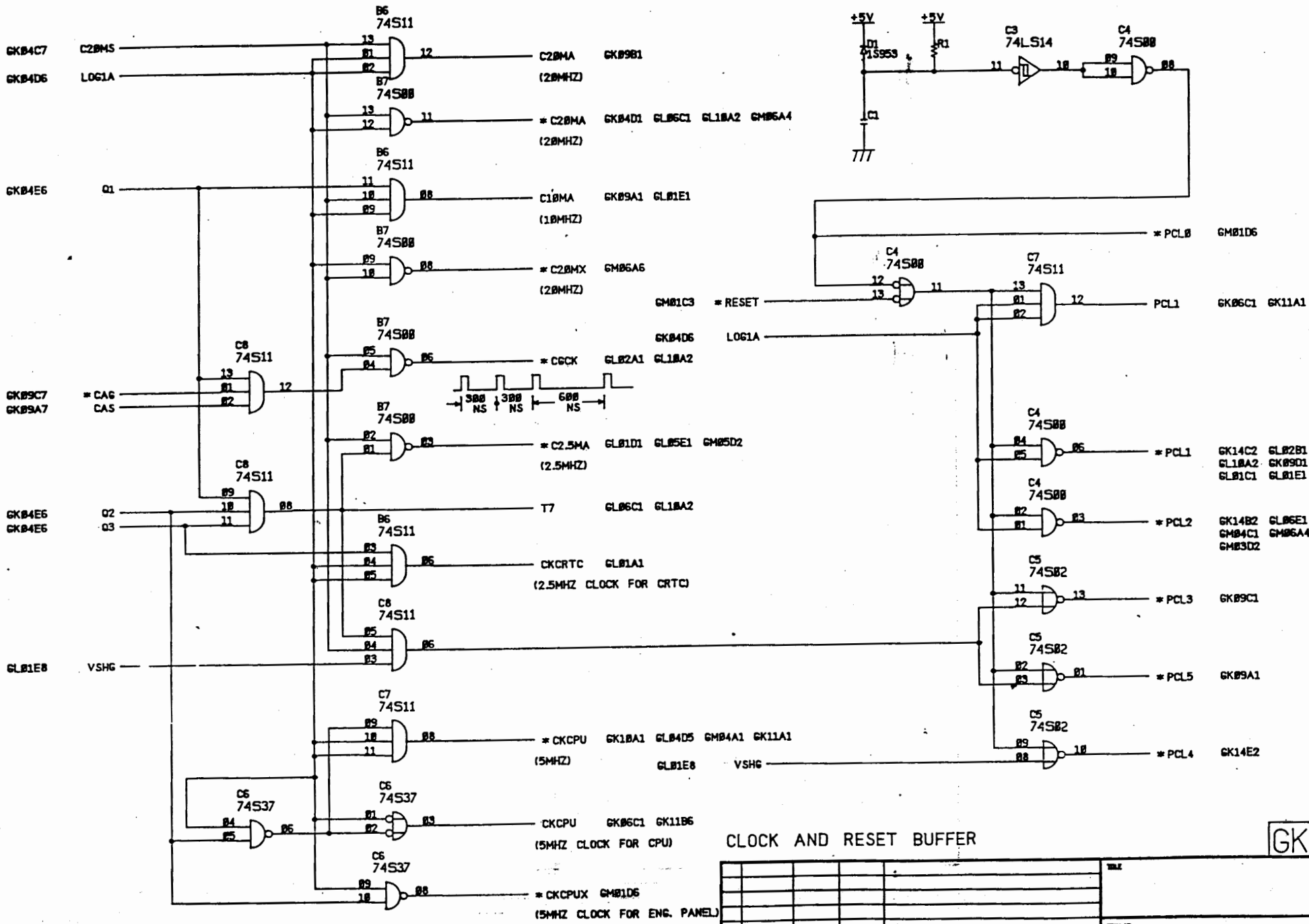
135  
7/71  
5



MPU			GK06	
MPU Pin	MPU Signal	MPU Part	MPU Part	MPU Part
34	BHE	GK07E2	GK01C6	
25	CS0	GK01C6	GK01C6	
24	CS1	GK01C6	GK01C6	
26	S0	GK01C6	GK01C6	
27	S1	GK01C6	GK01C6	
28	S2	GK01C6	GK01C6	
20	DTR	GK08B2	GK01D6	
29	ALE	GK07A2	GK11A1	GK01D6
16	DEN	GK12A6	GK01D6	
07	MRDC	GK01C6		
09	MWTC	GK12E1	GK01D6	
08	AMWC	GK12E1	GK01D6	
13	IO RC	GK10B1	GK12C1	
11	IO WC	GK12D1	GK11E1	
12	AOWC	GK12D1	GK11E1	
14	INTA	GK10B1	GK09E1	GK11C1

NOTE

134  
F  
18

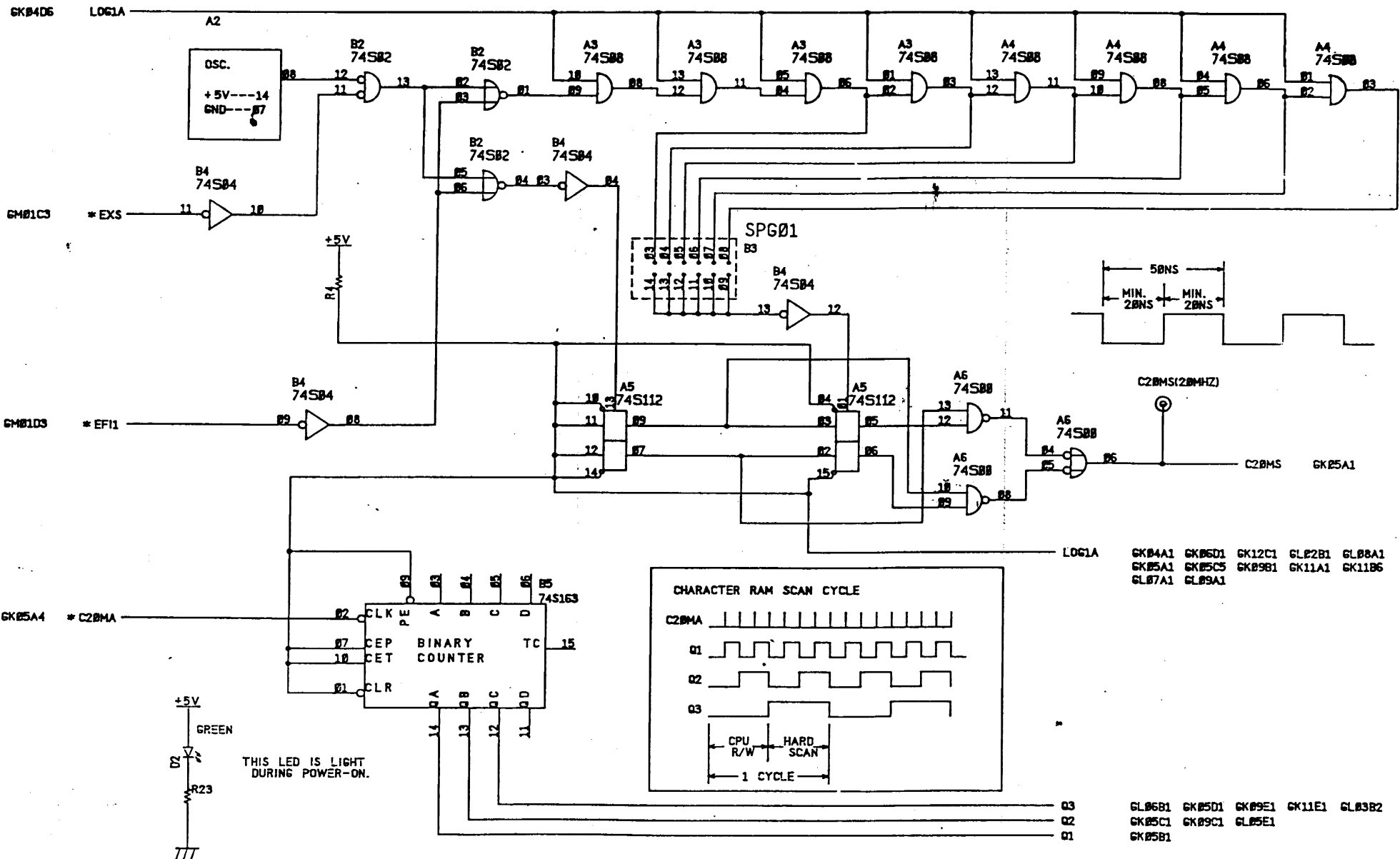


CLOCK AND RESET BUFFER

GK05


DATE	
REV. NO.	
A20C-1000-0480/01-	

133  
4/29



CLOCK AND TIMING GEN.

GK04

									REV. NO.
									A20C-1000-0480/01~

13/

D0	D1	D2	D3	D4	D5	D6	D7
CRTC00	CRTC01	CRTC02	CRTC03	CRTC04	CRTC05	CRTC06	CRTC07

CRTC00-  
CRTC07 --- CRTC DATA

D0	D1	D2	D3	D4	D5	D6	D7
GBCLDI	GGCLDI	GRCLDI	ORG				

ORG --- 1<sup>st</sup> OUTPUT READY OF FIFO (FIFO IS NOT EMPTY.)

GRCLDI --- 1<sup>st</sup> RAM CLEAR (RED) IS NOT COMPLETED.

GGCLDI --- 1<sup>st</sup> RAM CLEAR (GREEN) IS NOT COMPLETED.

GBCLDI --- 1<sup>st</sup> RAM CLEAR (BLUE) IS NOT COMPLETED.

D0	D1	D2	D3	D4	D5	D6	D7
					*TEST	EPIRH	VSIRH

VSIRH --- 1<sup>st</sup> VERTICAL NMI HOLD

EPIRH --- 1<sup>st</sup> ENGINEERING NMI HOLD

\*TEST --- 1<sup>st</sup> TEST MODE (NOTE)

D0	D1	D2	D3	D4	D5	D6	D7
FIFO00	FIFO01	FIFO02	FIFO03	FIFO04	FIFO05	FIFO06	FIFO07

FIFO00-  
FIFO07 --- FIFO DATA

(NOTE)  
TEST PIN IS SHORTED TO 0V. THEN THE TEST SCREEN IS DISPLAYED AUTOMATICALLY.

D8	D9	D10	D11	D12	D13	D14	D15
	GBOK	GGOK	GROK	COK	SS2	D06	D06

D06 --- D0 FOR MAIN CPU (GRAPHIC CPU ----> MAIN CPU)

SS2 --- 1<sup>st</sup> GRAPHIC RAM NO1 IS SELECTED.

1<sup>st</sup> GRAPHIC RAM NO2 IS SELECTED.

COK --- 1<sup>st</sup> CHARACTER DISPLAY IS ENABLE.

GROK --- 1<sup>st</sup> GRAPHIC DISPLAY (RED) IS ENABLE.

GGOK --- 1<sup>st</sup> GRAPHIC DISPLAY (GREEN) IS ENABLE.

GBOK --- 1<sup>st</sup> GRAPHIC DISPLAY (BLUE) IS ENABLE.

D0	D1	D2	D3	D4	D5	D6	D7
				GBRD	GGRD	GRRD	VSNMIH

VSNMIH --- 1<sup>st</sup> VERTICAL NMI IS INHIBITED. (FOR ENGINEERING PANEL)

GRRD --- 1<sup>st</sup> CPU IS ENABLE TO READ GRAPHIC RED RAM. (GGRD=0,GBRD=0)

GGRD --- 1<sup>st</sup> CPU IS ENABLE TO READ GRAPHIC GREEN RAM. (GRRD=0,GGRD=0)

GBRD --- 1<sup>st</sup> CPU IS ENABLE TO READ GRAPHIC BLUE RAM. (GRRD=0,GGRD=0)

D0	D1	D2	D3	D4	D5	D6	D7
GBCLD0	GGCLD0	GRCLD0					

GRCLD0 --- 1<sup>st</sup> GRAPHIC RAM (RED) CLEAR

GGCLD0 --- 1<sup>st</sup> GRAPHIC RAM (GREEN) CLEAR

GBCLD0 --- 1<sup>st</sup> GRAPHIC RAM (BLUE) CLEAR

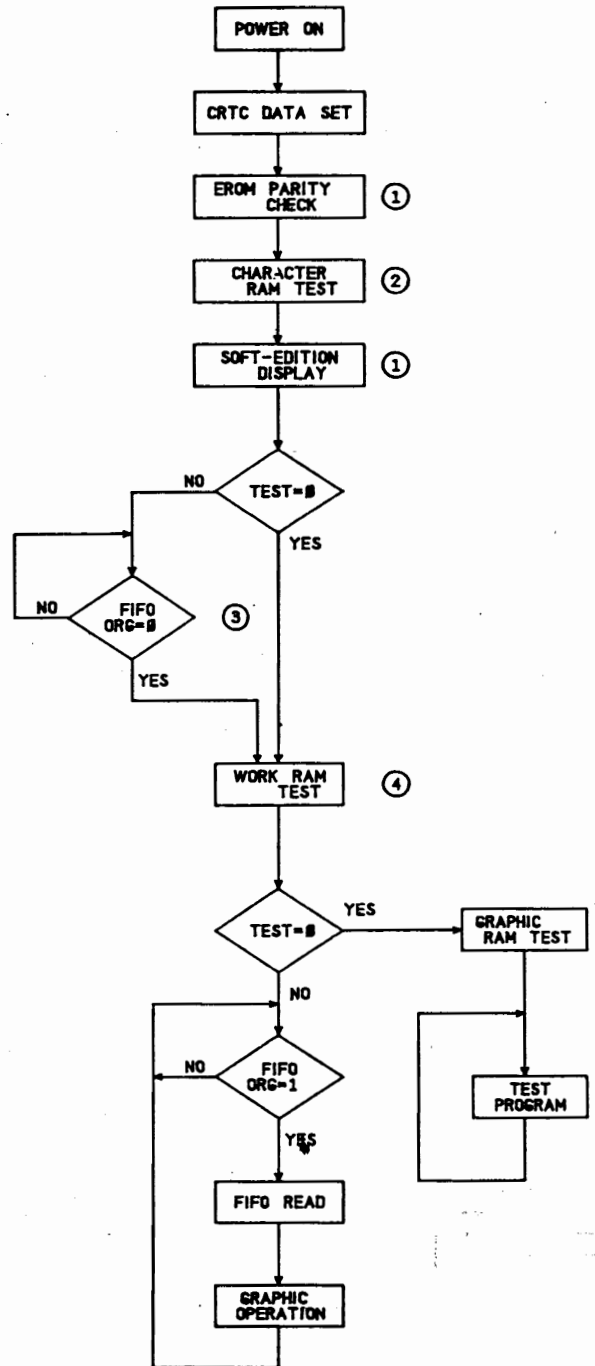
GK03

							A20C-1000-0480/01~

13/

130

# POWER ON SEQUENCE



## SCREEN

- ① E09-001A OR ROM PARITY 001  
ROM PARITY 002
- ② CHARACTER RAM OK OR CHARACTER RAM ERROR
- ③ FIFO NOT READY ---> FIFO READY
- ④ WORK RAM OK OR WORK RAM ERROR
- ⑤ GRAPHIC RAM TEST ---> GRAPHIC RAM OK  
OR GRAPHIC RAM ERROR

CHARACTER COLOR TEST  
 CHARACTER GEN. TEST  
 GRAPHIC RED SCREEN TEST  
 GRAPHIC GREEN SCREEN TEST  
 GRAPHIC BLUE SCREEN TEST  
 GRAPHIC SCREEN NO1 TOTAL TEST  
 GRAPHIC SCREEN NO2 TOTAL TEST

## POWER ON SEQUENCE


GK02	
A20C-1000-0480/01~	

130F

6e1

A

B

C

D

E

129 F

# ADDRESS MAP

00000
10000
20000
30000
40000
50000
60000
70000
80000
90000
A0000
B0000
C0000
D0000
E0000
F0000

8000  
8000  
E000  
FFFF  
8000

EROM (32KB)
DI/DO
WORK RAM (4KB)

8000  
A000  
FFFF  
20000

CHARACTER RAM (4KB)
---------------------

60000  
9FFFF

GRAPHIC RAM NO 1 (32KB)
GRAPHIC RAM NO 2 (32KB)

ENGINEERING PANEL  
8000  
FFFFB - 87FFB  
FFFF

ENGINEERING PANEL
-------------------

800XX	DO	CRTC CONTROL DATA
8A0XX	DI	GRAPHIC RAM CLEAR STATUS
8A0XX	DI	NMI FROM CRTC
8B0XX	DI	FIFO DATA
8B0XX		
8C0XX	DO	DISPLAY CONTROL
8C0XX	DO	READ SELECT FOR GRAPHIC RAM
8D0XX	DO	GRAPHIC RAM CLEAR
8D0XX		

E000-EFFF = F000-FFFF

8000-8FFF = 9000-9FFF

GK01

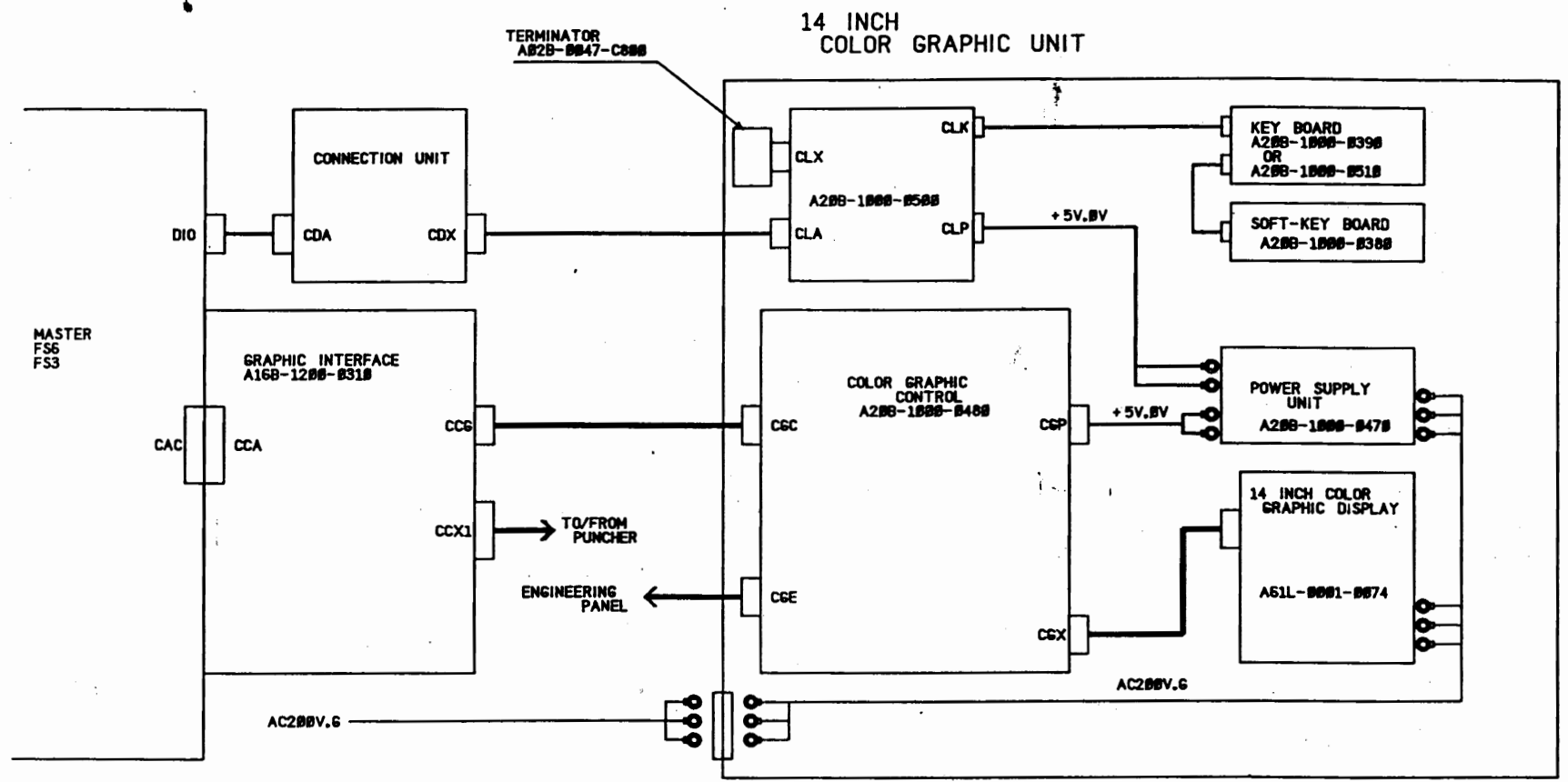

TITLE
DATE
REV. NO.
A20C-1000-0480/01~



821

A  
B  
C

D  
E



CGP  
BURNDY-6P

06	05	04	03	02	01
0V	0V	0V	5V	5V	5V

CGE  
MR-50S

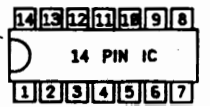
01	AD14	33	* EXS
02	AD13	34	
03	AD12	35	* MWTC
04	AD11	36	* MRDC
05	AD10	37	
06	AD09	38	DTR
07	AD08	39	DEN
08	AD07	40	ALE
09	AD06	41	
10	AD05	42	* RESET
11	AD04	43	* PCL0
12	AD03	44	
13	AD02	45	RDYEP
14	AD01	46	* READY
15	AD00	47	* NMIEP
16	QS1	48	
17	+ 5V	49	* CKCPU
18	+ 5V	50	+ 5V

CGC  
MR-28S

01	DC03	14	SLH
02	* DC03	15	* SLH
03	DC02	16	SLL
04	* DC02	17	* SLL
05	DC01	18	0V
06	* DC01	19	0V
07	0V	20	

CGX  
MR-28S

01	VR	14	
02	HS	15	
03	VS	16	DPT
04	V6	17	
05	VB	18	
06		19	* C20MX
07		20	



				14-INCH GRAPHIC CONTROL			
				A20C-1000-0480/01			

GK00

108F