

INSTRUCTION MANUAL



DATA EAST USA, INC.

470 GIANNI ST., SANTA CLARA, CALIFORNIA 95054  
Telephone: (408) 727-4490 Telex: 172163 DATA EAST SNTA

780-0019-00

# **WARNING**

**This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the instructions manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.**

**Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.**

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# COMMANDO<sup>©</sup>

## GAME PLAY

YOU ARE ABOUT TO BEGIN A HIGHLY SECRET MISSION

You are a crack soldier with special training. You have been given a highly secret mission, and are about to enter into fierce guerrilla warfare! The mission is to annihilate the enemy and to rescue important captives. To do this you must destroy the enemy base, which is said to be impregnable.

The battles you will fight take place in several areas requiring various attack techniques. Your weapons consist of a machine gun with unlimited shots, and a limited supply of hand grenades, which you may replenish by taking from the enemy.

GOOD LUCK!

- \* Use JOYSTICK to maneuver the soldier.
- \* Use RIGHT BUTTON to fire Machine gun.
- \* Use LEFT BUTTON to hurl hand grenades.
- \* Dodge all bullets and grenades. Do not collide with enemy soldiers!
- \* Destroy as many of the enemy as possible.
- \* Pick up enemy grenades (one grenade per box) and use them against the enemy.
- \* Extra 'lives' are awarded for exceeding certain scores.
- \* Score higher points by destroying enemy leaders and enemy headquarters.
- \* Score bonus points by rescuing captives.
- \* The arch bridge is a dangerous spot! Watch for attacks from above!
- \* Be careful of trucks and jeeps that may try to ram you!
- \* Do not fall into rivers or ponds.
- \* Trees, walls and other obstacles can be used for cover.

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Developed by CAPCOM Co., Ltd.

C O M M A N D O  
OPTION SWITCH SETTINGS

SWITCH A

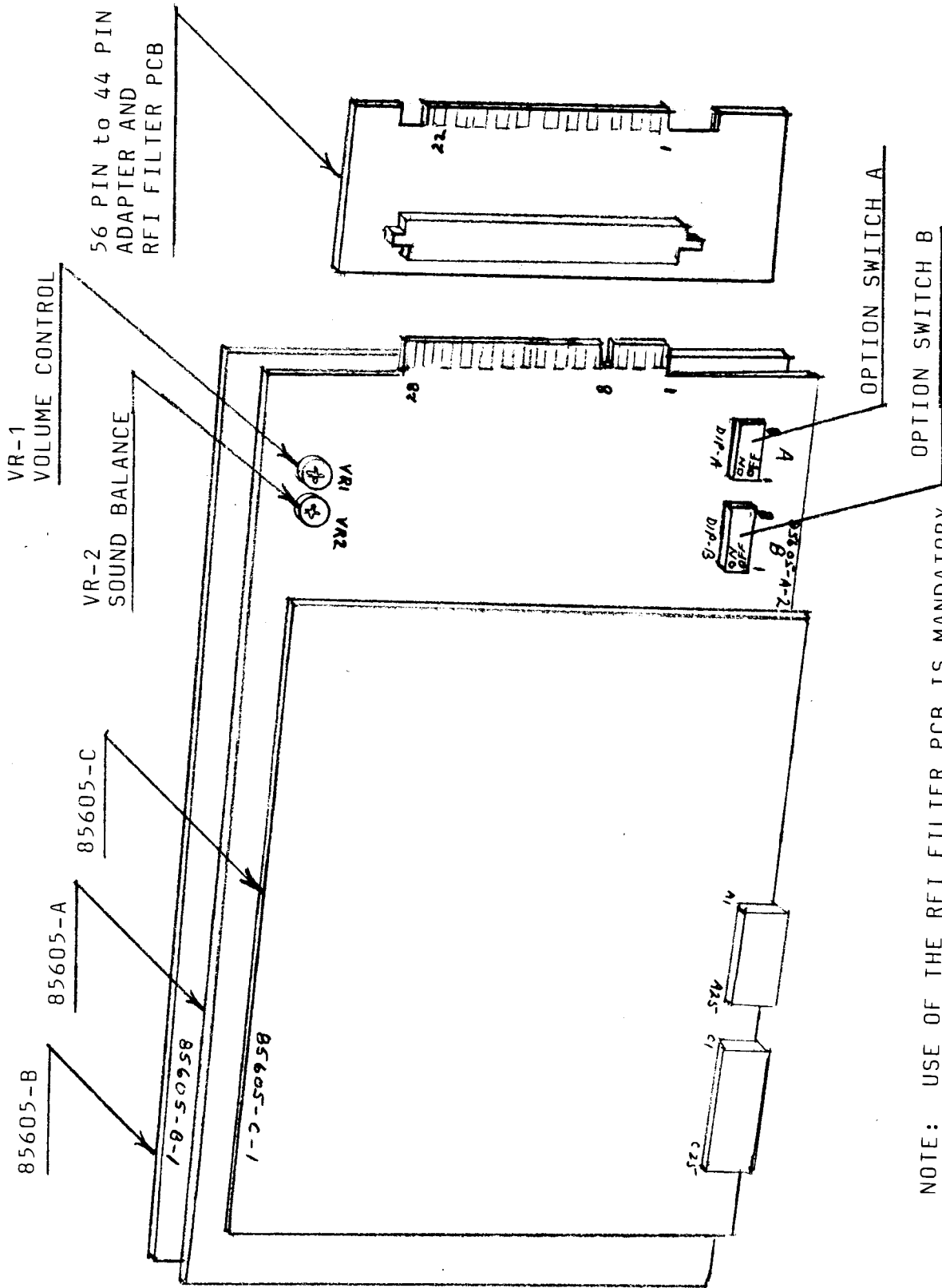
| OPTION                        |                   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|-------------------------------|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| COIN 1<br>1 WAY               | 1 Coin - 1 Credit | OFF | OFF |     |     |     |     |     |     |
|                               | 1 Coin - 2 Credit | ON  | OFF |     |     |     |     |     |     |
|                               | 1 Coin - 3 Credit | OFF | ON  |     |     |     |     |     |     |
|                               | 2 Coin - 1 Credit | ON  | ON  |     |     |     |     |     |     |
| COIN 2<br>2 WAY               | 1 Coin - 1 Credit |     |     | OFF | OFF |     |     |     |     |
|                               | 2 Coin - 1 Credit |     |     | ON  | OFF |     |     |     |     |
|                               | 3 Coin - 1 Credit |     |     | OFF | ON  |     |     |     |     |
|                               | 4 Coin - 1 Credit |     |     | ON  | ON  |     |     |     |     |
| NUMBER OF LIVES<br>(FIGHTERS) | 3                 |     |     |     |     | OFF | OFF |     |     |
|                               | 2                 |     |     |     |     | ON  | OFF |     |     |
|                               | 4                 |     |     |     |     | OFF | ON  |     |     |
|                               | 5                 |     |     |     |     | ON  | ON  |     |     |
| STARTING<br>AREA              | 0 (Forest 1)      |     |     |     |     |     |     | OFF | OFF |
|                               | 2 (Desert 1)      |     |     |     |     |     |     | ON  | OFF |
|                               | 4 (Forest 2)      |     |     |     |     |     |     | OFF | ON  |
|                               | 6 (Desert 2)      |     |     |     |     |     |     | ON  | ON  |

SWITCH B

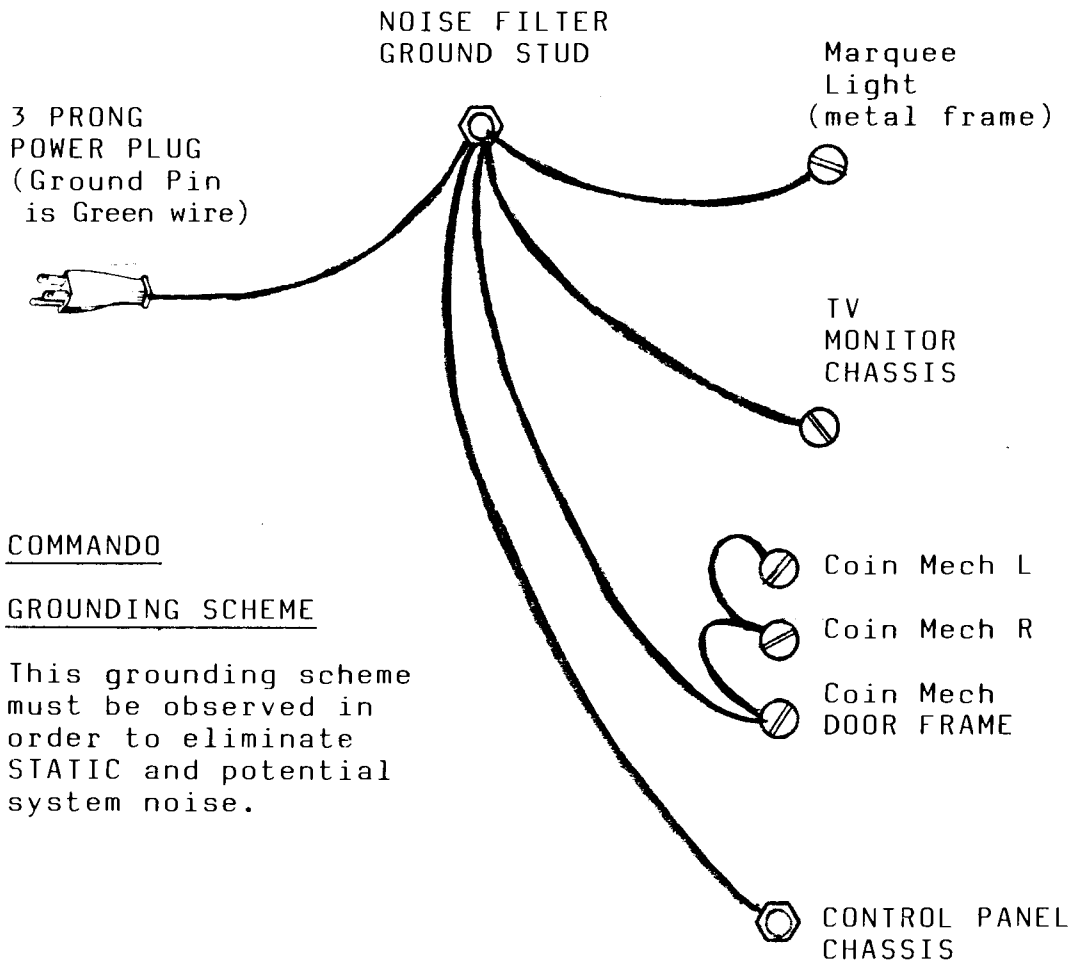
| OPTION                           |                        | 1         | 2         | 3         | 4         | 5         | 6   | 7   | 8   |
|----------------------------------|------------------------|-----------|-----------|-----------|-----------|-----------|-----|-----|-----|
| COCKTAIL TABLE<br>UPRIGHT        |                        | OFF<br>ON |           |           |           |           |     |     |     |
| JOYSTICK 2 WAY<br>JOYSTICK 1 WAY |                        | ON<br>ON  | OFF<br>ON |           |           |           |     |     |     |
| MONITOR REVERSE SWITCH           |                        |           |           | OFF<br>ON |           |           |     |     |     |
| DIFFICULTY                       | NORMAL<br>DIFFICULT    |           |           |           | OFF<br>ON |           |     |     |     |
| ATTRACT MODE                     | SOUND ON<br>SOUND OFF  |           |           |           |           | OFF<br>ON |     |     |     |
| BONUS<br>'LIFE'<br>AWARD         | 10,000 & after 50,000  |           |           |           |           |           | OFF | OFF | OFF |
|                                  | 10,000 & after 60,000  |           |           |           |           |           | ON  | OFF | OFF |
|                                  | 20,000 & after 60,000  |           |           |           |           |           | OFF | ON  | OFF |
|                                  | 20,000 & after 70,000  |           |           |           |           |           | ON  | ON  | OFF |
|                                  | 30,000 & after 70,000  |           |           |           |           |           | OFF | OFF | ON  |
|                                  | 30,000 & after 80,000  |           |           |           |           |           | ON  | OFF | ON  |
|                                  | 40,000 & after 100,000 |           |           |           |           |           | OFF | ON  | ON  |
|                                  | NO BONUS LIVES GIVEN   |           |           |           |           |           | ON  | ON  | ON  |

C O M M A N D O

PCB IDENTIFICATION AND COMPONENT LOCATIONS



NOTE: USE OF THE RFI FILTER PCB IS MANDATORY IN ORDER TO PREVENT UNDESIRABLE RADIO FREQUENCY INTERFERENCE. DO NOT ATTEMPT TO BYPASS THIS FILTER! NO RFI SHIELD IS NECESSARY.



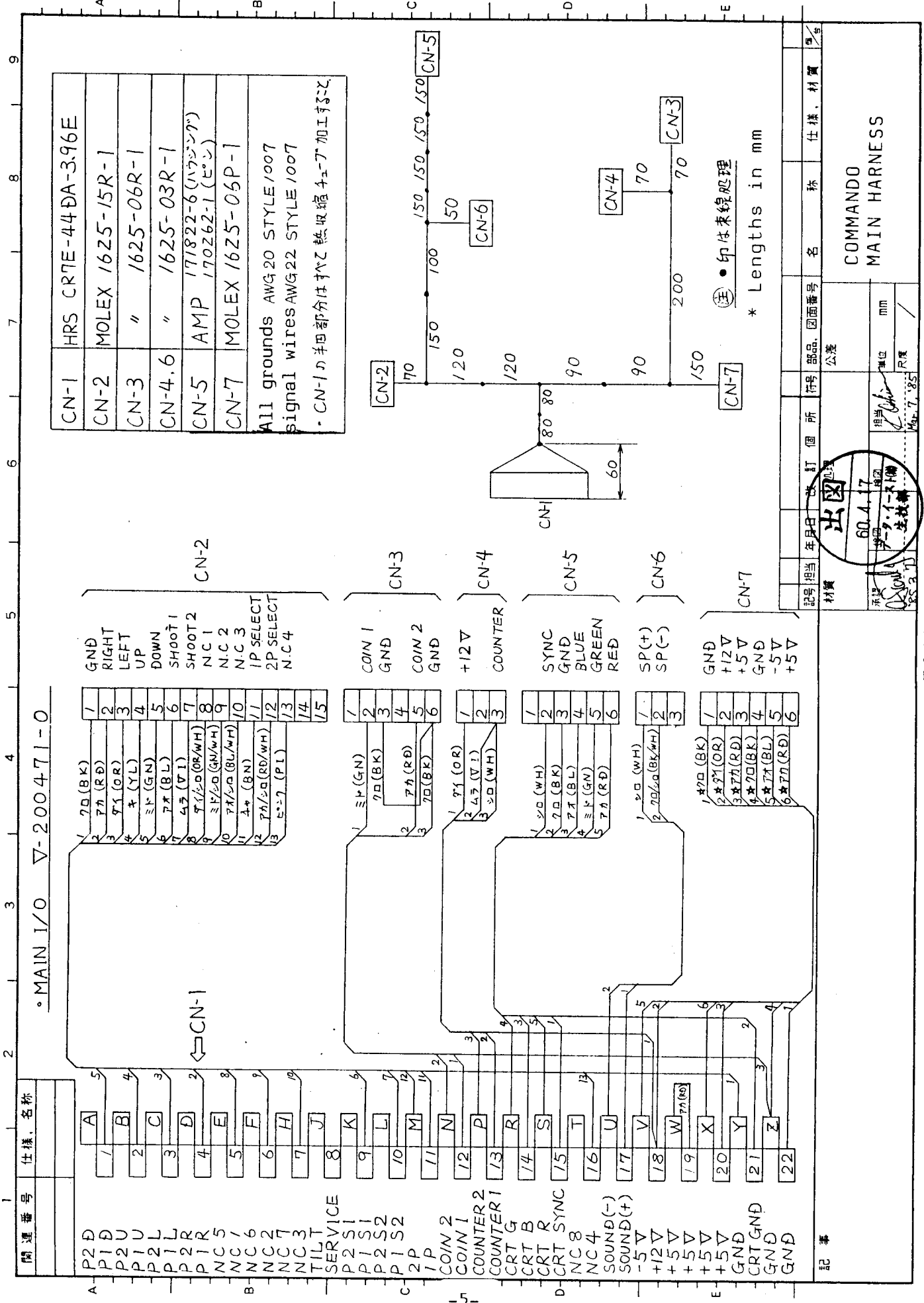
COMMANDO

GROUNDING SCHEME

This grounding scheme must be observed in order to eliminate STATIC and potential system noise.

1. Ground wire of 3 prong power plug to be connected to Ground Stud on Noise Filter.
2. Marquee Light metal frame to be connected to ground stud on Noise Filter.
3. TV Monitor Chassis to be connected to ground stud on Noise Filter.
4. Coin Mech L, Coin Mech R and Coin Mech Door Frame to be connected to ground stud on Noise Filter.
5. Control Panel Chassis to be connected to ground stud on Noise Filter.
6. All connections must have good mechanical & electrical bond.
7. All connections to be made with #18 or larger green wire.





|        |   |
|--------|---|
| CN-1   | HRS CR7E-44DA-3.96E                     |
| CN-2   | MOLEX 1625-15R-1                        |
| CN-3   | " 1625-06R-1                            |
| CN-4.6 | " 1625-03R-1                            |
| CN-5   | AMP 171822-6 (ハブジャンプ)<br>170262-1 (L-2) |
| CN-7   | MOLEX 1625-06P-1                        |

All grounds AWG20 STYLE/007  
signal wires AWG22 STYLE/007  
- CN-1の半田部分はすべて熱収縮チューブ加工すること

|    |         |   |   |   |   |   |   |   |   |    |   |   |   |
|----|---------|---|---|---|---|---|---|---|---|----|---|---|---|
| 記号 | 年       | 日 | 出 | 訂 | 個 | 所 | 部 | 品 | 番 | 名  | 仕 | 材 | 質 |
|    |         |   |   |   |   |   |   |   |   | 公差 |   |   |   |
| 材質 | 公差      |   |   |   |   |   |   |   |   |    |   |   |   |
| 承認 | 60.4.17 |   |   |   |   |   |   |   |   |    |   |   |   |
| 担当 | 生技課     |   |   |   |   |   |   |   |   |    |   |   |   |
| 単位 | mm      |   |   |   |   |   |   |   |   |    |   |   |   |
| 尺度 | 7.85    |   |   |   |   |   |   |   |   |    |   |   |   |

COMMANDO MAIN HARNESS

| SOLDER SIDE |             |    |           | COMPONENT SIDE |    |
|-------------|-------------|----|-----------|----------------|----|
| GND         | A           | 1  | GND       |                |    |
| GND         | B           | 2  | GND       |                |    |
| +5          | C           | 3  | +5        |                |    |
| +5          | D           | 4  | +5        |                |    |
| Ⓞ           | E           | 5  | Ⓡ         |                |    |
| SYNC.       | F           | 6  | Ⓟ         |                |    |
| GND         | H           | 7  | GND       |                |    |
| KEYWAY      |             | J  | 8         | KEYWAY         |    |
| 2P          | SHOT 2      | K  | 9         | SHOT 2         | IP |
|             | SHOT 1      | L  | 10        | SHOT 1         |    |
|             | UP 1        | M  | 11        | UP 1           |    |
|             | DOWN 1      | N  | 12        | DOWN 1         |    |
|             | LEFT 1      | P  | 13        | LEFT 1         |    |
|             | RIGHT 1     | R  | 14        | RIGHT 1        |    |
|             | GND         | S  | 15        | GND            |    |
|             | 2P SELECT   | T  | 16        | IP SELECT      |    |
|             | (D5)        | U  | 17        | (D4)           |    |
|             | COIN 2      | V  | 18        | COIN 1         |    |
|             | GND         | W  | 19        | GND            |    |
|             |             | X  | 20        |                |    |
|             |             | Y  | 21        |                |    |
|             | +12V COMMON | Z  | 22        | +12V COMMON    |    |
| COUNTER 2   | a           | 23 | COUNTER 1 |                |    |
| SP ⊖        | b           | 24 | SP ⊕      |                |    |
| +12         | c           | 25 | +12       |                |    |
| GND (12V)   | d           | 26 | GND (12V) |                |    |
| GND         | e           | 27 | GND       |                |    |
| GND         | f           | 28 | GND       |                |    |

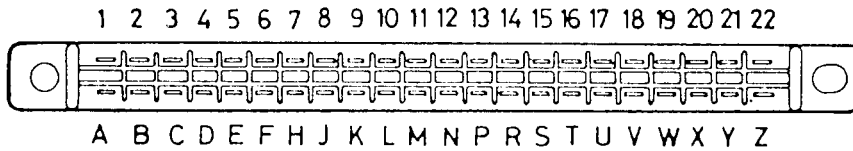
CONNECTOR TYPES  
 CR7E - 56DA - 3.96E : HIROSE  
 OF  
 1168 - 056 - 009 : KEL

|                |             |
|----------------|-------------|
| EDGE CONNECTOR |             |
| 14             | 85605-1-1/2 |

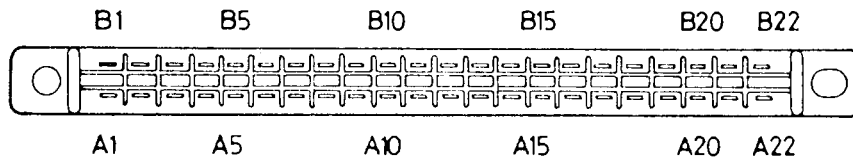
C O M M A N D O

56 PIN TO 44 PIN ADAPTOR & RFI FILTER PCB  
MAIN HARNESS CONNECTIONS

a) CONNECTOR CR7E-44DA-3.96E (HIROSE) 3.96mm



b) CONNECTOR 1168-044-009 (KEL) 3.96mm



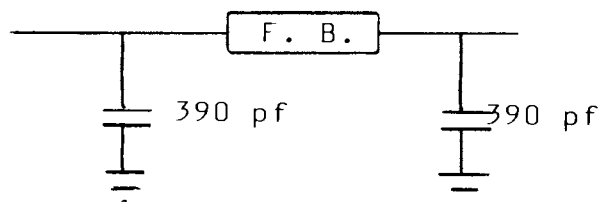
56 PIN to 44 PIN ADAPTER AND RFI FILTER PCB  
MAIN HARNESS CONNECTIONS

| COMPONENT SIDE |     |                | SOLDER SIDE |     |                |
|----------------|-----|----------------|-------------|-----|----------------|
| Pin Nos        |     | Signal         | Pin Nos     |     | Signal         |
|                | KEL |                |             | KEL |                |
| 1              | B1  | 1P DOWN        | A           | A1  | 2P DOWN        |
| 2              | B2  | 1P UP          | B           | A2  | 2P UP          |
| 3              | B3  | 1P LEFT        | C           | A3  | 2P LEFT        |
| 4              | B4  | 1P RIGHT       | D           | A4  | 2P RIGHT       |
| 5              | B5  |                | E           | A5  |                |
| 6              | B6  |                | F           | A6  |                |
| 7              | B7  |                | H           | A7  |                |
| 8              | B8  |                | J           | A8  |                |
| 9              | B9  | 1P SHOOT 1     | K           | A9  | 2P SHOOT 1     |
| 10             | B10 | 1P SHOOT 2     | L           | A10 | 2P SHOOT 2     |
| 11             | B11 | 1P GAME SELECT | M           | A11 | 2P GAME SELECT |
| 12             | B12 | COIN 1         | N           | A12 | COIN 2         |
| 13             | B13 | COIN COUNTER 1 | P           | A13 | COIN COUNTER 2 |
| 14             | B14 | TV.B           | R           | A14 | TV.G           |
| 15             | B15 | SYNC.          | S           | A15 | TV.R           |
| 16             | B16 |                | T           | A16 |                |
| 17             | B17 | SPEAKER +      | U           | A17 | SPEAKER -      |
| 18             | B18 | +12V           | V           | A18 |                |
| 19             | B19 | +5V            | W           | A19 | +5V            |
| 20             | B20 | +5V            | X           | A20 | +5V            |
| 21             | B21 | TV.GND         | Y           | A21 | GND            |
| 22             | B22 | GND            | Z           | A22 | GND            |

56 PIN to 44 PIN ADAPTER & RFI FILTER PCB

The COMMANDO game was developed by CAPCOM CO. Ltd., who also produces the PC Board. The game developer has made no provision for compliance with Federal Communication Commission Rules and Regulations regarding Radio Frequency Interference generated by Class A computing devices. In order to ensure compliance with those regulations, DATA EAST has designed adequate RFI Filtering into the adapter PC Board. This PCB also serves as the interface between the COMMANDO 56 pin edge connector and the DATA EAST 44 pin connector.

All signals and voltages entering or leaving the COMMANDO PCB pass through a 'PI' filter network, with the exception of the ground connections and the R,G,B, & Sync signals for the Monitor, which are routed through a ferrite bead, in order to suppress unwanted radiation. Refer to the pin-out tables on pages 6 and 7 for guidance in tracing signals through this Adapter/Filter PCB.



TYPICAL FILTER NETWORK

CN - 2

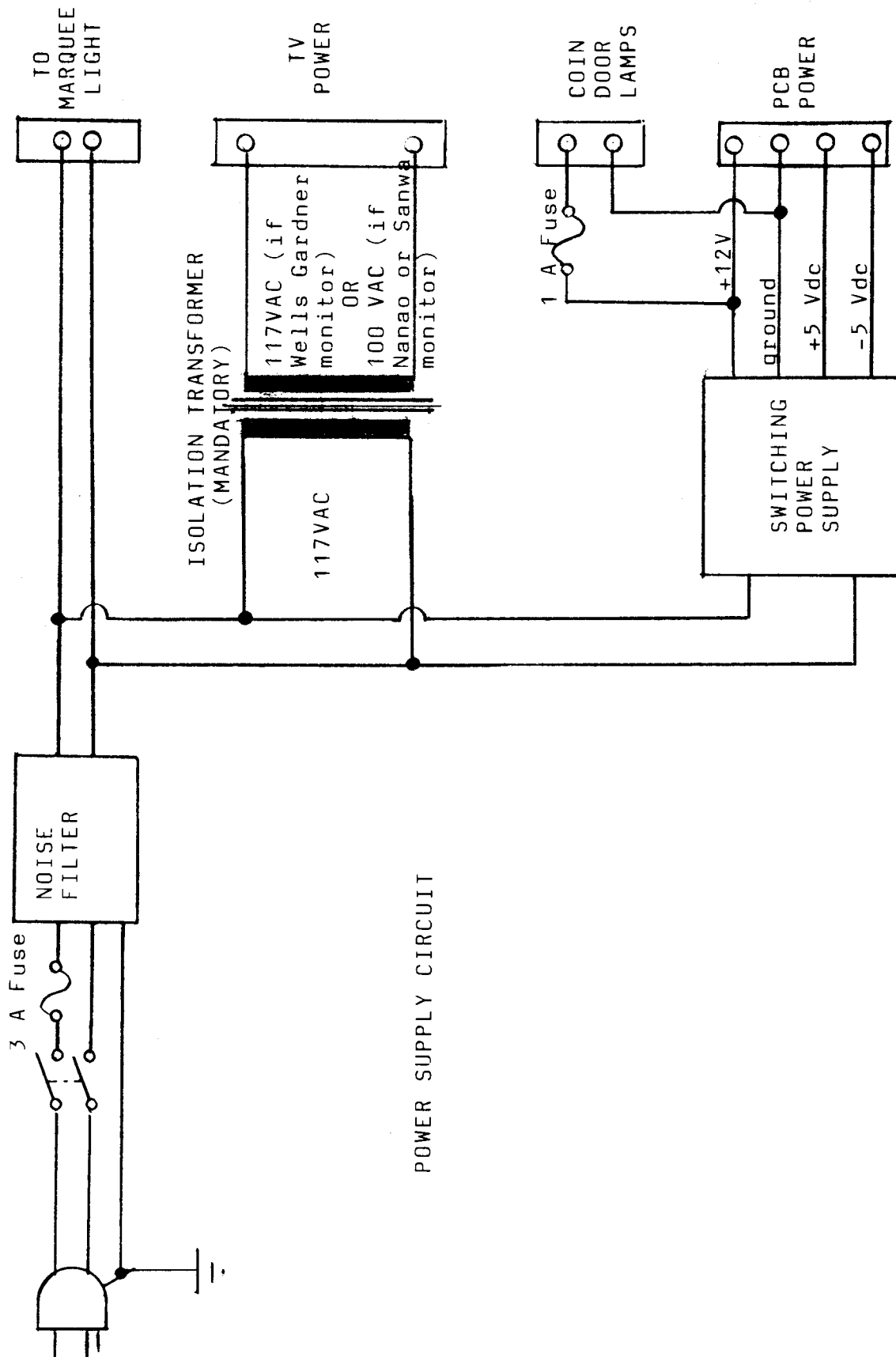
CN - 1

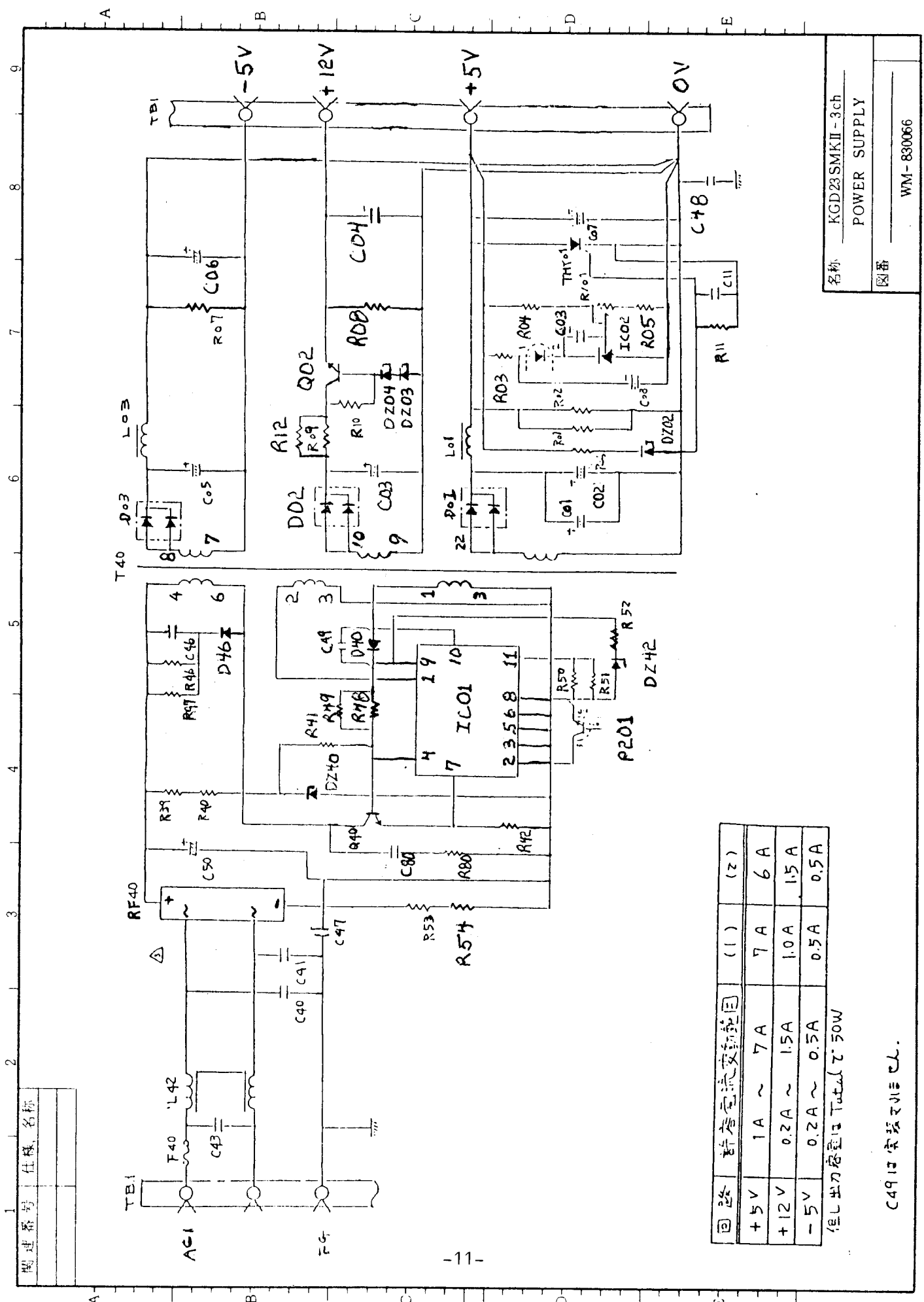
| D     |    | C     |
|-------|----|-------|
| SCR B | 1  | SCR C |
| FLIP  | 2  | SCR A |
| OH    | 3  | 6M    |
| 4H    | 4  | 4-3H  |
| H2    | 5  | H1    |
| H8    | 6  | H4    |
| H32   | 7  | H16   |
| H128  | 8  | H64   |
| LHBL  | 9  | H256  |
| V2    | 10 | V1    |
| V8    | 11 | V4    |
| V32   | 12 | V16   |
| V128  | 13 | V64   |
| OBJ G | 14 | OBJ H |
| OBJ E | 15 | OBJ F |
| OBJ C | 16 | OBJ D |
| OBJ A | 17 | OBJ B |
|       | 18 | HINIT |
|       | 19 |       |
|       | 20 |       |
|       | 21 |       |
| +5V   | 22 | +5V   |
|       | 23 |       |
|       | 24 |       |
|       | 25 |       |

| B                           |    | A    |
|-----------------------------|----|------|
|                             | 1  | DB0  |
|                             | 2  | DB1  |
|                             | 3  | DB2  |
|                             | 4  | DB3  |
|                             | 5  | DB4  |
| GND                         | 6  | DB5  |
|                             | 7  | DB6  |
|                             | 8  | DB7  |
|                             | 9  | GND  |
|                             | 10 |      |
|                             | 11 |      |
| SCR G                       | 12 |      |
| $\overline{\text{CBCS}}$    | 13 | AB0  |
| $\overline{\text{D8CS}}$    | 14 | AB1  |
| $\phi \text{ SC}$           | 15 | AB2  |
| SCR D                       | 16 | AB3  |
| SCR E                       | 17 | AB4  |
| SCR F                       | 18 | AB5  |
| $\overline{\text{ACL 2}}$   | 19 | AB6  |
| $\overline{\text{OKOUT}}$   | 20 | AB7  |
| $\overline{\text{AKB}}$     | 21 | AB8  |
| $\overline{\text{RQB}}$     | 22 | AB9  |
| $\overline{\text{BLCNTEN}}$ | 23 | AB10 |
| $\overline{\text{WRB}}$     | 24 | AB11 |
| $\overline{\text{RDB}}$     | 25 | AB12 |

JOINT CONNECTOR

85605 - 連實 - 1 - 2/2





|    |    |
|----|----|
| 图号 | 名称 |
|    |    |
|    |    |

| 回路   | 許容電流変動範囲    | (1)  | (2)  |
|------|-------------|------|------|
| +5V  | 1A ~ 7A     | 7A   | 6A   |
| +12V | 0.2A ~ 1.5A | 1.0A | 1.5A |
| -5V  | 0.2A ~ 0.5A | 0.5A | 0.5A |

但し出力容量は T40 まで 50W

C49 は 実験値に依る。

|    |                                  |
|----|----------------------------------|
| 名称 | KGD23SMKII - 3ch<br>POWER SUPPLY |
| 図番 | WM - 830066                      |

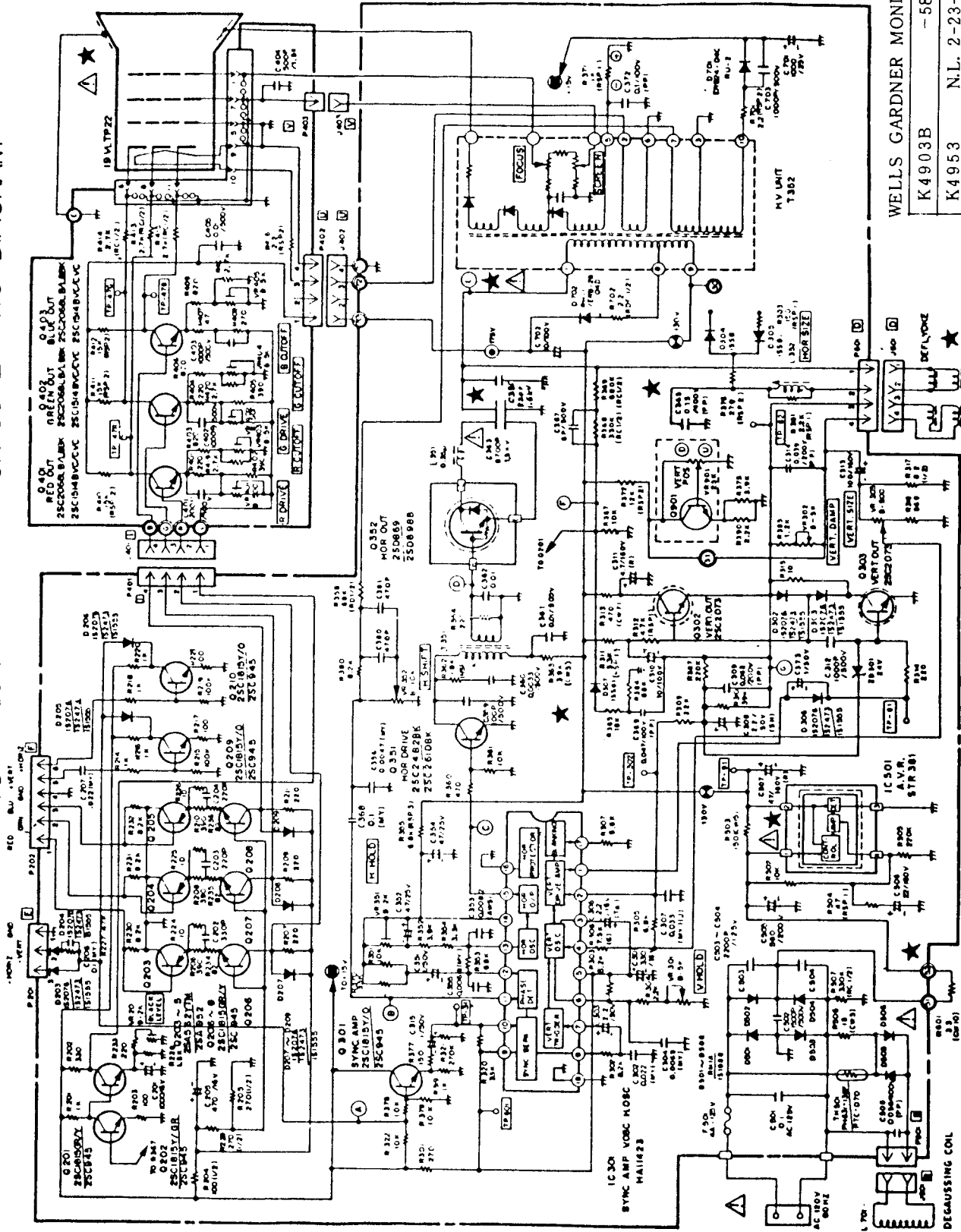
**POWER SUPPLY Model KGD23SMK-II**

| Item | Parts Nos | Description          | Specification                       | Q'ty | Manufacturer      |
|------|-----------|----------------------|-------------------------------------|------|-------------------|
| 1.   | F40       | Fuse                 | GHS 5                               | 1    | Nagasawa          |
| 2.   | T40       | Transformer          |                                     | 1    | Shindengen        |
| 3.   | L42       | Common Mode Choke    | UF327S 602YIRO                      | 1    | TDK               |
| 4.   | Q40       | Transistor           | 2SC3306                             | 1    | Toshiba           |
| 5.   | RF40      | Bridge Rectifier     | S3WB 40                             | 1    | Shindengen        |
| 6.   | D40       | Diode                | V19C                                | 1    | Hitachi           |
| 7.   | D46       | Diode                | V19G                                | 1    | Hitachi           |
| 8.   | DZ40      | Zener Diode          | HZ16-1                              | 1    | Hitachi           |
| 9.   | IC01      | HB IC                | RHD01-2                             | 1    | Nichi-con         |
| 10.  | PC01      | Photo Coupler        | PS 2018                             | 1    | Nichiden (NEC)    |
| 11.  | C40, 41   | Ceramic Capacitor    | DE7090B 102KVAI<br>125V 1,000pf     | 2    | Murata            |
| 12.  | C47       | Ceramic Capacitor    | – ditto –                           | 1    | Murata            |
| 13.  | C80       | Ceramic Capacitor    | DE0707B 681K<br>2KV DC 680p         | 1    | Murata            |
| 14.  | C42       | Film Capacitor       |                                     |      |                   |
| 15.  | C43       | Film Capacitor       | QXM2G 104KT<br>400V 0.1 $\mu$ f     | 1    | Nichi-con         |
| 16.  | C46       | Film Capacitor       | ECQ-E2 104KS<br>200V 0.1 $\mu$ f    | 1    | Matsushita        |
| 17.  | C48       | Film Capacitor       | ECQ-E6 473KZ<br>400V 0.047 $\mu$ f  | 1    | Matsushita        |
| 18.  | C50       | Electrode Capacitor  | LJA2D471 THSCBV<br>200V 470 $\mu$ f | 1    | Nichi-con         |
| 19.  | R37, 40   | Resistor             | ERG-1SJ 393H                        | 2    | Matsushita        |
| 20.  | R47, 46   | Resistor             | ERG-2SJ 223H                        | 2    | Matsushita        |
| 21.  | R48, 49   | Resistor             | ERG-3SJ 560H                        | 2    | Matsushita        |
| 22.  | R80       | Resistor             | ERG-2SJ 330H                        | 1    | Matsushita        |
| 23.  | R42       | Metal Plate Resistor | MFC 70 0.22 ohm                     | 1    | Fukushima Futaba  |
| 24.  | R53, 54   | Coil Resistor        | MNS 05N 1ROJ                        | 2    | Micron            |
| 25.  | R41       | Carbon Resistor      | 1/4W 10K ohm                        | 1    |                   |
| 26.  | R50       | Carbon Resistor      | 1/4W 680 ohm                        | 1    |                   |
| 26.  | R51       | Carbon Resistor      | 1/4W 12K ohm                        | 1    |                   |
| 28.  | R52       | Carbon Resistor      |                                     |      |                   |
| 29.  | L01       | Choke                | RD1113A 3J<br>3uH 10A               | 1    | Hokkoh            |
| 30.  | L03       | Choke                | RD810A 3F<br>3uH 5A                 | 1    | Hokkoh            |
| 31.  | Q02       | Transistor           | 2SD1022 or 2SD1308                  | 1    | Shindengen        |
| 32.  | D01       | Diode                | ESAC 83-004                         | 1    | Fuji Denki        |
| 33.  | D02       | Diode                | 5CH2M or ESAC25-020                 | 1    | Fuji Denki or NEC |
| 34.  | D03       | Diode                | – ditto –                           | 1    | Fuji Denki        |
| 35.  | DZ02      | Zener Diode          | HZ 6B-2                             | 1    | Hitachi           |
| 36.  | DZ03      | Zener Diode          | HZ 12B-1L                           | 1    | Hitachi           |
| 37.  | THY01     | Thyristor            | 5PIM or SF5B41                      | 1    | NEC or Toshiba    |
| 38.  | IC02      | I.C.                 | TL431 CLP                           | 1    | T.I.              |
| 39.  | C01, 02   | Capacitor            | SXA 16VB 2200                       | 2    | Nichi-Chemi       |
| 40.  | C03, 05   | Capacitor            | CEUSM 1V 471<br>35V 470 $\mu$ f     | 2    | Nichi-con         |



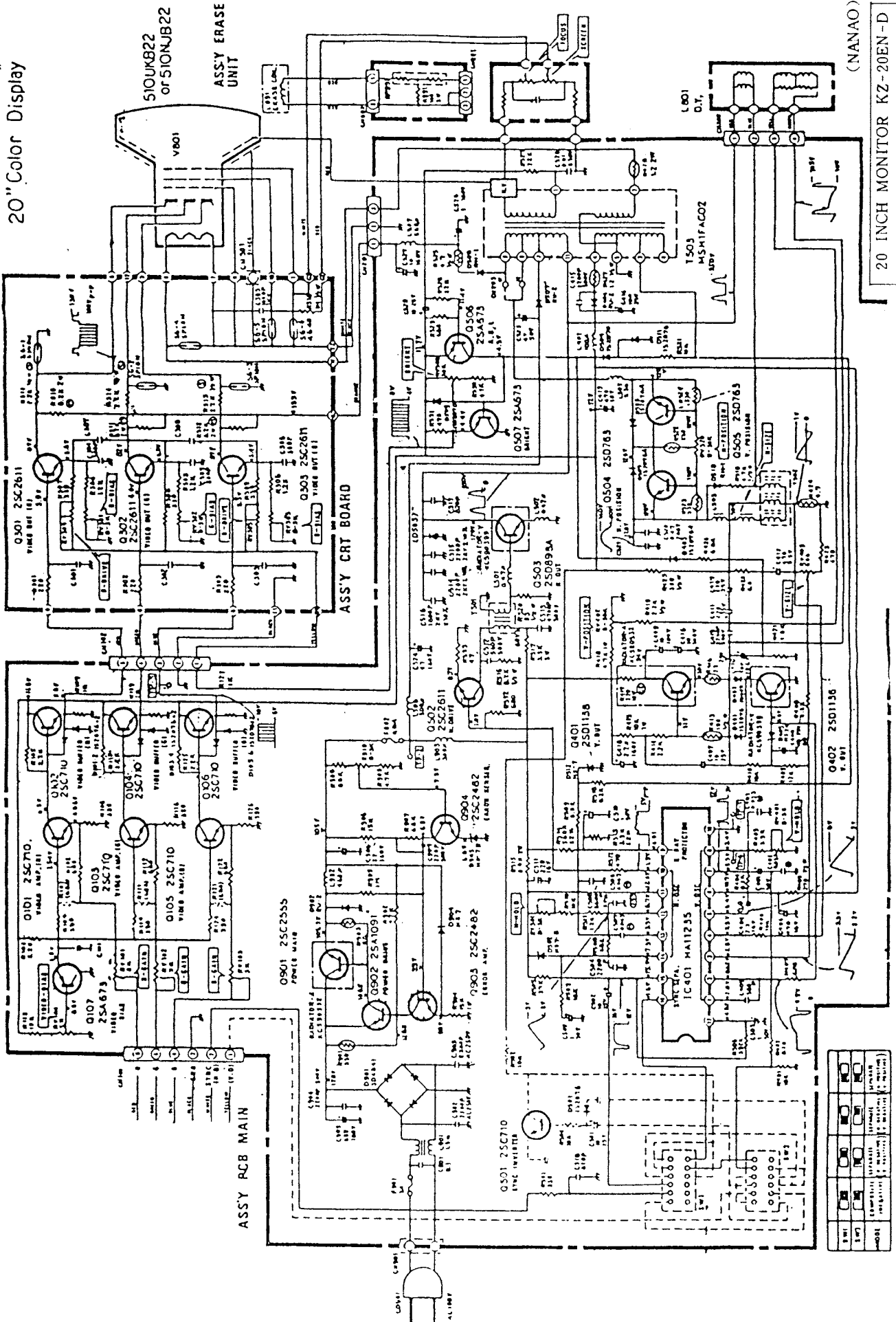
| Item | Parts Nos | Description     | Specification                    | Q'ty | Manufacturer               |
|------|-----------|-----------------|----------------------------------|------|----------------------------|
| 41.  | C04       | Capacitor       | CEUSM 1E 331<br>25V 330 $\mu$ F  | 1    | Nichi-con                  |
| 42.  | C07, 06   | Capacitor       | CEUSM 1E 331<br>25V 330 $\mu$ f  | 2    | Nichi-con                  |
| 43.  | C08       | Capacitor       | CEUSM 1H 010                     | 1    | Nichi-con 50V 1 $\mu$ f    |
| 44.  | C09       | Capacitor       | CEUSM 1V 4R7<br>35V 4.7 $\mu$ f  | 1    | Nichi-con                  |
| 45.  | C11       | Film Capacitor  | TDY1H/2A 104K<br>50V 0.1 $\mu$ f | 1    | Nichi-con                  |
| 46.  | R01, 13   | Resistor        | ERG 3SJ 680H                     | 2    | Matsushita 3W 68 $\Omega$  |
| 47.  | R08       | Resistor        | ERG3SJ 271H                      | 1    | Matsushita 3W 270 $\Omega$ |
| 48.  | R09       | Resistor        | ERG 2SJ R68<br>2W 0.68 ohm       | 1    | Matsushita                 |
| 49.  | R10       | Resistor        | ERG 1SJ 271<br>1W 270 ohm        | 1    | Matsushita                 |
| 50.  | RV01      | Volume          | EVM38GA 00B52<br>500 ohm         | 1    | Matsushita                 |
| 51.  | R03       | Carbon Resistor | 1/4W 68 ohm                      | 1    |                            |
| 52.  | R04, 11   | Carbon Resistor | 1/4W 560 ohm                     | 2    |                            |
| 53.  | R05       | Carbon Resistor | 1/4W 390 ohm                     | 1    |                            |
| 54.  | R06       | Carbon Resistor | 1/4W 15 ohm                      | 1    |                            |
| 55.  | R02       |                 |                                  |      |                            |
| 56.  |           | P.C. Board      |                                  | 1    |                            |
| 57.  | TB1       | Terminal Strip  |                                  | 1    |                            |
| 58.  |           | Terminal        | Faston                           | 7    |                            |

# 19" COLOR GAME MONITOR SCHEMATIC DIAGRAM

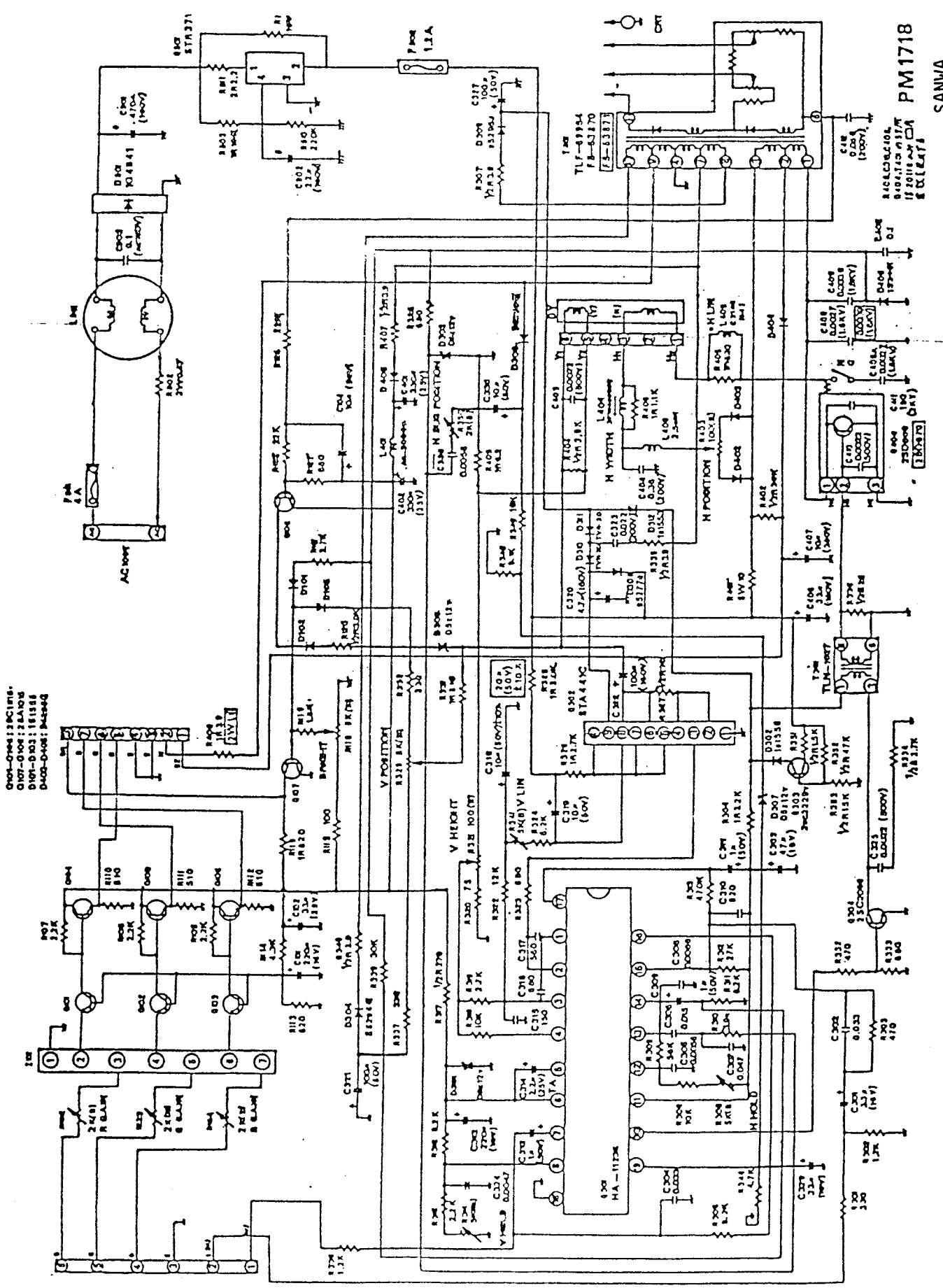


WELLS GARDNER MONITOR  
 K4903B  
 K4953 N.L. 2-23-84

20" Color Display

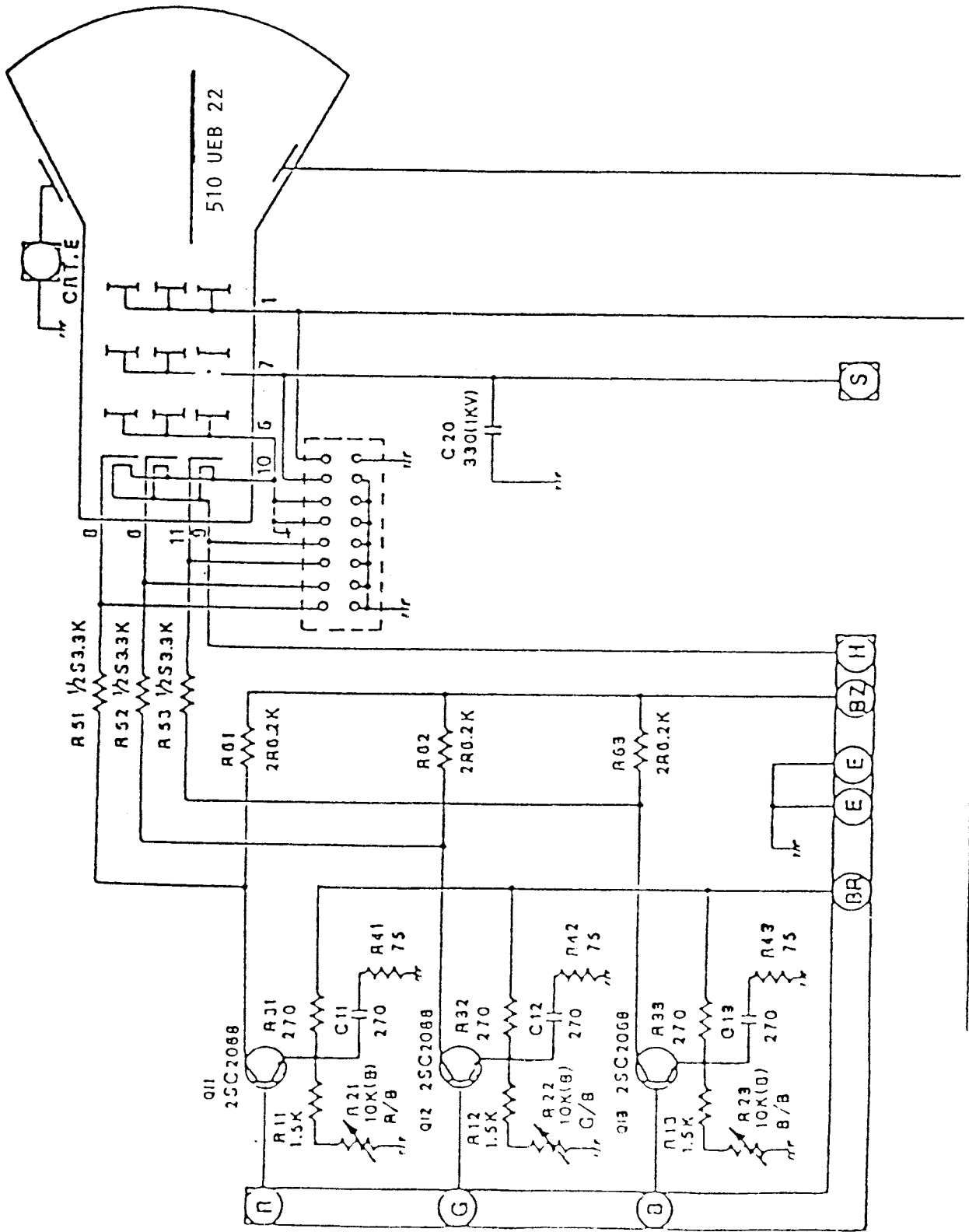


(NANAO)  
20 INCH MONITOR KZ-20EN-D  
K-10364



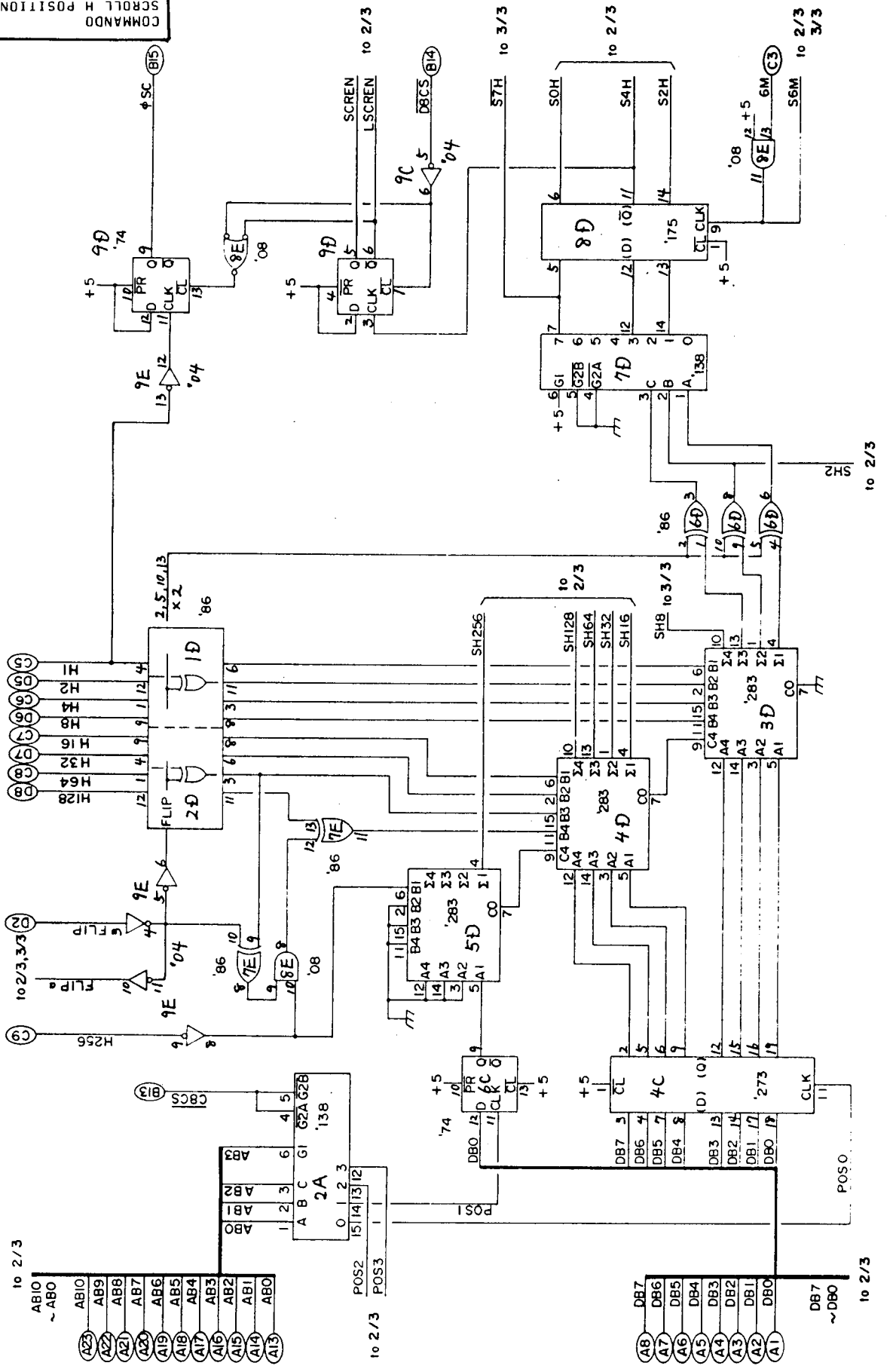
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 6X4-6AR5: 12.5C118,  
 6X4-6AR5: 12.5C118,  
 6X4-6AR5: 12.5C118

PM1718  
 SANWA

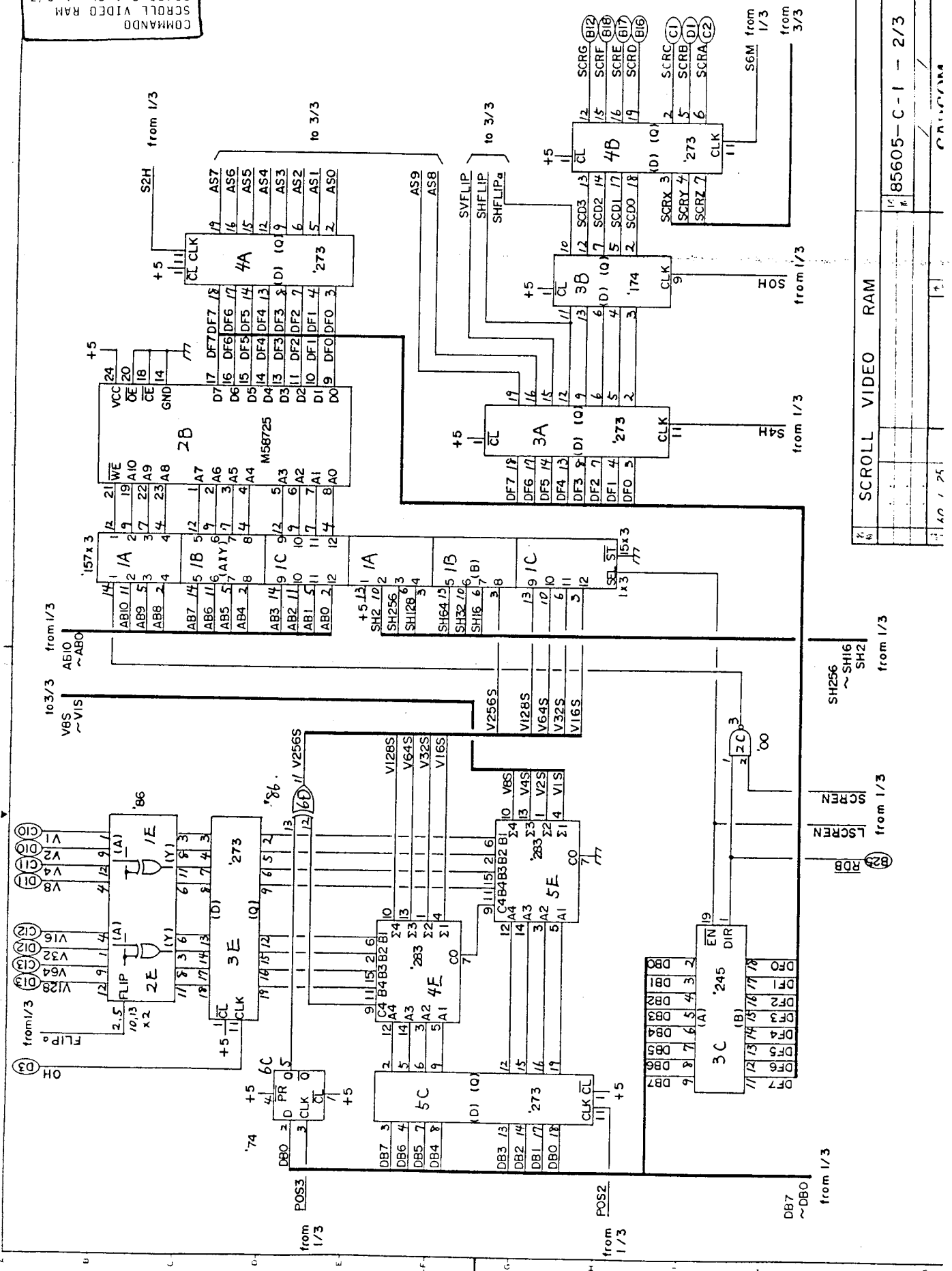


CRT.D W/B (PC1002)

SANWA

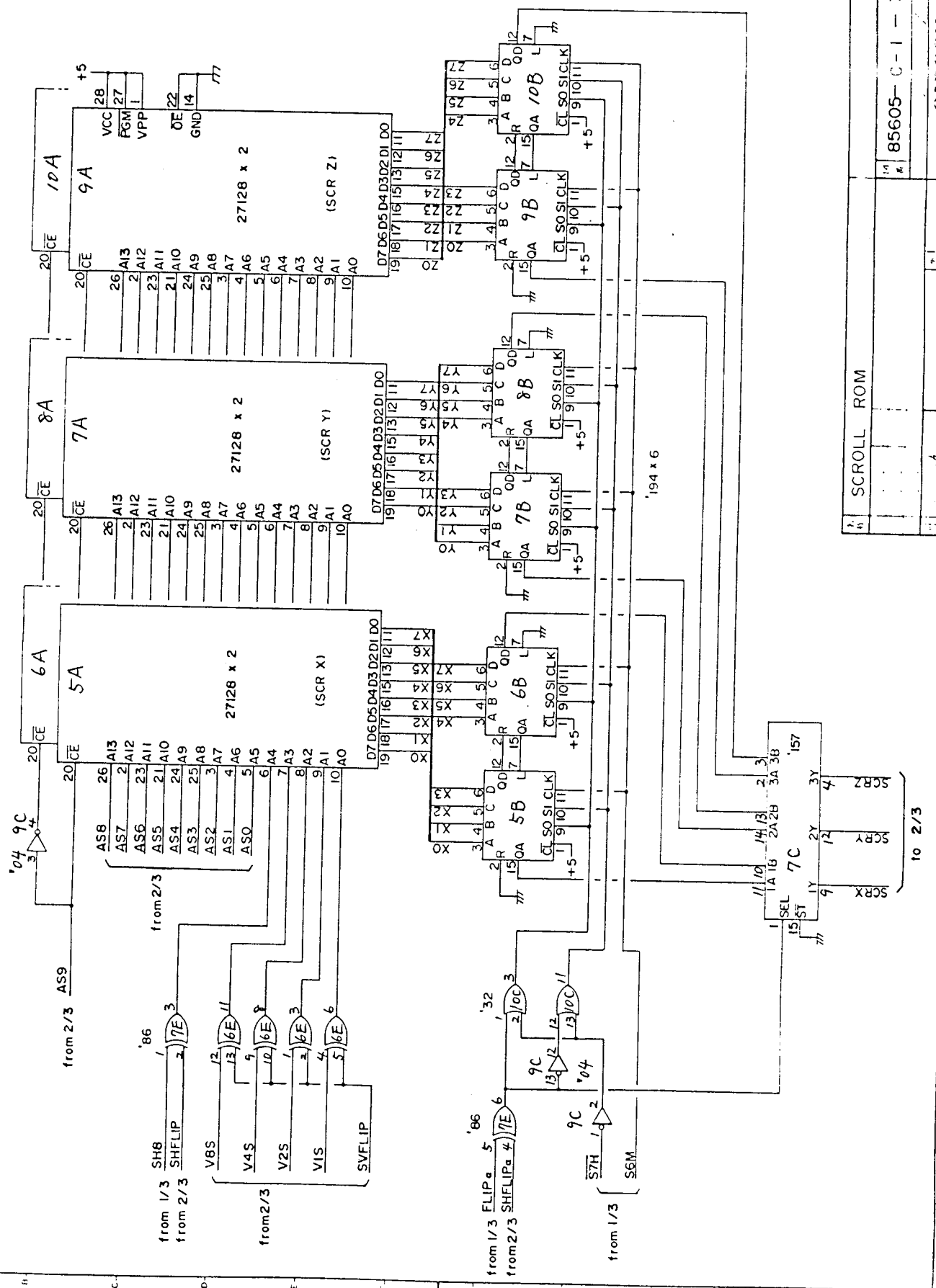


|                   |                     |
|-------------------|---------------------|
| COMMANDO          | 85605 - C - 1 - 1/3 |
| SCROLL H POSITION |                     |
| 14/15             |                     |
| CADCOM            |                     |



| COMMANDO         |        |
|------------------|--------|
| SCROLL VIDEO RAM |        |
| Pin              | Signal |
| 1                | VCC    |
| 2                | AS0    |
| 3                | AS1    |
| 4                | AS2    |
| 5                | AS3    |
| 6                | AS4    |
| 7                | AS5    |
| 8                | AS6    |
| 9                | AS7    |
| 10               | AS8    |
| 11               | AS9    |
| 12               | AS10   |
| 13               | AS11   |
| 14               | AS12   |
| 15               | AS13   |
| 16               | AS14   |
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| 18               | AS16   |
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| 43               | AS41   |
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| 96               | AS94   |
| 97               | AS95   |
| 98               | AS96   |
| 99               | AS97   |
| 100              | AS98   |
| 101              | AS99   |
| 102              | AS100  |

| COMMANDO         |        |
|------------------|--------|
| SCROLL VIDEO RAM |        |
| Pin              | Signal |
| 1                | VCC    |
| 2                | AS0    |
| 3                | AS1    |
| 4                | AS2    |
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| 93               | AS91   |
| 94               | AS92   |
| 95               | AS93   |
| 96               | AS94   |
| 97               | AS95   |
| 98               | AS96   |
| 99               | AS97   |
| 100              | AS98   |
| 101              | AS99   |
| 102              | AS100  |

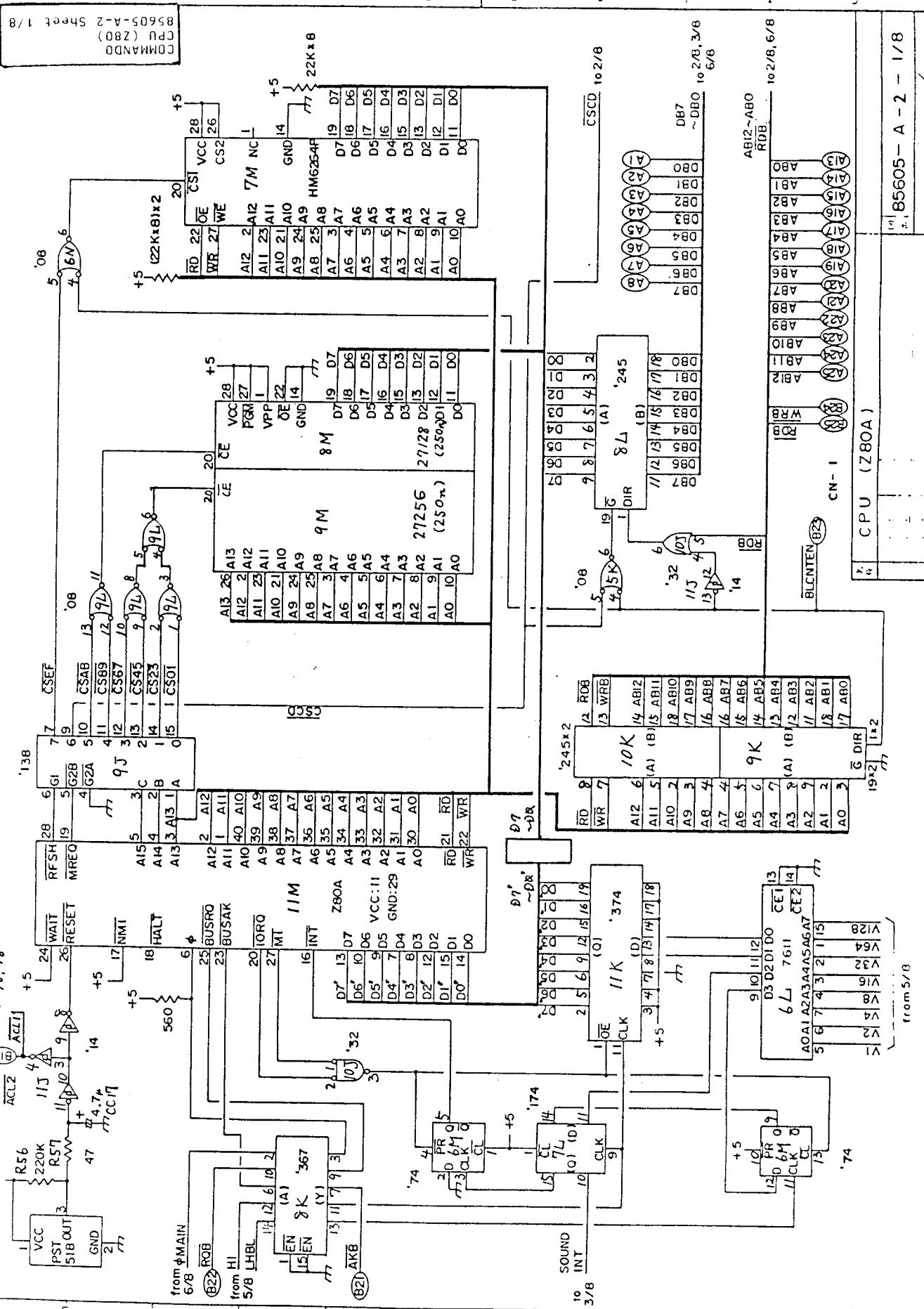


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COMMANDO SCROLL ROM

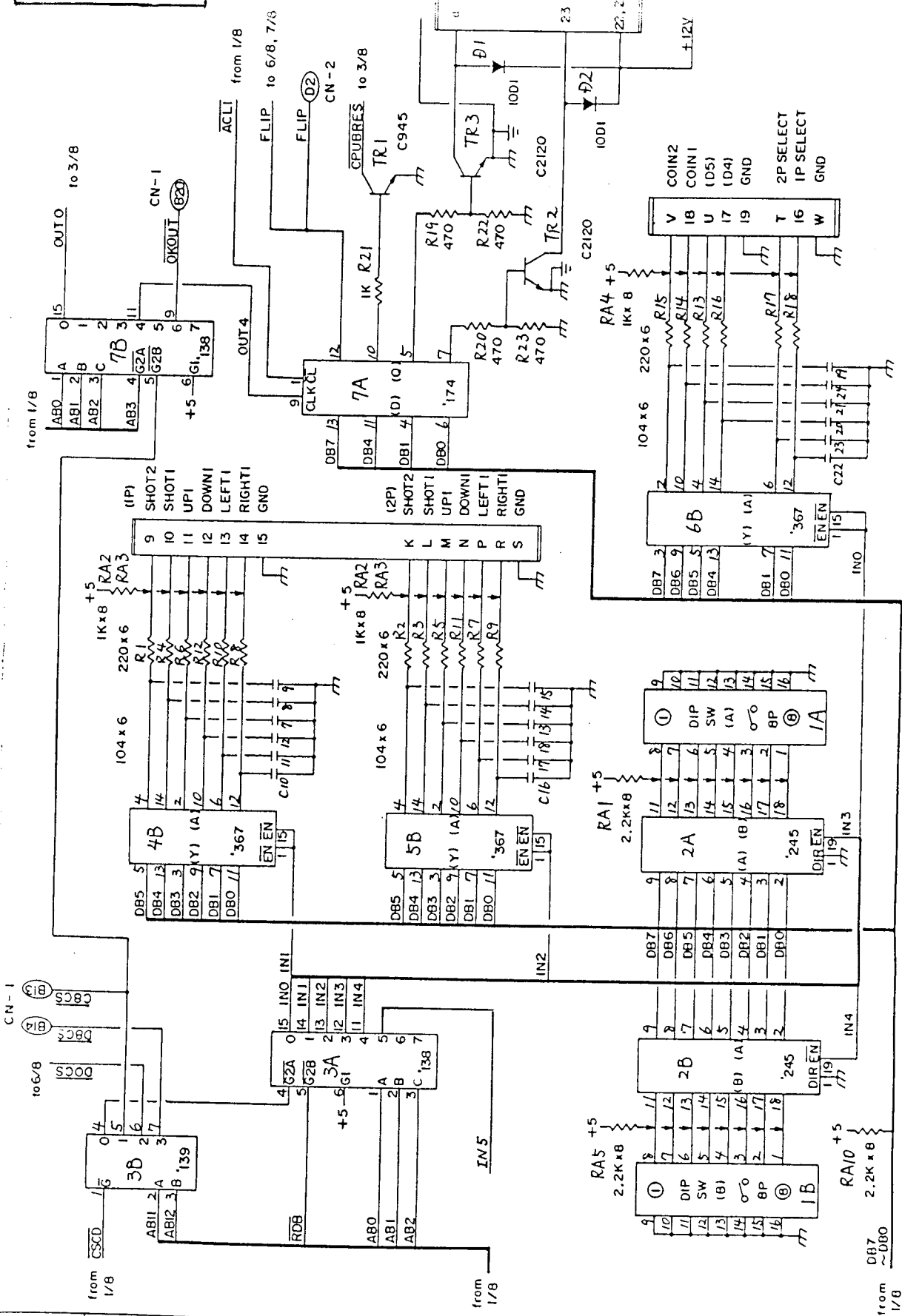
85605-C-1 - 3/3





COMMANDO  
CPU (Z80)  
85605-A-2 Sheet 1/8

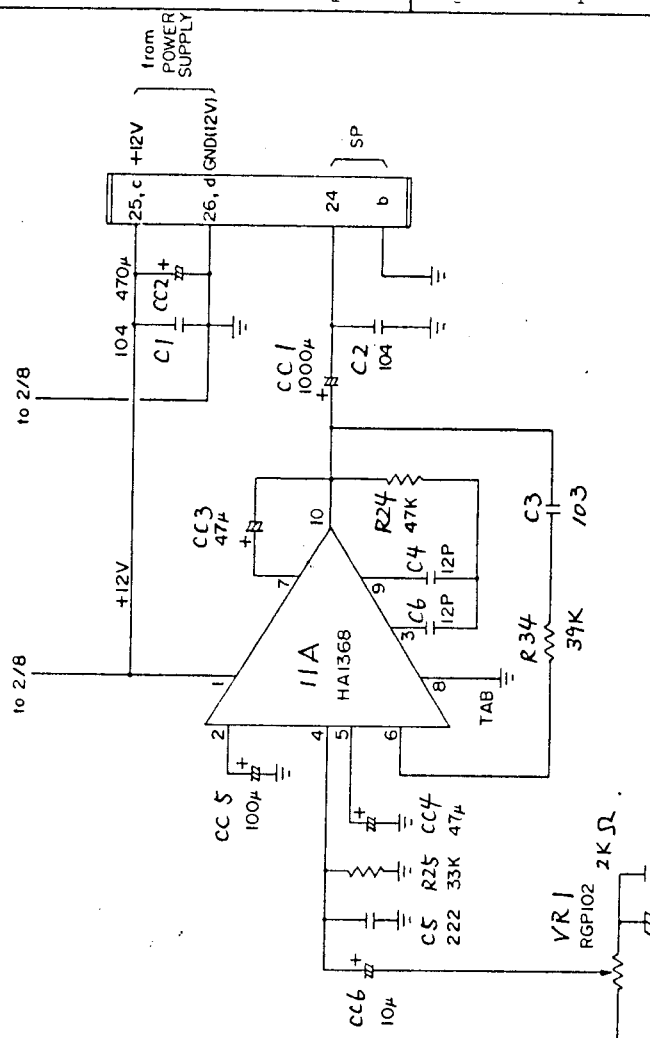
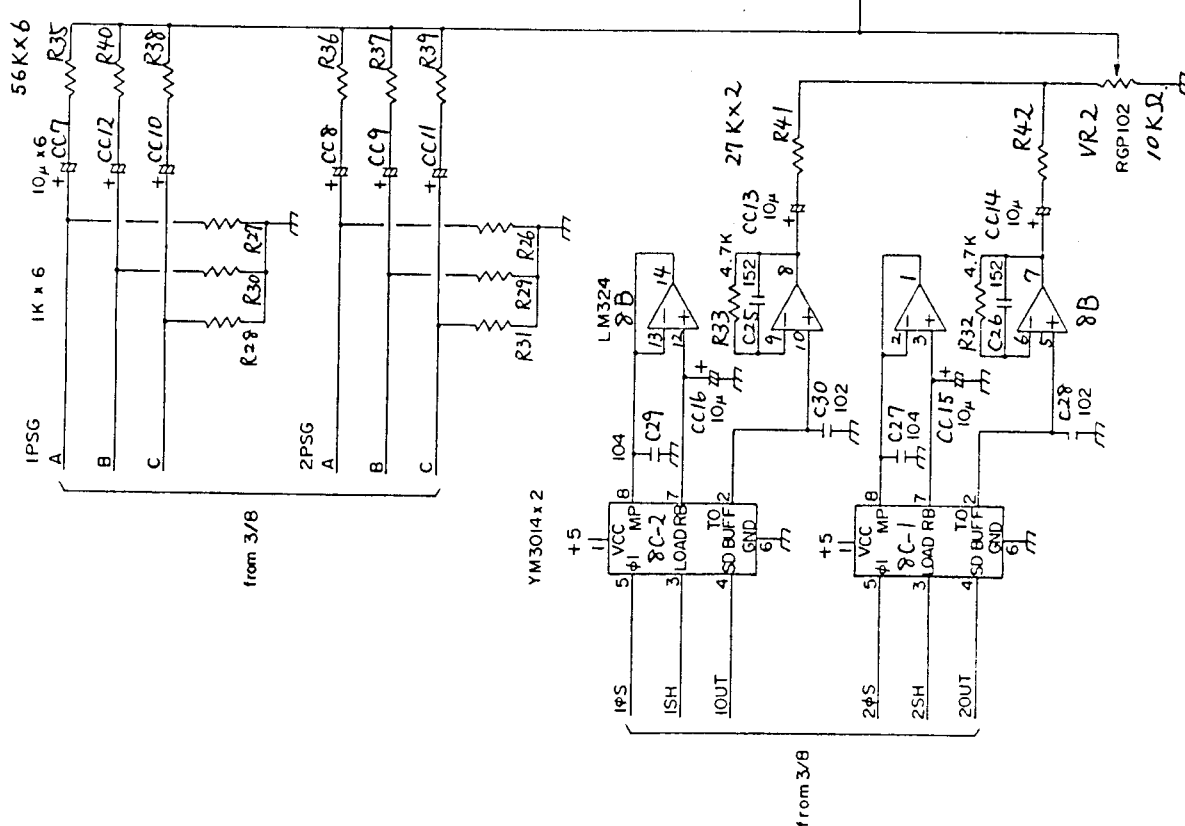
85605-A-2 - 1/8



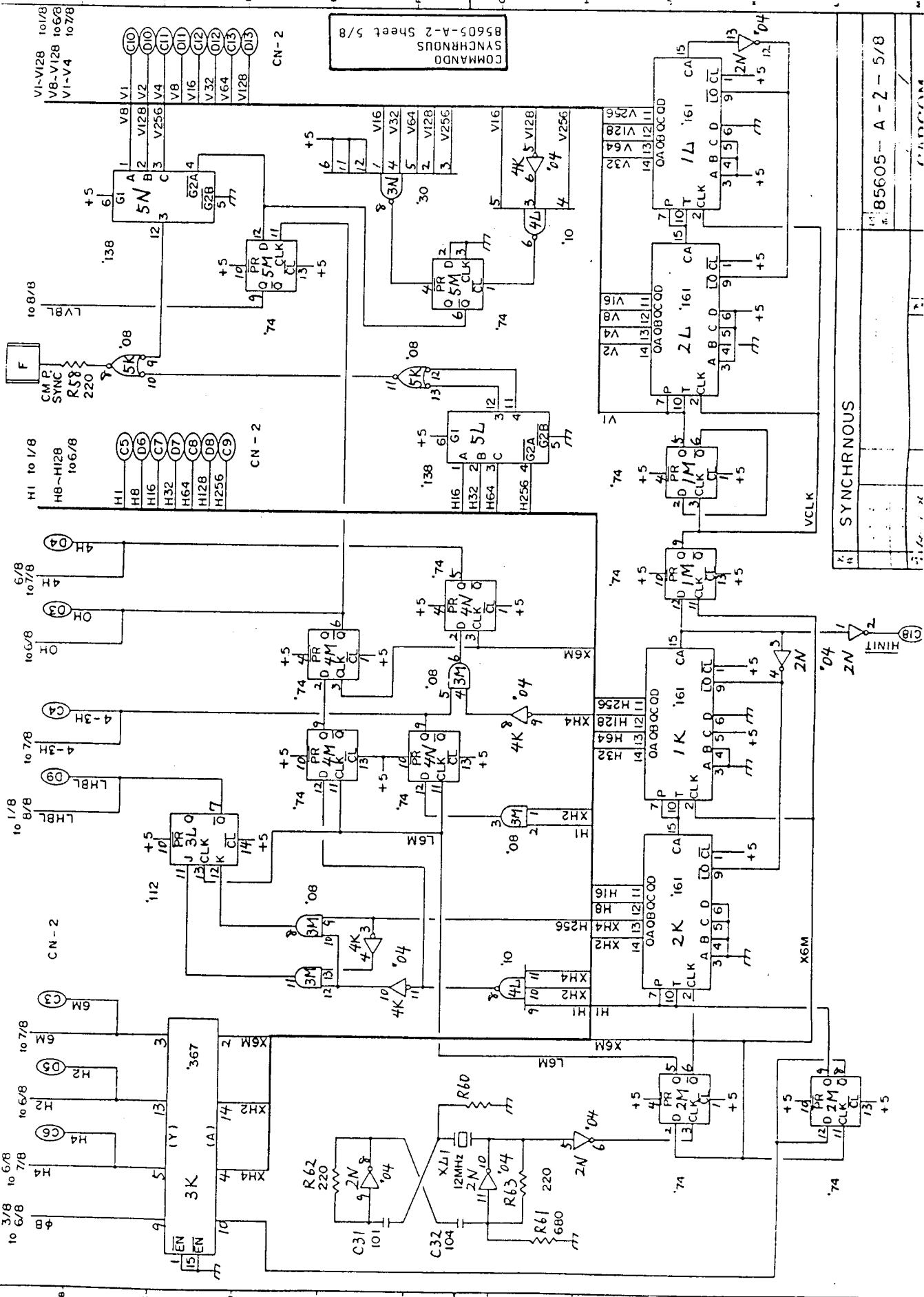
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| 14  | 85605 - A - 2 - 2/8 |
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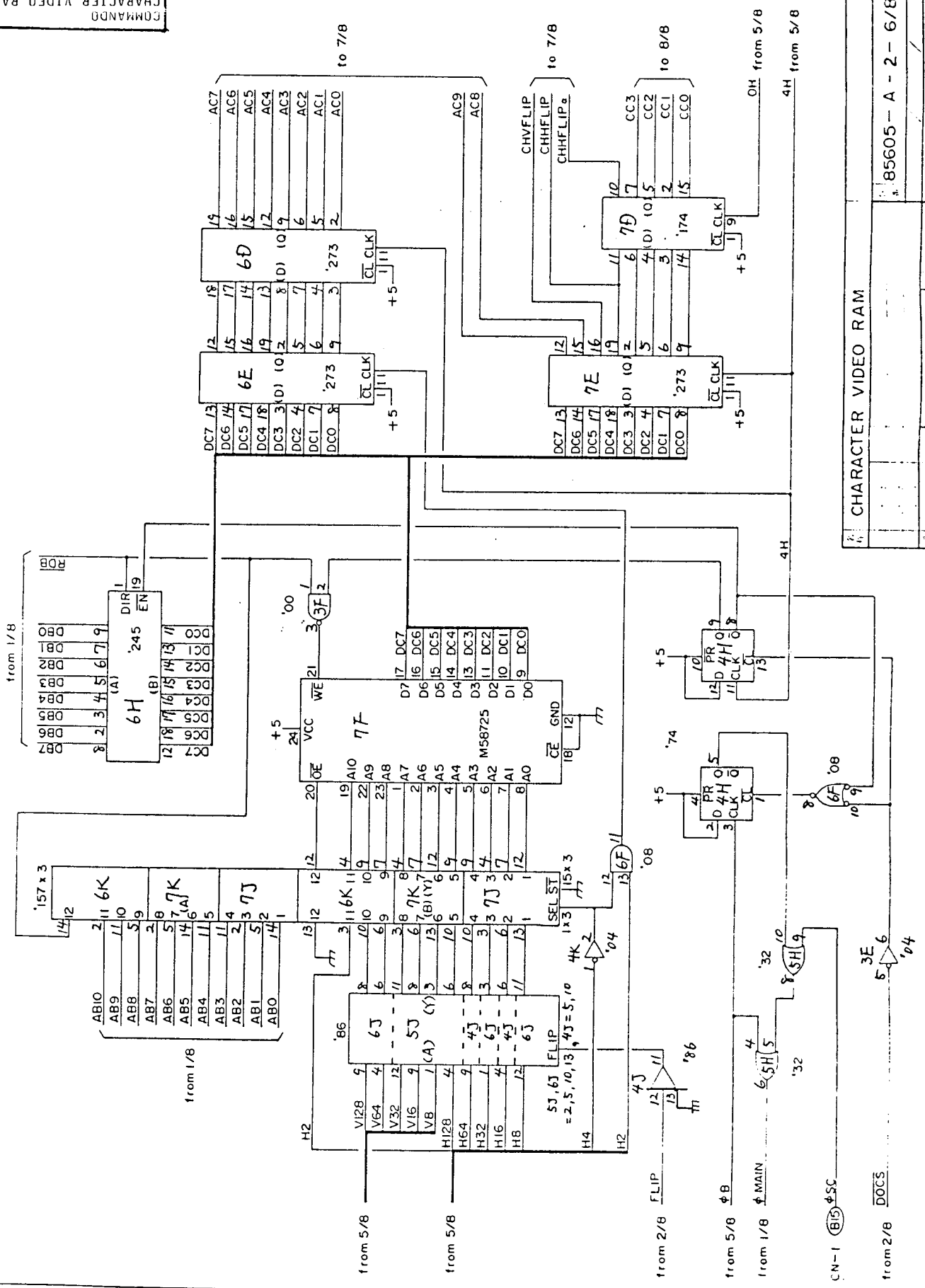
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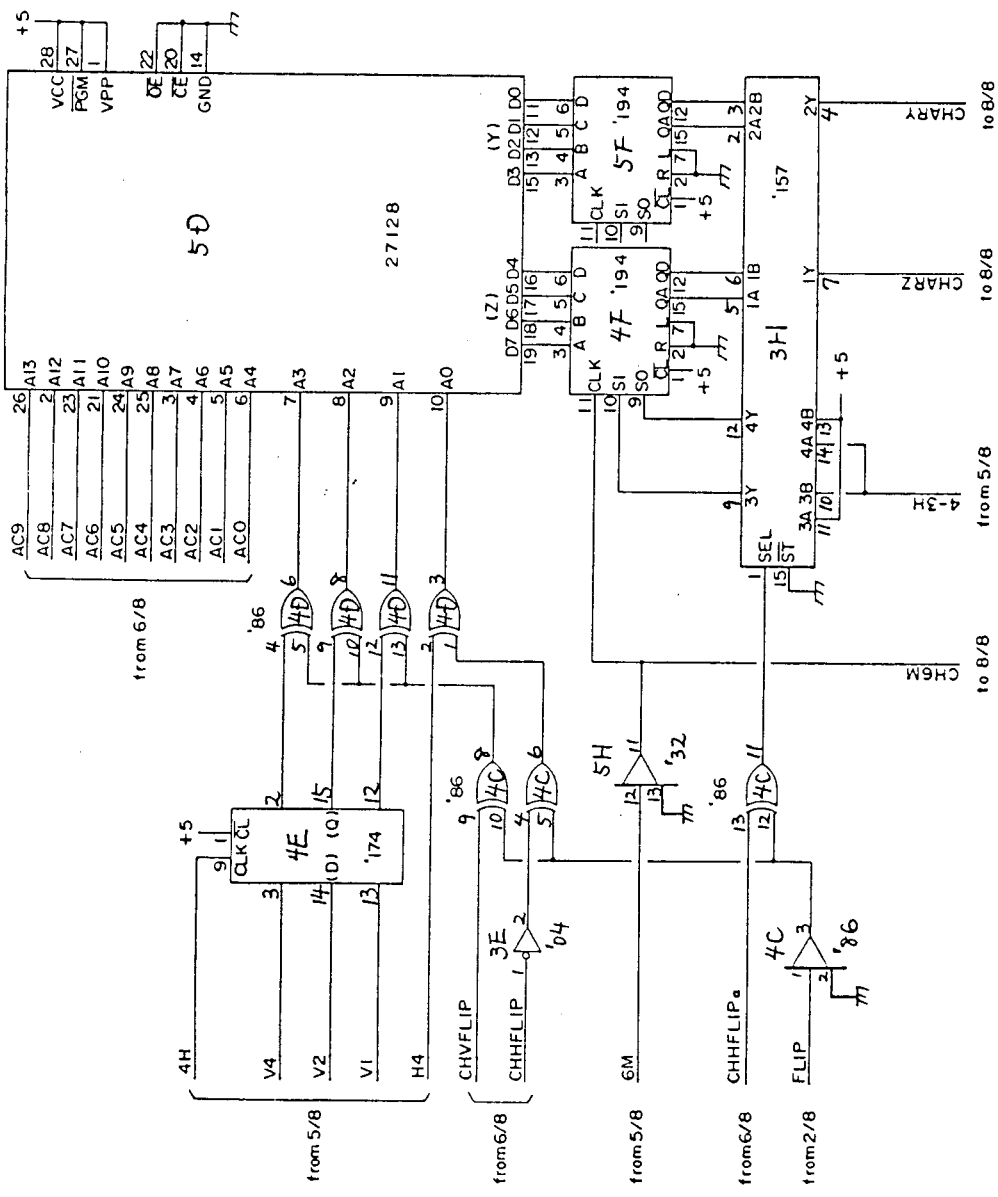


|               |                        |
|---------------|------------------------|
| MAIN AMP      |                        |
| 60.4.1        | R35~R40 55K→56K 容値値 変更 |
| 4.1           | R41, R42 55K→27K 変更    |
| 85605-A-2-4/8 |                        |

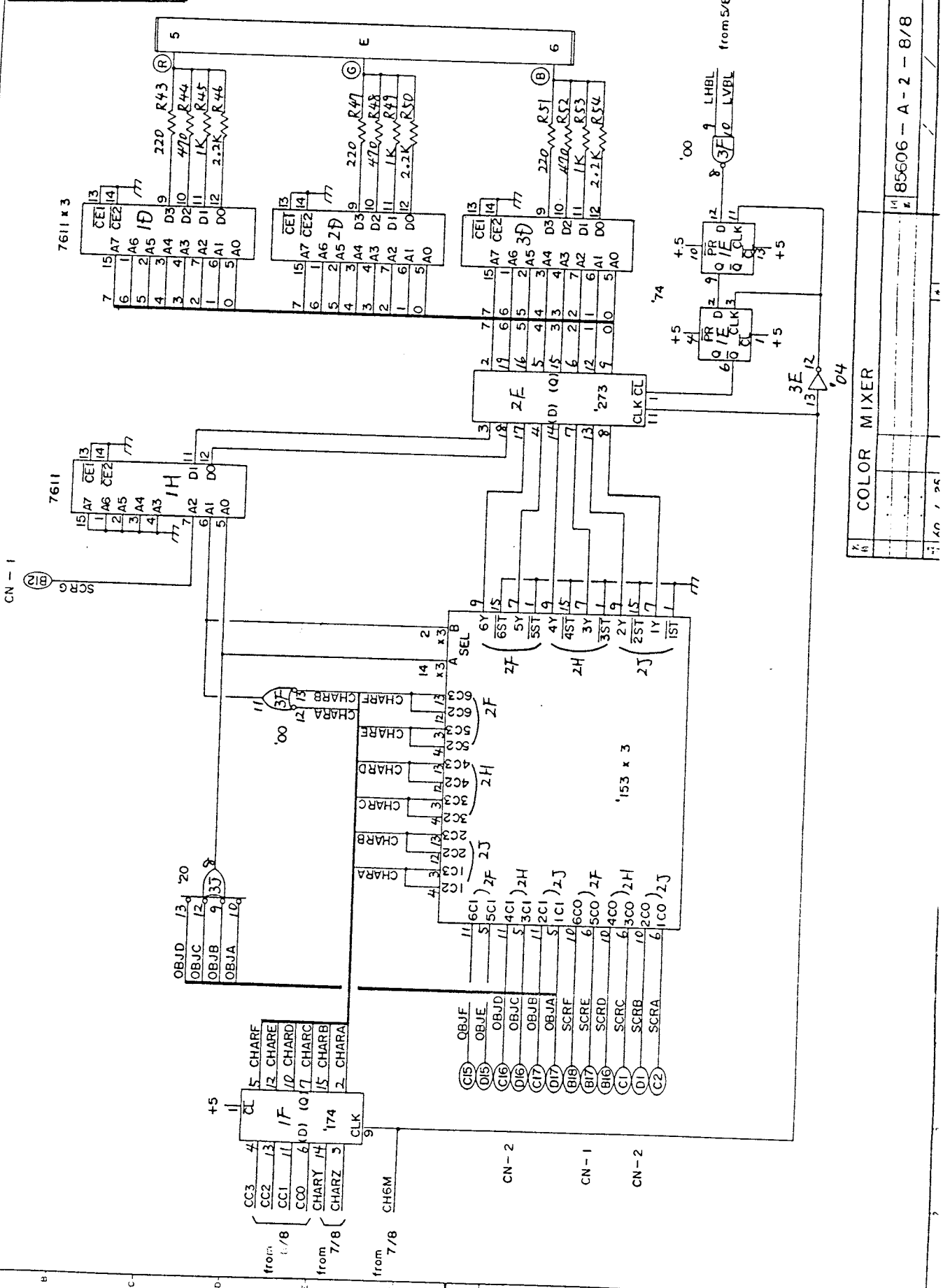




CHARACTER VIDEO RAM  
85605-A-2-6/8



|                         |                 |
|-------------------------|-----------------|
| CHARACTER GENERATOR ROM |                 |
| 10                      | 85605-A-2 - 7/8 |
| 11                      | CADCOM          |



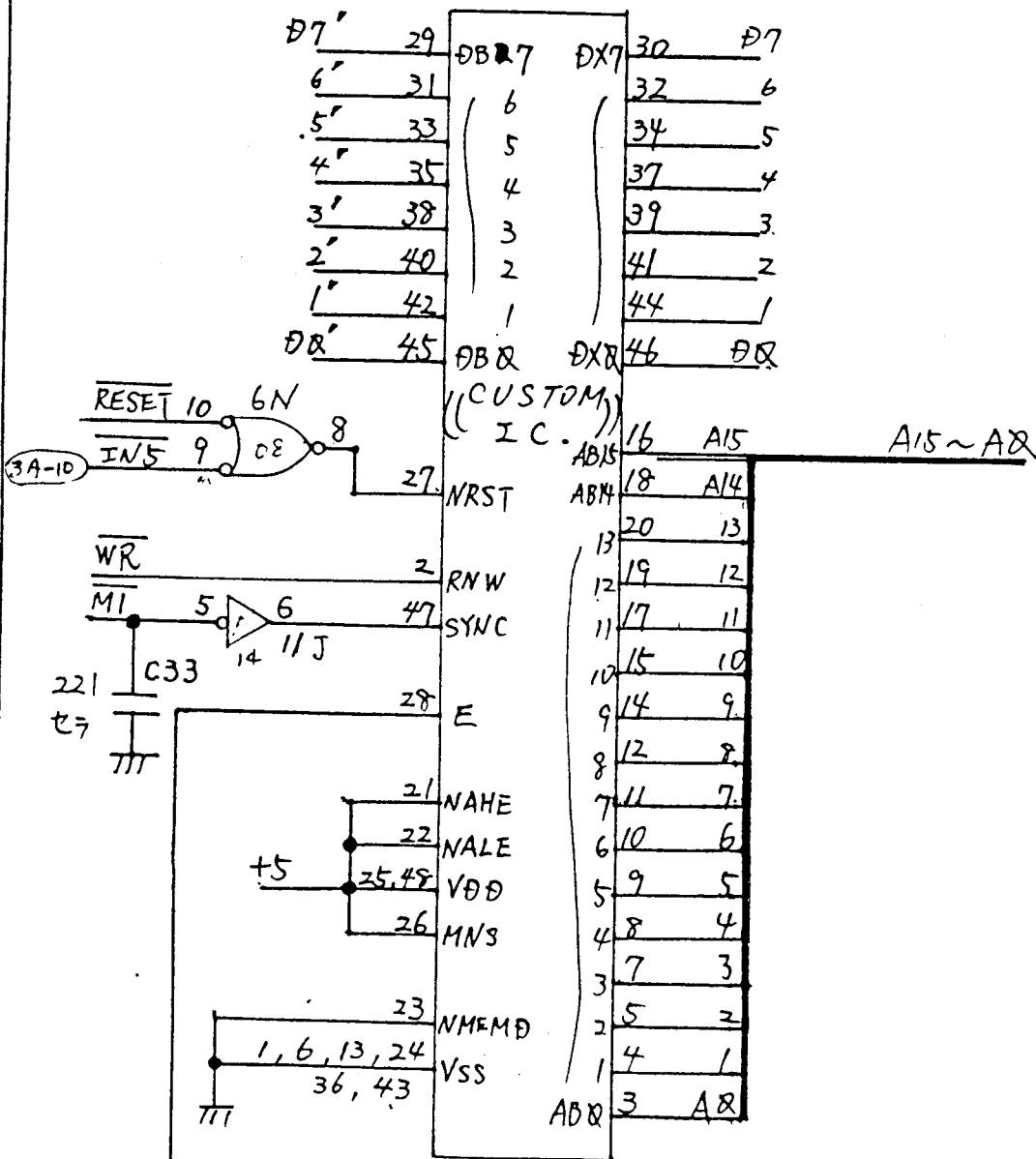
|             |                     |
|-------------|---------------------|
| COLOR MIXER |                     |
| 14          | 85606 - A - 2 - 8/8 |
| 14          |                     |
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| 14          |                     |



CPU側

10M

Memory側

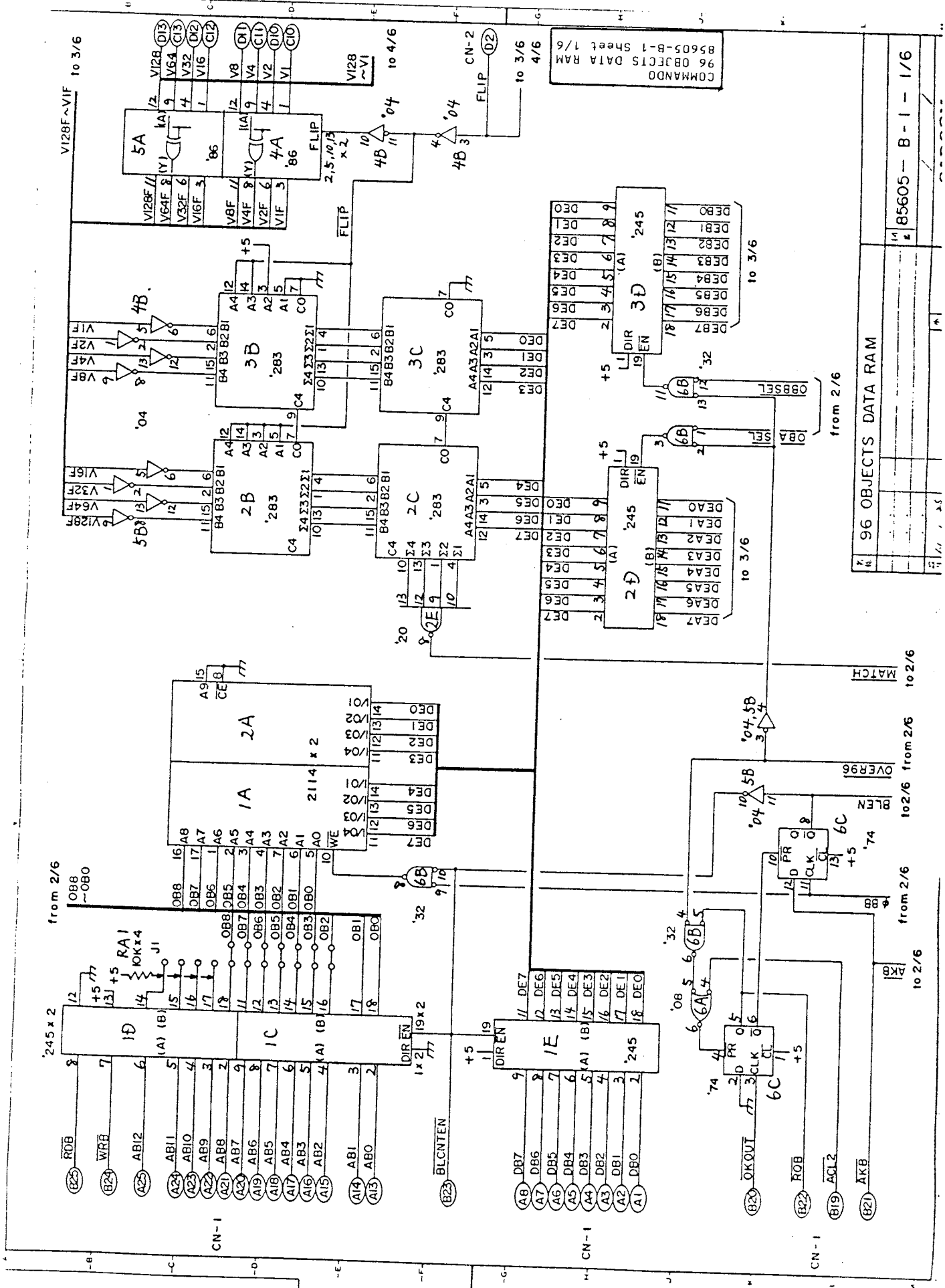


(SIGNAL)

IN5 のみ 2/8 8' )

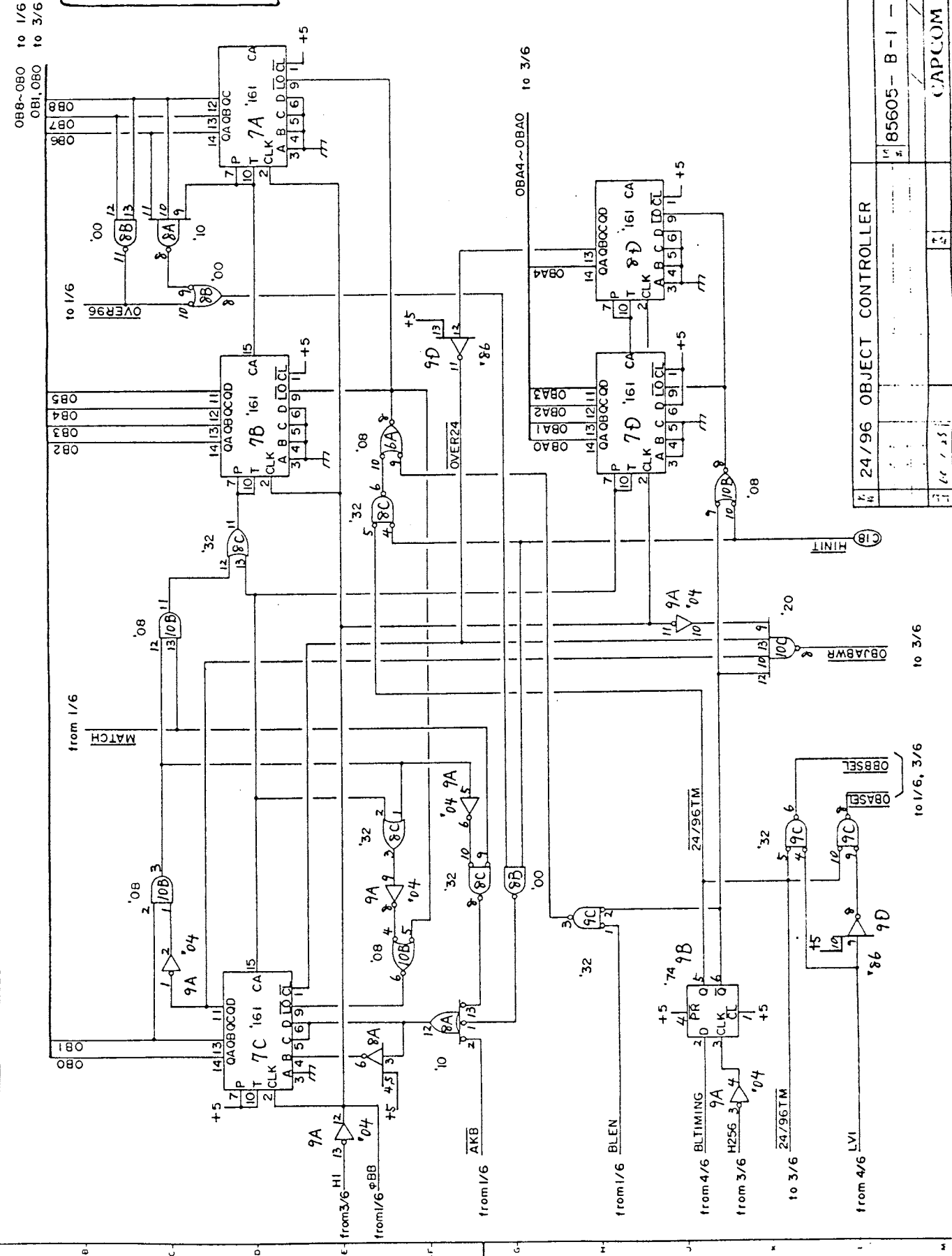
(図番)

COMMANDO  
CUSTOM CHIP  
85605-A-2 Sheet 1/1

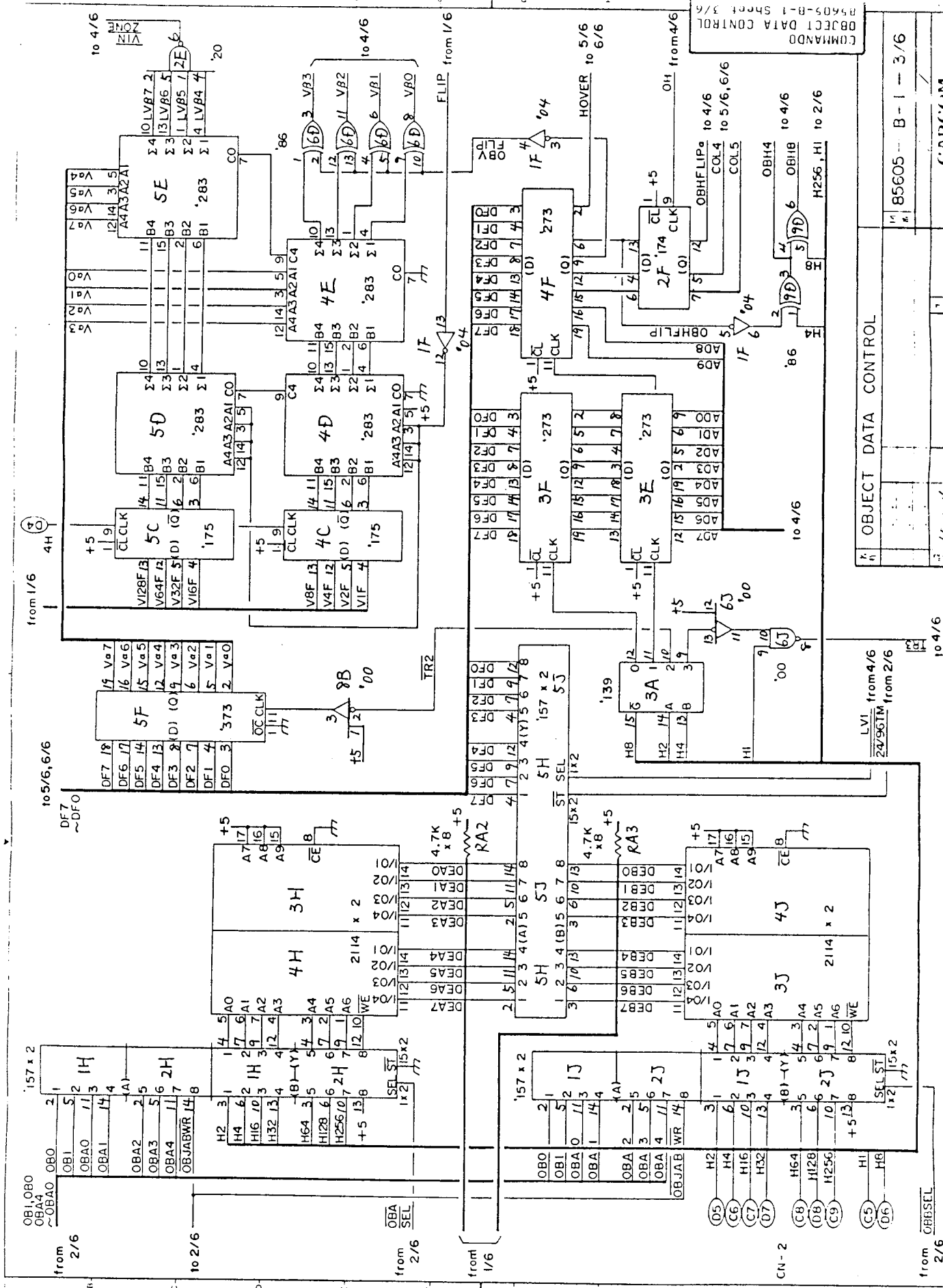


COMMAND  
96 OBJECTS DATA RAM  
85605-B-1 Sheet 1/6

| 96 OBJECTS DATA RAM |               |
|---------------------|---------------|
| 14                  | 85605-B-1-1/6 |

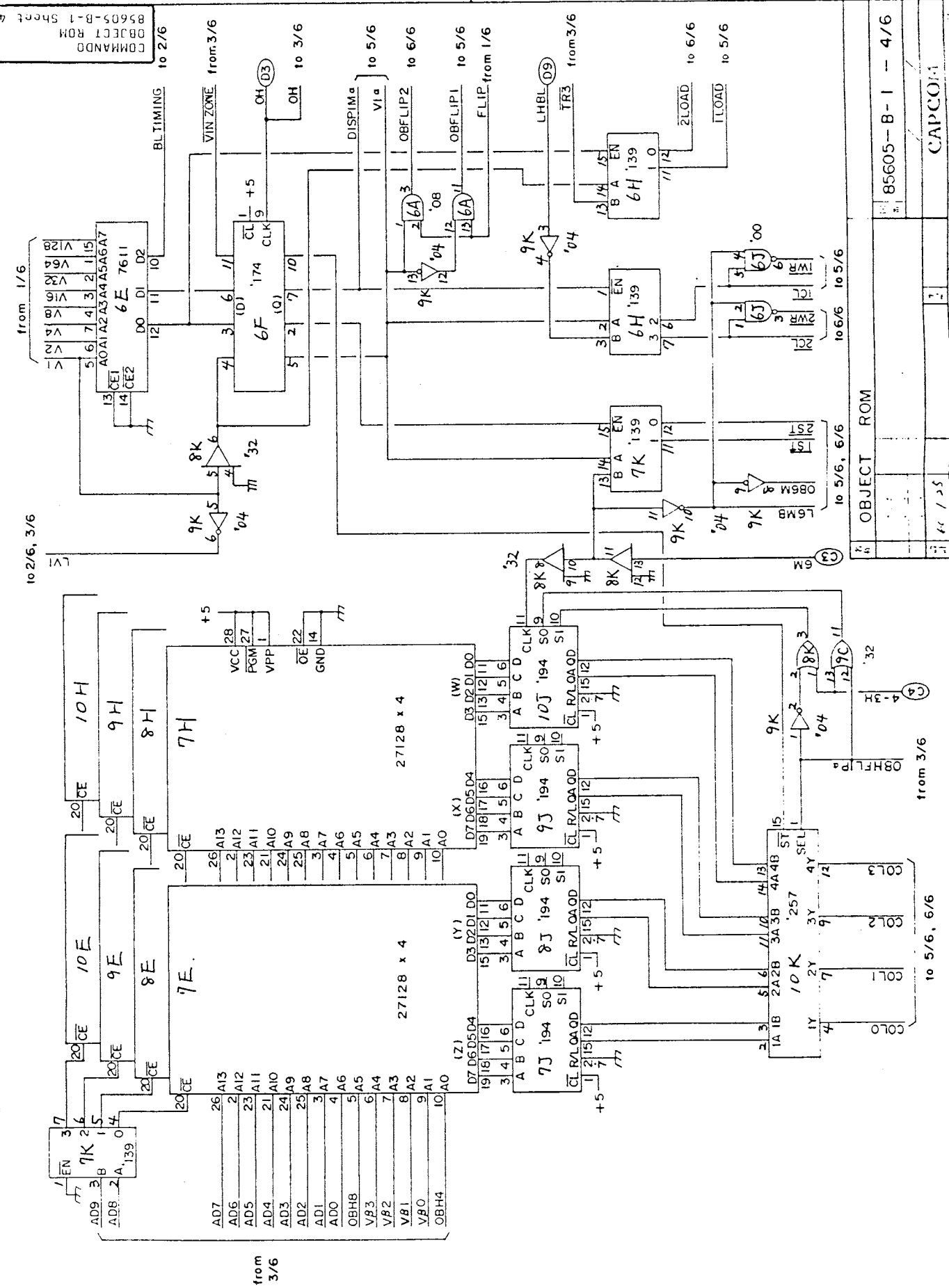


|    |                         |
|----|-------------------------|
| 14 | 24/96 OBJECT CONTROLLER |
| 15 | 85605-B-1 - 2/6         |
| 16 | CAPCOM                  |



COMMANDO  
 OBJECT DATA CONTROL  
 85605-B-1 Sheet 3/6

|  |                     |
|--|---------------------|
| COMMANDO<br>OBJECT DATA CONTROL<br>85605-B-1 Sheet 3/6 |                     |
| 7  | OBJECT DATA CONTROL |
| 8  | 85605-B-1 - 3/6     |



102/6, 3/6

from 1/6

10 2/6

from 3/6

10 3/6

to 5/6

to 6/6

to 5/6

FLIP from 1/6

from 3/6

to 6/6

to 5/6

to 5/6, 6/6

to 6/6, 10 5/6

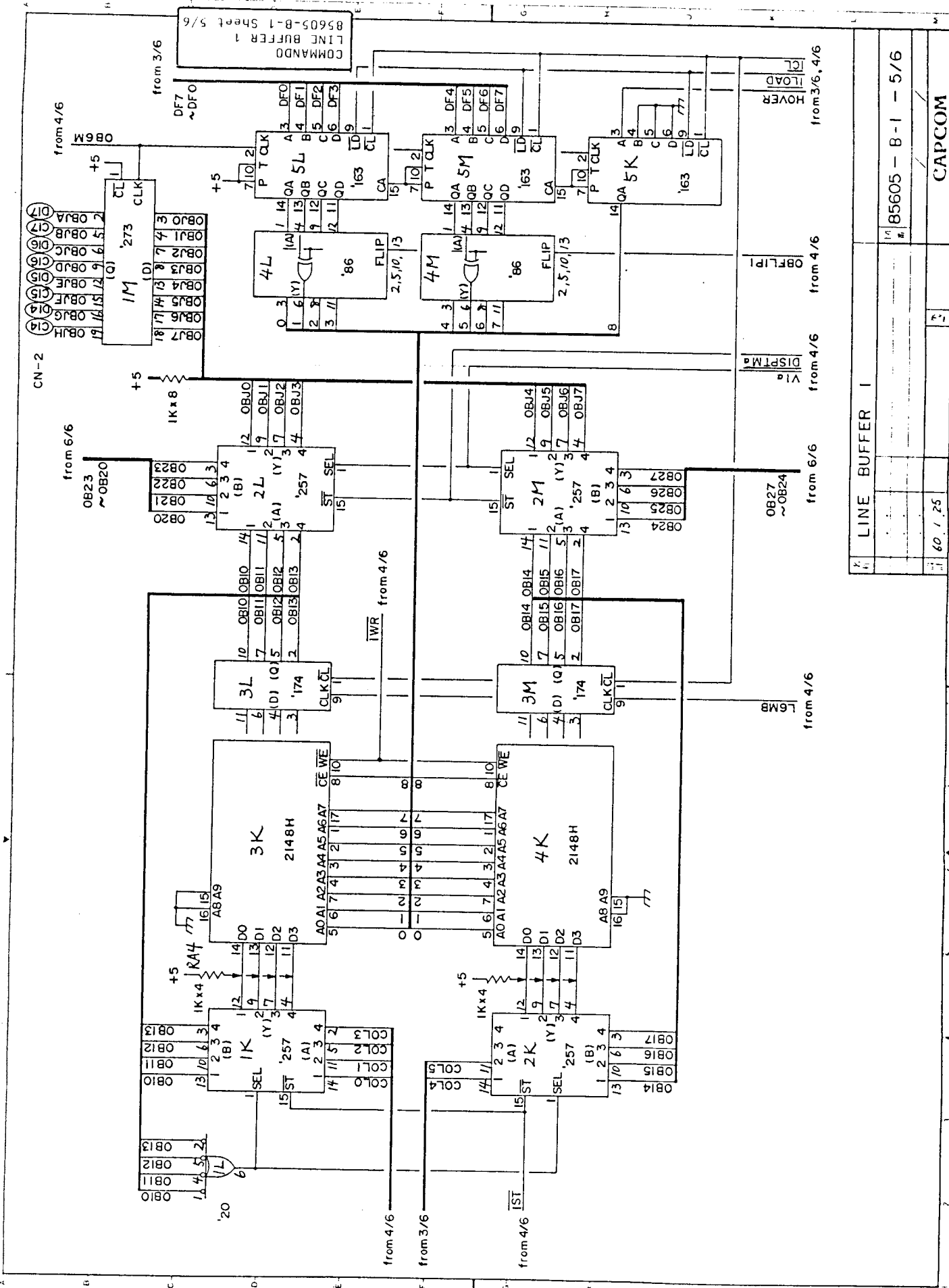
OBJECT ROM

|           |     |
|-----------|-----|
| 85605-B-1 | 4/6 |
| CAPCOM    |     |

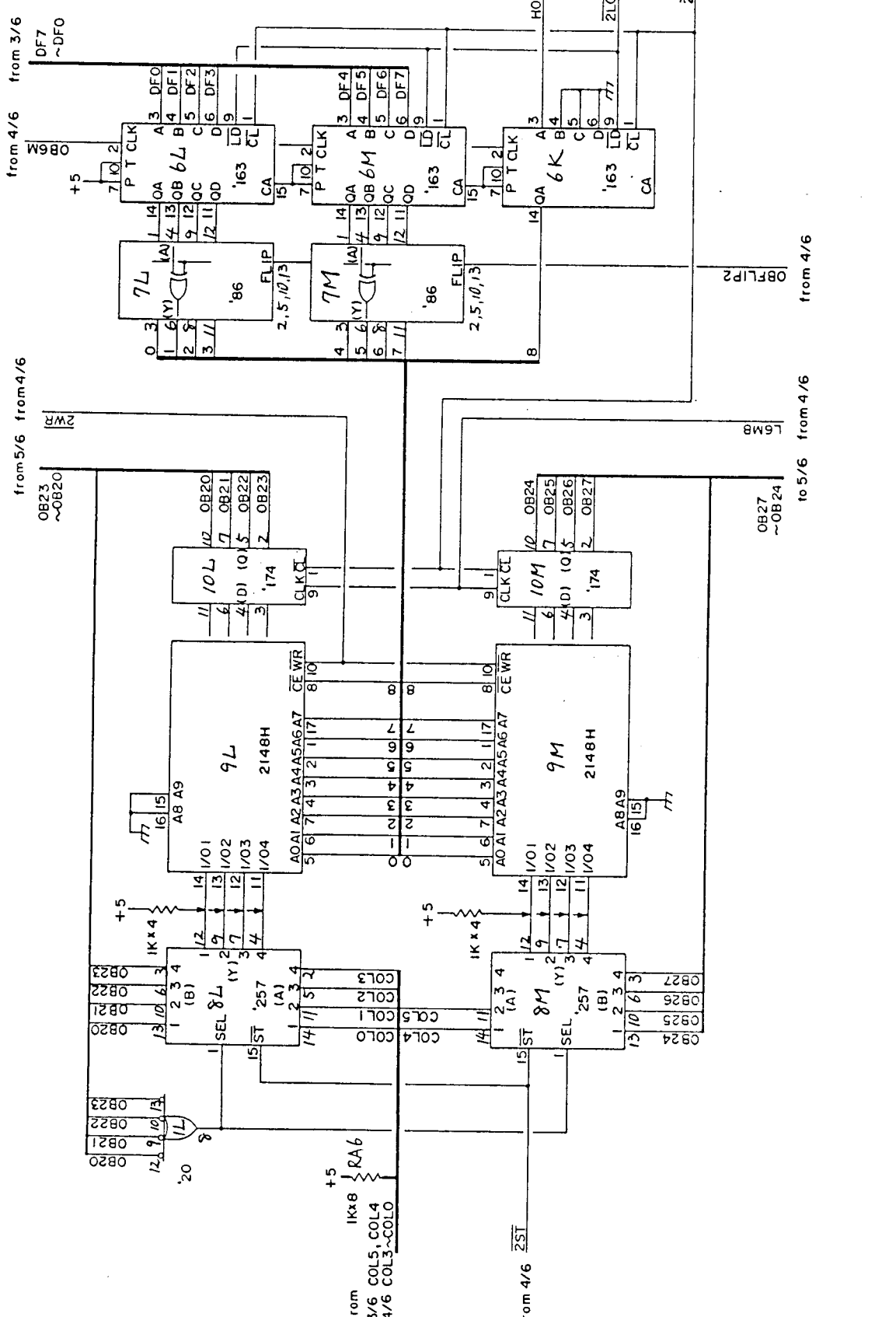
from 3/6

from 3/6

to 5/6, 6/6



|               |                   |
|---------------|-------------------|
| LINE BUFFER 1 |                   |
| 14            | 85605 - B-1 - 5/6 |
| 60 / 25       | CAPCOM            |



|     |               |  |
|-----|---------------|--|
| 1   | LINE BUFFER 2 |  |
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## LIMITED WARRANTY

Data East USA, Inc. ("Seller"), warrants only to the initial purchaser of its products that the items listed below are free from defects in material and workmanship under normal use and service for the warranty periods specified:

- A. Printed circuit boards (90) days
- B. Television monitor (30) days

No other parts of Seller's products are warranted.

Warranty periods are effective from the initial date of shipment from Seller to its authorized distributors.

Seller's sole liability shall be, at its option, to repair or replace products which are returned to Seller during the warranty periods specified, provided:

- A. Seller is notified promptly upon discovery by buyer that stated products are defective.
- B. Such products are properly packaged and then returned, prepaid to Seller's plant.

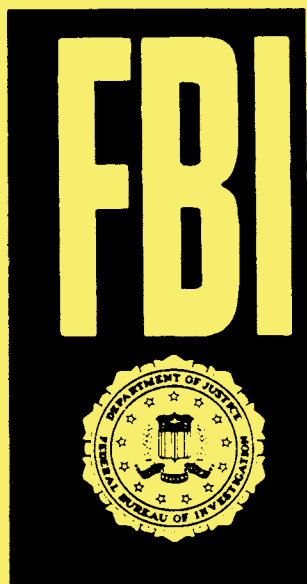
This warranty does not apply to any parts damaged during shipping or handling, or due to improper installation or usage, or alteration. In no event shall Seller be liable for any anticipated profits, loss of profits, loss of use, incidental or consequential damages or any other losses incurred by the customer in connection with the purchase of a Data East USA, Inc. product.

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DATE: 5-01-85





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