OKI

OKIPAGE8*w*
LED Page Printer

Troubleshooting Manual
with Component Parts List
(ODA/OEL/INT)

All specifications are subject to change without notice.

CONTENTS

1. OUTLINE

This manual has been written to provide guidance for troubleshooting of the OKIPAGE8w Printer (primarily for its printed circuit boards), on an assumption that the reader is knowledgeable of the printer. Read the maintenance manual for this printer if necessary.

Note:

1. High voltage power supply board and power supply unit containing a high voltage power supply is dangerous. From the viewpoint of the safety standards, the local repairing of a defective board is not allowed. Thus, the objects to be locally repaired as a result of troubleshooting are switches.

2. TOOLS

For troubleshooting the printer, the tools listed below may be needed in addition to general maintenance tools.

Tool	Remarks
Oscilloscope	Frequency response 100 MHz or higher
Soldering iron	A slender tip type, 15-20 watts

3. CIRCUIT DESCRIPTION

3.1 Outline

The circuit of OKIPAGE8w consists of a main control board, a main high voltage power supply board,a syb-high voltage power supply board and a power supply unit. The block diagram is shown in Fig. 3-1. The main control board controls the reception and transmission of data with a host I/f and processes command analysis, bit image development, raster buffer read. It also controls the engine and high voltage outputs.

(1) Reception and transmission control
The main control board has one parallel I/F port which is compliant to the IEEE 1284 specification.
An interface task stores all data received from the host into a receive buffer first, and returns the printer status upon request of the host.

(2) Command analysis processing
The OKIPAGE8w printer has the following emulation mode.
Hiper-W: OKI original
An edit task fetches data from the receive buffer, analizes commands, and sets I/O registers.

(3) Raster data processing
The decompression circuit in the CPU expands the compressed data and stores the data into the raster buffer.

(4) Raster data transfer
The LED head control circuit in the CPU sends the data stored in the raster buffer to the LED head.

(5) High voltage control (main, sub)
The high voltage control circuit in the CPU.

The high voltage power supply board generates high voltage outputs, and have sensors, LED for display.
The power supply unit generates +26VDC output, +5DC output.

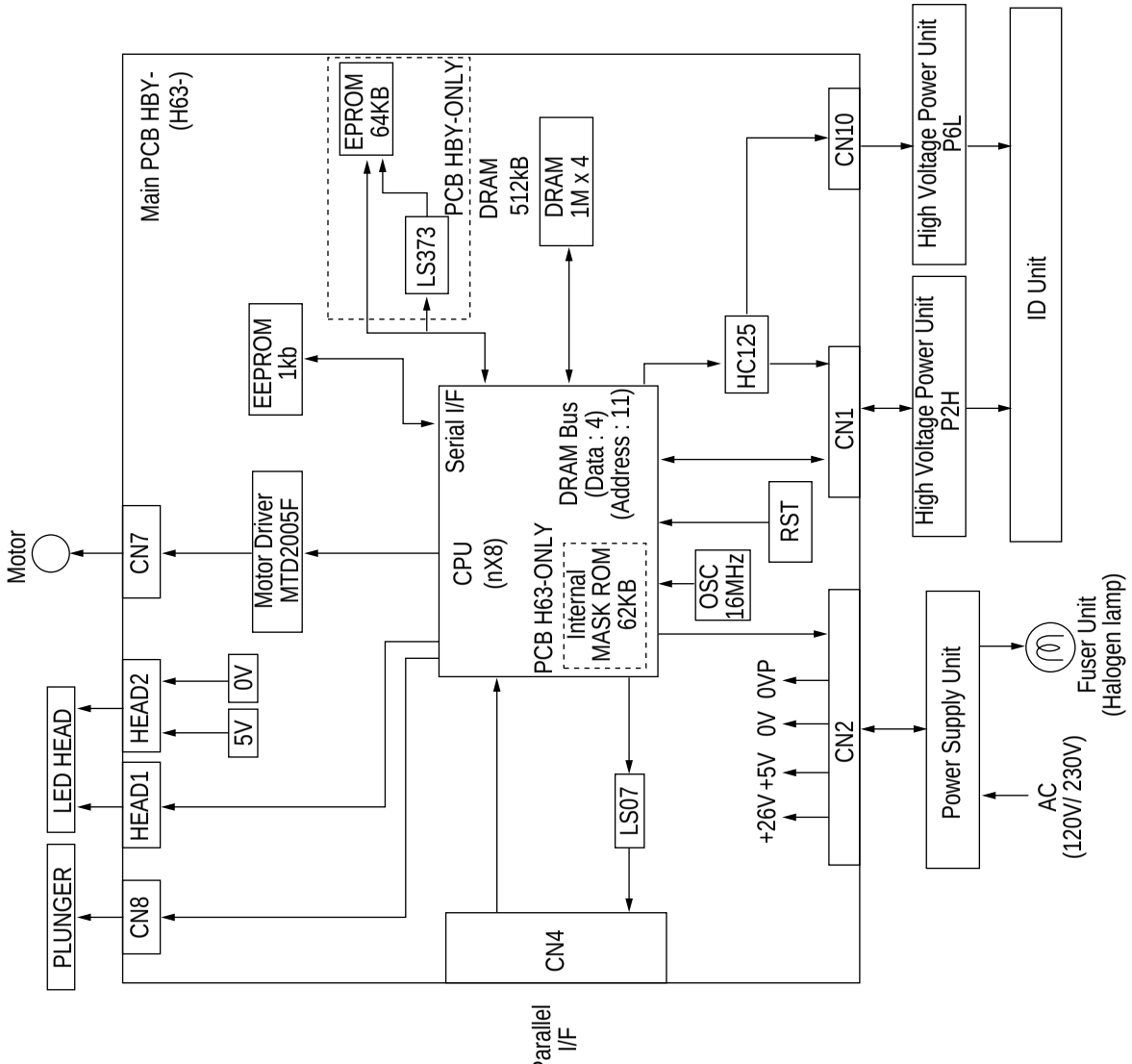


Figure 3-1 OKIPAGE8w Block Diagram

3.2 CPU and Memory

(1) CPU (MSM65917)

CPU core	nX-8
CPU clock	16 MHz
Data bus width	External 8 bits, Internal 8 bits

(2) Program ROM

ROM capacity	64k-bytes (512-kbit EPROM)
ROM type	512 kbits (64k x 8 bits)
Access time	90 nsec

When mask ROM in the CPU is valid, the EPROM is not mounted.

(3) Resident RAM

RAM capacity	512k bytes (1M x 4 bits D-RAM one piece)
RAM type	4M bits (1M x 4 bits)
Access time	60 ns

The block diagram of CPU and memory circuit is shown in Fig. 3-2.

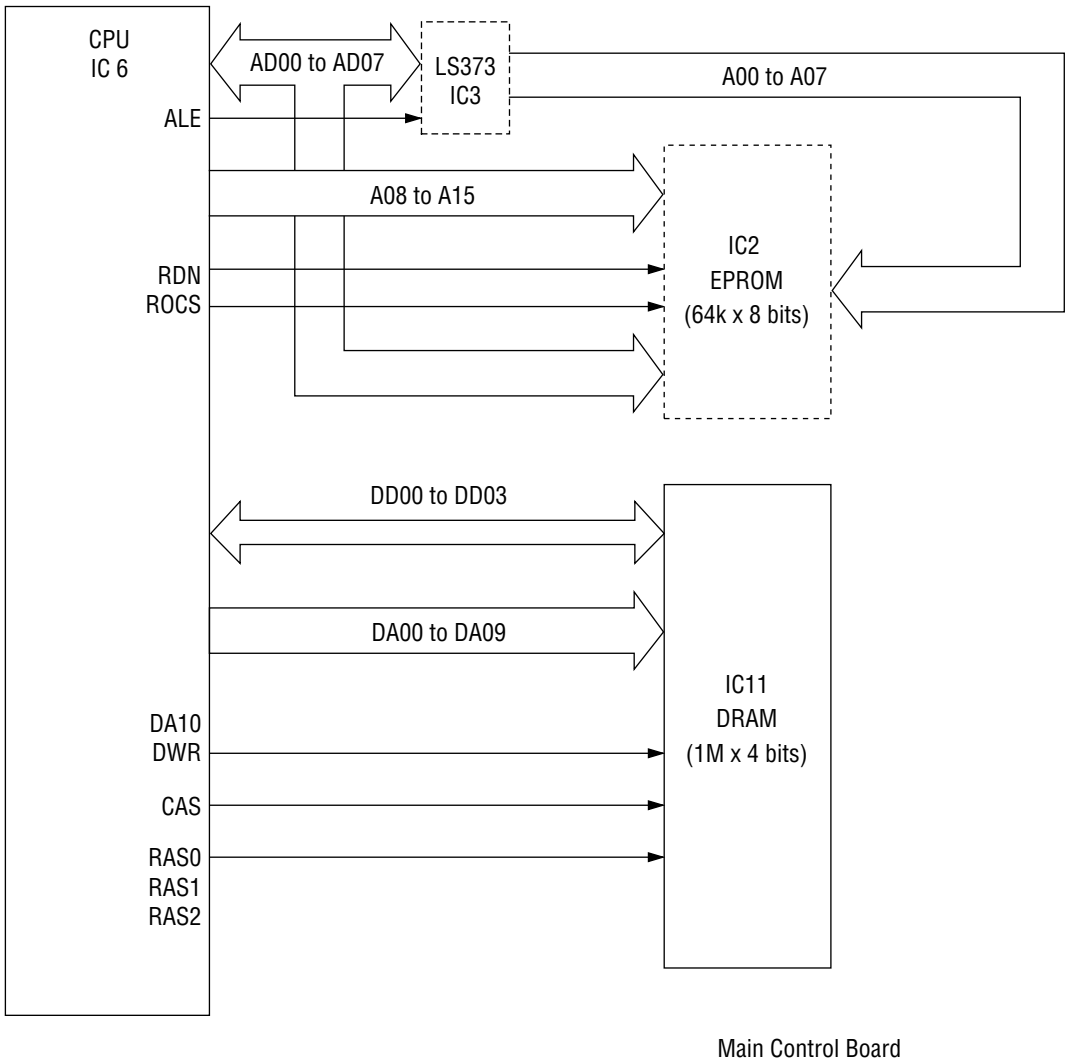
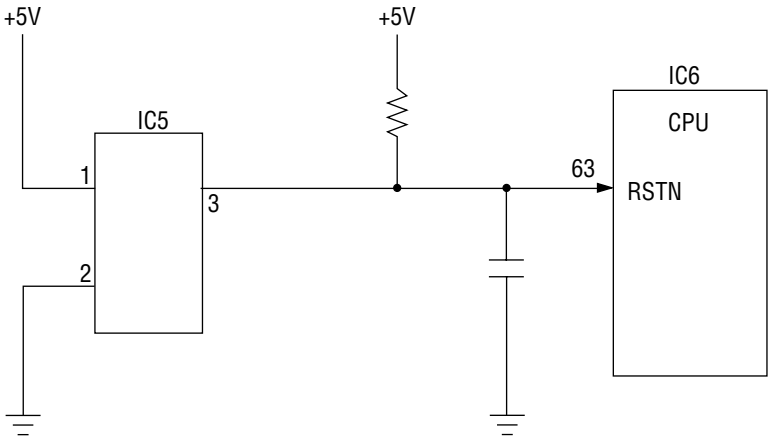
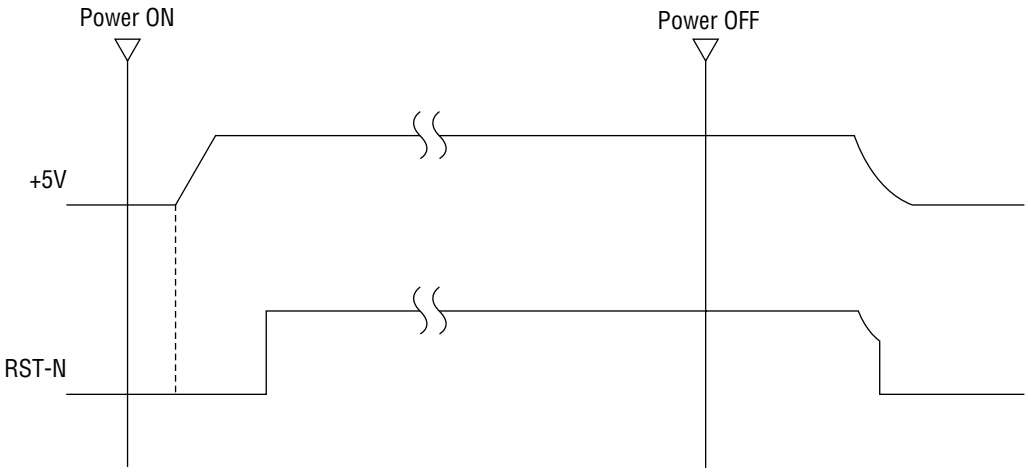


Figure 3-2 Block Diagram of CPU & Memory in OKIPAGE8w

3.3 Reset Control

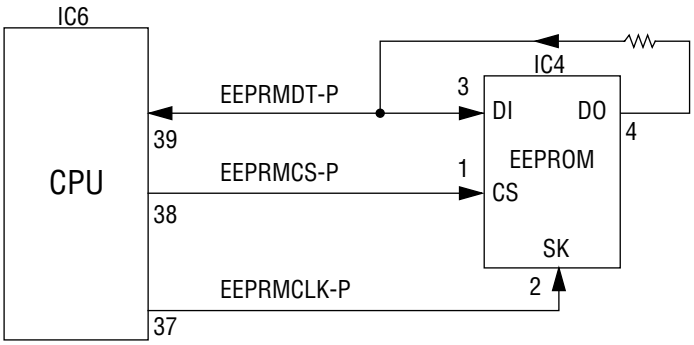
When power is turned on, RST-N signal is generated by IC5.





3.4 EEPROM Control

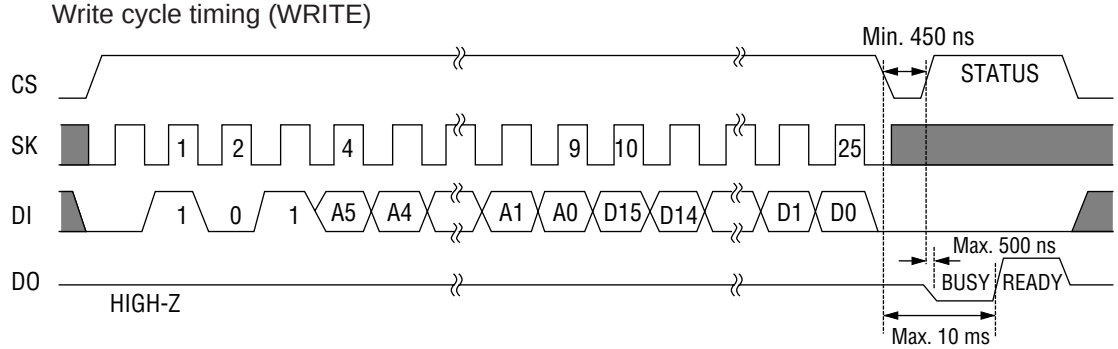
The BR93LC46A on the main control board is an electrical erasable/programmable ROM of 64-bit x 16-bit configuration. Data input to and output from the ROM are bidirectionally transferred in units of 16 bits through I/O port (EEPRMDT-P) in serial transmission synchronized with a clock signal from the CPU.



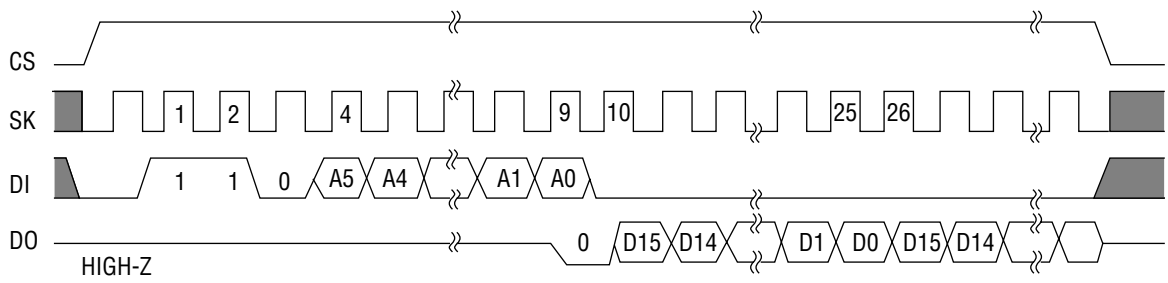
The EEPROM operates in the following instruction modes.

Instruction	Start bit	Operation code	Address	Data
Read (READ)	1	10	A5 to A0	
Write Enabled (WEN)	1	00	11XXXX	
Write (WRITE)	1	01	A5 to A0	D15 to D0
Write All Address (WRAL)	1	00	01XXXX	D15 to D0
Write Disabled (WDS)	1	00	00XXXX	
Erase	1	11	A5 to A0	
Chip Erasable (ERAL)	1	00	10XXXX	

Write cycle timing (WRITE)

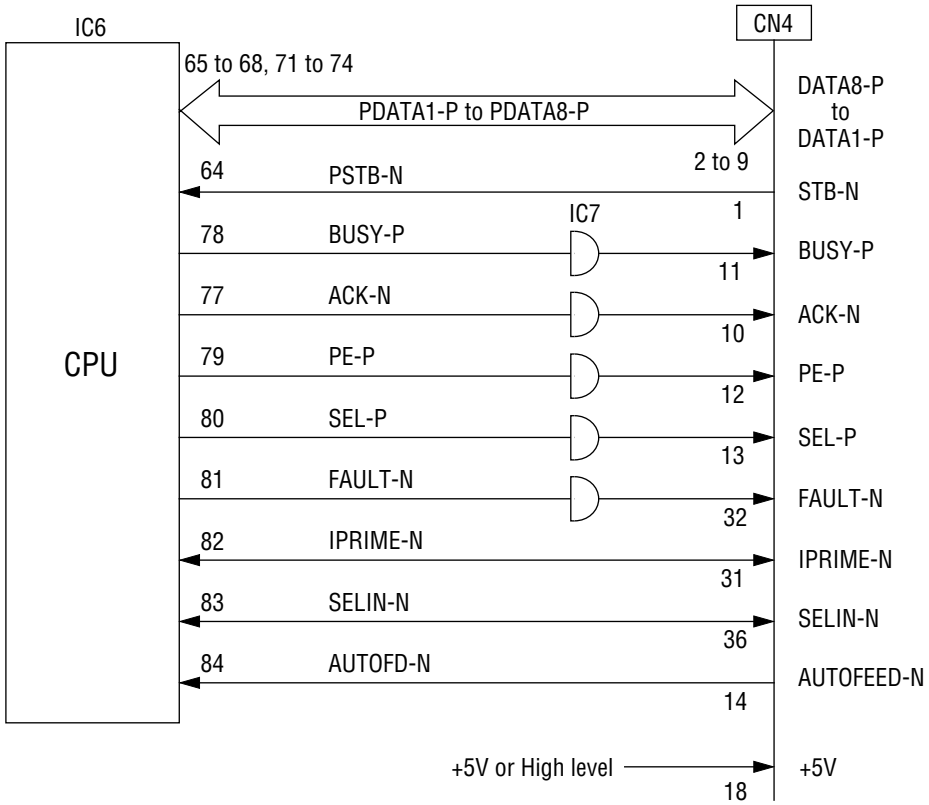


Read cycle timing (READ)



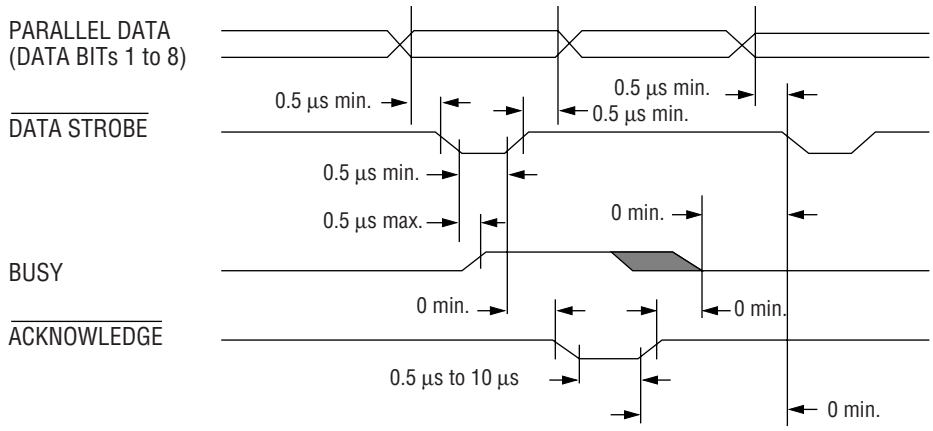
3.5 Parallel Interface

Parallel data is received from a host system via parallel interface which is compliant to the IEEE1284 specification.



Compatible mode

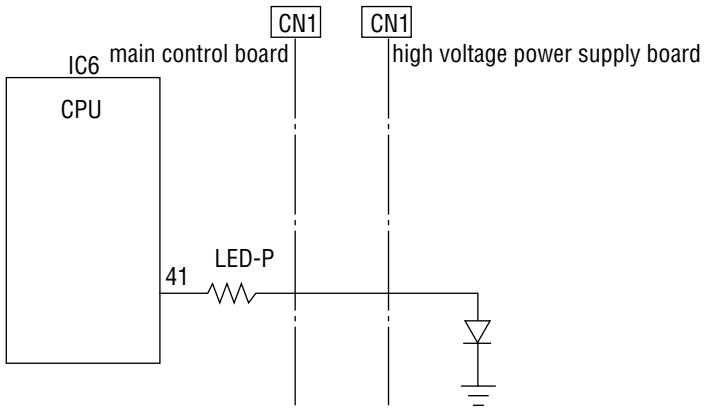
The CPU sets a BUSY-P signal to ON at the same time when it reads the parallel data (PDATA1-P to PDATA 8-P) from the parallel port at the fall of PSTB-N signal. Furthermore, it makes the store processing of received data into a receive buffer terminate within a certain fixed time and outputs an ACK-N signal, setting the BUSY-P signal to OFF.



3.6 LED Lamp Control

There is an LED lamp on the high voltage power supply board which is connected to and controled by the CPU on the main control board.

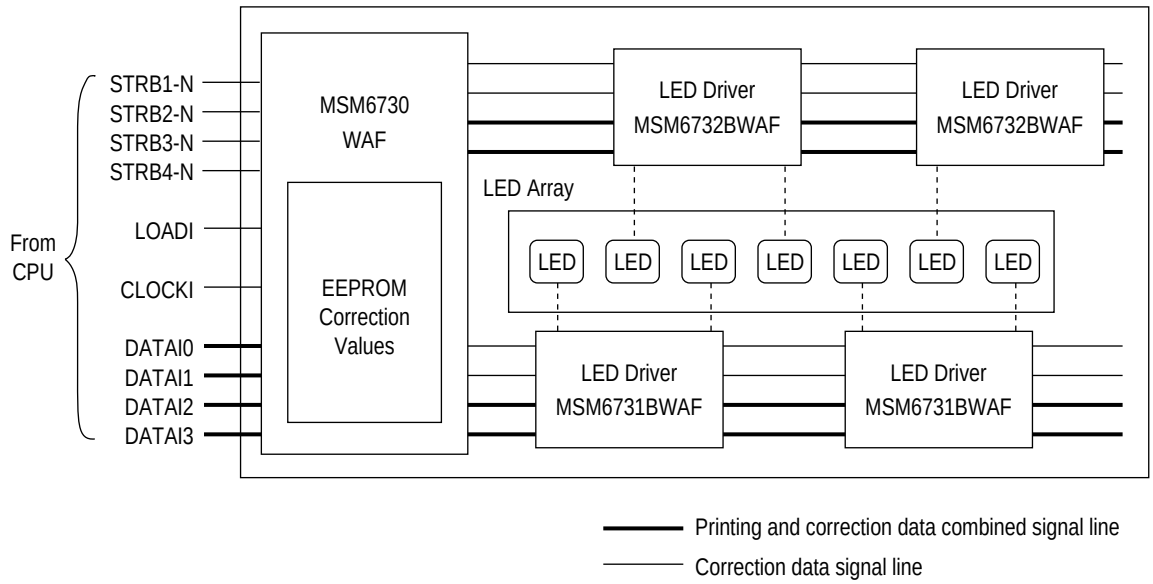
The light from the LED lamp can be seen on the Lens Cover through the LED Lens.

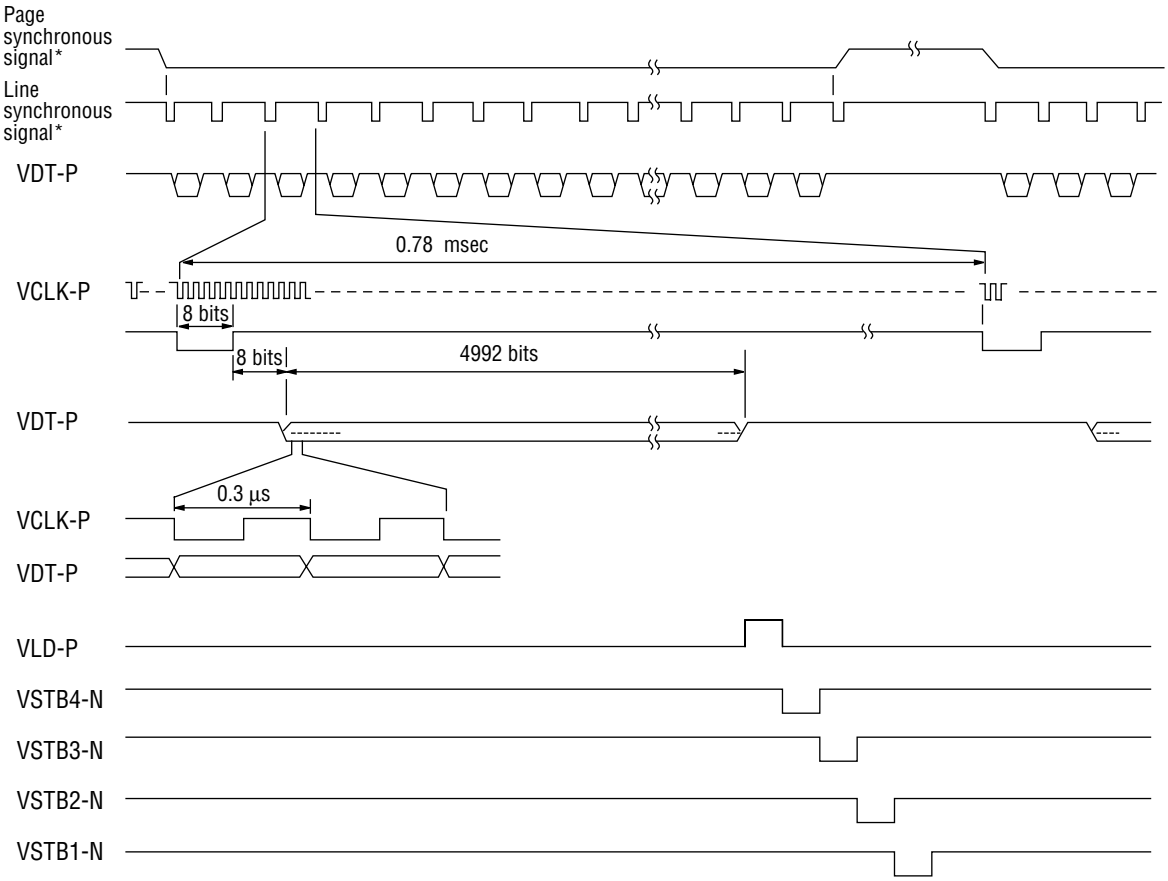


3.7 LED Head Control

An LED correcting head, which is capable of correcting the illumination of the LED for each dot, is being used in this printer. LED illumination correction function of 16 steps is carried out by using an EEPROM which is installed in the LSI that maintains the LED illumination correction values, and an LED correction drivers (MSM6731BWAF or MSM6732BWAF) together as a pair.

The LED correcting head consists of the correction control LSI (MSM6730WAF), LED drivers (MSM6731BWAF or MSM6732BWAF), and an LED array.

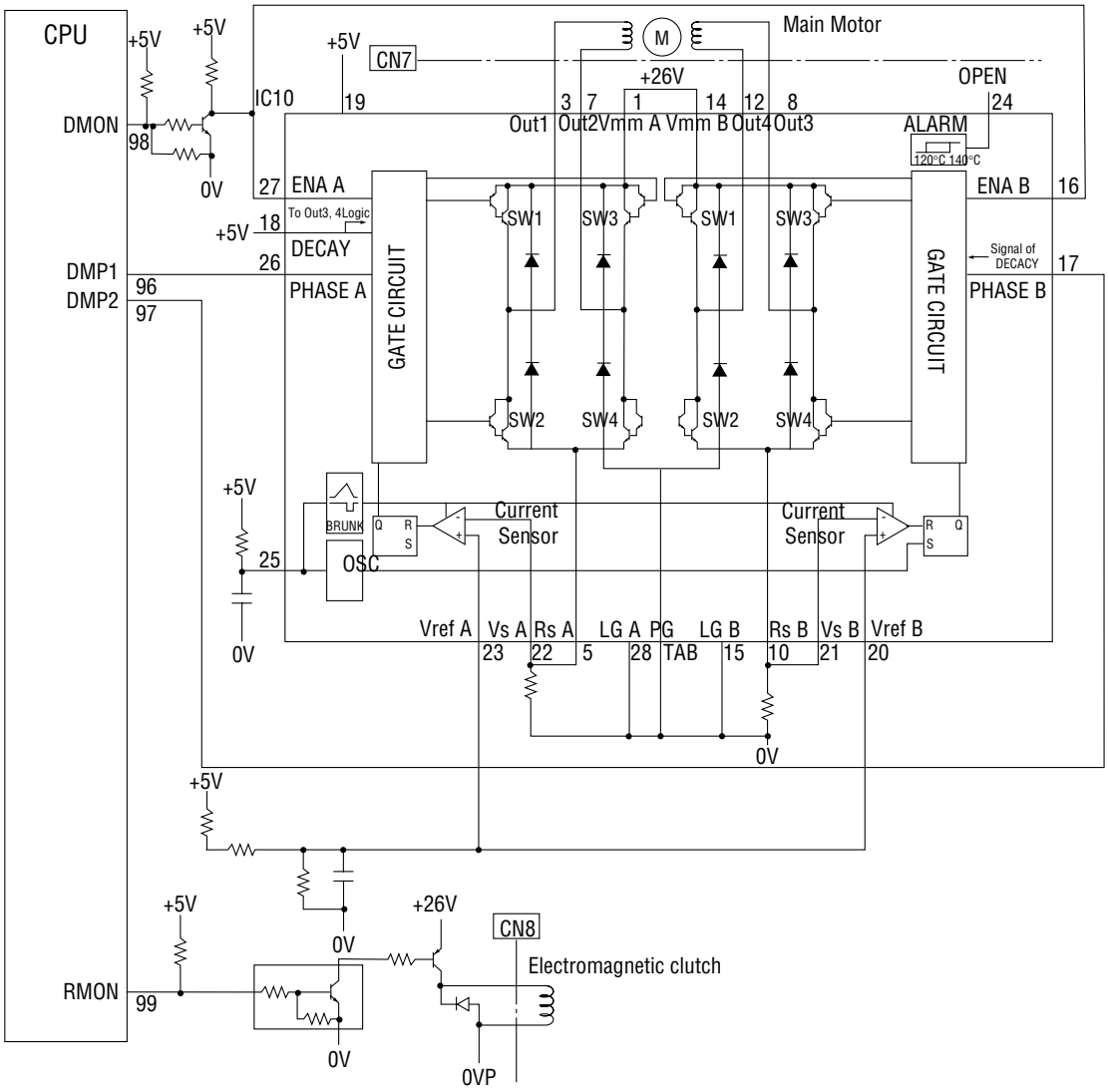




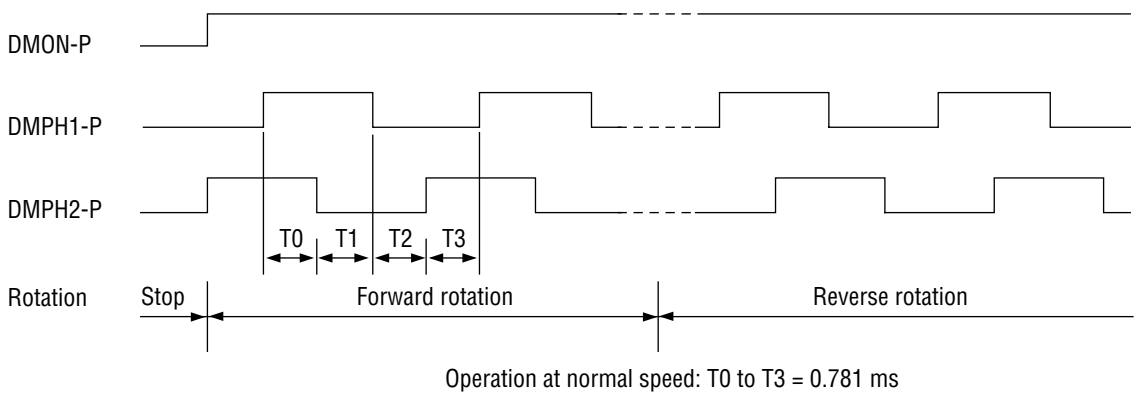
* CPU internal signal

3.8 Motor and clutch control

The electromagnetic clutch is driven by a control signal from the CPU and the drive circuit shown below.
The main motor is driven by the control signals from the CPU and the driver IC.



(1) Main motor



Operation at normal speed: T0 to T3 = 0.781 ms

(2) Motor drive control

Time T0 to T3 determines the motor speed, while the phase different direction between phase signals DMPH1-P and DMPH2-P determines the rotation direction. DMON-P signal control a motor coil current. According to the polarity of the phase signal, the coil current flow as follows:

1) +26V $\rightarrow$ SW1 $\rightarrow$ motor coil $\rightarrow$ $\overline{SW4}$ $\rightarrow$ resistor $\rightarrow$ earth, or,

2) +26V $\rightarrow$ $\overline{SW3}$ $\rightarrow$ motor coil $\rightarrow$ SW2 $\rightarrow$ resistor $\rightarrow$ earth

The drop voltage across the resistor is input to comparator, where it is compared with a reference voltage. If an overcurrent flows, a limiter operates to maintain it within a certain fixed current.

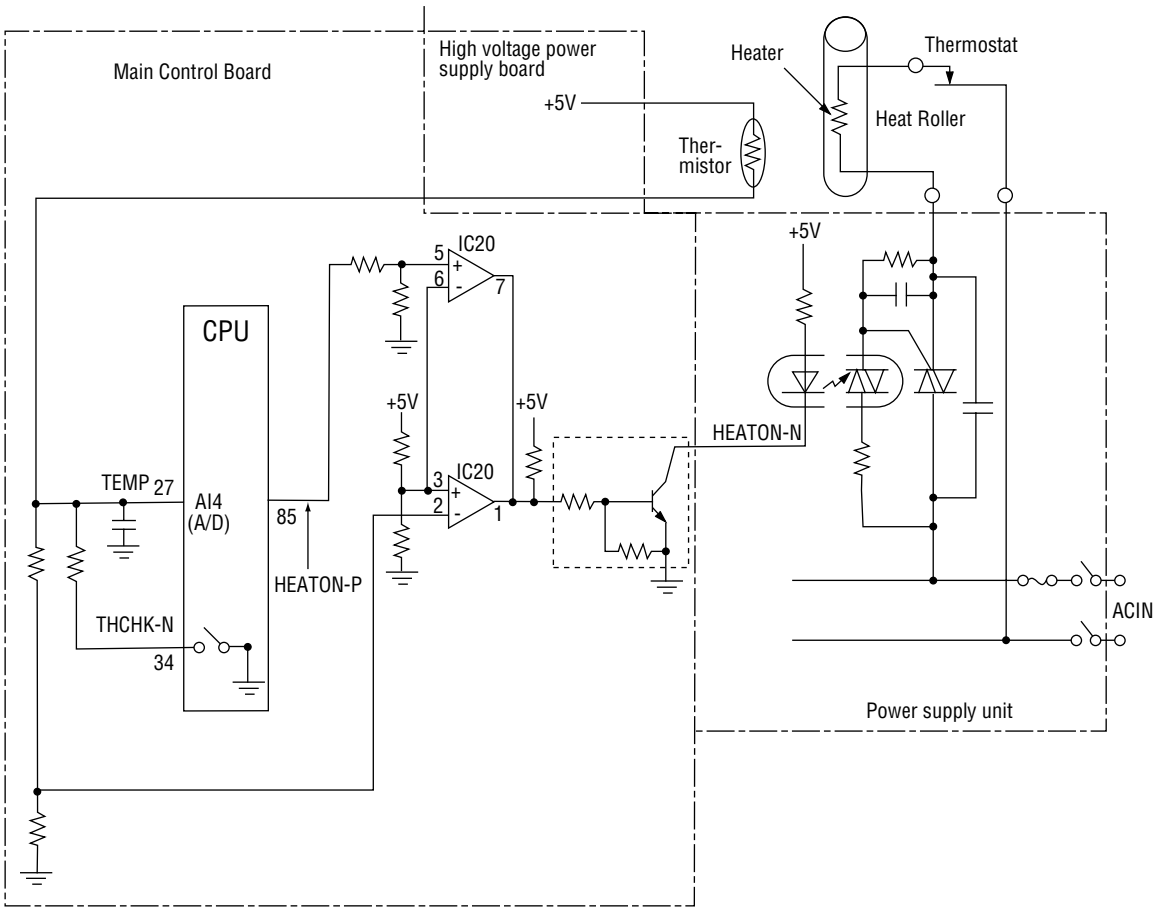
(3) Electromagnetic clutch control

Mechanical operation mode is switched by the combination of the clutch status and the direction of motor rotation.

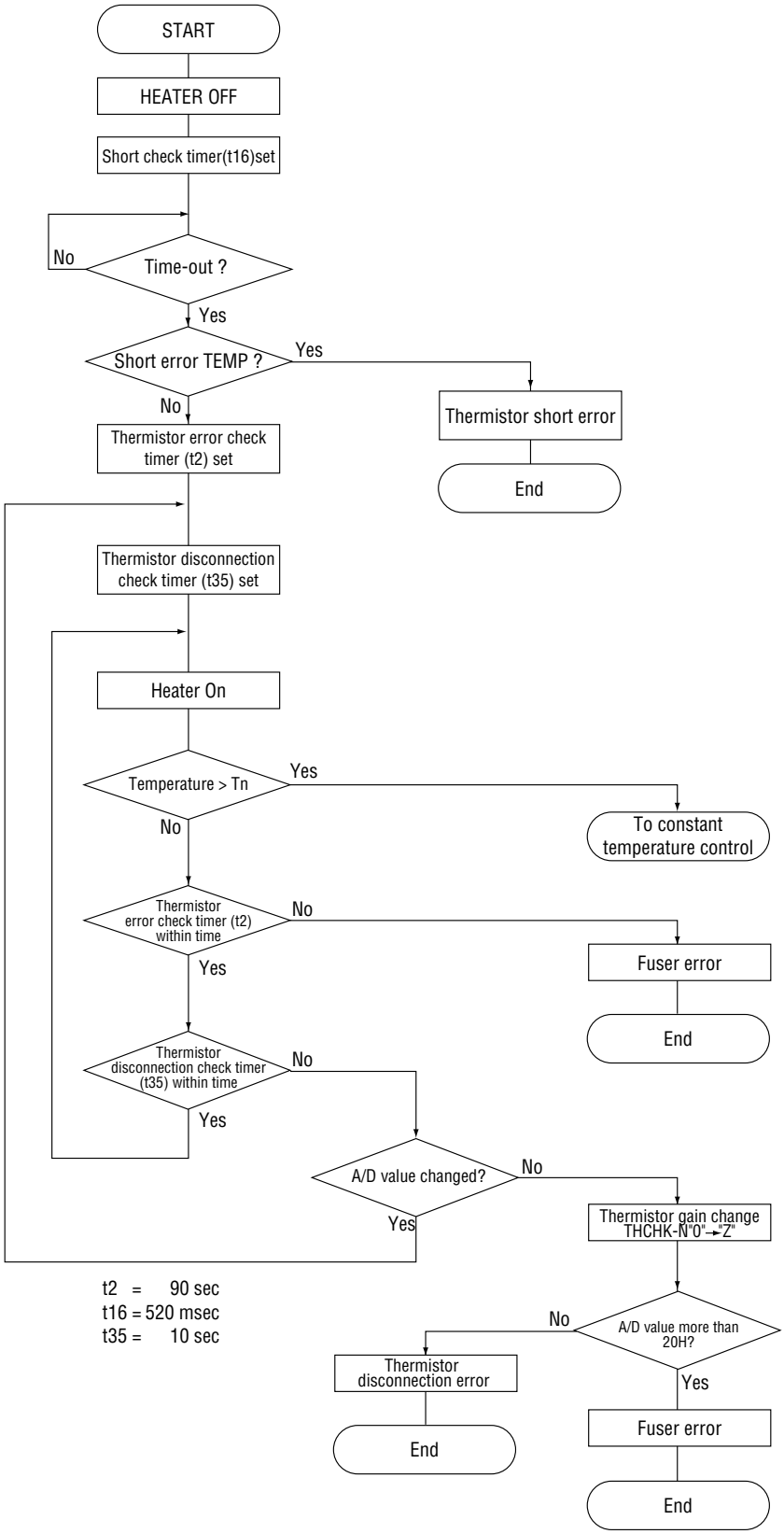
clutch status	rotation direction	operation mode
off	Forward	cleaning
off	Reverse	Hopping from manual feed slot
on	Forward	illegal operation
on	Reverse	Hopping from tray

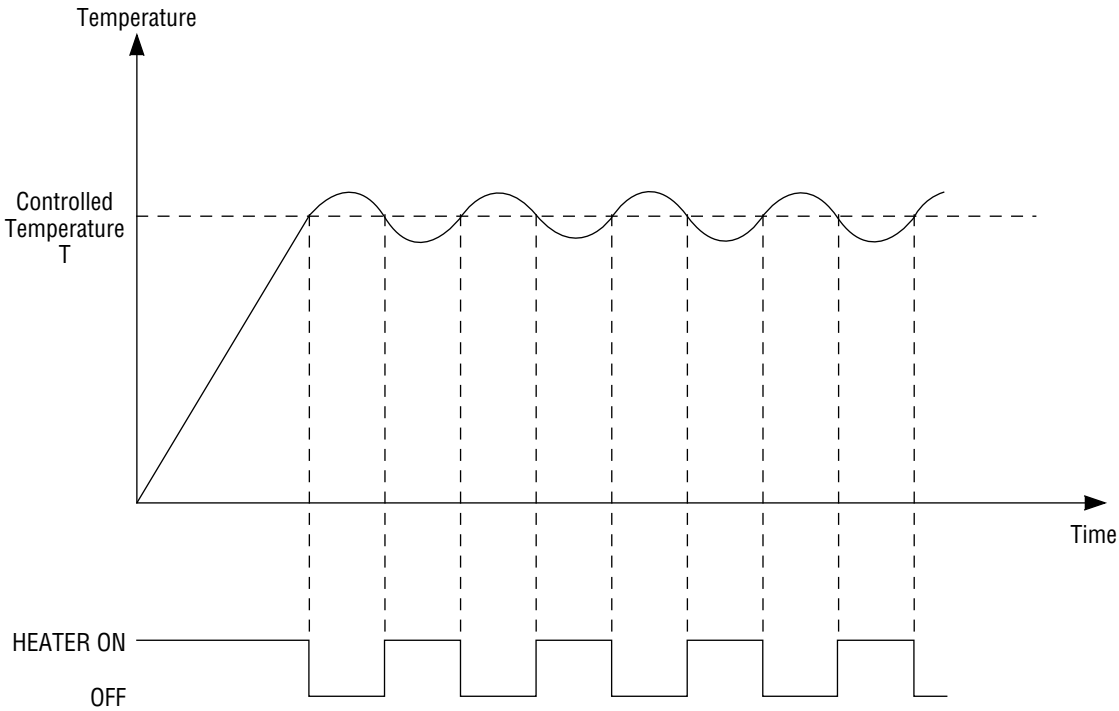
3.9 Fuser Temperature Control

The temperature change in a heat controller is converted into the electric potential TEMP corresponding to the change in the resistance value of a thermistor, and the resultant potential is fed back to the control circuit. The CPU performs ON/OFF control of the HEATON-P signal to keep the heat roller temperature constant in accordance with the state at which the thermistor voltage (TEMP) is read into directly by the AD converter of the CPU.
When the paper thickness is set on the menu of the host, the temperature is adjusted to the targeted thickness accordingly.



Flowchart of Thermistor Circuit Check





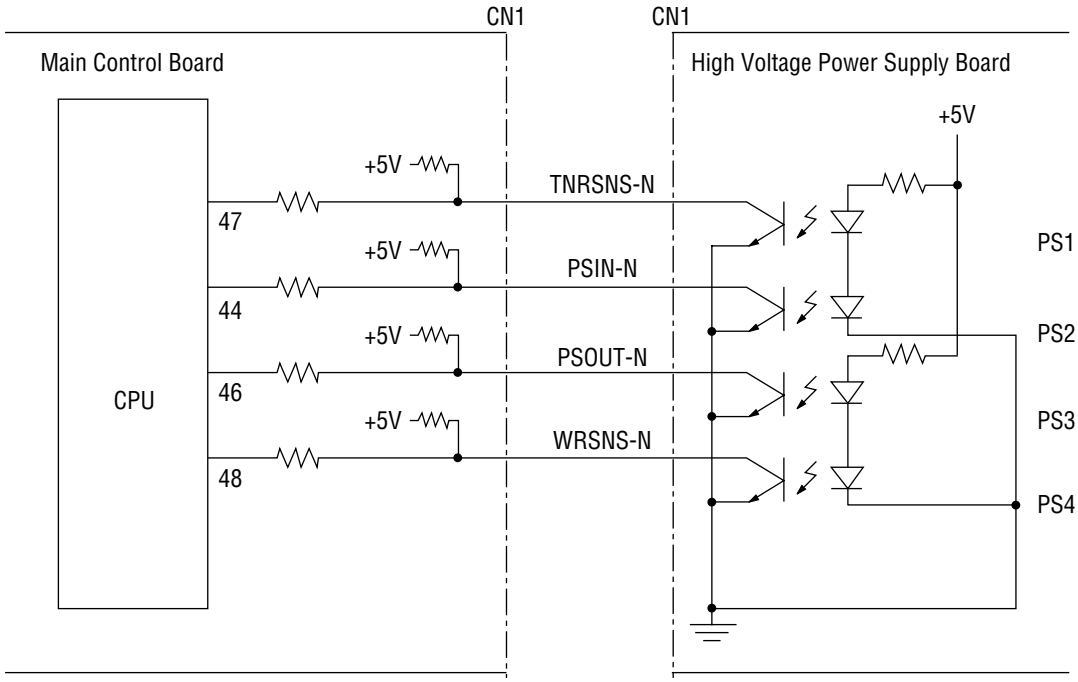
Temperature table

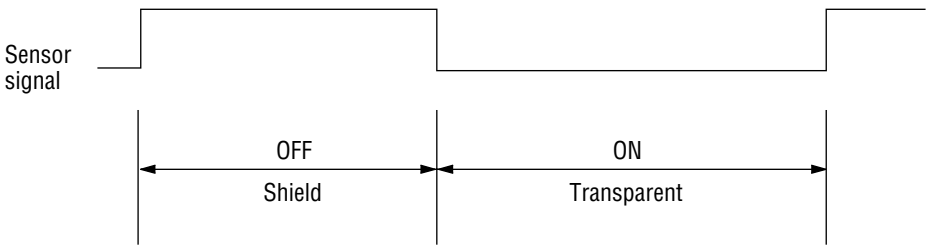
THERMCMP-N	Heater control mode
0	Normal operation
Z	Fuser Error Check

T Paper Thickness
145˚C: light
150˚C: medium light
155˚C: medium
160˚C: medium heavy
165˚C: heavy

3.10 Sensor Control

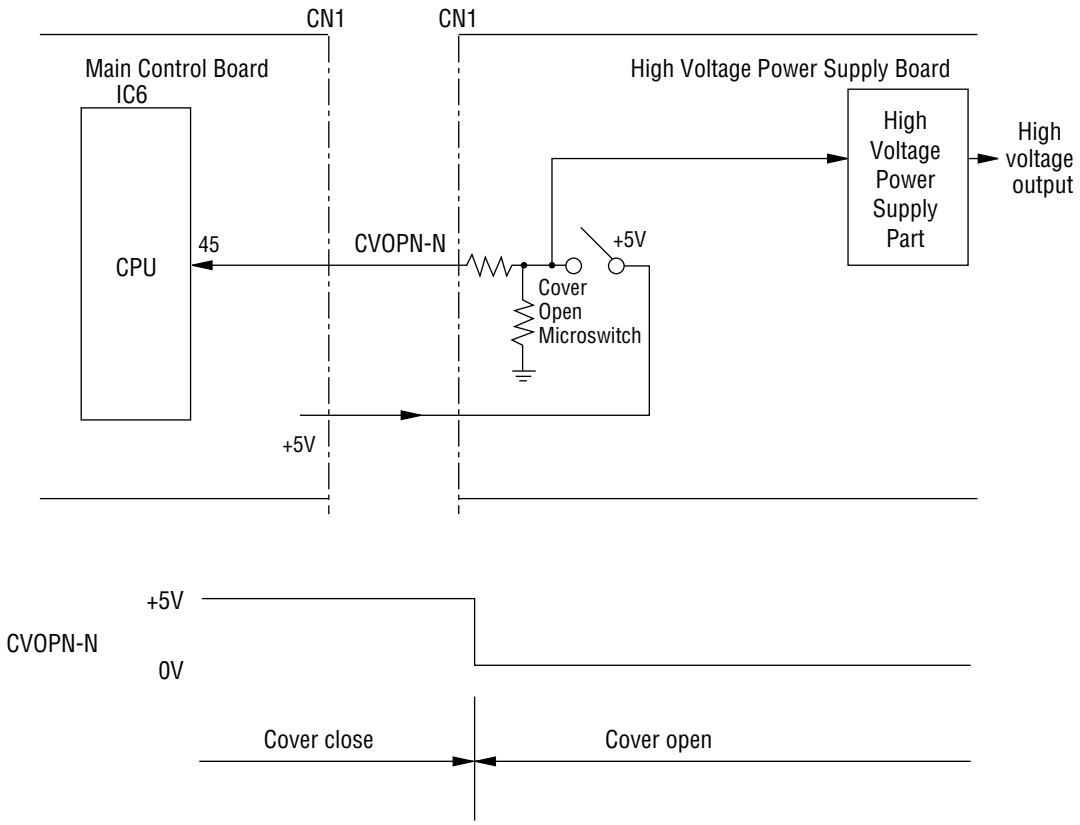
The CPU supervises the state of each sensor every 40 ms.





3.11 Cover Open

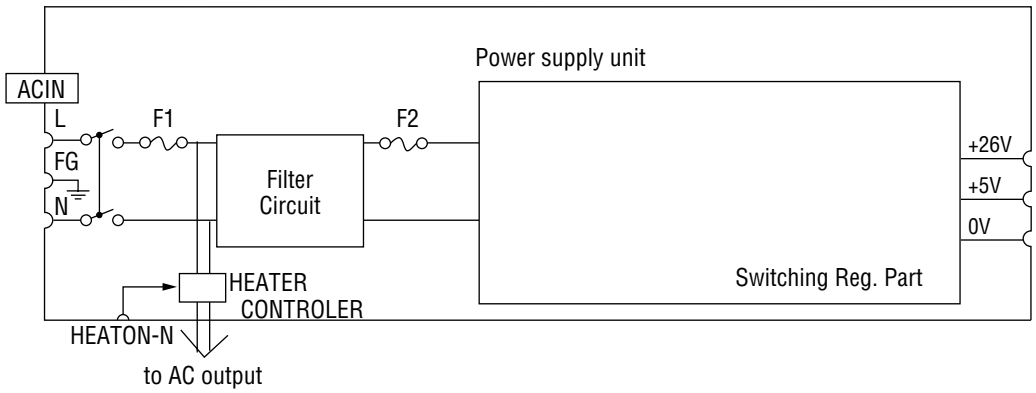
When the cover is opened, a cover open microswitch is opened. This makes a CVOPN-N signal low, thereby the CPU detects that cover is open. Furthermore, opening the cover stops applying a +5V power to the high voltage power supply part, resulting in stopping all high voltage outputs.



3.12 Power Supply Part

(1) Power supply unit

An AC power from an inlet is input to Switching Reg. part .AC power is converted to a +26 VDC output and +5 VDC output.

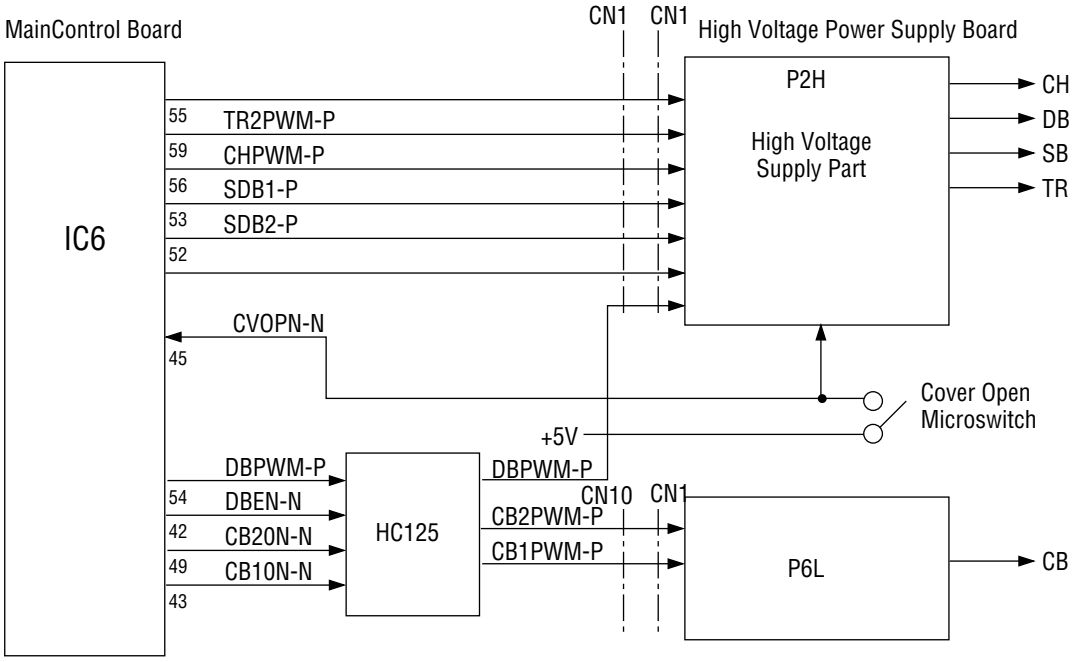


Fuse Ratings

AC Input / Fuse	230 V	120 V
F1	250 V 6.3 A	125 V 8 A
F2	250 V 2 A	250 V 2.5 A

(2) High voltage power supply board

The +5 VDC power supplied to the high voltage power supply part via the cover open microswitch as source voltage. The high voltage power supply part supplies necessary voltage for electro-photography print to output terminals CH, DB, SB, TR, and CB according to a control signal from the CPU. The table on the next page shows the relationship between control signals and high voltage outputs.



Control Signals and High Voltage Outputs

Control signal name	Level	Function
TR1PWM	H/L (PWM)	Makes the part put out a power (+3 to 5 μA, +0.5 to 4 KV) to TR.
	L	———
TR2PWM	H/L(PWM)	Makes the part put out a -750V power to TR.
	L	———
CHPWM	H/L(PWM)	Makes the part put out a -1300V power to CH.
	L	———
DB1ENB-P	H	Makes the part put out the following power: 0V power to SB +265V power to DB
	L	———
DB2ENB-P	H	Makes the part put out the following power: -550V power to SB -265V power to DB
	L	———
DBPWM-P	H/L(PWM)	Makes the part put out the power to SB, DB, CB.
	L	———
CB1PWM	H/L(PWM)	Makes the part put out a +400V to CB
	L	———
CB2PWM	H/L(PWM)	Makes the part put out a -1350V to CB
	L	———

4. TROUBLESHOOTING

4.1 Troubleshooting Table

(A) High Voltage Power Supply Board

Note: A malfunction of the power supply is not repaired by an agency. The abnormality to be treated here is that of sensors only.

Failure	PC Display Message	Flowchart No.
A paper input jams occur frequently.	PAPER INPUT JAM	A - 1
A paper feed jams occur frequently.	PAPER FEED JAM	A - 2
A paper-exit jams occur frequently.	PAPER EXIT JAM	A - 3
A paper size errors occur frequently.	PAPER SIZE ERROR	A - 4
Paper can not be fed from the manual feed slot .		A - 5
The message "COVER OPEN" remains displayed on the PC display.	COVER OPEN	A - 6
The message "TONERLOW" remains displayed on the PC display.	TONER LOW	A - 7
The message "TONERSNS" remains displayed on the PC display.	TONER SENSOR PROBLEM	A - 8

(B) Main Control Board

Failure	PC Display Message	Flowchart No.
Initialization error and not restored	CONNECTION PROBLEM	B - 1
Program ROM error	ERROR 10	B - 2
Resident RAM error	ERROR 30	B - 3
EEPROM error	ERROR 40	B - 4
Fuser error	ERROR 71	B - 5
Thermistor Open error	ERROR 72	B - 5
Thermistor Short error	ERROR 73	B - 5
Watchdog timer timeout occurs frequently.	ERROR 90	B - 6
Data sent through the Parallel I/F cannot be received.	CONNECTION PROBLEM	B - 7

4.2 Troubleshooting Flowchart

A-1 Paper input jams occur frequently.

- Is PS4 (Write Sensor) operating normally?
  - No Replace PS4.
- Yes Is Pin1 of CN8 in main control board operating normally?
  - No Replace Q4 or Q5 in main control board.
- Yes Failure of IC6 in main control board.

A-2 A paper feed jams occur frequently.

- Is PS4 (Write Sensor) operating normally?
  - No Replace PS4.
- Yes Is PS3 (Outlet Sensor) operating normally?
  - No Replace PS3.
- Yes Failure of IC6 in main control board.

A-3 A paper exit jams occur frequently.

- Is PS3 (Outlet Sensor) operating normally?
  - No Replace PS3.
- Yes Failure of IC6 in main control board.

A-4 A paper size errors occur frequently.

- Is PS4 (Write Sensor) operating normally?
  - No Replace PS4.
- Yes Failure of IC6 in main control board.

A-5 Paper can not be fed from manual feed slot.

- Is PS2 (Manual Feed Sensor) operating normally?
  - No Replace PS2.
- Yes Failure of IC6 in main control board.

A-6 The message “COVER OPEN” remains displayed on the PC display.

- Is CVSW (Cover Open Switch) operating normally?
  - No Replace CVSW.
- Yes Failure of IC6 in main control board.

A-7 The message “TONERLOW” remains displayed on the PC display.

- Is PS1 (Toner Sensor) operating normally?
  - No Replace PS1.
- Yes Failure of IC6 in main control board.

A-8 The message “TONERSNS” remains displayed on the PC display.

- Is PS1 (Toner Sensor) operating normally?
  - No Replace PS1.
- Yes Failure of IC6 in main control board.

B-1 Initialization error and not restored

- Replace IC2.(Case H63-PCB : No mounted IC2)
- OK?
- No Is the 16-MHz clock signal being put out to pin 3 of OCS1?
  - No Replace OSC1.
- Yes Failure of IC6

B-2 Program ROM error

- Replace IC2.(Case H63-PCB: Replace IC6)

B-3 Resident RAM error

- Are negative pulses being put out to Pin 4 , 23 (RAS0-N , CSA-N) of IC11?
  - No Failure of IC6
- Yes Are the signals at pins, 9 TO 12 , 14 TO 18 , 5 (DA00-P to DA09-P) of IC11 being changed?
  - No Failure of IC6
- Yes Replace IC11.

B-4 EEPROM error

- Replace IC4.
- OK?
- No Failure of IC6

B-5 Fuser error/ Thermistor Open error/ Thermistor Short error

- Is the heater on?
  - No Is the voltage at Pin 40 (HEATON-P) of IC6(MSM65917) 5V?
    - Yes Replace Q3 or IC20 (Case H63-PCB: Replace TR2 or IC20)
- No Failure of IC6

B-6 Watchdog timer timeout occurs frequently.

- Replace IC2.(Case H63-PCB : No mounted IC2)
- OK?
- No Failure of IC6

B-7 Data sent through the Parallel I/F cannot be received.

- Is the signal at Pin 11 (BUSY-P) of CN4 being at low level?
  - No — Is the signal at Pin 13 (BUSY-P) of IC7 (74LS07) changed as shown below, at data reception?

	ON-LINE	OFF-LINE
BUSY-P	Low	High

    - No — Failure of IC6
    - Yes — Replace IC7 (74LS07).
  - Yes — Is the level of the signal at Pin 1 (STB-N) of CN4 changed at data reception?
    - No — Make sure of the connection of I/F cable or the operation of the h ost computer.
  - Yes — Are the signals at Pin 1 (ACK-N), Pin 9 (FAULT-N) of IC7 (74LS07) being respectively at low level and high level in on-line mode?
    - No — Replace IC7 (74LS07).
    - OK?
    - No
  - Yes — Failure of IC6

5. CIRCUIT DIAGRAM

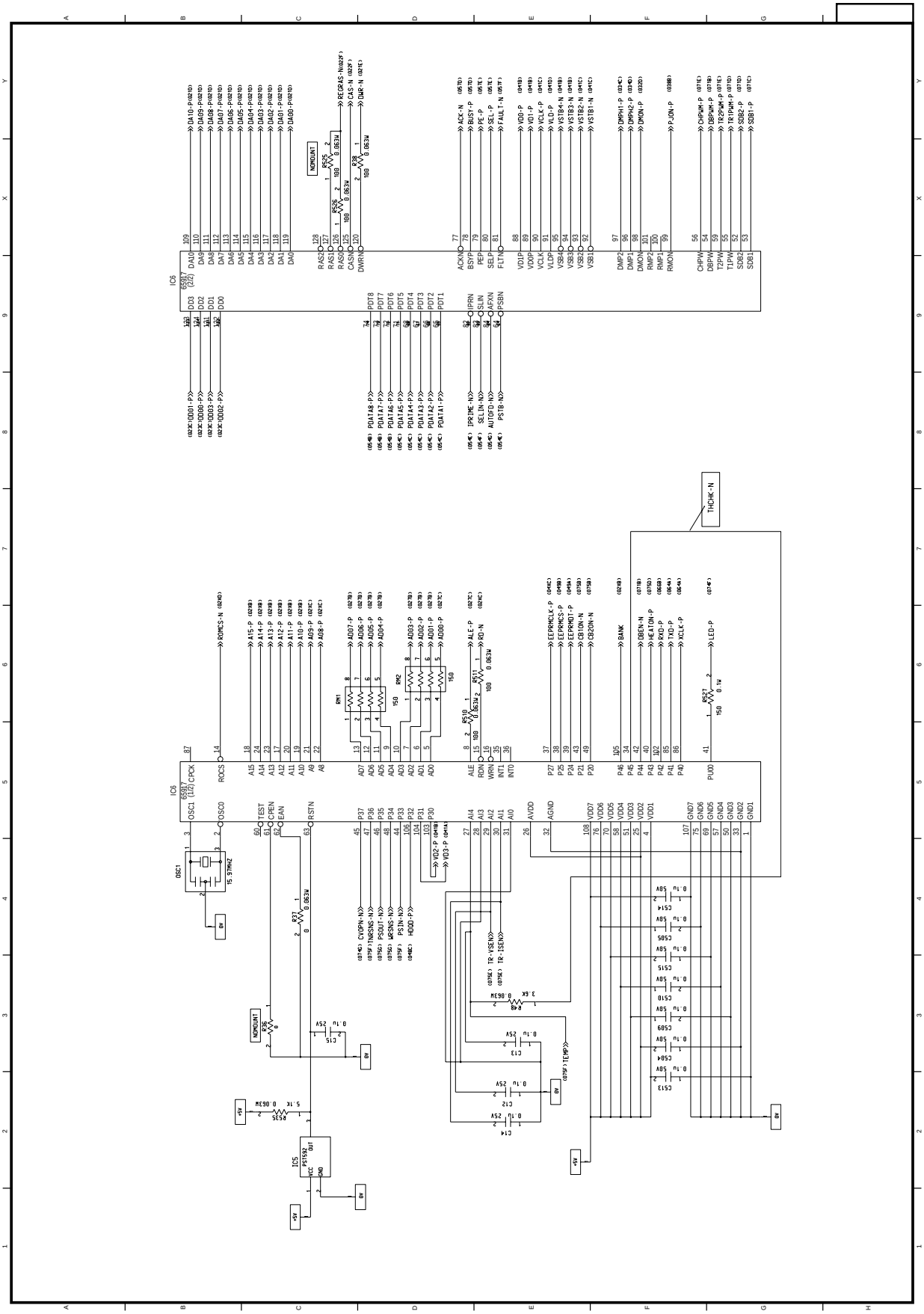


Figure 5-1 Main Control PCB (HBY-1/ 7) Circuit Diagram Rev.1

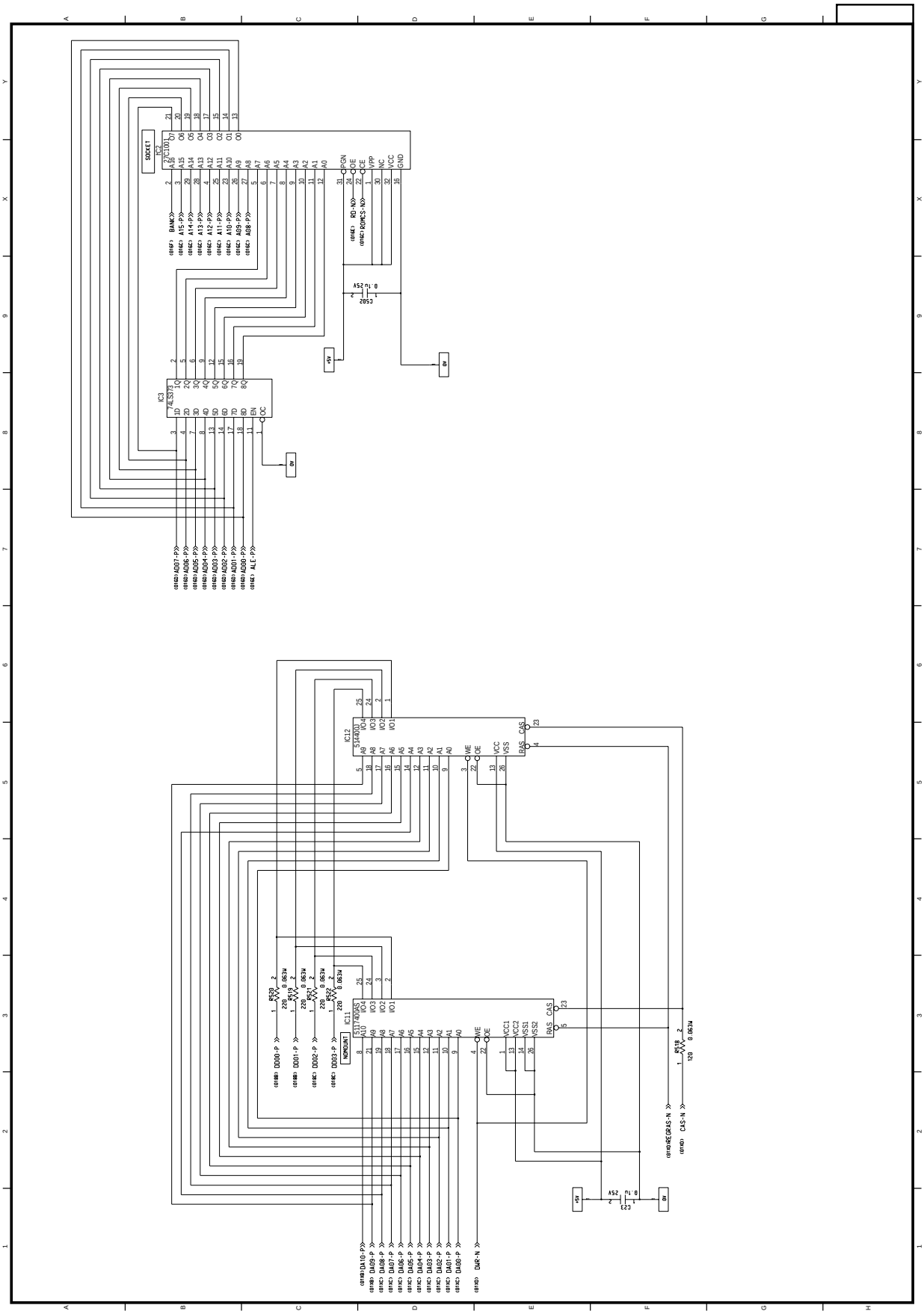


Figure 5-2 Main Control PCB (HBY-2/ 7) Circuit Diagram Rev.1

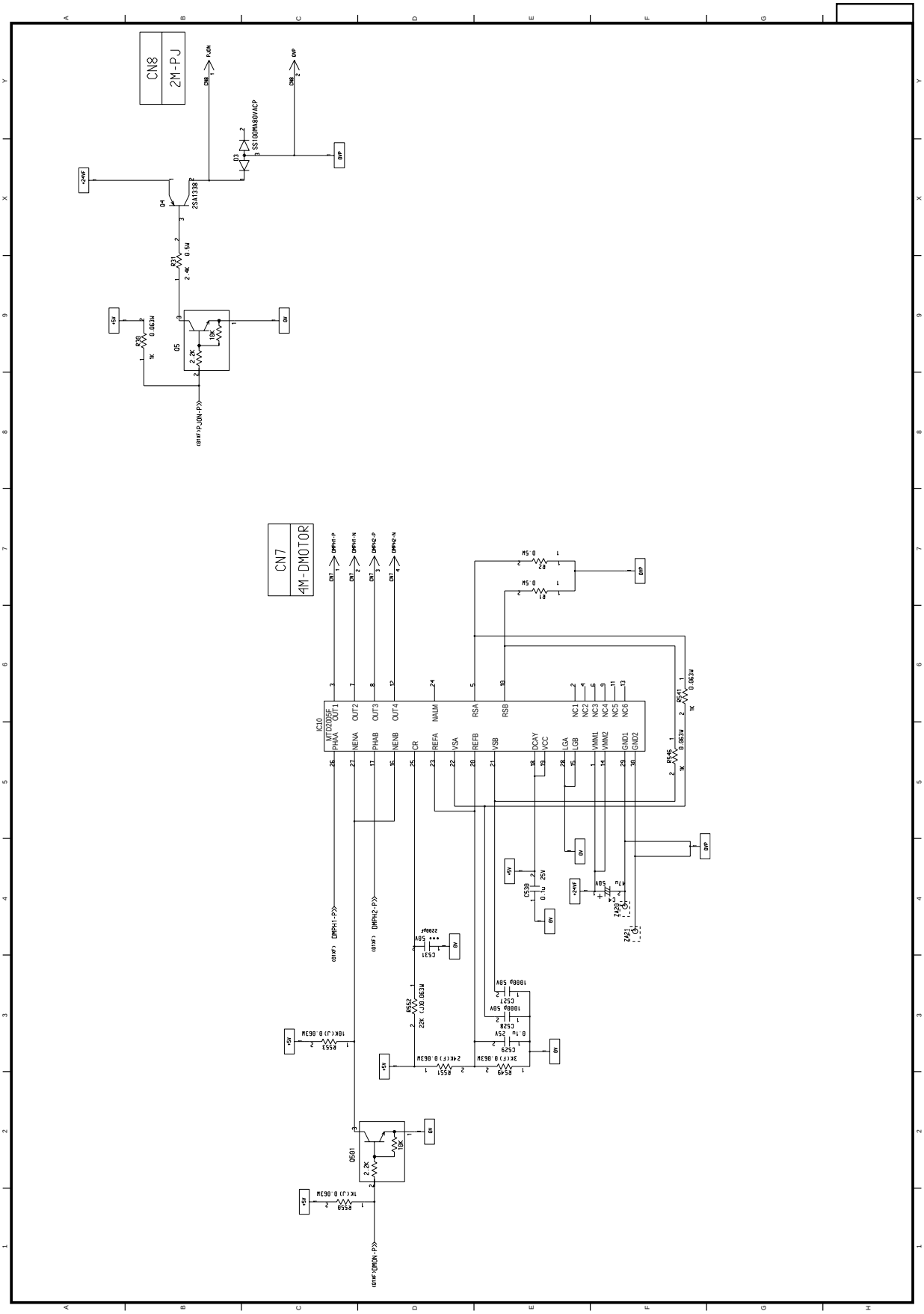


Figure 5-3 Main Control PCB (HBY-3/ 7) Circuit Diagram Rev.1

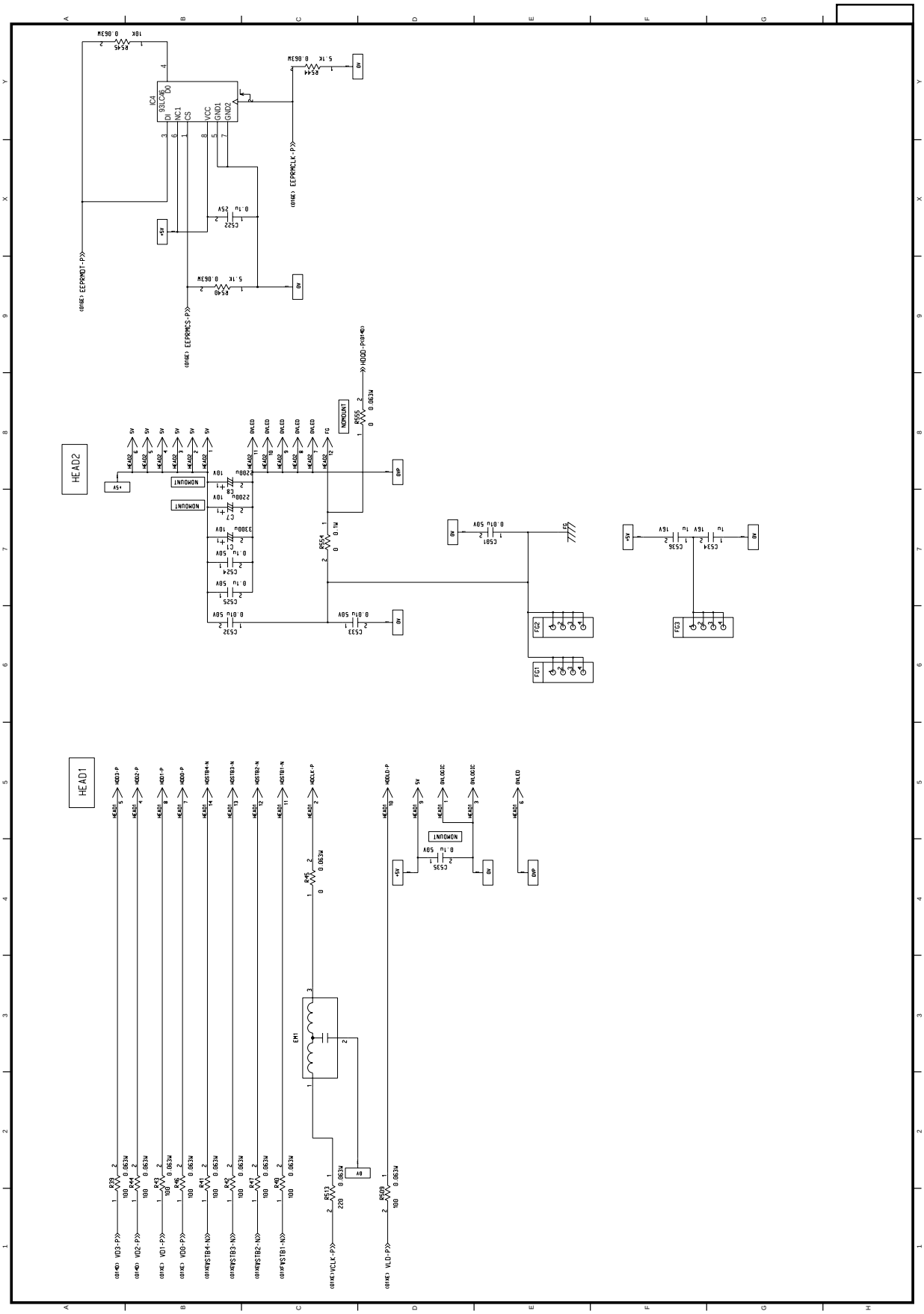


Figure 5-4 Main Control PCB (HBY-4/ 7) Circuit Diagram Rev.1

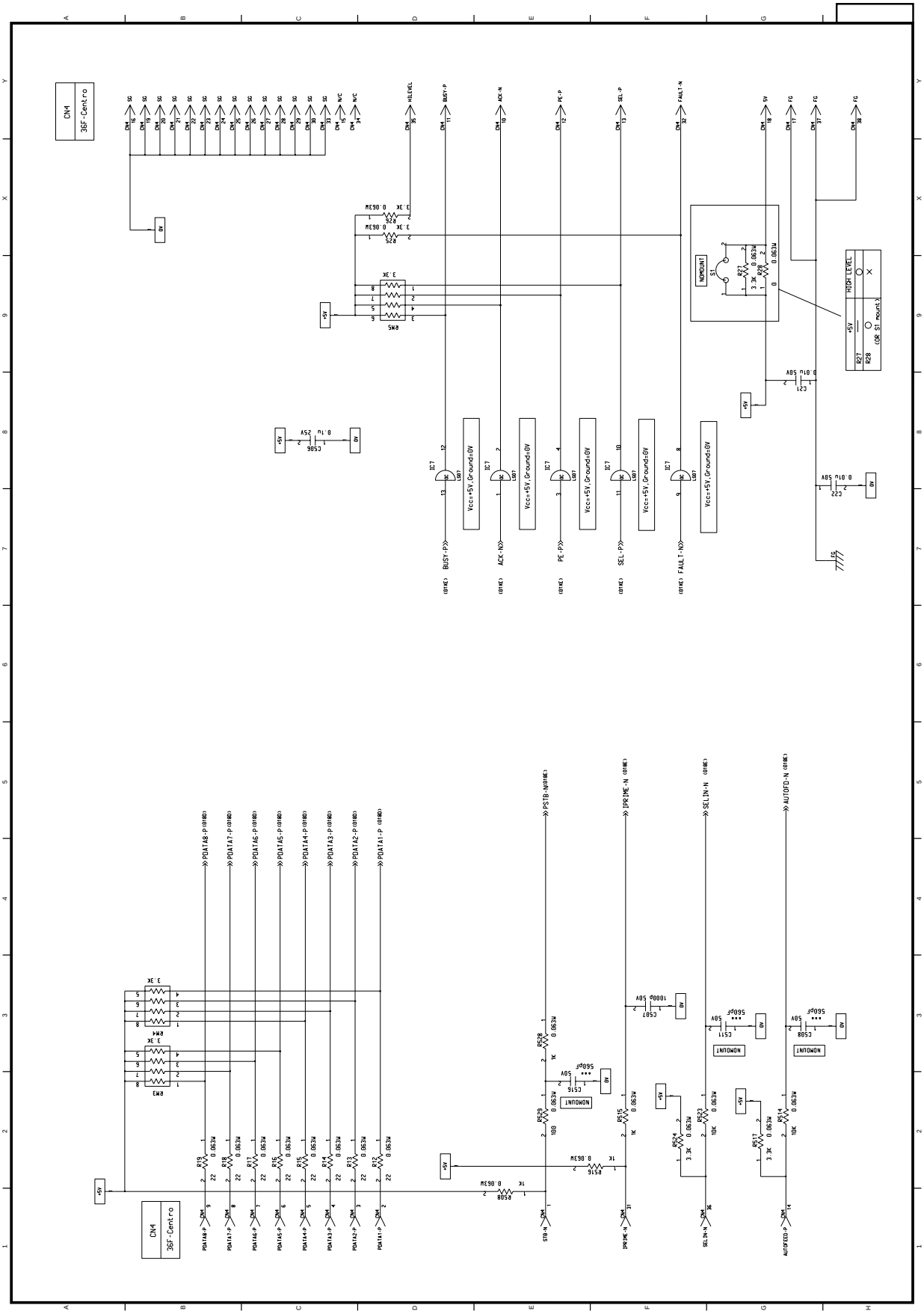


Figure 5-5 Main Control PCB (HBY-5/ 7) Circuit Diagram Rev.1

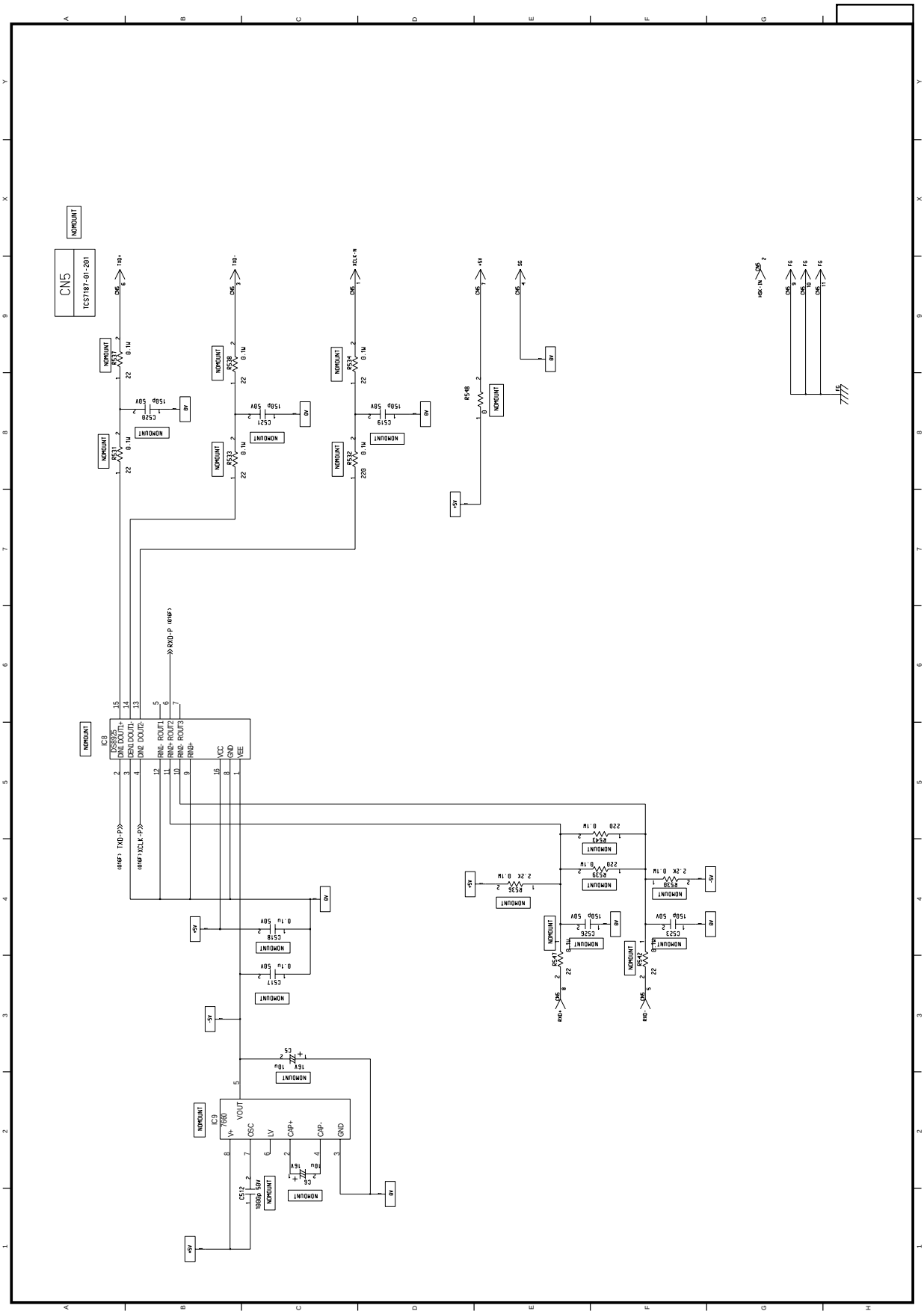


Figure 5-6 Main Control PCB (HBY-6/ 7) Circuit Diagram Rev.1

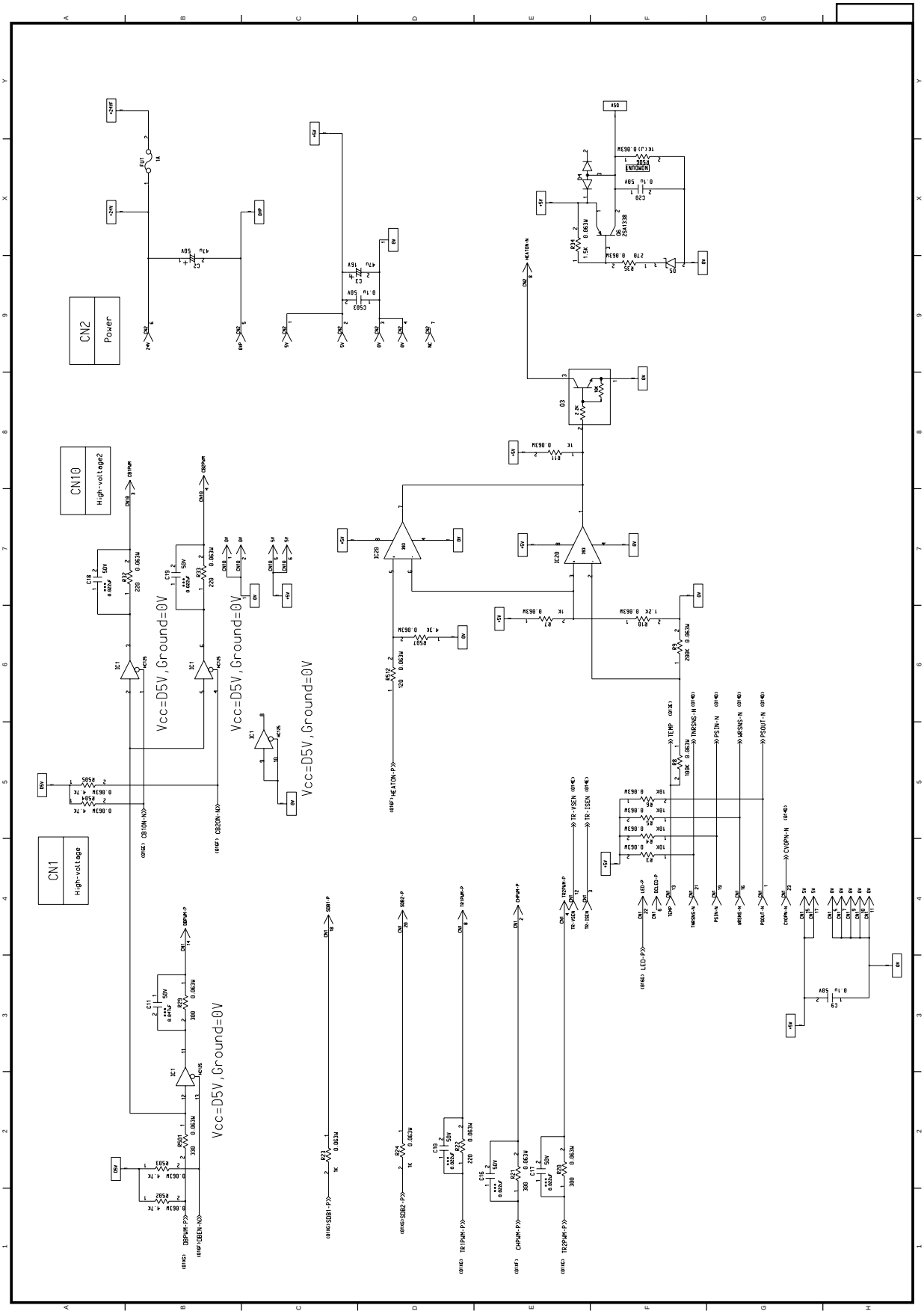


Figure 5-7 Main Control PCB (HBY-7/ 7) Circuit Diagram Rev.1

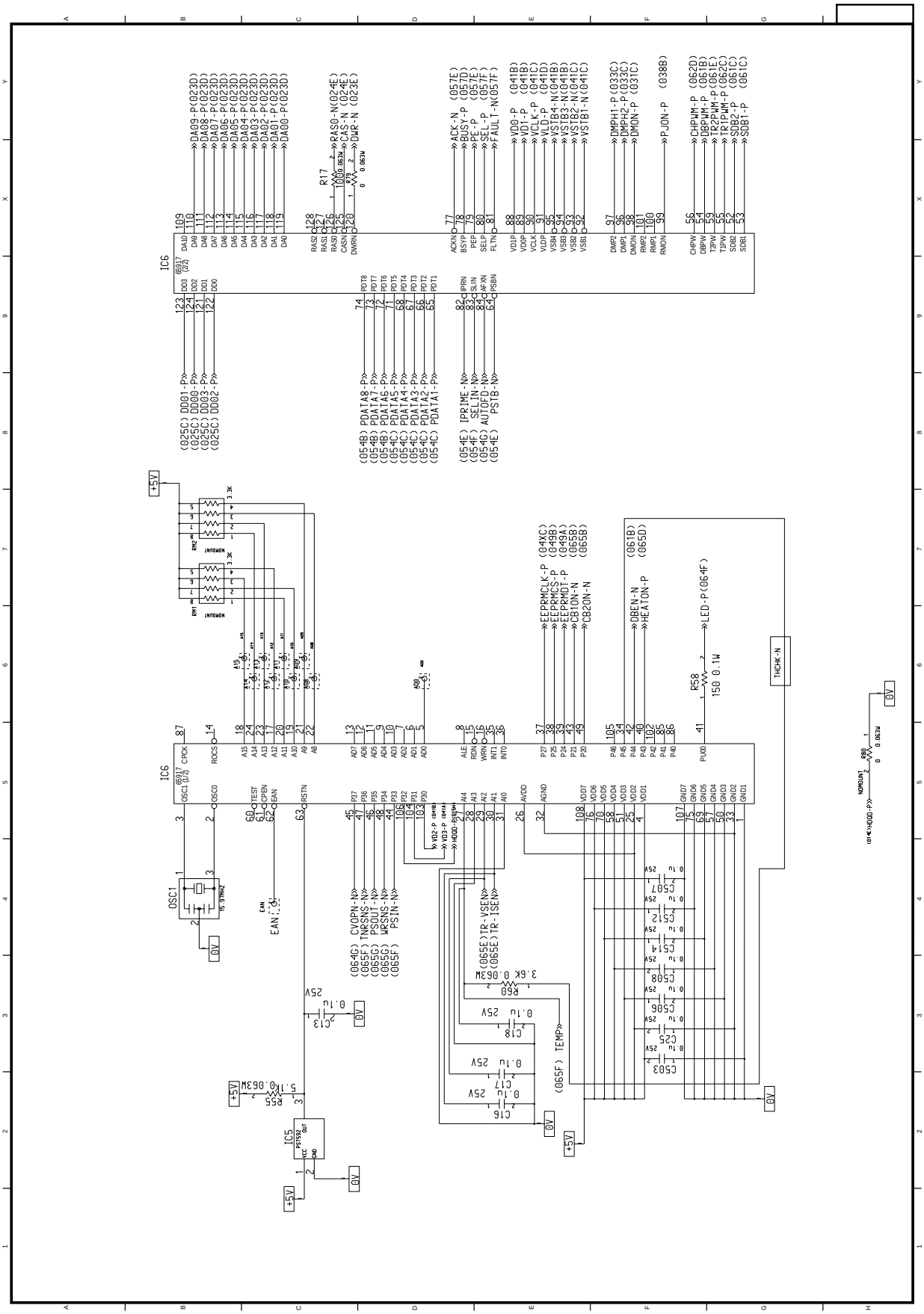


Figure 5-8 Main Control PCB (H63-1/ 6) Circuit Diagram Rev.4

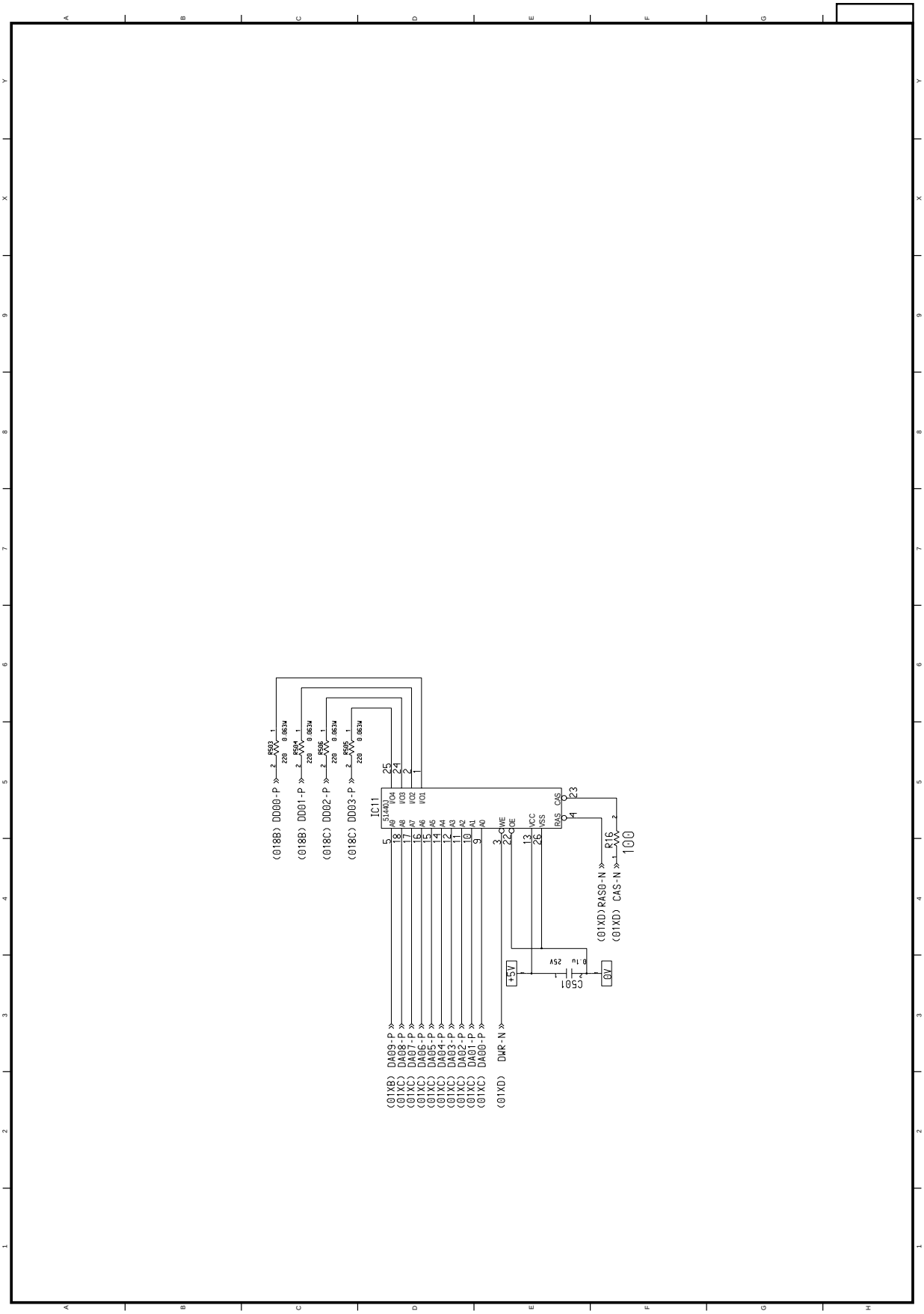


Figure 5-9 Main Control PCB (H63-2/ 6) Circuit Diagram Rev.4

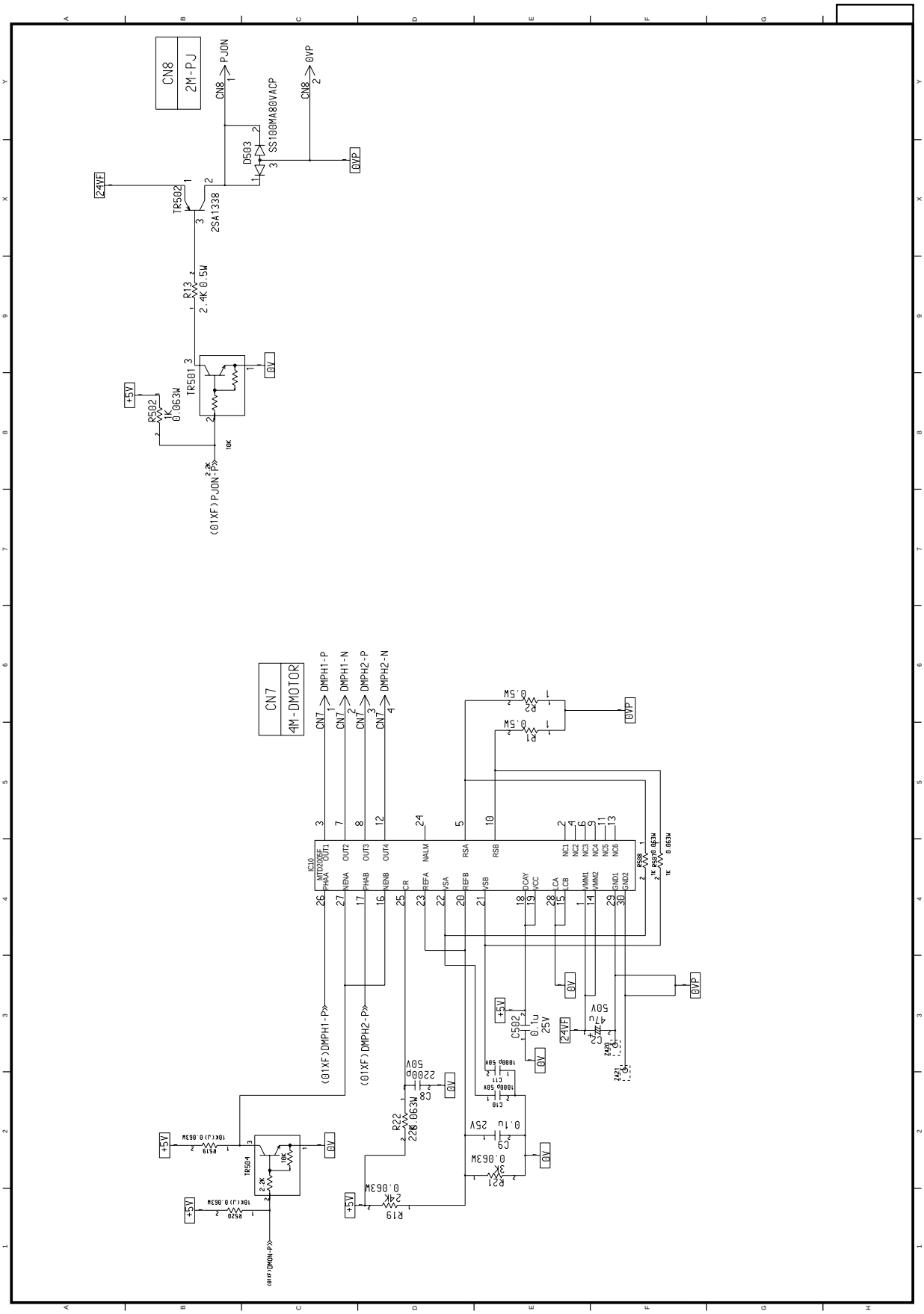


Figure 5-10 Main Control PCB (H63-3/ 6) Circuit Diagram Rev.4

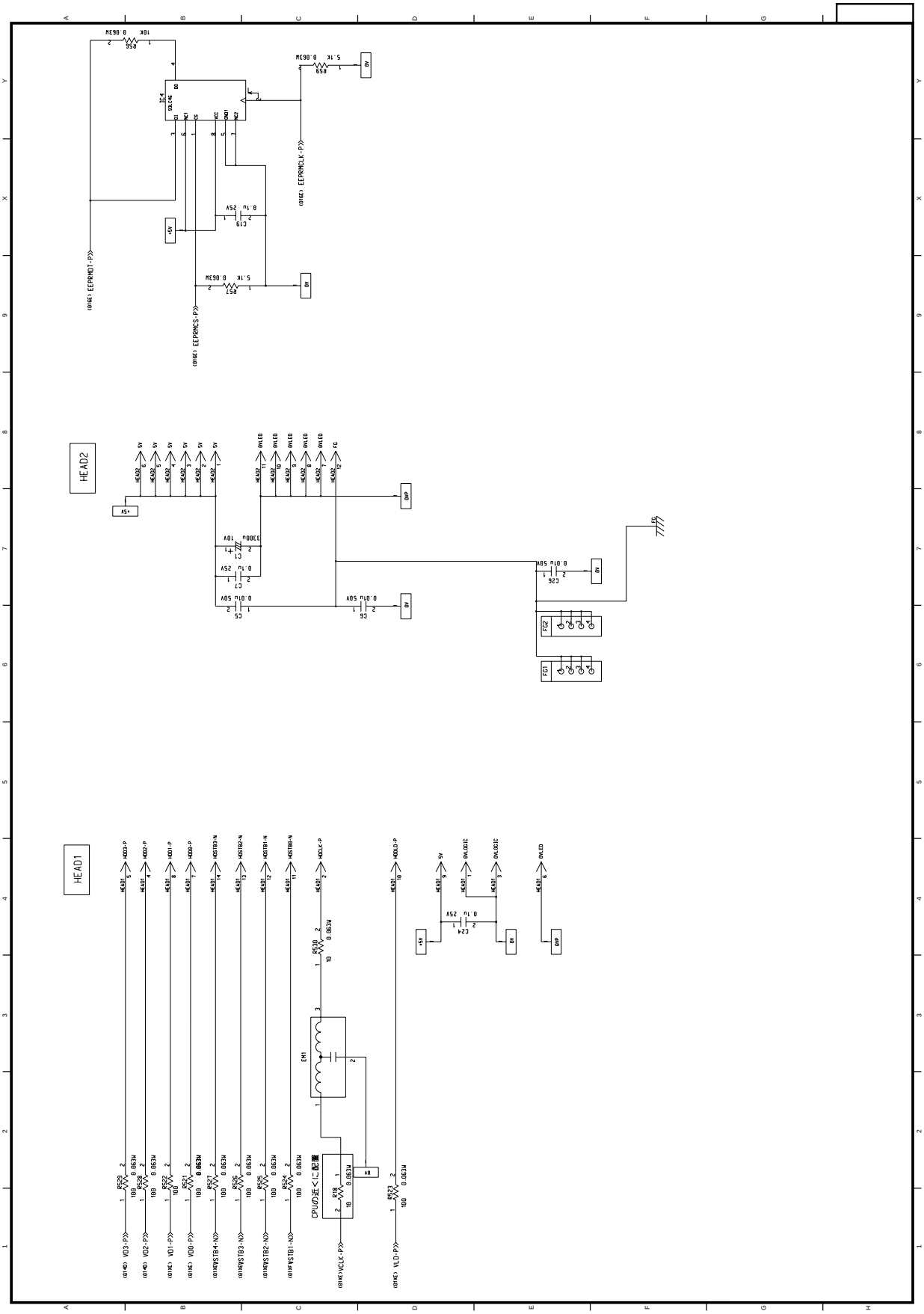


Figure 5-11 Main Control PCB (H63-4/ 6) Circuit Diagram Rev.4

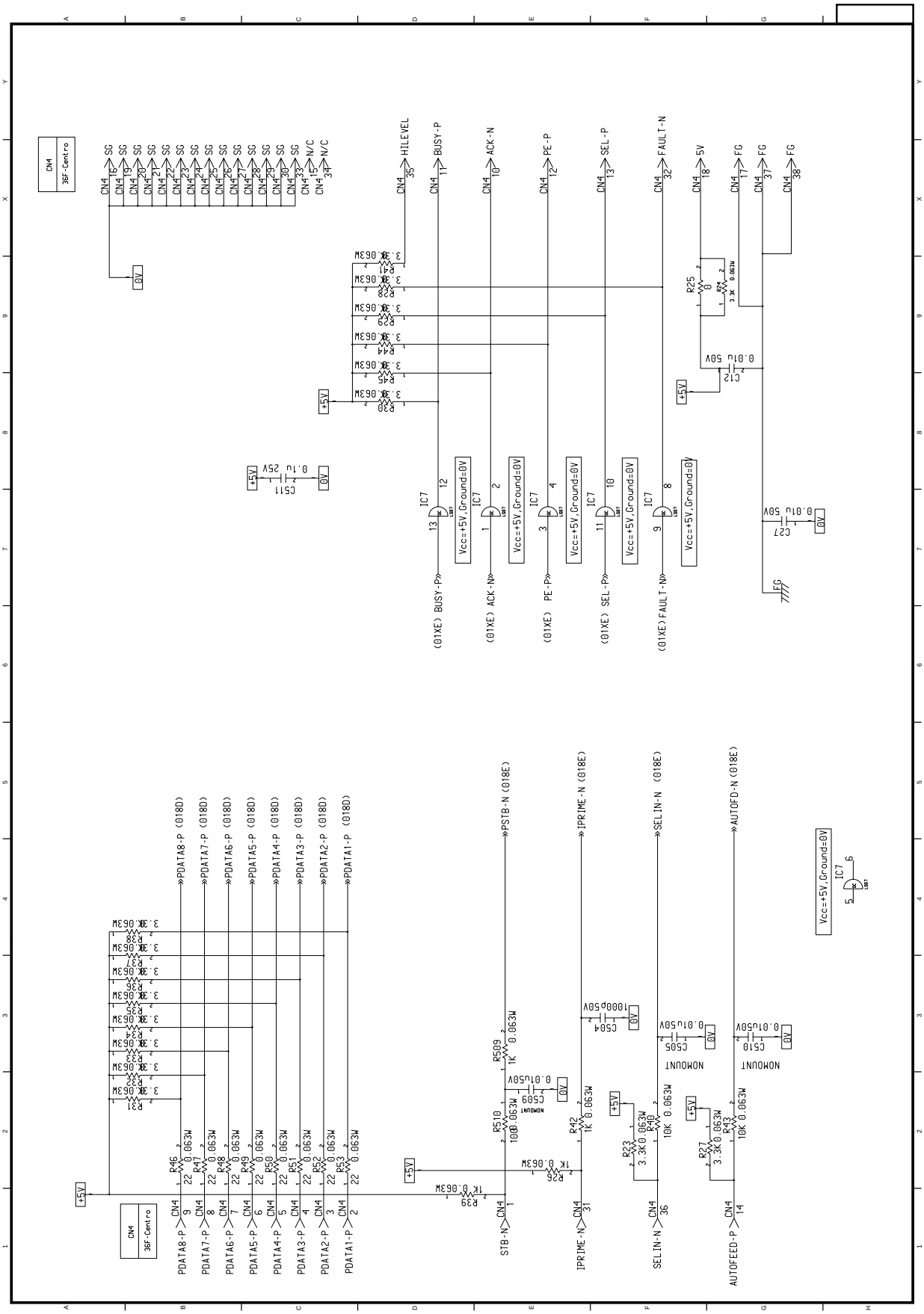


Figure 5-12 Main Control PCB (H63-5/ 6) Circuit Diagram Rev.4

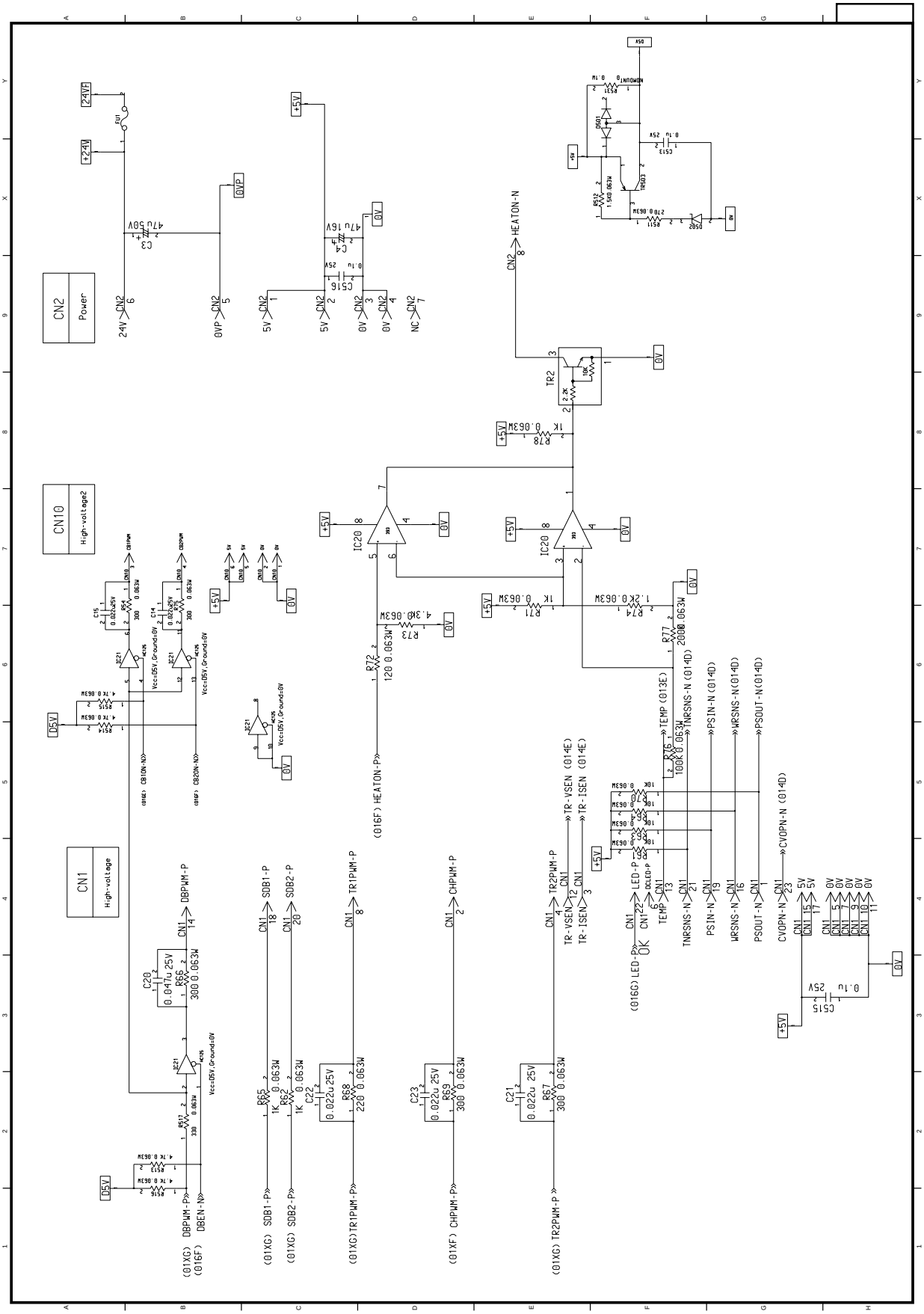


Figure 5-13 Main Control PCB (H63-6/ 6) Circuit Diagram Rev.4

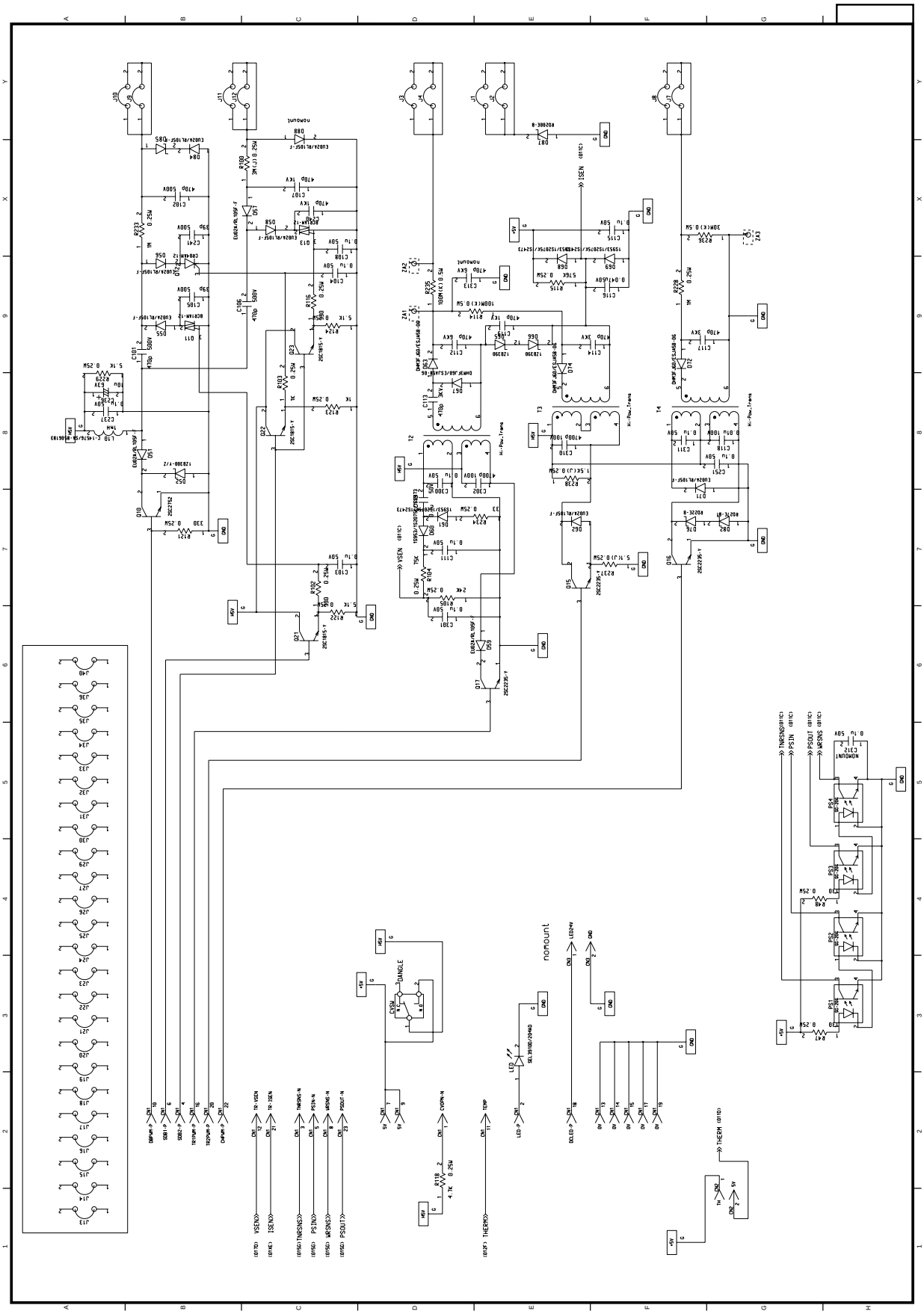


Figure 5-14 High Voltage Power Supply PCB (P2H-1/1) Circuit Diagram Rev.2

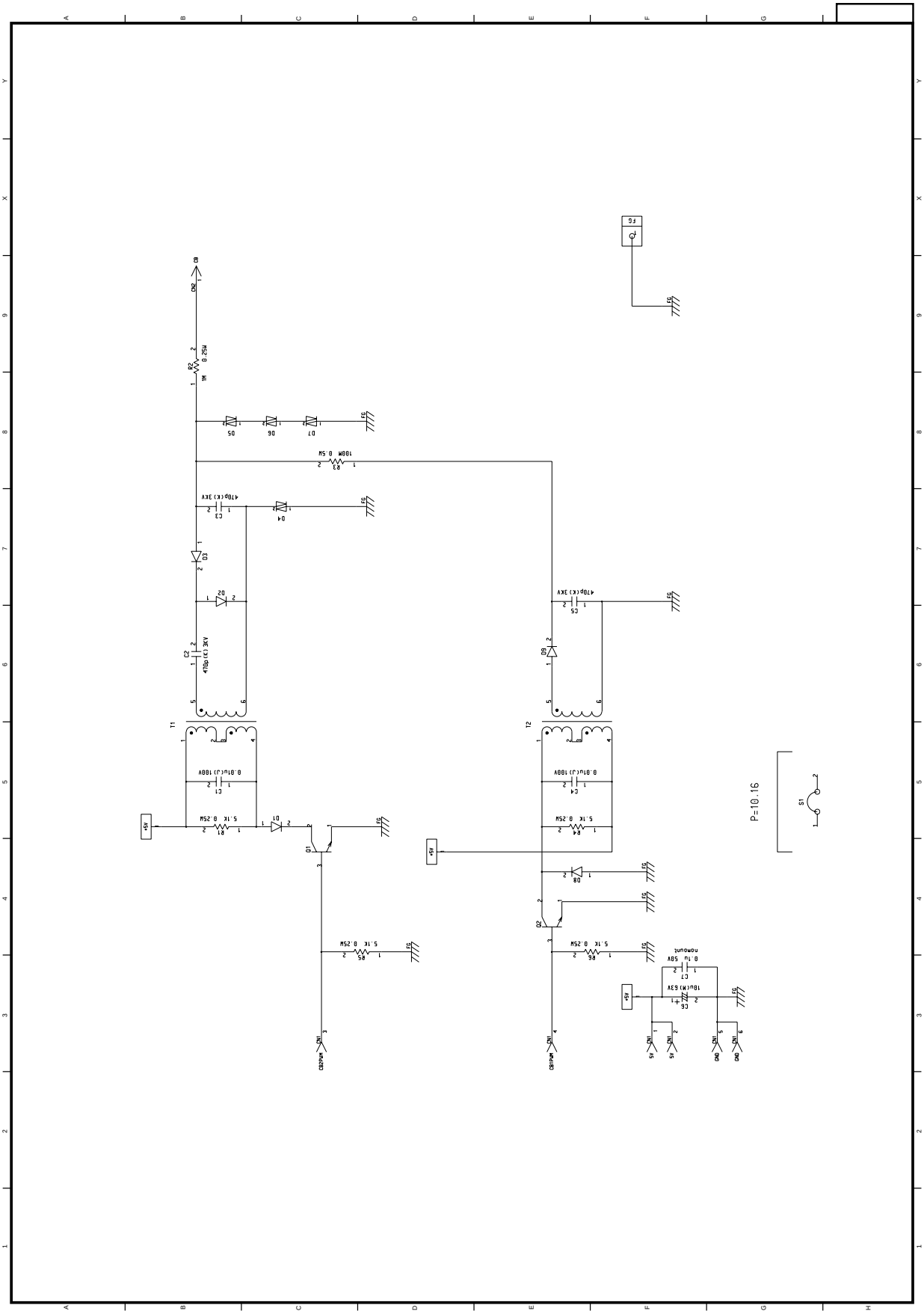
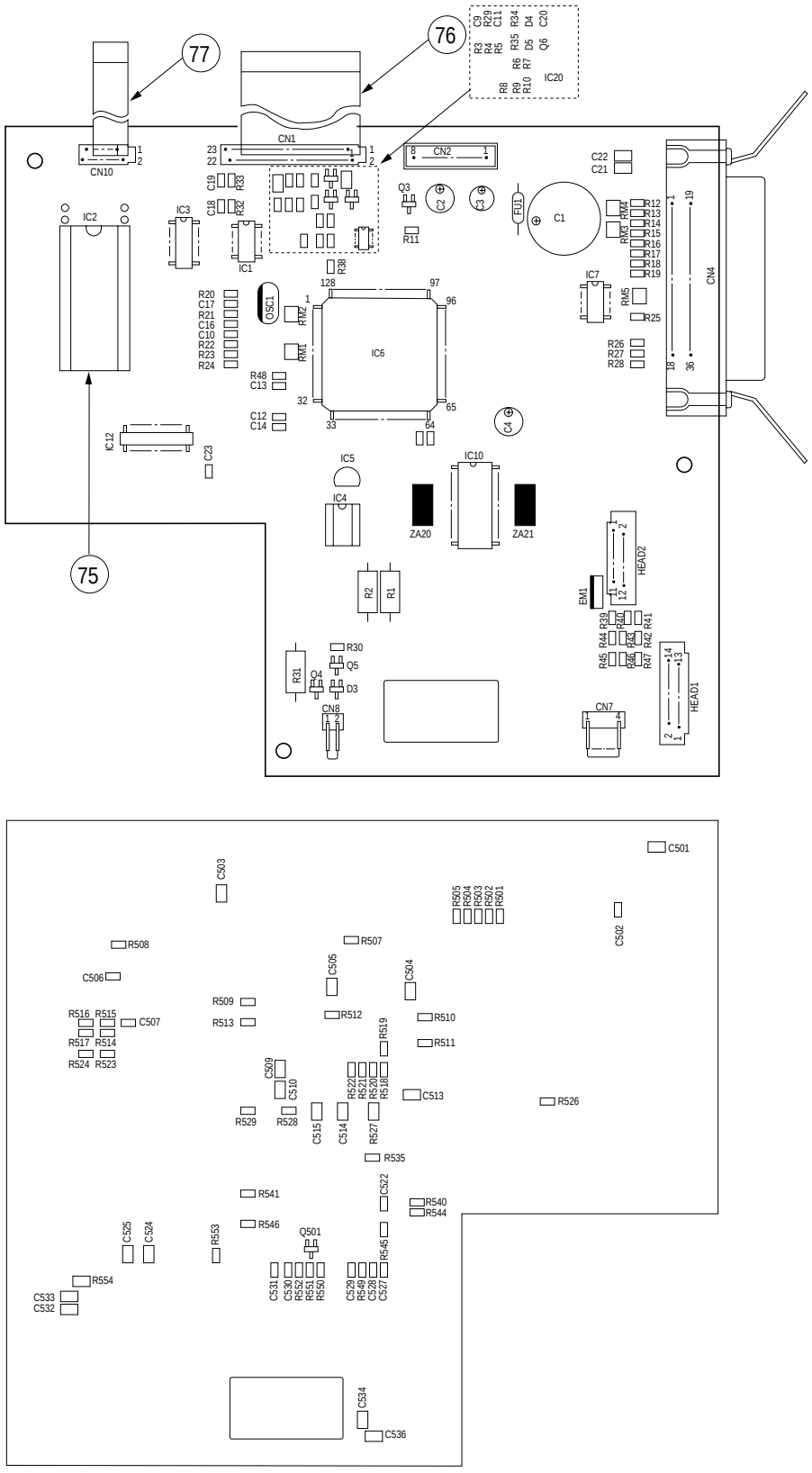


Figure 5-15 High Voltage Power Supply PCB (P6L-1/1) Circuit Diagram Rev.2

COMPONENT PARTS LIST

Drawing List

Main Control Board	(HBY PCB, Rev. 1)	40681602YA
Main Control Board	(H63 PCB, Rev. 4)	40551101YA
High Voltage Power Supply Board	(P2H PCB, Rev.2)	40607401YA
High Voltage Power Supply Board	(P6L PCB, Rev.2)	40605601YA



HBY Printed Circuit Board REV.1
(40681602YA-1/2)

HBY Printed Circuit Board Rev. 1
(40681602YA-2/2-1/5)

REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
1	D3,D4	SS100MA80VACP D-Signal -C	611A0000N0001	2	
2	D5	RD 3.3M-B2 D-Zener -C	613A0233M0062B	1	
3					
4	R31	RD1/2Y2.4KΩJ RES-Carbon flm -	321A1431J0242	1	
5	R7	CR/ RK73H/ ERJ/ MCRF102 RES-MET RN -C	3235003F0102	1	
6	R8	CR/ RK73H/ ERJ/ MCRF104 RES-MET RN -C	3235003F0104	1	
7	R10	CR/ RK73H/ ERJ/ MCRF122 RES-MET -C	3235003F0122	1	
8	R9	CR/ RK73H/ ERJ/ MCRF204 RES-MET RN -C	3235003F0204	1	
9	R551	CR/ RK73H/ ERJ/ MCRF243 RES-MET RN -C	3235003F0243	1	
10	R549	CR/ RK73H/ ERJ/ MCRF302 RES-MET RN -C	3235003F0302	1	
11	R48	CR/ RK73H/ ERJ/ MCRF362 RES-MET RN -C	3235003F0362	1	
12	R38~R44, R46, R47, R509~R511, R526, R529	CR/ RK73H/ ERJ/ MCRJ101 RES-MET RN -C	3235003J0101	14	
13	R11, R23, R24, R30, R508, R515, R516, R528, R541, R546, R550, R553	CR/ RK73H/ ERJ/ MCRJ102 RES-MET RN -C	3235003J0102	12	
14	R3~R6, R514, R523, R545	CR/ RK73H/ ERJ/ MCRJ103 RES-MET RN -C	3235003J0103	7	
15	R512, R518	CR/ RK73H/ ERJ/ MCRJ121 RES-MET RN -C	3235003J0121	2	
16	R34	CR/ RK73H/ ERJ/ MCRJ152 RES-MET RN -C	3235003J0152	1	
17	R12~R19	CR/ RK73H/ ERJ/ MCRJ220 RES-MET RN -C	3235003J0220	8	

HBY Printed Circuit Board Rev. 1
(40681602YA-2/2-2/5)

REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
18	R22, R32, R33, R513, R519~R522	CR/ RK73H/ ERJ/ MCRJ221 RES-MET RN -C	3235003J0221	8	
19	R552	CR/ RK73H/ ERJ/ MCRJ223 RES-MET RN -C	3235003J0223	1	
20	R35	CR/ RK73H/ ERJ/ MCRJ271 RES-MET RN -C	3235003J0271	1	
21	R20, R21, R29	CR/ RK73H/ ERJ/ MCRJ301 RES-MET RN -C	3235003J0301	3	
22	R501	CR/ RK73H/ ERJ/ MCRJ331 RES-MET RN -C	3235003J0331	1	
23	R25~R27, R517, R524	CR/ RK73H/ ERJ/ MCRJ332 RES-MET RN -C	3235003J0332	5	
24	R507	CR/ RK73H/ ERJ/ MCRJ432 RES-MET RN -C	3235003J0432	1	
25	R502~R505	CR/ RK73H/ ERJ/ MCRJ472 RES-MET RN -C	3235003J0472	4	
26	R535, R540, R544	CR/ RK73H/ ERJ/ MCRJ512 RES-MET RN -C	3235003J0512	3	
27	R527	RM73B2A151J RES-MET RN -C	323A5003J0151	1	
28	R554	2125JPW RES-MET RN -C	323A5003P0001	1	
29	R1, R2	MSF1/2B1ΩJ RES-MET OX -	324A1001J0109	2	
30	R28, R37, R45	CR/ RK73Z/ ERJ/ MCRJ-0V RES-Zero Ω -C	3255003P001	3	
31					
32	RM1, RM2	MNR14ABJ151 RES-Block -C	334A5012J0151	2	
33	RM3~RM5	MNR14ABJ332 RES-Block -C	334A5012J0332	3	
34					
35	C507, C527, C528	GRM/ UMK/ MCH/ 102B CAP-Ceramic -C	3036003K0102	3	

HBY Printed Circuit Board Rev. 1
(40681602YA-2/2-3/5)

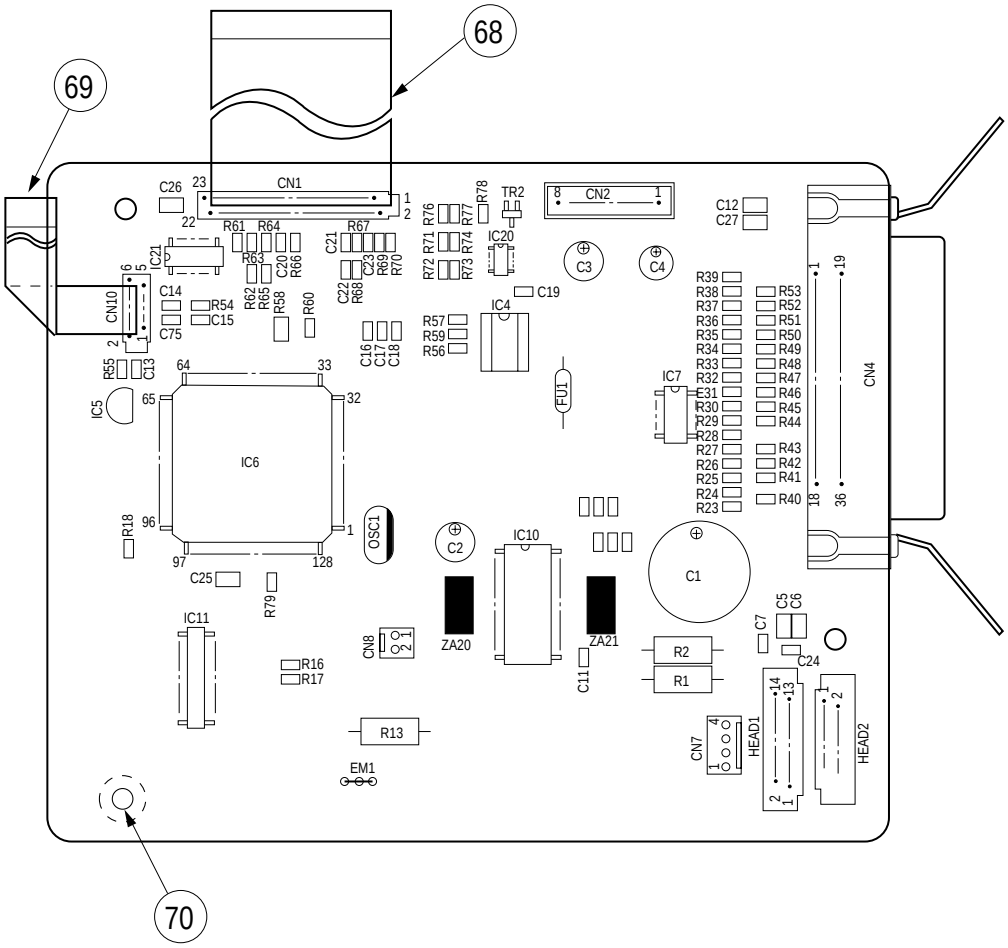
REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
36	C531	GRM/ UMK/ MCH/ 222B CAP-Ceramic -C	3036003K0222	1	
37	C10, C16~C19	GRM/ TMK/ MCH/ 223B 25V CAP-Ceramic -C	3036003K0223	5	
38	C11	GRM/ TMK/ MCH/ 473B 25V CAP-Ceramic -C	3036003K0473	1	
39	C12~C15, C23, C502, C506, C522, C529, C530	GRM/ TMK/ MCH/ 104Z 25V CAP-Ceramic -C	3036003Z0104	10	
40	C534, C536	CK2012FC105Z 16V CAP-Ceramic -C 1μF	303A6008Z1105	2	
41	C21, C22, C501, C532, C533	CK2012FH103Z 50V CAP-Ceramic -C	303A6008Z3103	5	
42	C9, C20, C503~C505, C509, C510, C513~C515, C524, C525	CK2012FH104Z 50V CAP-Ceramic -C	303A6008Z3104	12	
43	C3	UVX/ SME-16V-47μF 16V CAP-Alum (CE) -P	3041003C1470	1	
44	C2, C4	KME50VB-47 50V CAP-Alum (CE) -47μF	304A1115H1470	2	
45	C1	UVS1A332MHA 10V CAP-Alum (CE) -	304A1137A1332	1	
46					
47	IC7	74LS07FP Digital IC-BIP -S	700A0503N0007	1	
48	IC3	SN74LS37NS Digital IC-BIP -S	700A0550N0373	1	
49	IC1	74HC125FP Digital IC-MOS -S	702A1703N0125	1	
50	IC20	UPC393G2 Analog-BIPLIN -S	720A0523N0011	1	
51	IC10	MTD2005F Analog-BIPLIN -S	720A1816N0001	1	
52	IC5	PST592D-2 Analog-BIPLIN -	720A4037M0015	1	

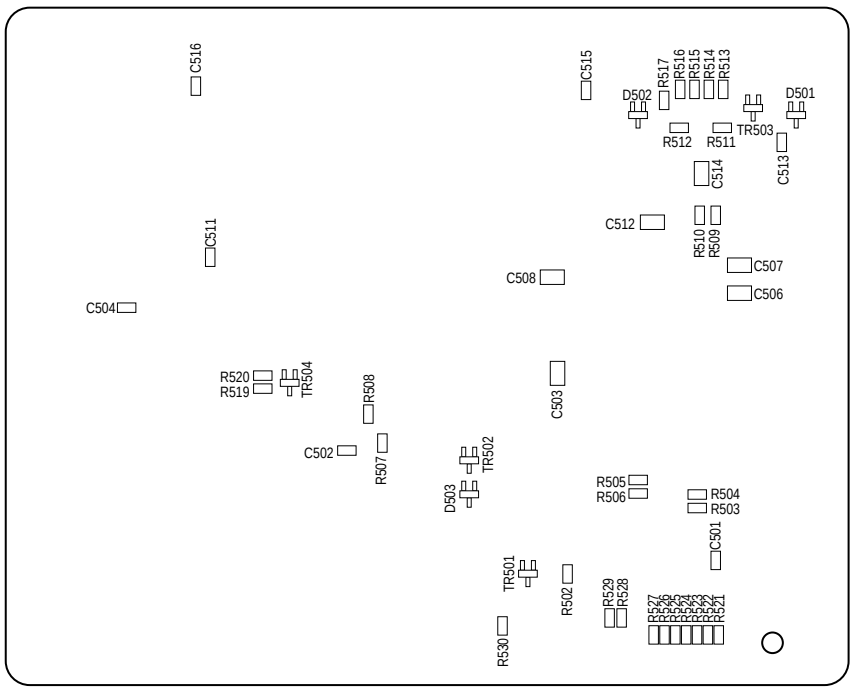
HBY Printed Circuit Board Rev. 1
(40681602YA-2/2-4/5)

REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
53	IC12	514400JP-60 Memory-MOSDRAM -S	8020003N2603	1	
54	IC4	93C46LDP-NW Memory-MOSEEPR -	8160303M0000	1	
55	IC6	MSM65917-016GS-K CPU-MOS (ROM) -F	8530193N0016	1	
56					
57	Q4, Q6	2SA1338 TR-PNP/ H FREQ -C	600A1032N0010	2	
58	Q3, Q5, Q501	DTC123YK TR-NPN/ H-FREQ -C	602A1035N0019	3	
59					
60	CN4	57RE-40360-830B-D29 Connector-SQR -	2201001P0360	1	
61	HEAD2	SLD12S-2 Connector-PCB -	2243001P0120	1	
62	HEAD1	SLD14S-2 Connector-PCB -	2243001P0140	1	
63	CN8	00-8263-0211-00-000 Connector-PCB -	224A3358P0020	1	
64	CN7	00-8263-0411-00-000 Connector-PCB -	224A3358P0040	1	
65	CN2	B8B-XH-A Connector-PCB	224A3530P0080	1	
66	CN10	00-5062-301-006-000 Connector-PCB -	224A5114P0060	1	
67	CN1	00-5062-301-023-000 Connector-PCB	224A5114P0230	1	
68					
69	OSC1	CST15.97MXW040 OSC-Ceramic -	381A1047B0004	1	
70					

HBY Printed Circuit Board Rev. 1
(40681602YA-2/2-5/5)

REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
71	FU1	251-001 FUSE-	540A2208S1102	1	
72					
73	EM1	SHORT WIRE (U TYPE)	KH-31036-50	1	
74					
75		DICF-28CS-E Socket-SEMICON -	245A1221P0280	1	
76		SMCD23/ TWVF23-210 CONN PAR- -	2381003P0003	1	
77		SMCD6/ TWVF6-55 CONN PAR- -	2381003P0005	1	





H63 Printed Circuit Board REV.4
(40551101YA-1/2)

H63 Printed Circuit Board Rev. 41
(405511 01YA-2/2-1/4)

REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
1	D501, D503	SS100MA80VACP D-Signal -C	611A0000N0001	2	
2	D502	RD 3.3M-B2 D-Zener -C	613A0233M0062B	1	
3					
4	R71	CR/ RK73H/ ERJ/ MCRF102 RES-MET RN -C	3235003F0102	1	
5	R76	CR/ RK73H/ ERJ/ MCRF104 RES-MET RN -C	3235003F0104	1	
6	R74	CR/ RK73H/ ERJ/ MCRF122 RES-MET -C	3235003F0122	1	
7	R77	CR/ RK73H/ ERJ/ MCRF204 RES-MET RN -C	3235003F0204	1	
8	R21	CR/ RK73H/ ERJ/ MCRF302 RES-MET RN -C	3235003F0302	1	
9	R60	CR/ RK73H/ ERJ/ MCRF362 RES-MET RN -C	3235003F0362	1	
10	R19	CR/ RK73H/ ERJ/ MCRF243 RES-MET RN -C	3235003F0243	1	
11	R18, R530	CR/ RK73K/ ERJ/ MCRJ100 RES-MET RN -C	3235003J0100	2	
12	R16, R17, R510, R521~R529	CR/ RK73K/ ERJ/ MCRJ101 RES-MET RN -C	3235003J0101	12	
13	R26, R39, R42, R62, R65, R78, R502, R507~R509	CR/ RK73K/ ERJ/ MCRJ102 RES-MET RN -C	3235003J0102	10	
14	R40, R43, R56, R61, R63, R64, R70, R519, R520	CR/ RK73K/ ERJ/ MCRJ103 RES-MET RN -C	3235003J0103	9	
15	R72	CR/ RK73K/ ERJ/ MCRJ121 RES-MET RN -C	3235003J0121	1	
16	R58	RM73B2A151J RES-MET RN -C	323A5003J0151	1	
17	R512	CR/ RK73K/ ERJ/ MCRJ152 RES-MET RN -C	3235003K0152	1	

H63 Printed Circuit Board Rev. 41
(405511 01YA-2/2-2/4)

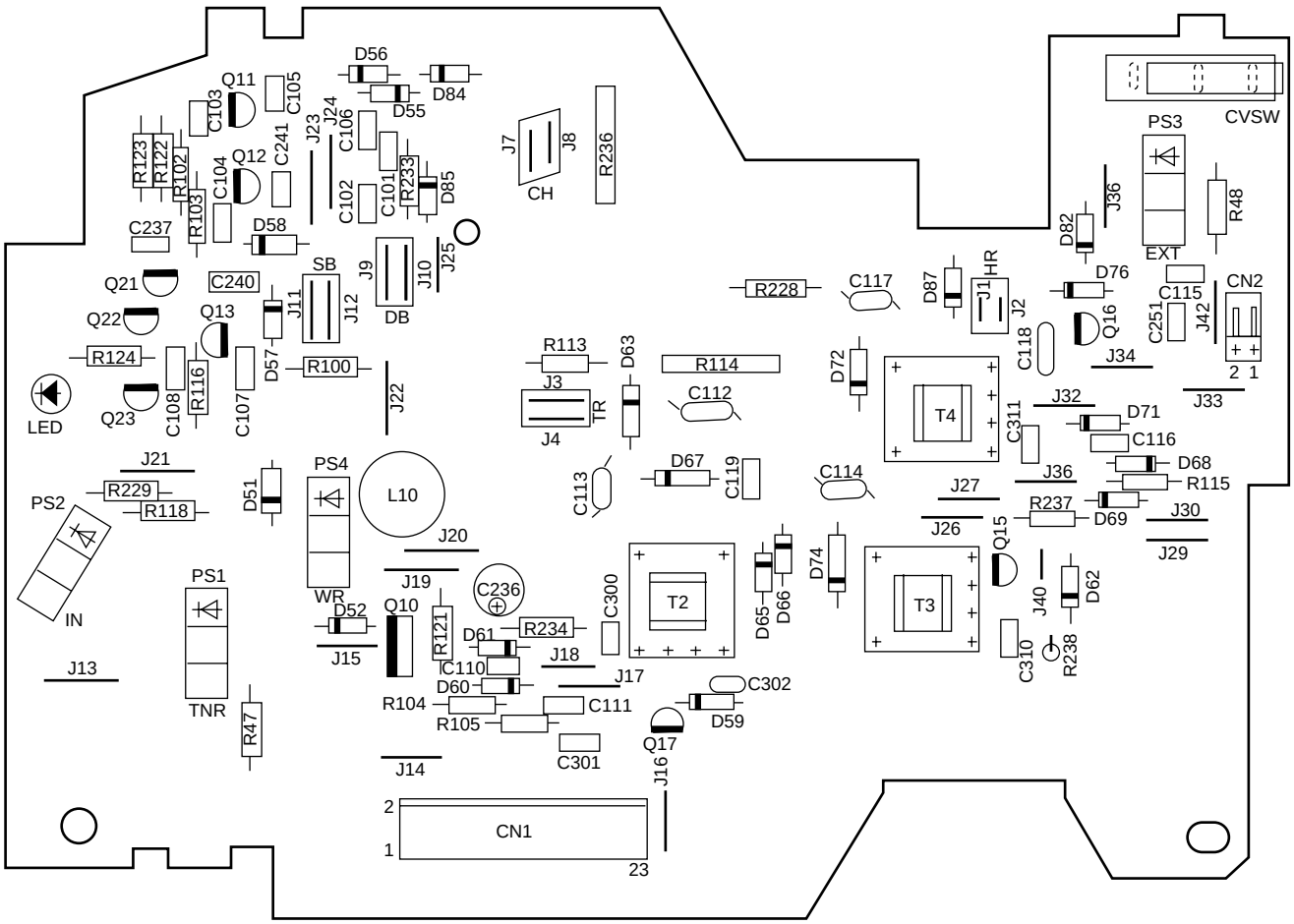
REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
18	R46~R53	CR/ RK73K/ ERJ/ MCRJ220 RES-MET RN -C	3235003J0220	8	
19	R68, R503~R506	CR/ RK73K/ ERJ/ MCRJ221 RES-MET RN -C	3235003J0221	5	
20	R22	CR/ RK73K/ ERJ/ MCRJ223 RES-MET RN -C	3235003J0223	1	
21	R511	CR/ RK73K/ ERJ/ MCRJ271 RES-MET RN -C	3235003J0271	1	
22	R54, R66, R67, R69, R75	CR/ RK73K/ ERJ/ MCRJ301 RES-MET RN -C	3235003J0301	5	
23	R517	CR/ RK73K/ ERJ/ MCRJ331 RES-MET RN -C	3235003J0331	1	
24	R23, R24, R27~R38, R41, R44, R45	CR/ RK73H/ ERJ/ MCRJ332 RES-MET RN -C	3235003J0332	17	
25	R73	CR/ RK73K/ ERJ/ MCRJ432 RES-MET RN -C	3235003J0432	1	
26	R513~R516	CR/ RK73K/ ERJ/ MCRJ472 RES-MET RN -C	3235003J0472	4	
27	R55, R57, R59	CR/ RK73K/ ERJ/ MCRJ512 RES-MET RN -C	3235003J0512	3	
28	R25, R79	CR/ RK73Z/ ERJ/ MCRJ-0V RES-Zero Ω -C	3255003P0001	2	
29	R13	RD1/2Y2.4KΩJ RES-Carbon flm -	321A1431J0242	1	
30	R1, R2	MSF1/2B1ΩJ RES-MET OX -	324A1001J0109	2	
31					
32	C10, C11, C504	GRM/ UMK/ MCH/ 102B CAP-Ceramic -C	3036003K0102	3	
33	C8	GRM/ UMK/ MCH/ 222B CAP-Ceramic -C	3036003K0222	1	
34	C14, C15, C21~C23	GRM/ UMK/ MCH/ 223B 25V CAP-Ceramic -C	3036003K0223	5	
35	C5, C6, C12, C26, C27	CK2012F1H103Z 50V CAP-Ceramic -C	303A6008Z3103	5	

H63 Printed Circuit Board Rev. 41
(405511 01YA-2/2-3/4)

REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
36	C7, C9, C13, C16~C19, C24, C501, C502, C511, C513, C515, C516	GRM/ TMK/ MCH/ 104Z 25V CAP-Ceramic -C	3036003Z0104	14	
37	C25, C503, C506~C508, C512, C514	CK2012FE1E104Z 25V CAP-Ceramic -C	303A6008Z2104	7	
38	C20	GRM/ TMK/ MCH/ 473B 25V CAP-Ceramic -C	3036003K0473	1	
39	C2, C3	KME50VB-47 CAP-Alum (CE) - 47μF	304A1115H1470	2	
40	C4	UVX/ SME-16V-47μF 16V CAP-Alum (CE) -P	3041003C1470	1	
41	C1	UVS1A332MHA 10V CAP-Alum (CE) -	304A1137A1332	1	
42					
43	IC7	74LS07FP Digital IC-BIP -S	700A0503N0007	1	
44	IC21	74HC125FP Digital IC-MOS -S	702A1703N0125	1	
45	IC20	UPC393G2 Analog-BIPLIN -S	720A0523N0011	1	
46	IC10	MTD2005F Analog-BIPLIN -S	720A1816N0001	1	
47	IC5	PST592D-2 Analog-BIPLIN -	720A4037M0015	1	
48	IC11	514400JP-60 Memory-MOSDRAM -S	8020003N2603	1	
49	IC4	93C46LDP-NW Memory-MOSEEPR -	8160303M0000	1	
50	IC6	ML65918-012GA	8530194N0001	1	
51					
52	EM1	SHORT WIRE (U TYPE)	KH-31036-50	1	

H63 Printed Circuit Board Rev. 41
(405511 01YA-2/2-4/4)

REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
53					
54	TR502, TR503	2SA1338 TR-PNP/ H FREQ -C	600A1032N0010	1	
55	TR2, TR501, TR504	DTC123YK TR-NPN/ H-FREQ -C	602A1035N0019	1	
56					
57	CN4	57RE-40360-830B-D29 Cpnnector-SQR -	2201001P0360	1	
58	HEAD2	SLD12S-2 Connector-PCB -	2243001P0120	1	
59	HEAD1	SLD14S-2 Connector-PCB -	2243001P0140	1	
60	CN8	00-8263-0212-00-000 Connector-PCB -	224A3357P0020	1	
61	CN7	00-8263-0412-00-000 Connector-PCB -	224A3357P0040	1	
62	CN10	00-5062-301-006-000 Connector-PCB -	224A5114P0060	1	
63	CN2	B8B-XH-A Connector-pcb -	224A3530P0080	1	
64	CN1	00-5062-301-023-000 Connector-PCB -	224A5114P0230	1	
65	OSC1	CTS15.97MXW040 OSC-Ceramic -	381A1047B0004	1	
66	FU1	251-001 FUSE-	540A2208S1102	1	
67					
68		SMCD23/ TWVF23-210 CONN PAR- -	2381003P0003	1	
69		SMCD23/ TWVF23-210 CONN PAR- -	2381003P0004	1	
70		SMCD6/ TWVF6-85 CONN PAR- -	143A1047P0001	1	



P2H Printed Circuit Board REV.2
(40607401YA-1/2)

P2H Printed Circuit Board Rev. 2
(40607401YA-2/2-1/4)

REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
1	D60, D61, D68, D69	1S953/ 1S2075K/ 1S2473 D-Signal -	611A0003L0001	4	
2	D63,D67, D72, D74	OR-DHM/ ESJA/ SHV-06	40681301	4	
3	D51, D55-D59, D62, D71, D84	EU02A/ RL105F-F D-Rectifying -Q	6100003M0001	9	
4	D52	1ZB300-Y/ Z D-Zener -	613A2003M0001	1	
5	D65,D66	1ZB3900 D-Zener -	613A2258M0350	2	
6	D76	RD22E-B2 D-Zener -	613A1231L0262B	1	
7	D82	RD27E-B1 D-Zener -	613A1231L0282A	1	
8	D87	RD200E-B D-Zener -	613A1231L0522	1	
9	D85	1ZB270-Y/ Z (TPA2) D-Zener -Q	6132003M0001	1	
10					
11	R234	RD1/4Y33ΩJ RES-Carbon flm -	321A1421J0330	1	
12	R47, R48	RD1/4Y130ΩJ RES-Carbon flm -	321A1421J0131	2	
13	R102, R116, R121	RD1/4Y330ΩJ RES-Carbon flm -	321A1421J0331	3	
14	R103, R123	RD1/4Y1KΩJ RES-Carbon flm -	321A1421J0102	2	
15	R118	RD1/4Y4.7KΩJ RES-Carbon flm -	321A1421J0472	1	
16	R122, R124, R229	RD1/4Y5.1KΩJ RES-Carbon flm -	321A1421J0512	3	
17	R105	RD1/4Y24KΩJ RES-Carbon flm -	321A1421J0243	1	
18	R104	RD1/4Y75KΩJ RES-Carbon flm -	321A1421J0753	1	

P2H Printed Circuit Board Rev. 2
(40607401YA-2/2-2/4)

REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
19	R235	MRH30MK/ HV-22-30MK RES-MET solid -	3263103K0306	1	
20	R228, R233	RD1/4Y1MΩJ RES-Carbon flm -	321A1421J0105	2	
21	R100	RD1/4Y3MΩJ RES-Carbon flm -	321A1421J0305	1	
22	R115	RNL1/4C3F576KΩ RES-MET RN -	323A1222F5763	1	
23	R114, R236	MRH100MK/ HV-38-100MK RES MET solid -	3263103K0107	2	
24	R237	RD1/4Y5.1ΩJ RES-Carbon flm -	321A1421J0519	1	
25	R238	RD16UJ1.5KΩ RES-Carbon flm -	3213420J0152	1	
26					
27	C105, C107, C119, C240, C241	HNY5P/ DE07-1KV-471K CAP-Ceramic -P	3024003K7471	5	
28	C113, C114, C117	DE07/ HCYB3F471 CAP Ceramic -Z	3024203K2471	3	
29	C112	DE1010B471K6K 6KV CAP-Ceramic -	302A4028K4471	1	
30	C101, C102, C106	HLY5P/ DD05-500V-471K CAP-Ceramic -P	3024003K6471	3	
31	C103, C104,C108,C110, C111, C115,C237,C251, C300, C301, C311	MLRD/ FK16Y5V1H104Z CAP-Ceramic -N	3034003Z3104	11	
32	C116	MLRD/ FK16Y5V1H473Z CAP-Ceramic -N	3034003Z3473	1	
33	C118	MY2A/ CQMF-100V-103J CAP-Plast flm -P	3064003J2103	1	
34	C302, C310	CQMF/ MY2A472J-T 100V CAP-Plast flm -P	3064003J2472	2	
35	C236	UVX/ SME-63V-10μF 63V CAP-Alum (CE) -P	3041003J1100	1	

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REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
36	Q11, Q13	BCR1AM-12/ MAC97-008 THY-Bi/ Dir -	622A0003M0001	2	
37	Q12	CR04AM-12 THY-Gate -	620A0022M0008	1	
38	Q21-Q23	2SC1815-Y TR-NPN/ H-FREQ -	602A1025M0006Y	3	
39	Q15-Q17	2SC2235-Y TR-NPN/ H-FREQ -	602A1125M0039Y	3	
40	Q10	2SC2752 TR-NPN/ H-FREQ -	602A1223M0039	1	
41					
42	L10	C-14576/ SA-8506183 Coil-Choke -	3502003P0102	1	
43					
44	T2-T4	HIGH VOLTAGE TRANSFORMER	YB4049-7078P003	3	
45					
46	PS1-PS4	RPI-574/ #9568 PHOTO-Coupler -	652A0103M0002	4	
47					
48	CVSW	SM05S/ SS5GL13 Switch-Micro -	2071003P0001	1	
49					
50	LED	SEL3910D/ 204AD PHOTO-LED -	6500003M0001	1	
51					
52	CN1	23FE-BT-VK-N Connector-PCB -	224A4134P0230	1	
53	CN2	53254-0210 CONNECTOR-PCB -	224A4407P0020	1	

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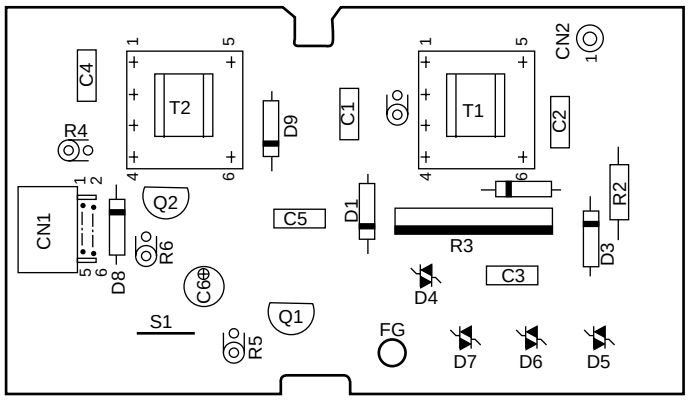
REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
54					
55	J1, J2, J40	SHORT WIRE	TA-0.6	3	
56	J3, J4, J7-J12	SHORT WIRE	TA-0.6	8	
57	J13-J21, J23-J27, J29-J36	SHORT WIRE	TA-0.6	22	
58	J22	SHORT WIRE	TA-0.6	1	
59					
60					



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REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
1	D1,D8	EU02A/RL105F-F D-Rectifying -Q	6100003M0001	2	
2	D2,D3,D9	DHM3FJ60/ESJA58-06 D-Rectifying -	610A0003M0002	3	
3	D4	ERZV05D391 SEMICO-Vari -	6320229M0003	1	
4	D5~D7	ERZ/JVR-05N471 SEMICO-Vari -	6320003M0001	3	
5					
6	R1,R4~R6	RD16U/VTJ5.1KΩ RES-Carbon flm -	3213420J0512	4	
7	R2	RD1/4Y1MΩJ RES-Carbon flm -	321A1421J0105	1	
8	R3	MRH100MK/HV-38-100MK RES-MET solid -	3263103K0107	1	
9					
10	C1,C4	MY2A/CQMF-100V-103J CAP-Plast flm -P	3064003J2103	2	
11	C2,C3,C5	DE07/HCYB3F471 CAP-Ceramic -Z	3024203K2471	3	
12	C6	UVX/SME-63V-10μF 63V CAP-Alum(CE) -P	3041003J1100	1	
13					
14	S1	SHORT WIRE	TA-0.6	1	
15					
16	Q1,Q2	2SC2235-Y TR-NPN/H-FREQ -	602A1125M0039Y	2	
17					
18	T1,T2	HIGH VOLTAGE TRANSFORMER	YB4049-7078P0003	2	

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REF. NO.	SYMBOL	TYPE/NAME	PART NO.	Q'TY	REMARKS
19					
20	CN1	06FE-ST-VK-N Connector-PCB -	2244101P0060	1	
21	CN2	RT-01T-1.0B Connector-PCB -	2247000P0001	1	
23					
24					

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