OKI

OKIPAGE 6e/6ex LED Page Printer

Troubleshooting Manual with Component Parts List

ODA/OEL/INT

Approval

All specifications are subject to change without notice.

CONTENTS

1. OUTLINE

This manual has been written to provide guidance for troubleshooting of the OKIPAGE 6e Series 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.

Notes:

1. The power supply board (OLER/OLHR) 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 and fuses.
2. Replacement of CPU (MHM2029K) is not recommended. If CPU is found to be defective, board replacement is suggested.

2. TOOLS

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

Tool	Remarks
Extension cord kit	P/N: 4YA4121-2028G2
Oscilloscope	Frequency response 100 MHz or higher
Soldering iron	A slender tip type, 15-20 watts

3. CIRCUIT DESCRIPTION

3.1 Outline

The control board controls the reception of data transferred through a host I/F and processes command analysis, bit image development, raster buffer read. It also controls the engine and the operator panel. Its block diagram is shown in Fig. 3-1 through 3-4.

(1) Reception control
The control board has one centronics parallel I/F port.
The parallel I/F port can specify the following item when set by the control panel:
I-PRIME: Enabled/Disabled

(2) Command analysis processing
The OKIPAGE 6e series printers have the following emulation modes.
Laser Jet Series IVP : Hewlett Packard OKIPAGE 6e/6ex

An edit task fetches data from the receive buffer, analizes commands, and reconstructs the data in such a way that print data are aligned from up to down and from right to left; then it writes the resultant data into a page buffer with such control data as print position coordinate, font type, etc. added.

(3) Font Processing
When one page editing is finished, a developing task makes an engine start and fetches data from the page buffer synchronizing with a printing operation; then it developes the fetched data to a bit map as referring to data from a character generator, and writes the resultant data into the raster buffer (of band buffer structure).

(4) Raster buffer read.
As controlling the engine operation, an engine task sends data from the raster buffer to the LED head.

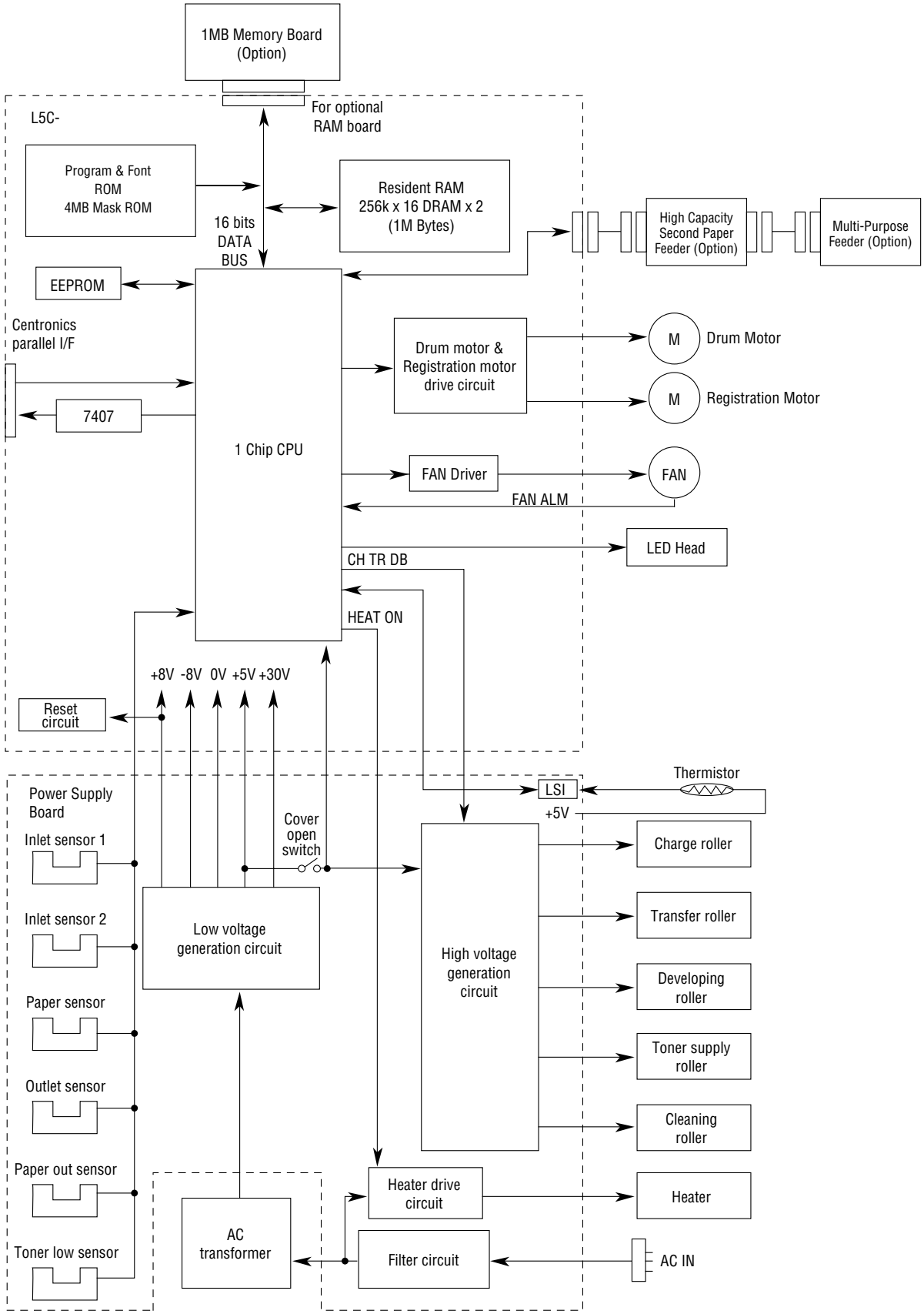


Figure 3-1 OKIPAGE 6e Block Diagram

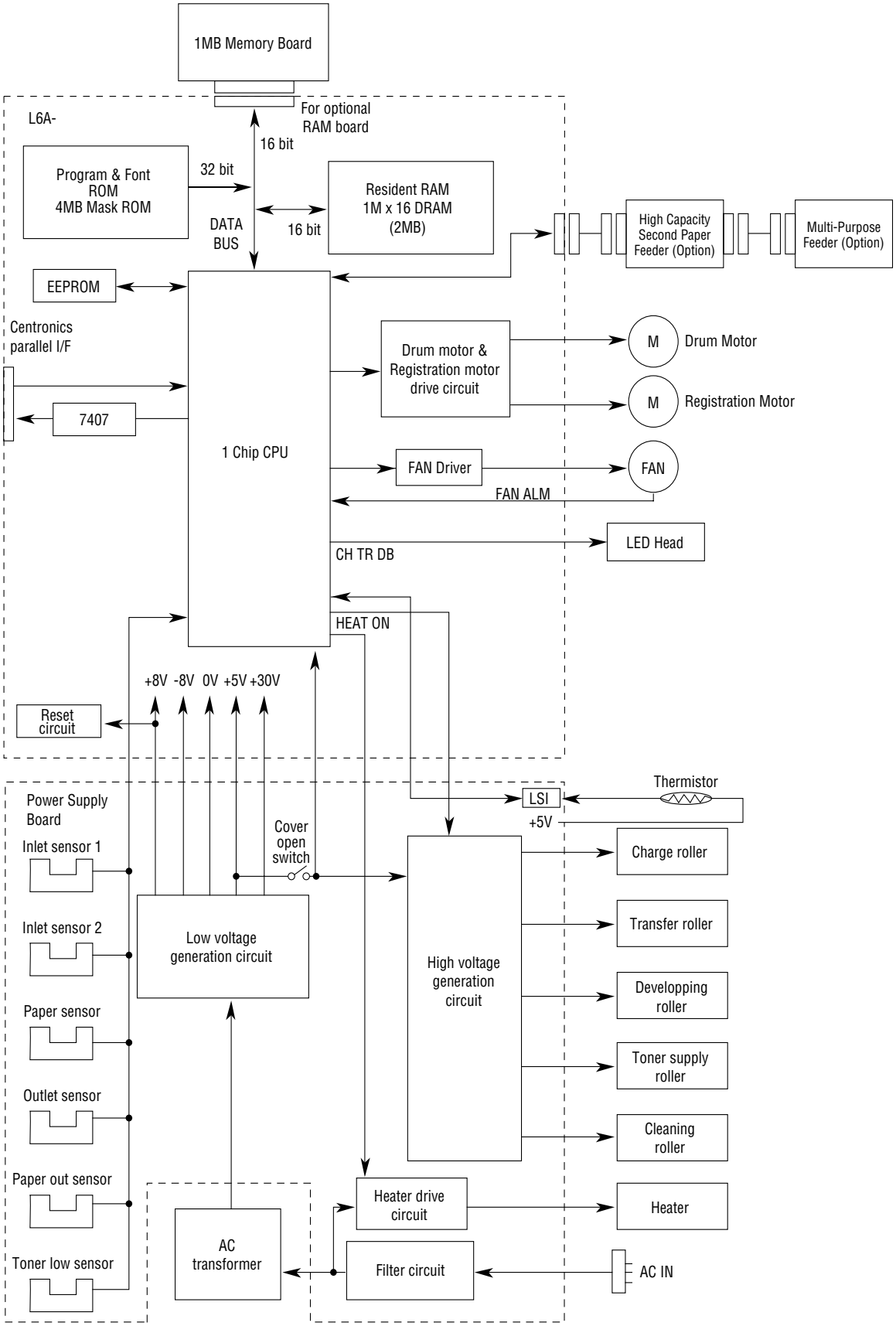


Figure 3-2 OKIPAGE 6ex Block Diagram

3.2 CPU and Memory

(1) CPU (MHM2029K-002K for OKIPAGE 6e, MHM2029K-004K-29 for OKIPAGE 6ex)

CPU core	RISC CPU (MIPS R3000 compatible)
CPU clock	24.576 MHz (OSC is 12.288 MHz)

(2) Program ROM

ROM capacity	4MB (32M bit mask ROM)
ROM type	32M bits (2M × 16 bits) for OKIPAGE 6e and 32M bits (1M × 32 bits) for OKIPAGE 6ex
Access time	100 ns for OKIPAGE 6e and 100ns for OKIPAGE 6ex

(3) Resident RAM

RAM capacity	1MB (4M bit D-RAM, 2 pieces) for OKIPAGE 6e and 2MB (16M bit D-RAM, 1 piece) for OKIPAGE 6ex
RAM type	4M bits (256k × 16 bits) 16M bits (1M × 16 bits)
Access time	80 ns

(4) Expansion SIMM

RAM capacity	1/2/4/8/16MB/32MB (32MB for OKIPAGE 6ex only) SIMM
RAM type	72 pins
Access time	60 ~ 100 ns

The block diagram of CPU and memory circuit is shown in Fig. 3-4 through 3-7.

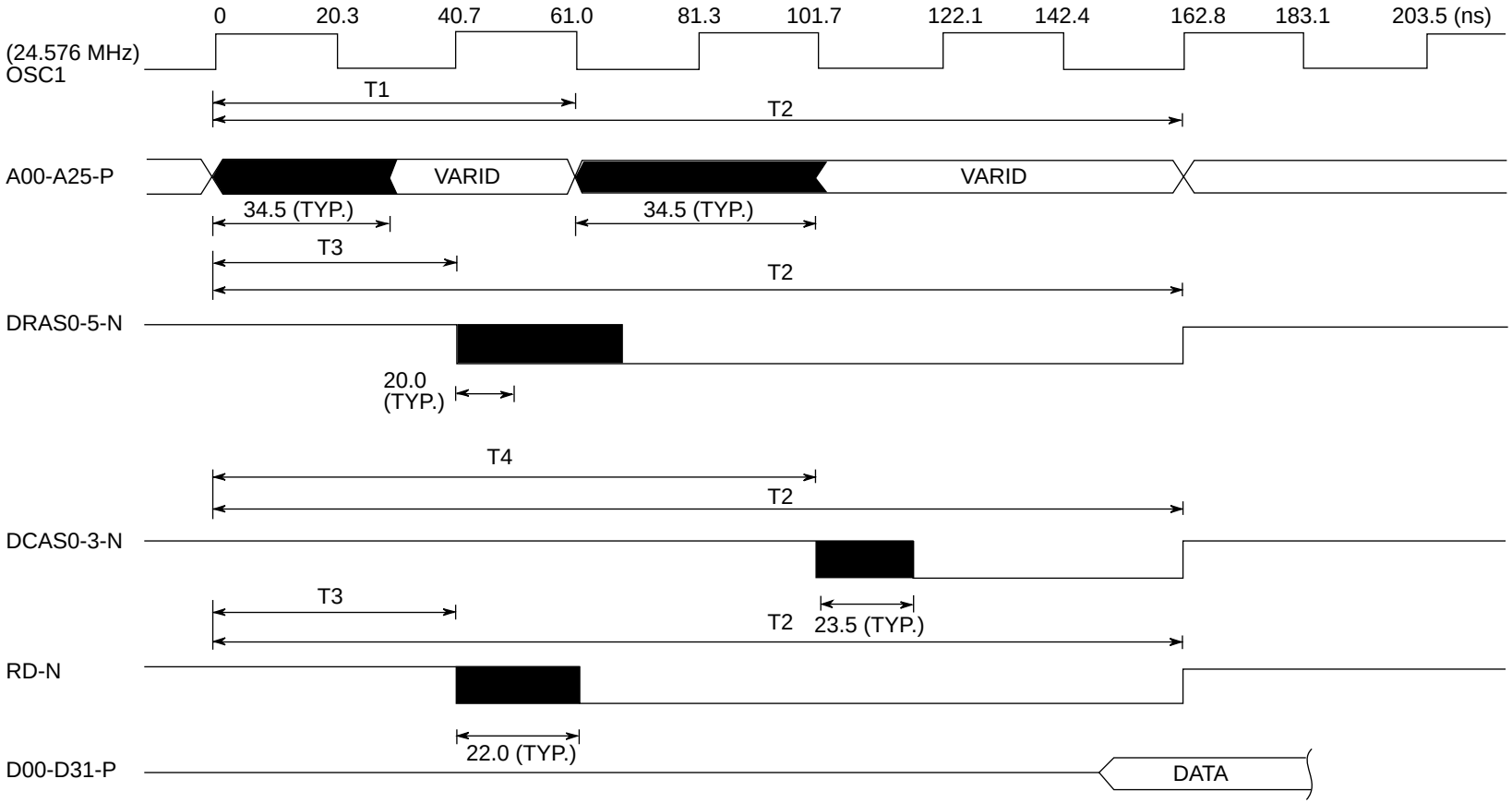


Figure 3-4 Block Diagram of CPU & Memory in OKIPAGE 6e/6ex

TIME / SIMM speed	T1	T2	T3	T4
No SIMM	61.0 ns	162.8 ns	40.7 ns	101.7 ns
60 ns	61.0 ns	162.8 ns	40.7 ns	101.7 ns
70 ns	61.0 ns	162.8 ns	40.7 ns	101.7 ns
80 ns	61.0 ns	162.8 ns	40.7 ns	101.7 ns
100 ns	81.3 ns	203.5 ns	40.7 ns	122.1 ns

CPU detects the type of SIMM memory installed on the memory expansion board, and sets the suitable timing as shown in the left handside table.
Due to this, T1~T4 values shown above vary depending on the type of SIMM memory being used.

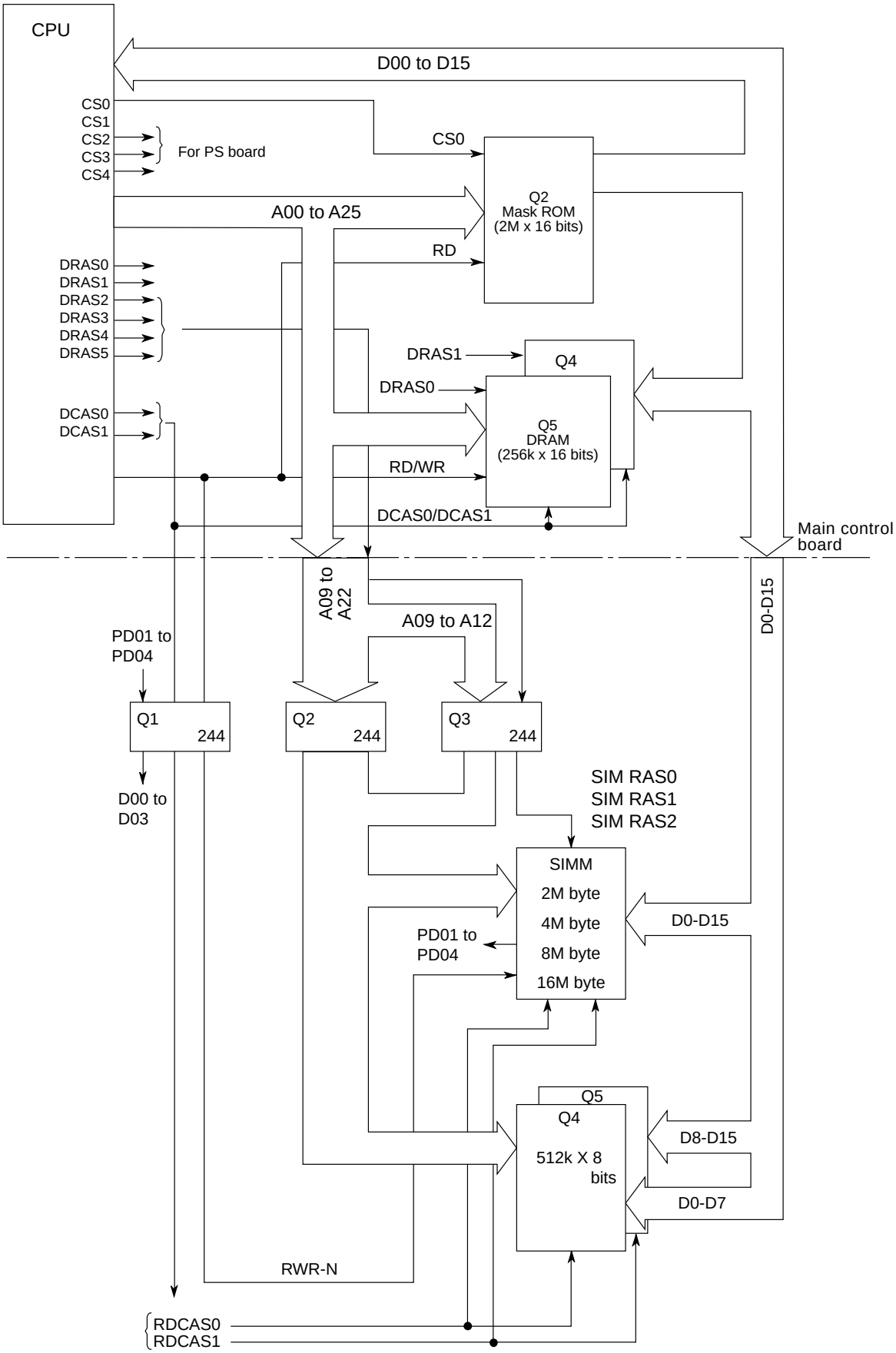


Figure 3-5 Block Diagram of CPU & Memory in OKIPAGE 6e

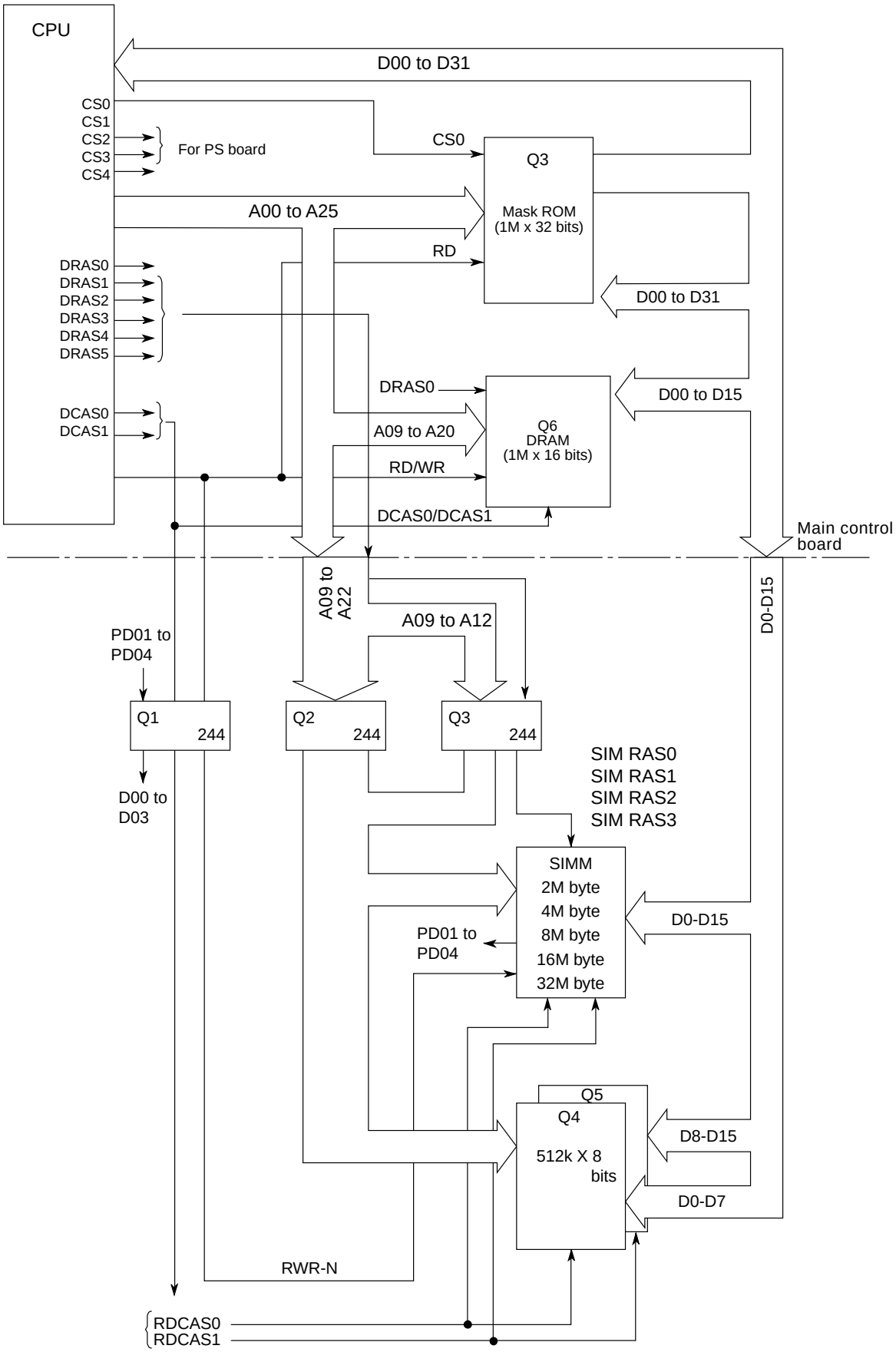
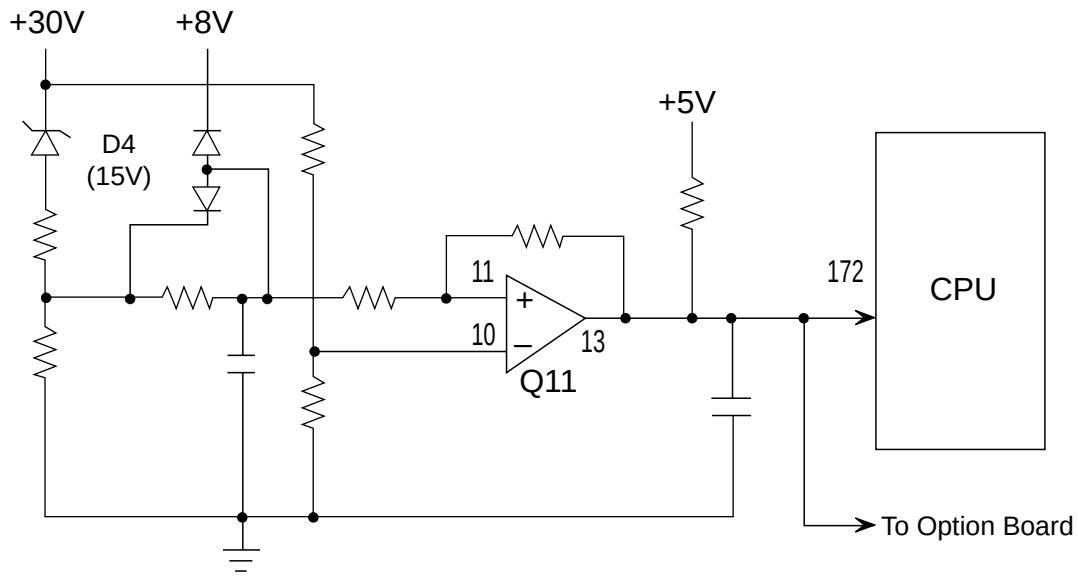
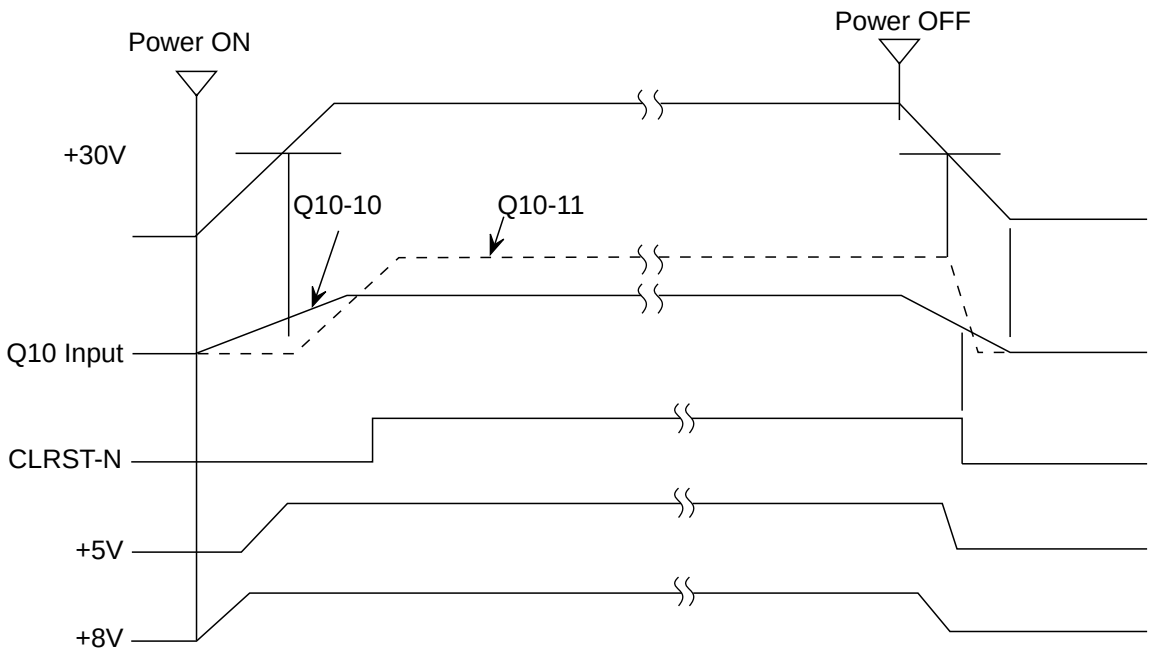


Figure 3-6 Block Diagram of CPU & Memory in OKIPAGE 6ex

3.4 Reset Control

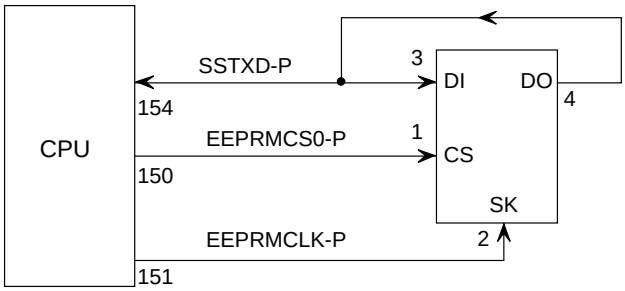
When power is turned on, a CLRST-N signal is generated by the rising sequence of +30V power supply.





3.5 EEPROM Control

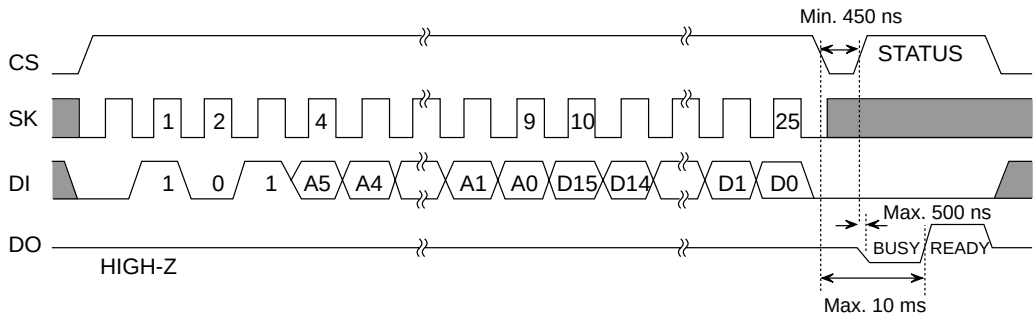
The BR93LC46A on the main control board is an electrical erasable/programmable ROM of 64-bit x 16-bit configuration. Data input to and output from the ROM are bidirectionally transferred in units of 16 bits through a serial I/O port (SSTXD-P) in serial transmission synchronized with a clock signal from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



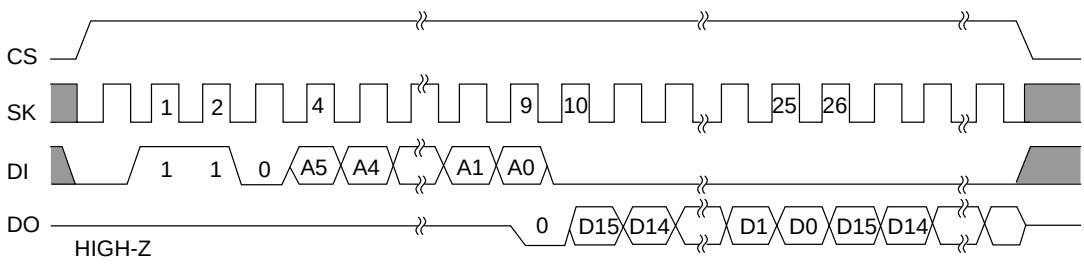
The EEPROM operates in the following instruction modes

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	

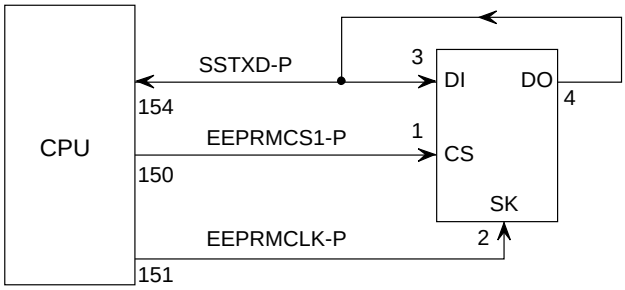
Write cycle timing (WRITE)



Read cycle timing (READ)



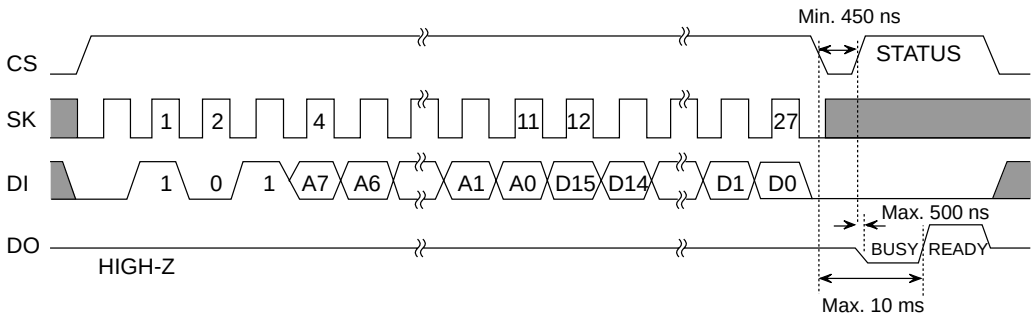
The NM93C66N on the PostScript board is an electrical erasable/programmable ROM of 256-bit x 16-bit configuration. Data input to and output from the ROM are bidirectionally transferred in units of 16 bits through a serial I/O port (SSTXD-P) in serial transmission synchronized with a clock signal from the CPU.



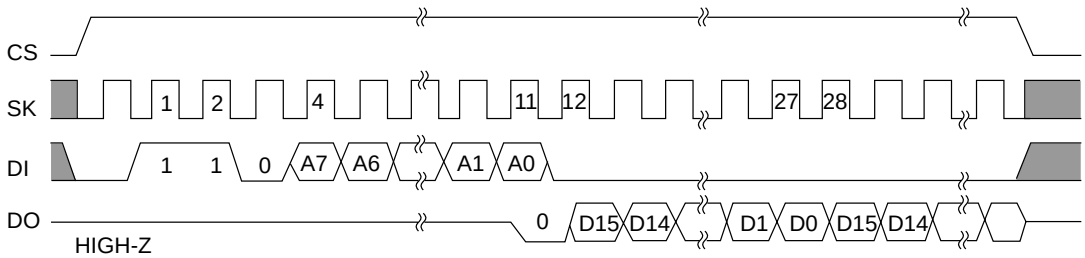
The EEPROM operates in the following instruction modes

Instruction	Start bit	Operation code	Address	Data
Read (READ)	1	10	A7 to A0	
Write Enabled (WEN)	1	00	11XXXXXX	
Write (WRITE)	1	01	A7 to A0	D15 to D0
Write All Address (WRAL)	1	00	01XXXXXX	D15 to D0
Write Disabled (WDS)	1	00	00XXXXXX	
Erase	1	11	A7 to A0	
Chip Erasable (ERAL)	1	00	10XXXXXX	

Write cycle timing (WRITE)

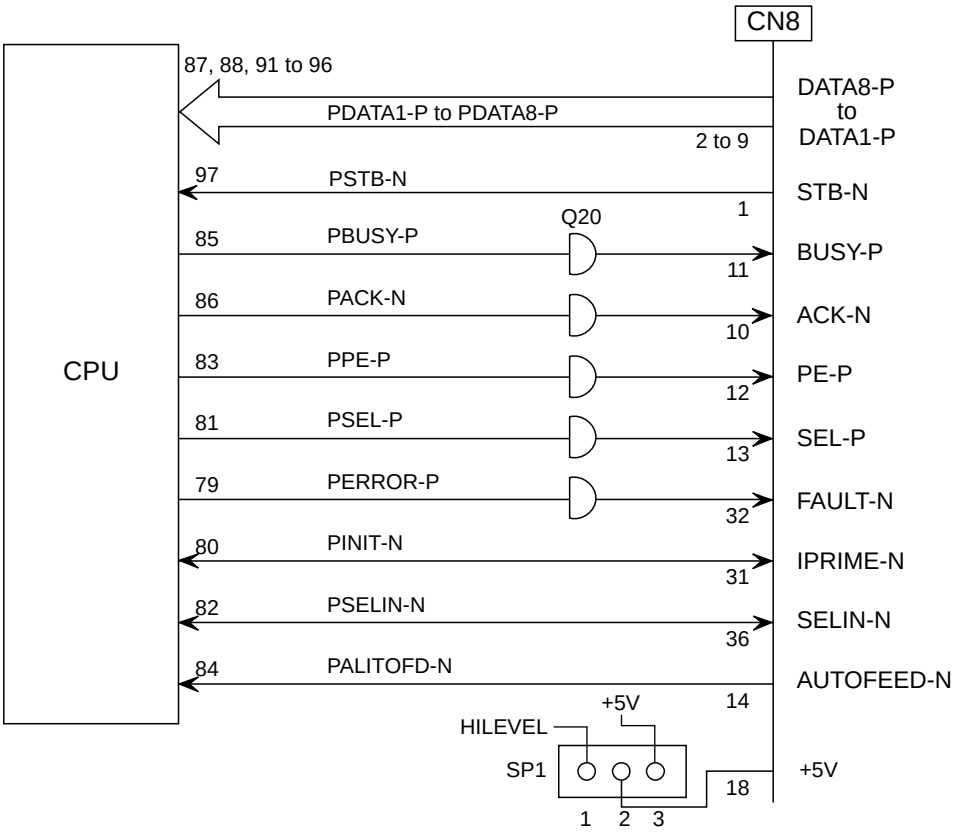


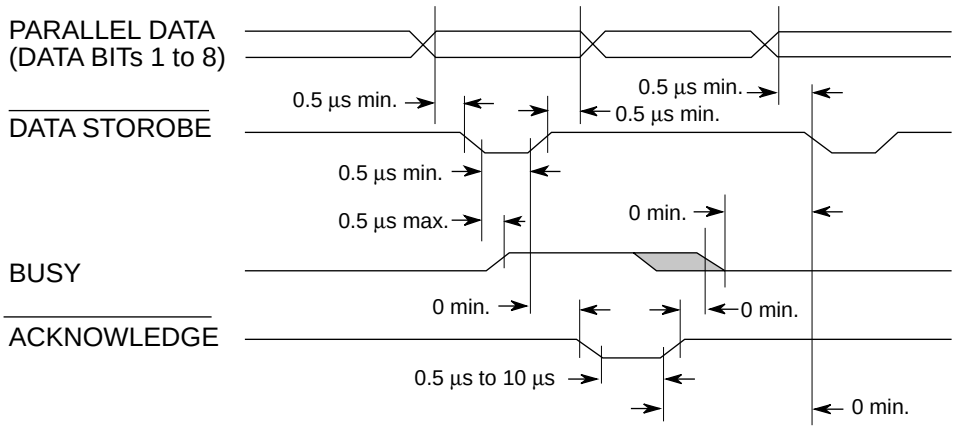
Read cycle timing (READ)



3.6 Centronics Parallel Interface

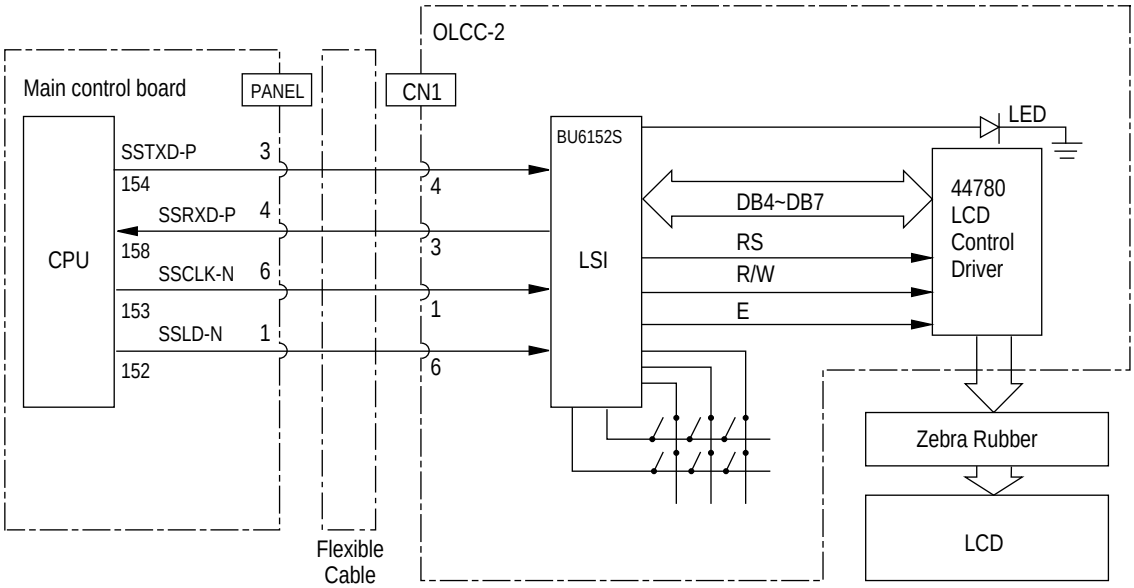
The CPU sets a BUSY-P signal to ON at the same time when it reads the parallel data (PDATA1-P to PDATA 8-P) from the parallel port at the fall of PSTB-N signal. Furthermore, it makes the store processing of received data into a receive buffer terminate within a certain fixed time and outputs an ACK-N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





3.8 Operator Panel Control

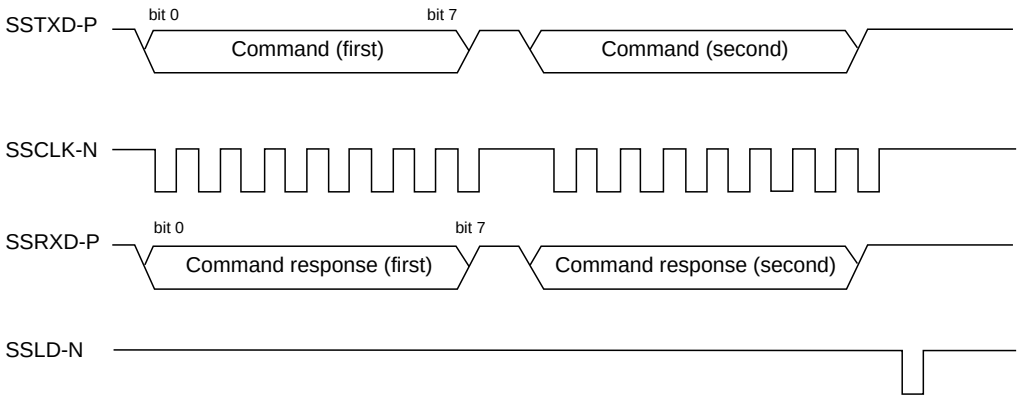
The operator panel consists of the following circuits.



1) BU5148S (LSI)

This LSI is connected to a clock synchronous serial port of the CPU. It controls switch data input, LED data output and LCD data input/output according to the commands given by the CPU. The CPU sends the 2-byte (16-bit) command (SSTXD-P) together with the shift clock signal (SSCLK-N) to the LSI and then makes a predetermined input/output control if the command decoded by the LSI is found to be a normal command.

On receiving a command sent from the CPU, the LSI, synchronizing with the serial clock of the command, returns a 2-byte command response to the CPU.



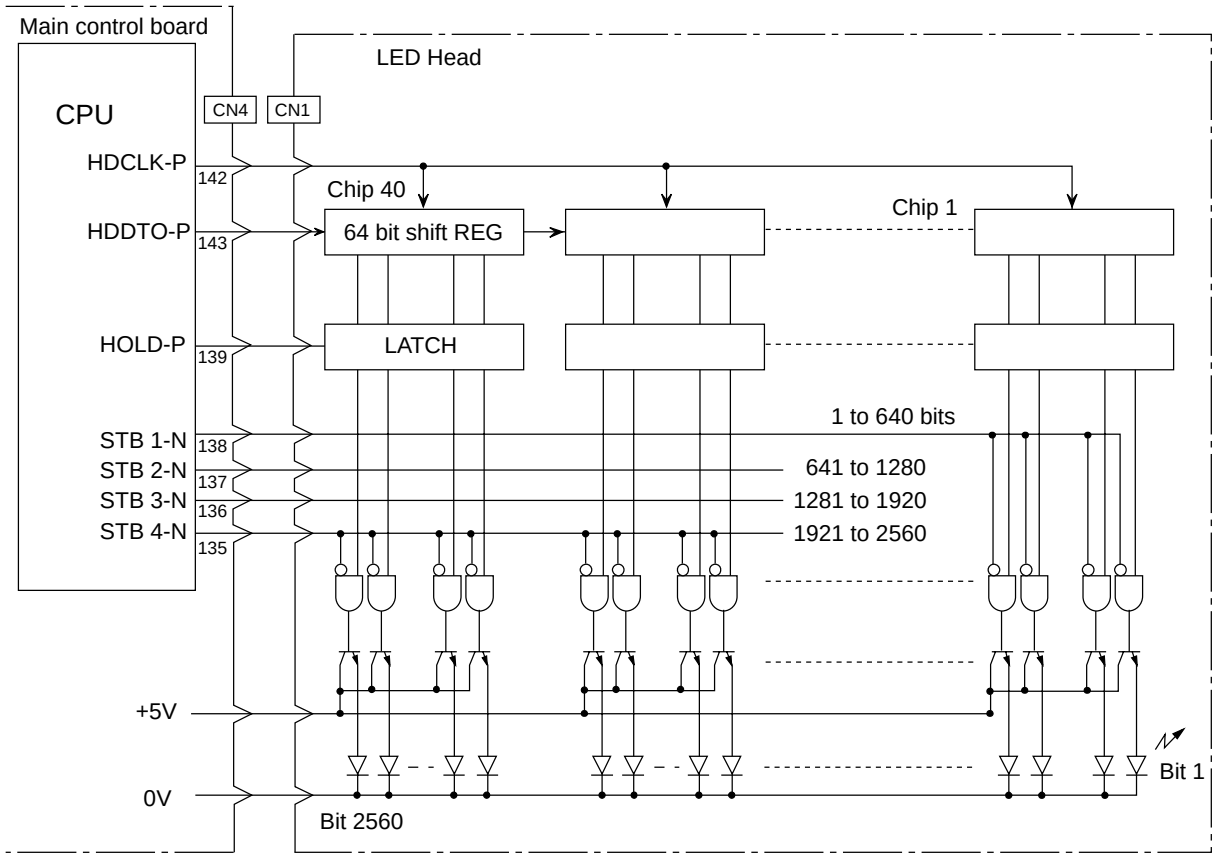
3.9 LED Head Control

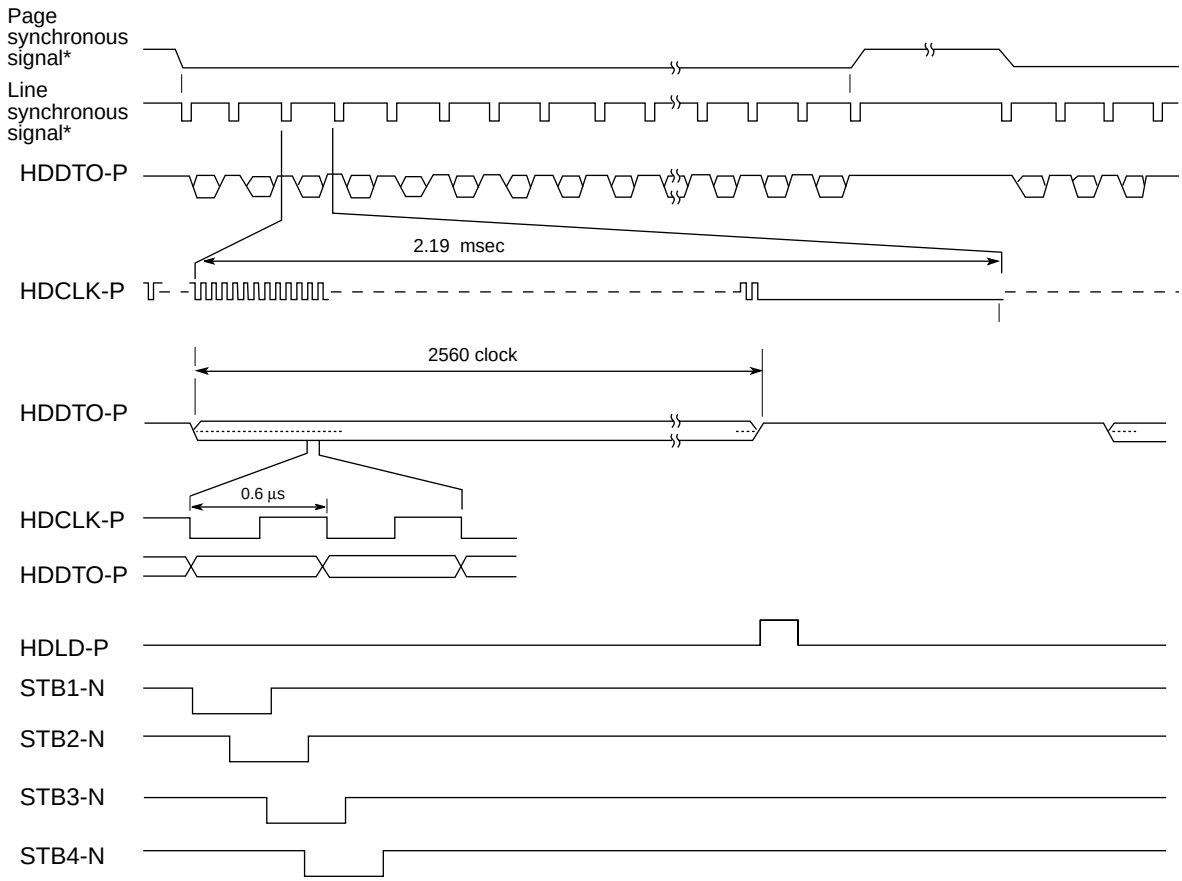
(1) For OKIPAGE 6e

When a paper form is made to arrive at the data write position on print start, the sending of data to the LED head starts as synchronized with the page synchronous signal/line synchronous signal (CPU internal signal).

Bit image data developed on the raster buffer of a memory are DMA-transferred to the register of a video interface controller (CPU built-in) and then sent to the shift register of the LED head in a serial transmission synchronized with the HDCLK-P signal by the HDDTO-P signal.

When 1-dot line data (2560 bits) is completely shifted, it is latched by means of the HDLD-P signal, causing LEDs to be driven by means of the STB1-N to STB4-N signals in 4-time division.



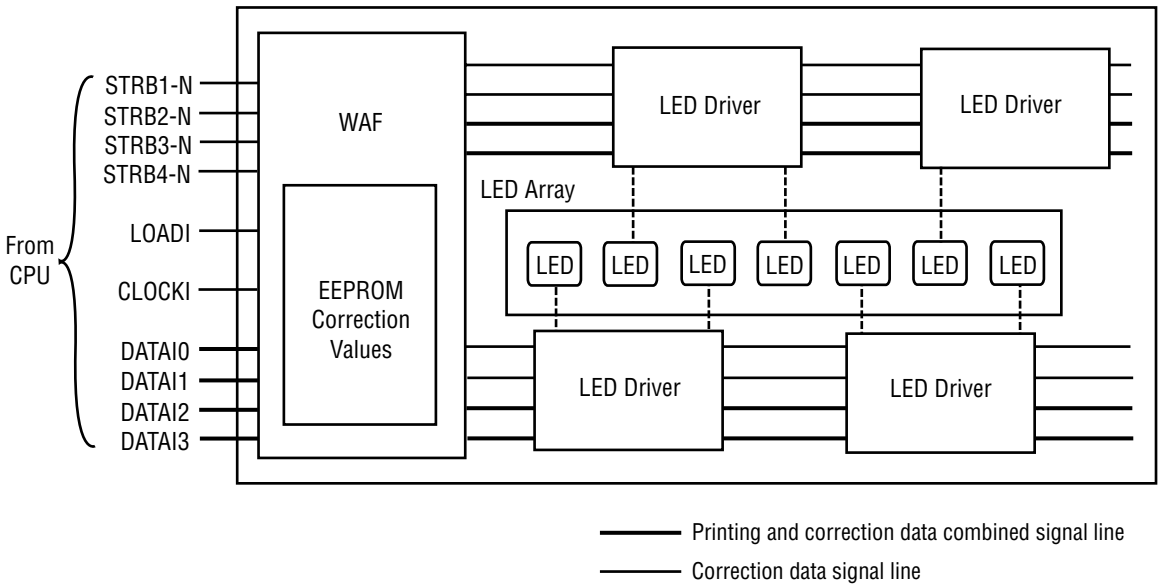


* CPU internal signal

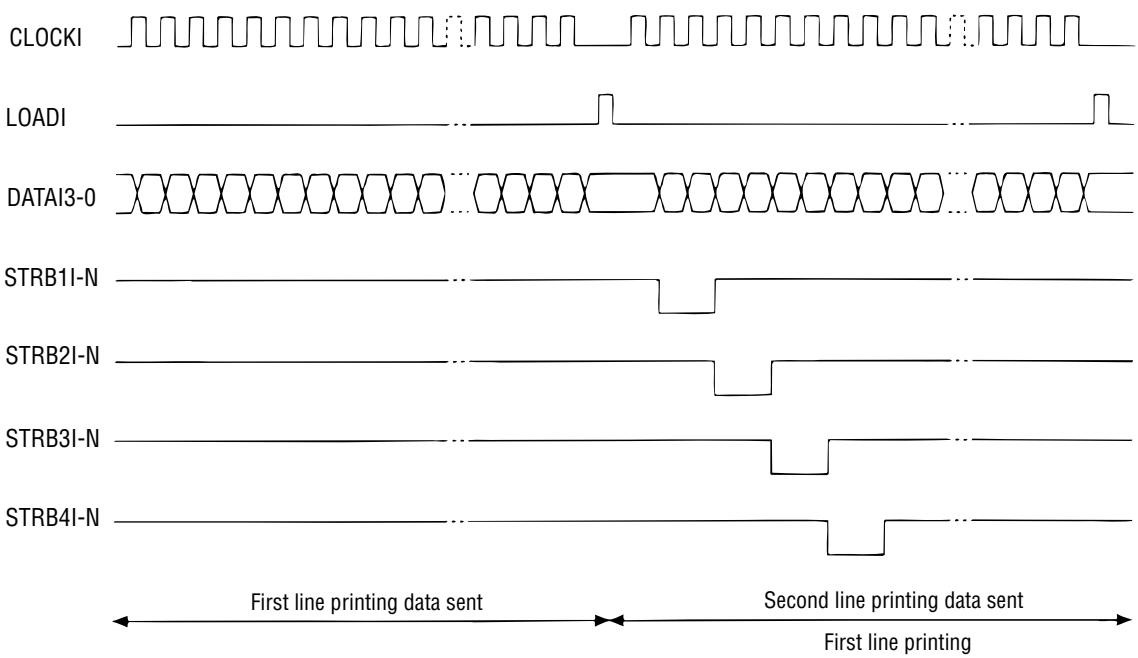
(2) For OKIPAGE 6ex

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 together as a pair.

The LED correcting head consists of the correction control LSI, LED drivers, and an LED array.



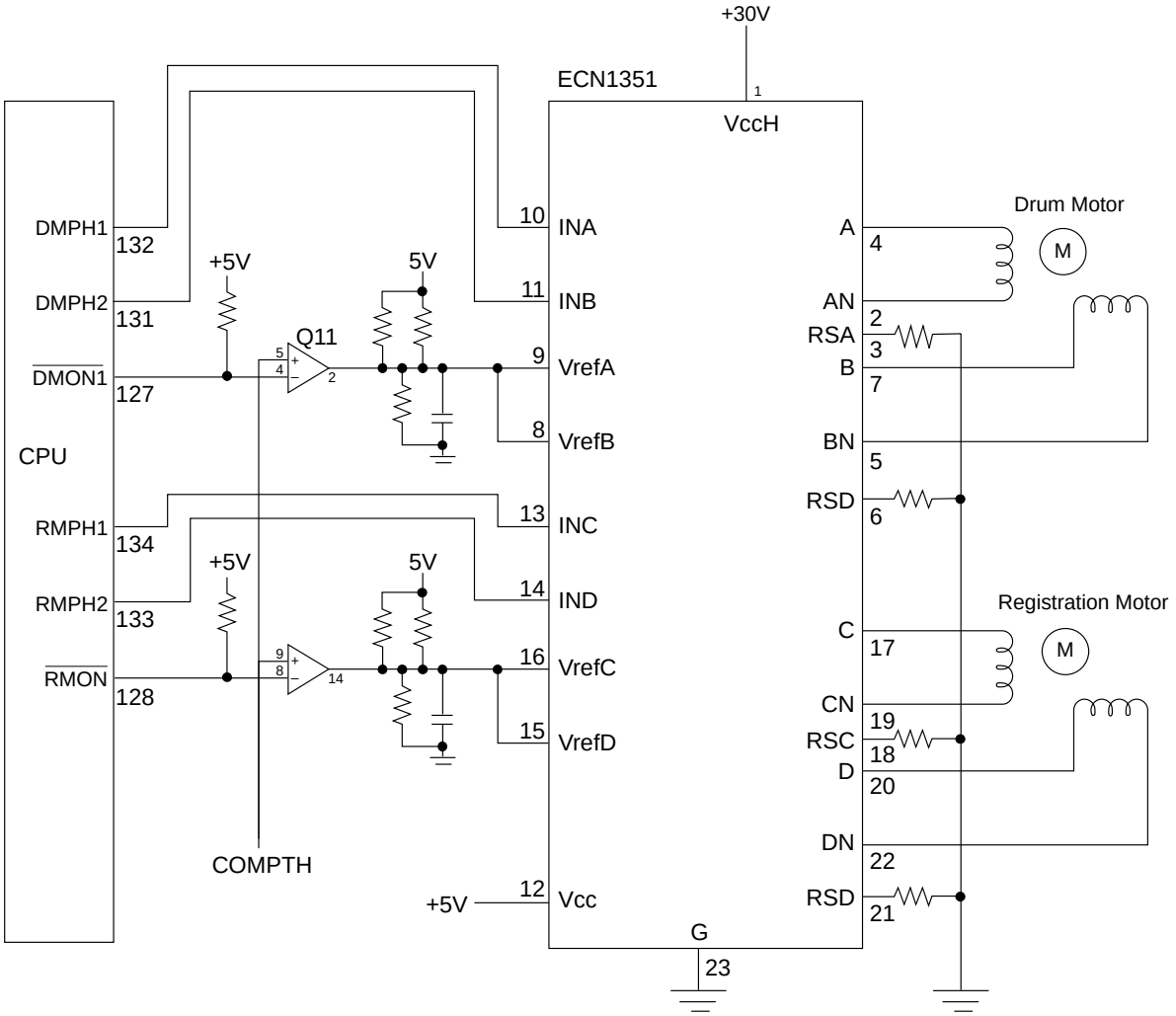
Normal Mode Printing Timing Chart



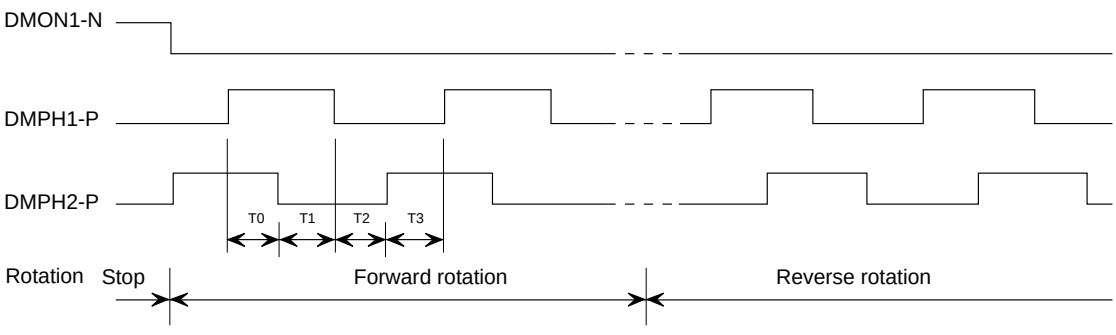
The printing operation is carried out in the following sequence. First, the printing data DATAI3 through DATAI0 are stored, sequentially shifted, in the shift registers of the LED drivers, by the printing data synchronous clock, CLOCKI. Then the printing data stored in shift registers are latched by the high level pulse of LOADI. The latched printing data turns the LEDs on by STRB1I-N through STRB4I-N and actuates printing.

3.10 Motor Control

A registration motor and a drum motor are driven by means of control signals from the CPU and a driver IC.

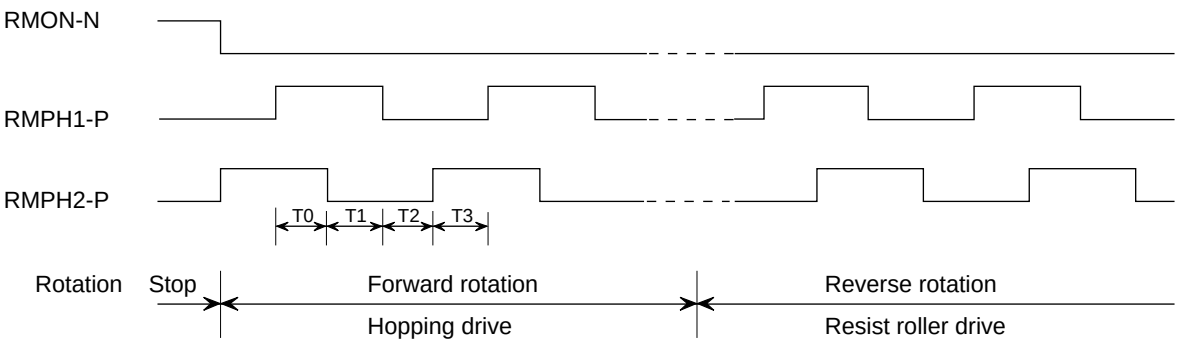


(1) Drum motor



Operation at normal speed: T0 to T3 = 1.094 ms

(2) Registration motor



Operation at normal speed: T0 to T3 = 1.094 ms

(3) Drive control

Time T0 to T3 determines the motor speed, while the phase different direction between phase signals DMPH1-P and DMPH2-P (RMPH1-P and RMHPH2-P) determines the rotation direction. DMON1-N and RMON-N signals control a motor coil current. According to the polarity of the phase signal, the coil current flow as follows:

1) +30V $\rightarrow$ SW $\rightarrow$ motor coil $\rightarrow$ $\overline{\text{SW}}$ $\rightarrow$ resistor $\rightarrow$ earth, or,

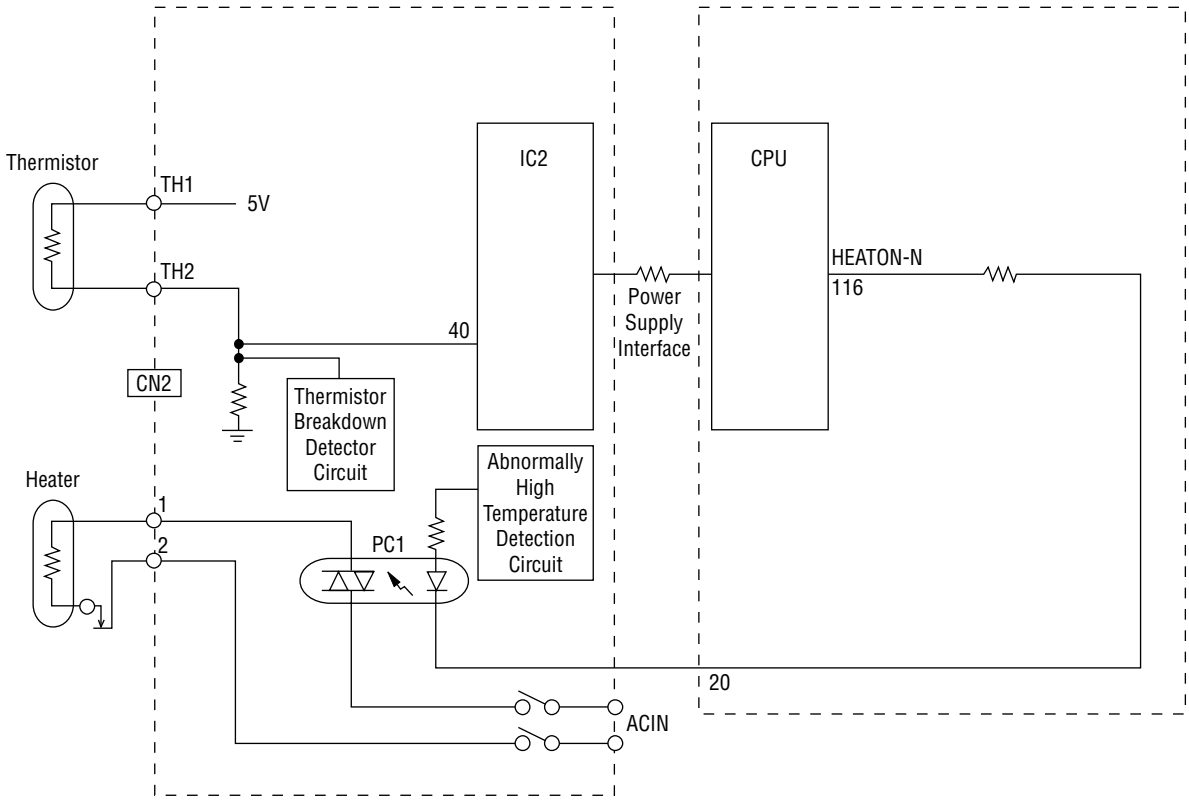
2) +30V $\rightarrow$ $\overline{\text{SW}}$ $\rightarrow$ motor coil $\rightarrow$ SW $\rightarrow$ resistor $\rightarrow$ earth

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.

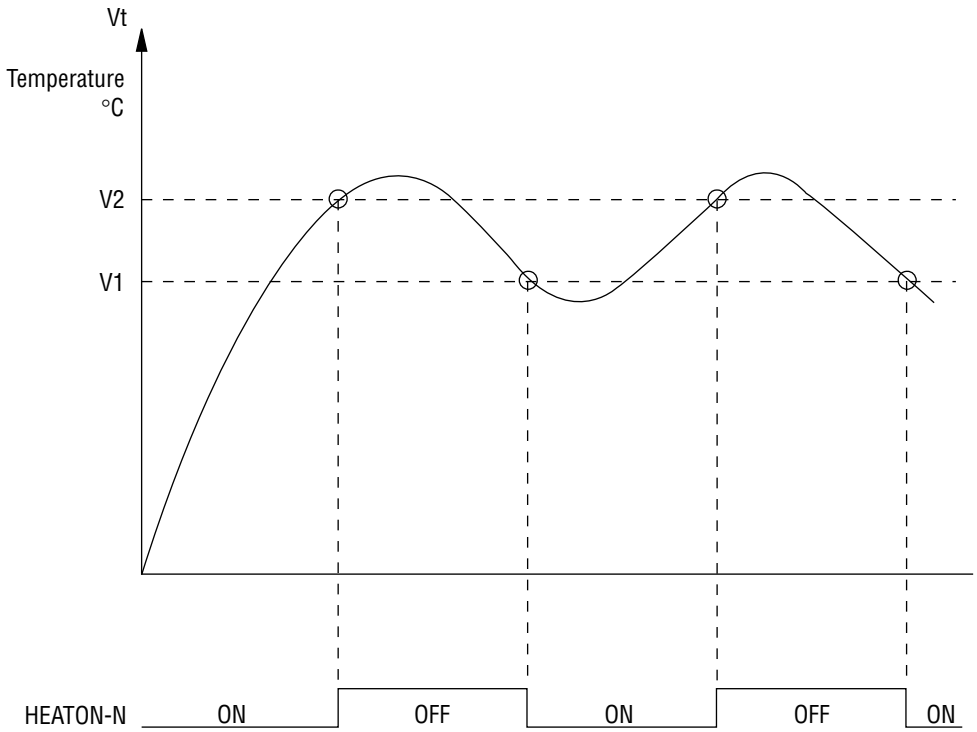
3.11 Fuser Temperature Control

For the temperature control by heater control, the variation in the resistance of thethermistor is A/D converted in IC2 and the resultant digital value is read and transferred to the CPU. The CPU turns on or off the HEATON-N signal according to the value of the signal received from IC2 to keep the temperature at a constant level.

Immediately after the power is turned on, the thermistor is checked for short circuit and breakdown. If the thermistor is shorted, the A/D converted value shows an abnormally high temperature, so that the short circuit can be detected. If the breakdown of the thermistor occurs, the A/D converter value shows the normal temperature. In this case, the thermistor breakdown can be detected by the sequence shown at the end of this section. If the heater is overheated, 5V supply is turned off when the resistance of the thermistor is detected to be exceeding the predetermined value.



The temperature control is described below.



V2	168°C
V1	165°C

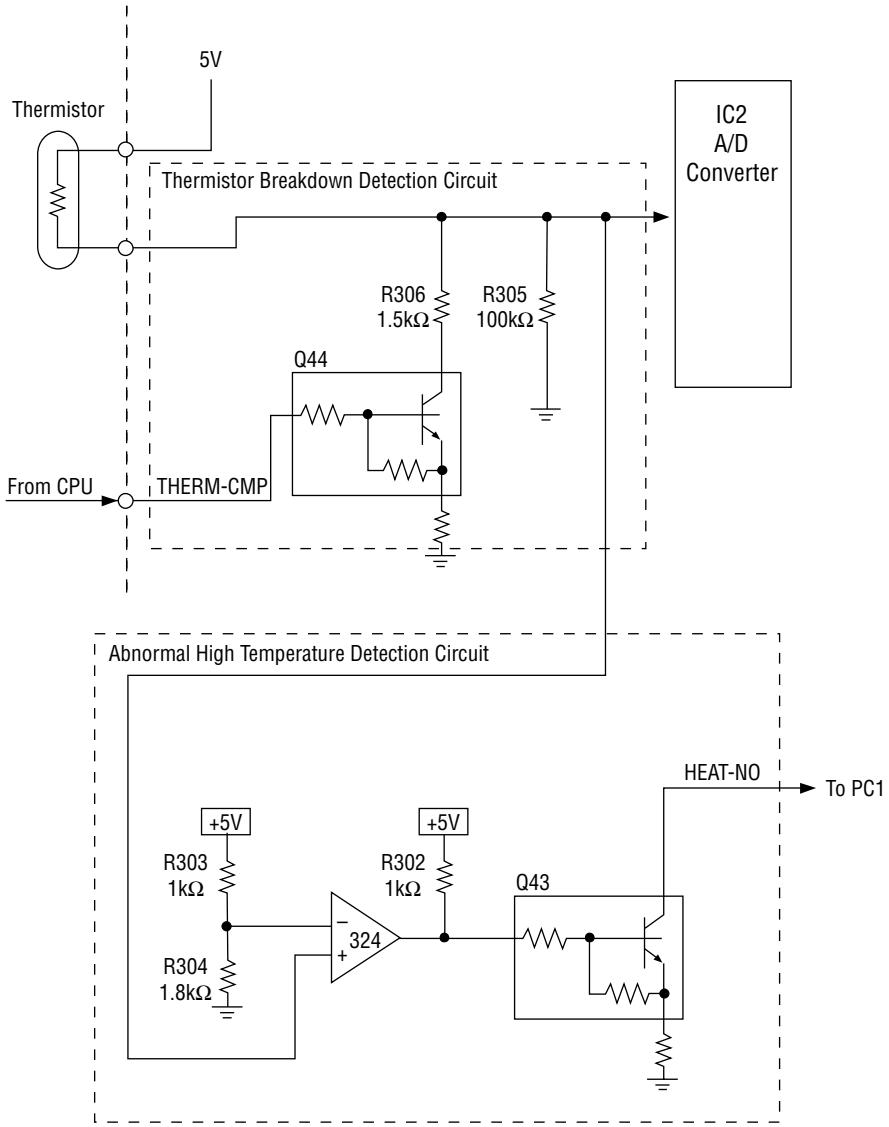
* The values V1 and V2 vary according t o setting mode.

(Standard temperature)

When Vt rises to V2 or more, the heater is turned of (by setting HEATON-N signal to LOW). When Vt drops to V1 or less, the heater is turned on (by setting HEATON-N signal to HIGH). In this way, the temperature can be kept within the predetermined range.

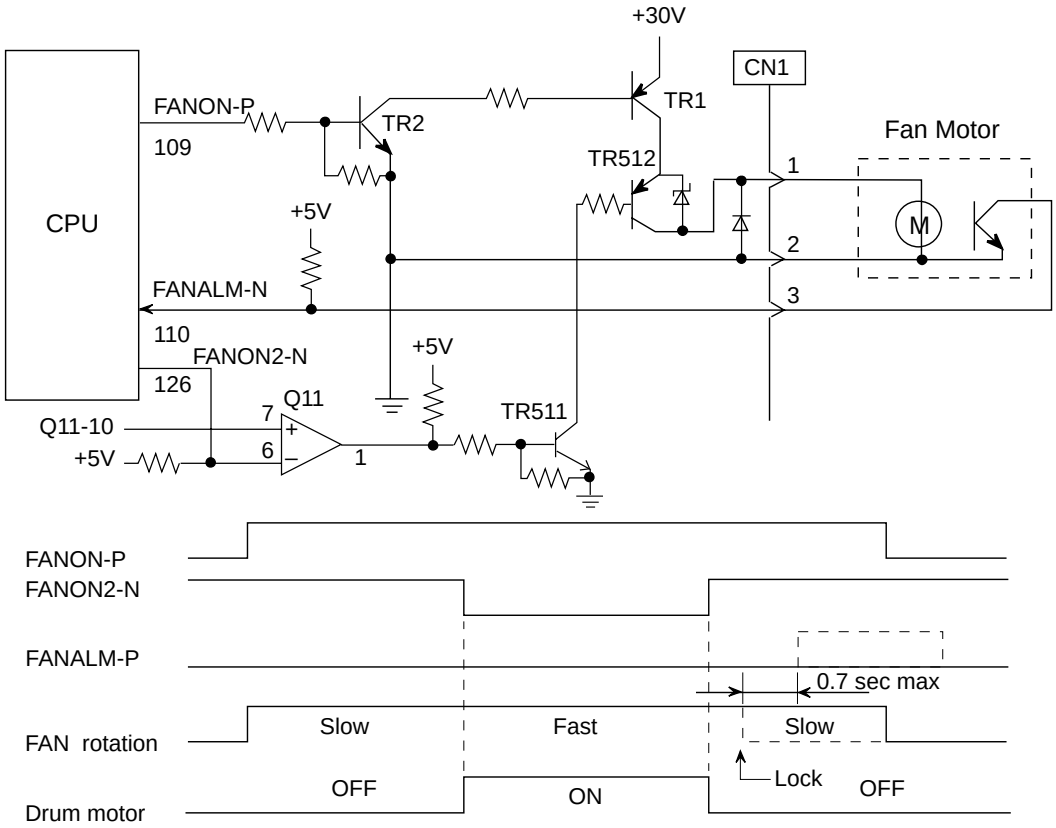
For heater breakdown detection, the heater must first be turned on. When a temperature rise which corresponds to the switching on of the heater does not occur, then a heater breakdown is detected. To shorten the breakdown detection time, the following circuit is used. Immediately after the power is turned on, the thermistor is checked and THERM-CMP signal is turned on to turn the transistor Q44 on. The reading resolution is increased through the variation of the thermistor resistance value.

If, for whatever reason, temperature control fails and the temperature rises abnormally, the abnormal high temperature detection circuit shown below forcibly cuts the power supply to the fuser.



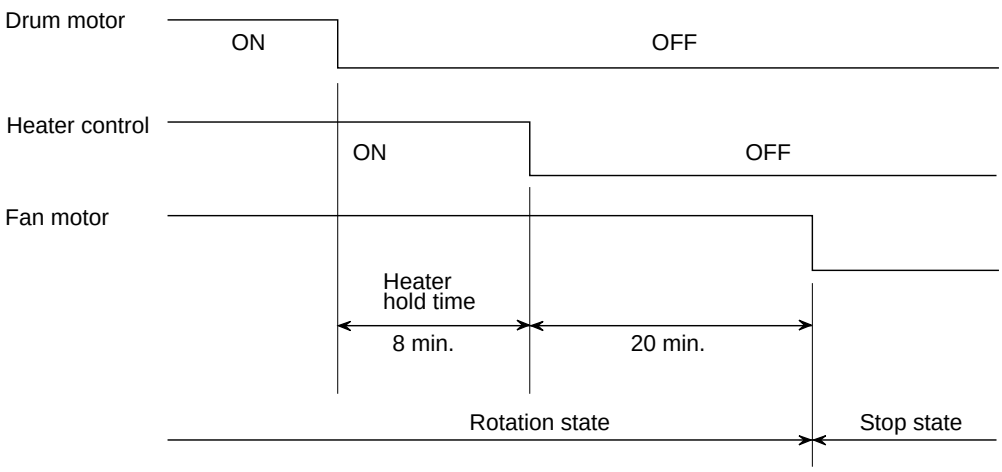
3.12 Fan Motor Control

The stop/rotation of the fan motor is controlled by a FANON-P signal. When the fan motor rotates normally, a FANALM-P signal generated in the hole element built in the fan motor is input to the CPU.



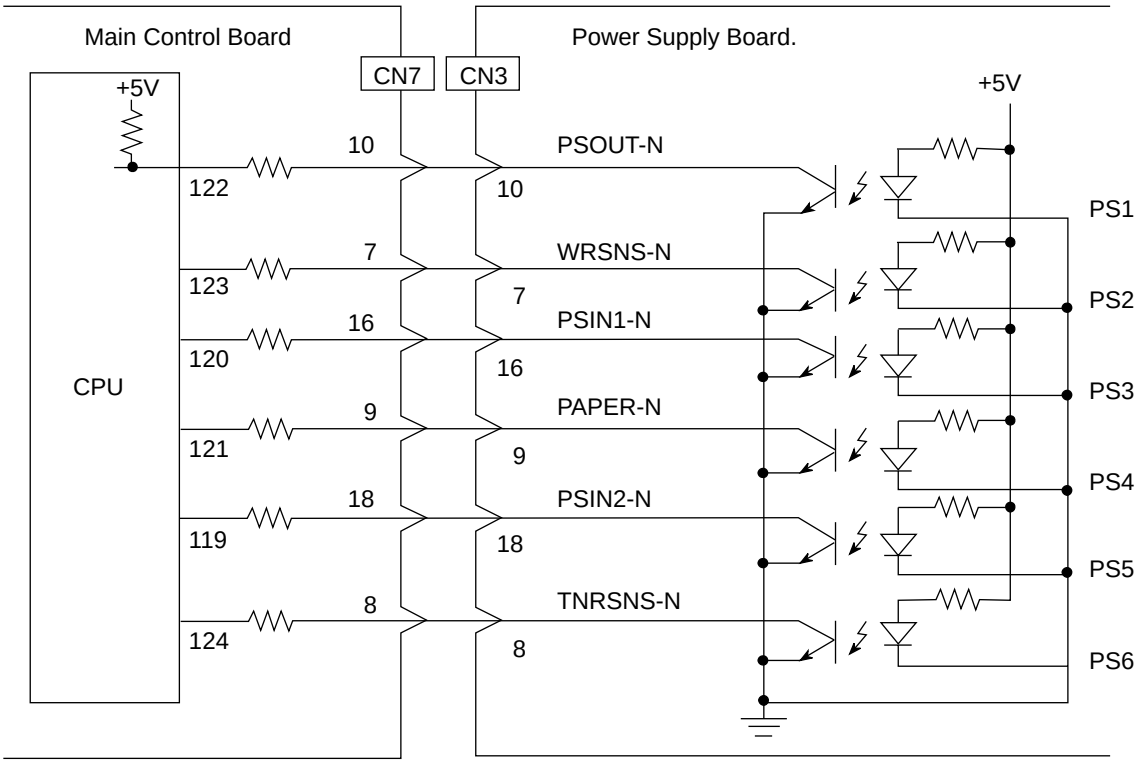
Fan motor start: Initial request, heater on, print start request

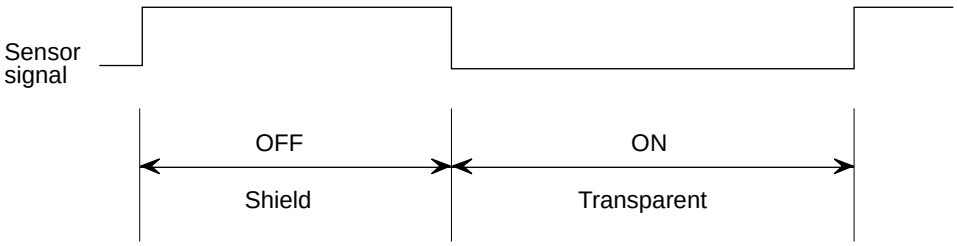
Fan motor stop:
- The motor immediately stops when an engine error or a fan error occurs.
- The motor stops 20 minutes after the occurrence of a paper jam, size error, or fuse error.
- The motor stops in the power save mode as below.



3.13 Sensor Control

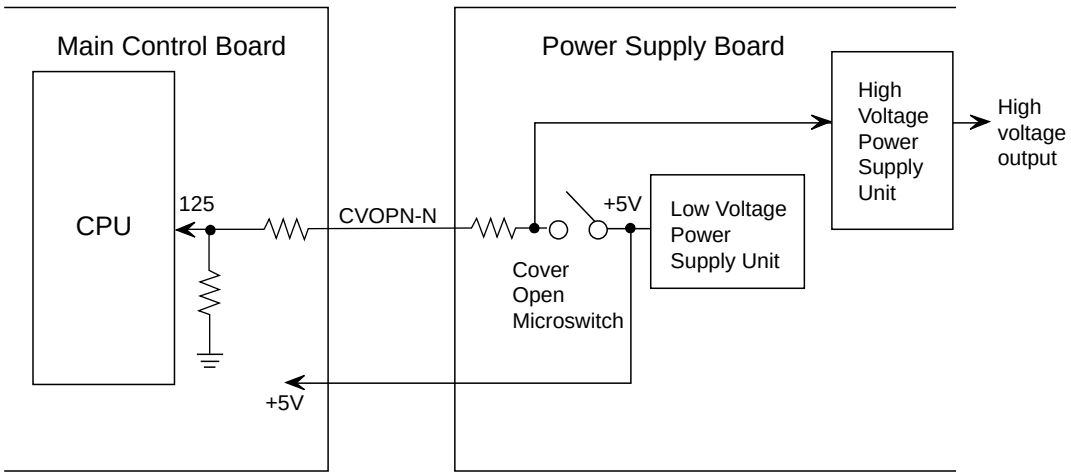
The CPU supervises the state of each sensor every 40 ms.

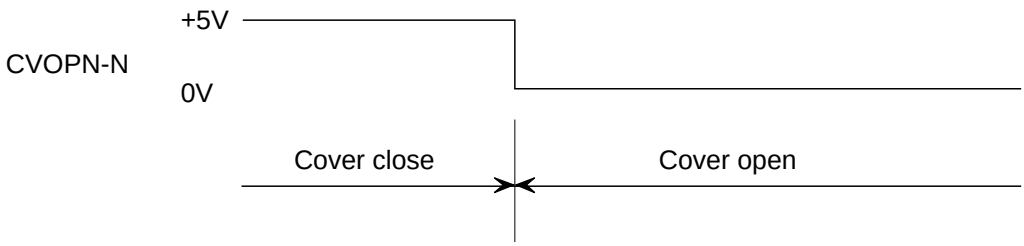




3.14 Cover Open

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

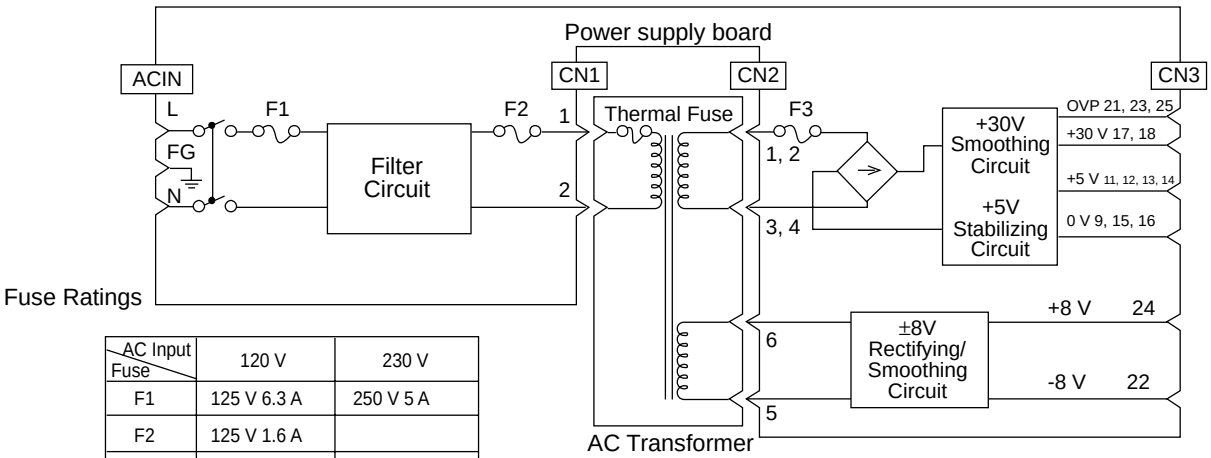




3.15 Power Supply Board

(1) Low voltage power supply

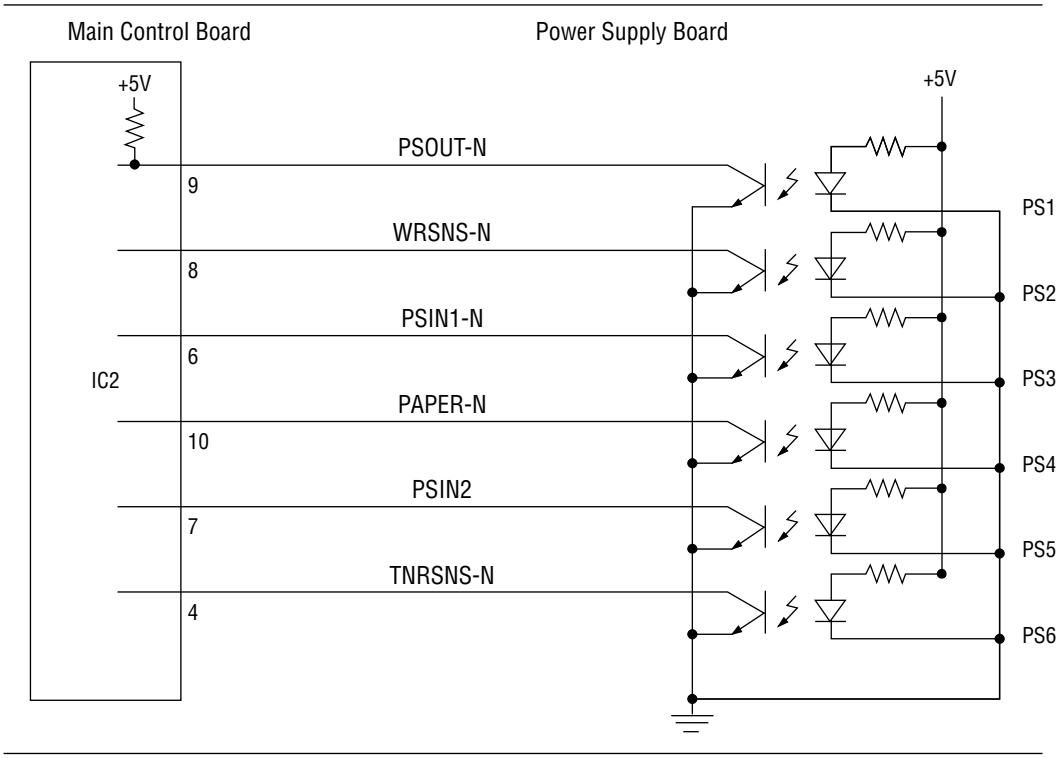
An AC power from an inlet is input to a transformer via fuses, AC switch and noise filter and then lowered to a 28 VAC power and a 10 VAC power. The 28 VAC power is converted to a +30 VDC output through a rectifying/smoothing circuit. A +5 VDC output is derived from the resultant +30 VDC power through a regulation circuit. The 10 VAC power is converted to a +8 VDC output and a -8 VDC output through a rectifying/smoothing circuit.

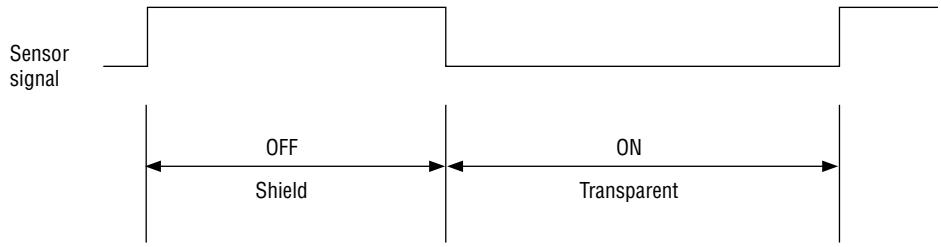


Fuse Ratings

AC Input / Fuse	120 V	230 V
F1	125 V 6.3 A	250 V 5 A
F2	125 V 1.6 A	
F3	125 V 2.5 A	250 V 2.5 A

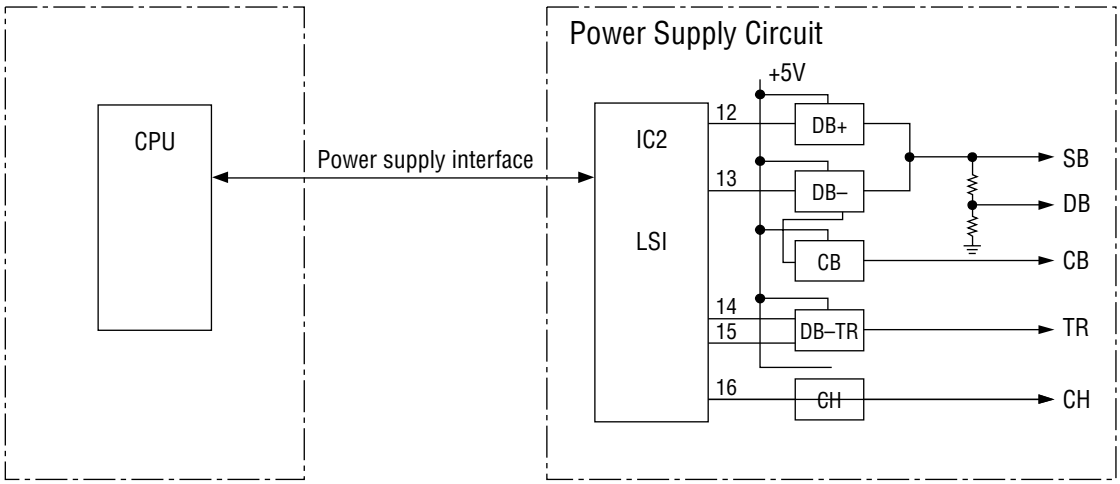
(2) Sensor control





(3) High voltage power supply

This high-voltage power supply circuit receives the high-voltage generation timing control command that is transmitted in serial through the power supply interface from the control section. It decodes this command by LSI (IC2) and outputs high-frequency pulses to the corresponding high-voltage generating circuits through pins 12, 13, 14, 15 and 16 of LSI (IC2). It supplies +38V to each high-voltage generating circuit as the source voltage. When the cover is open, the supply of +5V is interrupted to interrupt all the high-voltage outputs. The relationship between the high-frequency pulse output pins and the high voltage outputs is shown in the following table.



High-voltage outputs / High-frequency pulse output pins	SB	DB	CB	TR	CH
12	hv	+300V	+240V		
13	–450V	–300V	–400V		
14				+1.2KV	
15				–0.75KV	
16					-1.35KV

Part with slant line: no output

3.16 Option Tray Control

Two kinds of option trays, Second Tray and Multi purpose Feeder, can be connected to the printer individually or at same time by daisy chain. The trays are distinguished by two digit ID numbers. Fig. 3-10 shows the connection and the block diagrams.

The option trays and the printer communicate with each other through bi-directional clock synchronized serial interface. Fig. 3-11 shows its time chart, the printer always sends a command first, then each option tray interpret it. Because the command contains an ID, the selected option tray takes appropriate actions, then sends back a reply. The command and reply are transmitted back and forth on OPTSD-P signal line by synchronizing OPTSCLK-N clock signal which is sent by the printer. The printer knows the timing when it outputs the clock for the reply by sensing OPTSDR-N signal which is turned to zero by the option tray when it is ready for the reply.

The option tray's paper feeding action is triggered by a command sent by the printer. When the tray detects a signal on OPTPSIN-N signal line, which indicates the paper reaches a input sensor in the printer, the tray stops the paper feeding after carrying out the paper feeding according to the predetermined steps which have been downloaded from the printer at power-up time. Fig. 3-12 shows the time chart.

Status of the option trays such as no paper cassette, paper out and cover open, are informed to the printer though a reply in response to a status inquiry command.

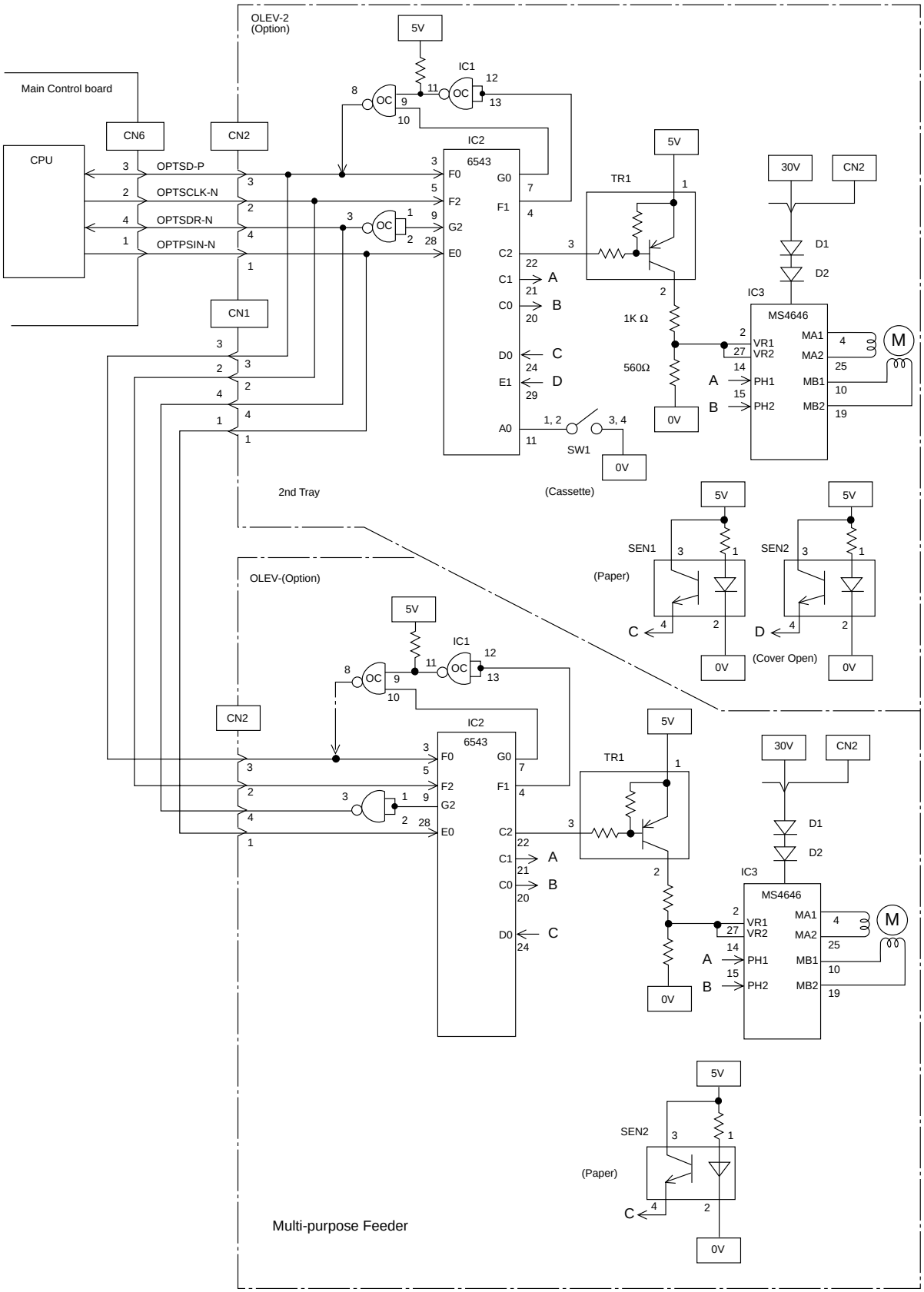


Figure 3-10 Option Tray Connection and Block Diagram

Option Tray Control Serial Interface Time Chart

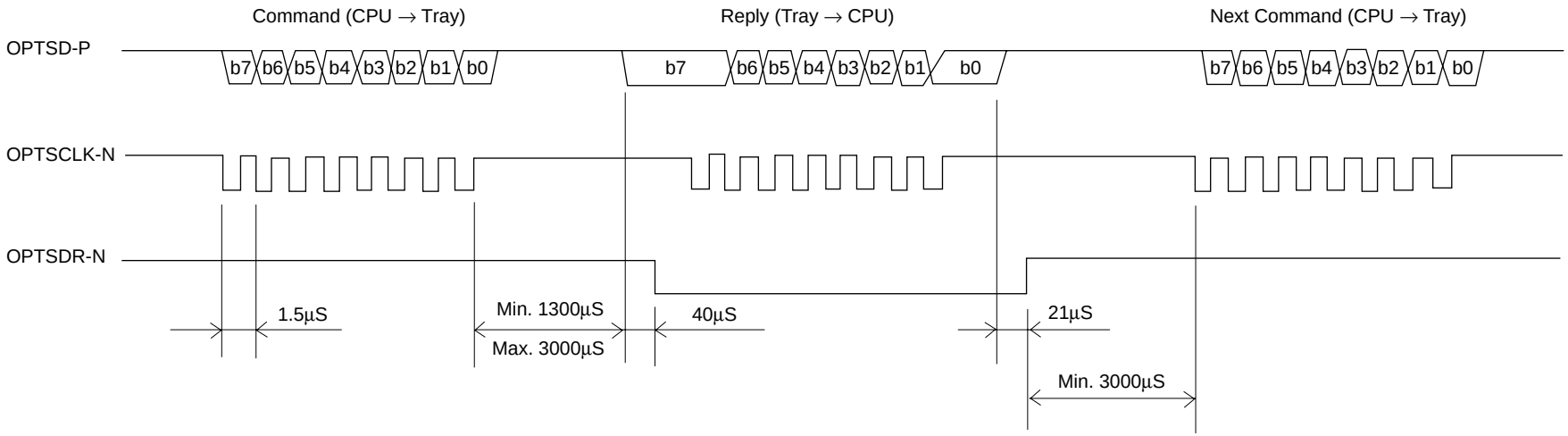


Figure 3-11 Option Tray Serial Interface Time Chart

Motor Control Time Chart

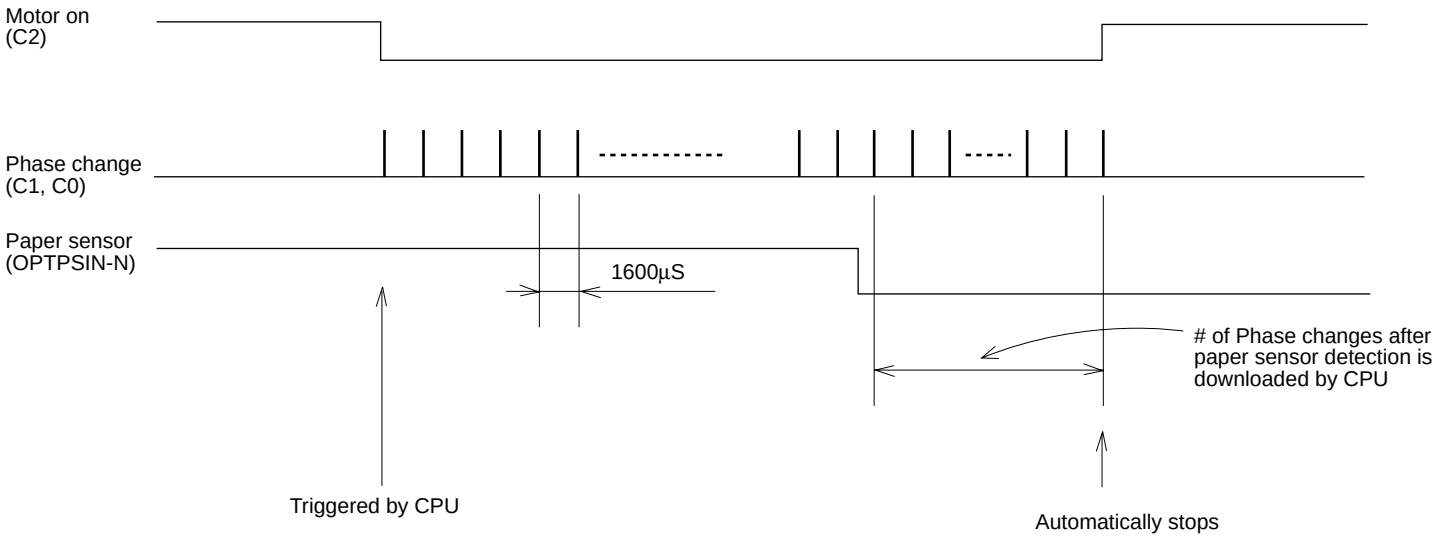


Figure 3-12 Option Tray Motor Control Time Chart

4. TROUBLESHOOTING

4.1 Troubleshooting Table

(A) Power Supply Board (OLER-OLHR-)

Note: (1) A malfunction of the power supply is not repaired by an agency. The abnormality to be treated here is that of sensors only.

(2) LCD Message is for OKIPAGE 6ex.

Failure	LCD Message (OKIPAGE 6ex)	Flowchart No.
Paper input jams occur frequently.	PAPER INPUTJAM	A-1
Paper feed jams occur frequently.	PAPER FEEDJAMn	A-2
Paper exit jams occur frequently.	PAPER EXITJAMn	A-3
Paper size errors occur frequently.	PAPER SIZEERRn	A-4
The message "TRAY PAPEROUT" remains displayed on the LCD.	TRAY PAPEROUT	A-5
The message "COVER OPEN" remains displayed on the LCD.	COVER OPEN	A-6
The message "TONERLOW" remains displayed on the LCD.	 TONERLOW	A-7
The message "TONERSNS" remains displayed on the LCD.	 TONERSNS	A-8
The printer does not function at all, and the LCD does not display any message.	 	A-9
Thermistor open error.	ERROR 72 	A-10

(B) Main Control Board (L5C, L6A) (1/2)

Failure	LCD Message	Flowchart No.
Abnormal message display on the LCD (no display, unclear display, display with some dot not lit).		B-1
Program ROM error	**E R R O R 1 0**	B-2
Font ROM error	**E R R O R 2 0**	B-3
Resident RAM error	**E R R O R 3 0**	B-4
EEPROM error	**E R R O R 4 0**	B-5
Option RAM error	**E R R O R 6 0**	B-6
Cooling fan error	**E R R O R 7 0**	B-7
SSIO error	**E R R O R 7 4**	B-8
Operator panel I/F error	**E R R O R 8 0**	B-9
Option tray I/F timeout error	**E R R O R 8 1**	B-10
Watchdog timer timeout occurs frequently.	**E R R O R 9 0**	B-11
Program error	**E R R O R F ***	B-12
Processor error	**E R R O R 0 ***	B-13

(B) Main Control Board (L5C, L6A) (2/2)

Failure	LCD Message	Flowchart No.
Print overrun occurs frequently.	PRINT OVERRUN	B-16
Error receive buffer overflow occurs frequently.	REC BUF OVERRUN	B-18
Paper input jam occurs frequently. #: TRAY1, TRAY2, FEEDER, MANUAL	# INPUTJAM	B-19
Paper input jam occurs frequently. #: TRAY1, TRAY2, FEEDER, MANUAL	# FEED JAM	B-20
The key switch operation on the operator panel is disabled frequently.		B-21
Data sent through the Centronics I/F cannot be received.		B-24
Cover open occurs frequently	COVER OPEN	B-25

(C) Operator Panel Board (OLCC-2-PCB)

Failure	LCD Message	Flowchart No.
Abnormal message display on the LCD (no display, unclear display, display with some dot not lit, etc.)		C-1
The key switch operation on the operator panel is disabled.		C-2
The LCD does not display any message.		C-3
Display on the LCD with some dot not lit.		C-4
Unclear display on the LCD.		C-5

(D) Memory Expansion Board (LQME-)

Failure	LCD Message	Flowchart No.
Option RAM error	E R R O R 6 0	D-1

(E) High capacity Second Paper Feeder Board (OLEV-2)

Failure	LCD Message	Flowchart No.
Paper input jams occur frequently.	T R A Y 2 I N P U T J A M	E-1
Paper out occurs even if the papers are in cassette or a tray.	T R A Y 2 P A P E R O U T	E-2
Second tray cover open errors occur even if the cover is closed.	C O V E R T 2 O P E N	E-3
The printer does not recognize an option tray.		E-4

(F) Multi purpose Feeder (OLEV)

Failure	LCD Message	Flowchart No.
Paper input jams occur frequently.	F E E D E R I N P U T J A M	F-1
Paper out occurs even if the papers are in a cassette or a tray.	F E E D E R P A P E R O U T	F-2
The printer does not recognize an option tray.		F-3

4.2 Troubleshooting Flowchart

A-1 Paper input jams occur frequently.

- Is PS3 (Inlet Sensor 1) operating normally?
  - No Replace PS3.

Yes Is PS5 (Inlet Sensor 2) operating normally?

- No Replace PS5.

Yes Replace IC2 (LC9700A).

A-2 Paper feed jams occur frequently.

- Is PS3 (Inlet Sensor 1) operating normally?
  - No Replace PS3.

Yes Is PS5 (Inlet Sensor 2) operating normally?

- No Replace PS5.

Yes Is PS2 (Paper Sensor) operating normally?

- No Replace PS2.

Yes Is PS1 (Outlet Sensor) operating normally?

- No Replace PS1.

Yes Replace IC2 (LC9700A).

A-3 Paper exit jams occur frequently.

- Is PS1 (Outlet Sensor) operating normally?
  - No Replace PS1.

Yes Replace IC2 (LC9700A).

A-4 Paper size errors occur frequently.

- Is PS3 (Inlet Sensor 1) operating normally?
  - No Replace PS3.
- Yes Is PS5 (Inlet Sensor 2) operating normally?
  - No Replace PS5.
- Yes Replace IC2 (LC9700A).

A-5 The message "TRAY PAPEROUT" remains displayed on the LCD

- Is PS4 (Paper End Sensor) operating normally?
  - No Replace PS4.
- Yes Replace IC2 (LC9700A).

A-6 The message "COVER OPEN" remains displayed on the LCD.

- Is SW2 (Cover Open Switch) operating normally?
  - No Replace SW2.
- Yes Is the CVOPN-N signal low at SW2?
  - No Replace SW2.
- Yes Is CVOPN-N signal low at Pin-2 of R600?
  - No Replace the power supply board.
- Yes Replace R564.

A-7 The message "TONERLOW" remains displayed on the LCD.

- Is PS6 (Toner Sensor) operating normally?
  - No Replace PS6.
- Yes Replace IC2 (LC9700A).

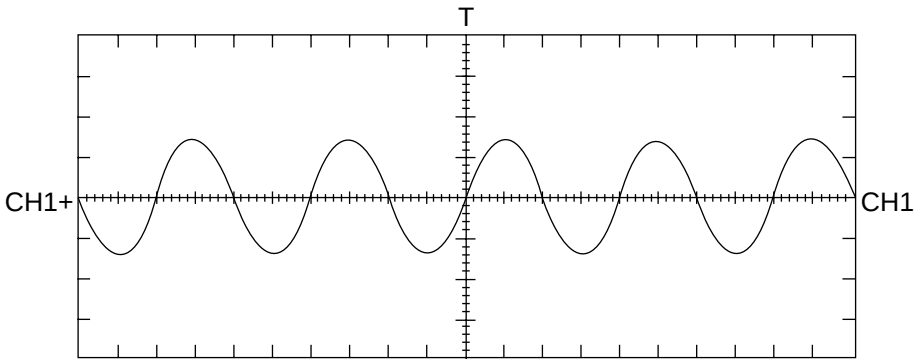
A-8 The message "TONERSNS" remains displayed on the LCD.

- Is PS6 (Toner Sensor) operating normally?
  - No Replace PS6.
- Yes Replace IC2 (LC9700A).

A-9 The printer does not function at all, and the LCD does not display any message.

- Is fuse F1 open?
  - Yes Replace F1.

No Is the voltage waveform between Pins 1 and 3 of the connector (CN2) same as the waveform shown below?



CH1: DC 2V/div. Normal 5ms/div.

- No Replace the transformer T1.

Has the problem been solved?

- Yes End.

No Is the voltage output between Pins 2 and 3 of the filter L101 100VAC?

- No Replace the filter L101.

Yes Replace the filter L1.

Has the problem been solved?

- Yes End.

No Replace the capacitors C1, C2 and C3.

Yes Is the fuse F3 open?

- Yes Replace F3.

No Is the voltage output of Pin 17 of the connector (CN3) about 30 VDC?

- No Replace the diode bridge DS1.

Yes Is the voltage output of Pin 11 of the connector (CN3) about 5 VDC?

- No — Replace the transistor Q1.
- Has the problem been solved.
  - Yes — End.
- No — Replace the transistor Q2.
- Has the problem been solved.
- No — Replace IC1 (FA7617P-1).

Yes — Check the connection between the power supply board and TQCB-PCB.

A-10 Thermistor open error (ERROR 72).

- Is the voltage output between (L) and (N) of the connector ACOUT correct (240V or 120V)?
  - Yes — Replace IC2 (LC9700A).
  - Has the problem been solved?
    - Yes — End.
  - No — Thermistor of fuser failure

No — Is Pin 2 (HEAT-N signal) of PC1 (S21ME4) low?

- No — Check the connection between the power supply board and TWCB-PCB.

Yes — Is Pin 1 (HEAT-NO signal) of PC1 (S21ME4) low?

- No — Replace the photo coupler PC1 (S21ME4).
- Has the problem been solved?
  - Yes — End.
- No — Replace the thyristor D1 (TM1241/TM1261).

Yes — Is Pin 10 of IC4 (324P) low?

- No — Replace Q43 (2SC3400).

Yes — Replace IC4 (324P).

B-1 Abnormal message display on the LCD.

- Is the 12.288-MHz clock signal being sent to Pin 3 of OSC1?
  - No Replace OSC1 (CST 12.288MTW).
- Yes Is the output at Pin 13 (CLRST-N) of Q11 (NJM2901 or µPC339G2) normal (see Section 3.3 Reset Control on page 7)?
  - No Replace Q11 (NJM2901 or µPC339G2).
- Yes Program ROM error (ERROR 10).

B-2 Program ROM error (ERROR 10).

- Replace Q2 (L5C-PCB) or Q3 (L6A-PCB).

B-3 Font ROM error (ERROR 20).

- Replace Q2 (L5C-PCB) or Q3 (L6A-PCB)

B-4 Resident RAM error (ERROR 30).

- Are negative pulses being put out to Pin 14 (DRASO-N) of Q5 (L5C-PCB) or Q6 (L6A-PCB)?
  - No Failure of Q1 (MHM2029-002K/MHM2029-004K).
- Yes Are negative pulses being sent to Pin 29 and 28 (DCAS0-N DCAS1-N) of Q5 (L5C-PCB) or Pin 31 and 30 (DCAS0-N, DCAS1-N) of Q6 (L6A-PCB)?
  - No Failure of Q1 (MHM2029-002K/MHM2029-004K).
- Yes Replace Q5 (L5C-PCB) or Q6 (L6A-PCB).

B-5 EEPROM error (ERROR 40).

- Replace Q10 (BR93LC46A).
- Has the problem been solved?
  - Yes End.
- No Failure of Q1 (MHM2029-002K/MHM2029-004K).

B-6

- Option RAM error (ERROR 60)
- The MENU PRINT memory capacity does not increase even when an expansion memory board is installed.
- Are negative pulses being put out to Pin 51 (DRAS1-N), Pin 29 (DRAS2-N), Pin 59 (DRAS3-N), Pin 30 (DRAS4-N), Pin 70 (DRAS5-N) of the connector (CN11)?
  - No — Failure of Q1 (MHM2029-002K/MHM2029-004K).
  - Yes — Failure of LQME-PCB. Go to flowchart D-1

B-7

Cooling fan error (ERROR 70)

- Is the fan rotating?
  - No — Is +38V power being supplied to Pin 1 (FAN POW) of the connector (CN1)?
    - No — Is the output at Pin 109 (FANON-P) of Q1 (MHM2029K-002K/MHM2029-004K) at high level?
      - No — Failure of Q1 (MHM2029K-002K/MHM2029-004K).
      - Yes — Is +38V power being supplied to Pin 1 of TR1?
        - No — Failure of power supply board.
        - Yes — Replace TR1.
    - Yes — Are negative pulses being sent to Pin 3 (FANALM-N) of the connector (CN1)?
      - No — Replace the fan.
  - Yes — Failure of Q1 (MHM2029K-002K/MHM2029-004K).

B-8

- SSIO error (ERROR 74)
- Is the connection at the connector (CN7) properly engaged?
  - No — Replace the connector (CN7).
  - Yes — Failure of Q1 (MHM2029-002K/MHM2029-004K).

B-9

Operator panel I/F timeout error (ERROR 80).

- Is the connection at the connector (CN5) properly engaged?
  - No — Replace the connector (CN5).
  - Yes — Failure of Q1 (MHM2029-002K/MHM2029-004K).

B-10 Option tray I/F timeout error (ERROR 81).

- Is the connection at the connector (CN6) properly engaged?
  - No Replace the connector (CN6).
- Yes Failure of Q1 (MHM2029-002K).

B-11 Watchdog timer timeout error occurs frequently (ERROR 90).

- Failure at Q1 (MHM2029-002K/MHM2029-004K).

B-12 Program error (ERROR F*).

- Failure of Q1 (MHM2029-002K/MHM2029-004K).

B-13 Processor error (ERROR 0*).

- Failure of Q1 (MHM2029-002K/MHM2029-004K).

B-16 Print overrun occures frequently.

- Failure of Q1 (MHM2029-002K/MHM2029-004K).

B-18 Error receive buffer overflow occurs frequently.

[Centronics I/F]

- Is the BUSY signal being sent to Pin 11 (BUSY-P) of the connector (CN8)?
  - No Is the BUSY signal being sent to Pin 1 (BUSY-P) of Q20 (7407)?
    - Yes Replace Q20 (7407).
  - No Failure of Q1 (MHM2029-002K/MHM2029-004K).
- Yes Verify the host settings.

B-19 Paper input jam.

- Is the hopping motor rotating normally?
  - No — Are the waveforms of RMPH1-P and RMPH2-P signals as shown in Section 3.9 (2) being sent to Pins 13 and 14 of Q7 respectively?
    - No — Failure of Q1 (MHM2029-002K/MHM2029-004K).
    - Yes — When the motor is rotating, does the output to Pin 15 and 16 of Q7 go high?
      - No — Is the waveform of RMON-N, as shown in Section 3.9 (2)being sent to Pin 8 of Q11?
        - No — Failure of Q1 (MHM2029-002K/ MHM2029-004K).
        - Yes — Replace Q11.
      - Yes — Is the voltage at Pin 1 of Q7 +38V?
        - No — Failure of the power supply board.
        - Yes — Replace Q7.
  - No — Failure of the power supply board or mechanical parts.

B-20 Paper feed jam occurs frequently.

- Is the (drum) motor rotating normally?
  - No — Are the waveforms of DMPH1-P and DMPH2-P as shown in Section 3.9(1) being sent to Pins 10 and 11 of Q7 respectively?
    - No — Failure of Q1 (MHM2029-002K/MHM2029-004K).
  - Yes — When the main (drum) motor is rotating, is DMON1-N at Pin 4 of Q11 low?
    - No — Failure of Q1 (MHM2029-002K/MHM2029-004K).
    - Yes — When DMON1-N signal at Pin 4 of Q11 changes, does VREF signal at Pins 8 and 9 of Q7 change?
      - No — Replace Q11.
      - Yes — Replace Q7.
      - Has the problem been solved?
        - Yes — End.
      - No — Failure of the power supply board or mechanical parts.

B-21 The key switch operation on the operator panel is disabled frequently.

- Is the clock signal (303kHz) being sent to Pin 6 of CN5 during key operations?
  - No — Failure of Q1 (MHM2029-002K/MHM2029-004K).
  - Yes — Is the data signal being sent to Pin 3 (OPDTOUT-P) of CN5 during key operations??
    - No — Failure of Q1 (MHM2029-002K/MHM2029-004K).
    - Yes — Verify the connection of CN5.

B-24 Data sent through the centronics I/F cannot be received.

- Is the signal at Pin 11 (BUSY-P) of the connector (CN8) low?
  - No — Is the signal at Pin 1 (PBUSY-P) of Q20 (7407) change at data reception as shown below?

	ON-LINE	OFF-LINE
PBUSY-P	Low	High

    - No — Failure of Q1 (MHM2029-002K/MHM2029-004K).
  - Yes — Replace Q20 (7407)?
- Yes — Is the level of the signal at Pin 1 (STB-N) of the connector (CN8) change at data reception?
  - No — Verify the connection of I/F cable or the operation of the host computer.
- Yes — Are the signals at Pin 3 (PACK-N), Pin 5 (FAULT-N) of Q20 (7407) respectively low and high in on-line mode?
  - No — Replace Q20 (7407).
  - Has the problem been solved?
    - Yes — End.
- No
- Yes — Failure of Q1 (MHM2029-002K/MHM2029-004K).

B-25 Cover open occurs frequently.

- Is the connection of the connector (CN7), correct?
  - No — Replace the connector (CN7).
- Yes — Failure of Q1 (MHM2029-002K/MHM2029-004K).

C-1

Abnormal message display on the LCD (no display, unclear display, display with some dot not lit, etc.)

- Is +5V power being supplied to Pin 8 of IC1 (BU6152S)?
  - No Replace CN1.

Yes Is the CLOCK signal being sent to Pin 26 (OP-CLOCK-N) of IC1 (BU6152S)?

- No Replace CN1.

Yes Is the DATA signal put out to Pin 2 (OP-DATA-IN) of IC1 (BU6152S)?

- No Replace CN1.

Yes Is the LOAD signal being sent to Pin 11 (OP-LOAD-N) of IC1 (BU6152S)?

- No Replace CN1.

Yes Is the DATA signal being sent to Pin 24 (OP-DATA-OUT) of IC1 (BU6152S)?

- No Replace IC1 (BU6152S).

Yes Is +5V power being supplied to Pin 2 of CN1? (OLCC-2 PCB)

- No Replace CN1. (OLCC-2 PCB)

Yes Is the DB signal put out to Pins, 19, 20, 29, 30 (DB4 to DB7) of IC1 (BU6152S)?

- No Replace IC1 (BU6152S).

Yes Is the RS signal being sent to Pin 22 of IC1 (BU6152S)?

- No Replace IC1 (BU6152S).

Yes Is the R/W signal being sent to Pin 22 of IC1 (BU6152S)?

- No Replace IC1 (BU6152S).

Yes Is the R/W signal being sent to Pin 22 of IC1 (BU6152S)?

- No Replace IC1 (BU6152S).

Yes Is the R/W signal being sent to Pin 27 of IC1 (BU6152S)?

- No Replace IC1 (BU6152S).

Yes Replace CN2.

C-2 The key switch operation on the operator panel is disabled.

- Do the signals at Pins, 3, 7, 10, 18, 23, 31 of IC1 (BU6152S) change from high to low level by key switch pushing?
  - No Replace SW1 to SW8.

Yes Is the connection of CN1 correct? (OLCC-2 PCB)

- No Connect the connector correctly.

Yes Replace IC1 (BU6152S).

C-3 The LCD does not display any message.

- Is +5V power being supplied to Pin 33 of IC2 (HD44780)?
  - No Replace CN1. (OLCC-2 PCB).

Yes Are 4.15V, 3.3V, 2.46V, 1.61V, and 0.77V powers being supplied respectively to Pins 26, 27, 28, 29 and 30 of IC2 (HD44780)?

- No Are the resistance values of R5 through R10 correct? (OLCC-2 PCB)
  - No Replace R5 through R10. (OLCC-2 PCB)

Yes

Yes Replace IC2 (HD44780).

Has the problem been solved?

- Yes End.

No Replace CN1. (OLCC-2 PCB)

Has the problem been solved?

- Yes End.

No Is the contact surface of the zebra rubber dirty?

- No Clean the dirt.

Yes Replace the zebra solved?

Has the problem been solved?

- Yes End.

No Replace the LCD.

C-4 Display on the LCD with some dot not lit.

- Are 4.15V, 3.3V, 2.46V, 1.61V, and 0.77V powers being supplied respectively to Pins 26, 27, 28, 29, and 30 of IC2 (HD44780)?
  - No Replace R5 through R10. (OLCC-2 PCB)

Yes Is the COM signal being sent to Pins 47 to 62 (COM01 to COM16) of IC2 (HD44780)?

- No Replace IC2 (HD44780).

Yes Is the SEG signal being sent to Pins 1 to 22 (SEG 19 to SEG40), Pins, 63 to 80 (SEG01 to SEG18) of IC2 (HD44780)?

- No Replace IC2 (HD44780).

Yes Is the contact surface of a zebra rubber dirty?

- No Clear the dirt.

Yes Replace the zebra rubber.

Has the problem been solved?

- Yes End.

No Replace the LCD.

C-5 Unclear display on the LCD.

- Is +5V power being supplied to Pin 33 of IC2 (HD44780)?
  - No Replace CN1. (OLCC-2 PCB)

Yes Are 4.15V, 3.3V, 2.46V, 1.61V, and 0.77V powers being supplied respectively to Pins 26, 27, 28, 29 and 30 of IC2 (HD44780)?

- No Replace R5 through R10. (OLCC-2 PCB)

Yes Is the contact surface of a zebra rubbber dirty?

- No Clear the dirt.

Yes Replace the zebra rubber.

Has the problem been solved?

- Yes End.

No Replace the LCD.

D-1 Option RAM error (ERROR 60)

- Do the signals at Pins 6, 13, 8 and 11 (RAS2, RAS3, RAS4 and RAS5) of Q3 (74ALS244) vary?
  - No Replace CN1.

Yes Do the signals at Pins 9, 12, 7 and 14 of Q3 (74ALS244) vary?

- No Replace the bus buffer Q3 (74ALS244).

Yes Do the signals at Pins 8 and 23 (DRRAS, RDCAS0) of Q4, Pin 23 (RDCAS1) of Q6 (514800J-NC) vary?

- No Replace CN11.

Yes Replace Q4 and Q6 (514800J-NC).

E-1 Paper input jams occur frequently.

- Has the fuse F1 opened?
  - No — Is the high voltage (around 30V being sent to Pin 2 of D1 and Pin 2 of D2?
    - No — Replace D1 or D2.
  - Yes — Is the signal level at Pin 22 of IC2 at low level?
    - No — Replace IC2.
  - Yes — Are the signals at Pins 20 and 21 of IC2 being altered?
    - No — Replace IC2.
  - Yes — Is the signal level at Pin 2 of TR2 around 5V?
    - No — Replace TR2.
  - Yes — Are the signal levels at Pin 20 and 27 of IC3 around 3.4V?
    - No — Replace R6 and R17.
  - Yes — Are the signals at Pins 1 to 4 of connector (MOTOR) being altered?
    - No — Replace IC3.
  - Yes — Replace motor.
- Yes — Replace the Fuse F1.

E-2 Paper out occurs even if the papers are in a cassette.

- Is paper sensor (SEN1) operating normally?
  - No — Replace the paper sensor.
- Yes — Replace IC2.

E-3 High capacity Second Paper Feeder cover open errors occur even if the cover is closed.

- Is cover open sensor (SEN2) operating normally?
  - No — Replace SEN2.
- Yes — Replace IC2.

E-4 The printer does not recognize High capacity Second Paper Feeder.

- Do signal levels at Pin 2 (OPTSCLK-N) and 3 (OPTSD-P) PU alter at power-up time?
  - No — Replace Cable.
    - No — Replace D1 or D2.
  - Yes — Do signal levels at Pin 4, 7, and 9 of IC2 alter at power-up time?
    - No — Is signal level at Pin 2 of D5 at 3.9V?
      - No — Replace D5.
    - Yes — Is the signal level at Pin 2 of TR1 around 5V?
      - No — Replace TR1.
    - Yes — Is signal level at Pin 2 of C3 high?
      - No — Replace C3.
    - OK?
    - No — Is OSC1 being oscillated at 4MHz?
      - No — Replace OSC1.
    - Yes — Replace IC2.
  - Yes — Do signal levels at Pin 3 and 8 of IC1 alter at power-up time?
    - No — Replace IC1.
  - Yes — Does signal level at Pin 6 of IC1 alter at power-up time when Pin 8 of IC1 is at low level?
    - No — Replace IC1.

F-1 Paper input jams occur frequently.

- Is the motor rotating?
  - No — Has the fuse F1 opened?
    - No — Is the high voltage (around 30V) being sent to Pin 2 of D1 and Pin 2 of D2?
      - No — Replace D1 or D2.
    - Yes — Is the signal level at Pin 22 of IC2 at low level?
      - No — Replace IC2.
    - Yes — Are the signals at Pins 20 and 21 of IC2 being altered?
      - No — Replace IC2.
    - Yes — Is the signal level at Pin 2 of TR1 around 5V?
      - No — Replace TR1.
    - Yes — Is the signal level at Pin 2 and 27 of IC3 around 1.8V?
      - No — Replace R6 and R17.
    - Yes — Are the signals at Pins 1 to 4 of CN3 being altered?
      - No — Replace IC3.
    - Yes — Replace motor.
  - Yes — Replace the Fuse F1.

F-2 Paper out occurs even if the papers are in a cassette or tray.

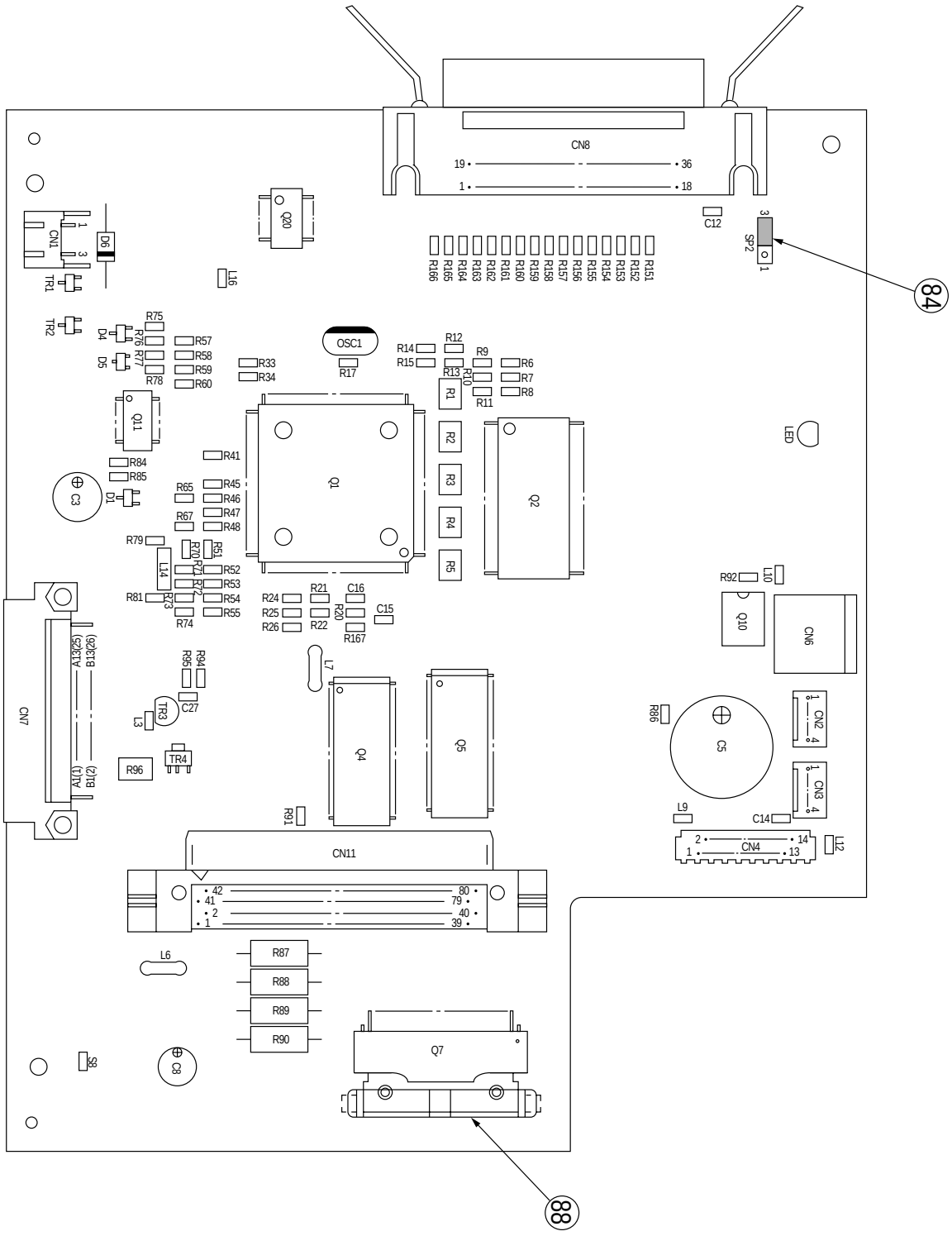
- Is paper sensor (SEN1 in Second Tray and SEN2 in Multi-purpose Feeder) operating normally?
  - No — Replace the paper sensor.
  - Yes — Replace IC2.

F-3 The printer does not recognize Multi Purpose Feeder.

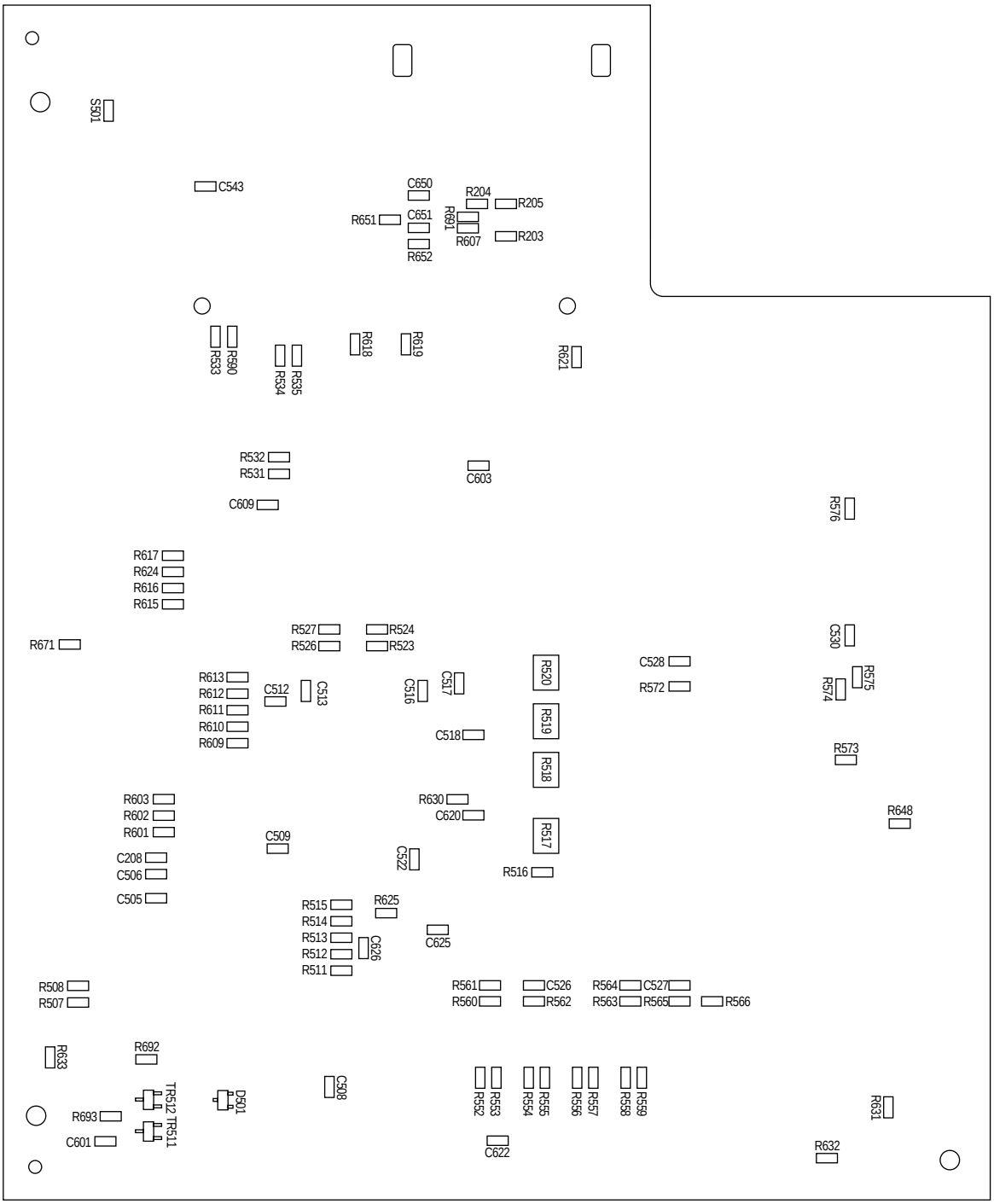
- Do signal levels at Pin 2 (OPTSCLK-N) and 3 (OPTSD-P) CN1 alter at power-up time?
  - No — Replace Option Tray Cable.
  - Yes — Do signal levels at Pin 4, 7, and 9 of IC2 alter at power-up time?
    - No — Is signal level at Pin 2 of D4 at 3.9V?
      - No — Replace D5.
      - Yes — Is the signal level at Pin 2 of TR4 around 5V?
        - No — Replace TR4.
        - Yes — Is signal level at Pin 2 of C2 high?
          - No — Replace C2.
          - OK?
            - No — Is OSC1 being oscillated at 4MHz?
              - No — Replace OSC1.
              - Yes — Replace IC2.
    - Yes — Do signal levels at Pin 3 and 11 of IC1 alter at power-up time?
      - No — Replace IC1.
      - Yes — Does signal level at Pin 8 of IC1 alter at power-up time when Pin 3 of IC1 is at low level?
        - No — Replace IC1.

5. COMPONENT PARTS LIST

L5C-PCB Rev. 1	40227002
L6A-PCB Rev. 2	40131202
LQME-PCB Rev. 2	4YA4121-1058G11
OLER-PCB	4YB4049-7101G1
OLHR-PCB	4YB4049-7101G2
OLCC-2-PCB Rev. 1	4YA4130-1001G2
OLEV-PCB Rev. 4	4YA4121-1014G11
OLEV-2-PCB Rev. 4	4YA4121-1014G12



L5C-PCB Rev. 1 40227002 1/2



L5C-PCB Rev. 1 40227002 2/2

L5C-PCB Rev. 1 40227002 (1/6)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
1					
2					
3	D1, D5, D501	611A0000N0001	SS100MA80VACP Signal DI (CP)	3	
4	D6	613A2232L0182	RD10F-B ZENOR DI	1	
5	D4	613A0233M0222B	RD15M-B2 Zenor DI (CP)	1	
6	LED	650A0229M0018	SEL3910D-YZ LED	1	
7				1	
8	R625	323A5003F0105	RM73B2A105F RN resistor (CP)	1	
9	R691	323A5003F0112	RM73B2A112F RN resistor (CP)	1	
10	R204, R205	323A5003F0152	RM73B2A152F RN resistor (CP)	2	
11	R94	323A5003F0201	RM73B2A201F RN resistor (CP)	1	
12	R60, R84, R617	323A5003F0242	RM73B2A242F RN resistor (CP)	3	
13	R75	323A5003F0392	RM73B2A392F RN resistor (CP)	1	
14	R85	323A5003F0393	RM73B2A393F RN resistor (CP)	1	
15	R95	323A5003F0621	RM73B2A621F RN resistor (CP)	1	
16	R203, R651, R652	323A5003F0821	RM73B2A821F RN resistor (CP)	3	
17	R51, R52, R71, R561, R613	323A5003J0101	RM73B2A101J RN resistor (CP)	5	

L5C-PCB Rev. 1 40227002 (2/6)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
18	R46-R48, R67, R79, R560, R562-R564, R573, R576	323A5003J0102	RM73B2A102J RN resistor (CP)	11	
19	R507, R565, R566, R671	323A5003J0103	RM73B2A103J RN resistor (CP)	4	
20	R86, R575	323A5003J0112	RM73B2A112J RN resistor (CP)	2	
21	R26, R55, R74	323A5003J0122	RM73B2A122J RN resistor (CP)	3	
22	R76	323A5003J0125	RM73B2A125J RN resistor (CP)	1	
23	R22, R33, R34, R57, R73, R590, R648	323A5003J0151	RM73B2A151J RN resistor (CP)	7	
24	R533	323A5003J0153	RM73B2A153J RN resistor (CP)	1	
25	R693	323A5003J0183	RM73B2A183J RN resistor (CP)	1	
26	R59, R65, R531, R532	323A5003J0202	RM73B2A202J RN resistor (CP)	4	
27	R508	323A5003J0203	RM73B2A203J RN resistor (CP)	1	
28	R552-R559	323A5003J0220	RM73B2A220J RN resistor (CP)	8	
29	R6, R7, R9, R10, R12, R13, R20, R91, R92, R167, R523, R524, R534, R535	323A5003J0241	RM73B2A241J RN resistor (CP)	14	
30	R25, R54, R81	323A5003J00272	RM73B2A272J RN resistor (CP)	3	
31	R511-R515	323A5003J0331	RM73B2A331J RN resistor (CP)	5	
32	R77, R151-R166	323A5003J0332	RM73BA332J RN resistor (CP)	17	
33	R630	323A5003J0470	RM73B2A470J RN resistor (CP)	1	

L5C-PCB Rev. 1 40227002 (3/6)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
34	R17, R574	323A5003J0471	RM73B2A471J RN resistor (CP)	2	
35	R526, R527, R572, R601-R603	323A5003J0472	RM73B2A472J RN resistor (CP)	6	
36					
37	R70, R72	323A5003J0560	RM73B2A560J RN resistor (CP)	2	
38	R609-R612	323A5003J0561	RM73B2A561J RN resistor (CP)	4	
39	R615, R616, R624, R692	323A5003J0562	RM73B2A562J RN resistor (CP)	4	
40	R78	323A5003J0564	RM73B2A564J RN resistor (CP)	1	
41	R8, R11. R14, R15, R21, R516	323A5003J0680	RM73B2A680J RN resistor (CP)	6	
42	R23, R53	323A5003J0681	RM73B2A681J RN resistor (CP)	2	
43	L3, L9, L10, L12, L16, R41, R45, R58, R618, R619, R621, R631-R633, S8, S501, C12, C601, C622	323A5003P0001	2125JPW Chip jumper (CP)	19	
44	R96	323A5019J0750	ERJ-12YJ750 RN resistor (CP)	1	
45	R87-R90	324A1001J0339	MSF1/2B3.3ΩJ RS resistor (CP)	4	
46	R1-R5, R517-R520	334A5003J0680	MNR34J680 Block resistor (CP)	9	
47	C625, C626	303A3007C0680	CC2012CH1H680J 50V CC capacitor (CP)	2	
48	C526	303A3007K0561	CC2012SL1H561J 50V CC capacitor (CP)	1	
49	C15, C16, C509, C512, C517, C522, C527	303A6008K3102	CK2012B1H102K 50V CK capacitor (CP)	7	

L5C-PCB Rev. 1 40227002 (4/6)

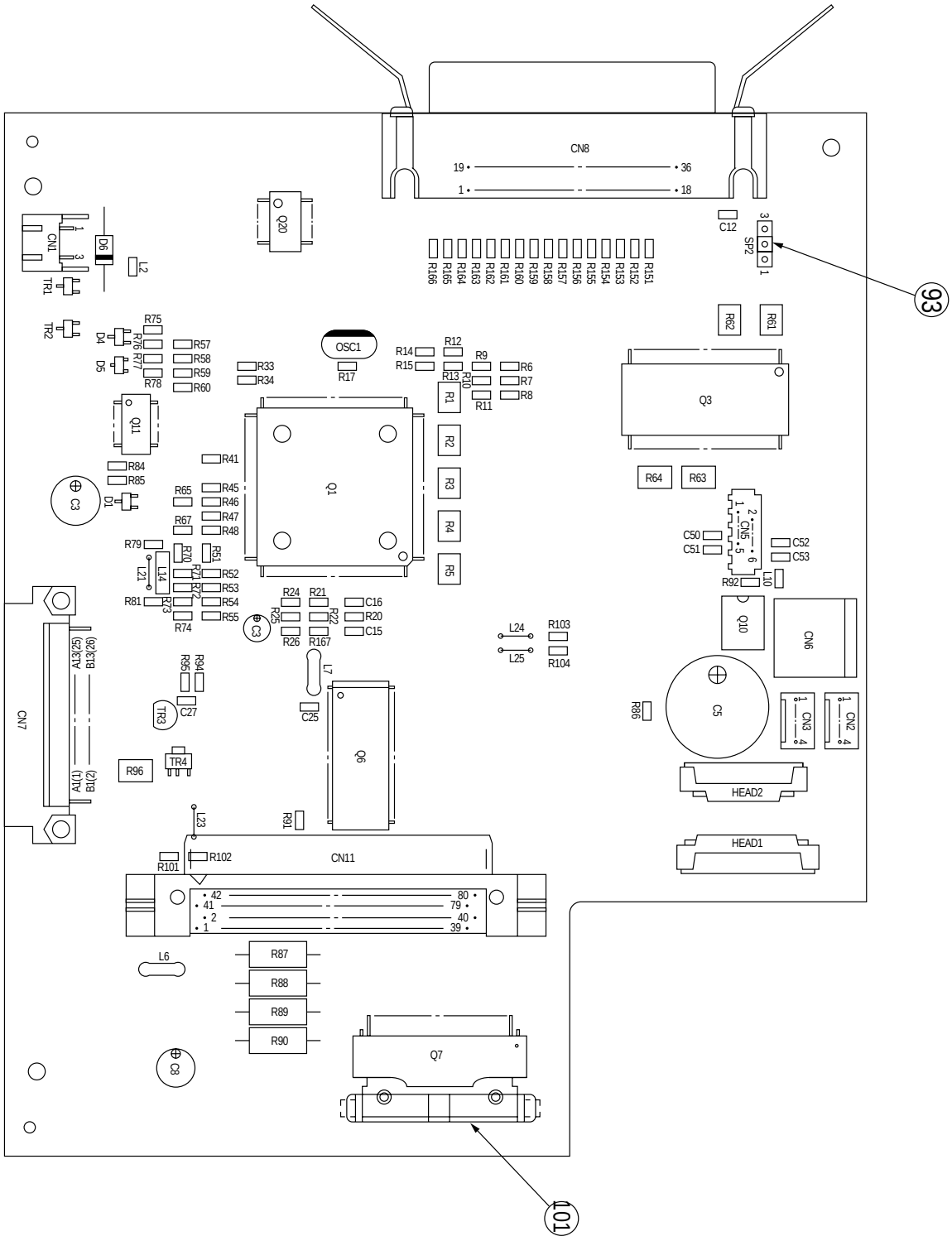
REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
50	C505, C506, C513, C528, C603, C609, C620	303A6008Z1105	CK2012F1C105Z 16V CK capacitor(CP) 1UF	7	
51	C208, C508, C516, C518, C530, C543, C607, C650, C651, C14	303A6008Z2104	CK2012F1E104Z 25V CK capacitor (CP)	10	
52	C27	303A6008Z3103	CK2012F1H103Z 50V CK capacitor (CP)	1	
53	C3	304A1007C1221	SXE16VB-220 16V CE capacitor 220UF	1	
54	C8	304A1115H1470	KME50VB-47 50V CE capacitor 47UF	1	
55	C5	304A1137A1332	UVS1A332MHA 10V CE capacitor 3300UF	1	
56					
57	Q20	700A0003N0007	7407FP BIP Digital IC (SO)	1	
58	Q11	720A0503N0007	NJM2901/UPC339G2 BIP linear IC (SO)	1	
59	TR3	7200903M9001	TL431CLP/NJM431L BIP linear IC	1	
60	Q4, Q5	802A0003N2601	514260JP-70 MOS-D-RAM (SO)	2	
61	Q2	8175622N0001	LHMN5UN1 MOS-MROM (SO)	1	
62	Q10	816A0303M0000	93LC46A-NW MOS-EEPROM	1	
63	Q7	720A1821M0004	ECN1351SP1 BIP linear IC	1	
64					
65	L6, L7	342A1009P2222	DSS306-0AE222Z EMI filter	2	

L5C-PCB Rev. 1 40227002 (5/6)

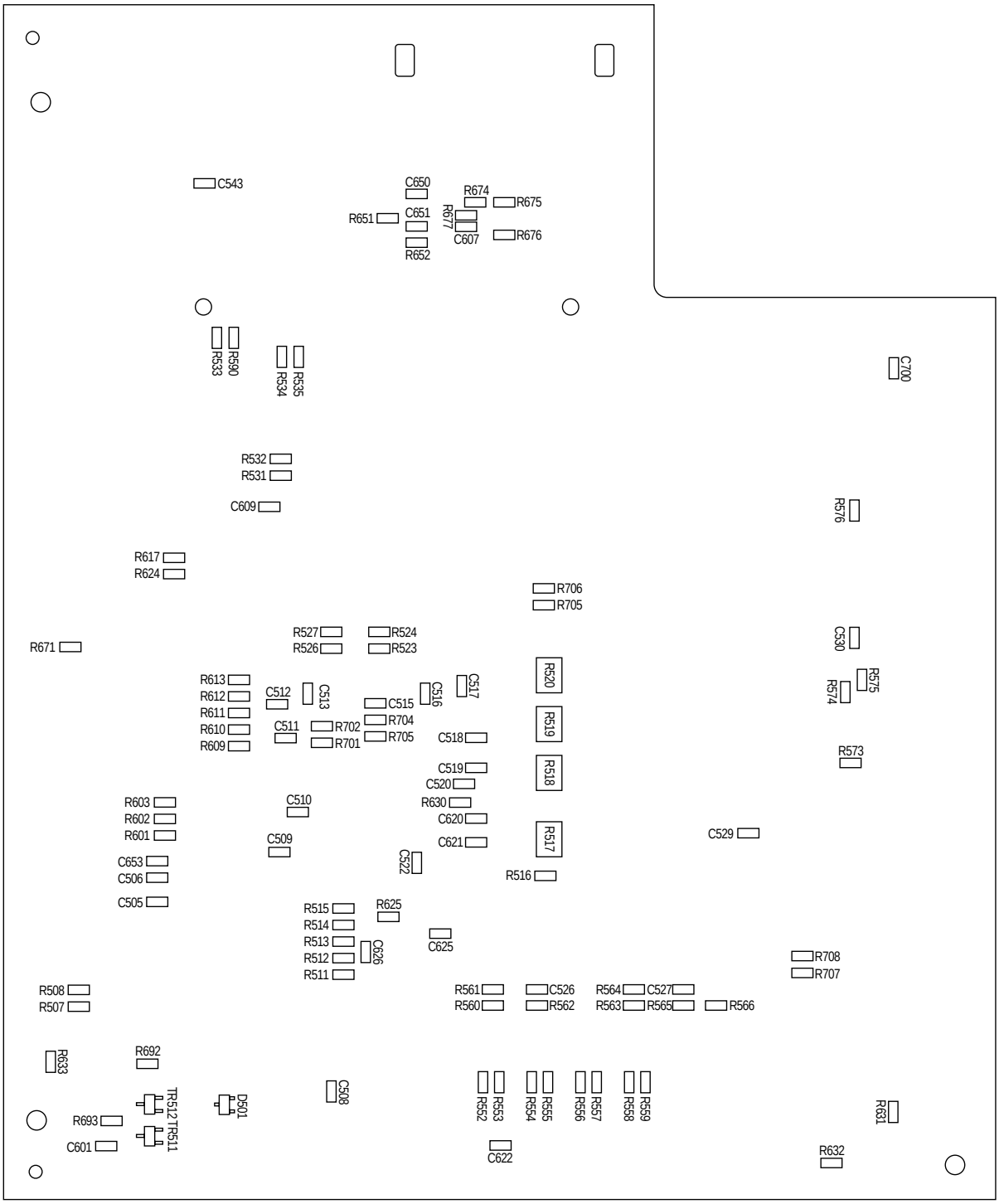
REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
66	L14	342A1012P2101	ZJSC-2R2-101 EMI filter	1	
67					
68	Q1	851A0940N0041	MHM2029-002K MOS-CPU (FP)	1	
69					
70	CN7	224A3222P0261	128A-026P2B-L14N PC connector	1	
71	CN4	224A3590P0140	ZC-014 PC connector	1	
72	CN8	2201001P0360	57RE-40360-830B-D29 square-shaped connector	1	
73	CN1	224A3528P0030	S3B-XH-A PC connector	1	
74	CN2, CN3	224A3357P0040	00-8263-0412-00-000 PC connector	2	
75	CN11	224A35516P0800	PQ80A2FA PC connector	1	
76	CN6	221A1630P0081	TCS7597-01-401 round type connector	1	
77					
78	TR4	603A1132N0001S	2SD1623S NPN-LF-TR (CP)	1	
79	TR2, TR511	602A1035N0019	DTC123YK NPN-HF-TR (CP)	2	
80	TR1, TR512	600A1032N0010	2SA1338 PNP-HF-TR (CP)	2	
81					
82	SP2	224A4082P0030	IMSA9202B-1-03Z013GF PC connector	1	

L5C-PCB Rev. 1 40227002 (6/6)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
84		224A4080P0020	IMSA-9206H-GF PC connector	1	
85					
86	0SC1	381A1045B0017	CST12.288MTW ceramic oscillator	1	
87					
88		4PP4083-6254P001	Push spring	1	



L6A-PCB Rev. 2 40131202 1/2



L6A-PCB Rev. 2 40131202 2/2

	R708
Rev.2.0	no mount
Rev.2.1	mount

L6A-PCB Rev. 2 40131202 (1/6)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
1		40077099	PCB-L6A	1	
2					
3	D1, D5, D501	611A0000N0001	SS100MA80VACP DAP202K/1SS181/M	3	
4	D4	613A0233M0222B	RD15M-B2 D-Zener	1	
5	D6	613A2232L0182	RD10F-B D-Zener	1	
6					
7	R625	323A5003F0105	RM73B2A105F RES-MET RN	1	
8	R674	323A5003F0112	RM73B2A112F RES-MET RN	1	
9	R675	323A5003F0122	RM73B2A122F RES-MET RN	1	
10	R677	323A5003F0152	RM73B2A152F RES-MET RN	1	
11	R60, R84, R617	323A5003F0242	RM73B2A242F RES-MET RN	3	
12	R94	323A5003F0181	RM73B2A181F RES-MET RN	1	
13	R75	323A5003F0392	RM73B2A392F RES-MET RN	1	
14	R85	323A5003F0393	RM73B2A393F RES-MET RN	1	
15	R95	323A5003F0431	RM73B2A431F RES-MET RN	1	
16	R651, R652, R676	323A5003F0821	RM73B2A821F RES-MET RN	3	
17					

L6A-PCB Rev. 2 40131202 (2/6)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
18	R14, R15, R92, R561	323A5003J0101	RM73B2A101J RES-MET RN	4	
19	R46-R48, R67, R79, R560, R562-R564, R573, R576	323A5003J0102	RM73B2A102J RES-MET RN	11	
20	R507, R565, R566, R671	323A5003J0103	RM73B2A103J RES-MET RN	4	
21	R86, R575	323A5003J0112	RM73B2A112J RES-MET RN	2	
22	R22	323A5003J0121	RM73B2A121J RES-MET RN	1	
23	R26, R55, R74	323A5003J0122	RM73B2A122J RES-MET RN	3	
24	R76	323A5003J0125	RM73B2A125J RES-MET RN	1	
25	R33, R34, R57, R73, R590	323A5003J0151	RM73B2A151J RES-MET RN	5	
26	R533	323A5003J0153	RM73B2A153J RES-MET RN	1	
27	R6, R7, R9, R10, R12, R13, R20, R167, R523, R524, R534, R535	323A5003J0181	RM73B2A181J RES-MET RN	12	
28	R693	323A5003J0183	RM73B2A183J RES-MET RN	1	
29	R59, R65, R531, R532, R609-R612	323A5003J0202	RM73B2A202J RES-MET RN	8	
30	R508	323A5003J0203	RM73B2A203J RES-MET RN	1	
31	R552-R559	323A5003J0220	RM73B2A220J RES-MET RN	8	
32	R8, R11, R516	323A5003J0221	RM73B2A221J RES-MET RN	3	
33	R91	323A5003J0241	RM73B2A241J RES-MET RN	1	
34	R630	323A5003J0270	RM73B2A270J RES-MET RN	1	

L6A-PCB Rev. 2 40131202 (3/6)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS	
35	R25, R54, R81	323A5003J0272	RM73B2A272J RES-MET RN	3		
36	R511-R515	323A5003J0331	RM73B2A331J RES-MET RN	5		
37	R77, R151-R166	323A5003J0332	RM73B2A332J RES-MET RN	17		
38	R574	323A5003J0471	RM73B2A471J RES-MET RN	1		
39	R526, R527, R601-R603	323A5003J0472	RM73B2A472J RES-MET RN	5		
40	R21	323A5003J0510	RM73B2A510J RES-MET RN	1		
41	R613	323A5003J0511	RM73B2A511J RES-MET RN	1		
42	R51, R52, R70, R72, R705, R706	323A5003J0560	RM73B2A560J RES-MET RN	6		
43	R624, R692	323A5003J0562	RM73B2A562J RES-MET RN	2		
44	R701-R704	323A5003J0563	RM73B2A563J RES-MET RN	4		
45	R78	323A5003J0564	RM73B2A564J RES-MET RN	1		
46	R24, R53	323A5003J0681	RM73B2A681J RES-MET RN	2		
47	L2, L10, R17, R41, R45, R58, R71, R101-R104, R631-R633, C12, C601, C622, R707	323A5003P0001	2125JPW RES-MET RN	18		Rev.2.0 (R707)
48	R96	323A5019J0750	ERJ-12YJ750 RES-MET RN	1		
49	R4, R5, R519, R520	334A5003J0680	MNR34J680 RES-Block	4		
50	R1-R3, R61-R64, R517, R518	334A5003J0221	MNR34J221 RES-Block	9		
51	R87-90	324A1001J0339	MSF1/2B3.3 ohmJ RES-MET OX	4		
	R707	323A5003F0100	RM73B2A100F RES-MET RN	1		Rev.2.1
	R708	3235001F0130	RK73H2ATD13 ohmF RES-MET RN	1		

L6A-PCB Rev. 2 40131202 (4/6)

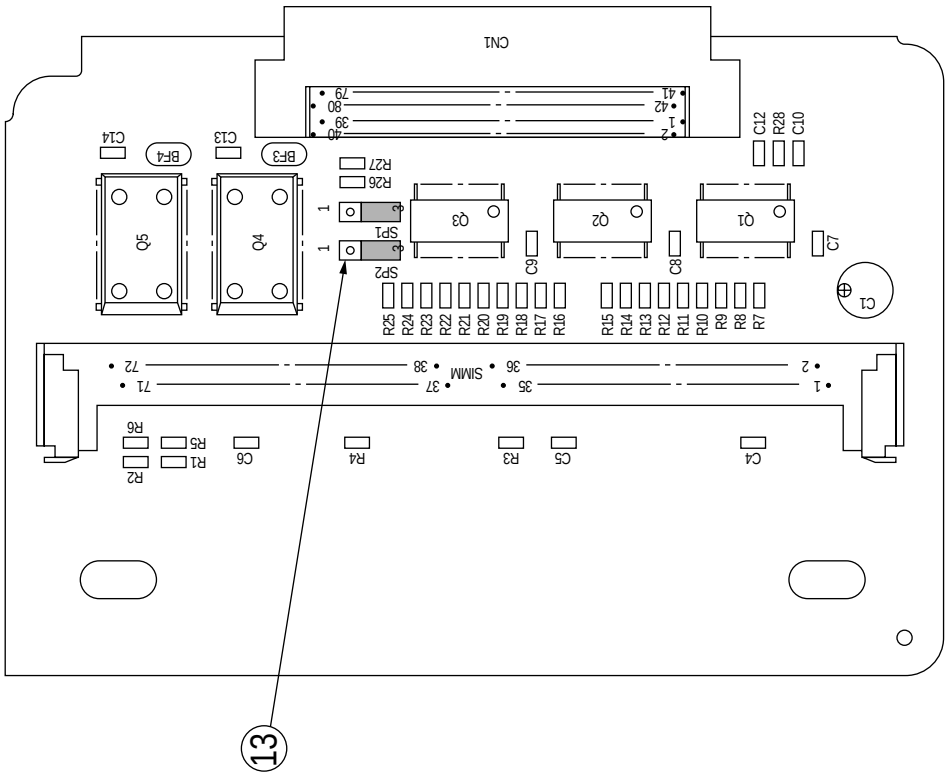
REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
52					
53	C50-C53	303A3007C0101	CC2012CH1H101J 50V CAP-Ceramic	4	
54	C625, C626	303A3007C0680	CC2012CH1H680J 50V CAP-Ceramic 68pF	2	
55	C526	303A3007K0561	CC2012SL1H561J 50V CAP-Ceramic	1	
56	C15, C16, C509, C512, C517, C522, C527	303A6008K3102	CK2012B1H102K 50V CAP-Ceramic	7	
57	C25, C505, C506, C513, C519-C521, C529, C609, C620	303A6008Z1105	CK2012F1C105Z 16V CAP-Ceramic 1uF	10	
58	C508, C510, C511, C515, C516, C518, C530, C543, C607, C650, C651, C653, C700	303A6008Z2104	CK2012F1E104Z 25V CAP-Ceramic	13	
59	C27	303A6008Z3103	CK2012F1H103Z 50V CAP-Ceramic	1	
60					
61	C3	304A1007C1221	URS1C221MNA1FA 16V CAP-Alum (CE)	1	
62	C31	304A1046C1100	16MS5-10M 16V CAP-Alum (CE) 10uF	1	
63	C8	304A1115H1470	KME50VB-47 50V KME50VB-47 CE CP	1	
64	C5	304A1137A1332	UVS1A332MHA 10V CAP-Alum (CE)	1	
65					
66	Q20	700A0003N0007	7407FP Digital IC-BIP	1	
67	TR3	7200903M9001	TL431CLP/NJM431L Analog-BIP linear	1	

L6A-PCB Rev. 2 40131202 (5/6)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS	
68	Q11	720A0503N0007	NJM2901M/UPC339G2 Analog-BIPLIN	1		
69	Q7	720A1821M0004	ECN1351SP1 Analog-BIPLIN	1		
70	Q6	8020003N4603	5118160JP-70 Memory-MOSDRAM-S	1		
71	Q10	8160303M0000	93C46LDP-NW Memory-MOSEEPR	1		
72						
73	Q3	8175623N0001	MX23C3223MC-10-045 Memory-MOSMROM-S	1		Rev.2.0
74		8175624N0001	MX23C3224MC-10-045 Memory-MOSMROM-S	1		Rev.2.1
75	Q1	8510440N0001	MHM2029-004K-29 CPU-MOS-F	1		
76						
77	L6, L7	342A1009P2222	DSS306-OAE222Z COMP PAR-LC	2		
78	L14	342A1012P1181	ZJSC-R47-181 COMP PAR-LC	1		
79						
80	L21, L23-L25	KH-31036-50	SHORT WIRE (U TYPE)	4		
81						
82	CN8	2201001P0360	57RE-40360-830B-D-29 Connector-RECT	1		
83	CN6	221A1630P0081	TCS7597-01-401 Connector-RND	1		
84	CN7	224A3222P0261	128A-026P2B-L14N Connector-PCB	1		

L6A-PCB Rev. 2 40131202 (6/6)

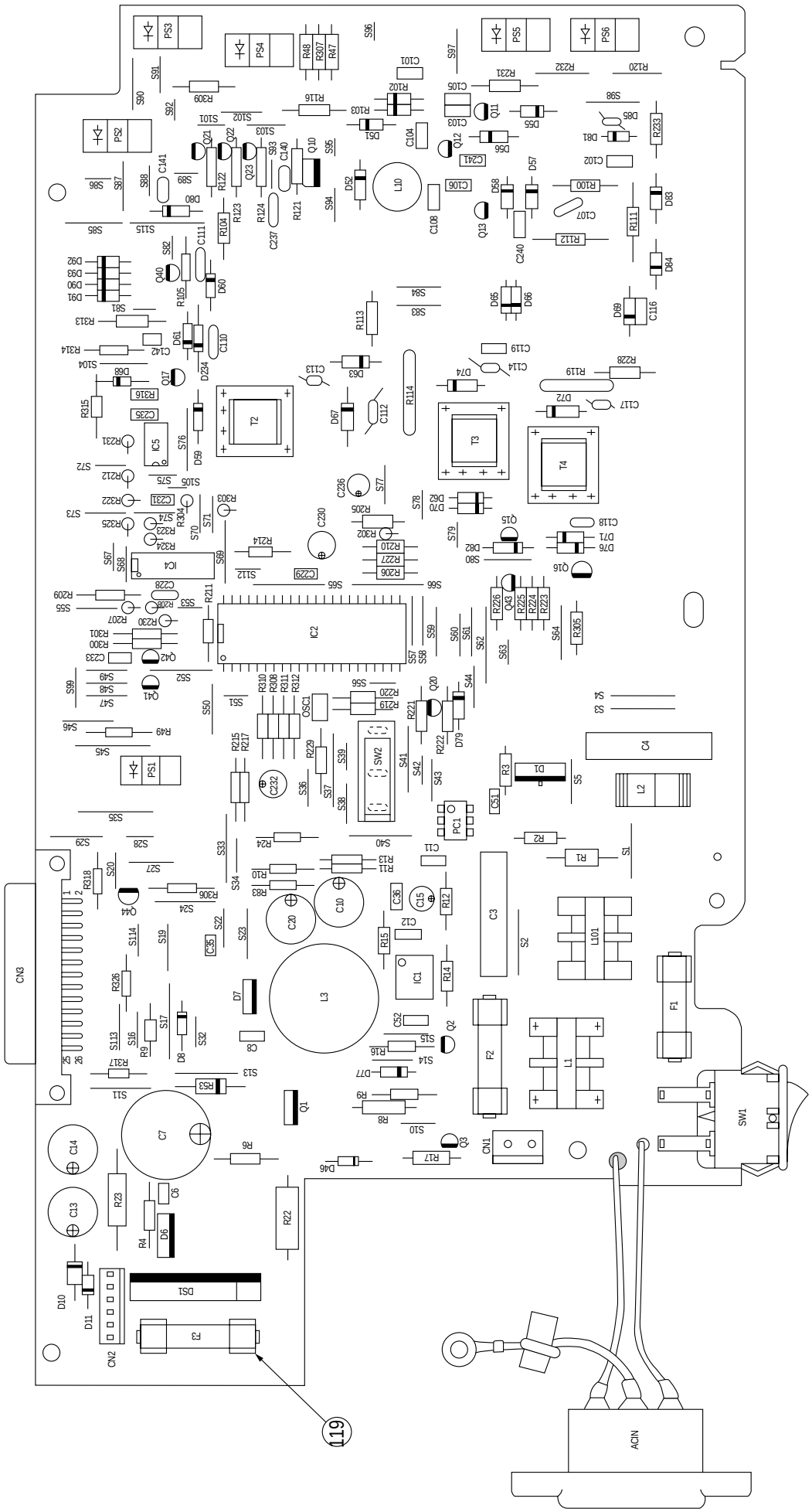
REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
85	CN2	224A3357P0040	00-8263-0412-00-000 Connector-PCB	1	
86	CN3	224A3357P0041	00-8263-0412-00-003 Connector-PCB	1	
87	CN11	224A3516P0800	PQ80A2FA Connector-PCB	1	
88	CN1	224A3528P0030	S3B-XH-A Connector-PCB	1	
89	CN5	224A3590P0060	ZC-006 Connector-PCB	1	
90	HEAD2	2243001P0120	SLD12S-2 Connector-PCB	1	
91	HEAD1	2243001P0140	SLD14S-2 Connector-PCB	1	
92	SP2	224A4082P0030	IMSA9202B-1-03Z013GF Connector-PCB	1	
93		224A4080P0020	IMSA-9206H-GF Connector-PCB	1	
94					
95	TR4	603A1132N0001S	2SD1623S TR-NPN/L-FREQ	1	
96	TR2, TR511	602A1035N0019	DTC123YK TR-NPN/H-FREQ	2	
97	TR1, TR512	600A1032N0010	2SA1338 TR-PNP/H-FREQ	2	
98					
99	OSC1	381A1045B0017	CST12.288MTW OSC-Ceramic	1	
100					
101		PP4083-6254P001	SPRING PLATE	1	



LQME-PCB Rev. 2 4YA4121-1058G11

LQME-PCB Rev. 2 4YA4121-1058G11

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
1	R7, R19, R21, R24, R25	323A5003J0101	RM73B2A101J RN resistor (CP)	5	
2	R1-R3, R5, R6, R26-R28	323A5003J0472	RM73B2A472J RN resistor (CP)	8	
3	R4, R8-R18, R20, R22, R23	323A5003J0510	RM73B2A510J RN resistor (CP)	15	
4	C10	303A3007C0680	CC2012CH1H680J 50V CC capacitor (CP)	1	
5	C4-C6, C12	303A6008Z1105	CK2012F1C105Z 16V CK capacitor (CP) 1UF	4	
6	C7-C9, C13, C14	303A6008Z2104	CK2012F1E104Z 25V CK capacitor (CP)	5	
7	C1	304A1046J0101	6.3MS5-100M 6.3V CE capacitor 100UF	1	
8	Q1-Q3	700A2550N0244B	SN74ALS244CNS BIP digital IC (SO)	3	
9	Q4, Q5	802A0024N2624	MSM514800-80JS MOS-D-RAM (SO)	2	
10	BF3-BF4	377A1115P1309	ZBF253D-01 beads filter	2	
11	CN1	224A3515P0800	PQ80A2MA PC connector	1	
12	SP1, SP2	224A4082P0030	IMSA9202B-1-03Z013GF PC connector	2	
13		224A4080P0020	IMSA-9206H-GF PC connector	2	
14	SIMM	245A1059P0720	3955-2TT-40721A IC socket	1	



OLER-PCB 4YB4049-7101G1

OLER-PCB 4YB4049-7101G1 (1/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
1					
2					
3	D6	620A0026M0002	TF341M Gate thyristor OFF	1	
4	DS1	610A1003M0001	RBV-402/D3SBA20 Rectifier DI	1	
5	D10, 11, 46, 77	610A0003M0001	EM01Z/SM1XN02/ DSM1D2 rectifier DI	4	
6	D51, 55-59, 62, 70, 71, 81, 83	610A0226M0016	EU02A rectifier DI	11	
7	D7	610A0226M0017	FML-G12S rectifier DI	1	
8	D68, 69, 60, 61, 80, 90-93	611A0003L0001	1S953/1S2075K/1S2473 signal DI	9	
9	D79	613A1231L0072	RD3.6E-B zener DI	1	
10	D8	613A1231L0122	RD5.6E-B zener DI	1	
11	D76	613A1231L0262B	RD22E-B2 zener DI	1	
12	D82	613A1231L0282A	RD27E-B1 zener DI	1	
13	D52, 84	613A2003M0001	1ZB300-Y/Z zener DI	2	
14	D65, 66	613A2258M0350	1ZB390 zener DI	2	
15	D63, 67, 72, 74	610A0003M0002	DHM3FJ60/ESJA58-06 rectifier DI	4	
16	D85	632A0200M1470	D05-471 varistor	1	

OLER-PCB 4YB4049-7101G1 (2/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
17					
18	R207, 208, 230, 212, 302, 303	321A3412J0102	RD1/6-1KΩJ (vertical) RD resistor	6	
19	R322	321A3412J0183	RD1/6-18KΩ J (vertical) RD resistor	1	
20	R321, 323, 324	321A3412J0243	RD1/6-24KΩJ (vertical) RD resistor	3	
21	R325	321A3412J0623	RD1/6-62KΩJ (vertical) RD resistor	1	
22	R304	321A3412J0182	RD1/6-1.8KΩJ (vertical) RD resistor	1	
23	R6, 226	321A1421J0301	RD1/4Y300ΩJ RD resistor	2	
24	R9, 234	321A1421J0330	RD1/4Y33ΩJ RD resistor	2	
25	R12, 215	321A1421J0153	RD1/4Y15KΩJ RD resistor	2	
26	R13, 217	321A1421J0362	RD1/4Y3.6KΩJ RD resistor	2	
27	R14	321A1421J0154	RD1/4Y150KΩJ RD resistor	1	
28	R210, 211, 113, 15, 305	321A1421J0104	RD1/4Y100KΩJ RD resistor	5	
29	R16	321A421J0242	RD1/4Y2.4KΩJ RD resistor	1	
30	R4, 17, 103, 214	321A1421J0102	RD1/4Y1KΩJ RD resistor	4	
31	R19, 102, 116	321A1421J0331	RD1/4Y330ΩJ RD resistor	3	
32	R24	321A1421J0151	RD1/4Y150ΩJ RD resistor	1	

OLER-PCB 4YB4049-7101G1 (3/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
33	R53, 105	321A1421J0163	RD1/4Y16KΩJ RD resistor	2	
34	R220, 228, 233	321A1421J0105	RD1/4Y1MΩJ RD resistor	3	
35	R219, 313	321A1421J0222	RD1/4Y2.2KΩJ RD resistor	2	
36	R121-124, 227, 229, 300-301	321A1421J0512	RD1/4Y5.1KΩJ RD resistor	8	
37	R47-49	321A1421J0131	RD1/4Y130ΩJ RD resistor	3	
38	R221, 306	321A1421J0152	RD1/4Y1.5KΩJ RD resistor	2	
39	R222	321A1421J0271	RD1/4Y270ΩJ RD resistor	1	
40	R223-225	321A1421J0511	RD1/4Y510ΩJ RD resistor	3	
41	R100	321A1421J0305	RD1/4Y3MΩJ RD resistor	1	
42	R104	321A1421J0753	RD1/4Y75KΩJ RD resistor	1	
43	R209	321A1421J0304	RD1/4Y300KΩJ RD resistor	1	
44	R307, 308, 309, 312	321A1421J0103	RD1/4Y10KΩJ RD resistor	4	
45	R310, 311	321A1421J0203	RD1/4Y20KΩJ RD resistor	2	
46	R10	323A1222F0203	RNL1/4C3F20KΩ RN resistor	1	
47	R11, 205, 206	323A1222F0242	RNL1/4C3F2.4KΩ RN resistor	3	
48	R83	323A1222F0102	RNL1/4C3F1.0KΩ RN resistor	1	
49	R316	323A4021F0394	RNF1/4C3-390KΩF RN resistor	1	

OLER-PCB 4YB4049-7101G1 (4/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
50	R318	323A1222F0222	RNL1/4C3F2.2KΩ RN resistor	1	
51	R314	323A1222F0183	RNL1/4C3F18KΩ RN resistor	1	
52	R315	323A1222F0123	RNL1/4C3F12KΩ RN resistor	1	
53	R317	323A1222F0563	RNL1/4C3F56KΩ RN resistor	1	
54	R326	323A1222F0223	RNL1/4C3F22KΩ RN resistor	1	
55	R1	321A1431J0105	RD1/2Y1MΩJ RD resistor	1	
56	R2, 3	327A1001J0101	FMR1/2-100ΩJ fuse resistor	2	
57	R114, 119	326A3021K0107	HM-38-100MK RK resistor	2	
58	R111, 112, 231	323A1029J0106	HMP1/4-106J RN resistor	3	
59	R8	324A3024J0272	MOS2-2.7KΩJL RS resistor	1	
60	R22, 23	324A3024J0391	MOS2-390ΩJL RS resistor	2	
61					
62	C118	306A4103J2103	CQMF92PP2A103J-F0 CQ capacitor 0.010UF	1	
63	C3	306A2277M5104	MKC-S-104M CF capacitor 0.1UF	1	
64	C4	340A2014P1001	ECQ-J0187Y spark killer	1	
65	C6, 51, 35, 52, 239, 108, 237, C233, 103, 104, 110, 111, 140-142, 242	303A4019Z3104	FK16Y5V1H104Z CK capacitor	16	

OLER-PCB 4YB4049-7101G1 (5/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
66	C8, 231, 235	302A4003K6331	DD05-63B331K500 500V CK capacitor 330PF	3	
67	C10, 20	304A1179J0222	ECA0JM222 6.3V CE capacitor 2200UF	2	
68	C11	302A4003K6102	DDO7-63B102K500 500V CK capacitor 1000PF	1	
69	C12	302A4003K6222	DD09-63B222K500 500V CK capacitor 2200PF	1	
70	C15	304A1123C1470	SME16VB-47-OA 16V CE capacitor 47UF	1	
71	C230	304A1046E1330	25MS5-33M 25V CE capacitor 33UF	1	
72	C232, 236	304A1123J1100	SME63VB-10-OA 63V CE capacitor 10UF	2	
73	C13, 14	304A1179C1102	ECA1CM102 16V CE capacitor 1000UF	2	
74	C228, 229	303A4115M3102	CK92C1H102MS 50V CK capacitor 0.001UF	2	
75	C116	303A4019Z3473	FK16Y5V1H473Z CK capacitor	1	
76	C240, 241	302A1202K0390	DD05-63SL390J500 CC capacitor 39PF	2	

OLER-PCB 4YB4049-7101G1 (6/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
77	C101, 102, 106	302A4003K6471	DD05-63B471K500 500V CK capacitor 470PF	3	
78	C105, 107, 119	302A4028K0471A	DE0705B471K1K 1KV CK capacitor 470PF	3	
79	C113, 114, 117	302A4028K2471	DEO707B471K3K 3.15KV CK capacitor 470PF	3	
80	C7	304A1005H1332	UVR1H332MHA1CA 50V CE capacitor 3300UF	1	
81	C112	302A4028K4471	DE1010B471K6K 6KV CK capacitor 470PF	1	
82	C36	303A4115M3681	CK92C1H681MS 50V CK capacitor 680PF	1	
83	Q1	601A1226M0001	2SB1258 PNP-LF-TR	1	
84	Q3, 41, 42	602A1025M0006Y	2SC1815-Y NPN-HF-TR	3	
85	Q10	602A1223M0039	2SC2752 NPN-HF-TR	1	
86	Q2, 40, 43, 44	602A1032M0004	2SC3400 NPN-HF-TR	4	
87	Q20	600A1003M0001	2SA608SP/2SA933S PNP-HF-TR	1	
88	Q21-23	600A1035M0005	DTA114S PNP-HF-TR	3	
89	D1	622A0026M0004	TM1241I-LE-LF625 gate thyristor	1	
90	Q15-17	602A1125M0039Y	2SC2235-Y NPN-HF-TR	3	

OLER-PCB 4YB4049-7101G1 (7/9)

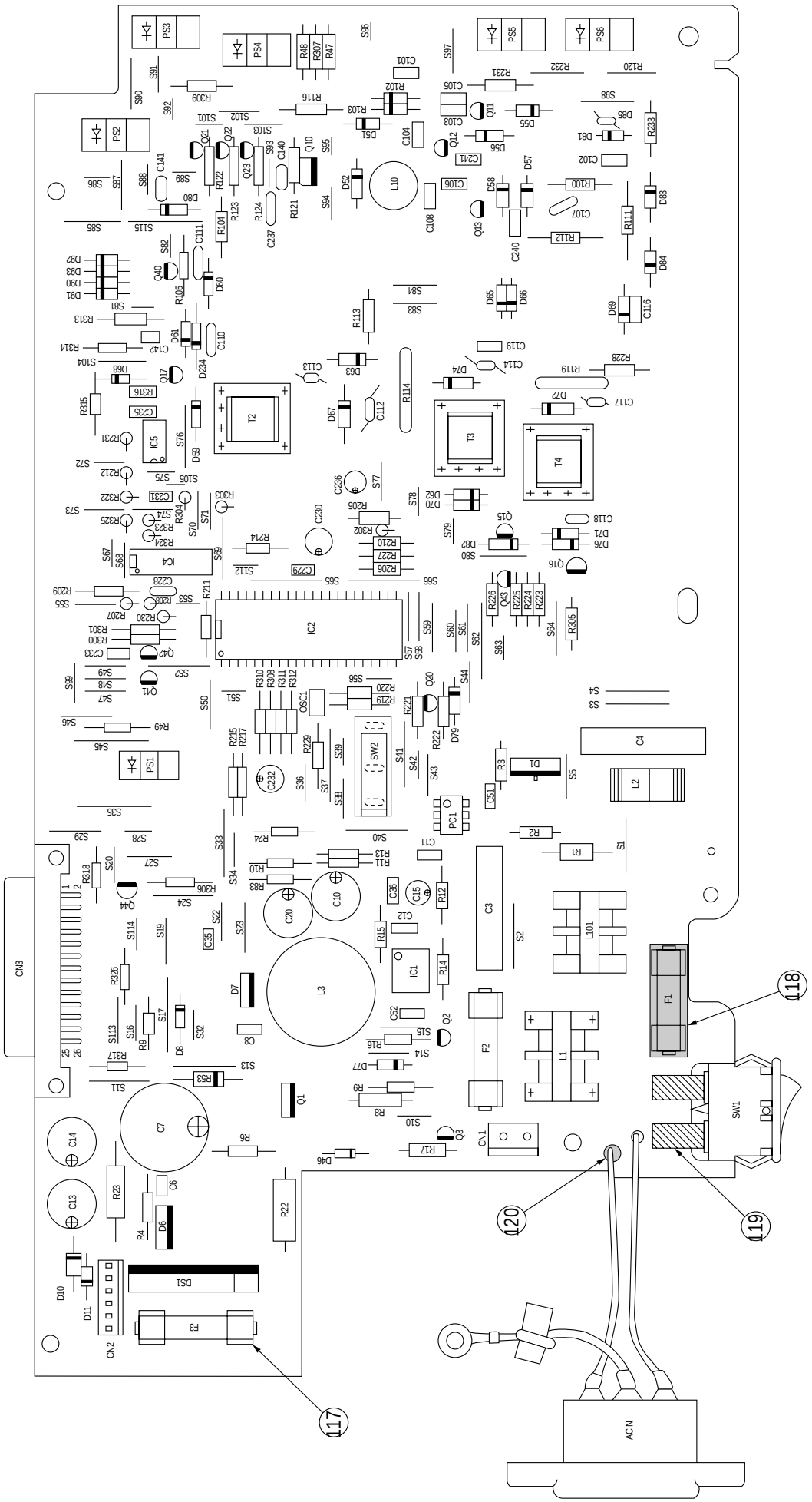
REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
91	Q11, 13	622A0022M0014	BCR1AM-12 gate thyristor SW	2	
92	Q12	620A0022M0008	CR04AM-12 gate thyristor OFF	1	
93					
94					
95	IC2	702A4731M0003	LC97000A-983 MOS digital IC	1	
96	PC1	652A0203M0002	TLP666JF/S21ME4FY photo coupler	1	
97	PS1-6	652A0114M0003	SG-206 photo coupler	6	
98	IC1	720A0843M0001	FA7617P-1 BIP linear IC	1	
99	IC4	720A0000M0002	324P BIP linear IC	1	
100	IC5	720A0000M0033	358P BIP linear IC	1	
101					
102	OSC1	381A1054B0001	CST1.80MG040 ceramic oscillator	1	
103	L2	350A0221P1001	SN8S-300/SF-T8-30S P coil	1	
104	L3	350A2510P0551	SK-21P-060-550S P coil	1	
105	L101	350A2027P0200	SU16VD-40020 power supply coil	1	
106	L1	350A0223P0402	SU10V07040/ FUS325020 power supply coil	1	
107	L10	350A2511P0102	C-14576 P coil	1	
108	T2	4YB4049-7078P001	high voltage transformer	1	

OLER-PCB 4YB4049-7101G1 (8/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
109	T3	4YB4049-7078P002	high voltage transformer	1	
110	T4	4YB4049-7078P003	high voltage transformer	1	
111	CN1	224A3907P0020	5281-02A PC connector	1	
112	CN2	224A3357P0060	00-8263-0612-00-000 PC connector	1	
113	CN3	224A3222P0262	128A-026S2B-L14A PC connector	1	
114					
115					
116	F1	540A2076N0632	51MS063L fuse	1	
117	F2	540A2076N0162	51MS016L fuse	1	
118	F3	540A2036M1252	GGS2-1/2 fuse	1	
119		4LP-7142	FP-213 fuse holder	6	
120					
121	SW1	200A3220P2000	SJ-W2P4A-03BB toggle switch	1	
122	SW2	207A1025P0001	SS-5GL13	1	
123	INLET	4YS4011-2894P001	special cord	1	
124	S28, 39, 42, 32, 51, 53, 56, 67, 72, 79, 81, 82, 86, 89, 91-93, 95, 96, 101, 105	TA-0.65	0.65 tin melted copper wire	21	L=32mm P=5.0

OLER-PCB 4YB4049-7101G1 (9/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
125	S5, 10, 14, 15, 23, 27, 46, 29, 50, 77, 57-61, 78, 80, 83, 84, 90, 97, 64, 104, 87	TA-0.65	0.65 tin melted copper wire	24	L=32mm P=10
126	S2-4, 17, 33, 35, 37, 41, 45, 62, 65, 66, 115	TA-0.65	0.65 tin melted copper wire	13	L=32mm P=15
127	S1, 11, 13, 24, 40, 52, 69, 76, 85, 98, 113, 19, R120, R232	TA-0.65	0.65 tin melted copper wire	14	L=32mm P=12.5
128	S16, 20, 22, 34, 36, 38, 43-44, 47-49, 55, 63, 68, 70, 71, 88, 94, 99, 73, 74, 75, 102, 103, 111, 112, 114	TA-0.65	0.65 tin melted copper wire	27	L=32mm P=7.5



OLHR-PCB 4YB4049-7101G2

OLHR-PCB 4YB4049-7101G2 (1/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
1					
2					
3	D6	620A0026M0002	TF341M Gate thyristor OFF	1	
4	DS1	610A1003M0001	RBV-402/D3SBA20 Rectifier DI	1	
5	D10, 11, 46, 77	610A0003M0001	EM01Z/SM1XN02/DSM1D2 rectifier DI	4	
6	D51, 55-59, 62, 70, 71, 81, 83	610A0226M0016	EU02A rectifier DI	11	
7	D7	610A0226M0017	FML-G12S rectifier DI	1	
8	D68, 69, 60, 61, 80, 90-93	611A0003L0001	1S953/1S2075K/1S2473 rectifier DI	9	
9	D79	613A1231L0072	RD3.6E-B zener DI	1	
10	D8	613A1231L0122	RD5.6E-B zener DI	1	
11	D76	613A1231L0262B	RD22E-B2 zener DI	1	
12	D82	613A1231L0282A	RD27E-B1 zener DI	1	
13	D52, 84	613A2003M0001	1ZB300-Y/Z zener DI	2	
14	D65, 66	613A2258M0350	1ZB390 zener DI	2	
15	D63, 67, 72, 74	610A0003M0002	DHM3FJ60/ESJA58-06 rectifier DI	4	
16	D85	632A0200M1470	D05-471 varistor	1	

OLHR-PCB 4YB4049-7101G2 (2/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
17					
18	R207, 208, 230, 212, 302, 303	321A3412J0102	RD1/6-1KΩJ (vertical) RD resistor	6	
19	R322	321A3412J0183	RD1/6-18KΩ J (vertical) RD resistor	1	
20	R321, 323, 324	321A3412J0243	RD1/6-24KΩJ (vertical) RD resistor	3	
21	R325	321A3412J0623	RD1/6-62KΩJ (vertical) RD resistor	1	
22	R304	321A3412J0182	RD1/6-1.8KΩJ (vertical) RD resistor	1	
23	R6, 226	32A1421J0301	RD1/4Y300ΩJ RD resistor	2	
24	R9, 234	321A1421J0330	RD1/4Y33ΩJ RD resistor	2	
25	R12, 215	321A1421J0153	RD1/4Y15KΩJ RD resistor	2	
26	R13, 217	321A1421J0362	RD1/4Y3.6KΩJ RD resistor	2	
27	R14	321A1421J0154	RD1/4Y150KΩJ RD resistor	1	
28	R210, 211, 113, 15, 305	321A1421J0104	RD1/4Y100KΩJ RD resistor	5	
29	R16	321A1421J0242	RD1/4Y2.4KΩJ RD resistor	1	
30	R4, 17, 103, 214	321A1421J0102	RD1/4Y1KΩJ RD resistor	4	
31	R19, 102, 116	321A1421J0331	RD1/4Y330ΩJ RD resistor	3	
32	R24	321A1421J0151	RD1/4Y150ΩJ RD resistor	1	

OLHR-PCB 4YB4049-7101G2 (3/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
33	R53, 105	321A1421J0163	RD1/4Y16KΩJ RD resistor	2	
34	R220, 228, 233	321A1421J0105	RD1/4Y1MΩJ RD resistor	3	
35	R219, 313	321A1421J0222	RD1/4Y2.2KΩJ RD resistor	2	
36	R121-124, 227, 229, 300-301	321A1421J0512	RD1/4Y5.1KΩJ RD resistor	8	
37	R47-49	321A1421J0131	RD1/4Y130ΩJ RD resistor	3	
38	R221, 306	321A1421J0152	RD1/4Y1.5KΩJ RD resistor	2	
39	R222	321A1421J0271	RD1/4Y270ΩJ RD resistor	1	
40	R223-225	321A1421J0511	RD1/4Y510ΩJ RD resistor	3	
41	R100	321A1421J0305	RD1/4Y3MΩJ RD resistor	1	
42	R104	321A1421J0753	RD1/4Y75KΩJ RD resistor	1	
43	R209	321A1421J0304	RD1/4Y300KΩJ RD resistor	1	
44	R307, 308, 309, 312	321A1421J0103	RD1/4Y10KΩJ RD resistor	4	
45	R310, 311	321A1421J0203	RD1/4Y20KΩJ RD resistor	2	
46	R10	323A1222F0203	RNL1/4C3F20KΩ RN resistor	1	
47	R11, 205, 206	323A1222F0242	RNL1/4C3F2.4KΩ RN resistor	3	
48	R83	323A1222F0102	RNL1/4C3F1.0KΩ RN resistor	1	
49	R316	323A4021F0394	RNF1/4C3-390KΩF RN resistor	1	

OLHR-PCB 4YB4049-7101G2 (4/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
50	R318	323A1222F0222	RNL1/4C3F2.2KΩ RN resistor	1	
51	R314	323A1222F0183	RNL1/4C3F18KΩ RN resistor	1	
52	R315	323A1222F0123	RNL1/4C3F12KΩ RN resistor	1	
53	R317	323A1222F0563	RNL1/4C3F56KΩ RN resistor	1	
54	R326	323A1222F0223	RNL1/4C3F22KΩ RN resistor	1	
55	R1	321A1431J0105	RD1/2Y1MΩJ RD resistor	1	
56	R2, 3	327A1001J0101	FMR1/2-100ΩJ fuse resistor	2	
57	R114, 119	326A3021K0107	HV-38-100MK RK resistor	2	
58	R111, 112, 231	323A1029J0106	HMP1/4-106J RN resistor	3	
59	R8	324A3024J0272	MOS2-2.7KΩJL RS resistor	1	
60	R22, 23	324A3024J0391	MOS2-390ΩJL RS resistor	2	
61	C1, C2	302A4037M6222	DE7100F222M-VA1-KC CK capacitor 2200 PF	2	
62	C118	306A4103J2103	CQMF92PP2A103J-F0 CQ capacitor 0.010UF	1	
63	C3	306A2277M5104	MKC-S-104M CF capacitor 0.1UF	1	
64	C4	340A2014P1001	ECQ-J0187Y spark killer	1	
65	C6, 51, 35, 52, 239, 108, 237, C233, 103, 104, 110, 111, 140-142, 242	303A4019Z3104	FK16Y5V1H104Z CK capacitor	16	

OLHR-PCB 4YB4049-7101G2 (5/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
66	C8, 231, 235	302A4003K6331	DD05-63B331K500 500V CK capacitor 330PF	3	
67	C10, 20	304A1179J0222	ECA0JM222 6.3V CE capacitor 2200UF	2	
68	C11	302A4003K6102	DDO7-63B102K500 500V CK capacitor 1000PF	1	
69	C12	302A4003K6222	DD09-63B222K500 500V CK capacitor 2200PF	1	
70	C15	304A1123C1470	SME16VB-47-OA 16V CE capacitor 47UF	1	
71	C230	304A1046E1330	25MS5-33M 25V CE capacitor 33UF	1	
72	C232, 236	304A1123J1100	SME63VB-10-OA 63V CE capacitor 10UF	2	
73	C13, 14	304A1179C1102	ECA1CM102 16V CE capacitor 1000UF	2	
74	C228, 229	303A4115M3102	CK92C1H102MS 50V CK capacitor 0.001UF	2	
75	C116	303A4019Z3473	FK16Y5V1H473Z CK capacitor	1	
76	C240, 241	302A1202K0390	DD05-63SL390J500 CC capacitor 39PF	2	
77	C101, 102, 106	302A4003K6471	DD05-63B471K500 500V CK capacitor 470PF	3	

OLHR-PCB 4YB4049-7101G2 (6/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
78	C105, 107, 119	302A4028K0471A	DE0705B471K1K 1KV CK capacitor 470PF	3	
79	C113, 114, 117	302A4028K2471	DEO707B471K3K 3.15KV CK capacitor 470PF	3	
80	C7	304A1005H1332	UVR1H332MHA1CA 50V CE capacitor 3300UF	1	
81	C112	302A4028K4471	DE1010B471K6K 6KV CK capacitor 470PF	1	
82	C36	303A4115M3681	CK92C1H681MS 50V CK capacitor 680PF	1	
83	Q1	601A1226M0001	2SB1258 PNP-LF-TR	1	
84	Q3, 41, 42	602A1025M0006Y	2SC1815-Y NPN-HF-TR	3	
85	Q10	602A1223M0039	2SC2752 NPN-HF-TR	1	
86	Q2, 40, 43, 44	602A1032M0004	2SC3400 NPN-HF-TR	4	
87	Q20	600A1003M0001	2SA608SP/2SA933S PNP-HF-TR	1	
88	Q21-23	600A1035M0005	DTA114S PNP-HF-TR	3	
89	D1	622A0026M0003	TM1261I-LE-LF625 gate thyristor SW	1	
90	Q15-17	602A1125M0039Y	2SC2235-Y NPN-HF-TR	3	

OLHR-PCB 4YB4049-7101G2 (7/9)

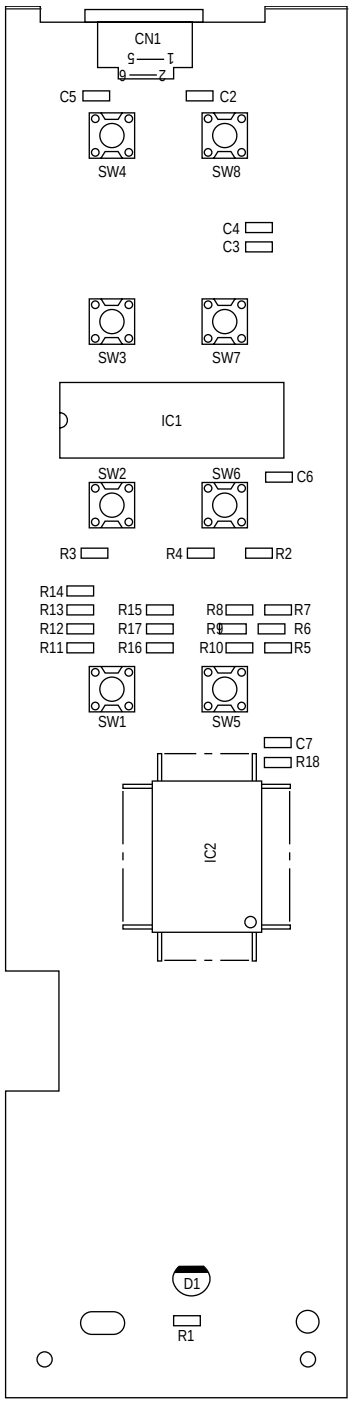
REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
91	Q11, 13	622A0022M0014	BCR1AM-12 gate thyristor SW	2	
92	Q12	620A0022M0008	CR04AM-12 gate thyristor OFF	1	
93					
94					
95	IC2	702A4731M0003	LC97000A-983 MOS digital IC	1	
96	PC1	652A0228M004	S21ME4FY photo coupler	1	
97	PS1-6	652A0114M0003	SG-206 photo coupler	6	
98	IC1	720A0843M0001	FA7617P-1 BIP linear IC	1	
99	IC4	720A0000M0002	324P BIP linear IC	1	
100	IC5	720A0000M0033	358P BIP linear IC	1	
101					
102	OSC1	381A1054B0001	CST1.80MG040 ceramic oscillator	1	
103	L2	350A0221P1001	SN8S-300/SF-T8-30S P coil	1	
104	L3	350A2510P0551	SK-21P-060-550S P coil	1	
105	L101	350A2027P0200	SU16VD-40020 power supply coil	1	
106	L1	350A0223P0402	SU10V07040/ FUS325020 power supply coil	1	
107	L10	350A2511P0102	C-14576 P coil	1	
108	T2	4YB4049-7078P001	high voltage transformer	1	

OLHR-PCB 4YB4049-7101G2 (8/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
109	T3	4YB4049-7078P002	high voltage transformer	1	
110	T4	4YB4049-7078P003	high voltage transformer	1	
111	CN1	224A3907P0020	5281-02A PC connector	1	
112	CN2	224A3357P0060	00-8263-0612-00-000 PC connector	1	
113	CN3	224A3222P0262	128A-026S2B-L14A PC connector	1	
114					
115	F1	540A2123T2502	19181-5A fuse	1	
116	F3	540A2221S0252	21702.5 fuse	1	
117		4LP-7142	FP-213 fuse holder	4	
118		242A7041P0001	840622-23 fuse cover	1	
119		4YC4061-1076P006	SUMI tube F2 (Z) (Inner 5 black)	2	L=19mm
120		121A1037P0001	201840-23 board in sleeve	1	
121					
122	SW1	200A3220P2000	SJ-W2P4A-03BB toggle switch	1	
123	SW2	207A1048P0001	SS-5GL13 (149) micro switch	1	
124	INLET	4YS4011-2894P002	special cord	1	
125	S28, 32, 39, 42, 51, 53, 56, 67, 72, 79, 81, 82, 86, 89, 91-93, 95, 96, 101, 105	TA-0.65	0.65 tin melted copper wire	21	L=32mm P=5.0

OLHR-PCB 4YB4049-7101G2 (9/9)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
126	S5, 6, 10, 14, 15, 23, 27, 29, 46, 50, 57-61, 77, 78, 80, 83, 84, 90, 97, 64, 104, 87	TA-0.65	0.65 tin melted copper wire	25	L=32mm P=10
127	S2-4, 17, 33, 35, 37, 41, 45, 62, 65, 66, 115	TA-0.65	0.65 tin melted copper wire	13	L=32mm P=15
128	S1, 11, 13, 24, 40, 52, 69, 76, 85, 98, 113, 19, R120, R232	TA-0.65	0.65 tin melted copper wire	14	L=32mm P=12.5
129	S16, 20, 22, 34, 36, 38, 43, 44, 47-49, 55, 63, 68, 70, 71, 73, 74, 75, 88, 94, 99, 102, 103, 111, 112, 114	TA-0.65	0.65 tin melted copper wire	27	L=32mm P=7.5



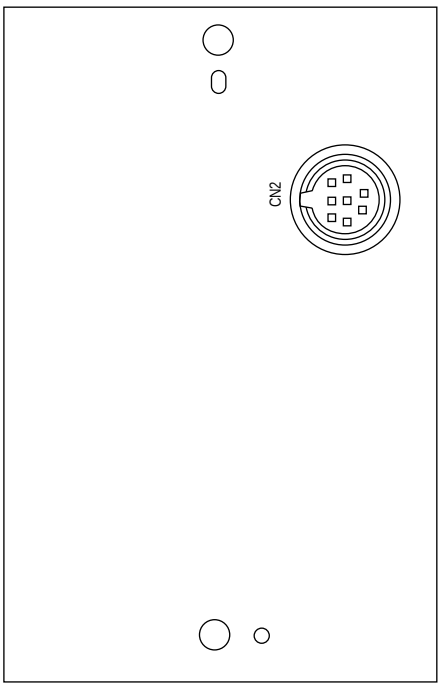
OLCC-2-PCB Rev. 1 4YA4130-1001G2

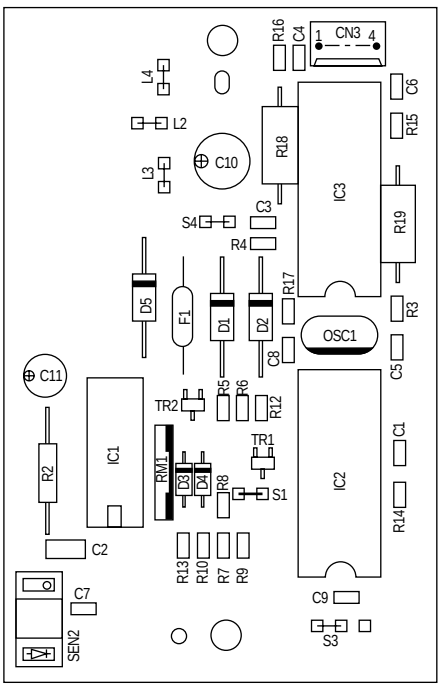
OLCC-2-PCB Rev. 1 4YA4130-1001G2 (1/2)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
1					
2					
3	D1	650A0229M0018	SEL3910D-YZ LED	1	
4					
5	C2, C3, C4, C5	303A3007C0101	CC2012CH1H101J 50V CC capacitor (CP)	4	
6	C6, C7	303A6008Z2104	CK2012F1E104Z 25V CK capacitor (CP)	2	
7					
8	R1	323A5003J0181	RM73B2A181J RN resistor (CP)	1	
9	R2, R3, R4	323A5003J0201	RM73B2A201J RN resistor (CP)	3	
10	R5	323A5003J0682	RM73B2A682J RN resistor (CP)	1	
11	R6, R7, R8, R9, R10	323A5003J0752	RM73B2A752J RN resistor (CP)	5	
12	R11, R12, R13, R14, R15, R16, R17	323A5003J0103	RM73B2A103J RN resistor (CP)	7	
13					
14	R18	323A5003F0913	RM73B2A913F RN resistor (CP)	1	
15					
16	IC1	702A4733M0002	BU6152S MOS digital IC	1	
17	IC2	855A0421N0002	HD44780UB01FS CPU-INF-IC (FP)	1	
18					

OLCC-2-PCB Rev. 1 4YA4130-1001G2 (2/2)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
19	SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8	205A1165P1000	SOR-113HS Push-button switch	8	
20					
21					
22	CN1	224A3591P0060	ZC-106 PC connector	1	





OLEV-PCB Rev. 4 4YA4121-1014G11

OLEV-PCB Rev. 4 4YA4121-1014G11 (1/3)

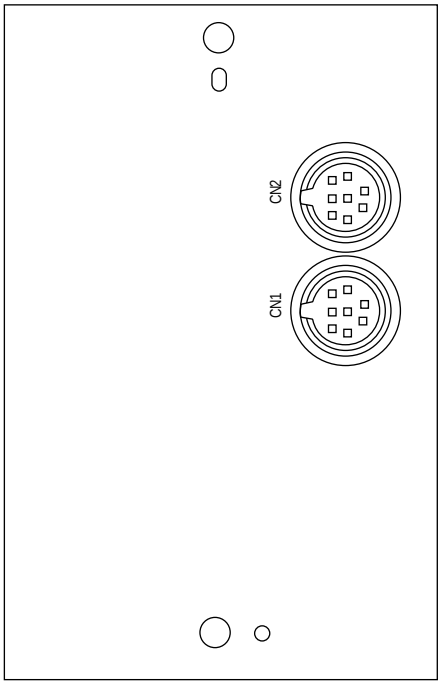
REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
1					
2					
3	D1, D2, D5	610A0003M0001	EM01Z/SM1XN02/ DSM1D2 Rectifier DI	3	
4	D4	613A1231L0082	RD3, 9E-B Zener DI	1	
5	D3	611A0003L0001	1S953/1S2075K/ 1S2473 Signal DI	1	
6					
7	R15, R16	323A5003J0473	RM73B2A473J RN Resistor (CP)	2	
8	R18, R19	324A1001J0518	MSF1/2B0.51ΩJ RS Resistor	2	
9	R3-R6	323A5003J0102	RM73B2A102J RN Resistor (CP)	4	
10	R2	321A1421J0181	RD1/4Y180ΩJ RD Resistor	1	
11	R7-R10, R14	323A5003J0103	RM73B2A103J RN Resistor (CP)	5	
12	R12	323A5003J0123	RM73B2A123J RN Resistor (CP)	1	
13	R17	323A5003J0561	RM73B2A561J RN Resistor (CP)	1	

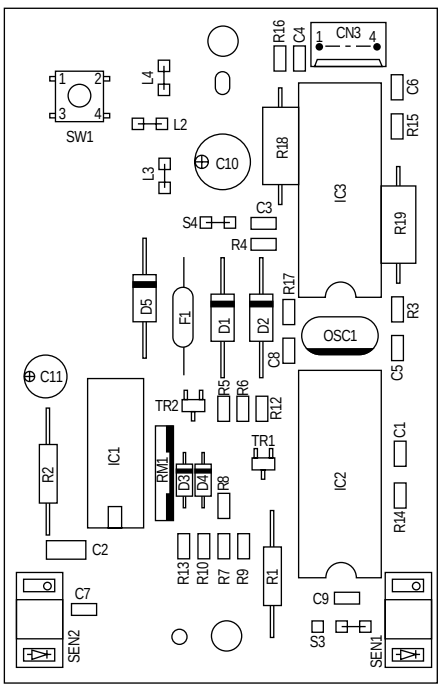
OLEV-PCB Rev. 4 4YA4121-1014G11 (2/3)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
14	R13	323A5003J0153	RM73B2A153J RN Resistor (CP)	1	
15	RM1	334A3266J0512	MRM-4-512JA Block Resistor	1	
16					
17	C10	304A1046H1100	50MS5-10M 50V CE Capacitor 10uF	1	
18	C11	304A1046A1330	10MS5-33M 10V CE Capacitor 33uF	1	
19	C2	303A4116M3334	RPE122-127E334M50 CK Capacitor 0.33uF	1	
20	C1	303A3007K0471	CC2012SL1H471J 50V CC Capacitor (CP)	1	
21	C3-C6	303A6008K3102	CK2012B1H102K 50V CK Capacitor (CP)	4	
22	C7-C9	303A6008Z2104	CK2012F1E104Z 25V CK Capacitor (CP)	3	
23					
24	IC3	720A1822M0002	M54646AP BIP Linear IC	1	
25	IC1	700A0503M0038	74LS38P BIP Digital IC	1	
26	IC2	853A0036M0002	LC6543N-4B52 MOS-CPU (ROM)	1	

OLEV-PCB Rev. 4 4YA4121-1014G11 (3/3)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
27					
28	SEN2	652A0114M0001	SG-205-B Photocoupler	1	
29	TR1, TR2	600A1003N0003	A1344/UN2111/ DTA114K PNP-HF-TR (CP)	2	
30	OSC1	381A1025B0002	CST4, 00MGW Ceramic Oscillator	1	
31					
32	S1, S3, S4, L2-L4	KH-31036-25	Short-wire (U-type) 0.65 P = 2.5	6	
33	F1	540A2208S1102	251-001 Fuse	1	
34	CN2	221A1622P0082	TCS7698-01-201 Round-shaped Connec- tor	1	
35	CN3	224A3357P0040	00-8263-0412-00-000 PC Connector	1	





OLEV-2-PCB Rev. 4 4YA4121-1014G12

OLEV-2-PCB Rev. 4 4YA4121-1014G12 (1/3)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
1					
2					
3	D1, D2, D5	610A0003M0001	EM01Z/SM1XN02/ DSM1D2 Rectifier DI	3	
4	D4	613A1231L0082	RD3, 9E-B Zener DI	1	
5	D3	611A0003L0001	1S953/1S2075K/ 1S2473 Signal DI	1	
6					
7	R15, R16	323A5003J0473	RM73B2A473J RN Resistor (CP)	2	
8	R18, R19	324A1001J0518	MSF1/2B0.51ΩJ RS Resistor	2	
9	R3-R6	323A5003J0102	RM73B2A102J RN Resistor (CP)	4	
10	R1, R2	321A1421J0181	RD1/4Y180ΩJ RD Resistor	2	
11	R7-R10, R14	323A5003J0103	RM73B2A103J RN Resistor (CP)	5	
12	R12	323A5003J0123	RM73B2A123J RN Resistor (CP)	1	
13	R17	323A5003J0561	RM73B2A561J RN Resistor (CP)	1	

OLEV-2-PCB Rev. 4 4YA4121-1014G12 (2/3)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
14	R13	323A5003J0153	RM73B2A153J RN Resistor (CP)	1	
15	RM1	334A3266J0512	MRM-4-512JA Block Resistor	1	
16					
17	C10	304A1046H1100	50MS5-10M 50V CE Capacitor 10uF	1	
18	C11	304A1046A1330	10MS5-33M 10V CE Capacitor 33uF	1	
19	C2	303A4116M3334	RPE122-127E334M50 CK Capacitor 0.33uF	1	
20	C1	303A3007K0471	CC2012SL1H471J 50V CC Capacitor (CP)	1	
21	C3-C6	303A6008K3102	CK2012B1H102K 50V CK Capacitor (CP)	4	
22	C7-C9	303A6008Z2104	CK2012F1E104Z 25V CK Capacitor (CP)	3	
23					
24	IC3	720A1822M0002	M54646AP BIP Linear IC	1	
25	IC1	700A0503M0038	74LS38P BIP Digital IC	1	
26	IC2	853A0036M0002	LC6543N-4B52 MOS-CPU (ROM)	1	

OLEV-2-PCB Rev. 4 4YA4121-1014G12 (3/3)

REF. NO.	SYMBOL	PART NO.	TYPE/NAME	Q'TY	REMARKS
27					
28	SEN1, SEN2	652A0114M0001	SG-205-B Photocoupler	2	
29					
30	TR1, TR2	600A1003N0003	A1344/UN2111/ DTA114K PNP-HF-TR (CP)	2	
31					
32	OSC1	381A1025B0002	CST4, 00MGW Ceramic Oscillator	1	
33					
34	SW1	205A1179P1000	B3F-1000 Push-button switch	1	
35					
36	S3, S4, L2-L4	KH-31036-25	Short-wire (U-type) 0.65 P = 2.5	5	
37					
38	F1	540A2208S1102	251-001 Fuse	1	
39					
40	CN1, CN2	221A1622P0082	TCS7698-01-201 Round-shaped Connec-tor	2	
41	CN3	224A3357P0040	00-8263-0412-00-000 PC Connector	1	

6. CIRCUIT DIAGRAM

Main Control Board (L5C-PCB) Circuit diagram (Rev. 1)

Main Control Board (L6A-PCB) Circuit diagram (Rev. 2)

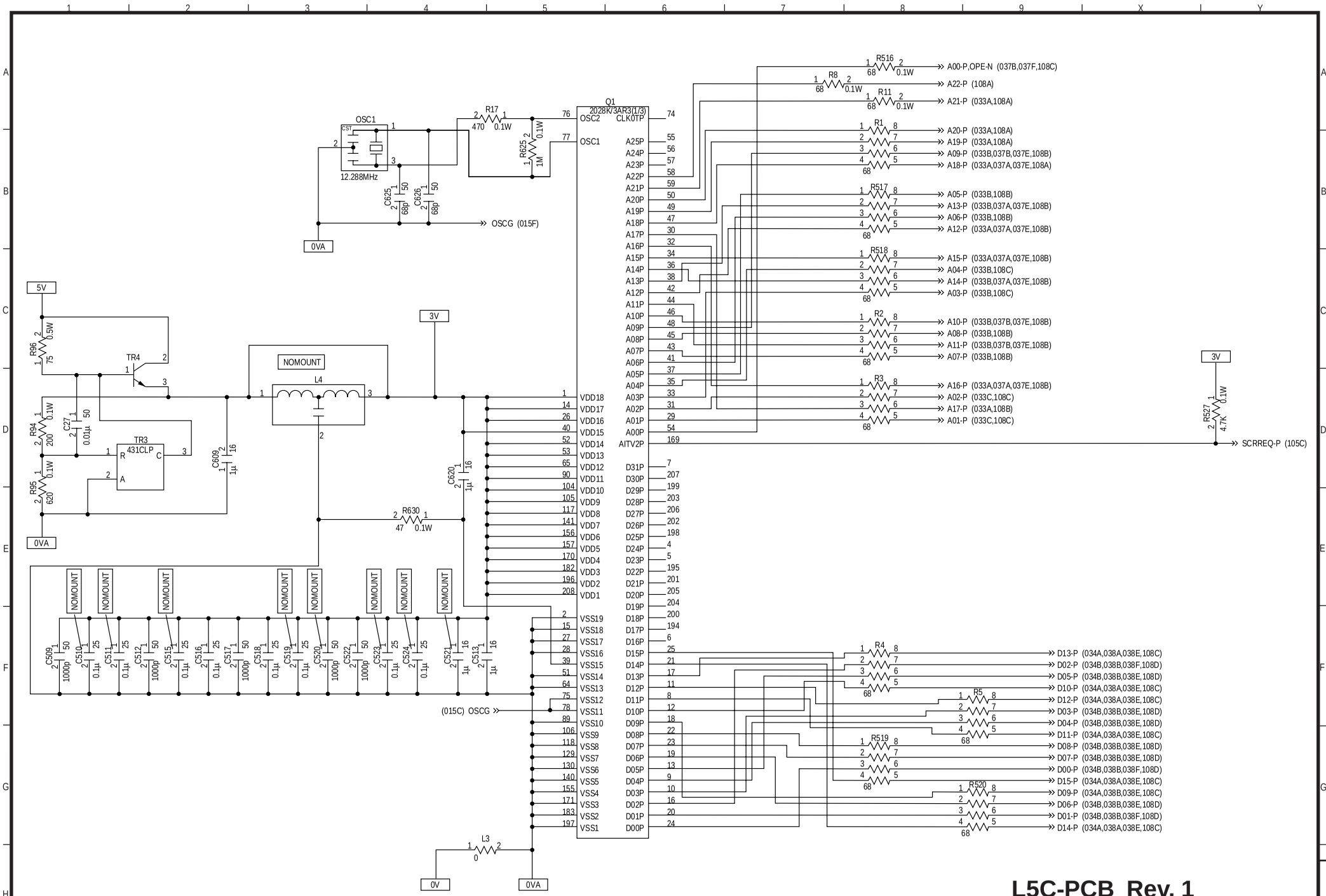
Operator Panel Board (OLCC-2-PCB) Circuit diagram (Rev. 1)

Option RAM Board (LQME-PCB) Circuit diagram (Rev. 2)

Power Supply Board (OLER-PCB) Circuit diagram

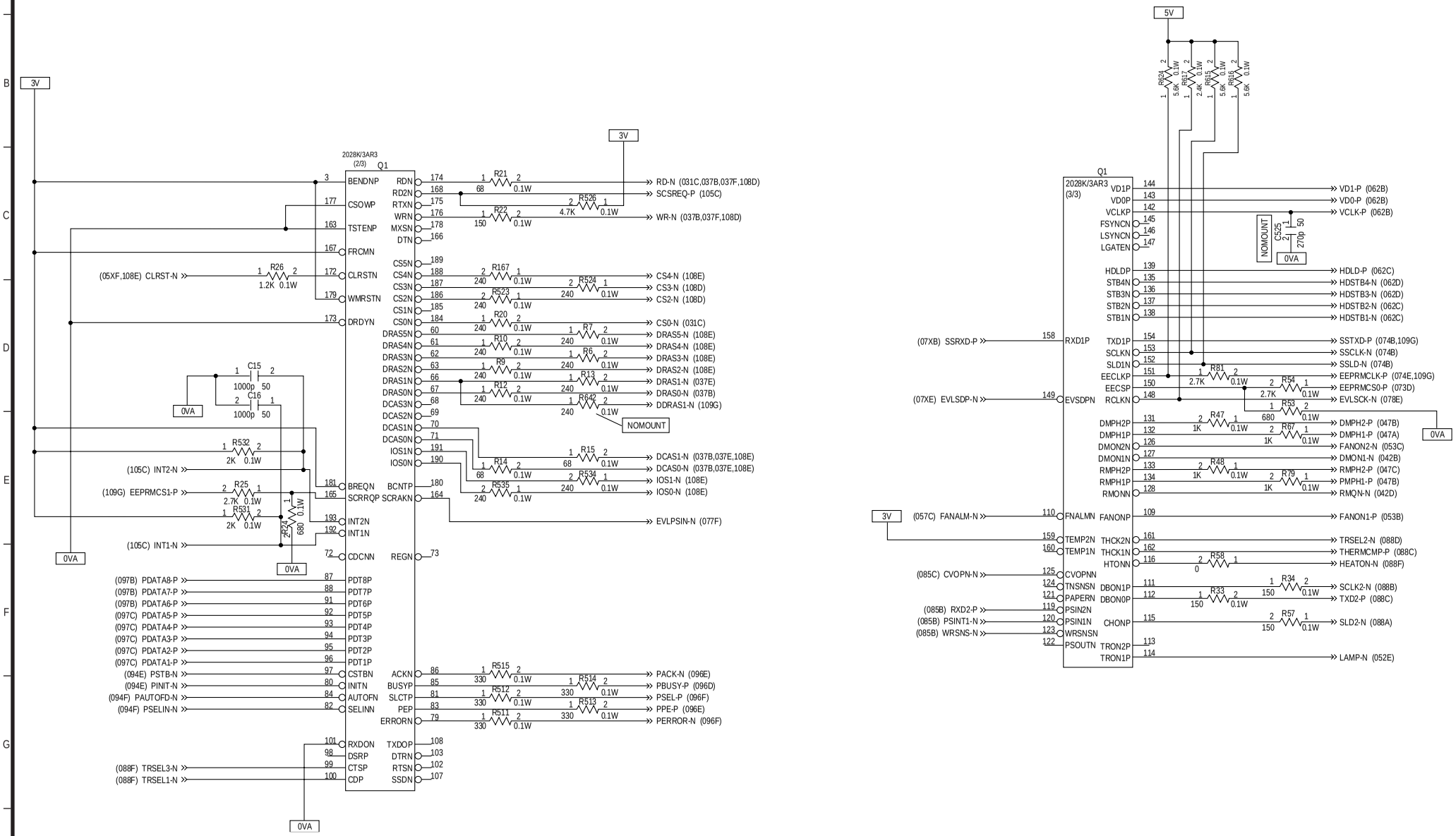
Power Supply Board (OLHR-PCB) Circuit diagram

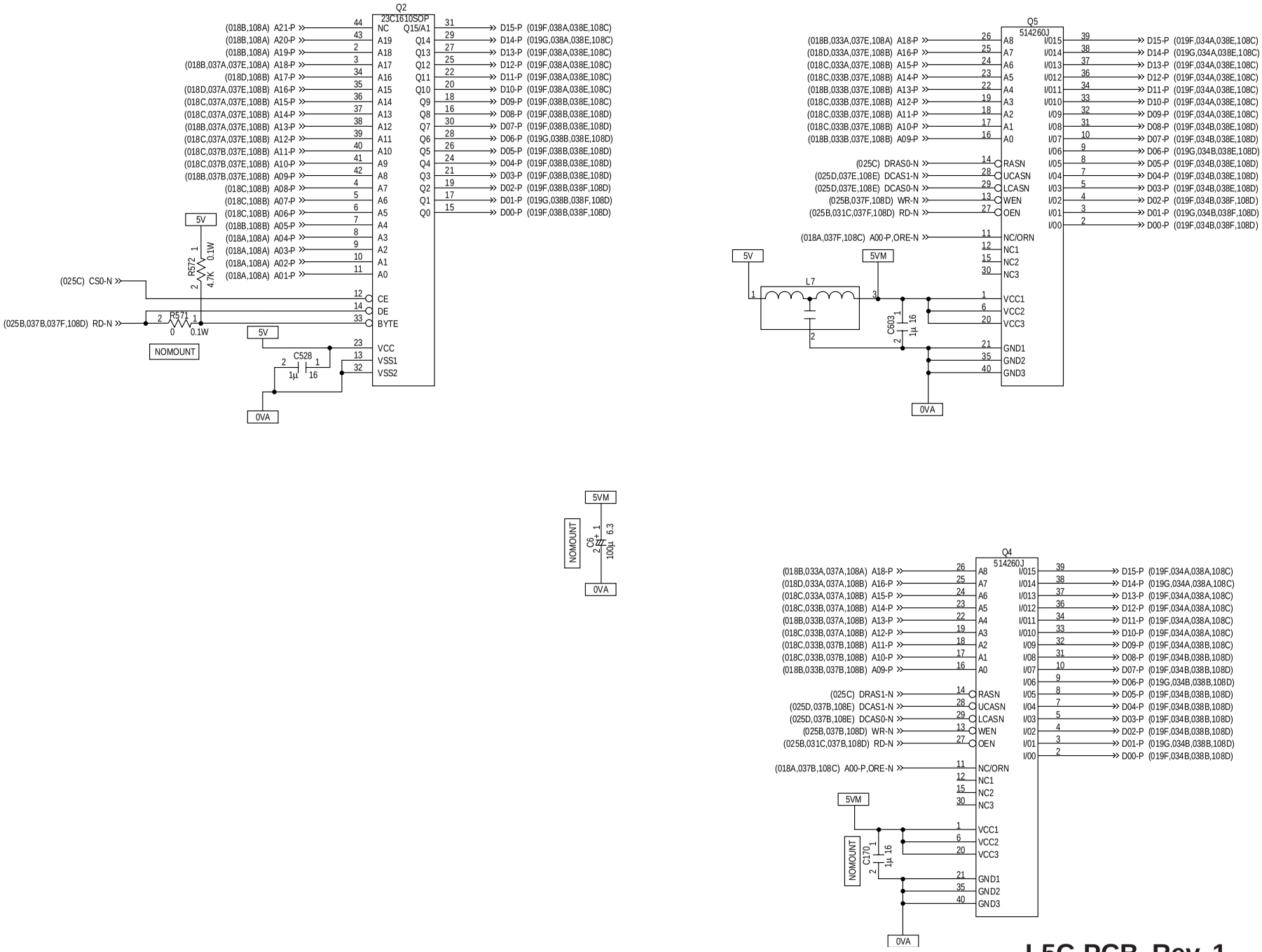
Option Tray Board (OLEV-PCB) Circuit diagram (Rev. 4)



L5C-PCB Rev. 1

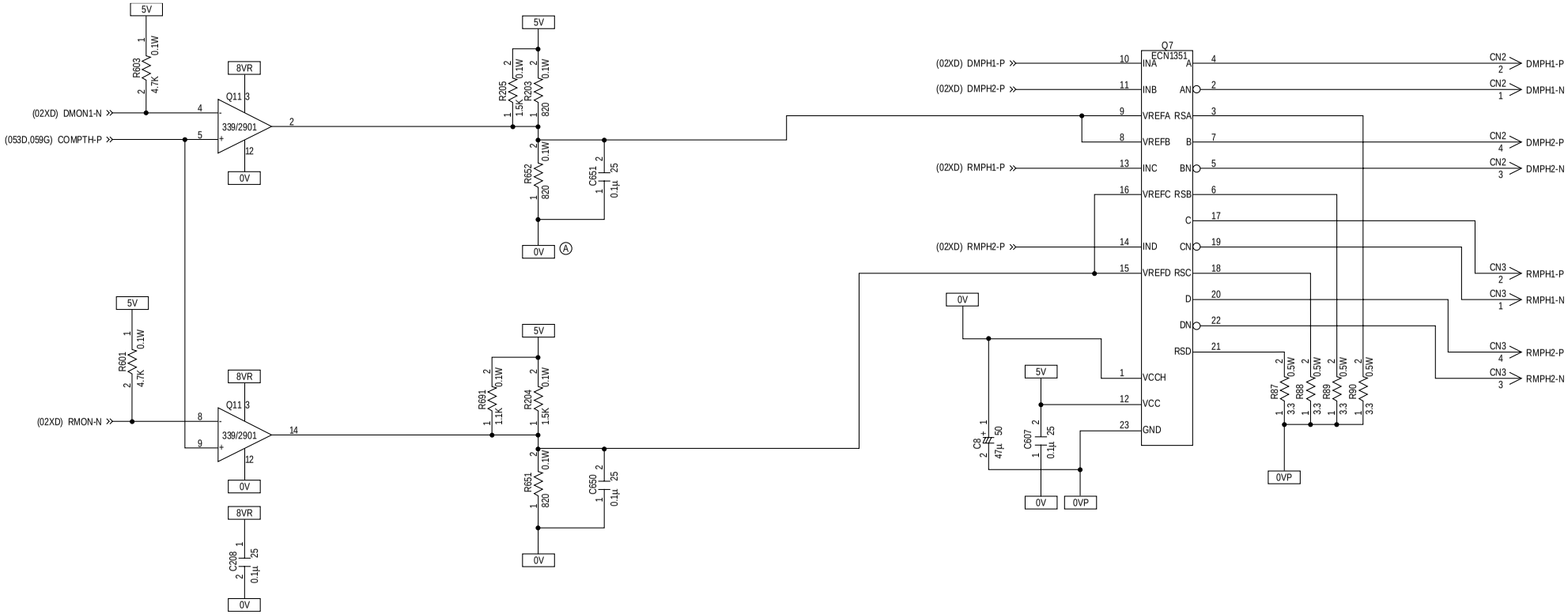
Main Control **1/10**


3V
2028K/3AR3
(2/3)
Q1
BENDNP
CSOWP
TSTENP
FRCMN
CLRSTN
WMRSTN
DRDYN
BREQN
SCRRQP
INT2N
INT1N
CDCNN
RDN
RD2N
RTXN
WRN
MXSN
DTN
CS5N
CS4N
CS3N
CS2N
CS1N
CS0N
DRAS5N
DRAS4N
DRAS3N
DRAS2N
DRAS1N
DRAS0N
DCAS3N
DCAS2N
DCAS1N
DCAS0N
IOS1N
IOS0N
BCNTP
SCRAKN
REGN
ACKN
BUSYP
SLCTP
PEP
ERRORN
RXDON
DSRP
CTSP
CDP
TXDOP
DTRN
RTSN
SSDN
(05XF,108E) CLRST-N
(105C) INT2-N
(109G) EEPRMCS1-P
(105C) INT1-N
(097B) PDATA8-P
(097B) PDATA7-P
(097B) PDATA6-P
(097C) PDATA5-P
(097C) PDATA4-P
(097C) PDATA3-P
(097C) PDATA2-P
(097C) PDATA1-P
(094E) PSTB-N
(094E) PINIT-N
(094F) PAUTOFD-N
(094F) PSELIN-N
(088F) TRSEL3-N
(088F) TRSEL1-N
RD-N (031C,037B,037F,108D)
SCSREQ-P (105C)
WR-N (037B,037F,108D)
CS4-N (108E)
CS3-N (108D)
CS2-N (108D)
CS0-N (031C)
DRAS5-N (108E)
DRAS4-N (108E)
DRAS3-N (108E)
DRAS2-N (108E)
DRAS1-N (037E)
DRAS0-N (037B)
DDRAS1-N (109G)
NOMOUNT
DCAS1-N (037B,037E,108E)
DCAS0-N (037B,037E,108E)
IOS1-N (108E)
IOS0-N (108E)
EVLPSIN-N (077F)
PACK-N (096E)
PBUSY-P (096D)
PSEL-P (096F)
PPE-P (096E)
PERROR-N (096F)
0VA
5V
Q1
2028K/3AR3
(3/3)
VD1P
VD0P
VCLKP
FSYNCN
LSYNCN
LGATEN
HDLDP
STB4N
STB3N
STB2N
STB1N
RXD1P
TXD1P
SCLKN
SLD1N
EECLKP
EECSP
RCLKN
EVSDPN
DMPH2P
DMPH1P
DMON2N
DMON1N
RMPH2P
RMPH1P
RMONN
FNALMN
FANONP
TEMP2N
TEMP1N
THCK2N
THCK1N
HTONN
CVOPNN
TNSNSN
PAPERN
PSIN2N
PSIN1N
WRSNSN
PSOUTN
DBON1P
DBON0P
CHONP
TRON2P
TRON1P
(07XB) SSRXD-P
(07XE) EVLSDP-N
(057C) FANALM-N
(085C) CVOPN-N
(085B) RXD2-P
(085B) PSINT1-N
(085B) WRSNS-N
VD1-P (062B)
VD0-P (062B)
VCLK-P (062B)
HDLD-P (062C)
HDSTB4-N (062D)
HDSTB3-N (062D)
HDSTB2-N (062C)
HDSTB1-N (062C)
SSTXD-P (074B,109G)
SSCLK-N (074B)
SSLD-N (074B)
EEPRMCLK-P (074E,109G)
EEPRMCS0-P (073D)
EVLSCK-N (078E)
DMPH2-P (047B)
DMPH1-P (047A)
FANON2-N (053C)
DMON1-N (042B)
RMPH2-P (047C)
PMPH1-P (047B)
RMQN-N (042D)
FANON1-P (053B)
TRSEL2-N (088D)
THERMCMP-P (088C)
HEATON-N (088F)
SCLK2-N (088B)
TXD2-P (088C)
SLD2-N (088A)
LAMP-N (052E)
NOMOUNT
0VA
L5C-PCB Rev. 1
Main Control
2/10

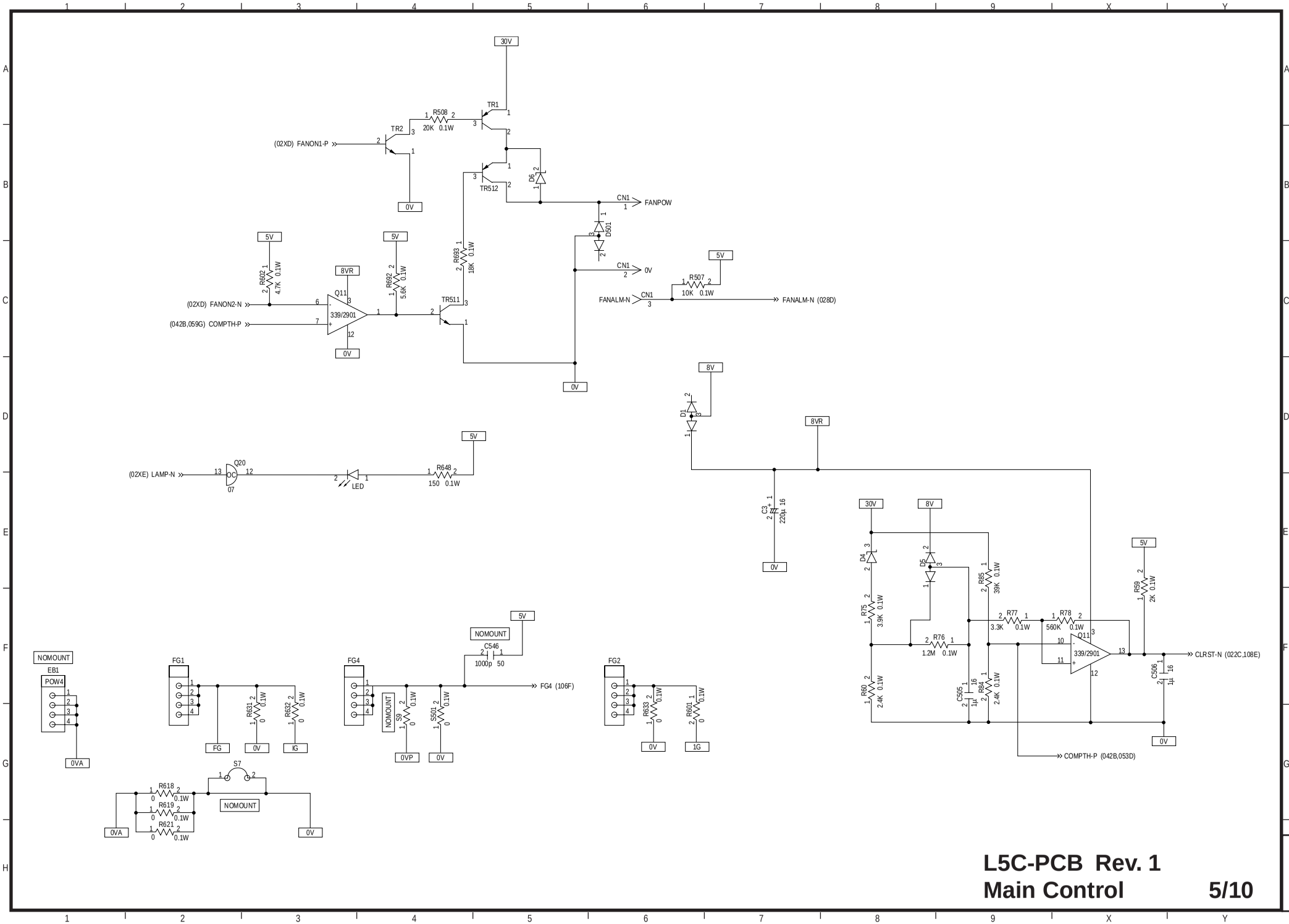


L5C-PCB Rev. 1

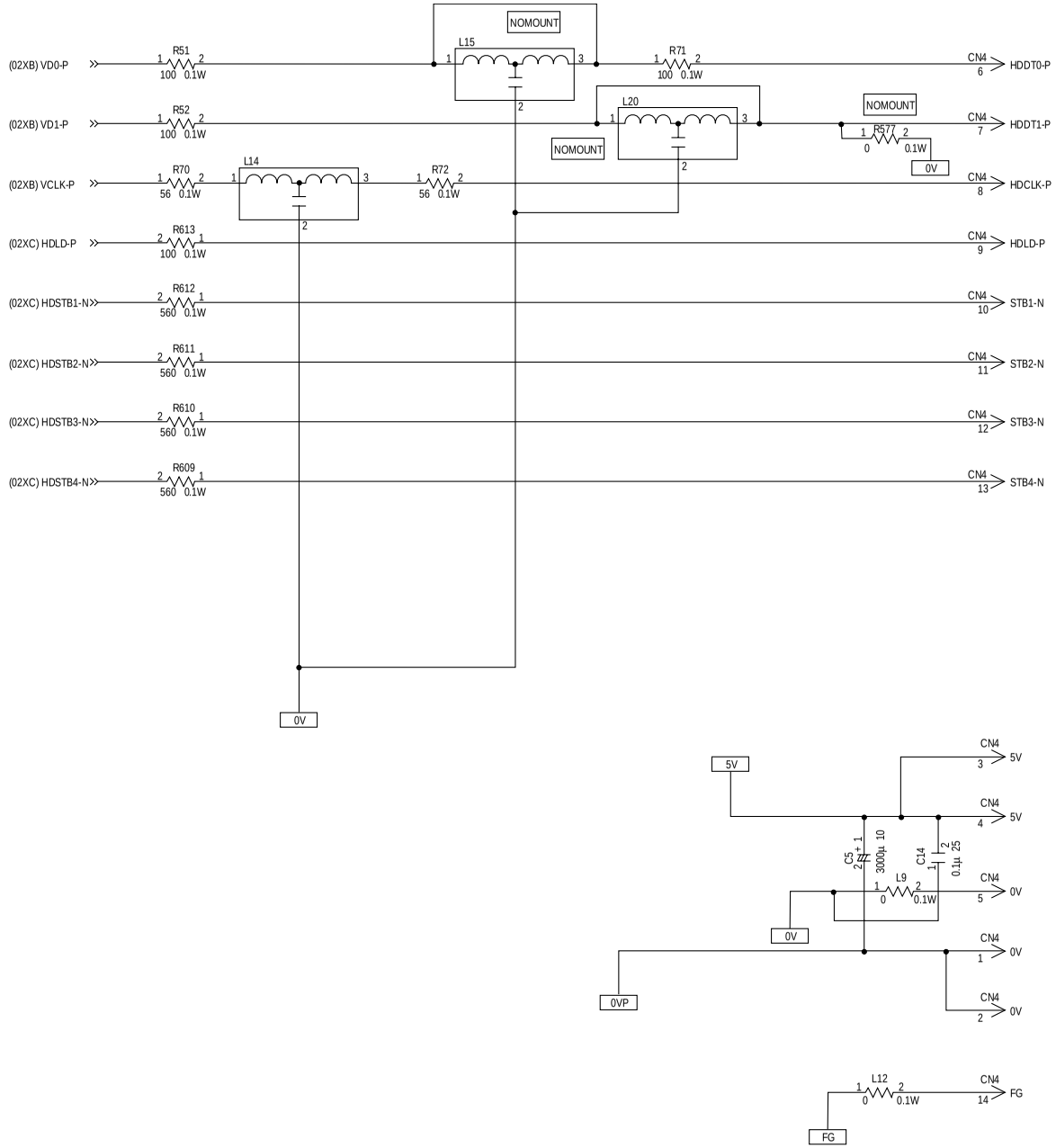
Main Control **3/10**



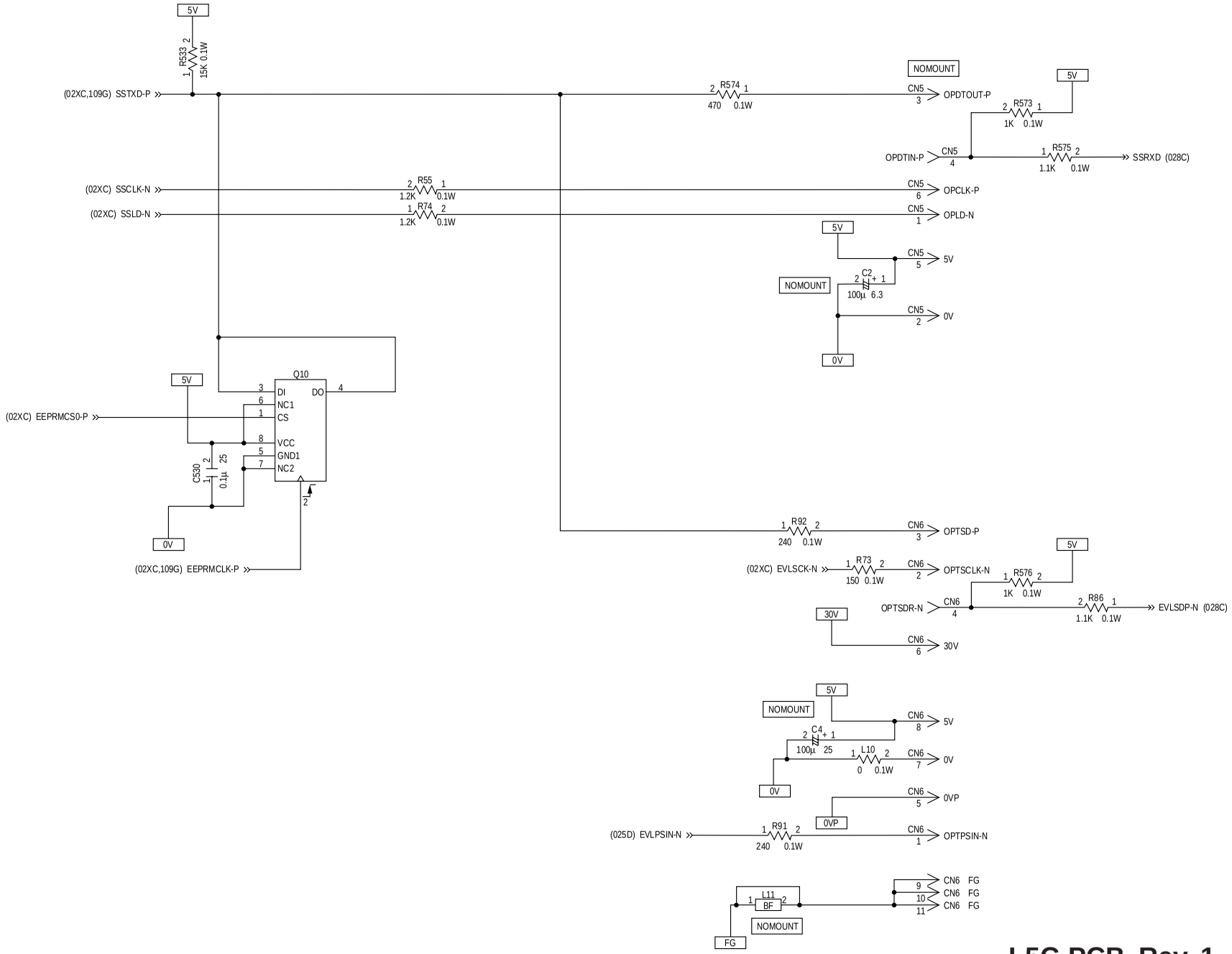
L5C-PCB Rev. 1
Main Control **4/10**



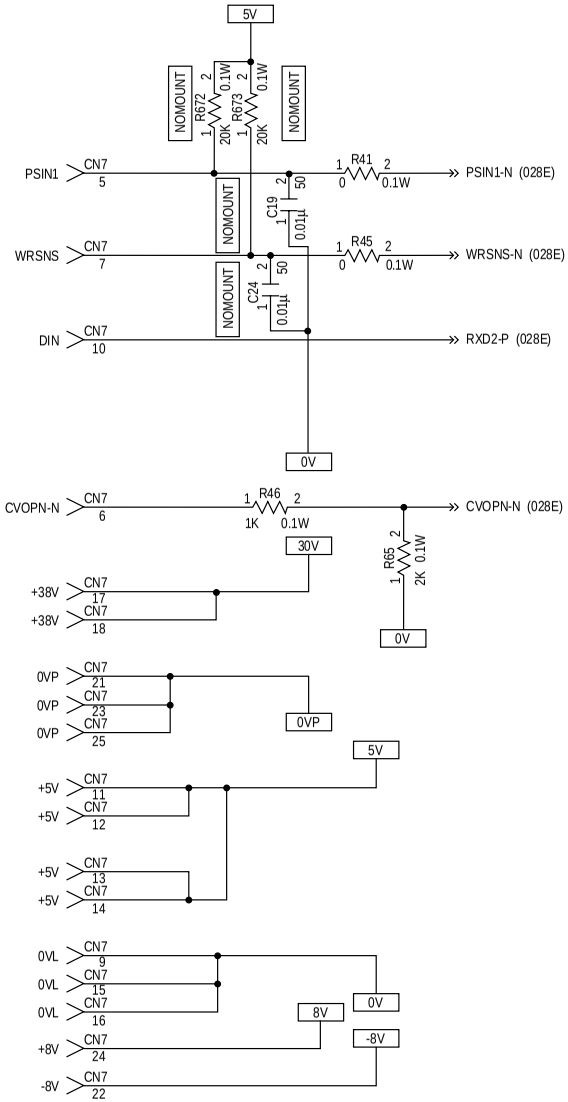
L5C-PCB Rev. 1
Main Control **5/10**



L5C-PCB Rev. 1
Main Control **6/10**



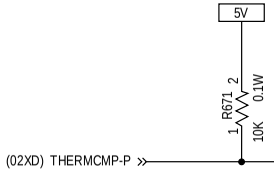
L5C-PCB Rev. 1
Main Control **7/10**



(02XE) SLD2-N » CN7 1 SQCR-N

(02XE) SCLK2-N » CN7 3 SCLK-N

(02XE) TXD2-P » CN7 8 DOUT-P



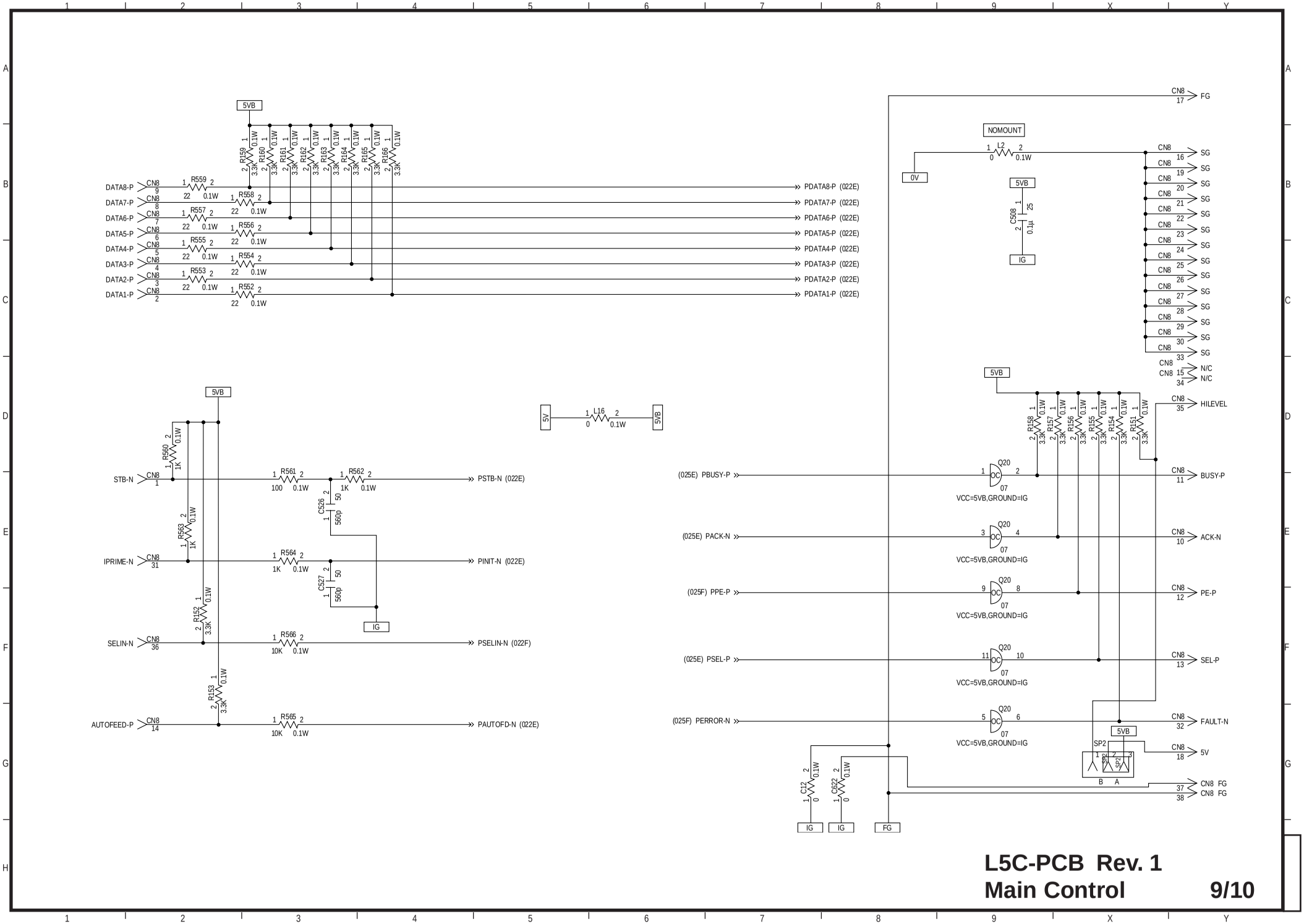
(02XD) TRSEL2-N » CN7 19 TRSEL2-N

(02XE) HEATON-N » CN7 20 HEATON-N

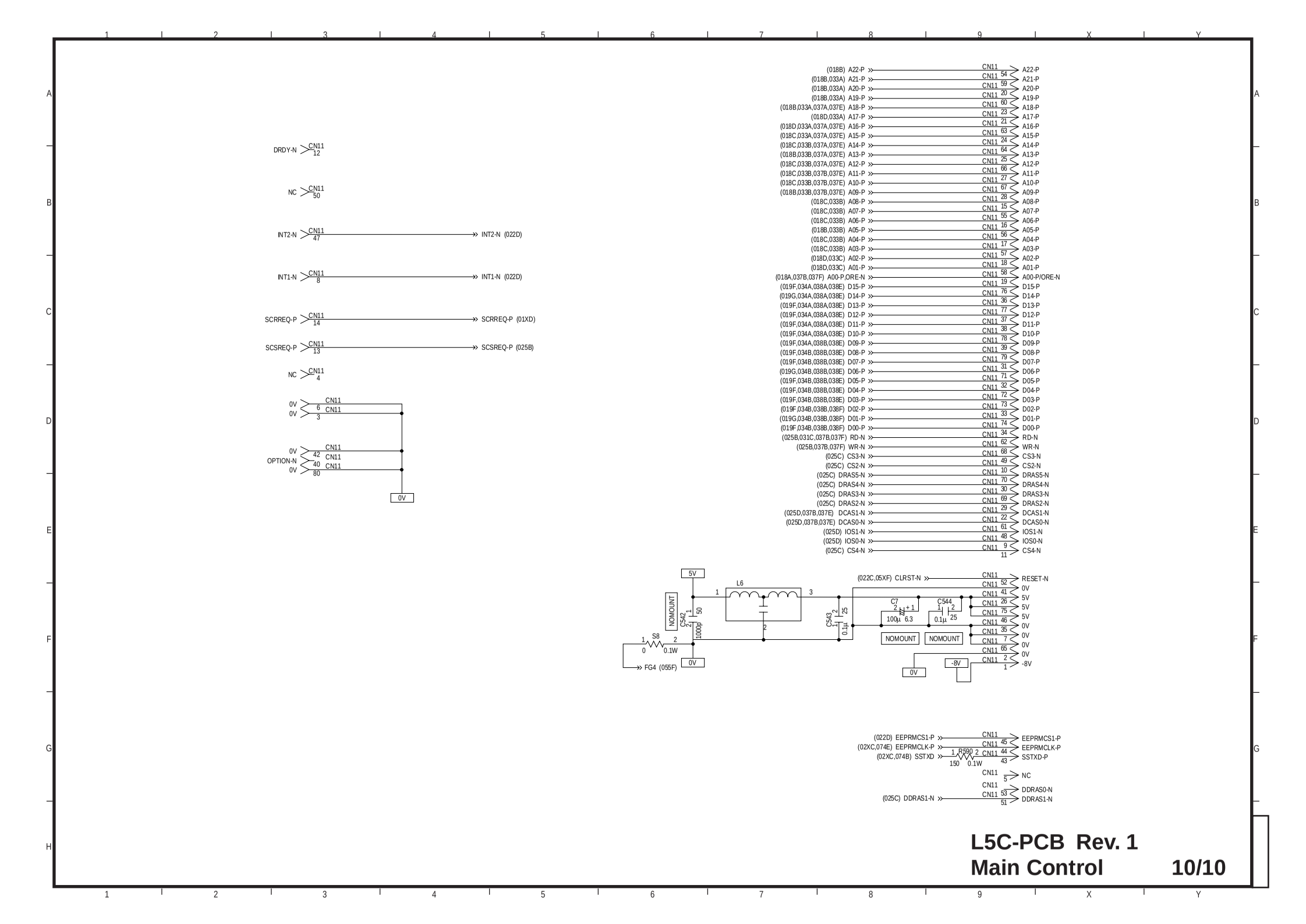
(022F) TRSEL1-N » CN7 2 TRSEL1-N

(022F) TRSEL3-N » CN7 26 TRSEL3-N

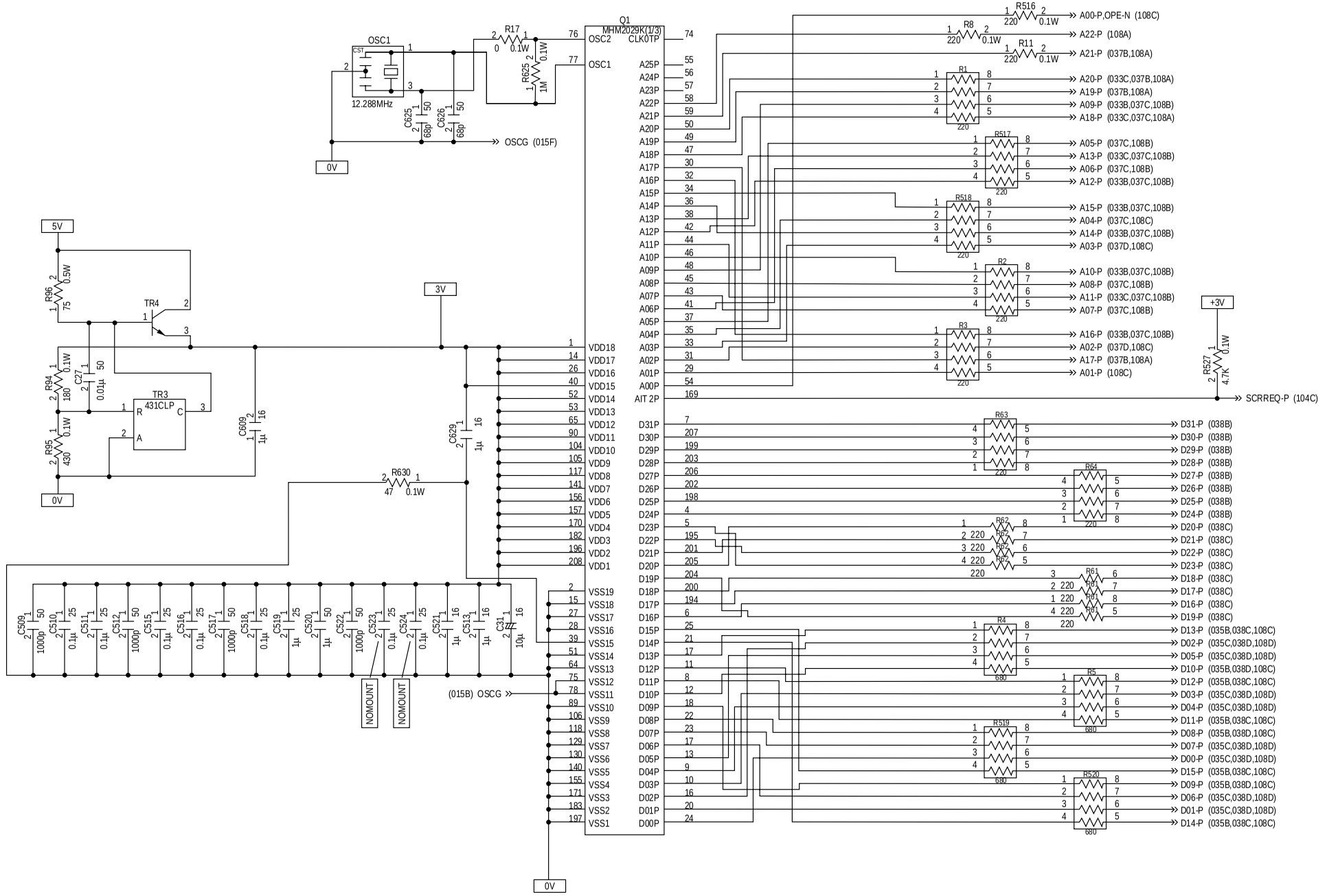
L5C-PCB Rev. 1
Main Control **8/10**



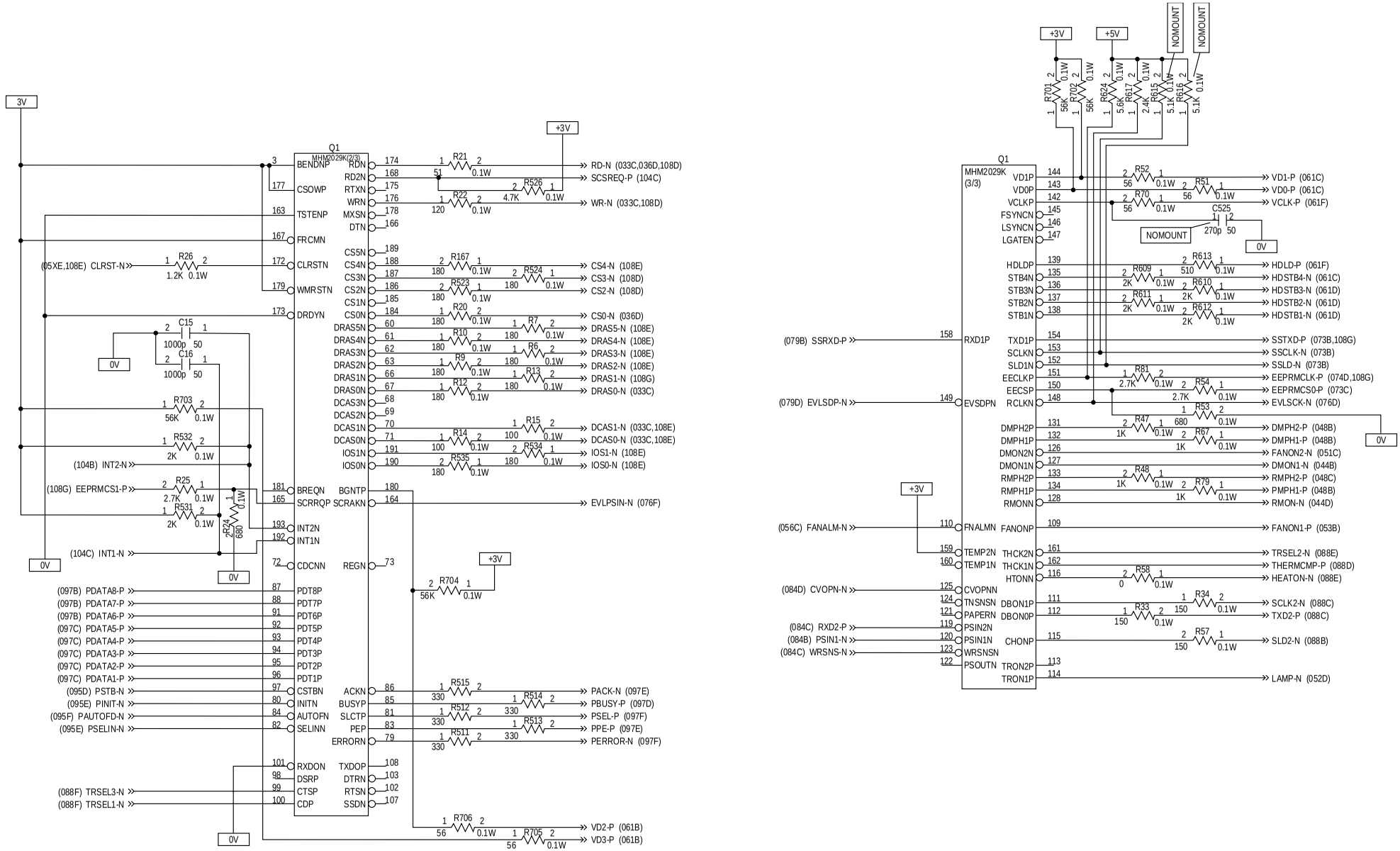
L5C-PCB Rev. 1
Main Control 9/10



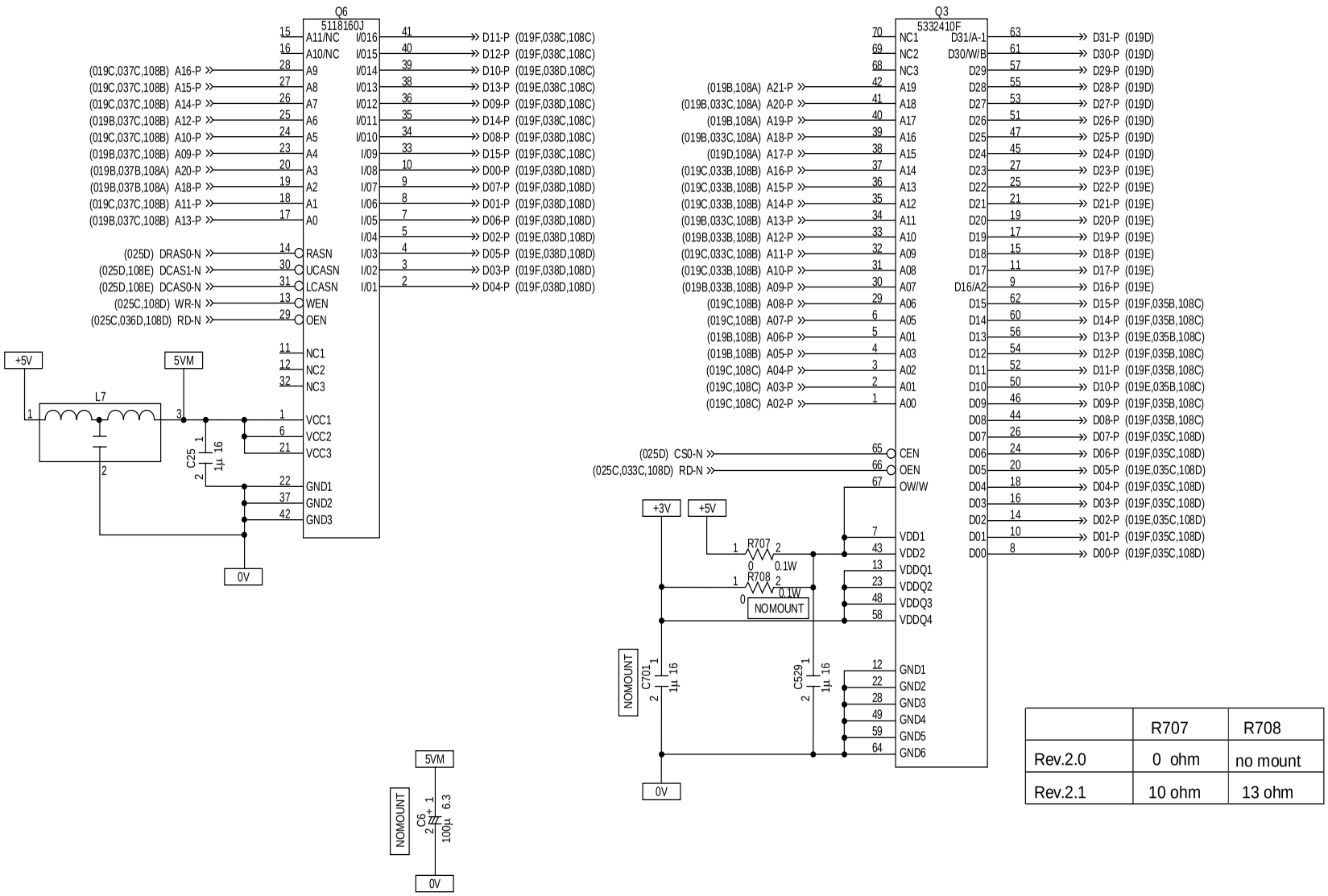
L5C-PCB Rev. 1
Main Control 10/10



L6A-PCB Rev. 2
Main Control **1/10**

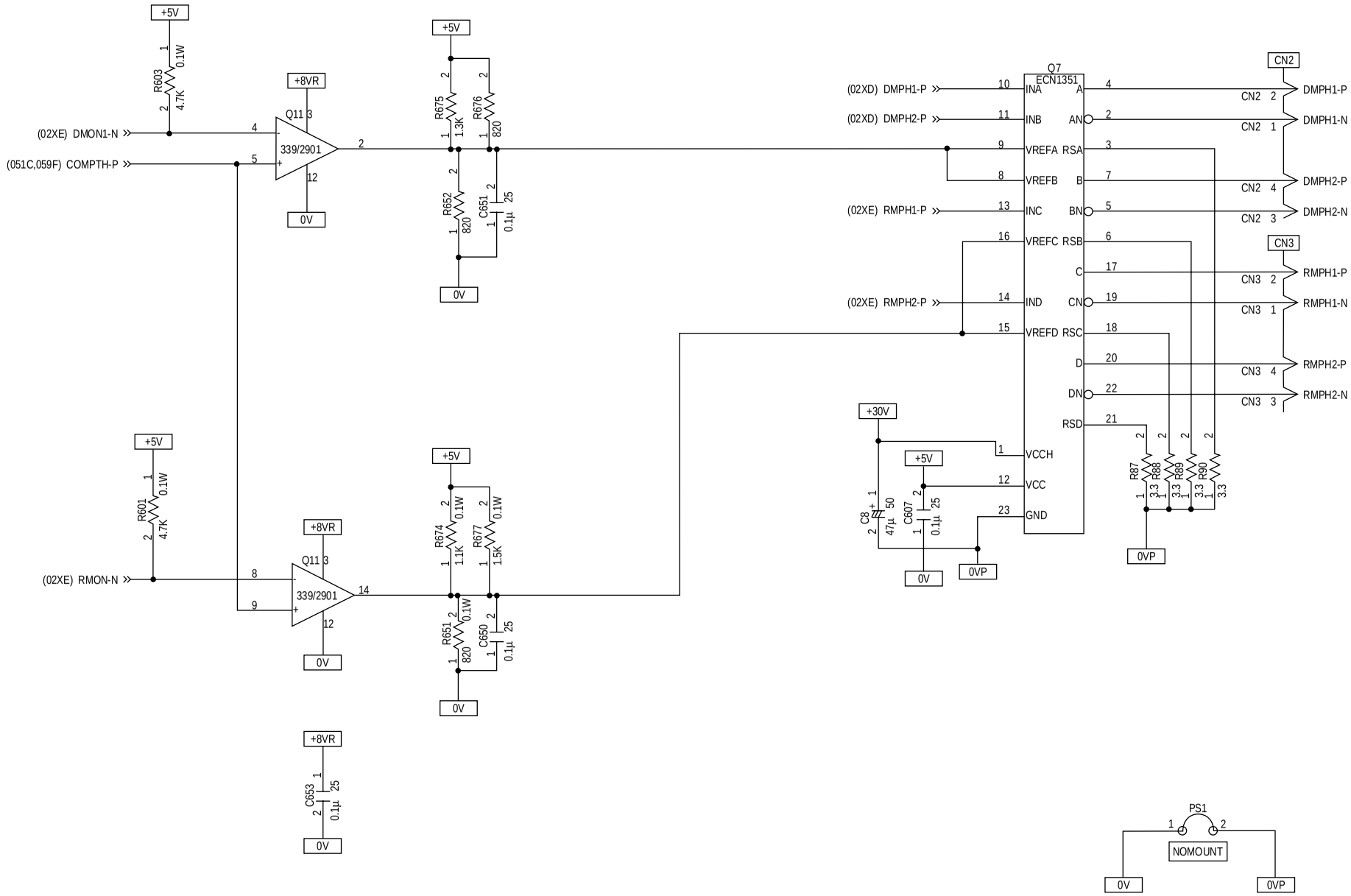


L6A-PCB Rev. 2
Main Control 2/10

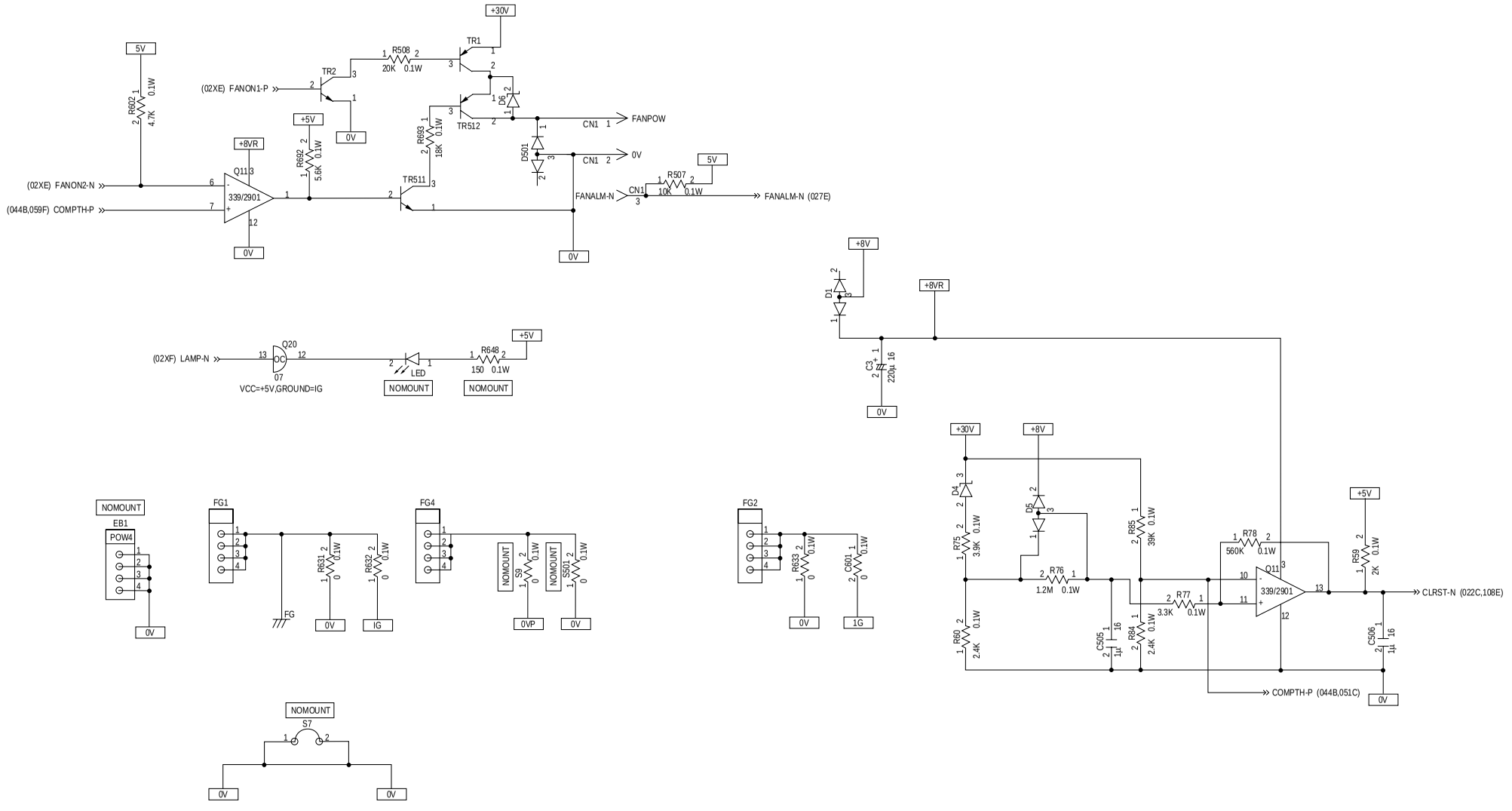


	R707	R708
Rev.2.0	0 ohm	no mount
Rev.2.1	10 ohm	13 ohm

L6A-PCB Rev. 2
Main Control **3/10**

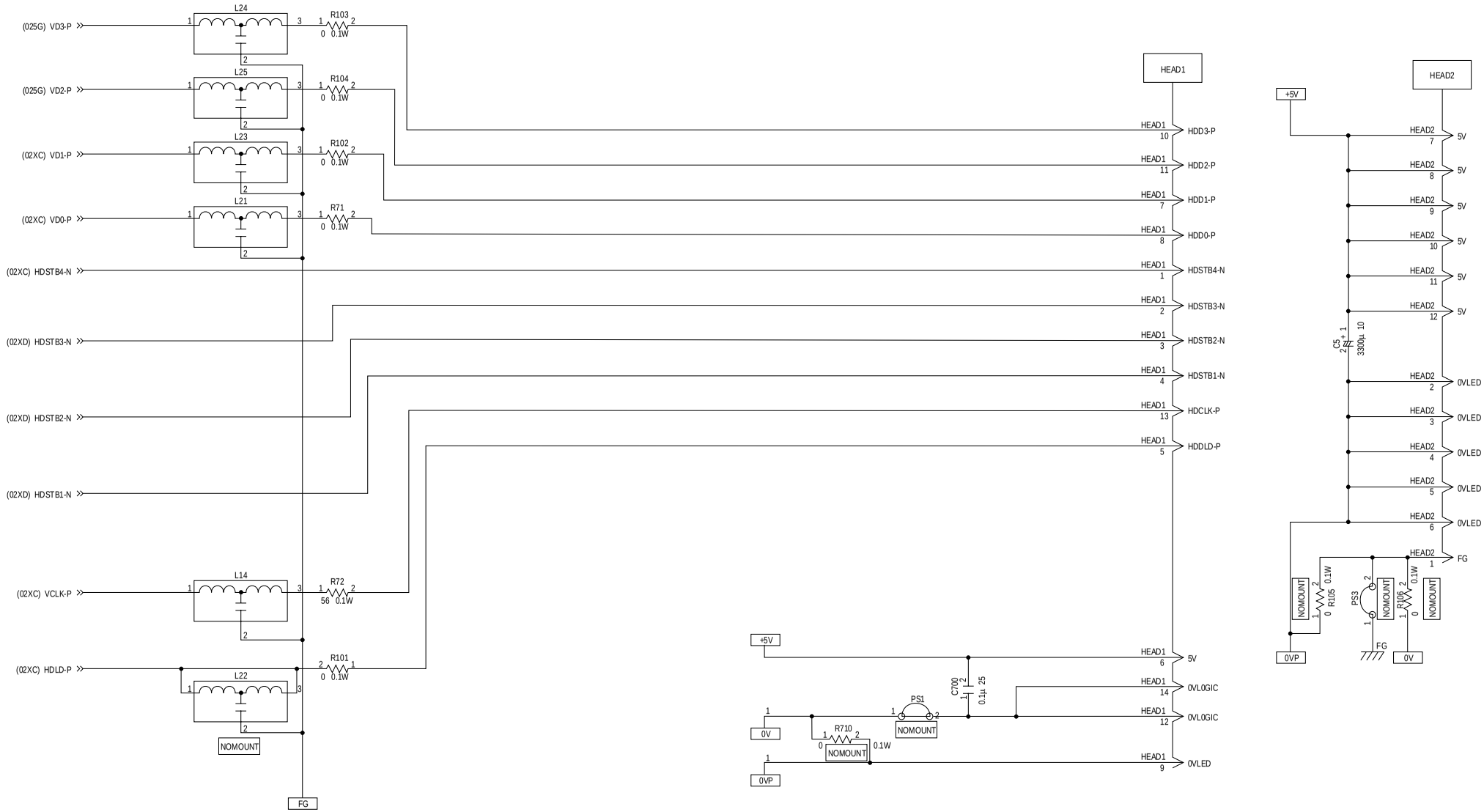


L6A-PCB Rev. 2
Main Control **4/10**

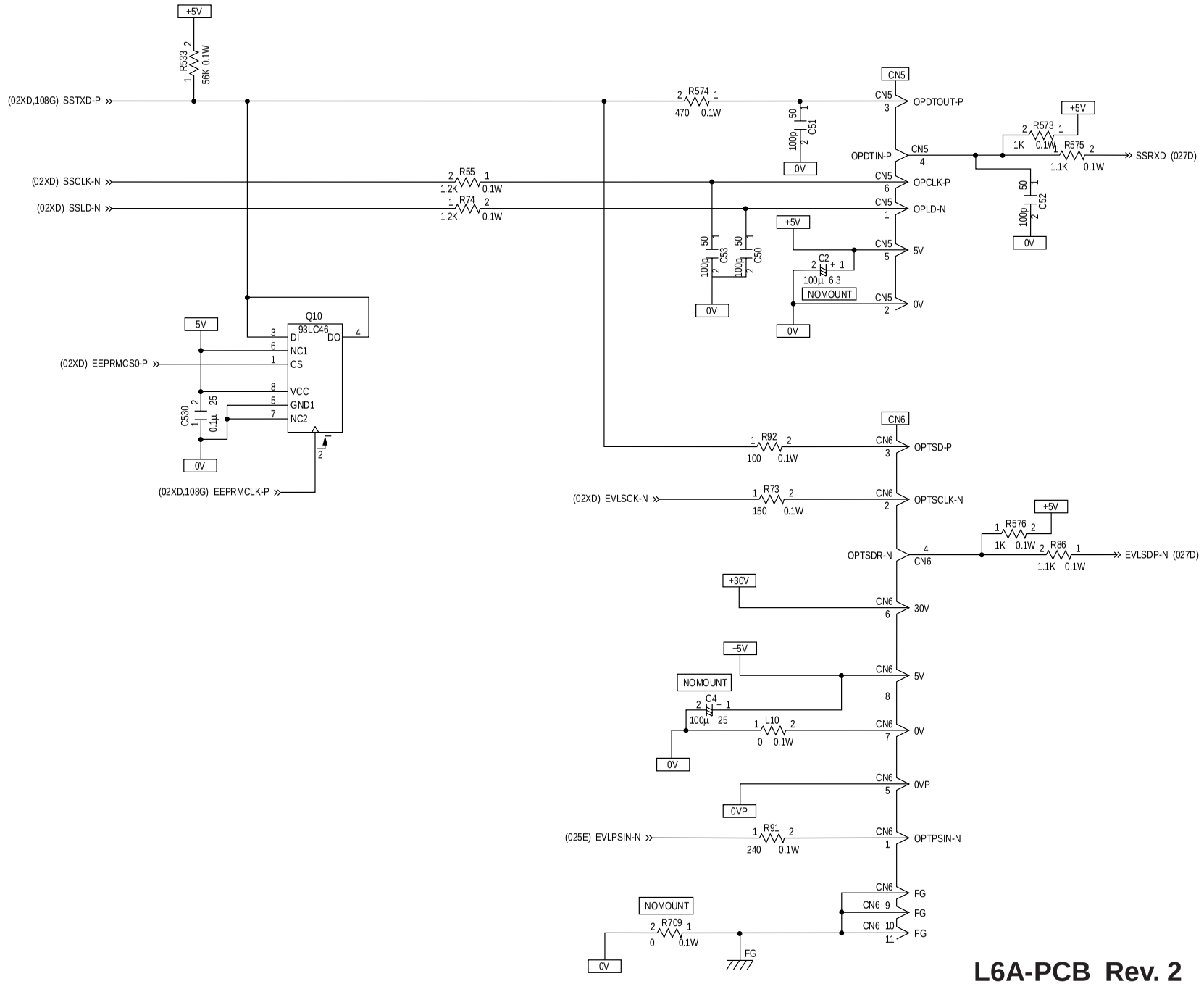


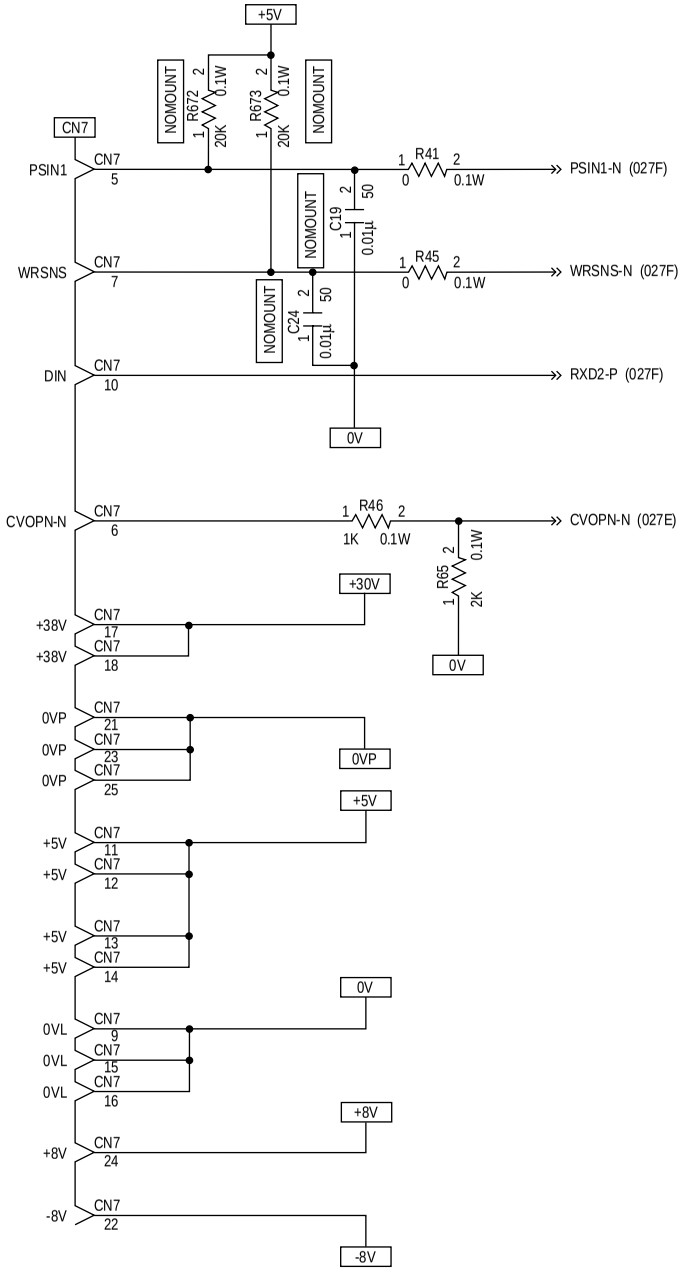
L6A-PCB Rev. 2
Main Control

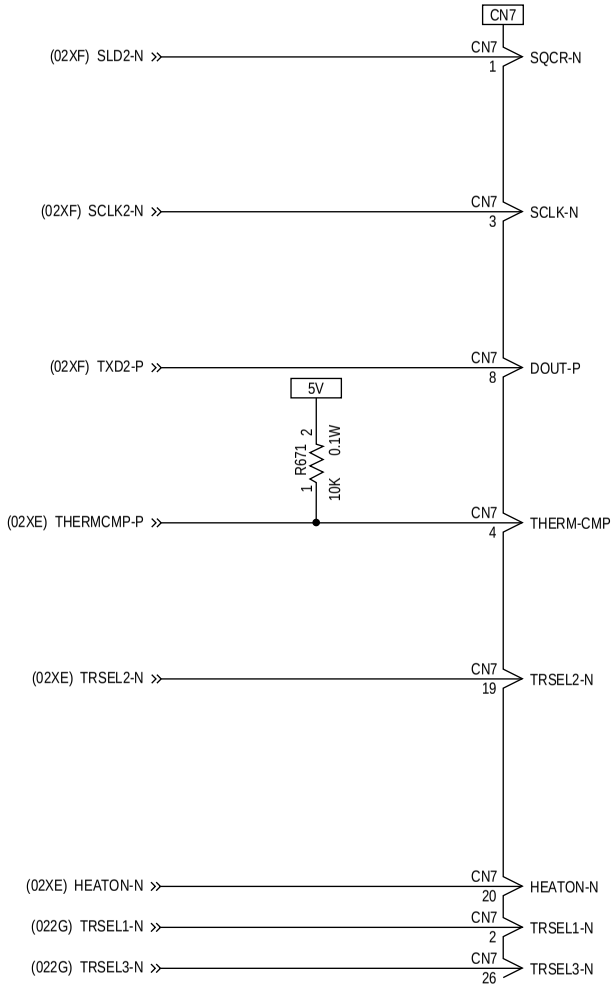
5/10



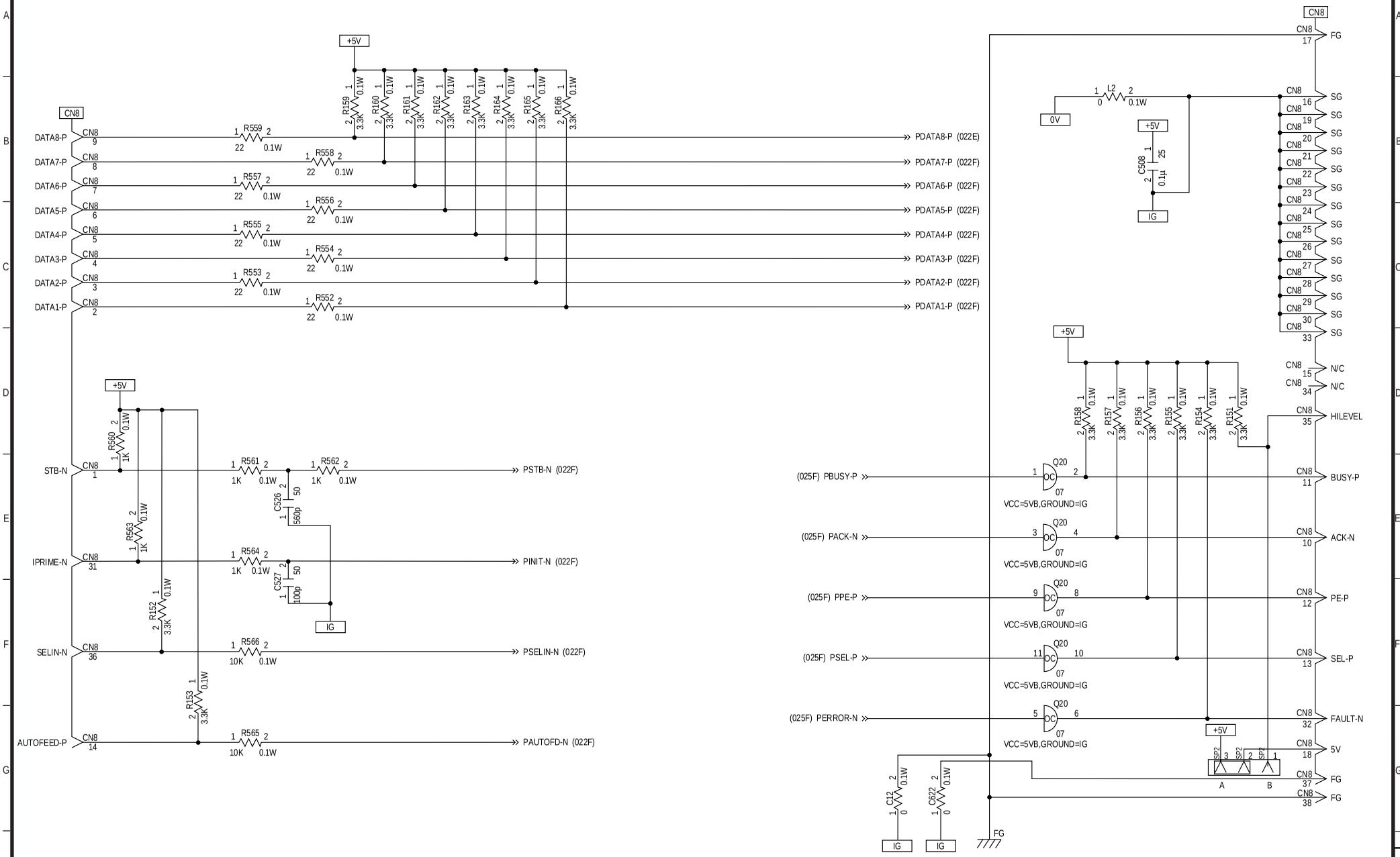
L6A-PCB Rev. 2
Main Control **6/10**


+5V
R533 2 1 56K 0.1W
(02XD,108G) SSTXD-P
(02XD) SSCLK-N
(02XD) SSLD-N
R55 2 1.2K 1 0.1W
R74 1 1.2K 2 0.1W
R574 2 470 1 0.1W
100p 50 2 1 C51
0V
CN5
CN5 3 OPDTOUT-P
CN5 4 OPDTIN-P
CN5 6 OPCLK-P
CN5 1 OPLD-N
CN5 5 5V
CN5 2 0V
R573 2 1K 1 0.1W
R575 2 1.1K 0.1W
SSRXD (027D)
100p 50 2 1 C52
100p 50 2 1 C53
100p 50 2 1 C50
C2 2 + 1 100µ 6.3
NOMOUNT
Q10
93LC46
DI 3
DO 4
NC1 6
CS 1
VCC 8
GND1 5
NC2 7
5V
(02XD) EEPRMCS0-P
C530 2 1 0.1µ 25
(02XD,108G) EEPRMCLK-P
CN6
CN6 3 OPTSD-P
CN6 2 OPTSCK-N
CN6 4 OPTSDR-N
CN6 6 30V
CN6 8 5V
CN6 7 0V
CN6 5 0VP
CN6 1 OPTPSIN-N
CN6 FG
CN6 9 FG
CN6 10 11 FG
R92 1 100 2 0.1W
(02XD) EVLSCK-N
R73 1 150 2 0.1W
R576 2 1K 1 0.1W
R86 2 1.1K 1 0.1W
EVLSDP-N (027D)
+30V
C4 2 + 1 100µ 25
L10 1 0 2 0.1W
0VP
(025E) EVLPSIN-N
R91 1 240 2 0.1W
R709 2 0 1 0.1W
FG
L6A-PCB Rev. 2
Main Control
7/10

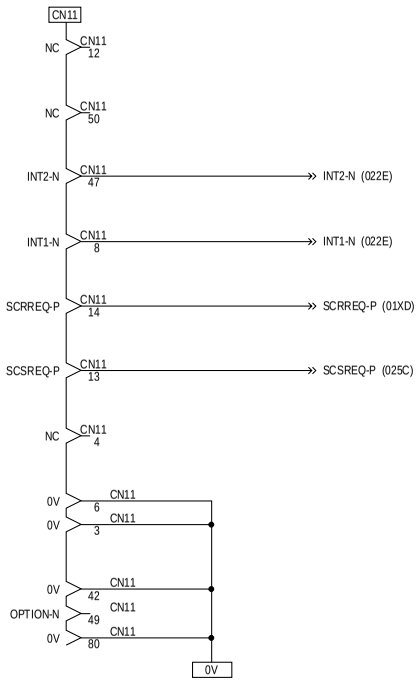


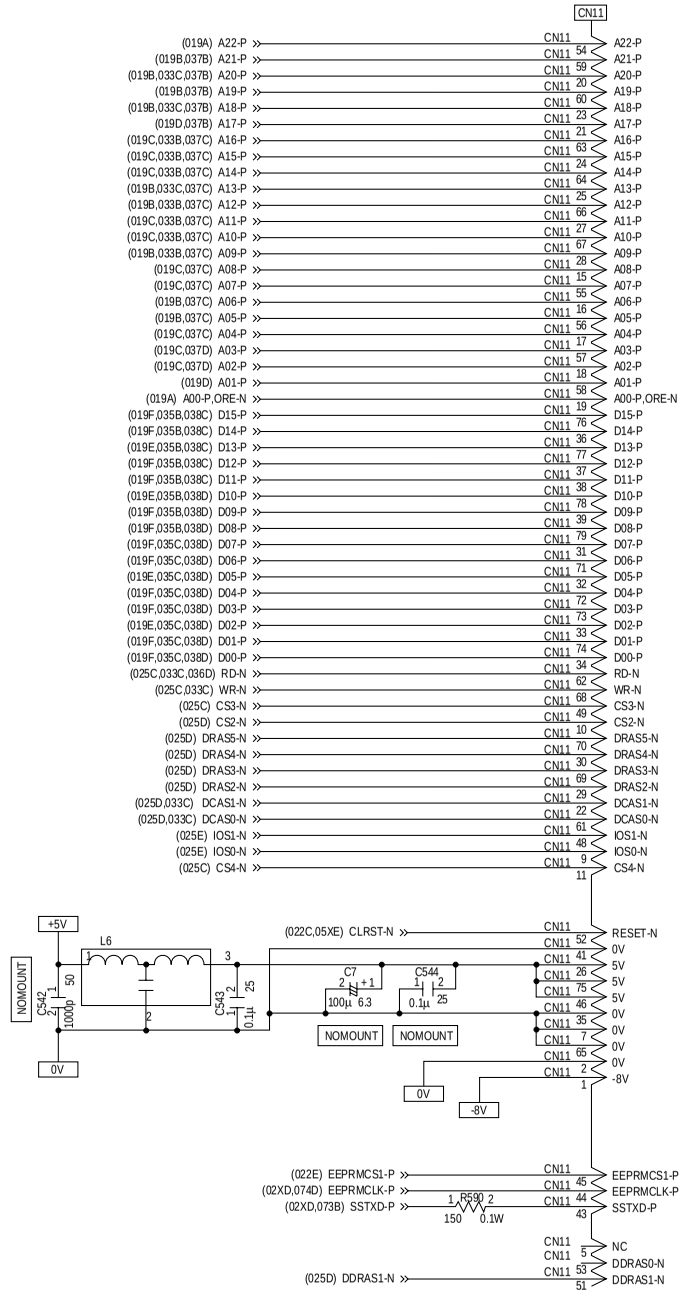


L6A-PCB Rev. 2
Main Control **8/10**

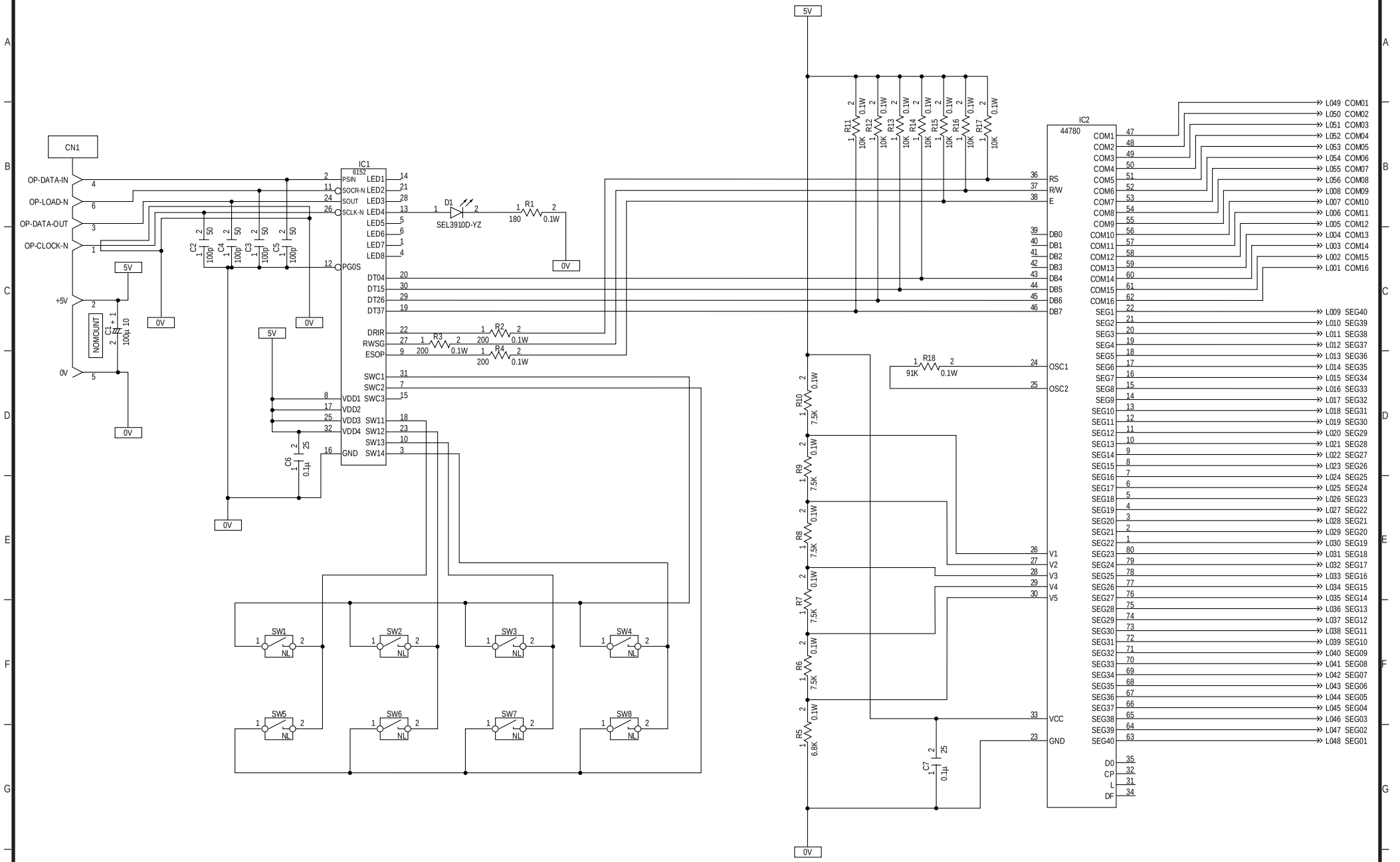


L6A-PCB Rev. 2
Main Control **9/10**



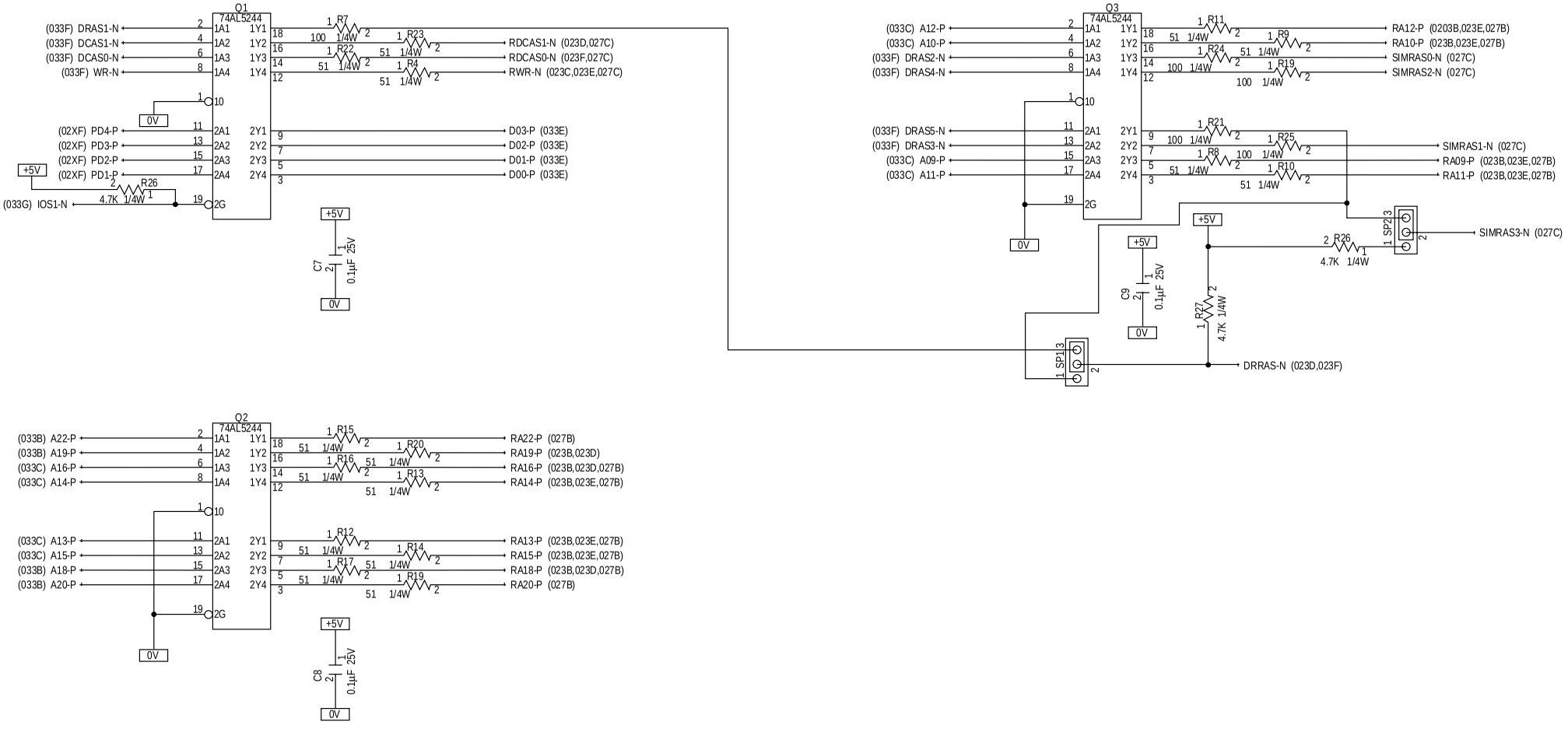


L6A-PCB Rev. 2
Main Control 10/10

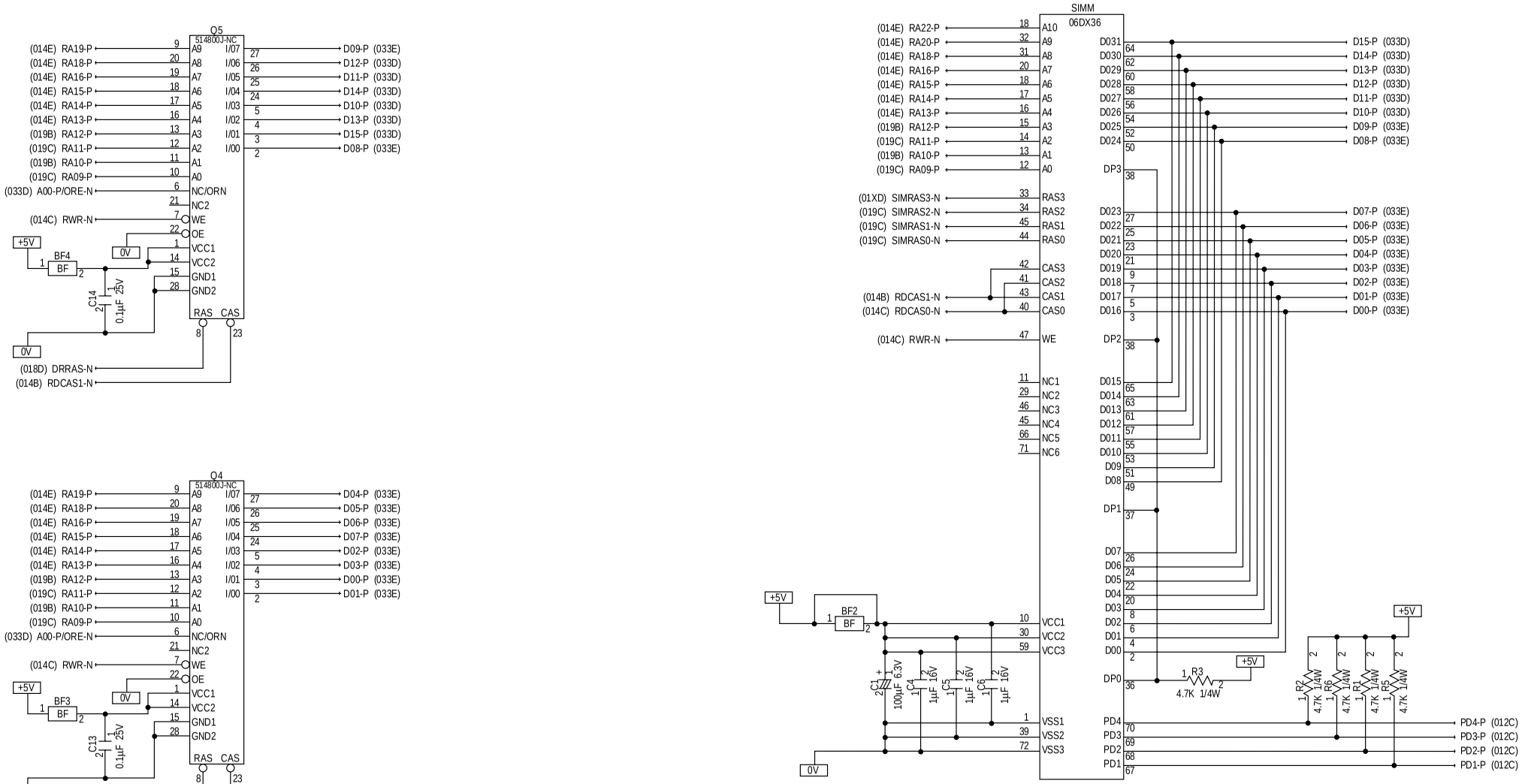


OLCC-2-PCB Rev. 1

Operator Panel 1/1

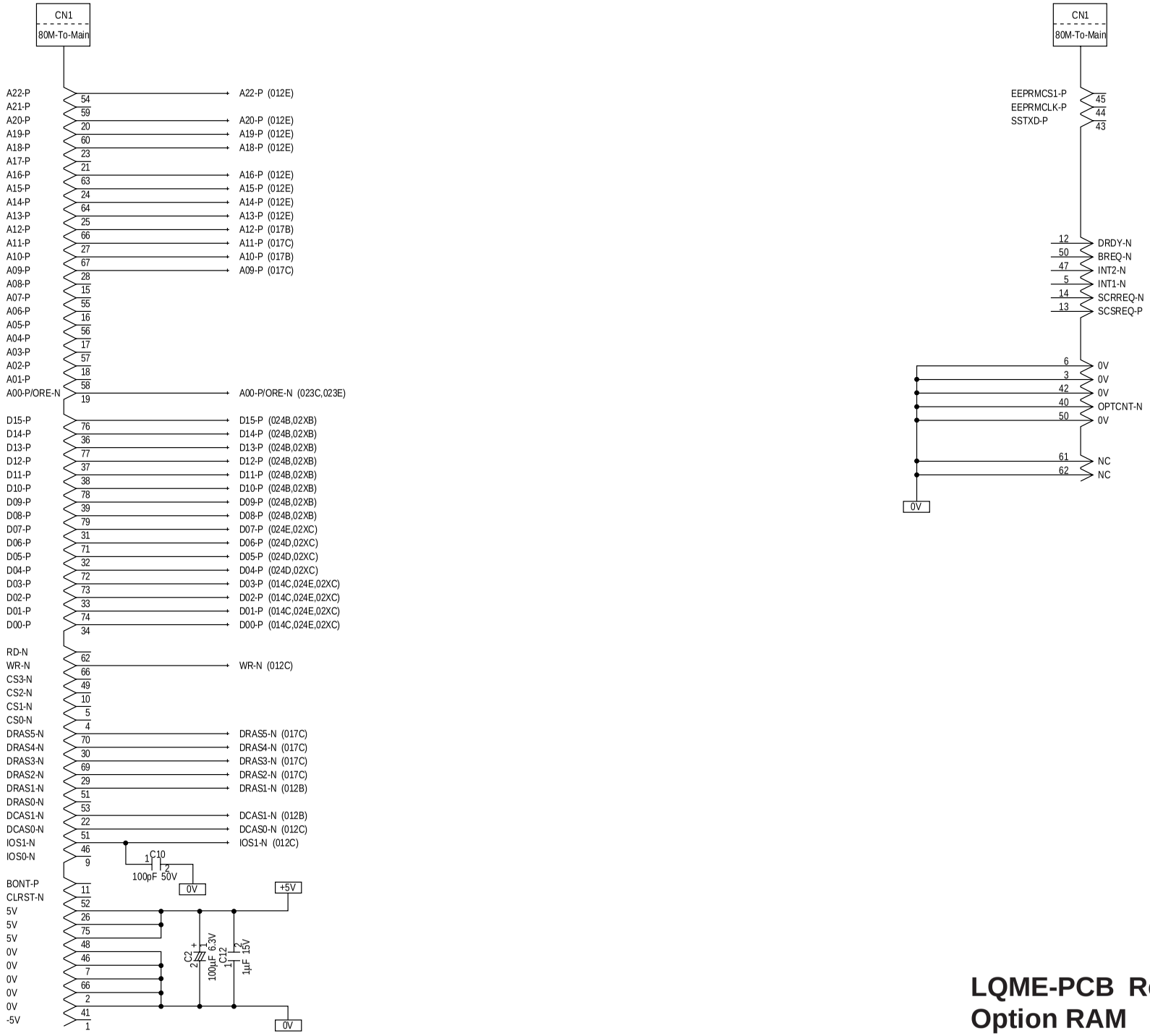


LQME-PCB Rev. 2
Option RAM **1/4**



LQME-PCB Rev. 2

Option RAM **2/4**



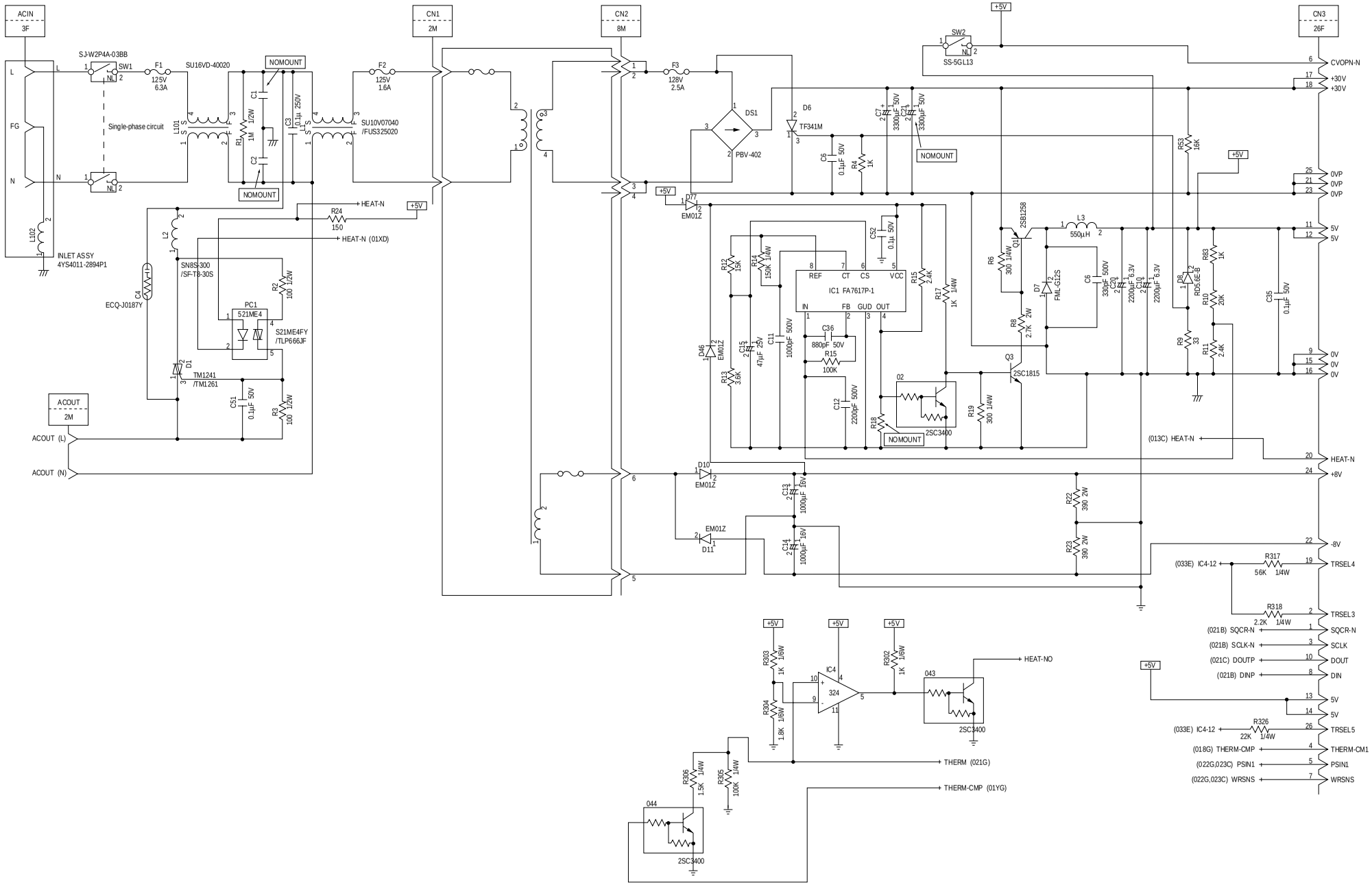
LQME-PCB Rev. 2
Option RAM **3/4**

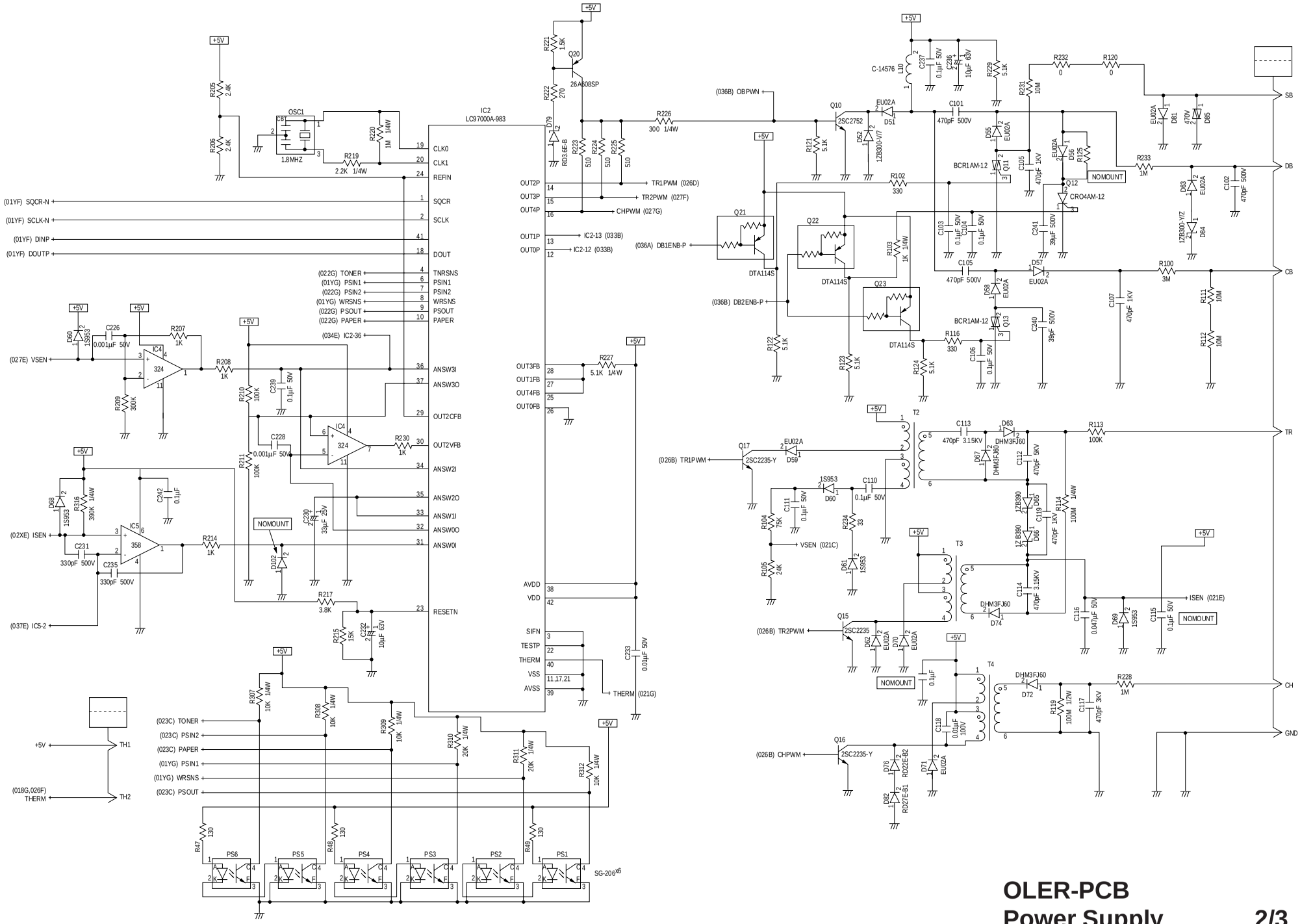
Connector : 80M-To-Main
PART No. : 224A3515P0800
PART Symbol : CN1

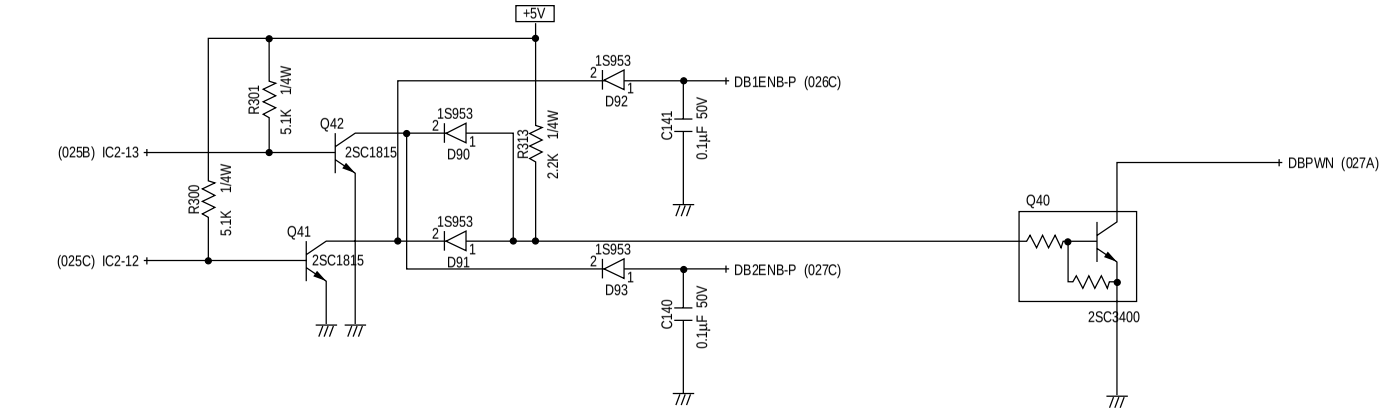
Pin	Signal	Location
1	-8V	033H
2	0V	033G
3	0V	033D
4	CS0-N	033F
5	CS1-N	033F
6	0V	038D
7	0V	033G
8	INT1-N	038C
9	IOS0-N	033G
10	CS2-N	033F
11	BGNT-P	033G
12	DRDY-N	038C
13	SCSREQ-P	038C
14	SCRREQ-N	038C
15	A08-P	033C
16	A06-P	033C
17	A04-P	033D
18	A02-P	033D
19	A00-P/DRE-N	033D
20	A20-P	033B
21	A17-P	033C
22	DCAS1-N	033F
23	A18-P	033B
24	A15-P	033C
25	A13-P	033C
26	5V	033G
27	A11-P	033C
28	A09-P	033C
29	DRAS2-N	033F
30	DRAS4-N	033F
31	D07-P	033E
32	D05-P	033E
33	D02-P	033E
34	D00-P	033E
35	0V	033G
36	D14-P	033D
37	D12-P	033D
38	D11-P	033D
39	D09-P	033E
40	OPTCNT-N	038D
41	0V	033H
42	0V	038D
43	SSTXD-P	039B
44	EEPRMCLK-P	039B
45	EEPRMCS1-P	039B
46	5V	033G
47	INT2-N	038C
48	IOS1-N	033G
49	CS3-N	033F
50	BREQ-N	038C

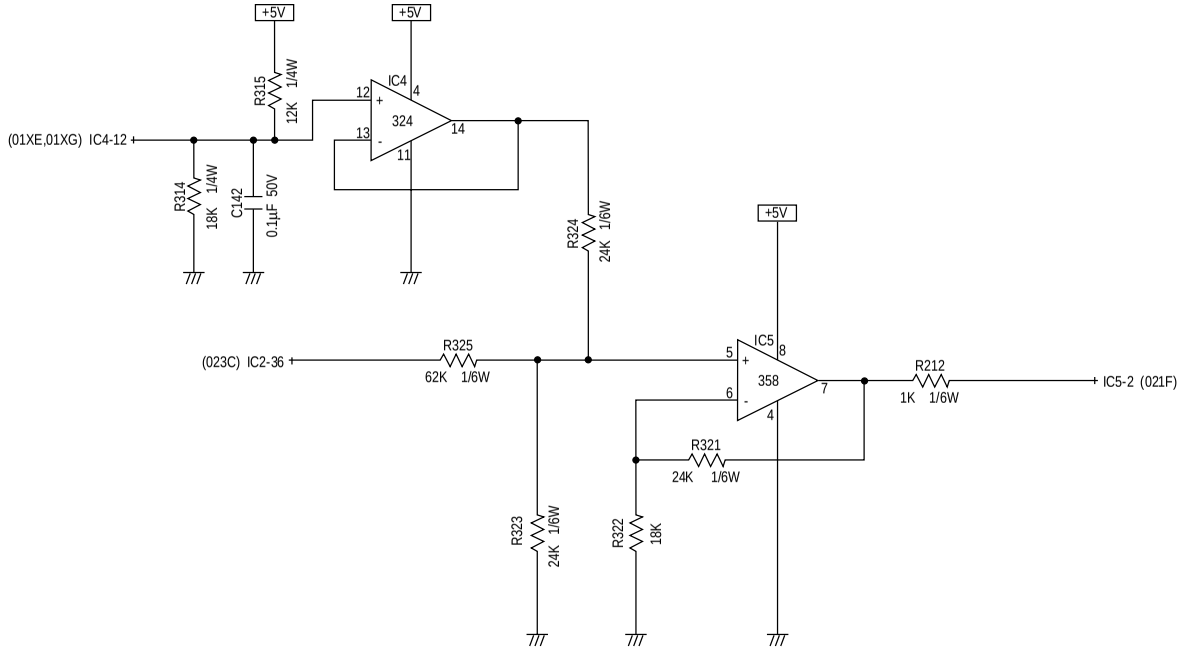
Pin	Signal	Location
51	DRAS1-N	033F
52	CLRST-N	033G
53	DRAS0-N	033F
54	A22-P	033B
55	A07-P	033C
56	A05-P	038D
57	A03-P	033D
58	A01-P	038D
59	A21-P	033B
60	A19-P	033B
61	DCAS0-N	033F
62	RD-N	038E
63	A16-P	033C
64	A14-P	033C
65	0V	033G
66	A12-P	033C
67	A10-P	033C
68	WR-N	033F
69	DRAS3-N	033F
70	DRAS5-N	033F
71	D06-P	033E
72	D04-P	033E
73	D03-P	033E
74	D01-P	033E
75	5V	033G
76	D15-P	033D
77	D13-P	033D
78	D10-P	033D
79	D08-P	033E
80	0V	038D
81	NC	038D
82	NC	038D

LQME-PCB Rev. 2
Option RAM **4/4**

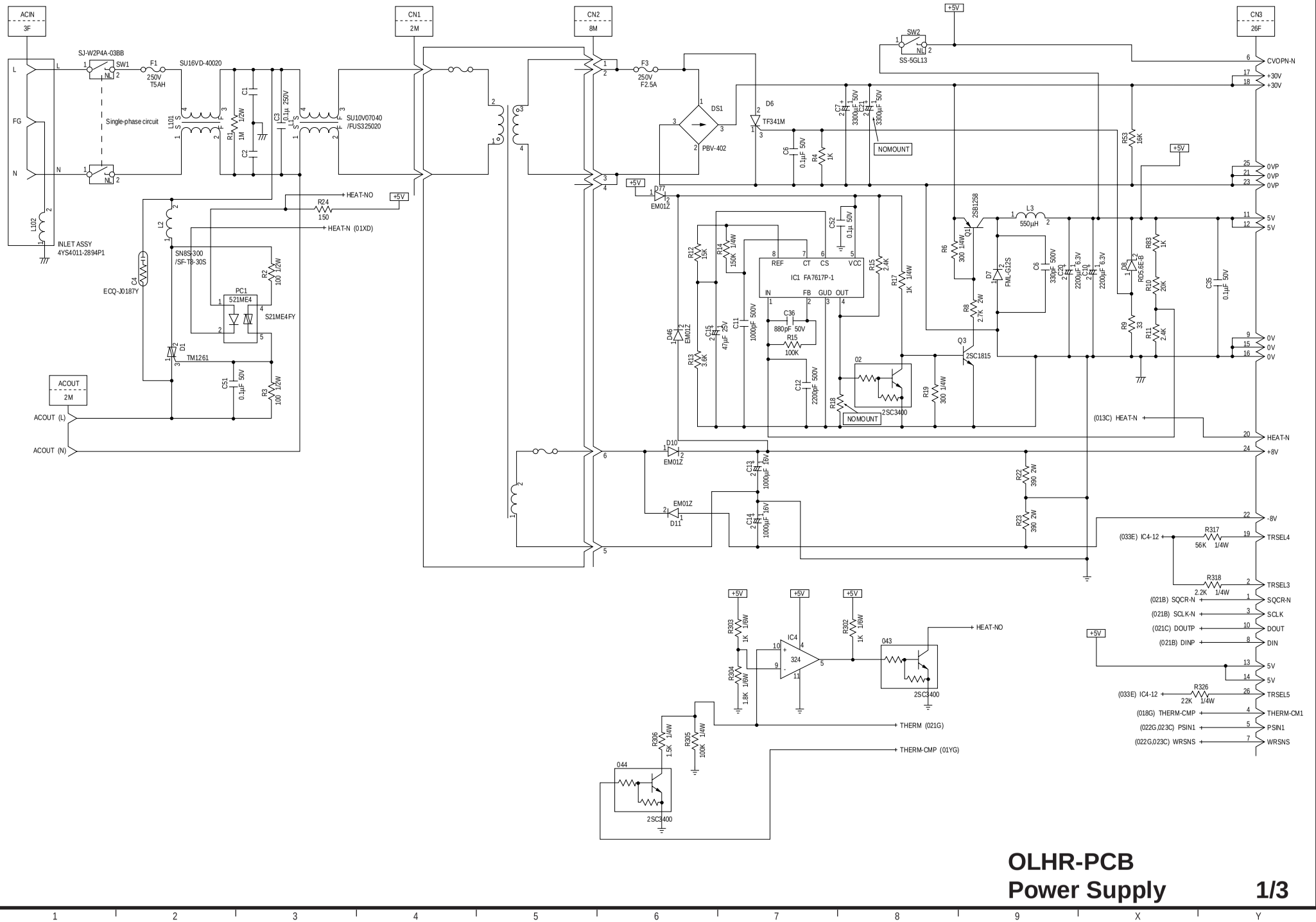

ACIN
3F
SJ-W2P4A-03BB
SW1
F1
125V
6.3A
SU16VD-40020
NOMOUNT
F2
125V
1.6A
CN1
2M
CN2
8M
F3
128V
2.5A
DS1
PBV-402
D6
TF341M
SW2
SS-5GL13
CN3
26F
Single-phase circuit
SU10V07040
/FUS325020
INLET ASSY
4YS4011-2894P1
SN8S300
/SF-T8-30S
ECQ-J0187Y
PC1
521ME4
S21ME4FY
/TLP666JF
TM1241
/TM1261
HEAT-N
HEAT-N (01XD)
ACOUT
2M
ACOUT (L)
ACOUT (N)
IC1 FA7617P-1
REF
CT
CS
VCC
IN
FB
GUD
OUT
2SB1258
2SC1815
2SC3400
FML-G12S
EM01Z
R05.6E-B
550µH
CVOPN-N
+30V
0VP
5V
0V
HEAT-N
+8V
-8V
TRSEL4
TRSEL3
SQCR-N
SCLK
DOUT
DIN
TRSEL5
THERM-CM1
PSIN1
WRSNS
(033E) IC4-12
(021B) SQCR-N
(021B) SCLK-N
(021C) DOUTP
(021B) DINP
(013C) HEAT-N
(018G) THERM-CMP
(022G,023C) PSIN1
(022G,023C) WRSNS
IC4
324
HEAT-NO
THERM (021G)
THERM-CMP (01YG)
2SC3400
OLER-PCB
Power Supply
1/3


OLER-PCB
Power Supply
2/3

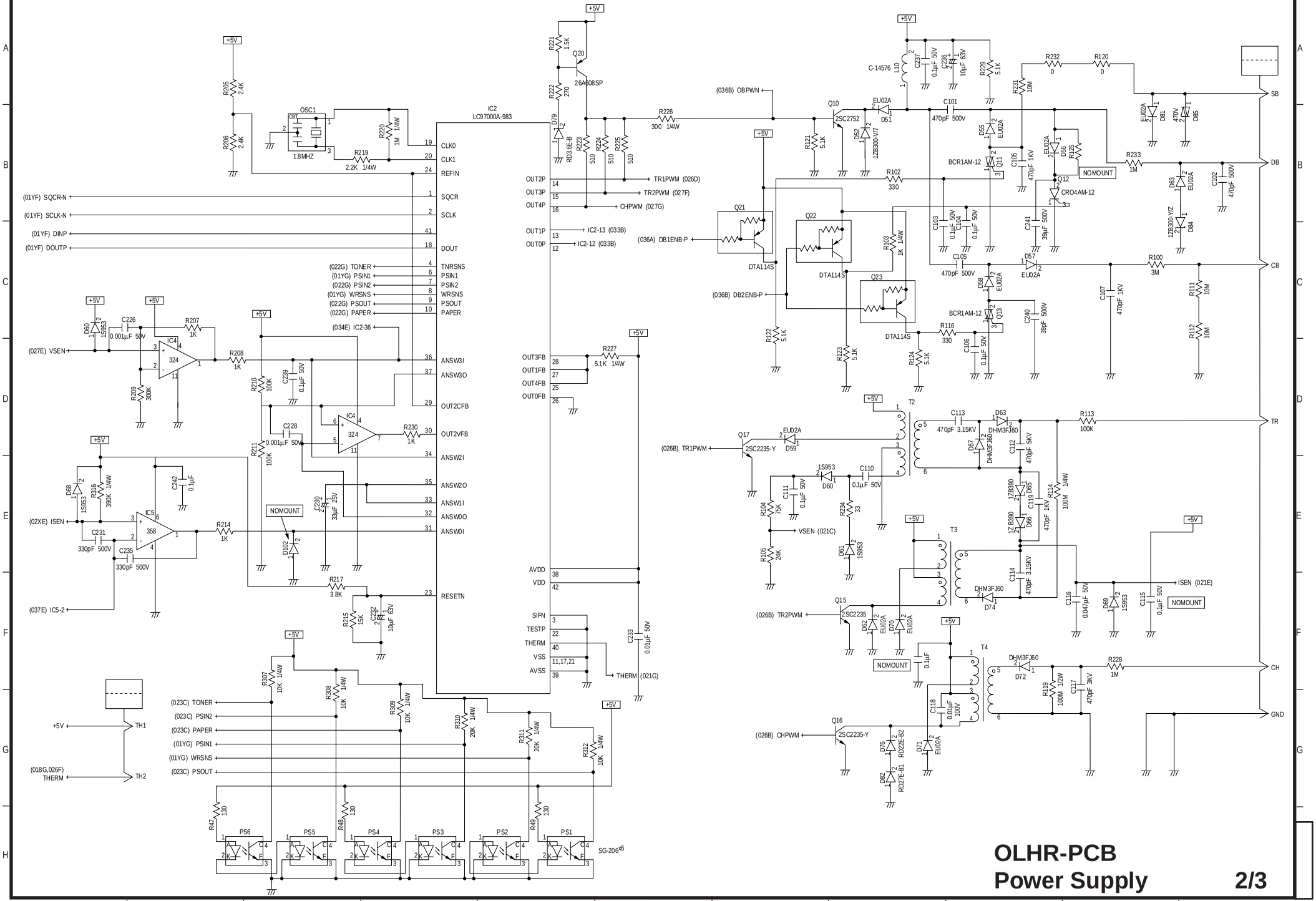


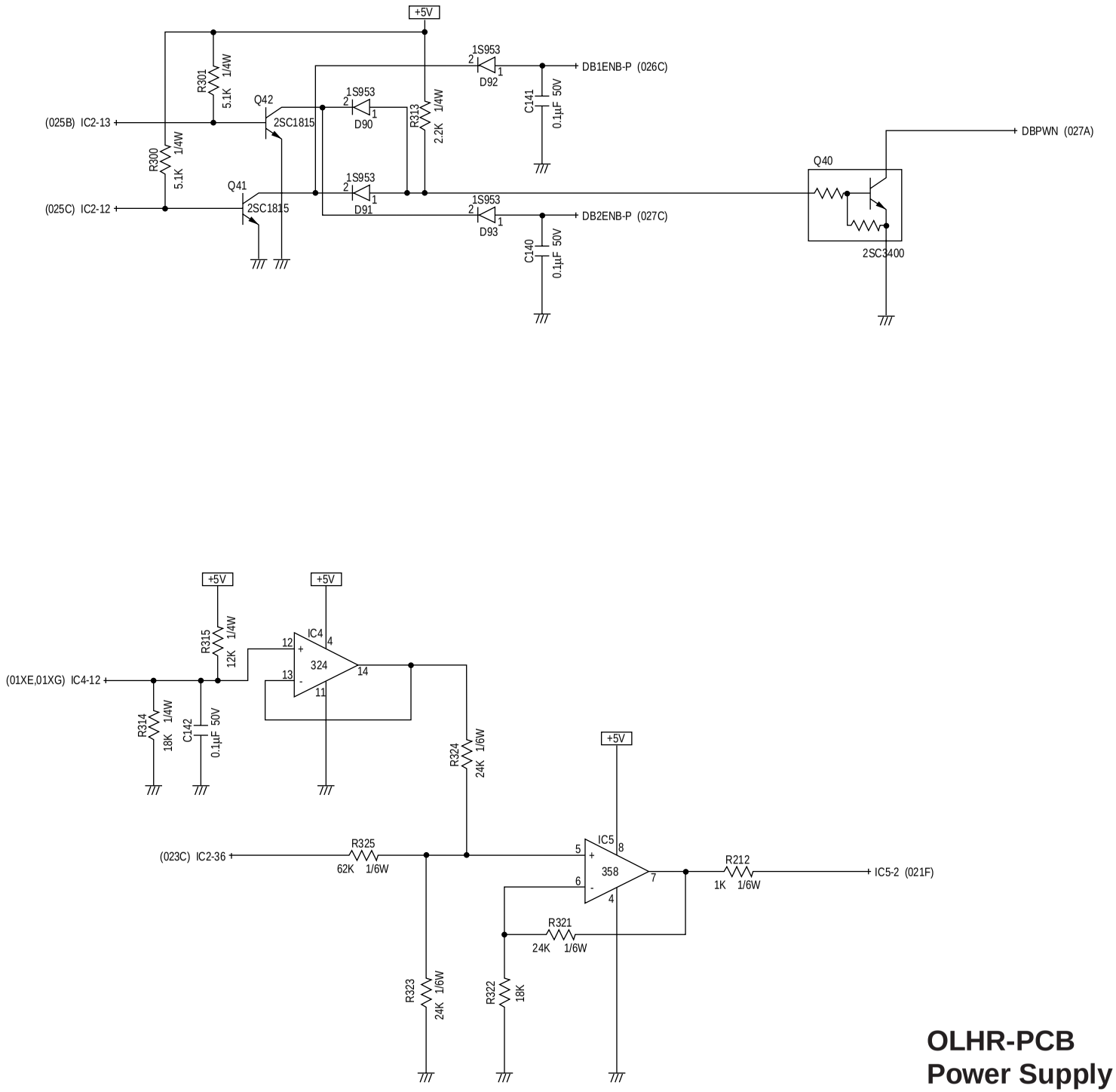


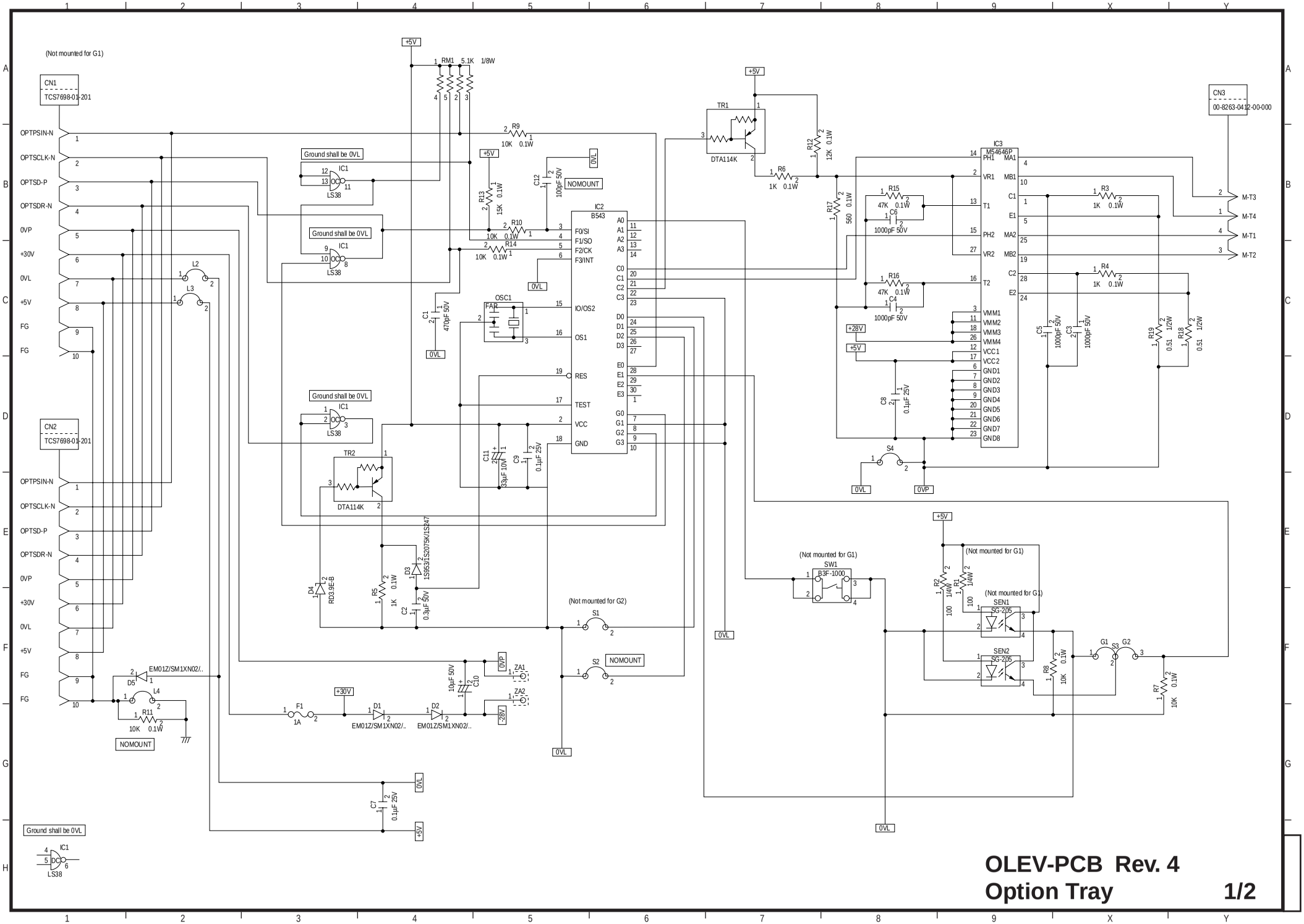
OLER-PCB
Power Supply **3/3**



OLHR-PCB
Power Supply 1/3


OLHR-PCB
Power Supply
2/3
IC2
LC97000A-983
OSC1
1.8MHZ
Q20
2SA608SP
Q10
2SC2752
Q21
Q22
Q23
DTA114S
Q11
BCR1AM-12
Q12
CRO4AM-12
Q13
BCR1AM-12
Q17
2SC2235-Y
Q15
2SC2235
Q16
2SC2235-Y
T2
T3
T4
IC4
IC5
PS1
PS2
PS3
PS4
PS5
PS6
SG-206X6
NOMOUNT
+5V
SB
DB
CB
TR
CH
GND
TH1
TH2
(01YF) SQCR-N
(01YF) SCLK-N
(01YF) DINP
(01YF) DOUTP
(022G) TONER
(01YG) PSIN1
(022G) PSIN2
(01YG) WRSNS
(022G) PSOUT
(022G) PAPER
(034E) IC2-36
(027E) VSEN
(02XE) ISEN
(037E) IC5-2
(036B) OBPWN
(036A) DB1ENB-P
(036B) DB2ENB-P
(026B) TR1PWM
(026B) TR2PWM
(026B) CHPWM
VSEN (021C)
ISEN (021E)
(023C) TONER
(023C) PSIN2
(023C) PAPER
(01YG) PSIN1
(01YG) WRSNS
(023C) PSOUT
(018G,026F) THERM
THERM (021G)
IC2-13 (033B)
IC2-12 (033B)
TR1PWM (026D)
TR2PWM (027F)
CHPWM (027G)


+5V
R301 5.1K 1/4W
R300 5.1K 1/4W
Q42 2SC1815
Q41 2SC1815
(025B) IC2-13
(025C) IC2-12
1S953 D90
1S953 D91
1S953 D92
1S953 D93
R313 2.2K 1/4W
C141 0.1µF 50V
C140 0.1µF 50V
DB1ENB-P (026C)
DB2ENB-P (027C)
Q40
2SC3400
DBPWN (027A)
+5V
R315 12K 1/4W
IC4 324
(01XE,01XG) IC4-12
R314 18K 1/4W
C142 0.1µF 50V
R324 24K 1/6W
(023C) IC2-36
R325 62K 1/6W
IC5 358
R212 1K 1/6W
IC5-2 (021F)
R321 24K 1/6W
R323 24K 1/6W
R322 18K
OLHR-PCB
Power Supply
3/3


(Not mounted for G1)
CN1
TCS7698-01-201
OPTPSIN-N
OPTSCLK-N
OPTSD-P
OPTSDR-N
0VP
+30V
0VL
+5V
FG
FG
CN2
TCS7698-01-201
RM1 5.1K 1/8W
R9 10K 0.1W
R10 10K 0.1W
R14 10K 0.1W
R13 15K 0.1W
C12 100pF 50V
NOMOUNT
Ground shall be 0VL
IC1 LS38
IC2 B543
F0/SI
F1/SO
F2/CK
F3/INT
IO/OS2
OS1
RES
TEST
VCC
GND
A0
A1
A2
A3
C0
C1
C2
C3
D0
D1
D2
D3
E0
E1
E2
E3
G0
G1
G2
G3
OSC1
FAR
C1 470pF 50V
TR2
DTA114K
C11 33μF 10V
C9 0.1μF 25V
D4 RD3.9E-B
D3 1SS53/1S2075K/1S247
R5 1K 0.1W
C2 0.3μF 50V
L2
L3
L4
D5 EM01Z/SM1XN02/..
R11 10K 0.1W
F1 1A
D1 EM01Z/SM1XN02/..
D2 EM01Z/SM1XN02/..
C10 10μF 50V
ZA1
ZA2
+30V
-28V
(Not mounted for G2)
S1
S2
C7 0.1μF 25V
TR1
DTA114K
R6 1K 0.1W
R12 12K 0.1W
R17 560 0.1W
IC3 M54646P
PH1
VR1
T1
PH2
VR2
T2
VMM1
VMM2
VMM3
VMM4
VCC1
VCC2
GND1
GND2
GND3
GND4
GND5
GND6
GND7
GND8
MA1
MB1
C1
E1
MA2
MB2
C2
E2
R15 47K 0.1W
C6 1000pF 50V
R16 47K 0.1W
C4 1000pF 50V
R3 1K 0.1W
R4 1K 0.1W
C5 1000pF 50V
C3 1000pF 50V
R19 0.51 1/2W
R18 0.51 1/2W
C8 0.1μF 25V
+28V
S4
CN3
00-8263-0412-00-000
M-T3
M-T4
M-T1
M-T2
(Not mounted for G1)
SW1 B3F-1000
R2 100 1/4W
R1 100 1/4W
SEN1 SG-205
SEN2 SG-205
R8 10K 0.1W
R7 10K 0.1W
S3
G1
G2
OLEV-PCB Rev. 4
Option Tray
1/2

Connector Name : 00-8263-0412-00-00
Part Number : 224A3357P0040
Part Symbol : CN3

Pin No.	Signal Name	Location	
1	M-T4	01YB	
2	M-T3	01YB	
3	M-T2	01YC	
4	M-T1	01YB	

Connector Name : TCS7698-01-201
Part Number : 221A1622P0082
Part Symbol : CN1

Pin No.	Signal Name	Location	
1	OPTPSIN-N	012B	
2	OPTSCLK-N	012B	
3	OPTSD-P	012B	
4	OPTSDR-N	012B	
5	0VP	012B	
6	+30V	012C	
7	0VL	012C	
8	+5V	012C	
9	FG	012C	
10	FG	012C	

Connector Name : TCS7698-01-201
Part Number : 221A1622P0082
Part Symbol : CN2

Pin No.	Signal Name	Location	
1	OPTPSIN-N	012D	
2	OPTSCLK-N	012E	
3	OPTSD-P	012E	
4	OPTSDR-N	012E	
5	0VP	012E	
6	+30V	012E	
7	0VL	012F	
8	+5V	012F	
9	FG	012F	
10	FG	012F	

OKI

People to People Technology

Oki Data Corporation

4-11-22, Shibaura, Minato-ku,
Tokyo 108, Japan
Tel: (03) 5445-6162 Fax: (03) 5445-6189