LASER PRINTER
Phaser 3110
Phaser 3210

SERVICE *Manual*

LASER PRINTER

CONTENTS

1. Precautions

Please read the following carefully to prevent any accidents and not to damage the unit during service.

1-1 Safety Precautions

1. **Safety Precautions**
   There are some electric or machinery parts with safety related property. If the parts replaced are different from the original, the safety may not function. Even if the part could allow higher voltage than that of the part used, do not replace it and use a regular product clarified in specifications.

2. Be careful not to leave a switch, a cover or a safety device out when reinstalling or assembling the product after repair.

3. **Replacing Precautions**
   Do not change or add parts as you like. You cannot benefit from such a remodeled product at your will during the term of guarantee.

4. You must replace overheated or damaged parts or cords with regular products. Please solve the problem causing any damage or overheating and troubles beforehand.

> **Especially mind the safety on the part with this mark.**
> You must use regular parts described in specifications for the parts inflammable and where the current can be flown. Otherwise any hazard such as an electric shock or a fire could occur.

LASER STATEMENT (LASERTURVALLISUUS)

WARNING : NEVER OPERATE AND SERVICE THE PRINTER WITH THE PROTECTIVE COVER REMOVED FROM LASER/SCANNER ASSEMBLY. THE REFLECTIVE BEAM, ALTHOUGH INVISIBLE, CAN DAMAGE YOUR EYES.

Class 1 laser product

Luokan 1 laserlaite
Klass 1 laser apparat

Allonpituus 770-795nm
Teho 0.3mW±0.03mW

⚠	**CAUTION**	INVISIBLE LASER RADIATION WHEN THIS COVER OPEN. DO NOT OPEN THIS COVER.
	VORSICHT	UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEOFFNET. NIGHT DEM STRAHL AUSSETZEN.
ATTENTION		REYONNEMENT LASER INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGERUSE AU FAISCEAU.
ATTENZIONE		RADIAZIONE LASER INVISIBLE IN CASO DI APERTURA. EVITARE L'ESPOSIZONE LA FASCIO.
PRECAUCION		REDIACION LASER INVISIBLE CUANDO SE ABRE. EVITAR EXPONERSE AL RAYO.

CAUTION : Avoid exposure to invisible laser radiation when the development unit is not installed.

1-2 Precautions on Disassembly and Reassembly

Very careful precautions should be taken when replacing parts. Before replacing, please check cables because you cannot put the cables that you removed for replacing parts into the proper place if you would not make sure of where they were connected and in which condition.

Please do the following before disassembling for a repair or replacement of parts.
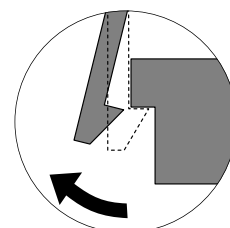
1. Pull out paper cassette, printer cartridge installed. Especially careful not to be scratched by the surface of developer or not to expose them to light.
2. Turn the power switch off.
3. Take out the power plug, printer cable from the printer.
4. Use only the same type of part as original when replacing parts.
5. Do not force to open or fasten plastic material components.
6. Be careful that small parts such as screws should not get in the printer.

7. When disassembling, assembling, also observe small components are located in place.
8. If you uncover and turn the machine over to replace some parts, toner or paper particles may contaminate the LSU window. Protect the LSU window with clean paper.

Releasing Plastic Latches
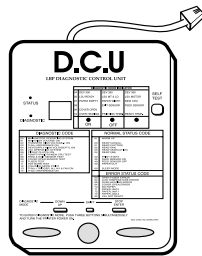
Many of parts are held in place with plastic latches. The latches break easily : release them carefully. To remove such parts, press the hook end of the latch away from the part to which it is latched.
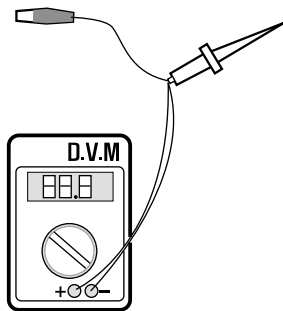
1-3 Tools for Troubleshooting

The following tools are recommended for safe and smooth troubleshooting described in this service manual.
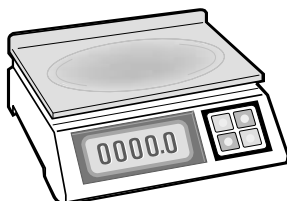
1 **DCU(Diagnostic Control Unit)**
Standard: Test equipment to diagnose the Laser printer supplied by Samsung Electronics.
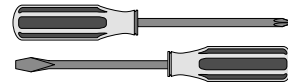
2 **DVM(Digital Volt Meter)**
Standard: Indicates more than 3 digits.

3 **Electronic Scale**
Standard: Equipment to check the weight of consumables(toner cartridge) supplied by Samsung Electronics. (The gram unit can be measured.)

4 **Driver**
Standard: "-" type, "+" type (M3 long, M3 short, M2 long, M2 short).

5 **Pinset**
Standard: For general home use, small type.
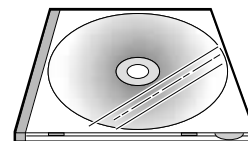
6 **Cotton Swab**
Standard: For general home use, for medical service.

7 **Cleaning Equipments a IPA(Isopropyl Alcohol)dry cloth or a soft stuff neutral detergent.**

8 **Software(Driver) installation CD ROM**

⚠ **Note** Mind your hands not to be touched when you disassemble and reassemble PBA ASS'Y, such as the main board, SMPS, HVPS.

2. Specifications
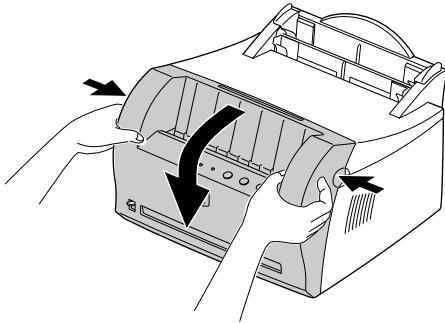
		Phaser 3110	Phaser 3210
Engine	Speed	10 ppm	12 ppm
	Resolution	600 x 600 dpi	1200 dpi image quality true 600 x 600 dpi
	Fist Printing Time)	Under 13 sec	
	Warm-Up Time	Under 30 sec	
	Power Consumption	Under 10 W	
	Acoustic Noise	Under 47 dB	
	Dimension	329 X 348 X 224 mm (13" x 13.7" x 8.8")	
	Weight	Max 6.5Kg (With Toner Cartridge)	
Controller	Processor	Jupiter3 66MHz	61200 66MHz
	Memory	8MB(Nonexpandable)	4MB(Up to 68MB)
	Emulation	GDI	PCL6
	Interface	IEEE1284, USB	
	OS Support	Windows 95/98/2000/Me/NT/XP, Linux(Radhat 6.0 ↑)	
	N/W	External	
Paper	Input	150 sheets	
	Output	100 sheets	
	Manual	1 sheet	
	Media Type	A4, Letter. Legal, Executive, B5, A5, Folio, 7 3/4(Monarch), #10, DL, C5, C6, B5	
Toner	Type	Single Cartridge	
	Life	3,000 sheets / 5% (start : 1,000sheets)	
Periodic Replacing parts	Pick up Roller	60,000	
	Feed Roller	60,000	
	Transfer Roller	60,000	
	Fuser	40,000	
User interface	Key & LED	3 Buttons , 3 LEDs	
	LCD	No	
	Toner Save	YES	
	Reprint	YES	

3. Disassembly and Reassembly
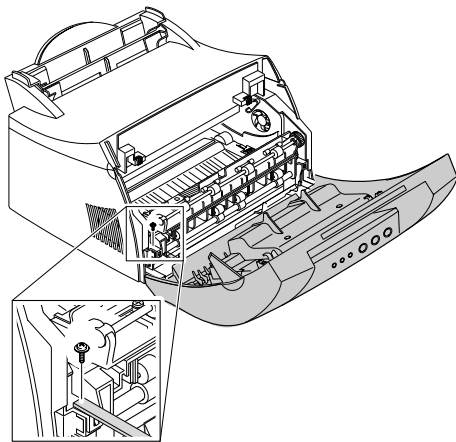
3-1 Cover Assembly

3-1-1 Front Cover
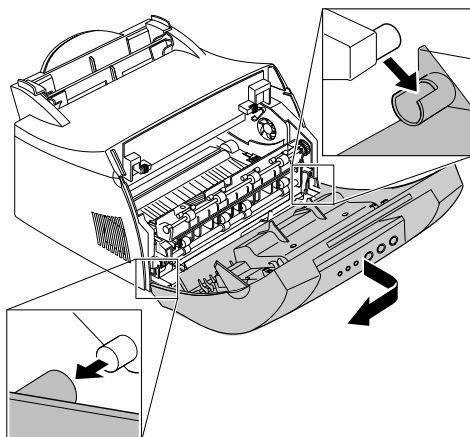
1. Pull the both side of the cover to open.
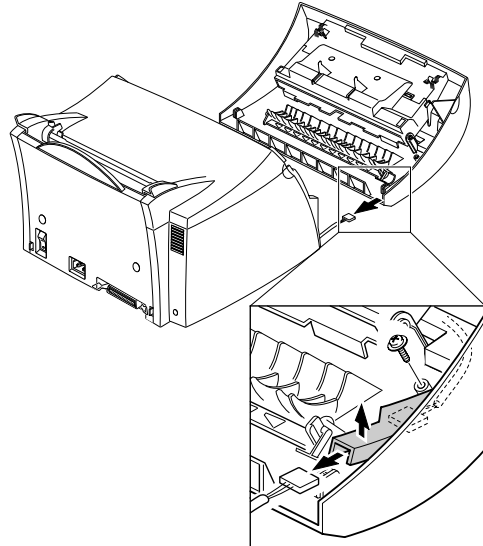
2. Remove a screw and remove the stopper that holds the printer cover.

3. Loosen the right lower part of the cover, then push the cover in the direction of arrow to loosen the left lower part.
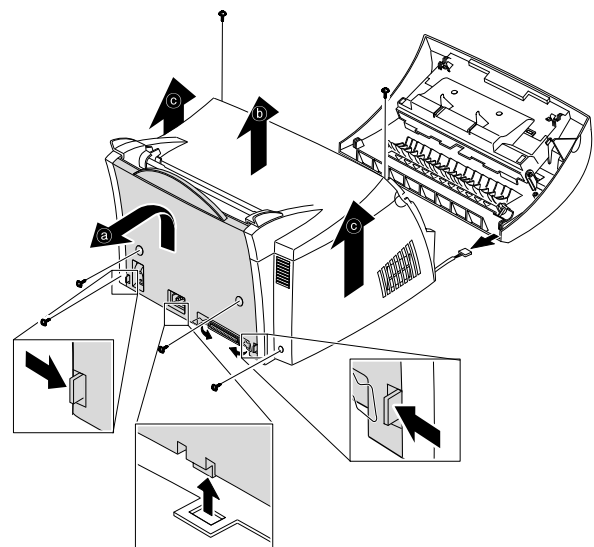
4. Remove a screw of the front cover PCB and remove the connector, then remove the cover.

3-1-2 Other Covers

1. Before you remove other covers, you should remove the Front cover in advance.

2. Rear Cover : Remove the cover in the direction of ⓐ .

3. Top Cover : Remove the cover in the direction of ⓑ .

4. Side Cover L, R : Remove the cover in the direction of ⓒ.
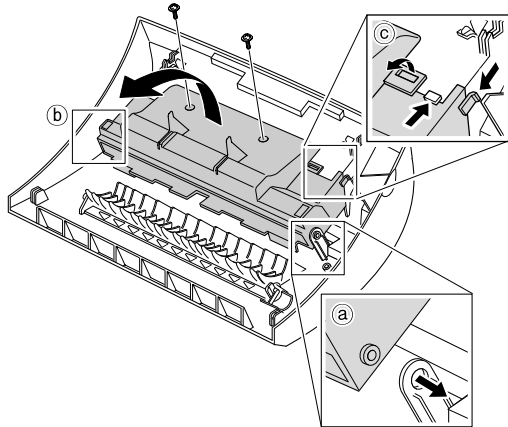
3-2 LED Panel PBA
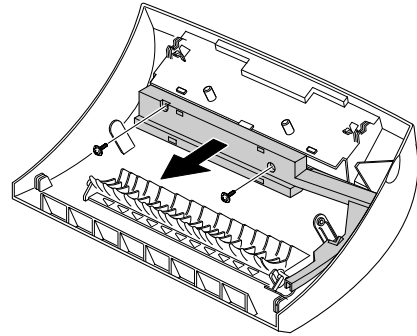
1. Before you remove other covers, you should remove.

   • Front Cover (see [3-1 Main Cover])
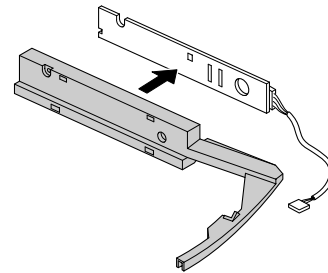
2. Remove two screws of PCB cover, and widen the hooks(ⓐ ⓑ ⓒ) to remove.

3. Remove two screws, and remove LED panel.

4. Remove PCB from the PCB cover.
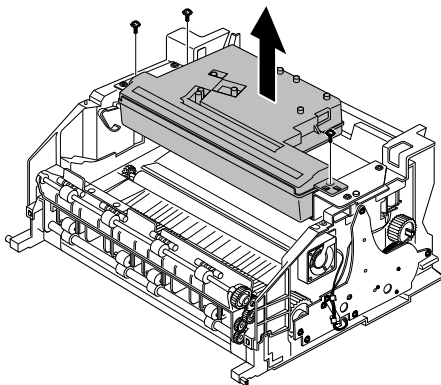
3-3 LSU(Laser Scanning Unit)
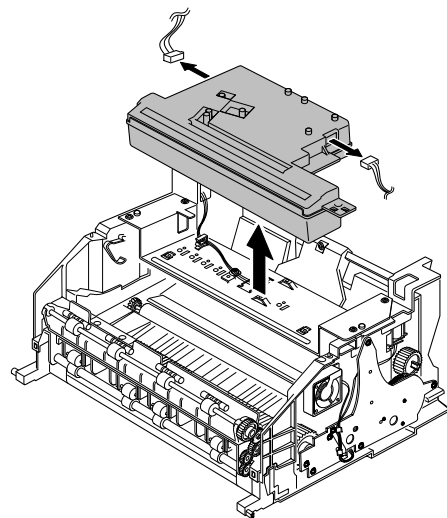
1. Before you remove LSU, you should remove front cover, rear cover and top cover.

   • Main Cover (see [3-1 Main Cover])

2. Remove three screws securing the LSU.
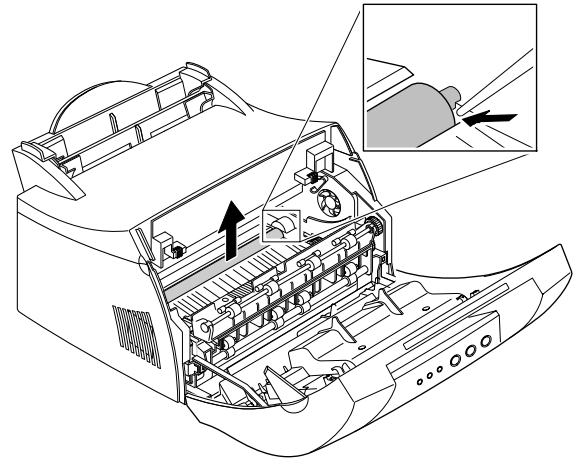
3. Remove two connectors from the LSU, then remove the LSU.
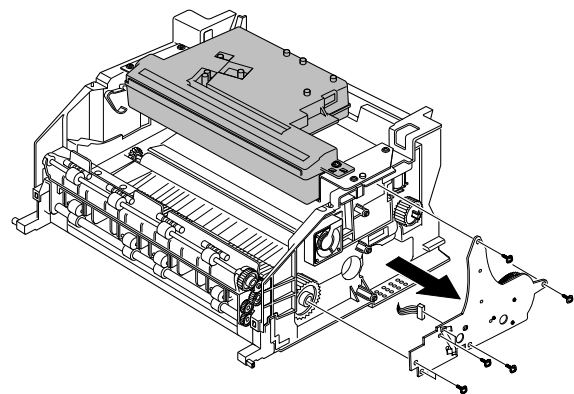
3-4 Transfer Roller

1. Open the front cover.

2. Use a proper tool("-" type screwdriver) to pull the one
   end of the roller slightly, then take it out.

3-5 Motor Assembly

1. Before you remove the motor assembly, you should
   remove:

   • Main Cover (see [3-1 Main Cover])

   • Shield Engine Assembly

2. Remove five screws securing the motor assembly
   and remove a connector from engine board(Engine
   board and SMPS board are integrated), then take the
   motor assembly out.

3-6 HVPS Board
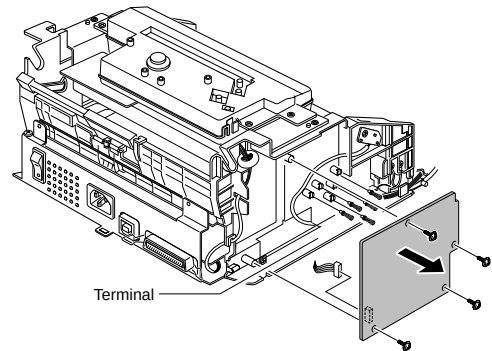
1. Before you remove HVPS board, you should remove:

   •Main Cover (see [3-1 Main Cover])

2. Remove four screws and a connector from HVPS board, then take the board out.

   ⚠ **Note** When you reassemble the HVPS board, make sure that five terminals should be put in place.

Terminal
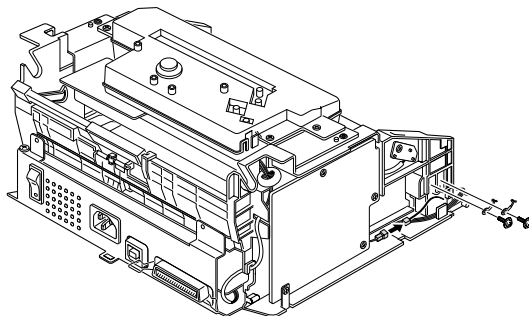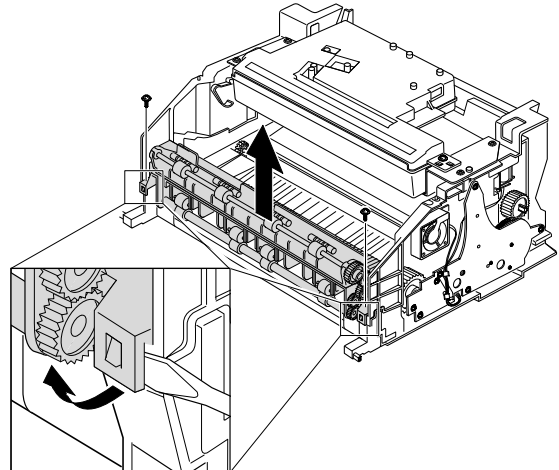
3-7 Fuser Assembly

1. Before remove fuser assembly, you should remove:

   • Main Cover (see [3-1 Main Cover])

2. Remove two ground screws and a connector as illustrated.
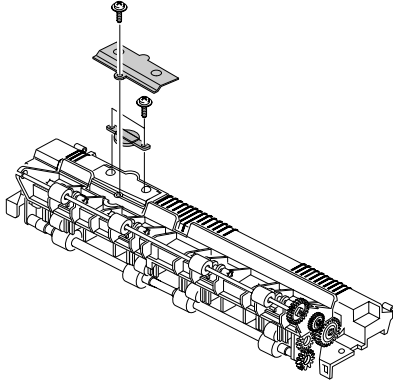
3. Remove two screws and unplug a fuser assembly harness. Then use a " - " screwdriver to unlatch the fuser assembly to remove.
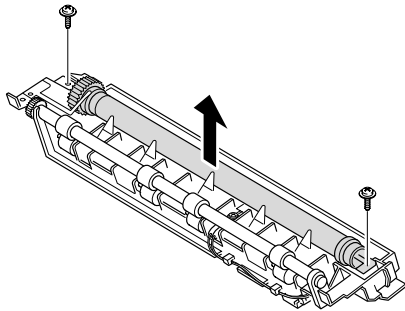
3-8 Thermostat and Halogen Lamp
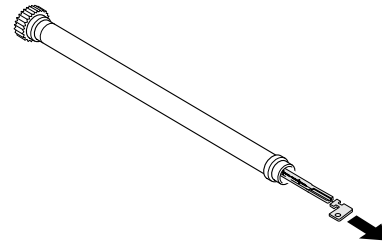
1. Remove a screw from the fuser assembly and remove the thermostat cover, then remove two screws securing the thermostat.

3. Take the halogen lamp out from the Heat Roller.
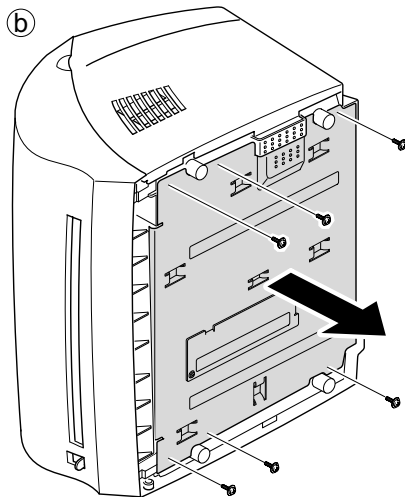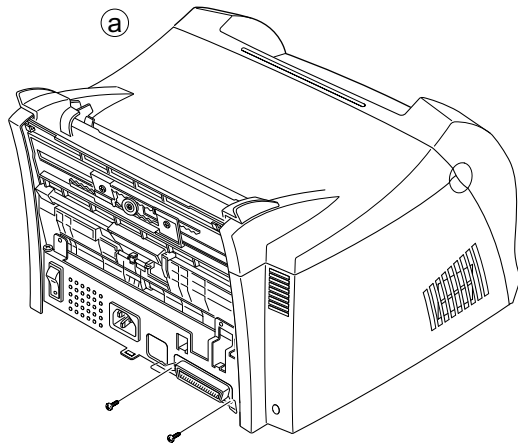
> ⚠ **Note** When you reassemble the halogen lamp, handle it with care as it is fragile.

2. Remove two screws from the fuser assembly, and take the Heat Roller out.
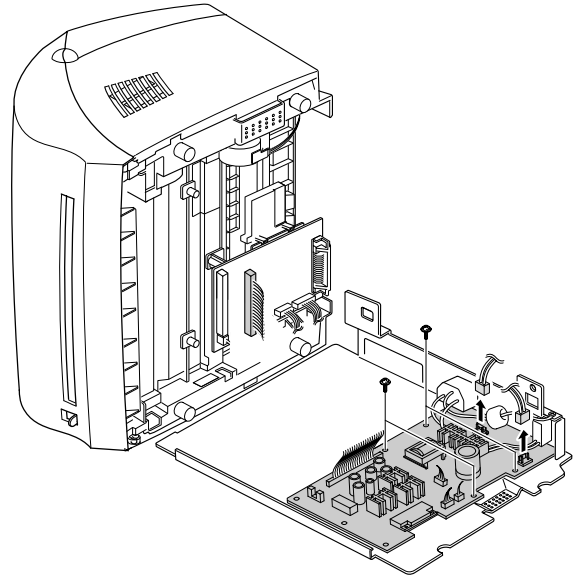
3-9 SMPS Board

1. Before you remove the SMPS board, you should remove:

   • Main Cover (see [3-1 Main Cover])

3. Unplug connectors from the main board and connectors from SMPS, then remove the SMPS. Remove four screws from SMPS and remove the SMPS board.

2. Remove screws in the order of ⓐ ⓑ then remove the shield engine assembly.

ⓐ

ⓑ
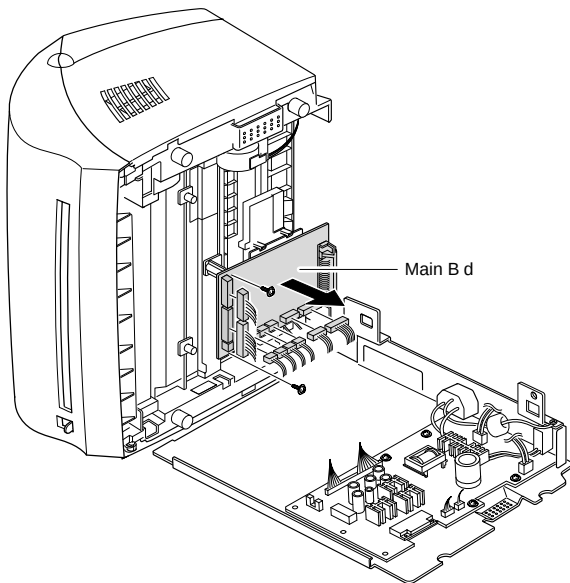
⚠ Note	The Engine board and SMPS board are integrated in a body.

3-10 Main Board and Sensor Board
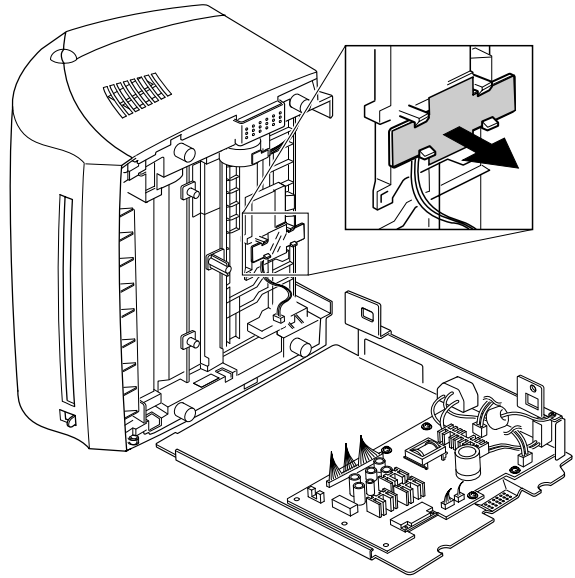
1. Before you remove the main board, you should remove:

   • Main Cover (see [3-1 Main Cover])

   • SMPS board (see [3-9 SMPS Board])
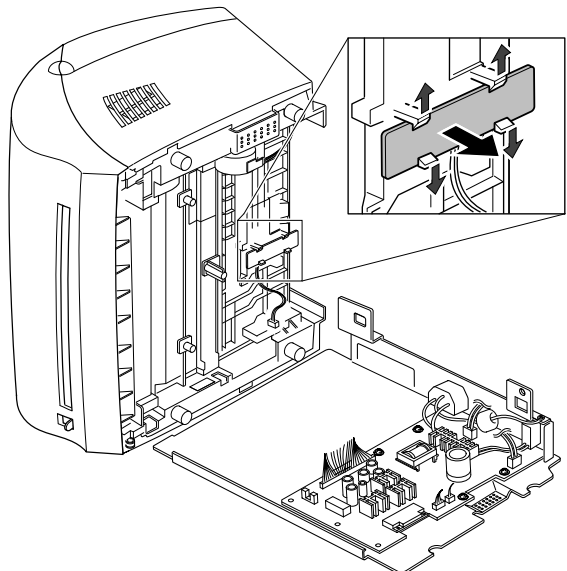
2. Remove two screws from the main board and unplug all of connectors, then remove the board.

Main B d

3. Release four snap-fits securing the insulator engine board and then remove the insulator.

4. Release four snap-fits securing the sensor board and then remove the sensor board.

4. Troubleshooting

4-1 How to use DCU

4-1-1 DCU Setup

You can examine the malfunction of the printer. To perform DCU, open the front discharge cover and leave the connect the harness wire(10 pin/4 pin) to the CN10(4 pin) of the Main control board.

4-1-2 Code

Connect DCU to the printer and turn the power on. It show 7 LED on the panel and each code tells the function of the printer.

Normal Code

While printing or warming up, it indicate the position of the paper

61	Warm up	The printer is on, the cover is open or close.
00-05	Ready(kind of paper)	The printer is ready, the paper is detected when the first paper is printed.
		00: Legal , 01: Letter , 02: A4 , 03: EXEC , 04: B5 , 05: Folio
20	Print Start	The engine controller received the print order from the video controller.
30	Feed Sensor On	The paper is passing out of the Feed Sensor.
40	Feed Sensor off	The paper has passed out of the Feed Sensor.
50	Paper Out	The paper has passed out of Exit Sensor.
69	Sleep Mode	The fuser power turned off to minimize the power consumption.

Error Code

When detecting the malfunction, the printing is stopped to indicate error code.

60, 62, 68	Fuser Error	The error in the fuser occurred. There is a short circuit in the thermistor and the thermostat while printing, Low Temperature Error occurs.
		• 60: Open Fuser Error
		• 62: Low Heat Error
		• 68: Over Heat Error
64	Cover Open	The Printer Cover is open or Toner Cartridge not installed.
70	No Paper	No paper in the paper cassette.
71	Paper Jam 0	The front part of paper is jammed between pickup unit and Feed sensor.
72	Paper Jam 1	The front part of paper is jammed between the Discharge sensor and Feed sensor.
73	Paper Jam 2	The front part of paper is jammed just after passing through the discharge sensor.
95	LSU Not Ready	LSU Scanner Motor not ready or Hsync signal not output.

4-1-3 Self Diagnostic Mode

If Error code occurs due to malfunction of the printer, perform Self Diagnostic Mode to solve the problem.

The printer works only in the self-test mode to solve the malfunction problem.
To enter the self-test mode, turn the power on pressing the buttons of [Down], [Shift] and [Stop] at the same time.
Release the button within 2 or 3 seconds if 78 shows in the DCU. If 00 shows in the DCU, press the button [Up] or [Shift] to select the self+test , and press the button of [Enter] to operate. To stop, press the button of [shift] and [Enter] together.

00	Main Motor Operating System
	Only the main motor is in operation.
01	Main High Voltage On(THV-)
	-1550 voltage output by MHV terminal. ⚠ Caution : High voltage probe should be used.
02	Transfer High Voltage(-)On(THV-)
	-1300 voltage output by MHV terminal. ⚠ Caution : High voltage probe should be used.
03	Transfer High Voltage (+)Reference on (THV +)
	1300 voltage output by MHV terminal. ⚠ Caution : High voltage probe should be used.
04	DEV/supply High Voltage : DEV/Supply High Voltage Test.
	The left one of the three LEDs in the self-test panel is on when DEV high voltage Supply high voltage output by each HV terminal. Press the [Up] button to switch the voltage. The middle and right one of the three LEDs are on and -530 voltage output by DEV HV terminal. ⚠ Caution : High voltage probe should be used.
05	LSU Operating System
	The scanning motor of LSU is in operation, the right LED of the three buttons on. Press the [Up] button to Check LD. LD is functioning and the middle button is on. If the LD is normal, all LEDs are on.
06	Pickup clutch on
	The Solenoid in the printer is in operation. To stop the operation, Press the button [shift] and [Enter] together.
07	Pempty/PWIDTH/New CRU Sensor Test : Pempty/PWIDTH.HEW CRU sensor test.
	If activate the Actuator of the PEMPTY/PWIDTH Sensor, the left and right of the three LEDs are on. If you install new toner Cartridge in this mode, the right LED is on.
08	Feed & Exit Sensor Test
	Test the Feed sensor and Discharge sensor in the same way as '06'.
09	Cover Open Sensor Test
	The same way as code '06'.
10	Fuser Test
	If the [Enter] button pressed, the right LED is on and temperature of the fuser is up to READY Mode. If the [Up] button pressed, the middle LED is on and temperature of the fuser is up to Printing Mode. If you press the button once more, the left LED is on and temperature of the fuser is up to overheat Mode.
11	Hot Burn Test
	If the [enter] button pressed, the printer is continuously printing without detection. Turn the power off to stop operation.
12.	Cleaning Mode Print Mode
	Print the paper to clean the OPC Drum in the Cartridge.
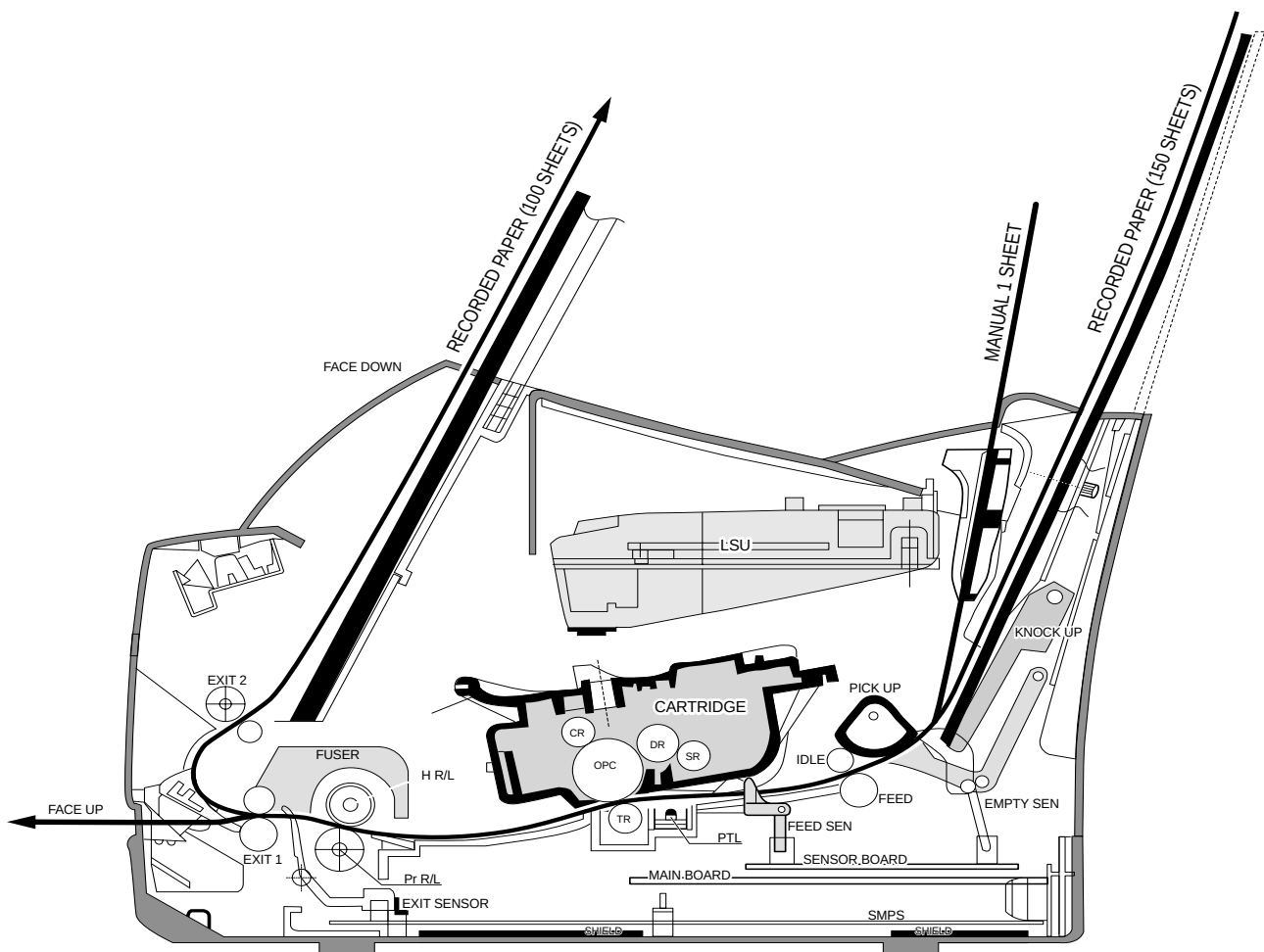
13.	**THV(+) TRIGGER. ALL HV**
	All high voltage output by each HV terminal and LSU and the fan is in operation. In this mode, electronic resistance of transfer roller and high voltage is detected. If no toner cartridge in the printer, output of THV is +199V ~ + 2100V.
14.	**PTL Test**
	Indicates the PTL LED.
15.	**Fan Test**
	Indicates the function of the fan.

4-1-4 Self Test Button

If the Self-Test button pressed, vertical lines are printed.

Turn the power on while pressing this button, '89' shows in the DCU and the printer is warming up. After warming-up the printer is in READY Mode, and '88' shows in the DCU. In this mode, without any detection, the printer begins printing(trial printing and data from the PC). It is convenient to use this mode when the engine malfunction is detected in the control board.

4-1-5 Paper Path Layout
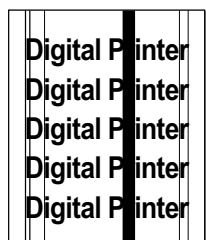
4-2 The cause and solution of Bad image

4-2-1 Vertical Black Line and Band

| • Description | 1. Straight thin black vertical line occurs in the printing.
2. Dark black vertical band occur in the printing. |

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer
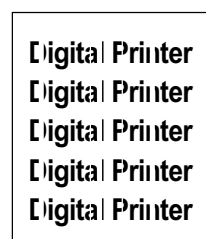
Check and Cause	Solution
1. Damaged develop roller in the Developer or deformed Doctor-blade.	1. If causes 1 and 2 occur in the developer cartridge, replace the developer and try to print out.
2. Scratched surface of the discharge roller in the developer, or heavily accumulated foreign matters between the discharge roller and fur transfer roller/ charge roller.	2. Replace the transfer roller if occurred as No. 3.
3. Partly depression or deformation on the surface of the transfer roller.	

4-2-2 Vertical White Line

| • Description | White vertical voids in the image. |

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer
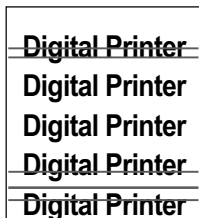
Check and Cause	Solution
1. Foreign matter stuck onto the window of internal lenses of LSU mirror.	1. Foreign matter stuck onto the window : Clean the LSU window with recommended cleaner(IPA) Clean the window with a clean cotton swab.
2. Foreign matter or toner particles between the developer roller and blade. (In case the life of the developer has been expired, white lines occur in front of the image.)	2. Foreign matter in the LSU : Open the cover of LSU and clean with a cotton swab on the surface of the reflex mirror.
3. It may occur when Burr and foreign substances are on the window of the developer frame.	3. No 3. : Remove the foreign matter and burr of the exposure window.
4. If the fuser is defective, voids occur periodically at the top of a black image.	4. No. 4. : Open the front cover and check ribs that corresponds to the position of the voids. Remove if found.
	5. If the problems are not solved, check to see if the weight of the developer is below 670g. If so, replace the developer cartridge.

4-2-3 Horizontal Black Band

• Description	1. Dark or blurry horizontal stripes occur in the printing periodically. (They may not occur periodically.)

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

Check and Cause	Solution
1. Bad contacts of the voltage terminals to developer.	1. Clean each voltage terminal of the Charge, Supply, Develop and Transfer roller. (remove the toner particles and paper particles)
2. The rollers of developer may be stained. Charge roller = 37 mm Supply roller = 27 mm Develop roller = 32 mm Transfer roller = 47 mm	2. Clean the right Gear that has relatively small gap of the teeth in the OPC.
	3. If the malfunction persists, replace the developer.

4-2-4 Black/White Spot

• Description	1. Dark or blurry black spots occur periodically in the printing. 2. White spots occur periodically in the printing.

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

Check and Cause	Solution
1. If dark or blurry black spots occur periodically, the rollers in the Developer may be contaminated with foreign matte or paper particles. (Charge roller : 37 mm interval OPC drum : 75mm interval)	1. Run OPC cleaning Mode Print and run the Self-test 2 or 3 times.
2. If faded areas or voids occur in a black image at intervals of 75 mm, or black spots occur elsewhere, the OPC drum surface is damaged.	2. In case of 75mm interval unremovable in 1, cleanly remove foreign substances stuck on the OPC location equivalent to black spots and white spots with a dry duster.
3. If a black image is partially broken, the transfer voltage is abnormal or the transfer roller's life has expired.	3. The transfer roller guarantees 50,000 sheets printing. If the roller's life is expired, replace it.
	4. In case of 37mm interval unremovable in 1, take measures as to replace the developer cartridge and try to print out.
	5. Clean the inside of the set against the paper particles and foreign matter in order not to cause the trouble.

4-2-5 Light Image

• **Description**   The printed image is light, with no ghost.

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

Check and Cause	Solution
1. Develop roller is stained when the toner of developer cartridge is almost consumed.	1. Check if the Toner Save mode is off.
2. Ambient temperature is below than 10°C.	2. Replace the developer cartridge and try to print out.
	3. Wait 30 minutes after printer is powered on before you start printing.
3. Bad contact caused by the toner stains between the high voltage terminal in the HVPS and the one in the set.	4. Clean up the contaminated area by the toner.
4. Abnormal output from the HVPS. (Run self-test and check 1~4)	5. Replace the HVPS if the problems are not solved by the above four directions. (Service parts : Figure 11, Chapter 5)

4-2-6 Dark Image or a Black

• **Description**   The printed image is dark.

Check and Cause	Solution
1. No charge voltage in the engine board. (Perform DCU diagnostic code 01)	1. Clean the high voltage charge terminal.
2. Charge voltage is not turned on due to the bad contacts between power supply in the side of the Developer and charge terminal of HVPS.	2. Check the state of the connector which connects the engine board and HVPS.
	3. Replace the HVPS if not solved by the above direction 1 and 2.

4-2-7 Uneven Density

> • **Description**   Print density is uneven between left and right.

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

Check and Cause	Solution
1. The pressure force on the left and right springs of the transfer roller is not even, the springs are damaged, the transfer roller is improperly installed, or the transfer roller bushing or holder is damaged.	1. Replace both the left and right Spring Holder.
2. The toner level is not even on the developer roller due to the bad blade.	2. Occur in the developer cartridge, replace the developer and try to print out.

4-2-8 Background

> • **Description**   Light dark background appears in whole area of the printing.

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

Check and Cause	Solution
1. Recycled recording paper has been used.	1. B/S is not guaranteed when using recycled paper.
2. The life of the Developer has expired. (The weight at the expiration of the developer's life: 800 ± 20g)	2. Replace the Developer that has expired.
3. The up-to-down movement of the transfer roller is swift?	3. Clean the busing part of the transfer roller.
4. The HVPS is normal? (Perform DCU diagnostic code 01~04)	4. Replace the Developer if not solved by the above direction 1~3.

4-2-9 Ghost (1)

> **• Description**   Ghost occurs at 75 mm intervals of the OPC drum in the whole printing.

Check and Cause	Solution
1. Bad contacts caused by contamination from toner particles between high voltage terminal in the main body and the electrode of the Developer.	1. Clean the terminals when contaminated by toner particles.
2. Bad contacts caused by contamination from toner particles between high voltage terminal in the main body and the one in the HVPS board.	2. Occur in the developer cartridge, replace the developer and try to print out.
3. The life of developer is expired.	3. Replace the engine board if not solved by the above directions 1-2. (Service Parts : Figure 9 , chapter 5)
4. Transfer roller lifetime(50,000 sheets) has expired.	4. If not solved by the direction 3, check the transfer roller lifetime and replace it. (Service Parts : Figure 8-2 , chapter 5)
5. Abnormal low temperature(below 10°C).	5. Wait about 1 hour after power on before using printer.

4-2-10 Ghost (2)

> **• Description**   Ghost occurs at 75 mm intervals of the OPC drum in the whole printing.
> (When printing on card stock or transparencies using manual feeder)

Check and Cause	Solution
When printing on card stock thicker than normal paper or transparencies such as OHP, higher transfer voltage is required.	Select 'Thick Mode' on paper type menu from the software application and after using returning to the original mode is recommended.

4-2-11 Ghost (3)
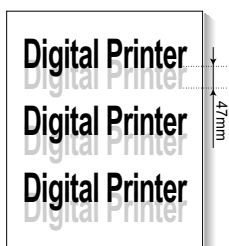
• **Description**   White ghost occurs in the black image printing at 32mm intervals.

Check and Cause	Solution
1. The life of the developer may be expired.	1. Occur in the developer cartridge, replace the developer and try to print out.
2. The abnormal voltage and bad contact of the terminal of the supply roller.	2. Check the approved voltage of the supply roller and contact of the terminal and adjust if necessary.

4-2-12 Ghost (4)
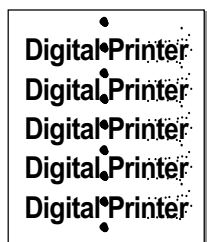
• **Description**   Ghost occurs at 47mm intervals.

Check and Cause	Solution
The temperature of the fuser is maintained high.	1. Disassemble the fuser and remove the contaminated toner particles on the roller and clean the foreign matter between Thermistor and Heat roller. (⚠ Caution: can be deformed)

4-2-13 Satins on the Face of Page
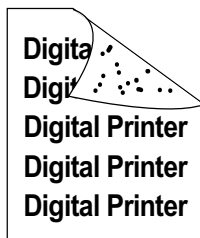
• **Description**   The background on the face of the printed page is stained.

Check and Cause	Solution
1. Toner leakage due to improperly sealed developer.	1. Replace the developer cartridge.
2. If the transfer roller is contaminated, satins on the face of page will occur.	2. If the transfer roller is contaminated, run PC Cleaning Mode Print 2 or 3 times. And perform Self-Test 2 or 3 times to remove contamination.

4-2-14 Satins on Back of Page

• **Description**   The back of the page is stained at 47mm intervals.

Check and Cause	Solution
1. Transfer roller is contaminated.	1. Perform the OPC Cleaning Mode Print 2 or 3 times. Run Self-Test to remove the contamination of the transfer roller.
2. Pressure roller is contaminated.	2. Replace the transfer roller if contaminated severely.
	3. Disassemble the fuser and clean the H/R(Heat Roller) and P/R(Pressure roller). And check the area between H/R and Thermistor. If contaminated, clean the area not to be deformed.

4-2-15 Blank Page Print out (1)
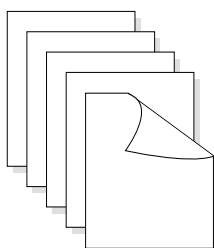
• **Description**   Blank page is printed.

Check and Cause	Solution
Bad ground contacts in OPC and/or developer.	Remove contamination of the terminals of the developer and the unit.

4-2-16 Blank Page Print out (2)

• **Description**   1. Blank page is printed.
2. One or several blank pages are printed.
3. When the printer turns on, several blank pages print.

Check and Cause	Solution
1. Bad ground contacts in OPC and/or developer.	1. Remove contamination of the terminals of the developer.
2. Abnormal solenoid.	2. Perform the engine self test using DCU to check if the Solenoid is normal.(refer to code 06)
	3. If not solved by the above directions 1-2, Replace the engine board. (Service Parts : Figure 9 , chapter 5)
	4. Turn the power off, delete the data of PC and try printing again.

4-3 The cause and solution of the bad discharge
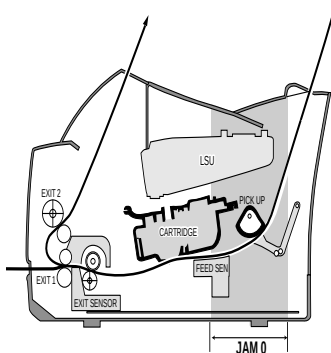
4-3-1   Wrong Print Position

• **Description**   Printing begins at wrong position on the paper.

Check and Cause	Solution
Wrong sense time caused by defective feed sensor actuator.	Replace the defective actuator (Service Parts : Figure 8-16 , chapter 5)

4-3-2 JAM 0

• **Description**   1. Paper is not exited from the cassette.
2. Jam-0 occurs if the paper feeds into the printer.
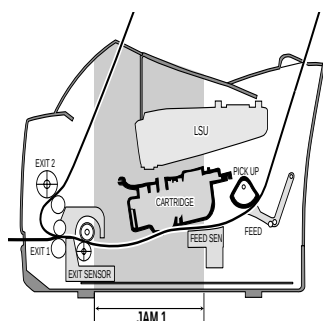
Check and Cause	Solution
1. Check the Solenoid by using DCU diagnostic mode 06.	1. Replace the solenoid. (Service Parts : Figure 8-11 , chapter 5)
2. Check if the pad is loose due to bad sealing of the side-pad.	2. Replace the side-pad Assembly L or R, if necessary. (Service Parts : Figure 8-13 , 8-14, chapter 5)
3. Check the surface of the roller-pick-up for foreign matter.	3. Clean with soft cloth dampened with IPA(Isopropyl Alcohol) or water.
4. If continuous clusters occur, check whether the assembly slot between shaft-pickup and housing-pickup become open or is broken away.	4. Replace the Housing-Pickup and/or Shaft-Pickup. (Service Parts : Figure 8-135, 8-12, chapter 5)
5. If the paper feeds into the printer rand Jam 0 occurs, perform DCU to check feed-sensor of the sensor board.	

4-3-3 JAM 1

• Description	1. Recording paper is jammed in front of or inside the fuser. 2. Recording paper is stuck in the discharge roller and in the fuser just after passing through the Actuator-Feed.
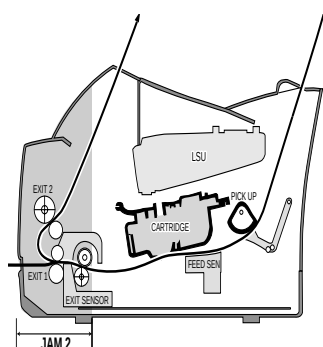
Check and Cause	Solution
1. If the recording paper is jammed in front of or inside the fuser. (Perform DCU diagnostic code of)	1. Replace the SMPS. (Service Parts : Figure 10, chapter 5)
2. If the recording paper is stuck in the discharge roller and the fuser just after passing through the Actuator-Feed, Feed Actuator may be defective.	2. Reassemble the Actuator-Feed and Spring-Actuator if the returning is bad.

4-3-4 JAM 2

• Description	1. Recording paper is jammed in front of or inside the fuser. 2. Recording paper is stuck in the discharge roller and in the fuser just after passing through the Actuator-Feed.

Check and Cause	Solution
1. If the paper is completely fed out of the printer, but Jam 2 occurs : Exit sensor is defective. • After the paper is completely discharged, actuator Exit should return to the original position to shut the photo-sensor. Sometimes it takes longer hour than it should and does not return.	1. Check if the exit sensor actuator is defective. • Check if the actuator exit is unformed (Check if the lever part is unformed in shape). • Check whether burrs occur in the assembly part of the actuator exit or not and if the actuator is smoothly operated. • Check if foreign matters and wire get caught in the actuator exit's operation.
2. If the paper is rolled in the Fuser Roller: • This occurs when a Guide claw is broken away or transformed. • It occurs when the Spring of a Guide claw is broken away or transformed. • It occurs when the Heat-Roller or Pressure-Roller is seriously contaminated with the toner.	2. If the paper is stuck in the fuser : disassemble the fuser and remove the jammed paper, and clean the surface of the pressure roller with dry gauze.
3. Paper is accordion in the fuser.	3. Remove the jammed paper after disassembling the fuser : Clean the surface of the pressure roller with dry gauze. • Remove the toner particles stained on the rib. • Check the assemblage and performance of the exit.

4-3-5 Multi-Feeding

> • **Description**   Multiple sheets of paper are fed at once.

Check and Cause	Solution
1. Solenoid malfunction(the solenoid does not work properly): Perform DCU mode : solenoid check 06.	1. Replace the solenoid if necessary. (Service Parts : Figure 13, chapter 5)
2. Pad-Friction is contaminated with foreign matter.(oil...)	2. Clean the pad friction with soft clothe dampened with IPA(Isopropyl Alcohol).
3. The face of paper is blended.	3. Use the smooth paper.

4-3-6 Paper rolled in the fuser

> • **Description**   If contaminated at intervals of 57mm on the back of a paper.

Check and Cause	Solution
1. Contamination of the pressure roller. (Background, Hot off set)	1. Disassemble the fuser, clean the area between the Heat-roller and Thermistor and remove the foreign matter of the pressure roller.
	2. If background appears badly in the printing, fix it by referring to the solutions for background. (See 4-2-8 Background)

4-3-7   OPC

4-15

> • **Description**   Paper is rolled up in the OPC.

Check and Cause	Solution
1. Paper is too much thin.	1. Recommend to use normal paper.
2. The face of paper is curled.	2. How to remove the rolled paper in the OPC. • Remove the paper while turning the OPC against the ongoing direction. • Clean fingerprints on the OPC softly with soft cloth dampened with IPA(Isopropyl Alcohol) or tissue.

4-4 The cause and solution of the malfunction

4-4-1 All LEDs blinking (Fuser Error)

| • Description | 1. All the lamps on the operator panel blink.
2. Gear of the fuser does not work and breaks away melt away.
   When printing, motor breaks away from its place due to defective fuser gear. |

Check and Cause	Solution
1. Check if the thermostat, AC wire and Heat Lamp is open.	1. If the thermostat is open replace the fuser and check following items.
2. Check if the thermistor sensor is in place.	2. If the thermistor sensor device is located deep in the sponge, replace the fuser.
3. Check if the heat lamp works properly.	3. Check if the circuit of overheat mode works properly.
4. Check if the overheat circuit works properly.	4. Run DCU mode : Perform DCU diagnostic code 10.
5. The fuser gear is defective due to melting away.	

4-4-2 All LEDs blinking (Scan Error)

| • Description | 1. All lamps on the operator panel blink. |

Check and Cause	Solution
DCU Mode : Perform DCU diagnostic code 05. If the DCU error code 95 is displayed, replace LSU.	Replace LSU. (Service Parts : Figure 13, chapter 5) If you cannot solve the problem after you replace LSU, replace the main board.

4-4-3 Not function of the gear of the fuser due to melting away

• Description   The motor breaks away from its place due to gear melting away.

Check and Cause	Solution
DCU Mode : Check if the Error States '60' '62' '68' occur. Check the operation of Fuser Erasing Lamp On/Off with the Error Code Check -10-.	1. Replace the Fuser. (Service Parts : Figure 8-4, Chapter 5) 2. Replace the Main Control board. (Service Parts : Figure 9, Chapter 5)

4-4-4 Paper Empty

• Description   The paper lamp on the operator panel is on even when paper is loaded in the cassette.

Check and Cause	Solution
1. Bending or deformation of the actuator of the paper sensor. 2. The function of the sensor board is defective Perform DCU mode: Perform DCU diagnostic code 8.	1. Replace the defective actuator. (Service Parts : Figure 8-17, Chapter 5) 2. Replace the sensor board. (Service Parts : Figure 8-10, Chapter 5)
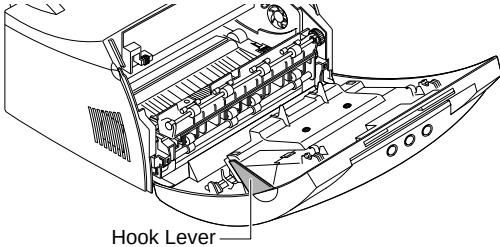
4-4-5 Paper Empty without indication

• Description   The paper lamp on the operator panel does not come on when the paper cassette is empty.

Check and Cause	Solution
1. Bending or deformation of the actuator of the paper sensor. 2. The function of the sensor board is defective Perform. DCU mode : Perform DCU diagnostic code 8.	1. Replace the defective actuator. (Service Parts : Figure 8-17, chapter 5) 2. Replace the sensor board. (Service Parts : Figure 8-10, chapter 5)

4-4-6 Cover Open

> • **Description**   The ERROR lamp is on even when the print cover is closed.

Check and Cause	Solution
1. The hook lever in the top cover may be defective.	1. Replace the hook lever, if defective. (Service Parts : Figure 1, chapter 5)
2. Check the connector and circuit of the cover switch department in the Main Control board. Perform DCU mode : If Error state '64' occurs, Check the related codes of the Cover Open Error. Hook Lever	2. Check the insertion of the Cover Open Sensor Connect. 3. Replace the Main Control board or Cover Open Sensor. (Service Parts : Figure 9, chapter 5)

4-4-7 No lamp on when the cover is open

> • **Description**   The ERROR lamp does not come on even when the printer cover is open

Check and Cause	Solution
1. Check the connector(CN8) and circuit of the cover switch department in the Main Control board. Perform DCU mode : If Error state '64' occurs, Check the related codes of the Cover Open Error	1. Check the insertion of the Cover Open Sensor Connect. 2. Replace the Main Control board or Cover Open Sensor. (Service Parts : Figure 9, chapter 5)

4-4-9 Defective motor operation

• **Description**	Main motor is not driving when printing, and paper does not feed into the printer, resulting 'Jam 0'.

Check and Cause	Solution
1. Motor harness or sub PCB may be defective.	1. Check the motor harness, replace it, if defective. (Service Parts : Figure 12, chapter 5)
2. Perform DCU diagnostic code 00 and Check the motor operation.	2. Replace the SMPS, if necessary. (Service Parts : Figure 10, chapter 5)

4-4-10 No Power

• **Description**	When system power is turned on, all lamps on the operator panel do not come on.

Check and Cause	Solution
1. Check if the power input and SMPS output are normal.	1. Replace the power supply cord or SMPS. (Service Parts : Figure 10, chapter 5)
2. Check the inferiority of LED-Panel on the front-cover if the LED of Panel does not appear after normal warming-up.	2. Replace the control board. (Service Parts : Figure 9, chapter 5)
	3. Replace the LED-panel. (Service Parts : Figure 1-1, chapter 5)

4-4-11 Vertical Line Getting Curved

• **Description**   When printing, vertical line gets curved.

Check and Cause	Solution
1. If the supply of +24v is unstable in the Main Control board linking with LSU, check drive by DCU Mode: LSU Check -05- LSU Motor on.	1. Replace LSU. (Service Parts : Figure 13, chapter 5) 2. Replace the Main Control board. (Service Parts : Figure 9, chapter 5)

4-5 Toner Cartridge Service

It is not guaranteed for the default caused by using other toner cartridge other than the cartridge supplied by the Samsung Electronic or caused by non-licensed refill production.

4-5-1 Precautions on Safe-keeping of Toner Cartridge

Excessive exposure to direct light more than a few minutes may cause damage to the cartridge.

4-5-2 Service for the Life of Toner Cartridge

If the printed image is light due to the life of the toner, you can temporarily improve the print quality by redistributing the toner(Shake the toner cartridge), however, you should replace the toner cartridge to solve the problem thoroughly.

4-5-3 Signs and Measures at Poor toner cartridge

Fault	Signs	Cause & Check	Solution
Light image and partially blank image (The life is ended.) Digital Printer Digital Printer Digital Printer Digital Printer Digital Printer	• The printed image is light or unclean and untidy. • Some part of the image is not printed. • Periodically a noise as "tick tick" occurs.	1. If the image is light or unclean and untidy printed image - Shake the developer and then recheck. (1)NG: Check the weight of the developer (2)OK: Lack of toner, so the life is nearly closed. 2. Some part of image is not printed - Shake the developer and then recheck. (1)NG: Check the weight of the developer and clean the LSU window with a cotton swab, then recheck. (2)OK: Lack of toner, so the life is nearly closed. 3. Periodically a noise as "tick tick" occurs - Measure the cycle and the weight of the developer. 4. White vertical stripes on the whole screen or partly : Check the weight of the developer.	1. All of 1, 2, 3 above- (1)The weight of the developer ended: 800g ± 20g (2)If it become better by shaking, replace with a new developer after 50-100 sheets in the closing state of the life span. 2. In case of 2- If it becomes better after cleaning the LSU window, then the developer is normal. (Because of foreign substance on the LSU window, the image has not been printed partly.) 3. In case of 3- If the cycle of noise is about 2 seconds, the toner inside the developer has been nearly exhausted.(Purchase and replace with a new developer after using about 200 sheets at the point of occurrence) 4. In case of 3- This is a phenomenon caused by lack of toner, so replace with a new developer.
Toner Contamination	• Toner is fallen on the papers periodically. • Contaminated with toner on prints partly or over the whole surface.	1. Toner is fallen on the paper periodically. (1)Check the cycle of the falling of the toner. (2)Check the appearance of both ends of the developer OPC drum. 2.The center of the printed matter is contaminated with toner. (1)Check whether foreign substances or toner are stuck to the terminal (contact point) of the developer. (2)Check whether the state of the terminal assembly is normal.	1. If both ends of the OPC drum are contaminated with toner: Check the life of the developer. (In case of less than 820g, the life may be expired.) 2. Check whether it could be recycled. 3. If it cannot be recycled: Replace the developer.

Fault	Signs	Cause & Check	Solution
White Black spot Digital Printer Digital Printer Digital Printer Digital Printer Digital Printer	• Light or dark black dots on the image occur periodically. • White spots occur in the image periodically.	1. If light or dark periodical black dots occur, this is because the developer rollers are contaminated with foreign substance or paper particles. (1)35mm interval : Charged roller (2)75mm interval : OPC cycle 2. If white spots occur in a black image at intervals of 75mm, or black spots occur elsewhere, the OPC drum is damaged or foreign substance is stuck to the surface. 3. If a black and white or graphic image is partially broken at irregular intervals, the transfer roller's life has been expired or the transfer voltage is abnormal.	1. In case of 1 above - Run OPC Cleaning Mode Print 4-5 times repeatedly to remove. Especially check foreign substance on the OPC surface, then remove them with a clean gauze moistened with IPA(Isopropyl Alcohol) not to damage OPC if necessary. ⚠ **Never use usual alcohol.** 2. In case of 2 If they are not disappeared by running OPC Cleaning Mode Print 4-5 times. : at intervals of 37mm - Replace the developer. : at intervals of 75mm - Remove foreign substance. : Broken image - Replace the developer according to carelessness. 3. In case of 3 - Exchange the transfer roller because the life of the transfer roller in use has been expired. (Check the transfer voltage and readjust if different.)
Recycled product	• Poor appearance of the developer. • Unclean and rough printouts. • Bad background in the image.	1. Poor appearance of the developer. (1)Check the damage to label and whether different materials are used. (2)Check the appearance of parts of the developer, such as frame, hopper. 2. Unclean and rough printouts. (1)Check whether foreign substance or toner are stuck to the terminal (contact point) of the developer. (2)Check whether the state of the terminal assembly is normal.	1. In case of 1 - (1)If there is an evidence of disassembling the developer. (2)If materials other than normal parts of the developer are added or substituted. 2. In case of 2 - If there are any abnormals in connection with the situation of 1. (1)It occurs when the developer is recycled over 2 times. (2)If toner nearly being expired are collected to use, it is judged as the recycled developer.

Fault	Signs	Cause & Check	Solution
Ghost & Image Contamination	• The printed image is too light or dark, or partially contaminated black. • Totally contaminated black. (Black image printed out) • The density of printouts is too dark and ghost occurs.	1. The printed image is too light or dark, or partially contaminated black. (1)Check whether foreign substance or toner are stuck to the terminal(point of contact) of the developer. (2)Check whether the terminal assembly is normal.	1. All of 1, 2, 3 above (1)Remove toner and foreign substances adhered to the contact point of the developer. (2)The contact point of the unit facing that of the developer also must be cleaned. (3)If the terminal assembly is unsafe: • Fully stick the terminal to or reassemble it after disassembling. • Disassemble the side plate and push the terminal to be stuck, then reassemble it.
		2. Totally contaminated black. (Black image printed out) (1)Check whether foreign substances are stuck to the terminal(point of contact) of the developer and the state of assembly. (Especially check the charged roller terminal.)	2. In case of 2 It is a phenomenon when the OPC drum of the developer is not electrically charged. Clean the terminals of the charged roller, then recheck it.
		3. The printed image is dark and ghost occurs. (1)Check foreign substance attached to the terminal (point of contact) of the developer and the state of assembly. (Especially check the developing roller terminal.)	3. In case of 3 It is a phenomenon as the developing bias voltage of the developer. Clean the terminals of the developing roller, then recheck it.

4-6 The cause and solutions of bad environment of the software

4-6-1 The printer is not working (1)

> • **Description**   While Power turned on, the printer is not working in the printing mode.

Check and Cause	Solution
1. Run Self-Test Mode: Turn the power on while pressing the test printing button for 2 or 3 seconds before printing works.	1. Check the power of the printer and perform the Self-Test. If the test printing works, that means no problems in the printer itself. If the test printing does not work, that means bad functioning of the printer(not because of software). Perform DCU to check the Error Status.
2. Check if the PC and the printer is properly connected and the toner cartridge installed.	2. Replace the printer cable. If the problems not solved even after the cable replaced, check the amount of the remaining tone. (refer to Toner Cartridge Service 4-5)
3. Printing is nor working in the Windows.	3. Check if the connection between PC and printer port is proper. If you use windows, check if the printer driver in the controller is set up. If the printer driver is properly set up, check in which program the printing is not working. The best way to find out is to open the memo pad to check the function of printing. If it is not working in a certain program, adjust the setup the program requires. Sometimes, the printout is normal within the Windows basic programs, but it's not working in a particular program. In such case, install the new driver again. If not working in the Windows basic program, Check the setup of the port of CMOS is on ECP. And check the address of IRQ 7 and 378
4. Check if the printer cable is directly connected to peripheral devices	4. If the scanner needs to be connected to the printer, first the remove the scanner from the PC to see if the printer is properly working alone.

4-6-2 The printer is not working (2)

• **Description**	After receiving the printing order, no response at all or the low speed of printing occurs due to wrong setup of the environment rather than malfunction of the printer itself.

Check and Cause	Solution
1. Secure more space of the hard disk.	1. Not working with the message 'insufficient printer memory' means hard disk space problem rather than the RAM problem. In this case, provide more space for the hard disk. Secure more space using the disk utilities program.
2. Printing error occurs even if there is enough space in the hard disk.	2. The connection of the cable and printer port is not proper. Check if the connection is properly done and if the parallel port in CMOS is rightly set up.
3. Check the parallel-port-related items in the CMOS Setup.	3. As a printer port, Select ECP or SPP among SPP(Normal), ECP, and EPP modes(increase print-ing speed) SPP normal mode support 8-bit data transfer, while ECP Mode transfer the 12-bit data.
4. Reboot the system to print.	4. If the regular font is not printing, the cable or the printer driver may be defective. Turn the PC and printer off, and reboot the system to print again. If not solved, double-click the printer in my computer If the regular fonts are not printed this time again. the cable must be defective so replace the cable with new one.

4-6-3 Abnormal Printing

• Description	The printing is not working properly even when the cable has no problem. (even after the cable is replaced) If the printer won't work at all or the strange fonts are repeated, the printer driver may be defective or wrong setup in the CMOS Setup.

Check and Cause	Solution
1. Set up the parallel port in the CMOS SETUP.	1. Select SPP(Normal) or ECP LPT Port the among ECP, EPP or SPP in the CMOS Setup.
2. Printer Driver Error.	2. Check the printer in My Computer.(to see if the printer driver is compatible to the present driver or delete the old driver, if defective and reinstall the new driver)
3. Error message from insufficient memory. (The printing job sometimes stops or due to insufficient virtual memory, but it actually comes from the insufficient space of the hard disk.)	3. Delete the unnecessary files to secure enough space of the hard disk and start printing job again.

4-6-3 Abnormal Printing

4-6-4 SPOOL Error

• Description	To spool which stands for "simultaneous peripheral operations online" a computer document or task list (or "job") is to read it in and store it, usually on a hard disk or larger storage medium so that it can be printed or otherwise processed at a more convenient time (for example, when a printer is finished printing its current document).

Check and Cause	Solution
1. Insufficient space of the hard disk in the directory assigned for the basic spool.	1. Delete the unnecessary files to provide more space to start printing job.
2. If the previous printing error not solved.	2. If there are some files with the extension name of ****.jnl, Delete them and Reboot the Windows to restart printing job.
3. When expected to collide with other program.	3. Shut down all other programs except the current one, if possible.
4. When an application program or the printer driver is damaged.	4. Delete the printer driver completely and reinstall it.
5. When some files related to OS are damaged or virus infected.	5 After rebooting the computer, check for viruses, restore the damaged files and reinstall the program to do the printing job.
6. Memory is less than suggested one.	6. Add up enough memory to the PC.

⚠ How to delete the data in the spool manager.

In the spool manager, the installed drivers and the list of the documents waiting to be printed are shown. Select the document to be deleted and check the delete menu.

If you intend to delete the current document being printed, the data being transferred to the printer will be put out and then the document is removed. Before choosing the document, the menu is still inactive.

Or put the document out of the list and repeat the routine as in the above or finish the spool manager.
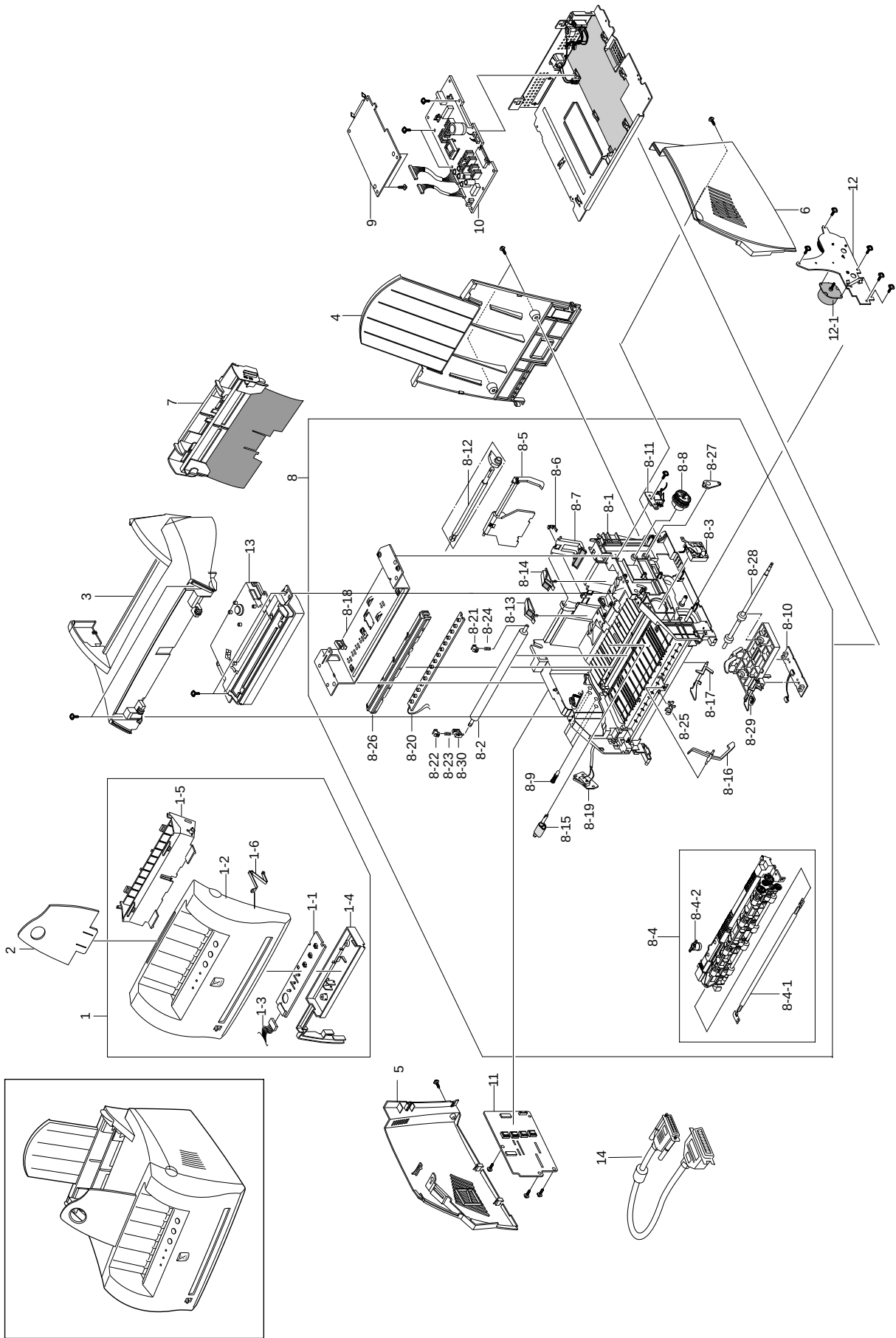
5. Exploded Views and Parts List

- **Deal drawings and service parts are declared for the items with higher rate of inferiority and replaceable in the level of service description only.**

- **If inferiority occurs, you can replace the parts by the unit declared in deal drawings and service items.**

5-1 Tatal Assembly
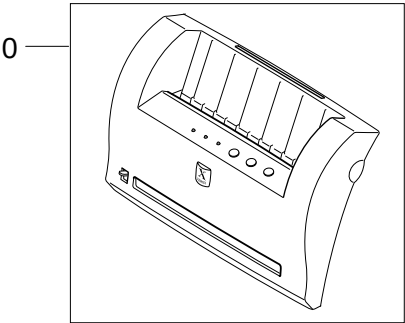
• Service Parts List
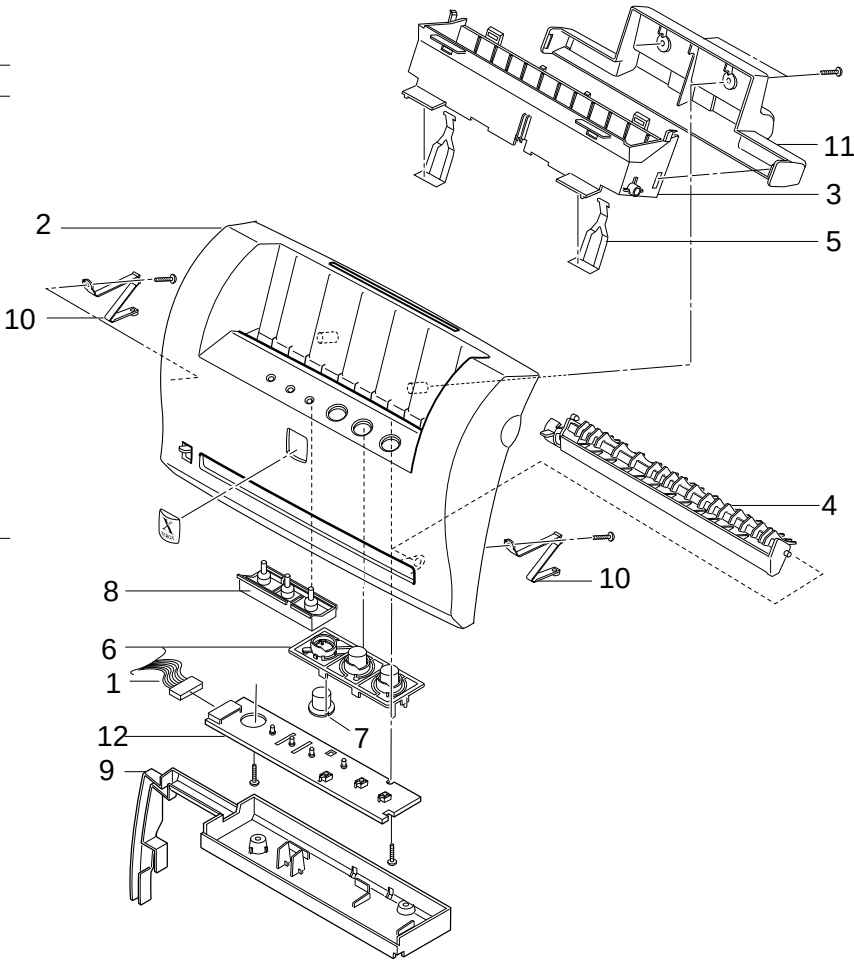
No.	Description	SEC.Code	Q'ty	SA	Remark
1	ELA UNIT-CVR FRONT	*	1	X	
1-1	PBA SUB-LED PANEL	JC92-01280A	1	O	
1-2	PMO-COVER FRONT	JC63-01281A	1	O	Phase3110
	PMO-COVER FRONT	JC63-01281B	1	O	Phase3210
1-3	CBF HARNESS-FRONT PANEL	JC39-00112C	1	O	
1-4	PMO-COVER PCB	JC72-00678A	1	O	
1-5	PMO-GUIDE STACKER	JC72-00511A	1	O	
1-6	PMO-STOPPER	JC72-00519A	1	O	
2	PMO-STACKER RX	JC72-00302A	1	O	
3	PMO-COVER TOP	JC72-00522A	1	O	
4	PMO-COVER REAR	JC75-00094A	1	O	
5	PMO-COVER SIDE(L)	JC72-00523A	1	O	
6	PMO-COVER SIDE(R)	JC72-00524A	1	O	
7	MEC-TRAY(P)	JC75-00099A	1	O	
8	ELA UNIT-FR LOWER	*	1	X	
8-1	PMO-FRAME LOWER	JC72-00533A	1	O	
8-2	MEC-ROLLER_TRANSFER	JC75-00129A	1	O	
8-3	FAN-DC	3103-001085	1	O	
8-4	ELA HOU-FUSER ASS'Y	JC81-00755A	1	O	⚠ 220V, CHINA
	ELA HOU-FUSER ASS'Y	JC81-00754A	1	O	⚠ 220V
	ELA HOU-FUSER ASS'Y	JC81-00753A	1	O	⚠ 110V
8-4-1	LAMP-HALOGEN	4713-001136	1	O	⚠ 220V
	LAMP-HALOGEN	4713-001135	1	O	⚠ 110V
8-4-2	THERMOSTAT	4712-000001	1	O	⚠ 125 / 250V
8-5	MEC KNOCKUP-ASS'Y	JC75-00053A	1	O	
8-6	MEC UNIT HOLDER PAD	JC97-01486A	1	O	
8-7	PMO-CAP_PAD	JC72-00124A	1	O	
8-8	MEC GEAR-PICK UP	JC75-00056A	1	O	
8-9	MEC-TERMINAL	JC75-00049A	5	O	
8-10	PBA MAIN-SENSOR	JC92-01197A	1	O	
8-11	SOLENOID	JC33-00002B	1	O	
8-12	PMO-SHAFT PICK UP	JC72-00150A	1	O	
8-13	MEC-SIDE PAD(L)	JC75-00050B	1	O	
8-14	MEC-SIDE PAD(R)	JC75-00051B	1	O	
8-15	PMO-HOUSING-PICK UP	JC72-00109A	1	O	
8-16	PMO-ACTUATOR-EXIT	JC72-00130A	1	O	
8-17	PMO-ACTUATOR-FEED	JC72-00119A	1	O	
8-18	MEC-PLATE UPPER	JC75-00111A	1	O	
8-19	ELA HOU-OPEN SENSOR	JC96-01584A	1	O	
8-20	ELA HOU-PTL ASS'Y	JC96-02037A	1	O	
8-21	PMO-BUSHING_TR(R)	JC72-00101A	1	O	
8-22	PMO-BUSHING_TR(L)	JC72-00102A	1	O	
8-23	SPRING-TR, L	JC61-00458A	1	O	
8-24	SPRING-TR ,R	JC61-00024A	1	O	
8-25	PMO-HOLDER_EXIT	JC72-00532A	1	O	
8-26	PMO-COVER PTL	JC72-00534A	1	O	
8-27	PMO-BUSHING SHAFT	JC72-40849A	1	O	
8-28	MEC-ROLLER FEED	JC75-00054A	1	O	
8-29	EMC-HOLDER FEED	JC75-00055A	1	O	
8-30	PMO-HOLDER TR	JC72-00100D	1	O	
9	PBA MAIN-CONTROLLER GDI	JC92-01316A	1	O	Phaser 3110
	PBA MAIN-CONTROLLER PCL	JC92-01333A	1	O	Phaser 3210
10	SMPS-ML-1210 V2	JC96-02234B	1	O	⚠ 220V
	SMPS-ML-1210 V1	JC96-02233C	1	O	⚠110V
11	SMPS-HVPS GDI	JC44-00024A	1	O	Phaser 3110
	SMPS-HVPS PCL	JC44-00036A	1	O	Phaser 3210
12	ELA UNIT-RX DRIVE	JC96-02125A	1	O	
12-1	MOTOR-STEP 7.5	JC31-00005B	1	O	
13	UNIT-LSU	JC59-00015A	1	O	Phaser 3110
	UNIT-LSU	JC59-00015B	1	O	Phaser 3210
14	CABLE PRINTHEAD	JC39-00143A	1	O	
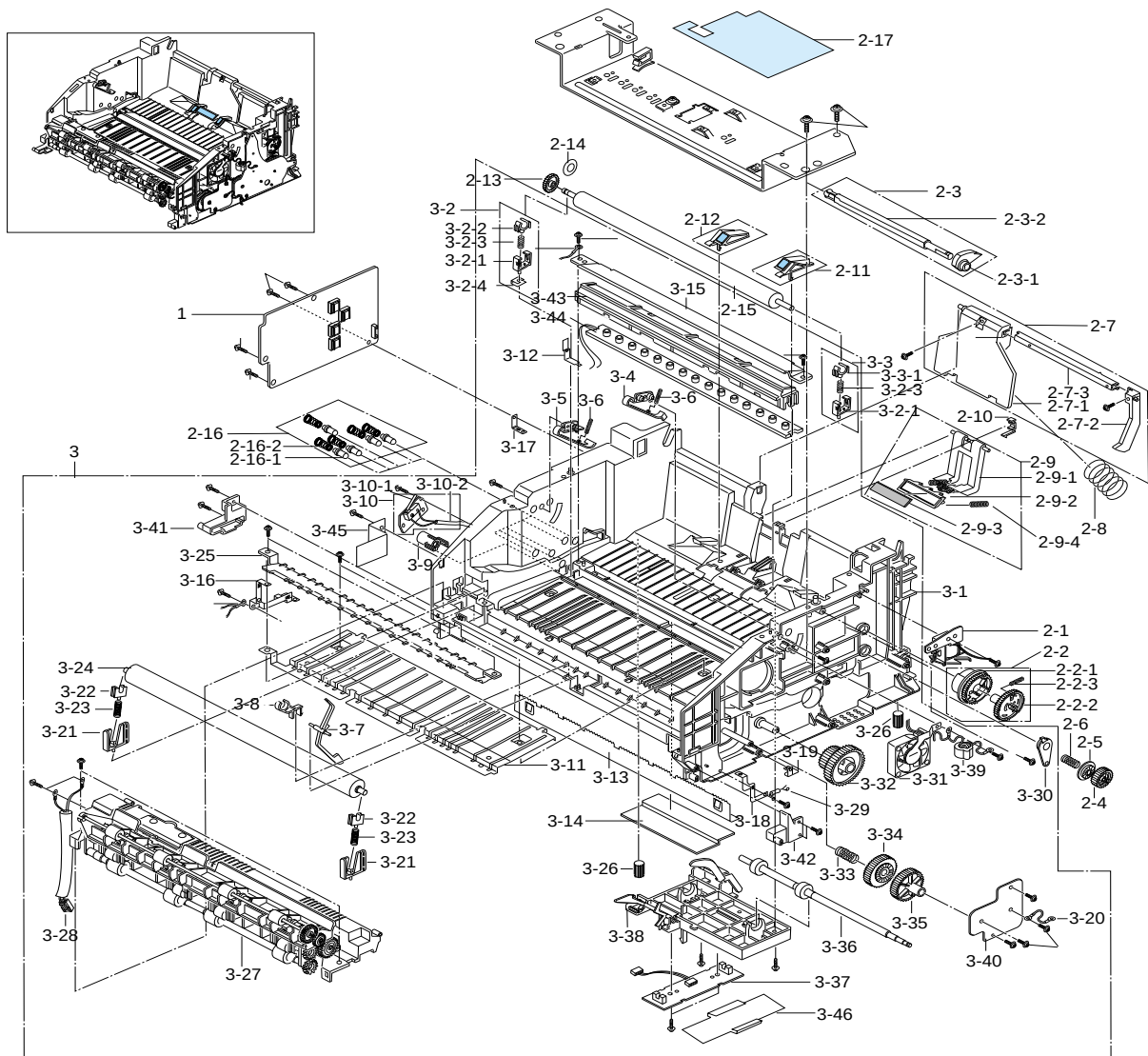
5-2 Front Assembly

NO	DESCRIPTION
0	ELA HOU-COVER FRONT
1	CBF-HARNESS-PANEL MAIN
2	PMO-COVER FRONT
3	PMO-GUIDE STACKER
4	PMO-DOOR FACE UP
5	PPR-SHEET PAPER GUIDE
6	PMO-KEY A
7	PMO-KEY B
8	PMO-LENS SED
9	PMO-COVER PCB
10	PMO-STOPPER
11	PMO-BRKT PUSH DEVE
12	PBA SUB DISP-PANEL
13	PMO-COVER FRONT, SUB IMAC
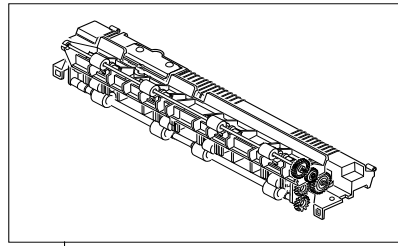
5-3 Engine/Frame Lower Assembly
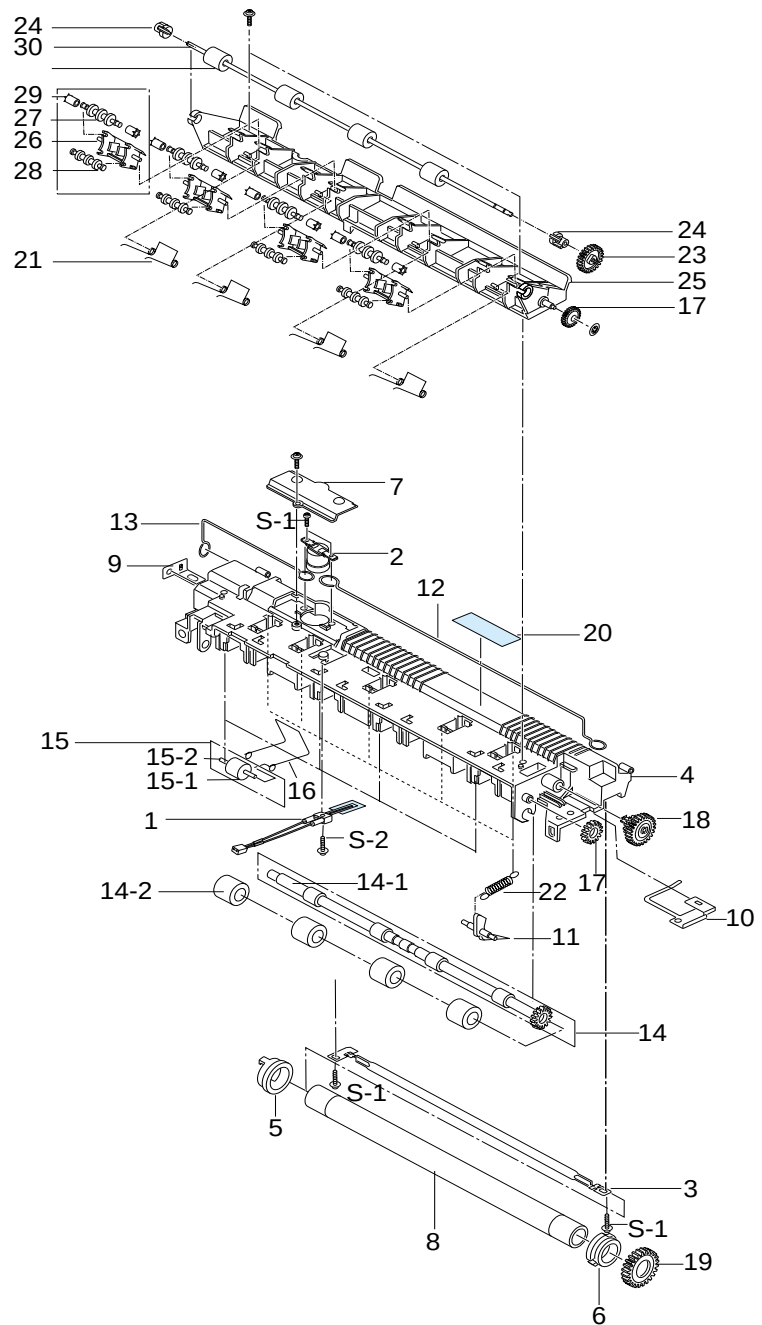
NO	DESCRIPTION	NO	DESCRIPTION	NO	DESCRIPTION
1	SMPS-HVPS	2-16-1	TERMINAL	3-17	IPR-GROUND_HVPS
2	ELA HOU-ENGINE ASS'Y	2-16-2	SPRING-HV APOLLO	3-18	IPR-GROUND_FUSER
2-1	SOLENOID-(APOLLO)	2-17	PCT-INSULATOR ENG B'D	3-19	IPR-GROUND_DRIVE
2-2	MEC-GEAR PICKUP	S-1	SCREW-TAPTITE	3-20	CBF HARNESS-OPE GND
2-2-1	PMO-GEAR_PICKUP,1	3	ELA HOU-FRAME LOWER	3-21	PMO-HOLDER_PR
2-2-2	PMO-GEAR_PICKUP,2	3-1	PMO-FRAME LOWER	3-22	BEARING-PRESSURE R
2-2-3	SPRING-PICKUP,GEAR	3-2	MEA ETC-HOLDER TR L	3-23	SPRING-PR
2-3	MEC-CAM PICKUP	3-2-1	PMO-HOLDER TR	3-24	MEC-ROLLER_PRESSURE
2-3-1	PMO-CAM_PICKUP	3-2-2	PMO-BUSHING_TR(L)	3-25	PMO-GUIDE_INPUT
2-3-2	PMO-SHAFT_PICKUP	3-2-3	SPRING-TR	3-26	RMO-RUBBER_FOOT
2-4	PMO-GEAR_FEED	3-2-4	IPR-PLATE_TR	3-27	ELA HOU-FUSER ASS'Y220V
2-5	PMO-CLUTCH_FEED	3-3	MEA ETC-HOLDER TR R	3-28	CBF-HARNESS FUSER
2-6	SPRING-CLUTCH	3-2-1	PMO-HOLDER TR	3-29	ELA HOU-MOTOR GND
2-7	MEC-KNOCKUP ASS'Y	3-3-1	PMO-BUSHING_TR(R)	3-30	PMO-BUSHING SHAFT
2-7-1	PMO-PLATE_KNOCKUP	3-2-3	SPRING-TR	3-31	FAN-DC
2-7-2	PMO-CAM-KNOCKUP	3-4	PMO-CAP PLTE GU/DEV R	3-32	PMO-GEAR_83/35
2-7-3	IPR-BAR_KNOCKUP	3-5	PMO-CAP PLTE GU/DEV L	3-33	SPRING-FUSER DR
2-8	SPRING-KNOCK UP	3-6	SPRING-GUIDE DEVE	3-34	PMO-GEAR_FU_IN 47
2-9	MEC-HOLDER PAD	3-7	PMO-ACTUATOR_EXIT	3-35	PMO-GEAR_FU_OUT 47
2-9-1	PMO-HOLDER PAD	3-8	PMO-HOLDER_EXIT	3-36	MEC-ROLLER FEED
2-9-2	PMO-HOLDER_PAD	3-9	PMO-BUSHING_TERMINAL	3-37	PBA MAIN-SENSOR
2-9-3	RPR-PAD FRICTION	3-10	ELA HOU-OPEN SENSOR	3-38	EMC-HOLDER FEED
2-9-4	SPRING-PAD	3-10-1	IPR-BRKT_SENSOR	3-39	CBF HARNESS-MOTOR GND
2-10	PMO-CAP_PAD	3-10-2	CBF-HARNESS COVER	3-40	IRP-BRKT FUSER DRV
2-11	MEC-SIDE PAD(R)	3-11	IPR-GUIDE-TR	3-41	PMO-HINGE FRONT(L)
2-12	MEC-SIDE PAD(L)	3-12	IPR-PLATE-TERMINAL	3-42	PMO-HINGE FRONT(R)
2-13	PMO-GEAR_TRANSFER	3-13	IPR-SAW_PLATE	3-43	PMO-COVER PTL
2-14	PPR-SPACER DR	3-14	PCT-FILM SAW	3-44	ELA HOU-PTL
2-15	MEC-TRANSFER ROLLER	3-15	IPR-EARTH_TRANS	3-45	PCT-COVER SHEET LAMP
2-16	MEC-TERMINAL	3-16	IPR-GROUND_GUIDE	3-46	PCT-INSULATOR SENSOR B'D

5-4 Fuser Assembly
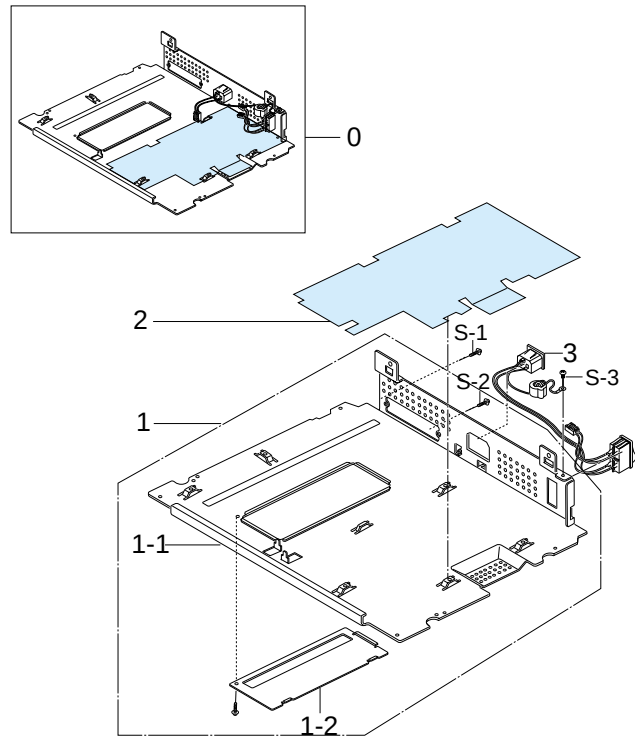
NO	DESCRIPTION
0	ELA HOU-FUSER ASS'Y
1	THERMISTOR-NTC
2	THERMOSTAT-150C
3	LAMP-HALOGEN
4	PMO-COVER FUSER
5	PMO-BUSHING H/R, L
6	PMO-BUSHING H/R, R
7	PMO-COVER_THERMOSTAT
8	NPR-ROLLER HEAT
9	IPR-ELECTRODE_PLATE
10	IPR-GROUND_FU
11	PMO-GUIDE CLAW
12	ELECTRODE-WIRE,1
13	ELECTRODE-WIRE,S
14	MEA ETC-SHAFT EXIT
14-1	PMO-SHAFT_EXIT(Z15)
14-2	RMO-RUBBER_EXIT
15	PMO-ROLLER_IDLE EXIT
15-1	IPR-PIN ROLLER EXIT
16	SPRING-EXIT
17	PMO-GEAR_EXIT_DRV16
18	PMO-GEAR_EXIT_IDLE
19	PMO-GEAR_FUSER
20	LABEL (R)-CAU_HOT_FU
21	SPRING-EXIT DOWN
22	SPRING-ES, GUIDE CLAW
23	GEAR-EXIT F/DOWN
24	BEARING-EXIT FU L
25	PMO-COVER FUSER F/DOWN
26	PMO-HOLDER_EXIT_DOWN
27	PMO-EXIT_DOWN_L
28	PMO-EXIT_DOWN_S
29	RMO-RUBBER-KICKER
30	MEC-UNIT_EXIT, F_DOWN
S-1	SCREW TAPTITE
S-2	SCREW TAPTITE
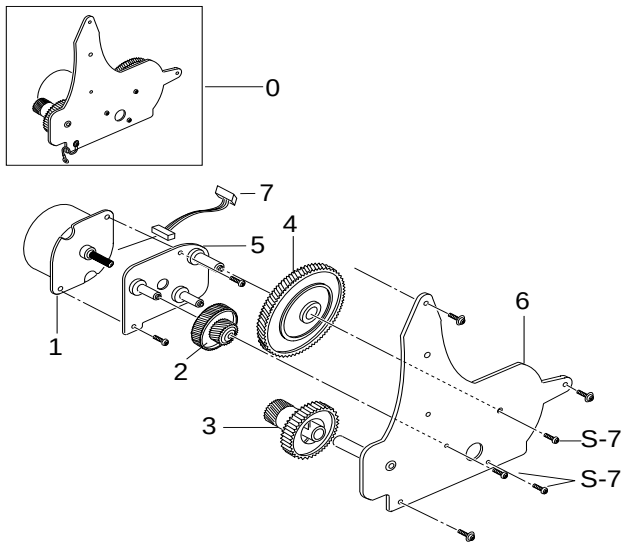
5-5 Shield Engine Unit Assembly

NO	DESCRIPTION
0	ELA HOU-SHIELD ENGINE
1	MEC-SHIELD BRKT CONTROLLER
1-1	IPR-SHIELD ENGINE
1-2	IPR-BRKT CONTROLLER
2	PCT-INSULATOR SMPS
3	CBF HARNESS-INLET ASS'Y
S-1	SCREW-MACHINE
S-2	SCREW-TAPTITE
S-3	SCREW-TAPTITE
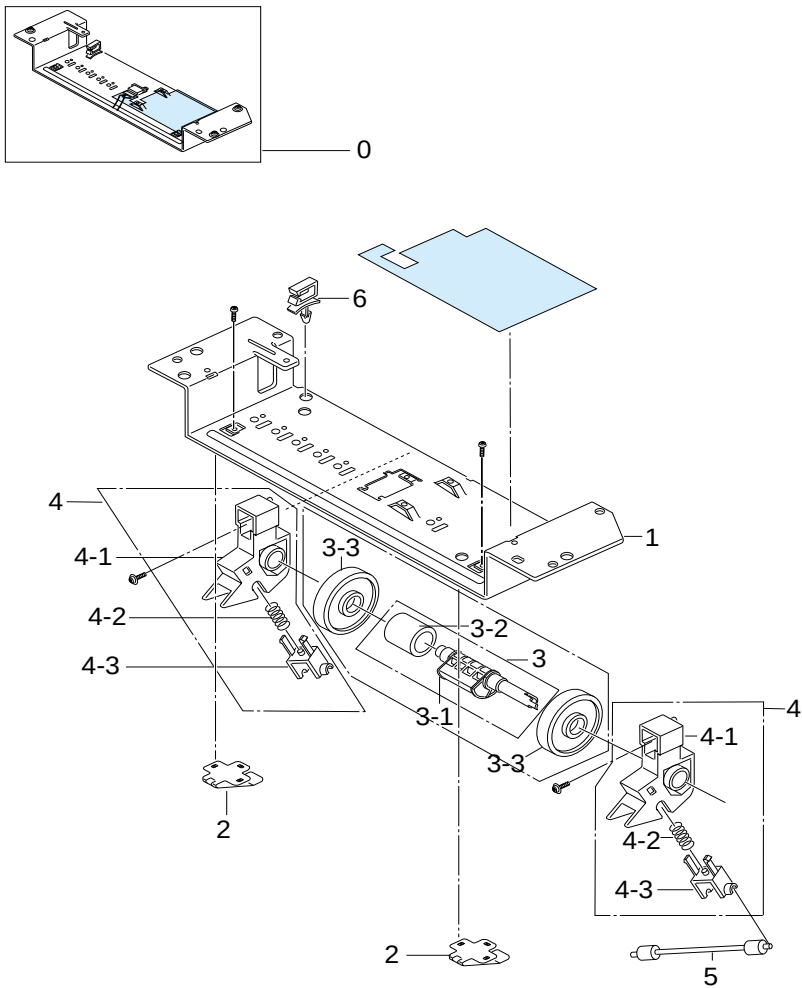
5-6 RX Drive Assembly

NO	DESCRIPTION
0	ELA HOU-RX DRIVE
1	MOTOR-STEP
2	PMO-GEAR_71/28
3	PMO-GEAR_73/22
4	PMO-GEAR_132/19
5	IPR-BRKT_MOTOR
6	IPR-BRKT_GEAR
7	CBF-HARNESS_MOTOR
S-7	SCREW-MACHINE
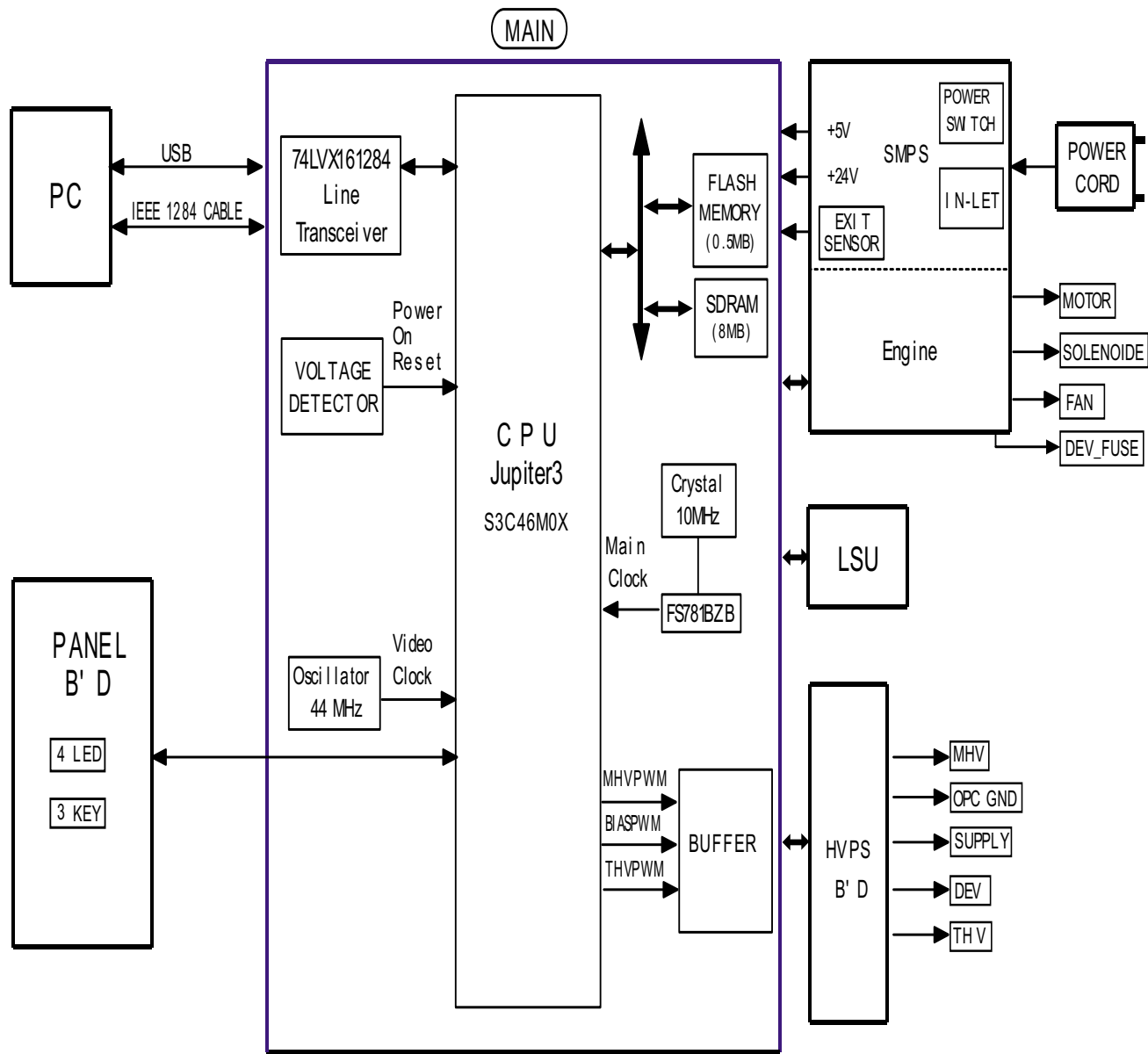
5-7 Plate-Upper Unit Assembly

NO	DESCRIPTION
0	MEC-PLATE UPPER
1	IPR-UPPER-PLATE
2	IPR-PLATE SPRING DEV
3	MEA ETC-ROLLER PICKUP
3-1	PMO-HOUSING_PICKUP
3-2	RMO-ROLLER_PICKUP
3-3	PMO-IDLE_PICKUP
4	MEA ETC-IDLE FEED
4-1	PMO-HOLDER_PICKUP
4-2	SPRING-FEED
4-3	PMO-HOLDER_IDLE,FEED
5	ICT-ROLLER_IDLE,FEED
6	CABLE CLAMP
S-1	SCREW TAPTITE
S-9	SCREW TAPTITE
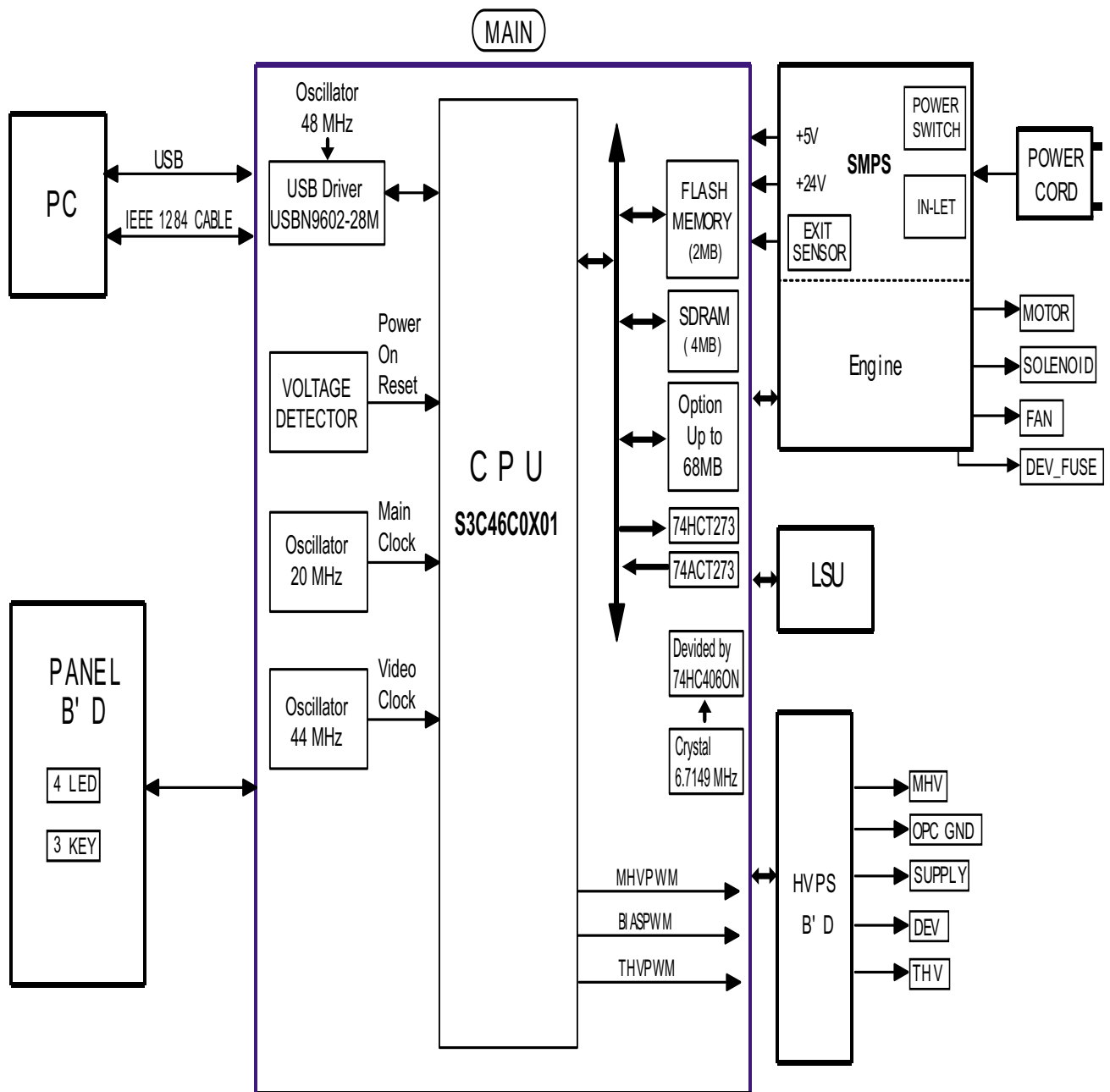
6. Block Diagram

6-1. Block Diagram(GDI)

6-2. Block Diagram(PCL)

MAIN

Oscillator
48 MHz

PC

USB

IEEE 1284 CABLE

USB Driver
USBN9602-28M

VOLTAGE
DETECTOR

Power
On
Reset

Oscillator
20 MHz

Main
Clock

Oscillator
44 MHz

Video
Clock

C P U

S3C46C0X01

FLASH
MEMORY
(2MB)

SDRAM
(4MB)

Option
Up to
68MB

74HCT273

74ACT273

Devided by
74HC406ON

Crystal
6.7149 MHz

+5V

+24V

EXIT
SENSOR

POWER
SWITCH

IN-LET

SMPS

Engine

POWER
CORD

MOTOR

SOLENOID

FAN

DEV_FUSE

LSU

PANEL
B' D

4 LED

3 KEY

MHVPWM

BIASPWM

THVPWM

HVPS
B' D

MHV

OPC GND

SUPPLY

DEV

THV

7. Connection Diagram

7-1. Connection Diagram(GDI)

7-2. Connection Diagram(PCL)

8. Electrical parts list

8-1 Main PBA (Phaser 3110)

SEC CODE	LOCATION NO.	Q'ty		DESCRIPTION
0105-001032		2	PAPER-ART	"75g,W210,-,WHITE,HANSOI,L297"
0401-000116	D1	1	DIODE-SWITCHING	"MMSD914T1,100V,200mA,SOD-123,TP"
0401-000116	D13	1	DIODE-SWITCHING	"MMSD914T1,100V,200mA,SOD-123,TP"
0404-000112	D6	1	DIODE-SCHOTTKY	"RB420D,25V,100mA,SOT-23,TP"
0407-000101	"D14,D15,D16,D17,D18"	5	DIODE-ARRAY	"DA204K,20V,100mA,C2-3,SOT-23,T"
0501-000338	Q3	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0501-000338	Q4	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0501-000338	Q5	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0501-000338	Q6	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0801-001090	U1	1	IC-CMOS LOGIC	"74HC14,SCHIMITT INVERTER,SOP,1"
0801-001090	U17	1	IC-CMOS LOGIC	"74HC14,SCHIMITT INVERTER,SOP,1"
0801-002591	U25	1	IC-CMOS LOGIC	"74LVX273,D FLIP-FLOP,TSSOP,20P,173MIL,OCTAL,TP,PLASTIC,3-STATE,-,0.8V,-40to+85C,"
0803-001392	U26	1	IC-TTL	"7406,BUFFER/DRIVER,SOP,14P,300"
0803-003263	"U24,U100"	2	IC-TTL	"74LCX07,HEX BUFFER,SOIC,14P,150MIL,SIX,TP,PLASTIC,OPEN DRAIN,-,0V,-40TO85C,-,0V,"
1006-001224	U102	1	IC-LINE TRANSCEIVER	"74LVX161284,TSSOP,48P,240MIL,TRIPLE,TP,PLASTIC,3.6V,-,-40to+85C,-,-,-,-,-0.5V,-"
1103-000132	U3	1	IC-EEPROM	"93C66,256x16BIT,DIP,8P,300MIL,"
1105-001369	U14	1	IC-DRAM	"-,4MX16BIT,TSOP(II),54P,400MIL,7.5NS,3.3V,10%,PLASTIC,0TO+70C,1MA,CMOS,TR"
1107-001287	U5	1	IC-FLASH MEMORY	"29LV400,512Kx8Bit,TSOP,48P,-,70nS,3.3V,10%,PLASTIC,0to+70C,-,CMOS,-"
1202-000164	U23	1	IC-VOLTAGE COMP.	"393,SOP,8P,150MIL,DUAL,36V,CMO"
1203-001455	U101	1	IC-POSI.FIXED REG.	"1117,DPAK,3P,265MIL,PLASTIC,3."
1203-002166	U6	1	IC-VOLTAGE REGULATOR	"1117DT25,DPAK,4P,240MIL,PLASTIC,2.475/2.525V,12W,0to+125C,1200mA,-,TP"
1203-002233	U2	1	IC-RESET	"XC61F,SOT-23,3P,-,PLASTIC,0.7/10V,150MW,-,-,-,TP"
1205-001771	U103	1	IC-CLOCK GENERATOR	"FS781BZB,SOP,8P,150MIL,PLASTIC,5.5V,37mW,0to+70C,TP,-"
2001-001140	R46	1	R-CARBON(S)	"39OHM,5%,1/2W,AA,TP,2.4X6.4MM"
2007-000067	R59	1	R-CHIP	"15Kohm,1%,1/16W,DA,TP,1608"
2007-000070	R96	1	R-CHIP	"0ohm,5%,1/16W,DA,TP,1608"
2007-000076	"R86,R87,R88,R89"	4	R-CHIP	"330ohm,5%,1/16W,DA,TP,1608"
2007-000078	R11	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	R35	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	R47	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	R48	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	"R51,R55"	2	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	"R57,R61"	2	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	"R8,R94"	2	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000081	R60	1	R-CHIP	"2.7Kohm,5%,1/16W,DA,TP,1608"
2007-000082	R83	1	R-CHIP	"3.3Kohm,5%,1/16W,DA,TP,1608"
2007-000084	R41	1	R-CHIP	"4.7Kohm,5%,1/16W,DA,TP,1608"
2007-000086	R52	1	R-CHIP	"5.6Kohm,5%,1/16W,DA,TP,1608"
2007-000090	R1	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R14	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R15	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R16	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R17	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R18	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R2	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R20	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R26	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R29	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R36	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"

SEC CODE	LOCATION NO.	Q'ty		DESCRIPTION
2007-000090	R37	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R42	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R43	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R44	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R56	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R74	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R79	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	"R80,R92,R93"	3	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R98	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000113	"R27,R4,R5"	3	R-CHIP	"33ohm,5%,1/16W,DA,TP,1608"
2007-000123	R9	1	R-CHIP	"1.5Kohm,5%,1/16W,DA,TP,1608"
2007-000309	R78	1	R-CHIP	"10ohm,5%,1/16W,DA,TP,1608"
2007-000683	R40	1	R-CHIP	"3.3Kohm,1%,1/16W,DA,TP,1608"
2007-000729	R90	1	R-CHIP	"300ohm,5%,1/16W,DA,TP,1608"
2007-000842	R19	1	R-CHIP	"3Kohm,1%,1/16W,DA,TP,1608"
2007-000965	"R53,R69,R70,R71,R72,R73,R75,R77"	8	R-CHIP	"5.1Kohm,5%,1/16W,DA,TP,1608"
2007-000965	"R91,R97"	2	R-CHIP	"5.1Kohm,5%,1/16W,DA,TP,1608"
2007-001073	R23	1	R-CHIP	"6.8KOHM,5%,1/8W,DA,TP,3216"
2007-007004	R39	1	R-CHIP	"12Kohm,1%,1/16W,DA,TP,1608"
2011-001094	"RA1,RA2"	2	R-NETWORK	"39ohm,5%,63mW,L,CHIP,8P,TP"
2011-001334	U13	1	RC-NETWORK	"1K/5.1K/39ohm,10%,150pF,-,6V,28P"
2203-000189	"C1,C160,C161,C162,C163,C195"	6	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C100	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C106	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C107	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	"C11,C76,C142,C143,C144,C145"	6	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C133	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C147	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C17	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C2	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	"C20,C91,C119,C120,C129,C131,C132"	7	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C3	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C34	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C35	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C37	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C39	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C40	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C43	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C44	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C45	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C46	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C47	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C51	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C59	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C60	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C65	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C68	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C72	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C82	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C90	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C92	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C93	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C94	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C95	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000192	C62	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	C67	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
2203-000192	"C96,C89"	2	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000236	"C134,C188,C192,C194"	4	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000236	"C154,C156,C157,C158"	4	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000257	"C102,C146"	2	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	"C126,C127,C128,C130,C136,C137"	6	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	"C18,C85,C15,C21,C26,C123,C125"	7	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C24	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C78	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C86	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C87	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	"C88,C174,C187,C164"	4	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000384	C148	1	"C-CERAMIC,CHIP"	"0.015nF,5%,50V,NP0,TP,1608"
2203-000440	"C101,C159"	2	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C12	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C5	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C6	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C69	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C70	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C71	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C73	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C79	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C81	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C9	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C97	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C98	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	"C99,C193"	2	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000626	"C4,C122,C173"	3	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000626	"C66,C165"	2	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000681	"C150,C151"	2	"C-CERAMIC,CHIP"	"0.027nF,5%,50V,NP0,TP,1608"
2203-001222	"C57,C58"	2	"C-CERAMIC,CHIP"	"820pF,10%,50V,X7R,TP,1608,-"
2203-001656	C152	1	"C-CERAMIC,CHIP"	"0.47nF,5%,50V,NP0,TP,1608"
2401-000042	C36	1	C-AL	"100uF,20%,16V,GP,TP,6.3x7,5"
2401-000414	C141	1	C-AL	"10uF,20%,16V,GP,TP,4x7,5"
2401-001185	"C27,C118"	2	C-AL	"33uF,20%,35V,GP,TP,5x11,5"
2401-001197	"C139,C140"	2	C-AL	"33uF,20%,50V,GP,TP,6.3x7,-"
2801-001375	OSC3	1	CRYSTAL-UNIT	"10MHz,20ppm,28-AAA,16pF,45ohm,BK"
2804-001415	OSC2	1	OSCILLATOR-CLOCK	"44MHZ,100PPM,15PF,BK,3.3V,-"
3301-000317	B10	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000317	B11	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000317	B6	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000317	B7	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000344	BD2	1	CORE-FERRITE BEAD	"AA,-,3.5x0.6x6.5mm,-,-,Mn-Zn,-"
3702-000118	J1	1	CONNECTOR-RIBBON	"36P,FEMALE,ANGLE,AU"
3711-000470	"CN1,CN7"	2	CONNECTOR-HEADER	"3WALL,4P,1R,2mm,STRAIGHT,SN"
3711-002810	CN8	1	CONNECTOR-HEADER	"BOX,9P,1R,2mm,STRAIGHT,SN"
3711-002811	CN13	1	CONNECTOR-HEADER	"BOX,10P,1R,2mm,STRAIGHT,SN"
3711-002812	CN9	1	CONNECTOR-HEADER	"BOX,11P,1R,2mm,STRAIGHT,SN"
3711-003204	CN5	1	CONNECTOR-HEADER	"BOX,24P,2R,2mm,STRAIGHT,SN"
3711-003408	CN6	1	CONNECTOR-HEADER	"BOX,2P,1R,2mm,STRAIGHT,SN"
3711-003968	CN11	1	CONNECTOR-HEADER	"BOX,3P,1R,2.5mm,STRAIGHT,SN"
3711-003969	CN12	1	CONNECTOR-HEADER	"BOX,2P,1R,2.5mm,STRAIGHT,SN"
3722-001101	CN3	1	JACK-USB	"4P/2C,8.38mm,AU,IVR,#22-28"
JC13-00011A	U7	1	IC ASIC-JUPITER3	"S3C46M0X ,ML-6200,160P,3.3,0to +70C,160-LQFP-2424,T-QFP-2424-A,-,PLASTIC,-"
JC41-00097A	PCB	1	PCB-GDI_2L	"ML-1210,FR-4,DOUBLE ,-,-,205 X 168MM,-,-,-,-"

8-2 Main PBA (Phaser 3210)

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
JC92-01333A		1	PBA MAIN-PCL	"ML-1250,SEC,WORLD WIDE,PCL,12PPM,"
0105-001032		2	PAPER-ART	"75g,W210,-,WHITE,HANSOI,L297"
0401-000116	D4	1	DIODE-SWITCHING	"MMSD914T1,100V,200mA,SOD-123,TP"
0401-000116	D8	1	DIODE-SWITCHING	"MMSD914T1,100V,200mA,SOD-123,TP"
0404-000112	D1	1	DIODE-SCHOTTKY	"RB420D,25V,100mA,SOT-23,TP"
0407-000101	D5	1	DIODE-ARRAY	"DA204K,20V,100mA,C2-3,SOT-23,T"
0407-000101	D7	1	DIODE-ARRAY	"DA204K,20V,100mA,C2-3,SOT-23,T"
0501-000338	Q1	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0501-000338	Q2	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0501-000338	Q3	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0501-000338	Q5	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0501-000338	Q6	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0501-000338	Q7	1	TR-SMALL SIGNAL	"2SC2812,NPN,200mW,SOT-23,TP,20"
0502-000245	Q4	1	TR-POWER	"KSB1151-Y,PNP,1.3W,TO-126,-,16"
0801-000477	U1	1	IC-CMOS LOGIC	"74HCT273,D FLIP-FLOP,SOP,20P,3"
0801-000477	U6	1	IC-CMOS LOGIC	"74HCT273,D FLIP-FLOP,SOP,20P,3"
0801-001072	U35	1	IC-CMOS LOGIC	"74ACT32,OR GATE,SOP,14P,150MIL"
0801-001090	U40	1	IC-CMOS LOGIC	"74HC14,SCHIMITT INVERTER,SOP,1"
0801-001262	U7	1	IC-CMOS LOGIC	"74HC4060,BINARY COUNTER,DIP,16"
0803-001392	U39	1	IC-TTL	"7406,BUFFER/DRIVER,SOP,14P,300"
0803-001393	U38	1	IC-TTL	"7407,BUFFER/DRIVER,SOP,14P,150"
0904-001319	U42	1	IC-USC	"USBN9602-28M,8BIT,SOP,28P,300MIL,48MHZ,ST"
1006-000243	U2	1	IC-LINE TRANSCEIVER	"74ACT245,SOP,20P,-,OCTAL,ST,PL"
1103-000132	U10	1	IC-EEPROM	"93C66,256x16BIT,DIP,8P,300MIL,"
1105-001213	U16	1	IC-DRAM	"416C1204,1Mx16BIT,SOJ,42P,400M"
1105-001213	U17	1	IC-DRAM	"416C1204,1Mx16BIT,SOJ,42P,400M"
1107-001121	U13	1	IC-FLASH MEMORY	"29F800,1Mx8/512Kx16Bit,TSOP,48P,787MIL,70nS,5V,10%"
1107-001121	U49	1	IC-FLASH MEMORY	"29F800,1Mx8/512Kx16Bit,TSOP,48P,787MIL,70nS,5V,10%"
1202-000164	U8	1	IC-VOLTAGE COMP.	"393,SOP,8P,150MIL,DUAL,36V,CMO"
1203-000495	U11	1	IC-RESET	"7045,T0-92,3P,-,PLASTIC,4.3/4."
1203-001455	U3	1	IC-POSI.FIXED REG.	"1117,DPAK,3P,265MIL,PLASTIC,3."
1203-001455	U33	1	IC-POSI.FIXED REG.	"1117,DPAK,3P,265MIL,PLASTIC,3."
2001-001165	R32	1	R-CARBON(S)	"56OHM,5%,1/2W,AA,TP,2.4X6.4MM"
2007-000052	R61	1	R-CHIP	"10Kohm,1%,1/16W,DA,TP,1608"
2007-000052	R62	1	R-CHIP	"10Kohm,1%,1/16W,DA,TP,1608"
2007-000070	R128	1	R-CHIP	"0ohm,5%,1/16W,DA,TP,1608"
2007-000070	R45	1	R-CHIP	"0ohm,5%,1/16W,DA,TP,1608"
2007-000074	R112	1	R-CHIP	"100ohm,5%,1/16W,DA,TP,1608"
2007-000074	R121	1	R-CHIP	"100ohm,5%,1/16W,DA,TP,1608"
2007-000074	R130	1	R-CHIP	"100ohm,5%,1/16W,DA,TP,1608"
2007-000074	R141	1	R-CHIP	"100ohm,5%,1/16W,DA,TP,1608"
2007-000074	R142	1	R-CHIP	"100ohm,5%,1/16W,DA,TP,1608"
2007-000074	R143	1	R-CHIP	"100ohm,5%,1/16W,DA,TP,1608"
2007-000074	R52	1	R-CHIP	"100ohm,5%,1/16W,DA,TP,1608"
2007-000076	R110	1	R-CHIP	"330ohm,5%,1/16W,DA,TP,1608"
2007-000076	R144	1	R-CHIP	"330ohm,5%,1/16W,DA,TP,1608"
2007-000076	R167	1	R-CHIP	"330ohm,5%,1/16W,DA,TP,1608"
2007-000077	R56	1	R-CHIP	"470ohm,5%,1/16W,DA,TP,1608"
2007-000078	R114	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	R155	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	R156	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	R168	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	R84	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
2007-000078	R89	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000078	R90	1	R-CHIP	"1Kohm,5%,1/16W,DA,TP,1608"
2007-000084	R68	1	R-CHIP	"4.7Kohm,5%,1/16W,DA,TP,1608"
2007-000086	R65	1	R-CHIP	"5.6Kohm,5%,1/16W,DA,TP,1608"
2007-000086	R67	1	R-CHIP	"5.6Kohm,5%,1/16W,DA,TP,1608"
2007-000090	R100	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R126	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R134	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R135	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R136	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R137	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R138	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R139	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R15	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R154	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R162	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R163	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R164	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R169	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R23	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R33	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R38	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R39	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R60	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R63	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R74	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R75	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R76	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R77	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000090	R78	1	R-CHIP	"10KOHM,5%,1/16W,DA,TP,1608"
2007-000109	R115	1	R-CHIP	"1Mohm,5%,1/16W,DA,TP,1608"
2007-000113	R3	1	R-CHIP	"33ohm,5%,1/16W,DA,TP,1608"
2007-000113	R4	1	R-CHIP	"33ohm,5%,1/16W,DA,TP,1608"
2007-000113	R5	1	R-CHIP	"33ohm,5%,1/16W,DA,TP,1608"
2007-000113	R6	1	R-CHIP	"33ohm,5%,1/16W,DA,TP,1608"
2007-000122	R96	1	R-CHIP	"1.2Kohm,5%,1/16W,DA,TP,1608"
2007-000123	R133	1	R-CHIP	"1.5Kohm,5%,1/16W,DA,TP,1608"
2007-000134	R101	1	R-CHIP	"33Kohm,5%,1/16W,DA,TP,1608"
2007-000496	R160	1	R-CHIP	"2.2KOHM,5%,1/8W,DA,TP,3216"
2007-000618	R117	1	R-CHIP	"24ohm,5%,1/16W,DA,TP,1608"
2007-000618	R118	1	R-CHIP	"24ohm,5%,1/16W,DA,TP,1608"
2007-000669	R69	1	R-CHIP	"2Kohm,1%,1/16W,DA,TP,1608"
2007-000861	R91	1	R-CHIP	"4.3KOHM,5%,1/8W,DA,TP,3216"
2007-000965	R165	1	R-CHIP	"5.1Kohm,5%,1/16W,DA,TP,1608"
2007-000965	R166	1	R-CHIP	"5.1Kohm,5%,1/16W,DA,TP,1608"
2007-000965	R34	1	R-CHIP	"5.1Kohm,5%,1/16W,DA,TP,1608"
2007-000965	R35	1	R-CHIP	"5.1Kohm,5%,1/16W,DA,TP,1608"
2007-000984	R159	1	R-CHIP	"5.6KOHM,5%,1/8W,DA,TP,3216"
2007-001134	R10	1	R-CHIP	"68ohm,5%,1/16W,DA,TP,1608"
2007-001134	R17	1	R-CHIP	"68ohm,5%,1/16W,DA,TP,1608"
2007-001134	R18	1	R-CHIP	"68ohm,5%,1/16W,DA,TP,1608"
2007-001134	R19	1	R-CHIP	"68ohm,5%,1/16W,DA,TP,1608"
2007-001134	R54	1	R-CHIP	"68ohm,5%,1/16W,DA,TP,1608"
2007-001134	R8	1	R-CHIP	"68ohm,5%,1/16W,DA,TP,1608"
2007-001134	R9	1	R-CHIP	"68ohm,5%,1/16W,DA,TP,1608"
2011-001011	RA1	1	R-NETWORK	"10Kohm,5%,63mW,L,CHIP,8P,TP"

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
2011-001334	U4	1	RC-NETWORK	"1K/5.1K/39ohm,10%,150pF,-,6V,28P"
2203-000189	C100	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C101	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C105	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C107	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C108	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C109	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C110	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C113	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C114	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C115	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C116	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C117	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C118	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C119	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C120	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C121	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C122	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C123	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C124	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C129	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C131	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C133	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C135	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C136	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C137	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C138	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C139	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C140	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C141	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C142	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C158	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C178	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C179	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C180	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C181	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C193	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C194	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,P"
2203-000189	C203	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C204	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C205	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C206	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C207	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C208	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C209	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C210	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C211	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C53	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C68	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C69	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C70	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C72	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C75	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C77	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C78	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C79	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
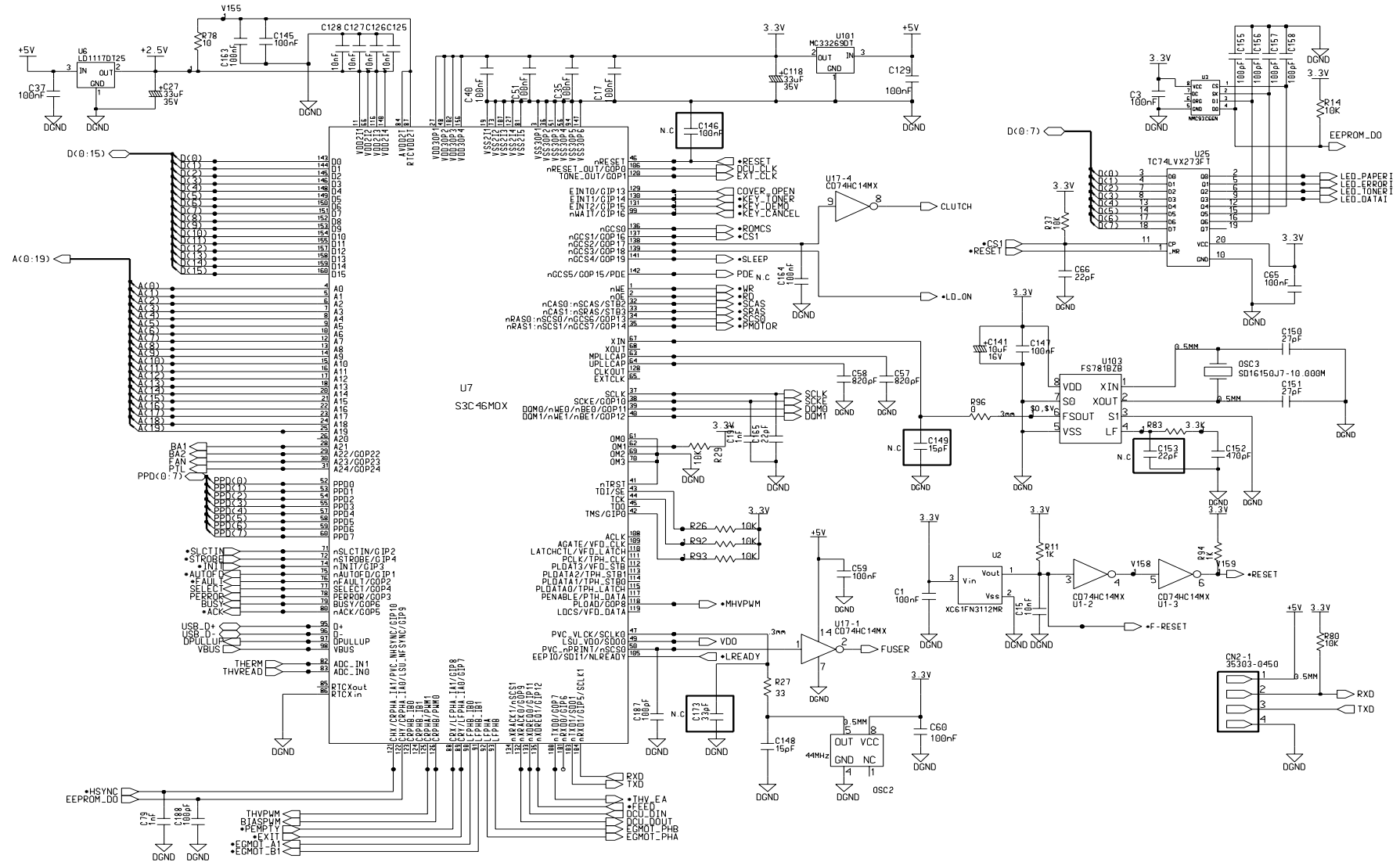
| SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
2203-000189	C83	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C84	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C86	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C87	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C88	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C89	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C90	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C91	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C92	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C93	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C94	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C95	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C96	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C97	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C98	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000189	C99	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,25V,Y5V,TP,1608,"
2203-000192	C106	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	C111	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	C177	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	C201	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	C82	1	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000236	C103	1	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000236	C146	1	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000236	C148	1	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000236	C149	1	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000236	C153	1	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000236	C155	1	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000236	C219	1	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000236	C220	1	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,1608"
2203-000257	C11	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C159	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C160	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C161	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C199	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C20	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000257	C74	1	"C-CERAMIC,CHIP"	"10nF,10%,50V,X7R,TP,1608"
2203-000384	C212	1	"C-CERAMIC,CHIP"	"0.015nF,5%,50V,NP0,TP,1608"
2203-000384	C213	1	"C-CERAMIC,CHIP"	"0.015nF,5%,50V,NP0,TP,1608"
2203-000384	C214	1	"C-CERAMIC,CHIP"	"0.015nF,5%,50V,NP0,TP,1608"
2203-000440	C12	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C13	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C14	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C175	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C189	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C19	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C195	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C196	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C197	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C21	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C218	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C22	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C23	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C24	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C29	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C30	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C31	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"

SEC CODE	LOCATION NO.	Q'ty		DESCRIPTION
2203-000440	C39	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C40	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C46	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C47	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C52	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C64	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C65	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C66	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000440	C67	1	"C-CERAMIC,CHIP"	"1nF,10%,50V,X7R,TP,1608,-"
2203-000626	C104	1	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000626	C41	1	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000626	C42	1	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000626	C43	1	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000626	C55	1	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000626	C60	1	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000626	C61	1	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000626	C62	1	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000626	C73	1	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,1608"
2203-000815	C1	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C10	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C152	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C154	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C164	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C165	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C166	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C170	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C171	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C172	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C2	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C216	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C4	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C5	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C6	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C7	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C8	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000815	C9	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,1608"
2203-000998	C188	1	"C-CERAMIC,CHIP"	"0.047nF,5%,50V,NP0,TP,1608"
2203-001683	C215	1	"C-CERAMIC,CHIP"	"0.068nF,5%,50V,NP0,TP,1608"
2203-002398	C198	1	"C-CERAMIC,CHIP"	"22nF,10%,50V,X7R,TP,1608"
2203-005105	C3	1	"C-CERAMIC,CHIP"	"0.68nF,5%,50V,NP0,TP,1608"
2401-000042	C167	1	C-AL	"100uF,20%,16V,GP,TP,6.3x7,5"
2401-000414	C54	1	C-AL	"10uF,20%,16V,GP,TP,4x7,5"
2401-000913	C162	1	C-AL	"22uF,20%,16V,GP,TP,5x11,5"
2401-000913	C174	1	C-AL	"22uF,20%,16V,GP,TP,5x11,5"
2401-001185	C163	1	C-AL	"33uF,20%,35V,GP,TP,5x11,5"
2401-002420	C173	1	C-AL	"470uF,20%,16V,GP,TP,10x12,5mm"
2801-004076	OSC2	1	CRYSTAL-UNIT	"6.785MHZ,30PPM,28-AAM,22PF,50OHM,BK"
2804-001163	OSC1	1	OSCILLATOR-CLOCK	"20MHz,50ppm,10TTL & CMOS,ST,5V"
2804-001278	OSC3	1	OSCILLATOR-CLOCK	"48MHZ,100PPM,10 TTL & CMOS,ST,5V,40MA"
2804-001475	OSC4	1	OSCILLATOR-CLOCK	"44MHZ,100PPM,15PF&10 TTL,ST,5V,60MA"
3301-000317	B1	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000317	B15	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000317	B16	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000317	B17	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000317	B18	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000317	B3	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
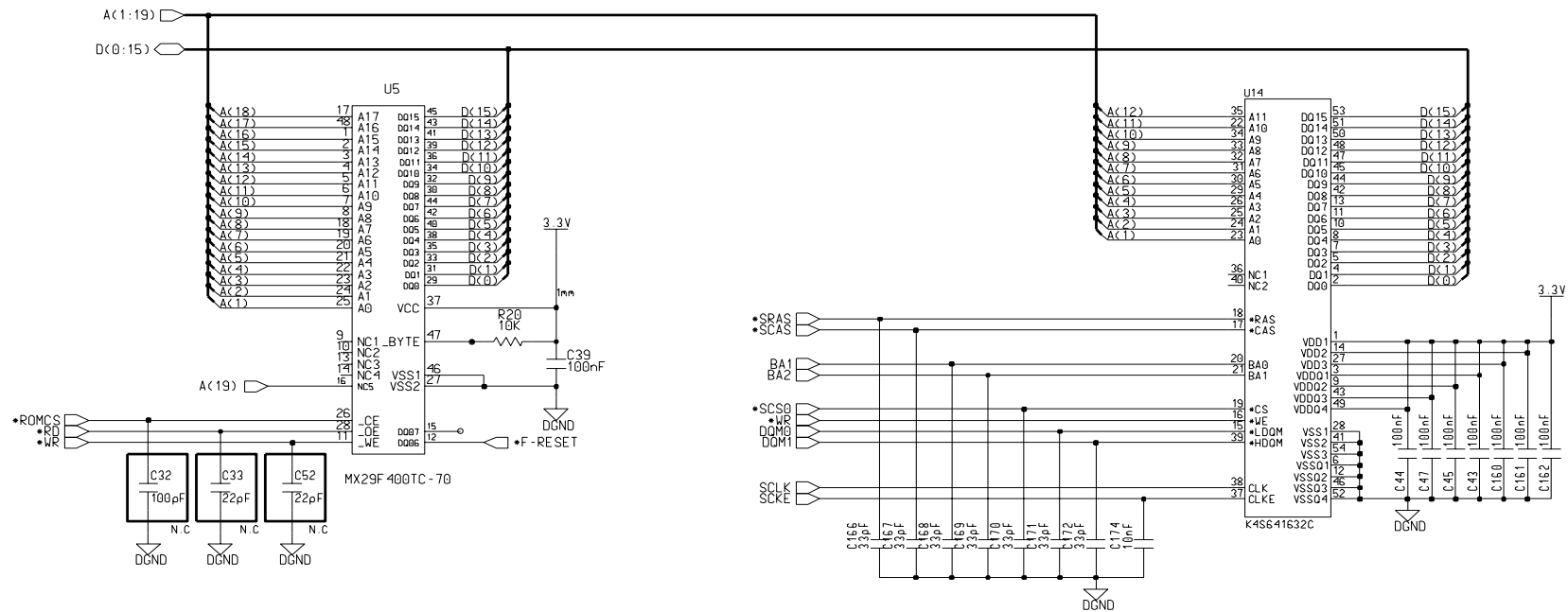
| SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
3301-000317	B4	1	CORE-FERRITE BEAD	"AB,2x1.25x0.9mm,-,-"
3301-000344	BD1	1	CORE-FERRITE BEAD	"AA,-,3.5x0.6x6.5mm,-,-,Mn-Zn,-"
3301-001069	L1	1	CORE-FERRITE BEAD	"AB,1.6x0.8x0.8mm,-,-"
3301-001069	L2	1	CORE-FERRITE BEAD	"AB,1.6x0.8x0.8mm,-,-"
3301-001069	L3	1	CORE-FERRITE BEAD	"AB,1.6x0.8x0.8mm,-,-"
3301-001069	L4	1	CORE-FERRITE BEAD	"AB,1.6x0.8x0.8mm,-,-"
3301-001069	L5	1	CORE-FERRITE BEAD	"AB,1.6x0.8x0.8mm,-,-"
3702-000118	J1	1	CONNECTOR-RIBBON	"36P,FEMALE,ANGLE,AU"
3709-000177	CN1	1	CONNECTOR-CARD EDGE	"72P,1.27mm,ANGLE,SN"
3711-000470	CN6	1	CONNECTOR-HEADER	"3WALL,4P,1R,2mm,STRAIGHT,SN"
3711-000470	CN9	1	CONNECTOR-HEADER	"3WALL,4P,1R,2mm,STRAIGHT,SN"
3711-002810	CN2	1	CONNECTOR-HEADER	"BOX,9P,1R,2mm,STRAIGHT,SN"
3711-002811	CN5	1	CONNECTOR-HEADER	"BOX,10P,1R,2mm,STRAIGHT,SN"
3711-002812	CN12	1	CONNECTOR-HEADER	"BOX,11P,1R,2mm,STRAIGHT,SN"
3711-003204	CN3	1	CONNECTOR-HEADER	"BOX,24P,2R,2mm,STRAIGHT,SN"
3711-003408	CN4	1	CONNECTOR-HEADER	"BOX,2P,1R,2mm,STRAIGHT,SN"
3711-003968	CN8	1	CONNECTOR-HEADER	"BOX,3P,1R,2.5mm,STRAIGHT,SN"
3711-003969	CN11	1	CONNECTOR-HEADER	"BOX,2P,1R,2.5mm,STRAIGHT,SN"
3722-001101	CN7	1	JACK-USB	"4P/2C,8.38mm,AU,IVR,#22-28"
JC11-10507A	U56	1	IC MASK ROM-HIGH	"ML-165,KM23C8105DG,SOP,44P,600"
JC11-10510A	U57	1	"IC MASK ROM-PCL6,LOW"	"ml-165,KM23C8105DG,SOP,44P,600"
JC13-00006A	U34	1	IC ASIC-SPGPE+	"ML-6060,KS32C61200,QFP,240P,36.4x4"
JC41-00110A	PCB	1	PCB-PCL	"ML-1250,FR-4,4L,-,1.6T,226.0*102.5,"

9. Schematic Diagrams
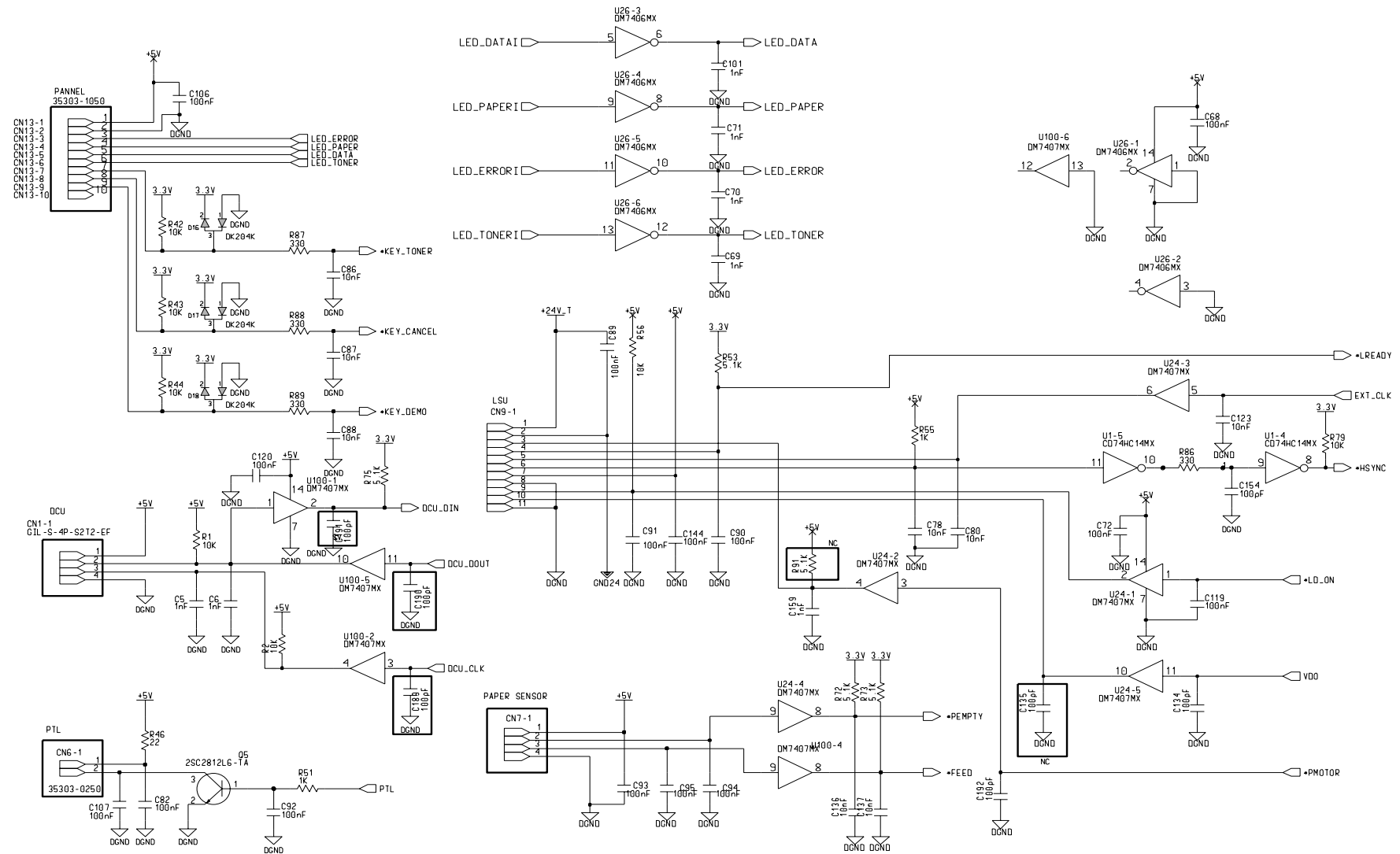
9-1 GDI Main Circuit Diagram(1/5)
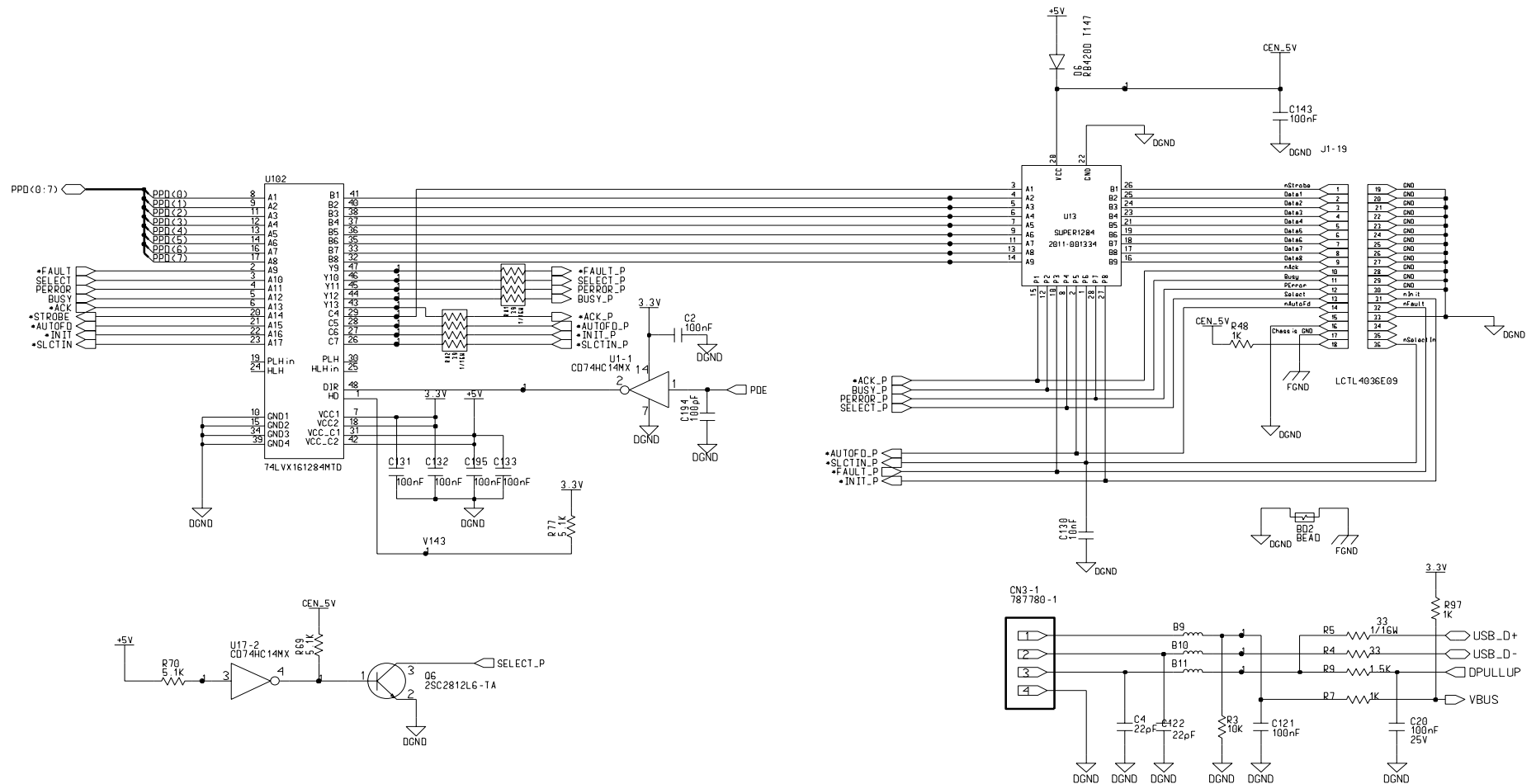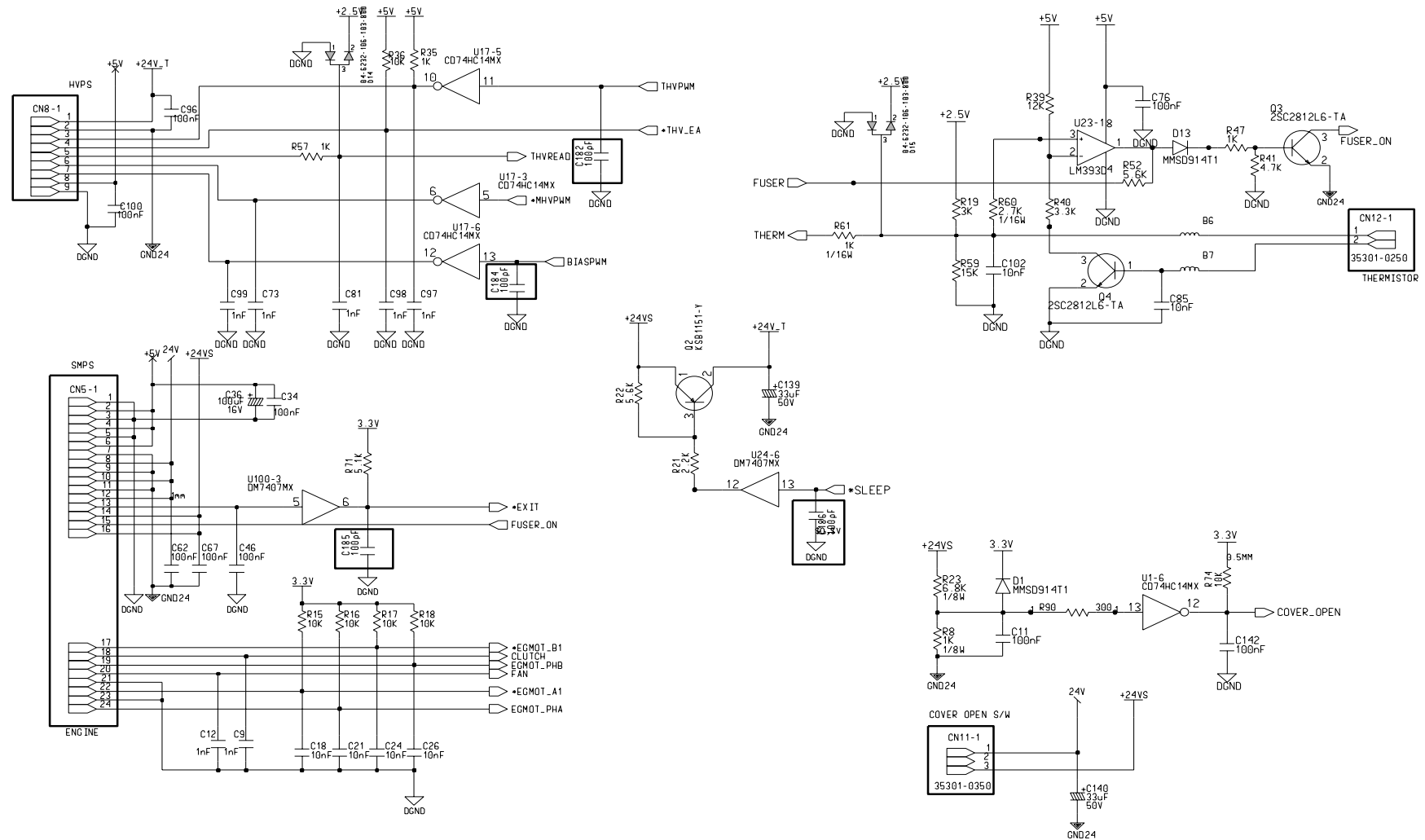
GDI Main Circuit Diagram(3/5)
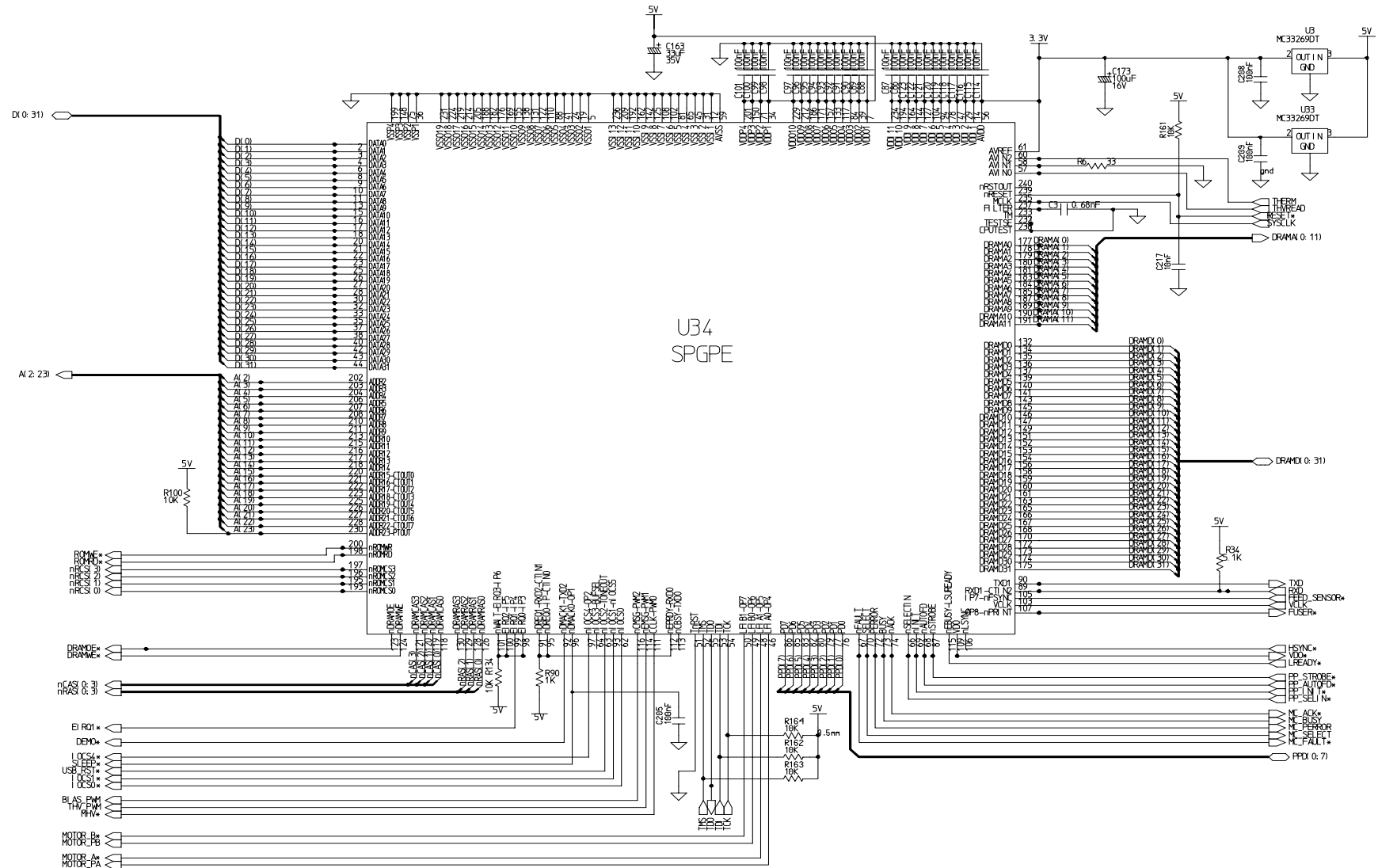
GDI Main Circuit Diagram(4/5)

GDI Main Circuit Diagram(5/5)
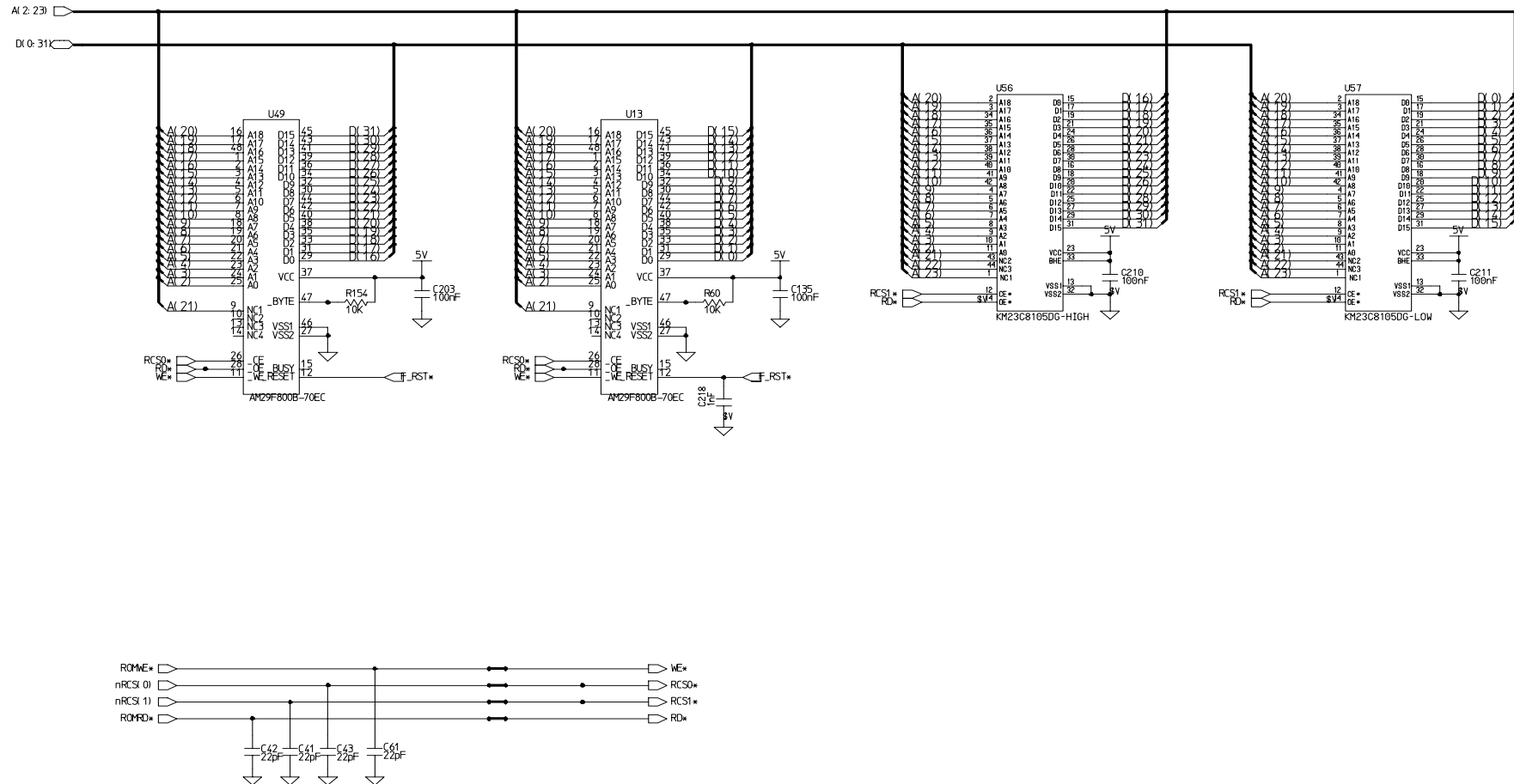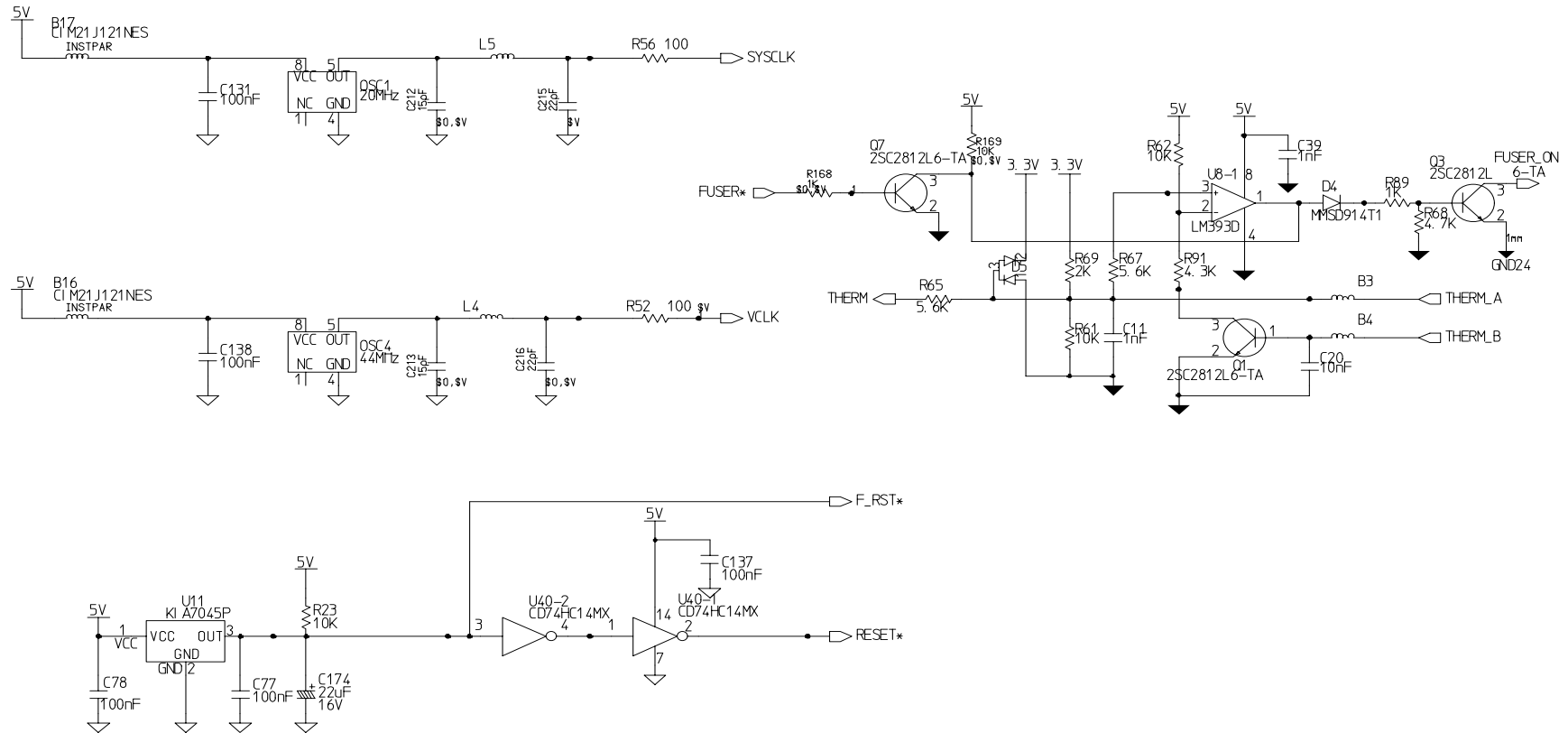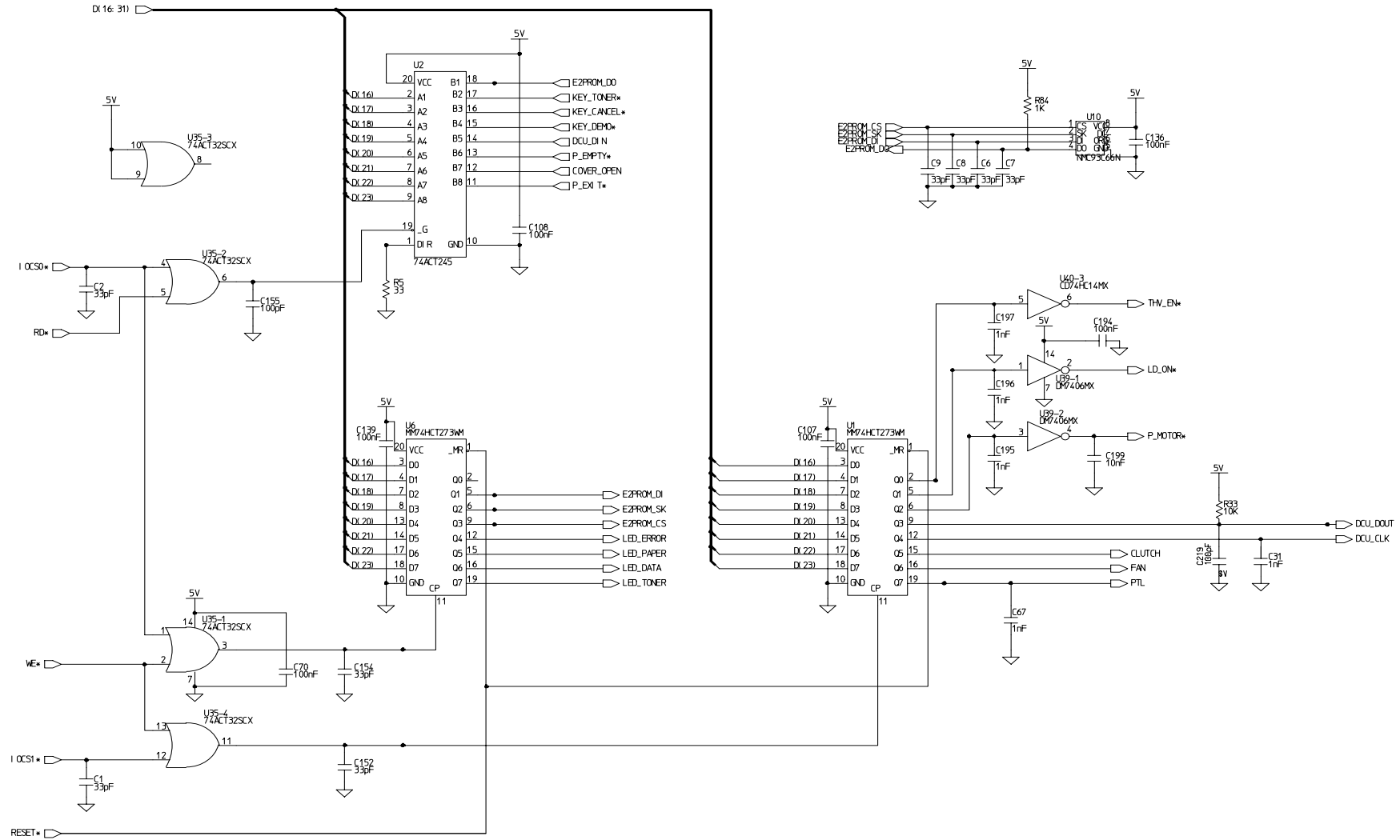
PCL Main Circuit Diagram(2/9)

# PCL Main Circuit Diagram(4/9)
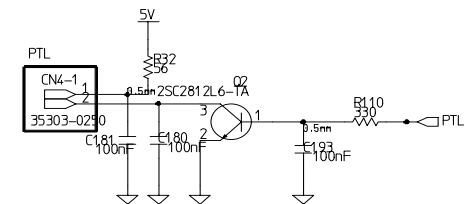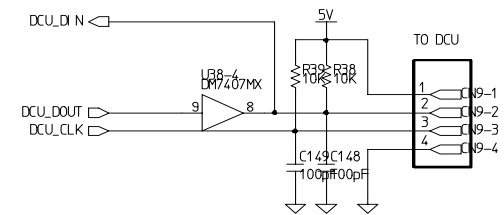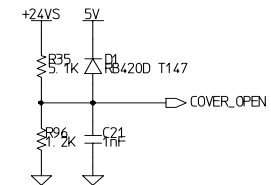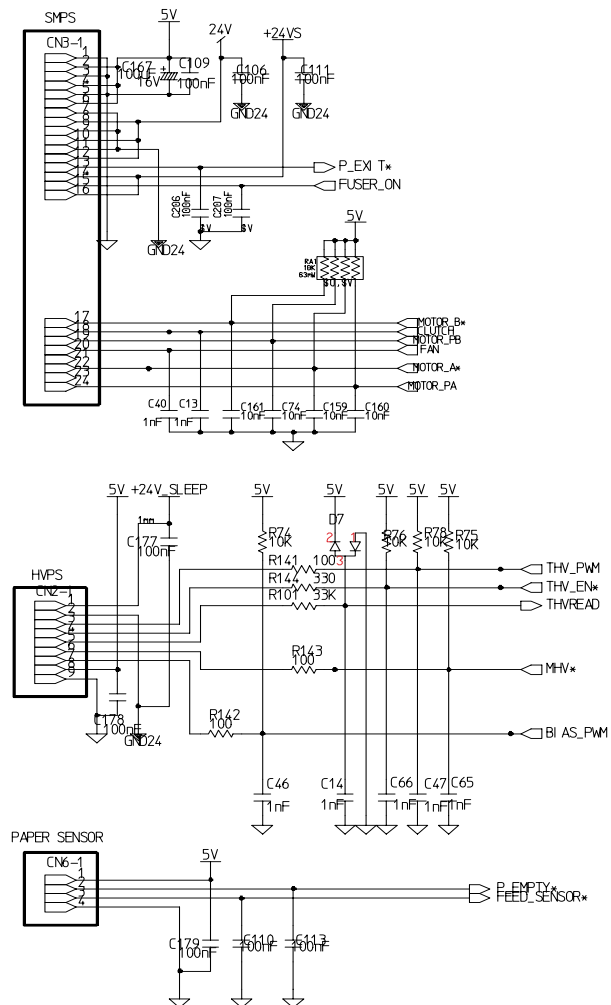
PCL Main Circuit Diagram(6/9)
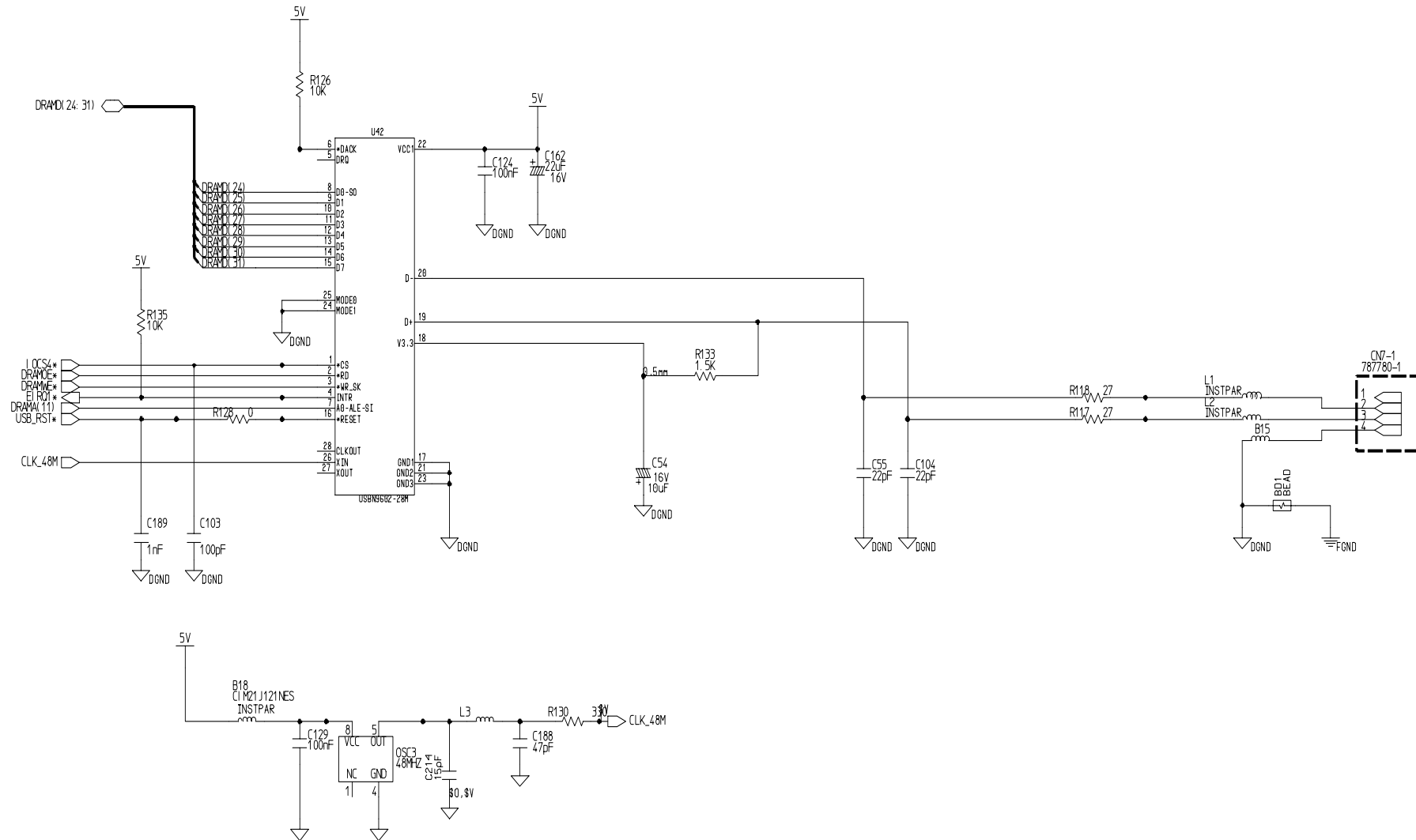
PCL Main Circuit Diagram(8/9)
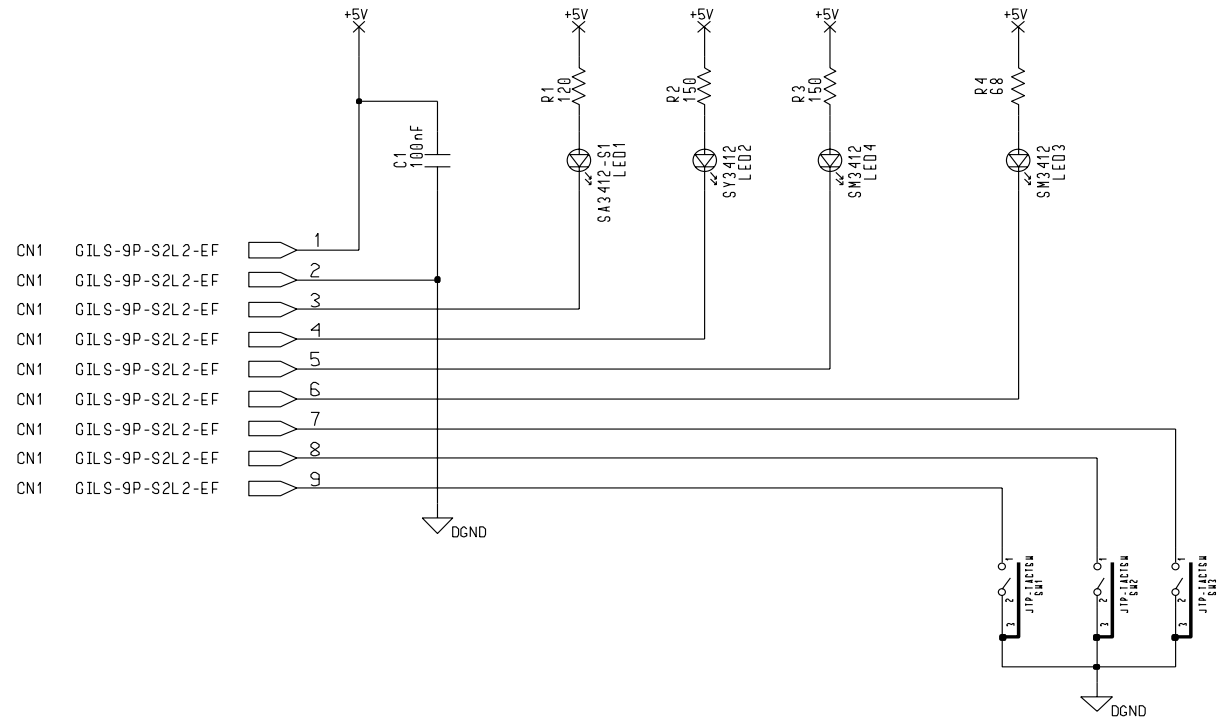
PCL Main Circuit Diagram(9/9)

9-3 Panel Circuit Diagram

9-4 HVPS Circuit Diagram(1/2)

HVPS Circuit Diagram(2/2)

9-5 SMPS Circuit Diagram(100V)

NO MARKING RESISTOR 1/4W-J (5%)

SMPS Circuit Diagram(200V)

NO MARKING RESISTOR 1/4W-J (5%)