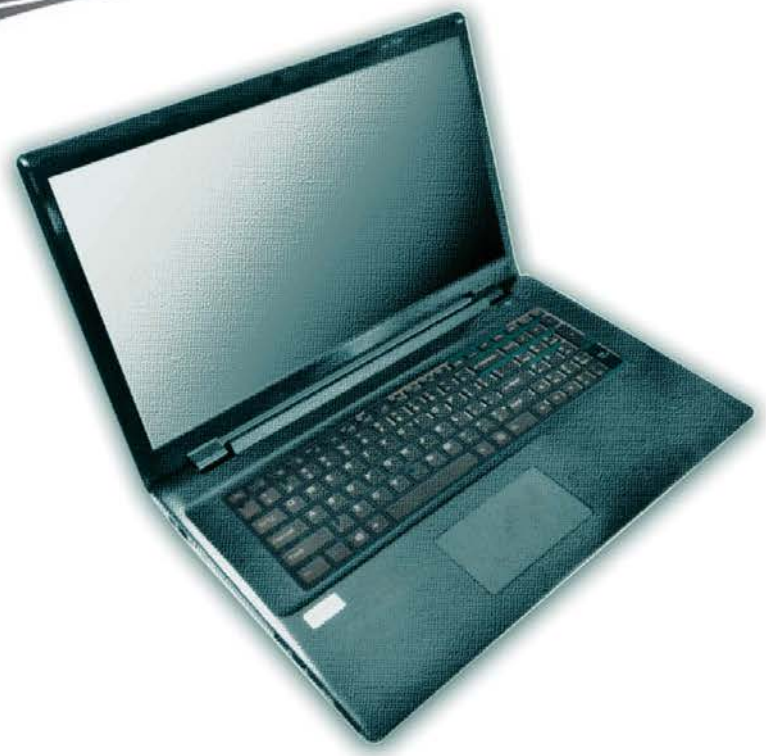
SERVICE MANUAL

W970LUQ

notebook



Notebook Computer

W970LUQ

Service Manual

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About this Manual

This manual is intended for service personnel who have completed sufficient training to undertake the maintenance and inspection of personal computers.

It is organized to allow you to look up basic information for servicing and/or upgrading components of the ***W970LUQ*** series notebook PC.

The following information is included:

Chapter 1, Introduction, provides general information about the location of system elements and their specifications.
Chapter 2, Disassembly, provides step-by-step instructions for disassembling parts and subsystems and how to upgrade elements of the system.

Appendix A, Part Lists
Appendix B, Schematic Diagrams
Appendix C, Updating the FLASH ROM BIOS

IMPORTANT SAFETY INSTRUCTIONS

Follow basic safety precautions, including those listed below, to reduce the risk of fire, electric shock and injury to persons when using any electrical equipment:

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit with an AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19V, 2.1A (**40** Watts) minimum AC/DC Adapter.

CAUTION

This Computer's Optical Device is a Laser Class 1 Product

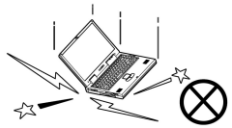
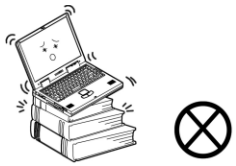
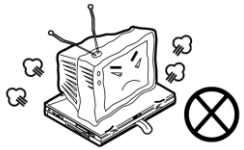
FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
This device may not cause harmful interference.
This device must accept any interference received, including interference that may cause undesired operation.

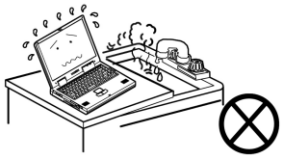
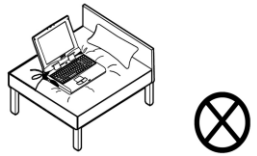
Instructions for Care and Operation

The notebook computer is quite rugged, but it can be damaged. To prevent this, follow these suggestions:

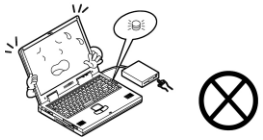
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.

Do not expose the computer to any shock or vibration.	*Do not place it on an unstable surface.*	*Do not place anything heavy on the computer.*
		

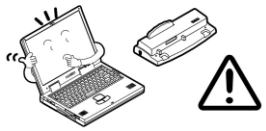
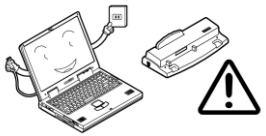
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.

Do not expose it to excessive heat or direct sunlight.	*Do not leave it in a place where foreign matter or moisture may affect the system.*	*Don't use or store the computer in a humid environment.*	*Do not place the computer on any surface which will block the vents.*
			

3. **Follow the proper working procedures for the computer**. Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.

Do not turn off the power until you properly shut down all programs.	*Do not turn off any peripheral devices when the computer is on.*	*Do not disassemble the computer by yourself.*	*Perform routine maintenance on your computer.*
			

4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices**.

Use only approved brands of peripherals.	*Unplug the power cord before attaching peripheral devices.*
	

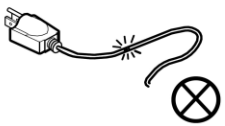
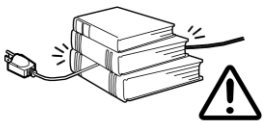
Power Safety

The computer has specific power requirements:

- Only use a power adapter approved for use with this computer.
- Your AC adapter may be designed for international travel but it still requires a steady, uninterrupted power supply. If you are unsure of your local power specifications, consult your service representative or local power company.
- The power adapter may have either a 2-prong or a 3-prong grounded plug. The third prong is an important safety feature; do not defeat its purpose. If you do not have access to a compatible outlet, have a qualified electrician install one.
- When you want to unplug the power cord, be sure to disconnect it by the plug head, not by its wire.
- Make sure the socket and any extension cord(s) you use can support the total current load of all the connected devices.
- Before cleaning the computer, make sure it is disconnected from any external power supplies.

Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

Do not plug in the power cord if you are wet.	*Do not use the power cord if it is broken.*	*Do not place heavy objects on the power cord.*
		

Battery Precautions

- Only use batteries designed for this computer. The wrong battery type may explode, leak or damage the computer.
- Do not continue to use a battery that has been dropped, or that appears damaged (e.g. bent or twisted) in any way. Even if the computer continues to work with a damaged battery in place, it may cause circuit damage, which may possibly result in fire.
- Recharge the batteries using the notebook's system. Incorrect recharging may make the battery explode.
- Do not try to repair a battery pack. Refer any battery pack repair or replacement to your service representative or qualified service personnel.
- Keep children away from, and promptly dispose of a damaged battery. Always dispose of batteries carefully. Batteries may explode or leak if exposed to fire, or improperly handled or discarded.
- Keep the battery away from metal appliances.
- Affix tape to the battery contacts before disposing of the battery.
- Do not touch the battery contacts with your hands or metal objects.

Battery Guidelines

The following can also apply to any backup batteries you may have.

- If you do not use the battery for an extended period, then remove the battery from the computer for storage.
- Before removing the battery for storage charge it to 60% - 70%.
- Check stored batteries at least every 3 months and charge them to 60% - 70%.

Battery Disposal

The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.

Caution

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used battery according to the manufacturer's instructions.

Battery Level

Click the battery icon in the taskbar to see the current battery level and charge status. A battery that drops below a level of 10% will not allow the computer to boot up. Make sure that any battery that drops below 10% is recharged within one week.

Related Documents

You may also need to consult the following manual for additional information:

User's Manual on CD/DVD

This describes the notebook PC's features and the procedures for operating the computer and its ROM-based setup program. It also describes the installation and operation of the utility programs provided with the notebook PC.

System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Insert the battery and make sure it is locked in position.
4. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
5. Attach the AC/DC adapter to the DC-In jack on the left of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 130 degrees); use the other hand (as illustrated in Figure 1) to support the base of the computer (**Note**: **Never** lift the computer by the lid/LCD).
7. Press the power button to turn the computer "on".

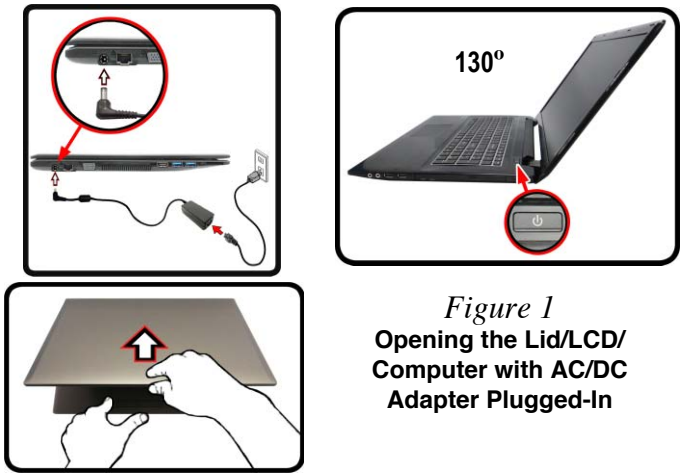


Figure 1
Opening the Lid/LCD/ Computer with AC/DC Adapter Plugged-In

Shut Down

Note that you should always shut your computer down by choosing the **Shut down** command in **Windows** (see below). This will help prevent hard disk or system problems.

Click **Settings** in the **Charms Bar** (use the **Windows Logo Key** + **C** key combination to access the Charms Bar) and choose **Shut down** from the **Power** menu.

Or

Choose **Shut down or sign out > Shut down** from the context menu (use the **Windows Logo Key** + **X** key combination to access the context menu).

Contents

Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the ***W970LUQ*** series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about dri-vers (e.g. VGA & audio) is also found in the *User's Manual*. The manual is shipped with the computer.

Operating systems (e.g. *Window 8.1*, etc.) have their own manuals as do application softwares (e.g. word processing and database programs). If you have questions about those programs, you should consult those manuals.

The ***W970LUQ*** series notebook is designed to be upgradeable. See ***Disassembly on page 2 - 1*** for a detailed description of the upgrade procedures for each specific component. Please take note of the warning and safety information indicated by the "  " symbol.

The balance of this chapter reviews the computer's technical specifications and features.

Specifications

Latest Specification Information

The specifications listed here are correct at the time of sending them to the press. Certain items (particularly processor types/speeds) may be changed, delayed or updated due to the manufacturer's release schedule. Check with your service center for more details.

CPU

The CPU is not a user serviceable part. Accessing the CPU in any way may violate your warranty.

Processor Options

Intel® Pentium® Processor
N3700 (1.60GHz)
2MB Smart Cache, **14nm**, DDR3L-1600MHz, TDP 6W
Intel® Celeron® Processor
N3150 (1.60GHz), N3050 (1.60GHz)
2MB Smart Cache, **14nm**, DDR3L-1600MHz, TDP 6W
N3000 (1.04GHz)
2MB Smart Cache, **14nm**, DDR3L-1600MHz, TDP 4W

BIOS

64Mb SPI Flash ROM
AMI BIOS

Memory

Two 204 Pin SO-DIMM Sockets Supporting **DDR3L 1600MHz** Memory
Memory Expandable up to 8GB

LCD Options

17.3" (43.94cm) HD+ (Thickness: 6.0mm)

Video Adapter

Intel HD Graphics
Dynamic Frequency
Intel Dynamic Video Memory Technology
Microsoft DirectX®11.1 Compatible

Audio

High Definition Audio Compliant Interface
2 * Built-In Speakers
Built-In Microphone

Security

Security (Kensington® Type) Lock Slot
BIOS Password
Intel® PTT

Storage

One Changeable 2.5" **7mm/9.5mm** (h) SATA **HDD/SSD**
(**Factory Option**) One 9.5mm(h) Optical Device Type Drive (Super Multi Drive)
Or
(**Factory Option**) Dummy ODD
Or
(**Factory Option**) **7mm** 2nd **HDD** caddy

Pointing Device

Built-in Touchpad

Keyboard

Full-size “WinKey” keyboard (with numeric keypad)

M.2 Slots

Slot 1 for **WLAN and Bluetooth** Combo Module

Interface

One HDMI-Out Port
One External Monitor Port
One Headphone-Out Jack
One Microphone-In Jack
One RJ-45 LAN Jack
Two USB 3.0 Ports
One DC-in Jack
Two USB 2.0 Ports

Communication

Built-In Gigabit Ethernet LAN

1.0M HD PC Camera Module

WLAN/Bluetooth M.2 Modules:

(**Factory Option**) Intel® Wireless-AC 3165 Wireless LAN (**802.11ac**) + Bluetooth 4.0

(**Factory Option**) Intel® Wireless-N 7265 Wireless LAN (**802.11b/g/n**) + Bluetooth 4.0

(**Factory Option**) Third-Party Wireless LAN (**802.11b/g/n**) + Bluetooth 4.0

Card Reader

Embedded Multi-In-1 Push-Push Card Reader

MMC (MultiMedia Card) / RS MMC

SD (Secure Digital) / Mini SD / SDHC/ SDXC

Environmental Spec

Temperature

Operating: 5°C - 35°C

Non-Operating: -20°C - 60°C

Relative Humidity

Operating: 20% - 80%

Non-Operating: 10% - 90%

Power

Full Range AC/DC Adapter

AC Input: 100 - 240V, 50 - 60Hz

DC Output: 19V, 2.1A (**40W**)

Removable 4 Cell Smart Lithium-Ion Battery Pack, 32WH

(**Factory Option**) Removable 4 Cell Smart Lithium-Ion Battery Pack, 44WH

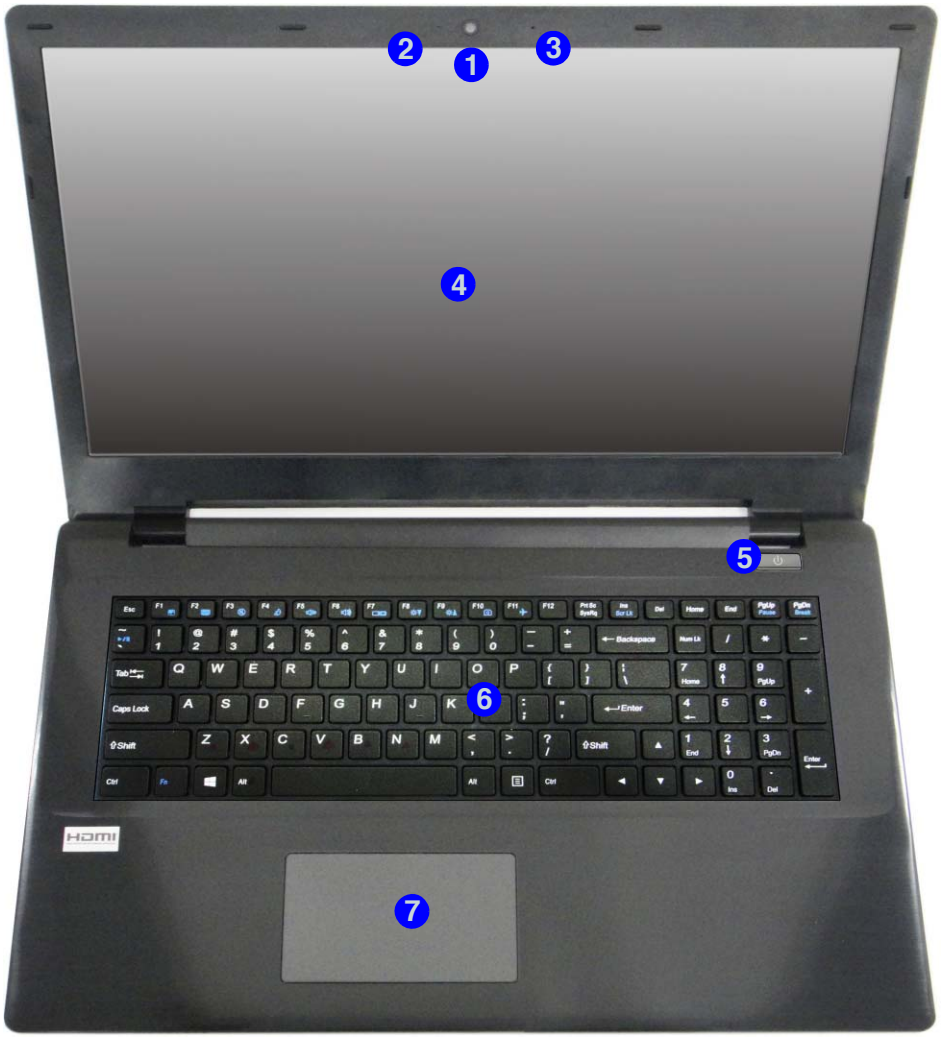
Dimensions & Weight

413mm (w) * 273mm (d) * 12.7 - 28.5mm (h)

2.5kg (Barebone with ODD and 32WH Battery)

External Locator - Top View with LCD Panel Open

Figure 1
Top View



1. PC Camera
2. *PC Camera LED
   **When the PC camera is in use, the LED will be illuminated in red.*
3. Built-In Microphone
4. LCD
5. Power Button
6. Keyboard
7. Clickpad & Buttons

External Locator - Front & Right Side Views

FRONT VIEW

Figure 2
Front View

1. LED Indicator

RIGHT SIDE VIEW

Figure 3
Right Side View

1. Microphone-In Jack
2. Headphone-Out Jack
3. USB 2.0 Ports
4. Optical Device Drive Bay
5. Emergency Eject Hole
6. Security Lock Slot

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. DC-In Jack
2. RJ-45 LAN Jack
3. External Monitor Port
4. Vent
5. HDMI-Out Port
6. USB 3.0 Ports
7. Multi-in-1 Card Reader

LEFT SIDE VIEW

Figure 5
Rear View

1. Battery

REAR VIEW

External Locator - Bottom View

Figure 6
Bottom View

1. Battery Location
2. Vent
3. Speakers

Overheating

To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

Mainboard Overview - Top (Key Parts)

Figure 7
Mainboard Top Key Parts

1. KBC-ITE IT8587

Mainboard Overview - Bottom (Key Parts)

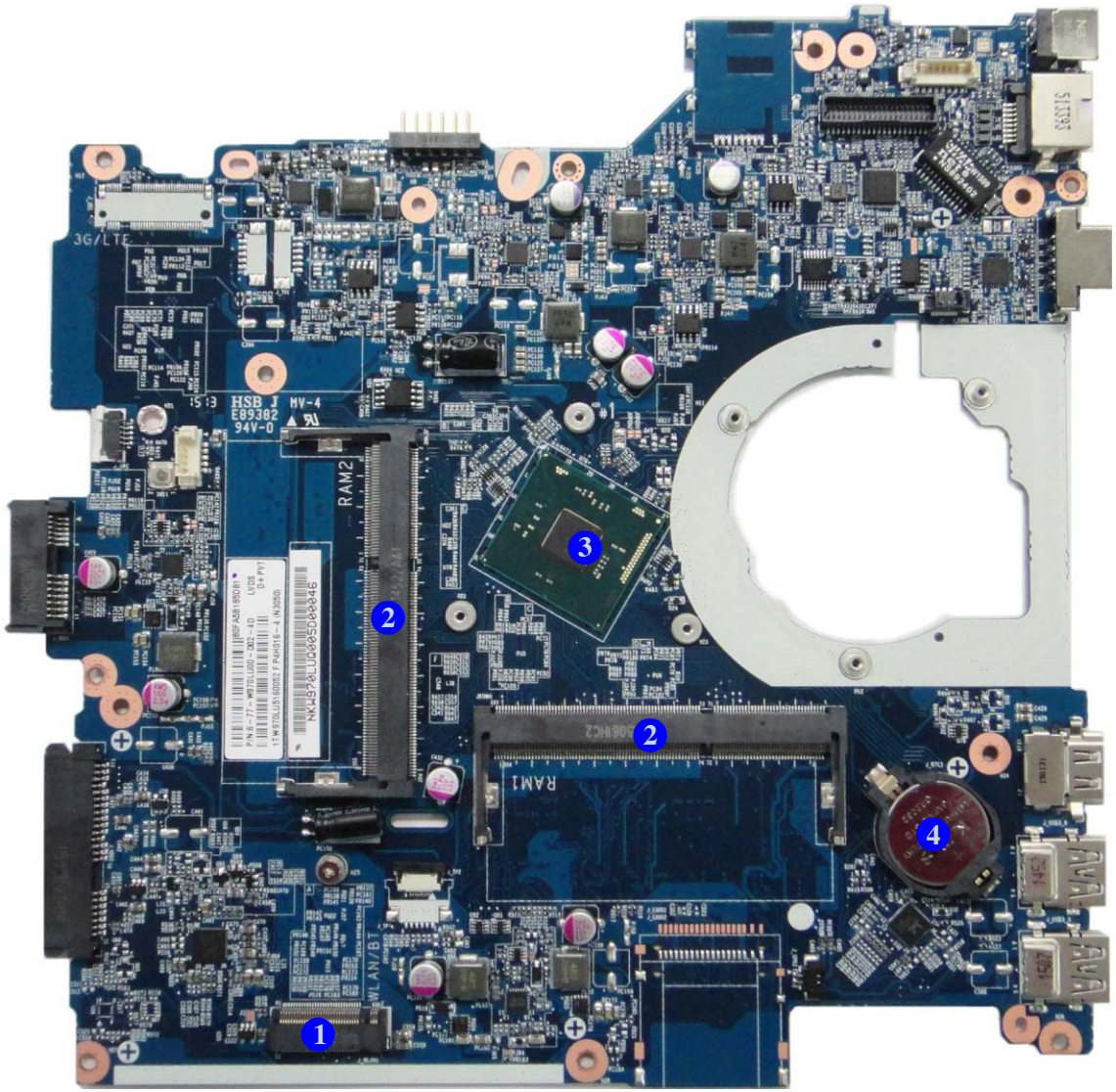


Figure 8
Mainboard Bottom Key Parts

1. M.2 Card Connector (mSATA module)
2. Memory Slots DDR3L SO-DIMM
3. CPU
4. CMOS Battery

Mainboard Overview - Top (Connectors)

Figure 9
Mainboard Top Connectors

1. HDMI-Out Port
2. USB 3.0 Ports
3. Keyboard Cable Connector
4. Audio Board Cable Connector

Mainboard Overview - Bottom (Connectors)

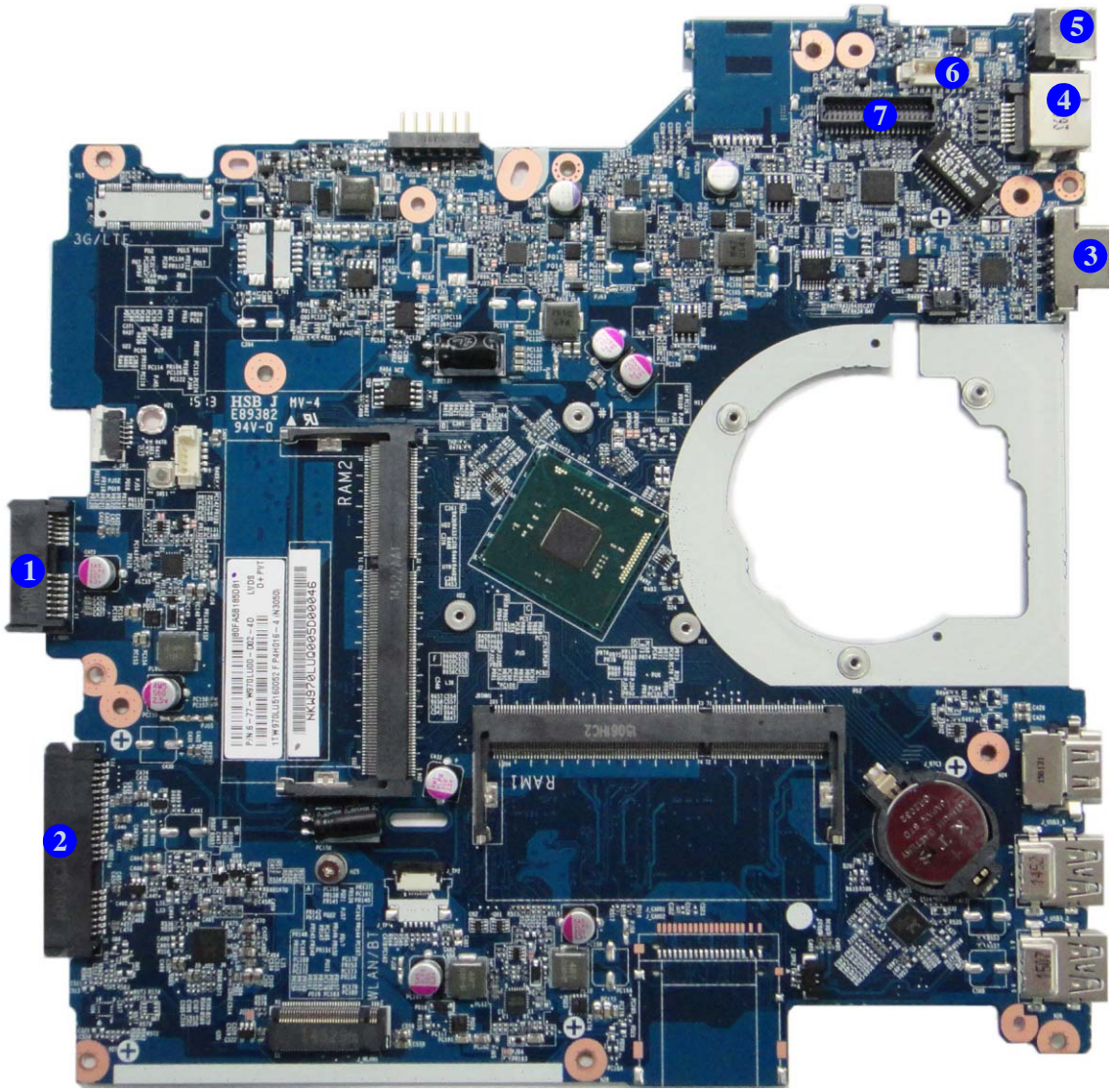


Figure 10
Mainboard Bottom Connectors

1. ODD Connector
2. HDD Connector
3. External Monitor Port
4. RJ-45 LAN Jack
5. DC-In Jack
6. CCD Connector
7. LCD Cable Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***W970LUQ*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

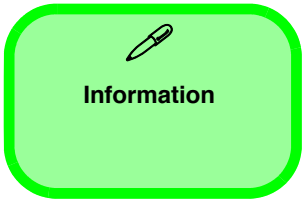
We suggest you completely review any procedure before you take the computer apart.

Procedures such as upgrading/replacing the RAM, optical device and hard disk are included in the User's Manual but are repeated here for your convenience.

To make the disassembly process easier each section may have a box in the page margin. Information contained under the figure # will give a synopsis of the sequence of procedures involved in the disassembly procedure. A box with a lists the relevant parts you will have after the disassembly process is complete. **Note**: The parts listed will be for the disassembly procedure listed ONLY, and not any previous disassembly step(s) required. Refer to the part list for the previous disassembly procedure. The amount of screws you should be left with will be listed here also.

A box with a will also provide any possible helpful information. A box with a contains warnings.

An example of these types of boxes are shown in the sidebar.



NOTE: All disassembly procedures assume that the system is turned **OFF**, and disconnected from any power supply (the battery is removed too).

Maintenance Tools

The following tools are recommended when working on the notebook PC:

- M3 Philips-head screwdriver
- M2.5 Philips-head screwdriver (magnetized)
- M2 Philips-head screwdriver
- Small flat-head screwdriver
- Pair of needle-nose pliers
- Anti-static wrist-strap

Connections

Connections within the computer are one of four types:

Locking collar sockets for ribbon connectors	To release these connectors, use a small flat-head screwdriver to gently pry the locking collar away from its base. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Pressure sockets for multi-wire connectors	To release this connector type, grasp it at its head and gently rock it from side to side as you pull it out. Do not pull on the wires themselves. When replacing the connection, do not try to force it. The socket only fits one way.
Pressure sockets for ribbon connectors	To release these connectors, use a small pair of needle-nose pliers to gently lift the connector away from its socket. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Board-to-board or multi-pin sockets	To separate the boards, gently rock them from side to side as you pull them apart. If the connection is very tight, use a small flat-head screwdriver - use just enough force to start.

Maintenance Precautions

The following precautions are a reminder. To avoid personal injury or damage to the computer while performing a removal and/or replacement job, take the following precautions:

1. **Don't drop it**. Perform your repairs and/or upgrades on a stable surface. If the computer falls, the case and other components could be damaged.
2. **Don't overheat it**. Note the proximity of any heating elements. Keep the computer out of direct sunlight.
3. **Avoid interference**. Note the proximity of any high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage components and/or data. You should also monitor the position of magnetized tools (i.e. screwdrivers).
4. **Keep it dry**. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.
5. **Be careful with power**. Avoid accidental shocks, discharges or explosions.
   - Before removing or servicing any part from the computer, turn the computer off and detach any power supplies.
   - When you want to unplug the power cord or any cable/wire, be sure to disconnect it by the plug head. Do not pull on the wire.
6. **Peripherals** – Turn off and detach any peripherals.
7. **Beware of static discharge**. ICs, such as the CPU and main support chips, are vulnerable to static electricity. Before handling any part in the computer, discharge any static electricity inside the computer. When handling a printed circuit board, do not use gloves or other materials which allow static electricity buildup. We suggest that you use an anti-static wrist strap instead.
8. **Beware of corrosion**. As you perform your job, avoid touching any connector leads. Even the cleanest hands produce oils which can attract corrosive elements.
9. **Keep your work environment clean**. Tobacco smoke, dust or other air-born particulate matter is often attracted to charged surfaces, reducing performance.
10. **Keep track of the components**. When removing or replacing any part, be careful not to leave small parts, such as screws, loose inside the computer.

Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

Cleaning

Do not apply cleaner directly to the computer, use a soft clean cloth.
Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.

Disassembly Steps

The following table lists the disassembly steps, and on which page to find the related information. **PLEASE PERFORM THE DISASSEMBLY STEPS IN THE ORDER INDICATED.**

To remove the Battery:

1. Remove the battery *page 2 - 5*

To remove the HDD:

1. Remove the battery *page 2 - 5*
2. Remove the HDD *page 2 - 6*

To remove the Optical Device:

1. Remove the battery *page 2 - 5*
2. Remove the optical device *page 2 - 9*

To remove the 2nd HDD:

1. Remove the battery *page 2 - 5*
2. Remove the optical device *page 2 - 9*
3. Remove the 2nd HDD *page 2 - 11*

To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 12*

To remove the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 14*

To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the WLAN *page 2 - 16*

To remove the CCD Module:

1. Remove the battery *page 2 - 5*
2. Remove the CCD module *page 2 - 18*

Removing the Battery

1. Turn **off** the computer, turn it over.
2. Slide the latch 1 in the direction of the arrow (***Figure 1a***).
3. Slide the latch 2 in the direction of the arrow, and hold it in place (***Figure 1a***).
4. Slide the battery 3 in the direction of the arrow 4 (***Figure 1b***).

a.

b.

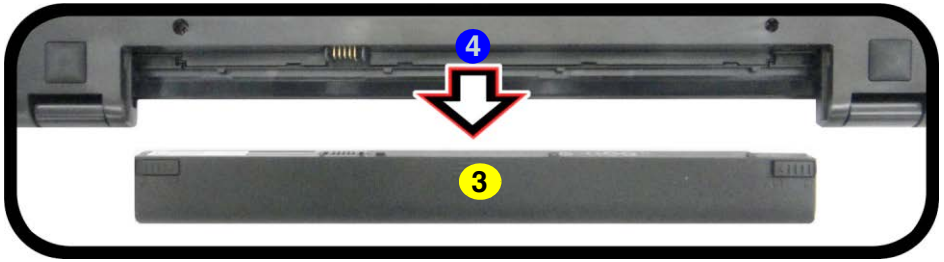


Figure 1
Battery Removal

a. Slide the latch and hold it in place.
b. Slide the battery in the direction of the arrow.

3. Battery

Removing the Hard Disk Drive

The hard disk drive can be taken out to accommodate other 2.5" serial (SATA) hard disk drives with a height of 9.5mm or 7.0mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up a new hard disk.

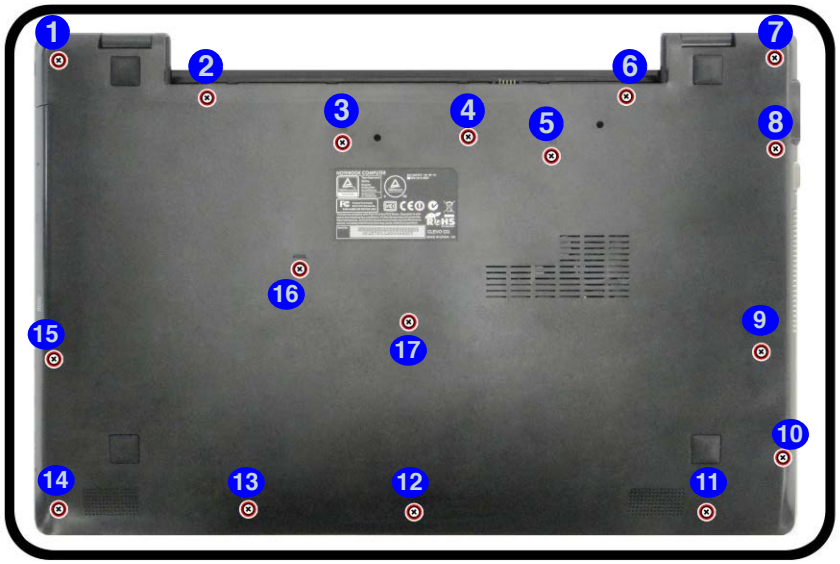
Hard Disk Upgrade Process

1. Turn **off** the computer, turn it over to remove the battery (*page 2 - 5*).
2. Remove screws 1 - 17 (*Figure 2a*).

Figure 2
HDD Assembly Removal

a. Remove the screws.

a.



- 17 Screws

HDD System Warning

New HDD's are blank. Before you begin make sure:

You have backed up any data you want to keep from your old HDD.

You have all the CD-ROMs and FDDs required to install your operating system and programs.

If you have access to the internet, download the latest application and hardware driver updates for the operating system you plan to install. Copy these to a removable medium.

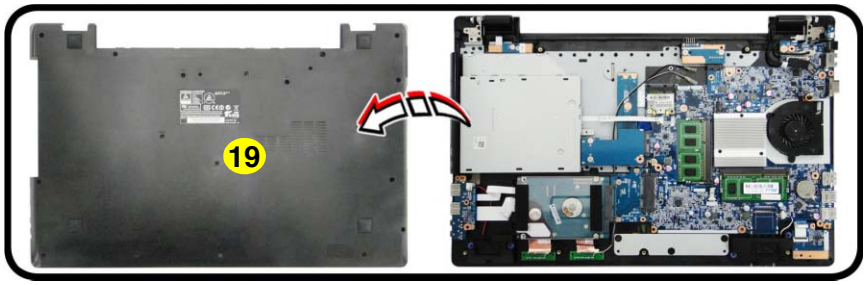
3. Lift the bottom cover from point 18 (*Figure 3b*).
4. Remove the bottom cover 19 (*Figure 3c*).
5. Slightly lift and pull the hard disk assembly in the direction of arrow 20 (*Figure 3d*).
6. Lift the hard disk assembly 21 out of the bay 22 (*Figure 3e*).
7. Remove screws 23 - 24 and the adhesive cover 25 from the hard disk 26 (*Figure 3f*).
8. Reverse the process to install a new hard disk (do not forget to replace all the screws and bay cover).

Figure 3
HDD Assembly Removal (cont'd.)

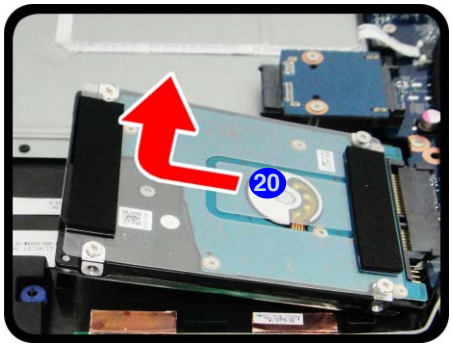
b. Lift the bottom cover.
c. Remove the bottom cover.
d. Slightly lift and pull the HDD assembly in the direction of the arrow.
e. Lift the HDD assembly out of the bay.
f. Remove the screws and adhesive cover.

b.

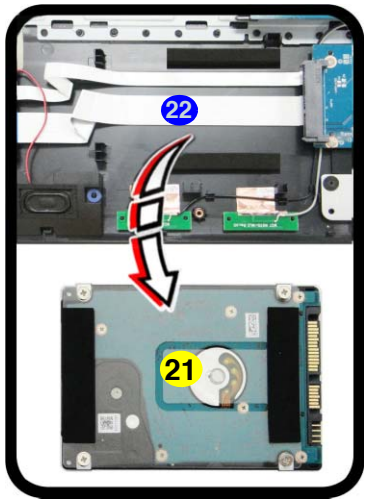
c.



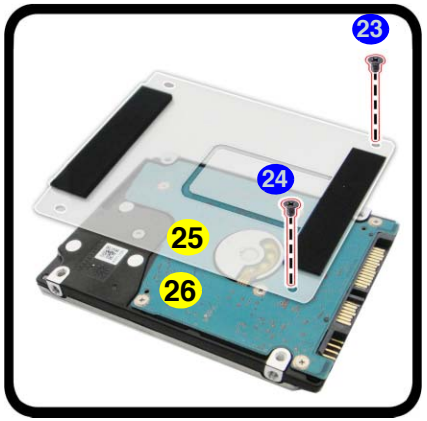
d.



e.



f.



19. Bottom Cover
21. HDD Assembly
25. Adhesive Cover
26. HDD

- 2 Screws

Hard Disk Size Note (Foam Rubber Insert)

Note that the hard disks pictured on the following pages are all 9.5mm(H) hard disk drives. In some cases 7mm(H) hard disk drives will be installed. For more information contact your distributor/supplier, and bear in mind your warranty terms.

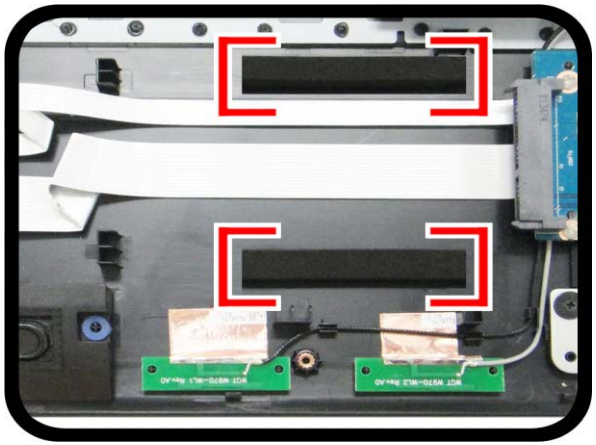


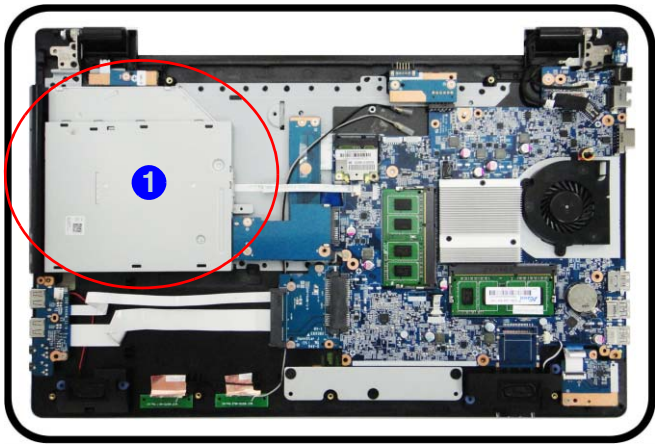
Figure 4
Foam Rubber Insert for 7mm(H) HDDs

- If you are replacing a 9.5mm(H) HDD with a 7mm(H) HDD then insert the foam rubber insert (as shown above).
- If you are replacing a 7mm(H) HDD with a 9.5mm(H) HDD then remove the foam rubber insert.

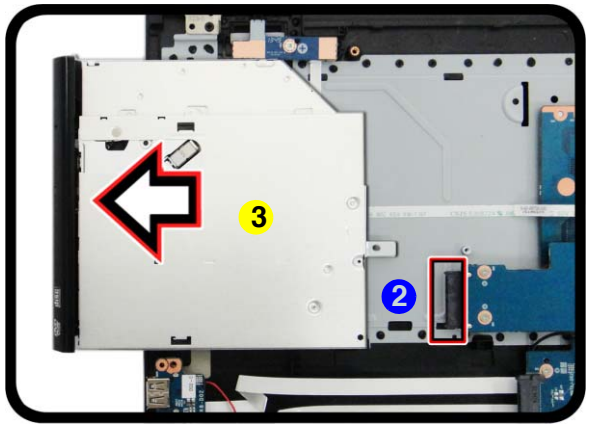
Removing the Optical (CD/DVD) Device

1. Turn **off** the computer, turn it over to remove the battery (*page 2 - 5*) and bottom cover (*page 2 - 6*).
2. The optical device will be visible at point 1 on the mainboard (*Figure 5a*).
3. Carefully pull out the optical device 3 out of the bay at point 2 (*Figure 5b*).
4. Carefully pry the bezel 5 off the optical device at point 4 (*Figure 5c*).
5. Separate the bezel 5 and the optical device (*Figure 5d*).

a.



b.



c.

d.

Figure 5
Optical Device Removal

a. Locate the optical device.
b. Pull out the optical device.
c. Pry the bezel off the optical device.
d. Separate the bezel and optical device

1. Dummy ODD Cover
3. Optical Device
5. Bezel

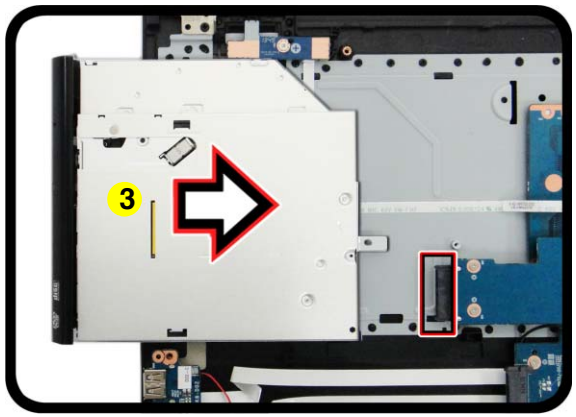
Figure 6
Optical Device Assembly

e. Install the front bezel.
f. Insert the optical device.

6. Reverse the process to attach the front bezel 5 with the new optical device at point 6 (***Figure 6e***).
7. Insert the new optical device 3 and carefully slide it into the computer (the device only fits one way. DO NOT FORCE IT; The screw holes should line up).
8. Replace the bottom cover and tighten the screws.
9. Restart the computer to allow it to automatically detect the new device.

e.

f.



3. Optical Device
5. Bezel

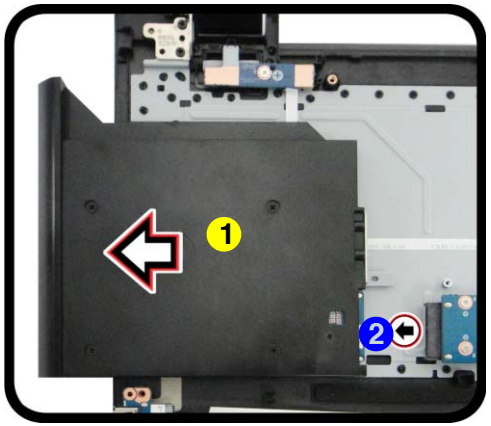
Removing the 2nd (7mm) HDD from the Caddy Bay

1. Turn **off** the computer, turn it over to remove the battery (*page 2 - 5*), bottom cover (*page 2 - 6*) and ODD (*page 2 - 9*).
2. Carefully pull the caddy bay 1 out of the bay at point 2 (*Figure 7a*).
3. Remove screws 3 - 6 from the bottom of the caddy bay (*Figure 7b*).
4. Slide the 2nd (7mm) hard disk in the direction of arrow 7 (*Figure 7c*).
5. Lift the 2nd (7mm) hard disk 8 out of the bay (*Figure 7d*).
6. Reverse the process to install a new 7mm HDD.

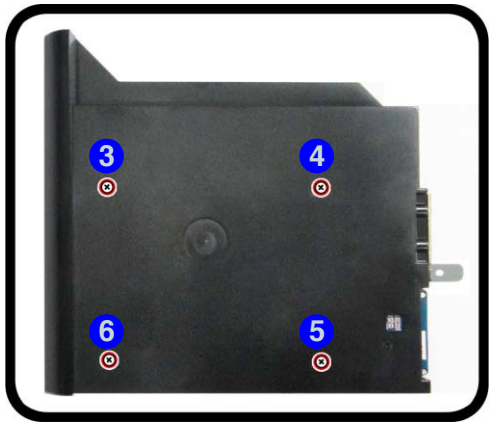
Figure 7
2nd (7mm) HDD Removal

a. Pull out the caddy bay.
b. Remove the screws.
c. Slide the 7mm HDD out of the bay.
d. Lift the 7mm HDD out of the bay.

a.



b.



c.

Note that the caddy bay only supports 7.0mm (H) hard disks.

d.

1. Caddy Bay
8. 2nd (7mm) HDD

- 4 Screws

Figure 8
RAM Module Removal

a. The RAM modules will be visible at point 1 on the mainboard.
b. Pull the release latches.
c. Remove the module.

Removing the System Memory (RAM)

The computer has two memory sockets for 204 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting single or dual channel DDR3L depending on the CPU. The main memory can be expanded up to 8GB. The total memory size is automatically detected by the POST routine once you turn on your computer.

Memory Upgrade Process

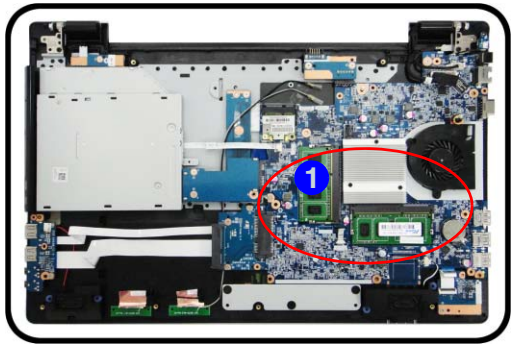
1. Turn **off** the computer, turn it over to remove the battery (*page 2 - 5*) and bottom cover (*page 2 - 6*).
2. The RAM modules will be visible at point 1 on the mainboard (*Figure 8b*).
3. Gently pull the two release latches (2 & 3) on the sides of the memory socket in the direction indicated by the arrows (*Figure 8b*). The RAM module 4 will pop-up (*Figure 8c*), and you can then remove it.

Contact Warning

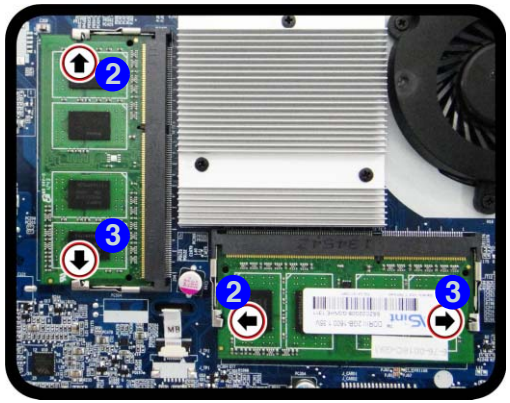
Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.

4. RAM Module

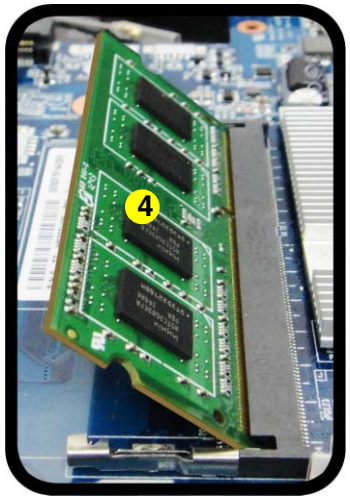
a.



b.



c.



Single Memory Module Installation

If your computer has a single memory module, then insert the module into the **Channel 0 (JDIMM1)** socket. In this case this is the **horizontal memory socket**.

4. Pull the latches to release the second module if necessary.
5. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
6. The module will only fit one way as defined by its pin alignment. Make sure the module is seated as far into the slot as it will go. DO NOT FORCE IT; it should fit without much pressure.
7. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
8. Replace the bottom case and the screws (see ***page 2 - 5***).
9. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

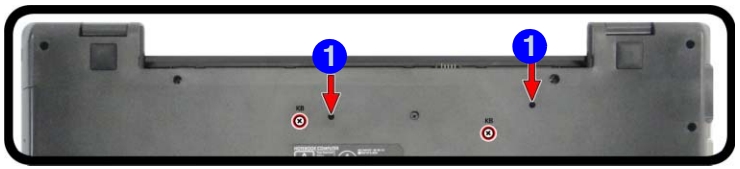
Figure 9
Keyboard Removal

a. Release the keyboard by pressing at point 1.
b. Disconnect the keyboard ribbon cable from the locking collar socket.
c. Remove the keyboard.

Removing the Keyboard

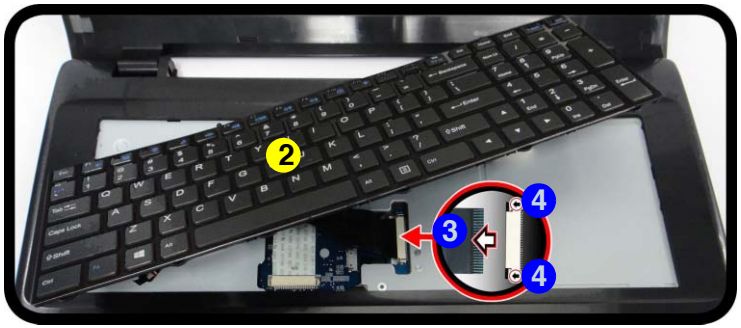
1. Turn **off** the computer, turn it over to remove the battery (*page 2 - 5*).
2. Press at point 1 to release the keyboard (*Figure 9a*).
3. Turn the computer over, remove the keyboard 2 (*Figure 9c*).
4. Carefully lift the keyboard up, being careful not to bend the keyboard ribbon cable 3. Disconnect the keyboard ribbon cable from the locking collar socket 4 (*Figure 9d*).
5. Carefully lift up the keyboard 2 off the computer (*Figure 9e*).

a.



c.

b.



2. Keyboard

6. Connect the keyboard ribbon cable from the locking collar socket 6, and be careful not to bend the keyboard ribbon cable 5 (*Figure 10f*).
7. Replace and tighten the screws (*Figure 9a*).

d.

Figure 10
Keyboard Assembly

d. Connect the keyboard ribbon cable to the locking collar socket.

Figure 11
Wireless LAN Module Removal

a. Locate the WLAN.
b. Disconnect the cable and remove the screw.
c. The WLAN module will pop up and lift it out of the computer.

Note: Make sure you reconnect the antenna cable to the "1 + 2" socket (***Figure 11b***).

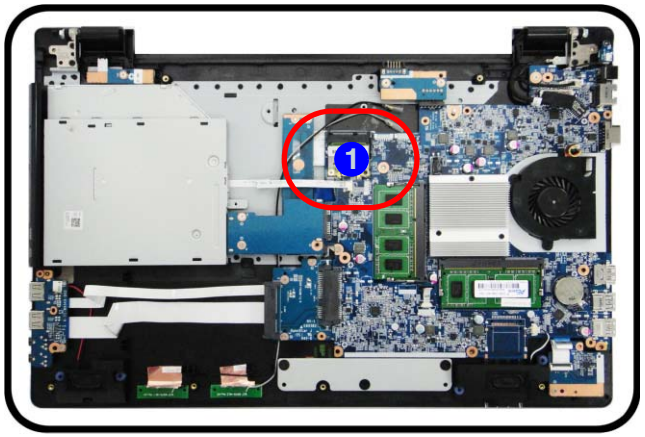
5.Wireless LAN Module

- 1 Screw

Removing the Wireless LAN Module

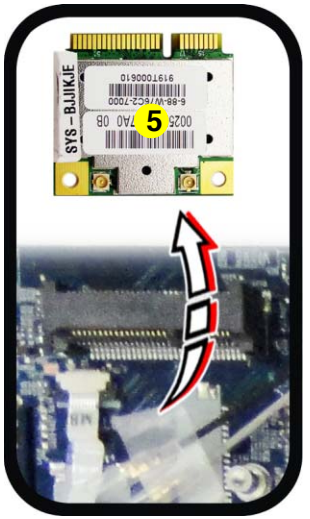
1. Turn **off** the computer, turn it over to remove the battery (***page 2 - 5***) and bottom cover (***page 2 - 6***).
2. The Wireless LAN module will be visible at point 1 on the mainboard (***Figure 11a***).
3. Carefully disconnect the cables 2 & 3, and then remove the screw 4 (***Figure 11b***)
4. The Wireless LAN module 5 (***Figure 11c***) will pop-up, and you can remove it from the computer.

a.



b.

c.



Wireless LAN and Combo Module Cables

Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo, LTE and 3G modules are not labelled. The cables/covers (each cable will have either a black or transparent cable cover) are color coded for identification as outlined in the table below.

Module Type	Antenna Type	Cable Color	Cable Cover Type
WLAN/WLAN & Bluetooth Combo	WM 1	Black	Transparent
	WM 2	Gray	
	WM 3	White	
LTE Broadbank	LTE 1	Black	Black
	LTE 2	Gray	
3G Broadband	3G 1	Black	Black
	3G 2	Gray	

Cable 1 is usually connected to antenna 1 (Main) on the module, and cable 2 to antenna 2 (Aux).

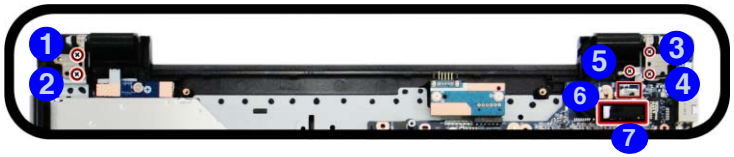
Figure 12
CCD Removal

a. Remove the screws and disconnect the cables.
b. Separate the LCD panel from the bottom assembly.
c. Carefully remove the rubber screw covers and screws from the front cover.
d. Run your fingers around the inner frame of the LCD panel at the points indicated by the arrows.

Removing the CCD

1. Turn **off** the computer, turn it over to remove the battery (*page 2 - 5*) and bottom cover (*page 2 - 6*).
2. Remove screws 1 - 5 and disconnect cables 6 & 7 from the bottom assembly (*Figure 12a*).
3. Separate the LCD panel 8 from the bottom assembly (*Figure 12b*).
4. Carefully remove the rubber screw covers 9 - 10 and screws 11 - 12 from the front cover (*Figure 12c*).
5. Run your fingers around the inner frame of the LCD panel at the points as indicated by the arrows 13 - 16 .

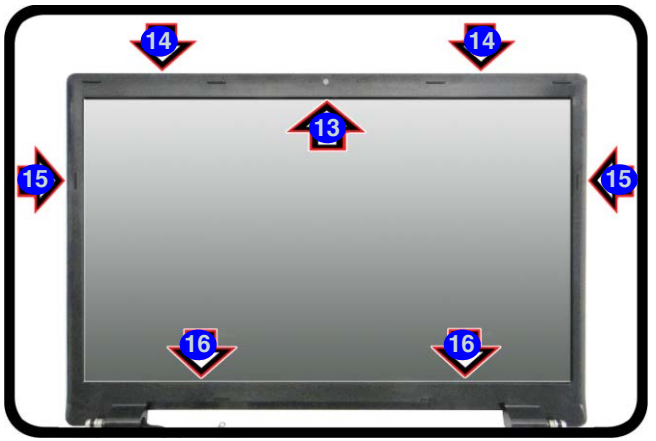
a.



b.

c.

d.



8. LCD Front Panel

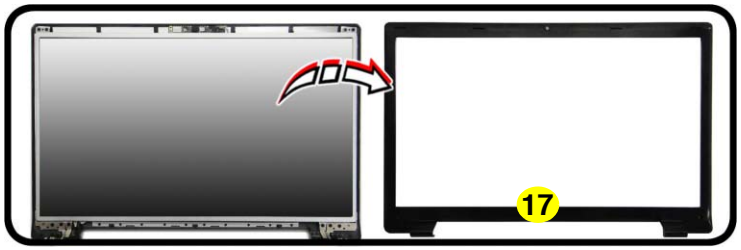
- 7 Screws

6. Remove the LCD front cover 17 (*Figure 12c*).
7. Disconnect the cable 18.
8. Remove the CCD module 19 (*Figure 13f*).
9. Reverse the process to install a new CCD module.

Figure 13
CCD Removal (cont'd)

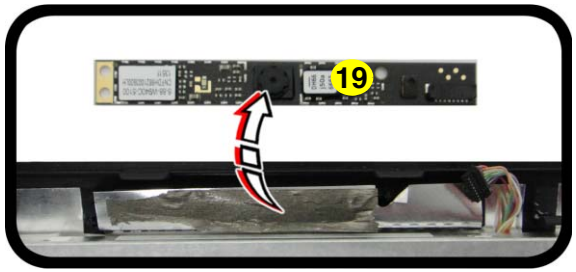
e. Remove the LCD front cover.
f. Disconnect the cable.
g. Remove the CCD module.

e.



f.

g.



17. LCD Front Cover
19. CCD Module

Appendix A:Part Lists

This appendix breaks down the ***W970LUQ*** series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

Note: This section indicates the *manufacturer's* part numbers. Your organization may use a different system, so be sure to cross-check any relevant documentation.

Note: Some assemblies may have parts in common (especially screws). However, the part lists DO NOT indicate the total number of duplicated parts used.

Note: Be sure to check any update notices. The parts shown in these illustrations are appropriate for the system at the time of publication. Over the product life, some parts may be improved or re-configured, resulting in *new* part numbers.

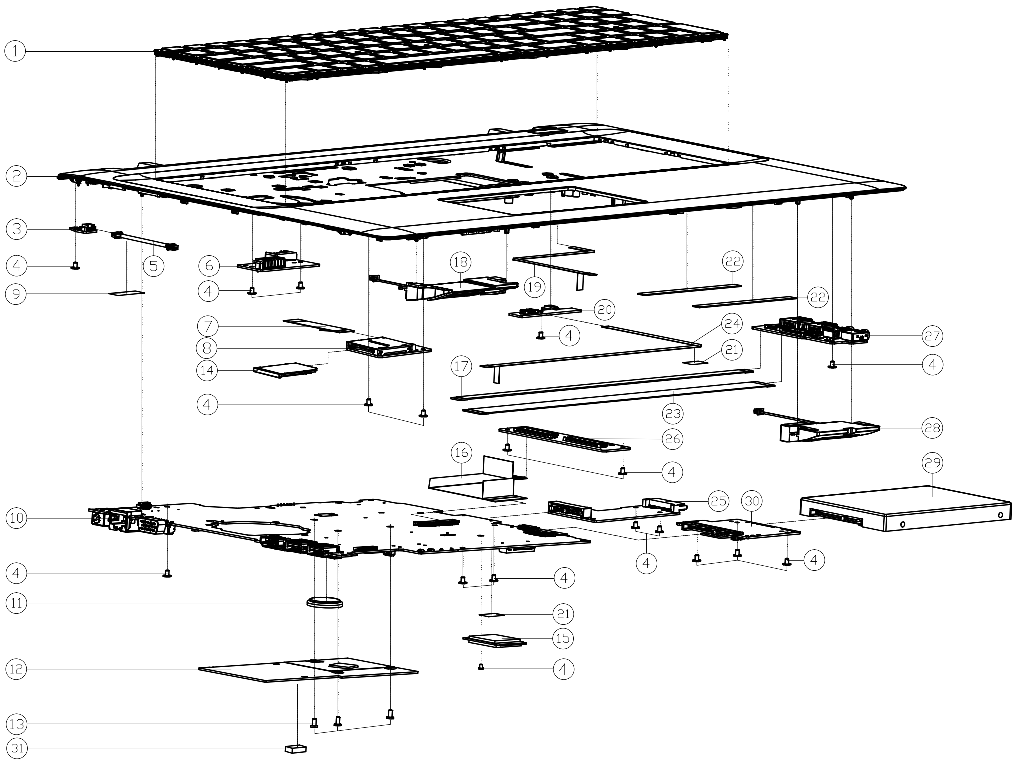
Part List Illustration Location

The following table indicates where to find the appropriate part list illustration.

Table A - 1
Part List Illustration Location

Part	
Top (4W)	*page A - 3*
Top (6W)	*page A - 4*
Bottom	*page A - 5*
LCD	*page A - 6*
HDD	*page A - 7*
DVD Dual Drive	*page A - 8*

Top (4W)

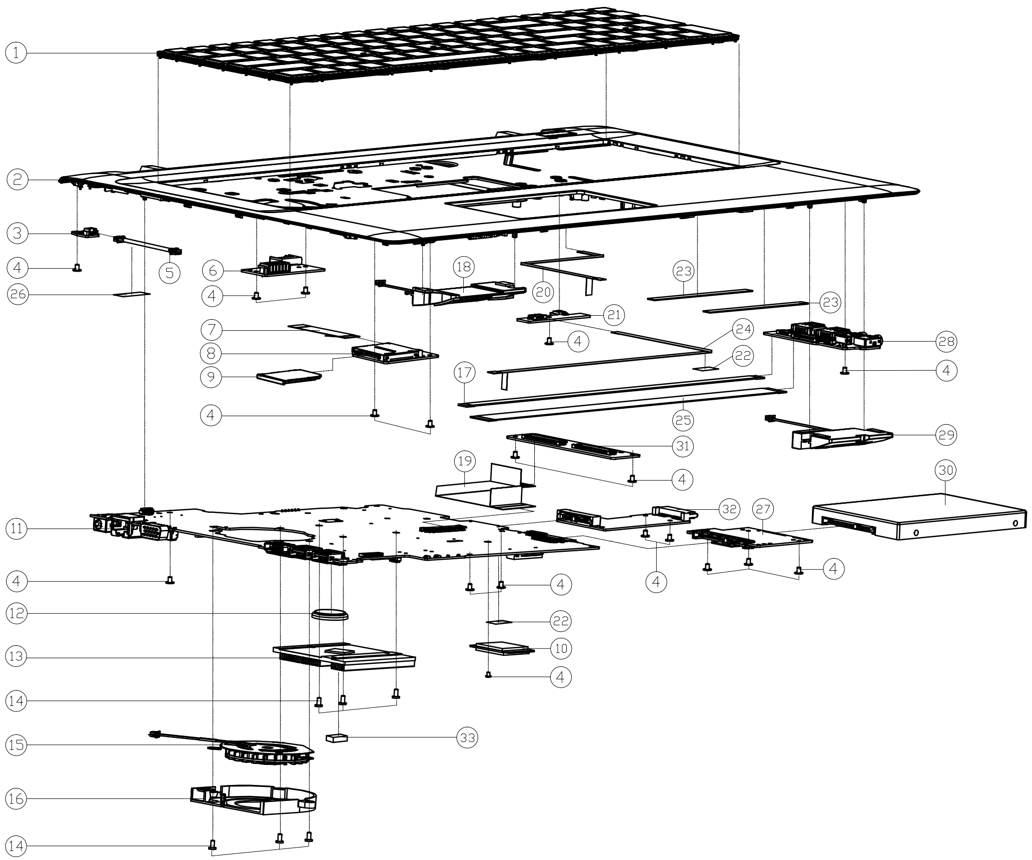


ITEM	PART NAME	PART NO	REMARK
1	WIN8 K/B USA(BLACK)& FRAME(US) MODULE W950AU	6-79-W950AU0K-010-W	
2	PRE-PROCESS)TOP CASE ASS'Y W970LUQ	6-78-W970LUQ2-010	
3	HALL SENSOR BOARD V1.0 W970SUW	6-77-W95K1-D01-A	
4	SCREW M2*3L KI NI ICT NY (DD=Ø4.5,DT=0.4)	6-35-B1120-3RE	
5	WIRE CABLE FOR LID 3P 40MM (HL) W550EU	6-43-W5503-011	
6	BATTERY BOARD V2.0 W970SUW	6-77-W970Q-D02	
7	FFC CABLE FOR CARDREADER TO MB 46MM 5V 22PIN W970SUW	6-43-W9700-011	
8	CARD READER BOARD PCIE V2.0 W970TUQ	6-77-W970V-D02-A	
9	TAPE MYLAR TRANSPARENT (30*5*0.05) W251HPQ	6-40-W25P3-010	
10	MAIN BOARD (CPU/N3000/1.04G)(4W)V2.0 (EDP)(W/O TPM,USB CHARGER) W970LUQ	6-77-W970LU00-D02-2C	
11	BATTERY 3V 220MA BBBCR2032B (KTS)	6-23-6A2B2-030	
12	CPU HEATSINK MODULE W945TUQ	6-33-W945N-T00	
13	SCREW M2*4L KI BZ ICT NY	6-35-B6120-4RA	
14	DUMMY SD PSUH PUSH TYPE PC+ABS (C7230P-701DE) W970SUW	6-42-W9708-010	
15	WLAN+BT COMBO INTEL WIRELESS-AC 3165 (STONE PEAK 1), 1X1 AC + BT 3165NGWGQ PCI-E M2 2230 N240LU	6-88-N240F-4200	
15	WLAN+BT COMBO INTEL STONE PEAK 7265NGWBNG.W D0 STEPPING PCI-E M2 2230 2X2 BGN+BT GENERIC W950LU	6-88-W95LF-4240	
15	WLAN+ BT COMBO LITEON WCBN8xxL-CC (RTL8723BE) 802.11BGN 1X1 (PCI-E) +BT4.0 LE (USB) WLAN+REALTEK BT SOFTWARE NGFF CARD S210TU	6-88-S210F-9400	
15	WLAN+ BT COMBO CHICONY C704NG-A2 (RTL8723BE) 802.11BGN 1X1 (PCI-E) +BT4.0 LE (USB) WLAN+REALTEK BT SOFTWARE PCI-E M2 2230 FR4 N170SD	6-88-N170F-5100	
16	FFC CABLE FOR KB TRANSFORM BD TO MB 52MM 5V 24PIN W970SUW	6-43-W9700-020	
17	FFC CABLE FOR AUDIO TO MB 230MM 5V 6PIN W970SUW	6-43-W9700-050	
18	SPK+CABLE L 2W 4? 35MM (PK251249XM) W970SUW	6-23-5W970-0L0	
19	FFC CABLE FOR CLICK TO MB 68.5MM 5V 8PIN W970SUW	6-43-W9700-060	
20	POWER SWITCH BOARD V2.0 W945LUQ	6-77-W94LS-D02-A	
21	TAPE MYLAR TRANSPARENT (20*10*0.05) P180HM	6-40-P1803-020	
22	7MM HDD SPONGE CR4305 (56x9x3.15T) W970SUW	6-47-0019A-70E	
23	FFC CABLE FOR AUDIO TO MB 230MM 5V 14PIN W970SUW	6-43-W9700-040	
24	FFC CABLE FOR POWER BD TO MB 173MM 5V 4PIN W970SUW	6-43-W9700-030	
25	EXT ODD BOARD V2.0 W970SUW	6-77-W970N-D02	
26	KEYBOARD SWITCH BOARD V2.0 W970SUW	6-77-W9707-D02	
27	AUDIO BOARD V2.0 W970LUQ	6-77-W95L8-D02-A	
28	SPK+CABLE R 2W 4? 68MM (PK251249XM) W950KU	6-23-5W95K-0R1	
29	W/O HDD ASS'Y W970SUW	6-79-W970SUWJ-010	
29	W/HDD ASS'Y W970LUQ	6-79-W970LUQJ-020	
30	EXT HDD BOARD V2.0 W970SUW	6-77-W970J-D02	
31	CONDUCTIVE GASKET(10*6.5*6) (L10*W6*H6.5)MM W340EU	6-47-00190-109	

Figure A - 1
Top (4W)

Top (6W)

Figure A - 1
Top (6W)



ITEM	PART NAME	PART NO	REMARK
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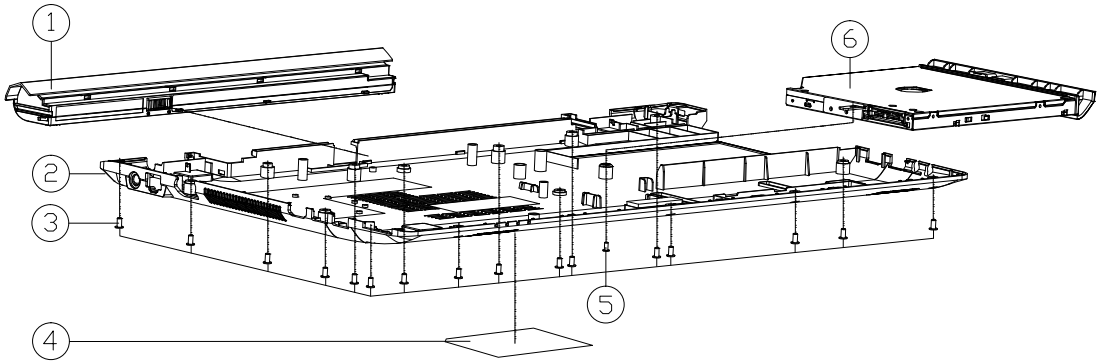
3	HALL SENSOR BOARD V1.0 W970SUW	6-77-W95K1-D01-A	
4	SCREW M2*3L KI NI ICT NY (DD=Ø4.5,DT=0.4)	6-35-B1120-3RE	
5	WIRE CABLE FOR LID 3P 40MM (HL) W550EU	6-43-W5503-011	
6	BATTERY BOARD V2.0 W970SUW	6-77-W970Q-D02	
7	FFC CABLE FOR CARDREADER TO MB 46MM 5V 22PIN W970SUW	6-43-W9700-011	
8	CARD READER BOARD PCIE V2.0 W970TUQ	6-77-W970V-D02-A	
9	DUMMY SD PSUH PUSH TYPE PC+ABS (C7230P-701DE) W970SUW	6-42-W9708-010	
10	WLAN+BT COMBO INTEL WIRELESS-AC 3165 (STONE PEAK 1), 1X1 AC + BT 3165NGWGQ PCI-E M2 2230 N240LU	6-88-N240F-4200	
10	WLAN+BT COMBO INTEL STONE PEAK 7265NGWBNGW D0 STEPPING PCI-E M2 2230 2X2 BGN+BT GENERIC W950LU	6-88-W95LF-4240	
10	WLAN+ BT COMBO LITEON WCBN802L-CC (RTL8723BE) 802.11BGN 1X1 (PCI-E) +BT4.0 LE (USB) WLAN+REALTEK BT SOFTWARE NGFF CARD S210TU	6-88-S210F-9400	
10	WLAN+ BT COMBO CHICONY C7WN03-A2 (RTL8723BE) 802.11BGN 1X1 (PCI-E) +BT4.0 LE (USB) WLAN+REALTEK BT SOFTWARE PCI-E M2 2230 FR4 N170SD	6-88-N170F-5100	
11	MAIN BOARD (CPU/N3700/1.6G)(6W)V2.0 (LVDS)(W/TPM,USB CHARGER) W970LUQ	6-77-W970LU00-D02-F	
11	MAIN BOARD (CPU/N3150/1.6G)(6W)V2.0 (LVDS)(W/TPM,USB CHARGER) W970LUQ	6-77-W970LU00-D02-E	
11	MAIN BOARD (CPU/N3150/1.6G)(6W)V2.0 (LVDS)(W/O TPM,USB CHARGER) W970LUQ	6-77-W970LU00-D02-4E	
11	MAIN BOARD (CPU/N3050/1.6G)(6W)V2.0 (LVDS)(W/O TPM,USB CHARGER) W970LUQ	6-77-W970LU00-D02-4D	
12	BATTERY 3V 220MA BBBCR2032B (KTS)	6-23-6A2B2-030	
13	CPU HEATSINK AL6063 W940TU	6-31-W940S-011	
14	SCREW M2*4L KI BZ ICT NY	6-35-B6120-4RA	
15	FAN MODULE (ADDA) W547BL	6-31-W547S-101	
16	FAN HOUSING TENJINPC+ABS TN3715BX W940TU	6-42-W940S-011	
17	FFC CABLE FOR AUDIO TO MB 230MM 5V 6PIN W970SUW	6-43-W9700-050	
18	SPK+CABLE L 2W 4? 35MM (PK251249XM) W970SUW	6-23-5W970-0L0	
19	FFC CABLE FOR KB TRANSFORM BD TO MB 52MM 5V 24PIN W970SUW	6-43-W9700-020	
20	FFC CABLE FOR CLICK TO MB 68.5MM 5V 8PIN W970SUW	6-43-W9700-060	
21	POWER SWITCH BOARD V2.0 W945LUQ	6-77-W94LS-D02-A	
22	TAPE MYLAR TRANSPARENT (20*10*0.05) P180HM	6-40-P1803-020	
23	7MM HDD SPONGE CR4305 (56x9x3.15T) W970SUW	6-47-0019A-70E	
24	FFC CABLE FOR POWER BD TO MB 173MM 5V 4PIN W970SUW	6-43-W9700-030	
25	FFC CABLE FOR AUDIO TO MB 230MM 5V 14PIN W970SUW	6-43-W9700-040	
26	TAPE MYLAR TRANSPARENT (30*5*0.05) W251HPQ	6-40-W25P3-010	
27	EXT HDD BOARD V2.0 W970SUW	6-77-W970J-D02	
28	AUDIO BOARD V2.0 W970LUQ	6-77-W95L8-D02-A	
29	SPK+CABLE R 2W 4? 68MM (PK251249XM) W950KU	6-23-5W95K-0R1	
30	W/O HDD ASS'Y W970SUW	6-79-W970SUWJ-010	
30	W/HDD ASS'Y W970SUW	6-79-W970SUWJ-020	
31	KEYBOARD SWITCH BOARD V2.0 W970SUW	6-77-W9707-D02	
32	EXT ODD BOARD V2.0 W970SUW	6-77-W970N-D02	
33	CONDUCTIVE GASKET(10*6.5*6) (L10*W6*H6.5)MM W340EU	6-47-00190-109	

Bottom

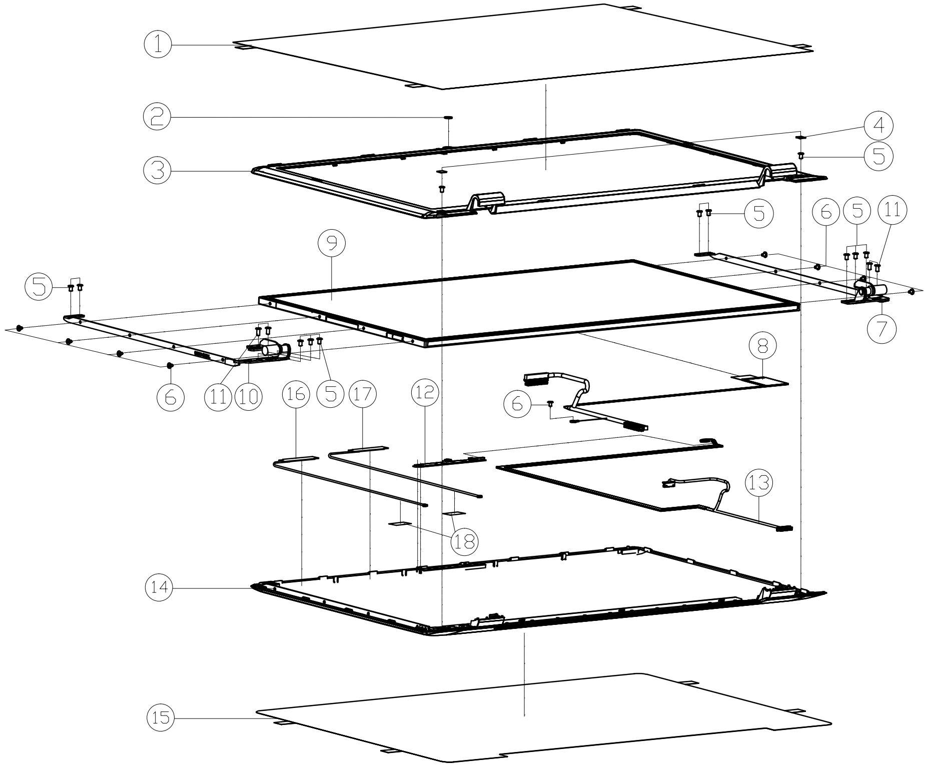
Figure A - 2
Bottom



ITEM	PART NAME	PART NO	REMARK
1	[illegible]	6-87-W97KS-42L	
1	[illegible]	6-87-W95KS-42F2	
1	[illegible]	6-87-W97KS-42L1	
1	[illegible]	6-87-W95KS-42F3	
2	BOTTOM CASE MODULE W970SUW	6-39-W9703-011	
3	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
4	PRODUCT LABEL FOR W970SUY	6-45-W955KL03-010	
4	PRODUCT LABEL FOR W970TUQ	6-45-W970TUQ3-010	
4	PRODUCT LABEL FOR W970SUW	6-45-W970SUW3-010	
4	PRODUCT LABEL FOR W970AUQ	6-45-W970AUQ3-010	
4	PRODUCT LABEL FOR W970LUQ	6-45-W970LUQ3-010	
5	SCREW M2*5L KIT=0.8 D=4.0 BK/Z ICT NY	6-35-B6120-5R0	
6	SATA DVD SUPER MULTI ASS'Y (OPTION)	6-79-W970AUQQ-010	(OPTION)
6	SATA DVD SUPER MULTI ASS'Y (OPTION)	6-79-W970SUWQ-000	(OPTION)
6	SATA DVD SUPER MULTI ASS'Y (OPTION)	6-79-W970LUQQ-001	(OPTION)
6	SATA BLU-RAY COMBO ASS'Y (OPTION)	6-79-W970SUWW-010	(OPTION)
6	W/O ODD ASS'Y W970SUW	6-79-W970SUWZ-000	(OPTION)
6	2ND HDD CADDY ASS'Y W/O HDD W970SUW	6-79-W970SUWJ-030	(OPTION)
6	2ND HDD CADDY ASS'Y W/HDD W970SUW	6-79-W970SUWJ-040	(OPTION)

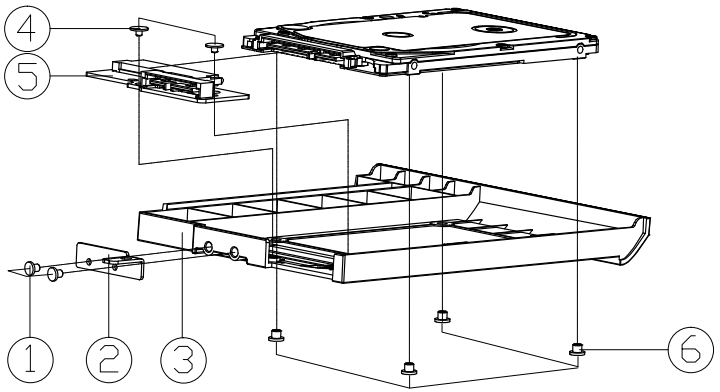
LCD

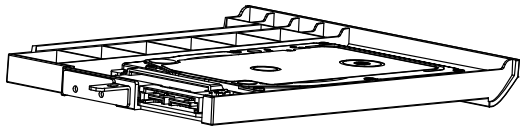
Figure A - 3
LCD



ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT COVER PROTECTION MYLAR (MP) W670SRQ	6-40-W6701-011	
2	CCD LENS PMMA W650SR	6-42-W6501-010	
3	LCD FRONT COVER MODULE W970SUW	6-39-W9701-011	
4	RUBBER FRONT COVER SCREW SILICONE W970SUW	6-47-W9701-041	
5	SCREW M2.5*4L KI(T=0.5 D=4.5) BK/Z ICT	6-35-B6125-4R0	
6	SCREW M2*3L KI NI ICT NY (DD=ø4.5,DT=0.4)	6-35-B1120-3RE	
7	LCD HINGE R SK7+SECC W970SUW	6-33-W9701-0R1	
8	WIRE CABLE FOR LVDS TO MB 85.6MM 19V 40PIN (HL/LA CON:LA0906MD-40-HF) W970KLQ	6-43-W97K1-010-P	
8	WIRE CABLE FOR EDP TO MB 85.6MM 19V 30PIN (HL/LA CON:LA0903MD-30) W970KLQ	6-43-W97K1-021-P	
9	LCD 17.3" HD+ CHIMEI N173FGE-L23 (GLARE TYPE) (LED) 5.8MM	6-50-NA158-D04	
9	LCD 17.3" HD+ AU B173RW01 V5 (GLARE TYPE) (LED) 5.8MM	6-50-NA158-G03	
9	LCD 17.3" HD+ EDP (GLARE TYPE) CHIMEI N173FGE-E23 (LED) 5.8MM	6-50-NA158-D05	
9	LCD 17.3" (HD+) INNOLUX (CHIMEI) N173FGE-L13 (LED) 5.8MM	6-50-NA158-V00	
9	LCD 17.3" HD+ AU B173RW01 V4 (LED) 5.8MM	6-50-NA158-G02	
10	LCD HINGE L SK7+SECC W970SUW	6-33-W9701-0L1	
11	SCREW M2.5*5L KI NI ICT NY	6-35-B1125-5RA	
12	UVC CAMERA CHICONY FIX CNFDH66 1M HD SETI ST171 W940TU FW6665 W/LED W/D-MIC	6-88-W940C-5100	
12	UVC CAMERA BISON FIX BN8V1GYK7-310 1M HD HYNIX 162 W940TU FW0608 W/LED W/D-MIC	6-88-W940C-4902	
13	WIRE CABLE CCD+MIC TO MB 8PIN 3.3V 107MM(50375-00811) W970LUQ	6-43-W970T-011	
14	LCD BACK COVER MODULE W970LUQ	6-39-W97L1-020	
15	BACK COVER PROTECT FILM 8B35 W970SUW	6-40-W9701-011	
16	ANTENNA IPEX4 WLAN WGT WL1 PCB 2.4G/5GHZ WL1=700MM W970LUQ	6-23-7W97L-011	
17	ANTENNA IPEX4 WLAN WGT WL2 PCB 2.4G/5GHZ WL2=750MM W970LUQ	6-23-7W97L-020	
18	TAPE MYLAR TRANSPARENT (20*10*0.05) P180HM	6-40-P1803-020	

HDD



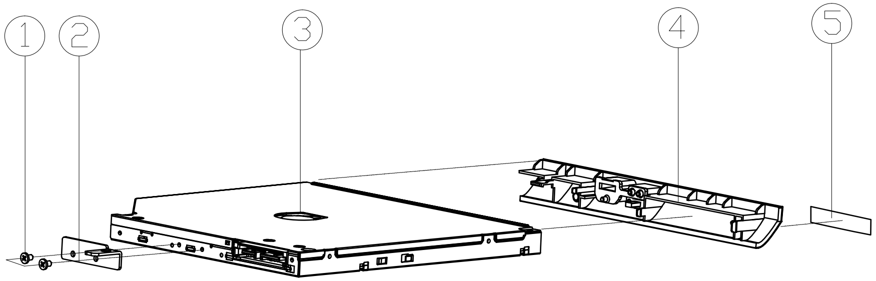


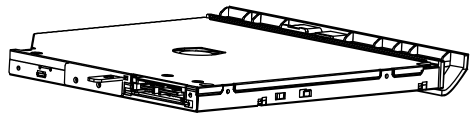
ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*3L KI BK/Z ICT NY (Ø3.5 t=0.3)	6-35-B6120-3RE	
2	CD ROM LOCK BRACKET SECC(9.5H) M740S (ZJ)	6-33-M74SZ-020-1	
3	CADDY BAY CASE PC+ABS SABIC C7230P W970SU	6-42-W9703-011	
4	SCREW M2*2L KI BK/Z ICT NY(Ø8,T=0.6)	6-35-B6120-2RE	
5	ODD TO HDD BOARD V3.0 W950SU2 (W/ REPEATER)	6-77-W95KN-D13-A	FOR W970SUY/AUQ/LUQ
5	ODD TO HDD BOARD V3.0 (W/O REPEATER) W950KU	6-77-W95KN-D13	FOR W970SUW/KLQ/TUQ
6	SCREW M3*4L KI BZ ICT NY (D=4.8 T=0.5)	6-35-B6130-4RB	

Figure A - 4
HDD

DVD DUAL

Figure A - 5
DVD DUAL





ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*3L KI NI ICT NY (DD=Ø4.5,DT=0.4)	6-35-B1120-3RE	
2	CD ROM LOCK BRACKET SECC(9.5H) M740S (ZJ)	6-33-M74SZ-020-1	
3	SATA DVD SUPER MULTI 5 1/4" 8X 9.5MM SU-208 (H/W: A VER.GB F/W: TC00) (WIN 8) TSST	6-85-A088X-T07	FOR TSST
3	SATA DVD SUPER MULTI 5 1/4" 8X 9.5MM UJ8G2 (ABPK1-B) F/W: 1.00/1000 H/W: 1.00 (WIN 8) PANASONIC	6-85-A088X-P06	FOR PANASONIC
3	SATA DVD SUPER MULTI 5 1/4" 8X 9.5MM DU-8A6SHXXX F/W: DC61 H/W: 01 (WIN 8) PLDS	6-85-A088X-L04	FOR PLDS
4	ODD MODULE W970SUW	6-42-W970Z-103	
5	SUPER MULTI ODD BEZEL LABEL (SIZE CHANGE) W860CU	6-45-W860Q-012	

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the ***W970LUQ*** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

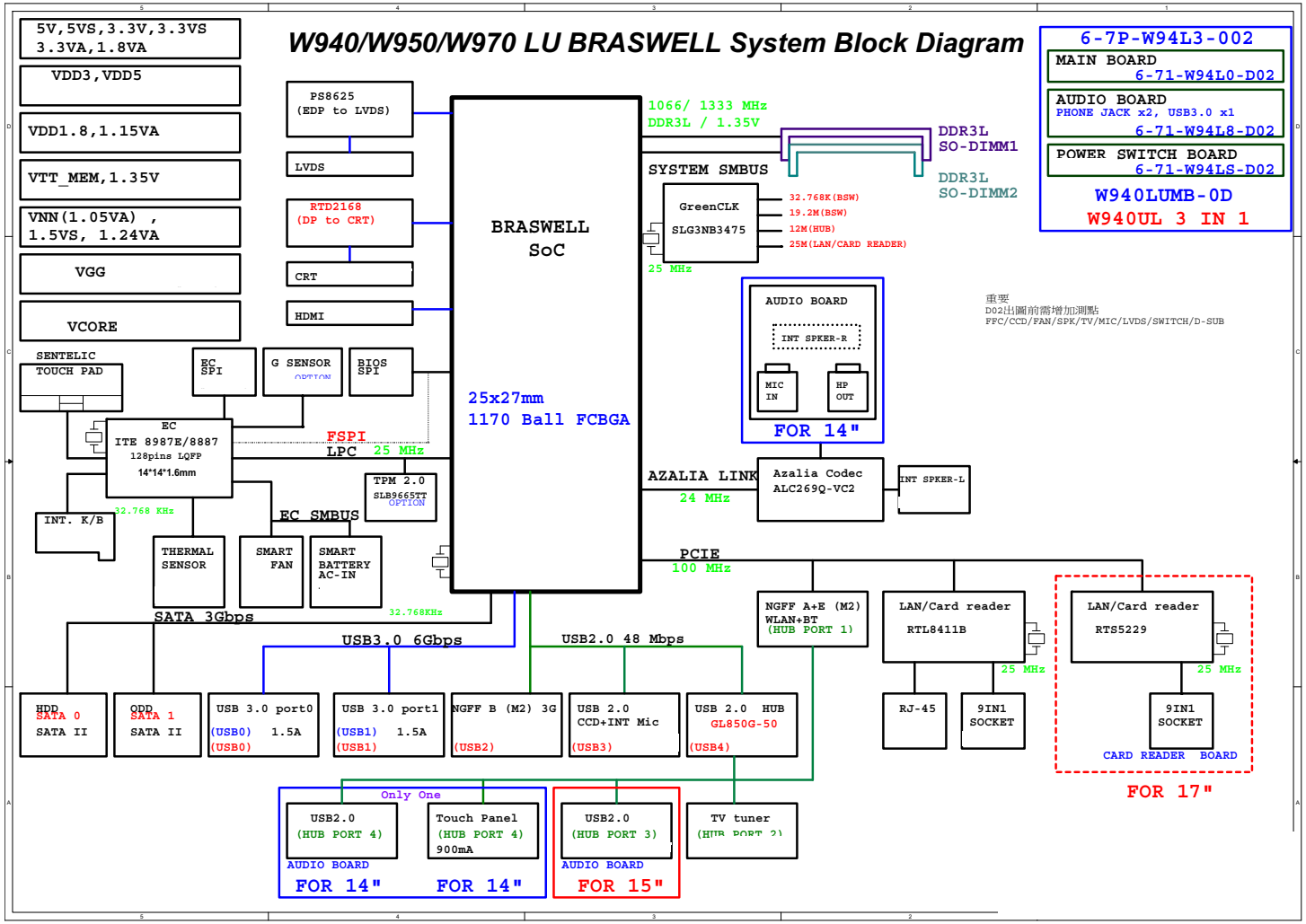
Table B - 1
SCHEMATIC DIAGRAMS

Version Note

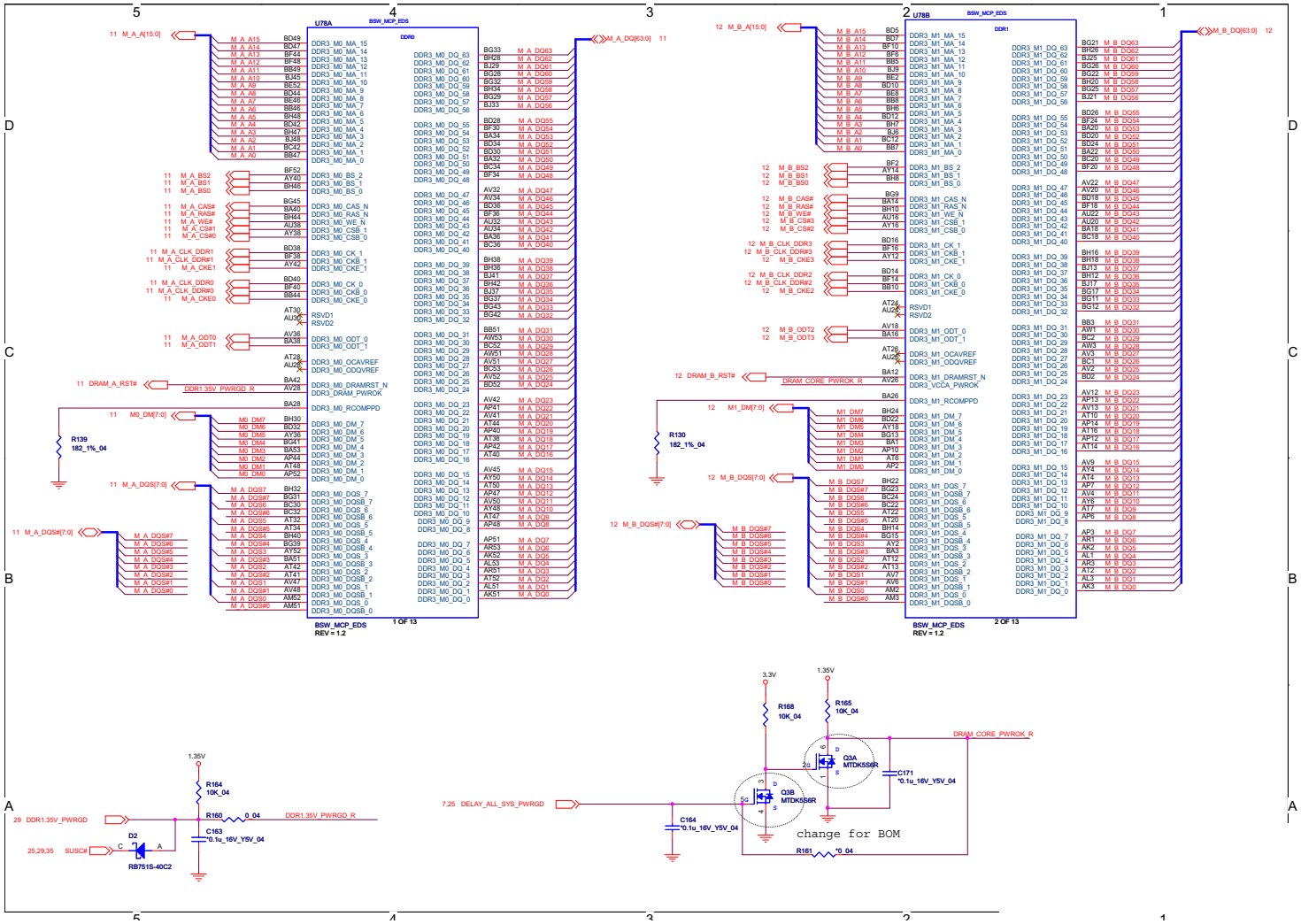
The schematic diagrams in this chapter are based upon version 6-7P-W94L3-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram

Sheet 1 of 39
System Block Diagram



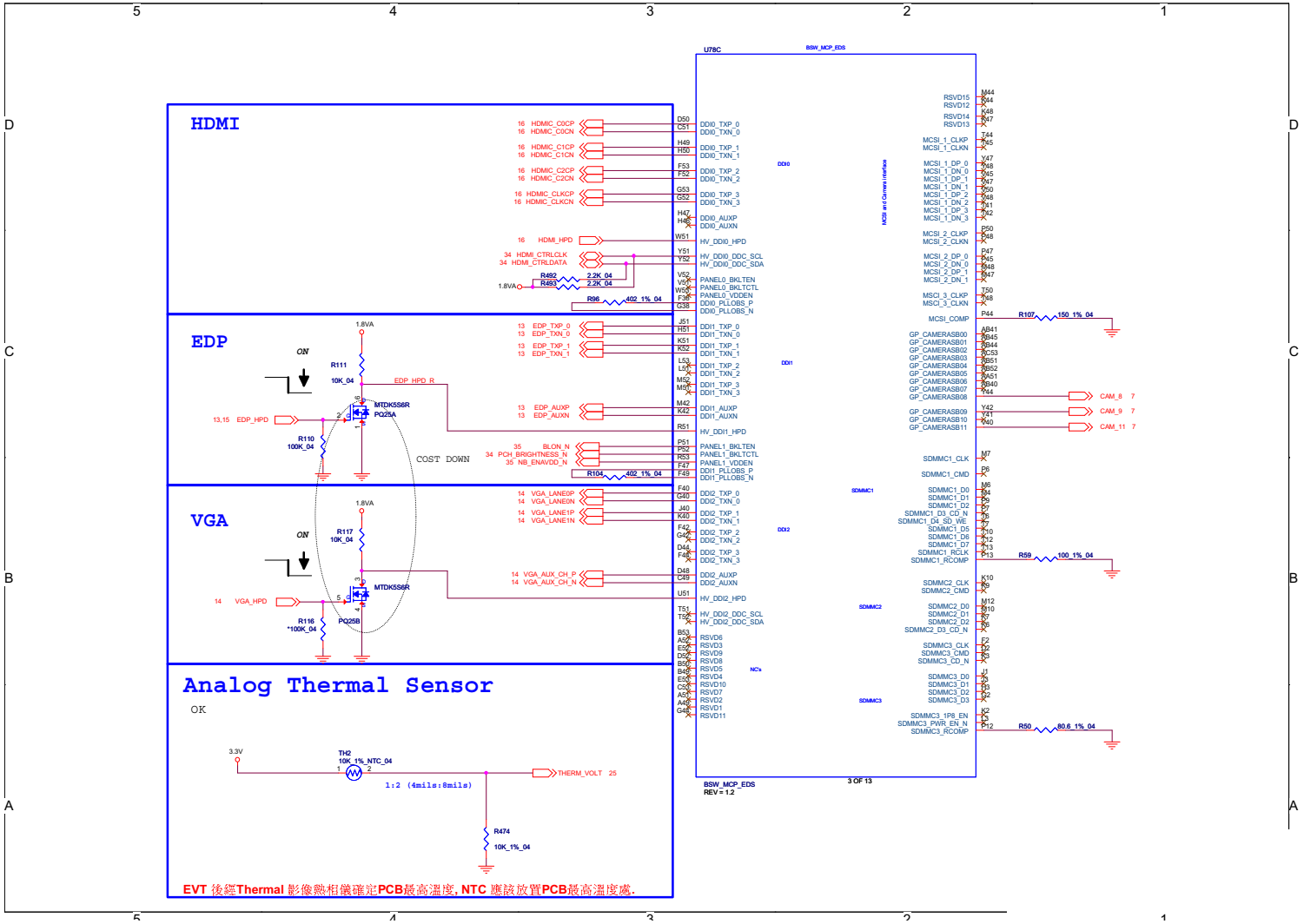
Processor 1/9



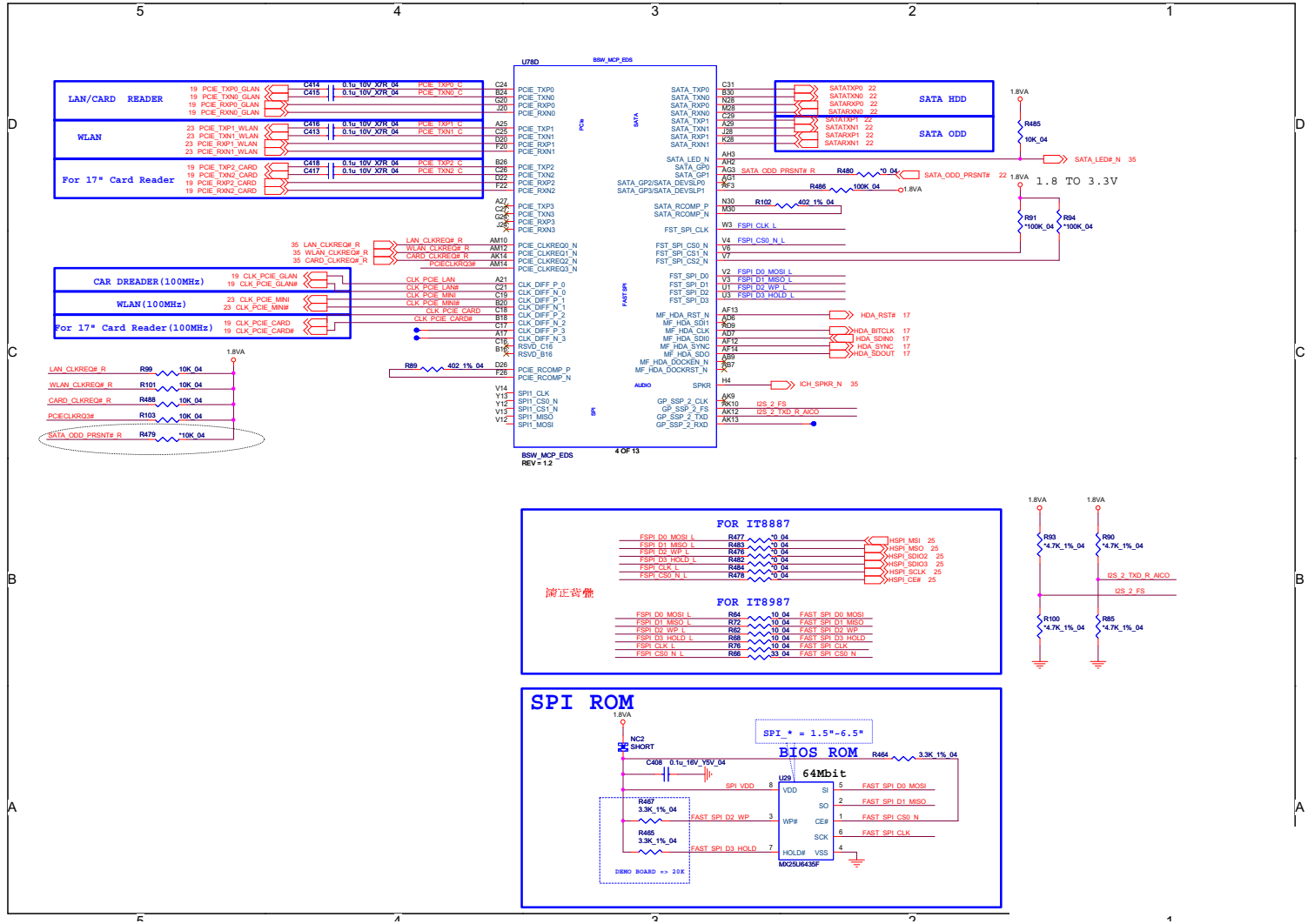
Sheet 2 of 39
Processor 1/9

Processor 2/9

Sheet 3 of 39
Processor 2/9



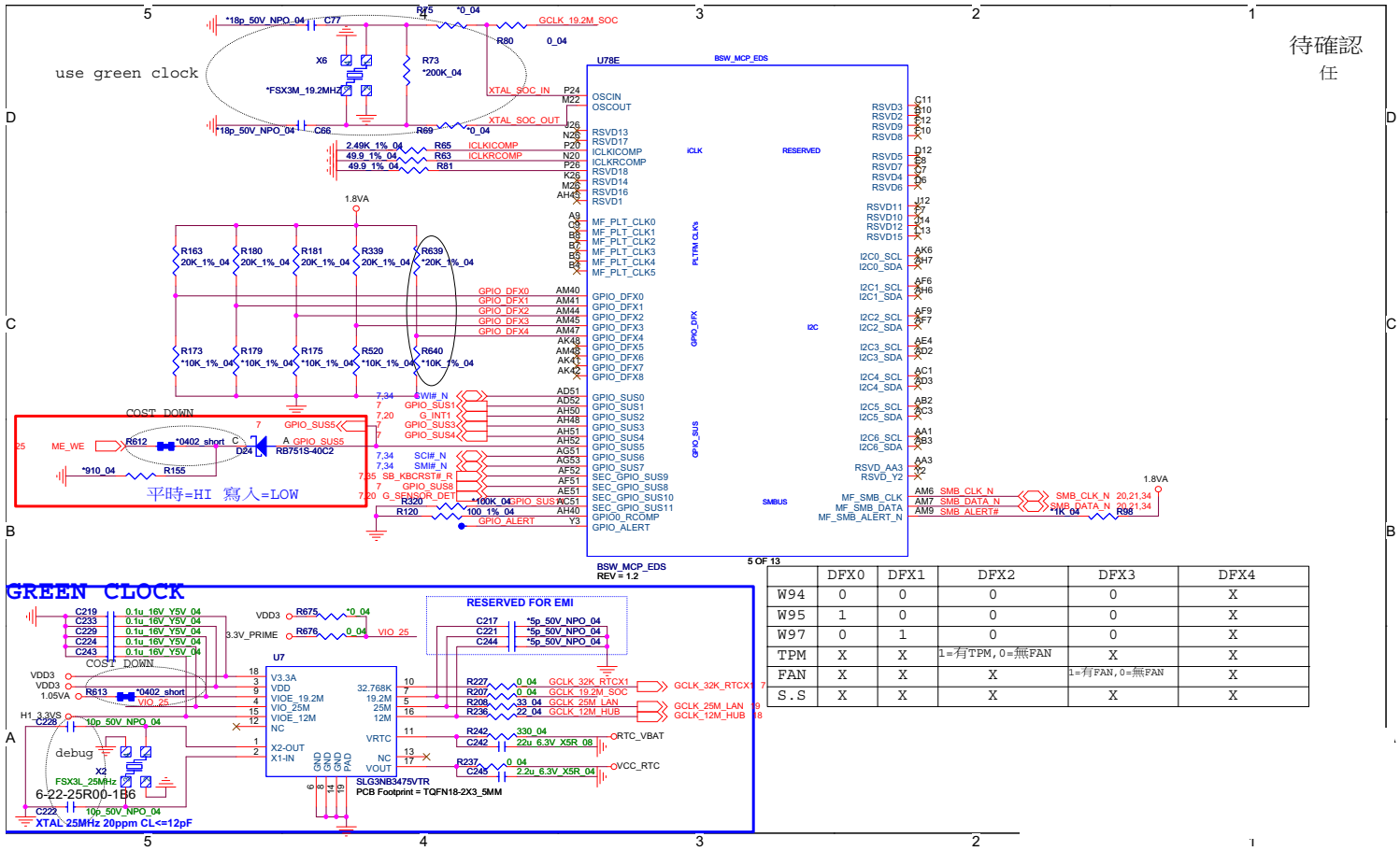
Processor 3/9



Sheet 4 of 39
Processor 3/9

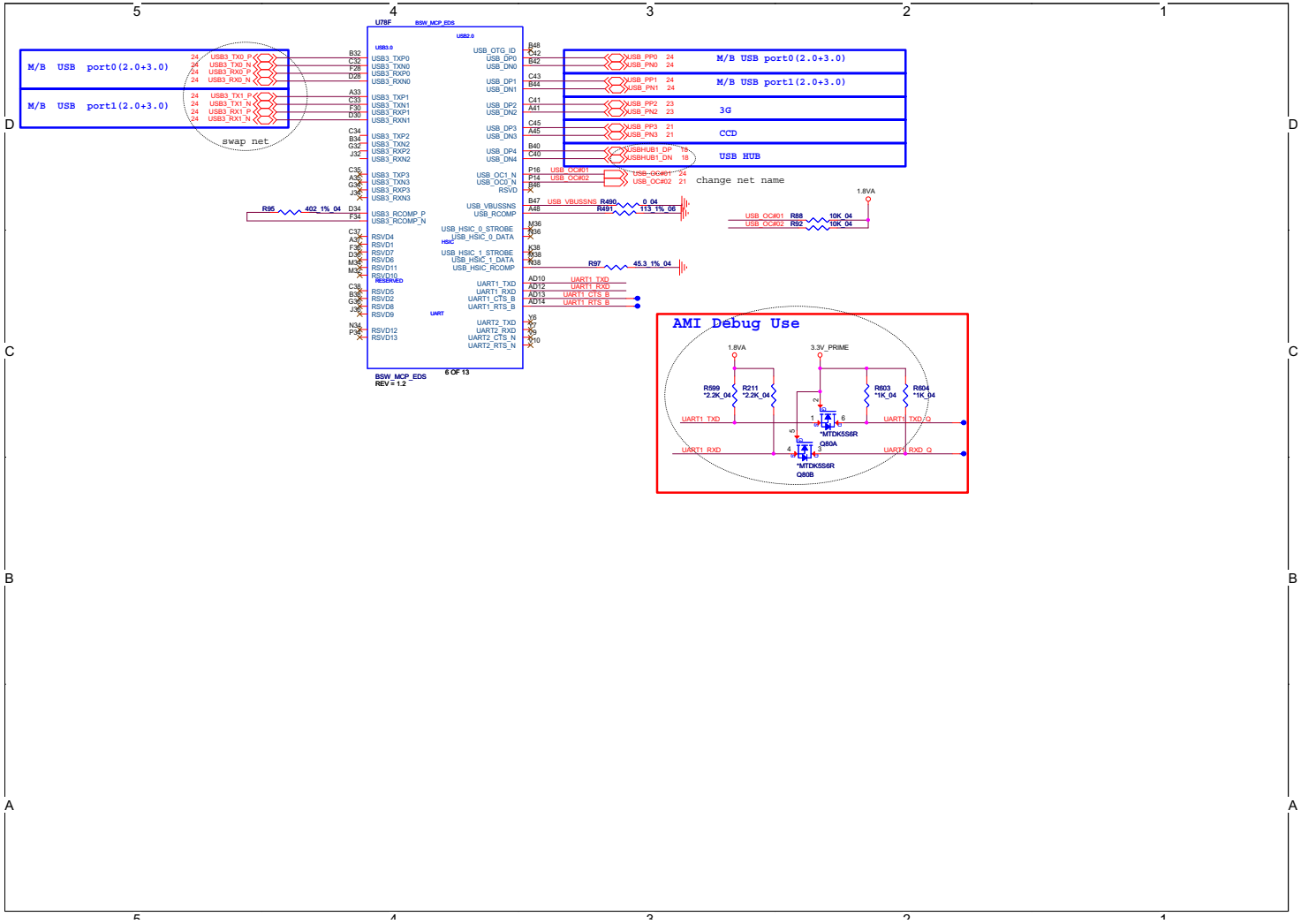
Processor 4/8

Sheet 5 of 39
Processor 4/8



	DFX0	DFX1	DFX2	DFX3	DFX4
W94	0	0	0	0	X
W95	1	0	0	0	X
W97	0	1	0	0	X
TPM	X	X	1=有TPM, 0=無FAN	X	X
FAN	X	X	X	1=有FAN, 0=無FAN	X
S.S	X	X	X	X	X

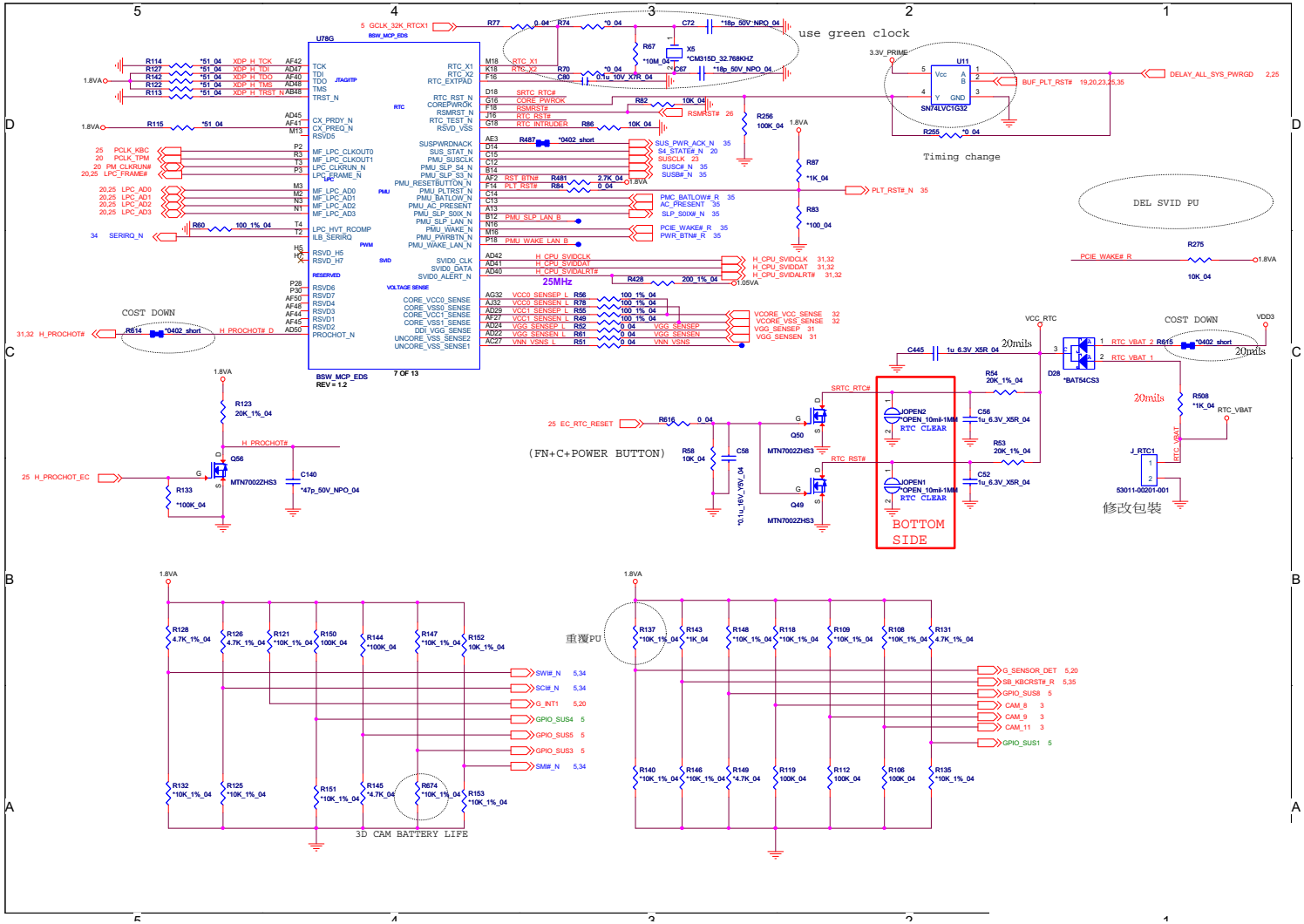
Processor 5/8



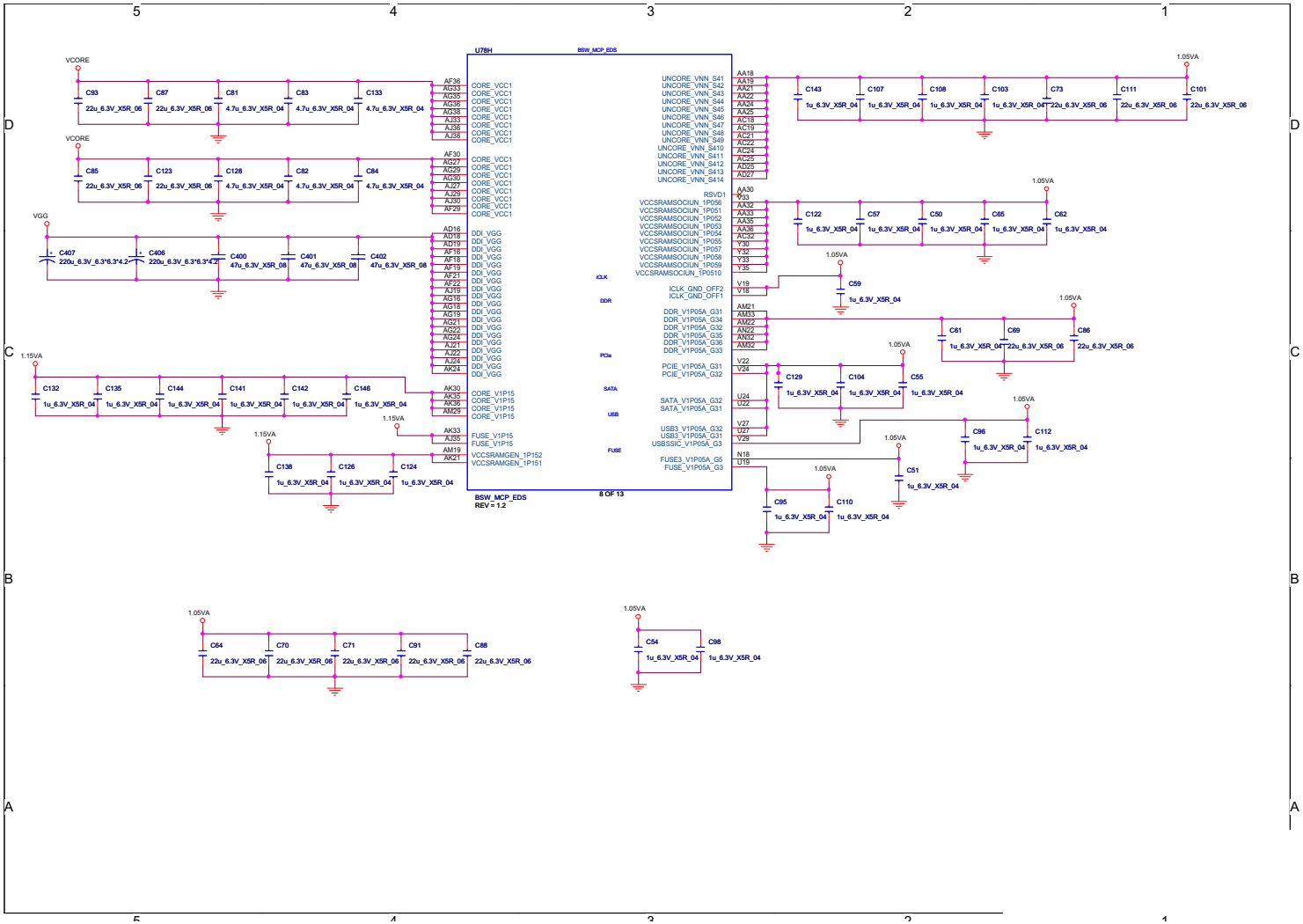
Sheet 6 of 39
Processor 5/8

Processor 6/8

Sheet 7 of 39
Processor 6/8



Processor 7/8

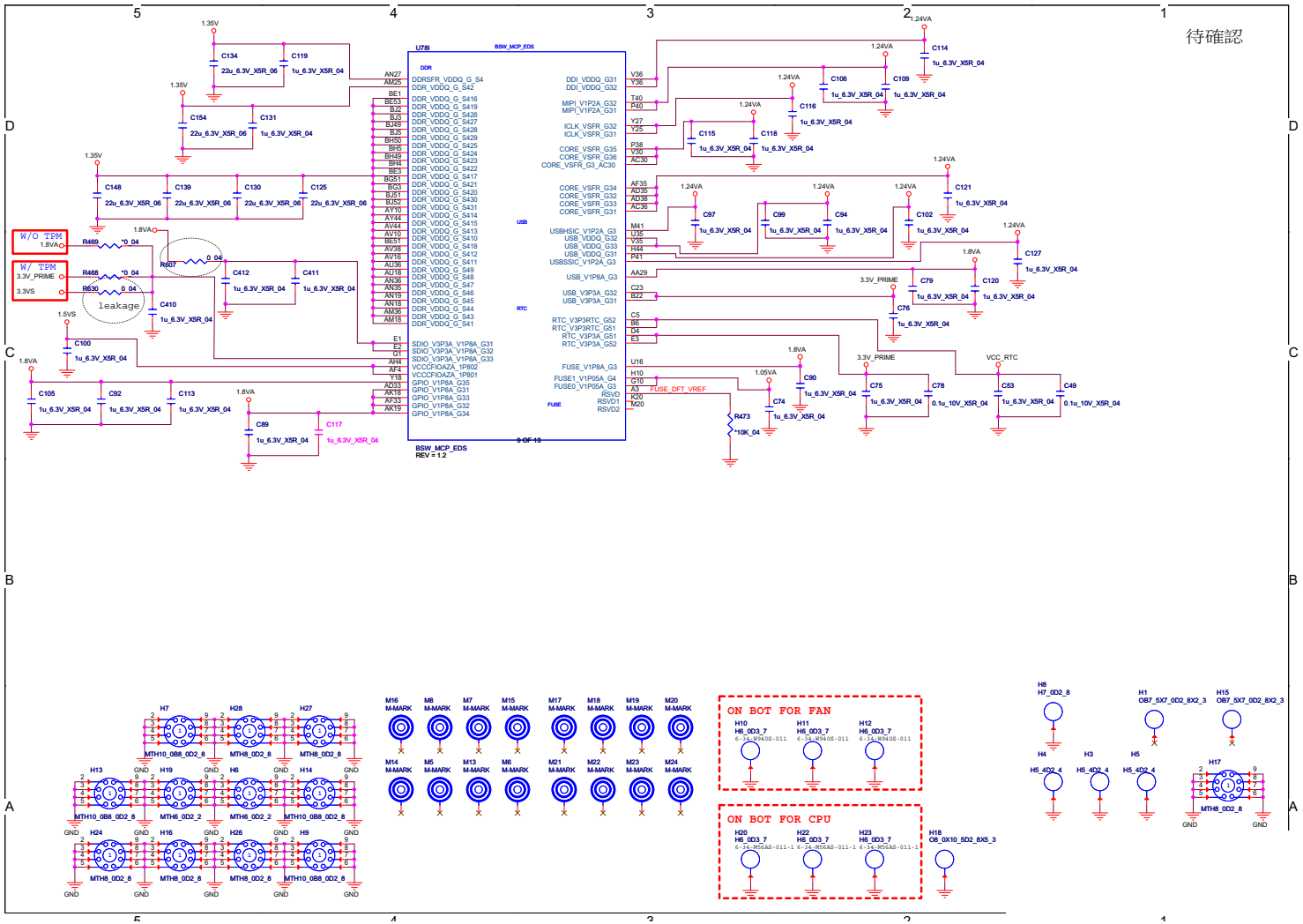


Sheet 8 of 39
Processor 7/8

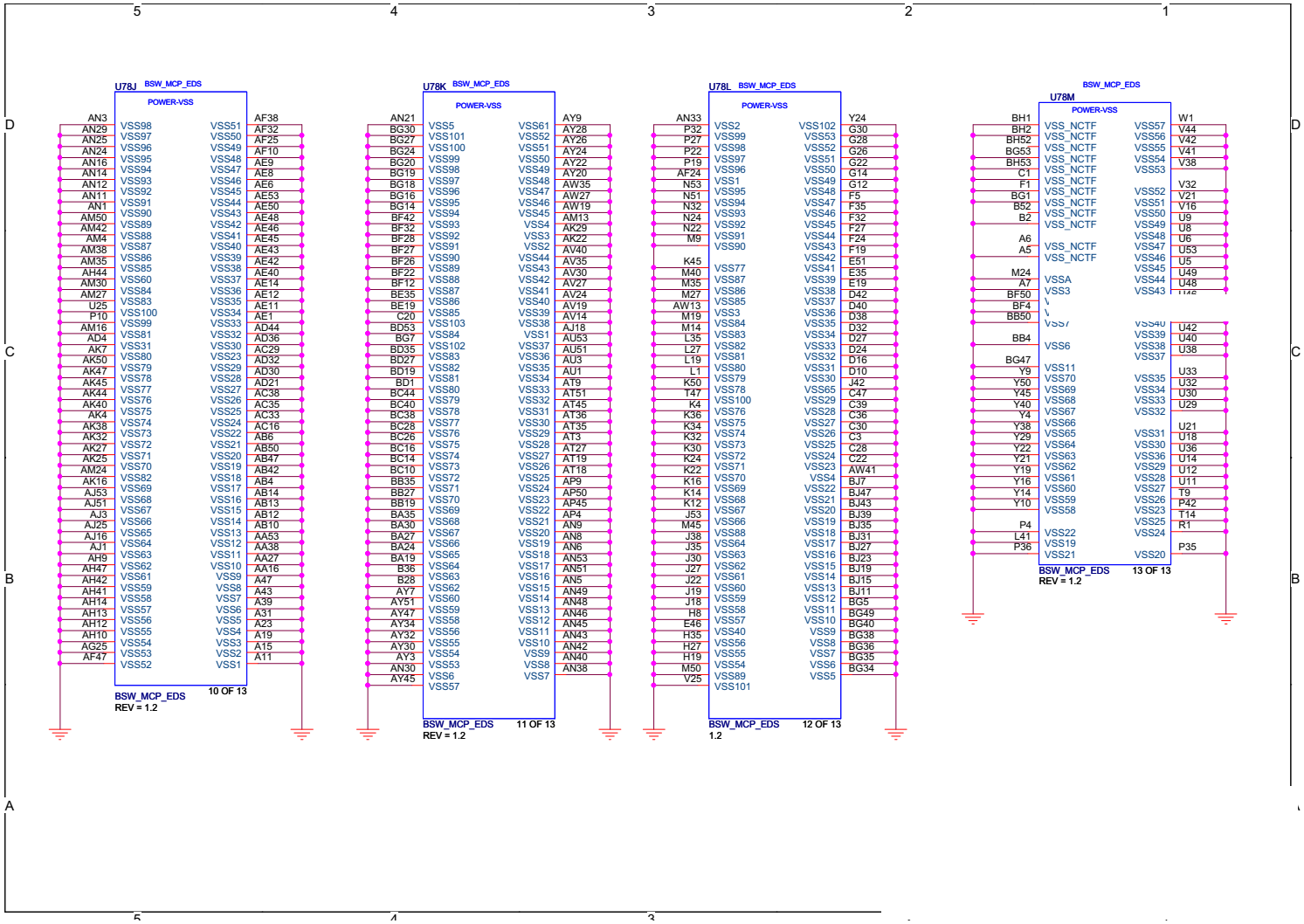
B.Schematic Diagrams

Processor 8/9

Sheet 9 of 39
Processor 8/9



Processor 9/9

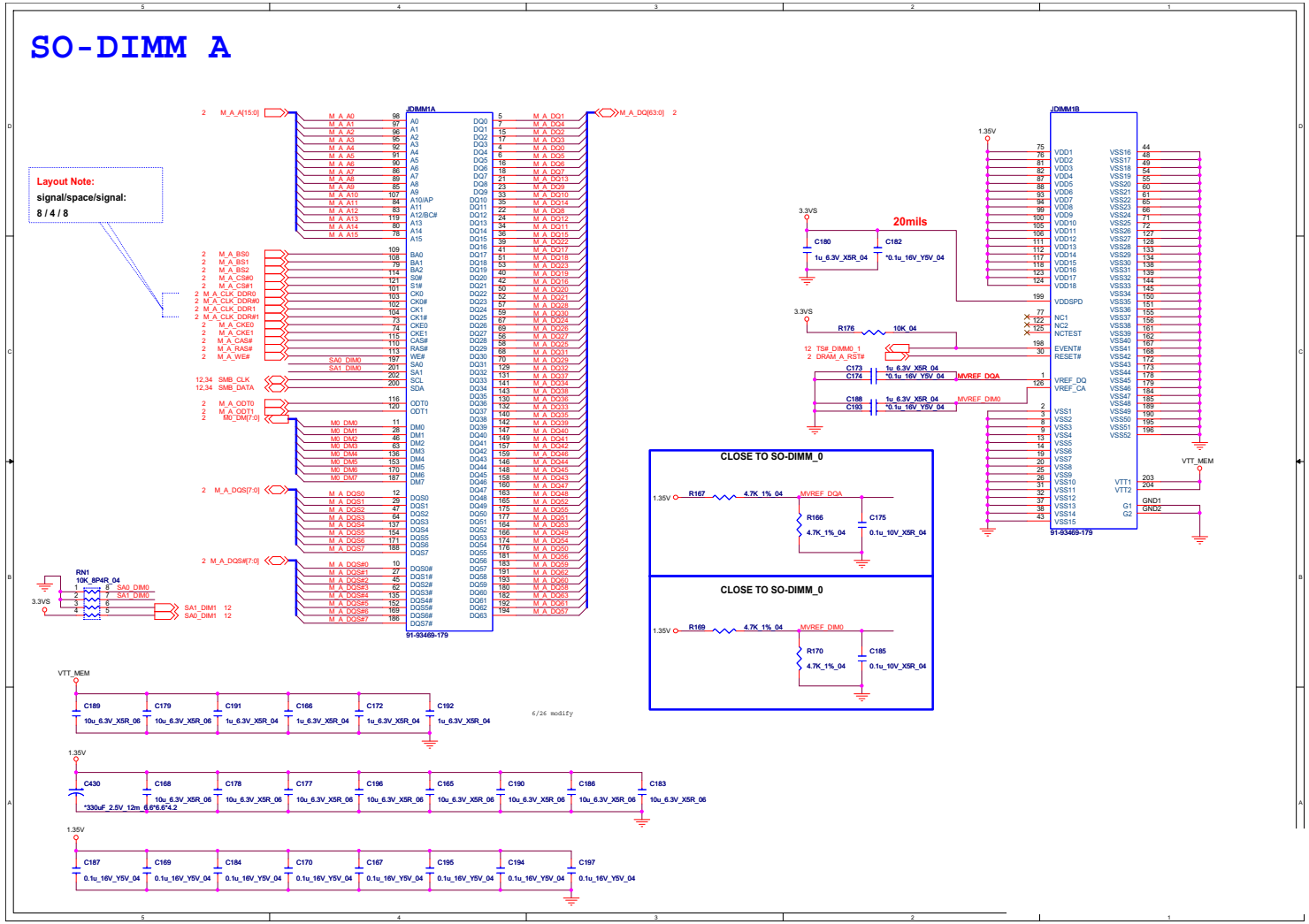


Sheet 10 of 39
Processor 9/9

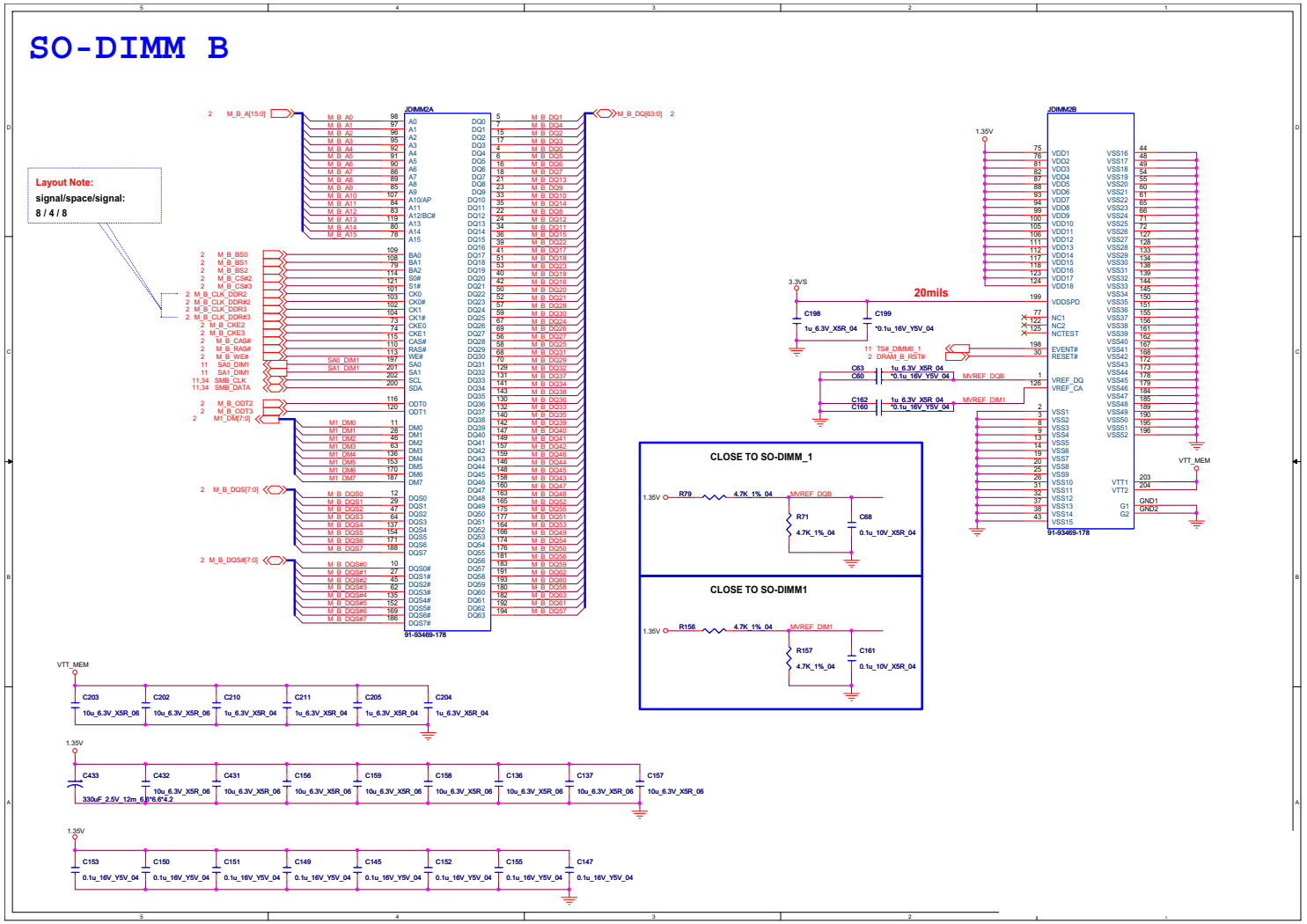
B.Schematic Diagrams

DDR3 SO-DIMM_A

Sheet 11 of 39
DDR3 SO-DIMM_A



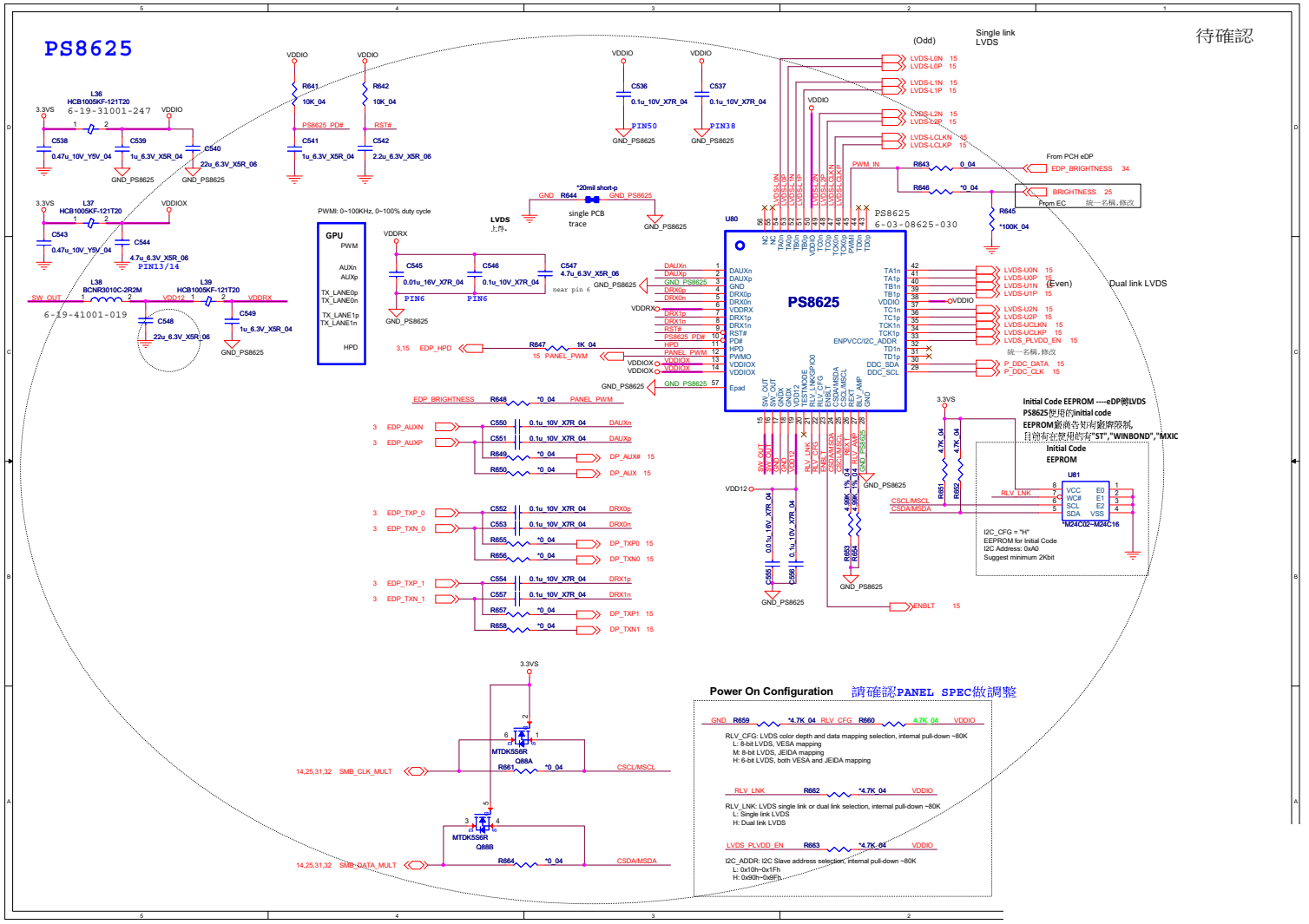
DDR3 SO-DIMM_B



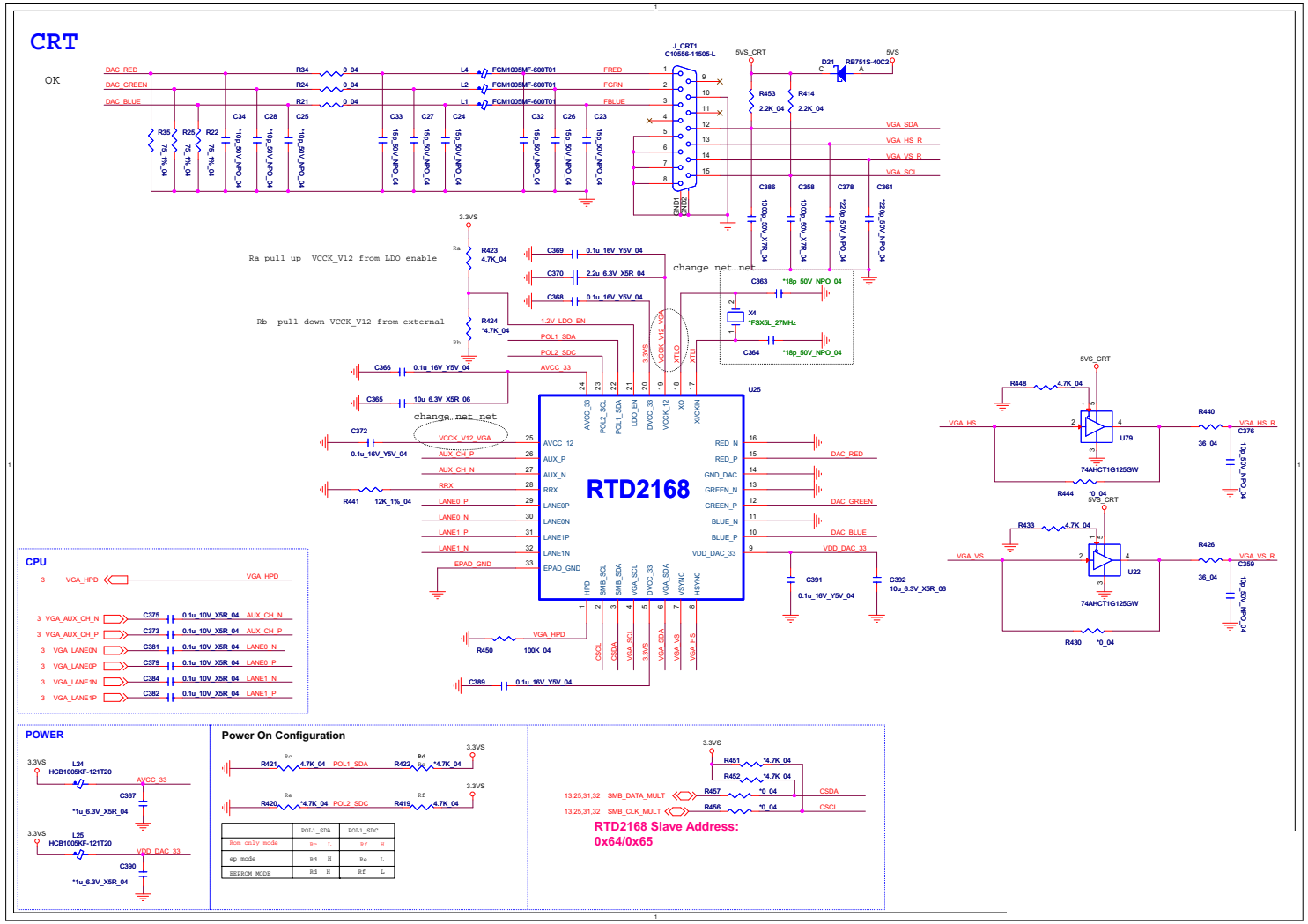
Sheet 12 of 39
DDR3 SO-DIMM_B

PS8625

Sheet 13 of 39
PS8625



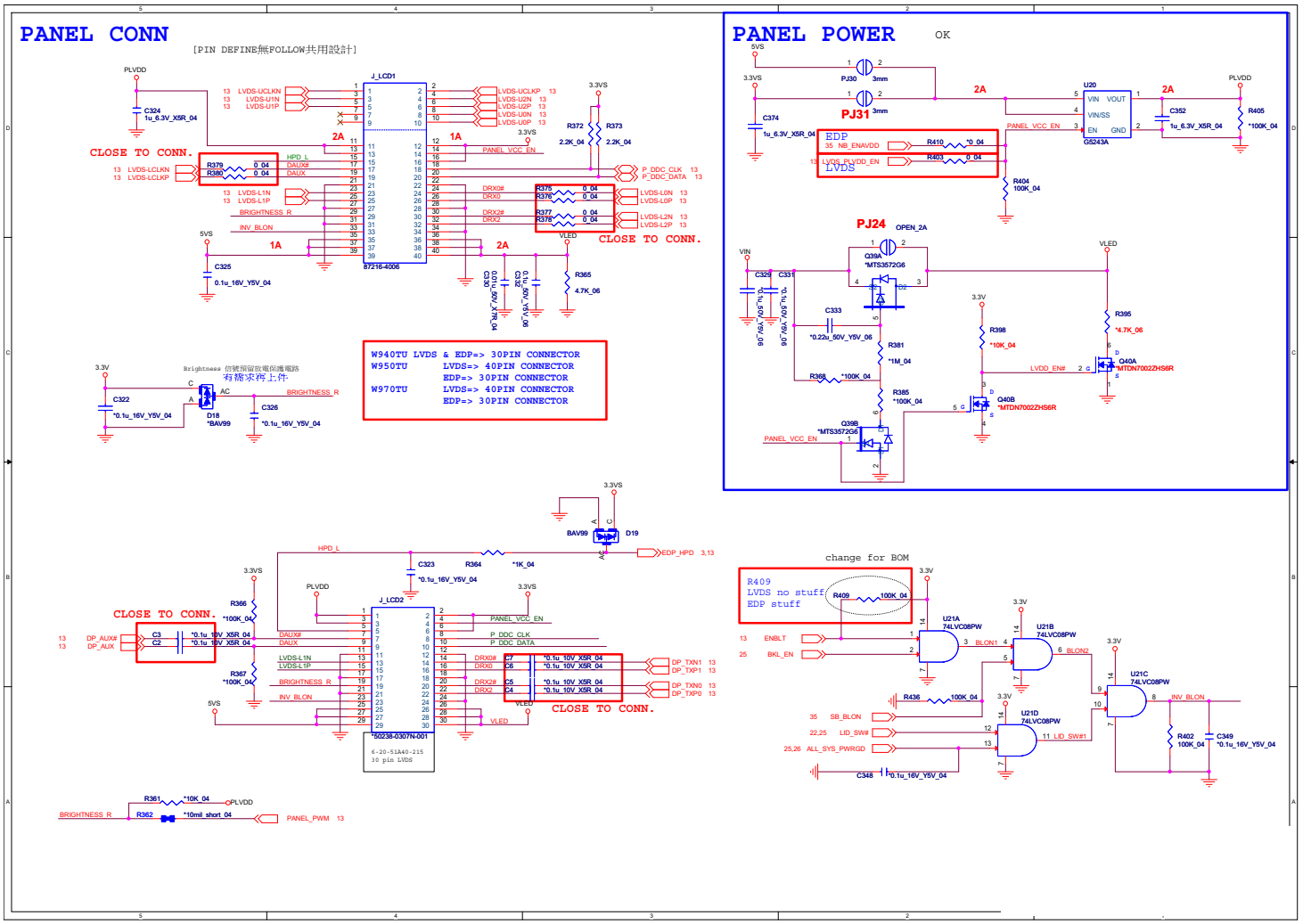
CRT



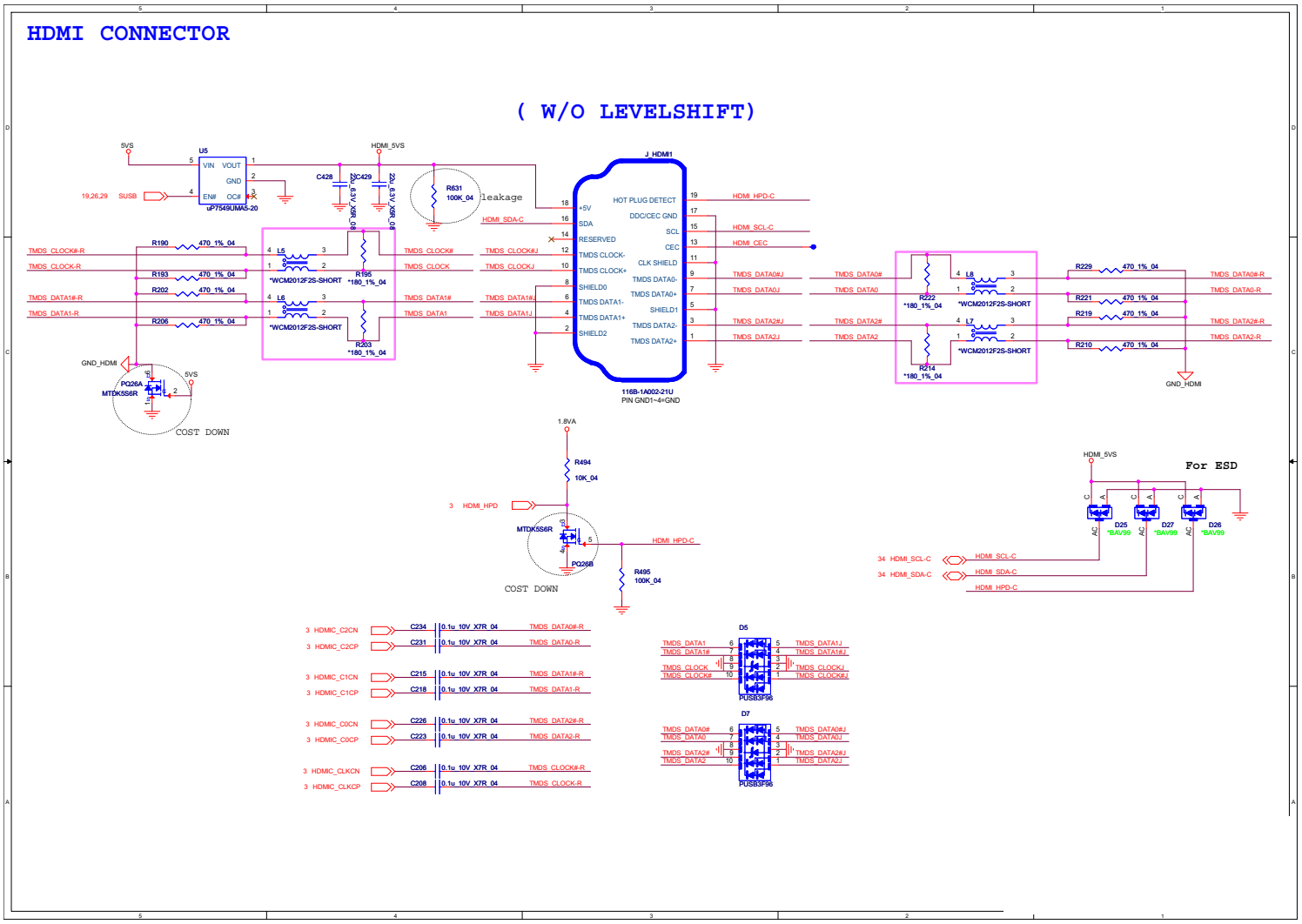
Sheet 14 of 39
CRT

Panel

Sheet 15 of 39
Panel



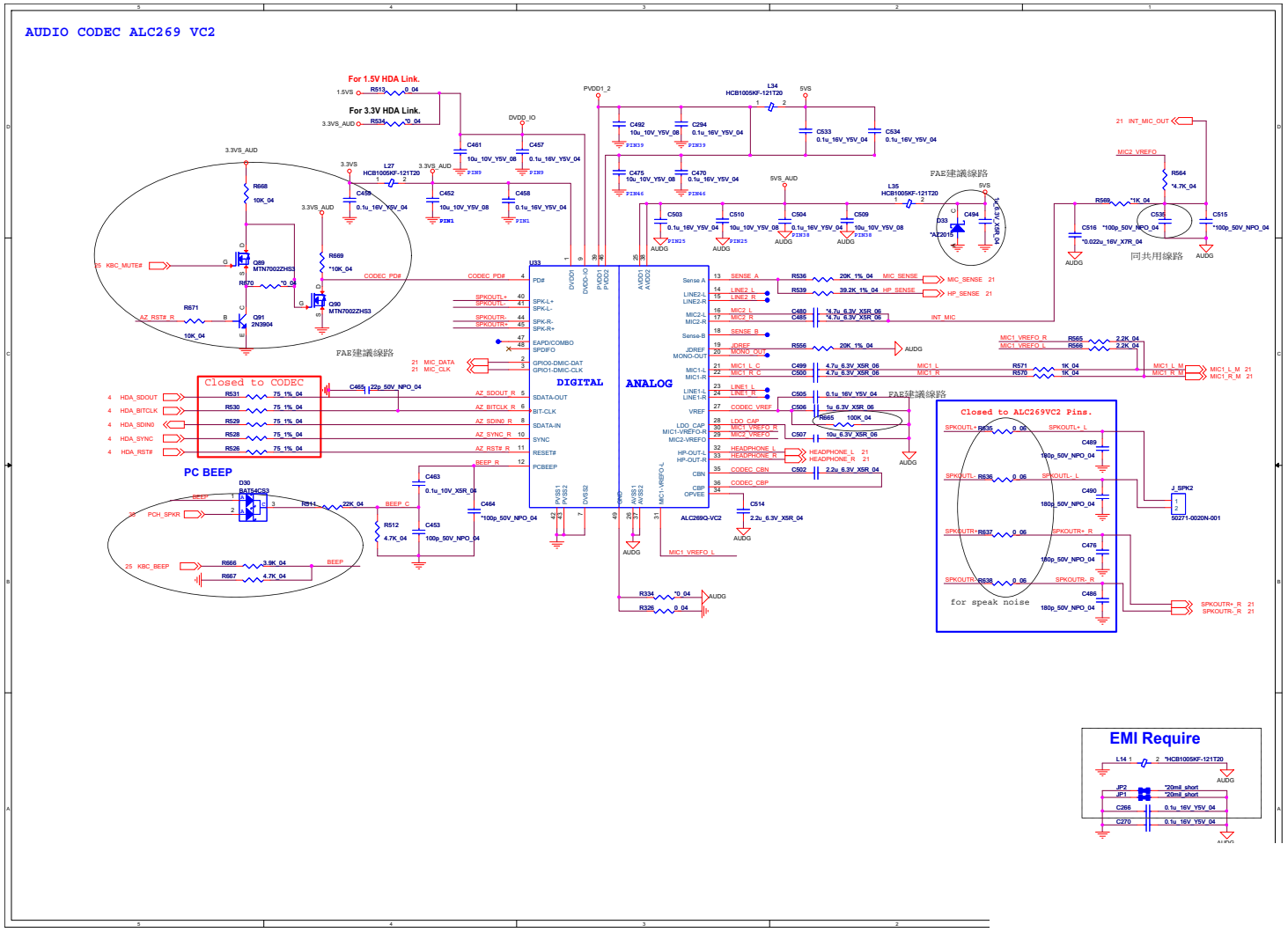
HDMI



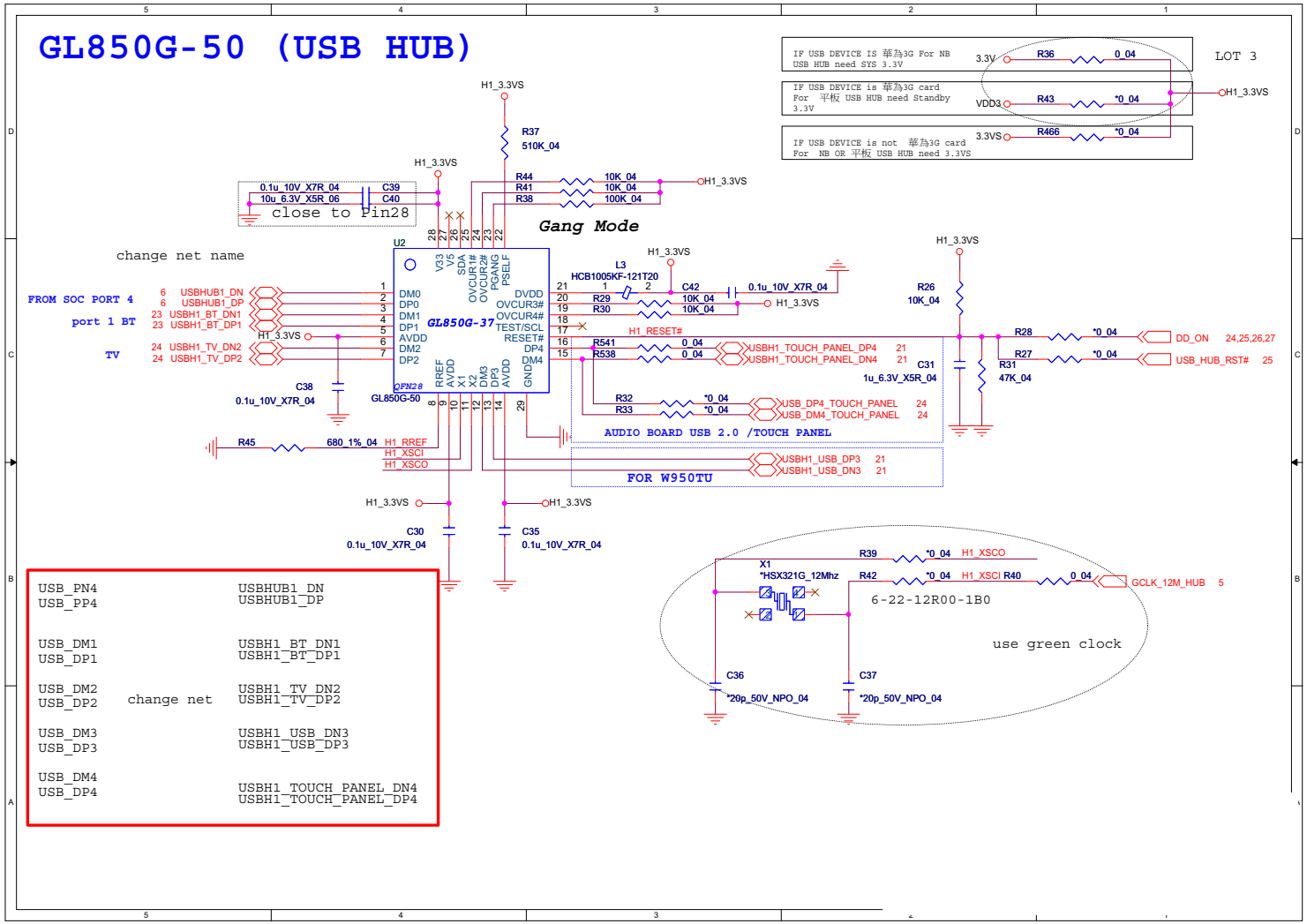
Sheet 16 of 39
HDMI

Audio Codec

Sheet 17 of 39
Audio Codec



USB Hub

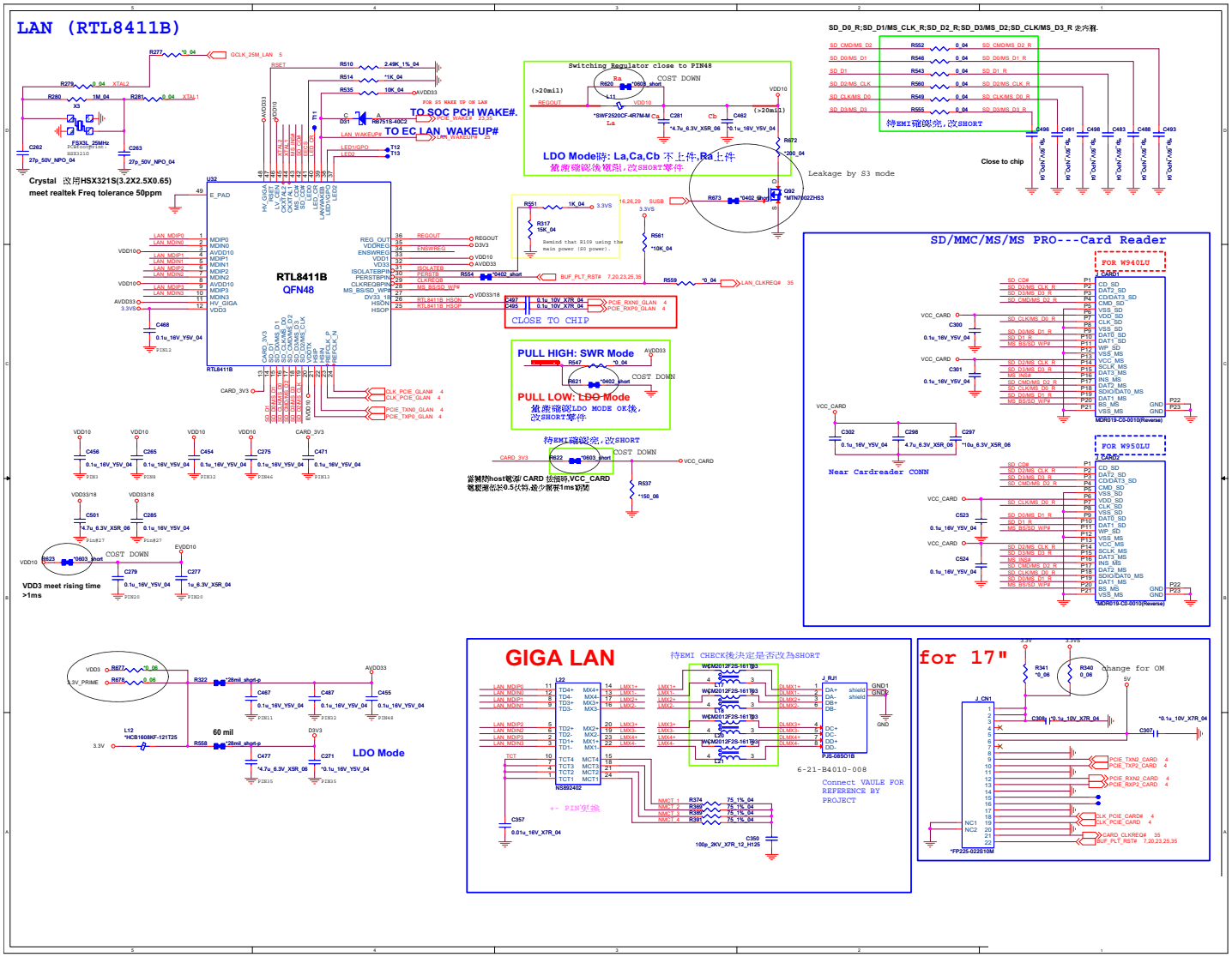


Sheet 18 of 39
USB Hub

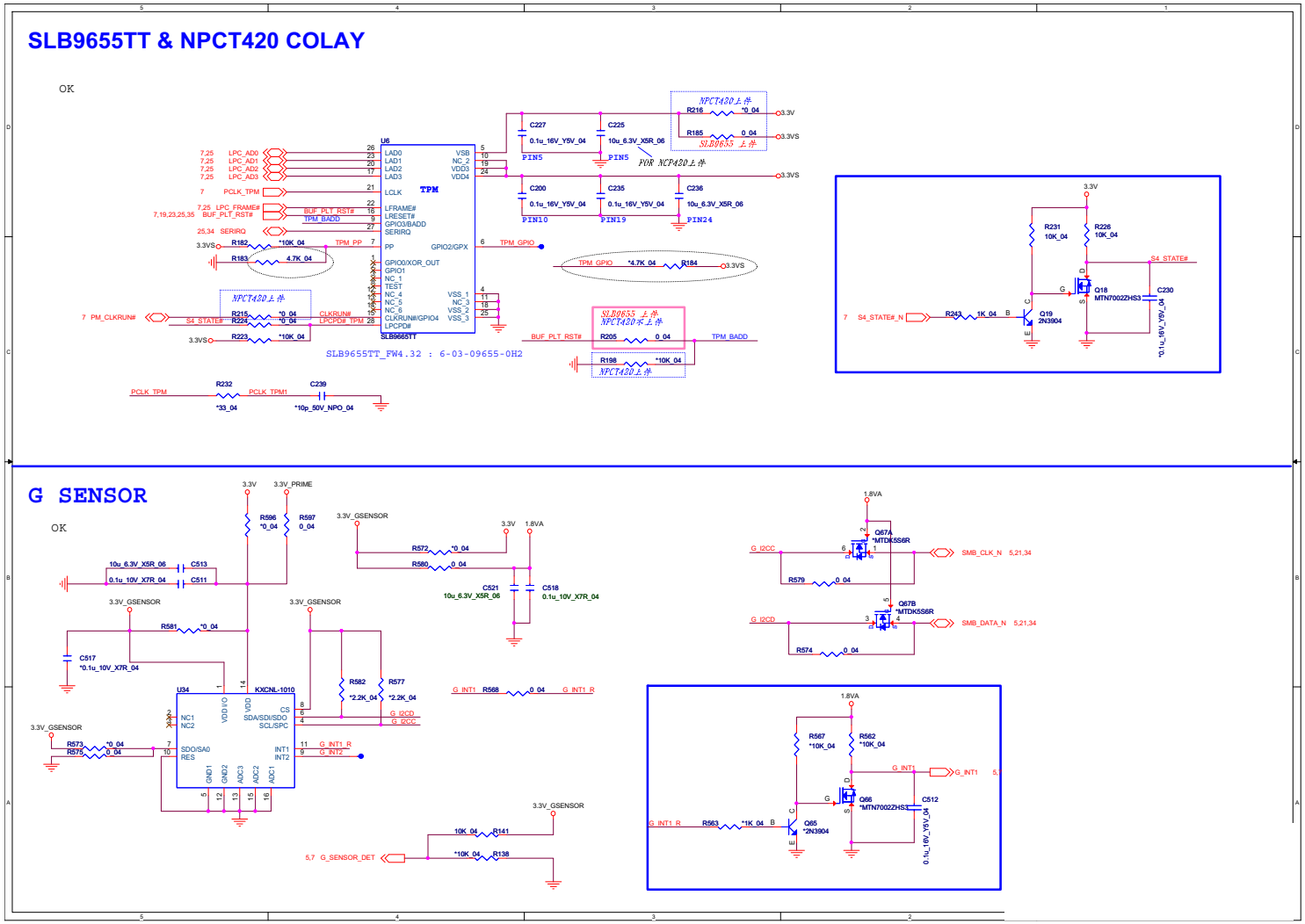
B.Schematic Diagrams

LAN / Card Reader

Sheet 19 of 39
LAN / Card Reader



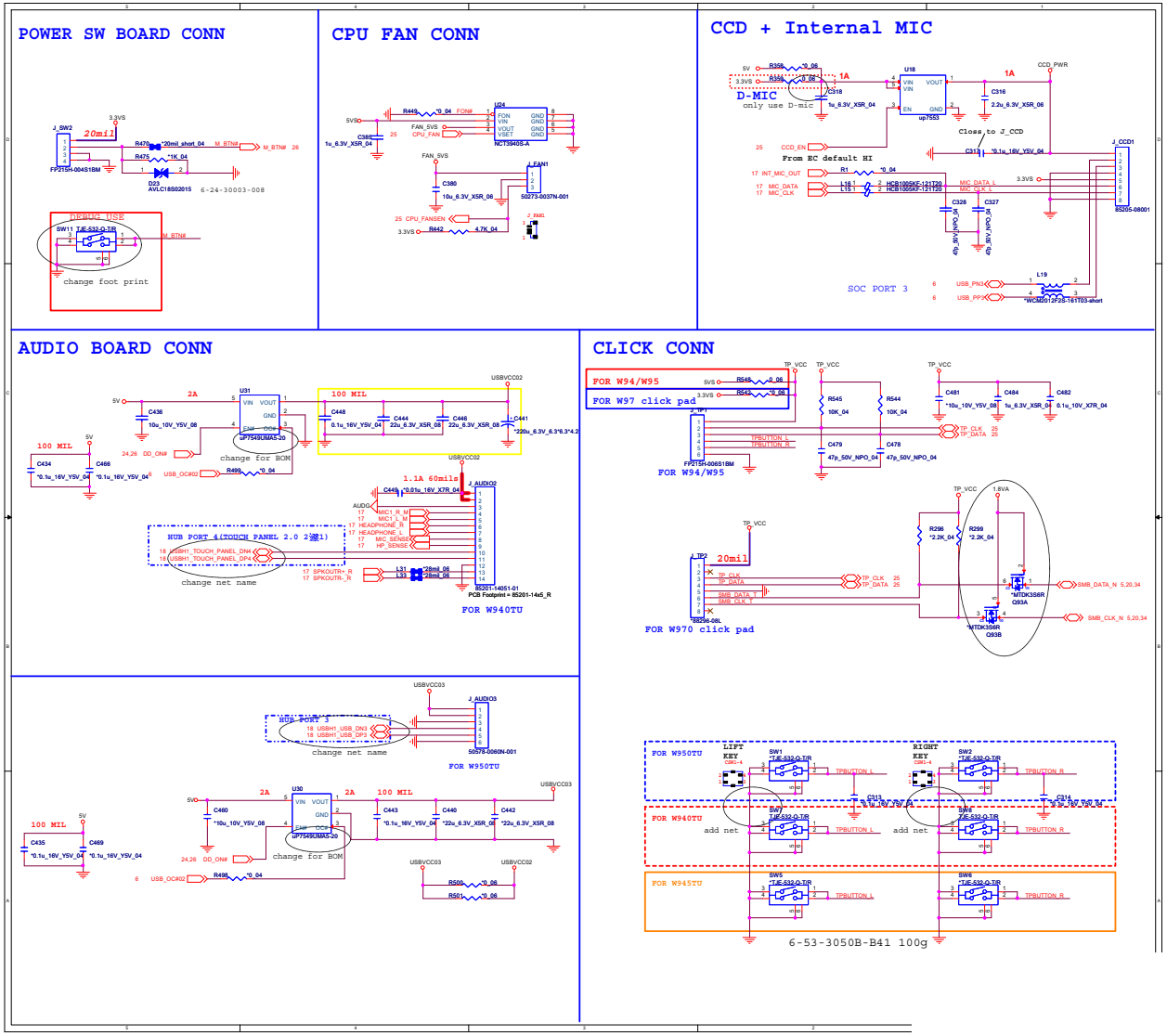
TPM, G Sensor



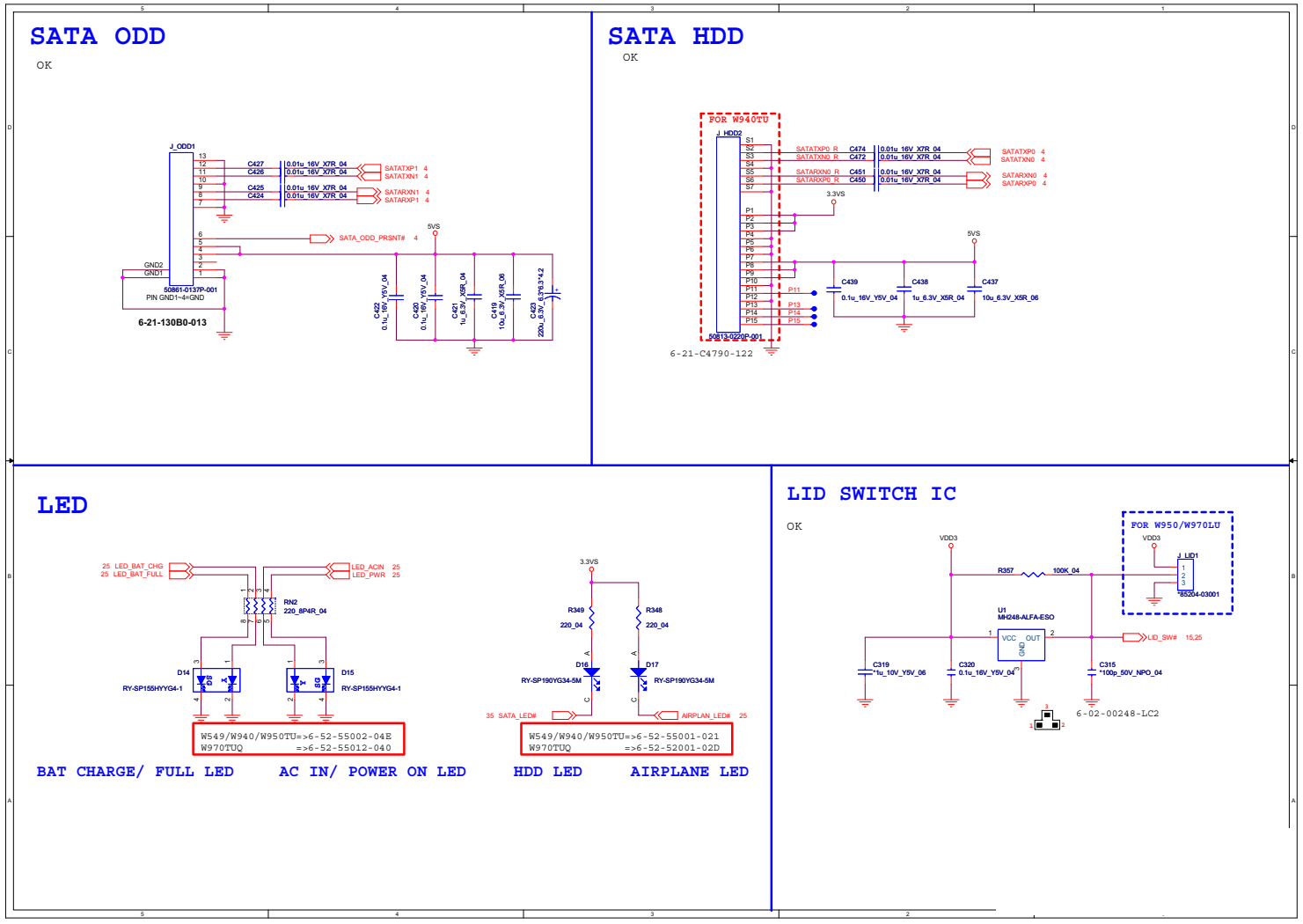
Sheet 20 of 39
TPM, G Sensor

Conn, Fan, Click, CCD

Sheet 21 of 39
Conn, Fan, Click, CCD



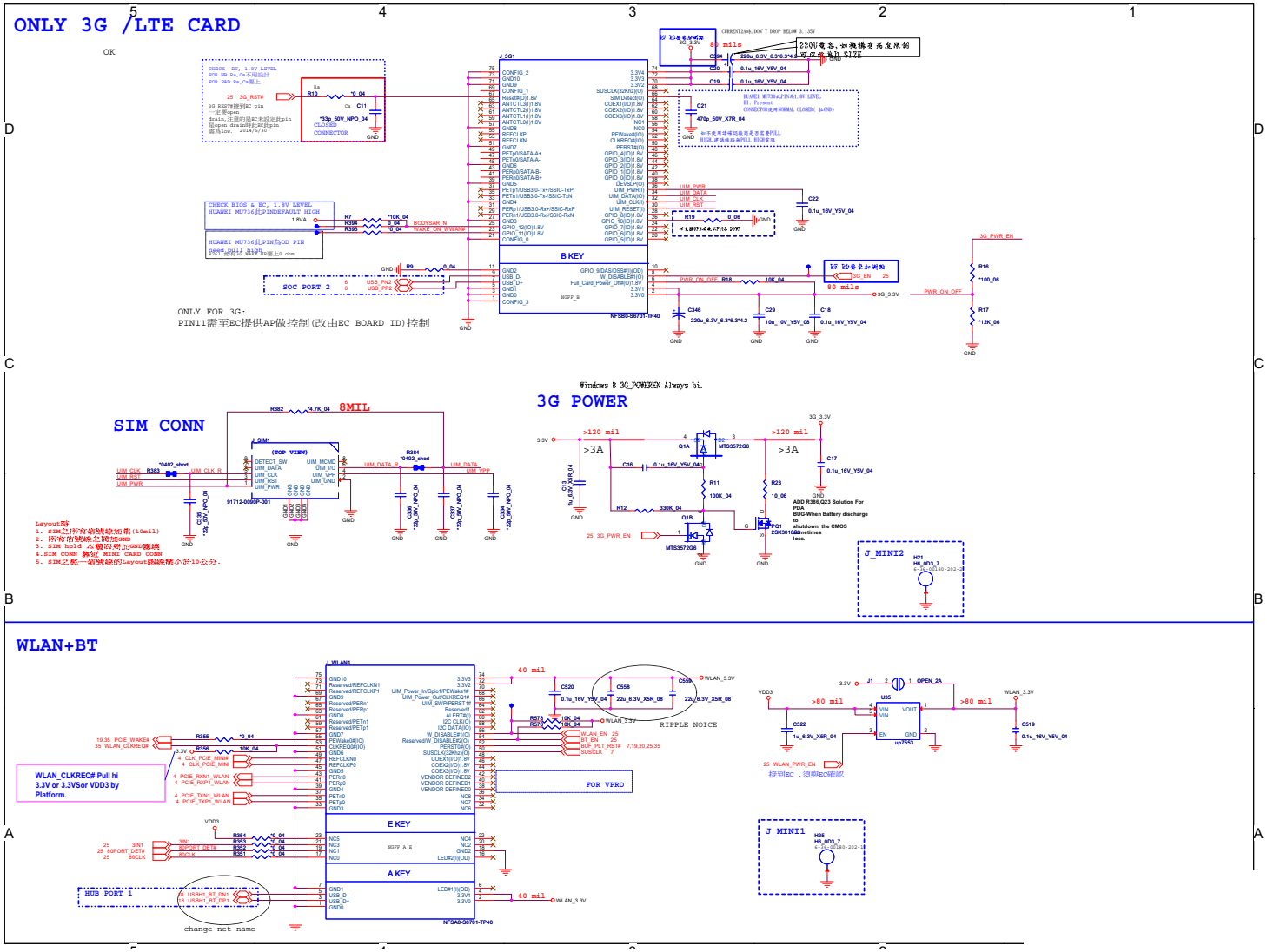
HDD, ODD, LED, LID



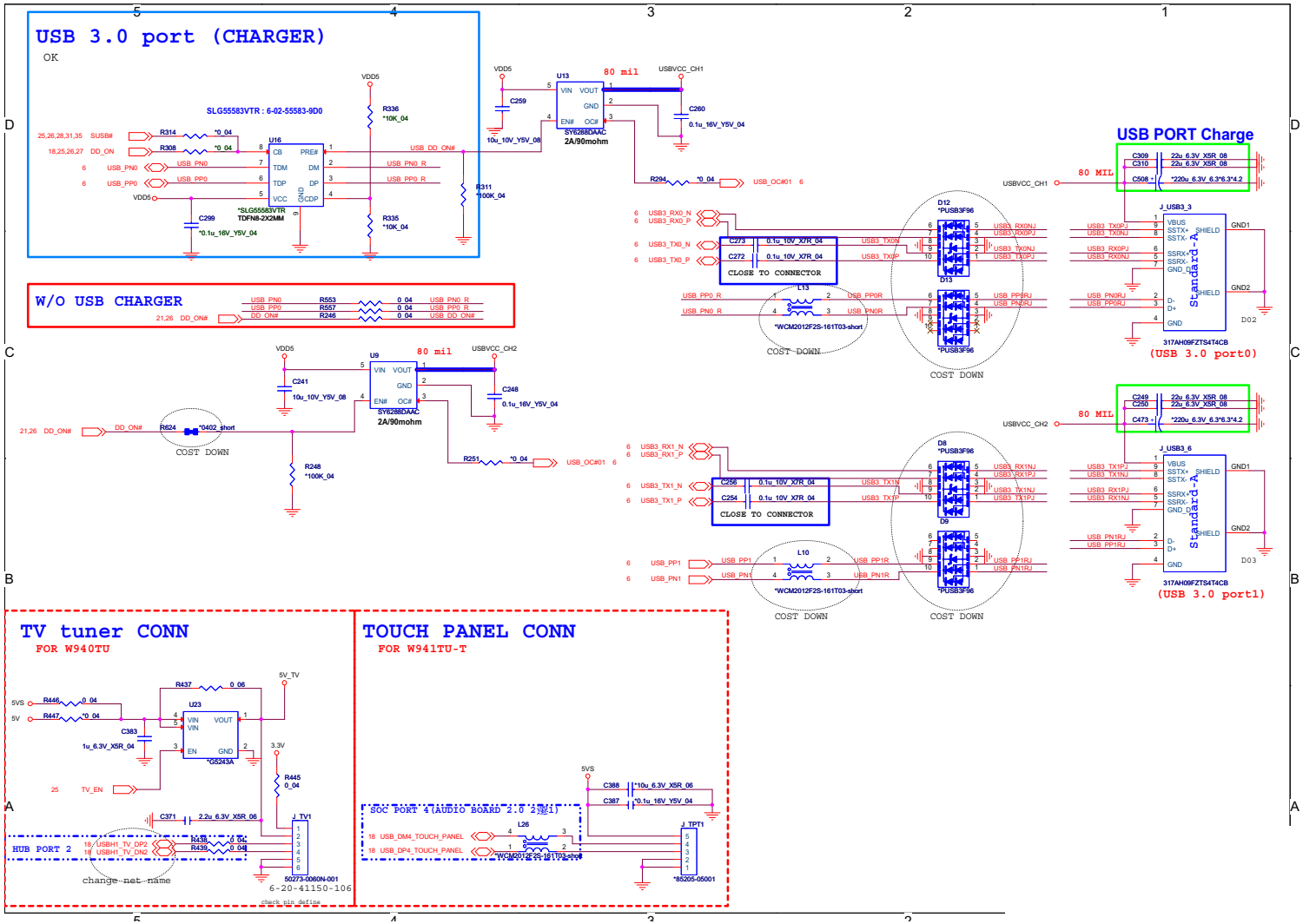
Sheet 22 of 39
HDD, ODD, LED, LID

NGFF

Sheet 23 of 39
BGFF



USB, Touch Panel, TV



Sheet 24 of 39
USB, Touch Panel, TV

KBC ITE IT8987E

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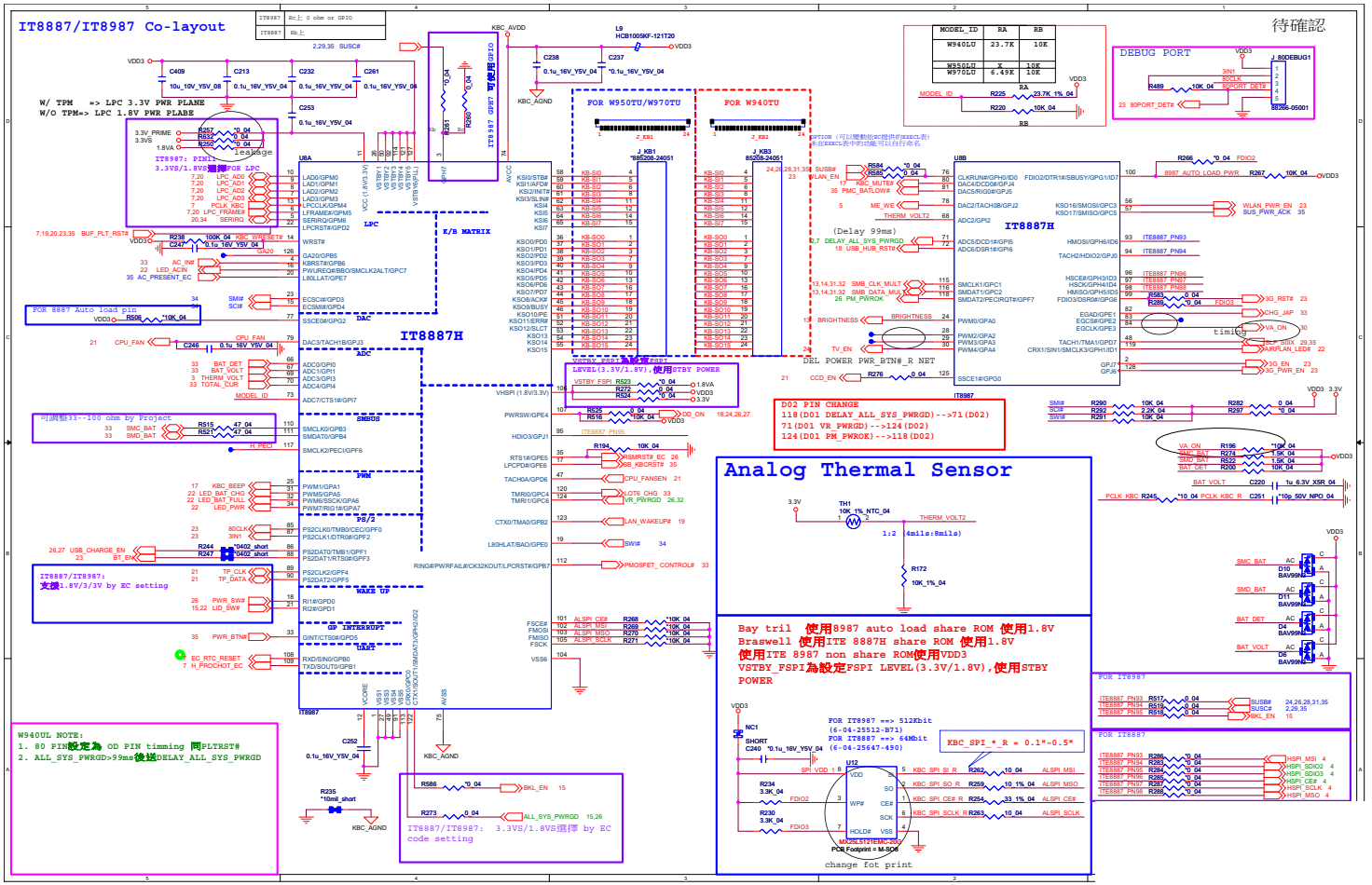
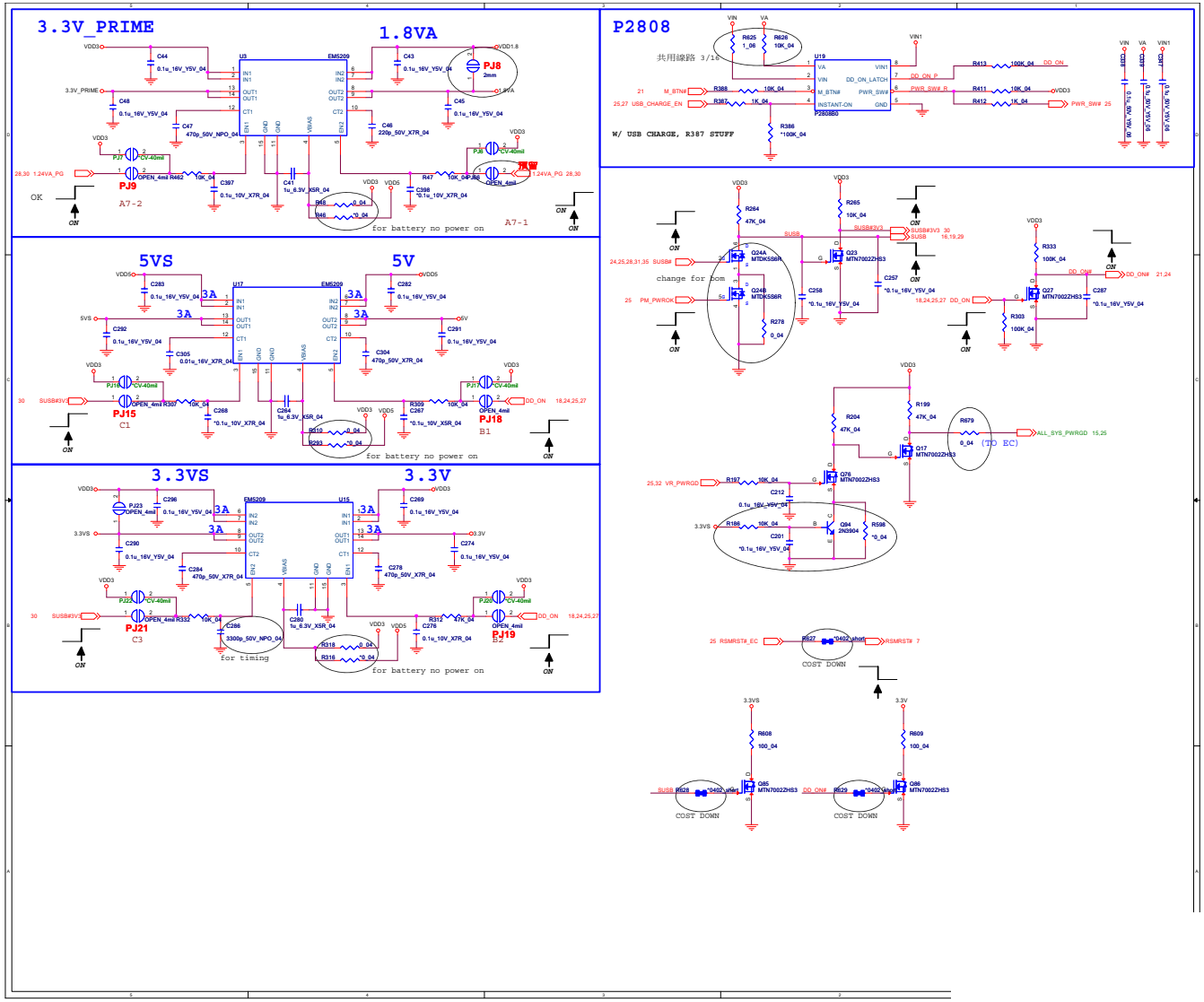
KBC ITE IT8987E



5V, 3.3V, 1.8VA



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5V, 3.3V, 1.8VA

VDD3, VDD5

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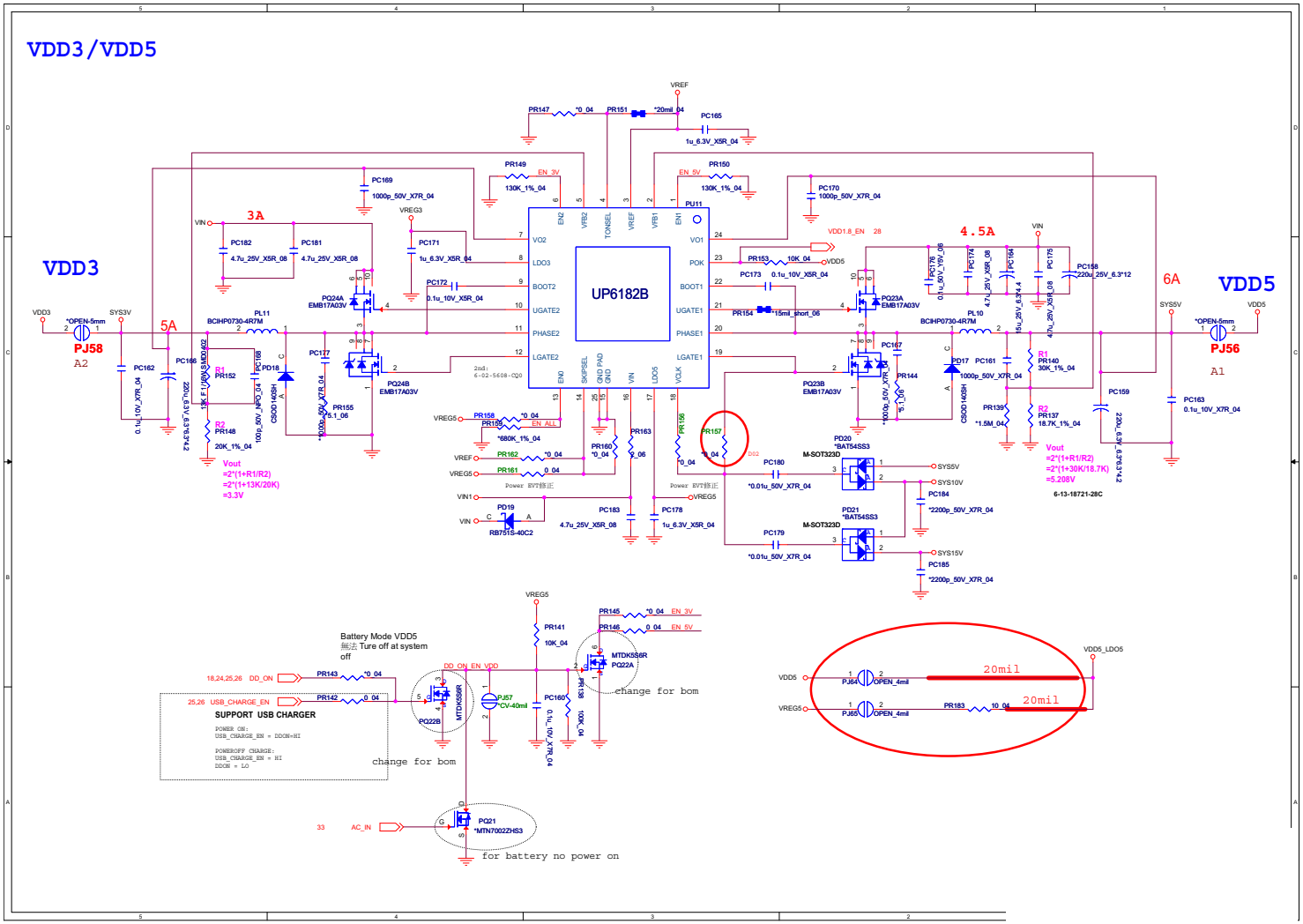
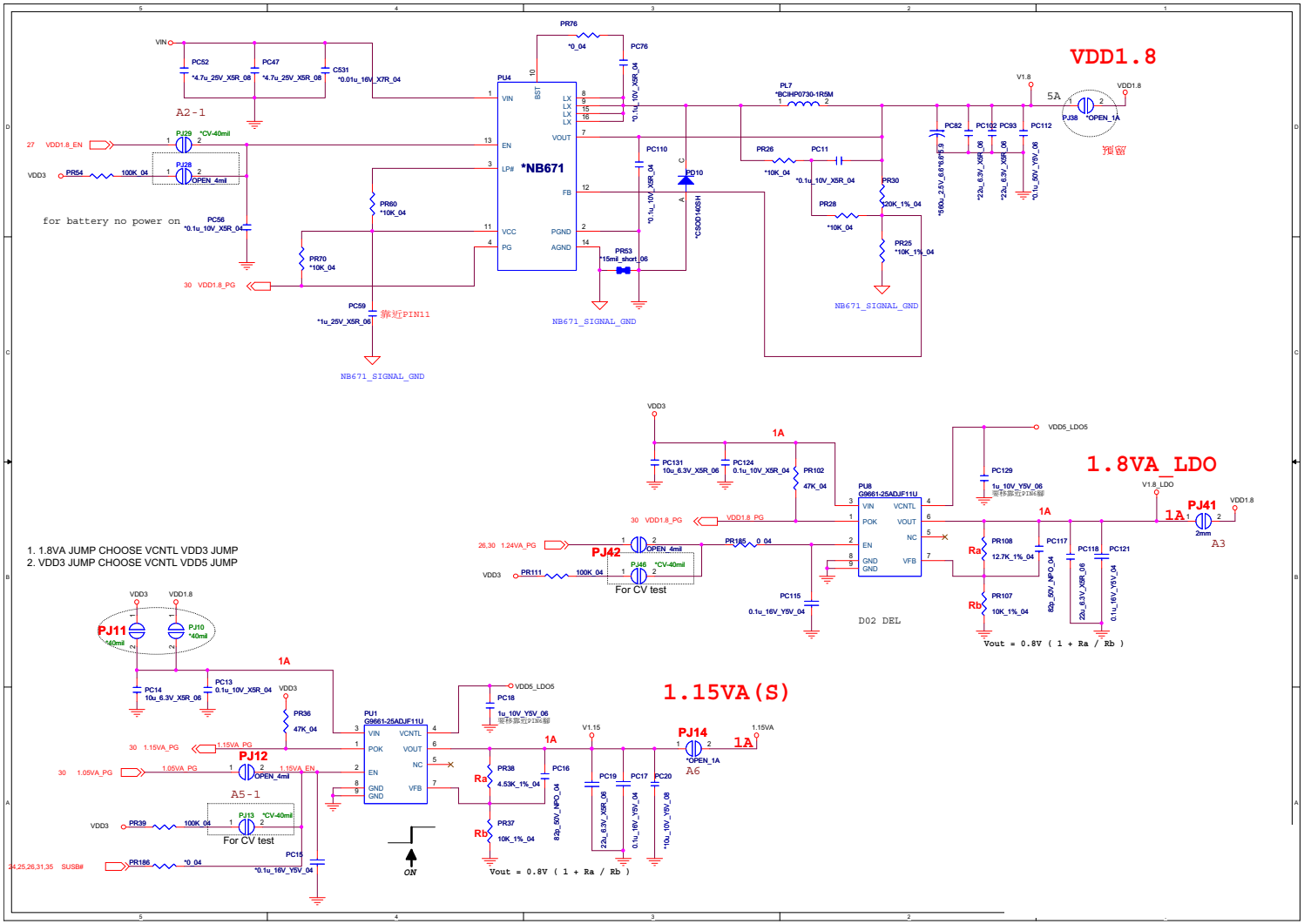
VDD3, VDD5



VDD 1.8/1.15VA



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VDD 1.8/1.15VA

VTT_MEM / 1.35V

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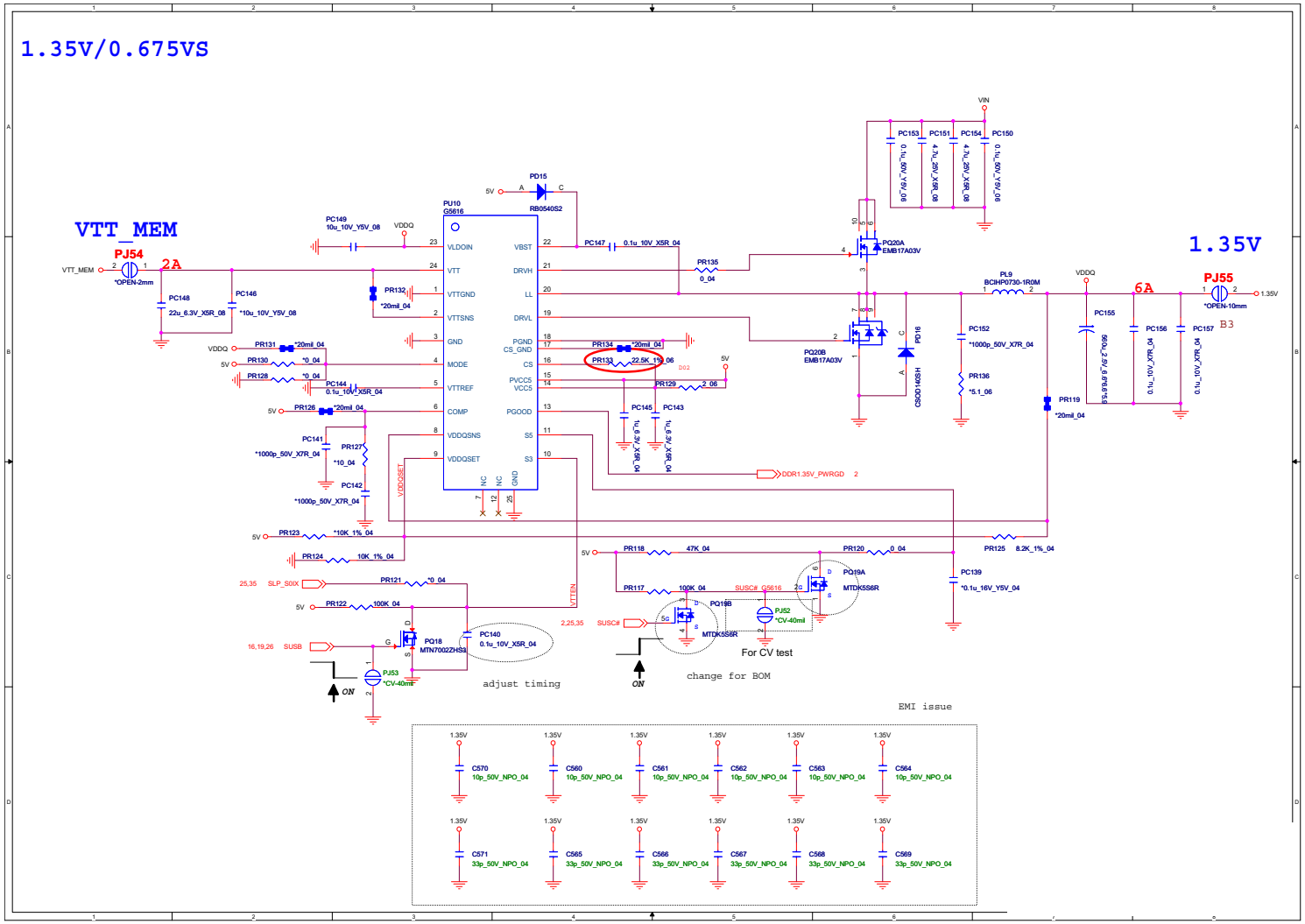
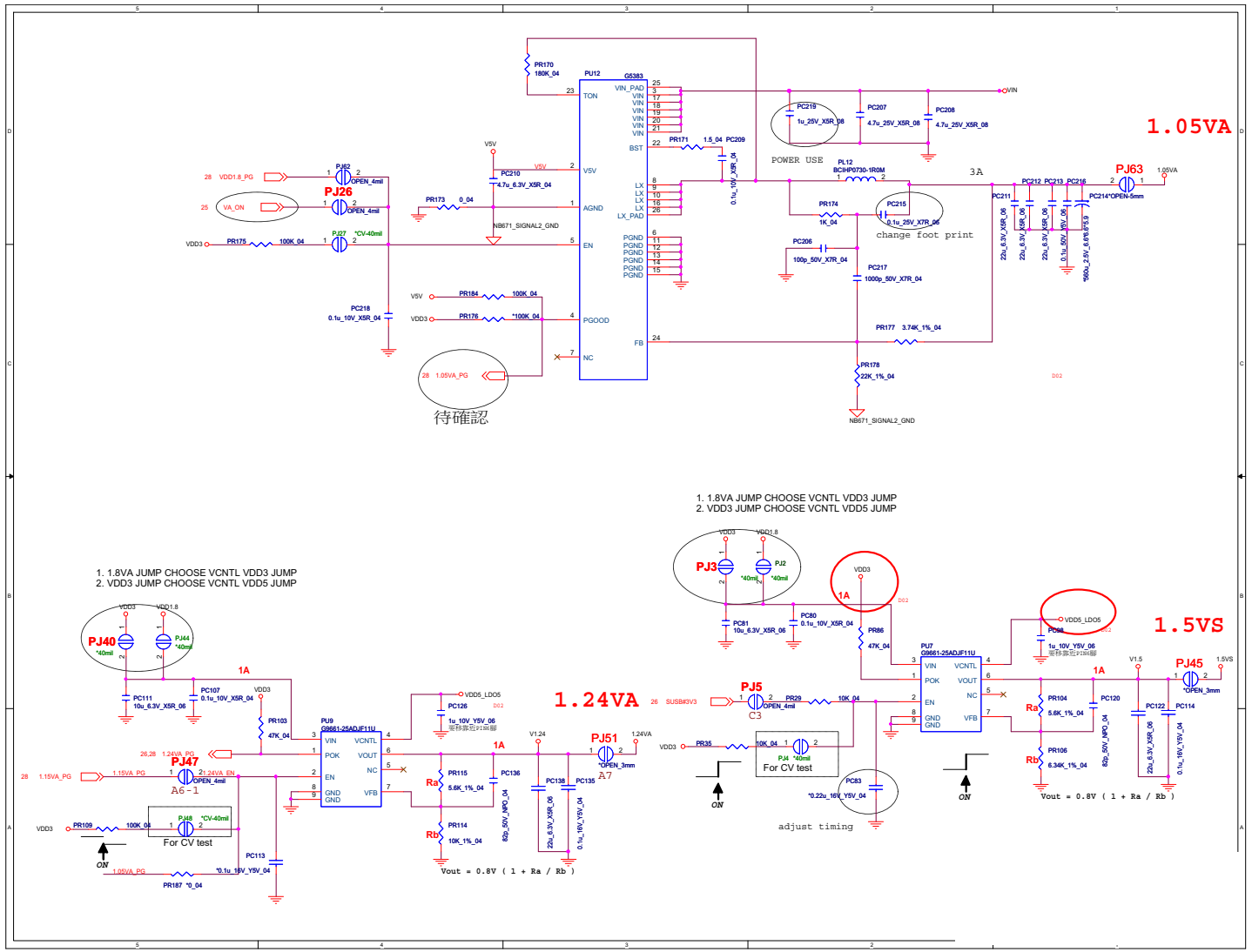
VTT_MEM / 1.35V



1.5VS/1.24VA



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1.5VS/1.24VA

VGG

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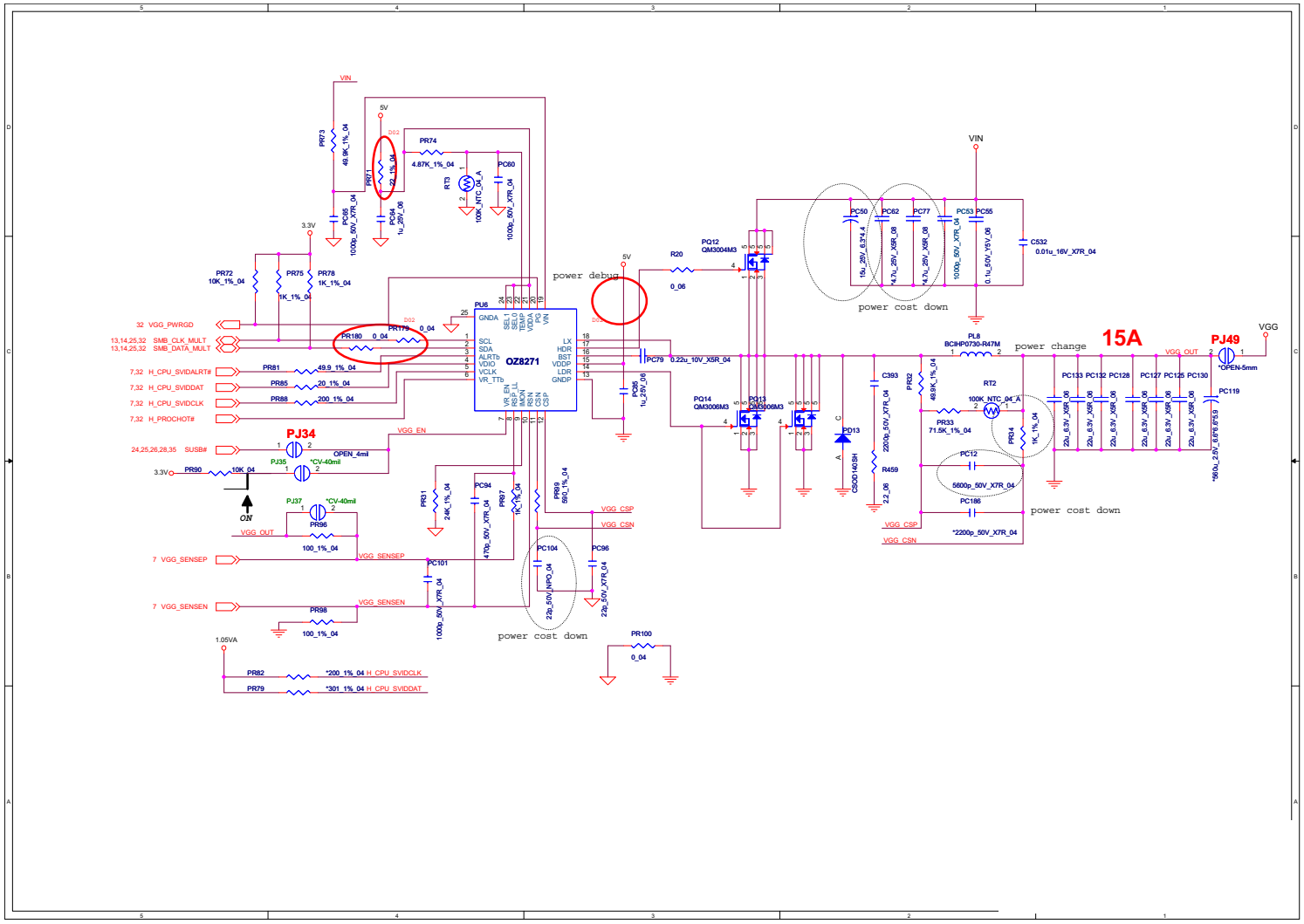
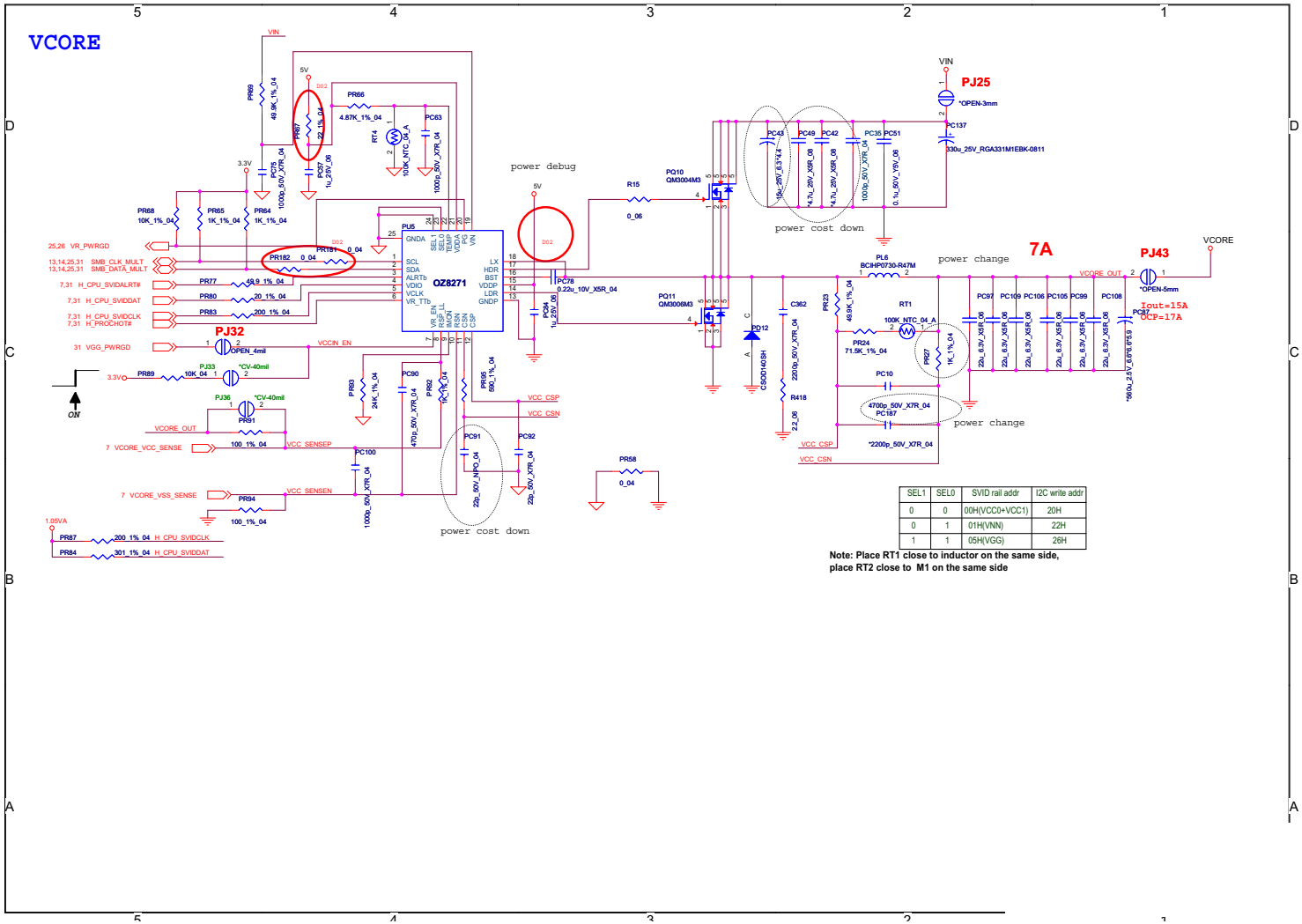
VGG



VCore



SEL1	SEL0	SVID rail addr	I2C write addr
0	0	00H(VCC0+VCC1)	20H
0	1	01H(VNN)	22H
1	1	05H(VGG)	26H

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VCore

AC-In, Charger

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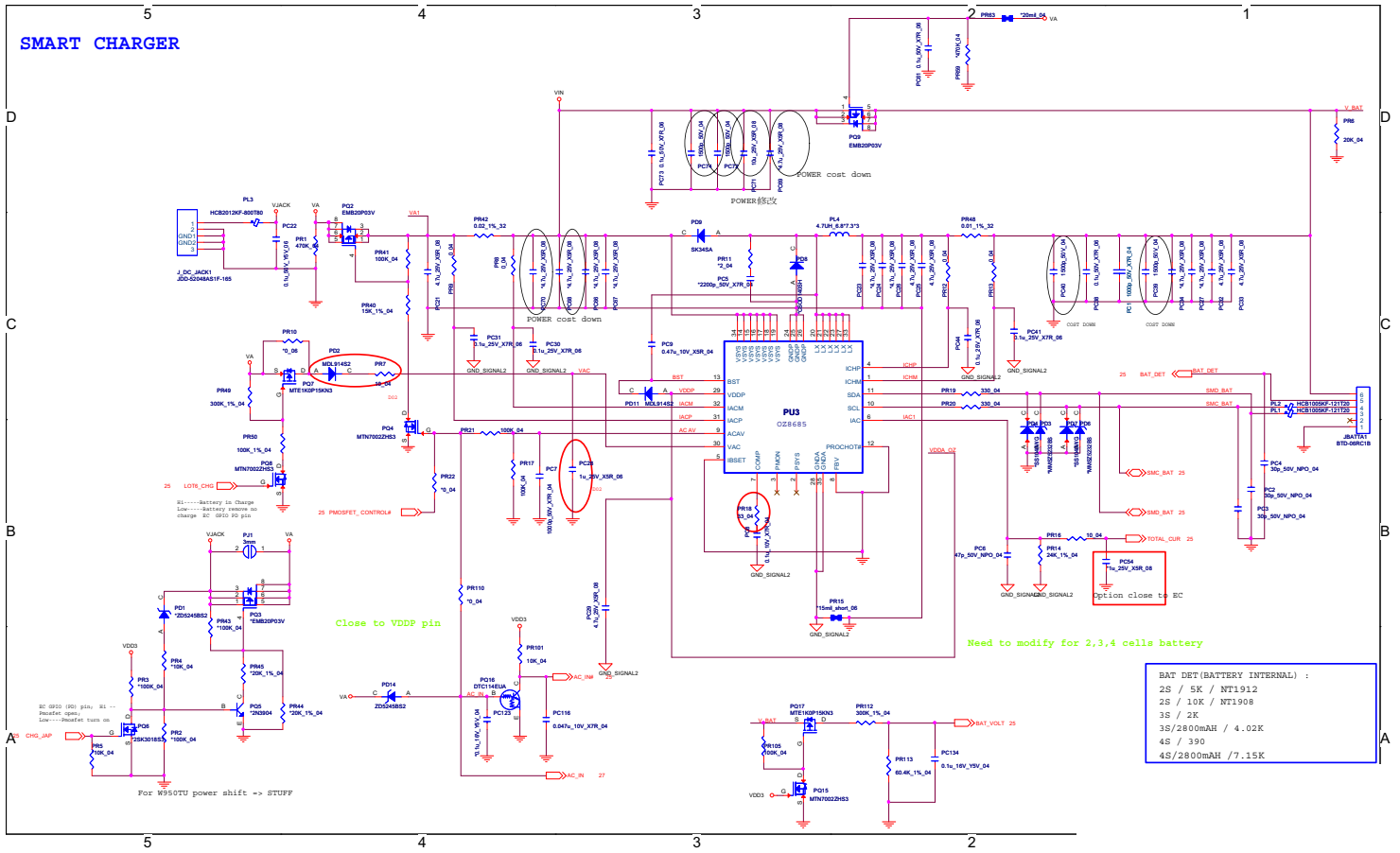
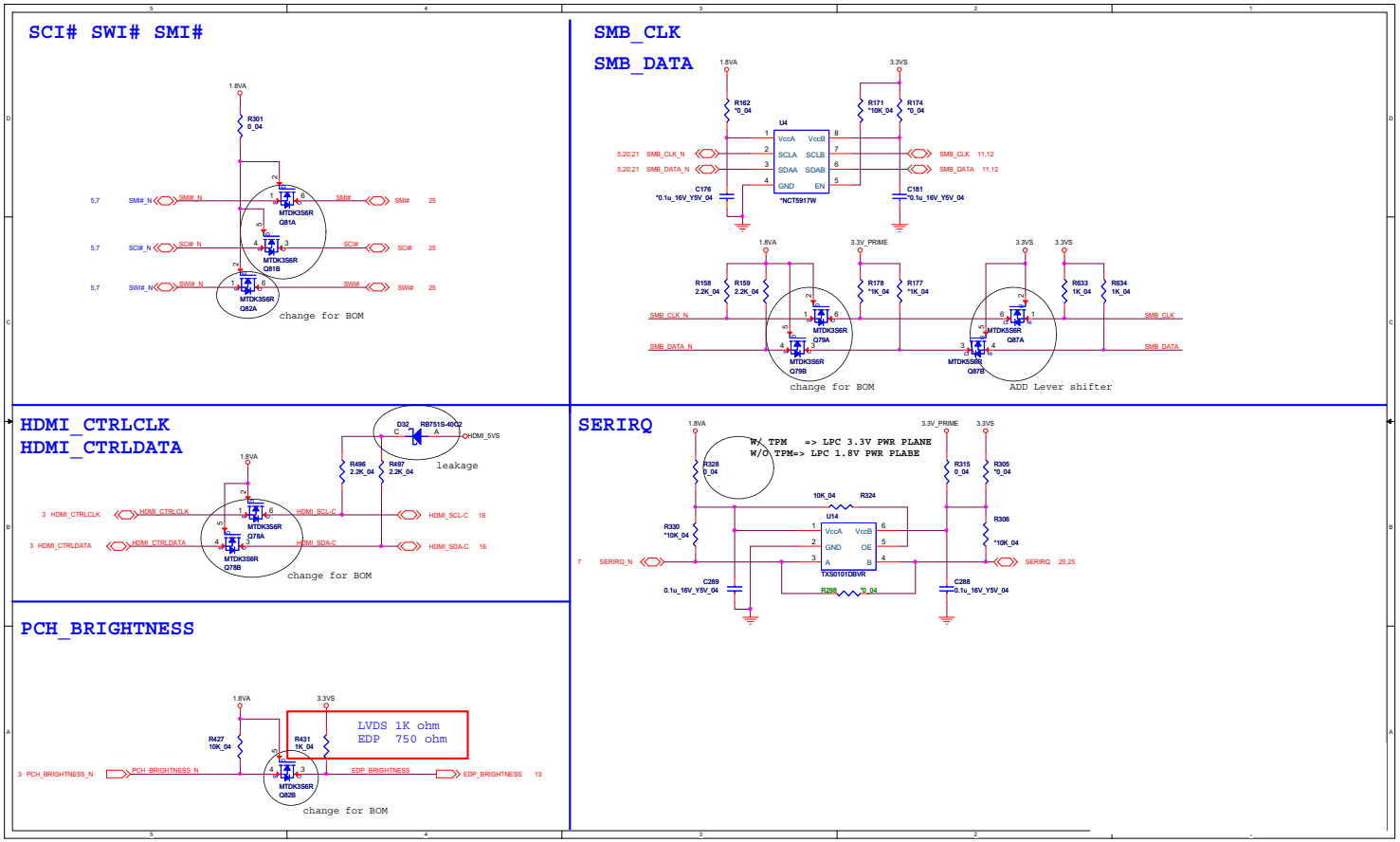
AC-IN, Charger



Level Shifter 1



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Level Shifter 1

Level Shifter 2

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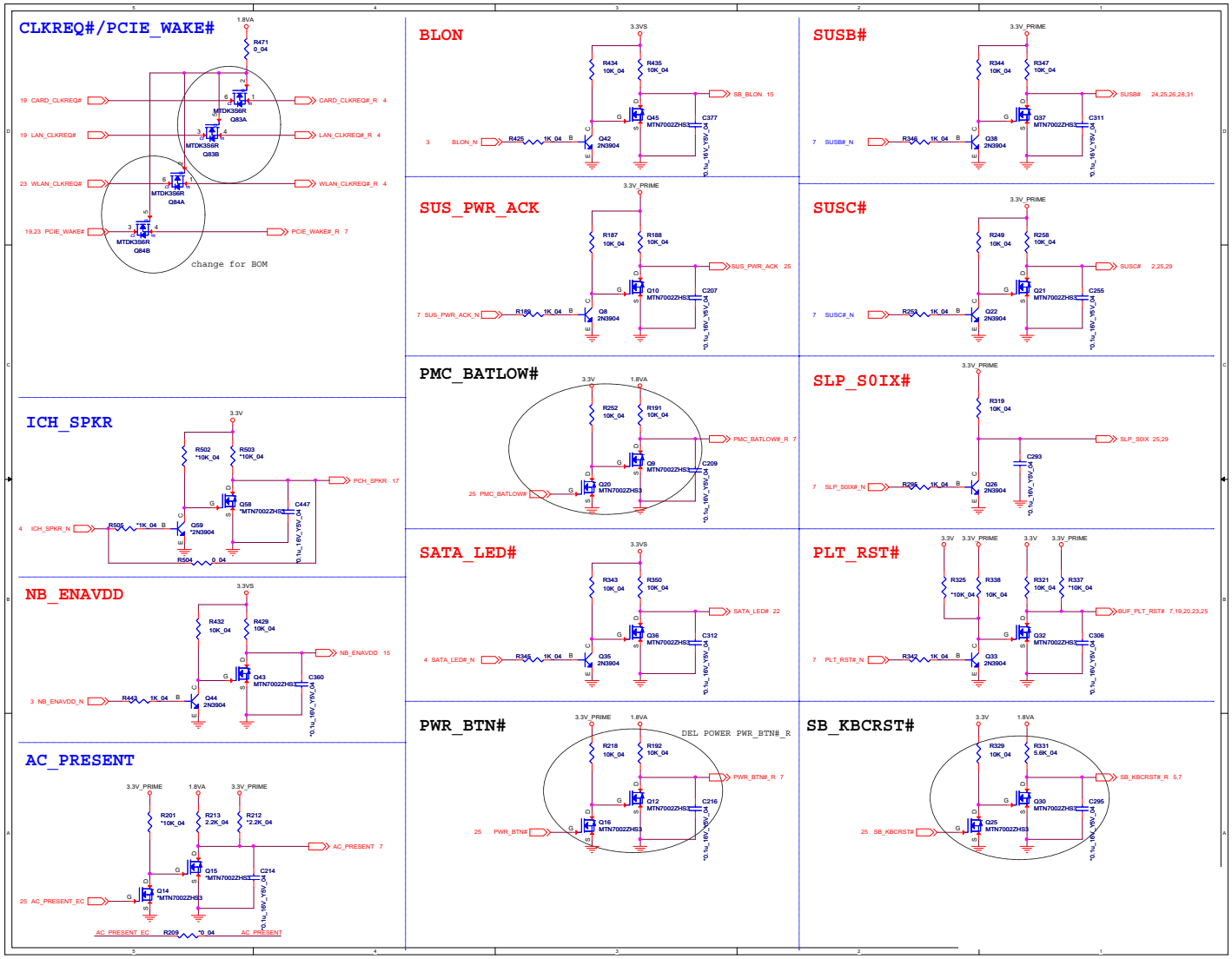
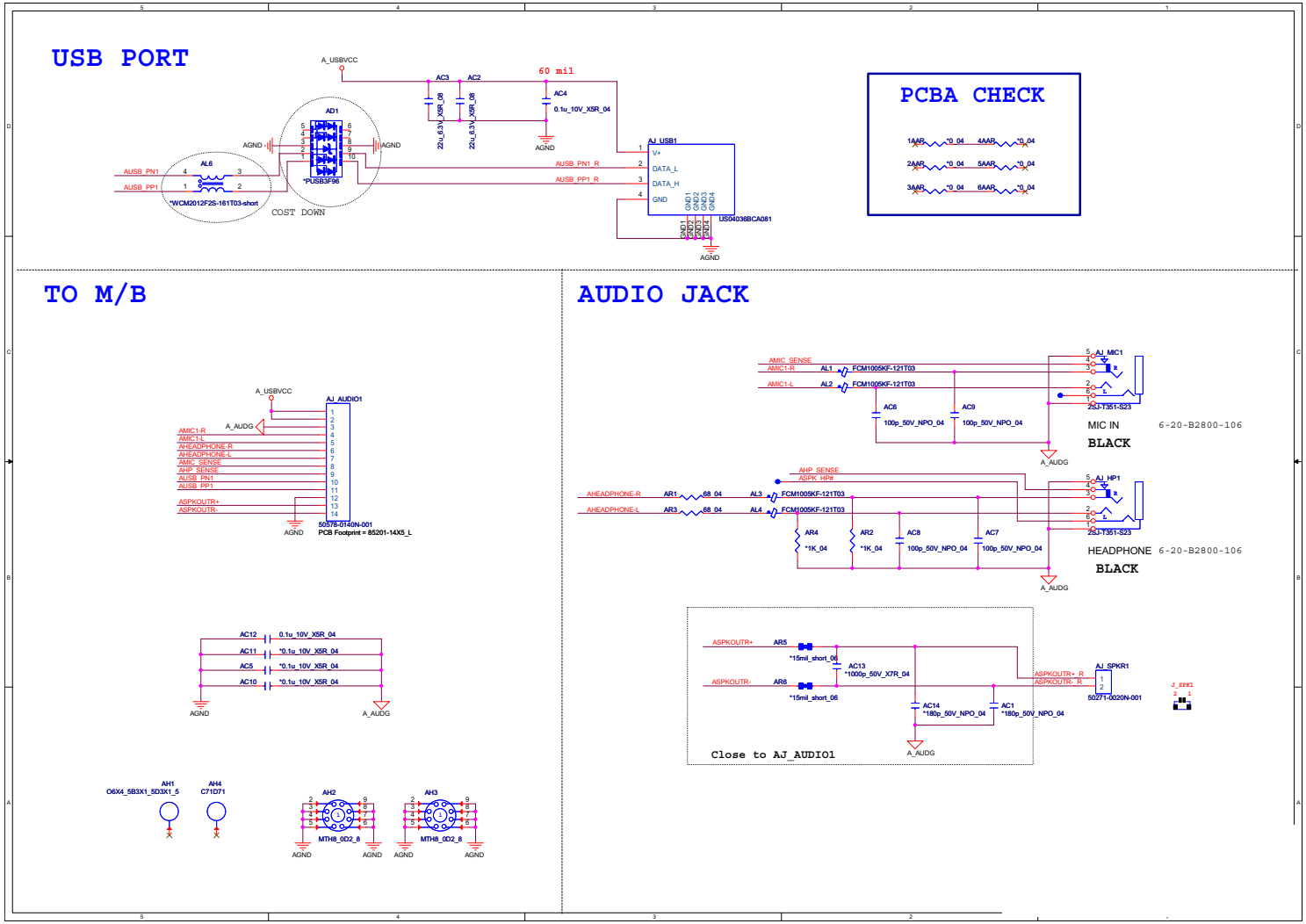
Level Shifter 2



Audio Board



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Audio Board

Power SW Board

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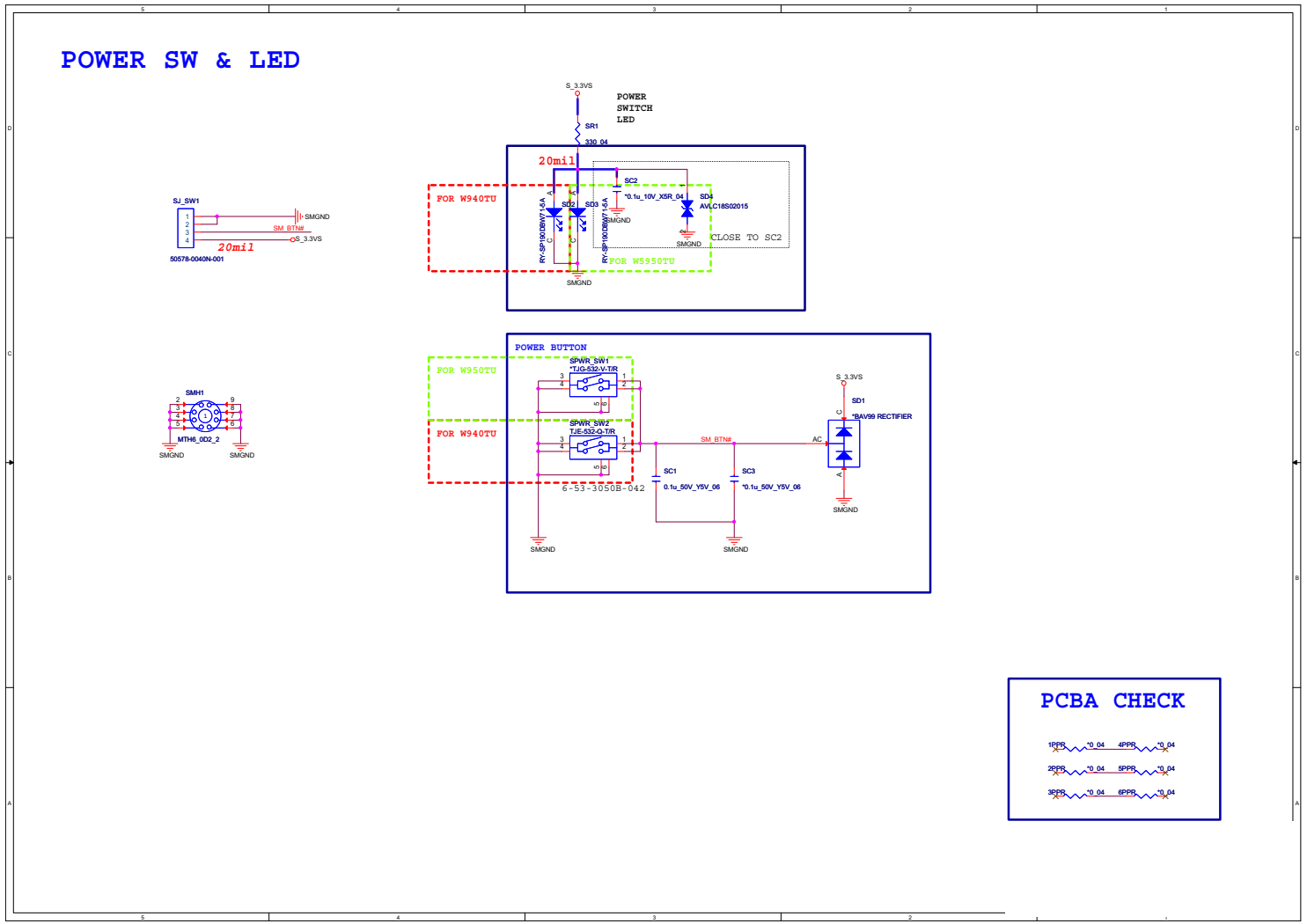
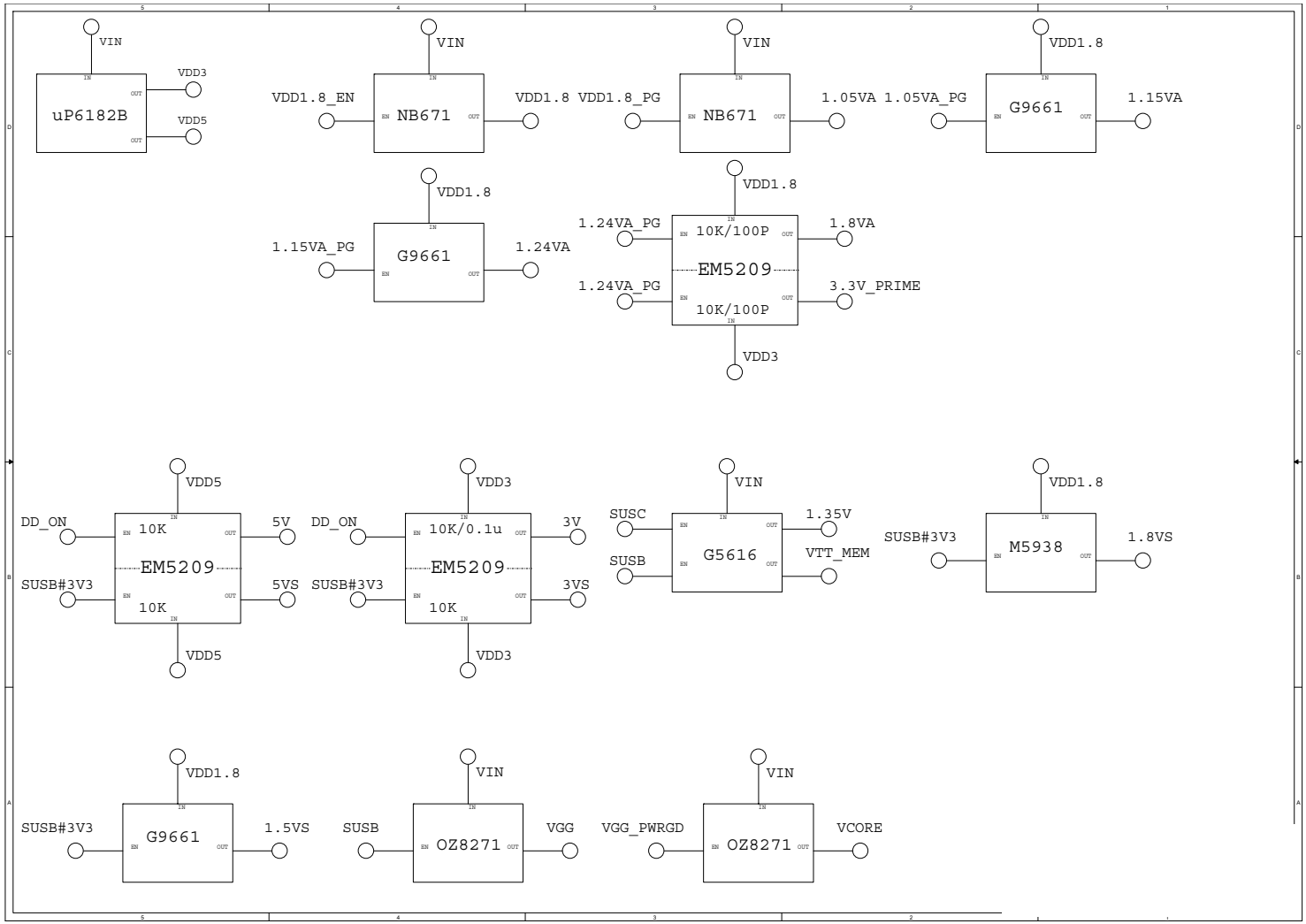
Power SW Board



Power Diagram



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Power Diagram

Power Sequence

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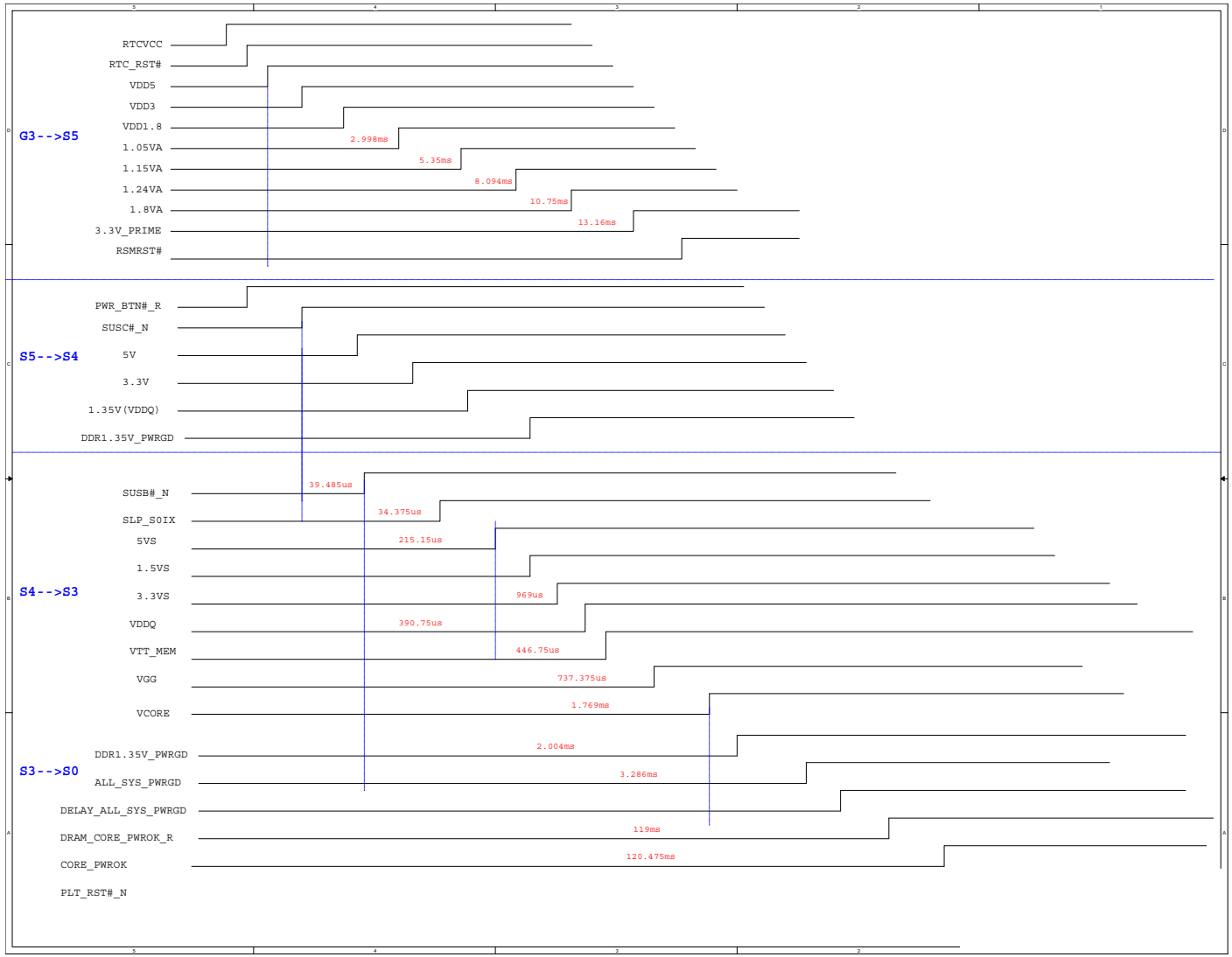
Power Sequence



Appendix C:Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS, you must:

- Download the BIOS update from the web site.
- Unzip the files onto a bootable CD/DVD/USB Flash Drive.
- Reboot your computer from an external CD/DVD/USB Flash Drive.
- Use the flash tools to update the flash BIOS using the commands indicated below.
- Restart the computer booting from the HDD and press **F2** at startup enter the BIOS.
- Load setup defaults from the BIOS and save the default settings and exit the BIOS to restart the computer.
- After rebooting the computer you may restart the computer again and make any required changes to the default BIOS settings.

Download the BIOS

1. Go to **www.clevo.com.tw** and point to **E-Services** and click **E-Channel**.
2. Use your user ID and password to access the appropriate download area (BIOS), and download the latest BIOS files (the BIOS file will be contained in a batch file that may be run directly once unzipped) for your computer model (**see sidebar for important information on BIOS versions**).

Unzip the downloaded files to a bootable CD/DVD or USB Flash drive

1. Insert a bootable CD/DVD/USB flash drive into the CD/DVD drive/USB port of the computer containing the downloaded files.
2. Use a tool such as Winzip or Winrar to unzip all the BIOS files and refresh tools to your bootable CD/DVD/USB flash drive (you may need to create a bootable CD/DVD with the files using a 3rd party software).

Set the computer to boot from the external drive

1. With the bootable CD/DVD/USB flash drive containing the BIOS files in your CD/DVD drive/USB port, restart the computer and press **F2** (in most cases) to enter the BIOS.
2. Use the arrow keys to highlight the **Boot** menu.
3. Use the "**+**" and "**-**" keys to move boot devices up and down the priority order.
4. Make sure that the CD/DVD drive/USB flash drive is set first in the boot priority of the BIOS.
5. Press **F4** to save any changes you have made and exit the BIOS to restart the computer.

BIOS Version

Make sure you download the latest correct version of the BIOS appropriate for the computer model you are working on.

You should only download BIOS versions that are V1.01.XX or higher as appropriate for your computer model.

Note that BIOS versions are not backward compatible and therefore **you may not downgrade your BIOS to an older version** after upgrading to a later version (e.g if you upgrade a BIOS to ver 1.01.05, you **MAY NOT** then go back and flash the BIOS to ver 1.01.04).

Use the flash tools to update the BIOS

1. Make sure you are not loading any memory management programs such as HIMEM by holding the **F8** key as you see the message "**EFI Shell**". You will then be prompted to give "**Y**" or "**N**" responses to the programs being loaded by EFI Shell. Choose "N" for any memory management programs.
2. You should now see DISK **fsX**:\> (X is the designated drive number for the CD/DVD drive/USB flash drive).
3. **Type the following command**:

   fsX:\> Flash.nsh

4. The utility will then proceed to flash the BIOS.
5. You should then be prompted to press any key to restart the system or turn the power off, and then on again but make sure you remove the CD/DVD/USB flash drive from the CD/DVD drive/USB port before the computer restarts.

Restart the computer (booting from the HDD)

1. With the CD/DVD/USB flash drive removed from the CD/DVD drive/USB port the computer should restart from the HDD.
2. Press **F2** as the computer restarts to enter the BIOS.
3. Use the arrow keys to highlight the **Exit** menu.
4. Select **Load Setup Defaults** (or press **F3**) and select "**Yes**" to confirm the selection.
5. Press **F4** to save any changes you have made and exit the BIOS to restart the computer.

Your computer is now running normally with the updated BIOS

You may now enter the BIOS and make any changes you require to the default settings.