

SERVICE MANUAL

N170RD1

notebook



Notebook Computer

N170RD1

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 *NI70RD1* 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 as follows:
 - AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19.5V, 6.15A (**120** 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:

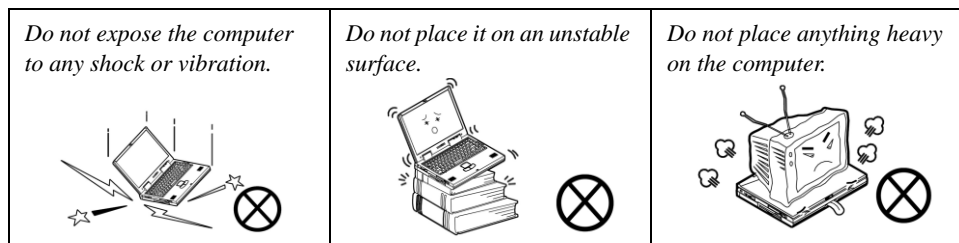
This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

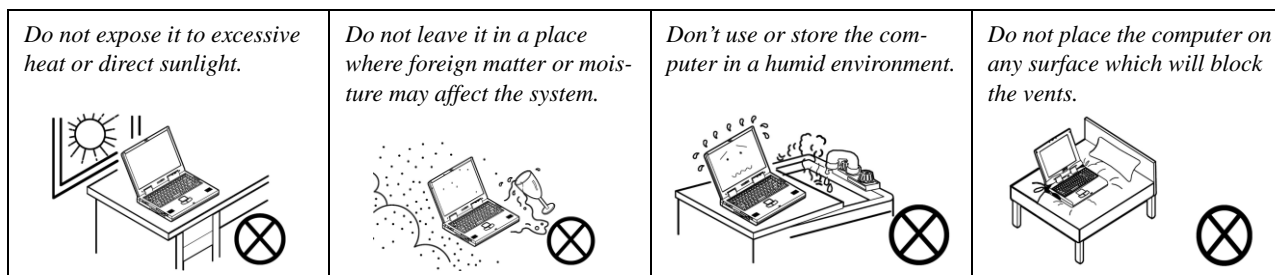
Instructions for Care and Operation

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

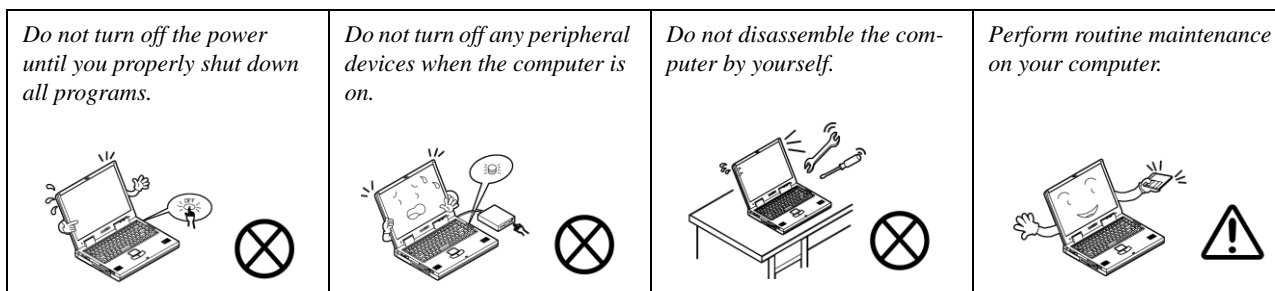
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



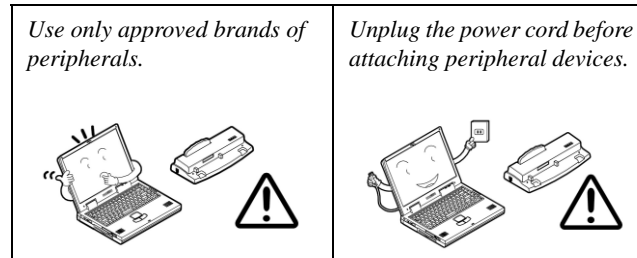
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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.



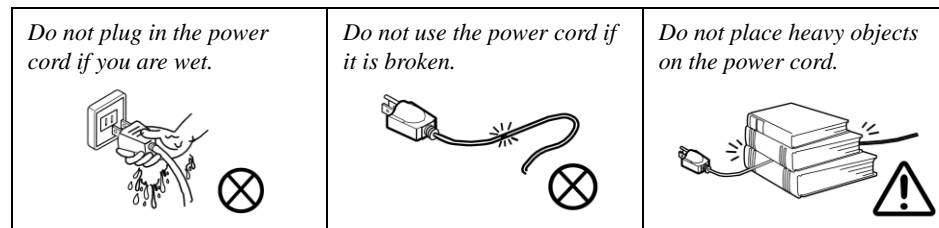
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



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.

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 at the rear 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 135 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".

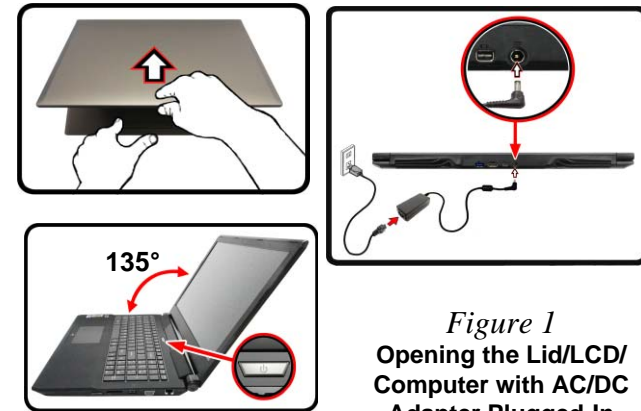



Figure 1
**Opening the Lid/LCD/
Computer with AC/DC
Adapter Plugged-In**


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 the icon  in the **Start Screen** and choose **Shut down** from the menu.



Or

Right-click the **Start button**  at the bottom of the **Start Screen** or the **Desktop** and choose **Shut down or sign out** > **Shut down** from the context menu.

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the *NI70RD1* series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in the *User's Manual*. The manual is shipped with the computer.

Operating systems (e.g. *Windows 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 *NI70RD1* 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.

Introduction

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® Core™ i7 Processor

i7-6700HQ (2.60GHz)

8MB Smart Cache, 14nm, DDR4-2133MHz, TDP 45W

Intel® Core™ i5 Processor

i5-6440HQ (2.60GHz), i5-6300HQ (2.30GHz)

6MB Smart Cache, 14nm, DDR4-2133MHz, TDP 45W

Core Logic

Intel® HM170 Chipset

BIOS

64Mb SPI Flash ROM

AMI BIOS

Memory

Two 260 Pin SO-DIMM Sockets Supporting **DDR4 2133MHz** Memory

Memory Expandable up to 32GB

(The real memory operating frequency depends on the FSB of the processor.)

Storage

One Changeable 2.5" 9.5mm/7.0mm (h) SATA HDD/SSD
(**Factory Option**) One 9.5mm(h) Optical Device Type Drive (Super Multi Drive)

Or

(**Factory Option**) 2.5" 7.0mm 2nd HDD/SSD caddy

(**Factory Option**) One M.2 **SATA/PCIe Gen3 x4** Solid State Drive (SSD)

LCD Options

17.3" (43.94cm), 16:9, FHD (1920x1080)

Video Adapter

Microsoft Hybrid Graphics Mode or Discrete Graphics Mode

Supports up to 4 Active Displays

Supports NVIDIA Surround View via HDMI x 1 and MiniDP x2

Virtual Reality Ready

Intel Integrated GPU

Intel® HD Graphics 530

Dynamic Frequency

Intel Dynamic Video Memory Technology

Microsoft DirectX®12 Compatible

NVIDIA® Discrete GPU

NVIDIA® GeForce GTX 960M

2GB GDDR5 Video RAM

Microsoft DirectX®12 Compatible

Audio

High Definition Audio Compliant Interface

2 * Built-In Speakers

ANSP™ 3D sound technology on headphone output

Built-In Array Microphone

Sound Blaster™ Cinema 2

Security

Security (Kensington® Type) Lock Slot

BIOS Password

(**Factory Option**) Fingerprint Reader

(**Factory Option**) TPM v2.0

Intel PTT for systems without hardware TPM

Keyboard

Full-size Winkey **Illuminated White-LED** Keyboard (with numeric keypad)

Pointing Device

Built-in Touchpad

M.2 Slots

Slot 1 for **Combo WLAN and Bluetooth**

Slot 2 for **SATA/PCIe Gen3 x4 SSD**

Card Reader

Embedded Multi-In-1 Card Reader

MMC (MultiMedia Card) / RS MMC

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

Interface

Two Mini DisplayPorts 1.2

One HDMI-Out Port

One Headphone-Out Jack

One Microphone-In Jack

One S/PDIF Out Jack

One RJ-45 LAN Jack

One DC-in Jack

Three USB 3.0 (USB 3.1 Gen 1) Ports

One USB 3.0 (USB 3.1 Gen 1) Type C Port

Communication

Built-In Gigabit Ethernet LAN

2.0M FHD PC Camera Module

WLAN/ Bluetooth M.2 Modules:

(**Factory Option**) Intel® Wireless-AC 8260 Wireless LAN
(**802.11ac**) + Bluetooth **4.1**

(**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**) Qualcomm® Atheros Killer™ Wireless-AC
1535 Wireless LAN (**802.11ac**) + Bluetooth **4.1**

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

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: 19.5V, 6.15A (**120W**)

Built-in 6 Cell Smart Lithium-Ion Battery Pack, 62WH

Dimensions & Weight

413mm (w) * 285mm (d) * 31.9mm (h)

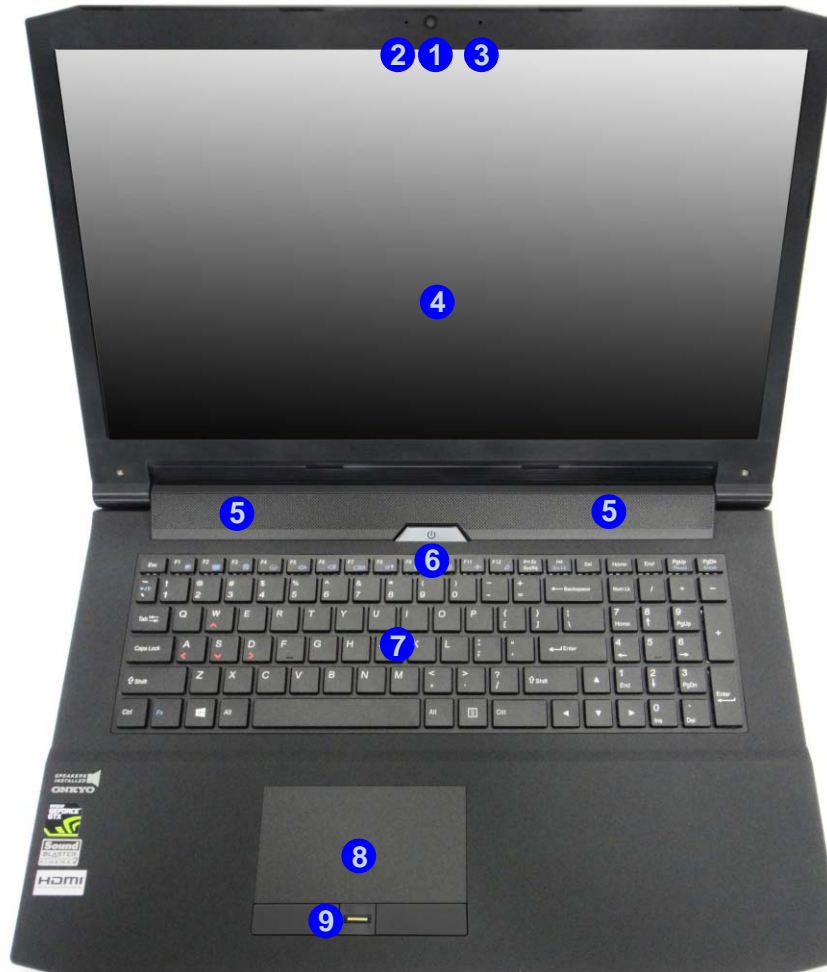
2.9kg (Barebone with 62WH Battery)

Introduction

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.*
3. Built-In Array Microphone
4. LCD
5. Speakers
6. Power Button
7. Keyboard
8. Touchpad & Buttons
9. Fingerprint Reader (Optional)



External Locator - Front & Right Side Views

Figure 2
Front View

1. LED Indicator

FRONT VIEW



Figure 3
Right Side View

1. Multi-in-1 Card Reader
2. USB 3.0 (USB 3.1 Gen 1) Type C Port
3. USB 3.0 (USB 3.1 Gen 1) Port
4. RJ-45 LAN Jack

RIGHT SIDE VIEW



Introduction

External Locator - Left Side & Rear View

Figure 4

Left Side View

1. Security Lock Slot
2. USB 3.0 Ports
3. S/PDIF-Out Jack
4. Microphone-In Jack
5. Headphone-Out Jack
6. Optical Device Drive Bay
7. Emergency Eject Hole

LEFT SIDE VIEW



Figure 5

Rear View

1. Vent
2. Mini Display Ports
3. HDMI-Out Port
4. DC-In Jack

REAR VIEW



External Locator - Bottom View



Figure 6
Bottom View

1. Vent
2. Battery
3. HDD Bay



Overheating

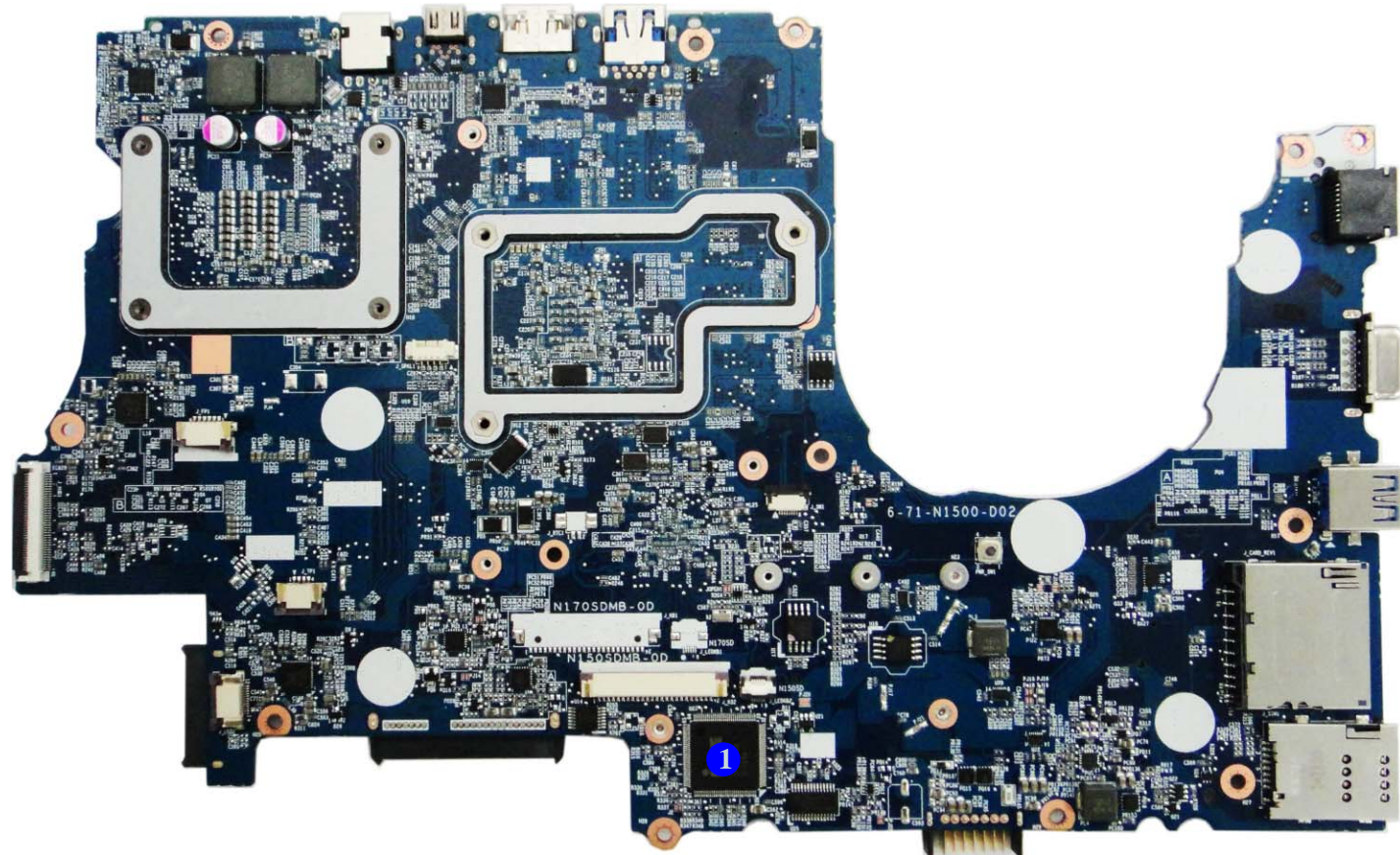
To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

Introduction

Figure 7
Mainboard Top
Key Parts

Mainboard Overview - Top (Key Parts)

1. KBC-ITE IT8587



Mainboard Overview - Bottom (Key Parts)

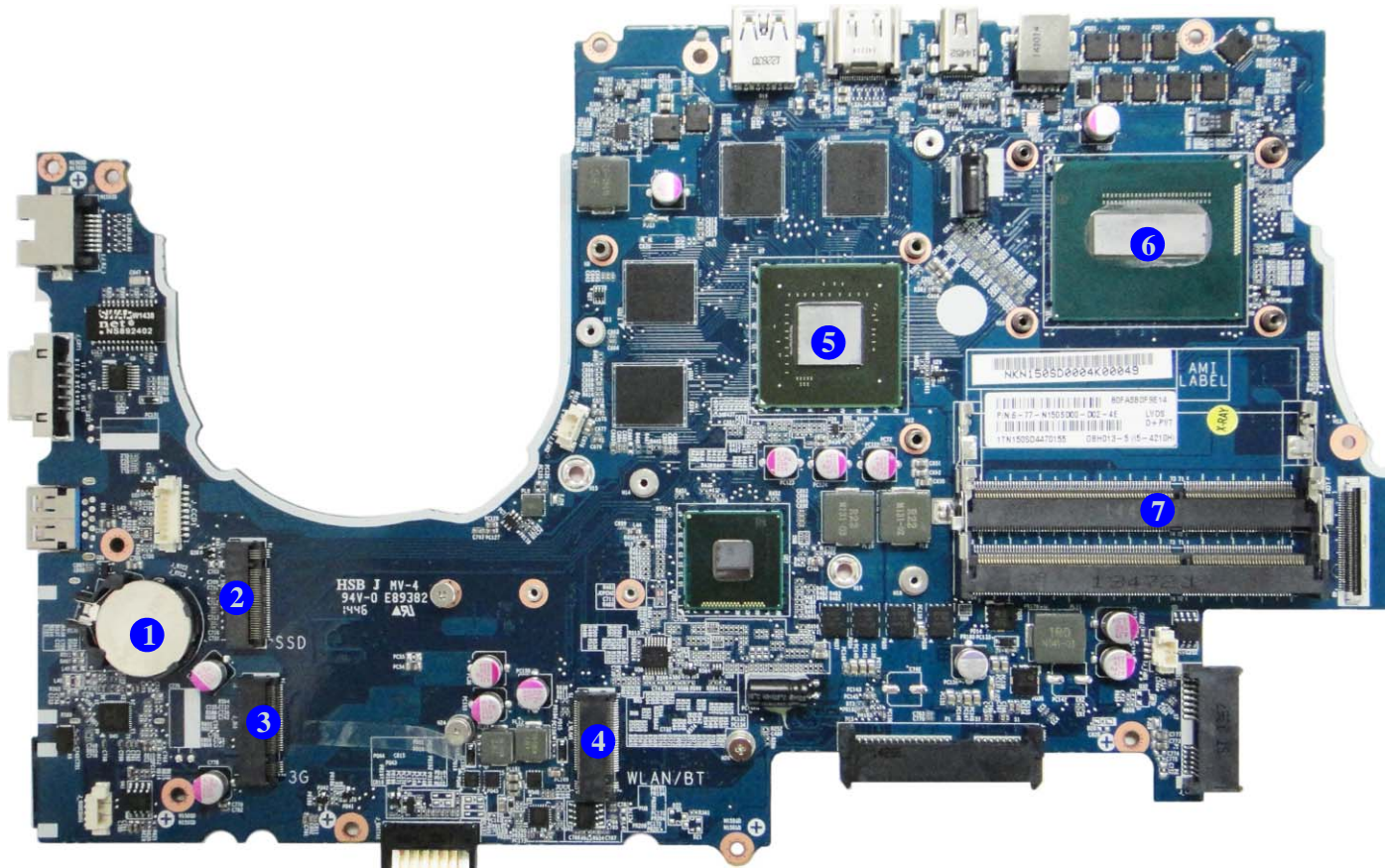


Figure 8
Mainboard Bottom
Key Parts

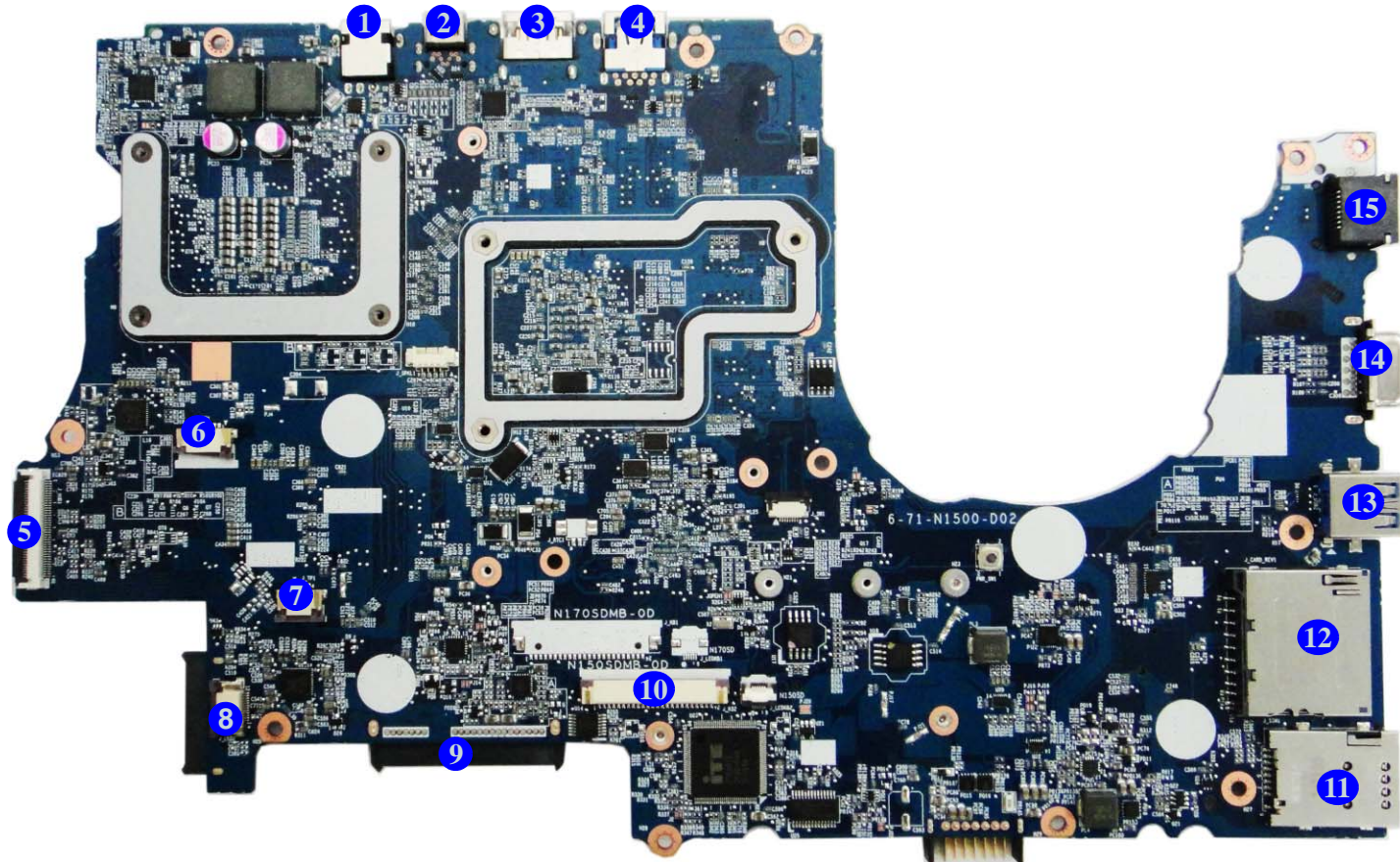
1. CMOS Battery
2. M.2-Card Connector (PCIe/SATA SSD Module)
3. M.2-Card Connector (3G/SATA Module)
4. M.2-Card Connector (WLAN Module)
5. GPU-GTX960M
6. CPU
7. Memory Slots (DDR4 SO-DIMM)

Introduction

Mainboard Overview - Top (Connectors)

Figure 9
**Mainboard Top
Connectors**

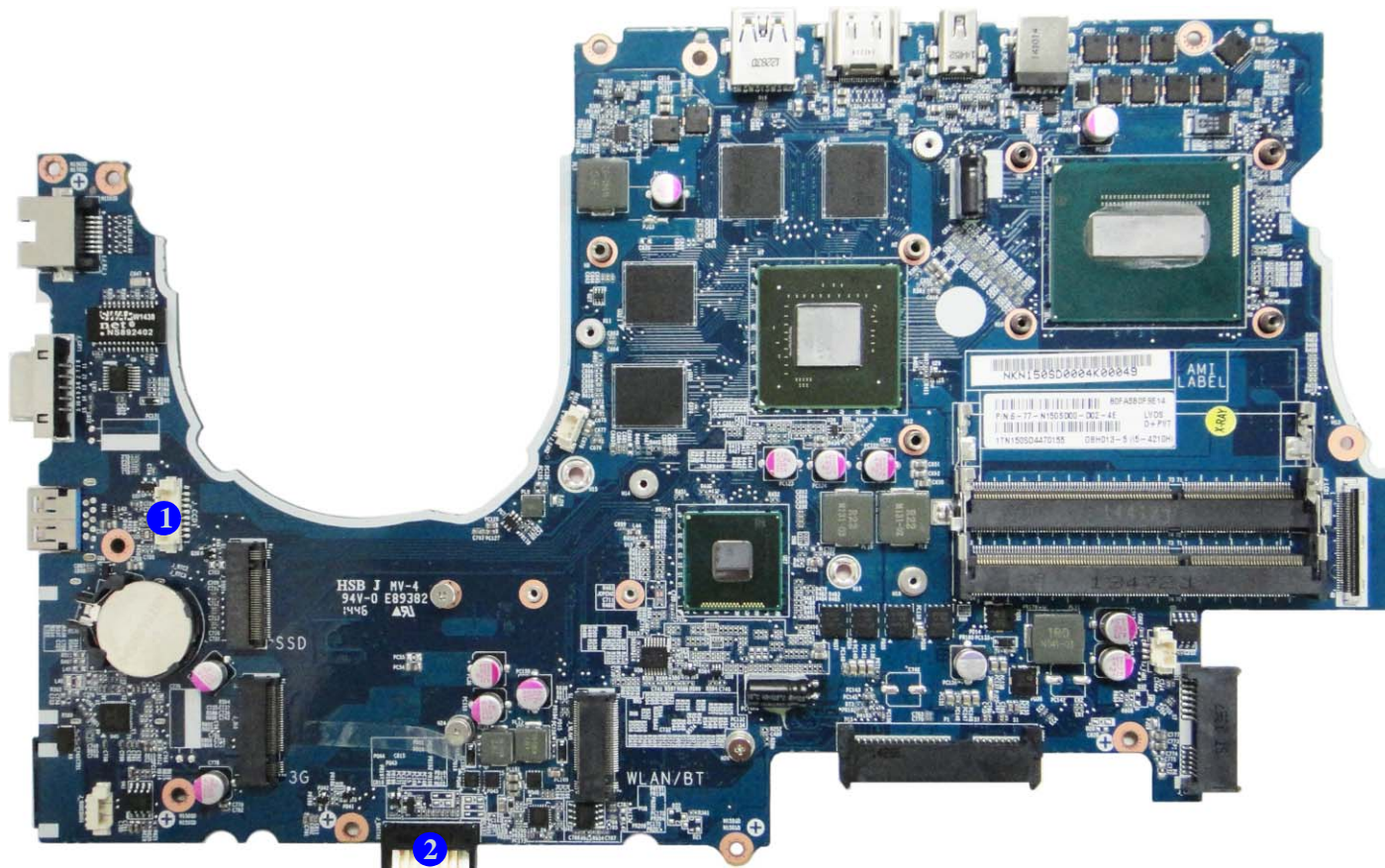
1. DC-In Jack
2. Mini Display Port
3. HDMI-Out Port
4. Mini Display Port
5. Audio Connector
6. Finger Print Connector
7. TP Connector
8. LED Connector
9. HDD Connector
10. Keyboard Cable Connector
11. USIM Card Reader
12. Multi-in-1 Card Reader
13. USB 3.0 (USB 3.1 Gen 1) Type C Port Connector
14. USB 3.0 (USB 3.1 Gen 1) Port Connector
15. RJ-45 LAN Jack



Mainboard Overview - Bottom (Connectors)

Figure 10
**Mainboard Bottom
Connectors**

1. CCD Connector
2. Battery Connector




Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the *NI70RDI* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

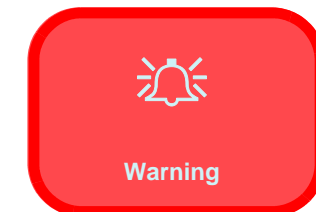
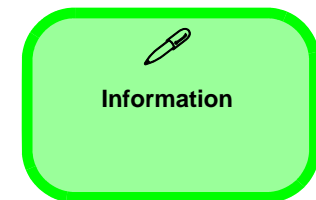
We suggest you completely review any procedure before you take the computer apart.

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.



Disassembly

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-borne 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.

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.



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.

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 Keyboard:

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

To remove the HDD:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 6*
3. Remove the HDD *page 2 - 8*

To remove the 2nd HDD:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 6*
3. Remove the 2nd HDD *page 2 - 11*

To remove the Optical Device:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 6*
3. Remove the Optical device *page 2 - 12*

To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 6*
3. Remove the system memory *page 2 - 13*

To remove the M.2 SSD:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 6*
3. Remove the SSD *page 2 - 14*

To remove the Wireless LAN Module:

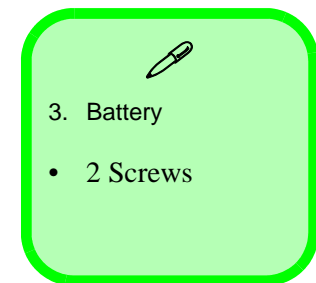
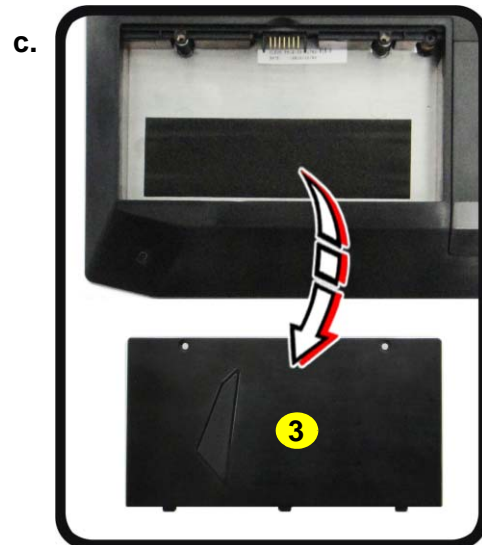
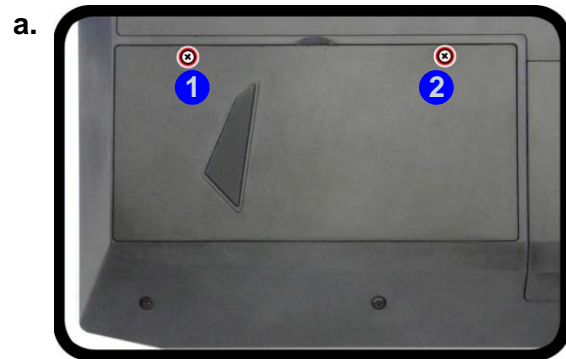
1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 6*
3. Remove the WLAN *page 2 - 15*

Removing the Battery

1. Turn the computer **off**, and turn it over.
2. Locate the battery and remove screws **1** - **2** (*Figure 1a*).
3. Carefully lift the battery **3** up in the direction of the arrow **4** (*Figure 1b*).
4. Remove the battery off the computer (*Figure 1c*).

Figure 1
Battery Removal

- a. Remove the screws.
- b. Lift the battery.
- c. Remove the battery.



Disassembly

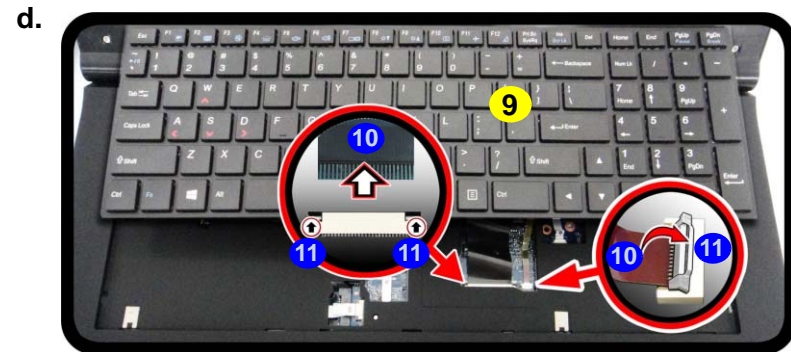
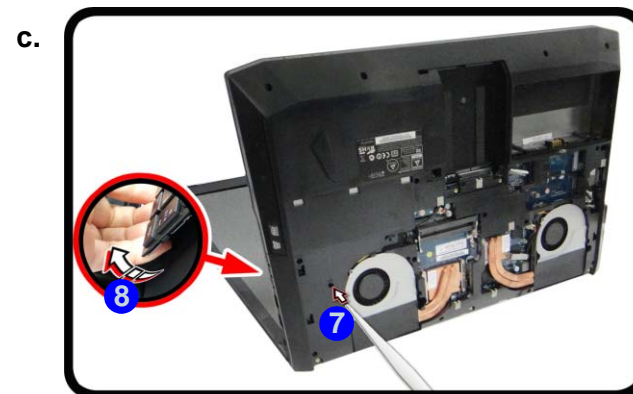
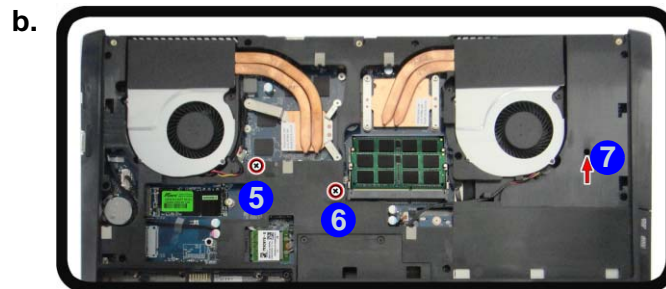
Figure 2

Keyboard Removal

- Remove the screws and component bay cover.
- Remove the screws.
- Eject the keyboard using a special eject stick to push the keyboard out while releasing the keyboard as shown.
- Lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.

Removing the Keyboard

- Turn **off** the computer, turn it over to remove the battery ([page 2 - 5](#)).
- Remove screws **1** - **3** (screw size = M2.5x5L) and the component bay cover **4** ([Figure 3a](#)).
- Remove screws **5** - **6** (screw size = M2.5x8L) to release the keyboard ([Figure 3a](#)).
- Open it up with the LCD on a flat surface before pressing at point **7** to release the keyboard module (use the special eject stick to do this) while releasing the keyboard in the direction of the arrow **8** as shown ([Figure 3b](#)).
- Carefully lift the keyboard **9** up, being careful not to bend the keyboard ribbon cable **10**. Disconnect the keyboard ribbon cable **10** from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins **11** away from the base ([Figure 3c](#)).



4. Component Bay Cover
9. Keyboard

- 5 Screws

6. Carefully lift the keyboard **9** off the computer (*Figure 3e*).



Figure 3
Keyboard Removal

e. Remove the keyboard.



**Re-inserting the Key-
board**

When re-inserting the keyboard firstly, align the keyboard tabs at the bottom of the keyboard with the slots in the case.



9. Keyboard

Disassembly

Figure 4
**HDD Assembly
Removal**

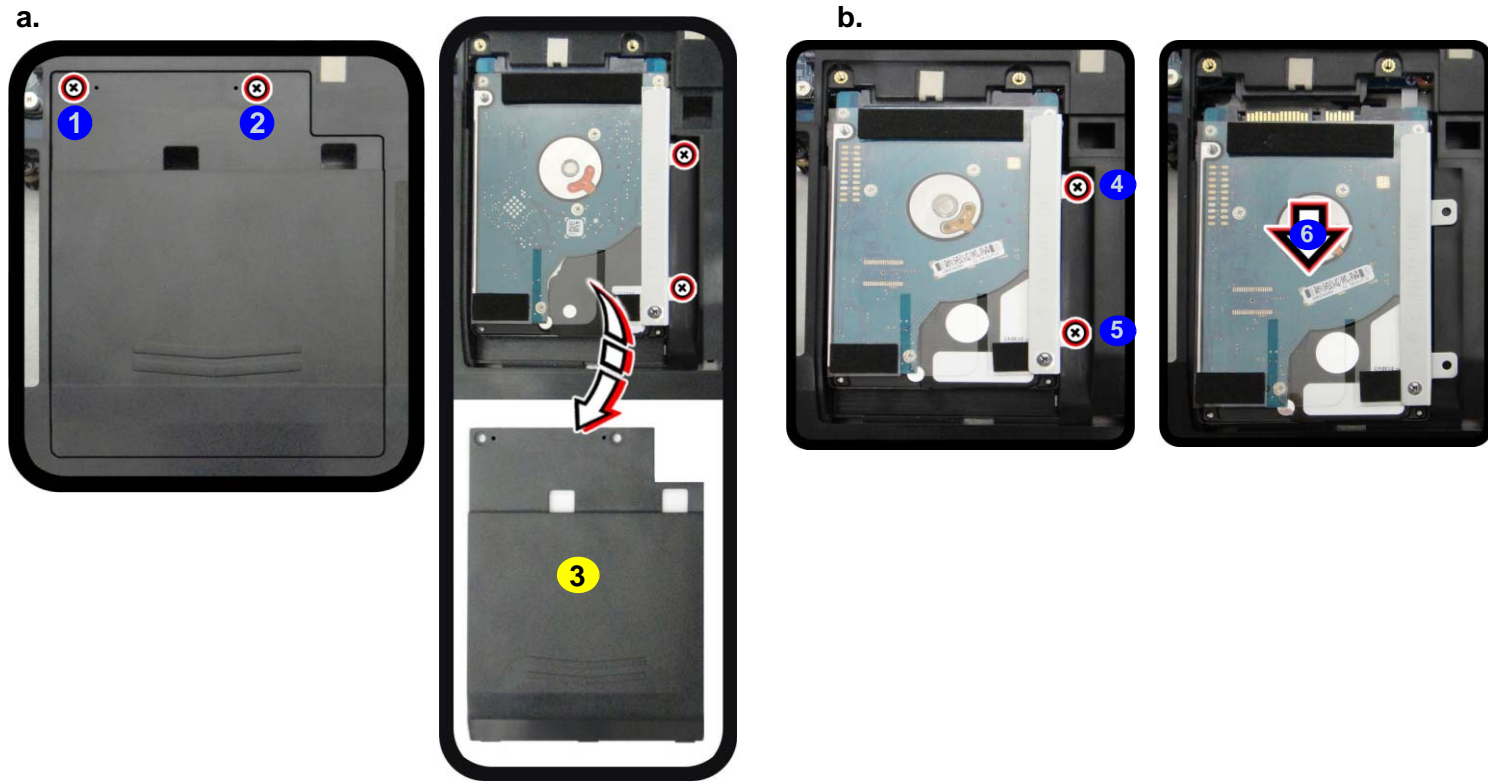
- Remove the screws and HDD cover.
- Slide the HDD in the direction of the arrow.

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 7mm (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 Disassembly Process

- Turn **off** the computer, remove the battery ([page 2 - 5](#)) and keyboard ([page 2 - 6](#)).
- Remove screws **1** - **2** and HDD cover **3** ([Figure 4a](#)).
- Remove screws **4** - **5** and then slide the hard disk out in the direction of arrow **6** ([Figure 4b](#)).



Screw Size

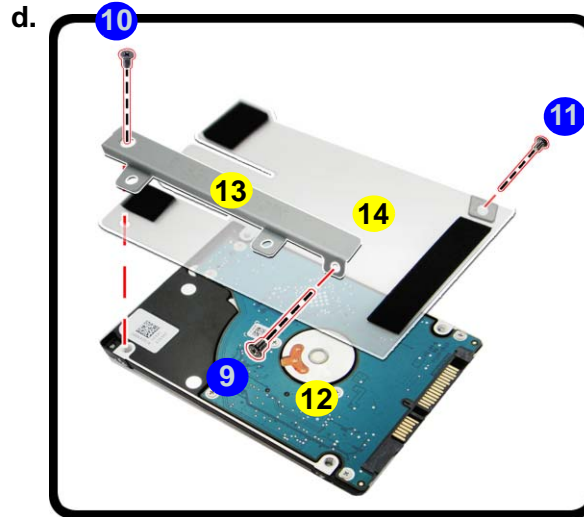
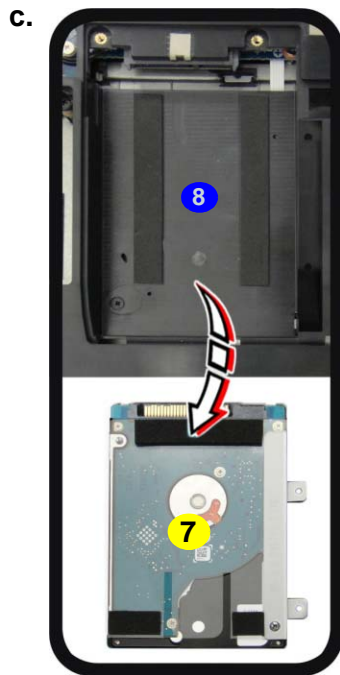
Note that the size of screws **1** & **2** is M2.5 x 5L.



3. HDD Cover

- 4 Screws

4. Lift the hard disk assembly **7** out of the bay **8** (*Figure 5c*).
5. Remove screws **9** - **11** and separate the hard disk **12** from the bracket **13** and mylar cover **14** (*Figure 5d*).
6. Reverse the process to install a new hard disk (do not forget to insert the mylar cover between the bracket and hard disk as shown before replacing the screws).



Installing 9.5mm or 7mm HDD

Note that the hard disks pictured on these pages are all 9.5mm(h) hard disk drive.

In some cases, a 7.0mm(h) hard disk drive will be installed. Do pay attention on the alignment of the hard disk and bracket when tightening the screws.

For more information, contact your distributor/supplier, and bear in mind your warranty terms.

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.

7. HDD Assembly
12. HDD
13. Bracket
14. Mylar Cover

- 3 Screws

- c. Lift the HDD assembly out of the bay.
- d. Separate the HDD, mylar cover and bracket.

Figure 5
HDD Assembly Removal (cont'd.)

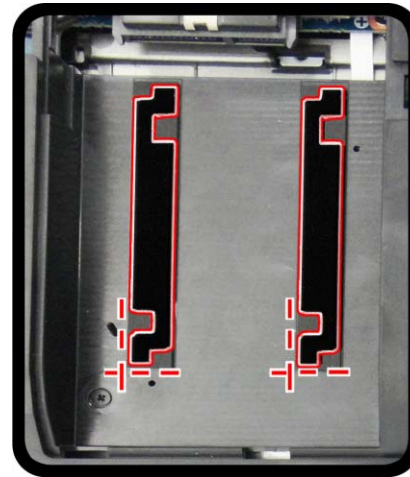
Disassembly

Hard Disk Size Note (Foam Rubber Insert)

Note that the hard disks pictured on these pages are all 9.5mm(H) hard disk drives. In some cases 7mm(H) hard disk drives will be installed. Also pay attention on the alignment of the hard disk and bracket when tightening the screws.

For more information contact your distributor/supplier, and bear in mind your warranty terms.

Figure 6
**Foam Rubber
Insert for 7mm(H)
HDDs**



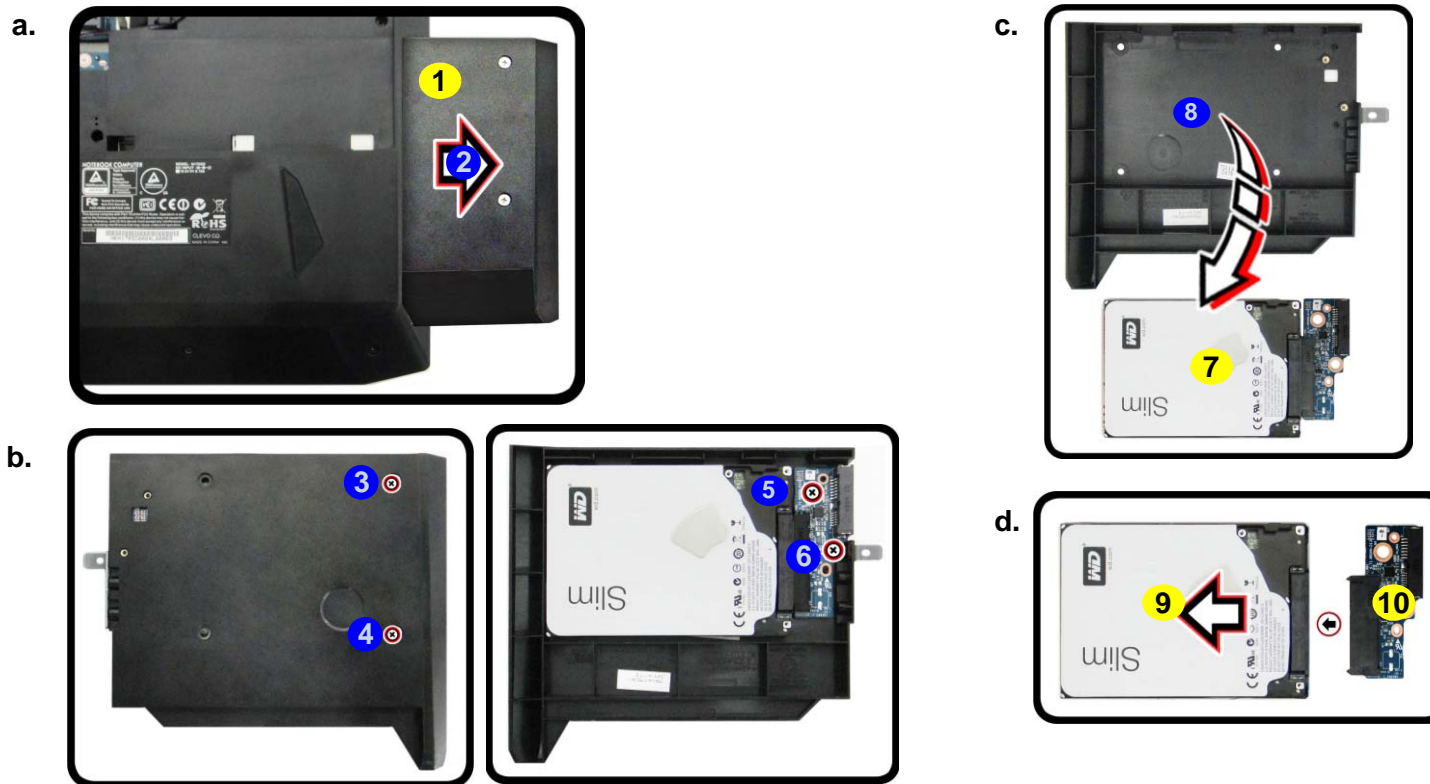
- If you are replacing a 9.5mm(H) HDD with a 7mm(H) HDD then insert the foam rubber insert (as shown above).
- If you are replacing a 7mm(H) HDD with a 9.5mm(H) HDD then remove the foam rubber insert.


Removing the 2nd Hard Disk from Caddy Bay

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)), and bottom case ([page 2 - 8](#)).
2. Carefully push out the caddy bay **1** out in the direction of the arrow **2** ([Figure 7a](#)).
3. Remove screws **3** - **4** (will depends on the HDD type) from the bottom of the caddy bay.
4. Remove screws **5** - **6** to release the hard disk assembly ([Figure 7b](#)).
5. Lift the hard disk assembly **7** out of the caddy bay **8** ([Figure 7c](#)).
6. Separate the hard disk **9** and connector board **10** ([Figure 7d](#)).
7. Reverse the process to install a new hard disk.
8. Restart the computer to allow it to automatically detect the new device.

Figure 7
2nd HDD Removal

- a. Push the caddy bay out off the computer.
- b. Remove the screws.
- c. Lift the hard disk assembly out of the caddy bay
- d. Separate the hard disk and connector.





1. Dummy Bay
7. HDD Assembly
9. Hard Disk
10. Connector Board

- 4 Screws

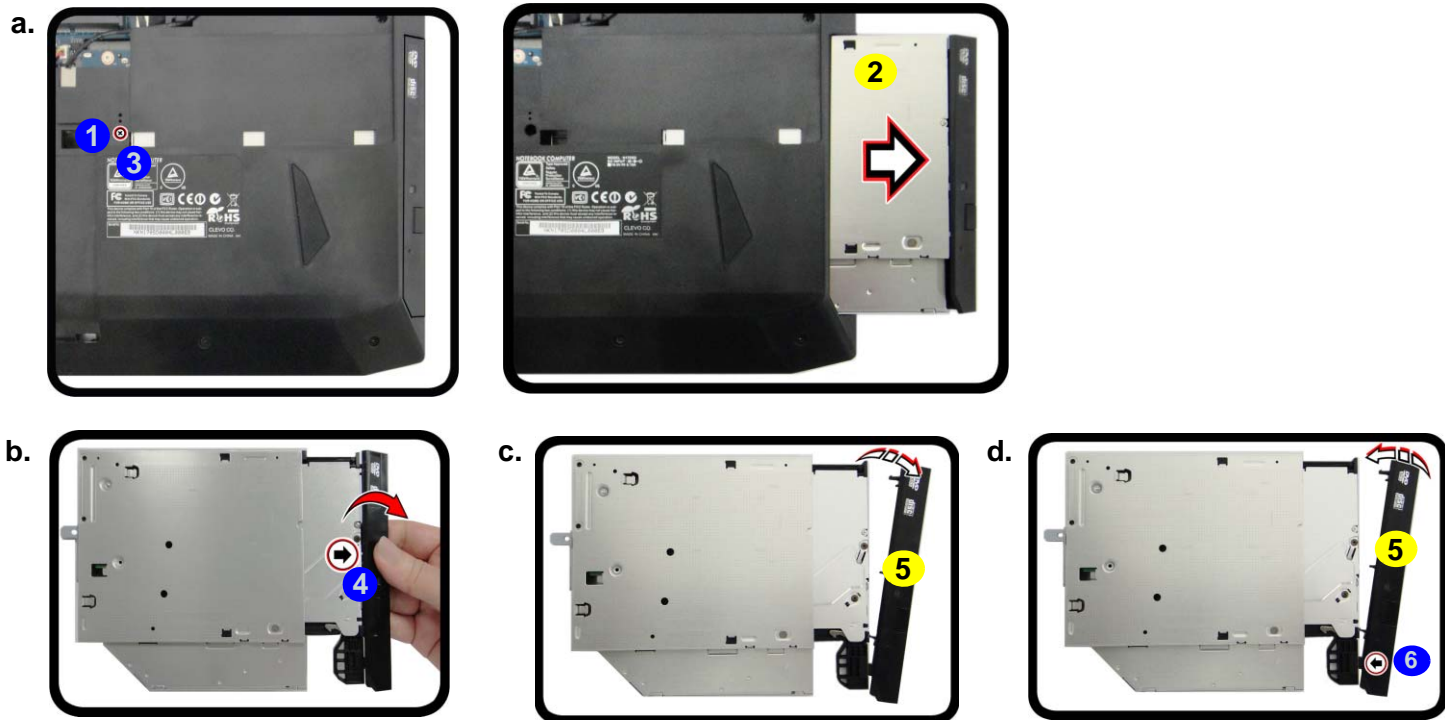
Disassembly

Figure 8
**Optical Device
Removal**

- Remove screw and push the optical device out of the bay.
- Pry the bezel off the optical device.
- Separate the bezel and optical device.
- Install the front bezel.

Removing the Optical (CD/DVD) Device

- Turn off the computer, remove the battery ([page 2 - 5](#)), and bottom case ([page 2 - 8](#)).
- Remove screw ① and carefully push the optical device ② out of the bay at point ③ ([Figure 8a](#)).
- Carefully pry the bezel ⑤ off the optical device at point ④ ([Figure 8b](#)).
- Separate the bezel ⑤ and the optical device as shown ([Figure 8c](#)).
- Reverse the process to attach the front bezel ⑤ with the new optical device at point ⑥ ([Figure 8d](#)).
- Insert the new device and carefully slide it into the computer (the device only fits one way. DO NOT FORCE IT; The screw holes should line up). Replace the bottom cover and tighten the screws.
- Restart the computer to allow it to automatically detect the new device.



Screw Size

Note that the size of screw ① is M2 x 8L.



- Optical Device
- Bezel Cover

Removing the System Memory (RAM)

The computer has two memory sockets for 260 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR4 up to 2133 MHz. The main memory can be expanded up to 32GB. 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, remove the battery ([page 2 - 5](#)) and keyboard ([page 2 - 6](#)).
2. The RAM modules will be visible at point **1** on the mainboard ([Figure 9a](#)).
3. Gently pull the two release latches (**2** & **3**) on the sides of the memory socket in the direction indicated by the arrows ([Figure 9b](#)). The RAM module **4** will pop-up ([Figure 9c](#)), and you can then remove it.
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 cover 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.

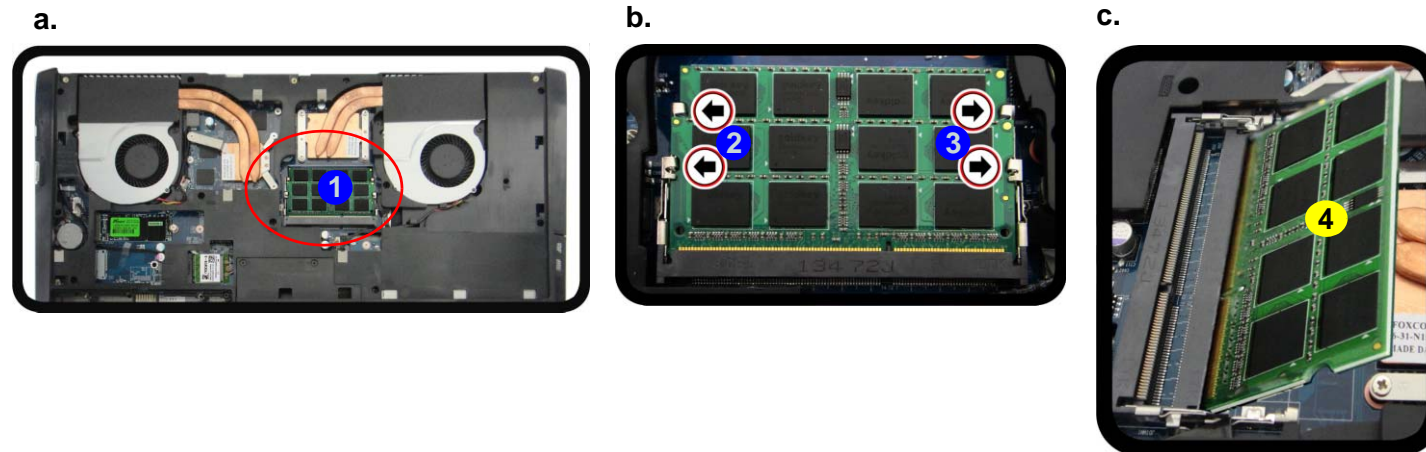


Figure 9
RAM Module Removal

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



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

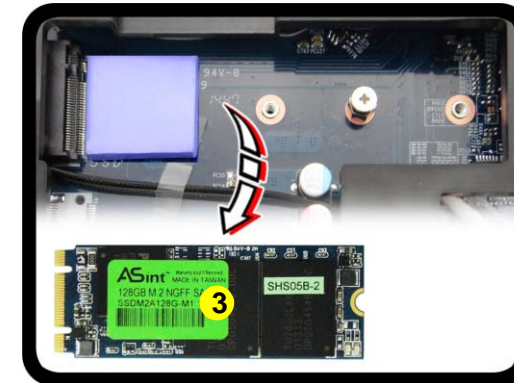
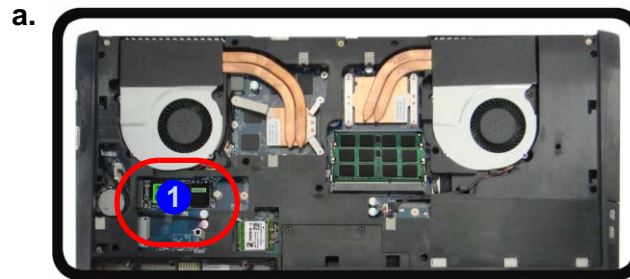
Disassembly


Figure 10
M.2 SSD Module Removal

- Locate the M.2 SSD.
- Remove the screw.
- The M.2 SSD module will pop up.

Removing the M.2 SSD Module

- Turn off the computer, remove the battery ([page 2 - 5](#)), keyboard ([page 2 - 6](#)) and bottom case ([page 2 - 8](#)).
- The M.2 SSD module will be visible at point **1** on the mainboard ([Figure 10a](#)).
- Remove the screw **2** ([Figure 10b](#)).
- The M.2 SSD module **3** ([Figure 10c](#)) will pop-up, and you can remove it from the computer.
- Reverse the process to install a new SSD module (make sure that the thermal pad is in place as shown below).




 3.M2 SSD Module

- 1 Screw

Removing the Wireless LAN Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)), keyboard ([page 2 - 6](#)) and bottom case ([page 2 - 8](#)).
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.

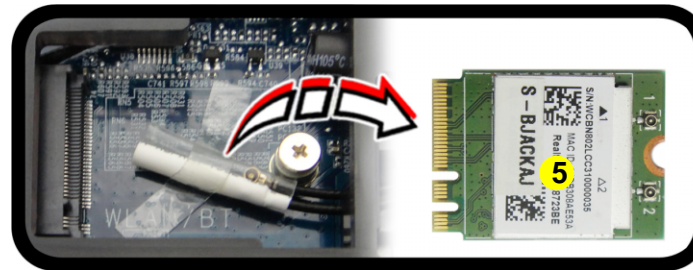
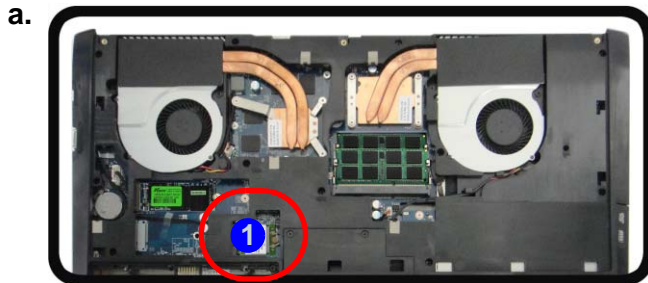



Figure 11
**Wireless LAN
Module Removal**

- a. Locate the WLAN.
- b. Disconnect the cables and remove the screw.
- c. The WLAN module will pop up.

Note: Make sure you reconnect the antenna cable to the “1 + 2” socket ([Figure 11b](#)).



5. Wireless LAN Module

- 1 Screw

Wireless LAN, & Combo Module Cables

Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo, 3G and LTE 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	

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

Appendix A:Part Lists

This appendix breaks down the *NI70RD1* 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.

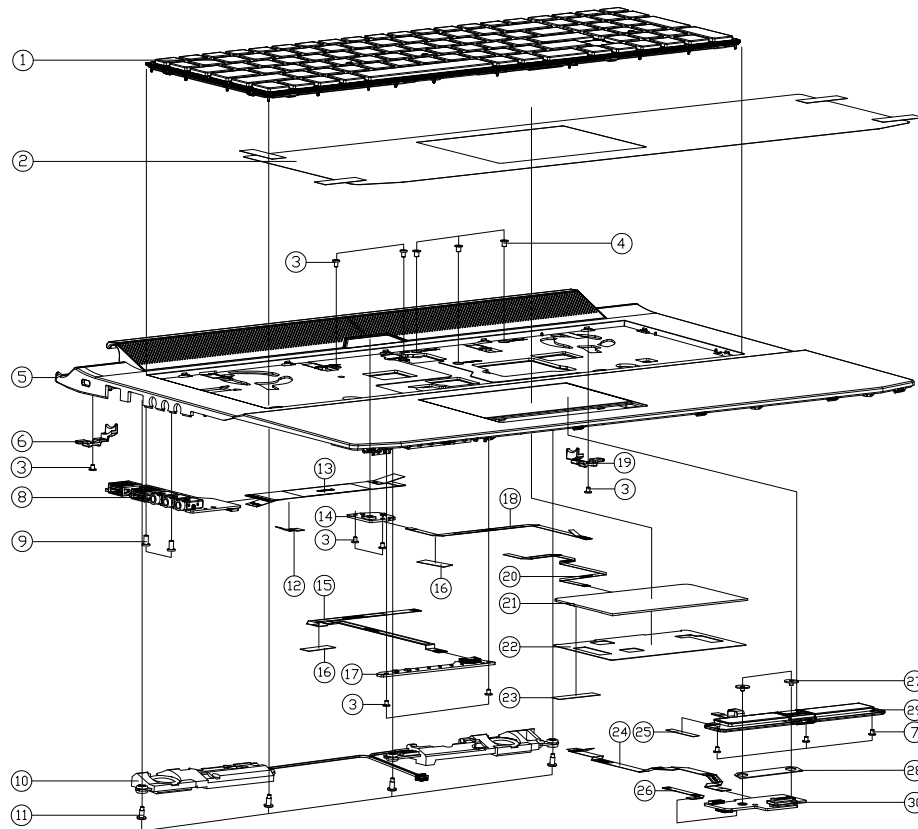
Part List Illustration Location

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

Table A - 1
**Part List Illustration
Location**

Part	
Top	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
Main Board	<i>page A - 5</i>
HDD	<i>page A - 6</i>
2nd HDD	<i>page A - 7</i>
LCD - EDP-LVDS	<i>page A - 8</i>
LCD - LG IPS	<i>page A - 9</i>
DVD	<i>page A - 10</i>
Dummy ODD	<i>page A - 11</i>

Top

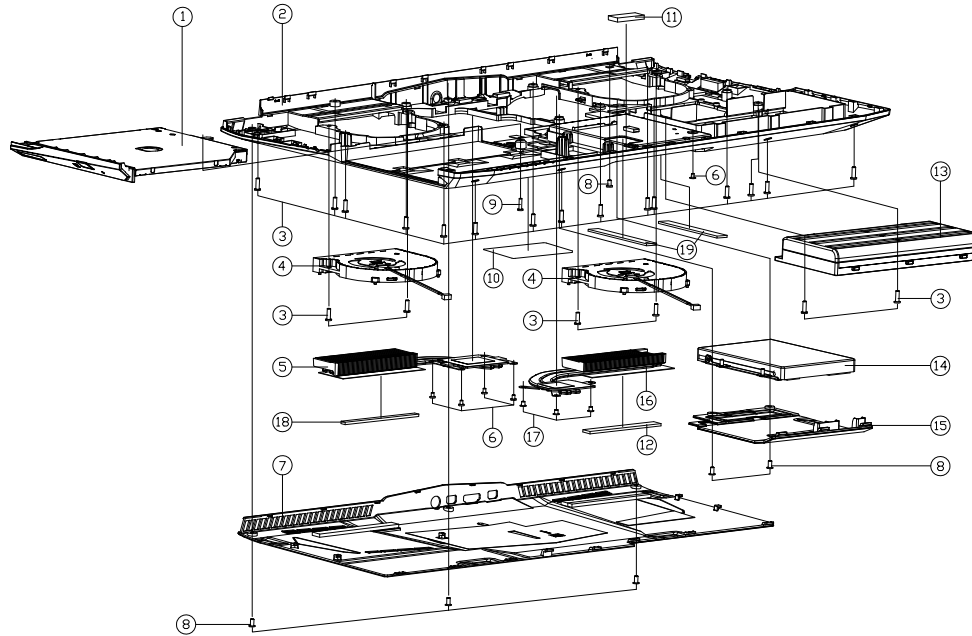


ITEM	PART NAME	PART NO	REMARK
1	WIRE IL TO I/O W/ FINGER FOR P/SISE BLACK ORATION WITH VIB KEY + I/O FINGER	6-80-P6500-013-1	
2	TOP CASE PROTECT FILM (PET+3MG915) N170SD	6-40-N1702-030	
3	SCREW M2*3L KI NI ICT NY (D0=04.5,D1=0.4)	6-35-B1120-3RE	
4	SCREW M2.5*3L KI NI ICT NY	6-35-B1125-3R0	
5	TOP CASE MODULE (NKYOKKAPDK) N170RF1	6-39-N17F2-011-N	
6	TOP CASE HINGE COVER L (PC+ABS T163715R0) N170SD	6-42-N1702-0L1	
7	SCREW M2*2.5L KI NI ICT NY (M4 T=0.5 TH)	6-35-B1120-2R6	
8	AUDIO BOARD V2.0 N150RF1	6-77-N15F8-D02	
9	SCREW M2.5*5L (REF) 0.4MM KI BK/Z ICT NY	6-35-B6125-5R0	
10	SPEAKER FRONT BAL SHD T52 2W 40 (ELECTROACOUSTIC) N170FA	6-23-5P177-012-A	
11	SCREW M2*6.2L NI ICT NY FOR SPEAKER	6-35-Z1120-6R2	
12	TAPE MYLAR TRANSPARENT (20*10*0.05) P180HW	6-40-P1803-020	
13	FFC CABLE AUDIO TO MB 182PM 5V 4PIN (Q) N170SD (CNLS)	6-43-N1700-061	
14	LTD PWR SW BOARD V1.0 N170RF1	6-77-N17FS-D01	
15	FFC CABLE LED TO MB 210M 3.3V 12PIN (L) N170SD (CNLS)	6-43-N1700-052	
16	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	
17	FRONT LED BOARD V1.0 N150RF1	6-77-N15F4-D01	
18	FFC CABLE POWER TO MB 1485PM 15V 8PIN (Q) N170SD (CNLS)	6-43-N1700-041	
19	TOP CASE HINGE COVER R (PC+ABS T163715R0) N170SD	6-42-N1702-0R1	
20	FFC CABLE TP TO MB 1485PM 60V 6P (Q) N170SD	6-43-N17R0-011	
21	TOUCH PAD SYNAPTICS TM-03189-001C00*55MM	6-49-N2503-010	
22	TOUCH PAD MYLAR (PET + TESA 4965) N170SD	6-40-N1702-051	
23	GASKET BLACK (30*7*0.13T) W370ET	6-47-00190-016	
24	FFC CABLE FINGER TO MB 182PM 3.3V 6PIN (Q) N170SD (CNLS)	6-43-N1700-031	ONLY FOR W/FINGER
25	TAPE MYLAR (CB),MYLAR M550J	6-40-M55J2-020	
26	FFC CABLE CLICK TO TP 45M 3.3V 4PIN (L) N170SD (CNLS)	6-43-N1700-021	
27	SCREW M2*2L KI BK/Z ICT NY (08,T=0.6)	6-35-B6120-2RE	
28	CLICK W/O FP MYLAR PET (48*14*0.5T) P650SE	6-40-P6502-080	ONLY FOR W/O FINGER
29	FUNCTION KEY FOR CLICK BUTTON MODULE W/FP P750M	6-23-KP75D-011	
29	FUNCTION KEY FOR CLICK BUTTON MODULE W/O FP P750M	6-23-KP75D-021	
30	CLICK FINGER BOARD VIA 4V/FP/FINGER FRONT BOARD VIA N530F1	6-77-N15FA-N01	
30	CLICK FINGER BOARD V1.0 (W/O FP) N150RF1	6-77-N15F2-D01-1	

Figure A - 1
Top

Bottom

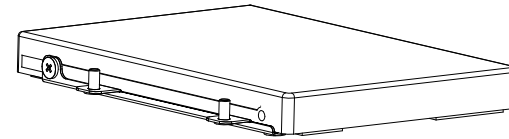
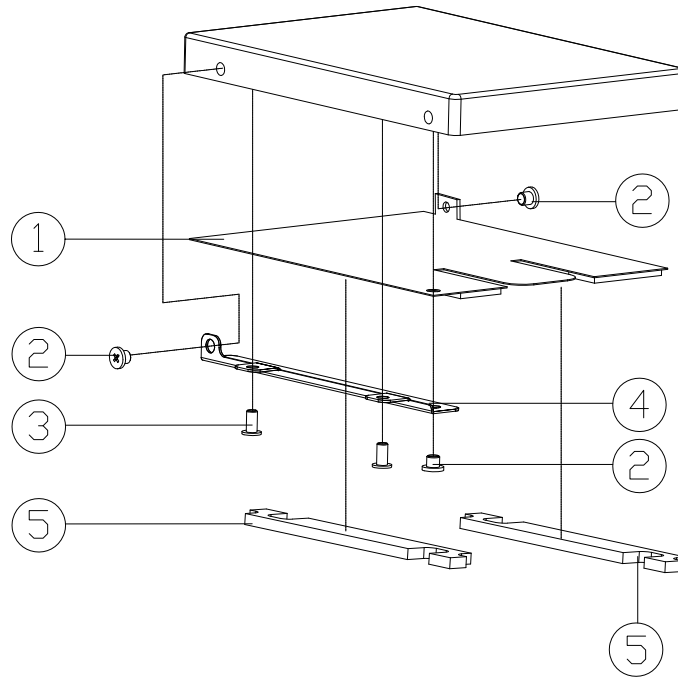
Figure A - 2
Bottom



ITEM	PART NAME	PART NO	REMARK
1	W/D ODD ASS'Y N170SD	6-79-N170SD02-000	
1	DUMMY ODD ASS'Y N170SD	6-79-N170SD02-001	
1	SATA DVD SUPER MULTI 8X ASS'Y N170SD	6-79-N170SD000-001	
1	W/D 2ND HDD ASS'Y N170SD	6-79-N170SD0J-030	
1	W/ 2ND HDD ASS'Y N170SD	6-79-N170SD0J-040	
2	BOTTOM CASE MODULE N170RF1	6-39-N17F3-011	
3	SCREW M2.5*8L KI BK/Z NY ICT	6-35-B6125-8R0	
4	FAN MODULE (A-POWER) N150SD	6-31-N1502-301	
5	CPU HEATSINK MODULE N150RD	6-31-N15R2-101	
6	SCREW M2*3L KI NI ICT NY (D0-#45, D1-#4)	6-35-B1120-3RE	
7	CPU COVER MODULE N170RF1	6-42-N17F3-101	
8	SCREW M2.5*5L (R0) 0.4MM KI BK/Z ICT NY	6-35-B6125-5R0	
9	SCREW M2*8L KI BK/Z ICT NY	6-35-B6120-8R0	
10	PRODUCT LABEL FOR N170RF1	6-45-N170RF13-010	
10	PRODUCT LABEL FOR N170RF1-G	6-45-N170RF1G-010	
10	PRODUCT LABEL FOR N170RD1	6-45-N170RD13-010	
11	HDD SPONGE (C541048B1) (CR2030*4SDNY 64000) W5603S0	6-47-W350J-020	FOR W/FP
12	SPONGE-MYLAR (G04105449) (CR2030*4F250*64000) N170SD	6-47-0019A-80C	
13	IMP FLO BALL BEARING SEP W/PCB DRIVES (SEE NOTE) (SEE LABEL AND CD) N170SD	6-87-N150S-4293	
13	IMP FLO BALL BEARING SEP W/PCB DRIVES (SEE NOTE) (SEE LABEL AND CD) N170SD	6-87-N150S-4U93	
14	W/D MAIN HDD ASS'Y N170SD	6-79-N170SD0J-010	
14	W/MAIN HDD ASS'Y N170SD	6-79-N170SD0J-020	
15	HDD COVER/PC+ABS SABC C7230P/N170SD	6-42-N170J-012	
16	GPU HEATSINK MODULE N150SD	6-31-N1502-202	
17	SCREW M2.5*3L KI NI ICT NY	6-35-B1125-3R0	
18	SPONGE (80*85*4.65) (CR2030*64000) N170SD	6-47-0019A-80B	
19	SPONGE (76*10*25) CR4305 FOR 7MM HDD (S46EUC) N170SD	6-47-0019A-763	FOR 7MM HDD

HDD

Figure A - 4
HDD



ITEM	PART NAME	PART NO	REMARK
1	HDD MYLAR (PET0.25T+CR2030) W940TU	6-40-W940J-010	
2	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	
3	SCREW M2.5*5L 沉头 0.4MM KI BK/Z ICT NY	6-35-B6125-5R0	
4	HDD BRACKET<SECC> N170SD	6-33-N170J-010	
5	SPONGE (76*10*2.5T) CR4305 FOR 7MM HDD W540EU	6-47-0019A-760	only for 7mm hdd

2nd HDD

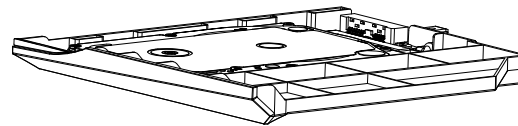
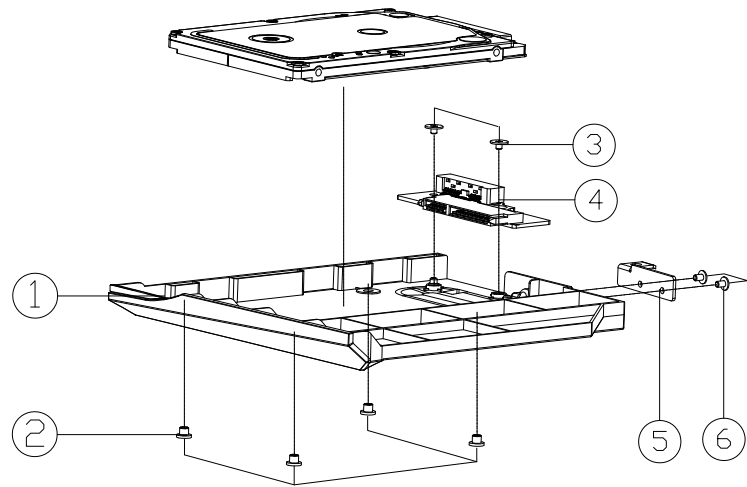
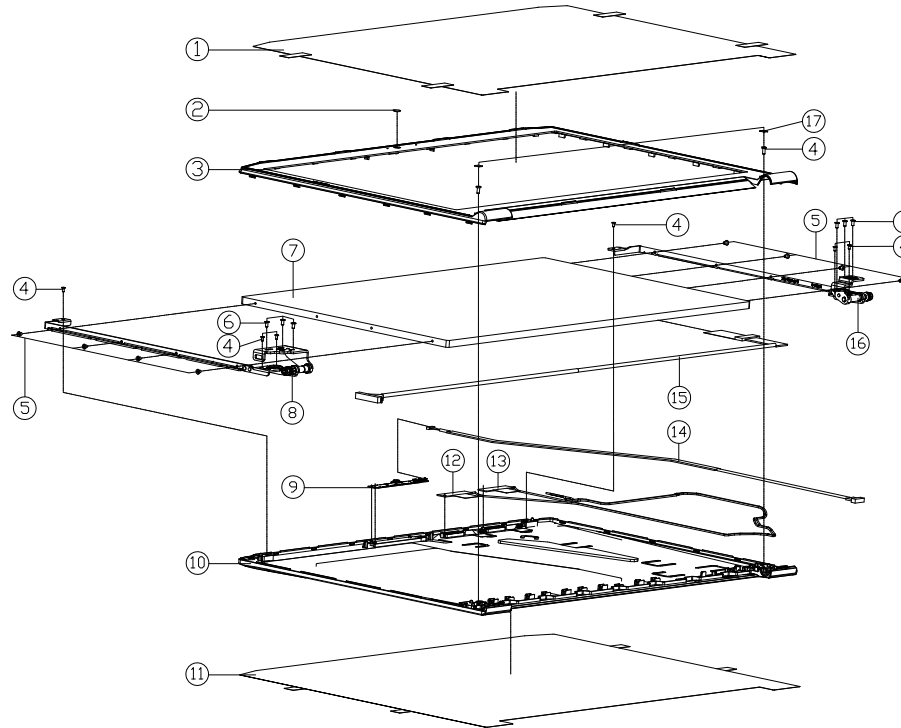


Figure A - 5
2nd HDD

ITEM	PART NAME	PART NO	REMARK
1	DUMMY ODD MODULE N170SD	6-42-N170Z-402	
2	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	
3	SCREW M2*2L KI BK/Z ICT NY (Ø6,T=0.5)	6-35-B6120-2RC	
4	ODD BOARD V3.0 N170SD	6-77-W95KN-D13-C	
5	CD ROM LOCK BRACKET SECC(9.5H) M740S (ZJ)	6-33-M74SZ-020-1	
6	SCREW M2*3L KI NI ICT NY (DD=Ø4.5,DT=0.4)	6-35-B1120-3RE	

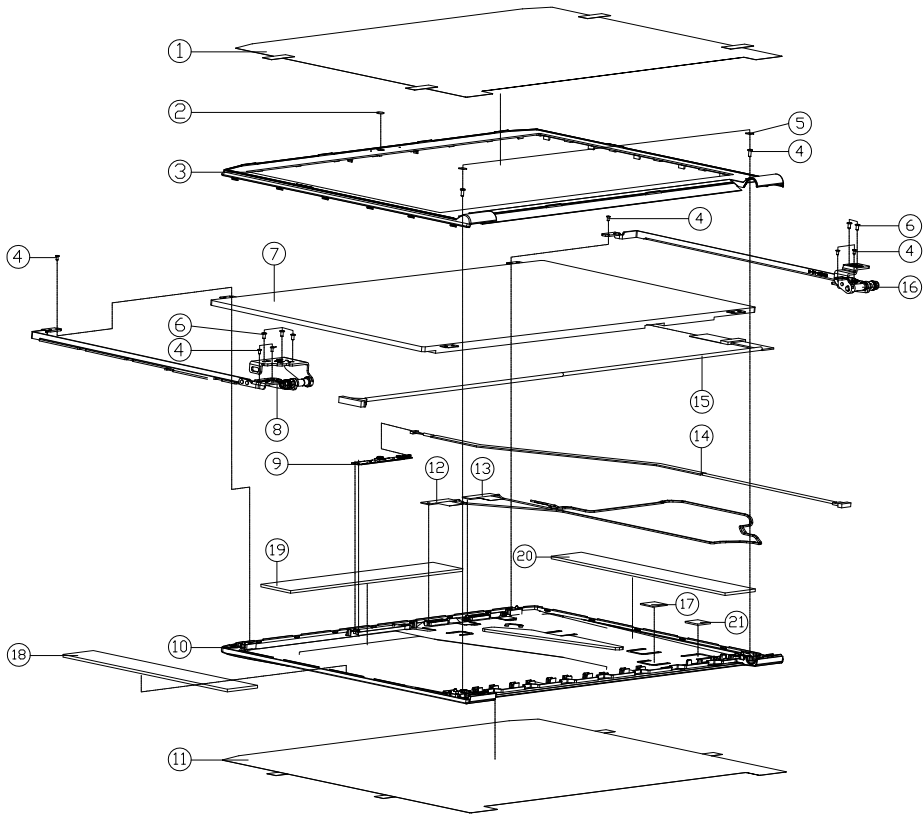
LCD - EDP-LVDS

Figure A - 6
LCD - EDP-LVDS



ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT COVER PROTECT MYLAR PET N170SD	6-40-N1708-010	
2	CCD LENS DD60(PMMA) N170SD	6-42-N170T-010	
3	LCD FRONT COVER MODULE N170SD	6-39-N1701-012	FDR N170SD/SD-A
3	LCD FRONT COVER MODULE N170RD	6-39-N17R1-010	FDR N170RD
4	SCREW M2*4L KI NI ICT NY (DD=#4.0,DT=0.5)	6-35-B1120-4RA	FDR N170SD
4	SCREW M2*4L KI NI ICT NY (DD=#4.5,DT=0.4)	6-35-B1120-4RE	FDR N170SD-A/RD
5	SCREW M2*2.5L KI NI ICT NY (#4 T=0.5 IH)	6-35-B1120-2R6	
6	SCREW M2.5*5L 0.4MM KI BK/Z ICT NY	6-35-B6125-5R0	
7	LCD 17.3" FHD (EDP) CHIMET N173HGE-E10(LED) 6.0 MM	6-50-NB260-D03	
7	LCD 17.3" FHD AU B173HW02 V1(LED) 6.0 MM	6-50-NB260-G04	
7	LCD 17.3" FHD CHIMET N173HGE-L11 (LED) 6.0 MM	6-50-NB260-D01	
7	LCD 17.3" FHD (EDP) AU B173HTN011 (LED) 6.0 MM	6-50-NB260-G06	
7	LCD 17.3" FHD (EDP) AU B173HTN011 (LED) 6.0 MM "HAIKER"	6-950-NB260-G06-H	
8	HINGE L (SGCC+SK7) SNR N170SD SIDE	6-33-N1701-2L0	
9	UV CAMERA BEZEL FOR 180X180X140 20 FHD D0224 FIBRE FIBRE W/WHITE LED VIO-HE	6-88-A11SC-4900	
9	UV CAMERA BEZEL FOR 180X180X140 20 FHD D0224 FIBRE FIBRE W/WHITE LED VIO-HE	6-88-P650C-4900	
9	UV CAMERA BEZEL FOR 180X180X140 20 FHD D0224 FIBRE FIBRE W/WHITE LED VIO-HE	6-88-P872C-4900	
10	LCD BACK COVER MODULE (PAINT) N170SD	6-39-N1701-023-W	
11	LCD BACK COVER PROTECT MYLAR PET N170SD	6-40-N1708-021	
12	ANTENNA TRX-4 V-LAN JEM VL-1 PCB 24G/5G VL-1-65MM N170SD	6-23-7N170-010	
13	ANTENNA TRX-4 V-LAN JEM VL-2 PCB 24G/5G VL-2-65MM N170SD	6-23-7N170-020	
14	WIRE CABLE FOR CCD D-MIC 5681MM 3.3V 8P QHT W450SJD	6-43-W450T-011-1	
15	WIRE CABLE FOR EDP 59MM 15V 40PIN Q1 Q1AC COM450KSD N170SD	6-43-N1701-010-2L1	FDR EDP
15	WIRE CABLE FOR LVDS 59MM 15V 40PIN Q1X6AC COM450KSD N170SD	6-43-N1701-011-2L	FDR LVDS
16	HINGE R (SGCC+SK7) SNR N170SD SIDE	6-33-N1701-2R0	
17	FRONT COVER SCREW MYLAR(PC+SM468)G45(N170SD) N170SD	6-40-N1501-010	

LCD - LG IPS

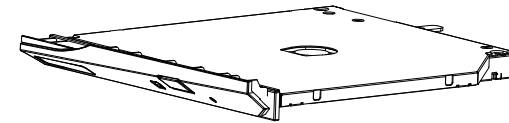
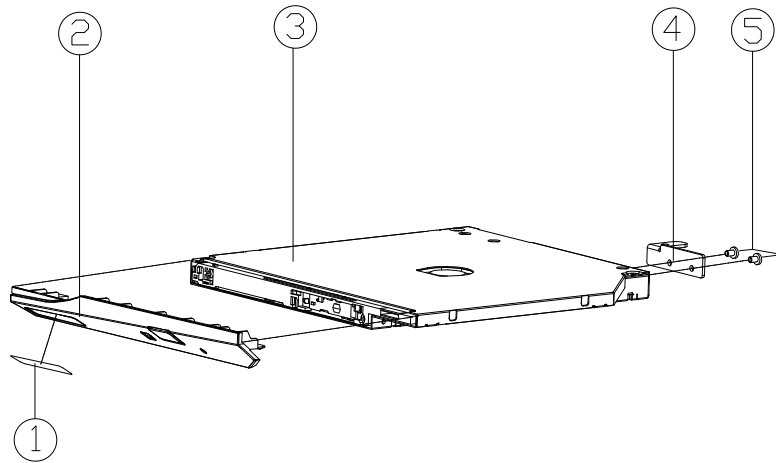


ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT COVER PROTECT MYLAR PET N170SD	6-40-N1708-010	
2	CCD LENS DD60(PMMA) N170SD	6-42-N170T-010	
3	LCD FRONT COVER MODULE N170SD	6-39-N1701-012	FDR N170SD
3	LCD FRONT COVER MODULE N170SD	6-39-N17R1-010	FDR N170RD
4	SCREW M2x4L KI NI ICT NY (DD=#4.0,DT=0.5)	6-35-B1120-4RA	
5	FRONT COVER SCREW MYLARPC+SM468X5x4.0J25D N150SD	6-40-N1501-010	
6	SCREW M2.5xSL 0.4MM KI BK/2 ICT NY	6-35-B6125-5R0	
7	LED FILM / PS / EP 16 LPT204-FP0E * SUPPORT SAN 6.50IC * ALUM ALUM	6-50-NB262-L00	
8	HINGE L (SGCC+SK7) SNR N170SD EAR	6-33-N1701-1L0	
9	UV-CURE RESIN FILM INK/WHITE/RED OR FILM INK/RED/WHITE/BLACK/WHITE/RED	6-88-A11SC-4900	
9	UV-CURE RESIN FILM INK/WHITE/RED OR FILM INK/RED/WHITE/BLACK/WHITE/RED	6-88-P650C-4900	
9	UV-CURE RESIN FILM INK/WHITE/RED OR FILM INK/RED/WHITE/BLACK/WHITE/RED	6-88-P872C-4900	
10	LCD BACK COVER MODULE (PAINT) N170SD	6-39-N1701-023-W	
11	LCD BACK COVER PROTECT MYLAR PET N170SD	6-40-N1708-021	
12	ANTENNA PCB+VIA+LEAD W/1 PCB 2.4G/5G W/L-1: 650MM N170SD	6-23-7N170-010	
13	ANTENNA PCB+VIA+LEAD W/2 PCB 2.4G/5G W/L-2: 650MM N170SD	6-23-7N170-020	
14	WIRE CABLE FOR CCD D-MIC 568.0UM 3.3V BP (HT) W450SJD	6-43-WA50T-011-1	
15	WIRE CABLE FOR EP 590M 19V 40PIN QJ (H/AC CONDUCTORS-H) N170SD	6-43-N1701-021-L	
15	WIRE CABLE FOR EP 590M 19V 40PIN QJ (H/AC CONDUCTORS) N170SD	6-43-N1701-010-2L1	
16	HINGE R (SGCC+SK7) SNR N170SD EAR	6-33-N1701-1R0	
17	BACK COVER RUBBER/SILICON 80X106.5X4.0 N170SD LG	6-47-N1701-060	
18	BACK COVER SPENCE-1 CR43821904254H2.5 N170SD LG	6-47-0019A-196	
19	BACK COVER SPENCE-2 CR43821904254H2.5 N170SD LG	6-47-0019A-20P	
20	BACK COVER SPENCE-3 CR43821904254H2.5 N170SD LG	6-47-0019A-216	
21	BACK COVER RUBBER/SILICON 80X106.5X4.0 N170SD LG	6-47-N1701-050	

Figure A - 7
LCD - LG IPS

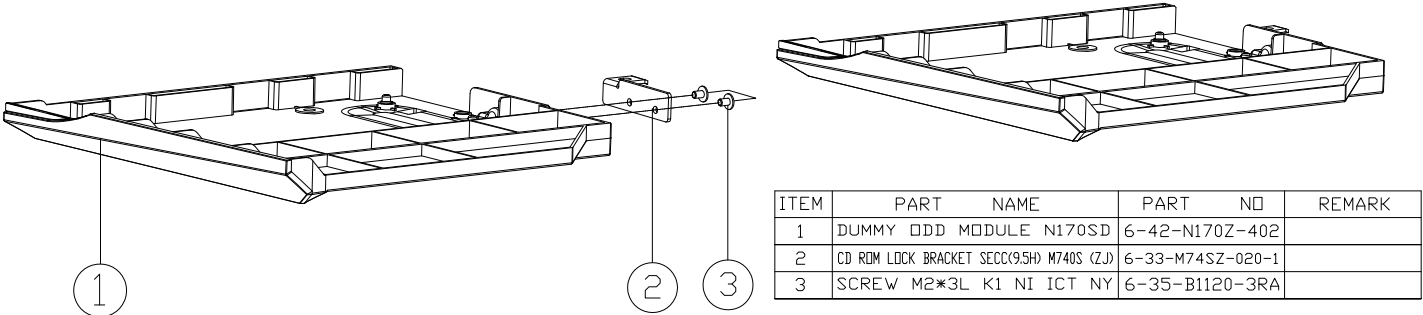
DVD

Figure A - 8
DVD



ITEM	PART NAME	PART NO	REMARK
1	SUPER MULTI ODD BEZEL LABEL (SIZE CHANGE)	6-45-W860Q-012	
2	ODD BEZEL MODULE N170SD	6-42-N170Z-102	
3	SATA DVD SUPER MULTI 5 1/4" BK 9.5MM 20X-200 01A/A-A VER4B0 F/A- T000 040N 00 TSSST	6-85-A088X-T08	FOR TSSST
3	SATA DVD SUPER MULTI 5 1/4" BK 9.5MM 20X-200 01A/A-A VER4B0 F/A- T000 040N 00 PLDS	6-85-A088X-L04	FOR PLDS
4	CD ROM LOCK BRACKET SECC(9.5H) M740S (ZJ)	6-33-M74SZ-020-1	
5	SCREW M2*3L KI NI ICT NY (DD=04.5,DT=0.4)	6-35-B1120-3RE	

Dummy ODD



ITEM	PART NAME	PART NO	REMARK
1	DUMMY ODD MODULE N170SD	6-42-N170Z-402	
2	CD ROM LOCK BRACKET SECC(9.5H) M740S (ZJ)	6-33-M74SZ-020-1	
3	SCREW M2*3L K1 NI ICT NY	6-35-B1120-3RA	

Figure A - 9
Dummy ODD



Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *NI70RD1* notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
<i>System Block Diagram - Page B - 2</i>	<i>VGA GPIO - Page B - 24</i>	<i>VDD3, VDD5 - Page B - 46</i>
<i>Processor 1/7 - Page B - 3</i>	<i>VGA NVVDD Decoupling - Page B - 25</i>	<i>DRAM Power - Page B - 47</i>
<i>Processor 2/7 - Page B - 4</i>	<i>PCH 1/9 - Page B - 26</i>	<i>Power 1.0V, VCCIO - Page B - 48</i>
<i>Processor 3/7 - Page B - 5</i>	<i>PCH 2/9 - Page B - 27</i>	<i>I.O DX_VCCSTG/VCCSFR_OC - Page B - 49</i>
<i>Processor 4/7 - Page B - 6</i>	<i>PCH 3/9 - Page B - 28</i>	<i>VCore, VCCSA - Page B - 50</i>
<i>Processor 5/7 - Page B - 7</i>	<i>PCH 4/9 - Page B - 29</i>	<i>VCore, VCCSA Output Stage - Page B - 51</i>
<i>Processor 6/7 - Page B - 8</i>	<i>PCH 5/9 - Page B - 30</i>	<i>VCCGT - Page B - 52</i>
<i>Processor 7/7 - Page B - 9</i>	<i>PCH 6/9 - Page B - 31</i>	<i>VCCGT Output Stage - Page B - 53</i>
<i>DDR4 SO-DIMM A_0 - Page B - 10</i>	<i>PCH 7/9 - Page B - 32</i>	<i>NVVDD - Page B - 54</i>
<i>DDR4 SO-DIMM B_0 - Page B - 11</i>	<i>PCH 8/9 - Page B - 33</i>	<i>3V3_AON, 3V3_RUN, PEX_VDD - Page B - 56</i>
<i>PS8331B - Page B - 12</i>	<i>PCH 9/9 - Page B - 34</i>	<i>FBVDDQ - Page B - 55</i>
<i>Panel, BKL Control - Page B - 13</i>	<i>AR_TBT - Page B - 35</i>	<i>AC-In, Charger - Page B - 57</i>
<i>HDMI - Page B - 14</i>	<i>AR_Power - Page B - 36</i>	<i>N155, N157 KB LED, PWR Board - Page B - 58</i>
<i>Mini DP Port 1 - Page B - 15</i>	<i>TPS65982 - Page B - 37</i>	<i>Audio Board - Page B - 59</i>
<i>Mini DP Port 2 - Page B - 16</i>	<i>USB 3.0, USB Charger - Page B - 38</i>	<i>Front LED Board - Page B - 60</i>
<i>VGA Frame Buffer Interface - Page B - 17</i>	<i>LAN RTL8411B, Card Reader - Page B - 39</i>	<i>Click / Finger Con Board - Page B - 61</i>
<i>VGA Frame Buffer A - Page B - 18</i>	<i>Audio Codec ALC269 - Page B - 40</i>	<i>Fingerprint Board - Page B - 62</i>
<i>VGA Frame Buffer A - Page B - 19</i>	<i>KBC-ITE IT8587 - Page B - 41</i>	<i>N150 LID, PWR SW Board - Page B - 63</i>
<i>VGA PCI-E Interface - Page B - 20</i>	<i>HDD, TPM, KB LED, PWR Con, T/P - Page B - 42</i>	<i>N170 LID, PWR SW Board - Page B - 64</i>
<i>VGA Frame Buffer B - Page B - 21</i>	<i>WLAN, 4G, Fan, Audio Con - Page B - 43</i>	<i>N170 ODD Ext. Board - Page B - 65</i>
<i>VGA Frame Buffer B - Page B - 22</i>	<i>CCD, M-Key, Click Conn - Page B - 44</i>	<i>Power Sequence - Page B - 66</i>
<i>VGA I/O - Page B - 23</i>	<i>System Power - Page B - 45</i>	<i>Option BOM - Page B - 67</i>

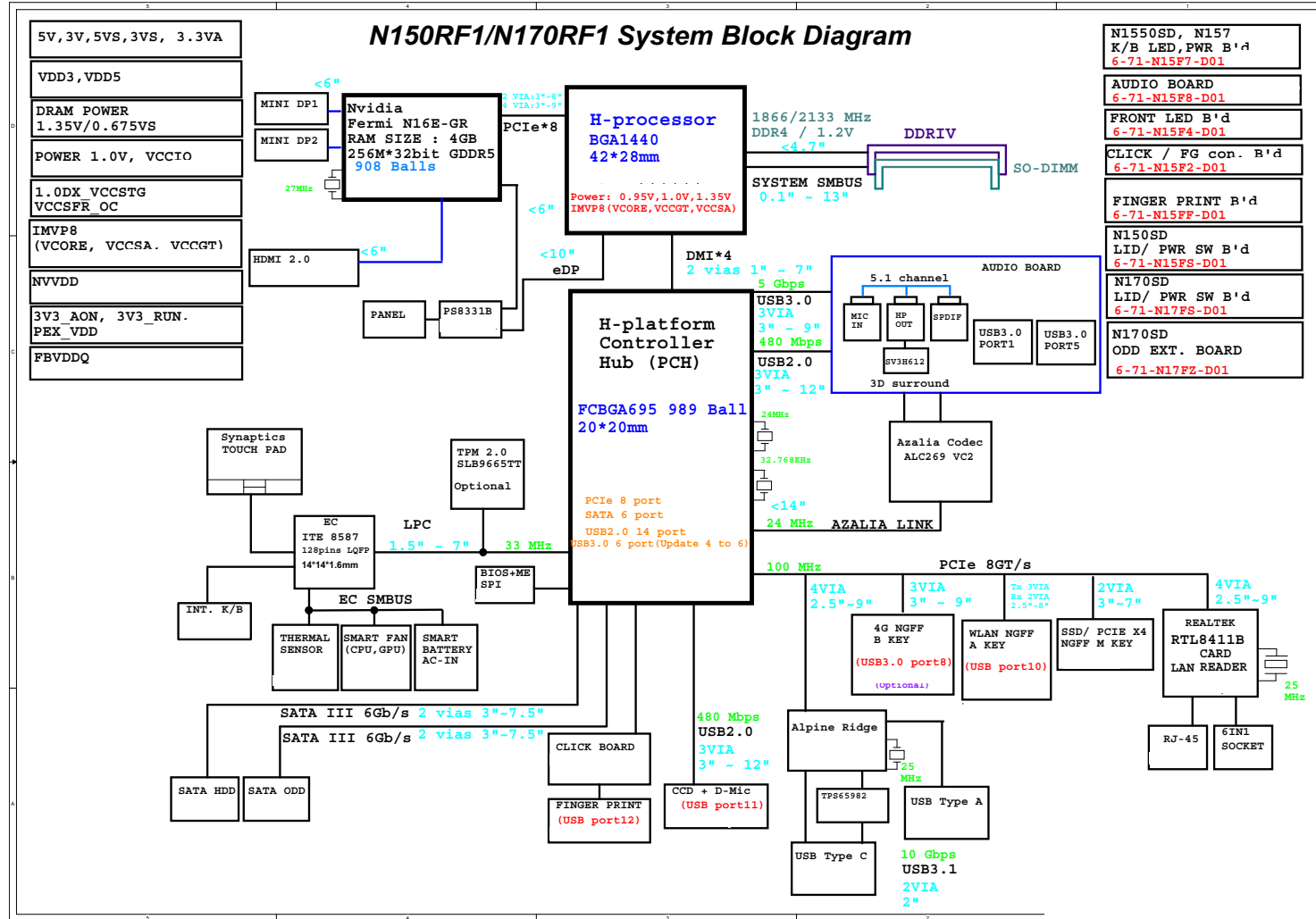
Table B - 1
**SCHEMATIC
DIAGRAMS**



Version Note

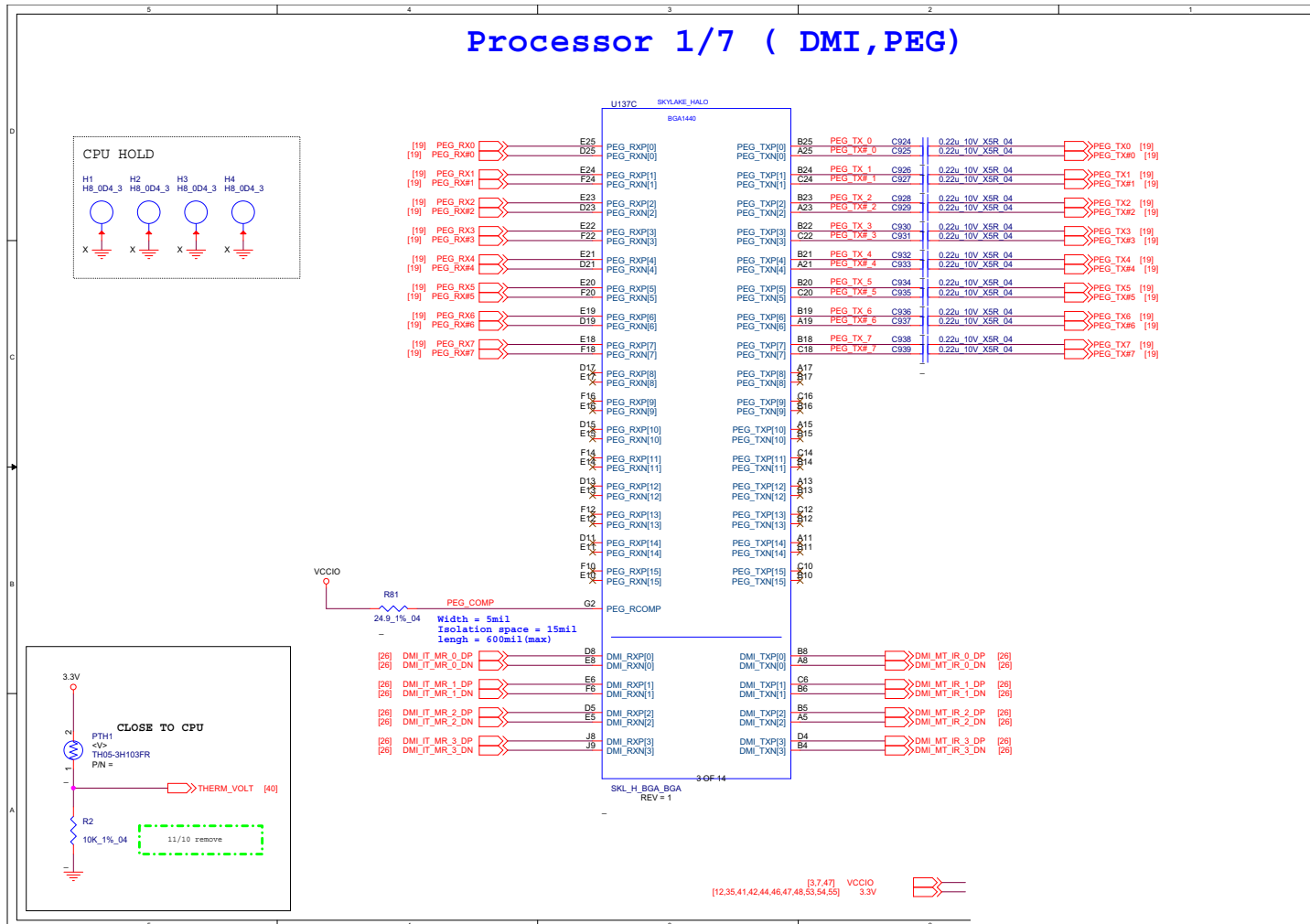
The schematic diagrams in this chapter are based upon version 6-7P-N15F9-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram



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System Block
Diagram

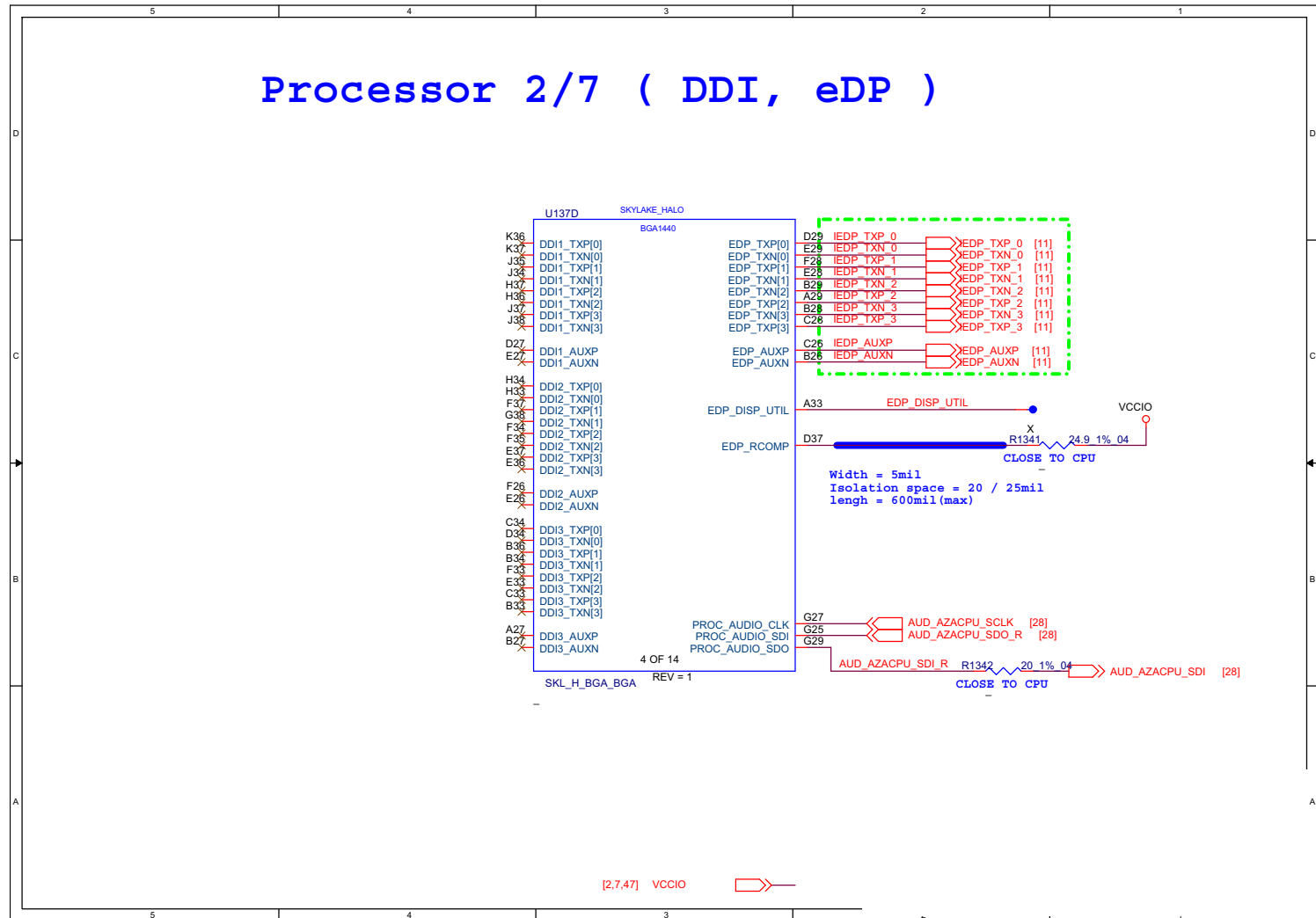
Processor 1/7



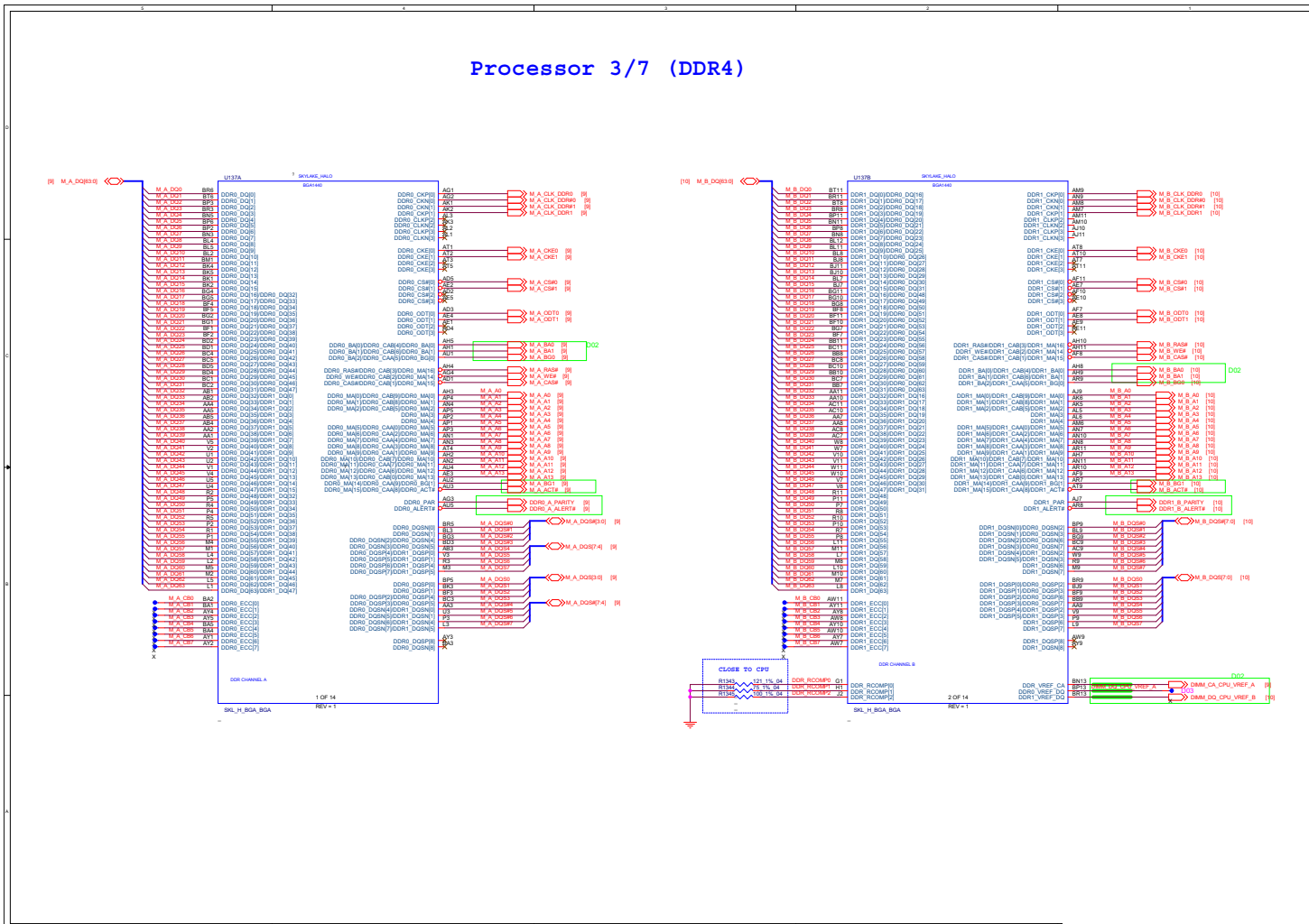
Sheet 2 of 62
Processor 1/7

Processor 2/7

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Processor 2/7



Processor 3/7



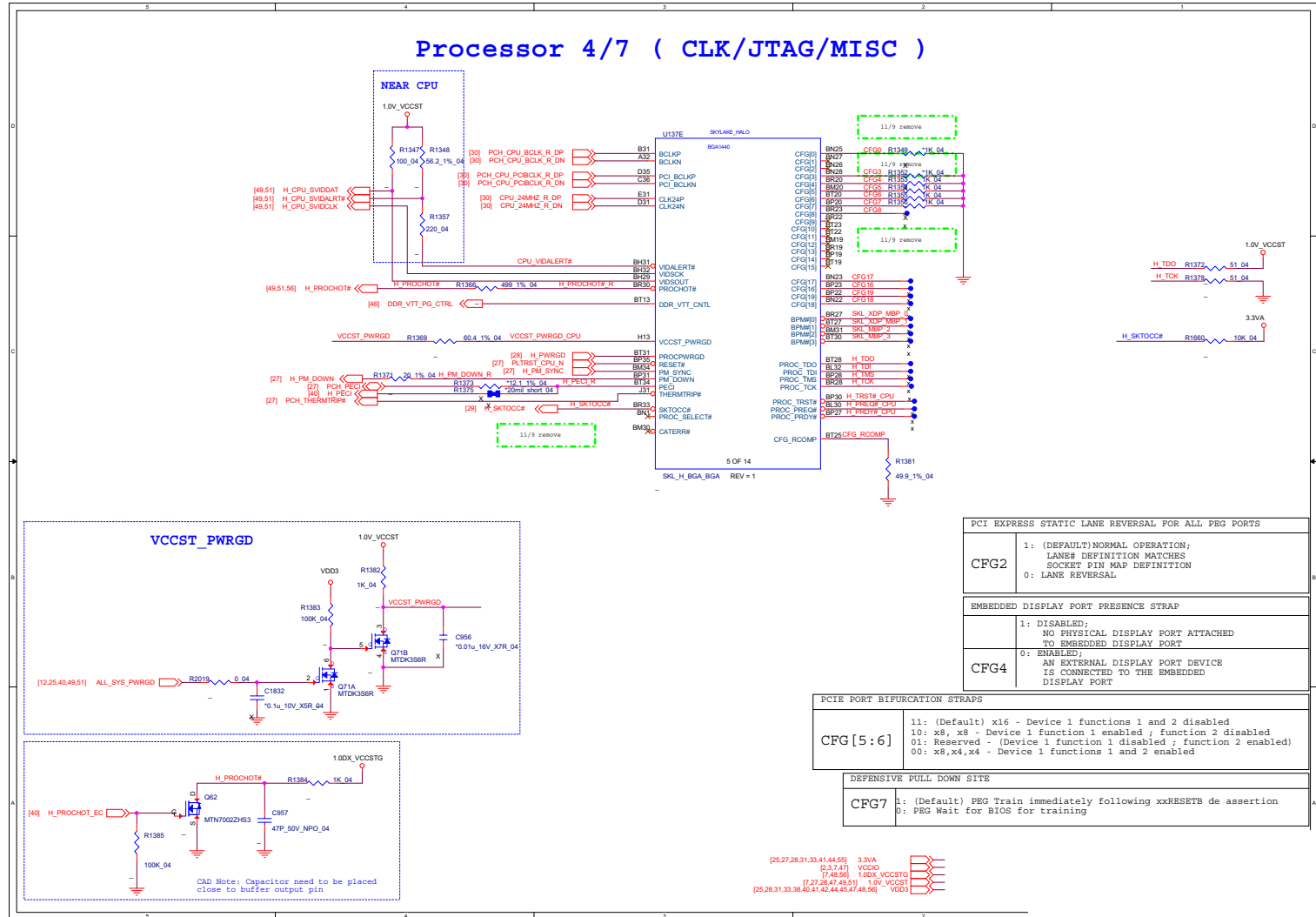
Sheet 4 of 62
Processor 3/7

B.Schematic Diagrams

Schematic Diagrams

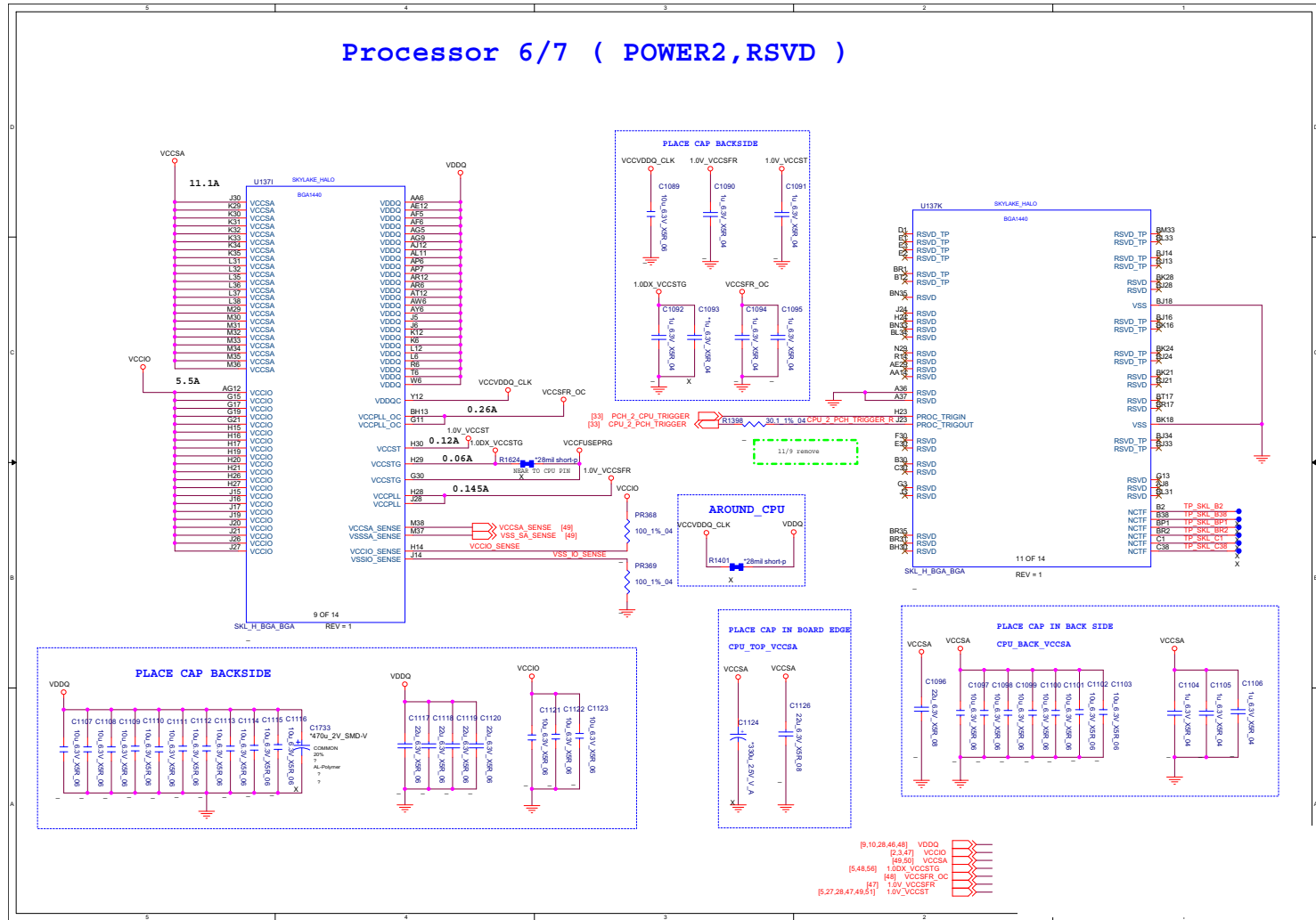
Processor 4/7

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Processor 4/7



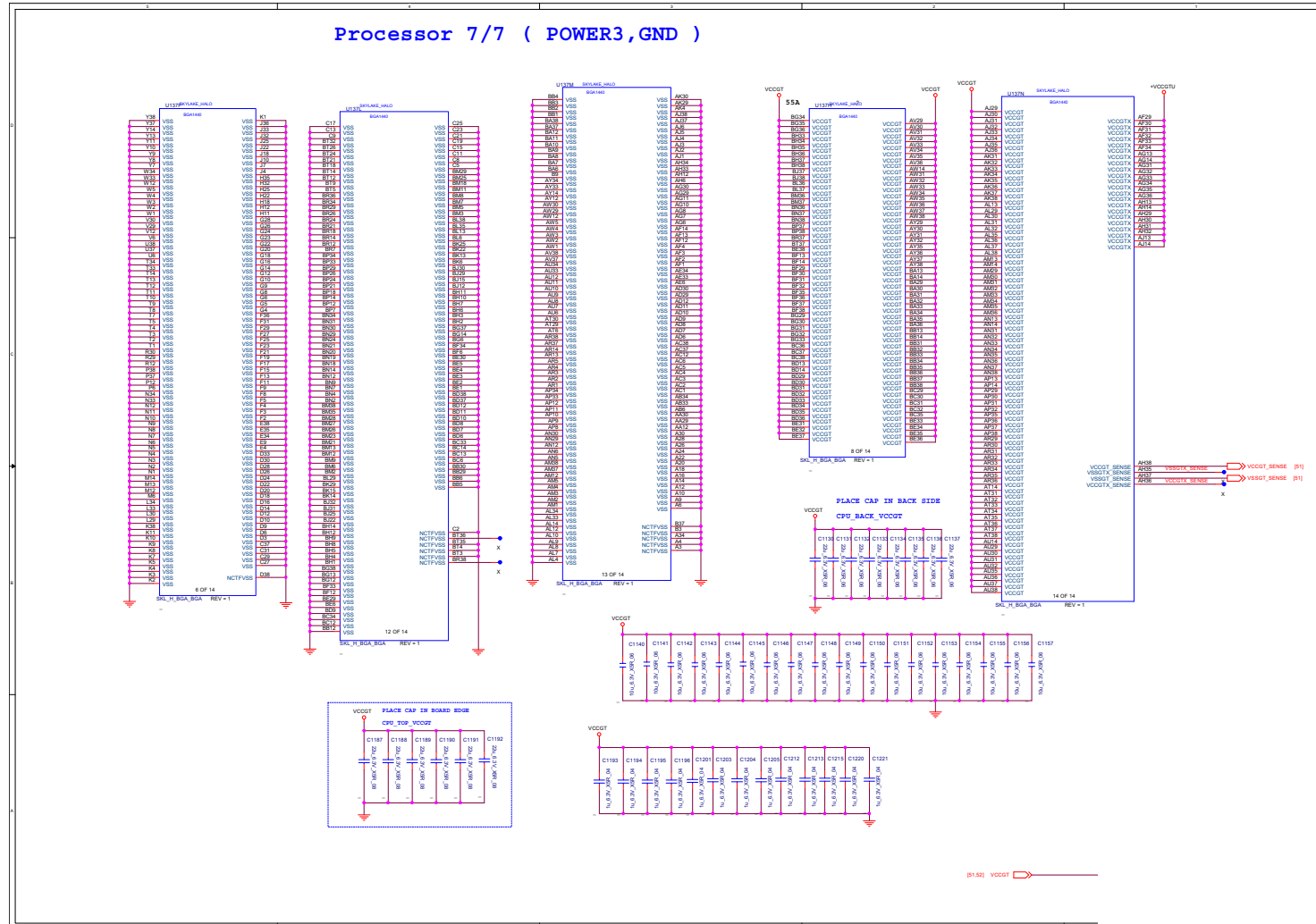
Processor 6/7

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Processor 6/7



Processor 7/7

Processor 7/7 (POWER3,GND)



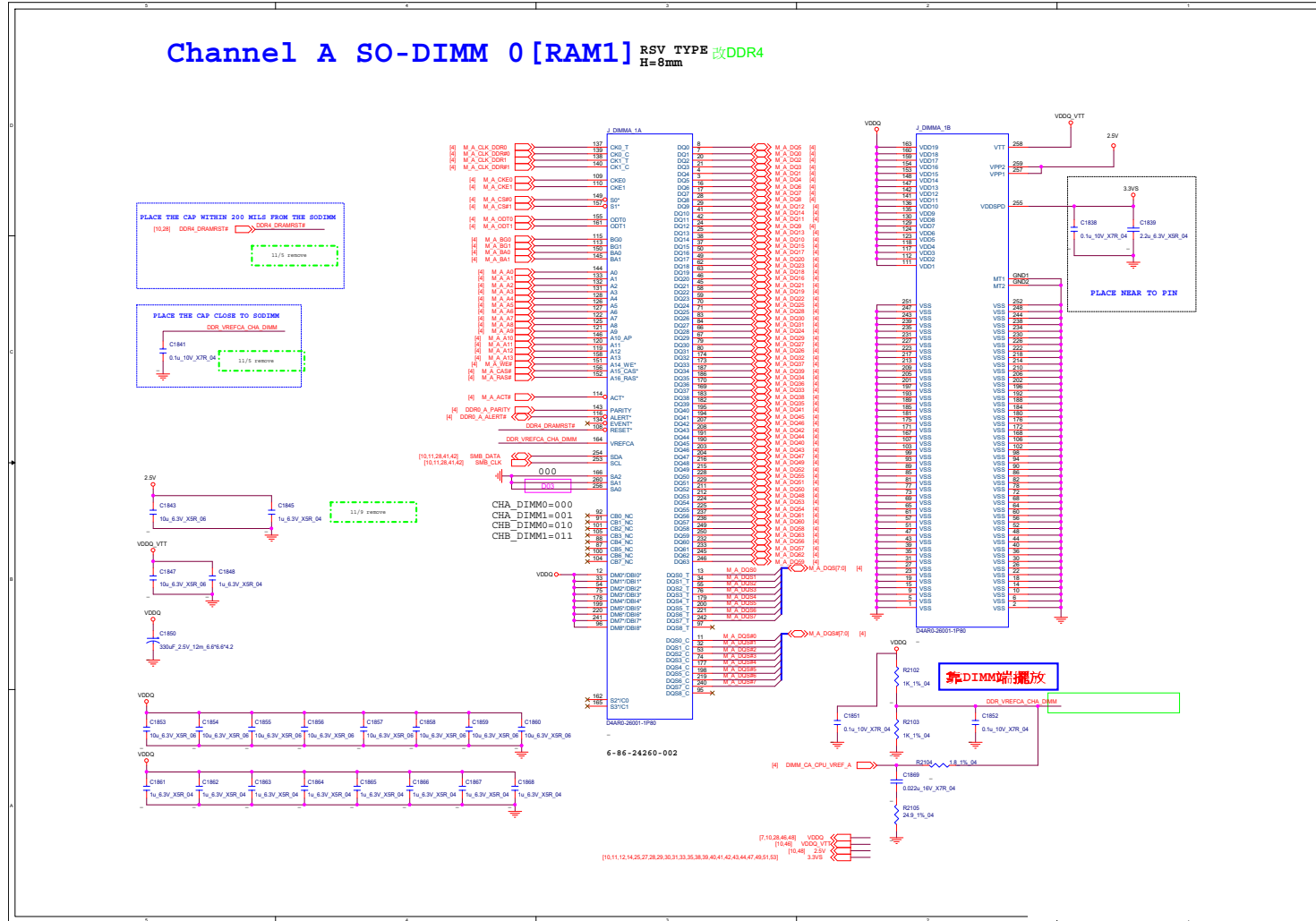
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Processor 7/7

B.Schematic Diagrams

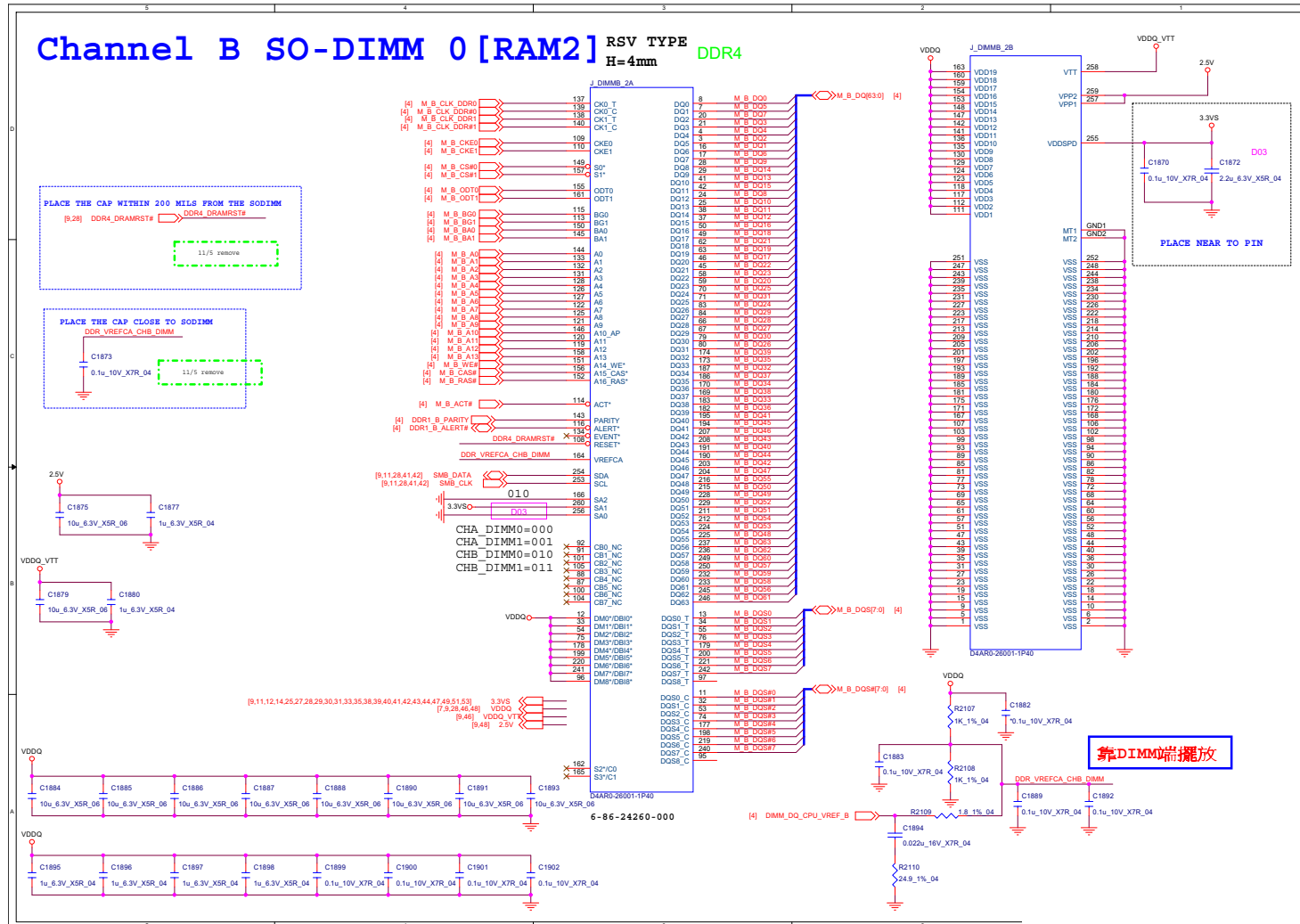
DDR4 SO-DIMM A_0

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DDR4 SO-DIMM
A_0

Channel A SO-DIMM 0 [RAM1] RSV TYPE 改DDR4 H=8mm



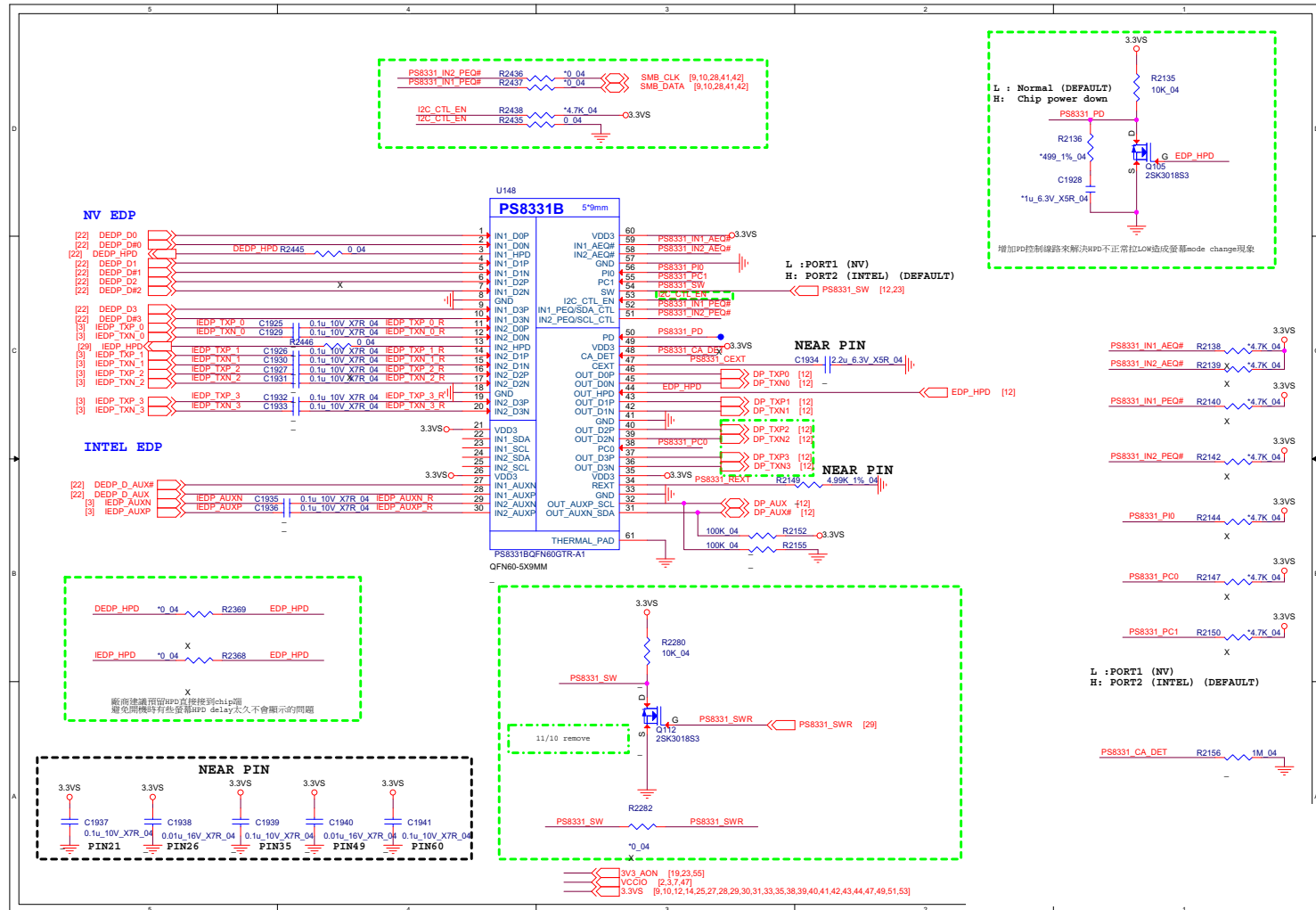
DDR4 SO-DIMM B_0



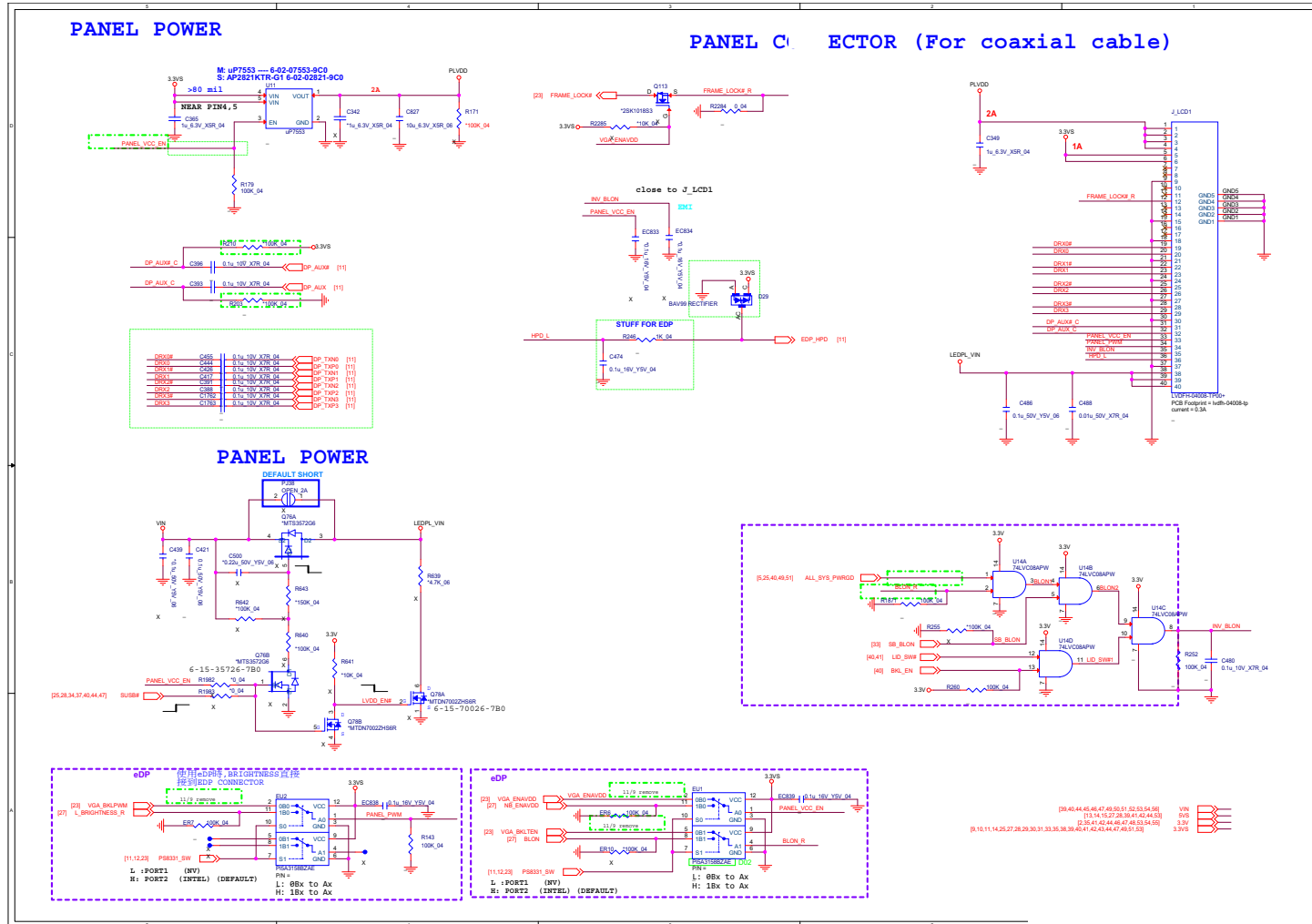
Sheet 10 of 62
DDR4 SO-DIMM
B_0

PS8331B

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PS8331B



Panel, BKL Control

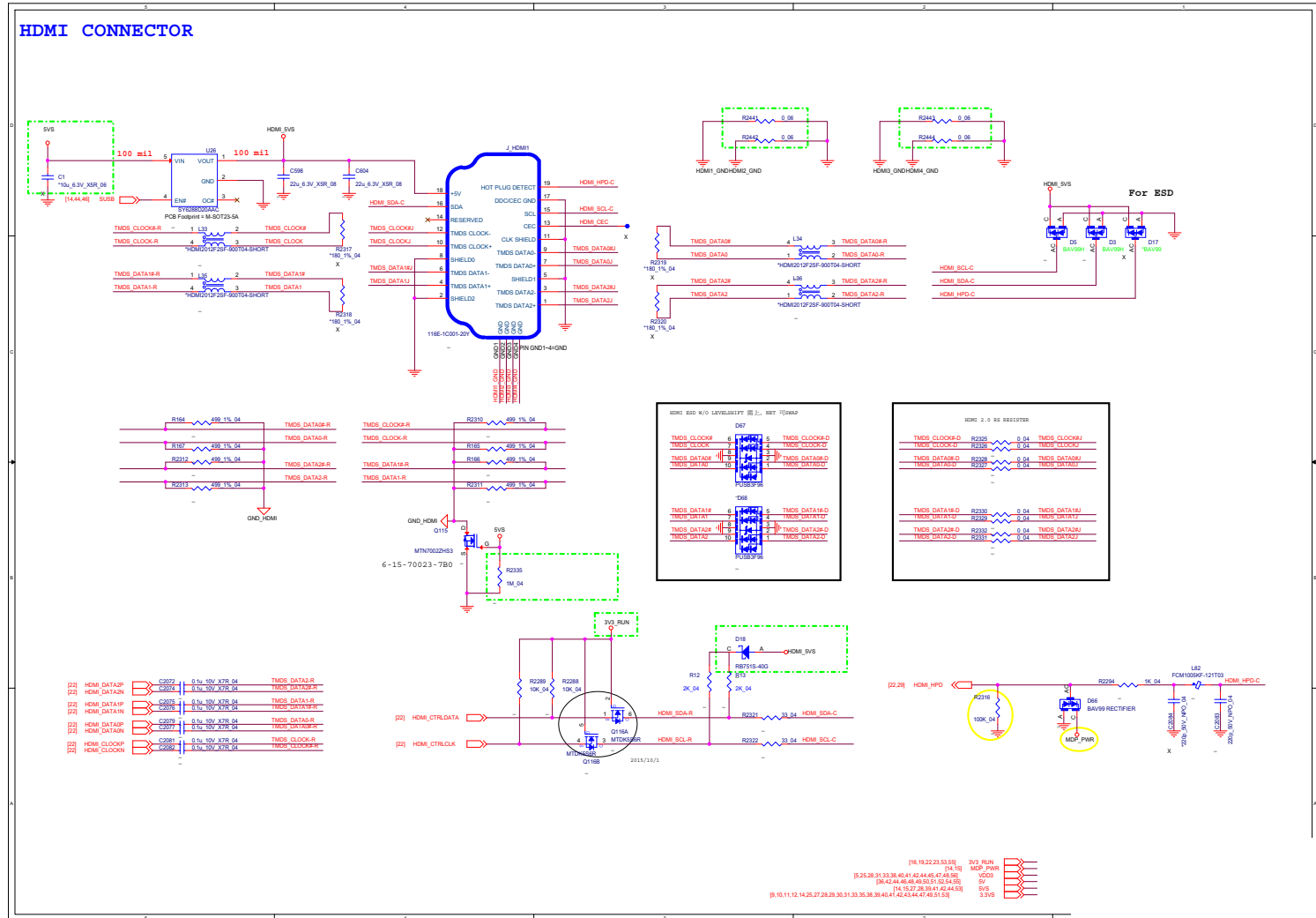


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Panel, BKL Control

B.Schematic Diagrams

Schematic Diagrams

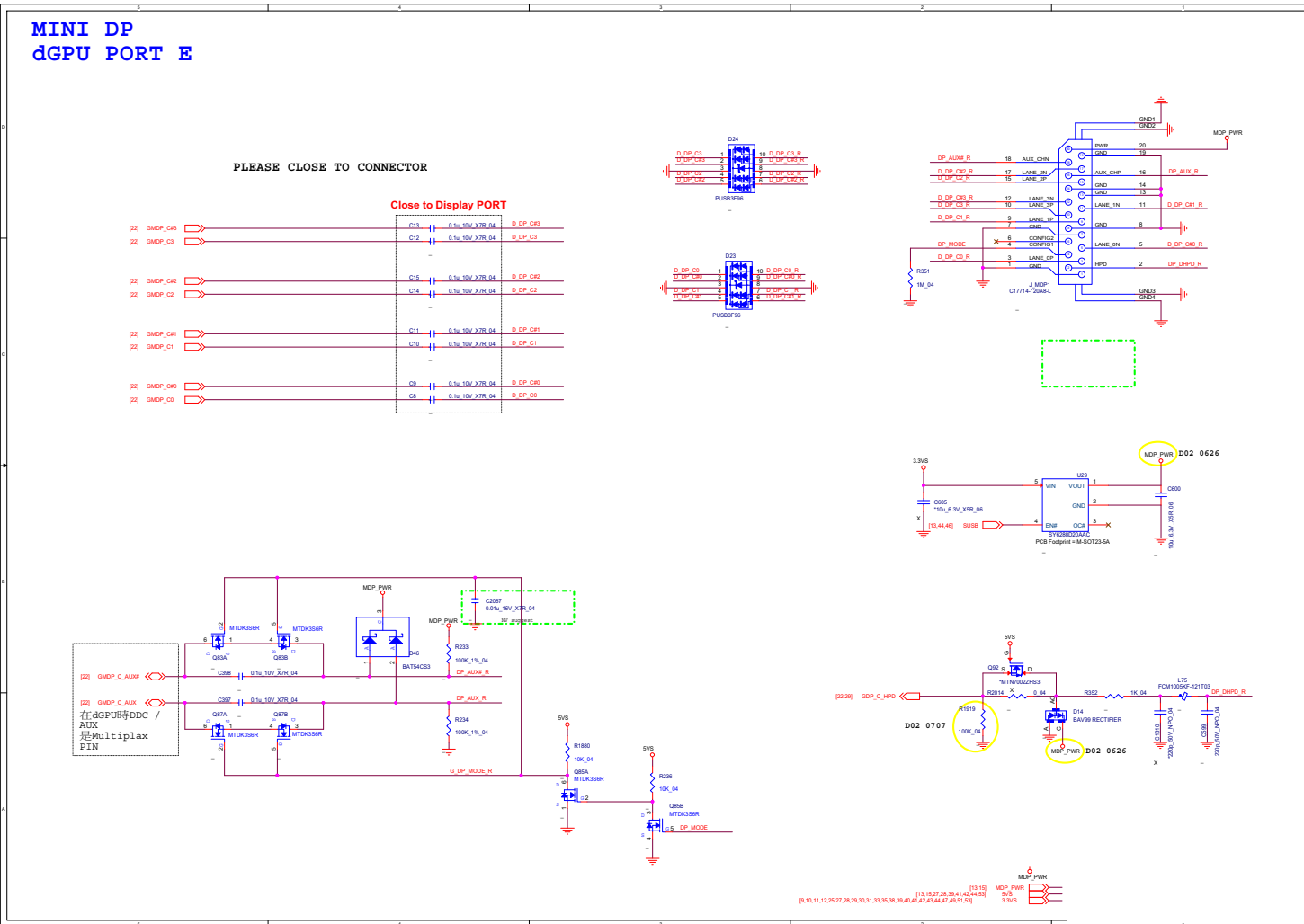
HDMI



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HDMI

B.Schematic Diagrams

Mini DP Port 1

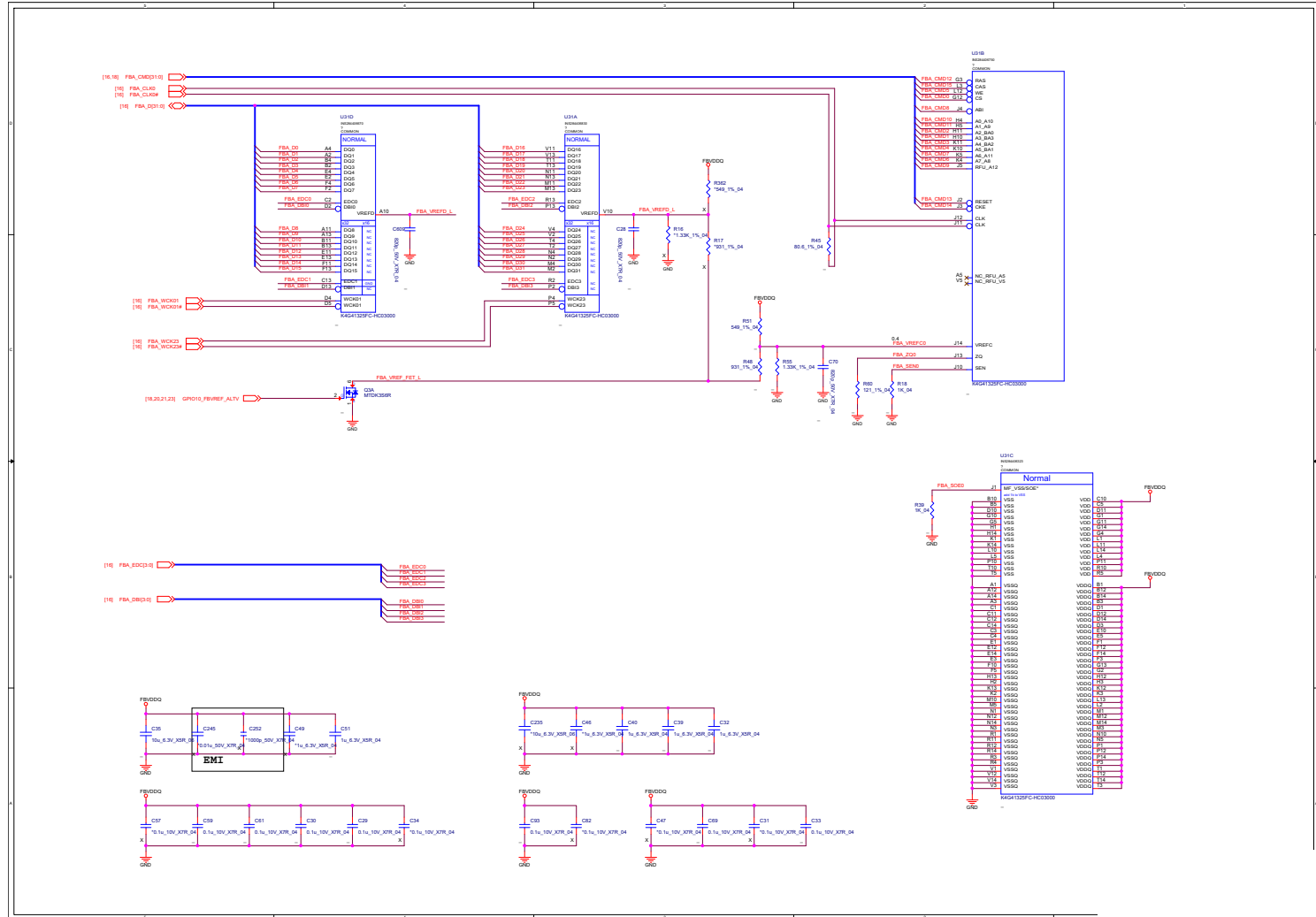


Sheet 14 of 62
Mini DP Port 1

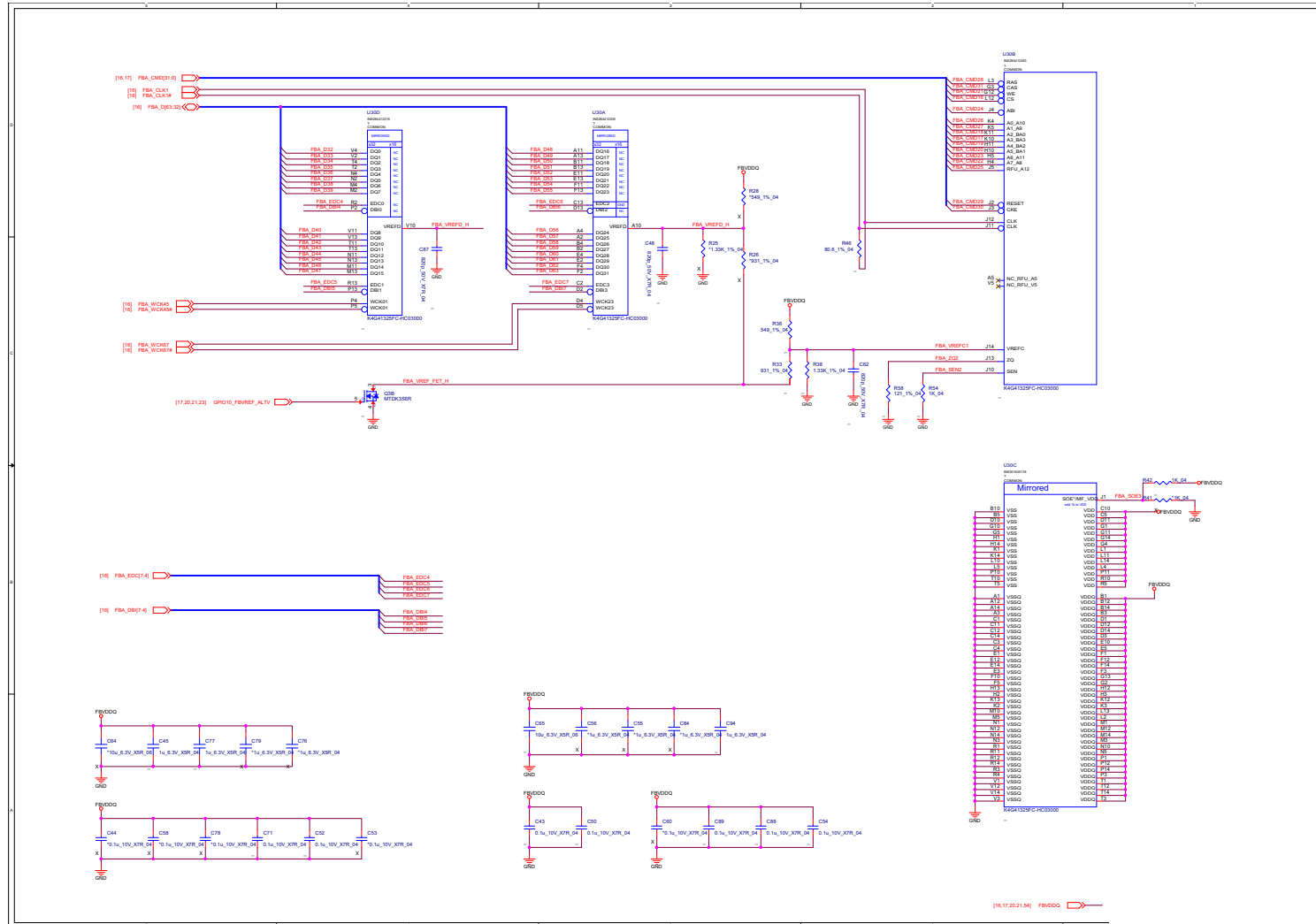
Schematic Diagrams

VGA Frame Buffer A

Sheet 17 of 62
VGA Frame Buffer
A



VGA Frame Buffer A

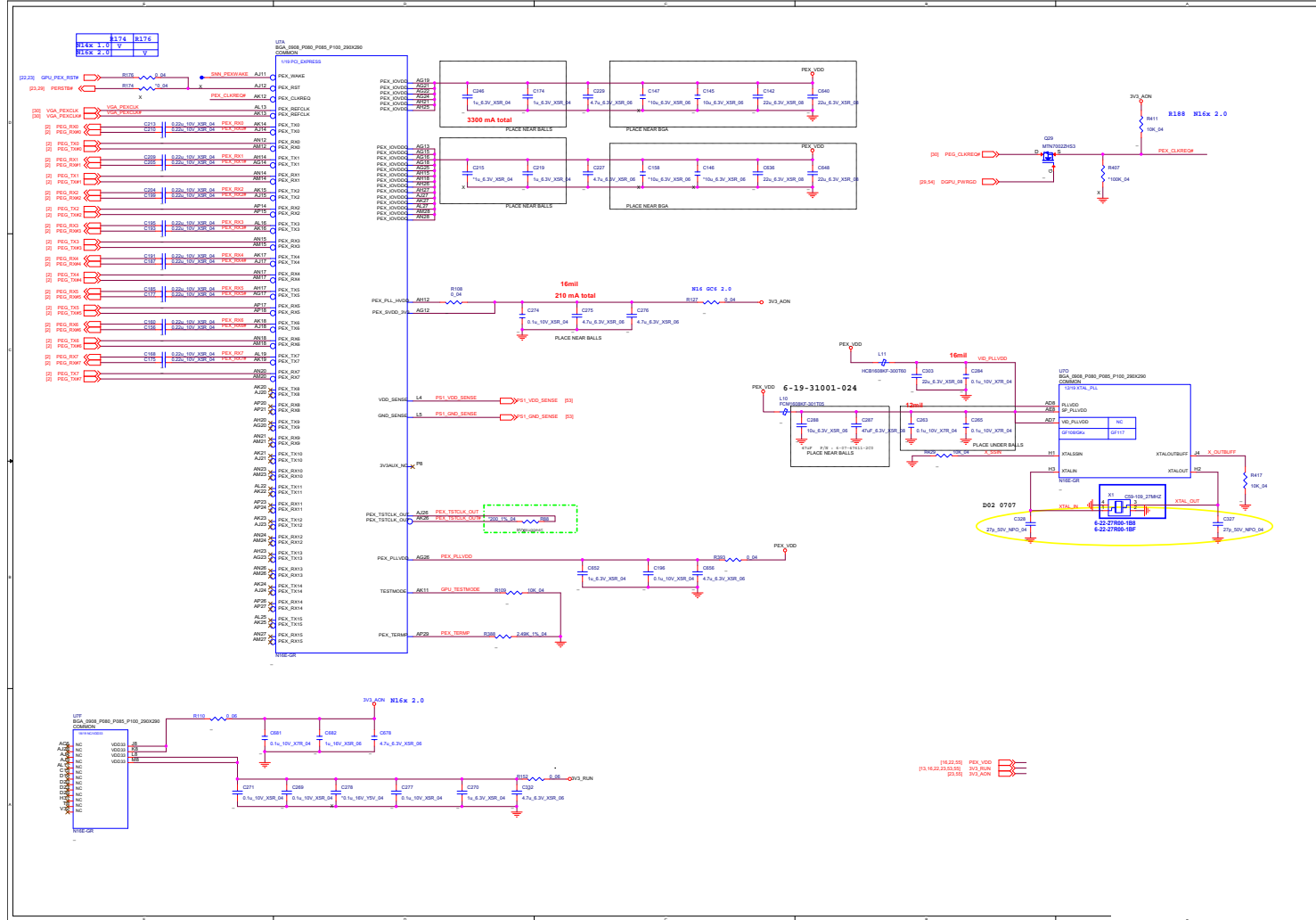


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VGA Frame Buffer A

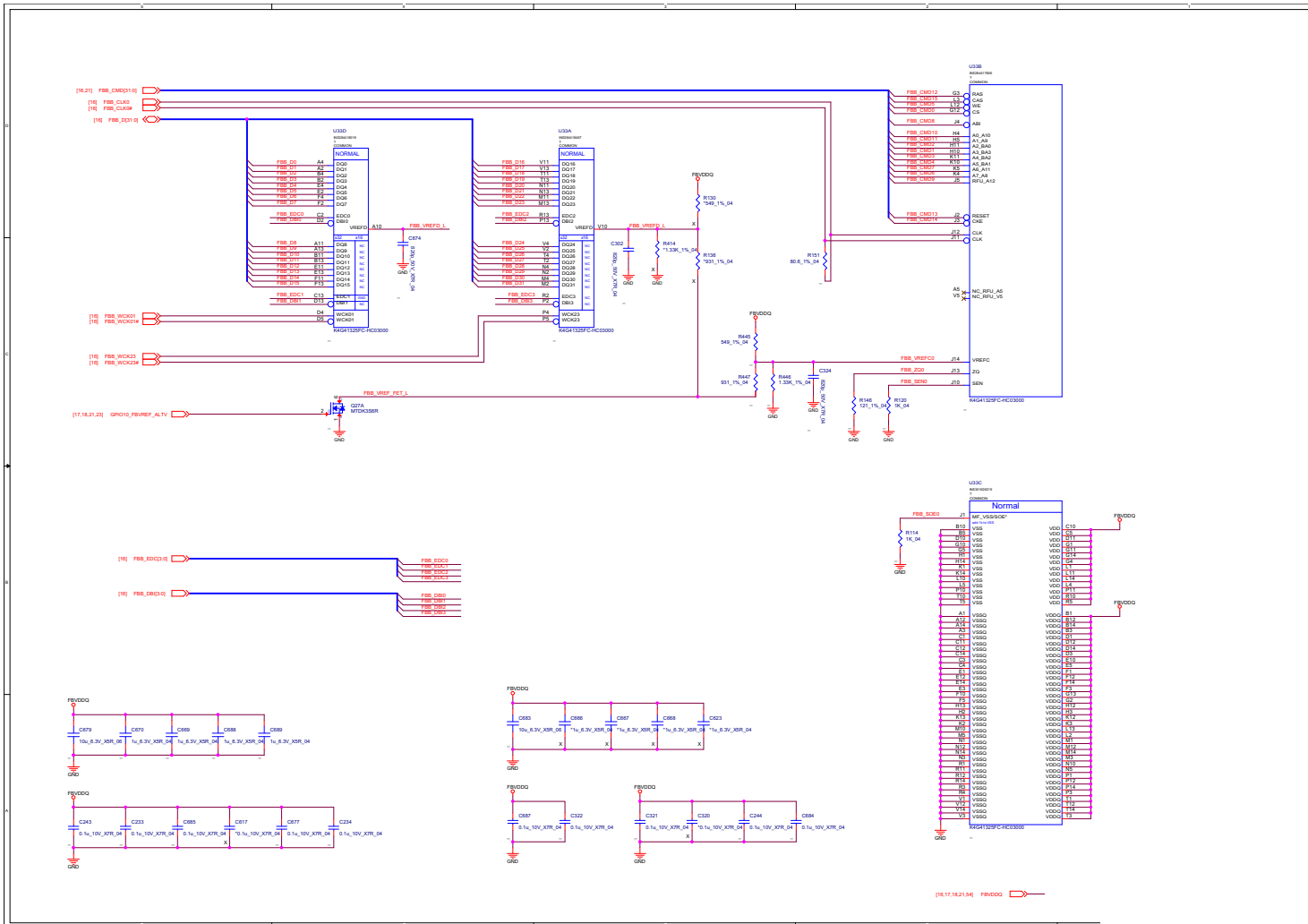
B.Schematic Diagrams

VGA PCI-E Interface

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VGA PCI-E
Interface



VGA Frame Buffer B

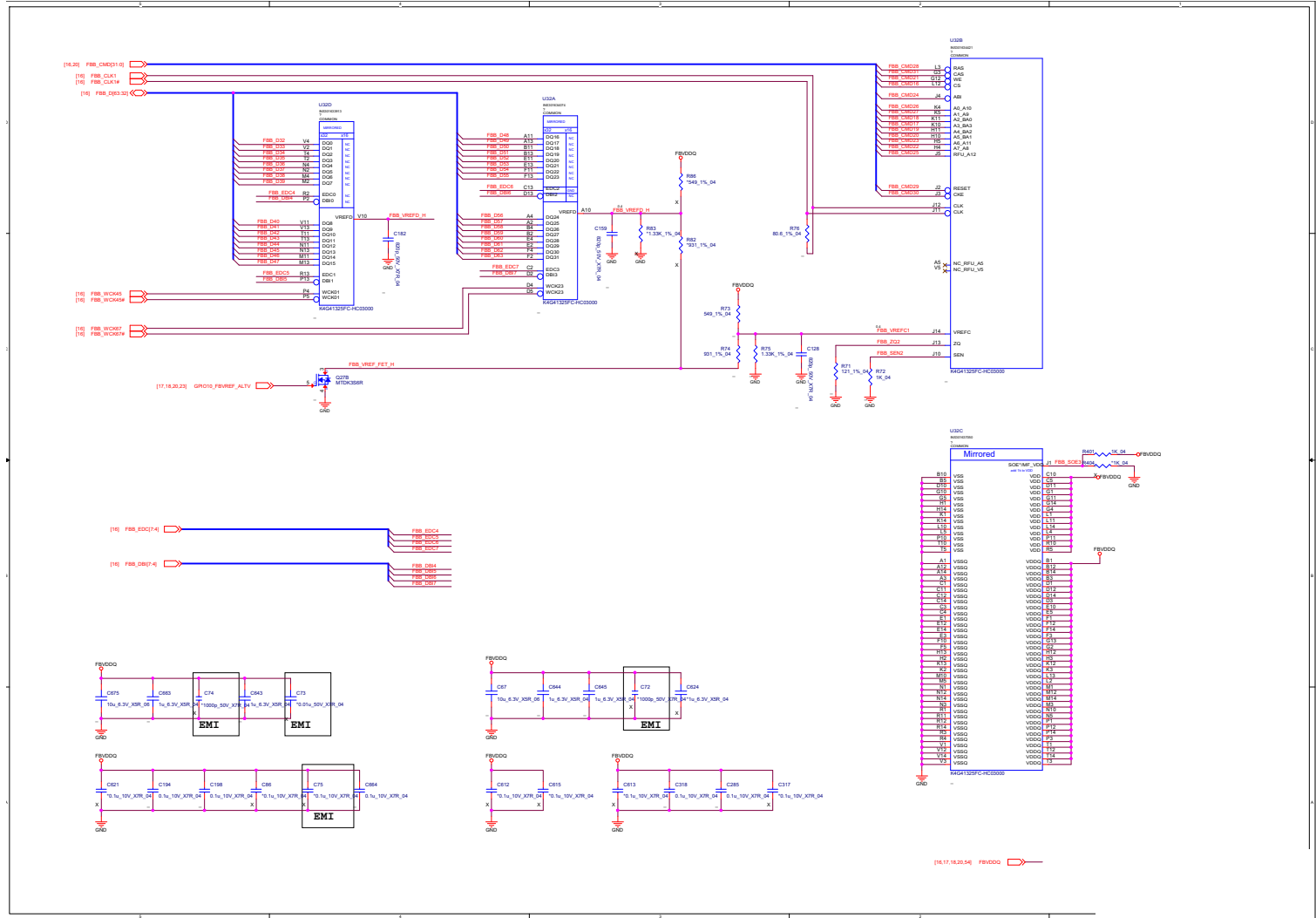


Sheet 20 of 62
VGA Frame Buffer B

B.Schematic Diagrams

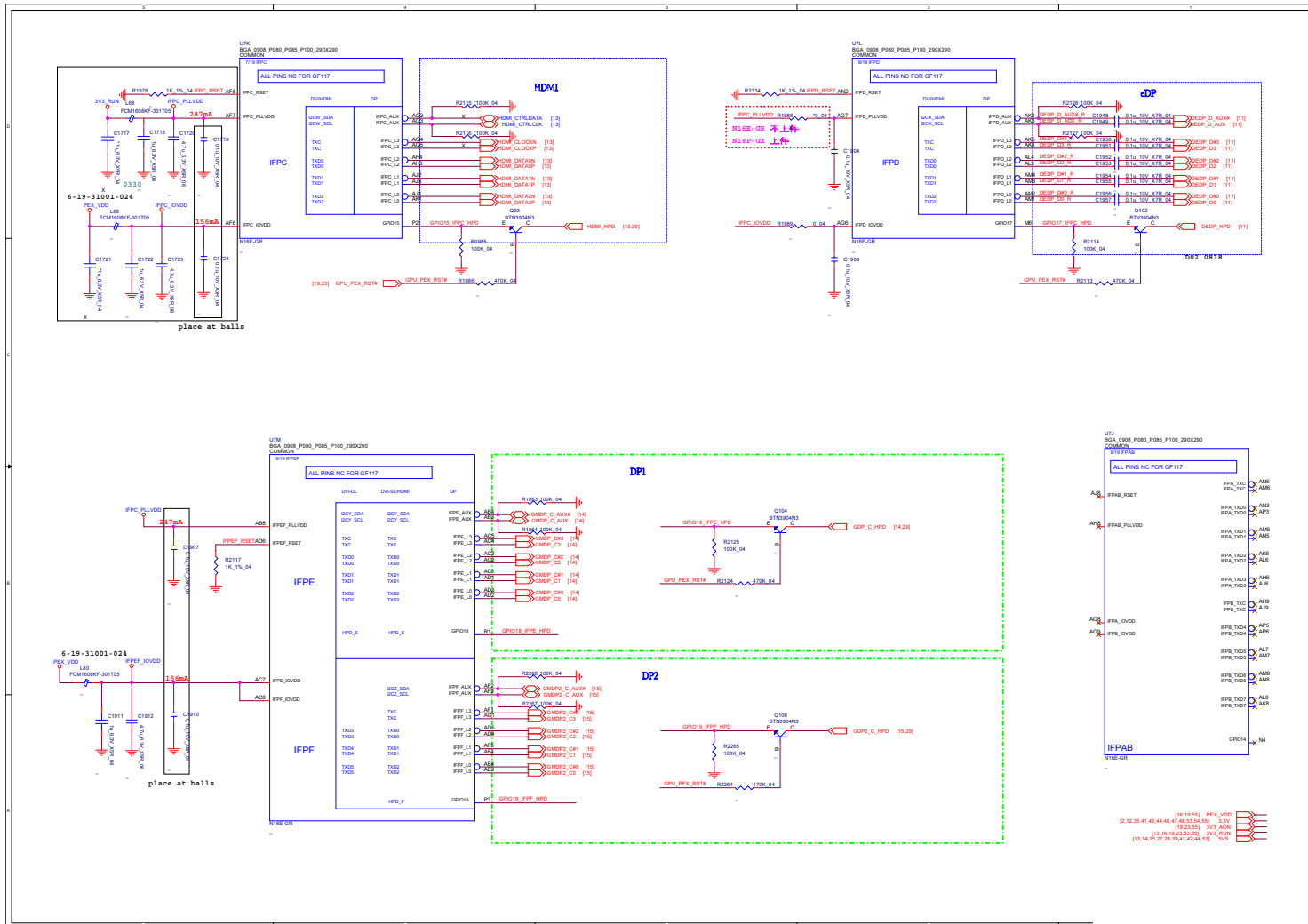
VGA Frame Buffer B

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VGA Frame Buffer
B



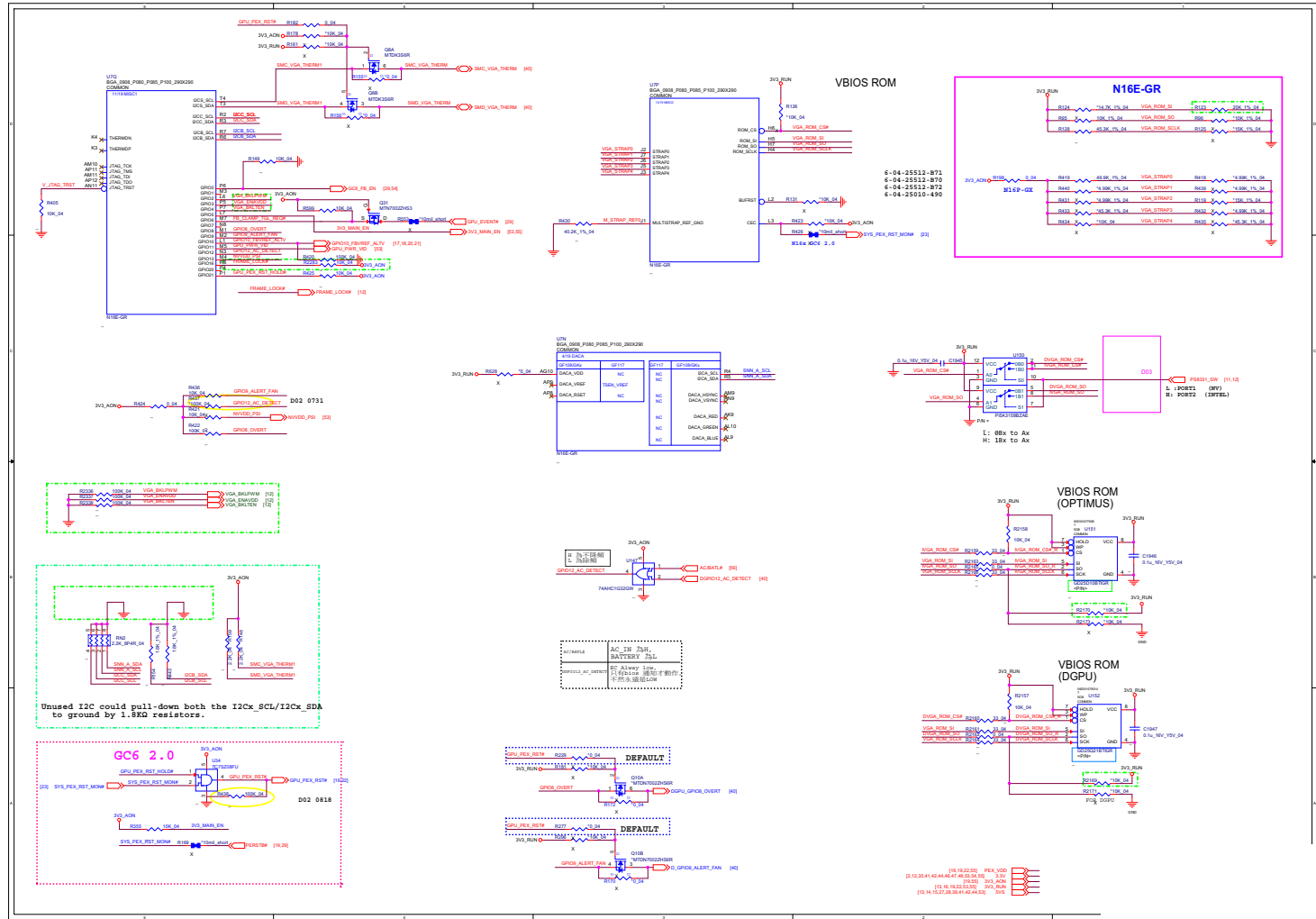
VGA I/O

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VGA I/O



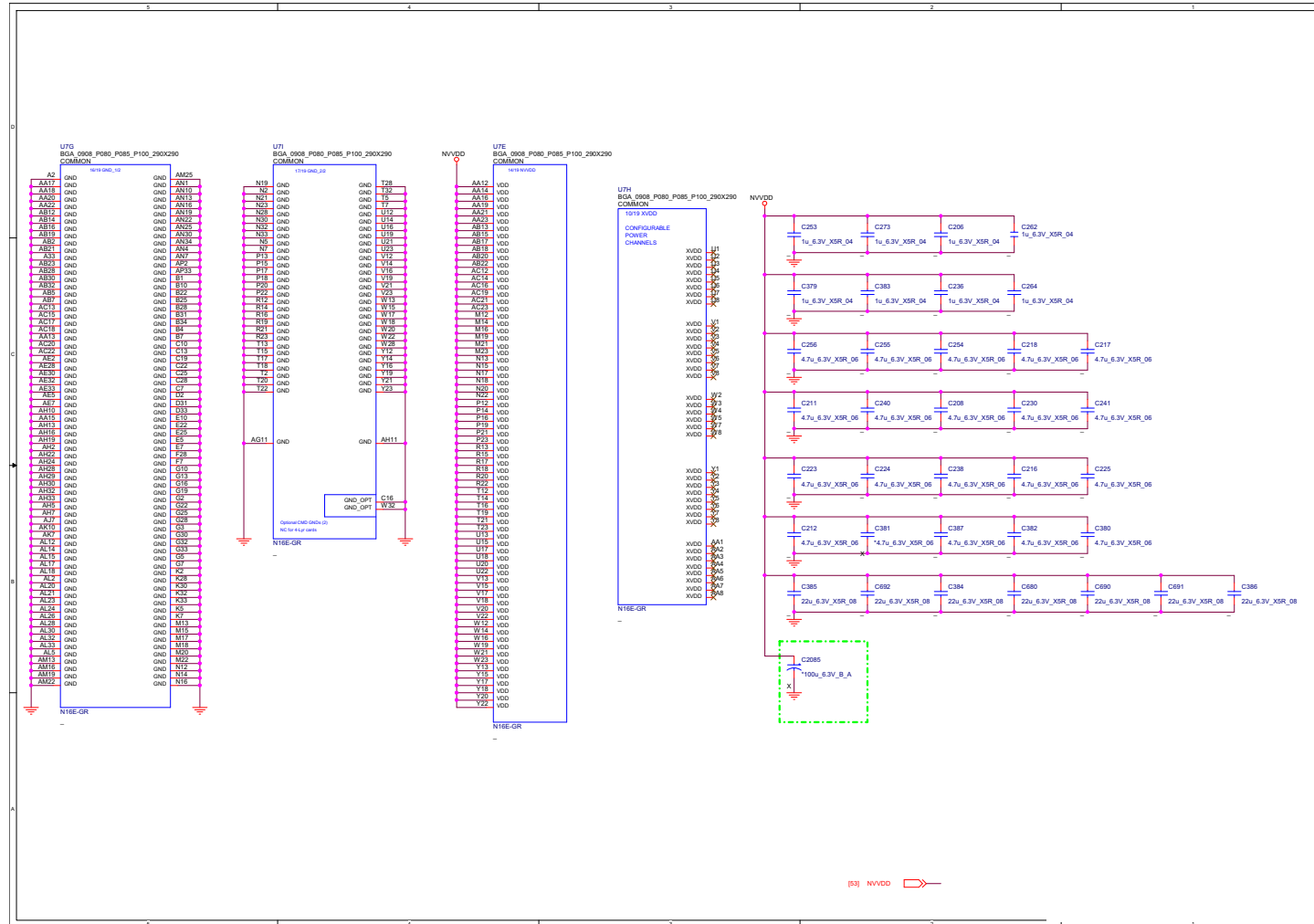
VGA GPIO

Sheet 23 of 62
VGA GPIO



VGA NVVDD Decoupling

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VGA NVVDD
Decoupling

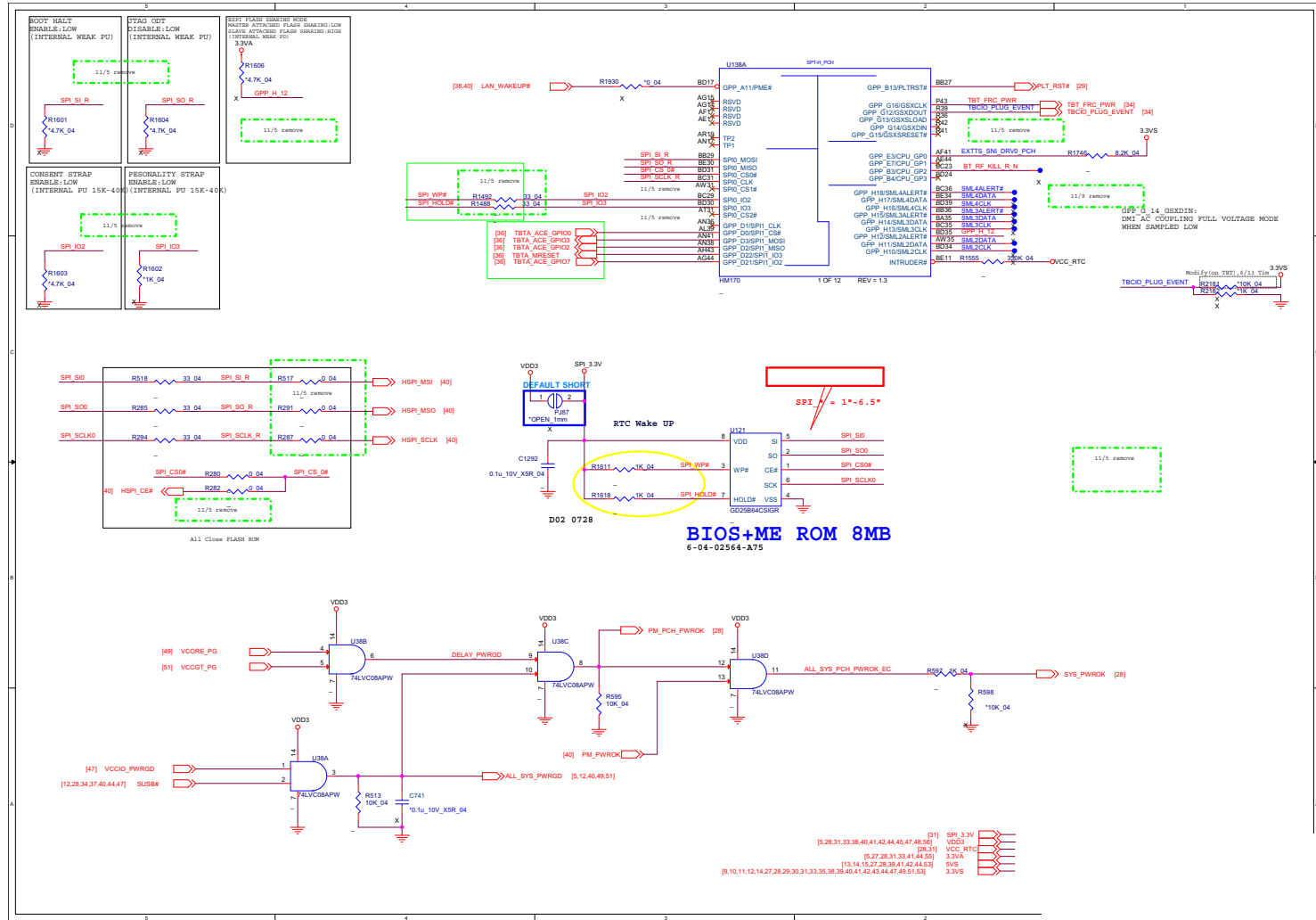


Schematic Diagrams

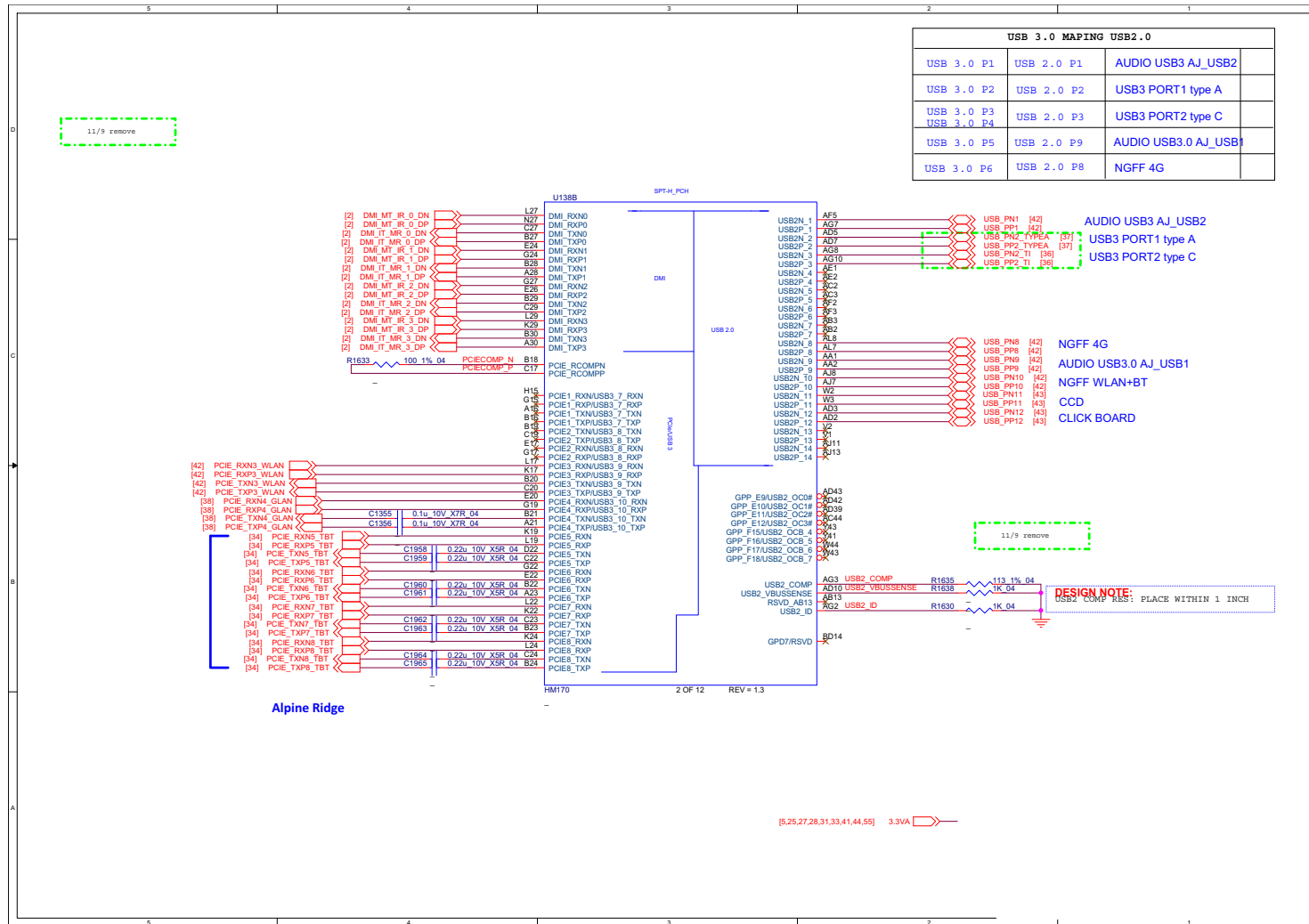
PCH 1/9

B.Schematic Diagrams

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PCH 1/9



PCH 2/9



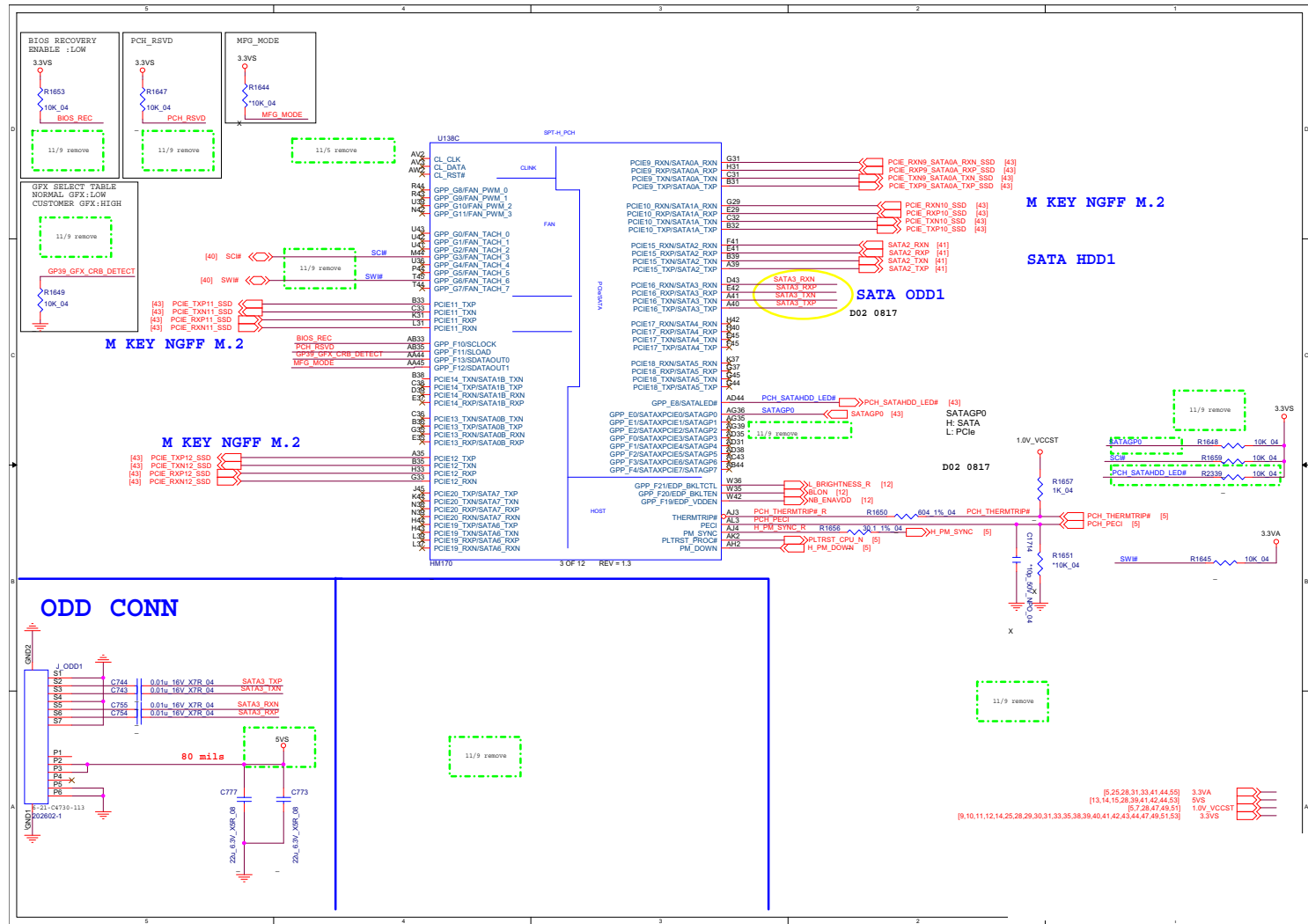
Sheet 26 of 62
PCH 2/9

B.Schematic Diagrams

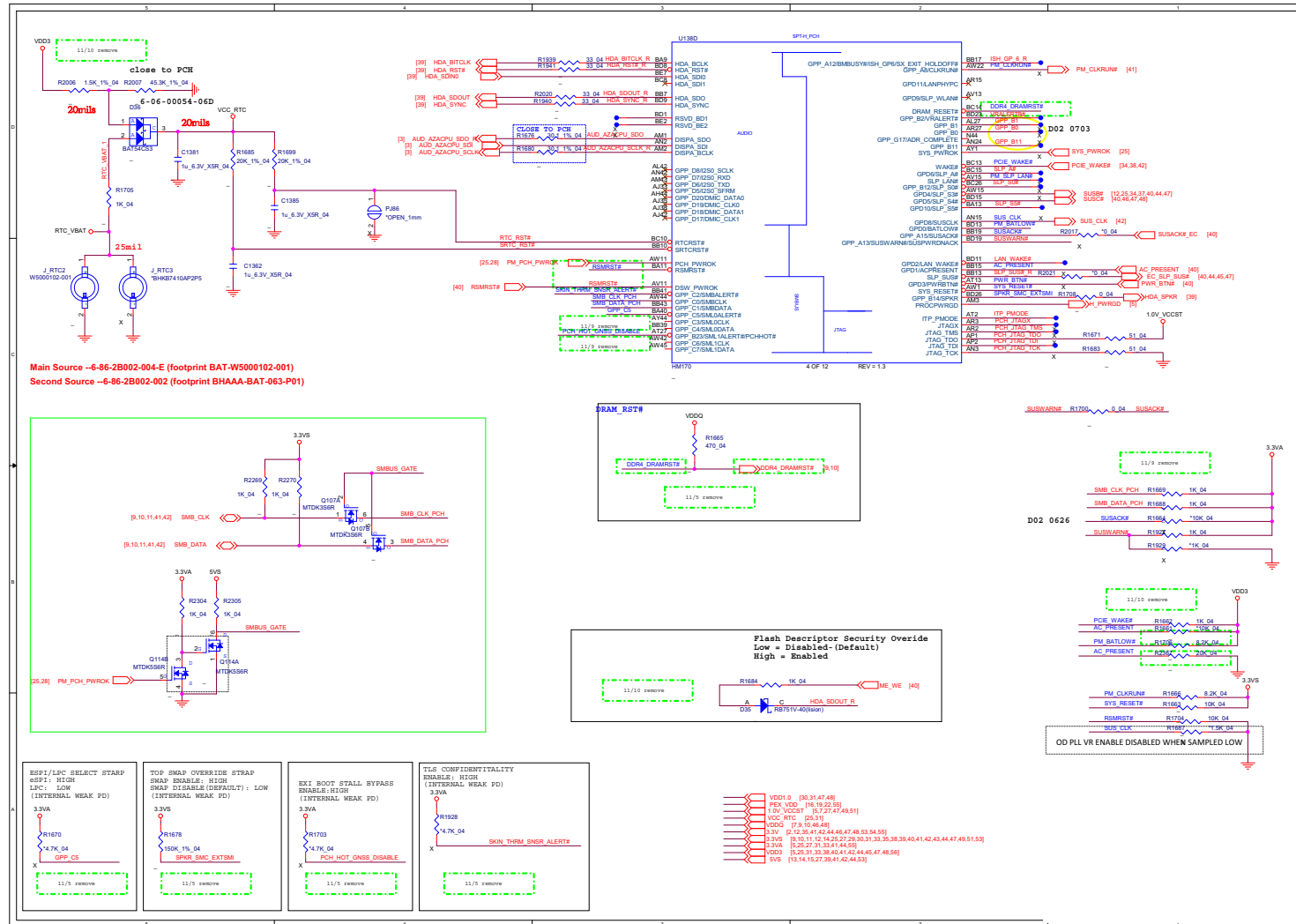
PCH 3/9

B.Schematic Diagrams

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PCH 3/9



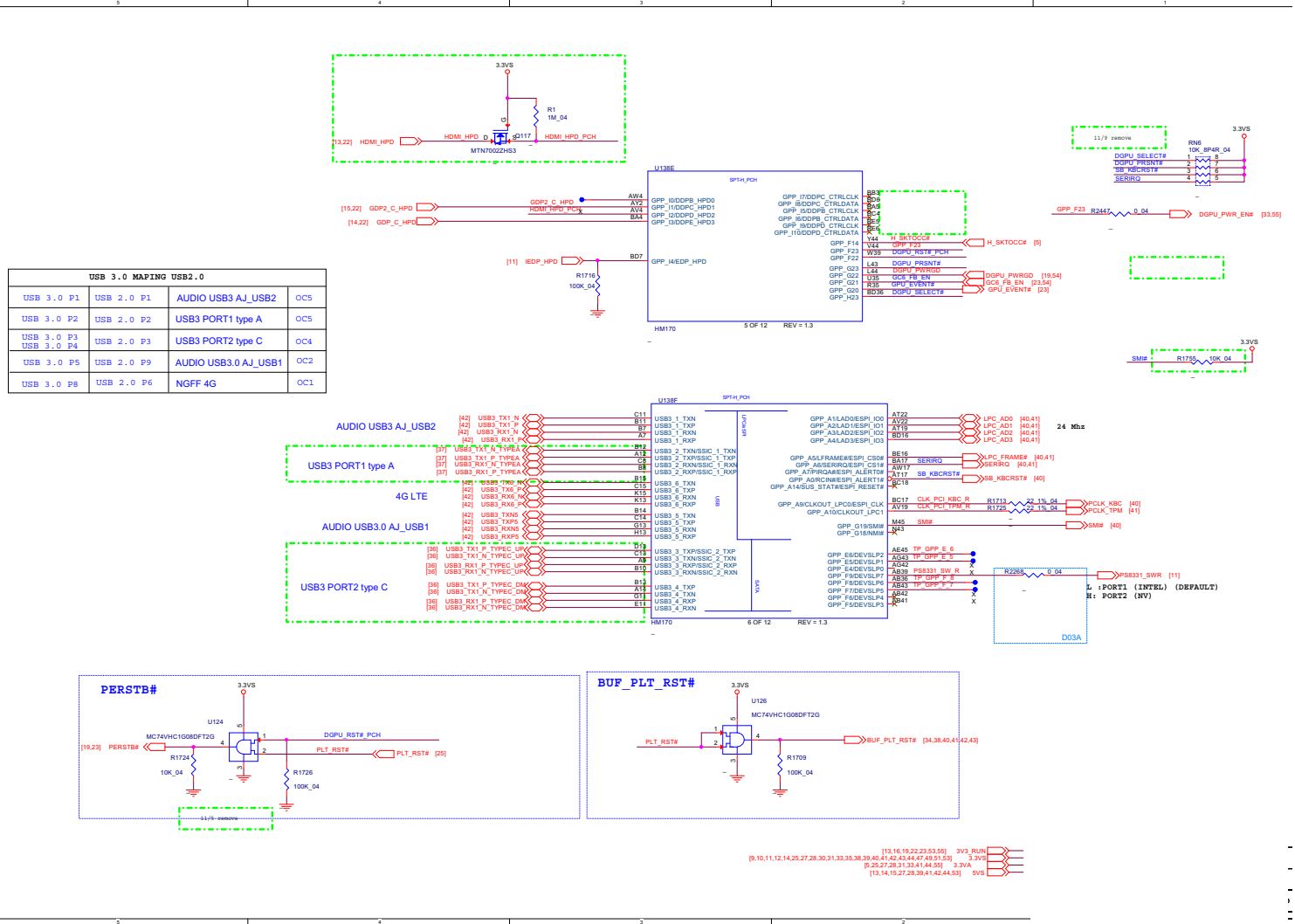
PCH 4/9



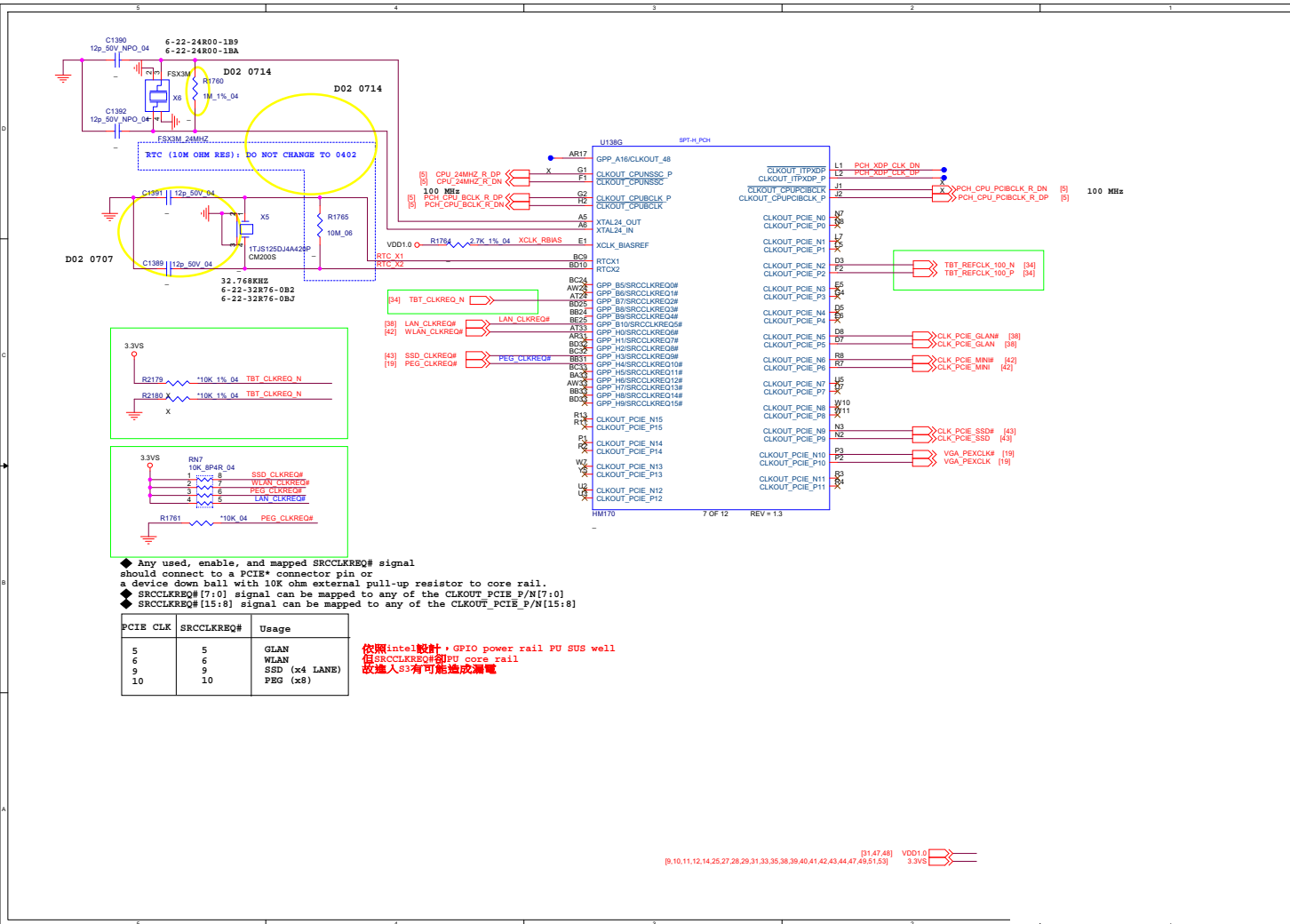
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PCH 4/9

B.Schematic Diagrams

PCH 5/9

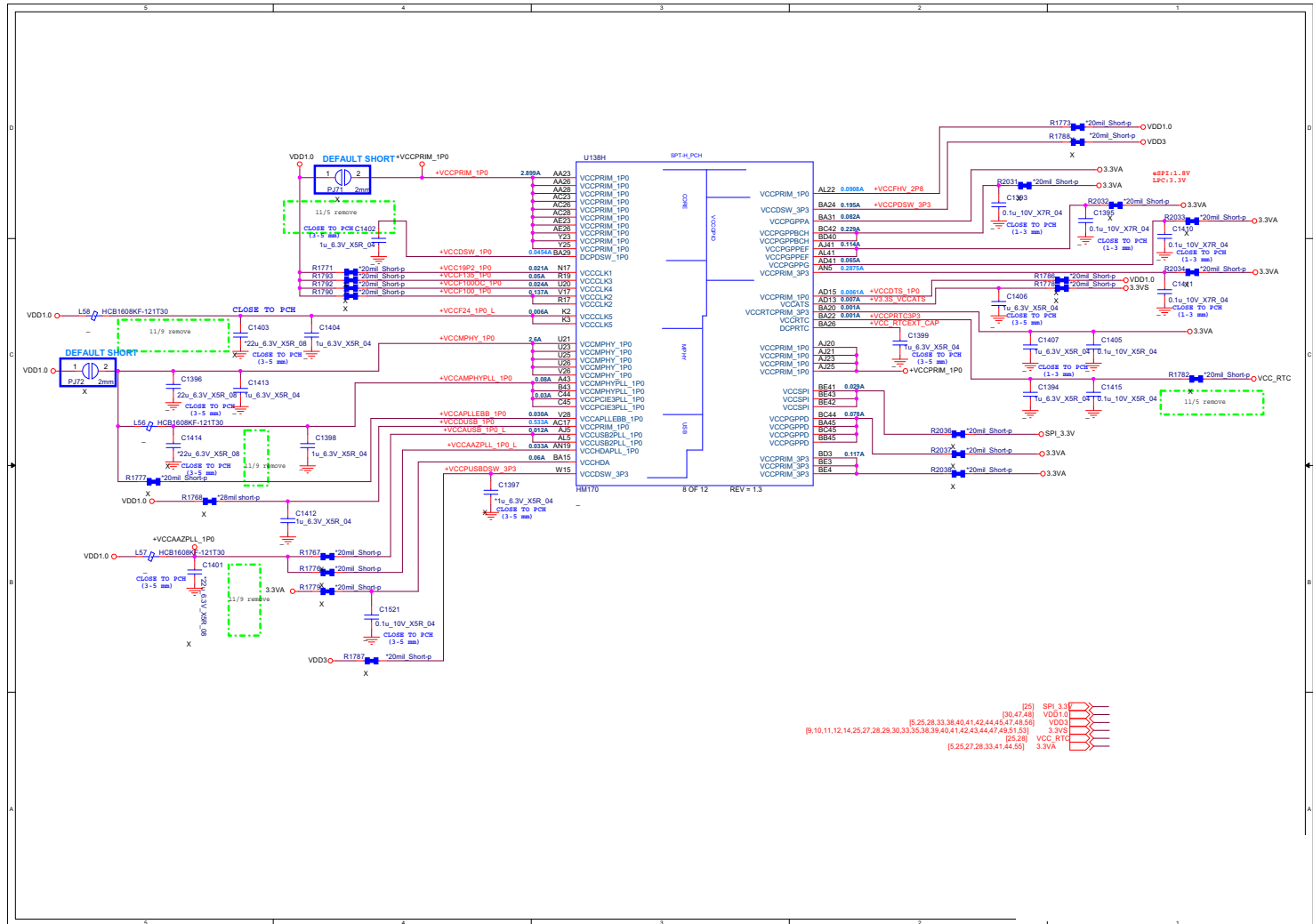


PCH 6/9

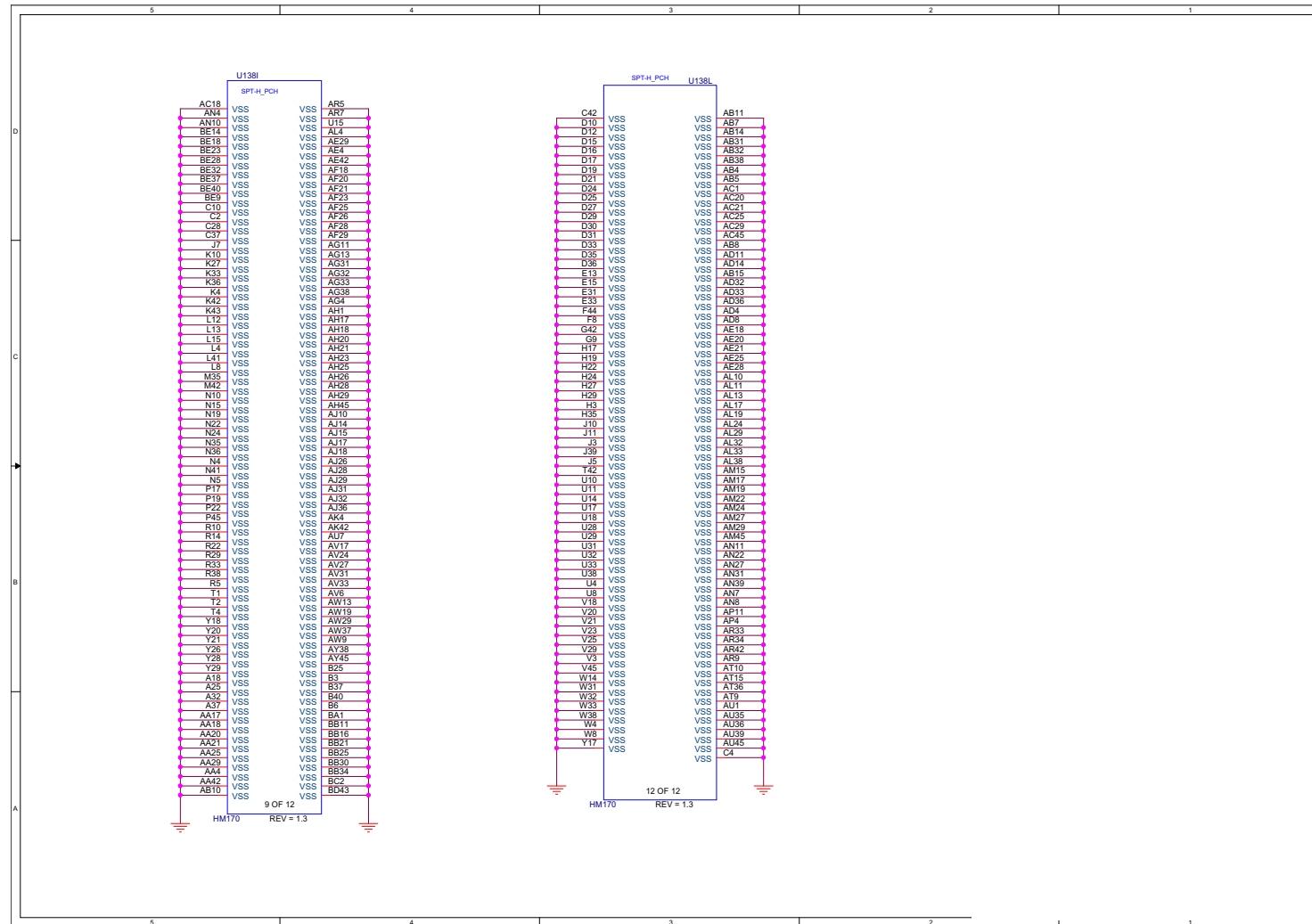


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PCH 6/9

PCH 7/9



PCH 8/9

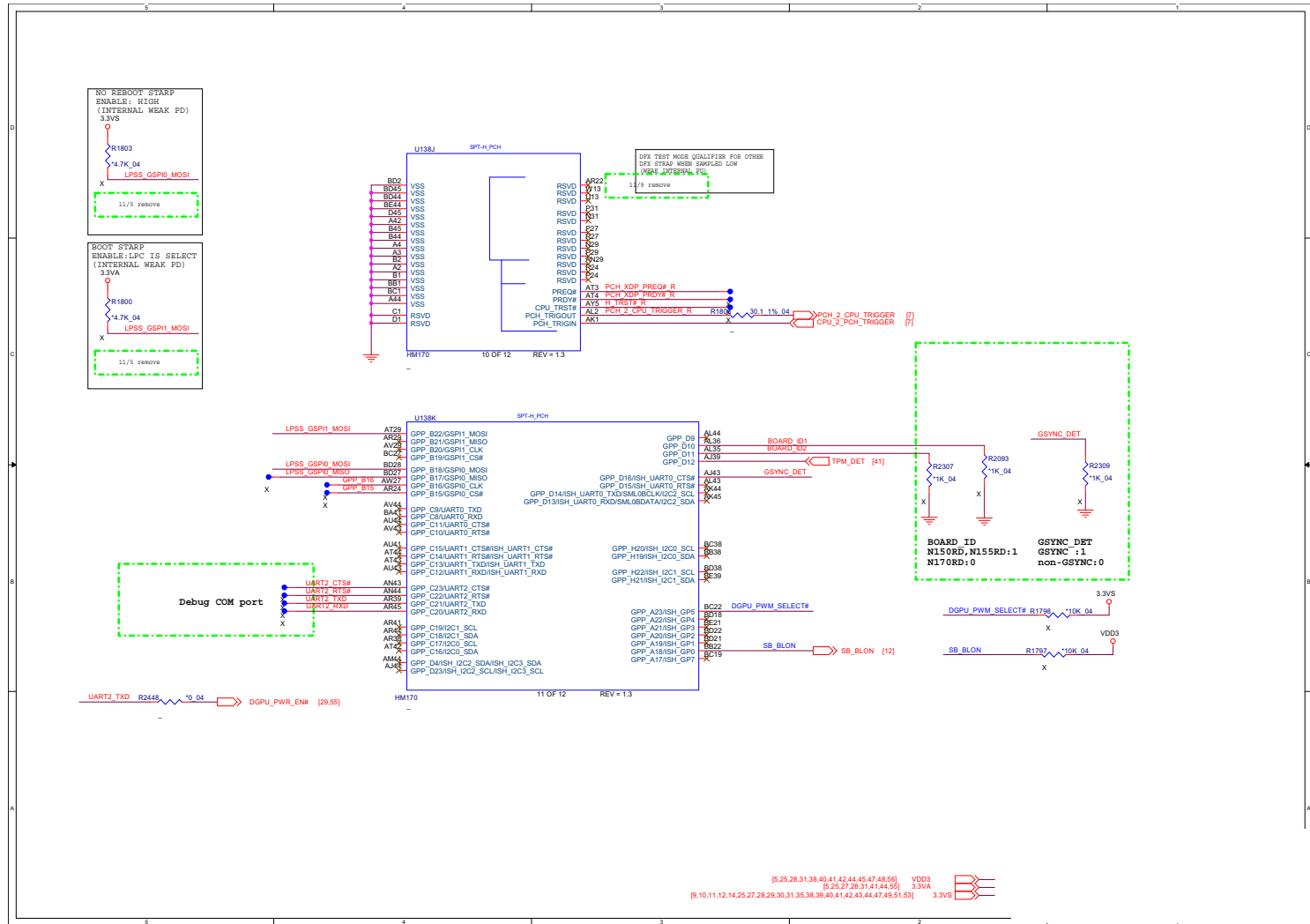


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PCH 8/9

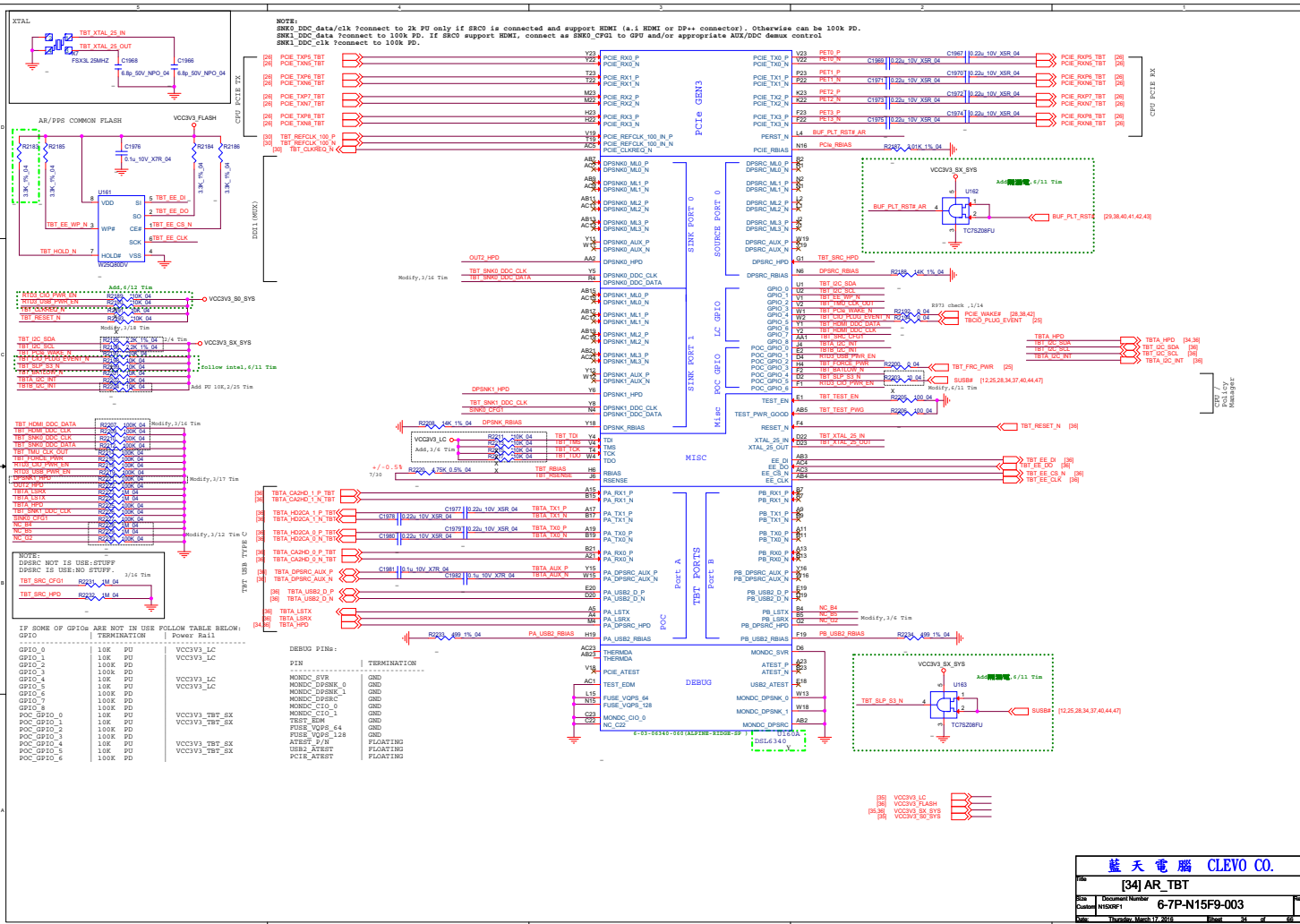
B. Schematic Diagrams

PCH 9/9

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PCH 9/9



AR_TBT



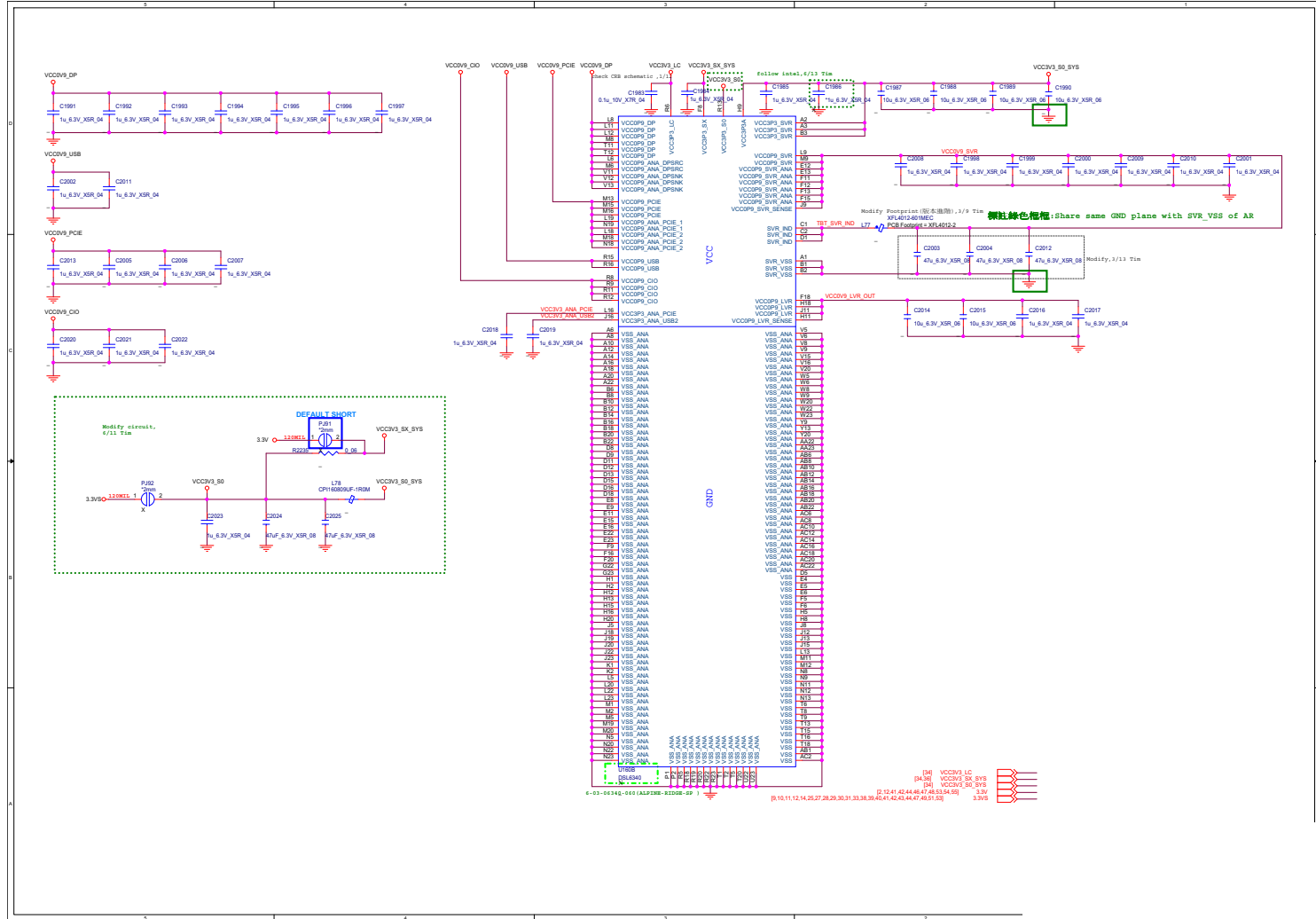
Sheet 34 of 62
AR_TBT

B.Schematic Diagrams

藍天電腦 CLEVO CO.
 [34] AR_TBT
 Doc: 6-7P-N15F9-003
 Date: 2015/11/17

Schematic Diagrams

AR_Power

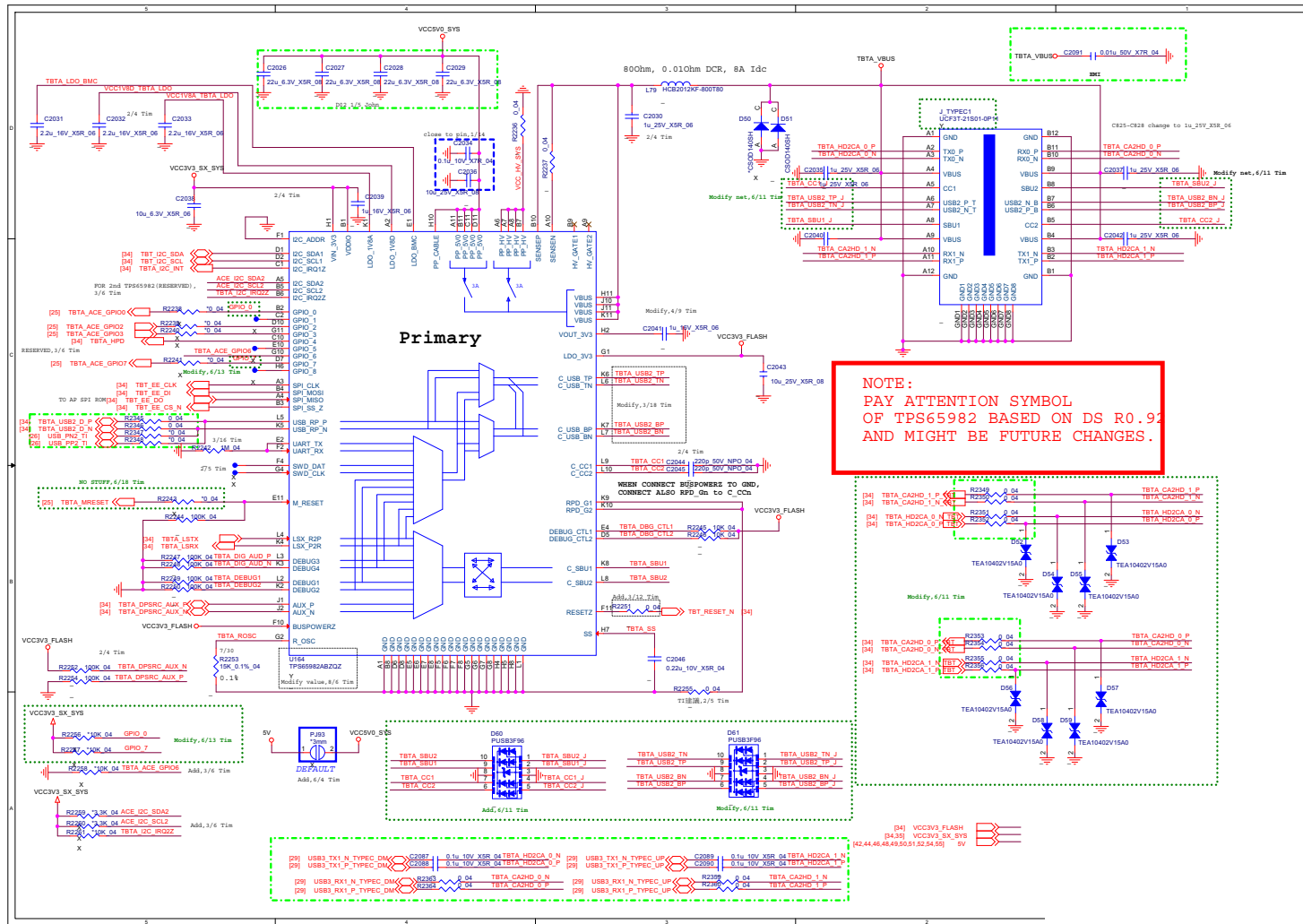


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AR_Power

B.Schematic Diagrams

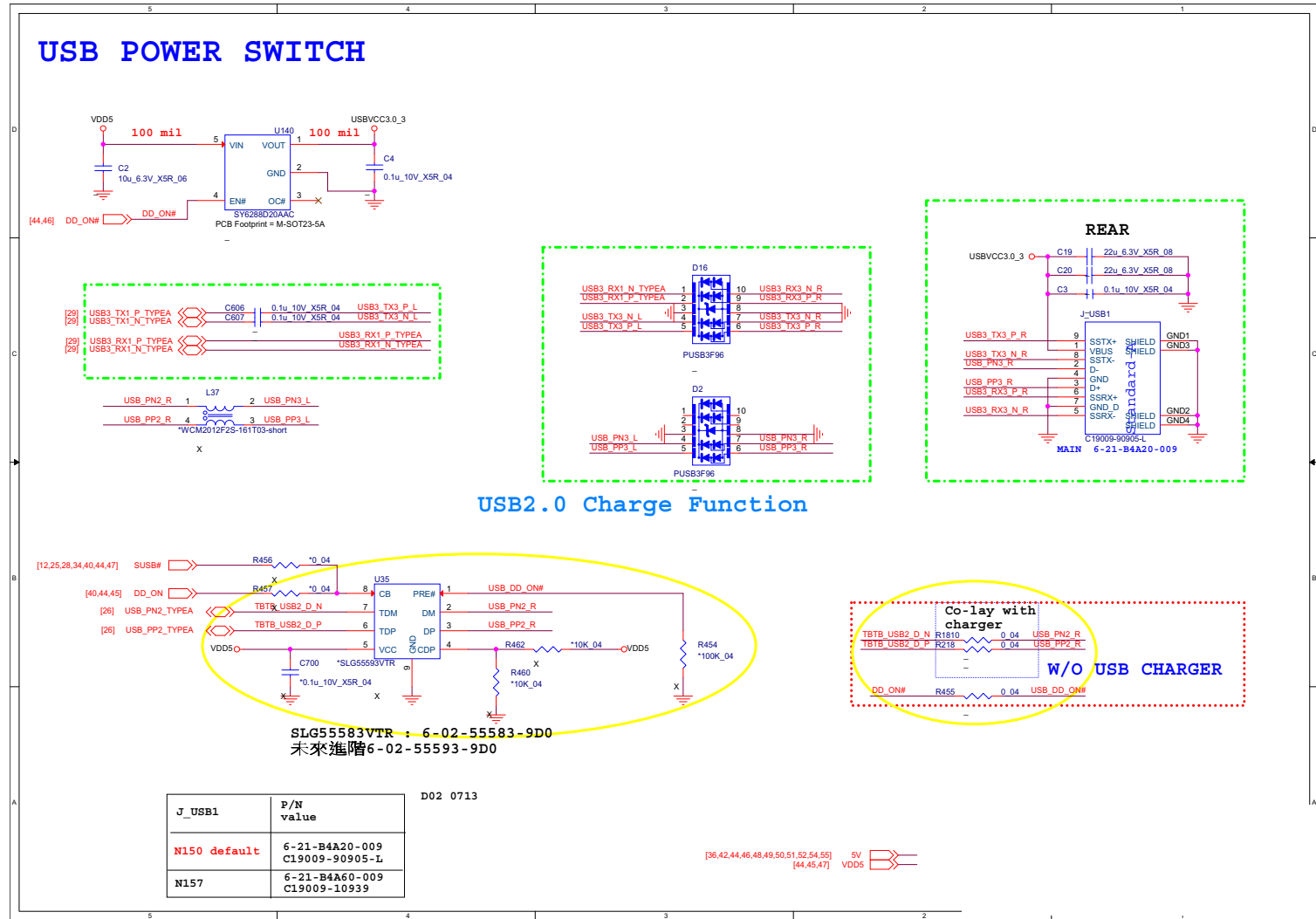
TPS65982

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TPS65982

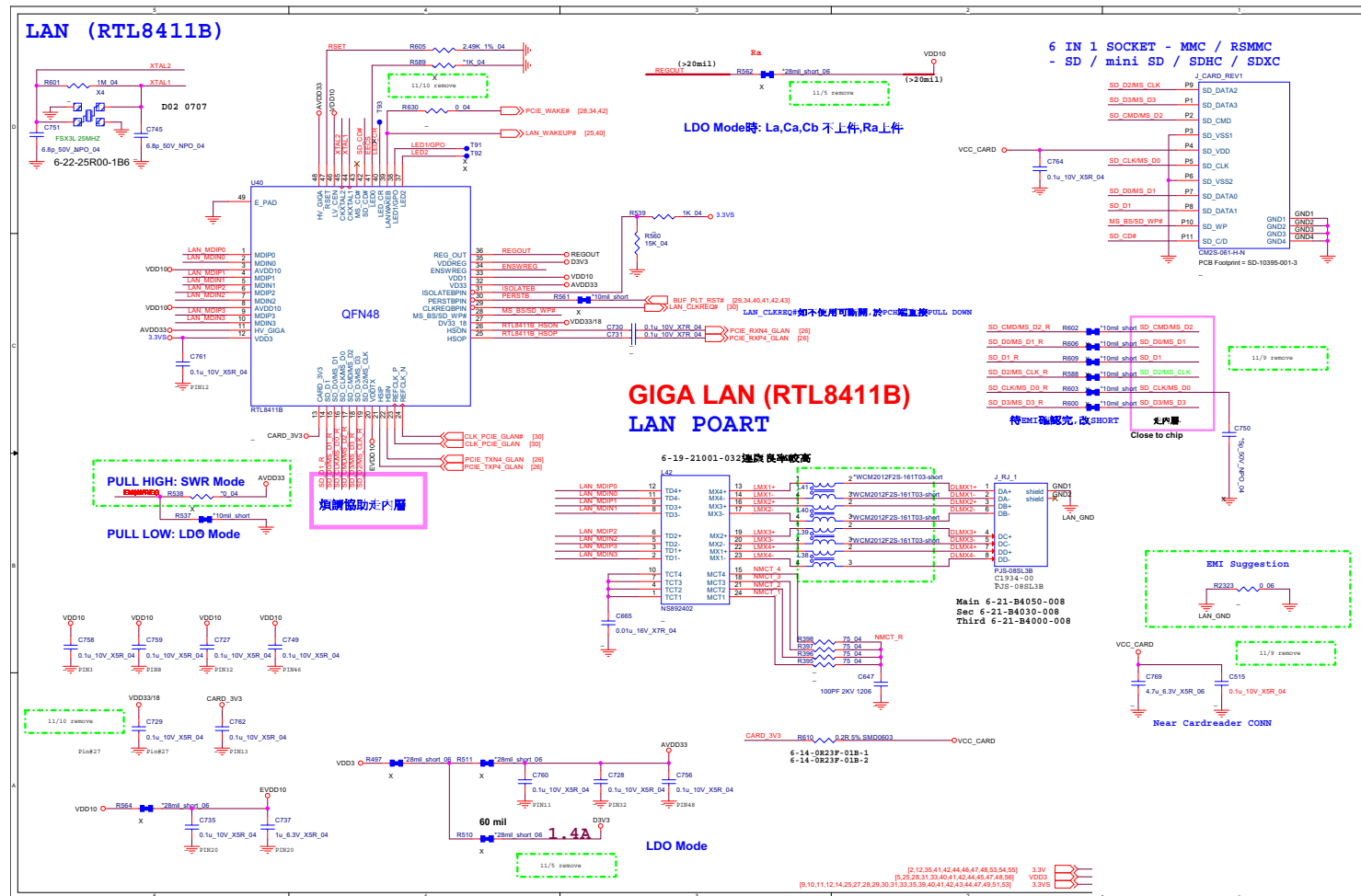


USB 3.0, USB Charger

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USB 3.0,
USB Charger



LAN RTL8411B, Card Reader

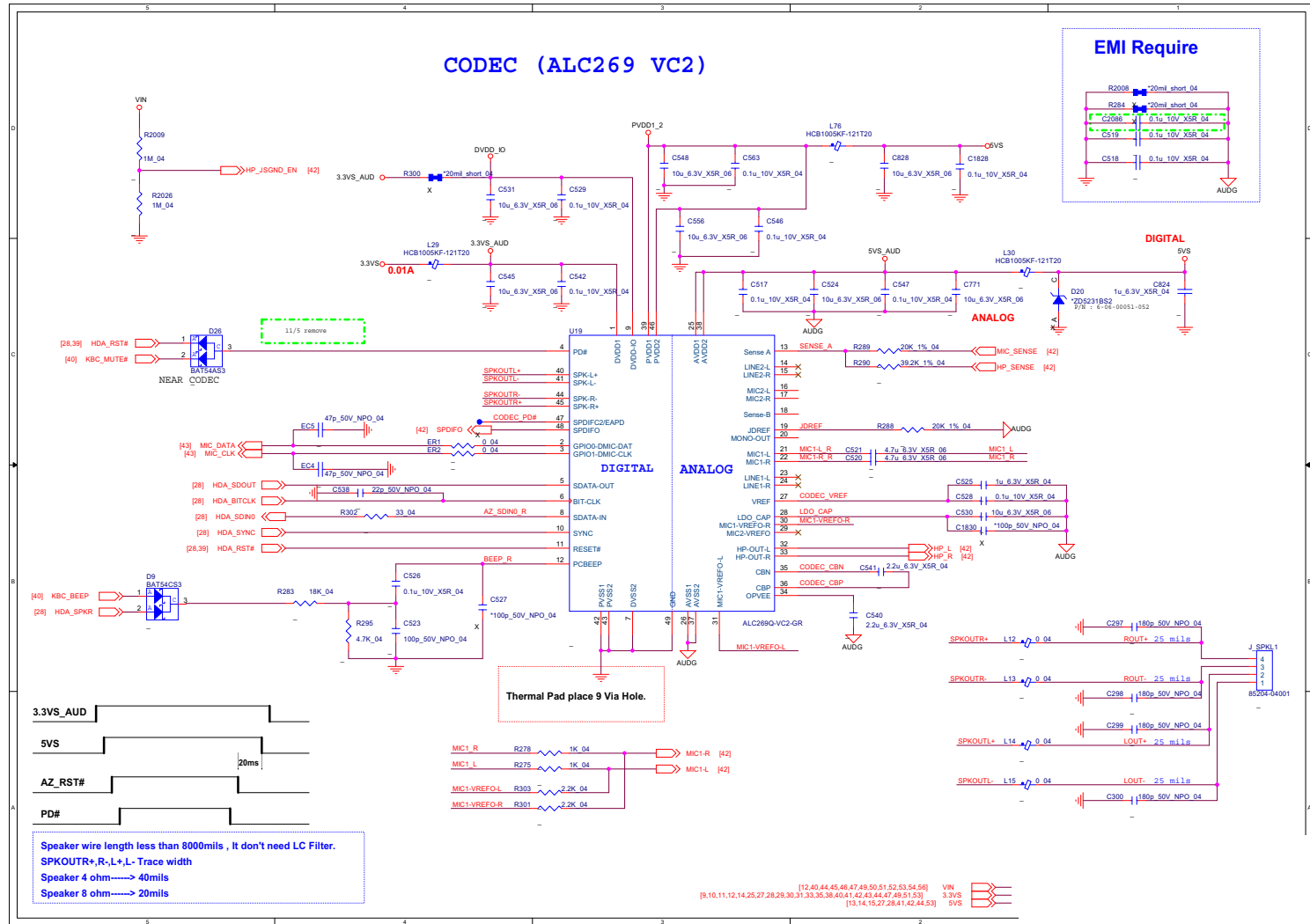


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LAN RTL8411B,
Card Reader

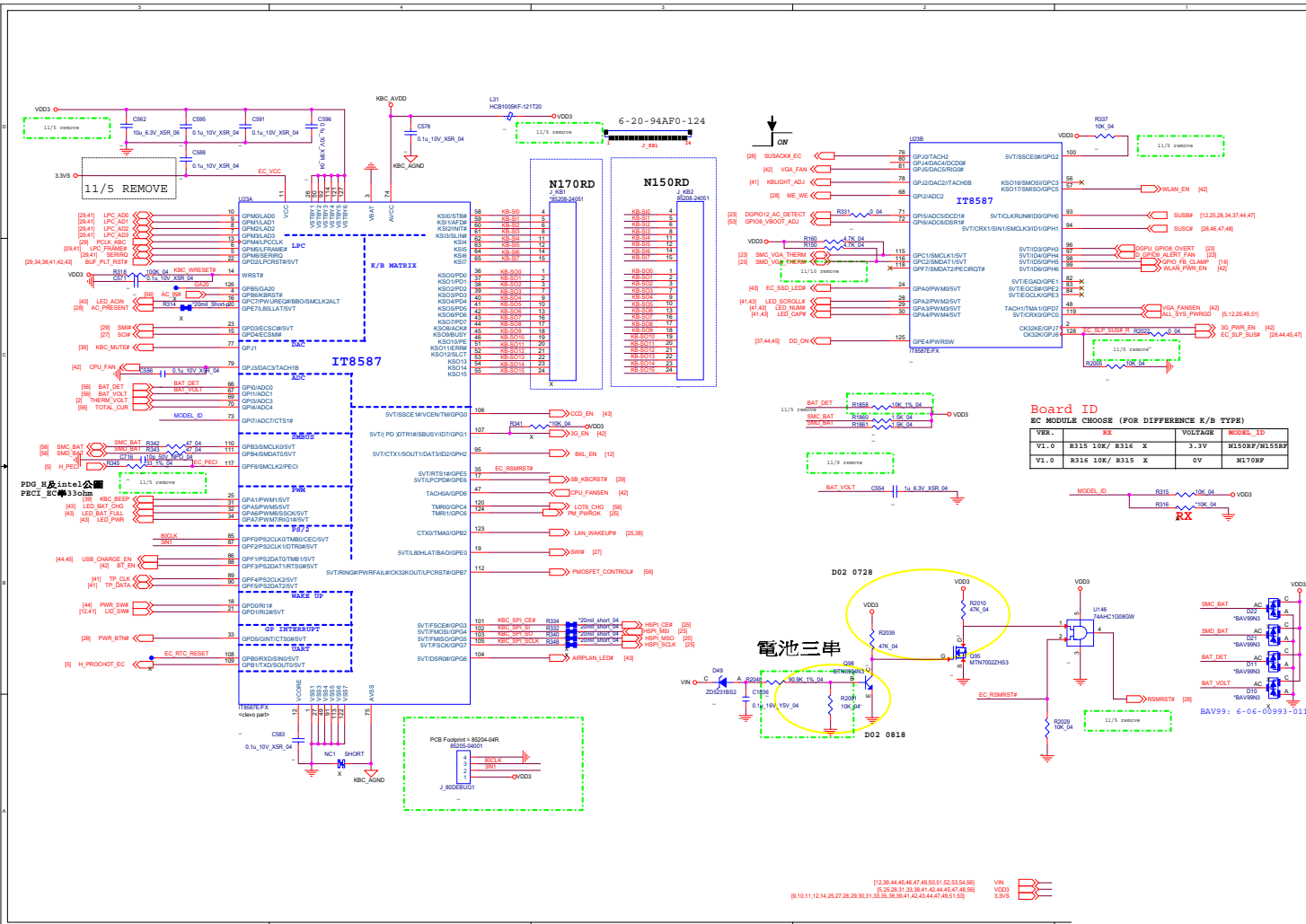
B.Schematic Diagrams

Audio Codec ALC269

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Audio Codec
ALC269



KBC-ITE IT8587



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KBC-ITE IT8587

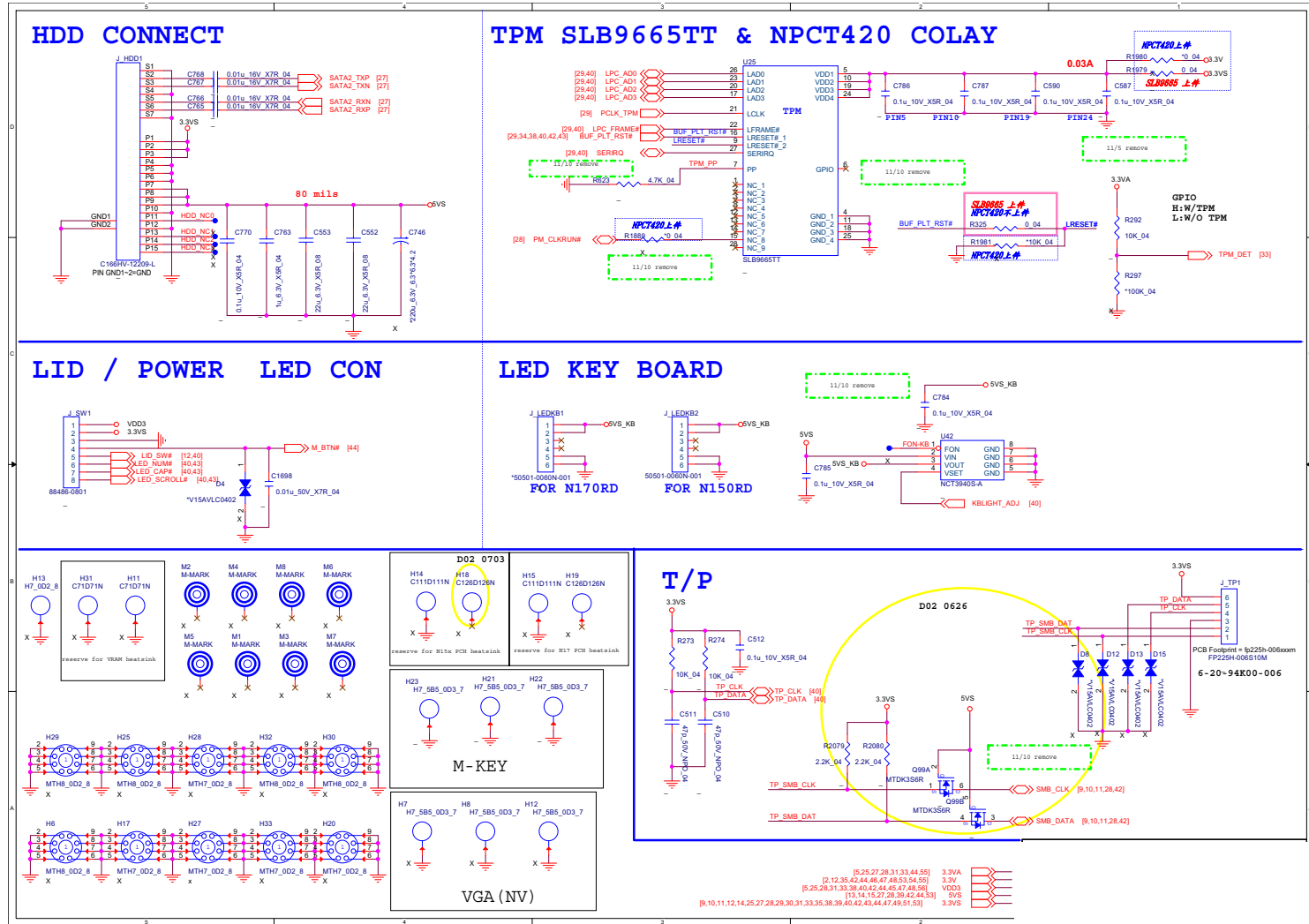
B.Schematic Diagrams

Schematic Diagrams

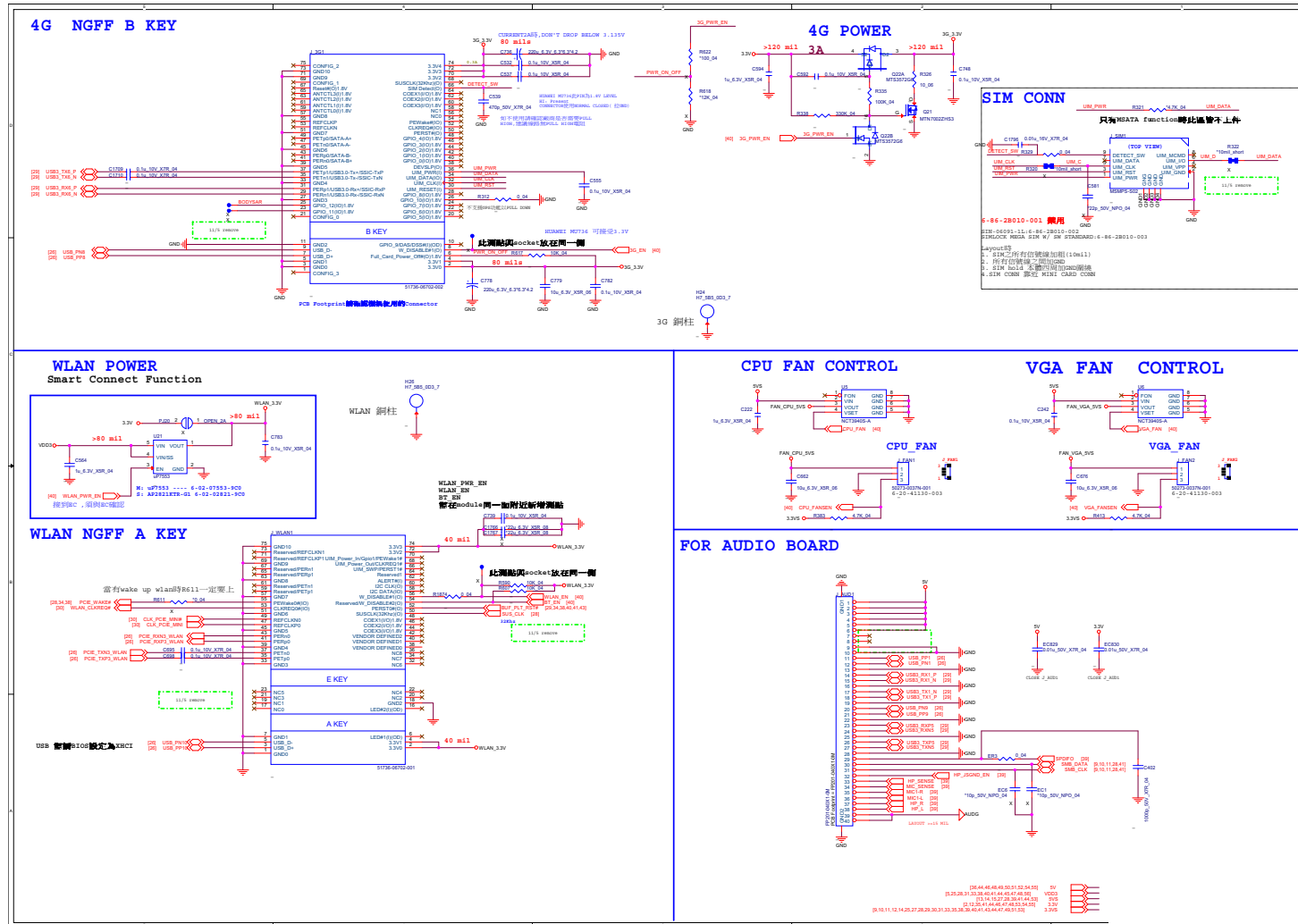
HDD, TPM, KB LED, PWR Con, T/P

B.Schematic Diagrams

Sheet 41 of 62
HDD, TPM, KB LED,
PWR Con, T/P



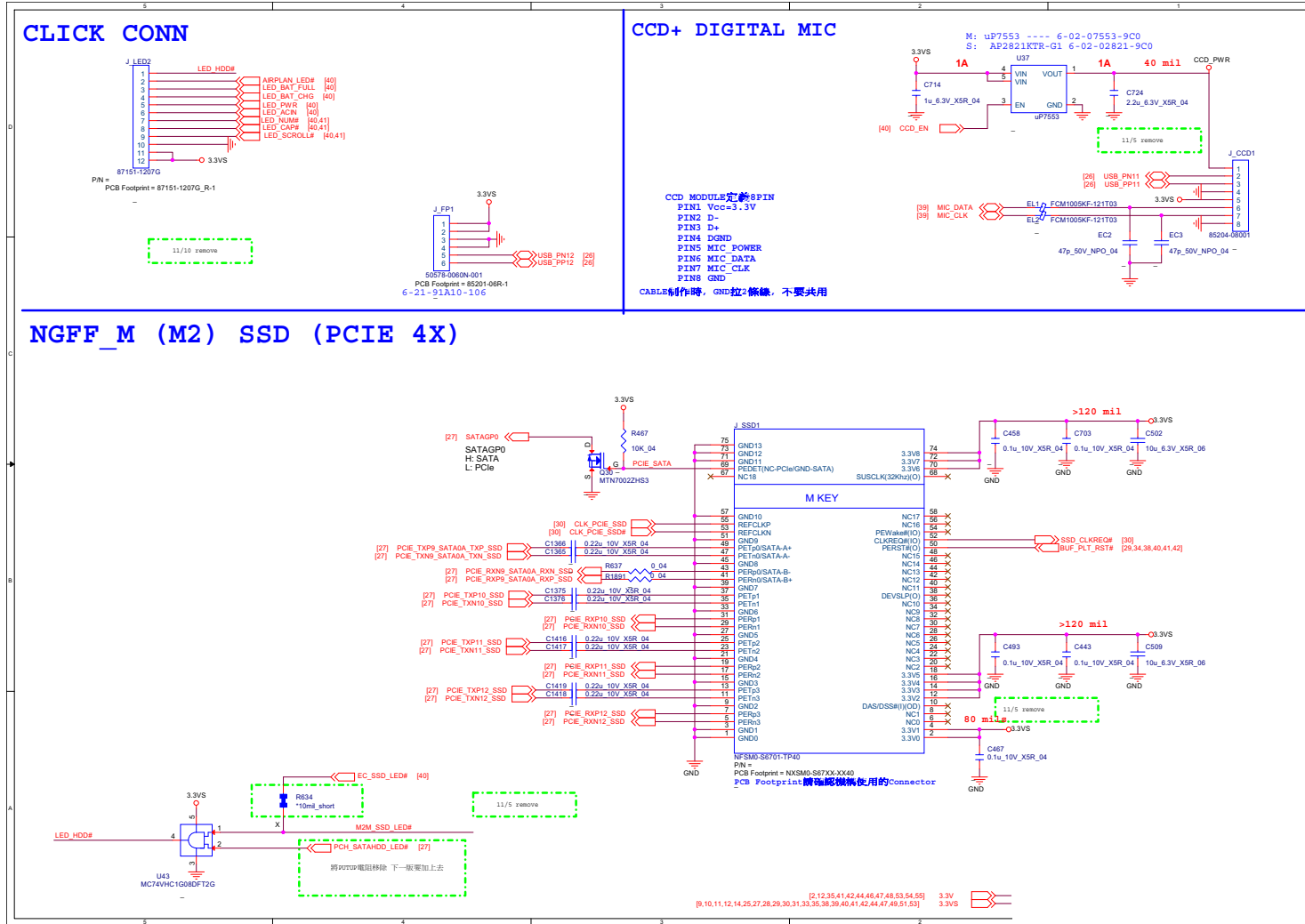
WLAN, 4G, Fan, Audio Con



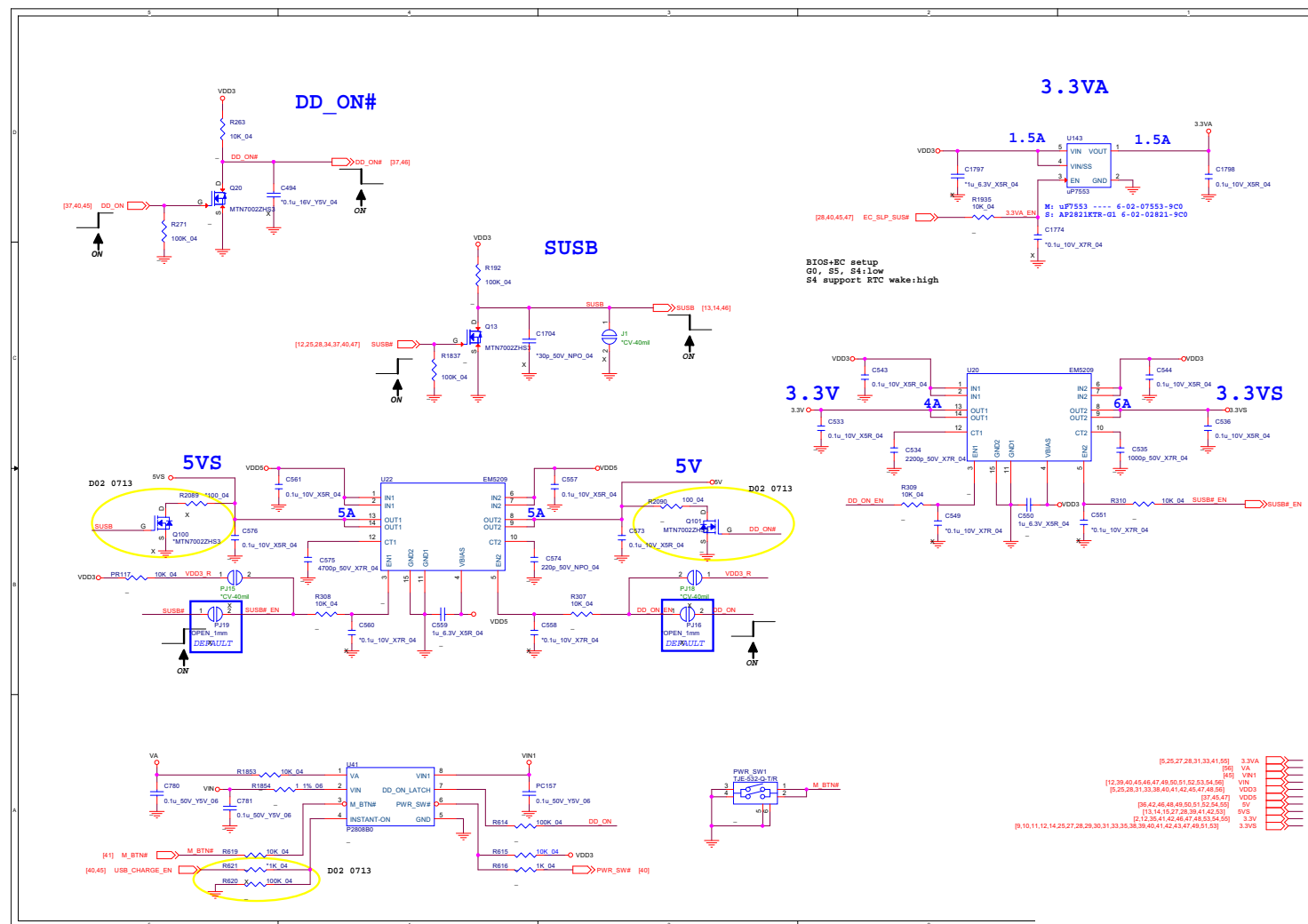
Sheet 42 of 62
WLAN, 4G, Fan,
Audio Con

CCD, M-Key, Click Conn

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 CCD, M-Key,
 Click Conn



System Power

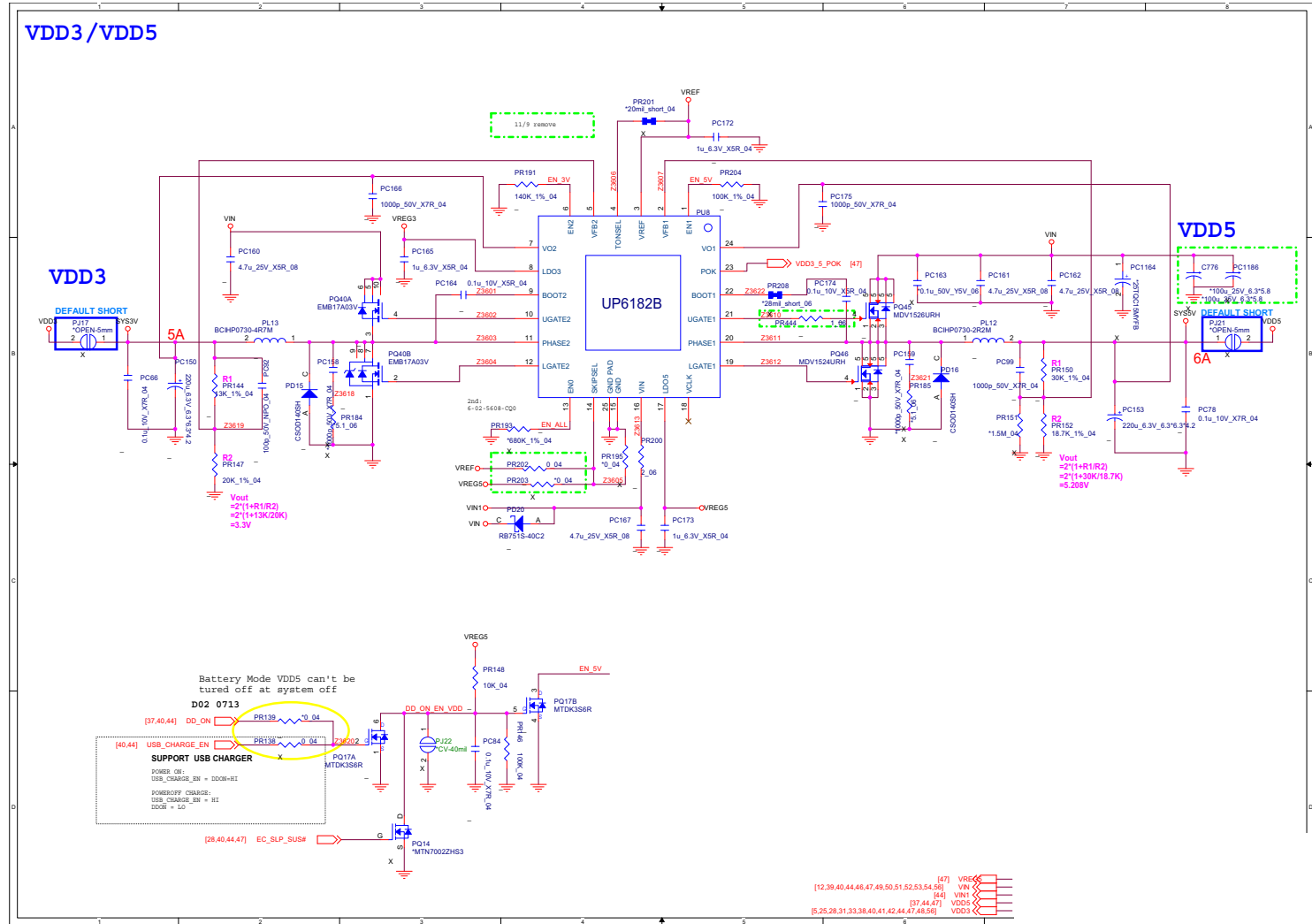


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System Power

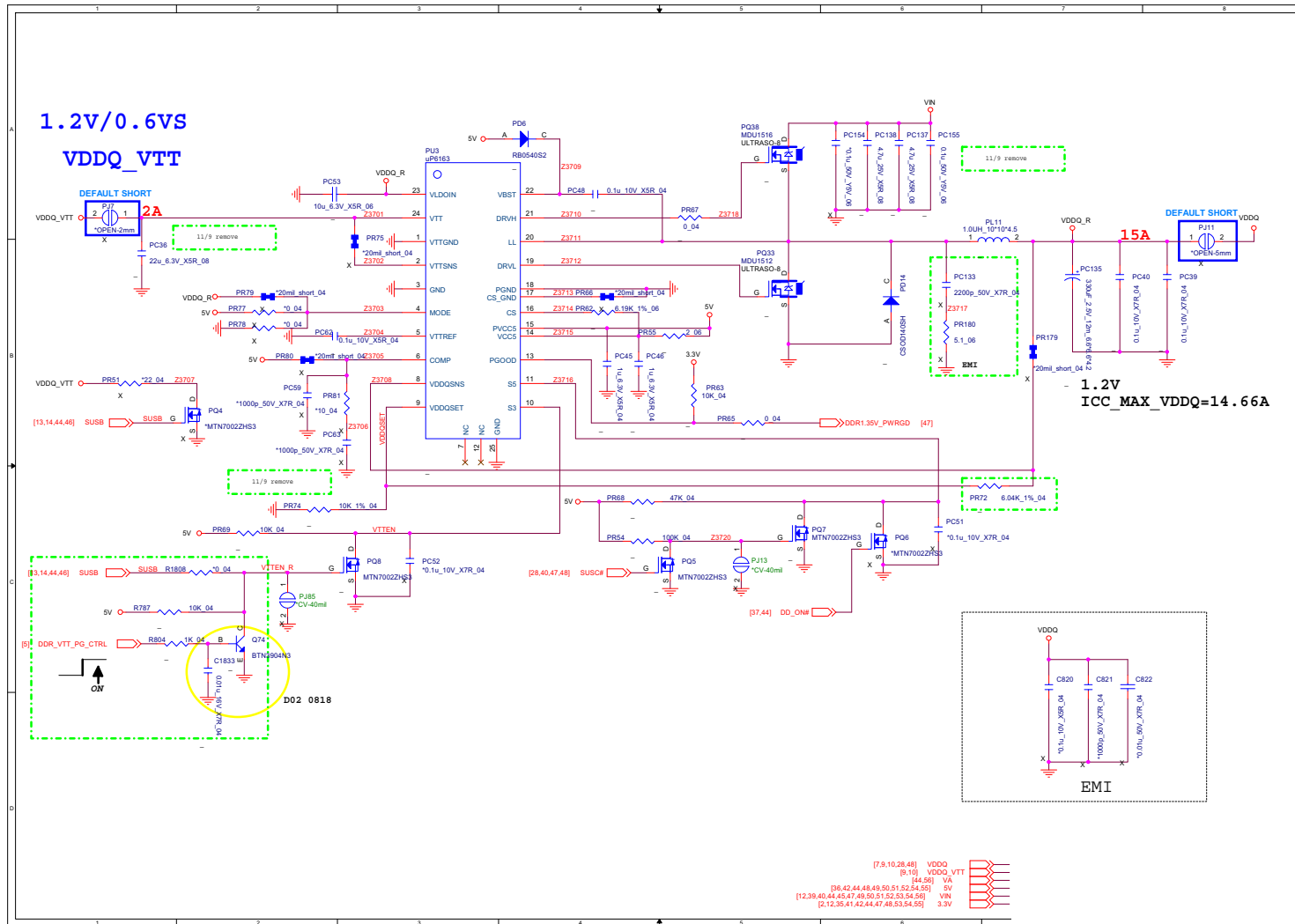
B.Schematic Diagrams

VDD3, VDD5

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VDD3, VDD5



DRAM Power

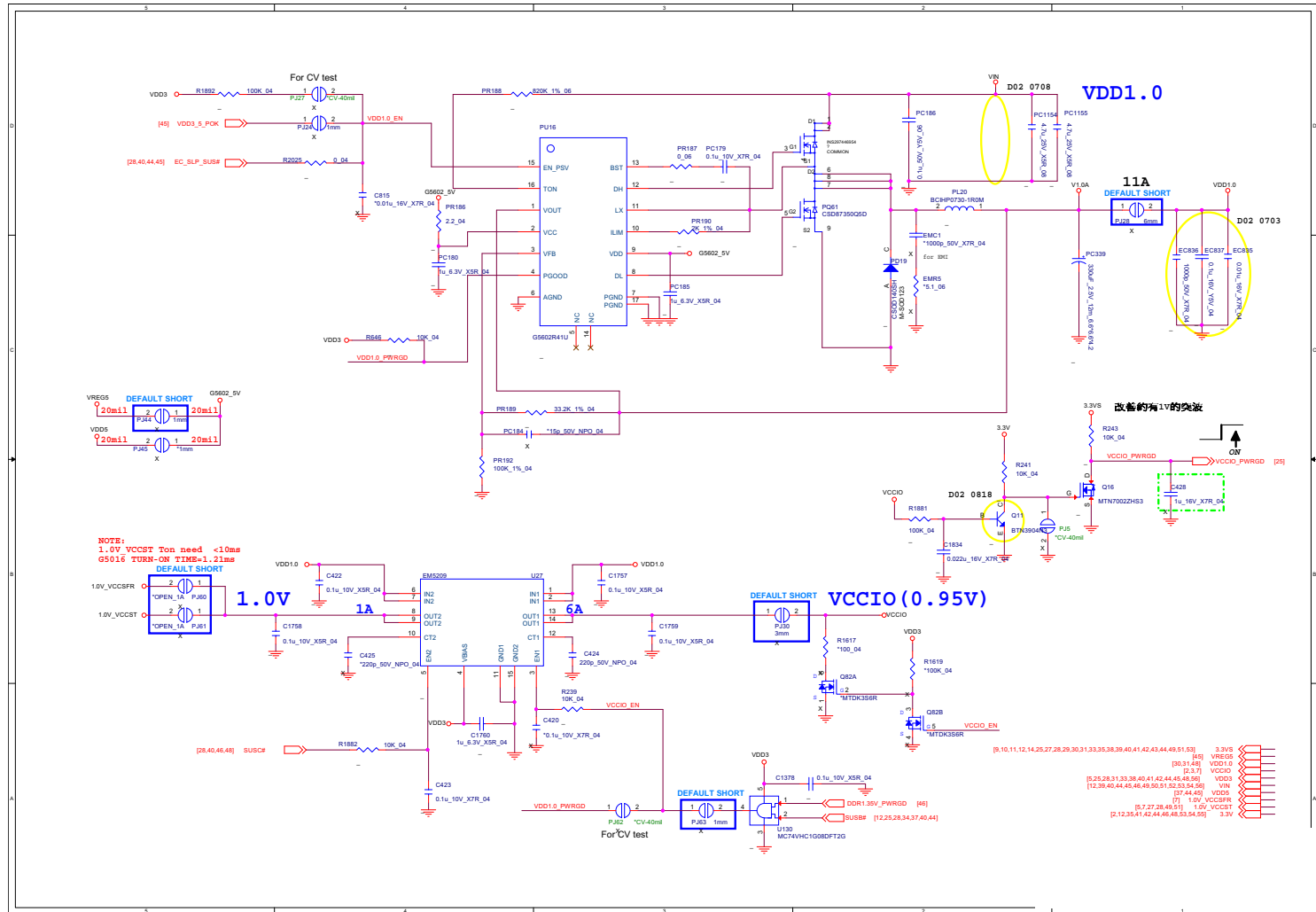


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DRAM Power

B.Schematic Diagrams

Schematic Diagrams

Power 1.0V, VCCIO



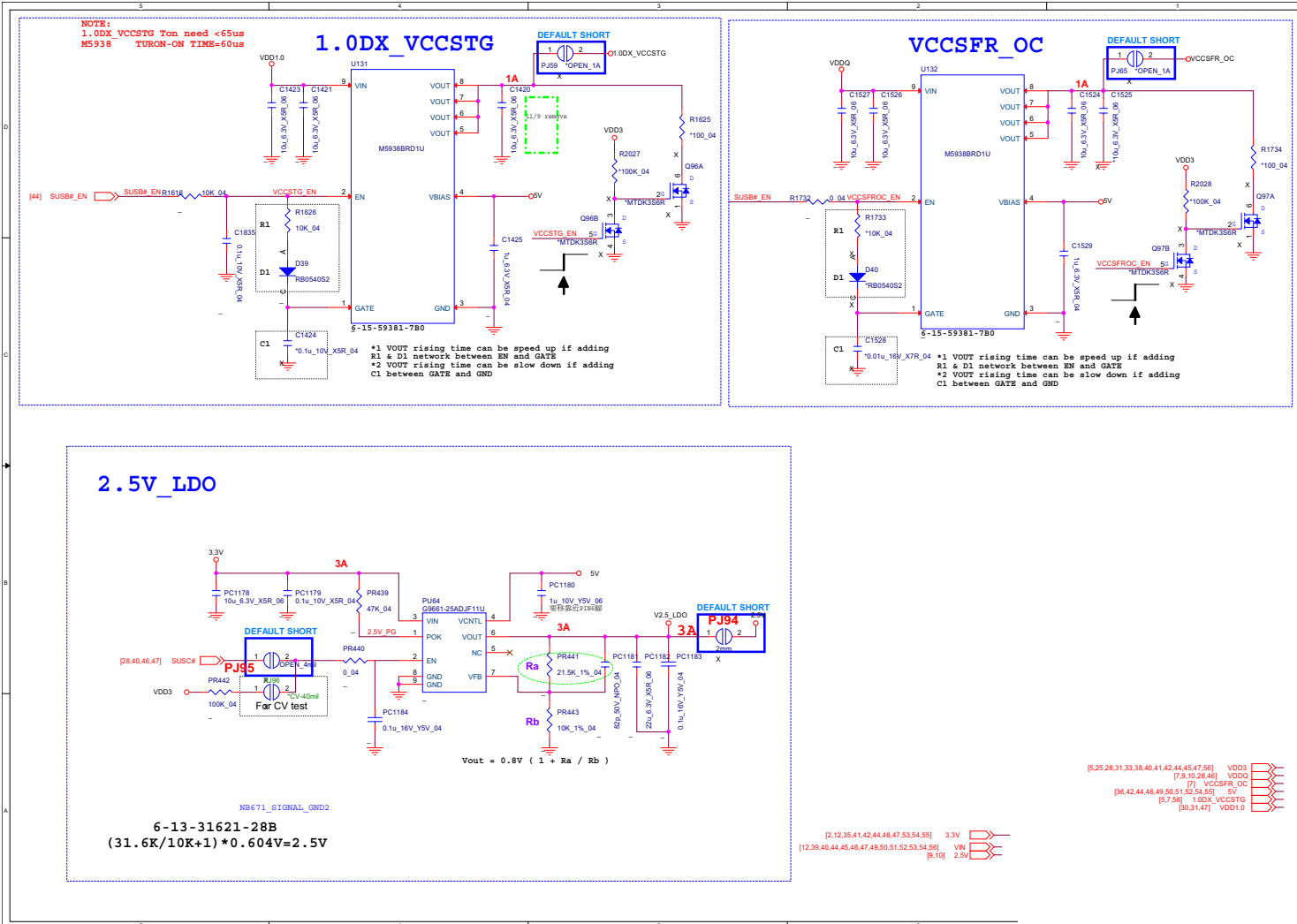
Sheet 47 of 62
 Power 1.0V, VCCIO

B.Schematic Diagrams

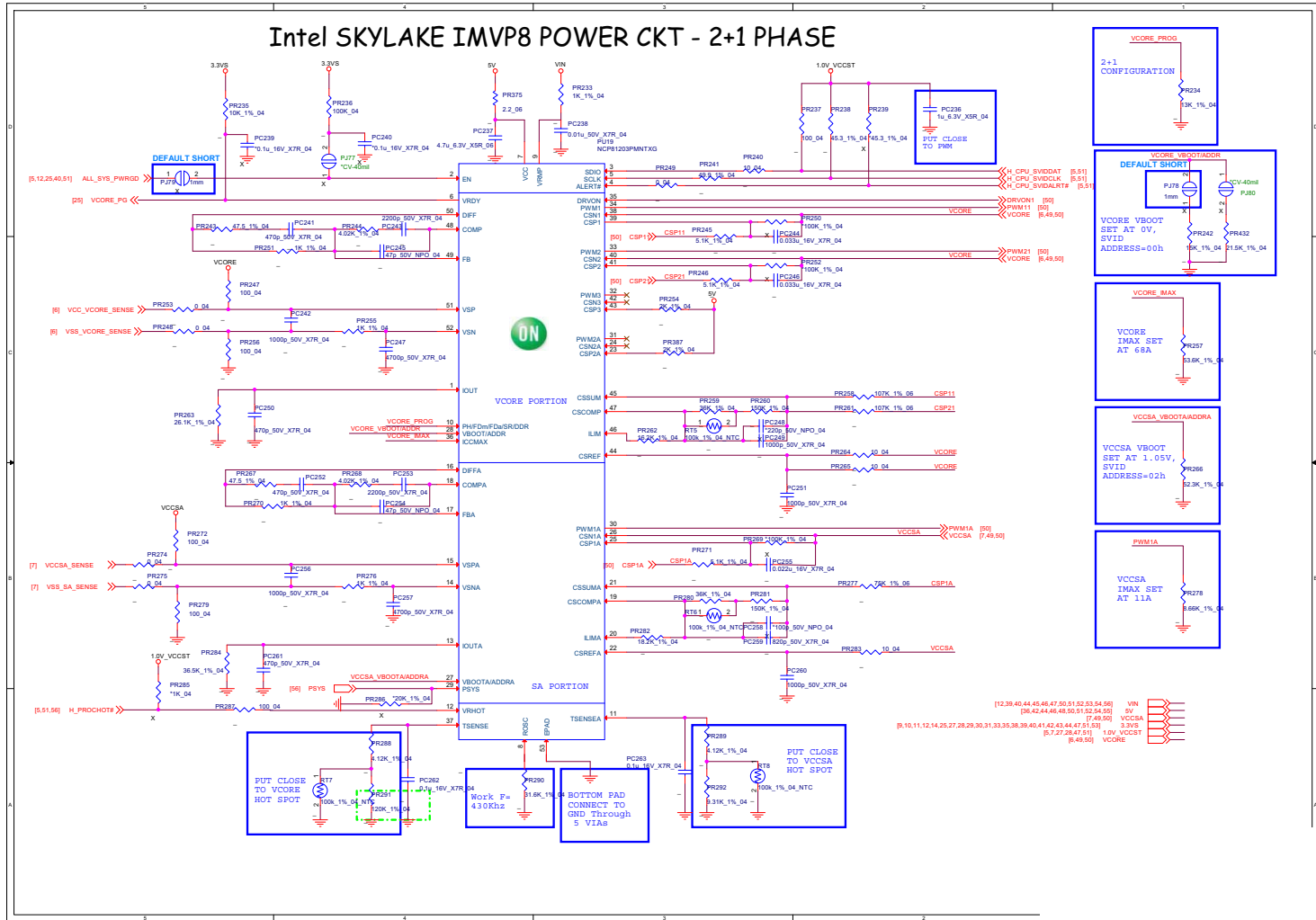
1.0DX_VCCSTG/VCCSFR_OC

B.Schematic Diagrams

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1.0DX_VCCSTG/
VCCSFR_OC



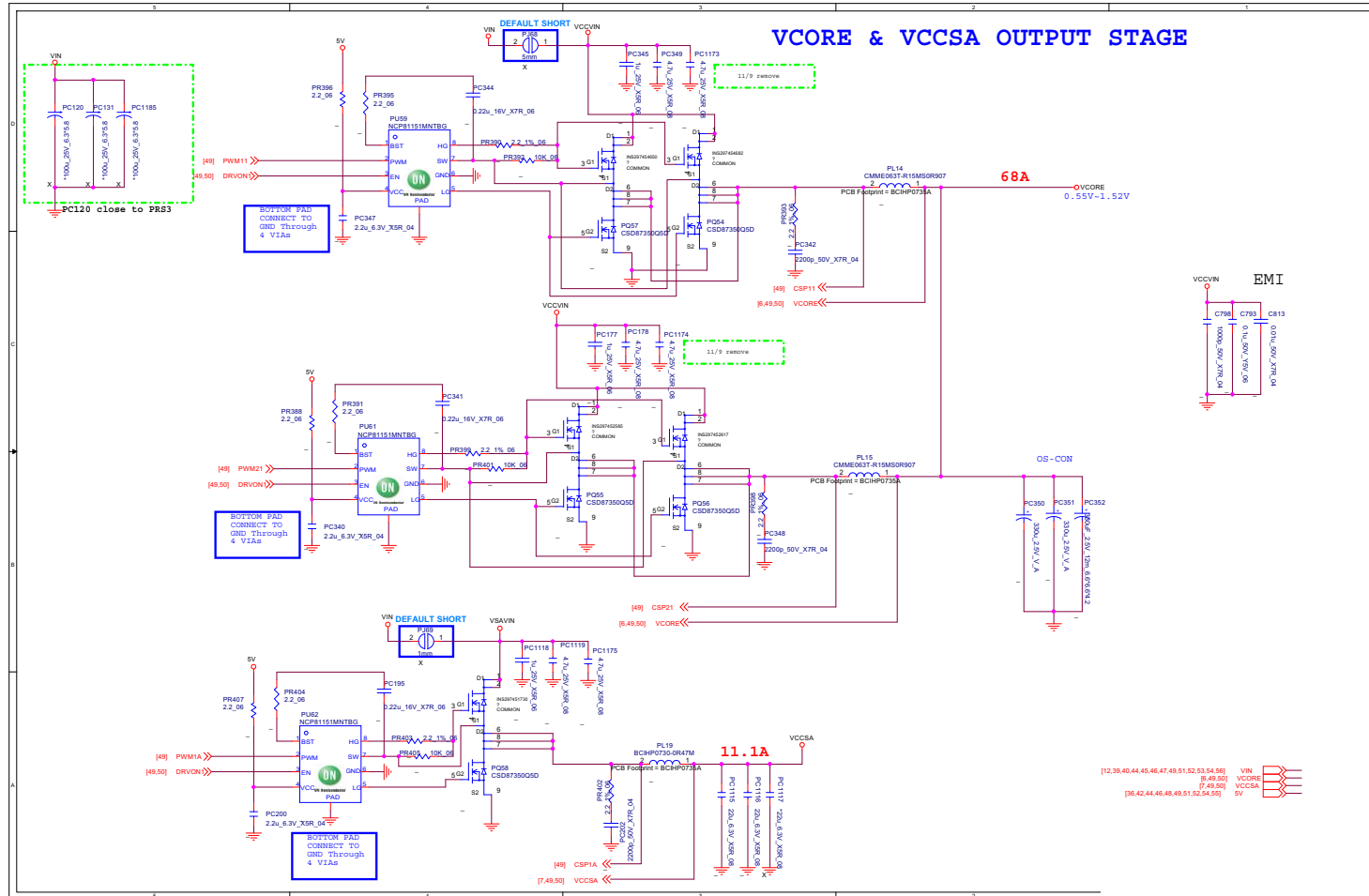
VCore, VCCSA



B.Schematic Diagrams

Sheet 49 of 62
VCore, VCCSA

VCore, VCCSA Output Stage

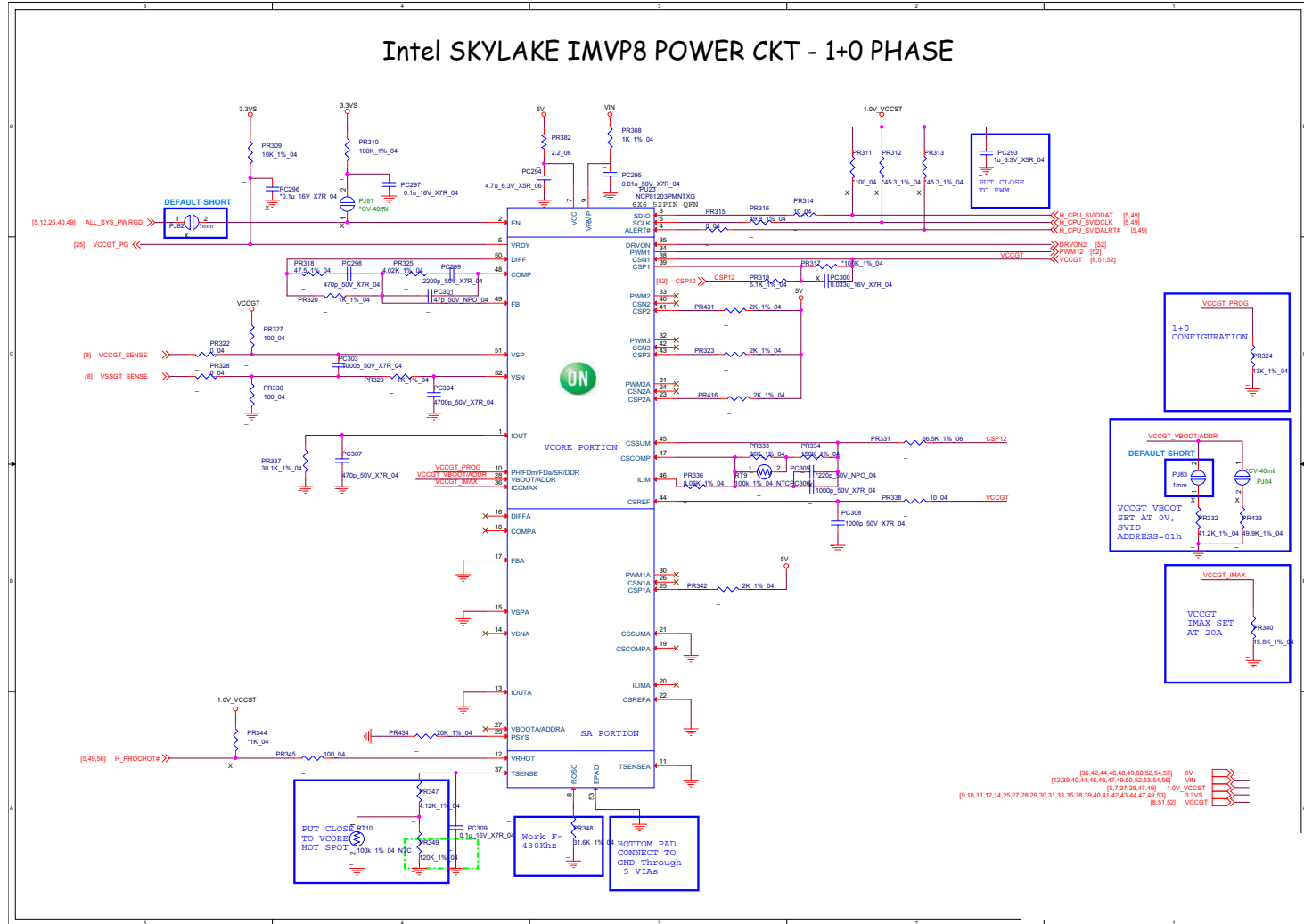


B.Schematic Diagrams

Sheet 50 of 62
VCore, VCCSA
Output Stage

Schematic Diagrams

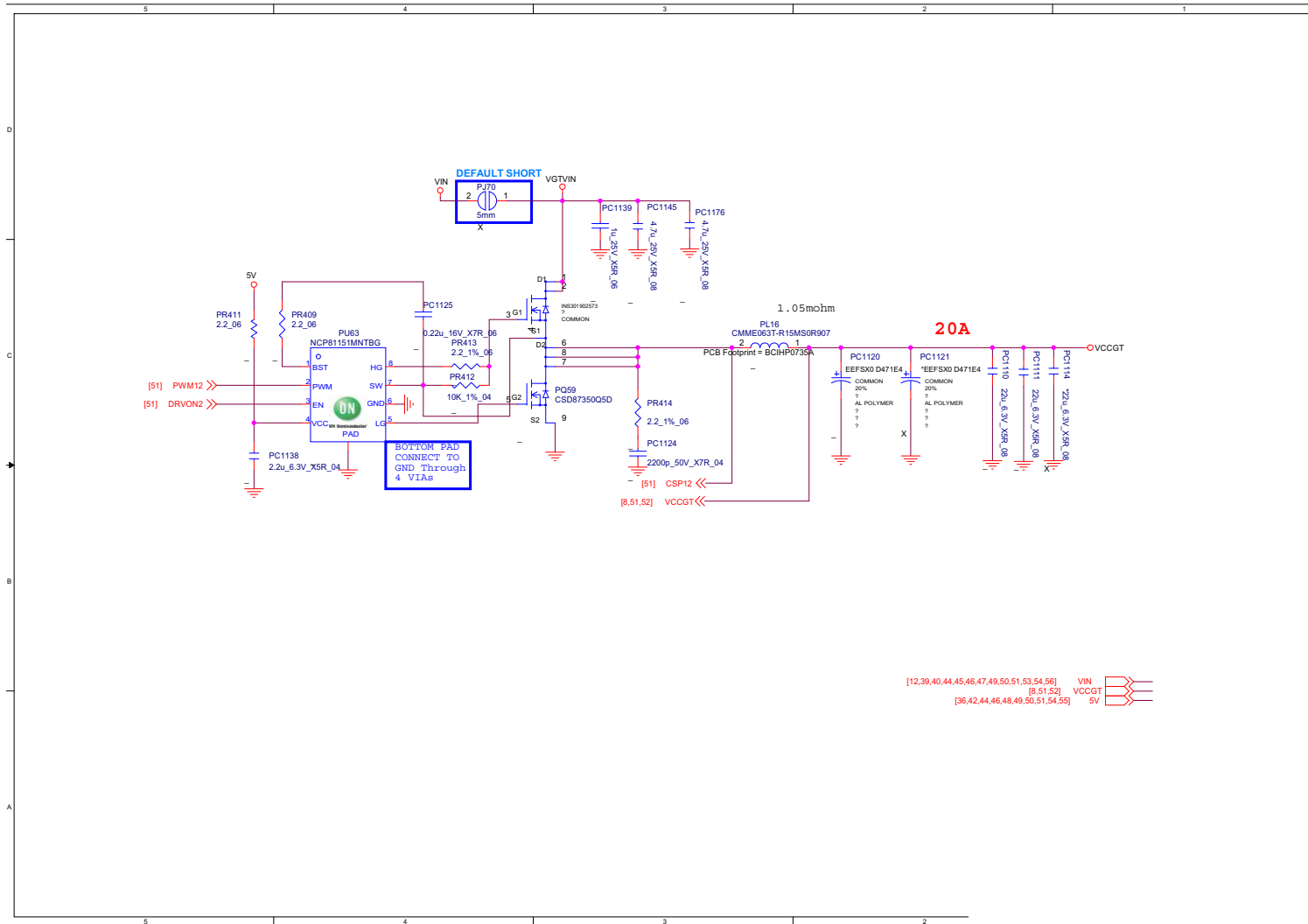
VCCGT



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VCCGT

B.Schematic Diagrams

VCCGT Output Stage

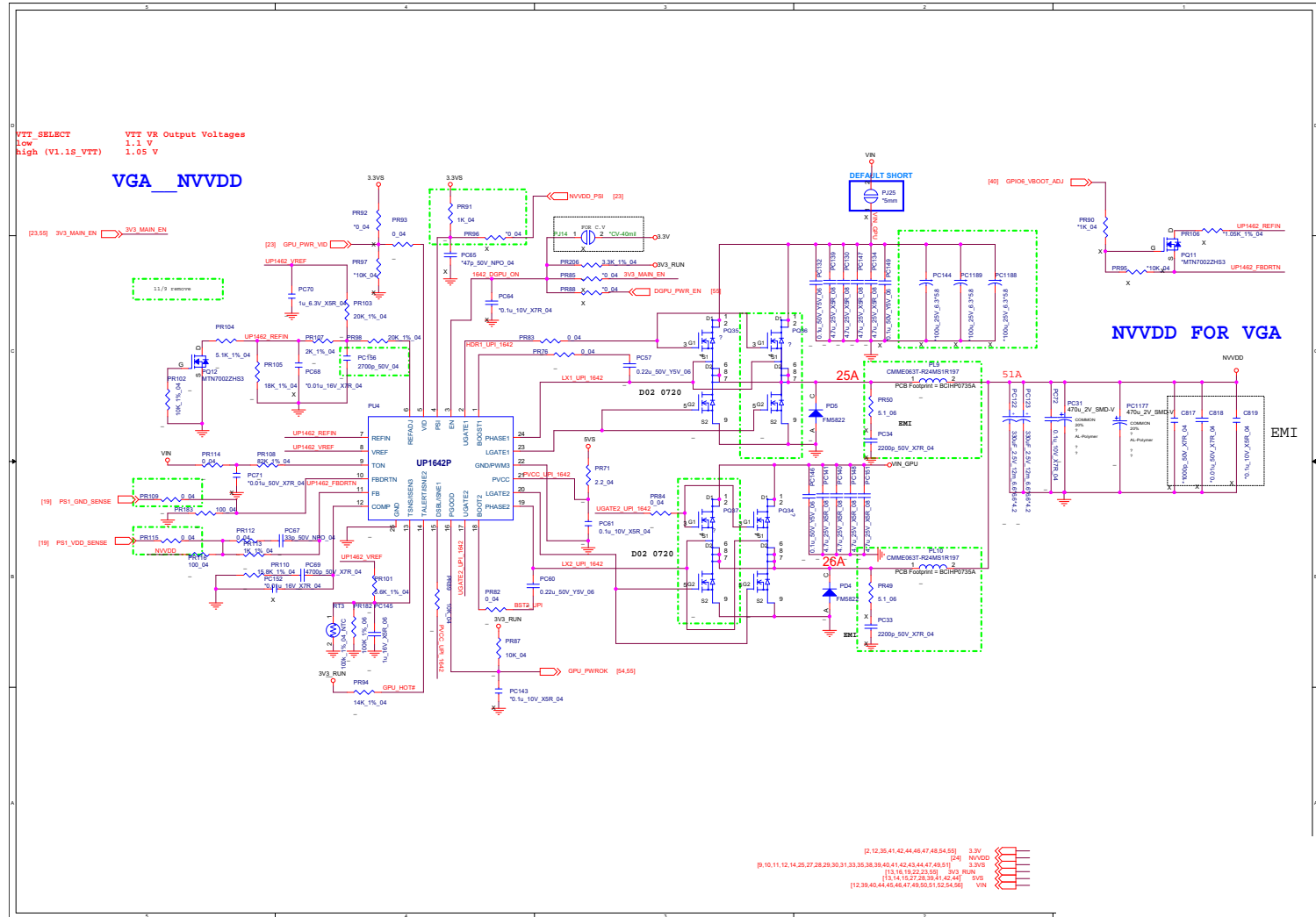


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VCCGT Output Stage

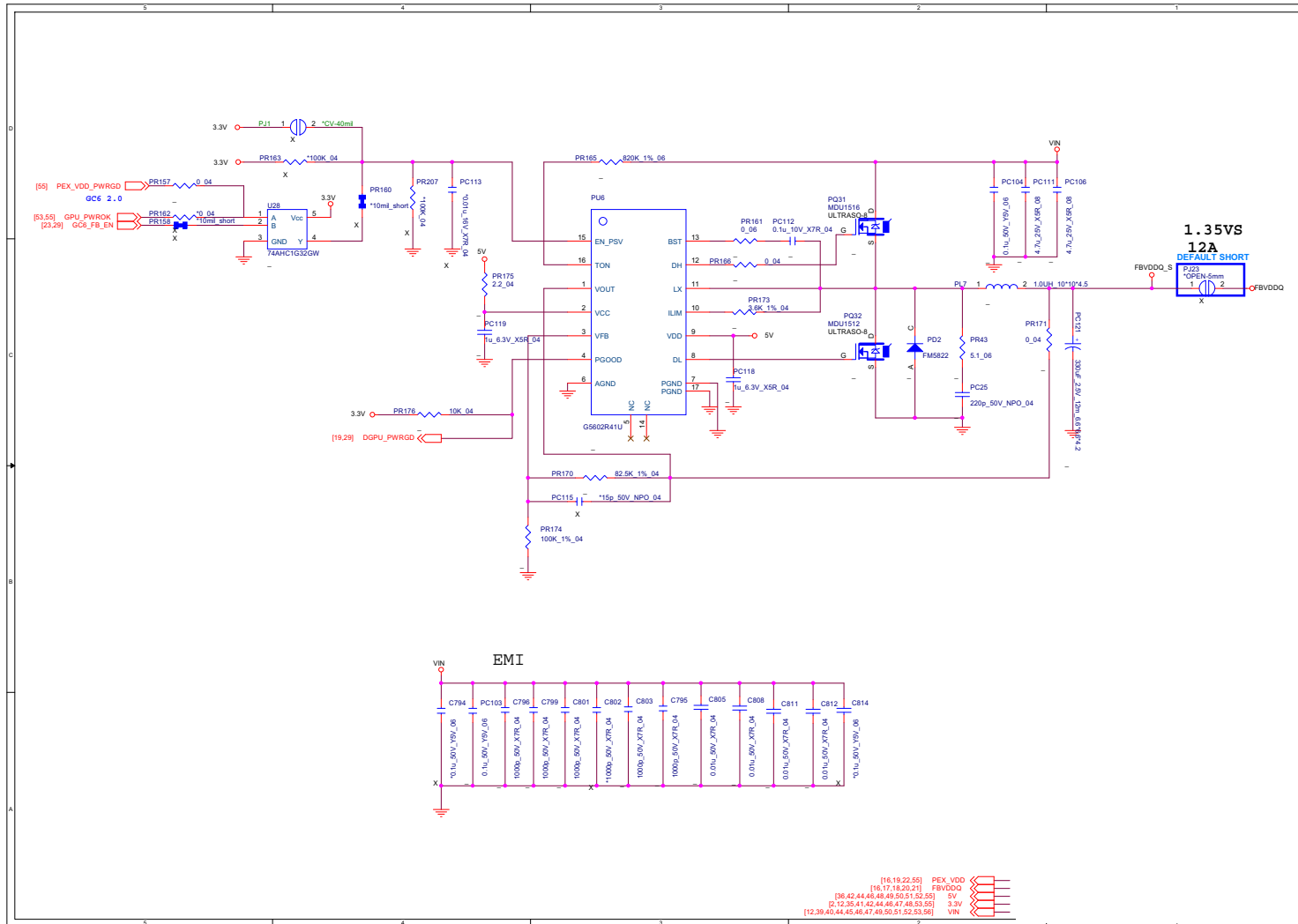
B.Schematic Diagrams

NVVDD

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NVVDD



FBVDDQ



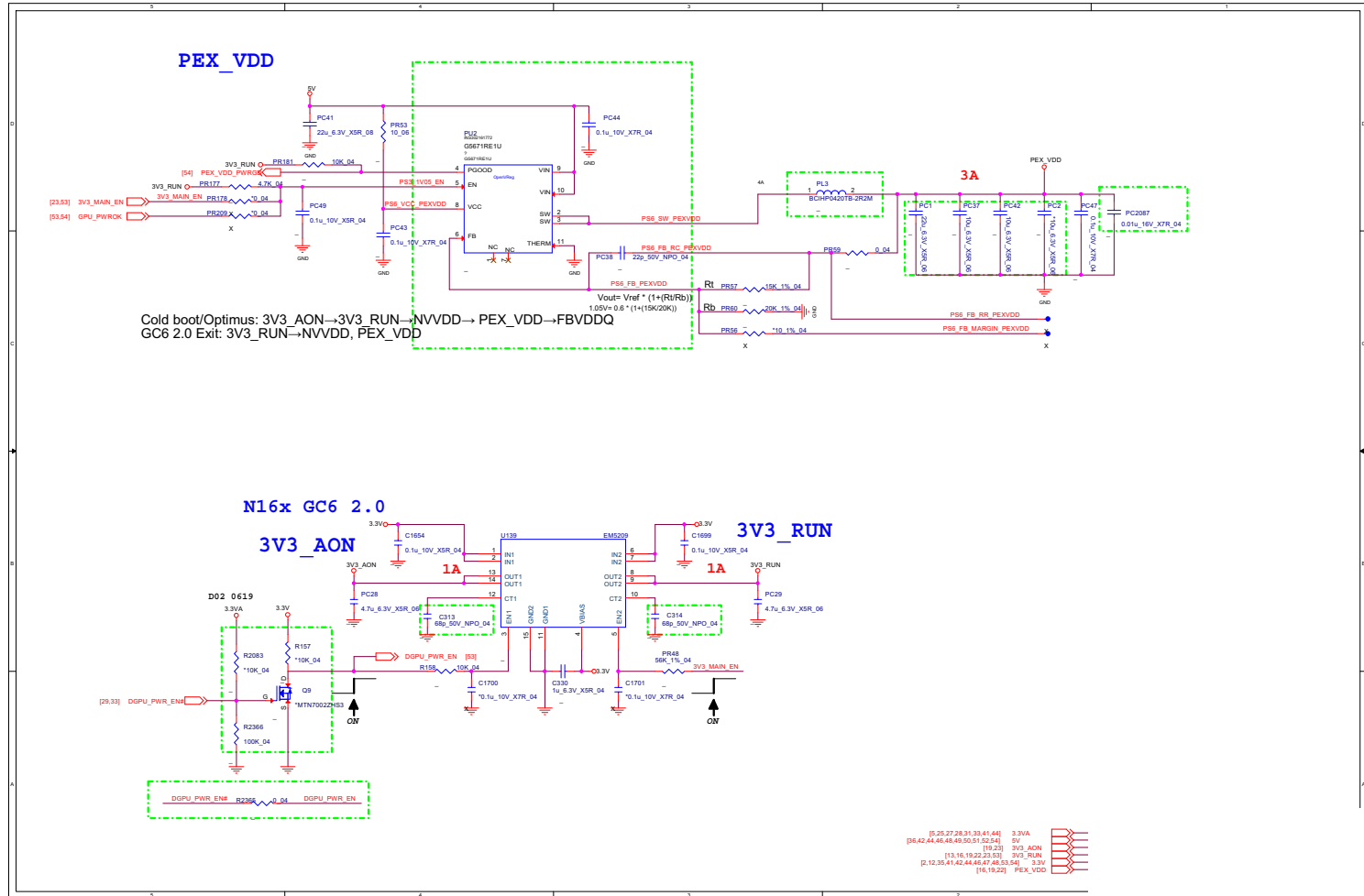
Sheet 54 of 62
FBVDDQ

B.Schematic Diagrams

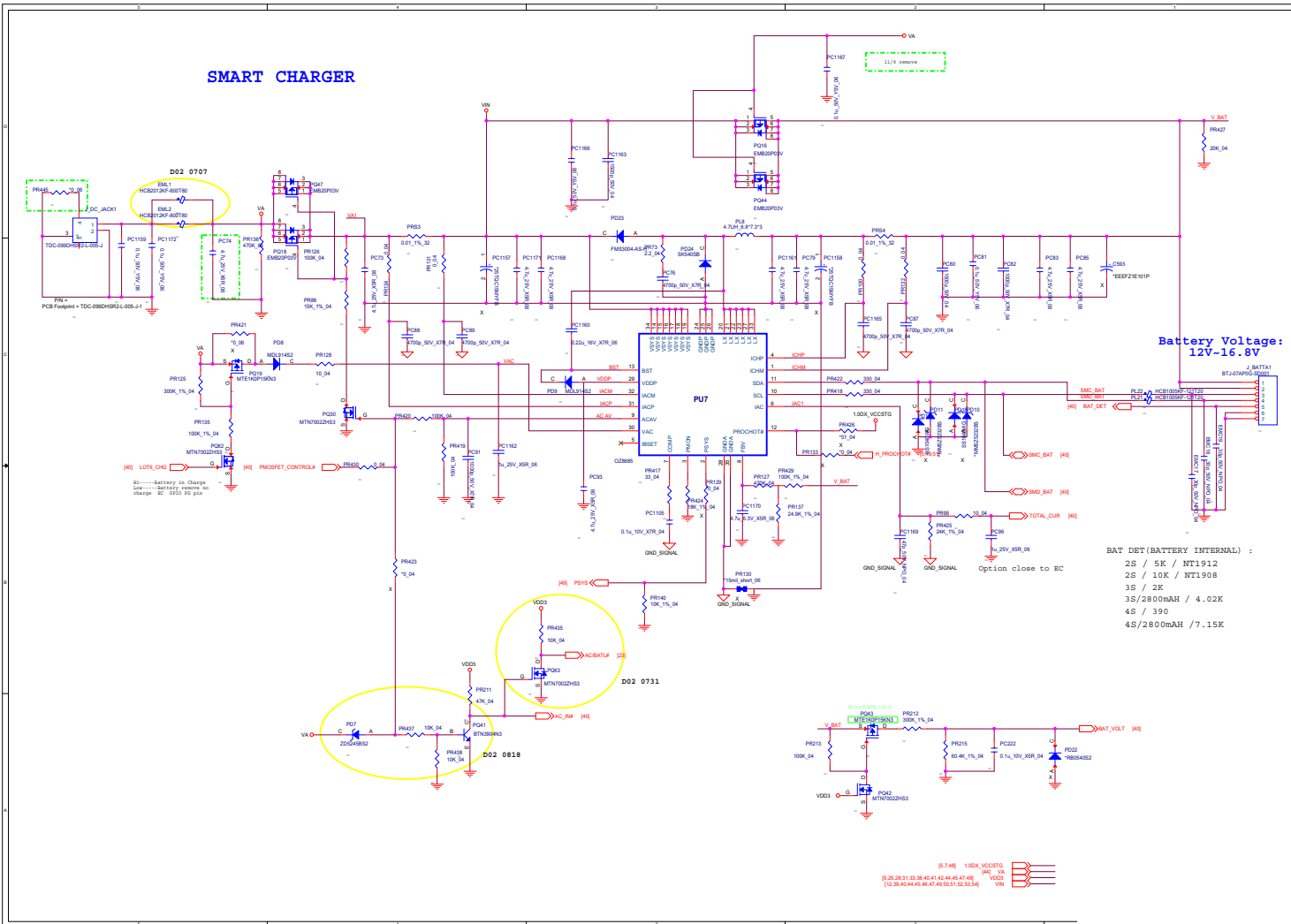
Schematic Diagrams

3V3_AON, 3V3_RUN, PEX_VDD

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3V3_AON,
3V3_RUN,
PEX_VDD



AC-In, Charger

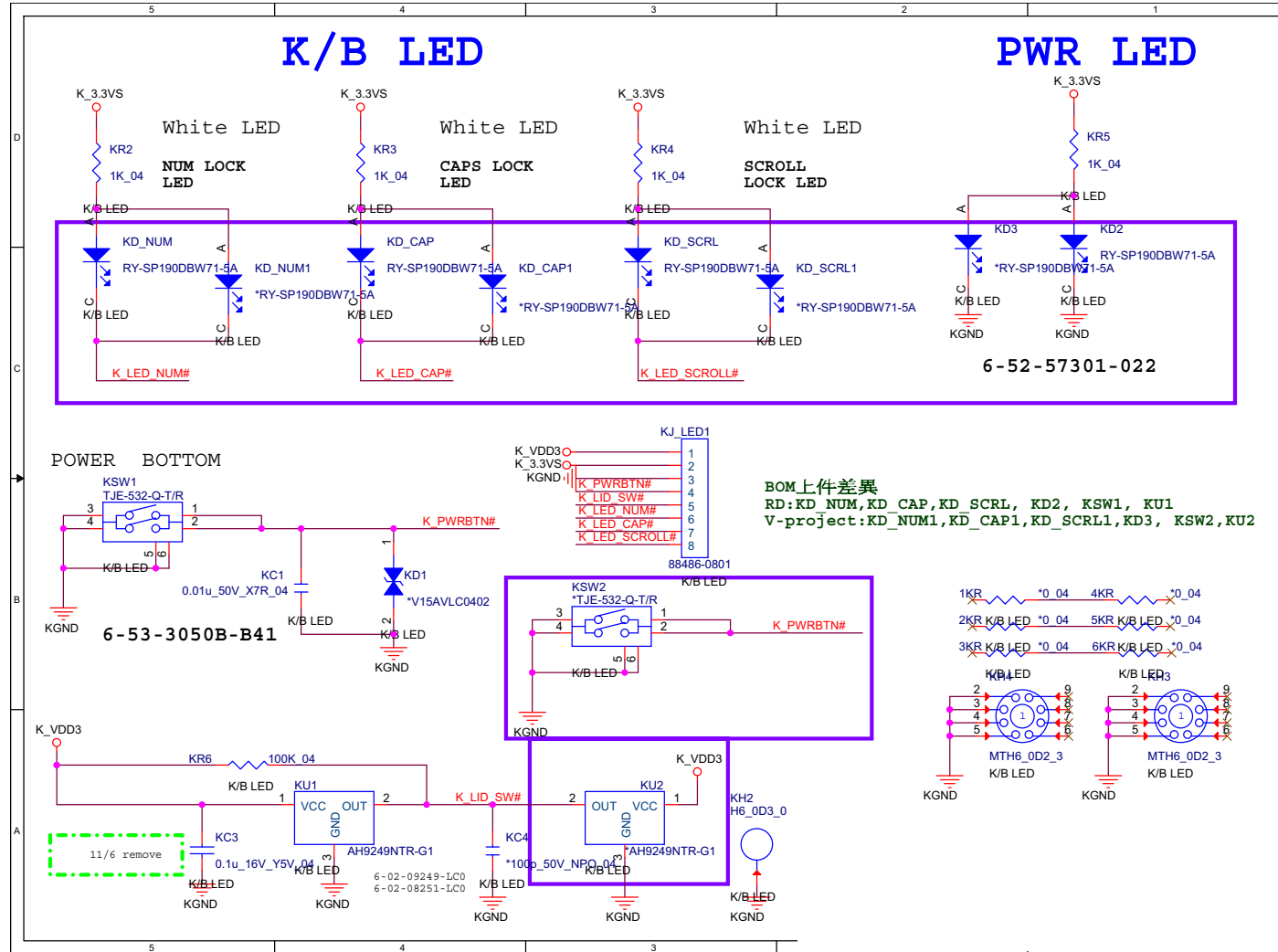


B.Schematic Diagrams

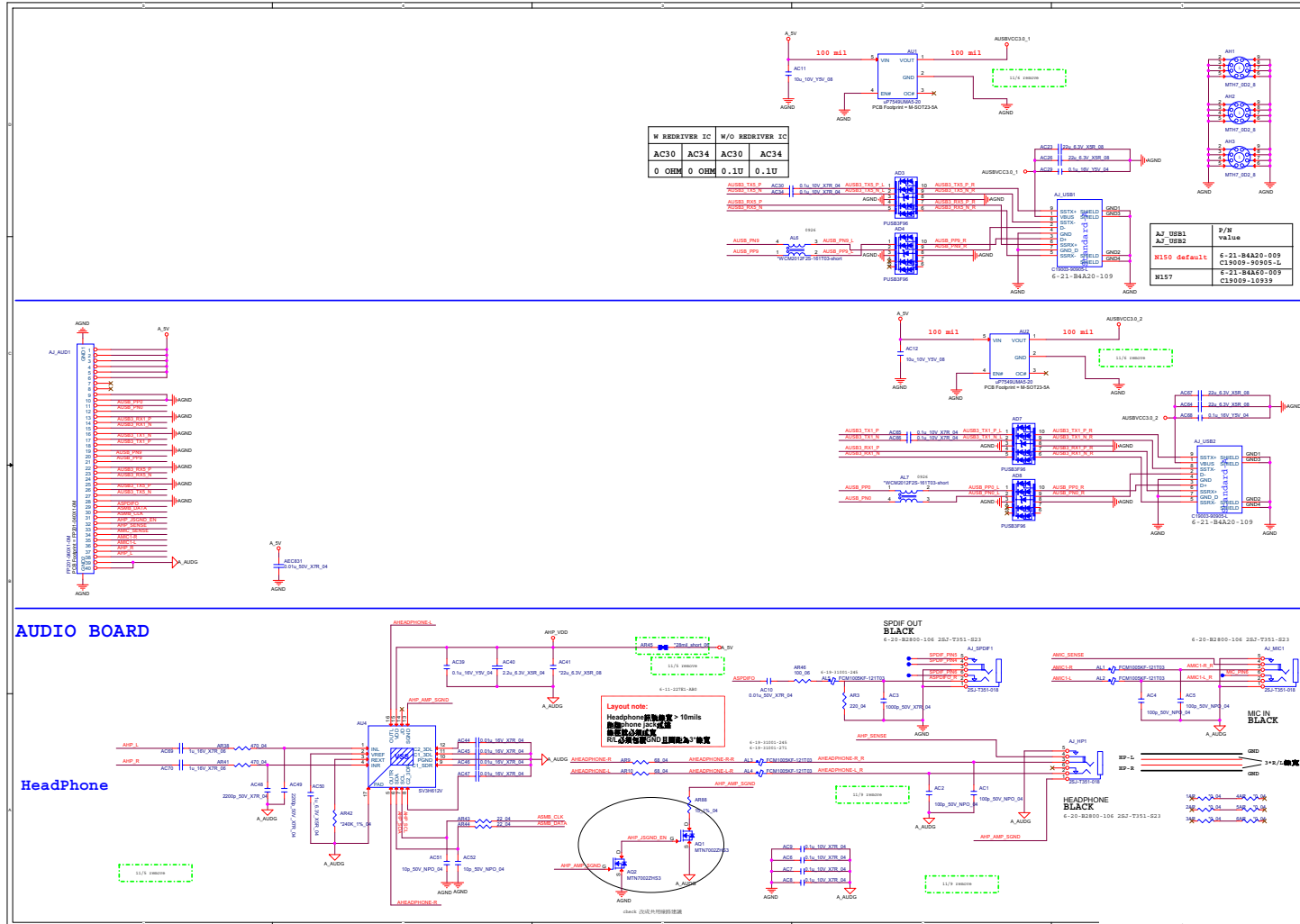
Sheet 56 of 62
AC-In, Charger

N155, N157 KB LED, PWR Board

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N155, N157 KB
LED, PWR Board



Audio Board

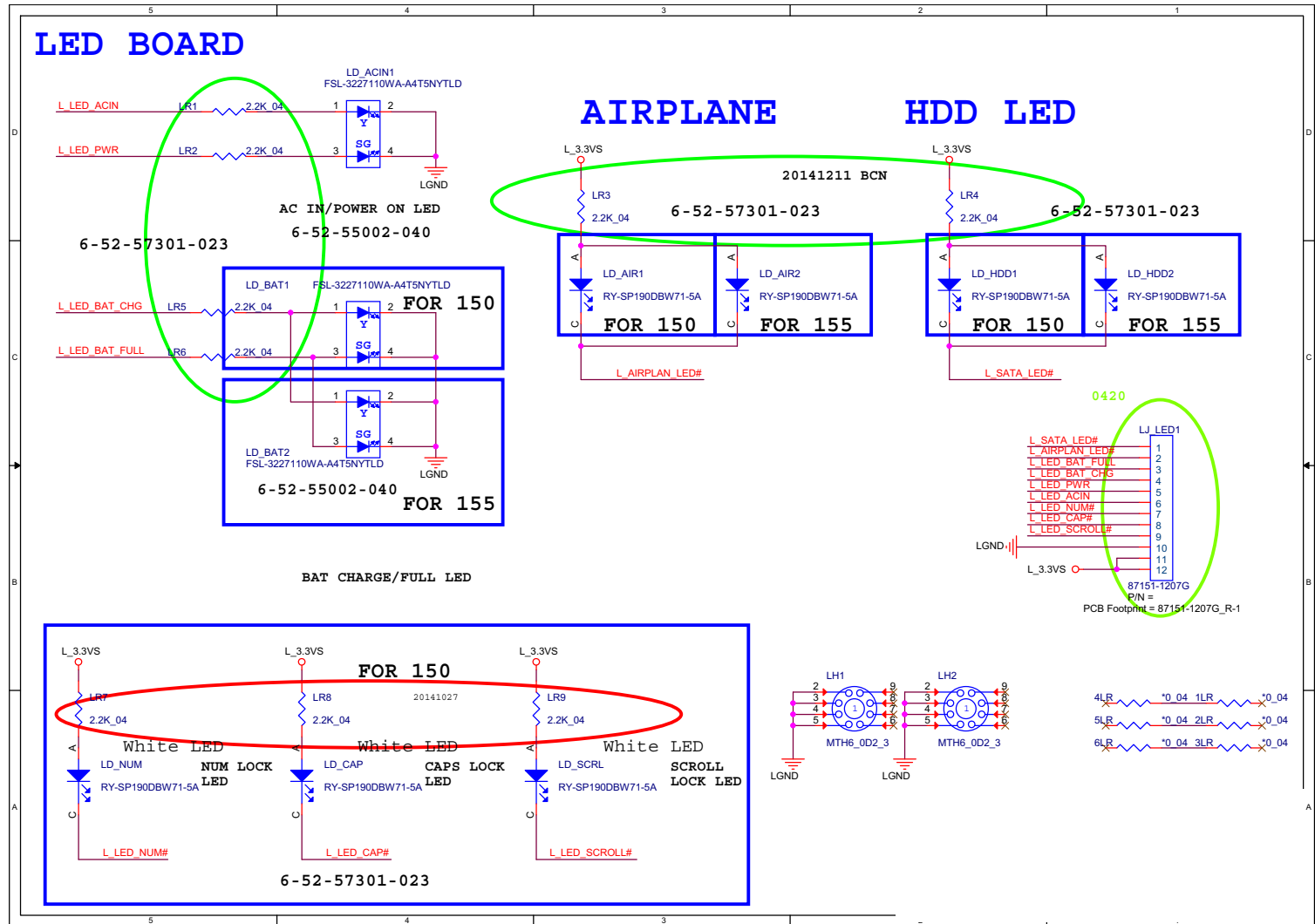


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Audio Board

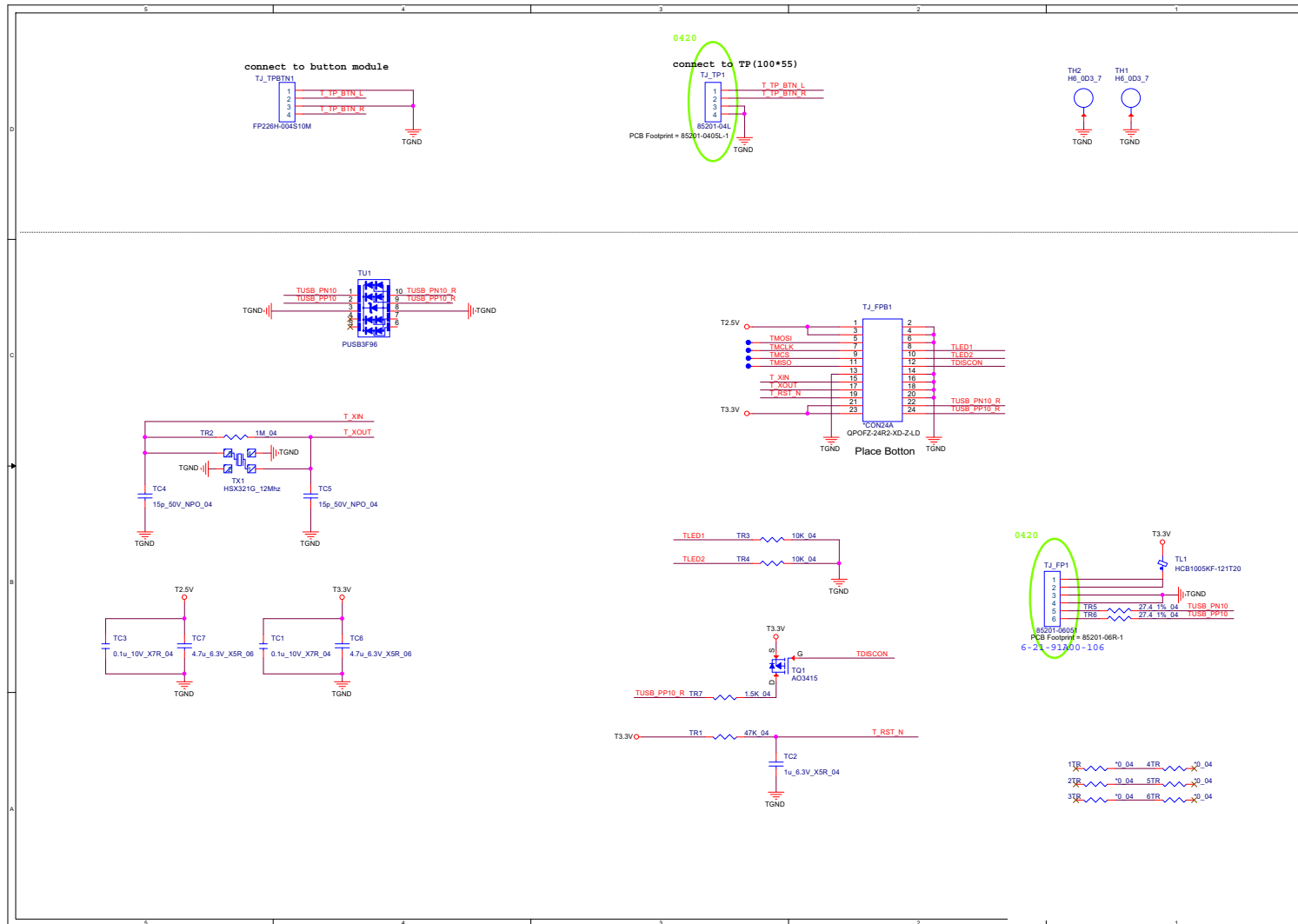
Schematic Diagrams

Front LED Board

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Front LED Board



Click / Finger Con Board

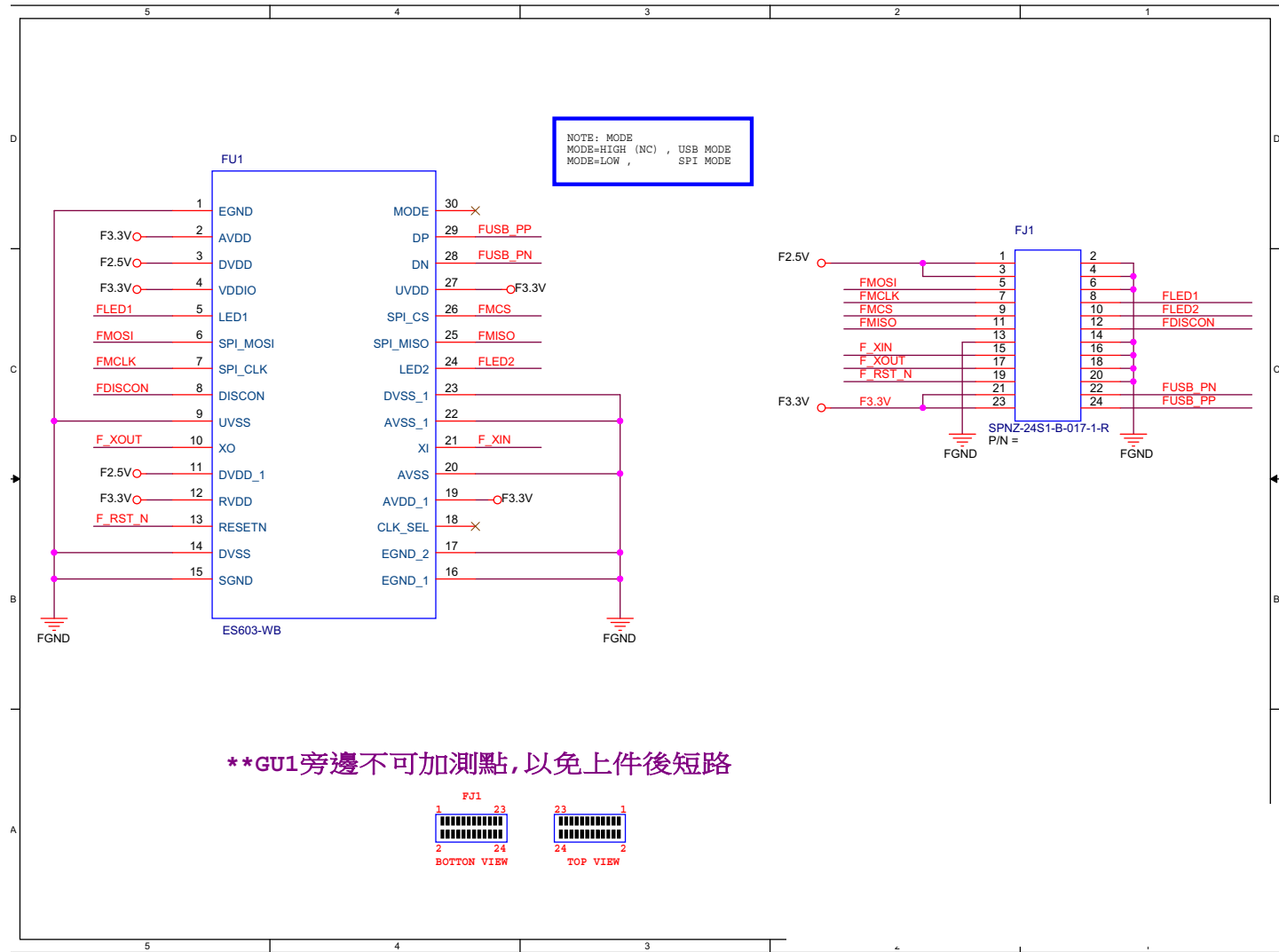


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Click / Finger Con Board

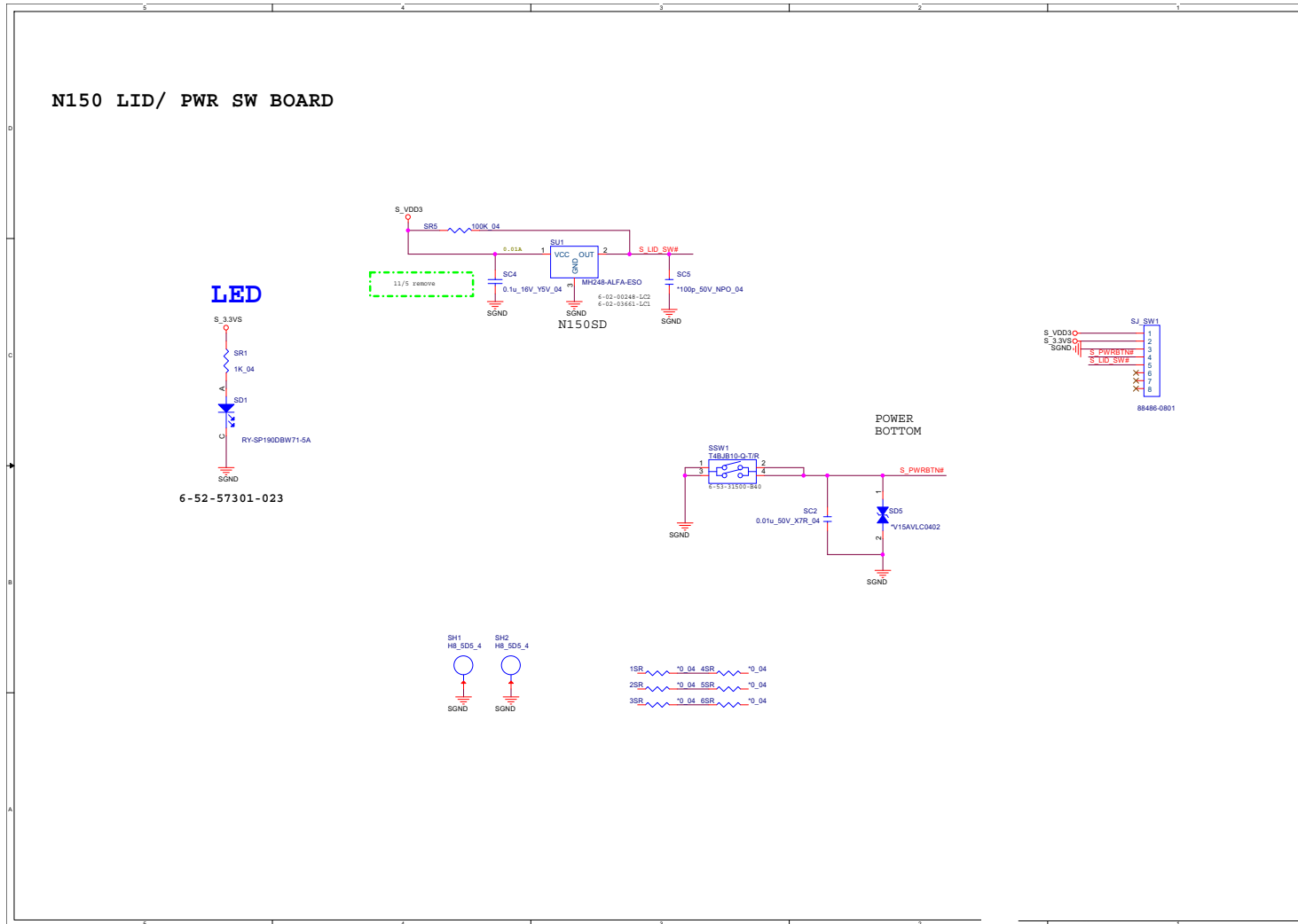
B.Schematic Diagrams

Fingerprint Board

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Fingerprint Board

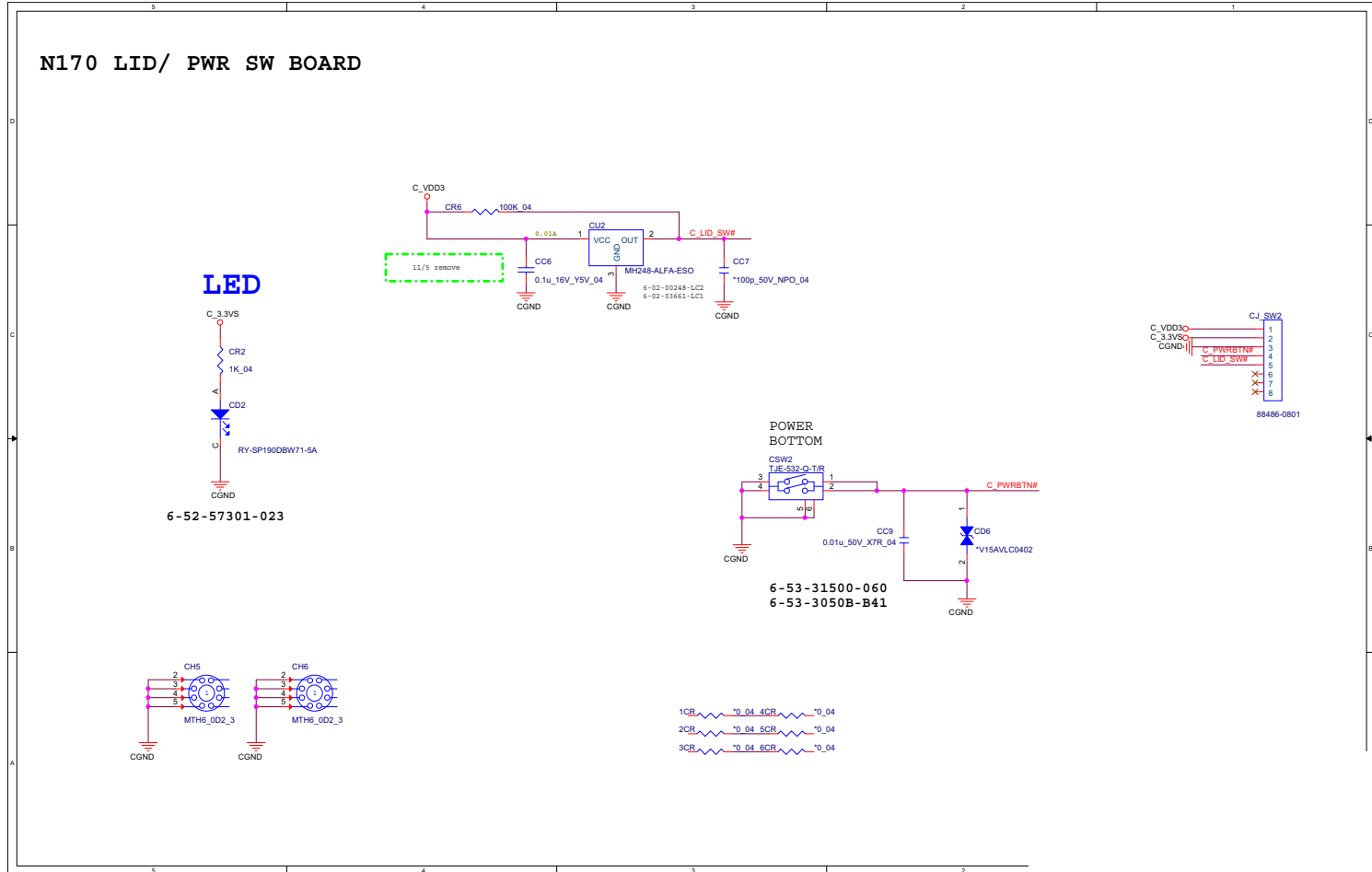


N150 LID, PWR SW Board



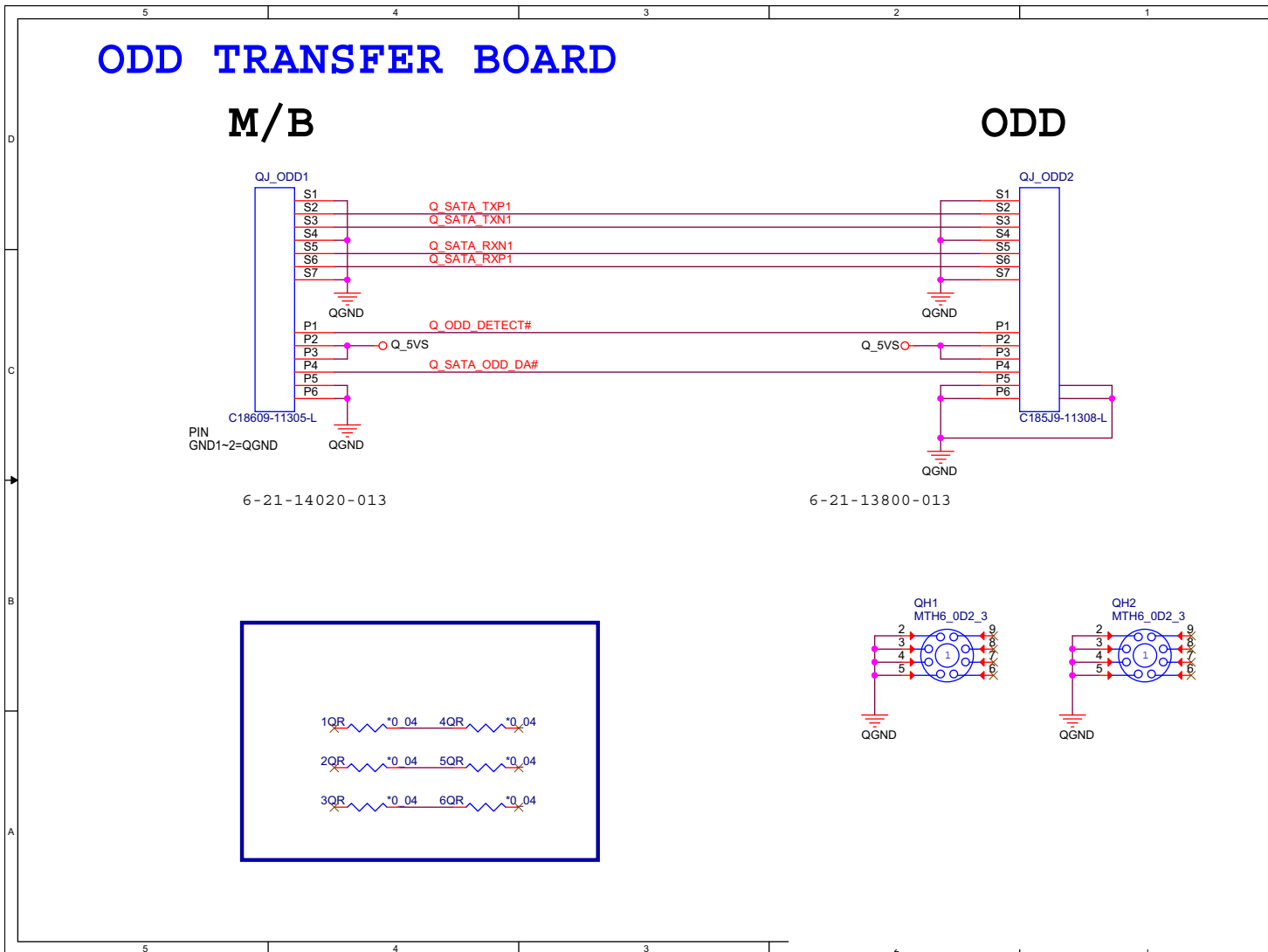
Sheet 62 of 62
N150 LID, PWR SW
Board

N170 LID, PWR SW Board



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N170 LID, PWR SW
Board

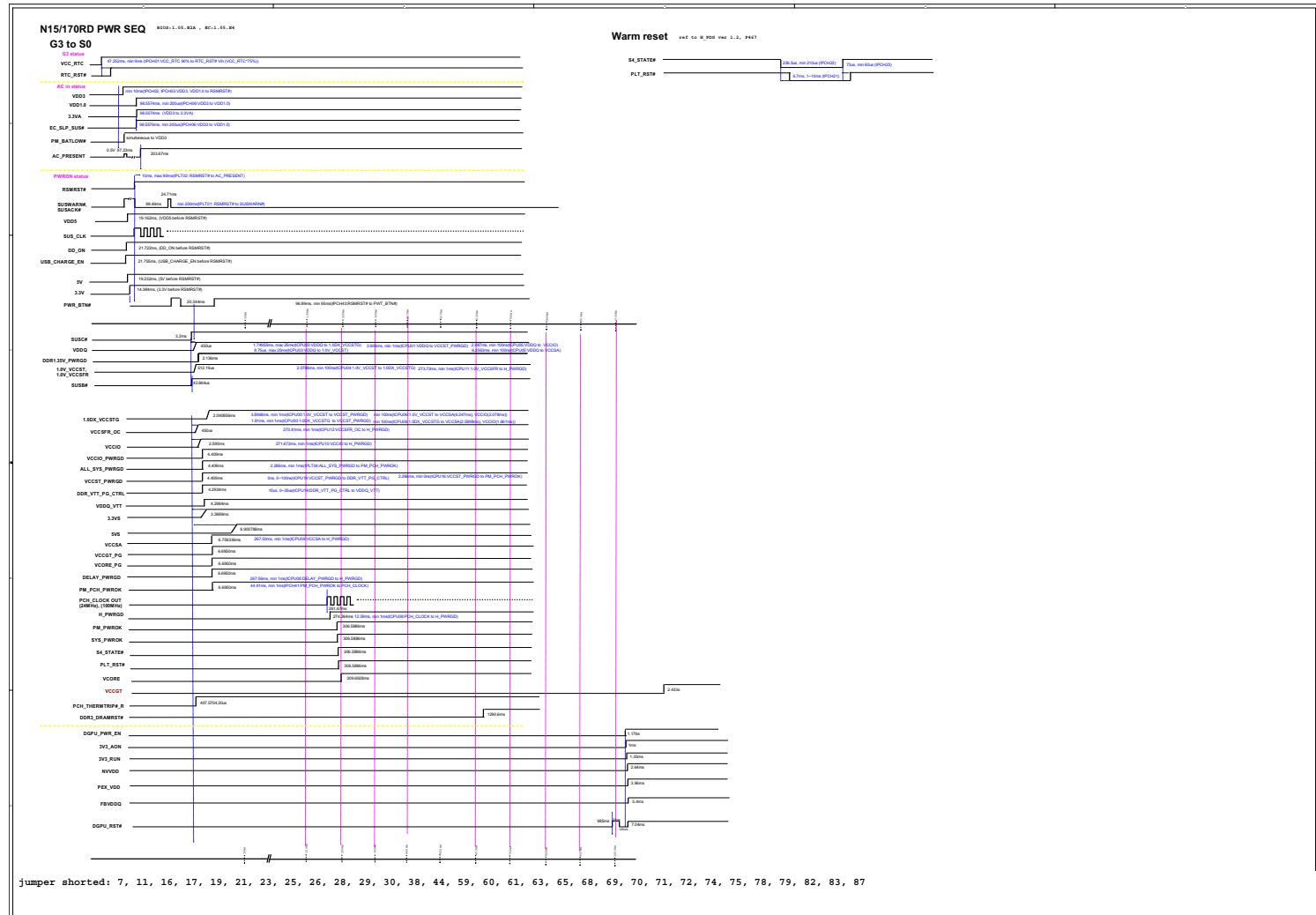
N170 ODD Ext. Board



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N170 ODD Ext.
Board

Power Sequence

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Power Sequence



Option BOM

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Option BOM

Schematic Diagrams

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 **V1.00.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 1.00.05, you **MAY NOT** then go back and flash the BIOS to ver 1.00.04).

BIOS Update

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.