SERVICE MANUAL

N150RD1 / N151RD1

notebook

Notebook Computer

N150RD1 / N151RD1

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 ***N150RD1 / N151RD1*** 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

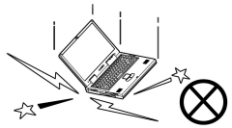
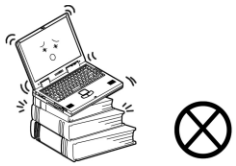
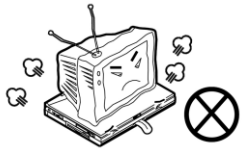
FCC Statement

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.

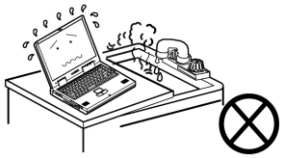
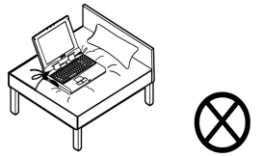
Instructions for Care and Operation

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

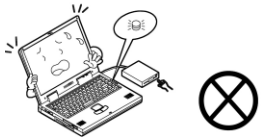
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.

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.*
		

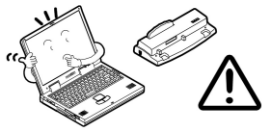
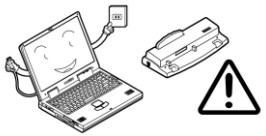
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.

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.*
	

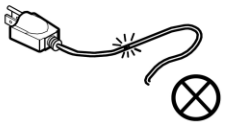
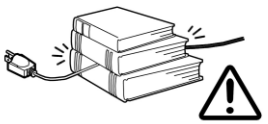
Power Safety

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 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".

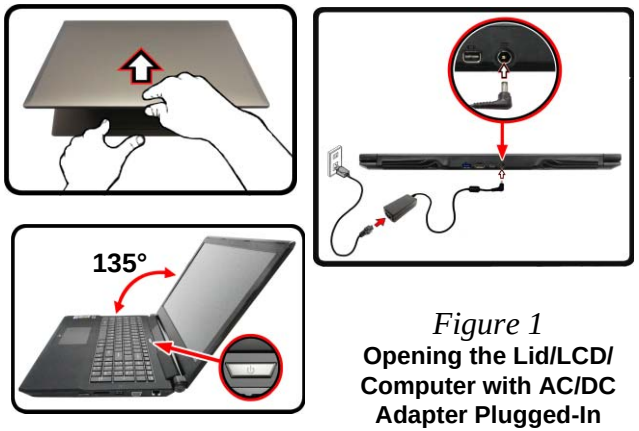
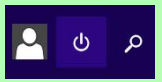


Figure 1
Opening the Lid/LCD/ Computer with AC/DC Adapter Plugged-In

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.

Contents

Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the ***N150RD1 / N151RD1*** 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. *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 ***N150RD1 / N151RD1*** 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® 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

15.6" (39.62cm), 16:9, QFHD (3840x2160)/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**
(**Factory Option**) Slot 3 for **3G/4G** Module

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

(**Factory Option**) M.2 **3G** or **4G** 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

385mm (w) * 268mm (d) * 28.5mm (h)
2.5kg (Barebone with 62WH 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.*
3. Microphone
4. LCD
5. Speakers
6. Power Button
7. Keyboard
8. Touchpad & Buttons
9. Fingerprint Reader (**Optional**)

External Locator - Front & Right Side Views

FRONT VIEW

Figure 2
Front View

1. LED Indicators

RIGHT SIDE VIEW

Figure 3
Right Side View

1. USIM Card Reader (for 3G/ 4G USIM Cards)
2. Multi-in-1 Card Reader
3. USB 3.0 (USB 3.1 Gen 1) Type C Port
4. USB 3.0 (USB 3.1 Gen 1) Port
5. RJ-45 LAN Jack

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

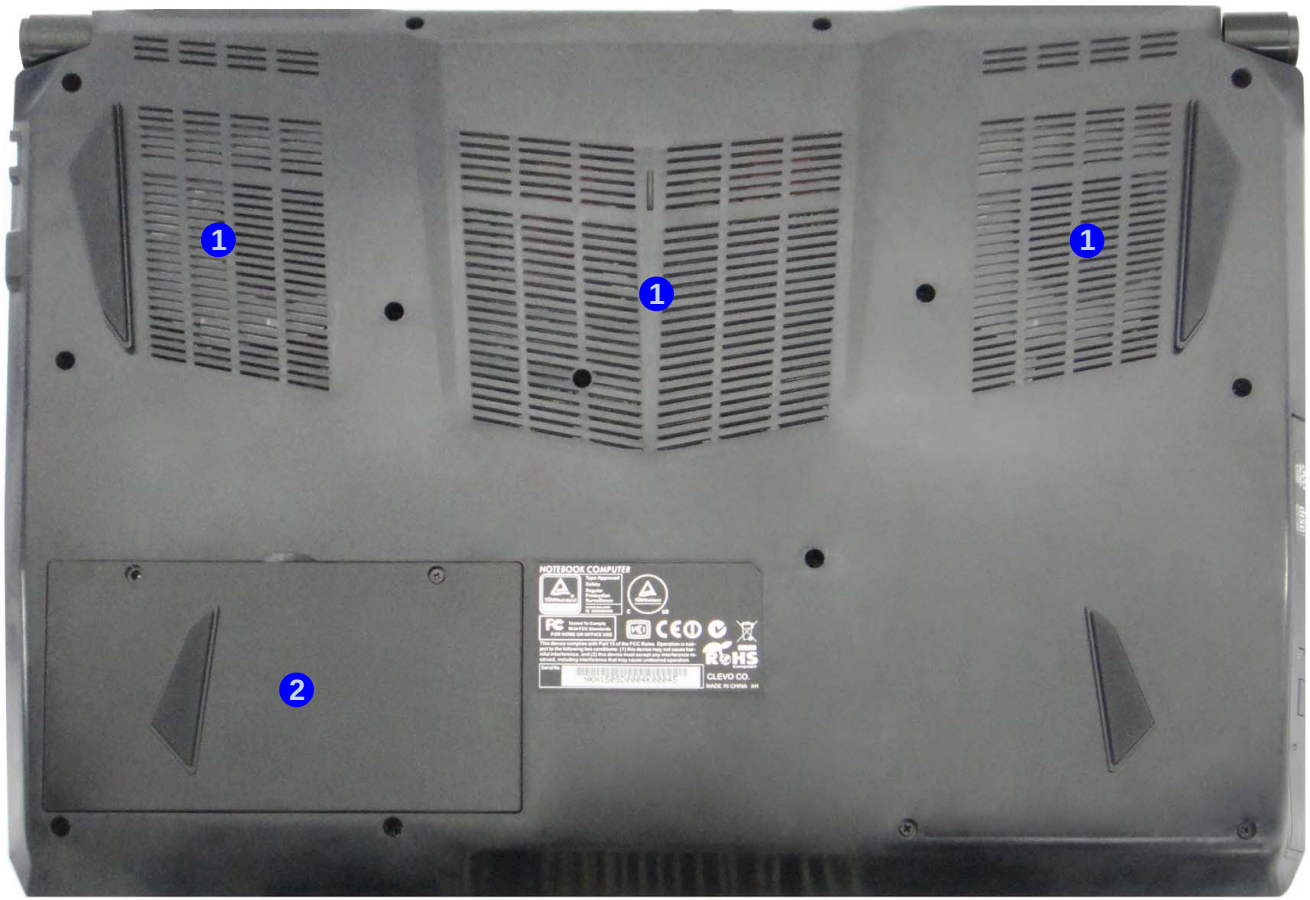


Figure 6
Bottom View

1. Vent
2. Battery

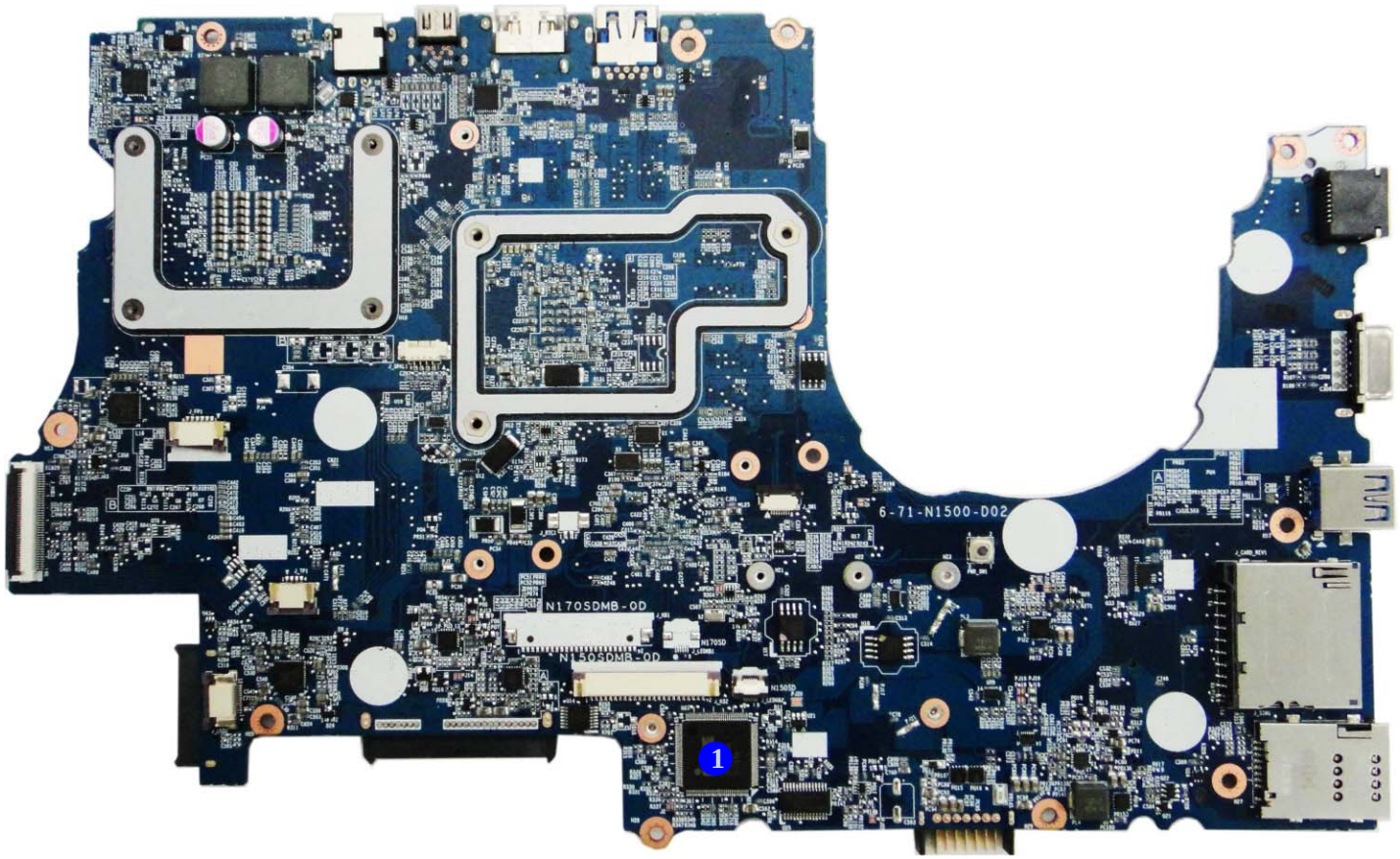
Overheating

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)

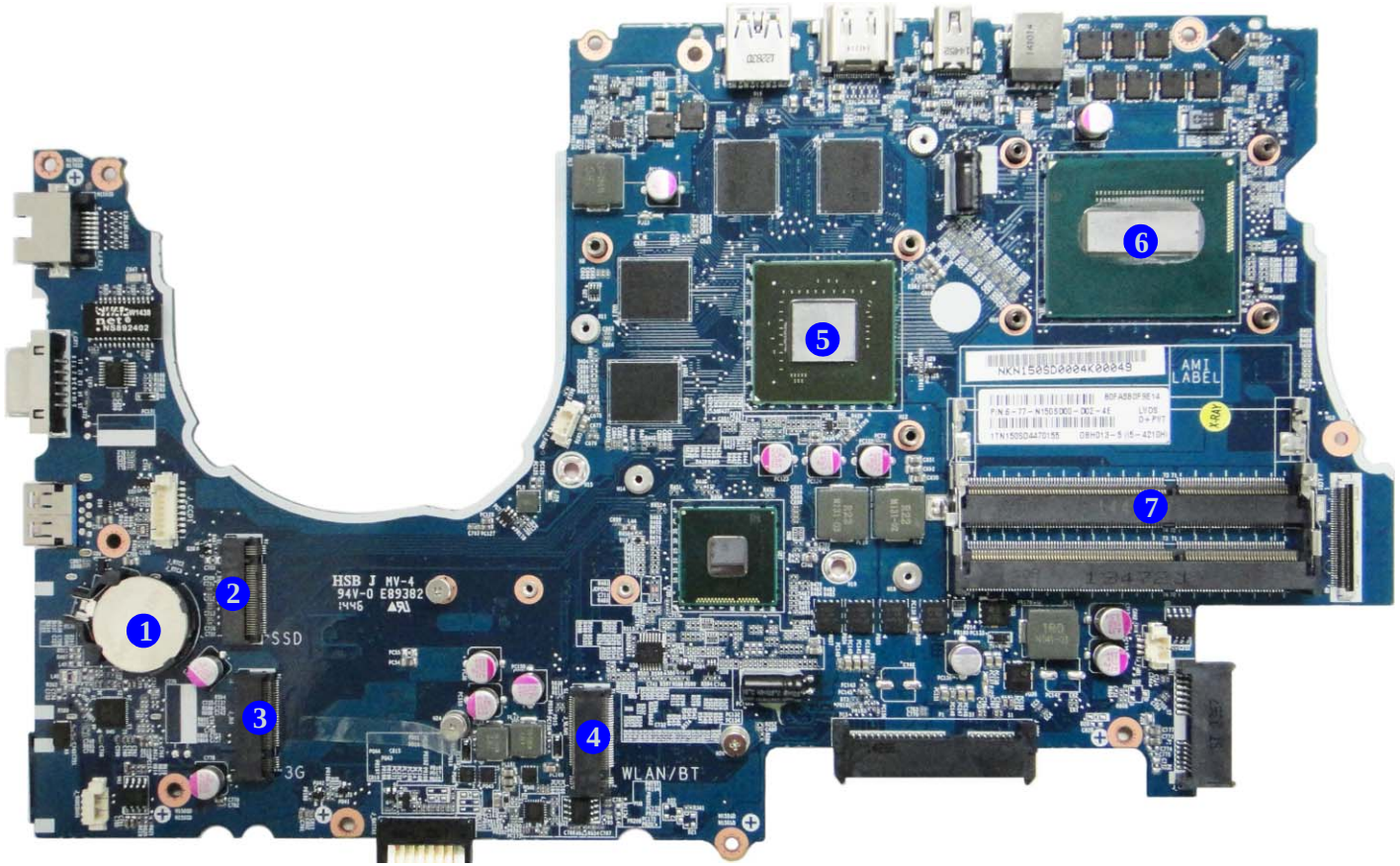
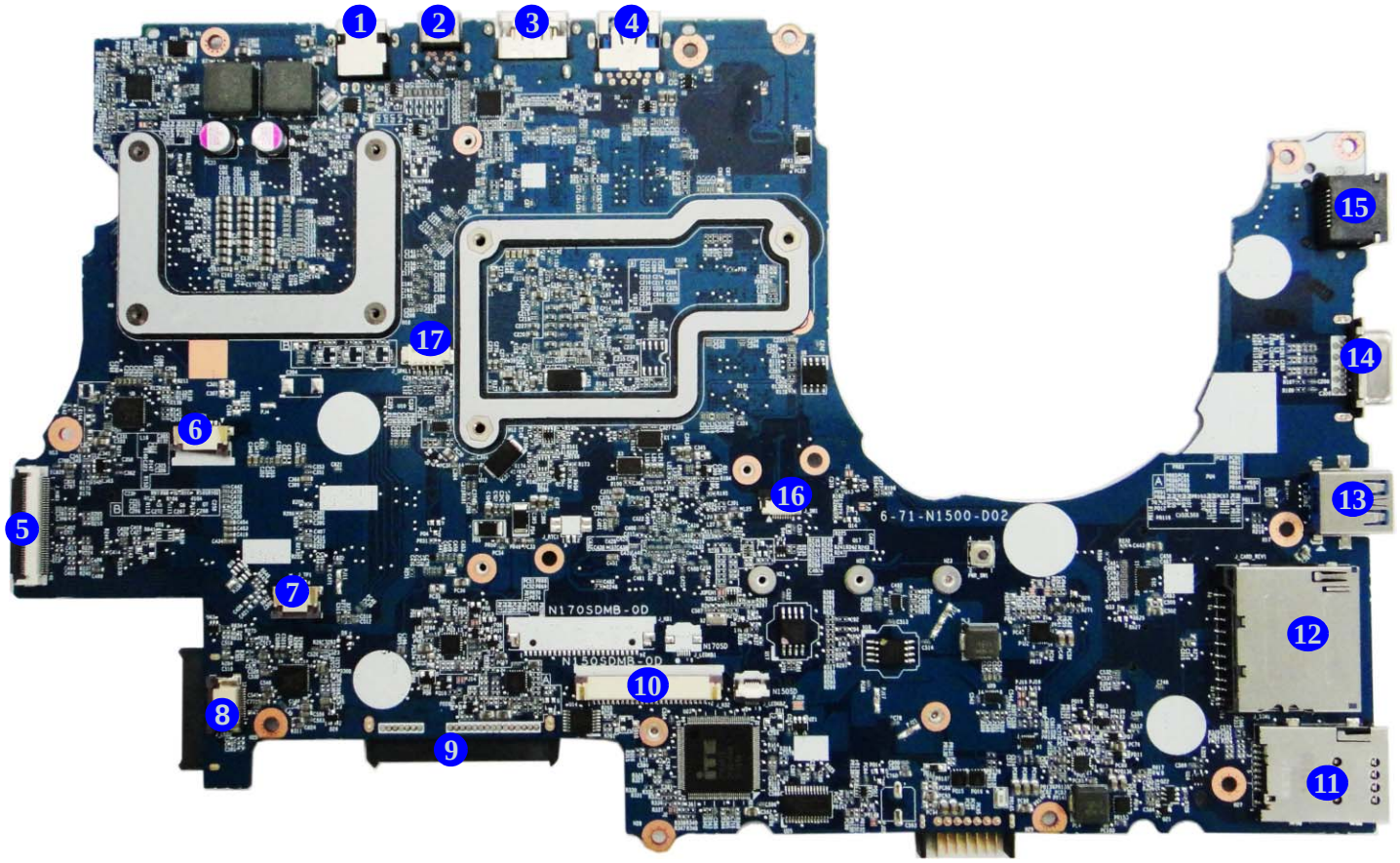


Figure 8
Mainboard Bottom Key Parts

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

Mainboard Overview - Top (Connectors)

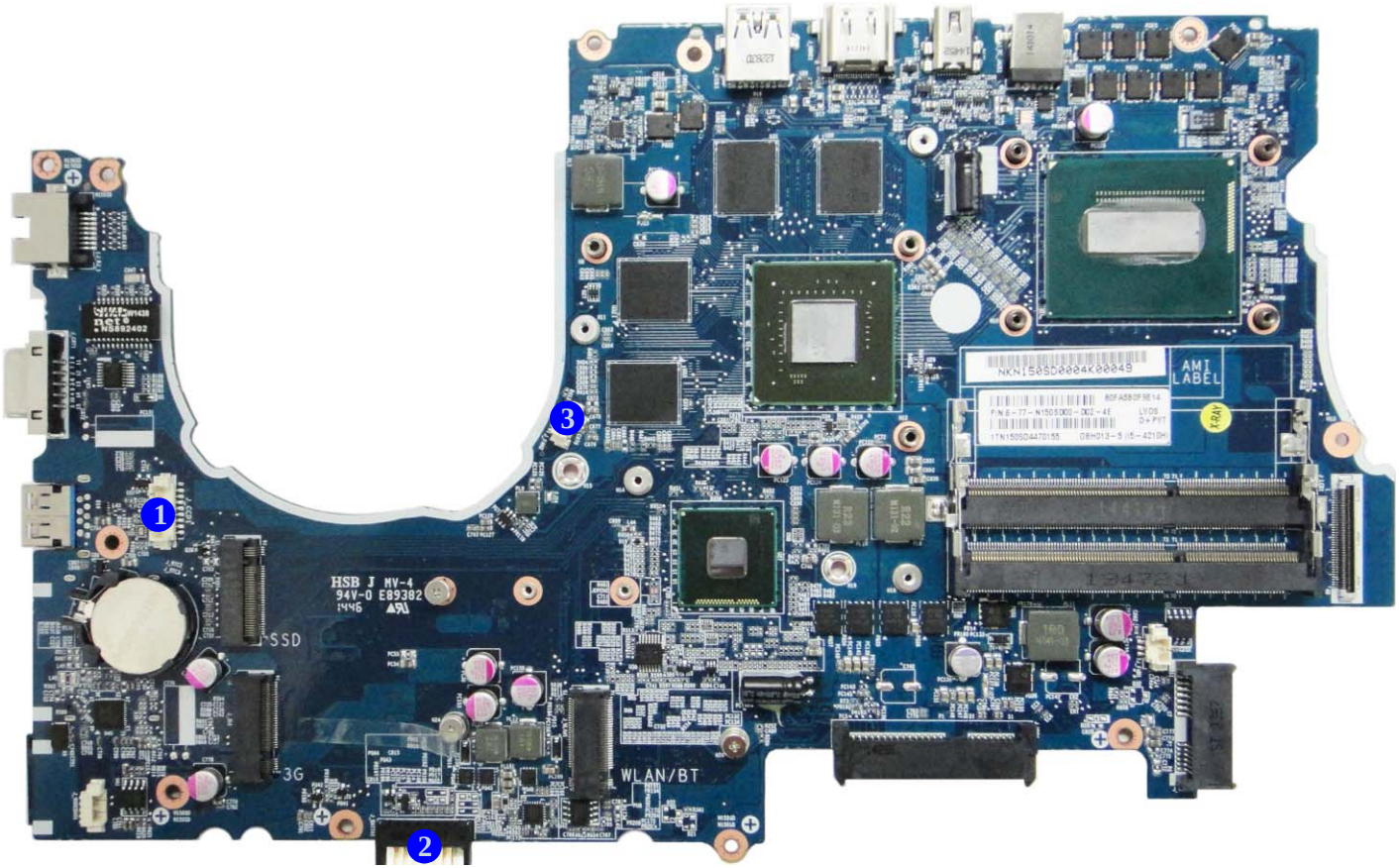
Figure 9
Mainboard Top Connectors



1. DC-In Jack
2. Mini Display Port
3. HDMI-Out Port
4. Mini Display Port
5. Audio Board Connector
6. Finger Print Connector
7. TP Connector
8. LED Board 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
16. Power Switch Board Connector
17. Speaker Connector

Mainboard Overview - Bottom (Connectors)

Figure 10
Mainboard Bottom Connectors



1. CCD Connector
2. Battery Connector
3. Fan Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***N150RD1 / N151RD1*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

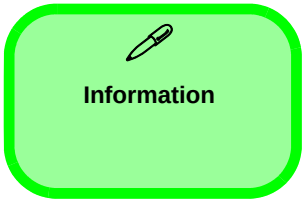
We suggest you completely review any procedure before you take the computer apart.

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 - 10*

To remove the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *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 M.2 SSD:

1. Remove the battery *page 2 - 5*
2. Remove the SSD *page 2 - 13*

To remove the Wireless LAN Module:

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

To remove the 3G Module:

1. Remove the battery *page 2 - 5*
2. Remove the 3G *page 2 - 16*

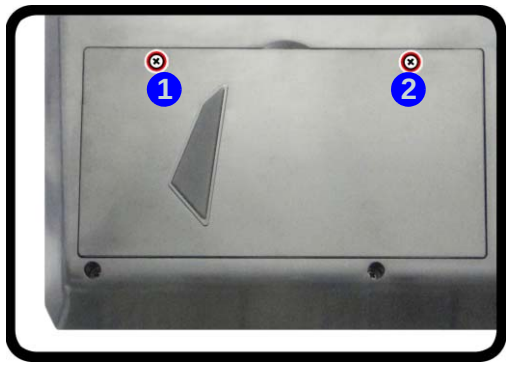
Removing the Battery

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*).

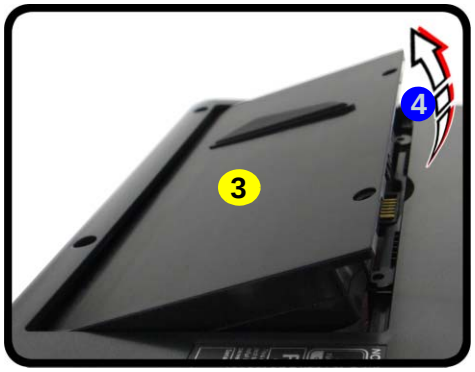
Figure 1
Battery Removal

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

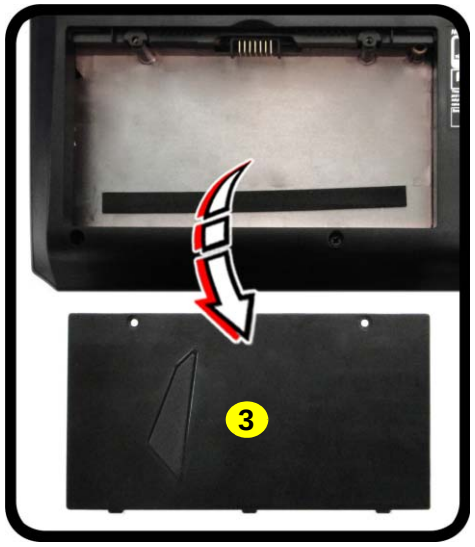
a.



b.



c.



3. Battery

- 2 Screws

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.

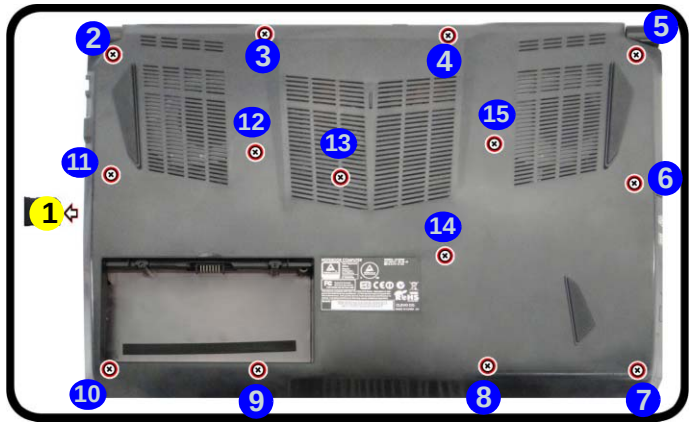
Figure 2
HDD Assembly Removal

a. Remove the SD cover and screws.
b. Remove the bottom case.
c. Locate the HDD.

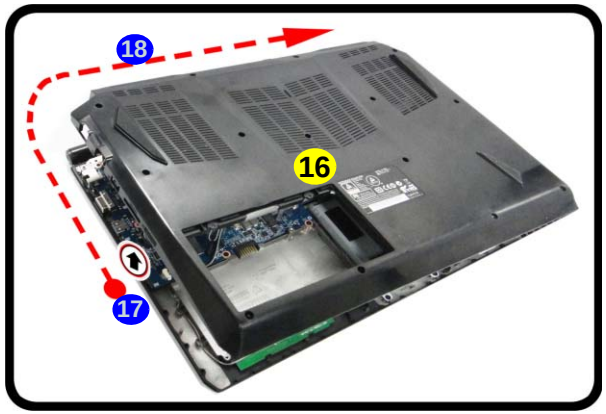
Hard Disk Disassembly Process

1. Turn **off** the computer, remove the battery (***page 2 - 5***) and keyboard (***page 2 - 11***).
2. Remove the SD card cover 1 and screws 2 - 15 (***Figure 2a***).
3. Carefully lift the bottom case 16 up at point 17 and slide in the direction of the arrow 18 to remove it (***Figure 1b***).
4. The HDD will be visible at point 19 on the mainboard (***Figure 2a***).

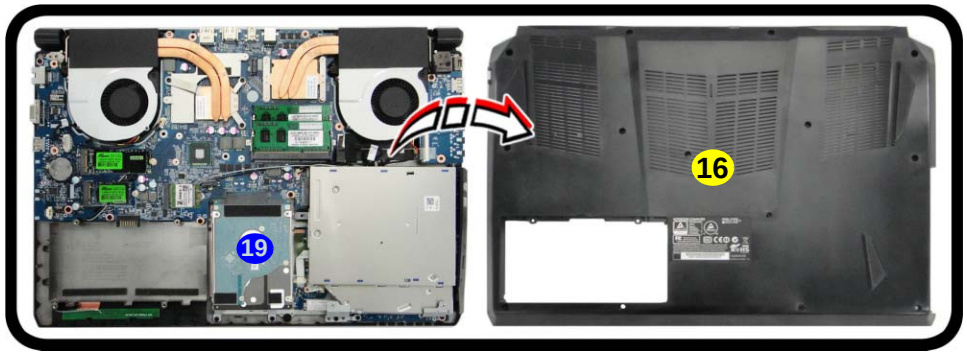
a.



b.



c.



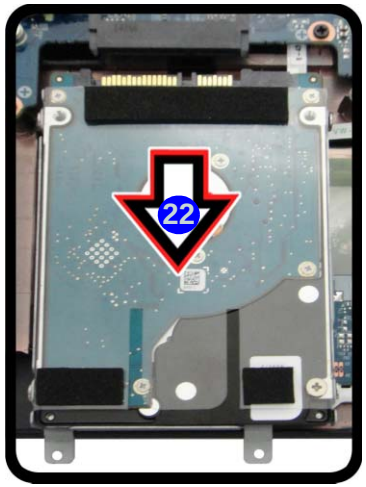
1. SD Card Cover
16. Bottom Case

- 14 Screws

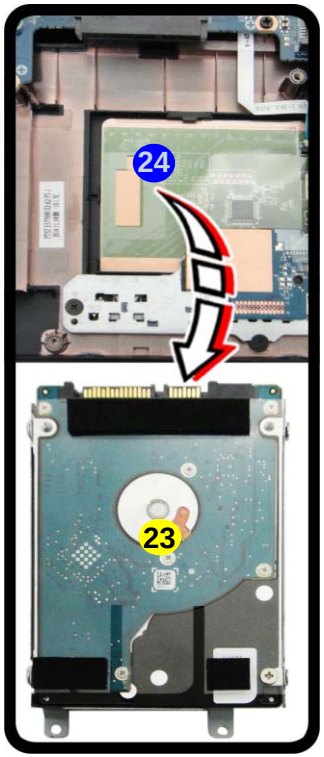
5. Remove screws 20 - 21 from the HDD assembly (*Figure 3c*).
6. Lift the hard disk at a 45 degrees angle and slide it out in the direction of arrow 22 (*Figure 4d*).
7. Remove the hard disk assembly 23 out of the bay 24 (*Figure 4e*).

c.

d.



e.



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.

Figure 3
HDD Assembly Removal (cont'd.)

c. Remove the screws.
d. Slide the HDD in the direction of the arrow.
e. Lift the HDD assembly out of the bay.

23. HDD Assembly

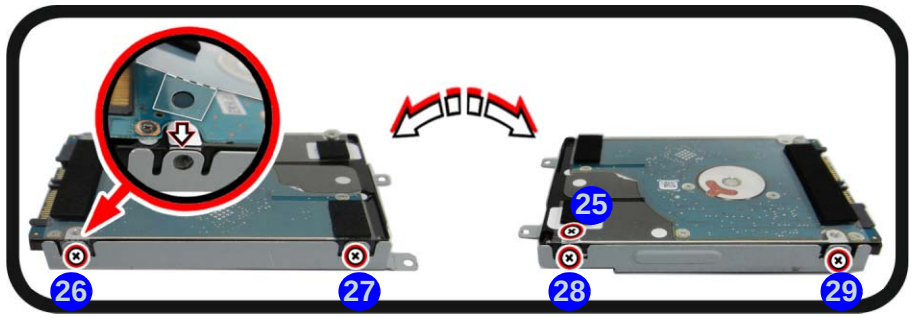
- 2 Screws

Figure 4
HDD Assembly Removal (cont'd.)

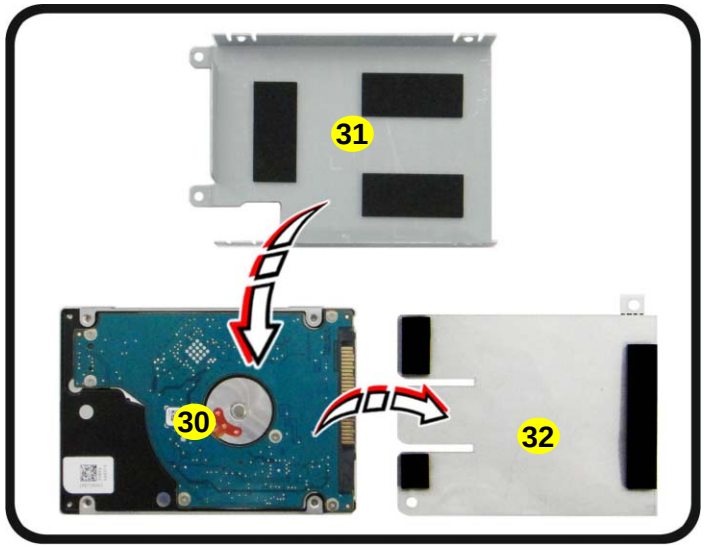
f. Remove the screws from the HDD assembly.
g. Separate the HDD, mylar cover and bracket.

8. Remove screws 25 - 29 from the hard disk assembly (***Figure 4f***).
9. Separate the hard disk 30 from the bracket 31 and mylar cover 32 (***Figure 4g***).
10. 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).

f.



g.



30. HDD
31. Bracket
32. Mylar Cover

- 5 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.

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.

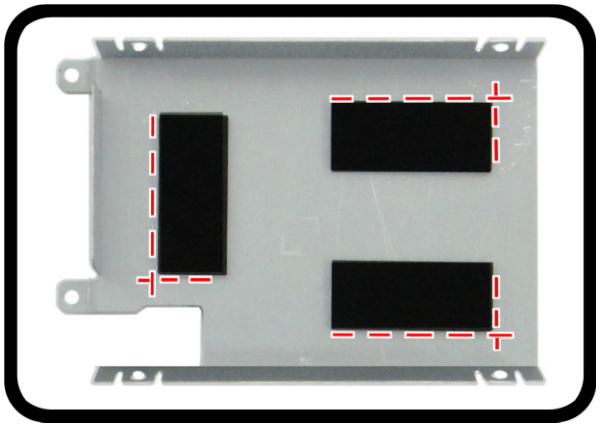


Figure 5
Foam Rubber Insert for 7mm(H) HDDs

- 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.

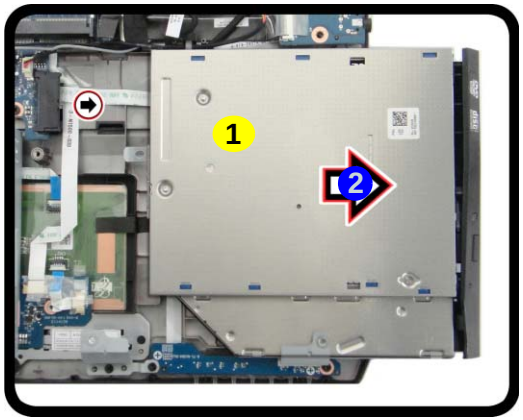
Figure 6
Optical Device Removal

a. Push the optical device out off the computer.
b. Pry the bezel off the optical device.
c. Separate the bezel and optical device
d. Install the front bezel.

Removing the Optical (CD/DVD) Device

1. Turn **off** the computer, remove the battery (***page 2 - 5***), and bottom case (***page 2 - 6***).
2. Carefully push out the optical device 1 out of the bay in the direction of the arrow 2 (***Figure 6a***).
3. Carefully pry the bezel 4 off the optical device at point 3 (***Figure 6b***).
4. Separate the bezel 4 and the optical device (***Figure 6d***).
5. Reverse the process to attach the front bezel 4 with the new optical device at point 5 (***Figure 6d***).
6. 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.
7. Restart the computer to allow it to automatically detect the new device.

a.



c.

b.

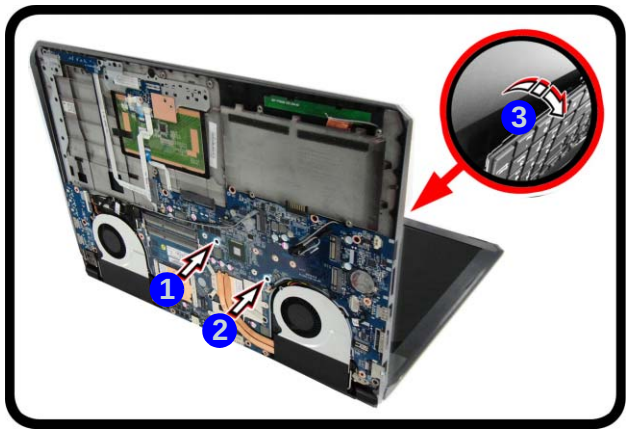
d.

1. Optical Device
4. Bezel Cover

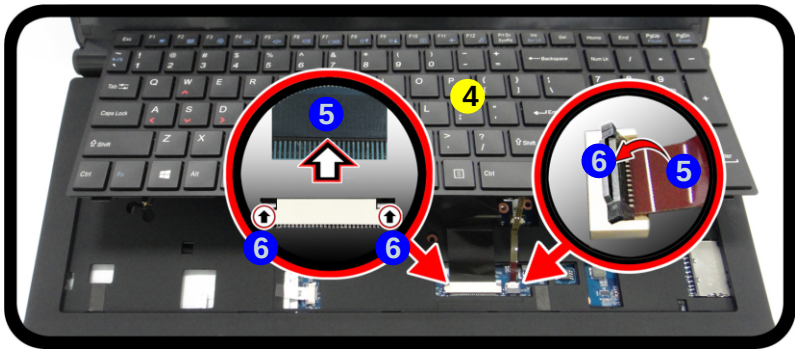
Removing the Keyboard

1. Turn **off** the computer, remove the battery (*page 2 - 5*), and bottom case (*page 2 - 6*).
2. Open it up with the LCD on a flat surface before pressing at points 1 & 2 to release the keyboard module (use the special eject stick to do this) while releasing the keyboard in the direction of the arrow 3 as shown (*Figure 7a*).
3. Carefully lift the keyboard 4 up, being careful not to bend the keyboard ribbon cable 5. Disconnect the keyboard ribbon cable 5 from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins 6 away from the base (*Figure 7b*).
4. Carefully lift the keyboard 4 off the computer (*Figure 7c*).

a.



b.



c.

Figure 7
Keyboard Removal

a. Eject the keyboard using a special eject stick to push the keyboard out while releasing the keyboard as shown.
b. Lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.
c. Remove the keyboard.

Re-inserting the Keyboard

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

4. Keyboard

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.

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

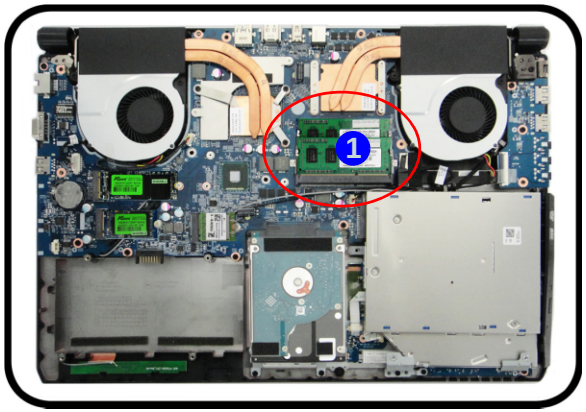
Removing the System Memory (RAM)

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.

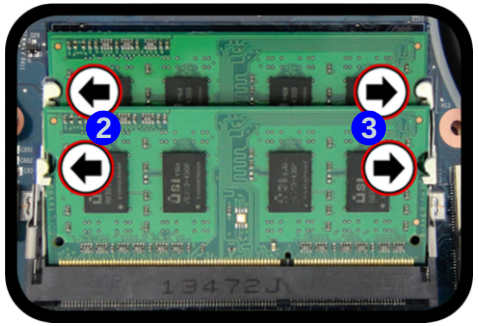
Memory Upgrade Process

1. Turn **off** the computer, remove the battery (***page 2 - 5***), and bottom case (***page 2 - 6***).
2. The RAM modules will be visible at point 1 on the mainboard (***Figure 8a***).
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.
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.

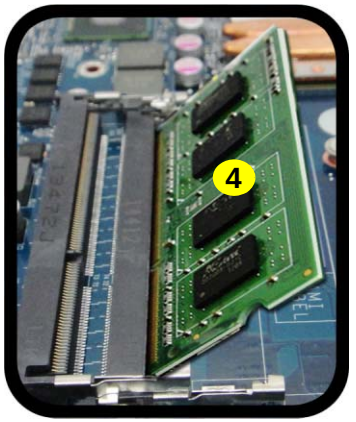
a.



b.



c.



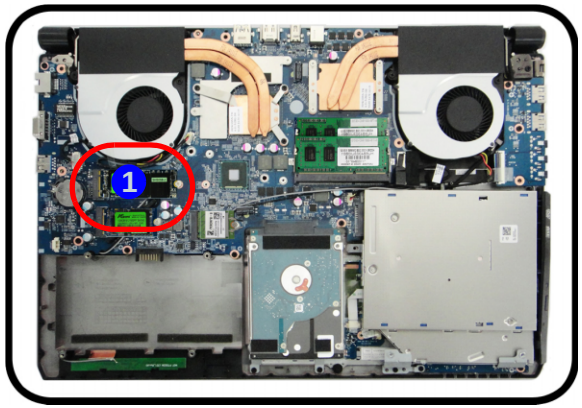
Removing the M.2 SSD Module

1. Turn **off** the computer, remove the battery (***page 2 - 5***), and bottom case (***page 2 - 6***).
2. The M.2 SSD module will be visible at point 1 on the mainboard (***Figure 9a***).
3. Remove the screw 2 (***Figure 9b***)
4. The M.2 SSD module 3 (***Figure 9c***) will pop-up, and you can remove it from the computer.
5. Reverse the process to install a new SSD (make sure that the hexagonal screw is in the correct location). Note that a flat-head screw driver can be used to tighten or remove the hexagonal screw as shown (***Figure 9d***).

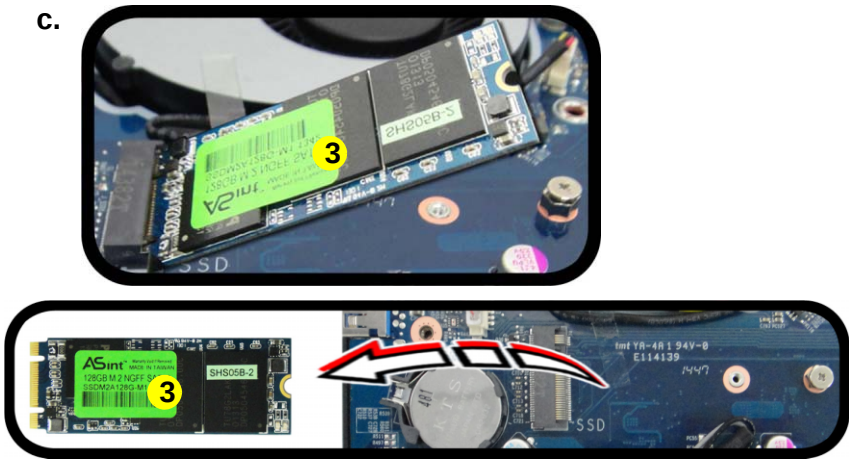
Figure 9
M.2 SSD Module Removal

a. Locate the M.2 SSD.
b. Remove the screw.
c. The M.2 SSD module will pop up.

a.



c.



b.

3.M2 SSD Module

- 1 Screw

Figure 10
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 10b***).

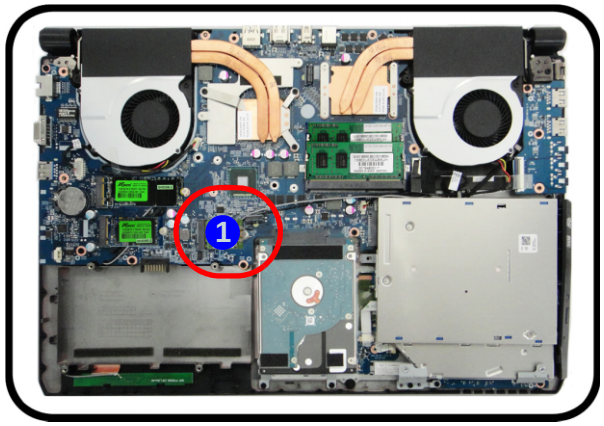
5.Wireless LAN Module

- 1 Screw

Removing the Wireless LAN Module

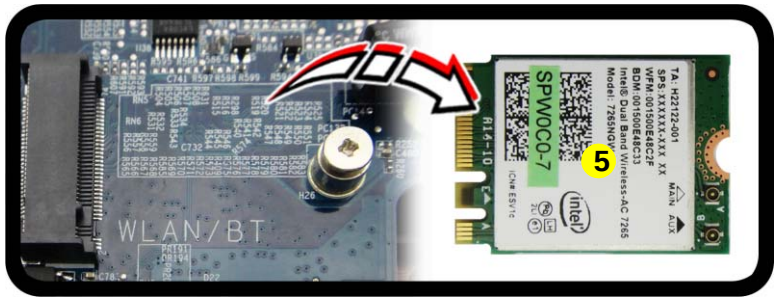
1. Turn **off** the computer, remove the battery (***page 2 - 5***), keyboard (***page 2 - 11***) and bottom case (***page 2 - 6***).
2. The Wireless LAN module will be visible at point 1 on the mainboard (***Figure 10a***).
3. Carefully disconnect the cables 2 & 3, and then remove the screw 4 (***Figure 10b***)
4. The Wireless LAN module 5 (***Figure 10c***) will pop-up, and you can remove it from the computer.

a.



b.

c.



Wireless LAN, Combo, 3G & LTE 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	White
LTE Broadband	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 11
3G/4G Module Removal

a. Locate the module.
b. Disconnect the cables and remove the screw.
c. The module will pop-up.
d. Lift the module up off the socket.

Removing the 3G/4G Module

3G/4G Module Removal Procedure

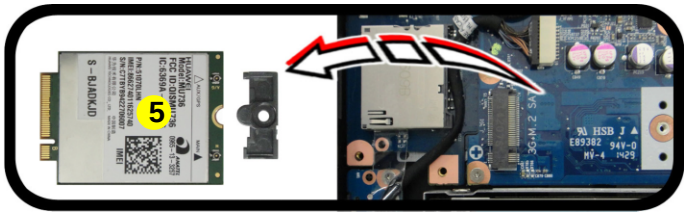
1. Turn **off** the computer, remove the battery (***page 2 - 5***), and bottom case (***page 2 - 6***).
2. Locate the module, it is visible at point 1 (***Figure 11a***).
3. Carefully disconnect the cables 2 & 3, and then remove the screw 4 from the module (***Figure 11b***).
4. The module 3 will pop-up (***Figure 11c***).
5. Lift the module 5 up and off the computer (***Figure 11d***).

a.

b.

c.

d.



5. 3G/4G Module

- 1 Screw

Appendix A:Part Lists

This appendix breaks down the ***N150RD1 / N151RD1*** 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.

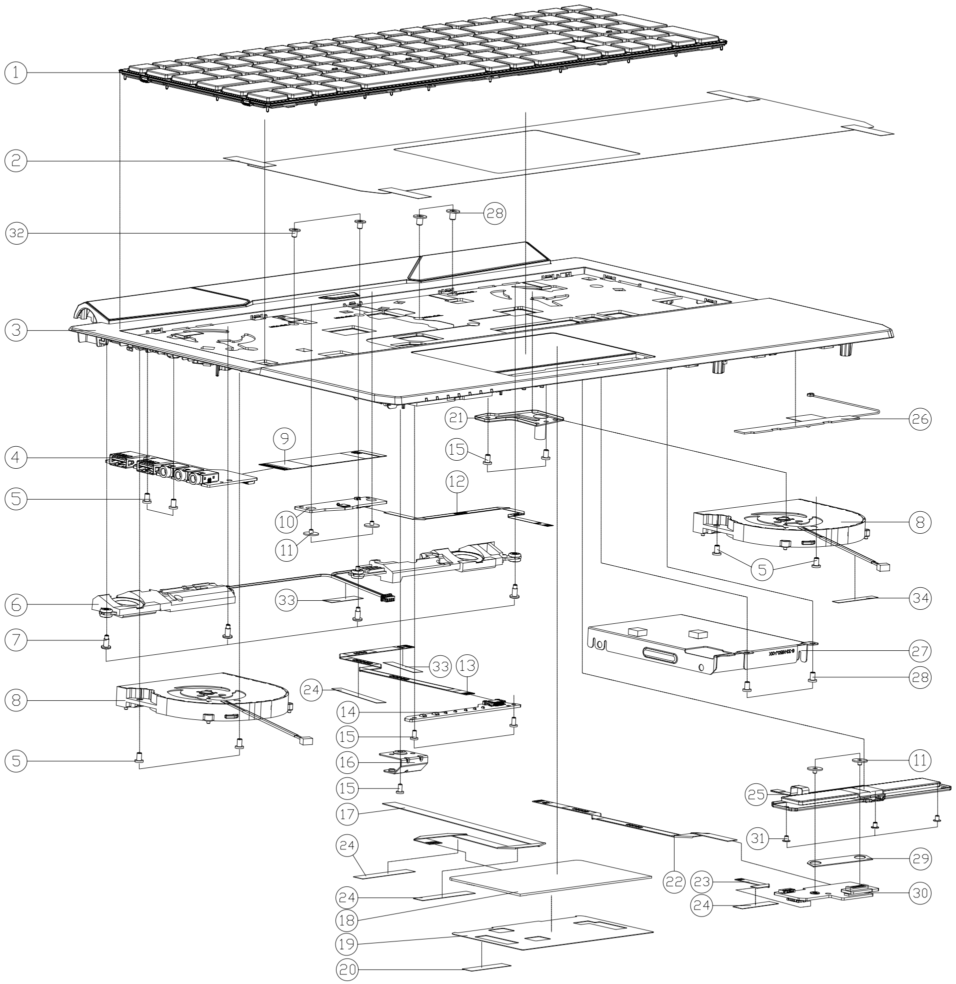
Note: Be sure to check any update notices. The parts shown in these illustrations are appropriate for the system at the time of publication. Over the product life, some parts may be improved or re-configured, resulting in *new* part numbers.

Part List Illustration Location

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

Table A - 1
Part List Illustration Location

Top

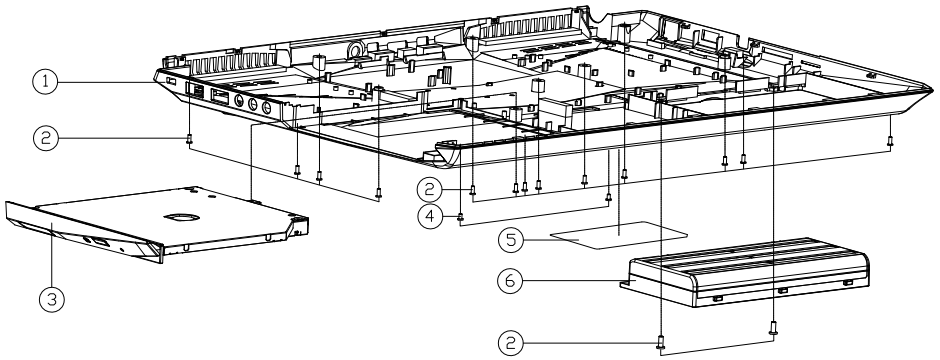


ITEM	PART NAME	PART NO	REMARK
1	WHITE BL KB USA MP-13H83USJ430B P650SE BLACK ISOLATION WITH WIN8 KEY + K/B FRAME	6-80-P6500-013-1	
2	TOP CASE PROTECT MYLAR PET N150SD	6-40-N1502-041	
3	TOP CASE MODULE ONKYO(KAPOK) N150RF1	6-39-N15F2-011-N	
3	TOP CASE MODULE ONKYO(KAPOK) N151RF1	6-39-N15F2-110-N	
4	AUDIO BOARD V2.0 N150RF1	6-77-N15F8-D02	
5	SCREW M2.5*4L K1 BK/O ICT NY	6-35-B4125-4RA	
6	SPK+CABLE FRONT R?L 51*20 T5.2 2.0W 4? EE09214C(ASSEMBLY MODIFY) P177SM-A	6-23-5P177-012-A	
7	SCREW M2*6.2L NI ICT NY FOR SPEAKER	6-35-Z1120-6R2	
8	FAN MODULE (A-POWER) N150SD	6-31-N1502-301	
9	FFC CABLE FOR AUDIO BOARD TO MB 73MM 60V 40P (CNJS) N150SD	6-43-N1500-062	
10	LID PWR SW BOARD V1.0 N150RF1	6-77-N15FS-D01	
11	SCREW M2*2L KI BK/Z ICT NY(ø8,T=0.6)	6-35-B6120-2RE	
12	FFC CABLE FOR POWER BD TO MB 148.5MM 60V 8P (CNJS) N150SD	6-43-N1500-050	
13	FFC CABLE FOR LED TO MB 184.5MM 60V 12P (CNJS) N150SD	6-43-N1500-041	
14	FRONT LED BOARD V1.0 N150RF1	6-77-N15F4-D01	
15	SCREW M2*4L KI BZ ICT NY	6-35-B6120-4RA	
16	TOP CASE BOSS BKT 01 (SECC) N150SD	6-33-N1502-021	
17	FFC CABLE TP TO MB 148.5MM 60V 6P (N) (HT) N157RD-V	6-43-N1570-011	
18	TOUCH PAD SYNAPTICS TM-03189-001(100*55MM) N250LU	6-49-N2503-010	
19	TOUCH PAD MYLAR (PET + TESA 4972) N170SD	6-40-N1702-051	
20	GASKET BLACK (30*7*0.13T) W370ET	6-47-00190-016	
21	TOP CASE BOSS BKT 02 (SECC) N150SD	6-33-N1502-032	
22	FFC CABLE FOR FP TO MB 161MM 60V 6P (CNJS) N150SD	6-43-N1500-031	ONLY FOR W/FINGER
23	FFC CABLE FOR FOR CLICK TO TP 32MM 60V 4P (CNJS) N150S	6-43-N1500-021	
24	TAPE MYLAR (A),MYLAR M550J	6-40-M55J2-010	
25	FUNCTION KEY FOR CLICK BUTTON MODULE W/FINGER(772?014C8?430) P650SE	6-23-KP650-014	FOR N151RD
25	FUNCTION KEY FOR CLICK BUTTON MODULE W/FP P750DM	6-23-KP75D-011	FOR N150RD
25	FUNCTION KEY FOR CLICK BUTTON MODULE W/O FINGER(772?014C9?430) P650SE	6-23-KP650-023	FOR N151RD
25	FUNCTION KEY FOR CLICK BUTTON MODULE W/O FP P750DM	6-23-KP75D-021	FOR N150RD
25	FUNCTION KEY FOR CLICK BUTTON MODULE W/FINGER P650RE6	6-23-KP65R-012	FOR N151RD1
25	FUNCTION KEY FOR CLICK BUTTON MODULE W/O FINGER P650RE6	6-23-KP65R-022	FOR N151RD1
26	ANTENNA IPEX-4 3G+LTE WGT LTE-2 PCB 0.7G/0.8G/0.9G/1.4G/1.8G/1.9G/2.1G/2.6GHZ L=250MM N150SD	6-23-7N150-020	
27	W/O MAIN HDD ASS'Y N150SD	6-79-N150SD0J-010	
27	W/MAIN HDD ASS'Y N150SD	6-79-N150SD0J-020	
28	SCREW M2.5*3L K1 BZ ICT NY	6-35-B6125-3R0	
29	CLICK W/O FP MYLAR PET (48*14*0.5T) P650SE	6-40-P6502-080	ONLY FOR W/O FINGER
30	CLICK FINGER BOARD V1.0 (W/FP)+FINGER PRINT BOARD V1.0 N150RF1	6-77-N15FA-N01	
30	CLICK FINGER BOARD V1.0 (W/O FP) N150RF1	6-77-N15F2-D01-1	
31	SCREW M2*2.5L KI NI ICT NY (ø4 T=0.5 1#)	6-35-B1120-2R6	
32	SCREW M2*3L KI NI ICT NY (DD=ø4.5,DT=0.4)	6-35-B1120-3RE	
33	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	
34	TAPE MYLAR (B),MYLAR M550J	6-40-M55J2-020	

Figure A - 1
Top

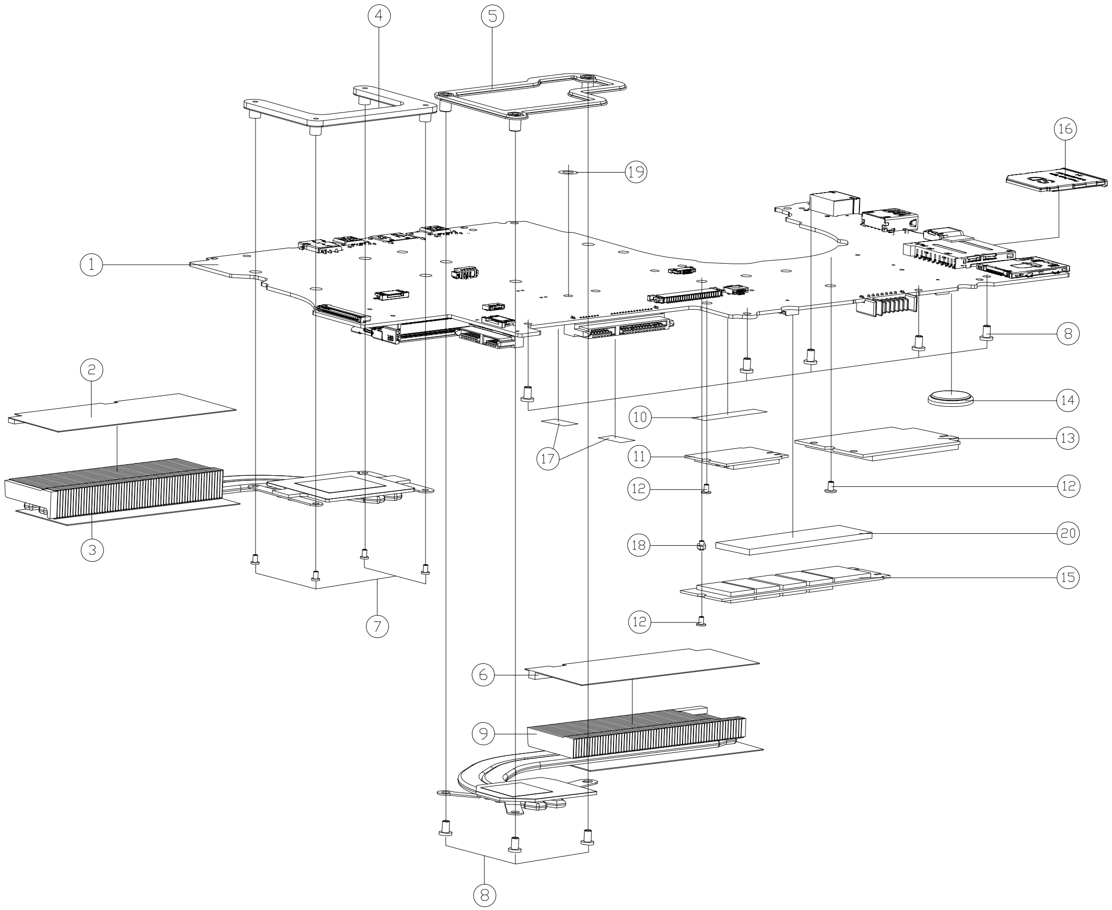
Bottom

Figure A - 2
Bottom



ITEM	PART NAME	PART NO	REMARK
1	BOTTOM CASE MODULE N150RF1	6-39-N15F3-011	
2	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
3	W/O ODD ASS'Y N150SD	6-79-N150SD0Z-000	
3	DUMMY ODD ASS'Y N150SD	6-79-N150SD0Z-001	
3	SATA DVD SUPER MULTI 8X ASS'Y N150SD	6-79-N150SD0Q-001	
4	SCREW M2.5*4L K1 BK/O ICT NY	6-35-B4125-4RA	
5	PRODUCT LABEL FOR N150RF1	6-45-N150RF13-010	
5	PRODUCT LABEL FOR N150RF1-G	6-45-N150RF1G-010	
5	PRODUCT LABEL FOR N150RD1	6-45-N150RD13-010	
5	PRODUCT LABEL FOR N151RD1	6-45-N151RD13-010	
6	[illegible]	6-87-N150S-4293	
6	[illegible]	6-87-N150S-4U93	

Main Board



ITEM	PART NAME	PART NO	REMARK
1	MAIN BOARD(CPU/I7-6820HK/2.7G) V2.0 (EDP)(W/TPM) N150RF1	6-77-N150RF10-D02-C	
1	MAIN BOARD(CPU/I7-6820HK/2.7G) V2.0 (EDP)(W/O TPM) N150RF1	6-77-N150RF10-D02-1C	
1	MAIN BOARD(CPU/I7-6700HQ/2.6G) V2.0 (EDP)(W/TPM) N150RF1	6-77-N150RF10-D02-E	
1	MAIN BOARD(CPU/I7-6700HQ/2.6G) V2.0 (EDP)(W/O TPM) N150RF1	6-77-N150RF10-D02-1E	
1	MAIN BOARD(CPU/I5-6440HQ/2.6G) V2.0 (EDP)(W/TPM) N150RF1	6-77-N150RF10-D02-F	
1	MAIN BOARD(CPU/I5-6440HQ/2.6G) V2.0 (EDP)(W/O TPM) N150RF1	6-77-N150RF10-D02-1F	
1	MAIN BOARD(CPU/I5-6300HQ/2.3G) V2.0 (EDP)(W/TPM) N150RF1	6-77-N150RF10-D02-G	
1	MAIN BOARD(CPU/I5-6300HQ/2.3G) V2.0 (EDP)(W/O TPM) N150RF1	6-77-N150RF10-D02-1G	
1	MAIN BOARD(CPU/I7-6820HK/2.7G) V2.0 (EDP)(W/TPM) N150RF1-G	6-77-N150RF20-D02-C	
1	MAIN BOARD(CPU/I7-6820HK/2.7G) V2.0 (EDP)(W/O TPM) N150RF1-G	6-77-N150RF20-D02-1C	
1	MAIN BOARD(CPU/I7-6700HQ/2.6G) V2.0 (EDP)(W/TPM) N150RF1-G	6-77-N150RF20-D02-E	
1	MAIN BOARD(CPU/I7-6700HQ/2.6G) V2.0 (EDP)(W/O TPM) N150RF1-G	6-77-N150RF20-D02-1E	
1	MAIN BOARD(CPU/I5-6440HQ/2.6G) V2.0 (EDP)(W/TPM) N150RF1-G	6-77-N150RF20-D02-F	
1	MAIN BOARD(CPU/I5-6440HQ/2.6G) V2.0 (EDP)(W/O TPM) N150RF1-G	6-77-N150RF20-D02-1F	
1	MAIN BOARD(CPU/I5-6300HQ/2.3G) V2.0 (EDP)(W/TPM) N150RF1-G	6-77-N150RF20-D02-G	
1	MAIN BOARD(CPU/I5-6300HQ/2.3G) V2.0 (EDP)(W/O TPM) N150RF1-G	6-77-N150RF20-D02-1G	
1	MAIN BOARD(CPU/I7-6700HQ/2.6G) V2.0A (EDP)(W/TPM) N150RD1	6-77-N150RD10-D02A-E	
1	MAIN BOARD(CPU/I5-6440HQ/2.6G) V2.0A (EDP)(W/TPM) N150RD1	6-77-N150RD10-D02A-F	
1	MAIN BOARD(CPU/I5-6300HQ/2.3G) V2.0A (EDP)(W/TPM) N150RD1	6-77-N150RD10-D02A-G	
1	MAIN BOARD(CPU/I7-6700HQ/2.6G) V2.0A (EDP)(W/O TPM) N150RD1	6-77-N150RD10-D02A-1E	
1	MAIN BOARD(CPU/I5-6440HQ/2.6G) V2.0A (EDP)(W/O TPM) N150RD1	6-77-N150RD10-D02A-1F	
1	MAIN BOARD(CPU/I5-6300HQ/2.3G) V2.0A (EDP)(W/O TPM) N150RD1	6-77-N150RD10-D02A-1G	
2	MYLAR TOP CPU R (MYLAR+SPONGE+SONY G9000)N150RF1	6-40-N15F3-010	
3	CPU HEATSINK MODULE N150RD	6-31-N15R2-101	
4	CPU SUPPORT BRACKET SECC T=1.5 P150HM	6-33-X510S-011	
5	VGA SUPPORTER SECC W150ERQ	6-33-W15ES-012	
6	MYLAR TOP VGA L (MYLAR+SPONGE+SONY G9000)N150RF1	6-40-N15F3-020	
7	SCREW M2*3L KI NI ICT NY (DD=ø4.5,DT=0.4)	6-35-B1120-3RE	
8	SCREW M2.5*4L K1 BK/O ICT NY	6-35-B4125-4RA	
9	GPU HEATSINK MODULE N150SD	6-31-N1502-202	
10	TAPE MYLAR (B),MYLAR M550J	6-40-M55J2-020	
11	WLAN+BT COMBO DUAL BAND INTEL SNOWFIELD PEAK 8260NGW MAINSTREAM 2X2 AC+BT 4.1 LE C1 STEPPING M2 2230 GENERIC N250JU	6-88-N25JF-4200	OPTION
11	WLAN+BT COMBO INTEL STONE PEAK 7265NGW.AC D0 STEPPING PCI-E M2 2230 2X2 AC+BT GENERIC W950LU	6-88-W95LF-4220	OPTION
11	WLAN+BT COMBO INTEL STONE PEAK 7265NGWBNGW D0 STEPPING PCI-E M2 2230 2X2 BGN+BT GENERIC W950LU	6-88-W95LF-4240	OPTION
11	WLAN+BT COMBO INTEL WIRELESS-AC 3165 (STONE PEAK 1) D0 AC + BT 3165NGWG PCI-E M2 2230 N240LU	6-88-N240F-4200	OPTION
11	WLAN+ BT COMBO ATHEROS QCNFA364A(KILLER 1535 DUAL BAND 2X2 AC+BT 4.1 LE M2 2230 P750DM	6-88-P75DF-9601	OPTION
11	WLAN+ BT COMBO LITEON WCBN821-CC (RTL8723BE) 802.11BGN 1X1 (PCI-E) +BT4.0 LE (USB) WLAN+REALTEK BT SOFTWARE NGFF CARD S210TU	6-88-S210F-9400	OPTION
11	WLAN+ BT COMBO CHICONY CYW42R2 (RTL8723BE) 802.11BGN 1X1 (PCI-E) +BT4.0 LE (USB) WLAN+REALTEK BT SOFTWARE PCI-E M2 2230 FOR N170SD	6-88-N170F-5100	OPTION
11	WLAN+BT COMBO DUAL BAND INTEL SNOWFIELD PEAK 8260NGW NON-VPRO MW94267 2X2 AC+BT 4.1 LE C1 STEPPING M2 2230 GENERIC P670RG	6-88-P67RF-4200	OPTION
12	SCREW M2*2L KI NI ICT NY (DD=ø5 ,T=0.5)	6-35-B1120-2R0	
13	WCDMA HUAWEI MU736 HSPA+ NGFF CARD USB INTERFACE WITHOUT GPS S210TU	6-88-S210W-8810	
13	LTE 4G NO GPS MODULE HUAWEI ME936 FIRMWARE VER 11.350.20.00.00 FOR EUROPE NGFF M2 CARD USB INTERFACE W330SU2	6-88-W3306-8841	
13	LTE 4G GPS DISABLED MODULE (NTTDOCOMO)HUAWEI ME906J FOR JAPAN NGFF M2 CARD USB INTERFACE W330SU2	6-88-W3306-8830	
14	BATTERY 3V 220MA BBBCR2032B (KTS)	6-23-6A2B2-030	
15	SSD M2 2280 512GB SAMSUNG MZHPV512HDGL-XXXXX (SM951) PCIE G3X4 MLC	6-85-D515B-S00	OPTION
15	SSD M.2 2280 500GB CRUCIAL CT500MX200SSD4 (MX200) SATA3 MLC	6-85-D515A-100	OPTION
15	SSD M2 2280 512GB SAMSUNG MZNLN512HCJH0000 (PM871) SATA3 V2 EVO	6-85-D515B-S01	OPTION
15	SSD M.2 2280 360GB INTEL SSDSCKJW360H6 (535) SATA3 MLC	6-85-D513G-Z00	OPTION
15	SSD M2 2280 512GB SAMSUNG MZVPV512HDGL-00000 (SM951_NVME) PCIE G3X4 MLC	6-85-D515B-S02	OPTION
15	SSD M2 2280 512GB SAMSUNG MZVLV512HCJH-00000 (PM951) PCIE G3X4 TLC	6-85-D515B-S03	OPTION
15	SSD M2 2280 256GB PHISON SSMP256GTMC2-S10C (S10C) SATA3 MLC	6-85-D51R6-H01	OPTION
16	DUMMY SD PSUH PUSH TYPE PC+ABS (C7230P-701DE) W970SUW	6-42-W9708-010	
17	TAPE MYLAR TRANSPARENT (20*10*0.05) P180HM	6-40-P1803-020	
18	SCREW M2*2.5L (H=2.5 D=5) STEEL ICT NY FOR NGFF CARD(CHANGE MATERIAL)	6-35-ZA120-2R5	
19	WASHER ø6*ø3*0.3t (MYLAR)	6-37-02000-601	
20	THERMAL PAD (MA500) 59*19.5*2.75MM N150RD	6-48-N15RS-010	

Figure A - 3
Main Board

HDD

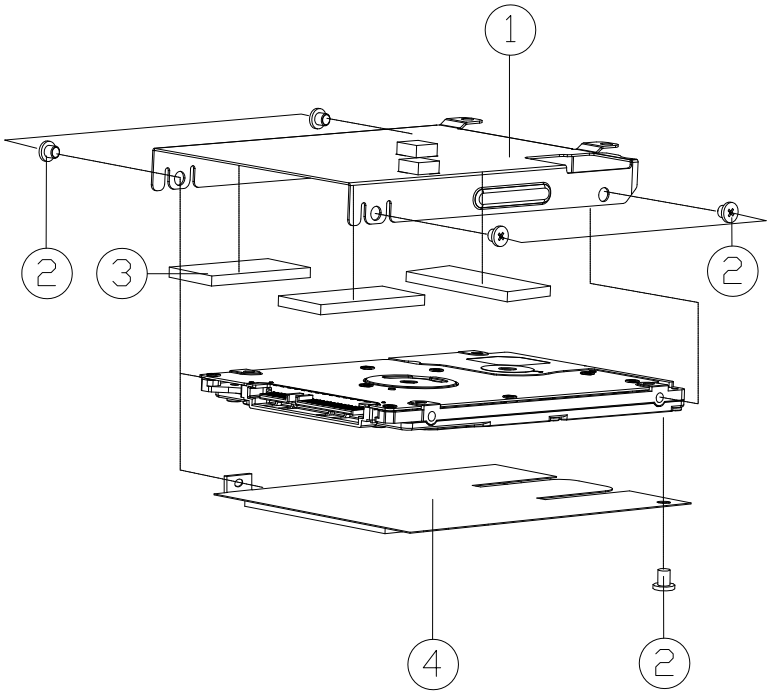
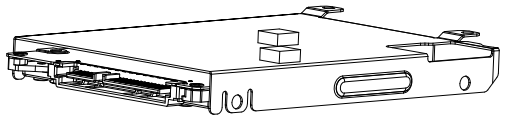
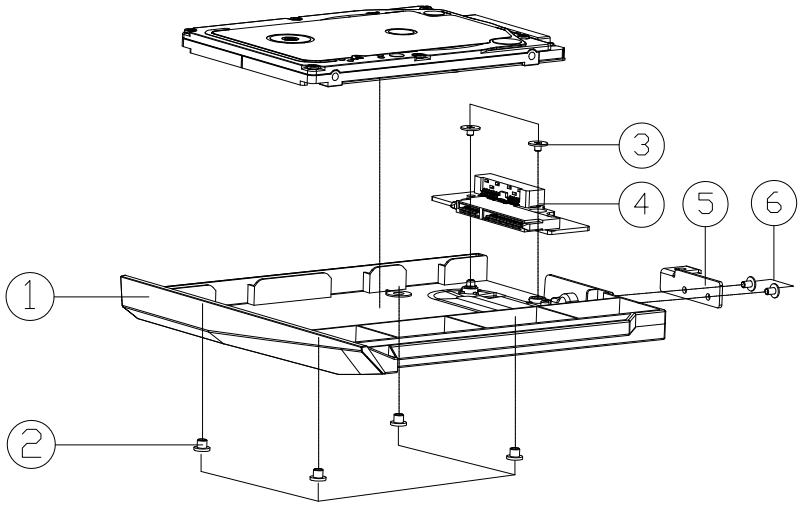


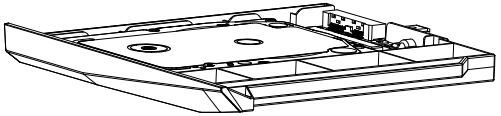
Figure A - 4
HDD



ITEM	PART NAME	PART NO	REMARK
1	HDD BRACKET (SECC+CR2030) N150SD	6-33-N150J-011	
2	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	
3	7MM HDD BKT SPONGE (35*15*2.5) CR2030 N150SD	6-47-0019A-355	
4	HDD MYLAR (PET0.25T+CR2030) W940TU	6-40-W940J-010	

2nd HDD



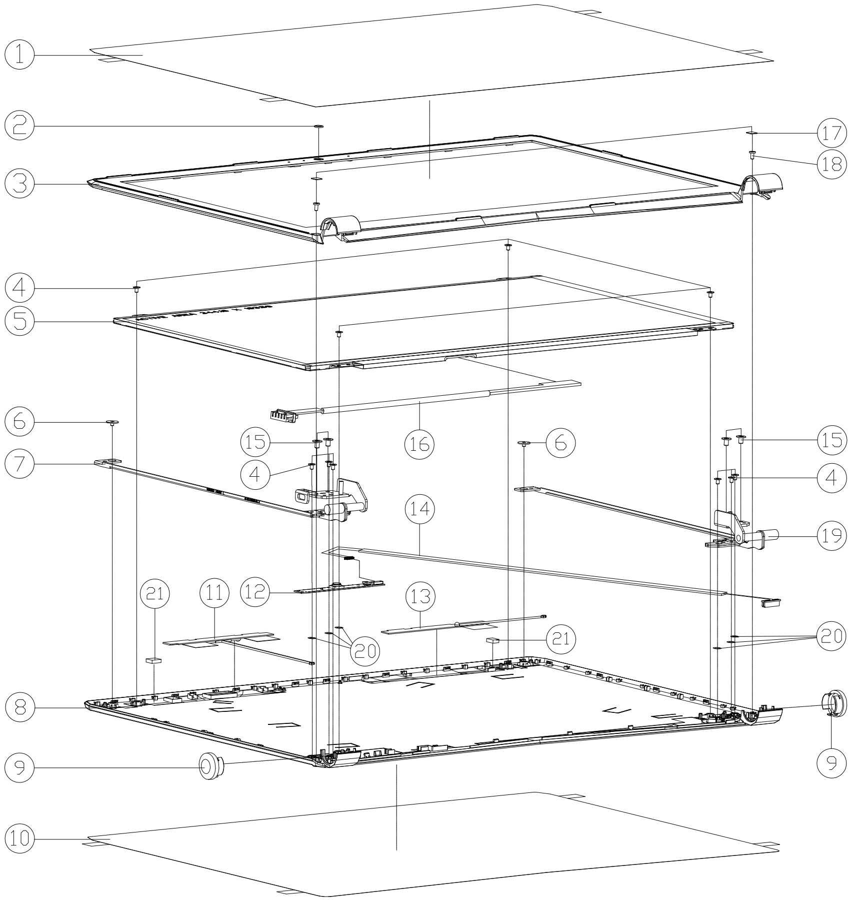


ITEM	PART NAME	PART NO	REMARK
1	DUMMY ODD MODULE N150SD	6-42-N150Z-201	
2	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	
3	SCREW M2*2L KI BK/Z ICT NY (Ø6,T=0.5)	6-35-B6120-2RC	
4	ODD BOARD V3.0 N150SD	6-77-W95KN-D13-B	
5	ODD LOCK BRKT (SECC 0.5T) N150SD	6-33-N150Z-011	
6	SCREW M2*3L KI NI ICT NY (DD=Ø4.5,DT=0.4)	6-35-B1120-3RE	

Figure A - 5
2nd HDD

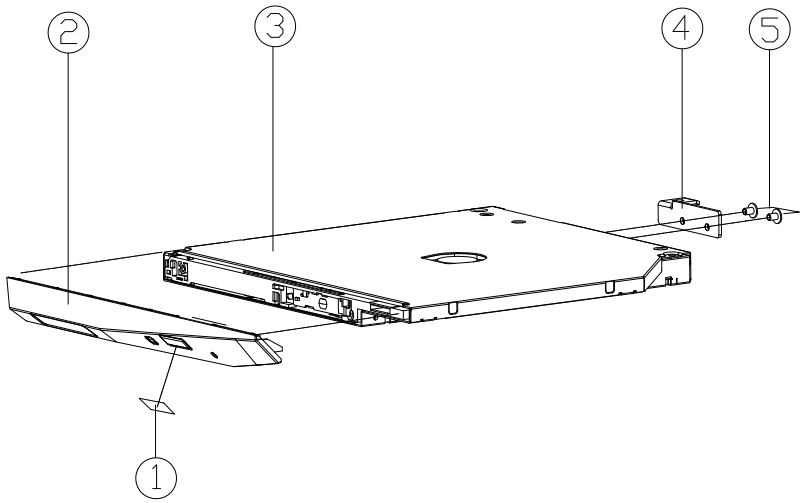
LCD

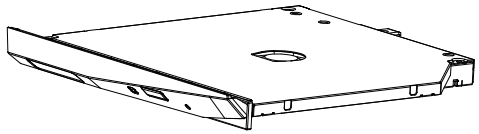
Figure A - 6
LCD



ITEM	PART NAME	PART NO	REMARK
1	FRONT COVER PROTECTION PET MYLAR N150SD	6-40-N1508-020	
2	CCD LENS (VIEWING AREA 4MM)(PMMA)W940TU	6-42-W9401-020	
3	LCD FRONT COVER MODULE N150RD	6-39-N15R1-010	
4	SCREW M2*3L KI NI ICT NY (DD=Ø4.5,DT=0.4)	6-35-B1120-3RE	
5	LCD 15.6" FHD (EDP) INNOLUX N156HGE-EAB (LED) 3.2 MM	6-50-LB232-V00	
5	LCD 15.6" FHD/IPS/EDP LG LP156WF6-SPK1 (N4) (LED) 3.2MM	6-50-LB232-L06	
5	LCD 15.6' UHD (PLS)(EDP) SAMSUNG LTN156FL02-101 ' SUPPORT S/W G-SYNC '(LED) 2.6MM	6-50-L1226-M03	
5	LCD 15.6' FHD/IPS/EDP LG LP156WF6-SPB1 (N7) (LED)' SUPPORT S/W G-SYNC ' 3.2MM	6-50-LB232-L04	
6	SCREW M2*2L KI BK/Z ICT NY(Ø8,T=0.6)	6-35-B6120-2RE	
7	HINGE L (SUS430+S50C) SZS N150SD	6-33-N1501-0L2	
8	LCD BACK COVER MODULE(PAINT) N150SD(KAPOK)	6-39-N1501-022-W	
8	LCD BACK COVER MODULE N151SD	6-39-N1511-021	
9	HINGE RING (TEIJIN TN-3715BX) N150SD	6-42-N1501-012	
9	HINGE RING (TEIJIN TN-3715BX) (CHANGE PAINT) N151SD	6-42-N1511-012	
10	BACK COVER PROTECTION PET MYLAR N150SD	6-40-N1508-010	
11	ANTENNA IPEX-4 WLAN COMBO WGT WL1+WL2 PCB FR4 2.4G/5GHZ WL1=600MM WL2=600MM N150SD	6-23-7N150-011	
12	UVC CAMERA BISON FIX BN8VU6VTH-020 2M FHD SLIM OV2724 P650SE FW0605 W/LED W/ARRAY D-MIC	6-88-P650C-4900	
12	UVC CAMERA CHICONY FIX CKFGF1021003920LH 2M FHD OV2740 W650DC FW3601 W/WHITE-LED W/2D-MIC	6-88-W65DC-5100	
12	UVC CAMERA BISON FIX BN8VU6VTH-040 2M FHD OV2724 P870DM2 FW0601 W/WHITE-LED W/2D-MIC	6-88-P872C-4900	
13	ANTENNA IPEX-4 3G+LTE WGT LTE-1 PCB 0.7G/0.8G/0.9G/1.4G/1.8G/1.9G/2.1G/2.6GHZ L=550MM P750ZM	6-23-7P750-030	OPTION
14	WIRE CABLE FOR CCD D-MIC 568.1MM 3.3V 8P (HT) WA50SJQ	6-43-WA50T-011-1	
15	.SCREW M2.5*4L K1 BK/O ICT NY	6-35-B4125-4RA	
16	WIRE CABLE FOR EDP 350MM 19V 40PIN (I) (HL/LC CON:L05M30S-HF) N150SD	6-43-N1501-012-L	
16	WIRE CABLE FOR EDP 4K 350MM 19V 40PIN (I) (HL/LC CON:L01M40S-HF) N150RD	6-43-N1571-020-L	
17	FRONT COVER SCREW MYLAR(PC+SM468)(5*5*0.35T) N150SD	6-40-N1501-010	
18	SCREW M2*4L KI BZ ICT NY	6-35-B6120-4RA	
19	HINGE R (SUS430+S50C) SZS N150SD	6-33-N1501-0R2	
20	WASHER Ø6*Ø3*0.3t (MYLAR)	6-37-02000-601	
21	RUBBER 7.5*5.5*4.3T FOR N151RD	6-47-00120-950	

DVD



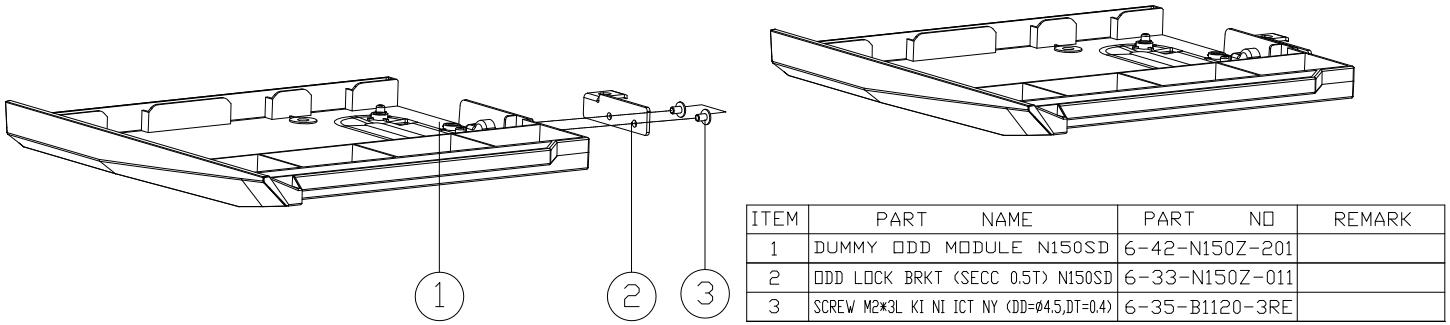


ITEM	PART NAME	PART NO	REMARK
1	SUPER MULTI ODD BEZEL LABEL (SIZE CHANGE)	6-45-W860Q-012	
2	ODD BEZEL MODULE N150SD	6-42-N150Z-102	
3	SATA DVD SUPER MULTI 5 1/4" 8X 9.5MM SU-208 (H/A- A VERUB F/A- TODD (WIN 10) TSST	6-85-A088X-T08	FOR TSST
3	SATA DVD SUPER MULTI 5 1/4" 8X 9.5MM DU-8A6SHXXX F/A- DOH H/A- 01 (WIN 8) PLDS	6-85-A088X-L04	FOR PLDS
4	ODD LOCK BRKT (SECC 0.5T) N150SD	6-33-N150Z-011	
5	SCREW M2*3L KI NI ICT NY (DD=Ø4.5,DT=0.4)	6-35-B1120-3RE	

Figure A - 7
DVD

Dummy ODD

Figure A - 8
Dummy ODD



ITEM	PART NAME	PART NO	REMARK
1	DUMMY ODD MODULE N150SD	6-42-N150Z-201	
2	ODD LOCK BRKT (SECC 0.5T) N150SD	6-33-N150Z-011	
3	SCREW M2*3L KI NI ICT NY (DD=Ø4.5,DT=0.4)	6-35-B1120-3RE	

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the ***N150RD1 / N151RD1*** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

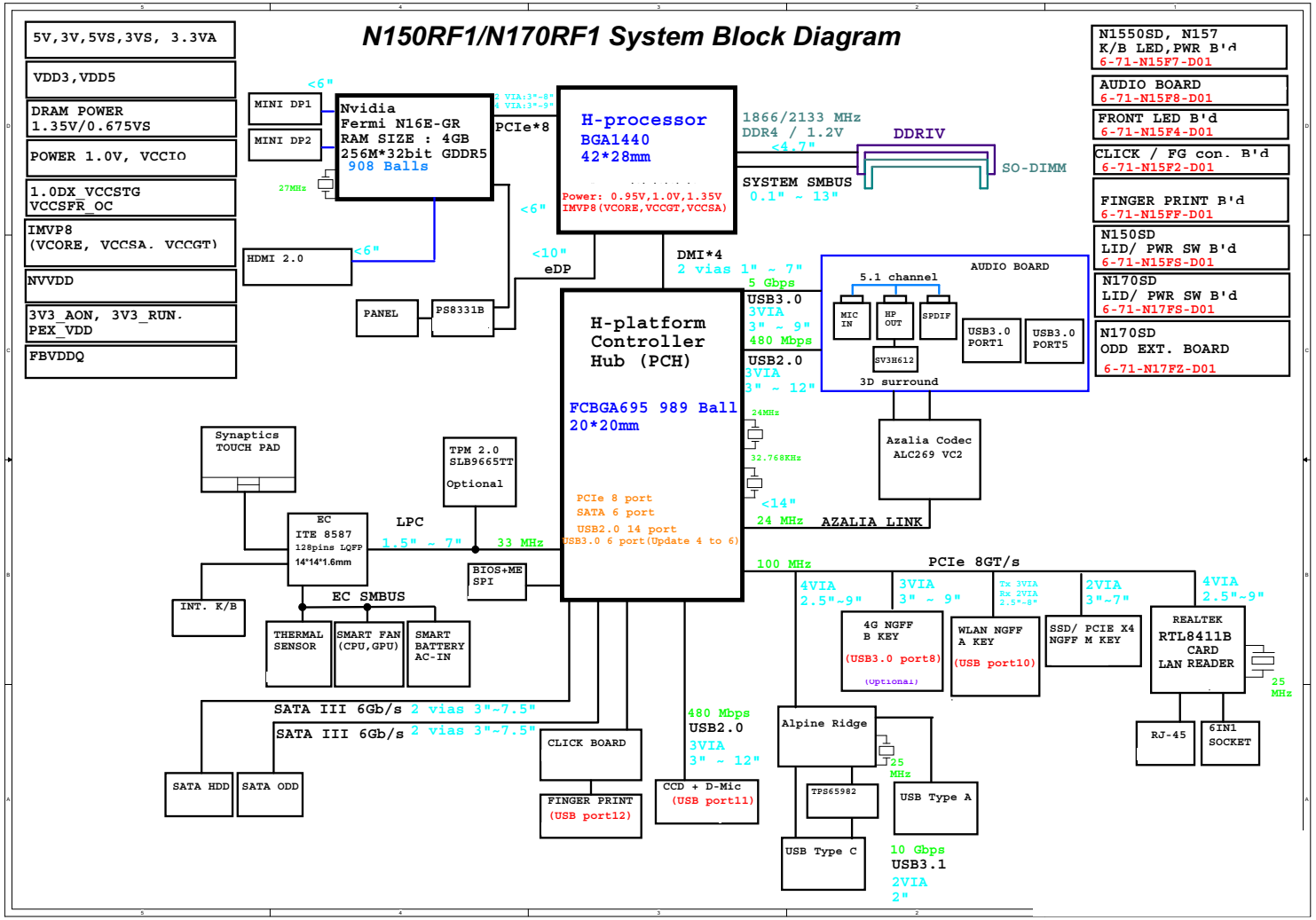
Table B - 1
SCHEMATIC DIAGRAMS

Version Note

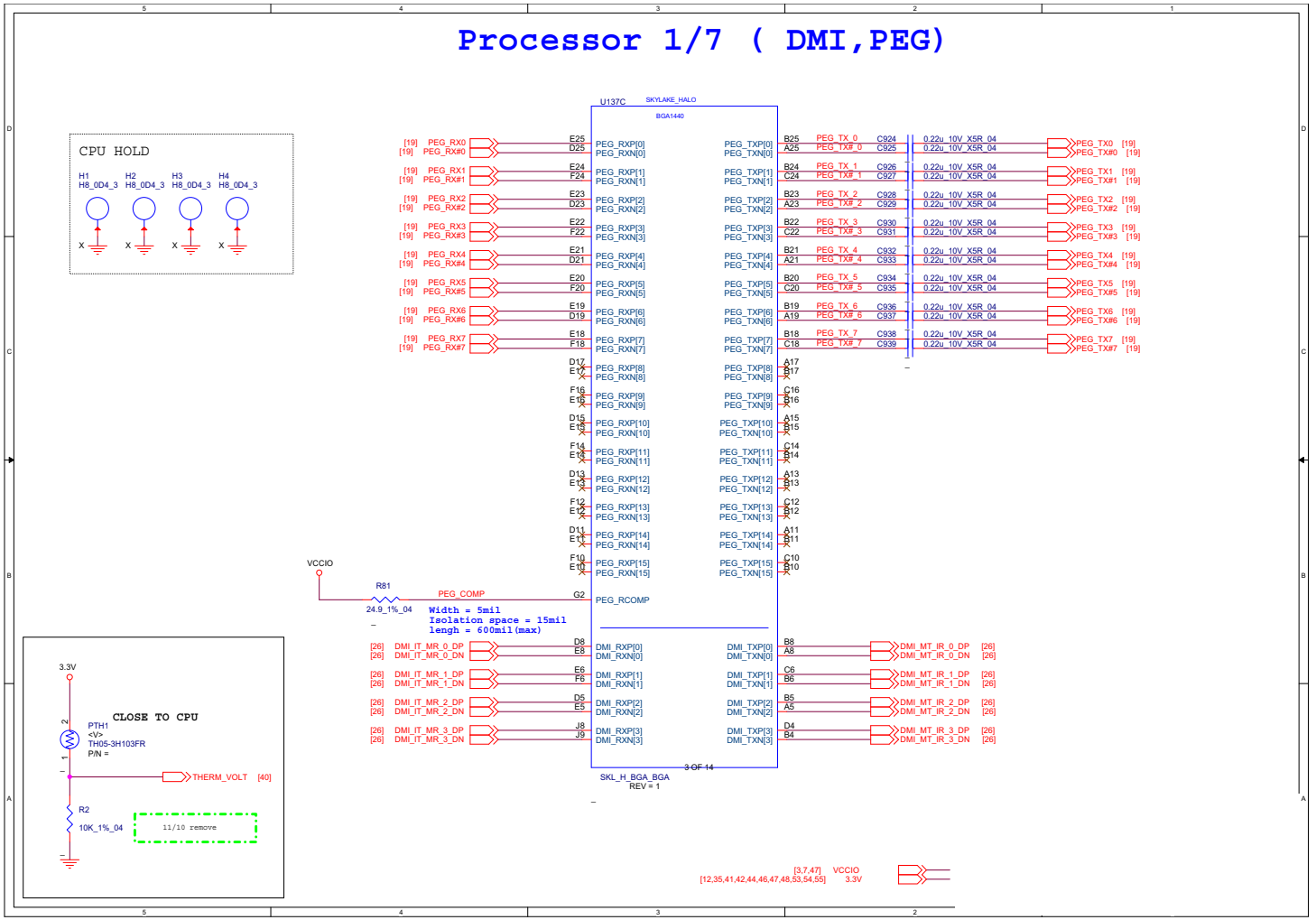
The schematic diagrams in this chapter are based upon version 6-7P-N15F9-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram

Sheet 1 of 62
System Block Diagram



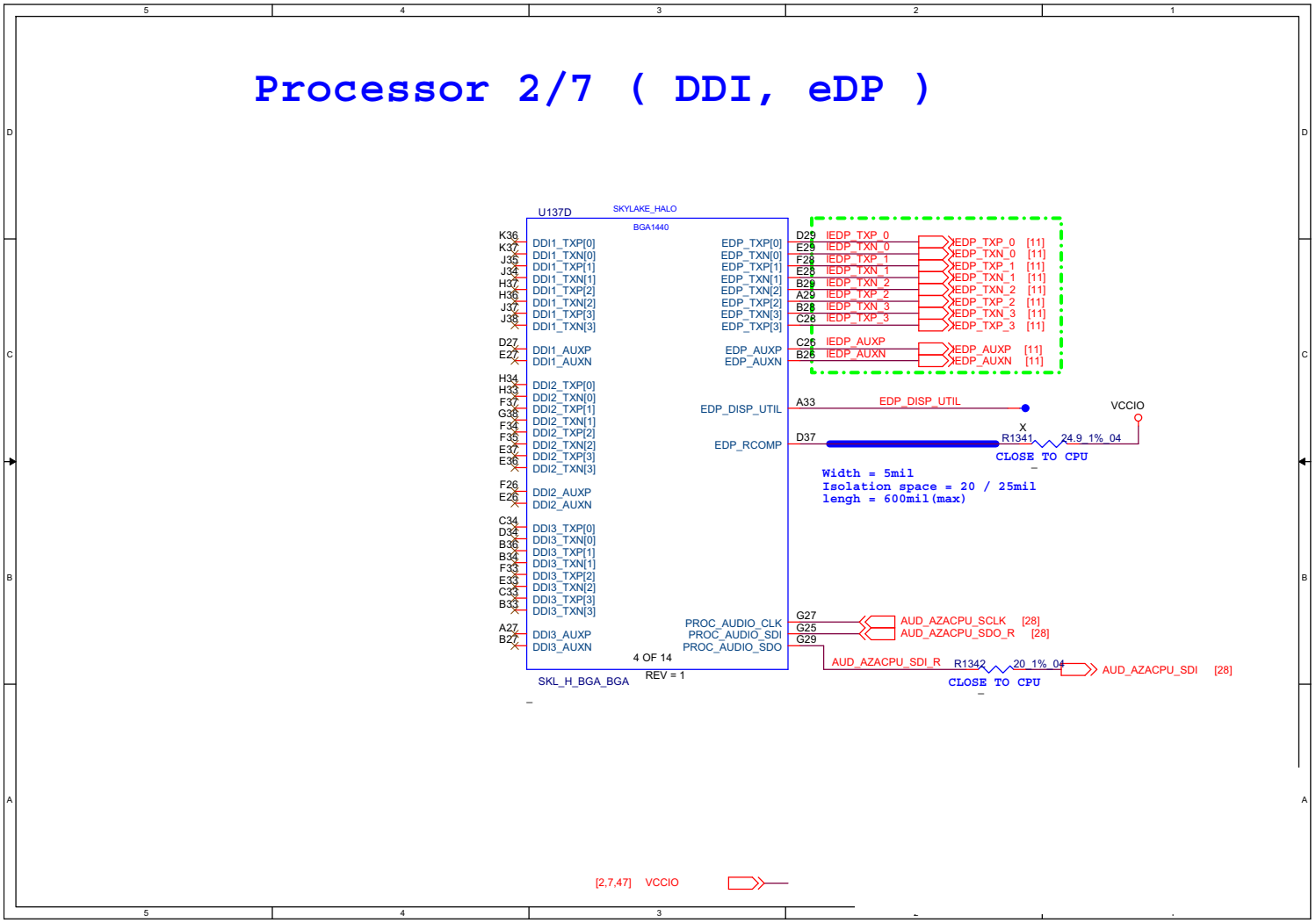
Processor 1/7



Sheet 2 of 62
Processor 1/7

Processor 2/7

Sheet 3 of 62
Processor 2/7



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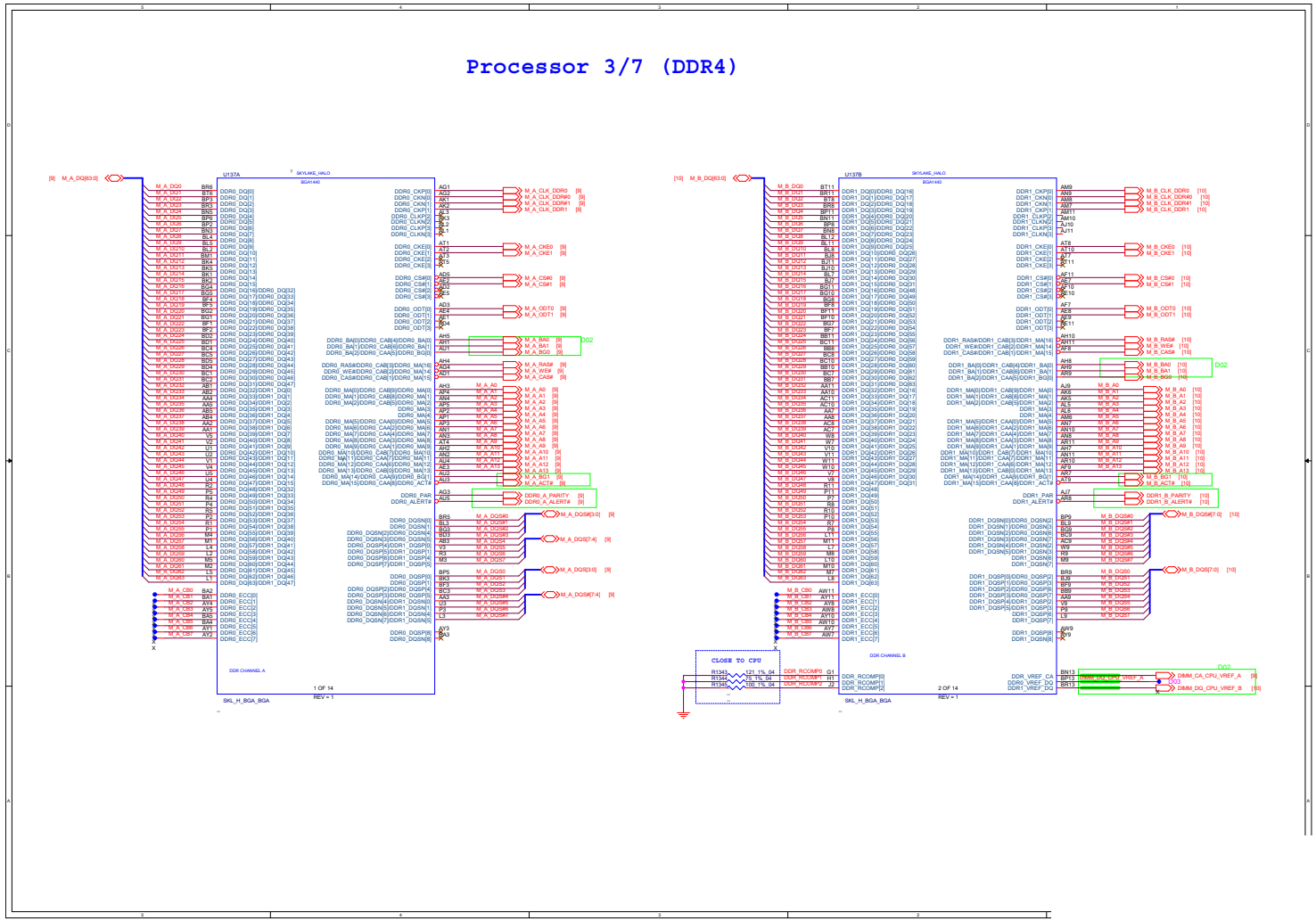
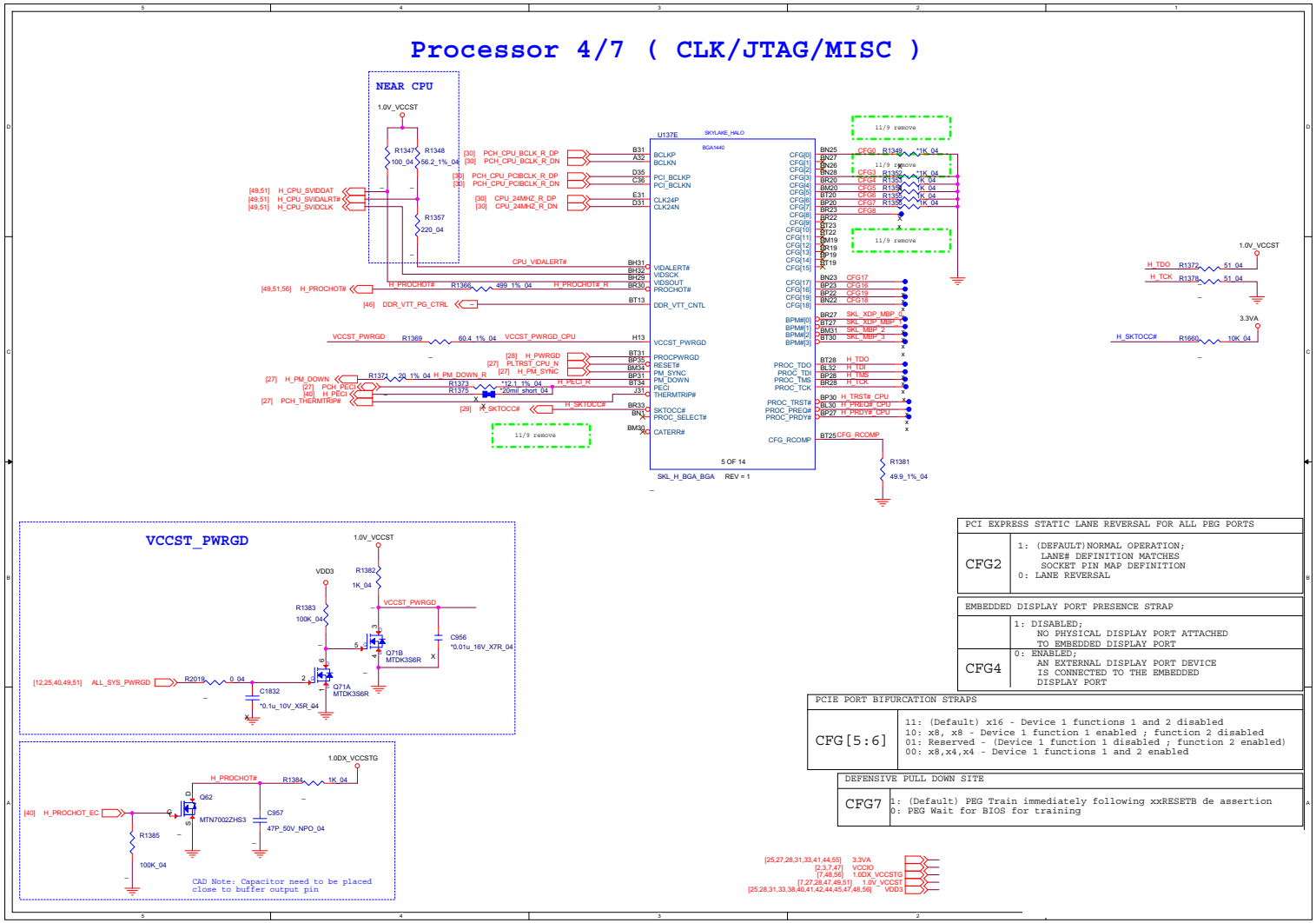


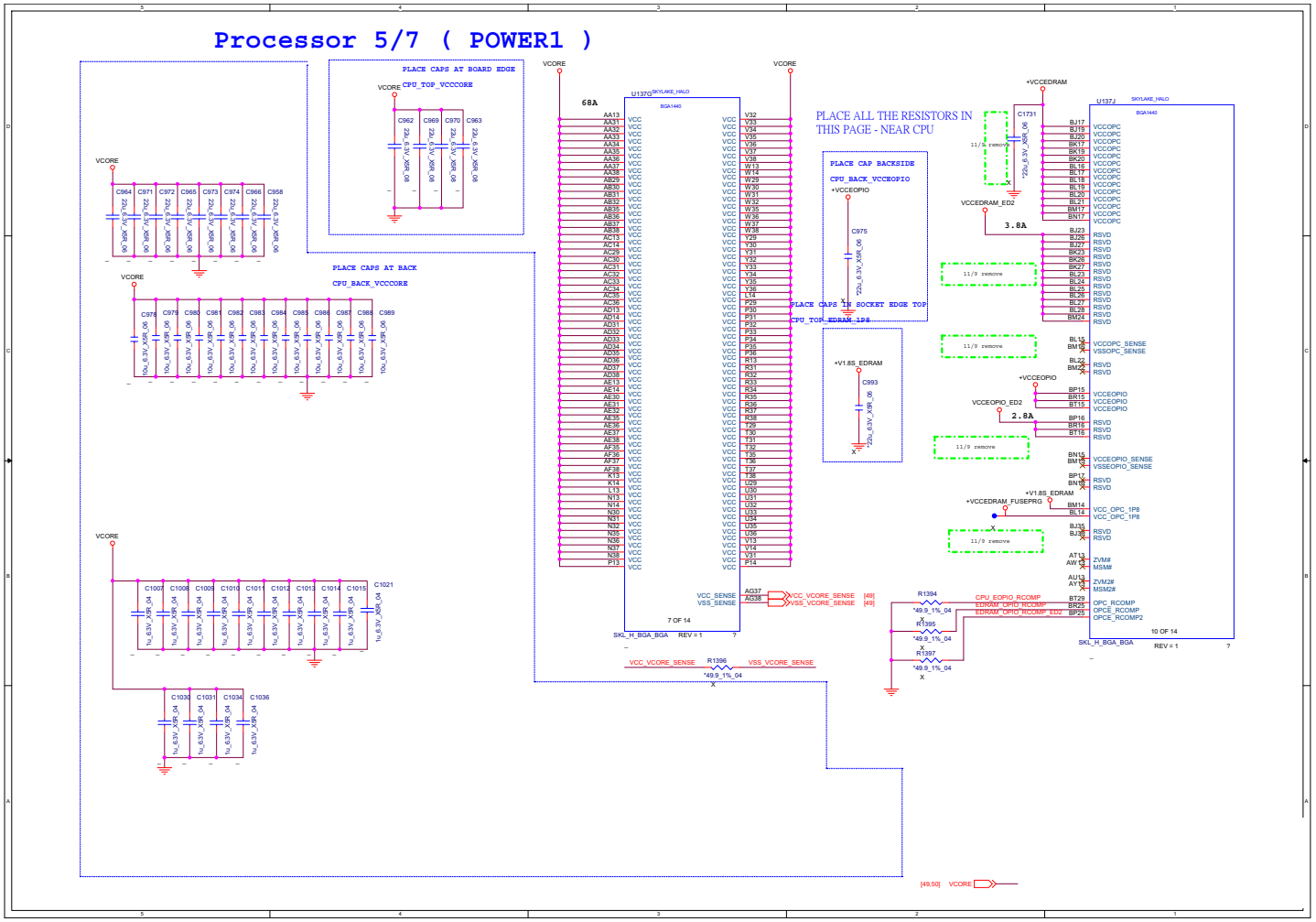
Sheet 4 of 62
Processor 3/7

Processor 4/7

Sheet 5 of 62
Processor 4/7



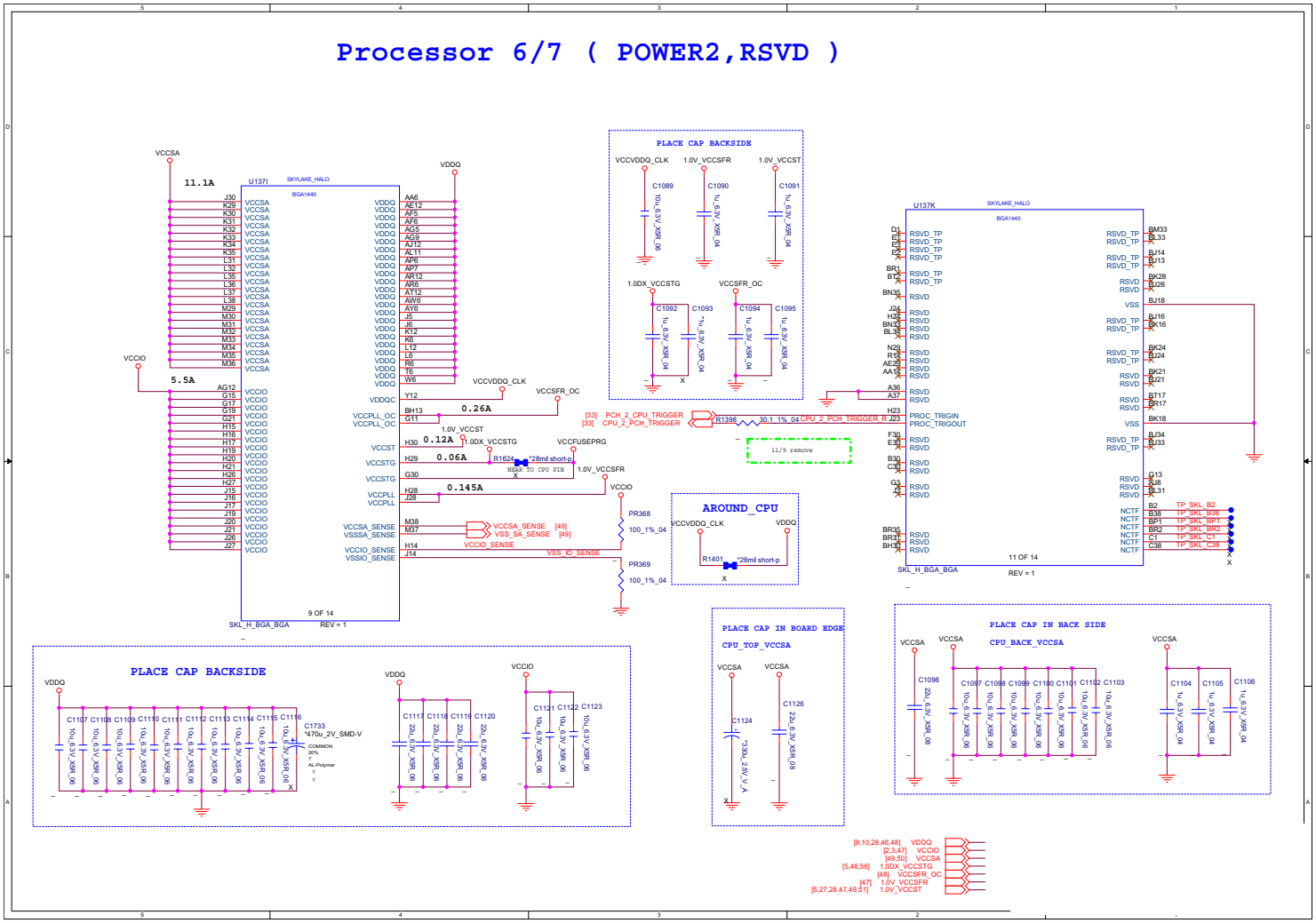
Processor 5/7



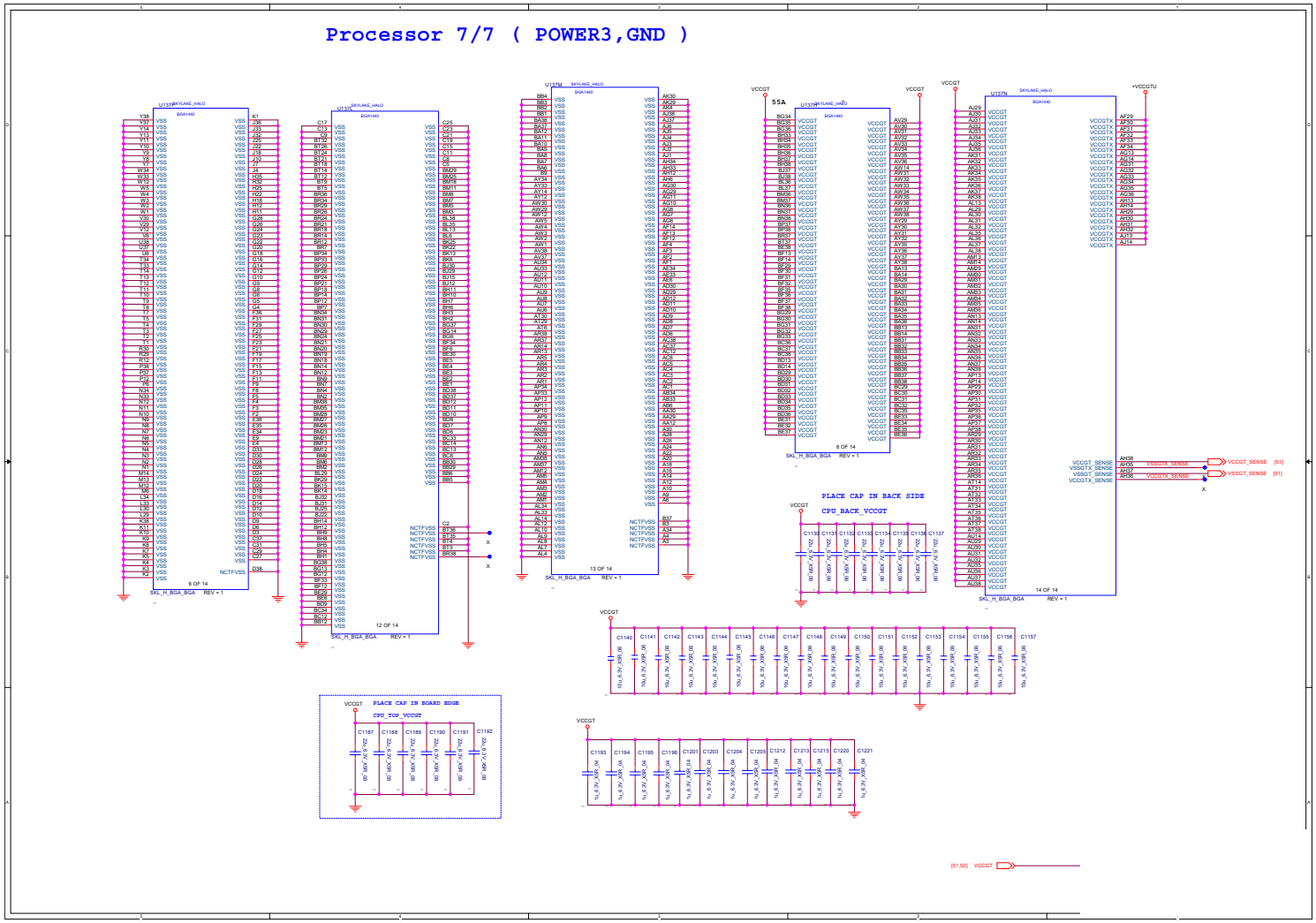
Sheet 6 of 62
Processor 5/7

Processor 6/7

Sheet 7 of 62
Processor 6/7



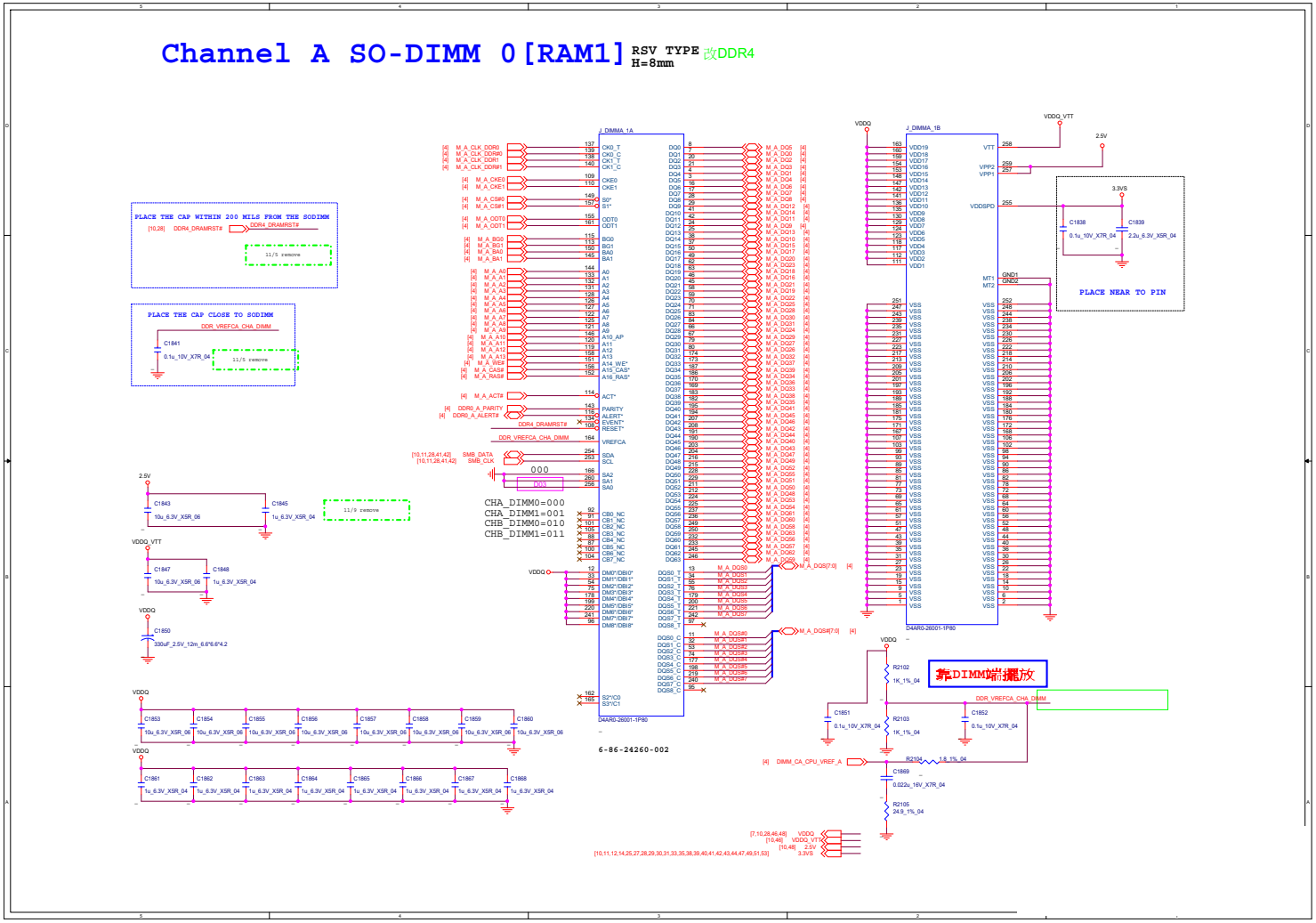
Processor 7/7



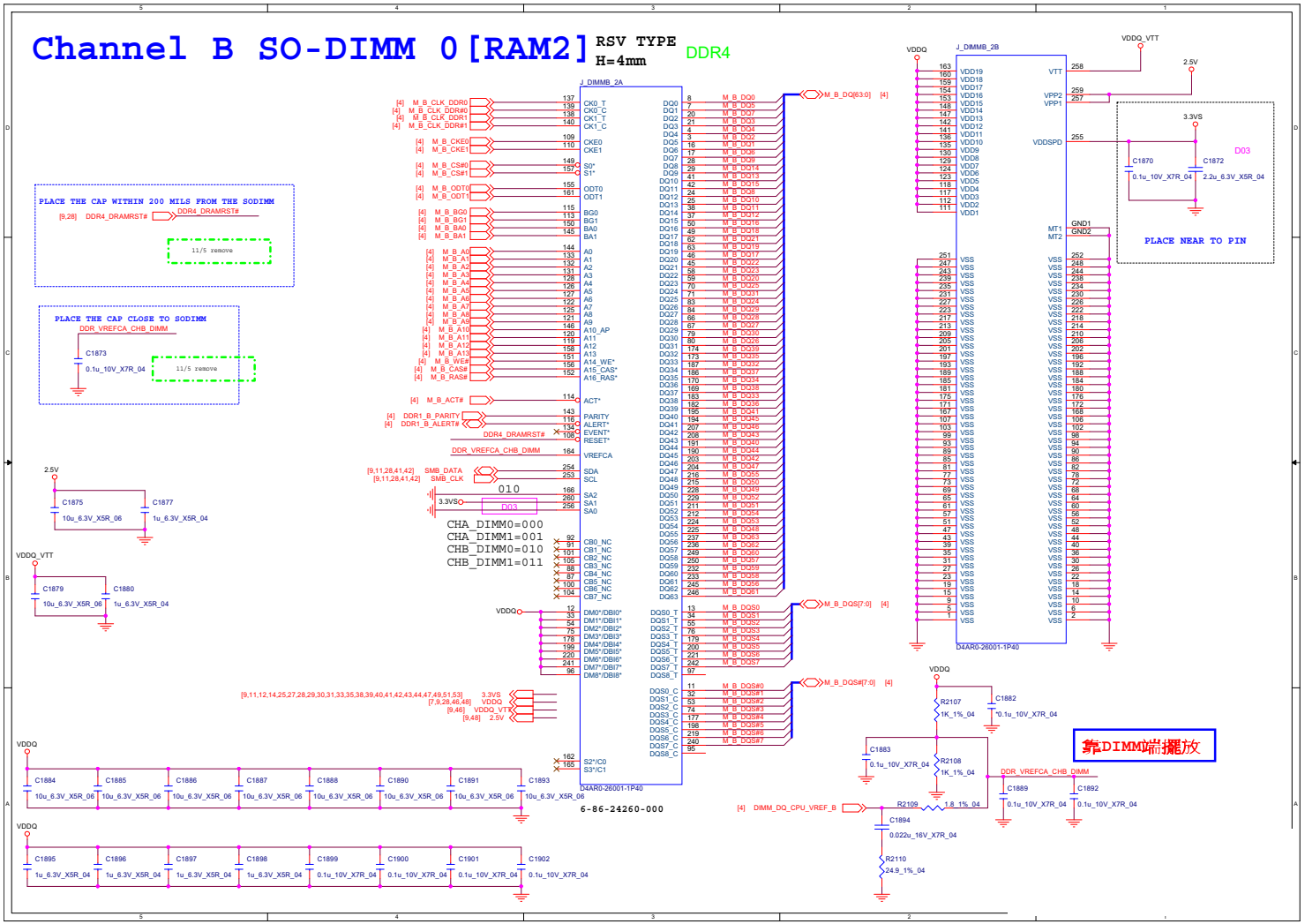
Sheet 8 of 62
Processor 7/7

DDR4 SO-DIMM A_0

Sheet 9 of 62
DDR4 SO-DIMM
A_0



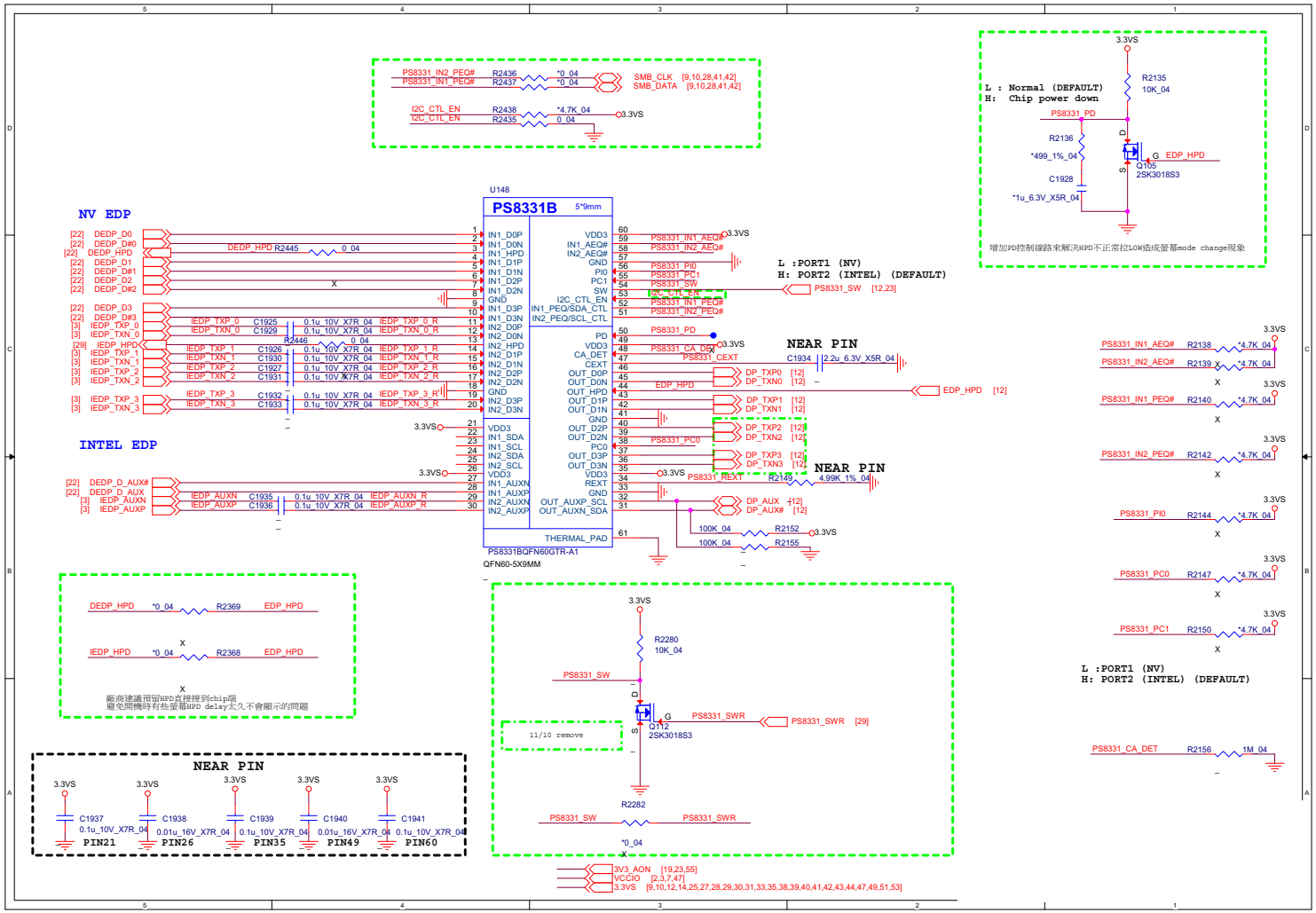
DDR4 SO-DIMM B_0



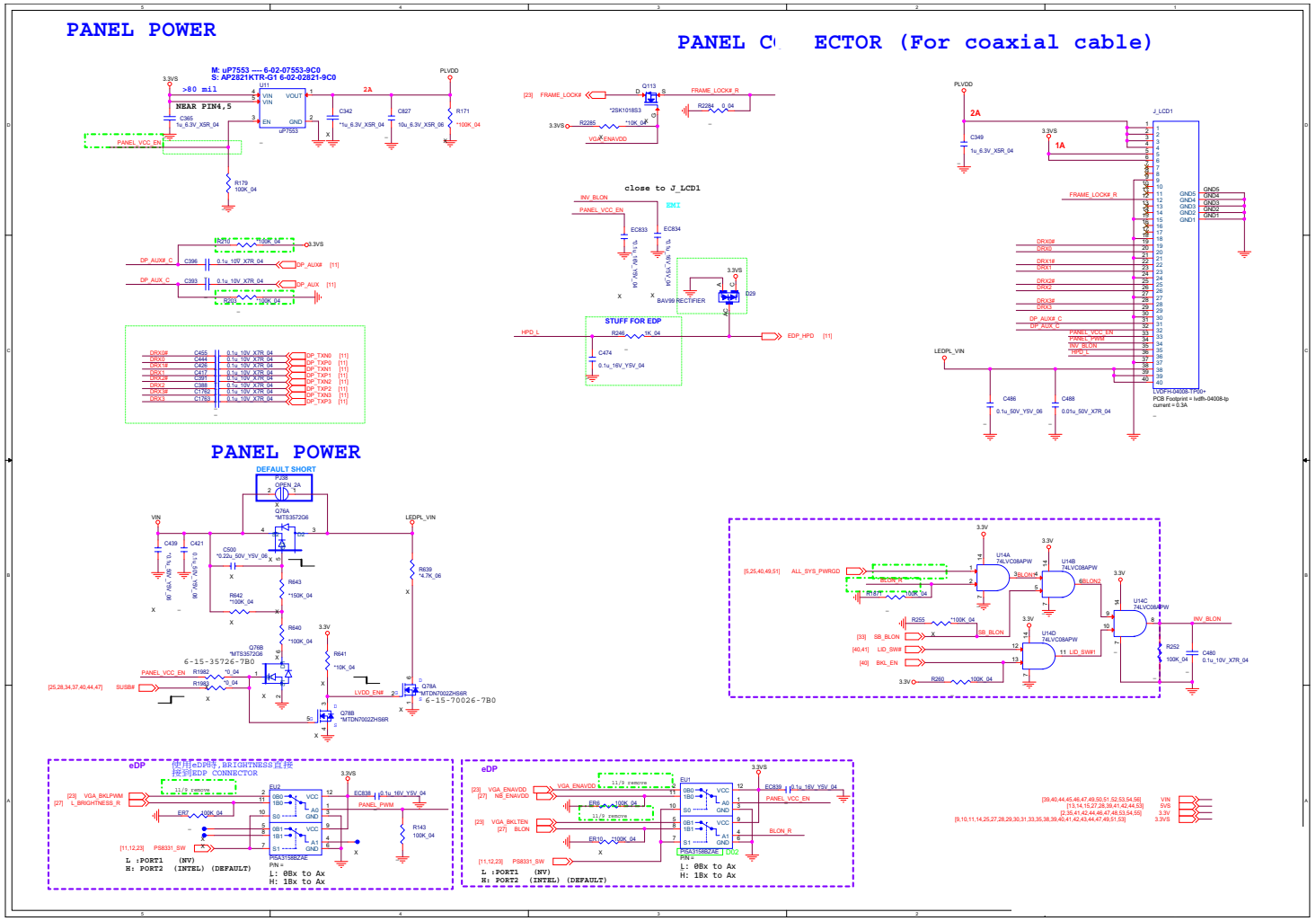
Sheet 10 of 62
DDR4 SO-DIMM
B_0

PS8331B

Sheet 11 of 62
PS8331B



Panel, BKL Control



Sheet 12 of 62
Panel, BKL Control

HDMI

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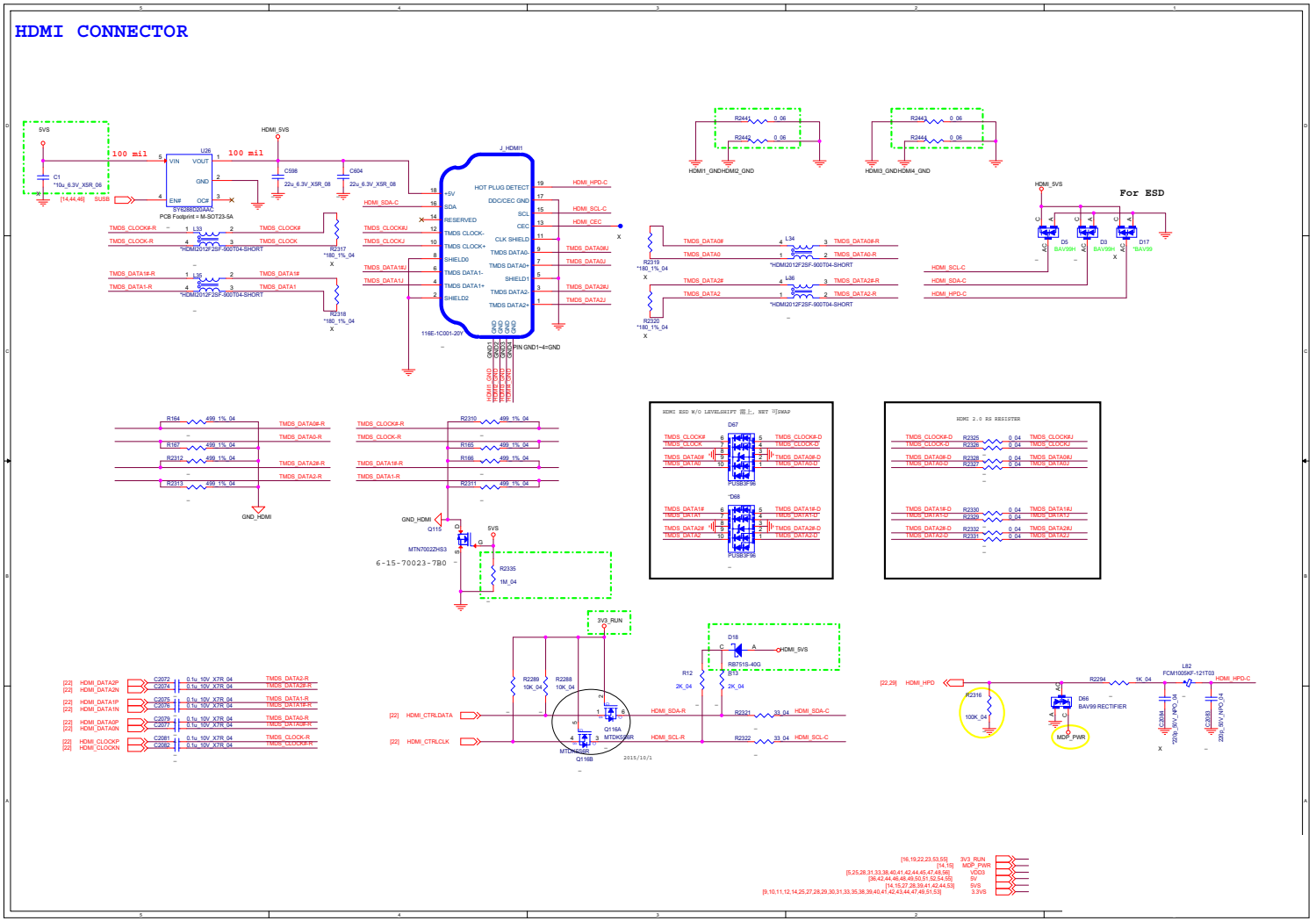
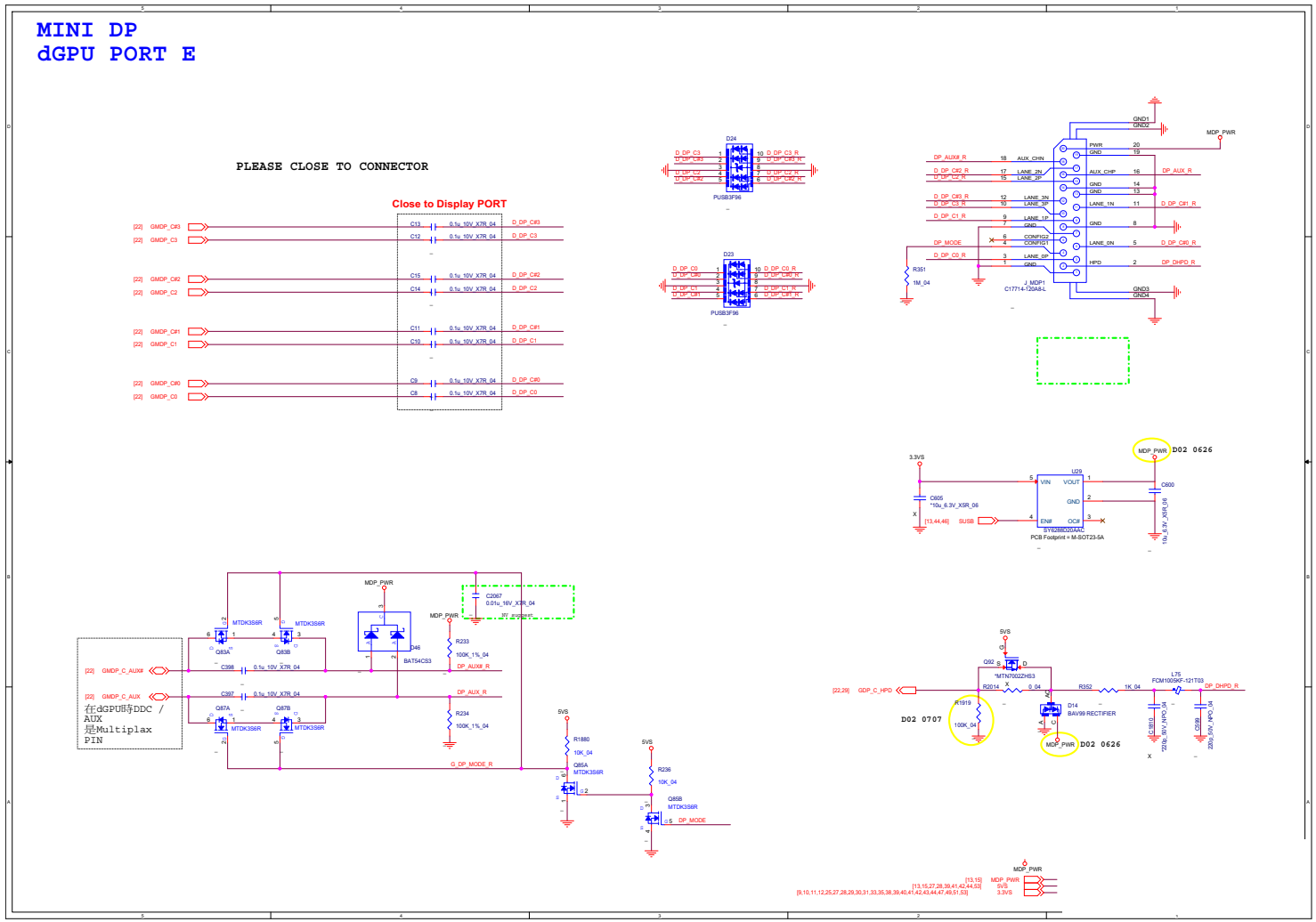
HDMI



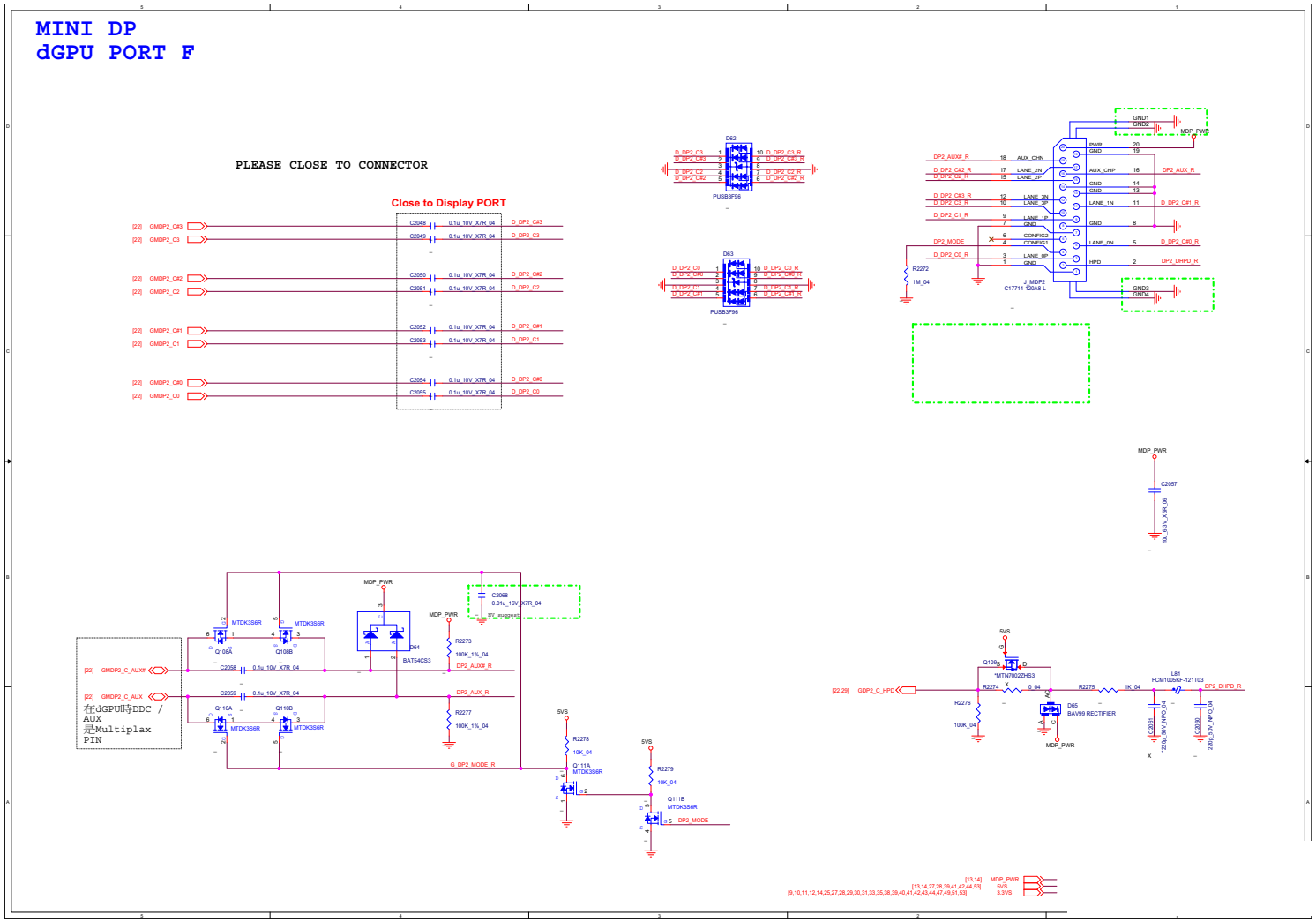
Mini DP Port 1



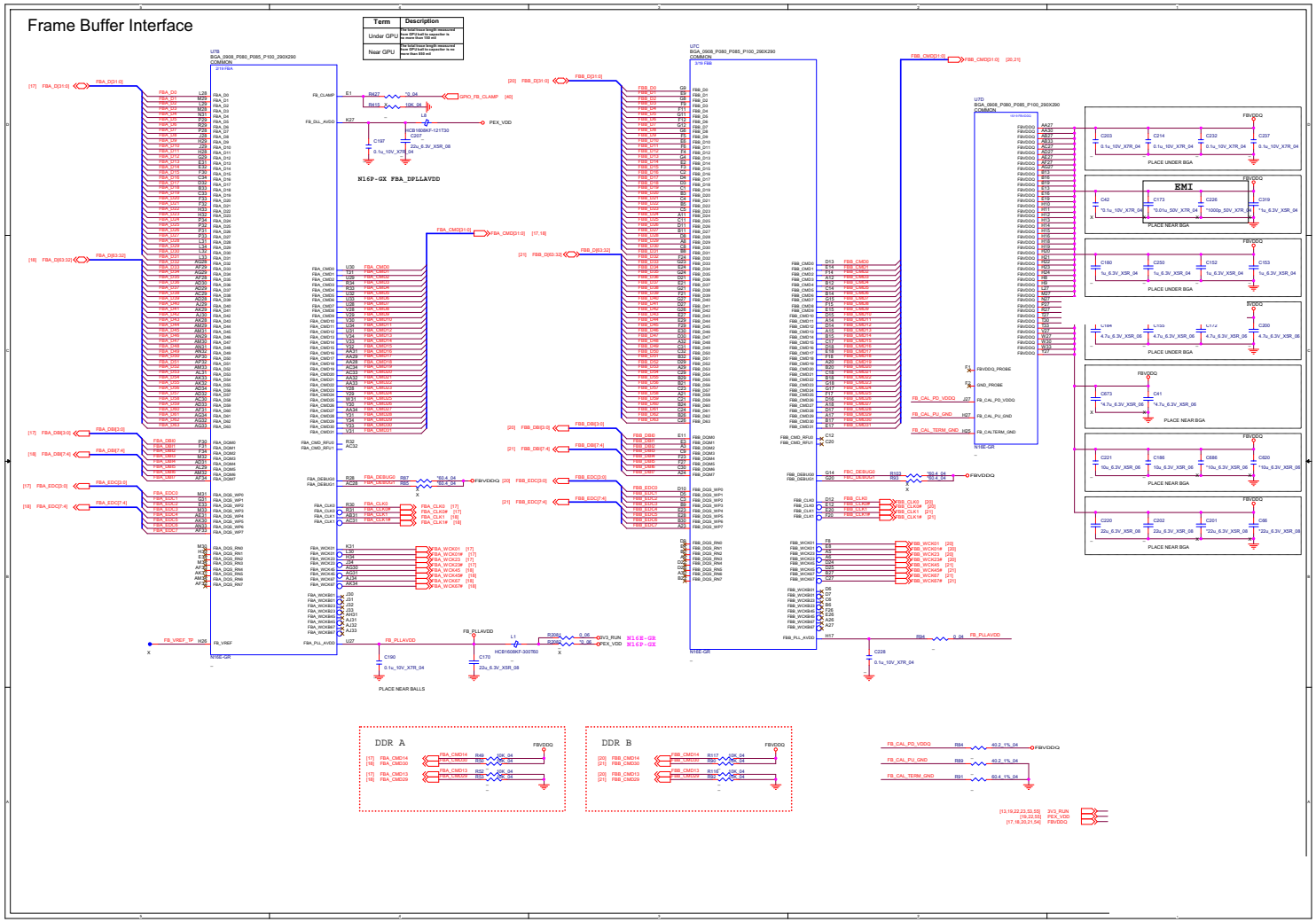
Sheet 14 of 62
Mini DP Port 1

Mini DP Port 2

Sheet 15 of 62
Mini DP Port 2



VGA Frame Buffer Interface



Sheet 16 of 62
VGA Frame Buffer Interface

B.Schematic Diagrams

VGA Frame Buffer A

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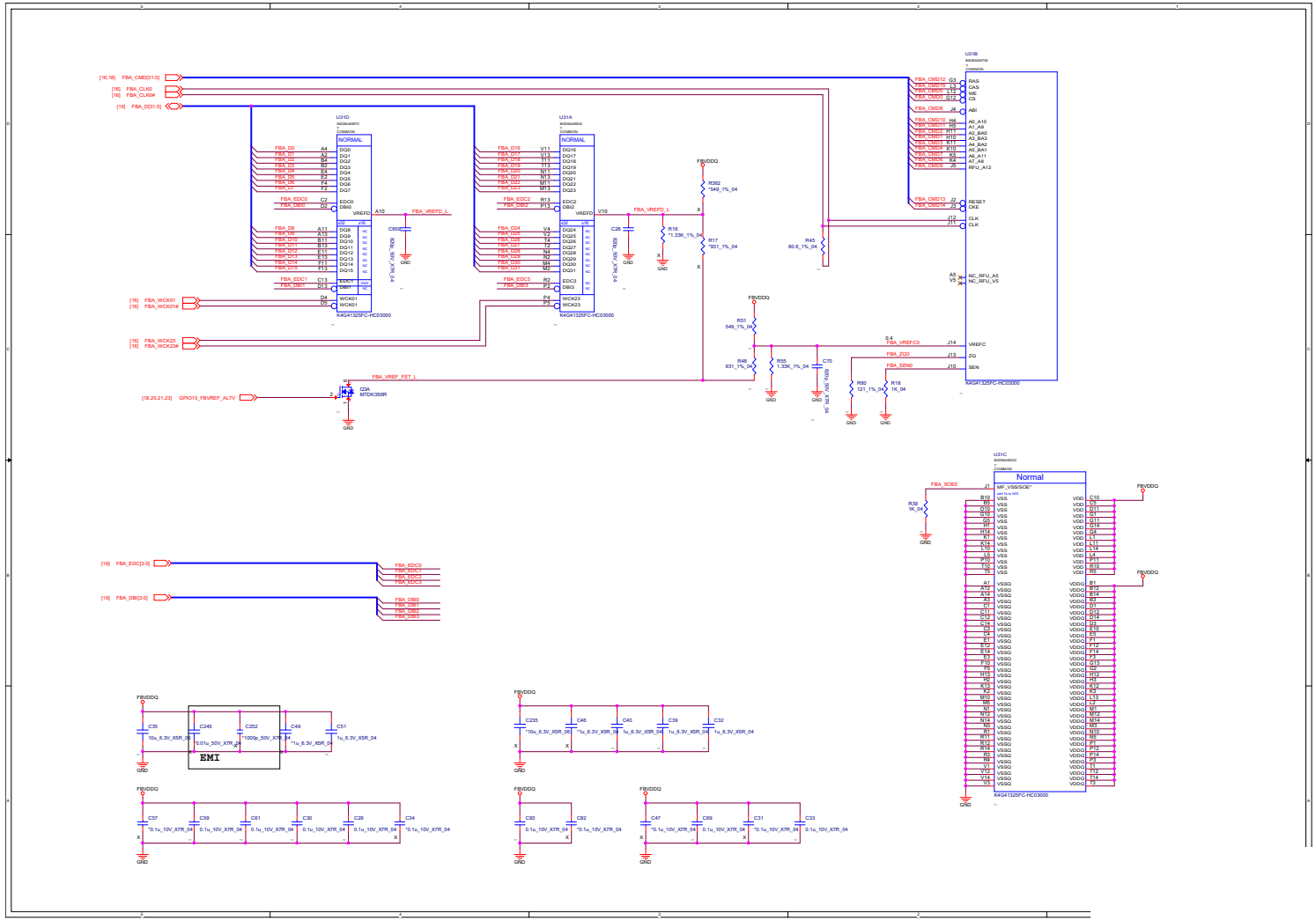
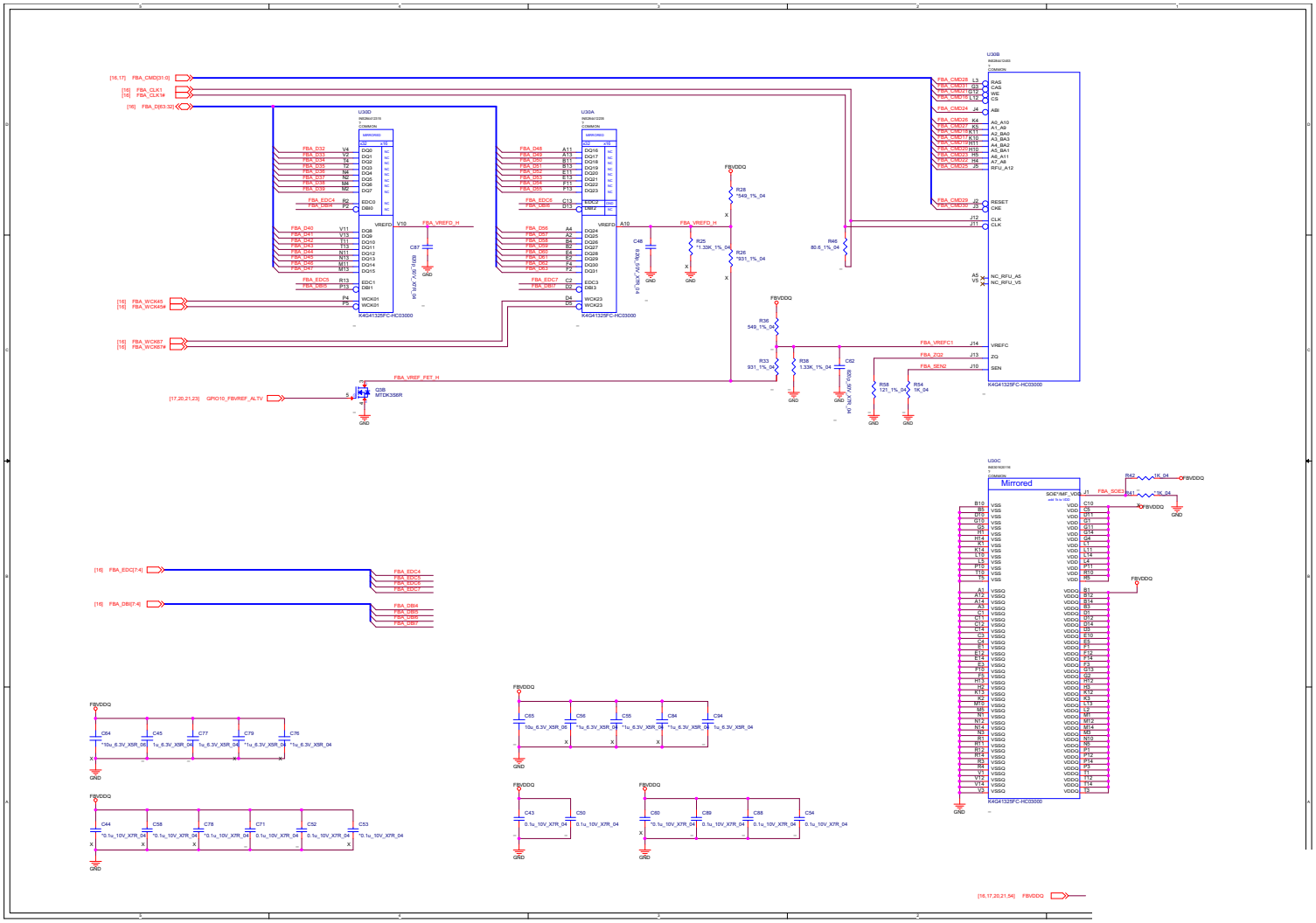
VGA Frame Buffer A



VGA Frame Buffer A



Sheet 18 of 62
VGA Frame Buffer
A

VGA PCI-E Interface

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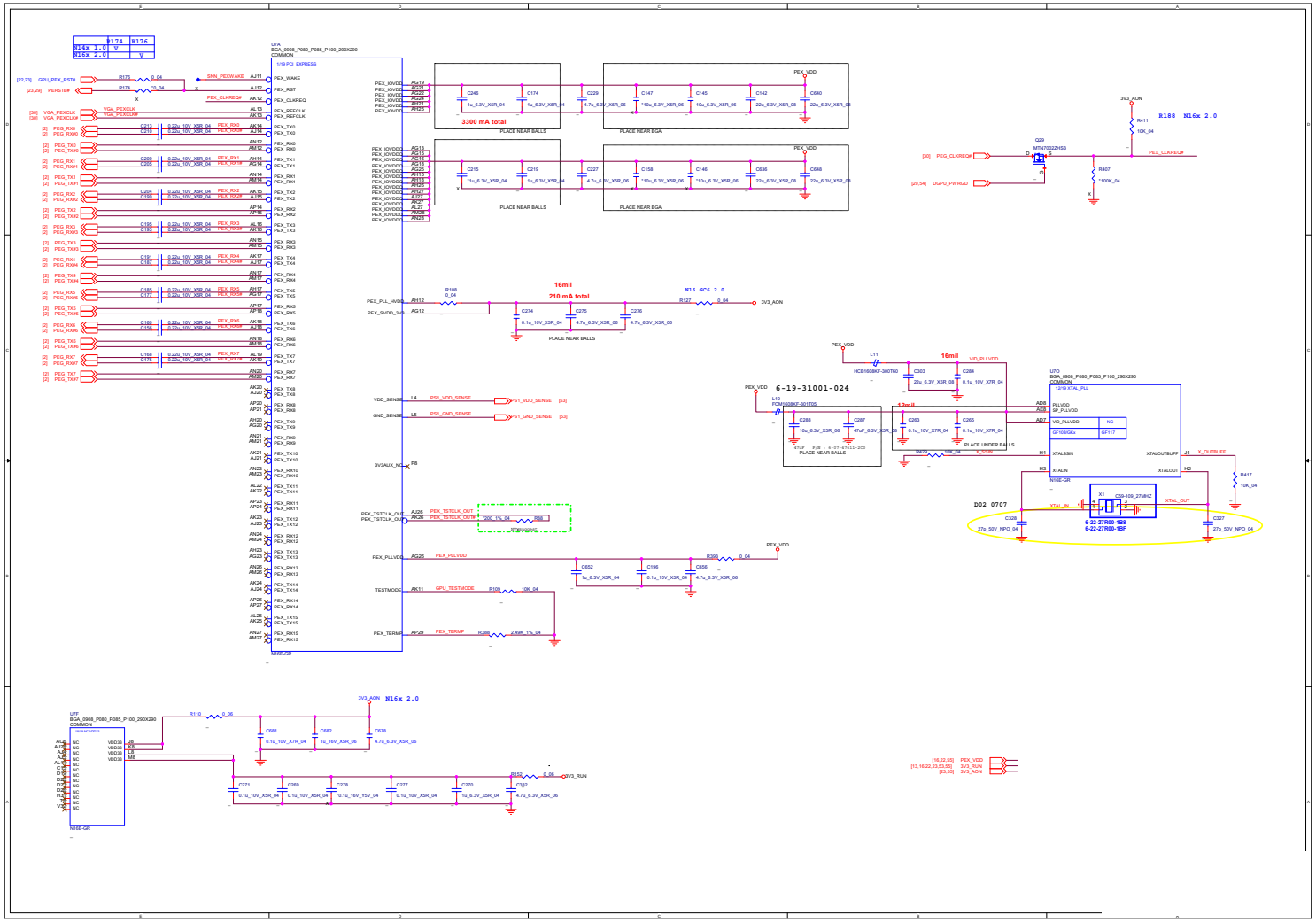
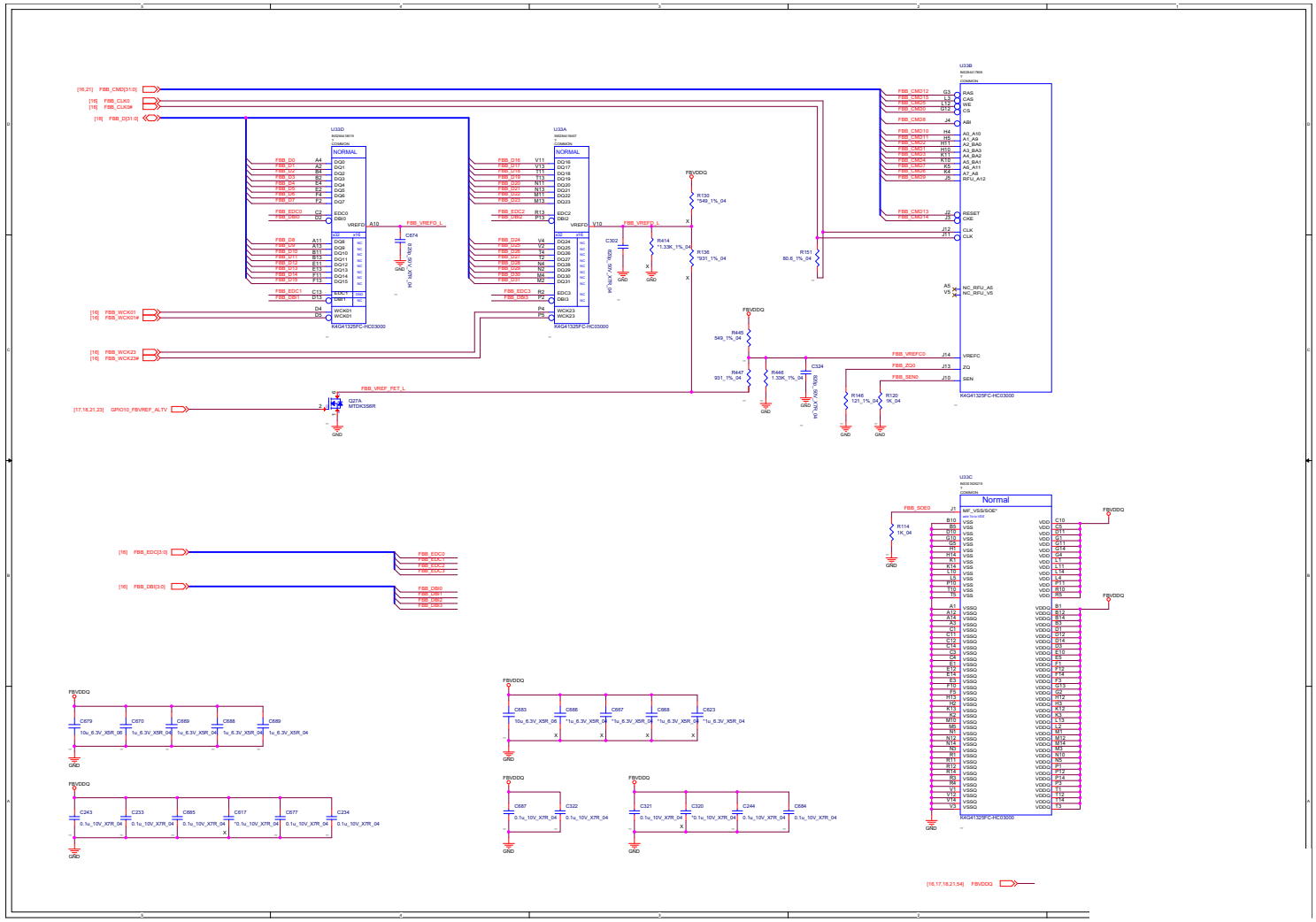
VGA PCI-E Interface



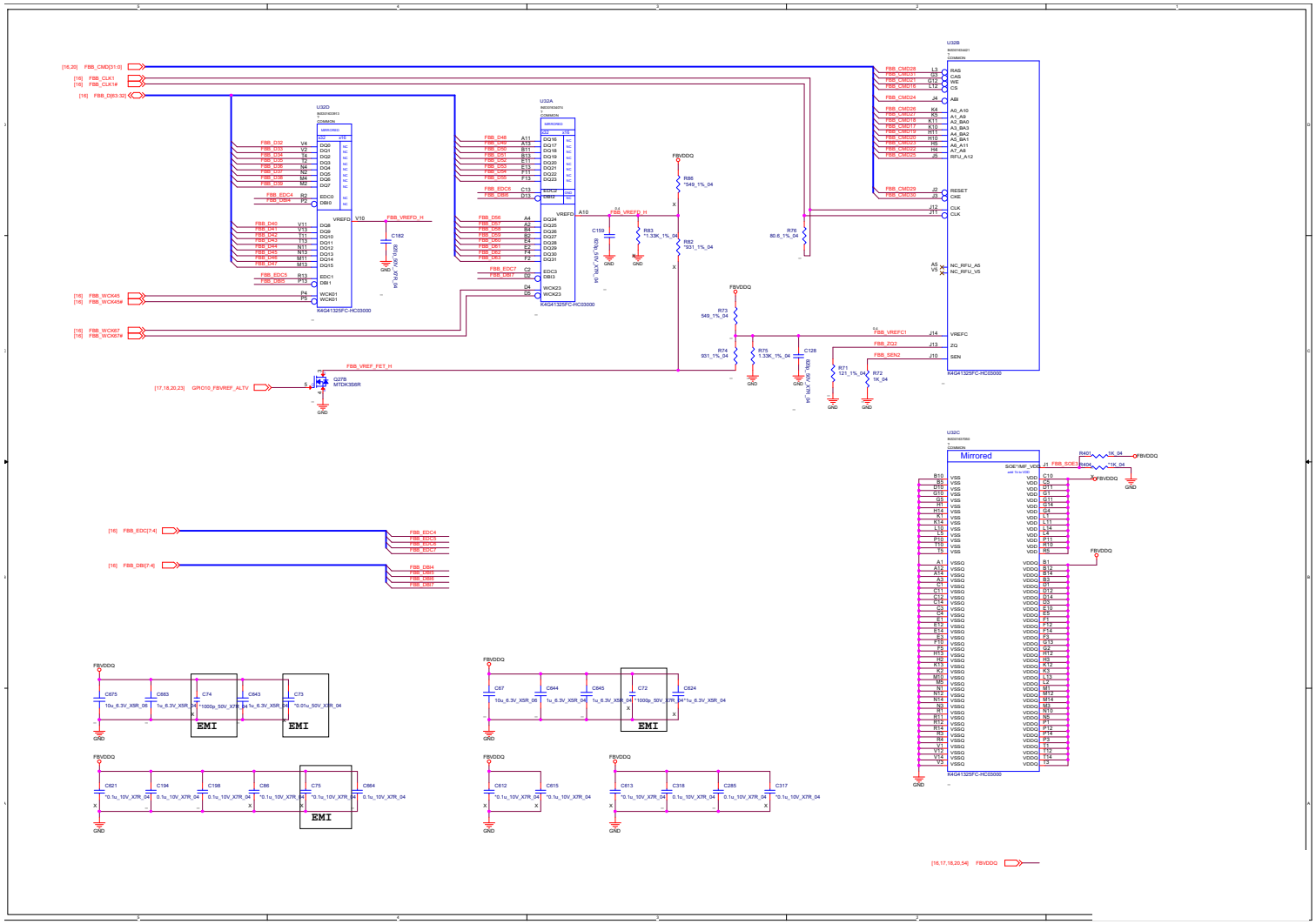
VGA Frame Buffer B



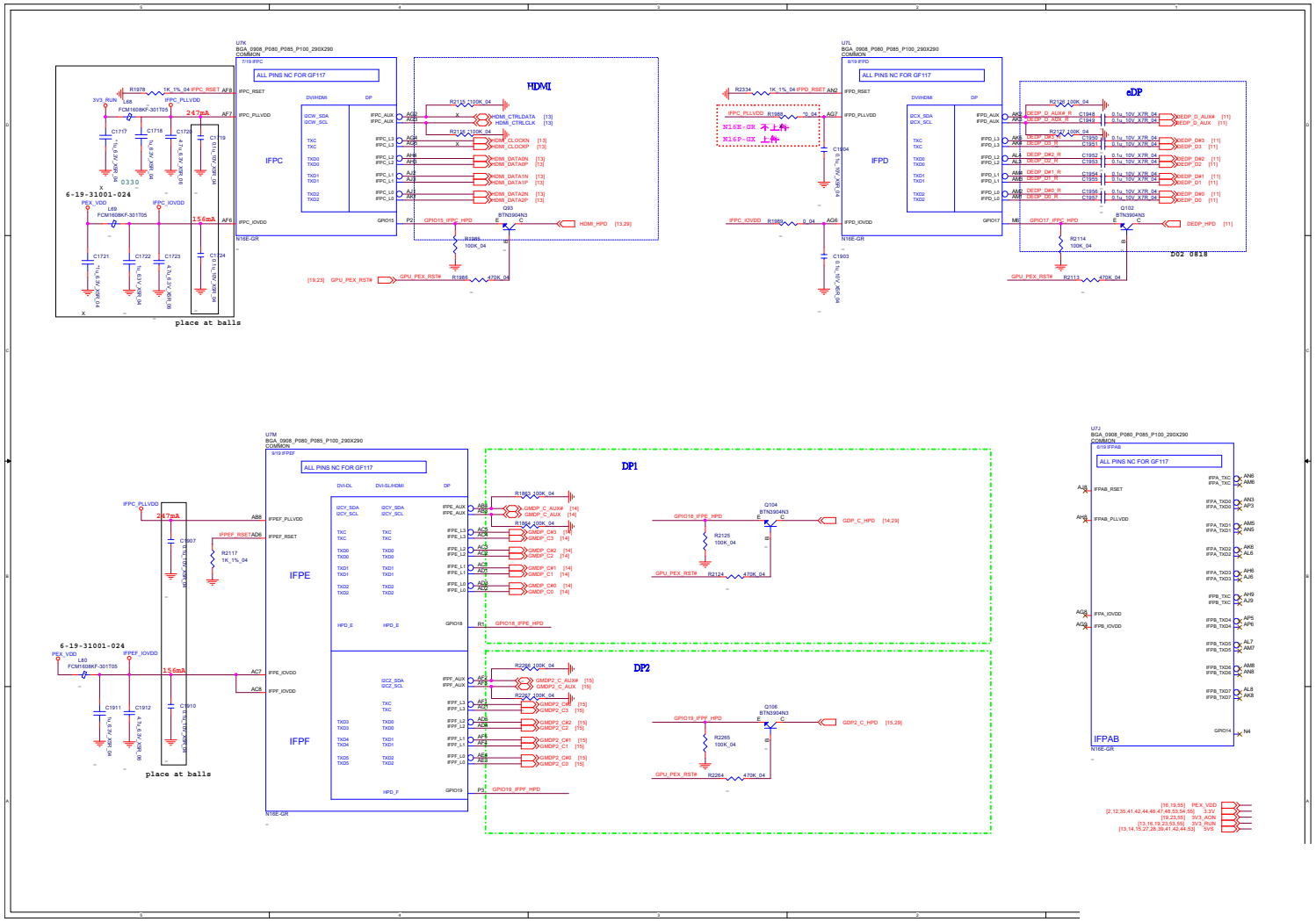
Sheet 20 of 62
VGA Frame Buffer
B

VGA Frame Buffer B

Sheet 21 of 62
VGA Frame Buffer B



VGA I/O



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VGA I/O

VGA GPIO

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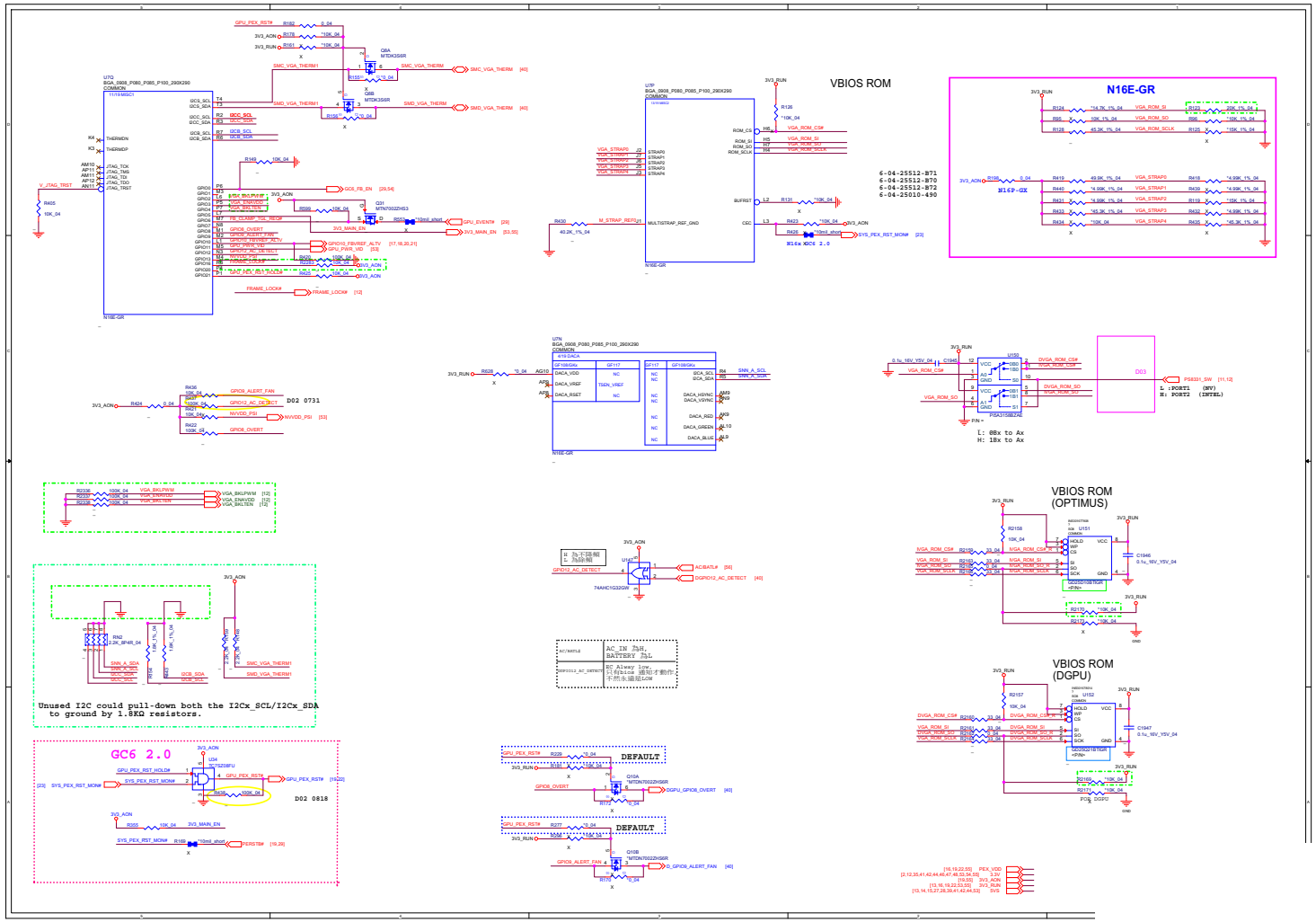
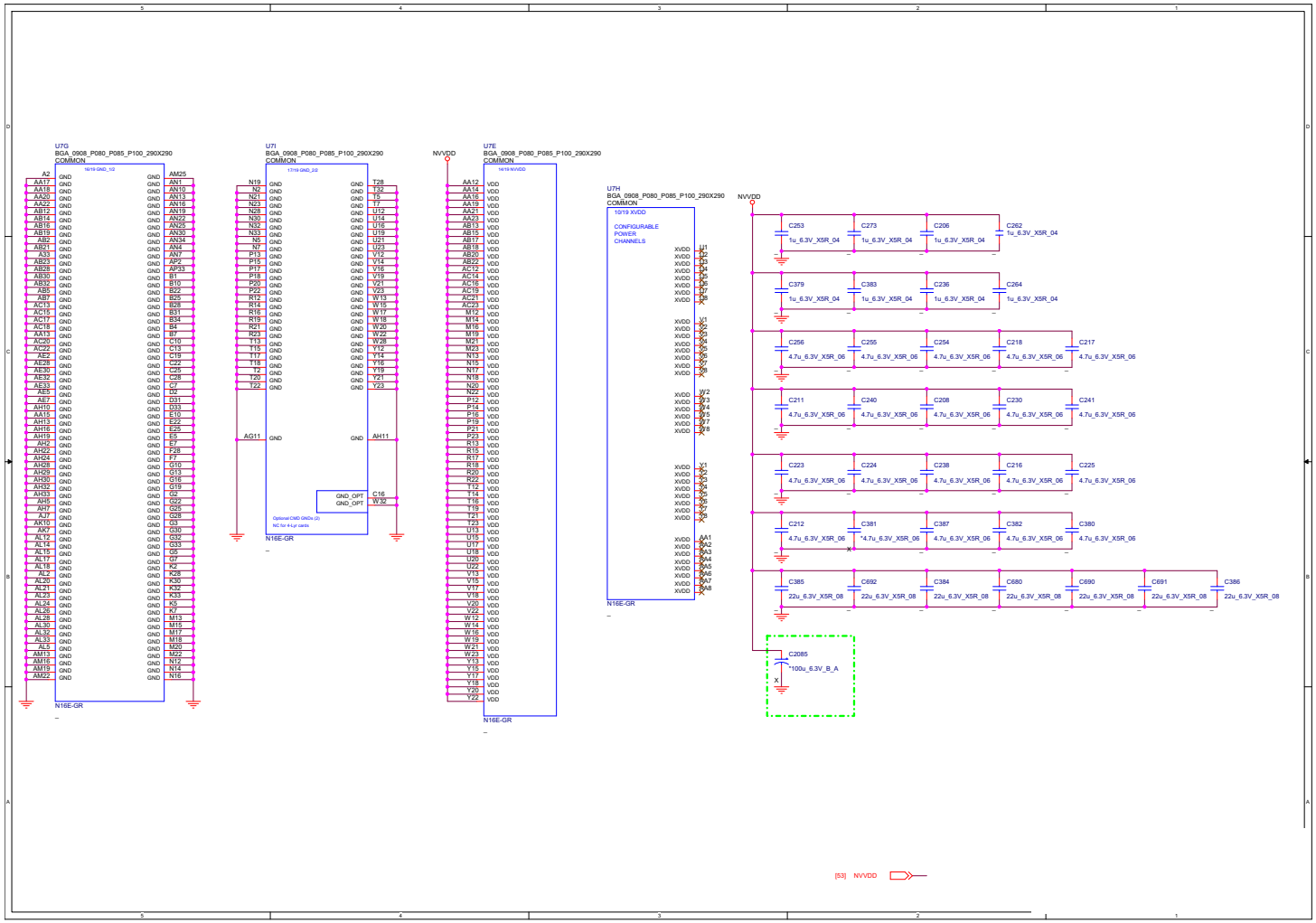
VGA GPIO



VGA NVVDD Decoupling



Sheet 24 of 62
VGA NVVDD Decoupling

PCH 1/9

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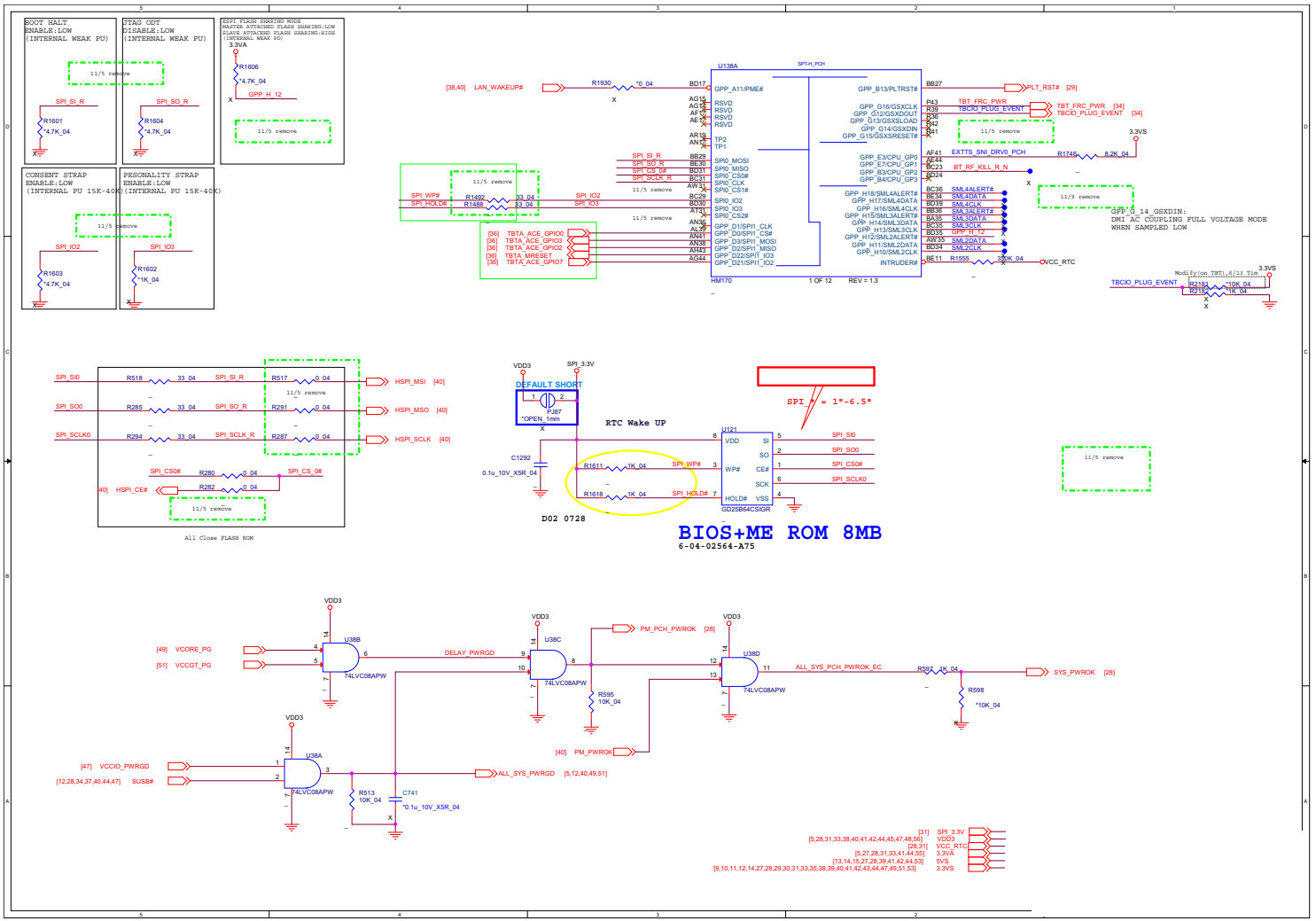
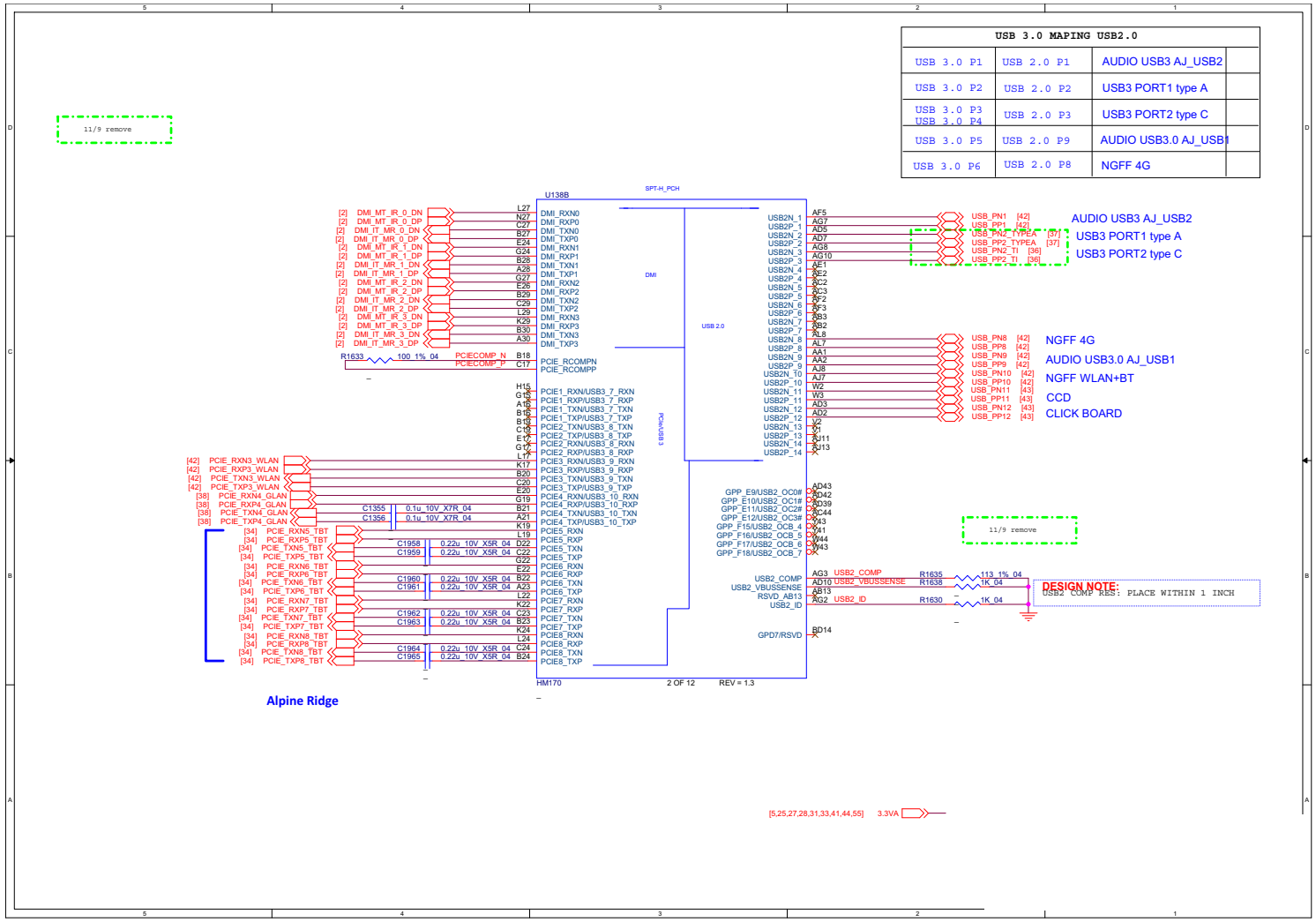
PCH 1/9



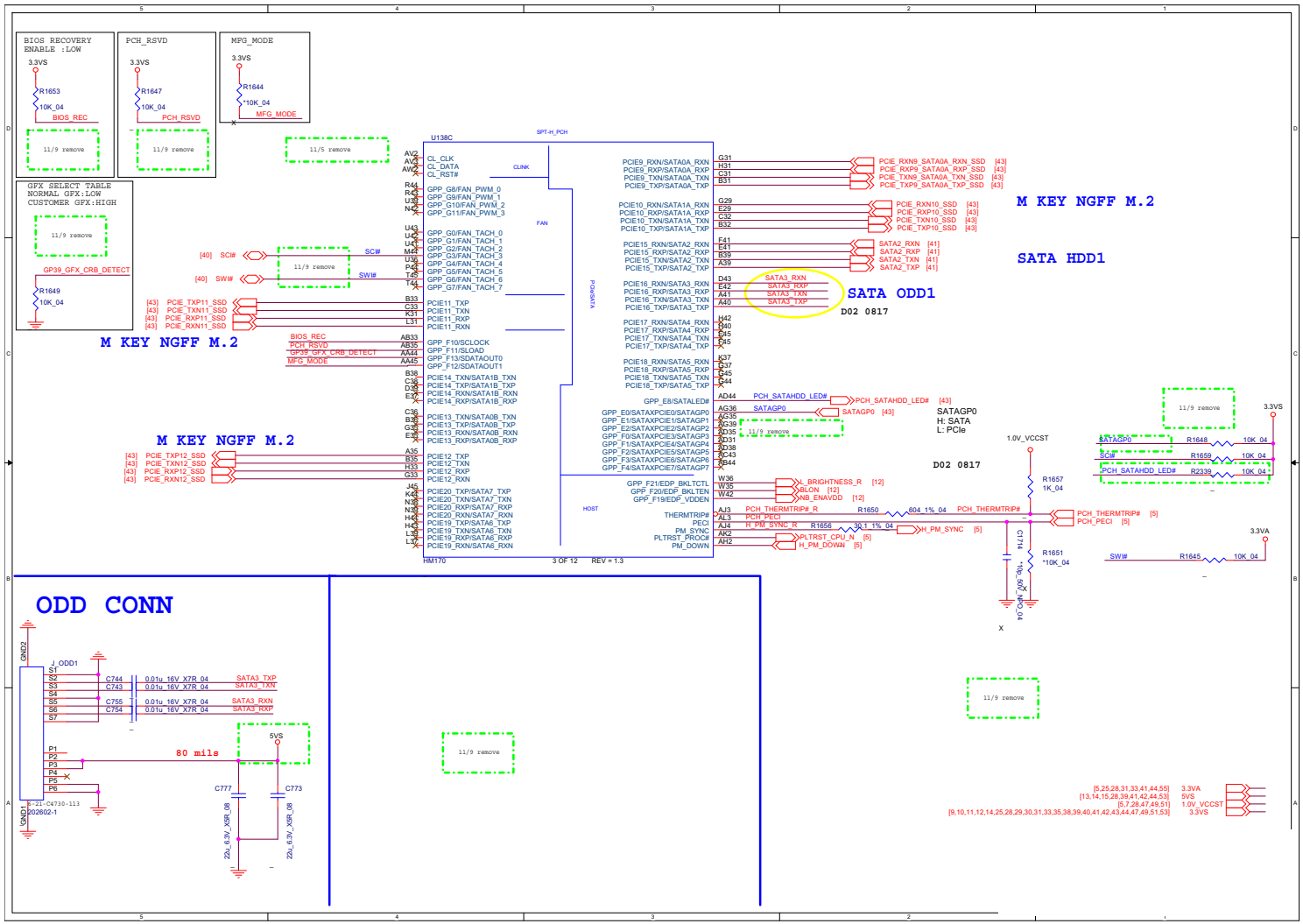
PCH 2/9



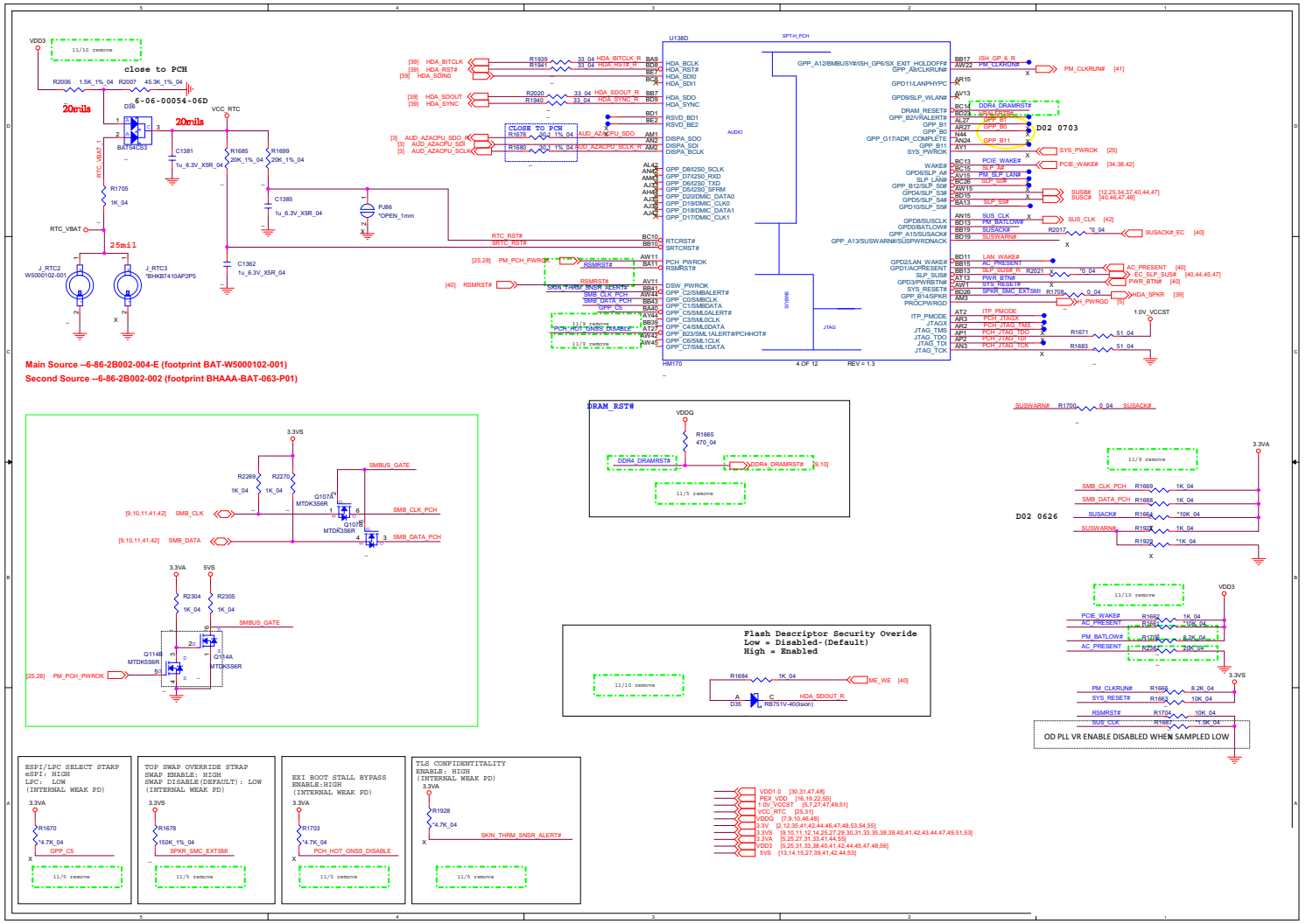
Sheet 26 of 62
PCH 2/9

PCH 3/9

Sheet 27 of 62
PCH 3/9



PCH 4/9



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PCH 4/9

B.Schematic Diagrams

PCH 5/9

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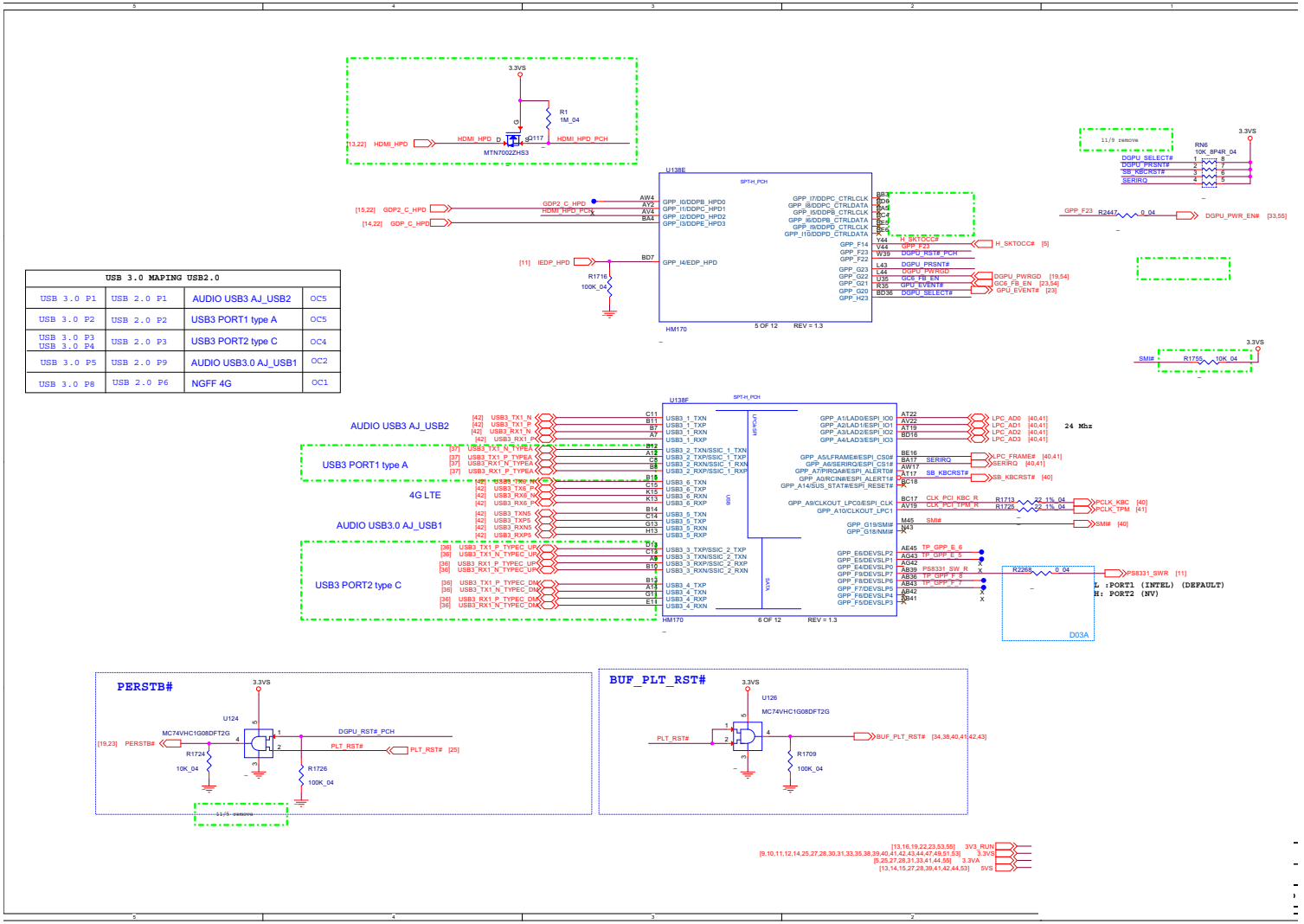
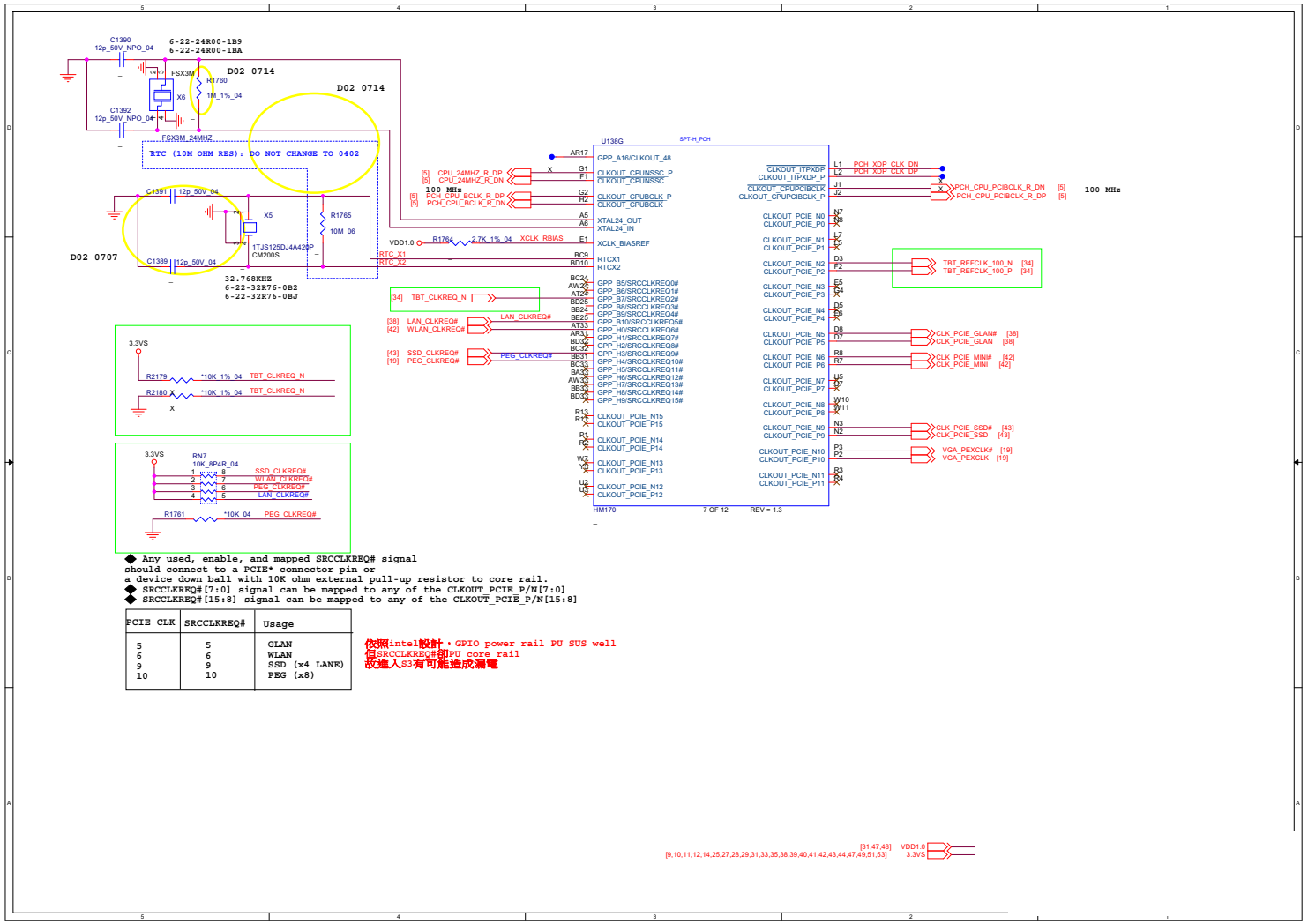
PCH 5/9



PCH 6/9



PCIE CLK	SRCCLKREQ#	Usage
5	5	GLAN
6	6	WLAN
9	9	SSD (x4 LANE)
10	10	PEG (x8)

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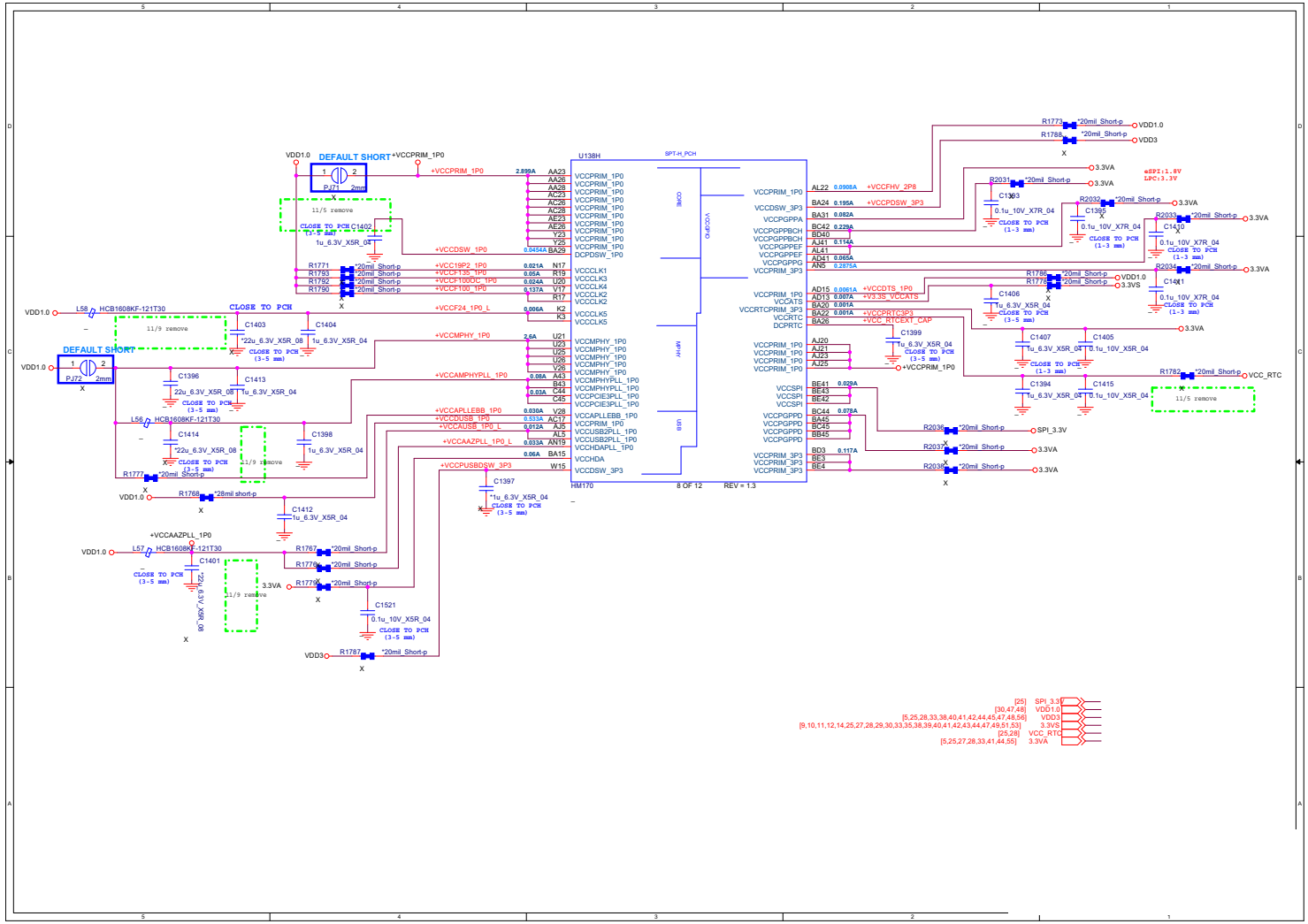
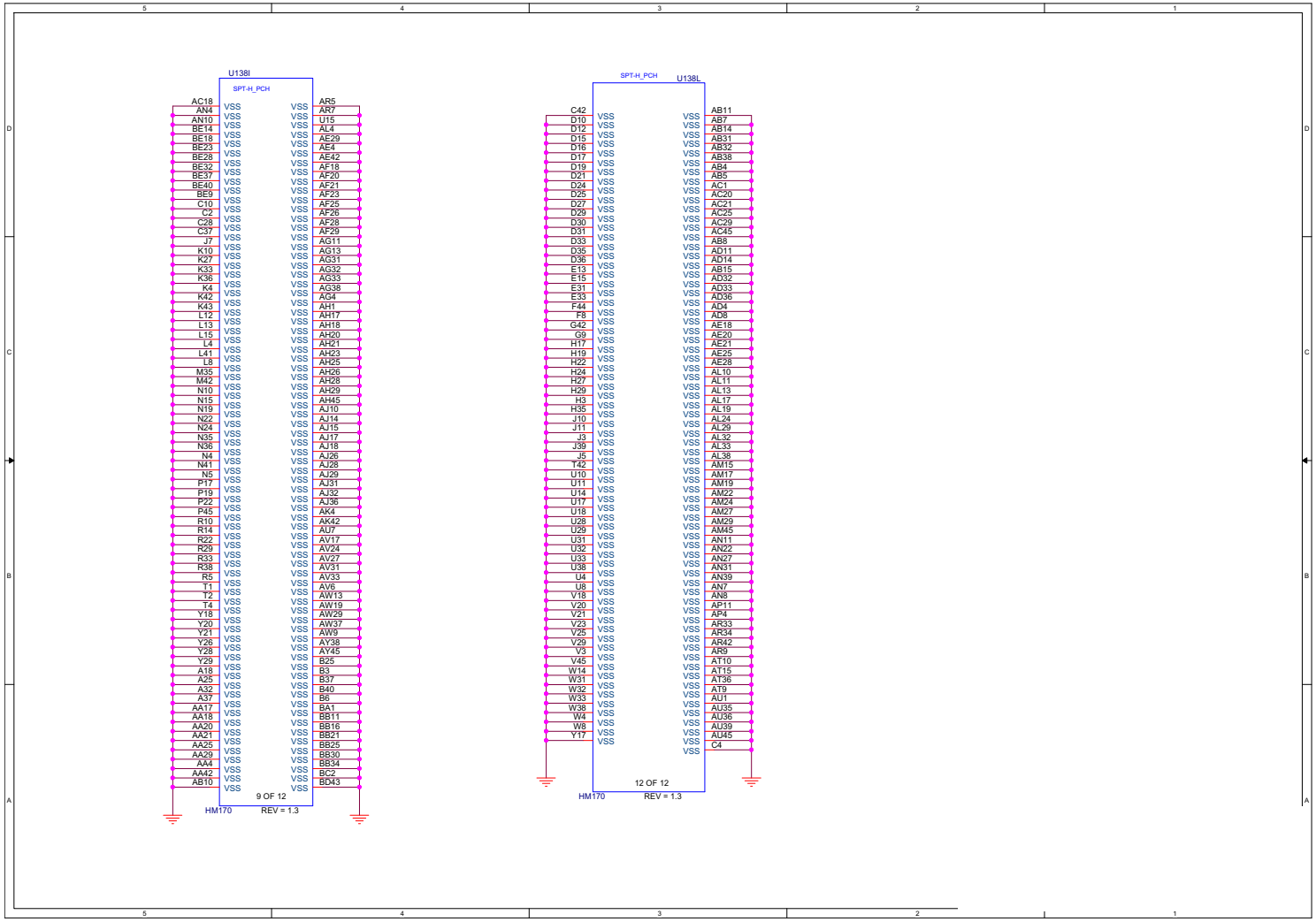
PCH 6/9

PCH 7/9

Sheet 31 of 62
PCH 7/9



PCH 8/9



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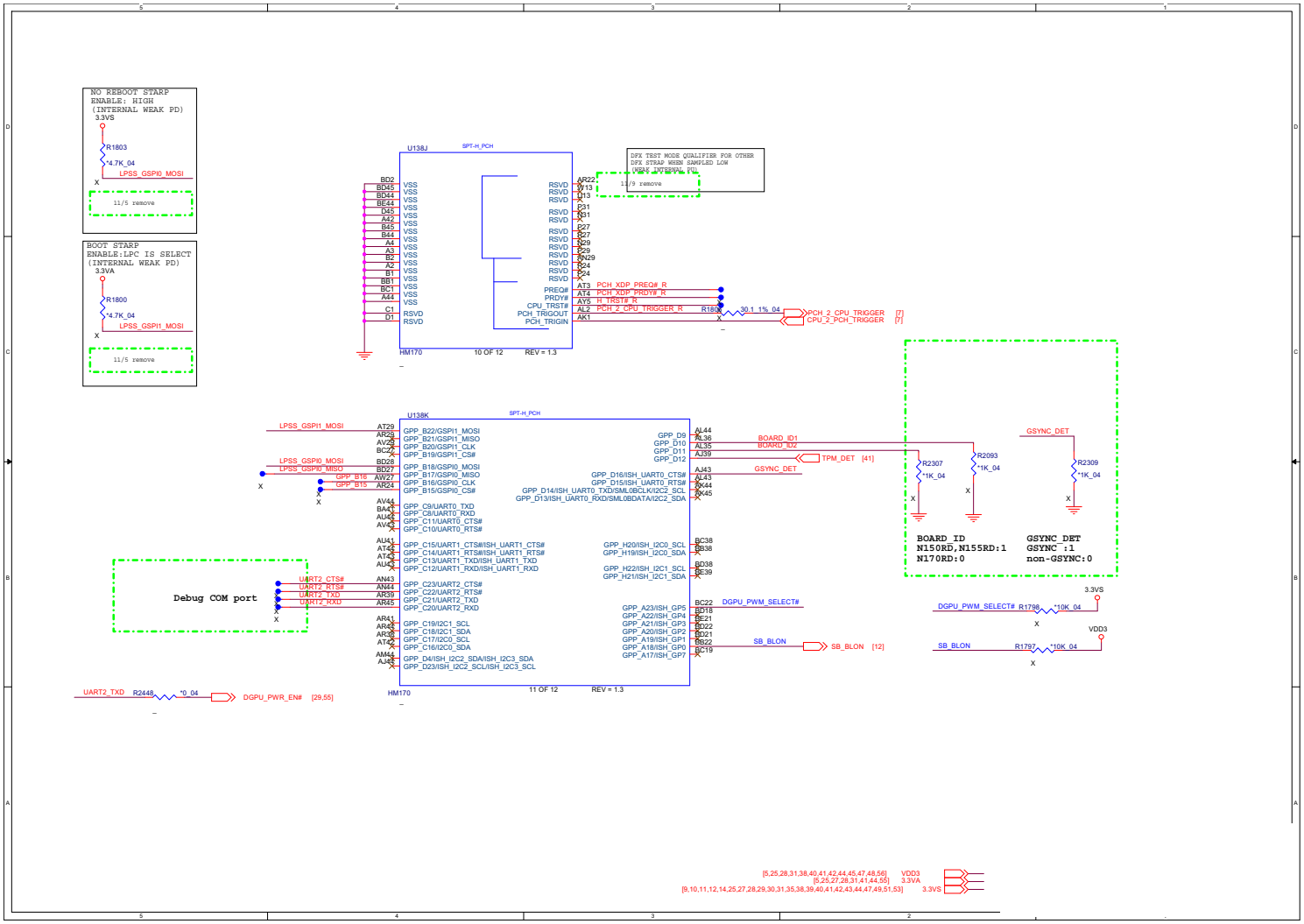
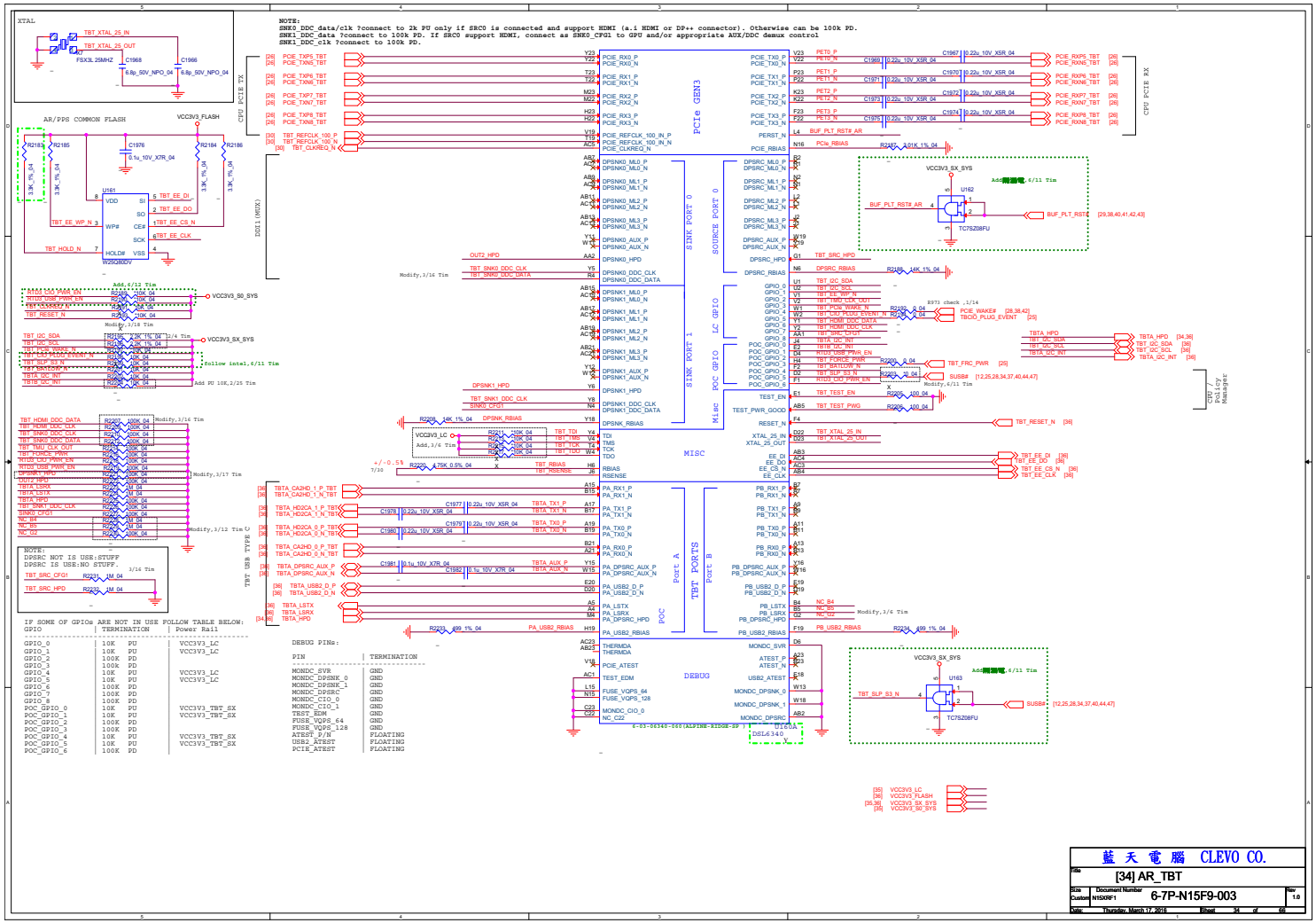
PCH 8/9

PCH 9/9

Sheet 33 of 62
PCH 9/9



AR_TBT



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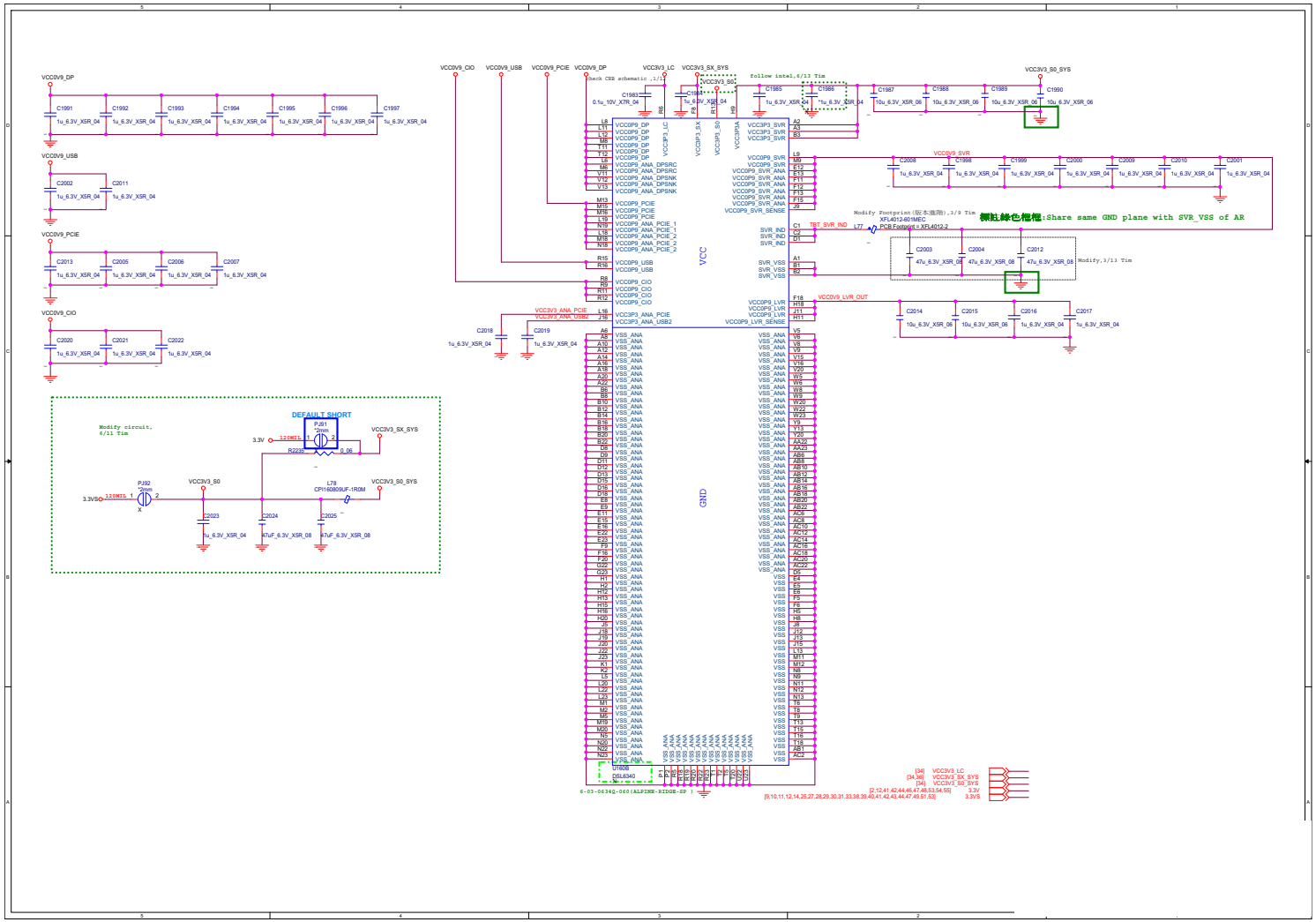
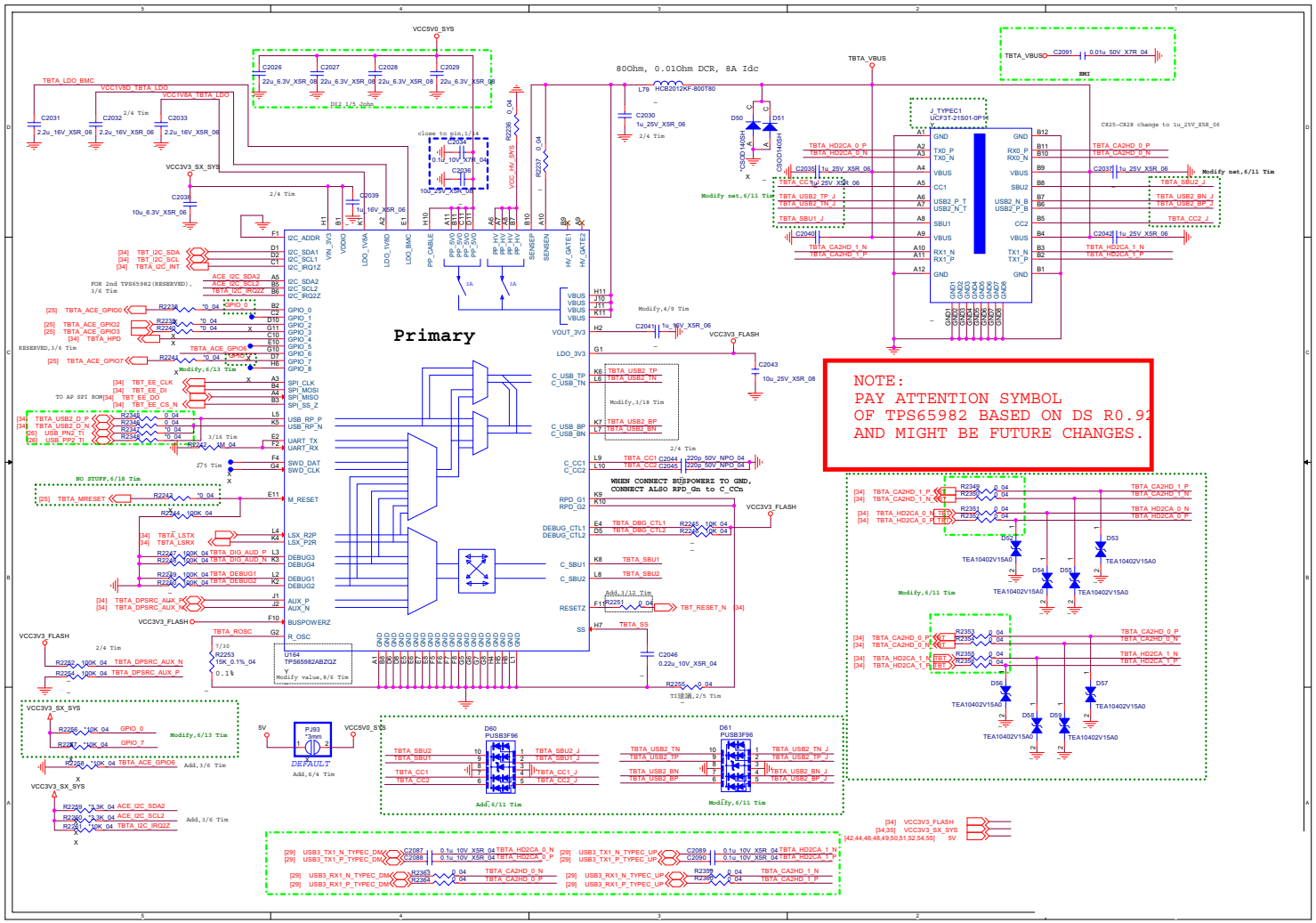
AR_TBT

AR_Power

Sheet 35 of 62
AR_Power



TPS65982



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TPS65982

USB 3.0, USB Charger

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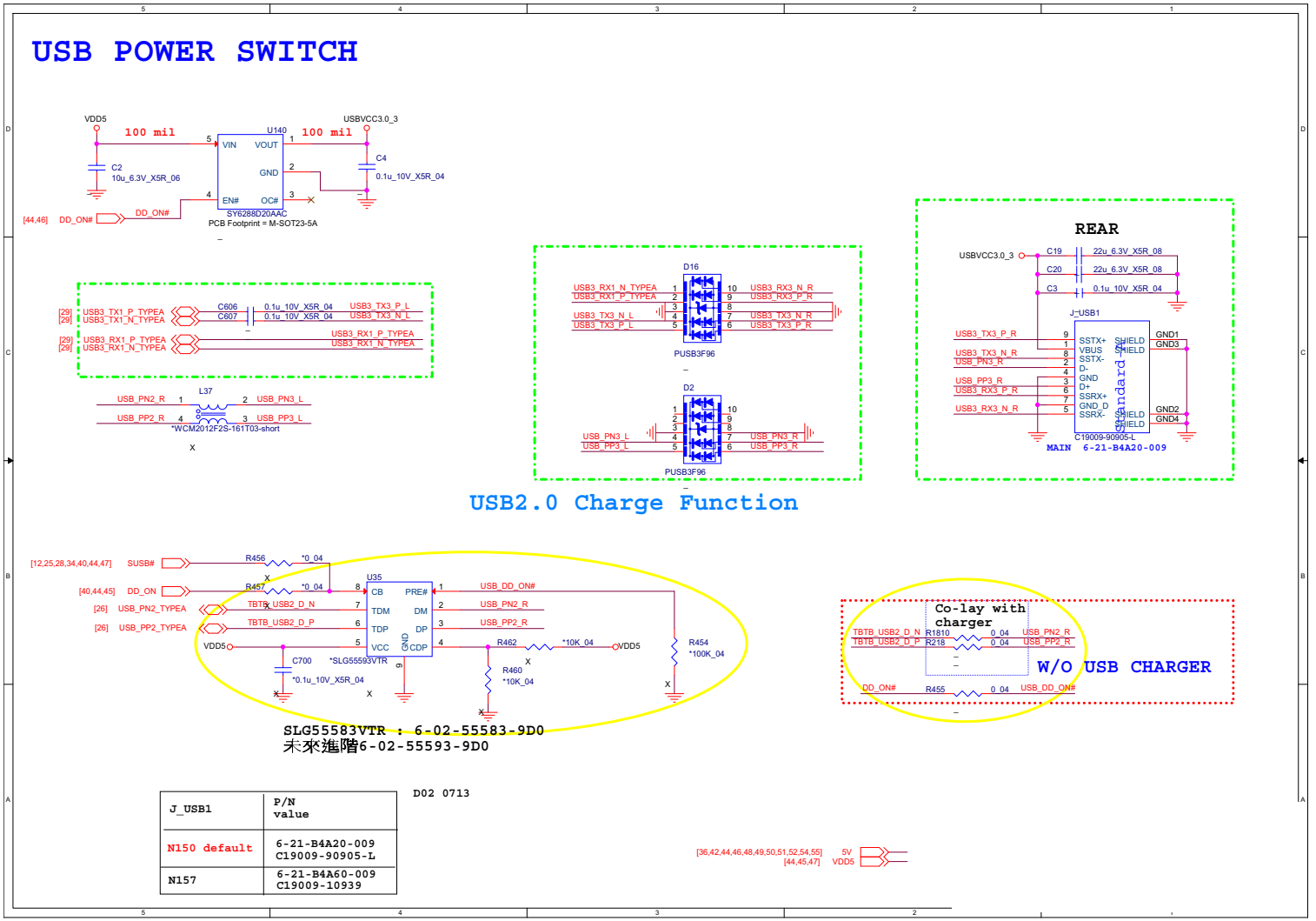
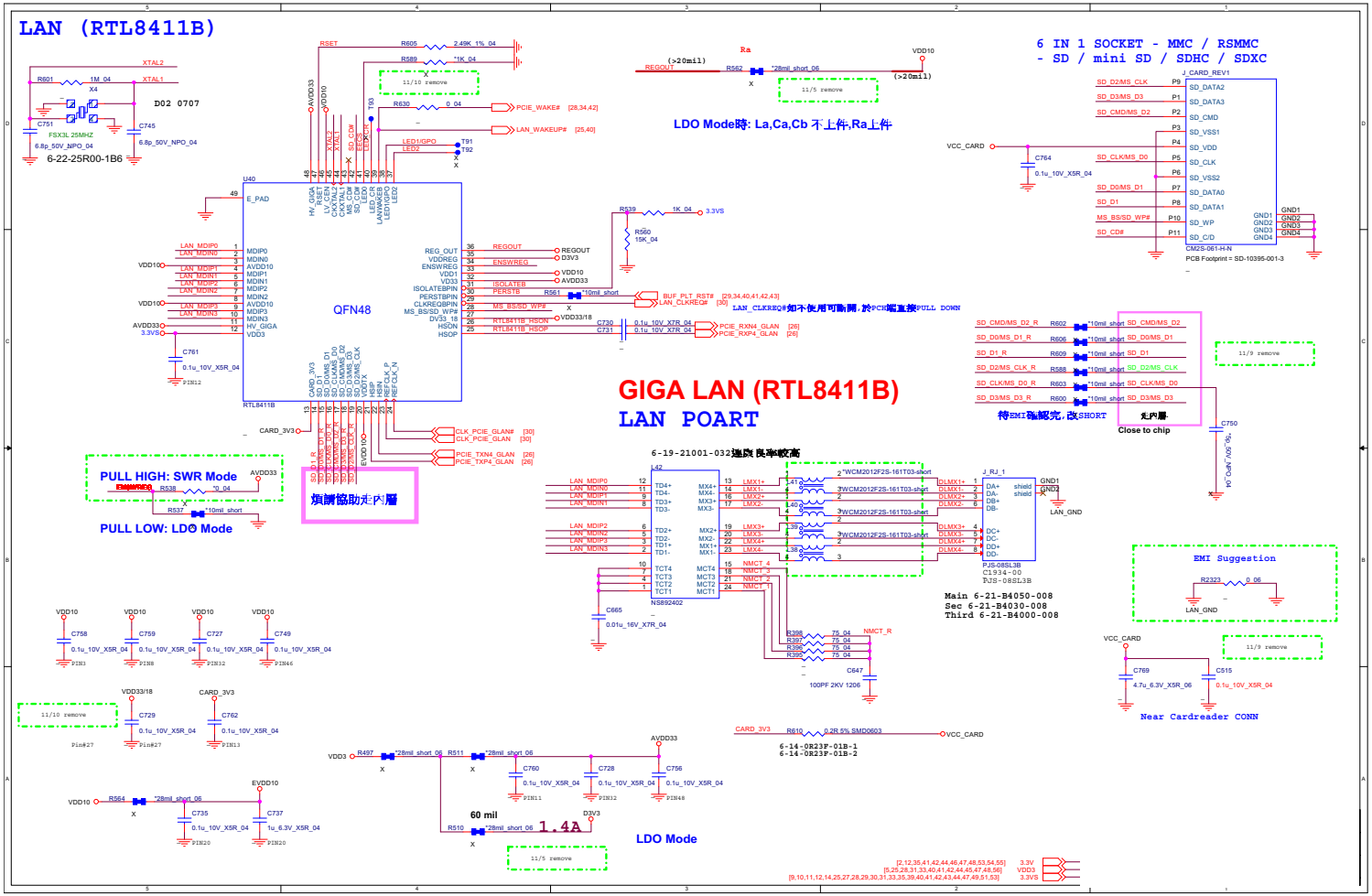
USB 3.0,
USB Charger



J_USB1	P/N value
N150 default	6-21-B4A20-009 C19009-90905-L
N157	6-21-B4A60-009 C19009-10939

LAN RTL8411B, Card Reader



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LAN RTL8411B,
Card Reader

Audio Codec ALC269

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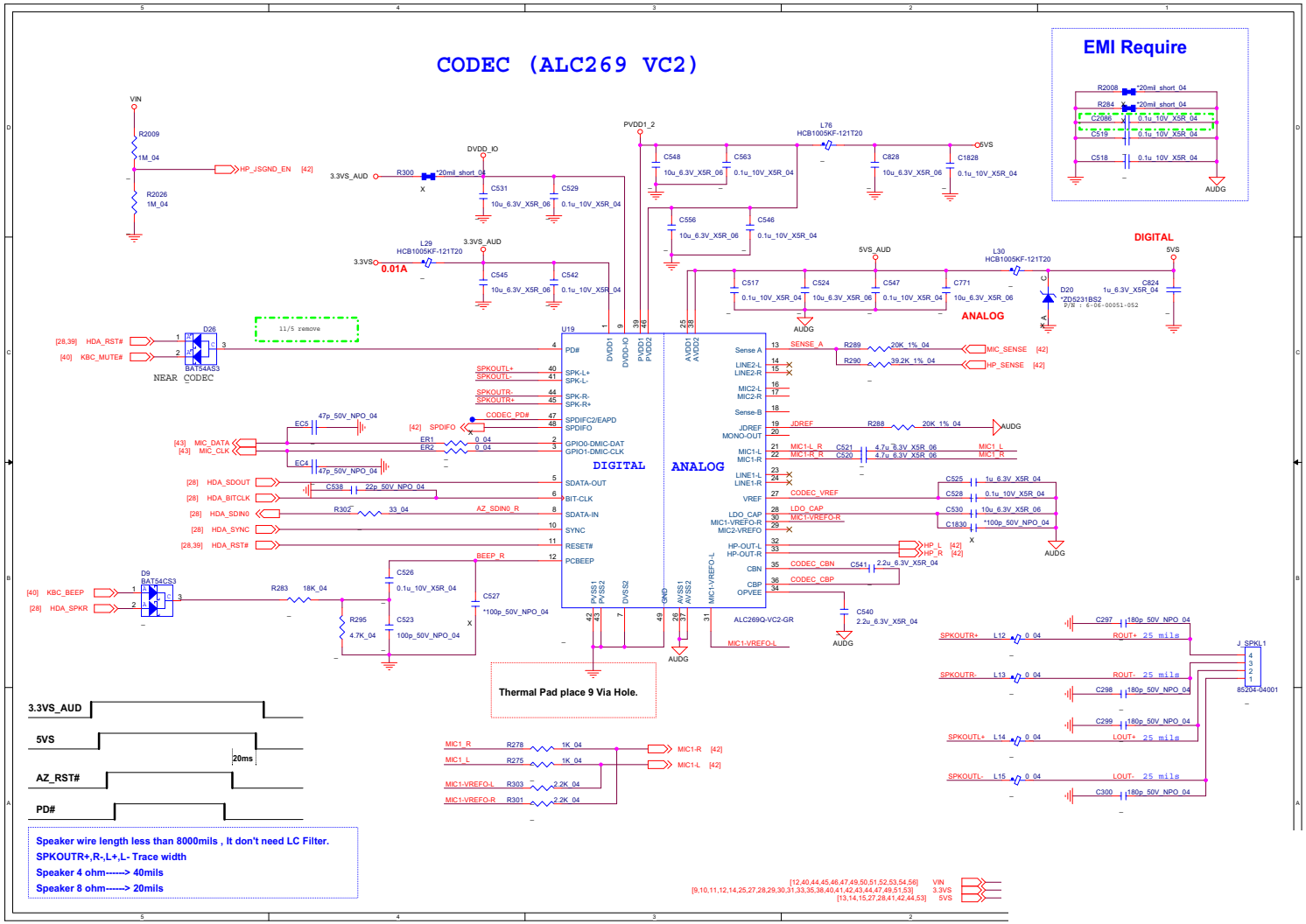
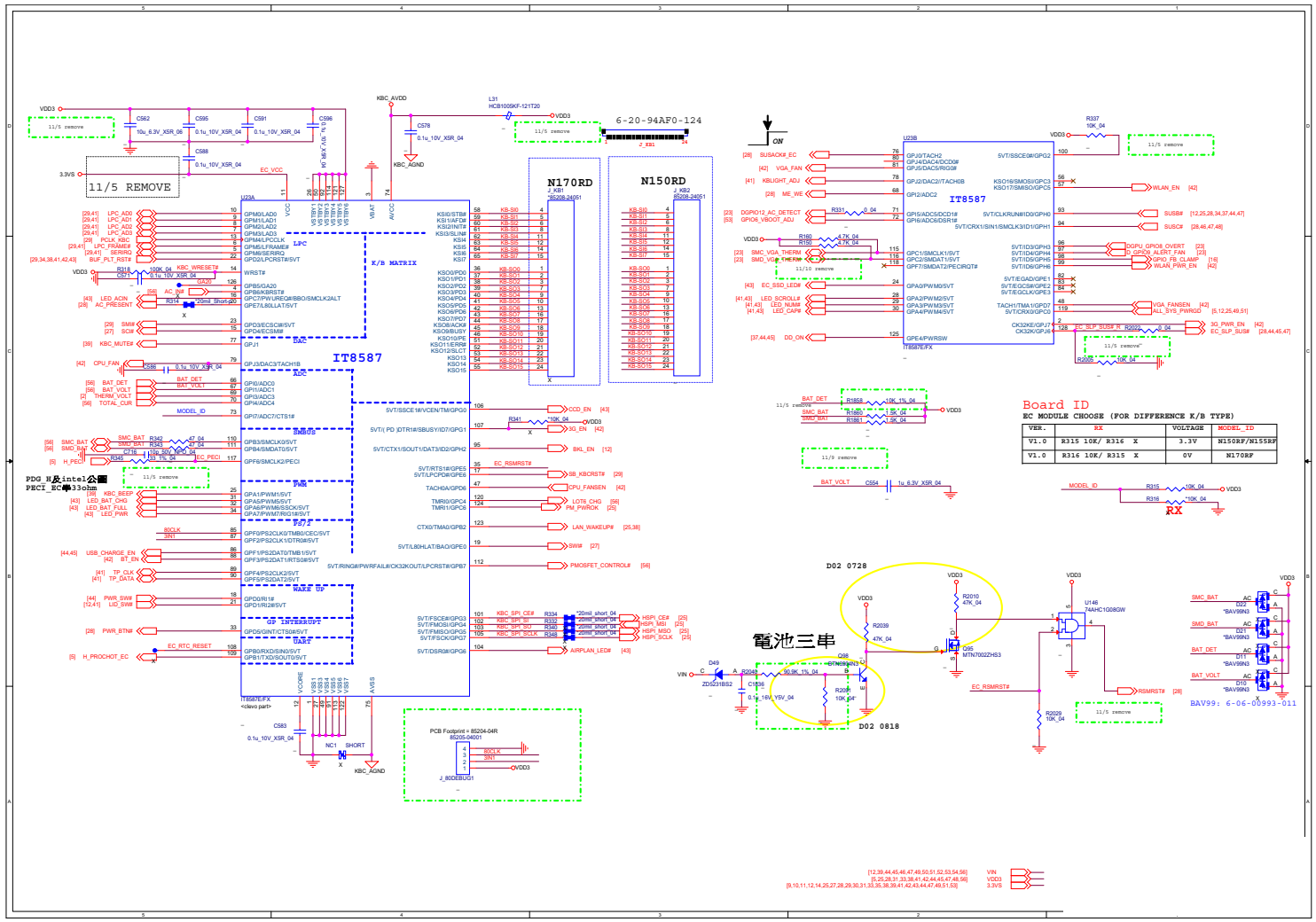
Audio Codec
ALC269



KBC-ITE IT8587



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KBC-ITE IT8587

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

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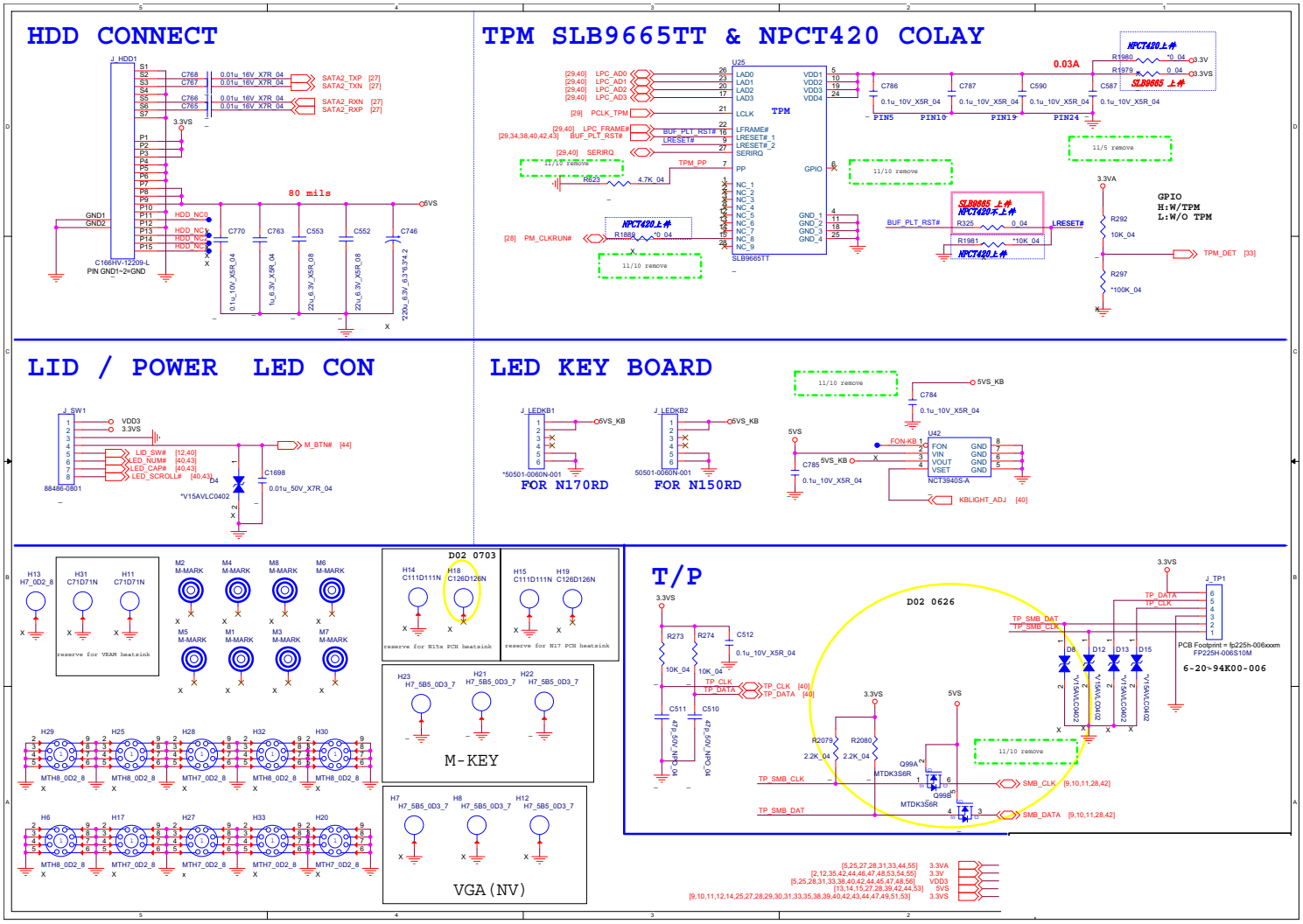
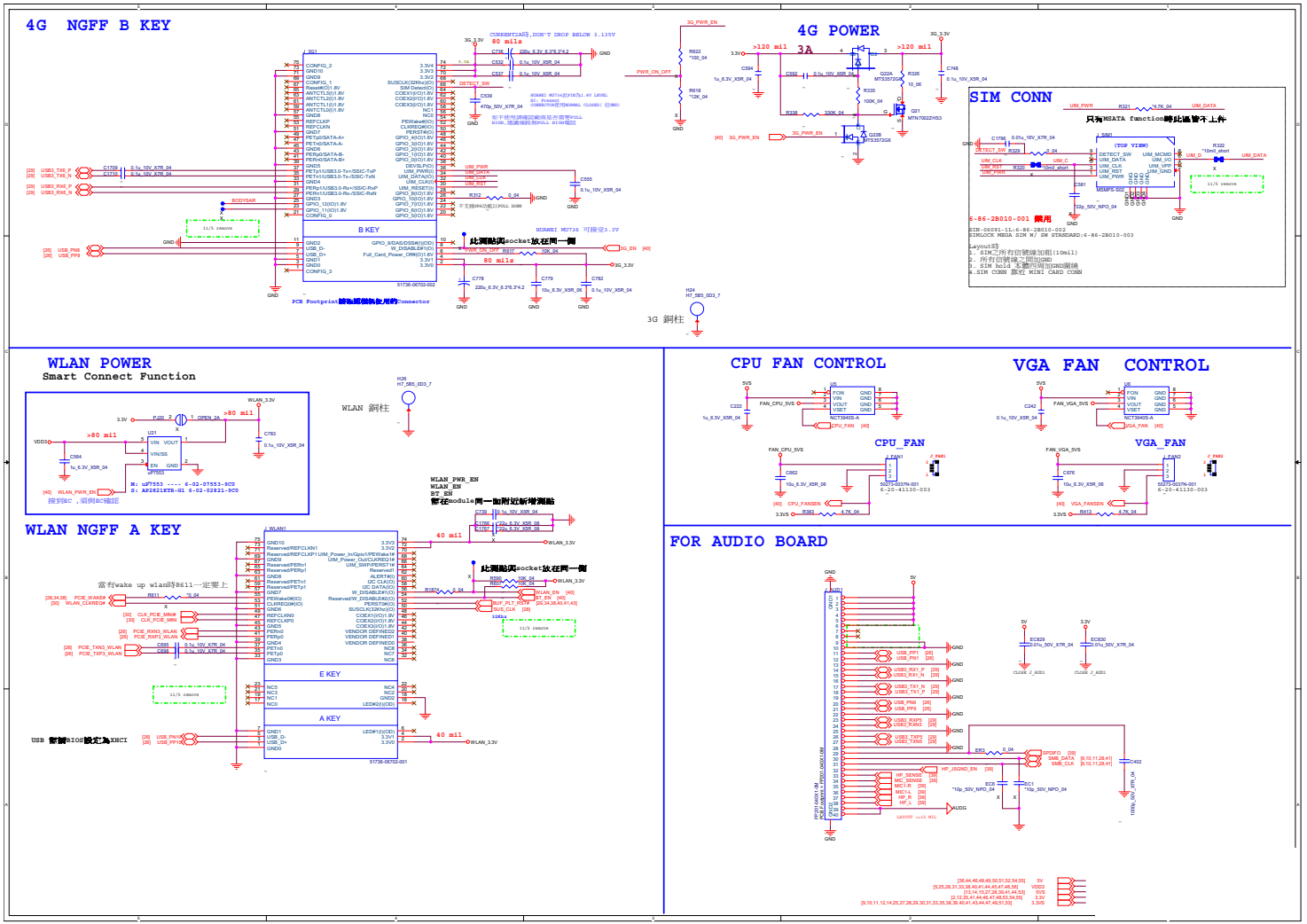
HDD, TPM, KB LED,
PWR Con, T/P



WLAN, 4G, Fan, Audio Con



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WLAN, 4G, Fan, Audio Con

B.Schematic Diagrams

CCD, M-Key, Click Conn

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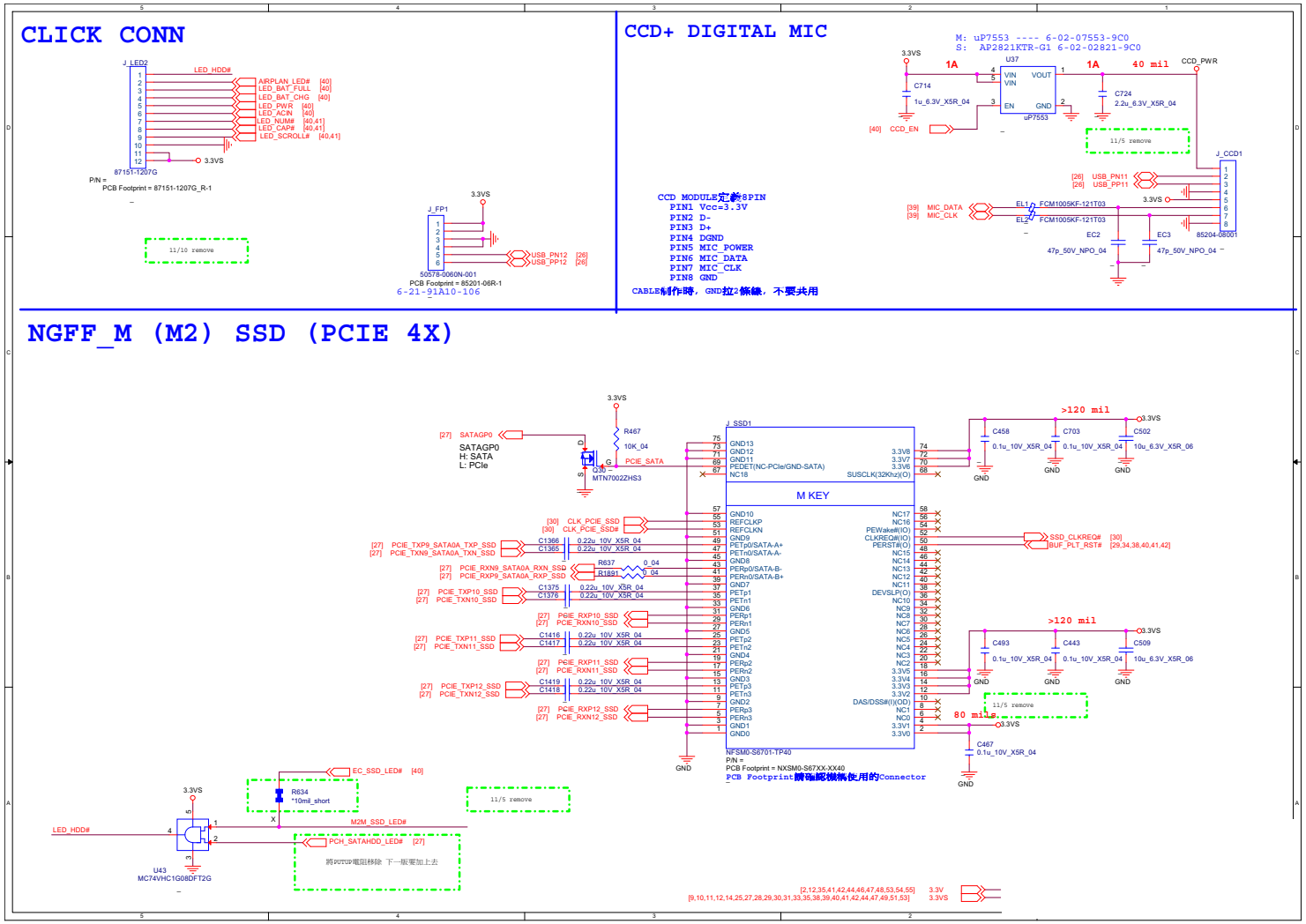
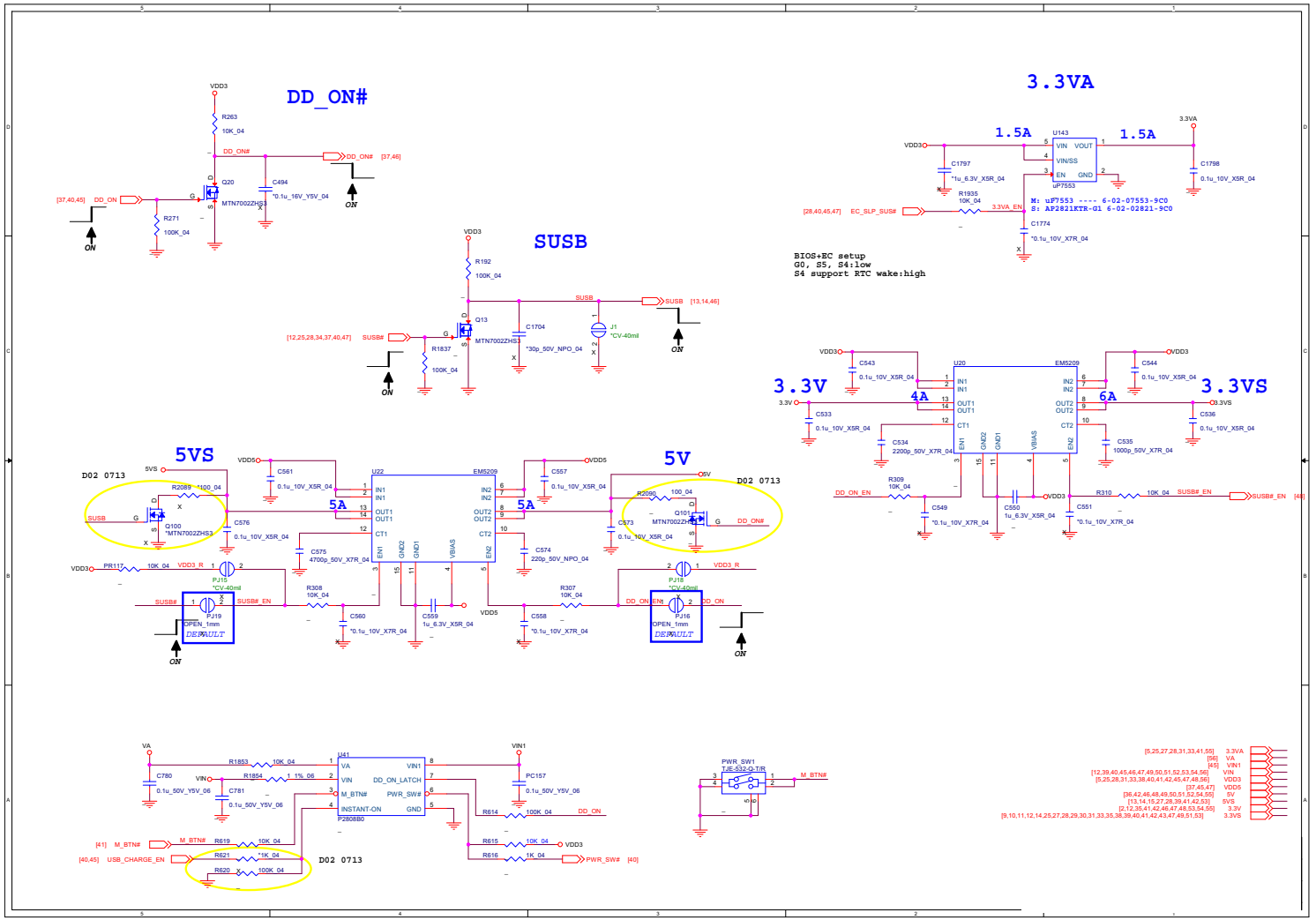
CCD, M-Key,
Click Conn



System Power



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System Power

VDD3, VDD5

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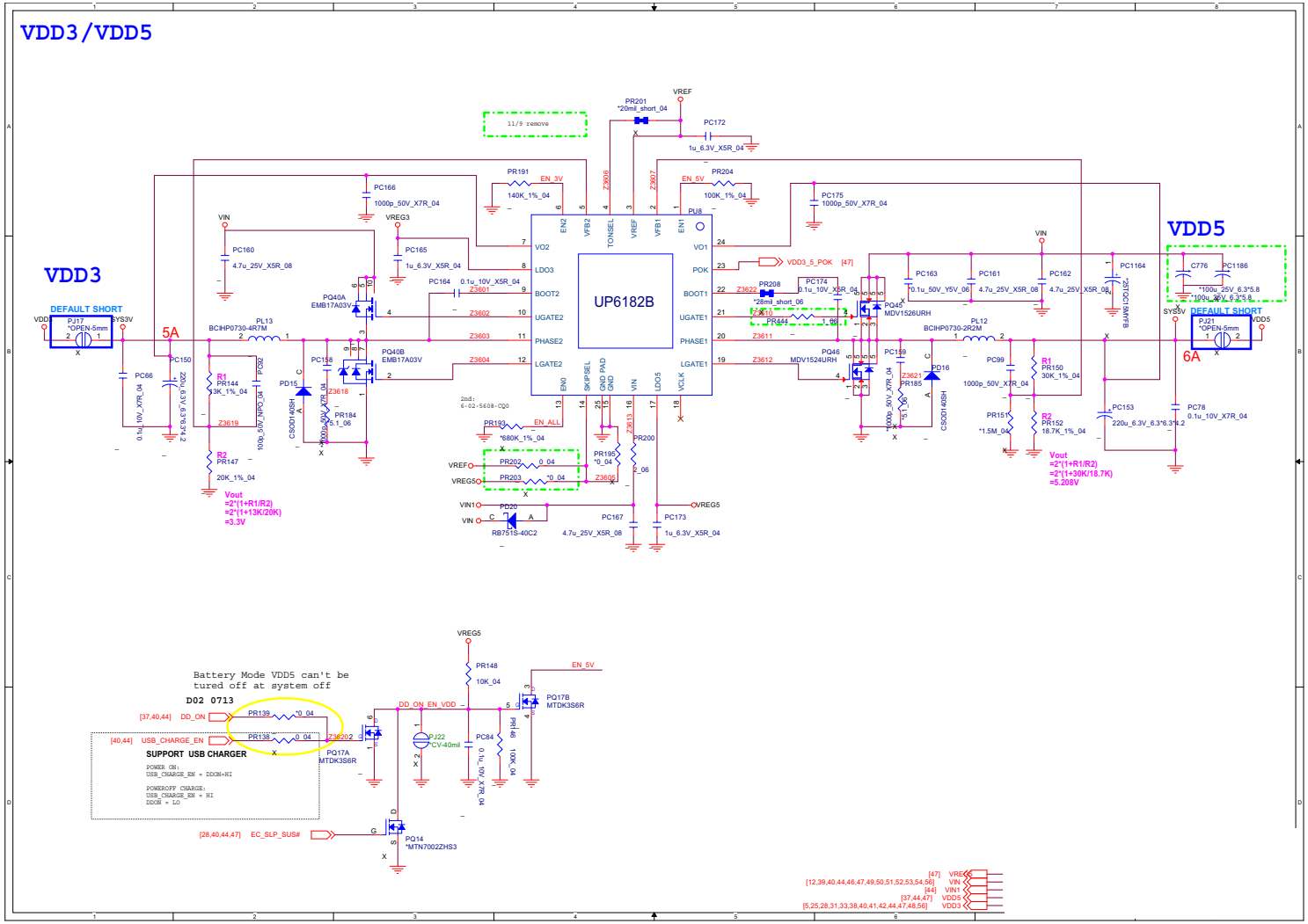
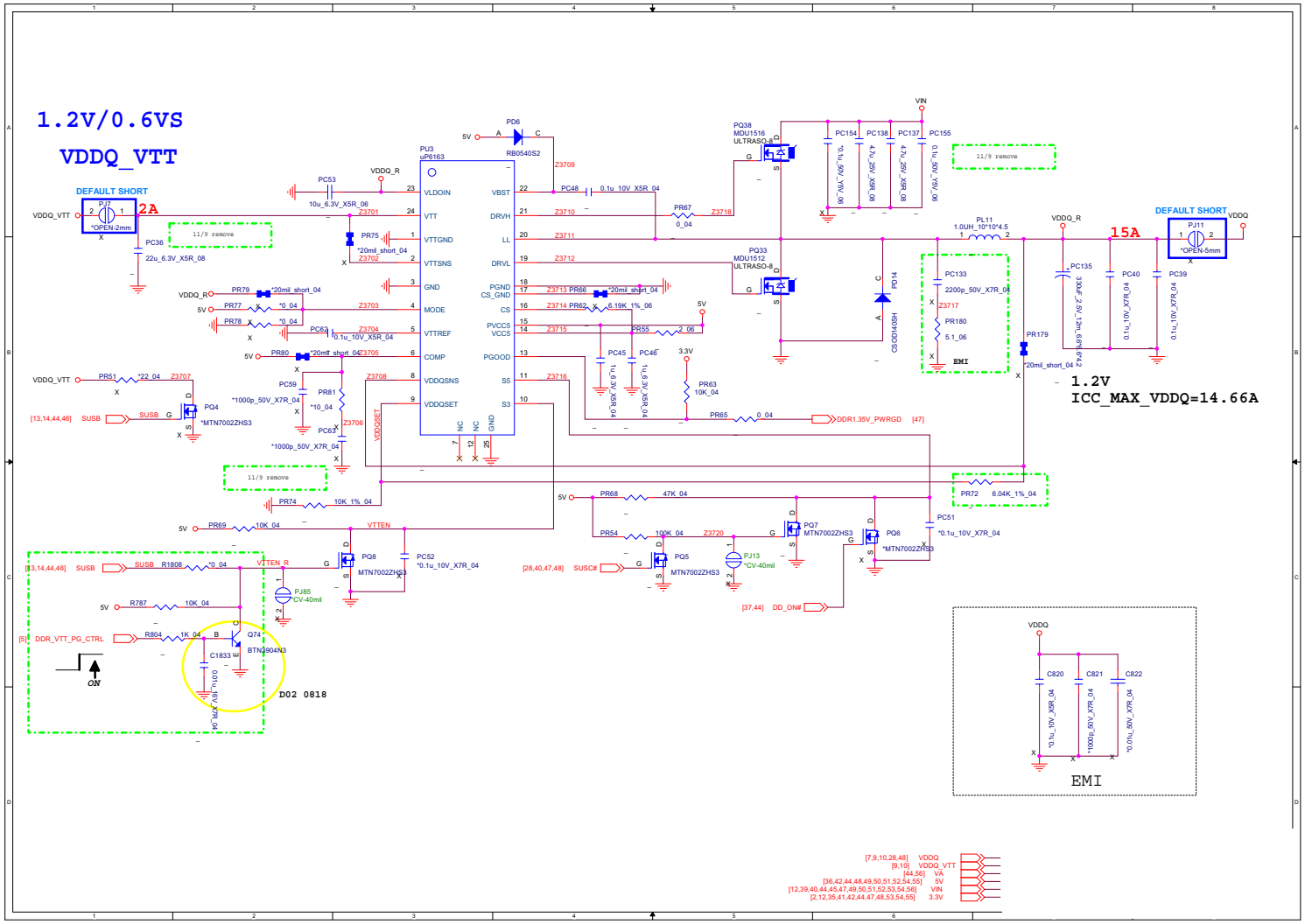
VDD3, VDD5



DRAM Power



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DRAM Power

Power 1.0V, VCCIO

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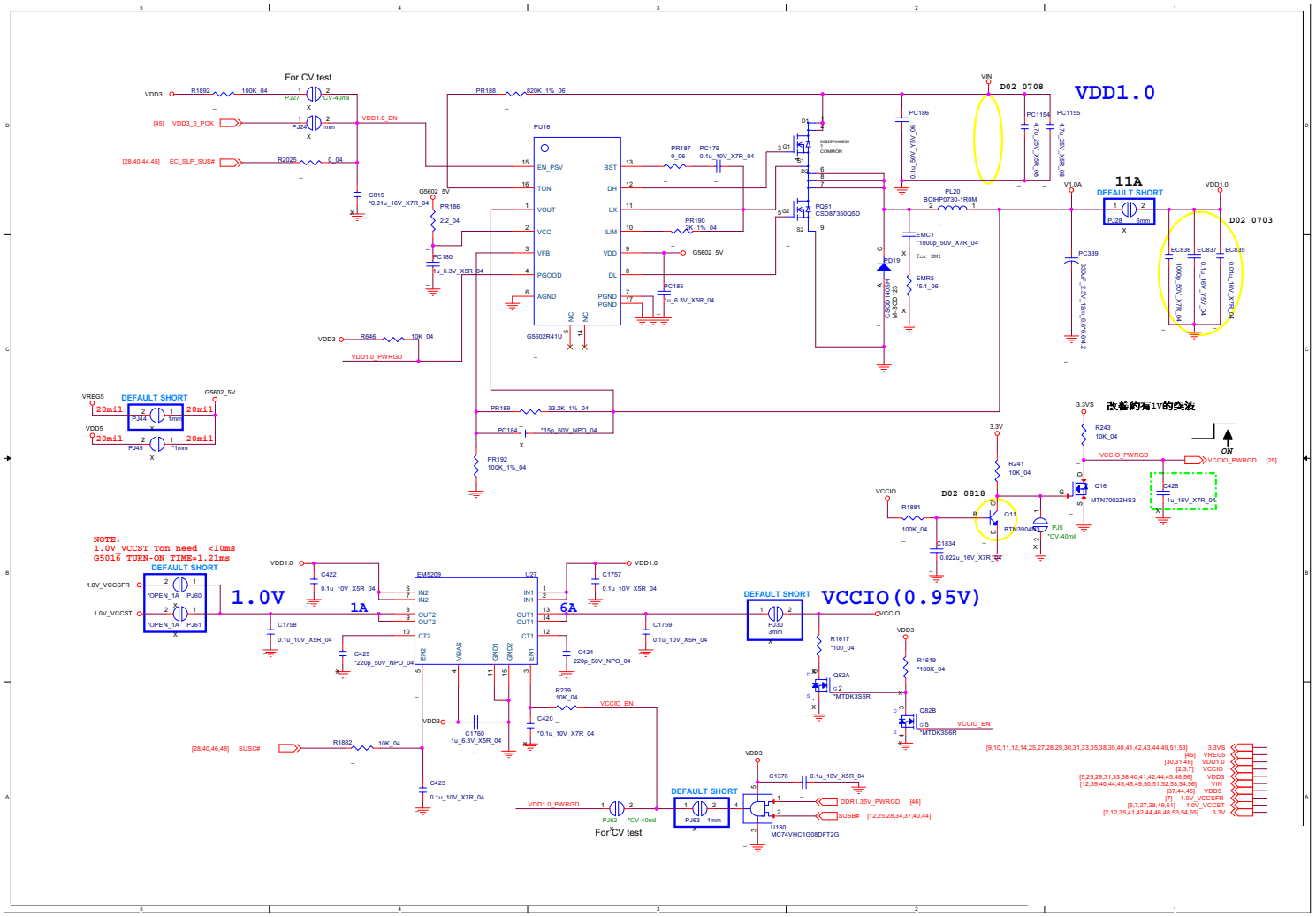
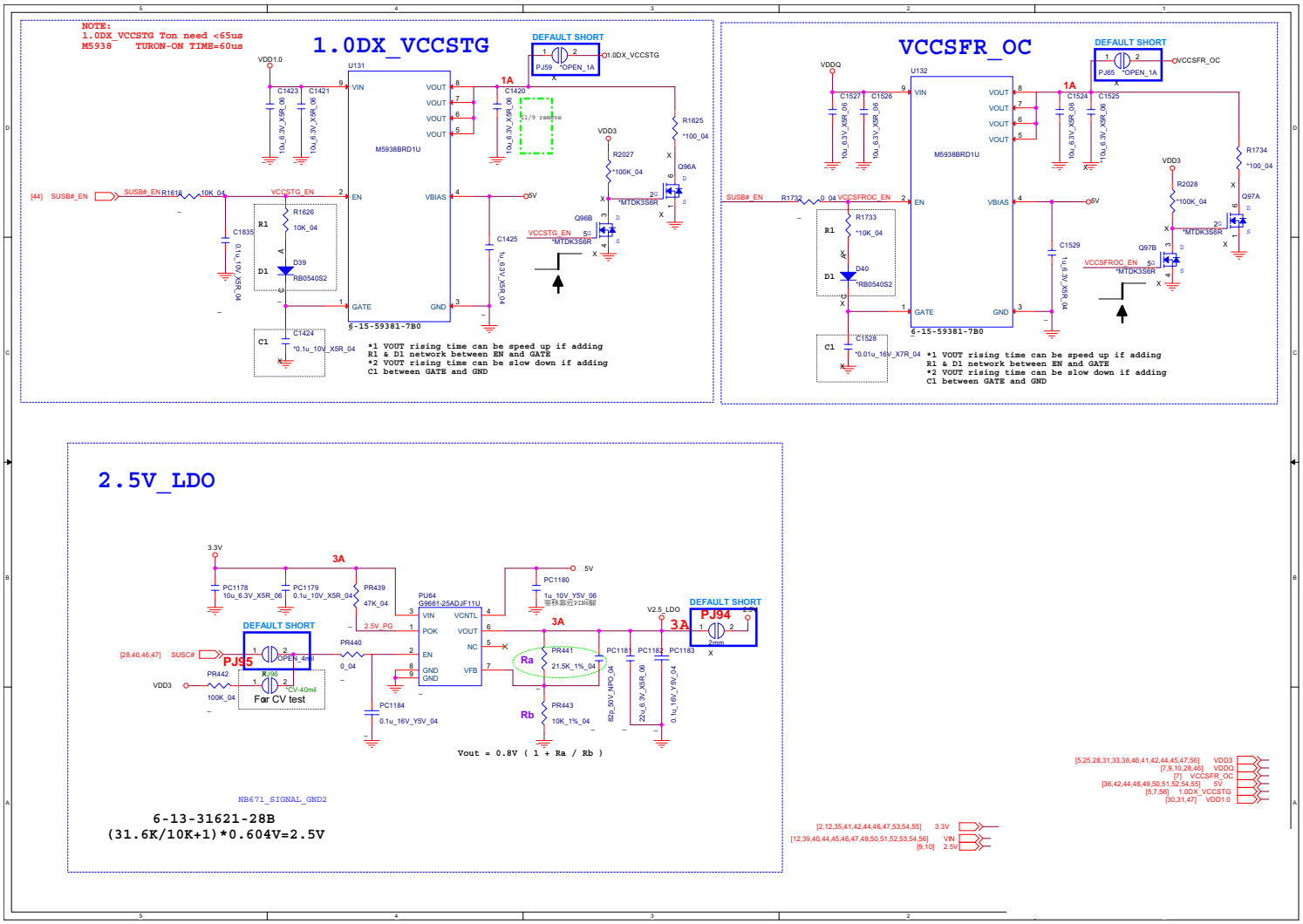
Power 1.0V, VCCIO



1.0DX_VCCSTG/VCCSFR_OC



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1.0DX_VCCSTG/
VCCSFR_OC

VCore, VCCSA

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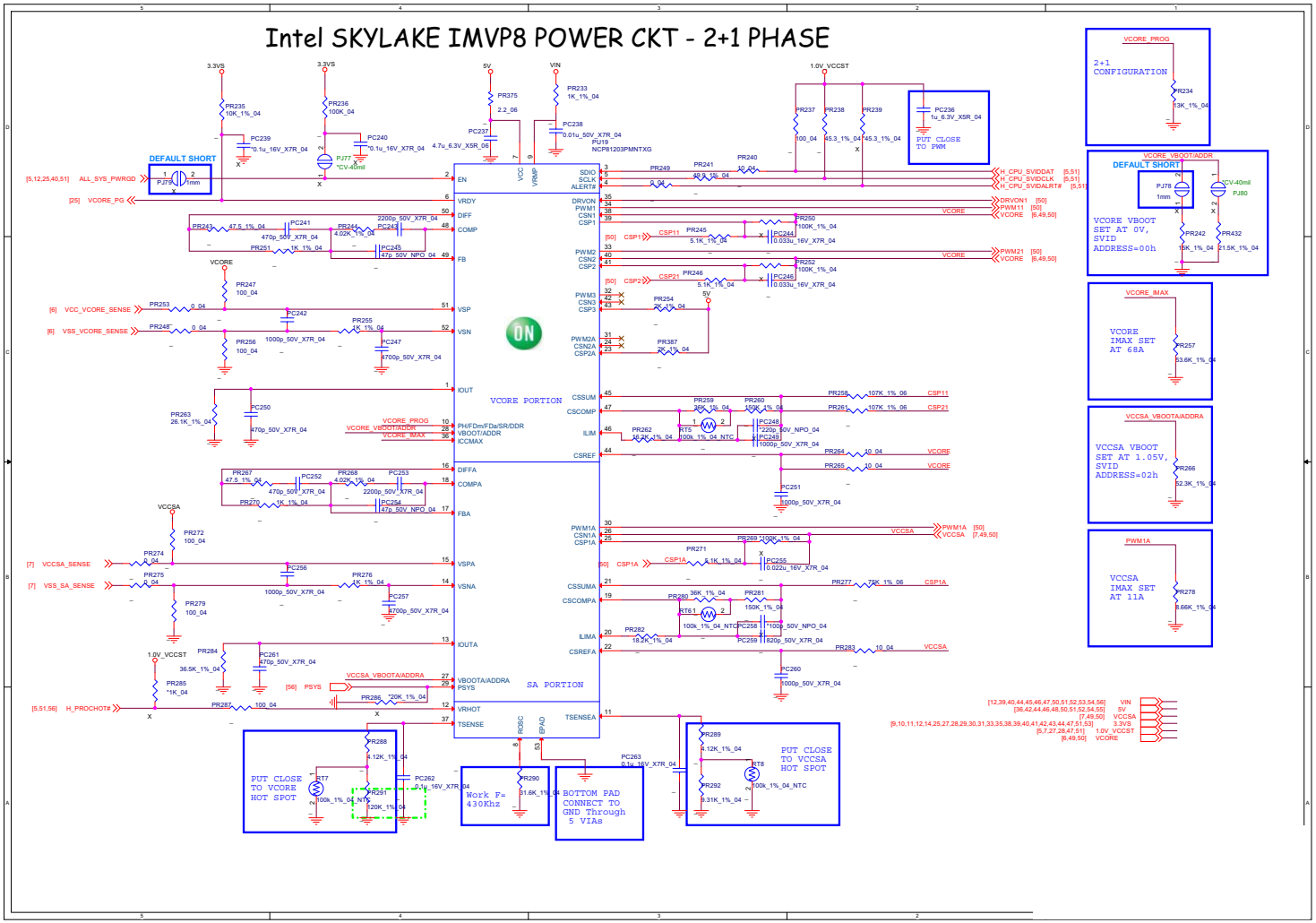
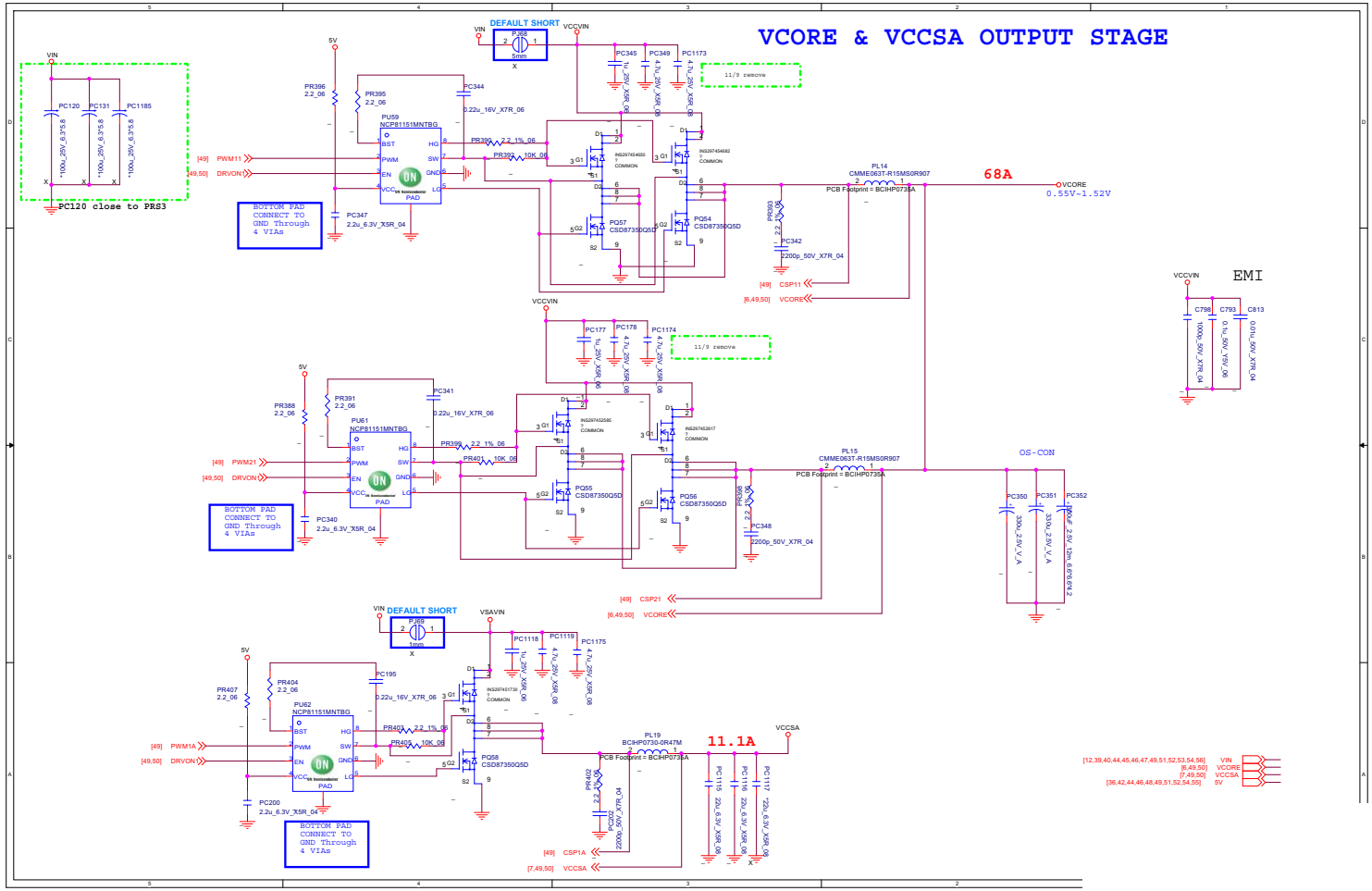
VCore, VCCSA



VCore, VCCSA Output Stage



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VCore, VCCSA
Output Stage

VCCGT

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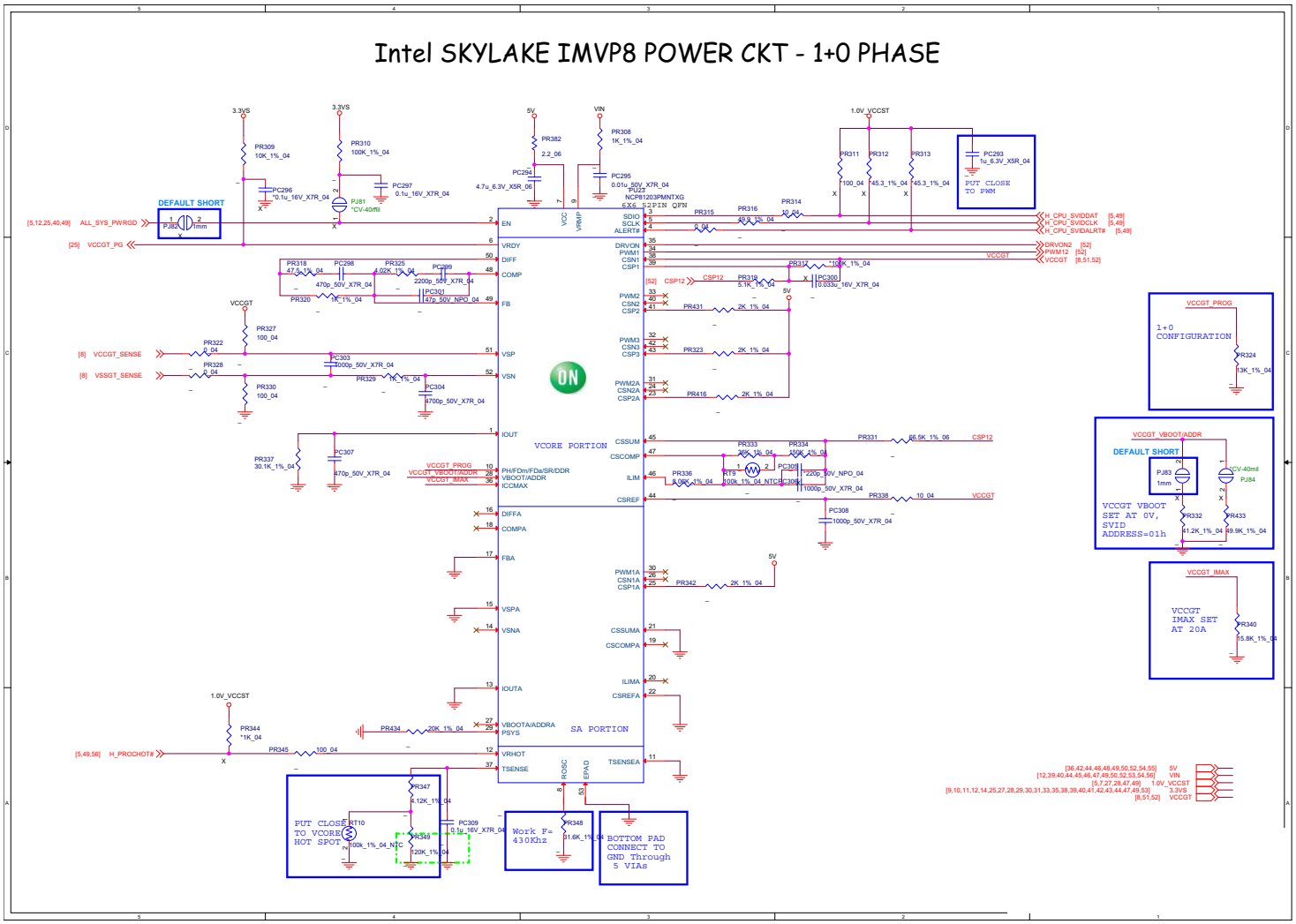
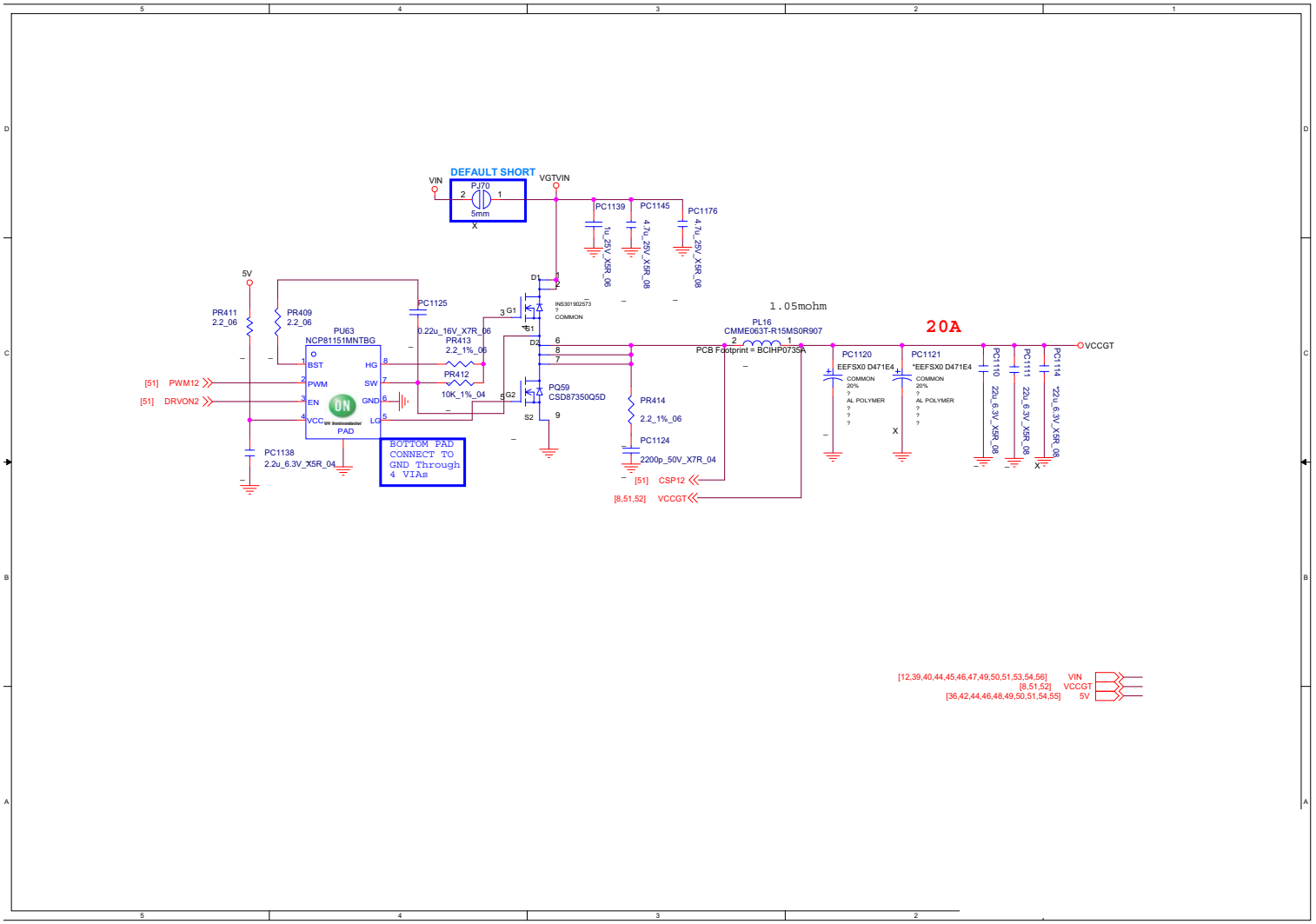
VCCGT



VCCGT Output Stage



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VCCGT Output Stage

NVVDD

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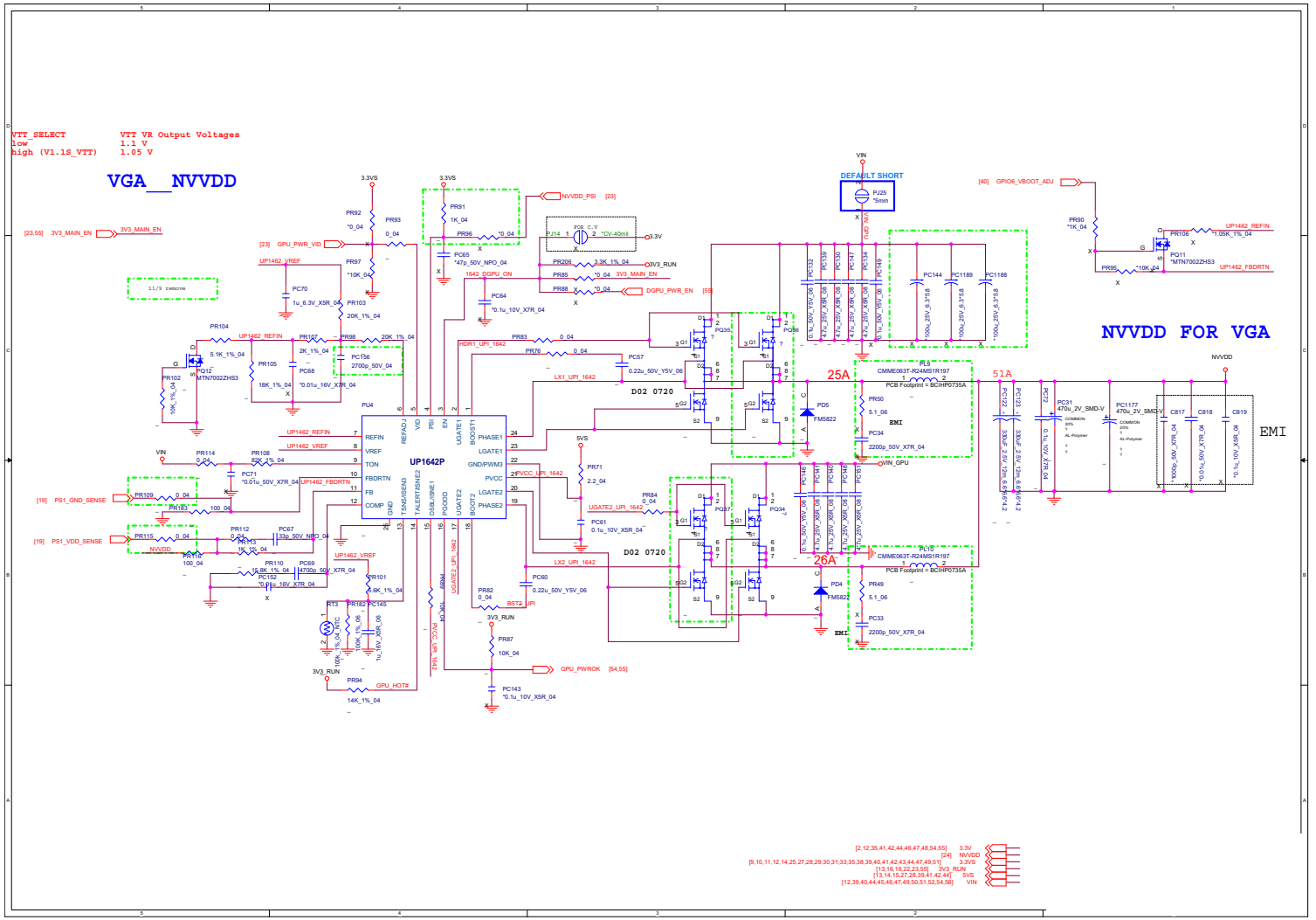
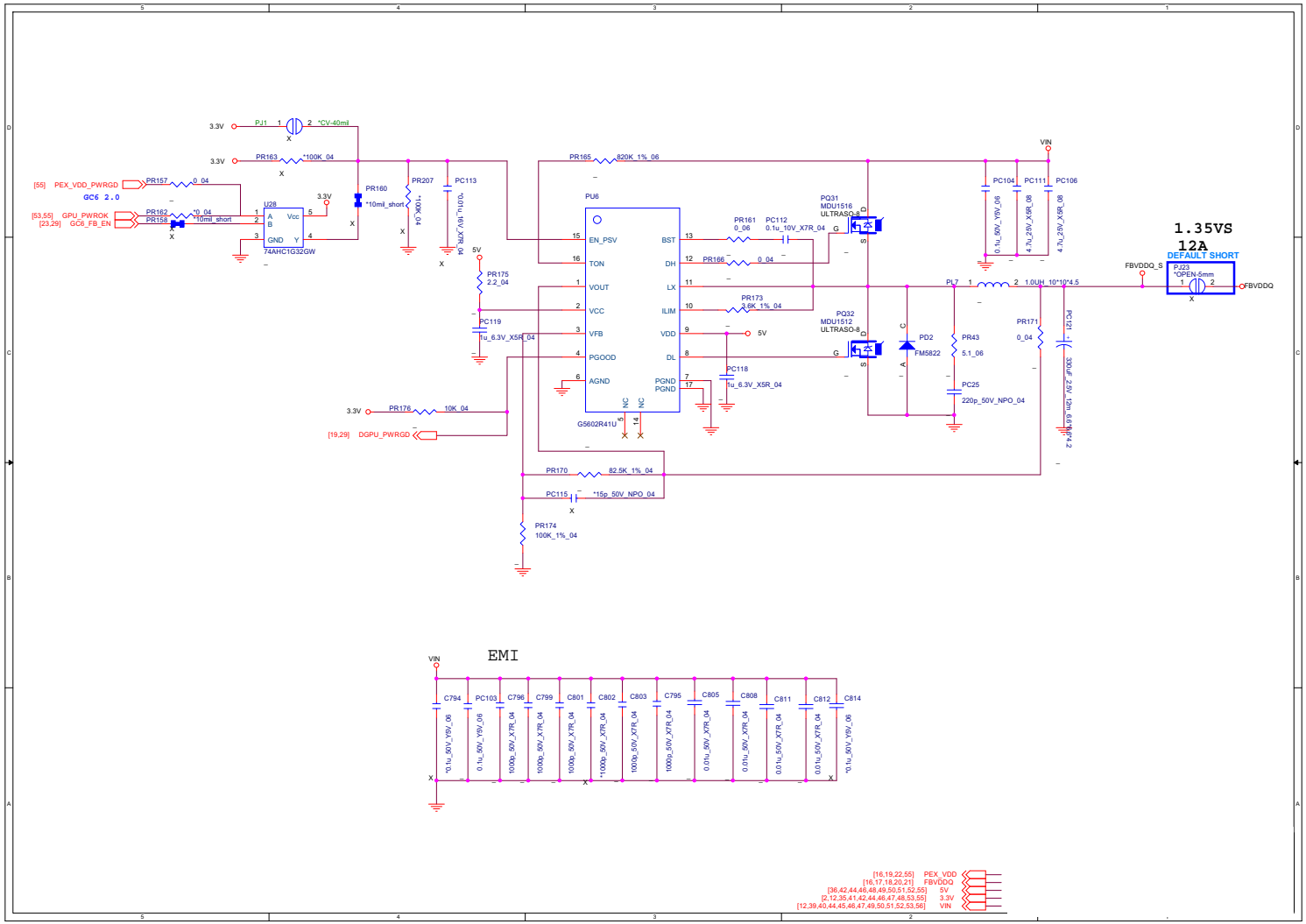
NVVDD



FBVDDQ



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FBVDDQ

3V3_AON, 3V3_RUN, PEX_VDD

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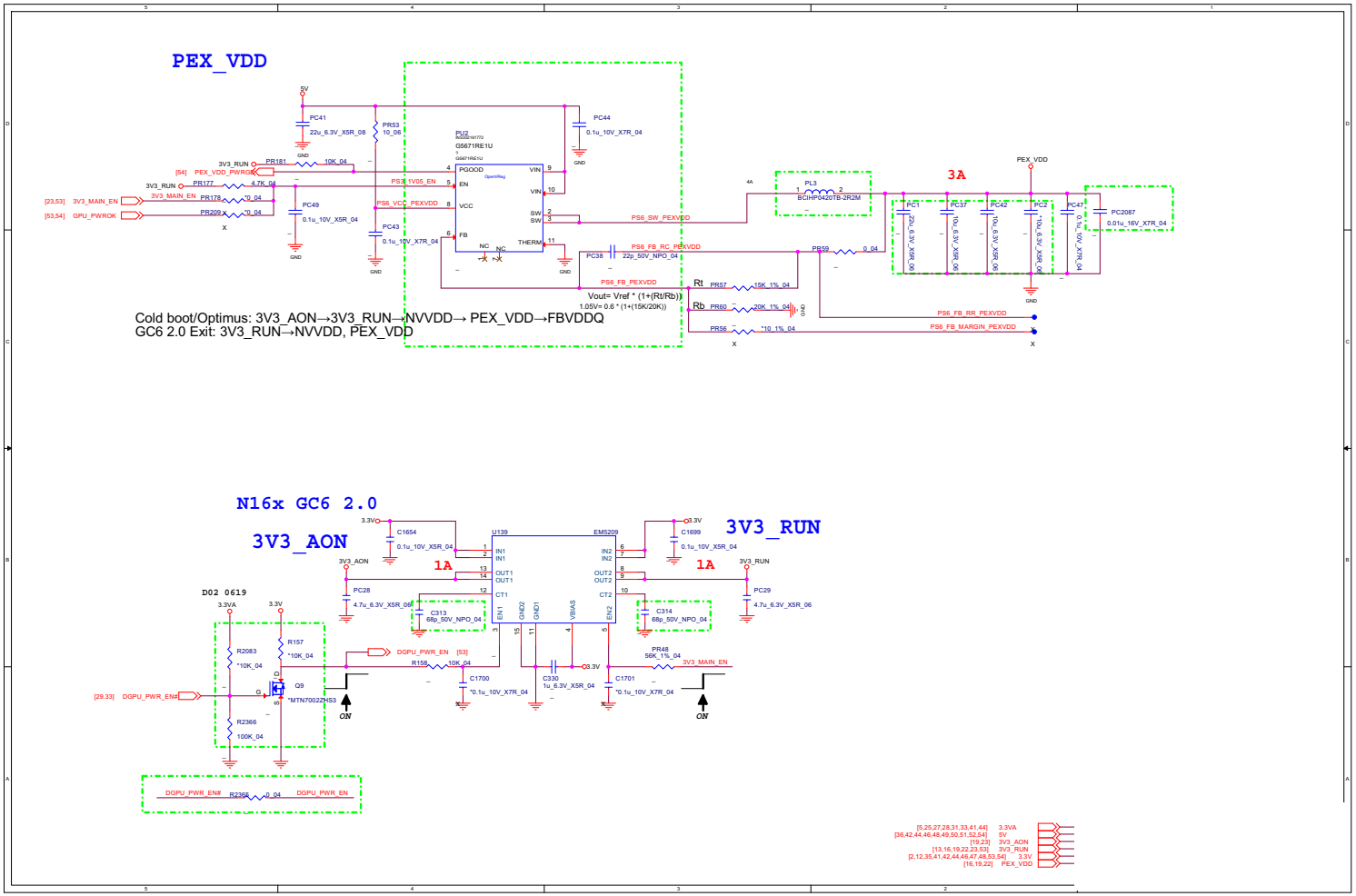
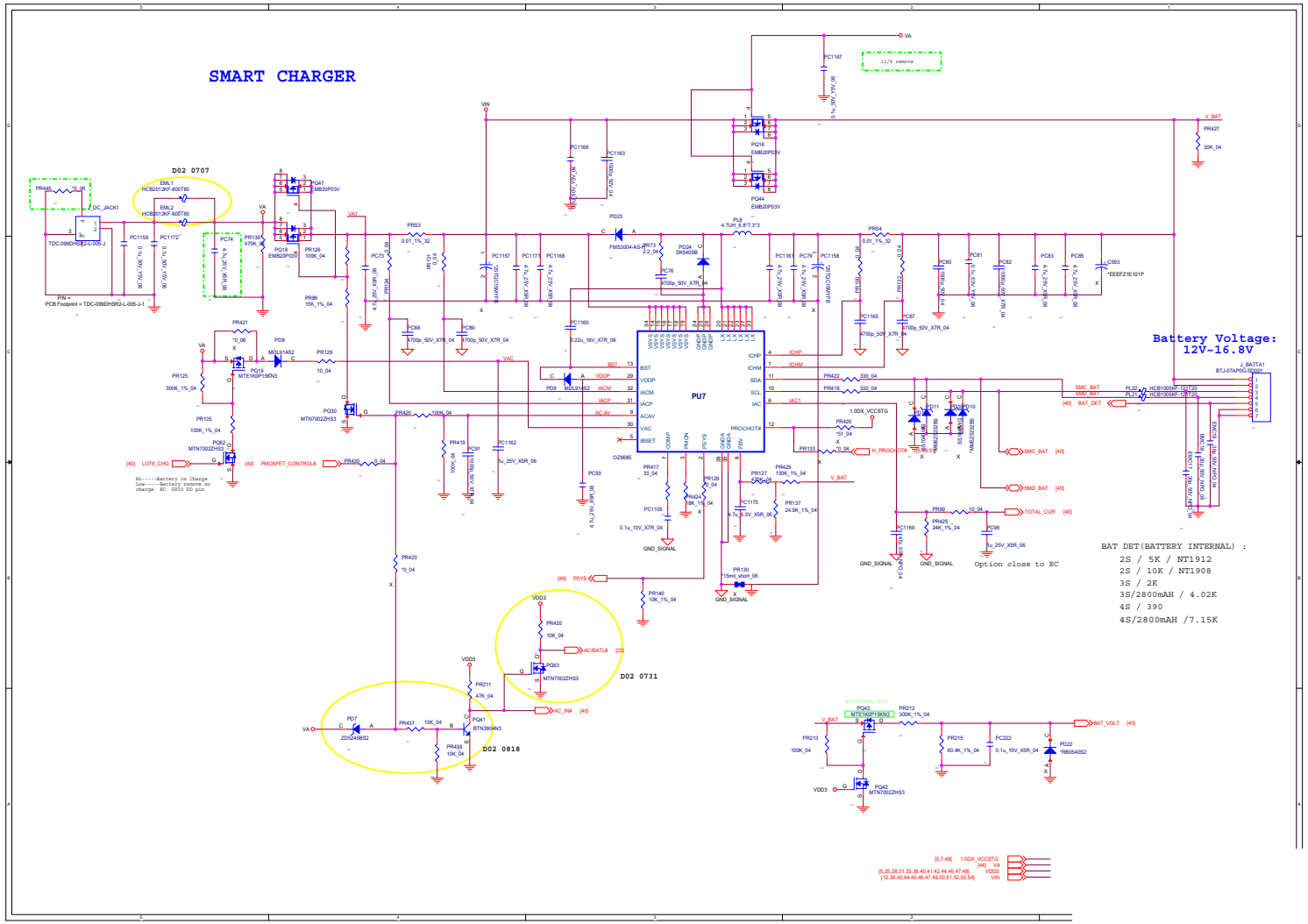
3V3_AON,
3V3_RUN,
PEX_VDD



AC-In, Charger



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AC-In, Charger

N155, N157 KB LED, PWR Board

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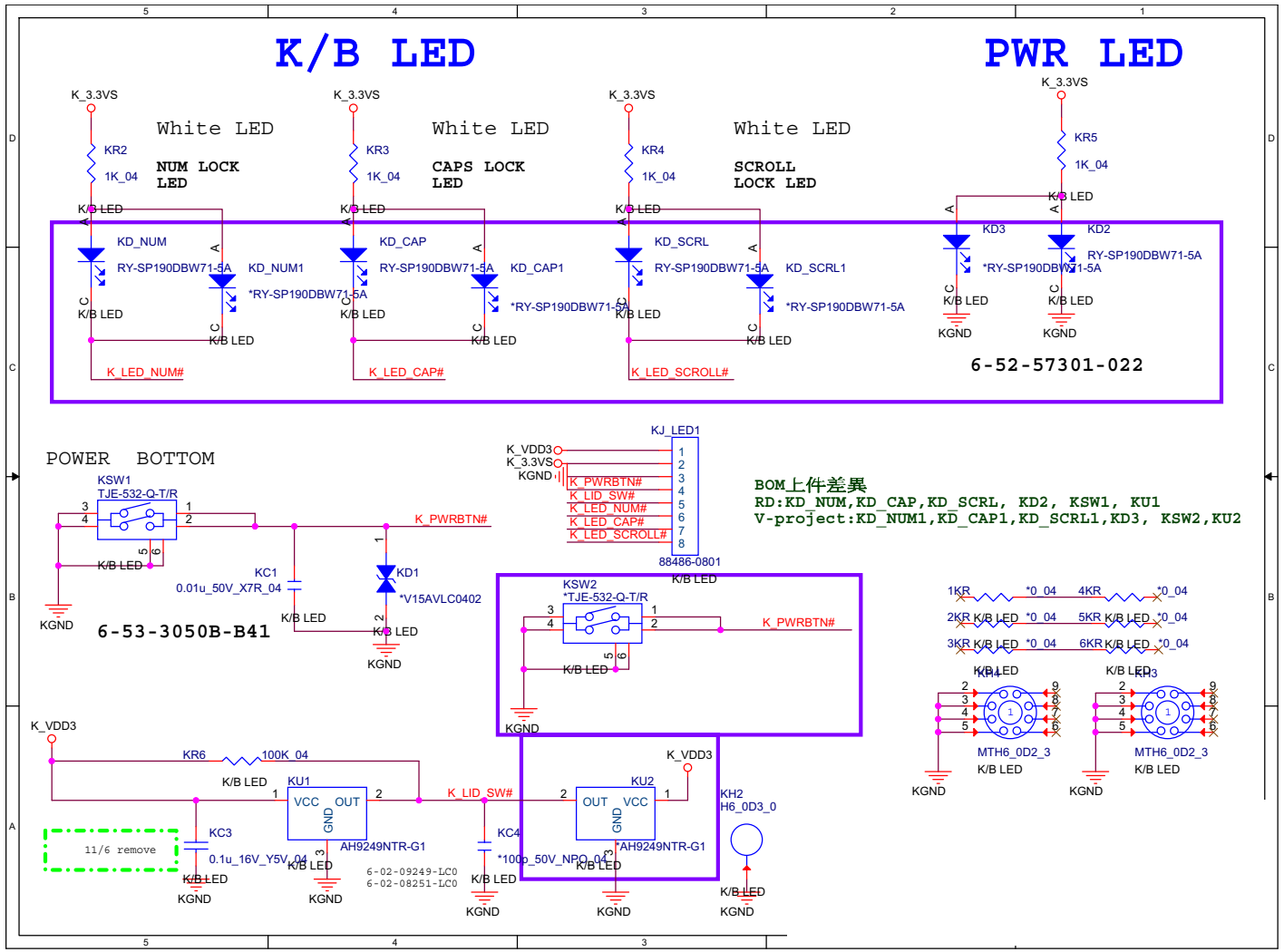
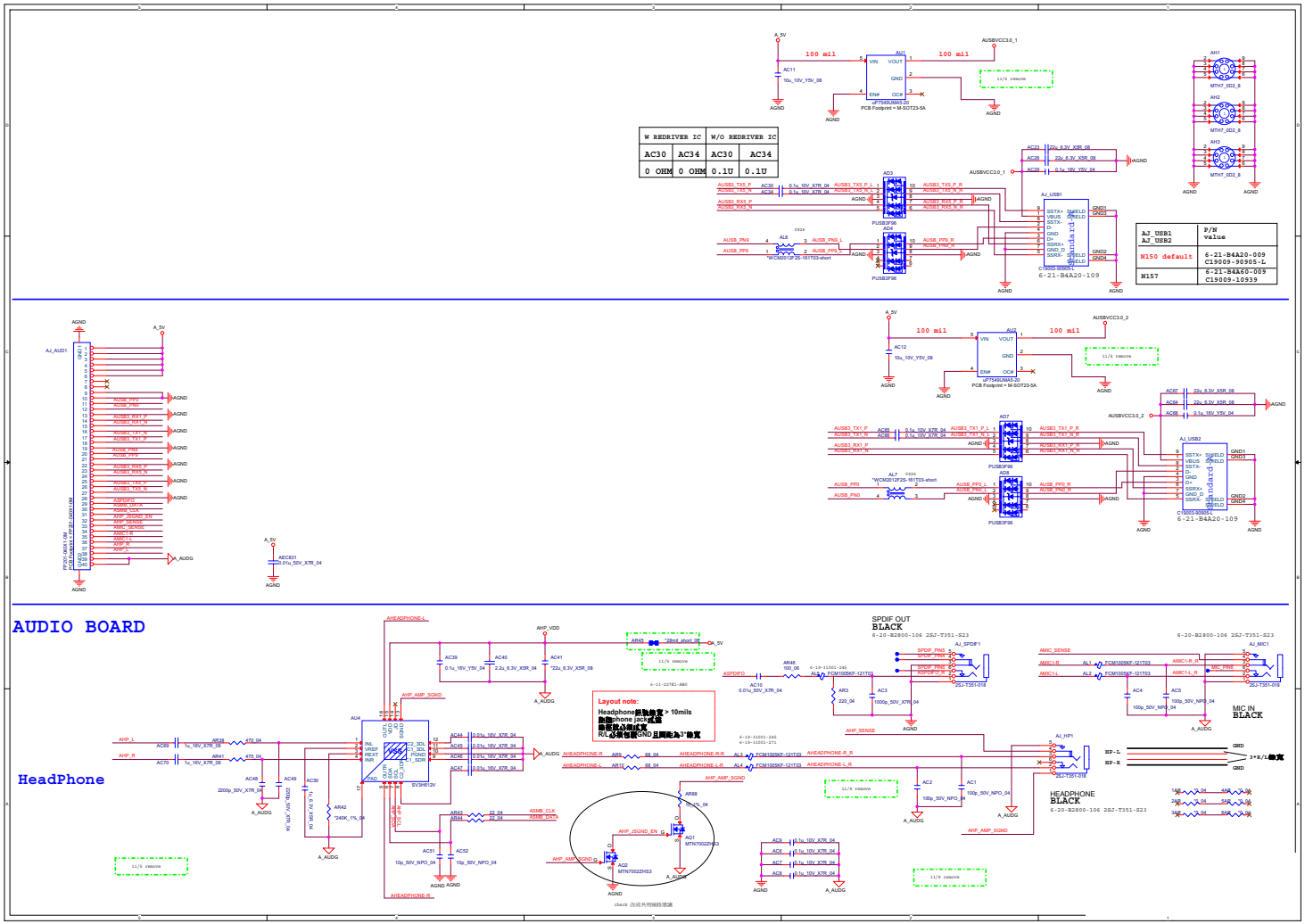
N155, N157 KB
LED, PWR Board



Audio Board



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Audio Board

Front LED Board

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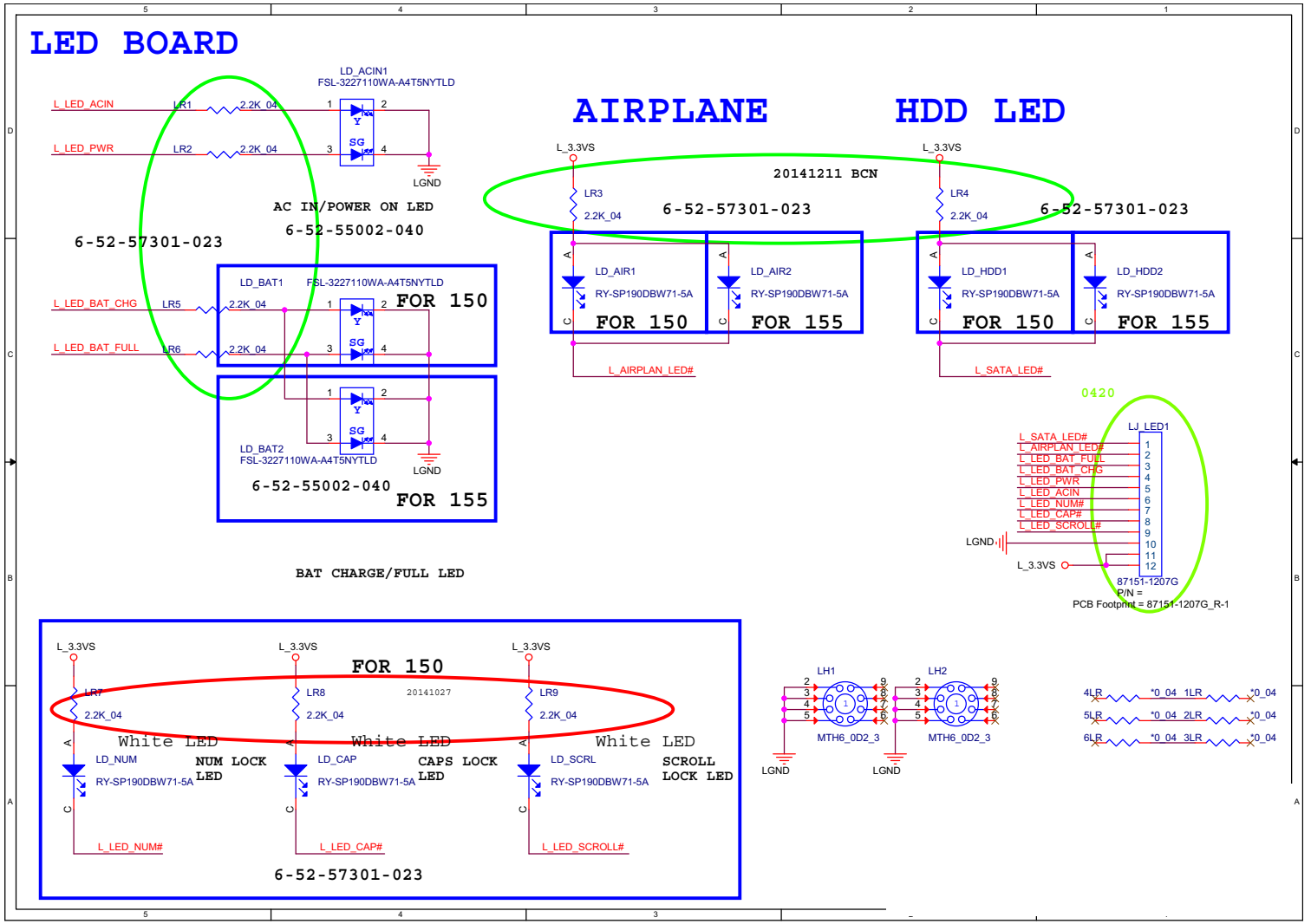
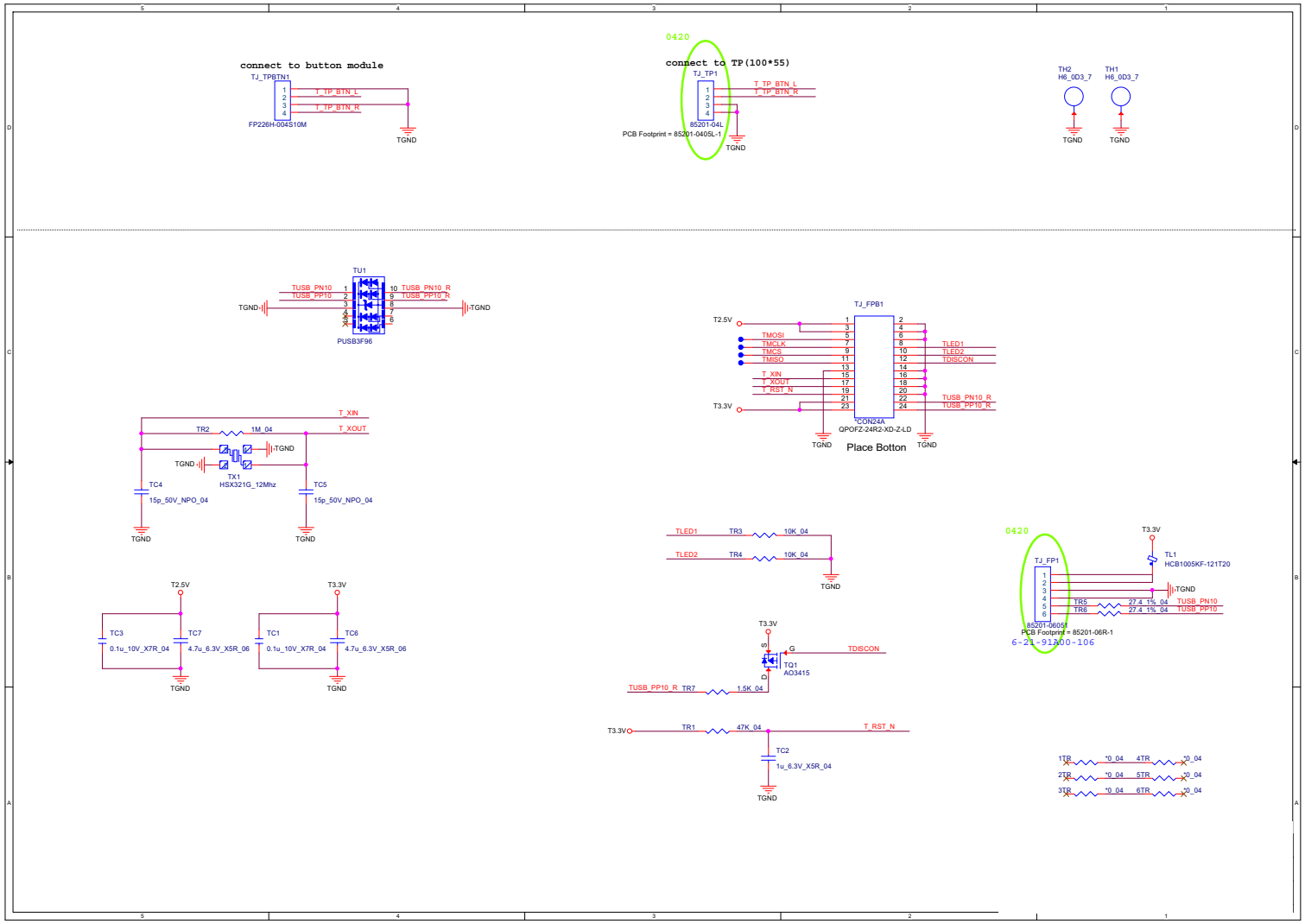
Front LED Board



Click / Finger Con Board



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Click / Finger Con Board

B.Schematic Diagrams

Fingerprint Board

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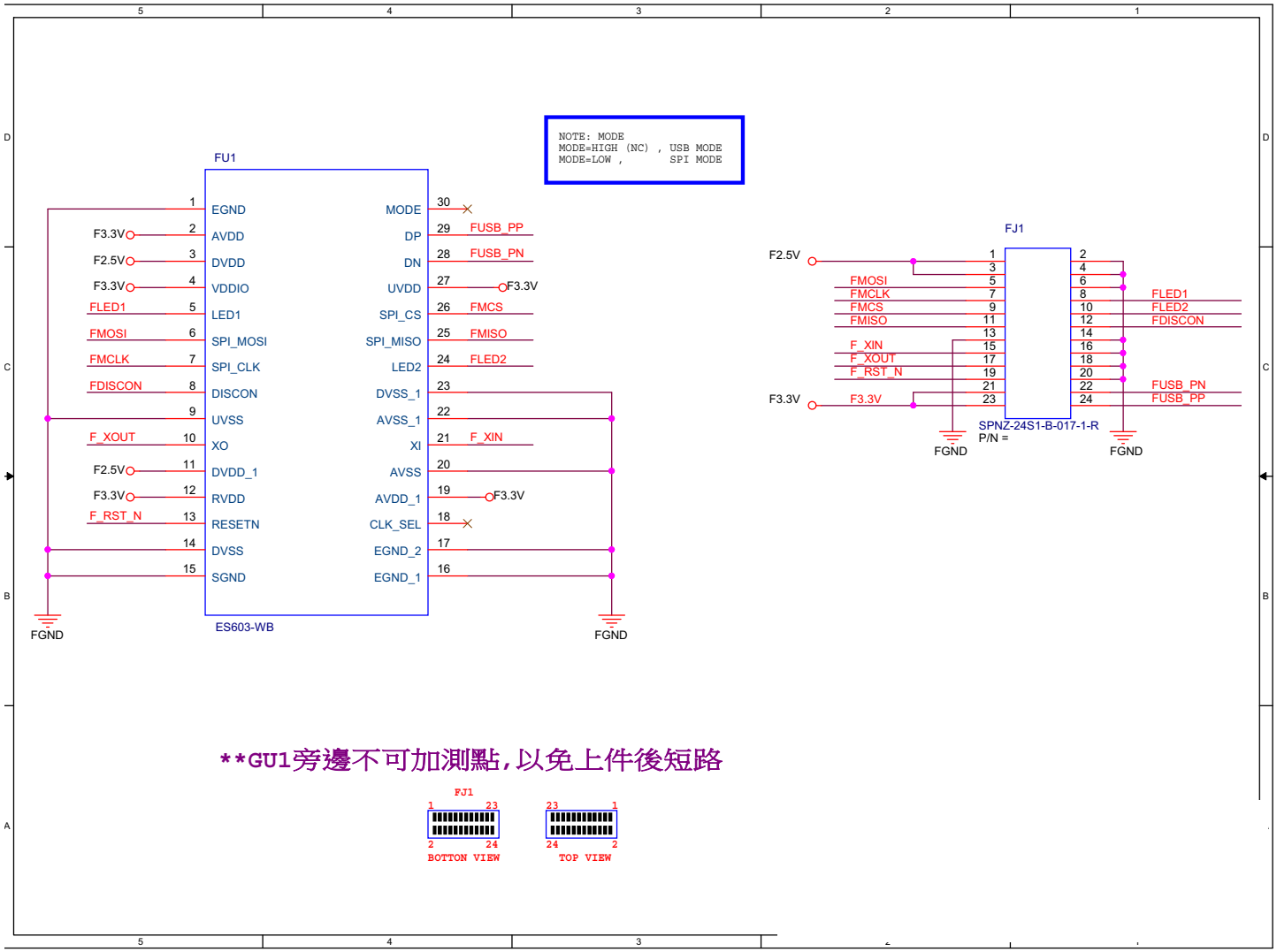
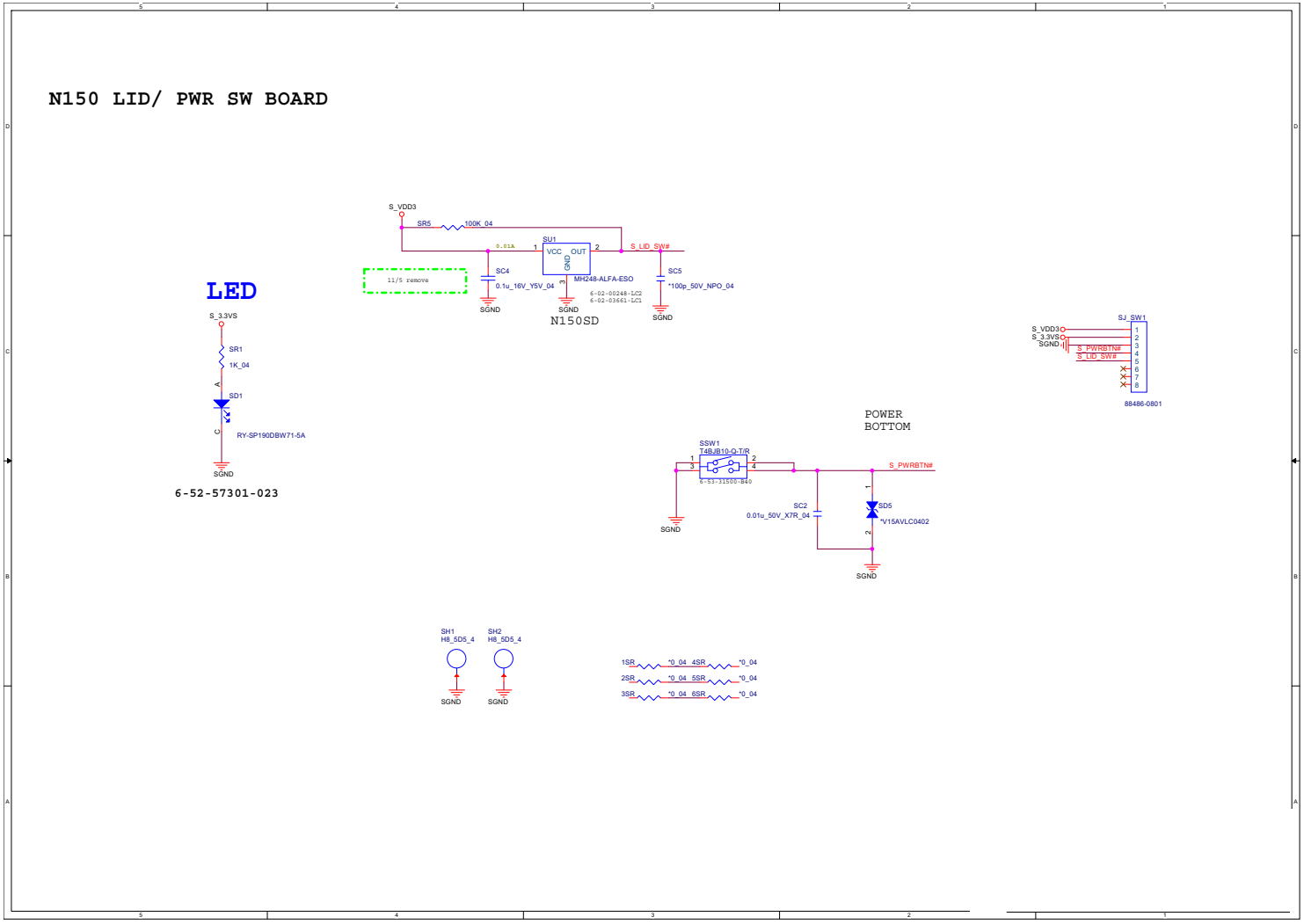
Fingerprint Board



N150 LID, PWR SW Board



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N150 LID, PWR SW Board

N170 LID, PWR SW Board

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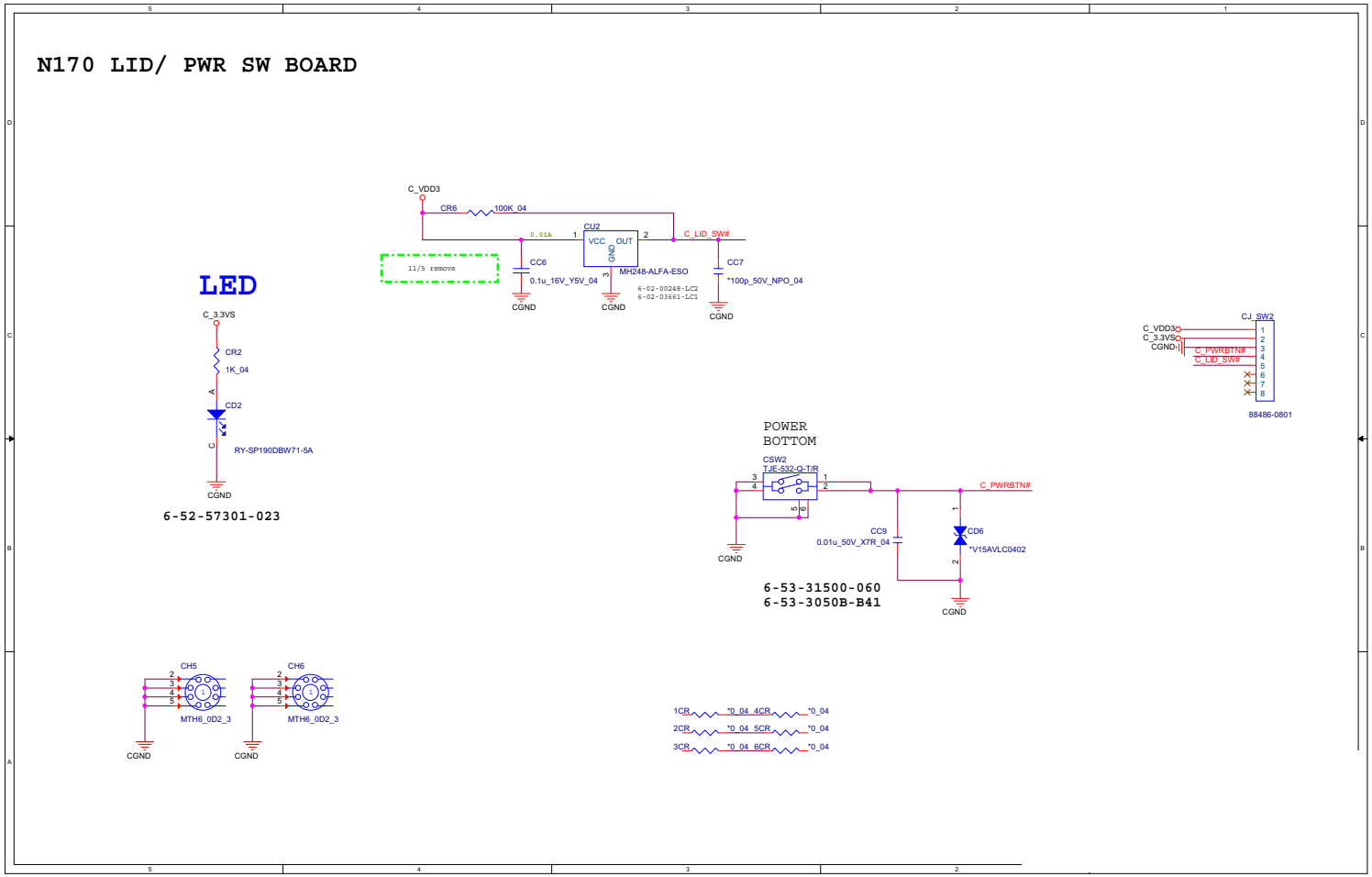
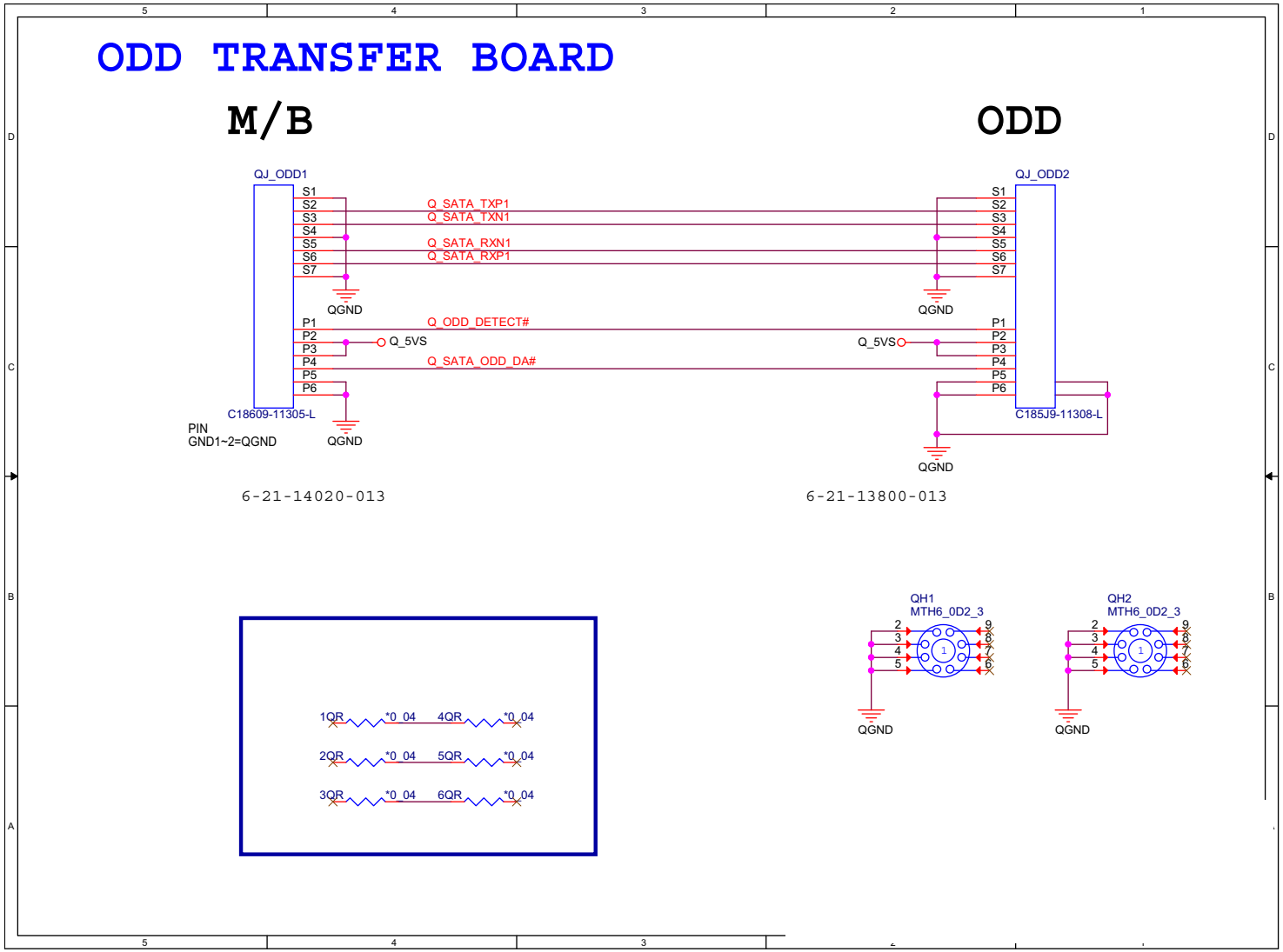
N170 LID, PWR SW Board



N170 ODD Ext. Board



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N170 ODD Ext. Board

Power Sequence

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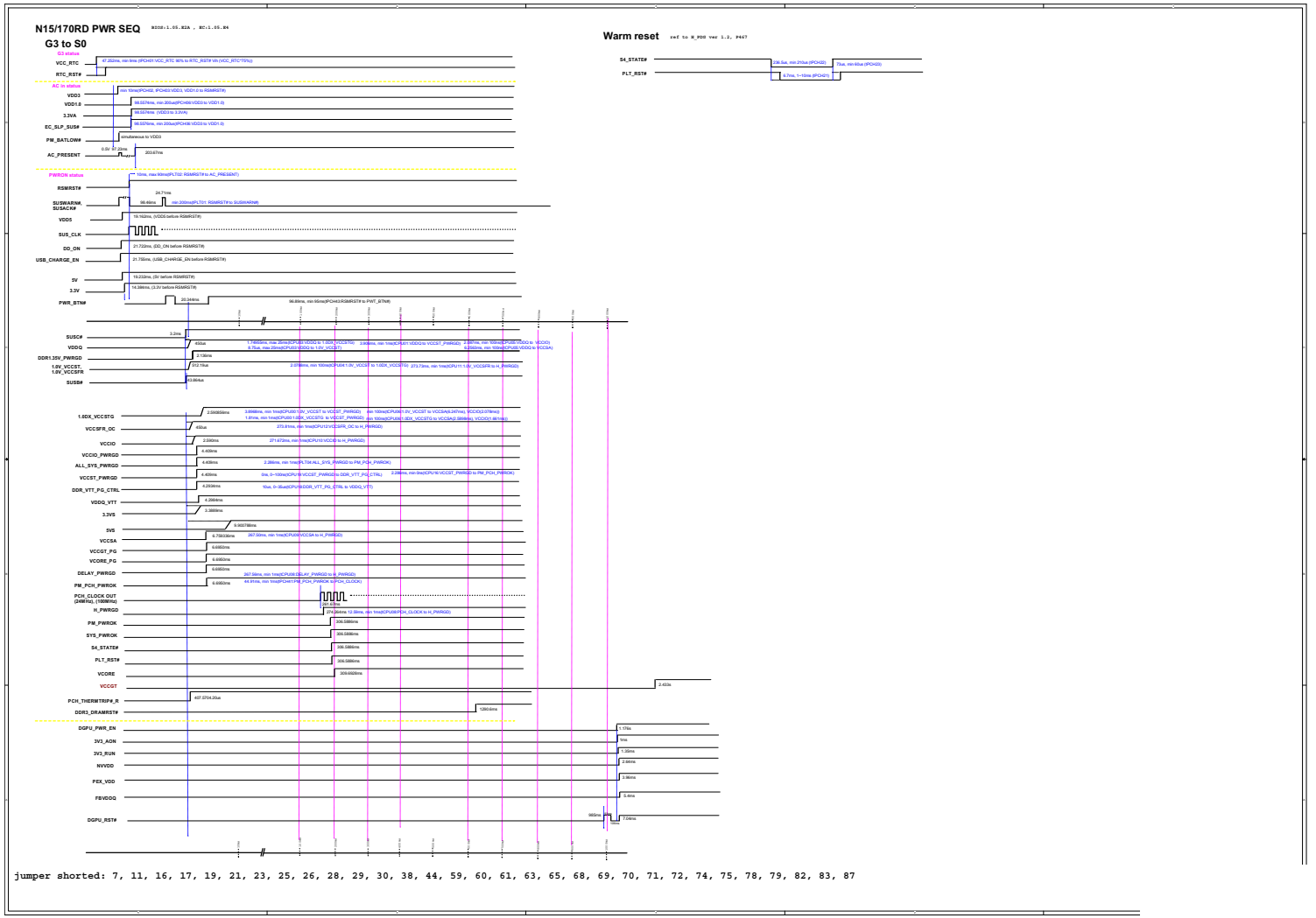
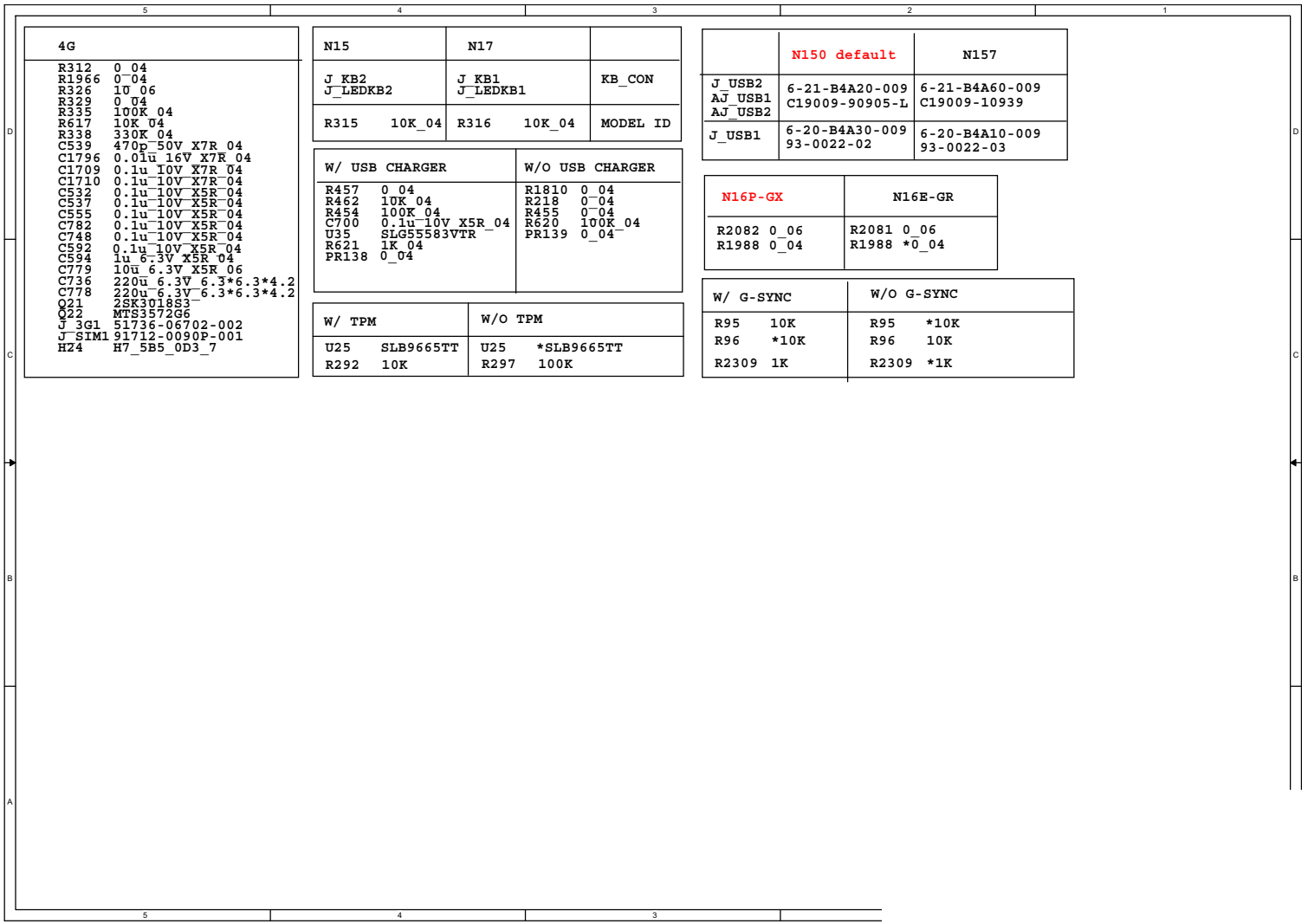
Power Sequence



Option BOM



4G	
R312	0_04
R1966	0_04
R326	10_06
R329	0_04
R335	100K_04
R617	10K_04
R338	330K_04
C539	470p_50V_X7R_04
C1796	0.01u_16V_X7R_04
C1709	0.1u_10V_X7R_04
C1710	0.1u_10V_X7R_04
C532	0.1u_10V_X5R_04
C537	0.1u_10V_X5R_04
C555	0.1u_10V_X5R_04
C782	0.1u_10V_X5R_04
C748	0.1u_10V_X5R_04
C592	0.1u_10V_X5R_04
C594	1u_6.3V_X5R_04
C779	10u_6.3V_X5R_06
C736	220u_6.3V_6.3*6.3*4.2
C778	220u_6.3V_6.3*6.3*4.2
Q21	2SK3018B3
Q22	MTS3572G6
J_3G1	51736-06702-002
J_SIM1	91712-0090P-001
H24	H7_5B5_0D3_7

N15		N17		
J_KB2 J_LEDKB2		J_KB1 J_LEDKB1		KB_CON
R315	10K_04	R316	10K_04	MODEL ID

W/ USB CHARGER		W/O USB CHARGER	
R457	0_04	R1810	0_04
R462	10K_04	R218	0_04
R454	100K_04	R455	0_04
C700	0.1u_10V_X5R_04	R620	100K_04
U35	SLG55583VTR	PR139	0_04
R621	1K_04		
PR138	0_04		

W/ TPM		W/O TPM	
U25	SLB9665TT	U25	*SLB9665TT
R292	10K	R297	100K

	N150 default	N157
J_USB2 AJ_USB1 AJ_USB2	6-21-B4A20-009 C19009-90905-L	6-21-B4A60-009 C19009-10939
J_USB1	6-20-B4A30-009 93-0022-02	6-20-B4A10-009 93-0022-03

N16P-GX		N16E-GR	
R2082	0_06	R2081	0_06
R1988	0_04	R1988	*0_04

W/ G-SYNC		W/O G-SYNC	
R95	10K	R95	*10K
R96	*10K	R96	10K
R2309	1K	R2309	*1K

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Option BOM

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 V1.0X.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).

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.