

# SERVICE MANUAL

V250RNB / V250RNC / V250RND

*notebook*









**Notebook Computer**

**V250RNB / V250RNC / V250RND**

**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 **V250RNB** / **V250RNC** / **V250RND** 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



## Preface

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### 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 20V, 9A (**180 Watts**) or 20V, 7.5A (**150 Watts**) minimum AC/DC Adapter.

### 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.



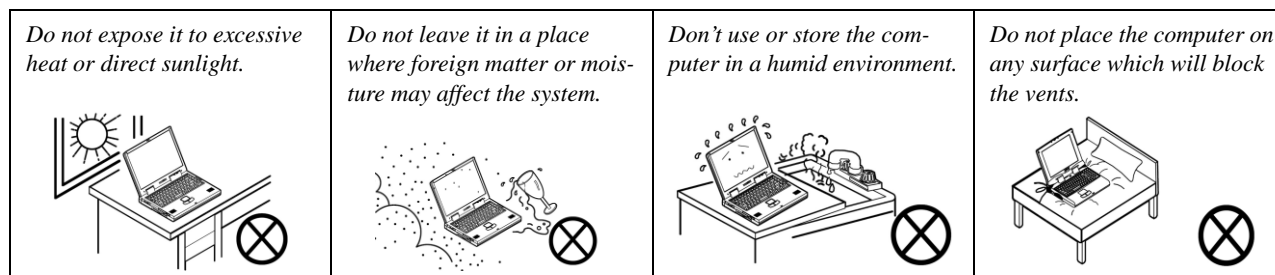
## Instructions for Care and Operation

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

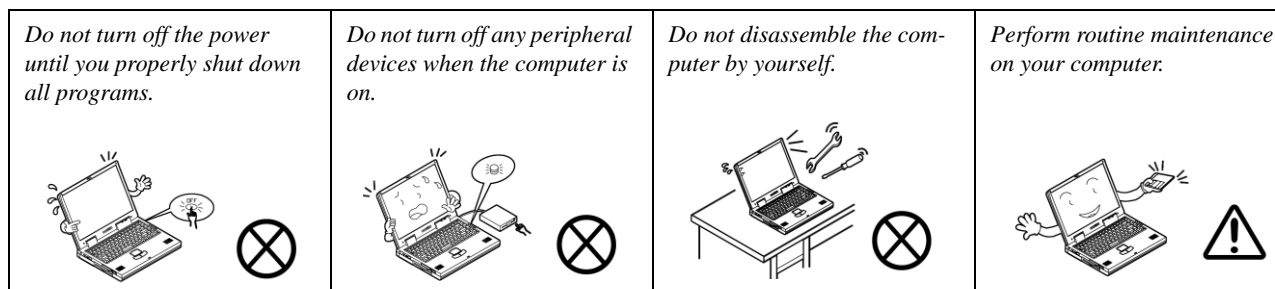
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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.



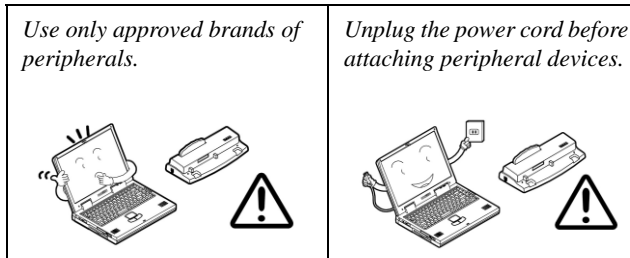
3. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.





## Preface

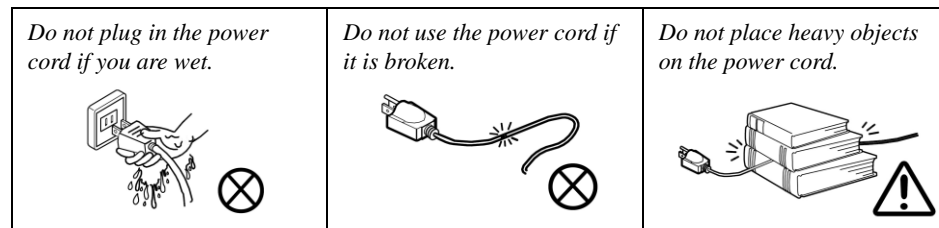
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



## 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

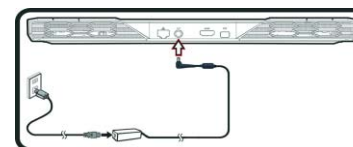
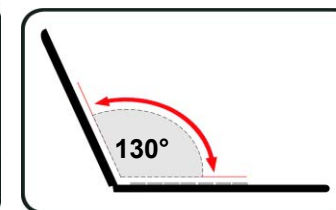
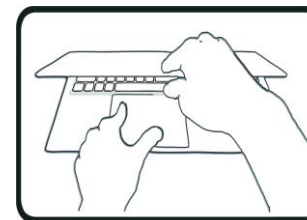
You may also need to consult the following manual for additional information:

### 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. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
4. **When first setting up the computer use the following procedure** (as to safeguard the computer during shipping, the battery will be locked to not power the system until first connected to the AC/DC adapter and initially set up as below):
  - Attach the AC/DC adapter cord to the DC-In jack on 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. The battery will now be unlocked.
5. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 130 degrees); use the other hand (as illustrated in Figure 1) to support the base of the computer (**Note: Never** lift the computer by the lid/LCD).
6. Press the power button to turn the computer "on".





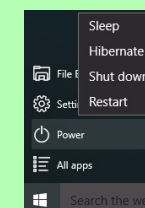
*Figure 1*  
**Opening the Lid/LCD/  
Computer with AC/DC  
Adapter Plugged-In**



### 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.

1. Click the Start Menu icon .
2. Click the **Power** item .
3. Choose **Shut Down** from the menu.





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# Chapter 1: Introduction

## Overview

This manual covers the information you need to service or upgrade the **V250RNB / V250RNC / V250RND** 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 11*, 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 **V250RNB / V250RNC / V250RND** 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 Speed & Computer in DC Mode

Note that when the computer is in DC mode (powered by the battery only) the CPU may not run at full speed. This is a design feature implemented in order to protect the battery.

### Processor Options

**i9-13900H (2.60GHz)**, TDP 45W  
**i7-13700H (2.40GHz)**, TDP 45W  
**i5-13500H (2.60GHz)**, TDP 45W  
**i7-12650H (2.30GHz)**, TDP 45W  
**i5-12450H (2.00GHz)**, TDP 45W

### LCD Options

LCD, 15.6" (39.62cm), 16:9, QHD (2560x1440)/FHD (1920x1080)

### BIOS

INSYDE BIOS (256Mb SPI Flash ROM)

### Memory

Dual Channel DDR5  
Two 262 Pin SO-DIMM Sockets  
Supporting up to **5600MHz DDR5** Memory  
Memory Expandable up to **64GB**  
Compatible with 8GB, 16GB or 32GB Modules  
(The real memory operating frequency depends on the FSB of the processor.)

### Storage

**Two** M.2 2280 **PCIe Gen4 x4** SSDs

### Security

Security (Kensington® Type) Lock Slot  
BIOS Password  
Intel® PTT for Systems Without TPM Hardware  
(**Factory Option**) TPM 2.0

### Video Adapter Options

NVIDIA® Advanced Optimus Capable (Switchable Display) Technology  
Supports up to 4 Active Displays

### Intel Integrated GPU

**Intel® Iris Xe Graphics** (i9-13900H, i7-13700H, i5-13500H)  
Intel Xe Micro Architecture  
HDR support  
Variable Rate Shading  
Microsoft DirectX®12 Compatible  
Rec. 2020

**Intel® UHD Graphics** (i7-12650H, i5-12450H)  
HDR support  
Microsoft DirectX®12 Compatible  
Rec. 2020

### NVIDIA® Discrete GPU

**NVIDIA® GeForce RTX3050** (V250RNB)  
**6GB** GDDR6 Video RAM  
Microsoft DirectX®12 Compatible  
Supports PCIe Gen4  
GeForce CUDA™ technology  
Dynamic Boost 2.0

**NVIDIA® GeForce RTX4050** (V250RNC)  
**6GB** GDDR6 Video RAM  
Microsoft DirectX®12 Compatible  
Supports PCIe Gen4  
GeForce CUDA™ technology  
Dynamic Boost 2.0



**NVIDIA® GeForce RTX4060** (V250RND)

8GB GDDR6 Video RAM  
 Microsoft DirectX®12 Compatible  
 Supports PCIe Gen4  
 GeForce CUDA™ technology  
 Dynamic Boost 2.0

**Pointing Device**

Built-In Touchpad (with Microsoft PTP Multi Gesture & Scrolling Functionality)

**Keyboard**

Full-size **Multi-Color** LED Keyboard (with Numeric Keypad)

**Audio**

High Definition Audio Compliant Interface  
 Sound Blaster Studio  
 Built-In Array Microphone  
 Two Speakers

**Communication**

Built-In 10/100/1000Mb Base-TX Ethernet LAN  
 1.0M HD Webcam  
 Or  
 (Factory Option) 2.0M FHD Webcam

**WLAN/ Bluetooth M.2 Modules:**

(Factory Option) Intel® Dual Band Wi-Fi 6E AX211, 2x2 AX Wireless LAN + Bluetooth  
 (Factory Option) Intel® Dual Band Wi-Fi 6E AX210, 2x2 AX Wireless LAN + Bluetooth  
 (Factory Option) Intel® Dual Band Wi-Fi 6 AX201, 2x2 AX Wireless LAN + Bluetooth  
 (Factory Option) Intel® Dual Band Wi-Fi 5 Wireless-AC 9462, 1x1 AC Wireless LAN + Bluetooth

**M.2 Slots**

Slot 1 for **Combo WLAN and Bluetooth** Module  
 Slot 2 for **PCIe Gen4 x4 SSD**  
 Slot 3 for **PCIe Gen4 x4 SSD**

**Interface**

One USB 2.0 Port  
 One USB 3.2 Gen 1 Type-A Port  
 One USB 3.2 Gen 2 Type-A Port  
 One DisplayPort 1.4a over USB 3.2 Gen 2 Type-C Port\*  
*\*The maximum amount of current supplied by USB Type-C ports is 500mA (USB 2.0)/900mA (USB3.2).*  
 One Mini DisplayPort 1.4  
 One HDMI-Out Port  
 One 2- In-1 Audio Jack (Headphone / Microphone)  
 One RJ-45 LAN Jack  
 One DC-In Jack

**Environmental Spec**

**Temperature**

Operating: 5°C - 35°C  
 Non-Operating: -20°C - 60°C

**Relative Humidity**

Operating: 20% - 80%  
 Non-Operating: 10% - 90%

**Power**

Embedded 4 Cell Polymer Battery Pack, 53.35Wh

Full Range AC/DC Adapter  
 AC Input: 100 - 240V, 50 - 60Hz  
 DC Output: 20V, 9A (**180W**)\*  
 Or  
 DC Output: 20V, 7.5A (**150W**)\*

*\*Depending on GPU Type*

**Dimensions & Weight**

361mm (w) \* 247mm (d) \* 24.9mm (h)  
**2.3kg** (Barebone with 53.35Wh Battery)

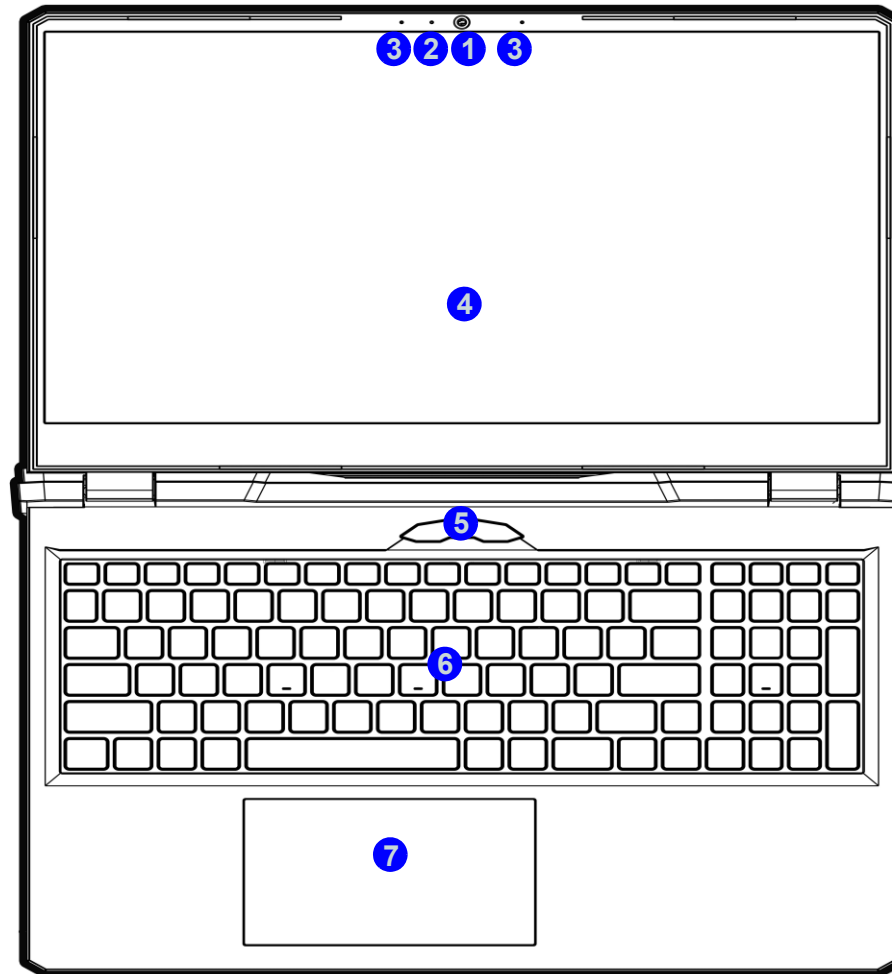


## Introduction

*Figure 1*  
**Top View**

1. Webcam
2. \*Camera LED  
*\*When the PC camera is in use, the LED will be illuminated.*
3. Built-In Array Microphone
4. Display
5. Power Button
6. Keyboard
7. Touchpad & Buttons

## External Locator - Top View with LCD Panel Open





## External Locator - Front & Right Side Views

*Figure 2*  
**Front View**

1. LED Indicators

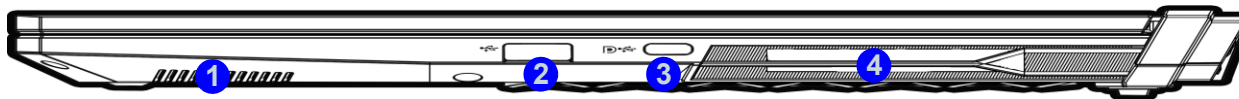
FRONT VIEW



*Figure 3*  
**Right Side View**

1. Speaker
2. USB 3.2 Gen 2 Type-A Port
3. Display Port 1.4 over USB 3.2 Gen 2 Type-C Port
4. Vent

RIGHT SIDE VIEW





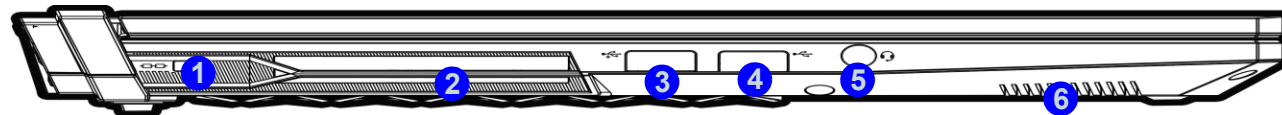
## Introduction

### External Locator - Left Side & Rear View

*Figure 4*  
**Left Side View**

1. Security Lock Slot
2. Vent
3. USB 3.2 Gen 1 Type-A Port
4. USB 2.0 Port
5. 2-In-1 Audio Jack (Headphone and Microphone)
6. Speaker

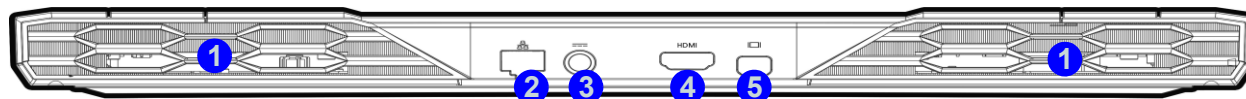
LEFT SIDE VIEW



*Figure 5*  
**Rear View**

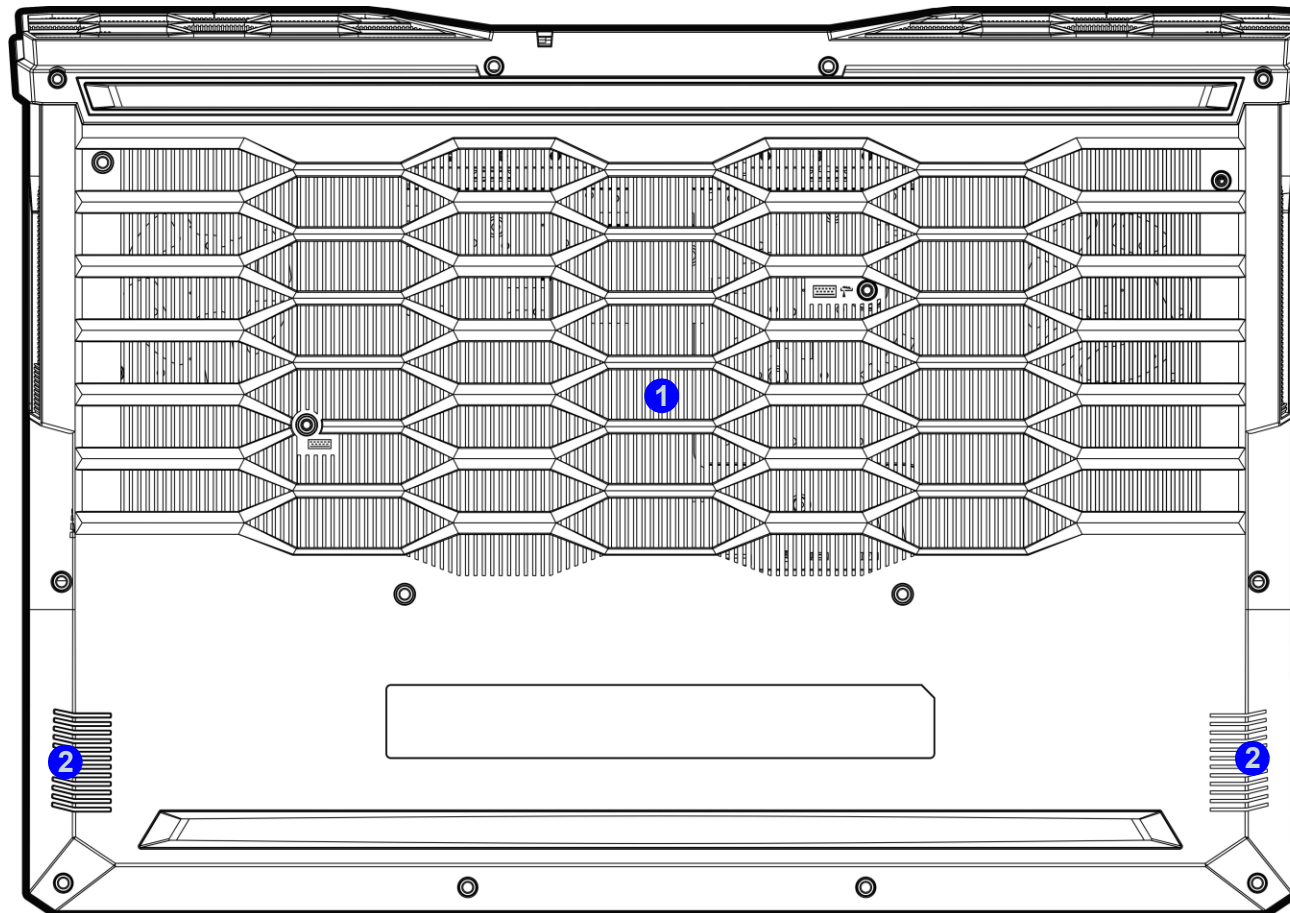
1. Vent
2. RJ-45 LAN Jack
3. DC-In Jack
4. HDMI-Out Port
5. Mini Display Port 1.4

REAR VIEW





## External Locator - Bottom View



*Figure 6*  
**Bottom View**

1. Vent
2. Speakers



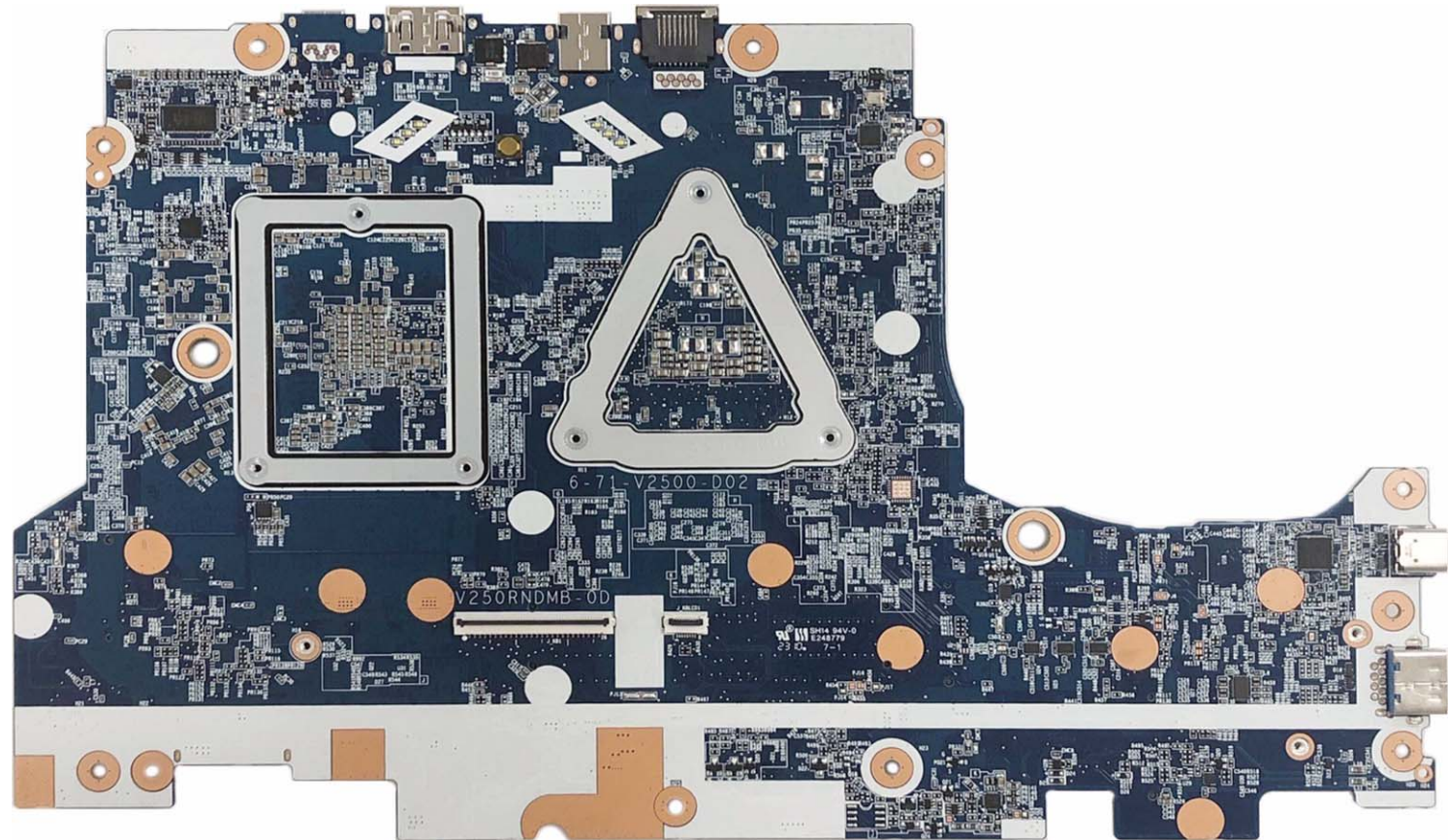
### Overheating

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



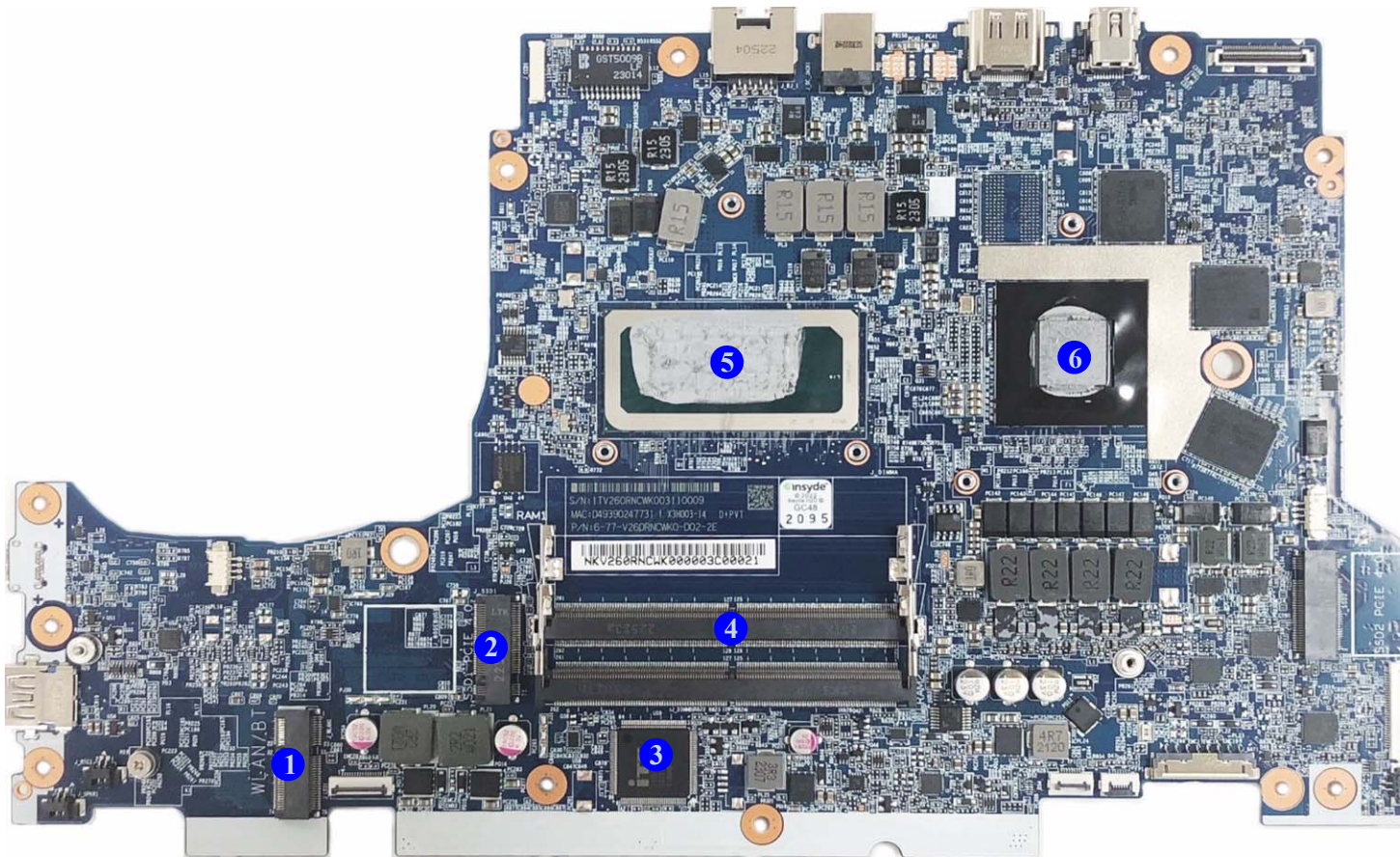
*Figure 7*  
Mainboard Top  
Key Parts

## Mainboard Overview - Top (Key Parts)





1. Mini-Card Connector (WLAN Module)
2. Mini-Card Connector (M.2 SSD Module)
3. KBC-ITE IT5570
4. Memory Slots  
DDR5 SO-DIMM
5. CPU
6. GPU



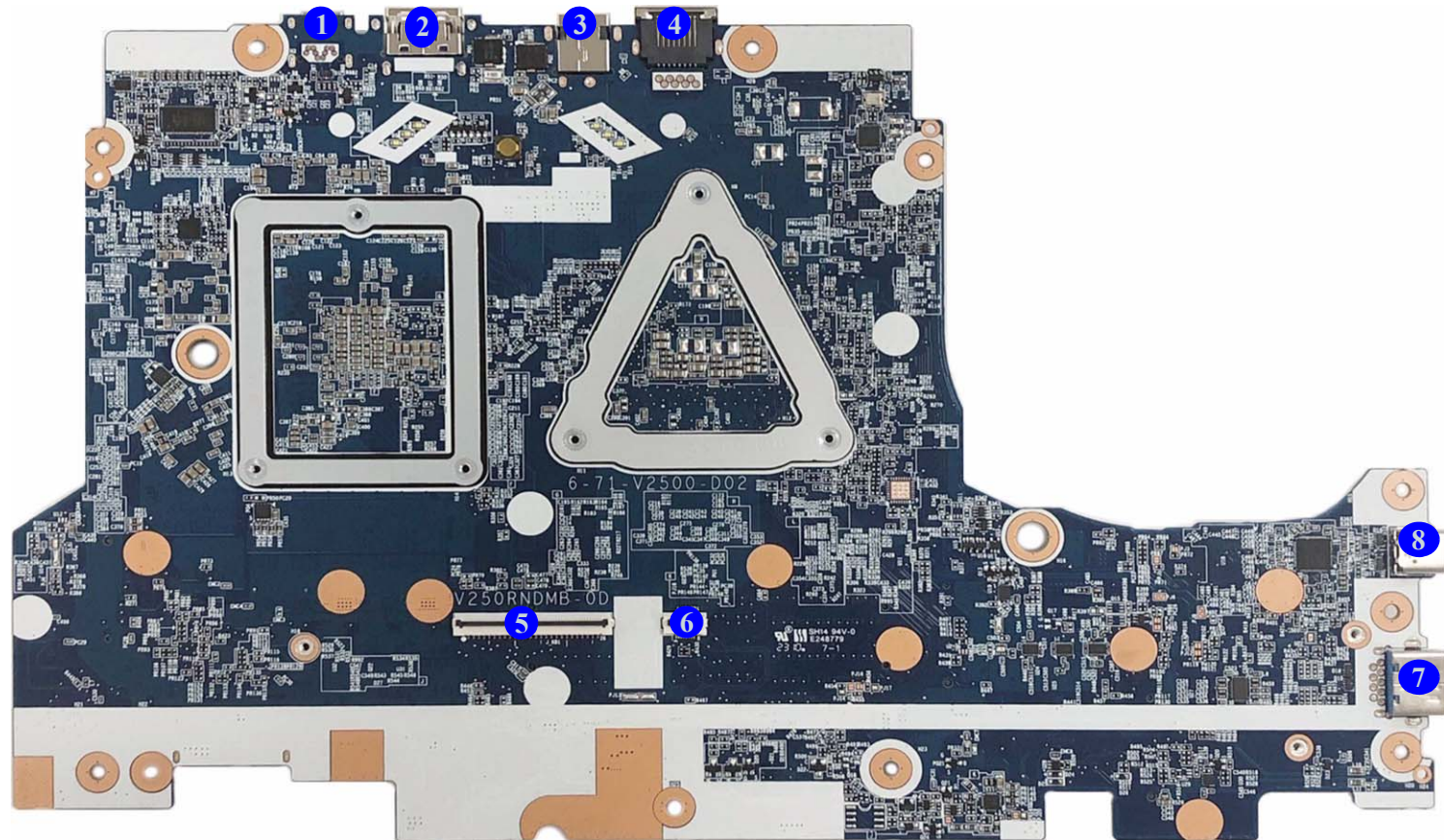


## Introduction

*Figure 9*  
**Mainboard Top  
Connectors**

## Mainboard Overview - Top (Connectors)

1. Mini Display Port
2. HDMI Port
3. DC-In Jack
4. RJ-45 LAN Jack
5. Keyboard Cable Connector
6. LED KB Connector
7. USB 3.2 Gen 2 Type-A Port
8. Display Port 1.4 over USB 3.2 Gen 2 Type-C Port

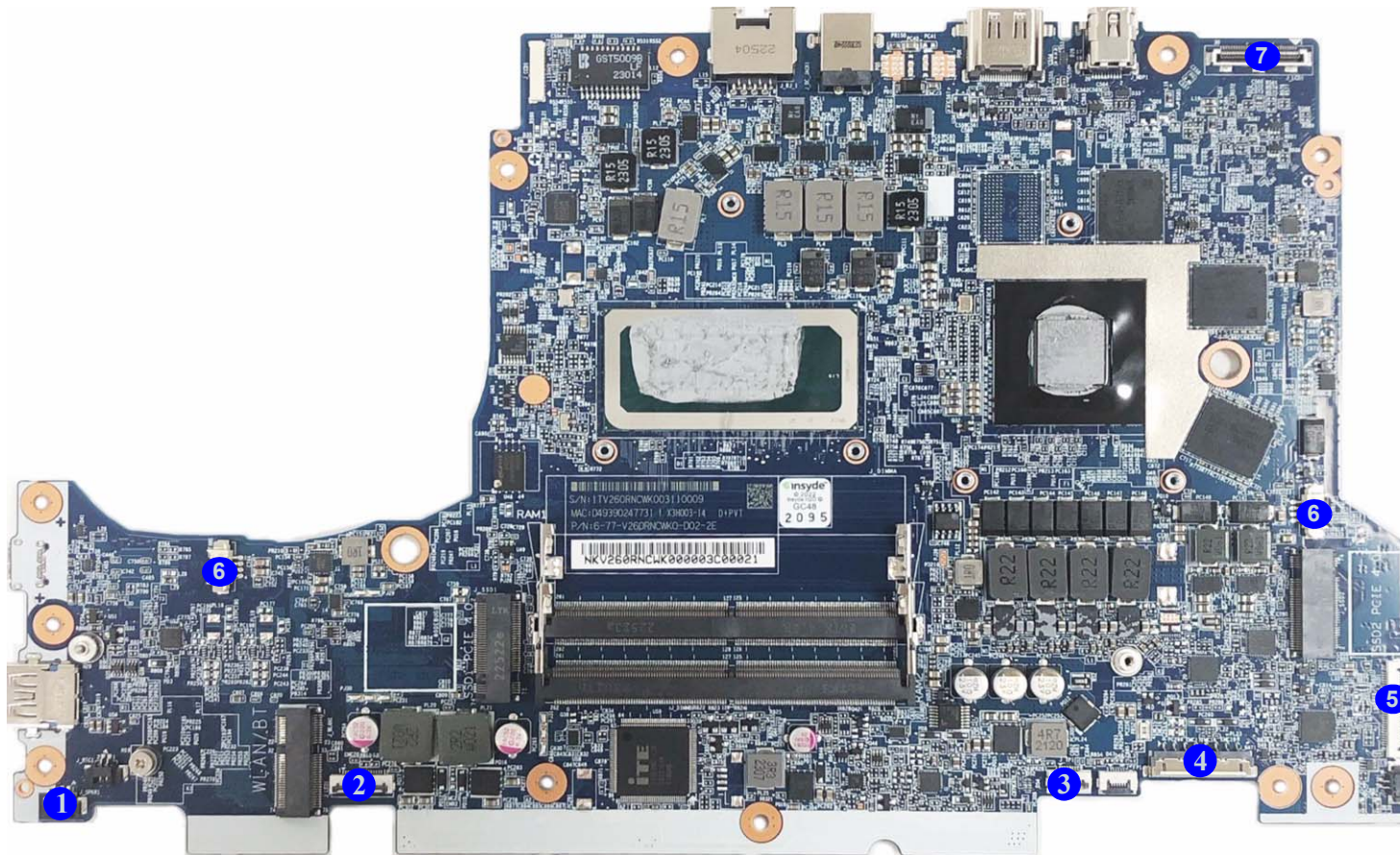




## Mainboard Overview - Bottom (Connectors)

*Figure 10*  
**Mainboard Bottom  
Connectors**

1. Speaker Connector
2. LED Connector
3. Touchpad Cable Connector
4. Battery Connector
5. Audio Connector
6. Fan Connector
7. LCD Connector










# Chapter 2: Disassembly



## Overview

This chapter provides step-by-step instructions for disassembling the *V250RNB / V250RNC / V250RND* 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.





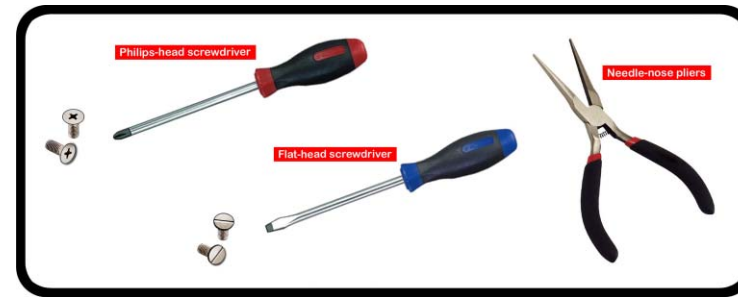
## Disassembly

**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-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.

## 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.

**(For Computer Models Supplied with Light Blue Cleaning Cloth)** Some computer models in this series come supplied with a light blue cleaning cloth. To clean the computer case with this cloth follow the instructions below.

- Power off the computer and peripherals.
- Disconnect the AC/DC adapter from the computer.
- Use a little water to dampen the cloth slightly.
- Clean the computer case with the cloth.
- Dry the computer with a dry cloth, or allow it time to dry before turning on.
- Reconnect the AC/DC adapter and turn the computer on.



### 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 - 7*

### To remove the M.2 SSD:

1. Remove the battery *page 2 - 5*
2. Remove the M.2 SSD-1 *page 2 - 8*
3. Remove the M.2 SSD-2 *page 2 - 9*

### To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 11*

### To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the WLAN *page 2 - 12*

### To remove the CCD Module:

1. Remove the battery *page 2 - 5*
2. Remove the CCD module *page 2 - 14*



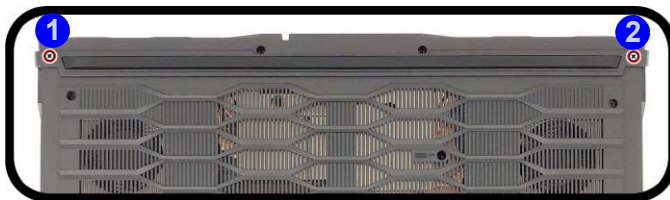
## Removing the Battery

1. Turn **off** the computer, turn it over.
2. Remove screws **1** - **2** (screw's size M2x8L x 2 - see *Figure 1a*).
3. Slide the hinge cover **3** out as shown and remove screws **4** - **5** (screw's size M2x8L x 2 - see *Figure 1b*).
4. Remove screws **6** - **19** (*Figure 1c*).
5. Carefully lift the bottom case **20** up in the direction of the arrow at point **21** (*Figure 1d*).

*Figure 1*  
**Battery Removal**

- a. Remove the screws.
- b. Slide the hinge cover out and remove the screws.
- c. Remove the screws.
- d. Remove the bottom case.

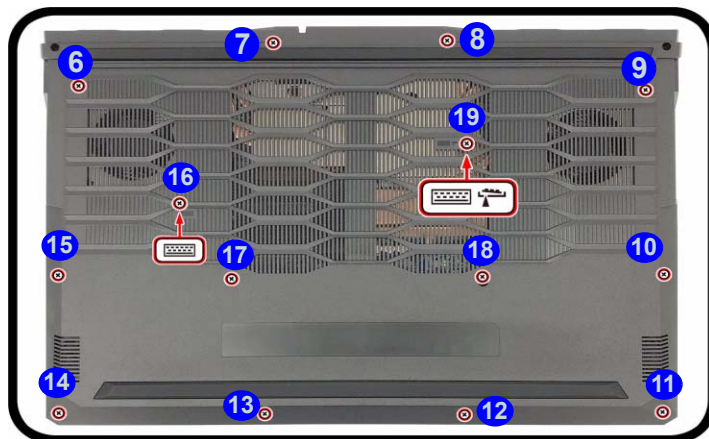
a.



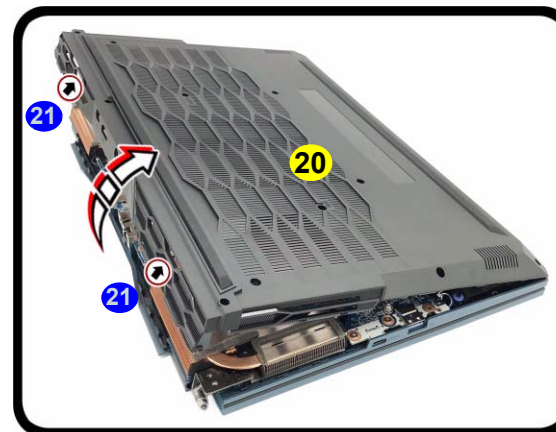
b.



c.



d.



3. Hinge Cover  
20. Bottom Case
- 18 Screws



## Disassembly

*Figure 2*  
**Battery Removal**  
(cont'd.)

- e. Locate the battery.  
f. Disconnect the cable and remove the screws.  
g. Lift the battery off the computer.

6. The battery will be visible at point **22** on the computer (*Figure 2e*).  
7. Carefully disconnect the cable **23**, then remove screws **24** - **28** (*Figure 2f*).  
8. Lift the battery **29** off the computer (*Figure 2g*).  
9. Reverse the process to install a new battery (do not forget to replace all the screws and bottom cover).



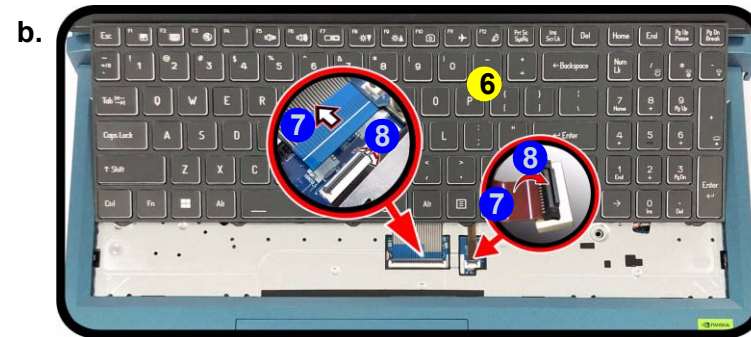
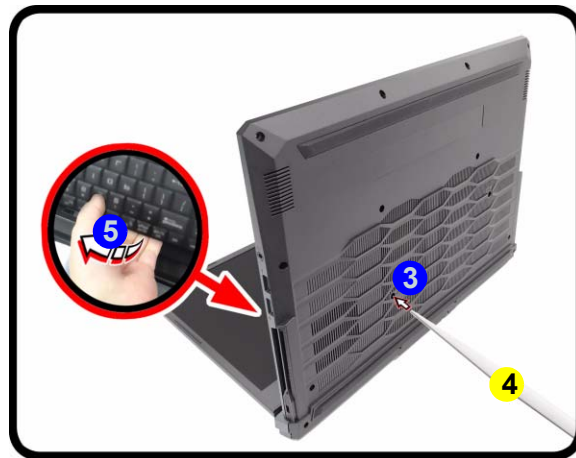
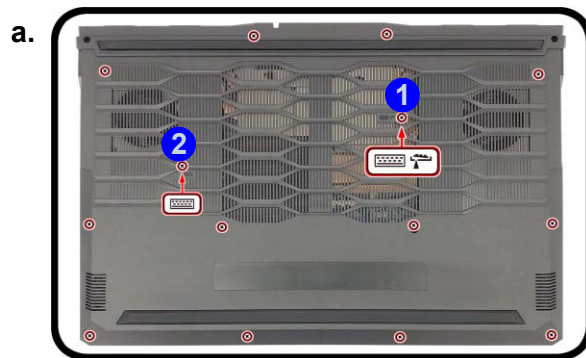
29. Battery

- 5 Screws



## Removing the Keyboard

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



*Figure 3*  
**Keyboard Removal**

- a. Remove the screws from the bottom of the computer and then 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. Eject Stick
6. Keyboard

- 2 Screws



## Disassembly

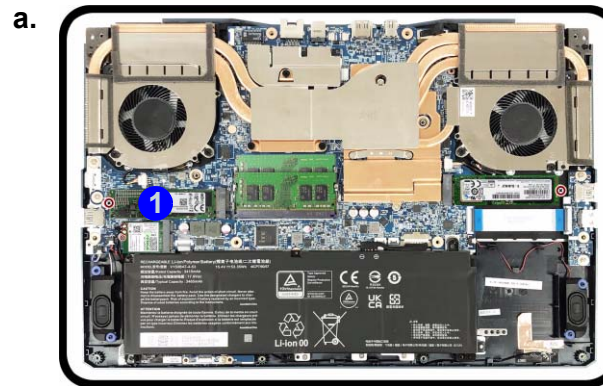
*Figure 4*  
**M.2 SSD-1 Module Removal**

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

## Removing the M.2 SSD Module

### M.2 SSD-1 Removal Procedure

- Turn **off** the computer, turn it over, remove the battery ([page 2 - 5](#)).
- The M.2 SSD module will be visible at point **1** on the mainboard. Remove the screw **2** ([Figure 4a](#)).
- The M.2 SSD module **3** ([Figure 4b](#)) will pop-up, and you can remove it from the computer.
- Reverse the process to install a new module (do not forget to replace the screws and make sure that the thermal pad **4** is attached).



#### Thermal Pad

Make sure to place the thermal pad's adhesive side down on the mainboard's surface as illustrated.



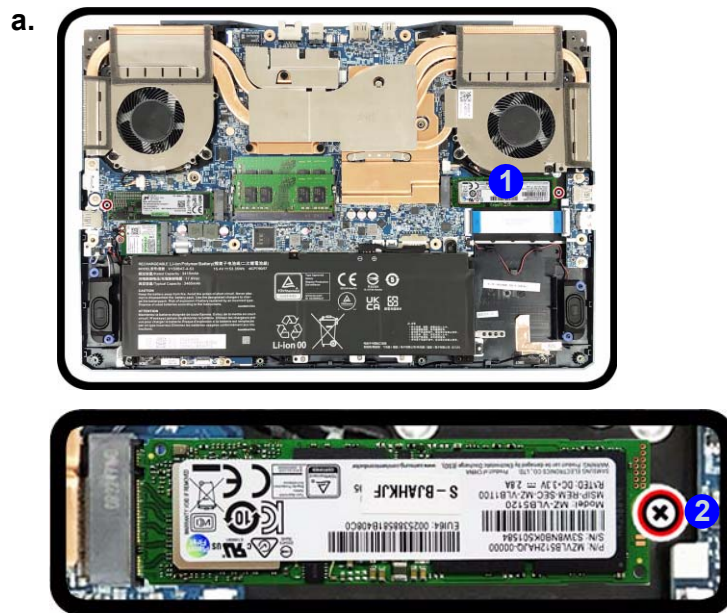
#### 3.M2 SSD Module PCIE

- 1 Screw



## M.2 SSD-2 Removal Procedure

1. Turn **off** the computer, turn it over, remove the battery ([page 2 - 5](#)).
2. The M.2 SSD module will be visible at point **1** on the mainboard. Remove the screw **2** ([Figure 4a](#)).
3. The M.2 SSD module **3** ([Figure 4b](#)) will pop-up, and you can remove it from the computer.
4. Reverse the process to install a new module (do not forget to replace the screws and make sure that the thermal pad **4** is attached).



*Figure 5*  
**M.2 SSD-2 Module Removal**

- a. Locate the M.2 SSD and remove the screw.
- b. The M.2 SSD module will pop up.



### Thermal Pad

Make sure to place the thermal pad's adhesive side down on the mainboard's surface as illustrated.



### 3.M2 SSD Module PCIE

- 1 Screw

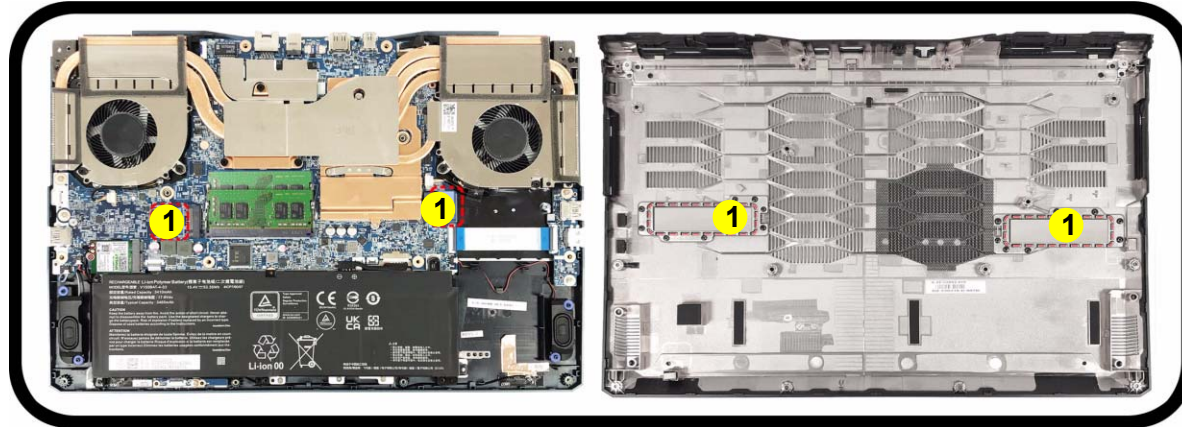


## Disassembly

*Figure 6*  
**Thermal Pad  
Location**

### M.2 SSD Thermal Pad location

When installing a new module, make sure to place the thermal pad **1** in its proper place. Note that the thermal pad should match the location of the main chip on the SSD module, in order to offer the thermal protection as illustrated.



1. Thermal Pad

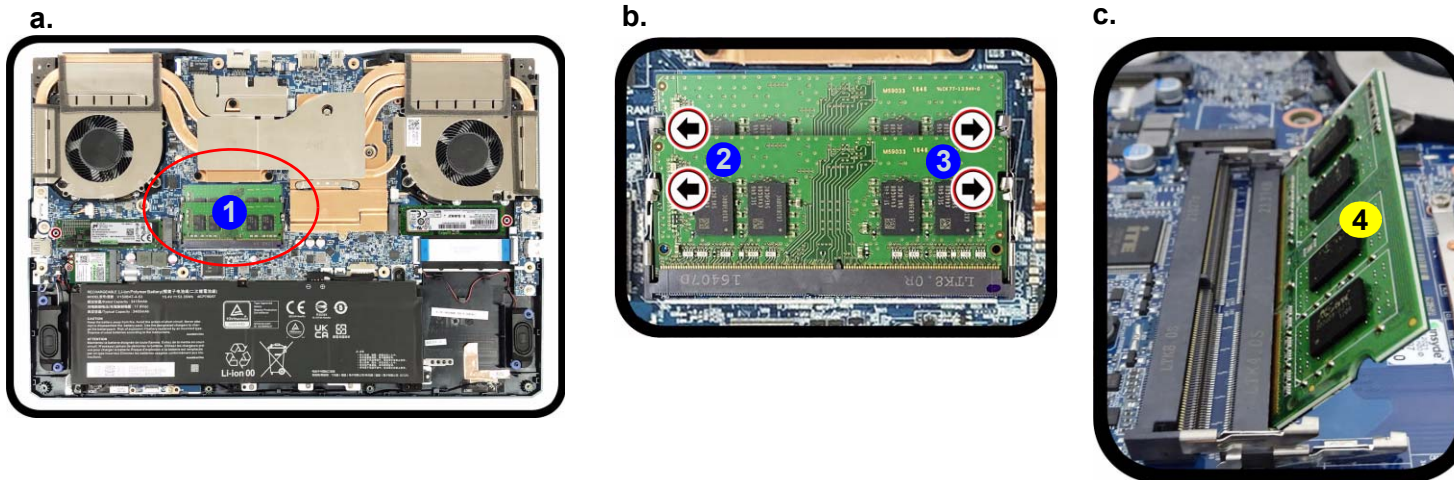


## Removing the System Memory (RAM)

The computer has four memory sockets for 262 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR4 Up to 5600 MHz. The main memory can be expanded up to 64GB. The total memory size is automatically detected by the POST routine once you turn on your computer.

### Memory Upgrade Process

1. Turn **off** the computer, turn it over, remove the battery ([page 2 - 5](#)).
2. The RAM-2 modules will be visible at point **1** on the mainboard ([Figure 7a](#)).
3. Gently pull the two release latches (**2** & **3**) on the sides of the memory socket in the direction indicated by the arrows ([Figure 7b](#)). The RAM module **4** will pop-up ([Figure 7c](#)), 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 7*  
**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 8*  
**Wireless LAN  
Module Removal**

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

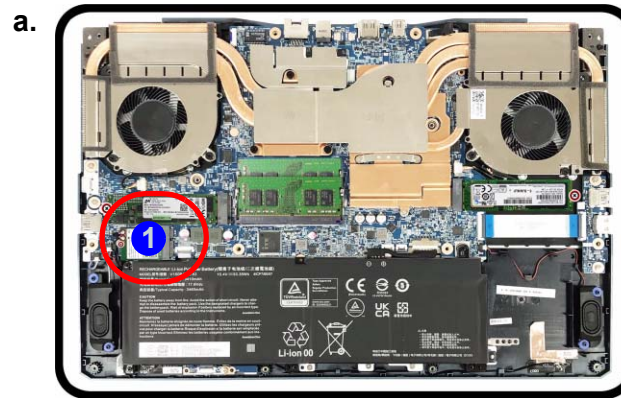
Note: Make sure you reconnect the antenna cable to the “1 + 2” socket (*Figure 8b*).

5. Wireless LAN Module

- 1 Screw

## Removing the Wireless LAN Module

- Turn **off** the computer, turn it over, remove the battery (*page 2 - 5*).
- The Wireless LAN module will be visible at point **1** on the mainboard (*Figure 8a*).
- Carefully disconnect the cables **2** & **3**, and then remove the screw **4** (*Figure 8b*).
- The Wireless LAN module **5** (*Figure 8c*) will pop-up, and you can remove it from the computer.





## Wireless LAN, Combo Module Cables

Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo, 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	WL 1	Black	Transparent
	WL 2	Black	White

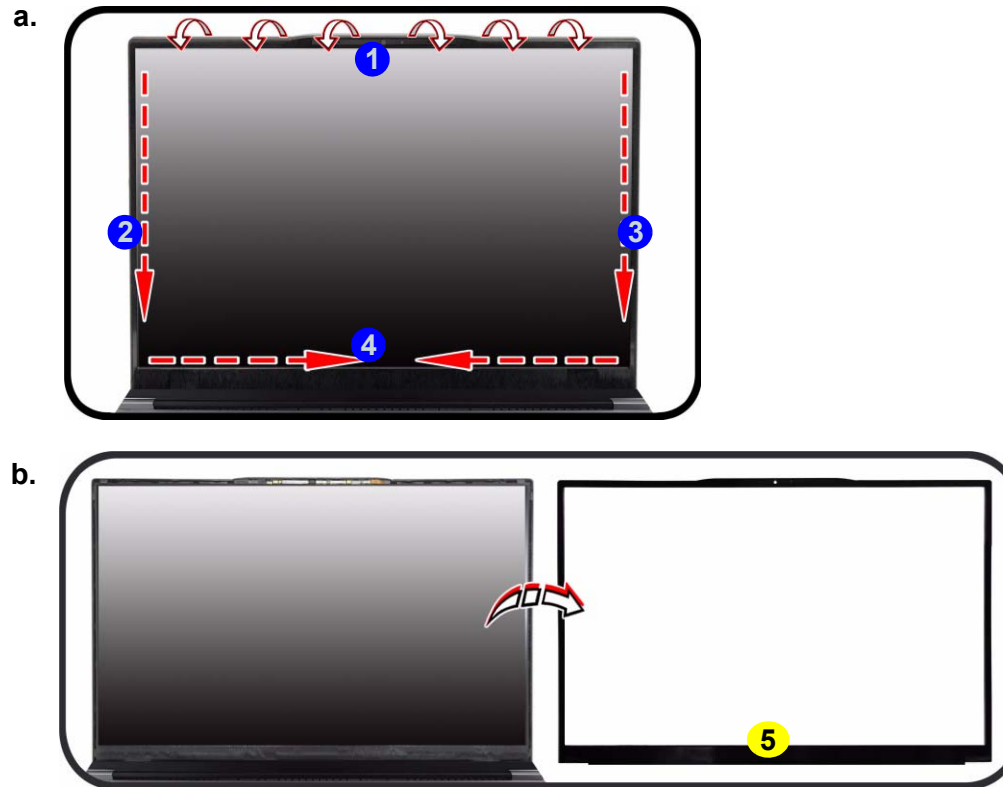
Cable 1 is usually connected to antenna 1 on the module, and cable 2 to antenna 2.



## Disassembly

*Figure 9*  
**CCD Removal**

- a. Carefully release the inner frame of the LCD panel at the points indicated by the arrows.
  - b. Remove the LCD front mylar.
1. Turn **off** the computer, turn it over to remove the battery ([page 2 - 5](#)).
  2. Lay the computer down on a flat surface with the top case up forming a 130 degree angle.
  3. Carefully run your fingers around the inner frame of the LCD mylar to lift at points ① - ④ as indicated by the arrows ([Figure 9a](#)).
  4. Remove the LCD front cover ⑤ ([Figure 9b](#)).



5. LCD Front Mylar

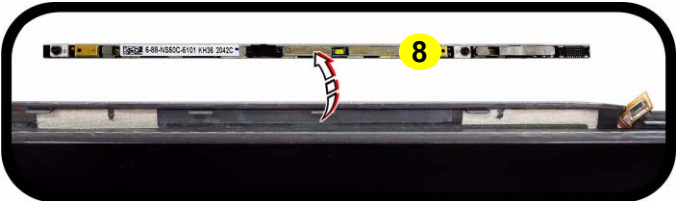


5. Disconnect the cable ⑥ from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins ⑦ away from the base (*Figure 10c*).
6. Remove the CCD module ⑧ (*Figure 10d*).
7. Reverse the process to install a new CCD module.

c.



d.



*Figure 10*  
**CCD Removal**  
**(cont'd)**

- c. Disconnect the cable from the locking collar socket.
- d. Remove the CCD module.



8. CCD Module







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# Appendix A: Part Lists

This appendix breaks down the *V250RNB / V250RNC / V250RND* 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.



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## Part List Illustration Location

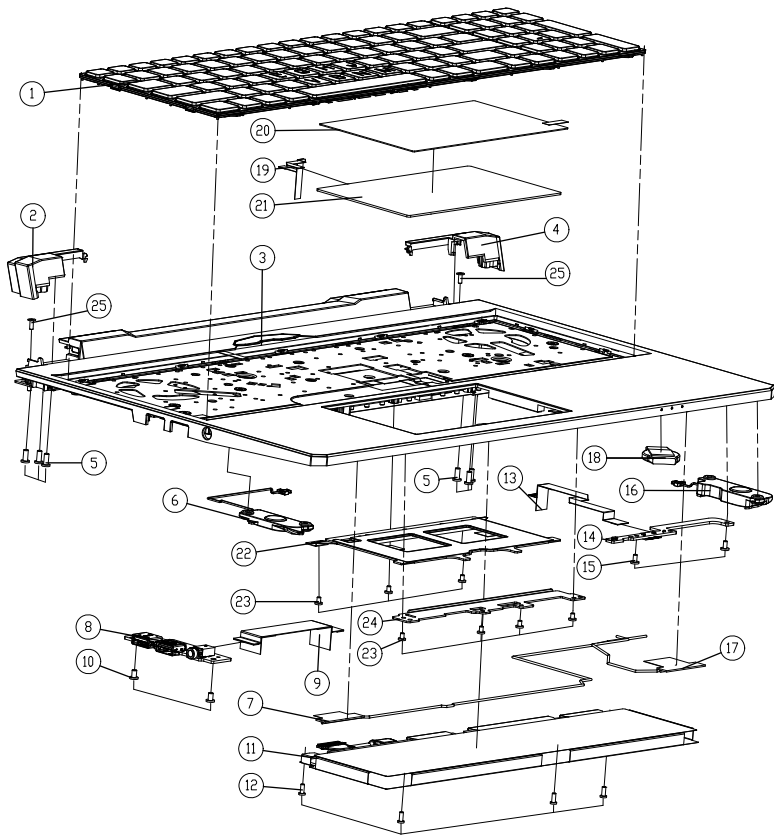
The following table indicates where to find the appropriate part list illustration.

*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>	
LCD	<i>page A - 6</i>	<i>page A - 7</i>



Top



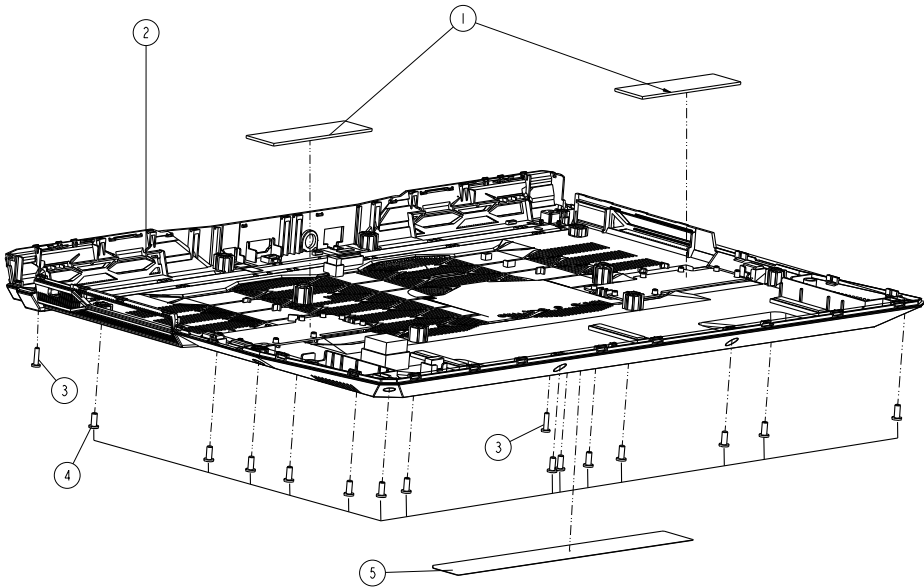
ITEM	PART NAME	PART NO	REMARK
1	KB FOR MULTI 15C BL KB US SERIES V170RNEQ	6-V170RNEQ-KB-MCL-US	
1	BL KB JAPANESE VINT KEY C/WHITE,049404 HES20 BLACK WHITE SILVER LINING PRINTING ISOLATION (3225MM FOR MCL)	6-80-N1510-21A-1M	
2	HINGE COVER L (SABIC C7230P) V250RND	6-42-V2502-021	
3	TOP CASE MODULE V250RND	6-39-V2502-011	
4	HINGE COVER R (SABIC C7230P) V250RND	6-42-V2502-011	
5	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
6	SPK+CABLE L L42.45*15.85 2W 4Ω L110MM CL-23004-L-1 V250RND	6-23-5V250-0L1	
7	ANTENNA IPEX4 WLAN JEM WL2 PCB AR 30X7.5MM 2.4G/5G/6G WL2=400MM V150PNP	6-23-7V150-020	
8	AUDIO BOARD V2.0 V250RND	6-77-V2508-D02	
9	FFC CABLE AUDIO TO MB L=77MM 5V 30PIN (QX) V260RND	6-43-V2600-021	
10	SCREW M2.5*4L (D=4.6,T=0.8) KI NI ICT NY	6-35-B1125-4RA	
11	BAT POLYMER 15.4V/3.465AH/53.35WH 43IP SCUB EBTB (0820Z55) (SH3660060) (3410MAH)	6-87-V150S-53G01	
11	BAT POLYMER 15.2V/3.58H/53.53WH 43IP ETEC VERA D40820 (SH3622500) (3400MAH) /VERA D40820 (SH3622500) (3400MAH)	6-87-V150S-51C01	
12	SCREW M2*5L KI(T=0.8 D=3.5) BK/Z ICT NY	6-35-B6120-5RC	
13	FFC CABLE LED TO MB L=107.9MM 3.3V 16PIN (QX) V250RND	6-43-V2500-011	
14	LED BOARD V2.0 V250RND	6-77-V2504-D02	
15	SCREW M2*4L KI NI ICT NY (DD=Ø4.5,DT=0.8)	6-35-B1120-4RC	
16	SPK+CABLE R L53.5*16.9 2W 4Ω L50MM CL-23004-R-1 V250RND	6-23-5V250-0R1	
17	ANTENNA IPEX4 WLAN JEM WL1 PCB AL 30X7.5MM 2.4G/5G/6G WL1=150MM V150PNP	6-23-7V150-010	
18	BAT. 20MM 3V 220MAH W/CABLE 55MM BCR2032H5.5V/11UB (SHIHND)	6-23-22015-TE0	
19	FFC CABLE TP TO MB L=50.4MM 3.3V 8PIN (QX) V250RND	6-43-V2500-021	
20	TP MYLAR (AG32+SDTT-13N) (BLUE) NP50PNK-W	6-40-NP502-N11-WK	
21	CLICK PAD FOCALTECH (IIC FTP + PS2 TP) FMB9713PFC (119.2*71.4MM) NL40GJ	6-49-NL403-011	
22	CLICK PAD BRK MODULE V250RND	6-33-V2502-201	
23	SCREW M2*3L KI NI ICT NY (DD=Ø4.0,DT=0.8)	6-35-B1120-3RD	
24	CLICK BKT(SCCC) V250RND	6-33-V2502-011	
25	SCREW M2*8L K1 BK/Z ICT NY	6-35-B6120-8R0	

Figure A - 1  
Top



Bottom

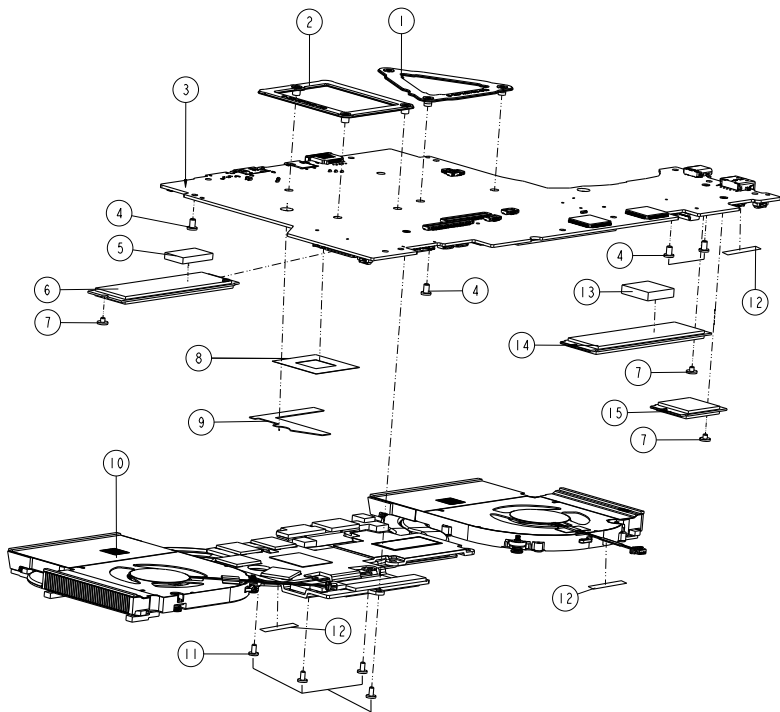
Figure A - 2  
Bottom



ITEM	PART NAME	PART NO	REMARK
1	THERMAL PAD SR-1000-A530BS-0A1(65*18*1.25T)/MM(D+P2) PD70SNE-G	6-48-PD7S1-011	
2	BOTTOM CASE MODULE (MP) V250RND	6-39-V2503-011	
3	SCREW M2*8L KI BK/Z ICT NY	6-35-B6120-8R0	
4	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
5	PRODUCT LABEL FOR V250RND	6-45-V250RND3-010	
5	PRODUCT LABEL FOR V250RNC	6-45-V250RNC3-010	
5	PRODUCT LABEL FOR V250RNB	6-45-V250RNB3-010	
5	PRODUCT LABEL "P15 23" FOR V250RNC-WK&V250RND-WK	6-45-V250RNCWK-010	
5	PRODUCT LABEL "P15 23" FOR V250RNB-WK	6-45-V250RNBWK-010	



Main Board



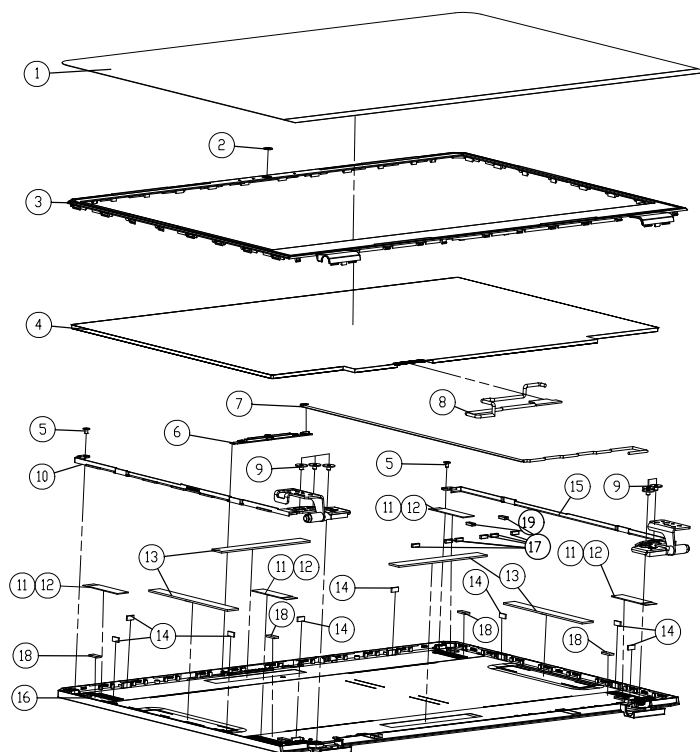
ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT SECC(T=0.5T X270PTA	6-33-X2700-010	
2	VGA SUPPORTOR SECC(T=0.8)+PET MYLAR(T=0.1)+3M467(T=0.1) NP70HP	6-33-NP7H0-010	
3	MAIN BOARD(CPU/I9-13900H/2.6G) V2.0 (HYNIX VRAM)(EDP)(W/ TPM,USB CHARGER) V25ORND	6-77-V25ORND0-D02-3A	
3	MAIN BOARD(CPU/I7-13700H/2.4G) V2.0 (HYNIX VRAM)(EDP)(W/ TPM) V25ORNC	6-77-V25ORNC0-D02-4B	
3	MAIN BOARD(CPU/I7-13700H/2.4G) V2.0 (HYNIX VRAM)(EDP)(W/ TPM) V25ORNB	6-77-V25ORNB0-D02-4B	
3	MAIN BOARD(CPU/I7-12500H/2.3G) V2.0 (SAMSUNG VRAM)(EDP)(W/ TPM) V25ORND-WK □ (MIC/CONSIGN CPU/VRAM)*	6-77-V25ORNDWK0-D02-2D	
3	MAIN BOARD(CPU/I5-12500H/2.3G) V2.0 (SAMSUNG VRAM)(EDP)(W/ TPM) V25ORND-WK □ (MIC/CONSIGN CPU/VRAM)*	6-77-V25ORNDWK0-D02-2C	
3	MAIN BOARD(CPU/I5-12450H/2.3G) V2.0 (SAMSUNG VRAM)(EDP)(W/ TPM) V25ORND-WK □ (MIC/CONSIGN CPU/VRAM)*	6-77-V25ORNDWK0-D02-1E	
3	MAIN BOARD(CPU/I7-13700H/2.4G) V2.0 (SAMSUNG VRAM)(EDP)(W/ TPM) V25ORNC-F	6-77-V25ORNCF0-D02-1B	
4	SCREW M2.5*4L (D=4.6,T=0.8) KI NI ICT NY	6-35-BI125-4RA	
5	THERMAL PAD RS300 20*12*3.0MM NH70EDQ	6-48-NH702-011	
6	SSD PCIE G4+4 M.2 2280 2TB SAMSUNG MZVL22T0HBLB-XXXX (PM9A1) PCIE G4+4 3D TLC 128 LAYERS	6-85-D512T-S00	
6	SSD PCIE G3+4 M.2 2280 512GB WD SDOPNPF-512G (SN540) 3D NAND 128 LAYERS FOR COLORFUL	6-985-D515B-W05-Y	FOR RNX-WK
7	SCREW M2*2L KI NI ICT NY (DD=Ø5 ,T=0.8)	6-35-BI120-2RA	
8	GN21 X6 MYLAR (29*29*0.1) PD50SNE-G	6-40-PD5SS-020	FOR V25ORND/NC(-WK)
8	VGA N18P MYLAR NH50RA	6-40-NH5ES-010	FOR V25ORNB(-WK)
9	VGA ABSORBER HAST-12020+3M 467 (43.37*44.71*0.35T) V25ORND	6-47-V250S-010	
10	HEATSINK MODULE V25ORND	6-31-V250N-101	
11	SCREW M2*4L KI NI ICT NY (DD=Ø4.5,DT=0.8)	6-35-BI120-4RC	
12	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	
13	THERMAL PAD MA500 (17.3*17.3*4T)MM X170KM-G	6-48-X17K2-0G0	
14	SSD M.2 2280 512GB SAMSUNG MZVL2512HCJQ-XXXX (PM9A1) PCIE G4+4 3D TLC 128 LAYERS	6-85-D515B-S0C	
14	SSD PCIE G3+4 M.2 2280 512GB WD SDOPNPF-512G (SN540) 3D NAND 128 LAYERS FOR COLORFUL	6-985-D515B-W05-Y	FOR RNX-WK
15	WLAN+BT COMBO DUAL BAND INTEL HARRISON PEAK 2 NEW OIP 8A270L.WRCG.WW (IMH99999999) NON-IPRO 2X2 8A10T B15.0 CMT M.2 2230	6-88-NV40F-4210	
15	WLAN+BT COMBO DUAL BAND INTEL JEFFERSON PEAK 1-9462.WRCG.WW(IMH99999999) NON-IPRO 101 DIVERSITY ANTENNA 8A10T B15.0 CMT M.2 2230	6-88-N24GF-4200	
15	WLAN+BT COMBO DUAL BAND INTEL WIT1 GE TYPHOON PEAK 2 8A270L.WRCG.WW (IMH99999999) NON-IPRO 2X2 8A10T B15.2 M.2 2230	6-88-X17KF-4210	
15	WLAN+BT COMBO DUAL BAND INTEL WIT1 GE GATFIELD PEAK 2 8A270L.WRCG.WW (IMH99999999) NON-IPRO 2X2 8A10T B15.2 M.2 2230 X270PTA	6-88-X270F-4210	
15	WLAN+BT COMBO DUAL BAND INTEL WIT1 GE GATFIELD PEAK 2 8A270L.WRCG.WW (IMH99999999) NON-IPRO 2X2 8A10T B15.2 M.2 2230 X270PTA □	6-988-X270F-4210-Y	FOR RNX-WK

Figure A - 3  
Main Board



# LCD (V250RNx)

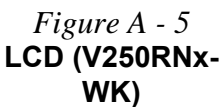
Figure A - 4  
LCD (V250RNx)



ITEM	PART NAME	PART NO	REMARK
1	LCD PROTECT MYLAR BOPP V250RND	6-40-V2501-010	
2	CCD LENS PC ( DIAMETER 3.8MM ) V250RND	6-42-V2501-010	
3	LCD FRONT COVER MODULE V250RND	6-39-V2501-011	
4	LCD N15.6" QHD/WVA/165HZ/N7/NDN GT/EDP BOE NE1560AH-NY2 2.6MMXRGB 100CF/W UPDATE	6-50-L6B26-Z211	
4	LCD N15.6" QHD/WVA/165HZ/DOS G-SYNC/N7/NDN GT/EDP BOE NE1560AH-NY4 F/WB437 2.6MMXRGB100C	6-50-L6B26-Z250	
4	LCD N15.6" FHD/WVA/144HZ/N7/NDN GT/EDP BOE NV156FHM-N4K 2.6MM	6-50-LBB26-Z130	
4	LCD N15.6" FHD/WVA/144HZ/N4/NDN GT/EDP BOE NV156FHM-NX4 2.6MM	6-50-LBB26-Z170	
4	LCD N15.6" FHD/WVA/144HZ/N4/NDN GT/EDP INNOLUX N156HRA-GAA 3.2MM	6-50-LBB32-V174	
5	SCREW M2*3L KI BZ ICT NY (DD=Ø4.5,DT=0.4)	6-35-B6120-3RD	
6	UVC CAMERA RISON F10000 10M HD DV974 N1560 F10000 W/WHITE-LED V129-MICROWAVE BORDER WITH FFO	6-88-N15ZC-4900	
6	UVC CAMERA CHICONY F10000 10M HD V129-MIC 4.0*7.2 DV974 N1560 F10000 W/WHITE-LED	6-88-N15ZC-5102	
6	UVC CAMERA RISON F10000 10M HD V129-MIC 4.0*7.2 SONY 280 107UM F10000 W/WHITE-LED	6-88-X17JC-4900	
7	WIRE+FFC CABLE FOR CCD 450MM 12P TO 8P 3.3V (HL) NV40ME	6-43-NV40T-010	
8	CORRAL CABLE FOR DUS EDP TO HD 200MM (D) 30V 40 TO 30PIN COM/LV CORAL V0340-229 V250RND	6-43-V2501-010-1N	
9	SCREW M2.5*2.5L KI BK/Z ICT NY(Ø8,T=0.6)	6-35-B6125-2R5	
10	LCD HINGE L ( SK7+1144 ) V250RND	6-33-V2501-0L1	
11	PANEL LA LA ADHESIVE(35*10*0.5T)	6-47-0019L-02C	FOR 6-50-LBB32-V174
12	PANEL LA LA ADHESIVE(35*10*1T)	6-47-0019L-029	FOR 6-50-LBB32-V174 6-50-LBB32-V174 6-50-LBB32-V174 6-50-LBB32-V174
13	LCD SPONGE (80*10*0.6T) SM55+DST-10 V155PNKQ	6-47-V1551-010	FOR 6-50-LBB32-V174 6-50-LBB32-V174 6-50-LBB32-V174 6-50-LBB32-V174
14	FIXED PANEL RUBBER 90° RED ( 6*3*0.8 ) V250RND	6-47-V2501-070	
15	LCD HINGE R ( SK7+1144 ) V250RND	6-33-V2501-0R1	
16	LCD BACK CASE (PRINT) MODULE V250RND (KAPDK)	6-39-V2501-021-N	
17	RUBBER 80° BLACK ( 6*2*1.4 ) V250RND	6-47-V2501-0A0	
18	CONDUCTIVE FOAM GASKET ( LZF + J6 ) ( 8*4*2.5 ) V250RND	6-47-V2501-080	FOR 6-50-LBB32-V174 6-50-LBB32-V174 6-50-LBB32-V174 6-50-LBB32-V174
19	RUBBER 80° GRAY ( 6*3*1.4 ) V250RND	6-47-V2501-090	



## A. Part Lists



**LCD (V250RNx-WK) A - 7**







# Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the **V250RNB / V250RNC / V250RND** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
System Block Diagram - Page B - 2	IFP I/O Interface - Page B - 26	MP2964 Controller - Page B - 50
Processor 1/13 - Page B - 3	Misc - GPIO, I2C, VBIOS - Page B - 27	VCore Power Stage - Page B - 51
Processor 2/13 - Page B - 4	NVIDIA Power Sequence - Page B - 28	VCCGT - Page B - 52
Processor 3/13 - Page B - 5	NVVDQ, FBVDDQ - Page B - 29	VCCIN AUX - Page B - 53
Processor 4/13 - Page B - 6	GPU GND - Page B - 30	VDD2, 1.8V - Page B - 54
Processor 5/13 - Page B - 7	PS8461 SW - Page B - 31	VNN / V1.05A - Page B - 55
Processor 6/13 - Page B - 8	Panel, Inverter - Page B - 32	NVVD1 - Page B - 56
Processor 7/13 - Page B - 9	mDP - Page B - 33	NVVD2 - Page B - 57
Processor 8/13 - Page B - 10	HDMI - Page B - 34	FBVDDQ - Page B - 58
Processor 9/13 - Page B - 11	Audio Codec - Page B - 35	PEX_VDD - Page B - 59
Processor 10/13 - Page B - 12	LAN RTL8111H - Page B - 36	OVR-M - Page B - 60
Processor 11/13 - Page B - 13	USB Gen2 Type-A - Page B - 37	60 LED, Hall Sensor - Page B - 61
Processor 12/13 - Page B - 14	ANX7443 - Page B - 38	Audio Board + Redriver - Page B - 62
Processor 13/13 - Page B - 15	PD Controller - Page B - 39	50 LED, Hall Sensor - Page B - 63
DDR5 CHA SO-DIMM_0 - Page B - 16	M.2 PCIE 4X SSD - Page B - 40	Power Sequence - Page B - 64
DDR5 CHB SO-DIMM_0 - Page B - 17	WLAN, BT, Click TP, Audio, Hall - Page B - 41	Power Map - Page B - 65
PCI-E Interface - Page B - 18	LED, CCD, TPM, Power SW - Page B - 42	
Frame Buffer Partition A/B - Page B - 19	KBC-ITE IT5570 - Page B - 43	
Frame Buffer A - Page B - 20	RGB KB - Page B - 44	
Frame Buffer A - Page B - 21	AC_In, Charger - Page B - 45	
Frame Buffer B - Page B - 22	VDD3, VDD5 - Page B - 46	
Frame Buffer B - Page B - 23	IV8_AON, NV3V3, 3.3VA - Page B - 47	
NVVDQ Coupling - Page B - 24	5V, 5VS, 3V, 3VS, 1.2VS - Page B - 48	
Straps and XTAL - Page B - 25	VCCST, VCCIP8 - Page B - 49	

Table B - 1  
**SCHEMATIC  
DIAGRAMS**



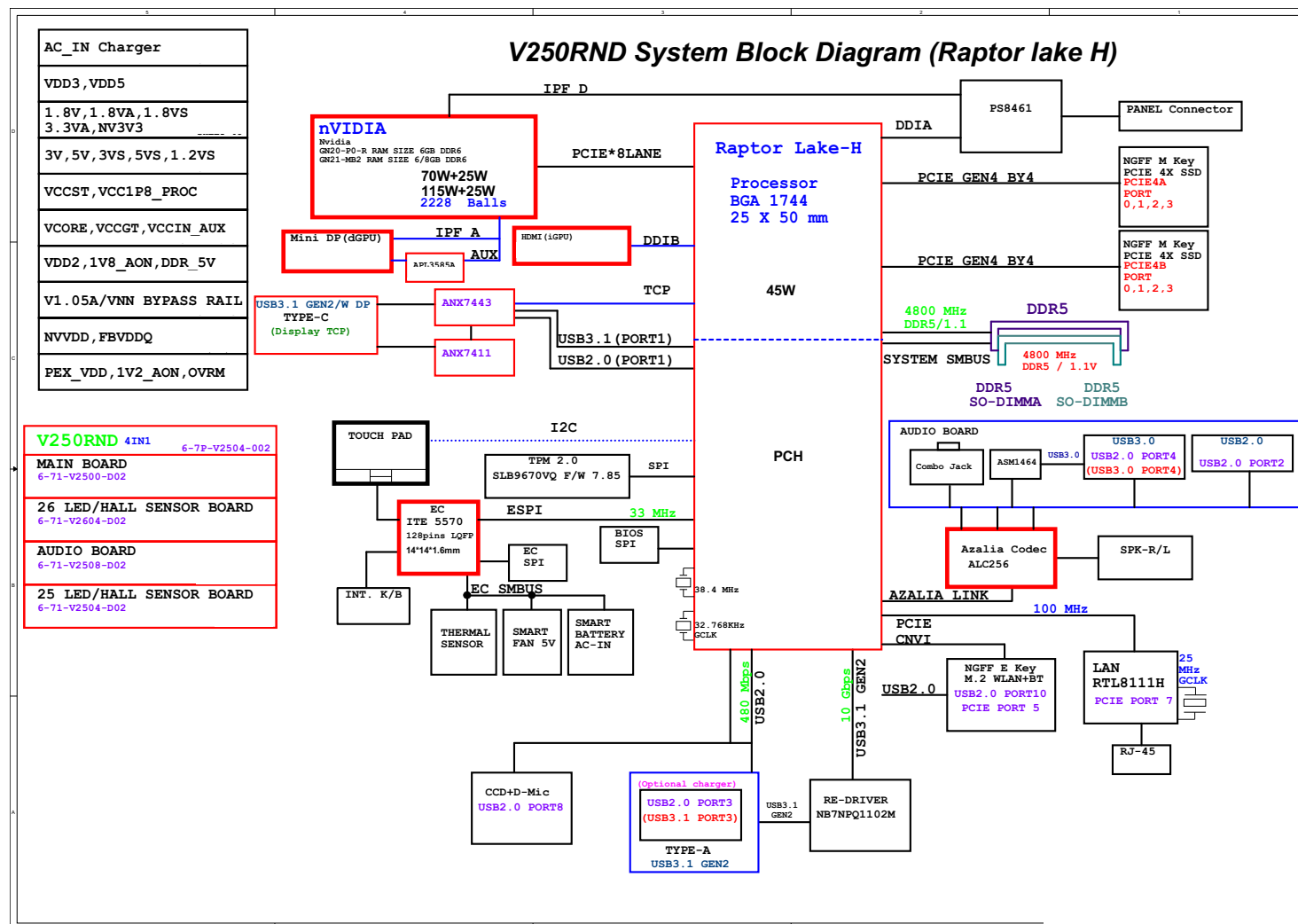
## Version Note

The schematic diagrams in this chapter are based upon version 6-7P-V2504-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

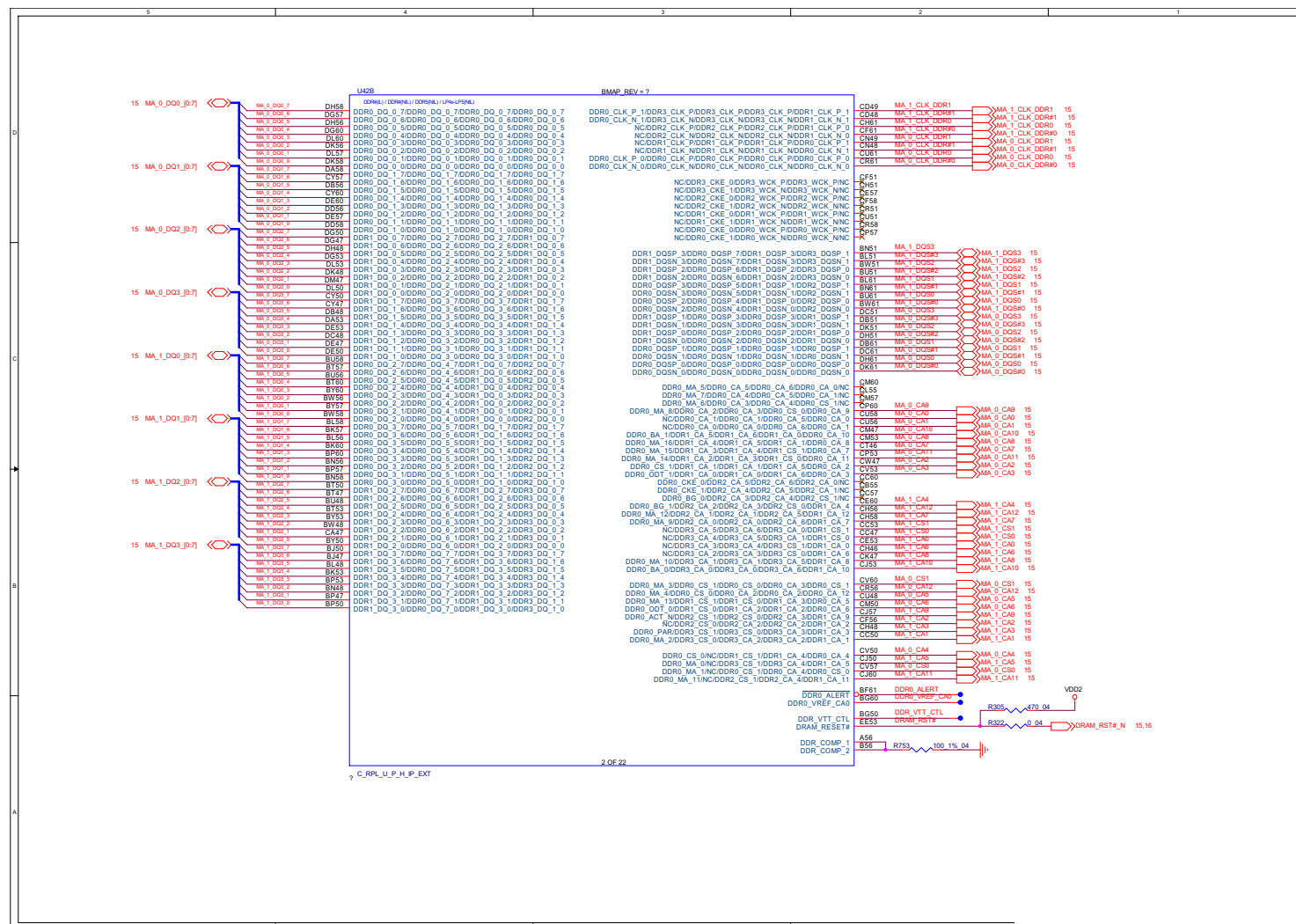


## System Block Diagram

**Sheet 1 of 64**  
**System Block**  
**Diagram**









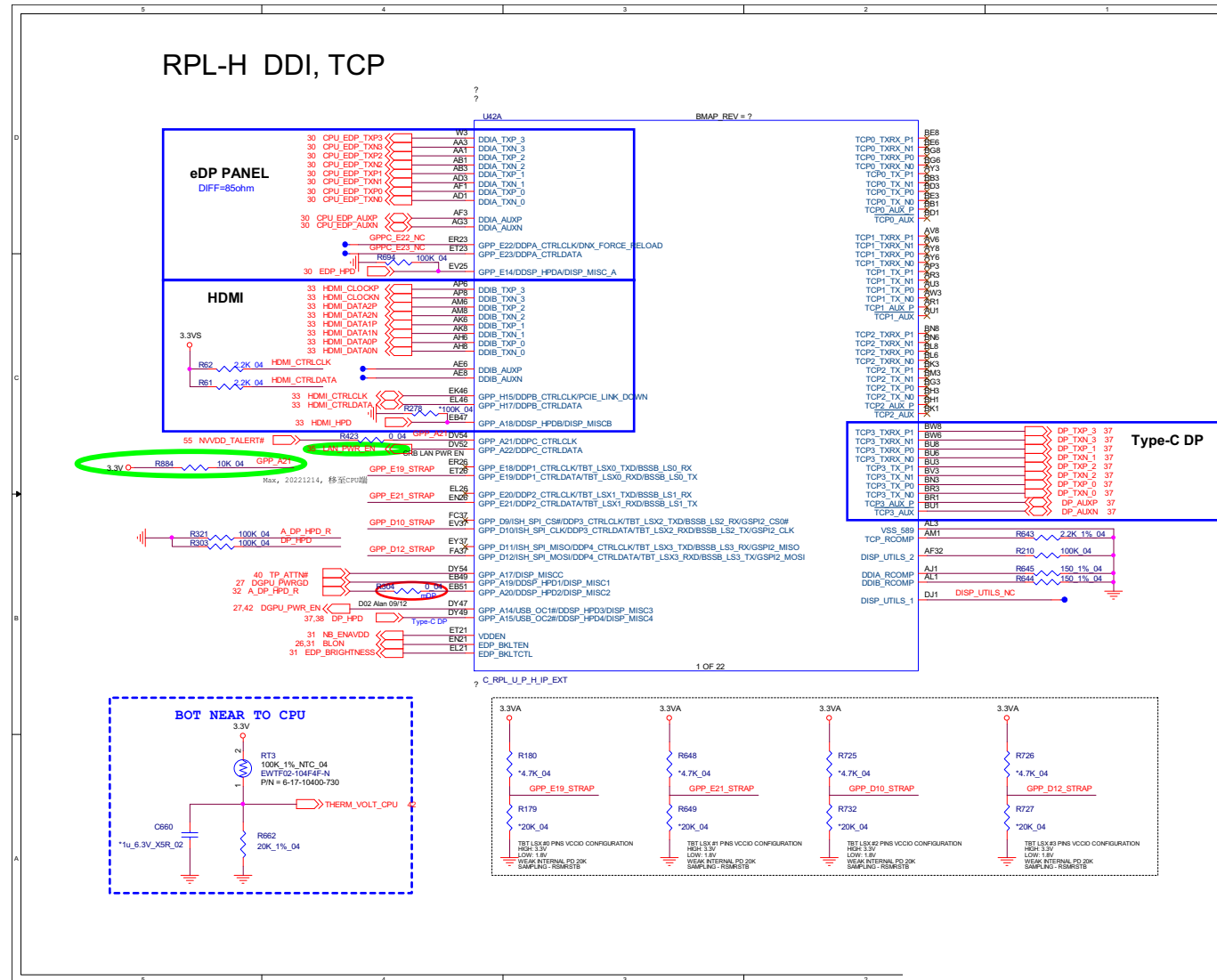
## Processor 2/13

## B. Schematic Diagrams

[illegible]



# Processor 3/13

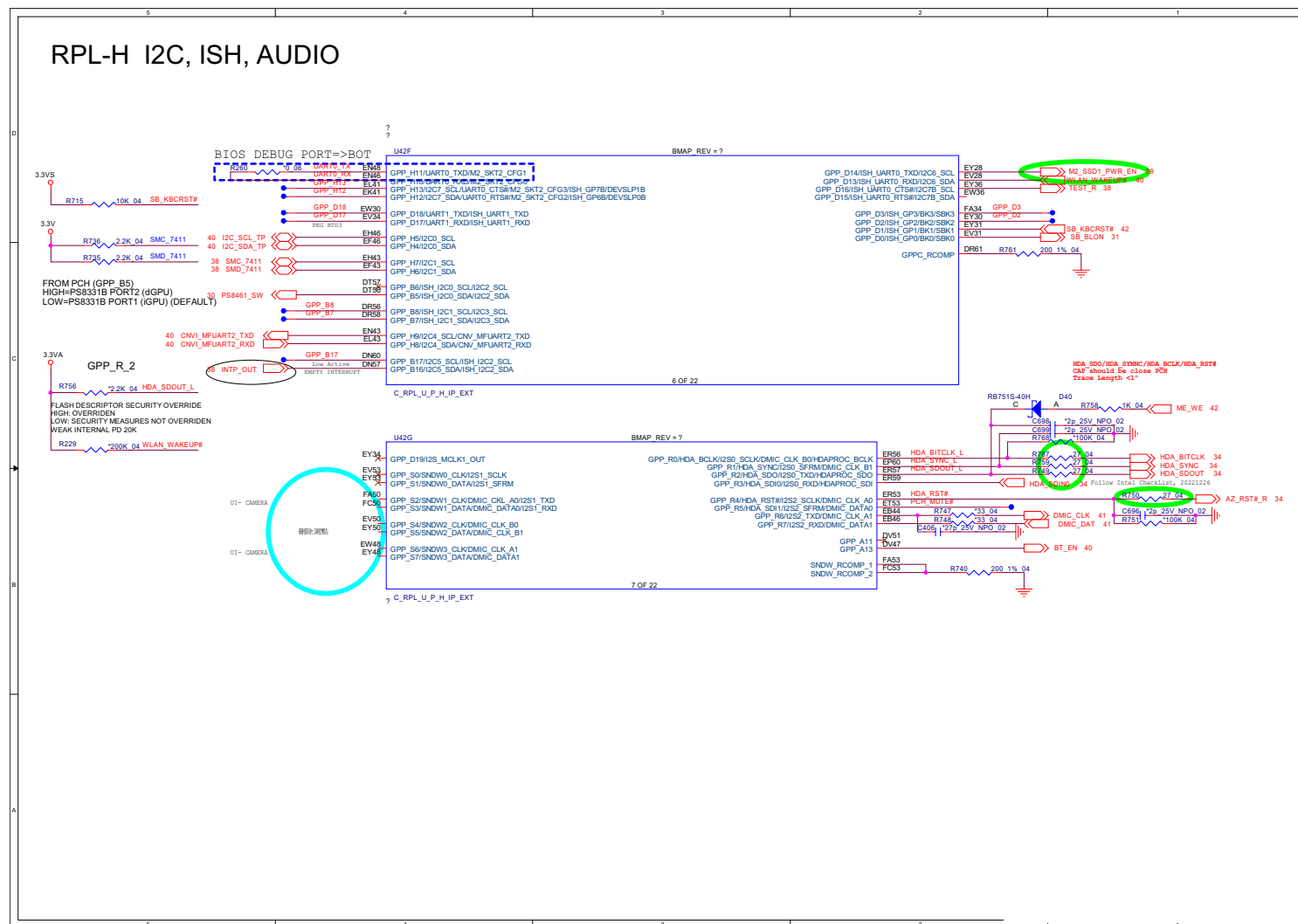


Sheet 4 of 64  
Processor 3/13



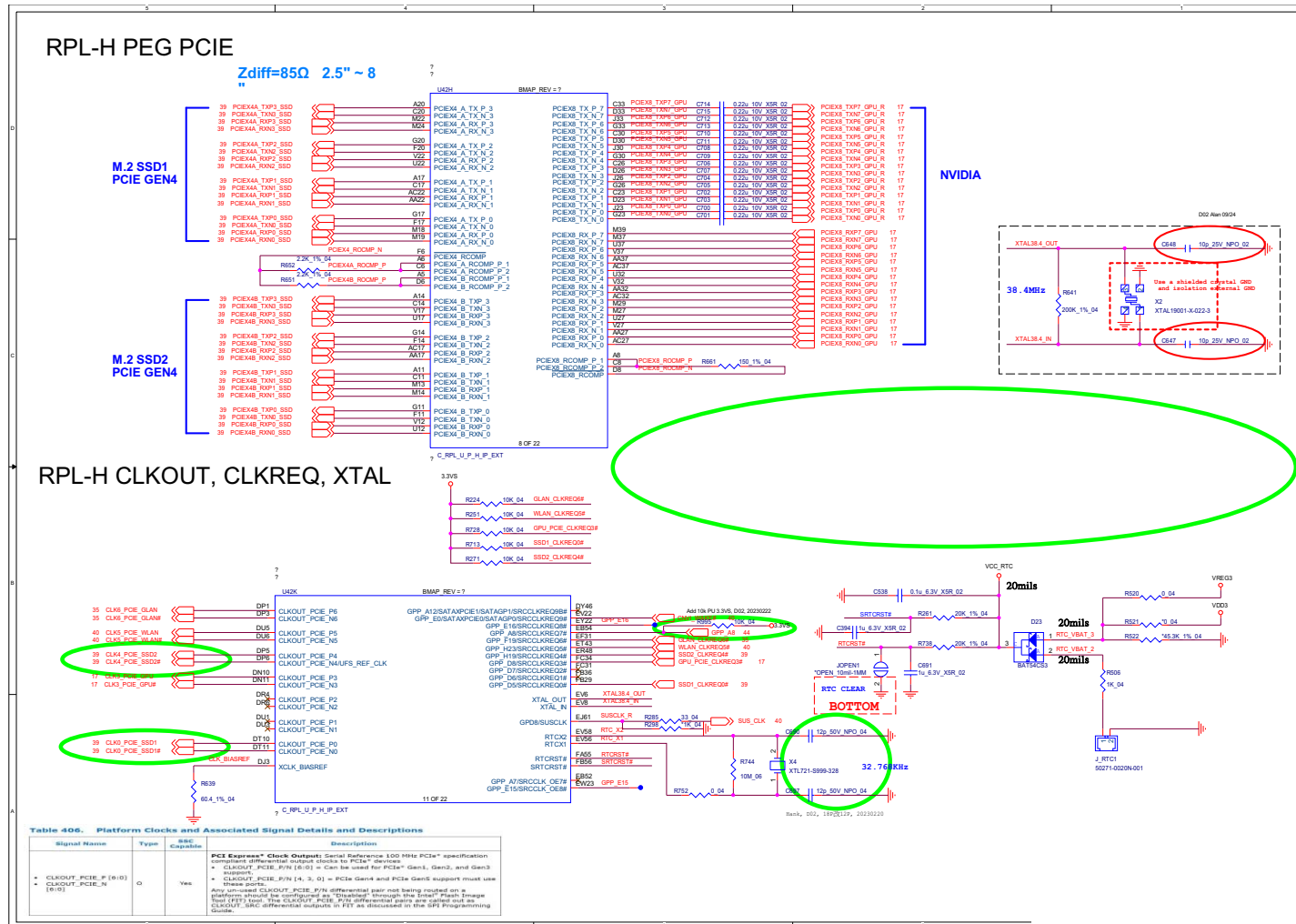
## Processor 4/13

Sheet 5 of 64  
Processor 4/13





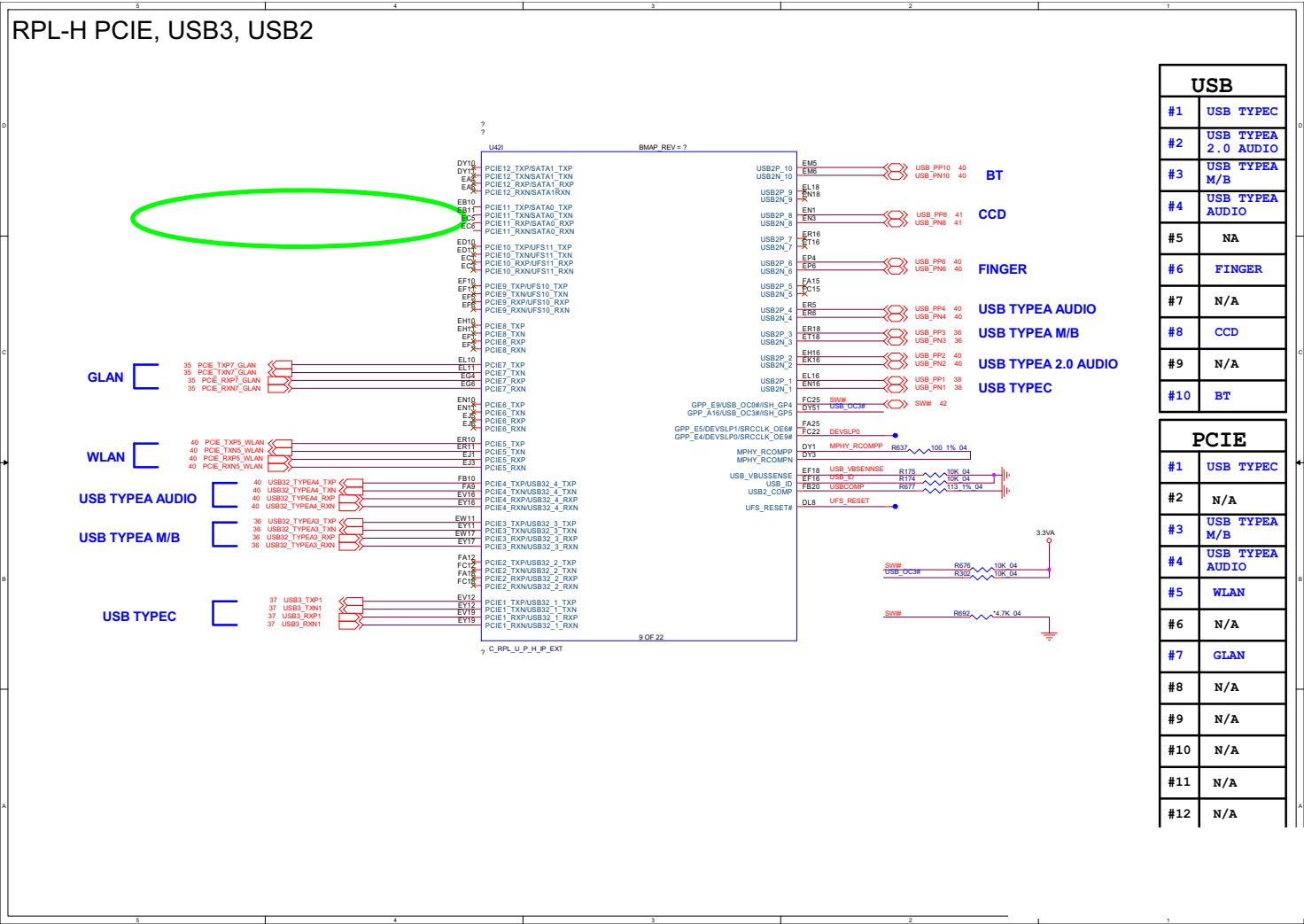
## Processor 5/13

Sheet 6 of 64  
Processor 5/13



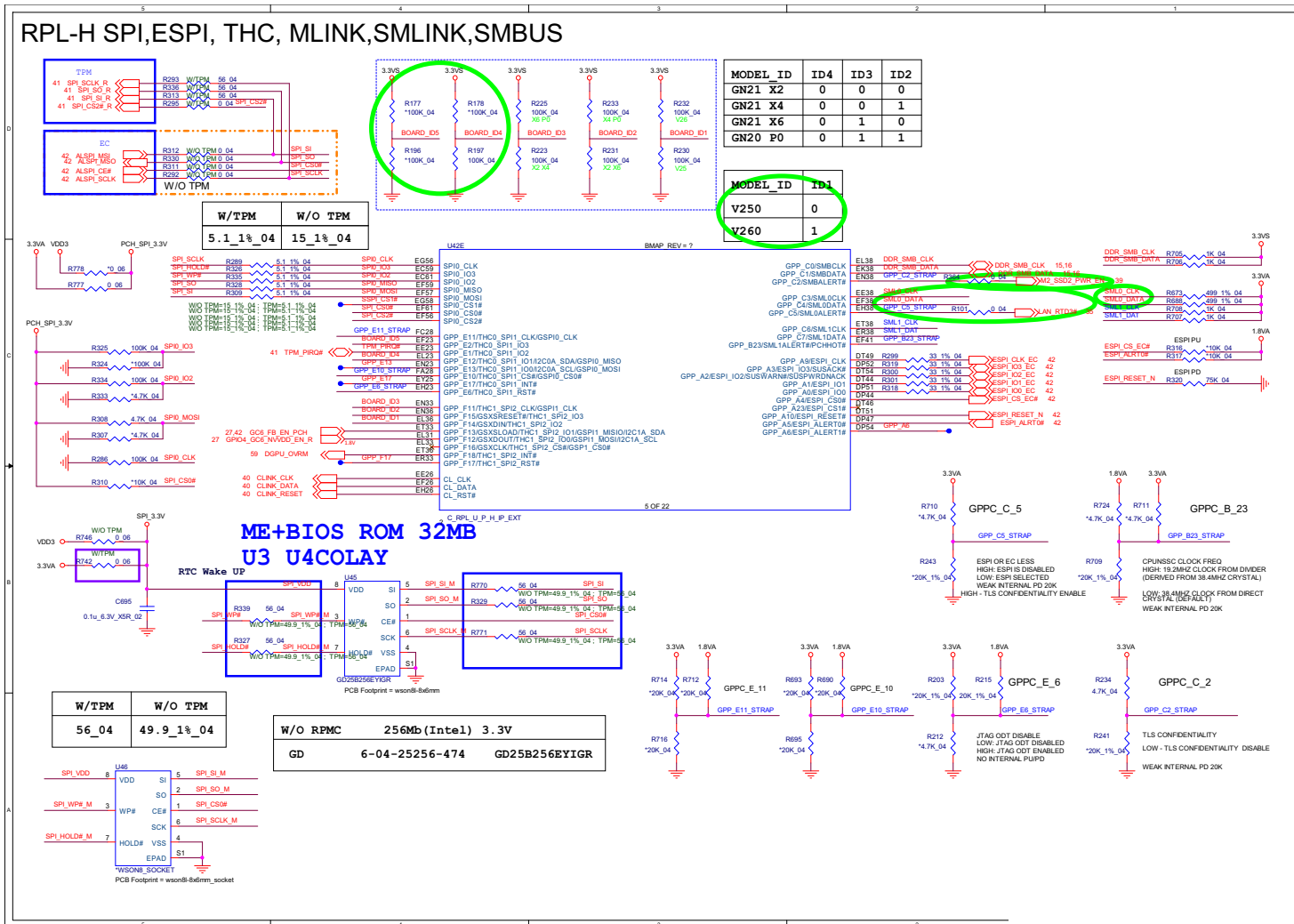
Processor 6/13

Sheet 7 of 64  
Processor 6/13





## Processor 7/13

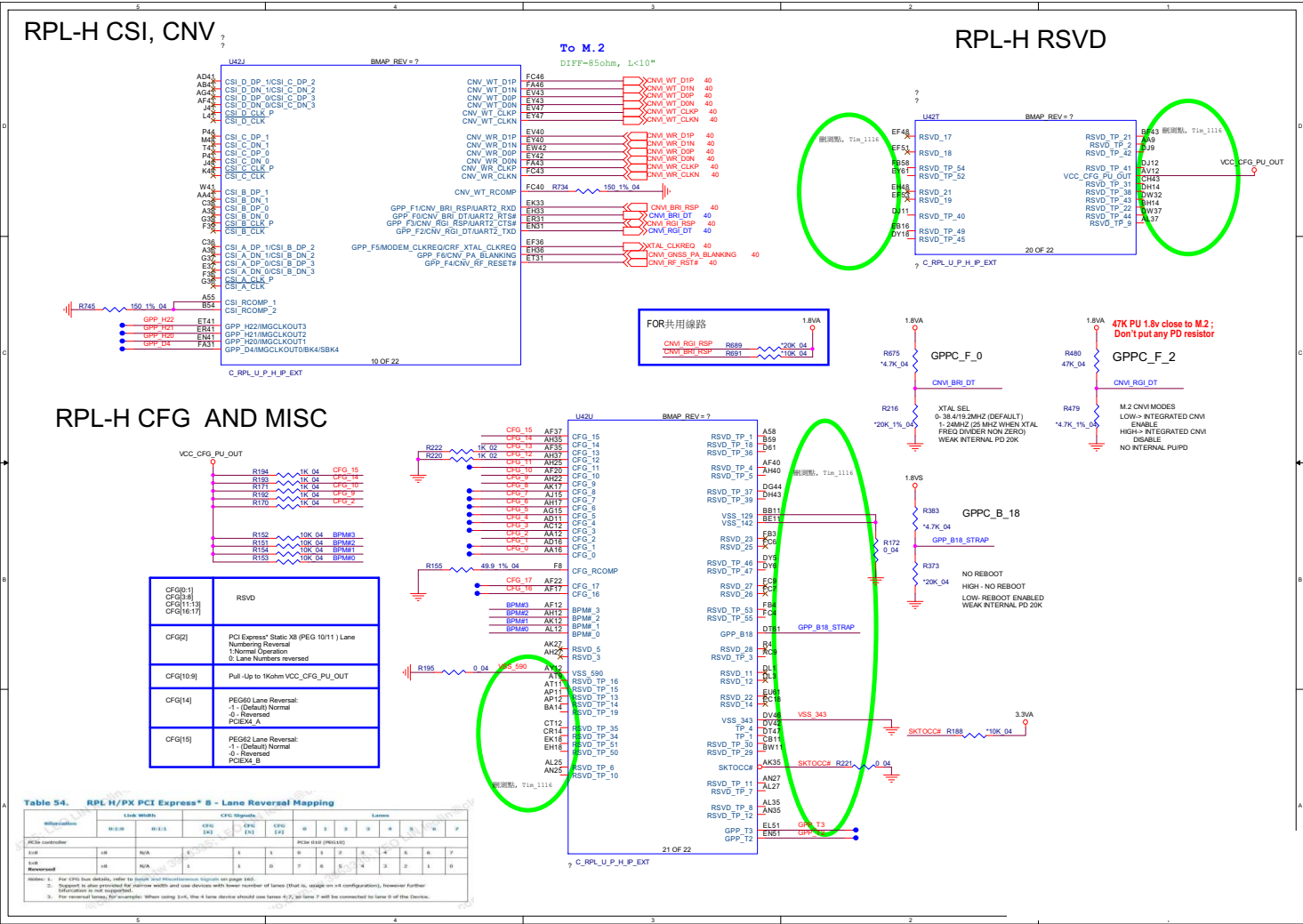
Sheet 8 of 64  
Processor 7/13



Schematic Diagrams

Processor 8/13

Sheet 9 of 64  
Processor 8/13





**Processor 9/13 B - 11**

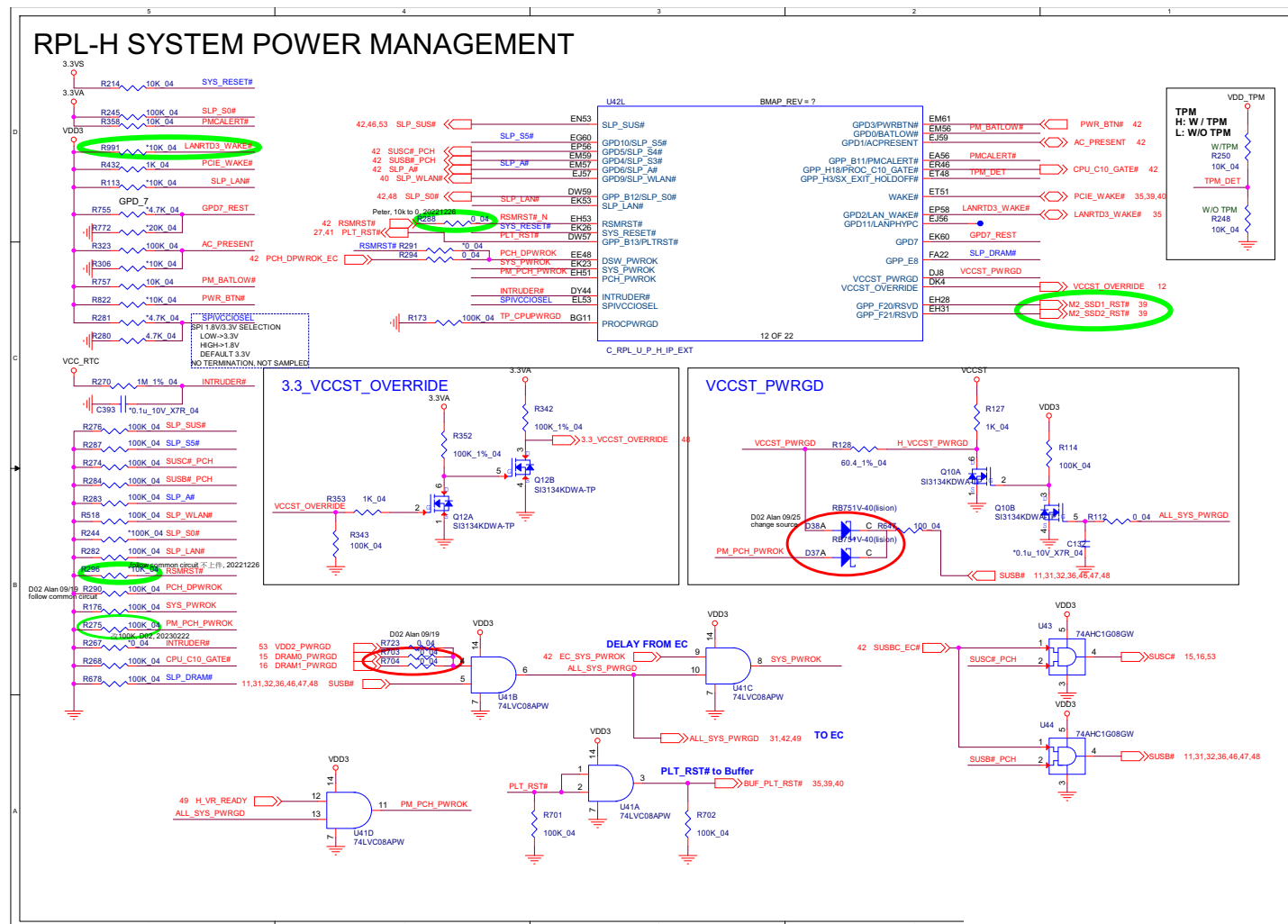
**Processor 9/13 B - 11**





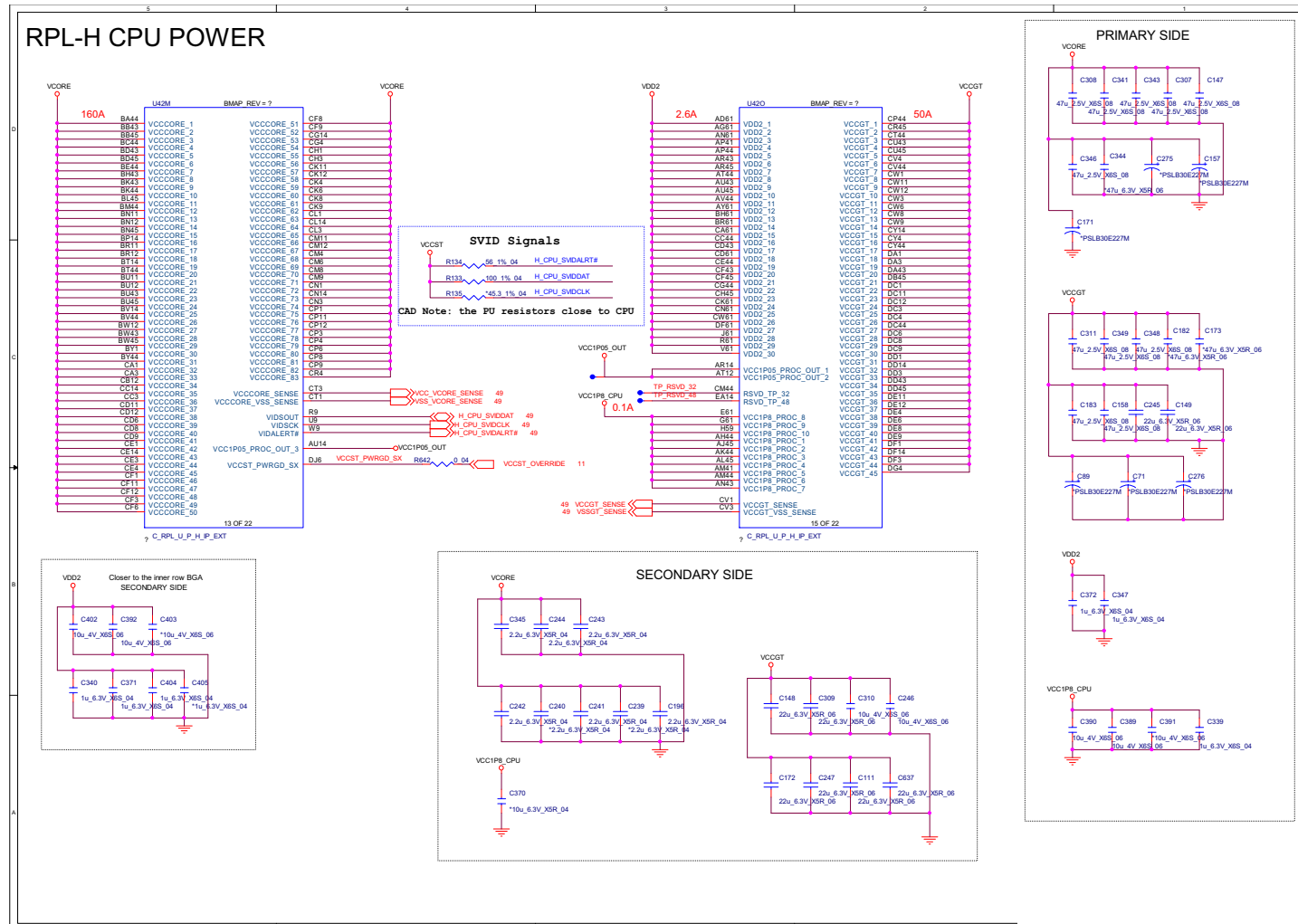
## Processor 10/13

Sheet 11 of 64  
Processor 10/13





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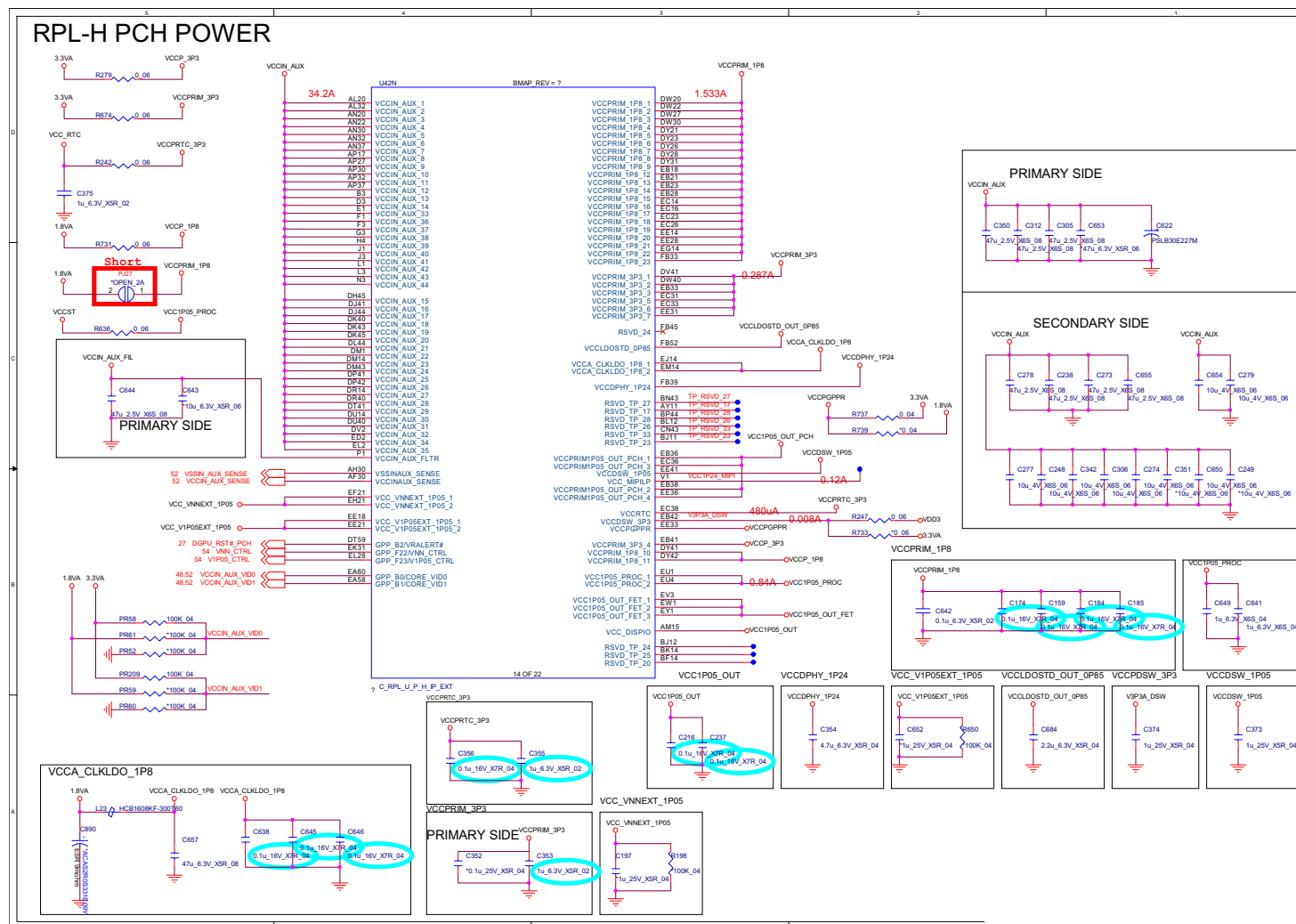
Sheet 12 of 64  
Processor 11/13

## B.Schematic Diagrams



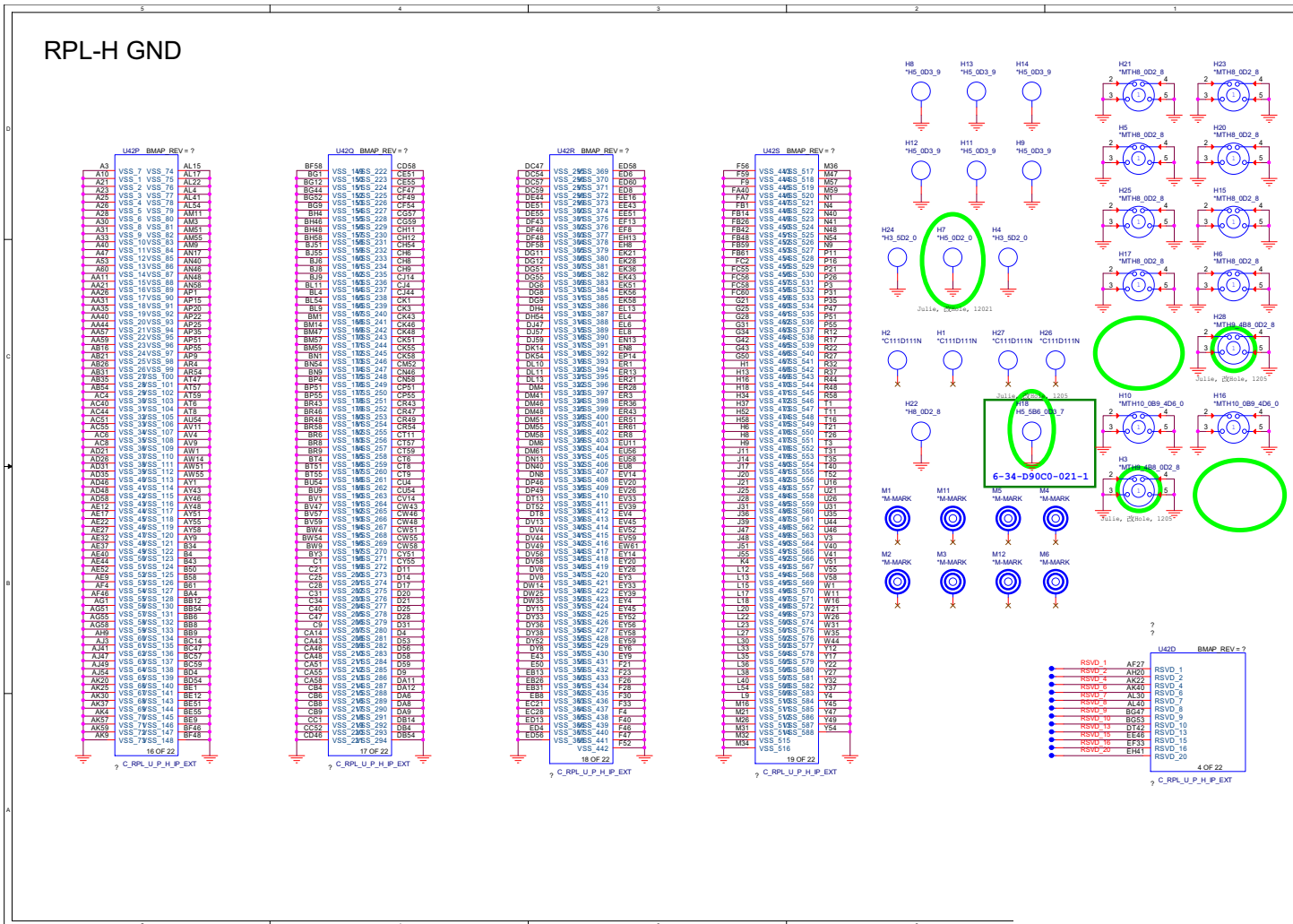
## Processor 12/13

Sheet 13 of 64  
Processor 12/13





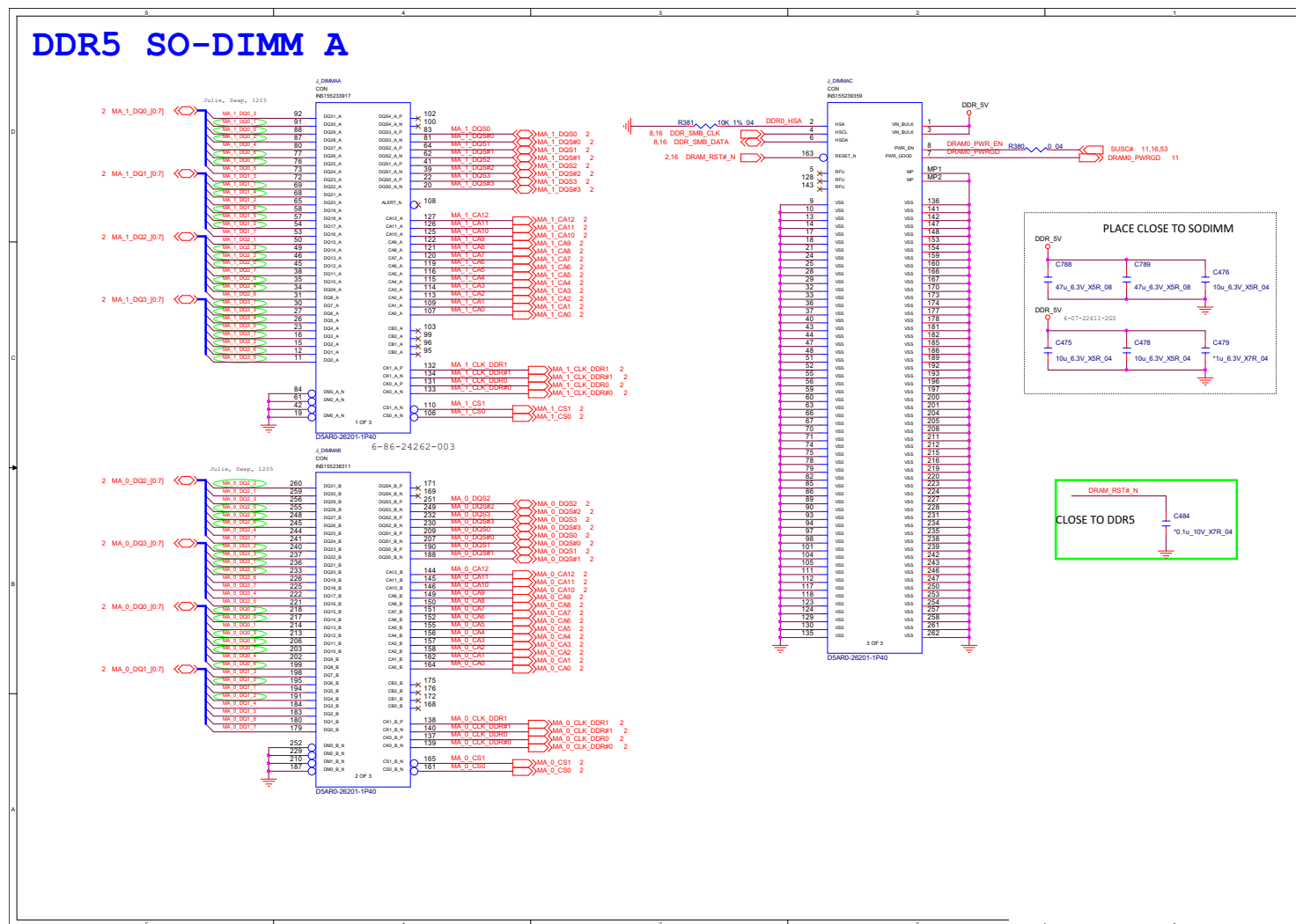
## Processor 13/13





## B. Schematic Diagrams

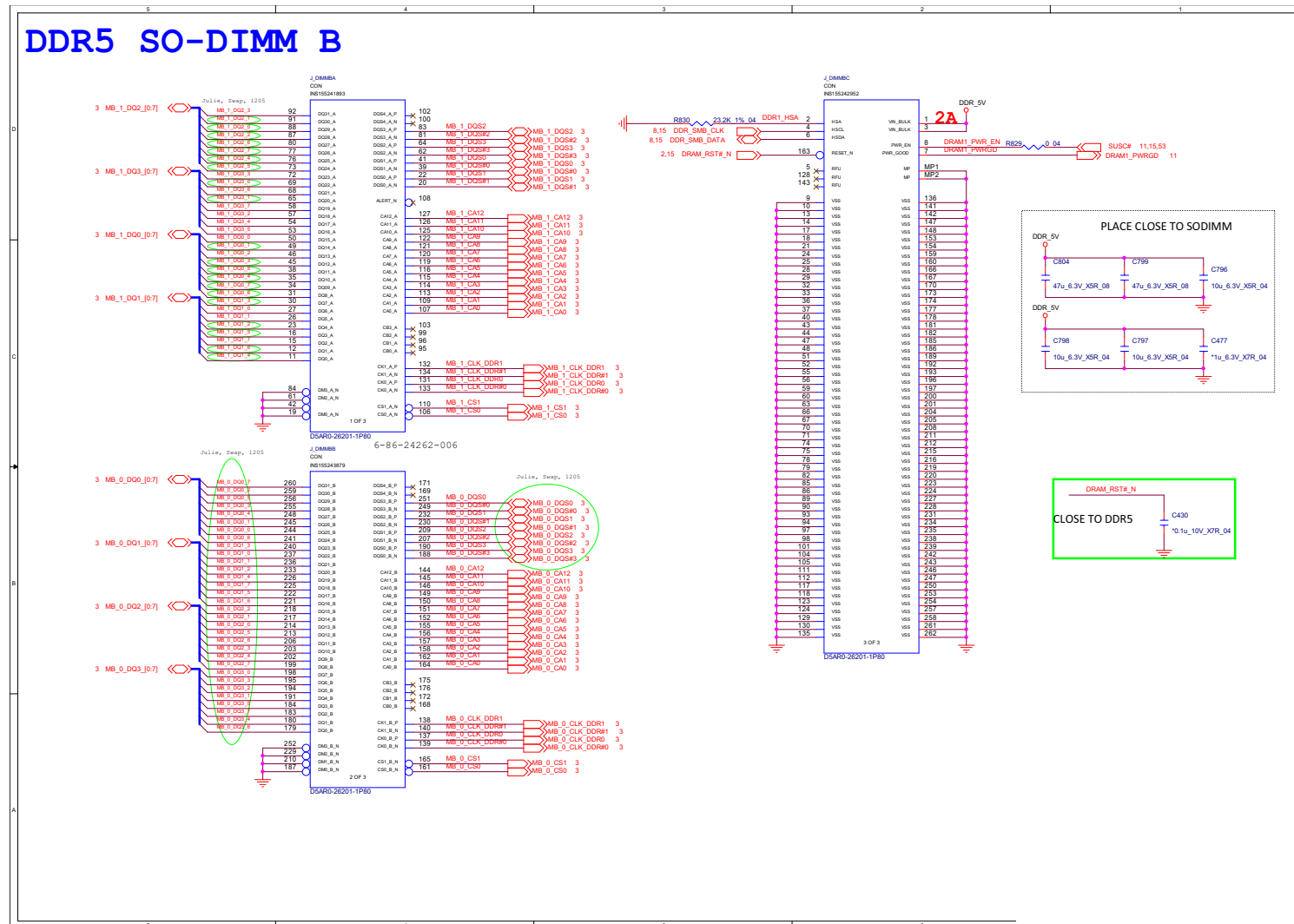
Sheet 15 of 64  
DDR5 CHA SO-  
DIMM 0





## Schematic Diagrams

## DDR5 CHB SO-DIMM\_0



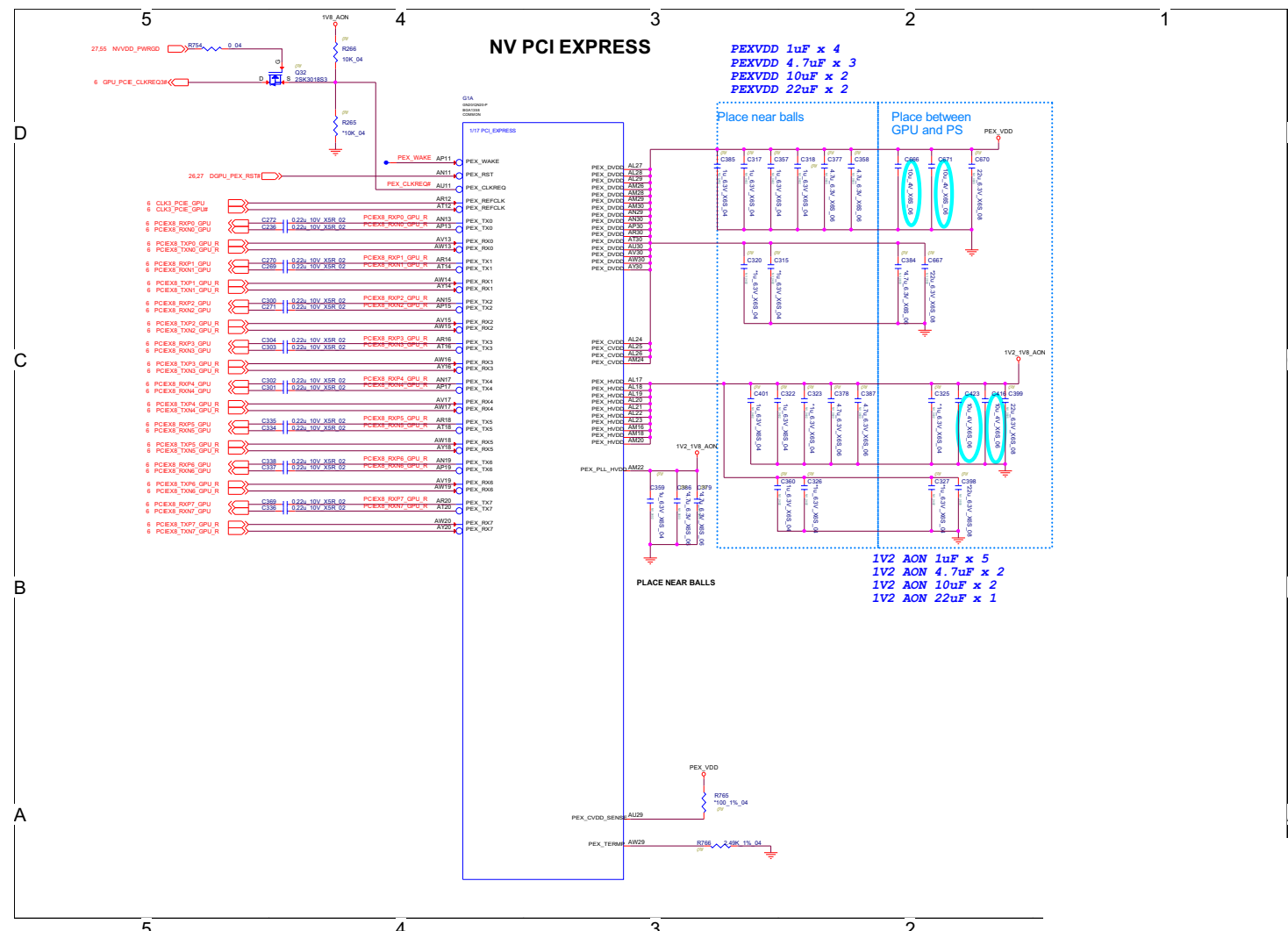
Sheet 16 of 64  
DDR5 CHB SO-  
DIMM\_0

## B.Schematic Diagrams



## PCI-E Interface

**Sheet 17 of 64**  
**PCI-E Interface**



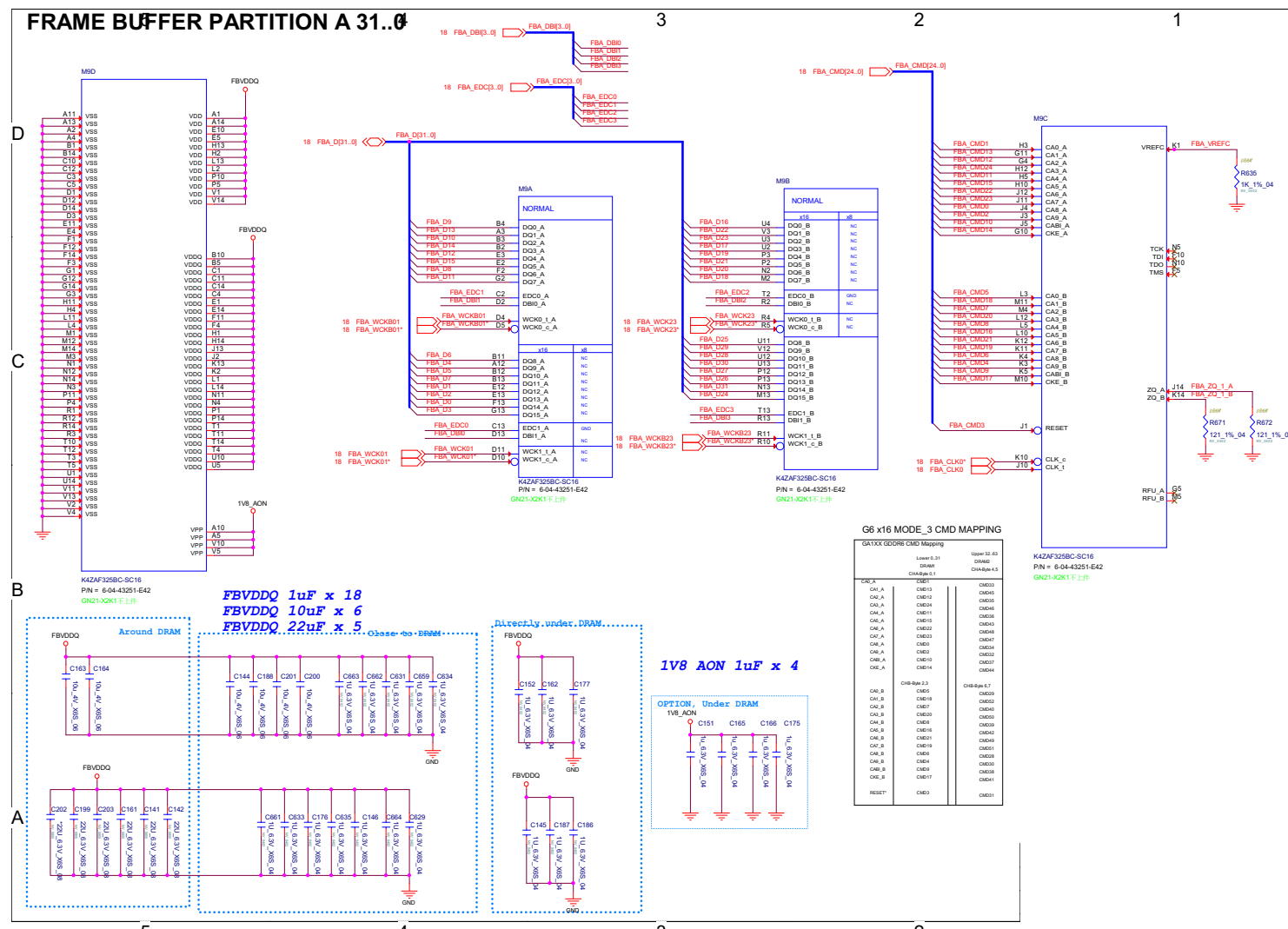


POWER RAIL	State in G0
1V8_AON	ON
1V8_MAIN	OFF
PEX&1.05V	OFF
NVDD	OFF
NVDDSD	OFF
FBVDD/Q	ON



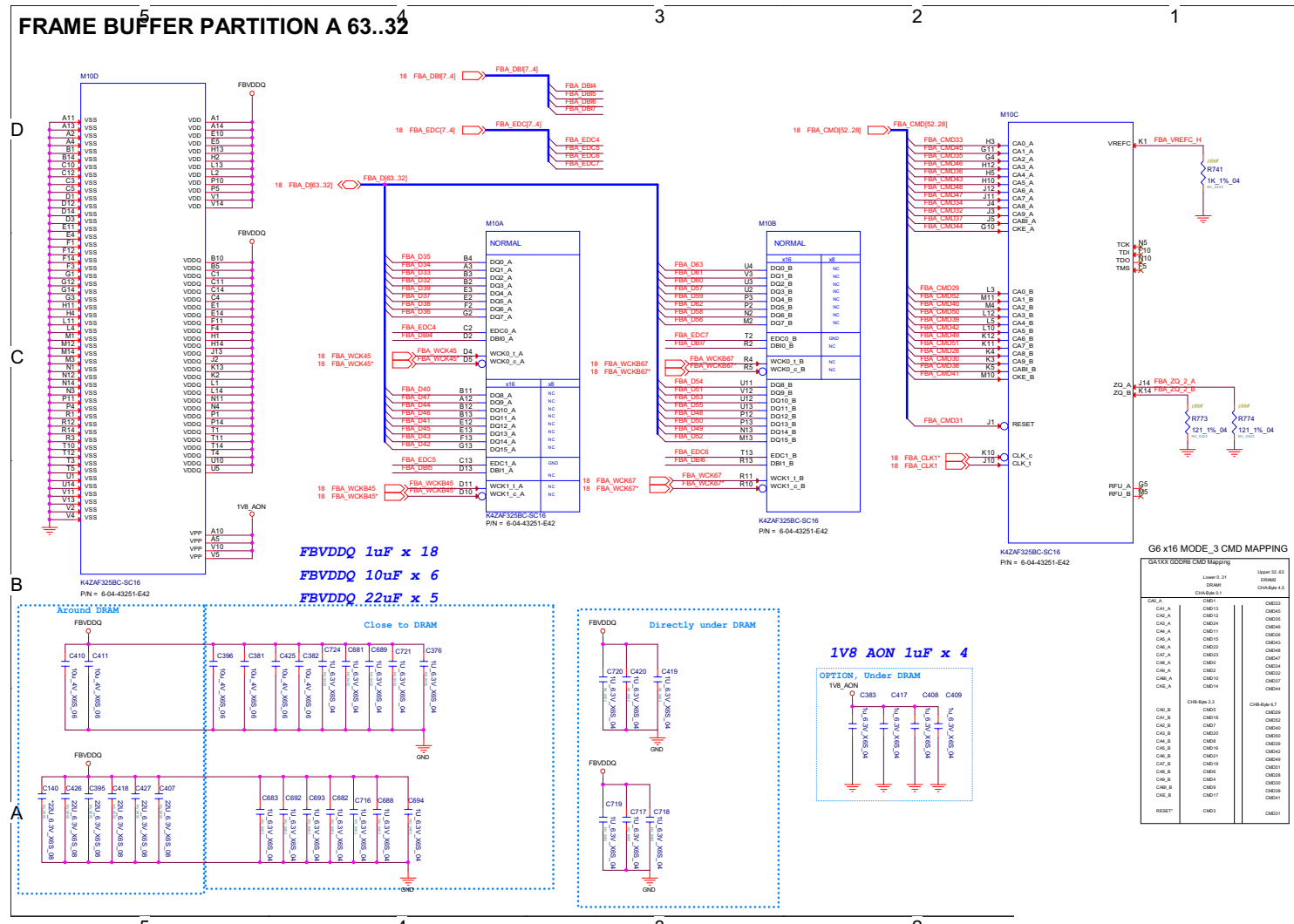
## Frame Buffer A

Sheet 19 of 64  
Frame Buffer A





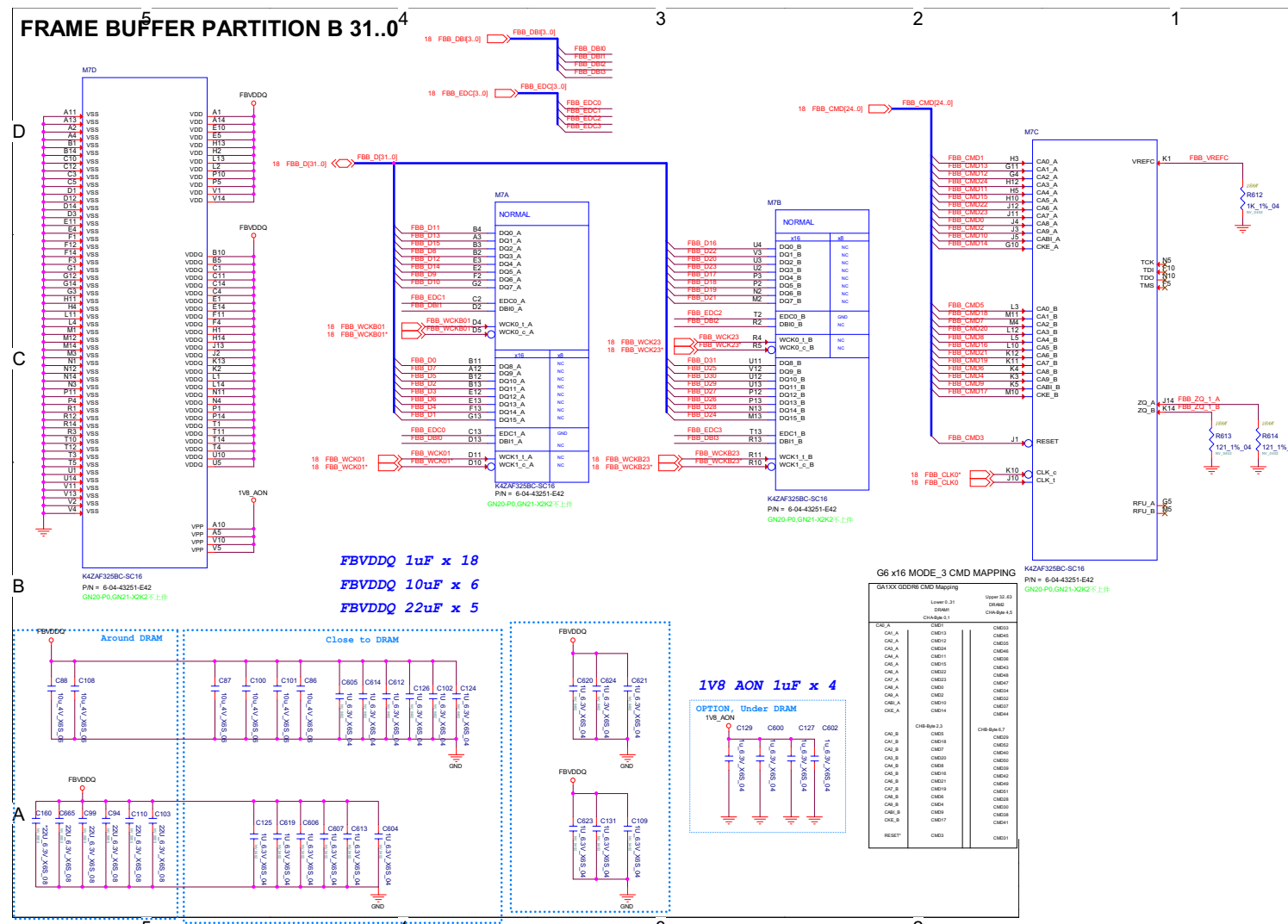
## Frame Buffer A





## Frame Buffer B

Sheet 21 of 64  
Frame Buffer B





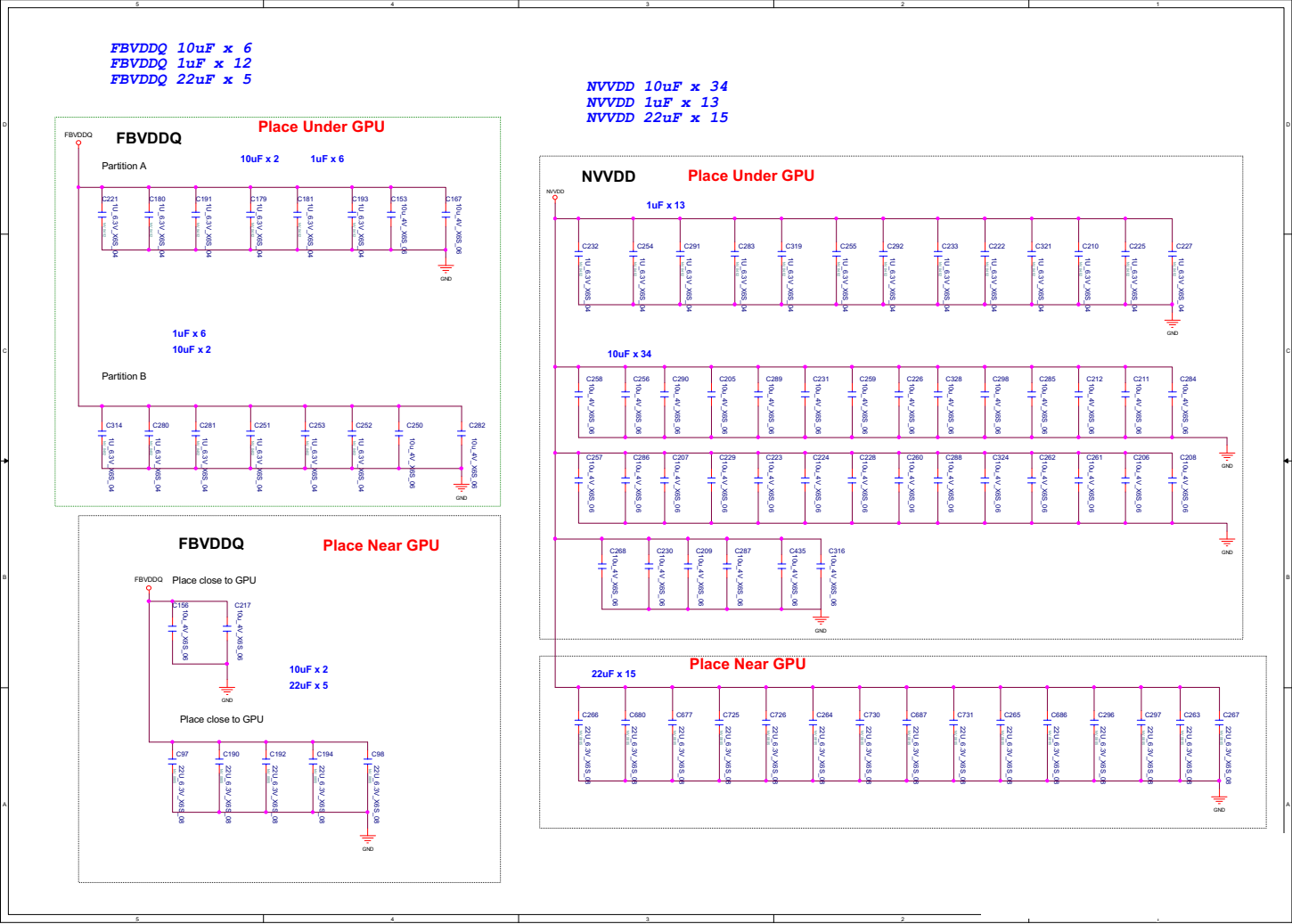




Schematic Diagrams

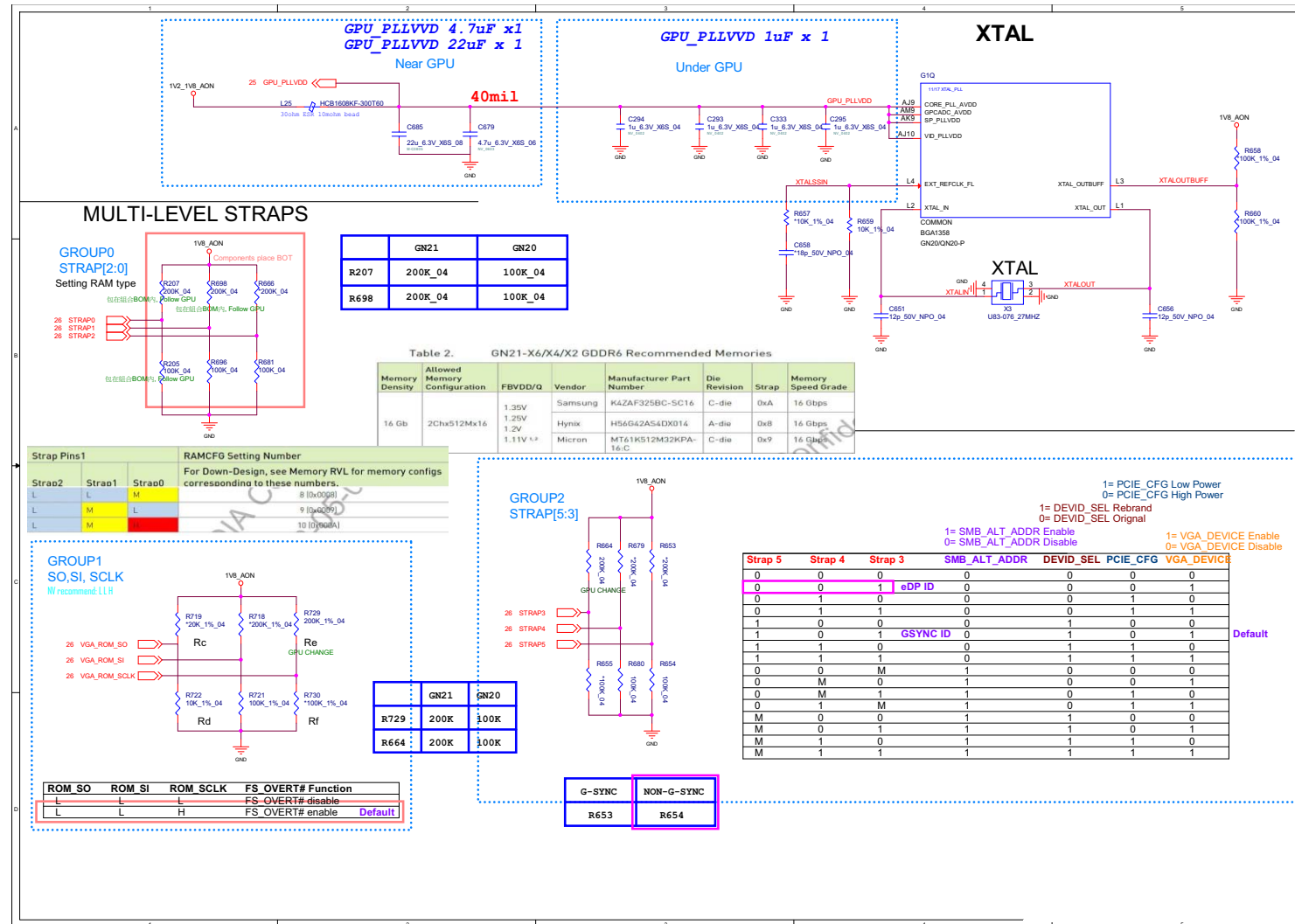
NVVDD Coupling

Sheet 23 of 64  
NVVDD Coupling



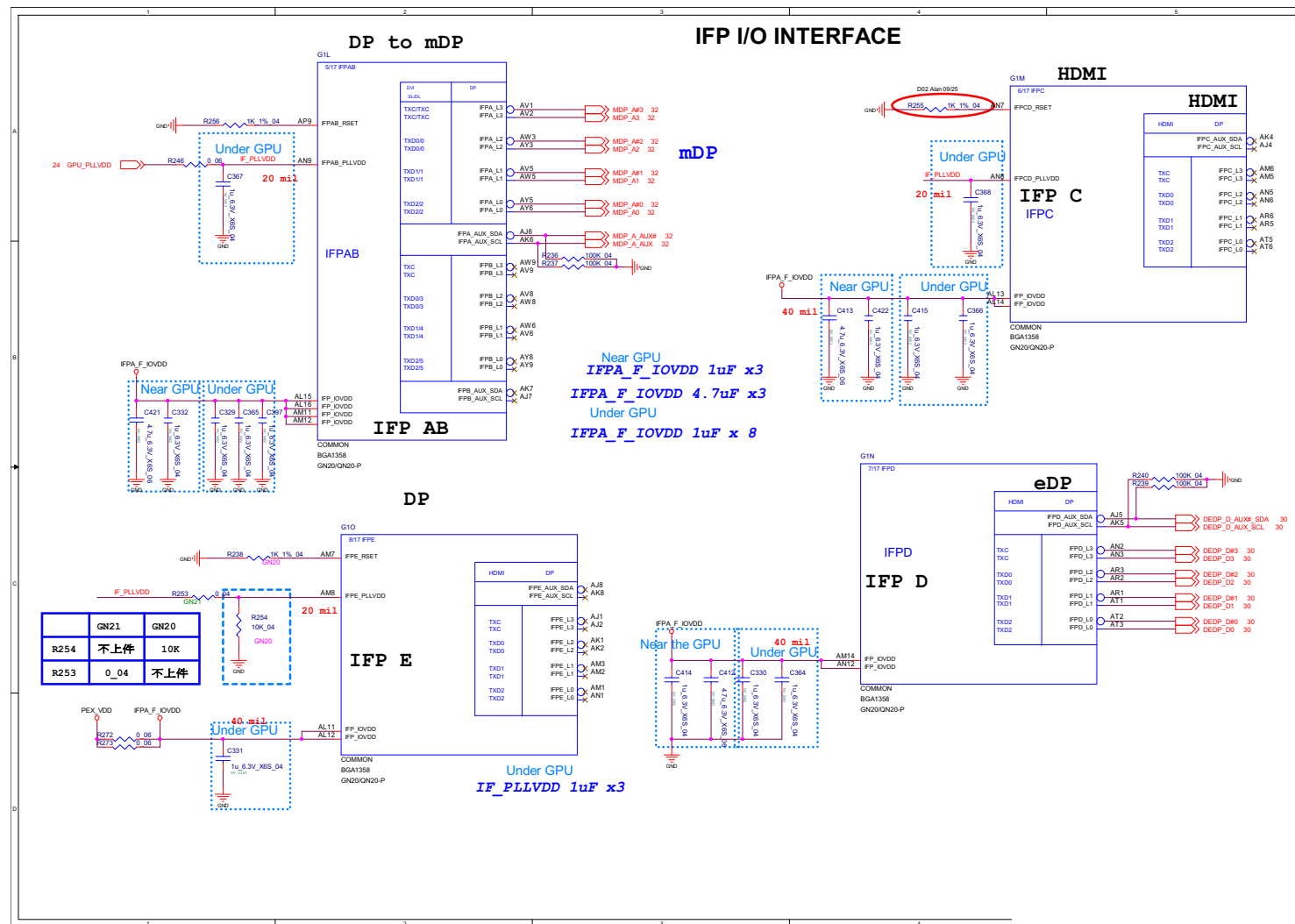


## Straps and XTAL

Sheet 24 of 64  
Straps and XTAL



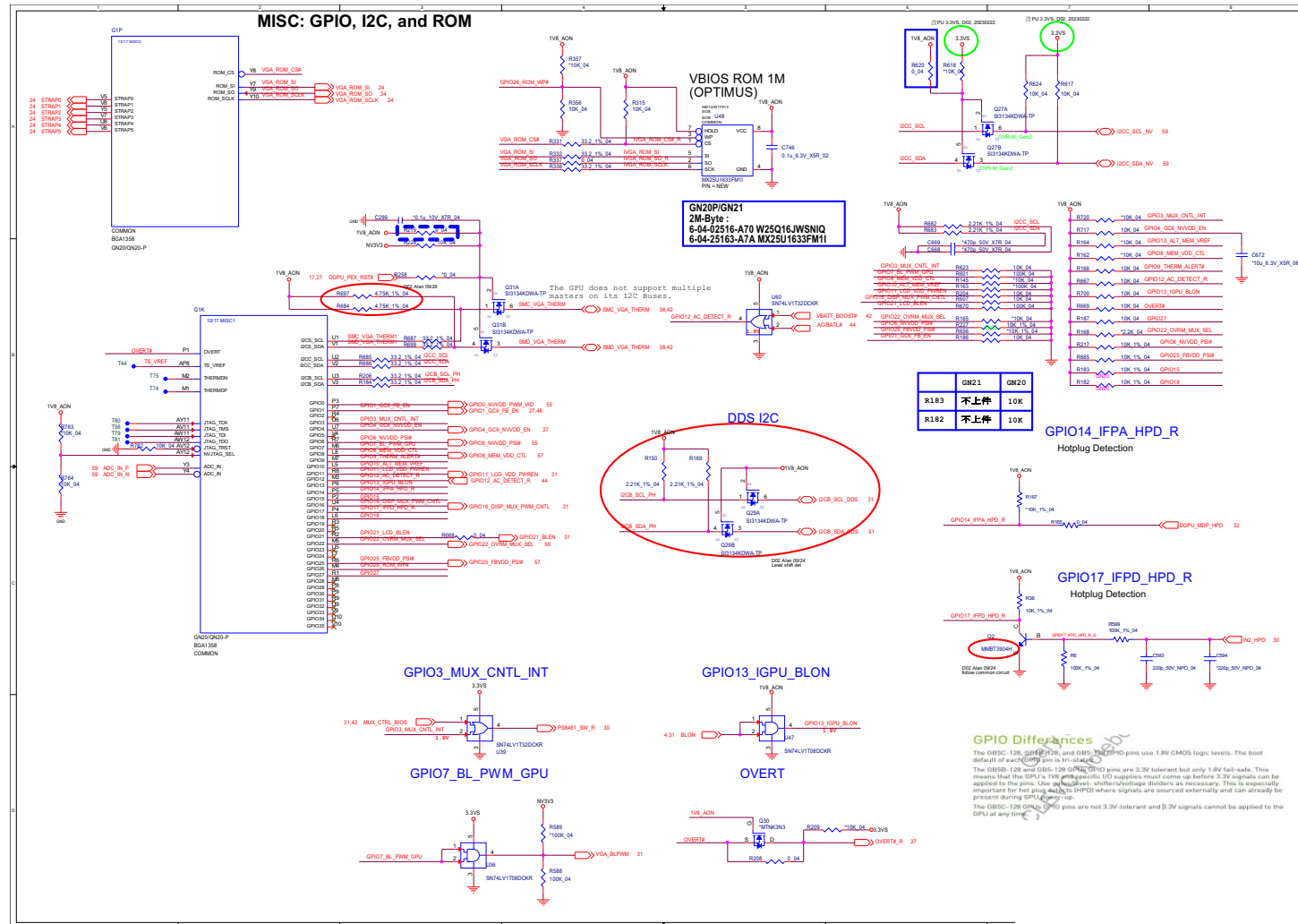
**Sheet 25 of 64**  
**IFP I/O Interface**





## Misc - GPIO, I2C, VBIOS

Sheet 26 of 64  
Misc - GPIO, I2C,  
VBIOS

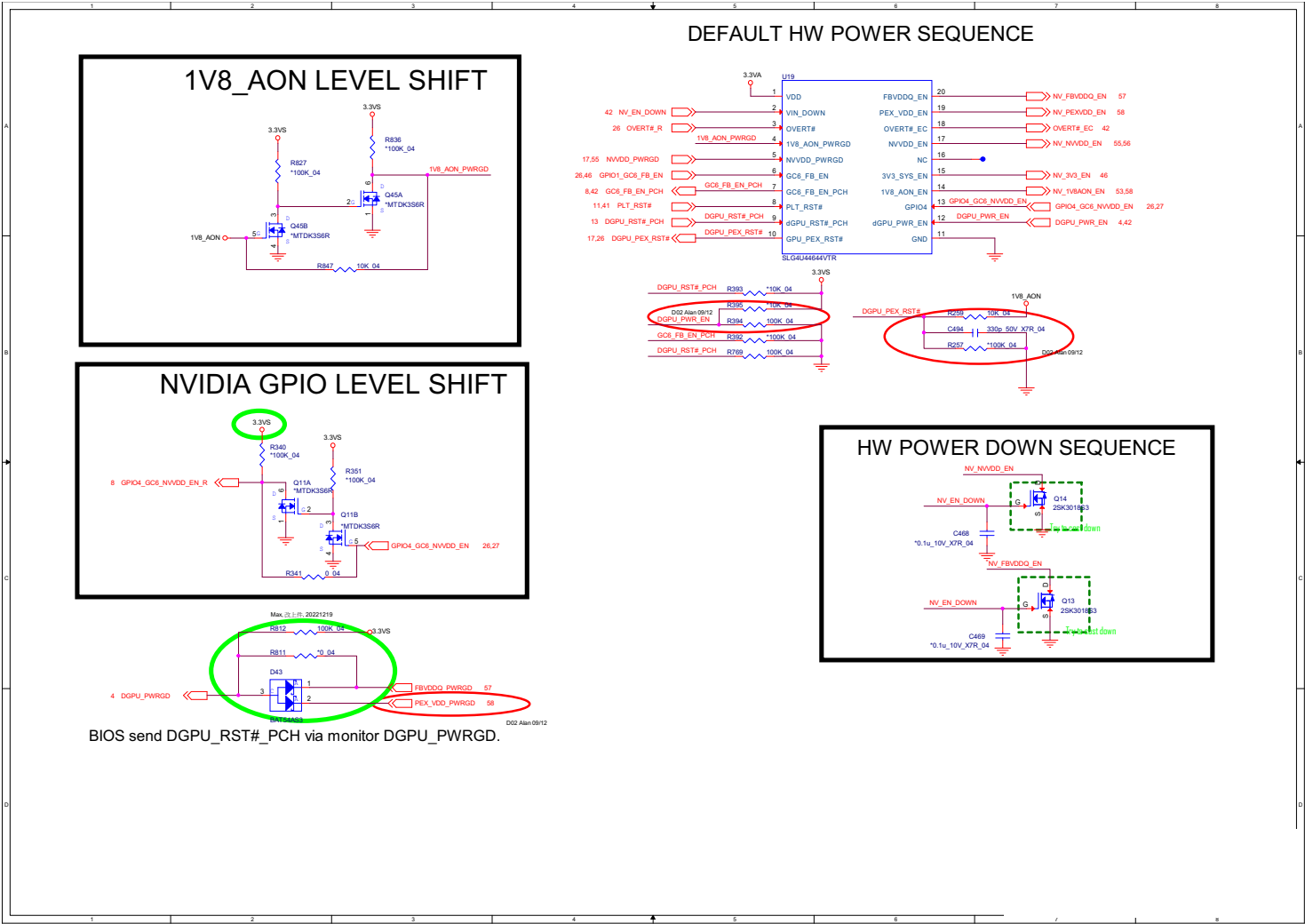




Schematic Diagrams

NVIDIA Power Sequence

Sheet 27 of 64  
NVIDIA Power  
Sequence



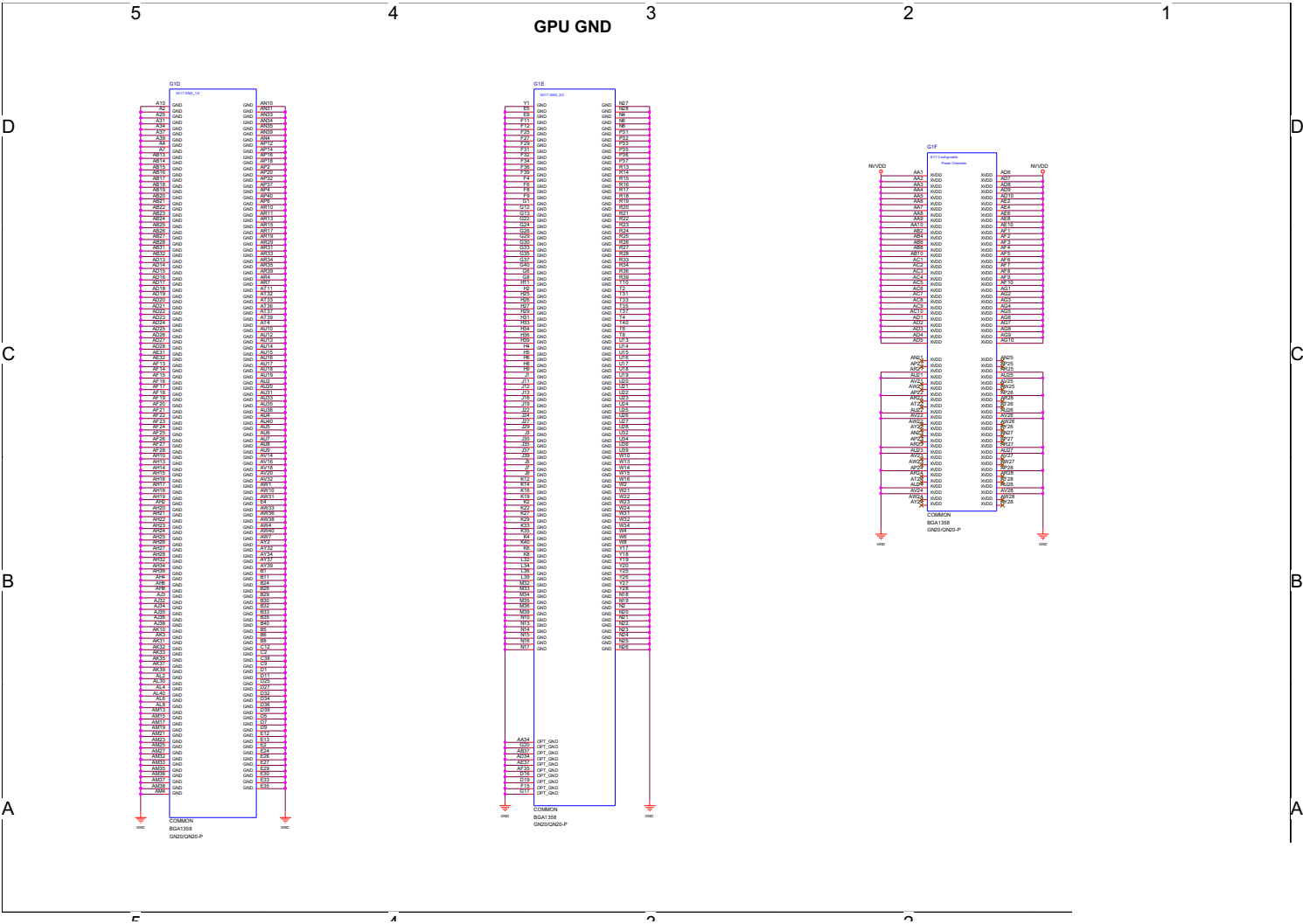


NVVDD, FBVDDQ B - 29



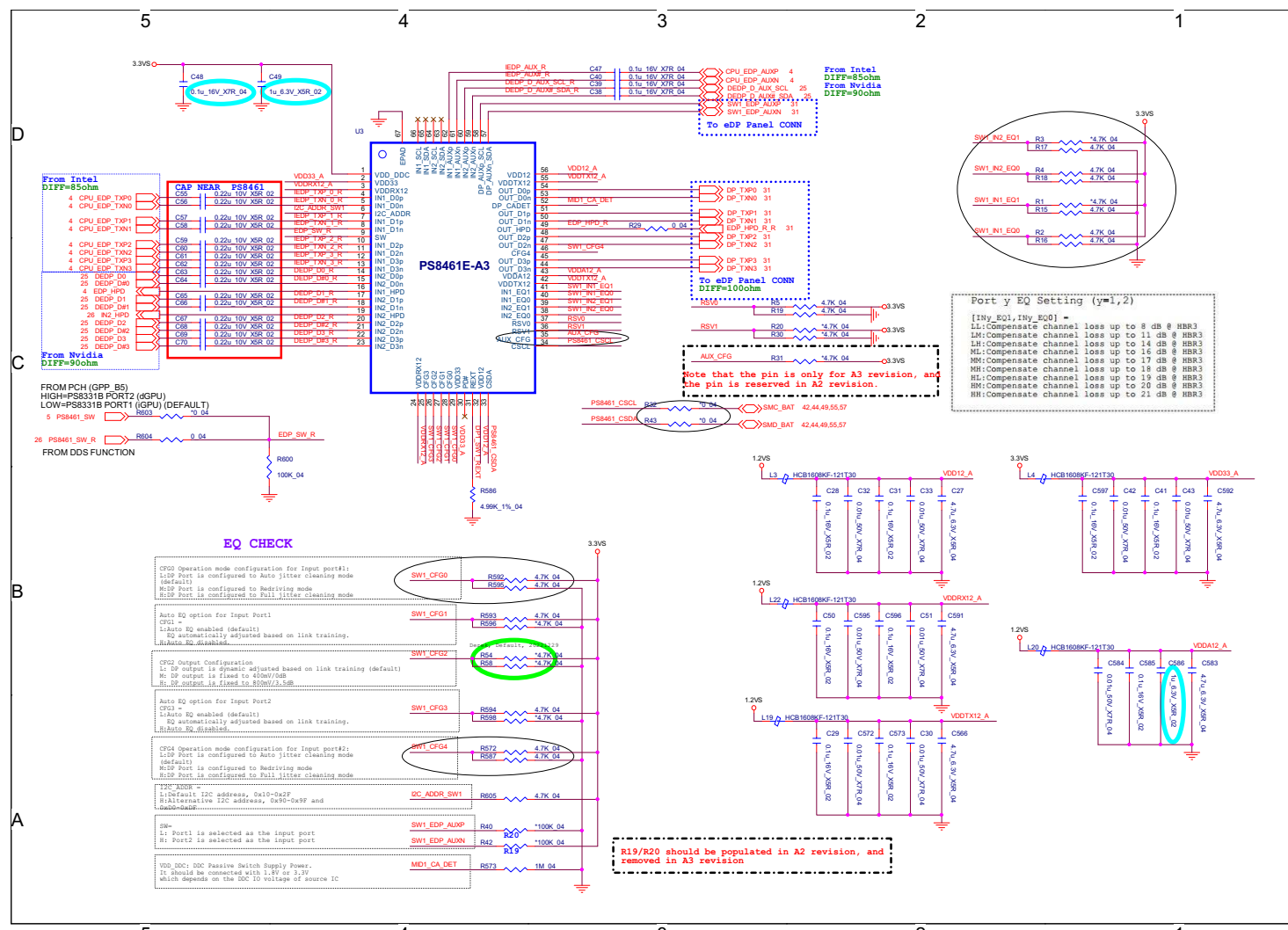
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# GPU GND



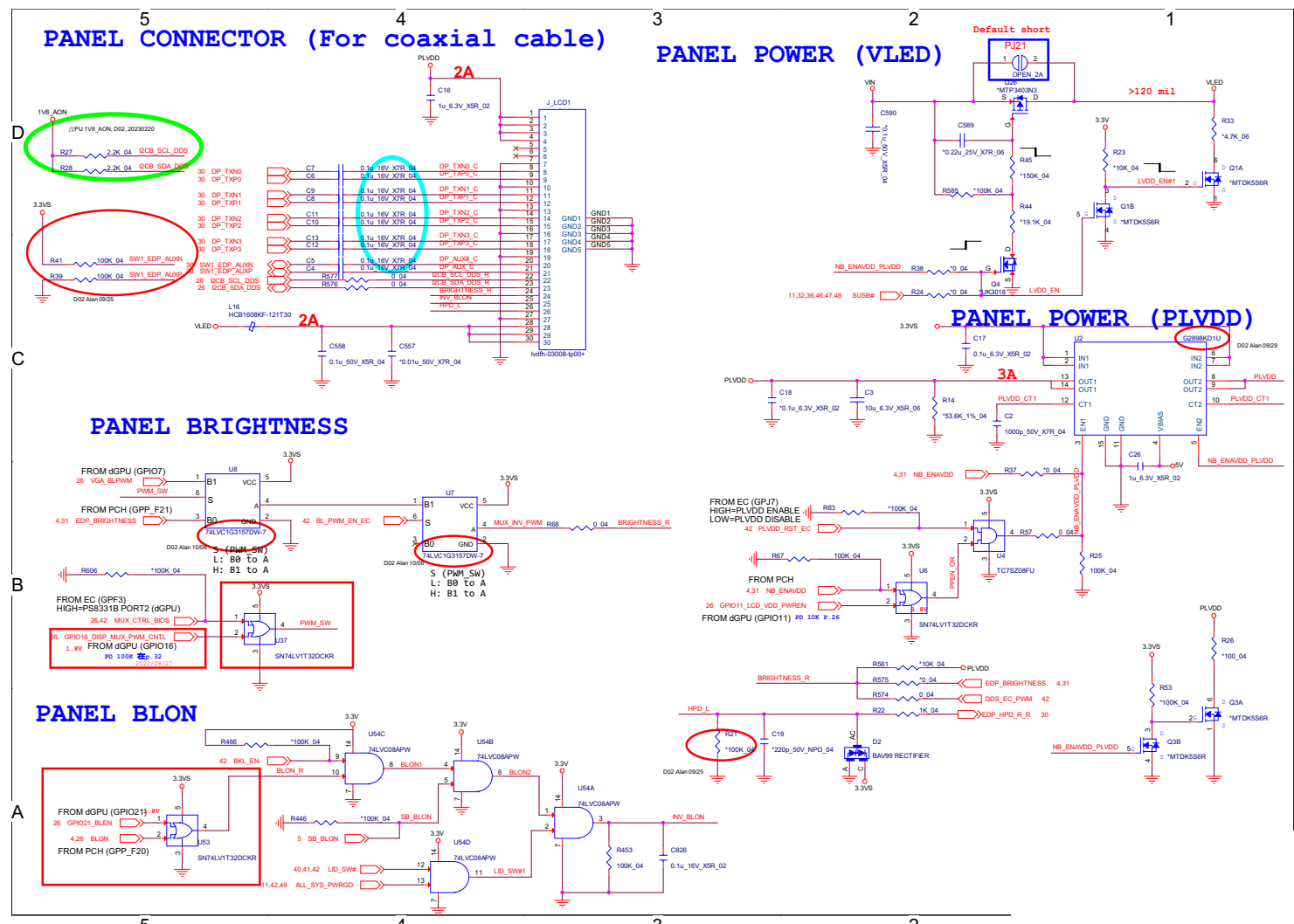


**PS8461 SW B - 31**





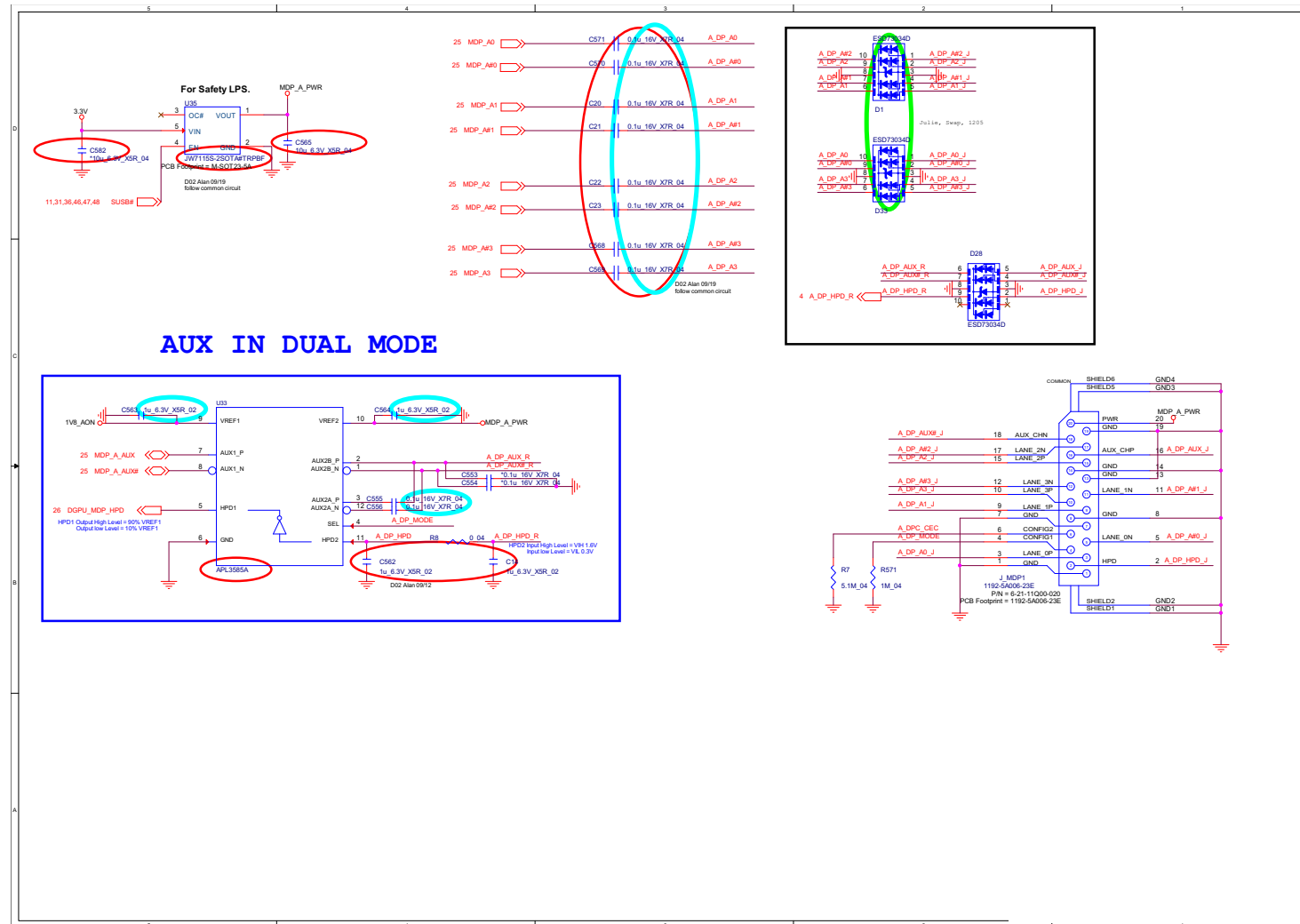
### B - 32 Panel, Inverter





## Schematic Diagrams

## mDP



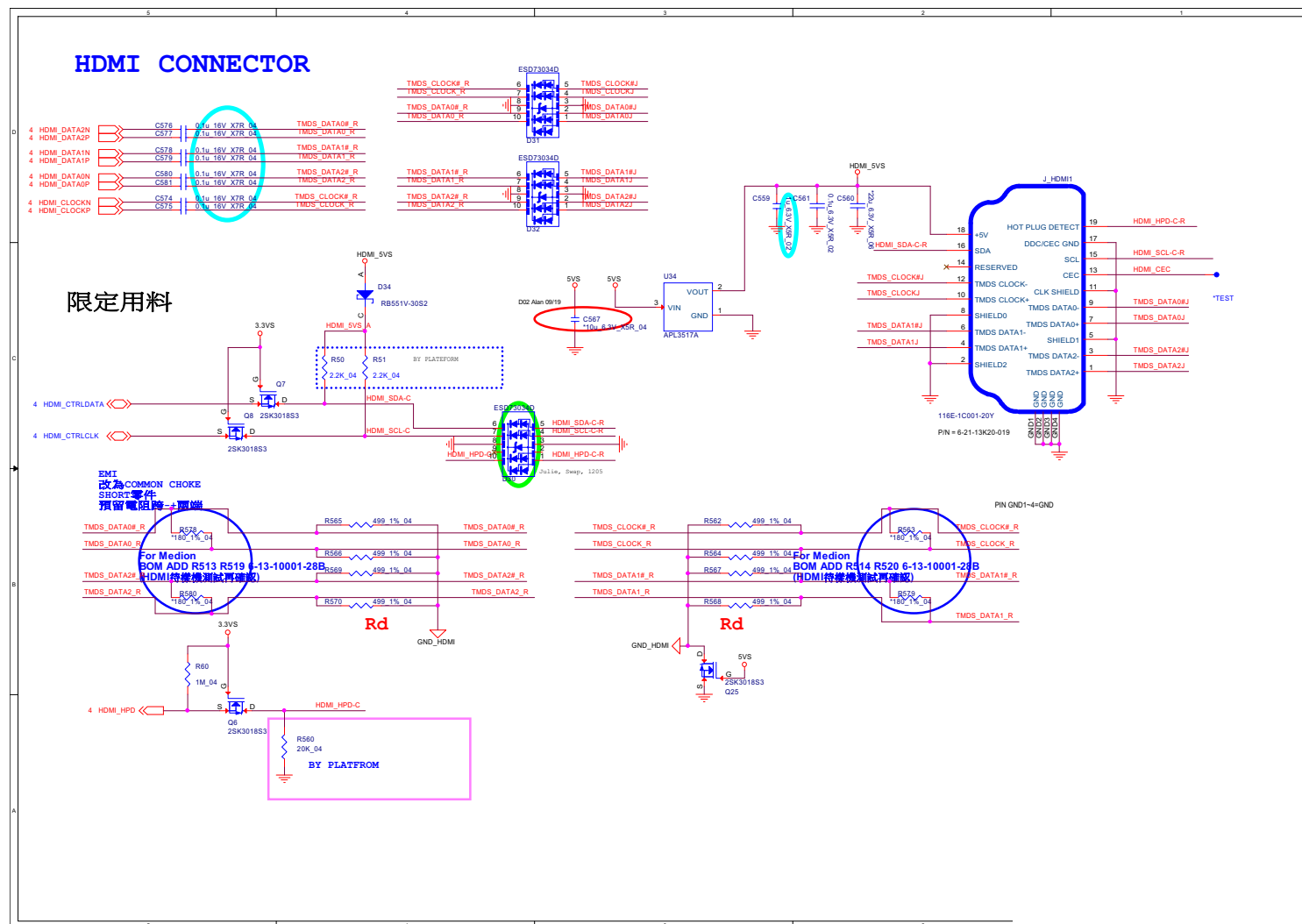
Sheet 32 of 64  
mDP

## B.Schematic Diagrams



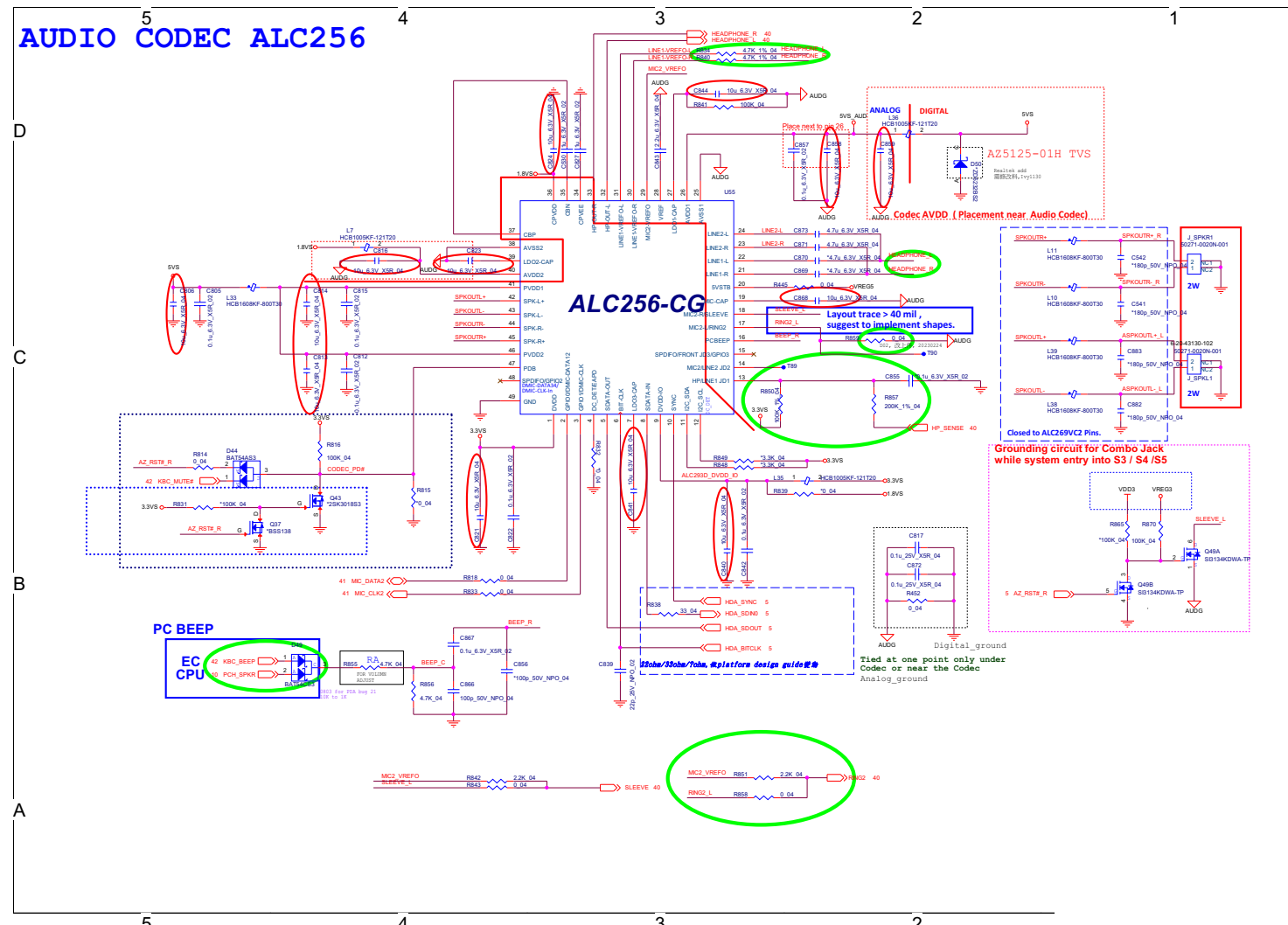
## HDMI

**Sheet 33 of 64**  
**HDMI**





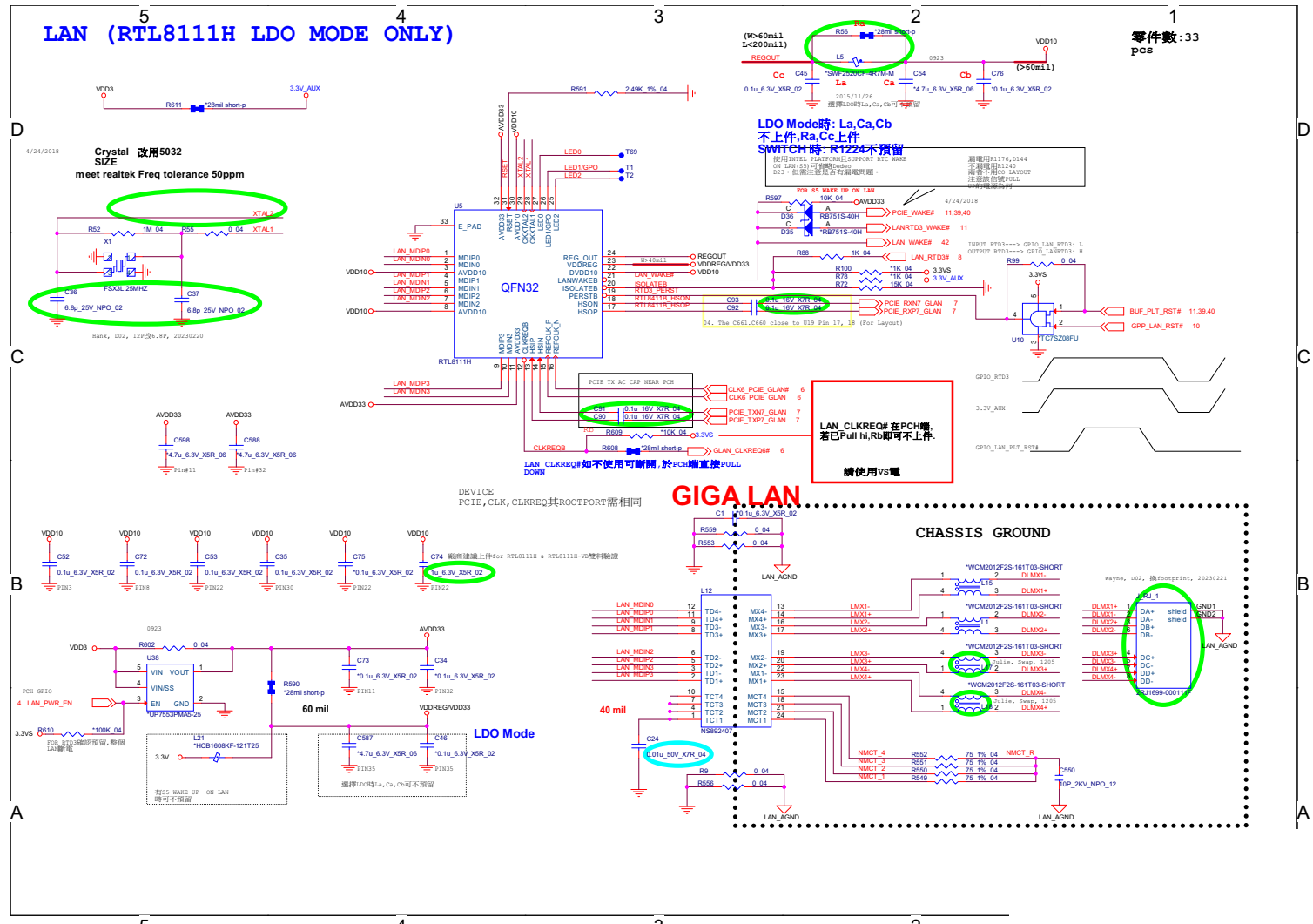
**Audio Codec B - 35**





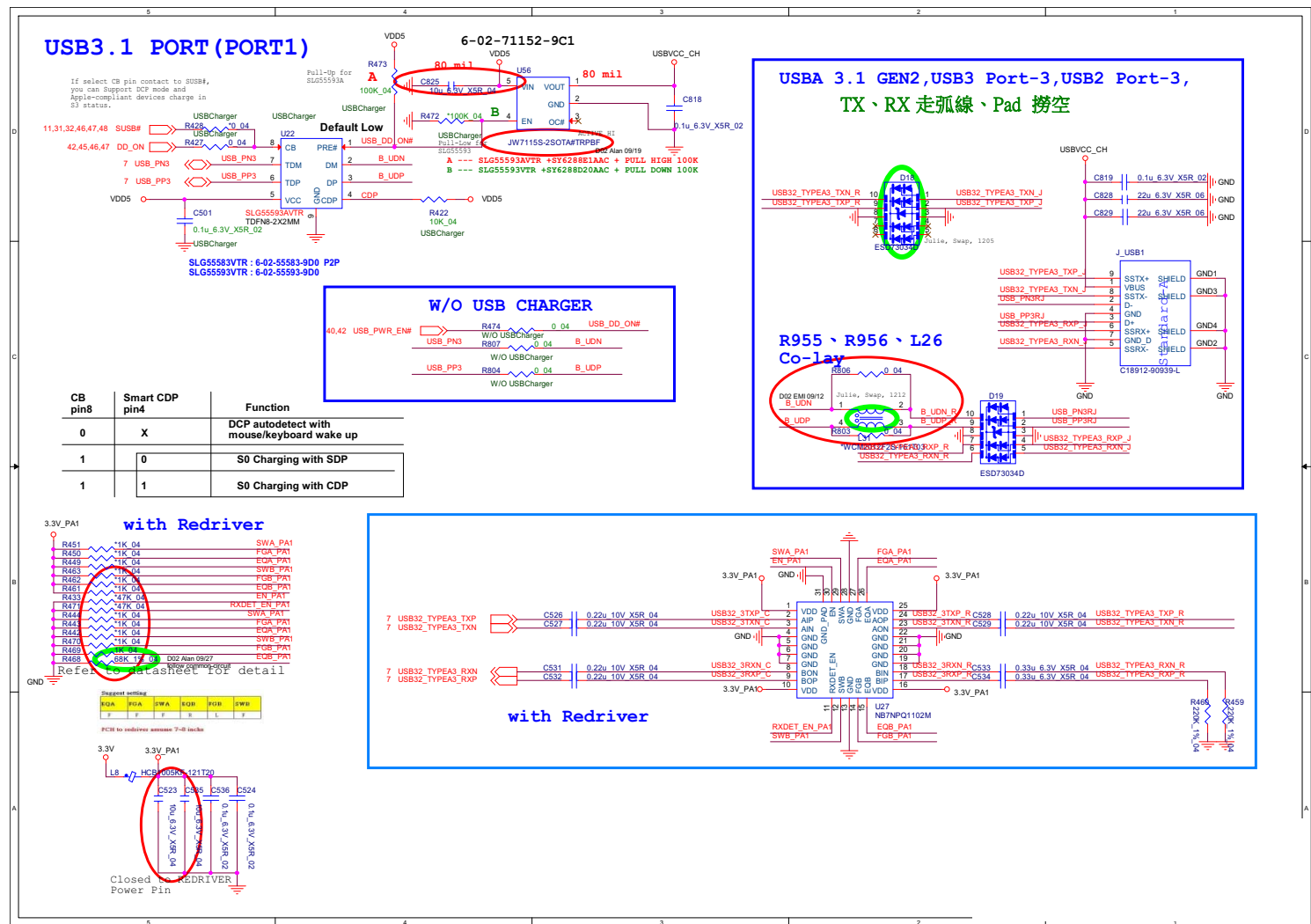
# LAN RTL8111H

Sheet 35 of 64  
LAN RTL8111H





# USB Gen2 Type-A

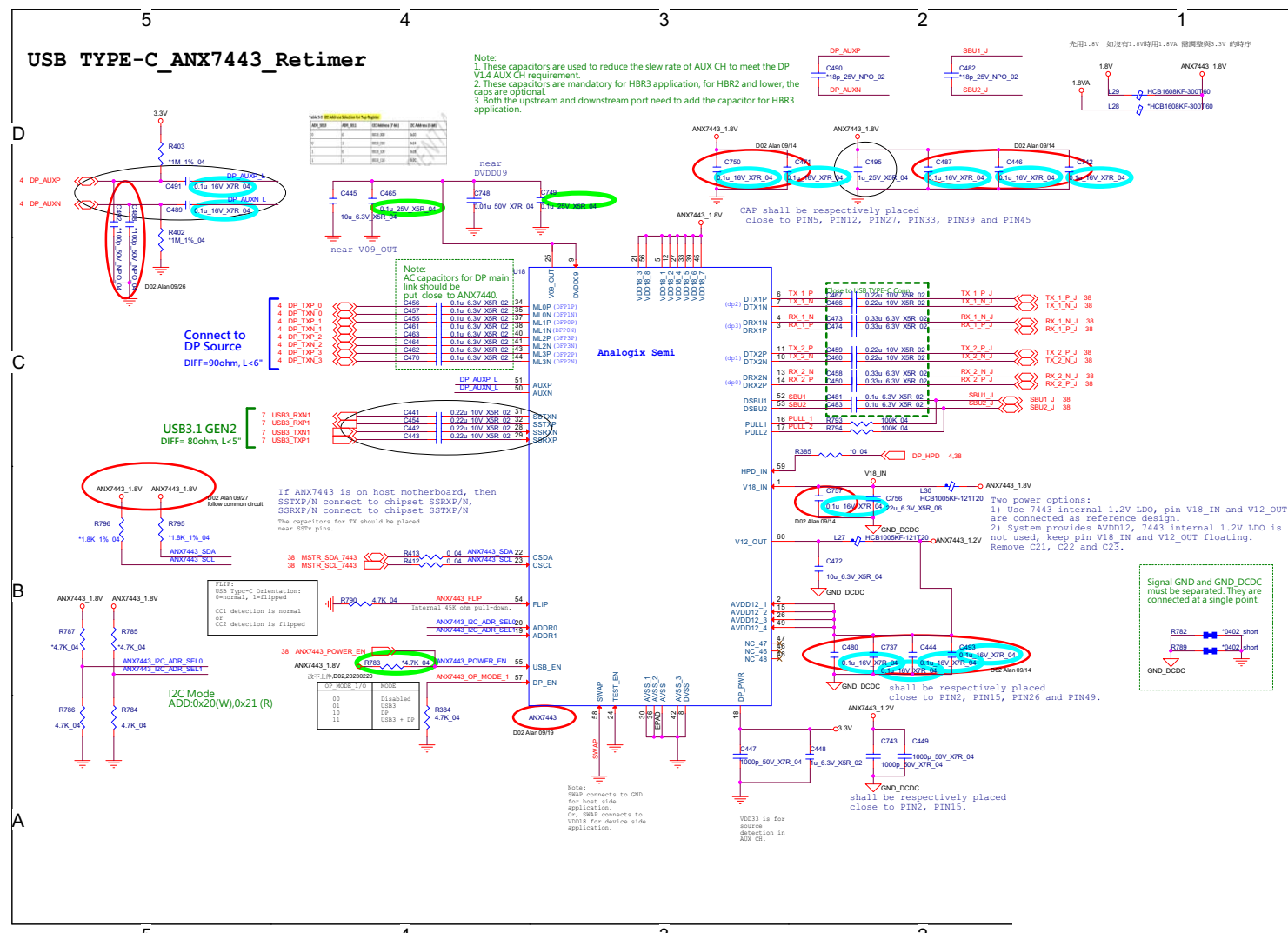


Sheet 36 of 64  
USB Gen2 Type-A



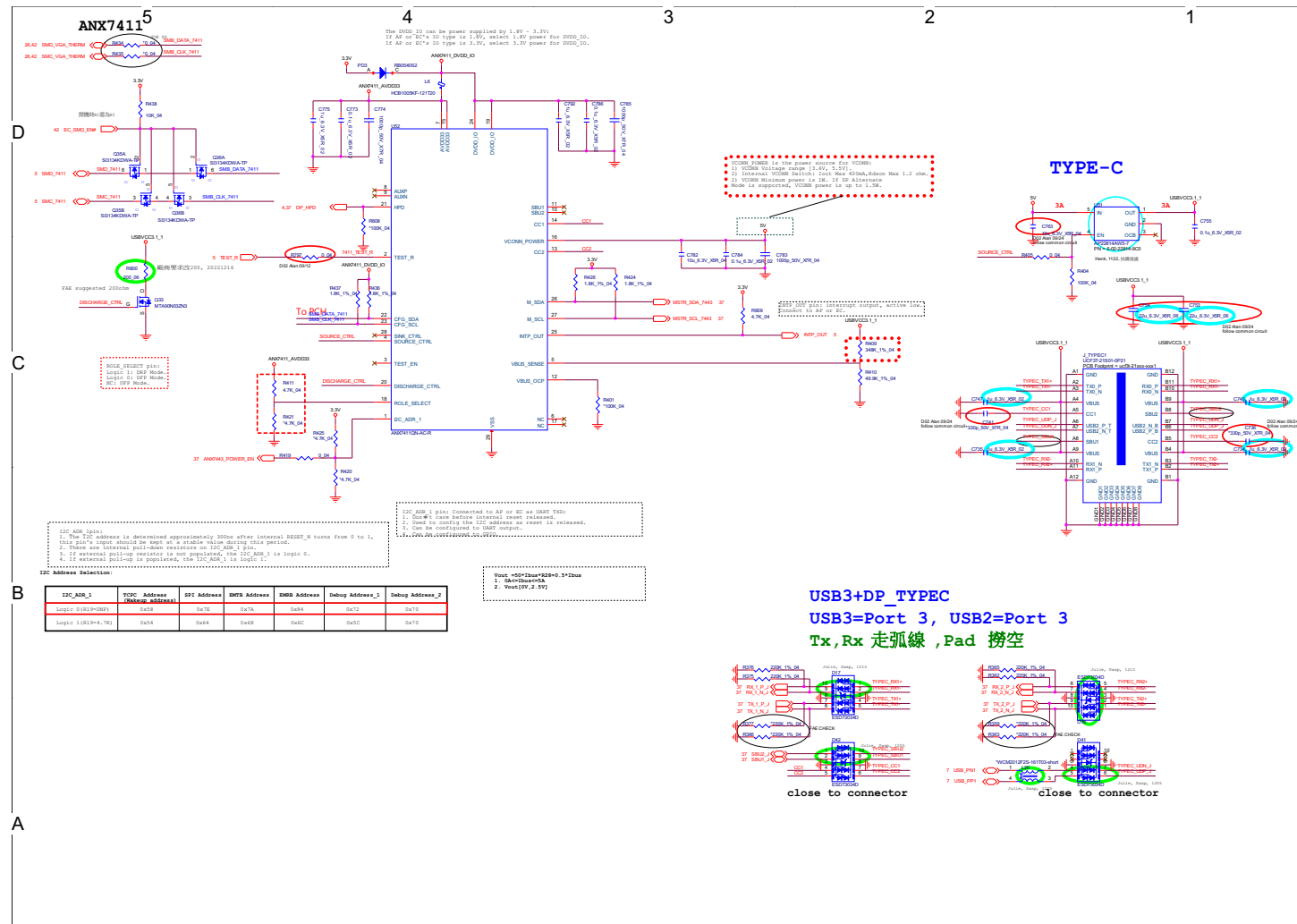
# ANX7443

Sheet 37 of 64  
ANX7443





# PD Controller

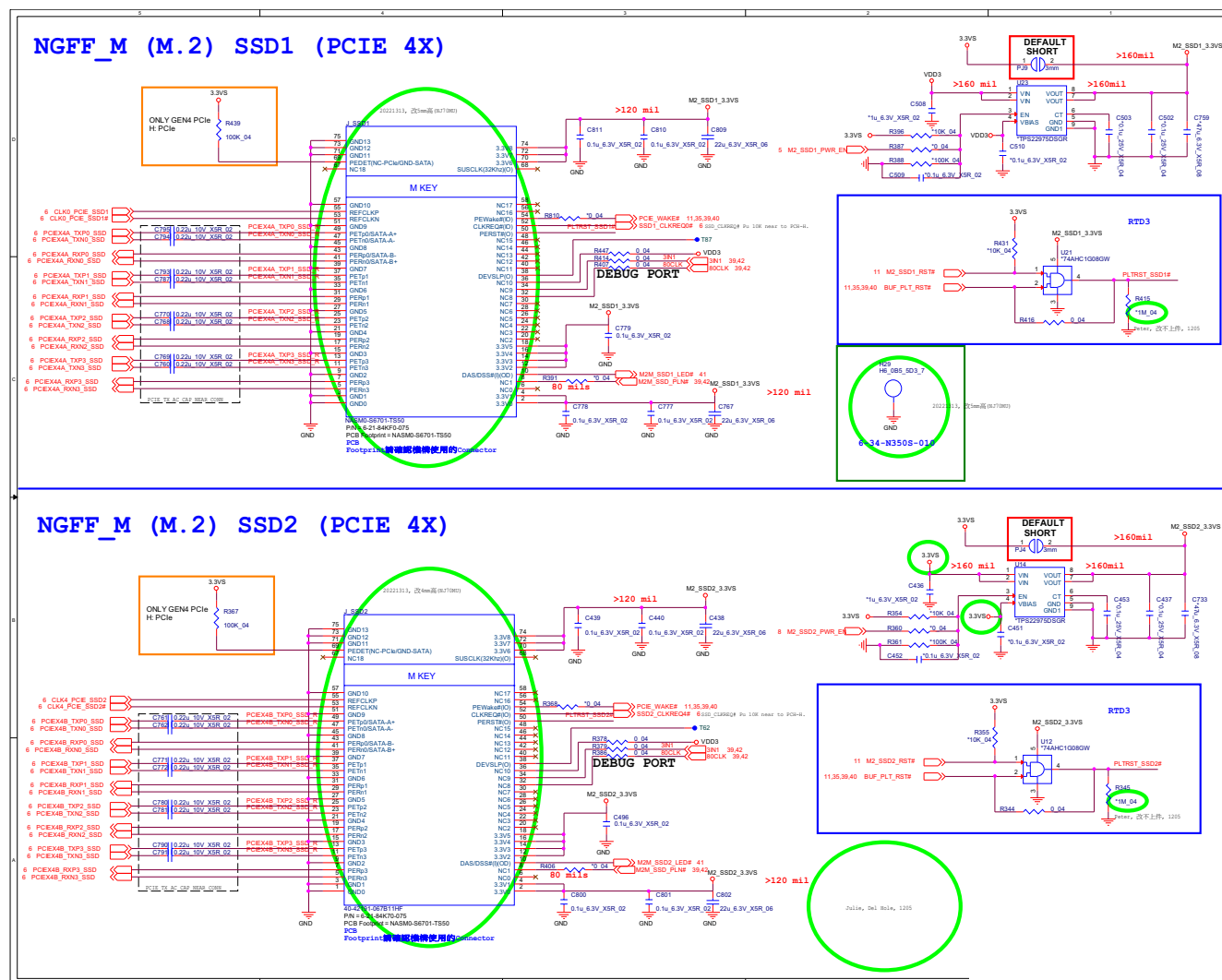


Sheet 38 of 64  
PD Controller

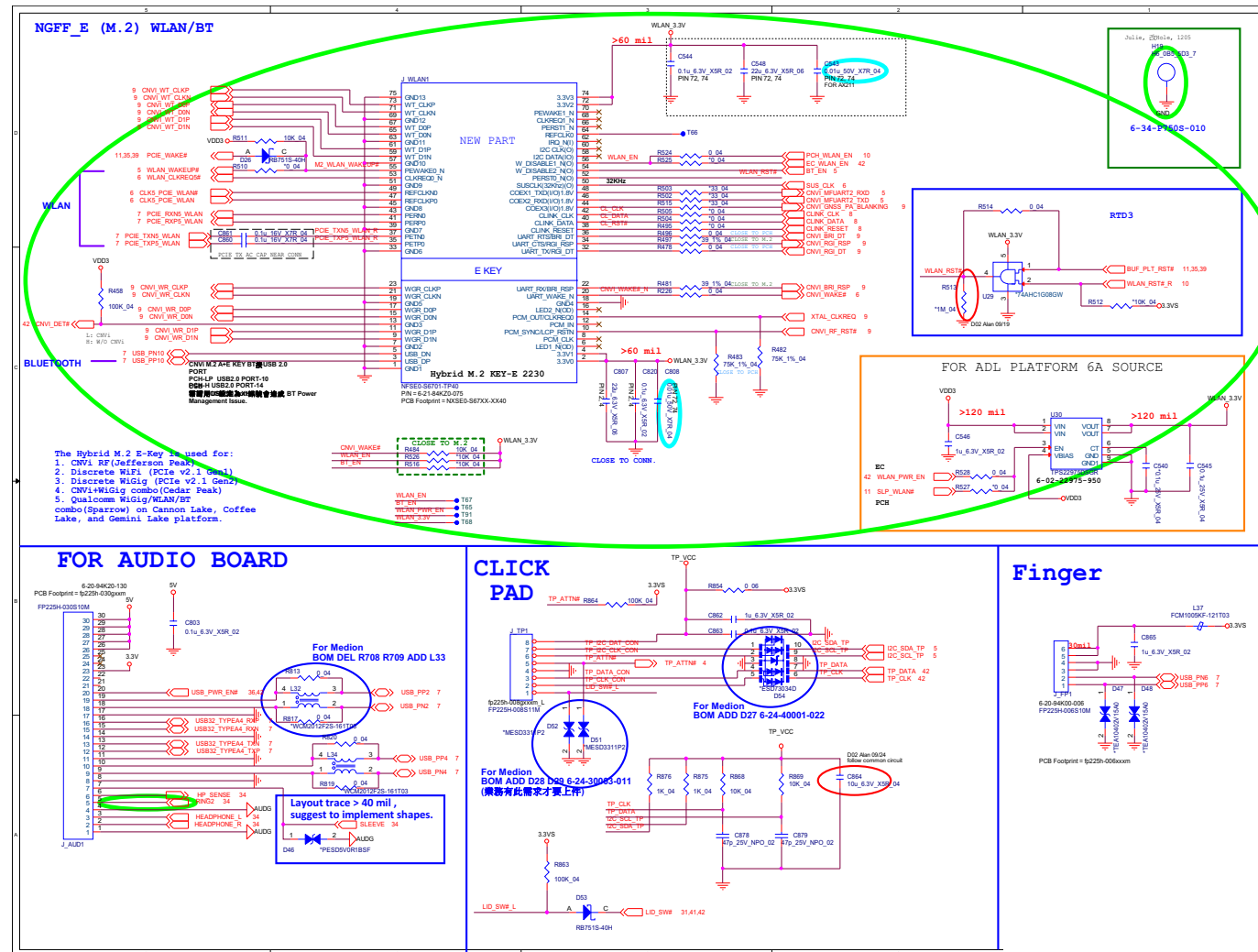


## M.2 PCIE 4X SSD

Sheet 39 of 64  
M.2 PCIE 4X SSD





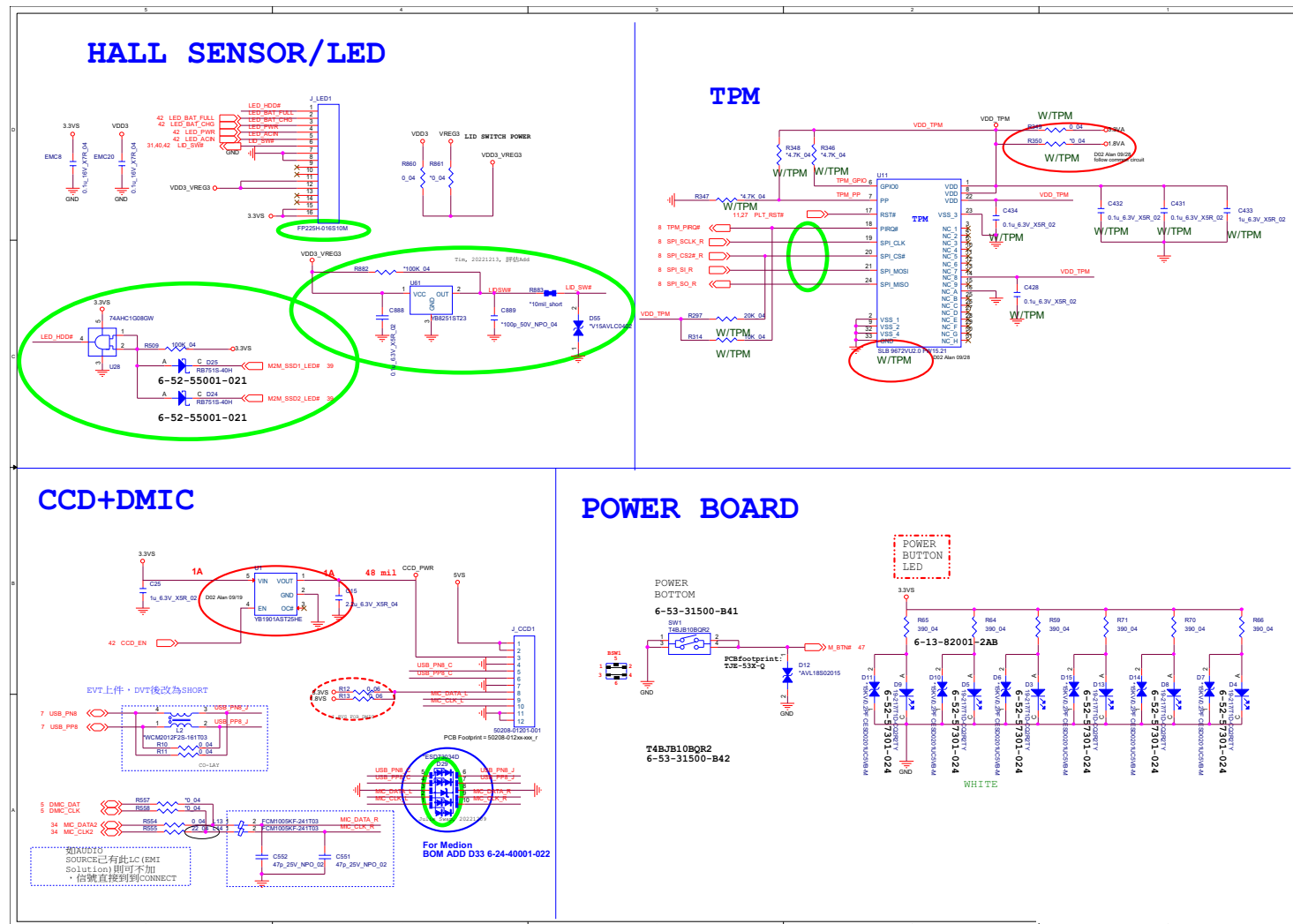




## Schematic Diagrams

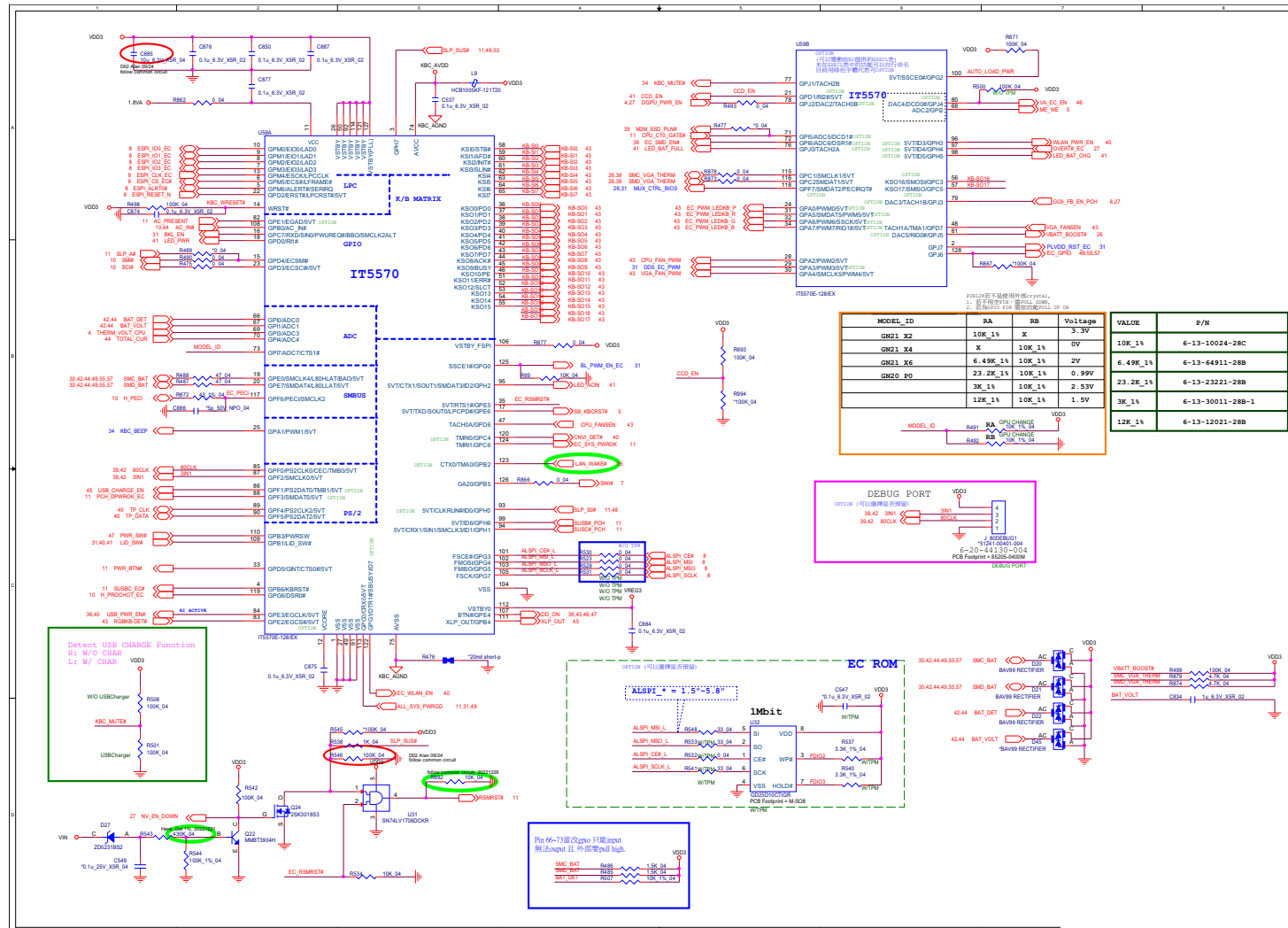
## LED, CCD, TPM, Power SW

Sheet 41 of 64  
LED, CCD, TPM,  
Power SW





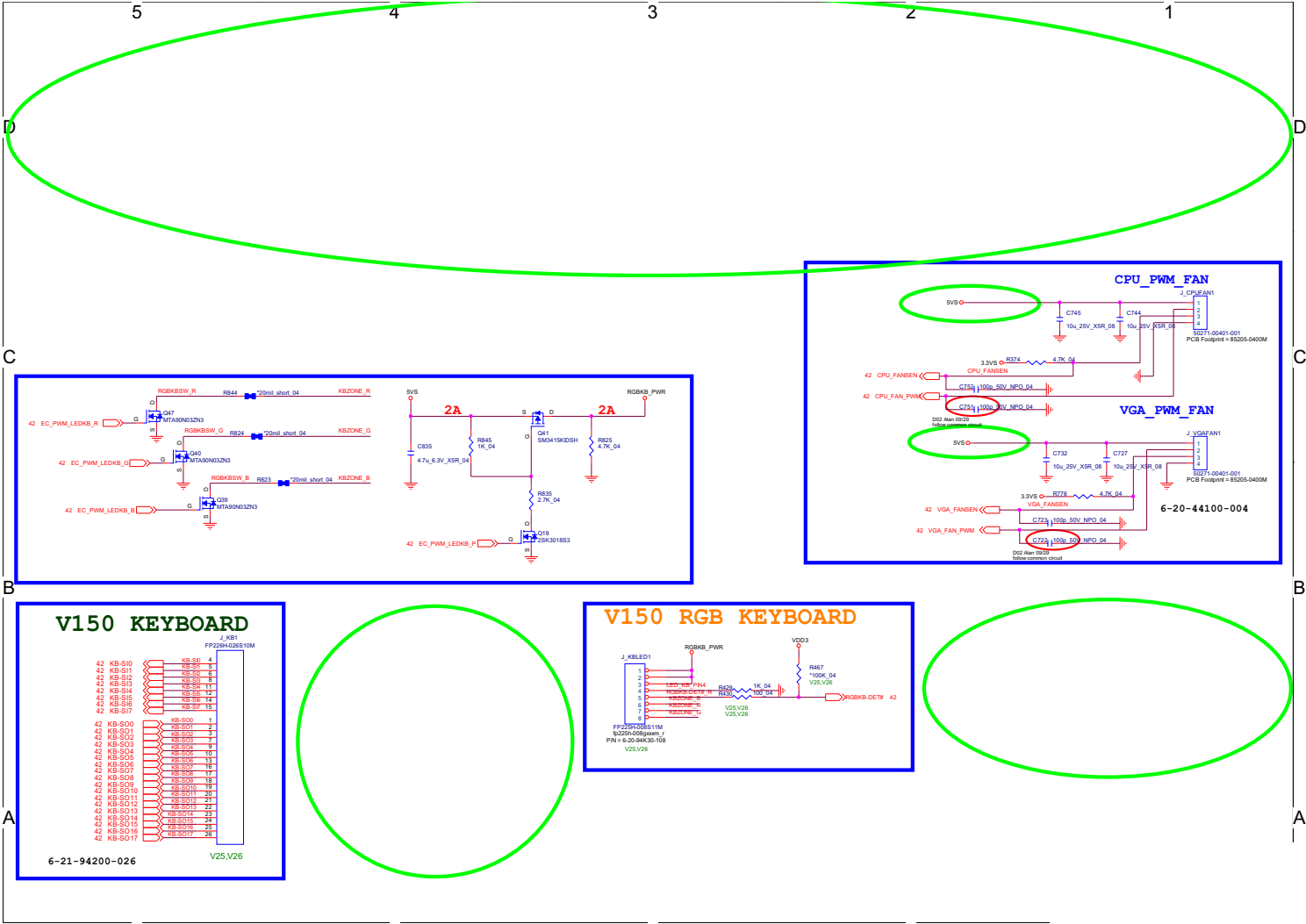
**KBC-ITE IT5570 B - 43**





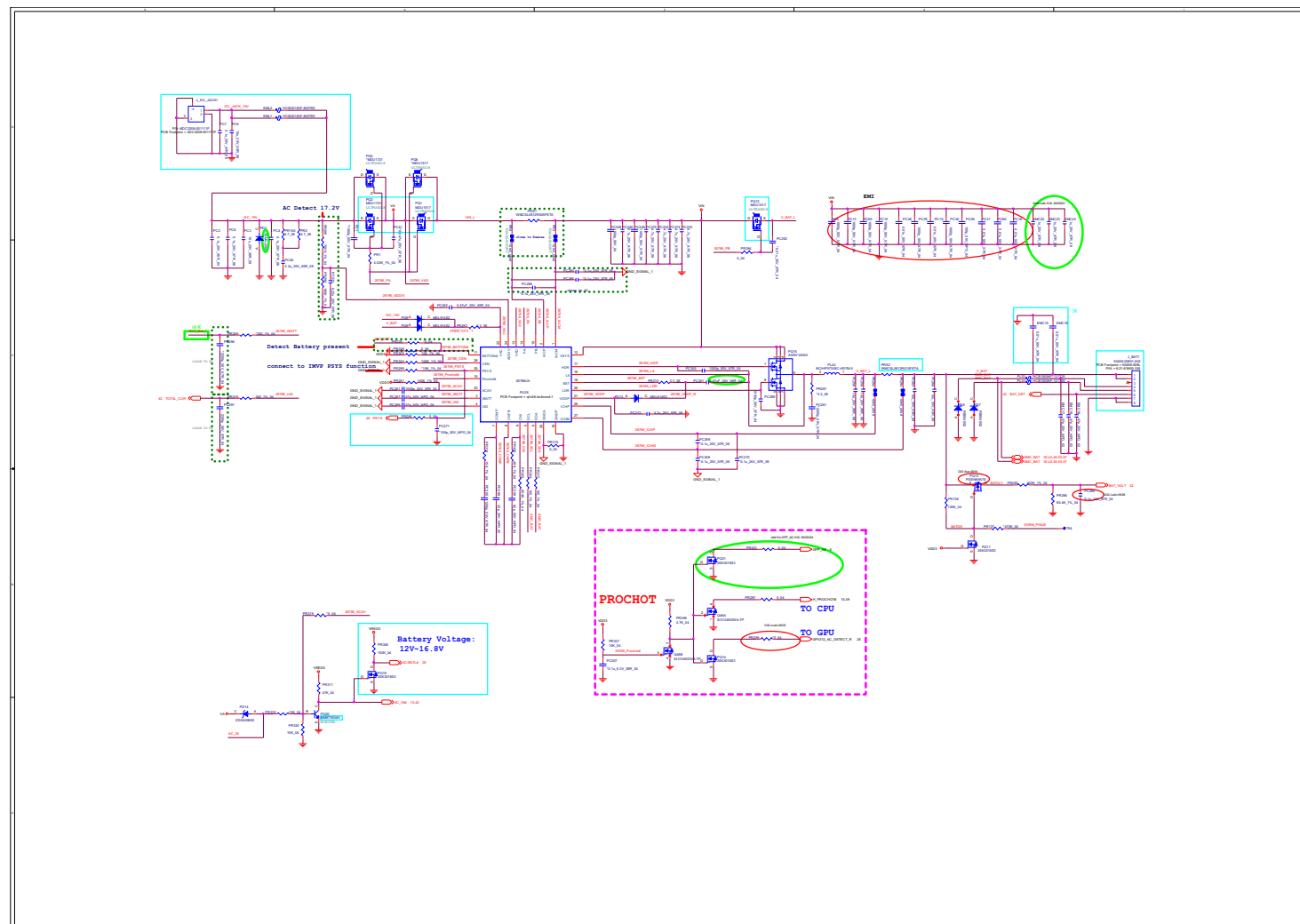
RGB KB

Sheet 43 of 64  
RGB KB





## AC\_In, Charger

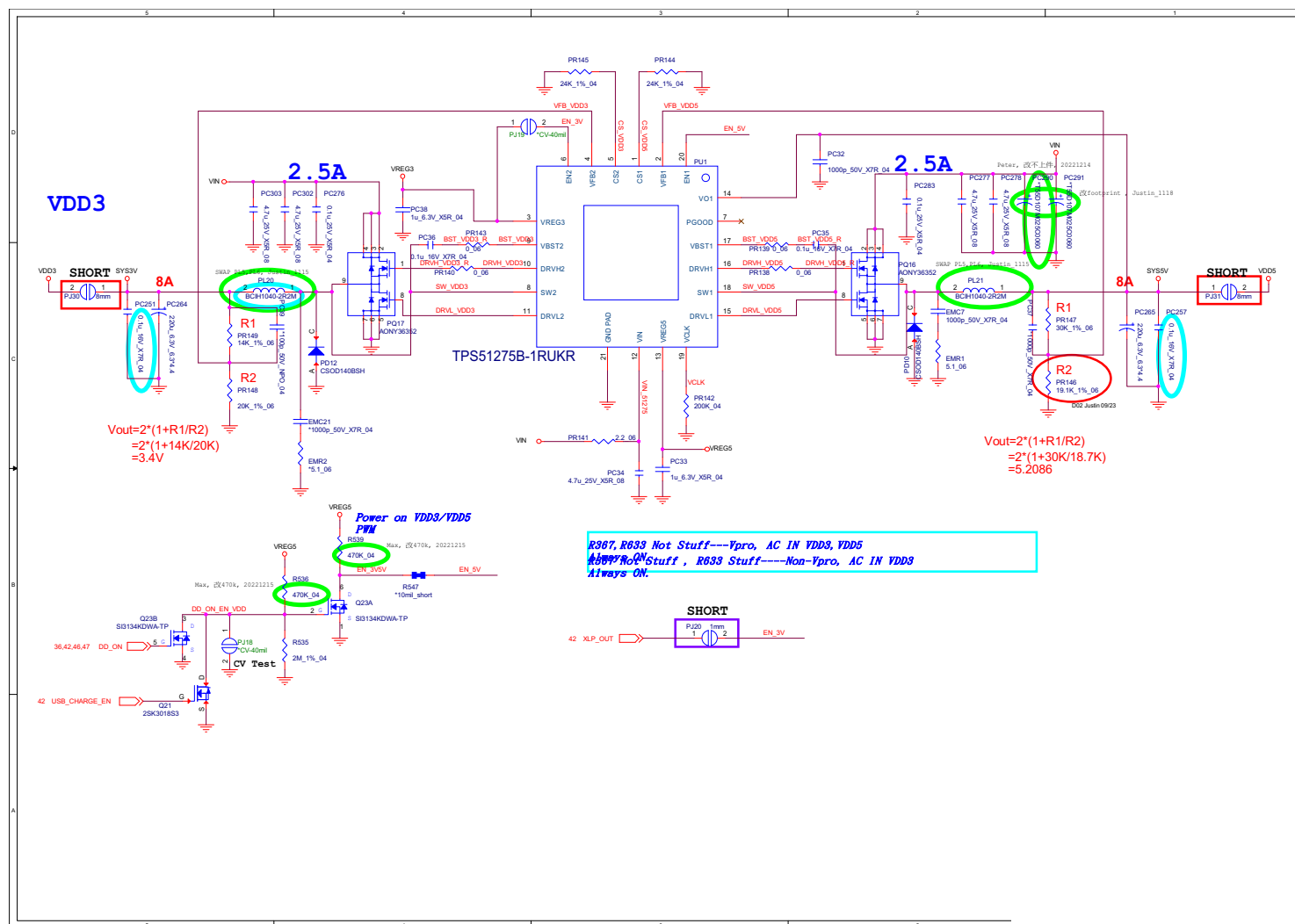


Sheet 44 of 64  
AC\_In, Charger



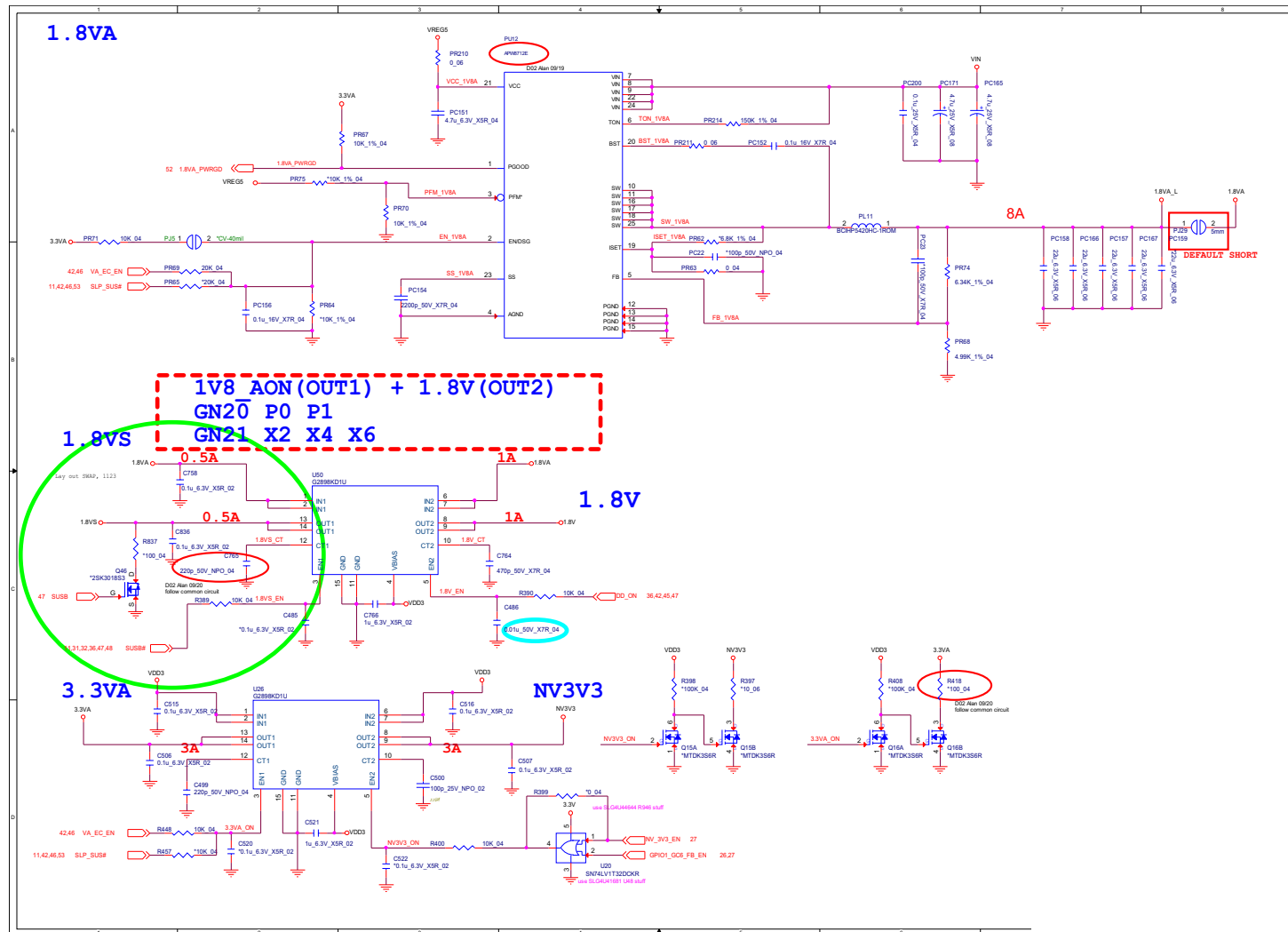
## VDD3, VDD5

**Sheet 45 of 64**  
**VDD3, VDD5**





Sheet 46 of 64  
1V8\_AON, NV3V3,  
3.3VA





**5V, 5VS, 3V, 3VS, 1.2VS**

**Sheet 47 of 64**  
**5V, 5VS, 3V, 3VS,**  
**1.2VS**





Sheet 48 of 64  
VCCST, VCC1P8

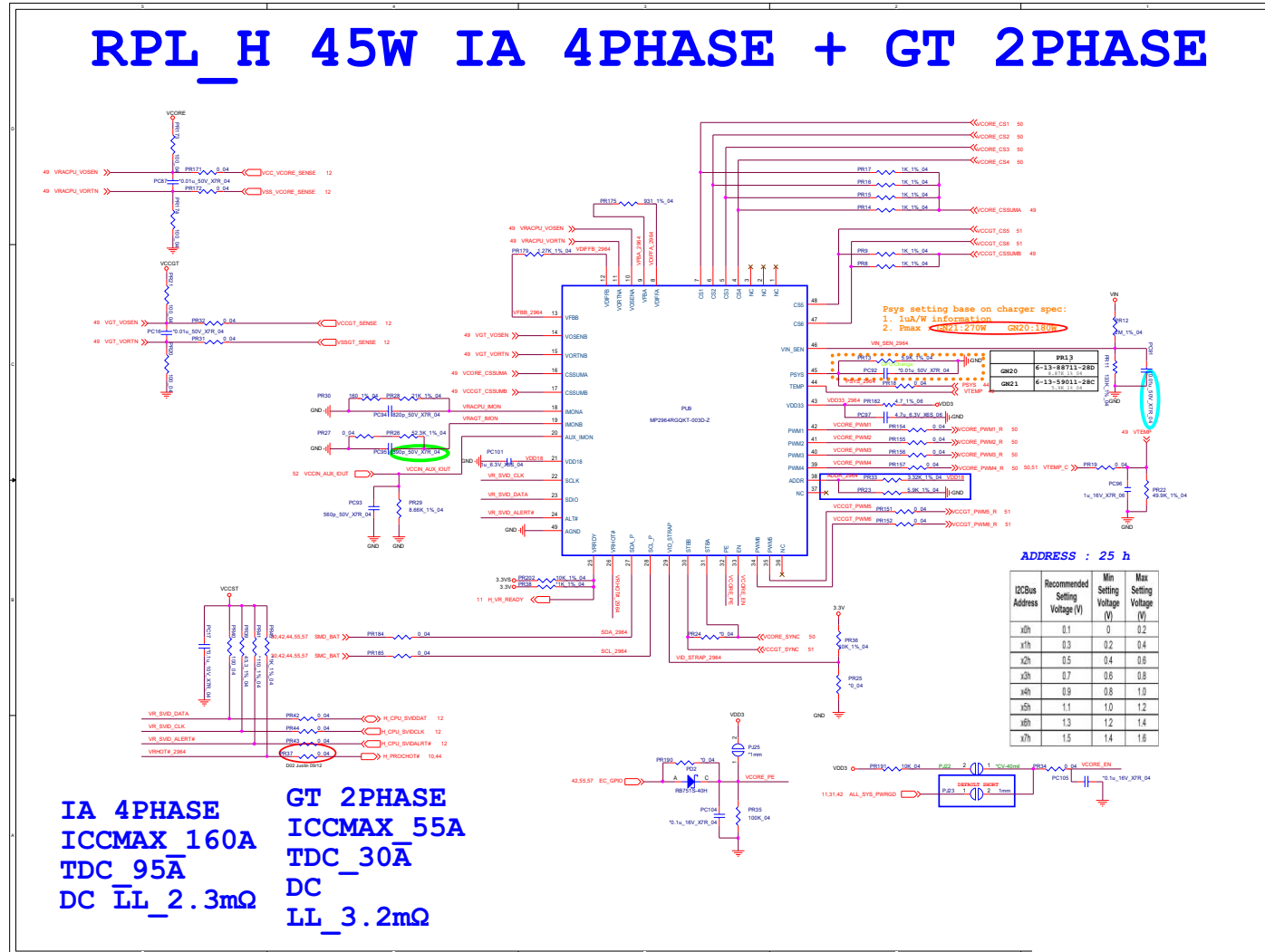




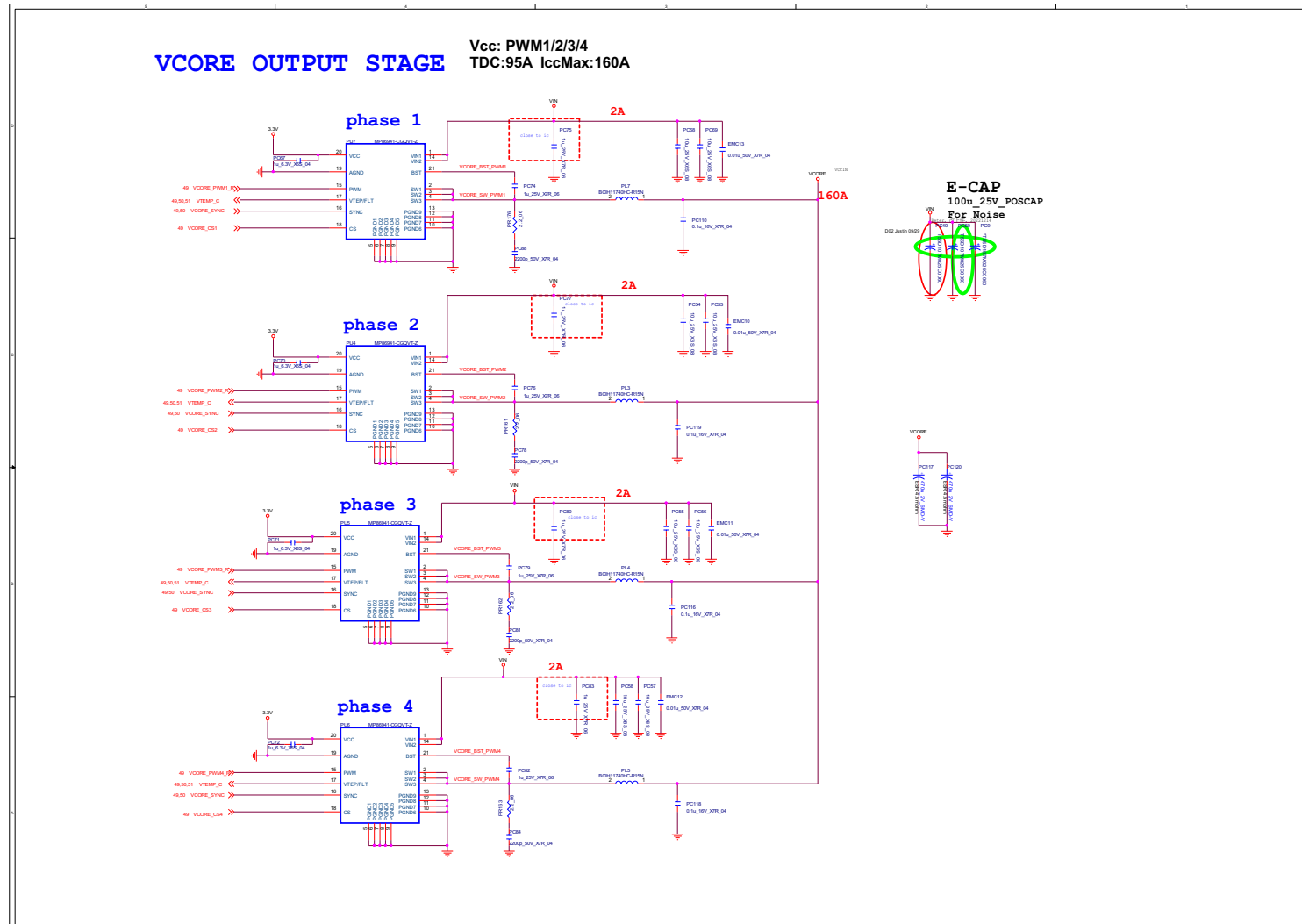
# MP2964 Controller

## RPL\_H 45W IA 4PHASE + GT 2PHASE

Sheet 49 of 64  
MP2964 Controller



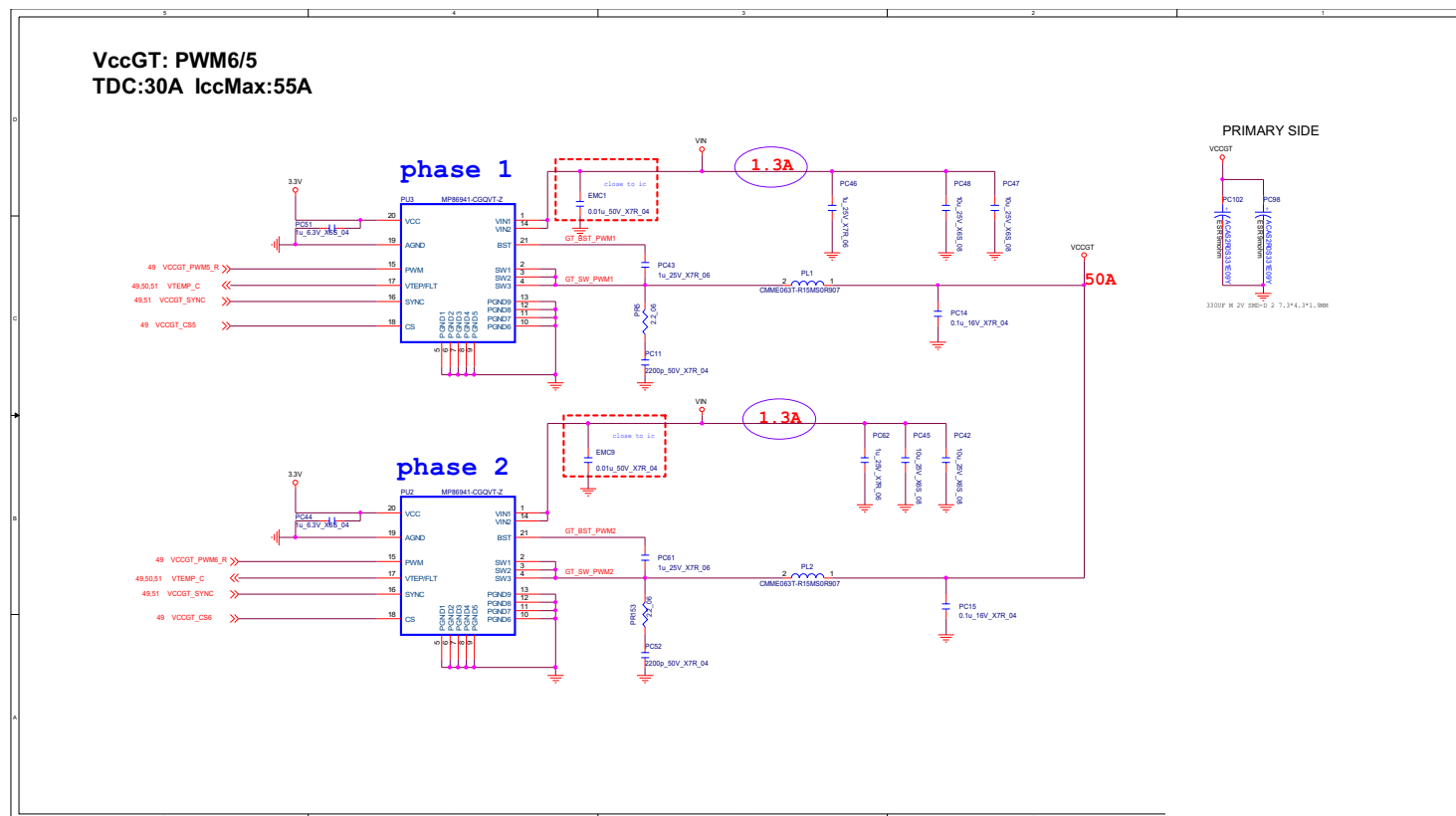






# VCCGT

Sheet 51 of 64  
VCCGT





**VCCIN\_AUX**

TDC 18A ICCMAX 34A

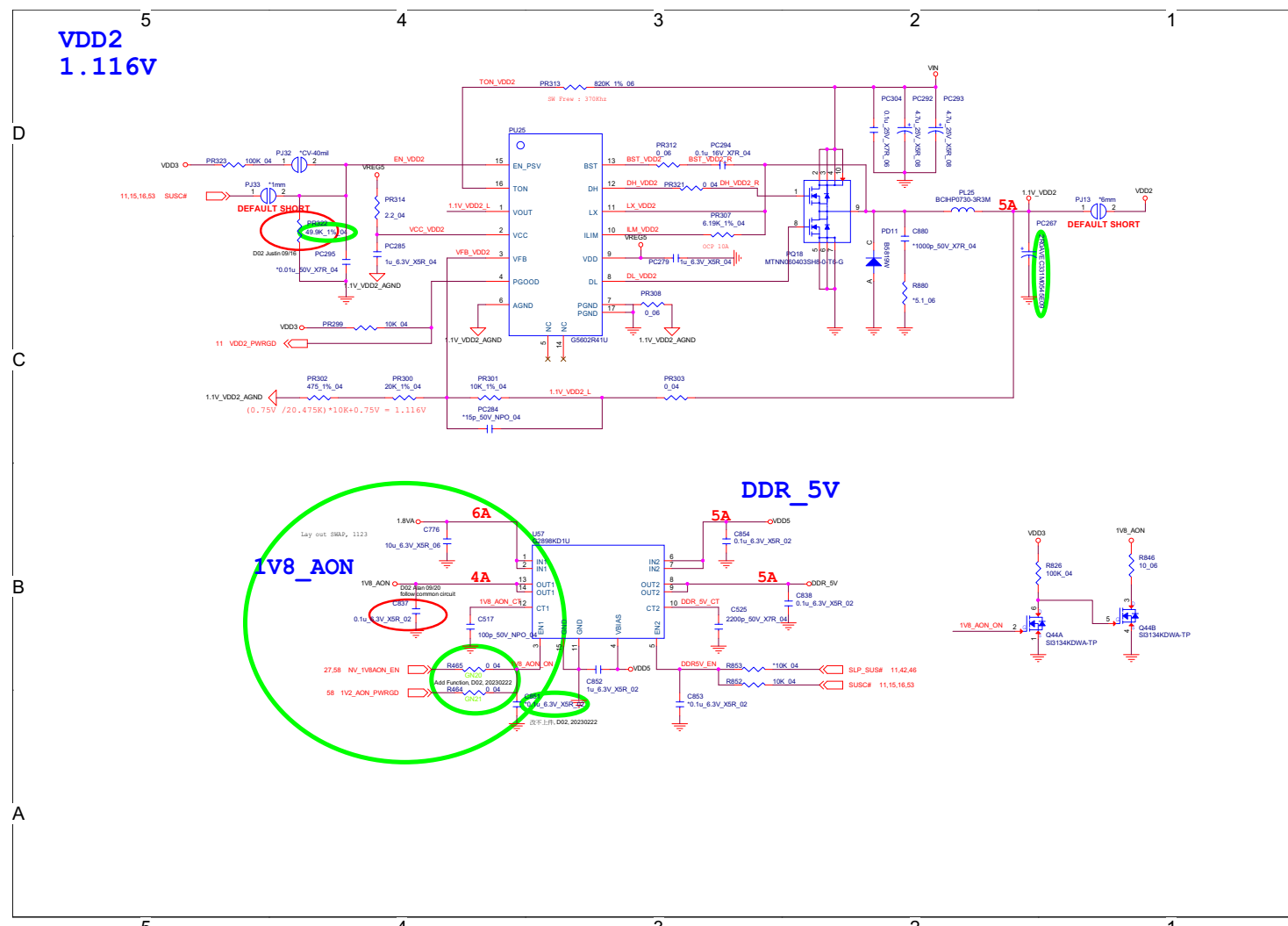
VID[1] Pin State	VID[0] Pin State	VCCIN_AUX_PCH Voltage (V)	Usage
0	0	0	Power Saving State
0	1	1.1	Power Saving State
1	0	1.65	Full Current
1	1	1.8	Initial boot for RKL PCH-H Full current

VCCIN AUX B - 53



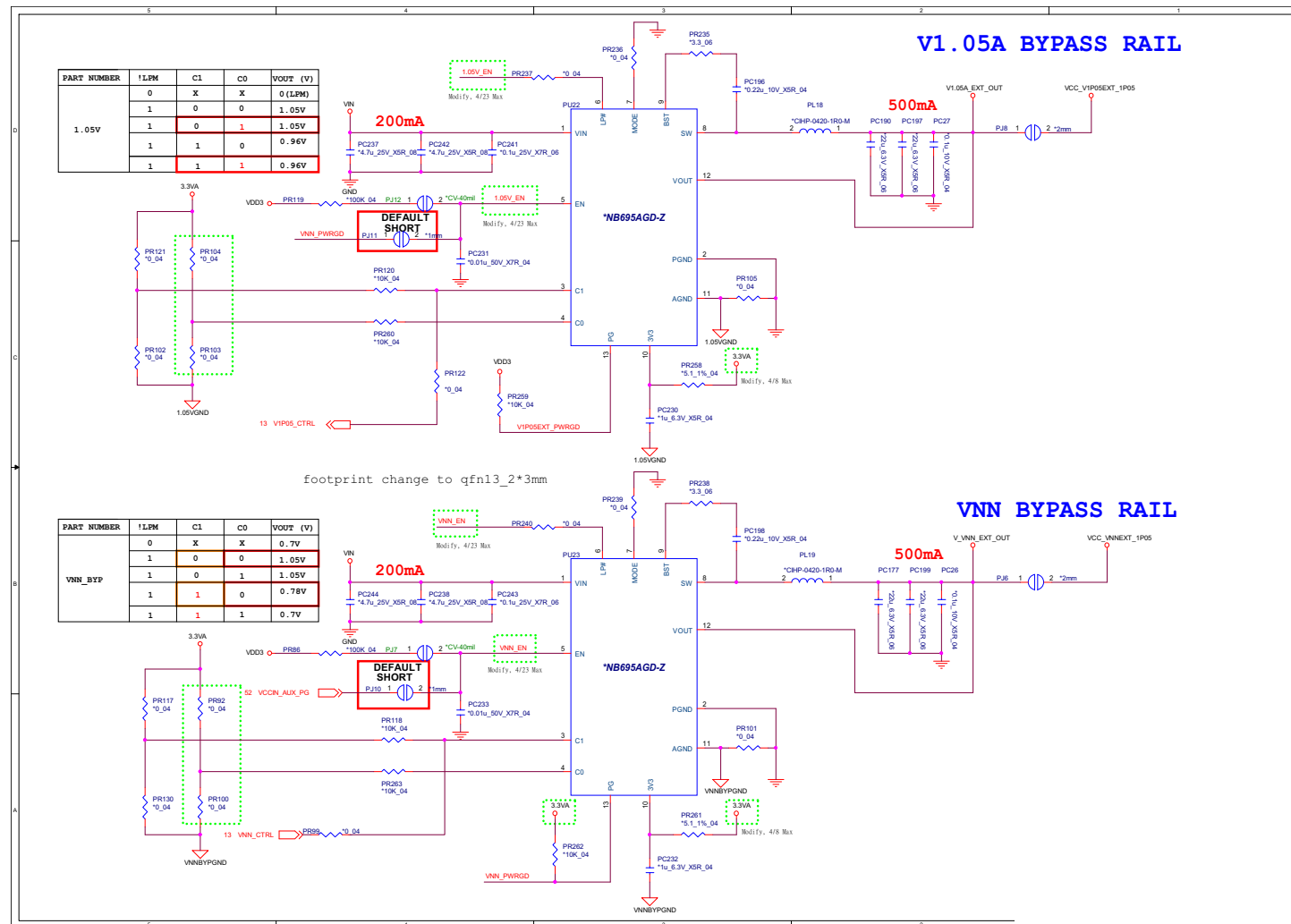
## VDD2, 1.8V

## B. Schematic Diagrams





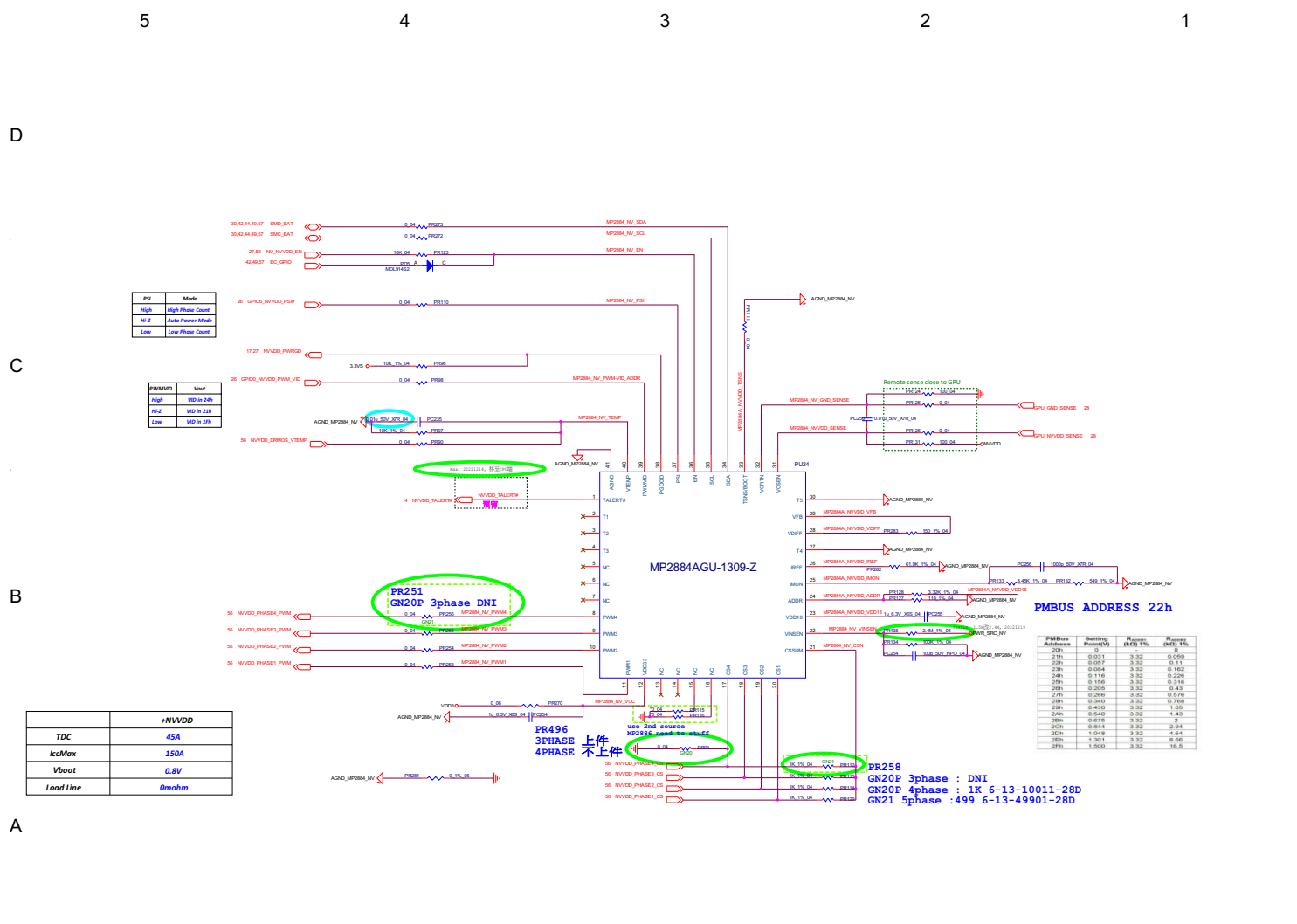
## VNN / V1.05A B - 55





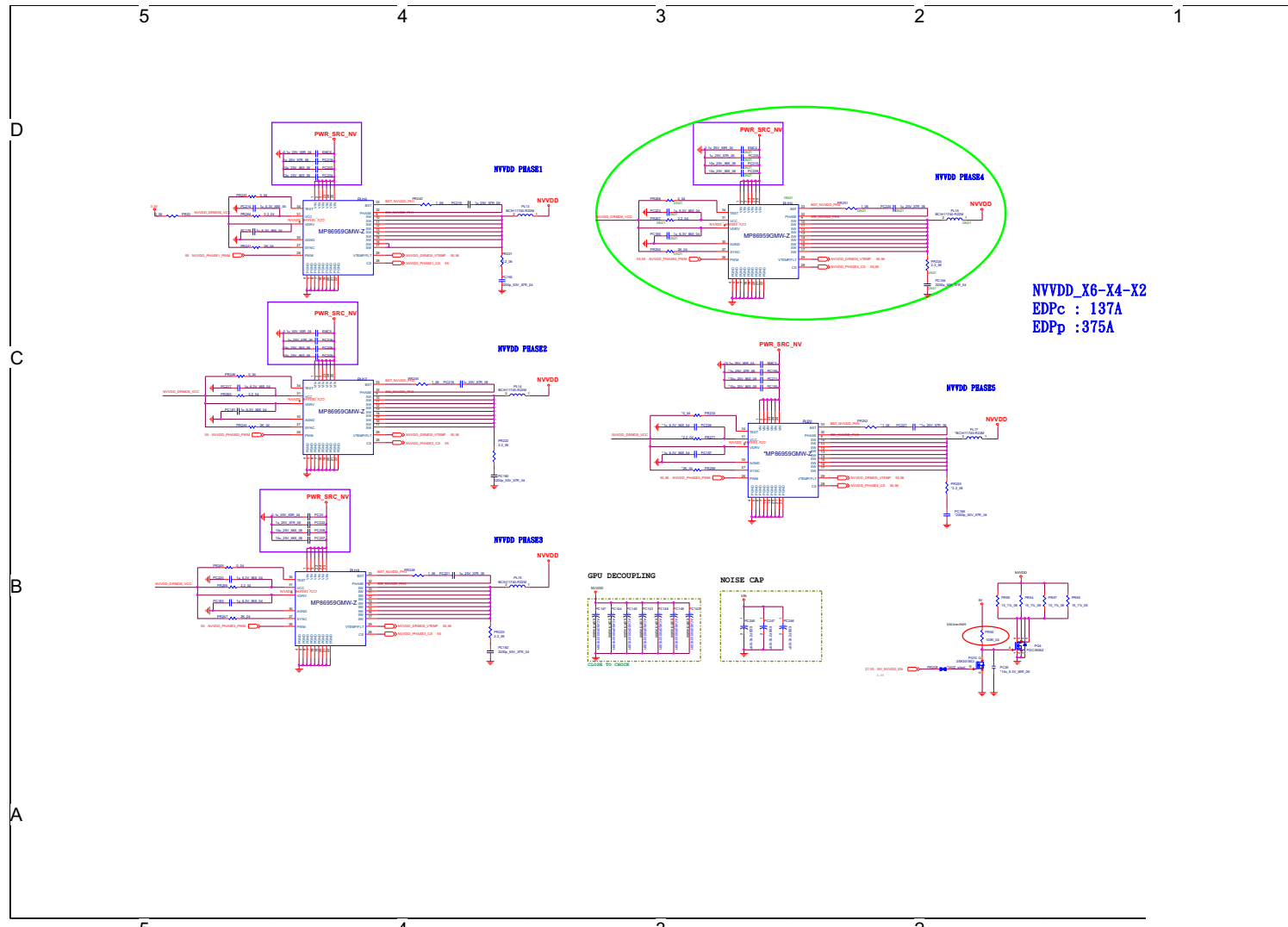
## NVVD1

Sheet 55 of 64  
NVVDD1





# NVVDD2

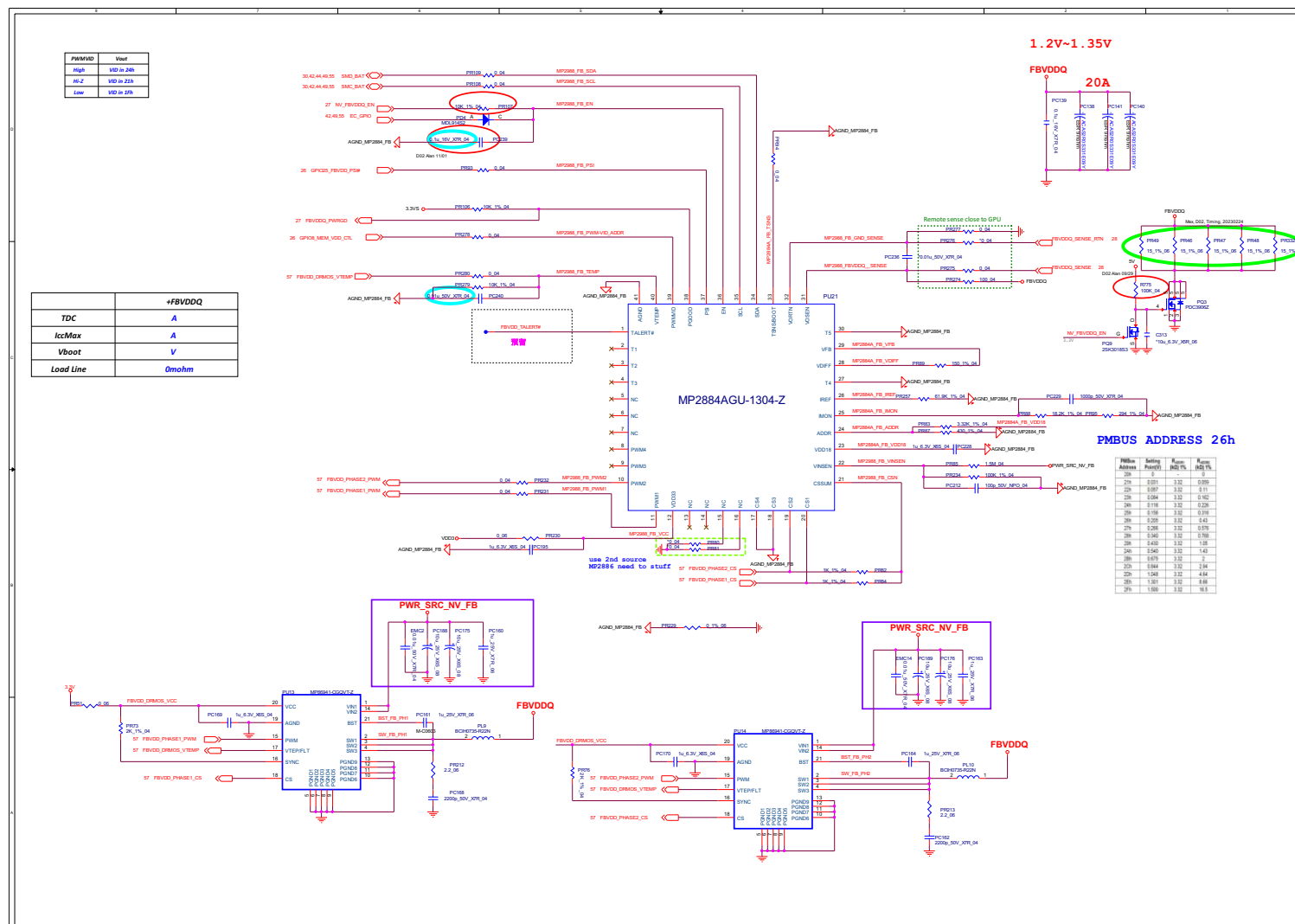


Sheet 56 of 64  
NVVDD2



**FBVDDQ**

Sheet 57 of 64  
FBVDDQ





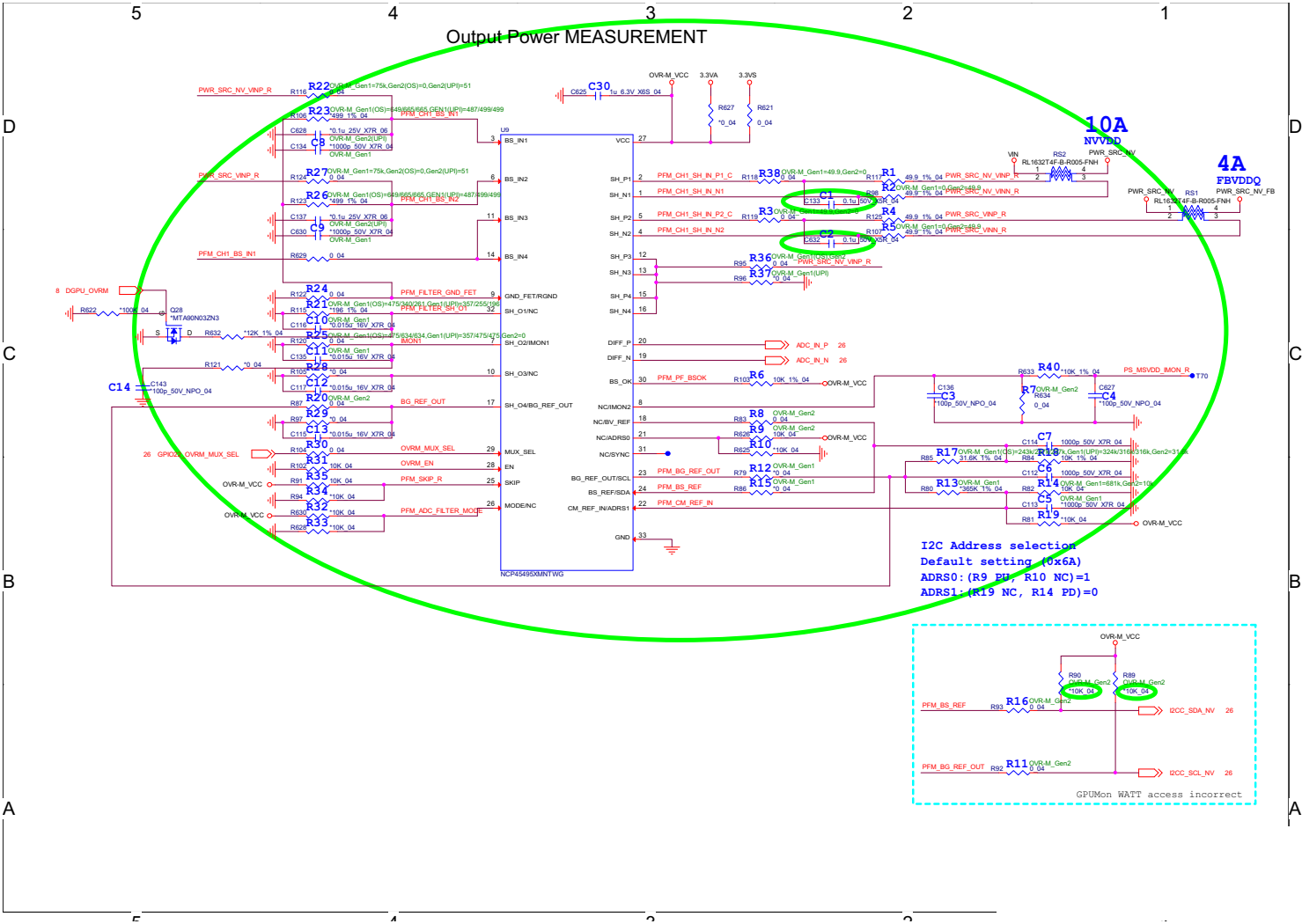




Schematic Diagrams

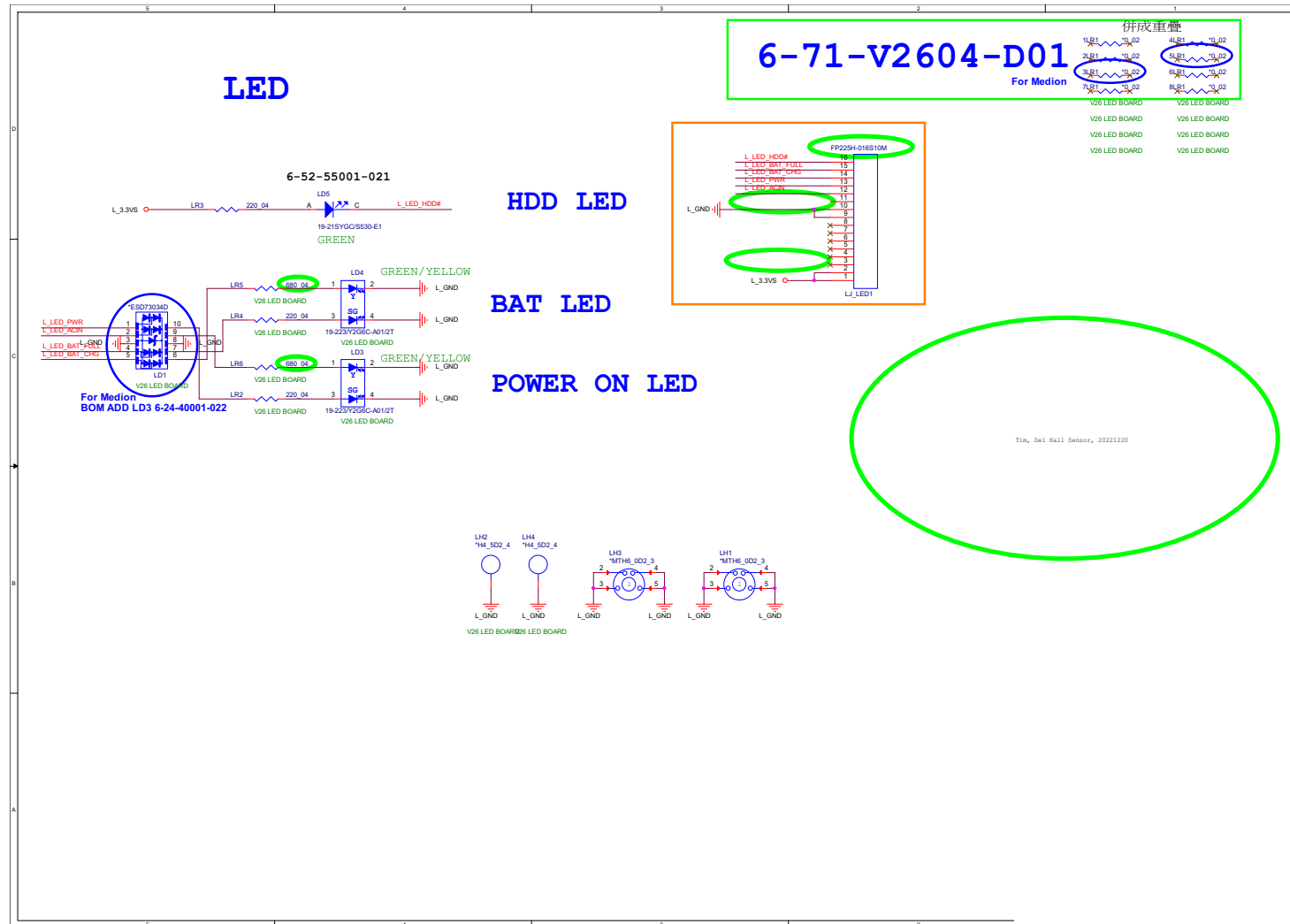
OVR-M

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OVR-M





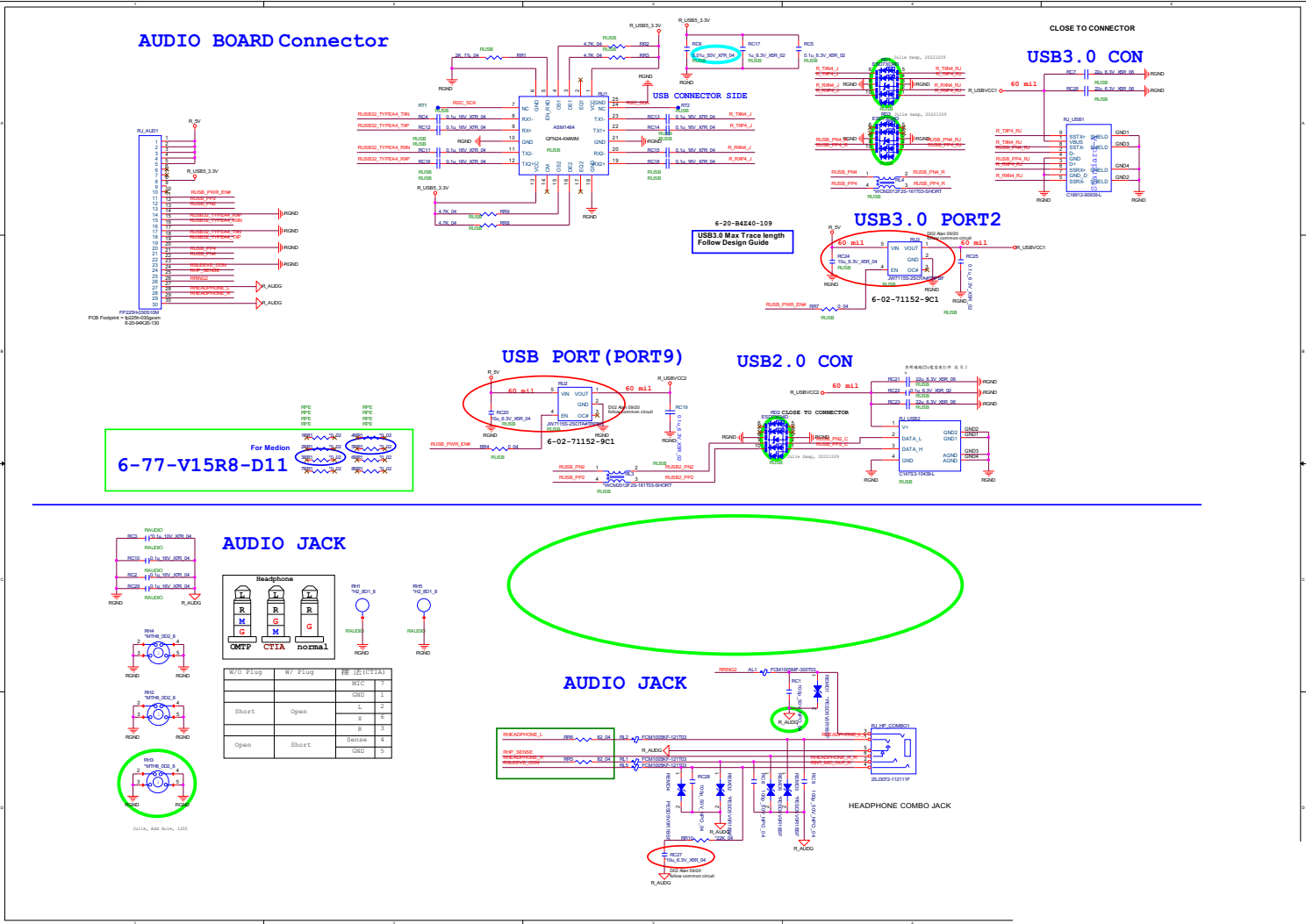
# 60 LED, Hall Sensor





Audio Board + Redriver

Sheet 61 of 64  
Audio Board +  
Redriver



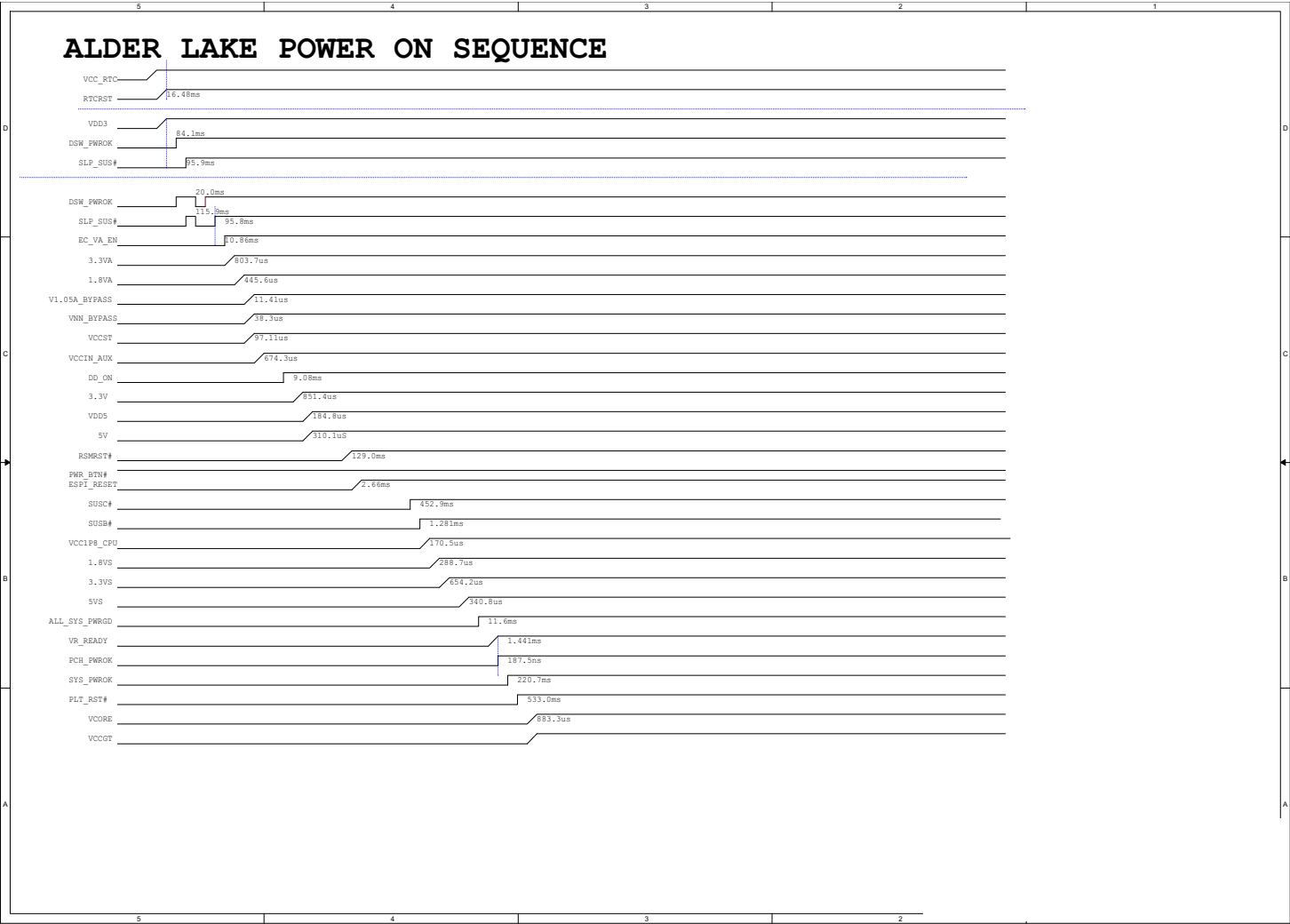


[illegible]

**50 LED, Hall Sensor B - 63**



Power Sequence



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Power Sequence



**Sheet 64 of 64**  
**Power Map**





