

# **SERVICE MANUAL**

*notebook*



**NH70EDQ / NH70RDQ**



**Notebook Computer**  
**NH70EDQ / NH70RDQ**  
**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 *NH70EDQ* / *NH70RDQ* 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, 9.23A (**180** 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.

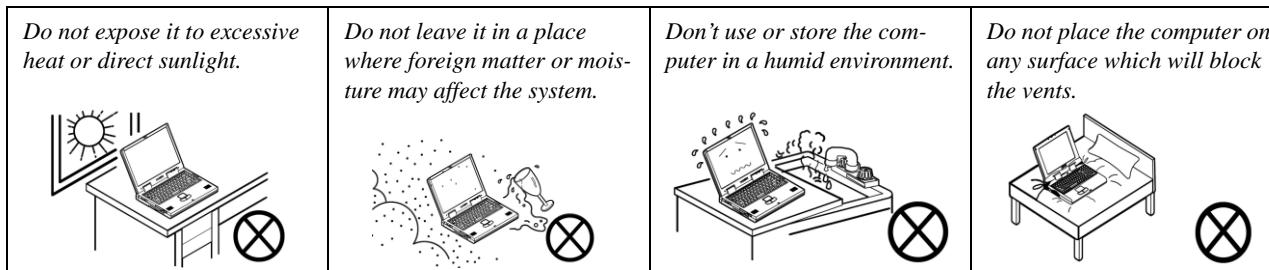
## Instructions for Care and Operation

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

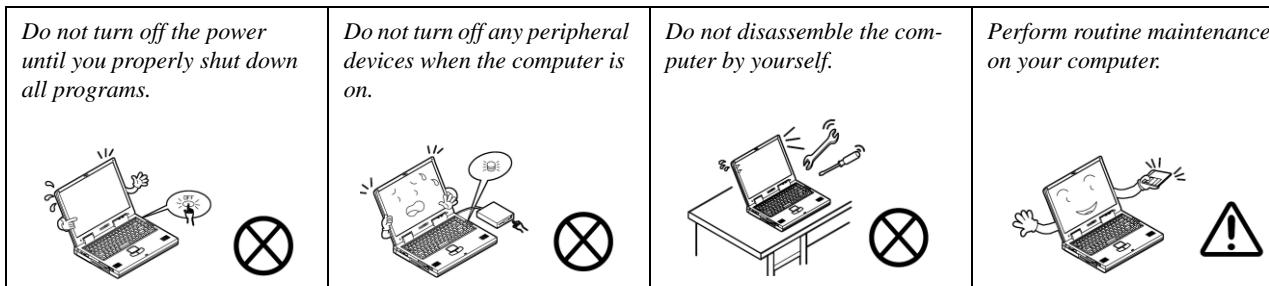
- 1. Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



- 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.



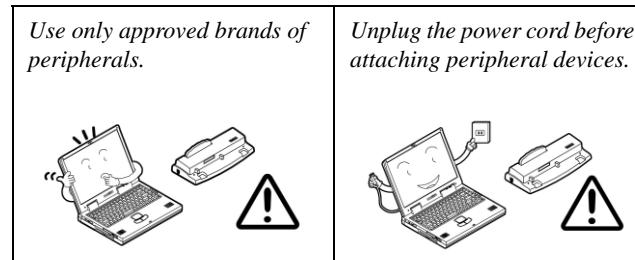
- 3. Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



## Preface

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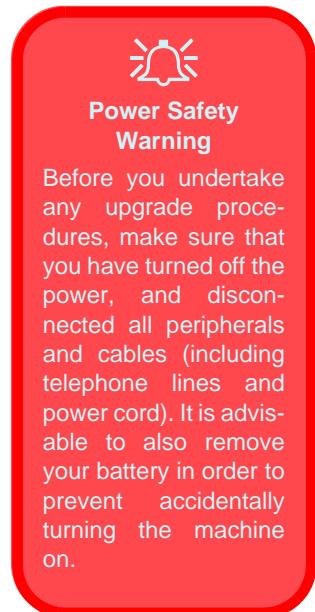
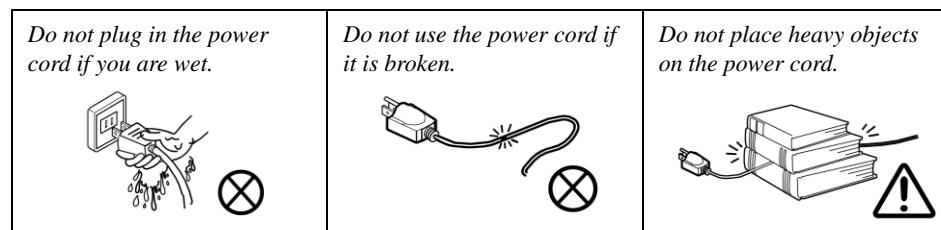
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



## 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.



## 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

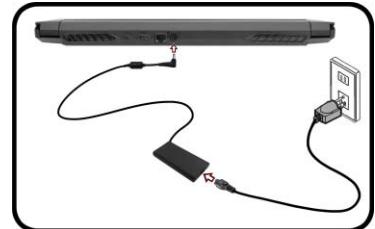
You may also need to consult the following manual for additional information:

### 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. **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 and **leave it there for 6 seconds or longer**.
  - Remove the adapter cord from the computer's DC-In jack, and then plug it back in again; the battery will now be unlocked.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 130 degrees); use the other hand (as illustrated in Figure 1) to support the base of the computer (**Note: Never** lift the computer by the lid/LCD).
7. Press the power button to turn the computer "on".



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



### Shut Down

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

Click 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

## **Introduction ..... 1-1**

Overview .....	1-1
Specifications .....	1-2
External Locator - Top View with LCD Panel Open .....	1-4
External Locator - Front & Right Side Views .....	1-5
External Locator - Left Side & Rear View .....	1-6
External Locator - Bottom View .....	1-7
Mainboard Overview - Top (Key Parts) .....	1-8
Mainboard Overview - Bottom (Key Parts) .....	1-9
Mainboard Overview - Top (Connectors) .....	1-10
Mainboard Overview - Bottom (Connectors) .....	1-11

## **Disassembly ..... 2-1**

Overview .....	2-1
Maintenance Tools .....	2-2
Connections .....	2-2
Maintenance Precautions .....	2-3
Disassembly Steps .....	2-4
Removing the Battery .....	2-5
Removing the Keyboard .....	2-6
Removing the Hard Disk Drive .....	2-7
Removing the System Memory (RAM) .....	2-9
Removing the M.2 SSD Module .....	2-10
Removing the Wireless LAN Module .....	2-11
Wireless LAN, Combo Module Cables .....	2-12
Removing the CCD .....	2-13

## **Part Lists ..... A-1**

Part List Illustration Location .....	A-2
Top .....	A-3
Bottom .....	A-4

Main Board .....	A-5
------------------	-----

HDD .....	A-6
-----------	-----

LCD .....	A-7
-----------	-----

## **Schematic Diagrams..... B-1**

System Block Diagram .....	B-2
Processor 1/6 .....	B-3
Processor 2/6 .....	B-4
Processor 3/6 .....	B-5
Processor 4/6 .....	B-6
Processor 5/6 .....	B-7
Processor 6/6 .....	B-8
DDR4 CHA SO-DIMM .....	B-9
DDR4 CHB SO-DIMM .....	B-10
VGA PCI Express .....	B-11
GPU Frame Buffer Partition .....	B-12
Frame Buffer A .....	B-13
Frame Buffer A .....	B-14
Frame Buffer B .....	B-15
Frame Buffer B .....	B-16
Frame Buffer C/D .....	B-17
Frame Buffer C .....	B-18
Frame Buffer C .....	B-19
GPU Decoupling 1 .....	B-20
GPU Decoupling 2 .....	B-21
Straps and XTAL .....	B-22
IFP I/O Interface .....	B-23
Misc - GPIO, I2C and ROM .....	B-24
NVIDIA Power Sequence .....	B-25
GPU NVVDD, FBVDDQ .....	B-26
GPU GND .....	B-27

## Preface

---

mDP .....	B-28
mDP .....	B-29
Panel, Inverter .....	B-30
HDMI .....	B-31
PCH 1/9 .....	B-32
PCH 2/9 .....	B-33
PCH 3/9 .....	B-34
PCH 4/9 .....	B-35
PCH 5/9 .....	B-36
PCH 6/9 .....	B-37
PCH 7/9 .....	B-38
PCH 8/9 .....	B-39
PCH 9/9 .....	B-40
M.2 Card .....	B-41
M.2 WLAN+BT .....	B-42
USB Charger .....	B-43
Card Reader / LAN RTL8411B .....	B-44
HDD, Click TP, Audio, Hall Con. ....	B-45
LED, CCD, TPM, Power SW Con. ....	B-46
Audio Codec .....	B-47
KBC-ITE IT8587 .....	B-48
RGB KB Only .....	B-49
5V, 5VS, 3.3V, 3.3VS .....	B-50
VDD1.05V, VCCIO .....	B-51
VDD3, VDD5 .....	B-52
DDR 1.2V / 0.6VS, 2.5V .....	B-53
VCore Output Stage .....	B-54
VCC_Core & VCCGT .....	B-55
1.05DX_VCCSTG/VCCSFR_OC .....	B-56
VCCGT & VCCSA Output Stage .....	B-57
AC_In, Charger .....	B-58
NVVDD1 .....	B-59
NVVDD2 .....	B-60
PEX_VDD .....	B-61
FBVDDQ .....	B-62
1V8_RUN/AON .....	B-63
Audio Board .....	B-64
NH50 PW Board .....	B-65
Hall Sensor Board .....	B-66
Click Board .....	B-67
LED Board .....	B-68
NH70 PW Board .....	B-69
Power Sequence .....	B-70
USB Type-C .....	B-71
PD Controller ANX7411 .....	B-72
PER KEY Board .....	B-73
DGPU Power Measurement .....	B-74

# Chapter 1: Introduction

## Overview

This manual covers the information you need to service or upgrade the **NH70EDQ / NH70RDQ** 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 10*, 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 **NH70EDQ / NH70RDQ** 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

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# 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

#### NH70EDQ

##### Intel® Core™ i7 Processor

##### i7-8750H (2.20GHz)

9MB Smart Cache, **14nm**, DDR4-2666MHz, TDP 45W

##### Intel® Core™ i5 Processor

##### i5-8300H (2.30GHz)

9MB Smart Cache, **14nm**, DDR4-2666MHz, TDP 45W

#### NH70RDQ

##### Intel® Core™ i7 Processor

##### i7-9750H (2.60GHz)

12MB Smart Cache, **14nm**, DDR4-2666MHz, TDP 45W

##### Intel® Core™ i5 Processor

##### i5-9300H (2.40GHz)

8MB Smart Cache, **14nm**, DDR4-2666MHz, TDP 45W

### Core Logic

Mobile Intel® HM370 Express Chipset

### BIOS

128Mb SPI Flash ROM

INSYDE BIOS

### Memory

Dual Channel DDR4

Two 260 Pin SO-DIMM Sockets

Supporting **DDR4 2666MHz** Memory Modules

Memory Expandable from **8GB (minimum)** up to **64GB (maximum)**

Compatible with 4GB, 8GB, 16GB or 32GB Modules

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

### Storage

**One** changeable 2.5" (6cm) **7.0mm (h)** SATA (Serial) Hard Disk Drive/Solid State Drive (SSD)

**(Factory Option)** **One** M.2 2280 **SATA** Solid State Drive (SSD)

Or

**(Factory Option)** **Two** PCIe Gen3 x4 M.2 2280 SSDs supporting RAID level 0/1

### Audio

High Definition Audio Compliant Interface

S/PDIF Digital Output

Sound Blaster™ Cinema 5

Built-In Array Microphone

Two Speakers

### LCD Options

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

### Video Adapter

Intel® Integrated GPU and NVIDIA® Discrete GPU

Supports Microsoft Hybrid Graphics

#### Intel Integrated GPU

##### Intel® UHD Graphics 630

Dynamic Frequency

Intel Dynamic Video Memory Technology

Microsoft DirectX®12 Compatible

#### NVIDIA® Discrete GPU

##### NVIDIA® GeForce RTX 2060

**6GB** GDDR6 Video RAM on board

Microsoft DirectX® 12 Compatible

**Security**

Security (Kensington® Type) Lock Slot

BIOS Password

Intel® PTT for Systems Without TPM Hardware

**(Factory Option)** TPM 2.0

**Keyboard**

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

Or

**(Factory Option)** Full Size **Full Color “Per Key”** LED Keyboard (with Numeric Keypad)

**Pointing Device**

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

**Card Reader**

Embedded Multi-In-1 Card Reader

MMC (MultiMedia Card) / RS MMC

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

**M.2 Slots**

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

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

Slot 3 for **PCIe Gen3 x4 SSD**

**Interface**

One DisplayPort 1.3 over USB 3.1 Gen 2 Type-C Port

One USB 3.1 Gen 2 Type-A Port

One USB 3.0 (USB 3.1 Gen 1) Type-A Port

One USB 2.0 Port

One Mini DisplayPort 1.2

One HDMI-Out Port

One Microphone-In Jack

One 2- In-1 Audio Jack (Headphone and 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**

Removable 4 Cell Smart Lithium-Ion Battery Pack, 48.96WH

Full Range AC/DC Adapter

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

DC Output: 19.5V, 9.23A (**180W**)

**Dimensions & Weight**

399.9mm (w) \* 282.2mm (d) \* 29.2mm (h)

**2.5kg** (Barebone with 48.96WH Battery)

 **USB 3.1 Gen 2**

Note that when a single USB device is plugged in to a USB 3.1 Gen 2 port the data transfer speed will be 10Gbps, however when two devices are plugged in to both USB 3.1 Gen 2 ports, this bandwidth will be shared between the ports.

**Communication**

Built-In 10/100/1000Mb Base-TX Ethernet LAN

1.0M HD PC Camera Module

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

**(Factory Option)** Intel® Dual Band Wireless-AC 9260 Wireless LAN (**802.11ac**) + Bluetooth

**(Factory Option)** Intel® Dual Band Wireless-AC 9560 Wireless LAN (**802.11ac**) + Bluetooth

**(Factory Option)** Intel® Dual Band Wireless-AC 9462 Wireless LAN (**802.11ac**) + Bluetooth

**(Factory Option)** Qualcomm® Atheros Killer™ Wireless-AC 1550i Wireless LAN (**802.11ac**) + Bluetooth

### Introduction

Figure 1  
Top View

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



## External Locator - Front & Right Side Views

*Figure 2*  
**Front View**

1. LED Indicator

FRONT VIEW



RIGHT SIDE VIEW



*Figure 3*  
**Right Side View**

1. USB 3.1 Gen 2  
Type-A Port
2. Mini Display Port  
1.2
3. Multi-in-1 Card  
Reader
4. Vent

## Introduction

### External Locator - Left Side & Rear View

Figure 4  
Left Side View

1. Security Lock Slot
2. Vent
3. USB 3.0 (USB 3.1 Gen 1) Type-A Port
4. USB 2.0 Port
5. Microphone-In Jack
6. 2-In-1 Audio Jack (Headphone and Microphone)

LEFT SIDE VIEW



REAR VIEW



Figure 5  
Rear View

1. Vent
2. DisplayPort 1.3 over USB 3.1 Gen 2 Type-C Port
3. HDMI-Out Port
4. RJ-45 LAN Jack
5. DC-In Jack

### External Locator - Bottom View



Figure 6  
Bottom View

1. Battery
2. Vent
3. Speakers

### 1. Introduction



#### Overheating

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

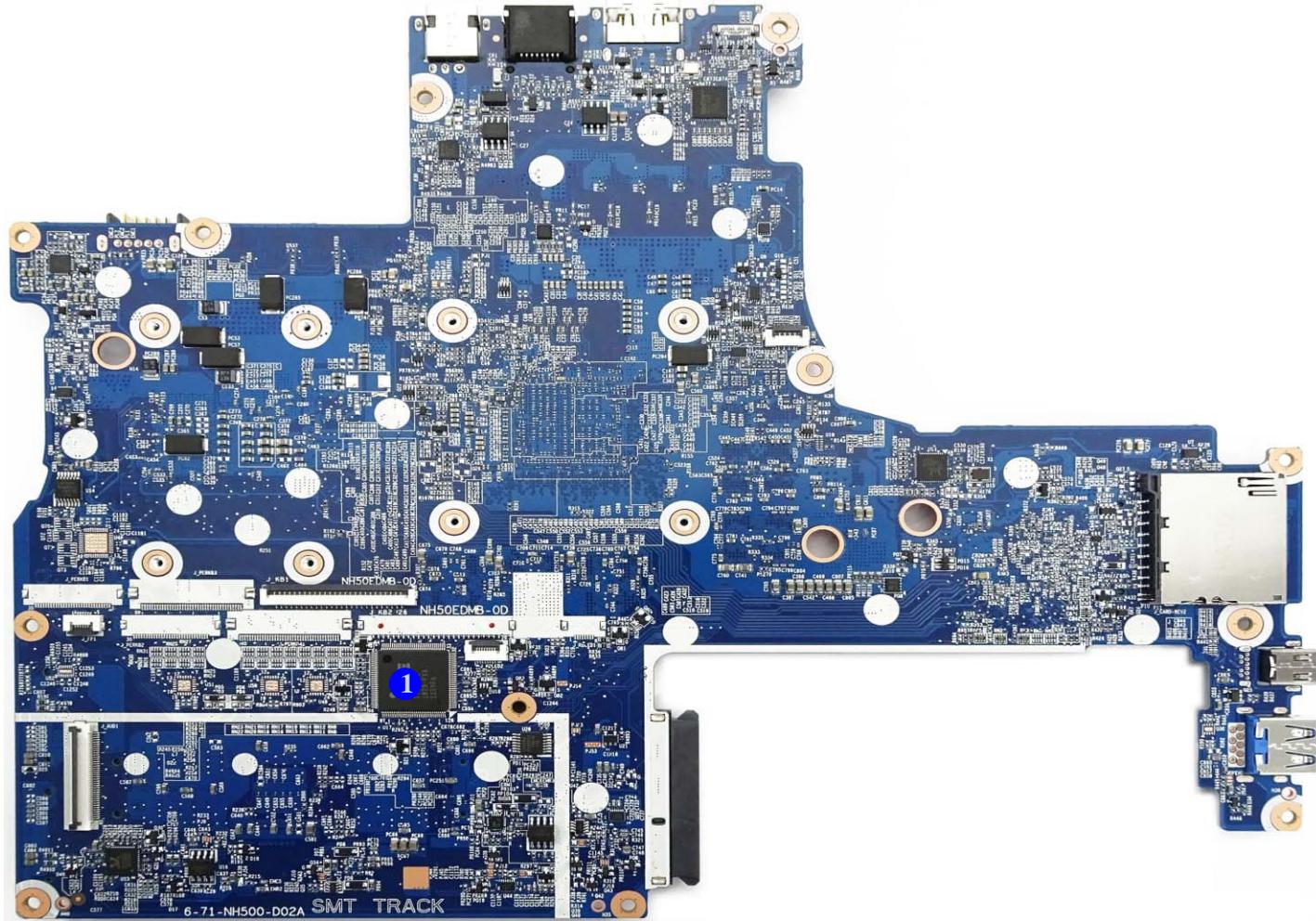
## Introduction

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*Figure 7*  
**Mainboard Top  
Key Parts**

1. KBC-ITE IT8587

## Mainboard Overview - Top (Key Parts)



### Mainboard Overview - Bottom (Key Parts)

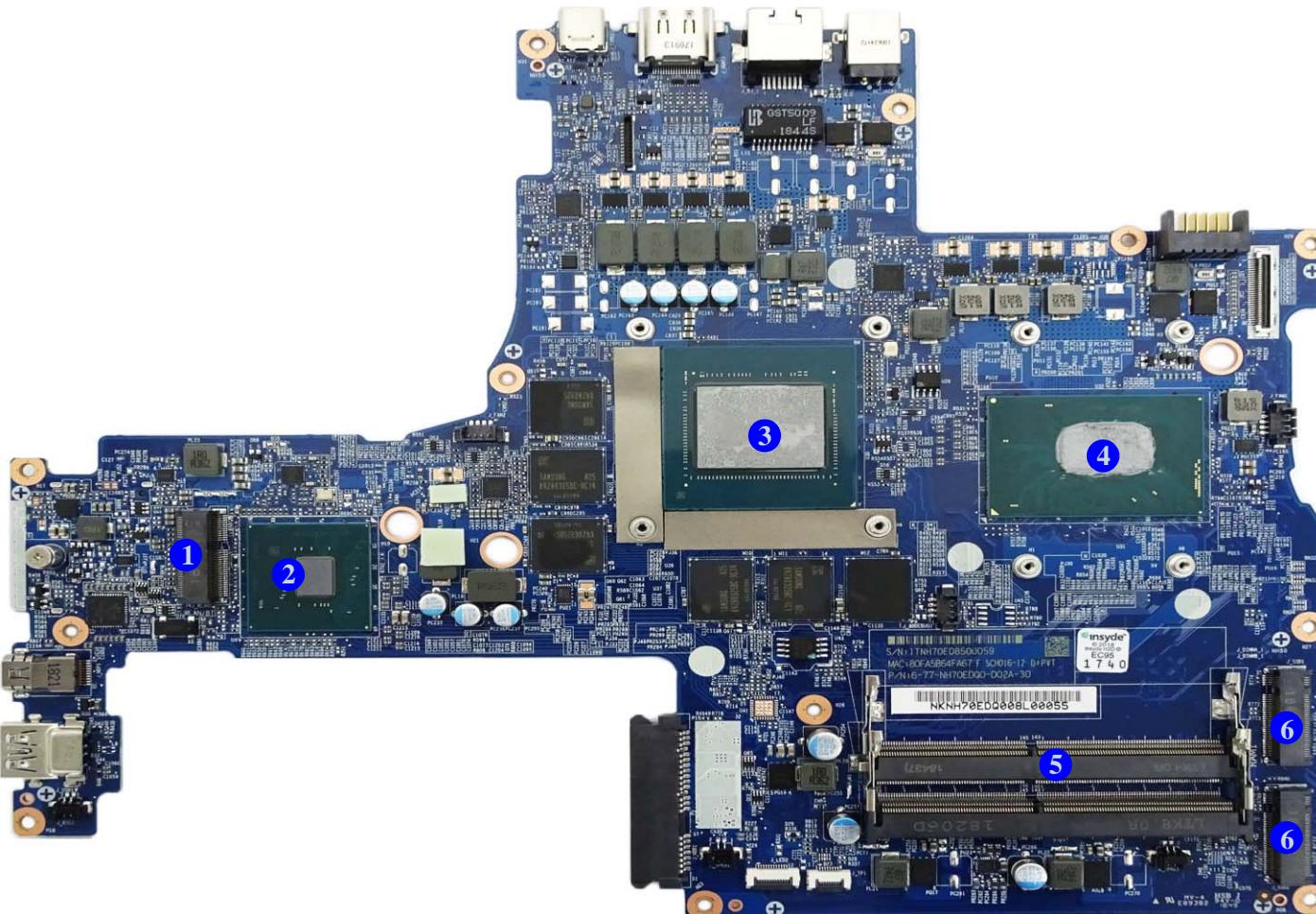


Figure 8  
Mainboard Bottom  
Key Parts

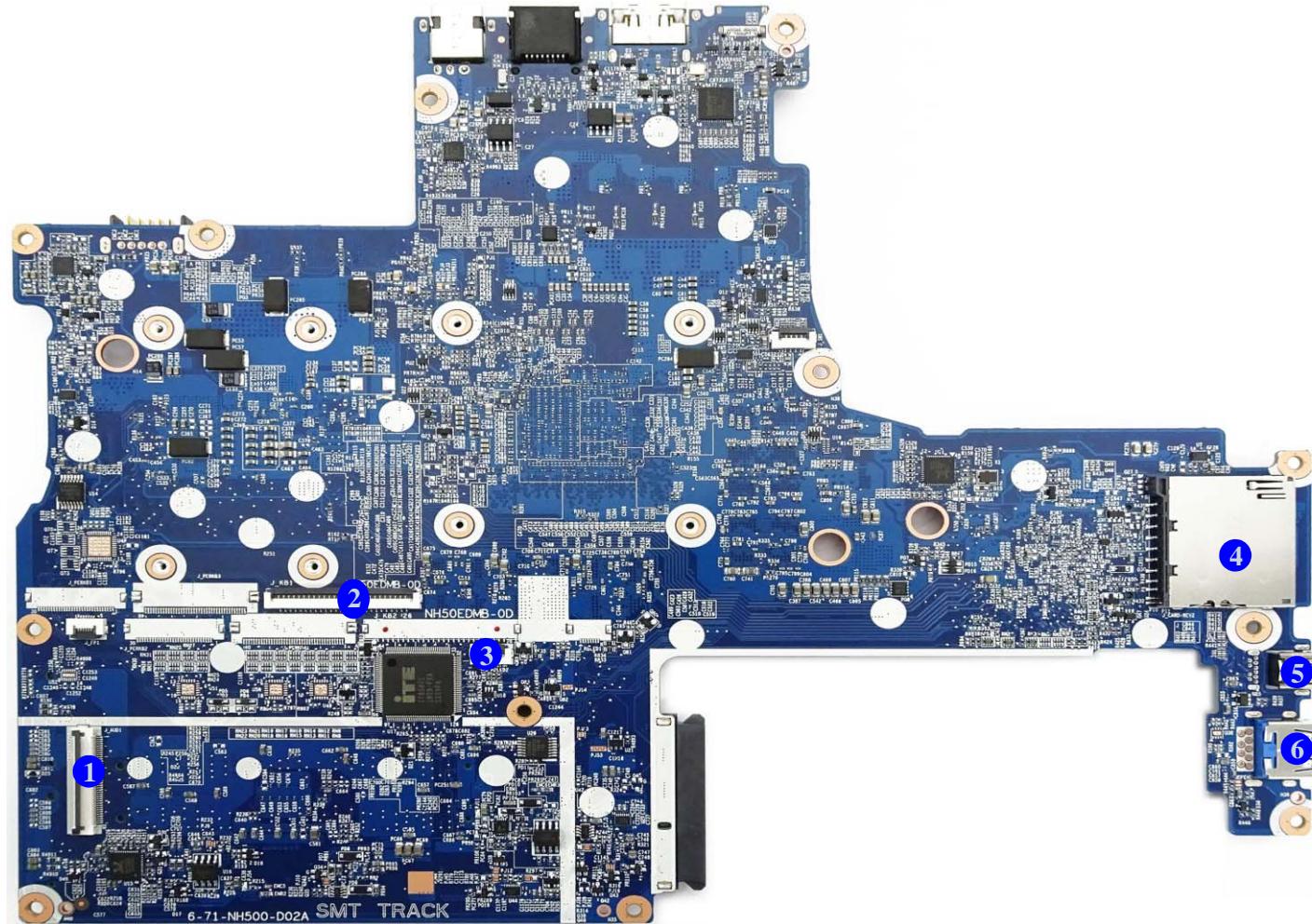
1. Mini-Card Connector (WLAN Module)
2. PCH
3. GPU
4. CPU
5. Memory Slots DDR4 SO-DIMM
6. M.2-Card Connector (SSD Module)

## Introduction

*Figure 9*  
**Mainboard Top  
Connectors**

1. USB Connector
2. Keyboard Cable  
Connector
3. KB LED  
Connector
4. Multi-in-1 Card  
Reader
5. Mini Display Port
6. USB 3.1 Gen 2  
Type-A Port

## Mainboard Overview - Top (Connectors)



## Mainboard Overview - Bottom (Connectors)

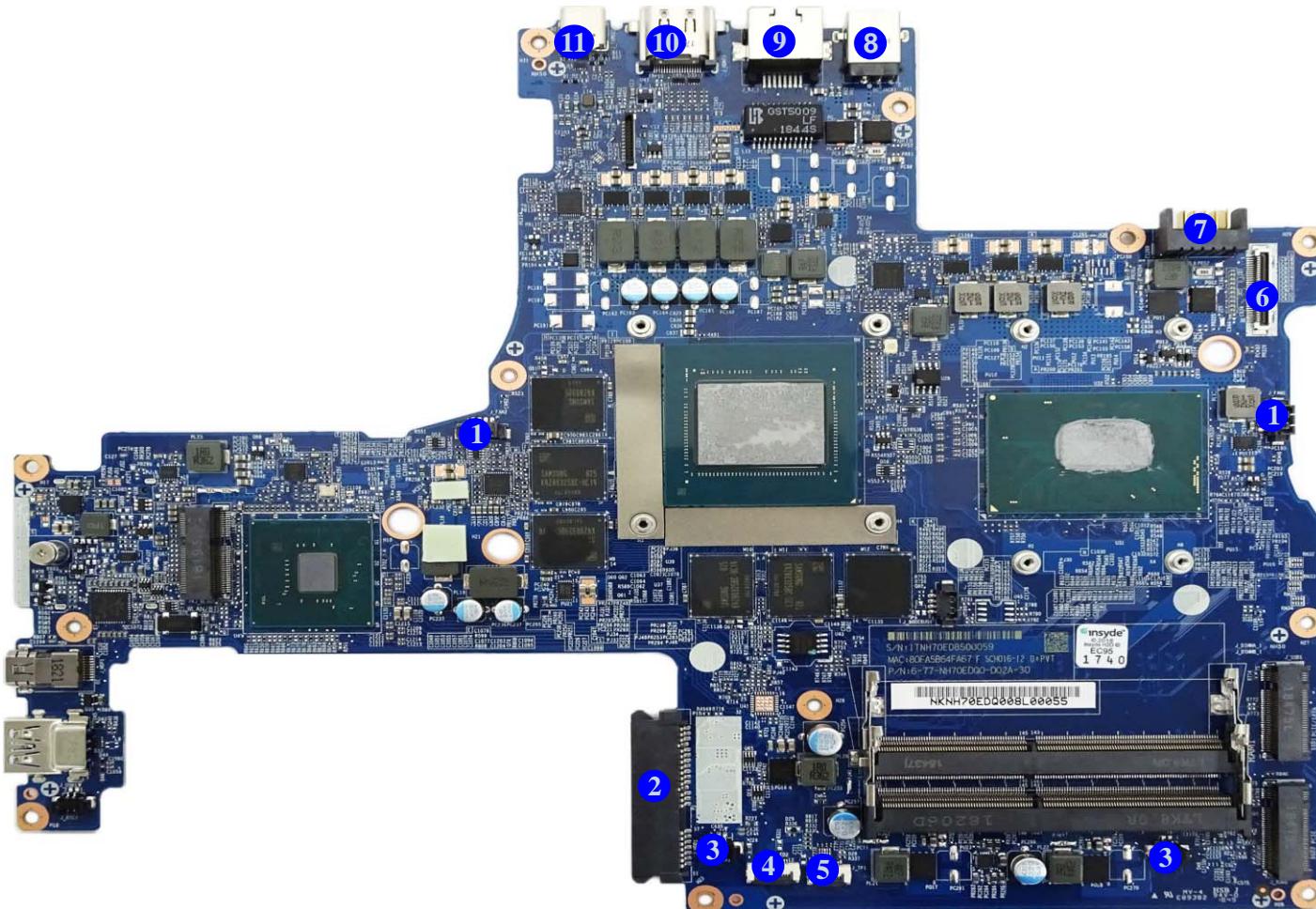


Figure 10  
Mainboard Bottom  
Connectors

1. Fan Connector
2. HDD Connector
3. Speaker Connector
4. LED Connector
5. Touchpad Connector
6. LCD Connector
7. Battery Connector
8. DC-In Jack
9. RJ-45 LAN Jack
10. HDMI-Out Port
11. DisplayPort 1.3 over USB 3.1 Gen 2 Type-C Port

## Introduction

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# Chapter 2: Disassembly

## Overview

This chapter provides step-by-step instructions for disassembling the **NH70EDQ / NH70RDQ** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

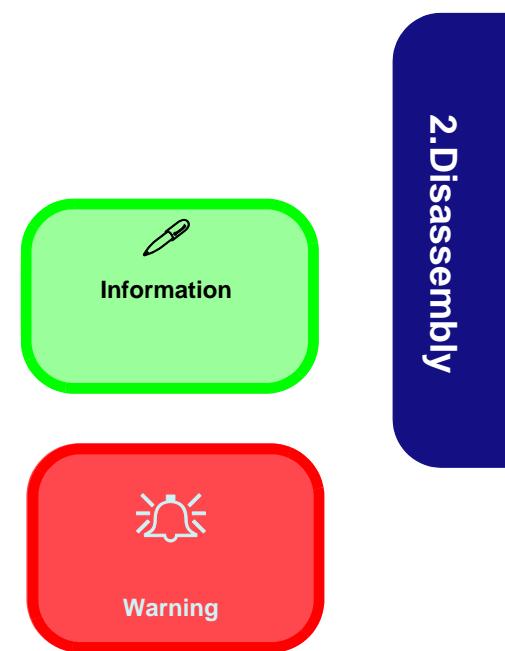
We suggest you completely review any procedure before you take the computer apart.

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 keyboard [page 2 - 6](#)

### To remove the HDD:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 7](#)

### To remove the System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 7](#)
3. Remove the system memory [page 2 - 9](#)

### To remove the M.2 SSD:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 7](#)
3. Remove the SSD [page 2 - 10](#)

### To remove the Wireless LAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 7](#)
3. Remove the WLAN [page 2 - 11](#)

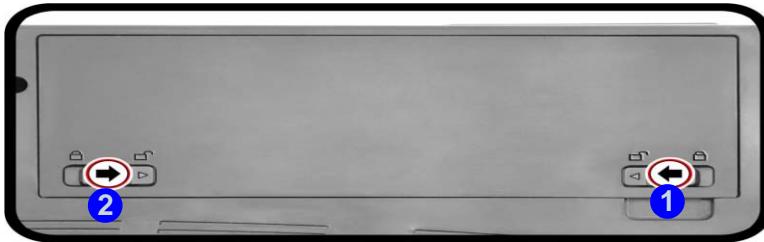
### To remove the CCD Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 7](#)
3. Remove the CCD module [page 2 - 13](#)

## Removing the Battery

1. Turn the computer **off**, and turn it over.
2. Slide the latch **1** in the direction of the arrow (*Figure 1a*).
3. Slide the latch **2** in the direction of the arrow.
4. While holding the latch **2**, lift the battery **3** (*Figure 1b*) out of the compartment (*Figure 1c*).

a.



b.



c.

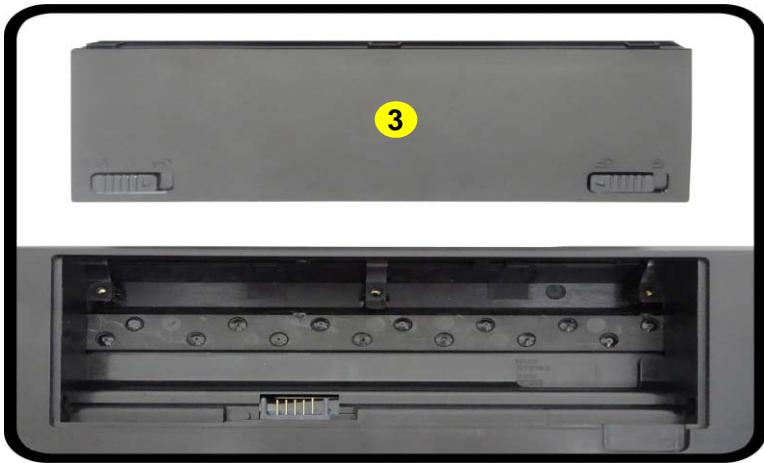
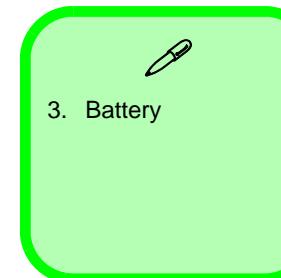


Figure 1  
Battery Removal

- a. Slide the latch **1** in the direction of the arrow, and slide the latch **2** in the direction of the arrow.
- b. Lift the battery.
- c. Remove the battery.

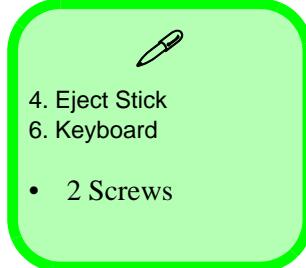
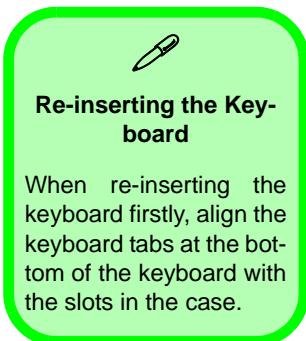


## Disassembly

---

*Figure 2*  
Keyboard Removal

- 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.
- Lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.
- Remove the keyboard.



## Removing the Keyboard

- Turn off the computer, turn it over.
- Remove screws 1 - 2 from the bottom of the computer.
- 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 2a*).
- 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 2b*).
- Carefully lift the keyboard 6 off the computer (*Figure 2c*).

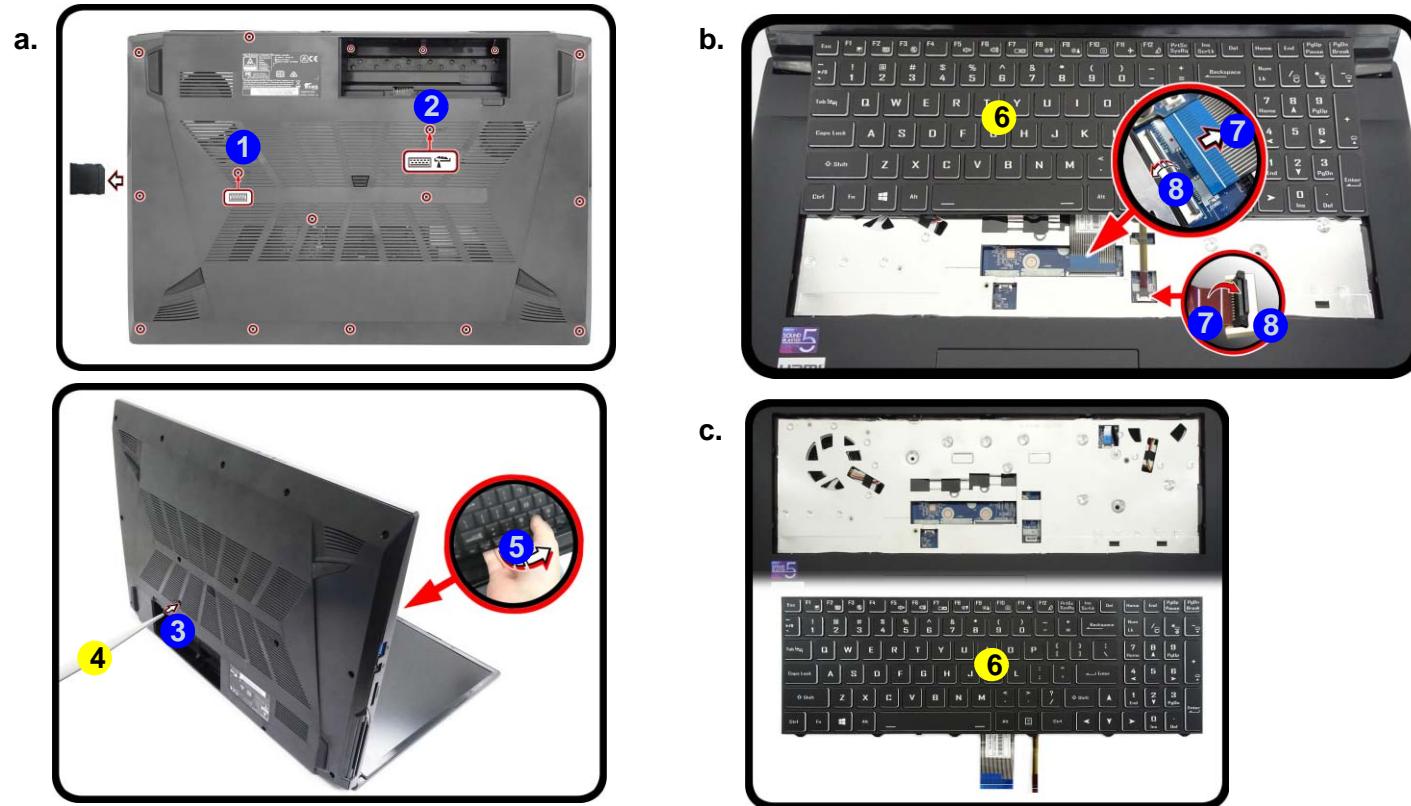


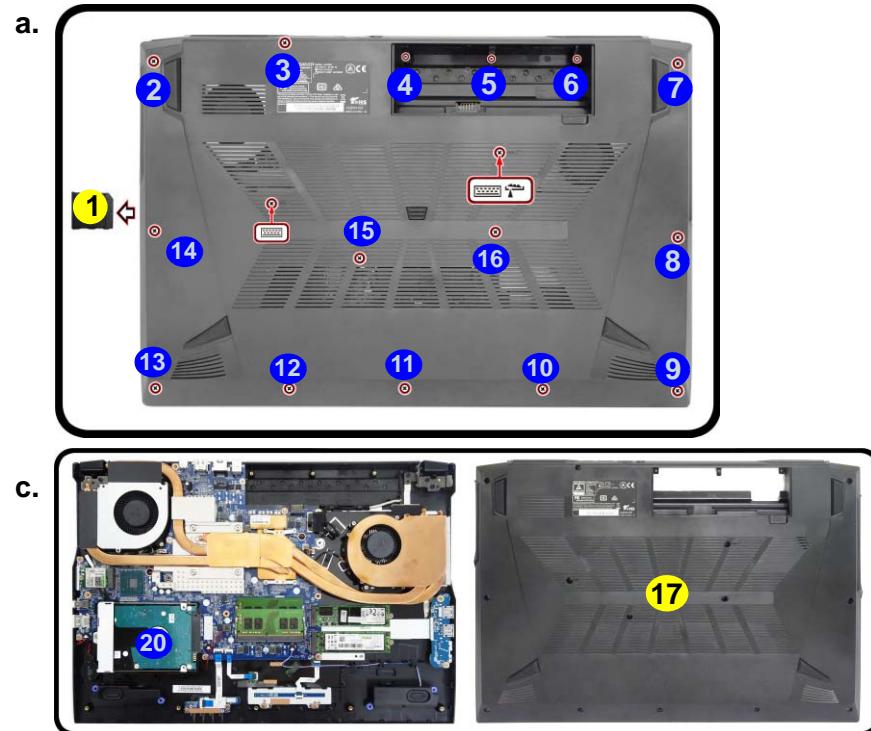
Figure 3  
HDD Assembly  
Removal

## 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 7mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up a new hard disk.

### Hard Disk Disassembly Process

1. Turn off the computer, and remove the battery ([page 2 - 5](#)).
2. Remove the SD card cover 1 and screws 2 - 16 ([Figure 3a](#)).
3. Open it up with the LCD on a flat surface, release the bottom case 17 at point 18 - 19 and remove it ([Figure 3b](#)).
4. The HDD will be visible at point 20 on the mainboard ([Figure 3c](#)).



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

17. Bottom Case

- 15 Screws

## 2. Disassembly

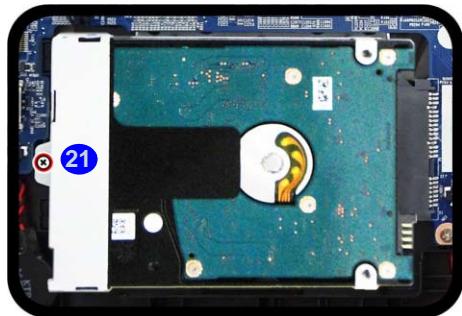
### Disassembly

Figure 4  
HDD Assembly  
Removal (cont'd.)

- d. Remove the screws.
- e. Slightly lift and pull the HDD in the direction of the arrow.
- f. Lift the HDD assembly out of the bay.
- g. Remove the screws and bracket from the HDD.

5. Remove the screw **21** from the HDD assembly (**Figure 4d**).
6. Slightly lift and pull up the tab **22** out to release the hard disk assembly (**Figure 4e**).
7. Lift the hard disk assembly **23** out of the bay **24** (**Figure 4f**).
8. Remove screws **25** - **26** and bracket **27** from the hard disk **28** (**Figure 4g**).
9. Reverse the process to install a new hard disk (**make sure to properly press to seal all sides of the bottom case especially near the vent area** and do not forget to replace the screws).

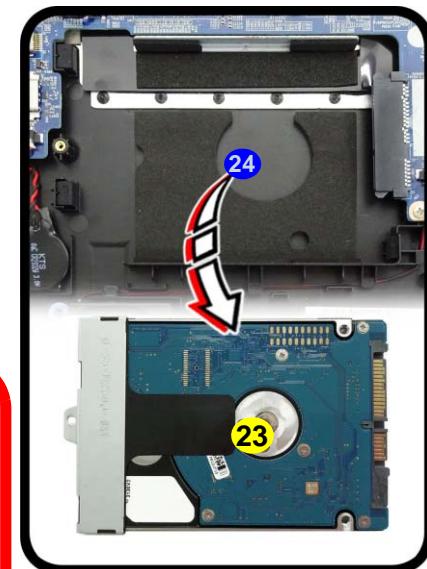
d.



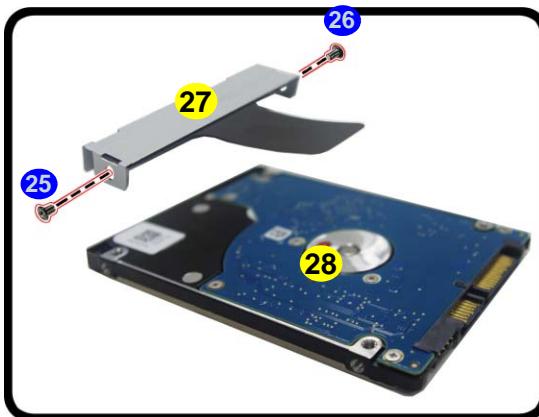
e.



f.



g.



#### 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.

- 23. HDD Assembly
- 27. Bracket
- 28. HDD
- 3 Screws

*Figure 5  
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.

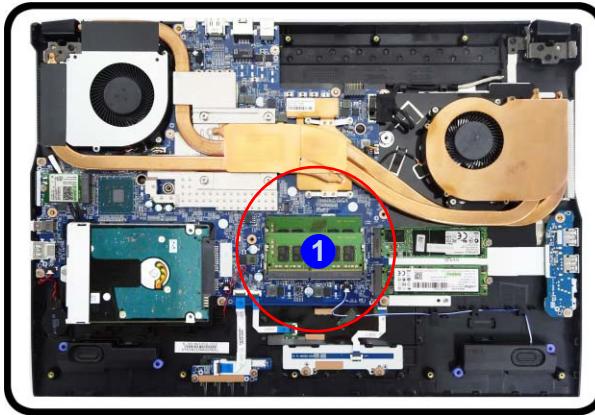
## 2. Disassembly



### 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.

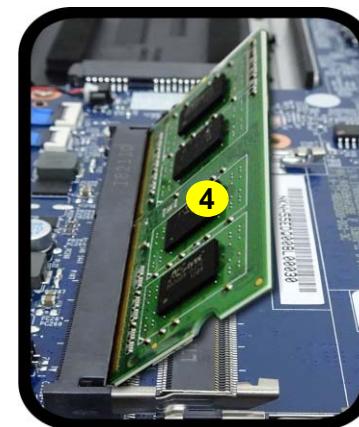
a.



b.



c.



4. RAM Module

## Disassembly

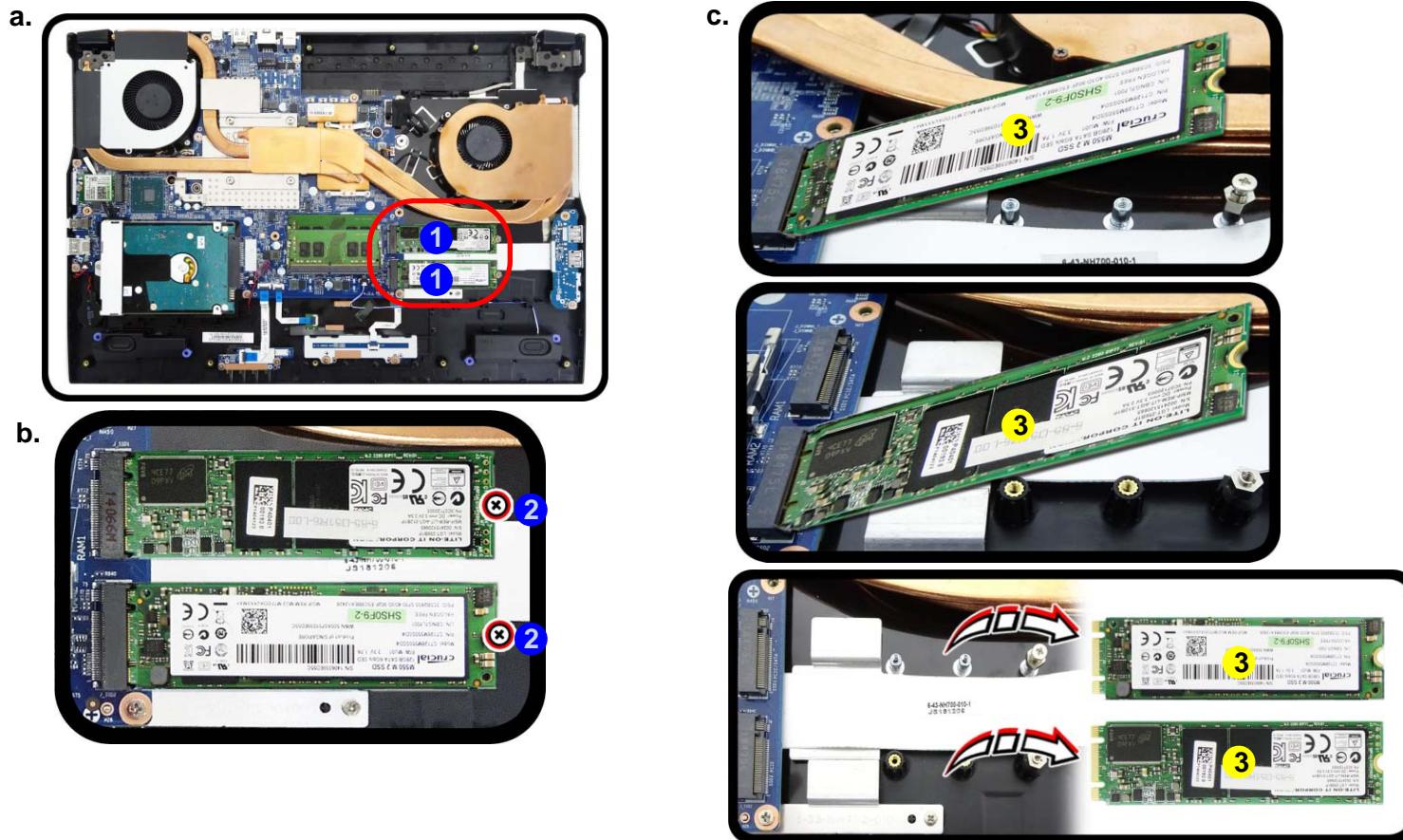
Figure 6  
M.2 SSD Module Removal

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

## Removing the M.2 SSD Module

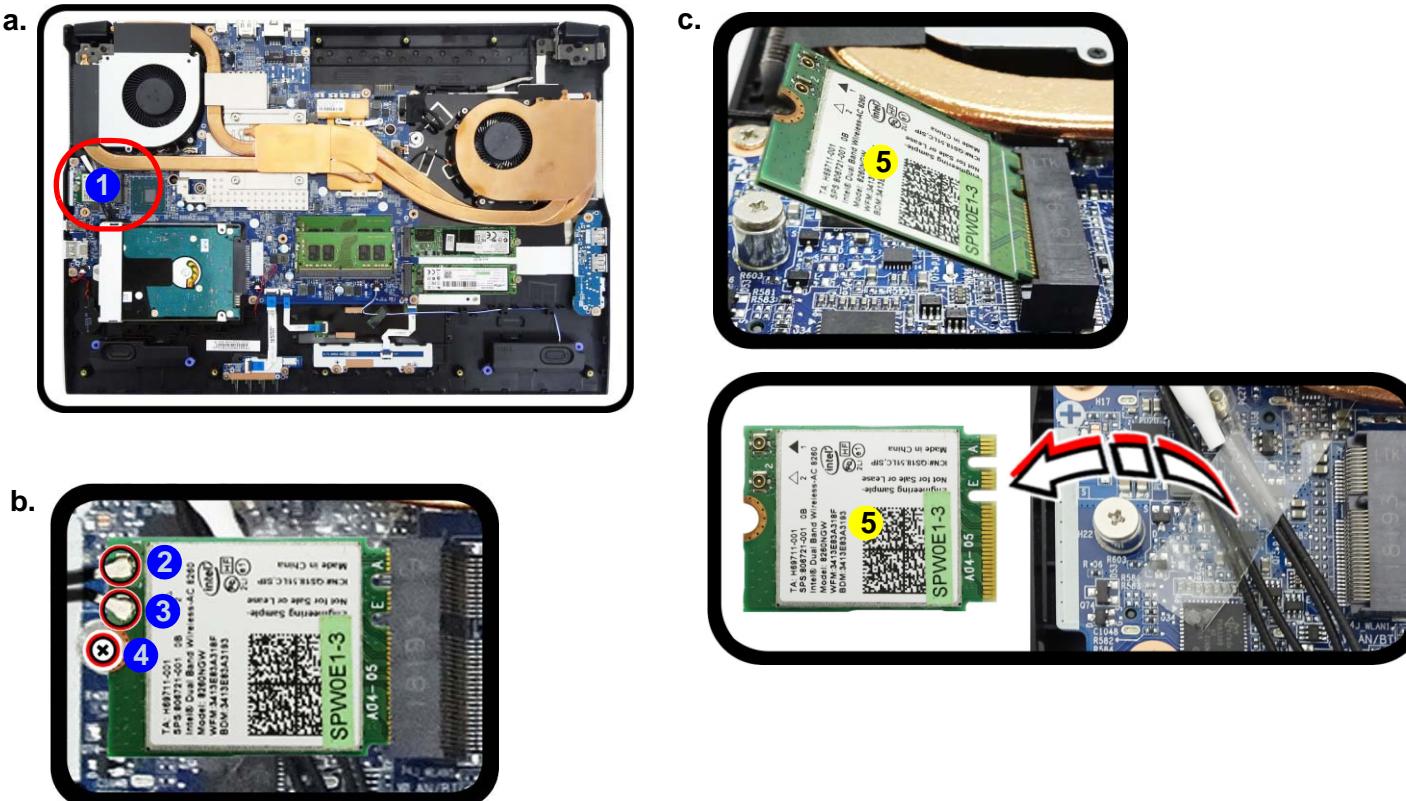
### M.2 SSD Module Removal Procedure

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 ([Figure 6a](#)).
3. Remove the screw ② ([Figure 6b](#))
4. The M.2 SSD module ③ ([Figure 6c](#)) will pop-up, and you can remove it from the computer.



## Removing the Wireless LAN Module

1. Turn **off** the computer, turn it over, remove the battery ([page 2 - 5](#)).
2. The Wireless LAN module will be visible at point **1** on the mainboard ([Figure 7a](#)).
3. Carefully disconnect the cables **2** & **3**, and then remove the screw **4** ([Figure 7b](#))
4. The Wireless LAN module **5** ([Figure 7c](#)) will pop-up, and you can remove it from the computer.



**Figure 7**  
**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 7b](#)).

## Disassembly

### Wireless LAN, Combo Module Cables

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

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

## Removing the CCD

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 90 degree angle.
3. Carefully run your fingers around the inner frame of the LCD panel to lift at points **1** - **4** as indicated by the arrows ([Figure 8a](#)).
4. Remove the LCD front cover **5** ([Figure 8b](#)).

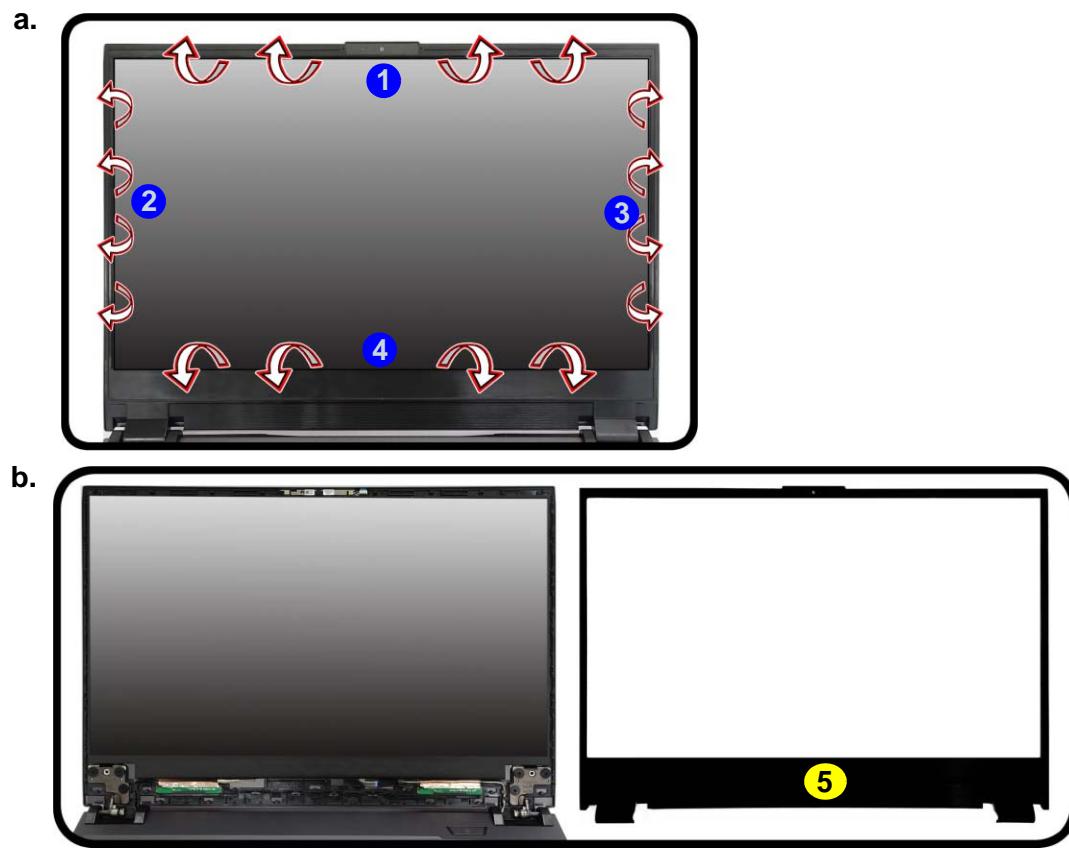


Figure 8  
CCD Removal

- a. Carefully release the inner frame of the LCD panel at the points indicated by the arrows.
- b. Remove the LCD front cover.

### Disassembly

#### Figure 9 CCD Removal (cont'd)

- c. Disconnect the cable from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins away from the base (**Figure 9c**).
- d. Remove the CCD module (**Figure 9d**).
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 9c**).
6. Remove the CCD module **8** (**Figure 9d**).
7. Reverse the process to install a new CCD module.

c.



d.



8. CCD Module

# Appendix A:Part Lists

This appendix breaks down the **NH70EDQ / NH70RDQ** 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.

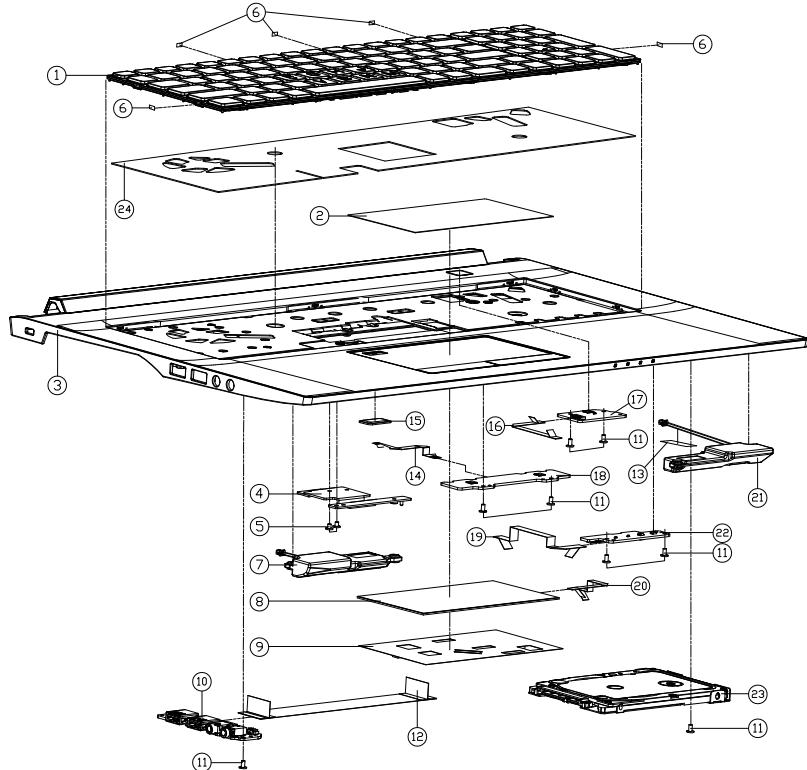
*Table A - 1*  
**Part List Illustration  
Location**

## Part List Illustration Location

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

Part	
Top	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
Main Board	<i>page A - 5</i>
HDD	<i>page A - 6</i>
LCD	<i>page A - 7</i>

# Top

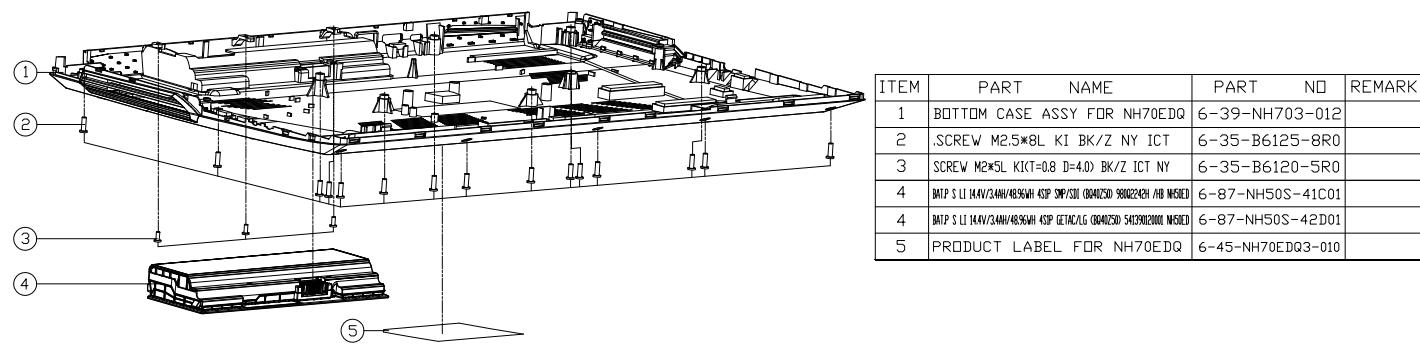


ITEM	PART NAME	PART NO	REMARK
1	KB FOR LED PER KEY KB US SERIES NH70EDQ	6-NH70EDQ-KB-LPK-US	FOR LED PER KEY KB SERIES
1	KB FOR MULTI 1SC BL KB US SERIES NH70EDQ	6-NH70EDQ-KB-MCL-US	FOR MULTI 1SC BL KB SERIES
2	W/D FP TP MYLAR AG32 NH55EDQ	6-40-NH552-052	
3	TOP CASE MODULE NH70EDQ	6-39-NH702-012	
4	MB SUPPORT BKT AL1050 NH70EDQ	6-33-NH702-010	
5	SCREW M2*4L K1 NI ICT NY (DID=04.0,DIT=0.8)	6-35-B1120-3RD	
6	ACETATE CLOTH (5*8*0.2T) NB70TJ1	6-47-NB702-030	
7	SPK CABLE L 16*23 2W 4L 19*1 MM DS-2514-ML-R2-HF NS001	6-23-5N95T-0L1	
8	TOUCH PAD SYNAPTICS PTP-3349 (01045MM (WBL) NS020)	6-49-N15Z3-011	
9	TP MYLAR PET NH70EDQ	6-40-NH702-010	
10	AUDIO BOARD V3.0 NH50ED	6-77-NH508-D03	
11	SCREW M2*4L K1 NI ICT NY (DID=04.5,DIT=0.8)	6-35-B1120-4RC	
12	FFC AUDIO TO MB L=140.5MM 5V 40P (0XNH70EDQ)	6-43-NH700-011	
13	TAPE MYLAR (C)MYLAR M550J	6-40-M55J2-030	
14	FFC CABLE CLICK TO TP L=6MM 3V 4PIN (0X NH50ED)	6-43-NH500-051	
15	TP WD FP RUBBER (17.9*1.2*1.2T) SILICONE	6-47-N15Z2-090	
16	FFC POWER TO MB L=67MM 3.3V 4P (0XNH70EDQ)	6-43-NH700-020	
17	POWER SW BOARD V1.0 NH70EDQ	6-77-NH70S-D01	
18	CLICK BOARD V3.0 NH50ED	6-77-NH502-D03	
19	FFC LED TO MB L=87MM 3.3V 12P (0XNH70EDQ)	6-43-NH700-031	
20	FFC TP TO MB L=73MM 3.3V 8P (0XNH70EDQ)	6-43-NH700-040	
21	SPK R/CABLE L2514 2W 4L 120MM DS-2514-ML-R2-HF NB70TJ1	6-23-5NB70-0R1	
22	LED BOARD V3.0 NH70EDQ	6-77-NH504-D03-A	
23	W/D HDD ASS'Y NH70EDQ	6-79-NH70EDQJ-010	
24	MYLAR (326.55*100.3*0.55T)FOR KB NH70EDQ	6-40-NH702-080	FOR NON BL KB SERIES

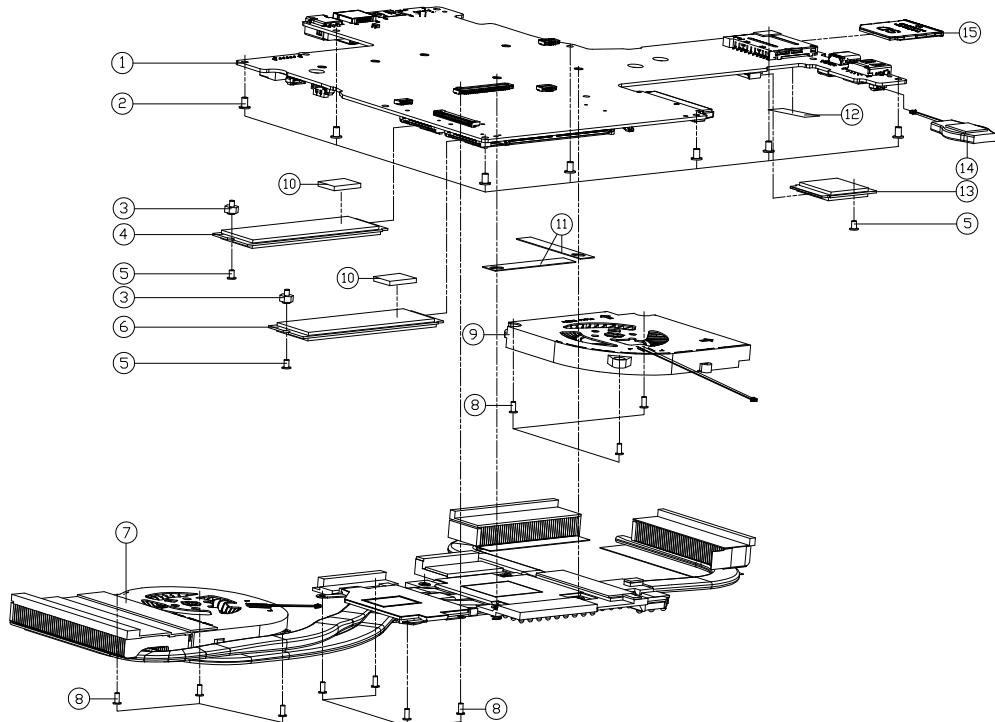
Figure A - 1  
Top

## Bottom

Figure A - 2  
Bottom



## Main Board

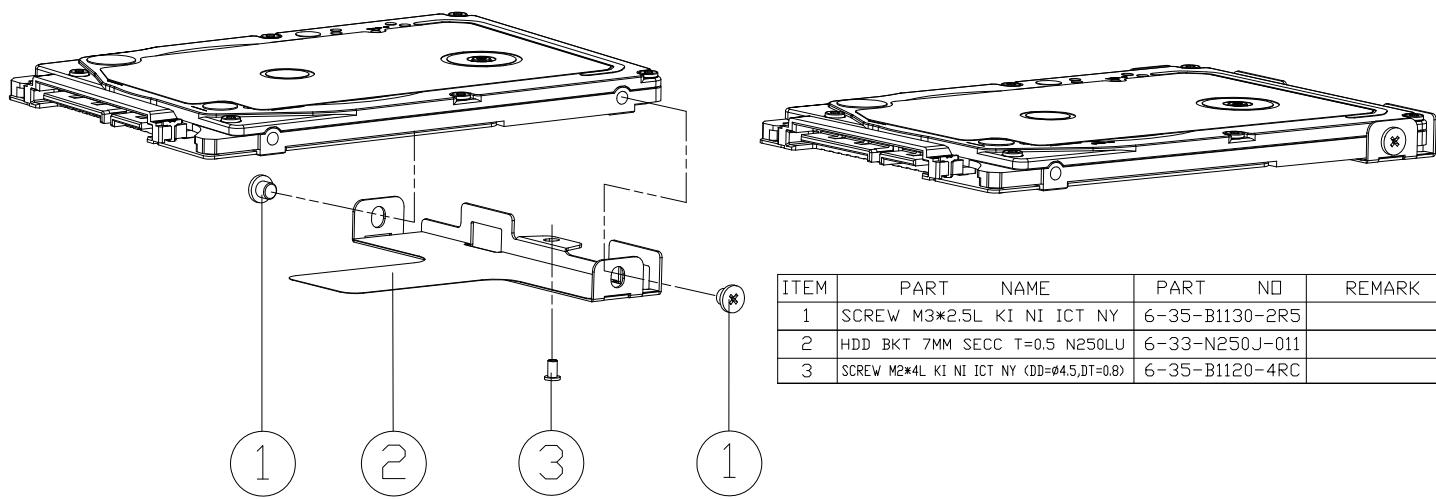


ITEM	PART	NAME	PART NO	REMARK
1	MINI-BIOS/VT-05W/230	Y200 CHIPSET FOR E11 K0W/TP0 MODULE	6-77-NH70EDQ0-D02A-C	
1	MINI-BIOS/VT-05W/230	Y200 CHIPSET FOR E11 K0W/TP0 MODULE	6-77-NH70EDQ0-D02A-1C	
1	MINI-BIOS/VT-05W/230	Y200 CHIPSET FOR E11 K0W/TP0 MODULE	6-77-NH70EDQ0-D02A-3C	
1	MINI-BIOS/VT-05W/230	Y200 CHIPSET FOR E11 K0W/TP0 MODULE	6-77-NH70EDQ0-D02A-3D	
2	SCREW M2.5x4L (D=4.6, T=0.8) K1 NI ICT NY	6-35-B1125-4RA		
3	SCREW M2x3L (D=2.5, T=0.9) K1 NI ICT NY FOR NEUT UNIFORMED	6-35-ZA120-2R5-1		
4	MICROSOFT POWER SUPPLY FOR DELL XPS L401X (PART NO: 04X114)	6-85-D51R6-H04	OPTION	
4	MICROSOFT POWER SUPPLY FOR DELL XPS L401X (PART NO: 04X114)	6-85-D51R6-K00	OPTION	
4	SODIUM 0220 256MB MEMORY MODULE (PART NO: 01-641400)	6-85-D51R6-101	OPTION	
4	SODIUM 0220 256MB MEMORY MODULE (PART NO: 01-641400)	6-85-D51R6-Z00	OPTION	
4	SODIUM 0220 512MB MEMORY MODULE (PART NO: 01-641400)	6-85-D51R6-S08	OPTION	
4	SODIUM 0220 1GB MEMORY MODULE (PART NO: 01-641400)	6-85-D51R6-S00	OPTION	
4	SODIUM 0220 1GB MEMORY MODULE (PART NO: 01-641400)	6-85-D51R6-Z00	OPTION	
4	ATMEL AT24C02 16Kbit EEPROM (PART NO: 01-641400)	6-85-D51R6-Z00	OPTION	
5	SCREW M2x2L K1 NI ICT NY (D=0.95, T=0.8)	6-35-B1120-2RA		
6	SODIUM 0220 256MB MEMORY MODULE (PART NO: 01-641400)	6-85-D51R6-K00	OPTION	
6	SODIUM 0220 256MB MEMORY MODULE (PART NO: 01-641400)	6-85-D51R6-Z00	OPTION	
6	SODIUM 0220 512MB MEMORY MODULE (PART NO: 01-641400)	6-85-D51R6-S08	OPTION	
6	SODIUM 0220 1GB MEMORY MODULE (PART NO: 01-641400)	6-85-D51R6-S00	OPTION	
6	ATMEL AT24C02 16Kbit EEPROM (PART NO: 01-641400)	6-85-D51R6-Z00	OPTION	
7	HEATSINK MODULE NH70EDQ	6-31-NH70N-102		
8	SCREW M2x4L K1 NI ICT NY (D=4.5, T=0.8)	6-35-B1120-4RC		
9	FAN MODULE (FCNPWM NH50E0)	6-31-NH503-201		
10	Thermal Pad RS300 20x12x3.0MM NH70EDQ	6-48-NH702-011		
11	EMI ABSORBER (45x9x0.3) FOR N850HP6	6-47-N85P2-021		
12	TAPE MYLAR (C) MYLAR M550J	6-40-M55J2-030		
13	VALVE CORD 1.5M 2PIN 2.5A 220V 50/60Hz (PART NO: 01-641420)	6-88-P75FF-4210	OPTION	
13	VALVE CORD 1.5M 2PIN 2.5A 220V 50/60Hz (PART NO: 01-641420)	6-88-N24GF-4200	OPTION	
13	VALVE CORD 1.5M 2PIN 2.5A 220V 50/60Hz (PART NO: 01-641420)	6-88-N24GF-4220	OPTION	
13	VALVE CORD 1.5M 2PIN 2.5A 220V 50/60Hz (PART NO: 01-641420)	6-88-P75FF-4230	OPTION	
13	VALVE CORD 1.5M 2PIN 2.5A 220V 50/60Hz (PART NO: 01-641420)	6-88-P95EF-4200	OPTION	
14	BAT. 2000 mAh 220WH W/CABLE 50W 30282855W08 SH400	6-23-22015-TE0		
15	JUMPER 3PIN NON PUSH TYPE (C720P-70E0X000) V970W	6-42-W9708-011		

Figure A - 3  
Main Board

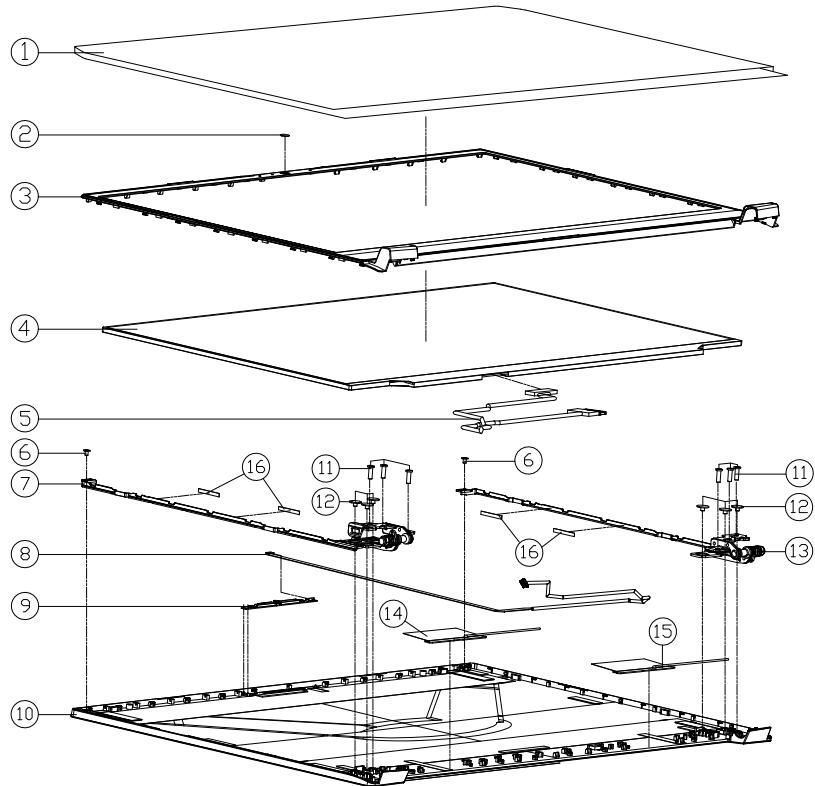
## HDD

Figure A - 4  
HDD



ITEM	PART NAME	PART NO	REMARK
1	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	
2	HDD BKT 7MM SECC T=0.5 N250LU	6-33-N250J-011	
3	SCREW M2*4L KI NI ICT NY (D=Φ4.5,Dt=0.8)	6-35-B1120-4RC	

# LCD



ITEM	PART NAME	PART NO	REMARK
1	LCD PROTECT MYLAR BOPP NB70TJ1	6-40-NB708-010	
2	CCD LENS PMMA ( DIAMETER 3.6MM ) X ( MPL ) P970EN	6-42-P97NI-011	
3	LCD FRONT COVER MODULE NH70EDQ	6-39-NH701-012	
4	LCD NB73 FHD/VA/144HZ G-SYNC/ANON G1/ EDP BIE NV173FH-N4 LED 3MM	6-50-NBB35-Z120	
4	LCD NB73 FHD/PS/144HZ G-SYNC/ANON G1/DP LG LP73VFG-SPIN 3MM	6-50-NBB35-L120	
4	LCD NB73 FHD/VA/144HZ G1/DP BIE NV173FH-N46 LED 3MM	6-50-NBB35-Z020	
5	WIRE CABLE FOR EDP FHD 144HZ 3MM (D 19V 3PIN HIZ/LV CONN) (22-HZ) NITRED	6-43-NH701-021-N	
5	WIRE CABLE FOR EDP FHD 3MM (D 19V 3PIN HIZ/LV CONN) (22-HZ) NITRED	6-43-NH701-011-N	
6	SCREW M2*3L KI NI ICT NY (DD=04.0,DT=0.8)	6-35-B1120-3RD	
7	LCD HINGE L (SK7+SECC) NH70EDQ	6-33-NH701-0L1	
8	CCD CABLE L=550MM 8PIN 30V (HL) NH70EDQ	6-43-NH70T-012	
9	INC CABLE THREAD (OPTION) IN 10 DIA 1.5MM WHITE LED 12MM NITRED	6-88-N15ZC-5100	OPTION
9	INC CABLE THREAD (OPTION) IN 10 DIA 1.5MM WHITE LED 12MM NITRED	6-88-N15ZC-4900	OPTION
10	LCD BACK COVER MODULE NH70EDQ	6-39-NH701-022	
11	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
12	SCREW M2.5*2.5L KI BK/Z ICT NY(Φ8,T=0.6)	6-35-B6125-2R5	
13	LCD HINGE R (SK7+SECC) NH70EDQ	6-33-NH701-0R1	
14	ANTENNA IPX4 VIAN VGT W12 PCB IRK A : PLASTIC 24/656 L: 65MM NITRED	6-23-7NH70-010	
15	ANTENNA IPX4 VIAN VGT W12 PCB IRK A : PLASTIC 24/656 L: 65MM NITRED	6-23-7NH70-020	
16	PANEL BLACK MYLAR 20*3*0.3T NH70EDQ	6-40-NH701-030	

Figure A - 5  
LCD



# Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *NH70EDQ / NH70RDQ* notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
<i>System Block Diagram - Page B - 2</i>	<i>GPU NVVDD, FBVDDQ - Page B - 26</i>	<i>5V, 5VS, 3.3V, 3.3VS - Page B - 50</i>
<i>Processor 1/6 - Page B - 3</i>	<i>GPU GND - Page B - 27</i>	<i>VDD1.05V, VCCIO - Page B - 51</i>
<i>Processor 2/6 - Page B - 4</i>	<i>mDP - Page B - 28</i>	<i>VDD3, VDD5 - Page B - 52</i>
<i>Processor 3/6 - Page B - 5</i>	<i>mDP - Page B - 29</i>	<i>DDR 1.2V / 0.6VS, 2.5V - Page B - 53</i>
<i>Processor 4/6 - Page B - 6</i>	<i>Panel, Inverter - Page B - 30</i>	<i>VCore Output Stage - Page B - 54</i>
<i>Processor 5/6 - Page B - 7</i>	<i>HDMI - Page B - 31</i>	<i>VCC_Core &amp; VCCGT - Page B - 55</i>
<i>Processor 6/6 - Page B - 8</i>	<i>PCH 1/9 - Page B - 32</i>	<i>1.05DX_VCCSTG/VCCSFR_OC - Page B - 56</i>
<i>DDR4 CHA SO-DIMM - Page B - 9</i>	<i>PCH 2/9 - Page B - 33</i>	<i>VCCGT &amp; VCCSA Output Stage - Page B - 57</i>
<i>DDR4 CHB SO-DIMM - Page B - 10</i>	<i>PCH 3/9 - Page B - 34</i>	<i>AC_In, Charger - Page B - 58</i>
<i>VGA PCI Express - Page B - 11</i>	<i>PCH 4/9 - Page B - 35</i>	<i>NVVDD1 - Page B - 59</i>
<i>GPU Frame Buffer Partition - Page B - 12</i>	<i>PCH 5/9 - Page B - 36</i>	<i>NVVDD2 - Page B - 60</i>
<i>Frame Buffer A - Page B - 13</i>	<i>PCH 6/9 - Page B - 37</i>	<i>PEX_VDD - Page B - 61</i>
<i>Frame Buffer A - Page B - 14</i>	<i>PCH 7/9 - Page B - 38</i>	<i>FBVDDQ - Page B - 62</i>
<i>Frame Buffer B - Page B - 15</i>	<i>PCH 8/9 - Page B - 39</i>	<i>IV8_RUN/AON - Page B - 63</i>
<i>Frame Buffer B - Page B - 16</i>	<i>PCH 9/9 - Page B - 40</i>	<i>Audio Board - Page B - 64</i>
<i>Frame Buffer C/D - Page B - 17</i>	<i>M.2 Card - Page B - 41</i>	<i>NH50 PW Board - Page B - 65</i>
<i>Frame Buffer C - Page B - 18</i>	<i>M.2 WLAN+BT - Page B - 42</i>	<i>Hall Sensor Board - Page B - 66</i>
<i>Frame Buffer C - Page B - 19</i>	<i>USB Charger - Page B - 43</i>	<i>Click Board - Page B - 67</i>
<i>GPU Decoupling 1 - Page B - 20</i>	<i>Card Reader / LAN RTL8411B - Page B - 44</i>	<i>LED Board - Page B - 68</i>
<i>GPU Decoupling 2 - Page B - 21</i>	<i>HDD, Click TP, Audio, Hall Con. - Page B - 45</i>	<i>NH70 PW Board - Page B - 69</i>
<i>Straps and XTAL - Page B - 22</i>	<i>LED, CCD, TPM, Power SW Con. - Page B - 46</i>	<i>Power Sequence - Page B - 70</i>
<i>IFP I/O Interface - Page B - 23</i>	<i>Audio Codec - Page B - 47</i>	<i>USB Type-C - Page B - 71</i>
<i>Misc - GPIO, I2C and ROM - Page B - 24</i>	<i>KBC-ITE IT8587 - Page B - 48</i>	<i>PD Controller ANX7411 - Page B - 72</i>
<i>NVIDIA Power Sequence - Page B - 25</i>	<i>RGB KB Only - Page B - 49</i>	<i>PER KEY Board - Page B - 73</i>

**Table B - 1**  
**SCHEMATIC**  
**DIAGRAMS**

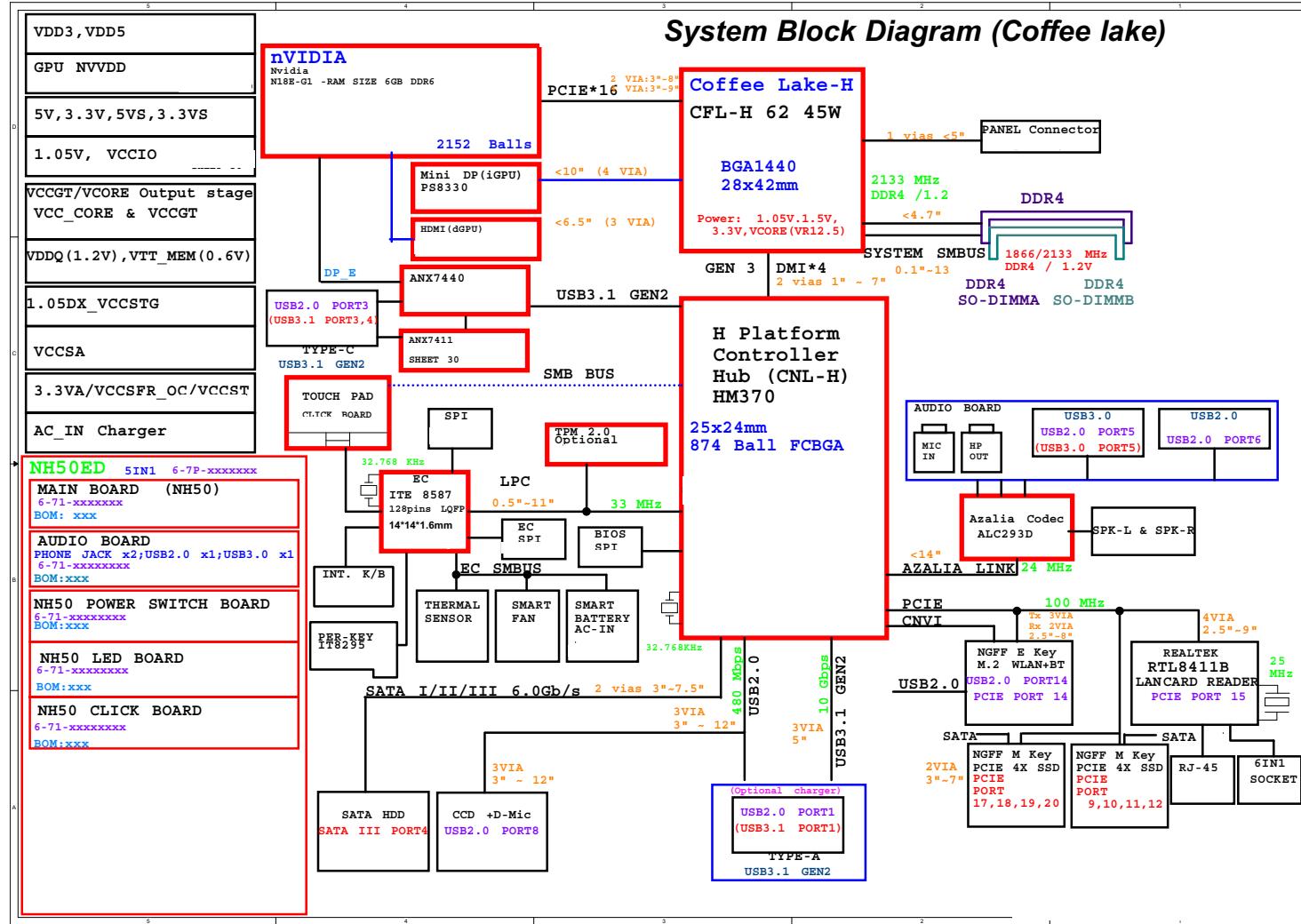


#### Version Note

The schematic diagrams in this chapter are based upon version 6-7P-NH506-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

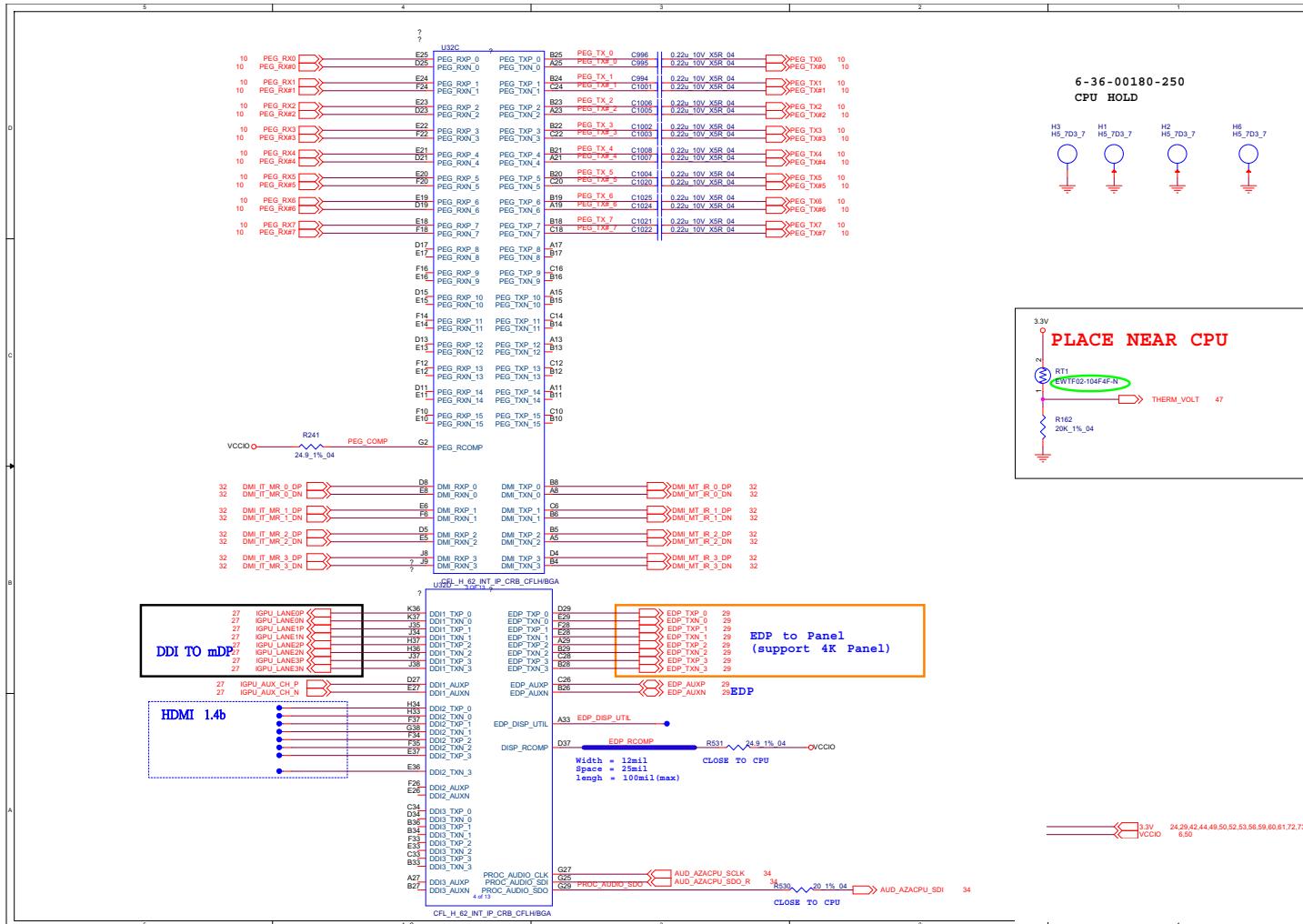
# System Block Diagram

**Sheet 1 of 73  
System Block Diagram**



**B - 2 System Block Diagram**

# Processor 1/6



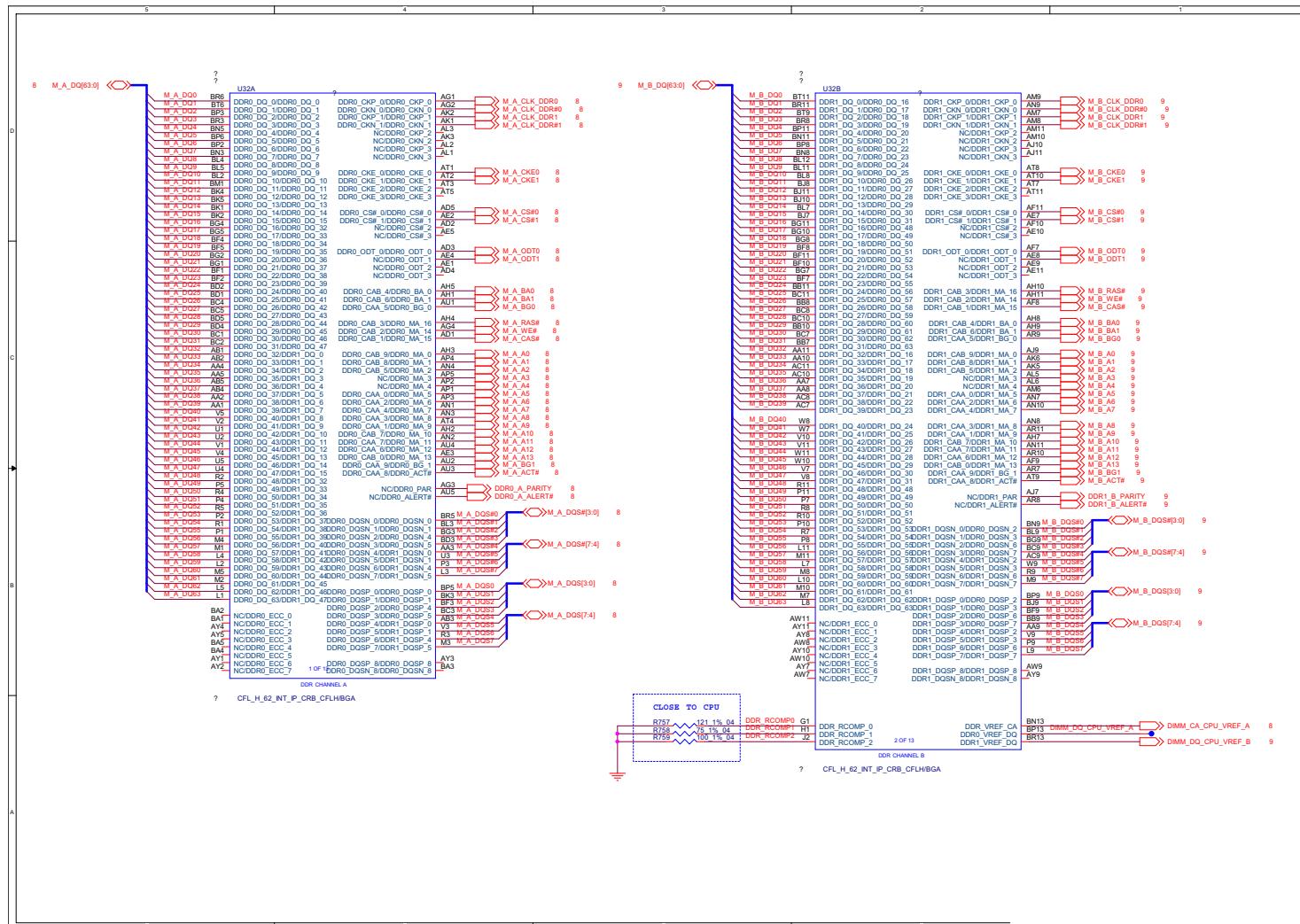
Sheet 2 of 73  
Processor 1/6

## Schematic Diagrams

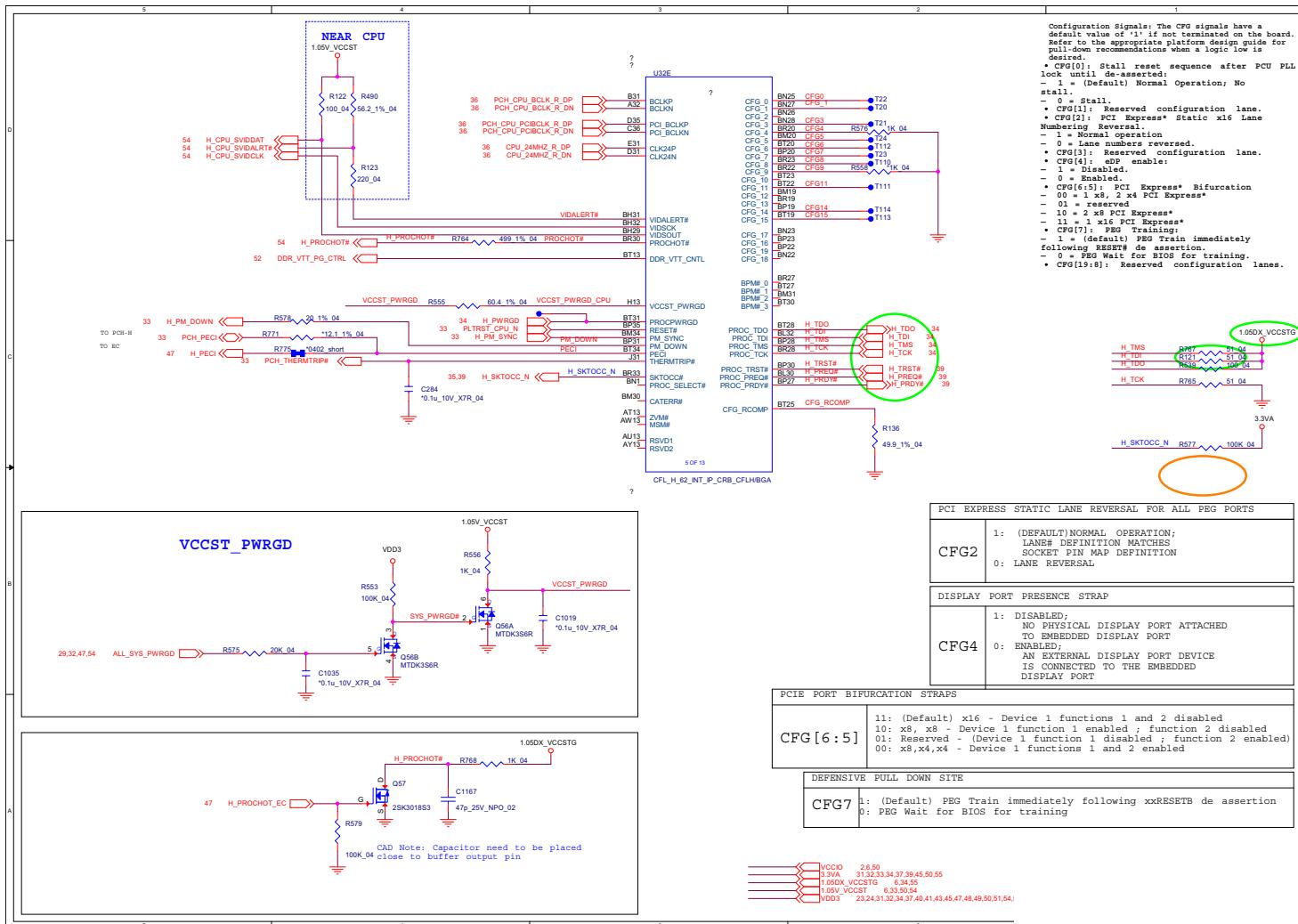
## Processor 2/6

## B. Schematic Diagrams

Sheet 3 of 73  
Processor 2/6



### Processor 3/6

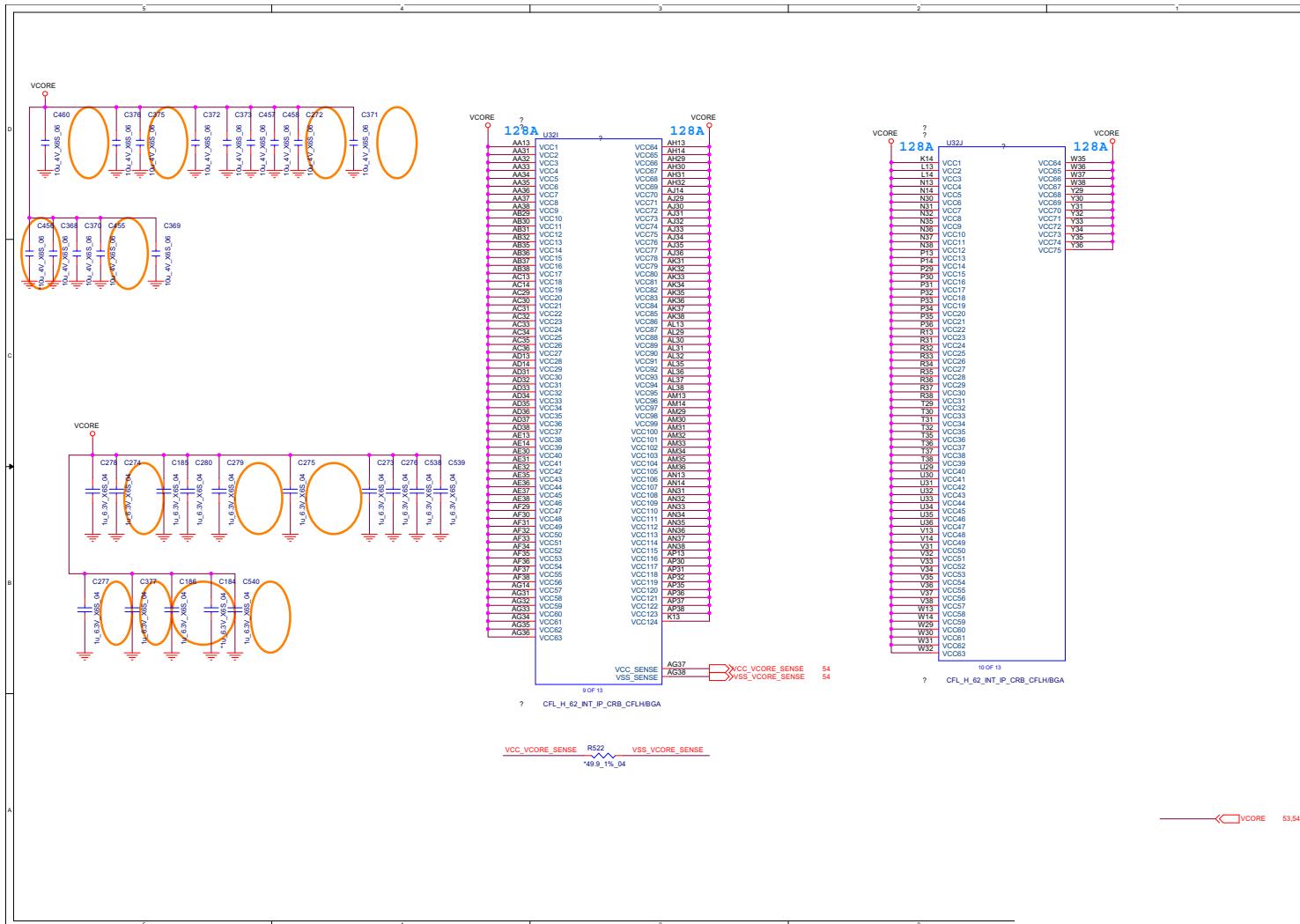


Sheet 4 of 73  
Processor 3/6

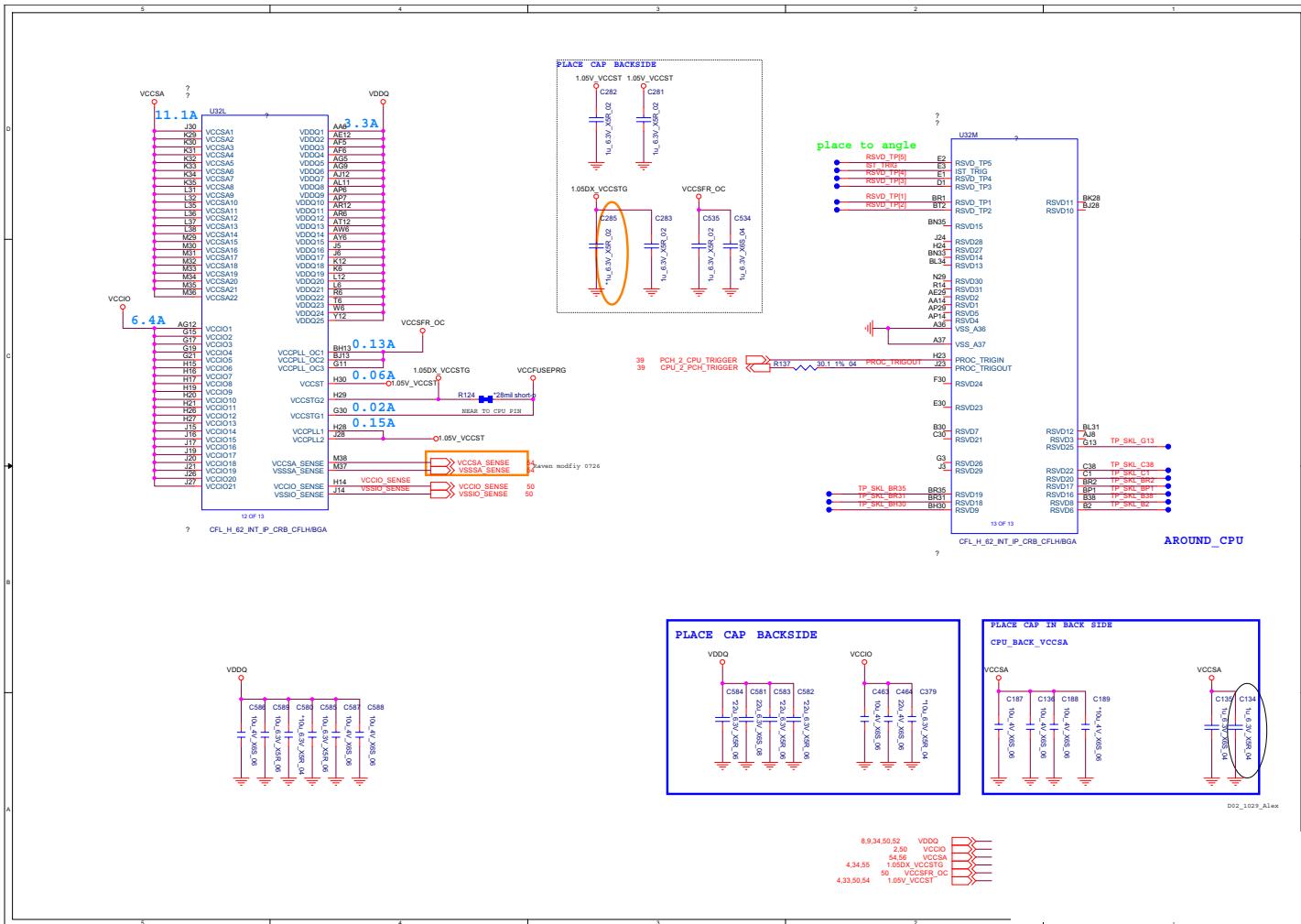
## B. Schematic Diagrams

### Schematic Diagrams

### Processor 4/6



# Processor 5/6



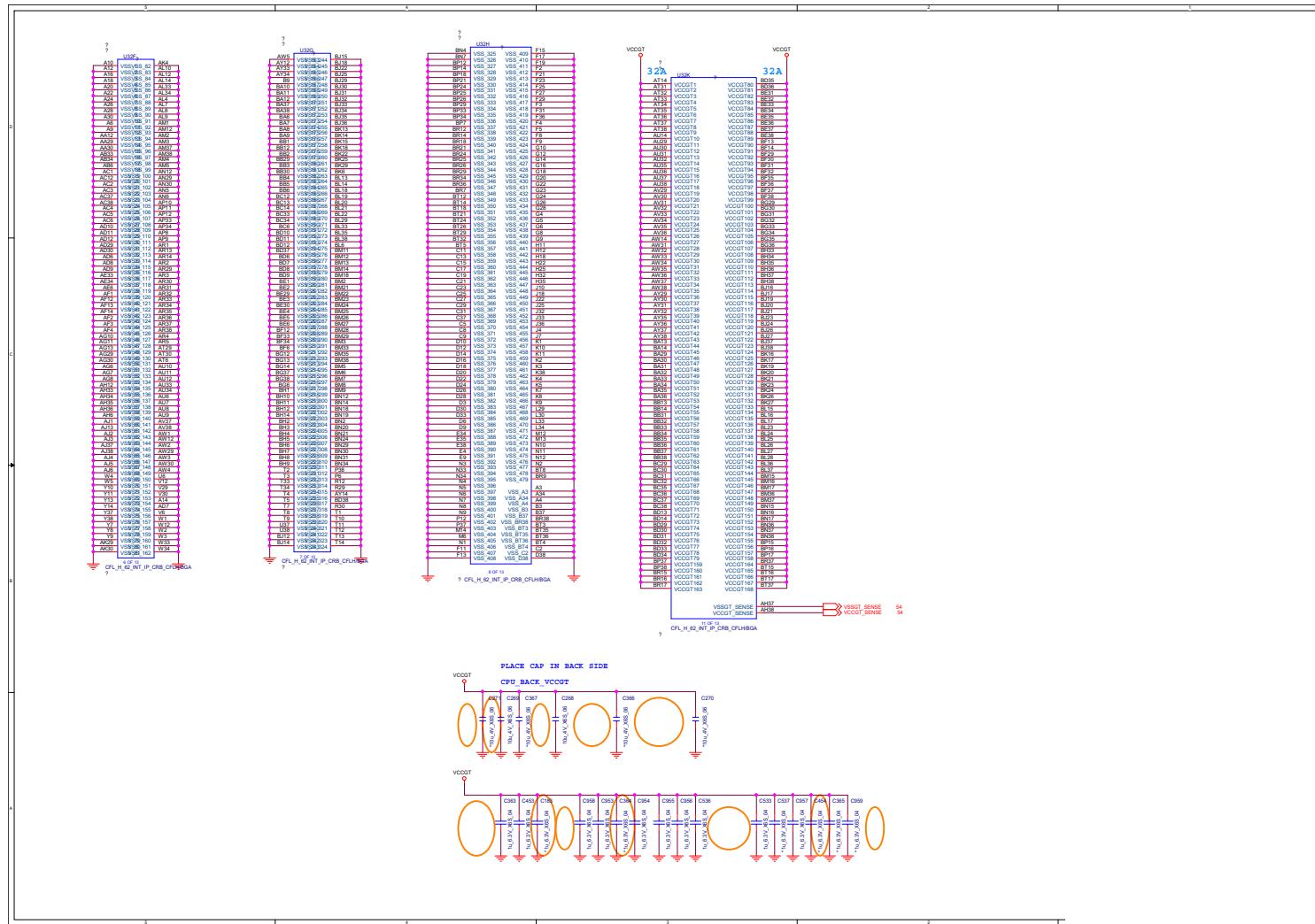
Sheet 6 of 73  
Processor 5/6

## B. Schematic Diagrams

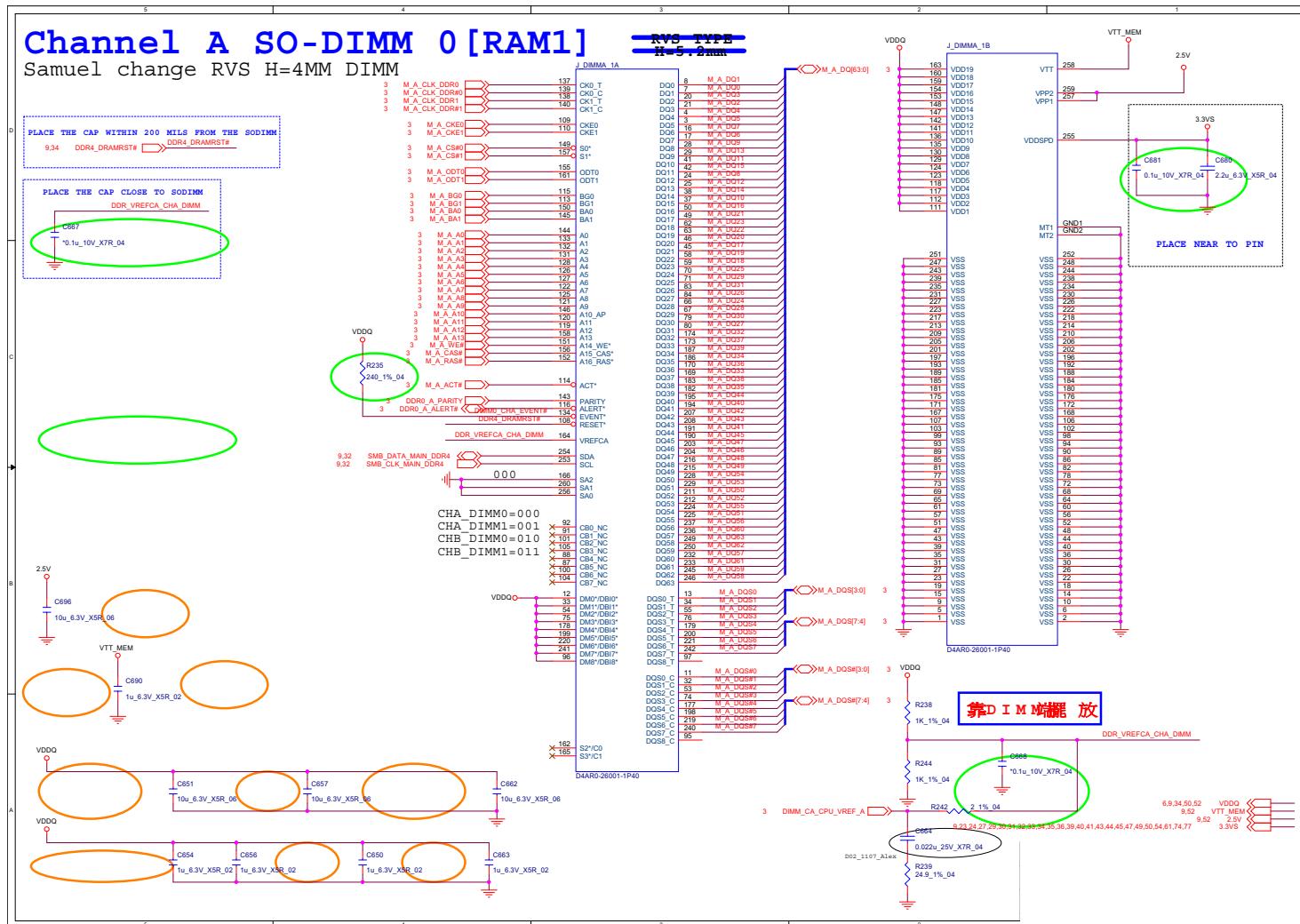
### Schematic Diagrams

### Processor 6/6

Sheet 7 of 73  
Processor 6/6



# **DDR4 CHA SO-DIMM**



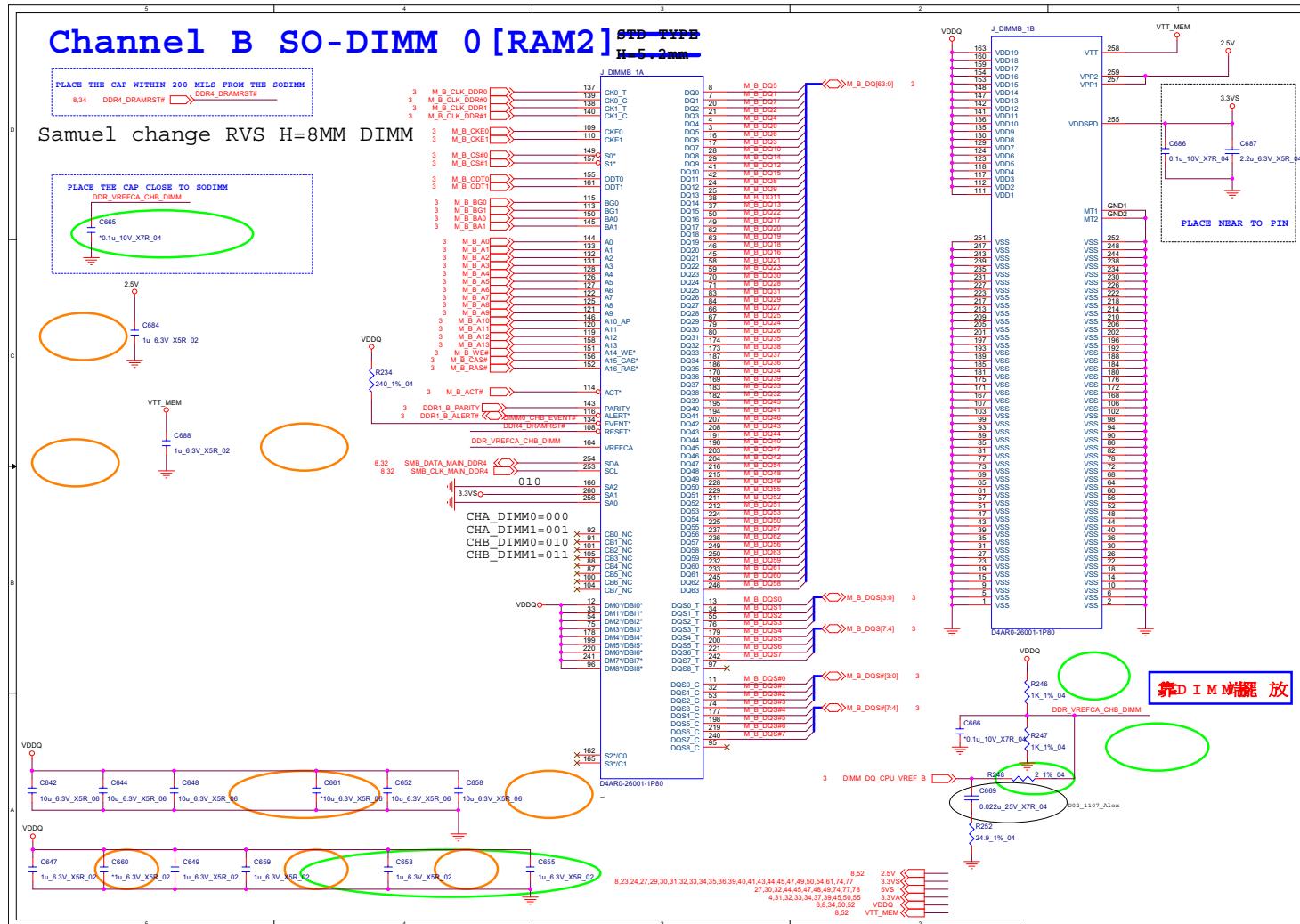
**Sheet 8 of 73**  
**DDR4 CHA SO-**  
**DIMM**

## B.Schematic Diagrams

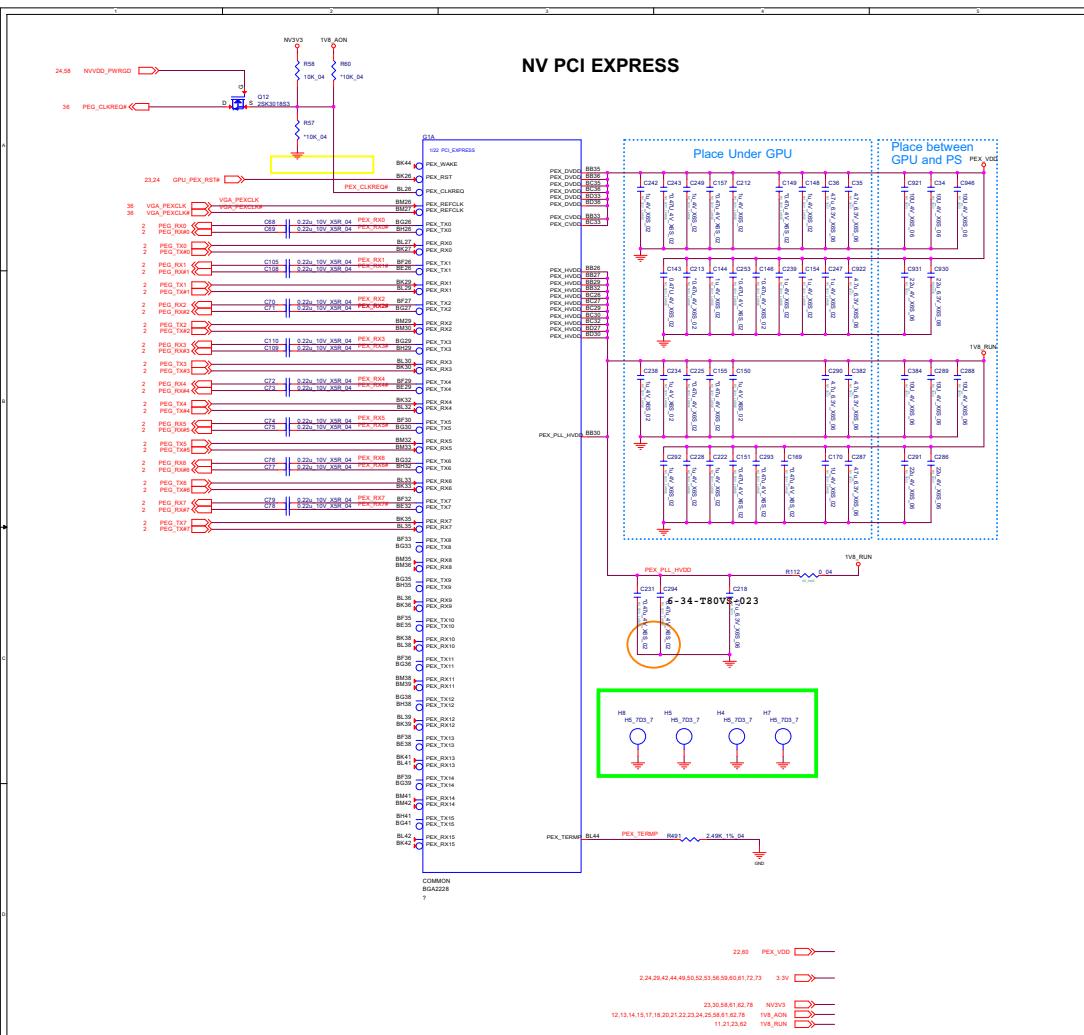
## Schematic Diagrams

# **DDR4 CHB SO-DIMM**

**Sheet 9 of 73**  
**DDR4 CHB SO-**  
**DIMM**



# VGA PCI Express



Sheet 10 of 73  
VGA PCI Express

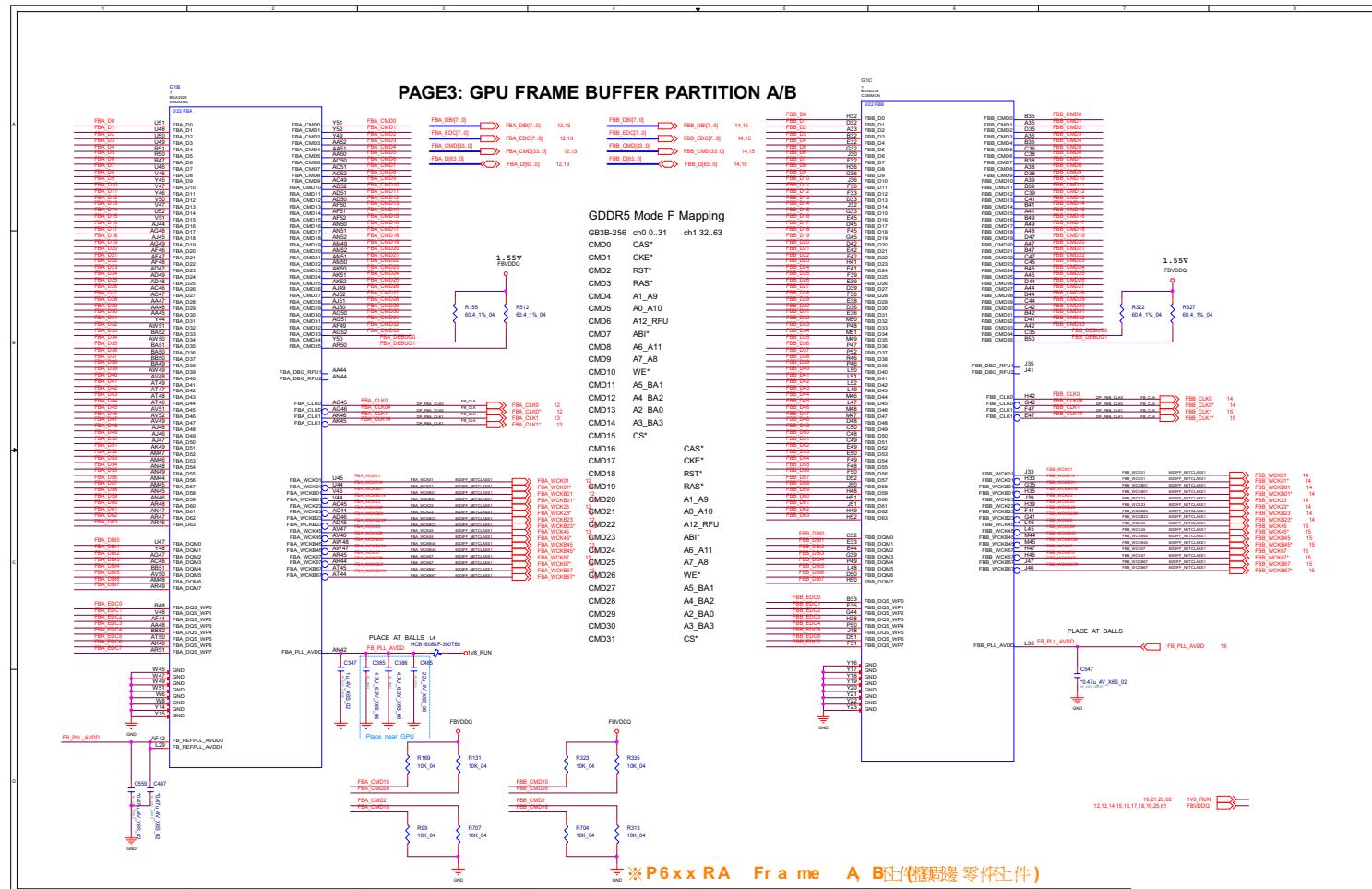
## B.Schematic Diagrams

## Schematic Diagrams

# GPU Frame Buffer Partition

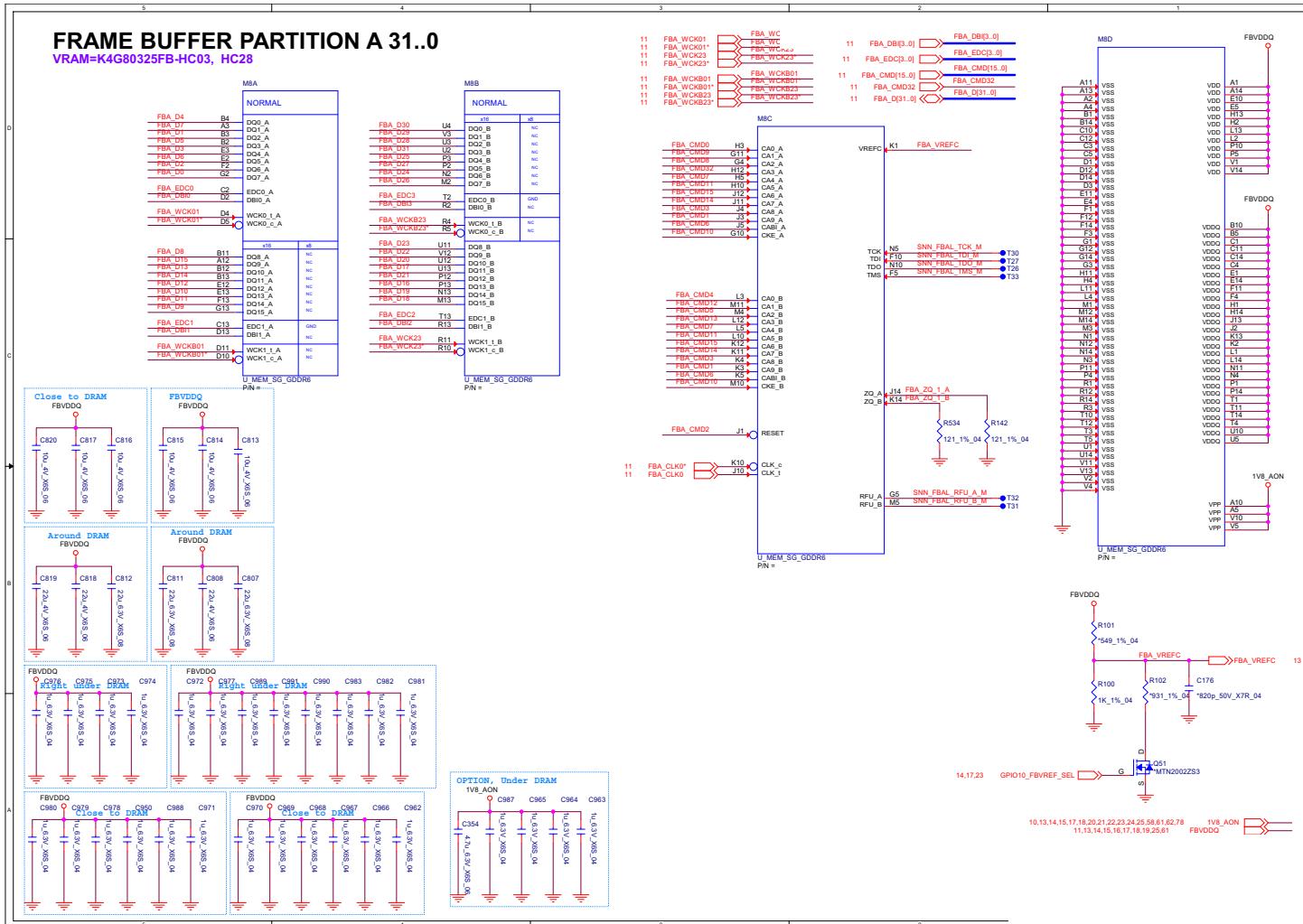
# Sheet 11 of 73

## GPU Frame Buffer Partition



## Schematic Diagrams

# Frame Buffer A



Sheet 12 of 73  
Frame Buffer A

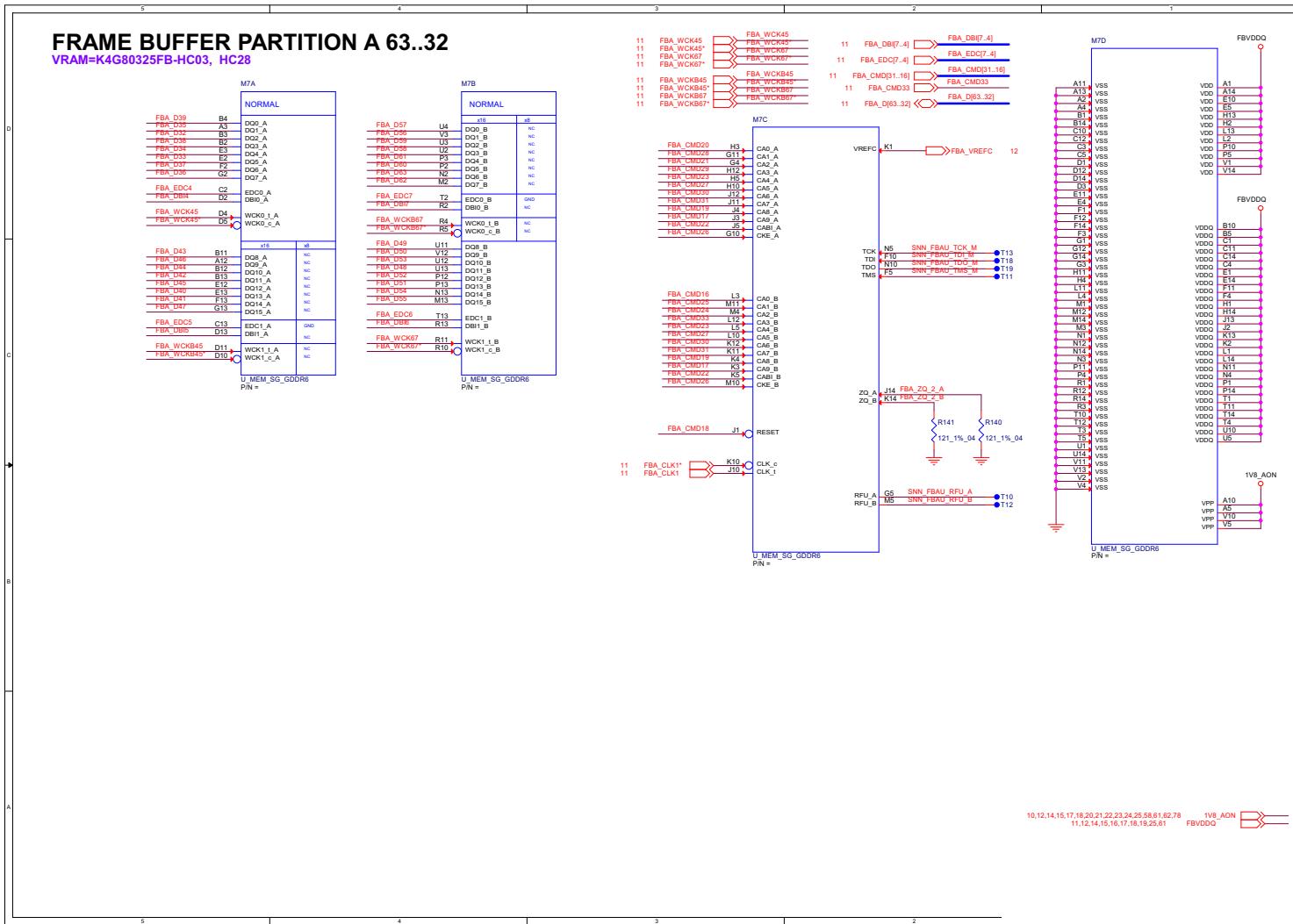
## B.Schematic Diagrams

# Schematic Diagrams

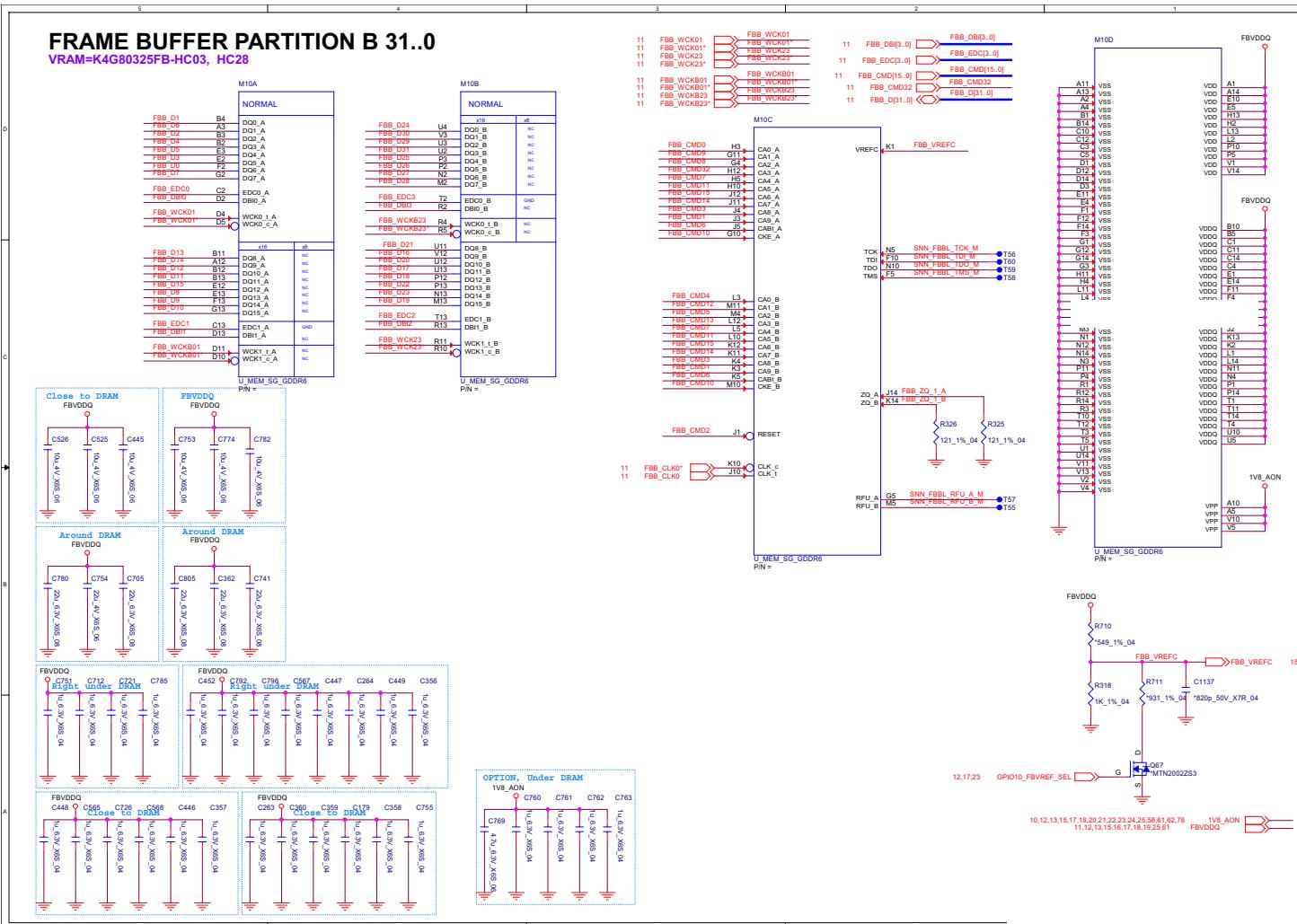
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# Frame Buffer A

Sheet 13 of 73  
Frame Buffer A



# Frame Buffer B

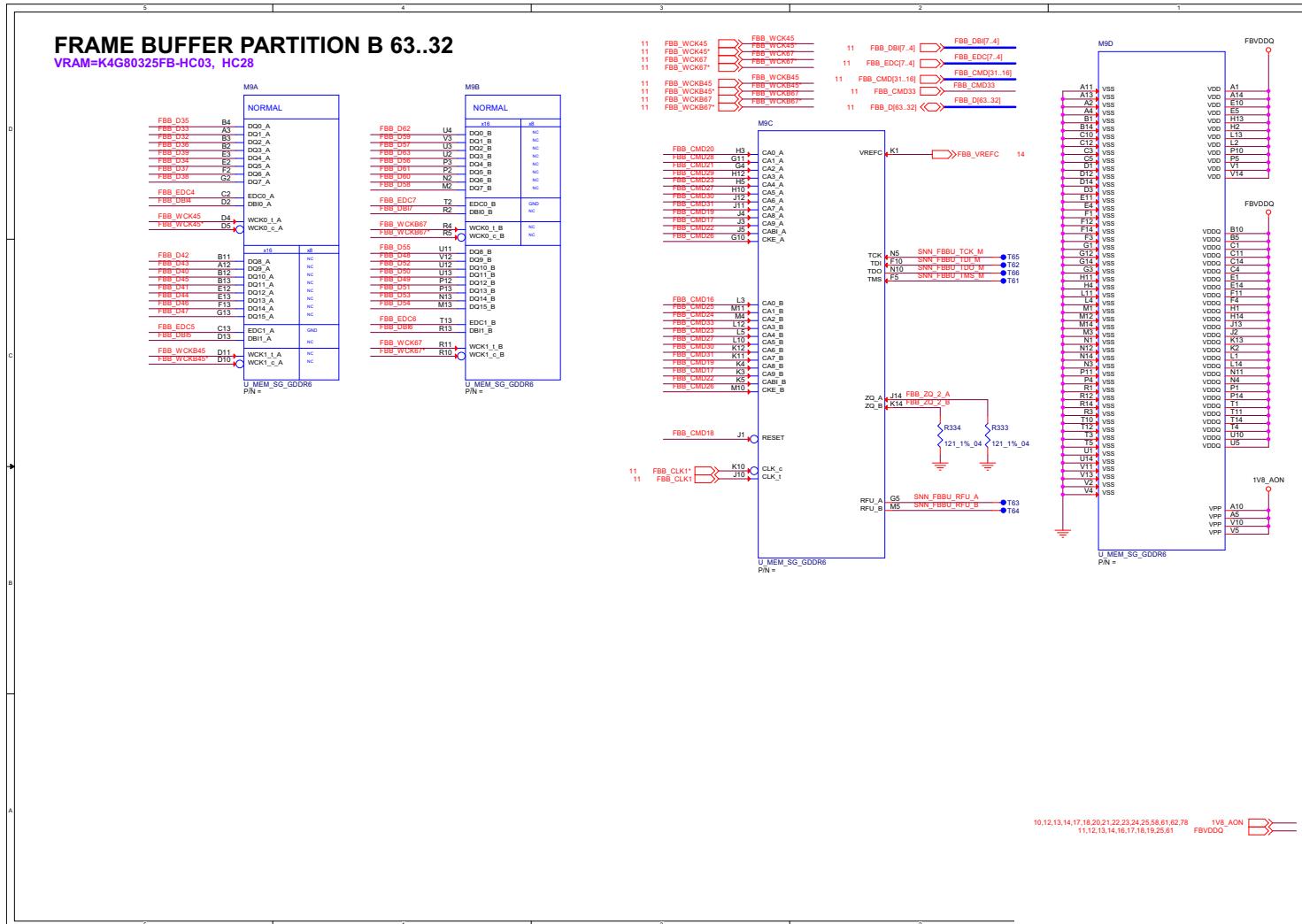


Sheet 14 of 73  
Frame Buffer B

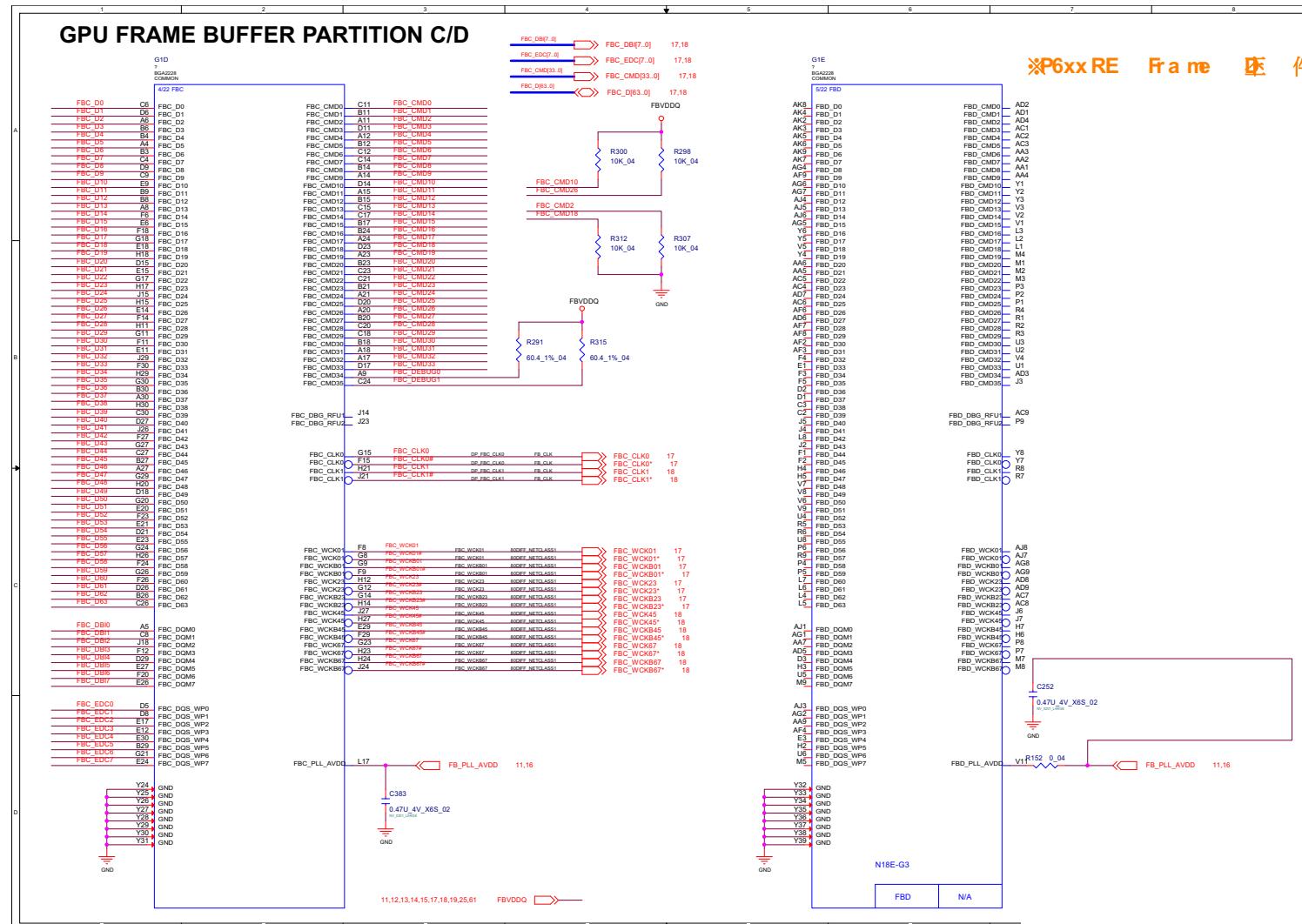
## Schematic Diagrams

### Frame Buffer B

Sheet 15 of 73  
Frame Buffer B



# Frame Buffer C/D

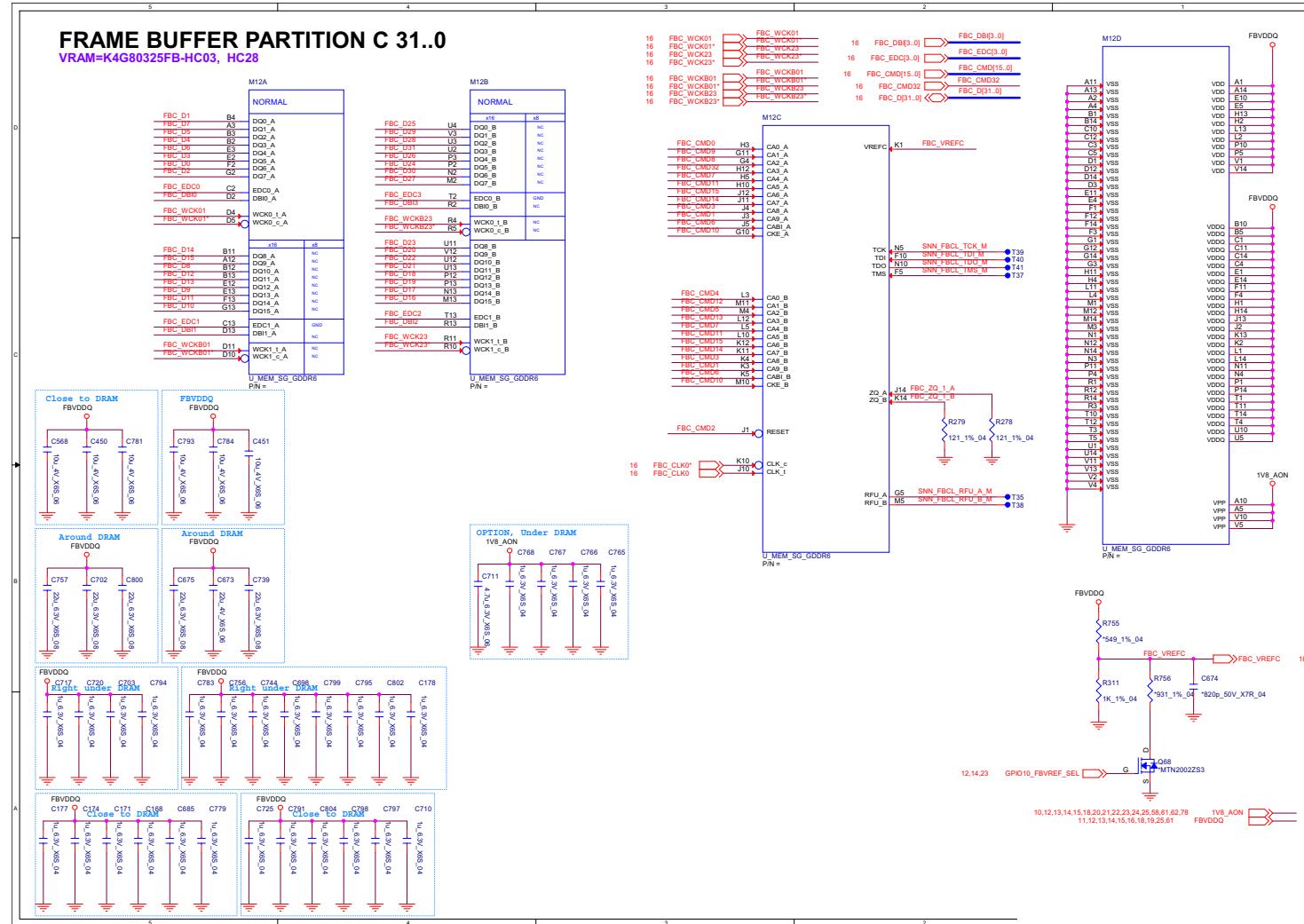


Sheet 16 of 73  
Frame Buffer C/D

## Schematic Diagrams

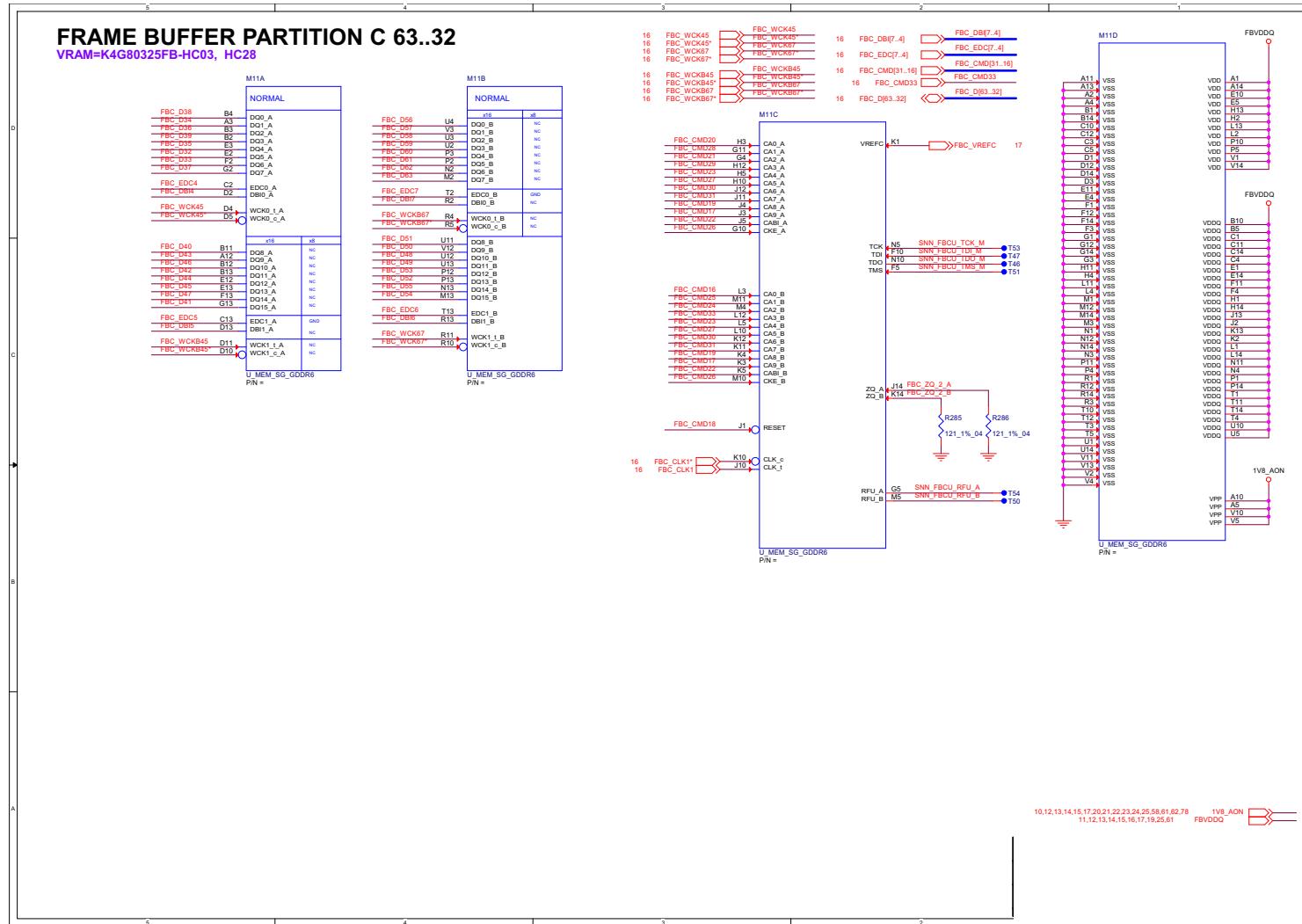
# Frame Buffer C

Sheet 17 of 73  
Frame Buffer C



## Schematic Diagrams

# Frame Buffer C



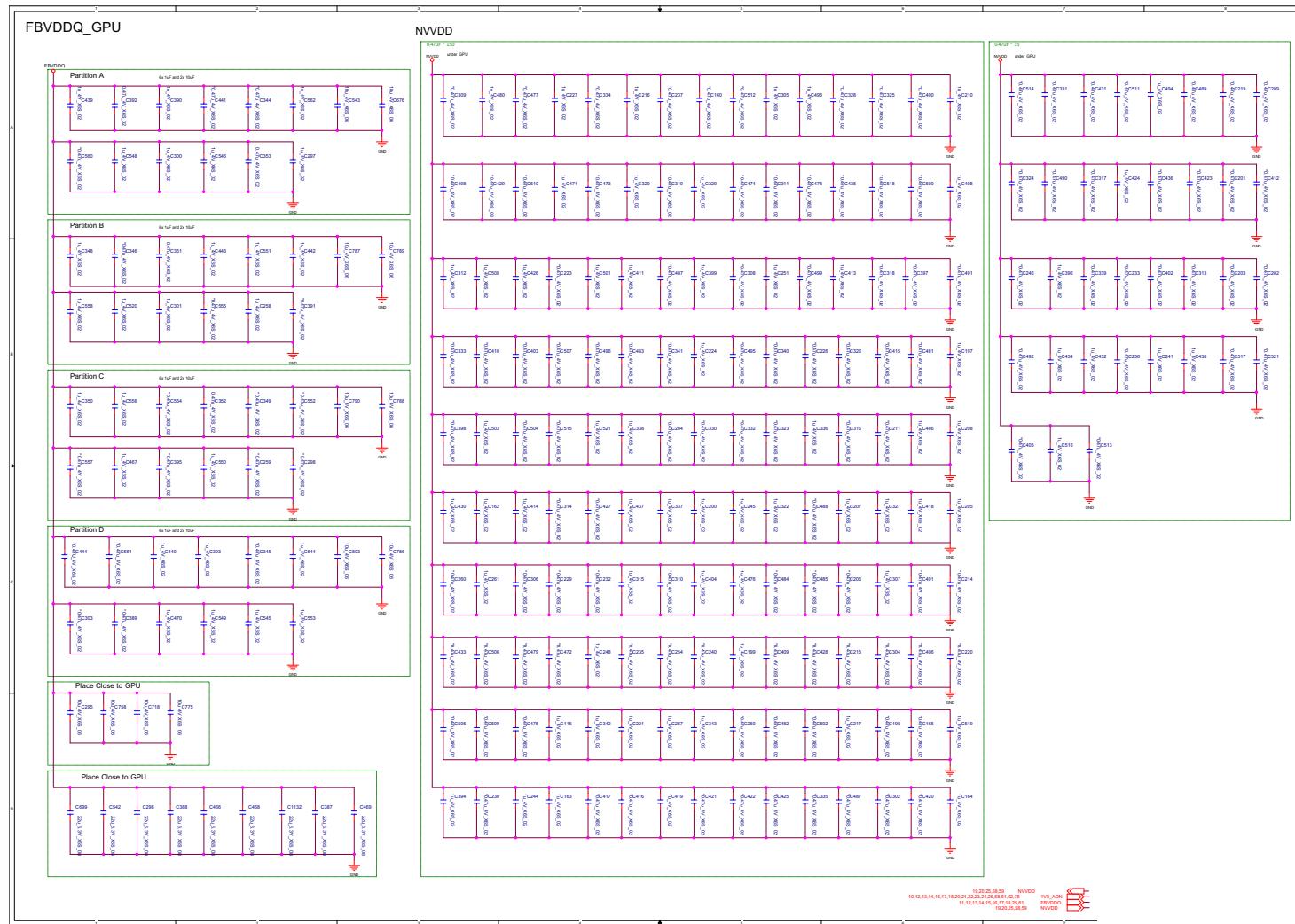
Sheet 18 of 73  
Frame Buffer C

## **Schematic Diagrams**

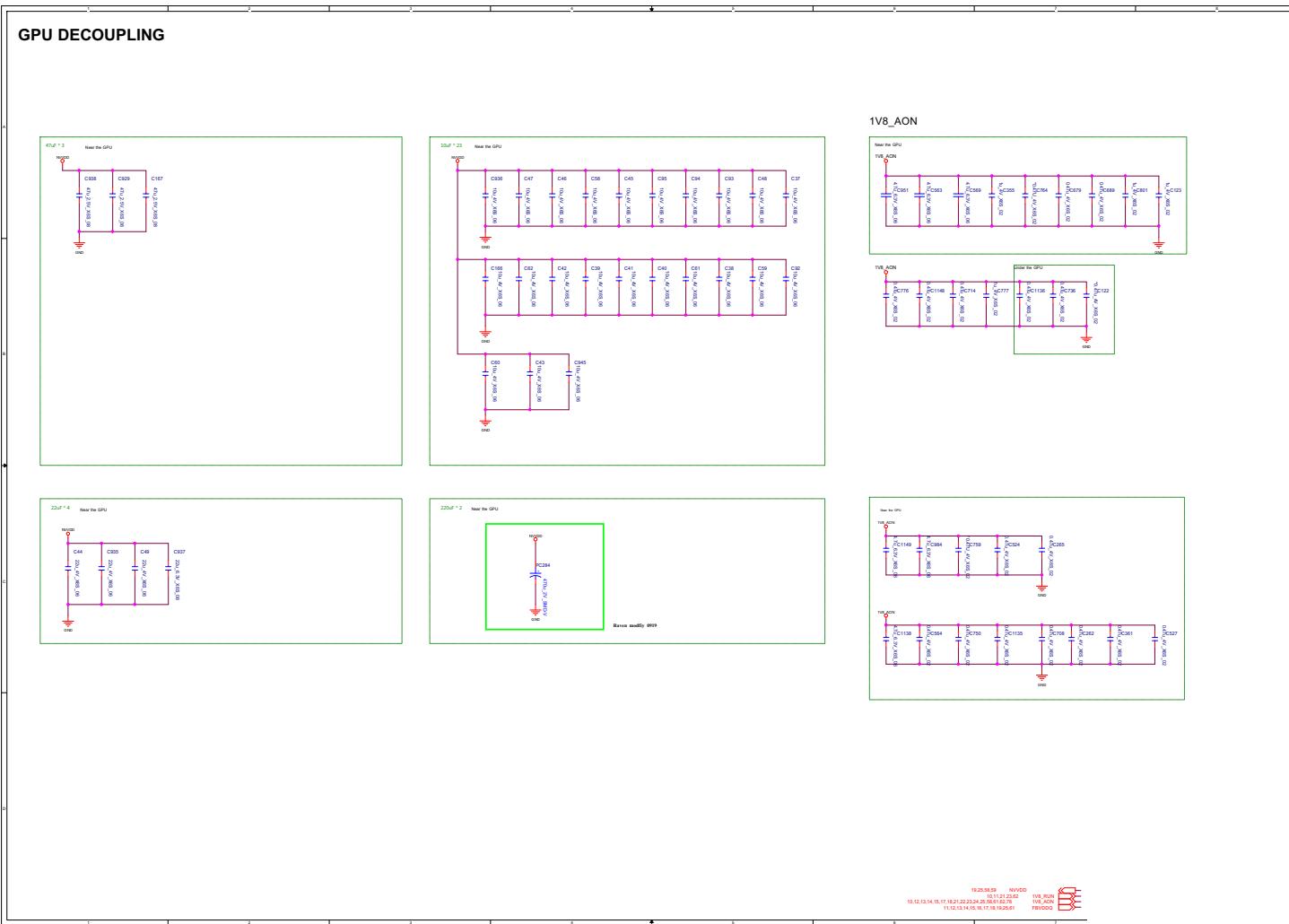
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# GPU Decoupling 1

Sheet 19 of 73  
GPU Decoupling 1



# GPU Decoupling 2

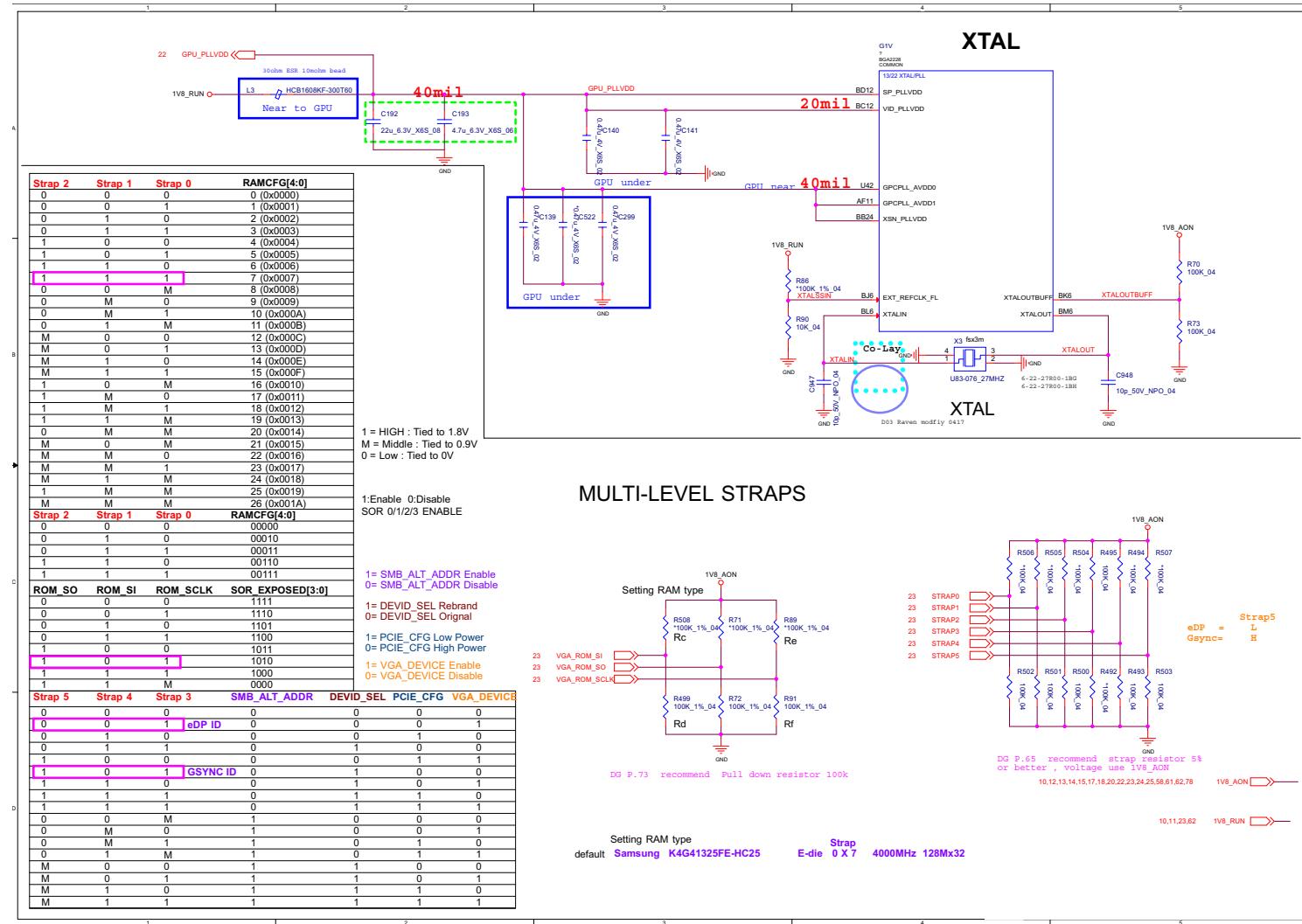


Sheet 20 of 73  
GPU Decoupling 2

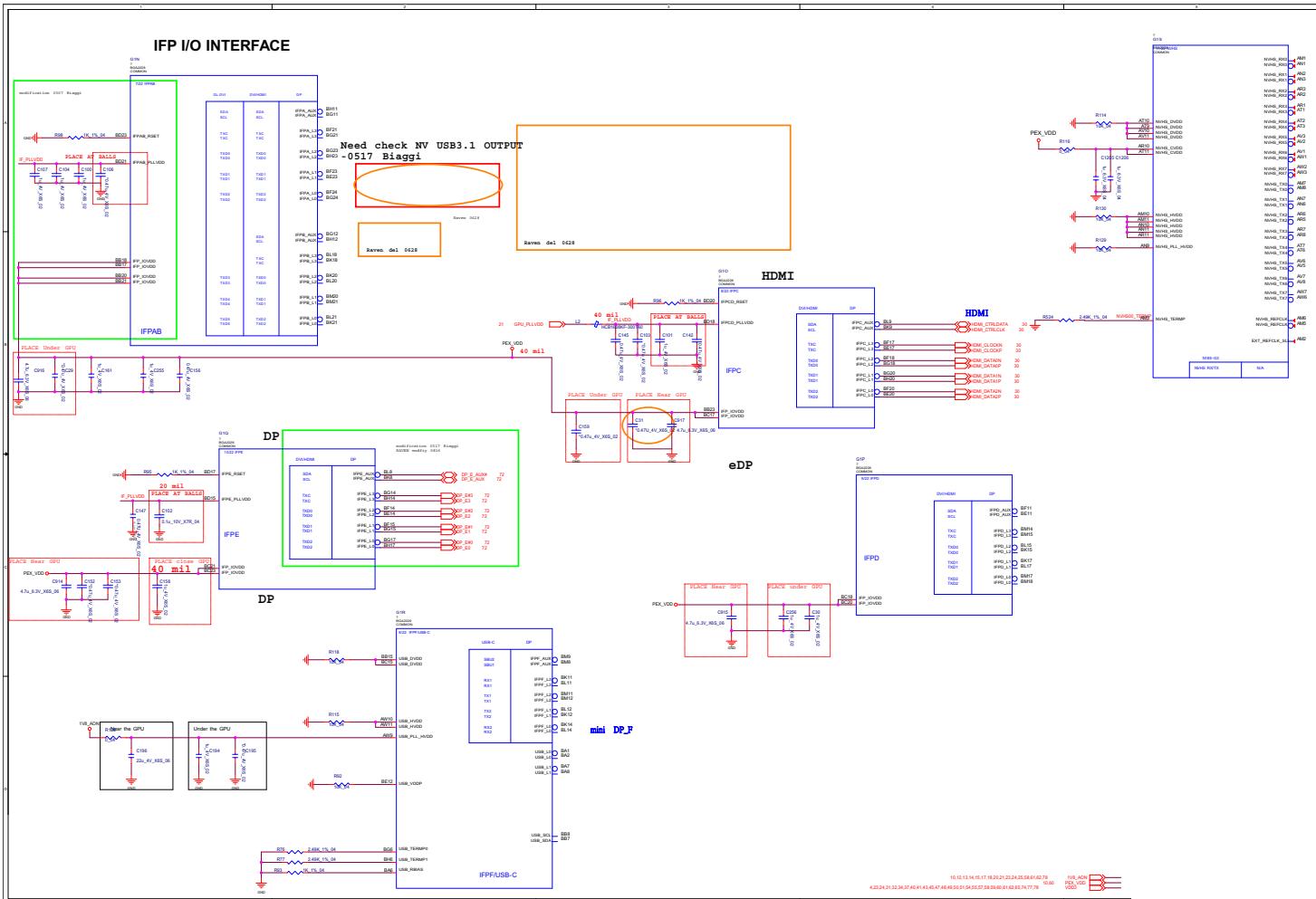
## Schematic Diagrams

### Straps and XTAL

Sheet 21 of 73  
Straps and XTAL



# IFP I/O Interface

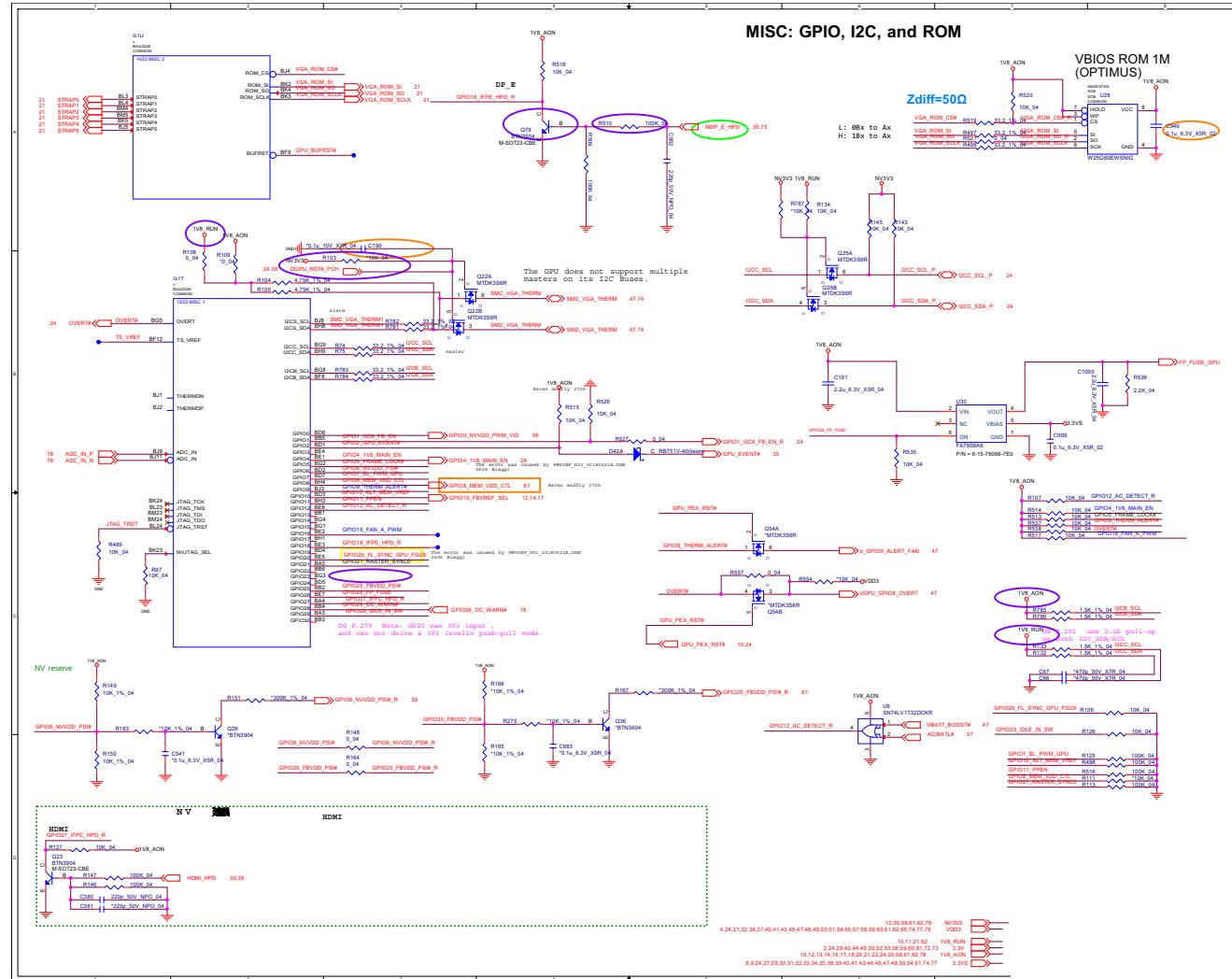


Sheet 22 of 73  
IFP I/O Interface

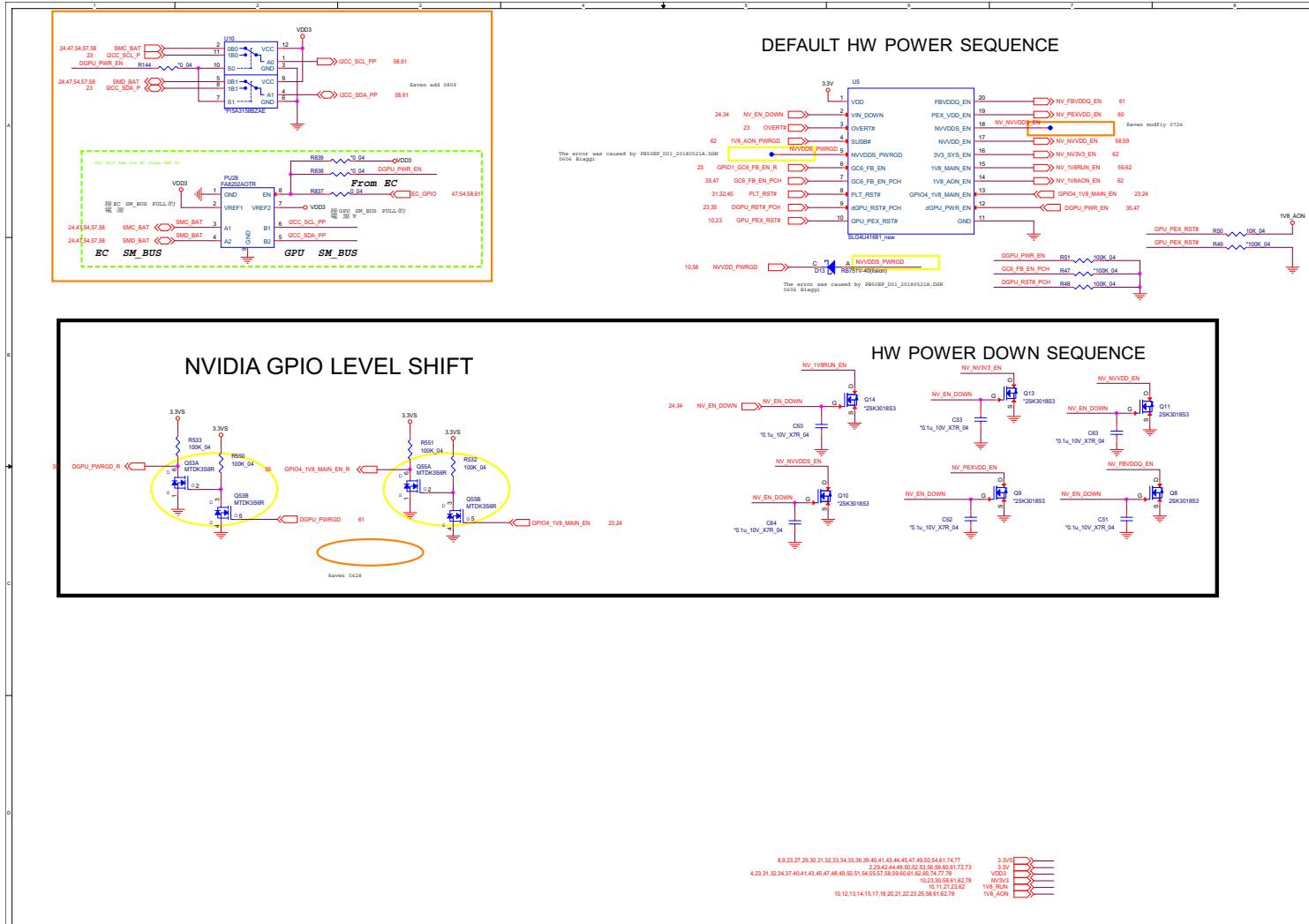
## Schematic Diagrams

## Misc - GPIO, I2C and ROM

Sheet 23 of 73  
Misc - GPIO, I2C  
and ROM



# NVIDIA Power Sequence

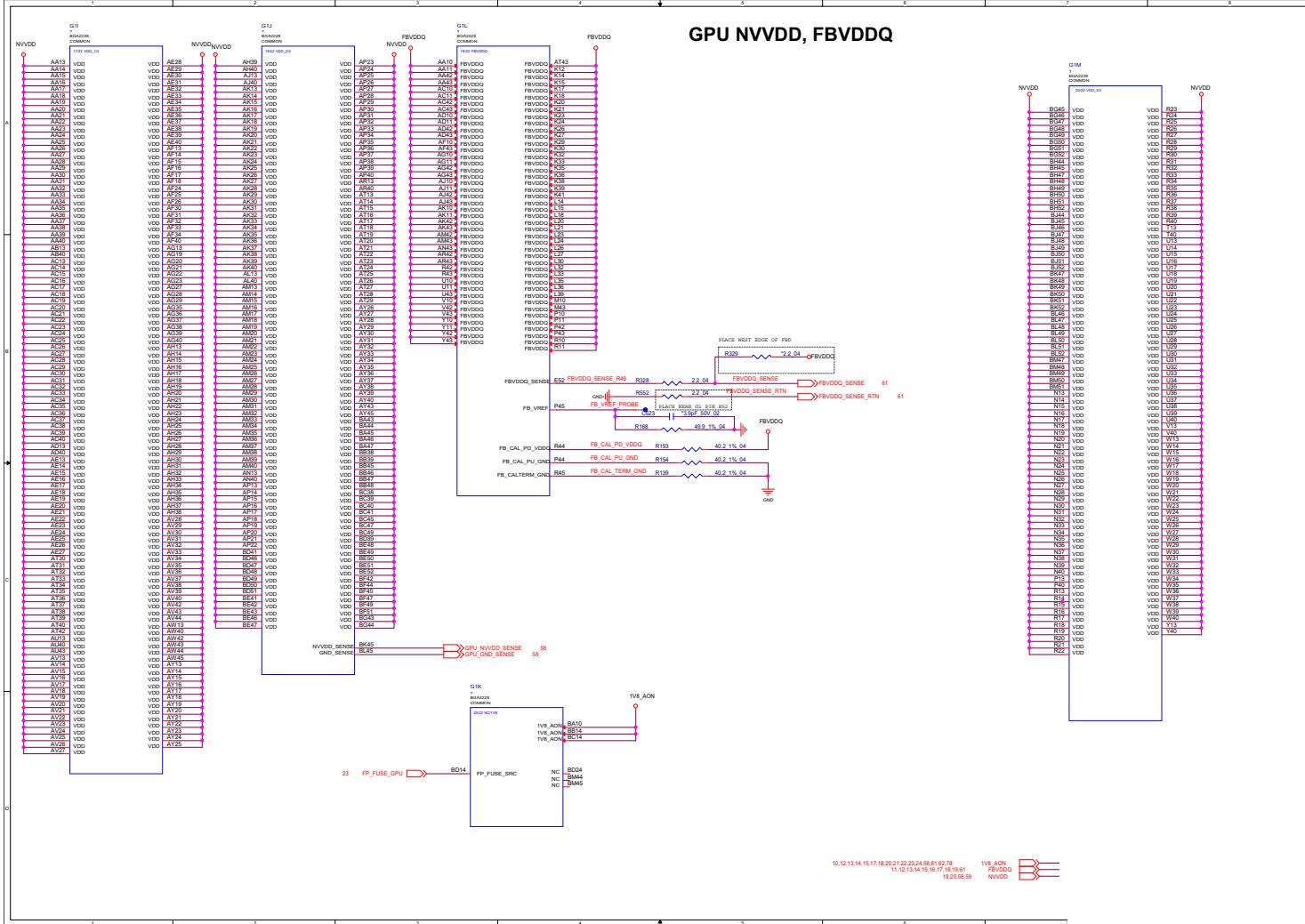


Sheet 24 of 73  
NVIDIA Power  
Sequence

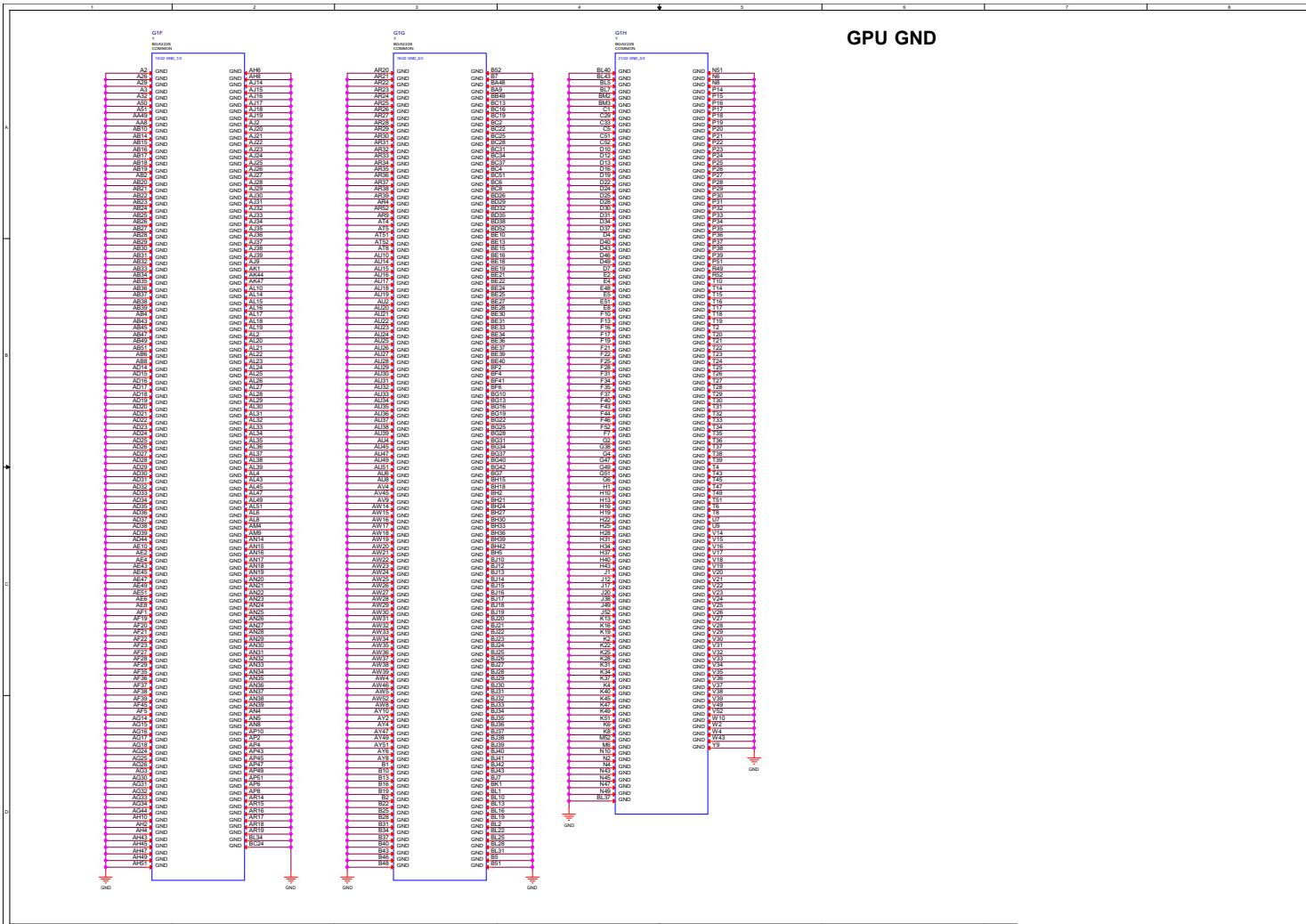
## Schematic Diagrams

### GPU NVVDD, FBVDDQ

Sheet 25 of 73  
GPU NVVDD,  
FBVDDQ



# GPU GND



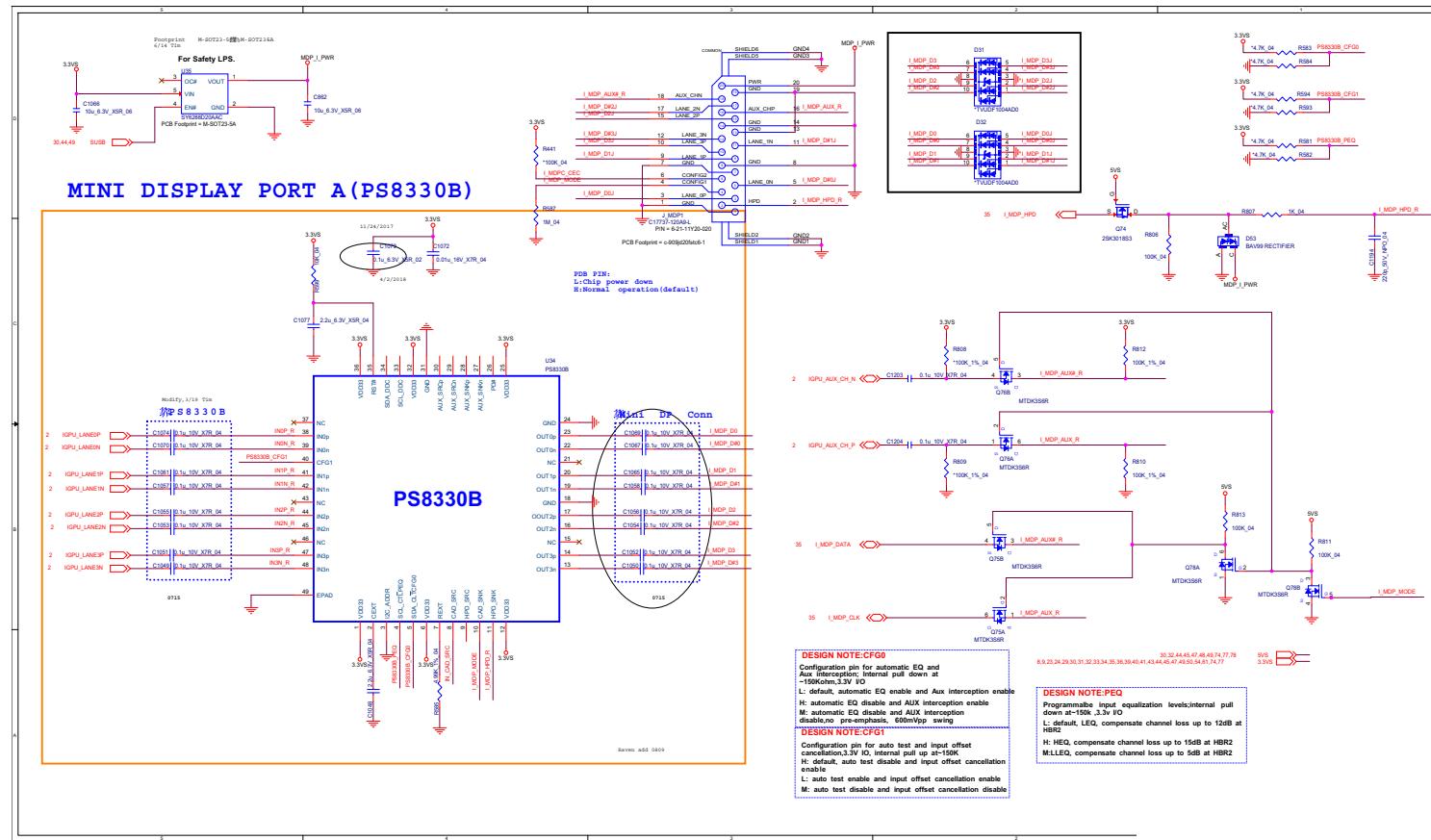
Sheet 26 of 73  
GPU GND

## B.Schematic Diagrams

## Schematic Diagrams

### mDP

Sheet 27 of 73  
mDP



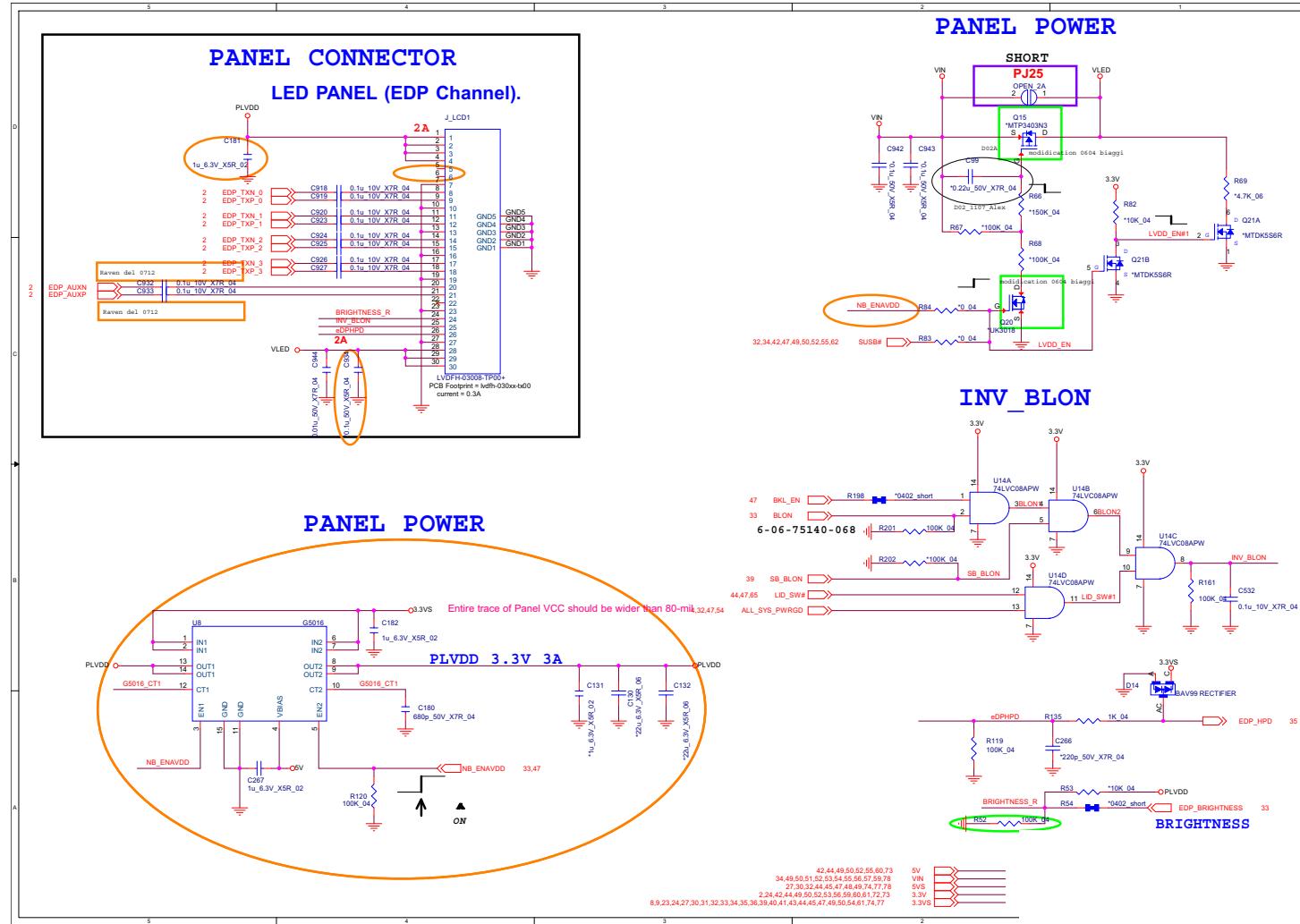
mDP



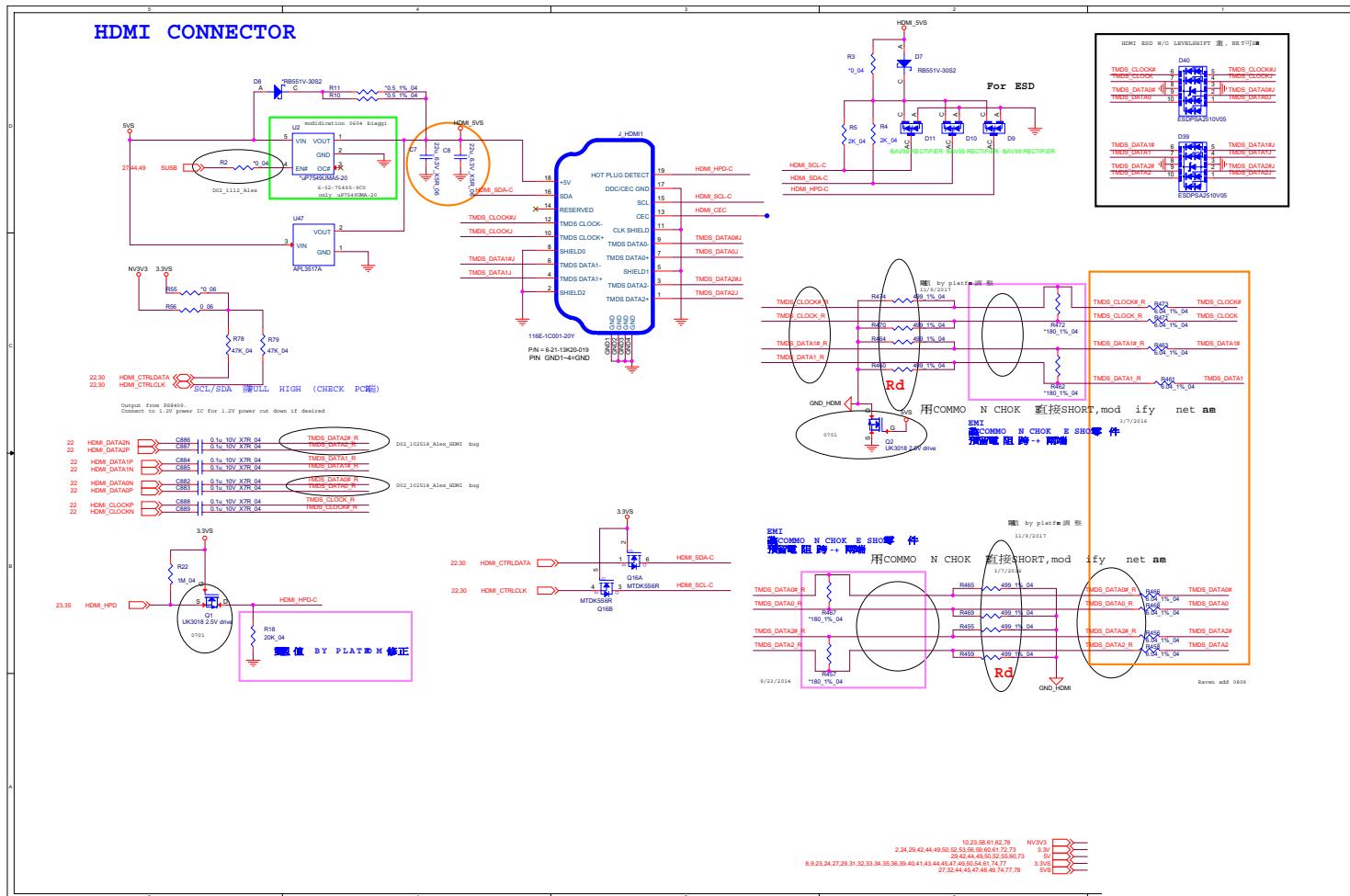
Sheet 28 of 73  
mDP

**Schematic Diagrams****Panel, Inverter**

**Sheet 29 of 73**  
**Panel, Inverter**



### HDMI



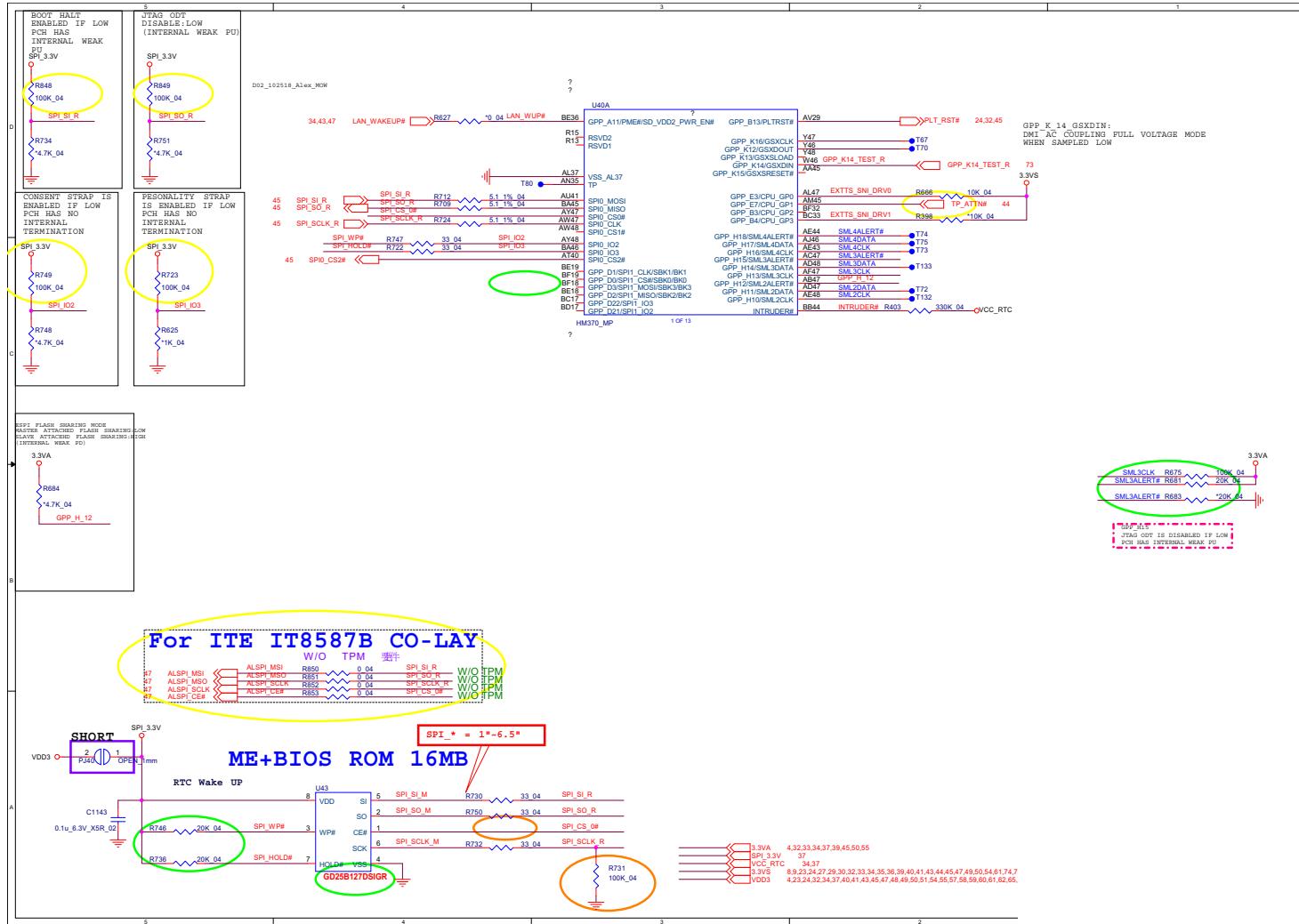
Sheet 30 of 73  
HDMI

## B.Schematic Diagrams

### Schematic Diagrams

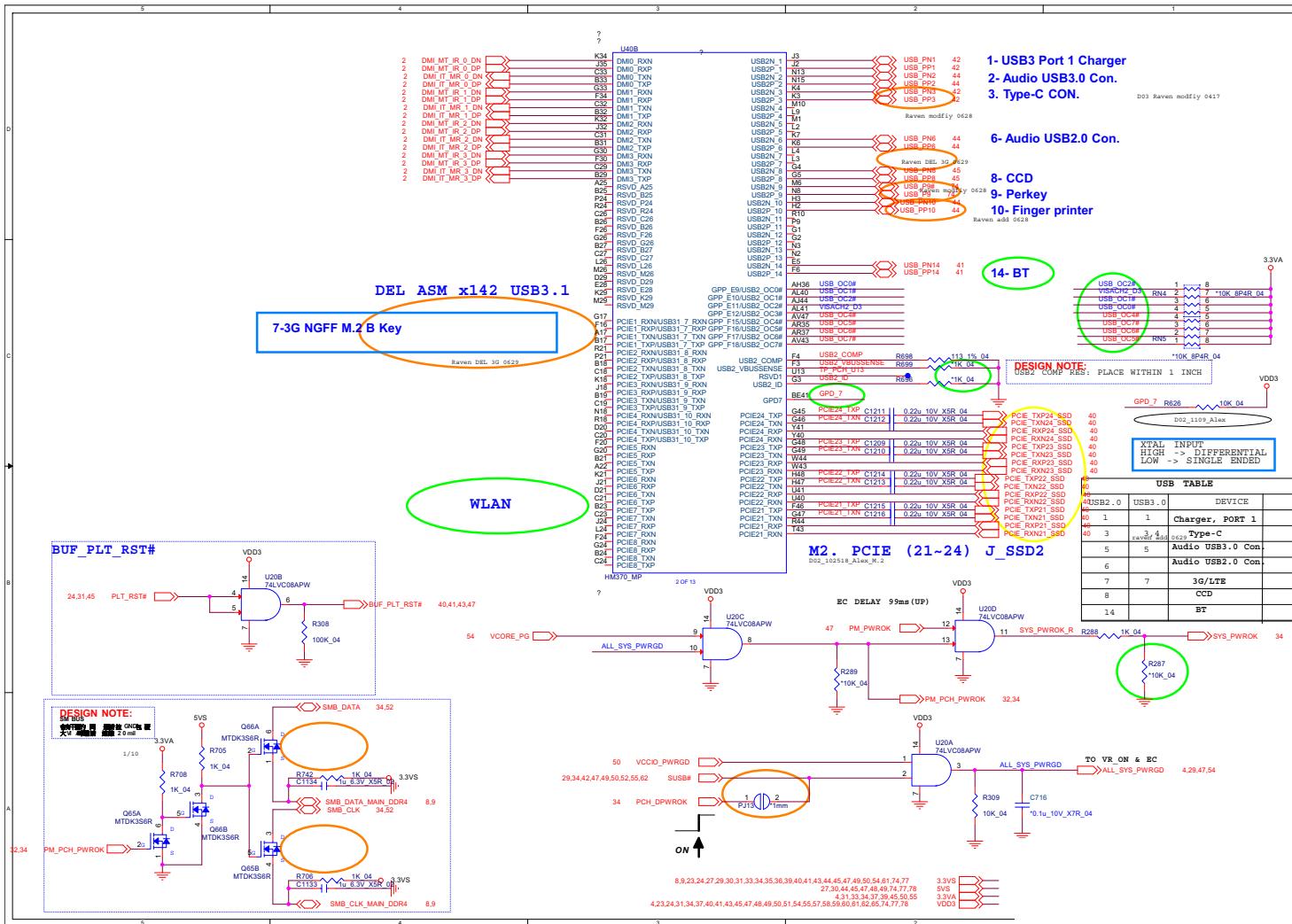
#### PCH 1/9

Sheet 31 of 73  
PCH 1/9



## Schematic Diagrams

PCH 2/9



## B.Schematic Diagrams

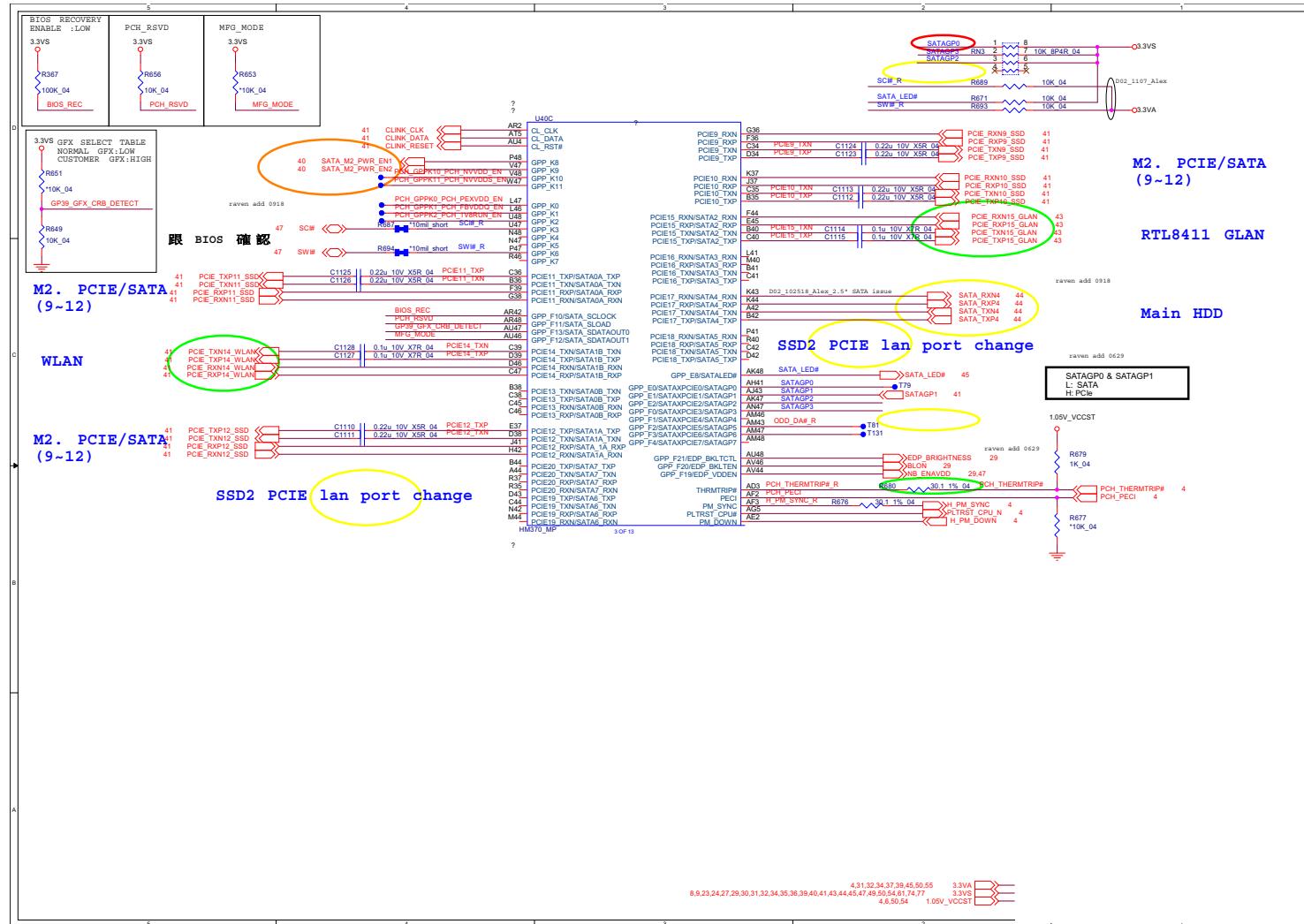
Sheet 32 of 73  
PCH 2/9

## B.Schematic Diagrams

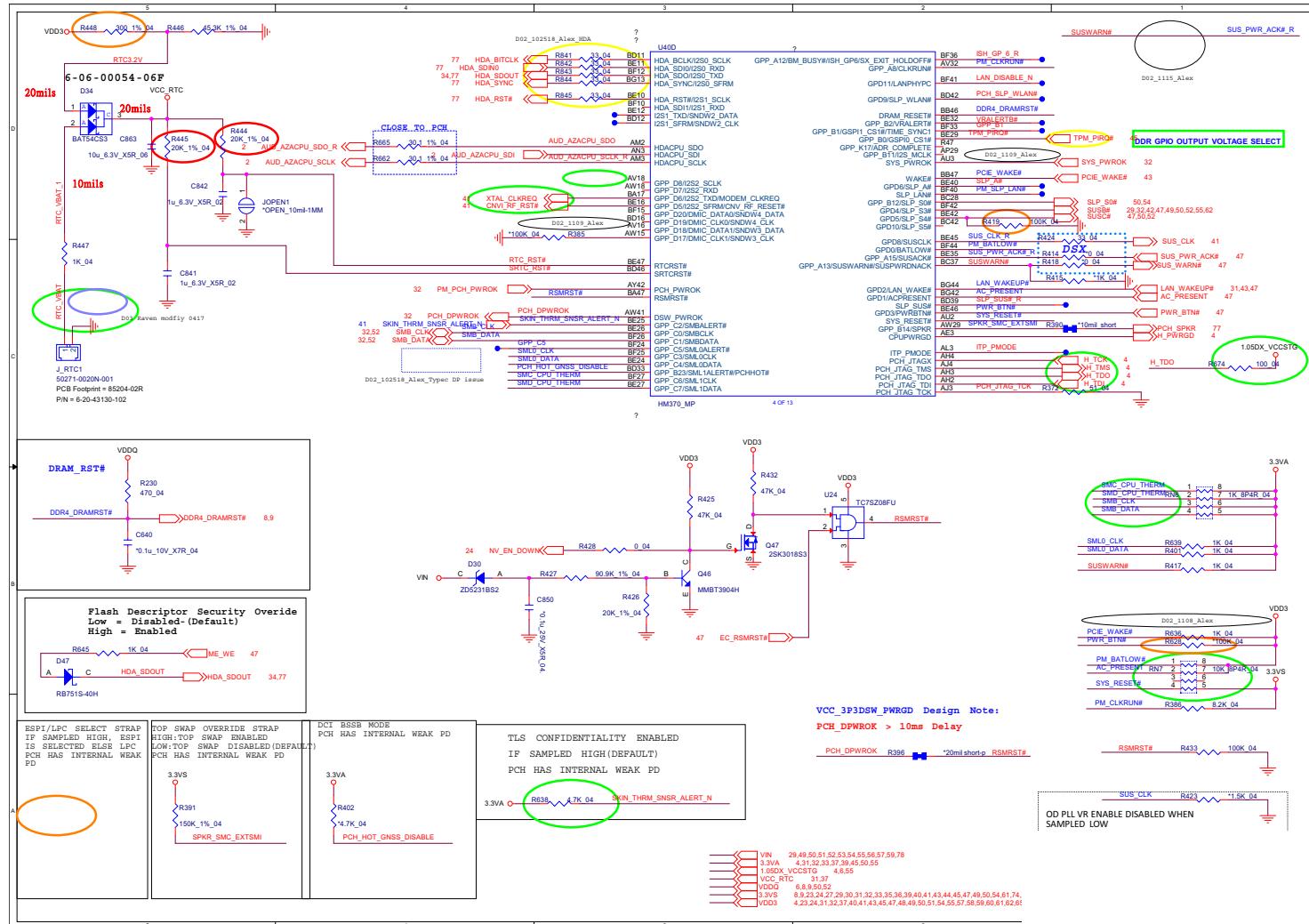
## Schematic Diagrams

### PCH 3/9

Sheet 33 of 73  
PCH 3/9



## PCH 4/9

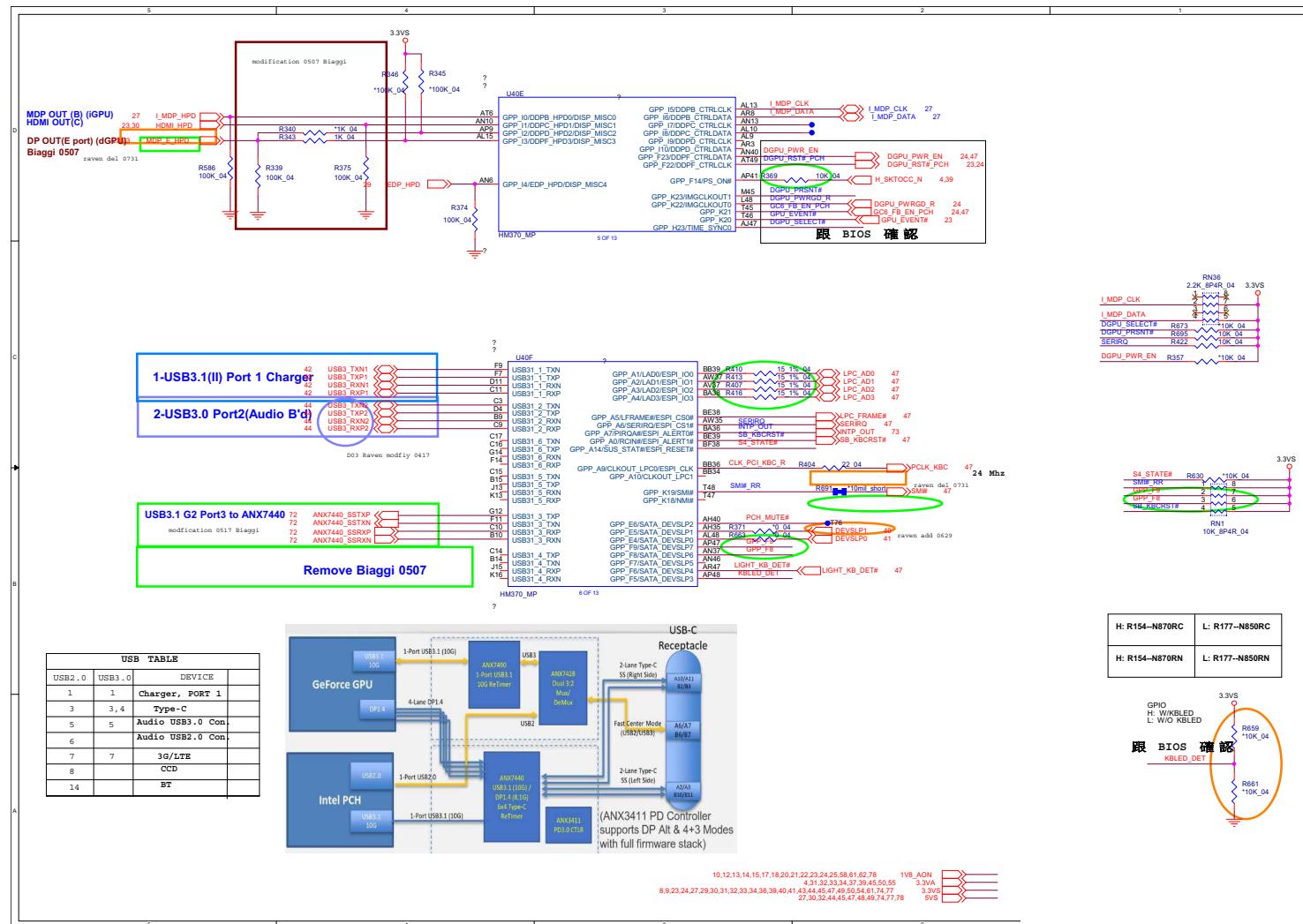


Sheet 34 of 73  
PCH 4/9

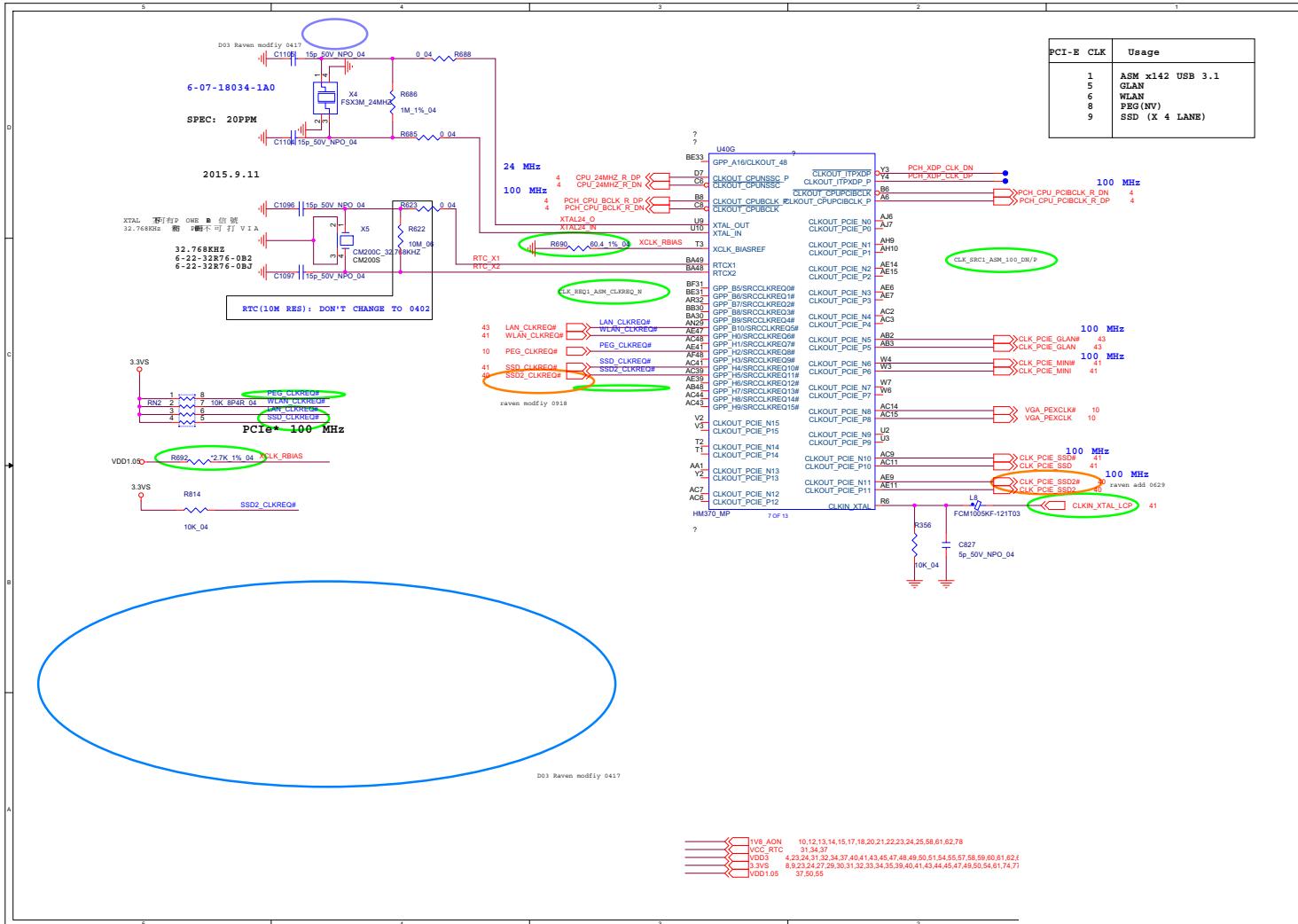
## Schematic Diagrams

PCH 5/9

Sheet 35 of 73  
PCH 5/9



### PCH 6/9



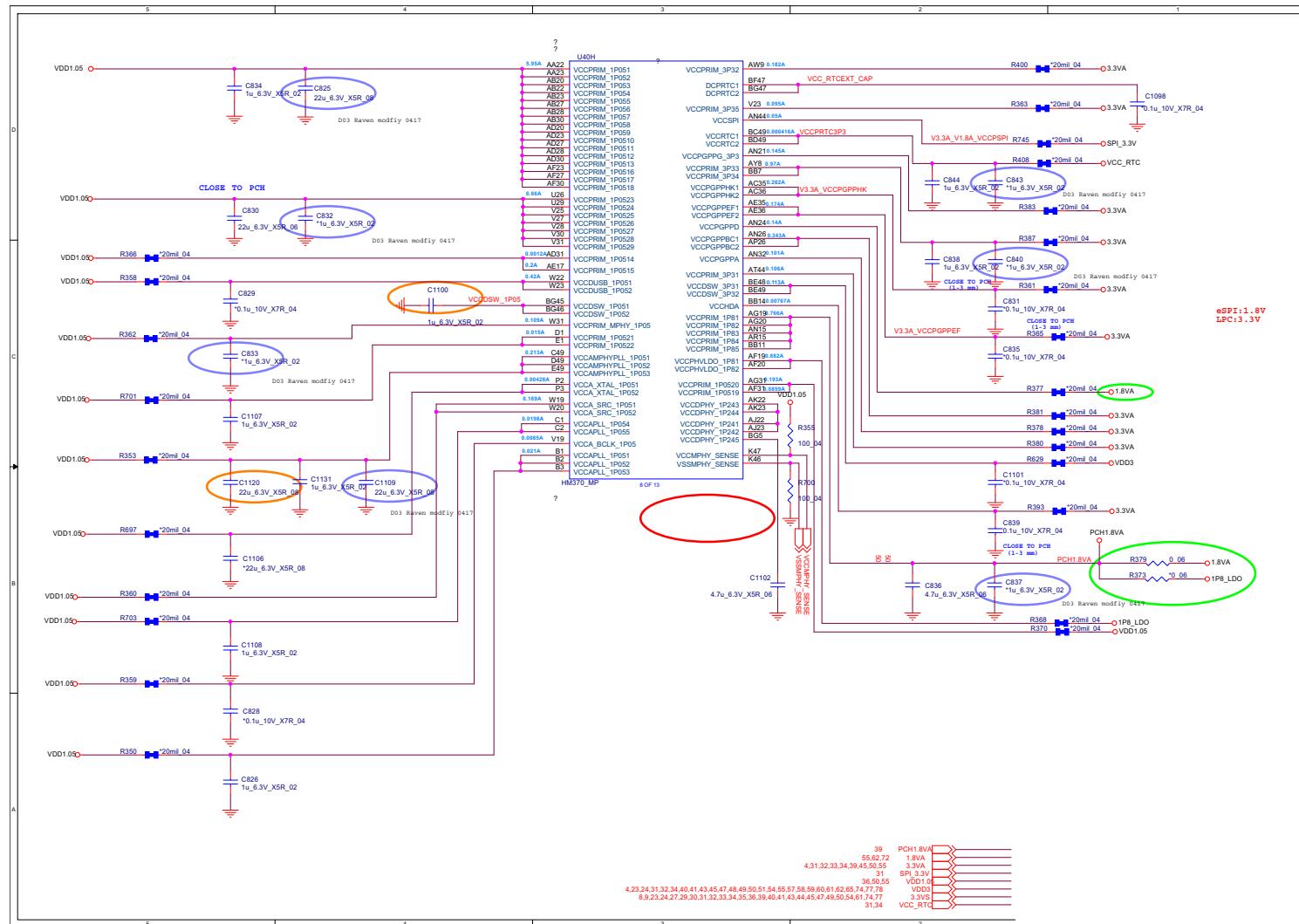
Sheet 36 of 73  
PCH 6/9

## B.Schematic Diagrams

## Schematic Diagrams

PCH 7/9

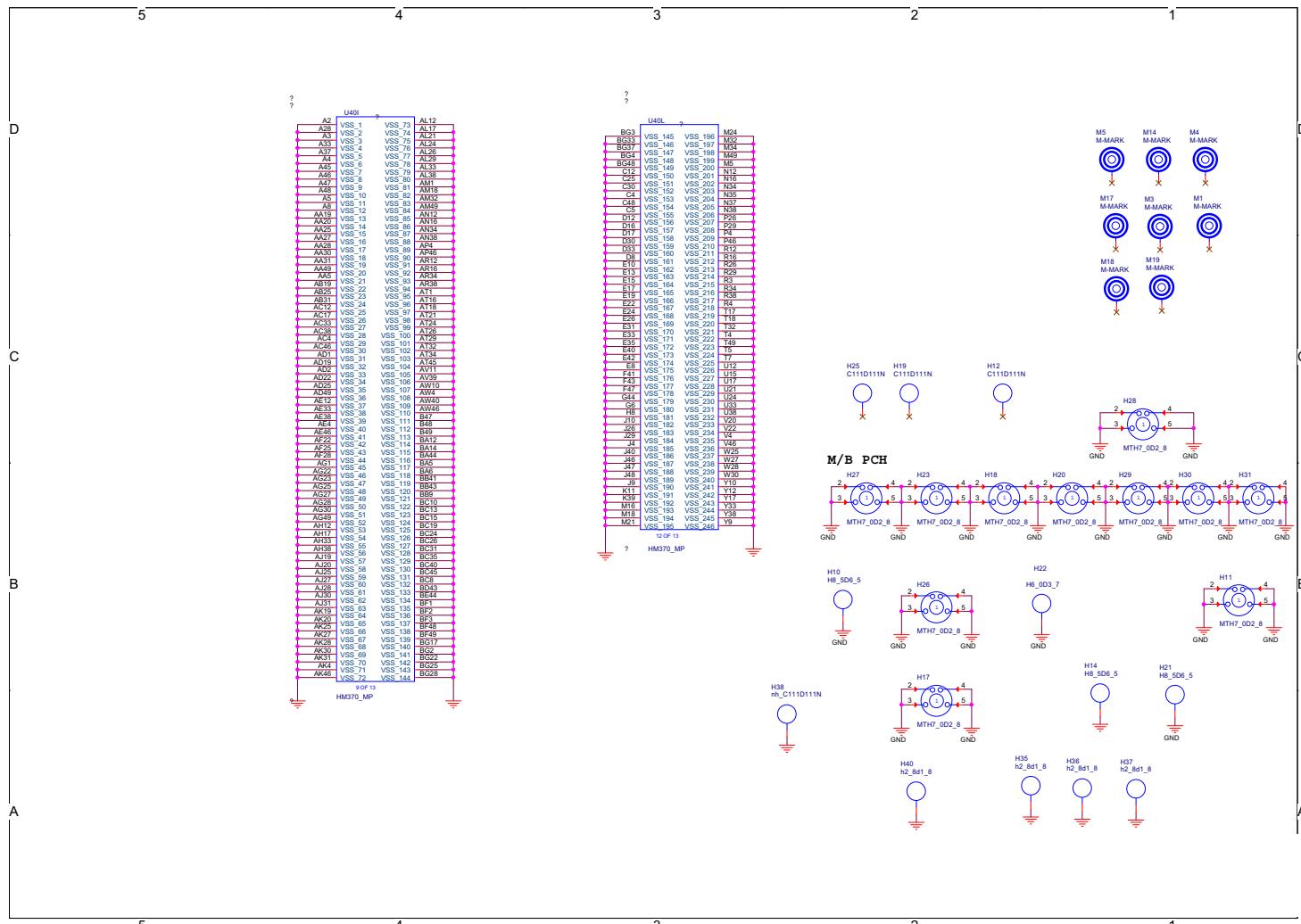
Sheet 37 of 73  
PCH 7/9



B - 38 PCH 7/9

## Schematic Diagrams

PCH 8/9



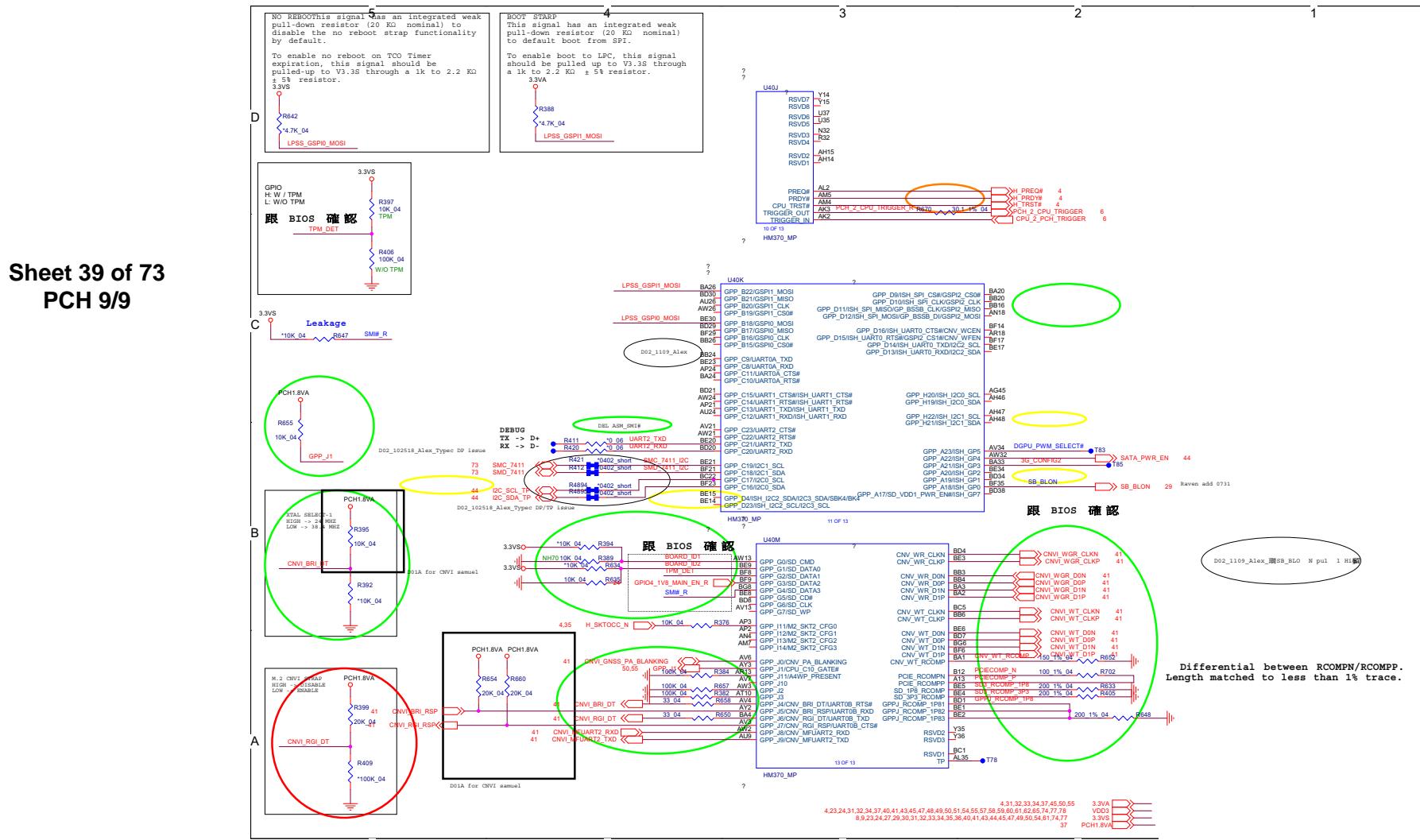
Sheet 38 of 73  
PCH 8/9

## B.Schematic Diagrams

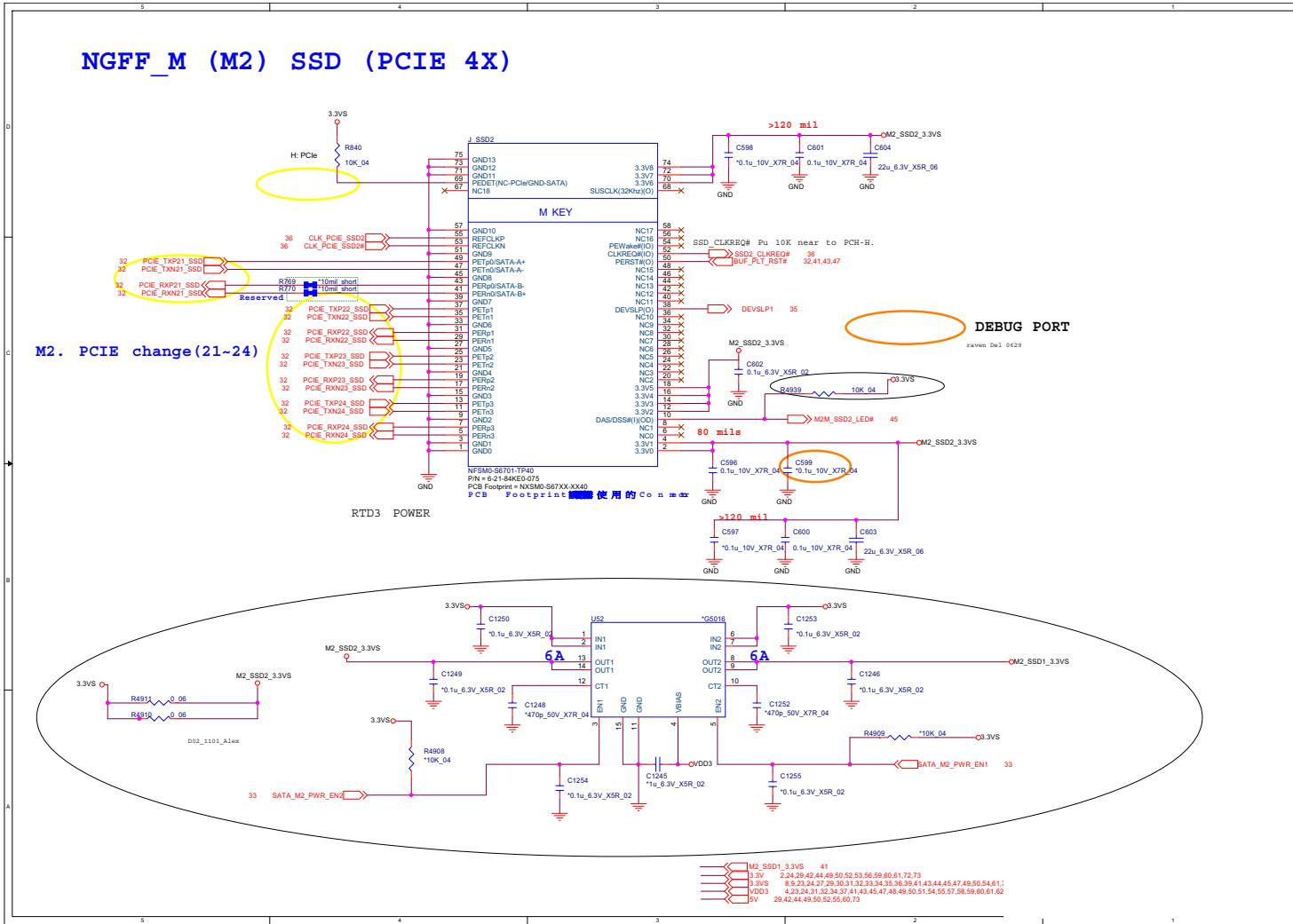
## **Schematic Diagrams**

---

PCH 9/9



## M.2 Card



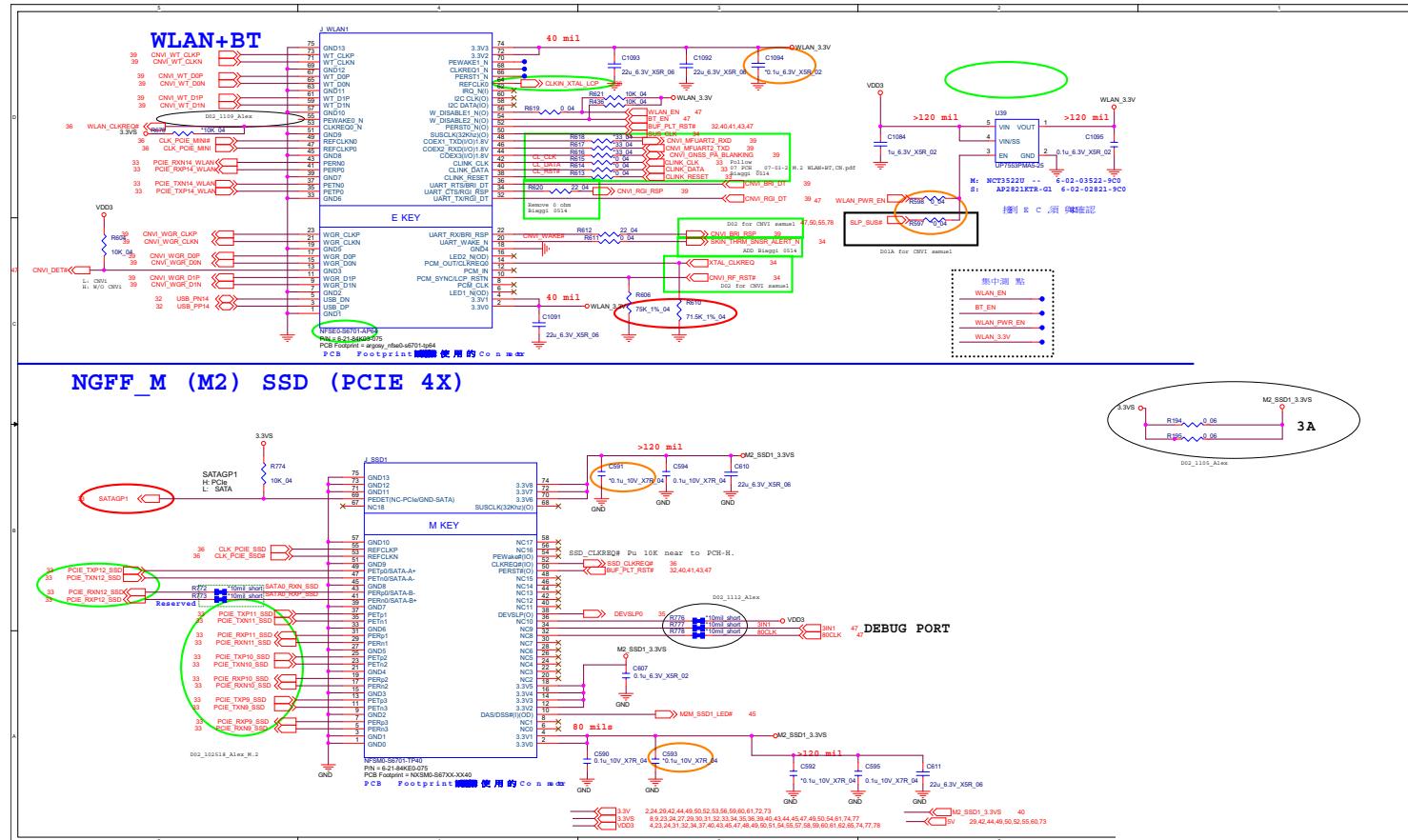
Sheet 40 of 73  
M.2 Card

## B.Schematic Diagrams

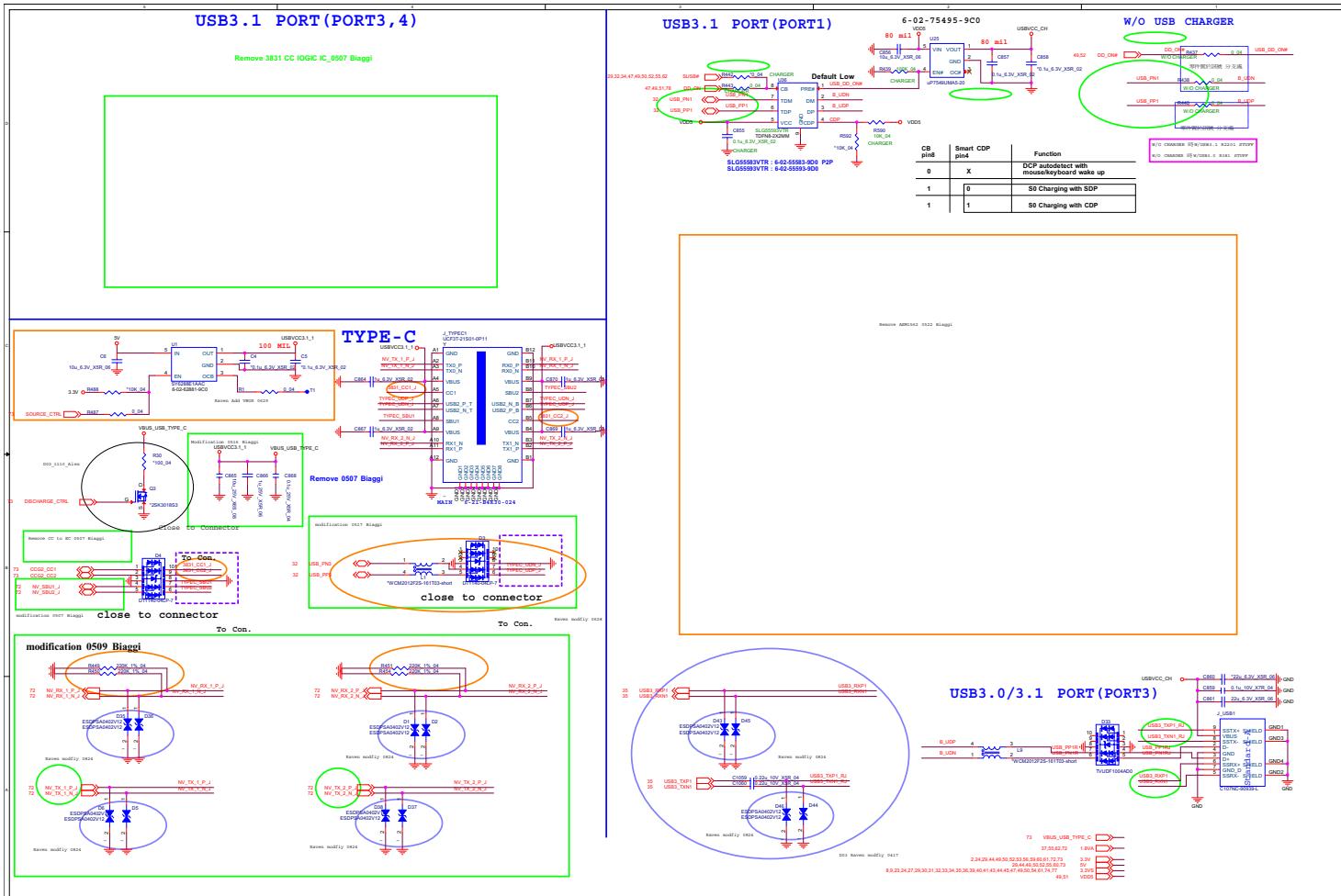
## Schematic Diagrams

## M.2 WLAN+BT

Sheet 41 of 73  
M.2 WLAN+BT



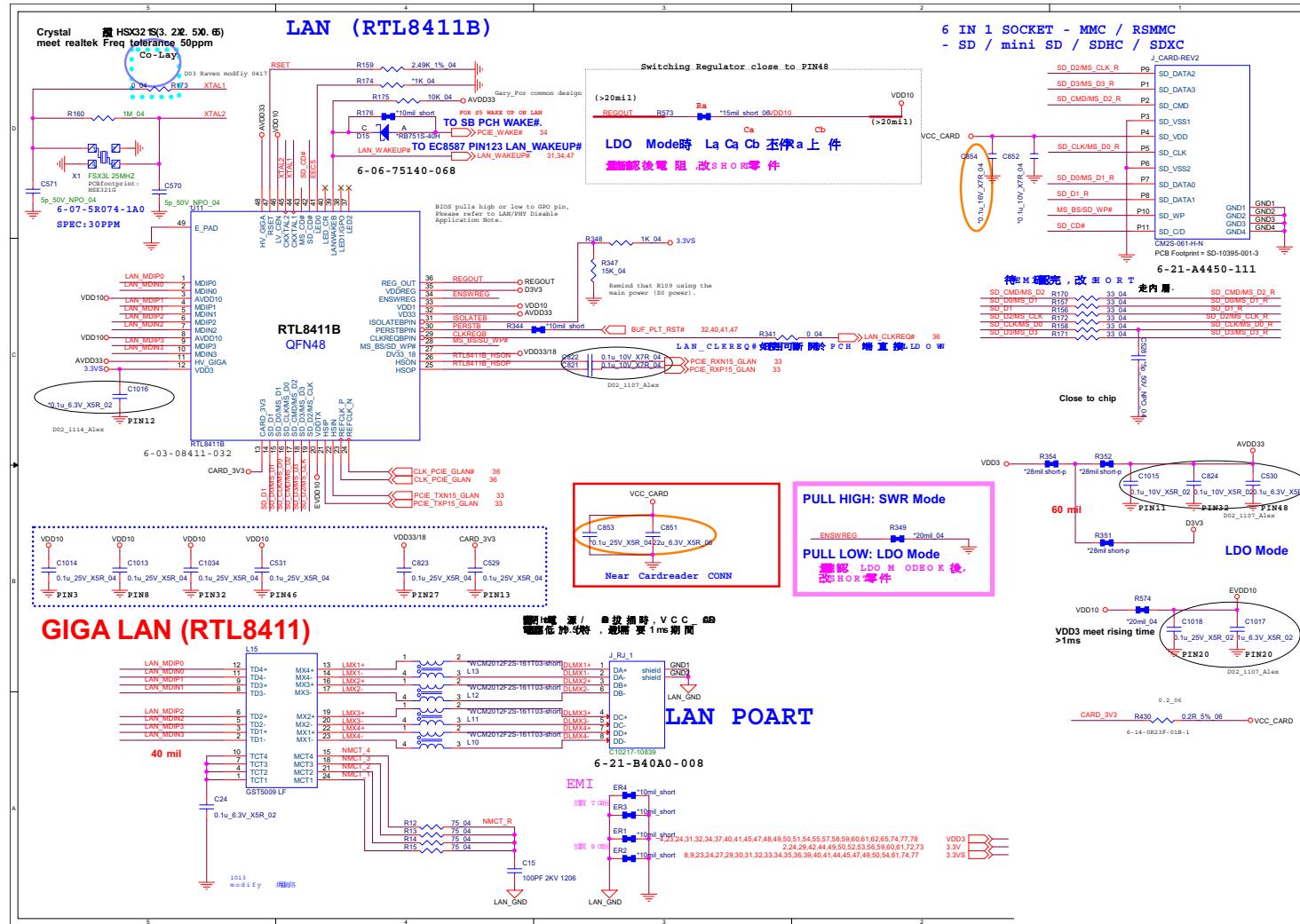
# USB Charger



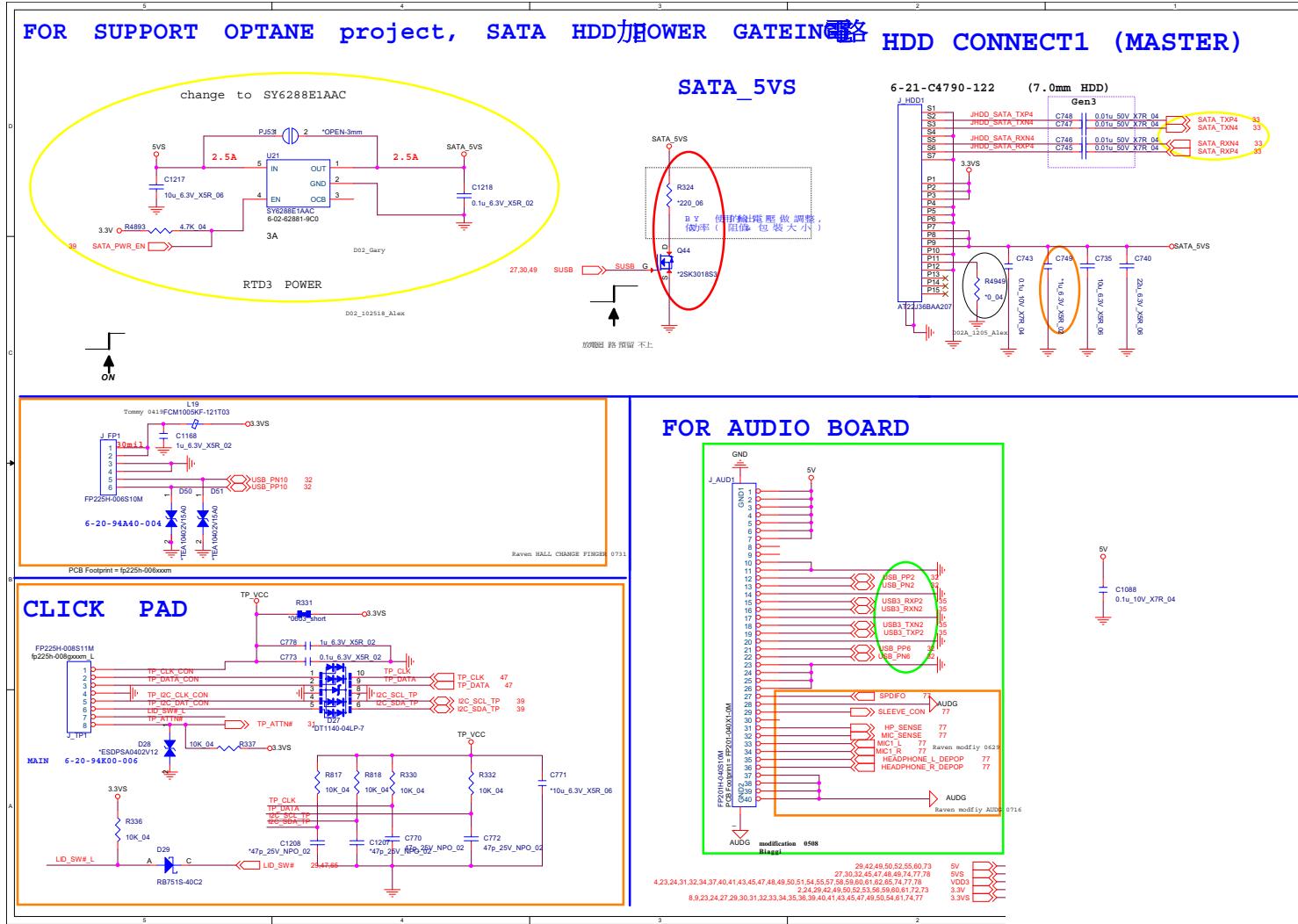
## Schematic Diagrams

### Card Reader / LAN RTL8411B

Sheet 43 of 73  
Card Reader /  
LAN RTL8411B



# HDD, Click TP, Audio, Hall Con.

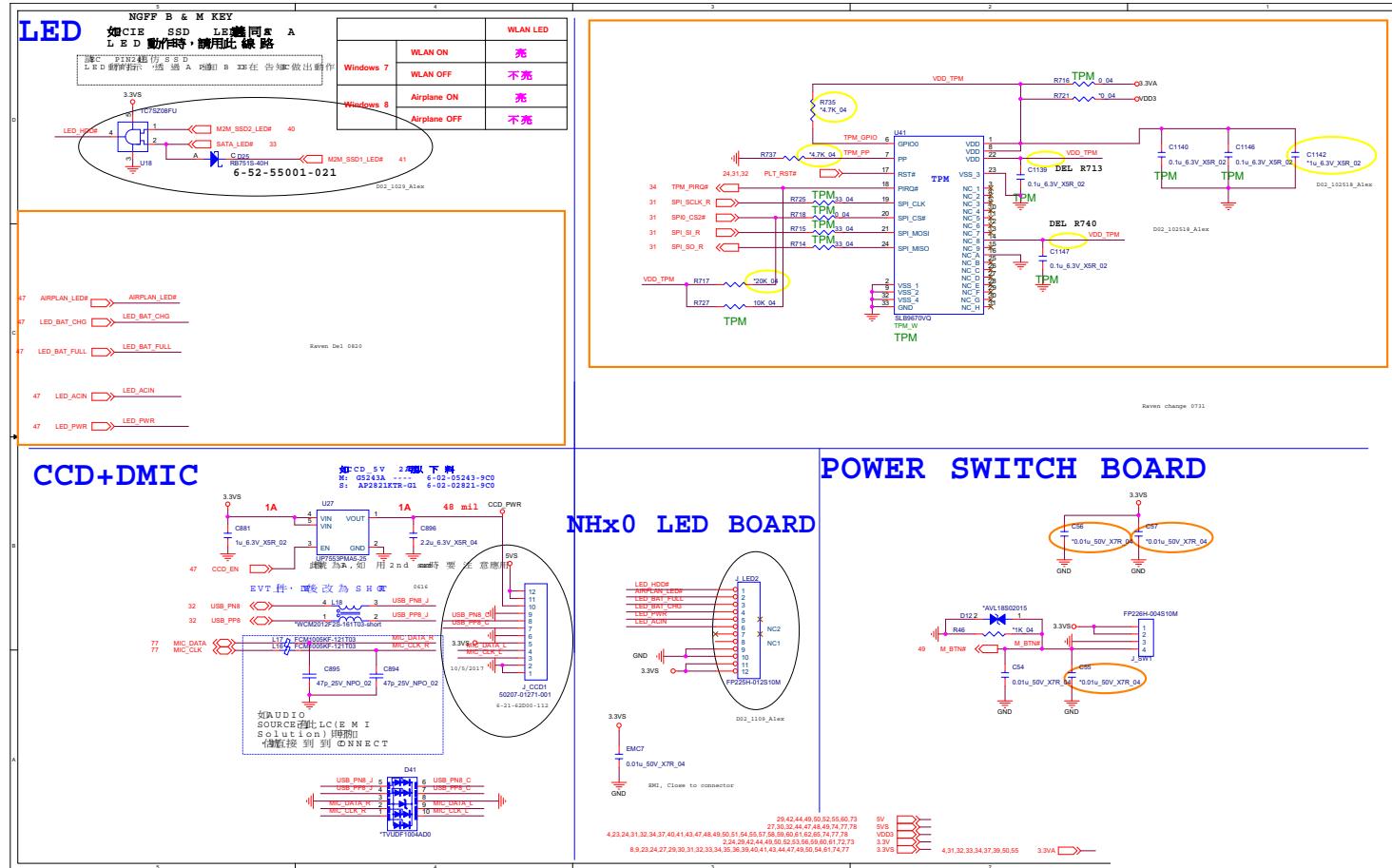


Sheet 44 of 73  
HDD, Click TP,  
Audio, Hall Con.

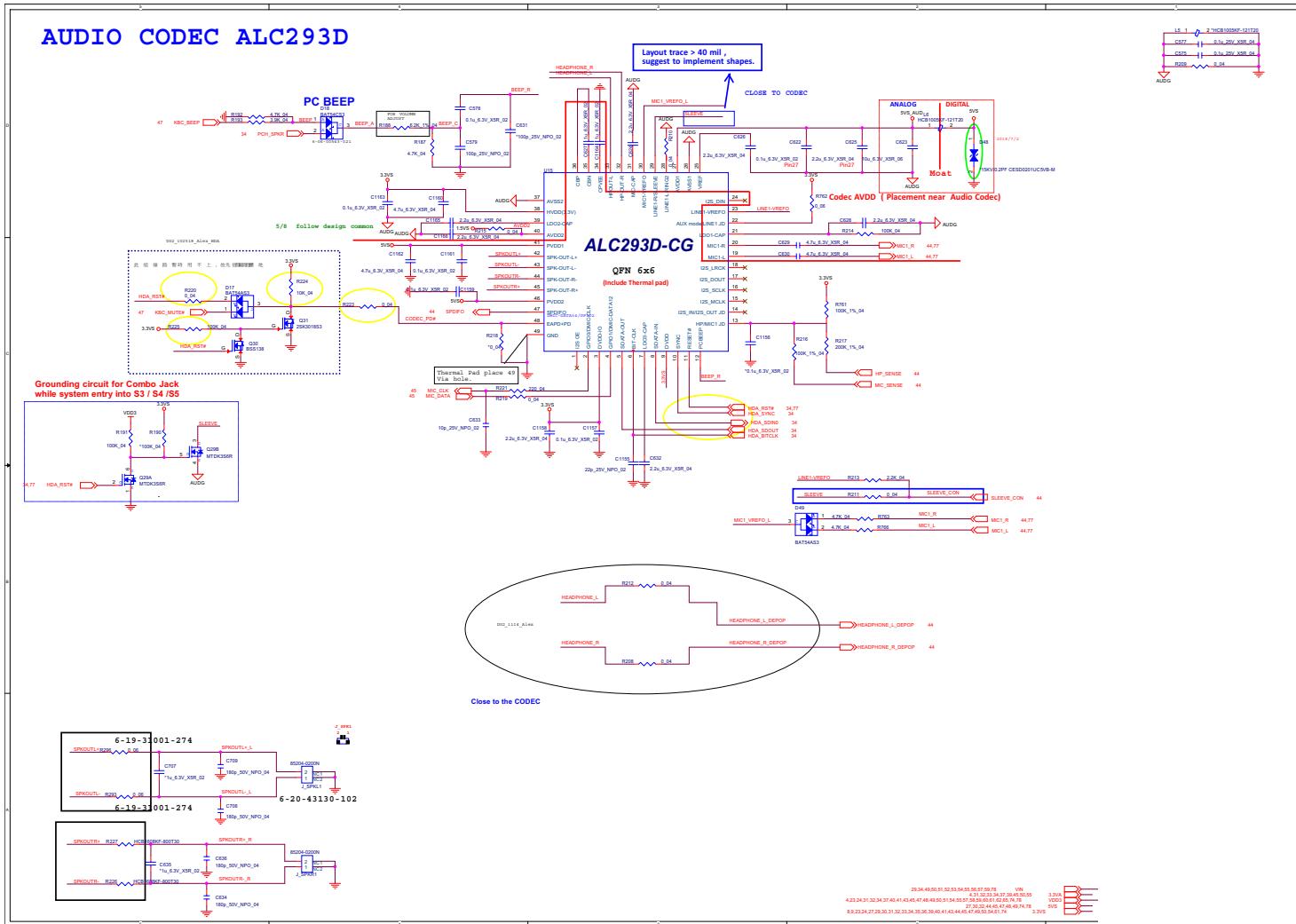
## Schematic Diagrams

### LED, CCD, TPM, Power SW Con.

Sheet 45 of 73  
LED, CCD, TPM,  
Power SW Con.



# Audio Codec



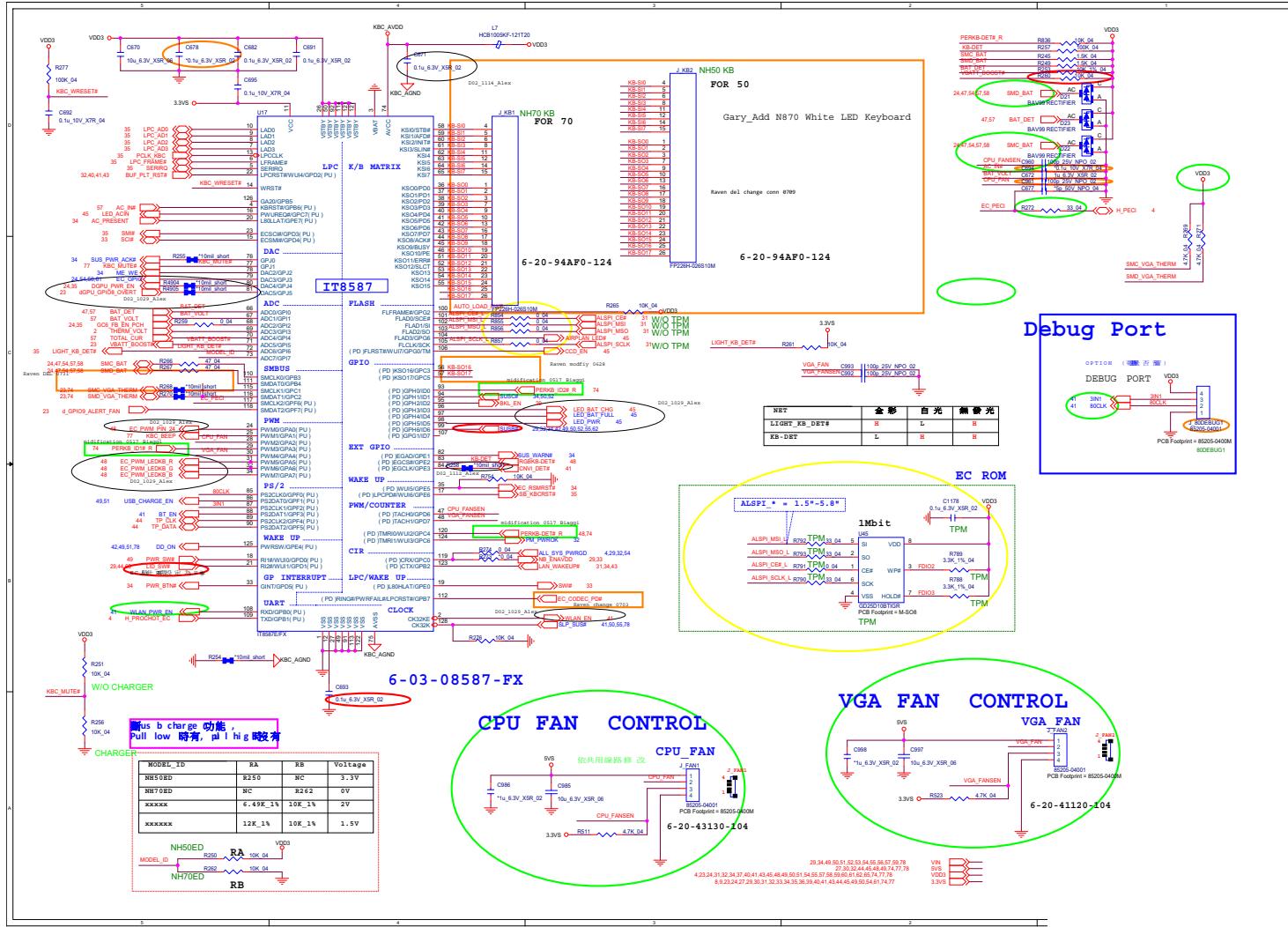
Sheet 46 of 73  
Audio Codec

## B.Schematic Diagrams

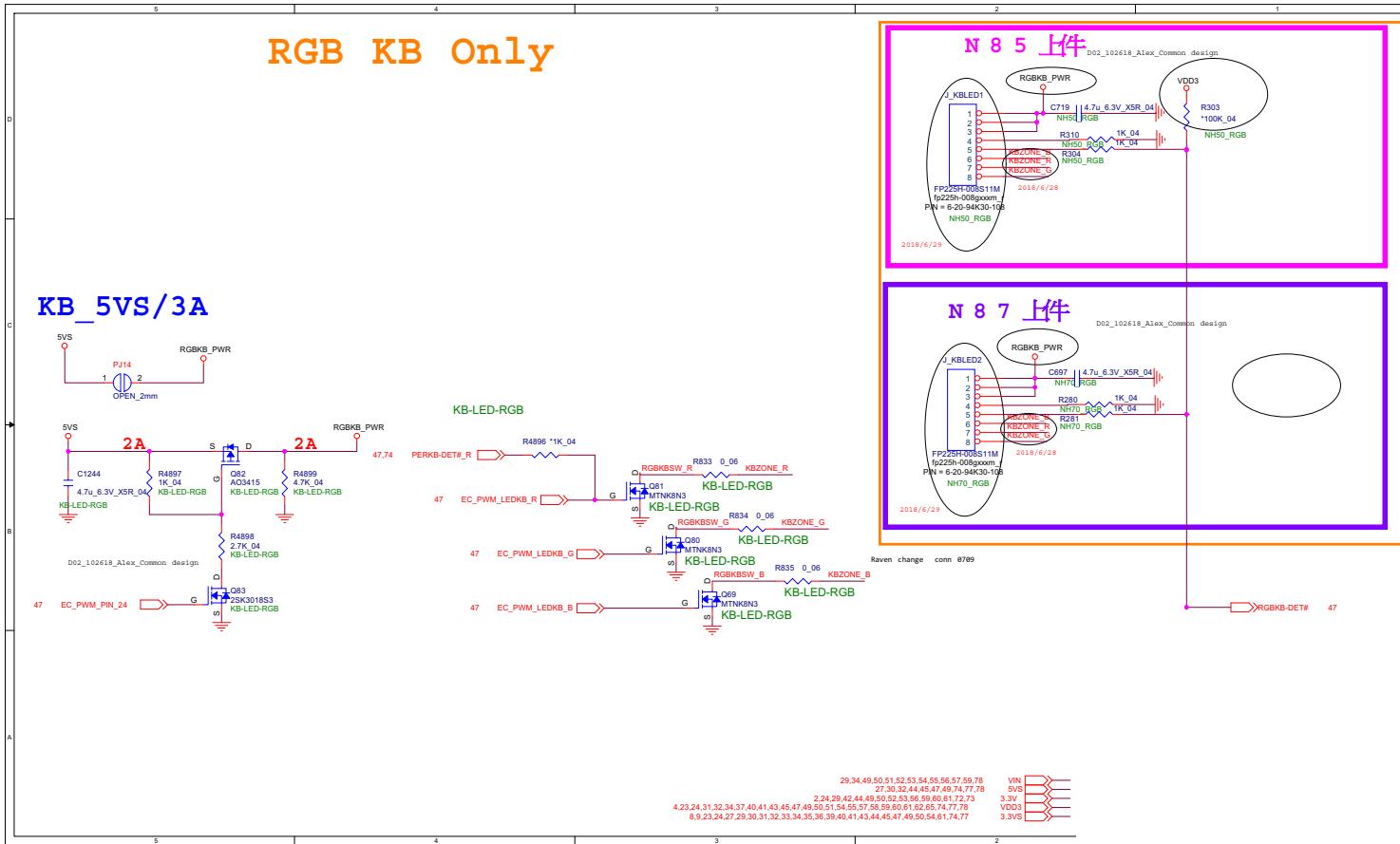
## Schematic Diagrams

# KBC-ITE IT8587

Sheet 47 of 73  
KBC-ITE IT8587



### RGB KB Only



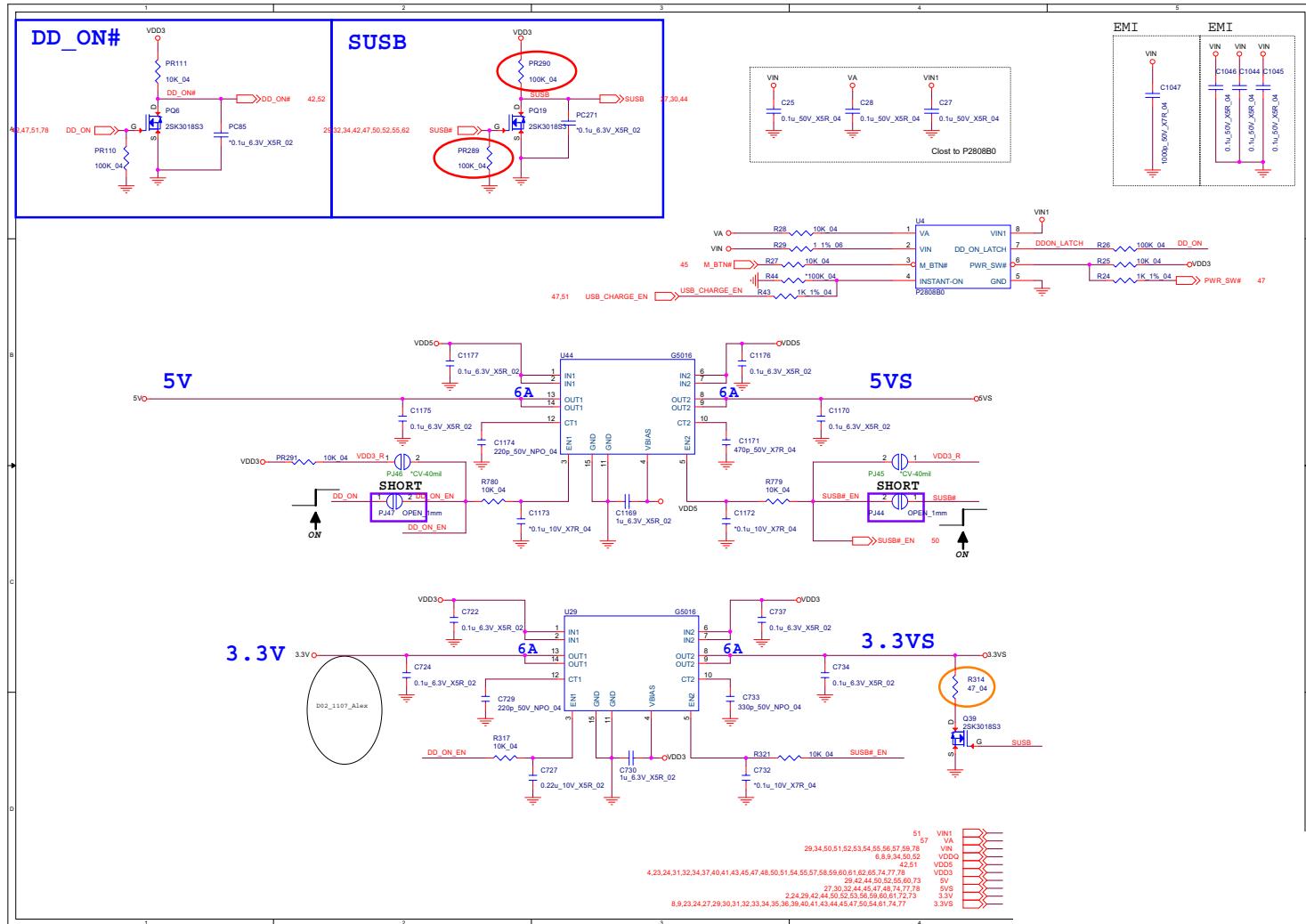
Sheet 48 of 73  
RGB KB Only

## B. Schematic Diagrams

## **Schematic Diagrams**

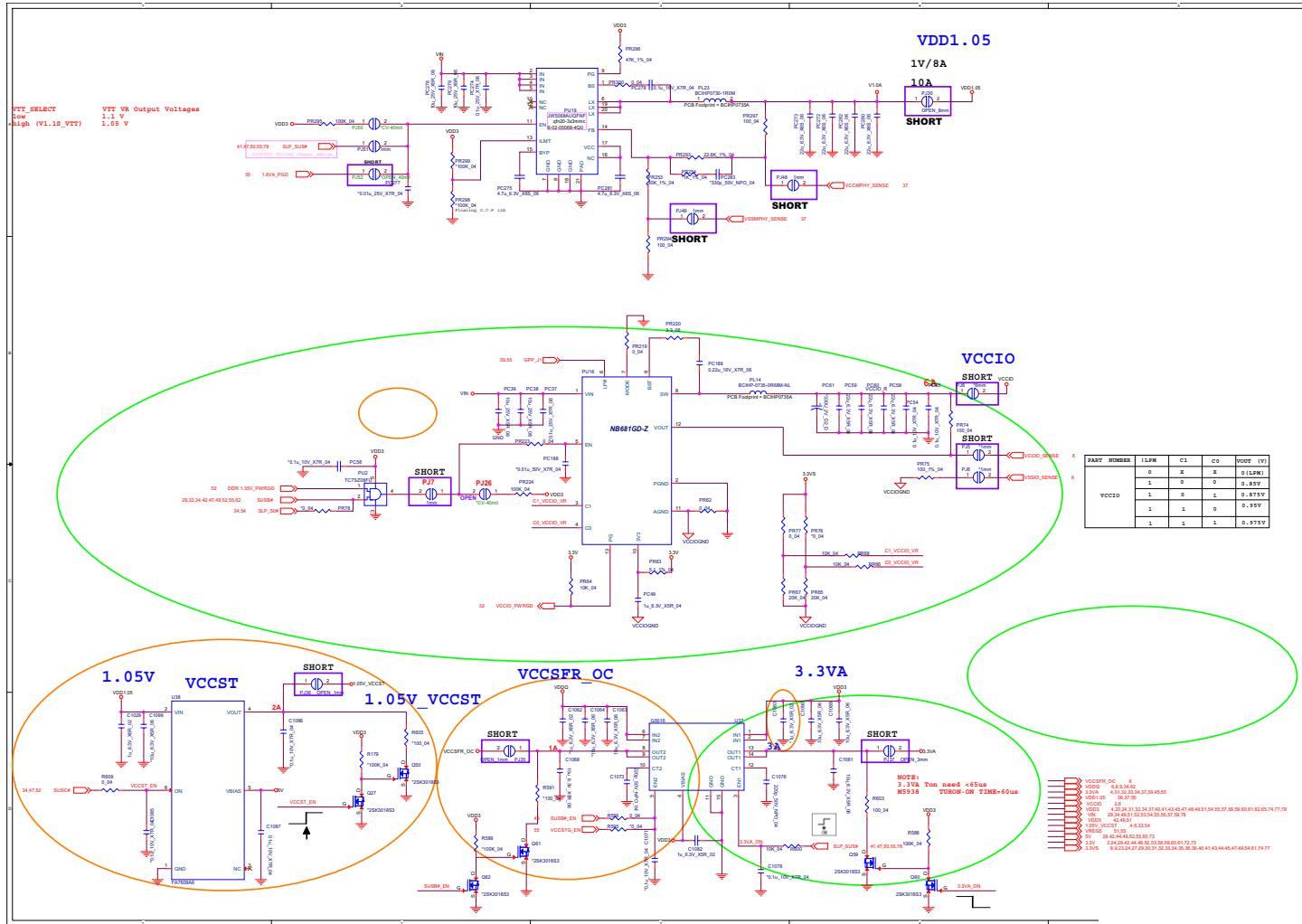
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# **5V, 5VS, 3.3V, 3.3VS**



## **B - 50 5V, 5VS, 3.3V, 3.3VS**

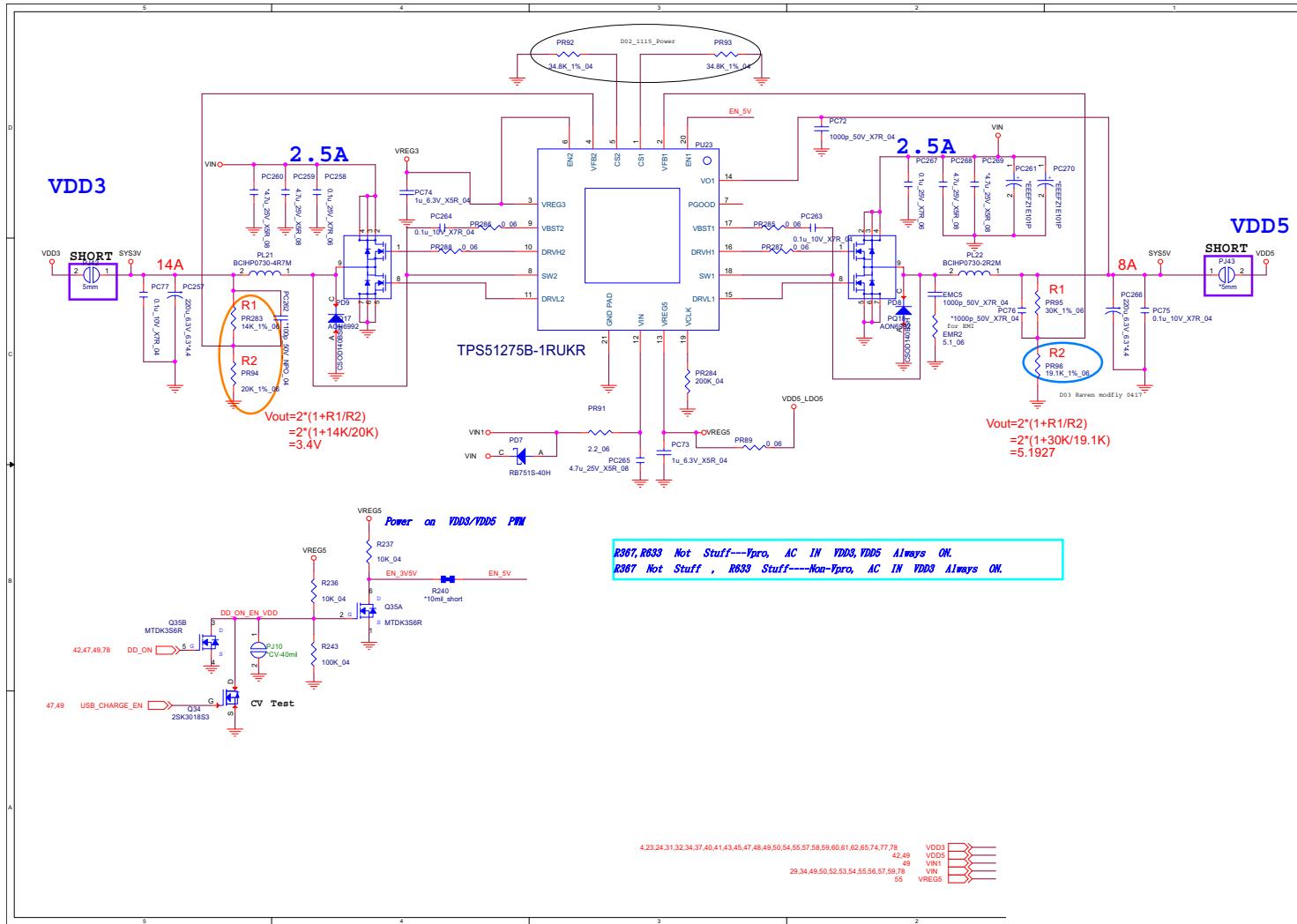
### VDD1.05V, VCCIO



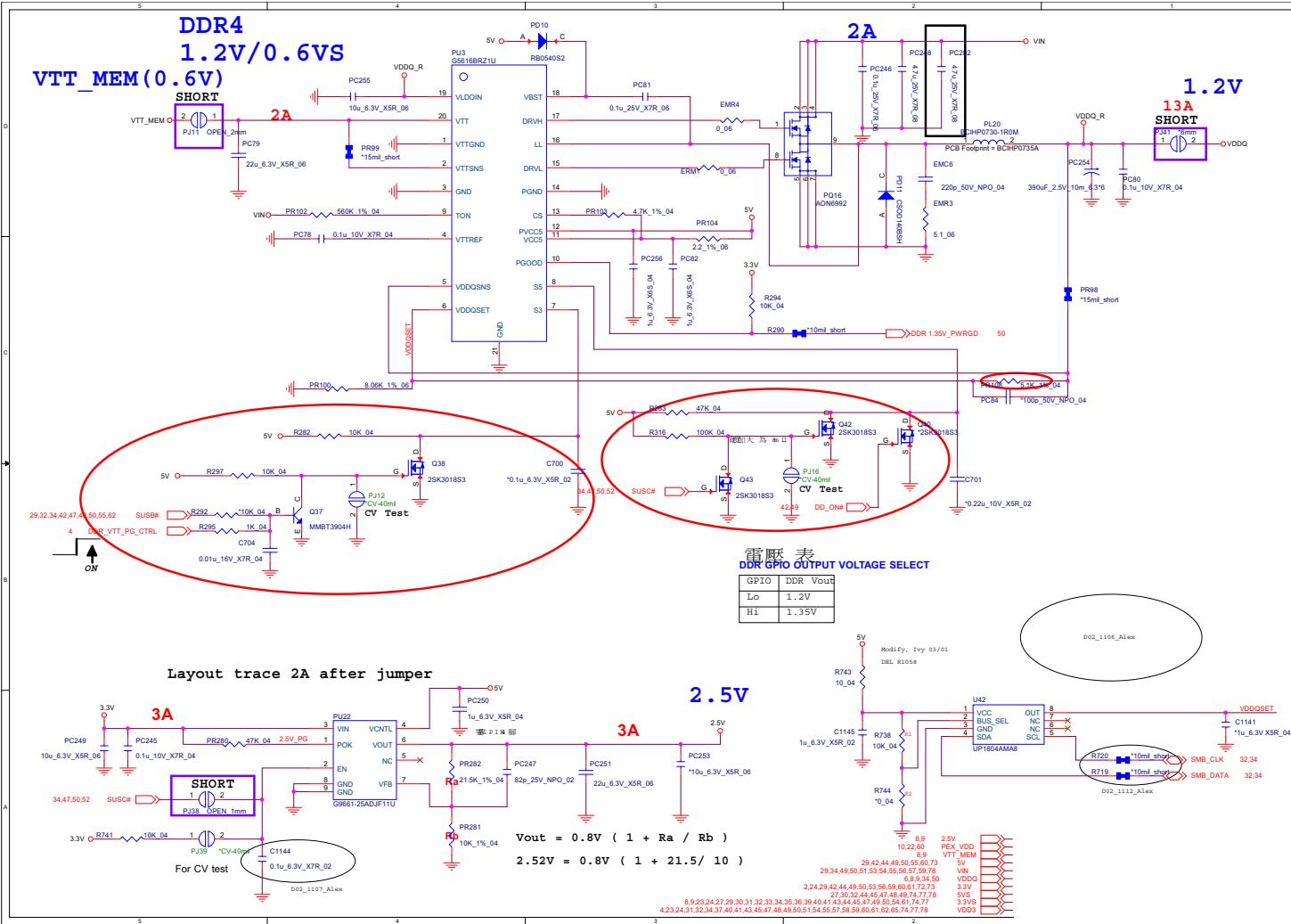
## Schematic Diagrams

### VDD3, VDD5

Sheet 51 of 73  
VDD3, VDD5



### DDR 1.2V / 0.6VS, 2.5V

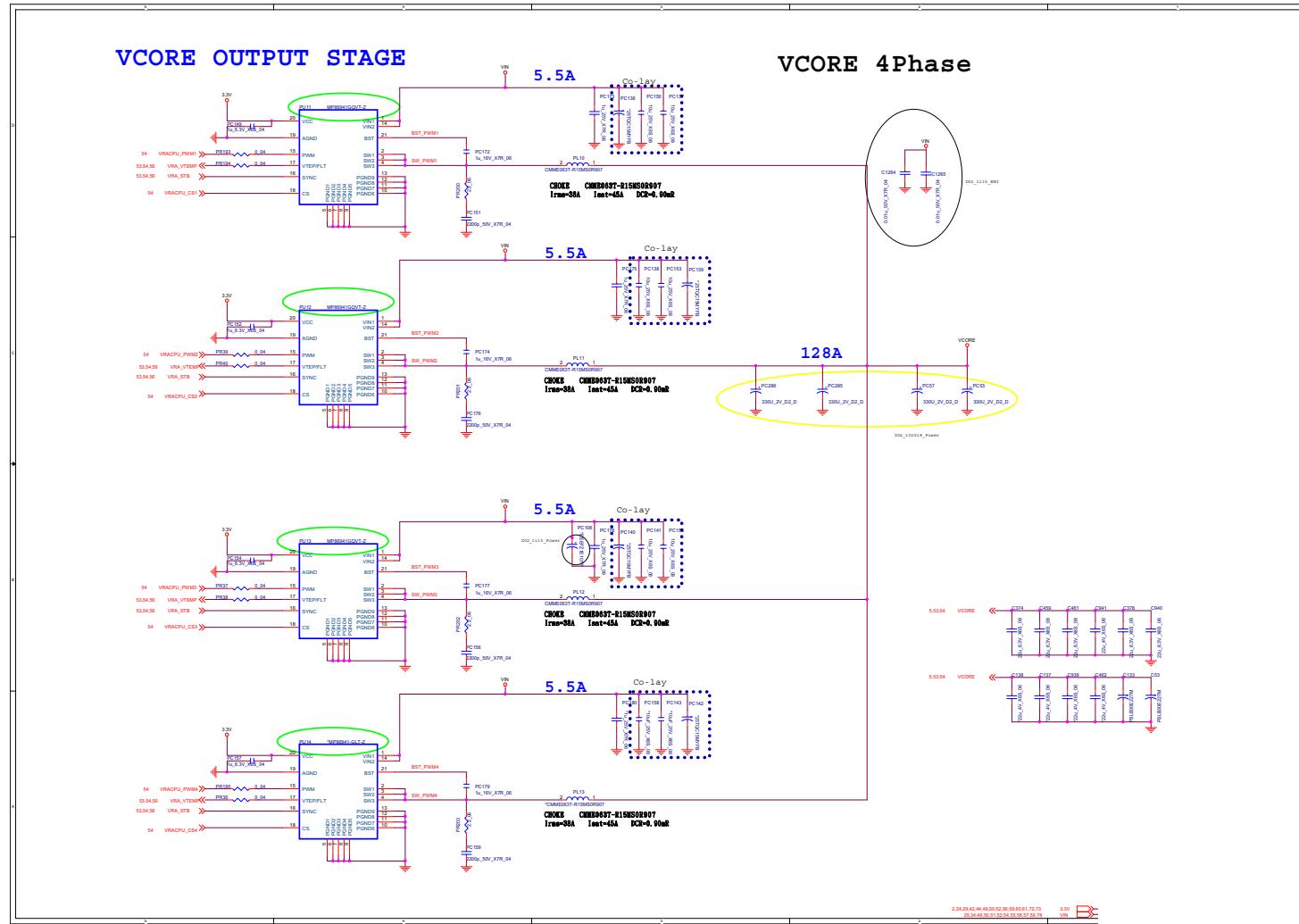


**Sheet 52 of 73**  
**DDR 1.2V / 0.6VS,**  
**2.5V**

## Schematic Diagrams

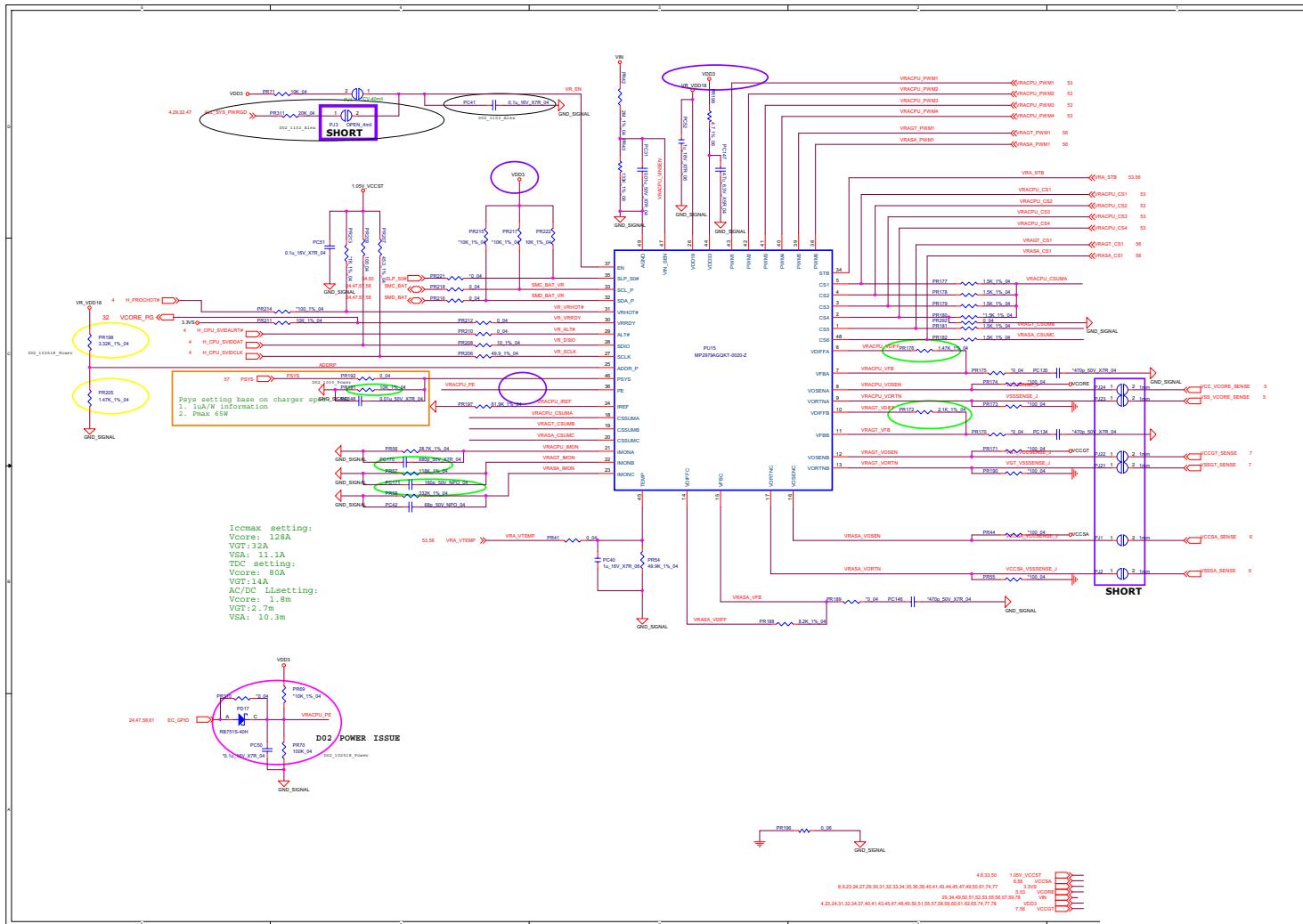
### VCore Output Stage

Sheet 53 of 73  
VCore Output Stage



B - 54 VCore Output Stage

# VCC\_Core & VCCGT



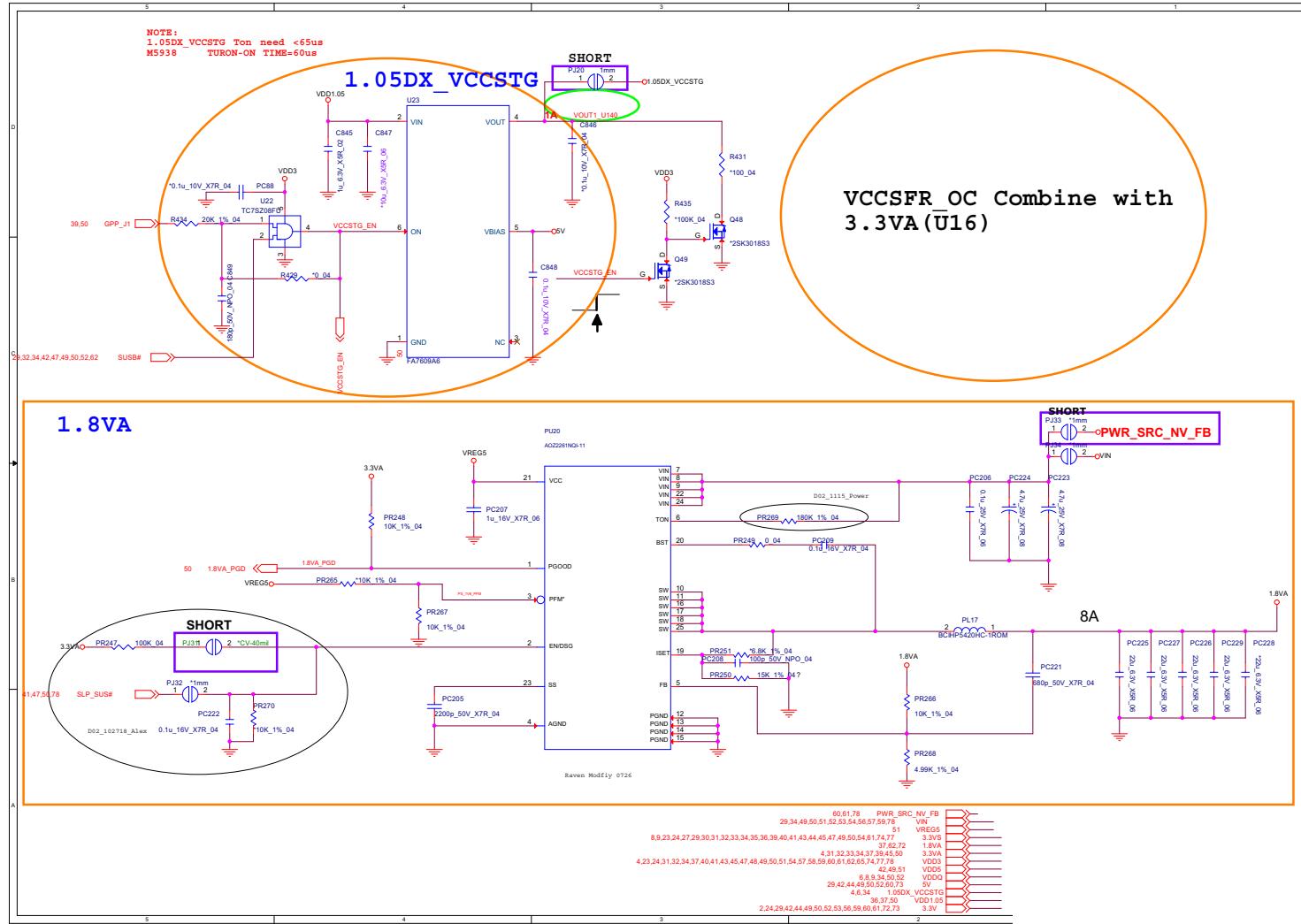
**Sheet 54 of 73**  
**VCC\_Core &**  
**VCCGT**

## B.Schematic Diagrams

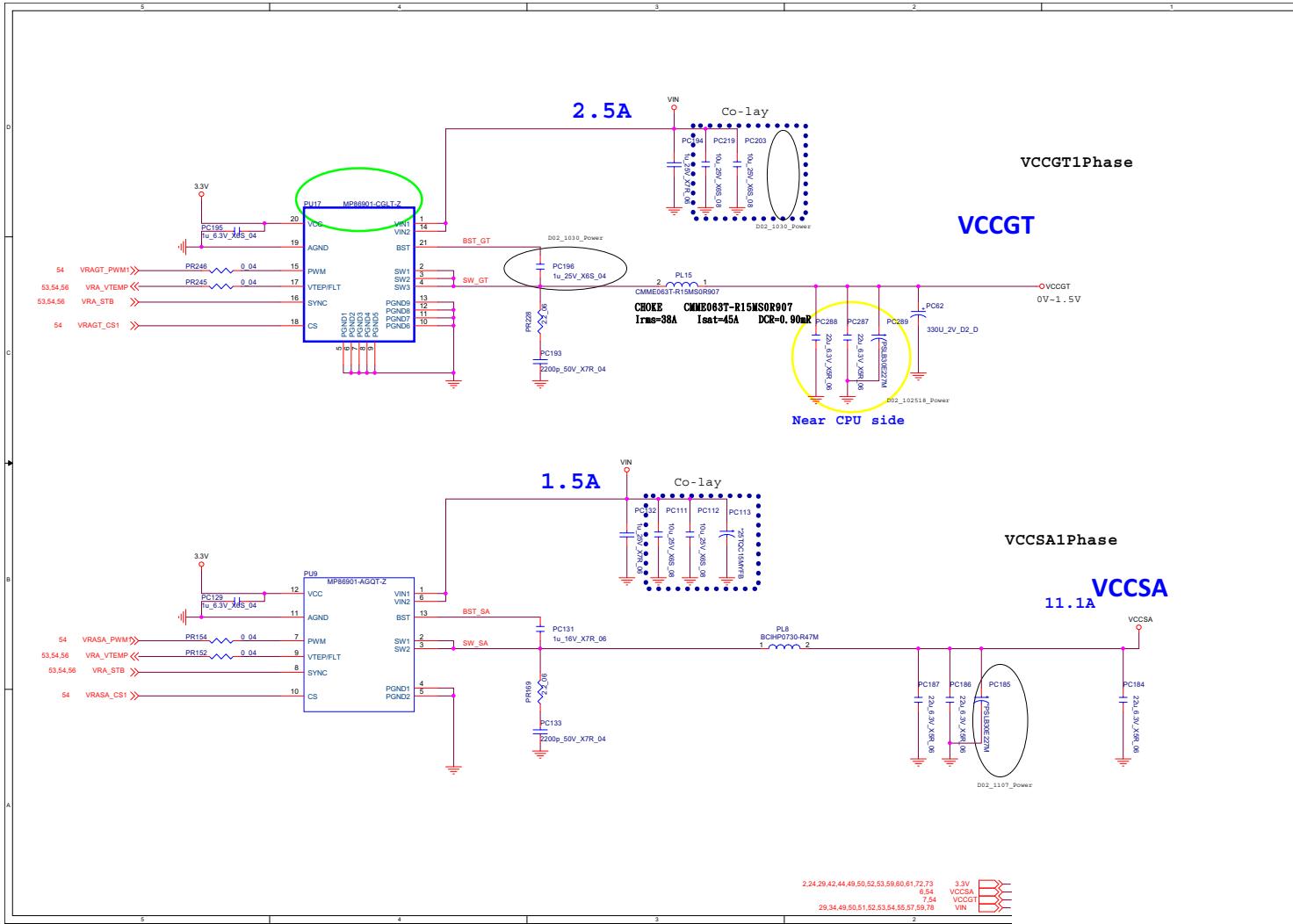
## Schematic Diagrams

### 1.05DX\_VCCSTG/VCCSFR\_OC

Sheet 55 of 73  
1.05DX\_VCCSTG/  
VCCSFR\_OC



## VCCGT & VCCSA Output Stage



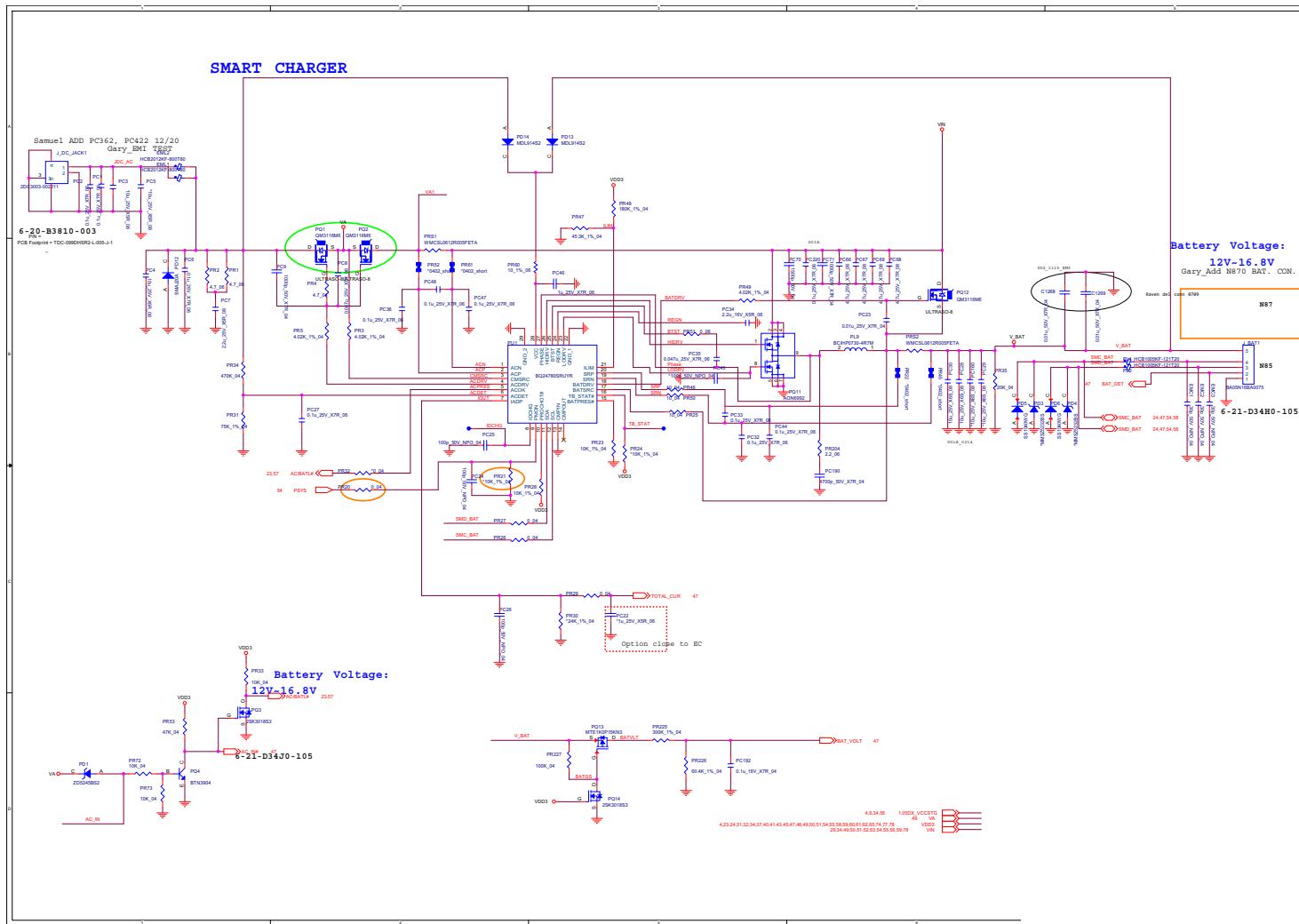
Sheet 56 of 73  
VCCGT & VCCSA  
Output Stage

# Schematic Diagrams

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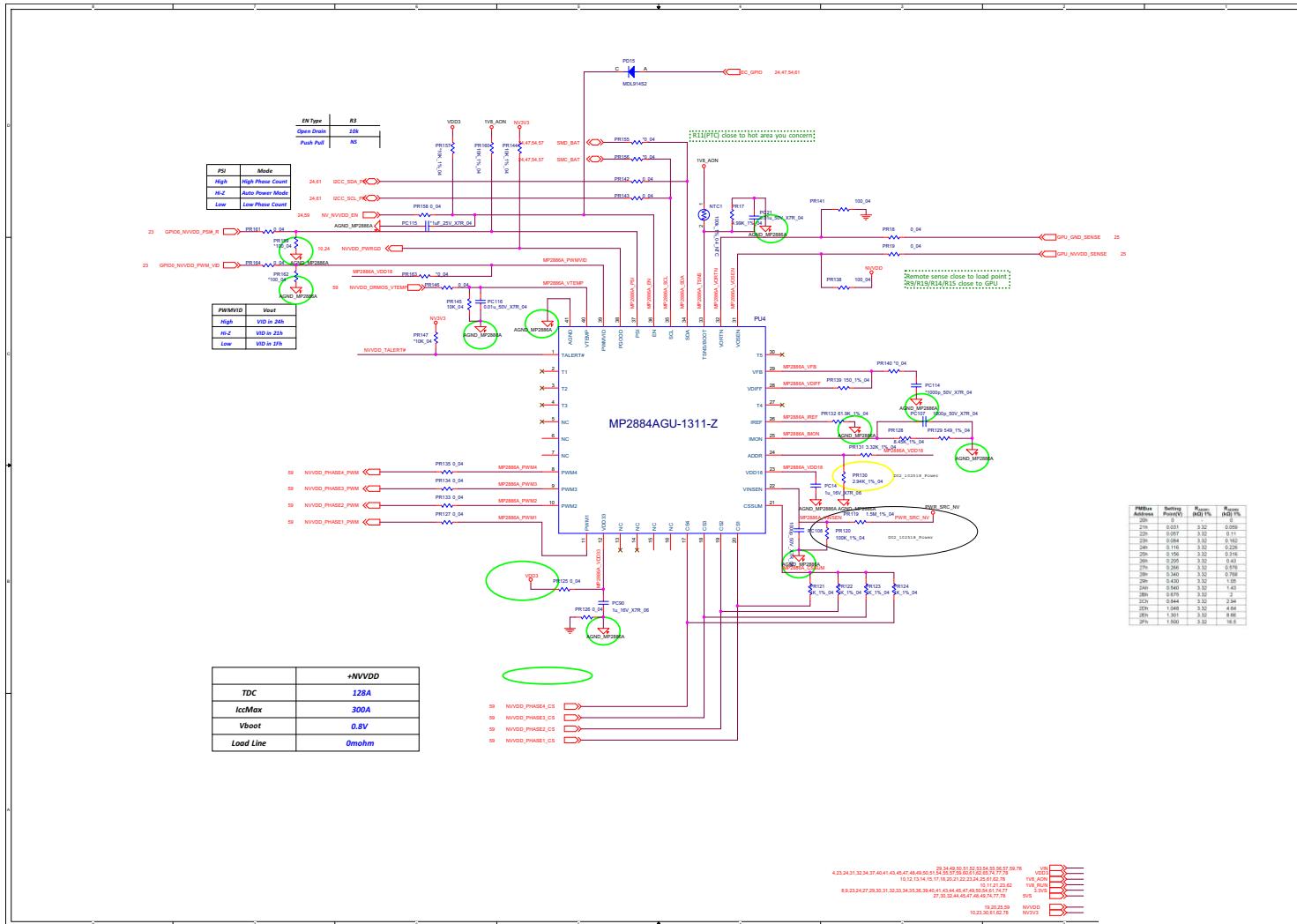
# AC\_In, Charger

Sheet 57 of 73  
AC\_In, Charger



B - 58 AC\_In, Charger

**NVVDD1**

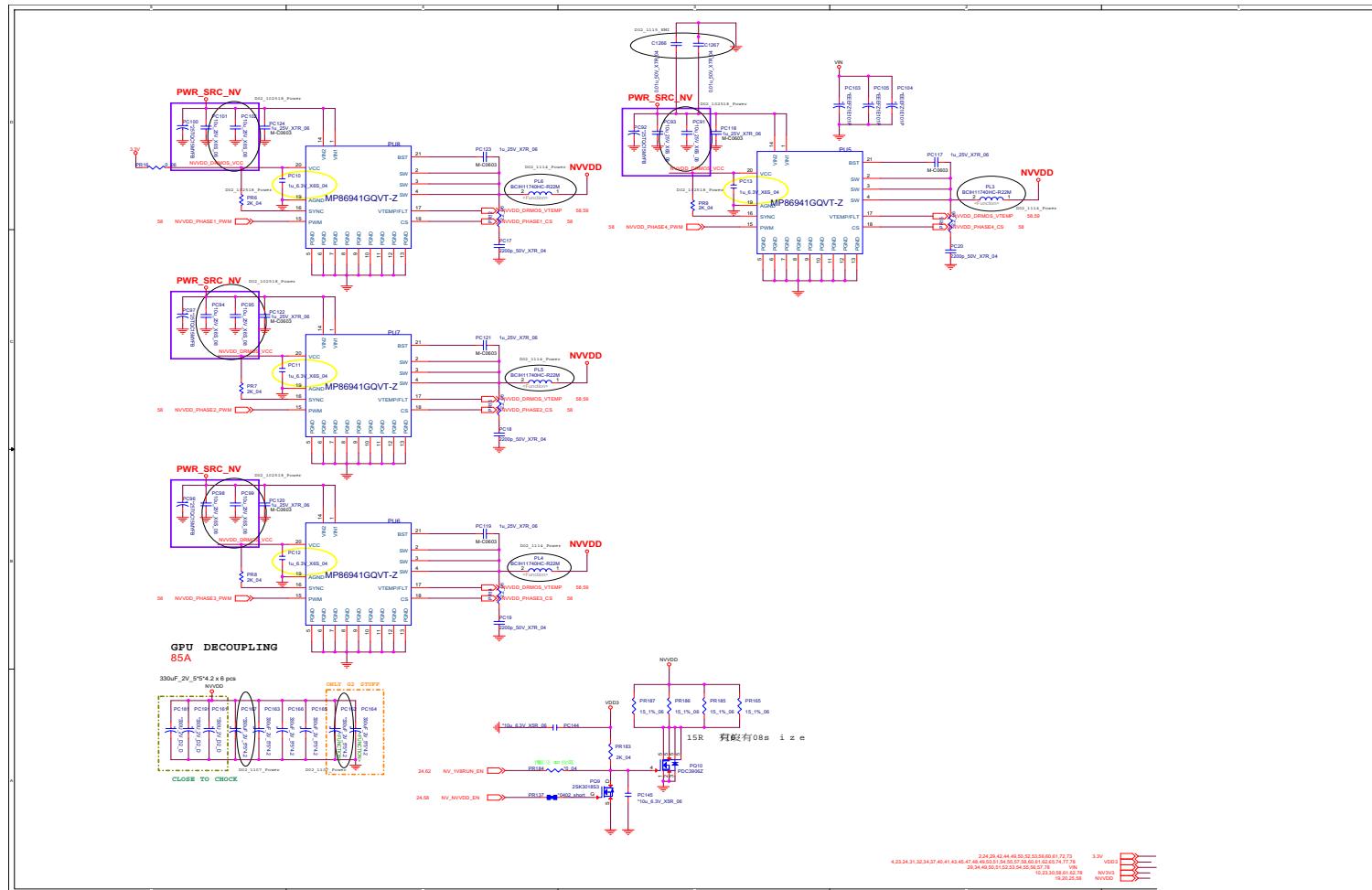


Sheet 58 of 73  
NVVDD1

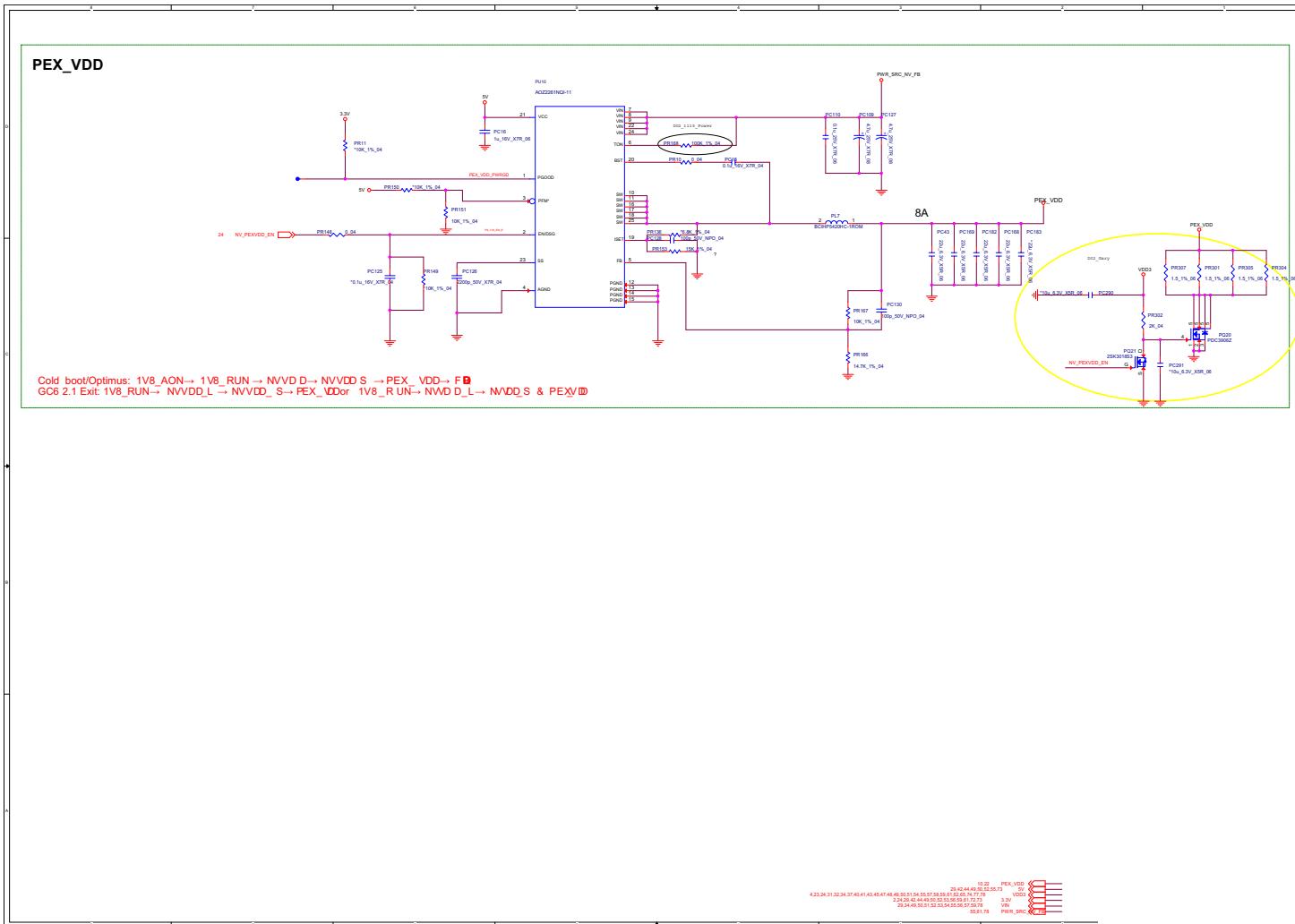
## Schematic Diagrams

### NVVDD2

Sheet 59 of 73  
NVVDD2



**PEX\_VDD**



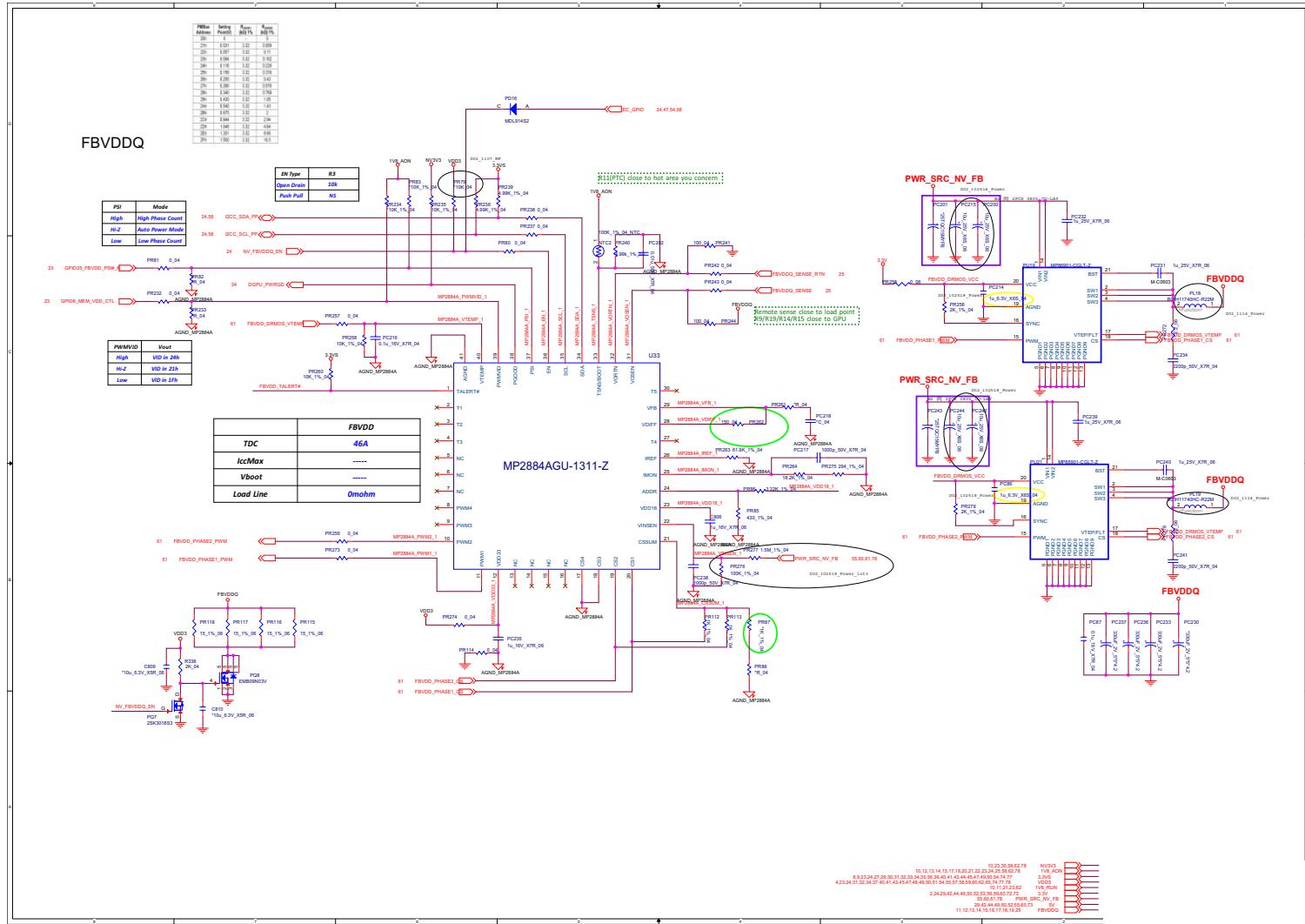
Sheet 60 of 73  
PEX\_VDD

## **Schematic Diagrams**

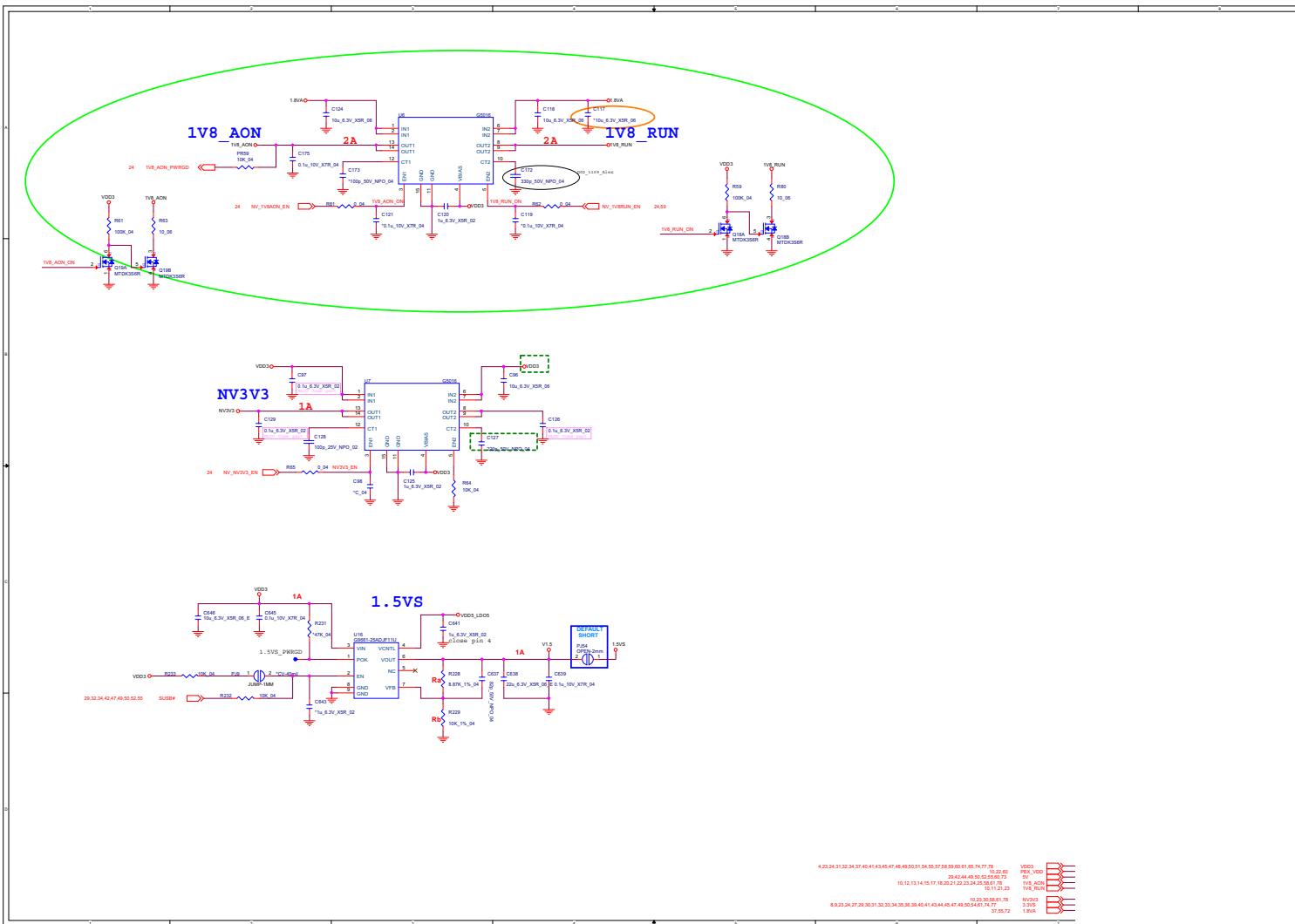
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**FBVDDQ**

Sheet 61 of 73  
FBVDDQ



### 1V8\_RUN/AON

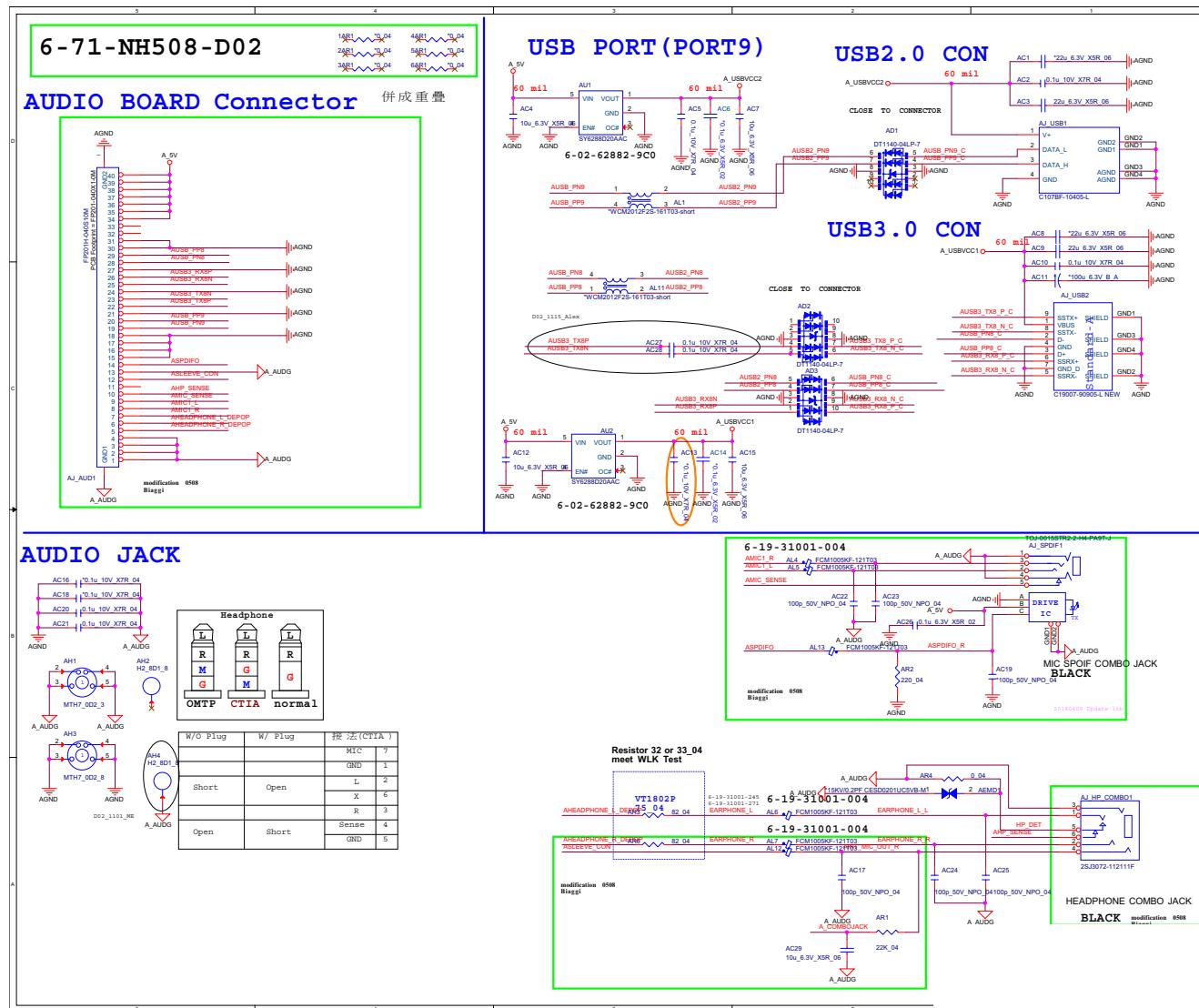


Sheet 62 of 73  
1V8\_RUN/AON

## Schematic Diagrams

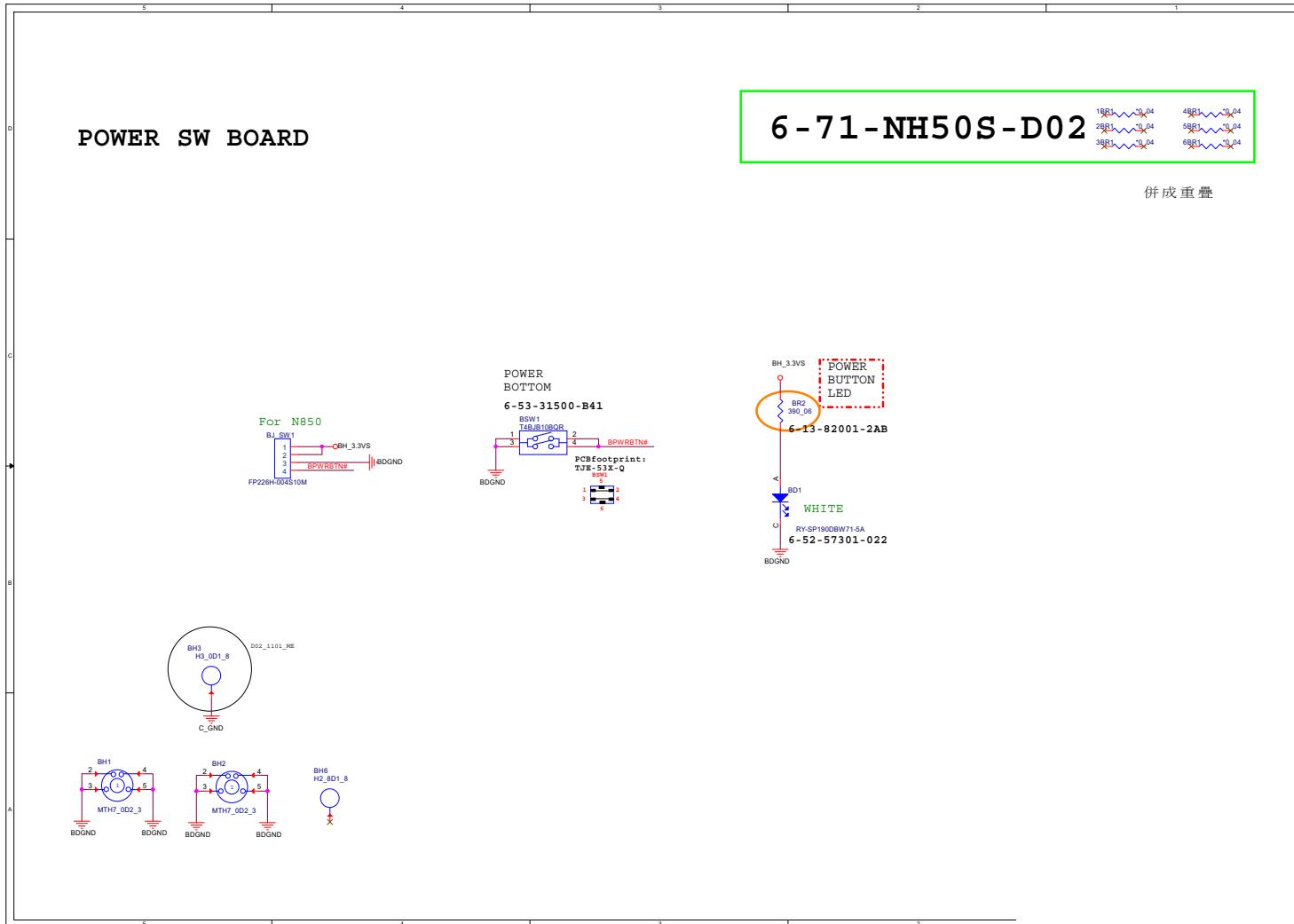
### Audio Board

Sheet 63 of 73  
Audio Board



B - 64 Audio Board

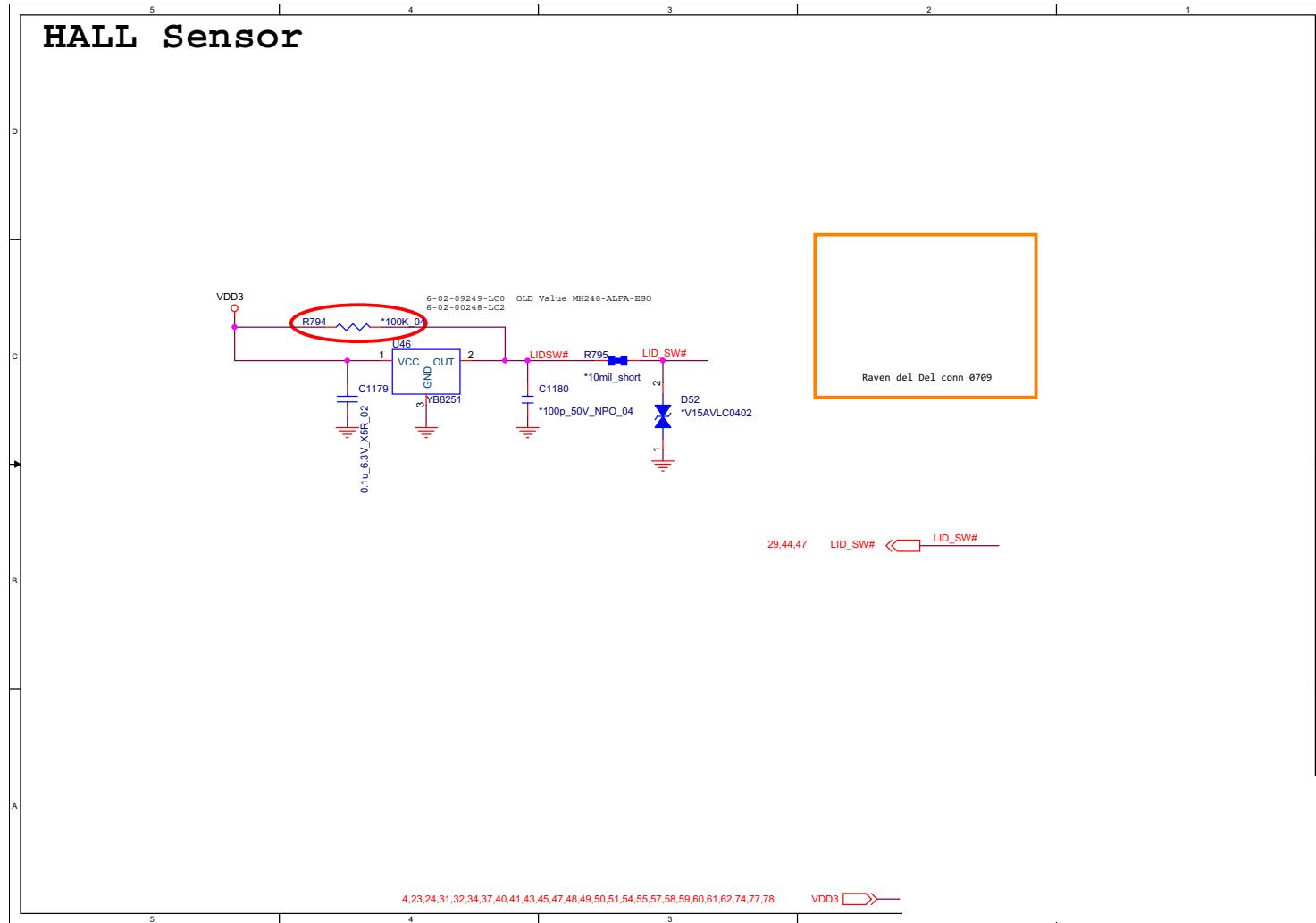
# NH50 PW Board



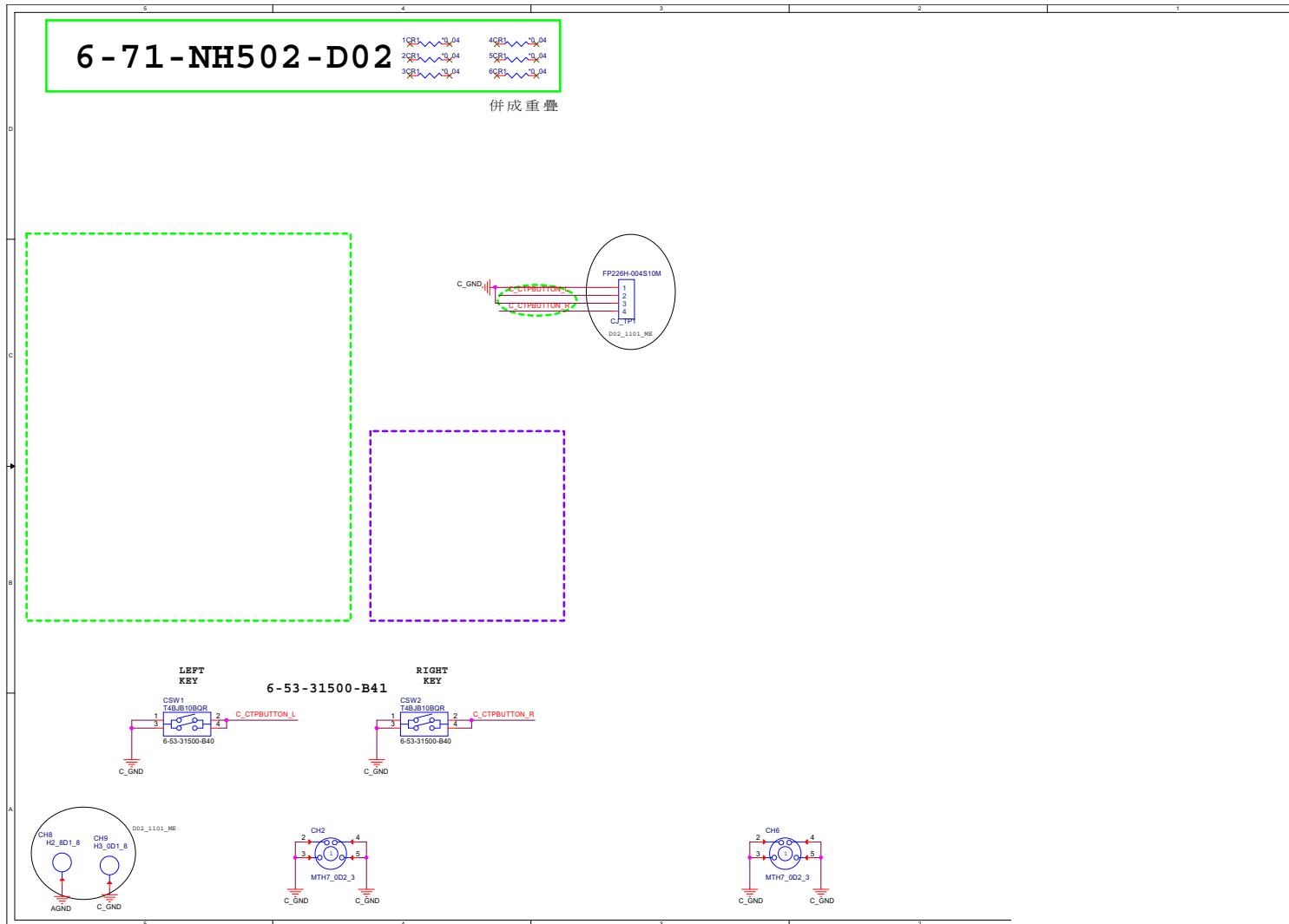
Sheet 64 of 73  
NH50 PW Board

# Hall Sensor Board

Sheet 65 of 73  
Hall Sensor Board



# Click Board

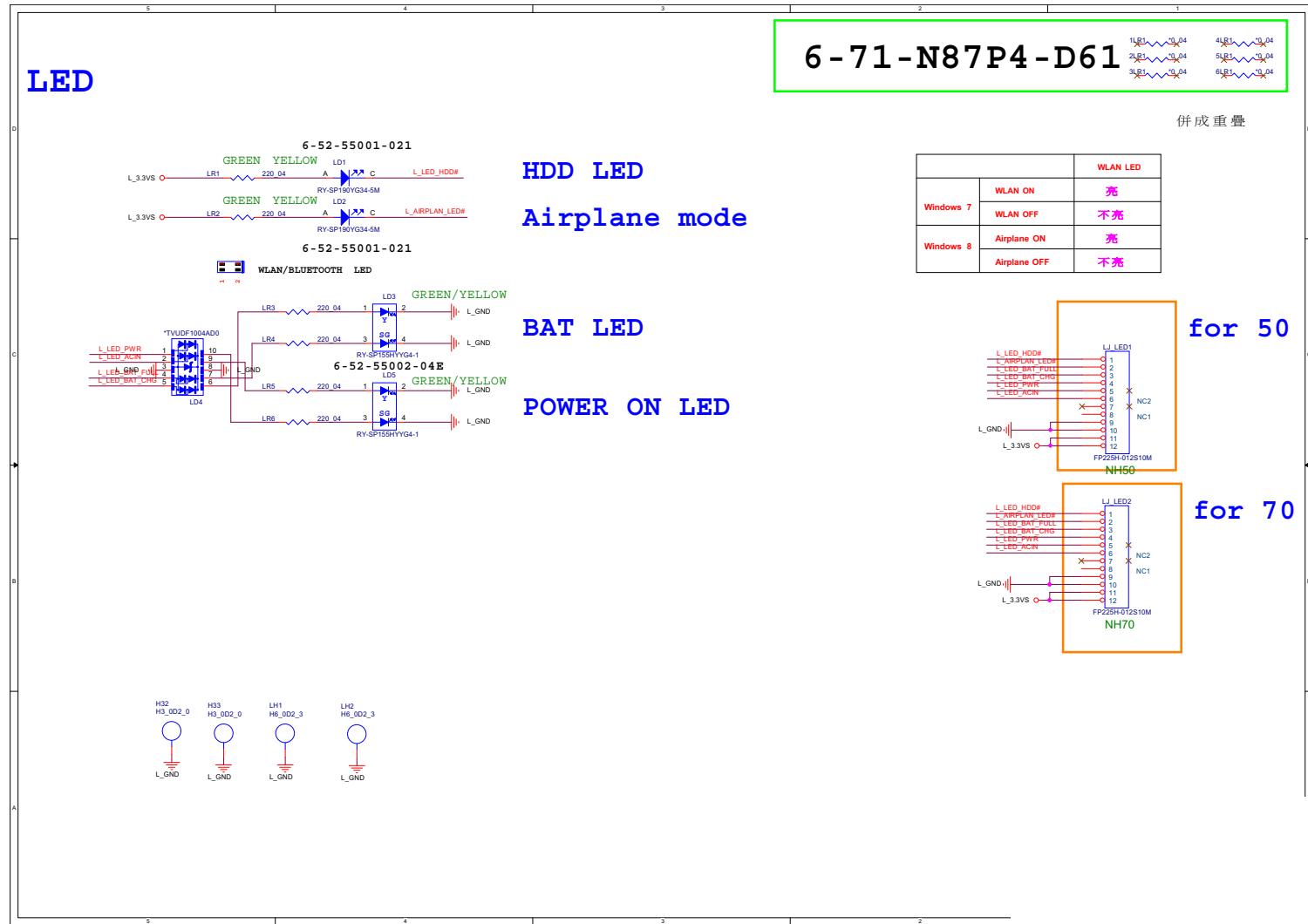


Sheet 66 of 73  
Click Board

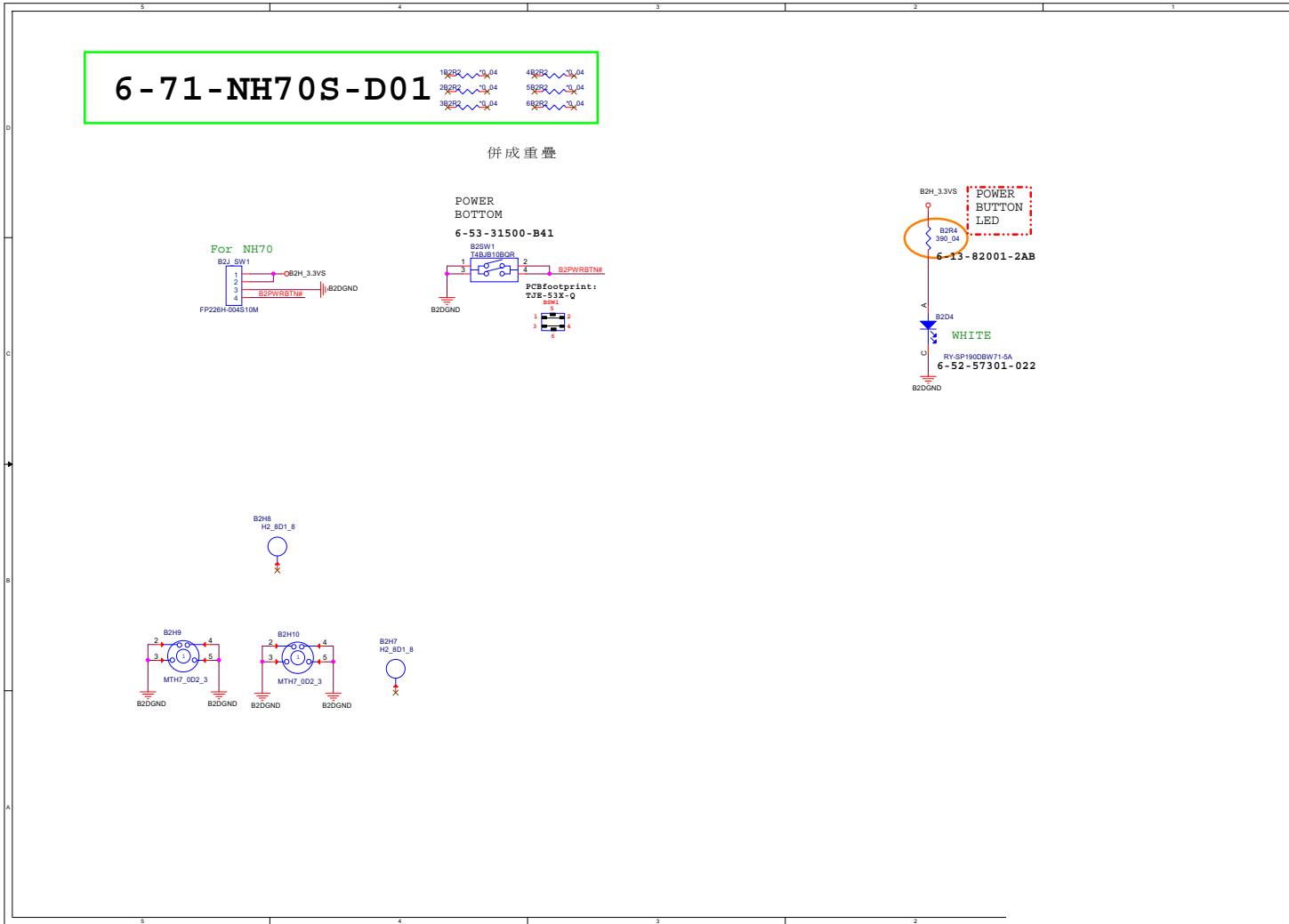
## Schematic Diagrams

### LED Board

Sheet 67 of 73  
LED Board



## NH70 PW Board

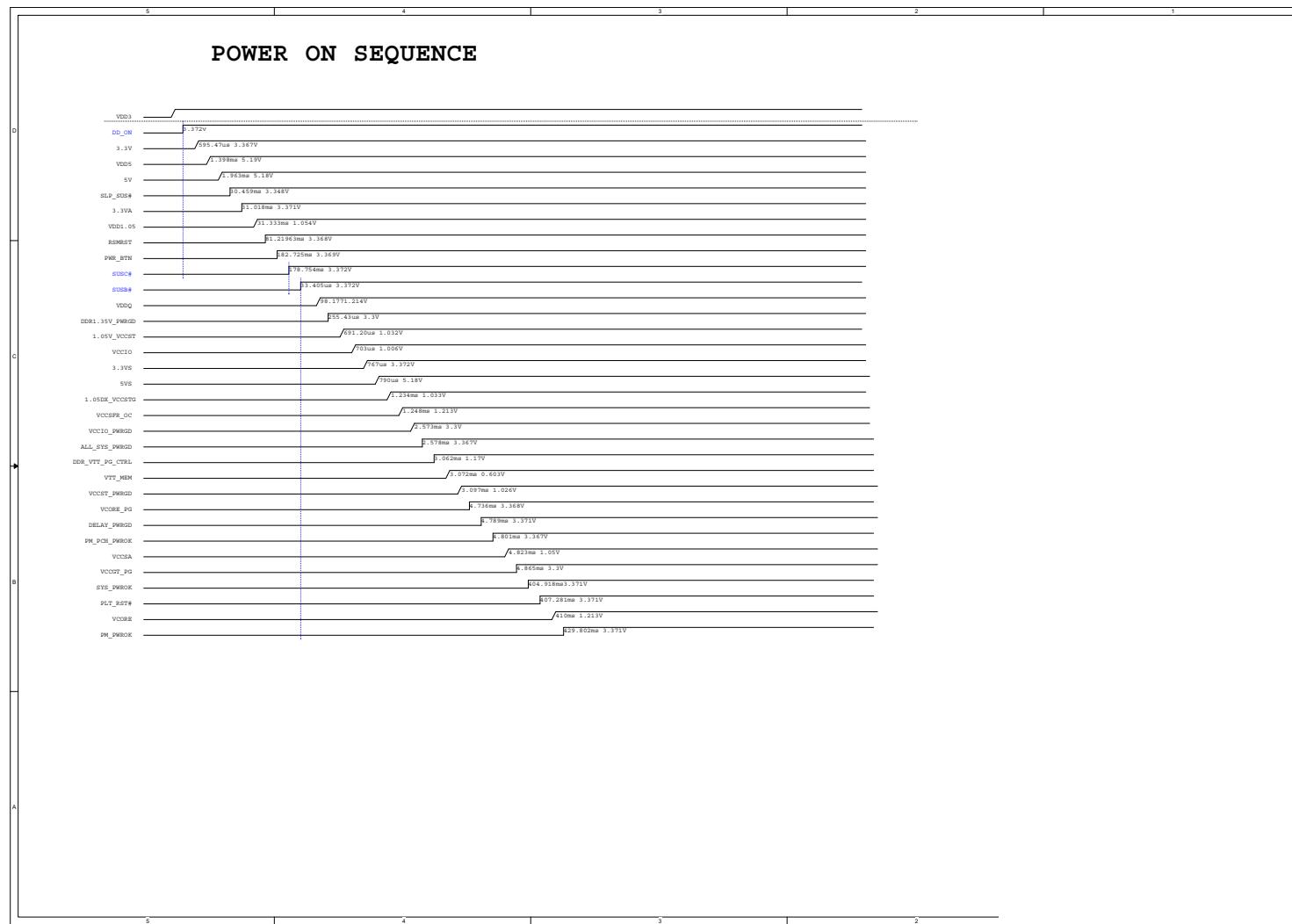


Sheet 68 of 73  
NH70 PW Board

## Schematic Diagrams

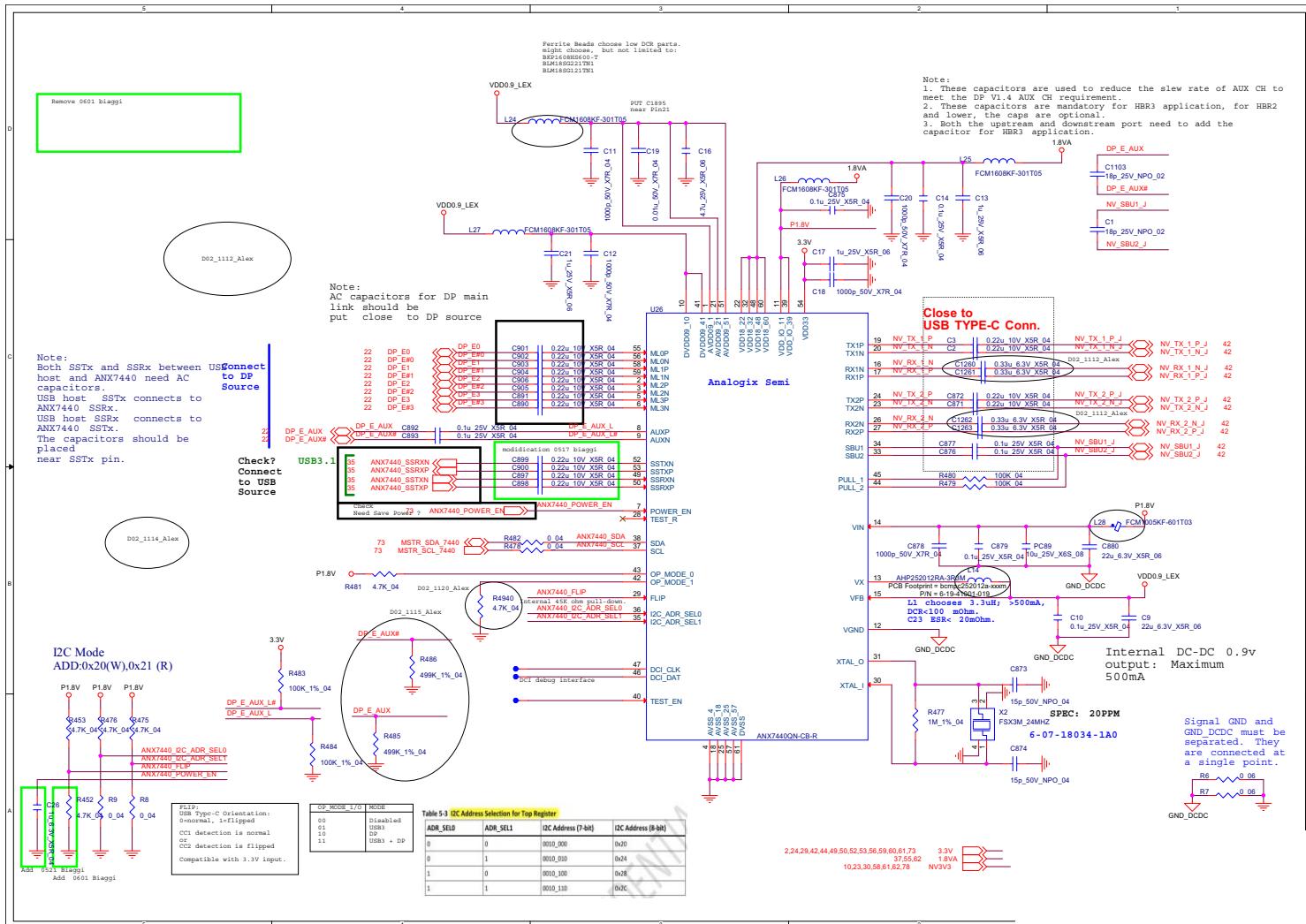
### Power Sequence

Sheet 69 of 73  
Power Sequence



## Schematic Diagrams

# USB Type-C



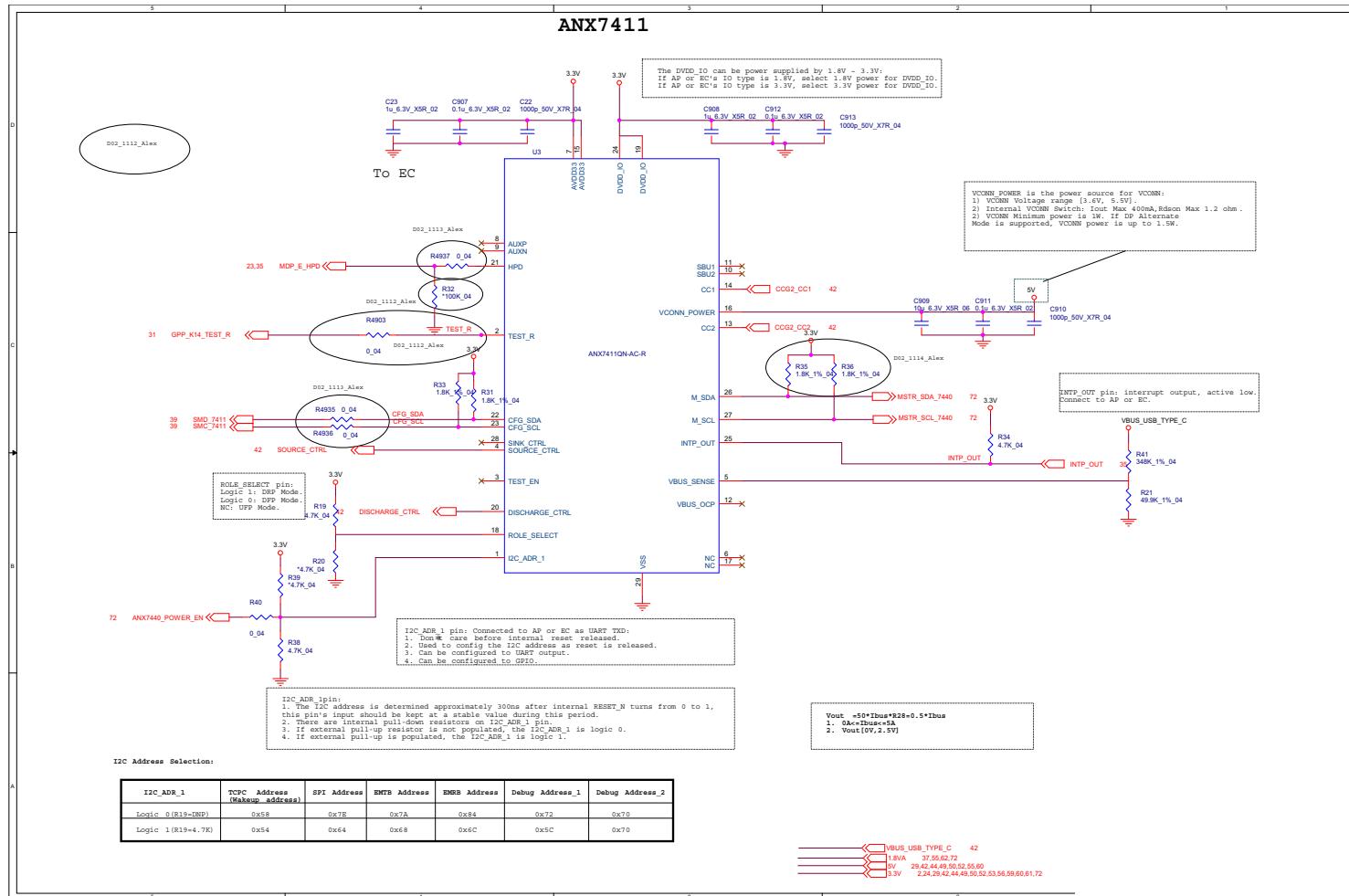
Sheet 70 of 73  
USB Type-C

## B.Schematic Diagrams

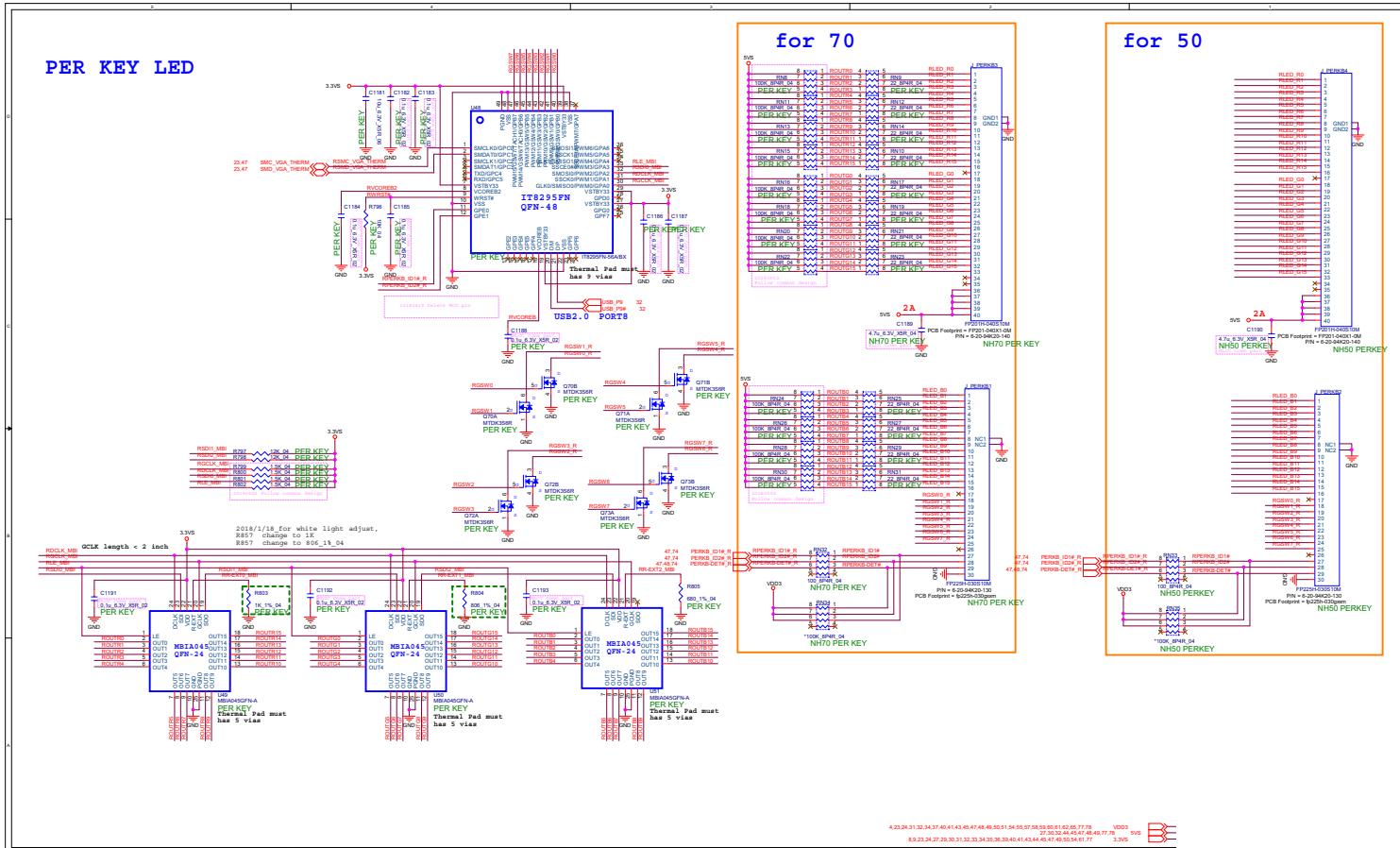
## Schematic Diagrams

### PD Controller ANX7411

Sheet 71 of 73  
PD Controller  
ANX7411



# PER KEY Board



Sheet 72 of 73  
PER KEY Board

## **Schematic Diagrams**

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## DGPU Power Measurement

**Sheet 73 of 73**  
**DGPU Power**  
**Measurement**

