

# SERVICE MANUAL

NK50SZ

*notebook*





**Notebook Computer**

**NK50SZ**

**Service Manual**

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HIGH-DEFINITION MULTIMEDIA INTERFACE

## 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 *NK50SZ* 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

### **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 19V, 4.74A (**90** 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:

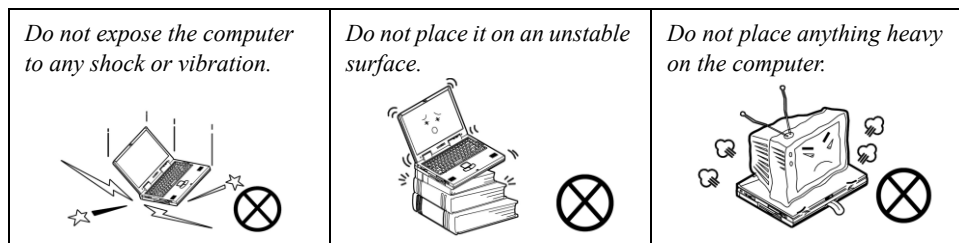
This device may not cause harmful interference.

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

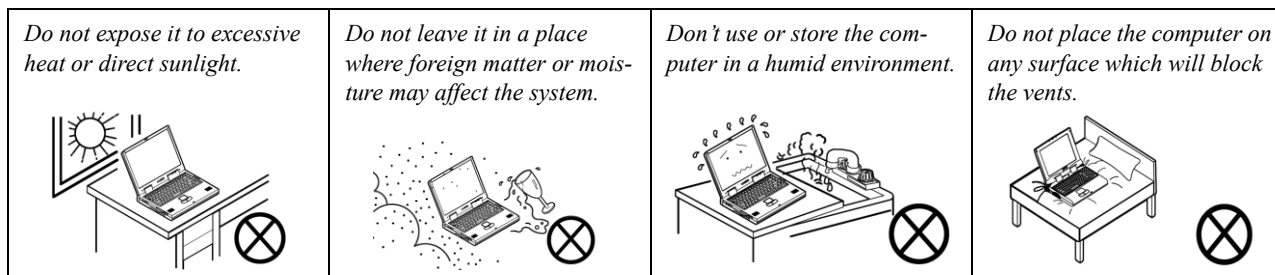
## Instructions for Care and Operation

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

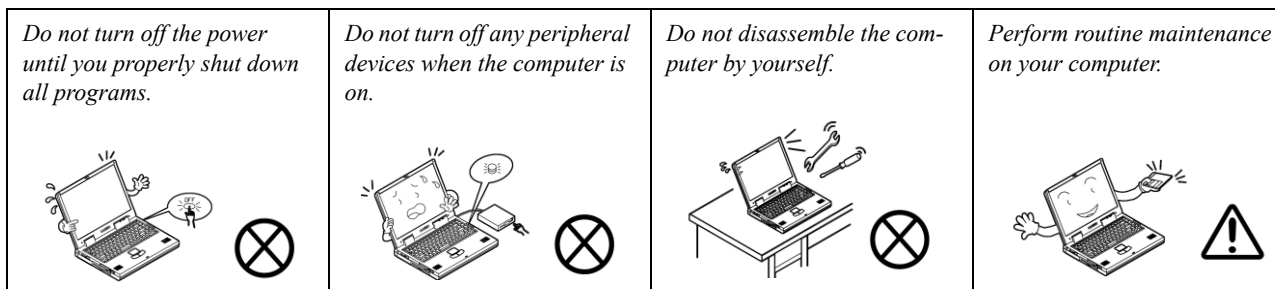
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



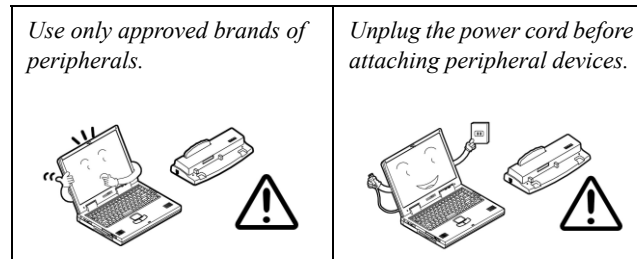
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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.



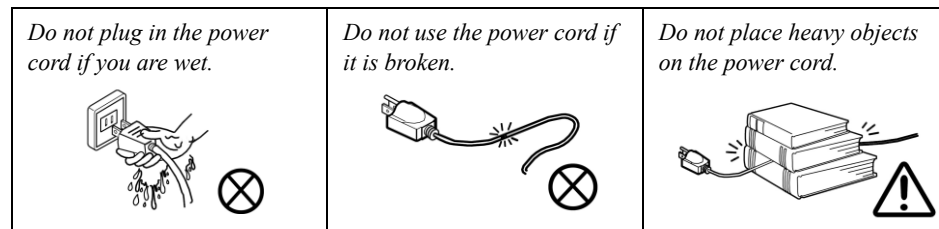
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



## Power Safety

The computer has specific power requirements:

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



### Power Safety Warning

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



## Battery Precautions

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

## Battery Guidelines

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

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




### Battery Disposal

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

### Caution

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

### Battery Level

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

### Related Documents

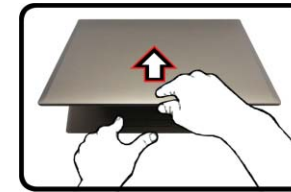
You may also need to consult the following manual for additional information:

#### User's Manual on CD/DVD

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

### System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Insert the battery and make sure it is locked in position.
4. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
5. **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 right 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.
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**

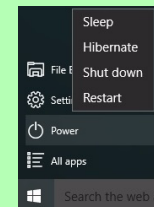
#### Powering the Computer On

After every disassembly, make sure that the bottom case's screws are all inserted and tightened before opening the Lid/LCD and turning the computer on.

#### 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.



## Contents

|   |            |                                  |            |
|---|------------|----------------------------------|------------|
| <b>Introduction .....</b>                             | <b>1-1</b> | Top .....                        | A-3        |
| Overview .....  | 1-1        | Bottom .....                     | A-4        |
| Specifications .....                                  | 1-2        | Main Board .....                 | A-5        |
| External Locator - Top View with LCD Panel Open ..... | 1-4        | LCD .....                        | A-6        |
| External Locator - Front & Right Side Views .....     | 1-5        | HDD .....                        | A-7        |
| External Locator - Left Side & Rear View .....        | 1-6        | <b>Schematic Diagrams.....</b>   | <b>B-1</b> |
| External Locator - Bottom View .....                  | 1-7        | System Block Diagram .....       | B-2        |
| Mainboard Overview - Top (Key Parts) .....            | 1-8        | Processor 1/5 .....              | B-3        |
| Mainboard Overview - Bottom (Key Parts) .....         | 1-9        | Processor 2/5 .....              | B-4        |
| Mainboard Overview - Top (Connectors) .....           | 1-10       | Processor 3/5 .....              | B-5        |
| Mainboard Overview - Bottom (Connectors) .....        | 1-11       | Processor 4/5 .....              | B-6        |
| <b>Disassembly .....</b>                              | <b>2-1</b> | Processor 5/5 .....              | B-7        |
| Overview .....  | 2-1        | DDR4 CHA SO-DIMM_0 .....         | B-8        |
| Maintenance Tools .....                               | 2-2        | DDR4 CHB SO-DIMM_0 .....         | B-9        |
| Connections .....                                     | 2-2        | VGA PCI-E Interface .....        | B-10       |
| Maintenance Precautions .....                         | 2-3        | VGA Frame Buffer Interface ..... | B-11       |
| Disassembly Steps .....                               | 2-4        | VGA Frame Buffer A .....         | B-12       |
| Removing the Battery .....                            | 2-5        | VGA Frame Buffer A .....         | B-13       |
| Removing the Hard Disk Drive .....                    | 2-6        | VGA I/O .....                    | B-14       |
| Removing the Keyboard .....                           | 2-8        | VGA NVVDD Coupling .....         | B-15       |
| Removing and Installing the Processor .....           | 2-9        | CRT .....                        | B-16       |
| Removing the System Memory (RAM) .....                | 2-12       | HDMI .....                       | B-17       |
| Removing the M.2 SSD Module .....                     | 2-13       | EDP Panel Conn. ....             | B-18       |
| Removing the Wireless LAN Module .....                | 2-14       | PCH 1/9 .....                    | B-19       |
| Wireless LAN, Combo, & LTE Module Cables .....        | 2-15       | PCH 2/9 .....                    | B-20       |
| Removing the LTE Module .....                         | 2-16       | PCH 3/9 .....                    | B-21       |
| Removing the CCD .....                                | 2-17       | PCH 4/9 .....                    | B-22       |
| <b>Part Lists .....</b>                               | <b>A-1</b> | PCH 5/9 .....                    | B-23       |
| Part List Illustration Location .....                 | A-2        | PCH 6/9 .....                    | B-24       |
|   |            | PCH 7/9 .....                    | B-25       |

## Preface

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|                                 |      |
|---------------------------------|------|
| PCH 8/9 .....                   | B-26 |
| PCH 9/9 .....                   | B-27 |
| Audio Codec .....               | B-28 |
| KBC-ITE IT5570 .....            | B-29 |
| M.2 SSD SATA .....              | B-30 |
| USB Type-C, M.2 WLAN+BT .....   | B-31 |
| USB Type-A, USB Charger .....   | B-32 |
| RGB KB, Fan, LED, Audio .....   | B-33 |
| HDD, CCD, TP, LID, PWR SW ..... | B-34 |
| 5V, 5VS, 3.3VA, 3.3V, 3VS ..... | B-35 |
| VDD3, VDD5 .....                | B-36 |
| 1.05A, VCCST/STG/SFR .....      | B-37 |
| VDDQ, VTT_MEM, 2.5V .....       | B-38 |
| MP2979 .....                    | B-39 |
| VCore .....                     | B-40 |
| VCCGT, VCCSA .....              | B-41 |
| VCCIO .....                     | B-42 |
| AC_In, Charger .....            | B-43 |
| NVVDD .....                     | B-44 |
| PEX_VDD, 1.8V .....             | B-45 |
| FBVDDQ .....                    | B-46 |
| M.2 3G/LTE .....                | B-47 |
| DC Jack Board .....             | B-48 |
| Power SW Board .....            | B-49 |
| Click Board .....               | B-50 |
| Multi Board .....               | B-51 |
| Multi Board .....               | B-52 |
| LID SW Board .....              | B-53 |
| TPM SLB9670 .....               | B-54 |
| Power Sequence .....            | B-55 |

# Chapter 1: Introduction

## Overview

This manual covers the information you need to service or upgrade the **NK50SZ** 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 **NK50SZ** series notebook is designed to be upgradeable. See [Disassembly on page 2 - 1](#) for a detailed description of the upgrade procedures for each specific component. Please take note of the warning and safety information indicated by the “” symbol.

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

## Introduction

# Specifications



### Latest Specification Information

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



### CPU

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

## Processor Options

### Intel® Core™ i7 Processor

#### i7-10700 (2.90GHz)

16MB Smart Cache, 14nm, DDR4-2933MHz, TDP 65W

### Intel® Core™ i5 Processor

#### i5-10600 (3.30GHz)

12MB Smart Cache, 14nm, DDR4-2666MHz, TDP 65W

#### i5-10500 (3.10GHz)

12MB Smart Cache, 14nm, DDR4-2666MHz, TDP 65W

#### i5-10400 (2.90GHz)

12MB Smart Cache, 14nm, DDR4-2666MHz, TDP 65W

### Intel® Core™ i3 Processor

#### i3-10320 (3.80GHz)

8MB Smart Cache, 14nm, DDR4-2666MHz, TDP 65W

#### i3-10300 (3.70GHz)

8MB Smart Cache, 14nm, DDR4-2666MHz, TDP 65W

#### i3-10100 (3.60GHz)

6MB Smart Cache, 14nm, DDR4-2666MHz, TDP 65W

### Intel® Pentium® Processor

#### Gold G6600 (4.20GHz)

4MB Smart Cache, 14nm, DDR4-2666MHz, TDP 58W

### Intel® Celeron Processor

#### Celeron G5920 (3.50GHz)

2MB Smart Cache, 14nm, DDR4-2666MHz, TDP 58W

## Core Logic

Mobile Intel® H410 Express Chipset

## BIOS

128Mb SPI Flash ROM

INSYDE BIOS

## LCD Options

15.6" (39.62cm), 16:9, FHD (1920x1080)

## Memory

Dual Channel DDR4

Two 260 Pin SO-DIMM Sockets

Supporting up to **3200MHz DDR4** Memory

Memory Expandable up to **32GB**

Compatible with 4GB, 8GB or 16GB Modules

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

## Video Adapter

### Intel® Integrated GPU and NVIDIA® Discrete GPU

#### Supports Microsoft Hybrid Graphics

#### Intel Integrated GPU

**Intel® UHD Graphics 630 (i7-10700, i5-10600, i5-10500, i5-10400, i3-10320, i3-10300, i3-10100, G6600)**

Dynamic Frequency

Intel Dynamic Video Memory Technology

Microsoft DirectX®12 Compatible

#### Intel® UHD Graphics 610 (G5920)

Dynamic Frequency

Intel Dynamic Video Memory Technology

Microsoft DirectX®12 Compatible

## Storage

One Changeable 2.5" 7mm (h) SATA HDD/SSD

(**Factory Option**) One M.2 2280 **PCIe Gen3 x4** Solid State Drive (SSD)

## Audio

High Definition Audio Compliant Interface

Built-In Microphone

(**Factory Option**) Built-In Array Microphone

Two Speakers

**Security**

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

**Keyboard**

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

**Pointing Device**

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

**Interface**

One USB 3.2 Gen 1 Type-C Port\*  
 \*The maximum amount of current supplied by USB Type-C ports is 500mA (USB 2.0)/900mA (USB 3.2).

One USB 3.2 Gen 1 Type-A Port  
 Two USB 2.0 Ports  
 One External Monitor Port  
 One HDMI-Out Port  
 One Microphone-In Jack  
 One 2- In-1 Audio Jack 2-In-1 Audio Jack (Headphones/ Headset)  
 One RJ-45 LAN Jack  
 One DC-In Jack

**Card Reader**

Embedded Multi-In-1 Push-Push 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 **PCIe Gen3 x4 SSD**  
 (Factory Option) Slot 3 for **4G** Module

**Communication**

1.0M HD PC Camera Module  
 Built-In 10/100/1000Mb Base-TX Ethernet LAN  
 (Factory Option) Intel® Dual Band Wi-Fi 6 AX200 Wireless LAN (802.11ax) + Bluetooth  
 (Factory Option) **4G** M.2 3042 Module

**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, 41WH  
 (Factory Option) Removable 4 Cell Smart Lithium-Ion Battery Pack, 48.96WH  
 Full Range AC/DC Adapter  
 AC Input: 100 - 240V, 50 - 60Hz  
 DC Output: 19V, 4.74A (**90W**)

**Dimensions & Weight**

361mm (w) \* 249mm (d) \* 29.8mm (h)  
**2.3kg** (Barebone with 41WH Battery)

## 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 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

FRONT VIEW



*Figure 2*  
**Front View**

1. LED Indicators

RIGHT SIDE VIEW



*Figure 3*  
**Right Side View**

1. Multi-in-1 Card Reader
2. 2-In-1 Audio Jack (Headphones/ Headset)
3. Microphone-In Jack
4. USB 2.0 Port
5. RJ-45 LAN Jack
6. Security Lock Slot

## Introduction

### External Locator - Left Side & Rear View

*Figure 4*

#### Left Side View

1. Vent
2. External Display Port
3. HDMI-Out Port
4. USB 3.2 Gen 1 Type-C Port
5. USB 3.2 Gen 1 Type-A Port
6. USB 2.0 Port

LEFT SIDE VIEW



REAR VIEW



*Figure 5*

#### Rear View

1. DC-In Jack
2. Vent

## External Locator - Bottom View

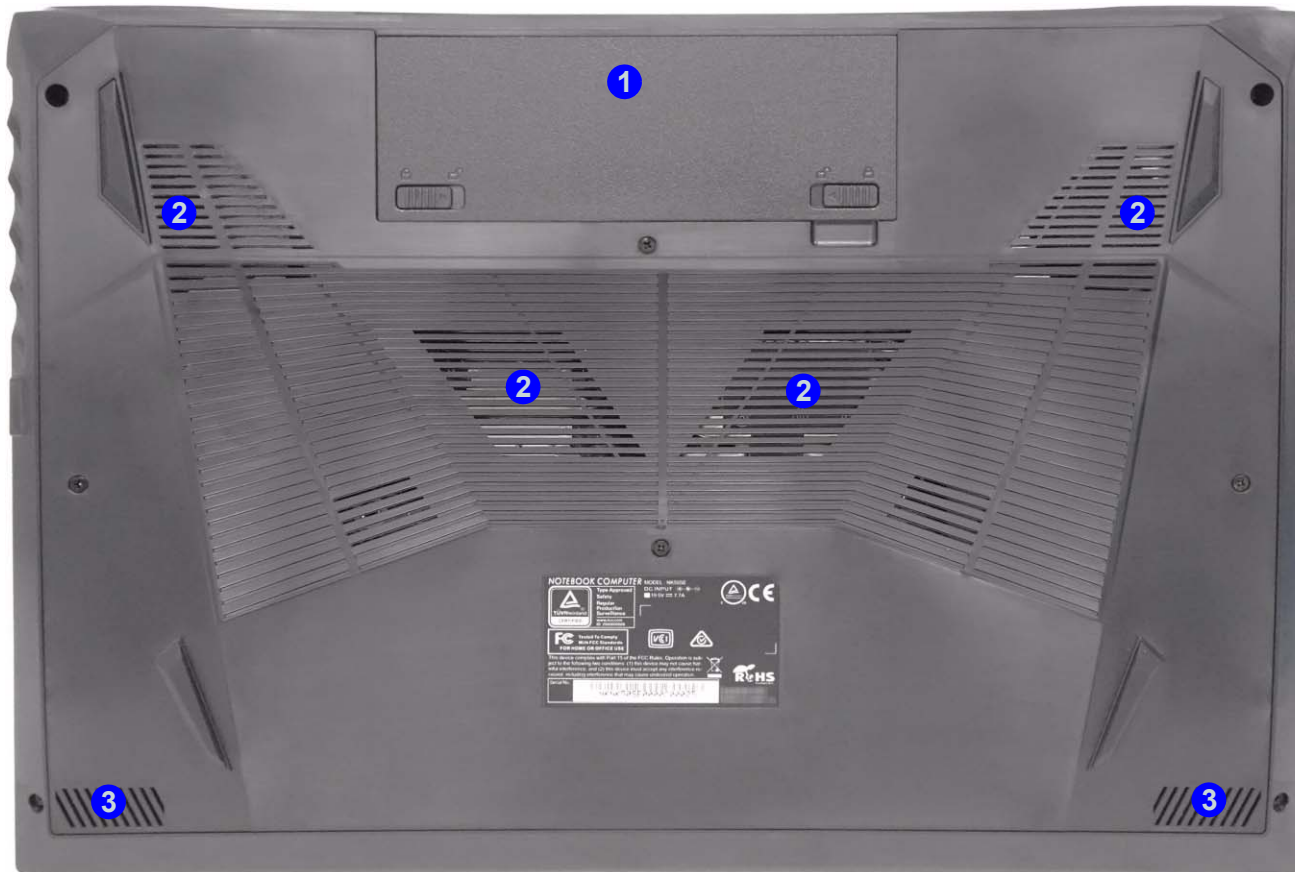


Figure 6  
Bottom View

1. Battery
2. Vent
3. Speakers



### Overheating

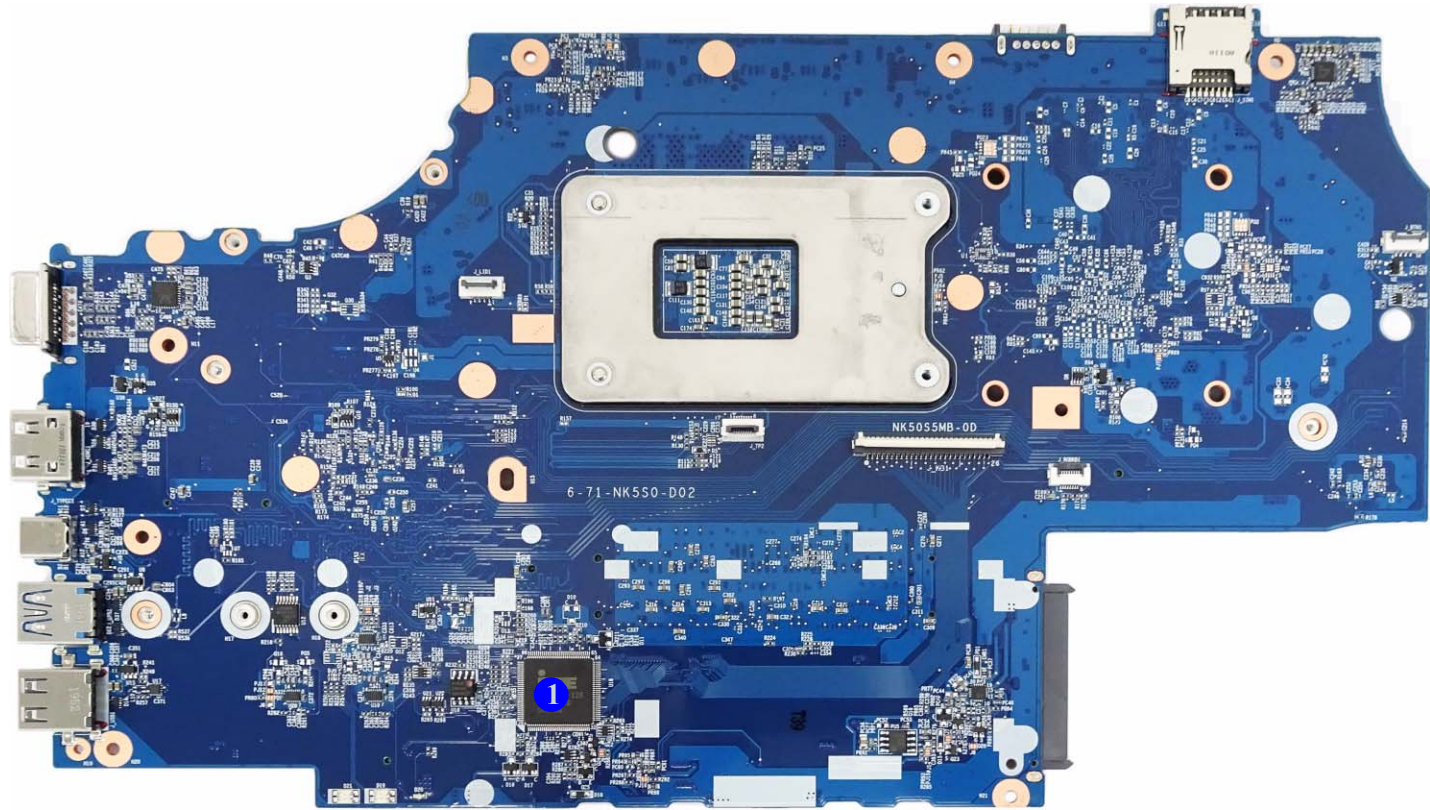
To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

## Introduction

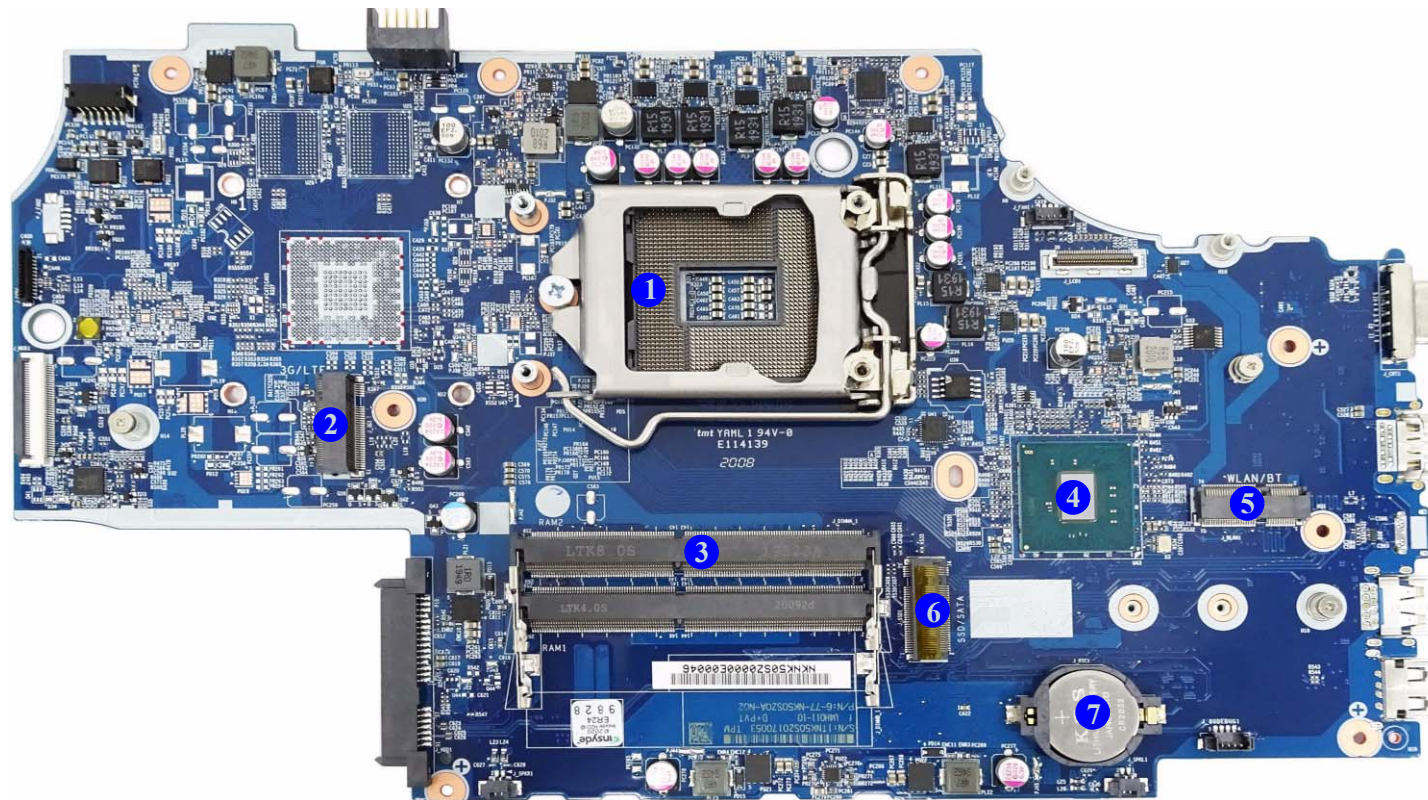
*Figure 7*  
Mainboard Top  
Key Parts

1. KBC-ITE IT5570

## Mainboard Overview - Top (Key Parts)



## Mainboard Overview - Bottom (Key Parts)



*Figure 8*  
**Mainboard Bottom  
Key Parts**

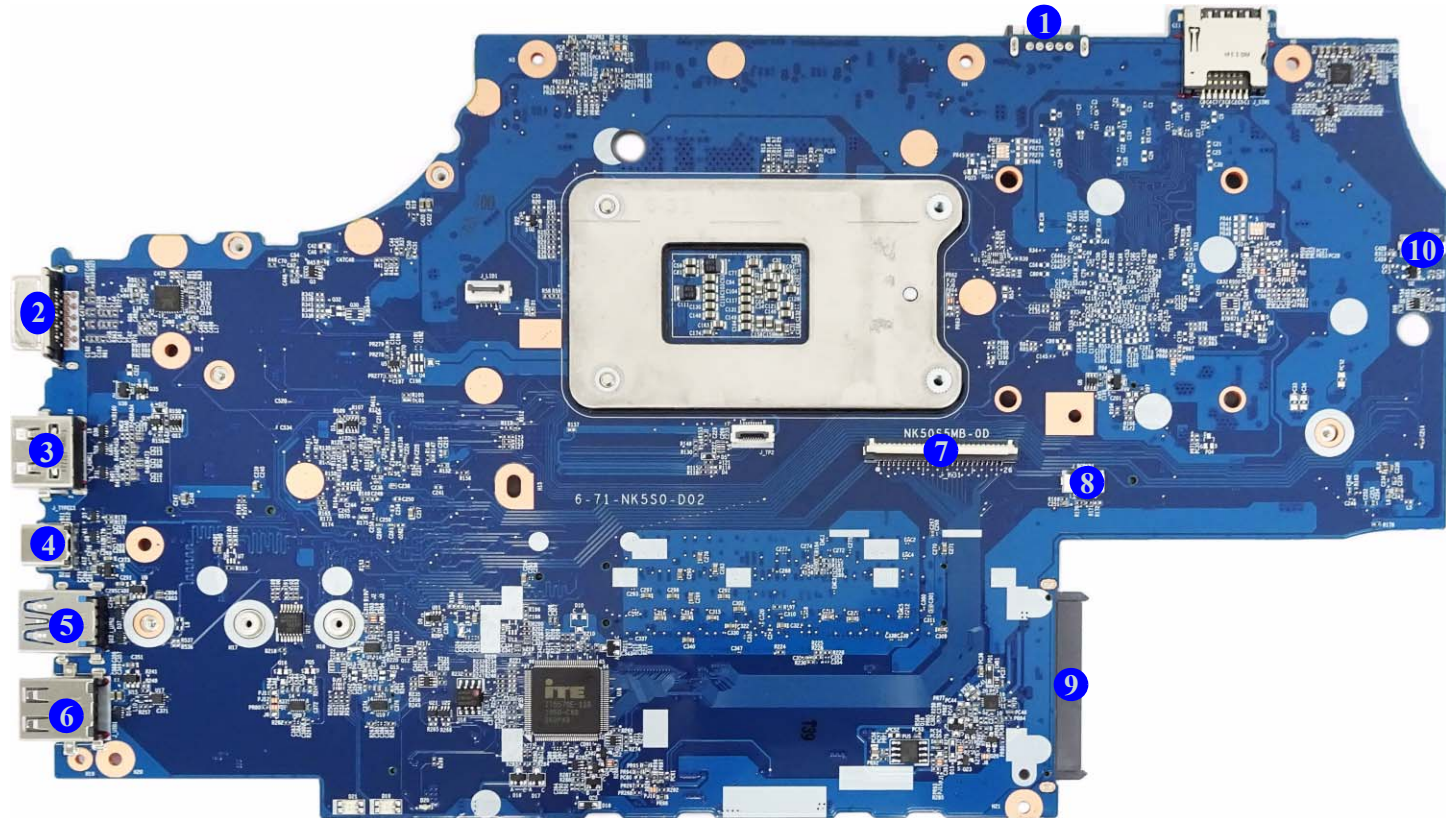
1. CPU (not installed)
2. M.2-Card Connector (LTE Module)
3. Memory Slots DDR4 SO-DIMM
4. PCH
5. M.2-Card Connector (WLAN Module)
6. M.2-Card Connector (SSD Module - PCIE only)
7. CMOS Battery

## Introduction

*Figure 9*  
**Mainboard Top  
Connectors**

## Mainboard Overview - Top (Connectors)

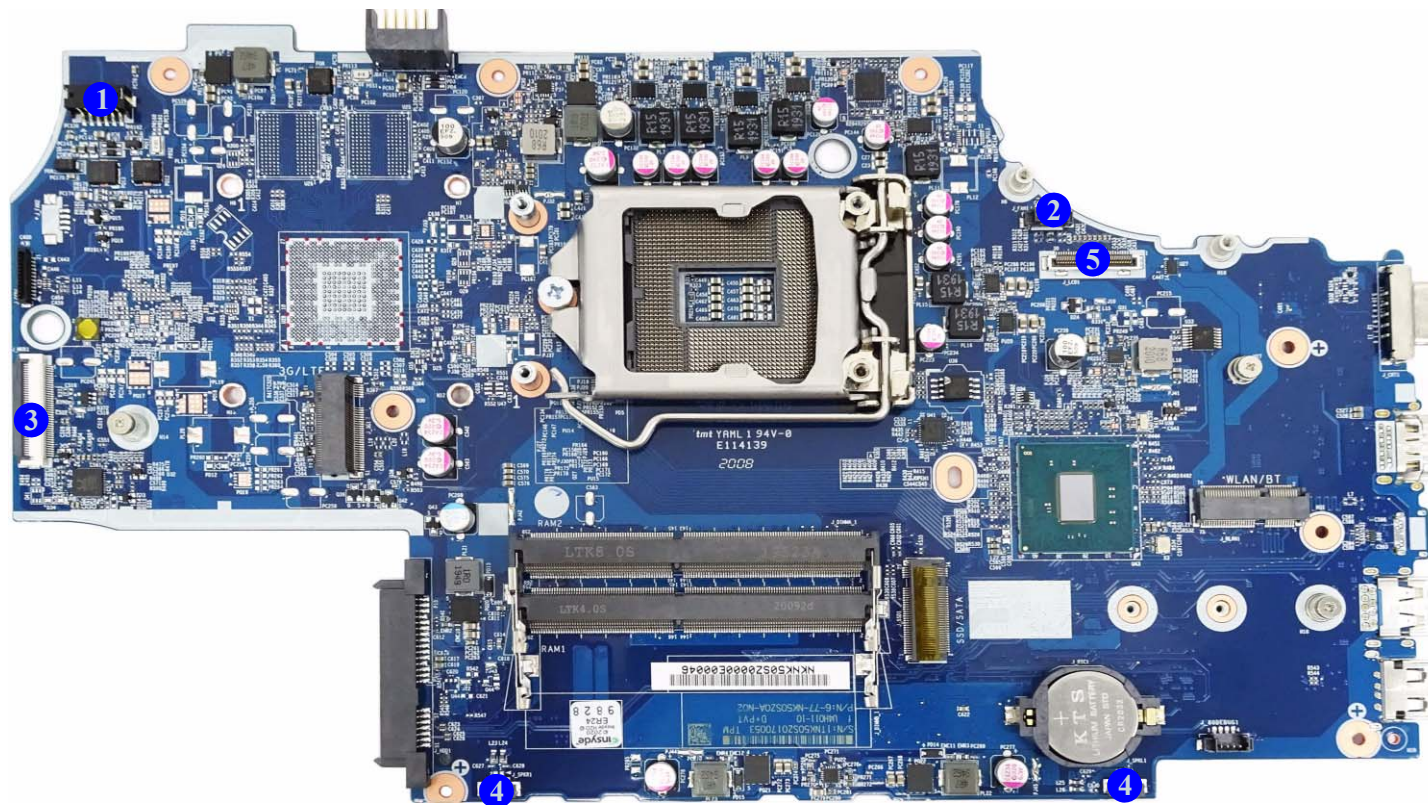
1. Battery Connector
2. External Display Port
3. HDMI-Out Port
4. USB Port 3.2 (Type C) Connector
5. USB Port 3.2 (Type A) Connector
6. USB Port 2.0 (Type A) Connector
7. Keyboard Cable Connector
8. KB LED Connector
9. HDD Connector
10. Power Button Connector



## Mainboard Overview - Bottom (Connectors)

*Figure 10*  
**Mainboard Bottom  
Connectors**

1. DC-In Connector
2. Fan Connector
3. J\_MUX Connector
4. Speaker Connector
5. LCD Connector








# Chapter 2: Disassembly



## Overview

This chapter provides step-by-step instructions for disassembling the *NK50SZ* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

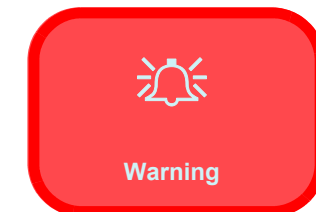
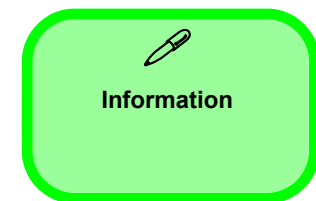
We suggest you completely review any procedure before you take the computer apart.

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

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

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

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



## Disassembly

---

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

### Maintenance Tools

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

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



### Connections

Connections within the computer are one of four types:

Locking collar sockets for ribbon connectors

To release these connectors, use a small flat-head screwdriver to gently pry the locking collar away from its base. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.

Pressure sockets for multi-wire connectors

To release this connector type, grasp it at its head and gently rock it from side to side as you pull it out. Do not pull on the wires themselves. When replacing the connection, do not try to force it. The socket only fits one way.

Pressure sockets for ribbon connectors

To release these connectors, use a small pair of needle-nose pliers to gently lift the connector away from its socket. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.

Board-to-board or multi-pin sockets

To separate the boards, gently rock them from side to side as you pull them apart. If the connection is very tight, use a small flat-head screwdriver - use just enough force to start.

## Maintenance Precautions

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

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

## Cleaning

Do not apply cleaner directly to the computer, use a soft clean cloth.

Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.

**(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 HDD:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)

#### To remove the Keyboard:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the keyboard [page 2 - 8](#)

#### To remove and install the Processor:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the processor [page 2 - 9](#)
4. Install the processor [page 2 - 11](#)

#### To remove the System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the system memory [page 2 - 12](#)

#### To remove the M.2 SSD:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the SSD [page 2 - 13](#)

#### To remove the Wireless LAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the WLAN [page 2 - 14](#)

#### To remove the LTE Module:

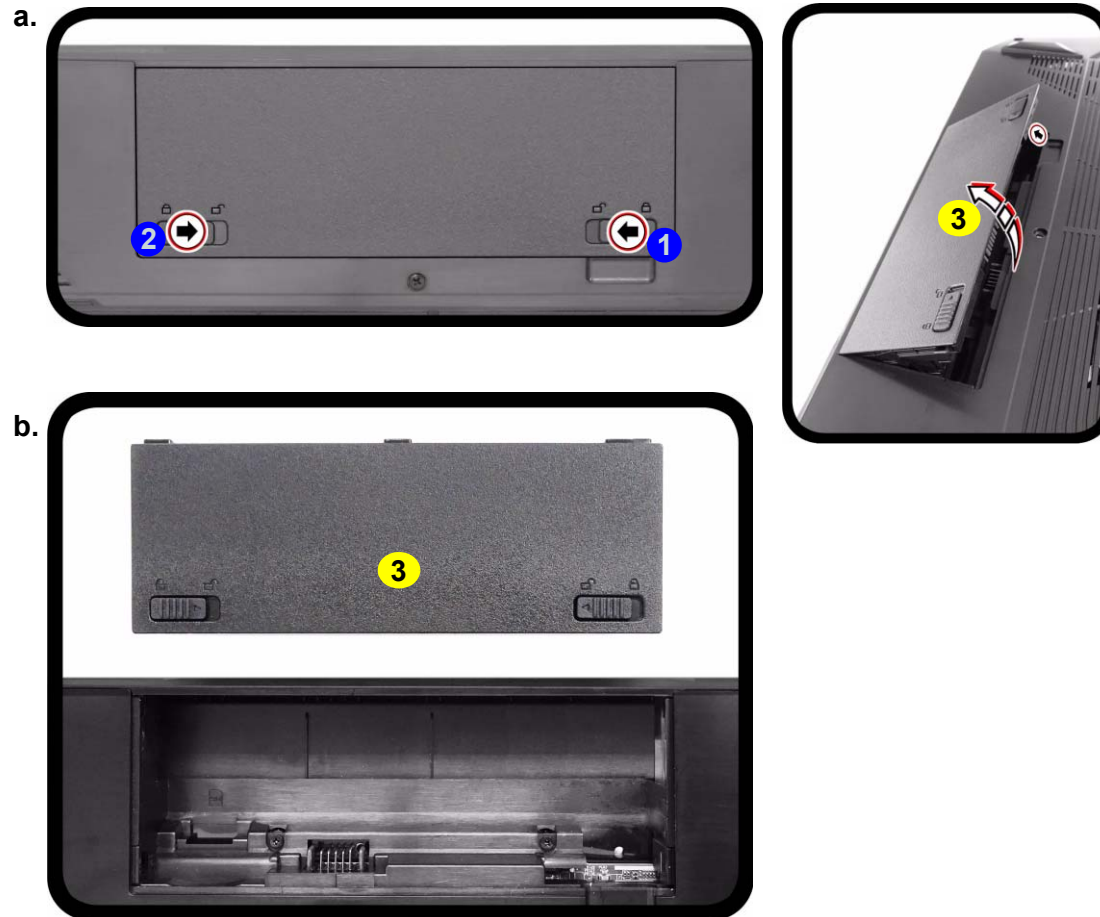
1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the LTE [page 2 - 16](#)

#### To remove the CCD Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the CCD module [page 2 - 17](#)

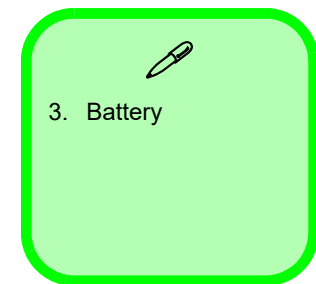
## Removing the Battery

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**, slide the battery **3** out of the compartment (*Figure 1b*).
5. Reverse the process to install a new battery.



*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. Remove the battery.



*Figure 2*  
**HDD Assembly  
Removal**

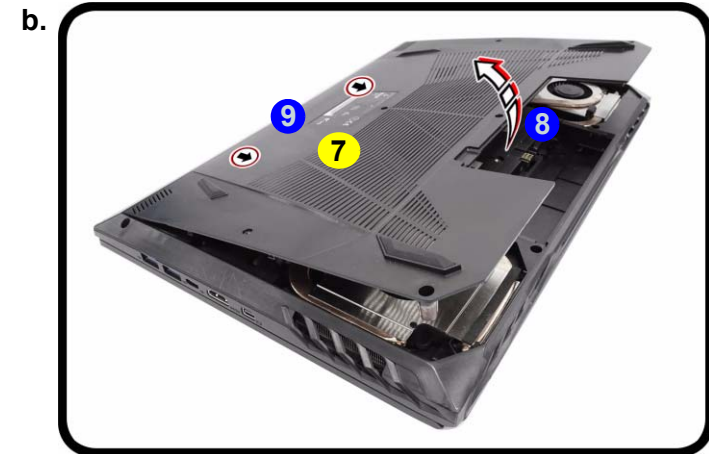
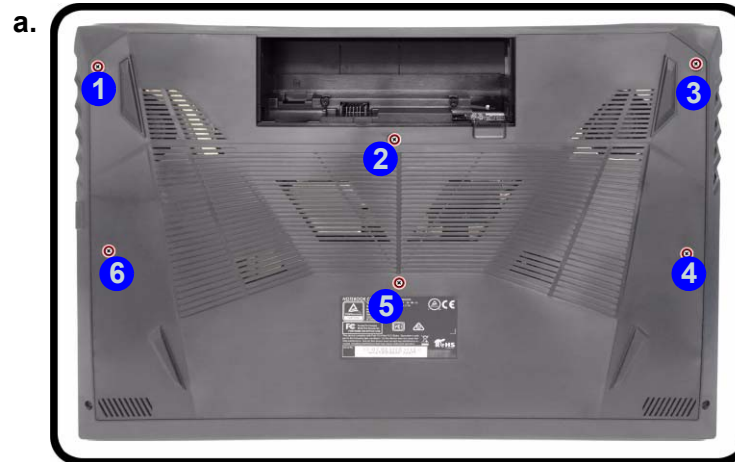
- Remove the SD card cover and screws.
- Remove the bottom case.
- Locate the HDD.

## 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

- Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
- Remove screws **1** - **6** ([Figure 2a](#)).
- Carefully lift the bottom case **7** up from point **8** first and then **9** to remove it ([Figure 2b](#)).
- The HDD will be visible at point **10** on the mainboard ([Figure 2c](#)).



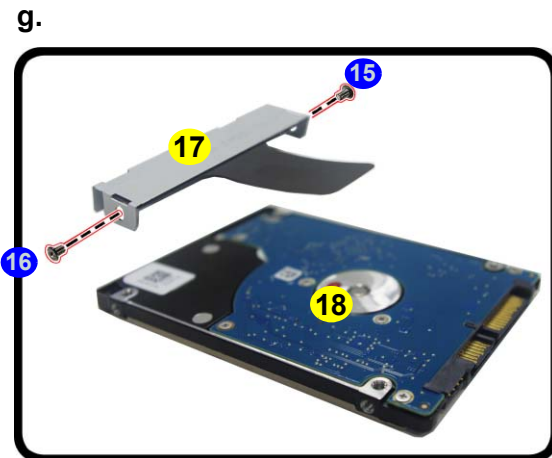
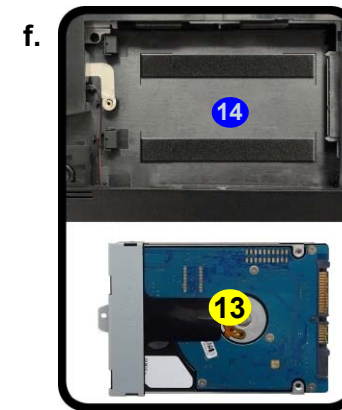
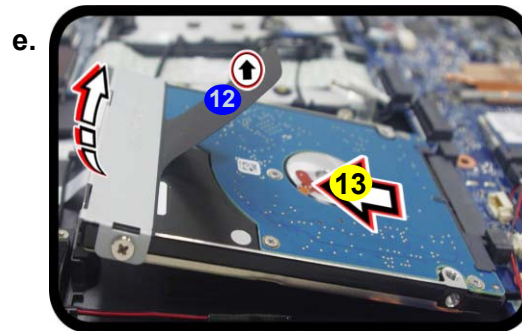
#### Powering the Computer On

After every disassembly, make sure that the bottom case's screws are all inserted and tightened before opening the Lid/LCD and turning the computer on.

#### 7. Bottom Case

- 6 Screws

5. Remove screws **11** from the HDD assembly (*Figure 3d*).
6. Slightly lift and pull the hard disk assembly in the direction of arrow **12** (*Figure 3e*).
7. Lift the hard disk assembly **13** out of the bay **14** (*Figure 3f*).
8. Remove screws **15** - **16** and bracket **17** from the hard disk **18** (*Figure 3g*).
9. Reverse the process to install a new hard disk (do not forget to replace the screws).



*Figure 3*  
**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.



### 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.



13. HDD Assembly  
17. Bracket  
18. HDD

- 3 Screws

## Disassembly

Figure 4  
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.

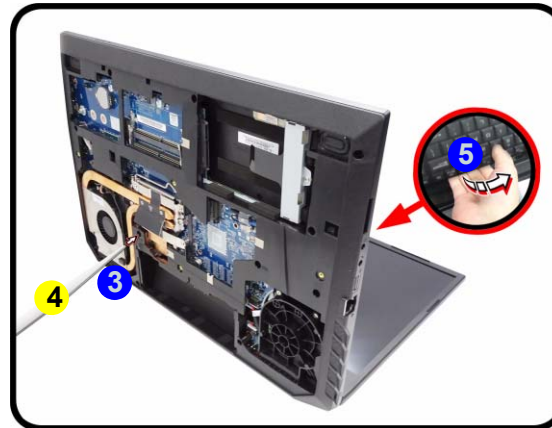
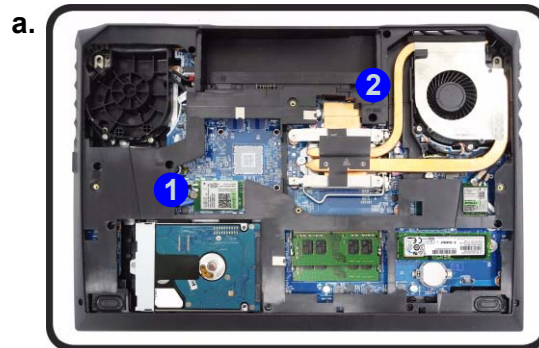


4. Eject Stick
6. Keyboard

- 2 Screws

## Removing the Keyboard

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and bottom cover ([page 2 - 6](#)).
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 4a](#)).
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 4b](#)).
5. Carefully lift the keyboard **6** off the computer ([Figure 4c](#)).
6. Reverse the process to install a new keyboard (do not forget to replace all the screws).





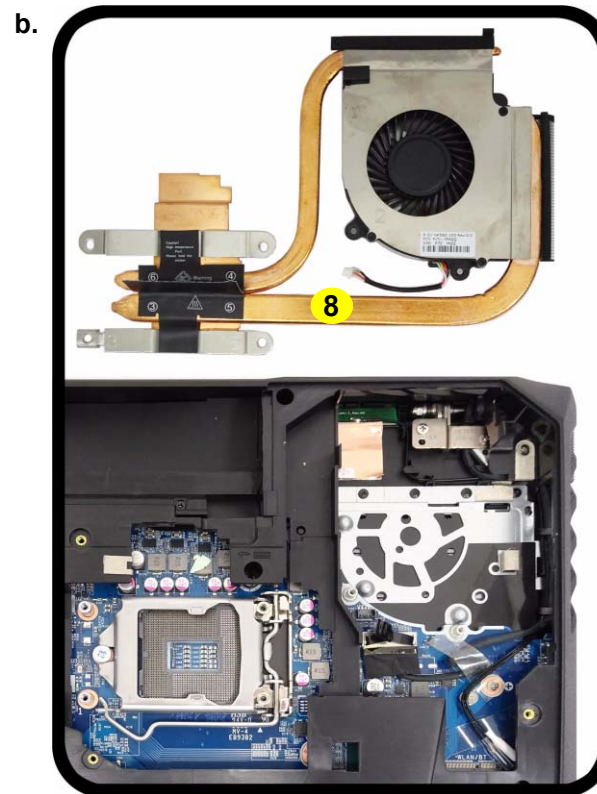
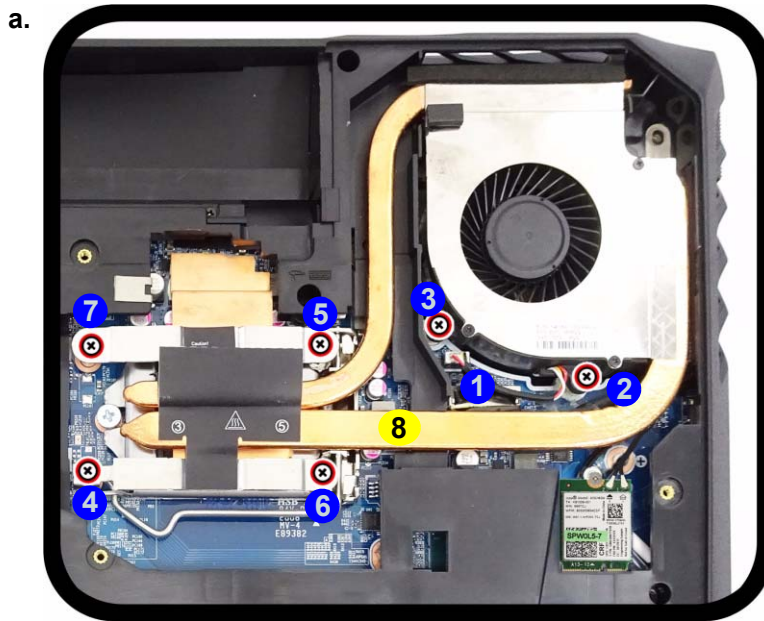
# Removing and Installing the Processor


## Processor Removal Procedure

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and bottom cover ([page 2 - 6](#)).
2. Disconnect the cable **1** and remove screws **2** - **7** from the CPU fan & heat sink unit **8** in the order indicated on the label (i.e screw **7** first through to screw **2** last [Figure 5a](#)).
3. Carefully (it may be hot) remove the heat sink unit **8** as shown by the arrow ([Figure 5b](#)).

*Figure 5*  
**Processor Removal Procedure**

- a. Disconnect the fan cable and remove the screws in the correct order.
- b. Carefully remove the heat sink unit as shown.





8. Heat Sink Unit

- 6 Screws

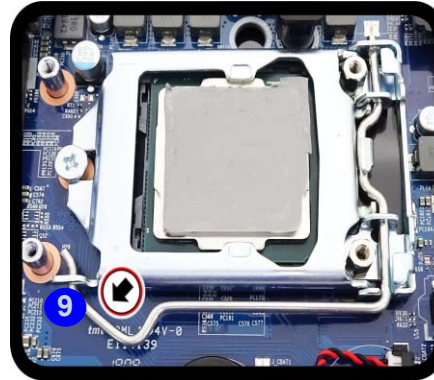
## Disassembly

### Figure 6 Processor Removal (cont'd)

- c. Move the latch and bracket fully in the direction indicated to unlock the CPU.
- d. Lift the CPU out of the socket.

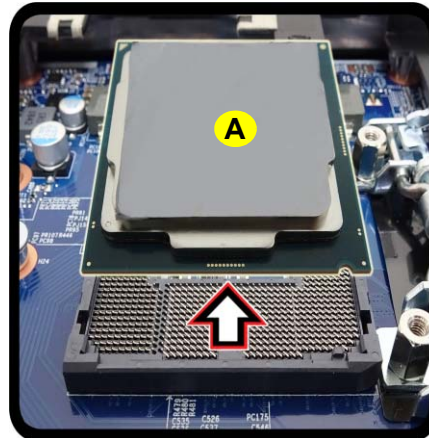
4. Press down and hold the latch **9** (with the latch held down you will be able to release it).
5. Move the latch **9** and bracket **10** fully in the direction indicated to unlock the CPU (**Figure 6d**).
6. Carefully (it may be hot) lift the CPU **A** up out of the socket (**Figure 6e**).
7. See [page 2 - 11](#) for information on inserting a new CPU.
8. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

c.



Unlock

d.



Caution

The heat sink, and CPU area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.



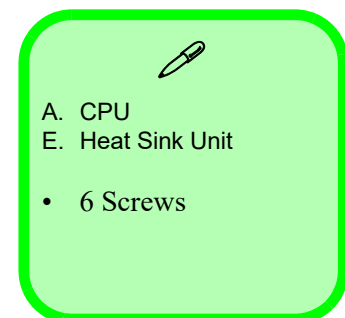
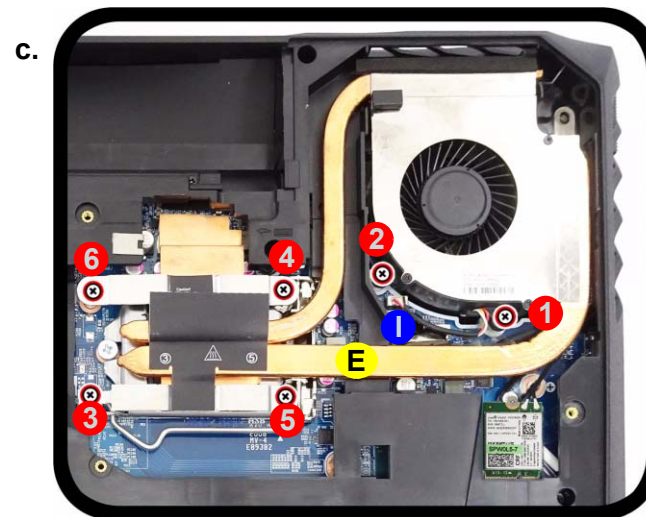
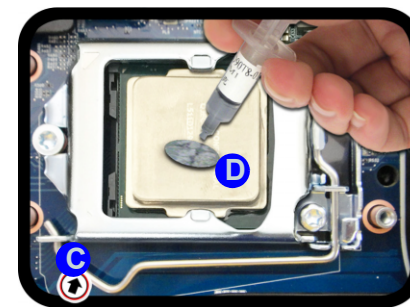
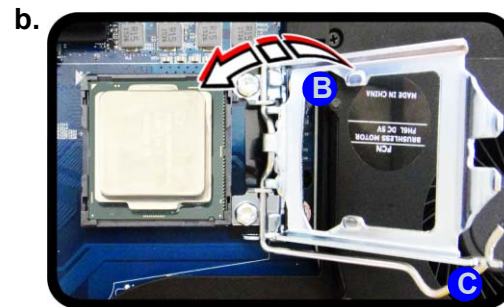
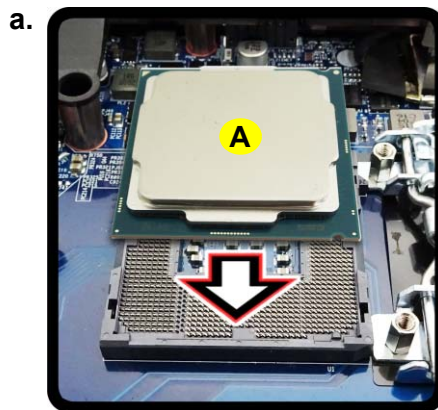
A. CPU

### Processor Installation Procedure

1. Insert the CPU **A**; pay careful attention to the pin alignment (*Figure 7a*), it will fit only one way (DO NOT FORCE IT!).
2. Move the bracket **B** and latch **C** fully in the direction indicated to lock the CPU.
3. Apply the thermal grease **D** to the top of the CPU as shown (*Figure 7b*).
4. Insert the heat sink unit **E** and tighten the CPU heat sink screws in the order **1** - **6** (the order as indicated on the label and *Figure 7c*).
5. Connect the CPU fan cable **I**, replace the component bay cover and tighten the screws (*page 2 - 6*).

*Figure 7*  
**Processor Installation**

- a. Insert the CPU.
- b. Move the latch and bracket fully in the direction indicated to lock the CPU. Apply thermal grease.
- c. Place the thermal pad.
- d. Insert the heat sink and bracket. Tighten the screws.



*Figure 8*  
**RAM Module Removal**

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



### Contact Warning

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



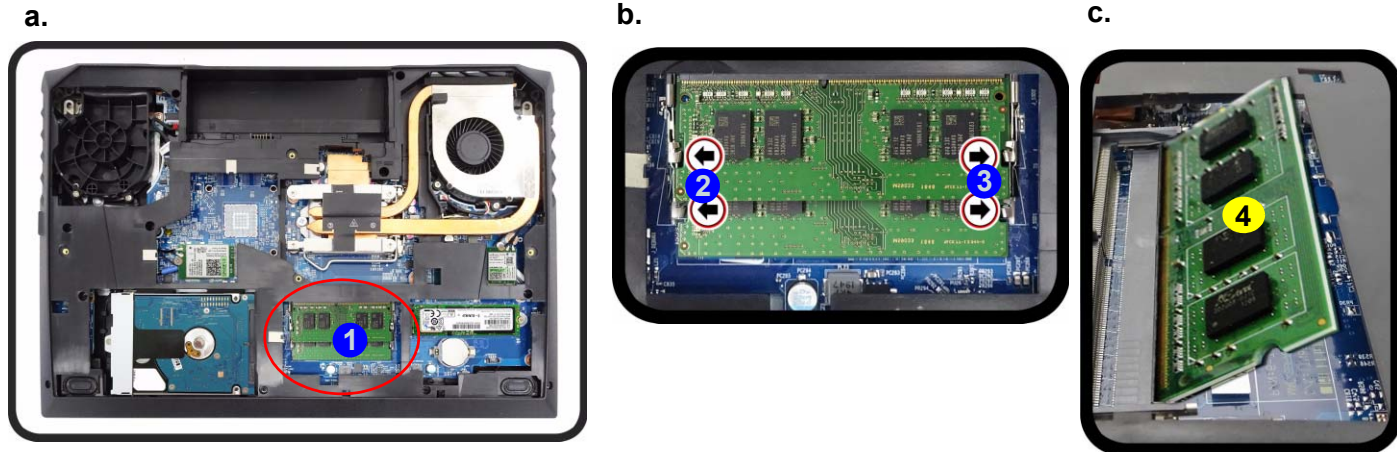
### 4. RAM Module

## Removing the System Memory (RAM)

The computer has two memory sockets for 260 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR4 3200 MHz. The main memory can be expanded up to 16GB. The total memory size is automatically detected by the POST routine once you turn on your computer.

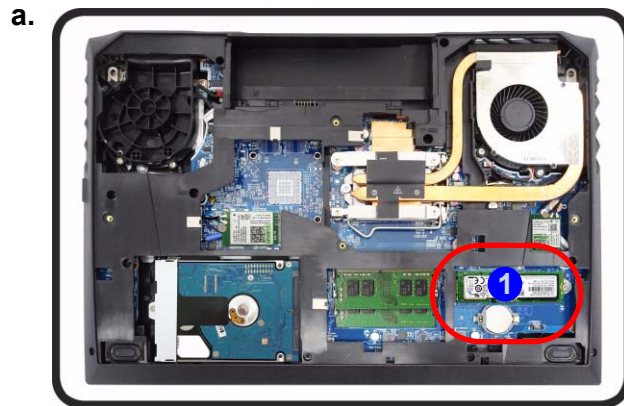
### Memory Upgrade Process

- Turn **off** the computer, remove the battery ([page 2 - 5](#)) and bottom cover ([page 2 - 6](#)).
- The RAM-2 modules will be visible at point **1** on the mainboard ([Figure 8a](#)).
- Gently pull the two release latches (**2** & **3**) on the sides of the memory socket in the direction indicated by the arrows ([Figure 8b](#)). The RAM module **4** will pop-up ([Figure 8c](#)), and you can then remove it.
- Pull the latches to release the second module if necessary.
- Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
- 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.
- Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
- Replace the bottom cover and the screws (see [page 2 - 6](#)).
- Restart the computer to allow the BIOS to register the new memory configuration as it starts up.



## Removing the M.2 SSD Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and bottom cover ([page 2 - 6](#)).
2. The M.2 SSD module will be visible at point **1** on the mainboard ([Figure 9a](#)).
3. Remove the screw **2** ([Figure 9b](#))
4. The M.2 SSD module **3** ([Figure 9c](#)) will pop-up, and you can remove it from the computer.
5. Reverse the process to install a new module (do not forget to replace the thermal pad and all the screws).



*Figure 9*  
**M.2 SSD Module Removal**

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



3.M2 SSD Module

- 1 Screw

## Disassembly

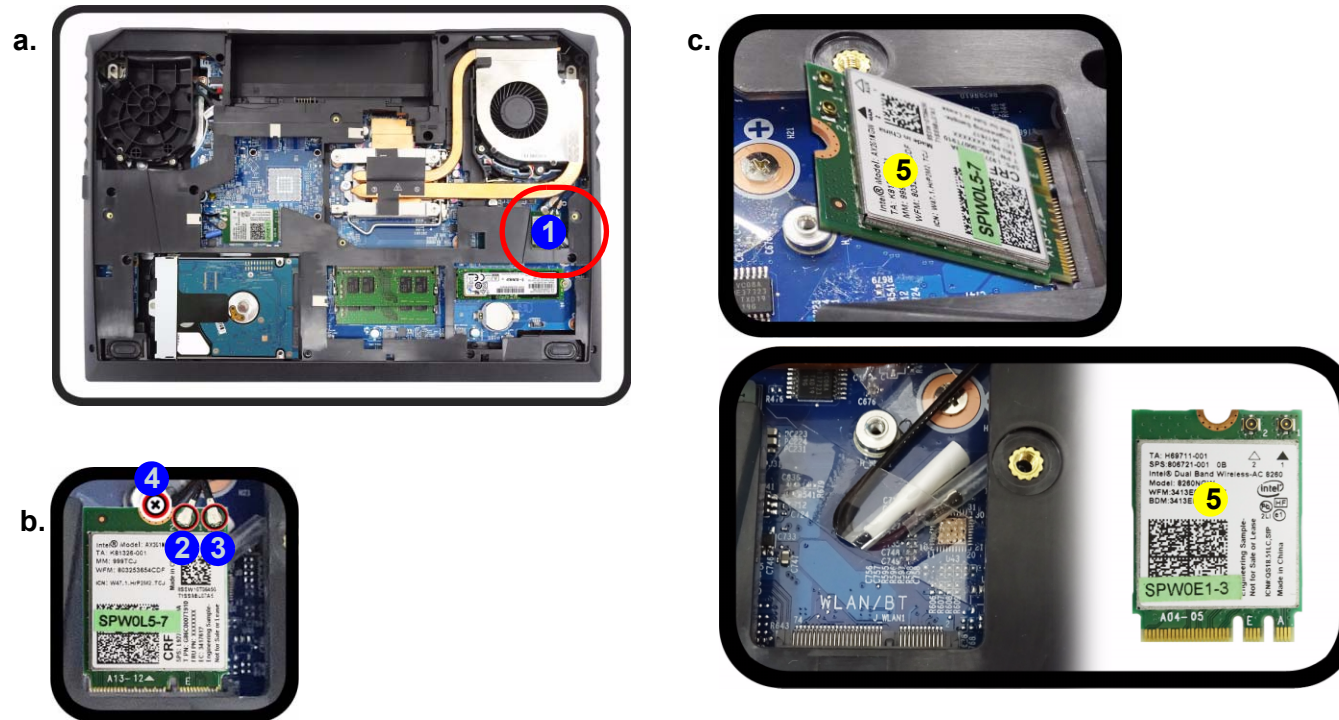
*Figure 10*  
**Wireless LAN  
Module Removal**

- 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 10b*).

## Removing the Wireless LAN Module

- Turn off the computer, remove the battery (*page 2 - 5*) and bottom cover (*page 2 - 6*).
- The Wireless LAN module will be visible at point **1** on the mainboard (*Figure 10a*).
- Carefully disconnect the cables **2** & **3**, and then remove the screw **4** (*Figure 10b*).
- The Wireless LAN module **5** (*Figure 10c*) will pop-up, and you can remove it from the computer.
- Reverse the process to install a new module (do not forget to replace all the screws).



5. Wireless LAN Module

- 1 Screw

## Wireless LAN, Combo, & LTE 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            |
| LTE Broadband               | LTE 1        | Black       | Black            |
|                             | LTE 2        | Black       | Blue             |

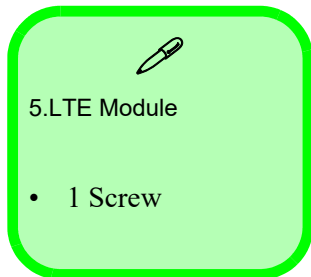
Cable 1 is usually connected to antenna 1 on the module, and cable 2 to antenna 2.

## Disassembly

Figure 11  
LTE Module  
Removal

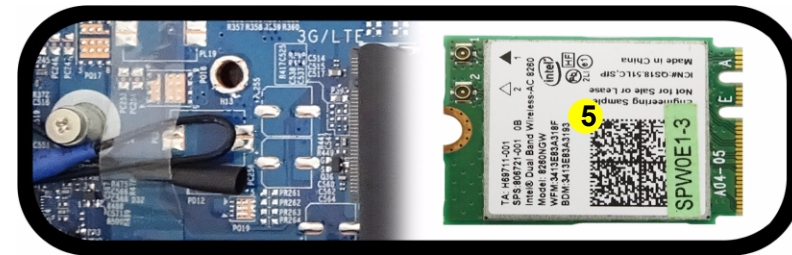
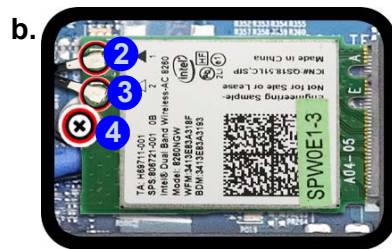
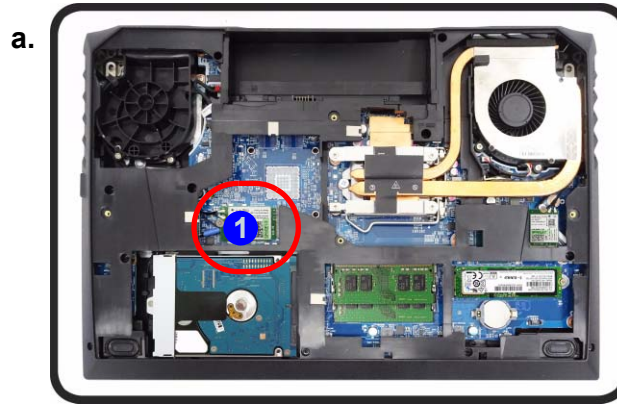
- Locate the LTE.
- Disconnect the cables and remove the screw.
- The LTE module will pop up.

Note: Make sure you reconnect the antenna cable to the “1 + 2” socket (Figure 10b).



## Removing the LTE Module

- Turn off the computer, remove the battery (page 2 - 5) and bottom cover (page 2 - 6).
- The LTE module will be visible at point 1 on the mainboard (Figure 11a).
- Carefully disconnect the cables 2 & 3, and then remove the screw 4 (Figure 11b).
- The LTE module 5 (Figure 10c) will pop-up, and you can remove it from the computer.
- Reverse the process to install a new module (do not forget to replace all the screws).



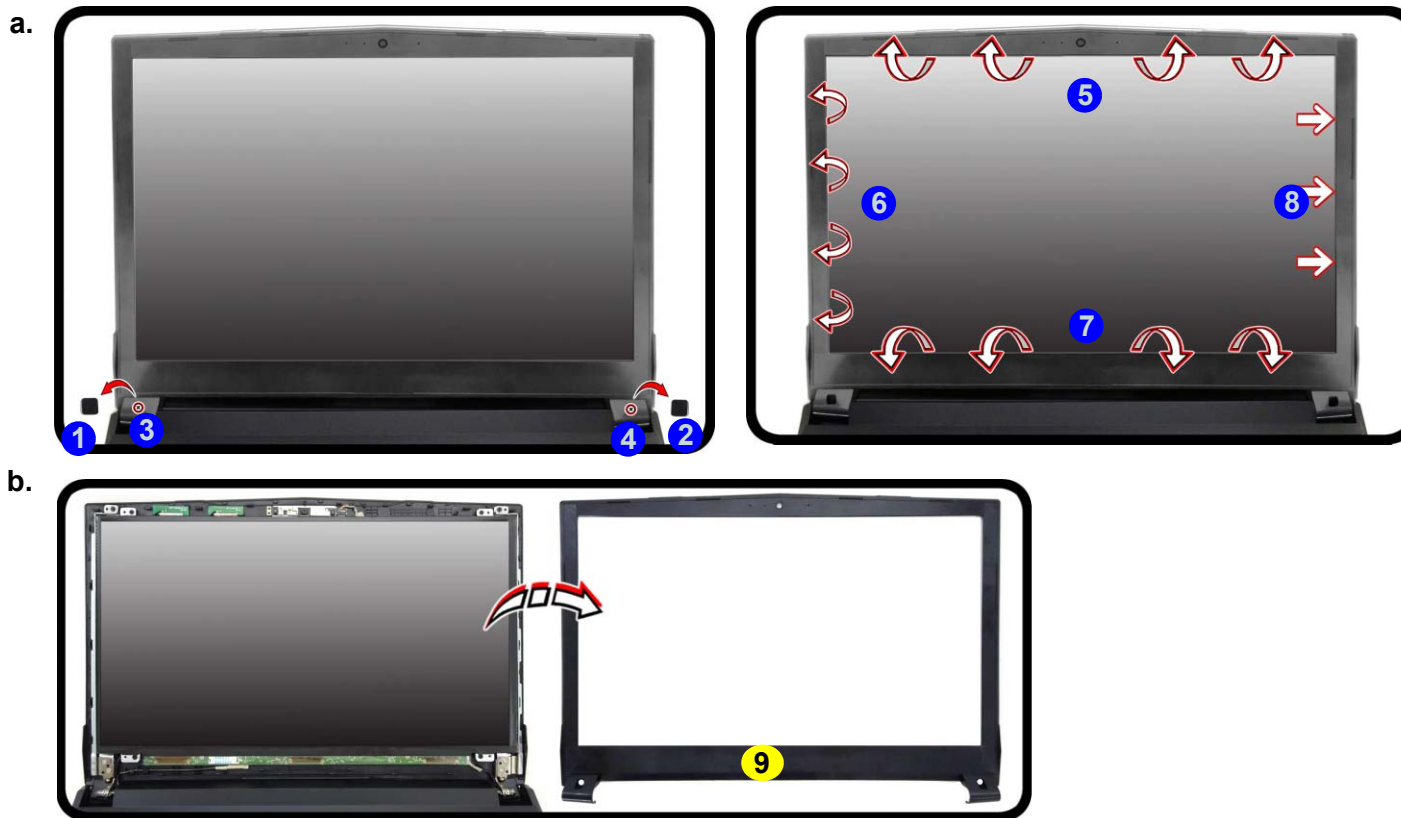



## Removing the CCD

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. Carefully remove the rubber covers **1** - **2** and screws **3** - **4**.
3. Run your fingers around the inner frame of the LCD panel to lift at the upper point **5** as indicated by the arrows, continue to lift up the inner frame at points **6** - **7** as indicated by the arrows, and then remove the inner frame at point **8** as indicated by the arrows ([Figure 12a](#)).
4. Remove the LCD front cover **5** ([Figure 12b](#)).

*Figure 12*  
**CCD Removal**

- a. Remove rubber and screws and then carefully release the inner frame of the LCD panel at the points indicated by the arrows.
- b. Remove the LCD front cover.





9. LCD Front Cover

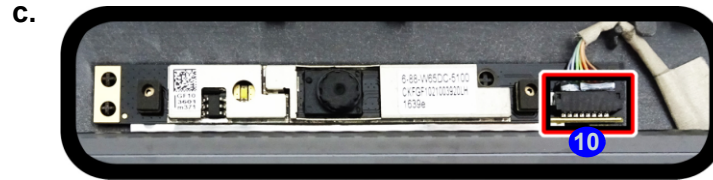
- 2 Screws

## Disassembly

*Figure 13*  
**CCD Removal**  
**(cont'd)**

- c. Disconnect the cable.
- d. Remove the CCD module.

- 5. Disconnect the cable **10** (*Figure 13c*).
- 6. Remove the CCD module **11** (*Figure 13d*).
- 7. Reverse the process to install a new CCD module.



11. CCD Module

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# Appendix A:Part Lists

This appendix breaks down the *NK50SZ* 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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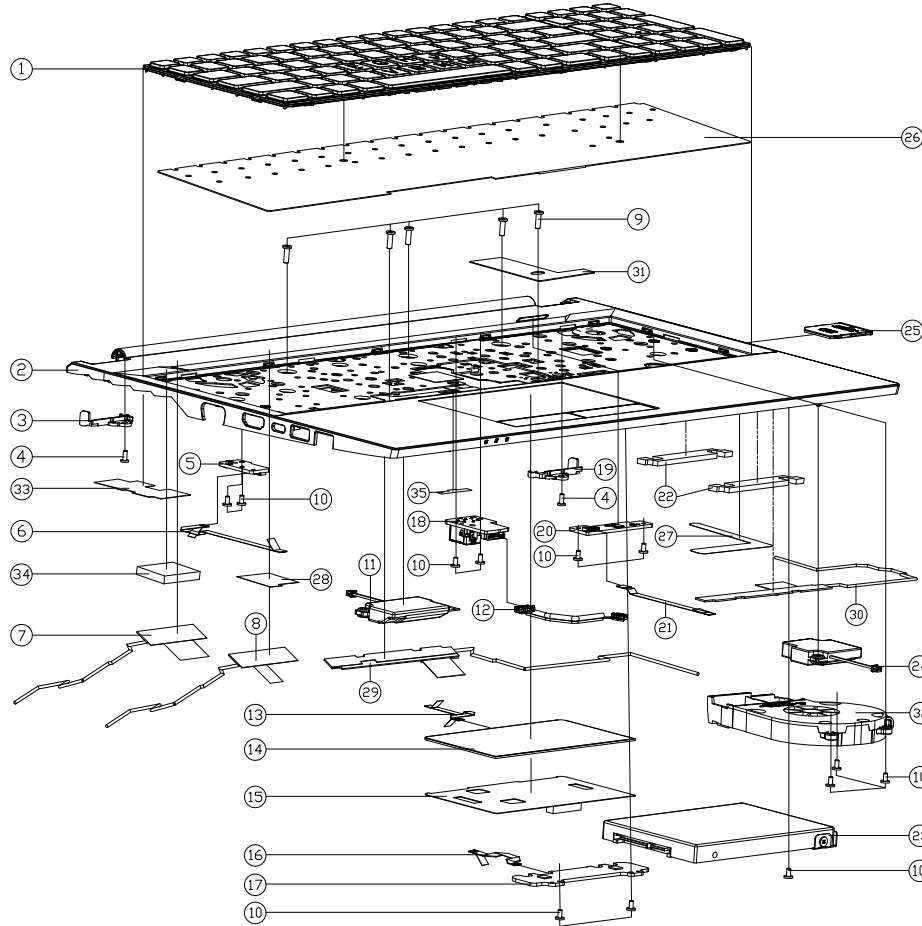
## Part List Illustration Location

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> |
| HDD        | <i>page A - 7</i> |

# Top



| ITEM | PART NAME  | PART NO           | REMARK                                |
|------|--|-------------------|---------------------------------------|
| 1    | KB FOR MULTI 15C BL KB SERIES NB70TH                             | 6-NB70TH-KB-MCL   |                                       |
| 1    | KB FOR NON BL KB SERIES NK70SB                                   | 6-NK70SB-KB-NBL   |                                       |
| 1    | KEYPRESS COVER-PC FOR BLACK COLORED WITH VIBRO KEY COVER FOR MCJ | 6-80-N1520-212-1M | FDR MCJ                               |
| 1    | KEYPRESS COVER-PC FOR BLACK COLORED WITH VIBRO KEY COVER FOR BL  | 6-80-N1520-21D-1M | FDR MCJ                               |
| 2    | TOP CASE MODULE NK50S5   | 6-39-NK5S2-012    |                                       |
| 3    | TOP COVER L (PC+ABS COVESTRO FR302) NK50SB                       | 6-42-NK502-062    |                                       |
| 4    | SCREW M2.5*6L K BZ ICT NY  | 6-35-82125-6RA    |                                       |
| 5    | LID BOARD V2.0 NK50S5  | 6-77-NK5S6-D02    |                                       |
| 6    | FFC CABLE HALL SENSOR TO MB 955MM 3.3V 4PIN NK50SB 000           | 6-43-NK500-050    |                                       |
| 7    | ANTENNA PEVA W/AN W/L PCB BR 400MM 2.6/5.0/6.0/8.0 W/2-20MM NK50 | 6-23-7NK50-010    |                                       |
| 8    | ANTENNA PEVA W/AN W/L PCB BR 400MM 2.6/5.0/6.0/8.0 W/2-20MM NK50 | 6-23-7NK50-020    |                                       |
| 9    | SCREW M2.5*6L K1 BK/Z NY ICT                                     | 6-35-B6125-8R0    |                                       |
| 10   | SCREW M2*4L K1 NI ICT NY (OD=04.5,DT=0.8)                        | 6-35-B1120-4RC    |                                       |
| 11   | SPK+CABLE L L40*26 2W 4P L40MM V1S02S1409-01 NK50SB              | 6-23-5NK50-0L1    |                                       |
| 12   | WIRE CABLE FOR DC-IN TO MB 50MM 30V 6PIN NK50SB 040              | 6-43-NK500-010    |                                       |
| 13   | FFC CABLE FOR TP TO MB 60MM 60V 8PIN 000 NK50SB                  | 6-43-NK500-040    |                                       |
| 14   | TOUCH PAD ELAN PTP SH650-620 (00045MM) N750WU                    | 6-49-N75W3-010    |                                       |
| 15   | TOUCH PAD MYLAR PET+C9000 NBS0TA                                 | 6-40-NB5A2-020    |                                       |
| 16   | FFC CABLE FOR CLICK TO TP 11-35MM SW PITCH 10 4PIN 000 NK50S     | 6-43-NK5S2-010    |                                       |
| 17   | CLICK BOARD V2.0 NK50S5  | 6-77-NK5S2-D02    |                                       |
| 18   | DC JACK BOARD V2.0 NK50S5  | 6-77-NK5S5C-D02   |                                       |
| 19   | TOP COVER R (PC+ABS COVESTRO FR302) NK50SB                       | 6-42-NK502-052    |                                       |
| 20   | POWER SW BOARD V2.0 NK50S5                                       | 6-77-NK5S5-D02    |                                       |
| 21   | FFC CABLE POWER TO MB 70MM 3.3V 4PIN NK50SB000                   | 6-43-NK500-020    |                                       |
| 22   | SPONGE (76*10*25) CR20S FOR 7MM HDD V54REV(CHANGED)              | 6-47-0019A-763    |                                       |
| 23   | W/HDD ASS'Y NK50SB   | 6-79-NK50SB0J-010 |                                       |
| 23   | W/O HDD ASS'Y NK50SB   | 6-79-NK50SB0J-020 |                                       |
| 24   | SPK+CABLE R L38*31.5 2W 4P L38MM V1S02S1409-02 NK50SB            | 6-23-5NK50-0R1    |                                       |
| 25   | DUMMY 30M NON PUSH TYPE PC+ABS (CR20P-700EXCHANGED) W9700V       | 6-42-W9708-011    |                                       |
| 26   | KB MYLAR FOR WD BACKLIGHT NB70TJ1                                | 6-40-NB702-030    | FDR MCJ<br>KB FOR NON BL KB SERIES    |
| 27   | GASKET(91*69*0.1) NK50SZ   | 6-47-00190-910    |                                       |
| 28   | AL FOIL LTE1 NK50SZ  | 6-47-NK5S-210     |                                       |
| 29   | ANTENNA PEVA W/L PCB BR 400MM 2.6/5.0/6.0/8.0 W/2-20MM NK50      | 6-23-7NK5S-010    |                                       |
| 30   | ANTENNA PEVA W/L PCB BR 400MM 2.6/5.0/6.0/8.0 W/2-20MM NK50      | 6-23-7N650-030    |                                       |
| 31   | WO BL KB MYLAR NK50SB  | 6-40-NK502-030    | FDR MCJ<br>KB FOR NON BL KB SB SERIES |
| 32   | VGA SAFETY COVER NK50SZ  | 6-42-NK5S2-Z10    |                                       |
| 33   | MYLAR FOR TOP COLORED PE MYLAR L40*70MM 1034-492 L40MM NK50      | 6-40-NK502-051    |                                       |
| 34   | SPONGE 26.4*20*4.15T (CR2030) NK50SB                             | 6-47-0019A-269    |                                       |
| 35   | MYLAR FOR TOP KB(0.05*2)+TESA 4965*2 NK50SB                      | 6-40-NK502-060    |                                       |

Figure A - 1  
Top

# Bottom

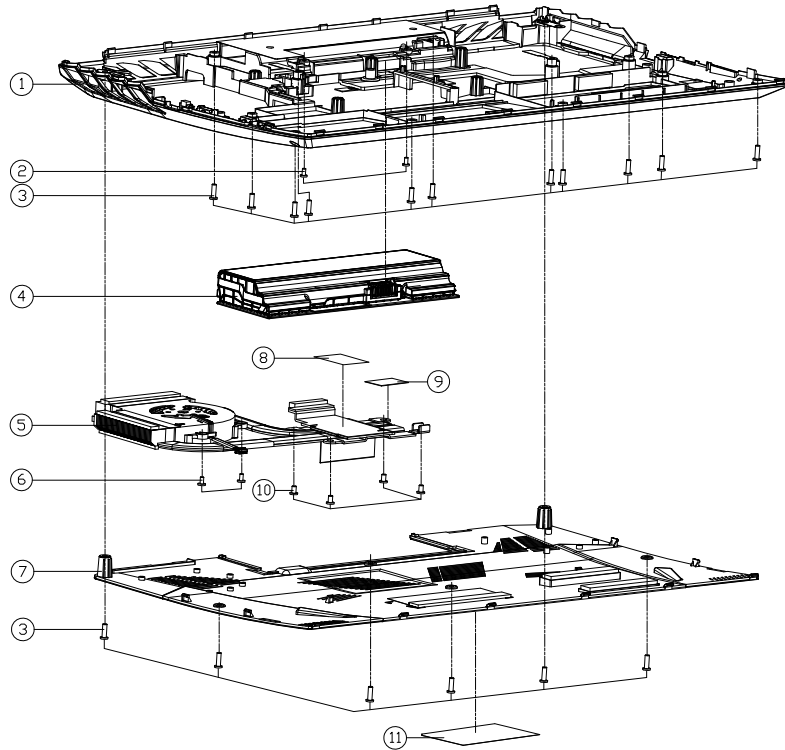
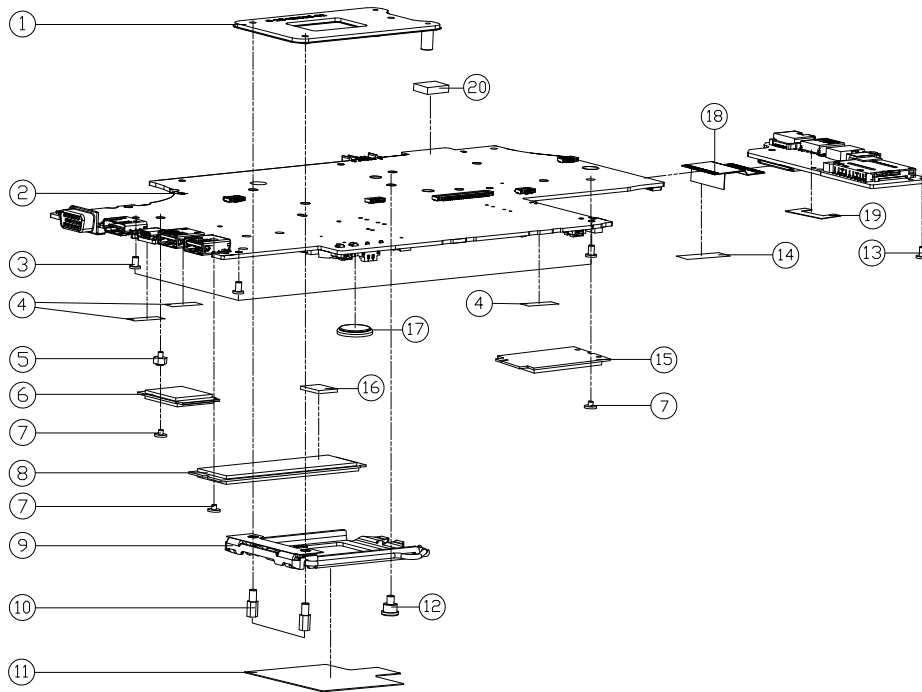


Figure A - 2  
Bottom

| ITEM | PART NAME  | PART NO            | REMARK          |
|------|--|--------------------|-----------------|
| 1    | BOTTOM CASE MODULE NK50S5  | 6-39-NK5S3-012     |                 |
| 2    | .SCREW M2*4L KI BZ ICT NY  | 6-35-B6120-4RA     |                 |
| 3    | .SCREW M2.5*8L KI BK/Z NY ICT  | 6-35-B6125-8R0     |                 |
| 4    | BATP S LI 14.6V/2260mAh 43P GELAC/PANASONIC Q640250 5413902004 Q275M4D | 6-87-NH5DS-42H00   |                 |
| 4    | BATP S LI 14.6V/2260mAh 43P GELAC/PANASONIC Q640250 5413902003 Q275M4D | 6-87-NH5DS-42H00-1 |                 |
| 4    | BATP S LI 14.6V/2260mAh 43P SMP/IG Q640250 9002242H /AB Q275M4H450RA   | 6-87-NH5ES-41D00   |                 |
| 4    | BATP S LI 14.6V/2260mAh 43P SMP/IG Q640250 9002242H /AB Q275M4D WESIED | 6-87-NH50S-41C01   |                 |
| 5    | CPU THERMAL MODULE NK50S5  | 6-31-NK5S2-101     |                 |
| 6    | SCREW M2*4L KI NI ICT NY (DD=04.5,DT=0.8)                              | 6-35-B1120-4RC     |                 |
| 7    | CPU COVER MODULE NK50SB  | 6-42-NK508-102     |                 |
| 8    | GREASE GA-690(0.6G) P157SM   | 6-47-P1578-020     |                 |
| 9    | THERMAL PAD PSX 20*15*0.20T M860TU                                     | 6-47-M8608-010     | ONLY FOR NK50SB |
| 10   | SCREW M2.5*4L (D=4.6,T=0.8) KI NI ICT NY                               | 6-35-B1125-4RA     |                 |
| 11   | PRODUCT LABEL FOR NK50S5   | 6-45-NK50S503-010  |                 |
| 11   | PRODUCT LABEL FOR NK50SZ   | 6-45-NK50S203-010  |                 |

# Main Board



| ITEM | PART NAME  | PART NO             | REMARK     |
|------|--|---------------------|------------|
| 1    | CPU SOCKET SOCKET 2 IN1+5 PIN+1 MYLAR 40+10+40+10 CHINA M501L                    | 6-33-NB50S-011      |            |
| 2    | MAIN BOARD V20 (CPU+V.LTC)+PLUS CHARGE+MULTI BOARD V20 M50SZ                     | 6-77-NK50SZ0A-N02   |            |
| 2    | MAIN BOARD V20 (CPU+V.LTC)+PRO+MULTI BOARD V20 M50SZ                             | 6-77-NK50SZ0A-N02-7 |            |
| 3    | SCREW M2.5*4L (D=4.6,T=0.8) KI NI ICT NY   | 6-35-B1125-4RA      |            |
| 4    | TAPE MYLAR (C),MYLAR M550J   | 6-40-M55J2-030      |            |
| 5    | SCREW M2*5L (H=25 H=5) STEEL ICT NY FOR MUFF CARDOCHARGE                         | 6-35-ZA120-2R5-1    |            |
| 6    | MYLAR COVER DUAL SIDE PEEK COVER PEAK 2 ACROSS+AN MIN+PRO 22 20+10 25*4 22 22    | 6-88-N15CF-4210     |            |
| 6    | MYLAR COVER DUAL SIDE PEEK COVER PEAK 2 ACROSS+AN MIN+PRO 22 20+10 25*4 22 22    | 6-88-N15CF-0C00     |            |
| 7    | SCREW M2*2L KI NI ICT NY (DD=0.5 ,T=0.8)   | 6-35-B1120-2RA      |            |
| 8    | SSD M2 2280 1TB SAMSUNG REVOLUTION+M001 5PM90 PCE GMA 30 TLC % LAYERS            | 6-85-D511T-S05      |            |
| 8    | SSD M2 2280 512GB SAMSUNG REVOLUTION+M001 5PM90 PCE GMA 30 TLC % LAYERS          | 6-85-D515B-S0A      |            |
| 8    | SSD M2 2280 512GB SAMSUNG REVOLUTION+M001 5PM90 PCE GMA 30 TLC % LAYERS          | 6-85-D515B-S0B      |            |
| 8    | SSD M2 2280 512GB SAMSUNG REVOLUTION+M001 5PM90 PCE GMA 30 TLC % LAYERS          | 6-85-D51R6-K00      |            |
| 8    | SSD M2 2280 1TB WD SUPRITY-1100 CONZOO PCE GMA 30 TLC % LAYERS                   | 6-85-D511T-W01      |            |
| 8    | SSD M2 2280 512GB WD SUPRITY-526 CONZOO PCE GMA 30 TLC % LAYERS                  | 6-85-D515B-W02      |            |
| 8    | SSD M2 2280 256GB WD SUPRITY-256 CONZOO PCE GMA 30 TLC % LAYERS                  | 6-85-D51R6-W02      |            |
| 9    | ILM FOR CPU SOCKET(METAL) LGA 1150P (PT44L31-640)                                | 6-86-25B50-001-S    |            |
| 10   | SCREW M3.0*5.0L NI ICT NY FOR CPU SOCKET   | 6-35-Z1130-SR0-1    |            |
| 11   | CPU SOCKET MYLAR FOR D900F   | 6-40-D90FS-070      |            |
| 12   | SCREW M3*3.5L BZ/Z ICT NY  | 6-35-Z2130-3R5      |            |
| 13   | SCREW M2*4L KI NI ICT NY (DD=0.45,DT=0.8)  | 6-35-B1120-4RC      |            |
| 14   | TAPE MYLAR (A),MYLAR M550J   | 6-40-M55J2-010      |            |
| 15   | LEE & HUNG THERMAL PAD 11.5*4 FOR COVER 22 220 22 INTERICE HEATLY WITHIN 0PAGINS | 6-88-NJ506-0C00     |            |
| 16   | THERMAL PAD M4500 (17.3*17.3*2.75)MM N750BU                                      | 6-48-N7503-010      |            |
| 17   | BATTERY 3V 220MA BBBBCR2032B (KTS)   | 6-23-6A2B2-030      |            |
| 18   | FFC IO TO MB (P=0.5) 51.0MM 60V 40PIN NL40CU                                     | 6-43-NL4C0-020-1    |            |
| 19   | USB MYLAR PET NK50S5   | 6-40-NK5S2-010      |            |
| 20   | WD STM SPONGE (12*9*3T) CR4382 NK50SB  | 6-47-0019A-1C3      | FOR W/O 3G |

Figure A - 3  
Main Board

# LCD

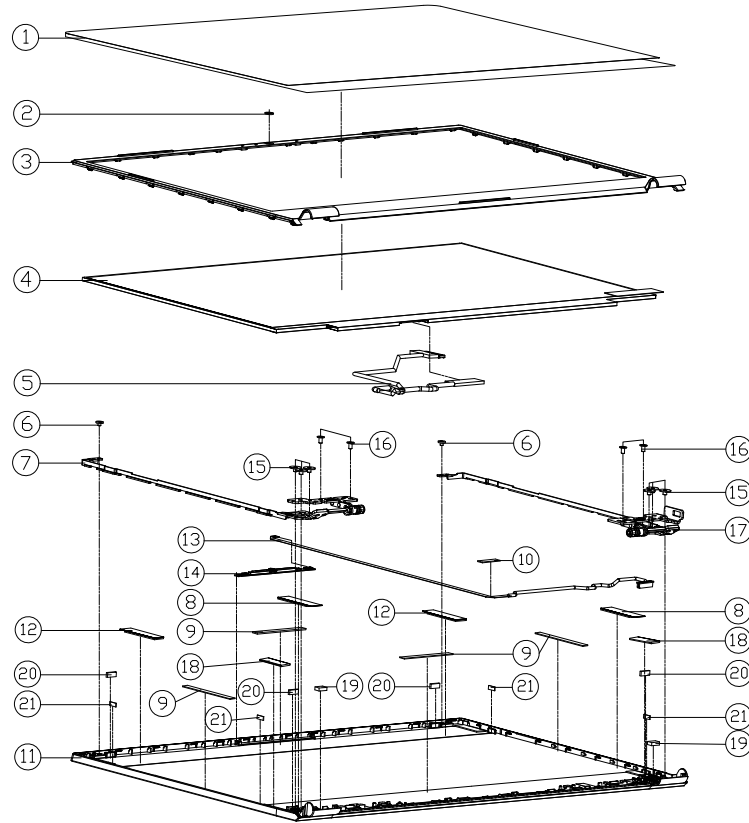


Figure A - 4  
LCD

| ITEM | PART NAME  | PART NO           | REMARK |
|------|--|-------------------|--------|
| 1    | LCD PROTECT MYLAR BOPP N150ZU  | 6-40-N15Z8-010    |        |
| 2    | CCD LENS (VIEWING AREA 4MM)(PMAX(6*3)W940TU  | 6-42-W9401-020-2  |        |
| 3    | FRONT COVER MODULE NK50SB  | 6-39-NK501-012    |        |
| 4    | LCD N156" FHD/NDN GT/EDP BDE NT156FH-N61 (LED) 32 MM   | 6-50-LBB32-Z007   |        |
| 4    | LCD N156" FHD/WVA / M/MEN GT/EP AU BISHAN21 (Q/P/W/A) NO BRACKETED 32 MM                               | 6-50-LBB32-G013   |        |
| 4    | LCD N156" FHD/NDN GT/EDP INMULX N156GA-EA3 (REV.03/04/BI ) LED 32MM                                    | 6-50-LBB32-V002   |        |
| 4    | LCD N156" FHD/WVA/NDN GT/EDP LG LP156WFC-SPD3 LED 32MM   | 6-50-LBB32-L01A   |        |
| 5    | WIRE CABLE FER EDP FHD 350MM (D) 19V 30PIN (CM/PLS CONN.LX0900) N150T.U                                | 6-43-NB501-010-2S |        |
| 6    | SCREW M2*3L KI NI ICT NY (DD=04.0,DT=0.8)  | 6-35-B1120-3RD    |        |
| 7    | HINGE L <SK7+SGCC> NK50SB  | 6-33-NK501-0L1    |        |
| 8    | LALATAPE PANEL 3.2 NK50SB  | 6-47-NK501-071    |        |
| 9    | SPONGE A-AL-3 (45*5*0.5T) NK50SB   | 6-47-0019A-45S    |        |
| 10   | TDP CASE MYLAR FR83 25*7*0.05 P180HM   | 6-40-P1802-030    |        |
| 11   | BACK COVER MODULE NK50SB   | 6-39-NK501-022    |        |
| 12   | LALATAPE PANEL 2.6 NK50SB  | 6-47-NK501-081    |        |
| 13   | CCD CABLE L=550MM 30V 8PIN (HT) NH50ED NH50ED  | 6-43-NH50T-011-1  |        |
| 14   | UVI CAMERA LENS COVER ON PAPER/REPEL IN HD D1574 N150T F/5.6M V-WHITE-LED V10-MICROHDM BORDER WITH PFD | 6-88-N15ZC-5100   | OPTION |
| 14   | UVI CAMERA LENS COVER ON PAPER/REPEL IN HD D1574 N150T F/5.6M V-WHITE-LED V10-MICROHDM BORDER WITH PFD | 6-88-N15ZC-4900   | OPTION |
| 14   | UVI CAMERA LENS COVER ON PAPER/REPEL IN HD D1574 N150T F/5.6M V-WHITE-LED V10-MICROHDM BORDER WITH PFD | 6-88-NL40C-5100   | OPTION |
| 14   | UVI CAMERA LENS COVER ON PAPER/REPEL IN HD D1574 N150T F/5.6M V-WHITE-LED V10-MICROHDM BORDER WITH PFD | 6-88-NL40C-4900   | OPTION |
| 15   | SCREW M2.5*2.5L KI BK/Z ICT NY(Ø8,T=0.6)   | 6-35-B6125-2R5    |        |
| 16   | SCREW M2.5*4L (D=4.6,T=0.8) KI NI ICT NY   | 6-35-B1125-4RA    |        |
| 17   | HINGE R <SK7> NP50DB   | 6-33-NK501-0R1    |        |
| 18   | GASKET A-AL-1 (8*6.5*0.5H) NK50SB  | 6-47-00190-A82    |        |
| 19   | SPONGE LCD (6.7*5*H2.15) NK50SB  | 6-47-0019A-06M    |        |
| 20   | FRONT RUBBER A-1 STOP PANEL SILICONE NK50SB  | 6-47-NK501-030    |        |
| 21   | RUBBER (6.4*2.6*0.5T)(WHITE)NH50ED   | 6-47-NH501-021    |        |



# HDD

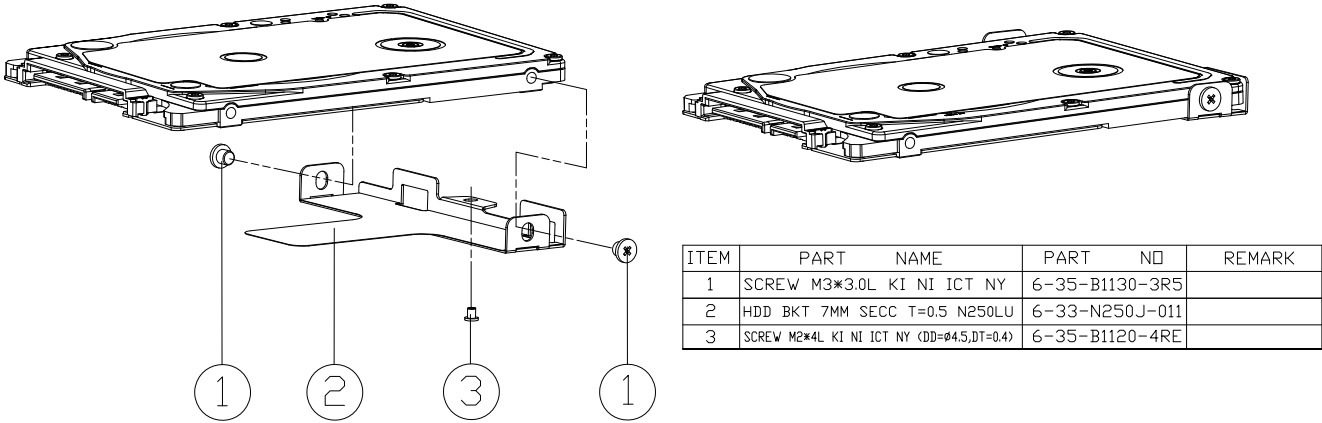


Figure A - 5  
HDD



# Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *NK50SZ* 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>PCH 5/9 - Page B - 23</i>                   | <i>NVVDD - Page B - 44</i>          |
| <i>Processor 1/5 - Page B - 3</i>               | <i>PCH 6/9 - Page B - 24</i>                   | <i>PEX_VDD, 1.8V - Page B - 45</i>  |
| <i>Processor 2/5 - Page B - 4</i>               | <i>PCH 7/9 - Page B - 25</i>                   | <i>FBVDDQ - Page B - 46</i>         |
| <i>Processor 3/5 - Page B - 5</i>               | <i>PCH 8/9 - Page B - 26</i>                   | <i>M.2 3G/LTE - Page B - 47</i>     |
| <i>Processor 4/5 - Page B - 6</i>               | <i>PCH 9/9 - Page B - 27</i>                   | <i>DC Jack Board - Page B - 48</i>  |
| <i>Processor 5/5 - Page B - 7</i>               | <i>Audio Codec - Page B - 28</i>               | <i>Power SW Board - Page B - 49</i> |
| <i>DDR4 CHA SO-DIMM_0 - Page B - 8</i>          | <i>KBC-ITE IT5570 - Page B - 29</i>            | <i>Click Board - Page B - 50</i>    |
| <i>DDR4 CHB SO-DIMM_0 - Page B - 9</i>          | <i>M.2 SSD SATA - Page B - 30</i>              | <i>Multi Board - Page B - 51</i>    |
| <i>VGA PCI-E Interface - Page B - 10</i>        | <i>USB Type-C, M.2 WLAN+BT - Page B - 31</i>   | <i>Multi Board - Page B - 52</i>    |
| <i>VGA Frame Buffer Interface - Page B - 11</i> | <i>USB Type-A, USB Charger - Page B - 32</i>   | <i>LID SW Board - Page B - 53</i>   |
| <i>VGA Frame Buffer A - Page B - 12</i>         | <i>RGB KB, Fan, LED, Audio - Page B - 33</i>   | <i>TPM SLB9670 - Page B - 54</i>    |
| <i>VGA Frame Buffer A - Page B - 13</i>         | <i>HDD, CCD, TP, LID, PWR SW - Page B - 34</i> | <i>Power Sequence - Page B - 55</i> |
| <i>VGA I/O - Page B - 14</i>                    | <i>5V, 5VS, 3.3VA, 3.3V, 3VS - Page B - 35</i> |                                     |
| <i>VGA NVVDD Coupling - Page B - 15</i>         | <i>VDD3, VDD5 - Page B - 36</i>                |                                     |
| <i>CRT - Page B - 16</i>                        | <i>1.05A, VCCST/STG/SFR - Page B - 37</i>      |                                     |
| <i>HDMI - Page B - 17</i>                       | <i>VDDQ, VTT_MEM, 2.5V - Page B - 38</i>       |                                     |
| <i>EDP Panel Conn. - Page B - 18</i>            | <i>MP2979 - Page B - 39</i>                    |                                     |
| <i>PCH 1/9 - Page B - 19</i>                    | <i>VCore - Page B - 40</i>                     |                                     |
| <i>PCH 2/9 - Page B - 20</i>                    | <i>VCCGT, VCCSA - Page B - 41</i>              |                                     |
| <i>PCH 3/9 - Page B - 21</i>                    | <i>VCCIO - Page B - 42</i>                     |                                     |
| <i>PCH 4/9 - Page B - 22</i>                    | <i>AC_In, Charger - Page B - 43</i>            |                                     |

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

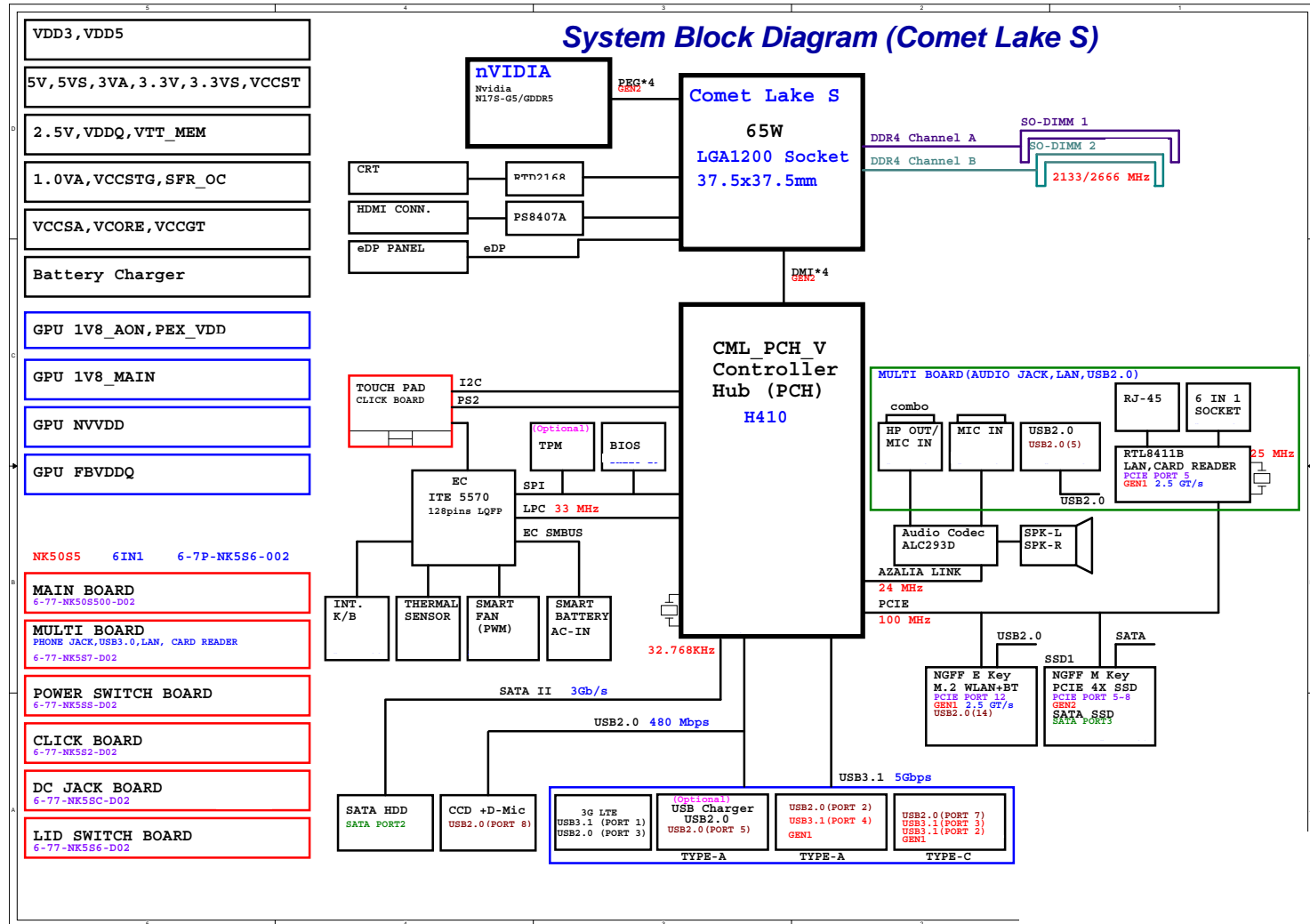


#### Version Note

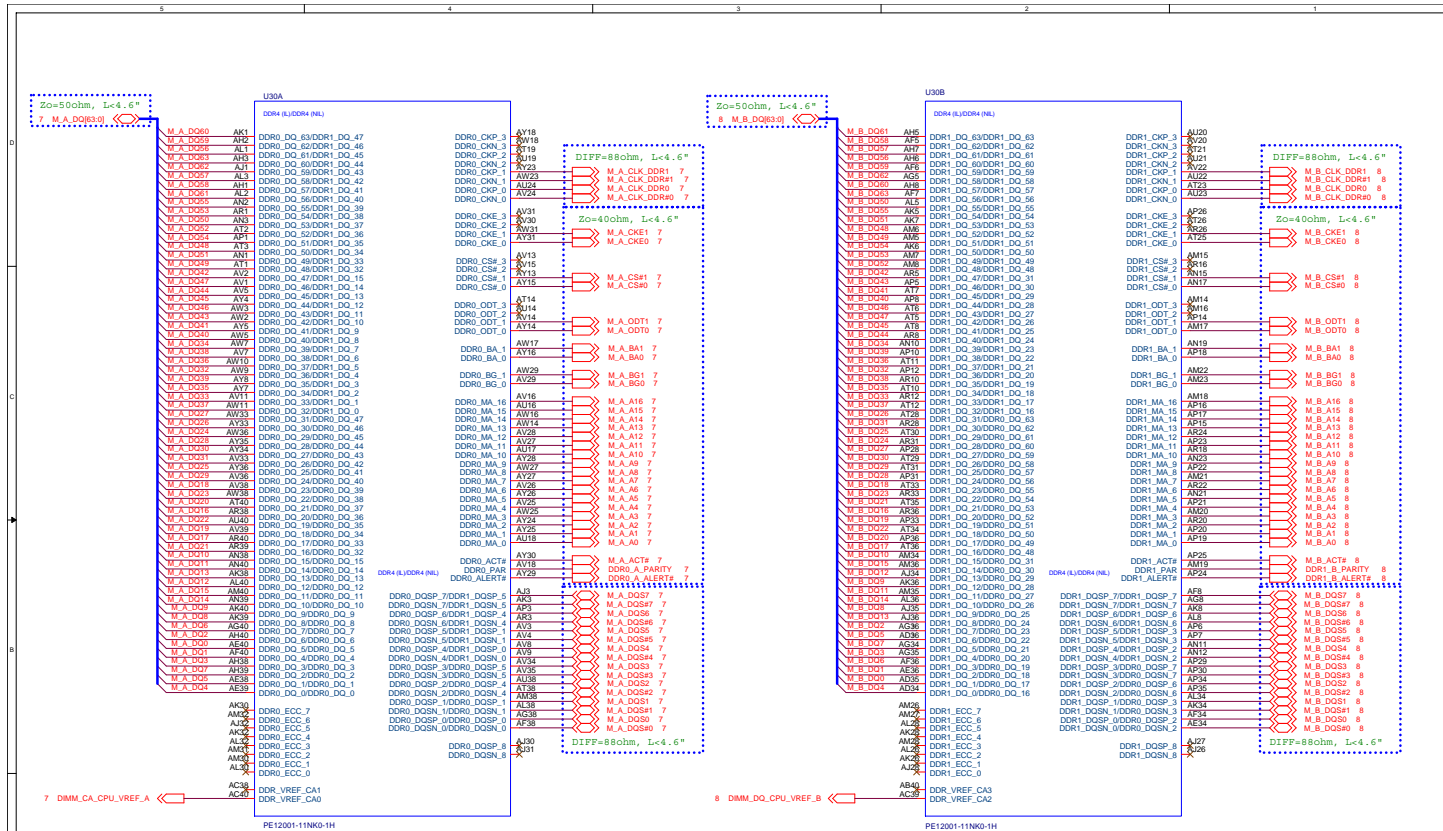
The schematic diagrams in this chapter are based upon version 6-7P-NK5S6-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

# System Block Diagram

Sheet 1 of 54  
System Block Diagram



# Processor 1/5

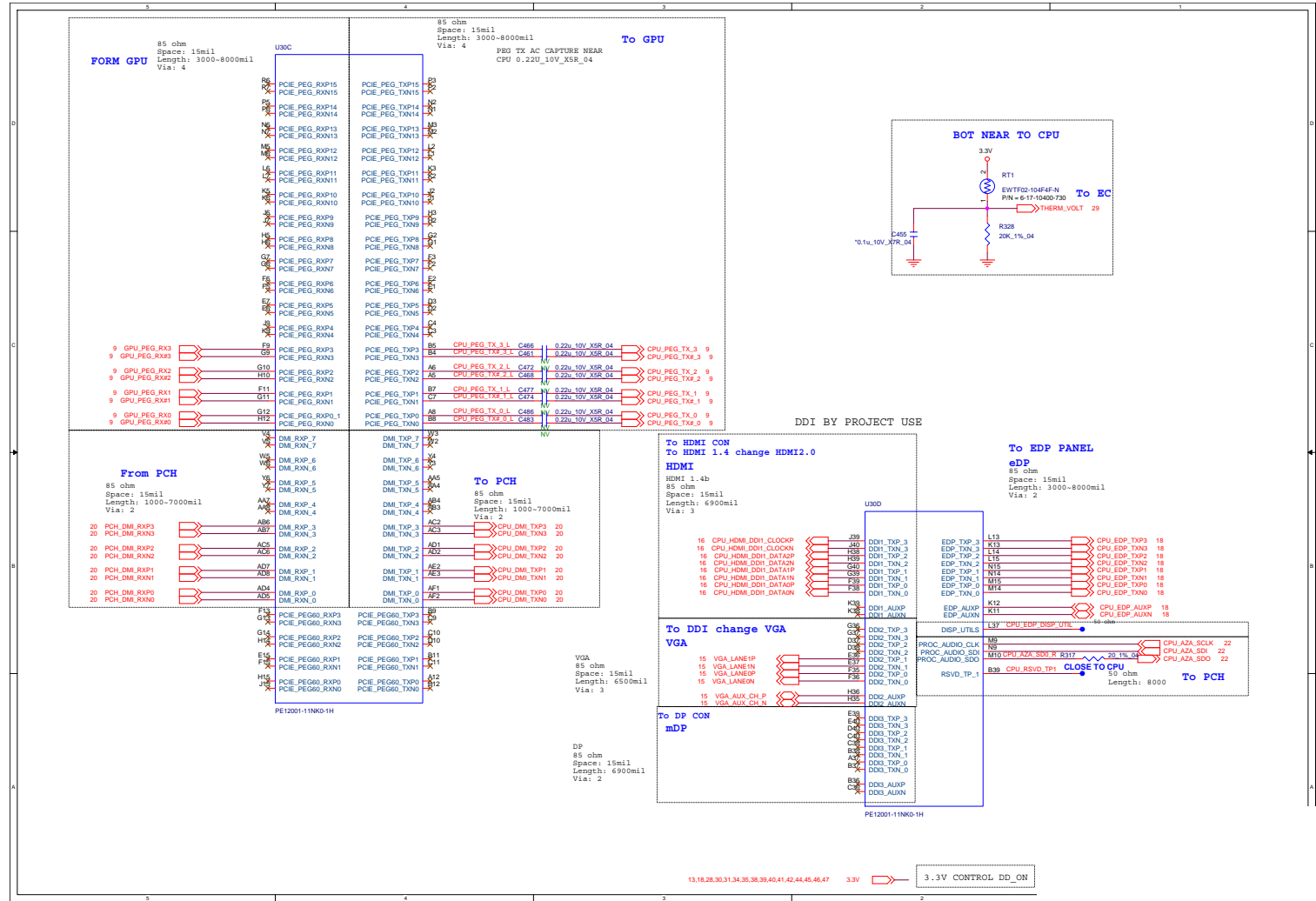


Sheet 2 of 54  
Processor 1/5

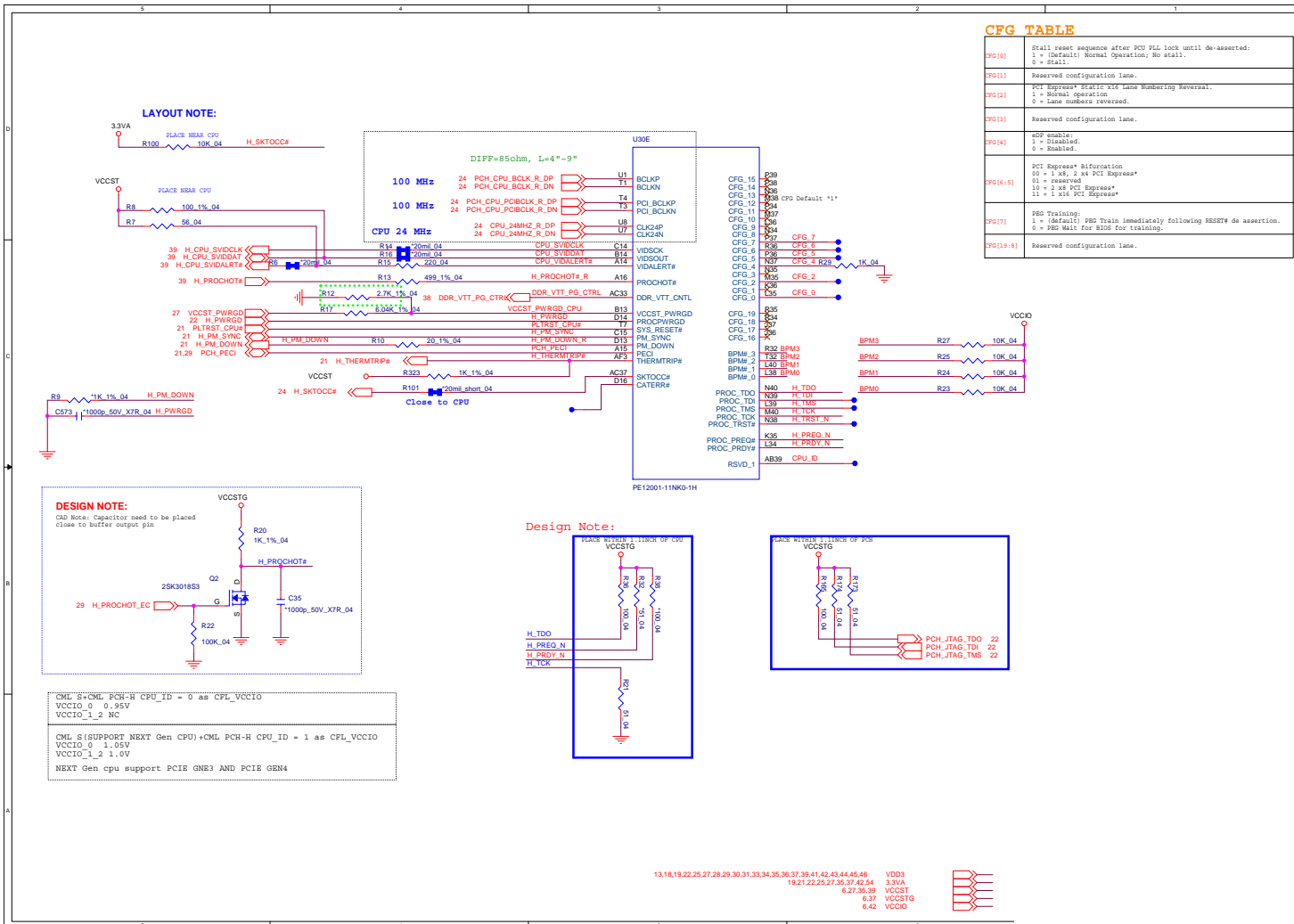
B.Schematic Diagrams

# Processor 2/5

Sheet 3 of 54  
Processor 2/5



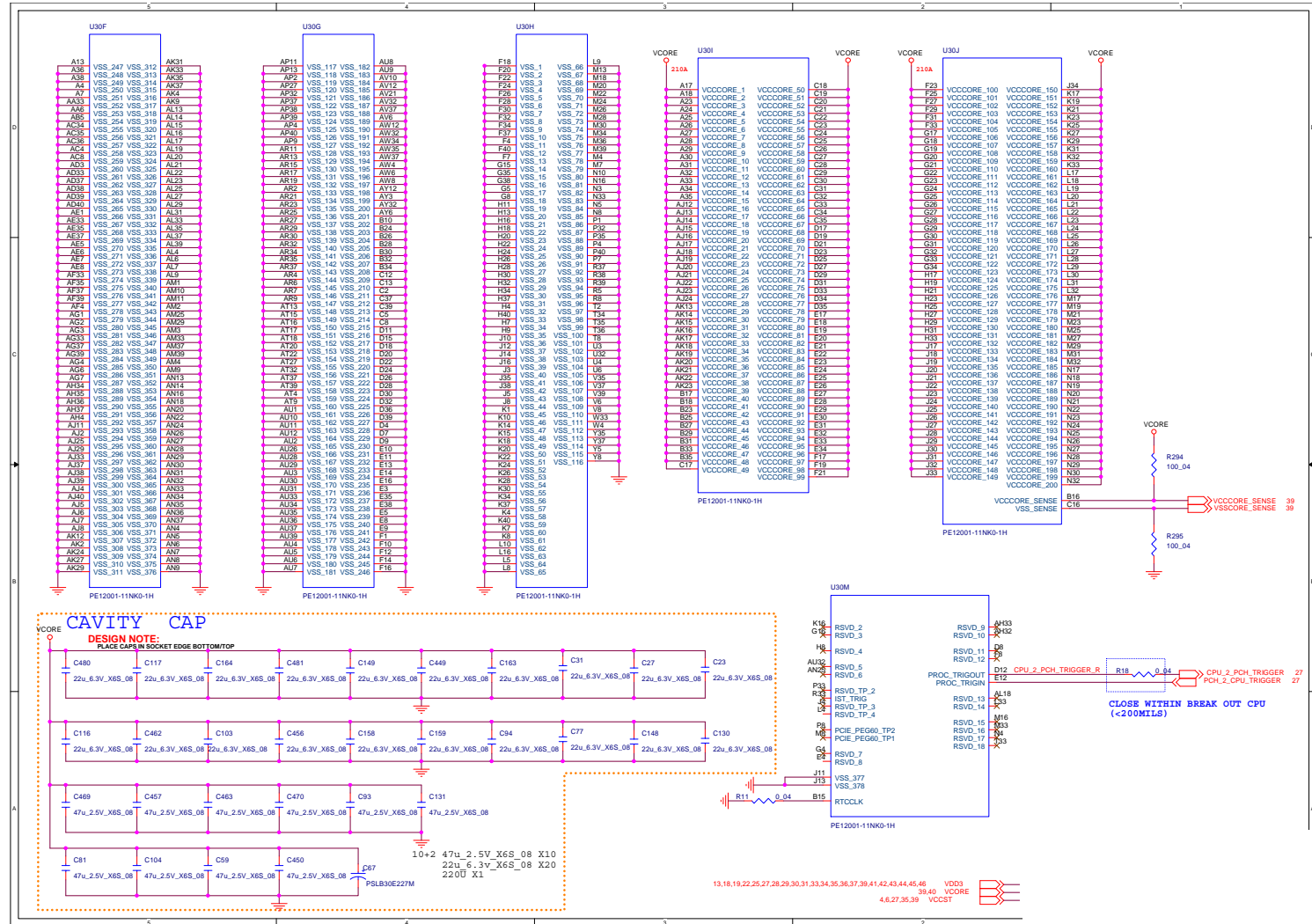
# Processor 3/5



Sheet 4 of 54  
 Processor 3/5

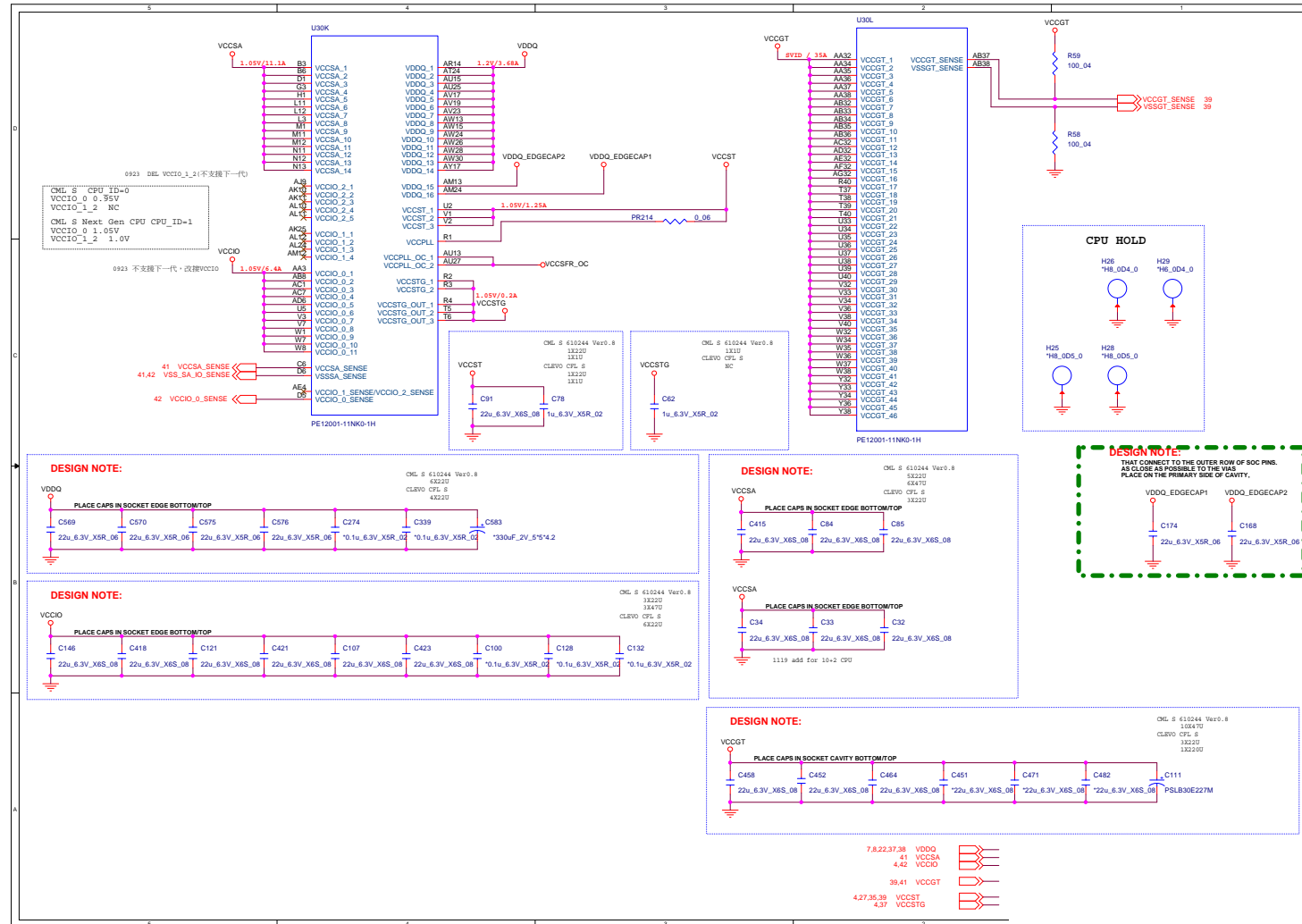
# Processor 4/5

Sheet 5 of 54  
Processor 4/5





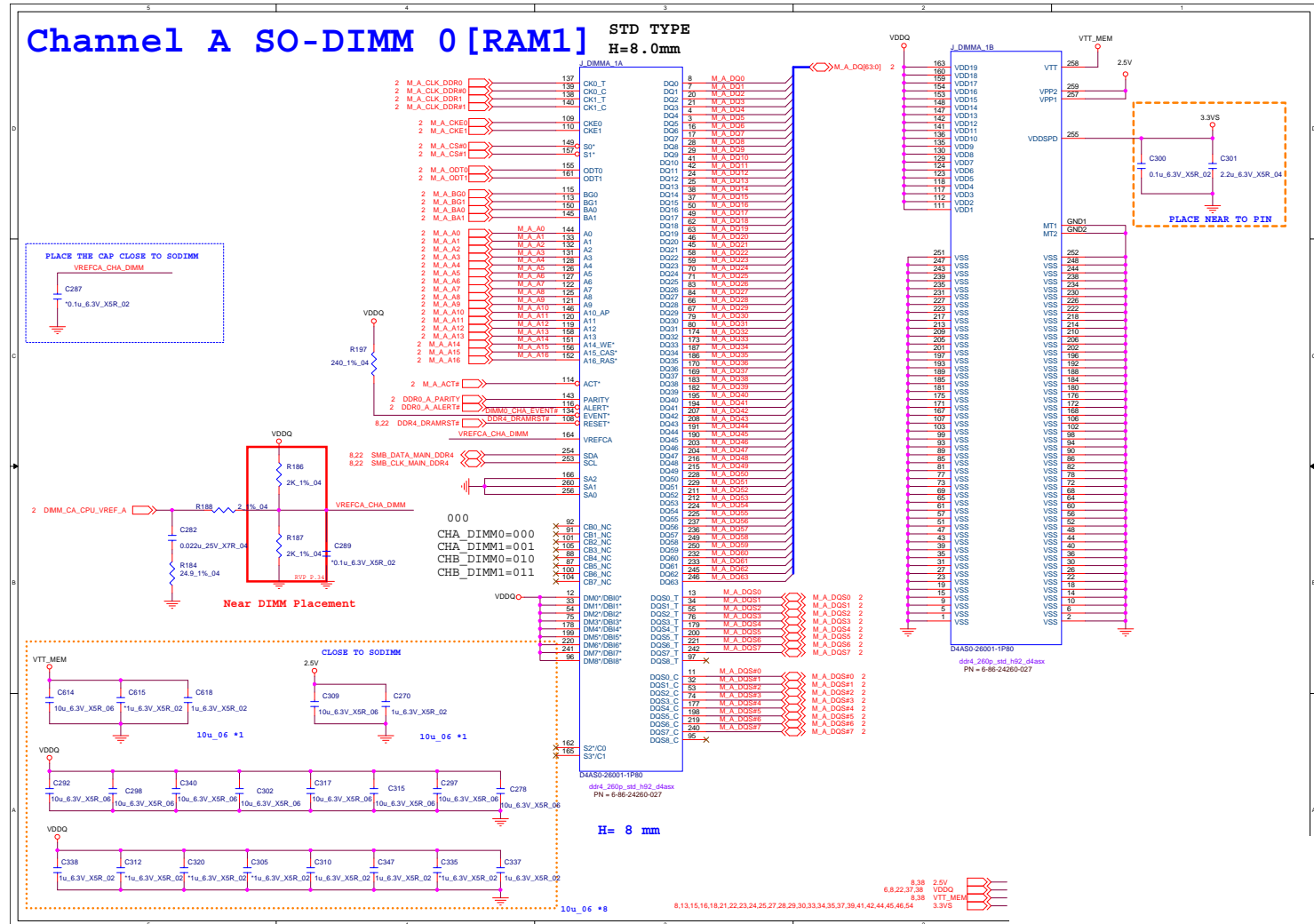
# Processor 5/5



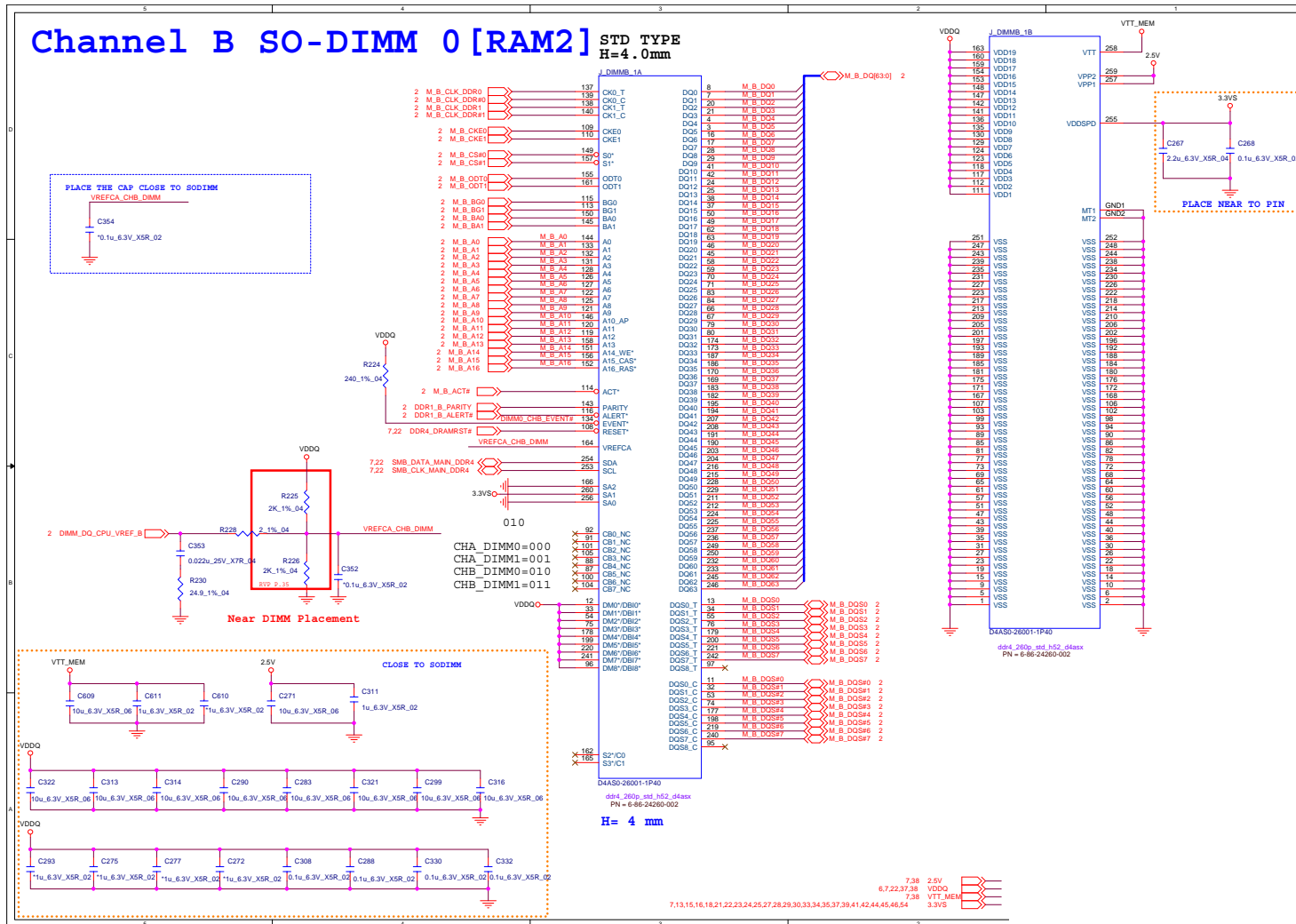
Sheet 6 of 54  
Processor 5/5

# DDR4 CHA SO-DIMM\_0

Sheet 7 of 54  
DDR4 CHA SO-DIMM\_0



# DDR4 CHB SO-DIMM\_0

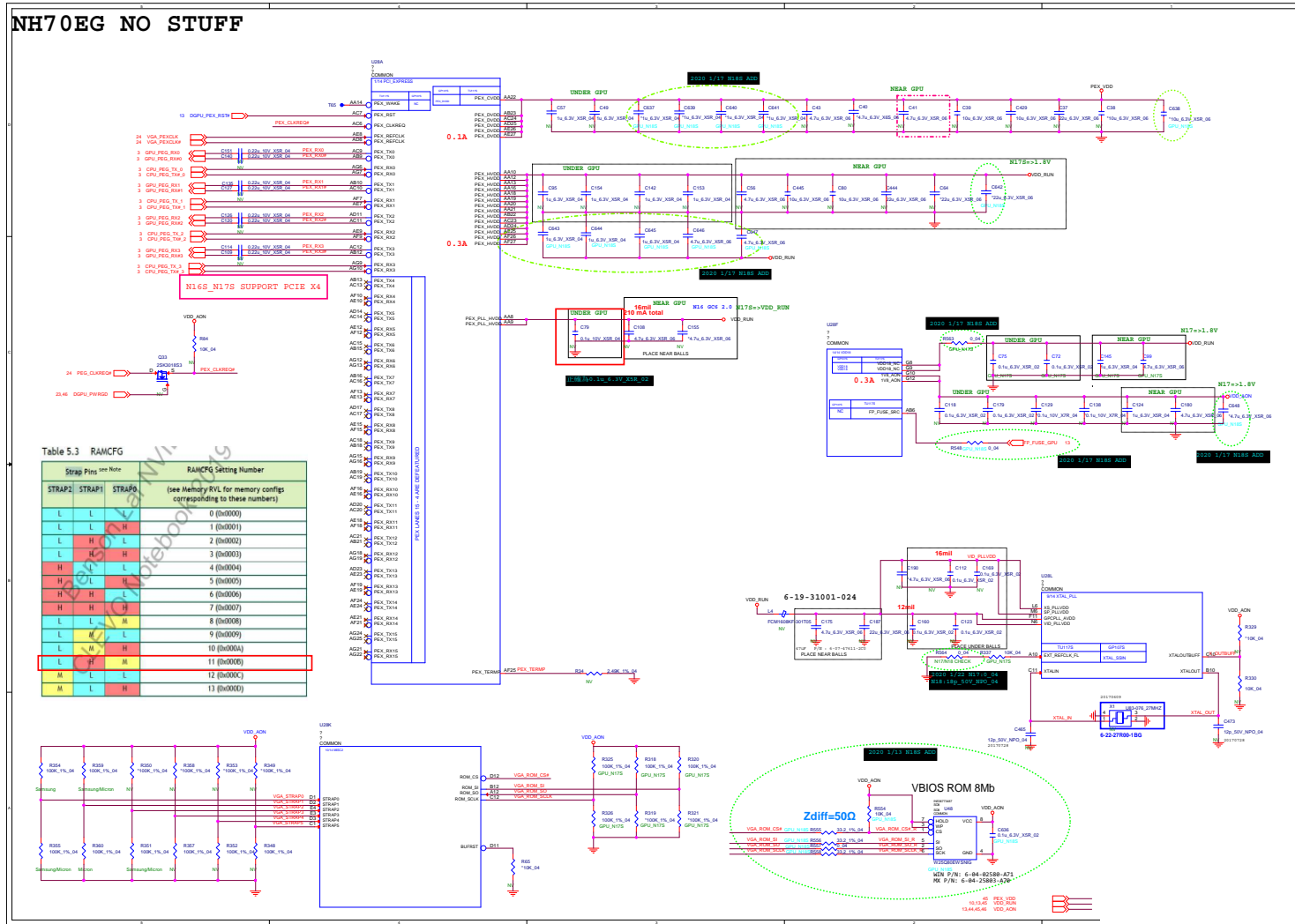


Sheet 8 of 54  
DDR4 CHB SO-DIMM\_0

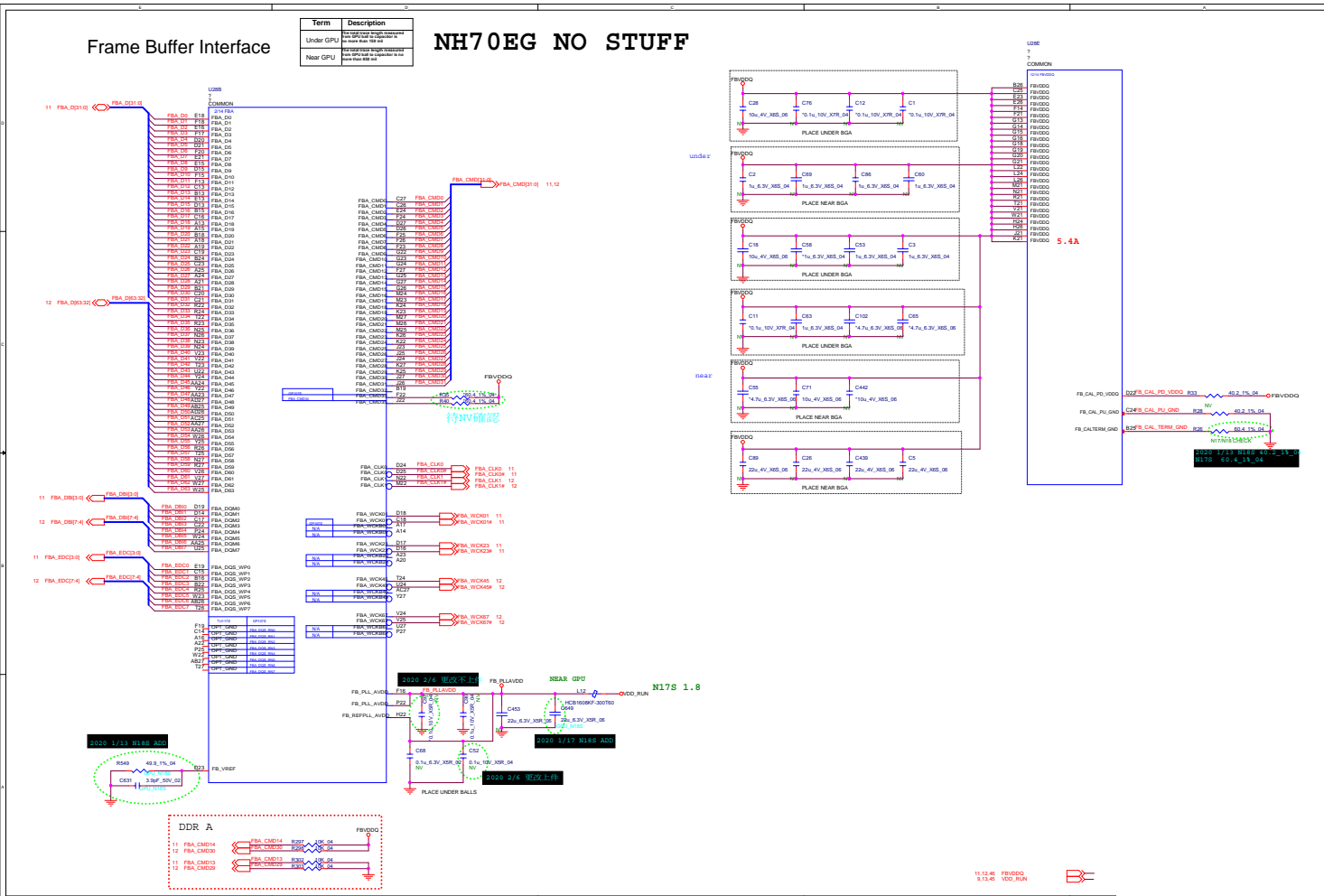
B.Schematic Diagrams

# VGA PCI-E Interface

Sheet 9 of 54  
VGA PCI-E  
Interface



# VGA Frame Buffer Interface

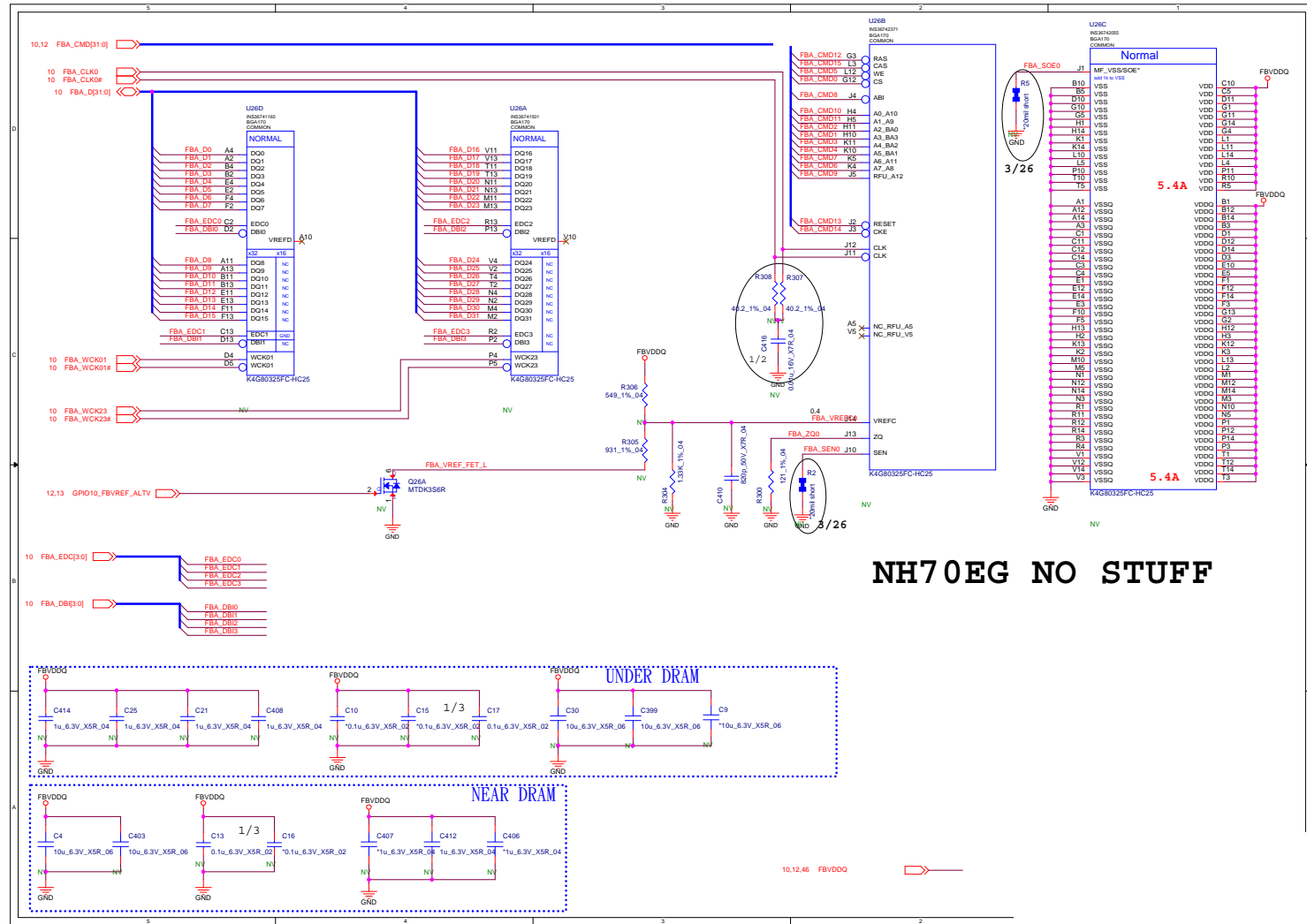


Sheet 10 of 54  
VGA Frame Buffer Interface

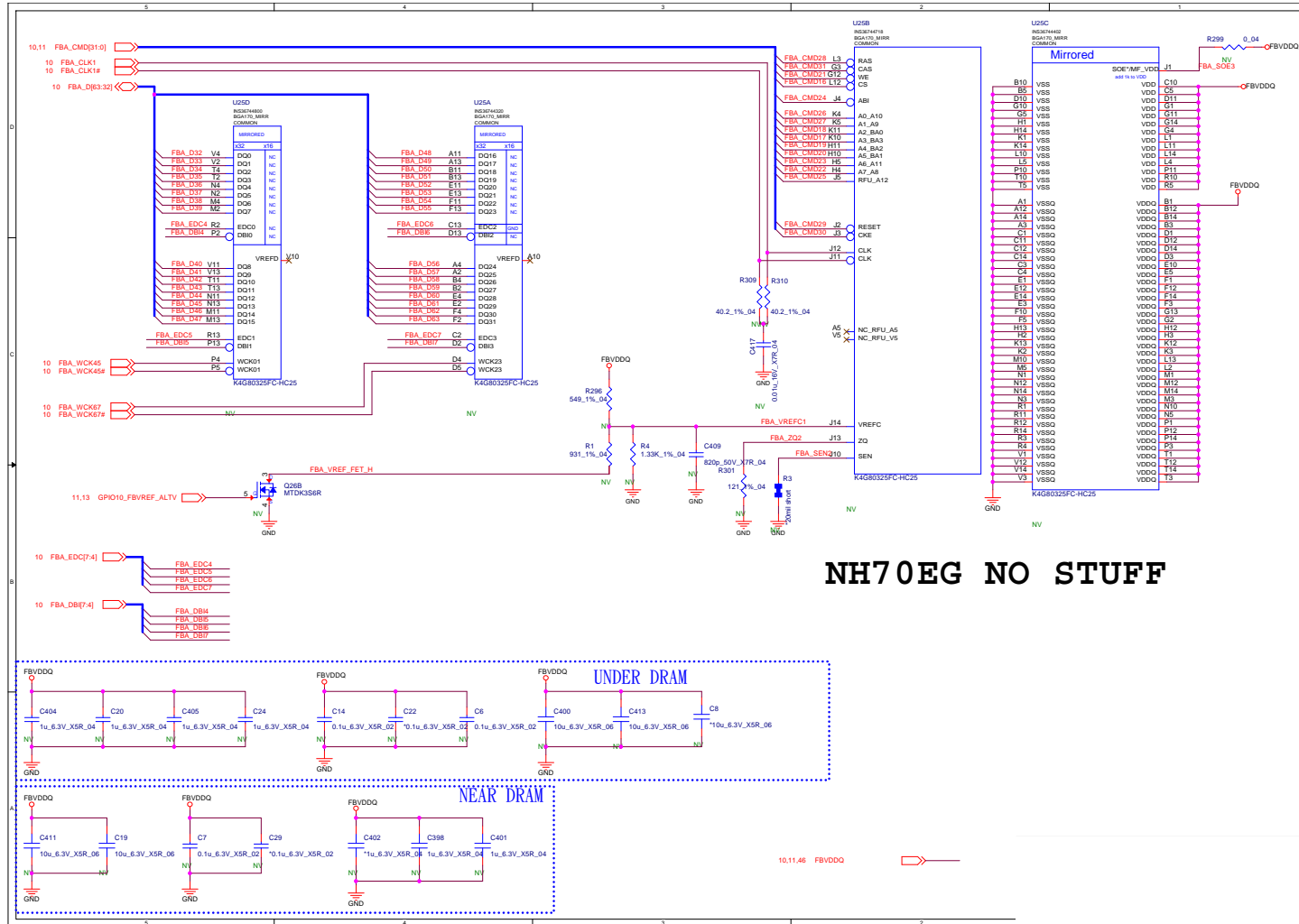
B.Schematic Diagrams

# VGA Frame Buffer A

Sheet 11 of 54  
VGA Frame Buffer  
A



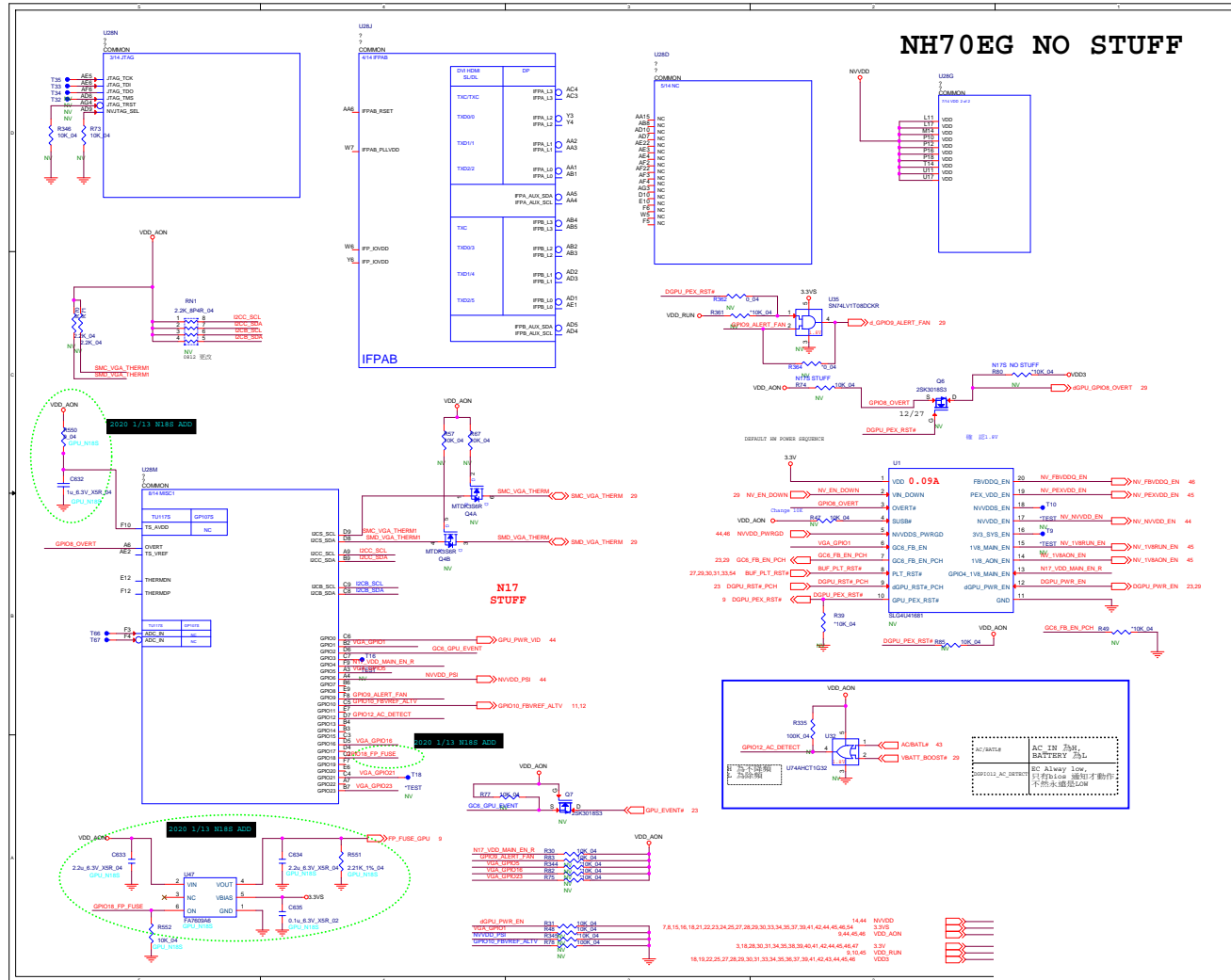
# VGA Frame Buffer A



Sheet 12 of 54  
VGA Frame Buffer  
A

B.Schematic Diagrams

# VGA I/O



Sheet 13 of 54  
VGA I/O

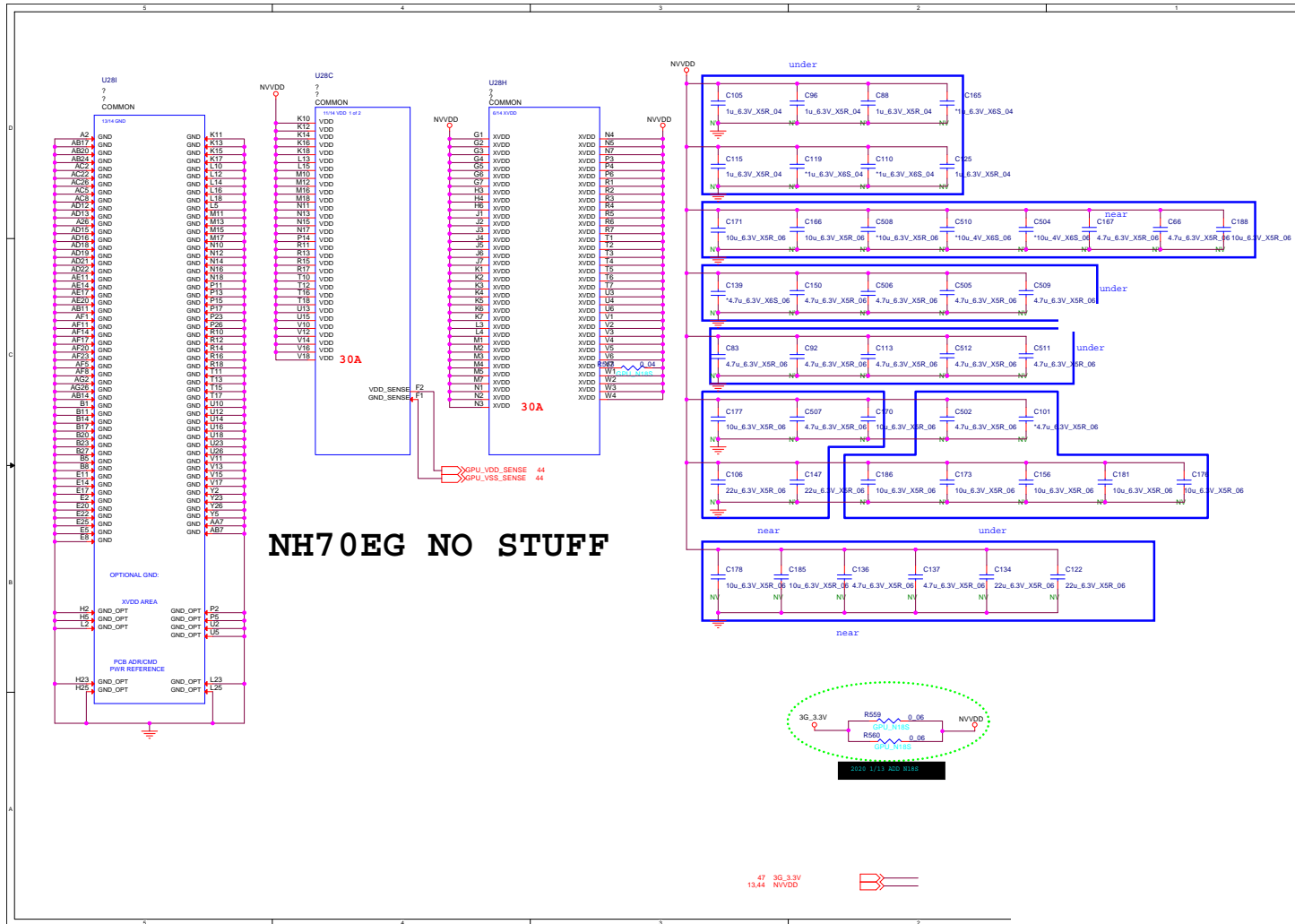
B.Schematic Diagrams



# VGA NVVDD Coupling

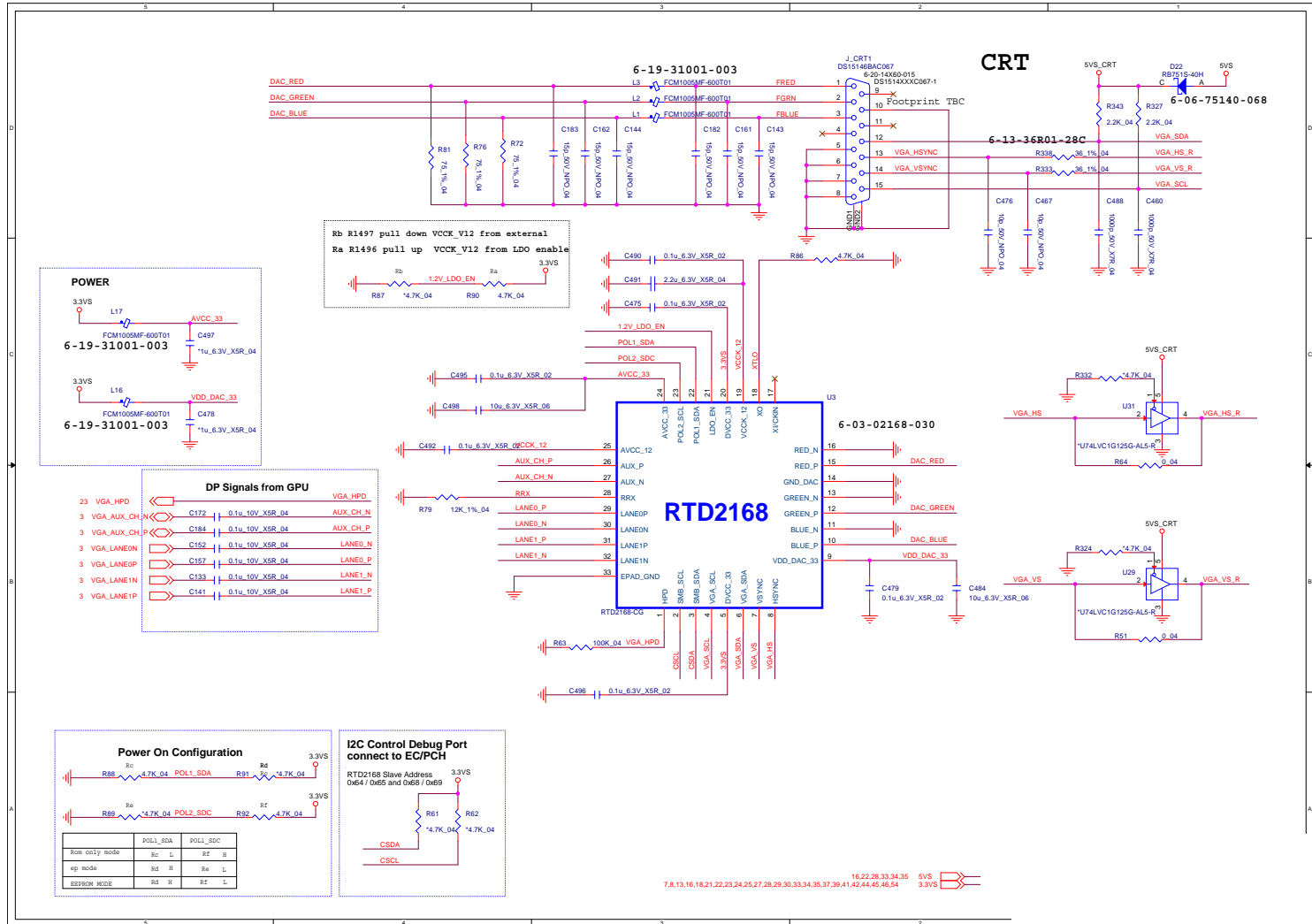
B.Schematic Diagrams

Sheet 14 of 54  
VGA NVVDD  
Coupling

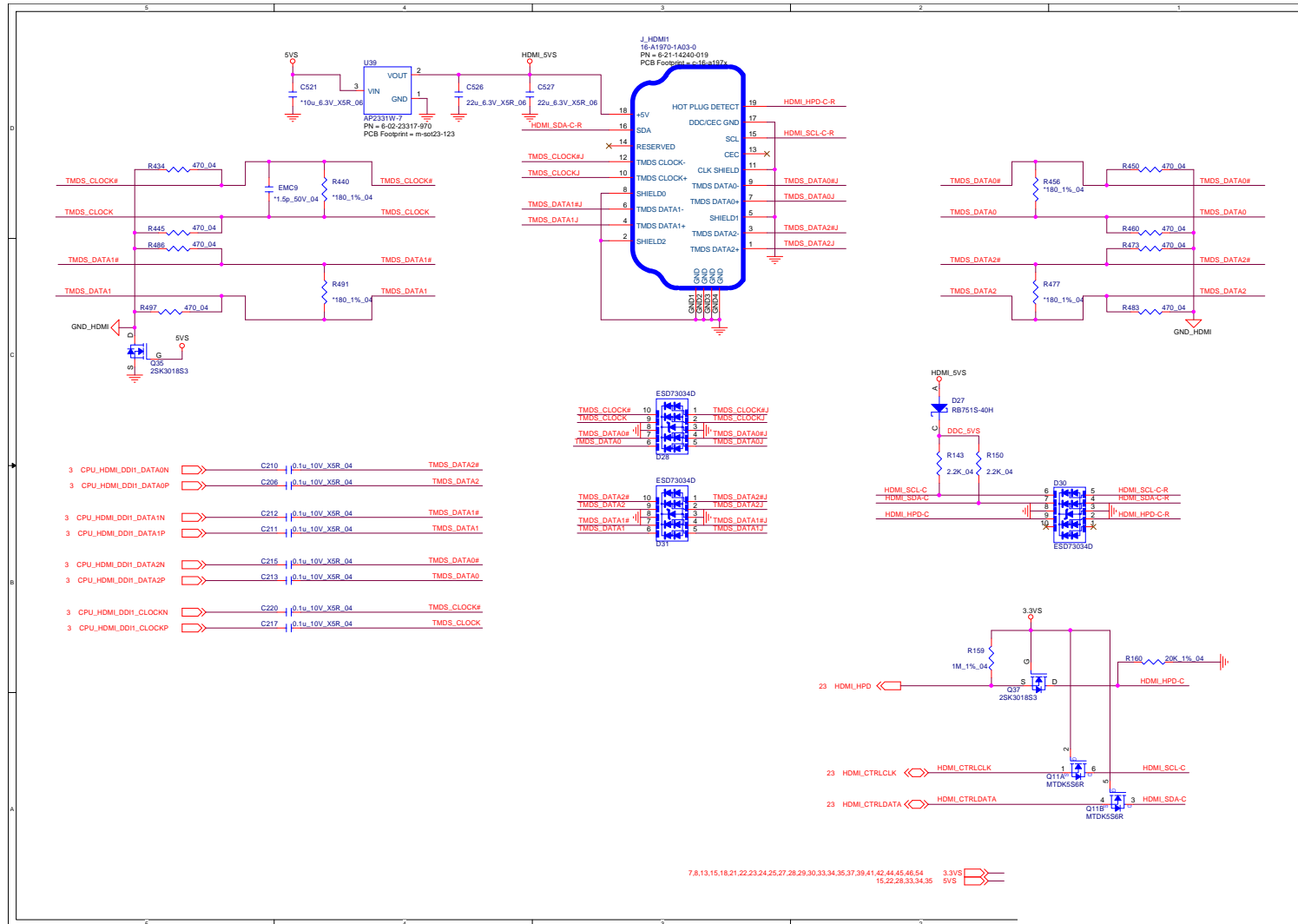


# CRT

Sheet 15 of 54  
CRT



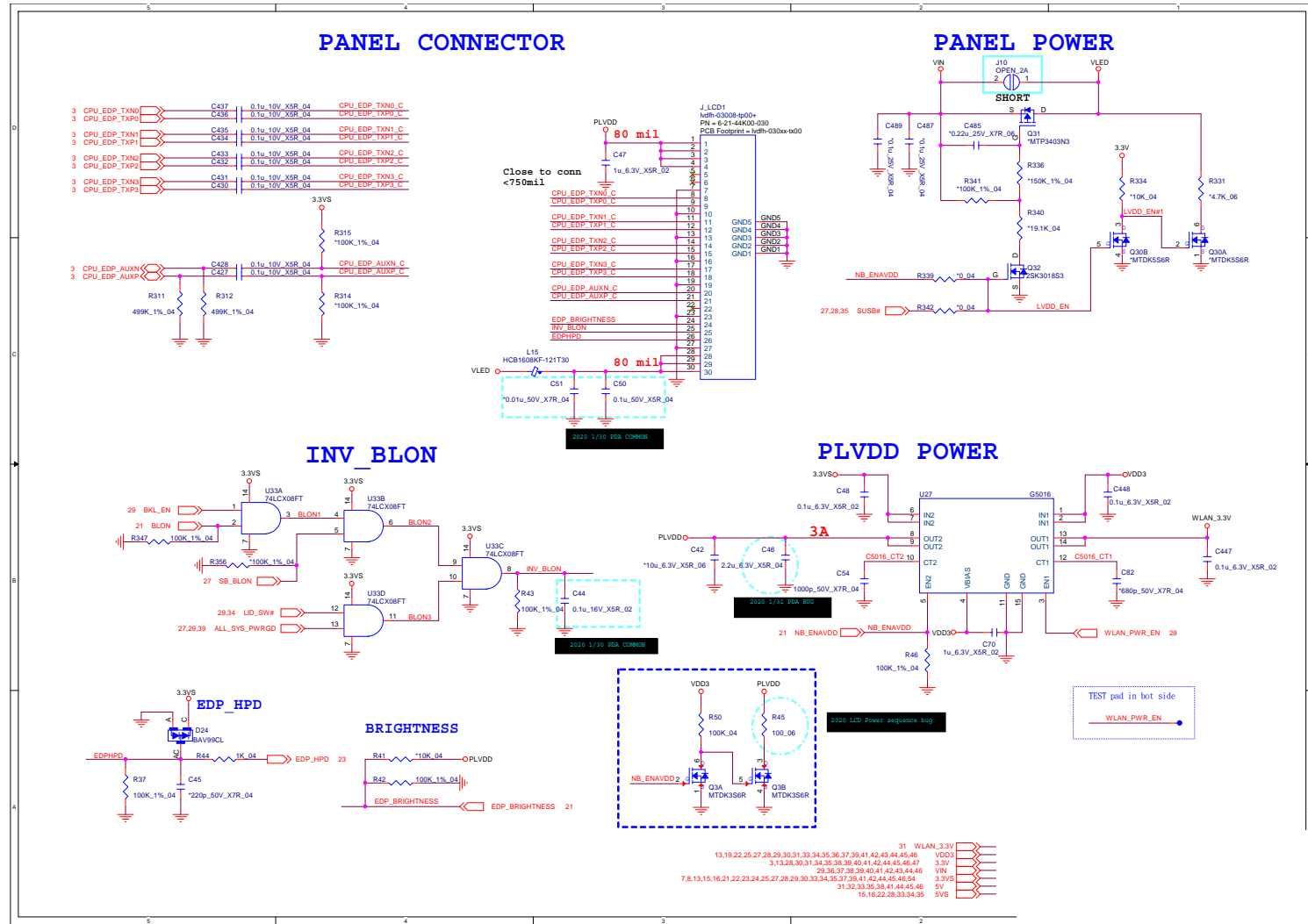
# HDMI



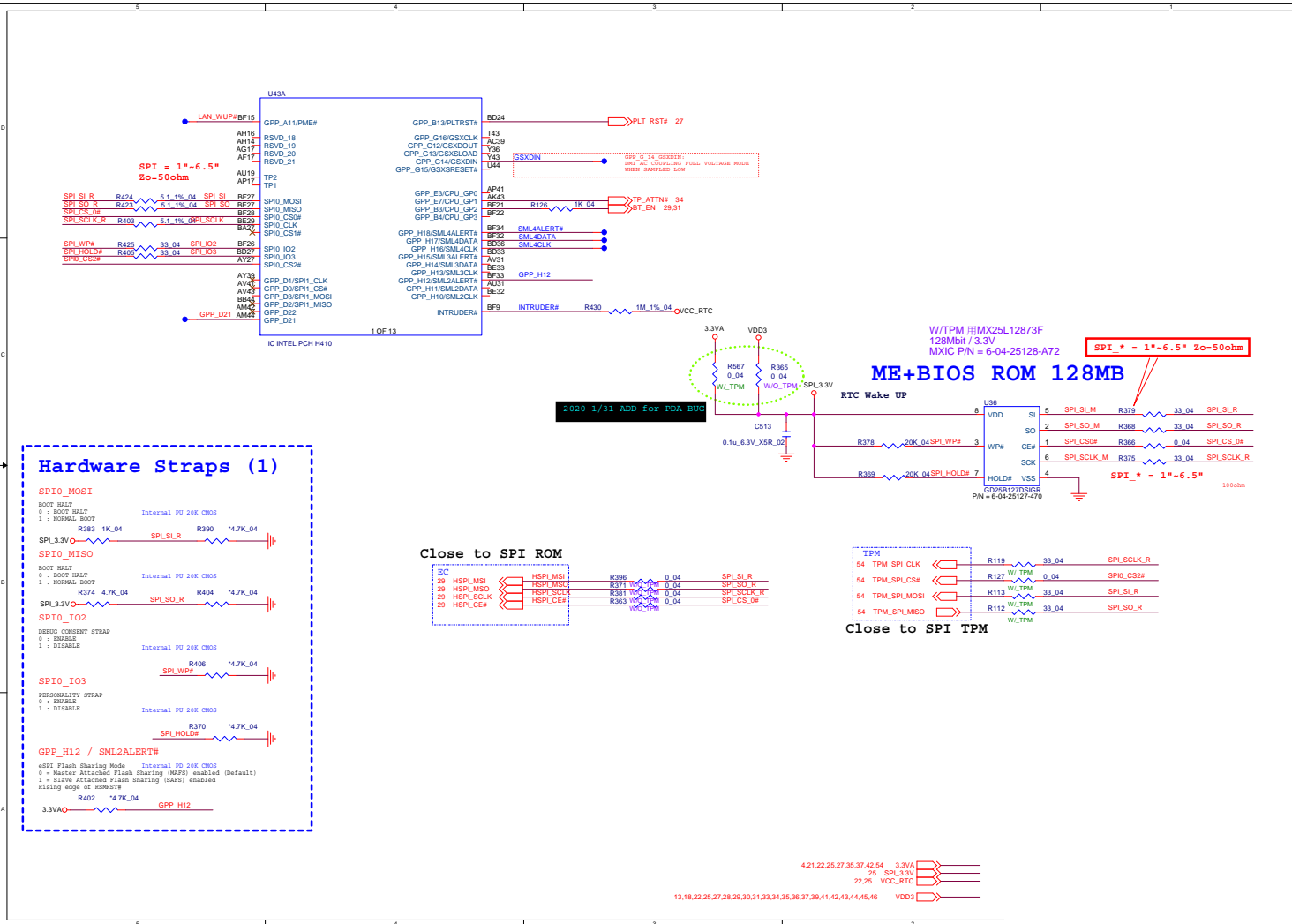
Sheet 16 of 54  
HDMI

B.Schematic Diagrams

# EDP Panel Conn.



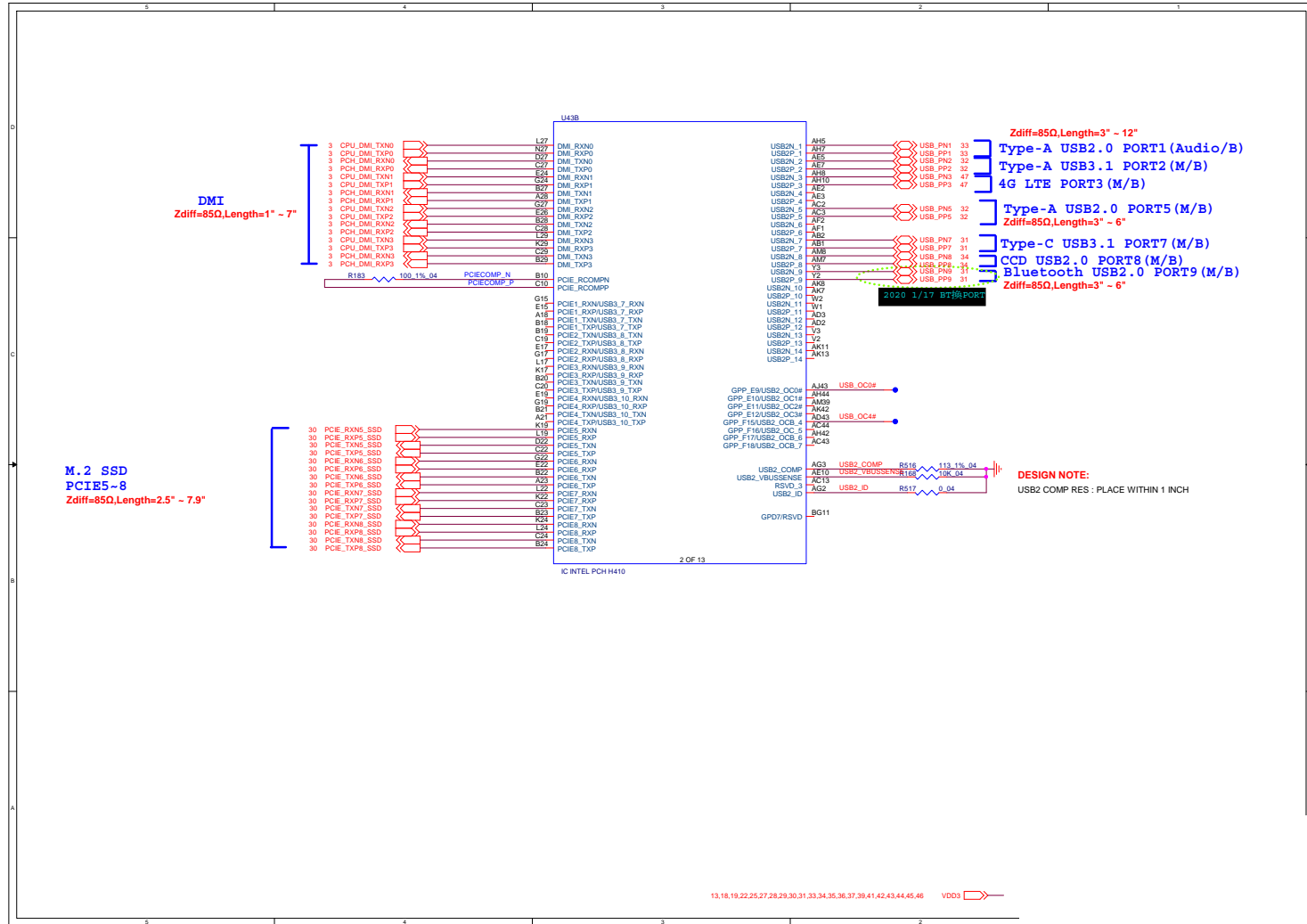
# PCH 1/9



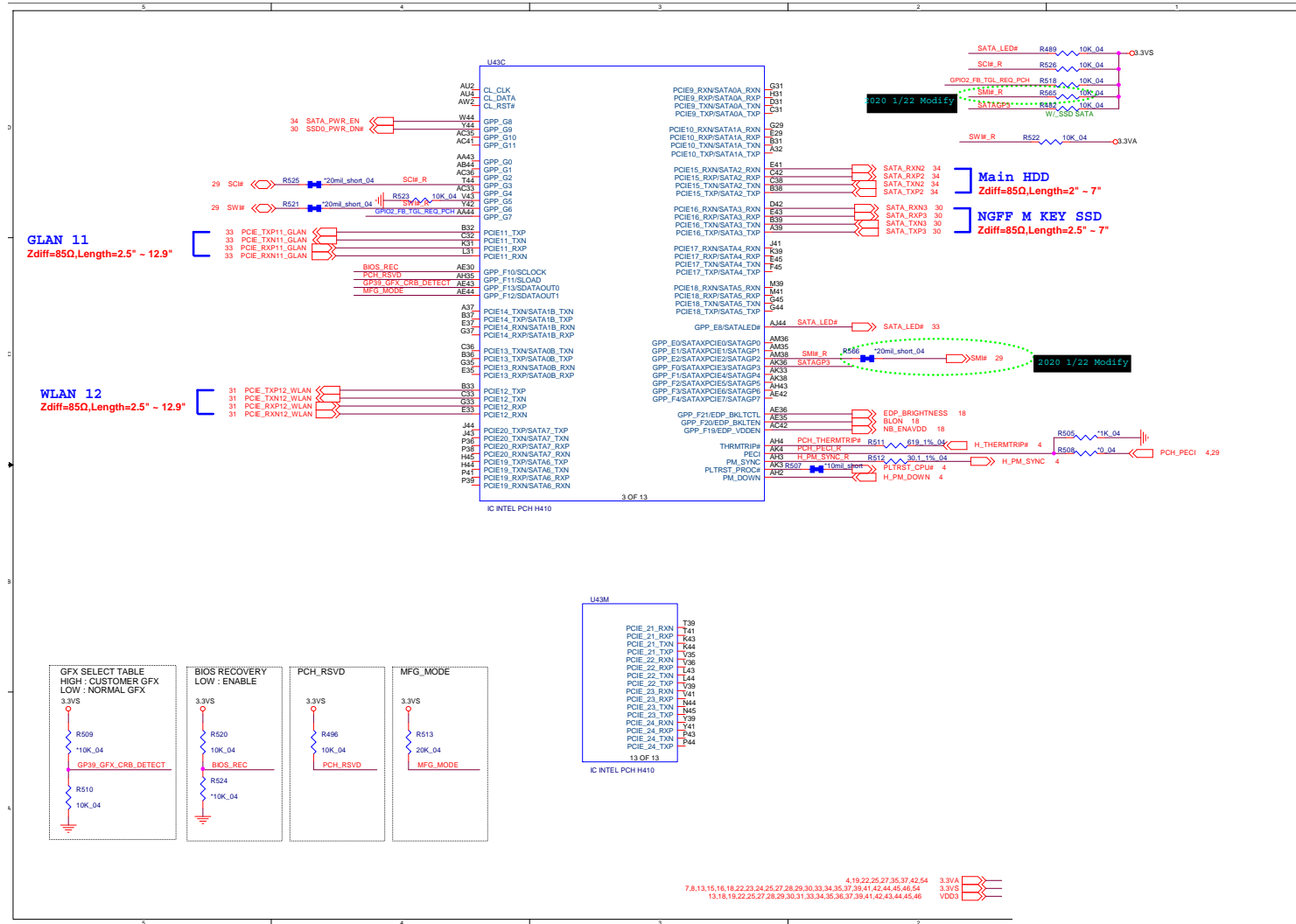
Sheet 18 of 54  
PCH 1/9

# PCH 2/9

Sheet 19 of 54  
PCH 2/9



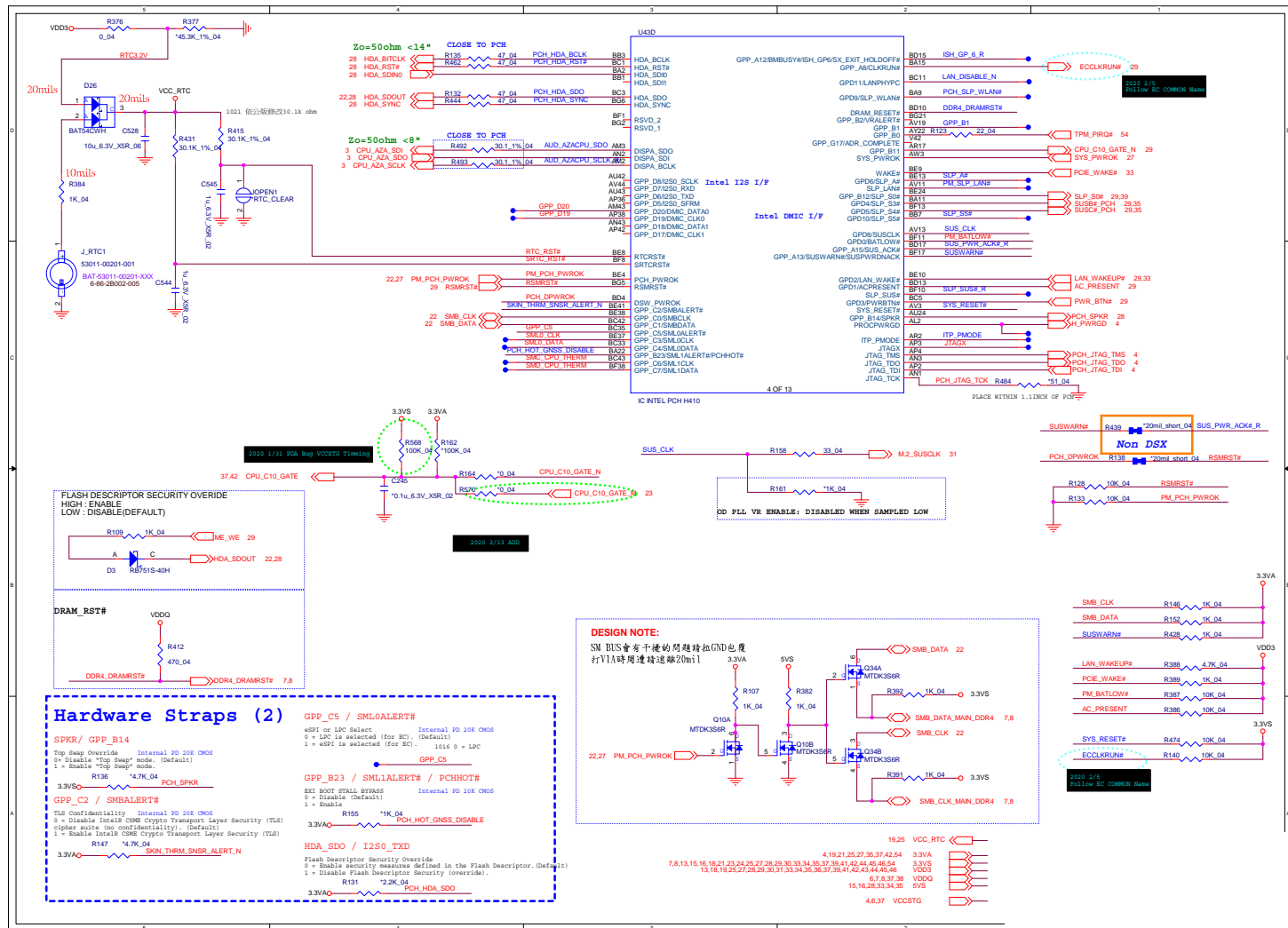
# PCH 3/9



Sheet 20 of 54  
PCH 3/9

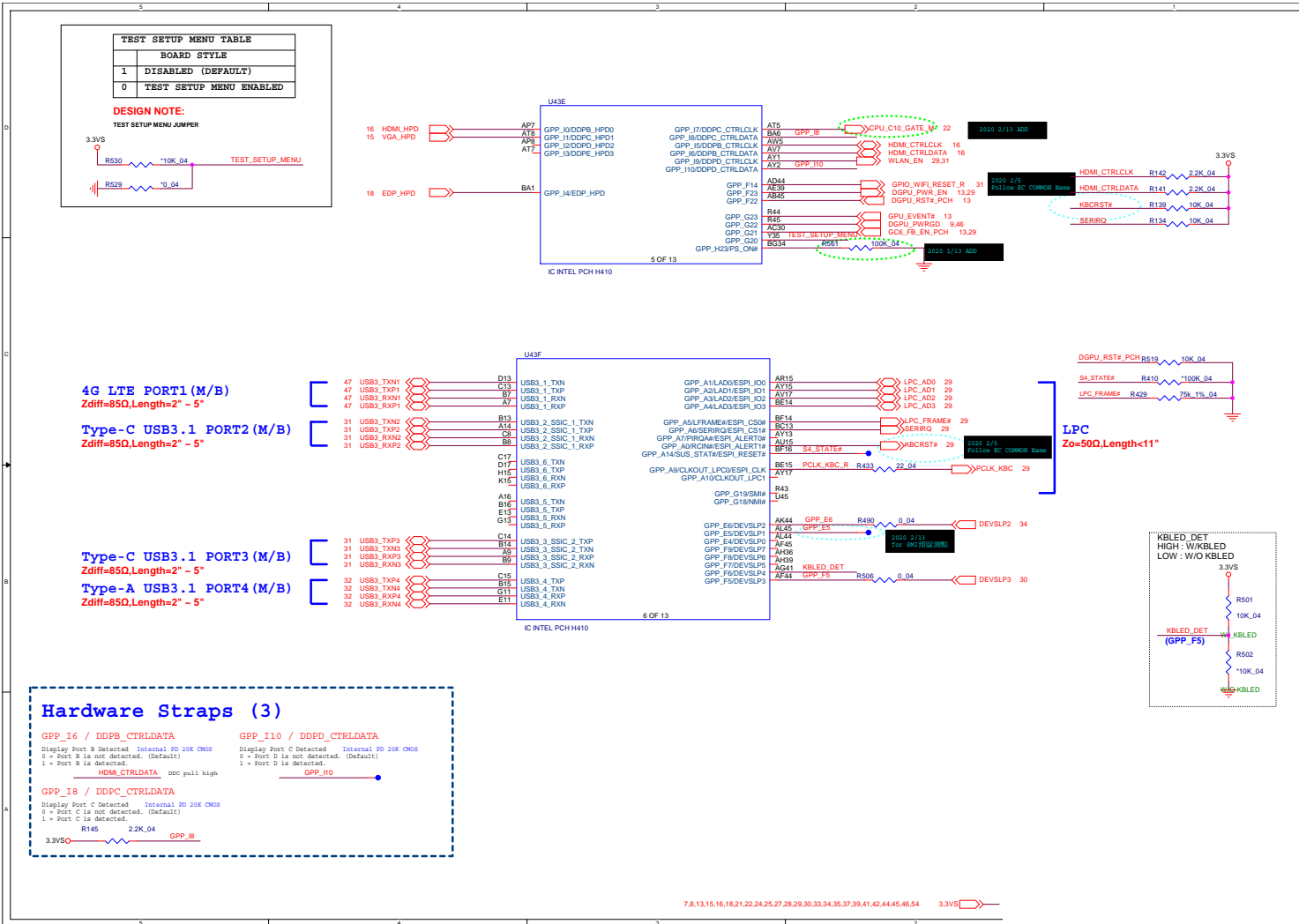
# PCH 4/9

Sheet 21 of 54  
PCH 4/9





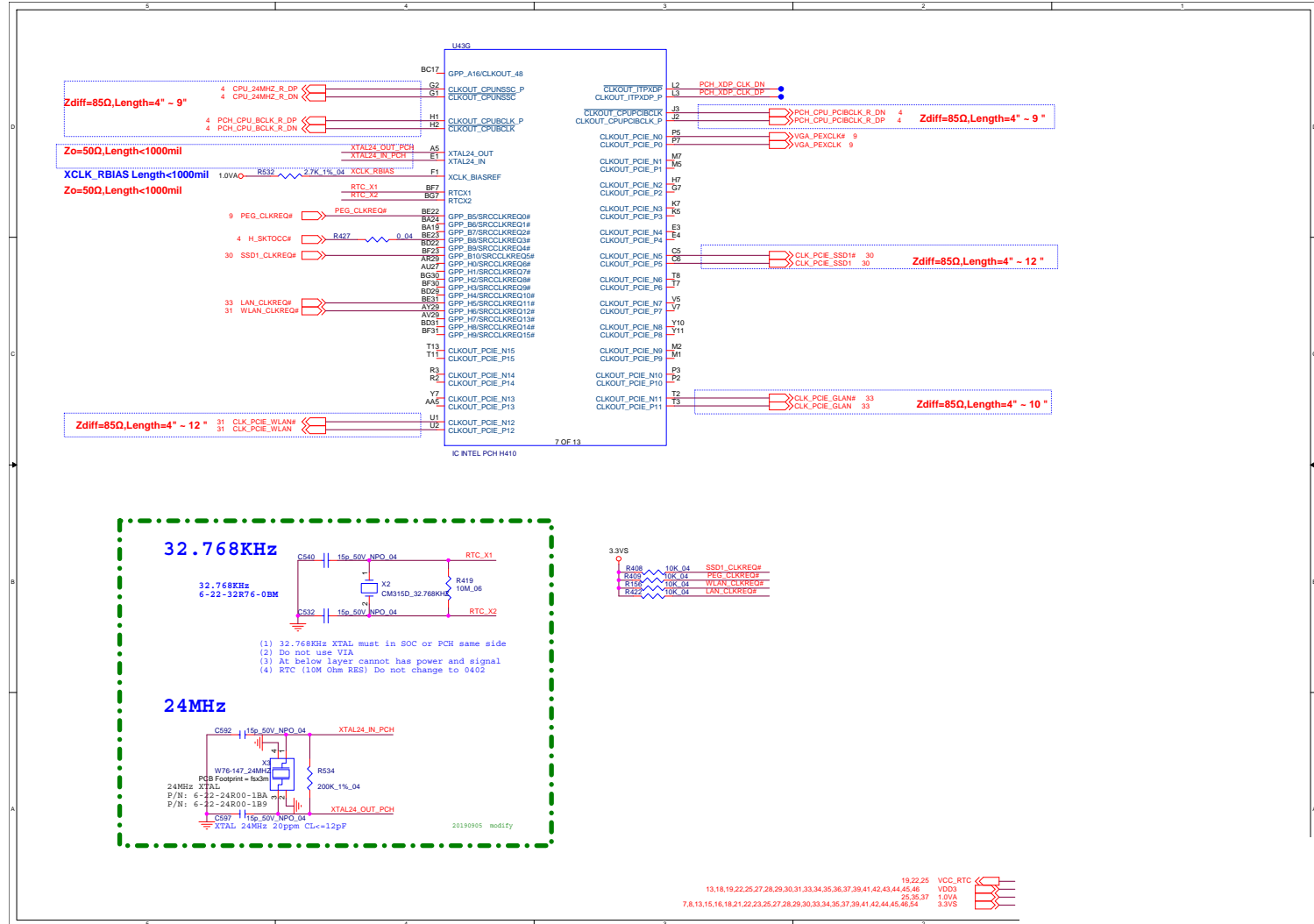
PCH 5/9



Sheet 22 of 54  
PCH 5/9

# PCH 6/9

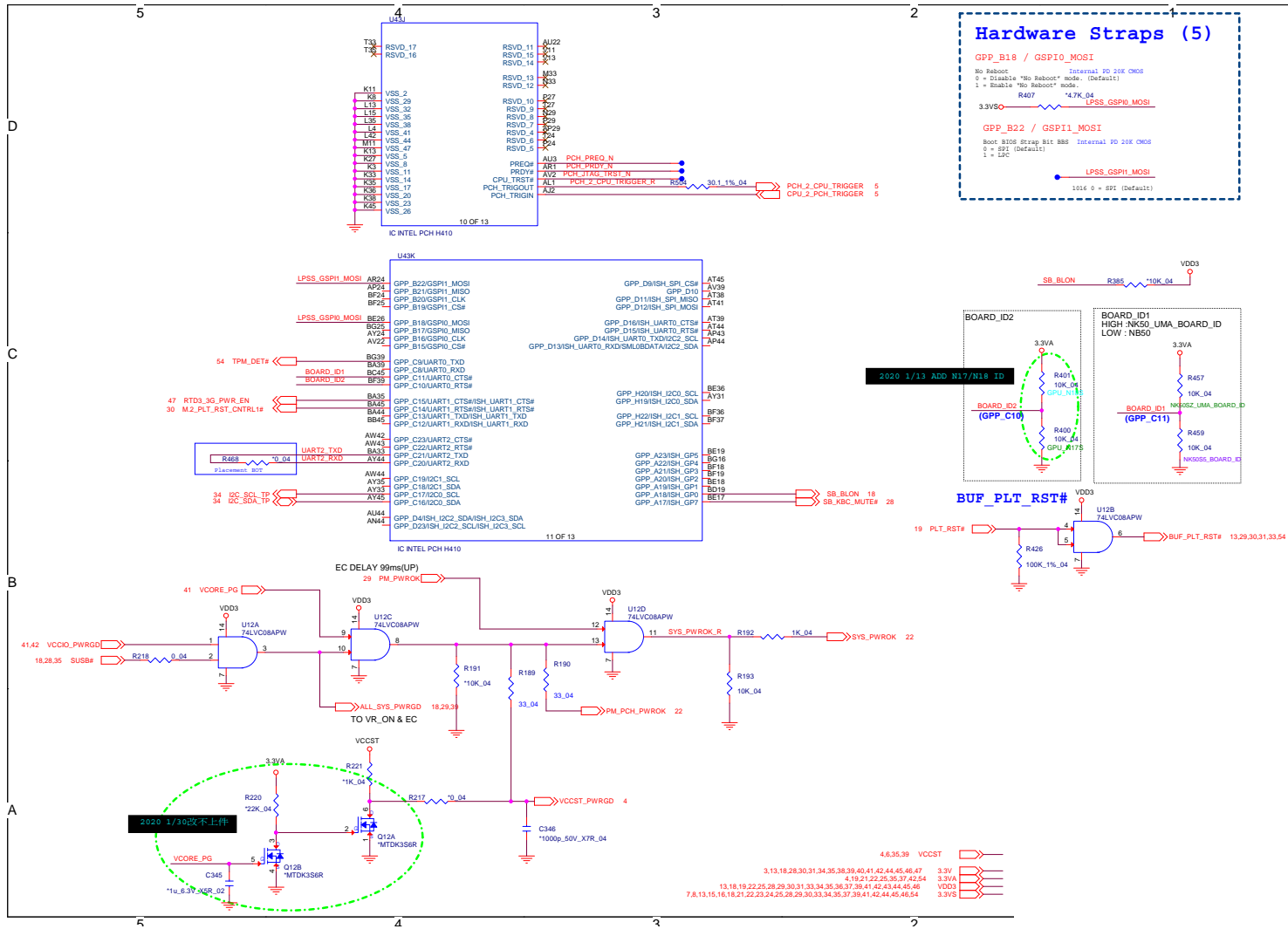
Sheet 23 of 54  
PCH 6/9







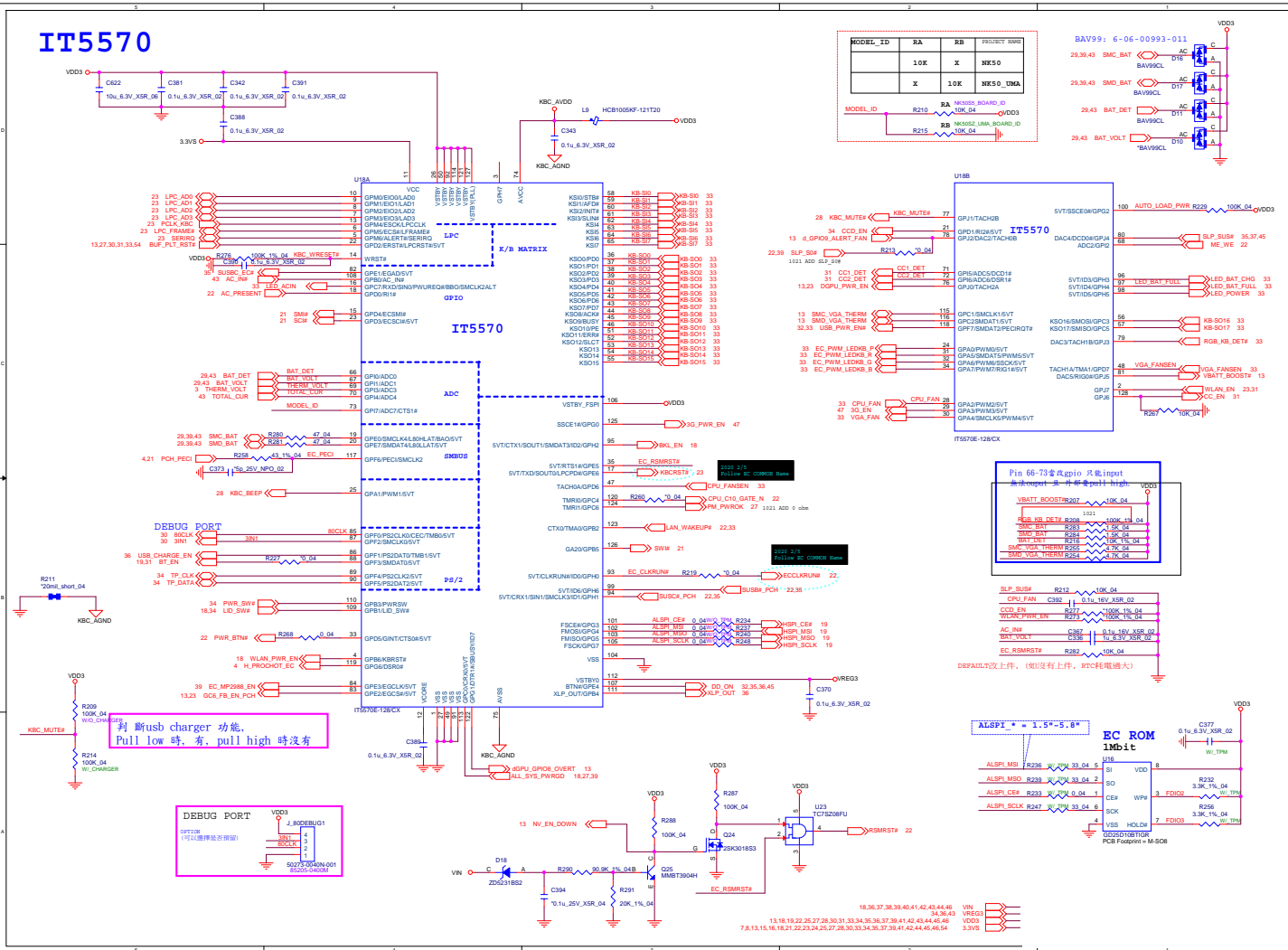
PCH 9/9



Sheet 26 of 54  
PCH 9/9



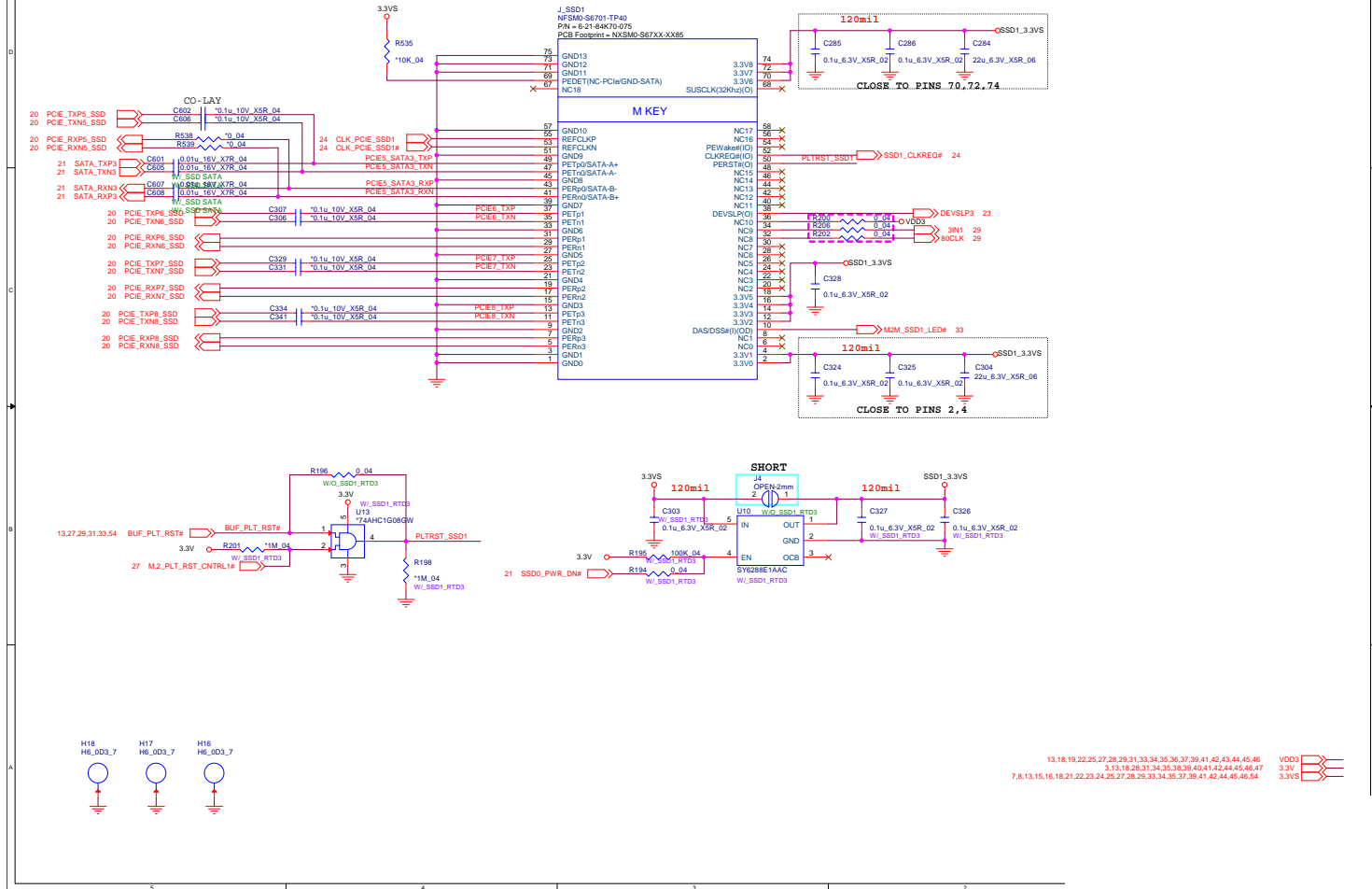
# KBC-ITE IT5570



Sheet 28 of 54  
KBC-ITE IT5570

# M.2 SSD SATA

## NGFF\_M (M2) SSD (PCIe Gen2 x4/SATA)

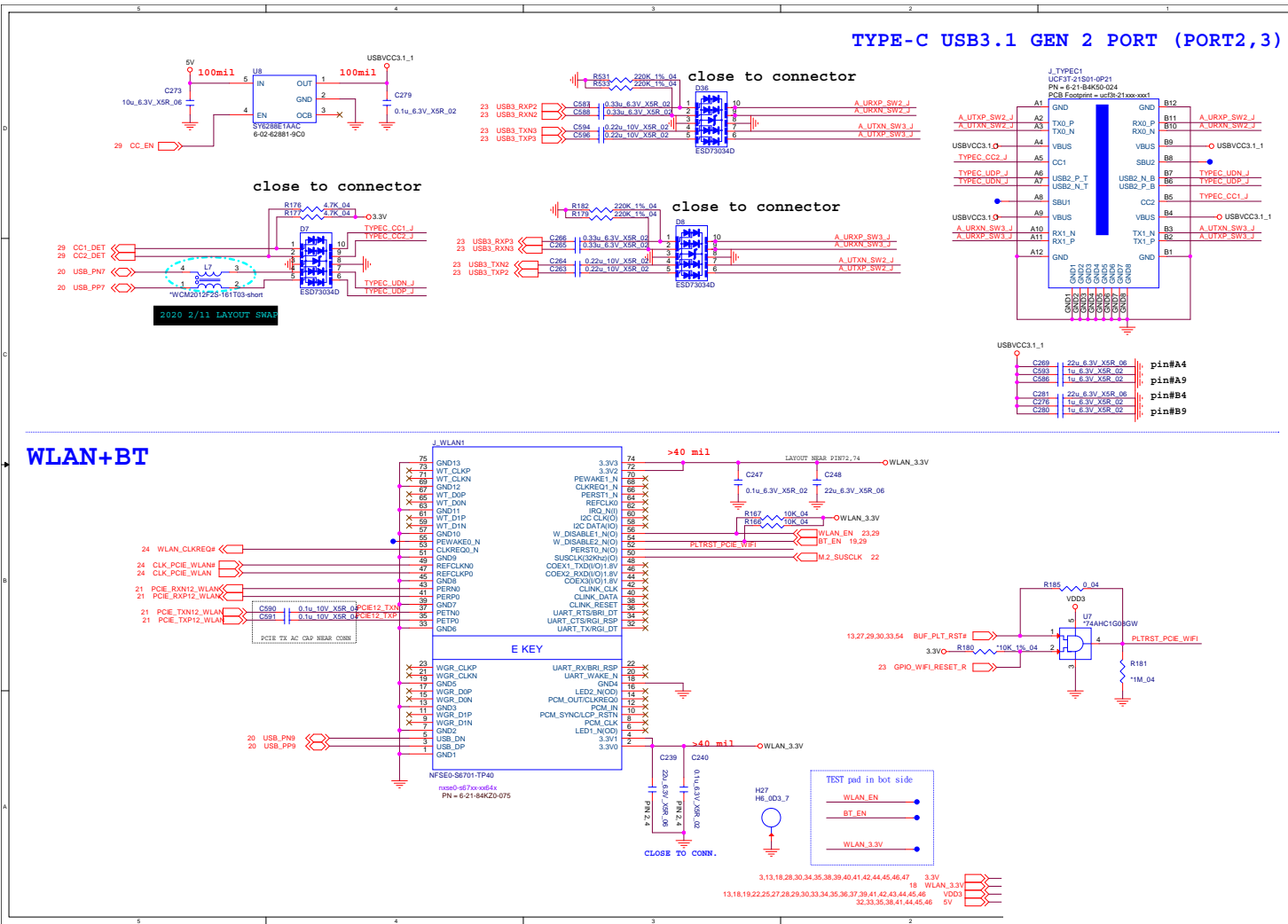


Sheet 29 of 54  
M.2 SSD SATA

B.Schematic Diagrams



# USB Type-C, M.2 WLAN+BT

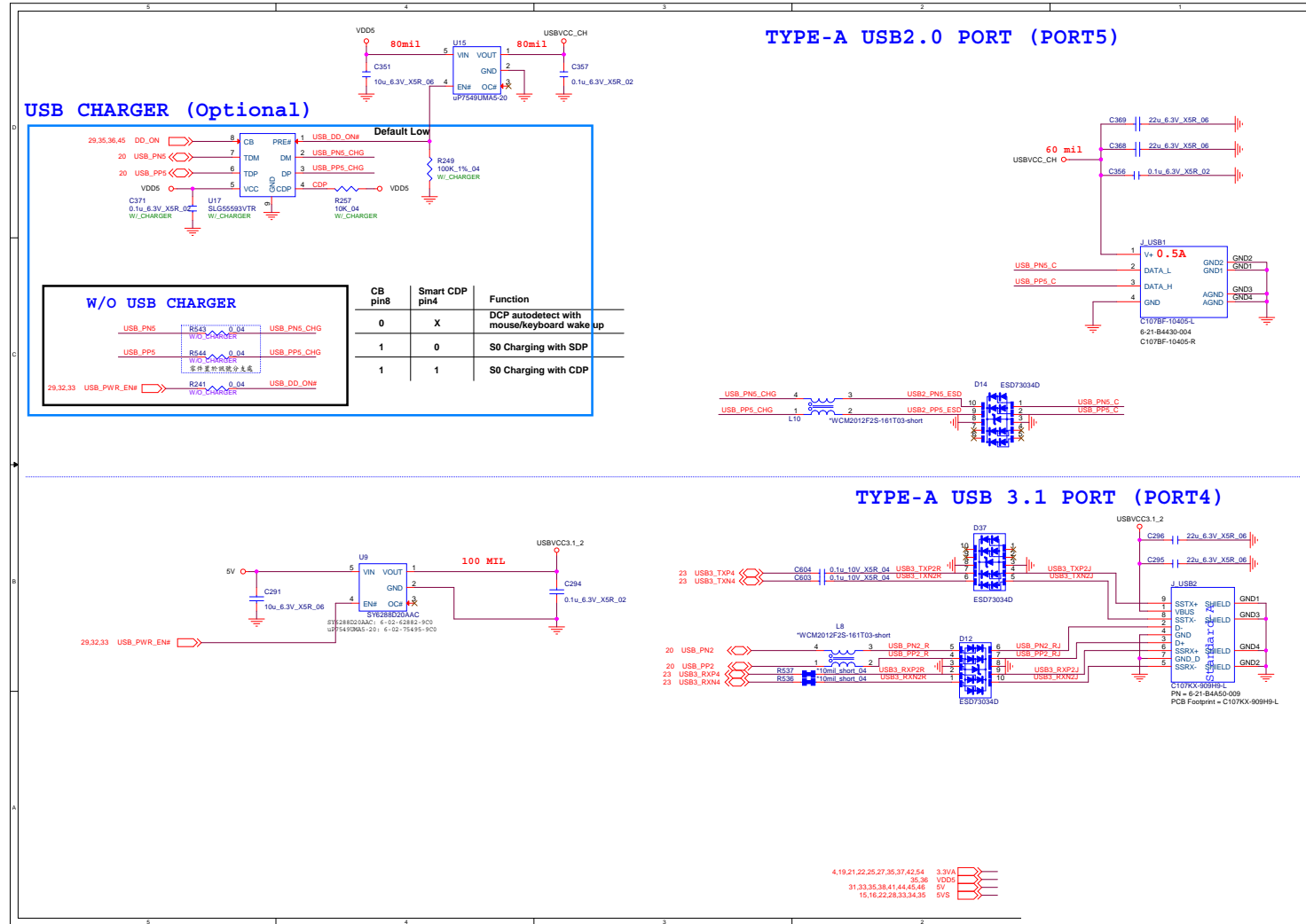


Sheet 30 of 54  
USB Type-C,  
M.2 WLAN+BT

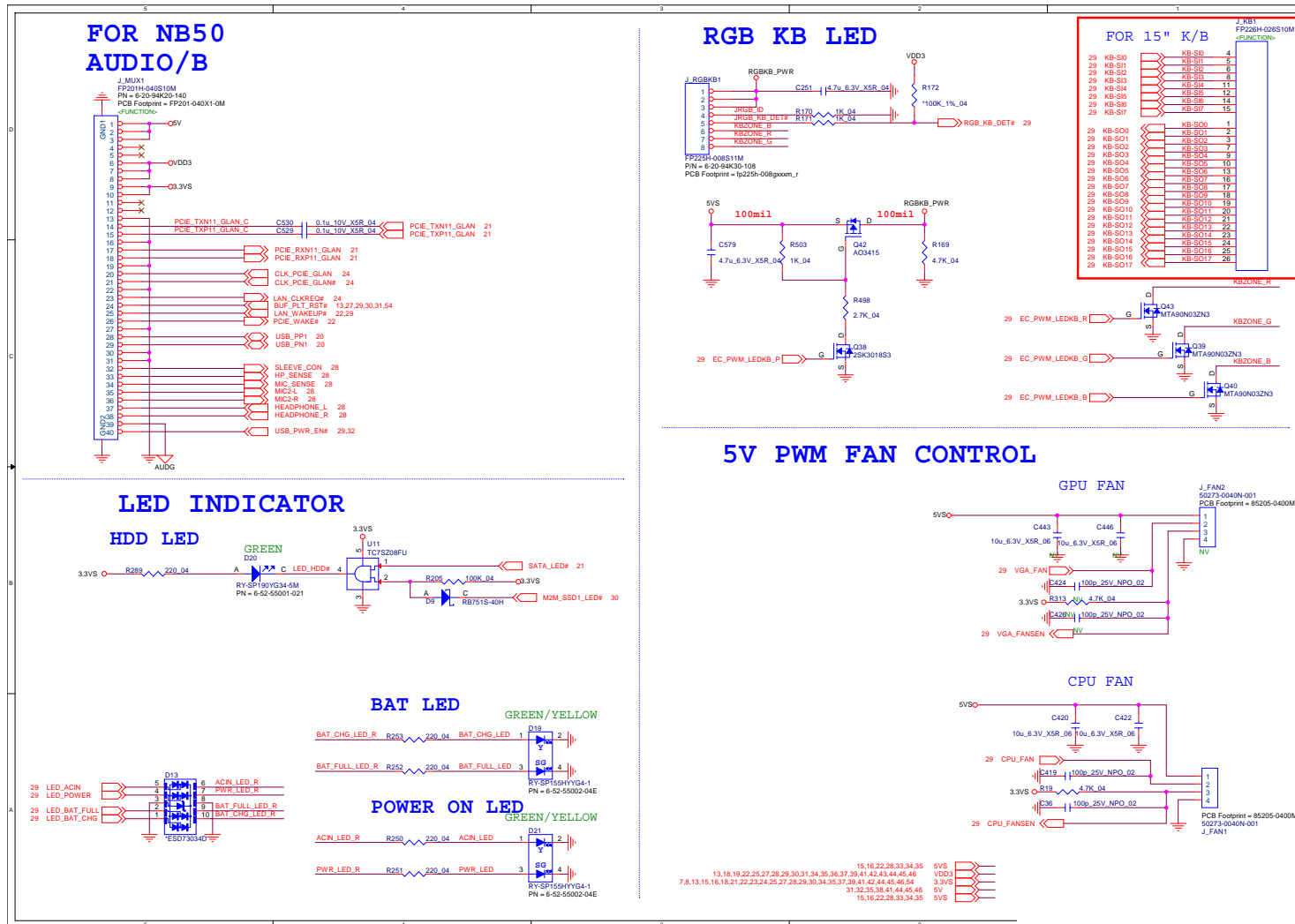
B.Schematic Diagrams

# USB Type-A, USB Charger

Sheet 31 of 54  
USB Type-A,  
USB Charger



# RGB KB, Fan, LED, Audio



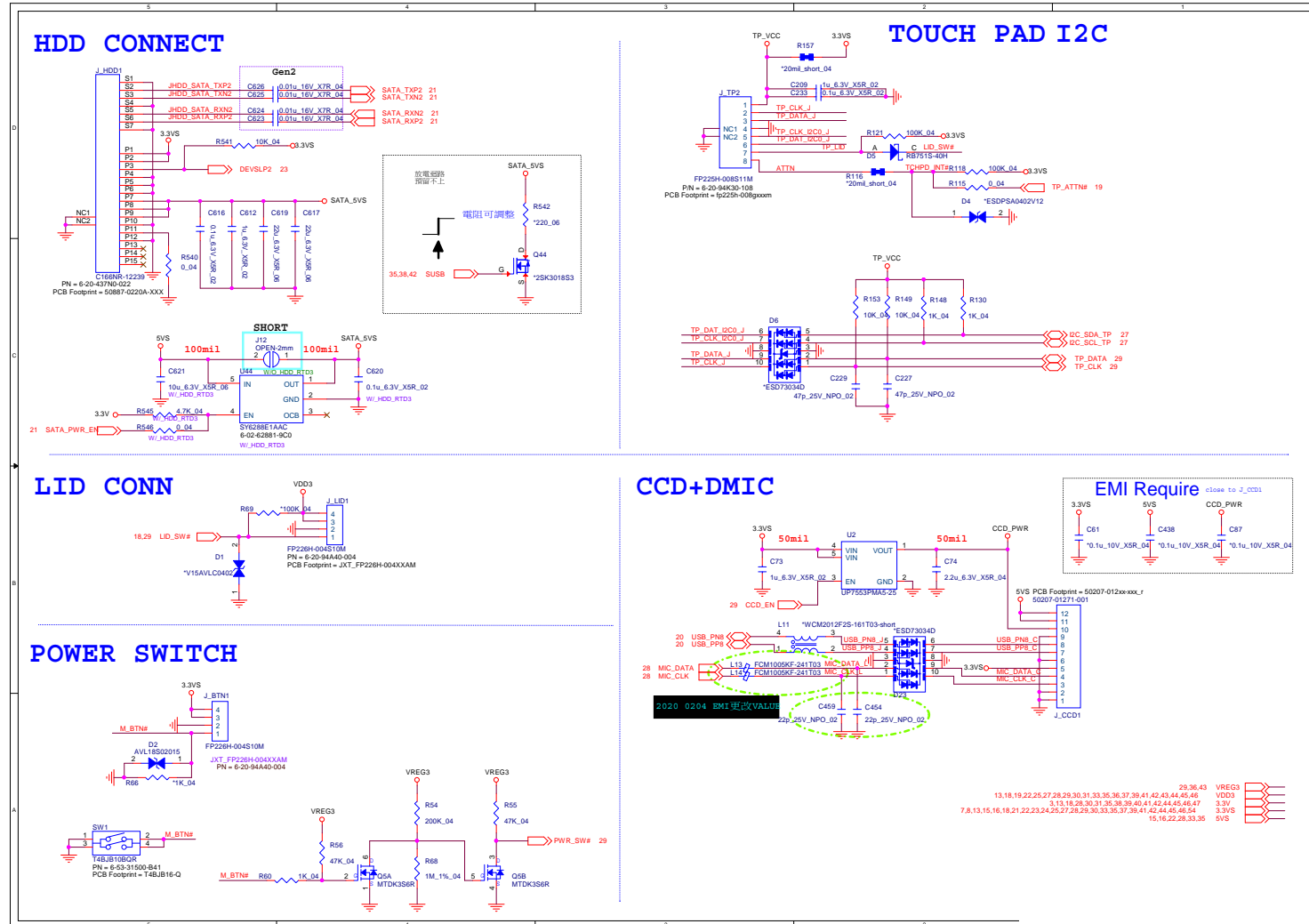
Sheet 32 of 54  
RGB KB, Fan, LED,  
Audio

# Schematic Diagrams

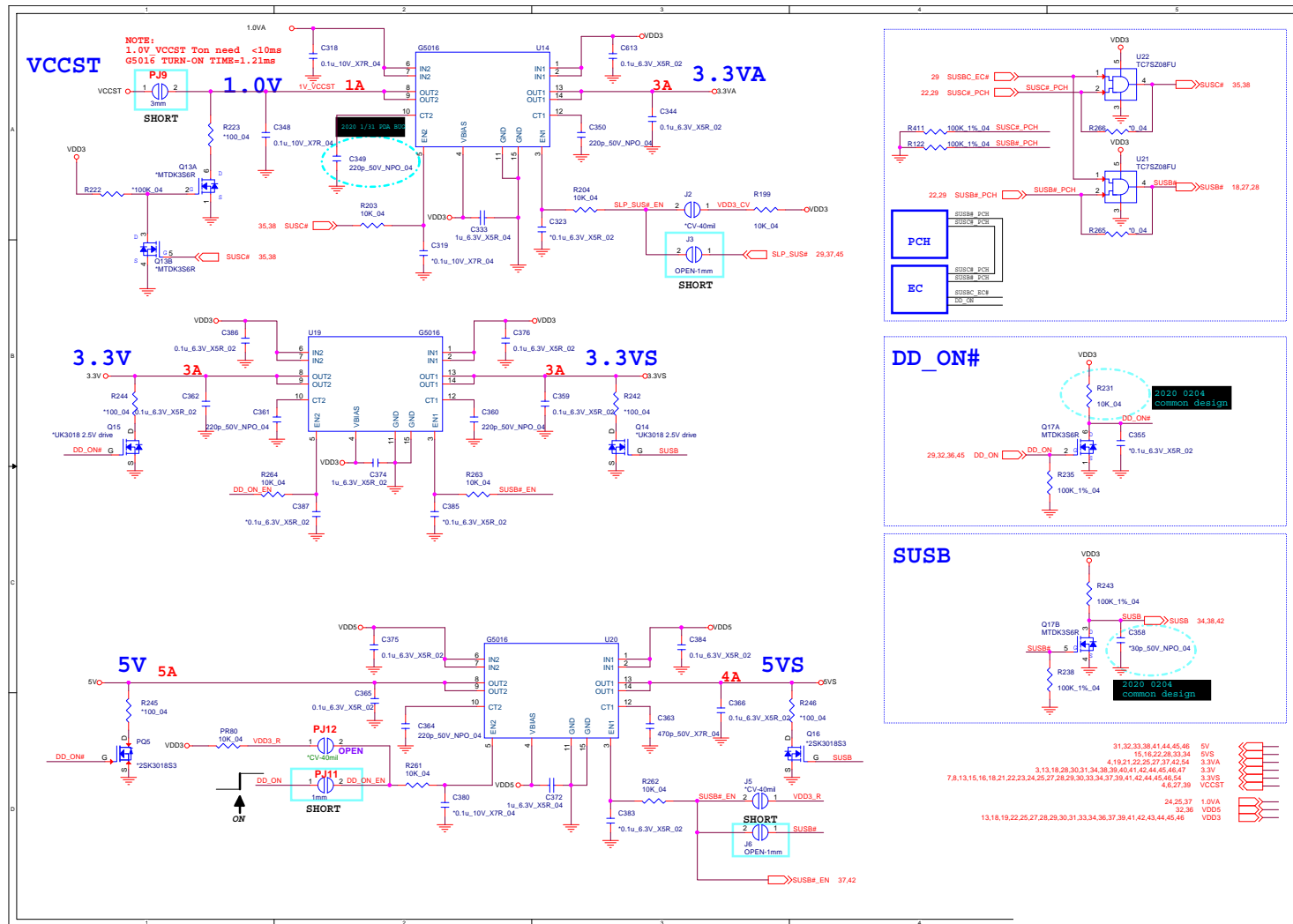
## HDD, CCD, TP, LID, PWR SW

B.Schematic Diagrams

Sheet 33 of 54  
HDD, CCD, TP, LID,  
PWR SW



# 5V, 5VS, 3.3VA, 3.3V, 3VS



Sheet 34 of 54  
5V, 5VS, 3.3VA,  
3.3V, 3VS

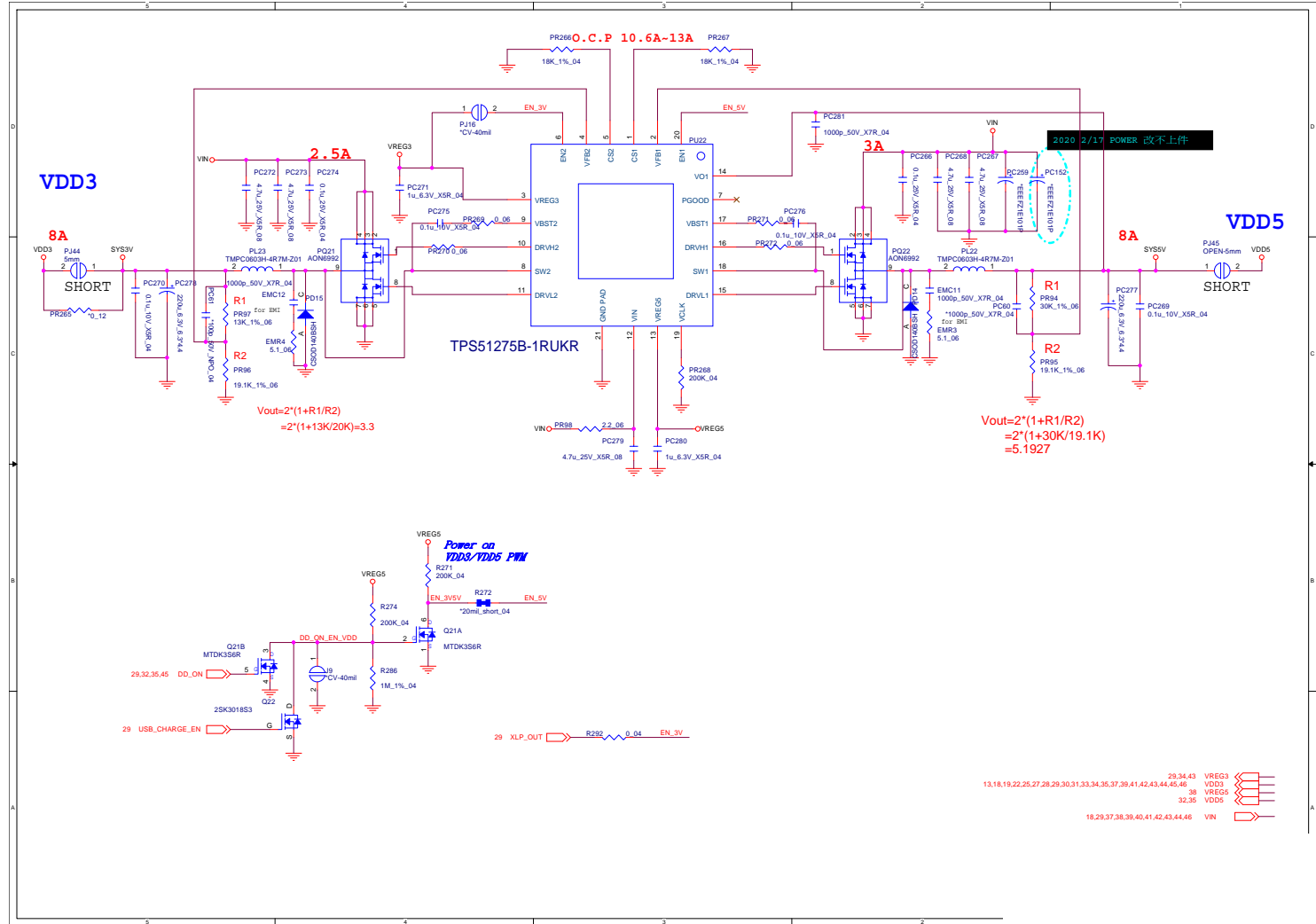
B.Schematic Diagrams

# Schematic Diagrams

## VDD3, VDD5

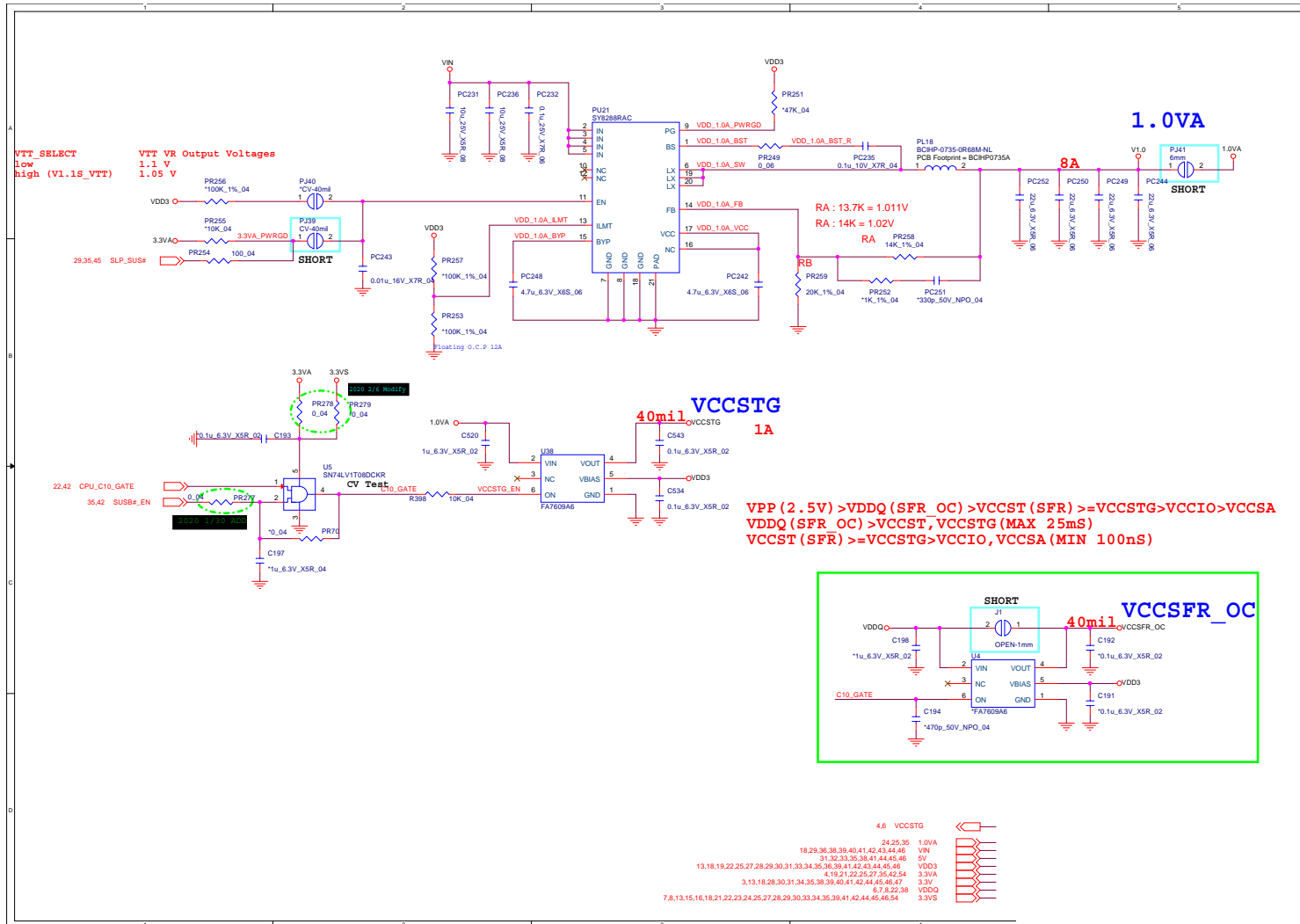
B.Schematic Diagrams

Sheet 35 of 54  
VDD3, VDD5



13,18,19,22,25,27,28,29,30,31,33,34,35,37,39,41,42,43,44,45,46 VDD3  
 38 VREG5  
 32,35 VDD5  
 18,29,37,38,40,41,42,43,44,46 VIN

# 1.05A, VCCST/STG/SFR

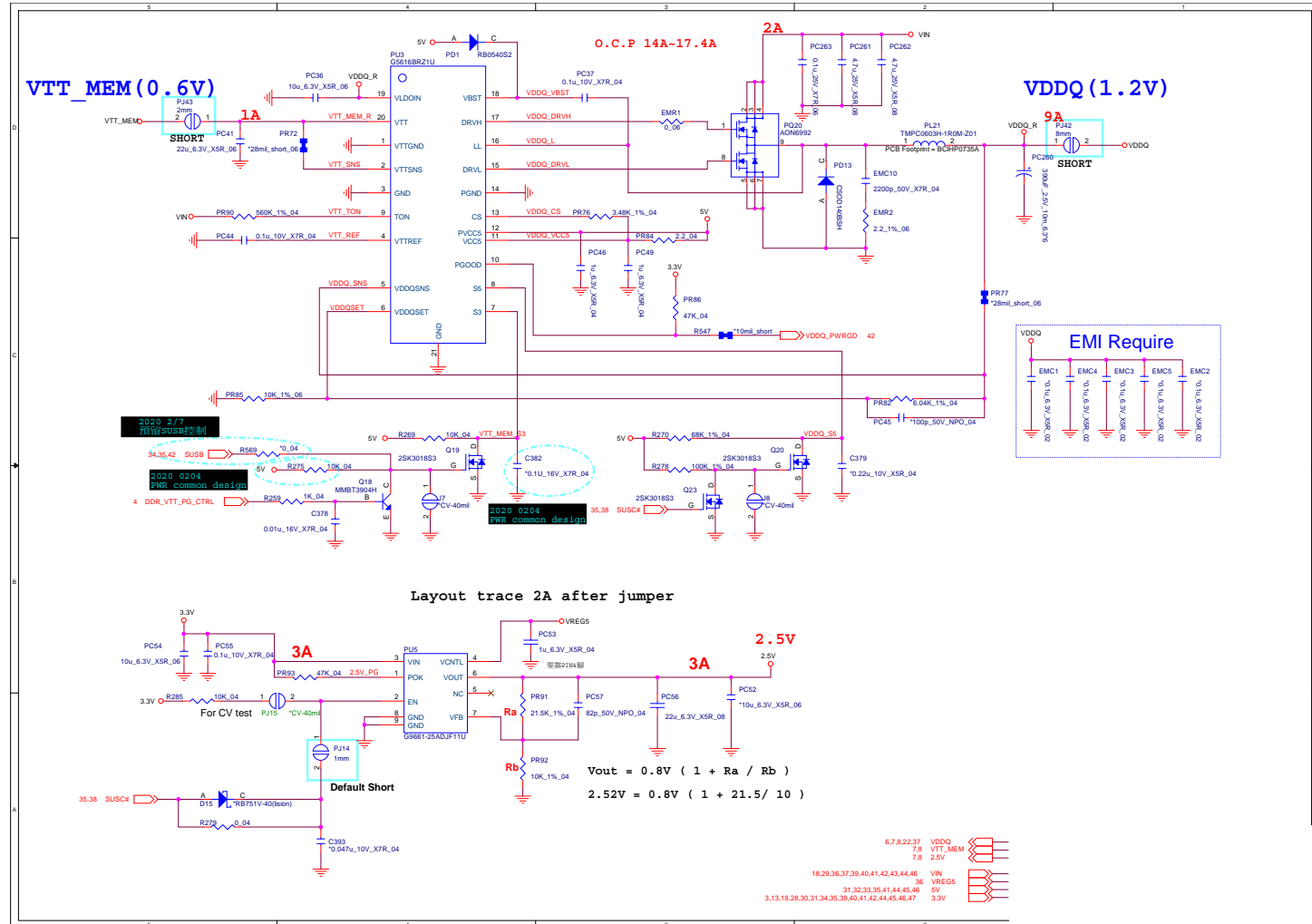


Sheet 36 of 54  
1.05A, VCCST/STG/  
SFR

B.Schematic Diagrams

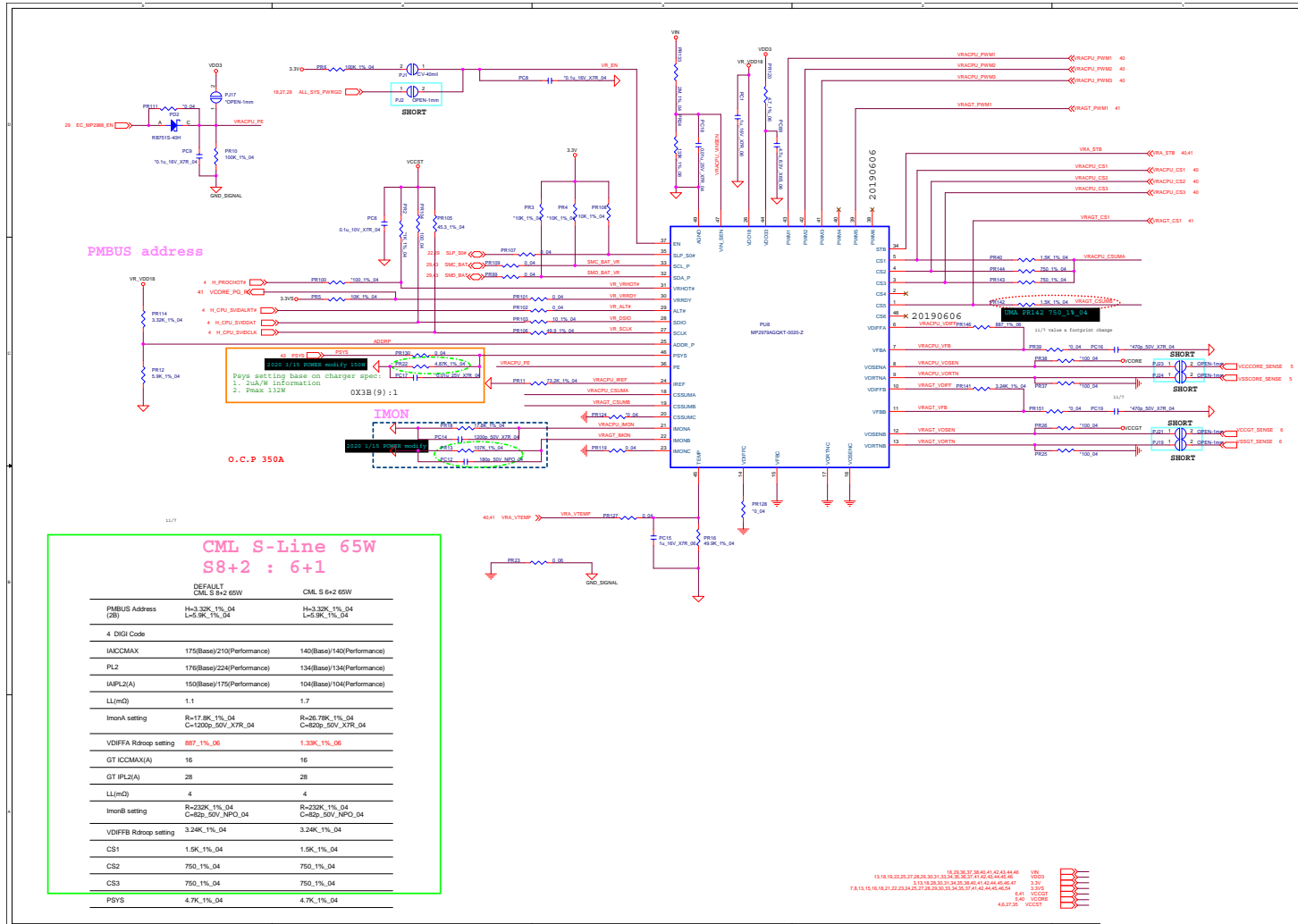
# VDDQ, VTT\_MEM, 2.5V

Sheet 37 of 54  
VDDQ, VTT\_MEM,  
2.5V



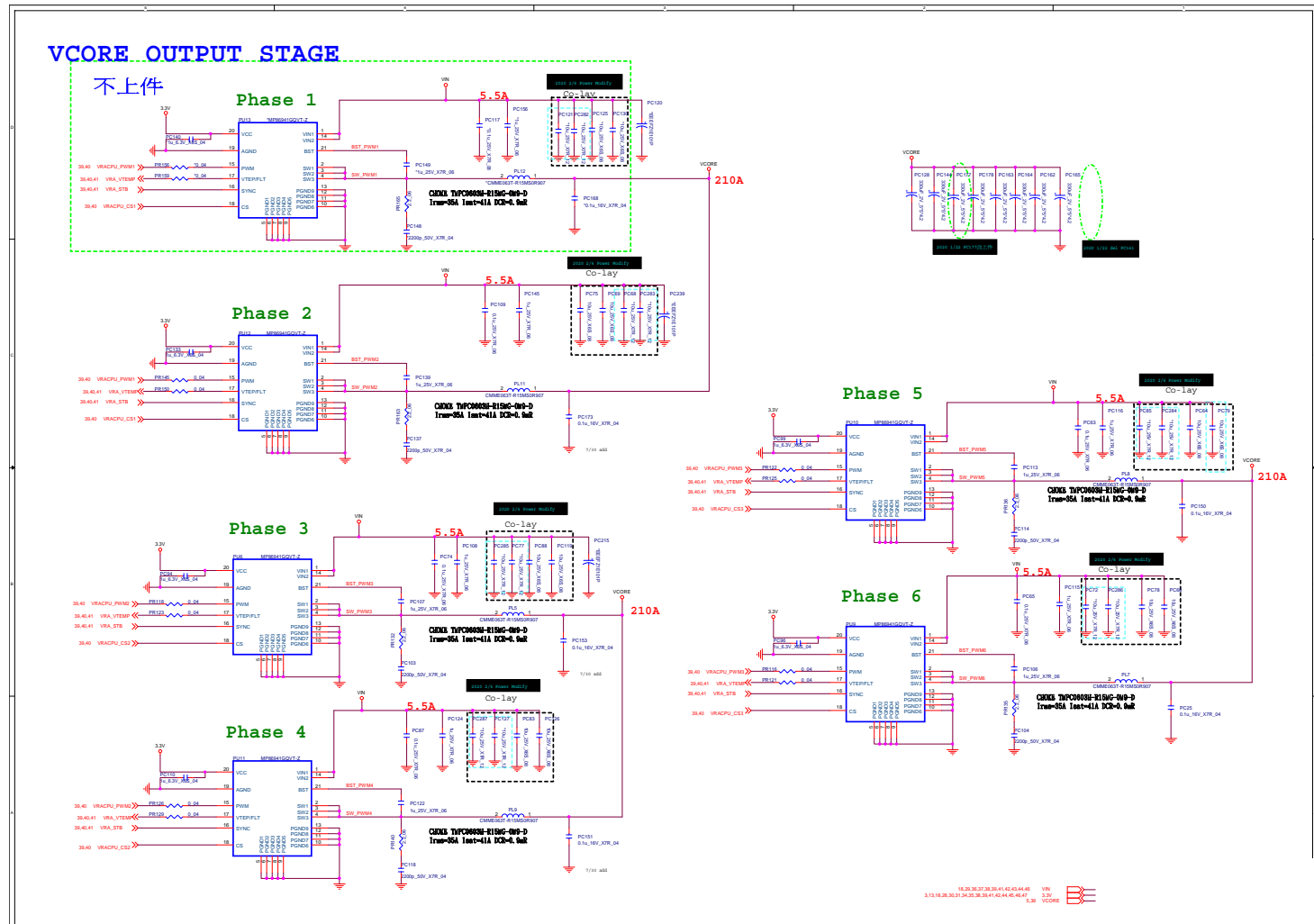


# MP2979



Sheet 38 of 54  
MP2979

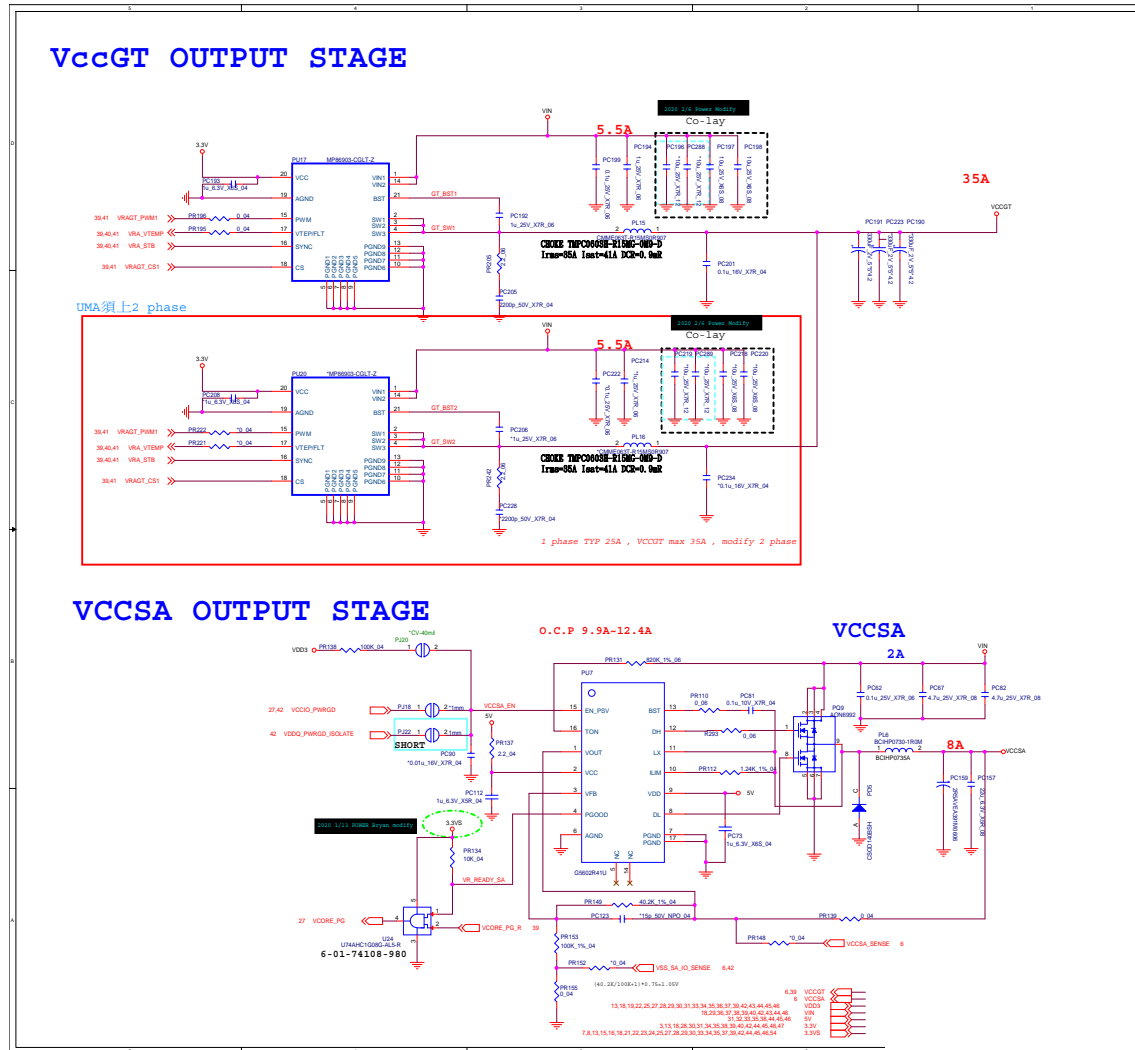
# VCore



Sheet 39 of 54  
VCore

B.Schematic Diagrams

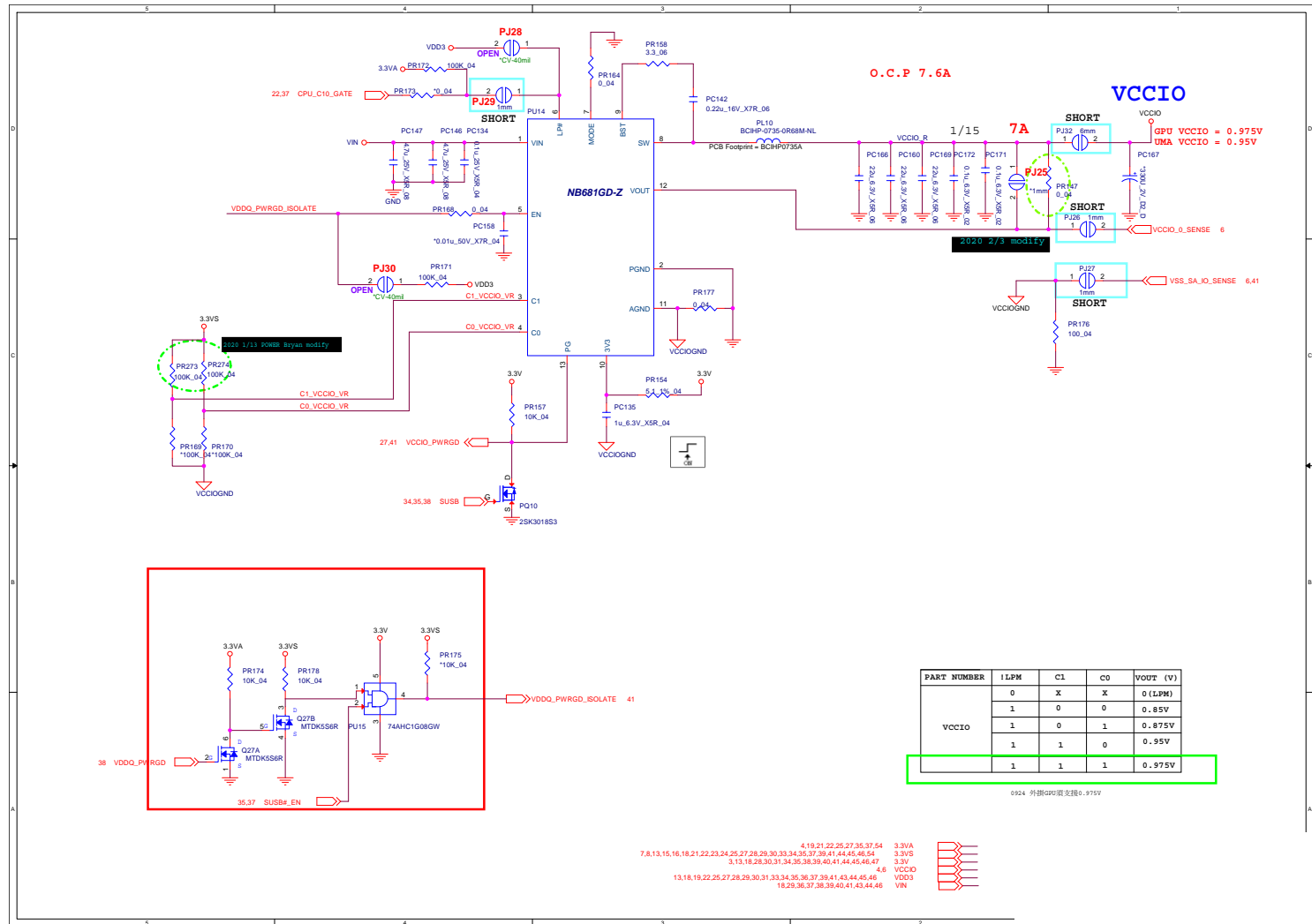
# VCCGT, VCCSA



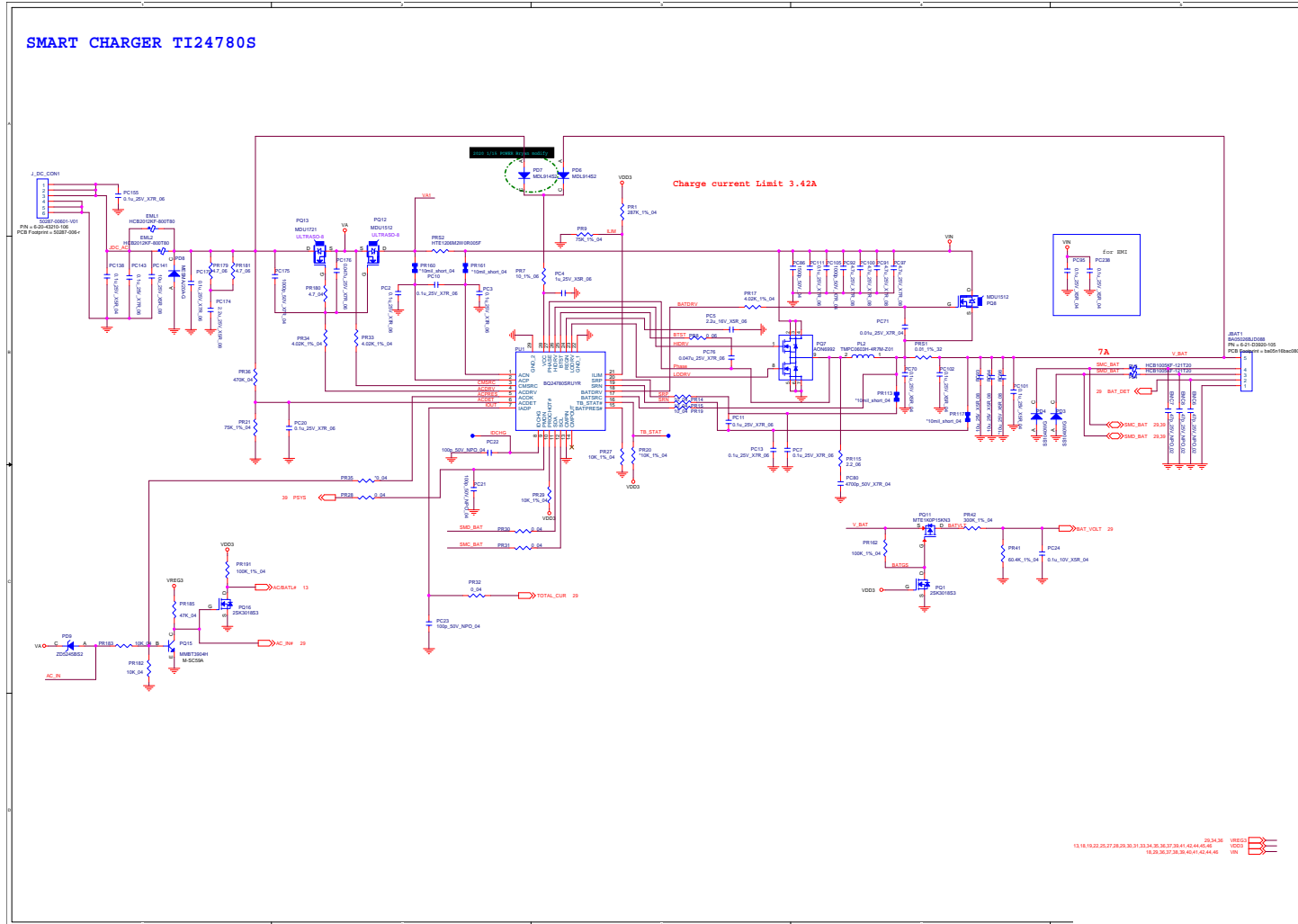
Sheet 40 of 54  
VCCGT, VCCSA

# VCCIO

Sheet 41 of 54  
VCCIO



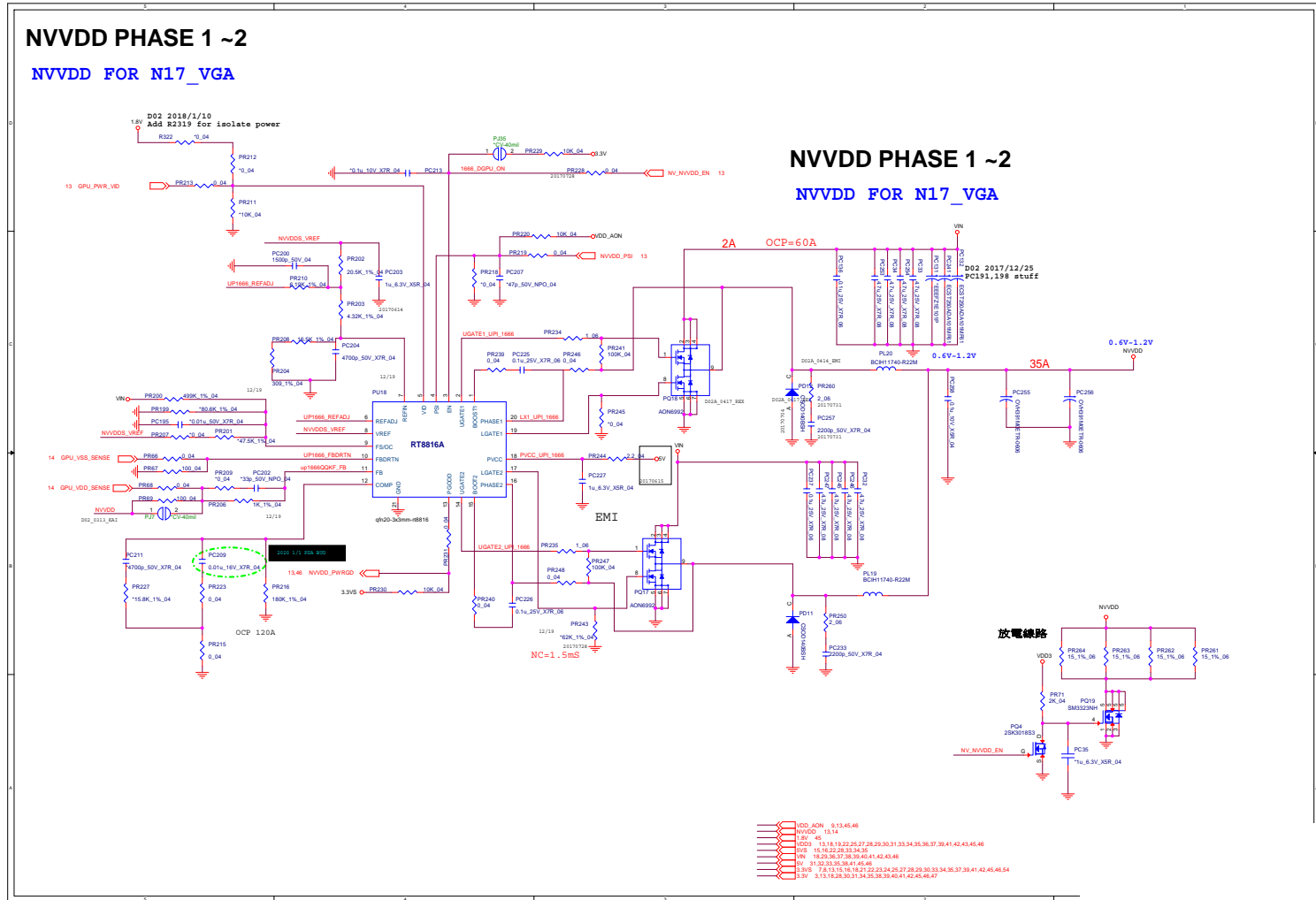
# AC\_In, Charger



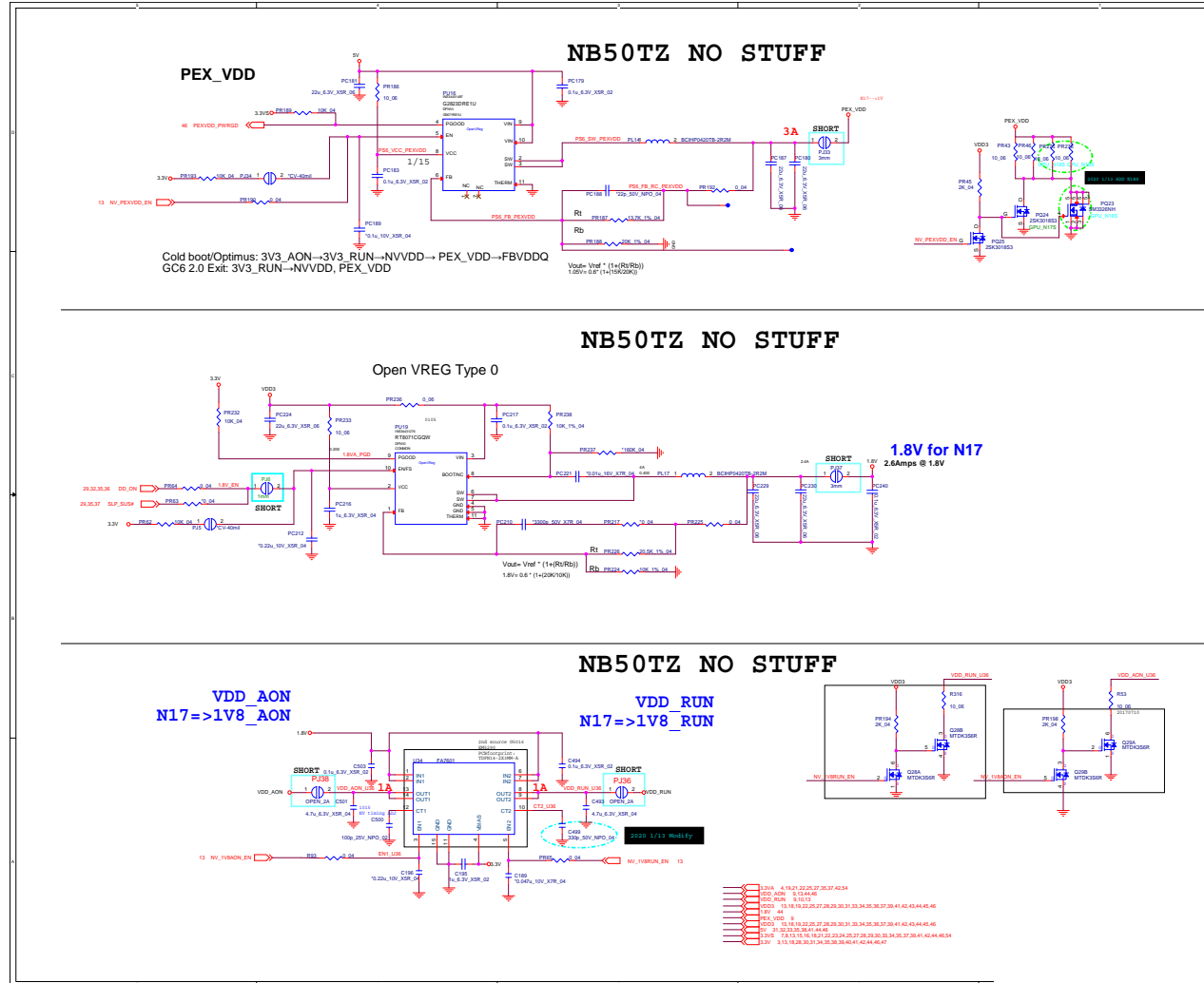
B.Schematic Diagrams

Sheet 42 of 54  
AC\_In, Charger

# NVDD



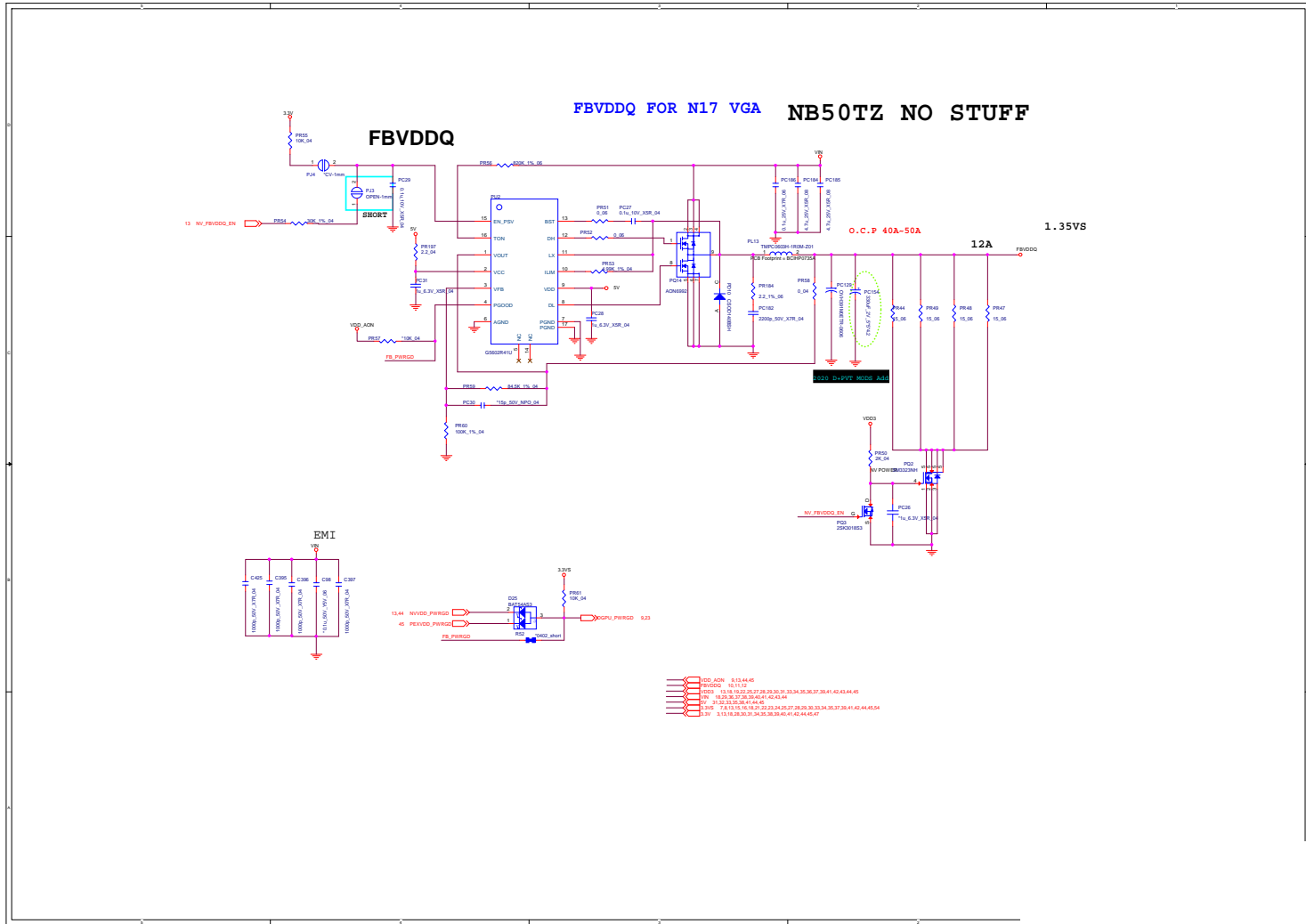
# PEX\_VDD, 1.8V



Sheet 44 of 54  
 PEX\_VDD, 1.8V

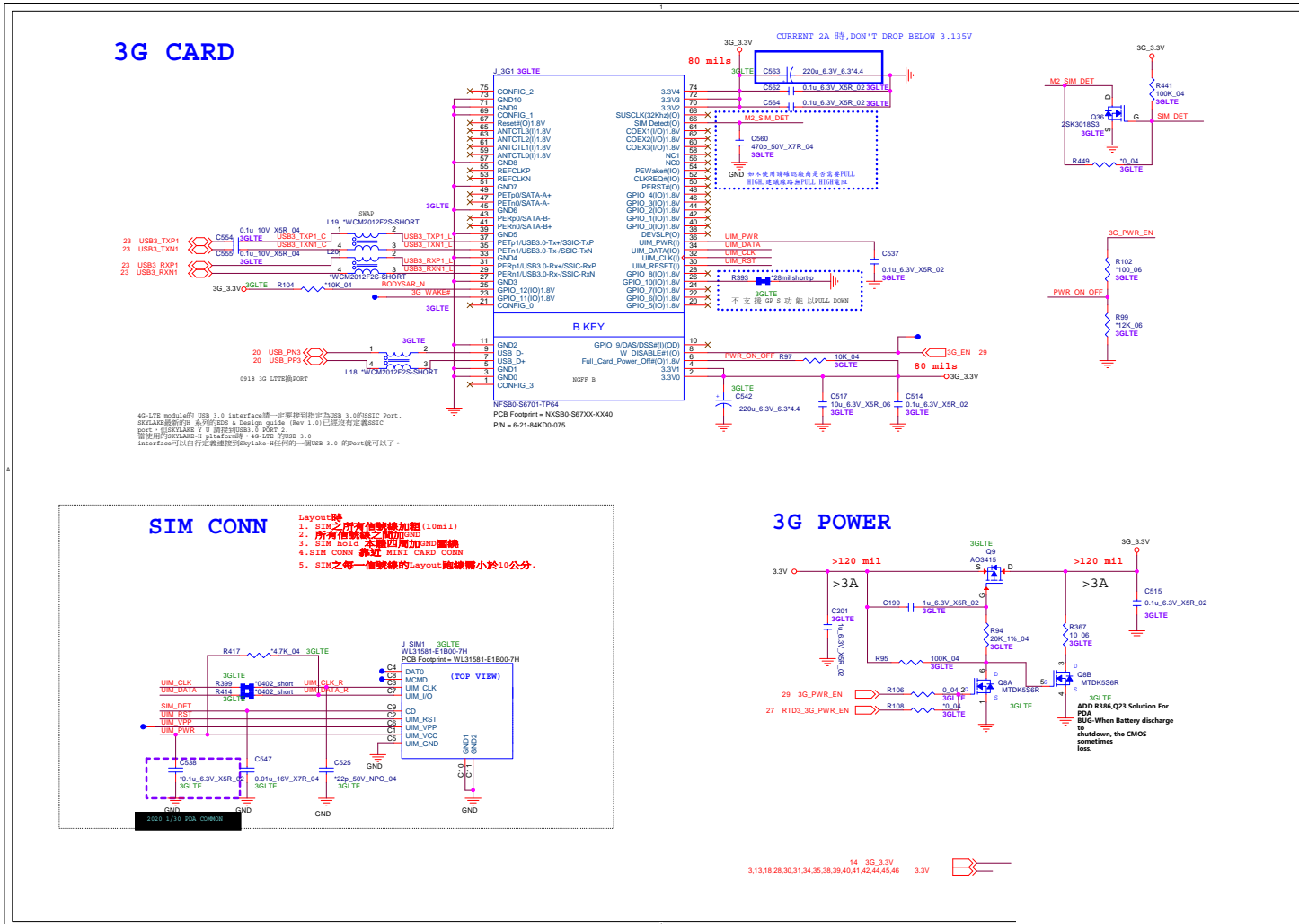
# FBVDDQ

Sheet 45 of 54  
FBVDDQ





# M.2 3G/LTE

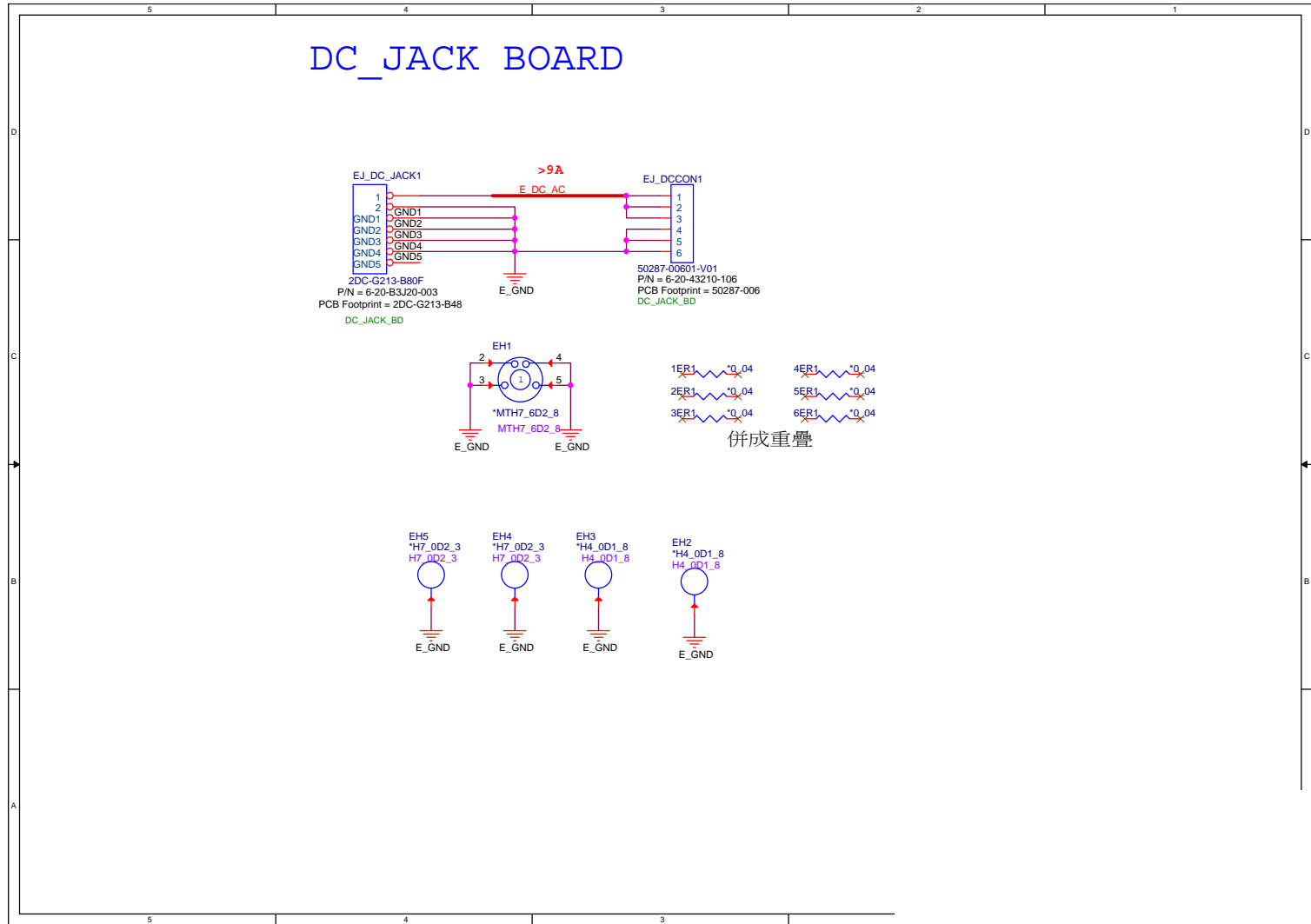


Sheet 46 of 54  
M.2 3G/LTE

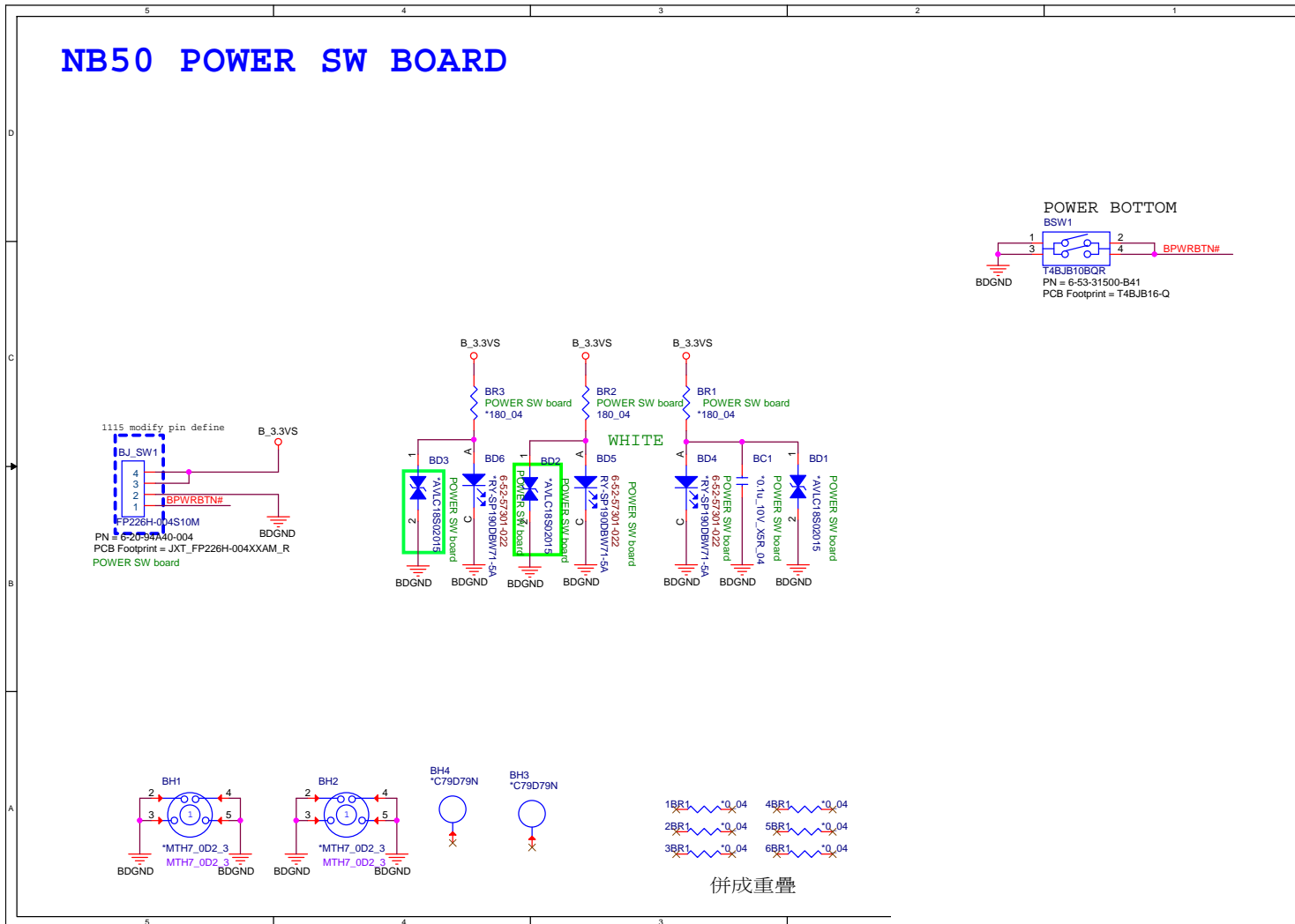
B.Schematic Diagrams

# DC Jack Board

Sheet 47 of 54  
DC Jack Board



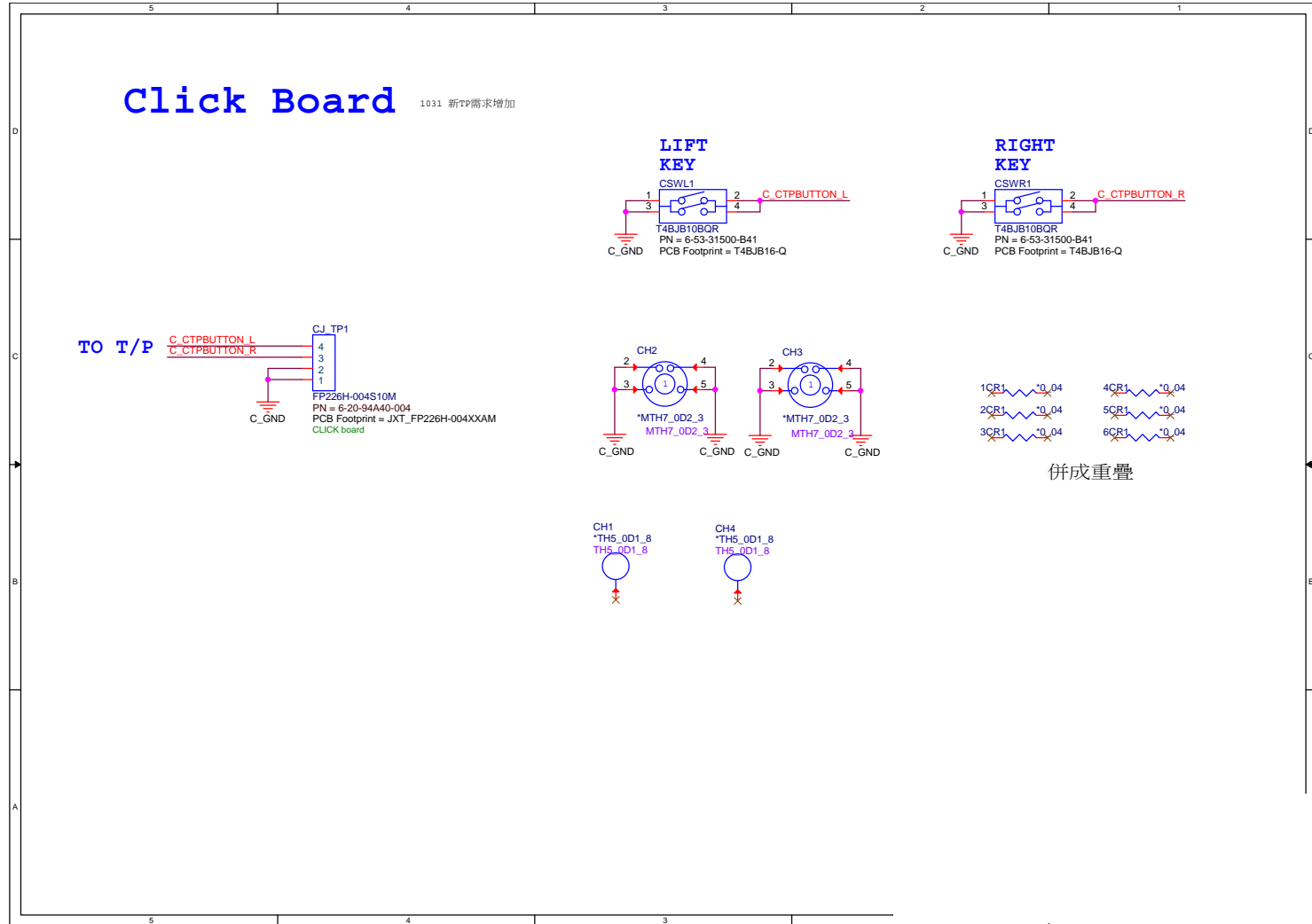
# Power SW Board



Sheet 48 of 54  
 Power SW Board

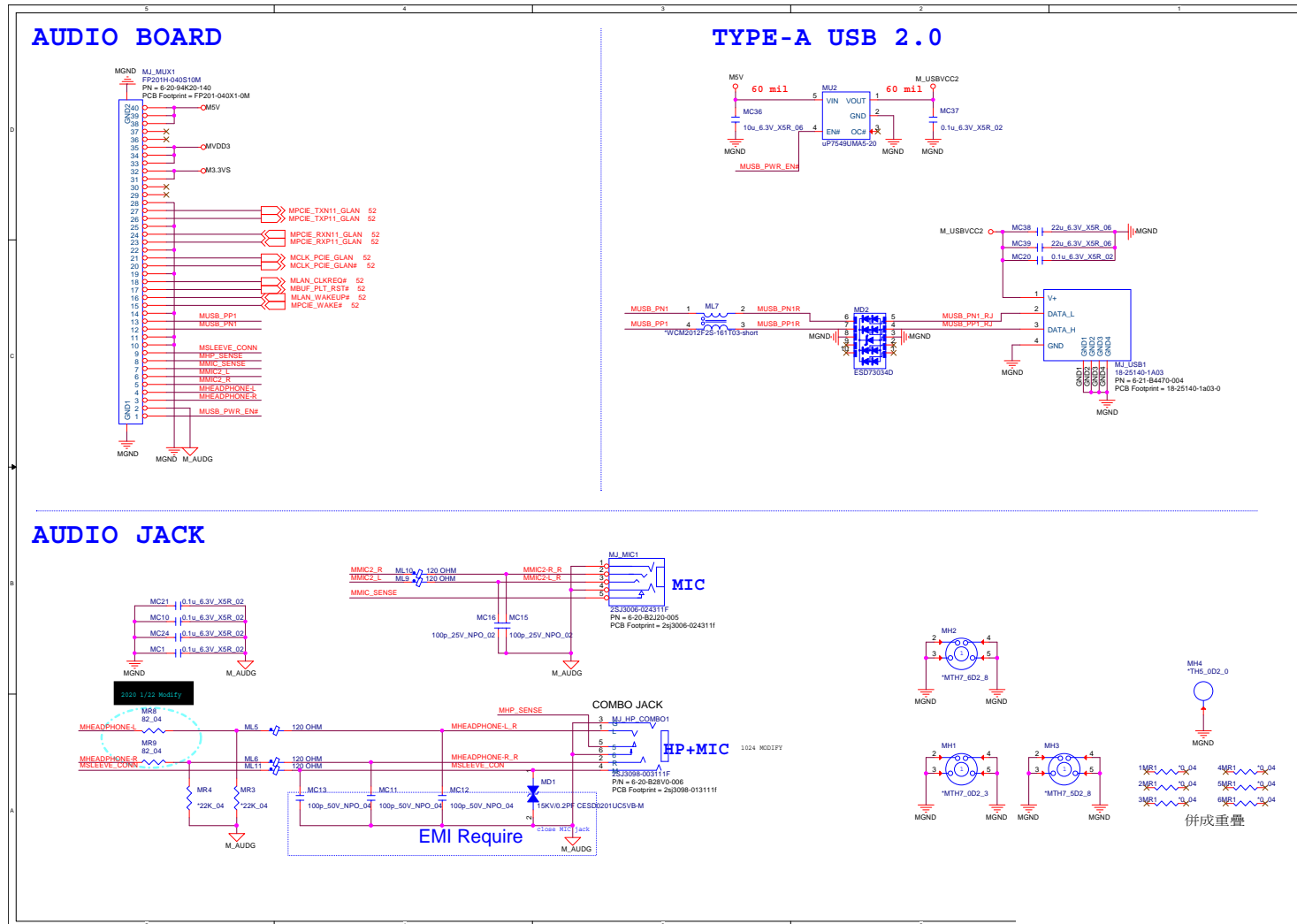
# Click Board

Sheet 49 of 54  
Click Board



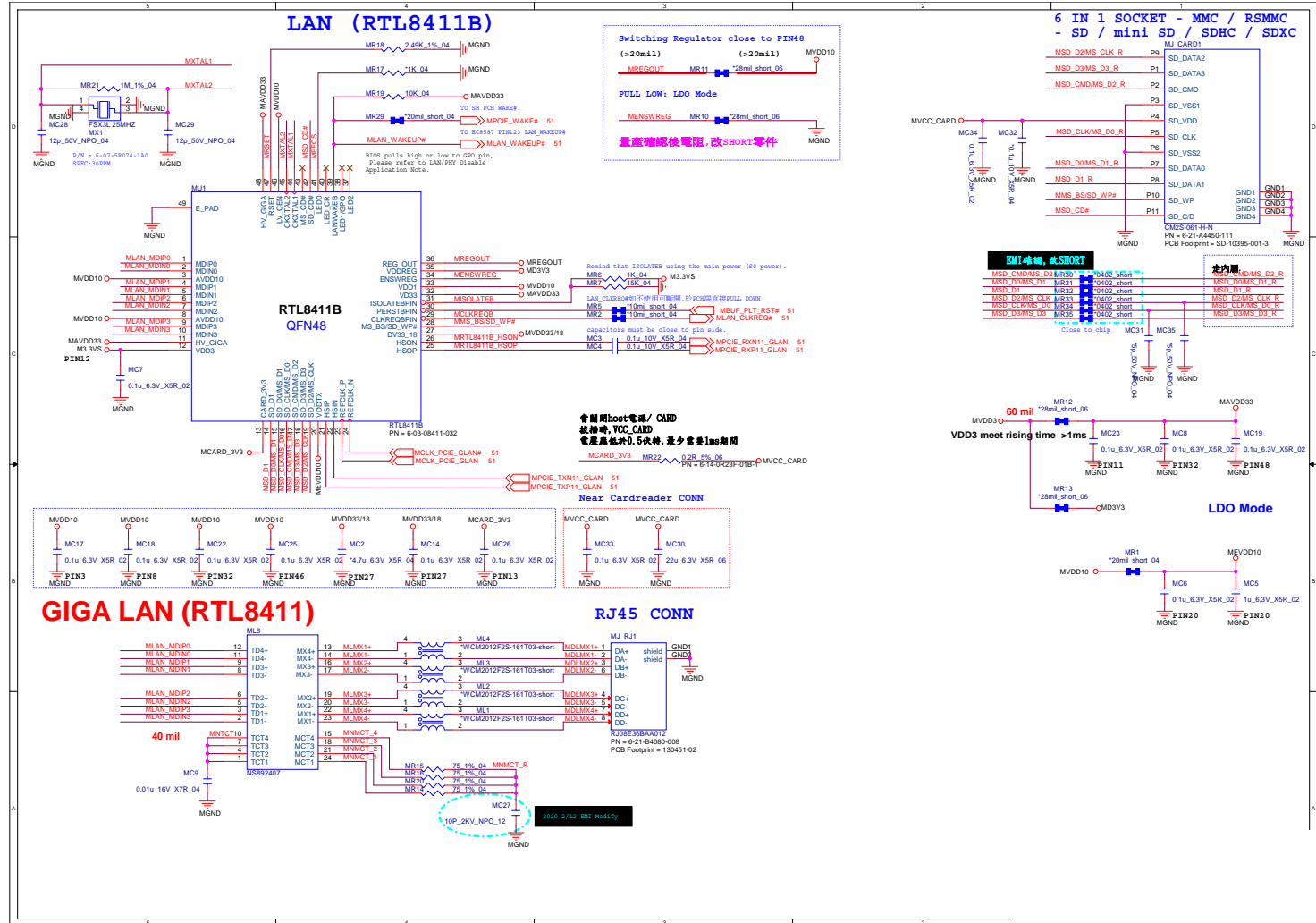
# Multi Board

Sheet 50 of 54  
Multi Board

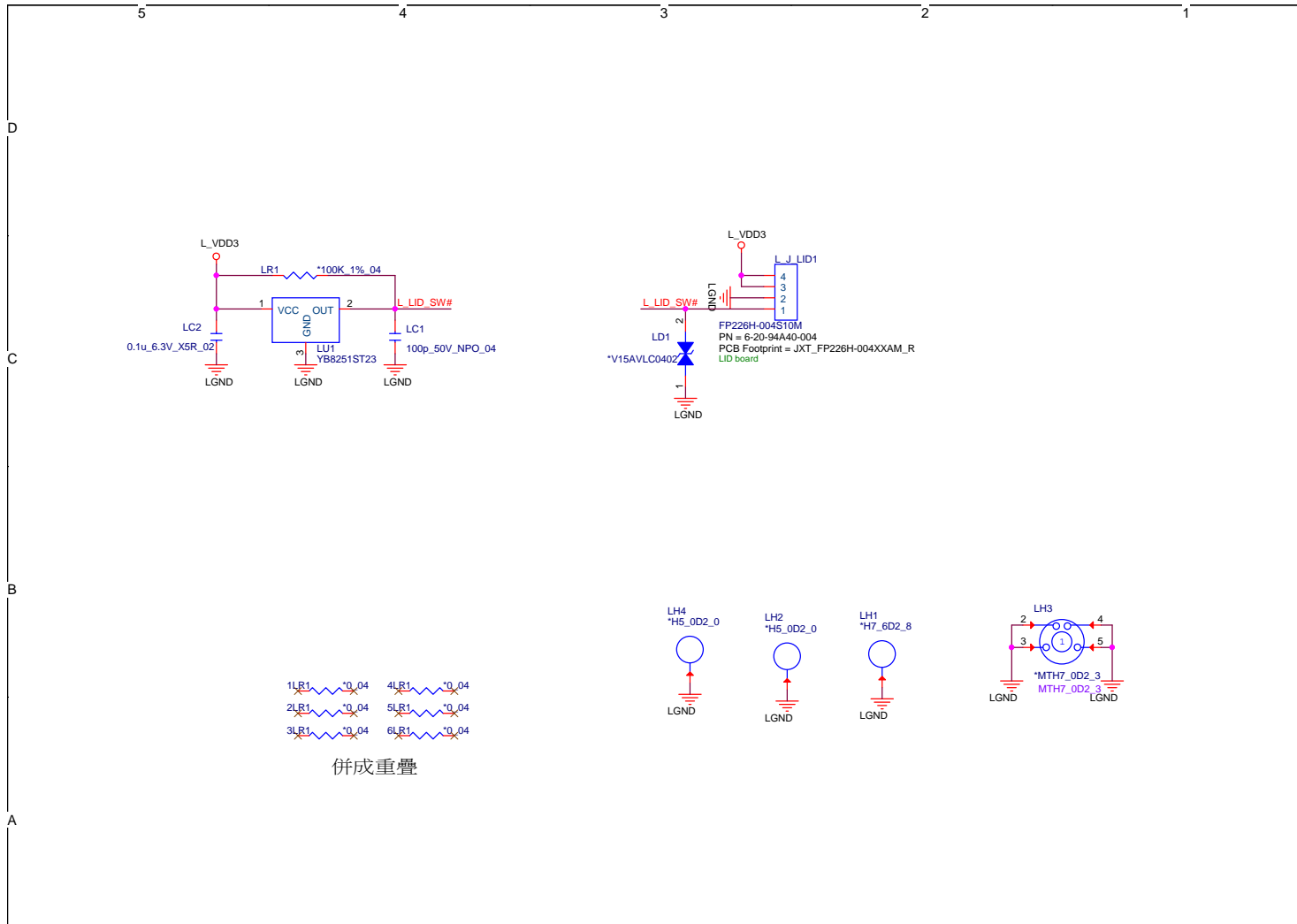


# Multi Board

Sheet 51 of 54  
Multi Board



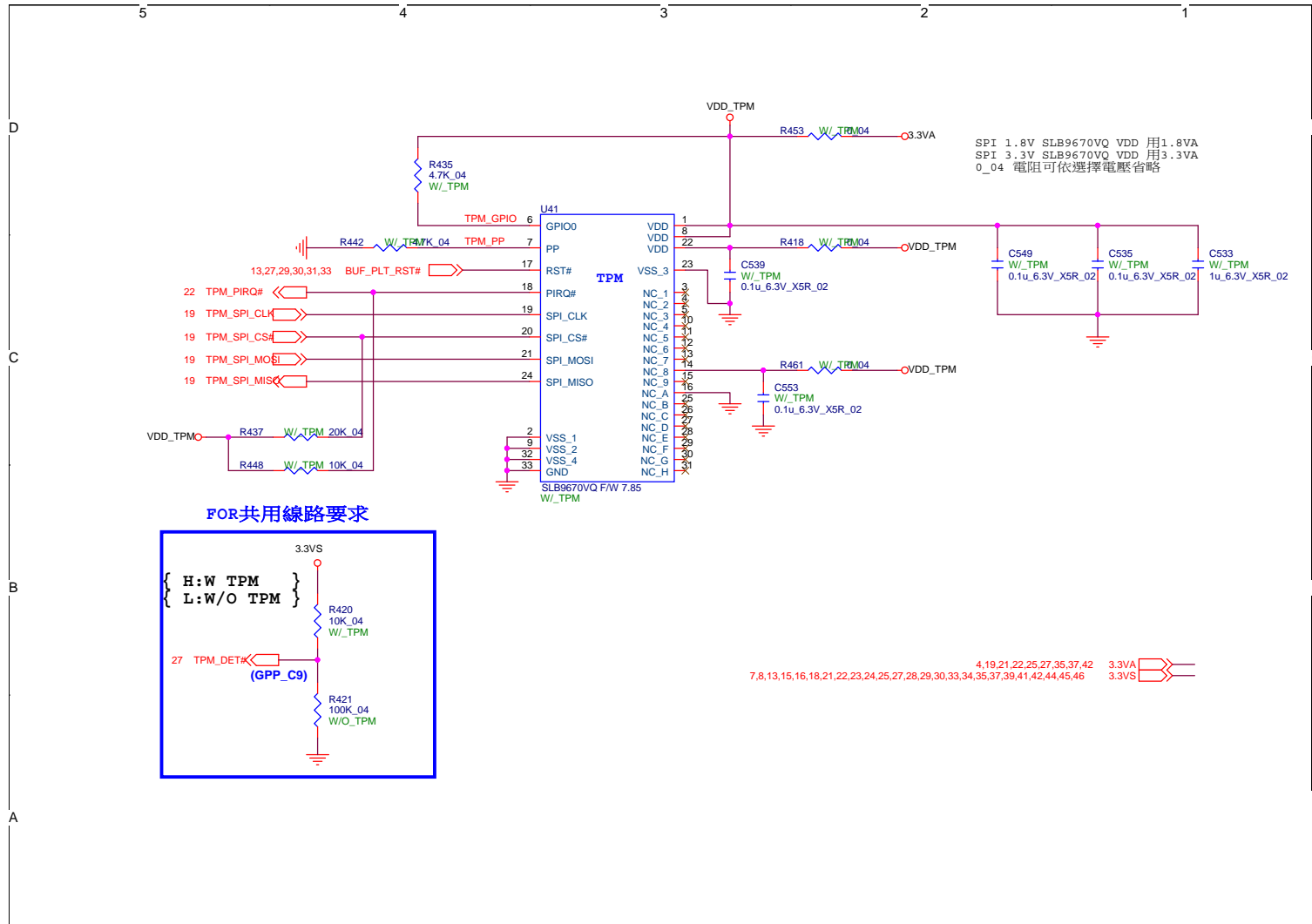
# LID SW Board



Sheet 52 of 54  
LID SW Board

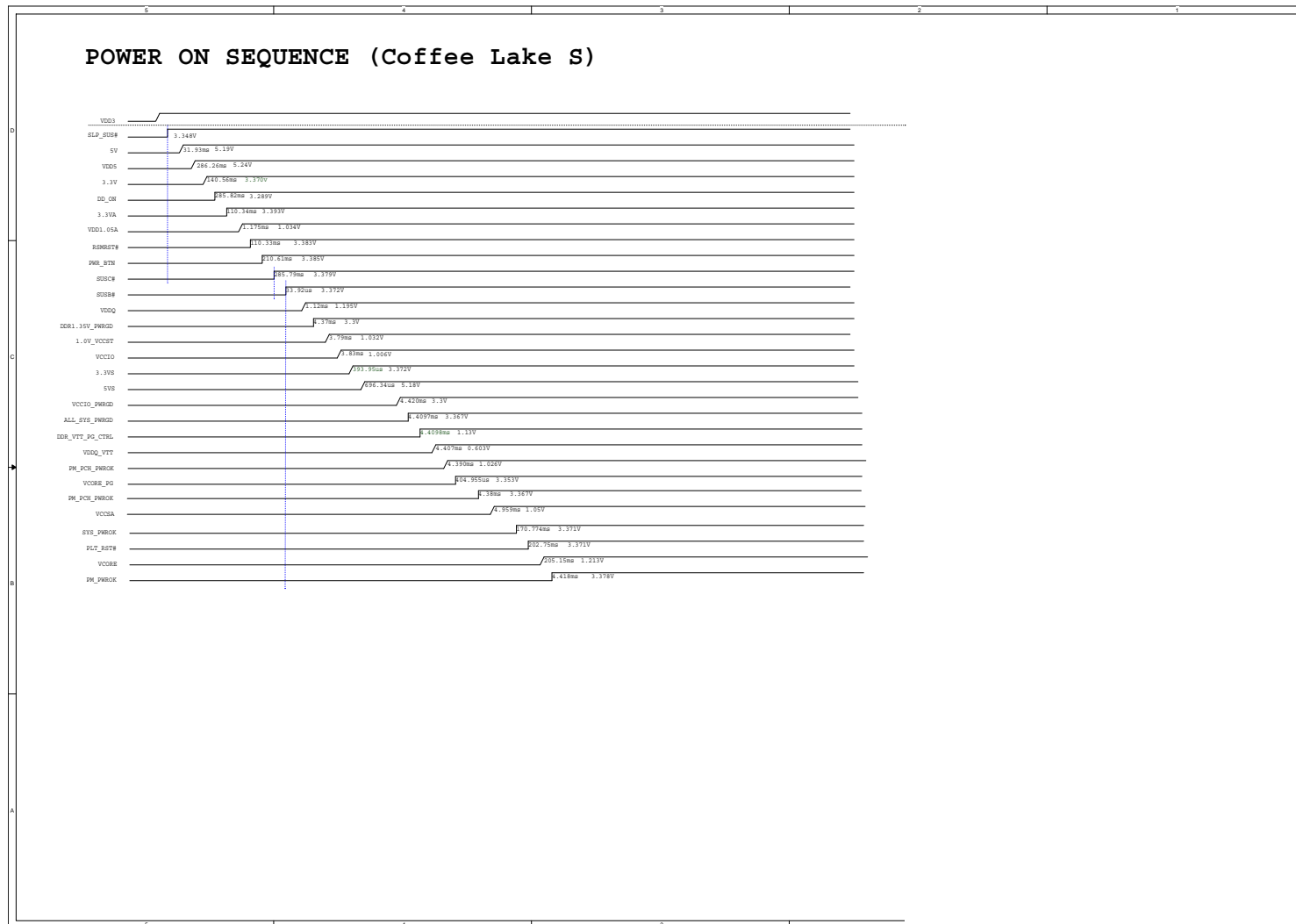
B.Schematic Diagrams

# TPM SLB9670





# Power Sequence



Sheet 54 of 54  
Power Sequence

**Schematic Diagrams**