SERVICE MANUAL

notebook

N550RN

Notebook Computer

N550RN

Service Manual

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Version 1.0
March 2016

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HDMI™
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 ***N550RN*** 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 19V, 4.74A (**90** Watts) minimum AC/DC Adapter.

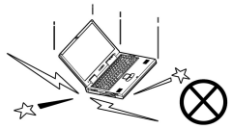
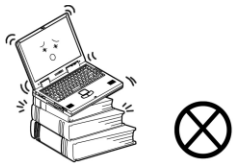
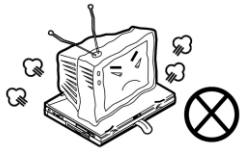
FCC Statement

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.

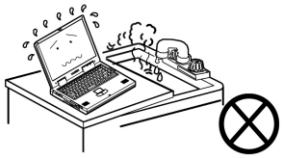
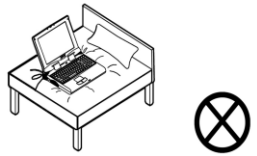
Instructions for Care and Operation

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

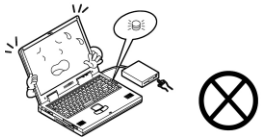
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.

Do not expose the computer to any shock or vibration.	*Do not place it on an unstable surface.*	*Do not place anything heavy on the computer.*
		

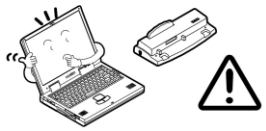
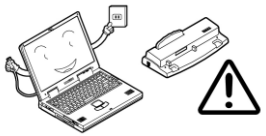
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.

Do not expose it to excessive heat or direct sunlight.	*Do not leave it in a place where foreign matter or moisture may affect the system.*	*Don't use or store the computer in a humid environment.*	*Do not place the computer on any surface which will block the vents.*
			

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

Do not turn off the power until you properly shut down all programs.	*Do not turn off any peripheral devices when the computer is on.*	*Do not disassemble the computer by yourself.*	*Perform routine maintenance on your computer.*
			

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

Use only approved brands of peripherals.	*Unplug the power cord before attaching peripheral devices.*
	

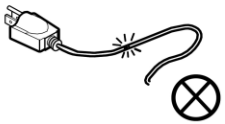
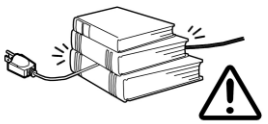
Power Safety

The computer has specific power requirements:

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

Power Safety Warning

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

Do not plug in the power cord if you are wet.	*Do not use the power cord if it is broken.*	*Do not place heavy objects on the power cord.*
		

Battery Precautions

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

Battery Guidelines

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

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

Battery Disposal

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

Caution

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

Battery Level

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

Related Documents

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

User's Manual on CD/DVD

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

System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Insert the battery and make sure it is locked in position.
4. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
5. Attach the AC/DC adapter to the DC-In jack at the rear of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 135 degrees); use the other hand (as illustrated in Figure 1) to support the base of the computer (**Note**: **Never** lift the computer by the lid/LCD).
7. Press the power button to turn the computer "on".

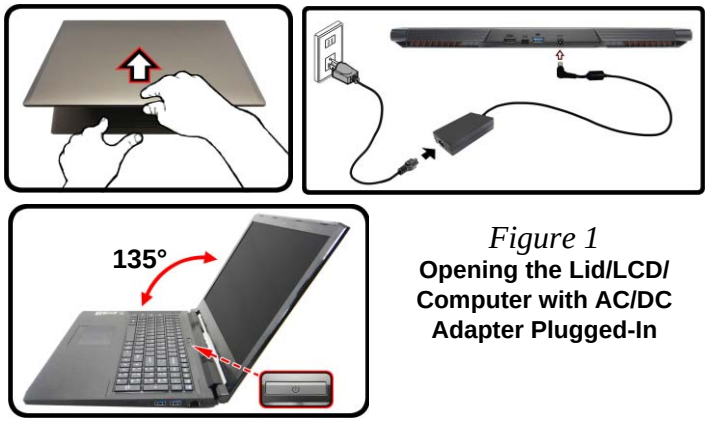
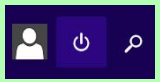


Figure 1
Opening the Lid/LCD/ Computer with AC/DC Adapter Plugged-In

Shut Down

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

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



Or

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

Contents

Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the ***N550RN*** series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in the *User's Manual*. The manual is shipped with the computer.

Operating systems (e.g. *Windows 8.1*, etc.) have their own manuals as do application softwares (e.g. word processing and database programs). If you have questions about those programs, you should consult those manuals.

The ***N550RN*** series notebook is designed to be upgradeable. See ***Disassembly on page 2 - 1*** for a detailed description of the upgrade procedures for each specific component. Please take note of the warning and safety information indicated by the "  " symbol.

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

Specifications

Latest Specification Information

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

CPU

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

Processor Options

Intel® Core™ i7 Processor
i7-6700HQ (2.60GHz)
8MB Smart Cache, **14nm**, DDR3L-1600MHz, TDP 45W
Intel® Core™ i5 Processor
i5-6440HQ (2.60GHz)/i5-6300HQ (2.30GHz)
6MB Smart Cache, **14nm**, DDR3L-1600MHz, TDP 45W
Intel® Core™ i3 Processor
i3-6100H (2.70GHz)
3MB Smart Cache, **14nm**, DDR3L-1600MHz, TDP 35W

Core Logic

Intel® HM170 Chipset

BIOS

64Mb SPI Flash ROM
AMI BIOS

Memory

Two 204 Pin SO-DIMM Sockets Supporting **DDR3L 1600MHz** Memory
Memory Expandable up to 16GB

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

LCD Options

15.6" (39.62cm), 16:9, HD (1366x768)/ FHD (1920x1080)

Video Adapter

Intel® Integrated GPU and NVIDIA® Discrete GPU

Supports Microsoft Hybrid Graphics

Intel Integrated GPU
Intel® HD Graphics 530
Dynamic Frequency
Intel Dynamic Video Memory Technology
Microsoft DirectX®12 Compatible

NVIDIA® Discrete GPU
NVIDIA® GeForce 940MX
2GB GDDR5 Video RAM on board
Microsoft DirectX® 12 Compatible

Storage

One Changeable 2.5" 7.0mm (h) SATA3 HDD/SSD
(**Factory Option**) Two **SATA** M.2 2280 SSDs supporting RAID level 0/1
Or
(**Factory Option**) One **PCIe Gen3 x4** M.2 2280 SSD

Audio

High Definition Audio Compliant Interface
2 * Built-In Speakers
Built-In Array Microphone
Sound Blaster™ Cinema 2

Security

Security (Kensington® Type) Lock Slot
BIOS Password
(**Factory Option**) TPM v2.0
Intel PTT for systems without hardware TPM

Keyboard

Full-size “WinKey” keyboard (with numeric keypad)

(**Factory Option**) Full-size “WinKey” **Illuminated White-LED** Keyboard (with numeric keypad)

Pointing Device

Built-in Touchpad

Interface

Three USB 3.0 Ports
One USB 2.0 Port
One Mini DisplayPort 1.2
One HDMI-Out Port
One External Monitor Port
One Headphone-Out Jack
One Microphone-In Jack
One S/PDIF Out Jack
One RJ-45 LAN Jack
One DC-in Jack

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 **SATA SSD**
Or
(**Factory Option**) Slot 3 for **3G/4G** Module

Communication

Built-In Gigabit Ethernet LAN
1.0M HD PC Camera Module
(**Factory Option**) 2.0M FHD PC Camera Module
(**Factory Option**) M.2 **3G** or **4G** Module

WLAN/ Bluetooth M.2 Modules:

(**Factory Option**) Intel® Wireless-AC 8260 Wireless LAN (**802.11ac**) + Bluetooth **4.1**
(**Factory Option**) Intel® Wireless-AC 3165 Wireless LAN (**802.11ac**) + Bluetooth **4.0**
(**Factory Option**) Intel® Wireless-N 7265 Wireless LAN (**802.11b/g/n**) + Bluetooth **4.0**
(**Factory Option**) Third-Party Wireless LAN (**802.11b/g/n**) + Bluetooth **4.0**

Environmental Spec

Temperature
Operating: 5°C - 35°C
Non-Operating: -20°C - 60°C
Relative Humidity
Operating: 20% - 80%
Non-Operating: 10% - 90%

Power

Full Range AC/DC Adapter
AC Input: 100 - 240V, 50 - 60Hz
DC Output: 19V, 4.74A (**90W**)

Built-in 3 Cell Prismatic Battery Pack, 48WH

Dimensions & Weight

385mm (w) * 269mm (d) * 23.9mm (h)
2.3kg (Barebone with 48WH Battery)

External Locator - Top View with LCD Panel Open

Figure 1
Top View

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

External Locator - Front & Right Side Views

FRONT VIEW

Figure 2
Front View

1. LED Indicator

RIGHT SIDE VIEW

Figure 3
Right Side View

1. Multi-in-1 Card Reader
2. USB 3.0 Ports
3. RJ-45 LAN Jack

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. Security Lock Slot
2. External Monitor Port
3. Headphone-Out Jack
4. Microphone-In Jack
5. S/PDIF-Out Jack
6. USB 2.0 Port
7. USIM Card Reader (for 3G/4G USIM Cards)

LEFT SIDE VIEW

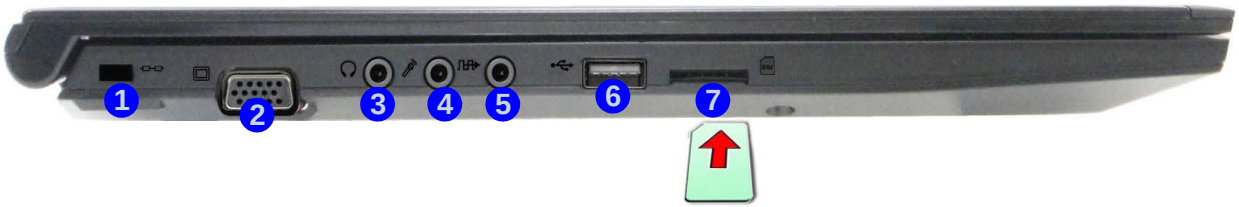


Figure 5
Rear View

1. Vent
2. HDMI-Out Port
3. Mini Display Port
4. USB 3.0 Port
5. DC-In Jack

REAR VIEW

External Locator - Bottom View

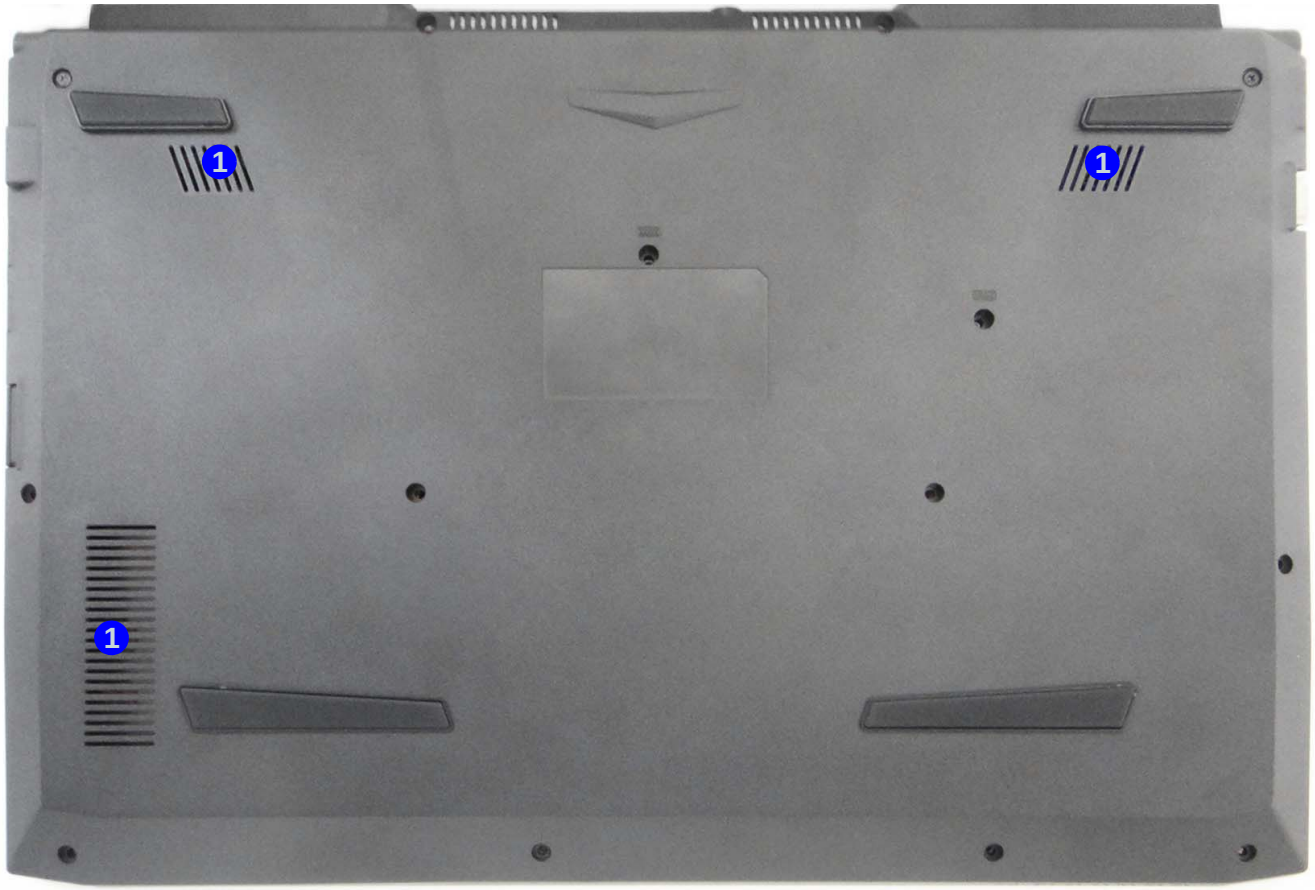


Figure 6
Bottom View

1. Vent

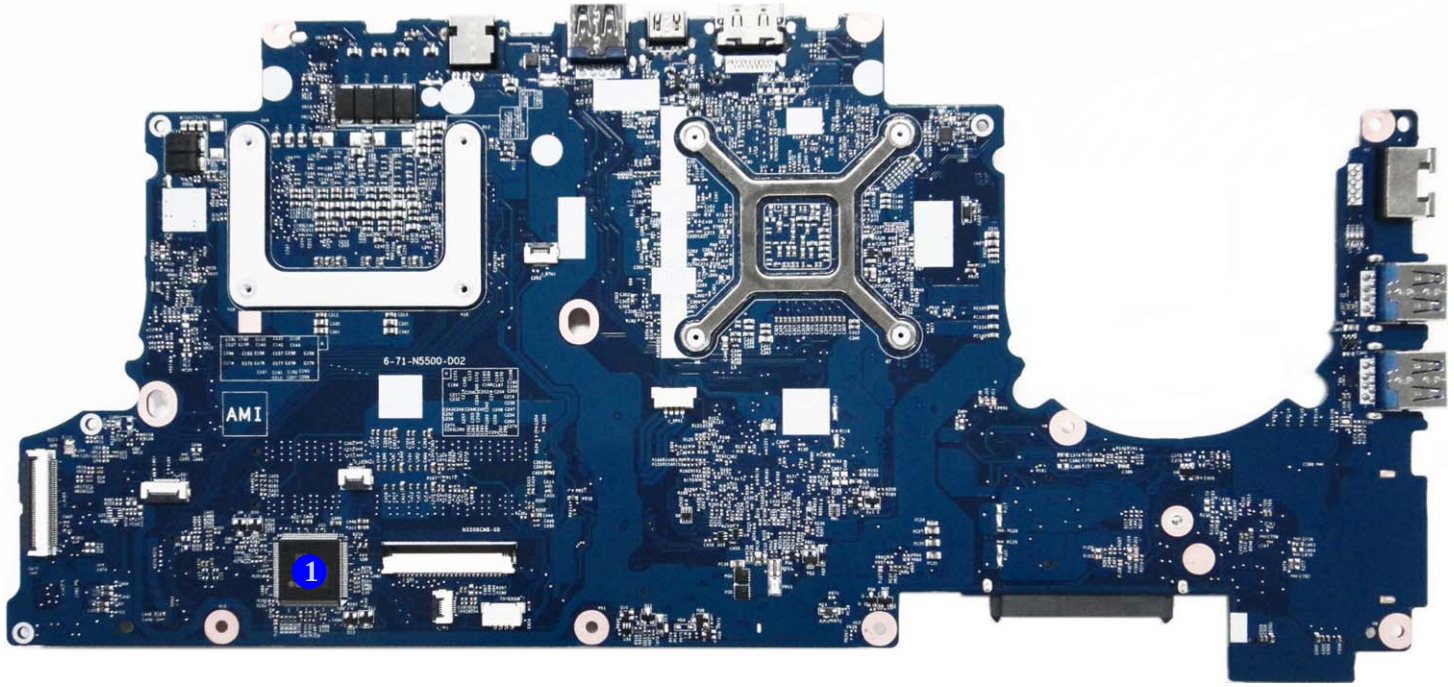
Overheating

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

Mainboard Overview - Top (Key Parts)

Figure 7
Mainboard Top Key Parts

1. KBC-ITE IT8587



Mainboard Overview - Bottom (Key Parts)

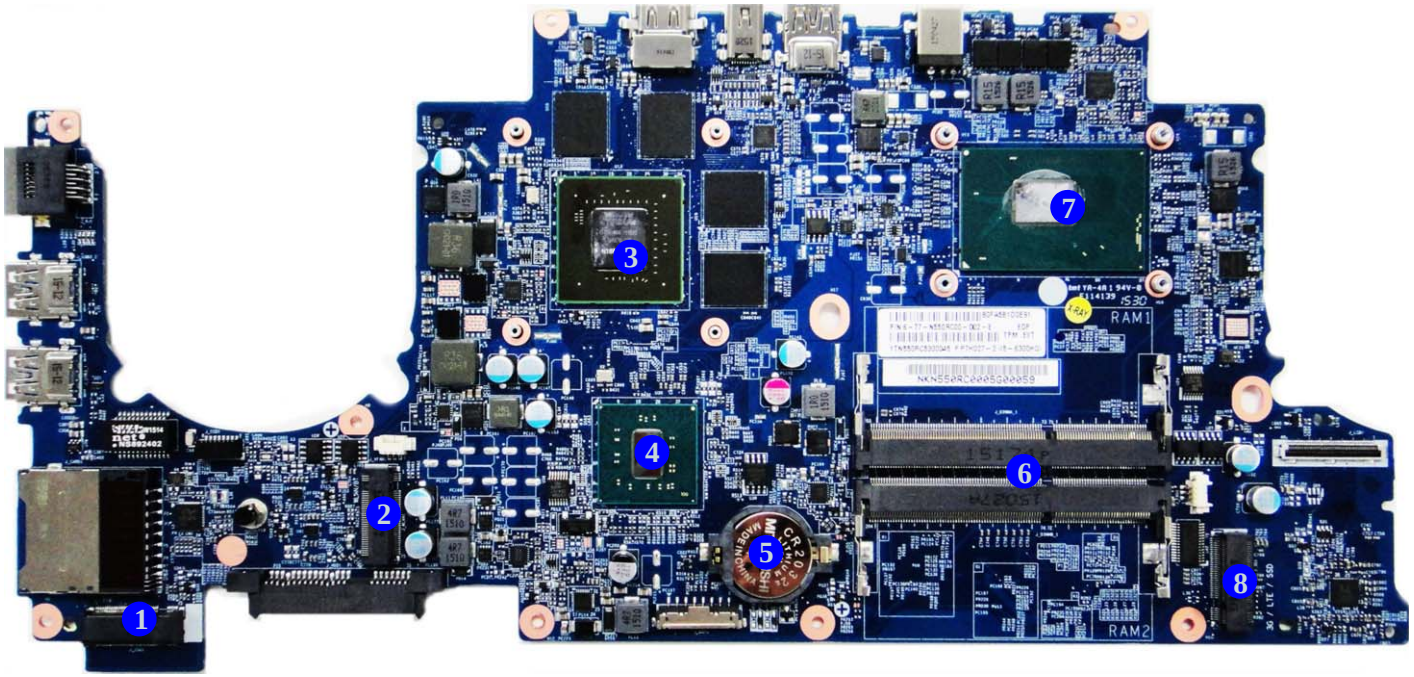


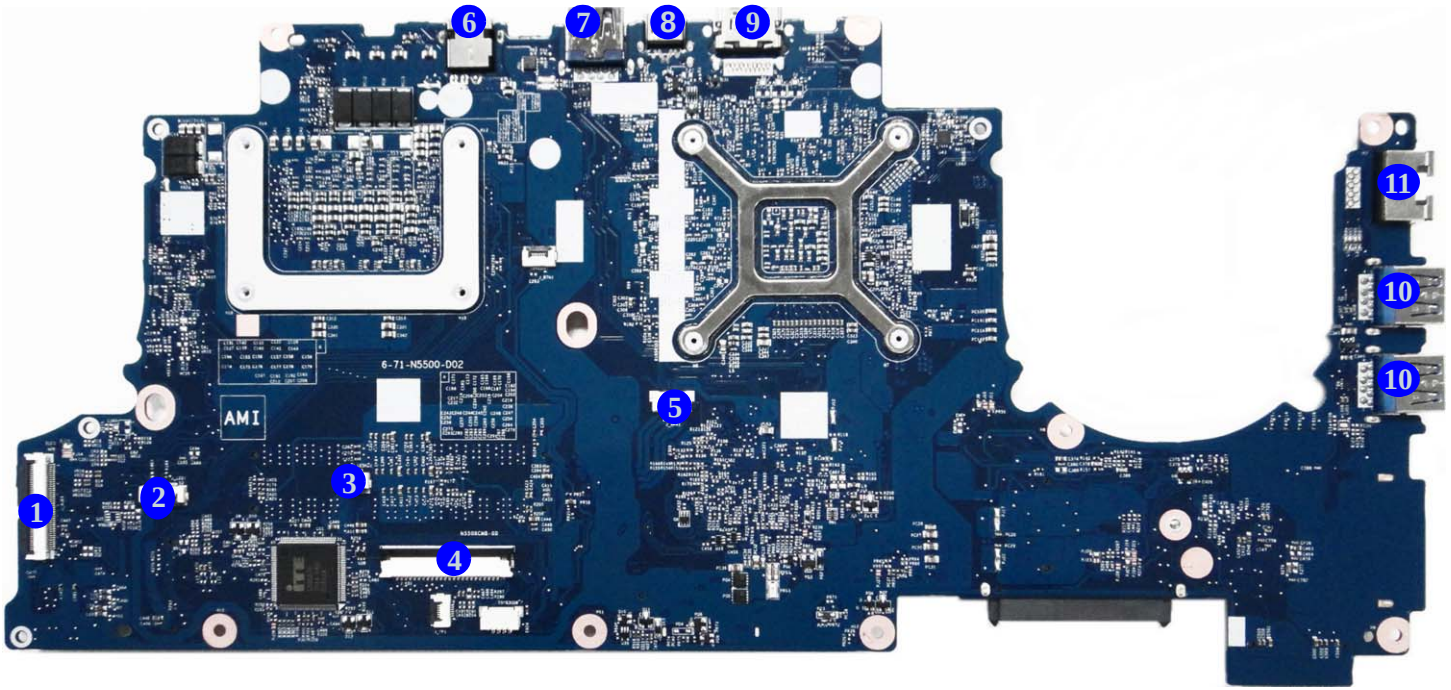
Figure 8
Mainboard Bottom Key Parts

1. M.2-Card Connector (SSD Module)
2. Mini-Card Connector (WLAN Module)
3. GPU-GTX965M
4.
5. CMOS Battery
6. Memory Slots DDR3L SO-DIMM
7. CPU
8. Mini-Card Connector (3G/ SATA Module)

Mainboard Overview - Top (Connectors)

Figure 9
Mainboard Top Connectors

1.
2. Connector
3.
4. Keyboard Cable Connector
5. FAn Cable COnnector
6. DC-In Jack
7. USB Port 3.0 Connector
8. Mini Display Port
9. HDMI-Out Port
10. USB Port 3.0 Connector
11. RJ-45 LAN Jack



Mainboard Overview - Bottom (Connectors)

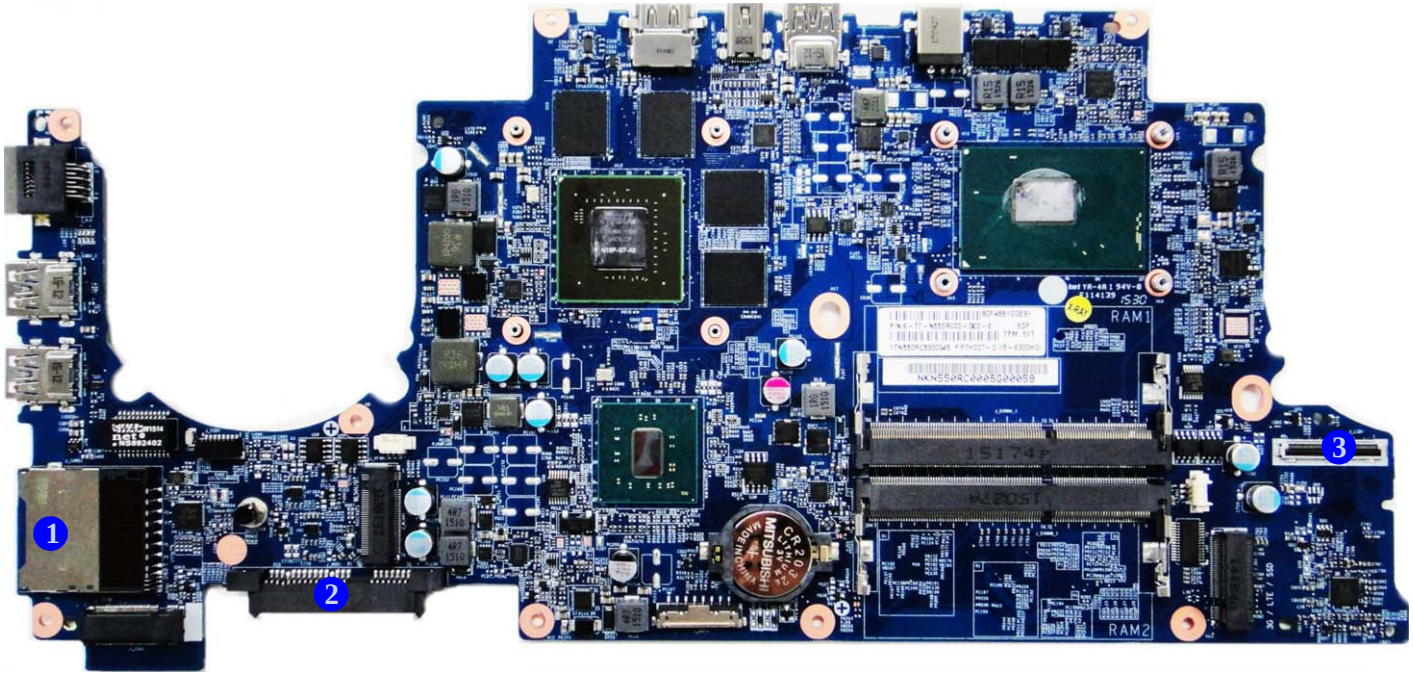


Figure 10
Mainboard Bottom Connectors

1. Multi-in-1 Card Reader
2. HDD Connector
3.

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***N550RN*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

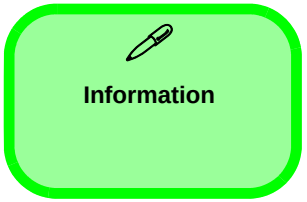
We suggest you completely review any procedure before you take the computer apart.

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

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

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

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



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

Maintenance Tools

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

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

Connections

Connections within the computer are one of four types:

Locking collar sockets for ribbon connectors	To release these connectors, use a small flat-head screwdriver to gently pry the locking collar away from its base. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Pressure sockets for multi-wire connectors	To release this connector type, grasp it at its head and gently rock it from side to side as you pull it out. Do not pull on the wires themselves. When replacing the connection, do not try to force it. The socket only fits one way.
Pressure sockets for ribbon connectors	To release these connectors, use a small pair of needle-nose pliers to gently lift the connector away from its socket. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Board-to-board or multi-pin sockets	To separate the boards, gently rock them from side to side as you pull them apart. If the connection is very tight, use a small flat-head screwdriver - use just enough force to start.

Maintenance Precautions

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

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

Power Safety Warning

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

Cleaning

Do not apply cleaner directly to the computer, use a soft clean cloth.
Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.

Disassembly Steps

The following table lists the disassembly steps, and on which page to find the related information. **PLEASE PERFORM THE DISASSEMBLY STEPS IN THE ORDER INDICATED.**

To remove the Keyboard:

1. Remove the keyboard *page 2 - 5*

To remove the Battery:

1. Remove the battery *page 2 - 6*

To remove the HDD:

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

To remove the System Memory:

1. Remove the battery *page 2 - 6*
2. Remove the system memory *page 2 - 10*

To remove the M.2 SSD:

1. Remove the battery *page 2 - 6*
2. Remove the SSD *page 2 - 11*

To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 6*
2. Remove the WLAN *page 2 - 13*

To remove the 3G Module:

1. Remove the battery *page 2 - 6*
2. Remove the 3G *page 2 - 15*

Removing the Keyboard

1. Turn **off** the computer, turn it over.
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 1a***).
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 1b***).
5. Carefully lift the keyboard 6 off the computer (***Figure 1c***).

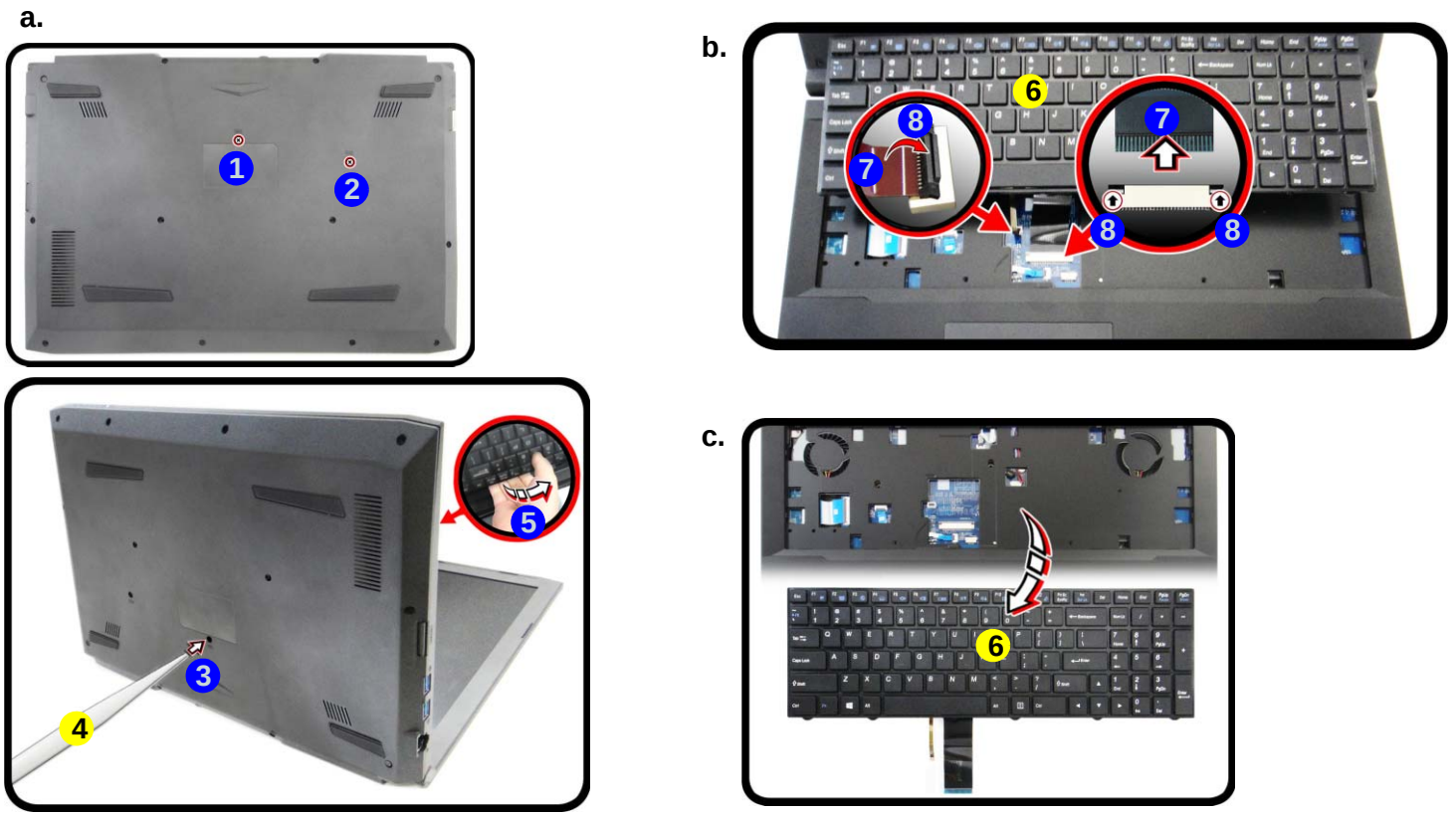


Figure 1
Keyboard Removal

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

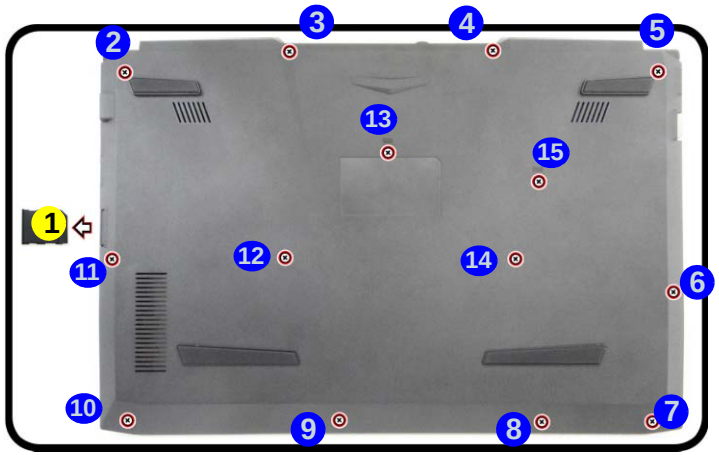
Figure 2
Battery Removal

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

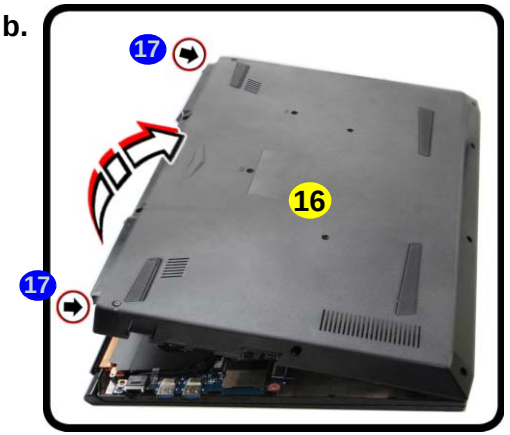
Removing the Battery

1. Turn the computer **off**, and turn it over.
2. Remove the SD card cover 1 and screws 2 - 15 (***Figure 2a***).
3. Carefully lift the bottom case 16 up from point 17 and remove it (***Figure 2b***).
4. The battery will be visible at point 18 on the computer (***Figure 2c***).

a.



b.



c.

1. SD Card Cover
16. Bottom Case

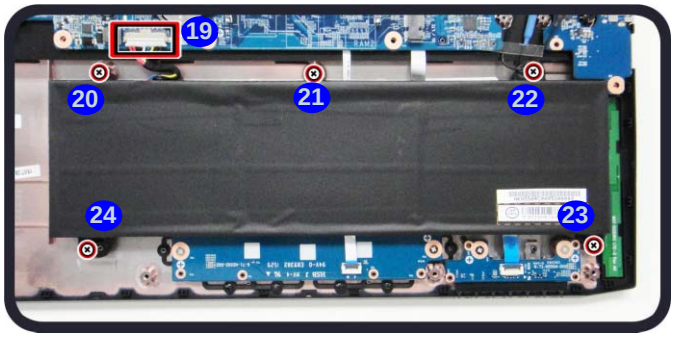
- 14 Screws

5. Carefully disconnect the cable 19, then remove screws 20 - 24 (*Figure 3b*).
6. Lift the battery 25 off the computer (*Figure 3e*).
7. Reinsert the bottom case starting from point 24 as shown (*Figure 3f*) to avoid damaging the rear eSATA/USB 3.0 port. Tighten the screws to secure the bottom case in place.

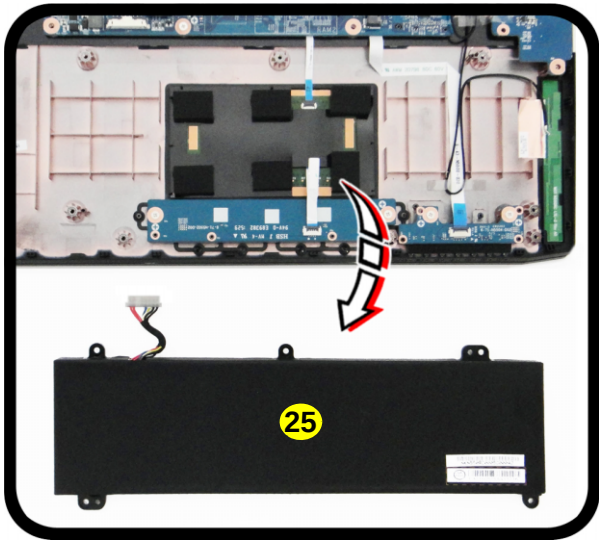
Figure 3
Battery Removal (cont'd.)

d. Disconnect the cable and remove the screws.
e. Lift the battery off the computer.
f. Reinsert the bottom case and tighten the screws.

d.



e.



f.

25. Battery

- 5 Screws

Removing the Hard Disk Drive

Figure 4
HDD Assembly Removal

a. Locate the HDD.
b. Remove the screws.

The hard disk drive can be taken out to accommodate other 2.5" serial (SATA) hard disk drives with a height of 9.5mm or 7mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up a new hard disk.

Hard Disk Disassembly Process

1. Turn **off** the computer, and remove the battery (*page 2 - 6*).
2. The HDD will be visible at point 1 on the mainboard (*Figure 4a*).
3. Remove screws 2 from the HDD assembly (*Figure 4b*).

a.

b.

6. Hard Disk

- 1 Screw

HDD System Warning

New HDD's are blank. Before you begin make sure:

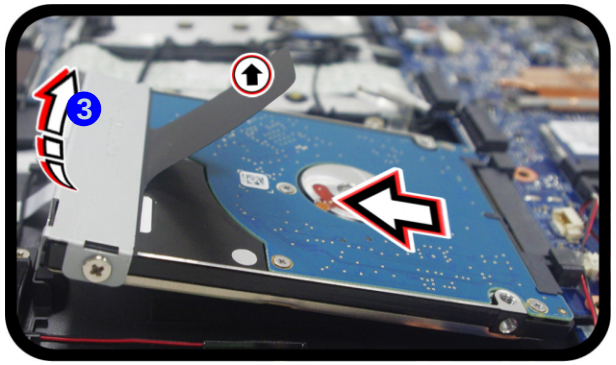
You have backed up any data you want to keep from your old HDD.

You have all the CD-ROMs and FDDs required to install your operating system and programs.

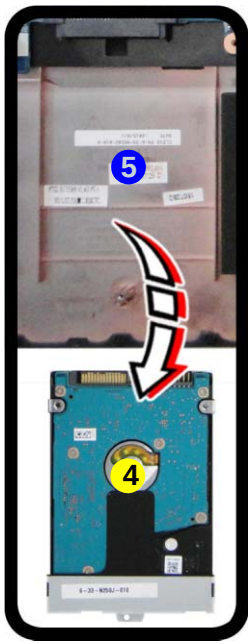
If you have access to the internet, download the latest application and hardware driver updates for the operating system you plan to install. Copy these to a removable medium.

4. Slightly lift and pull the hard disk assembly in the direction of arrow 3 (*Figure 5c*).
5. Lift the hard disk assembly 4 out of the bay 5 (*Figure 5d*).
6. Remove screws 6 - 7 and bracket 8 from the hard disk 9 (*Figure 5e*).
7. Reverse the process to install a new hard disk (do not forget to replace the screws).

c.



d.



e.

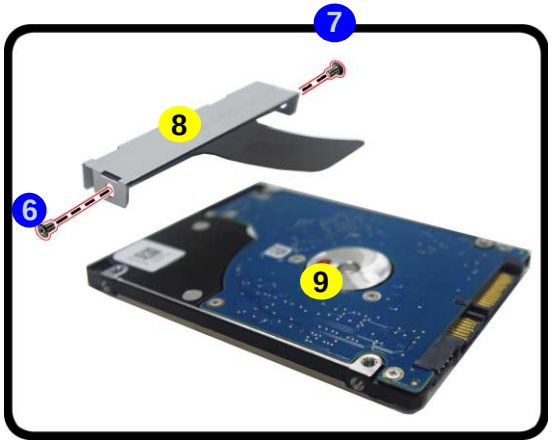


Figure 5
HDD Assembly Removal (cont'd.)

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

4. HDD Assembly
8. Bracket
9. HDD

- 2 Screws

Figure 6
RAM Module Removal

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

Contact Warning

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

4. RAM Module

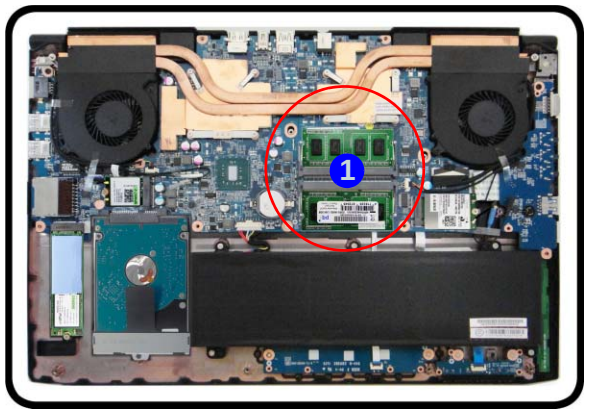
Removing the System Memory (RAM)

The computer has two memory sockets for 204 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR3L up to 1600 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

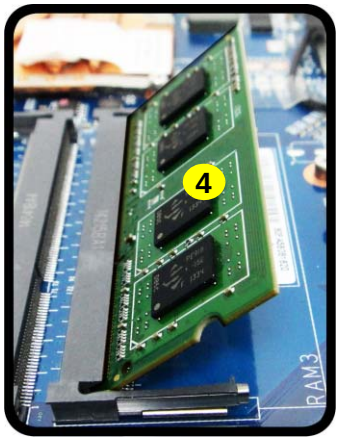
1. Turn **off** the computer, turn it over, remove the battery (***page 2 - 6***).
2. The RAM-2 modules will be visible at point 1 on the mainboard (***Figure 6a***).
3. Gently pull the two release latches (2 & 3) on the sides of the memory socket in the direction indicated by the arrows (***Figure 6b***). The RAM module 4 will pop-up (***Figure 6c***), and you can then remove it.
4. Pull the latches to release the second module if necessary.
5. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
6. The module will only fit one way as defined by its pin alignment. Make sure the module is seated as far into the slot as it will go. DO NOT FORCE IT; it should fit without much pressure.
7. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
8. Replace the bottom cover and the screws (see ***page 2 - 6***).
9. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

a.



b.

c.



Removing and Installing the M.2 SSD Module

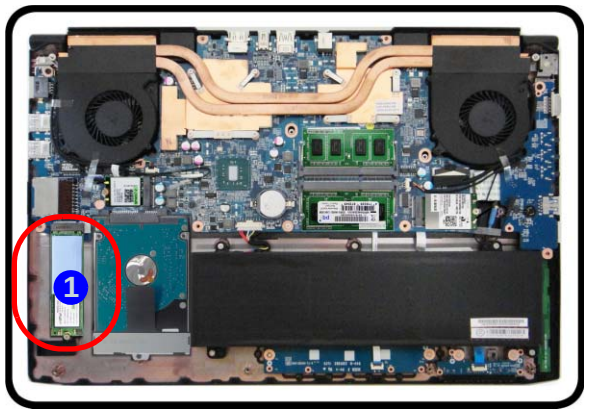
M.2 SSD Module Removal Procedure

1. Turn **off** the computer, turn it over, remove the battery (*page 2 - 6*).
2. The M.2 SSD module will be visible at point 1 on the mainboard (*Figure 7a*).
3. Remove the screw 2 (*Figure 7b*)
4. The M.2 SSD module 3 (*Figure 7c*) will pop-up, and you can remove it from the computer.

Figure 7
M.2 SSD Module Removal

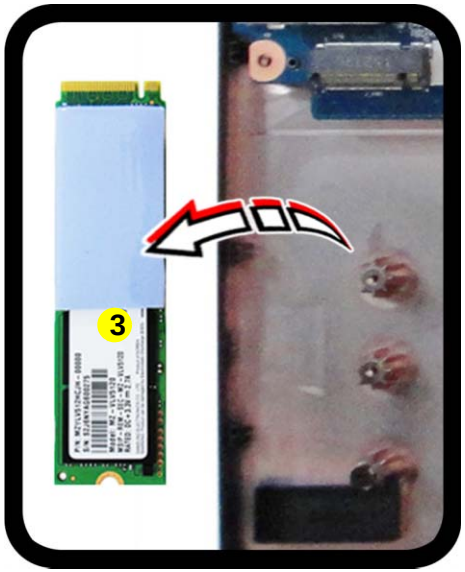
a. Locate the M.2 SSD.
b. Remove the screw.
c. The M.2 SSD module will pop up.

a.



b.

c.



3.M2 SSD Module

- 1 Screw

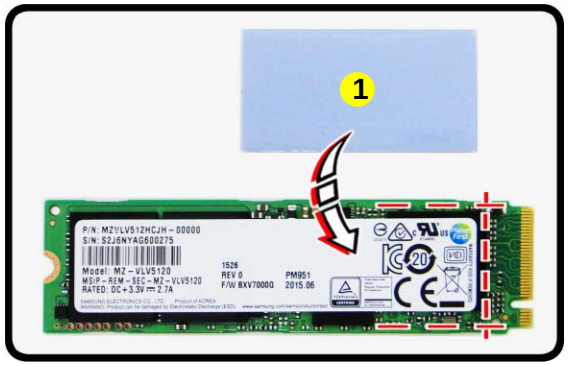
Figure 8
M.2 SSD Module Installation

a. Place the thermal pad.
b. Insert the module.
c. Tighten the screw.

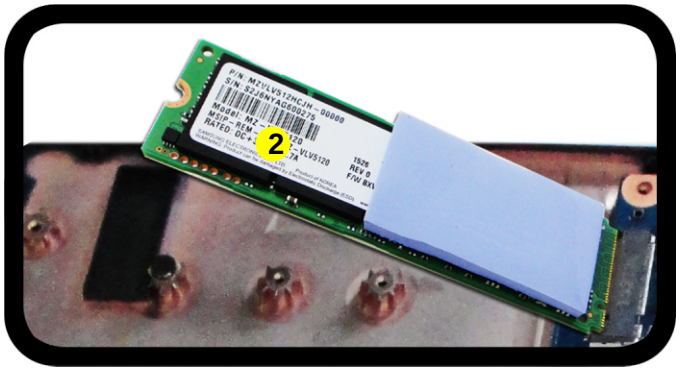
M.2 SSD Installation Procedure (for PM951 only)

1. Place the thermal pad 1 on the module as shown (***Figure 8a***).
2. Insert the module 2 in the computer (***Figure 8b***).
3. Tighten the screw 3 to secure it in place (***Figure 8c***).

a.



b.



c.

Thermal Pad

Be sure to place the thermal pad's adhesive side down onto the module surface.

The thermal pad needs to be cut (along the two markers as shown) to fit the corresponding size of the module.

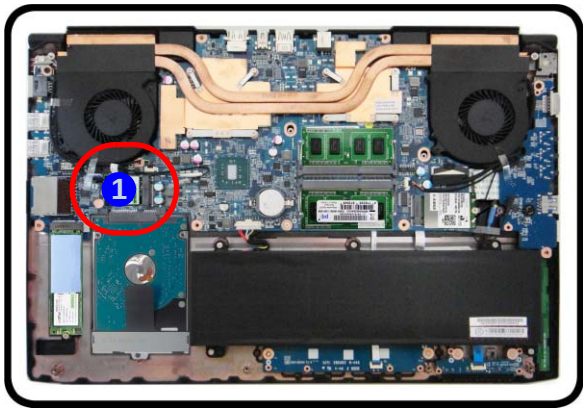
1. Thermal Pad
2. M2 SATA Module

- 1 Screw

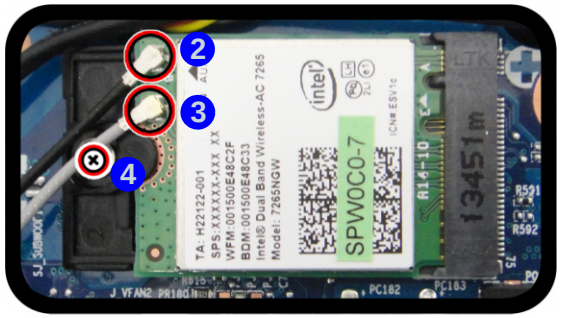
Removing the Wireless LAN Module

1. Turn **off** the computer, turn it over, remove the battery (*page 2 - 6*).
2. The Wireless LAN module will be visible at point 1 on the mainboard (*Figure 9a*).
3. Carefully disconnect the cables 2 & 3, and then remove the screw 4 (*Figure 9b*)
4. The Wireless LAN module 5 (*Figure 9c*) will pop-up, and you can remove it from the computer.

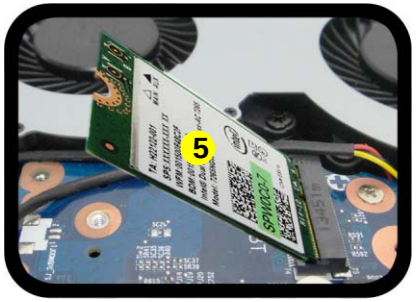
a.



b.



c.



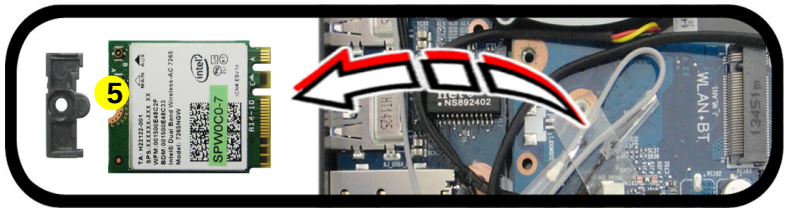


Figure 9
Wireless LAN Module Removal

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 9b*).

5.Wireless LAN Module

- 1 Screw

Wireless LAN, Combo, 3G & LTE Module Cables

Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo, 3G and LTE modules are not labelled. The cables/covers (each cable will have either a black or transparent cable cover) are color coded for identification as outlined in the table below.

Module Type	Antenna Type	Cable Color	Cable Cover Type
WLAN/WLAN & Bluetooth Combo	WM 1	Black	Transparent
	WM 2	Gray	
	WM 3	White	
LTE Broadband	LTE 1	Black	Black
	LTE 2	Gray	
3G Broadband	3G 1	Black	Black
	3G 2	Gray	

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

Removing the 3G Module

3G Module Removal Procedure

1. Turn **off** the computer, remove the battery (*page 2 - 6*).
2. Locate the module, it is visible at point 1 (*Figure 10a*).
3. Carefully disconnect the cables 2 & 3, and then remove the screw 4 from the module (*Figure 10b*).
4. The module 5 will pop-up (*Figure 10c*).
5. Lift the module 5 up and off the computer (*Figure 10d*).

Figure 10
3G Module Removal

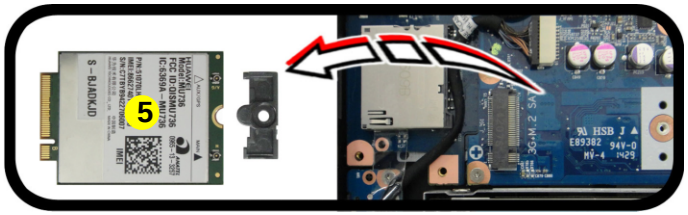
a. Locate the module.
b. Disconnect the cables and remove the screw.
c. The module will pop-up.
d. Lift the module up off the socket.

a.

b.

c.

d.



5. 3G Module

- 1 Screw

Appendix A:Part Lists

This appendix breaks down the ***N550RN*** series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

Note: This section indicates the *manufacturer's* part numbers. Your organization may use a different system, so be sure to cross-check any relevant documentation.

Note: Some assemblies may have parts in common (especially screws). However, the part lists DO NOT indicate the total number of duplicated parts used.

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

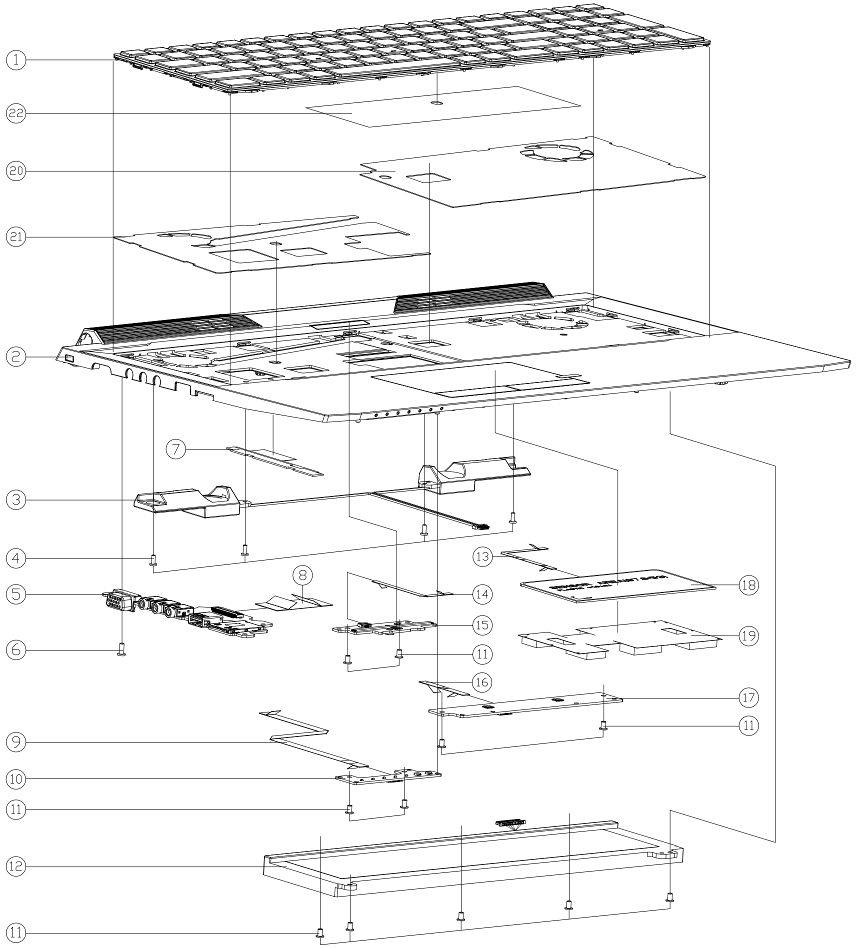
Part List Illustration Location

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

Table A - 1
Part List Illustration Location

Part	
Top	*page A - 3*
Bottom	*page A - 4*
Main Board	*page A - 5*
HDD	*page A - 6*
LCD	*page A - 7*

Top

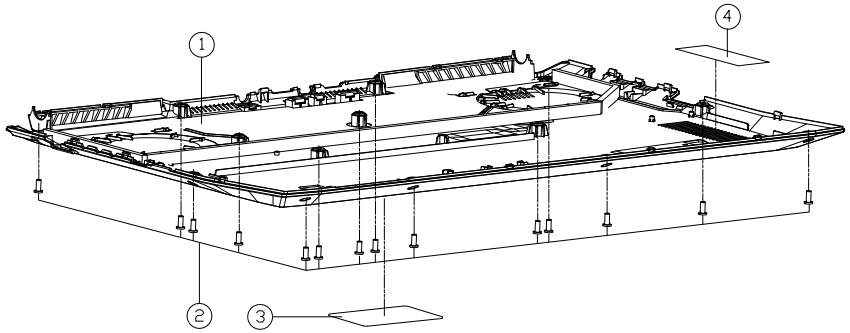


ITEM	PART NAME	PART NO	REMARK
1	WIN8 K/B USA(BLACK)& FRAME(US) MODULE FOR N250LU	6-79-N250LU0K-011-W	
2	TOP CASE MODULE ONKYO(KAPOK) N550RC	6-39-N5502-013-N	
3	SPK+CABLE TOP L+R L:185MM/R:110MM 2W 4? ONKYO N550RC (FOR 喇叭鎖耳修模)	6-23-5N550-0S2	
4	SCREW M2*5L KI(T=0.8 D=4.0) BK/Z ICT NY	6-35-B6120-5R0	
5	AUDIO BOARD V2.0A (W/3G) N550RC	6-77-N5508-D02A	
5	AUDIO BOARD V2.0A (W/O 3G) N550RC	6-77-N5508-D02A-1	
6	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
7	ANTENNA IPEX4 LTE WGT LTE2 PCB BL 0.7G/0.9G/1.5G/1.9G/2.1G/2.6GHZ LTE2=100MM N550RC	6-23-7N550-042	
8	FFC CABLE AUDIO TO MB(PITCH=0.5) 40MM 300V 40PIN N550RC	6-43-N5500-022	
9	FFC CABLE LED TO MB (P=0.5) 180.4MM 60V 12PIN N550RC	6-43-N5500-032	
10	LED BOARD V2.0B N550RC	6-77-N5504-D02B	
11	.SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
12	BAT.P S LI 11.4V/4.24AH/48WH 3S1P GETAC/LG (PRISMATIC) 541387750002 MODIFY MOLD (BQ30Z55) ADD CQC N550RC	6-87-N550S-4E43	
13	FFC CABLE TP TO MB (P=0.5) 81.5.5MM 60V 6PIN N550RC	6-43-N5500-042	
14	FFC CABLE POWER TO MB (P=0.5) 46.5MM 60V 6PIN N550RC	6-43-N5500-012	
15	POWER BOARD V2.0A N550RC	6-77-N550C-D02A	
16	FFC CABLE CLICK TO TP (P=1.0) 41MM 60V 4PIN N550RC	6-43-N5500-052	
17	CLICK BOARD V2.0A N550RC	6-77-N5502-D02A	
18	TOUCH PAD SYNAPTICS TM-03189-001(100*55MM) N250LU	6-49-N2503-010	
19	TP PCB MYLAR RUBBER(PET+TESA 4972+RUBBER 103*57*0.15T) N550RC	6-40-N5502-051	
20	WO BACKLIGHT KB MYLAR-1(PET0.2MM+AL-FOIL0.2MM= 0.4,180.2*109.2*0.4T) N550RC	6-40-N5502-071	ONLY FOR W/O BL KB
21	WO BACKLIGHT KB MYLAR(PET0.25MM+DS-15=0.4MM 346*109.2*0.4T) N550RC	6-40-N5502-043	ONLY FOR W/O BL KB
22	BACKLIGHT KB THERMAL(169.1*45.5) AL FOIL+3M467 N550RC	6-47-N5507-010	ONLY FOR N550RC ONLY FOR W/BL KB

Figure A - 1
Top

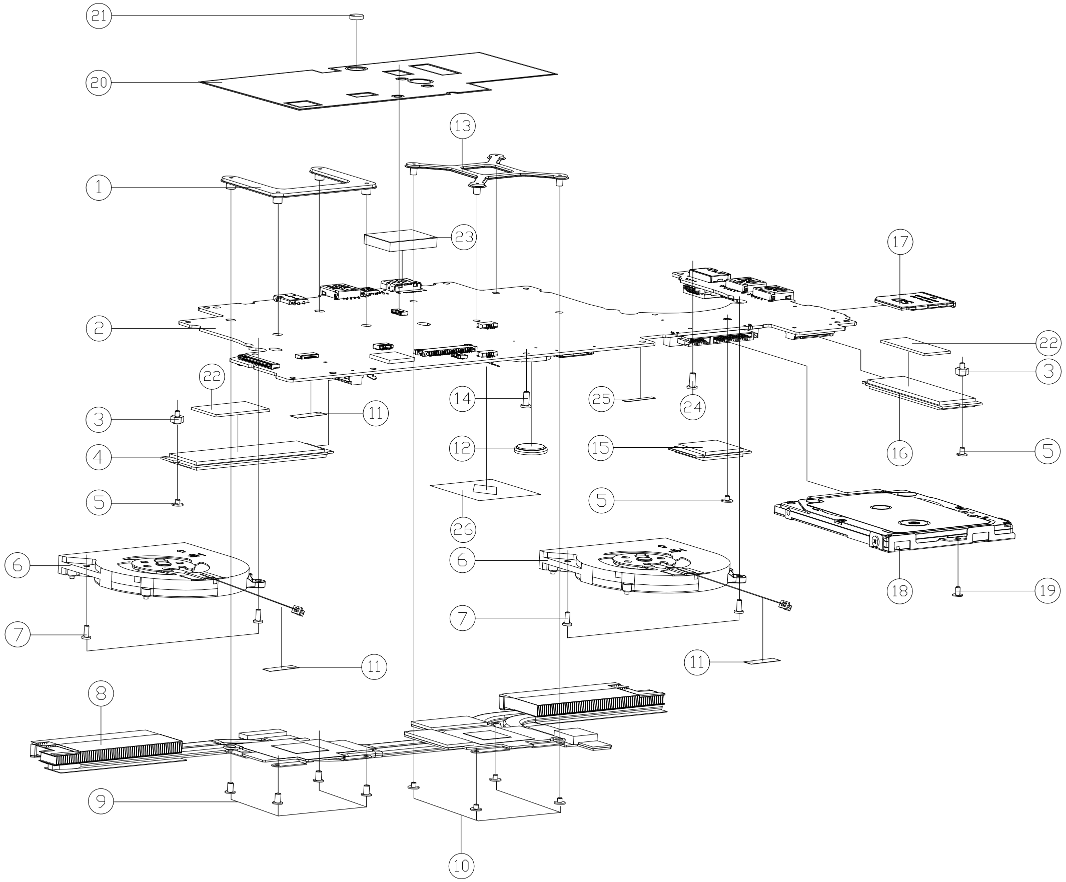
Bottom

Figure A - 2
Bottom



ITEM	PART NAME	PART NO	REMARK
1	BOTTOM CASE MODULE N550RC	6-39-N5503-013	
2	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
3	PRODUCT LABEL FOR N550RC	6-45-N550RC03-010	
3	PRODUCT LABEL FOR N550RN	6-45-N550RN03-010	
4	M2 SSD MYLAR (DFR-D117+TESA4972) N550RC	6-47-N5503-050	only for M.2 SSD SAMSUNG PM951 module

Main Board



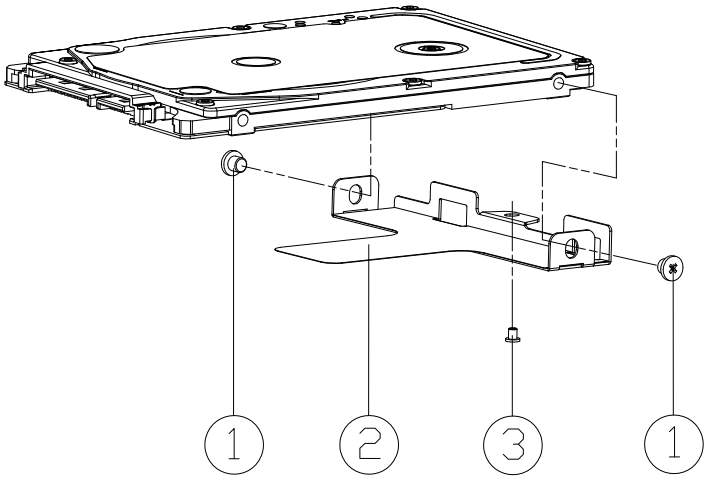
ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT BRACKET SECC T=1.2 N550RC	6-33-N550S-010	
2	MAIN BOARD(CPU/I7-6700HQ/2.6G) V2.0A (EDP)(W/TPM,LTE) N550RN	6-77-N550RN00-D02A-C	
2	MAIN BOARD(CPU/I5-6440HQ/2.6G) V2.0A (EDP)(W/TPM,LTE) N550RN	6-77-N550RN00-D02A-D	
2	MAIN BOARD(CPU/I5-6300HQ/2.3G) V2.0A (EDP)(W/TPM,LTE) N550RN	6-77-N550RN00-D02A-E	
2	MAIN BOARD(CPU/I3-6100H/2.7G) V2.0A (EDP)(W/TPM,LTE) N550RN	6-77-N550RN00-D02A-F	
3	SCREW M2*2.5L (H=2.5 D=5) STEEL ICT NY FOR NGFF CARD(CHANGE MATERIAL)	6-35-ZA120-2R5	
4	SSD M.2 2280 500GB CRUCIAL CT500MX200SSD4 (MX200) SATA3 MLC	6-85-D515A-100	OPTION
4	SSD M.2 2280 512GB SAMSUNG MZNLN512HCJH0000 (PM871) SATA3 V2 EVO	6-85-D515B-S01	OPTION
4	SSD M.2 2280 360GB INTEL SSDSCKJW360H6 (535) SATA3 MLC	6-85-D513G-Z00	OPTION
4	SSD M.2 2280 256GB SAMSUNG MZNLN256HCHP0000 (PM871) SATA3 V2 EVO	6-85-D51R6-S01	OPTION
4	.WCDMA HUAWEI MU736 HSPA+ NGFF CARD USB INTERFACE WITHOUT GPS S210TU	6-88-S210W-8810	OPTION
4	LTE 4G NO GPS MODULE HUAWEI ME936 FIRMWARE VER 11.350.20.00.00 FOR EUROPE NGFF M2 CARD USB INTERFACE W330SU2	6-88-W3306-8841	OPTION
4	LTE 4G GPS DISABLED MODULE (NTTDOCOMO)HUAWEI ME906J FOR JAPAN NGFF M2 CARD USB INTERFACE W330SU2	6-88-W3306-8830	OPTION
5	SCREW M2*2L KI NI ICT NY (DD=ø5 ,T=0.5)	6-35-B1120-2R0	
6	CPU FAN MODULE (FORCECON) N550RC	6-31-N5502-102	
7	SCREW M2*5L KI(T=0.8 D=4.0) BK/Z ICT NY	6-35-B6120-5R0	
8	CPU & GPU HEATSINK MODULE N550RN	6-31-N5502-300	
9	.SCREW M2*4L KI NI ICT NY (DD=ø4.5,DT=0.4)	6-35-B1120-4RE	
10	.SCREW M1.6*2.5L K(T=1.0, D=4.0, #1) NI ICT NY	6-35-81116-2R5	
11	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	
12	BATTERY 3V 220MA BBBCR2032B (KTS)	6-23-6A2B2-030	
13	VGA SUPPORTER SUS430 X7200(XIESHOU)	6-33-X720S-040-1	
14	.SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
15	WLAN+BT COMBO INTEL STONE PEAK 7265NGWG.W D0 STEPPING PCI-E M2 2230 2X2 AC+BT GENERIC W950LU	6-88-W95LF-4220	OPTION
15	WLAN+BT COMBO DUAL BAND INTEL SNOWFIELD PEAK 8260NGW NON-VPRO MM#942867 2X2 AC+BT 4.1 LE C1 STEPPING M2 2230 GENERIC P670RG	6-88-P67RF-4200	OPTION
15	WLAN+BT COMBO INTEL WIRELESS-AC 3165 (STONE PEAK 1), 1X1 AC + BT 3165NGWGA PCI-E M2 2230 N240LU	6-88-W95LF-4240	OPTION
15	WLAN+ BT COMBO CHICONY CNWR3-A2 (RTL8723BE) 802.11BGN 1X1 (PCI-E) +BT4.0 LE (USB) WLAN+REALTEK BT SOFTWARE PCI-E M2 2230 FR4 N170SD	6-88-N170F-5100	OPTION
15	WLAN+ BT COMBO LITEON WCBN801-CC (RTL8723BE) 802.11BGN 1X1 (PCI-E) +BT4.0 LE (USB) WLAN+REALTEK BT SOFTWARE NGFF CARD S210TU	6-88-S210F-9400	OPTION
15	WLAN+BT COMBO INTEL WIRELESS-AC 3165 (STONE PEAK 1), 1X1 AC + BT 3165NGWGA PCI-E M2 2230 N240LU	6-88-N240F-4200	OPTION
16	SSD M.2 2280 512GB SAMSUNG MZHPV512HDGL-XXXXX (SM951) PCIE G3X4 MLC	6-85-D515B-S00	OPTION
16	SSD M.2 2280 512GB SAMSUNG MZVPV512HDGL-00000 (SM951_NVME) PCIE G3X4 MLC	6-85-D515B-S02	OPTION
16	SSD M.2 2280 512GB SAMSUNG MZVLV512HCJH-00000 (PM951) PCIE G3X4 TLC	6-85-D515B-S03	OPTION
17	DUMMY SD PSUH PUSH TYPE PC+ABS (C7230P-701DE) W970SUW	6-42-W9708-010	
18	W/O HDD ASS'Y N550RC	6-79-N550RC0J-010	OPTION
18	W/HDD ASS'Y N550RC	6-79-N550RC0J-020	OPTION
19	SCREW M2*3L KI BZ ICT NY (DD=ø4.5,DT=0.4)	6-35-B6120-3RD	
20	MAIN BOARD THERMAL AL FOIL+MYLAR (149.8*79.3*0.3T)MM N550RC	6-47-N550S-020	
21	MB POWER RUBBER SLICON 80DEGREE N550RC	6-47-N550S-010	
22	THERMAL PAD MA500 (39*19.5*2.75T)MM N550RC	6-48-N550S-010	only for M.2 SSD SAMSUNG PM951 module
23	HDMI RUBBER FOIL N550RC	6-47-N550S-040	
24	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
25	TAPE MYLAR TRANSPARENT (30*5*0.05) W251HPQ	6-40-W25P3-010	
26	GPU MYLAR (30*30*0.23T)BLACK PET+NITTO 5000NS FOR N15S-GT W650SF	6-40-W650S-020	

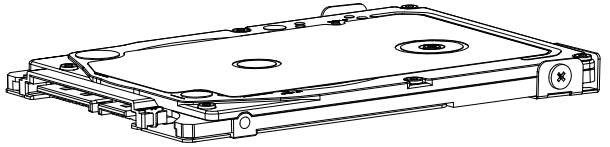
Figure A - 3
Main Board

A.Part Lists

HDD

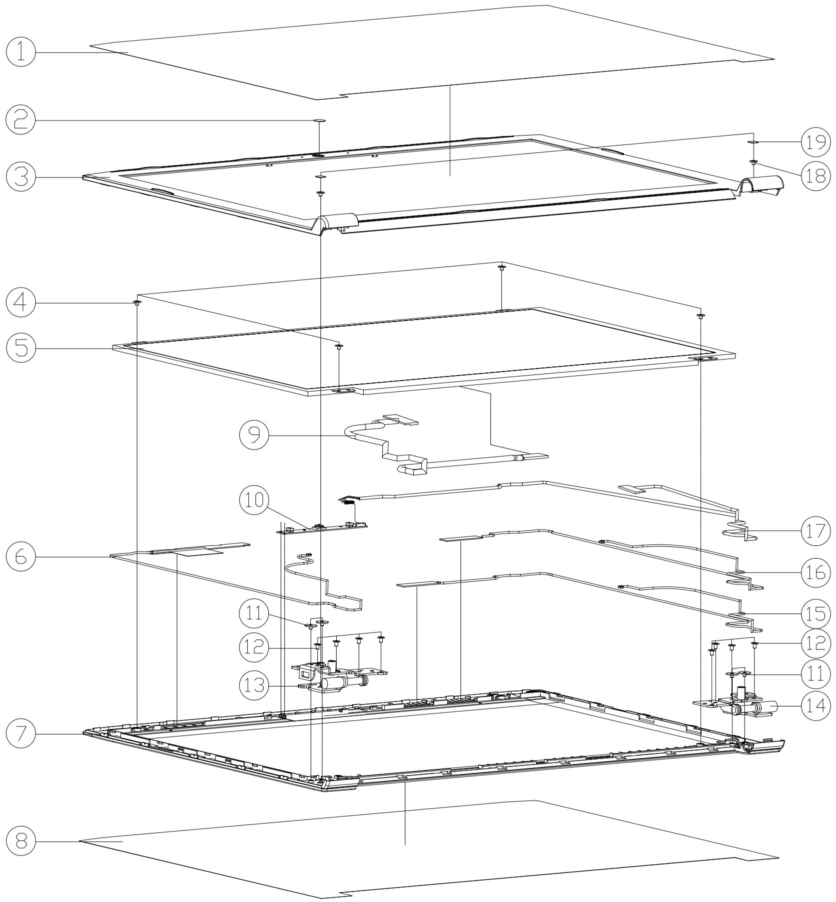
Figure A - 4
HDD





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*3L KI BZ ICT NY (DD=ø4.5,DT=0.4)	6-35-B6120-3RD	

LCD



ITEM	PART NAME	PART NO	REMARK
1	FRONT COVER MYLAR PET N550RC	6-40-N5501-020	
2	CCD LENS PC P650SE	6-42-P6501-010	
3	FRONT COVER MODULE N550RC	6-39-N5501-012	
4	SCREW M2*2L KI NI ICT NY (DD=Ø5 ,T=0.5)	6-35-B1120-2R0	
5	LCD 15.6" FHD/IPS/EDP LG LP156WF6-SPB1 (N7) (LED)" SUPPORT S/W G-SYNC " 3.2MM	6-50-LB232-L04	
5	LCD 15.6" FHD/IPS/EDP LG LP156WF4-SPL1 (N4)(LED) 3.2MM	6-50-LB232-L01	
5	LCD 15.6" HD EDP INNOLUX N156BGE-EA2 (LED) 3.25 MM	6-50-L8132-V00	
5	LCD 15.6" HD (EDP) AU B156XTN07.1 (3.2MM) LED	6-50-L8132-G04	
5	LCD 15.6" FHD/IPS/EDP LG LP156WF6-SPK1 (N4) (LED) 3.2MM	6-50-LB232-L06	
5	LCD 15.6" HD (EDP) AU B156XTN03.5 3.2MM LED	6-50-L8132-G03	
6	ANTENNA IPEX4 LTE WGT LTE1 PCB MODIFY BL 0.7G/0.9G/1.5G/1.9G/2.1G/2.6GHZ LTE1=500MM N550RC	6-23-7N550-011	
7	LCD BACK COVER MODULE N550RC	6-39-N5501-022	
8	BACK COVER MYLAR PET N550RC	6-40-N5501-030	
9	WIRE CABLE FOR EDP 350MM 30V 30P (I) (HL/LA CON:LA0906MD-40) N550RC	6-43-N5501-010-P	
10	UVC CAMERA CHICONY FIX CNFFH1421003921LH 1M HD HYNIX HI165 W940LU FW3207 W/LED W/2D-MIC	6-88-W94LC-5120	OPTION
10	UVC CAMERA BISON FIX BN8V16YTK-310 1M HD HYNIX HI165 W940LU FW0601 W/LED W/2D-MIC	6-88-W94LC-4911	OPTION
10	UVC CAMERA BISON FIX BN8VU6VTH-020 2M FHD SLIM OV2724 P650SE FW0605 W/LED W/ARRAY D-MIC	6-88-P650C-4900	OPTION
11	SCREW M2*2L KI BK/Z ICT NY(Ø8,T=0.6)	6-35-B6120-2RE	
12	.SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
13	HINGE L SK7 N550RC	6-33-N5501-0L1	
14	HINGE R SK7 N550RC	6-33-N5501-0R1	
15	ANTENNA IPEX4 WLAN HTK WL2 PCB AR WELDING 2.4G/5GHZ WL2=550MM N550RC	6-23-7N550-031	
16	ANTENNA IPEX4 WLAN HTK WL1 PCB AR WELDING 2.4G/5GHZ WL1=550MM N550RC	6-23-7N550-021	
17	WIRE CABLE FOR CCD 600MM 5V 8PIN (HL) N550RC	6-43-N550T-010	
18	SCREW M2*3L KI BZ ICT NY (DD=Ø4.5,DT=0.4)	6-35-B6120-3RD	
19	FRONT SCREW MYLAR (DFR117) N550RC	6-40-N5501-040	

Figure A - 5
LCD

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the ***N550RN*** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

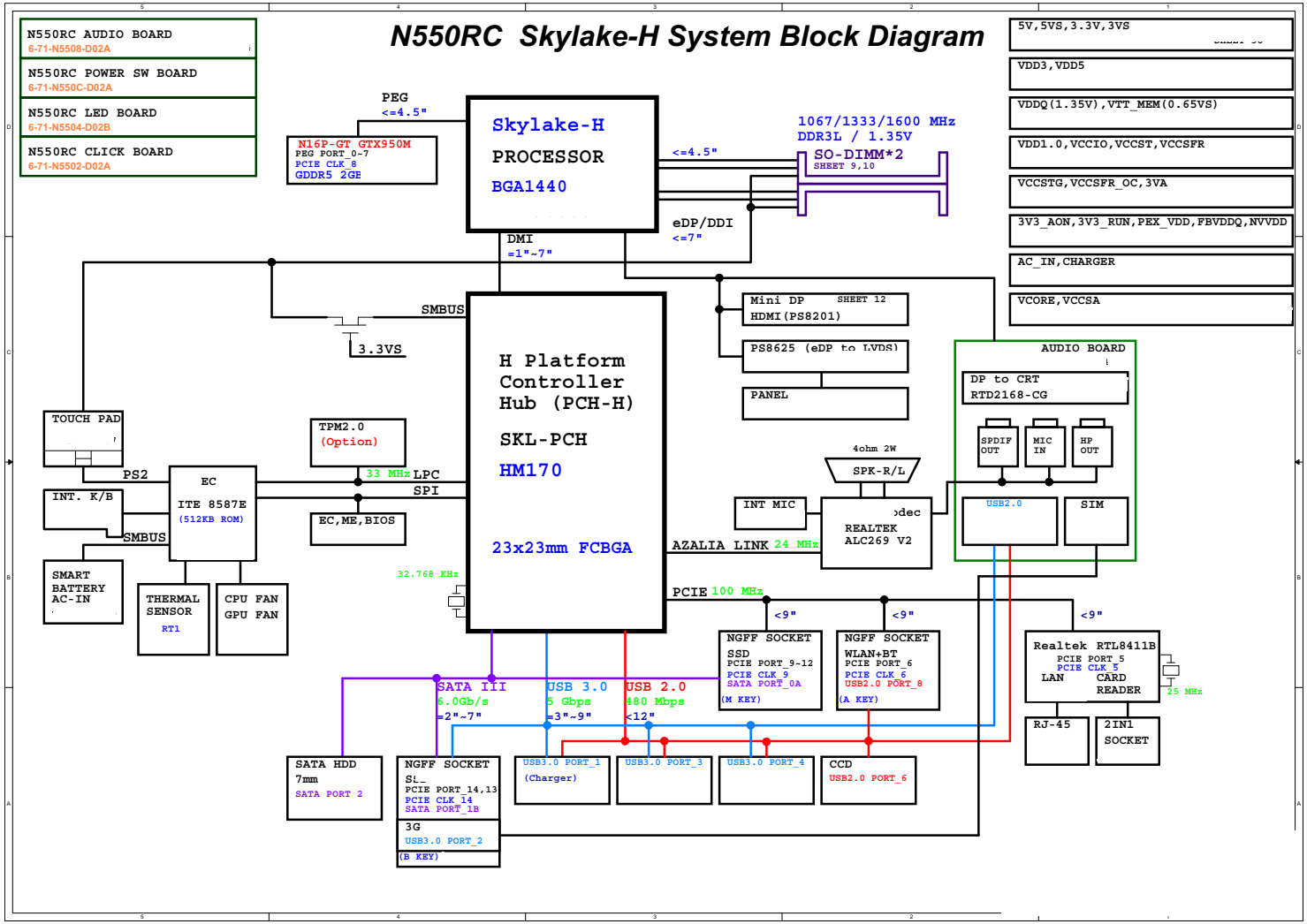
Table B - 1
SCHEMATIC DIAGRAMS

Version Note

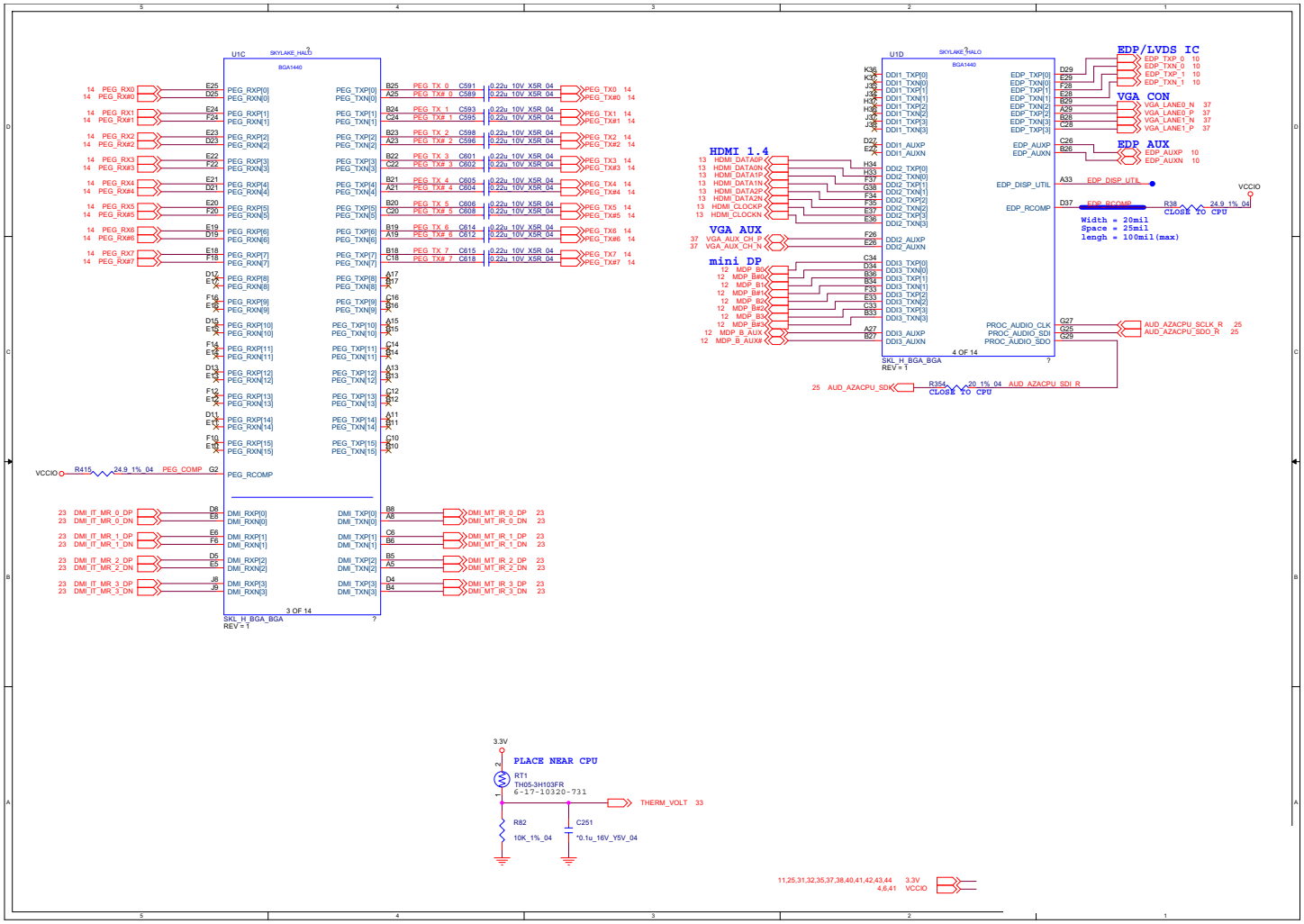
The schematic diagrams in this chapter are based upon version 6-7P-N5505-004. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram

Sheet 1 of 72
System Block Diagram



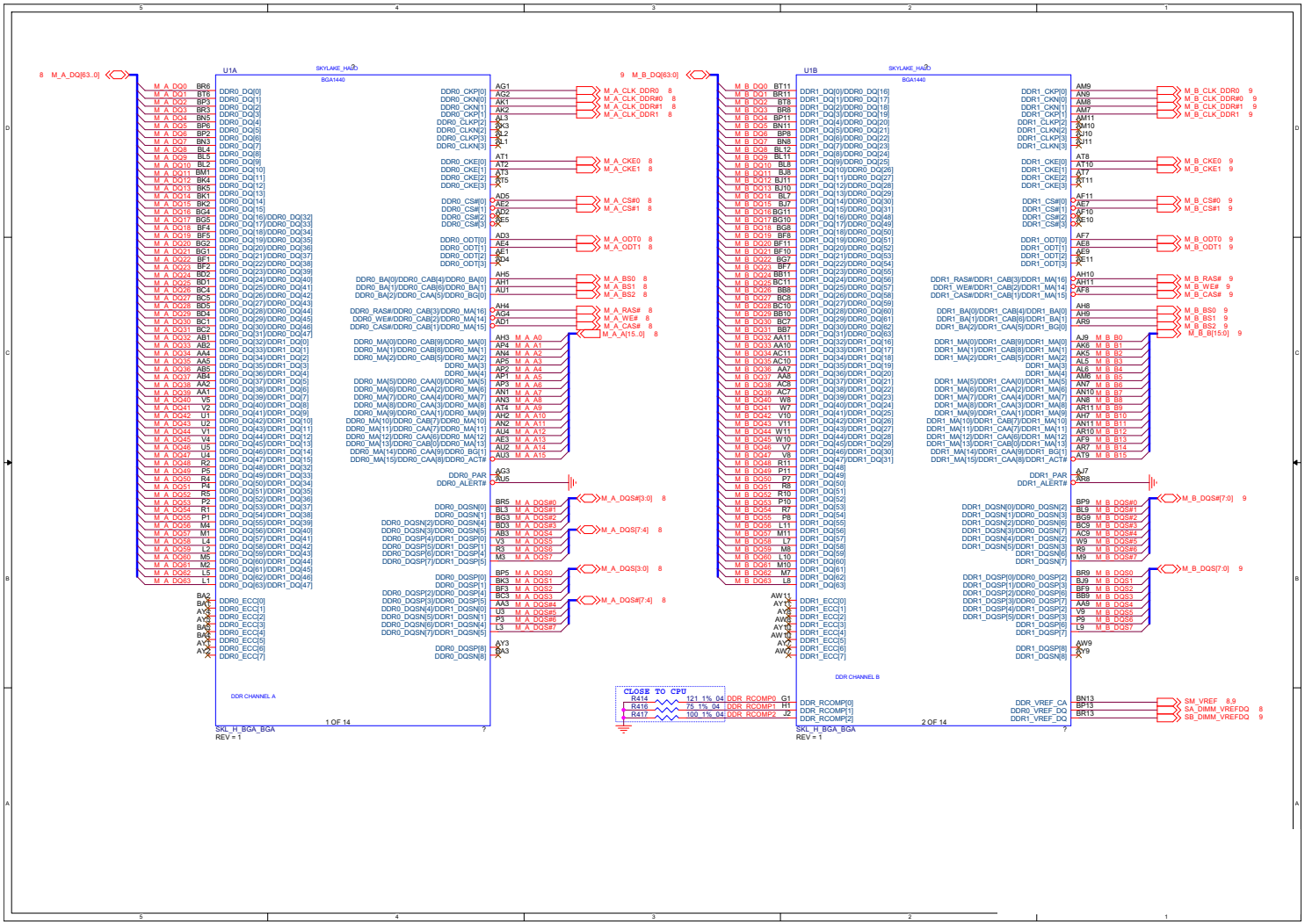
Processor 1/6



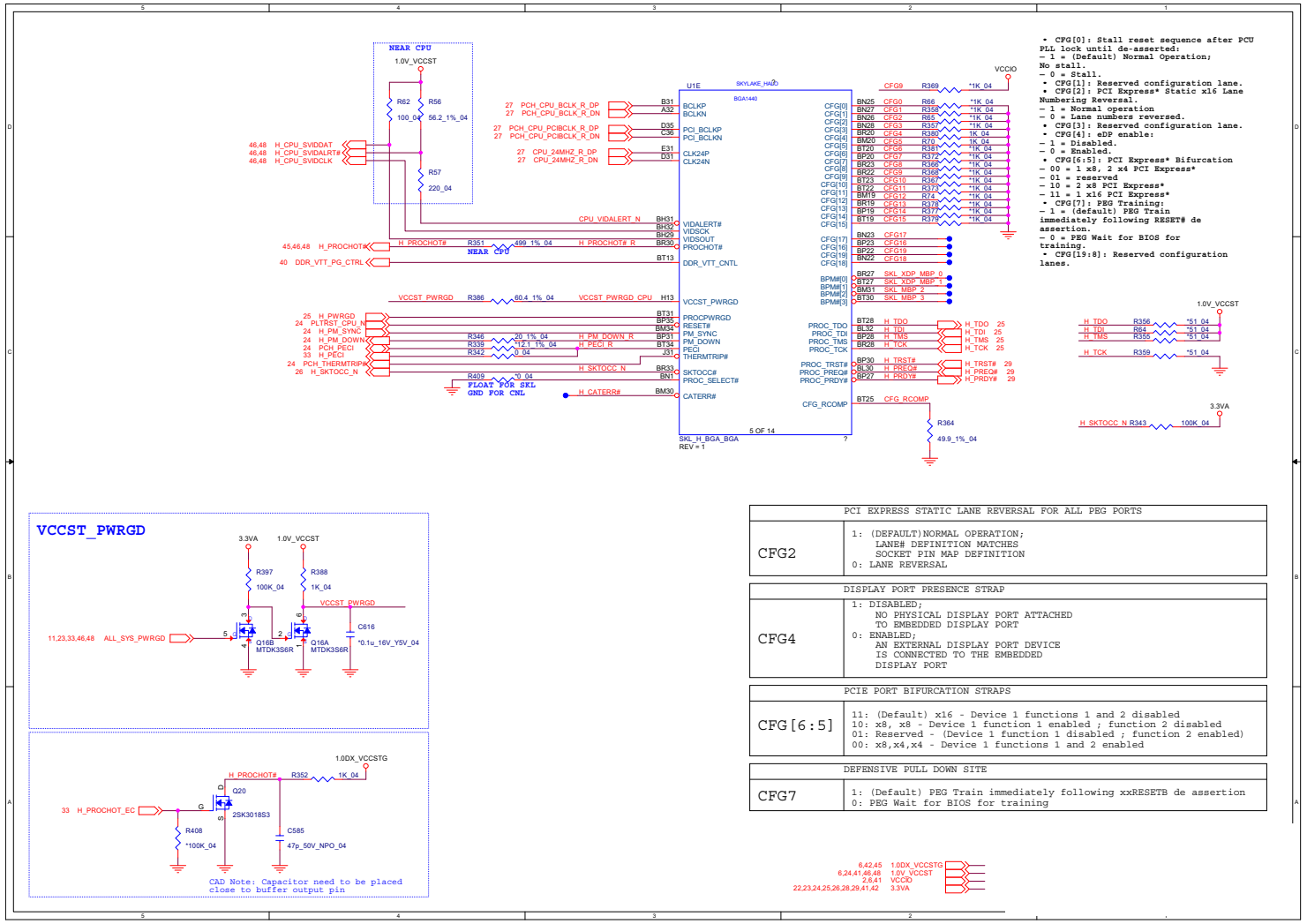
Sheet 2 of 72
Processor 1/6

Processor 2/6

Sheet 3 of 72
Processor 2/6



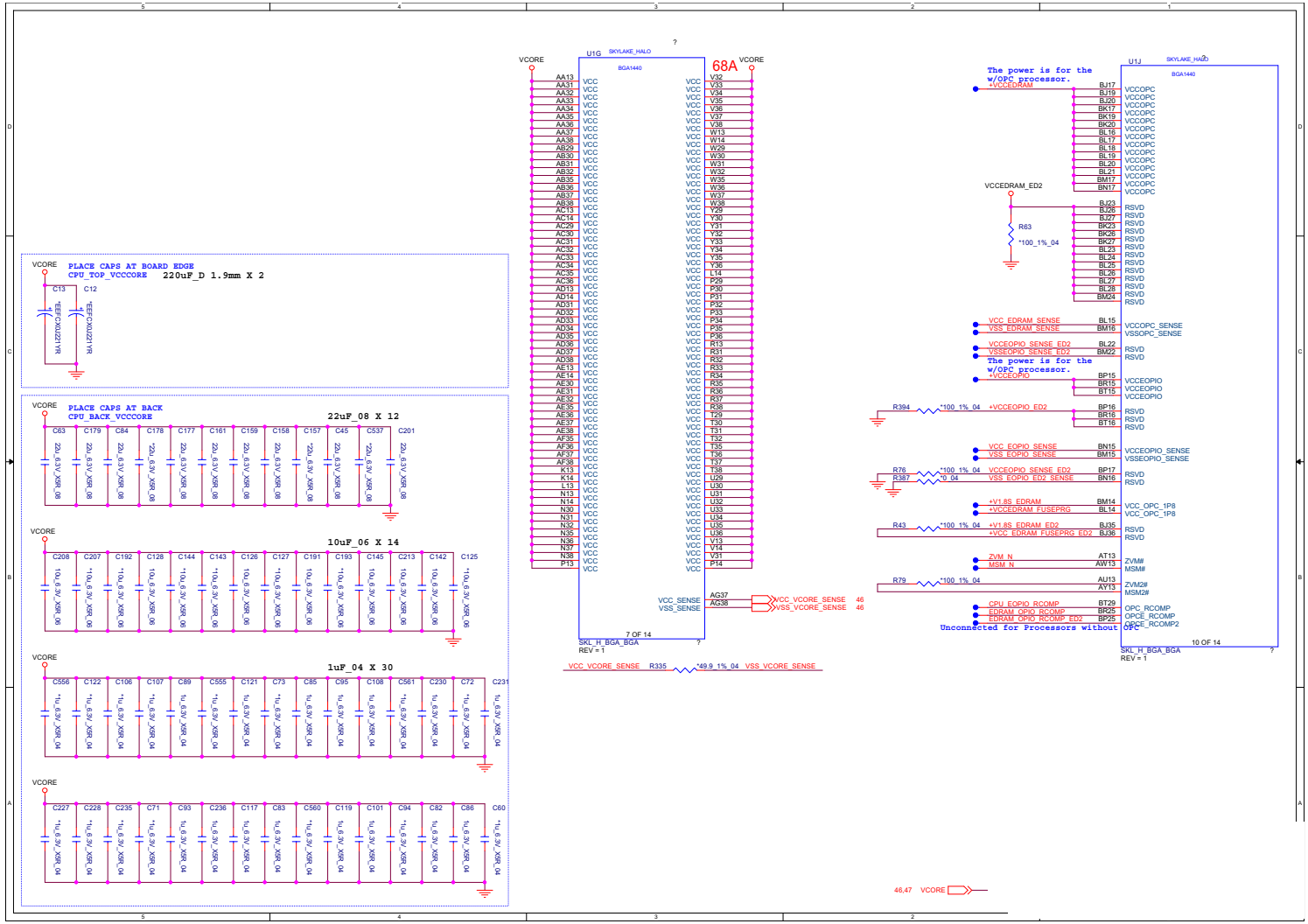
Processor 3/6



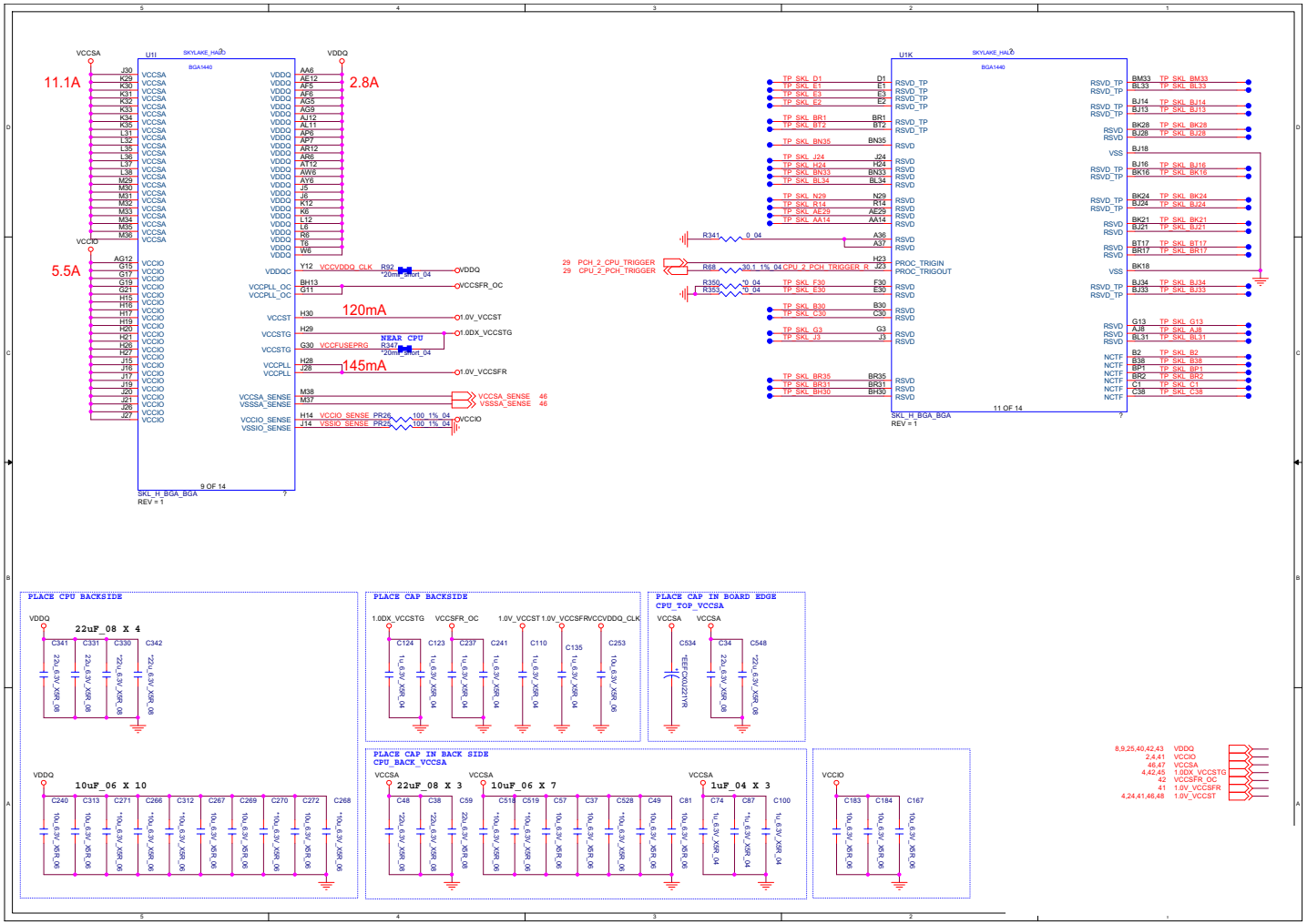
Sheet 4 of 72
Processor 3/6

Processor 4/6

Sheet 5 of 72
Processor 4/6



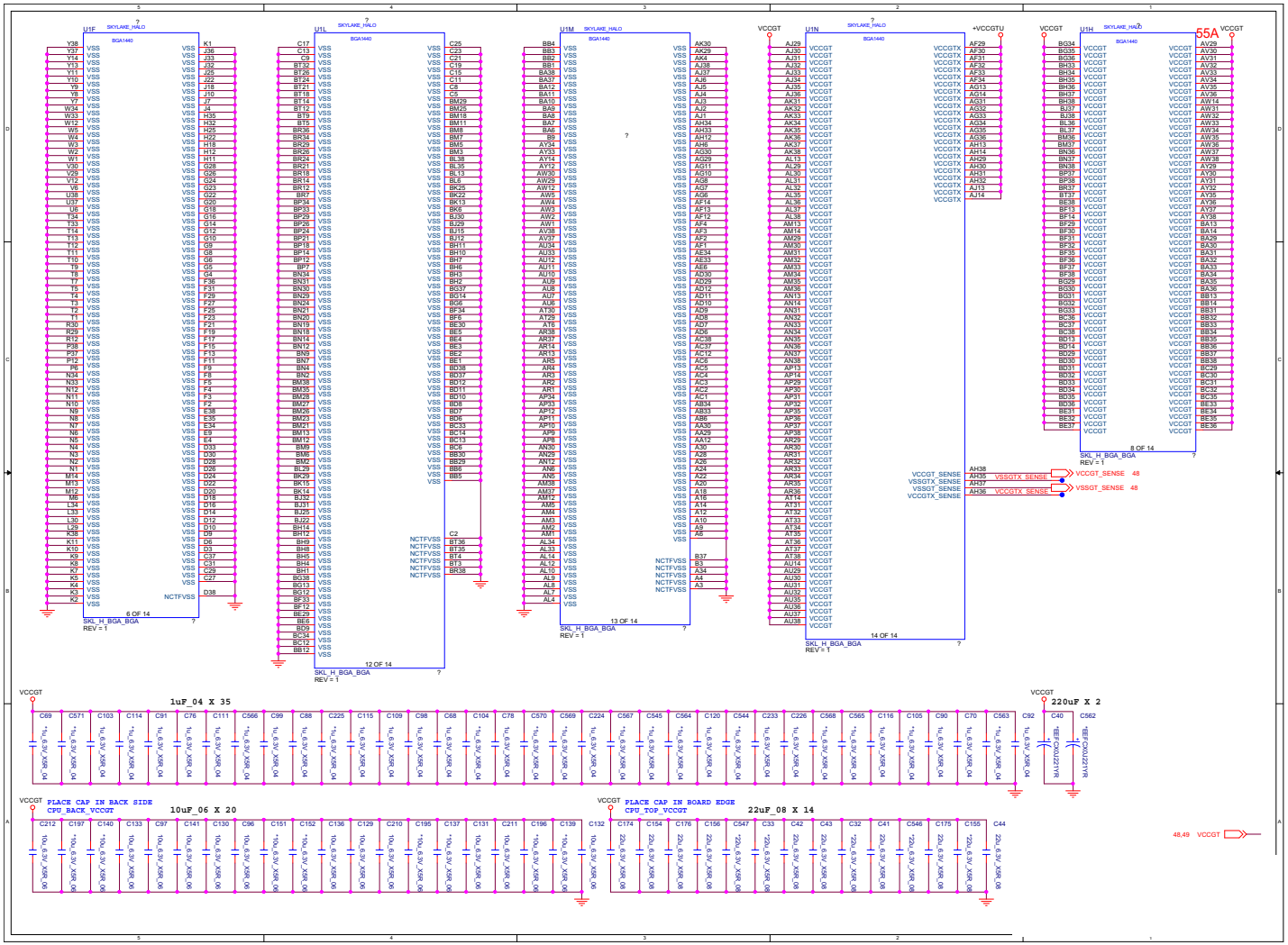
Processor 5/6



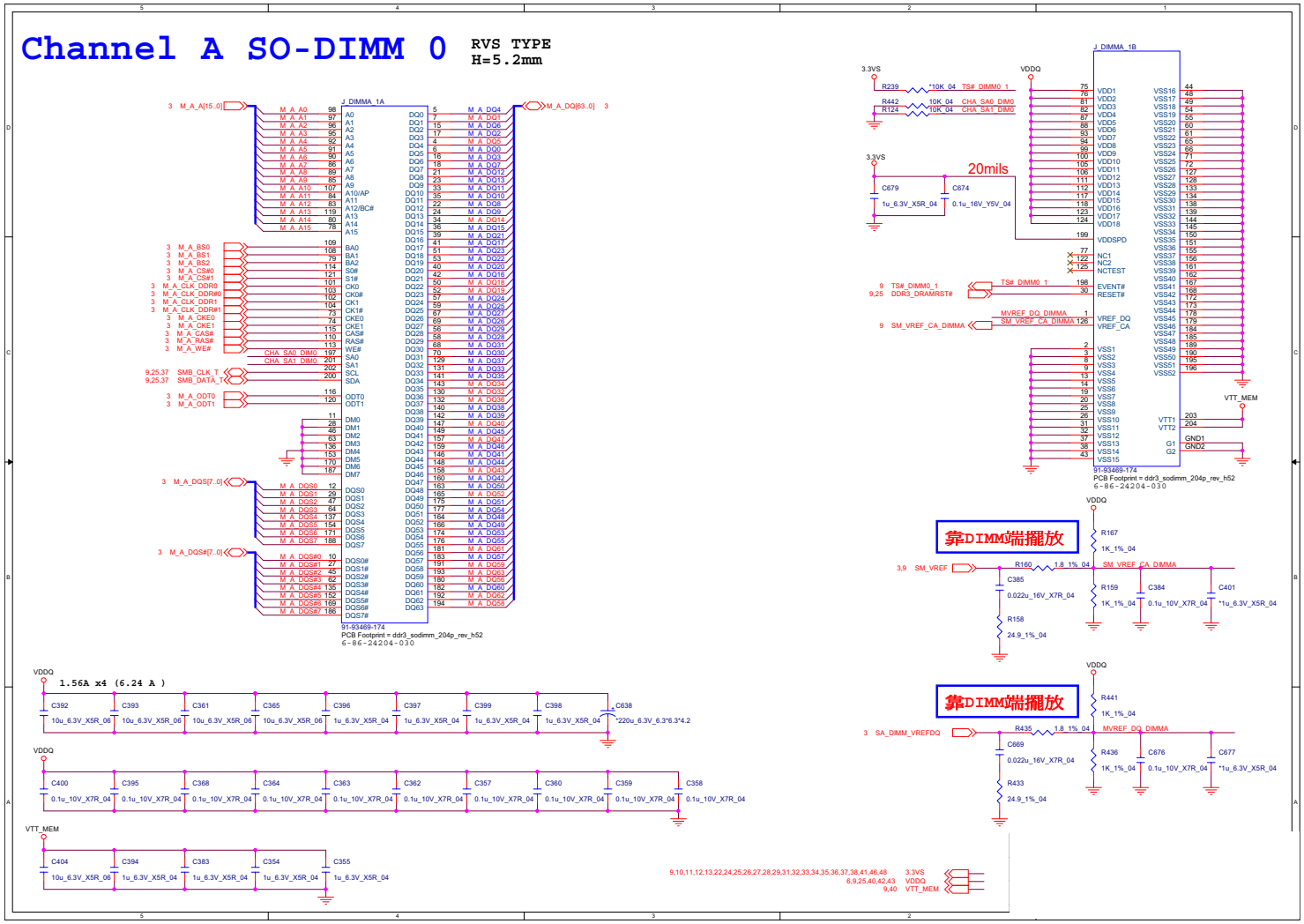
Sheet 6 of 72
Processor 5/6

Processor 6/6

Sheet 7 of 72
Processor 6/6



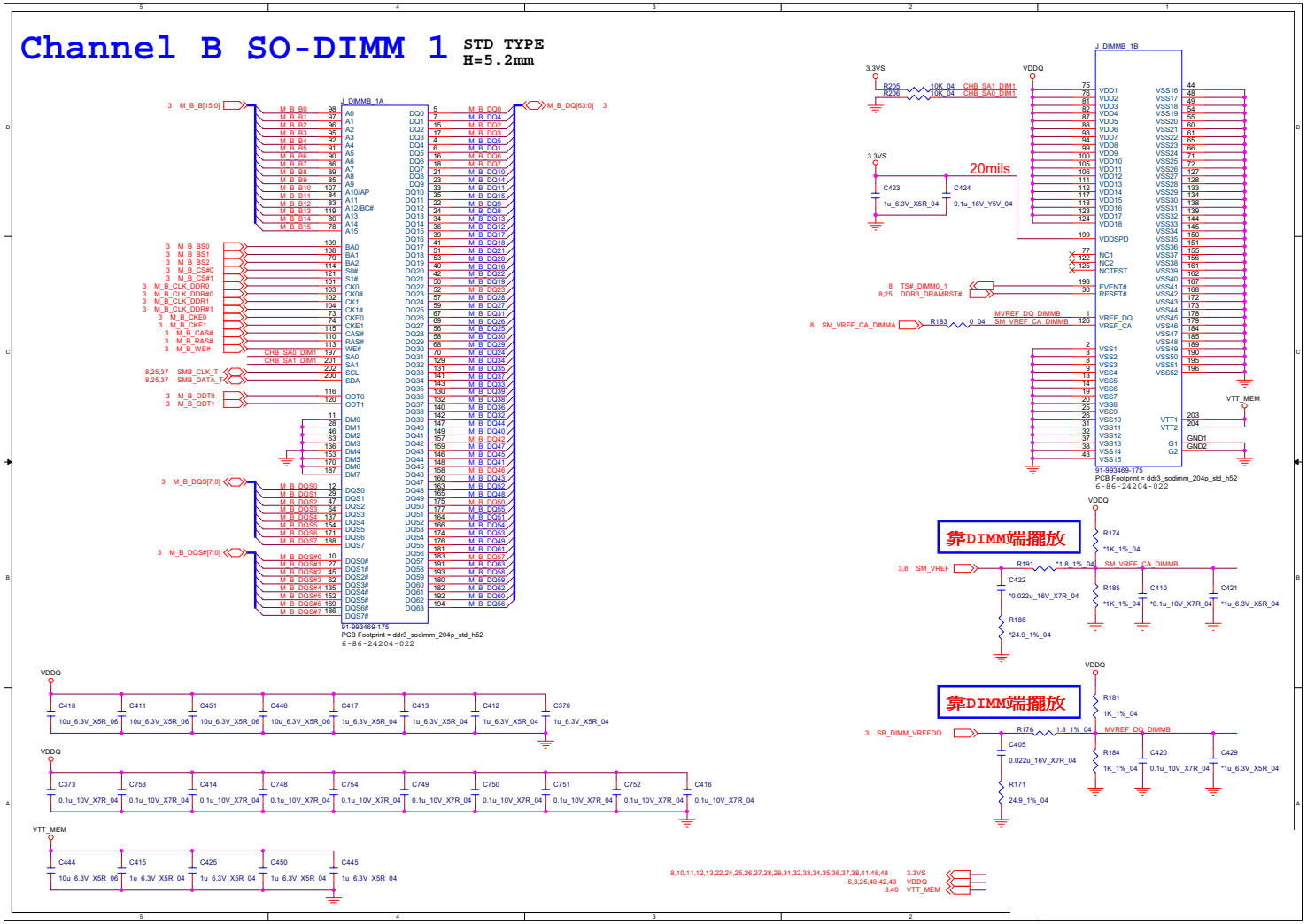
DDR3 CHA SO-DIMM



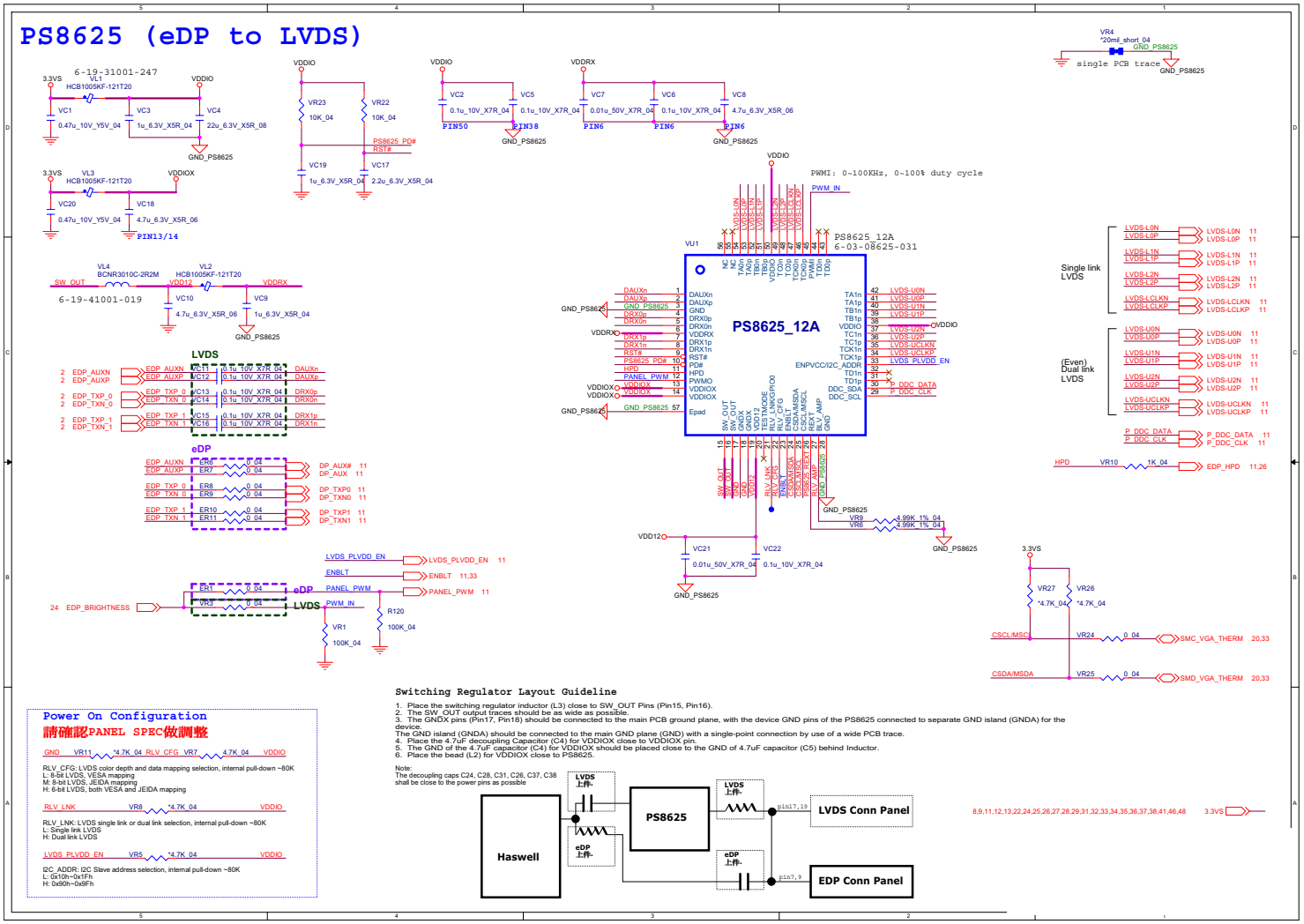
Sheet 8 of 72
DDR3 CHA SO-DIMM

DDR3 CHB SO-DIMM

Sheet 9 of 72
DDR3 CHB SO-DIMM

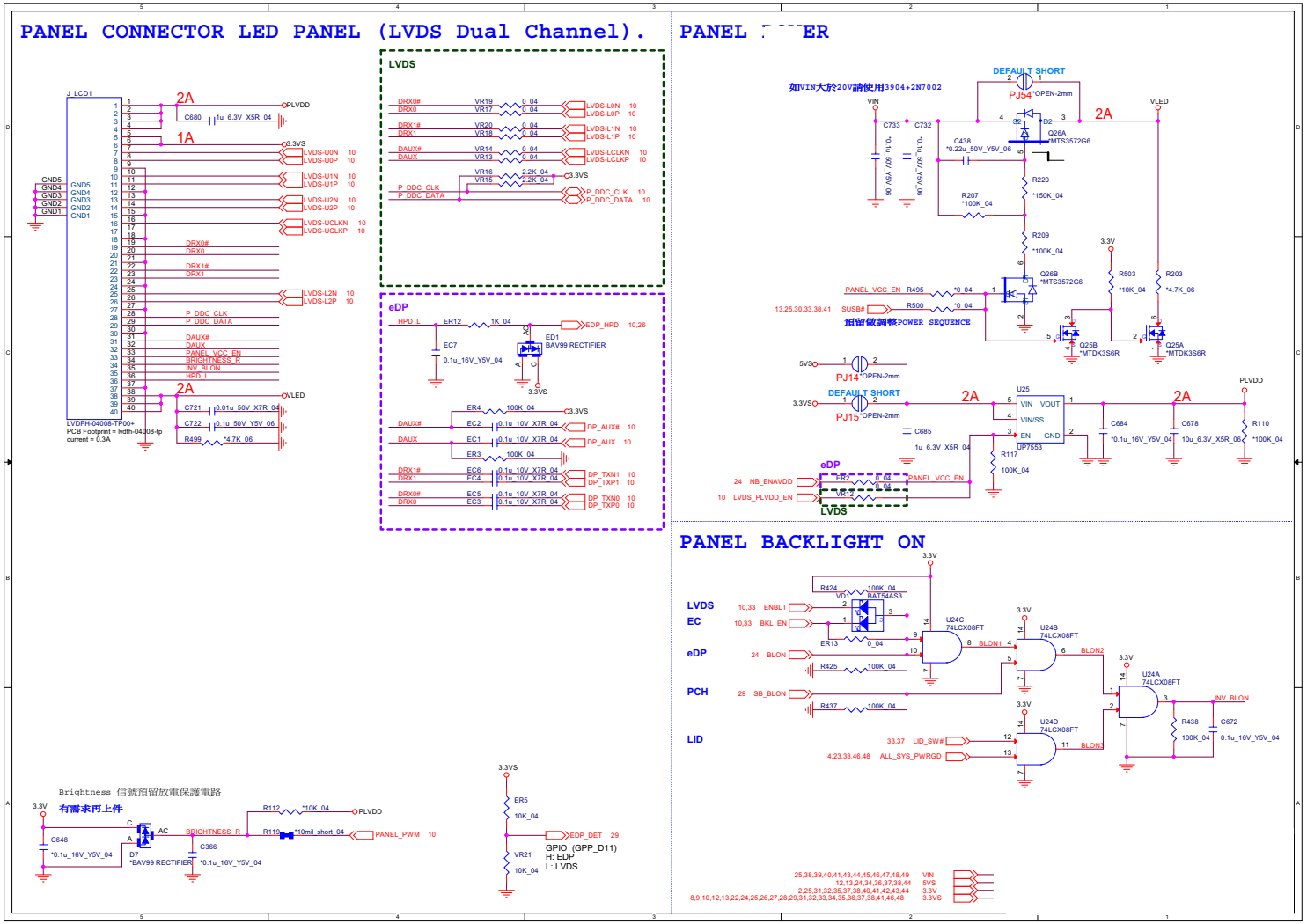


PS8625

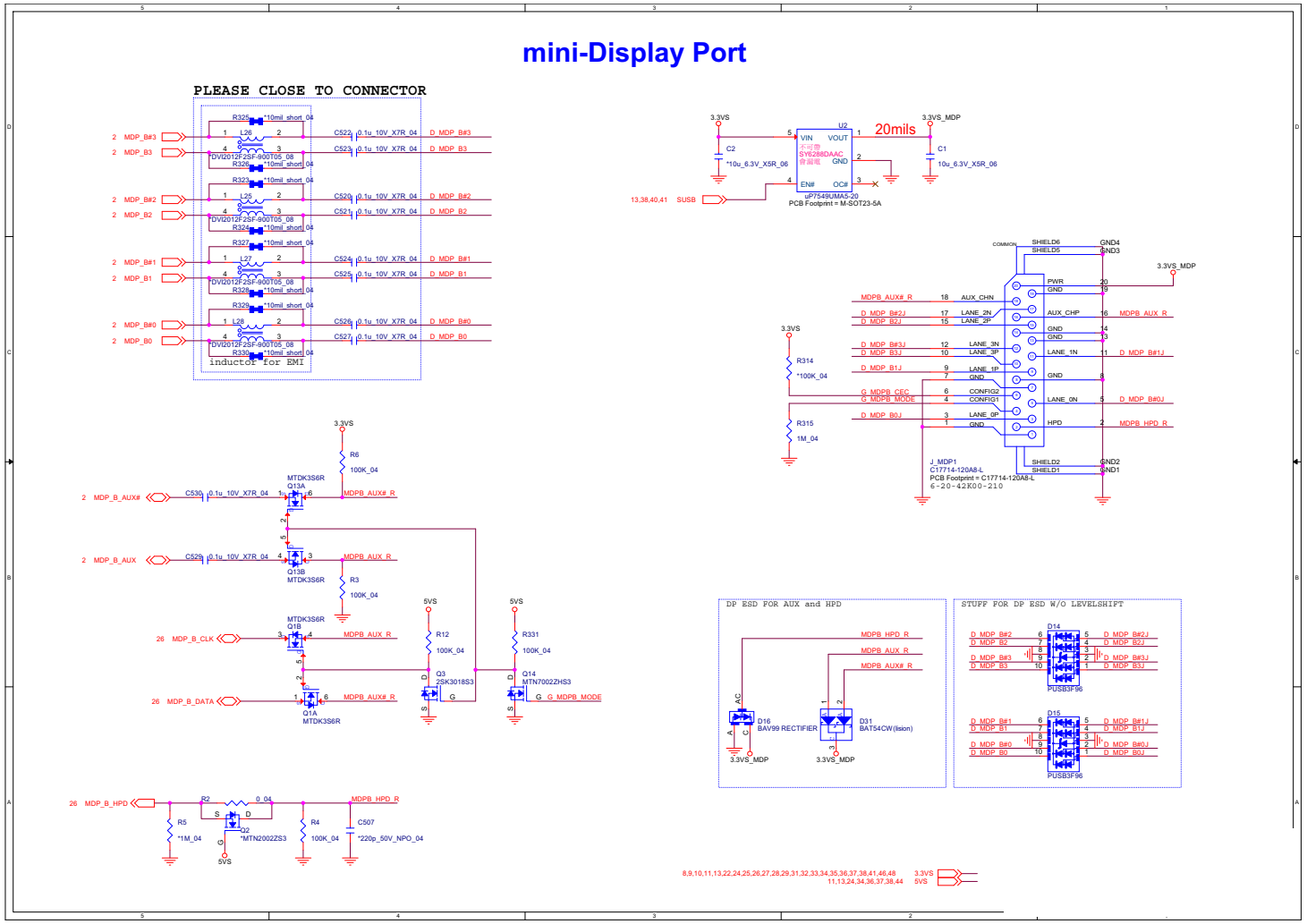

PS8625 (eDP to LVDS)
PS8625_12A
6-03-08625-031
6-19-31001-247
6-19-41001-019
LVDS
eDP
Single link LVDS
(Even) Dual link LVDS
Power On Configuration
請確認PANEL SPEC做調整
Switching Regulator Layout Guideline
1. Place the switching regulator inductor (L3) close to SW_OUT Pins (Pin15, Pin16).
2. The SW_OUT output traces should be as wide as possible.
3. The GNDX pins (Pin17, Pin18) should be connected to the main PCB ground plane, with the device GND pins of the PS8625 connected to separate GND island (GNDA) for the device.
The GND island (GNDA) should be connected to the main GND plane (GND) with a single-point connection by use of a wide PCB trace.
4. Place the 4.7uF decoupling Capacitor (C4) for VDDIOX close to VDDIOX pin.
5. The GND of the 4.7uF capacitor (C4) for VDDIOX should be placed close to the GND of 4.7uF capacitor (C5) behind Inductor.
6. Place the bead (L2) for VDDIOX close to PS8625.
Note:
The decoupling caps C24, C28, C31, C26, C37, C38 shall be close to the power pins as possible
Haswell
PS8625
LVDS Conn Panel
EDP Conn Panel

Panel, Inverter

Sheet 11 of 72
Panel, Inverter



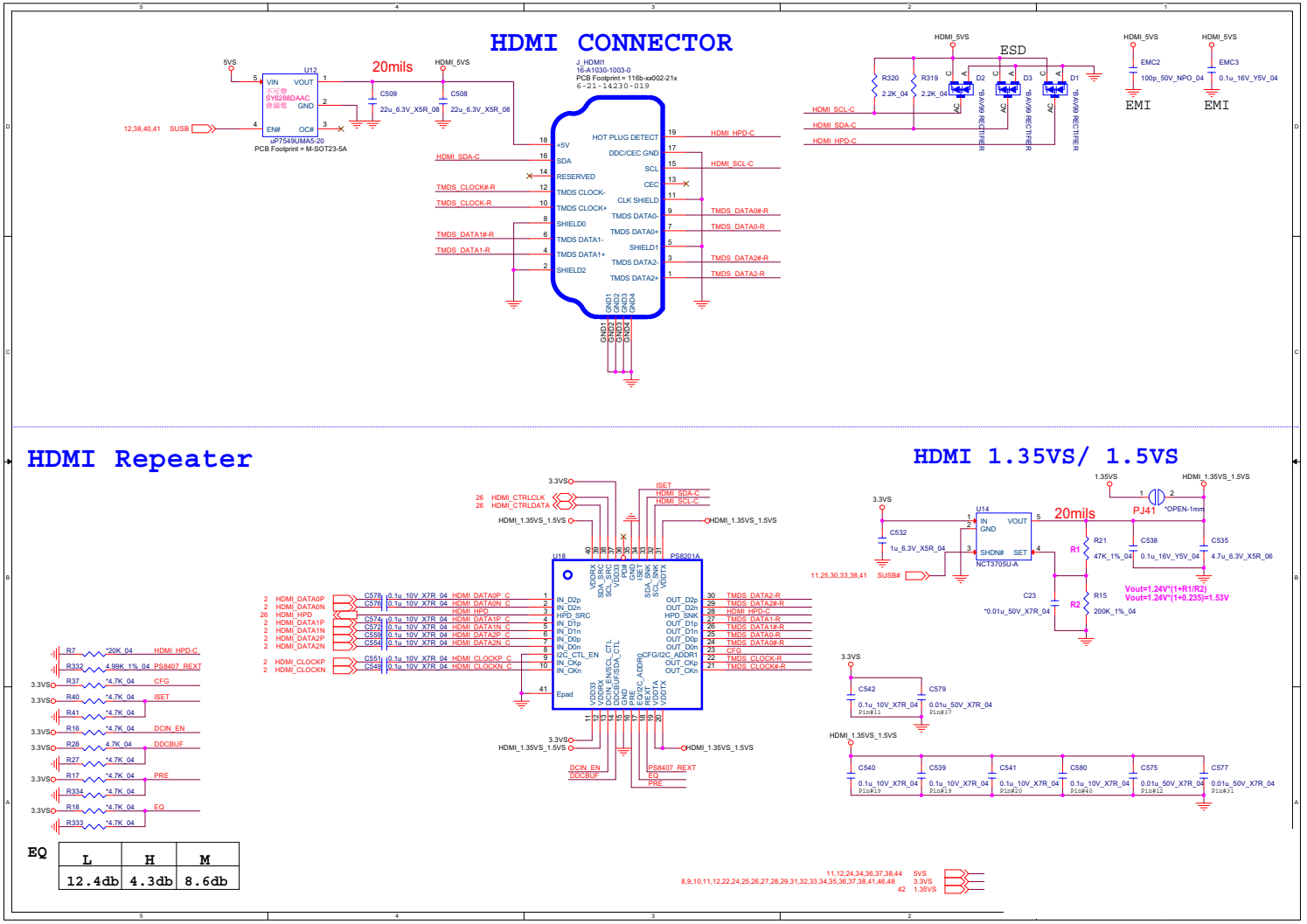
Mini DP Port



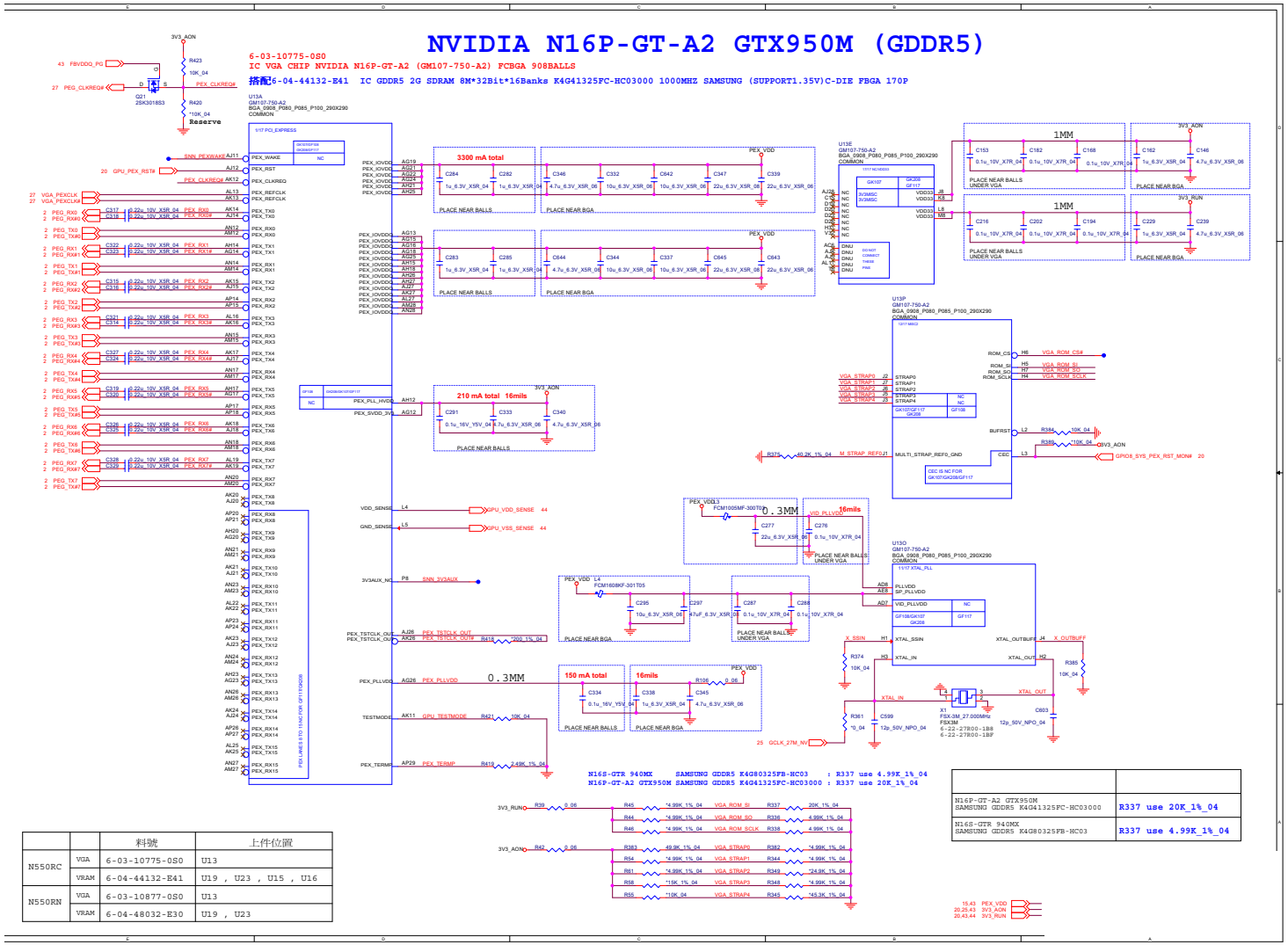
Sheet 12 of 72
Mini DP Port

HDMI PS8201

Sheet 13 of 72
HDMI PS8201



VGA Frame Buffer Interface

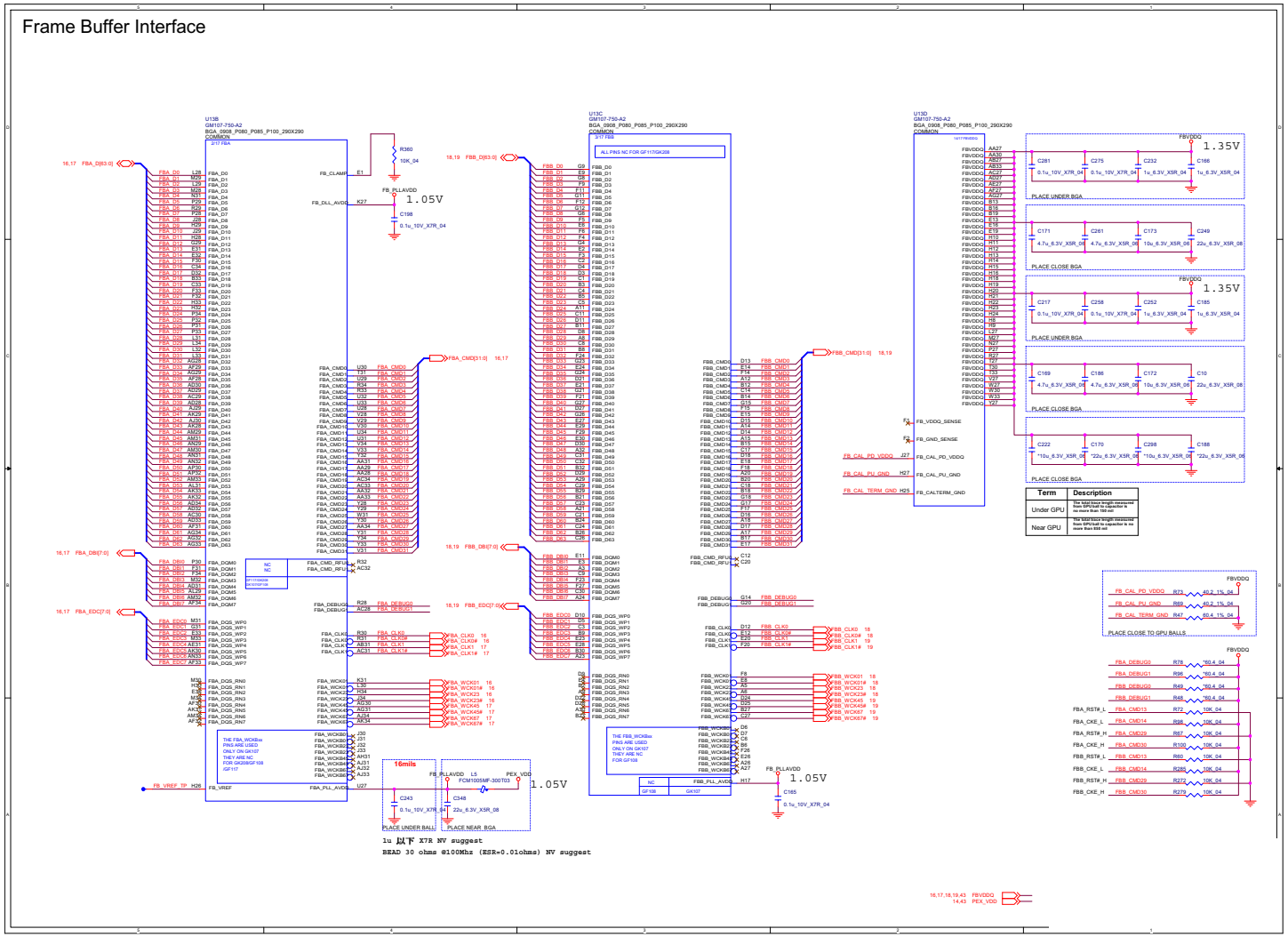


		料號	上件位置
N550RC	VGA	6-03-10775-0S0	U13
	VRAM	6-04-44132-E41	U19 , U23 , U15 , U16
N550RN	VGA	6-03-10877-0S0	U13
	VRAM	6-04-48032-E30	U19 , U23

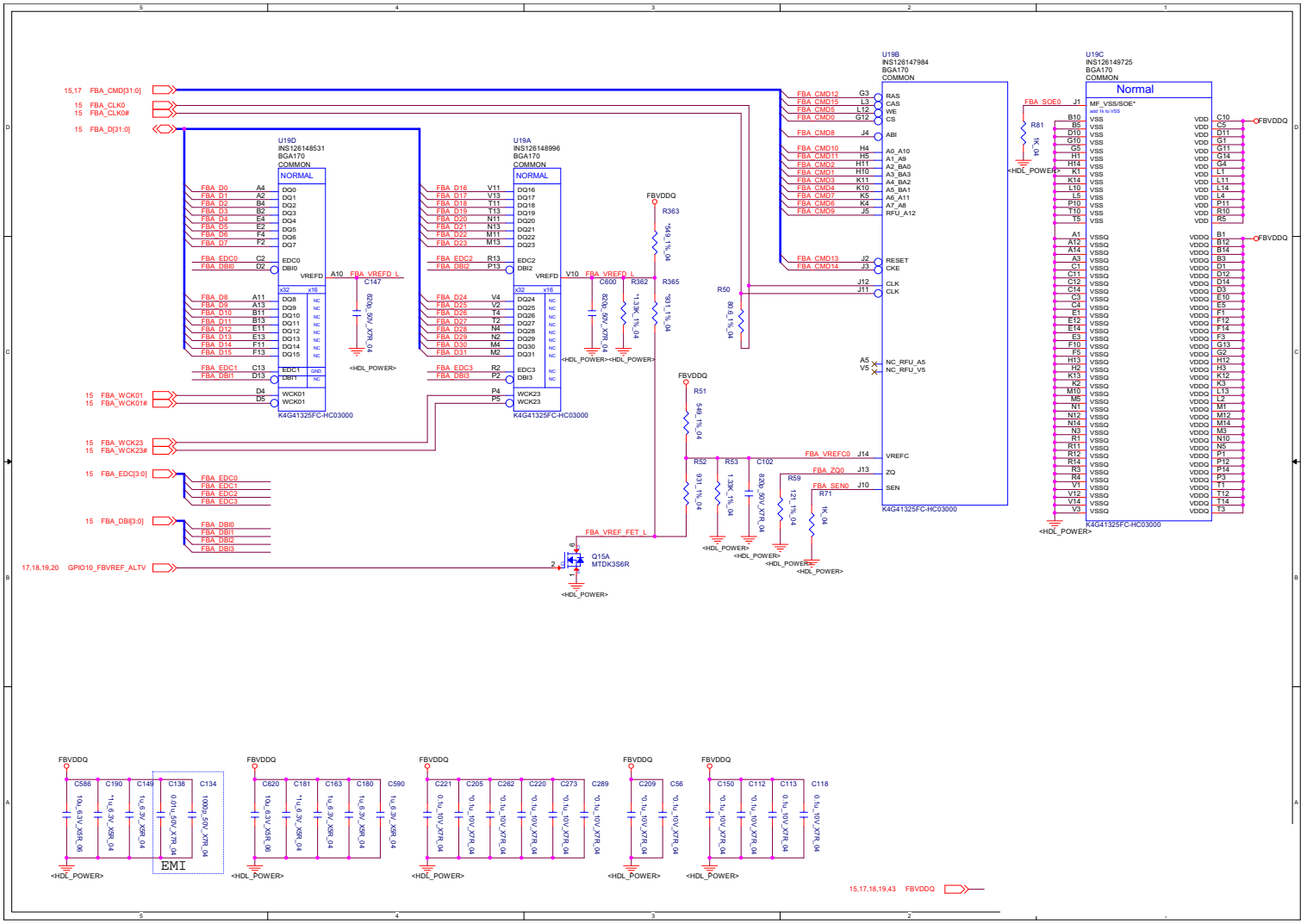
Sheet 14 of 72
VGA Frame Buffer Interface

VGA Frame Buffer Interface

Sheet 15 of 72
VGA Frame Buffer Interface



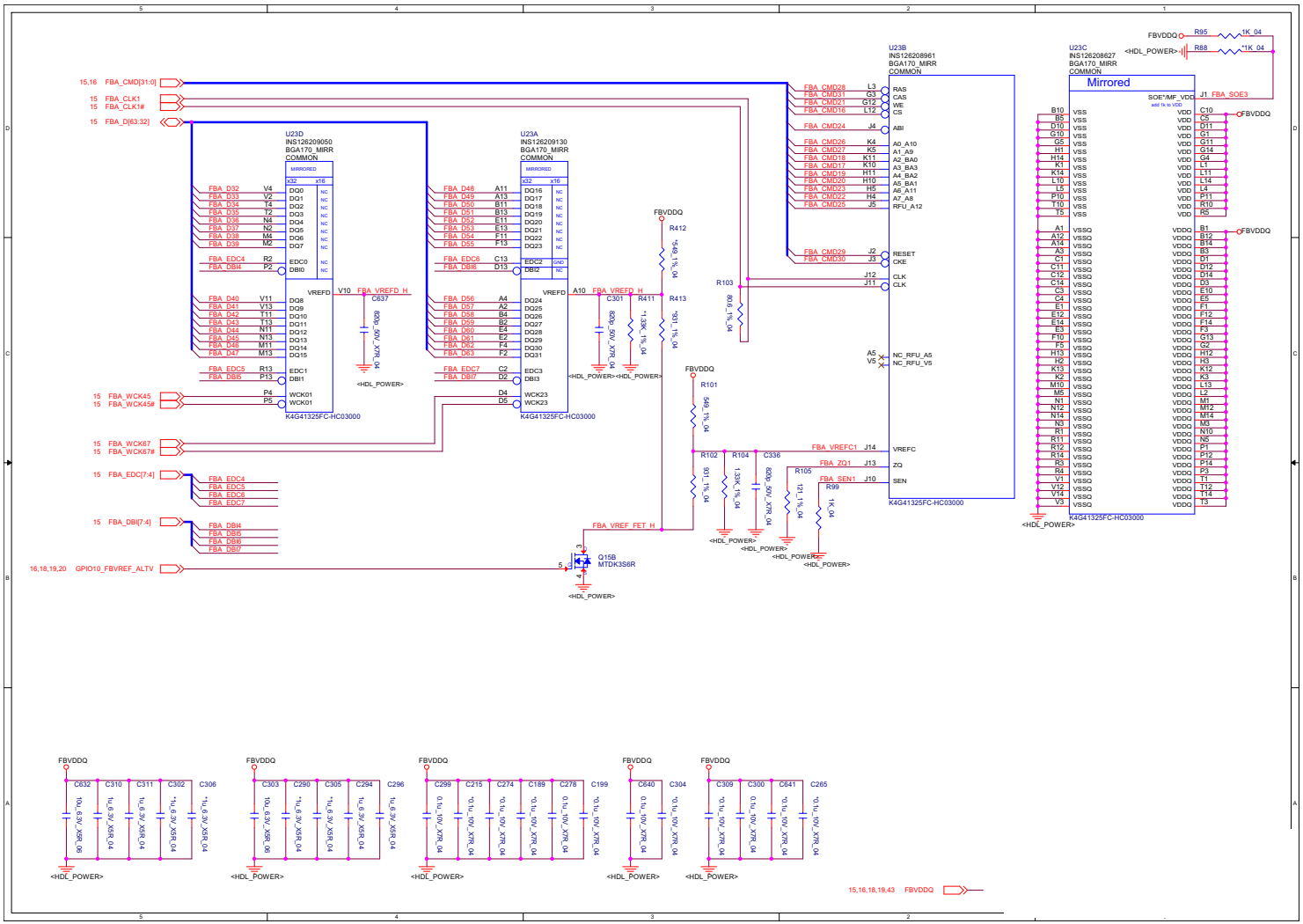
VGA Frame Buffer A



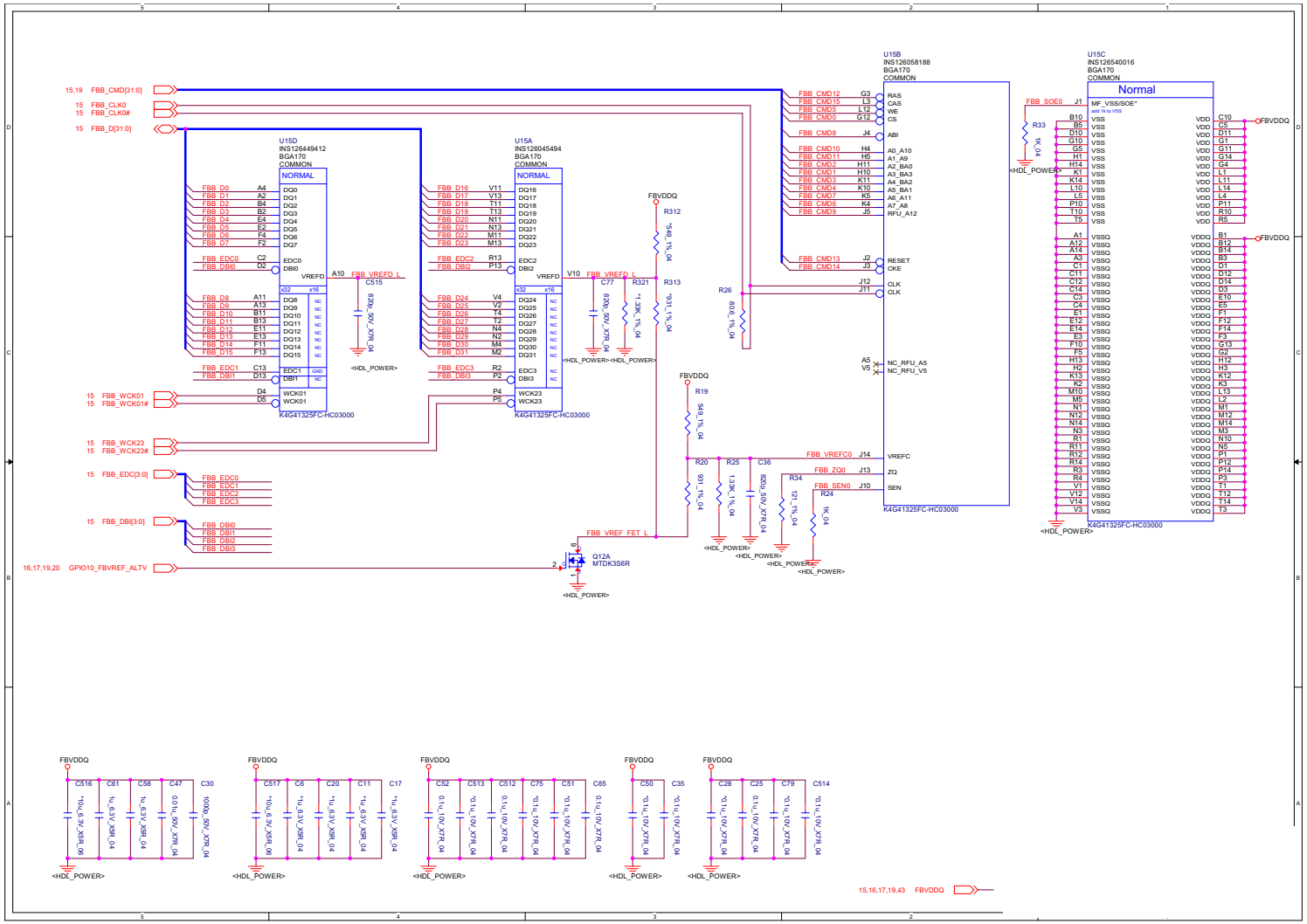
Sheet 16 of 72
VGA Frame Buffer
A

VGA Frame Buffe A

Sheet 17 of 72
VGA Frame Buffer A



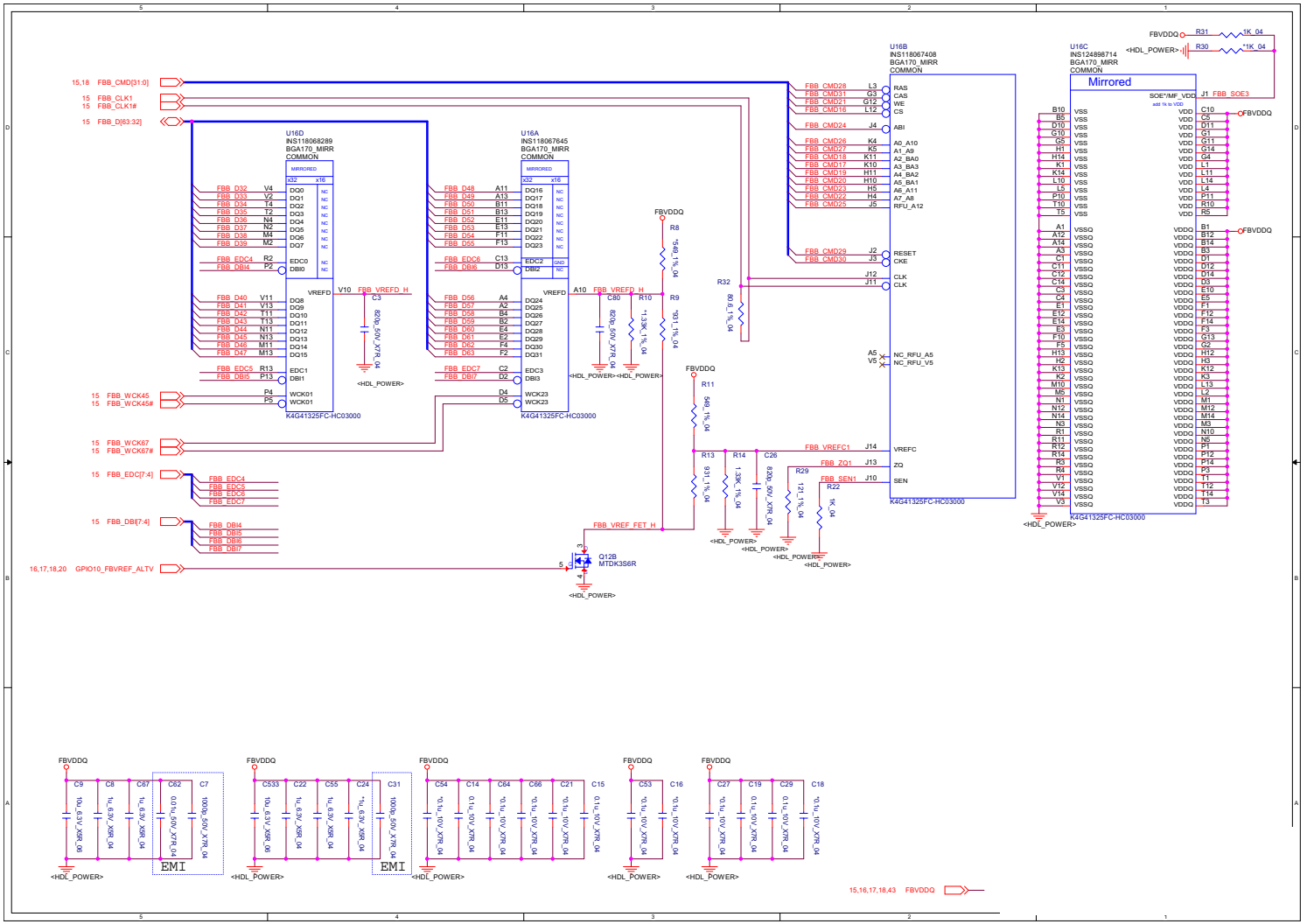
VGA Frame Buffer B



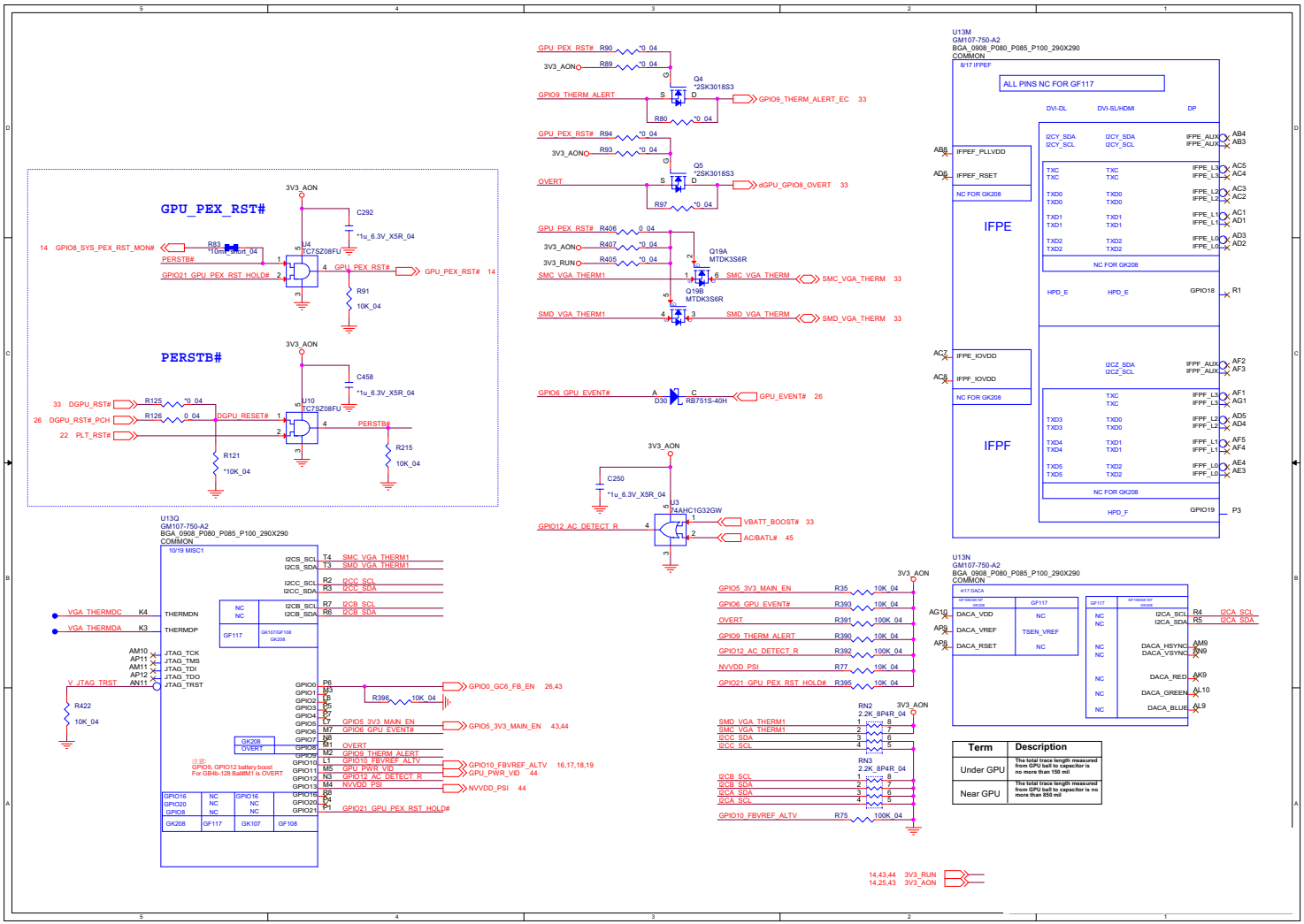
Sheet 18 of 72
VGA Frame Buffer
B

VGA Frame Buffer B

Sheet 19 of 72
VGA Frame Buffer B



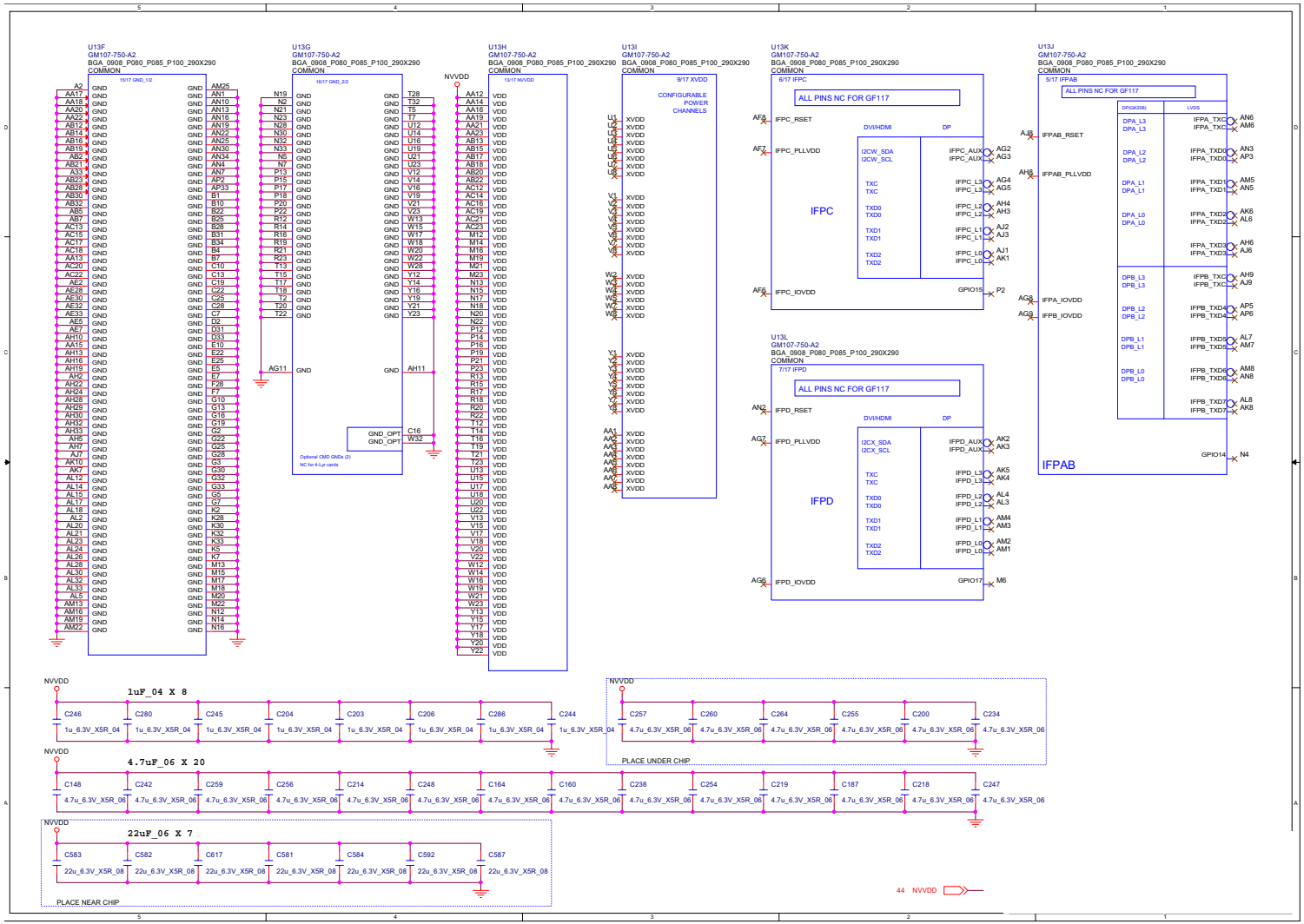
VGA I/O



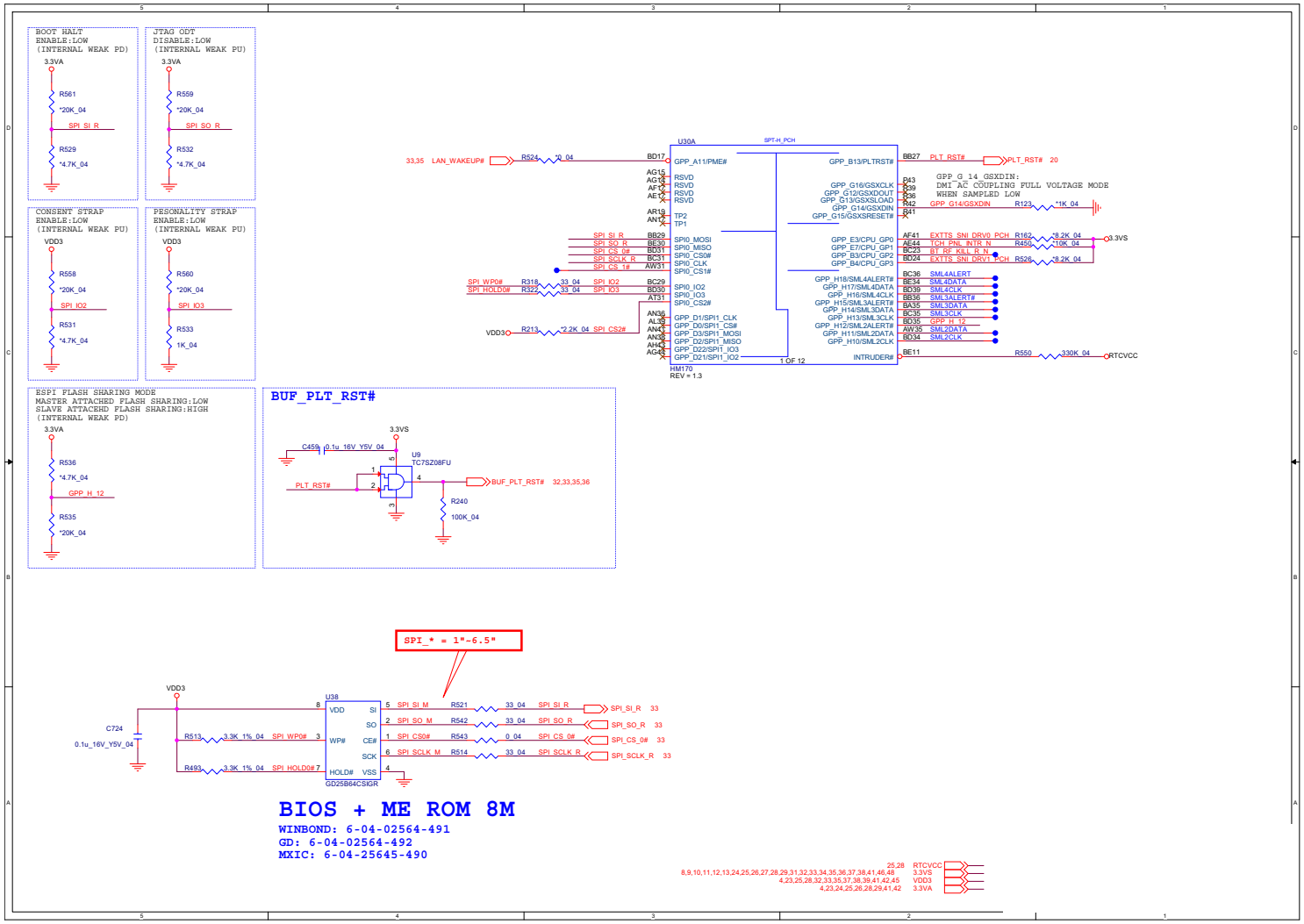
Sheet 20 of 72
VGA I/O

VGA NVVDD Decoupling

Sheet 21 of 72
VGA NVVDD Decoupling



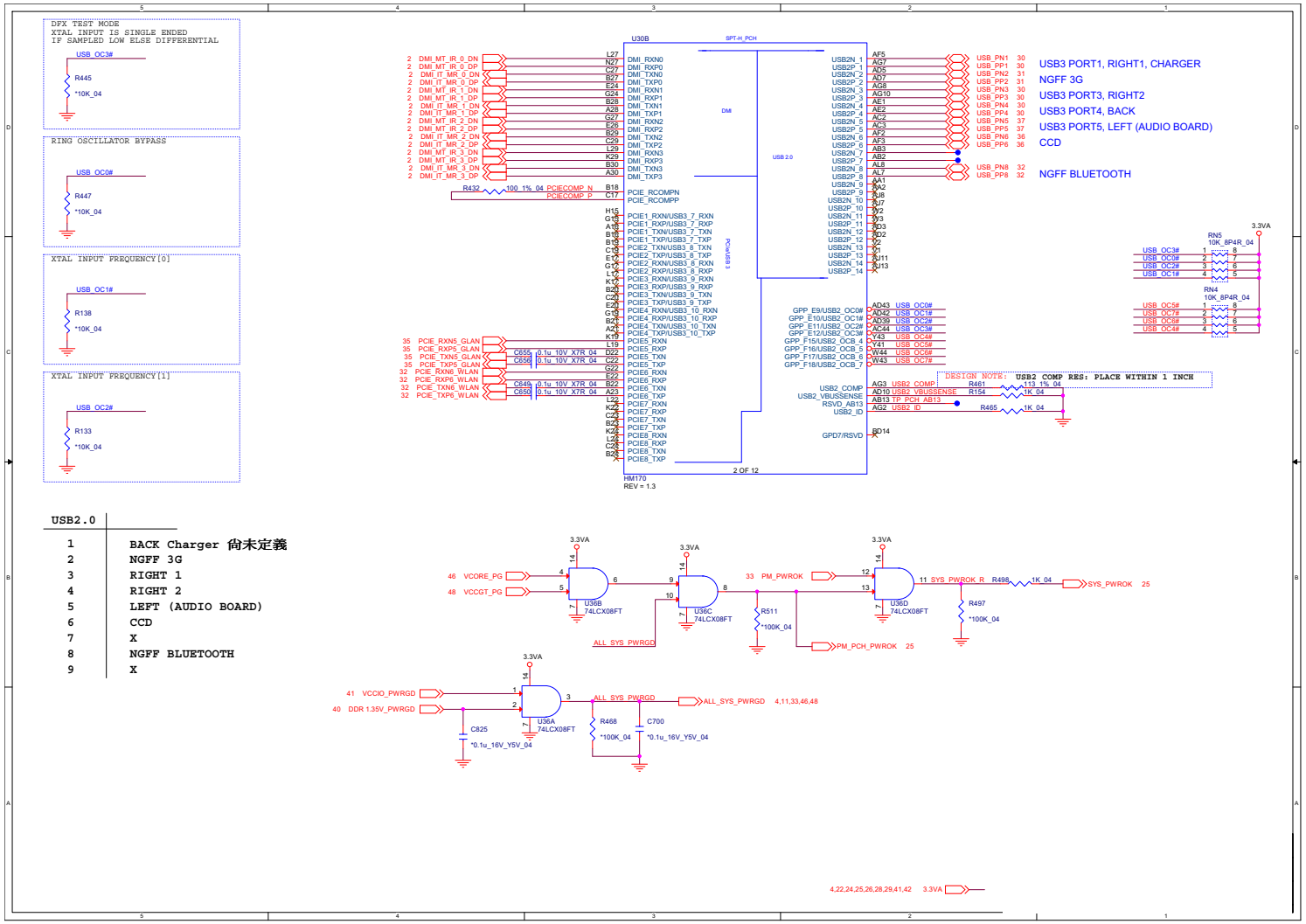
PCH 1/8



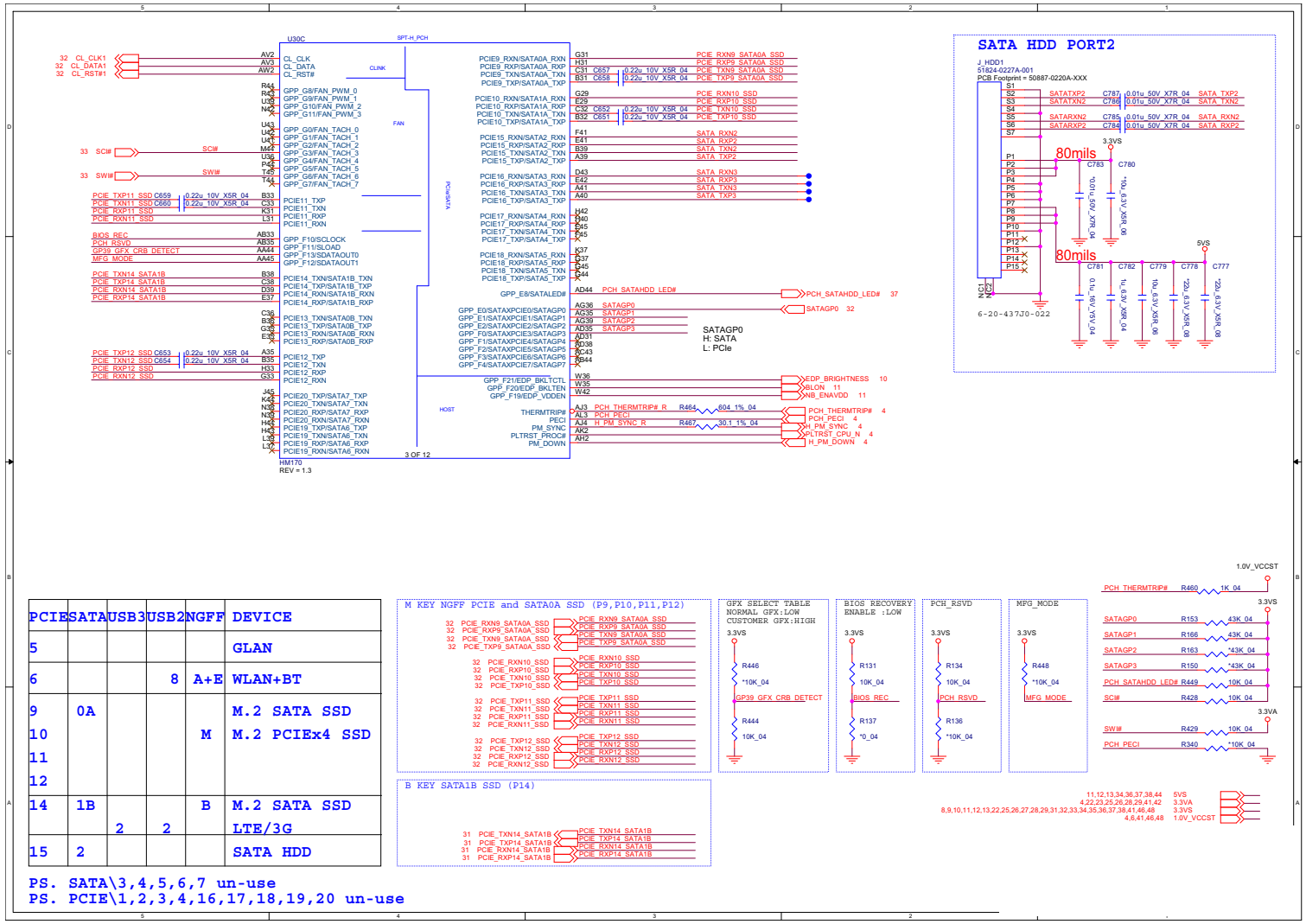
Sheet 22 of 72
PCH 1/8

PCH 2/8

Sheet 23 of 72
PCH 2/8



PCH 3/8



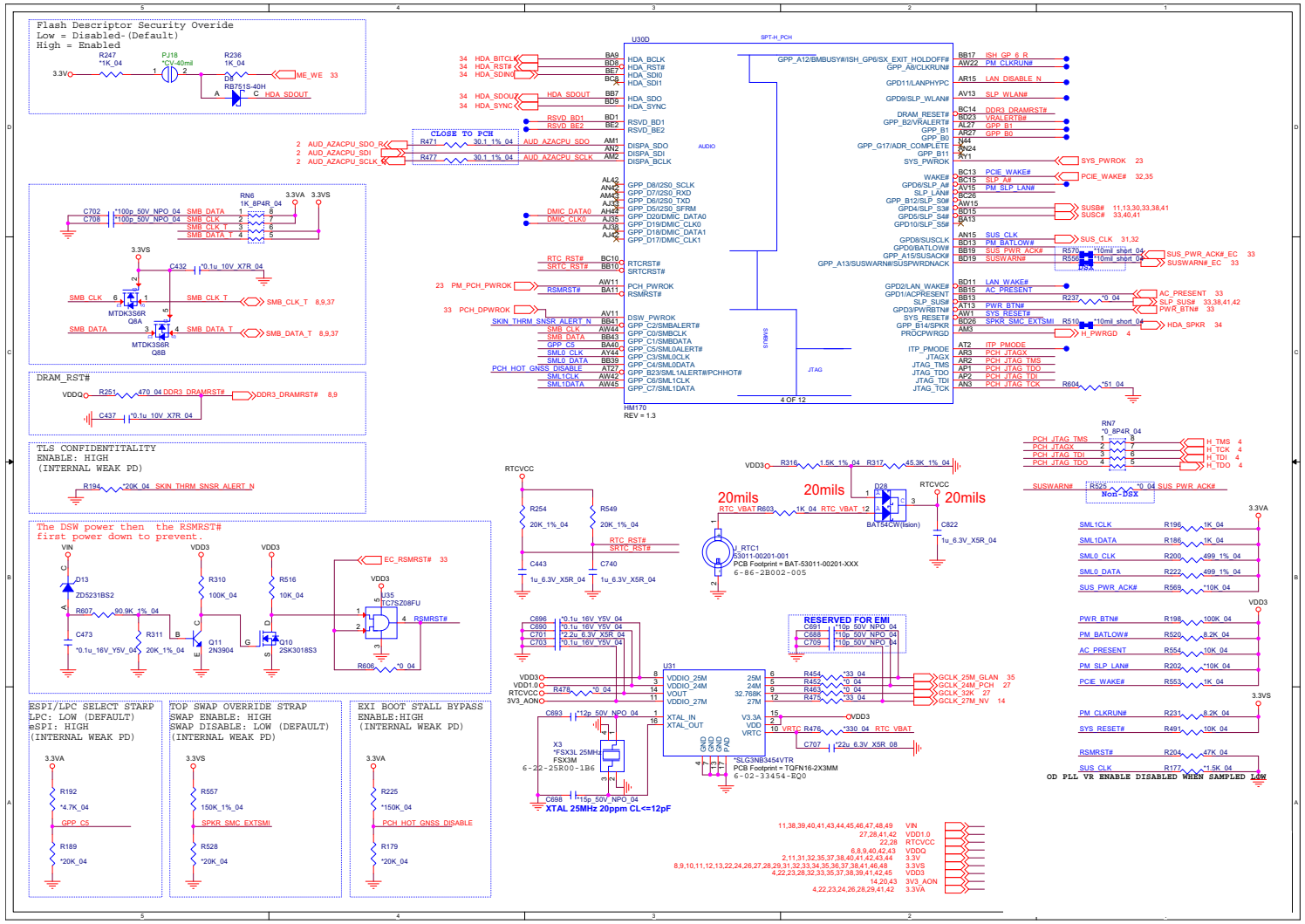
PCIE	SATA	USB3	USB2	NGFF	DEVICE
5					GLAN
6			8	A+E	WLAN+BT
9	0A				M.2 SATA SSD
10				M	M.2 PCIEx4 SSD
11					
12					
14	1B			B	M.2 SATA SSD
		2	2		LTE/3G
15	2				SATA HDD

PS. SATA\3,4,5,6,7 un-use
PS. PCIE\1,2,3,4,16,17,18,19,20 un-use

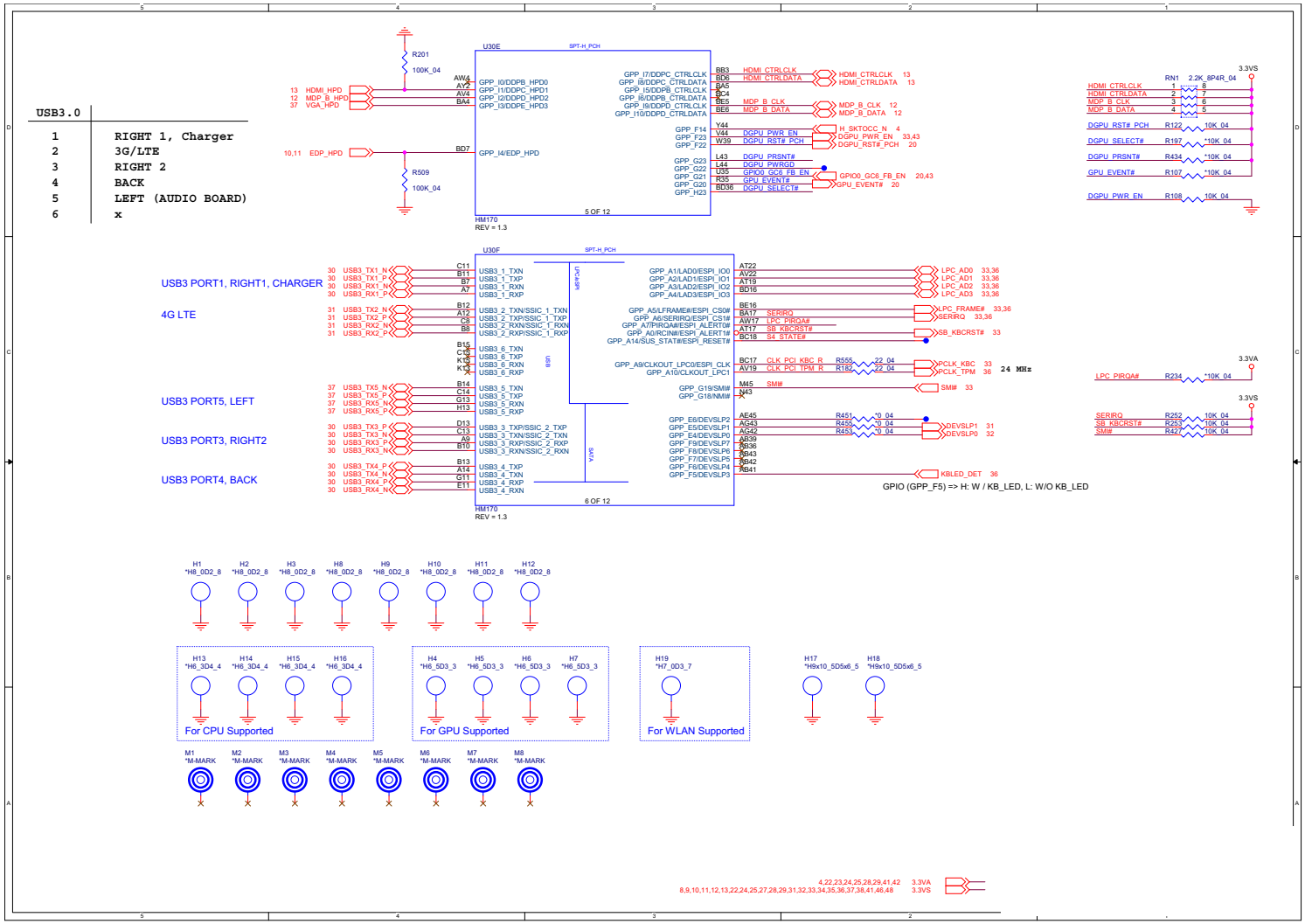
Sheet 24 of 72
PCH 3/8

PCH 4/8

Sheet 25 of 72
PCH 4/8



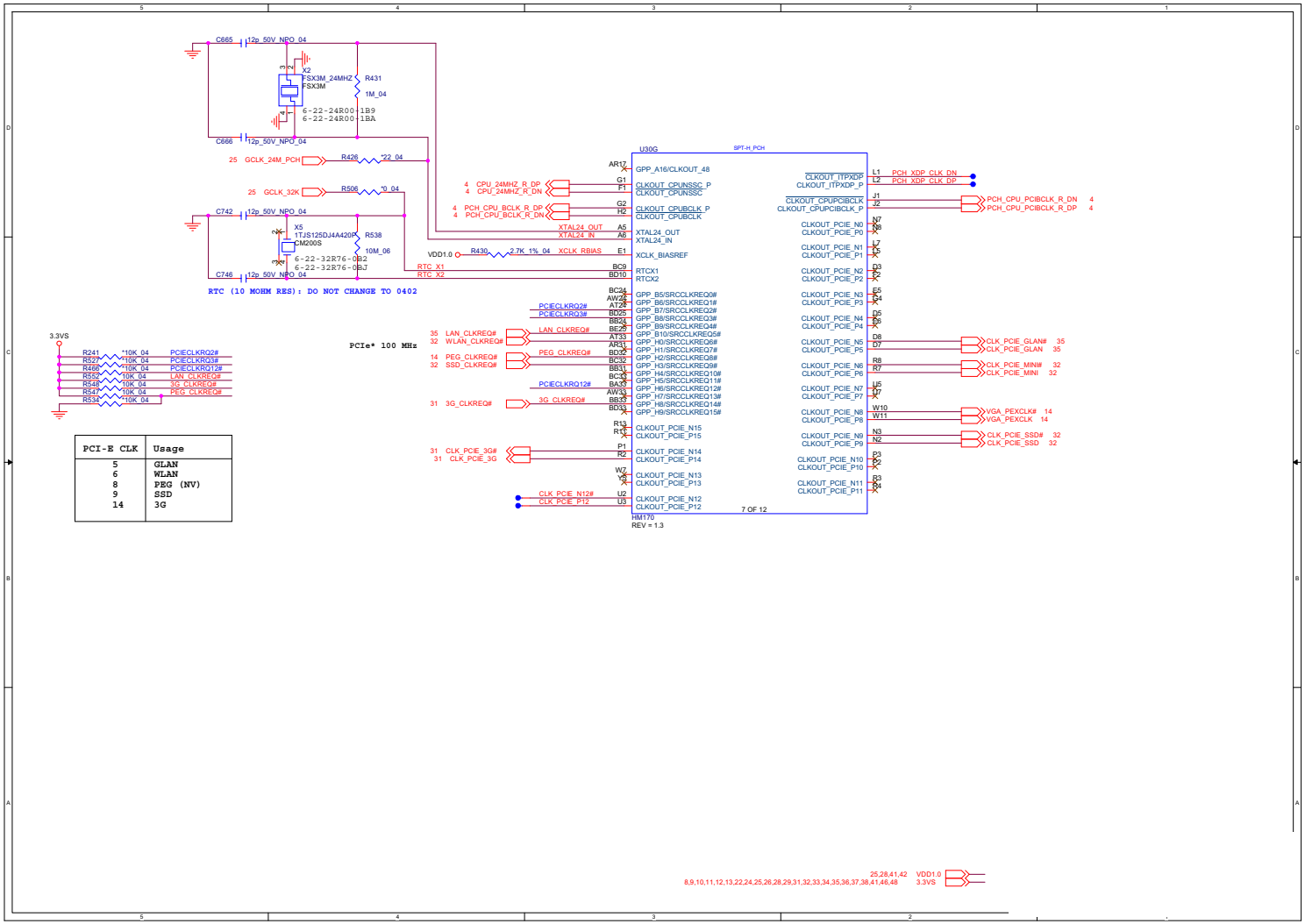
PCH 5/8



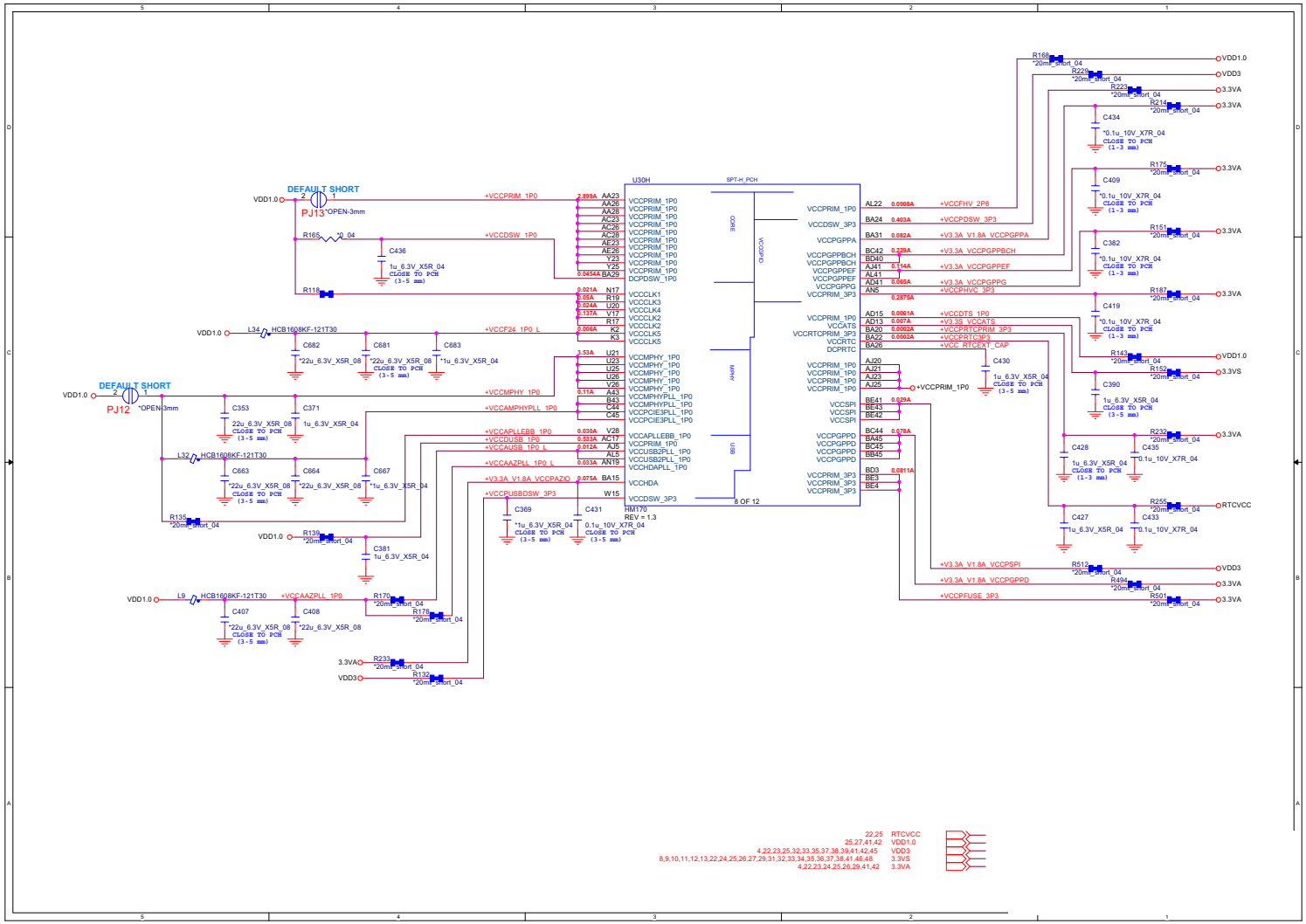
Sheet 26 of 72
PCH 5/8

PCH 6/8

Sheet 27 of 72
PCH 6/8



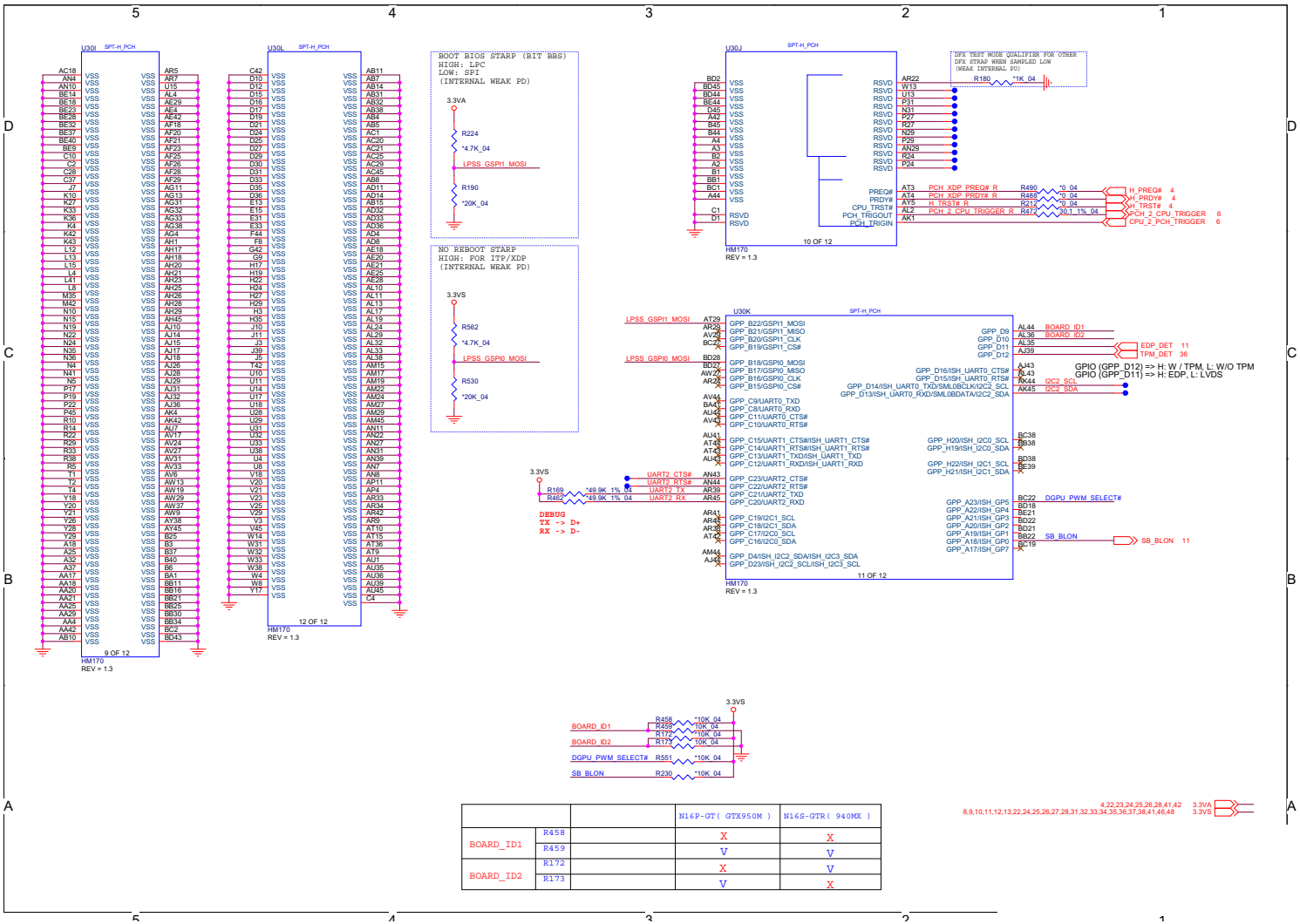
PCH 7/8



Sheet 28 of 72
PCH 7/8

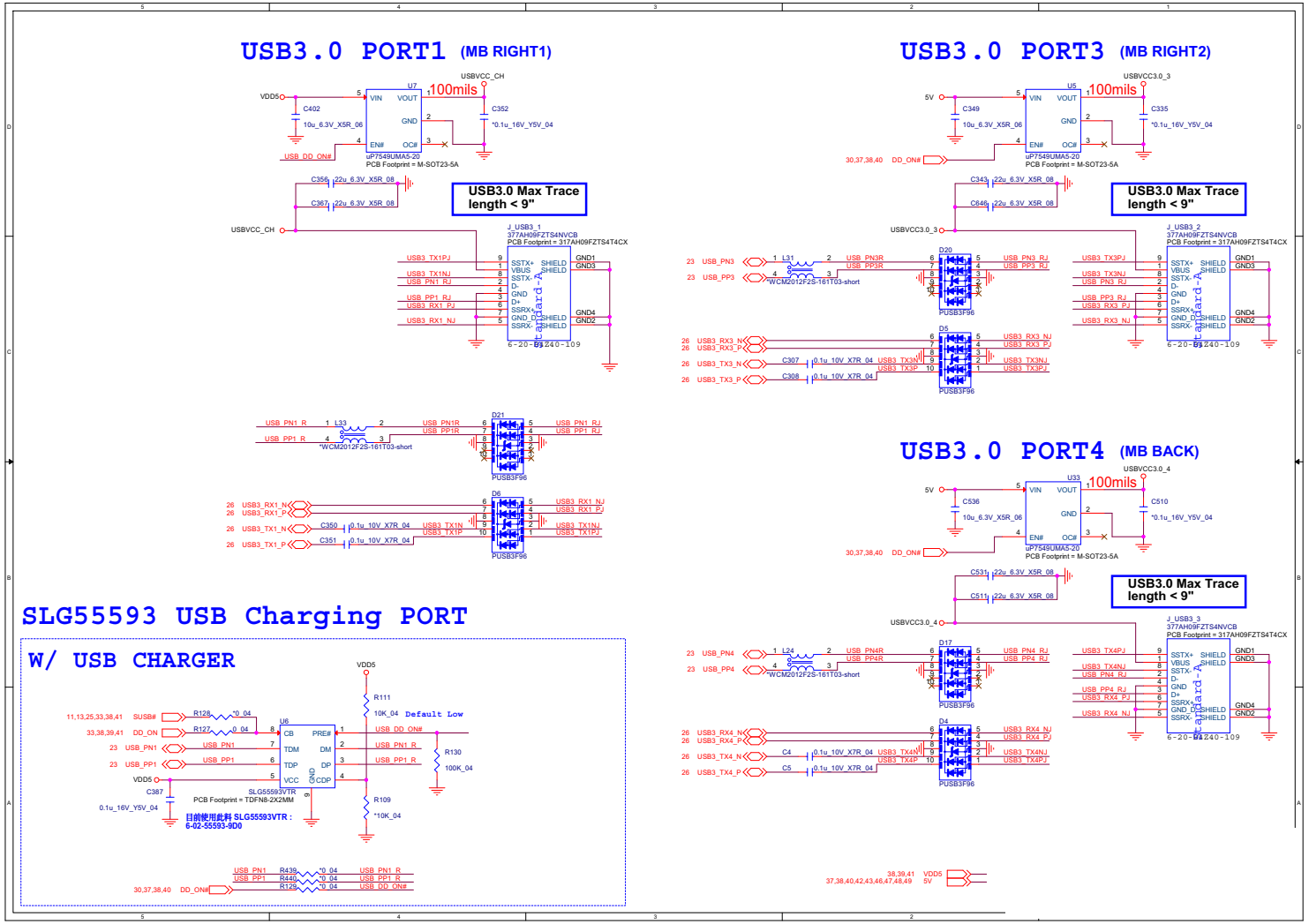
PCH 8/8

Sheet 29 of 72
PCH 8/8



		N16P-GT(GTX950M)	N16S-GTR(940MX)
BOARD_ID1	R458	X	X
	R459	V	V
BOARD_ID2	R172	X	V
	R173	V	X

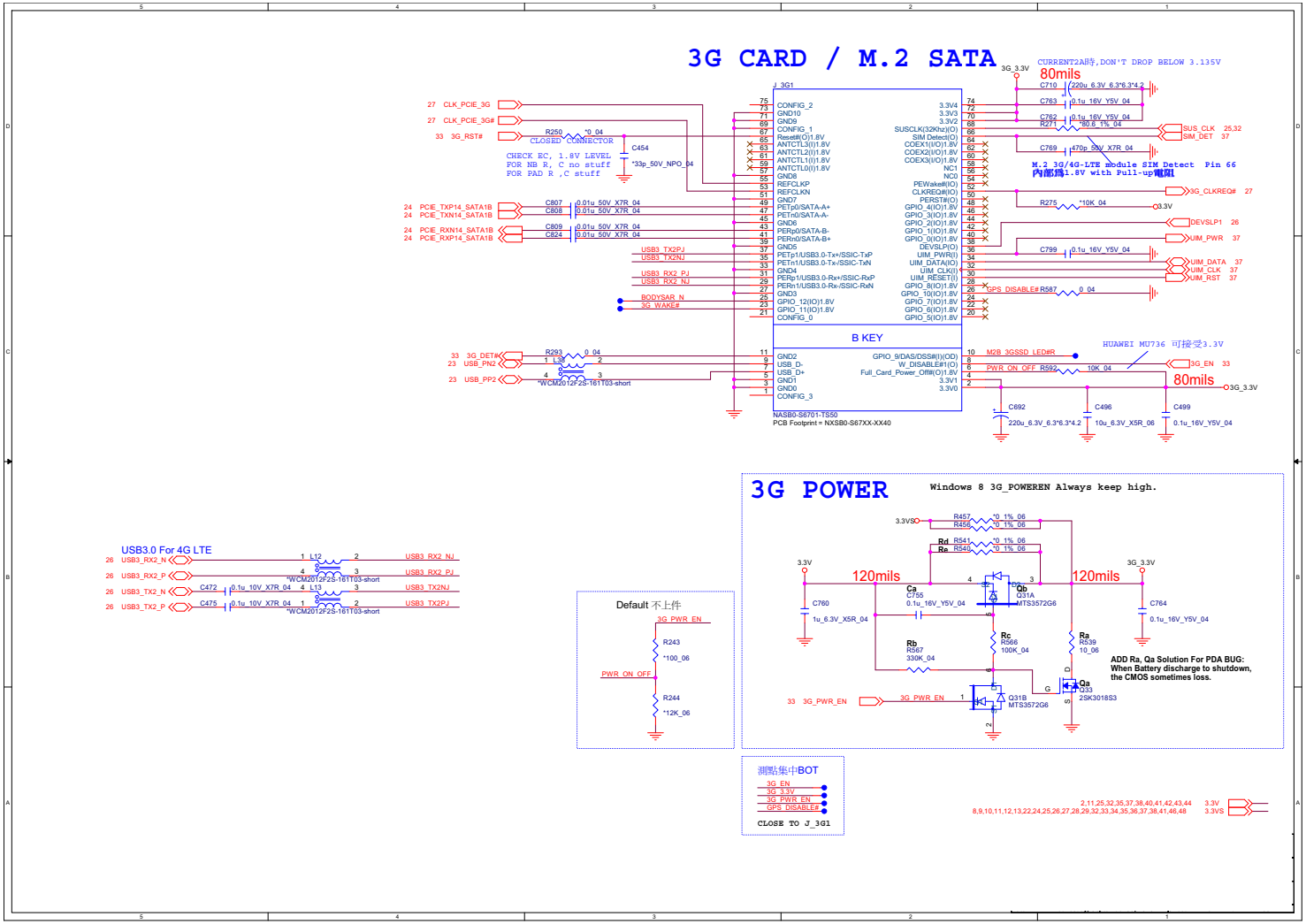
USB 3.0



Sheet 30 of 72
USB 3.0

M.2 SATA & SSD

Sheet 31 of 72
M.2 SATA & SSD



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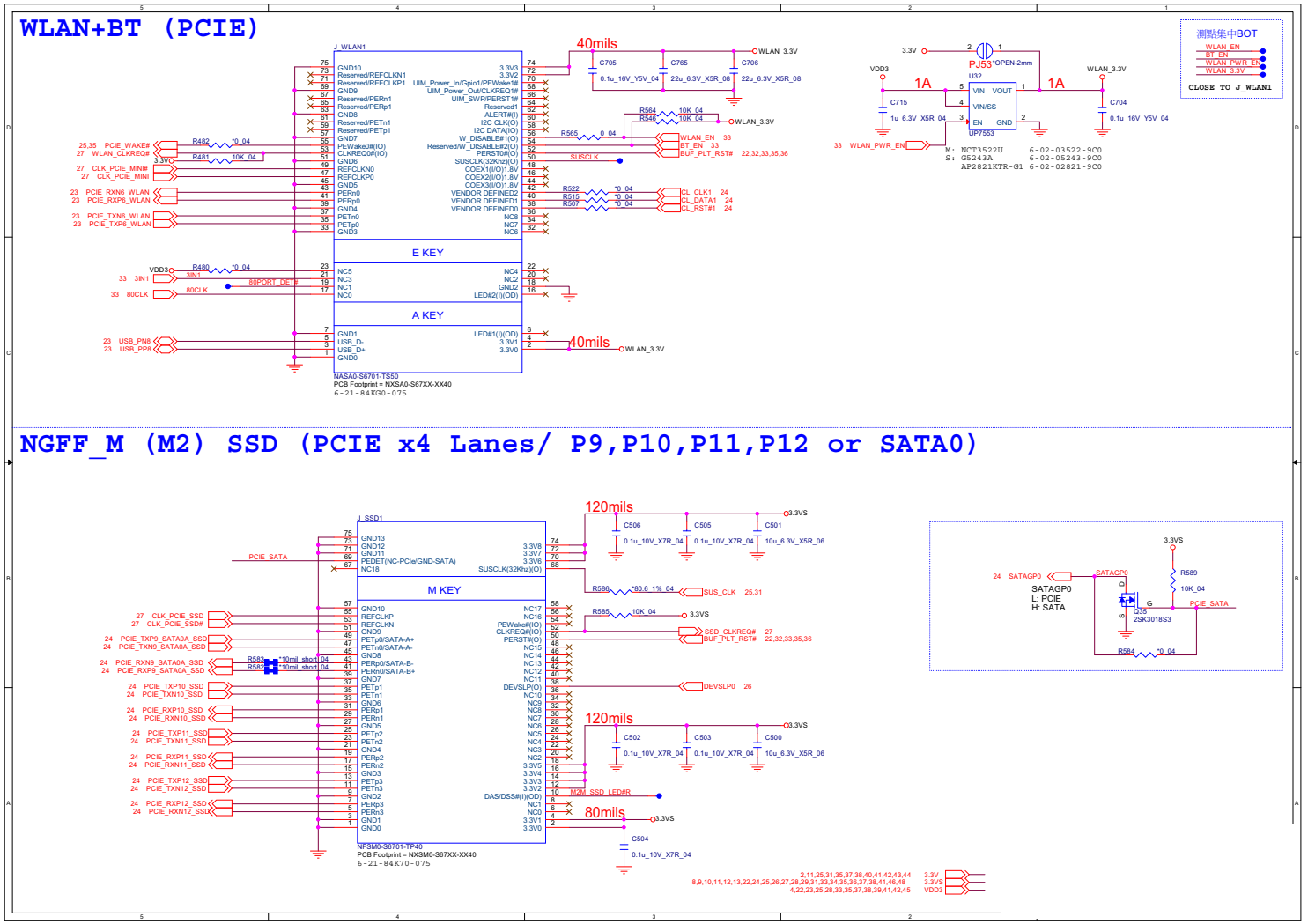
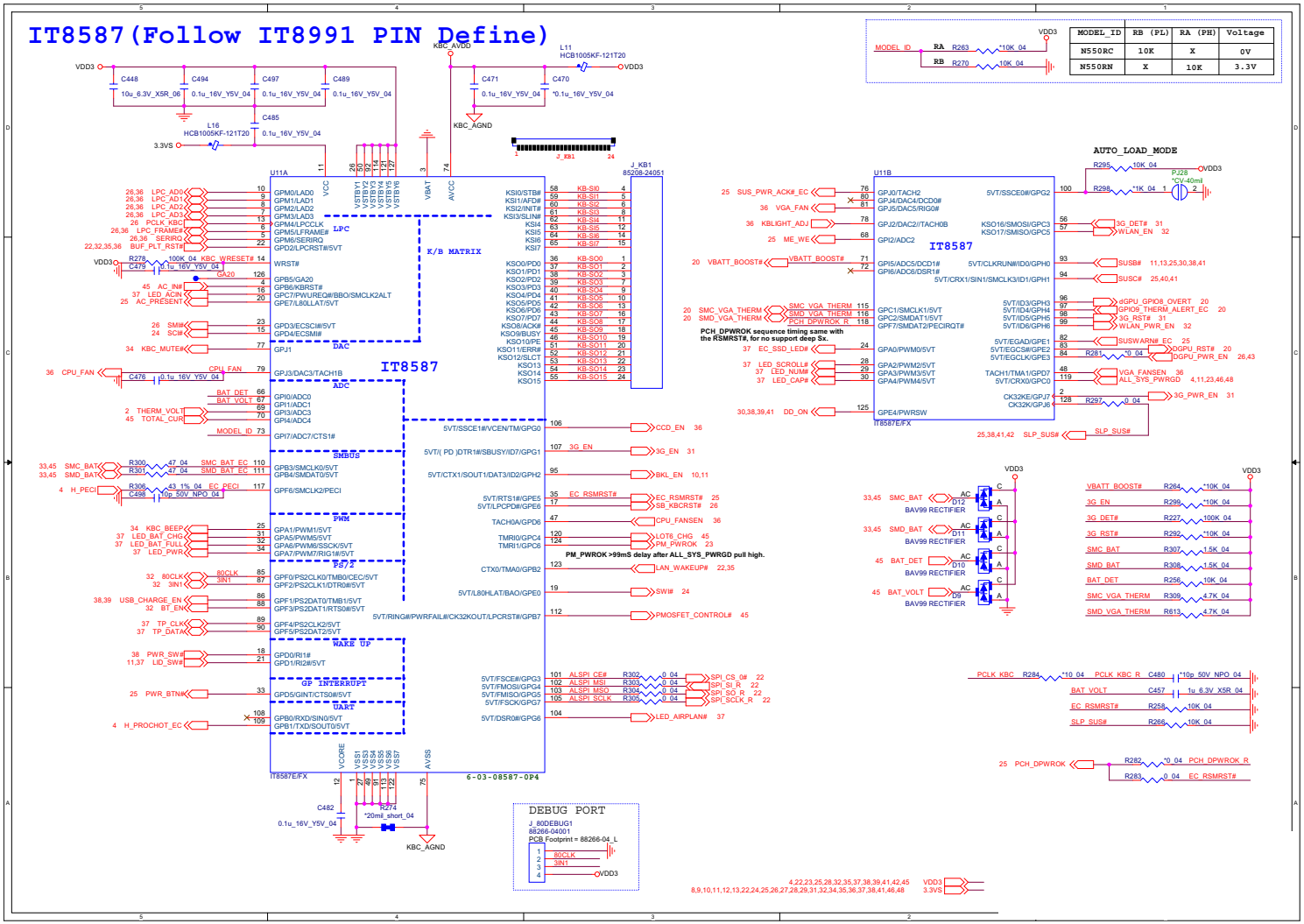


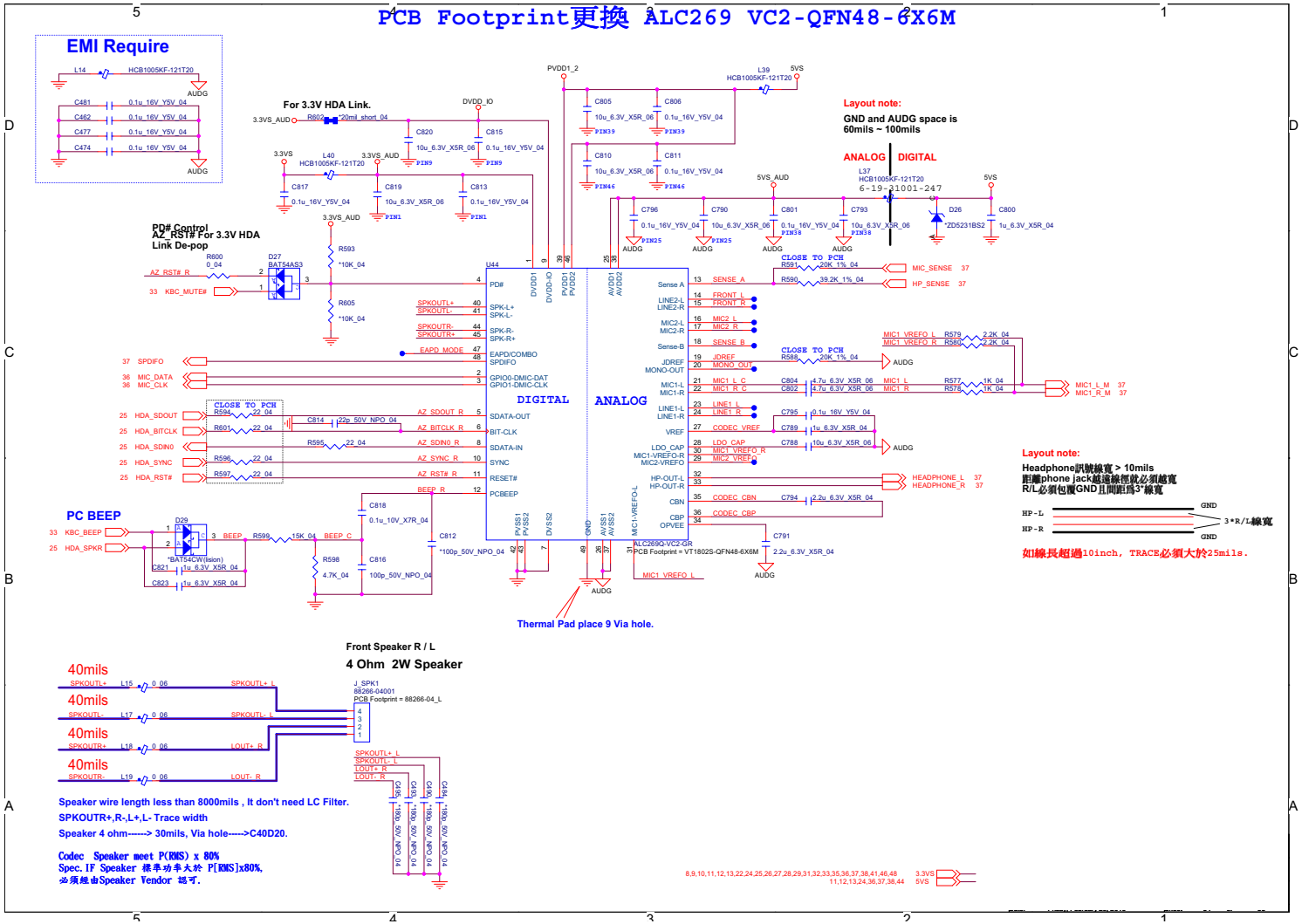
Sheet 32 of 72
M.2 WLAN, SSD

KBC IT8587E

Sheet 33 of 72
KBC IT8587E



Audio Codec, ALC269VC2



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Audio Codec,
ALC269VC2

LAN RTL8411B

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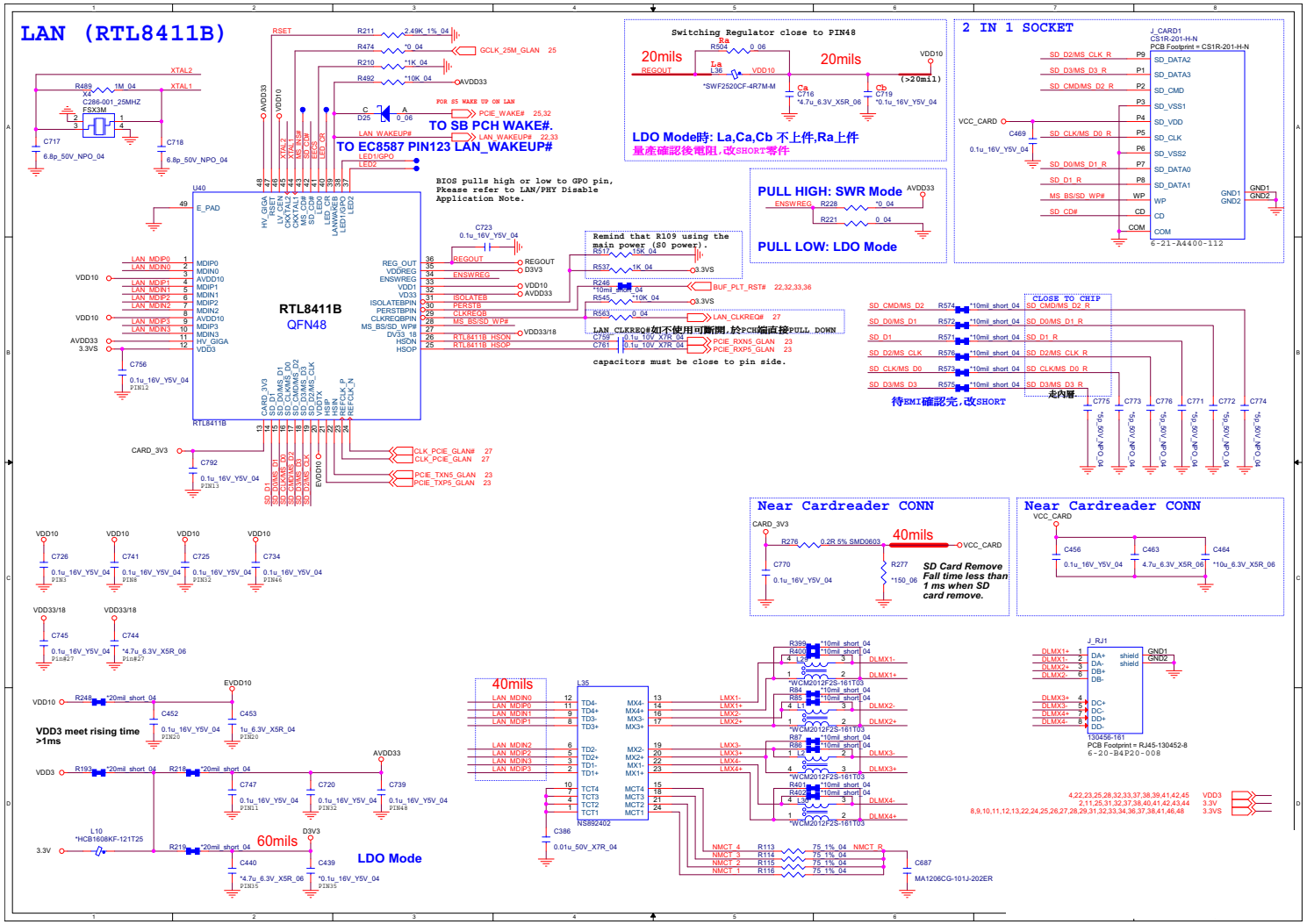
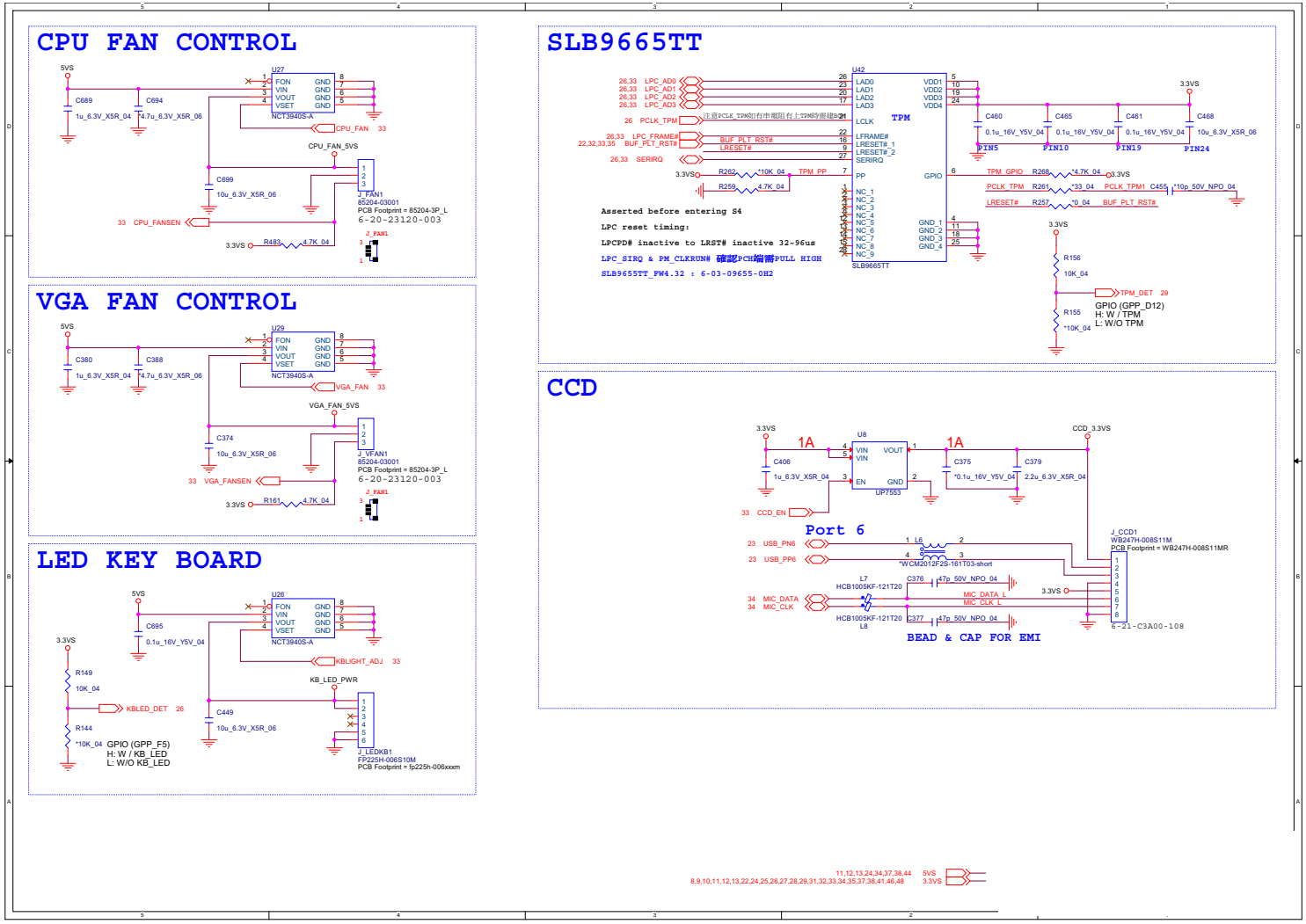
LAN RTL8411B



Fan, KB, LED TPM, CCD



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Fan, KB, LED, TPM, CCD

Connector

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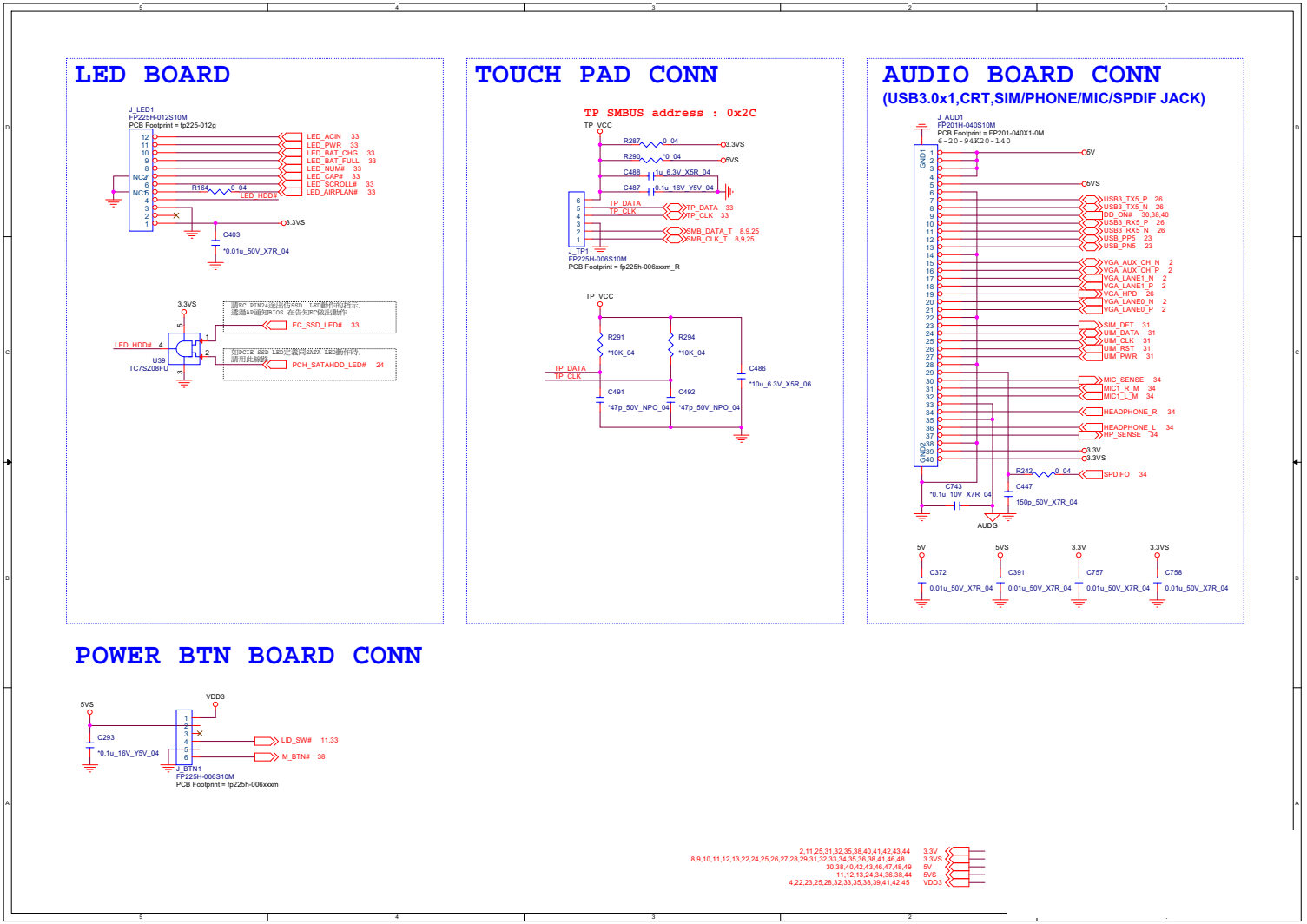
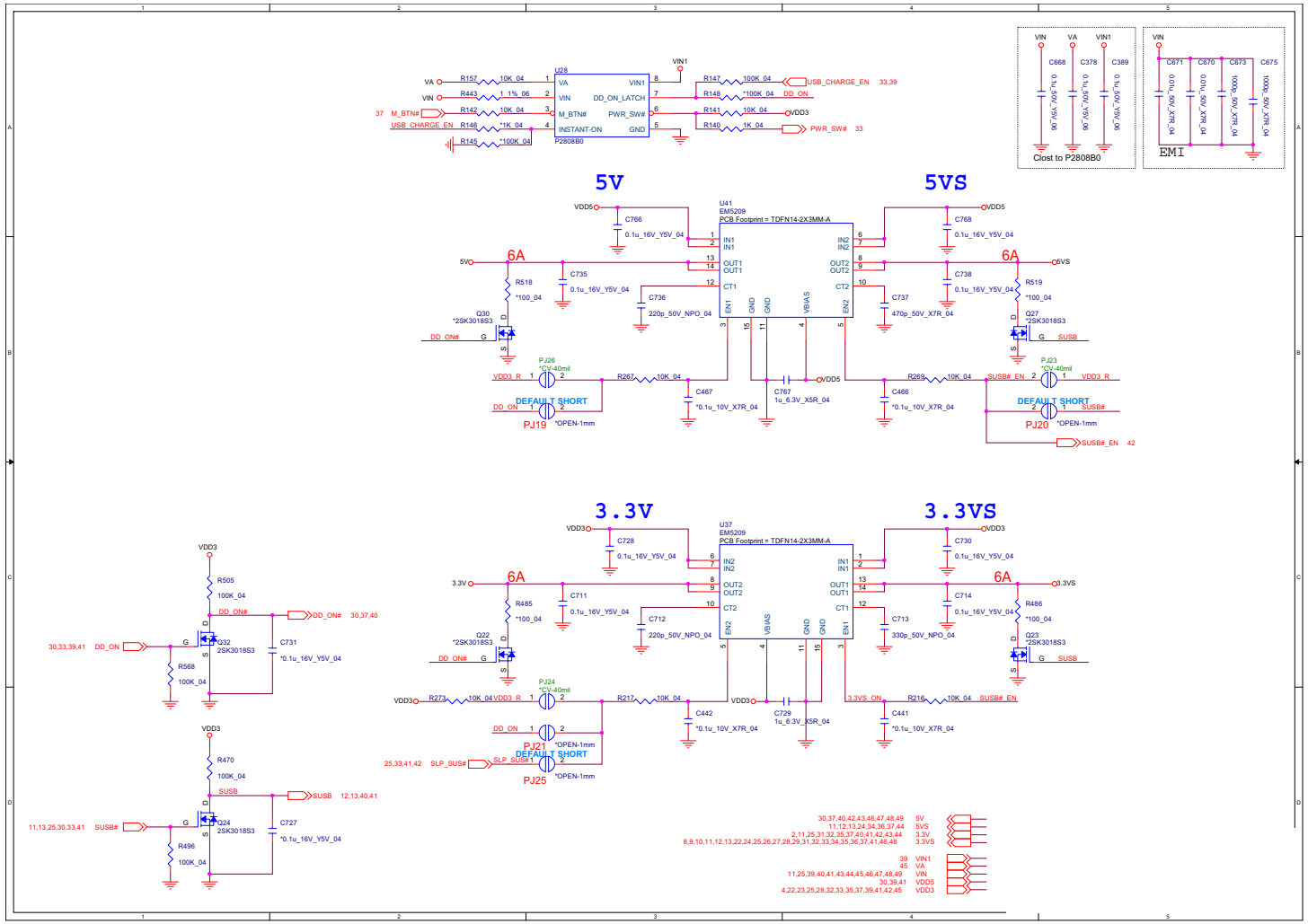
Connector



5V, 5VS, 3.3V, 3.3VS, 3.3VA



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5V, 5VS, 3.3V,
3.3VS, 3.3VA

VDD3, VDD5

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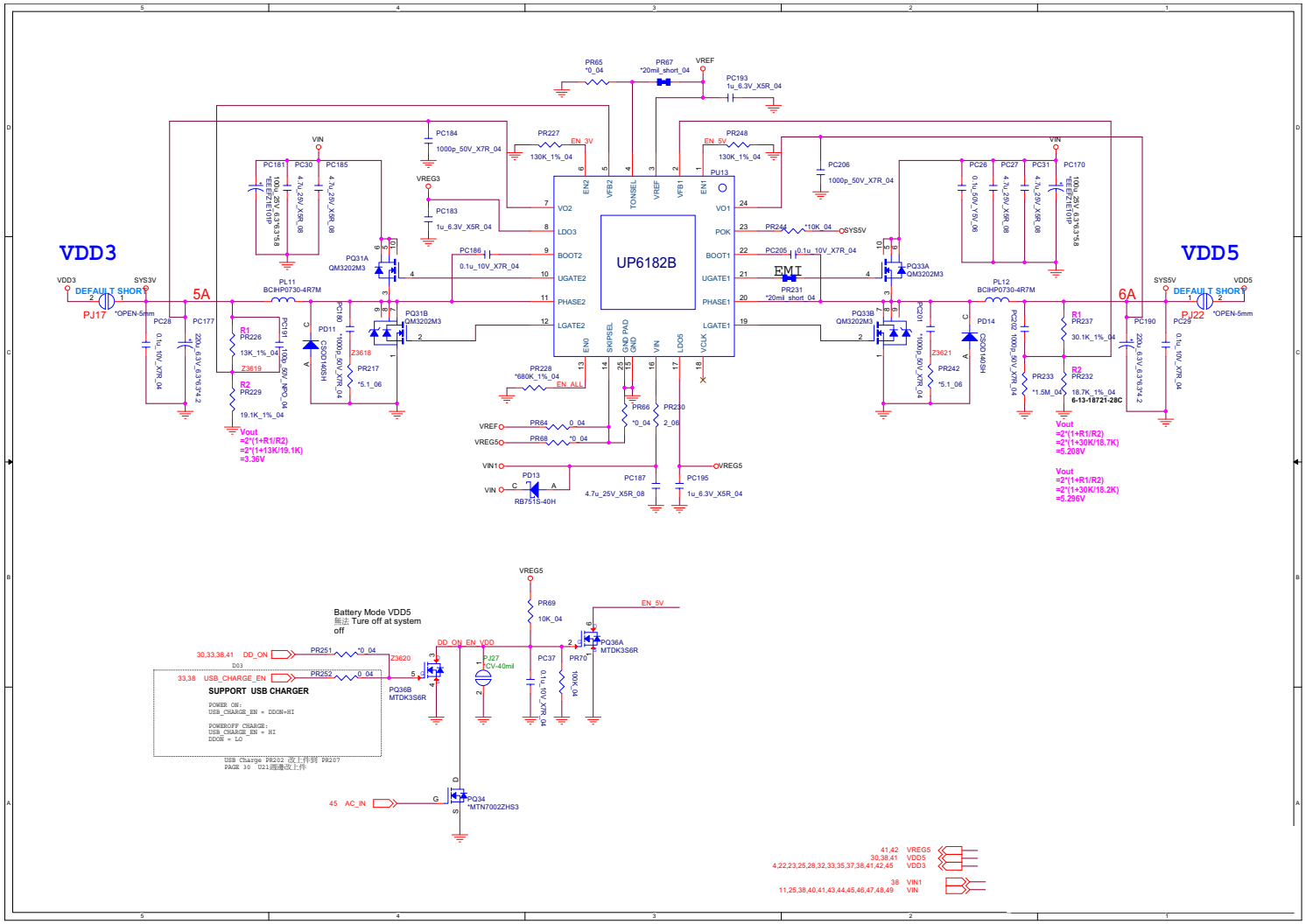
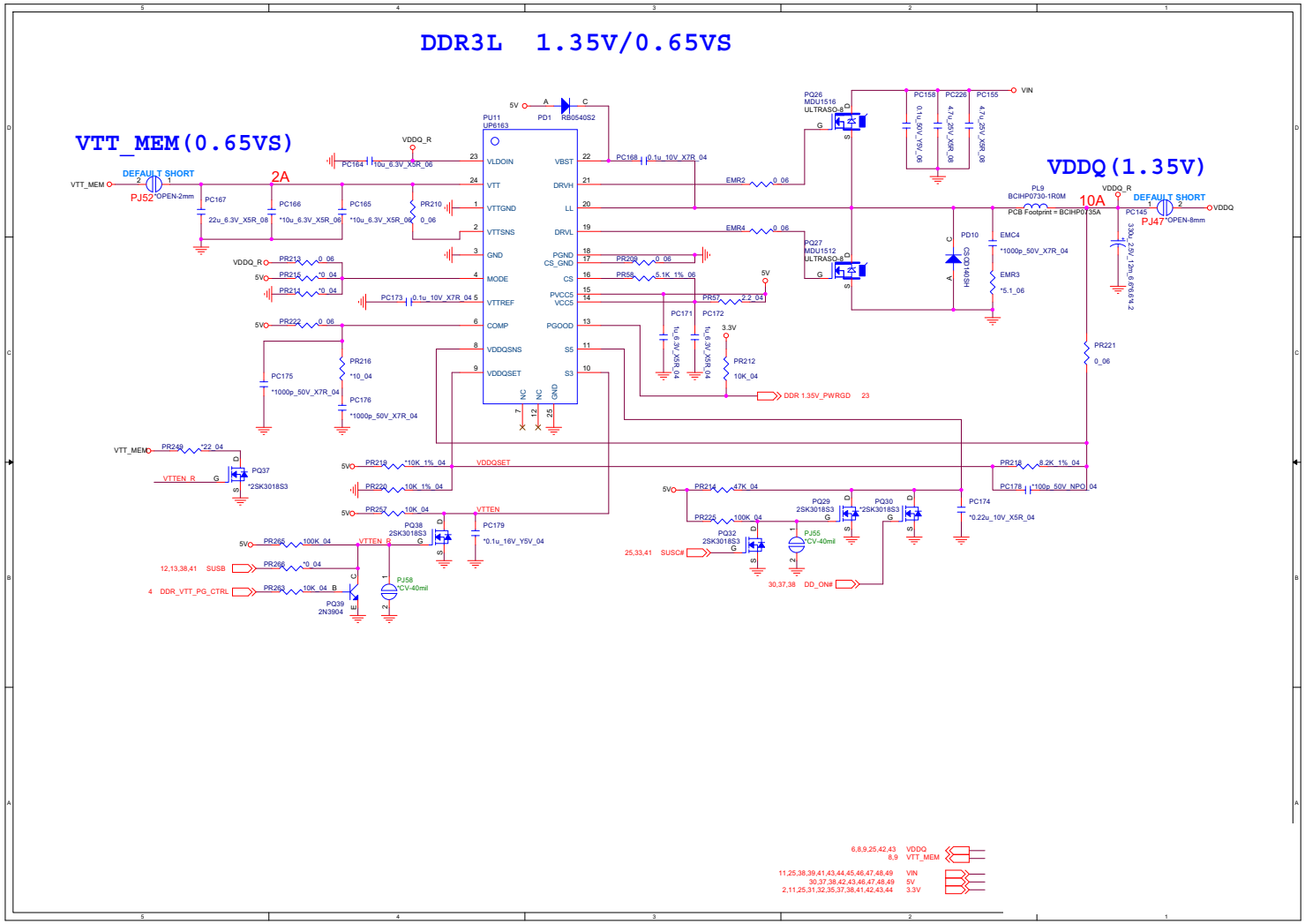
VDD3, VDD5



DDR 1.35V, 0.65VS



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DDR 1.35V, 0.65VS

VDD1.0, VCCIO

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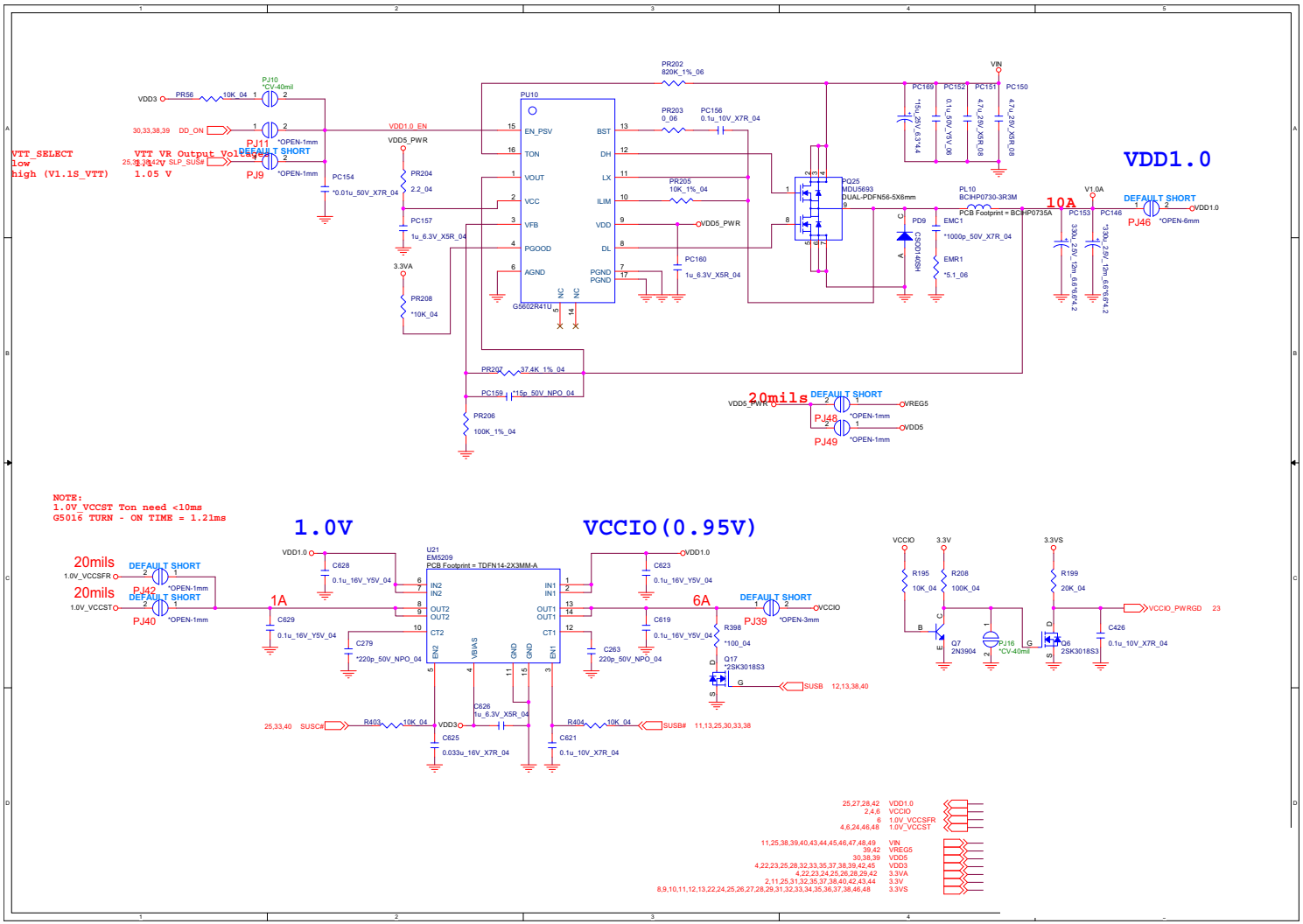
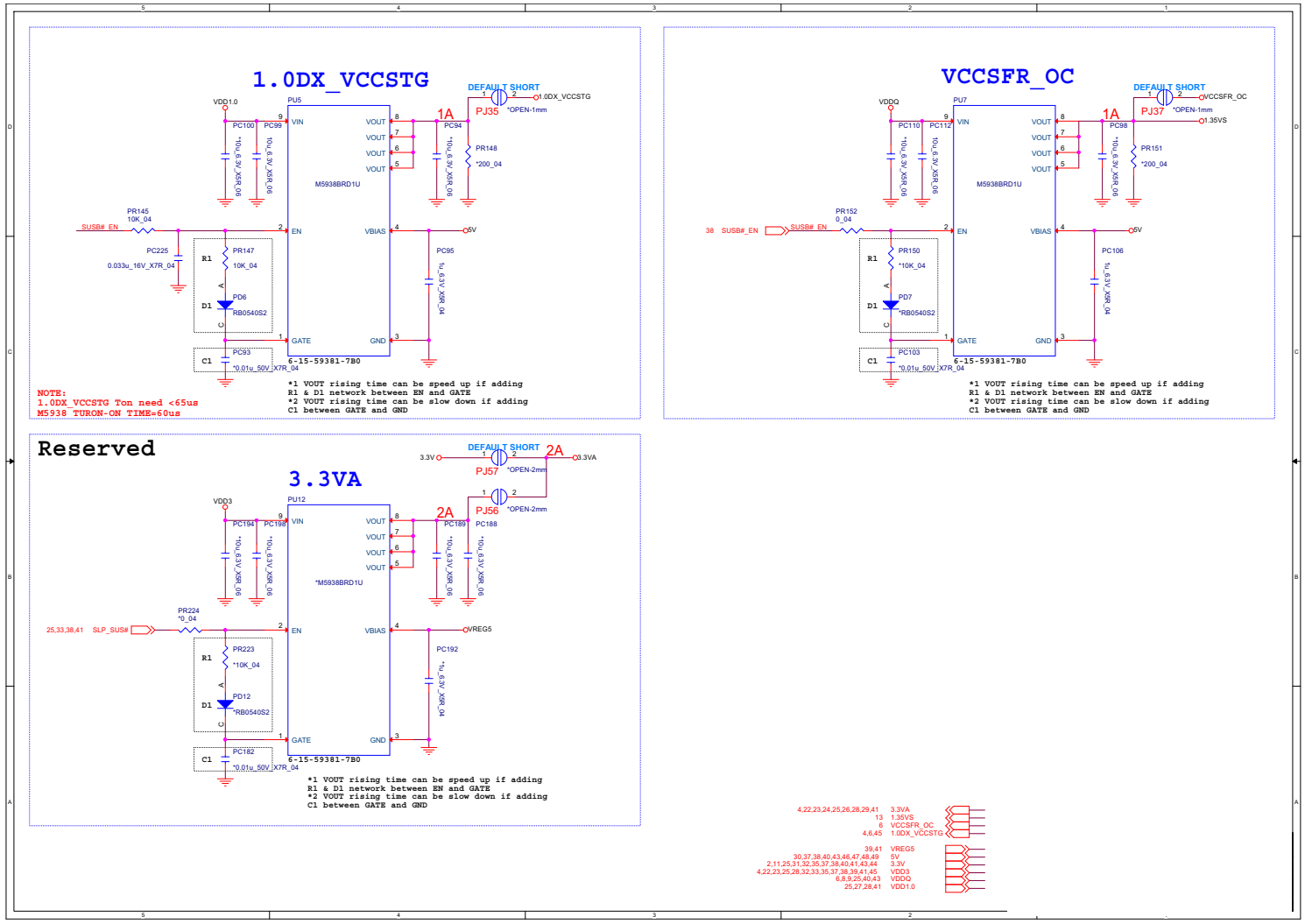
VDD1.0, VCCIO



VCCSTG, VCCSFR_OC



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VCCSTG,
VCCSFR_OC

GPU Power 1/2

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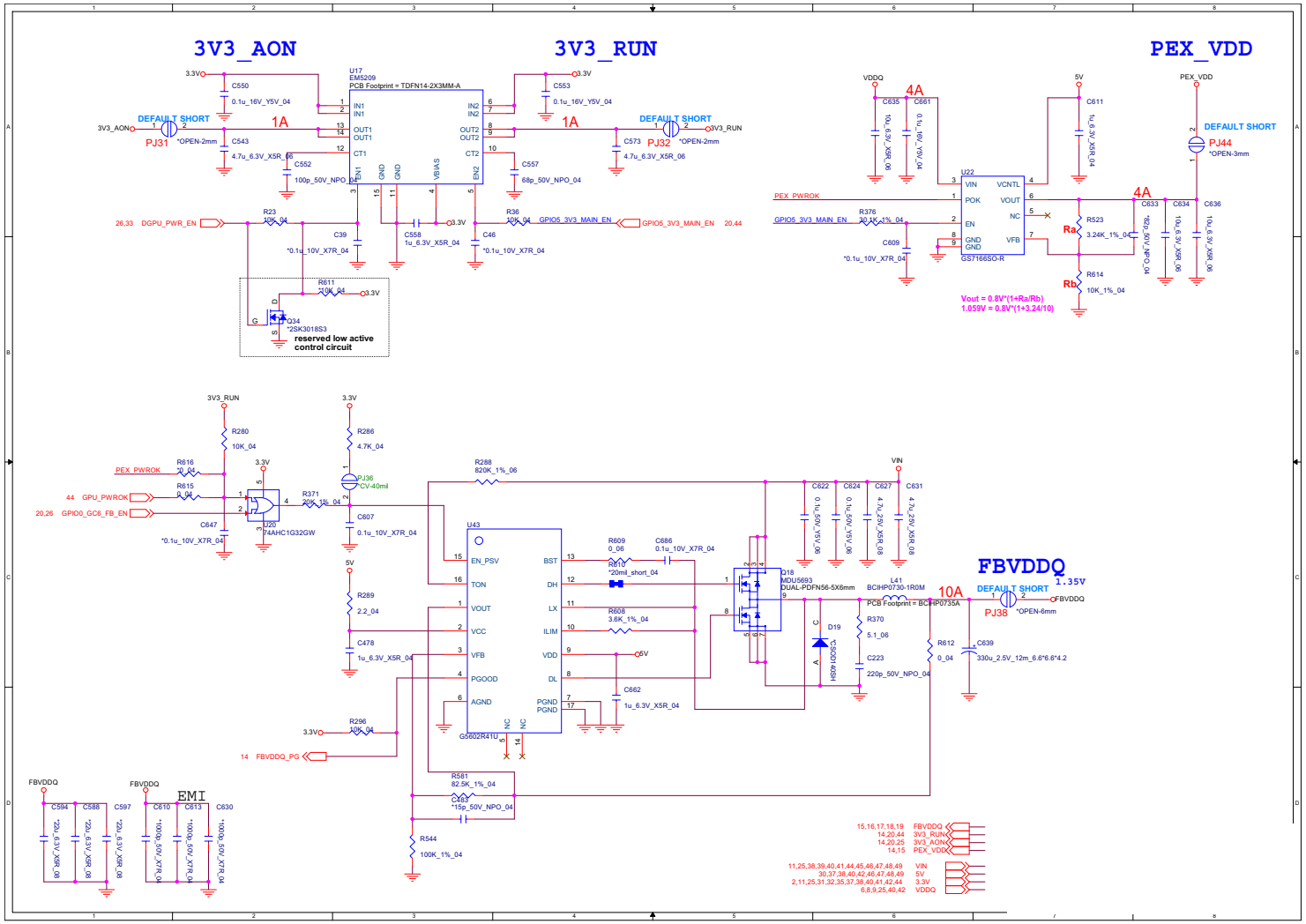
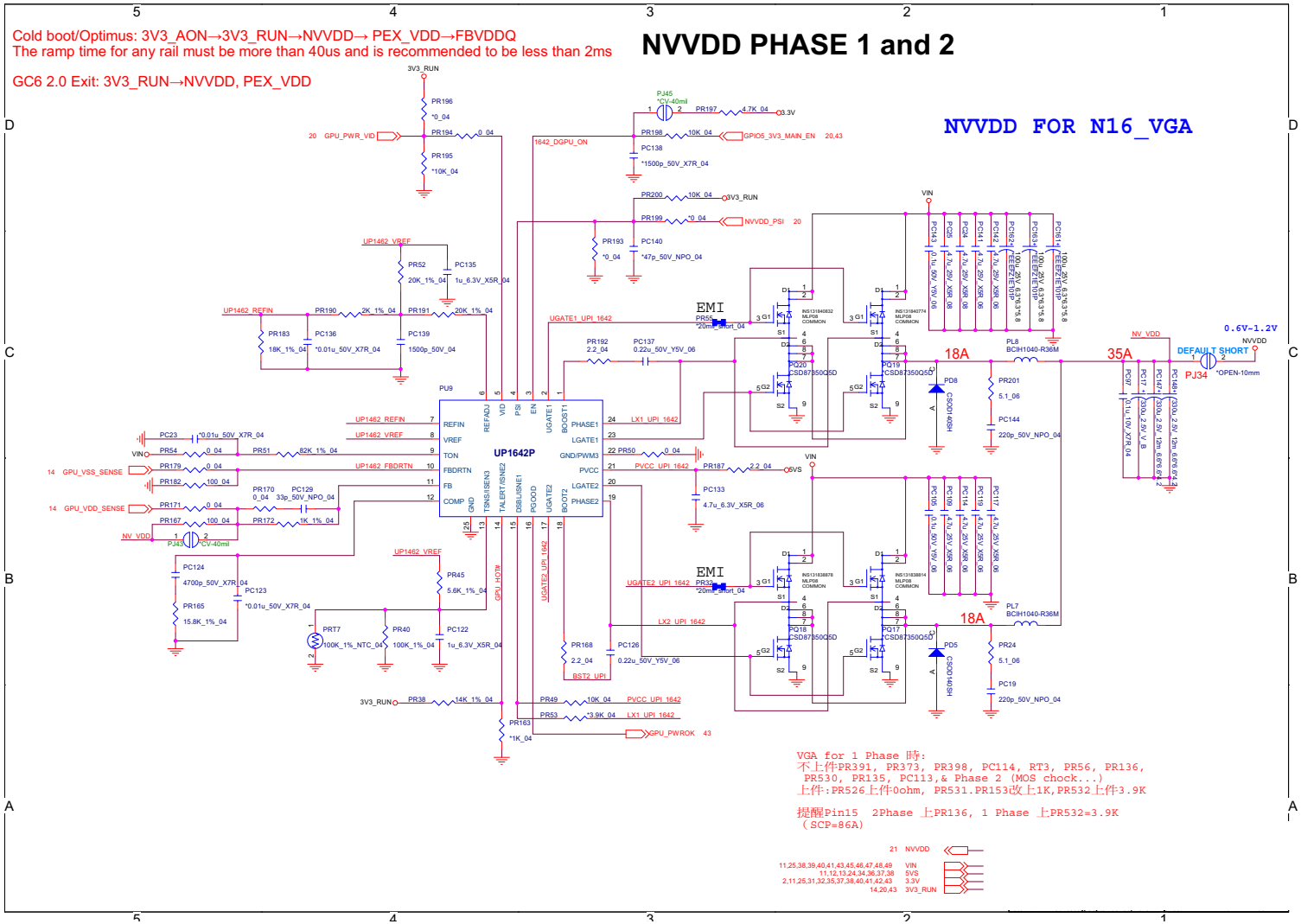
GPU Power 1/2



GPU Power 2/2



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GPU Power 2/2

AC_In, Charger

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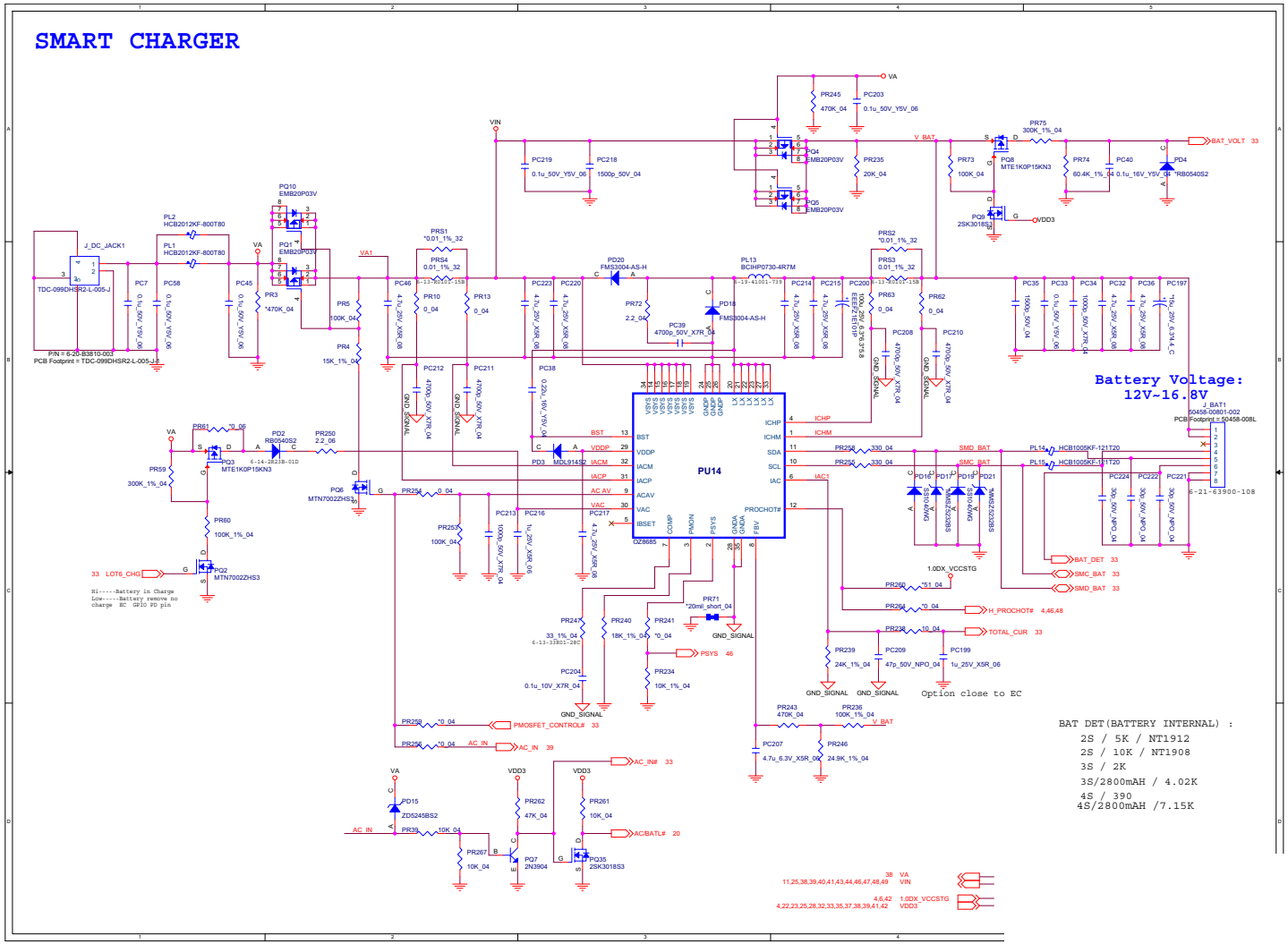
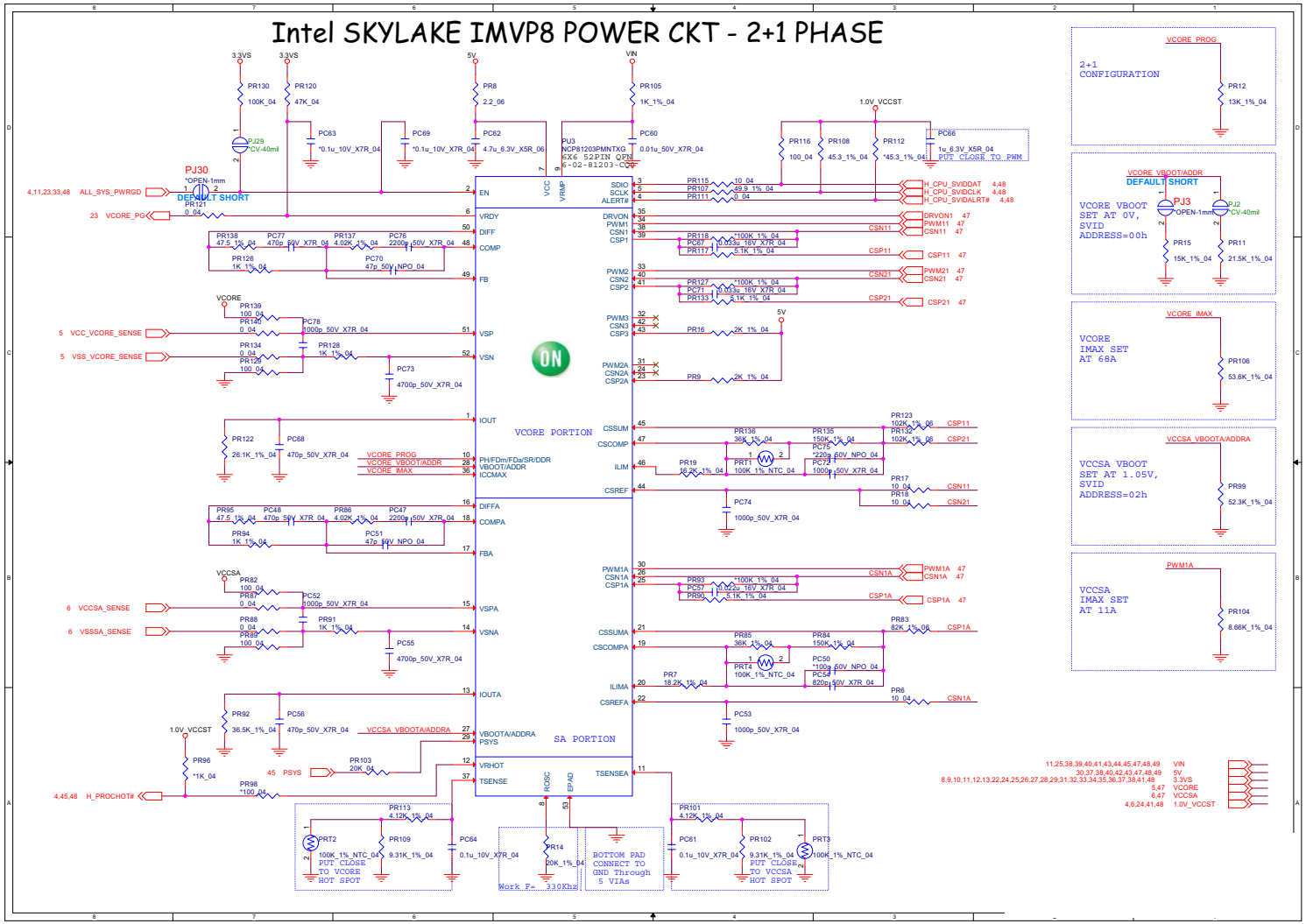
AC_In, Charger



VCore, VCCSA



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VCore, VCCSA

VCore Output Stage

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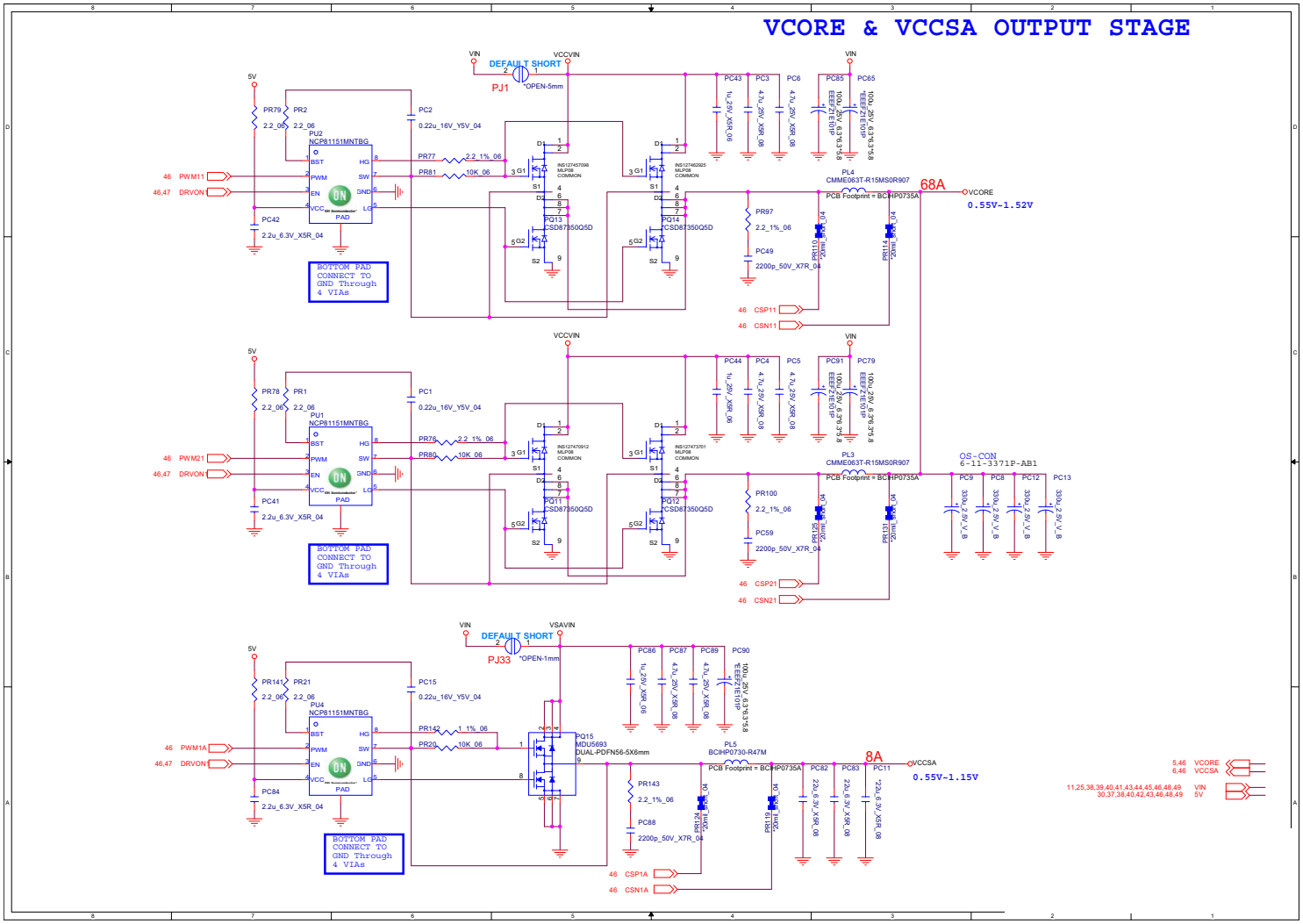
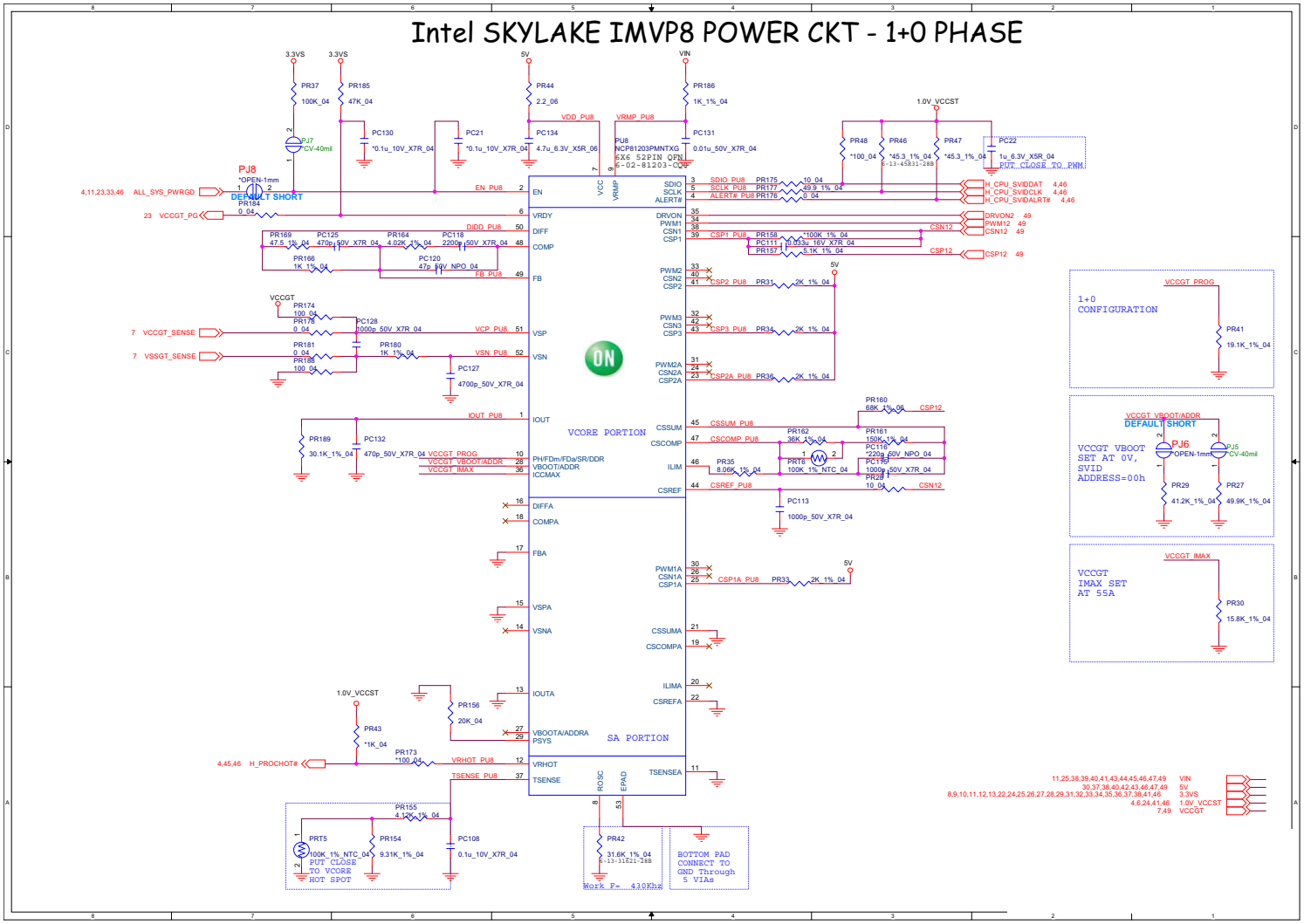
VCore Output Stage



VCCGT



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VCCGT

VCCGT Output Stage

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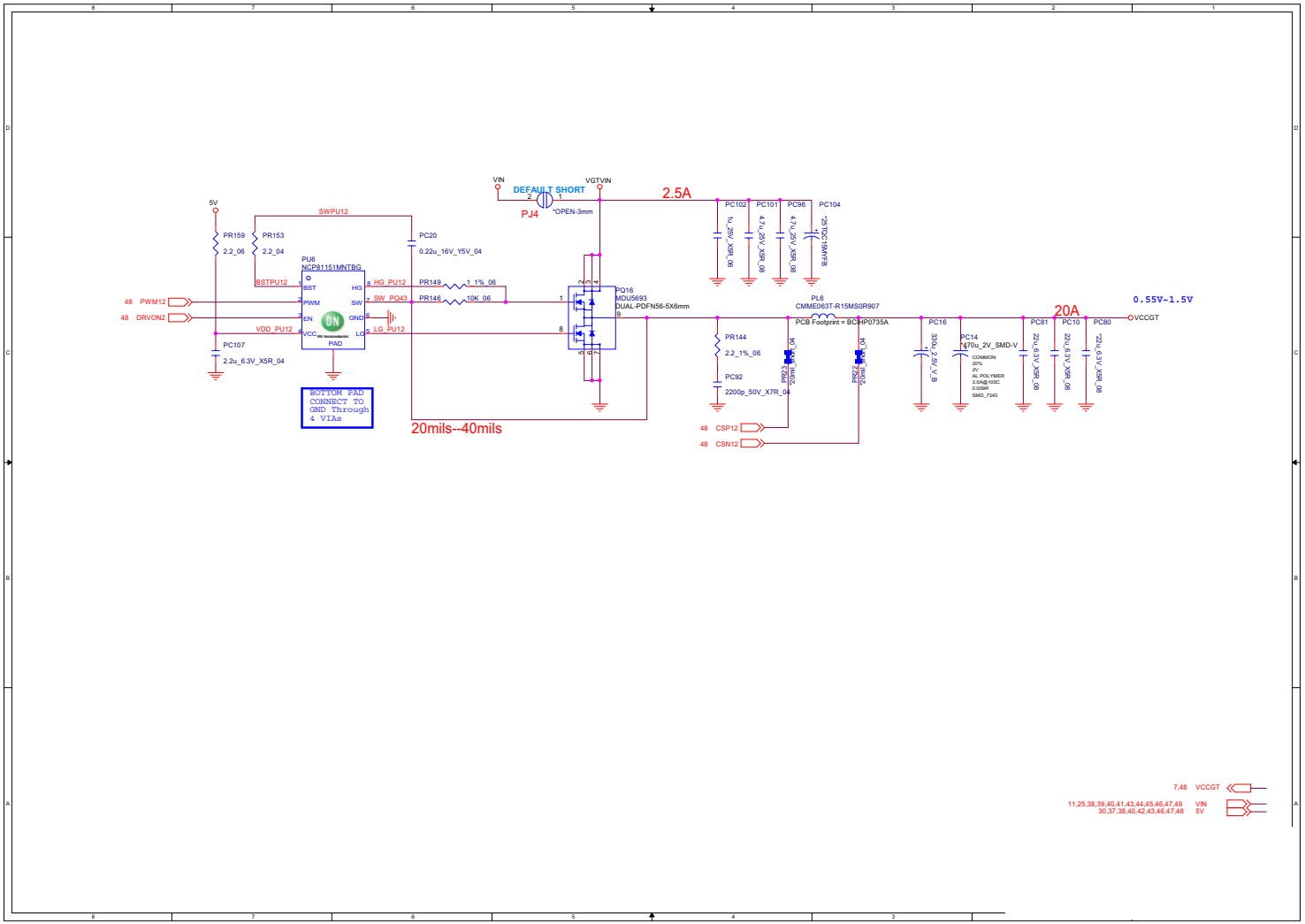
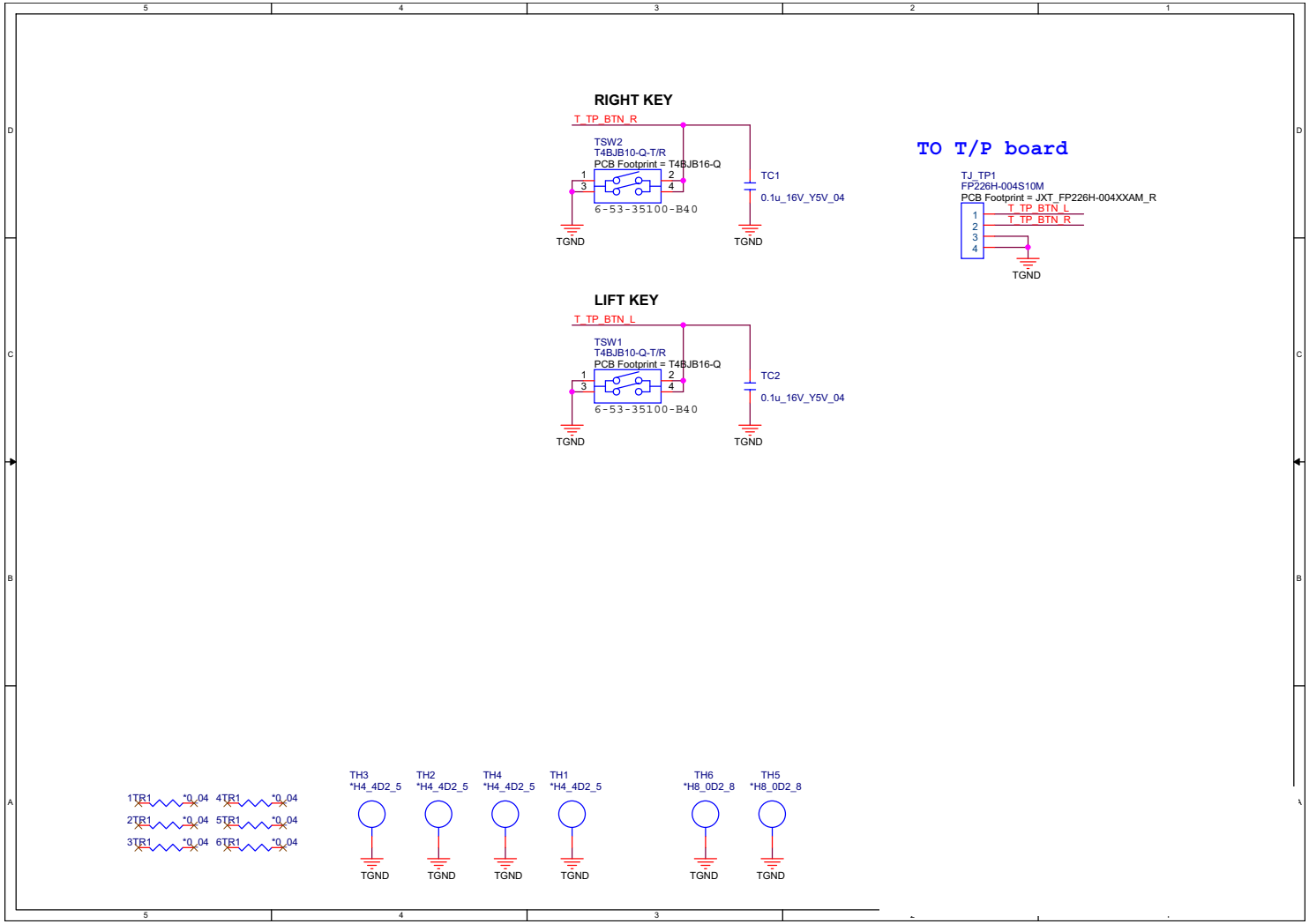
VCCGT Output Stage



Click Board



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Click Board

LED Board

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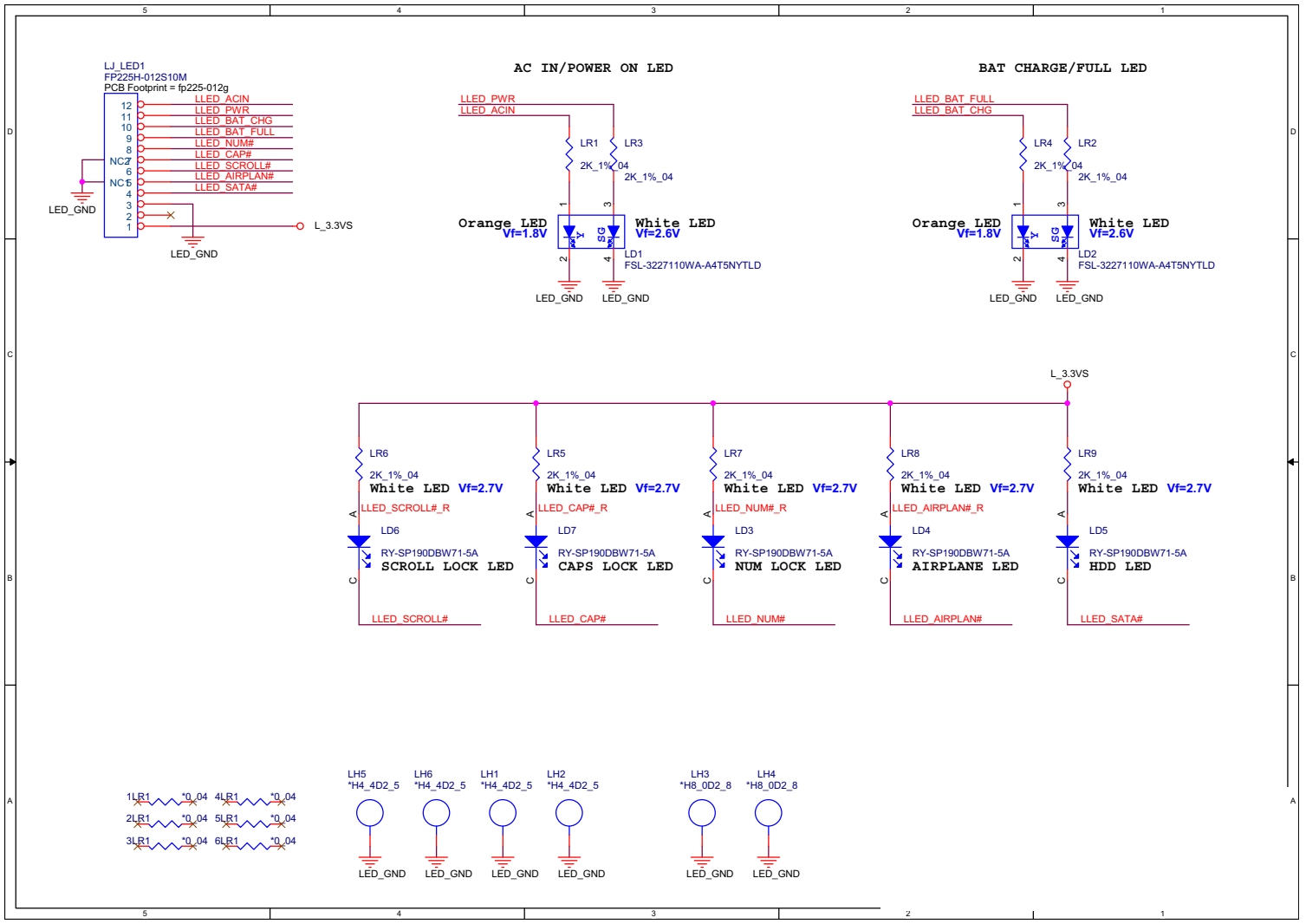
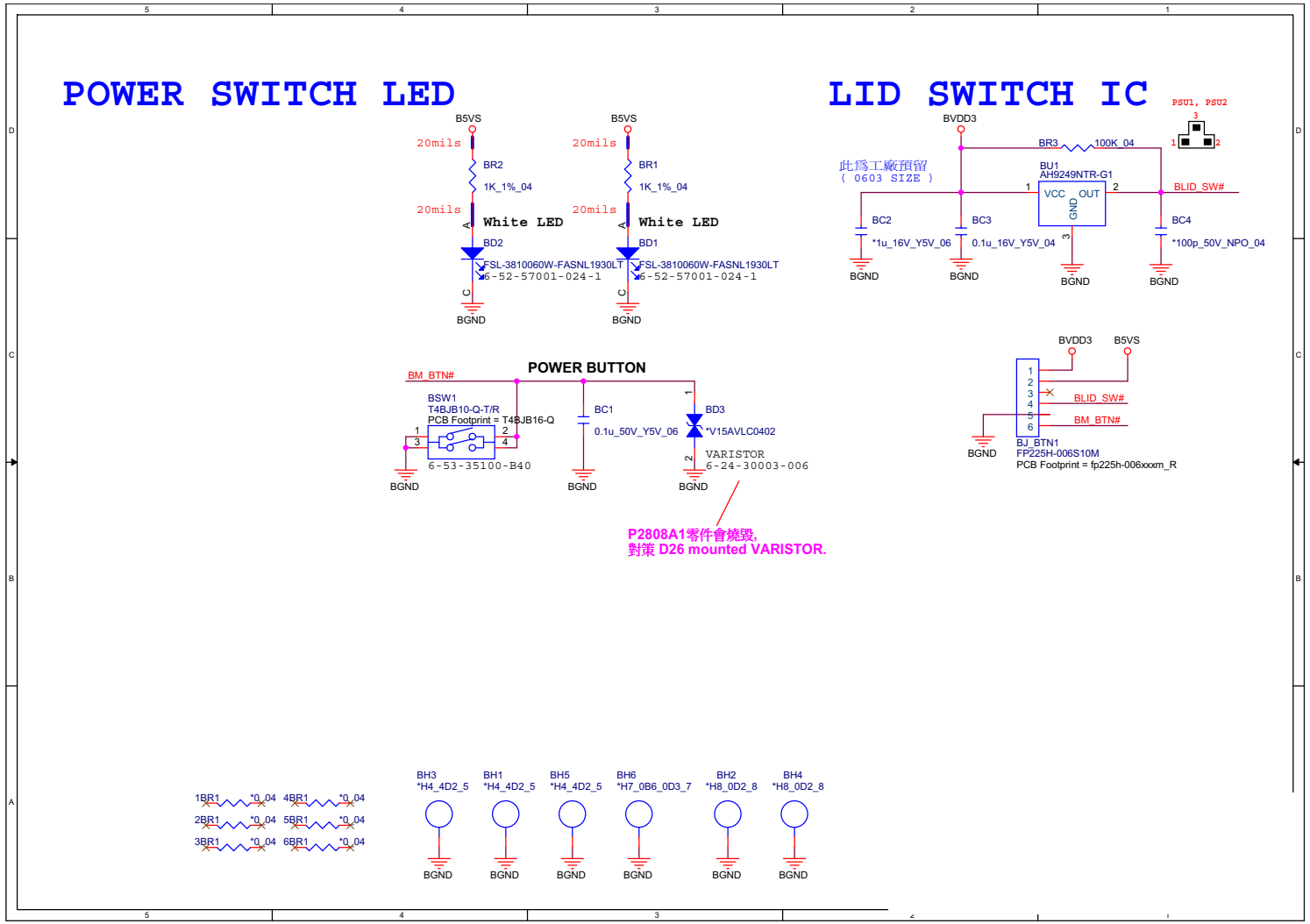
LED Board



Power Board



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Power Board

Audio Board 1/2

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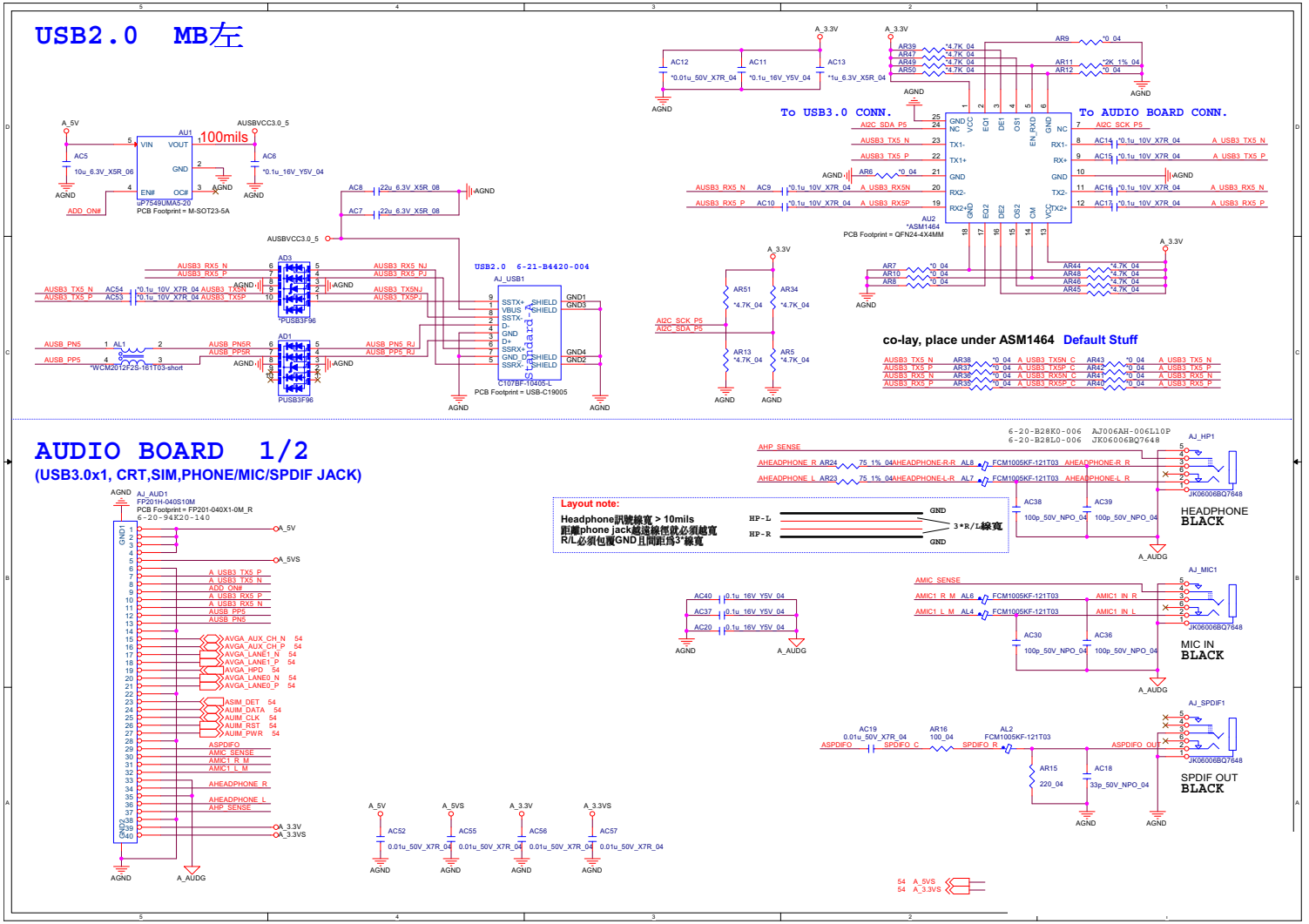
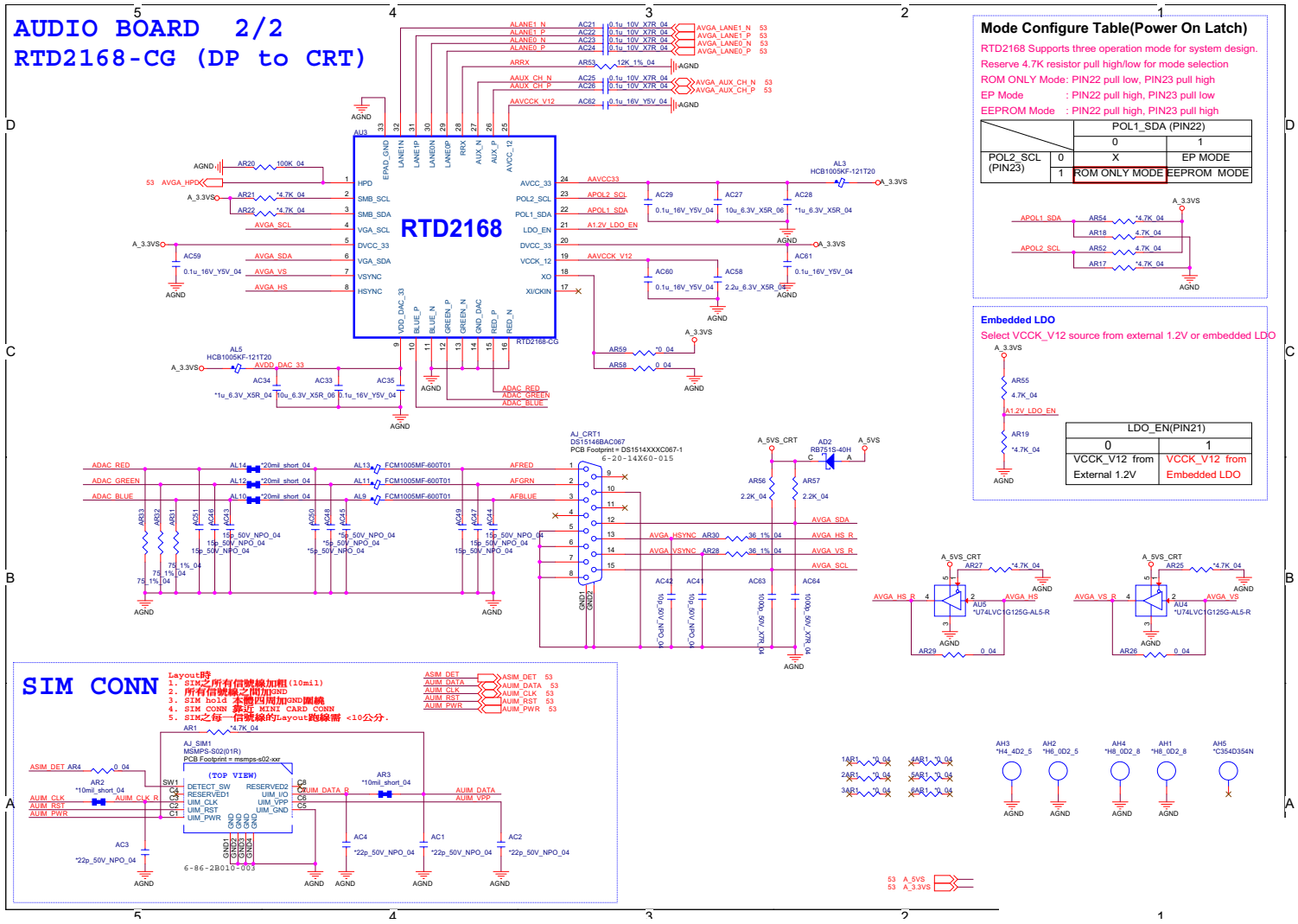
Audio Board 1/2



Audio Board 2/2



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Audio Board 2/2

Power Sequence

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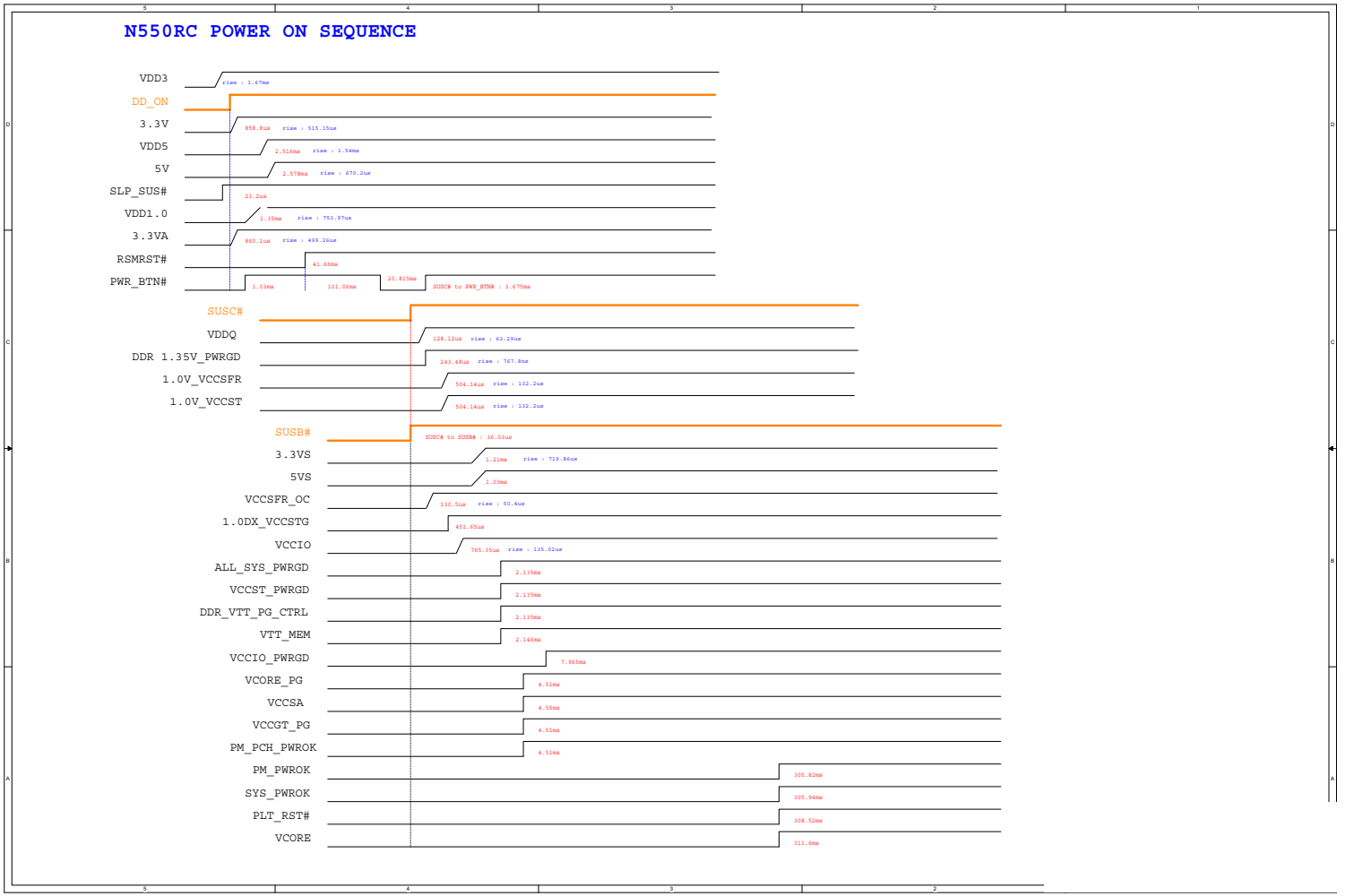
Power Sequence



Appendix C:Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS, you must:

- Download the BIOS update from the web site.
- Unzip the files onto a bootable CD/DVD/USB Flash Drive.
- Reboot your computer from an external CD/DVD/USB Flash Drive.
- Use the flash tools to update the flash BIOS using the commands indicated below.
- Restart the computer booting from the HDD and press **F2** at startup enter the BIOS.
- Load setup defaults from the BIOS and save the default settings and exit the BIOS to restart the computer.
- After rebooting the computer you may restart the computer again and make any required changes to the default BIOS settings.

Download the BIOS

1. Go to **www.clevo.com.tw** and point to **E-Services** and click **E-Channel**.
2. Use your user ID and password to access the appropriate download area (BIOS), and download the latest BIOS files (the BIOS file will be contained in a batch file that may be run directly once unzipped) for your computer model (**see sidebar for important information on BIOS versions**).

Unzip the downloaded files to a bootable CD/DVD or USB Flash drive

1. Insert a bootable CD/DVD/USB flash drive into the CD/DVD drive/USB port of the computer containing the downloaded files.
2. Use a tool such as Winzip or Winrar to unzip all the BIOS files and refresh tools to your bootable CD/DVD/USB flash drive (you may need to create a bootable CD/DVD with the files using a 3rd party software).

Set the computer to boot from the external drive

1. With the bootable CD/DVD/USB flash drive containing the BIOS files in your CD/DVD drive/USB port, restart the computer and press **F2** (in most cases) to enter the BIOS.
2. Use the arrow keys to highlight the **Boot** menu.
3. Use the "+" and "-" keys to move boot devices up and down the priority order.
4. Make sure that the CD/DVD drive/USB flash drive is set first in the boot priority of the BIOS.
5. Press **F4** to save any changes you have made and exit the BIOS to restart the computer.

BIOS Version

Make sure you download the latest correct version of the BIOS appropriate for the computer model you are working on.

You should only download BIOS versions that are V1.00.XX or higher as appropriate for your computer model.

Note that BIOS versions are not backward compatible and therefore **you may not downgrade your BIOS to an older version** after upgrading to a later version (e.g if you upgrade a BIOS to ver 1.00.05, you **MAY NOT** then go back and flash the BIOS to ver 1.00.04).

Use the flash tools to update the BIOS

1. Make sure you are not loading any memory management programs such as HIMEM by holding the **F8** key as you see the message "**EFI Shell**". You will then be prompted to give "**Y**" or "**N**" responses to the programs being loaded by EFI Shell. Choose "N" for any memory management programs.
2. You should now see DISK **fsX**:\> (X is the designated drive number for the CD/DVD drive/USB flash drive).
3. **Type the following command**:

   fsX:\> Flash.nsh

4. The utility will then proceed to flash the BIOS.
5. You should then be prompted to press any key to restart the system or turn the power off, and then on again but make sure you remove the CD/DVD/USB flash drive from the CD/DVD drive/USB port before the computer restarts.

Restart the computer (booting from the HDD)

1. With the CD/DVD/USB flash drive removed from the CD/DVD drive/USB port the computer should restart from the HDD.
2. Press **F2** as the computer restarts to enter the BIOS.
3. Use the arrow keys to highlight the **Exit** menu.
4. Select **Load Setup Defaults** (or press **F3**) and select "**Yes**" to confirm the selection.
5. Press **F4** to save any changes you have made and exit the BIOS to restart the computer.

Your computer is now running normally with the updated BIOS

You may now enter the BIOS and make any changes you require to the default settings.