

SERVICE MANUAL

P870DM / P870DM-G

notebook



Notebook Computer
P870DM / P870DM-G
Service Manual

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About this Manual

This manual is intended for service personnel who have completed sufficient training to undertake the maintenance and inspection of personal computers.

It is organized to allow you to look up basic information for servicing and/or upgrading components of the *P870DM* / *P870DM-G* 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

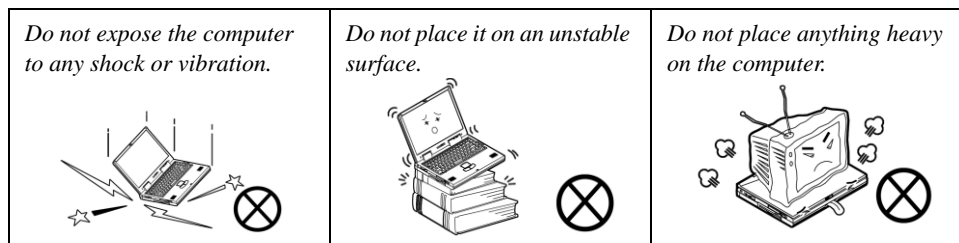
Follow basic safety precautions, including those listed below, to reduce the risk of fire, electric shock and injury to persons when using any electrical equipment:

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 with an AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19.5V, 11.8A (**230** Watts) minimum AC/DC Adapter.

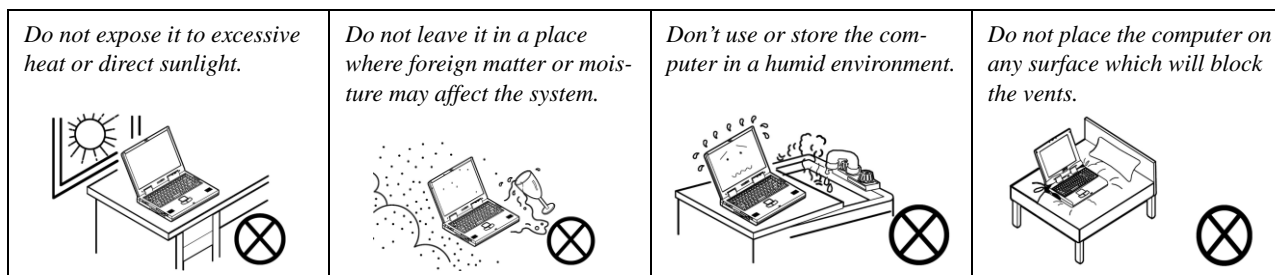
Instructions for Care and Operation

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

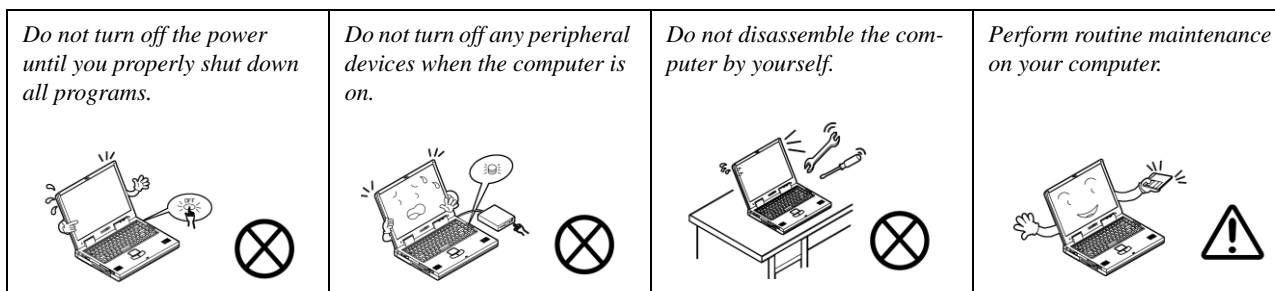
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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



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



Preface



Removal Warning

When removing any cover(s) and screw(s) for the purposes of device upgrade, remember to replace the cover(s) and screw(s) before restoring power to the system.

Also note the following when the cover is removed:

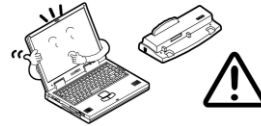
- Hazardous moving parts.
- Keep away from moving fan blades

Power Safety Warning

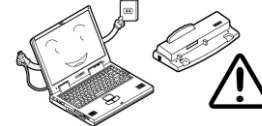
Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). You must also remove your battery in order to prevent accidentally turning the machine on.

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

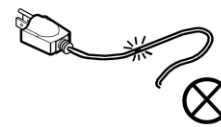
The computer has specific power requirements:

- 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.

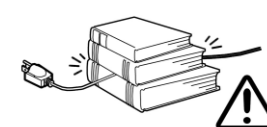
Do not plug in the power cord if you are wet.



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 Disc

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 (**make sure you use the adapter when first setting up the computer**, 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).
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not to 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".

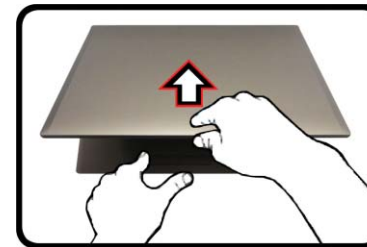


Figure 1
**Opening the Lid/LCD/
Computer with AC/DC
Adapter Plugged-In**

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **P870DM / P870DM-G** 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 *User's Manual*. That manual is shipped with the computer.

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

The **P870DM / P870DM-G** 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 note 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

i7-6700K (4.00GHz)*

8MB Smart Cache, 14nm, DDR4-2133MHz, TDP 91W

Intel® Core™ i5 Processor

i5-6600K (3.50GHz)*

6MB Smart Cache, 14nm, DDR4-2133MHz, TDP 91W

i5-6500 (3.20GHz)

6MB Smart Cache, 14nm, DDR4-2133MHz, TDP 65W

i5-6400 (2.70GHz)

6MB Smart Cache, 14nm, DDR4-2133MHz, TDP 65W

*Support Intel® XTU over-clocking technology

Video Adapter Options

NVIDIA® GeForce GTX 980M PCIe Video Card

8GB GDDR5 Video RAM on board

Supports NVIDIA® SLI Technology

NVIDIA® GeForce GTX 970M PCIe Video Card

6GB GDDR5 Video RAM

Supports NVIDIA® SLI Technology

NVIDIA® GeForce GTX 980 PCIe Video Card

8GB GDDR5 Video RAM

LCD Options

17.3" (43.94cm), 16:9, QFHD (3840x2160)/FHD (1920x1080)

Core Logic

Intel® Z170 Chipset

BIOS

AMI BIOS (64Mb SPI Flash-ROM)

Memory

Four 260 Pin SO-DIMM Sockets Supporting **DDR4 2133MHz** Memory

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

Memory Expandable from **4GB (minimum)** up to **64GB (maximum)**

Pointing Device

Built-in Touchpad (scrolling key functionality integrated)

Keyboard

Full Color **Illuminated** Full-size Winkey Keyboard (with numeric keypad and anti-ghost keys)

Audio

High Definition Audio Compliant Interface

S/PDIF Digital Output

Two Speakers

Sound Blaster Audio

ANSP™ 3D Sound Technology on Headphone Output

Built-In Array Microphone

Sub-Woofer

External 7.1CH Audio Output Supported by Headphone, Microphone, Line-In and S/PDIF Out Jacks

Storage

Two changeable 2.5" (6cm) 7.0mm (h)/ 9.5mm (h) SATA (Serial) Hard Disk Drives/Solid State Drives (SSD) supporting RAID level 0/1

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

Or

(Factory Option) Two M.2 **PCIe**

Gen3 x4 2280 SSDs supporting RAID level 0/1

Security

Security (Kensington® Type) Lock Slot

BIOS Password

Fingerprint Reader Module

Trusted Platform Module 2.0

Interface

One USB 3.1 Port/Thunderbolt Port
Five USB 3.0 Ports (Including one AC/DC Powered USB port)
One HDMI-Out Port
Two Mini DisplayPorts (1.2)
One S/PDIF Out Jack
One Headphone/Speaker-Out Jack
One Microphone-In Jack
One Line-In Jack
Two RJ-45 LAN Jacks
One DC-In Jack

M.2 Slots

Slot 1 for **Combo WLAN and Bluetooth** Module
Slot 2 for **SATA** or **PCIe Gen3 x4 SSD**
Slot 3 for **SATA** or **PCIe Gen3 x4 SSD**

Communication

Built-In Gigabit Ethernet LAN
2.0M FHD PC Camera Module

WLAN/ Bluetooth M.2 Modules:

(**Factory Option**) Intel® Wireless-N 7265 Wireless LAN (802.11b/g/n) + Bluetooth 4.0
(**Factory Option**) Intel® Wireless-AC 3165 Wireless LAN (802.11ac) + Bluetooth 4.0
(**Factory Option**) Intel® Wireless-AC 8260 Wireless LAN (802.11ac) + Bluetooth 4.1
(**Factory Option**) Qualcomm® Atheros Killer™ Wireless-AC 1535 Wireless LAN (802.11ac) + Bluetooth 4.1
(**Factory Option**) Third-Party Wireless LAN 802.11b/g/n + Bluetooth 4.0

Card Reader

Embedded Multi-In-1 Push-Push Card Reader
MMC (MultiMedia Card) / RS MMC
SD (Secure Digital) / Mini SD / SDHC/ SDXC (up to UHS-II)

Environmental Spec

Temperature

Operating: 10°C - 35°C
Non-Operating: -20°C - 60°C

Relative Humidity

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

Power

Embedded 8-cell Smart Lithium-Ion Battery Pack, 89WH

Full Range AC/DC Adapter

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

DC Output: 19.5V, 16.9A (**330W**)

Dimensions & Weight

428mm (w) * 308mm (d) * 45mm (h)

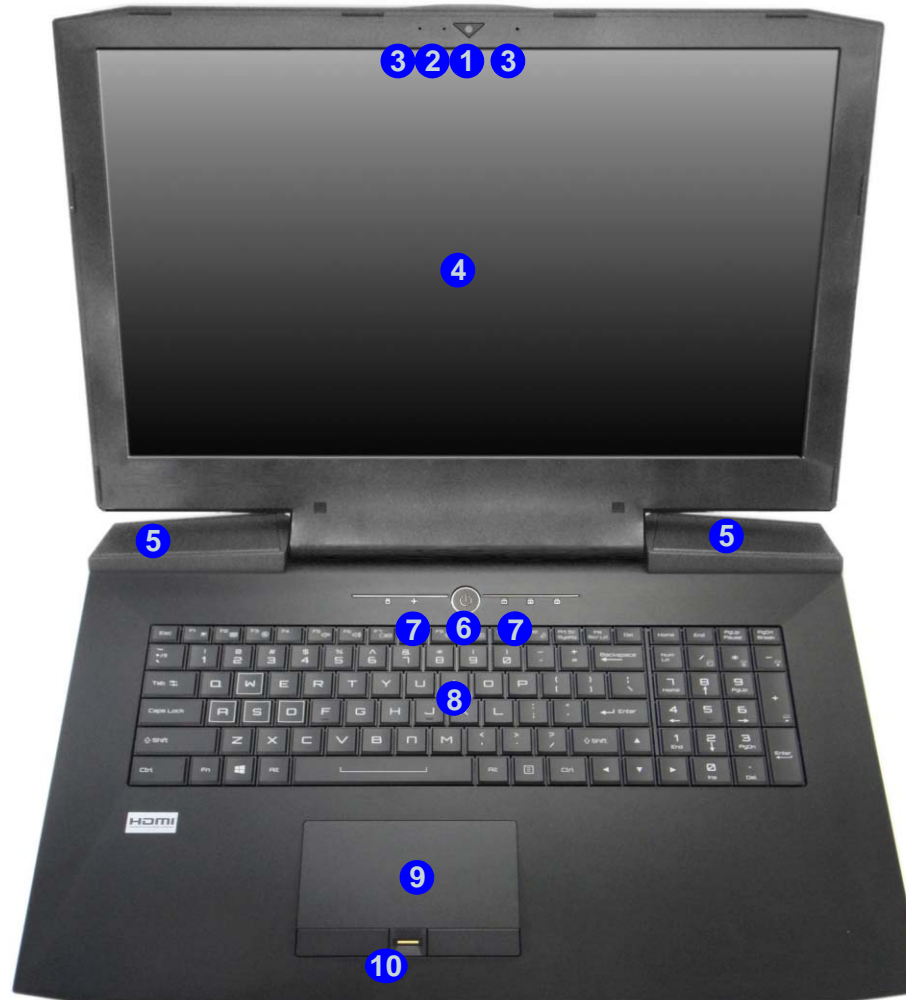
4.8kg (Barebone System with 1 Video Card and 89WH Battery)

Introduction

External Locator - Top View with LCD Panel Open

Figure 1
Top View

1. PC Camera
2. PC Camera LED
3. Built-In Array
Microphone
4. LCD
5. Speakers
6. Power Button
7. LED Indicators
8. Keyboard
9. TouchPad and
Buttons
10. Fingerprint
Reader (Optional)



External Locator - Front & Right side Views

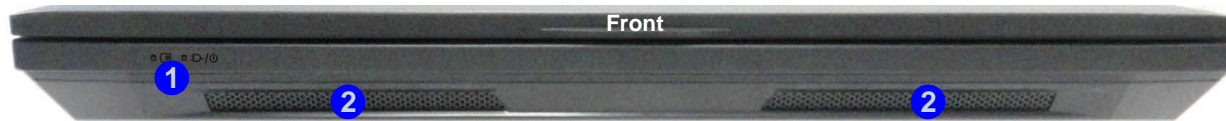


Figure 2
Front Views

1. LED Power Indicators
2. Vents



Figure 3
Right Side Views

1. Multi-in-1 Card Reader
2. USB 3.0 Port
3. USB 3.1 Port/Thunderbolt Port
4. Mini Display Port 2
5. Mini Display Port 1
6. Security Lock Slot

Introduction

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. RJ-45 LAN Jacks
2. USB 3.0 Ports
3. Powered USB 3.0 Port
4. Line-In Jack
5. Microphone Jack
6. Headphone Jack
7. S/PDIF-Out Jack



Figure 5
Rear View

1. Vent/Fan Intake
2. HDMI-Out Port
3. USB 3.0 Port
4. DC-In Jack



External Locator - Bottom View

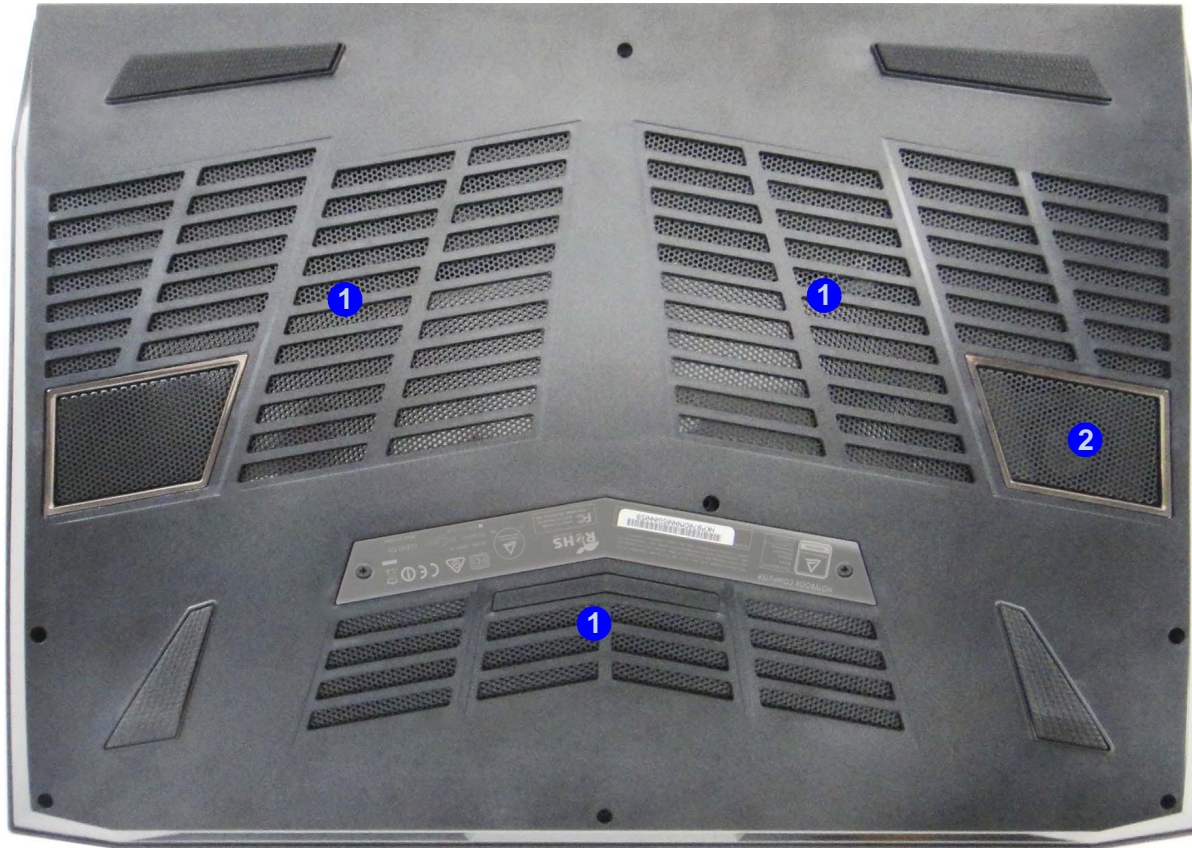


Figure 6
Bottom View

1. Vents
2. Sub Woofer



Overheating

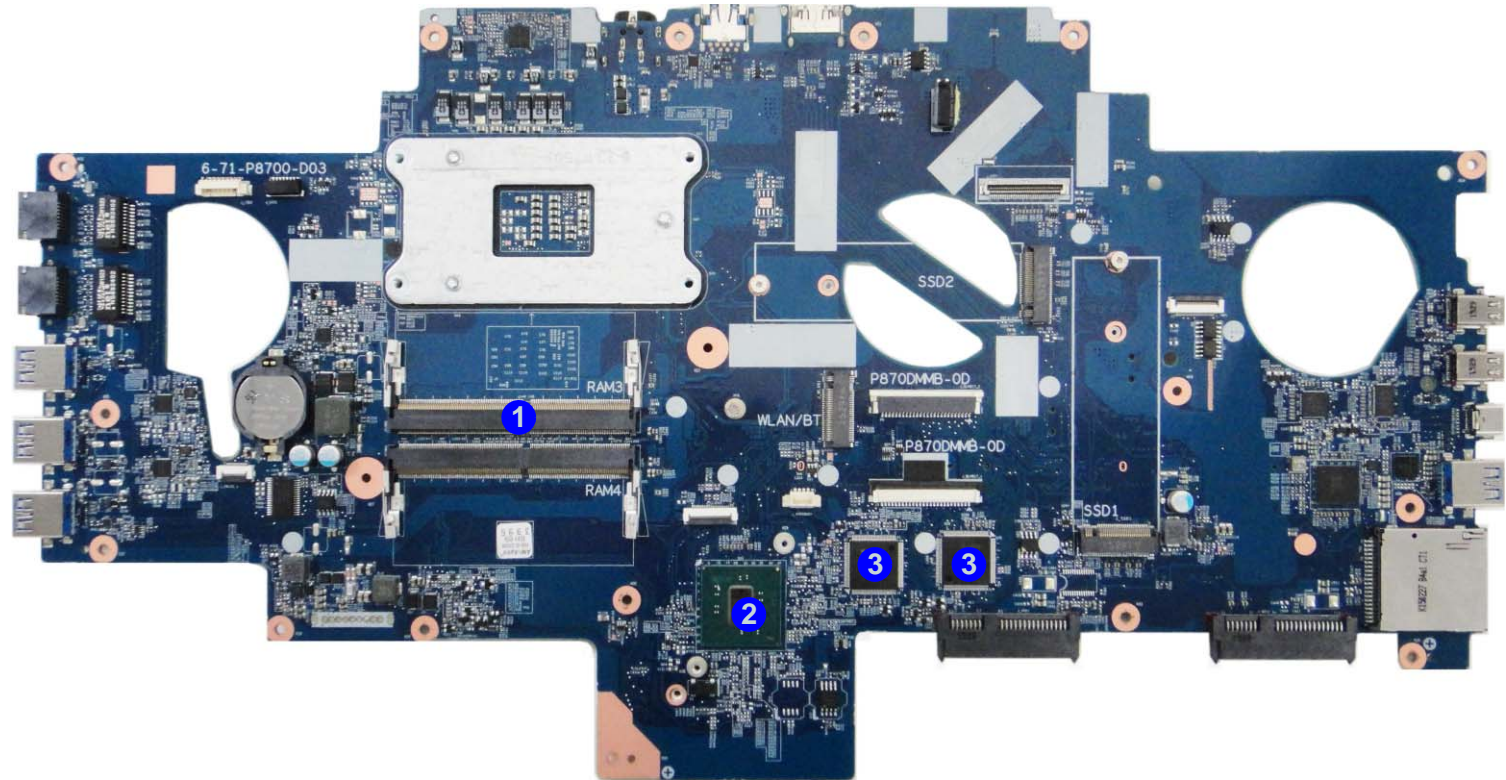
To prevent your computer from overheating make sure nothing blocks the vent/fan intakes while the computer is in use.

Introduction

Figure 7
**Mainboard Top
Key Parts**

1. Memory Slots
DDR4 SO-DIMM
2. Platform
Controller Hub
3. KBC ITE IT8587

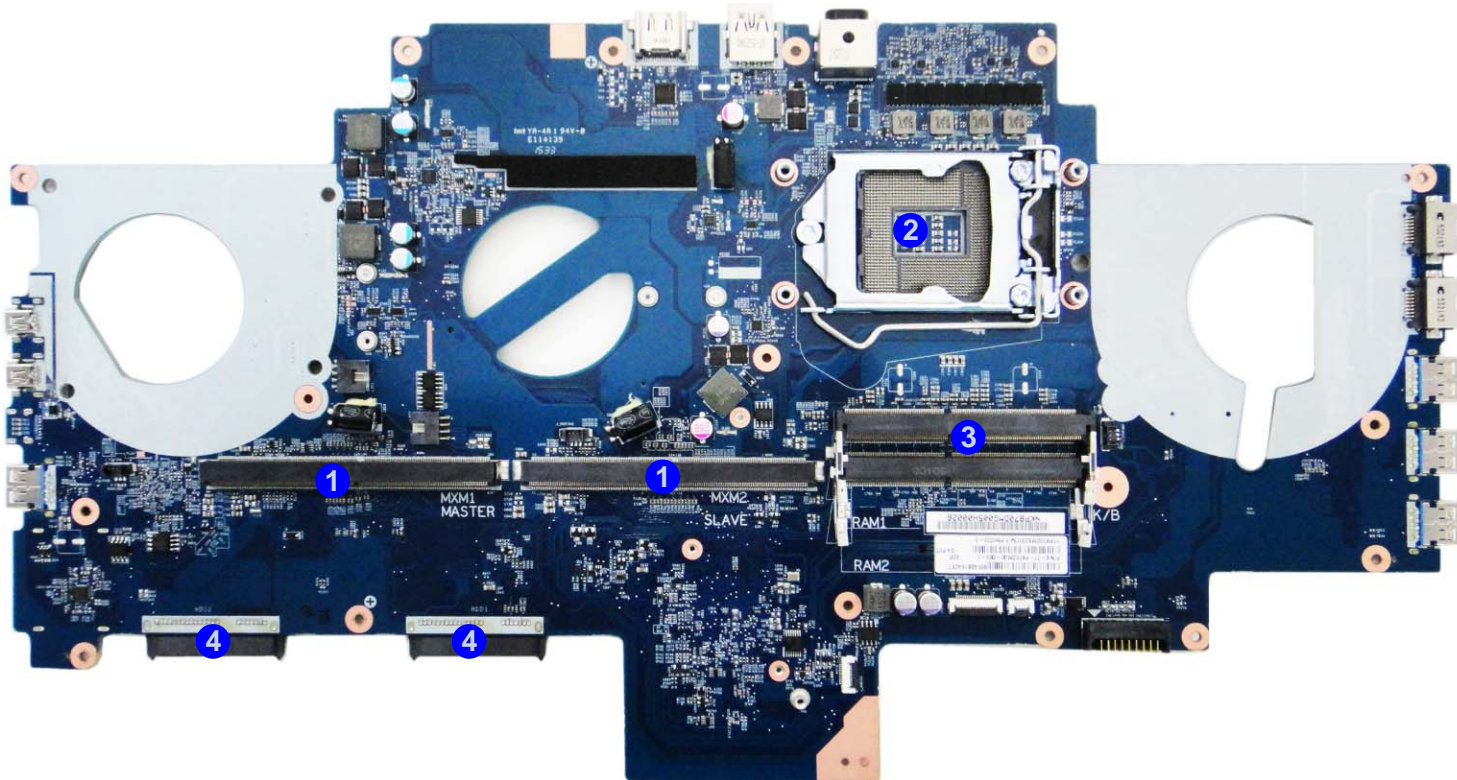
Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

Figure 8
**Mainboard Bottom
Key Parts**

1. VGA-Card Connector
2. CPU Socket (no CPU installed)
3. Memory Slots DDR4 SO-DIMM (Primary)
4. Hard Disk Connector

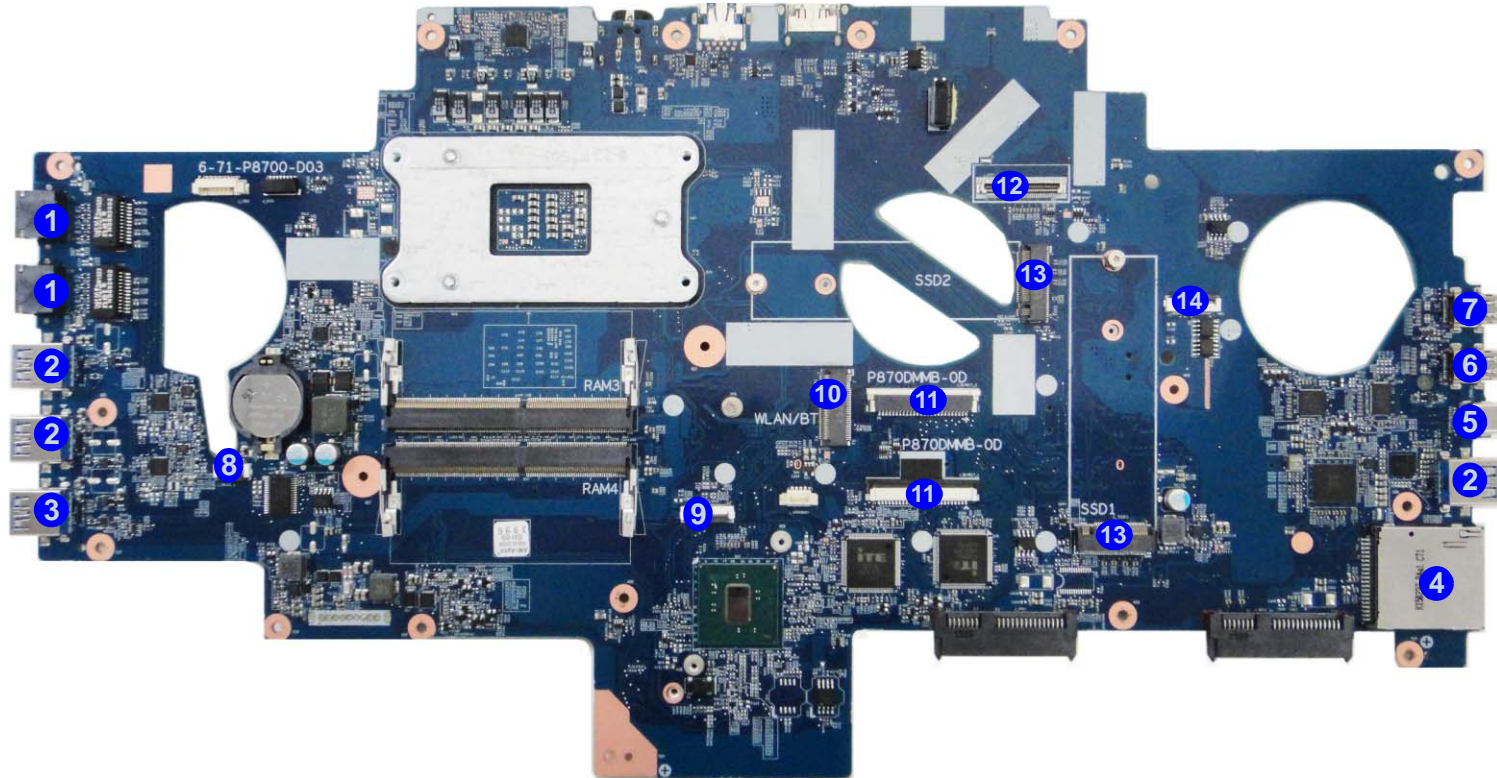


Introduction

Mainboard Overview - Top (Connectors)

Figure 9
**Mainboard Top
Connectors**

1. RJ-45 LAN Jacks
2. USB 3.0 Ports
3. Powered USB 3.0 Port
4. Multi-in-1 Card Reader
5. USB 3.1 Port
6. Display Port 2
7. Display Port 1
8. KB LED Connector
9. TP Connector
10. WLAN Card Connector
11. Keyboard Cable Connector
12. Panel Cable Connector
13. M.2 Card Connector
14. Button LED Connector



Mainboard Overview - Bottom (Connectors)

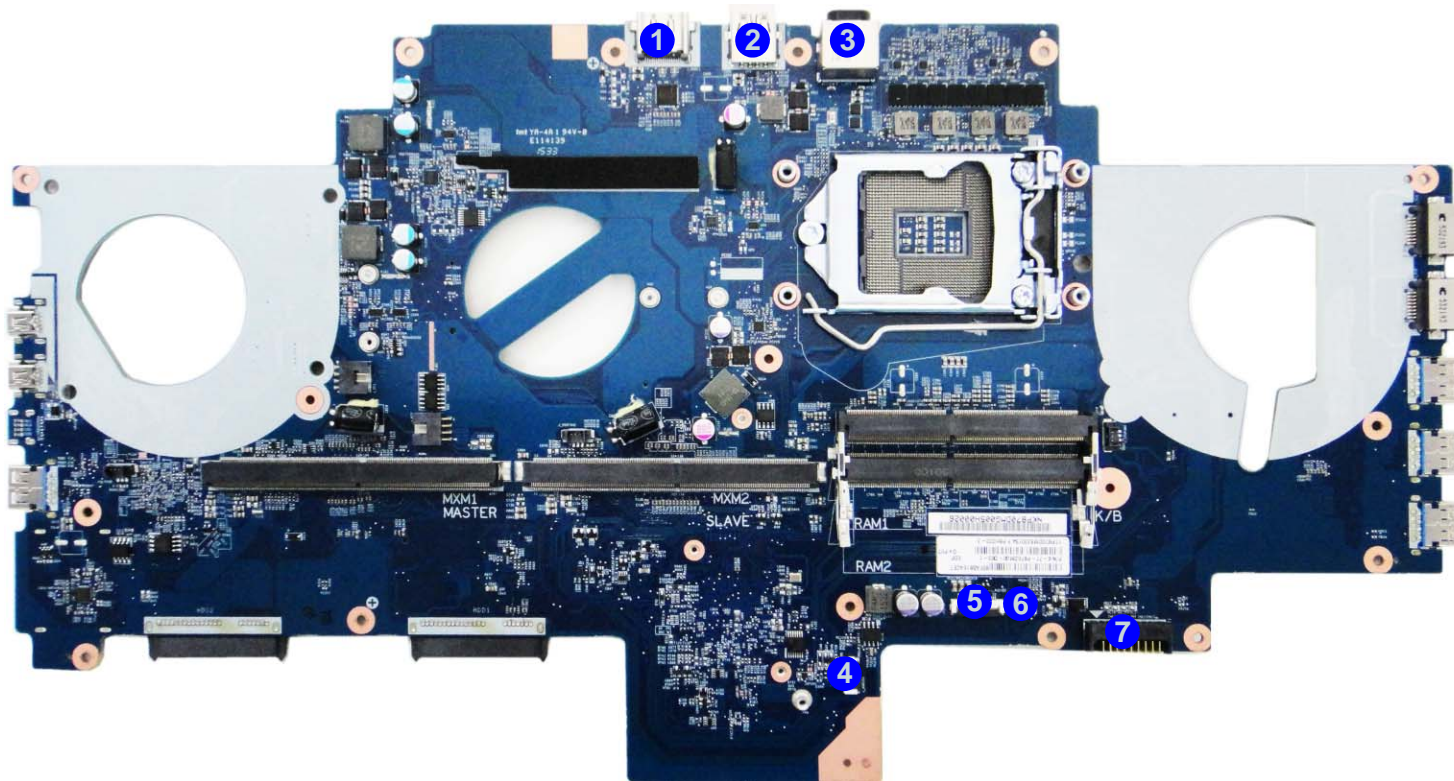


Figure 10
**Mainboard Bottom
Connectors**

1. HDMI-Out Port
2. USB 3.0 Port
3. DC-In Jack
4. 126 Pin Audio Connector
5. 22 Pin Audio Connector
6. 6 Pin Audio Connector
7. Battery Connector


Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the *P870DM / P870DM-G* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

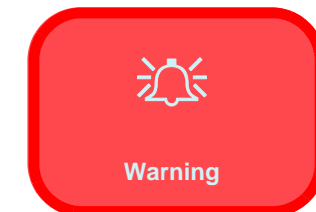
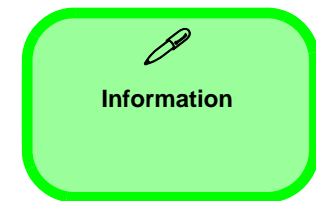
We suggest you completely review any procedure before you take the computer apart.

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.



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). You must 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 - 7](#)

To remove the Primary System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the system memory [page 2 - 10](#)

To remove the System Memory under the Keyboard:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 12](#)
3. Remove the system memory [page 2 - 13](#)

To remove and install the Video Card:

1. Remove the battery [page 2 - 5](#)
2. Remove the video card-2 [page 2 - 14](#)
2. Remove the video card-1 [page 2 - 15](#)
2. Remove the video card-3 [page 2 - 16](#)
3. Install the video card [page 2 - 17](#)

To remove and install the Processor:

1. Remove the battery [page 2 - 5](#)
2. Remove the video card [page 2 - 14](#)
3. Remove the processor [page 2 - 18](#)
4. Install the processor [page 2 - 20](#)

To remove the WLAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 12](#)
3. Remove the wireless LAN [page 2 - 21](#)

To remove the M.2 SSD:

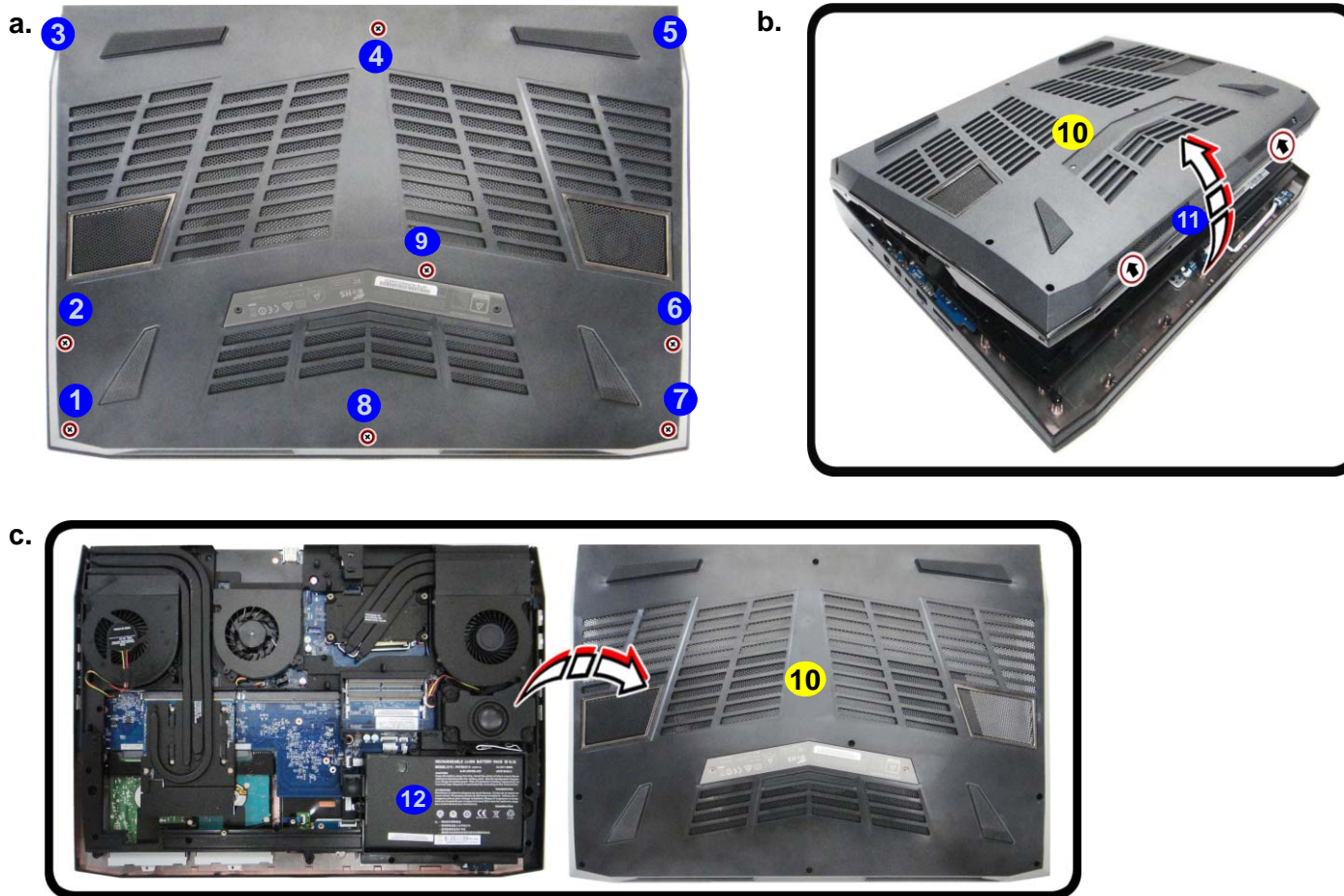
1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 12](#)
3. Remove the M.2 SSD-1 [page 2 - 23](#)
4. Remove the M.2 SSD-2 [page 2 - 24](#)


Removing the Battery

1. Turn the computer **off**, and turn it over.
2. Remove the screws **1** - **9** (*Figure 1a*).
3. Carefully lift the bottom case **10** up in the direction of the arrow **11** and remove it (*Figure 1b*).
4. The battery will be visible at point **12** on the computer (*Figure 1c*).

Figure 1
Battery Removal

- a. Remove the screws.
- b. Remove the bottom case.
- c. Locate the battery.




10. Bottom Case

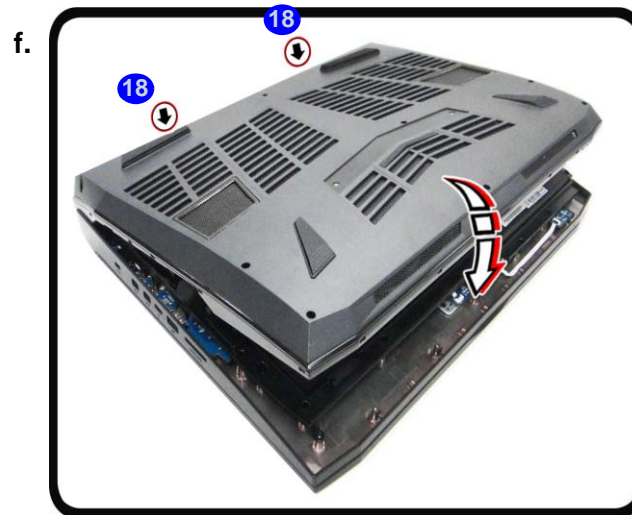
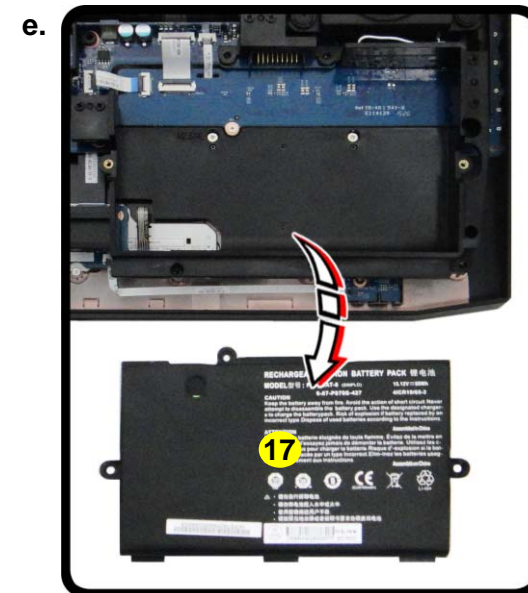
- 9 Screws

Disassembly

Figure 2
Battery Removal
(cont'd.)

- d. Remove the screws.
- e. Lift the battery off the computer.
- f. Reinsert the bottom case and tighten the screws.

5. Carefully remove screws **13** - **16** (*Figure 2b*).
6. Lift the battery **17** off the computer (*Figure 2e*).
7. Reinsert the bottom case starting from point **18** as shown (*Figure 2f*) to avoid damaging the rear eSATA/USB 3.0 port. Tighten the screws to secure the bottom case in place.



17. Battery

- 4 Screws

Removing the Hard Disk Drive

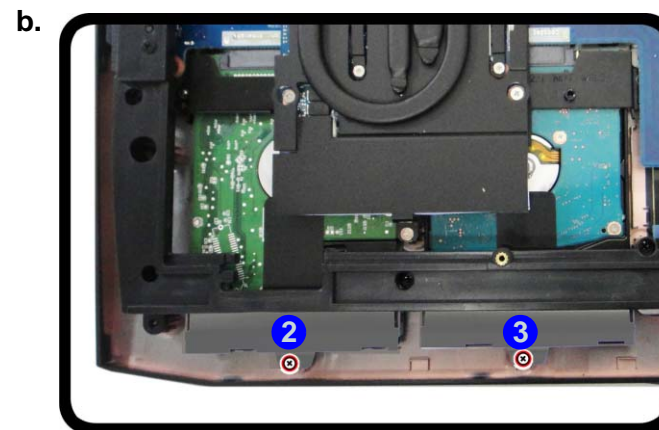
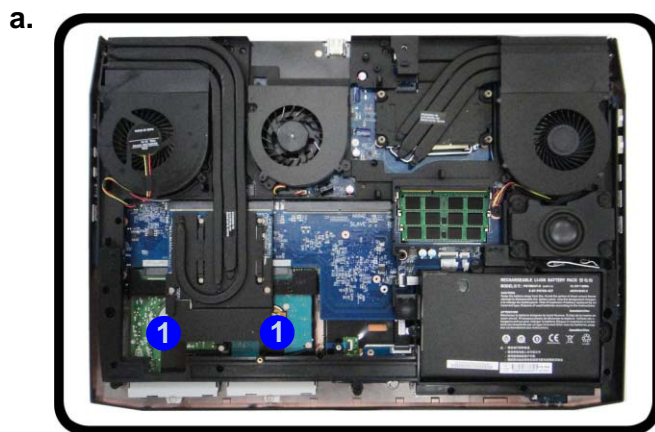
The hard disk drive can be taken out to accommodate other 2.5" serial (SATA) hard disk drives with a height of 7mm/ 9.5mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up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

Hard Disk Removal Process

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
2. The HDD(s) will be visible at point **1** on the mainboard ([Figure 3a](#)).
3. Remove screws **2** / **3** from the HDD assembly ([Figure 3b](#)).

Figure 3
HDD Assembly Removal

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



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.



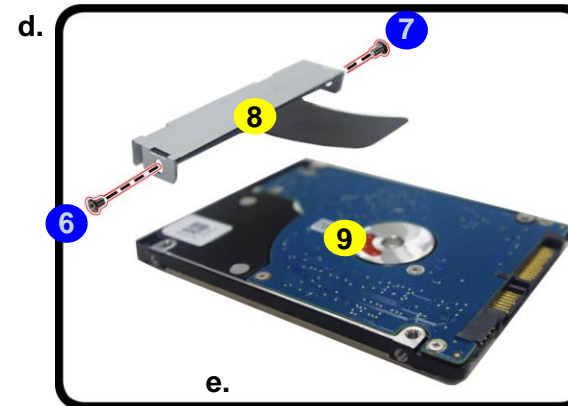
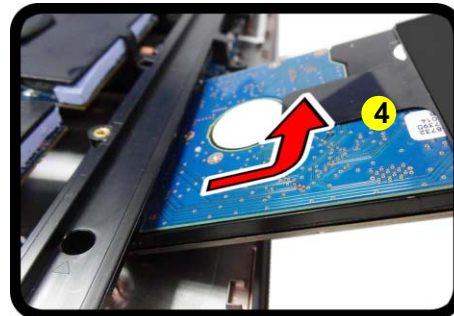
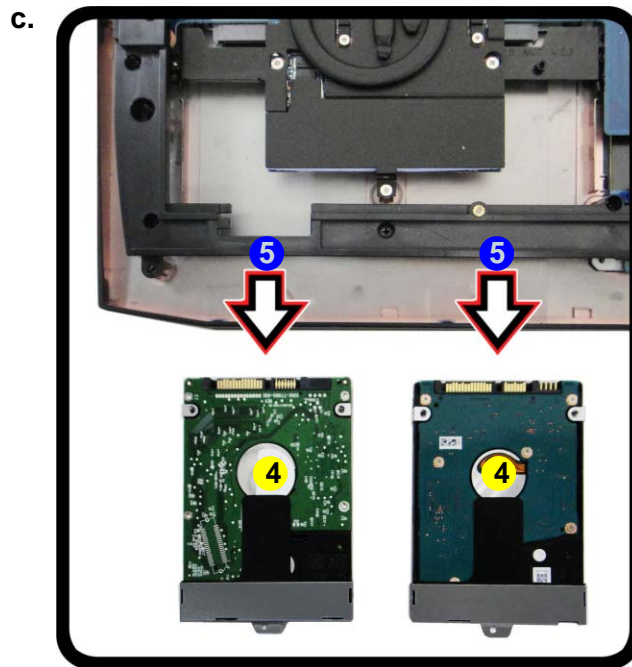
- 2 Screws

Disassembly

Figure 4
**HDD Assembly
 Removal (cont'd.)**

- c. Slightly lift and pull the HDD in the direction of the arrow.
 d. Remove the screws and bracket from the HDD.

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



- 4. HDD Assembly
- 8. HDD Bracket
- 9. HDD

- 2 Screws



Installing 9.5mm or 7mm HDD

Note that the hard disks pictured on the following pages are all 7mm(h) hard disk drive.

There are two hard disk drive options:

Two changeable 2.5" (6cm) **7.0mm** (h) **SATA** (Serial) Hard Disk Drives/Solid State Drives (SSD) supporting RAID level 0/1

Or

One changeable 2.5" (6cm) **9.5mm** (h) **SATA** (Serial) Hard Disk Drive/Solid State Drive (SSD)

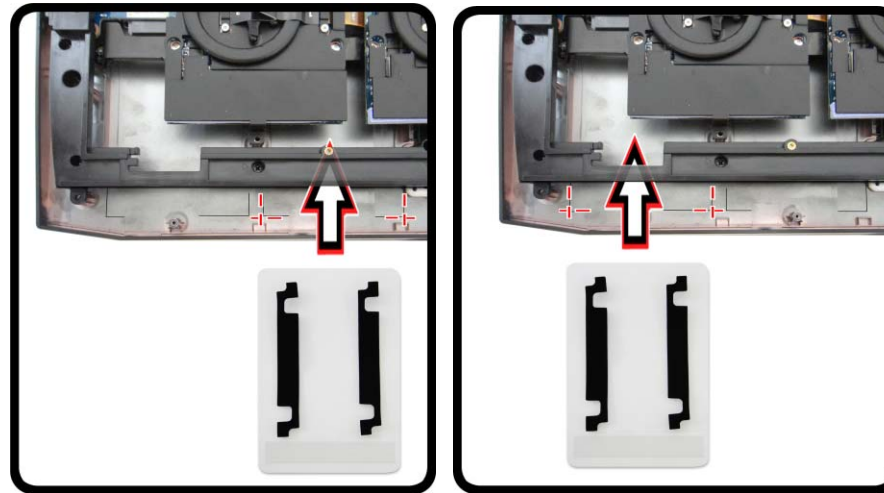
For more information, contact your distributor/supplier, and bear in mind your warranty terms.

Hard Disk Size Note (Foam Rubber Insert)

Note that the hard disks pictured on these pages are all 9.5mm(H) hard disk drives. In some cases 7mm(H) hard disk drives will be installed.



- If you are replacing a 9.5mm(H) HDD with a 7mm(H) HDD then insert the foam rubber insert.
- If you are replacing a 7mm(H) HDD with a 9.5mm(H) HDD then remove the foam rubber insert.



HDD-1

HDD-2

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

Disassembly

Figure 6
RAM Module Removal

- Locate the module.
- Gently pull the two release latches on the sides of the memory socket(s) in the direction indicated below.
- The RAM module will pop-up, and you can remove it.

Removing the Primary System Memory (RAM)

The computer has **four** memory sockets for 260 pin Small Outline Dual In-line (SO-DIMM) **DDR 4** type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

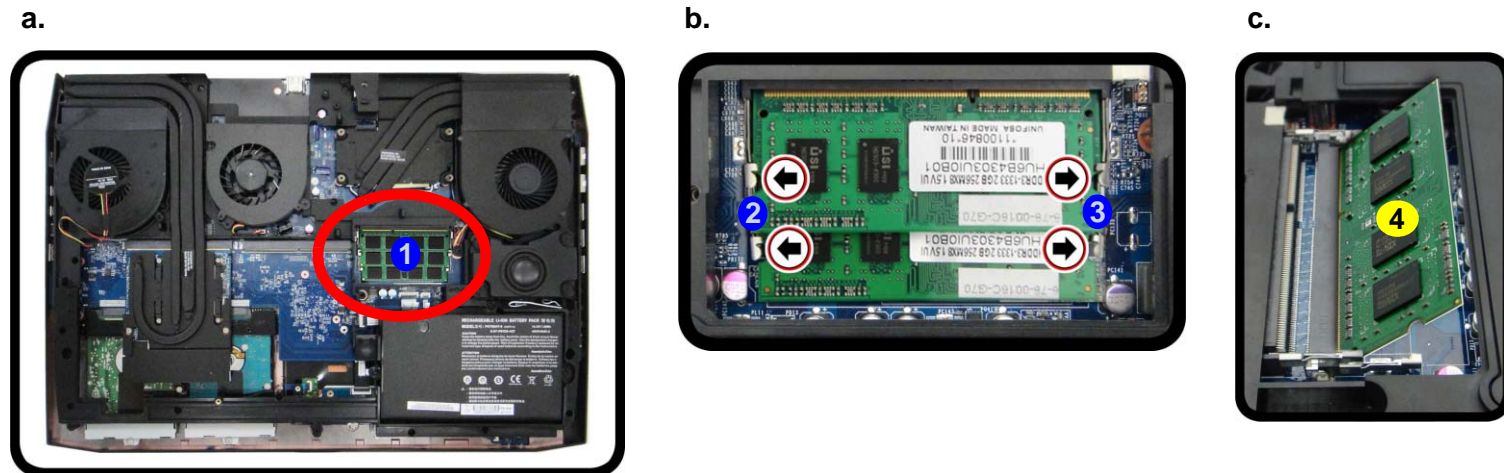
Note that **four SO-DIMMs are only supported by Quad-Core CPUs; Dual-Core CPUs support two SO-DIMMs maximum.**

Two primary memory sockets are located under component bay cover (the bottom case cover), and two secondary memory sockets are located under the keyboard (not user upgradable). If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay cover.

Note that the RAM located under the keyboard is not user upgradable.

Memory Upgrade Process

- Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)).
- The modules will be visible at point **1** ([Figure 6a](#)).
- Gently pull the two release latches (**2** & **3**) on the sides of the memory socket(s) in the direction indicated below ([Figure 6b](#)).
- The RAM module **4** will pop-up, and you can remove it ([Figure 6c](#)).



4. RAM Module

5. Pull the latches to release the second module if necessary.
6. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
7. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the slot as it will go. **DO NOT FORCE** the module; it should fit without much pressure.
8. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
9. Replace the bay cover and screws.
10. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.



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.

Disassembly

Figure 7
Keyboard Removal

- a. Remove the screw.
- b. Eject the keyboard using a special eject stick to push the keyboard out while releasing the keyboard as shown.

Removing the System Memory (RAM) from Under the Keyboard

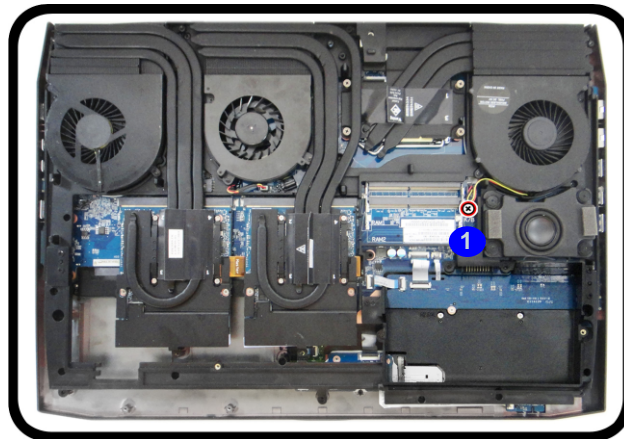
The computer has **four** memory sockets for 260 pin Small Outline Dual In-line (SO-DIMM) **DDR 4** type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

Two primary memory sockets are located under component bay cover (the bottom case cover), and two secondary memory sockets are located under the keyboard. If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay cover.

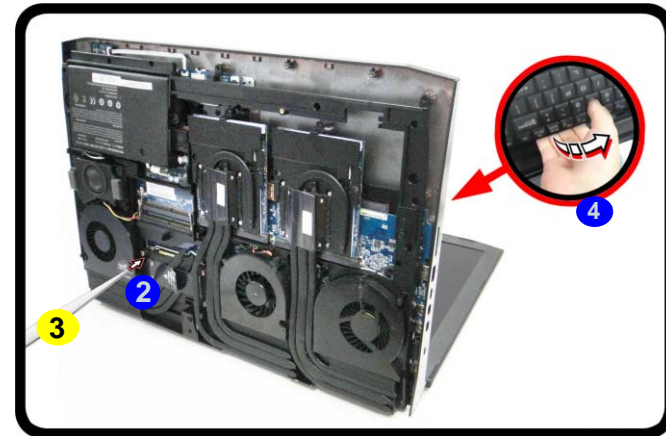
Memory Upgrade Process

1. Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)).
2. Remove the screw **1** ([Figure 7a](#)).
3. Open it up with the LCD on a flat surface before pressing at point **2** to release the keyboard module (use an eject stick **3** with a diameter no bigger than 2.5mm) to do this while releasing the keyboard in the direction of the arrow **4** as shown ([Figure 7b](#)).

a.



b.



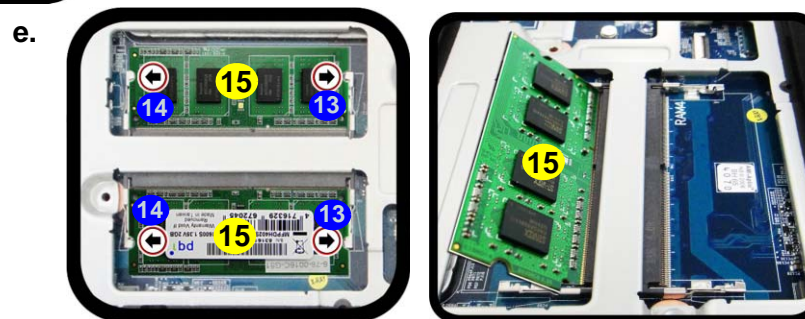
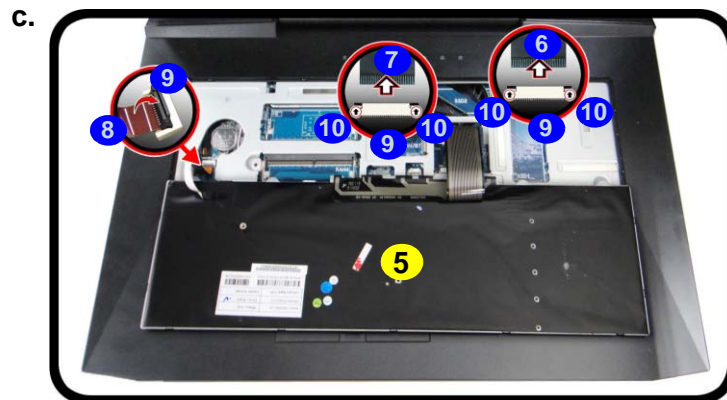
3. Eject Stick


- 1 Screw

Figure 8
KB & RAM Module Removal

- c. Lift the keyboard up, and disconnect the keyboard ribbon cable from the locking collar socket.
- d. Remove the keyboard and the memory sockets will be visible.
- e. Pull the two release latches on the sides of the memory socket(s) in the direction indicated.


4. Carefully lift the keyboard **5** up, being careful not to bend the keyboard ribbon cables **6** - **8**.
5. Disconnect the keyboard ribbon cables **6** - **8** from the locking collar socket **9** by using a small flat-head screwdriver to pry the locking collar pins **10** away from the base (*Figure 8c*).
6. Remove the keyboard and the memory sockets **11** & **12** will be visible (*Figure 8d*).
7. Gently pull the two release latches (**13** & **14**) on the sides of the memory socket(s) in the direction indicated below.
8. The RAM module **15** will pop-up, and you can remove it (*Figure 8e*).
9. Pull the latches to release the second module if necessary.
10. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
11. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the slot as it will go. **DO NOT FORCE** the module; it should fit without much pressure.
12. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
13. Replace the keyboard, bay cover and screws.
14. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.





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.



5. Keyboard
15. RAM Modules

Disassembly

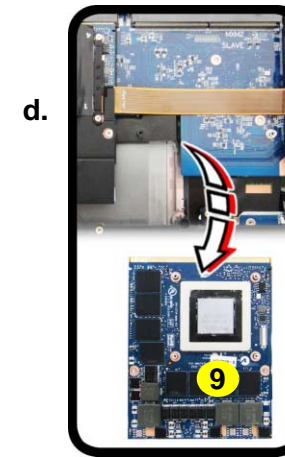
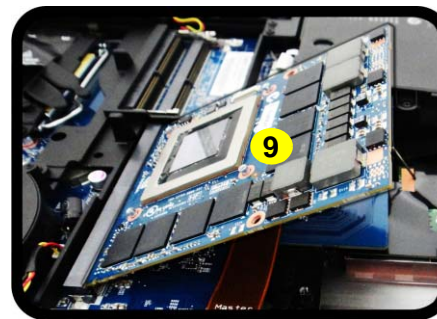
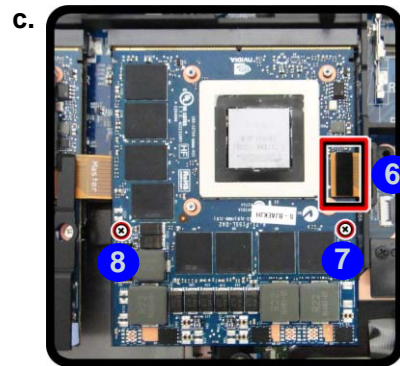
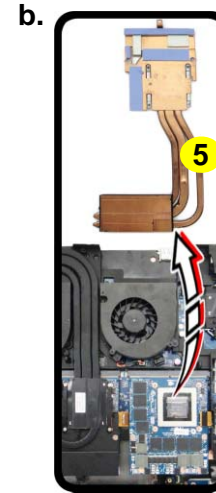
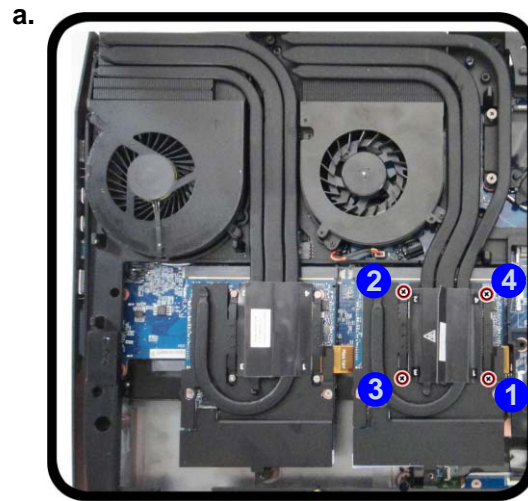
Figure 9 Video Card-2 Removal Procedure

- Remove the screws in the correct order.
- Carefully remove the heat sink units.
- Remove the video card cable connector and screws. The video card will pop up.
- Remove the video card.

Removing and Installing the Video Card

Video Card-2 Removal Procedure

- Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)).
- Remove screws **1** - **4** from the heat sink unit in the order indicated on the label (i.e screw **4** first through to screw **1** last) ([Figure 9a](#)).
- Carefully (**it may be hot**) remove the heat sink unit **5** ([Figure 9b](#)).
- Remove the connector **6** and screws **7** & **8** from the video card. The video card **9** will pop up.
- Remove the video card **9** ([Figure 9d](#)).



Caution

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



- 5. Heat Sink Unit
- 9. Video Card
- 6 Screws



Heat Sink Screw Removal and Insertion

Remove the screws from the heat sink in the order indicated here: **4-3-2-1**.

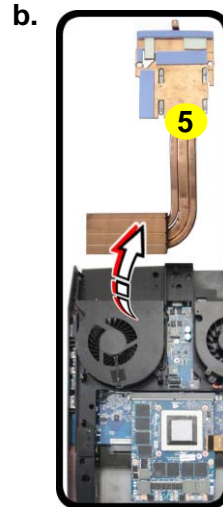
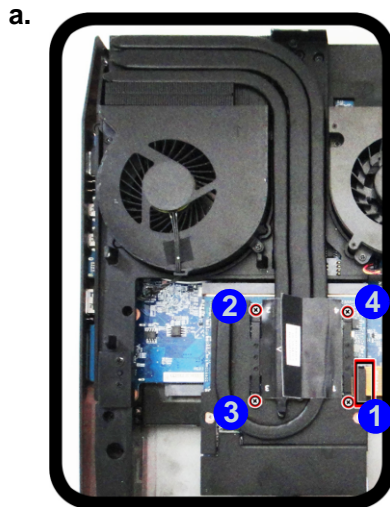
When tightening the screws, make sure that they are tightened in the order: **1-2-3-4**.


Video Card-1 Removal Procedure

1. Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)) and Video card-2 ([page 2 - 14](#)).
2. Remove screws **1** - **4** from the heat sink unit in the order indicated on the label (i.e screw **4** first through to screw **1** last) ([Figure 10a](#)).
3. Carefully (**it may be hot**) remove the heat sink unit **5** ([Figure 10b](#)).
4. Remove connector **6** (in case of two video cards) and screws **7** & **8** from the video card. The video card **9** will pop up ([Figure 10c](#)).
5. Remove the video card **9** ([Figure 10d](#)).

Figure 10
Video Card-1 Removal Procedure

- a. Remove the screws in the correct order.
- b. Carefully remove the heat sink units.
- c. Remove the video card cable connector and screws. The video card will pop up.
- d. Remove the video card.

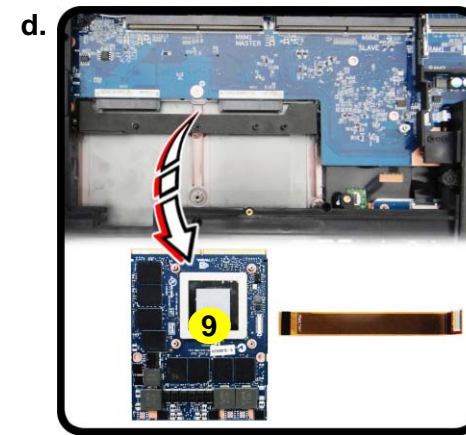
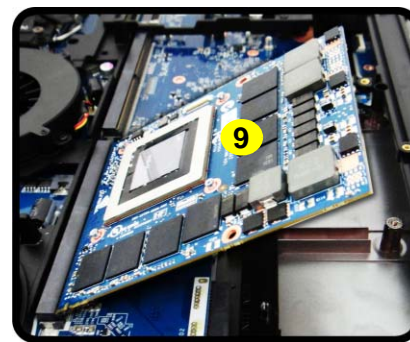
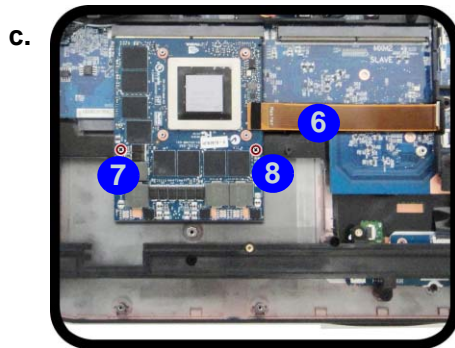





Heat Sink Screw Removal and Insertion

Remove the screws from the heat sink in the order indicated here: 4-3-2-1.


When tightening the screws, make sure that they are tightened in the order: 1-2-3-4.





Caution

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



5. Heat Sink Unit
9. Video Card

- 6 Screws

Disassembly

Figure 11 Video Card-3 Removal Procedure

- Remove the screws in the correct order.
- Carefully remove the heat sink units.
- Remove the video card cable connector and screws. The video card will pop up.
- Remove the video card.



Caution

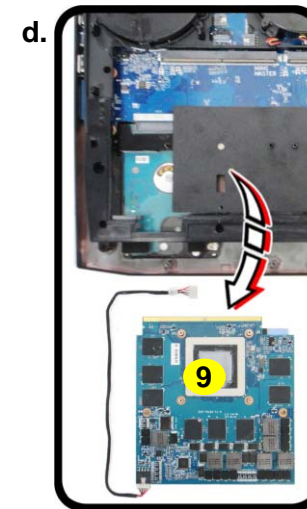
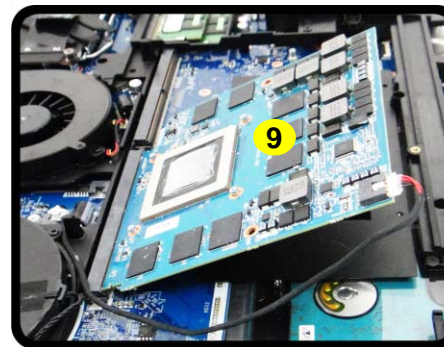
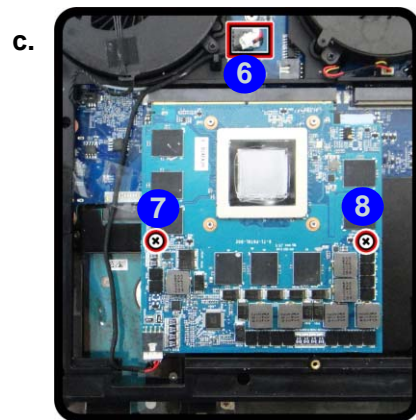
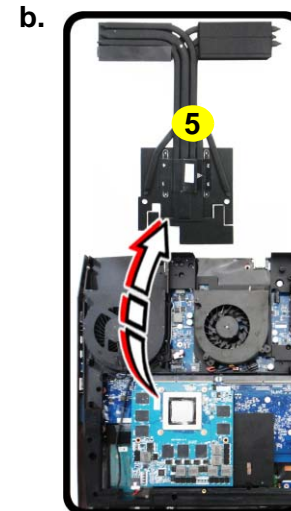
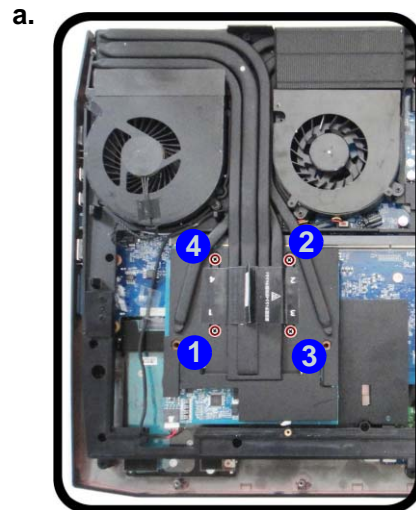
The heat sink, and video card area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.



- 5. Heat Sink Unit
- 9. Video Card
- 6 Screws

Video Card-3 Removal Procedure

- Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)) and Video card-2 ([page 2 - 14](#)).
- Remove screws **1 - 4** from the heat sink unit in the order indicated on the label (i.e screw **4** first through to screw **1** last) ([Figure 10a](#)).
- Carefully (**it may be hot**) remove the heat sink unit **5** ([Figure 10b](#)).
- Remove connector **6** and screws **7 & 8** from the video card. The video card **9** will pop up ([Figure 10c](#)).
- Remove the video card **9** ([Figure 10d](#)).



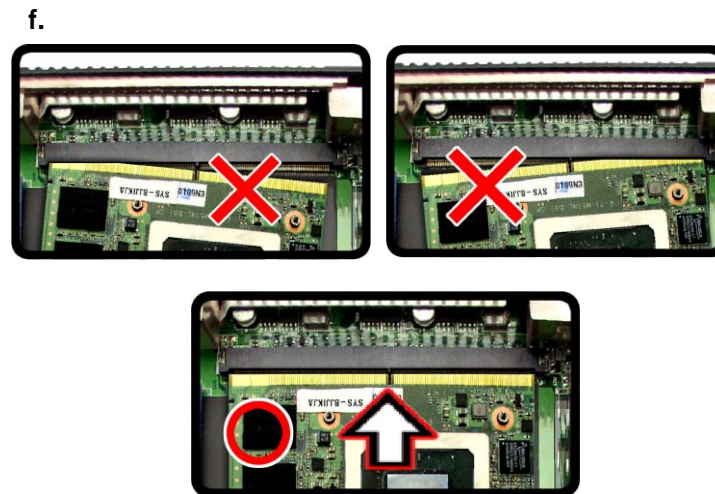
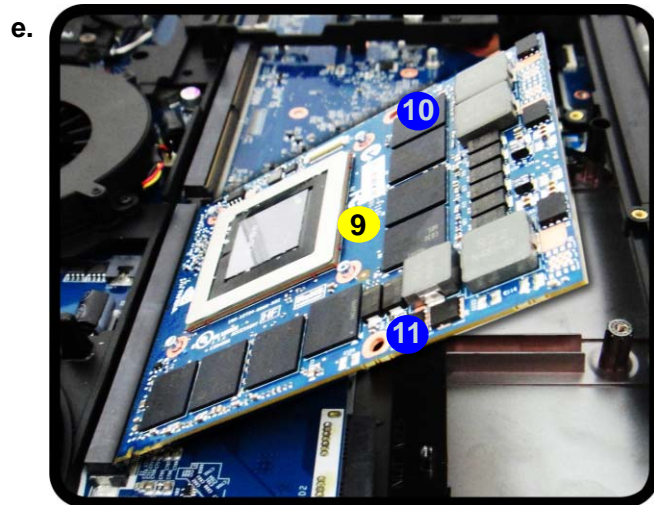
Heat Sink Screw Removal and Insertion

Remove the screws from the heat sink in the order indicated here: **4-3-2-1**.

When tightening the screws, make sure that they are tightened in the order: **1-2-3-4**.

Installing a New Video Card

1. Prepare to fit the video card **9** into the slot by holding it at about a 30° angle (*Figure 12e*).
2. The card needs to be fully into the slot, and the video card and socket have a guide-key and pin which align to allow the card to fit securely (*Figure 12f*).
3. Fit the connectors firmly into the socket, straight and evenly.



4. DO NOT attempt to push one end of the card in ahead of the other.
5. The card's pin alignment will allow it to only fit one way. **Make sure the module is seated as far into the socket as it will go.** DO NOT FORCE the card; it should fit without much pressure.
6. Secure the card with screws **10** & **11** (*Figure 10 on page 2 - 15*).
7. Place the heat sink back on the card, and secure the screws in the order indicated in *Figure 10 on page 2 - 15*.
8. Reinsert the component bay cover, and secure with the screws as indicated in *Figure 2 on page 2 - 6*.

Figure 12
Installing a New Video Card

- e. Insert the video card at a 30 degree angle.
- f. Fit the connectors straight and even, and secure the card with the screws.



Caution

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



9. Video Card

- 2 Screws

Disassembly

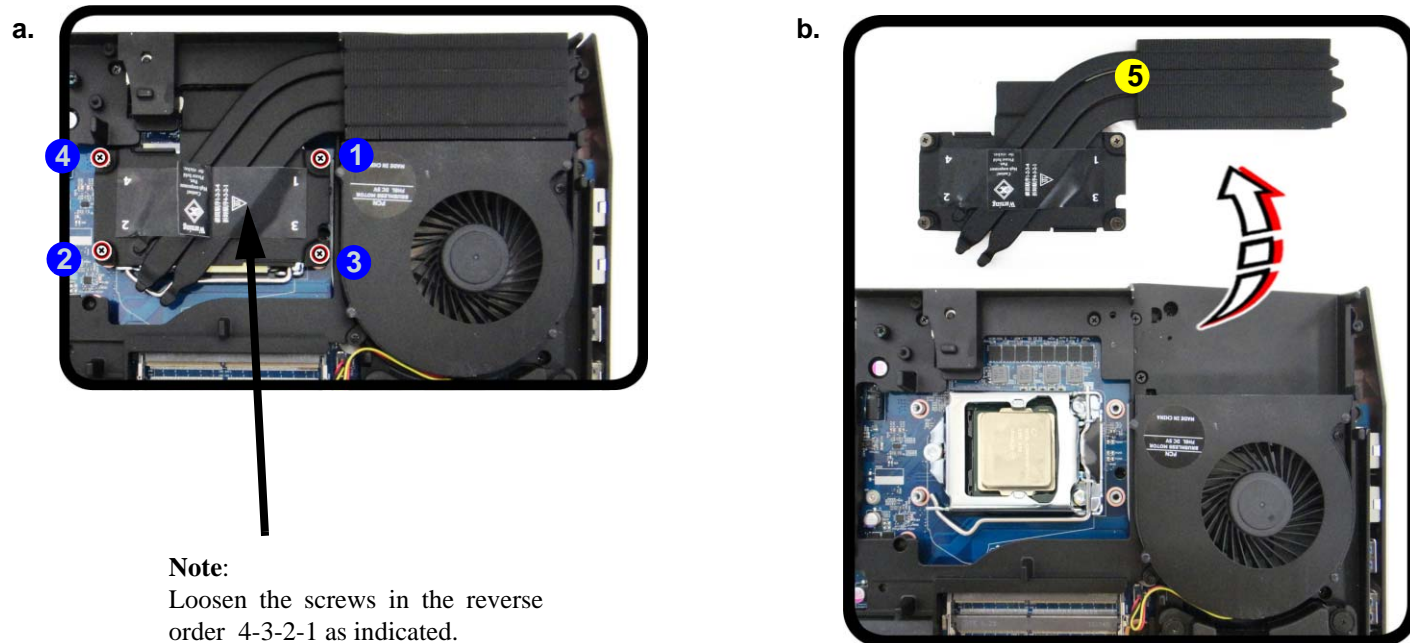
Figure 13 Processor Removal Procedure

- a. Remove the screws in the correct order.
- b. Carefully remove the heat sink unit.

Removing and Installing the Processor

Processor Removal Procedure

1. Turn off the computer, remove the battery ([page 2 - 5](#)) and video card-2 heatsink ([page 2 - 14](#)).
2. Remove screws ① - ④ from the heat sink unit in the order indicated on the label (i.e screw ④ first through to screw ① last [Figure 13a](#)).
3. Carefully (it may be hot) remove the heat sink unit ⑤ ([Figure 13b](#)).



Note:

Loosen the screws in the reverse order 4-3-2-1 as indicated.

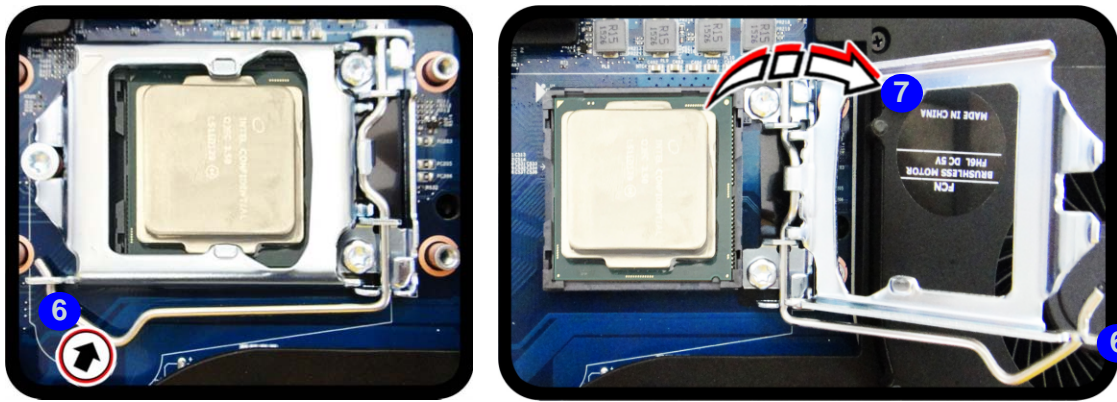


5. Heat Sink Unit

- 4 Screws

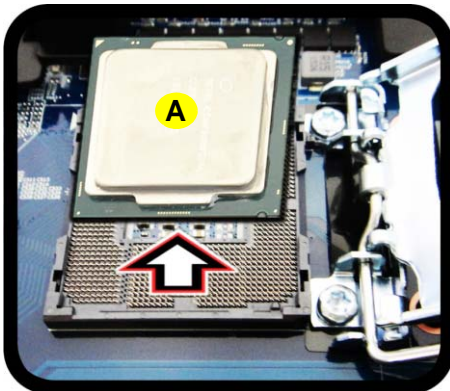
4. Press down and hold the latch **6** (with the latch held down you will be able to release it).
5. Move the latch **6** and bracket **7** fully in the direction indicated to unlock the CPU (**Figure 14c**).
6. Carefully (it may be hot) lift the CPU **A** up out of the socket (**Figure 14d**).
7. See **page 2 - 20** 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.

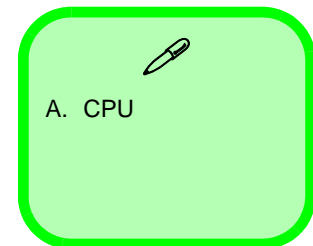


Figure 14
Processor Removal (cont'd)

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

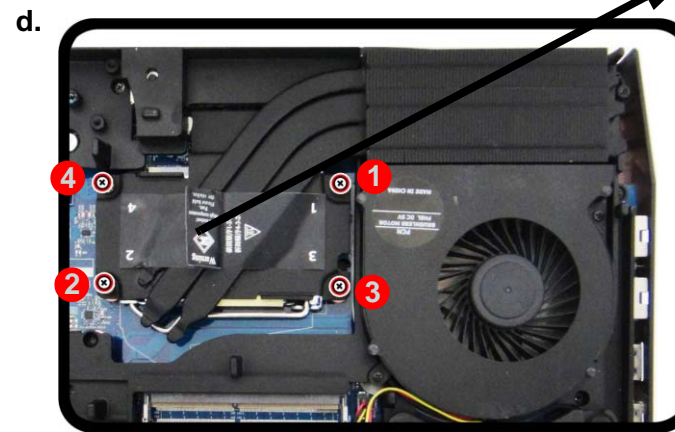
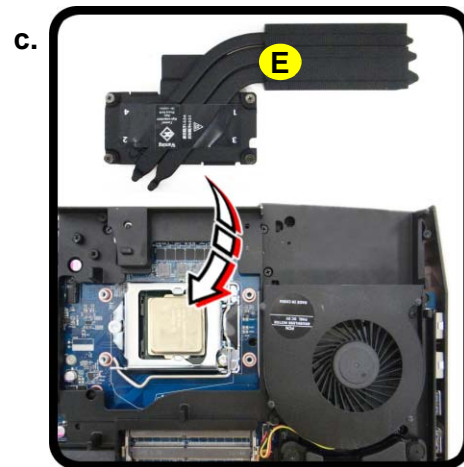
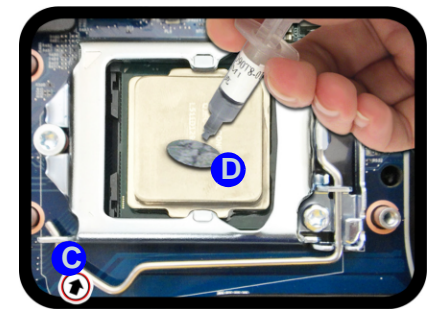
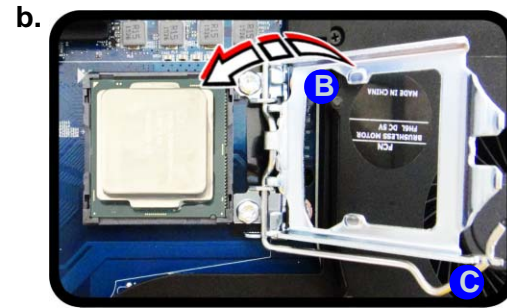
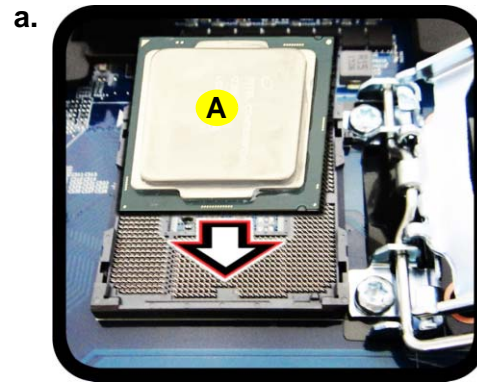
Disassembly

Figure 15
Processor Installation

- Insert the CPU.
- Move the latch and bracket fully in the direction indicated to lock the CPU. Apply thermal grease.
- Insert the heat sink.
- Tighten the screws.

Processor Installation Procedure

- Insert the CPU **A**; pay careful attention to the pin alignment (*Figure 15a*), it will fit only one way (DO NOT FORCE IT!).
- Move the bracket **B** and latch **C** fully in the direction indicated to lock the CPU.
- Apply the thermal grease **D** to the top of the CPU as shown (*Figure 15b*).
- Insert the heat sink unit **E** as indicated in *Figure 15c*.
- Tighten the CPU heat sink screws in the order **1** - **4** (the order as indicated on the label and *Figure 15d*).
- Replace the CPU fan, component bay cover and tighten the screws (*page 2 - 18*).



Note:
Tighten the screws in the order 1-2-3-4 as indicated.

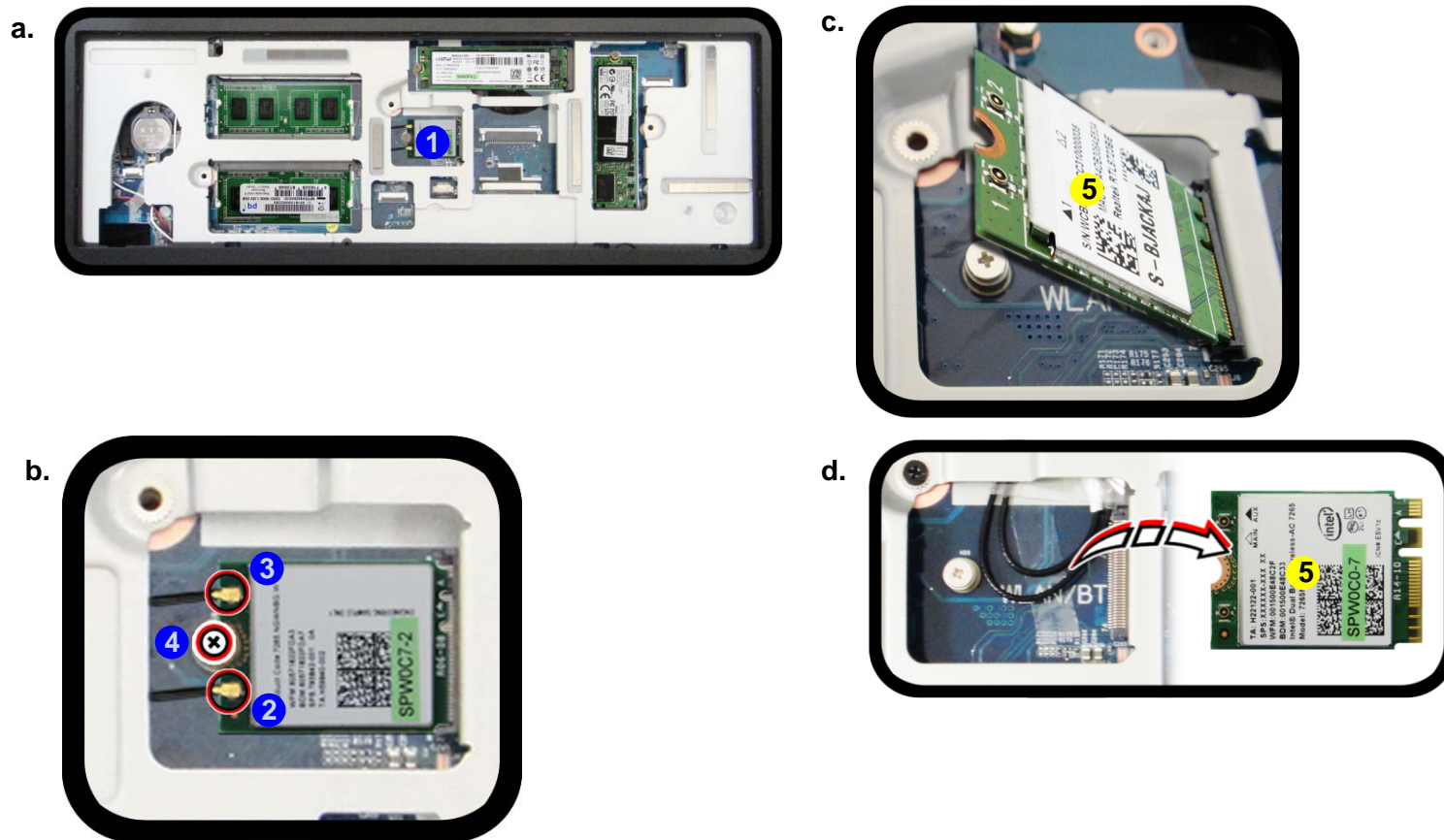
-
- A. CPU
 - E. Heat Sink
 - 4 Screws

Removing the Wireless LAN Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and the keyboard ([page 2 - 12](#)).
2. The Wireless LAN module will be visible at point **1** under the keyboard ([Figure 16a](#)).
3. Carefully disconnect cables **2** - **3**, then remove screw **4** from the module socket ([Figure 16b](#)).
4. The Wireless LAN module **5** will pop-up ([Figure 16c](#)).
5. Lift the Wireless LAN module ([Figure 16d](#)) up and off the computer.

Figure 16
**Wireless LAN
Module Removal**

- a. The Wireless LAN module will be visible at point **1** under the keyboard
- b. Disconnect the cables and remove the screw.
- c. The WLAN module will pop up.
- d. Lift the WLAN module out.



✎

5. WLAN Module

- 1 Screw

Wireless LAN, Combo 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	

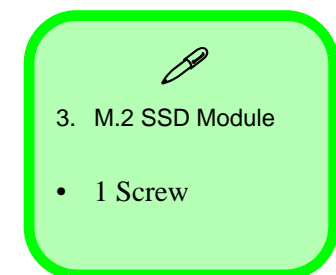
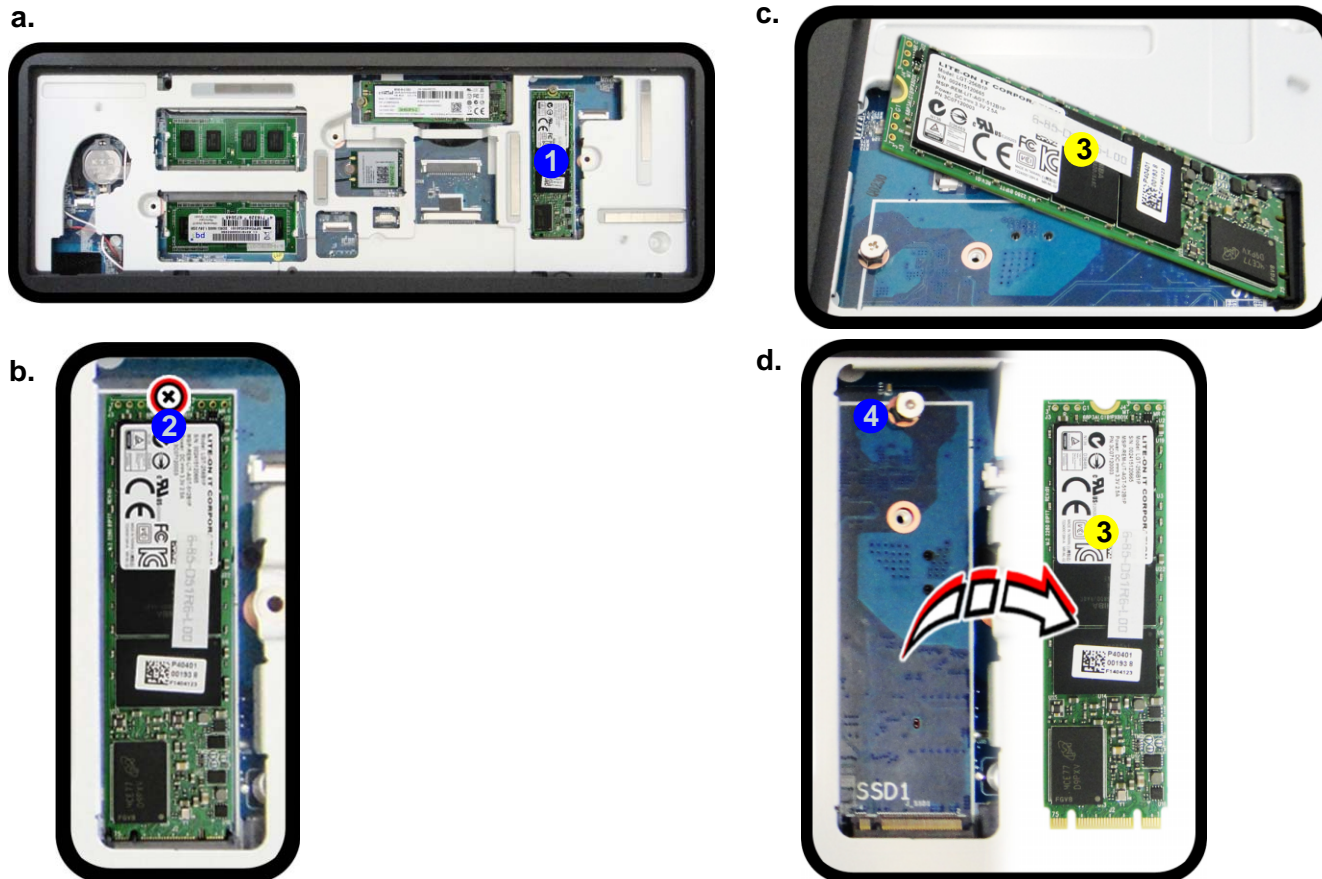
Cable 1 is usually connected to antenna 1 (Main) on the module, and cable 2 to antenna 2 (Aux).

Removing the M.2 SSD-1 Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)), and component bay cover ([page 2 - 10](#)).
2. Locate the module; it is visible at point **1** ([Figure 17a](#)).
3. Carefully remove the screw **2** from the module ([Figure 17b](#)).
4. The M.2 SSD module **3** will pop-up ([Figure 17c](#)).
5. Lift the M.2 SSD module **3** up and off the computer ([Figure 17d](#)).
6. Reverse the process to install a new module (make sure that the hexagonal screw **4** is in the correct location).

Figure 17
M.2 SSD-1 Module Removal

- a. Locate the module.
- b. Remove the screw.
- c. The module will pop-up.
- d. Lift the module up off the socket.



Disassembly

Figure 18
M.2 SSD-2 Module Removal

- Locate the module.
- Remove the screws.
- The module will pop up.
- Lift the module out.

Removing the M.2 SSD-2 Module

- Turn off the computer, and turn it over, remove the battery ([page 2 - 5](#)).
- Locate the module; it is visible at point **1** ([Figure 18a](#)).
- Remove the screw **2** from the SSD ([Figure 18a](#)).
- The M.2 SSD module **3** will pop-up ([Figure 18b](#)).
- Lift the M.2 SSD module **3** up and off the computer ([Figure 18c](#)).
- Reverse the process to install a new module (make sure that the hexagonal screw **3** is in the correct location depending upon the size of the module).



-
- 3. M.2 SSD Module
 - 1 Screw



Appendix A: Part Lists

This appendix breaks down the *P870DM / P870DM-G* 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.

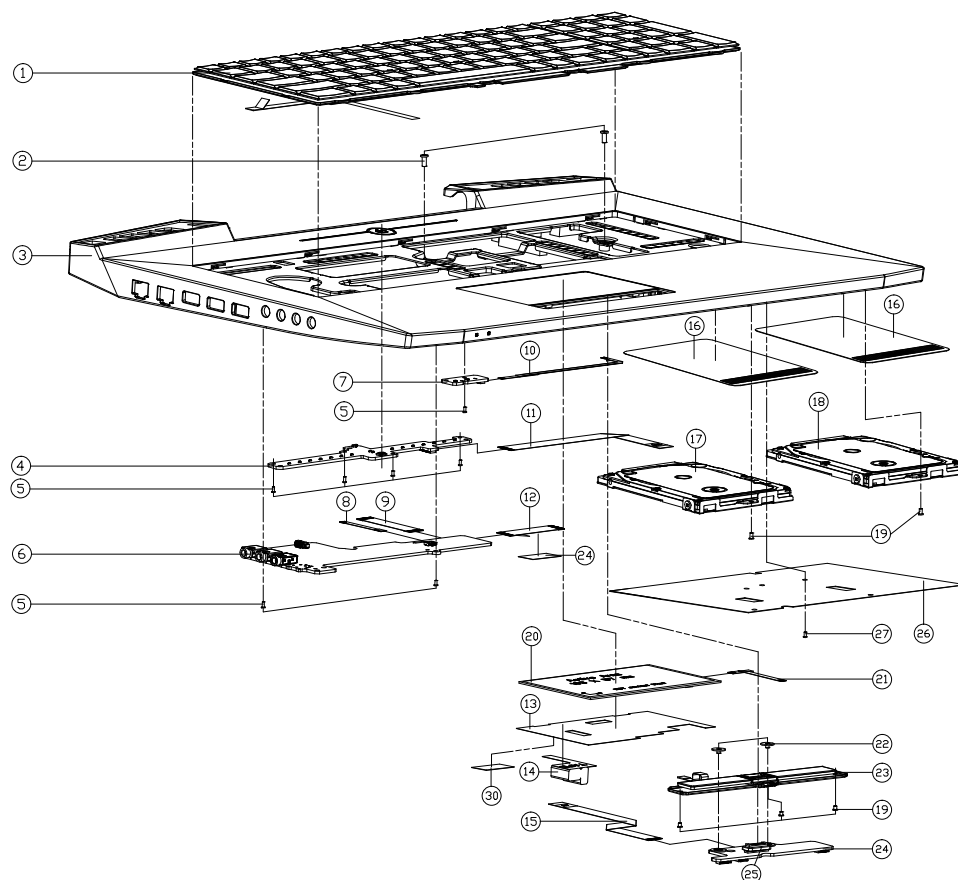
Part List Illustration Location

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

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

Parts	
Top	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
LCD	<i>page A - 5</i>
MB (GX VGA)	<i>page A - 6</i>
MB (GXX VGA)	<i>page A - 7</i>
MB (Two VGA)	<i>page A - 8</i>
VGA (N16E-GT)	<i>page A - 9</i>
VGA (N16E-GX)	<i>page A - 10</i>
VGA (N16E-GXX)	<i>page A - 11</i>
HDD	<i>page A - 12</i>

Top



ITEM	PART NAME	PART NO	REMARK
1	NET 0.10 GA NY3500 0.5 PPKM BLACK COATING WITH VIB KEY CONTACT REFLECTOR PLATE	6-80-P7500-013-3	
2	.SCREW M2.5*8L KI BK/Z NY ICT	6-35-B6125-8R0	
3	TOP CASE MODULE (CREATIVE/KRAPHIO) P870DM	6-39-P8702-012-N	
4	POWER SWITCHED BOARD V3.0 P870DM	6-77-P870S-D03	
5	.SCREW M2*4L KI NI ICT NY (OD=#4.5,DT=0.4)	6-35-B1120-4RE	
6	AUDIO BOARD V3.0 P870DM	6-77-P870B-D03	
7	CHARGER LED BOARD V2.0 P870DM	6-77-P8704-D02	
8	FFC CABLE FOR HD TO AUDIO BOARD (PINK) PITCH 1.50MM (AV PROTECTED)	6-43-P8700-021	
9	FFC CABLE FOR HD TO AUDIO BOARD (GREEN) PITCH 1.50MM (AV PROTECTED)	6-43-P8700-051	
10	FFC CABLE FOR CLICK BOARD TO CHARGE BOARD (PINK) PITCH 1.50MM (AV PROTECTED)	6-43-P8700-061	
11	FFC CABLE FOR HD TO POWER BOARD (GREEN) PITCH 1.50MM (AV PROTECTED)	6-43-P8700-012	
12	FFC CABLE FOR HD TO AUDIO BOARD (PINK) PITCH 1.50MM (AV PROTECTED)	6-43-P8700-041	
13	TOP TP MYLAR PET P870DM	6-40-P8702-060	
14	ESD GASKET (30*23*9.5T) FOR TOP CASE (P870DM)	6-47-00190-306	
15	FFC CABLE FOR HD TO CLICK BOARD (PINK) PITCH 1.50MM (AV PROTECTED)	6-43-P8700-032	
16	MYLAR FOR 7MM HDD P870DM	6-40-P8702-050	
17	W/D MAIN HDD ASS'Y P870DM	6-79-P870DM0J-010	
17	W/MAIN HDD ASS'Y P870DM	6-79-P870DM0J-020	
18	W/D 2ND HDD ASS'Y P870DM	6-79-P870DM0J-030	
18	W/2ND HDD ASS'Y P870DM	6-79-P870DM0J-040	
19	SCREW M2*3L KI BZ ICT NY (OD=#4.5,DT=0.4)	6-35-B6120-3RD	
20	TOUCH PAD SYMPHYS TM-03063-001 P750DM (026*61MM)	6-49-P75D3-010	
21	FFC CABLE FOR TP TO CLICK BOARD (PINK) PITCH 1.50MM (AV PROTECTED)	6-43-P8700-071	
22	SCREW M2*2L KI BK/Z ICT NY (Ø8,T=0.6)	6-35-B6120-2RE	
23	FUNCTION KEY FOR CLICK BUTTON MODULE W/FINGER P6506G	6-23-KP65R-012	
24	CLICK BOARD V3.0 P870DM	6-77-P8702-D03	
25	FINGER SENSOR BOARD V3.0 P870DM	6-77-P870F-D03	FDR 7mm HDD
26	MYLAR (40*78.5*0.5) PET FOR BOTTOM CASE ASSY P870DM	6-40-P8703-080	
27	.SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
28	TOP CASE GASKET 1 (20*10*0.15) P6505E	6-47-00190-209	
29	.SCREW M2*2.5L KI NI ICT NY (Ø4 T=0.5 1#)	6-35-B1120-2R6	
30	GASKET BLACK (30*7*0.13T) W370ET	6-47-00190-016	

Figure A - 1
Top

A. Part Lists

Bottom

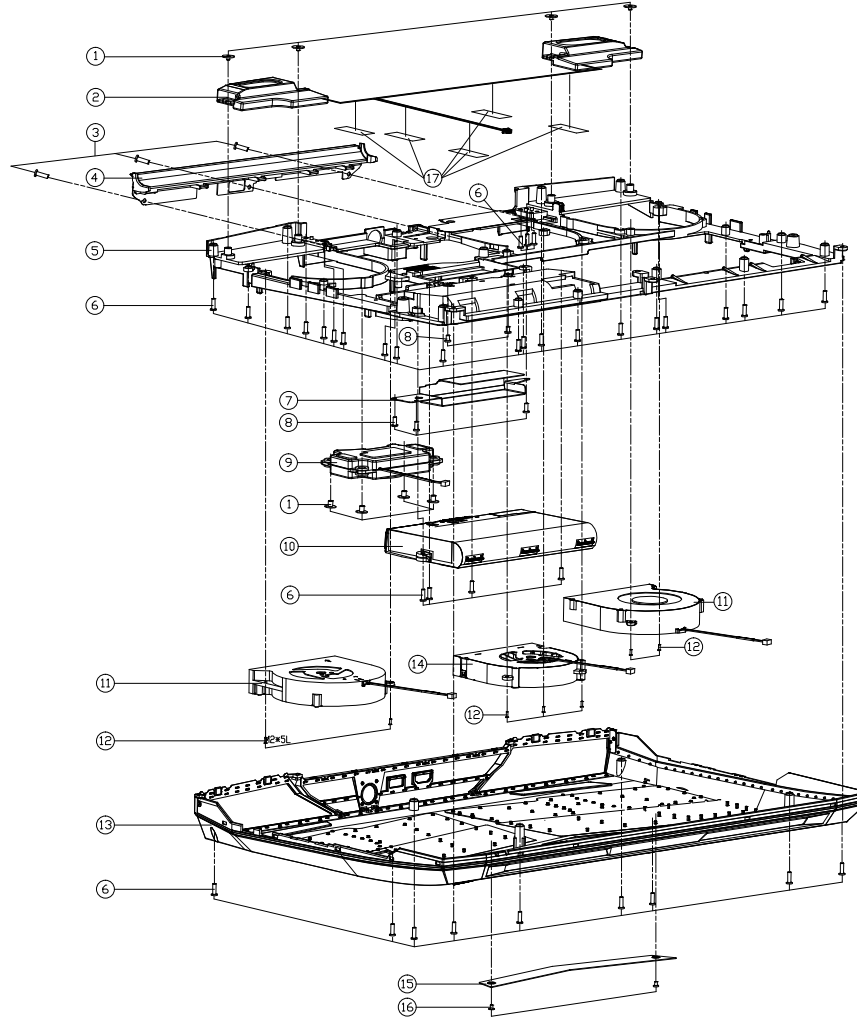
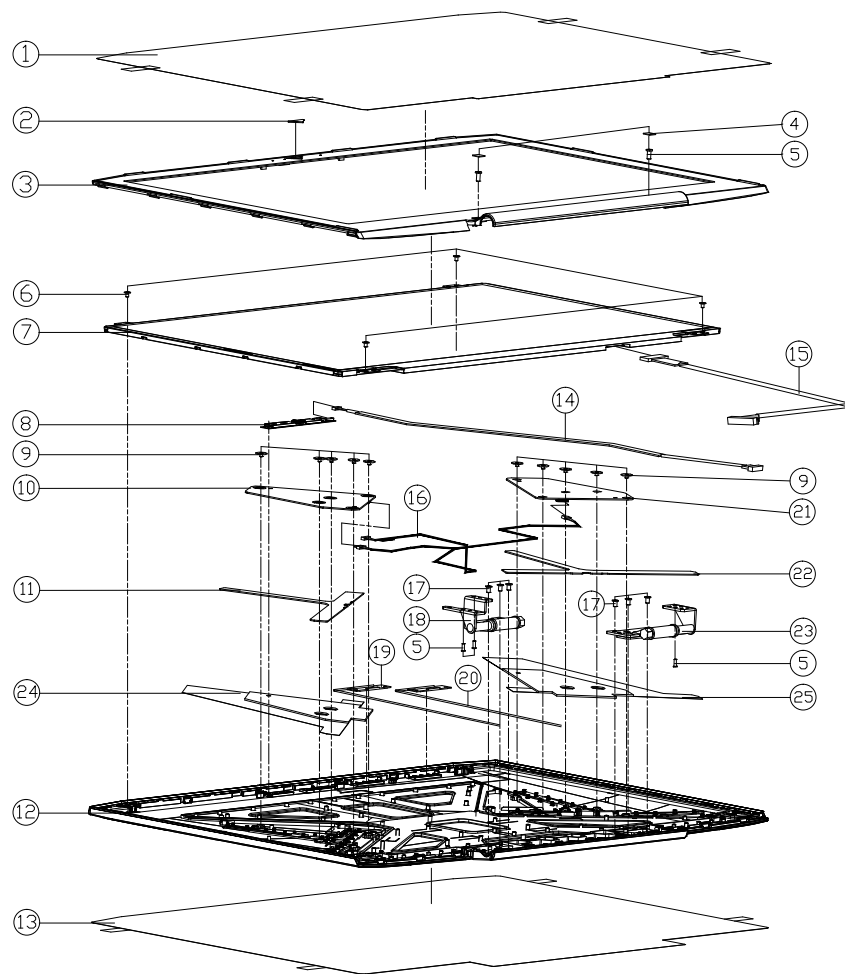


Figure A - 2
Bottom

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*2L KI BK/Z ICT NY(Φ8,T=0.6)	6-35-B6120-2RE	
2	SPEAKER+CABLE MAIN R/L R 390MM/L 160MM 2W 4.0T P870DM	6-23-5P870-0S1	
3	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
4	REAR PLATE MODULE P870DM	6-42-P8702-302	
5	BOTTOM MIDDLE MODULE P870DM	6-42-P8703-202	
6	SCREW M2.5*8L KI BK/Z NY ICT	6-35-B6125-8R0	
7	SAFTY BARRIER MESH SPCC P870DM	6-33-P870S-021	
8	SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
9	SPEAKER SUBWOOFER MODULE 432MM*15MM 2W 6Ω P87 WOODER 0870M	6-23-5P870-0W2	
10	BATP S LI 15.32V/5500mAh 452P SMP/PSE/KIC 98012157 P870DM	6-87-P870S-4271	
11	CPU FAN MODULE (FORCECON) P870DM	6-31-P870S-101	
12	SCREW M2*5L K1KT=0.8 D=4.0 BK/Z ICT NY	6-35-B6120-5R0	
13	BOTTOM CASE MODULE P870DM	6-39-P8703-012	
14	FAN MODULE (APOWER) P750ZM	6-31-P750S-102	
15	AI PRODUCT LABEL FOR P870DM(KCHANGE COLOR)	6-33-P870DMG3-011	
15	AI PRODUCT LABEL FOR P870DM-G(KCHANGE COLOR)	6-33-P870DMG3-011	
16	SCREW M2*3L KI BZ ICT NY (DD=Φ4.5,DT=0.4)	6-35-B6120-3RD	
17	TDP CASE MYLAR FR83 25*7*0.05 P180HM	6-40-P1802-030	

LCD



ITEM	PART NAME	PART NO	REMARK
1	FRONT COVER PROTECT PET MYLAR P870DM	6-40-P8708-010	
2	CCD LENS (PC) P870DM	6-42-P870T-010	
3	LCD FRONT COVER MODULE P870DM	6-39-P8701-012	
4	FRONT COVER SCREW MYLAR PC P870DM	6-40-P8708-030	
5	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
6	SCREW M2*3L KI BZ ICT NY (DD=0.45,DT=0.4)	6-35-B6120-3RD	
7	LCD 17.3" UHD / IPS (VAH40) / EDP AU B1732AN01.0 QLED 4000	6-50-NB204-L00	FDR P870DM-G
7	LCD 17.3" UHD / IPS (VAH40) / EDP AU B1732AN01.0 QLED 4000	6-50-N1240-G00	FDR P870DM
8	IRC CAMERA BEZEL FOR D9000/P8708 OR FOR SUN D9074 P8708 (FIBRE OPTIC W/IR) 0-IND	6-88-P650C-4900	
9	SCREW M2*2L KI BK/Z ICT NY(0.6,T=0.6)	6-35-B6120-2RE	
10	BACK LIGHT BOARD (LEFT) V2.0 P870DM	6-77-P8706-D02	
11	BACK LIGHT GUIDE PLATE-L (PC) P870DM	6-42-P8701-022	
12	LCD BACK COVER MODULE P870DM	6-39-P8701-022	
13	BACK COVER PROTECT PET MYLAR P870DM	6-40-P8708-020	
14	WIRE CALBE FOR CCD 5000MM 30V 8PIN (GHL) P870DM	6-43-P870T-010	
15	WIRE CABLE FOR EDP 160MM 30V 3P (L) 04/LAC CONDUCTORS P870DM	6-43-P8701-011-L	FDR P870DM-G
15	CODIAL CABLE FOR EDP (40X20) 160MM 30V 4P (L) 04/LAC CONDUCTORS P870DM	6-43-P8701-020-L	FDR P870DM
16	WIRE CABLE FOR BACK LIGHT GUIDE LED TO HD 405MM SV 8PIN (GHL) P870DM	6-43-P8707-011	
17	.SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
18	HINGE-L <SK7> P870DM	6-33-P8701-1L1	
19	ANTENNA IPEX4 WLAN VGT WL1 PCB AL 24G/5GHz WL1-650MM P870DM	6-23-7P870-010	
20	ANTENNA IPEX4 WLAN VGT WL2 PCB AL 24G/5GHz WL2-650MM P870DM	6-23-7P870-020	
21	BACK LIGHT BOARD (RIGHT) V2.0 P870DM	6-77-P8705-D02	
22	BACK LIGHT GUIDE PLATE-R (PC) P870DM	6-42-P8701-012	
23	HINGE-R <SK7> P870DM	6-33-P8701-1R1	
24	MYLAR(40X108.5X0.1T) FOR BACK LIGHT-L P870DM	6-40-P8701-030	
25	MYLAR(40X108.5X0.1T) FOR BACK LIGHT-R P870DM	6-40-P8701-020	

Figure A - 3
LCD

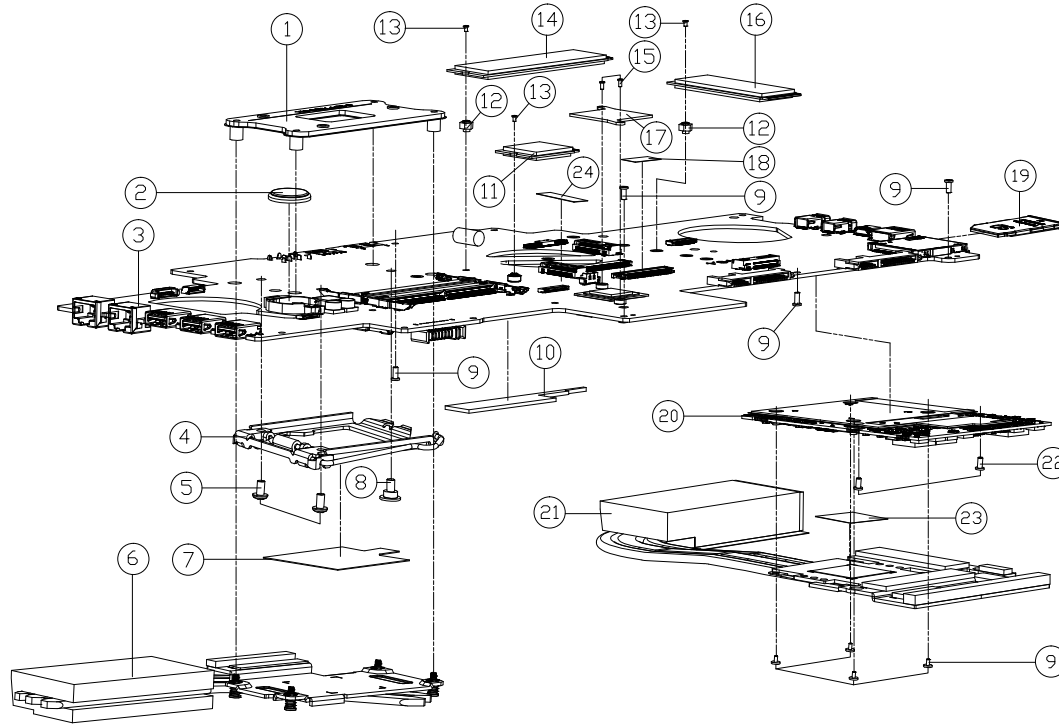
A.Part Lists

Part Lists

MB (GX VGA)

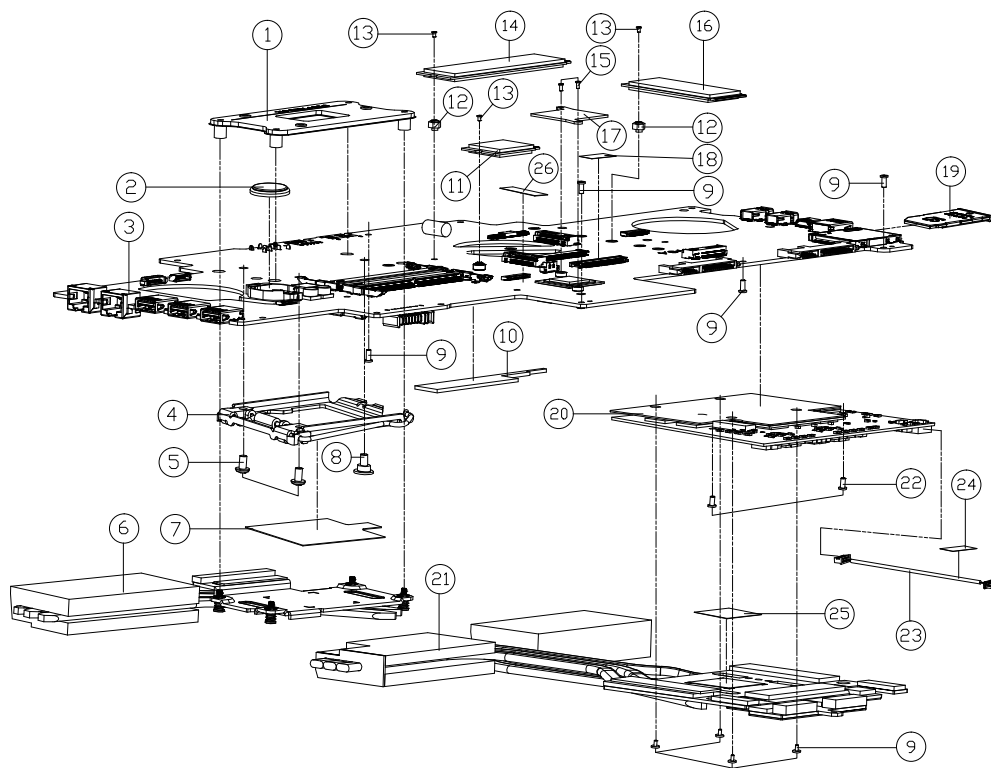
A.Part Lists

Figure A - 4
MB (GX VGA)



ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT FOR LGA 1150 SPCC P7502W	6-33-P750S-013	
2	BATTERY 3V 220MA BBCCR2032B (K1S)	6-23-6A2B2-030	
3	MAIN BOARD V30 (EEP) (W/D TPO) P870DM-G	6-77-P870DMG0-D03	
3	MAIN BOARD V30 (EEP) (W/D TPO) P870DM-G	6-77-P870DMG0-D03-1	
3	MAIN BOARD V30 (EEP) (W/D TPO) P870DM	6-77-P870DM00-D03	
3	MAIN BOARD V30 (EEP) (W/D TPO) P870DM	6-77-P870DM00-D03-1	
4	BLK FOR CPU SOCKET(MAL) LGA 1150P (P14L3R-64D)	6-86-25B50-001-S	
5	SCREW T20-#6-32*6.35L D BZ/Z ACT	6-35-D2306-6R3	
6	CPU HEATSINK MODULE P870DM	6-31-P870N-102	
7	CPU SOCKET MYLAR FDR D900F	6-40-D90FS-070	
8	SCREW T20-#6-32*6L Z BZ/Z ACT	6-35-Z2306-6R0	
9	SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
10	HEATSINK SPONGE FOR CPU (K4R2 (77654852) P7502W	6-47-0019A-70H	
11	MAIN BOARD KEYBOARD (K1S) (W/D TPO) (W/D TPO) (W/D TPO)	6-88-P75DF-9601	OPTION
11	MAIN BOARD KEYBOARD (K1S) (W/D TPO) (W/D TPO) (W/D TPO)	6-88-P67RF-4200	OPTION
11	MAIN BOARD KEYBOARD (K1S) (W/D TPO) (W/D TPO) (W/D TPO)	6-88-N240F-4200	OPTION
11	MAIN BOARD KEYBOARD (K1S) (W/D TPO) (W/D TPO) (W/D TPO)	6-88-S210F-9400	OPTION
11	MAIN BOARD KEYBOARD (K1S) (W/D TPO) (W/D TPO) (W/D TPO)	6-88-P75DF-9600	OPTION
11	MAIN BOARD KEYBOARD (K1S) (W/D TPO) (W/D TPO) (W/D TPO)	6-88-W95LF-4240	OPTION
12	SCREW M2.5*4 KI NI ICT NY FOR KEY (CHROMIUM NICKEL)	6-35-2A120-2R5	
13	SCREW M2.5*4 KI NI ICT NY (OD=4.5, J=0.5)	6-35-B1120-2R0	
14	SSD R2 2308 SAMSUNG RMP0290EL-XXXX (CP80) PEE GEN MLC	6-85-DS15B-S00	OPTION
14	SSD R2 2308 SAMSUNG RMP0290EL-XXXX (CP80) PEE GEN MLC	6-85-DS15B-101	OPTION
14	SSD R2 2308 SAMSUNG RMP0290EL-XXXX (CP80) PEE GEN MLC	6-85-DS15B-S01	OPTION
14	SSD R2 2308 SAMSUNG RMP0290EL-XXXX (CP80) PEE GEN MLC	6-85-DS13G-Z00	OPTION
15	SCREW M2.5*4 KI NI ICT NY (OD=4.5, DF=4.4)	6-35-B1120-4RE	
16	SSD R2 2308 SAMSUNG RMP0290EL-XXXX (CP80) PEE GEN MLC	6-85-DS15B-S00	OPTION
16	SSD R2 2308 SAMSUNG RMP0290EL-XXXX (CP80) PEE GEN MLC	6-85-DS15B-101	OPTION
16	SSD R2 2308 SAMSUNG RMP0290EL-XXXX (CP80) PEE GEN MLC	6-85-DS15B-S01	OPTION
16	SSD R2 2308 SAMSUNG RMP0290EL-XXXX (CP80) PEE GEN MLC	6-85-DS13G-Z00	OPTION
17	PCB FOR HEAT SINK ALSOUSE P870DM	6-33-P870S-010	
18	M/B KEYBOARD MYLAR PET M810L	6-40-M810S-011	
19	BUMPER FOR PUSH TYPE PC/MOUSE (K720P-7000) W/NOISE	6-42-W970B-010	
20	NO NOISE RUBBER MAT OF P (CHROMIUM NICKEL) (K1S) (W/D TPO) (W/D TPO)	6-77-P15SL-DA2-Y	
20	NO NOISE RUBBER MAT OF P (CHROMIUM NICKEL) (K1S) (W/D TPO) (W/D TPO)	6-77-P15SL-DA2-Z	
21	VGA HEATSINK MODULE FOR M166-GX P870DM	6-31-P870N-202	
22	SCREW M2.6*2.5L KTT-H0, B=4.0, HD NI ICT NY	6-35-81116-2R5	
23	THERMAL PAD T-PCM 788 25*25 P157SM-A	6-48-P1573-010	
24	TAPE MYLAR (C)MYLAR M550J	6-40-M55J2-030	

MB (GXX VGA)



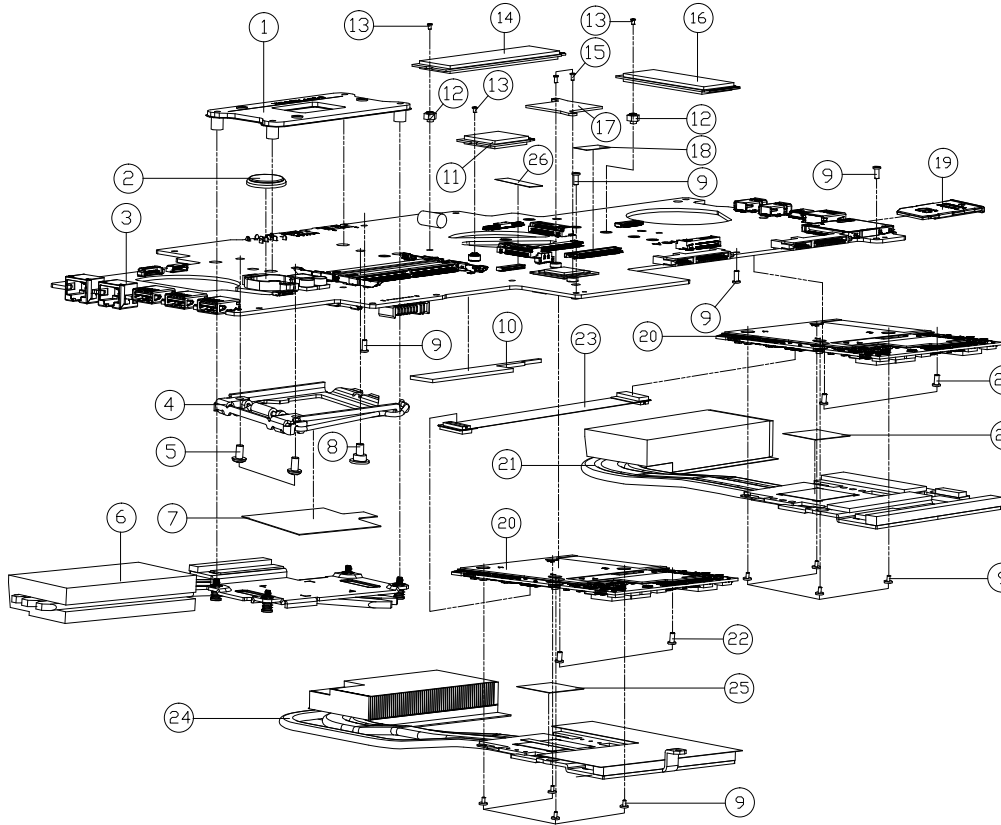
ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT FOR LGA 1150 SPPC P750ZM	6-33-P750S-013	
2	BATTERY 3V 220MA BBBCR2032B (KTS)	6-23-6A2B2-030	
3	MAIN BOARD V3.0 (EDP) (W/TPM) P870DM-G	6-77-P870DMG0-D03	
3	MAIN BOARD V3.0 (EDP) (W/TPM) P870DM-G	6-77-P870DMG0-D03-1	
4	ILM FOR CPU SOCKET(TOTAL) LGA 1150P (P744L31-640)	6-86-25B50-001-S	
5	SCREW T20-H6-32*6.35L D BZ/Z ACT	6-35-D2306-6R3	
6	CPU HEATSINK MODULE P870DM	6-31-P870N-102	
7	CPU SOCKET MYLAR FOR D900F	6-40-D90FS-070	
8	SCREW T20-H6-32*6L Z BZ/Z ACT	6-35-Z2306-6R0	
9	SCREW M2.5*4L KI NI ICT NY (D=D=4.0, H=)	6-35-81116-2R5	
10	HEATSINK SPONGE FOR CPU (GX392 (17H)M(L)S) P750DM	6-47-0019A-70H	
11	TAPE MYLAR (CC)MYLAR M550J	6-88-P75DF-9601	OPTION
11	TAPE MYLAR (CC)MYLAR M550J	6-88-P67RF-4200	OPTION
11	TAPE MYLAR (CC)MYLAR M550J	6-88-N240F-4200	OPTION
11	TAPE MYLAR (CC)MYLAR M550J	6-88-S210F-9400	OPTION
11	TAPE MYLAR (CC)MYLAR M550J	6-88-P75DF-9600	OPTION
11	TAPE MYLAR (CC)MYLAR M550J	6-88-W95LF-4240	OPTION
12	SCREW HEX2.5 0#25 P-30 STEEL KIT NY FOR MFT CARBONFIBRE MATERIAL	6-35-ZA120-2R5	
13	SCREW M2*2.5L KI NI ICT NY (D=D=4.5, T=0.5)	6-35-B1120-2R0	
14	SSD M2 2280 SATA3 SAMSUNG MZPLV2280H-00000 CRYSUM PEE GDM MLC	6-85-D515B-S00	OPTION
14	SSD M2 2280 SATA3 CRUCIAL MTFDDAV3200MP 06000 SATA3 MLC	6-85-D515B-101	OPTION
14	SSD M2 2280 SATA3 SAMSUNG MZPLV2280H-00000 CRYSUM PEE GDM MLC	6-85-D515B-S01	OPTION
14	SSD M2 2280 SATA3 INTEL S33SKCNV3846G (32GB) SATA3 MLC	6-85-D513G-Z00	OPTION
15	SCREW M2*4L KI NI ICT NY (D=D=4.5, T=0.4)	6-35-B1120-4RE	
16	SSD M2 2280 SATA3 SAMSUNG MZPLV2280H-00000 CRYSUM PEE GDM MLC	6-85-D515B-S00	OPTION
16	SSD M2 2280 SATA3 CRUCIAL MTFDDAV3200MP 06000 SATA3 MLC	6-85-D515B-101	OPTION
16	SSD M2 2280 SATA3 SAMSUNG MZPLV2280H-00000 CRYSUM PEE GDM MLC	6-85-D515B-S01	OPTION
16	SSD M2 2280 SATA3 INTEL S33SKCNV3846G (32GB) SATA3 MLC	6-85-D513G-Z00	OPTION
17	PCH FOR HEAT SINK AL5052 P870DM	6-33-P870S-010	
18	M/B KEYBOARD MYLAR PET M810L	6-40-M810S-011	
19	BUMMY S3 PUSH PUSH TYPE PC-MBS (C7230P-700E) W970SW	6-42-W9708-010	
20	VGA BRACKET M2E-GXX NY CARBONFIBRE/ALUMINUM M8-318 VGA P870DM	6-77-P870L-D02-2	
21	VGA HEATSINK MODULE FOR M2E-GXX P870DM	6-31-P870N-402	
22	SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
23	WIRE CABLE FOR M2E-GXX VGA (P/19V) 2150MM (RL) P870DM	6-43-P8700-080	
24	TAPE MYLAR TRANSPARENT (20H)M(L)S) P180DM	6-40-P1803-020	
25	THERMAL PAD T-PCM 788 25*25 P1573M-A	6-48-P1573-010	
26	TAPE MYLAR (CC)MYLAR M550J	6-40-M55J2-030	

Figure A - 5
MB (GXX VGA)

A.Part Lists

MB (2 VGA)

Figure A - 6
MB (2 VGA)



ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT FDR LGA 1150 SPCC P7502M	6-33-P750S-013	
2	BATTERY 3V 220MA BBBCR2032B <KTS>	6-23-6A2B2-030	
3	MAIN BOARD V3.0 (CEP) (V/TPO) P870DM-G	6-77-P870DMG0-D03	
3	MAIN BOARD V3.0 (CEP) (W/D TPO) P870DM-G	6-77-P870DMG0-D03-1	
4	ILM FDR CPU SOCKET(METAL) LGA 1150P ØT44L3I-640	6-86-25B50-001-S	
5	SCREW T20-#6-32#6.35L D BZ/2 ACT	6-35-D2306-6R3	
6	CPU HEATSINK MODULE P870DM	6-31-P870N-102	
7	CPU SOCKET MYLAR FDR D900F	6-40-D90FS-070	
8	SCREW T20-#6-32#6L Z BZ/2 ACT	6-35-Z2306-6R0	
9	SCREW M1.6X2.5L K1T-10, D=4.0, HD NI ICT NY	6-35-81116-2R5	
10	HEATSINK SPONGE FDR SPK CR4382 (77#6#6AST) P1502M	6-47-0019A-70H	
11	W/BIOS CHIP HEATSINK COVER/COVER FOR CPU HEAT SINK	6-88-P75DF-9601	OPTION
11	W/BIOS CHIP HEATSINK COVER/COVER FOR CPU HEAT SINK	6-88-P67RF-4200	OPTION
11	W/BIOS CHIP HEATSINK COVER/COVER FOR CPU HEAT SINK	6-88-N240F-4200	OPTION
11	W/BIOS CHIP HEATSINK COVER/COVER FOR CPU HEAT SINK	6-88-S210F-9400	OPTION
11	W/BIOS CHIP HEATSINK COVER/COVER FOR CPU HEAT SINK	6-88-P75DF-9600	OPTION
11	W/BIOS CHIP HEATSINK COVER/COVER FOR CPU HEAT SINK	6-88-V95LF-4240	OPTION
12	SCREW HEX2.0-#25 I-5.0 STEEL SET W/ FOR HEAT CONDUCTIVE MATERIAL	6-35-ZA120-2R5	
13	SCREW M2#4L KI NI ICT NY (CDD=#5, T=0.5)	6-35-B1120-2R0	
14	SSD R2 2280 SATA3 SHANGHAI K9P19280L-XXXX COMBIO PCE G3M MLC	6-85-D515B-S00	OPTION
14	SSD R2 2280 SATA3 CRUXAL HTF20AV320MF PHAD0 SATA3 MLC	6-85-D515B-101	OPTION
14	SSD R2 2280 SATA3 SHANGHAI K9P19280L-XXXX COMBIO PCE G3M MLC	6-85-D515B-S01	OPTION
14	SSD R2 2280 SATA3 INTEL S3300LW3006 C350 SATA3 MLC	6-85-D513G-200	OPTION
15	SCREW M2#4L KI NI ICT NY (CDD=#4.5, DT=0.4)	6-35-B1120-4RE	
16	SSD R2 2280 SATA3 SHANGHAI K9P19280L-XXXX COMBIO PCE G3M MLC	6-85-D515B-S00	OPTION
16	SSD R2 2280 SATA3 CRUXAL HTF20AV320MF PHAD0 SATA3 MLC	6-85-D515B-101	OPTION
16	SSD R2 2280 SATA3 SHANGHAI K9P19280L-XXXX COMBIO PCE G3M MLC	6-85-D515B-S01	OPTION
16	SSD R2 2280 SATA3 INTEL S3300LW3006 C350 SATA3 MLC	6-85-D513G-200	OPTION
17	PCH FDR HEAT SINK AL5052 P870DM	6-33-P870S-010	
18	M/B KEYBOARD MYLAR PET M810L	6-40-M810S-011	
19	BUMPER SD PS/2 PUSH TYPE PC+ABS (CT230P-7000) W9705W	6-42-W9708-010	
20	W/BIOS CHIP HEATSINK COVER/COVER FOR CPU HEAT SINK	6-77-P155L-DA2-Y	OPTION
20	W/BIOS CHIP HEATSINK COVER/COVER FOR CPU HEAT SINK	6-77-P155L-DA2-Z	OPTION
21	VGA1 HEATSINK MODULE FDR N16E-GX P870DM	6-31-P870N-202	
22	SCREW M2.5#4L KI NI ICT NY	6-35-21125-4R0	
23	TYPE CABLE FOR VGA CARD HP W/VIDEO PORT VGA 31 CON-#L230000 0200	6-43-X7200-070	
24	VGA2 HEATSINK MODULE FDR N16E-GX P870DM	6-31-P870N-302	
25	THERMAL PAD T-PCM 788 25#25 P1573M-A	6-48-P1573-010	
26	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	

VGA (N16E-GT)

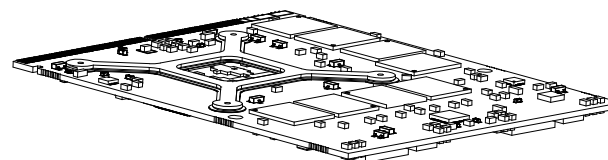
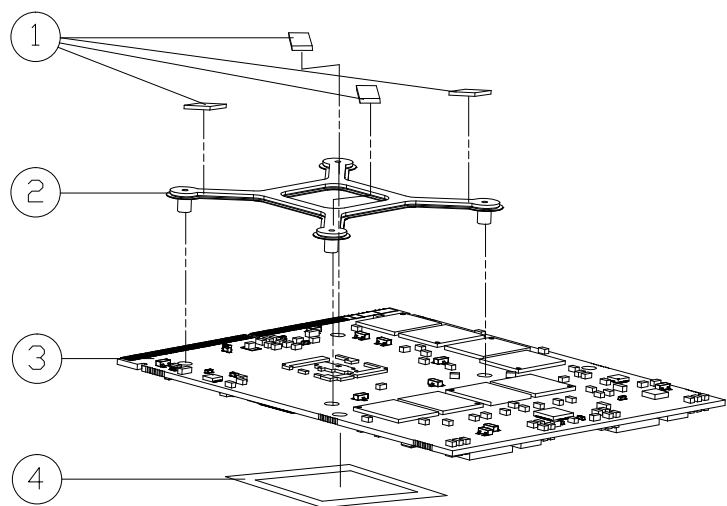


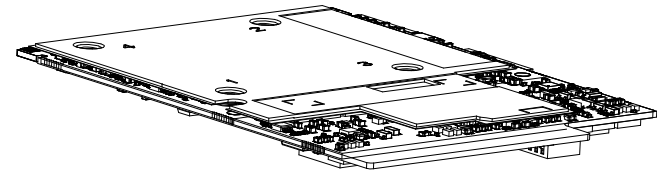
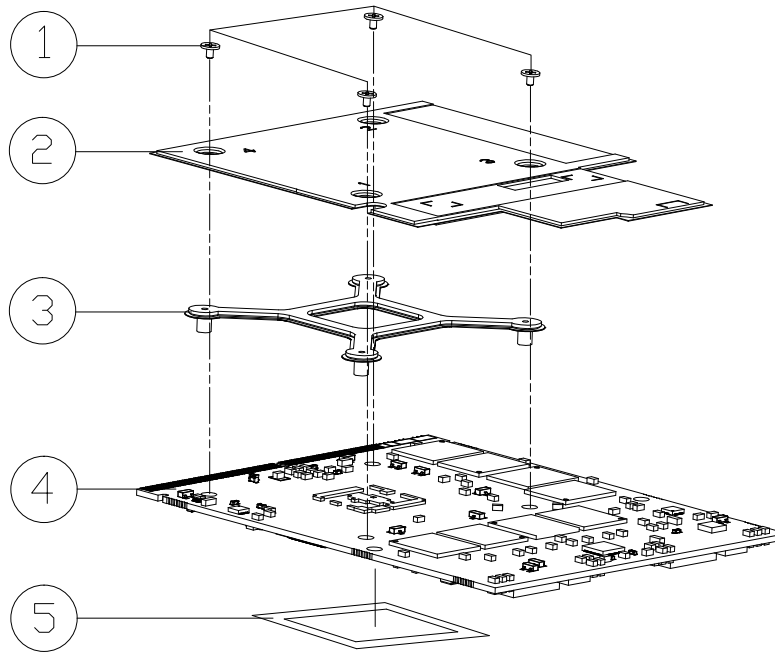
Figure A - 7
VGA (N16E-GT)

ITEM	PART NAME	PART NO	REMARK
1	PIORON (10*6*3T) FOR NIDE-GLM SUPPORTER P150HM	6-47-X510S-030	
2	VGA SUPPORTER SUS430 X7200	6-33-X720S-040-1	
3	VGA BOARD N16E-GT HP CONDUCTING 6652M42 NON-ETI V24 -SMT/TP P150M ONI ROM FOR 6-SMC	6-77-P15SL-1A2-L	
3	VGA BOARD N16E-GT HP CONDUCTING 6652M42 NON-ETI V24 -SMT/TP P150M ONI ROM FOR 6-SMC	6-77-P15SL-2A2-L	
3	VGA BOARD N16E-GT HP CONDUCTING 6652M42 NON-ETI V24 -SMT/TP P150M ONI ROM FOR 6-SMC	6-77-P15SL-AA2-A	
4	N16E-GX CHIP MYLAR (29*29*0.1) P177SM-A	6-40-P1778-010-A	

A.Part Lists

VGA (N16E-GX)

Figure A - 8
VGA (N16E-GX)



ITEM	PART NAME	PART NO	REMARK
1	SCREW M1.6*2.5L K(T=L0, D=4.0, #1) NI ICT NY	6-35-81116-2R5	
2	GPU SHIELDING MODULE FOR N16E-GX P370SM-A	6-33-P370S-100-A	
3	VGA SUPPORTER SUS430 X7200	6-33-X720S-040	
4	VIA BOARD WITHIN M16E-GX W/ CONDUCTING GLUEPADS FOR THE V2A -SMT/TP PASTE NY 100 FOR E-SOL	6-77-P15SL-AA2-2	
4	VIA BOARD WITHIN M16E-GX W/ CONDUCTING GLUEPADS FOR THE V2A -SMT/TP PASTE NY 100 FOR E-SOL	6-77-P15SL-1A2-K	
4	VIA BOARD WITHIN M16E-GX W/ CONDUCTING GLUEPADS FOR THE V2A -SMT/TP PASTE NY 100 FOR E-SOL	6-77-P15SL-2A2-K	
5	N16E-GX CHIP MYLAR (29*29*0.1) P177SM-A	6-40-P1778-010-A	

VGA (N16E-GXX)

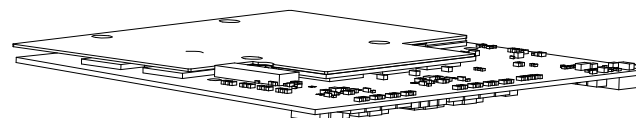
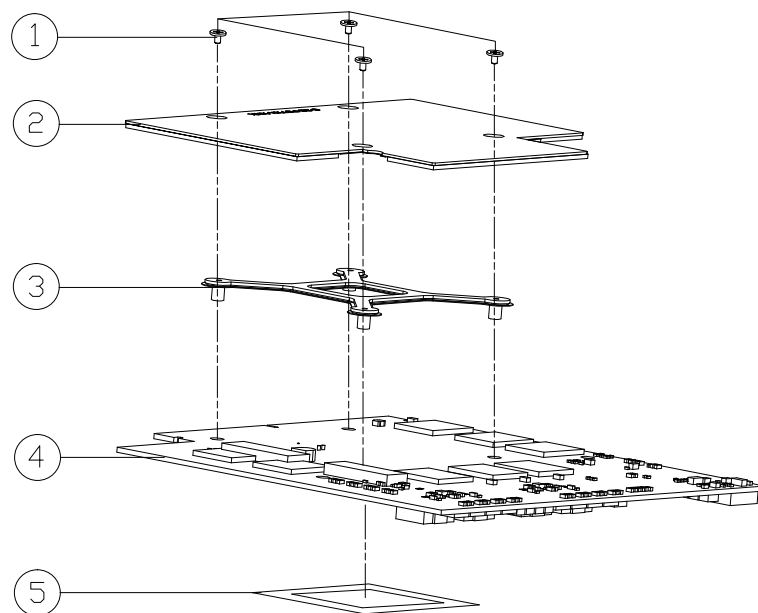


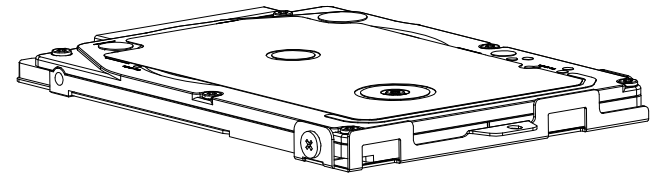
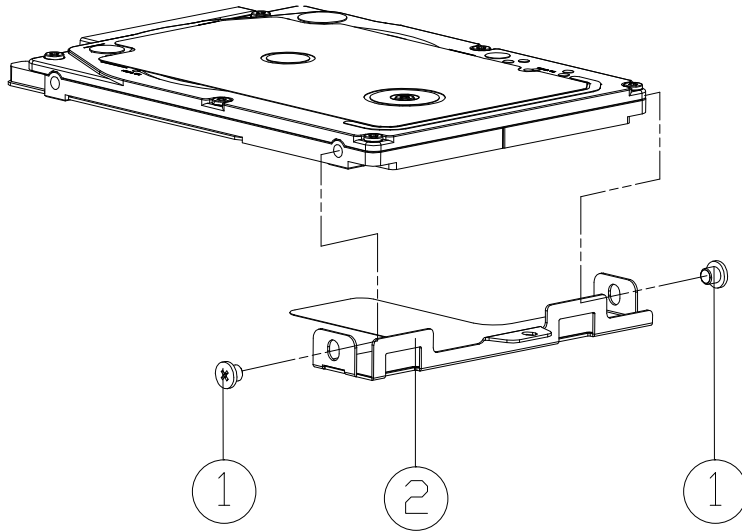
Figure A - 9
VGA (N16E-GXX)

ITEM	PART NAME	PART NO	REMARK
1	SCREW M1.6*2.5L KCT-1.0, D=4.0, #1) NI ICT NY	6-35-81116-2R5	
2	VGA SHIELDING HEAT SINK MODULE FOR N16E-GXX P8700M	6-31-P870N-500	
3	VGA SUPPORTER SUS430 X7200	6-33-X720S-040	
4	VGA BOARD NVIDIA N16E-GXX MP (CONDUCTING RES/SHIELD) NON-SMD V20 SMT/TP P8700M-G	6-77-P870L-102-2	
4	VGA BOARD NVIDIA N16E-GXX MP (CONDUCTING RES/SHIELD) NON-SMD V20 SMT/TP P8700M-G	6-77-P870L-A02-1	
4	VGA BOARD NVIDIA N16E-GXX MP (CONDUCTING RES/SHIELD) NON-SMD V20 SMT/TP P8700M-G	6-77-P870L-202-2	
5	N16E-GX CHIP MYLAR (29*29*0.1) P177SM-A	6-40-P1778-010-A	

A.Part Lists

HDD

Figure A - 10
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 BLACK P870DM	6-33-P870J-010	

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *P870DM / P870DM-G* notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
<i>Block Diagram - Page B - 2</i>	<i>SPT-H 7/7 - Page B - 22</i>	<i>5VS, 3.3VS, 1.0 V Series - Page B - 42</i>
<i>Processor 1/5 - Page B - 3</i>	<i>Main EC IT8587 - Page B - 23</i>	<i>2.5V, 5VS_2 - Page B - 43</i>
<i>Processor 2/5 - Page B - 4</i>	<i>Second EC IT8587 - Page B - 24</i>	<i>AMP10V, VCCSA - Page B - 44</i>
<i>Processor 3/5 - Page B - 5</i>	<i>TPM SLB9665TT - Page B - 25</i>	<i>DDR4 VDDQ & VTT, VCCPLL_OC - Page B - 45</i>
<i>Processor 4/5 - Page B - 6</i>	<i>CPU, VGA Fan Conn - Page B - 26</i>	<i>Power Charger, DC IN - Page B - 46</i>
<i>Processor 5/5 - Page B - 7</i>	<i>Backlight Keyboard - Page B - 27</i>	<i>VCCIO, 1.0VA - Page B - 47</i>
<i>DDR4 CHA SO-DIMM_0 - Page B - 8</i>	<i>CCD, USB Charging - Page B - 28</i>	<i>VCore & VCCGT - Page B - 48</i>
<i>DDR4 CHA SO-DIMM_1 - Page B - 9</i>	<i>AR_TBT - Page B - 29</i>	<i>VCore & VCCGT Output Stage - Page B - 49</i>
<i>DDR4 CHB SO-DIMM_0 - Page B - 10</i>	<i>AR_Power - Page B - 30</i>	<i>VDD3, VDD5 - Page B - 50</i>
<i>DDR4 CHB SO-DIMM_1 - Page B - 11</i>	<i>TPS65982 - Page B - 31</i>	<i>Charger LED Board - Page B - 51</i>
<i>MXM 3.0 Master - Page B - 12</i>	<i>Mini Display Port A - Page B - 32</i>	<i>Click Board - Page B - 52</i>
<i>MXM 3.0 Slave - Page B - 13</i>	<i>Mini Display Port B - Page B - 33</i>	<i>Finger Sensor Board - Page B - 53</i>
<i>Panel, Inverter - Page B - 14</i>	<i>M.2 WLAN+BT - Page B - 34</i>	<i>Power Switch LED Board - Page B - 54</i>
<i>HDMI - Page B - 15</i>	<i>M.2 M Key, B Key - Page B - 35</i>	<i>Audio Codec - Page B - 55</i>
<i>SPT-H 1/7 - Page B - 16</i>	<i>RTS5250 - Page B - 36</i>	<i>Audio Board (Speaker) - Page B - 56</i>
<i>SPT-H 2/7 - Page B - 17</i>	<i>LAN_IE2400 - Page B - 37</i>	<i>Audio Board (Subwoofer) - Page B - 57</i>
<i>SPT-H 3/7 - Page B - 18</i>	<i>LAN_2 E2400 - Page B - 38</i>	<i>Audio Jack - Page B - 58</i>
<i>SPT-H 4/7 - Page B - 19</i>	<i>Click, Finger Conn - Page B - 39</i>	<i>Power Sequence - Page B - 59</i>
<i>SPT-H 5/7 - Page B - 20</i>	<i>HDD & Second HDD - Page B - 40</i>	
<i>SPT-H 6/7 - Page B - 21</i>	<i>USB Port - Page B - 41</i>	

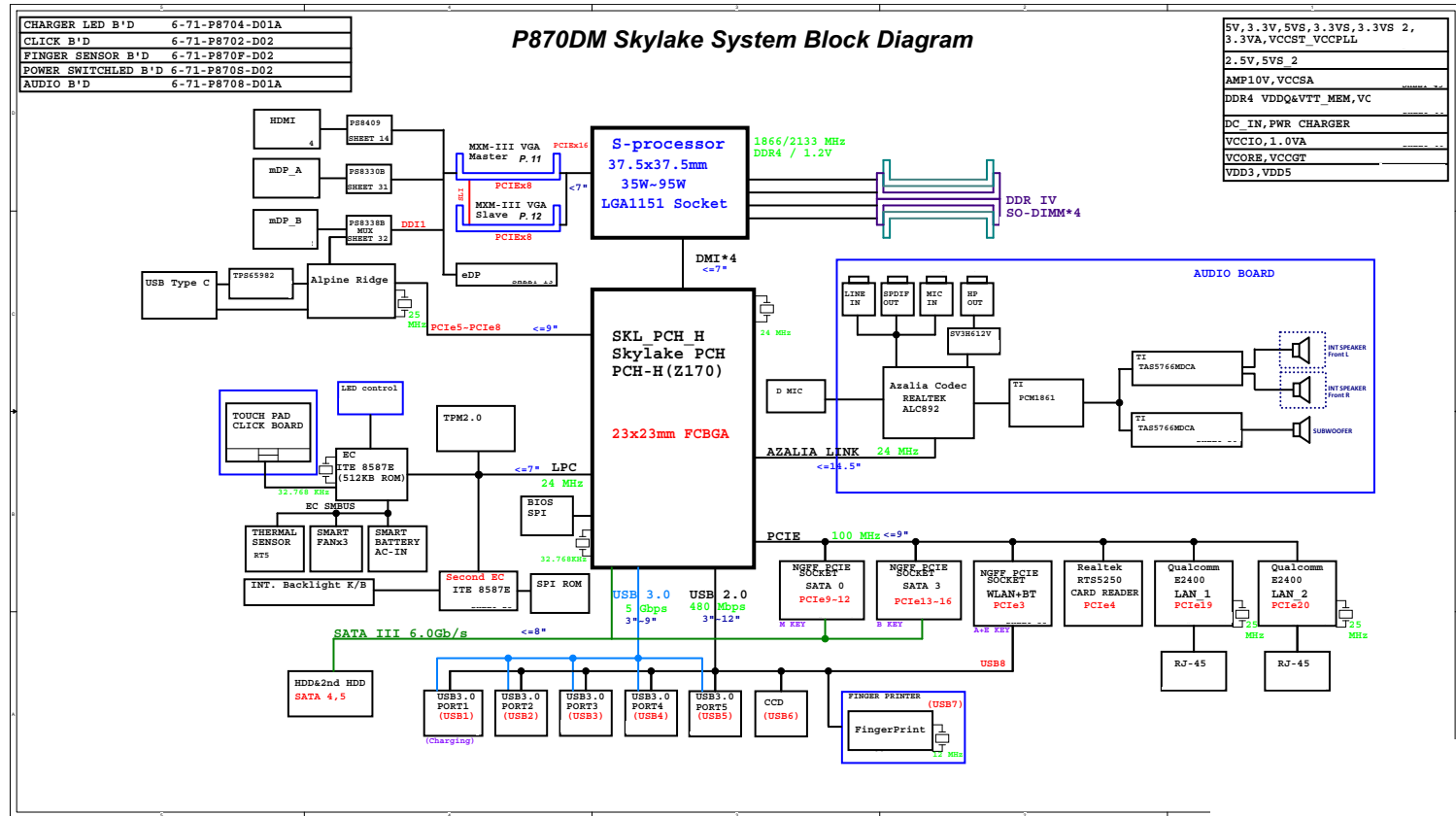
Table B - 1
**Schematic
Diagrams**



Version Note

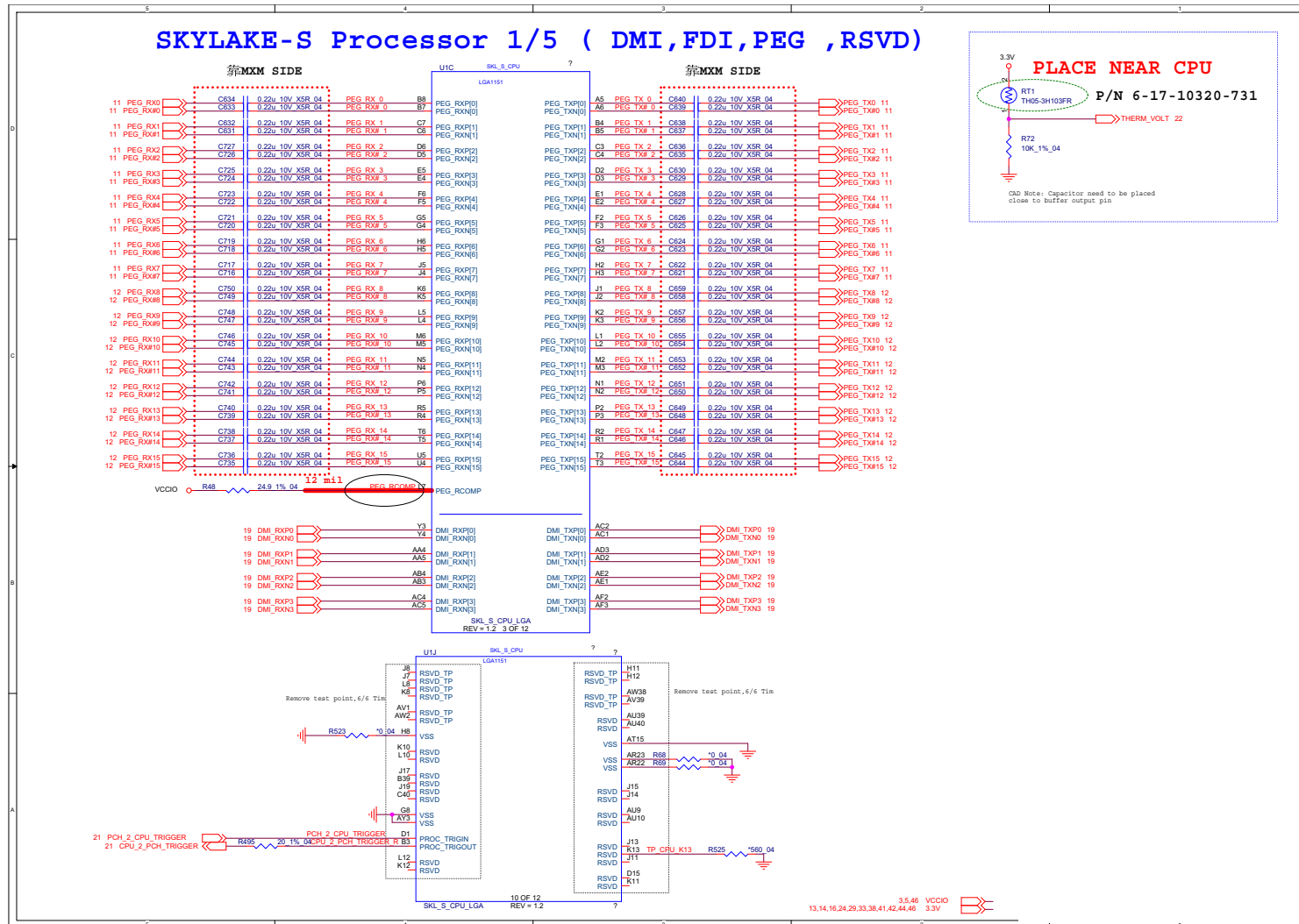
The schematic diagrams in this chapter are based upon version 6-7P-P8706-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

Block Diagram



Sheet 1 of 58
Block Diagram

Processor 1/5

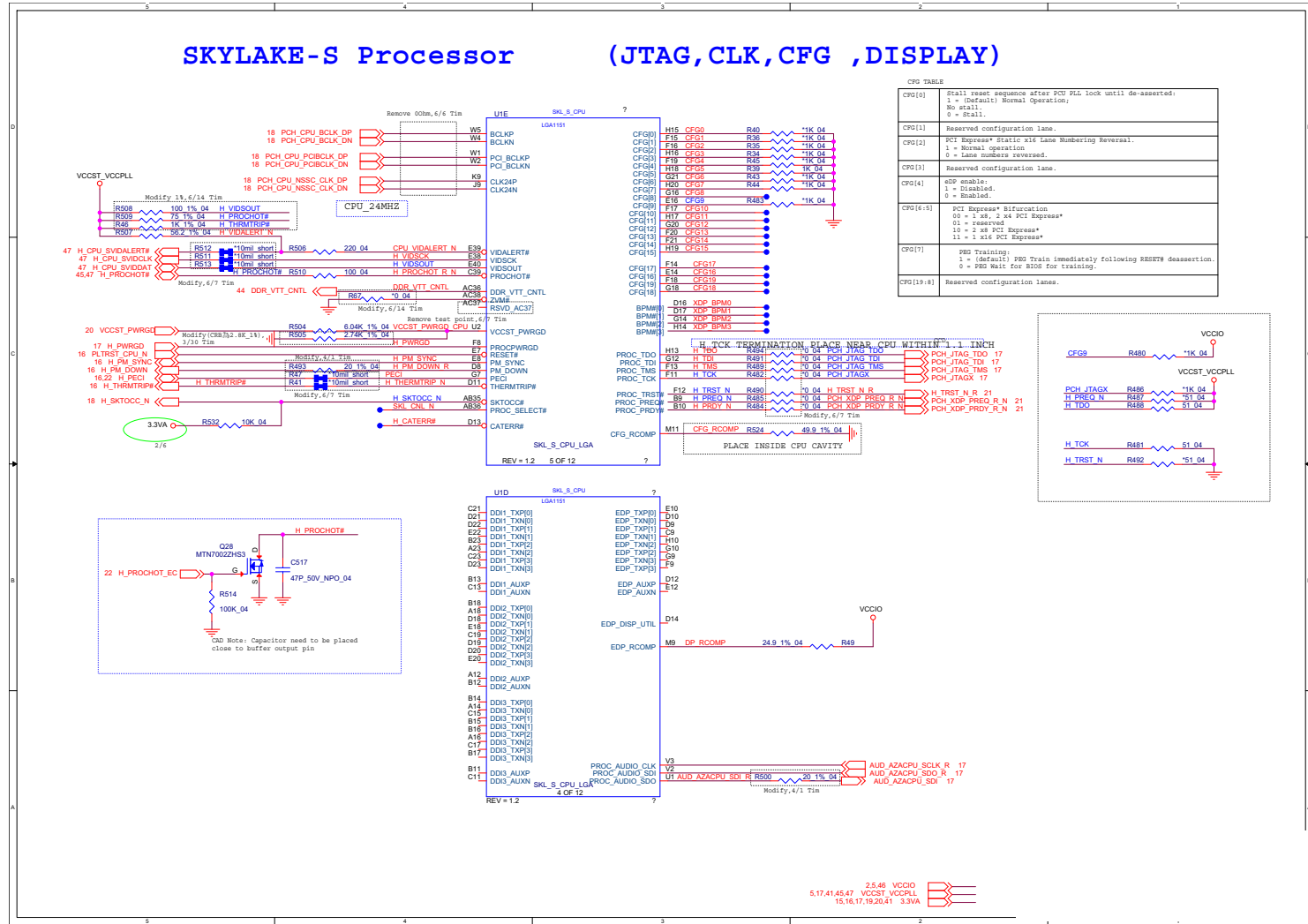


Sheet 2 of 58
 Processor 1/5

B.Schematic Diagrams

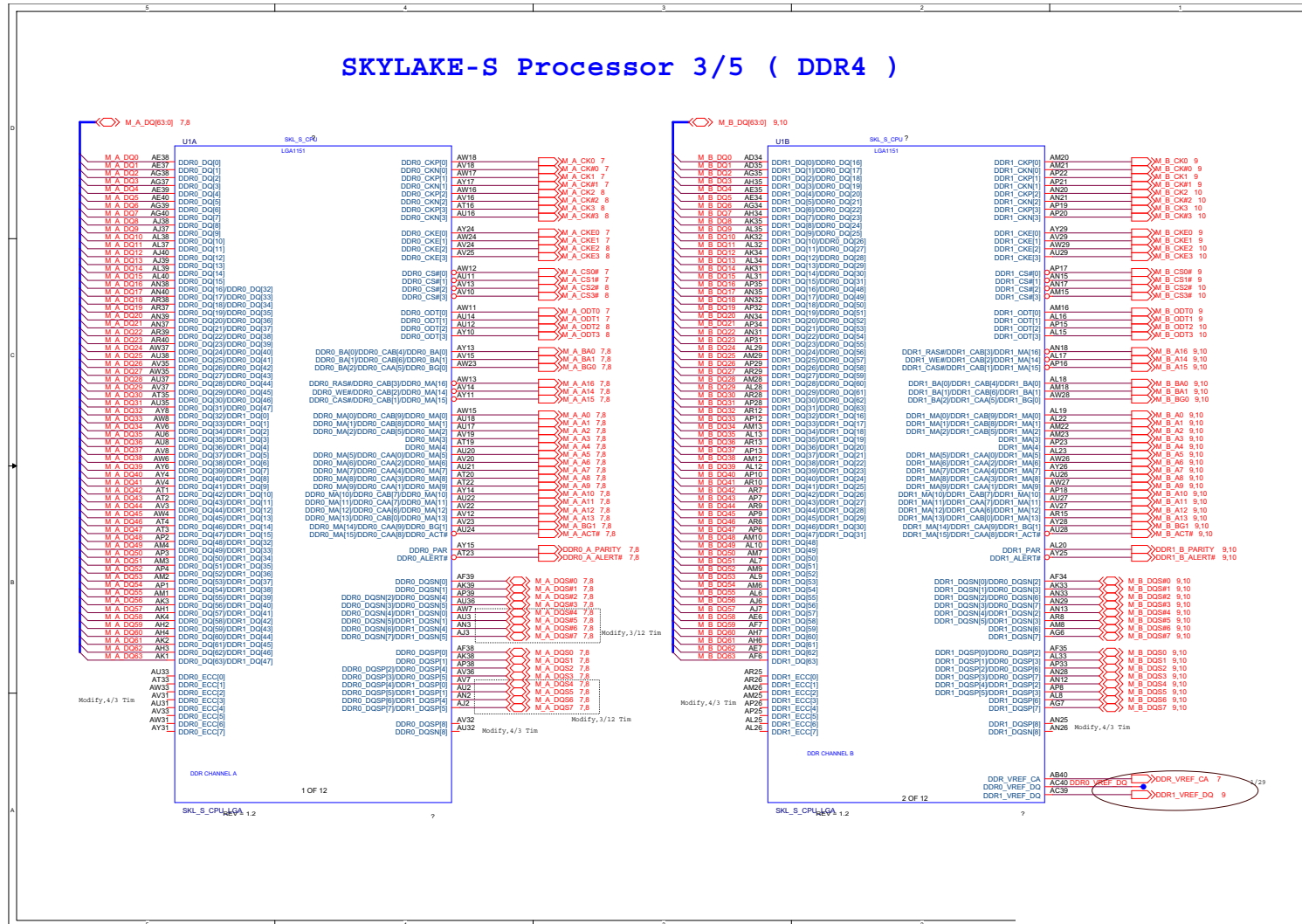
Processor 2/5

Sheet 3 of 58
Processor 2/5



Processor 3/5

SKYLAKE-S Processor 3/5 (DDR4)

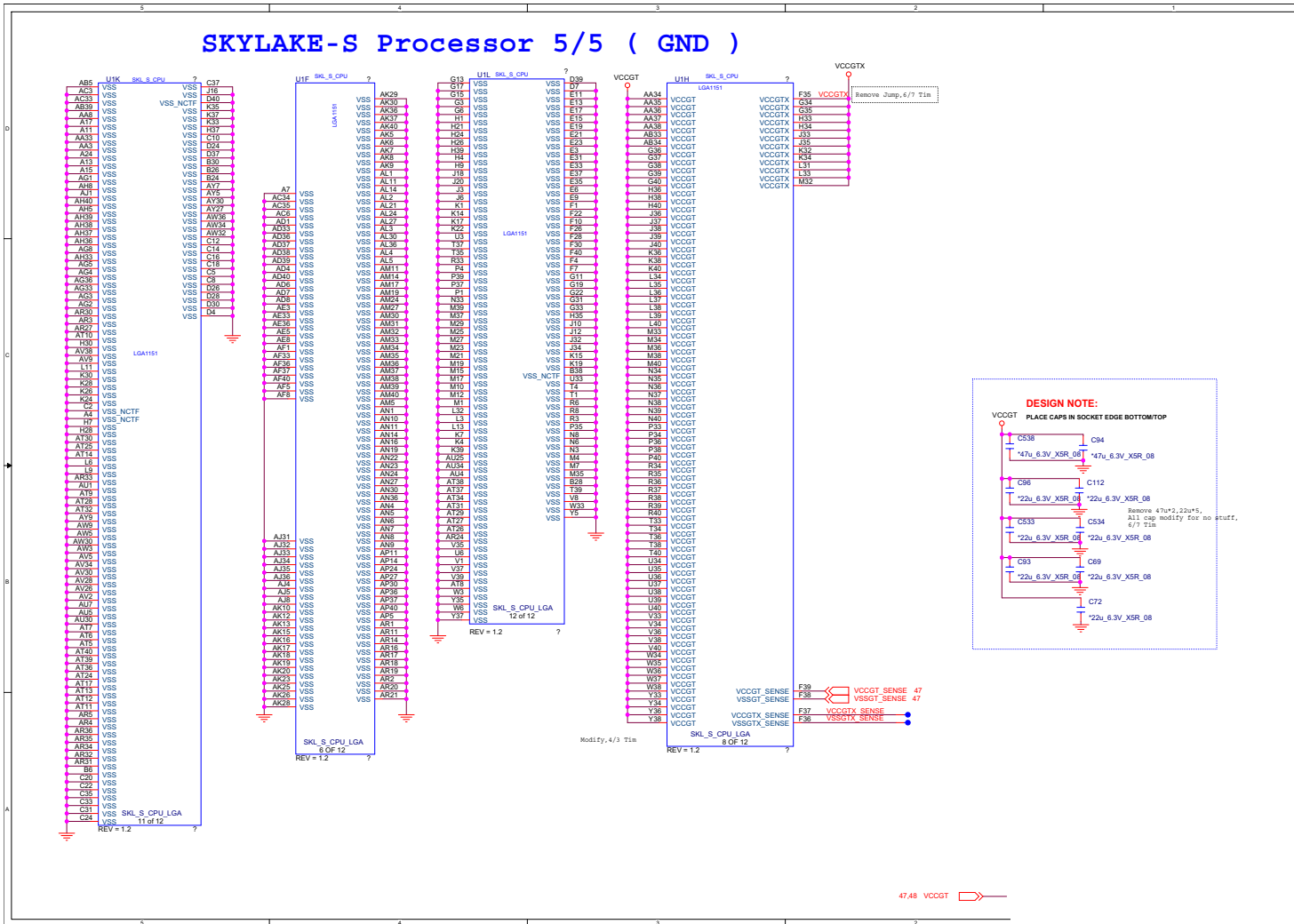


Sheet 4 of 58
Processor 3/5

B.Schematic Diagrams

Processor 5/5

SKYLAKE-S Processor 5/5 (GND)

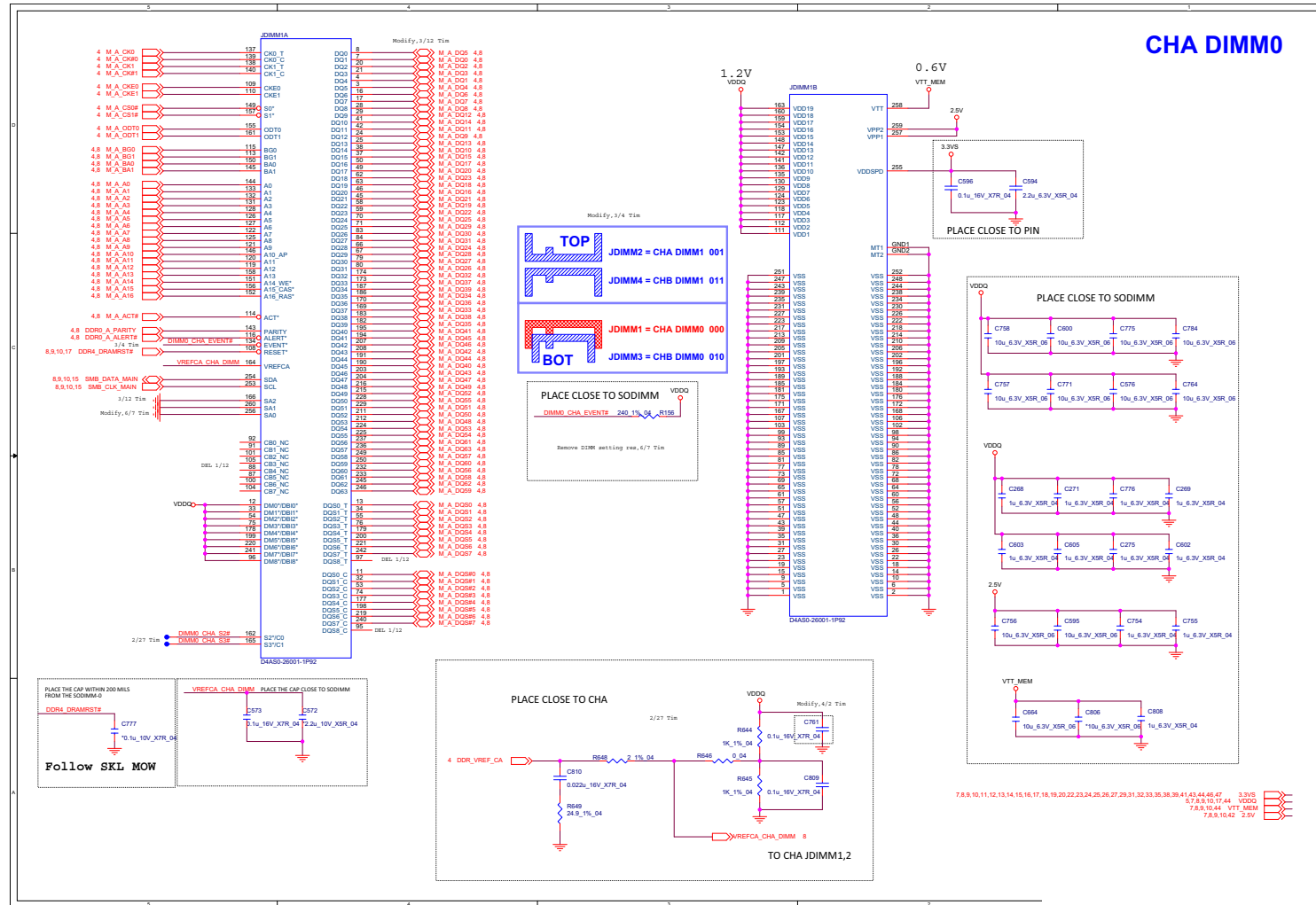


Sheet 6 of 58
Processor 5/5

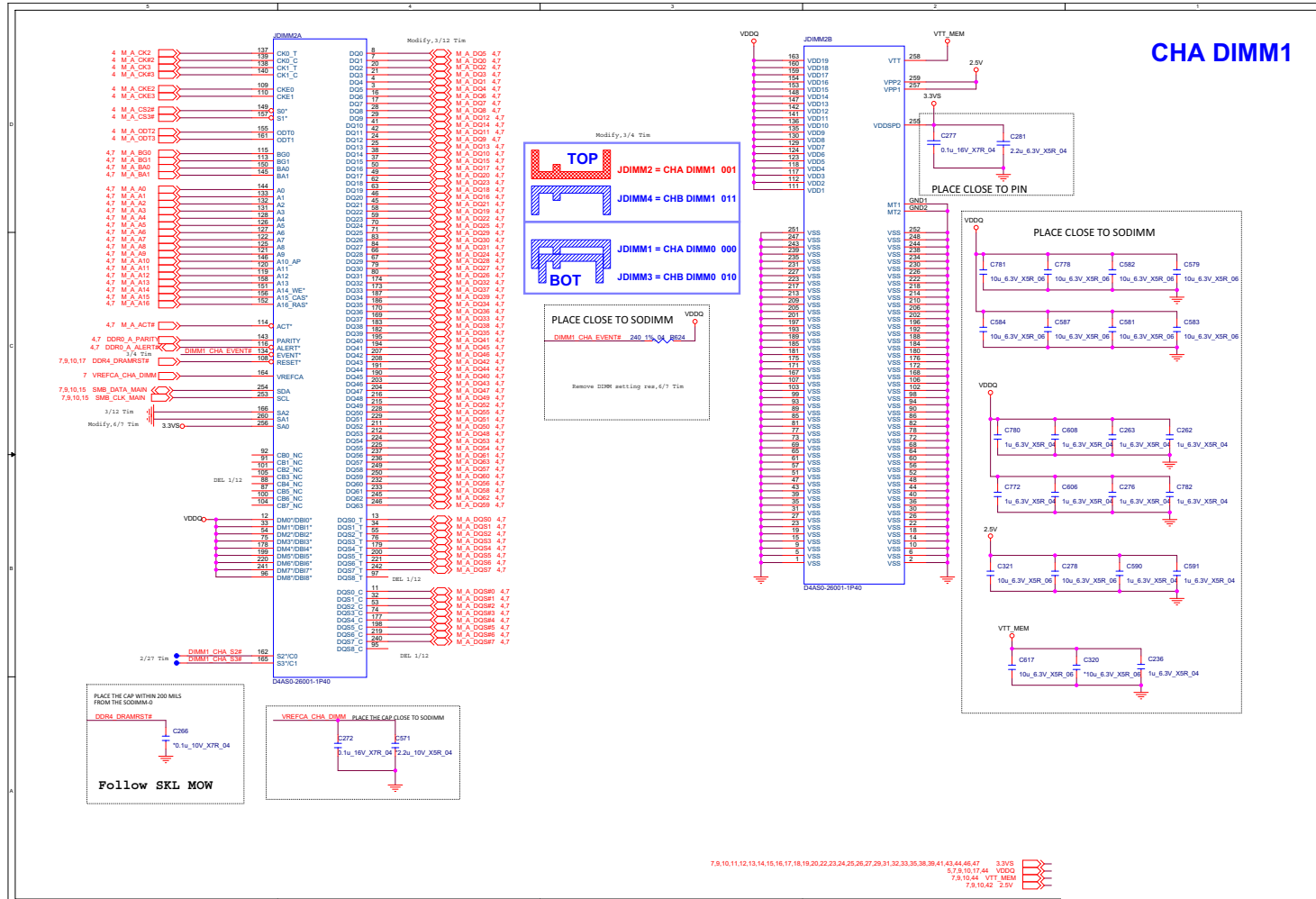
B.Schematic Diagrams

DDR4 CHA SO-DIMM_0

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DDR4 CHA SO-DIMM_0



DDR4 CHA SO-DIMM_1

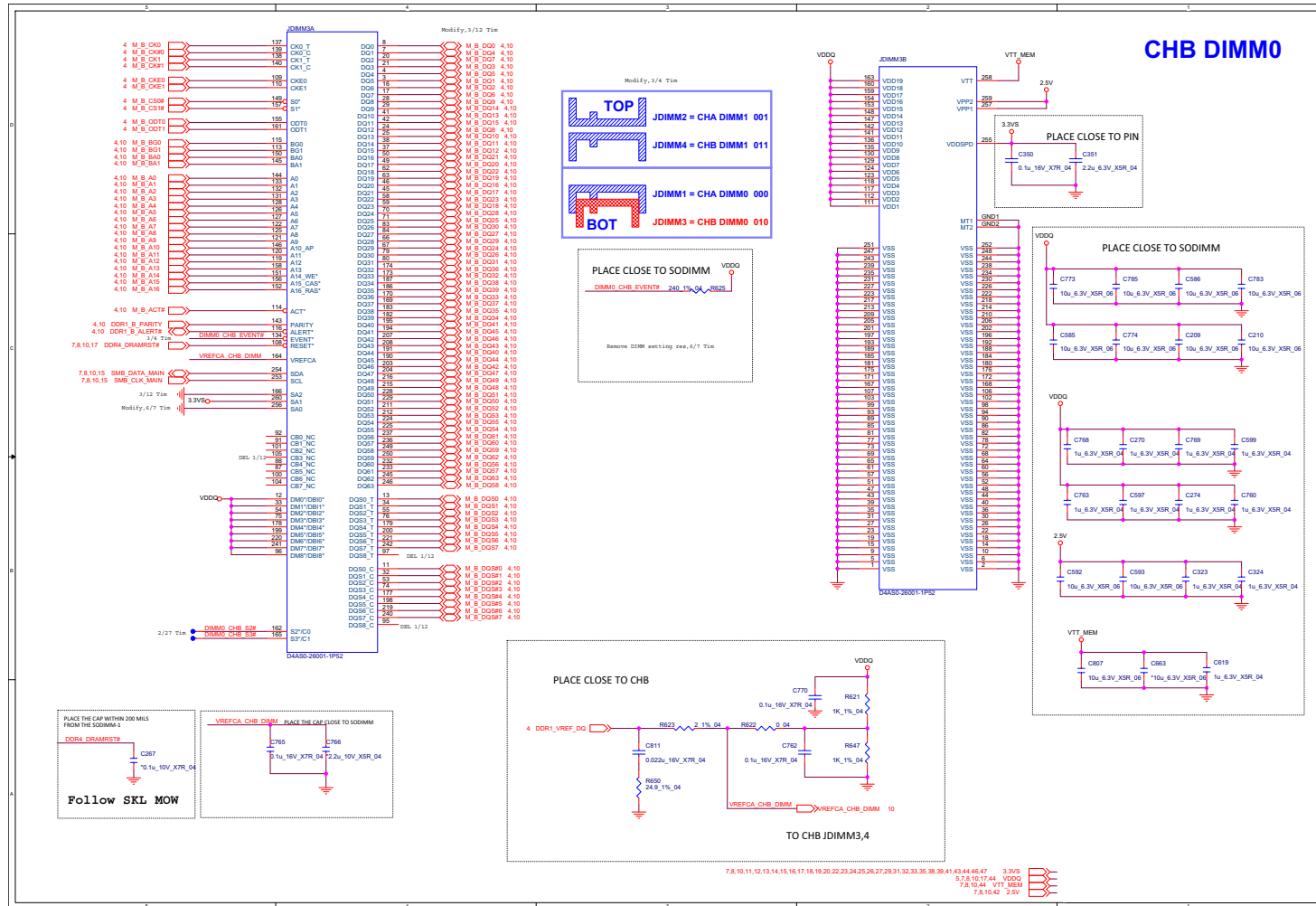


B.Schematic Diagrams

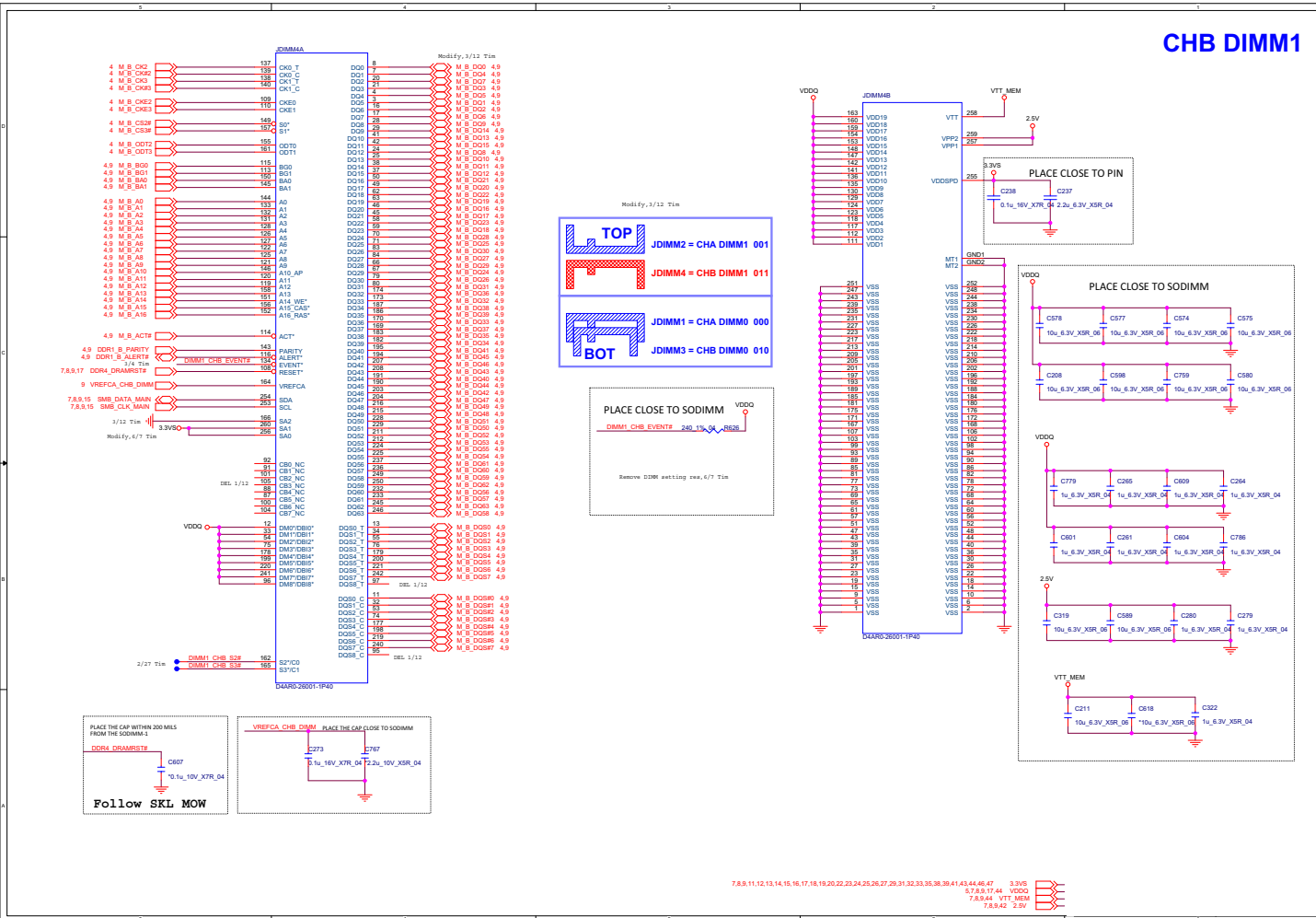
Sheet 8 of 58
 DDR4 CHA SO-DIMM_1

DDR4 CHB SO-DIMM_0

Sheet 9 of 58
DDR4 CHB SO-DIMM_0



DDR4 CHB SO-DIMM_1

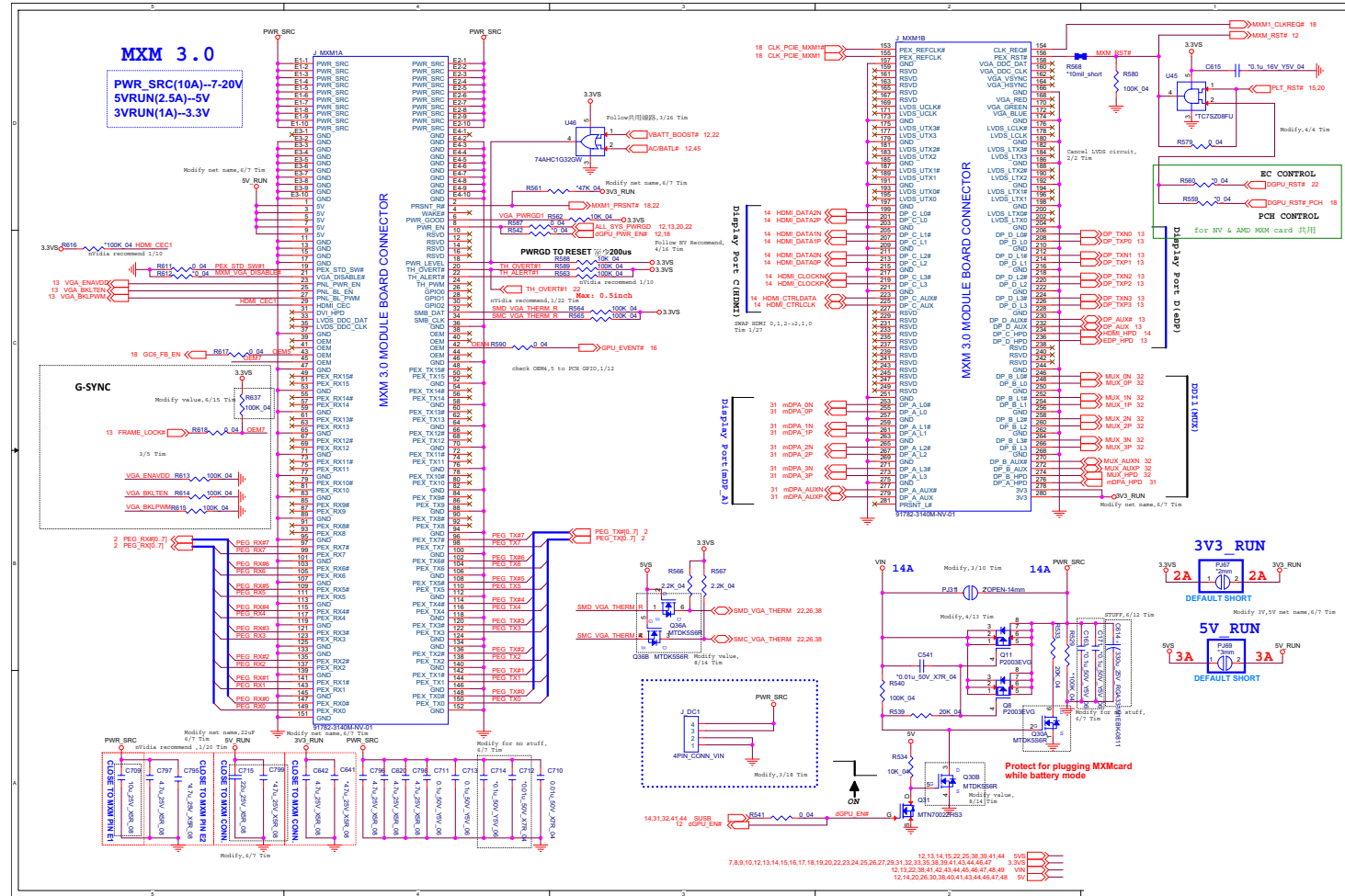


Sheet 10 of 58
DDR4 CHB SO-DIMM_1

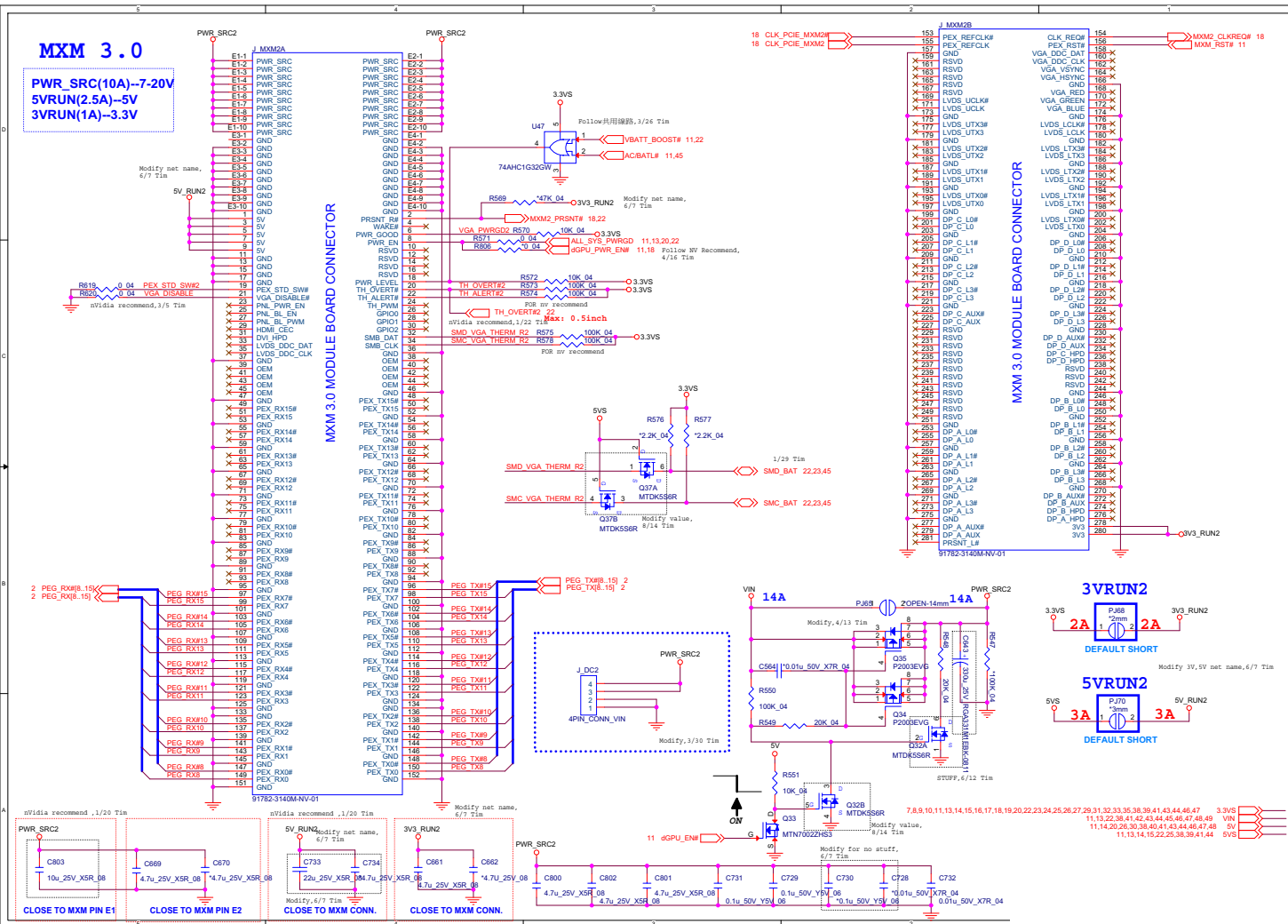
B.Schematic Diagrams

MXM 3.0 Master

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MXM 3.0 Master



MXM 3.0 Slave



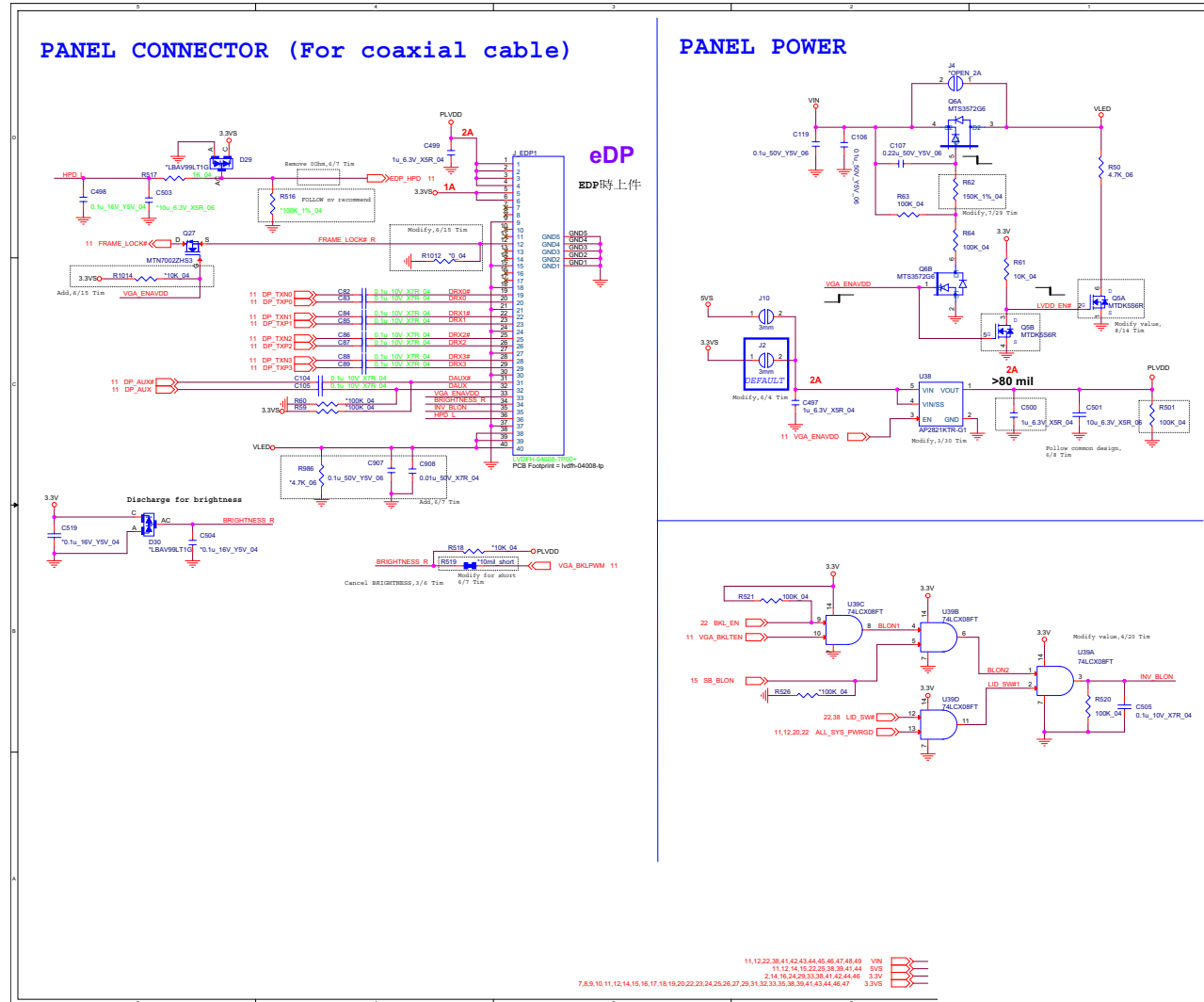
Sheet 12 of 58
MXM 3.0 Slave

B.Schematic Diagrams

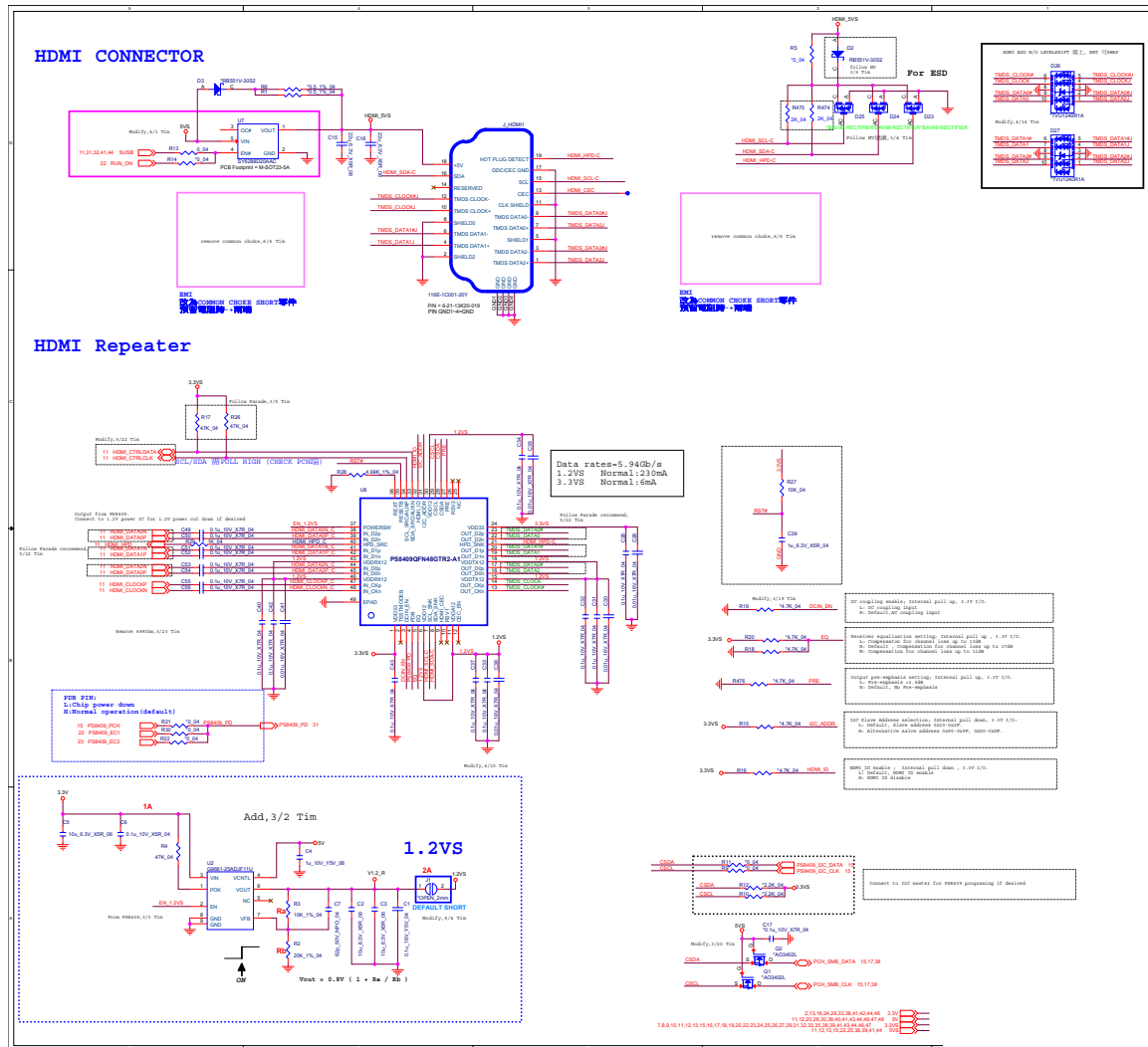
Schematic Diagrams

Panel, Inverter

Sheet 13 of 58
Panel, Inverter



HDMI

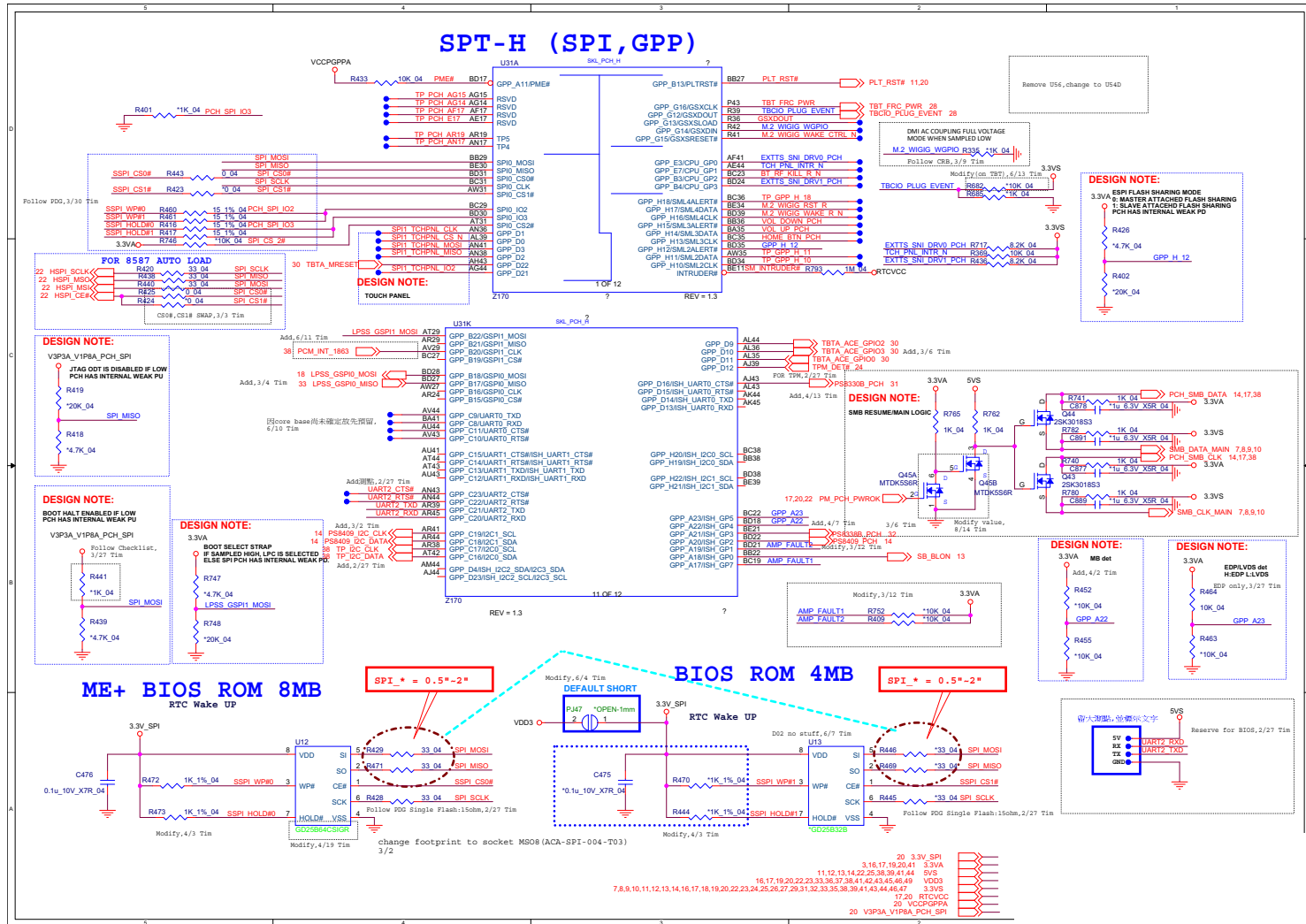


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HDMI

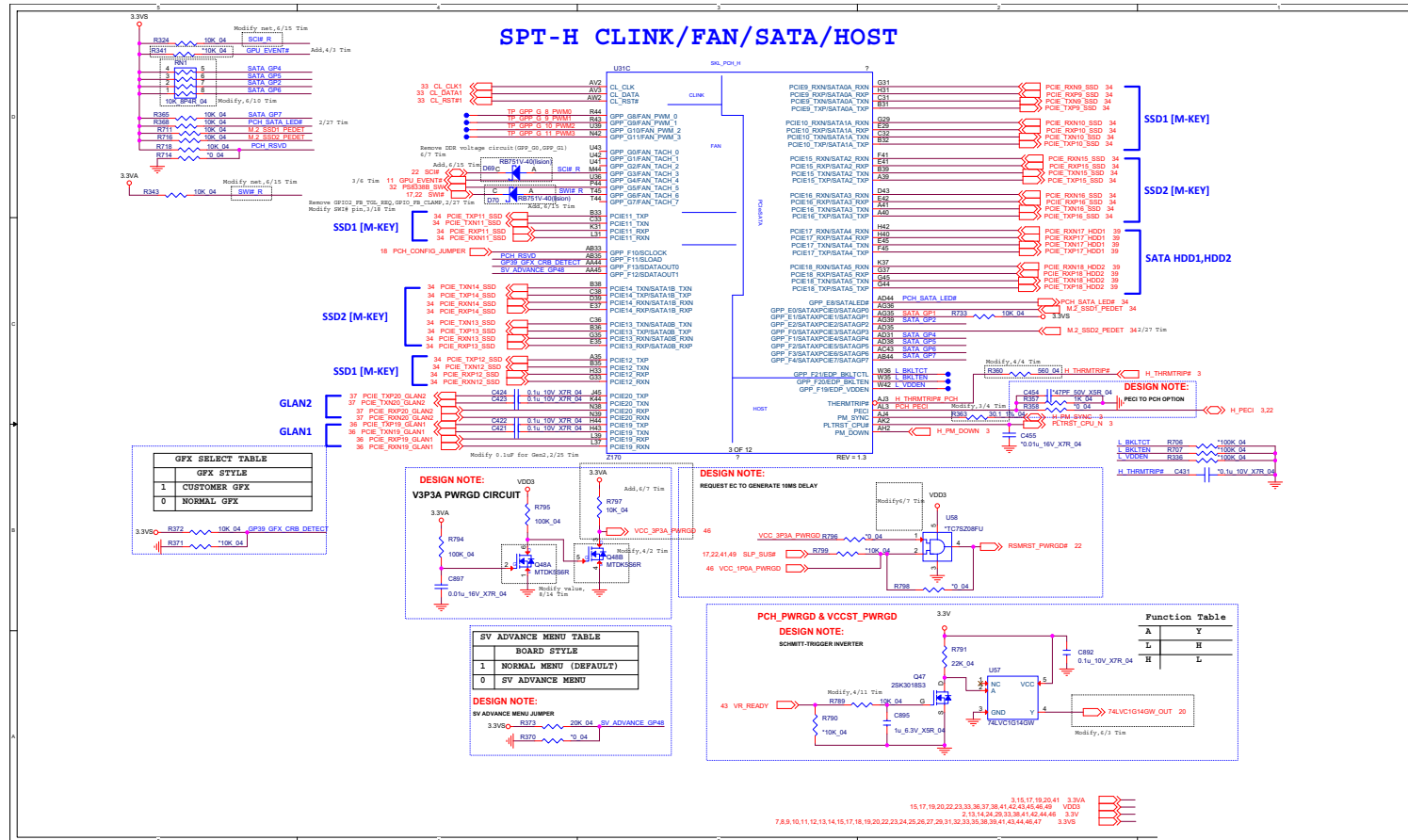
B.Schematic Diagrams

SPT-H 1/7

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SPT-H 1/7



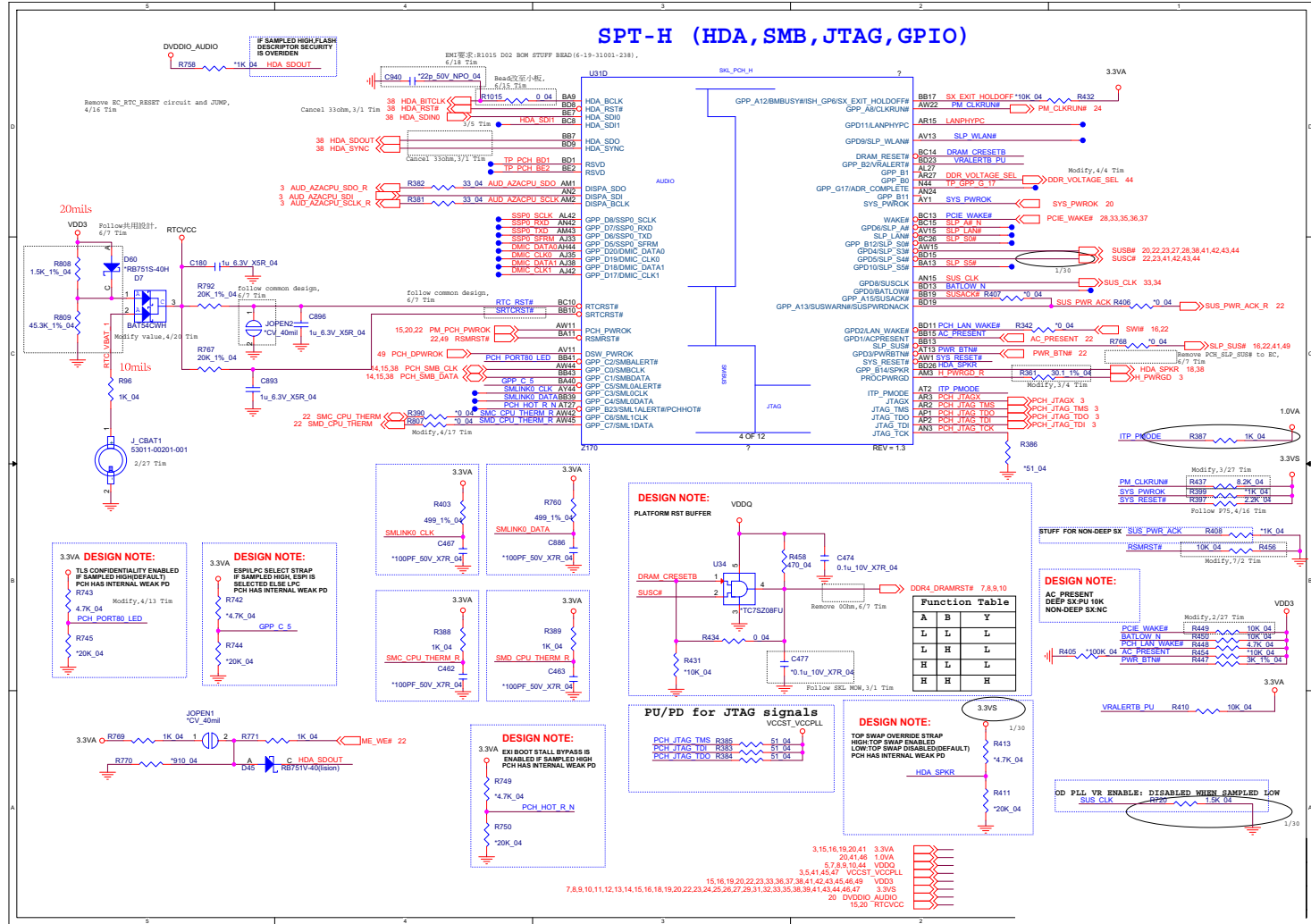
SPT-H 2/7



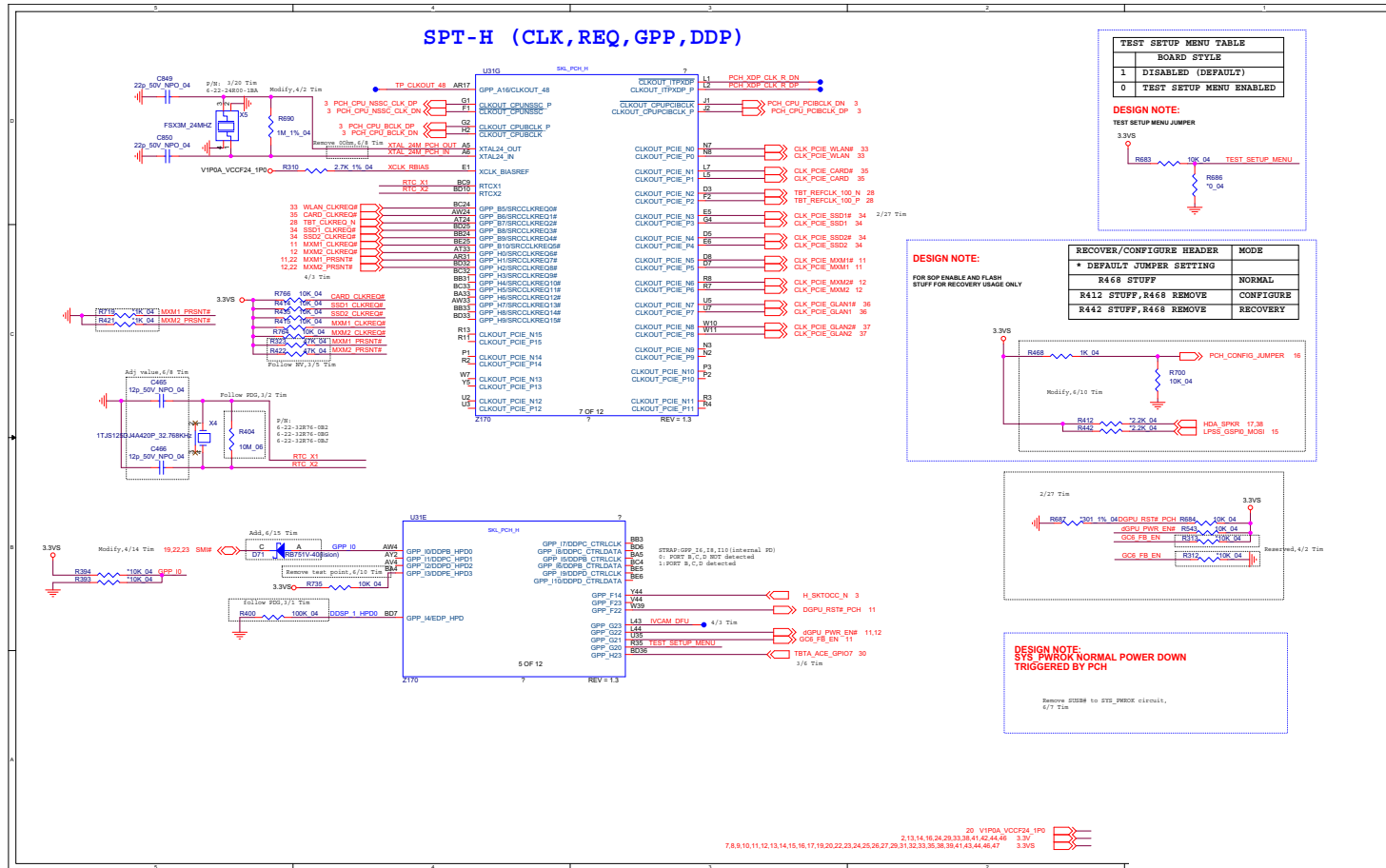
Sheet 16 of 58
SPT-H 2/7

B.Schematic Diagrams

SPT-H 3/7



SPT-H 4/7

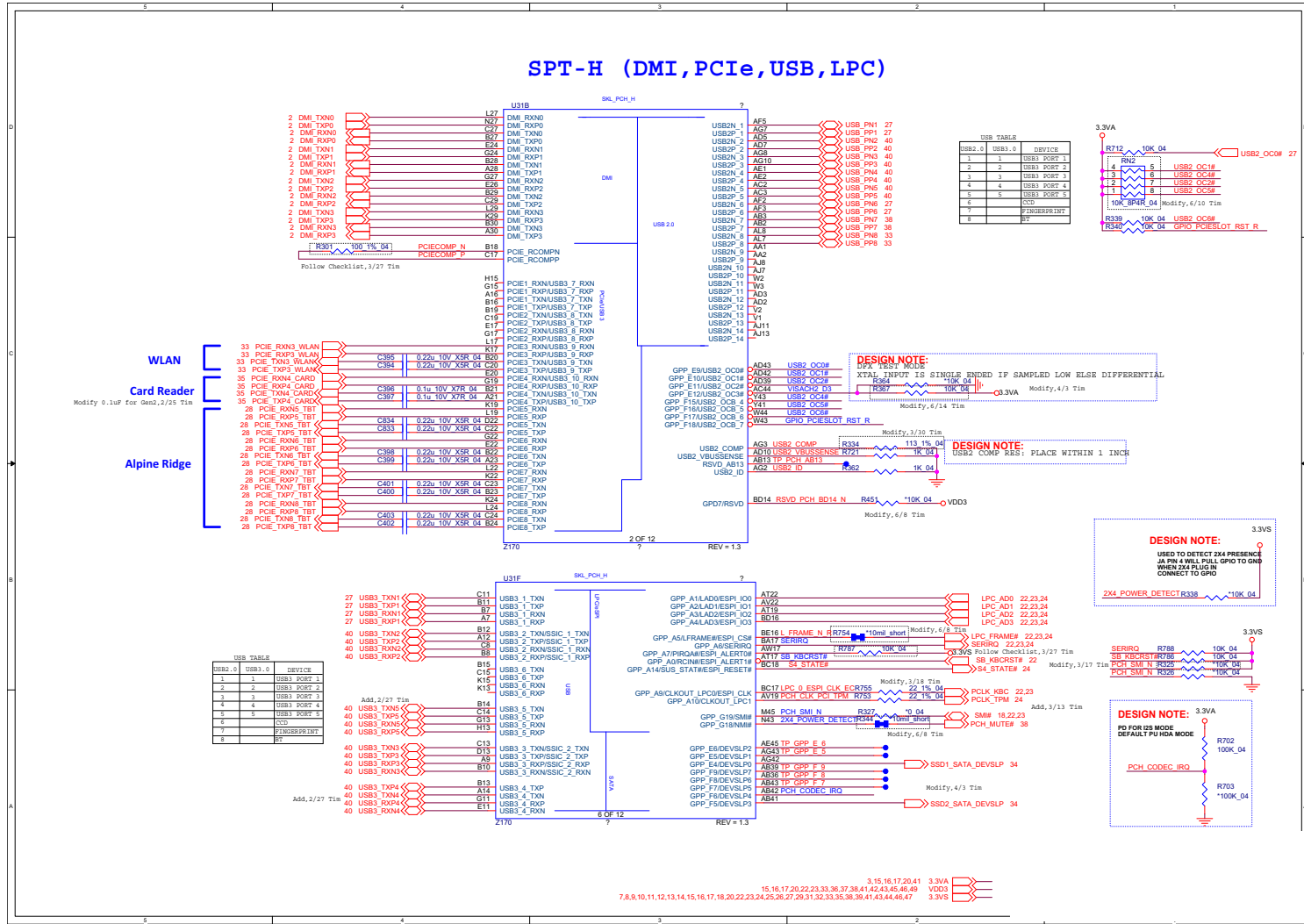


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SPT-H 4/7

SPT-H 5/7

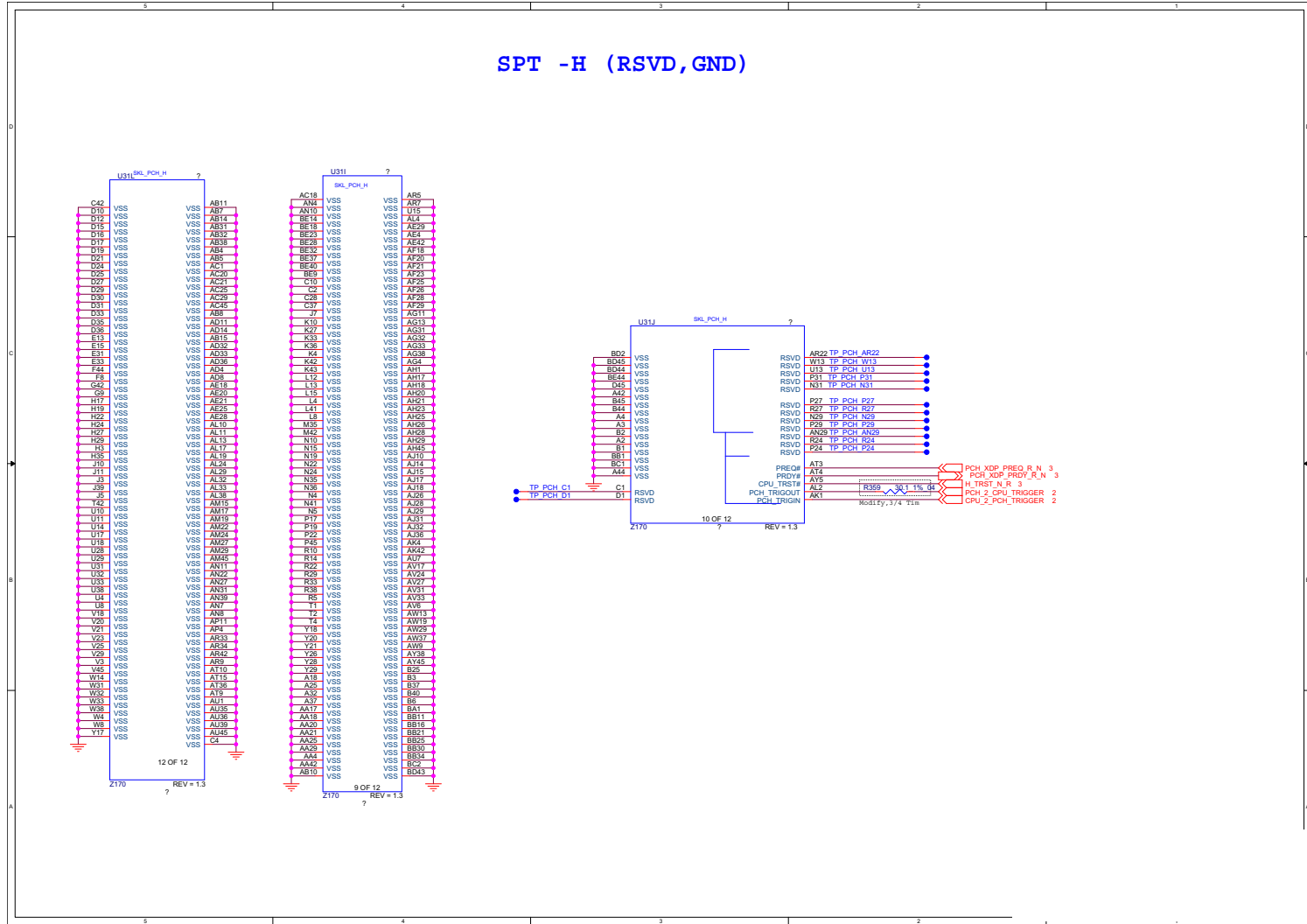
B.Schematic Diagrams

Sheet 19 of 58
SPT-H 5/7

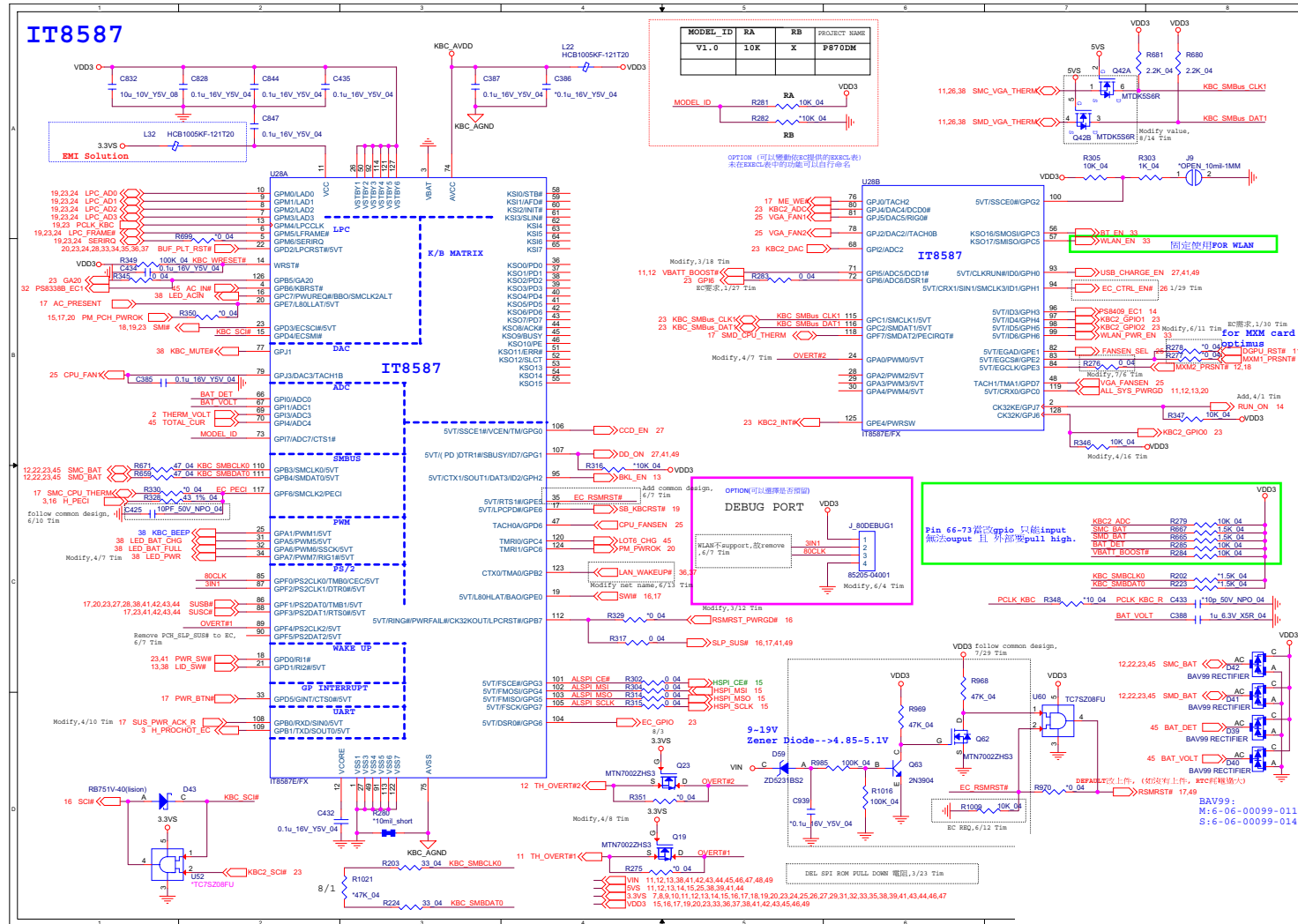


SPT-H 7/7

Sheet 21 of 58
SPT-H 7/7



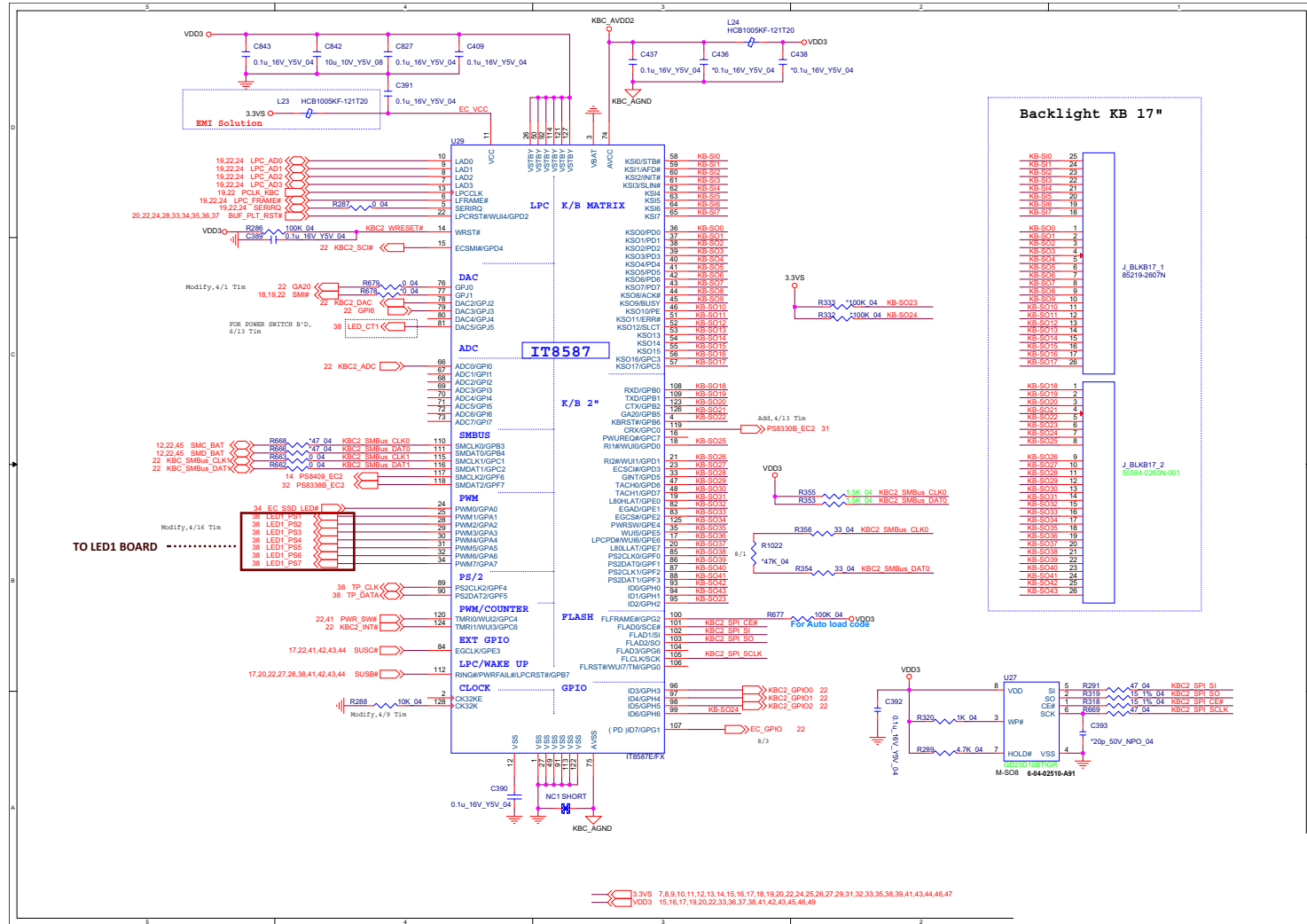
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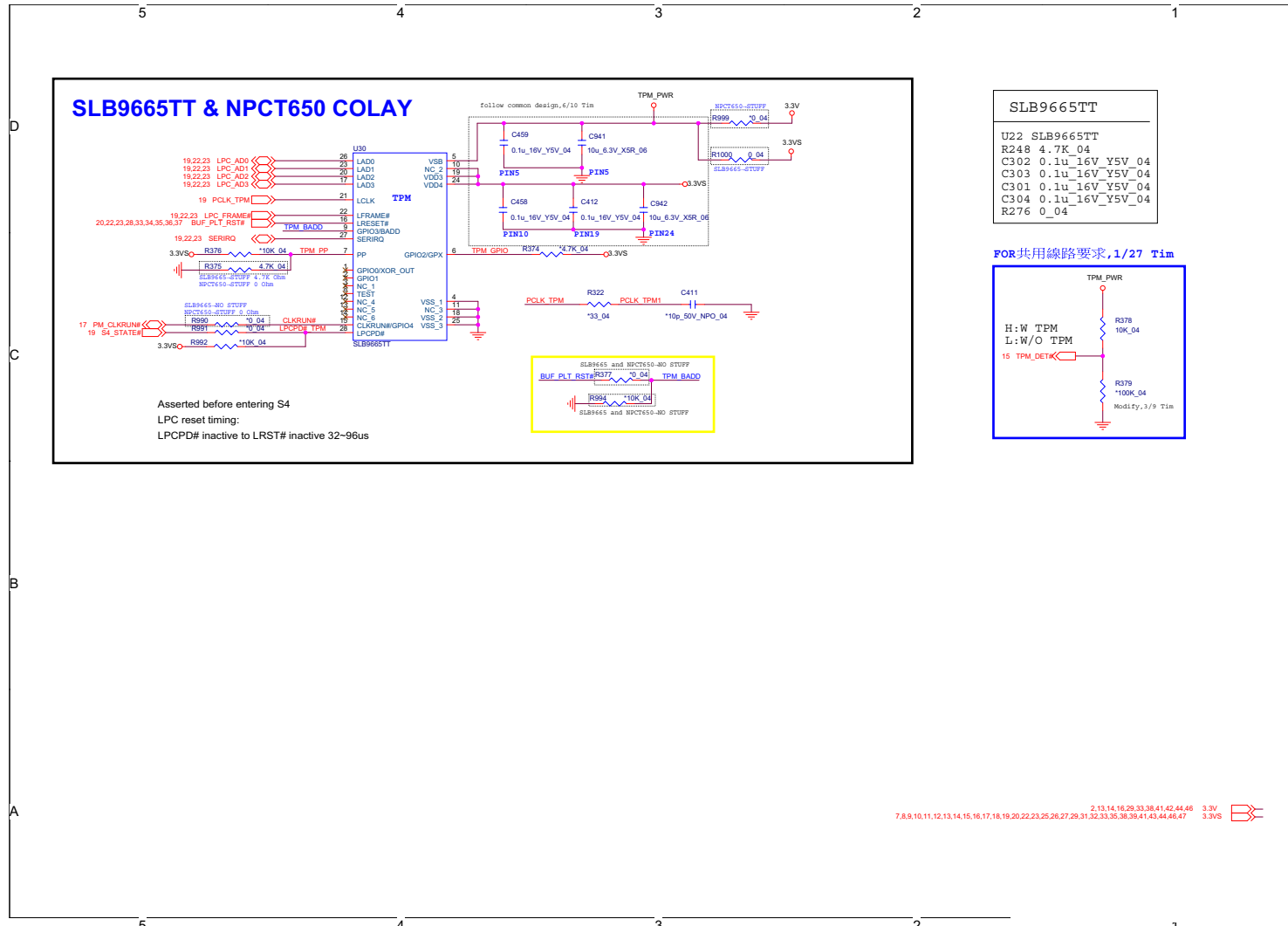
Sheet 22 of 58
Main EC IT8587

Second EC IT8587

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Second EC IT8587



TPM SLB9665TT

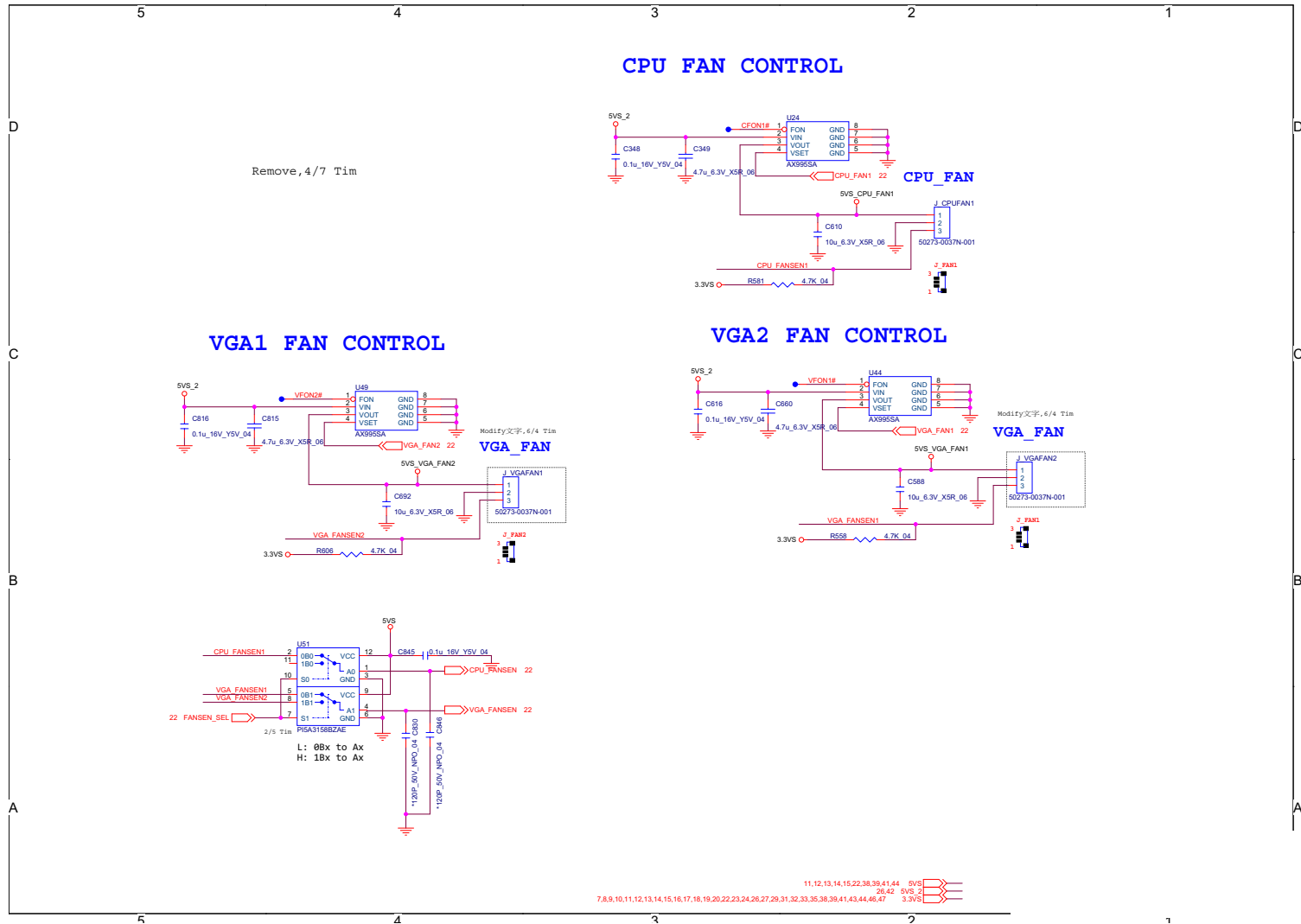


Sheet 24 of 58
TPM SLB9665TT

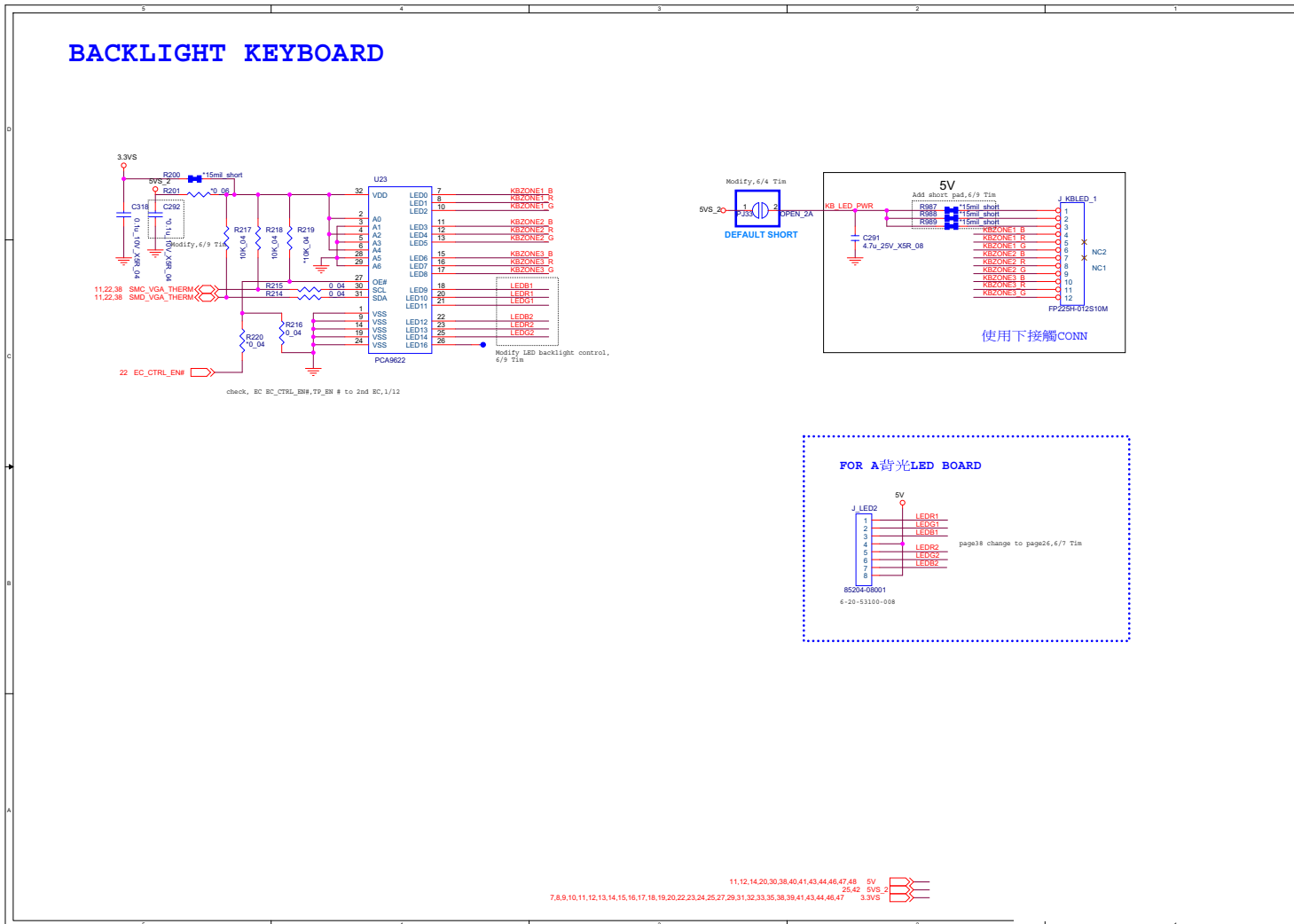
B.Schematic Diagrams

CPU, VGA Fan Conn

Sheet 25 of 58
CPU, VGA Fan
Conn



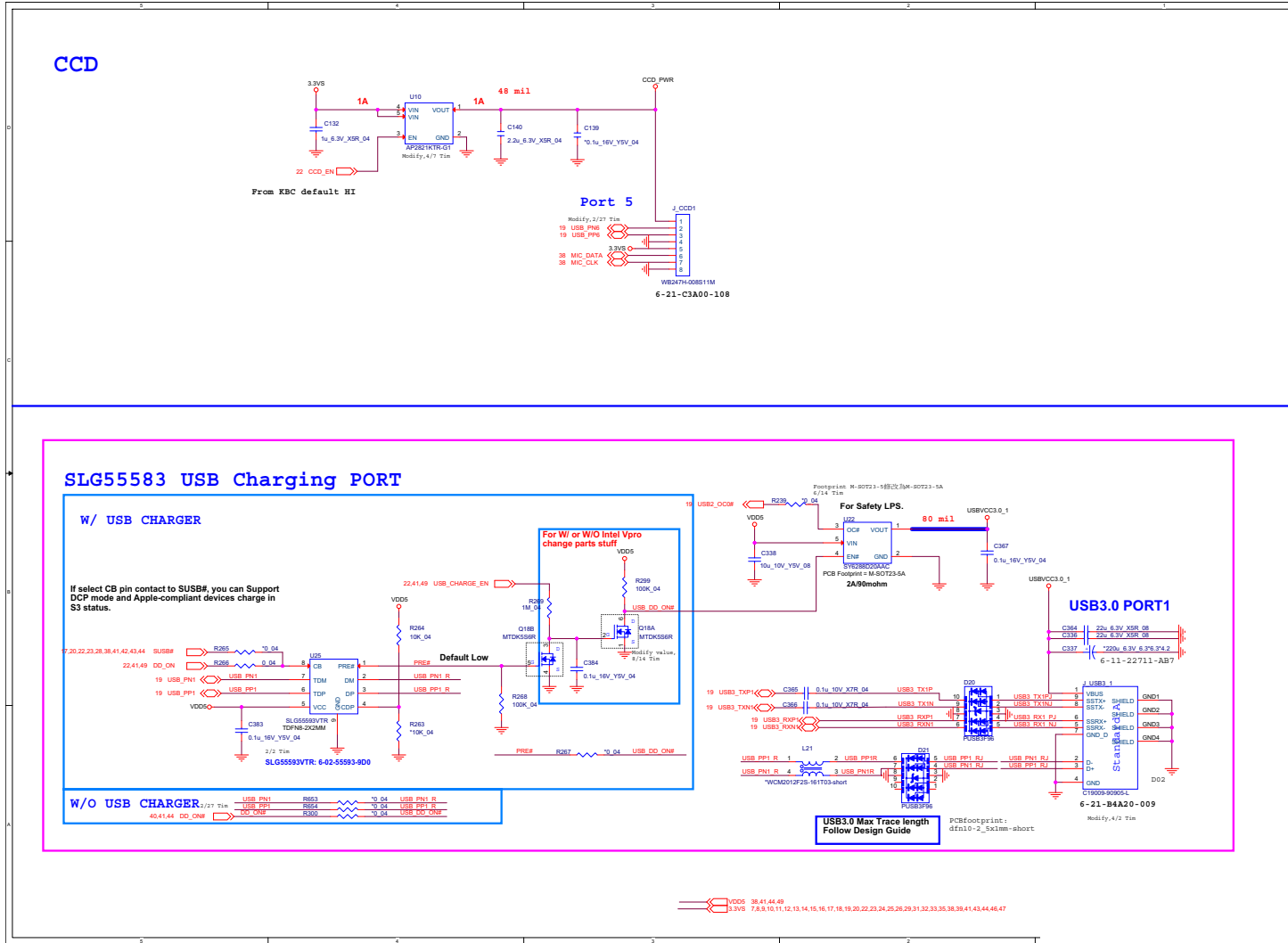
Backlight Keyboard



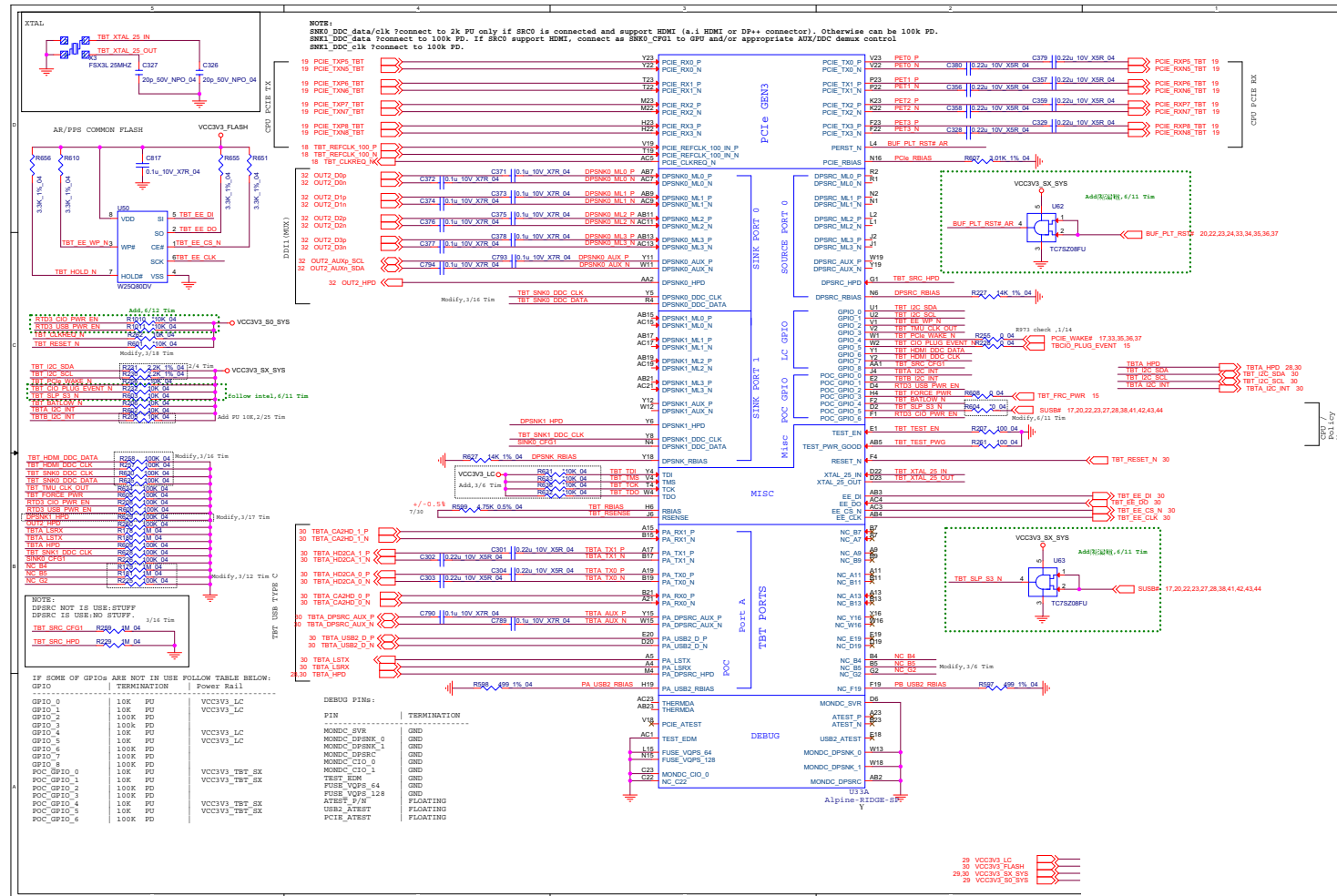
Sheet 26 of 58
Backlight Keyboard

B.Schematic Diagrams

CCD, USB Charging



AR_TBT

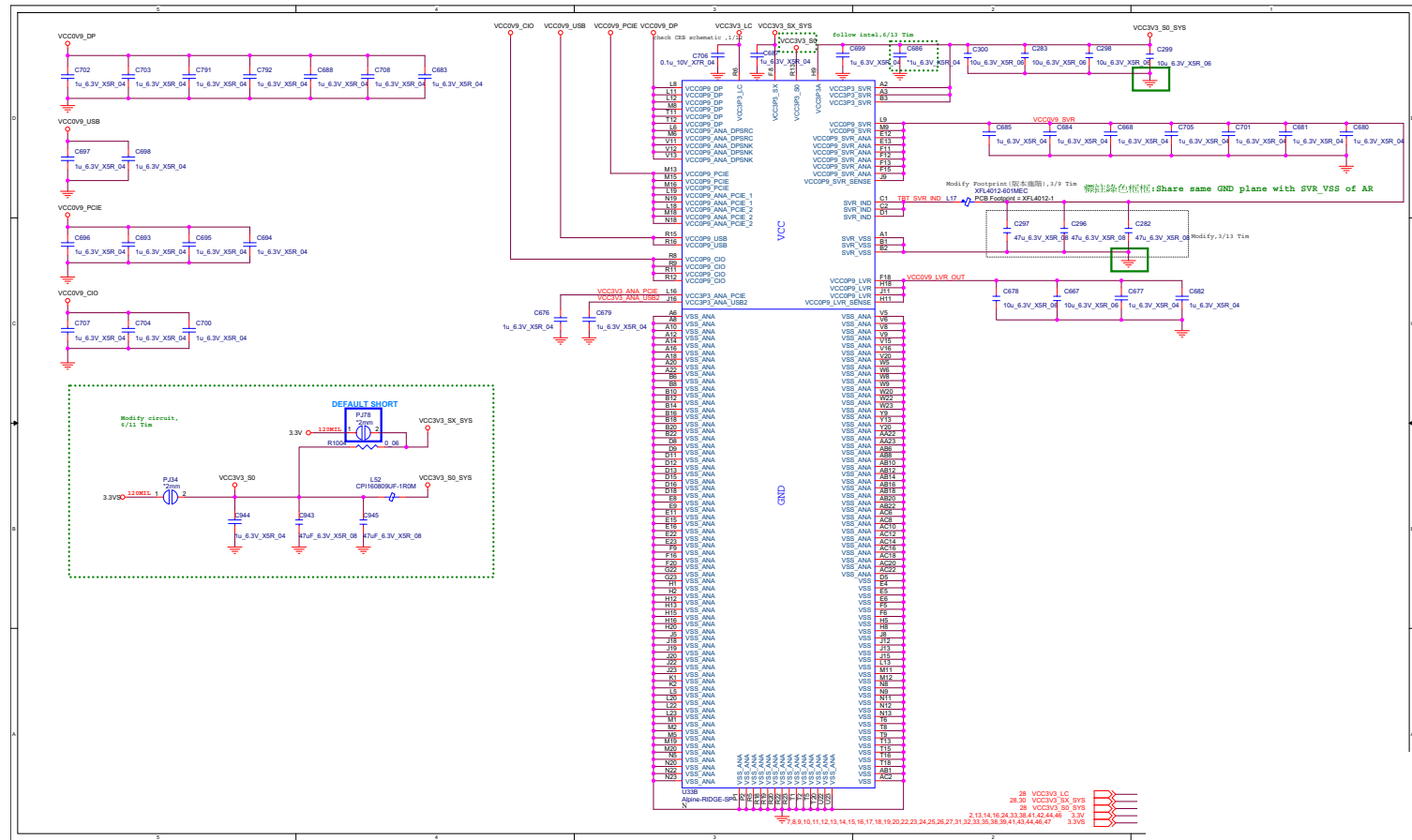


Sheet 28 of 58
AR_TBT

B.Schematic Diagrams

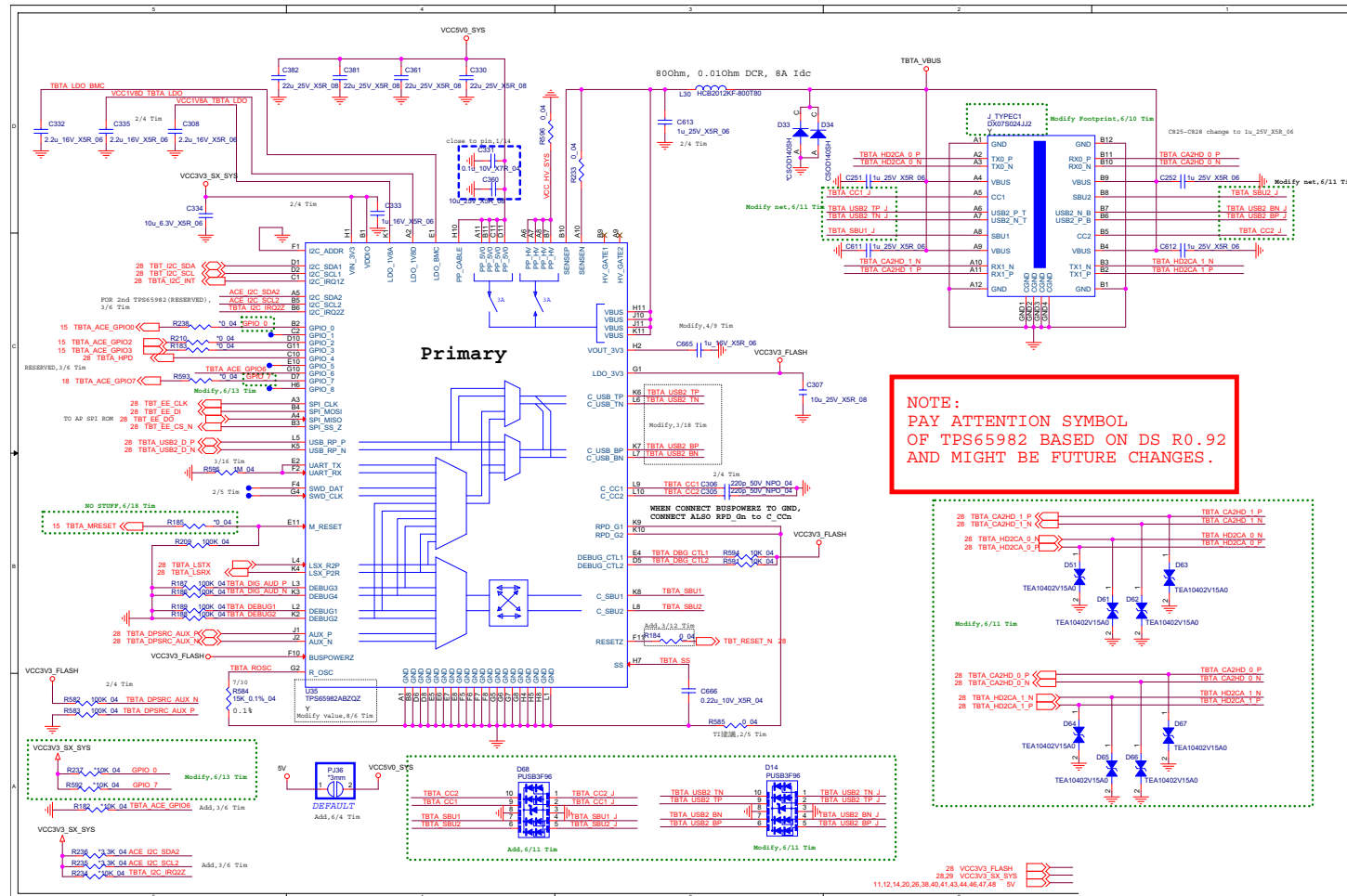
Schematic Diagrams

AR_Power



B.Schematic Diagrams

TPS65982

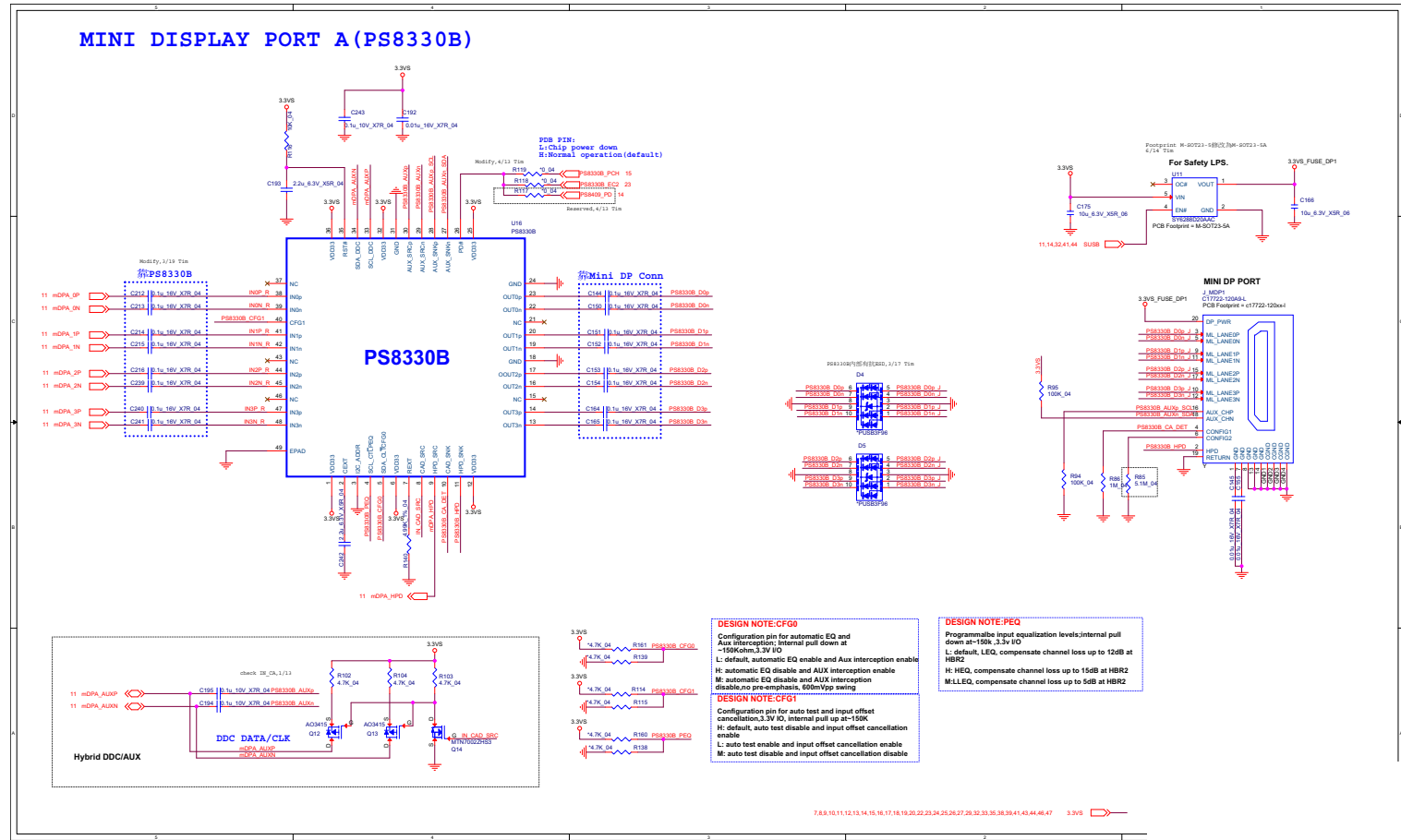


Sheet 30 of 58
TPS65982

B.Schematic Diagrams

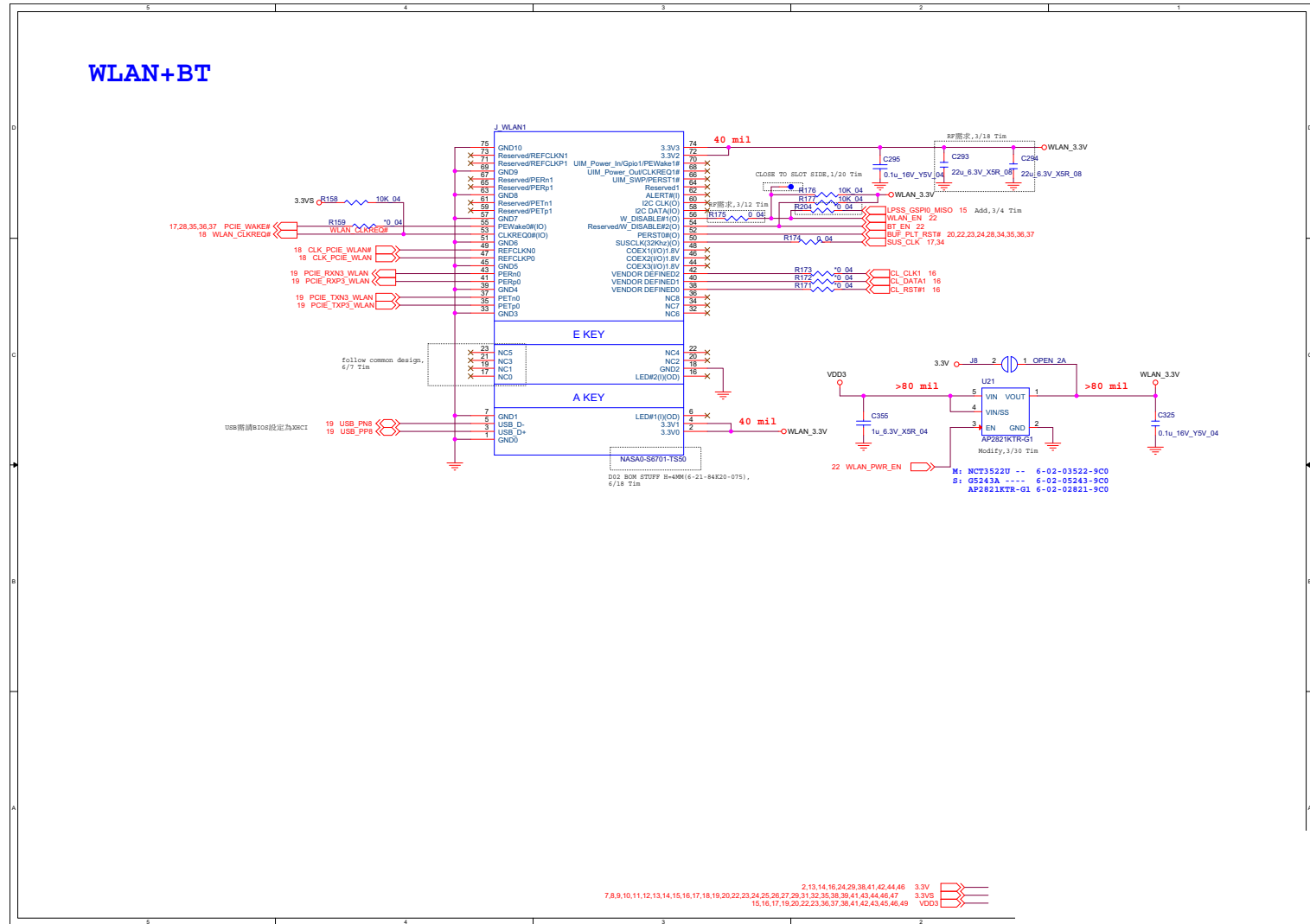
Mini Display Port A

Sheet 31 of 58
Mini Display Port A

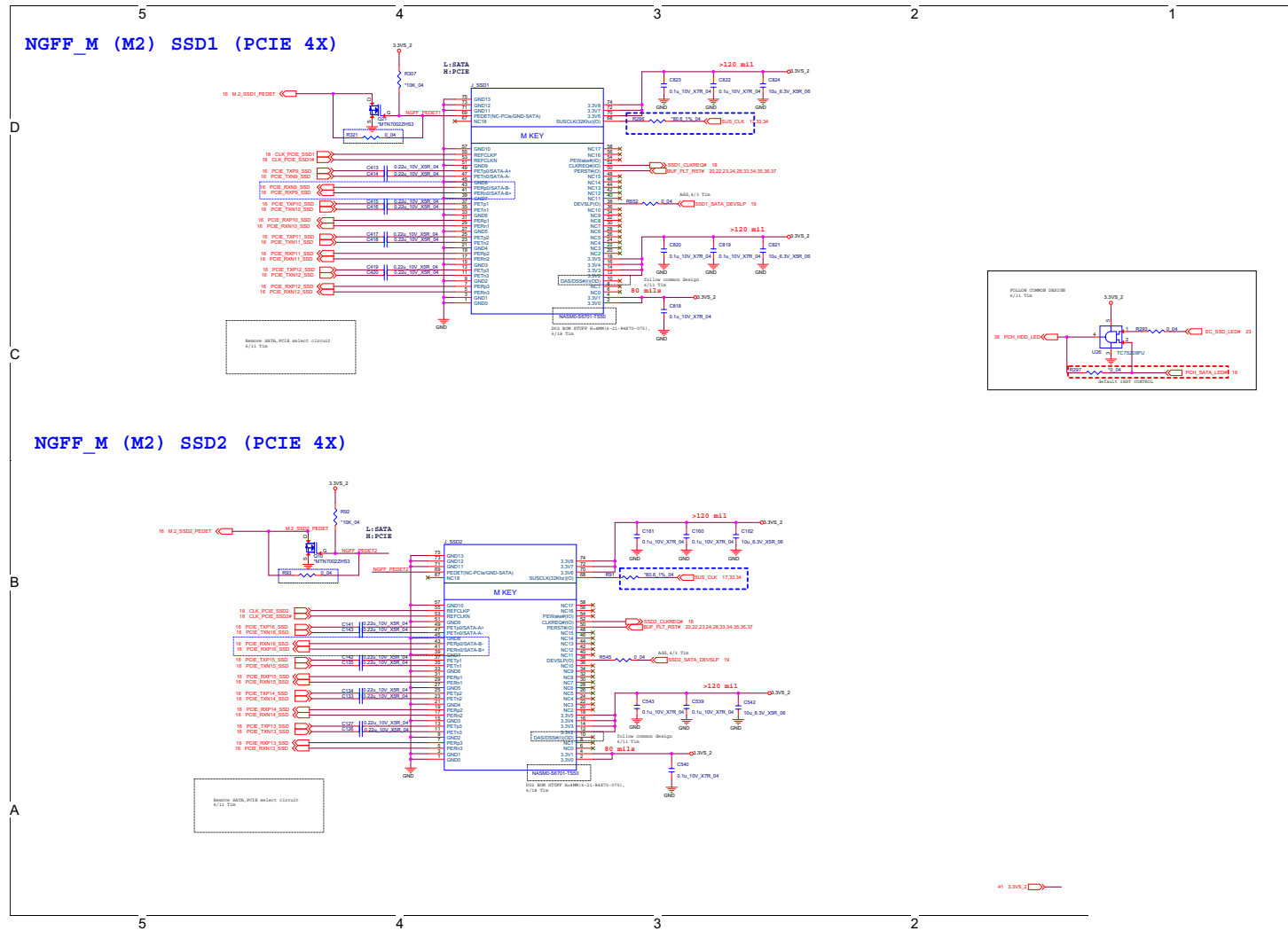


M.2 WLAN+BT

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M.2 WLAN+BT



M.2 M Key, B Key

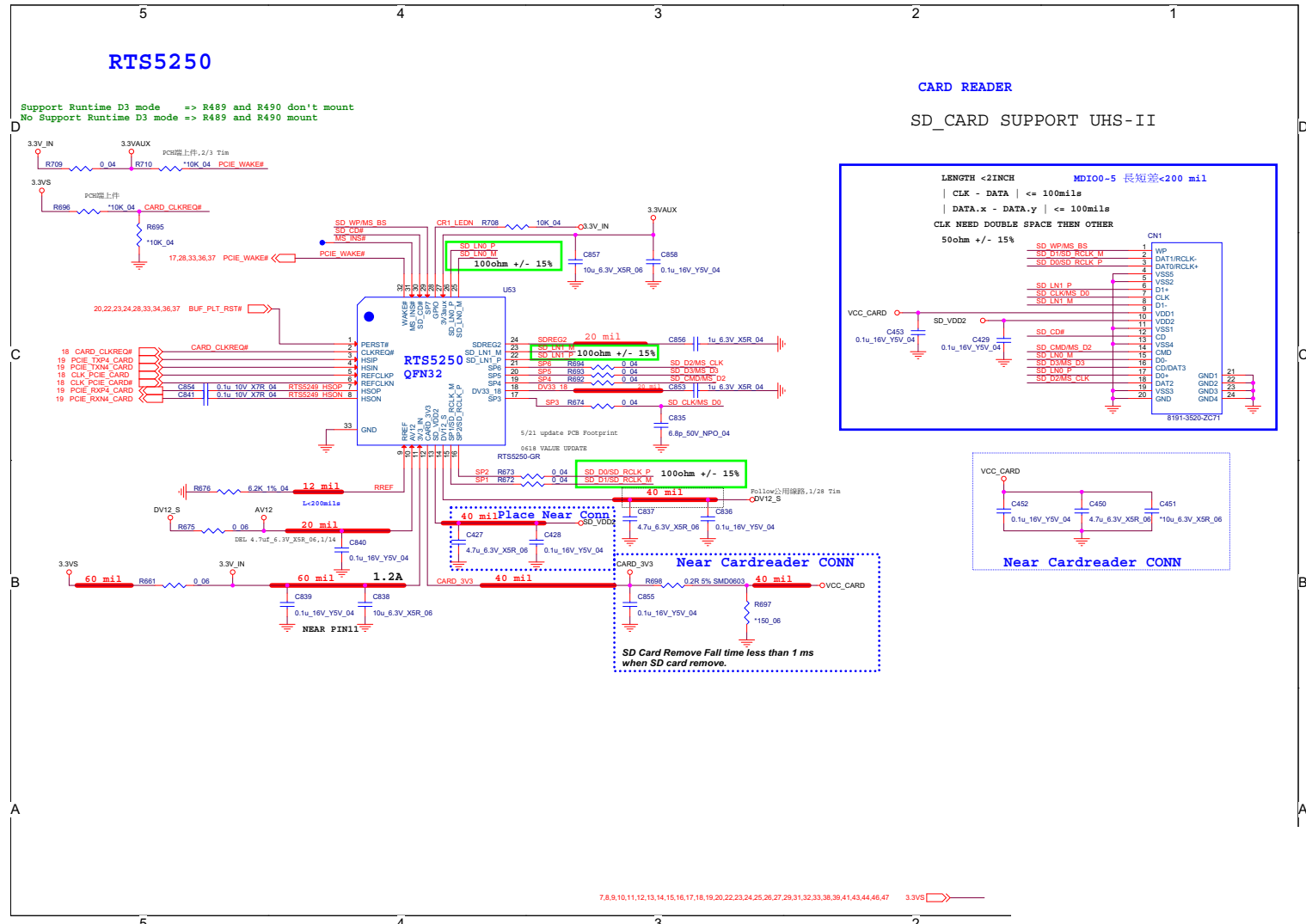


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M.2 M Key, B Key

B.Schematic Diagrams

RTS5250

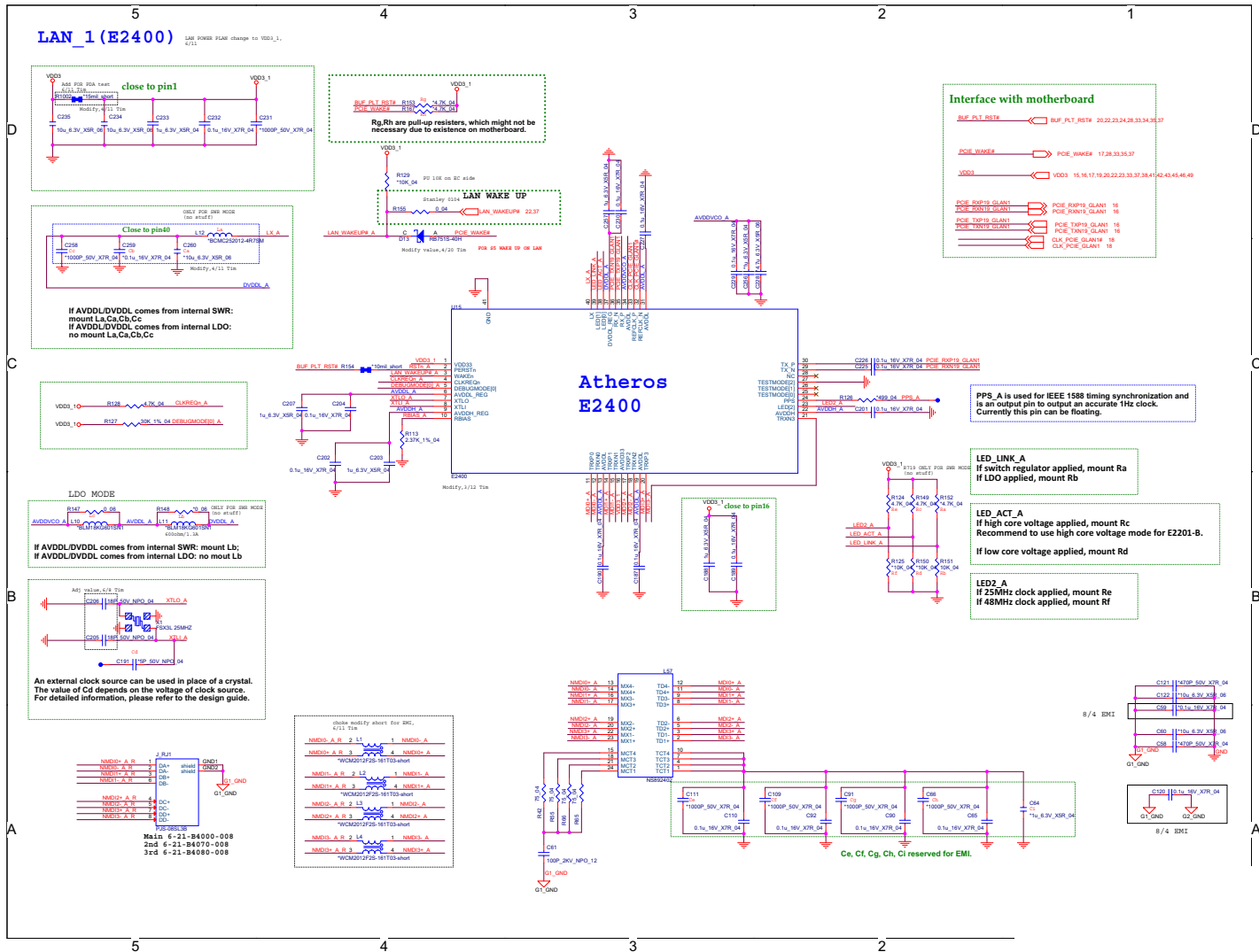
Sheet 35 of 58
RTS5250



LAN_1E2400

B.Schematic Diagrams

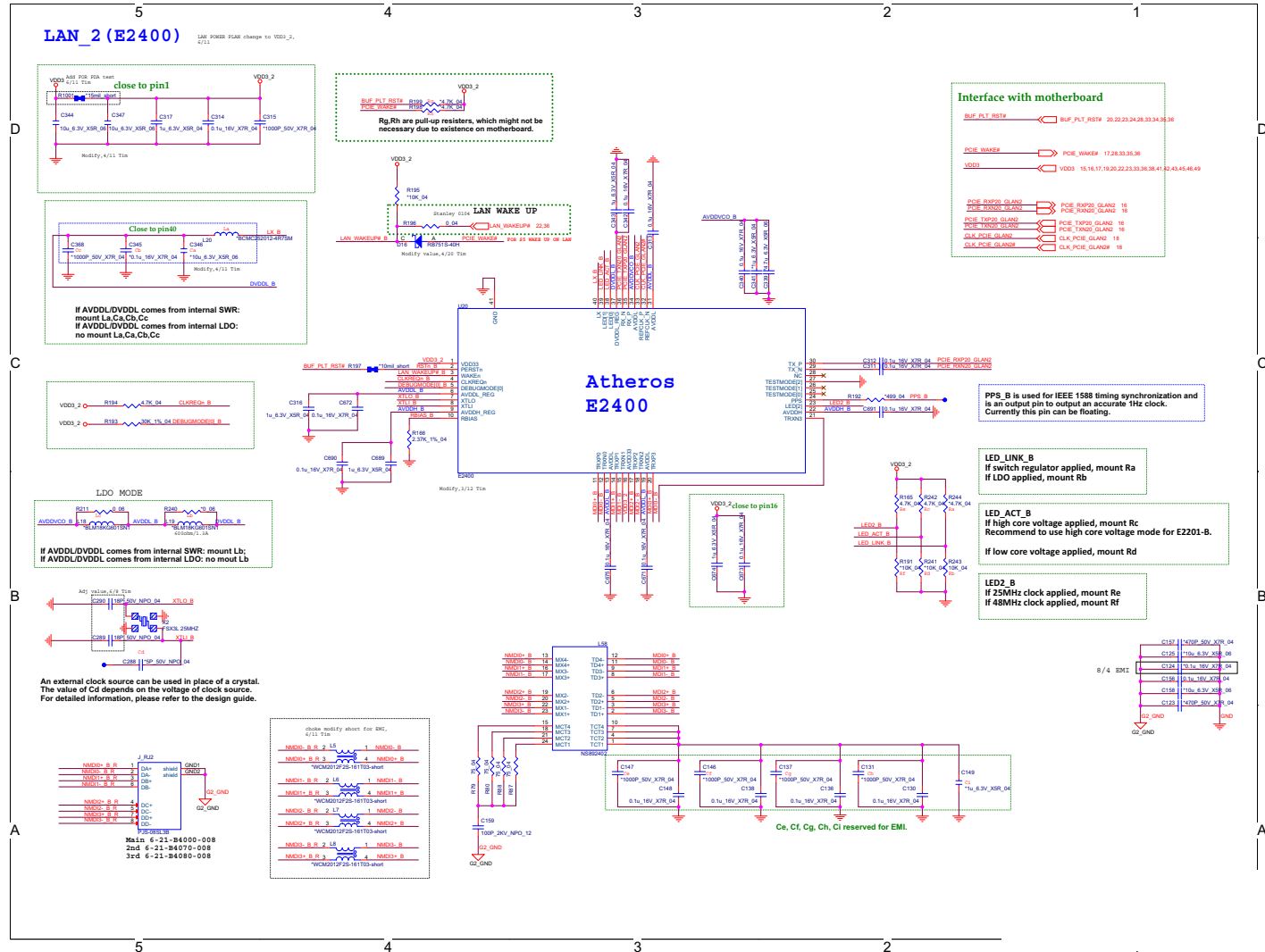
Sheet 36 of 58
LAN_1 E2400



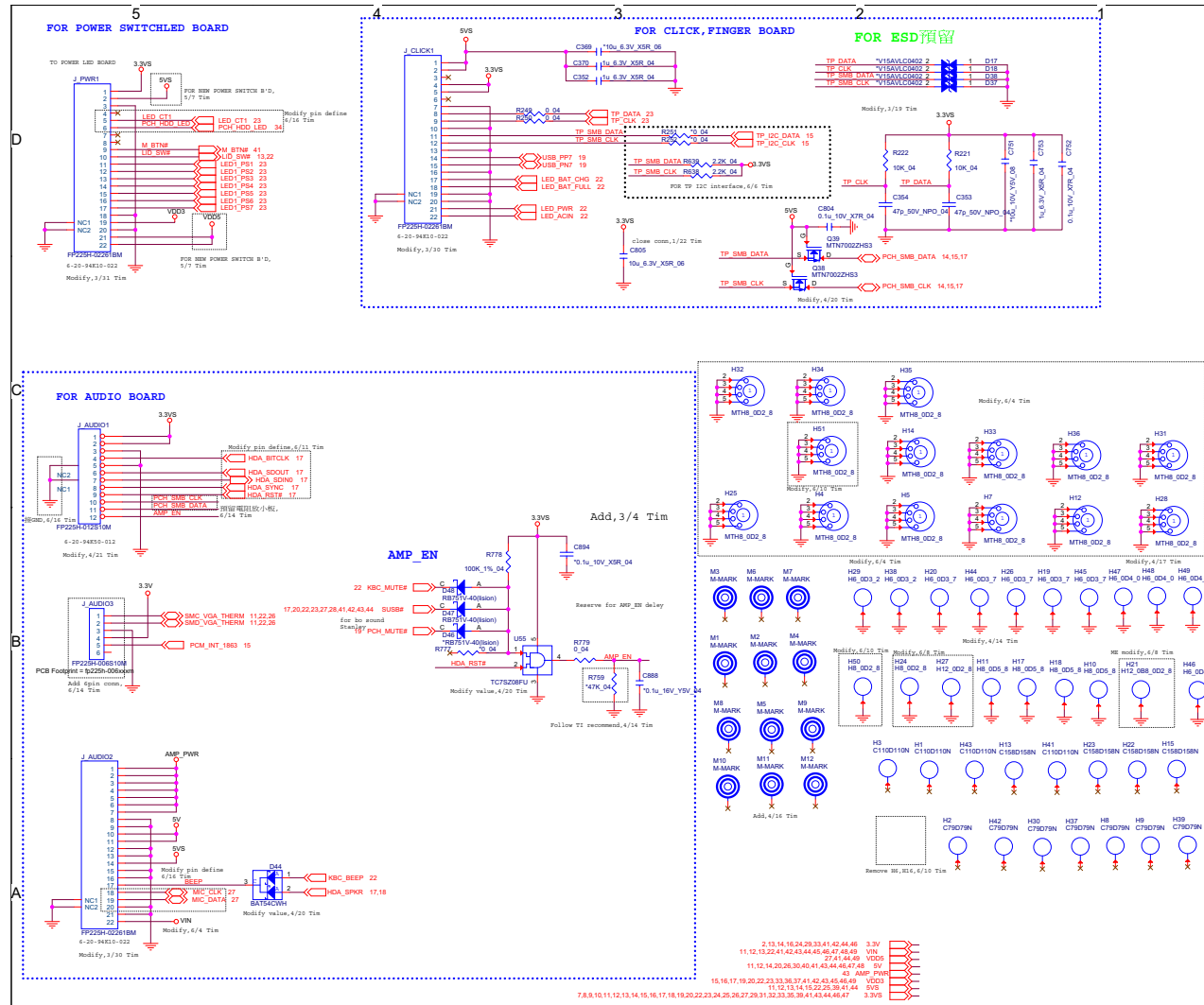
LAN_2 E2400

B.Schematic Diagrams

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LAN_2 E2400



Click, Finger Conn

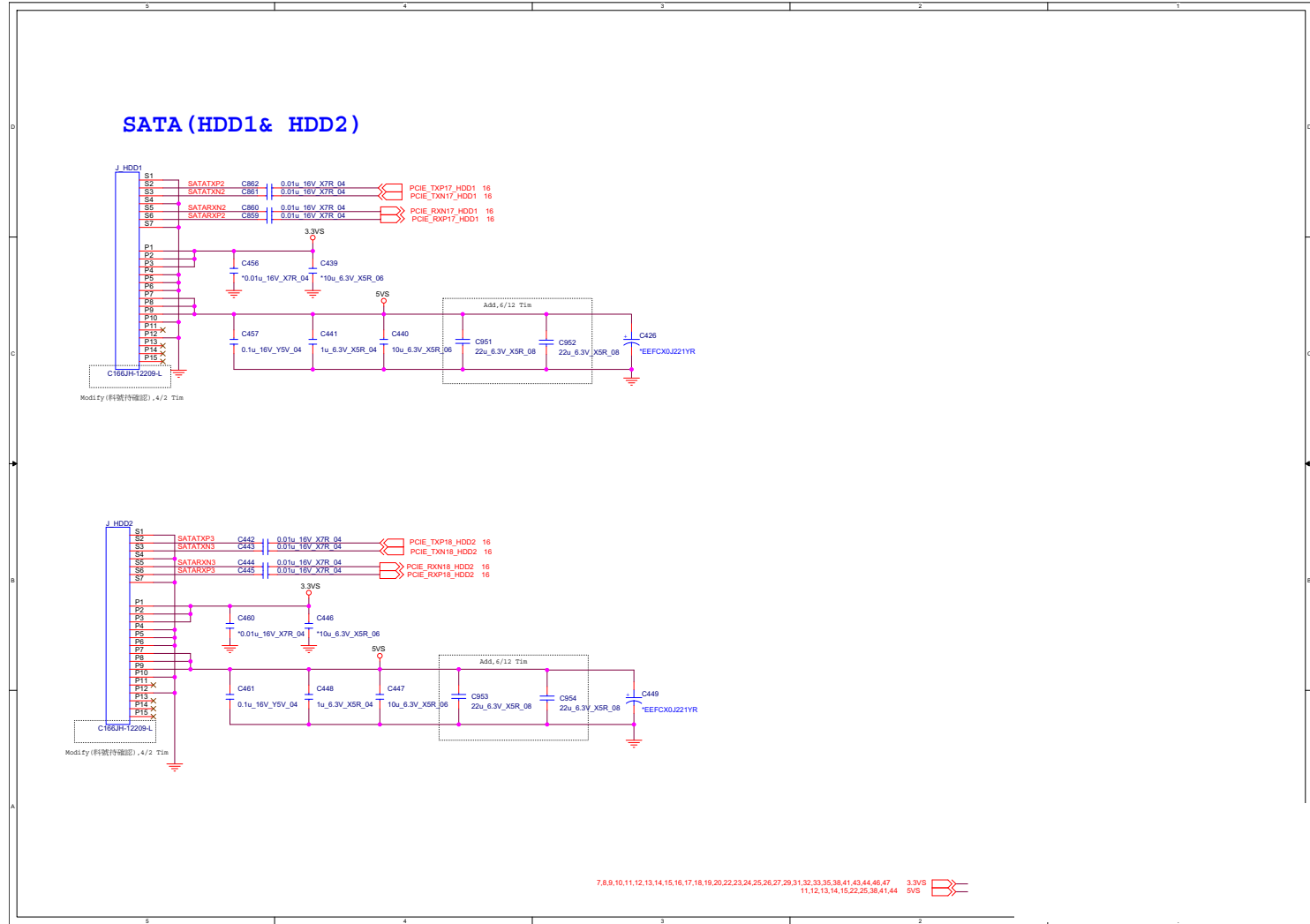


Sheet 38 of 58
Click, Finger Conn

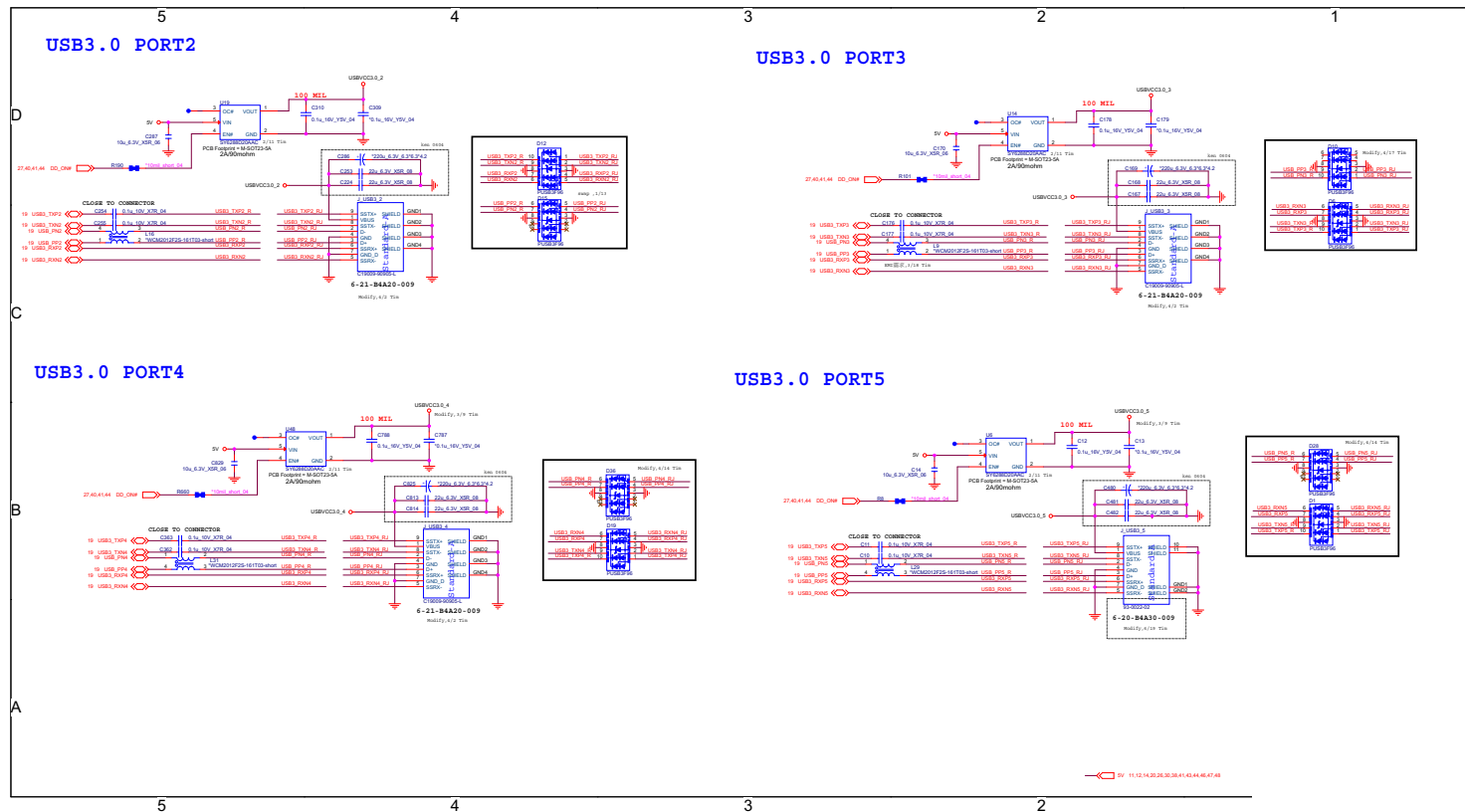
B.Schematic Diagrams

HDD & Second HDD

Sheet 39 of 58
HDD & Second
HDD



USB Port



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USB Port

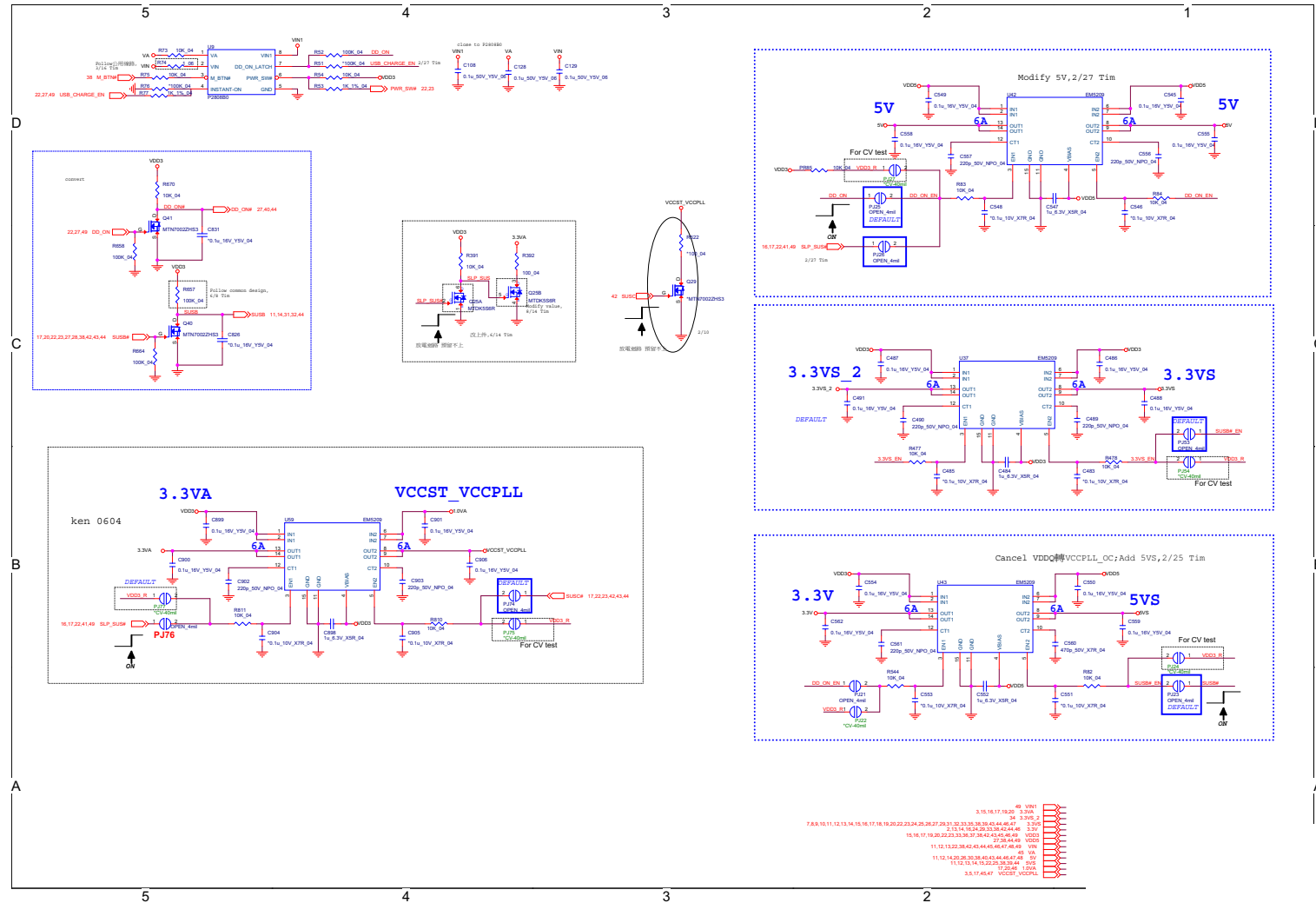
B.Schematic Diagrams

Schematic Diagrams

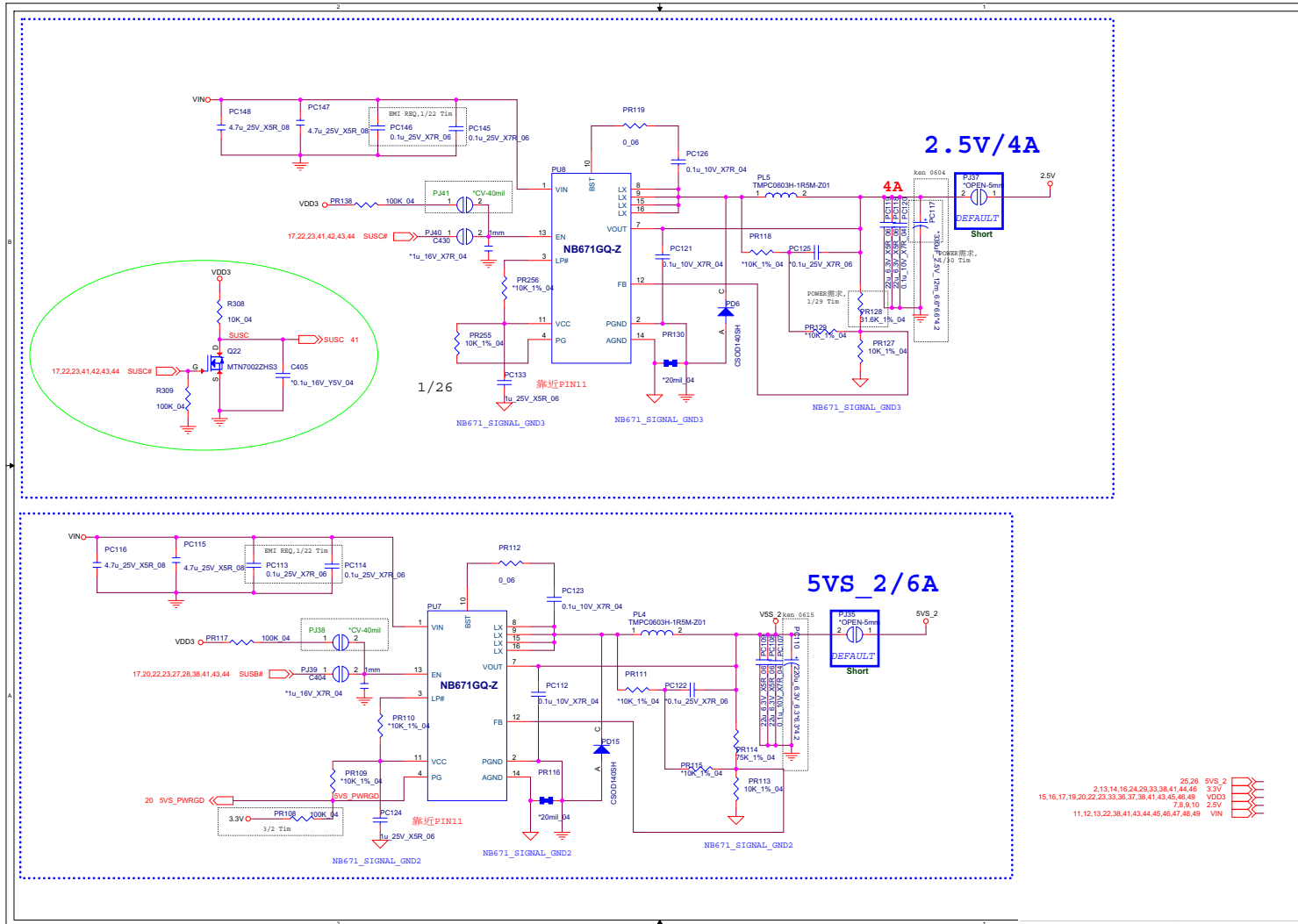
5VS, 3.3VS, 1.0 V Series

B.Schematic Diagrams

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5VS, 3.3VS, 1.0V
Series



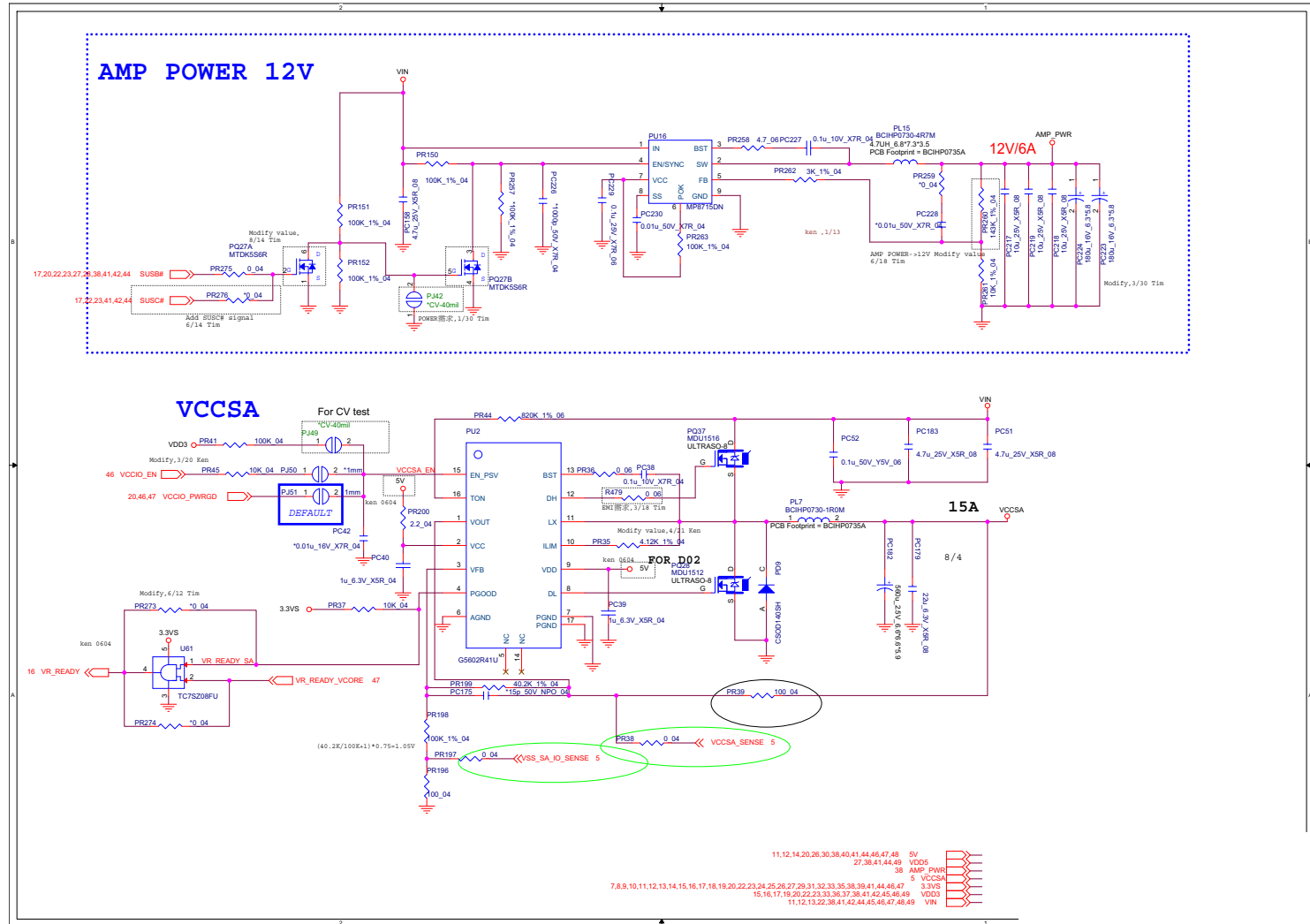
2.5V, 5VS_2



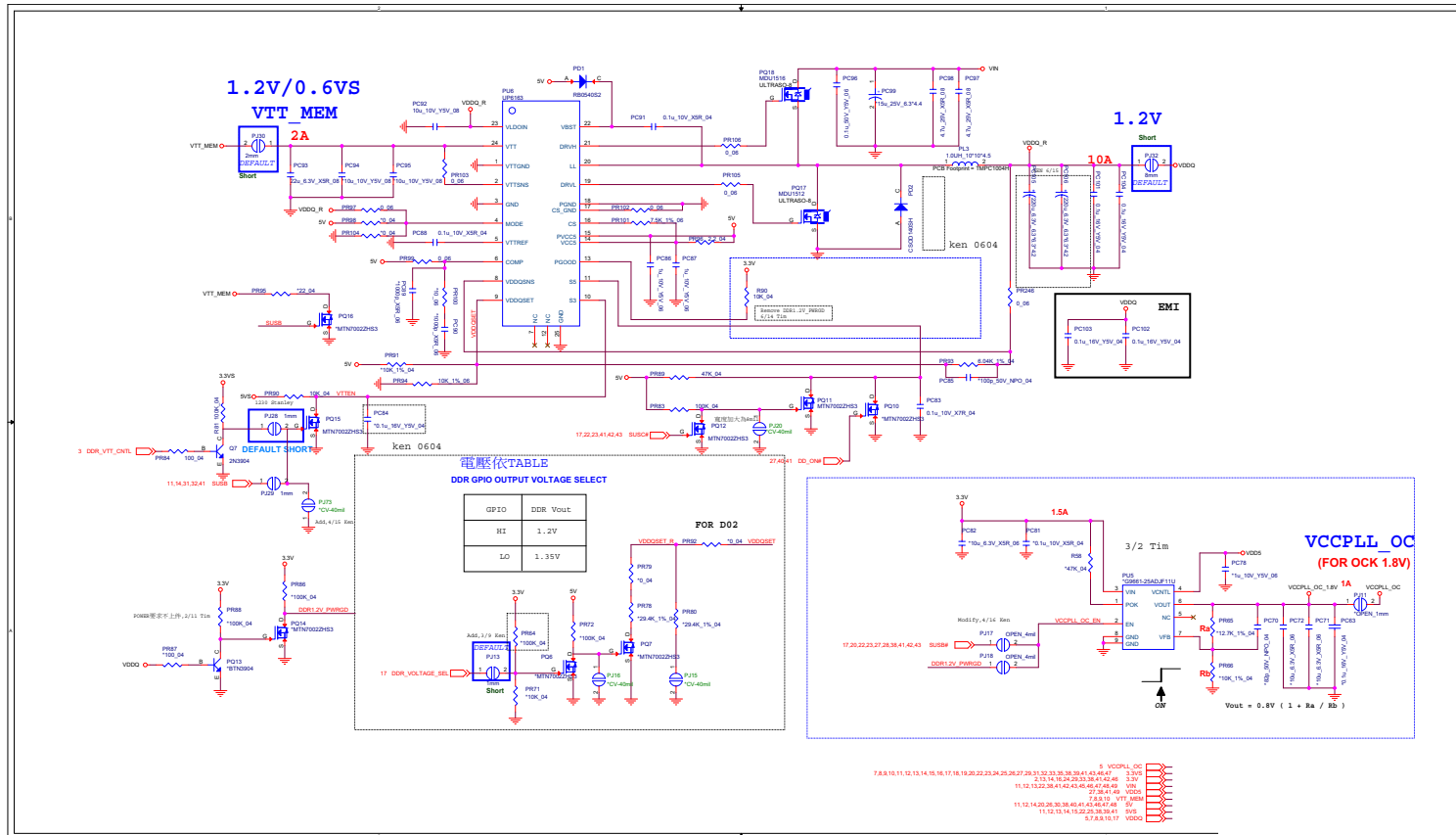
B.Schematic Diagrams

AMP10V, VCCSA

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AMP10V, VCCSA



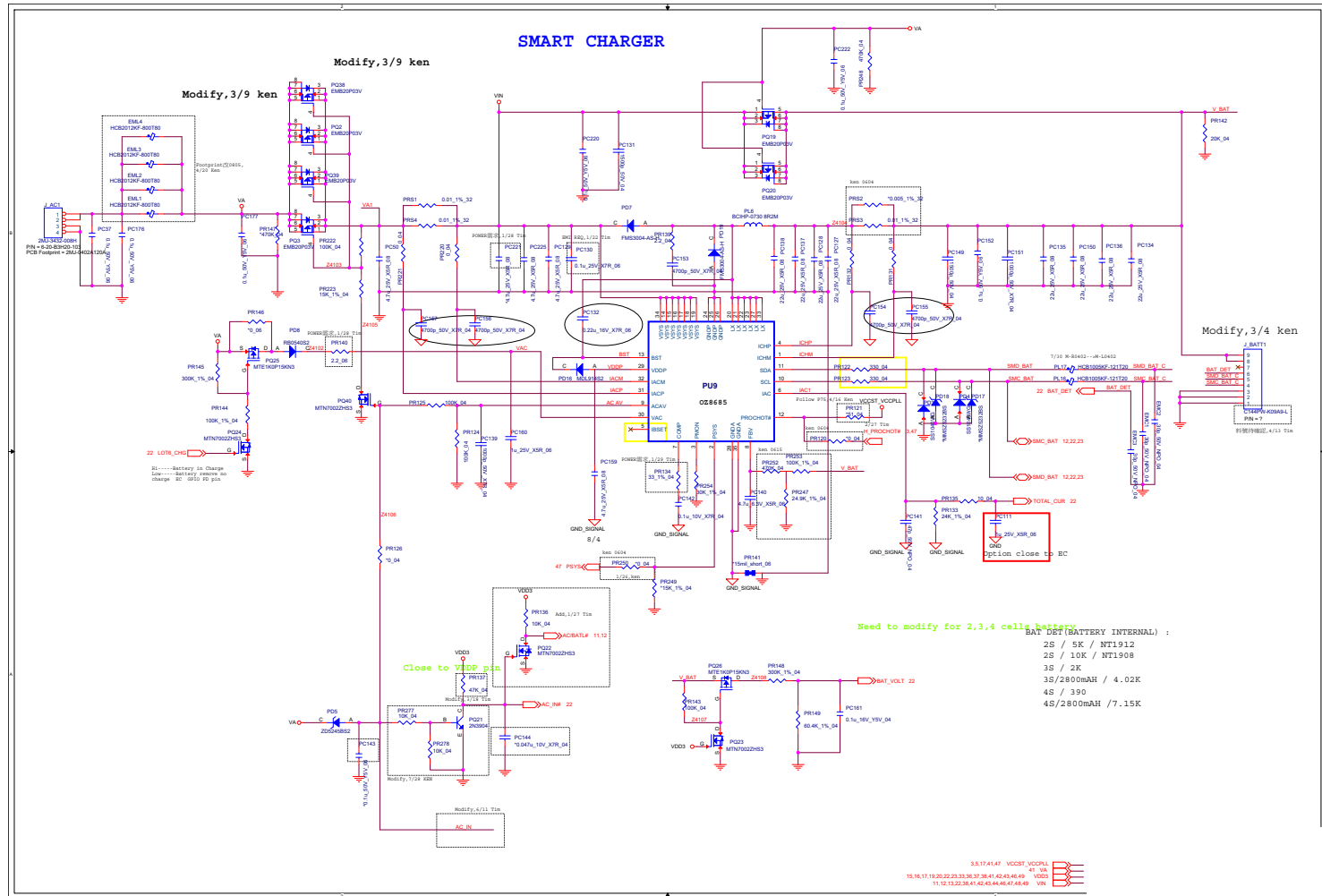
DDR4 VDDQ & VTT, VCCPLL_OC



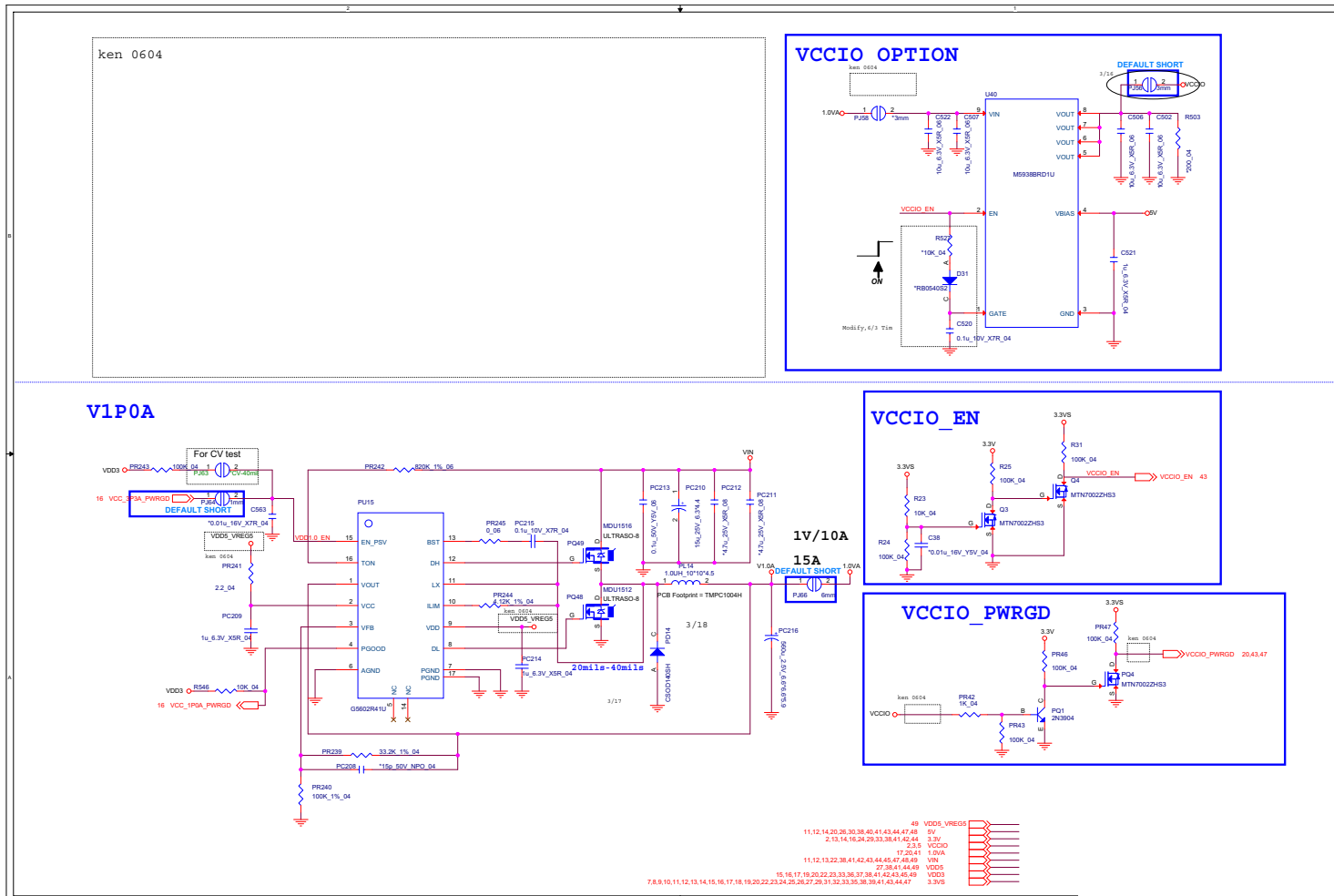
Sheet 44 of 58
 DDR4 VDDQ & VTT,
 VCCPLL_OC

Power Charger, DC IN

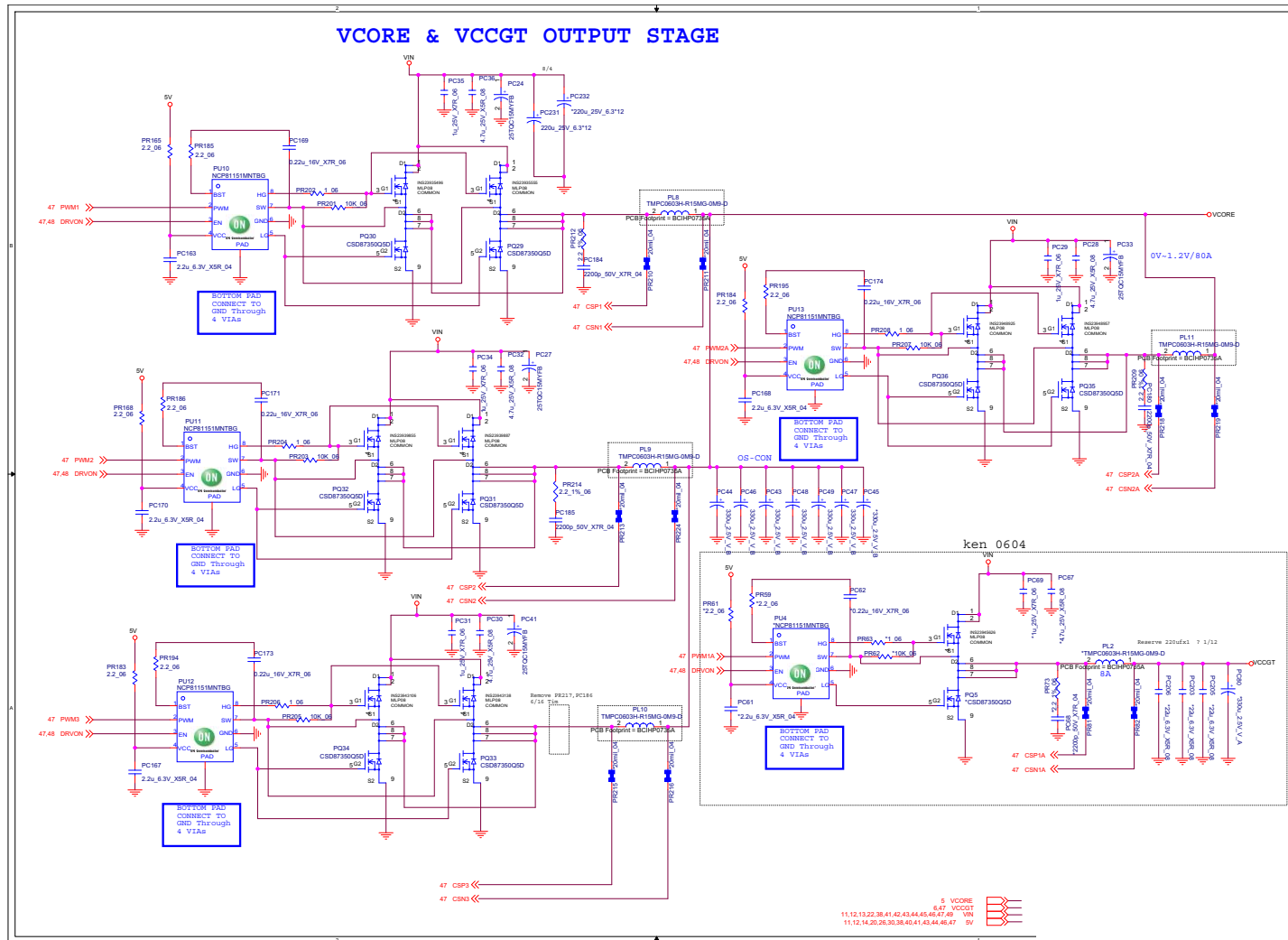
Sheet 45 of 58
Power Charger,
DC IN



VCCIO, 1.0VA



VCore & VCCGT Output Stage



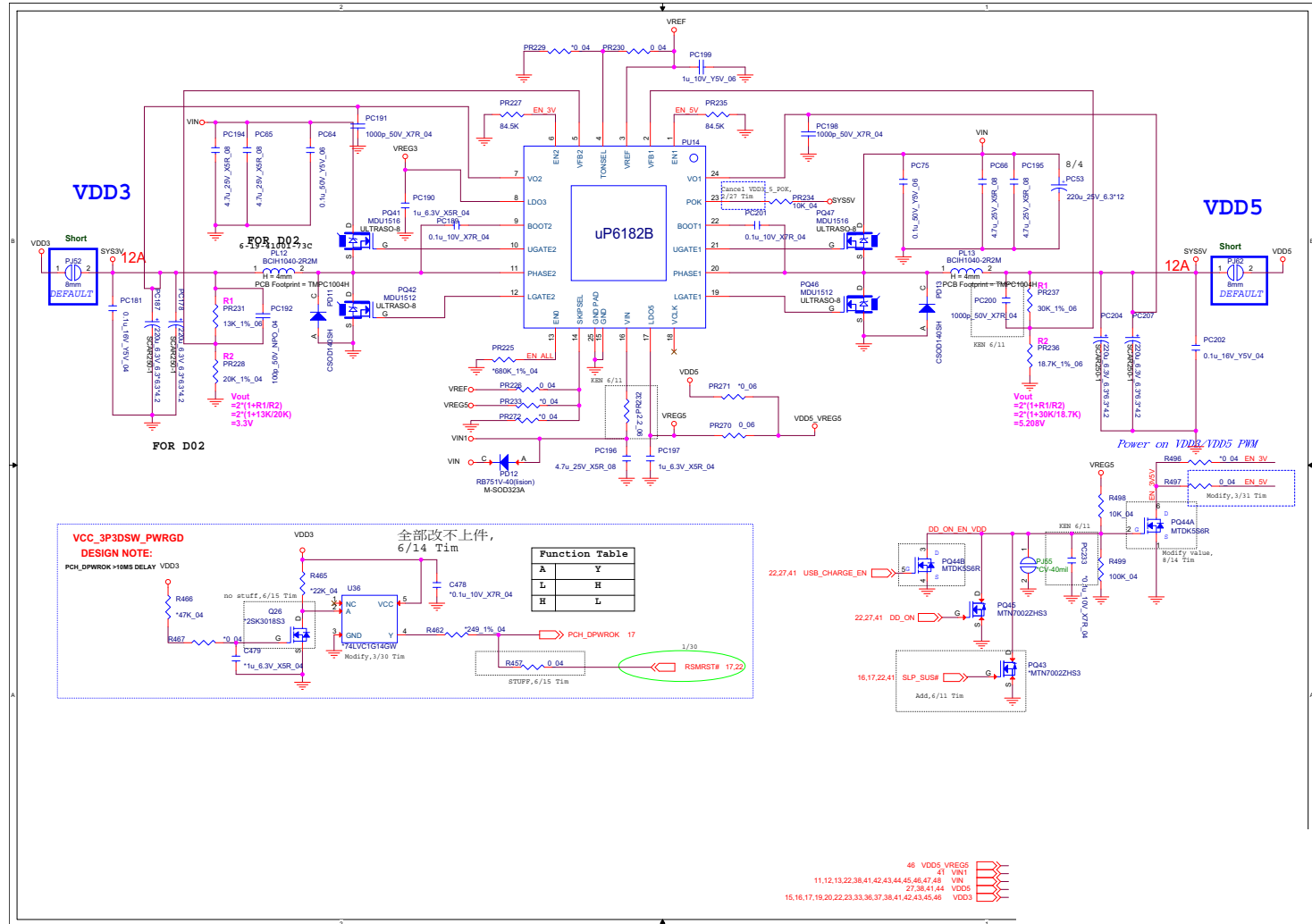
Sheet 48 of 58
VCore & VCCGT
Output Stage

B.Schematic Diagrams

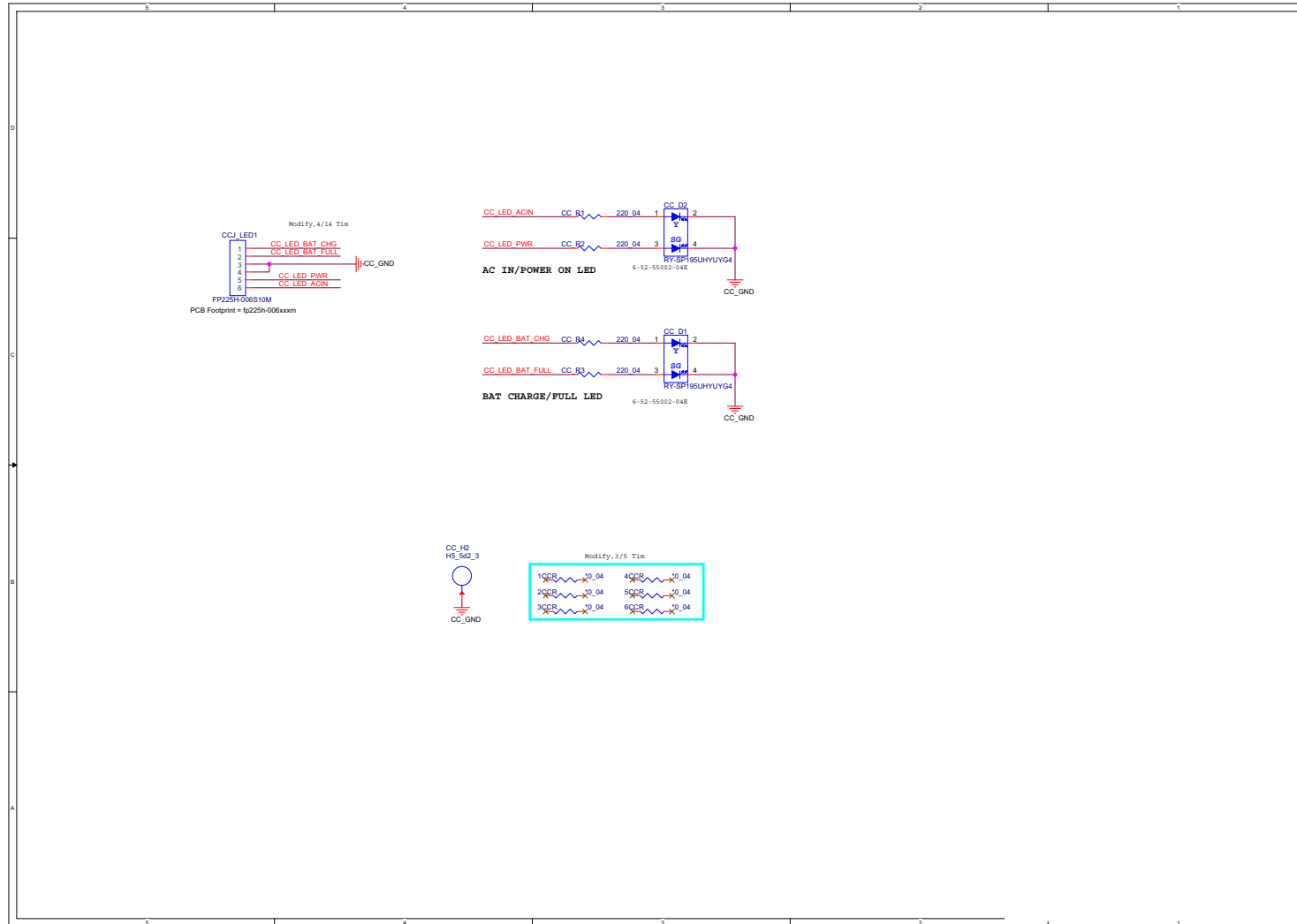
Schematic Diagrams

VDD3, VDD5

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VDD3, VDD5



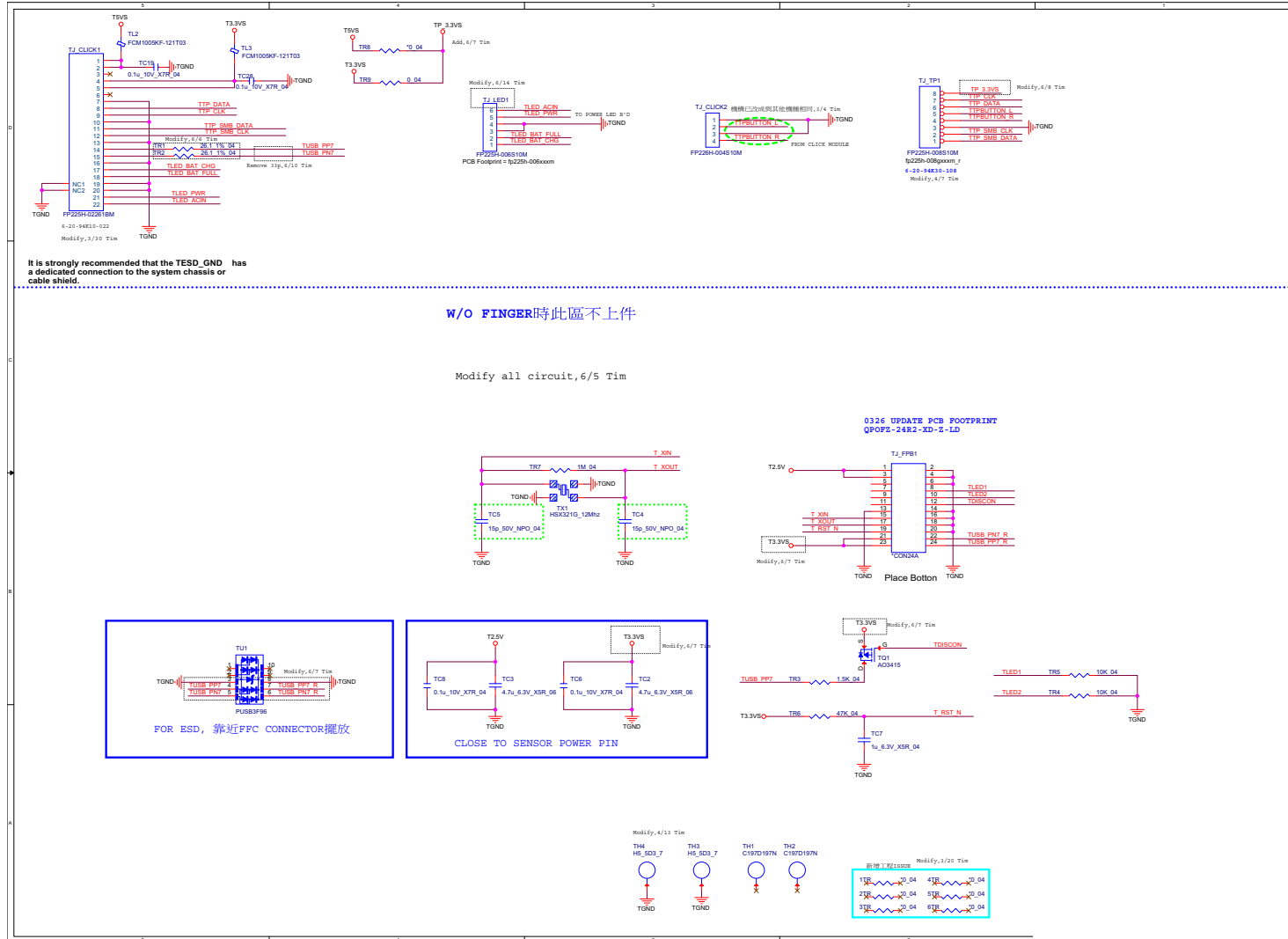
Charger LED Board



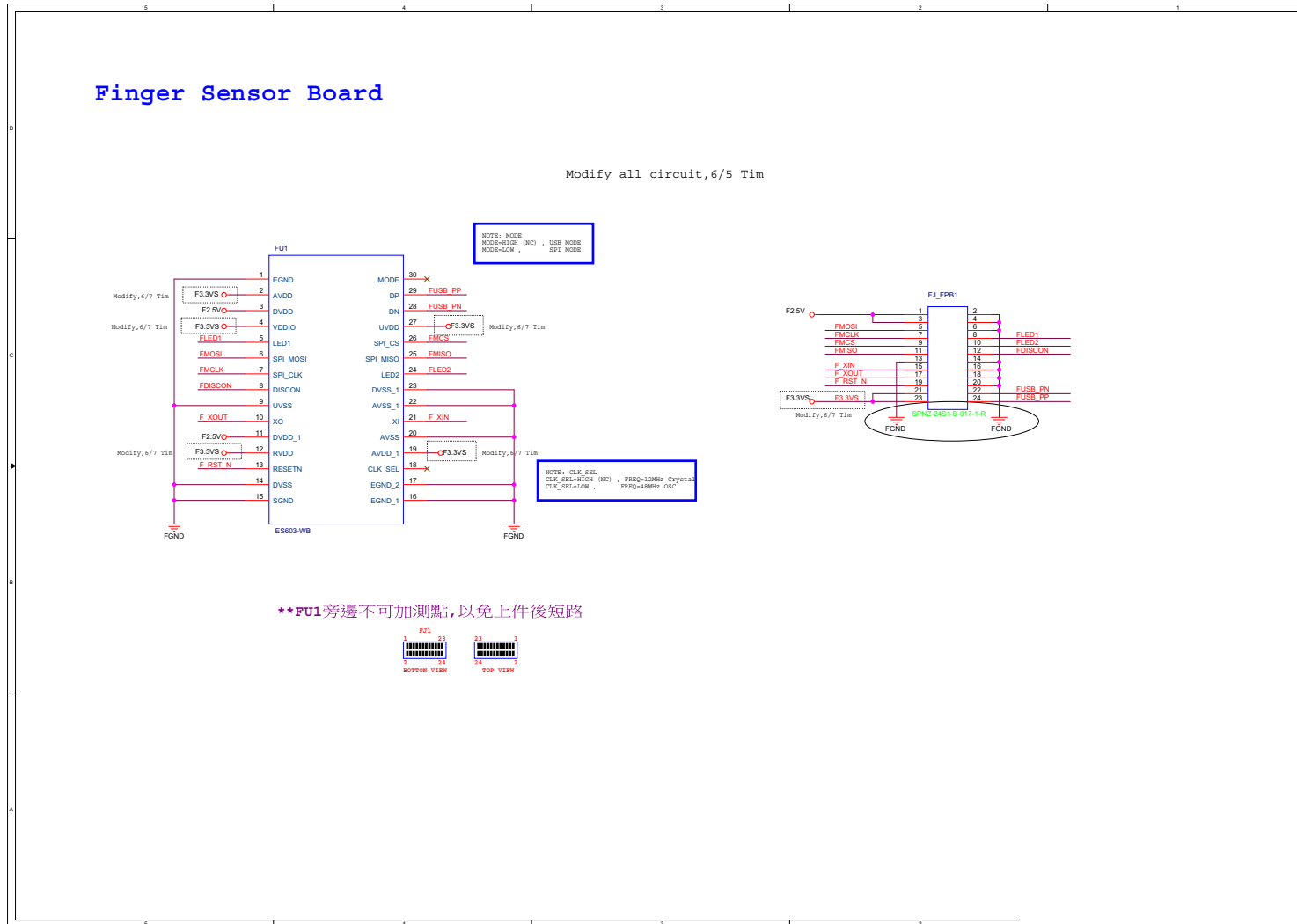
Sheet 50 of 58
Charger LED Board

Click Board

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Click Board



Finger Sensor Board



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Finger Sensor
Board

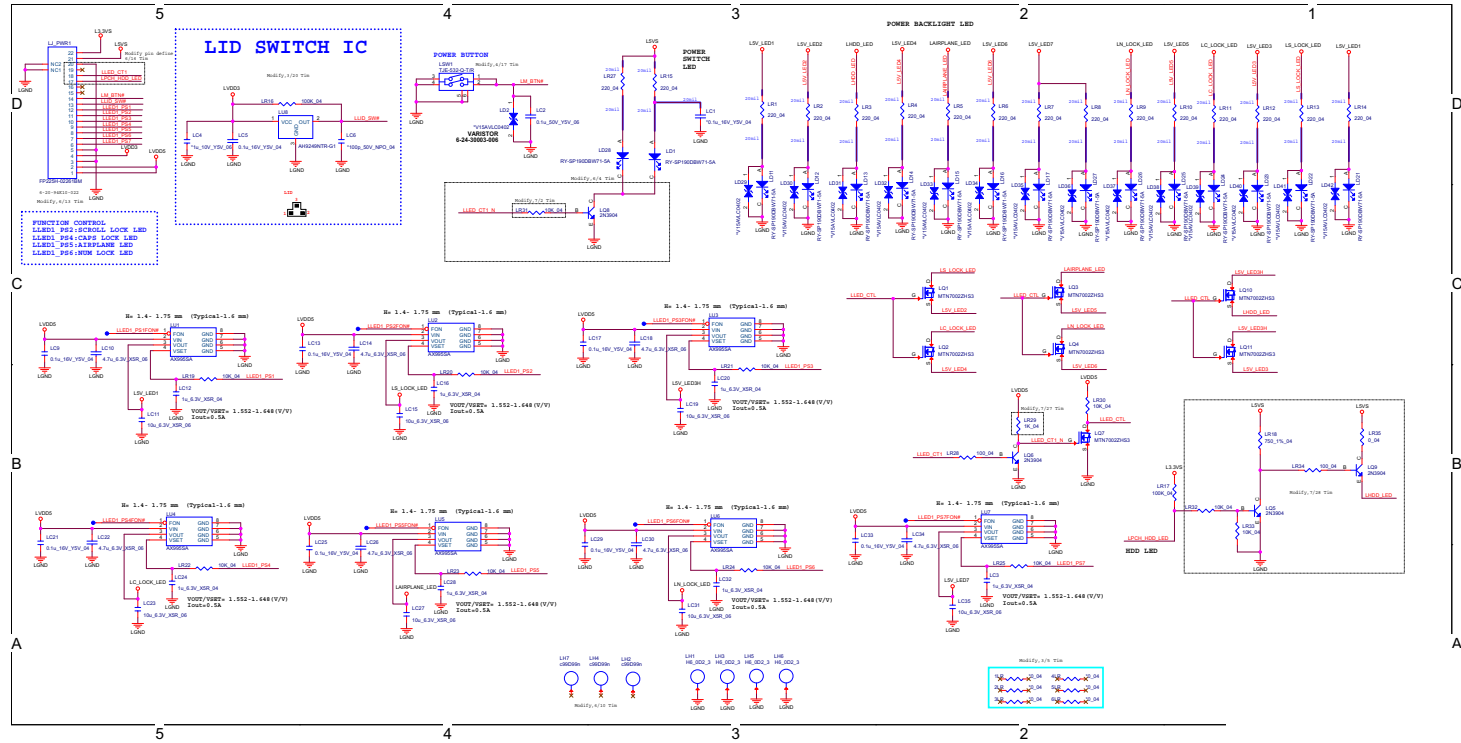
B.Schematic Diagrams

Schematic Diagrams

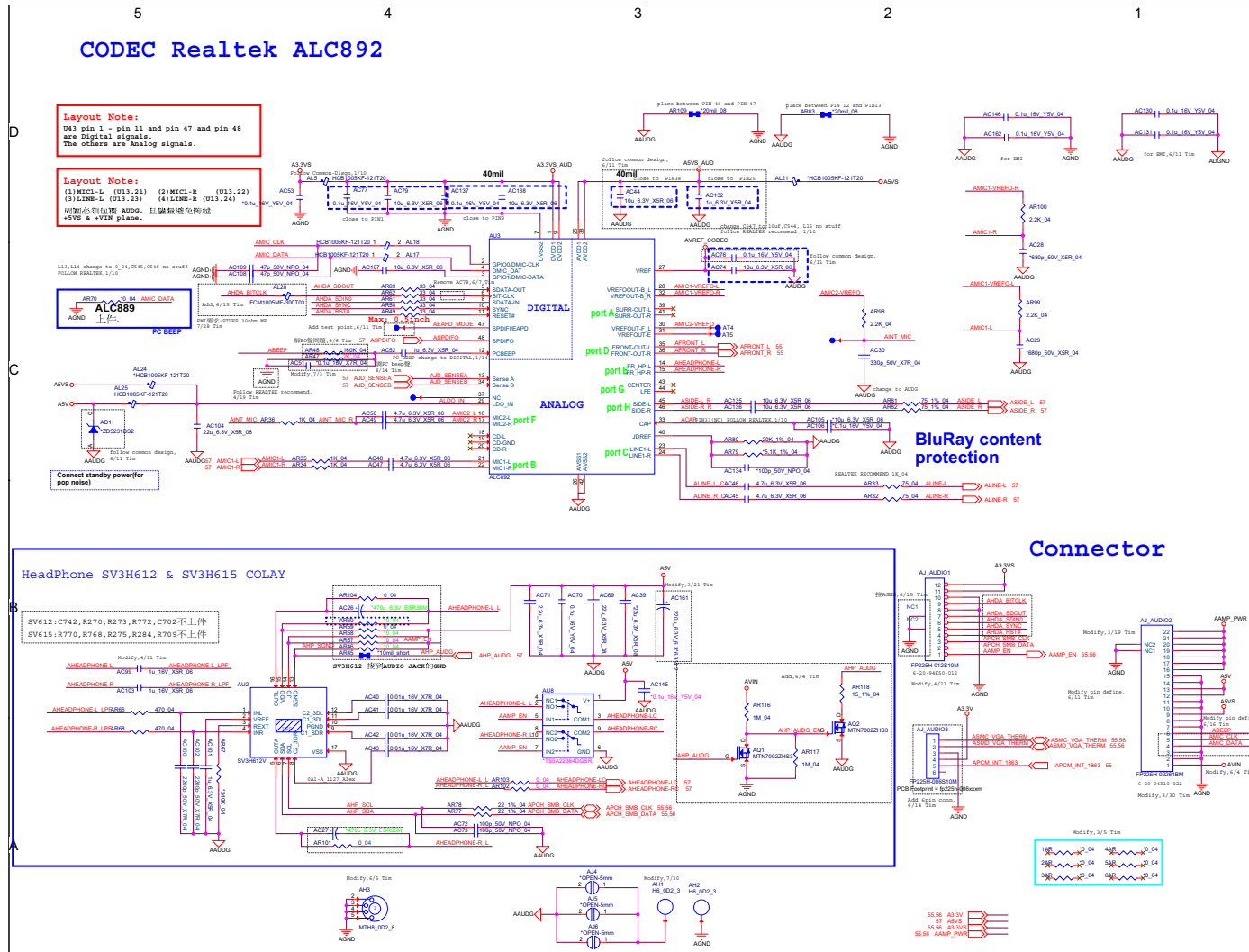
Power Switch LED Board

B.Schematic Diagrams

Sheet 53 of 58
Power Switch LED
Board



Audio Codec

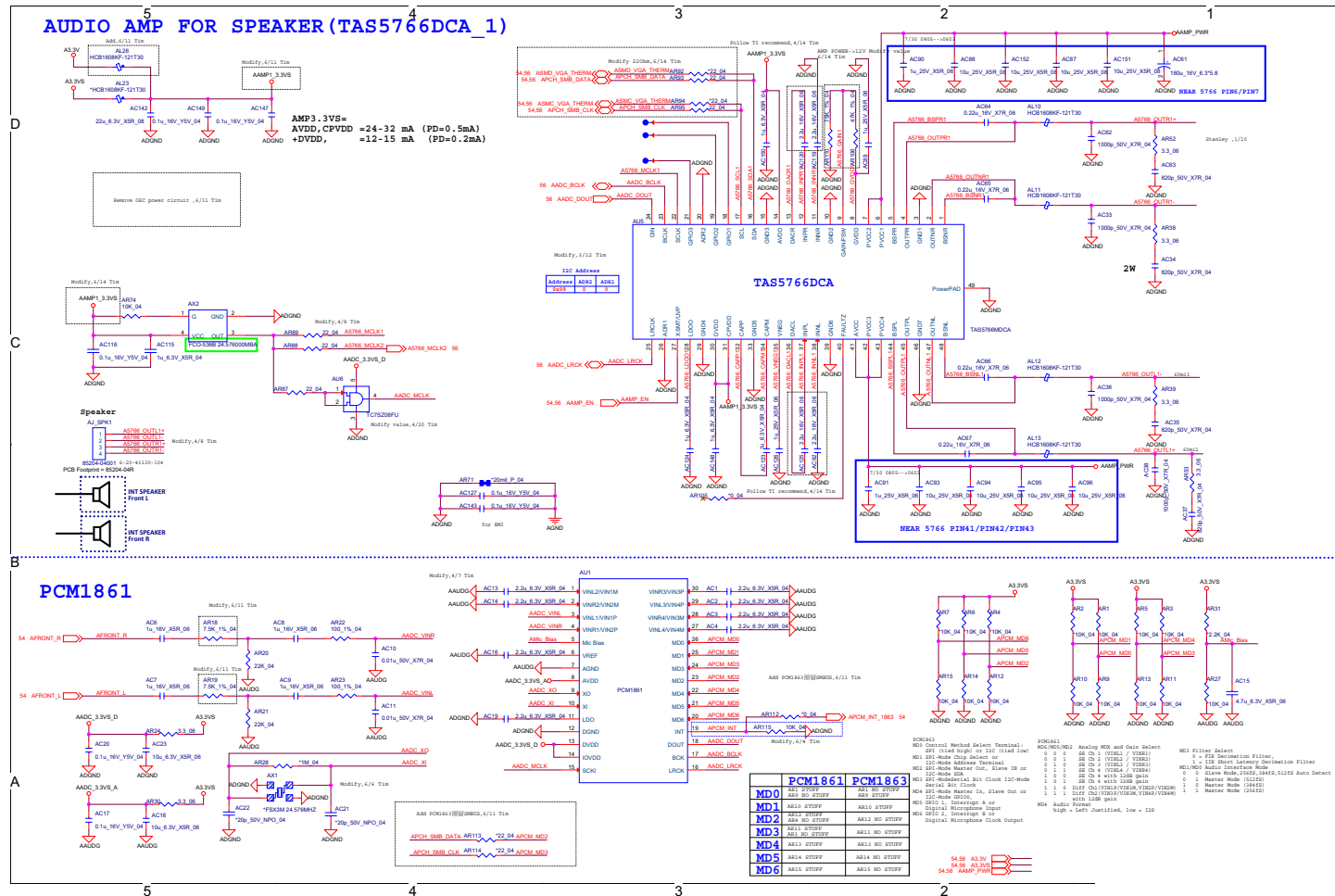


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Audio Codec

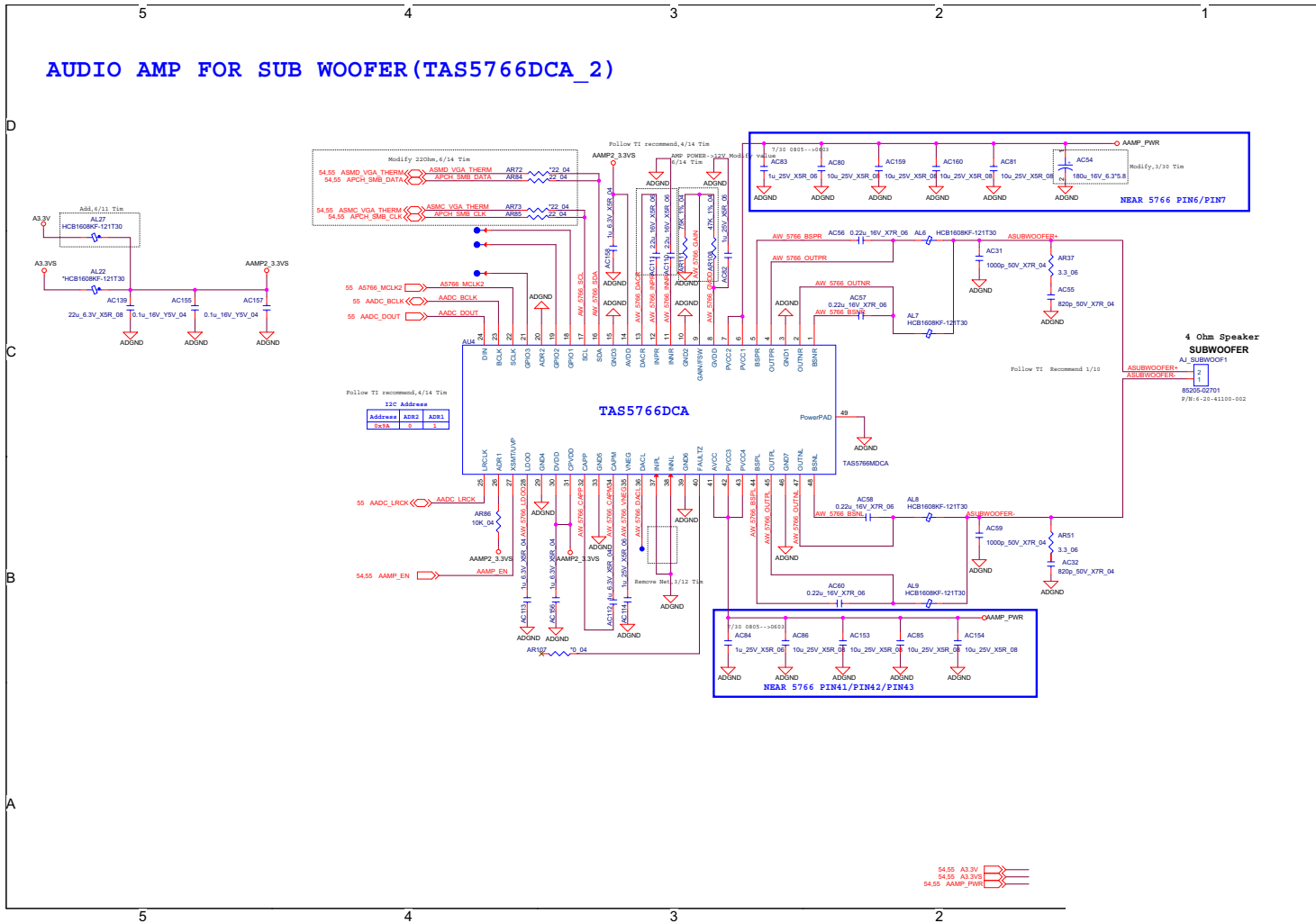
B.Schematic Diagrams

Audio Board (Speaker)

Sheet 55 of 58
Audio Board
(Speaker)



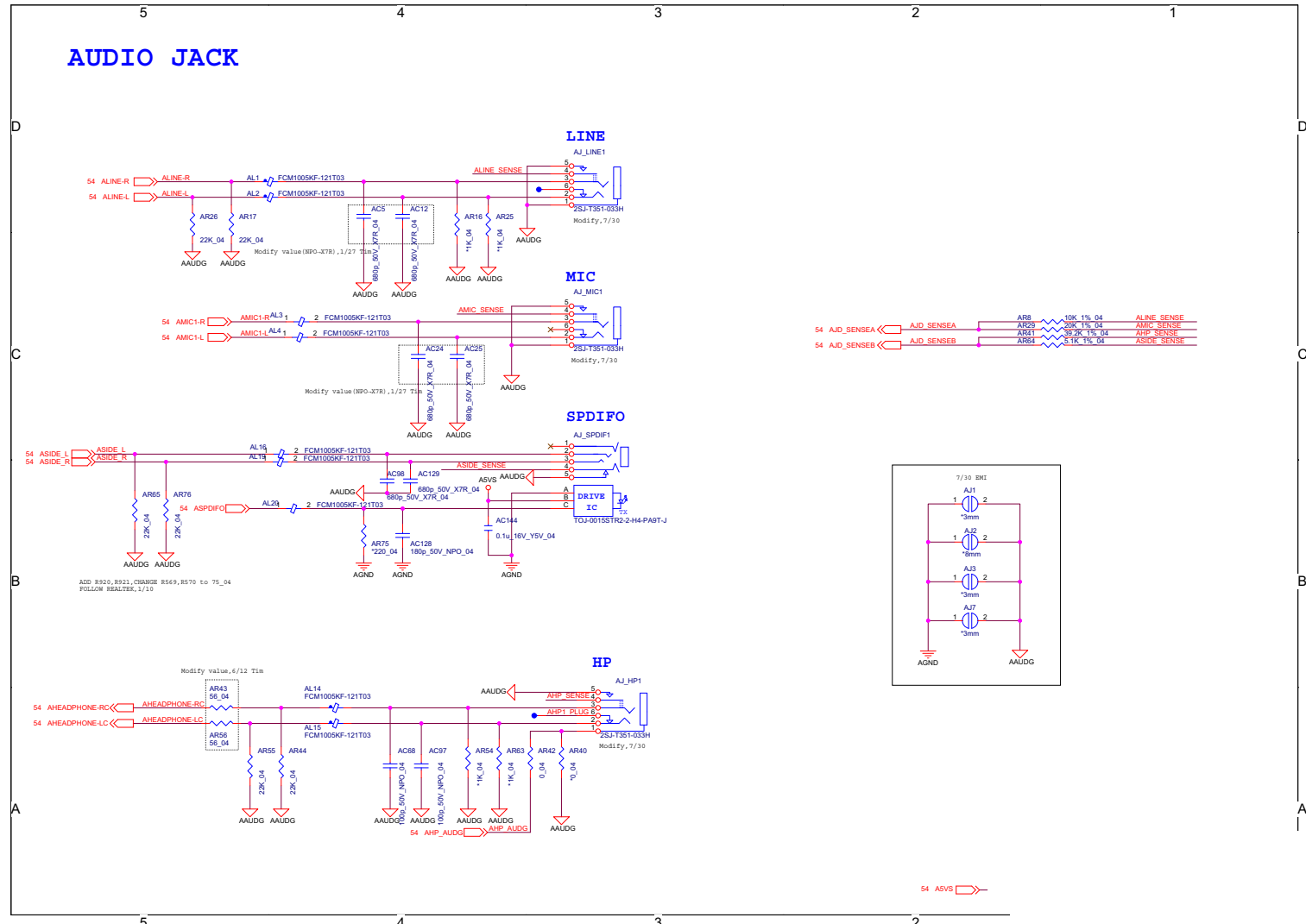
Audio Board (Subwoofer)



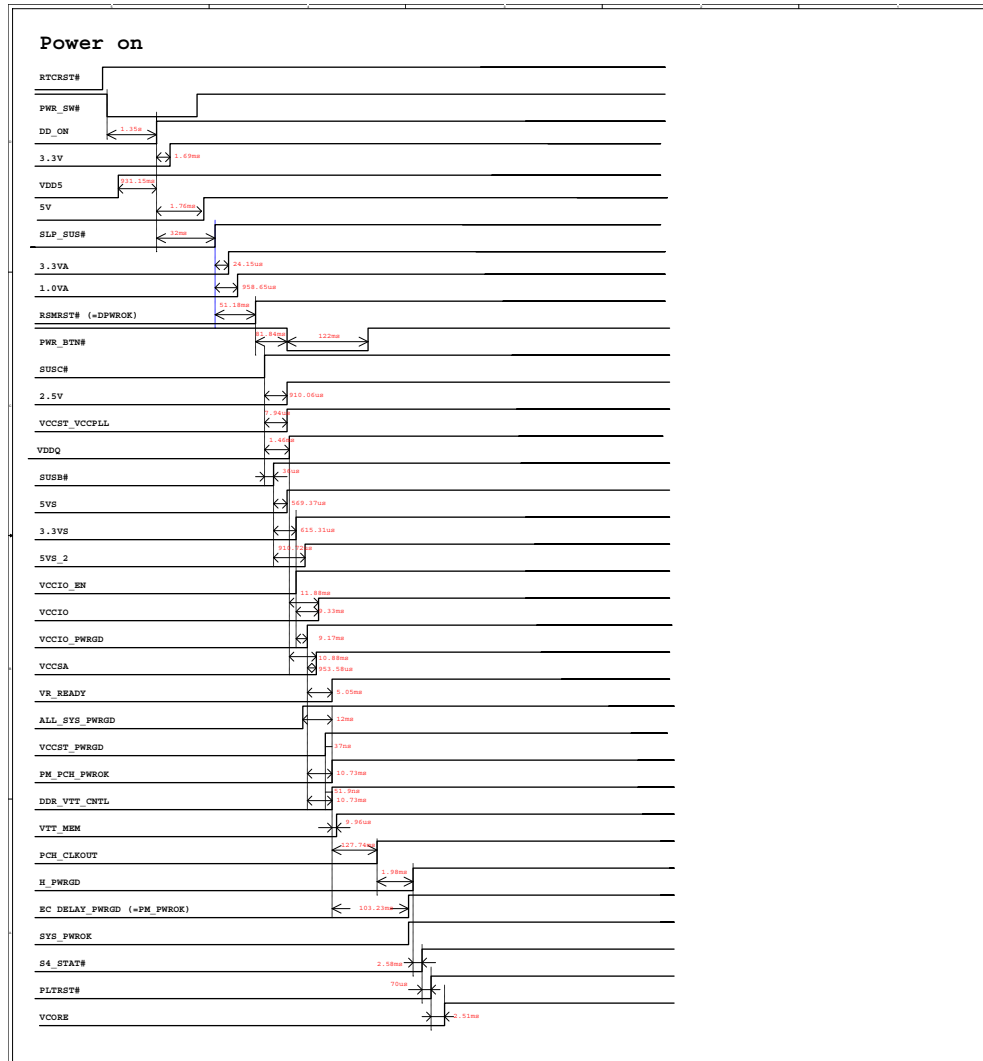
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Audio Board
(Subwoofer)

Audio Jack

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Audio Jack



Power Sequence



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Power Sequence

Schematic Diagrams

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 **V1.01.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 1.01.05, you **MAY NOT** then go back and flash the BIOS to ver 1.01.04).

BIOS Update

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 “**Starting MS-DOS**”. You will then be prompted to give “**Y**” or “**N**” responses to the programs being loaded by DOS. Choose “**N**” for any memory management programs.
2. You should now be at the DOS prompt e.g: DISK C:\> (C is the designated drive letter for the CD/DVD drive/USB flash drive).
3. **Type the following command** at the DOS prompt:

C:\> Flash.bat

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.