SERVICE MANUAL

P870KM1(-G)

notebook

Notebook Computer

P870KM1(-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 ***P870KM1(-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

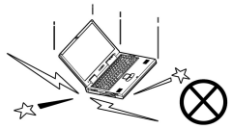
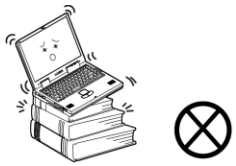
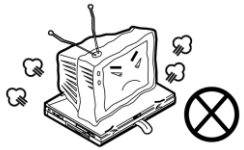
Follow basic safety precautions, including those listed below, to reduce the risk of fire, electric shock and injury to persons when using any electrical equipment:

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 - Dual Full Range AC/DC Adapters – AC in 100 - 240V, 50 - 60Hz DC Output 19.5V, 16.9A (**330 Watts**) with Power Converter Box.

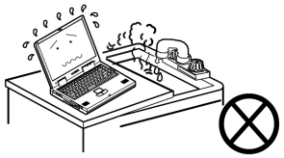
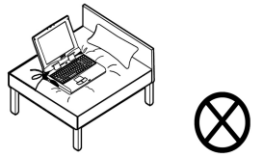
Instructions for Care and Operation

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

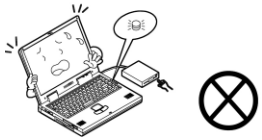
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.

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

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

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

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

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

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.

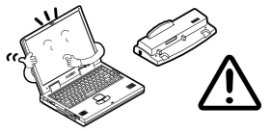
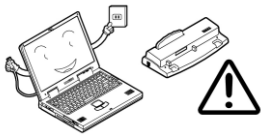
Also note the following when the cover is removed:

- 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.

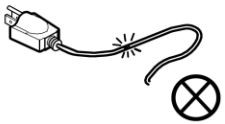
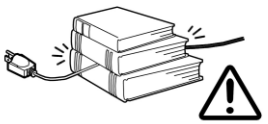
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices**.

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".

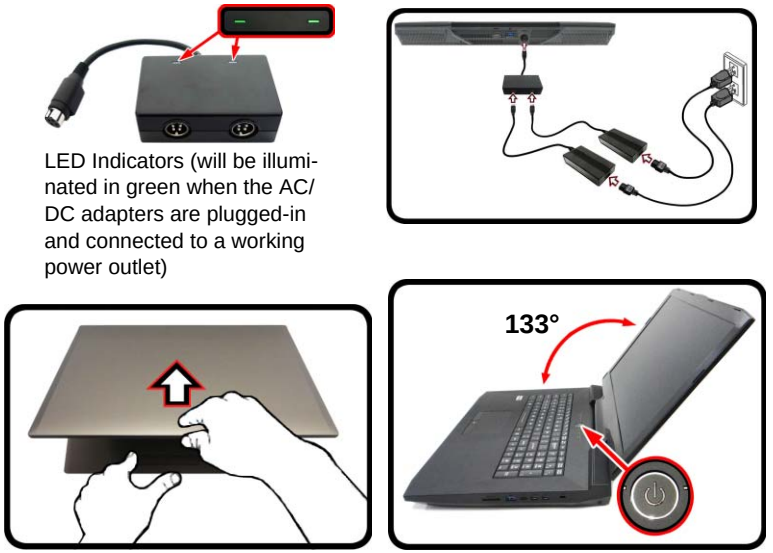


Figure 1
Opening the Lid/LCD/ Computer with AC/DC Adapter Plugged-In

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the ***P870KM1(-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 10*, 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 ***P870KM1(-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.

Specifications

Latest Specification Information

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

CPU Speed & Computer in DC Mode

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

Processor Options

i7-7700K (4.20GHz)*

8MB Smart Cache, **14nm**, DDR4-2400MHz, TDP 91W

i5-7600K (3.80GHz)*

6MB Smart Cache, **14nm**, DDR4-2400MHz, TDP 91W

i5-7400 (3.00GHz)

6MB Smart Cache, **14nm**, DDR4-2400MHz, TDP 65W

**Supports CPU overclocking technology depending on CPU SKU*

Video Adapter Options

NVIDIA® GeForce GTX 1080 PCIe Video Card

8GB GDDR5X Video RAM

Supports GPU Overclocking

Supports **NVIDIA® SLI Technology**

LCD Options

17.3" (43.94cm), 16:9, UHD (3840x2160)/*QHD (2560x1440)/FHD (1920x1080)

***Note:** QHD panels are available for systems with NVIDIA® G-SYNC™Technology only

Core Logic

Intel® Z270 Chipset

BIOS

AMI BIOS (64Mb SPI Flash-ROM)

Pointing Device

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

Keyboard

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

Memory

Four 260 Pin SO-DIMM Sockets Supporting **DDR4 2400MHz** Memory

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

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

Supports XMP 2666/3000 MHz (XMP depends on processor) and works in dual channel

SO-DIMM Memory Types

All SO-DIMM memory modules installed in the system should be identical (the same size and brand) in order to prevent unexpected system behavior.

Do not mix SO-DIMM memory module sizes and brands otherwise unexpected system problems may occur.

Audio

High Definition Audio Compliant Interface

S/PDIF Digital Output

Two Speakers

Sound Blaster Audio

ESS™ SABRE HIFI DAC for High Resolution Headphone Audio

Built-In Array Microphone

Sub-Woofer

Note: External 7.1CH Audio Output Supported by Microphone-In, Line-In and Line-Out and 2-in-1 Audio Combo 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**) Three 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

Intel PTT for Systems Without TPM Hardware

Interface

Five USB 3.0 (USB 3.1 Gen 1) Ports (Including one AC/DC Powered USB port)

Two USB 3.1 Gen 2/Thunderbolt 3 Combo Ports (Type C)

Two Mini DisplayPorts (1.3)

One HDMI-Out Port

One 2-In-1 Audio Jack (Headphone/ S/PDIF Optical Output Combo Jack)

One Microphone-In Jack

One Line-Out 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**

Slot 4 for **PCIe Gen3 x4 SSD**

Communication

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

2.0M FHD PC Camera Module

WLAN/ Bluetooth M.2 Modules:

(**Factory Option**) Intel® Dual Band Wireless-AC 8265 Wireless LAN (**802.11ac**) + Bluetooth 4.1

(**Factory Option**) Intel® Dual Band Wireless-AC 3168 Wireless LAN (**802.11ac**) + Bluetooth 4.0

(**Factory Option**) Qualcomm® Atheros Killer™ Wireless-AC 1535 Wireless LAN (**802.11ac**) + Bluetooth 4.1

(**Factory Option**) Wireless LAN (**802.11ad**) + Bluetooth 4.1 Combo

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)

Features

Supports NVIDIA® G-SYNC™ Technology

(G-SYNC is only supported if you have a G-SYNC capable display and a GTX series video adapter)

Virtual Reality Ready

Power

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

Dual Full Range AC/DC Adapters with the Power Converter Box

Full Range AC/DC Adapter

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

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

Power Converter

You must use the power converter supplied with the dual AC/DC adapters connected to power this computer. Do not use a single AC/DC adapter to power the system.

Environmental Spec

Temperature

Operating: 10°C - 35°C

Non-Operating: -20°C - 60°C

Relative Humidity

Operating: 20% - 80%

Non-Operating: 10% - 90%

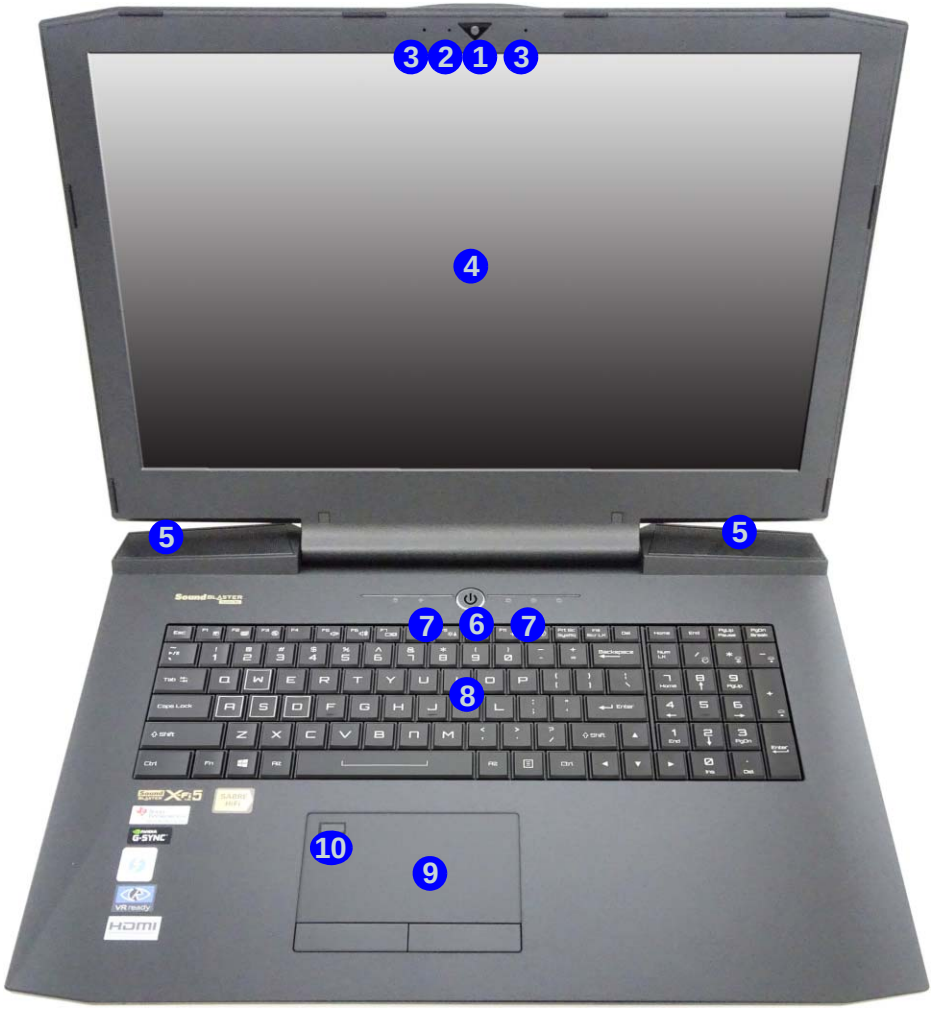
Dimensions & Weight

428mm (w) * 308mm (d) * 47.2mm (h)

5.5kg (Barebone System with 1 Video Card and 89WH Battery)

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

External Locator - Front & Right side Views

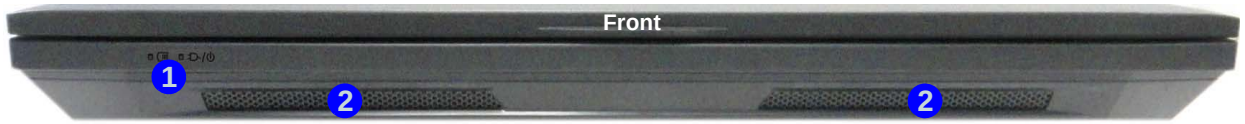


Figure 2
Front Views

1. LED Power Indicators
2. Vents

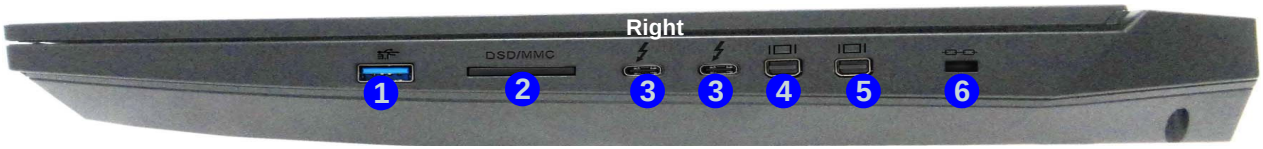


Figure 3
Right Side Views

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

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. RJ-45 LAN Jacks
2. USB 3.0/3.1 Ports
3. Powered USB 3.0/ 3.1 Port
4. Line-In Jack
5. Microphone Jack
6. Line-Out Jack
7. Headphone & S/ PDIF-Out combo Jack

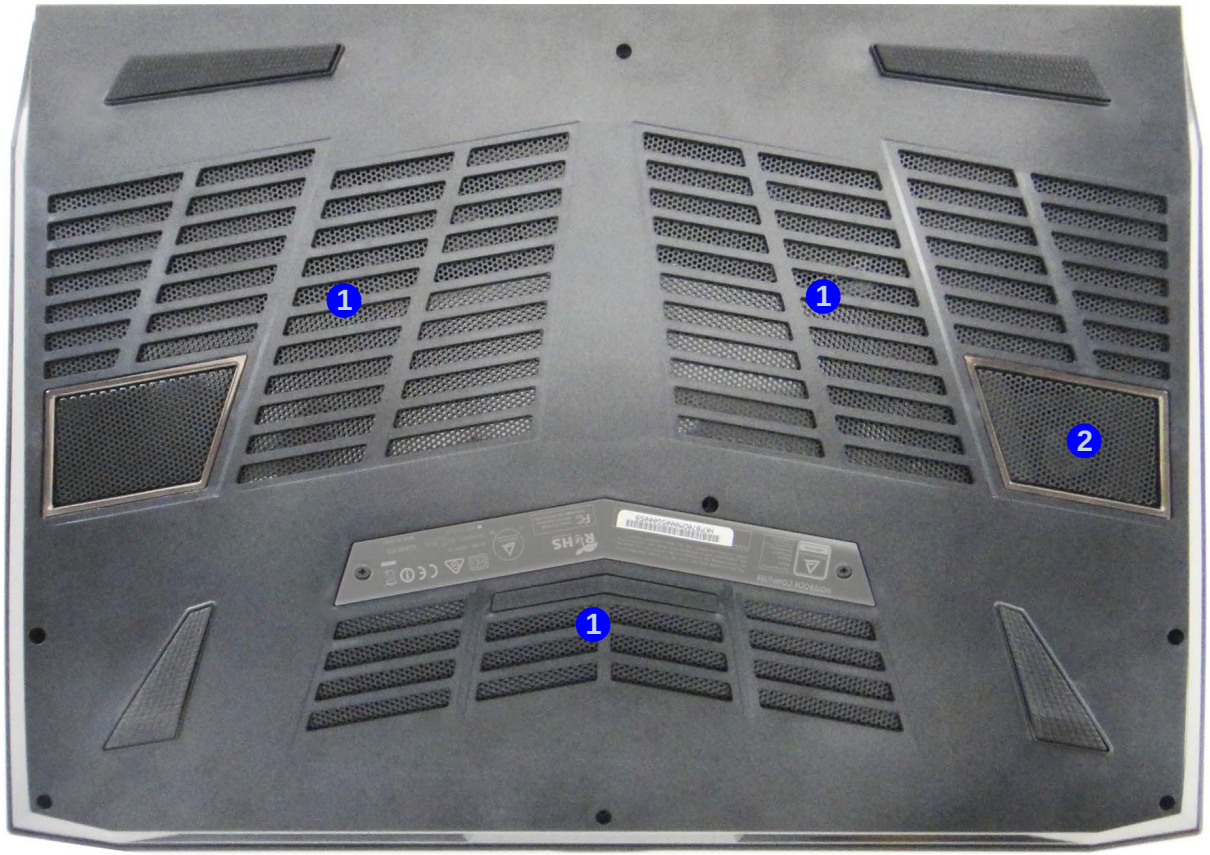
Figure 5
Rear View

1. Vent/Fan Intake
2. HDMI-Out Port
3. USB 3.0/3.1 Port
4. DC-In Jack

External Locator - Bottom View

Figure 6
Bottom View

1. Vents
2. Sub Woofer



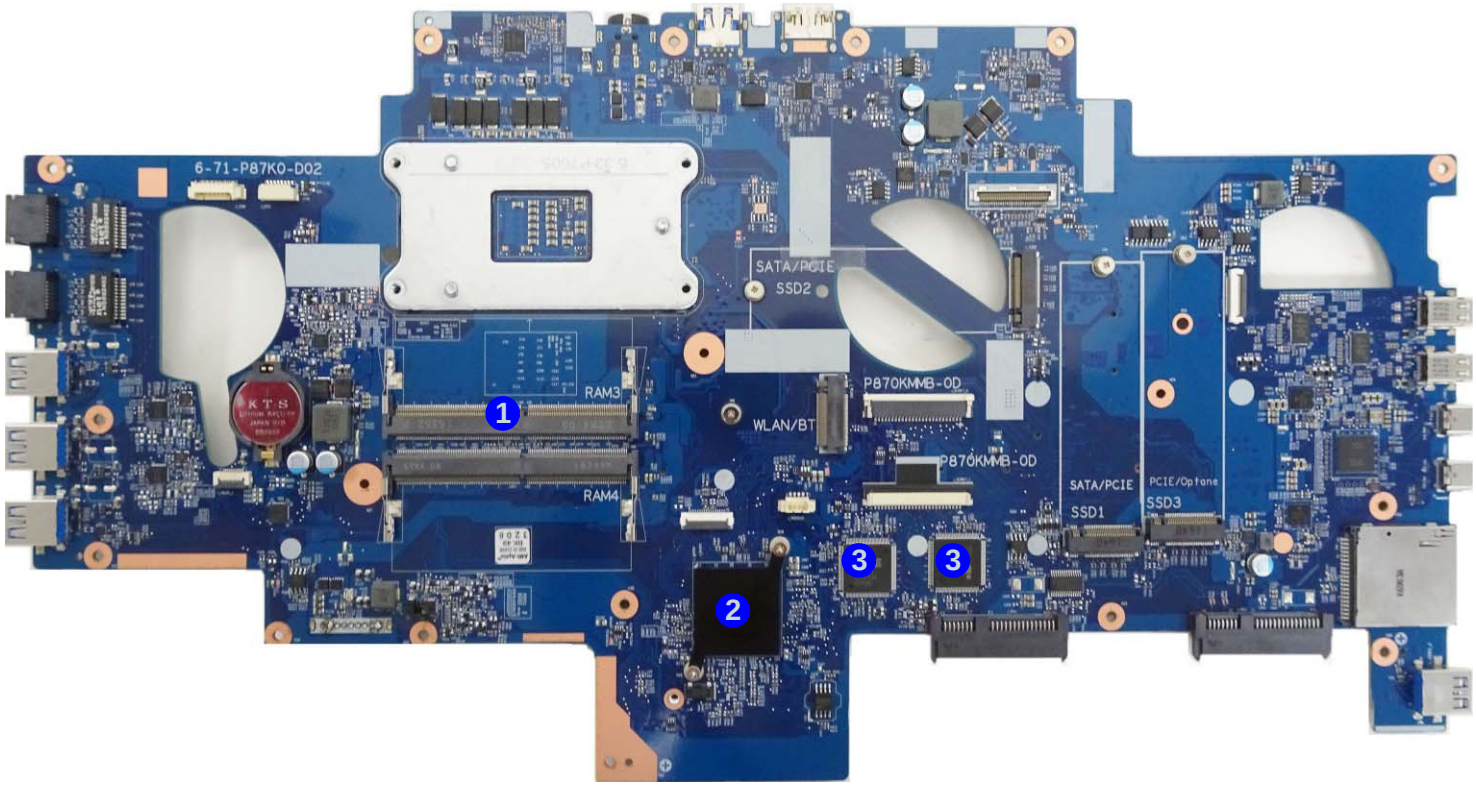
Overheating

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

Mainboard Overview - Top (Key Parts)

Figure 7
Mainboard Top Key Parts

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



Mainboard Overview - Bottom (Key Parts)

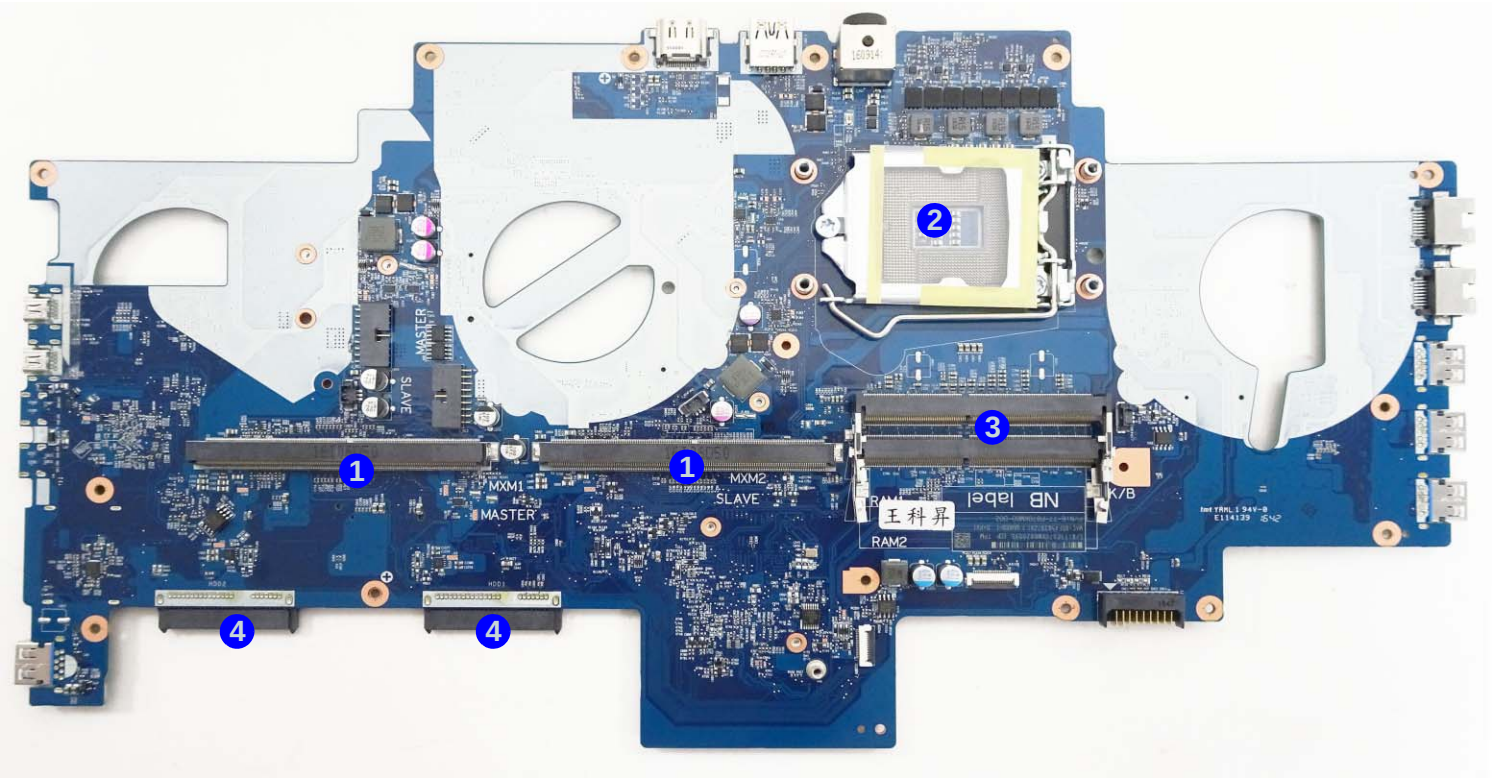


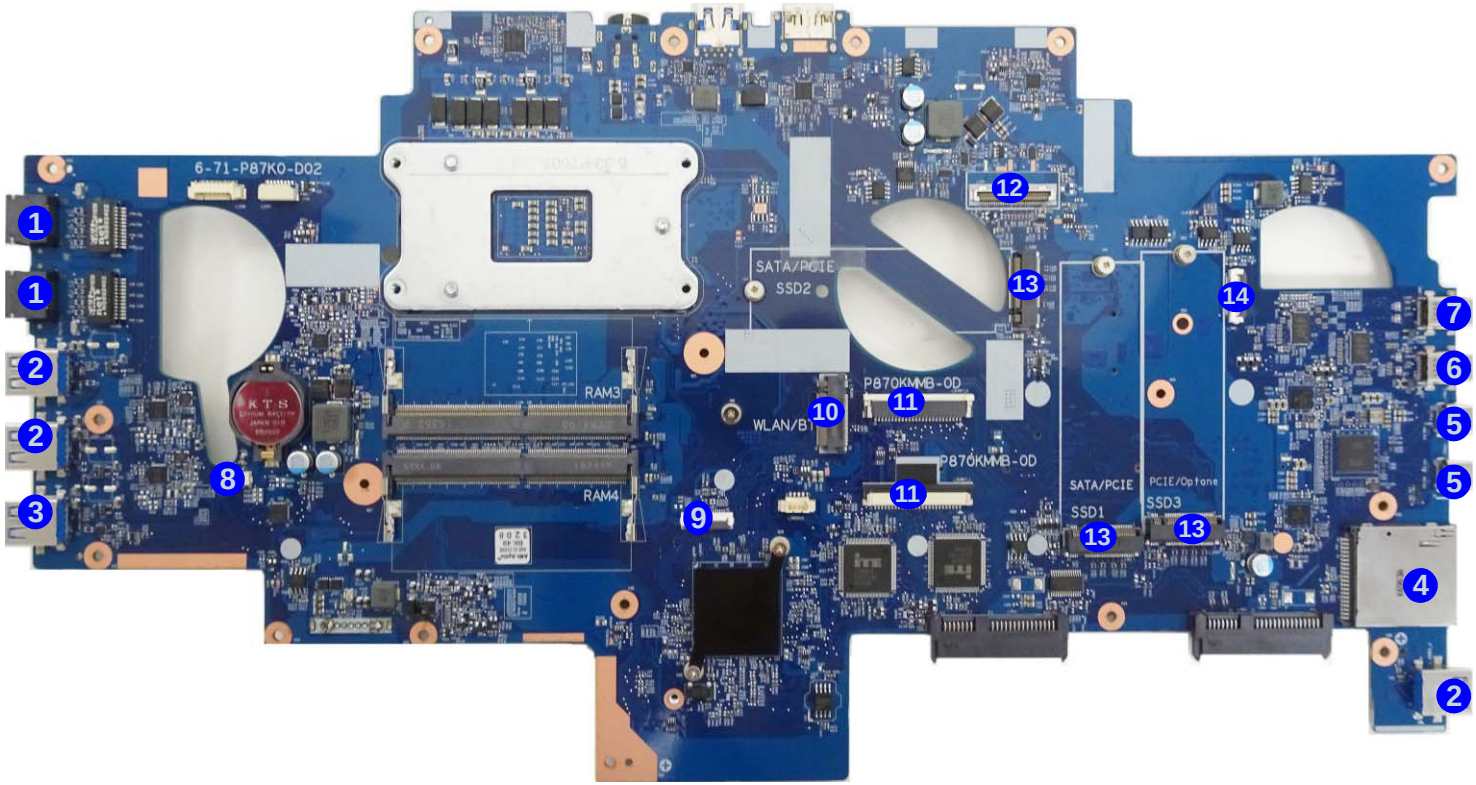
Figure 8
Mainboard Bottom Key Parts

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

Mainboard Overview - Top (Connectors)

Figure 9
Mainboard Top Connectors

1. RJ-45 LAN Jacks
2. USB 3.0/3.1 Ports
3. Powered USB 3.0/ 3.1 Port
4. Multi-in-1 Card Reader
5. USB 3.1 Ports
6. Mini Display Port 1
7. MIni Display Port 2
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)

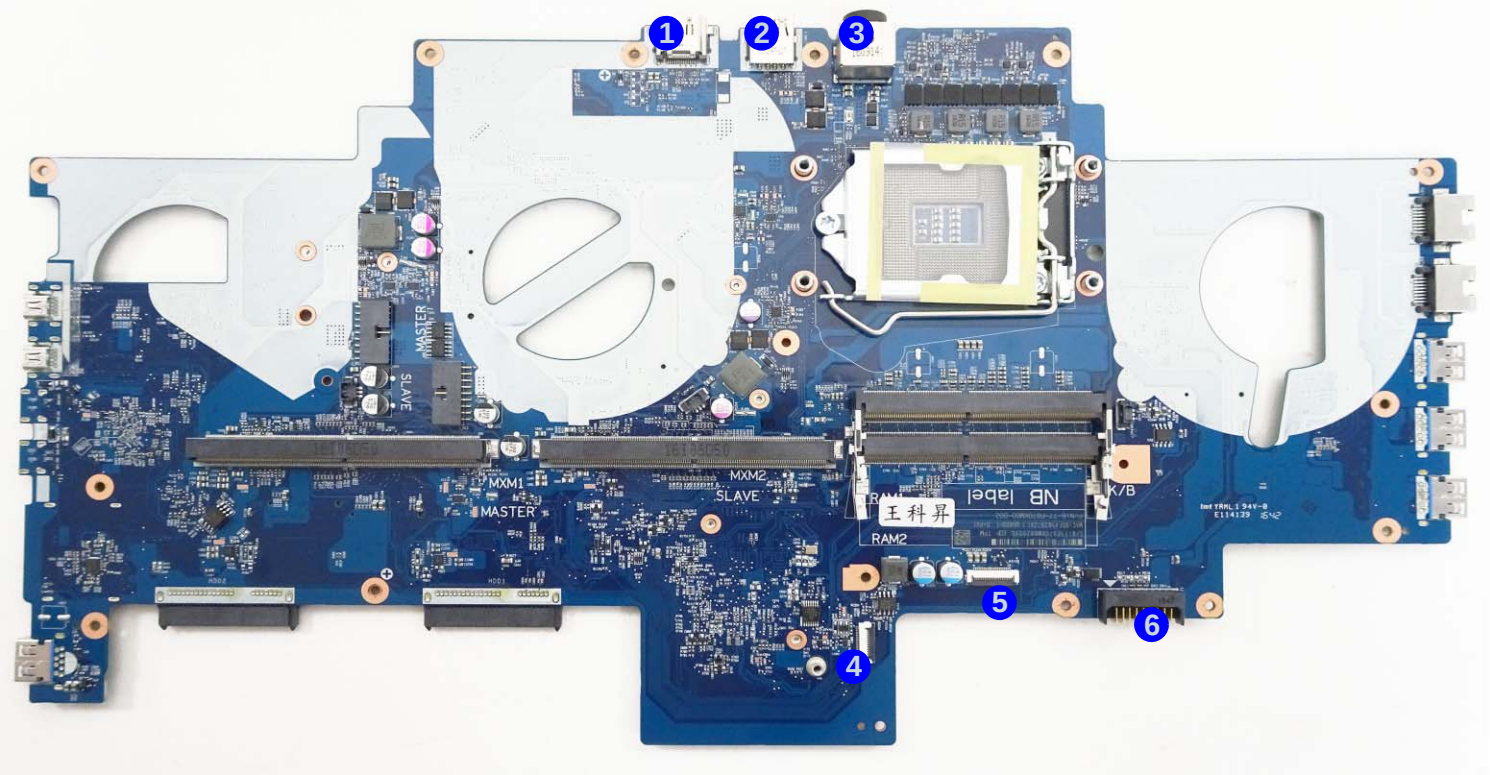


Figure 10
Mainboard Bottom Connectors

1. HDMI-Out Port
2. USB 3.0/3.1 Port
3. DC-In Jack
4. 126 Pin Audio Connector
5. 22 Pin Audio Connector
6. Battery Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***P870KM1(-G)*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

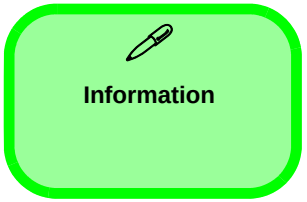
We suggest you completely review any procedure before you take the computer apart.

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.



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

Maintenance Tools

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

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

Connections

Connections within the computer are one of four types:

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

Maintenance Precautions

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

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

Power Safety Warning

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

Cleaning

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

Disassembly Steps

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

To remove the 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 *page 2 - 14*
3. Install the video card *page 2 - 15*

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 - 16*
4. Install the processor *page 2 - 18*

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 - 19*

To remove the WiGig Module:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 12*
3. Remove the WiGig *page 2 - 21*

To remove and install 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 - 22*
4. Remove the M.2 SSD-2 *page 2 - 23*
5. Install the M.2 SSD *page 2 - 24*

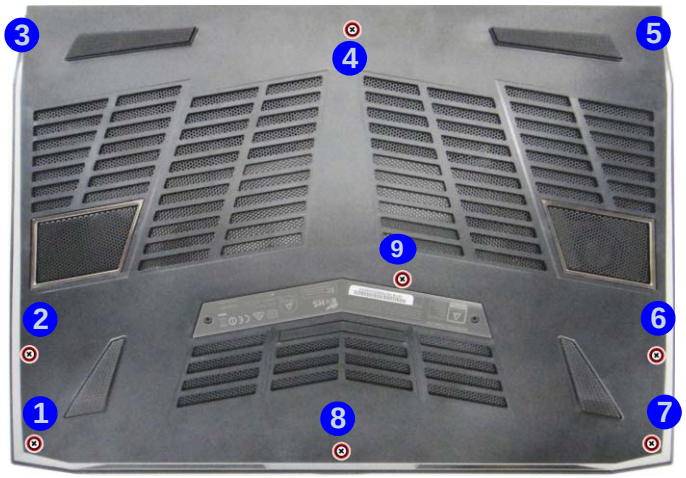
Removing the Battery

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*).

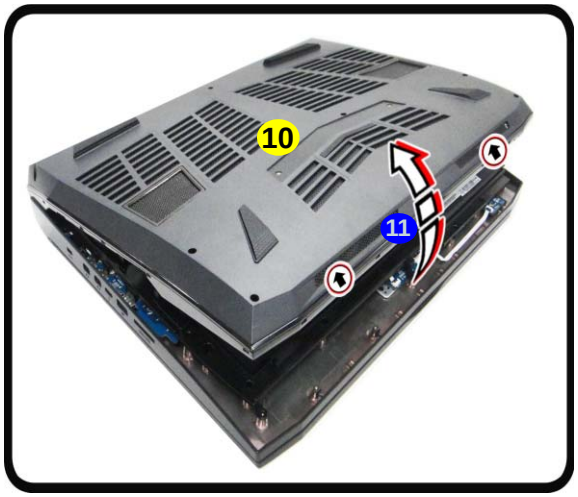
Figure 1
Battery Removal

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

a.



b.



c.

10. Bottom Case

- 9 Screws

Figure 2
Battery Removal (cont'd.)

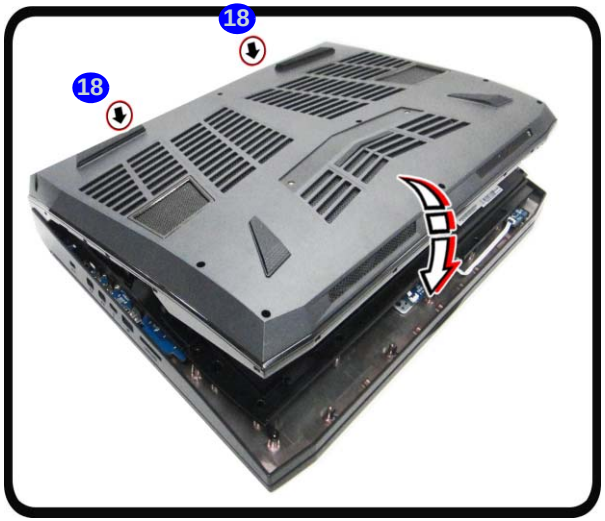
d. Remove the screws.
e. Lift the battery off the computer.
f. Reinsert the bottom case and tighten the screws.

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.

d.

e.

f.



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.

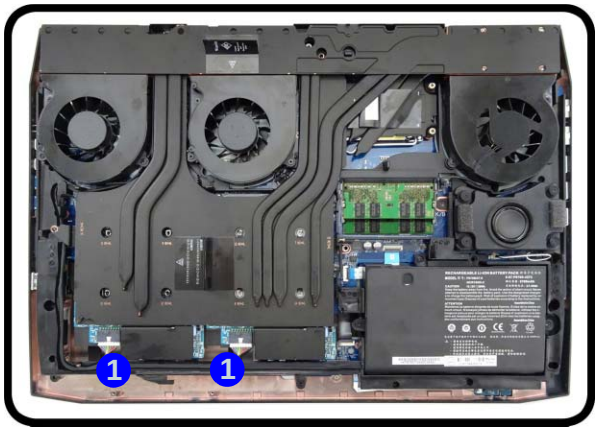
Hard Disk Removal Process

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*).

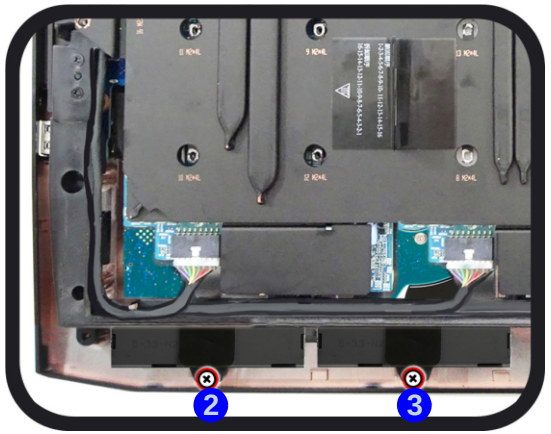
Figure 3
HDD Assembly Removal

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

a.



b.



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.

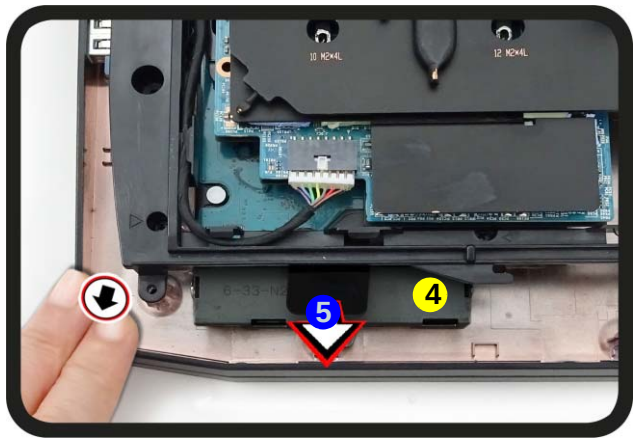
- 2 Screws

Figure 4
HDD Assembly Removal (cont'd.)

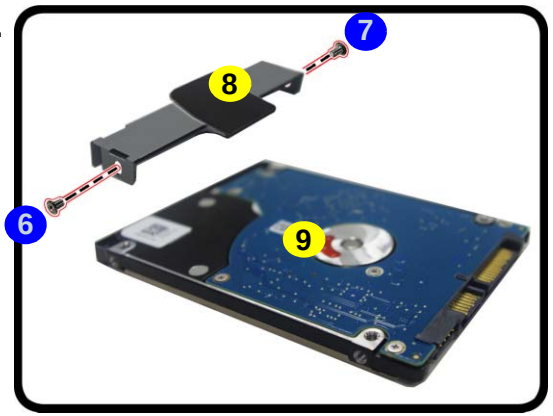
c. Slightly lift and pull the HDD in the direction of the arrow.
d. Remove the screws and bracket from the HDD.

4. Slightly lift the hard disk assembly 4 by the tab at an angle while holding the notebook in place and pull it in the direction of arrow 5 to release (***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 and take care when inserting the new hard disk by lifting the mylar underneath the video card for smooth insertion).

c.



d.



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:

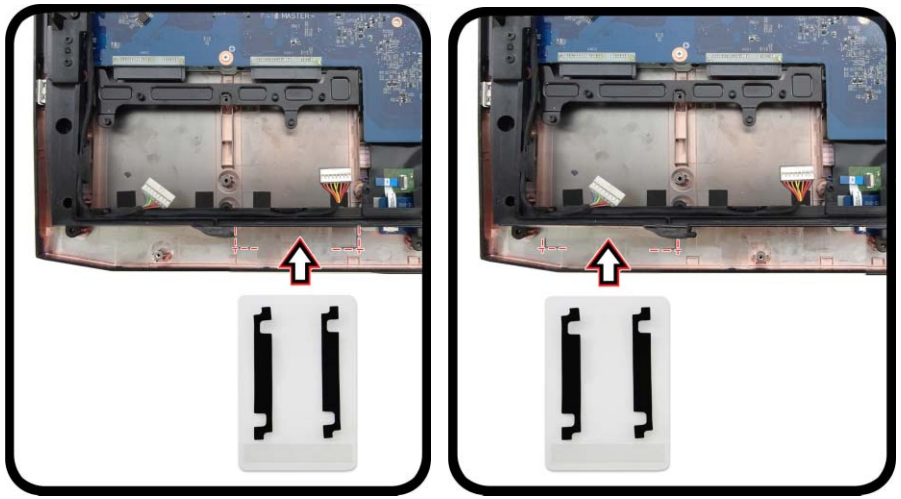
Two changeable 2.5" (6cm) **7.0mm** (h) **SATA** (Serial) Hard Disk Drives/Solid State Drives (SSD) supporting RAID level 0/1
Or
One changeable 2.5" (6cm) **9.5mm** (h) **SATA** (Serial) Hard Disk Drive/Solid State Drive (SSD)

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

Figure 6
RAM Module Removal

a. Locate the module.
b. Gently pull the two release latches on the sides of the memory socket(s) in the direction indicated below.
c. 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.

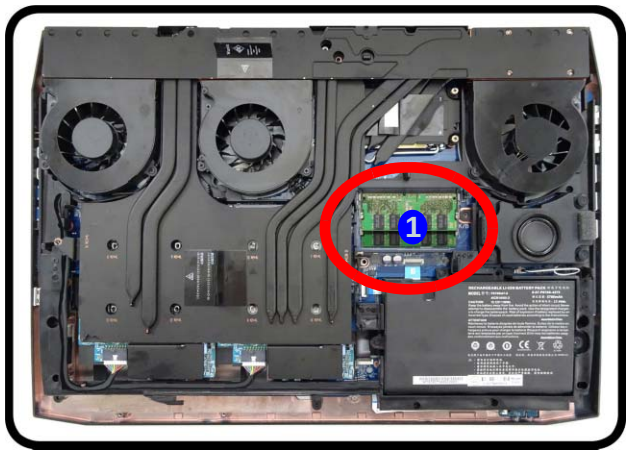
Note that the RAM located under the keyboard is not user upgradable.

Memory Upgrade Process

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

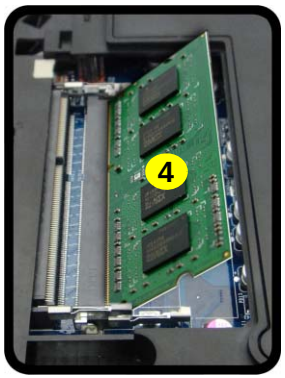
4. RAM Module

a.



b.

c.



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.

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.

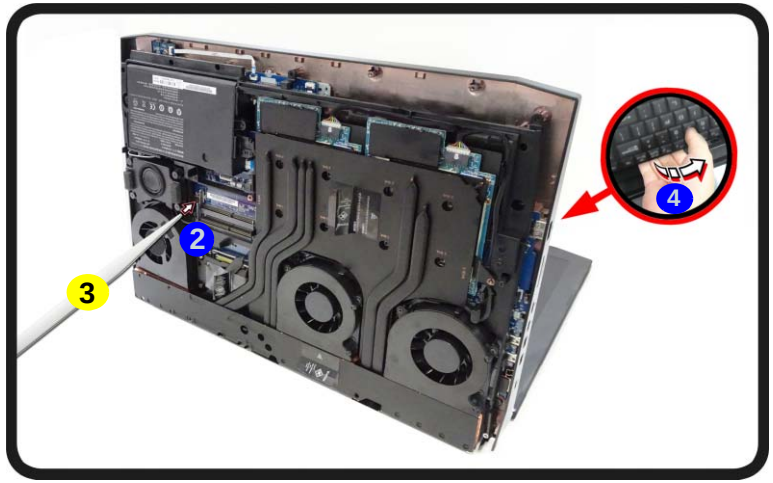
Two primary memory sockets are located under component bay cover (the bottom case cover), and two secondary memory sockets are located under the keyboard. If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay cover.

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

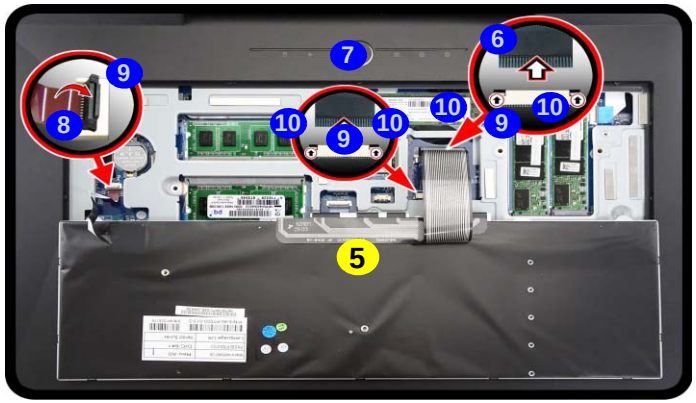
- 1 Screw

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.

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.

c.

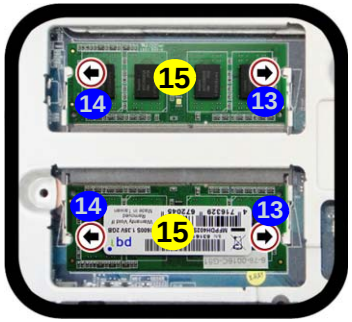


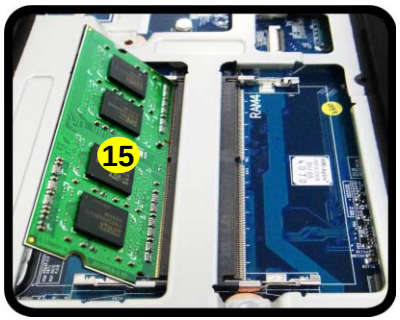
d.

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.

e.





5. Keyboard
15. RAM Modules

Figure 9
Video Card 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.

Removing and Installing the Video Card

Video Card Removal Procedure

1. Turn **off** the computer, turn it over and remove the battery (*page 2 - 5*).
2. Remove screws 1 - 16 from the heat sink unit in the order indicated on the label (i.e screw 16 first through to screw 1 last) (*Figure 9a*).
3. Carefully (**it may be hot**) remove the heat sink unit 18 by lifting it by the tabs 17 (*Figure 9b*).
4. Remove the connector 19 & 20 and screws 21 - 24 from the video card. The video card 25 will pop up.
5. Remove the video card 25 (*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.

18. Heat Sink Unit
25. Video Cards

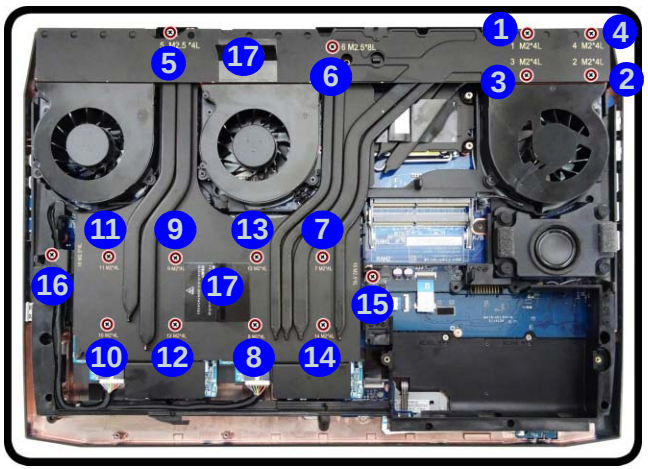
- 20 Screws

Heat Sink Screw Removal and Insertion

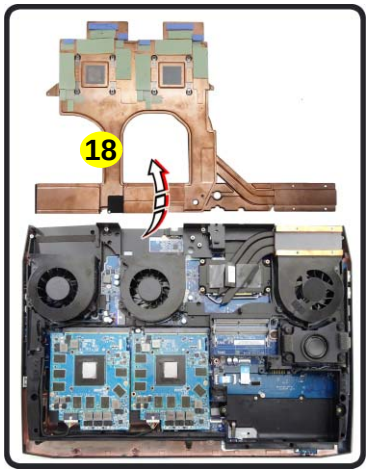
Remove the screws from the heat sink in the order indicated here: **16-15-14~3-2-1**.

When tightening the screws, make sure that they are tightened in the order: **1-2-3~14-15-16**.

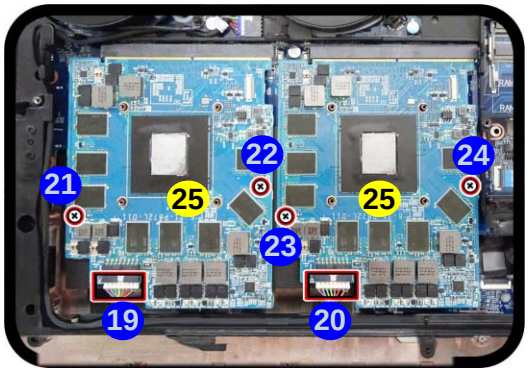
a.

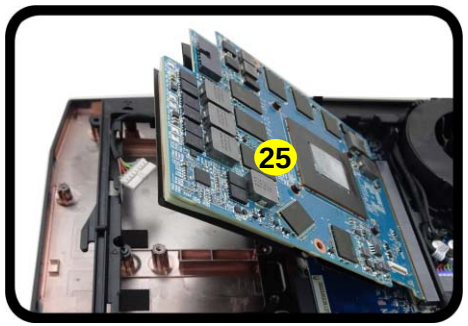


b.

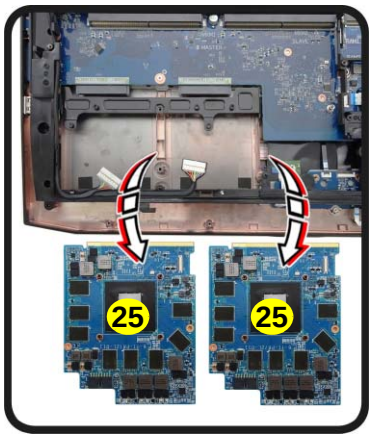


c.





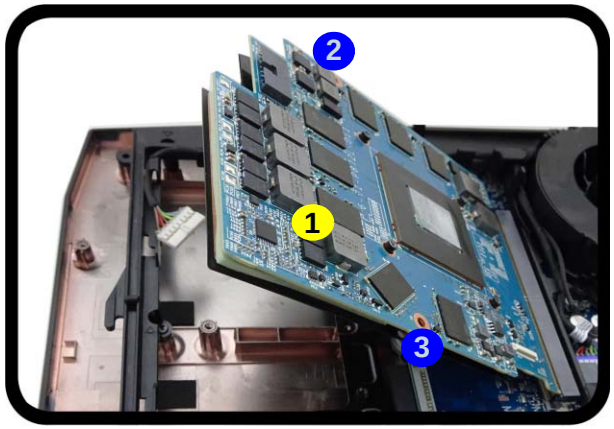
d.



Installing a New Video Card

1. Prepare to fit the video card 1 into the slot by holding it at about a 30° angle (***Figure 10a***).
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 10b***).
3. Fit the connectors firmly into the socket, straight and evenly.

a.



b.

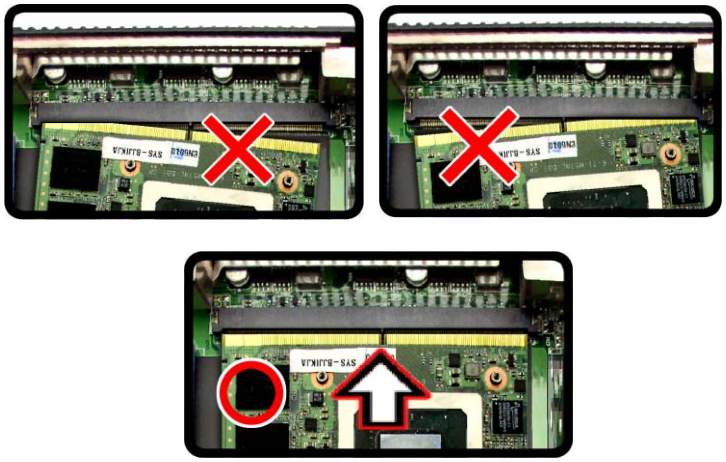


Figure 10
Installing a New Video Card

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

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 2 & 3 (***Figure 9 on page 2 - 14***).
7. Place the heat sink back on the card, and secure the screws in the order indicated in ***Figure 9 on page 2 - 14***.
8. Reinsert the component bay cover, and secure with the screws as indicated in ***Figure 2 on page 2 - 6***.

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.

1. Video Card

- 2 Screws

Removing and Installing the Processor

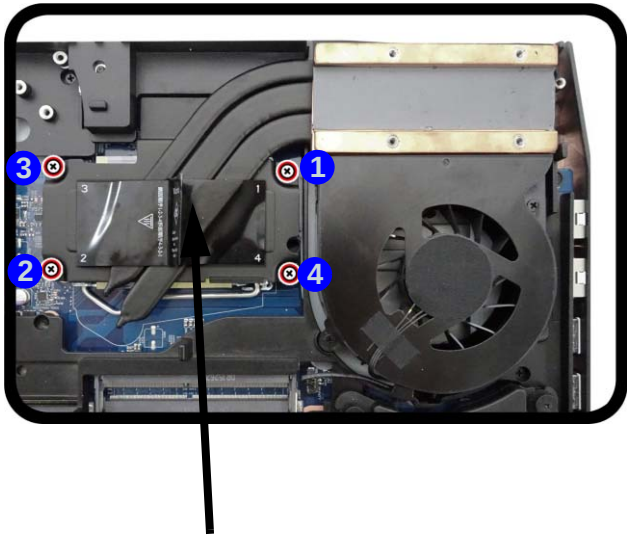
Processor Removal Procedure

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 11a***).
3. Carefully (it may be hot) remove the heat sink unit 5 (***Figure 11b***).

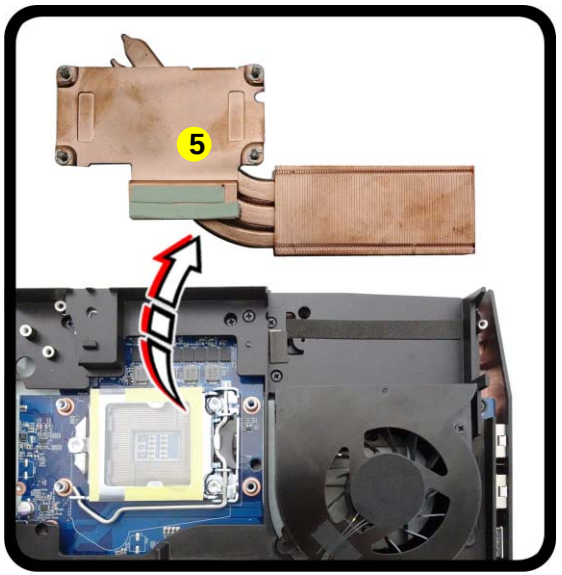
Figure 11
Processor Removal Procedure

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

a.



b.



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

5. Heat Sink Unit

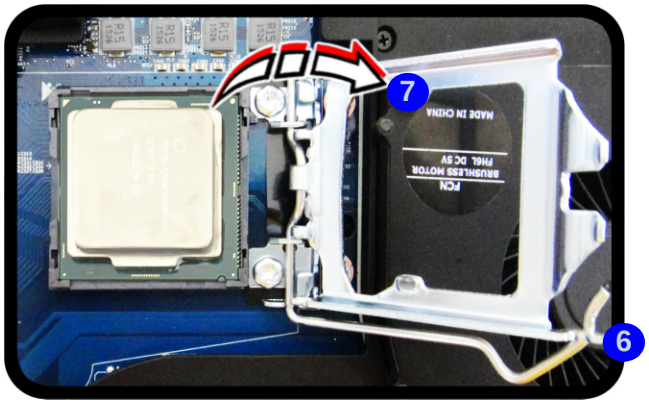
- 4 Screws

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 12c*).
6. Carefully (it may be hot) lift the CPU A up out of the socket (*Figure 12d*).
7. See *page 2 - 18* 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!).

Figure 12
Processor Removal (cont'd)

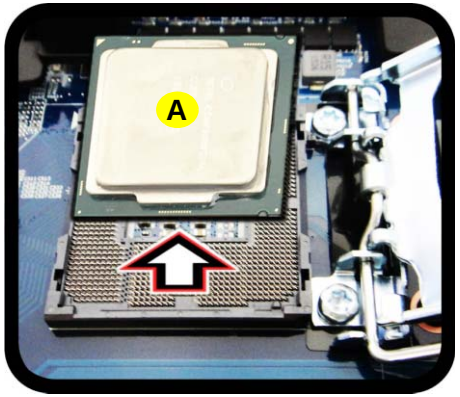
c. Move the latch and bracket fully in the direction indicated to unlock the CPU.
d. Lift the CPU out of the socket.

c.



Unlock

d.



Caution

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

A. CPU

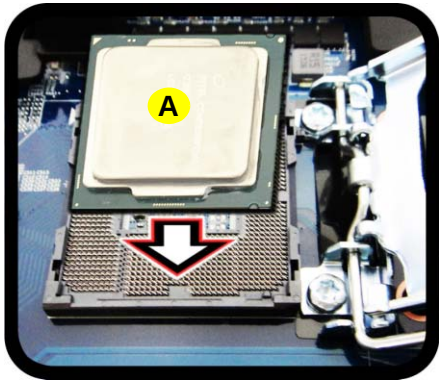
Figure 13
Processor Installation

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

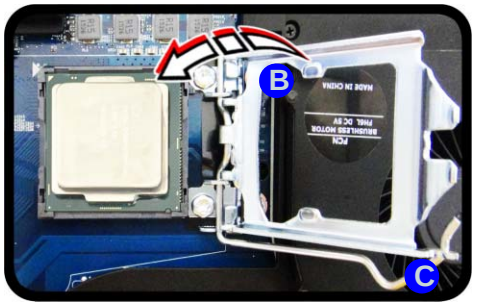
Processor Installation Procedure

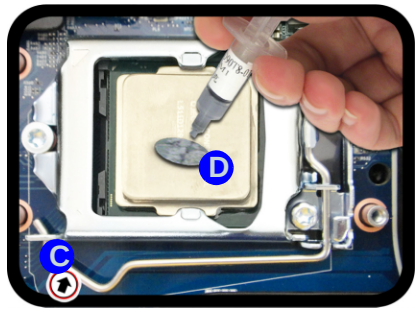
1. Insert the CPU A; pay careful attention to the pin alignment (***Figure 13a***), it will fit only one way (DO NOT FORCE IT!).
2. Move the bracket B and latch C fully in the direction indicated to lock the CPU.
3. Apply the thermal grease D to the top of the CPU as shown (***Figure 13b***).
4. Insert the heat sink unit E as indicated in ***Figure 13c***.
5. Tighten the CPU heat sink screws in the order 1 - 4 (the order as indicated on the label and ***Figure 13d***).
6. Replace the CPU fan, component bay cover and tighten the screws (***page 2 - 16***).

a.

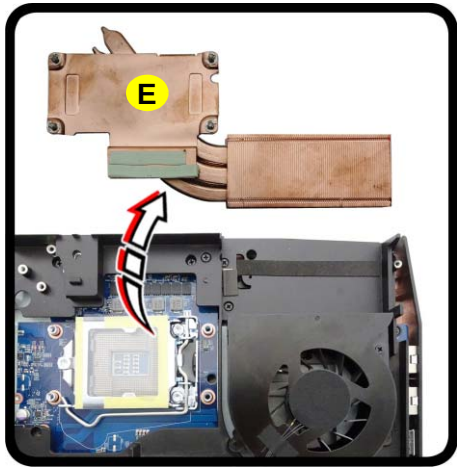


b.

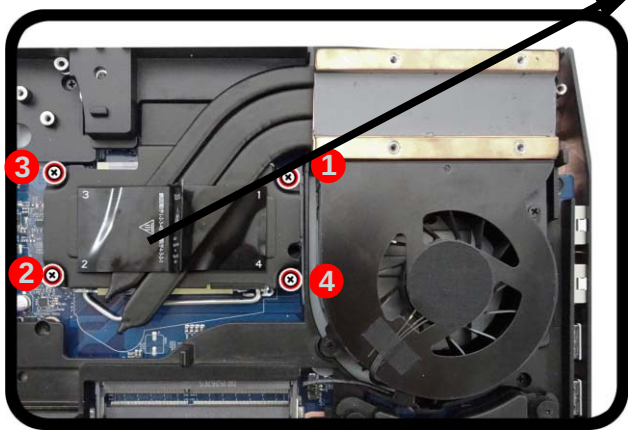




c.



d.



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 14a*).
3. Carefully disconnect cables 2 - 3, then remove screw 4 from the module socket (*Figure 14b*).
4. The Wireless LAN module 5 will pop-up (*Figure 14c*).
5. Lift the Wireless LAN module (*Figure 14d*) up and off the computer.

.

a.

b.

c.

d.

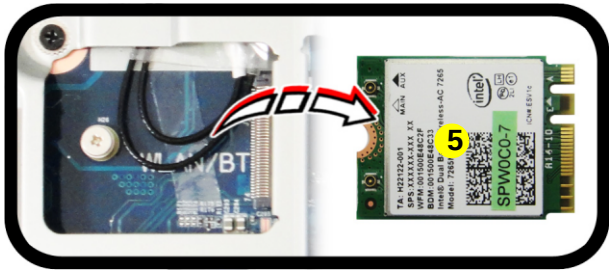


Figure 14
Wireless LAN Module Removal

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, WiGig 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	
WiGig	WM 1	Blue	White
	WM 2	Black	Transparent
	WM 3	Black	

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

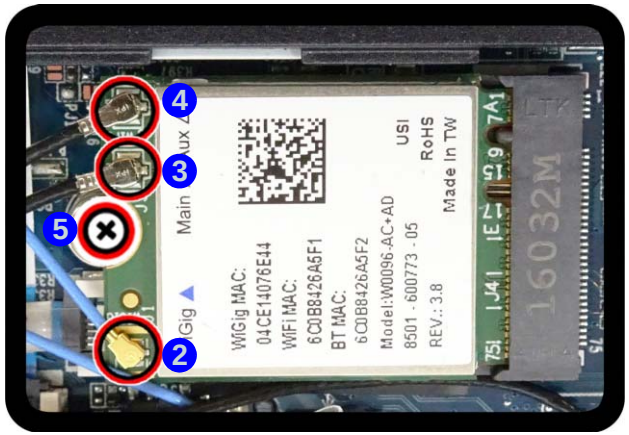
Removing the WiGig Module

1. Turn **off** the computer, remove the battery (***page 2 - 5***) and the keyboard (***page 2 - 12***).
2. The module will be visible at point 1 under the keyboard (***Figure 15a***).
3. Carefully disconnect cables 2 - 3, then remove screw 4 from the module socket (***Figure 15b***).
4. The module 5 will pop-up (***Figure 15c***).
5. Lift the module (***Figure 15d***) up and off the computer.

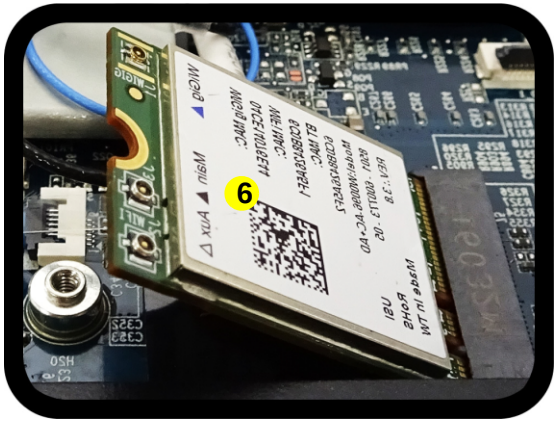
.

a.

b.



c.



d.

Figure 15
WiGig Module Removal

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

5. WiGig Module

- 1 Screw

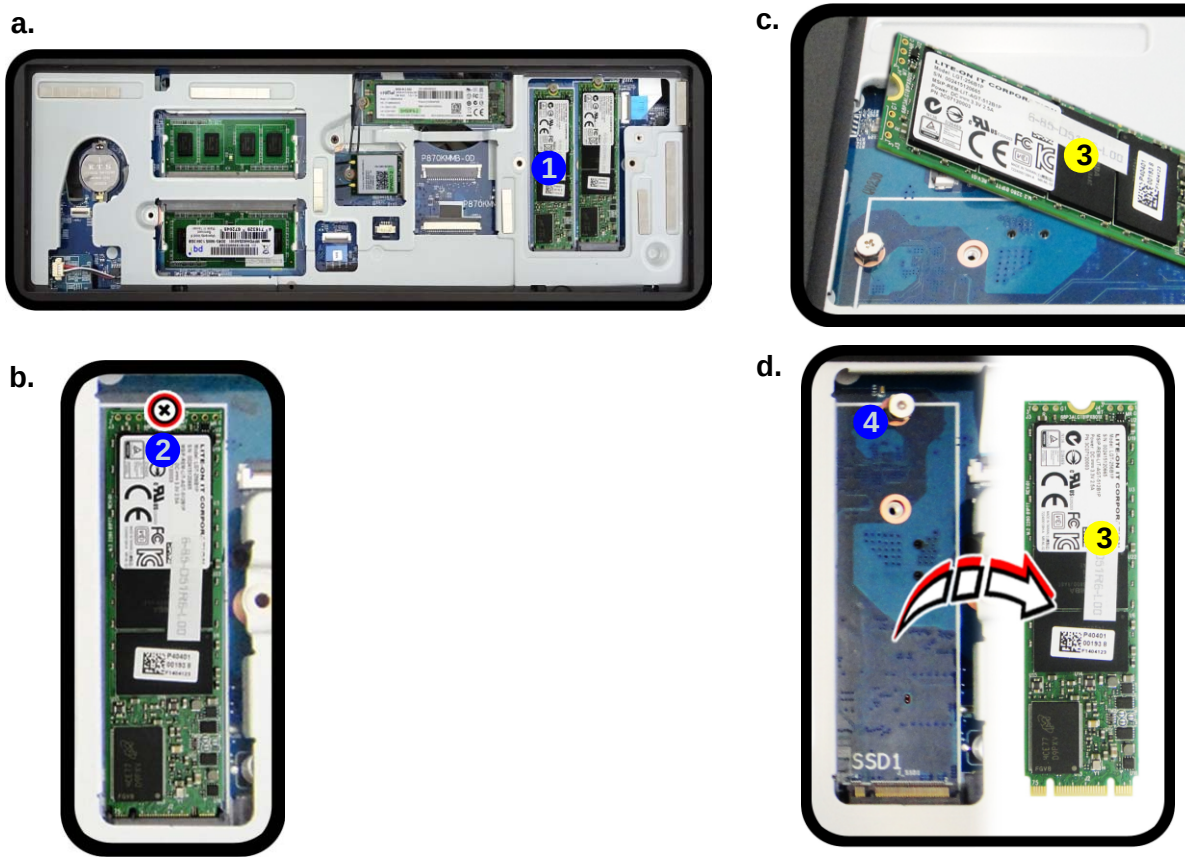
Removing the M.2 SSD Module

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 16a***).
3. Carefully remove the screw 2 from the module (***Figure 16b***).
4. The M.2 SSD module 3 will pop-up (***Figure 16c***).
5. Lift the M.2 SSD module 3 up and off the computer (***Figure 16d***).
6. Reverse the process to install a new module (make sure that the hexagonal screw 4 is in the correct location).

Figure 16
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.



3. M.2 SSD Module

- 1 Screw

Removing the M.2 SSD-2 Module

1. Turn **off** the computer, and turn it over, remove the battery (*page 2 - 5*).
2. Locate the module; it is visible at point 1 (*Figure 17a*).
3. Remove the screw 2 from the SSD (*Figure 17a*).
4. The M.2 SSD module 3 will pop-up (*Figure 17b*).
5. Lift the M.2 SSD module 3 up and off the computer (*Figure 17c*).
6. 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).

Figure 17
M.2 SSD-2 Module Removal

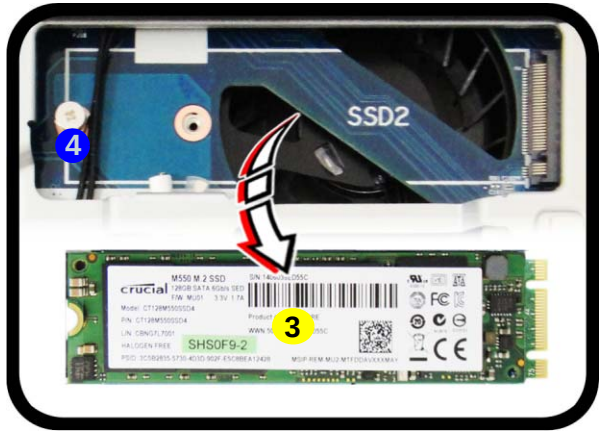
a. Locate the module.
b. Remove the screws.
c. The module will pop up.
d. Lift the module out.

a.

b.

c.

d.



3. M.2 SSD Module

- 1 Screw

Figure 18
M.2 SSD Module Installation

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

M.2 SSD Installation Procedure

1. Insert the module 1 in the computer (***Figure 18a***).
2. Tighten the screw 2 to secure it in place (***Figure 18b***).
3. Only place the thermal pad 3 on the module as shown when using specific module (***Figure 18c***).

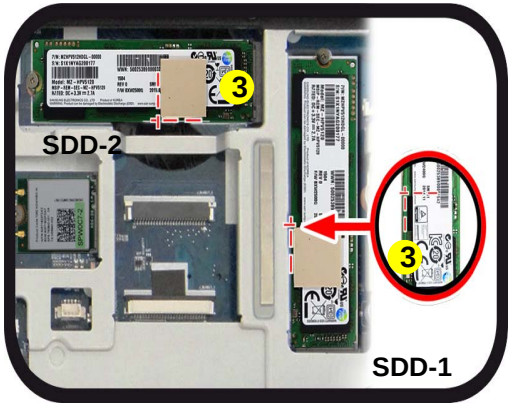
a.

b.

SDD-1

SDD-2

c.



Caution

The thermal pad is only required when using Samsung PM951 M.2 SSD module. Make sure you place the thermal pad's adhesive side down on the module surface as illustrated.

1. M.2 SSD Module
3. Thermal Pad

- 1 Screw

Appendix A: Part Lists

This appendix breaks down the ***P870KM1(-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.

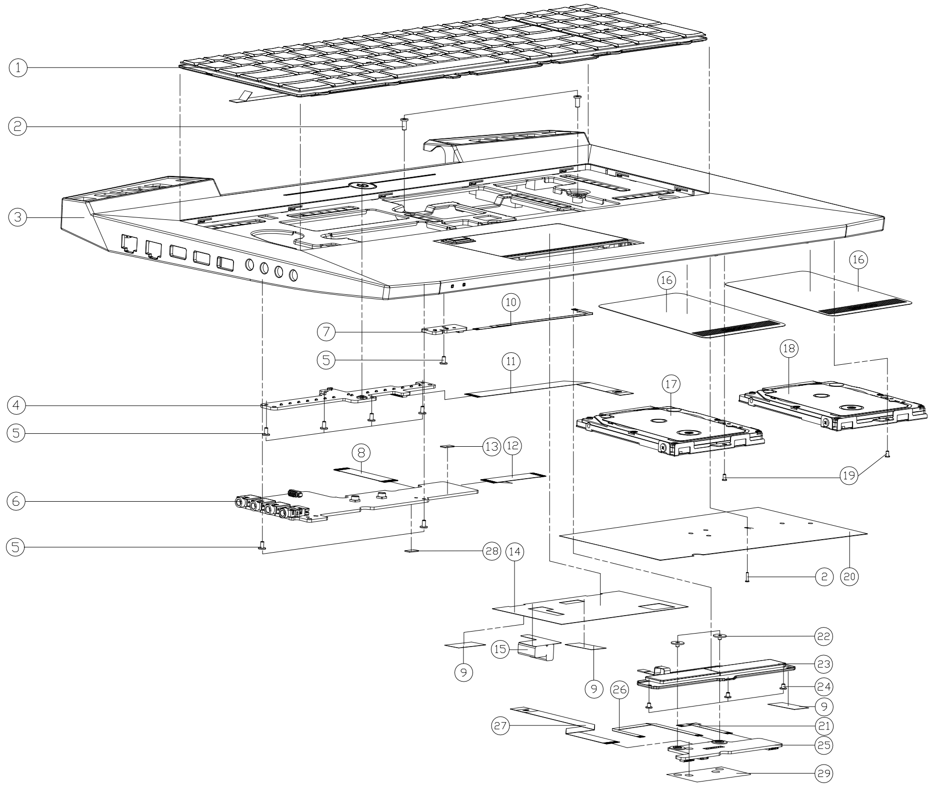
Part List Illustration Location

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

Table A- 1
Part List Illustration Location

Parts	
Top	*page A - 3*
Bottom	*page A - 4*
LCD	*page A - 5*
MB (VGA-1)	*page A - 6*
MB (Dual VGA)	*page A - 7*
VGA (N17E-G3)	*page A - 8*
HDD	*page A - 9*

Top



ITEM	PART NAME	PART NO	REMARK
1	MULTI BL KB USA V149550AS1 US P750ZM BLACK GAMING WITH WINB KEY (CHANGE REFLECTOR PLATE)	6-80-P7500-013-3	
2	.SCREW M2.5*8L KI BK/Z NY ICT	6-35-B6125-8R0	
3	(PRE-PROCESS) TOP CASE MODULE FOR TP P870DM3	6-78-P870DM32-010	
3	(PRE-PROCESS) TOP CASE MODULE FOR TP P870KM	6-78-P870KM02-010	
4	POWER SWITCHLED BOARD V1.0 P870DM2	6-77-P872S-D01	
5	.SCREW M2*4L KI NI ICT NY (DD=ø4.5,DT=0.4)	6-35-B1120-4RE	
6	AUDIO BOARD V2.0A P870DM2	6-77-P8728-D02A	
7	CHARGER LED BOARD V2.0 P870DM	6-77-P8704-D02	FOR P870DM2/3
7	CHARGER LED BOARD V1.0 P870KM	6-77-P87K4-D01	FOR P870KM/KM1
8	FFC CABLE FOR MB TO AUDIO BOARD 22PIN(0.5MM PITCH) L:45MM 60V P870DM(HT)	6-43-P8700-051	
9	GASKET BLACK (30*7*0.13T) W370ET	6-47-00190-016	
10	FFC CABLE FOR CLICK BOARD TO CHARGE BOARD 6PIN(0.5MM PITCH) L:118.2MM 60V P870DM(HT)(CHANGE)	6-43-P8700-062	
11	FFC CABLE FOR MB TO POWER BOARD 22PIN(0.5MM PITCH) L:123MM 60V P870DM(HT)	6-43-P8700-012	FOR P870DM2/3
11	FFC CABLE FOR MB TO POWER BOARD 22PIN (0.5MM PITCH) L : 170MM 60V P870KM (HT)	6-43-P87K0-010	FOR P870KM/KM1
12	FFC CABLE FOR MB TO AUDIO BOARD 16PIN(0.5MM PITCH) L:38MM 60V P870DM3(HT)	6-43-P8730-010-2	
13	AUDIO BOARD RUBBER(6.5*6T*4.5) TESA4965 P870DM3	6-47-P873S-010	
14	TOP TP MYLAR PET P870DM(FOR PTP)	6-40-P8702-061	
15	ESD GASKET(30*23*9.5T) FOR TOP CASE(P870DM)	6-47-00190-306	
16	MYLAR FOR 7MM HDD P870DM	6-40-P8702-050	
17	W/O MAIN HDD ASS'Y P870DM	6-79-P870DM0J-010	
17	W/MAIN HDD ASS'Y P870DM	6-79-P870DM0J-020	
18	W/O 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 (DD=ø4.5,DT=0.4)	6-35-B6120-3RD	
20	MYLAR FOR BOTTOM (174*79*0.2) P870DM3	6-40-P8733-080	
21	FFC CABLE FOR TP TO CLICK BOARD 8PIN(0.5MM PITCH) L:45MM 60V P870DM(HT)	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/O FINGER P650RE6	6-23-KP65R-022	
24	.SCREW M2*2.5L KI NI ICT NY (ø4 T=0.5 1#)	6-35-B1120-2R6	
25	CLICK BOARD V2.0A P870DM2	6-77-P8722-D02A	
26	FFC CABLE FOR TP TO CLICK BOARD 6PIN(0.5MM PITCH) L:143MM 60V P870DM3	6-43-P8732-011-2	
27	FFC CABLE FOR MB TO CLICK BOARD 22PIN(0.5MM PITCH) L:135MM 60V P870DM(HT)	6-43-P8700-032	
28	TOP SPONGE L CR2030 (12*5*1.1T) P670SG	6-47-0019A-12D	
29	MYLAR FOR W/O FP CLICK P870DM3	6-40-P8732-030	

Figure A - 1
Top

A.Part Lists

Bottom

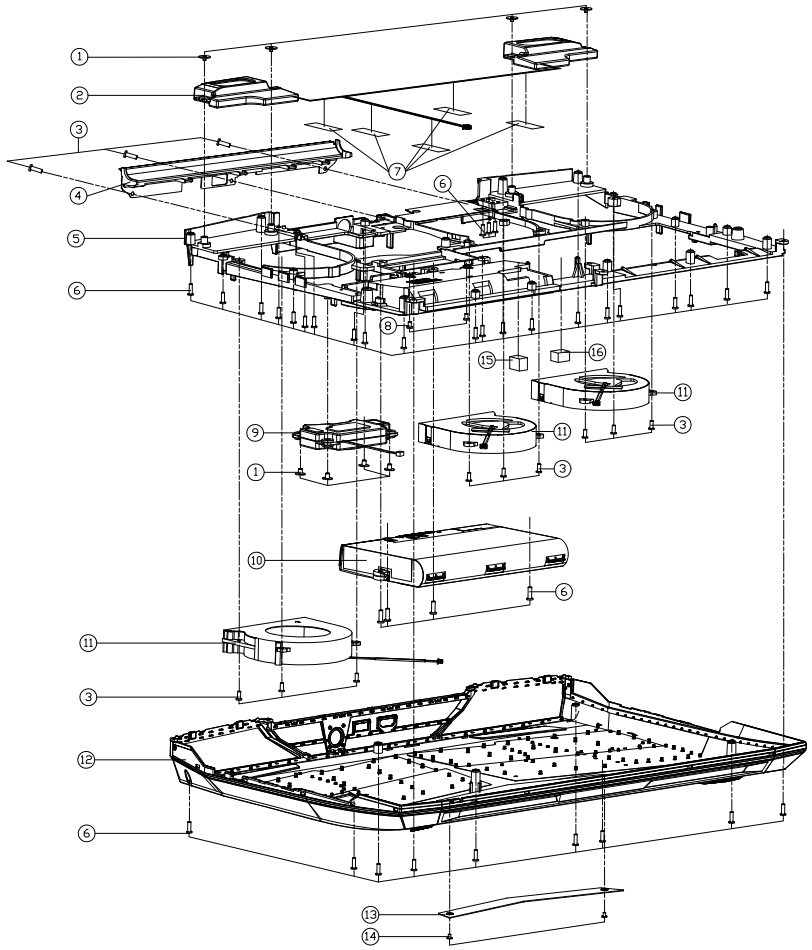
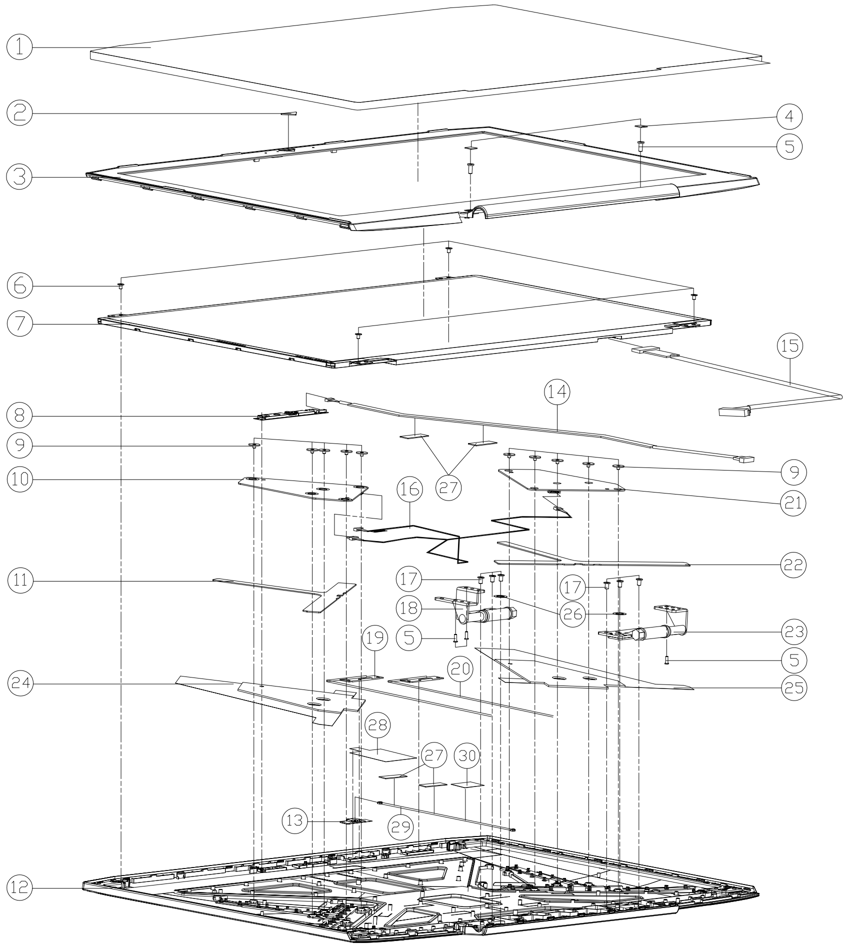


Figure A - 2
Bottom

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*2L KI BK/Z ICT NY(Ø8,T=0.6)	6-35-B6120-2RE	
2	SPEAKER+CABLE MAIN R?L R 390MM/L 160MM 2W 4.0? P870DM(NEW)	6-23-5P870-0S2	
3	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
4	REAR PLATE MODULE P870DM	6-42-P8702-302	
5	MIDDLE FRAME MODULE P870DM3	6-42-P8733-204	
6	SCREW M2.5*8L KI BK/Z NY ICT	6-35-B6125-8R0	
7	TOP CASE MYLAR FR83 25*7*0.05 P180HM	6-40-P1802-030	
8	.SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
9	SPEAKER SUBWOOFER MODULE 32MM?5MM 2W 6Ω? P87 WOOFER P870PM(NEW)	6-23-5P870-0W3	
10	BATP S LI 15.12V/5.9AH/89WH 4S2P SMP/PSE/KC/COC 98DT/G2180F P870DM	6-87-P870S-4273A	
11	12V 8219 FAN MODULE ADDA P750DM2	6-31-P75D3-202	
12	BOTTOM CASE MODULE P870DM3	6-39-P8733-012	
13	AI PRODUCT LABEL FOR P870DM3 (CHANGE RATING)	6-33-P870DM33-011	
13	AI PRODUCT LABEL FOR P870DM3-G (CHANGE RATING)	6-33-P870DM3G-011	
13	AI PRODUCT LABEL FOR P870KM1	6-33-P870KM13-010	
13	AI PRODUCT LABEL FOR P870KM1-G	6-33-P870KM1G-010	
14	SCREW M2*3L KI BZ ICT NY (DD=Ø4.5,DT=0.4)	6-35-B6120-3RD	
15	RUBBER(12*12*5)L12*W5*H12 FOR P870DM2	6-47-P8728-010	
16	RUBBER (12*10*5) L12*W5*H10 FOR P870DM2	6-47-P8728-020	貼于Click/BRJCONN下墊綠處

LCD



ITEM	PART NAME	PART NO	REMARK
1	LCD PROTECT MYLAR BOPP P870DM2	6-40-P8728-010	
2	CCD LENS (PC) P870DM	6-42-P870T-010	
3	LCD FRONT COVER MODULE P870DM2	6-39-P8721-010	
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=ø4.5,DT=0.4)	6-35-B6120-3RD	
7	LCD 17.3" FHD/ AAS / N7/EDP INNOLUX N173HCE-E31 (LED) 4.0 MM	6-50-NB240-V00	
7	LCD 17.3" FHD / IPS / EDP LG LP173WF4-SPF2 " SUPPORT S/W G-SYNC " LED 4.0MM	6-50-NB240-L01	
7	LCD 17.3" UHD / IPS (AHVA) / EDP AU B173ZAN01.0 (LED) 4.0MM	6-50-N1240-G00	
7	LCD 17.3" FHD / IPS / EDP LG LP173WF4-SPF1 " SUPPORT S/W G-SYNC " (LED) 4.0MM	6-50-NB204-L00	
7	LCD 17.3" FHD / AHVA /EDP AU B173HAN01.2 (120HZ) (N7) LED 4.0 MM	6-50-NB240-G00	
7	LCD 17.3" FHD / IPS / EDP LG LP173WF4-SPF1 (LED) 4.0MM	6-50-NB240-L00	
7	LCD 17.3" QHD/120HZ/NVSR G-SYNC/N7/EDP AU B173QTN01.0 LED 4.0MM	6-50-N6240-G00	
7	LCD 17.3" FHD/AHVA /120HZ/NVSR G-SYNC/N7/EDP AU B173HAN01.1 (LED) 4.0 MM	6-50-NB240-G01	
8	UVC CAMERA CHICONY FIX CKFGF1021003920LH 2M FHD OV2740 W650DC FW3601 W/WHITE-LED W/2D-MIC	6-88-W65DC-5100	
8	UVC CAMERA BISON FIX BN8VU6VTH-200 2M FHD OV2740 P775KM FWXXXX W/WHITE-LED W/2D-MIC	6-88-P775C-4900	
8	UVC CAMERA CHICONY FIX CKFGF1021003925LH 2M FHD OV2740 P775KM FWXXXX W/WHITE-LED W/2D-MIC	6-88-P775C-5100	
9	SCREW M2*2L KI BK/Z ICT NY(ø8,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-P8701-024	
13	ANTENNA IPEX4 WLAN JEM WL2 PCB 2.4G/5G CABLE BLACK L=800MM P650SE	6-88-P8722-8100	FOR 6-88-P872F-8100
14	WIRE CALBE FOR CCD 500MM 30V 8PIN (HT) P870DM	6-43-P870T-010-1	
15	WIRE CABLE FOR EDP 160MM 30V 30P (L) (HT/LC CON:L05M30S) P870DM	6-43-P8701-011-L	
15	COAXIAL CABLE FOR EDP (4KX2K) 160MM 19V 40P (I) (HT/LC CON:L01M40S) P870DM	6-43-P8701-020-1L	
16	WIRE CABLE FOR BACK LIGHT GUIDE LED TO MB 405MM 5V 8PIN (HT) P870DM	6-43-P8707-011-1	
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 WGT WL1 PCB 2.4G/5GHZ WL1=700MM W970LUQ	6-23-7W97L-011	
20	ANTENNA IPEX4 WLAN WGT WL2 PCB AL 2.4G/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(140*108.5*0.1T) FOR BACK LIGHT-L P870DM	6-40-P8701-030	
25	MYLAR(140*108.5*0.1T) FOR BACK LIGHT-R P870DM	6-40-P8701-020	
26	WASHER ø6*ø3*0.3t (MYLAR)	6-37-02000-601	
27	TOP CASE MYLAR FR83 25*7*0.05 P180HM	6-40-P1802-030	
28	802.11AD COPPER FOIL P775DM2	6-47-P7751-211	FOR 6-88-P872F-8100
29	802.11AD CABLE 640MM MXJA02JA6400TE MURATA CONNECTER P870DM2	6-23-7P872-010	FOR 6-88-P872F-8100
30	802.11AD TAPE MYLAR(BLACK)(35*20*0.2T) P870DM2	6-40-P872S-030	FOR 6-88-P872F-8100

Figure A - 3
LCD

MB (VGA-1)

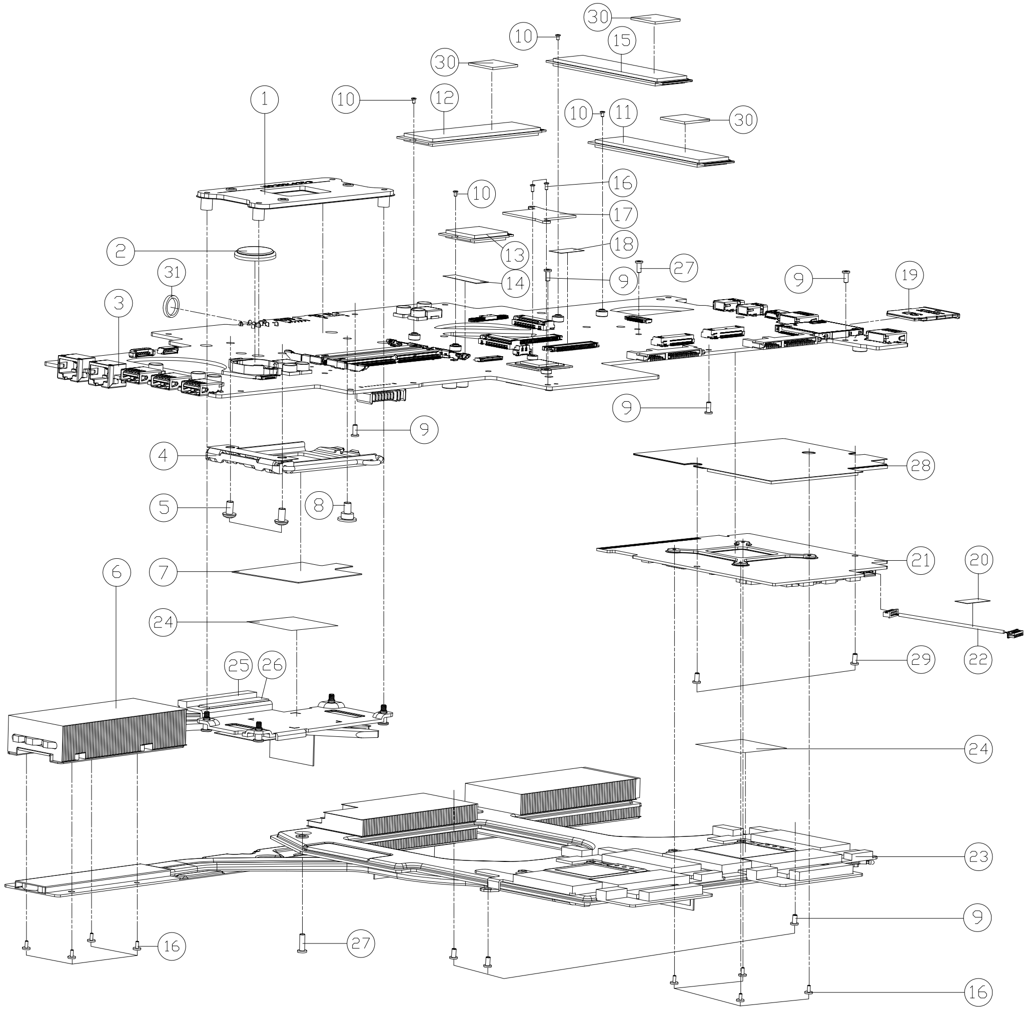
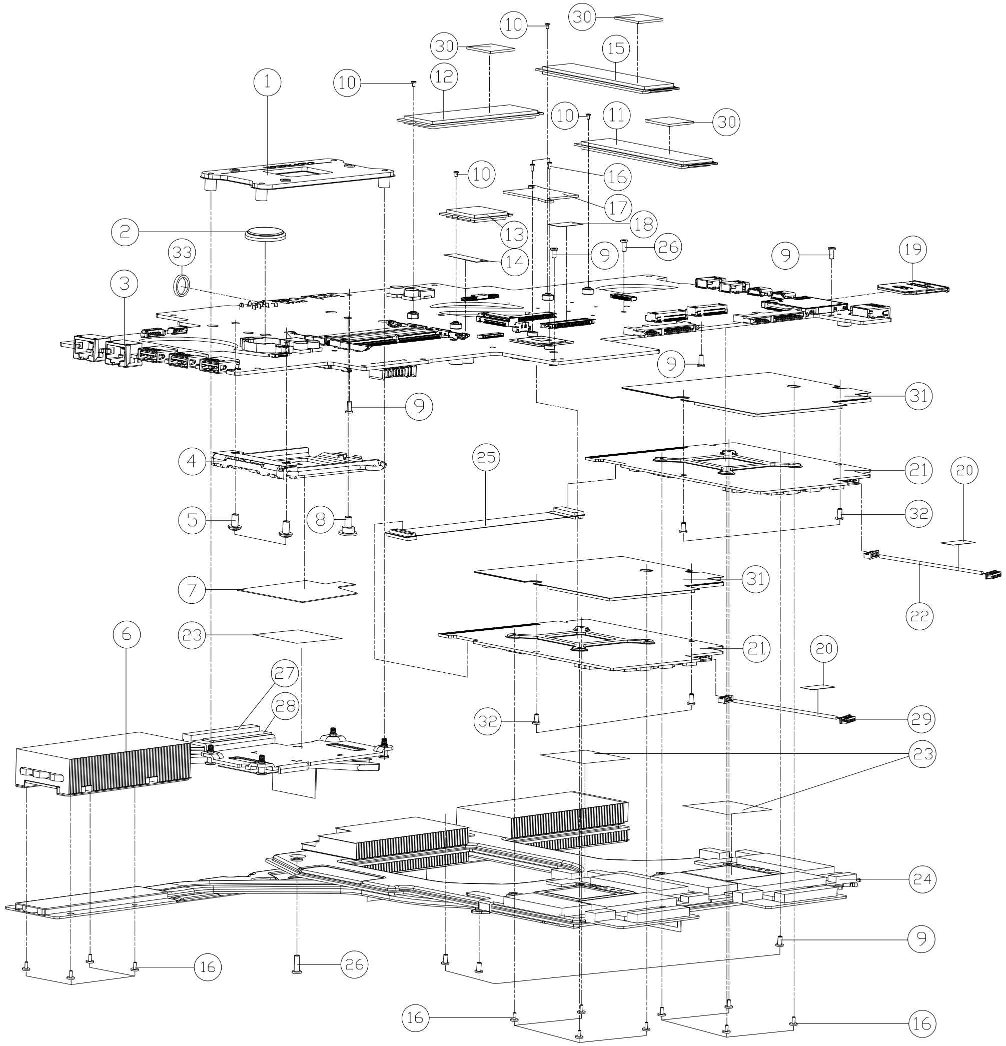


Figure A - 4
MB (VGA-1)

ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT FOR LGA 1150 SPCC P750ZM	6-33-P750S-013	
2	BATTERY 3V 220MA BBBCR2032B (KTS)	6-23-6A2B2-030	
3	MAIN BOARD V3.0A (EDP) (W/TPM) P870DM2	6-77-P870DM20-D03A	
3	MAIN BOARD V3.0A (EDP) (W/O TPM) P870DM2	6-77-P870DM20-D03A-1	
3	MAIN BOARD V2.0 (EDP)(W/TPM) P870KM	6-77-P870KM00-D02	
3	MAIN BOARD V2.0 (EDP)(W/O TPM) P870KM	6-77-P870KM00-D02-1	
4	ILM FOR CPU SOCKET(METAL) LGA 1150P (PT44L31-6401)	6-86-25B50-001-S	
5	SCREW T20-#6-32*6.35L D BZ/Z ACT	6-35-D2306-6R3	
6	CPU HEATSINK MODULE (WITH CNC) P870DM3	6-31-P873N-102	
7	CPU SOCKET MYLAR FOR 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	SCREW M2*2L KI NI ICT NY (DD=ø5 ,T=0.5)	6-35-B1120-2R0	
11	* SSD M.2 2280 512GB SAMSUNG MZVPV512HDGL-00000 (SM951_NVME) PCIE G3X4 MLC	6-85-D515B-S02	OPTION
11	* SSD M.2 2280 512GB SAMSUNG MZVLV512HCJH-00000 (PM951) PCIE G3X4 TLC	6-85-D515B-S03	OPTION
11	* SSD M.2 2280 256GB SAMSUNG MZHPV256HDGL-XXXXX (SM951) PCIE G3X4 MLC	6-85-D51R6-S00	OPTION
11	SSD M.2 2280 1000GB SAMSUNG MZVKW1T0HMLH-00000 (SM961) PCIE G3X4 3D MLC	6-85-D511T-S00	OPTION
11	SSD M.2 2280 512GB SAMSUNG MZVLW512HMJP-00000 (PM961) PCIE G3X4 3D TLC	6-85-D515B-S05	OPTION
11	SSD M.2 2280 512GB INTEL SSDPEKKW512G7 (600P) PCIE G3X4 3D TLC	6-85-D515B-Z00	OPTION
12	SSD M.2 2280 256GB SAMSUNG MZNLN256HCHP00000 (PM871) SATA3 V2 EVO	6-85-D51R6-S01	OPTION
12	SSD M.2 2280 512GB CRUCIAL MTFDDAV512MBF (M600) SATA3 MLC	6-85-D515B-101	OPTION
12	SSD M.2 2280 512GB SAMSUNG MZNLN512HCJH00000 (PM871) SATA3 V2 EVO	6-85-D515B-S01	OPTION
12	SSD M.2 2280 360GB INTEL SSDSCKJW360H6 (535) SATA3 MLC	6-85-D513G-Z00	OPTION
12	SSD M.2 2280 500GB CRUCIAL CT500MX200SSD4 (MX200) SATA3 MLC	6-85-D515A-100	OPTION
12	SSD M.2 2280 250GB CRUCIAL CT250MX200SSD4 (MX200) SATA3 MLC	6-85-D51R0-100	OPTION
12	SSD M.2 2280 512GB SAMSUNG MZVPV512HDGL-00000 (SM951_NVME) PCIE G3X4 MLC	6-85-D515B-S02	OPTION
12	SSD M.2 2280 512GB SAMSUNG MZVLV512HCJH-00000 (PM951) PCIE G3X4 TLC	6-85-D515B-S03	OPTION
12	SSD M.2 2280 256GB SAMSUNG MZHPV256HDGL-XXXXX (SM951) PCIE G3X4 MLC	6-85-D51R6-S00	OPTION
13	WLAN+BT+802.11AD COMBO USI SPARROW-M2-2230 QCA9008-TBD1 802.11AC+802.11AD+BT4.1 LE (USI) M2 2230 P870DM2	6-88-P872F-8100	OPTION
13	WLAN+ BT COMBO ATHEROS QCNFA364A(KILLER 1535 DUAL BAND 2X2 AC+BT 4.1 LE M2 2230 P750DM	6-88-P75DF-9601	OPTION
13	WLAN+BT COMBO DUAL BAND INTEL SANDY PEAK 3168NGW 1X1 AC+BT BT4.2 M2 2230 P650RS	6-88-P65SF-4210	OPTION
13	WLAN+BT COMBO DUAL BAND INTEL WINDSTORM PEAK 8265NGW NON-VPRO 2X2 AC+BT BT4.2 M2 2230 P650RS	6-88-P65SF-4200	OPTION
14	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	
15	SSD M.2 2280 256GB SAMSUNG MZNLN256HCHP00000 (PM871) SATA3 V2 EVO	6-85-D51R6-S01	OPTION
15	SSD M.2 2280 512GB CRUCIAL MTFDDAV512MBF (M600) SATA3 MLC	6-85-D515B-101	OPTION
15	SSD M.2 2280 512GB SAMSUNG MZNLN512HCJH00000 (PM871) SATA3 V2 EVO	6-85-D515B-S01	OPTION
15	SSD M.2 2280 360GB INTEL SSDSCKJW360H6 (535) SATA3 MLC	6-85-D513G-Z00	OPTION
15	SSD M.2 2280 500GB CRUCIAL CT500MX200SSD4 (MX200) SATA3 MLC	6-85-D515A-100	OPTION
15	SSD M.2 2280 250GB CRUCIAL CT250MX200SSD4 (MX200) SATA3 MLC	6-85-D51R0-100	OPTION
15	SSD M.2 2280 512GB SAMSUNG MZVPV512HDGL-00000 (SM951_NVME) PCIE G3X4 MLC	6-85-D515B-S02	OPTION
15	SSD M.2 2280 512GB SAMSUNG MZVLV512HCJH-00000 (PM951) PCIE G3X4 TLC	6-85-D515B-S03	OPTION
15	SSD M.2 2280 256GB SAMSUNG MZHPV256HDGL-XXXXX (SM951) PCIE G3X4 MLC	6-85-D51R6-S00	OPTION
16	.SCREW M2*4L KI NI ICT NY (DD=ø4.5,DT=0.4)	6-35-B1120-4RE	
17	PCH FOR HEAT SINK AL5052 P870DM	6-33-P870S-010	
18	M/B KEYBOARD MYLAR PET M810L	6-40-M810S-011	
19	DUMMY 3IN1 NON PUSH TYPE PC+ABS (C7230P-701DE)(CHANGE) W970SUW	6-42-W9708-011	
20	TAPE MYLAR TRANSPARENT (20*10*0.05) P180HM	6-40-P1803-020	
21	VGA BOARD NVIDIA N17E-G3 MP GDDR5X (MICRON 8G/512M*16) MXM-III V2.0 P870DM2	6-77-P872L-D12	FOR P870DM3
21	VGA BOARD NVIDIA N17E-G3 MP GDDR5X (MICRON 8G/512M*16) MXM-III V2.0 P870DM2-G	6-77-P872L-D12-A	FOR P870DM3-G
22	WIRE CABLE FOR N17E VGA (MASTER) 9P/19V/ 310MM (HT) P870DM2	6-43-P8720-030-1	
23	VGA HEATSINK MOUDLE FOR N17E-G3 SLI P870DM3	6-31-P873N-404	
24	GREASE GA-690(0.6G) P157SM	6-47-P1578-020	
25	THERMAL PAD T-FLEX 3110 47*6 P870DM	6-48-P8708-0A0	
26	THERMAL PAD T-FLEX 340 40*7 P870DM3	6-48-P873S-050	
27	.SCREW M2.5*8L KI BK/Z NY ICT	6-35-B6125-8R0	
28	CU FOIL MYLAR ON M/B FOR G3 P870DM3	6-40-P873S-010	
29	SCREW KI M2.5*4.2 ZINC BLUE NY	6-35-B2125-4R2	
30	THERMAL RS300 15*15*2.5T FOR M.2 SSD P870DM2	6-48-P8728-030	
31	RUBBER D15*T3 P870KM	6-47-P87K3-010	

MB (Dual VGA)



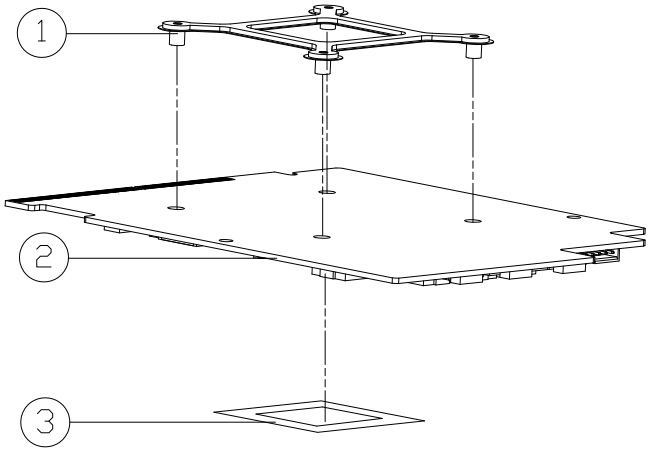
ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT FOR LGA 1150 SPCC P750ZM	6-33-P750S-013	
2	BATTERY 3V 220MA BBBCR2032B (KTS)	6-23-6A2B2-030	
3	MAIN BOARD V2.0 (EDP)(W/TPM) P870KM	6-77-P870KM00-D02	
3	MAIN BOARD V2.0 (EDP)(W/O TPM) P870KM	6-77-P870KM00-D02-1	
4	ILM FOR CPU SOCKET(METAL) LGA 1150P (PT44L31-6401)	6-86-25B50-001-S	
5	SCREW T20-#6-32*6.35L D BZ/Z ACT	6-35-D2306-6R3	
6	CPU HEATSINK MODULE (WITH CNC) P870DM3	6-31-P873N-102	
7	CPU SOCKET MYLAR FOR 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	SCREW M2*2L KI NI ICT NY (DD=ø5 ,T=0.5)	6-35-B1120-2R0	
11	* SSD M2 2280 512GB SAMSUNG MZVPV512HDGL-00000 (SM951_NVME) PCIE G3X4 MLC	6-85-D515B-S02	OPTION
11	* SSD M2 2280 512GB SAMSUNG MZVLV512HCJH-00000 (PM951) PCIE G3X4 TLC	6-85-D515B-S03	OPTION
11	* SSD M2 2280 256GB SAMSUNG MZHPV256HDGL-XXXXX (SM951) PCIE G3X4 MLC	6-85-D51R6-S00	OPTION
11	SSD M.2 2280 1000GB SAMSUNG MZVKW1T0HMLH-00000 (SM961) PCIE G3X4 3D MLC	6-85-D511T-S00	OPTION
11	SSD M.2 2280 512GB SAMSUNG MZVLW512HMJP-00000 (PM961) PCIE G3X4 3D TLC	6-85-D515B-S05	OPTION
11	SSD M.2 2280 512GB INTEL SSDPEKKW512G7 (600P) PCIE G3X4 3D TLC	6-85-D515B-Z00	OPTION
12	SSD M.2 2280 256GB SAMSUNG MZNLN256HCHP00000 (PM871) SATA3 V2 EVO	6-85-D51R6-S01	OPTION
12	SSD M.2 2280 512GB CRUCIAL MTFDDAV512MBF (M600) SATA3 MLC	6-85-D515B-101	OPTION
12	SSD M.2 2280 512GB SAMSUNG MZNLN512HCJH00000 (PM871) SATA3 V2 EVO	6-85-D515B-S01	OPTION
12	SSD M.2 2280 360GB INTEL SSDSCKJW360H6 (535) SATA3 MLC	6-85-D513G-Z00	OPTION
12	SSD M.2 2280 500GB CRUCIAL CT500MX200SSD4 (MX200) SATA3 MLC	6-85-D515A-100	OPTION
12	SSD M.2 2280 250GB CRUCIAL CT250MX200SSD4 (MX200) SATA3 MLC	6-85-D51R0-100	OPTION
12	SSD M2 2280 512GB SAMSUNG MZVPV512HDGL-00000 (SM951_NVME) PCIE G3X4 MLC	6-85-D515B-S02	OPTION
12	SSD M.2 2280 512GB SAMSUNG MZVLV512HCJH-00000 (PM951) PCIE G3X4 TLC	6-85-D515B-S03	OPTION
12	SSD M.2 2280 256GB SAMSUNG MZHPV256HDGL-XXXXX (SM951) PCIE G3X4 MLC	6-85-D51R6-S00	OPTION
13	WLAN+BT+802.11AD COMBO USI SPARROW-M2-2230 QCA9008-TBD1 802.11AC+802.11AD+BT4.1 LE (USB) M2 2230 P870DM2	6-88-P872F-8100	OPTION
13	WLAN+ BT COMBO ATHEROS (QCNFA364A)KILLER 1535 DUAL BAND 2X2 AC+BT 4.1 LE M2 2230 P750DM	6-88-P75DF-9601	OPTION
13	WLAN+BT COMBO DUAL BAND INTEL SANDY PEAK 3168NGW 1X1 AC+BT BT4.2 M2 2230 P650RS	6-88-P65SF-4210	OPTION
13	WLAN+BT COMBO DUAL BAND INTEL WINDSTORM PEAK 8265NGW NON-VPRO 2X2 AC+BT BT4.2 M2 2230 P650RS	6-88-P65SF-4200	OPTION
14	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	
15	SSD M.2 2280 256GB SAMSUNG MZNLN256HCHP00000 (PM871) SATA3 V2 EVO	6-85-D51R6-S01	OPTION
15	SSD M.2 2280 512GB CRUCIAL MTFDDAV512MBF (M600) SATA3 MLC	6-85-D515B-101	OPTION
15	SSD M.2 2280 512GB SAMSUNG MZNLN512HCJH00000 (PM871) SATA3 V2 EVO	6-85-D515B-S01	OPTION
15	SSD M.2 2280 360GB INTEL SSDSCKJW360H6 (535) SATA3 MLC	6-85-D513G-Z00	OPTION
15	SSD M.2 2280 500GB CRUCIAL CT500MX200SSD4 (MX200) SATA3 MLC	6-85-D515A-100	OPTION
15	SSD M.2 2280 250GB CRUCIAL CT250MX200SSD4 (MX200) SATA3 MLC	6-85-D51R0-100	OPTION
15	SSD M2 2280 512GB SAMSUNG MZVPV512HDGL-00000 (SM951_NVME) PCIE G3X4 MLC	6-85-D515B-S02	OPTION
15	SSD M.2 2280 512GB SAMSUNG MZVLV512HCJH-00000 (PM951) PCIE G3X4 TLC	6-85-D515B-S03	OPTION
15	SSD M.2 2280 256GB SAMSUNG MZHPV256HDGL-XXXXX (SM951) PCIE G3X4 MLC	6-85-D51R6-S00	OPTION
16	.SCREW M2*4L KI NI ICT NY (DD=ø4.5,DT=0.4)	6-35-B1120-4RE	
17	PCH FOR HEAT SINK AL5052 P870DM	6-33-P870S-010	
18	M/B KEYBOARD MYLAR PET M810L	6-40-M810S-011	
19	DUMMY 3IN1 NON PUSH TYPE PC+ABS (C7230P-701DEXCHANGE) W970SUW	6-42-W9708-011	
20	TAPE MYLAR TRANSPARENT (20*10*0.05) P180HM	6-40-P1803-020	
21	VGA BOARD NVIDIA N17E-G3 MP GDDR5X (MICRON 8G/512M*16) MXM-III V2.0 P870DM2	6-77-P872L-D12	FOR P870KM1
21	VGA BOARD NVIDIA N17E-G3 MP GDDR5X (MICRON 8G/512M*16) MXM-III V2.0 P870DM2-G	6-77-P872L-D12-A	FOR P870DM3-G/KM1-G
22	WIRE CABLE FOR N17E VGA (MASTER) 9P/19V/ 310MM (HT) P870DM2	6-43-P8720-030-1	FOR VGA 主卡
23	GREASE GA-690(0.6G) P157SM	6-47-P1578-020	
24	VGA HEATSINK MOUDLE FOR N17E-G3 SLI P870KM1	6-31-P873N-404	
25	FPC CABLE FOR VGA CARD 40P SLI 140MM 19.5V (CON H=1.35MM) V2.0 P870DM2	6-43-P8720-011	
26	.SCREW M2.5*8L KI BK/Z NY ICT	6-35-B6125-8R0	
27	THERMAL PAD T-FLEX 3110 47*6 P870DM	6-48-P8708-0A0	
28	THERMAL PAD T-FLEX 340 40*7 P870DM3	6-48-P873S-050	
29	WIRE CABLE FOR N17E VGA 9P/19V/ 408MM (HT) P870DM2	6-43-P8720-021-1	FOR VGA 副卡
30	THERMAL RS300 15*15*2.5T FOR M.2 SSD P870DM2	6-48-P8728-030	
31	CU FOIL MYLAR ON M/B FOR G3 P870DM3	6-40-P873S-010	
32	SCREW KI M2.5*4.2 ZINC BLUE NY	6-35-B2125-4R2	
33	RUBBER D15*T3 P870KM	6-47-P87K3-010	

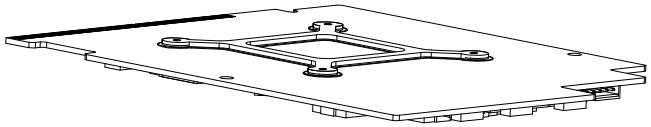
Figure A - 5
MB (Dual VGA)

A.Part Lists

VGA (N17E-G3)

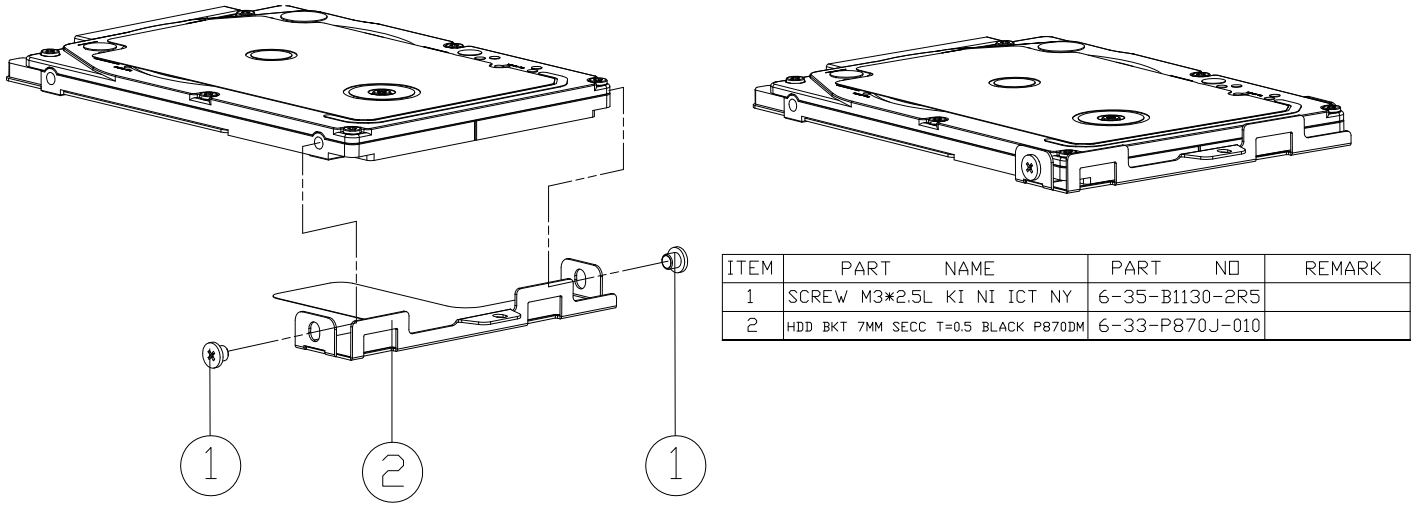
Figure A - 6
VGA (N16E-GT)





ITEM	PART NAME	PART NO	REMARK
1	N17 VGA SUPPORTER M2 SUS430 P750DM2	6-33-P75DS-011	
2	VGA BOARD NVIDIA N17E-G3 MP GDDR5X (MICRON 8G/512M*16) MXM-III V2.0 P870DM2	6-77-P872L-D12	FOR P870DM2/DM3
2	VGA BOARD NVIDIA N17E-G3 MP GDDR5X (MICRON 8G/512M*16) MXM-III V2.0 P870DM2-G	6-77-P872L-D12-A	FOR P870DM2-G/DM3-G
3	N17E-G2 CHIP MYLAR PET (37.5*37.5*0.1) P750DM2	6-40-P75DS-020	

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	

Figure A - 7
HDD

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the ***P870KM1(-G)*** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
Block Diagram - Page B - 2	*Main EC IT8587 - Page B - 23*	*2.5V, 5VS_2 - Page B - 44*
Processor 1/5 - Page B - 3	*Second EC IT8587 - Page B - 24*	*Fan_Power 12V - Page B - 45*
Processor 2/5 - Page B - 4	*TPM SLB9665TT - Page B - 25*	*AMP10V, VCCSA - Page B - 46*
Processor 3/5 - Page B - 5	*CPU, VGA Fan Conn - Page B - 26*	*DDR4 VDDQ & VTT, VCCPLL_OC - Page B - 47*
Processor 4/5 - Page B - 6	*Backlight Keyboard - Page B - 27*	*Power Charger, DC IN - Page B - 48*
Processor 5/5 - Page B - 7	*CCD, USB Charging - Page B - 28*	*VCCIO, 1.0VA - Page B - 49*
DDR4 CHA SO-DIMM_0 - Page B - 8	*AR_TBT - Page B - 29*	*VCore - Page B - 50*
DDR4 CHA SO-DIMM_1 - Page B - 9	*AR_Power - Page B - 30*	*VCore Output Stage - Page B - 51*
DDR4 CHB SO-DIMM_0 - Page B - 10	*TPS65982, Type C1 - Page B - 31*	*VDD3, VDD5 - Page B - 52*
DDR4 CHB SO-DIMM_1 - Page B - 11	*TPS65982, Type C2 - Page B - 32*	*Charger LED Board - Page B - 53*
MXM 3.0 Master - Page B - 12	*PS8338B+mDP_1 - Page B - 33*	*Click Board - Page B - 54*
MXM 3.0 Slave - Page B - 13	*PS8338B+mDP_2 - Page B - 34*	*Finger Sensor Board - Page B - 55*
Panel, Inverter - Page B - 14	*M.2 WLAN+BT - Page B - 35*	*Power Switch LED Board - Page B - 56*
HDMI - Page B - 15	*M.2 M Key - Page B - 36*	*Audio Codec - Page B - 57*
SPT-H 1/7 - Page B - 16	*RTS5250 - Page B - 37*	*Audio Board (Speaker) - Page B - 58*
SPT-H 2/7 - Page B - 17	*LAN_1 E2500 - Page B - 38*	*Audio Board (Subwoofer) - Page B - 59*
SPT-H 3/7 - Page B - 18	*LAN_2 E2500 - Page B - 39*	*ESS DAC - Page B - 60*
SPT-H 4/7 - Page B - 19	*Click, Finger Conn - Page B - 40*	*HP AMP - Page B - 61*
SPT-H 5/7 - Page B - 20	*HDD & Second HDD - Page B - 41*	*Audio Jack - Page B - 62*
SPT-H 6/7 - Page B - 21	*USB Port - Page B - 42*	*Power Sequence - Page B - 63*
SPT-H 7/7 - Page B - 22	*5VS, 3.3VS, 1.0 V Series - Page B - 43*	

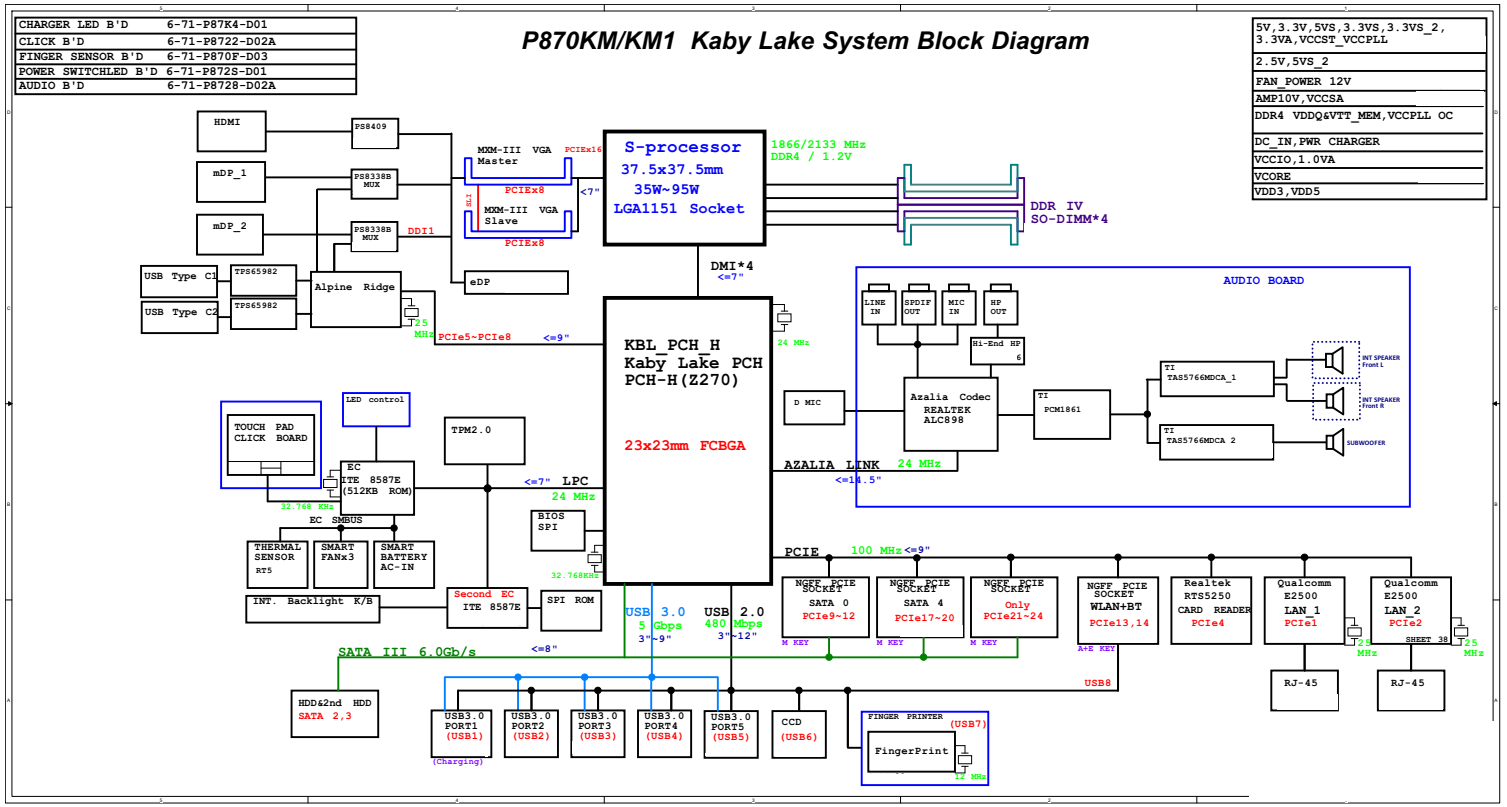
Table B - 1
Schematic Diagrams

Version Note

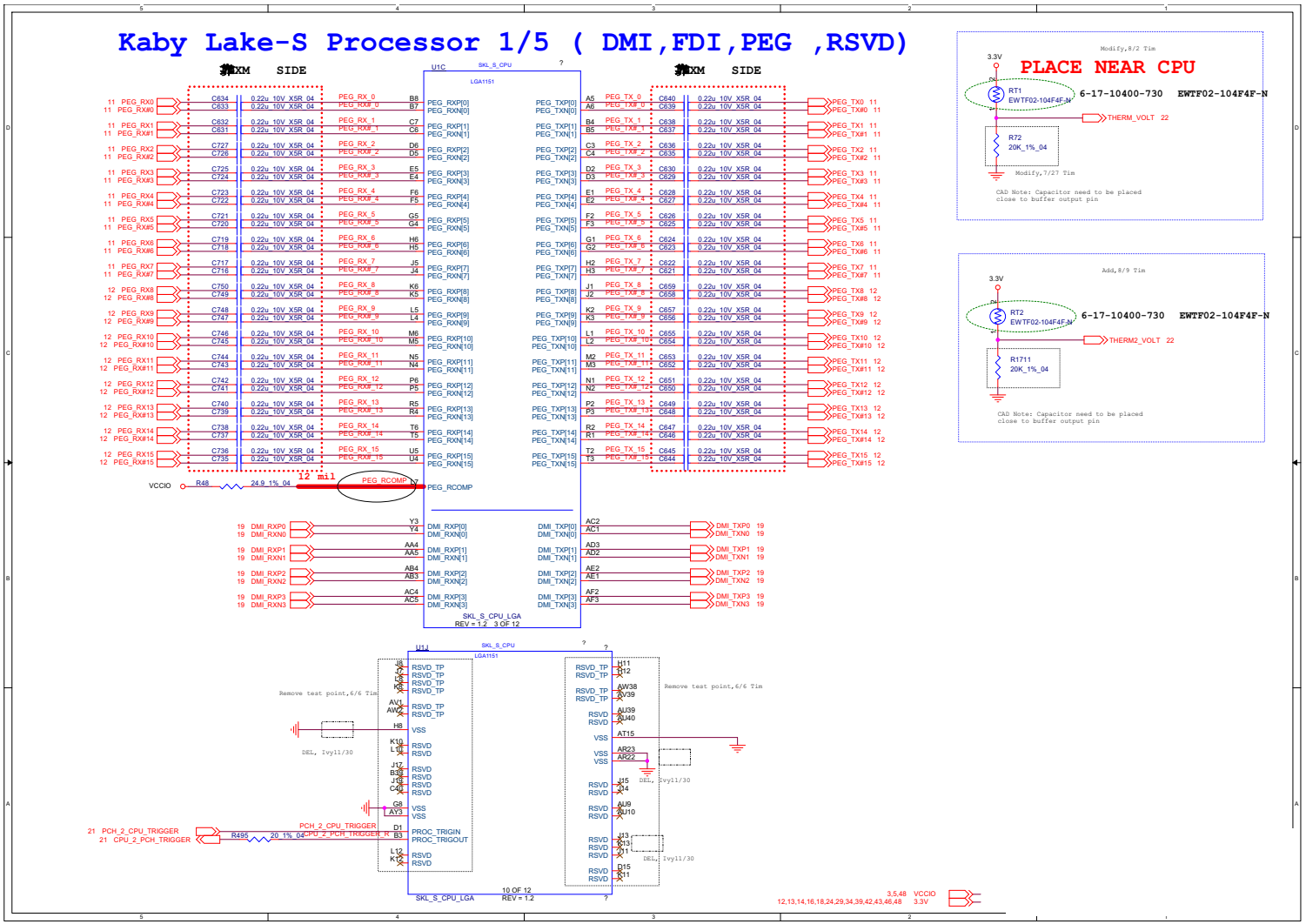
The schematic diagrams in this chapter are based upon version 6-7P-P87K6-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

Block Diagram

Sheet 1 of 62
Block Diagram



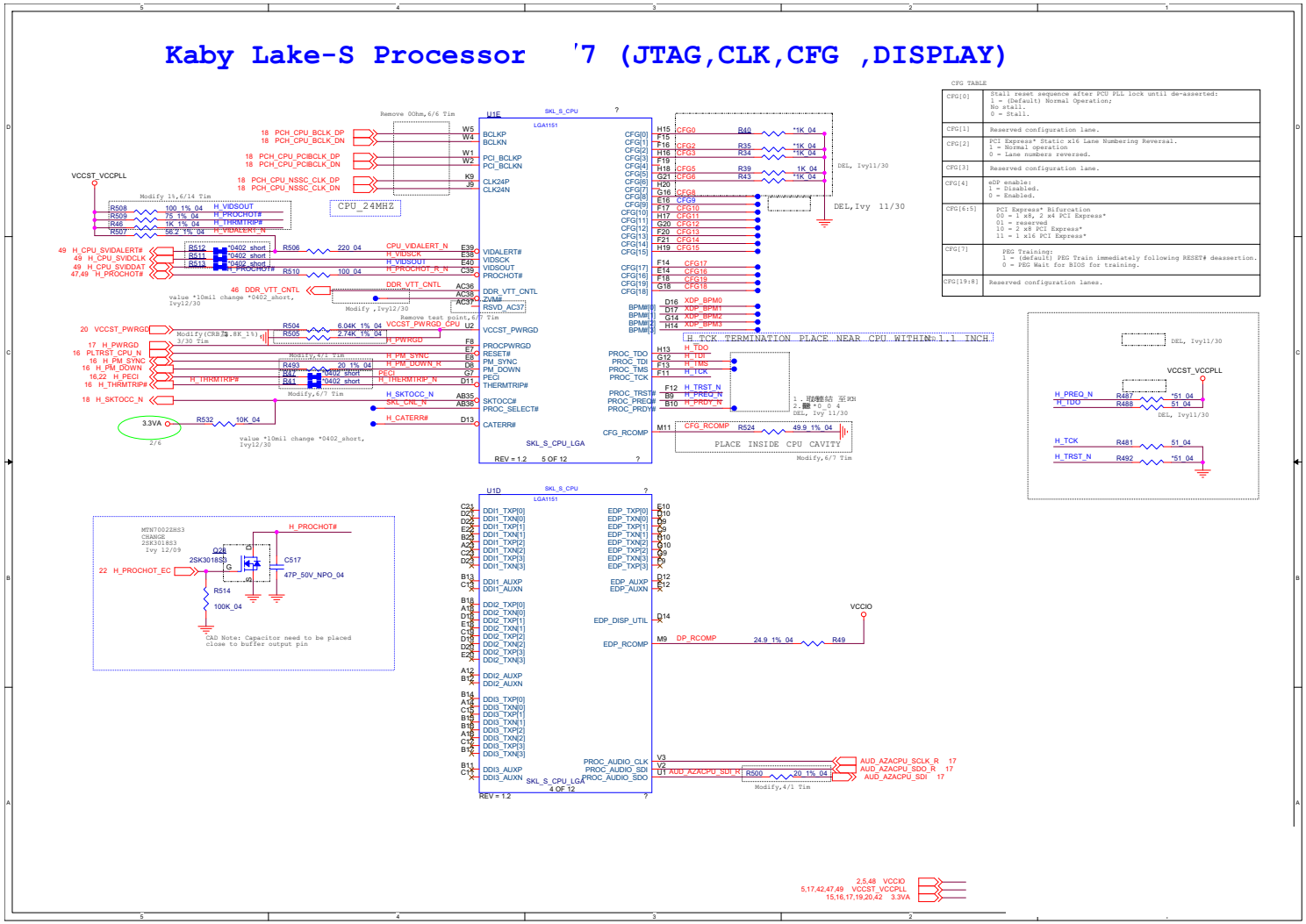
Processor 1/5



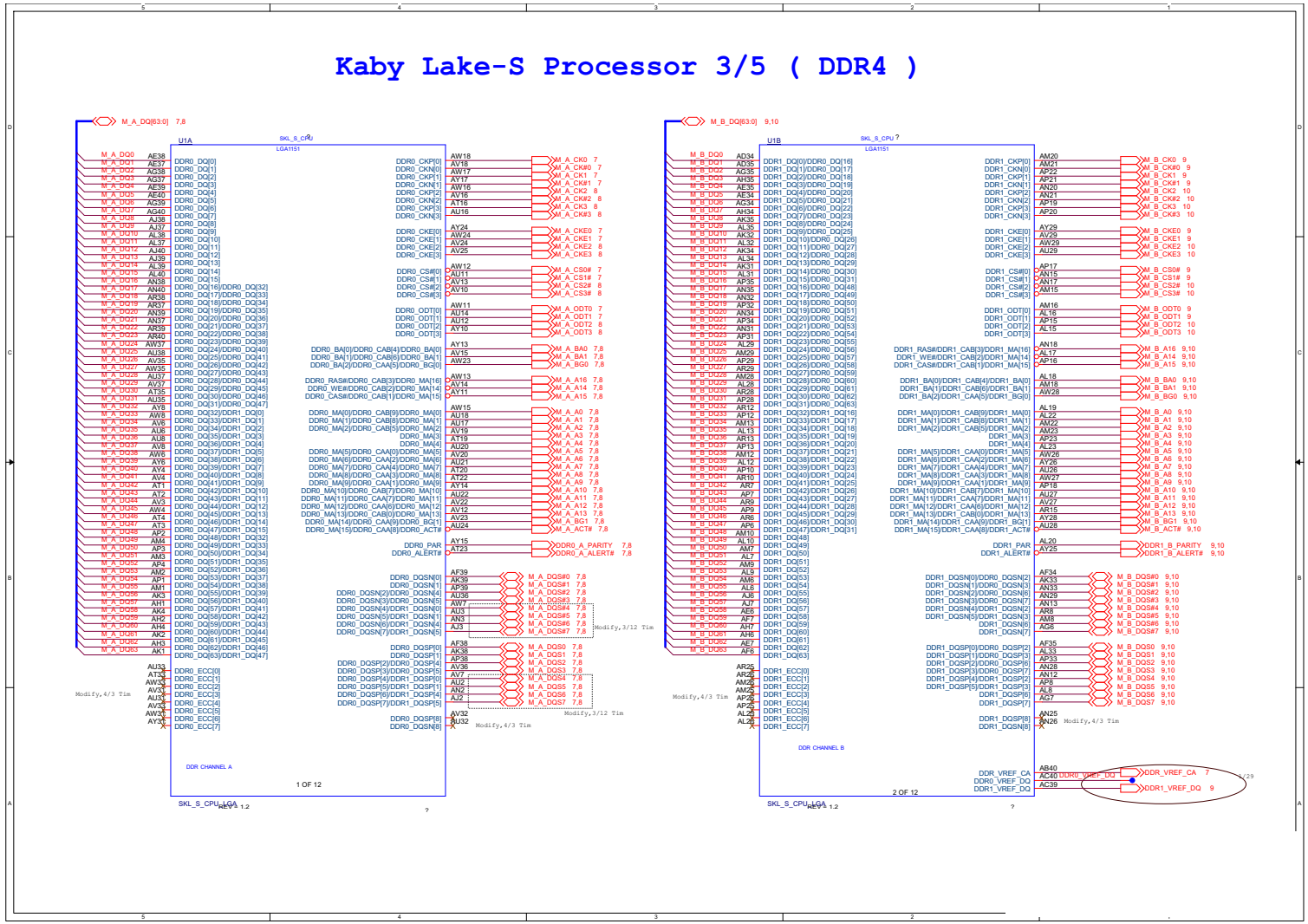
Sheet 2 of 62
Processor 1/5

Processor 2/5

Sheet 3 of 62
Processor 2/5



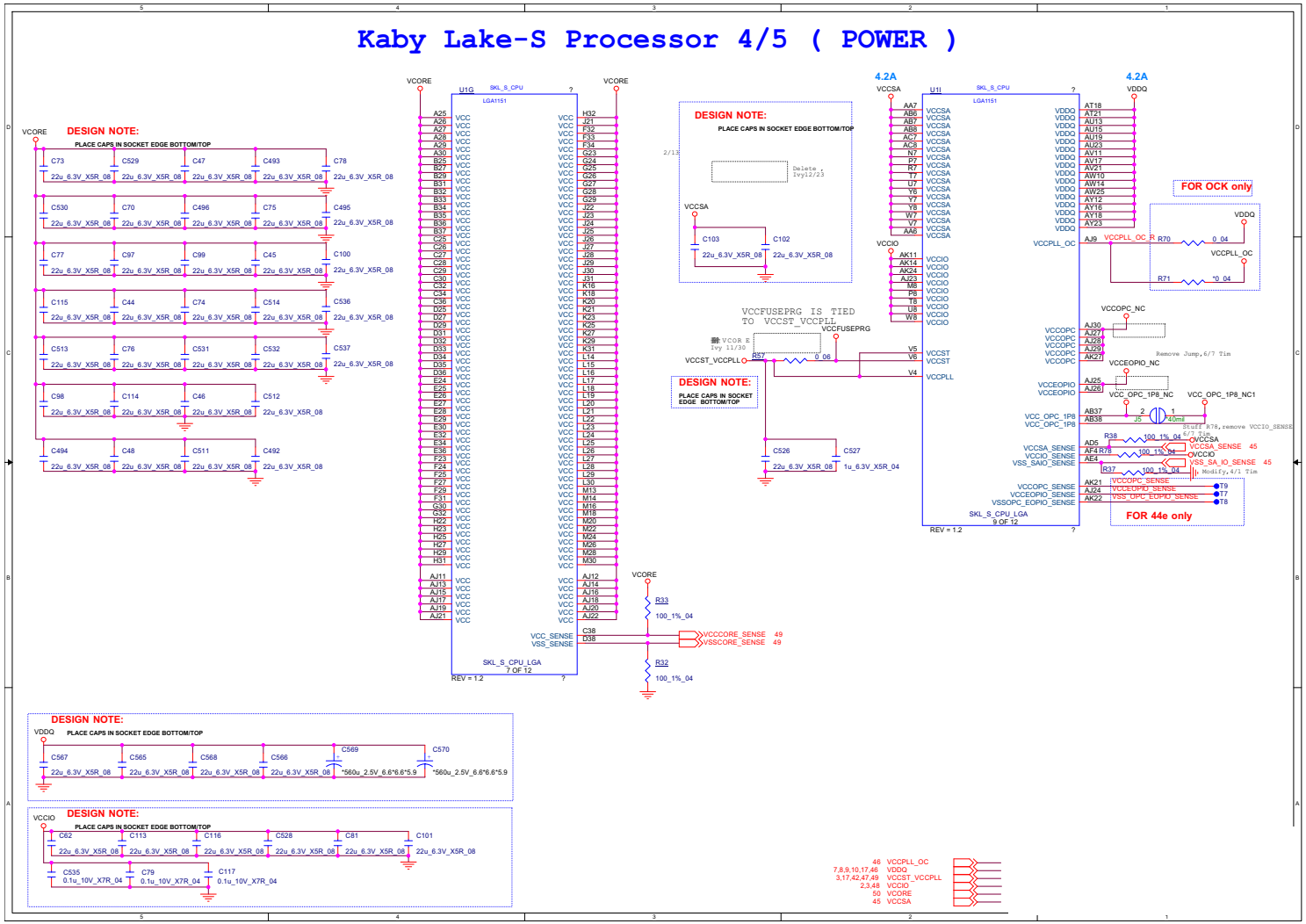
Processor 3/5



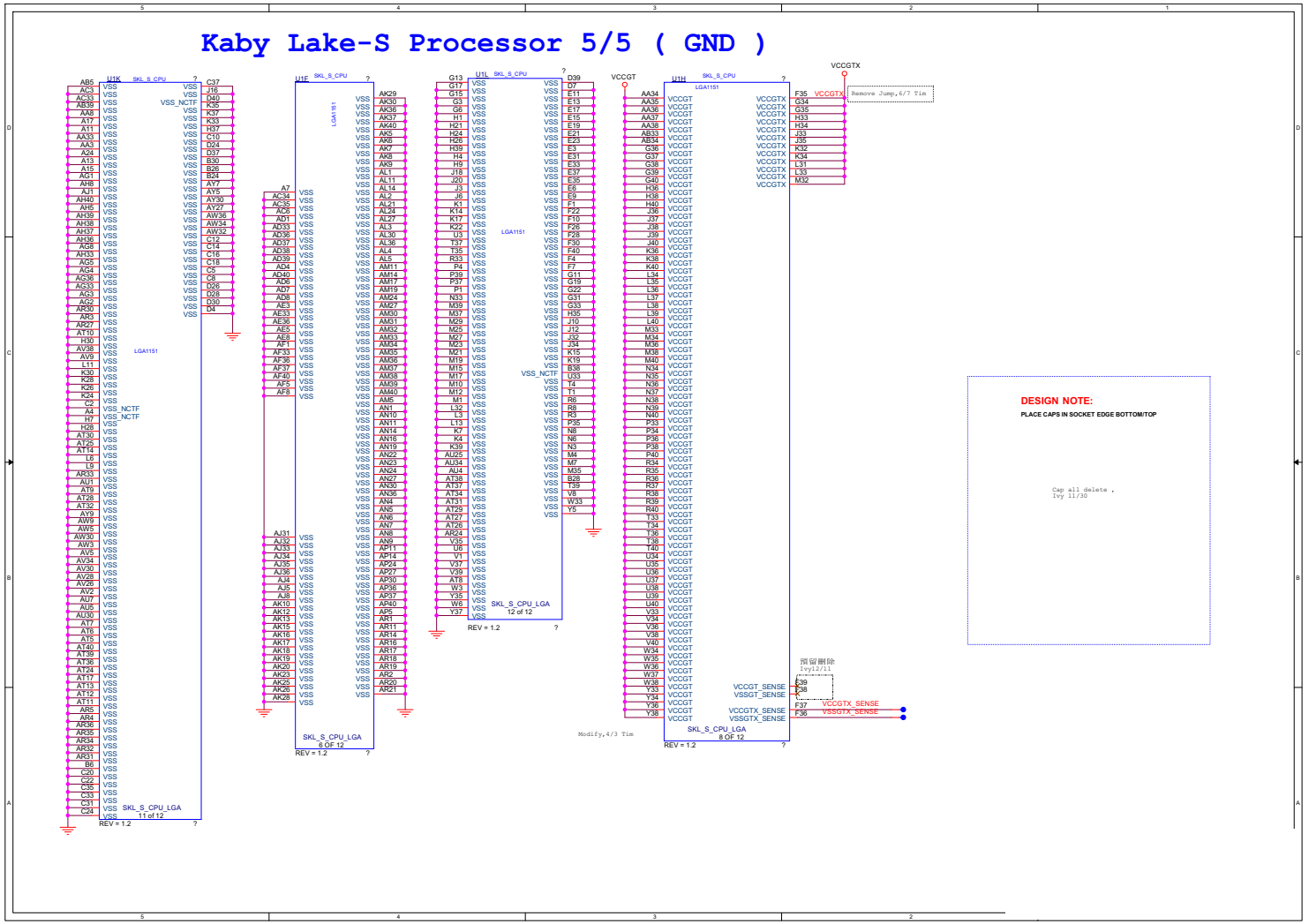
Sheet 4 of 62
Processor 3/5

Processor 4/5

Sheet 5 of 62
Processor 4/5



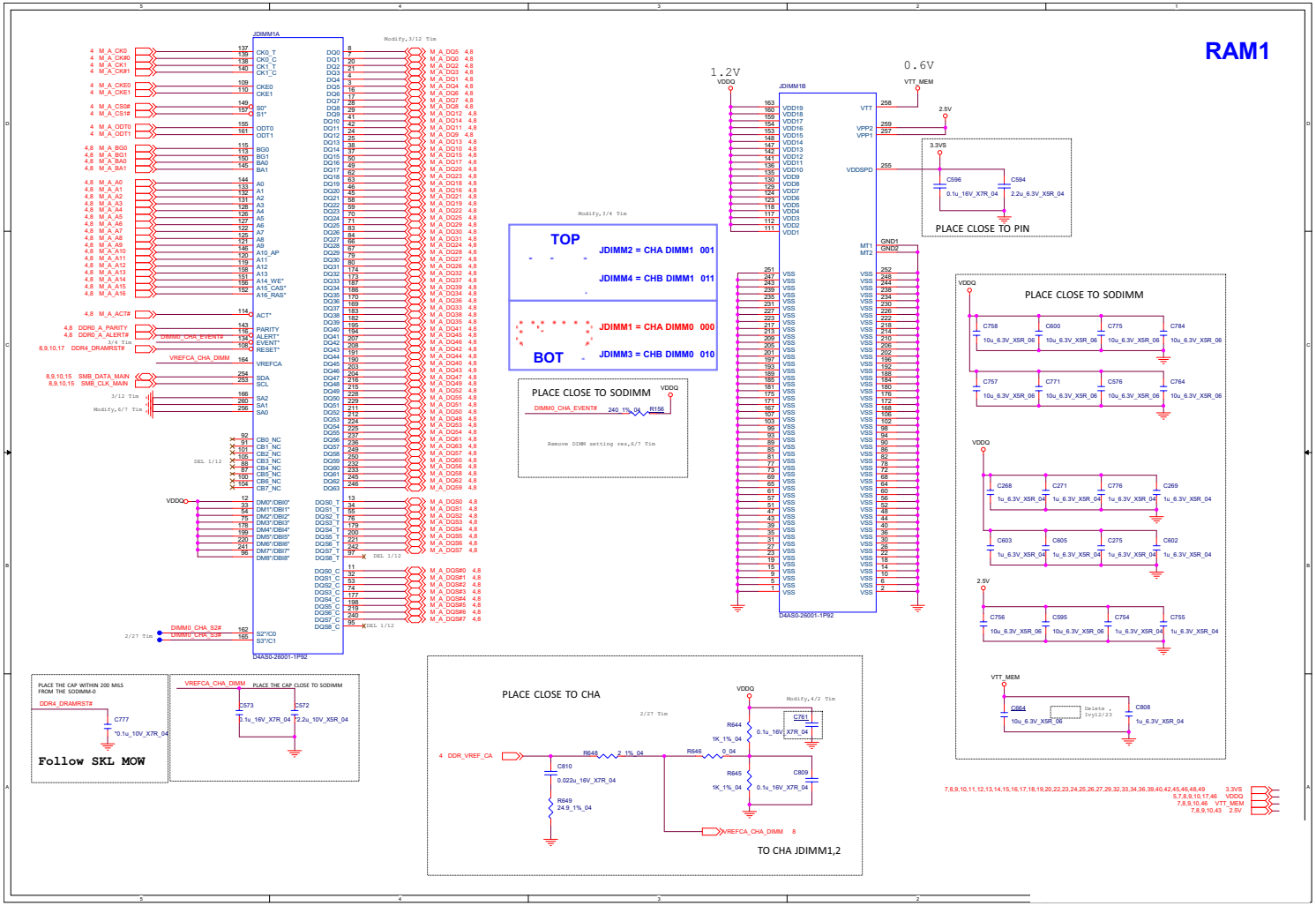
Processor 5/5



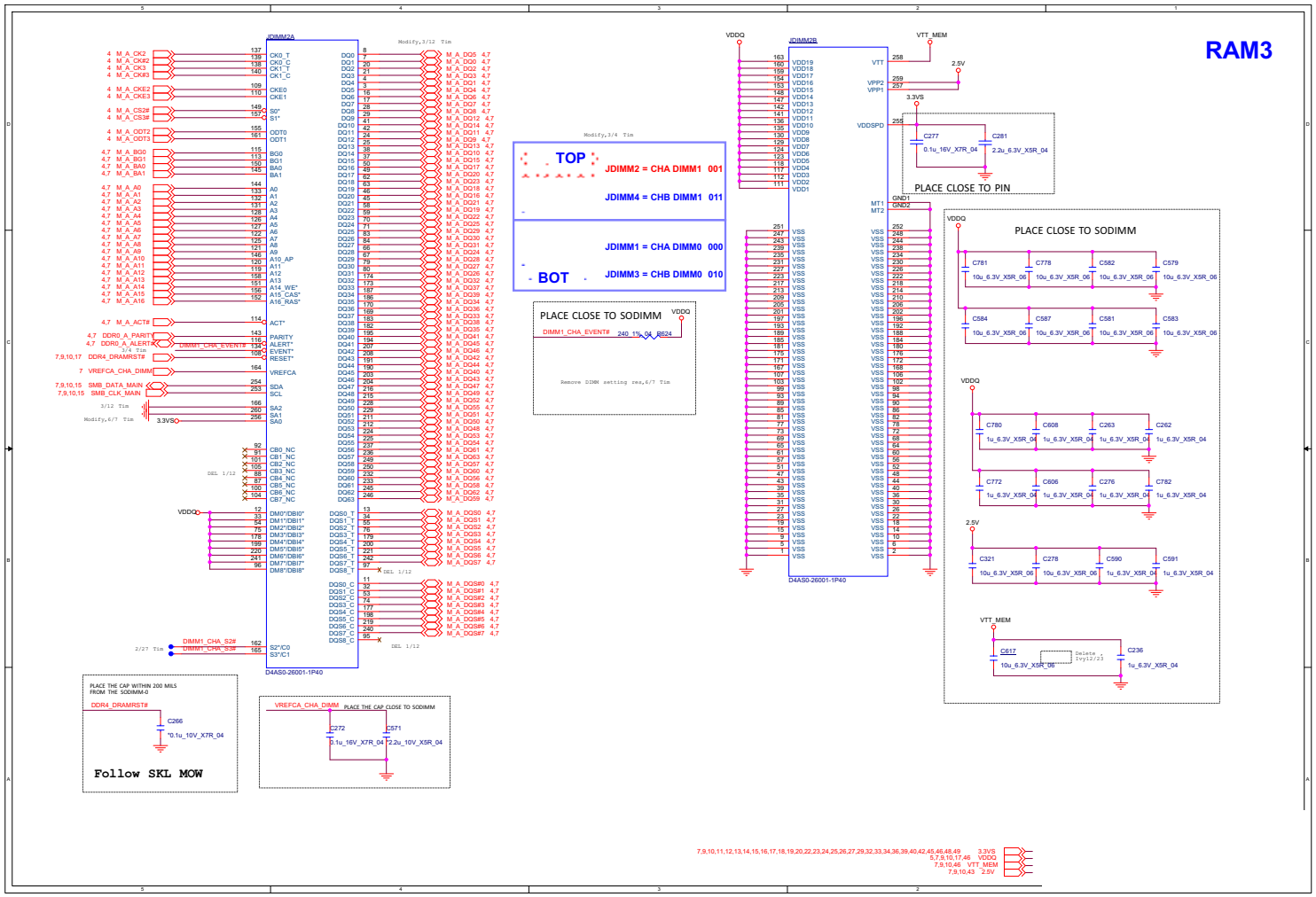
Sheet 6 of 62
Processor 5/5

DDR4 CHA SO-DIMM_0

Sheet 7 of 62
DDR4 CHA SO-DIMM _0



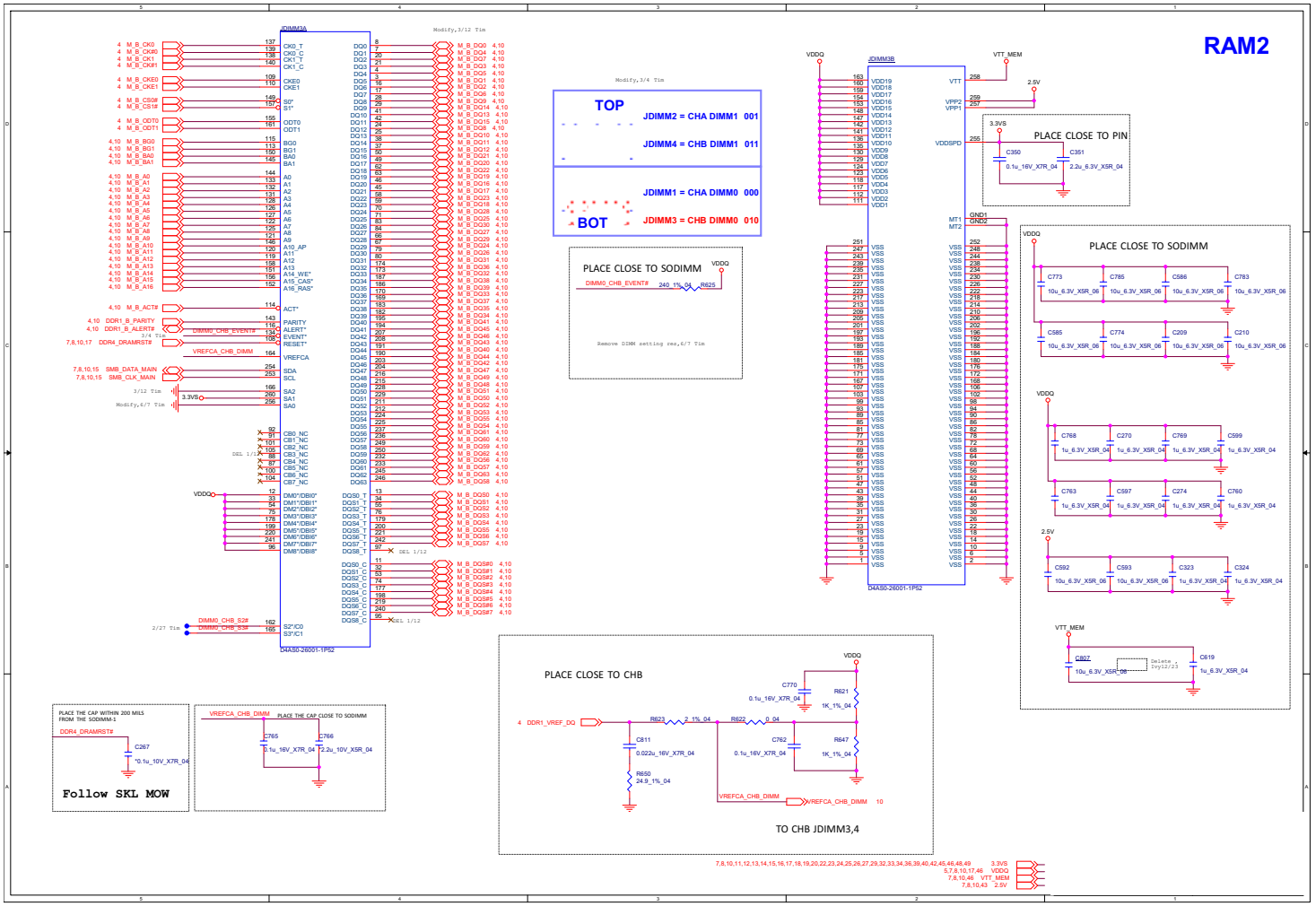
DDR4 CHA SO-DIMM_1



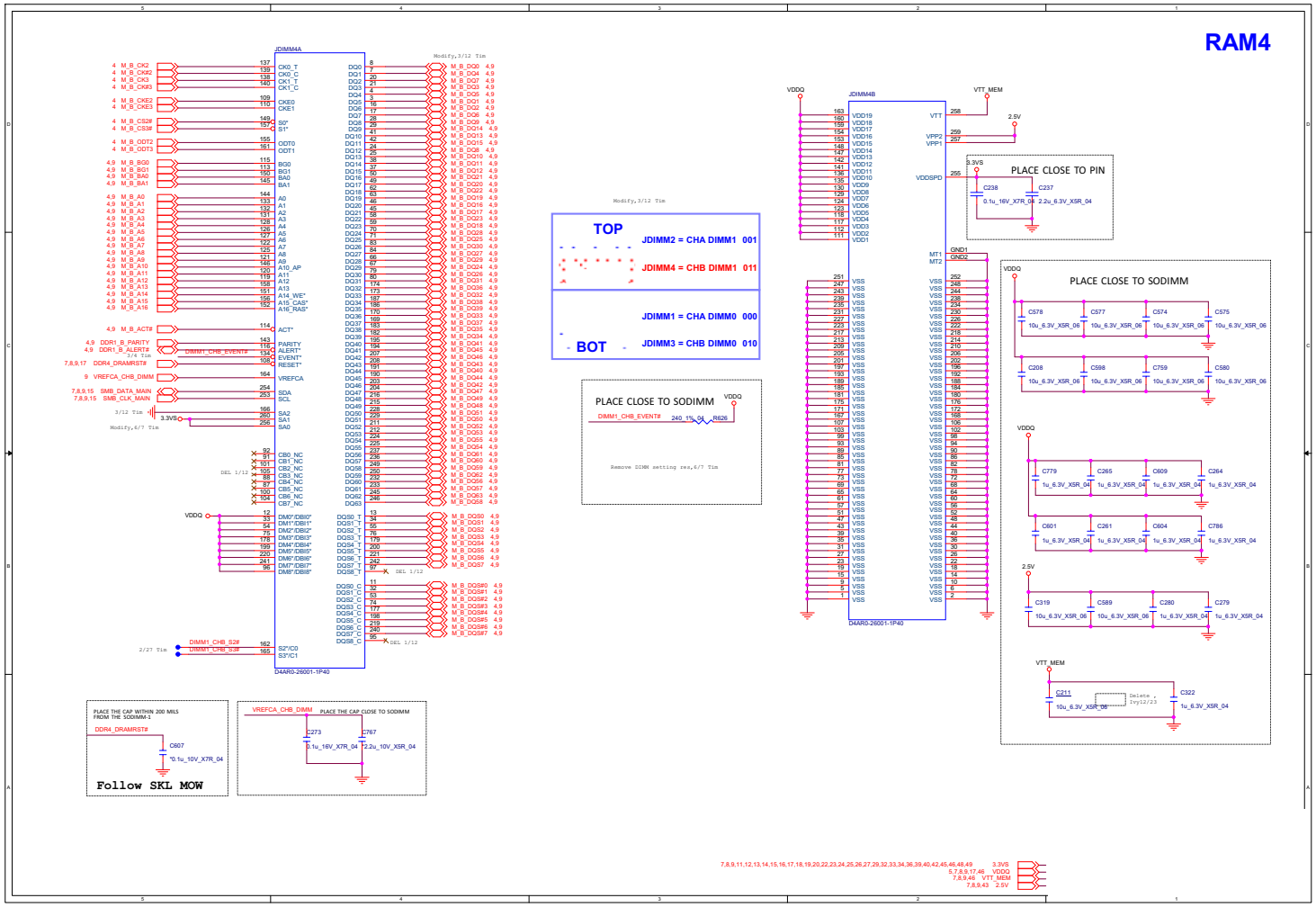
Sheet 8 of 62
DDR4 CHA SO-DIMM _1

DDR4 CHB SO-DIMM_0

Sheet 9 of 62
DDR4 CHB SO-DIMM _0



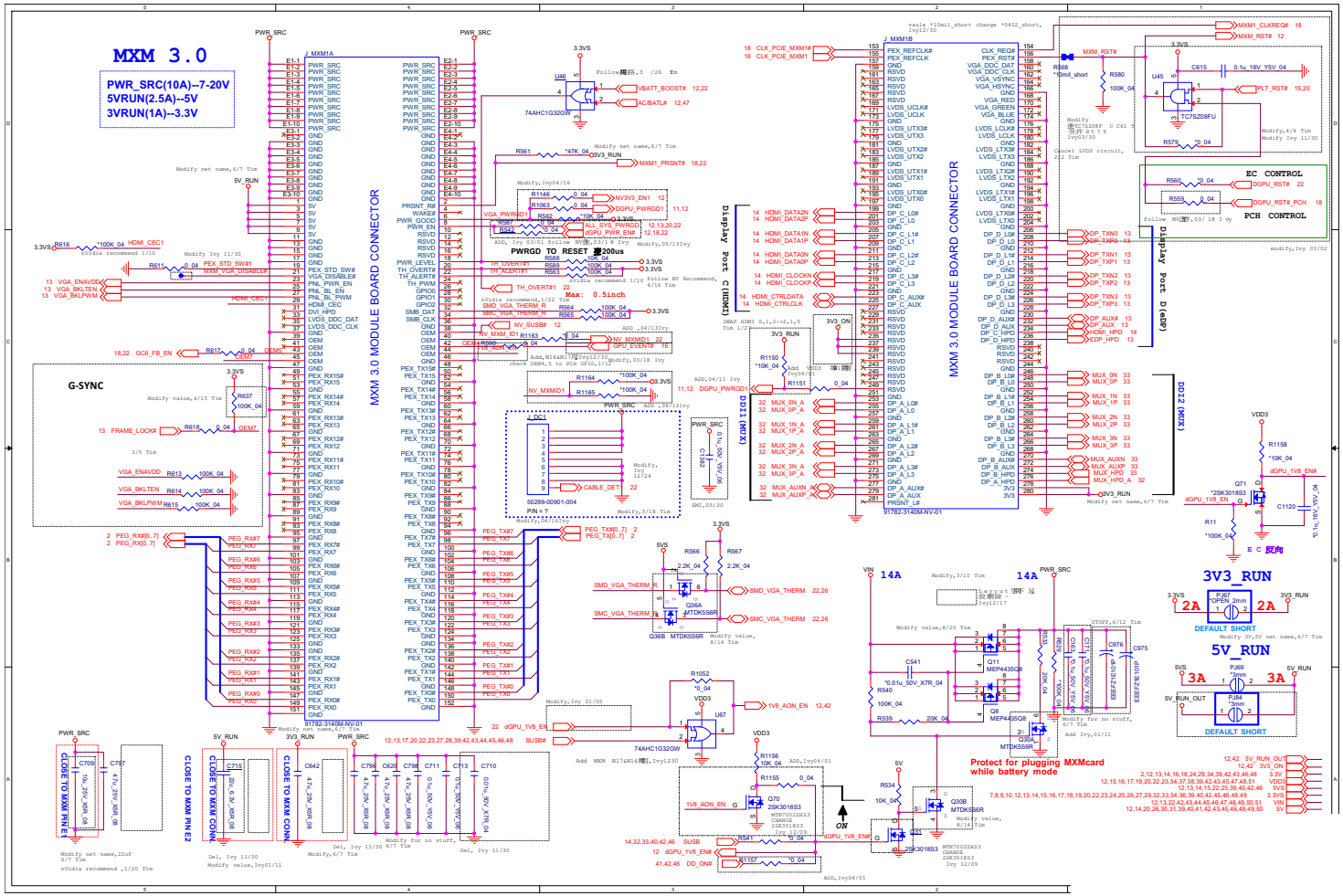
DDR4 CHB SO-DIMM_1



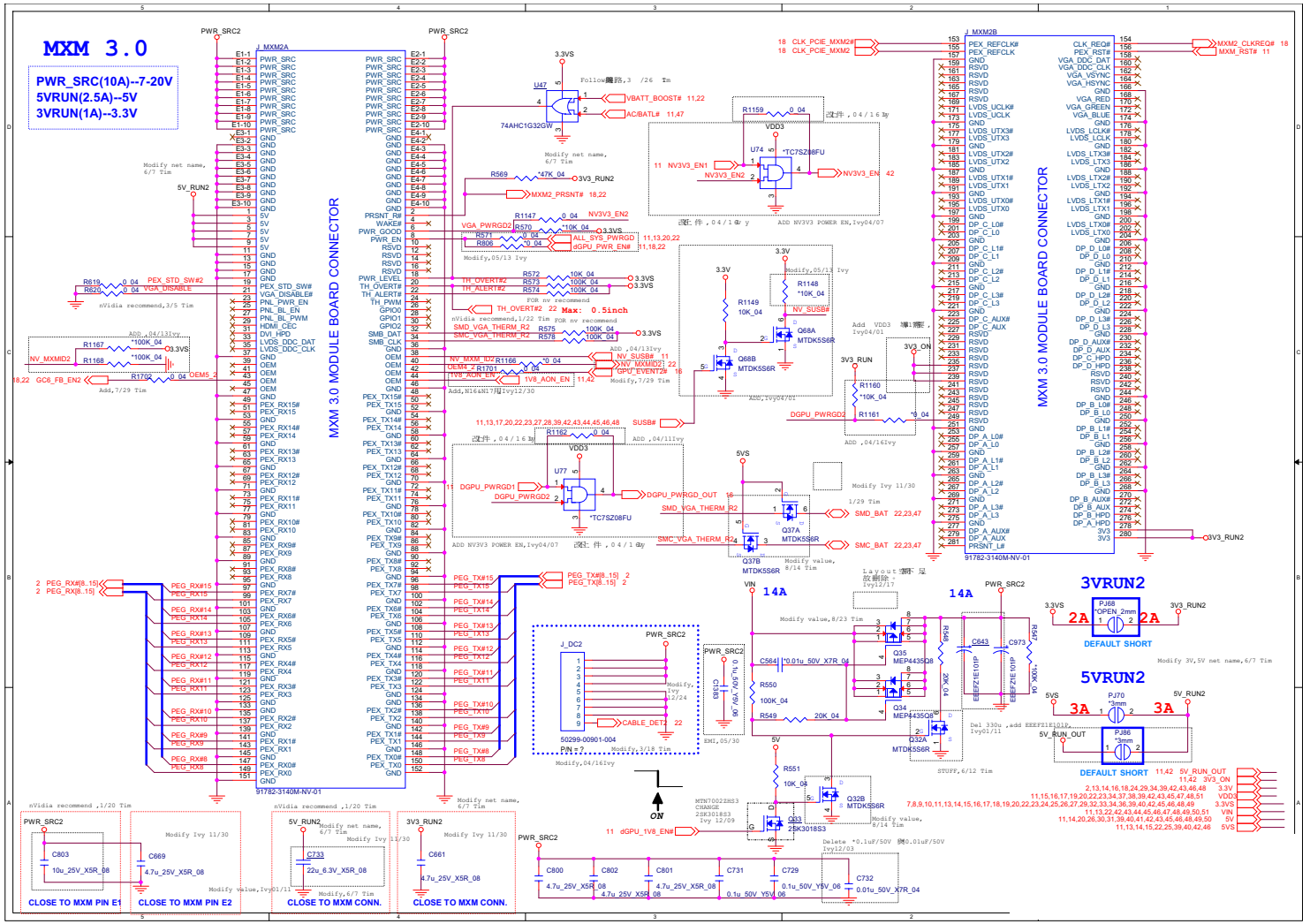
Sheet 10 of 62
DDR4 CHB SO-DIMM _1

MXM 3.0 Master

Sheet 11 of 62
MXM 3.0 Master



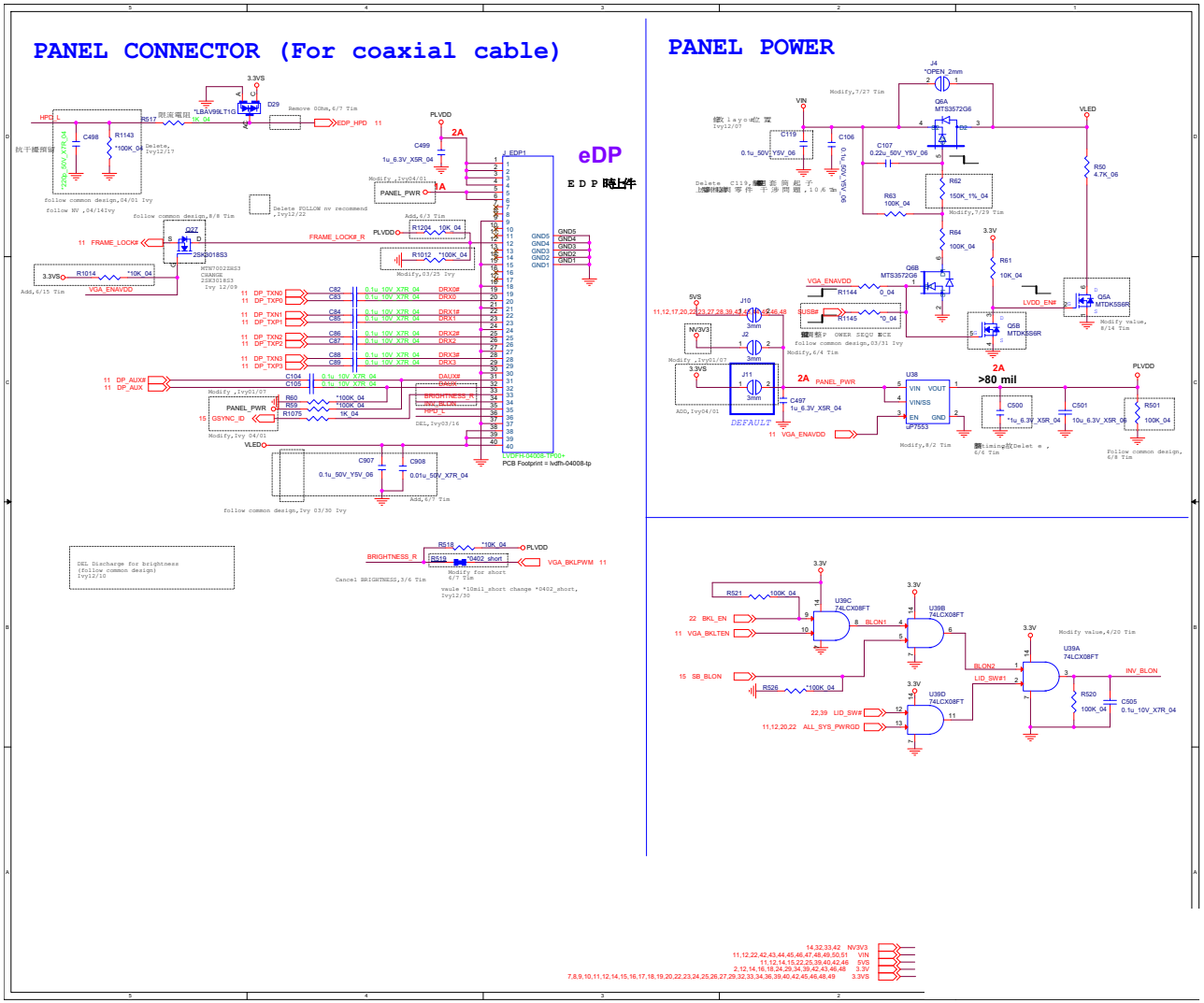
MXM 3.0 Slave



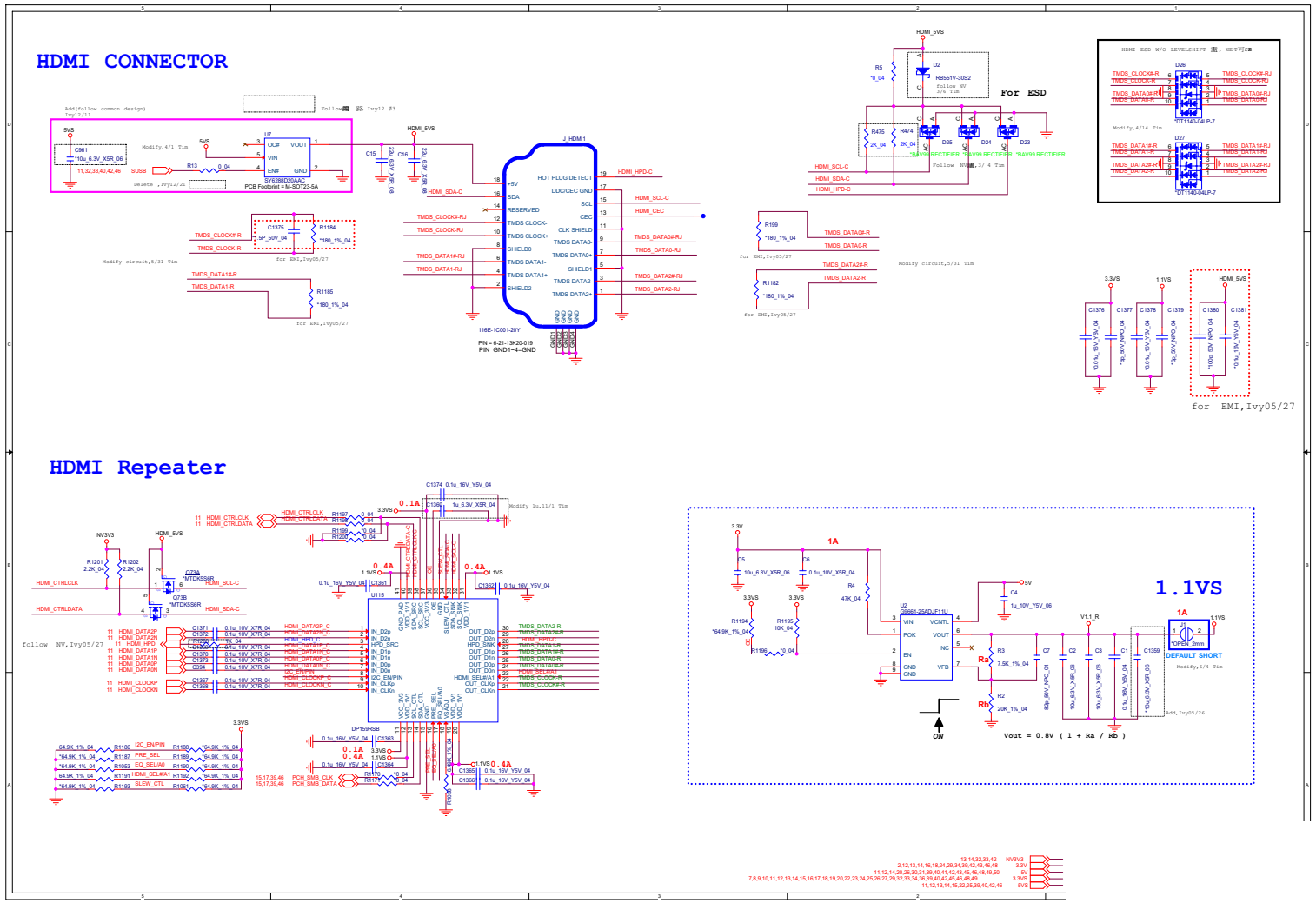
Sheet 12 of 62
MXM 3.0 Slave

Panel, Inverter

Sheet 13 of 62
Panel, Inverter



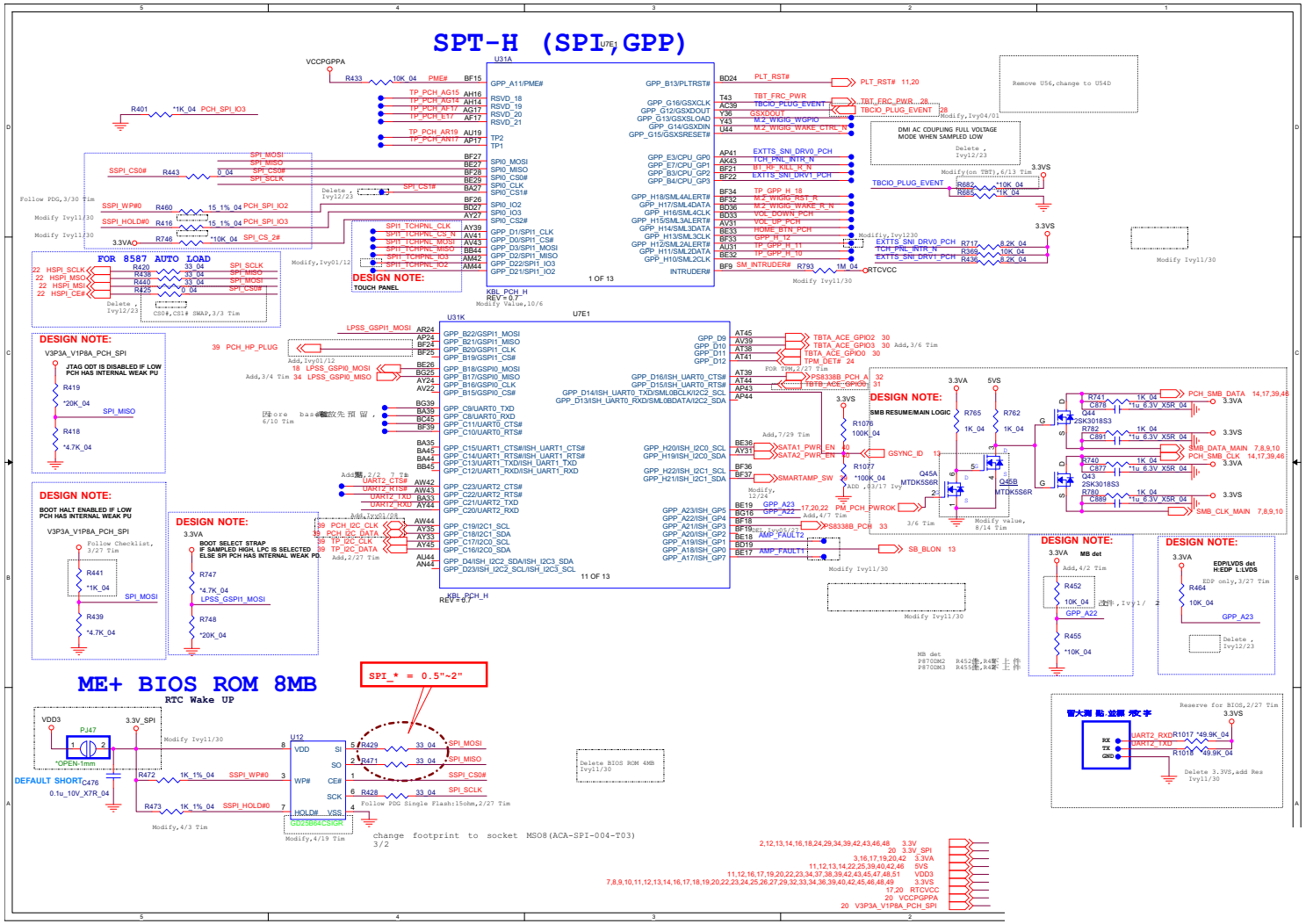
HDMI



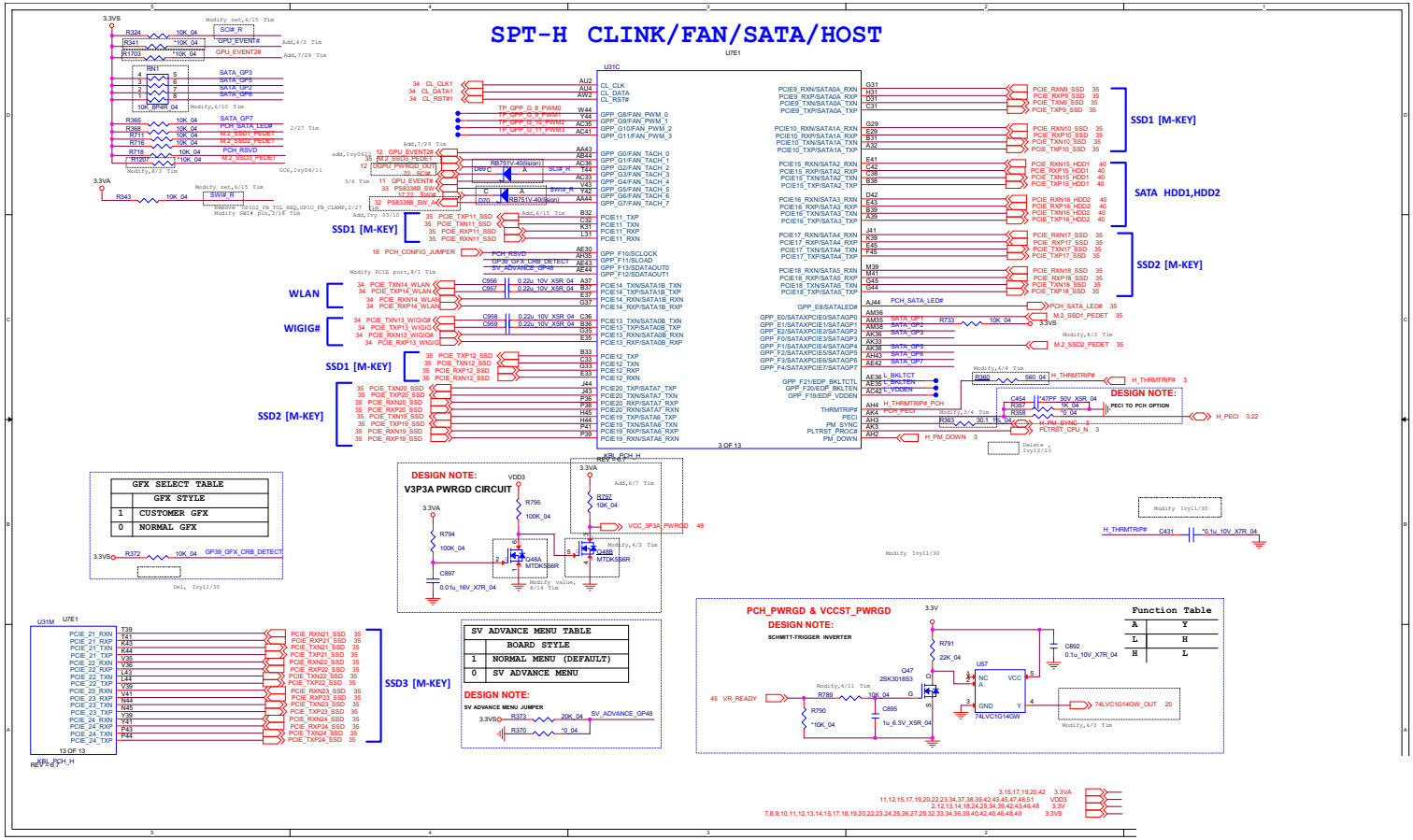
Sheet 14 of 62
HDMI

SPT-H 1/7

Sheet 15 of 62
SPT-H 1/7



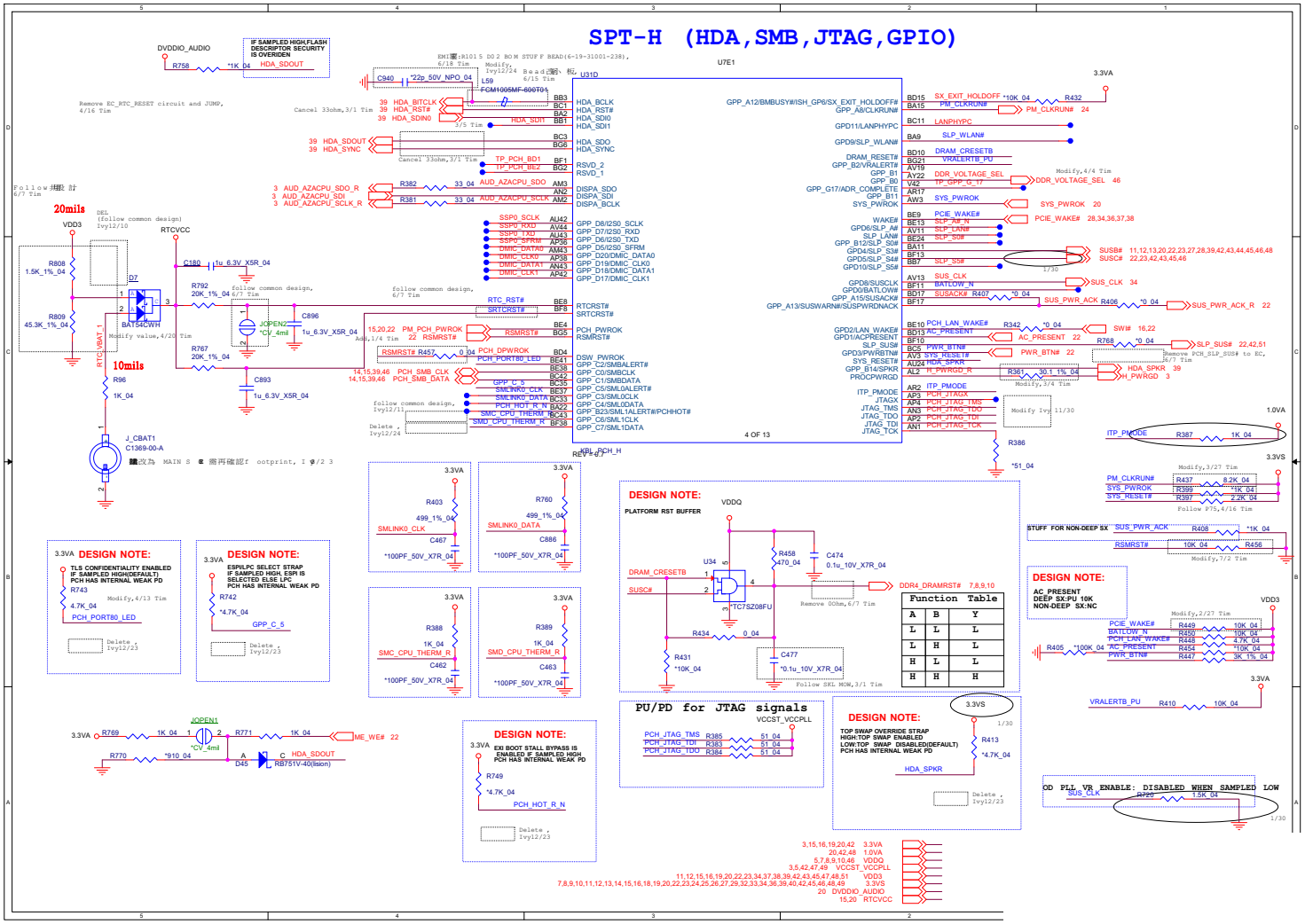
SPT-H 2/7



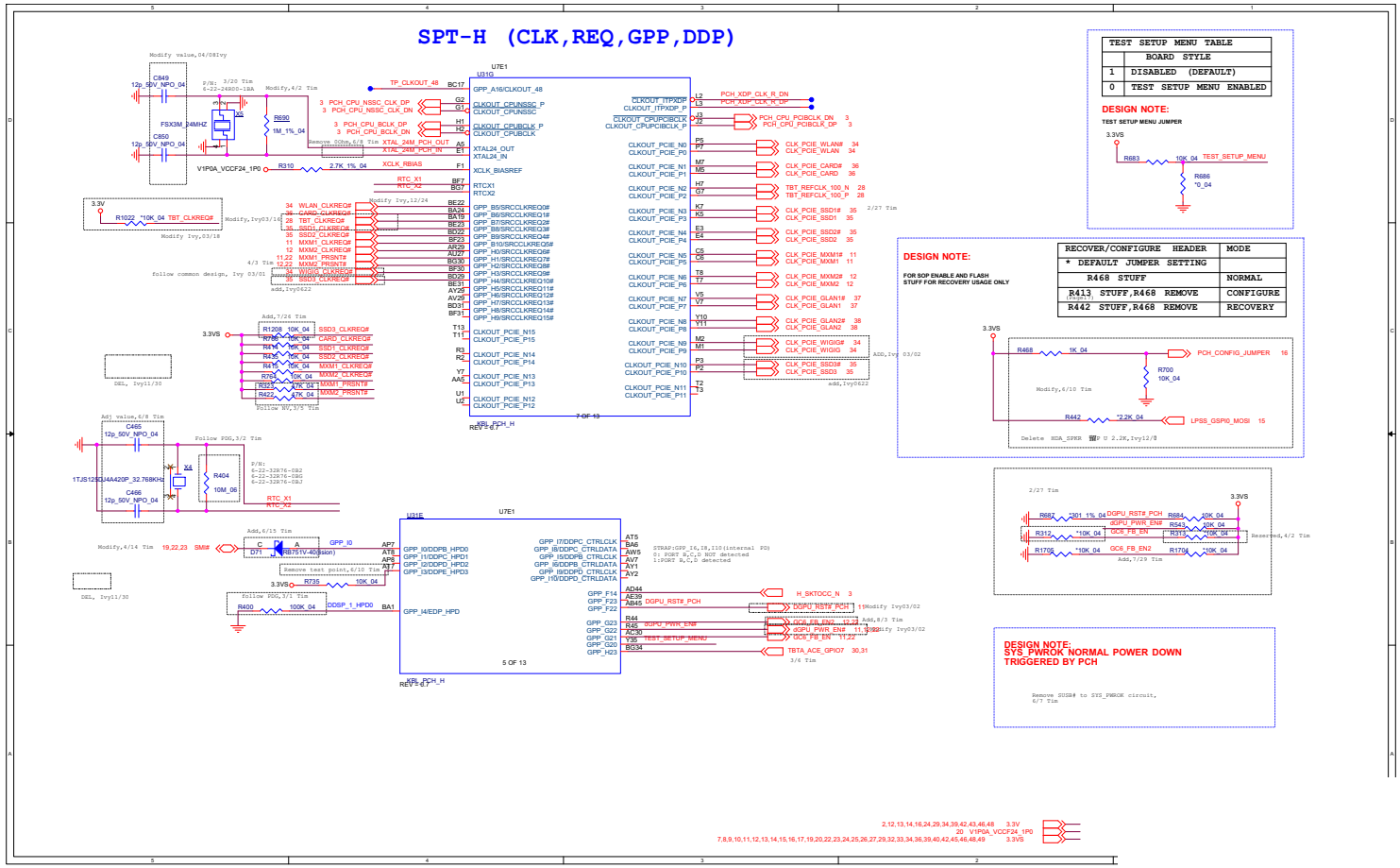
Sheet 16 of 62
SPT-H 2/7

SPT-H 3/7

Sheet 17 of 62
SPT-H 3/7

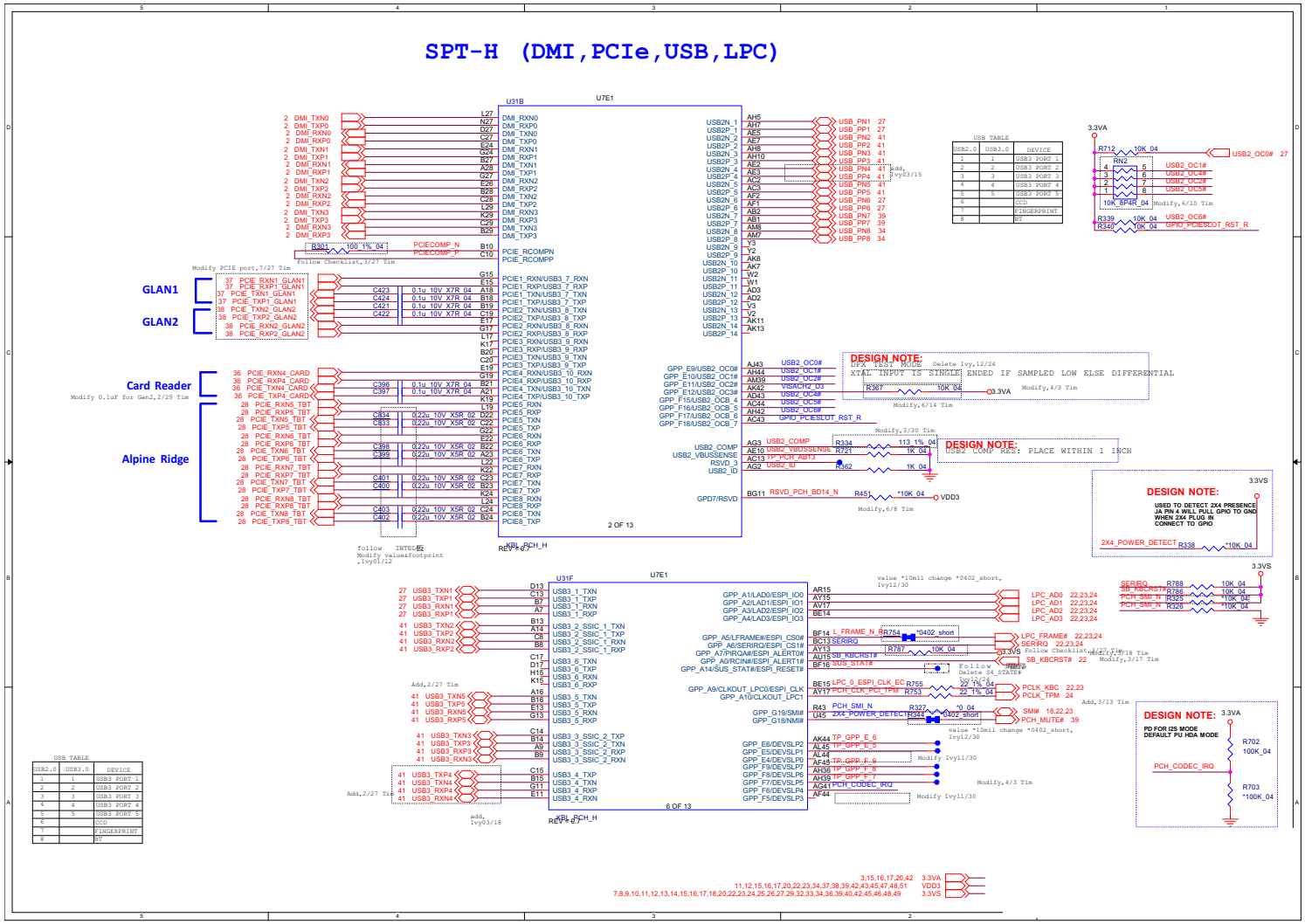


SPT-H 4/7

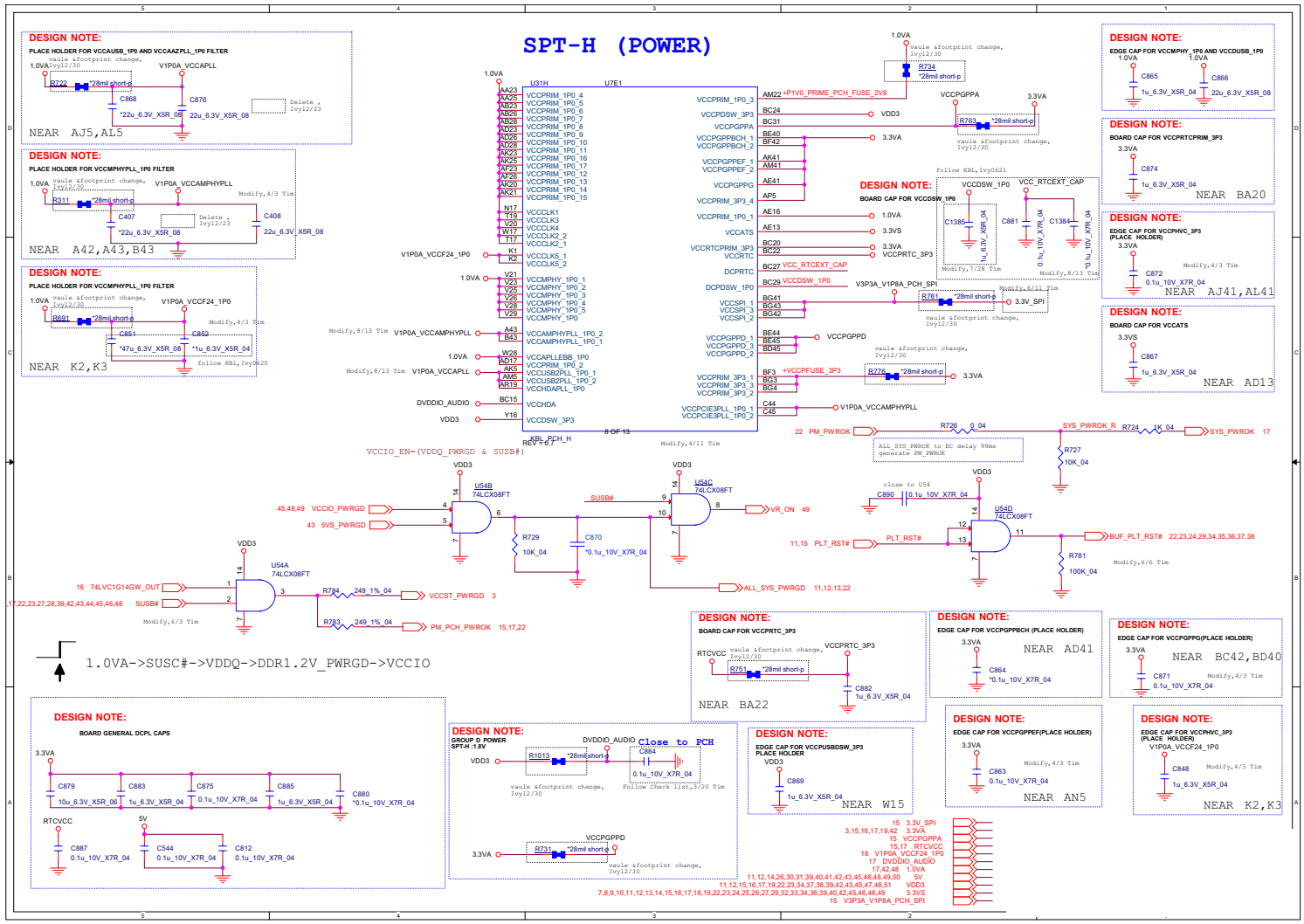

SPT-H (CLK,REQ,GPP,DDP)
TEST SETUP MENU TABLE
BOARD STYLE
1 DISABLED (DEFAULT)
0 TEST SETUP MENU ENABLED
DESIGN NOTE:
TEST SETUP MENU JUMPER
DESIGN NOTE:
FOR SOP ENABLE AND FLASH STUFF FOR RECOVERY USAGE ONLY
RECOVER/CONFIGURE HEADER MODE
* DEFAULT JUMPER SETTING
R468 STUFF NORMAL
R413 STUFF,R468 REMOVE CONFIGURE
R442 STUFF,R468 REMOVE RECOVERY
DESIGN NOTE:
SYS_PWROK NORMAL POWER DOWN
TRIGGERED BY PCH

SPT-H 5/7

Sheet 19 of 62
SPT-H 5/7



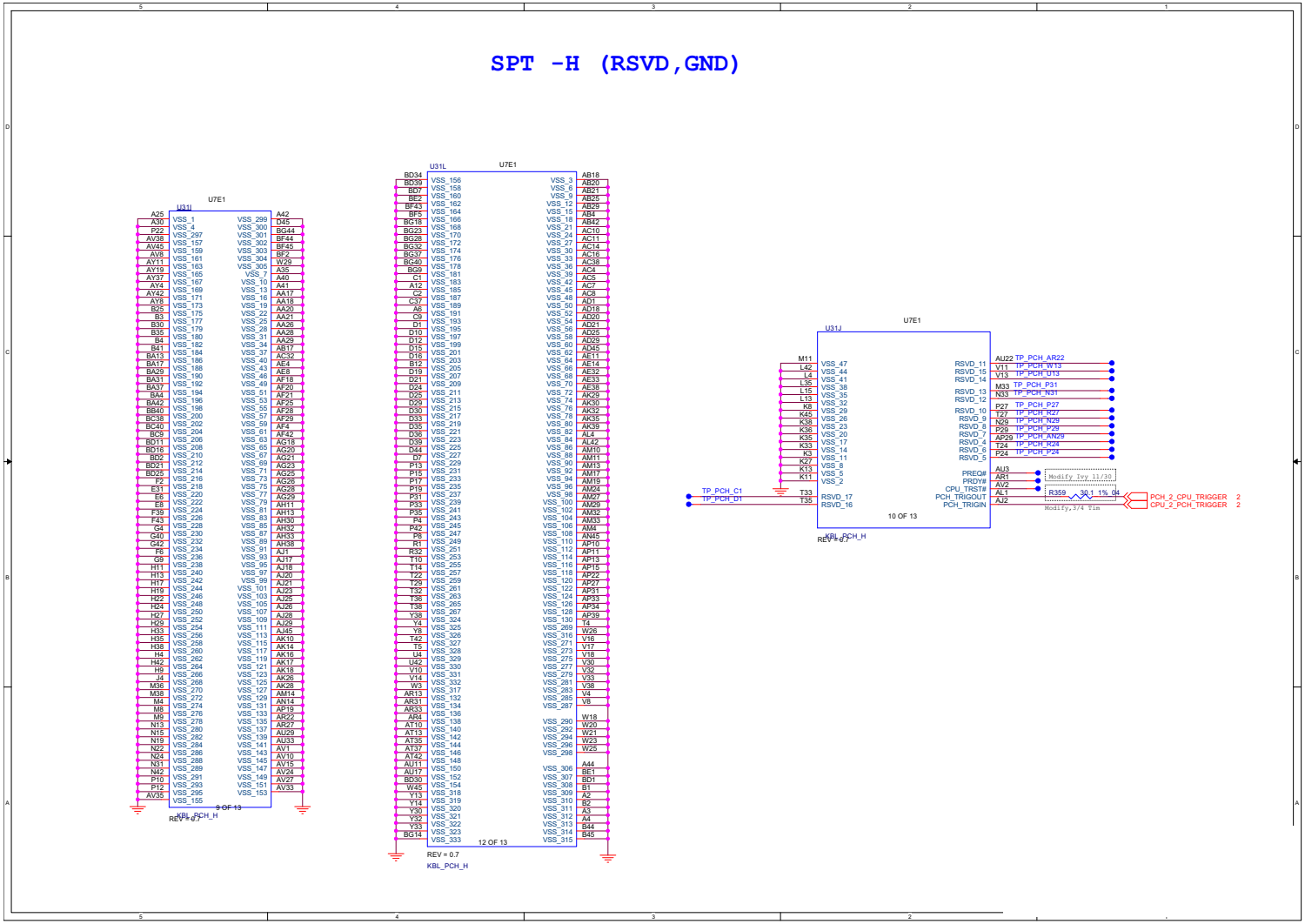
SPT-H 6/7



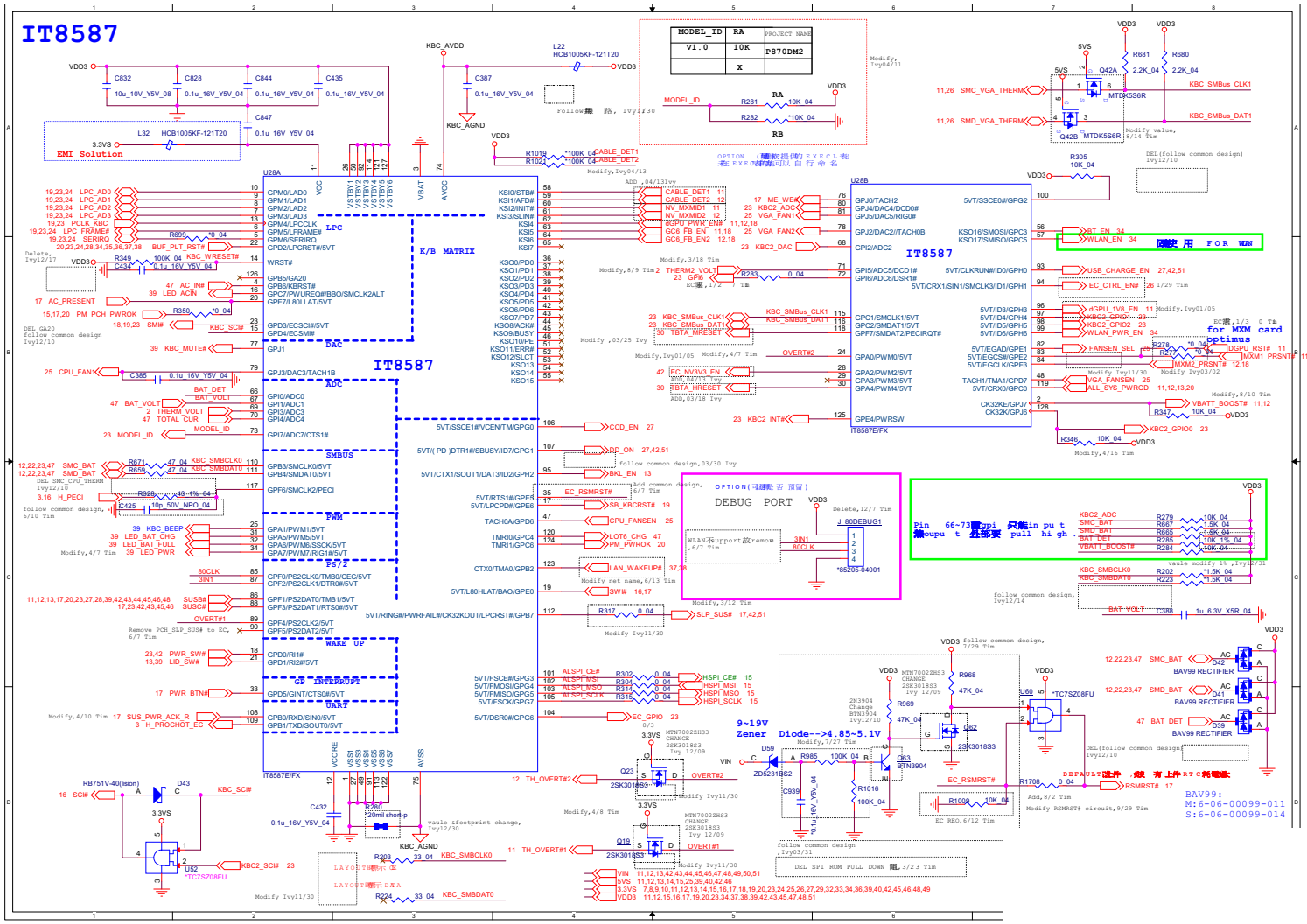
Sheet 20 of 62
SPT-H 6/7

SPT-H 7/7

Sheet 21 of 62
SPT-H 7/7



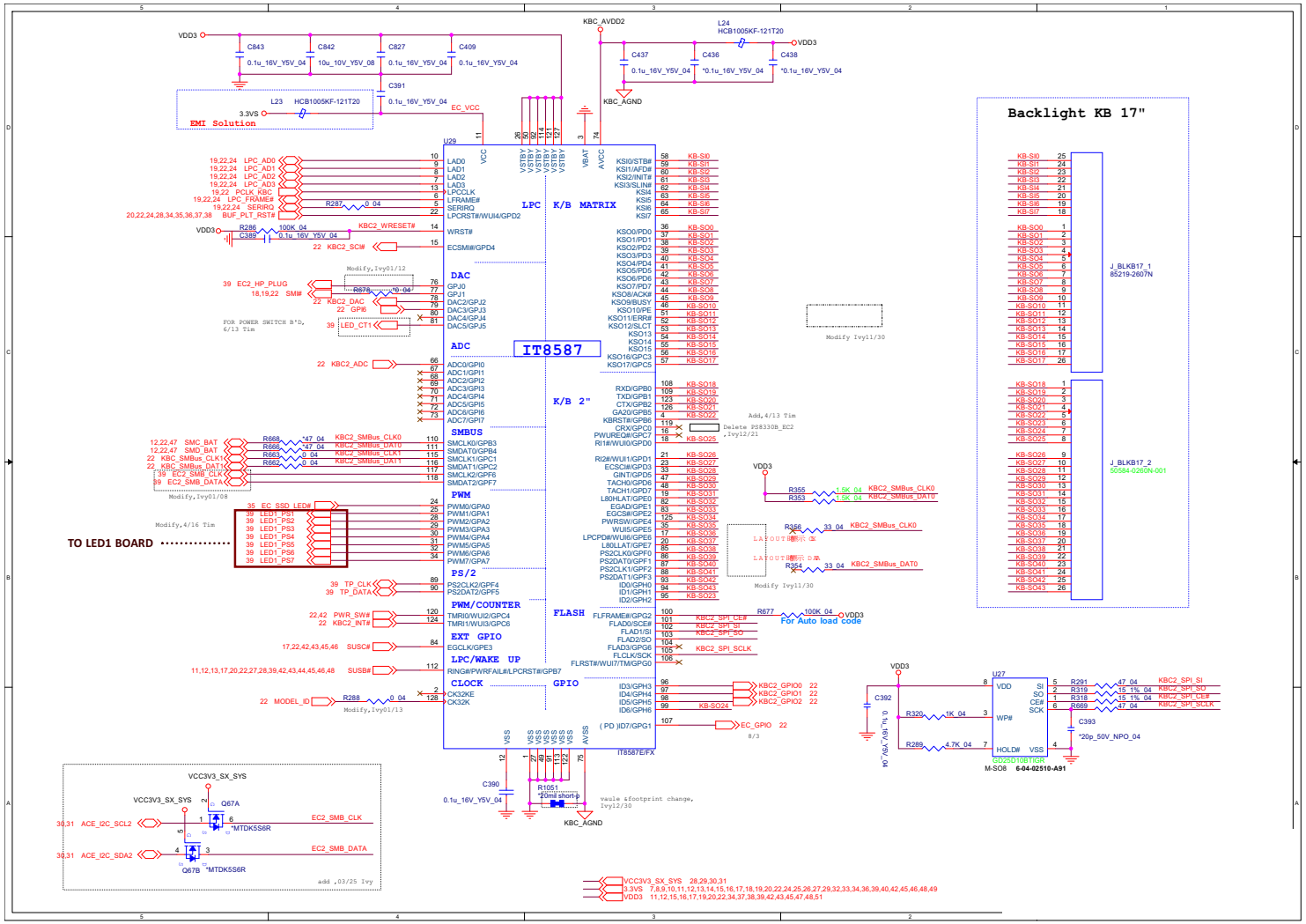
Main EC IT8587



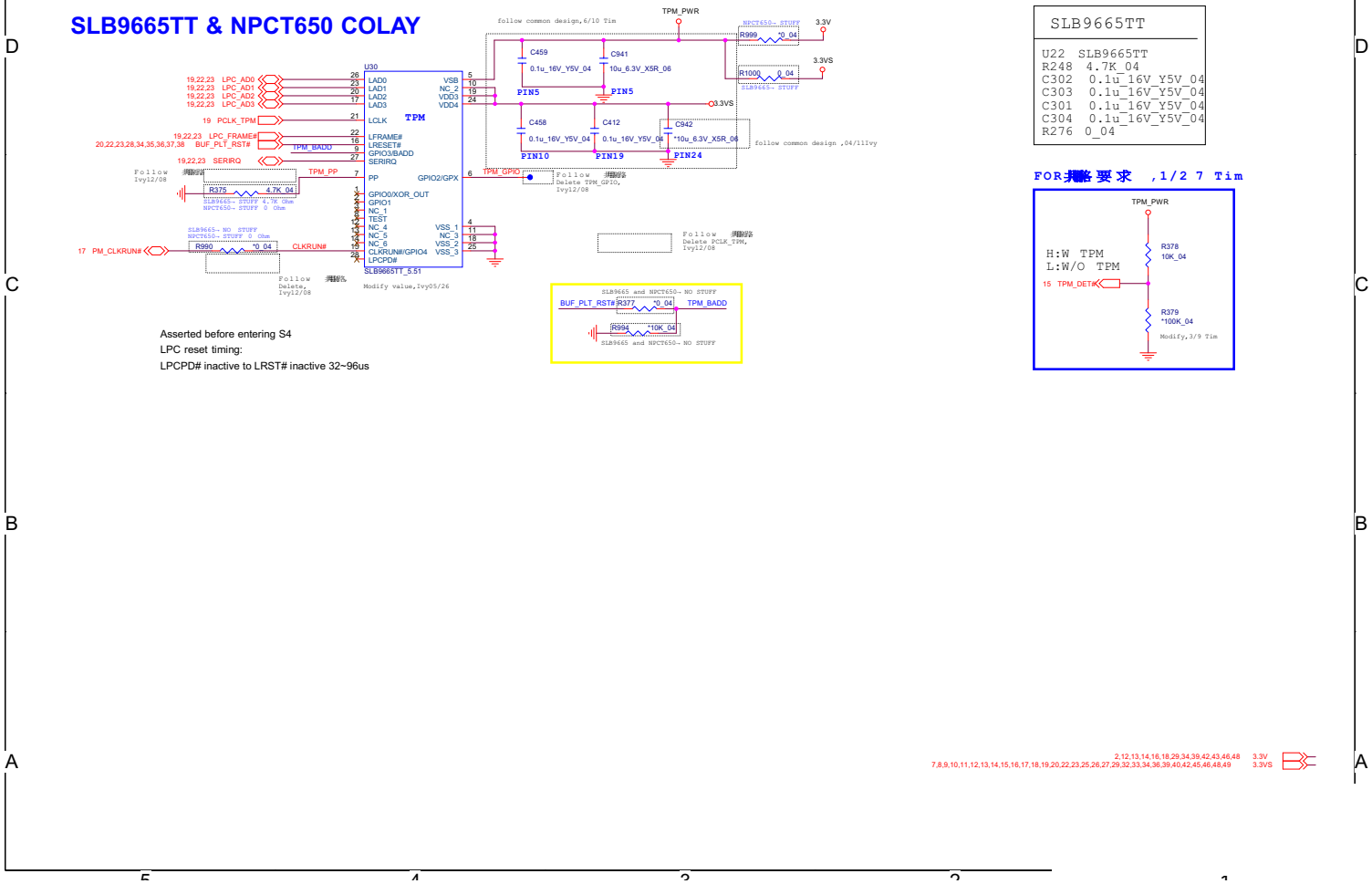
Sheet 22 of 62
Main EC IT8587

Second EC IT8587

Sheet 23 of 62
Second EC IT8587



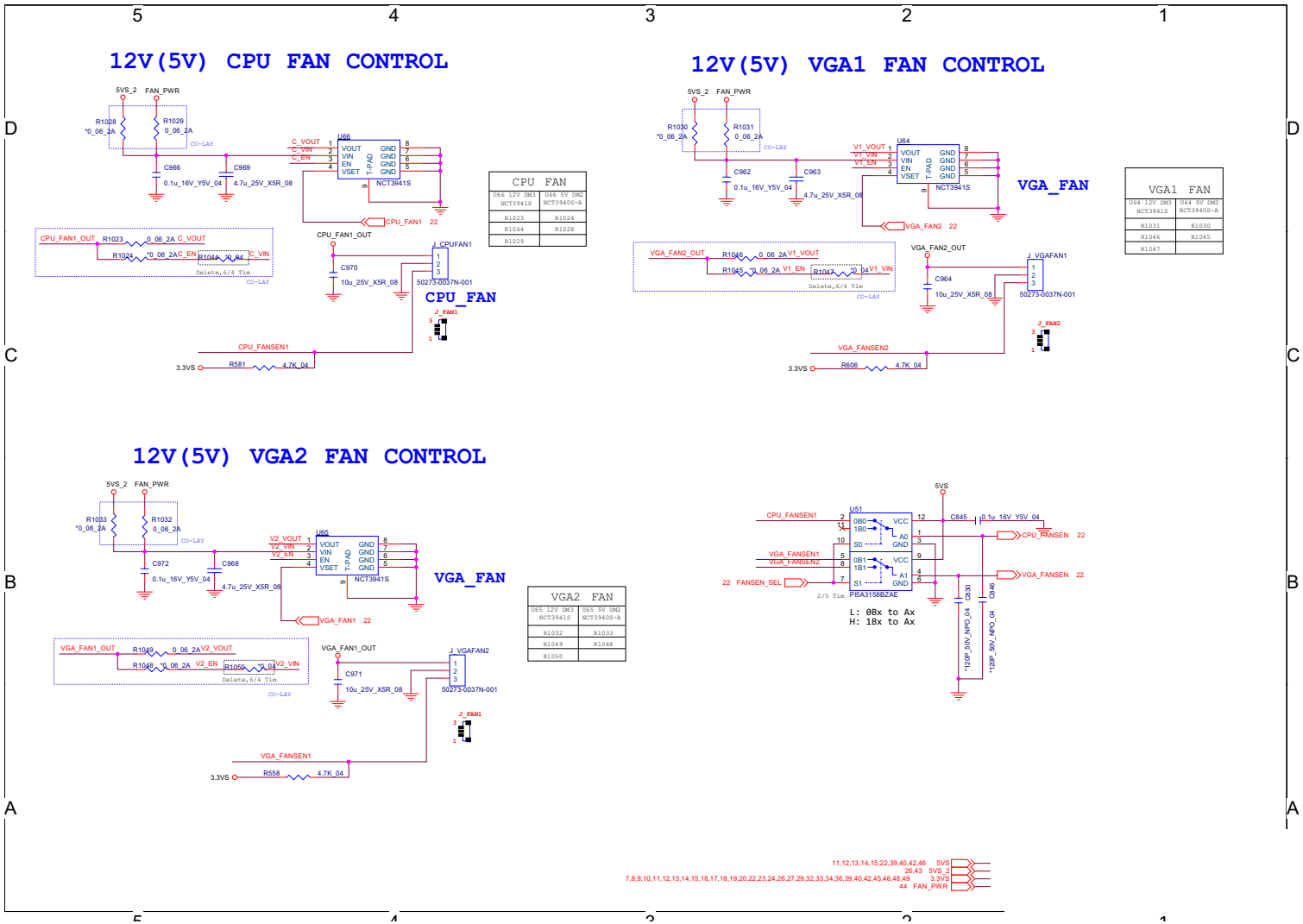
TPM SLB9665TT



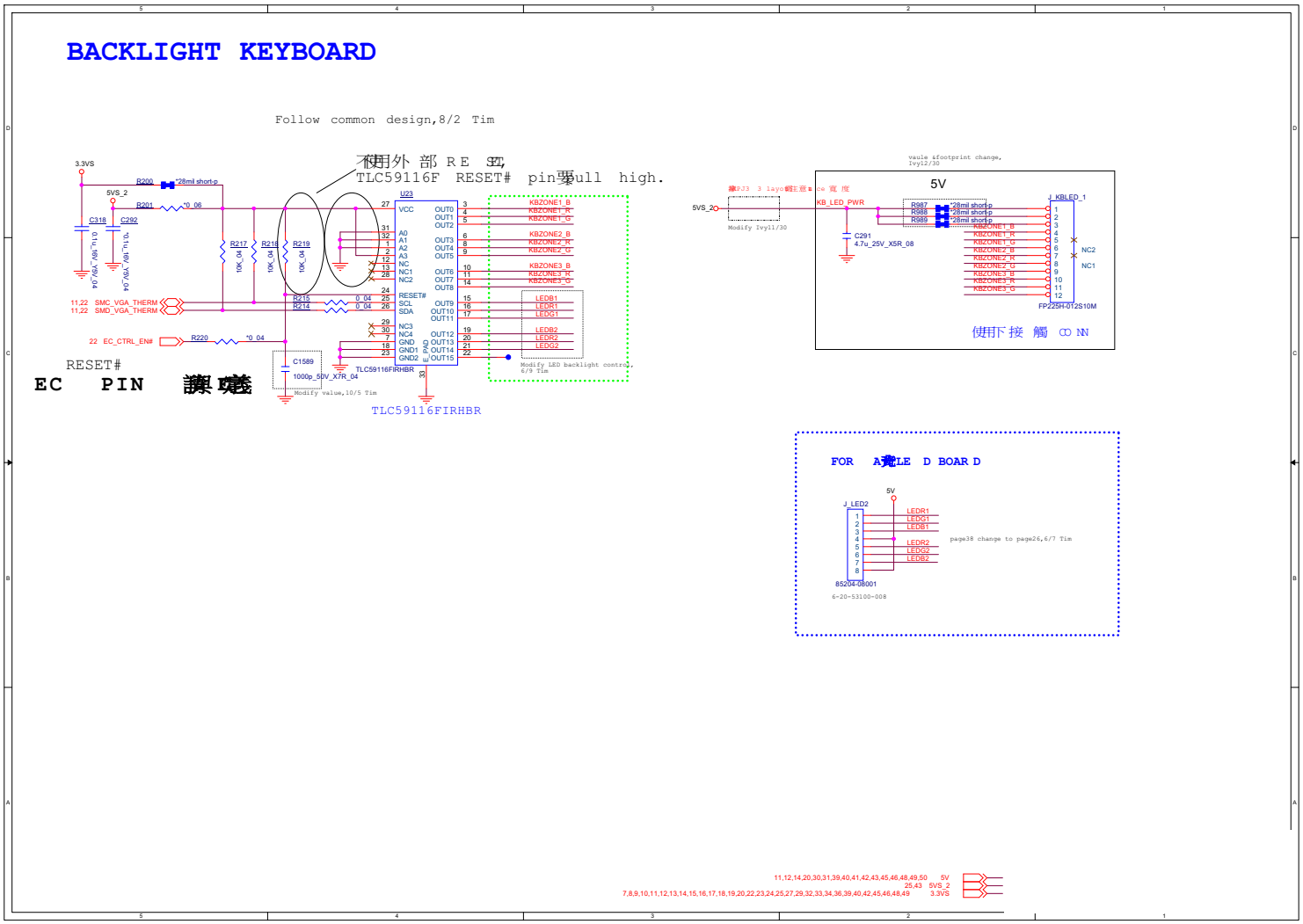
Sheet 24 of 62
TPM SLB9665TT

CPU, VGA Fan Conn

Sheet 25 of 62
CPU, VGA Fan Conn



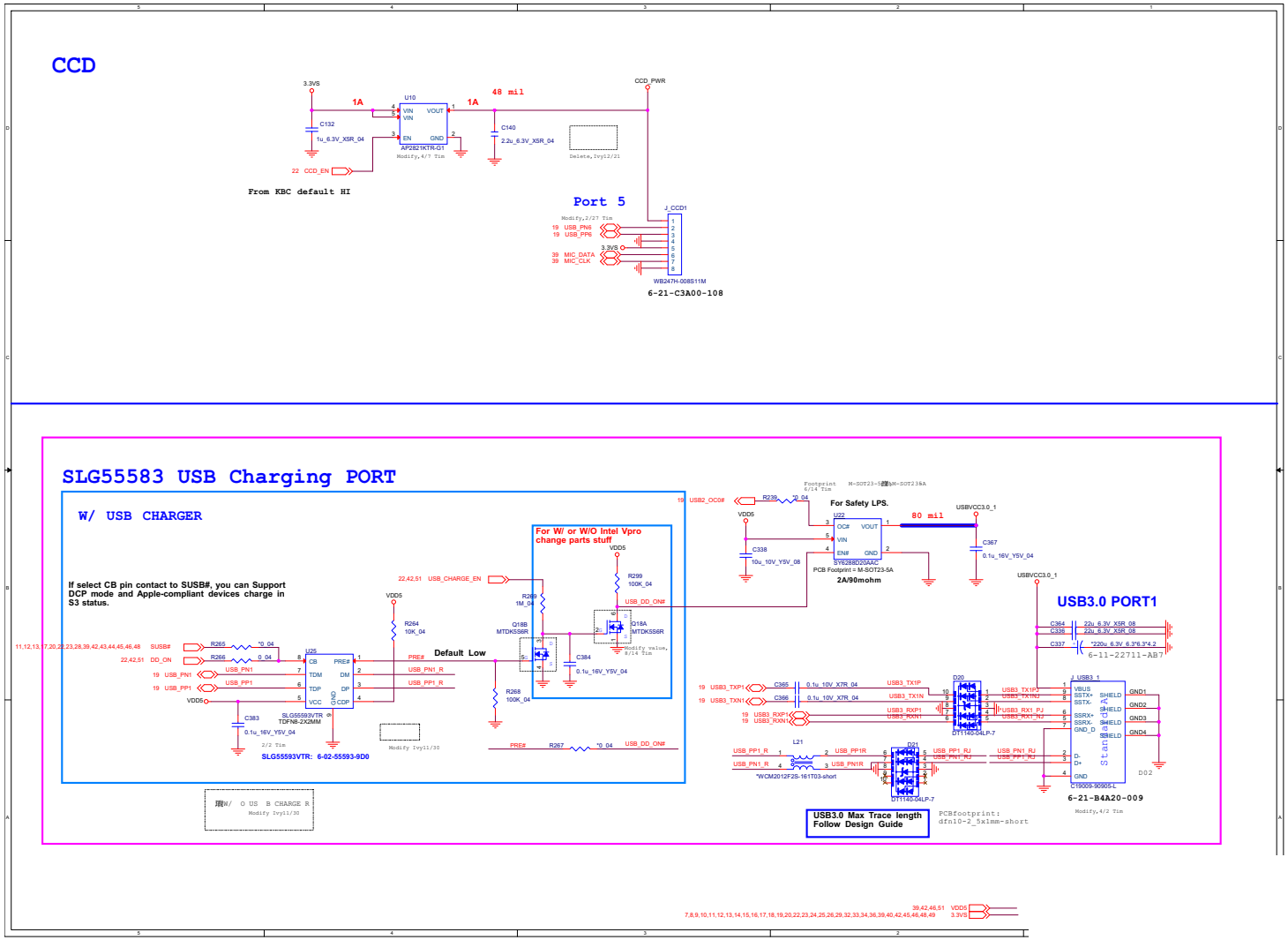
Backlight Keyboard



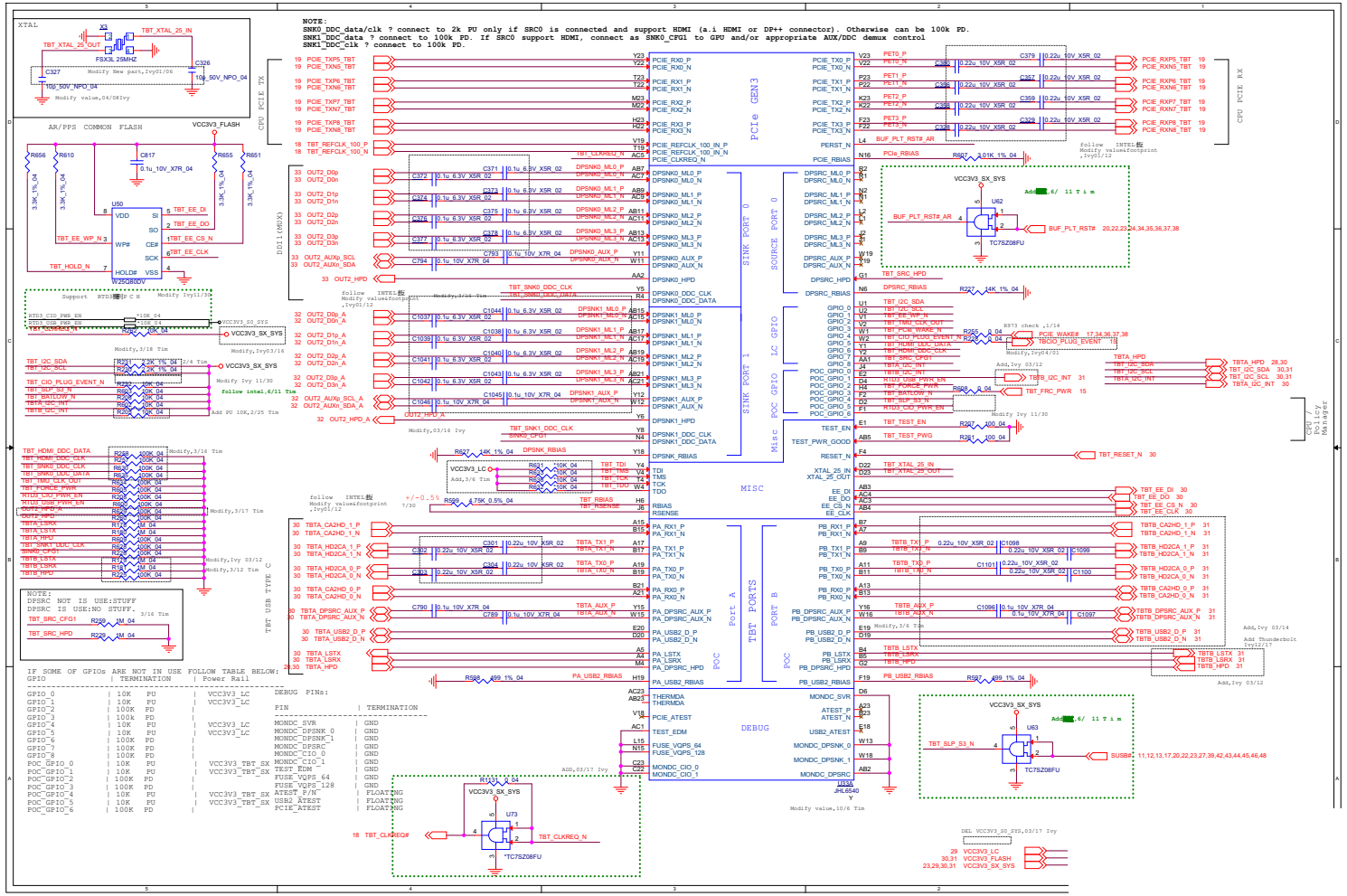
Sheet 26 of 62
Backlight Keyboard

CCD, USB Charging

Sheet 27 of 62
CCD, USB
Charging



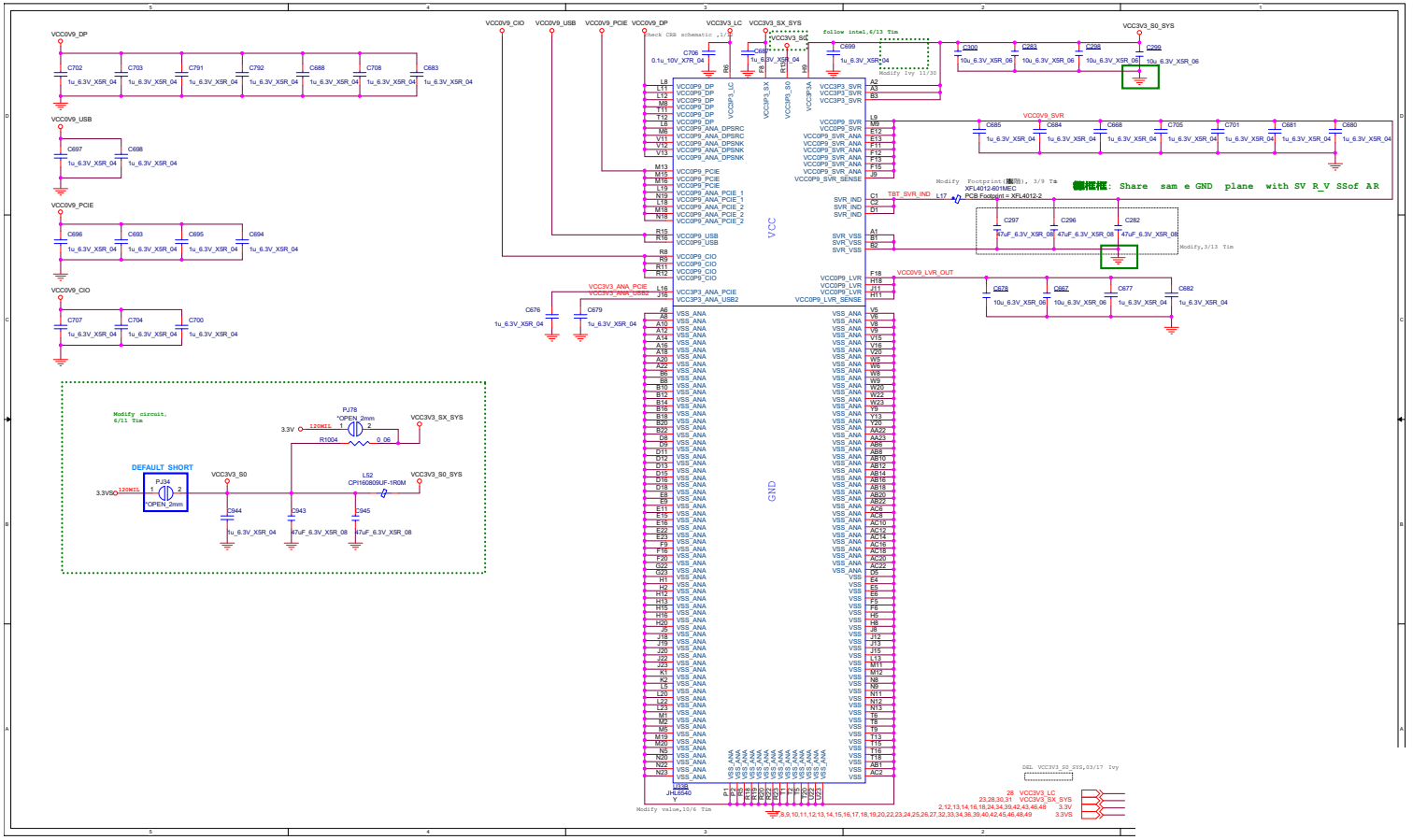
AR_TBT



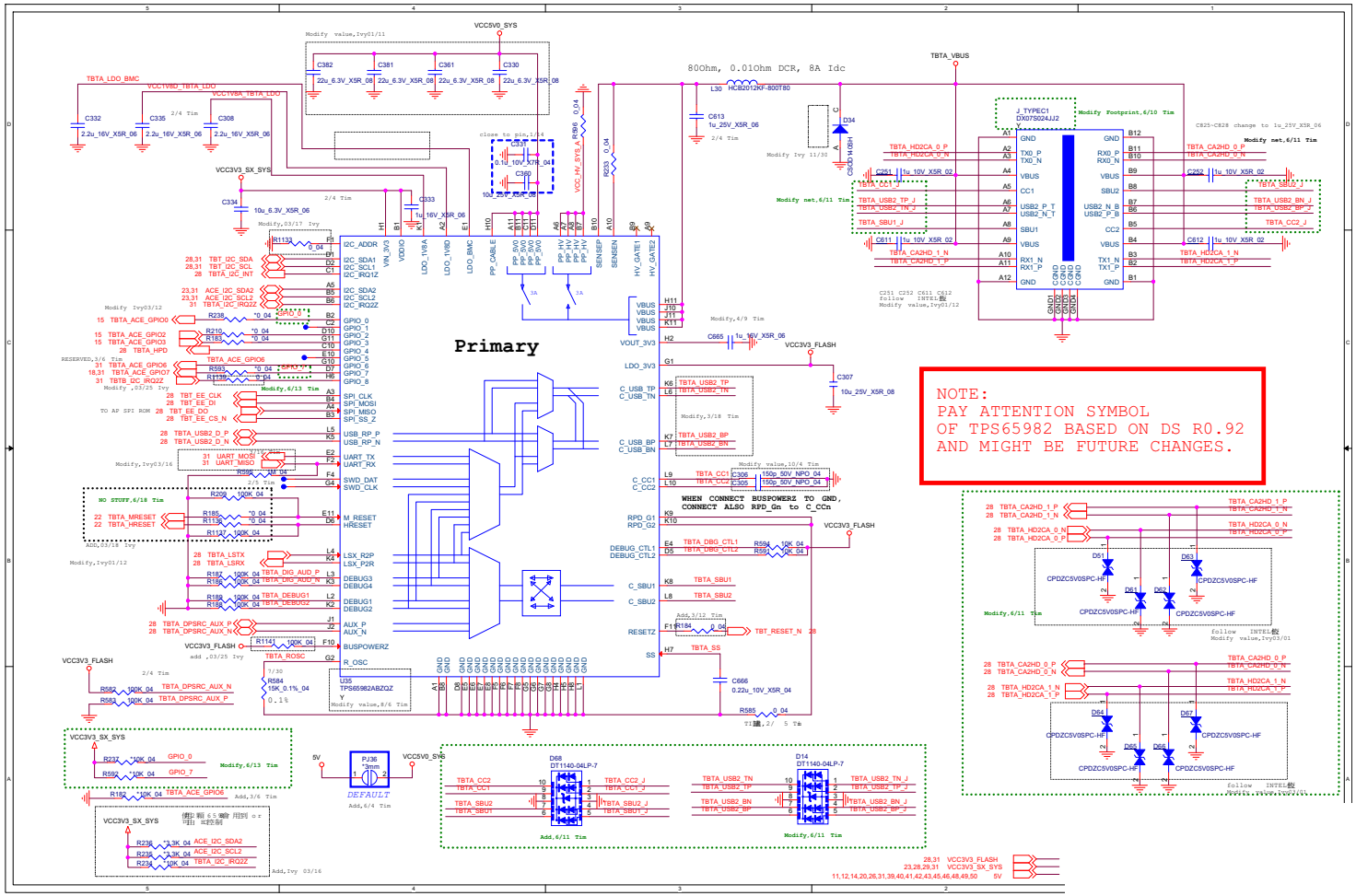
Sheet 28 of 62
AR_TBT

AR_Power

Sheet 29 of 62
AR_Power



TPS65982, Type C1



TPS65982, Type C2

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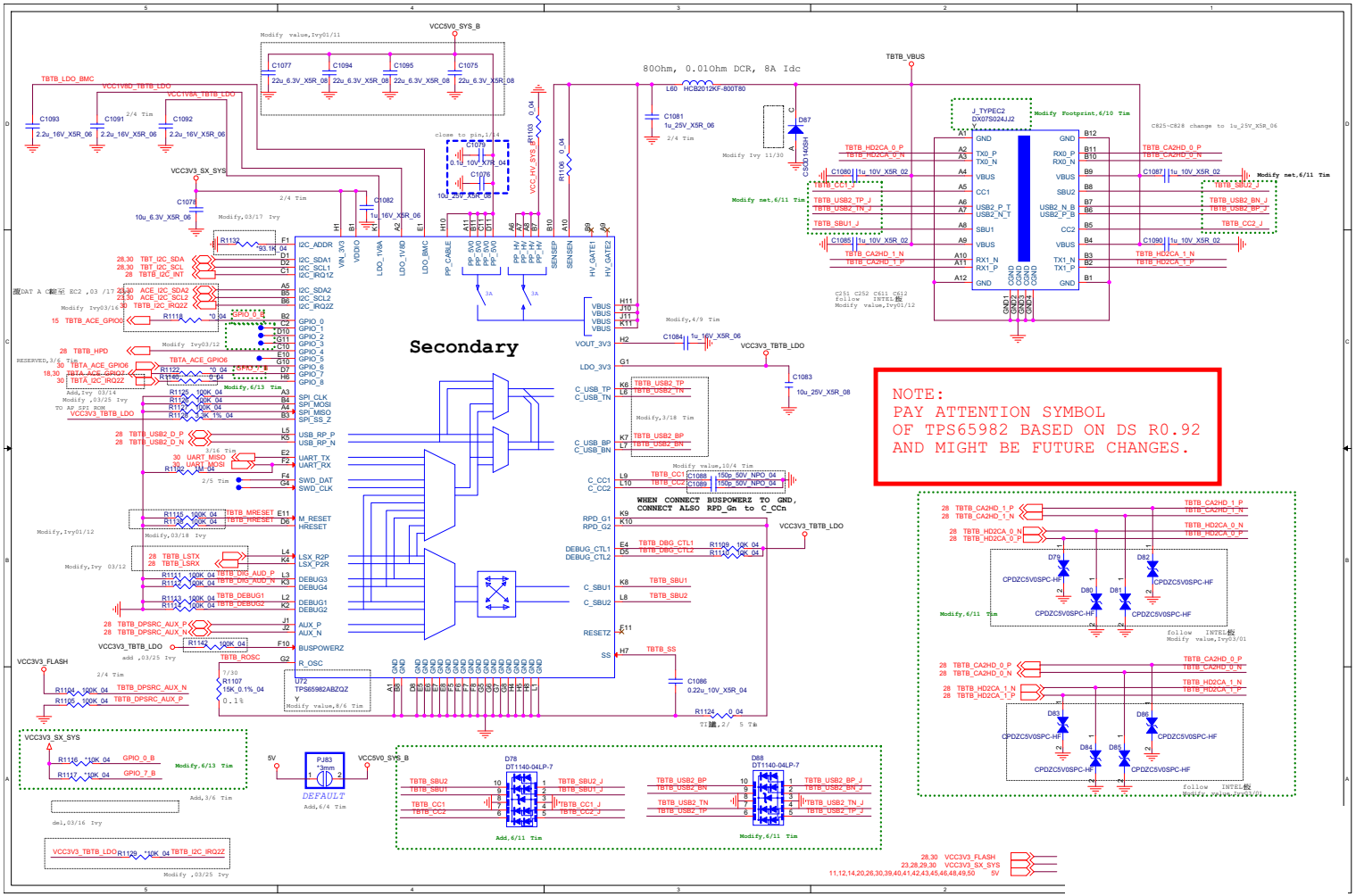
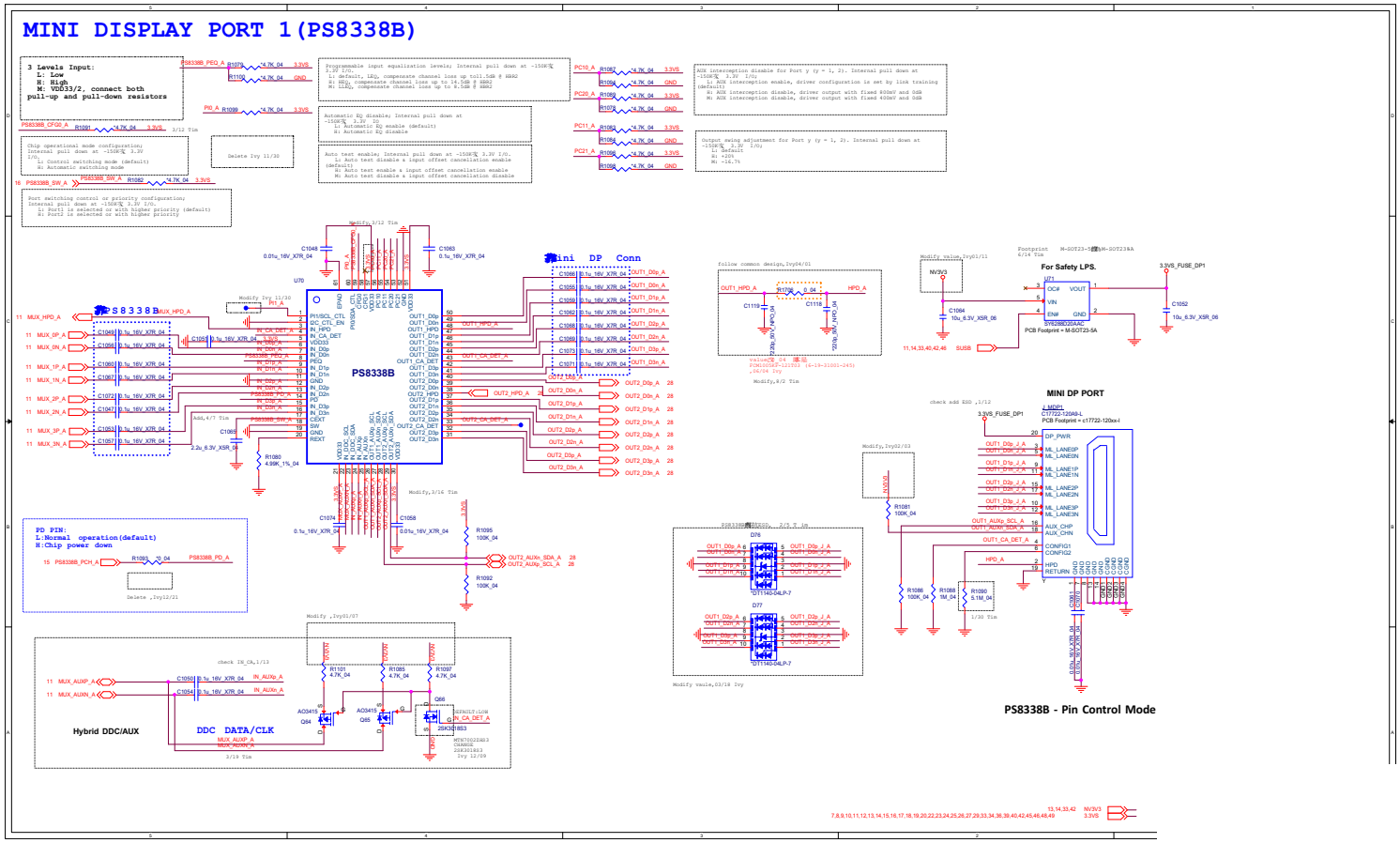
TPS65982, Type C2



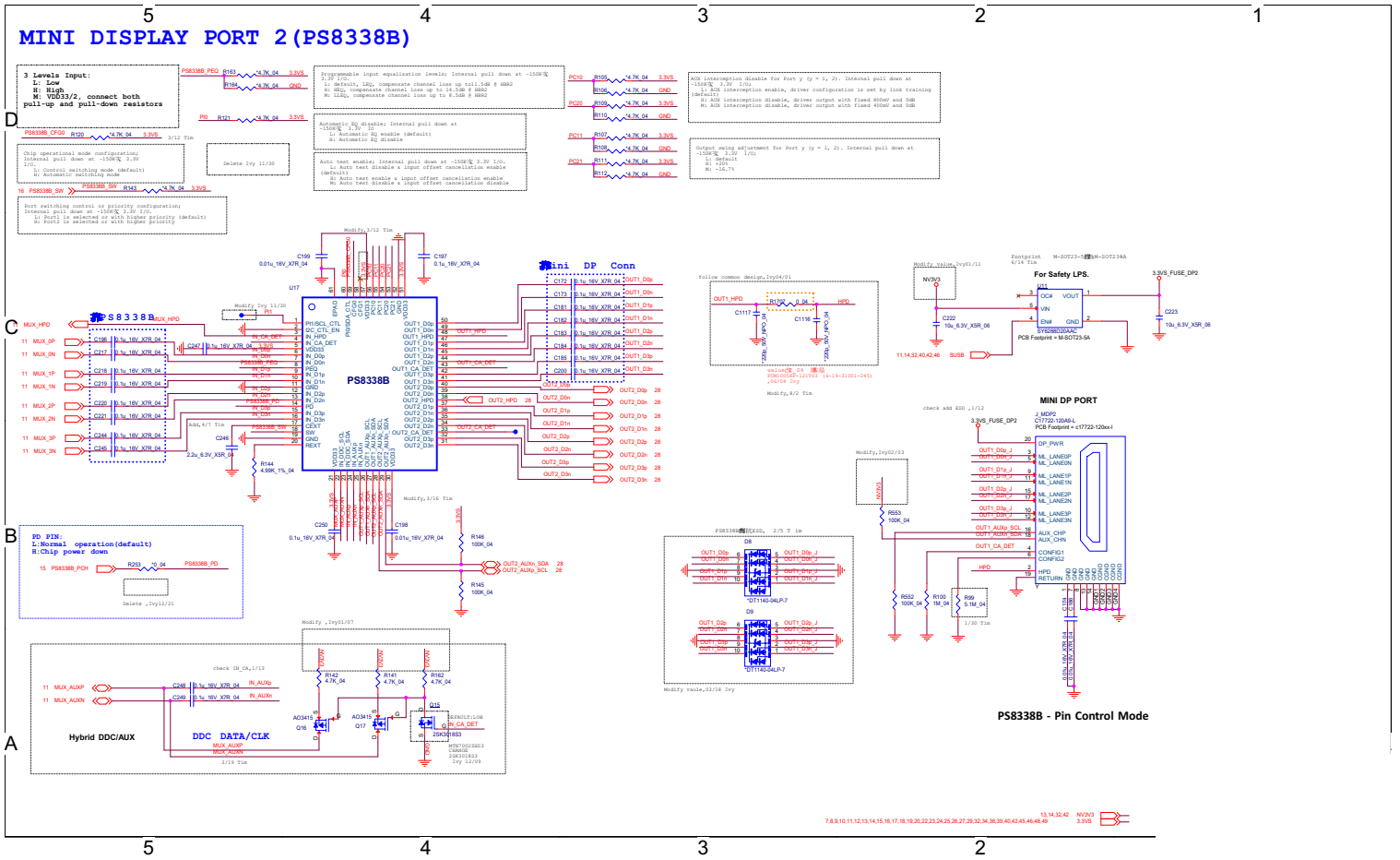
PS8338B+mDP_1



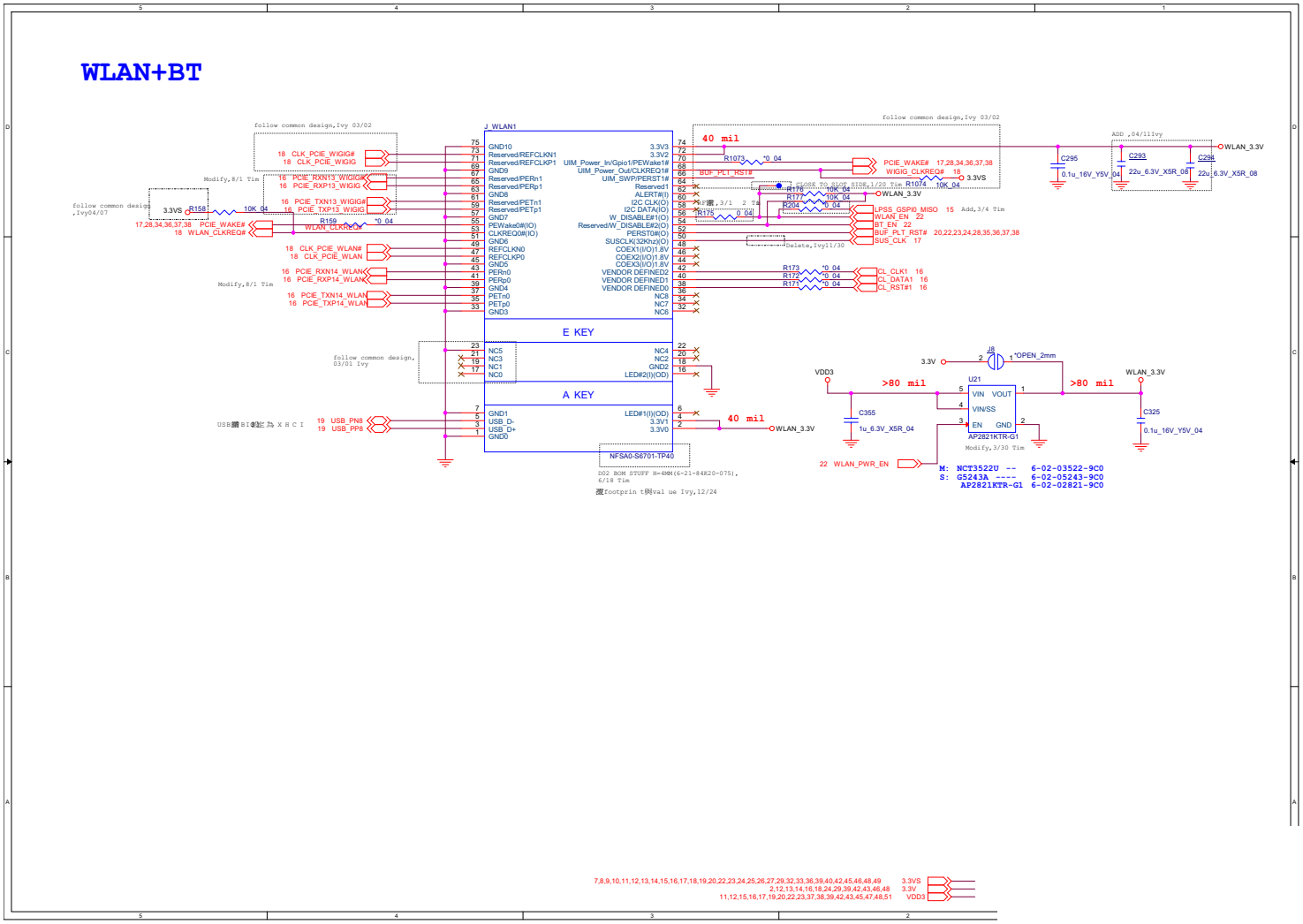
Sheet 32 of 62
PS8338B+mDP_1

PS8338B+mDP_2

Sheet 33 of 62
PS8338B+mDP_2



M.2 WLAN+BT



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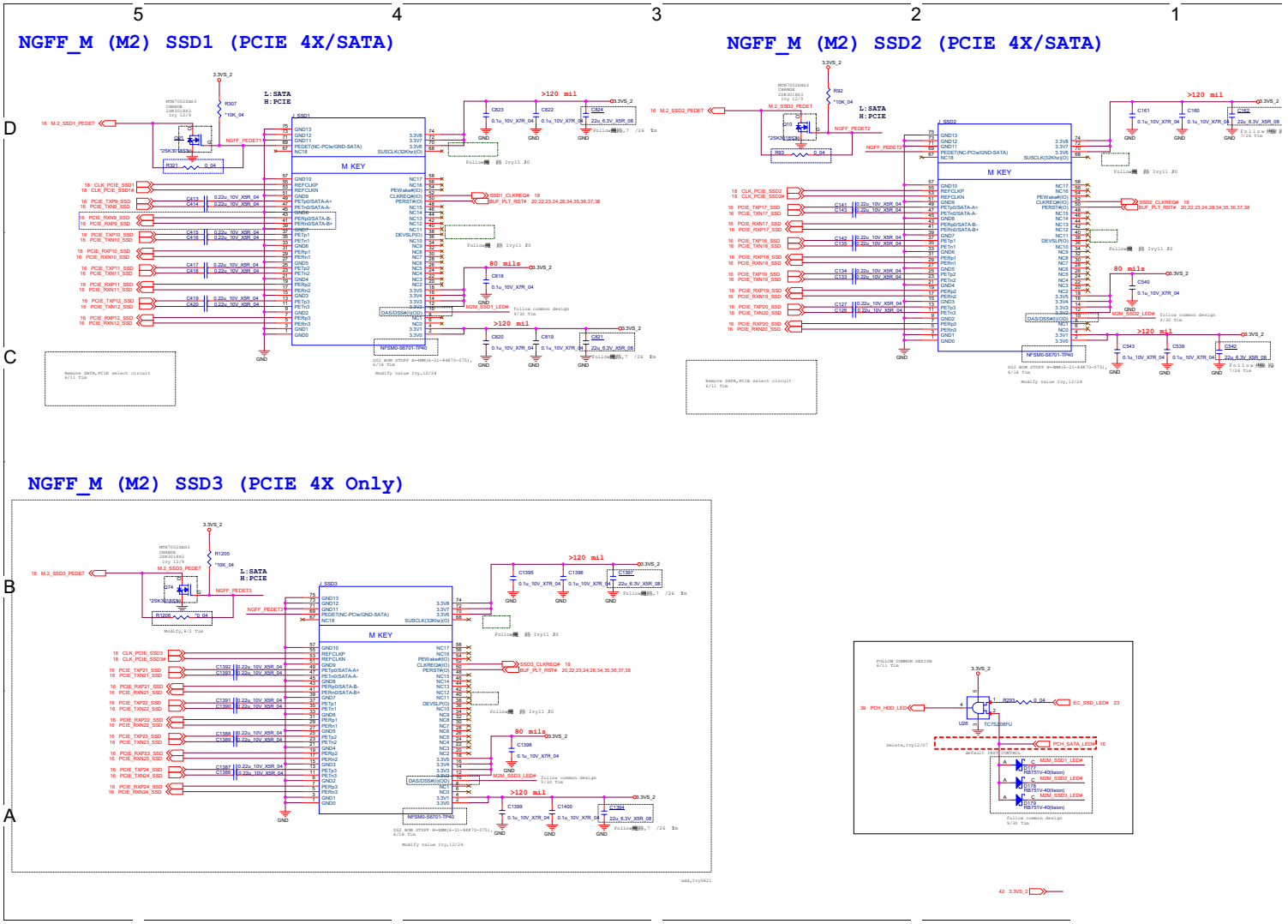
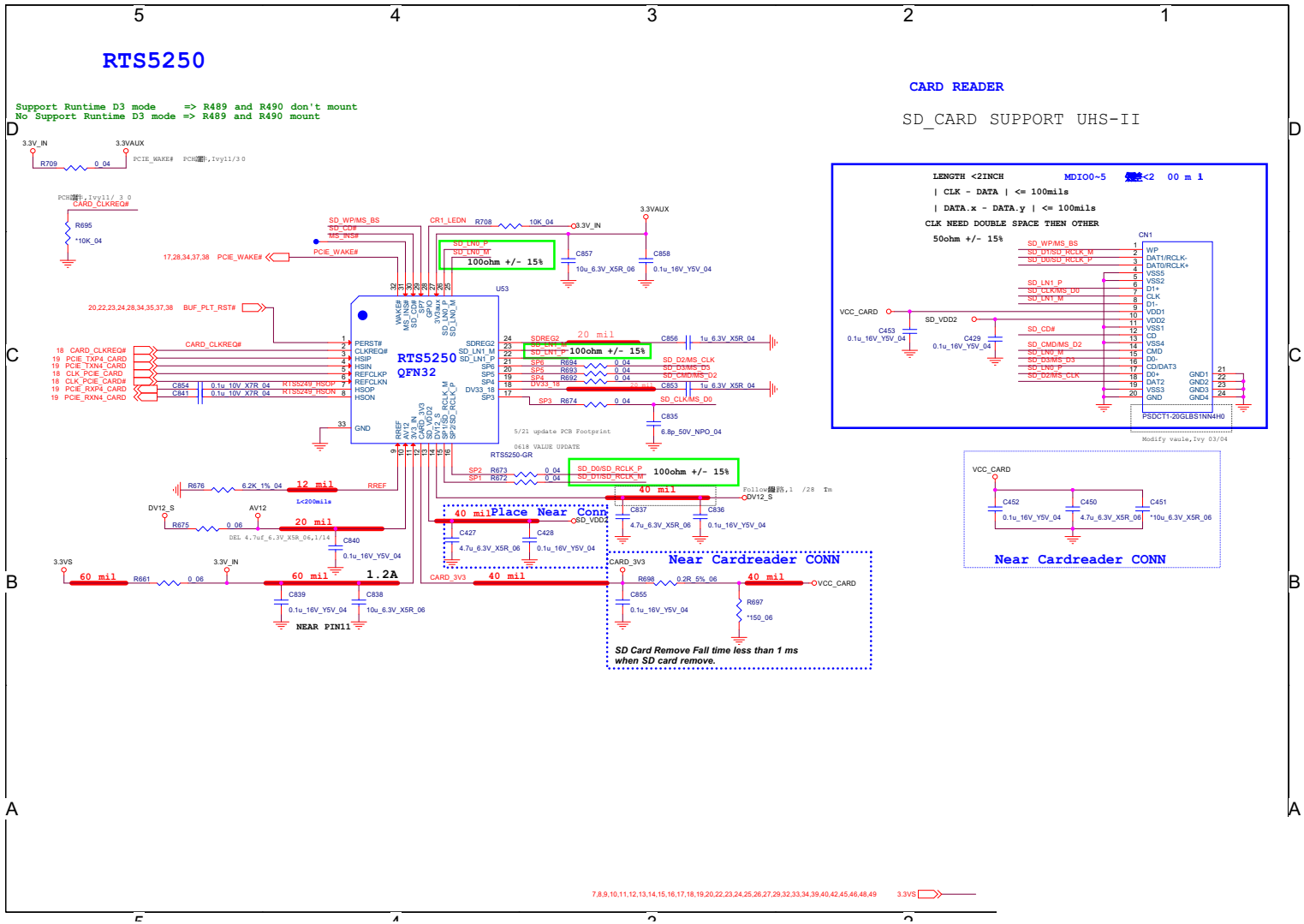
M.2 WLAN+BT

M.2 M Key

Sheet 35 of 62
M.2 M Key



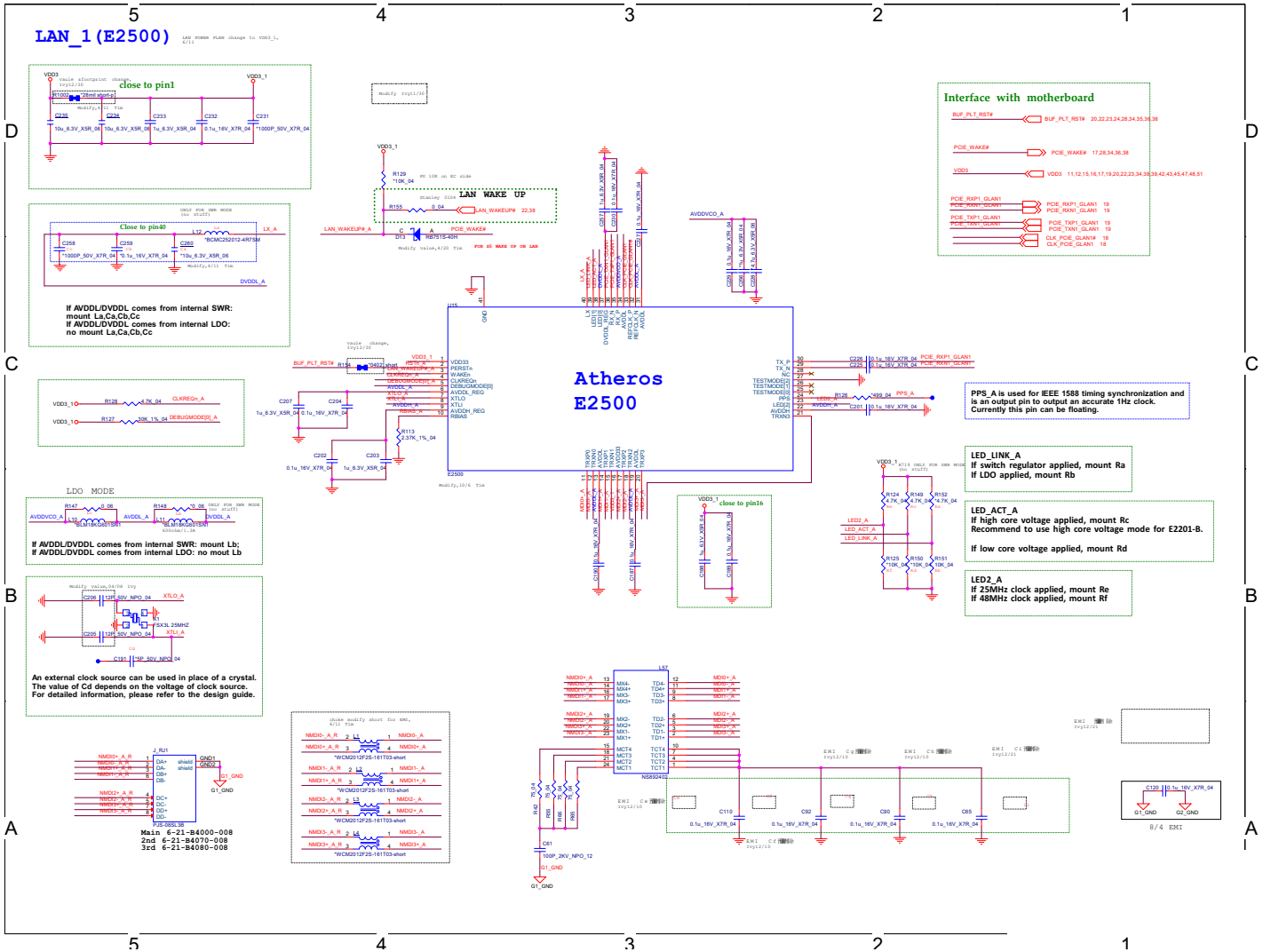
RTS5250



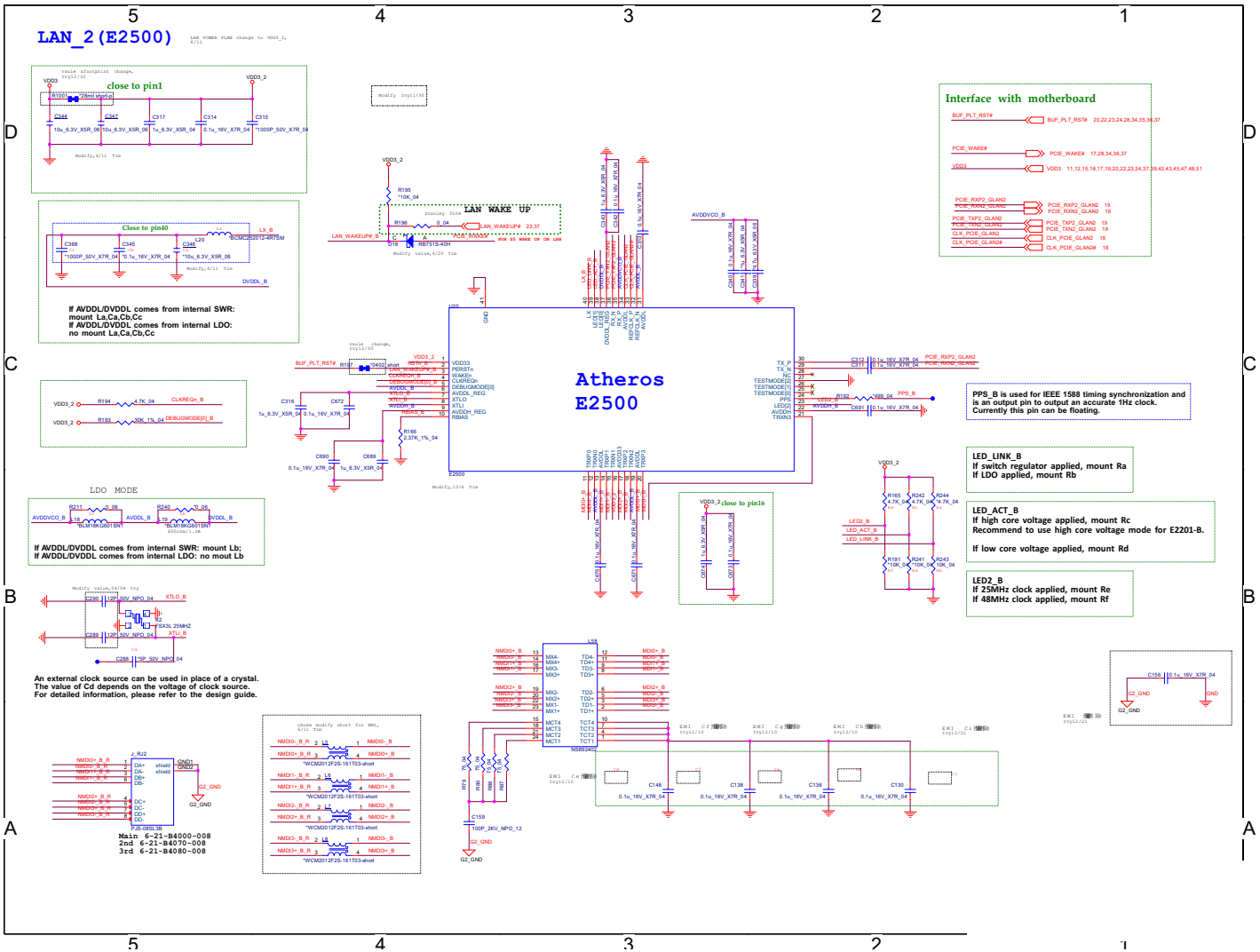
Sheet 36 of 62
RTS5250

LAN_1 E2500

Sheet 37 of 62
LAN_1 E2500



LAN_2 E2500



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LAN_2 E2500

B.Schematic Diagrams

Click, Finger Conn

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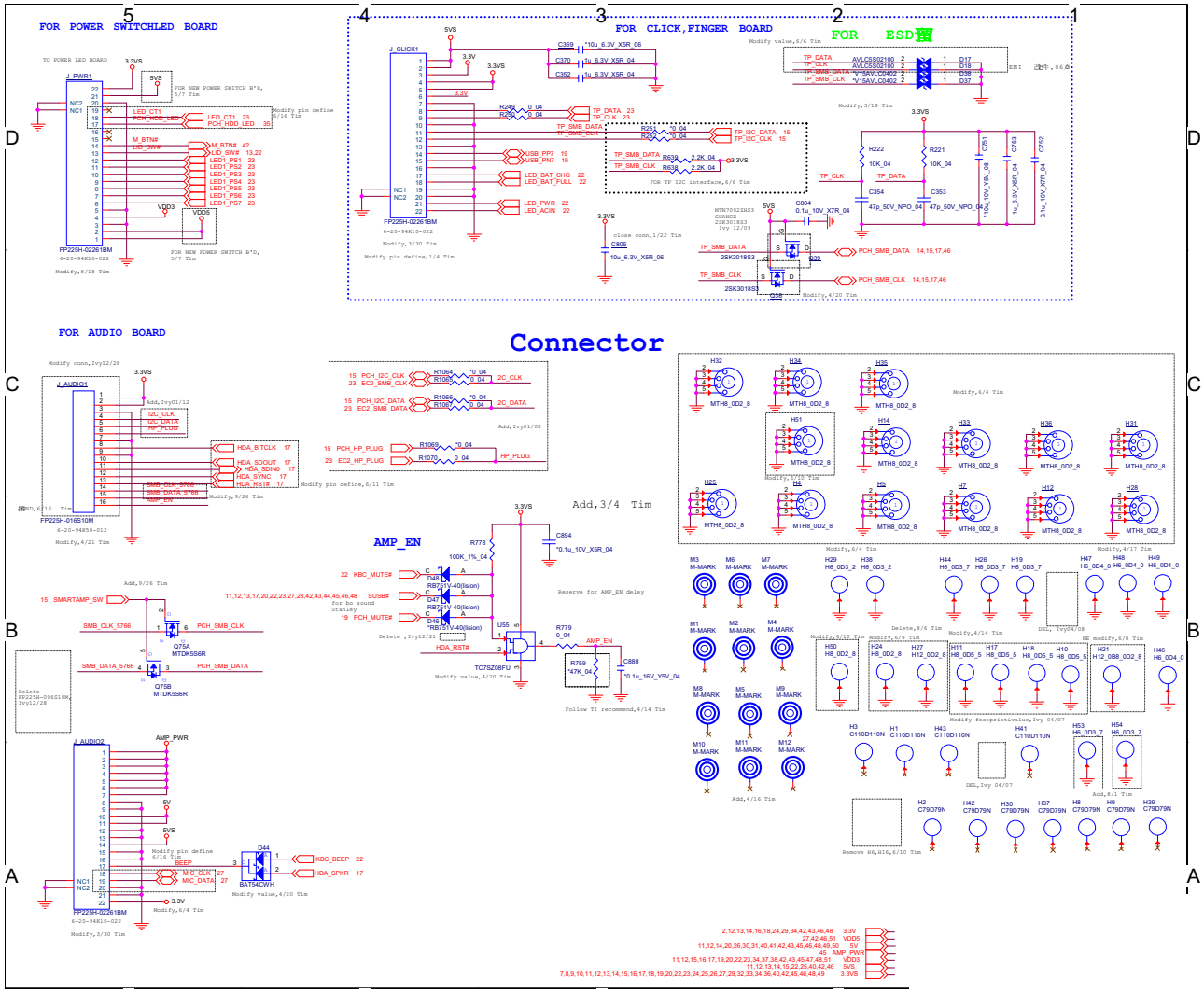
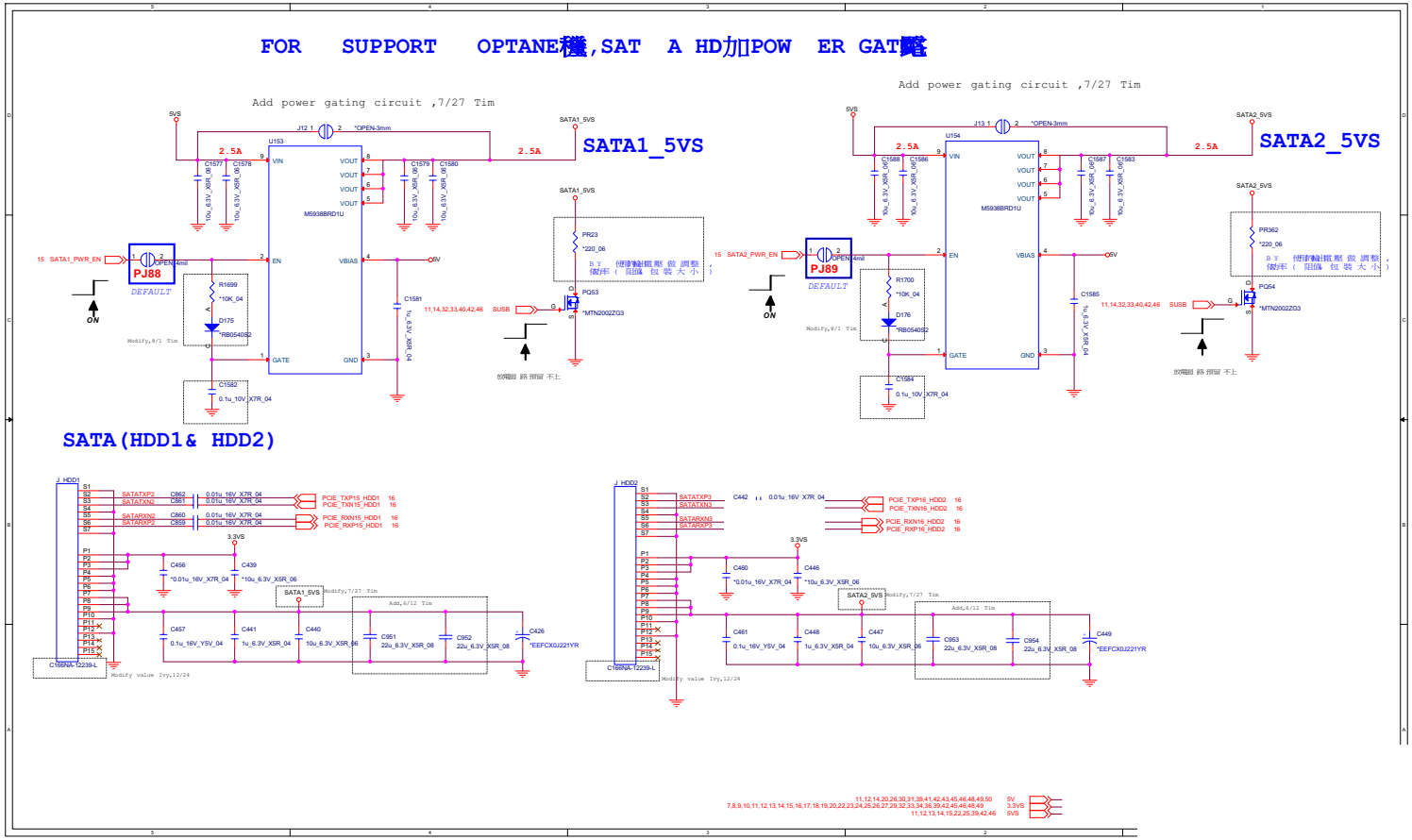
Click, Finger Conn



HDD & Second HDD



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HDD & Second HDD

USB Port

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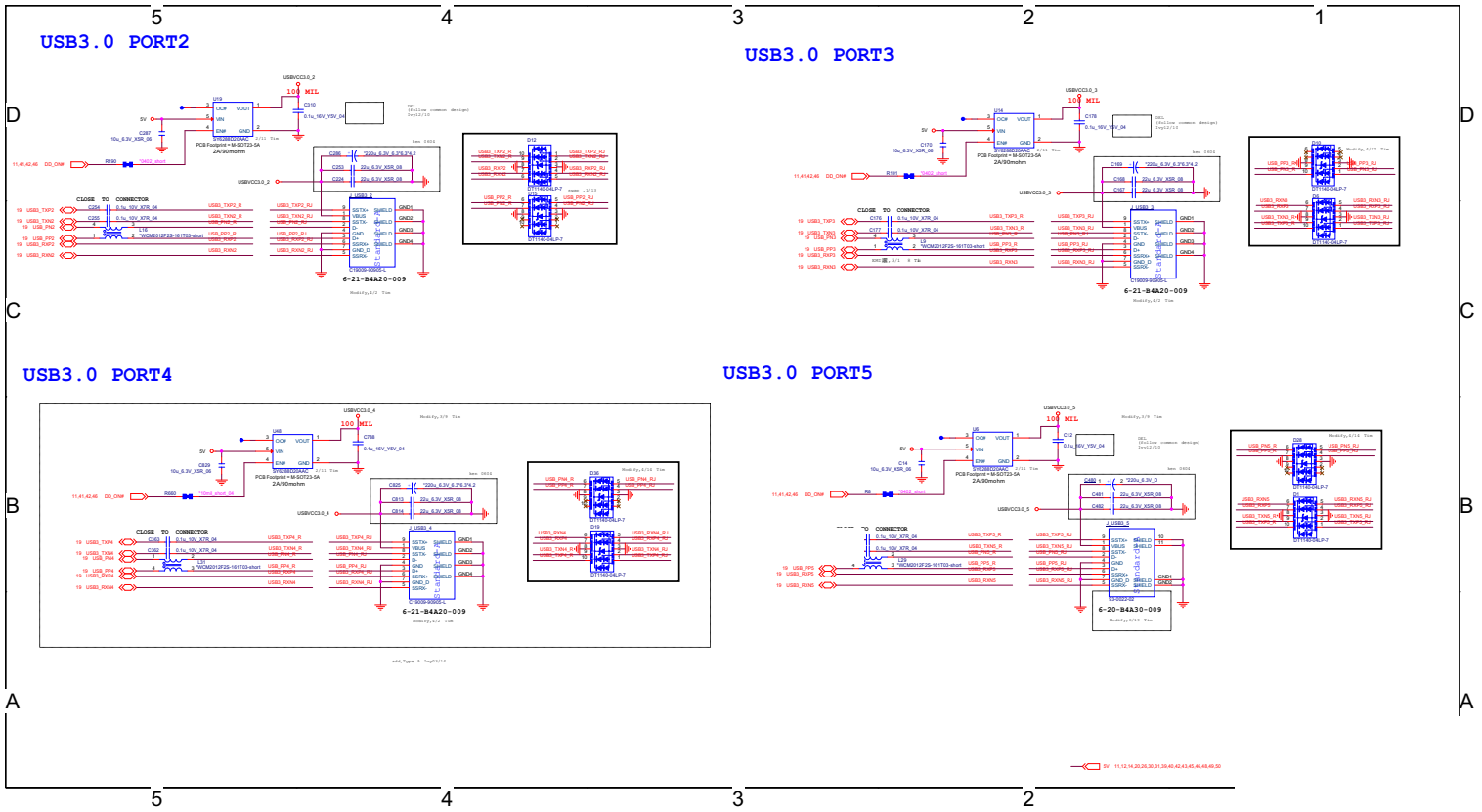
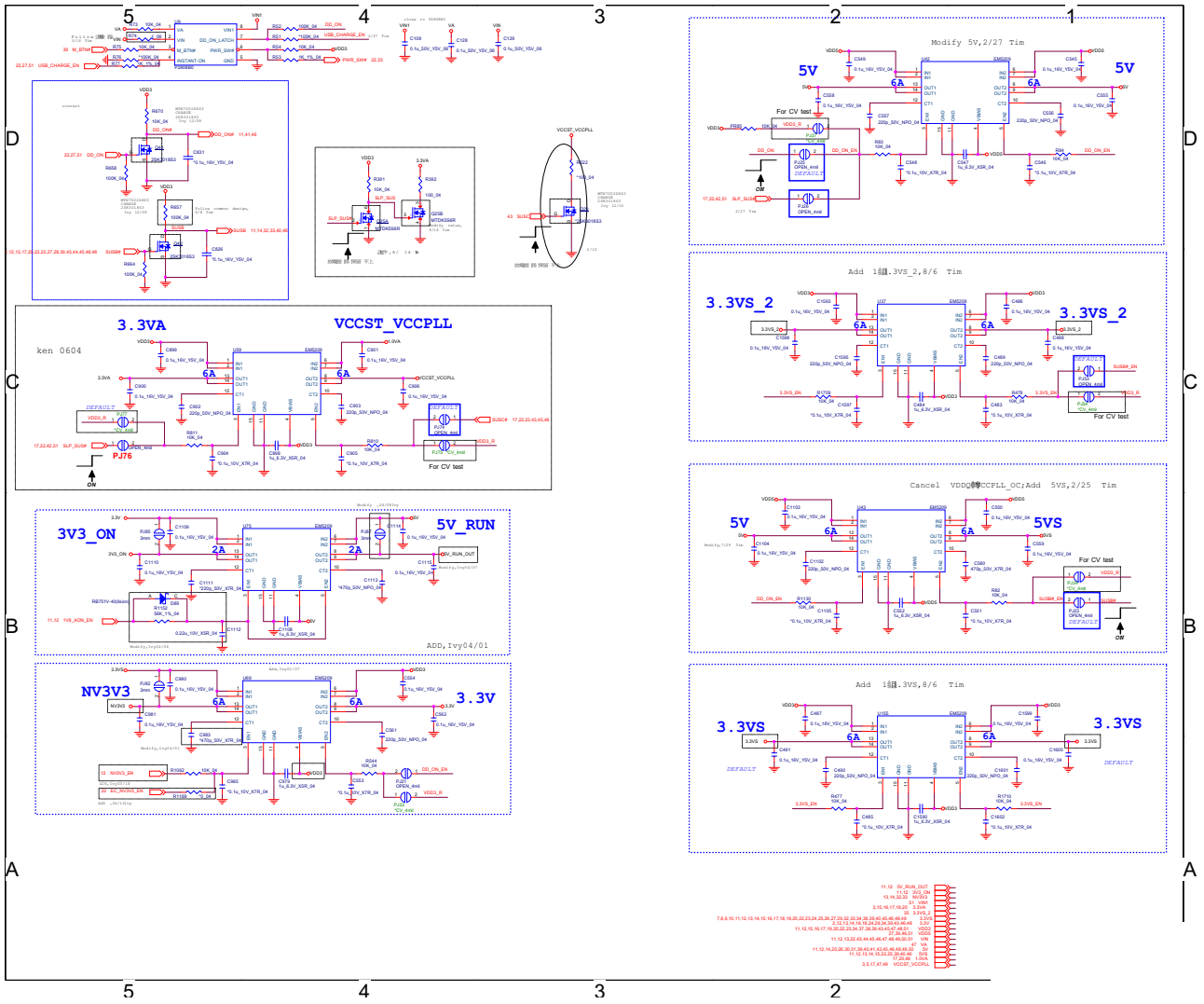
USB Port



5VS, 3.3VS, 1.0 V Series



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5VS, 3.3VS, 1.0V Series

2.5V, 5VS_2

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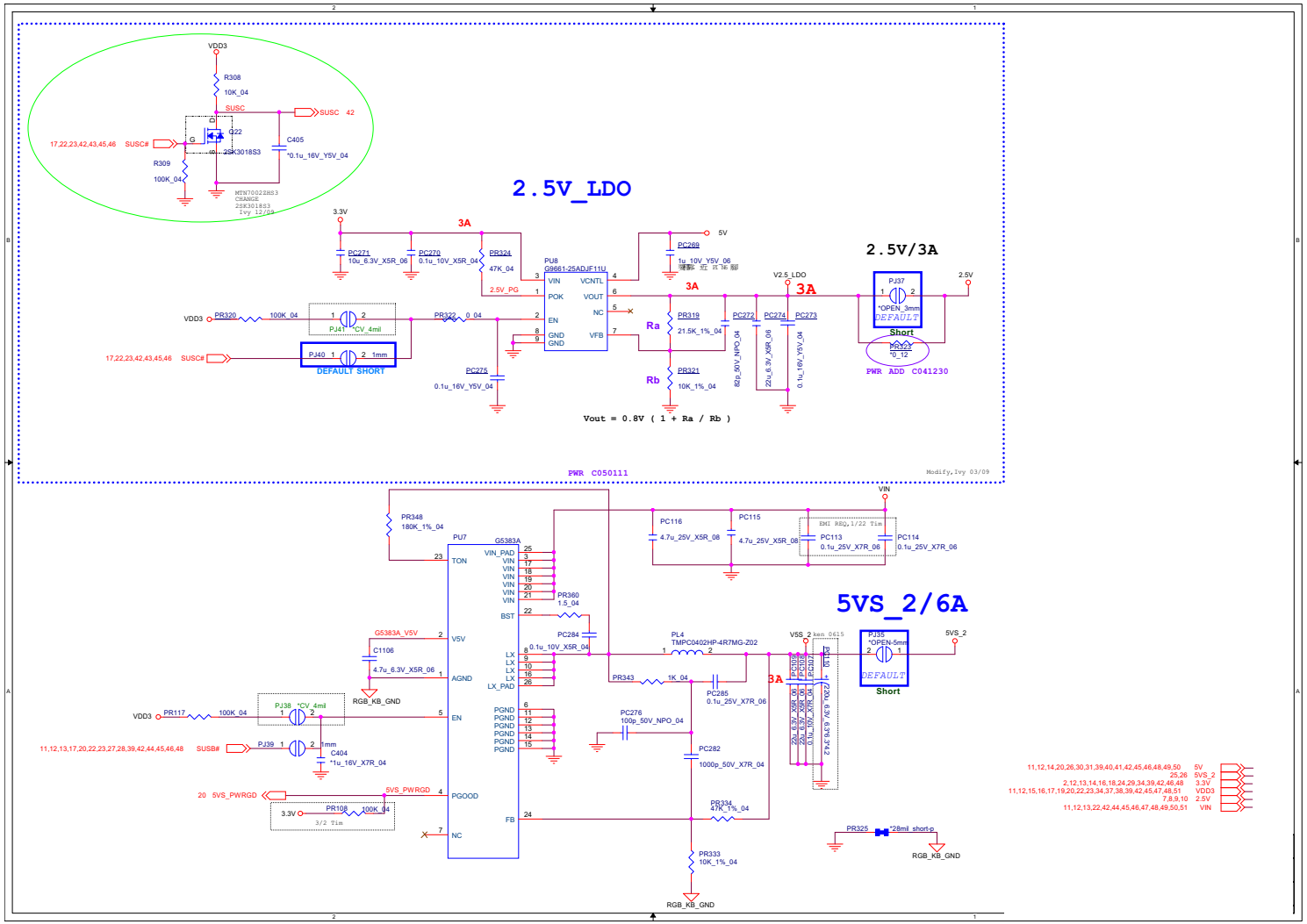
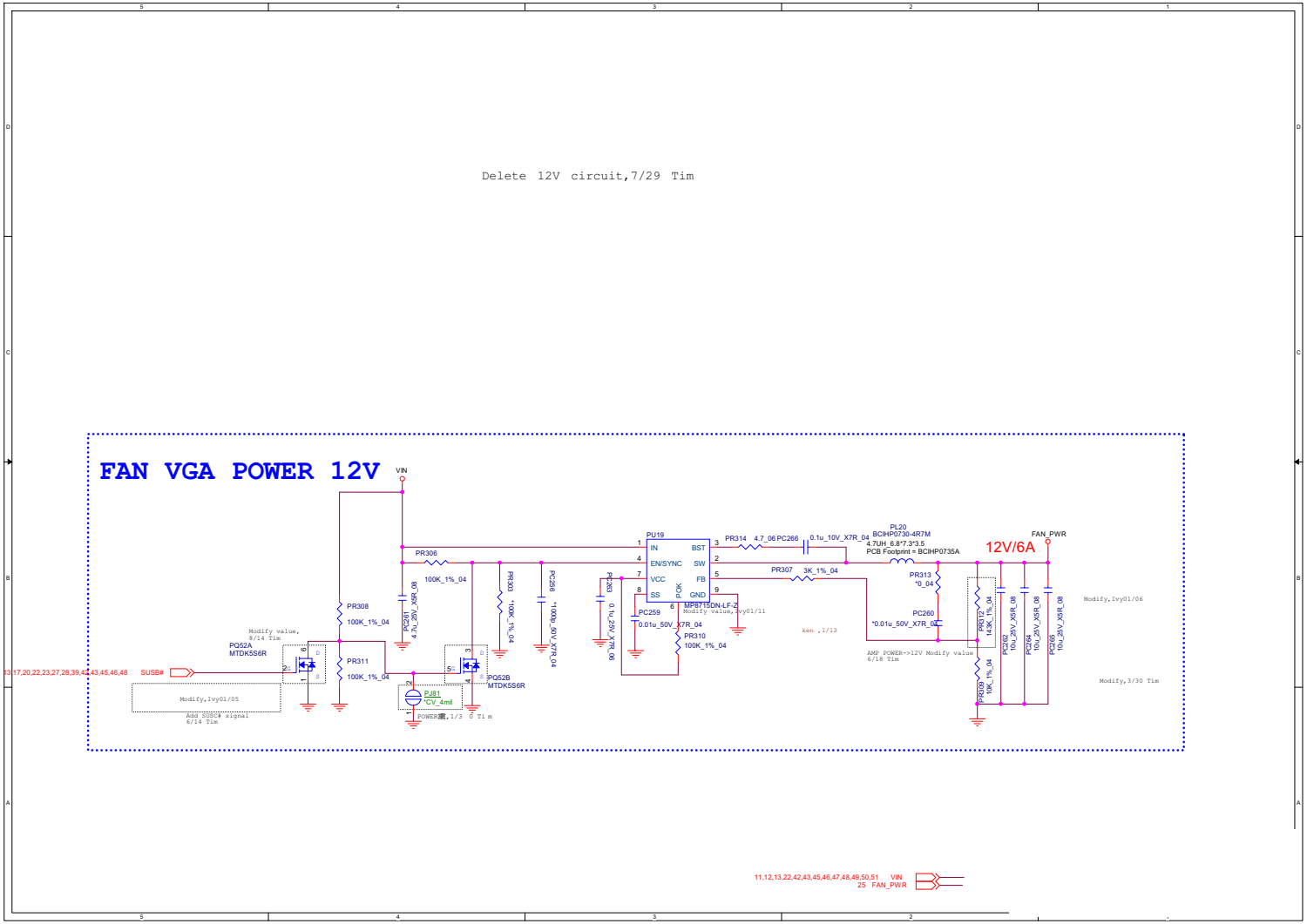
2.5V, 5VS_2



Fan_Power 12V



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Fan_Power 12V

AMP10V, VCCSA

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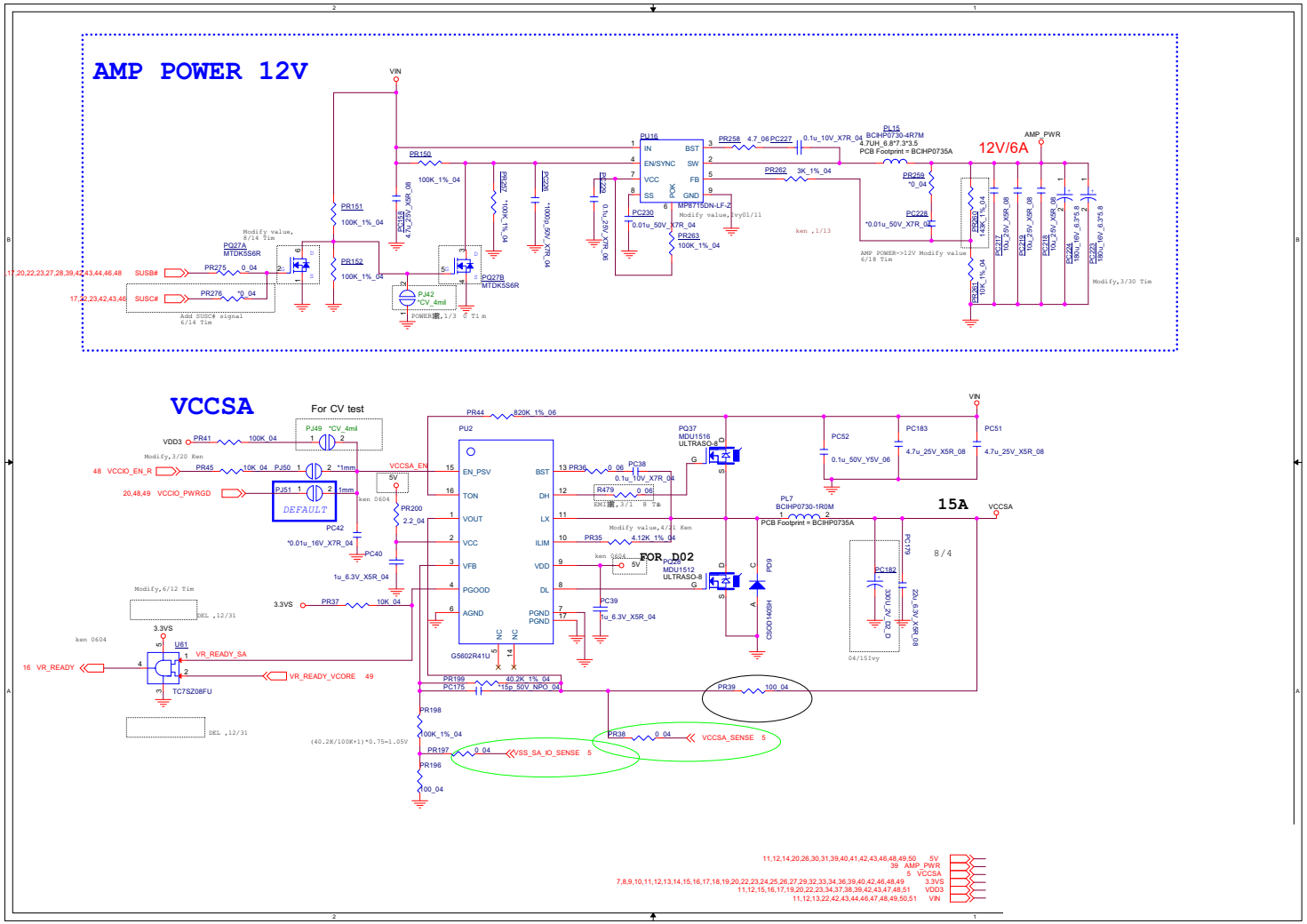
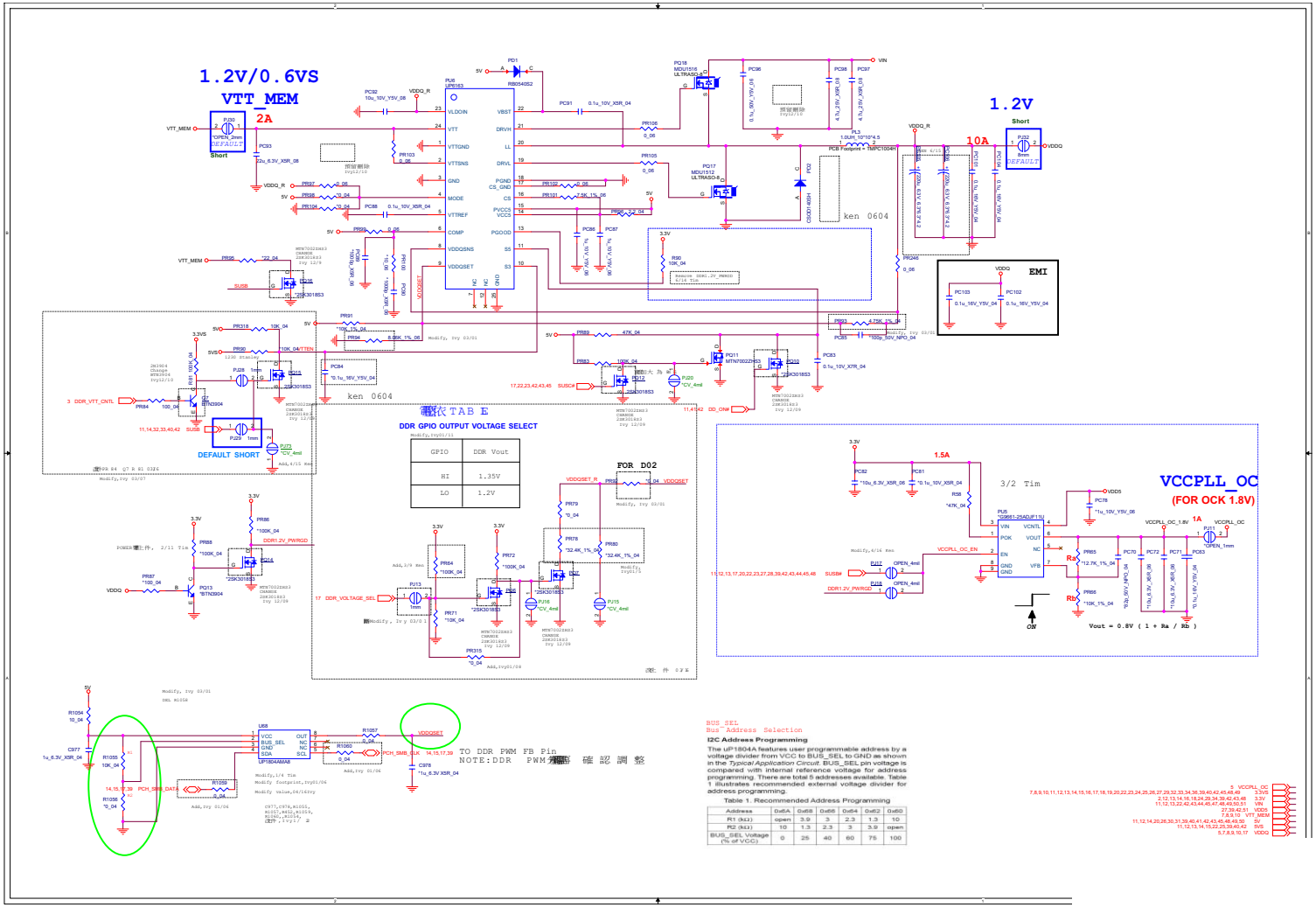
AMP10V, VCCSA



DDR4 VDDQ & VTT, VCCPLL_OC

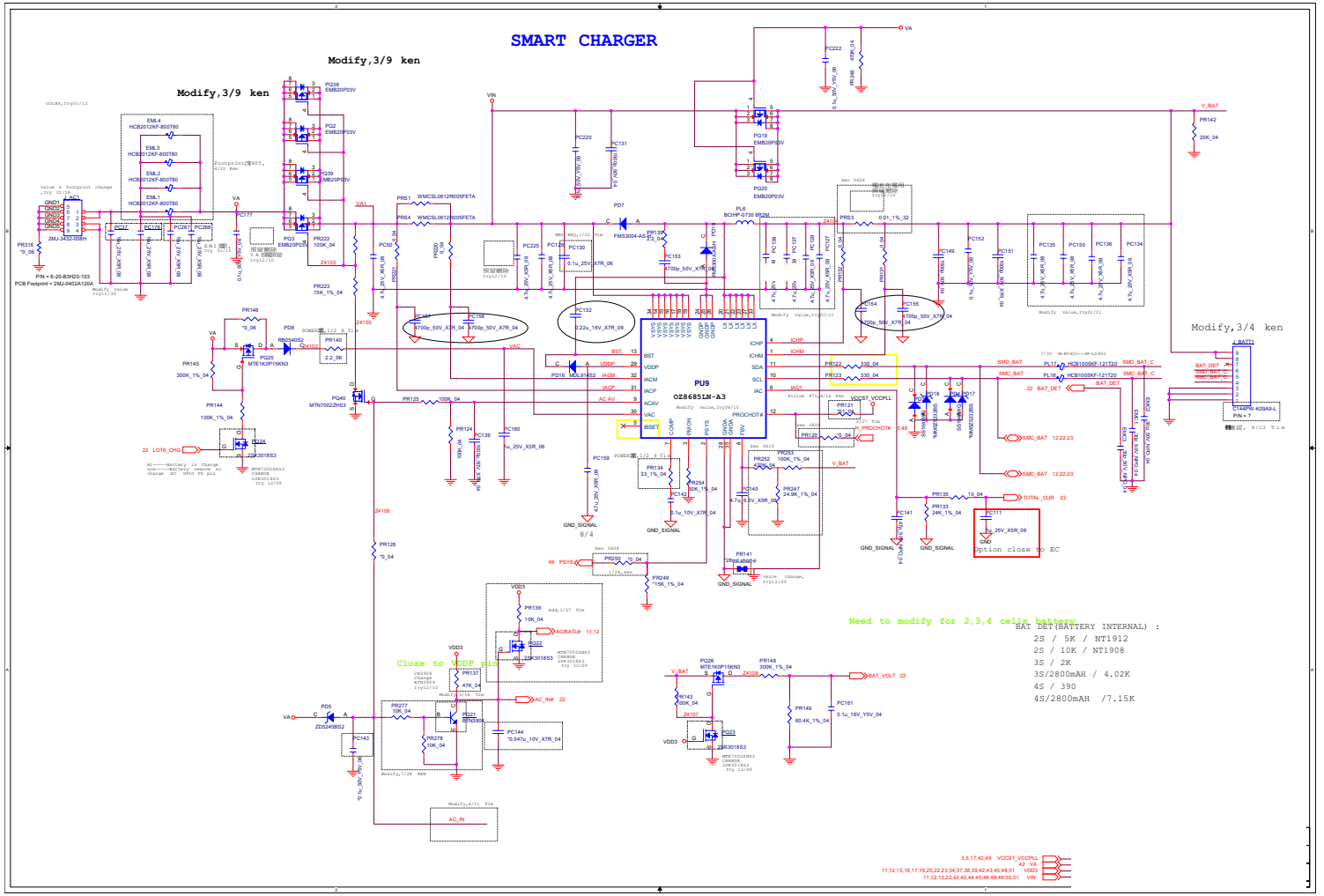


Sheet 46 of 62
DDR4 VDDQ & VTT, VCCPLL_OC

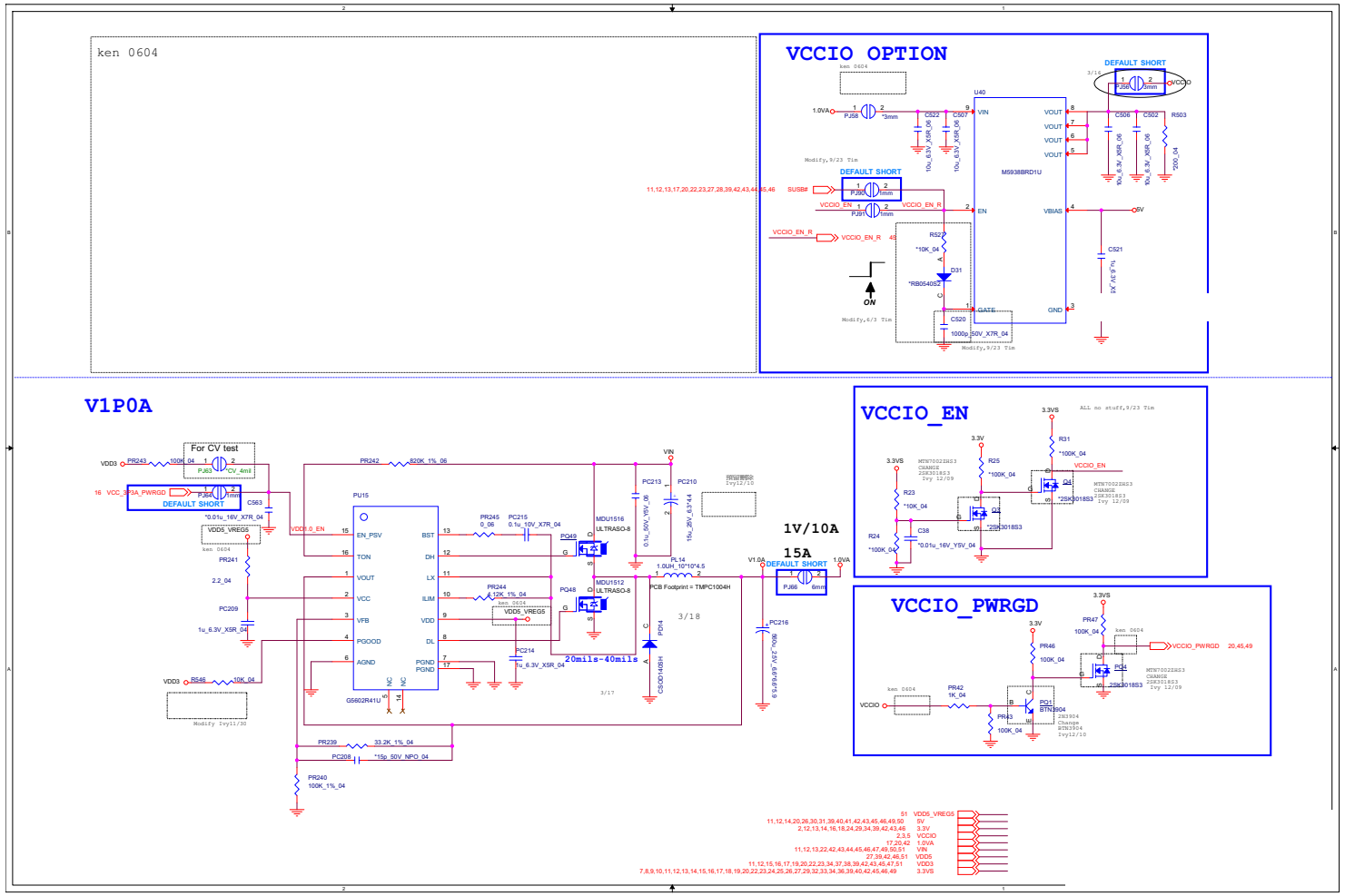
B.Schematic Diagrams

Power Charger, DC IN

Sheet 47 of 62
Power Charger, DC IN



VCCIO, 1.0VA



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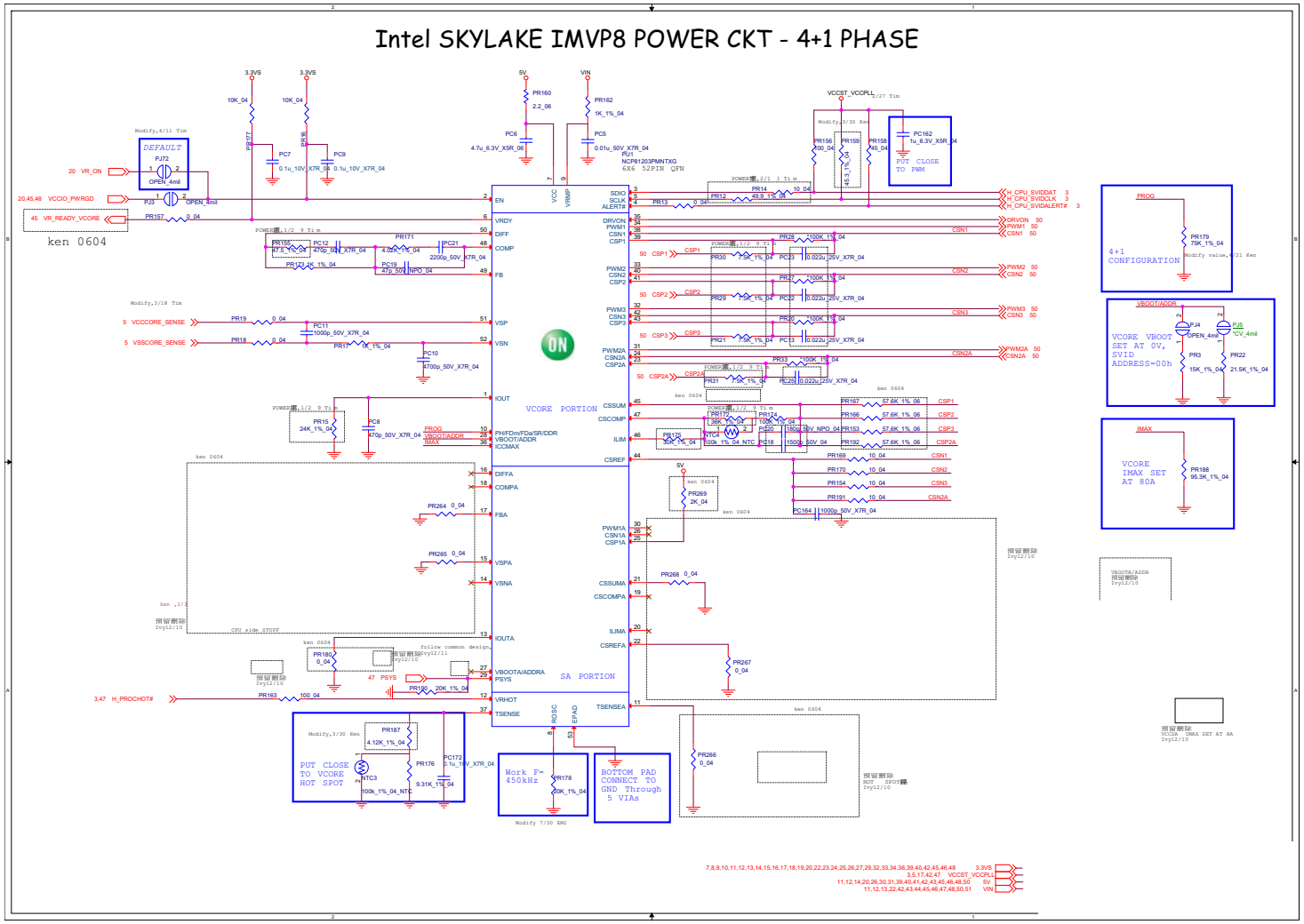
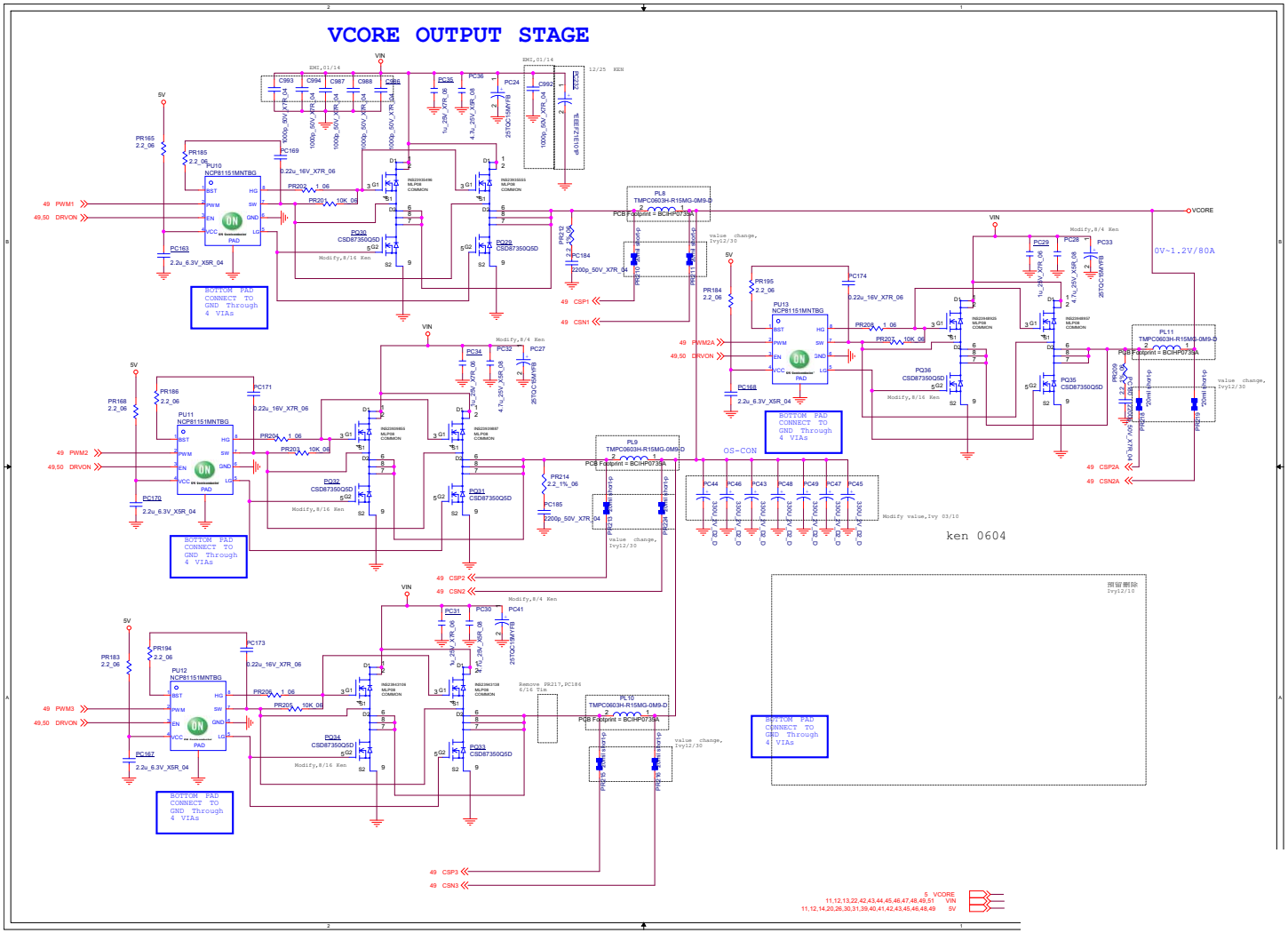
VCCIO, 1.0VA

VCore

Sheet 49 of 62
VCore



VCore Output Stage



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VCore Output Stage

VDD3, VDD5

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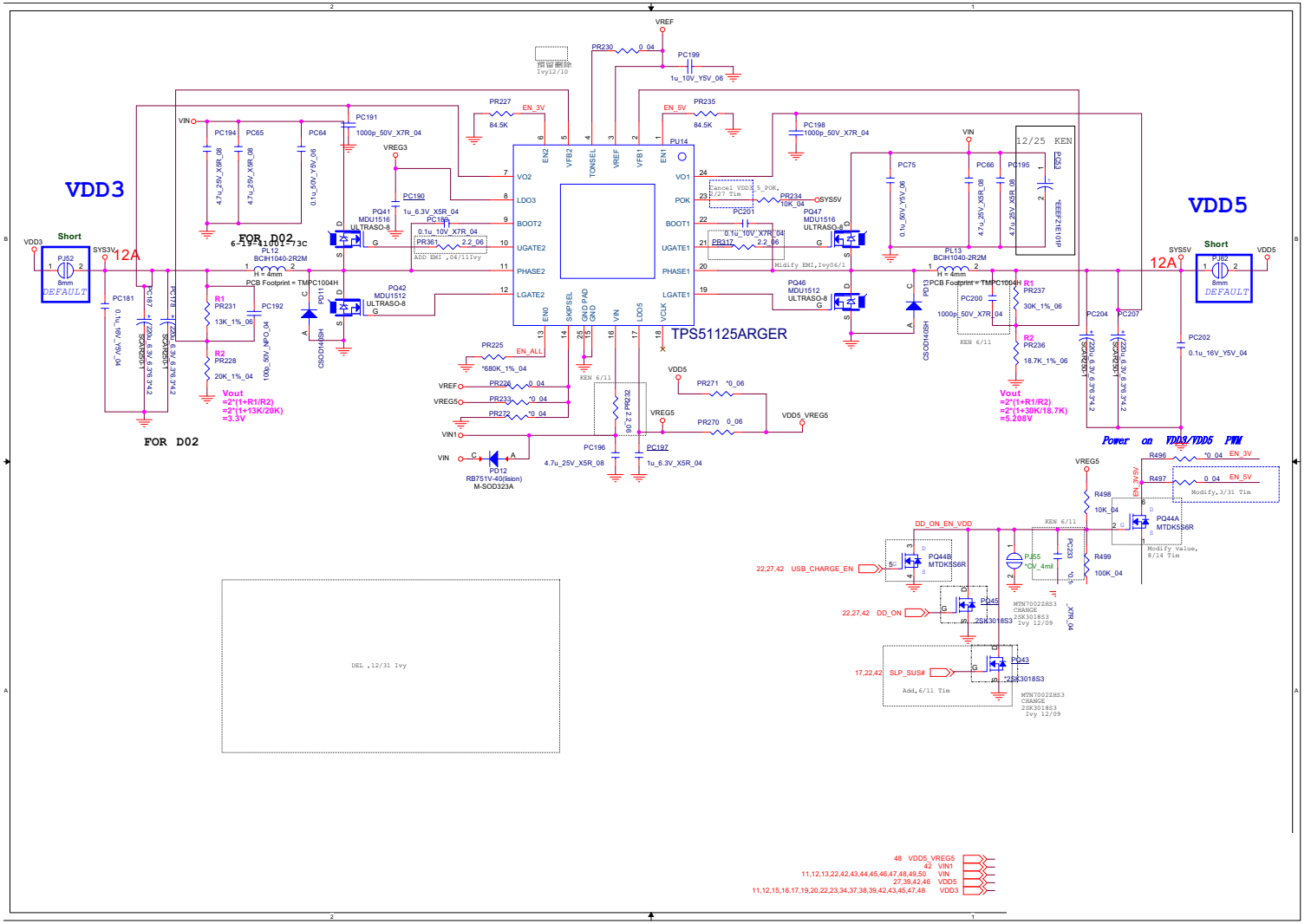
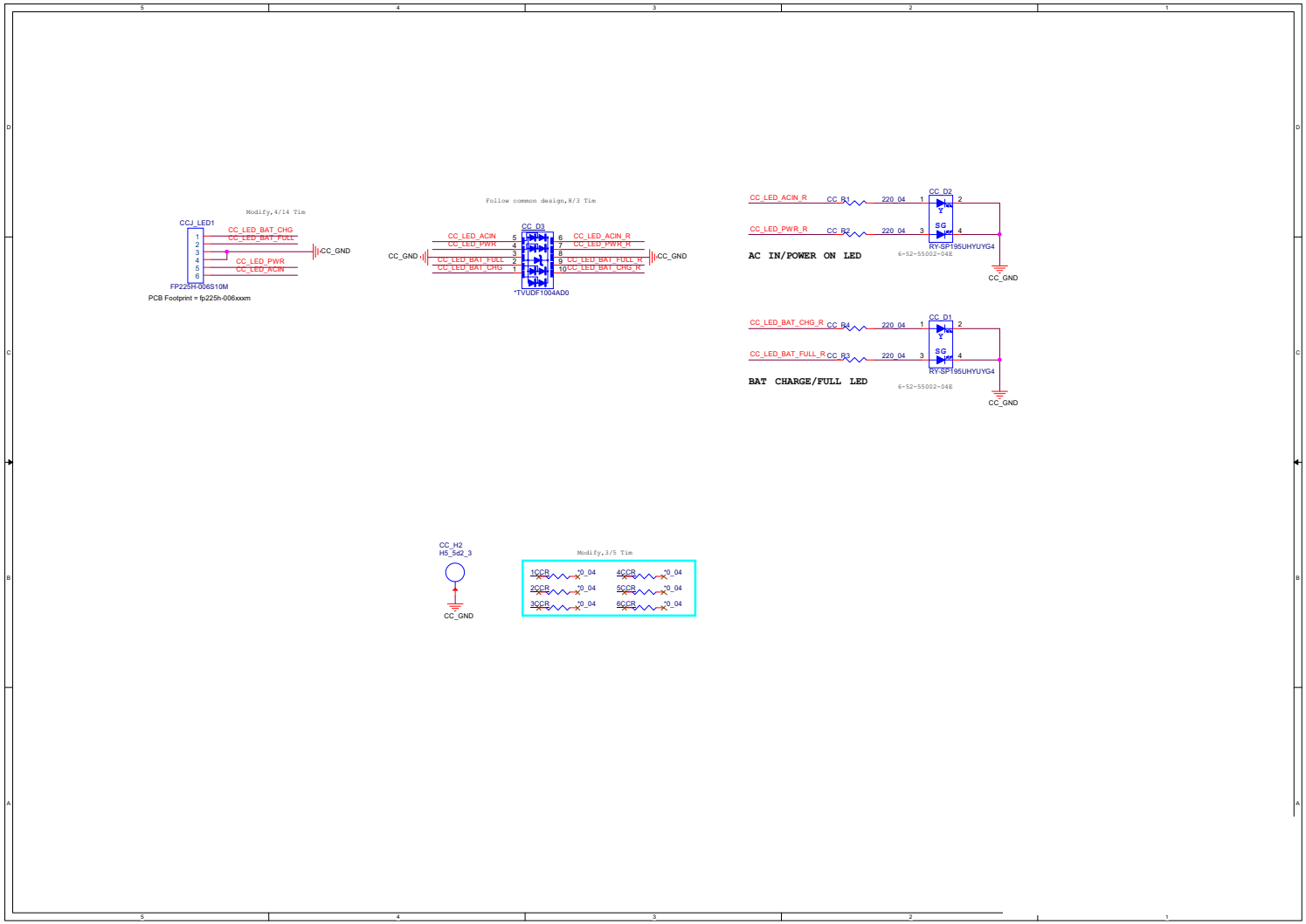
VDD3, VDD5



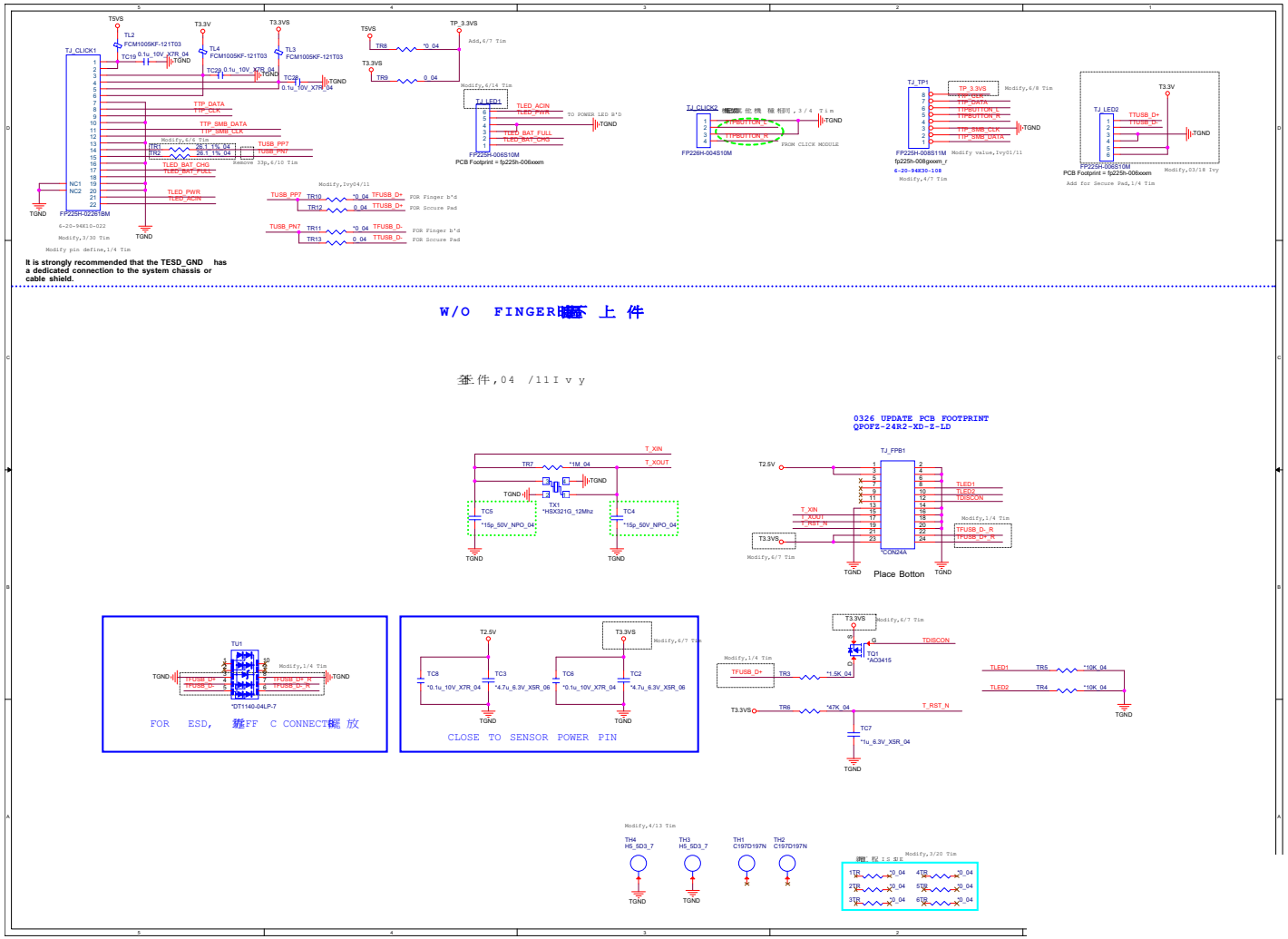
Charger LED Board



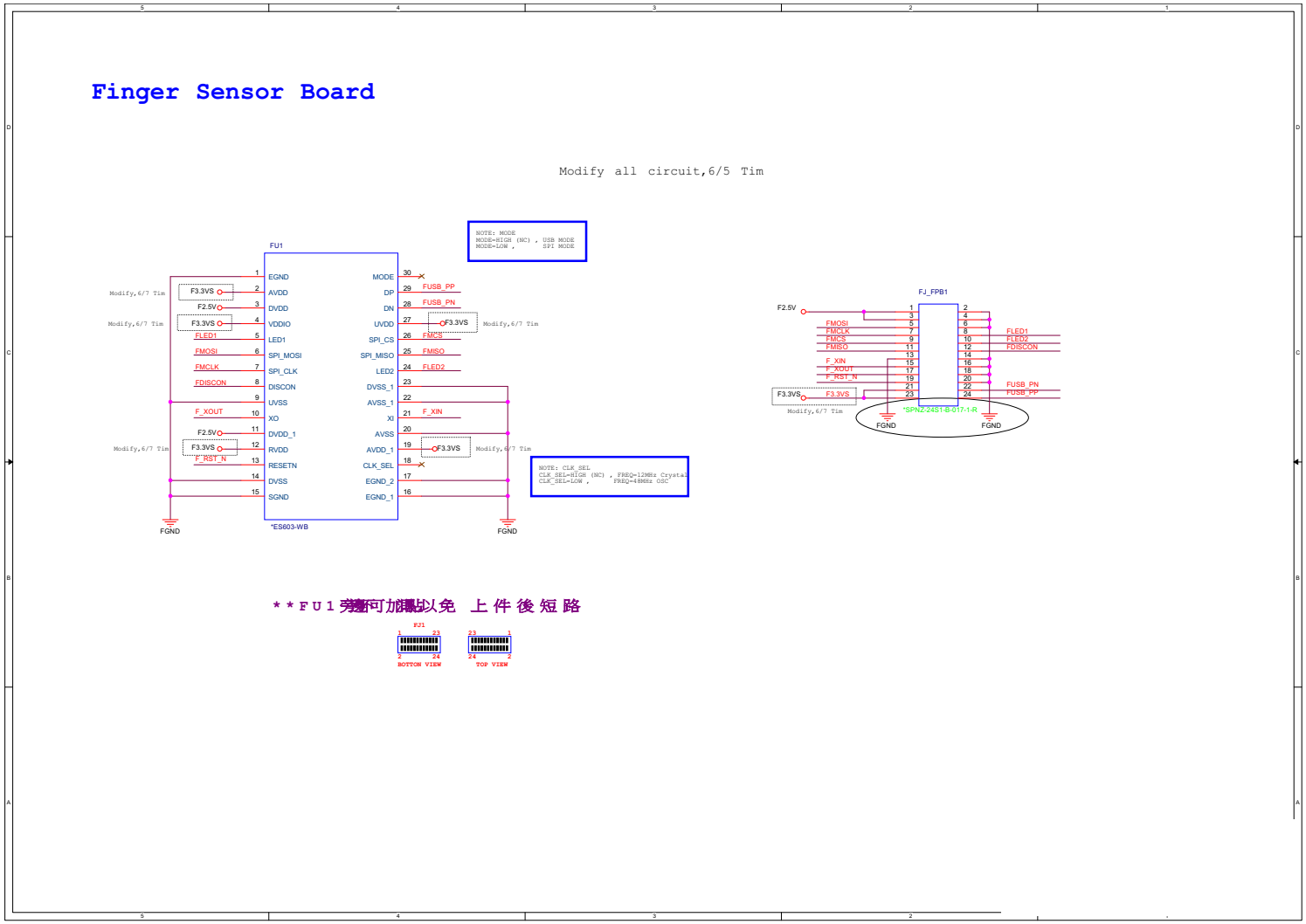
Sheet 52 of 62
Charger LED Board

Click Board

Sheet 53 of 62
Click Board



Finger Sensor Board



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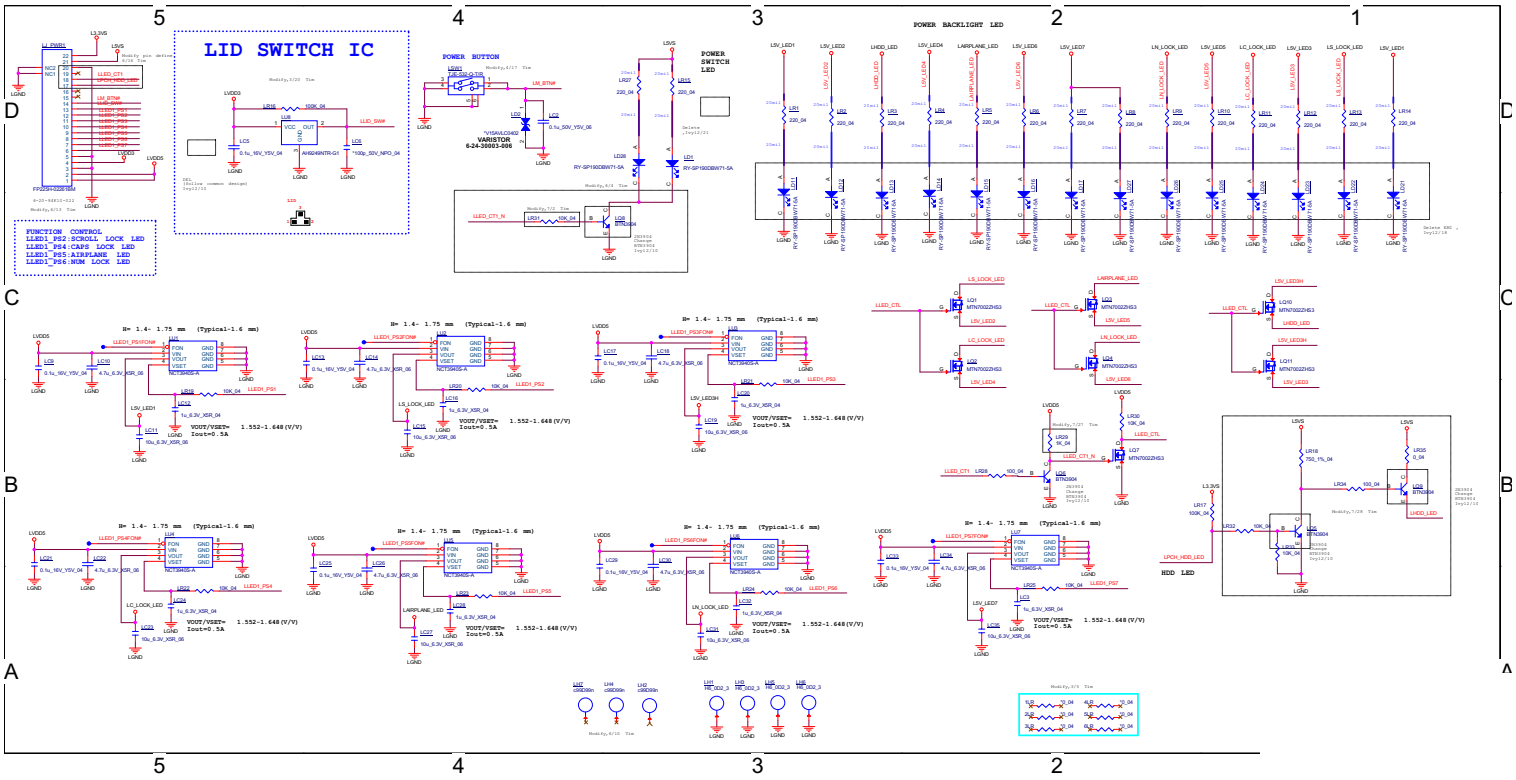
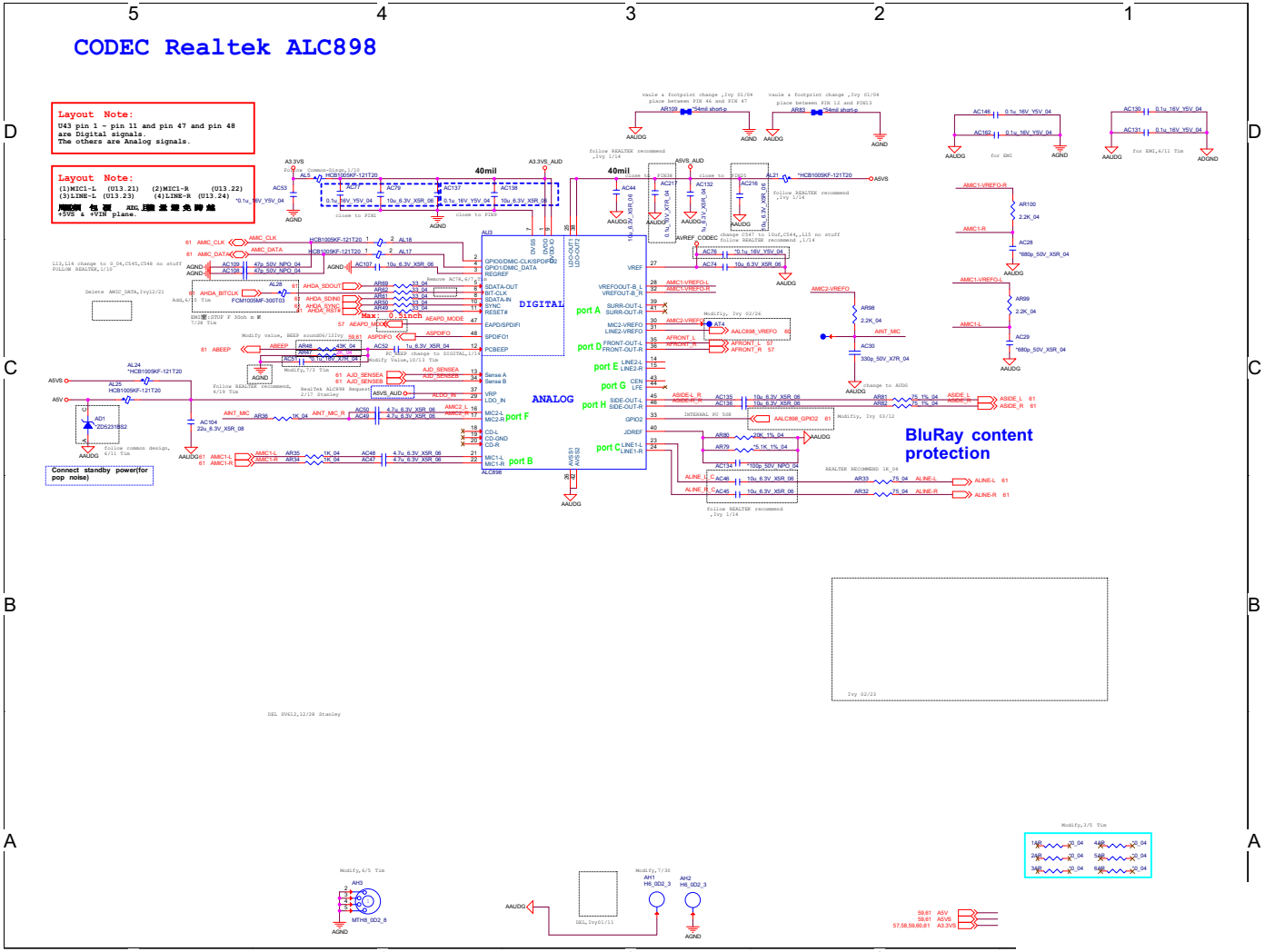
Finger Sensor Board

Power Switch LED Board

Sheet 55 of 62
Power Swtch LED Board



Audio Codec



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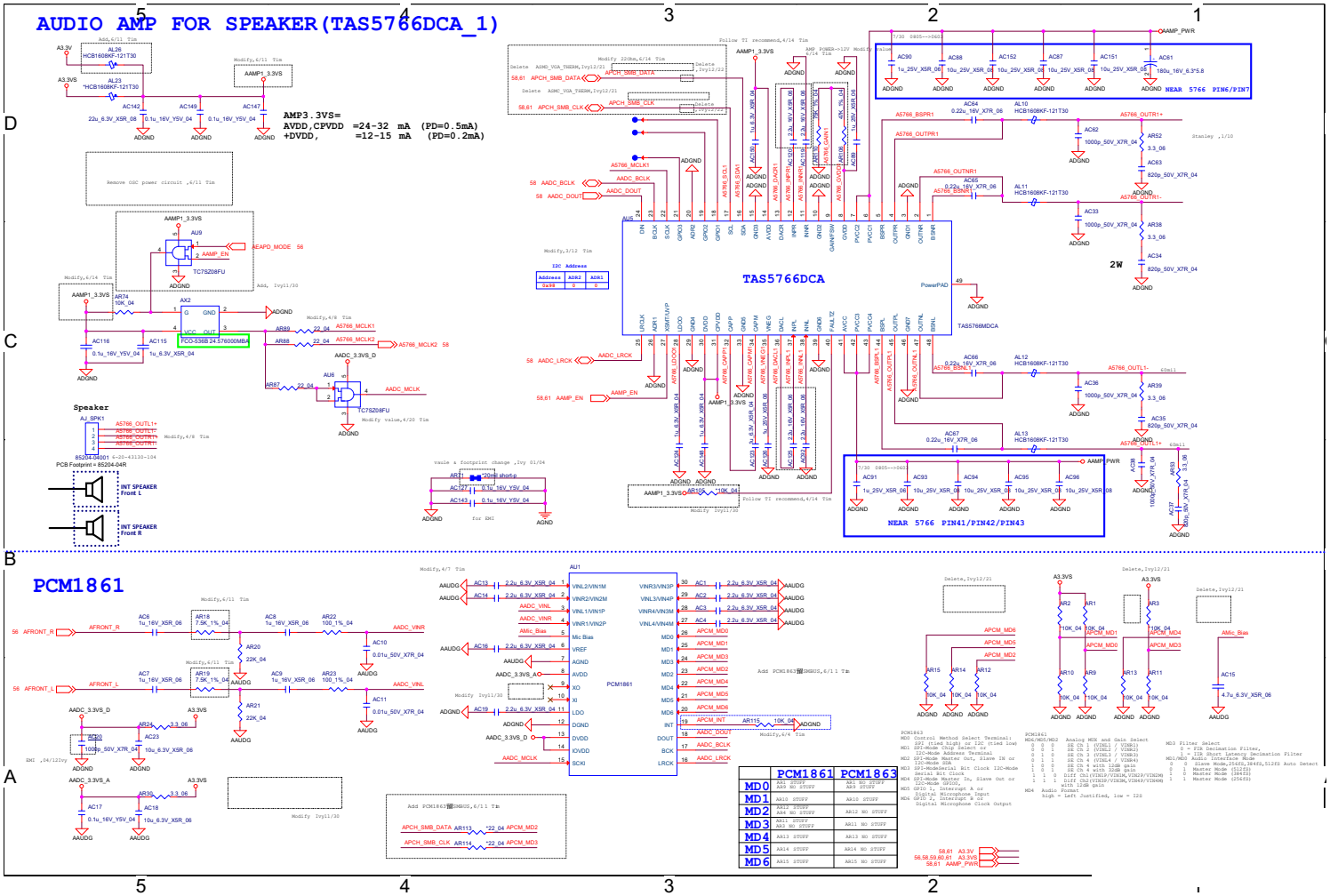
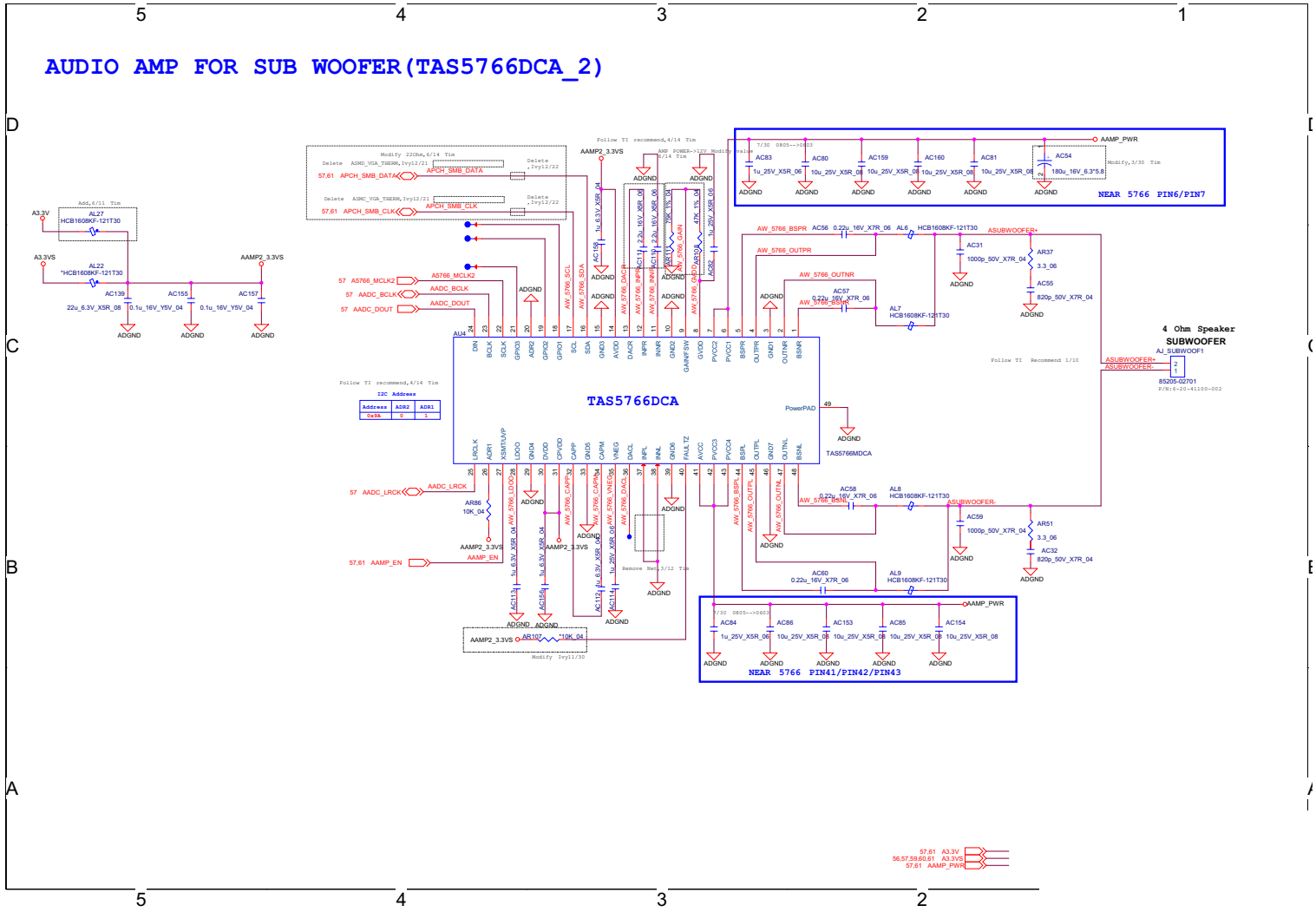
Audio Codec

Audio Board (Speaker)

Sheet 57 of 62
Audio Board
(Speaker)



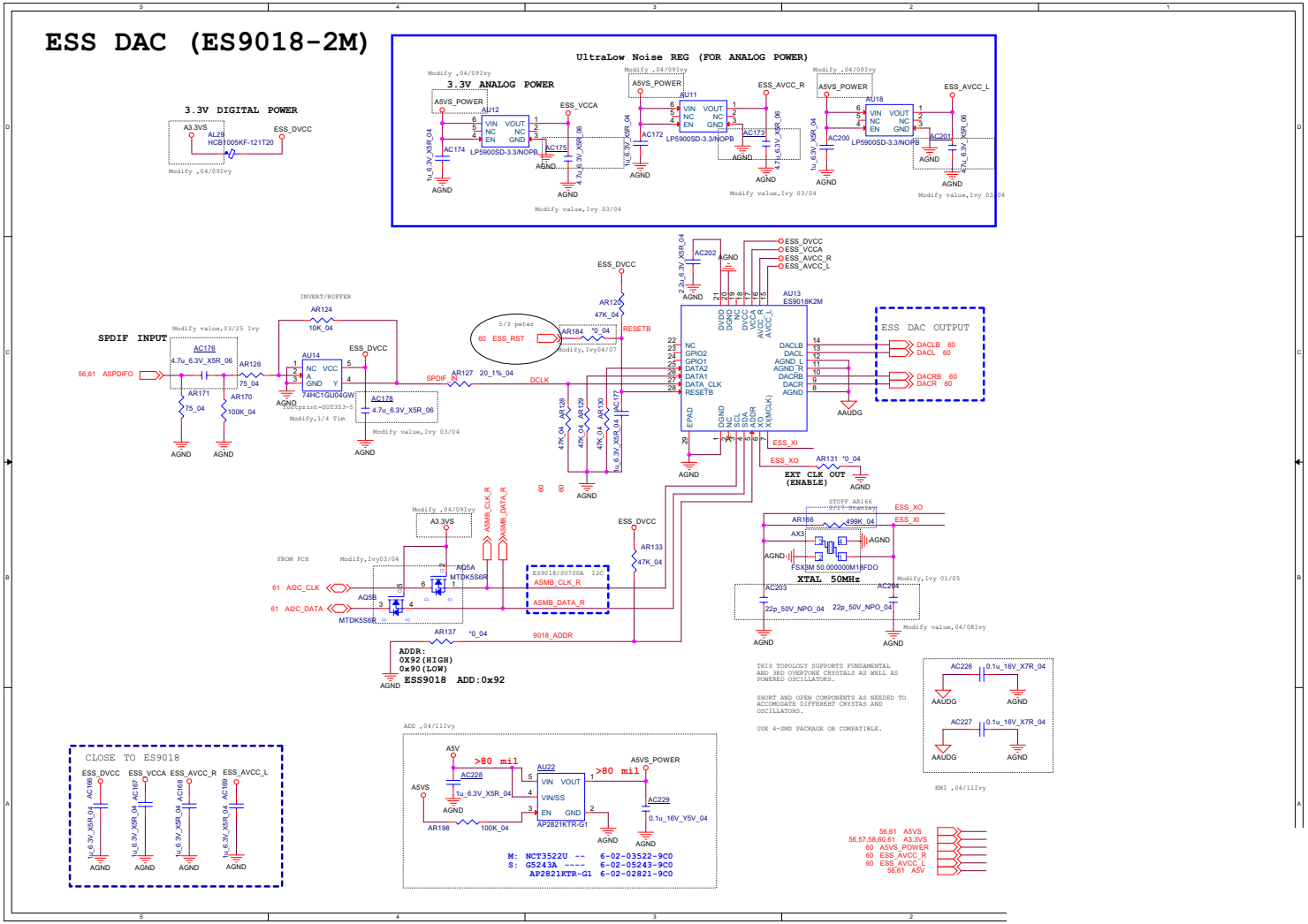
Audio Board (Subwoofer)



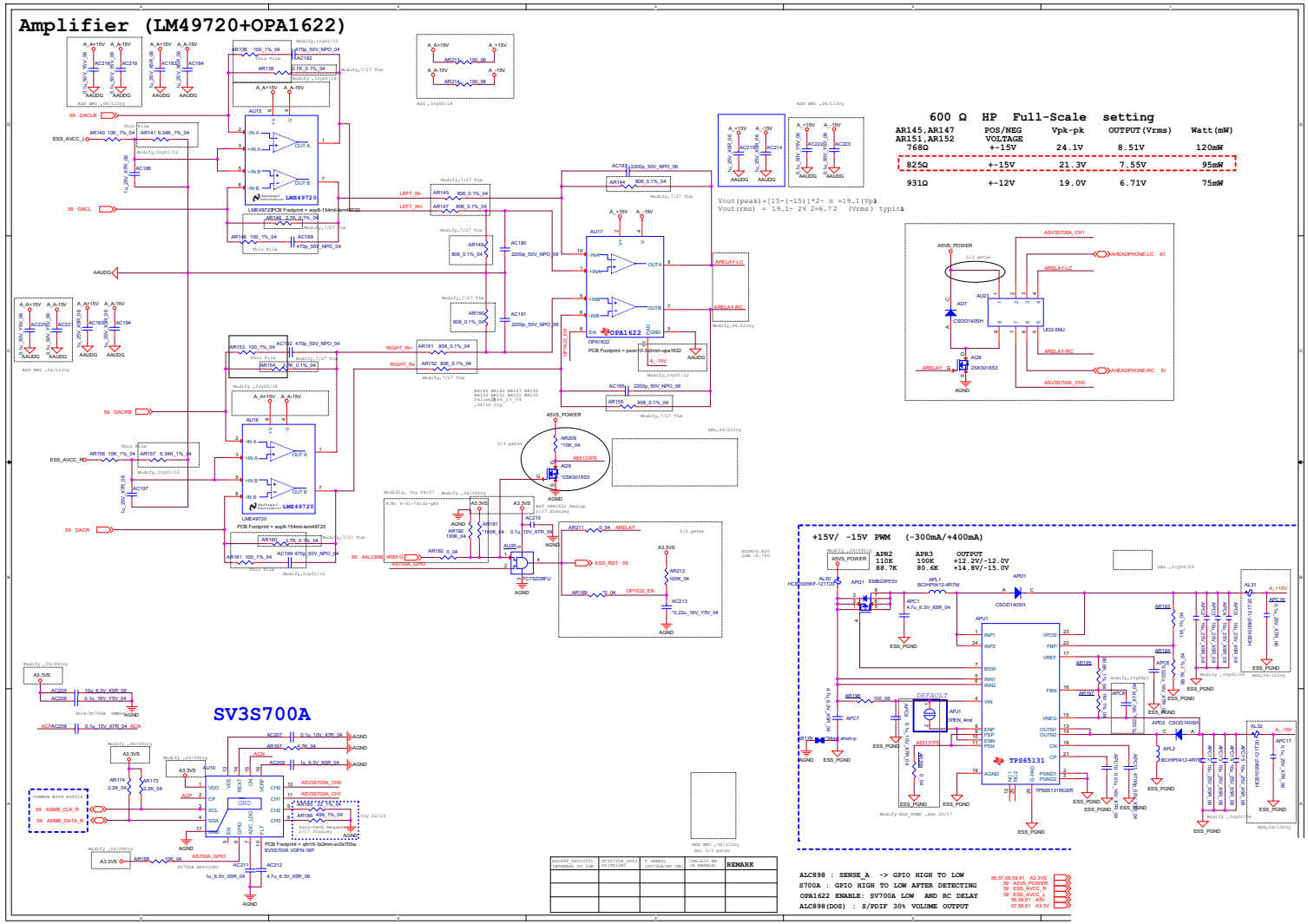
Sheet 58 of 62
Audio Board
(Subwoofer)

ESS DAC

Sheet 59 of 62
ESS DAC



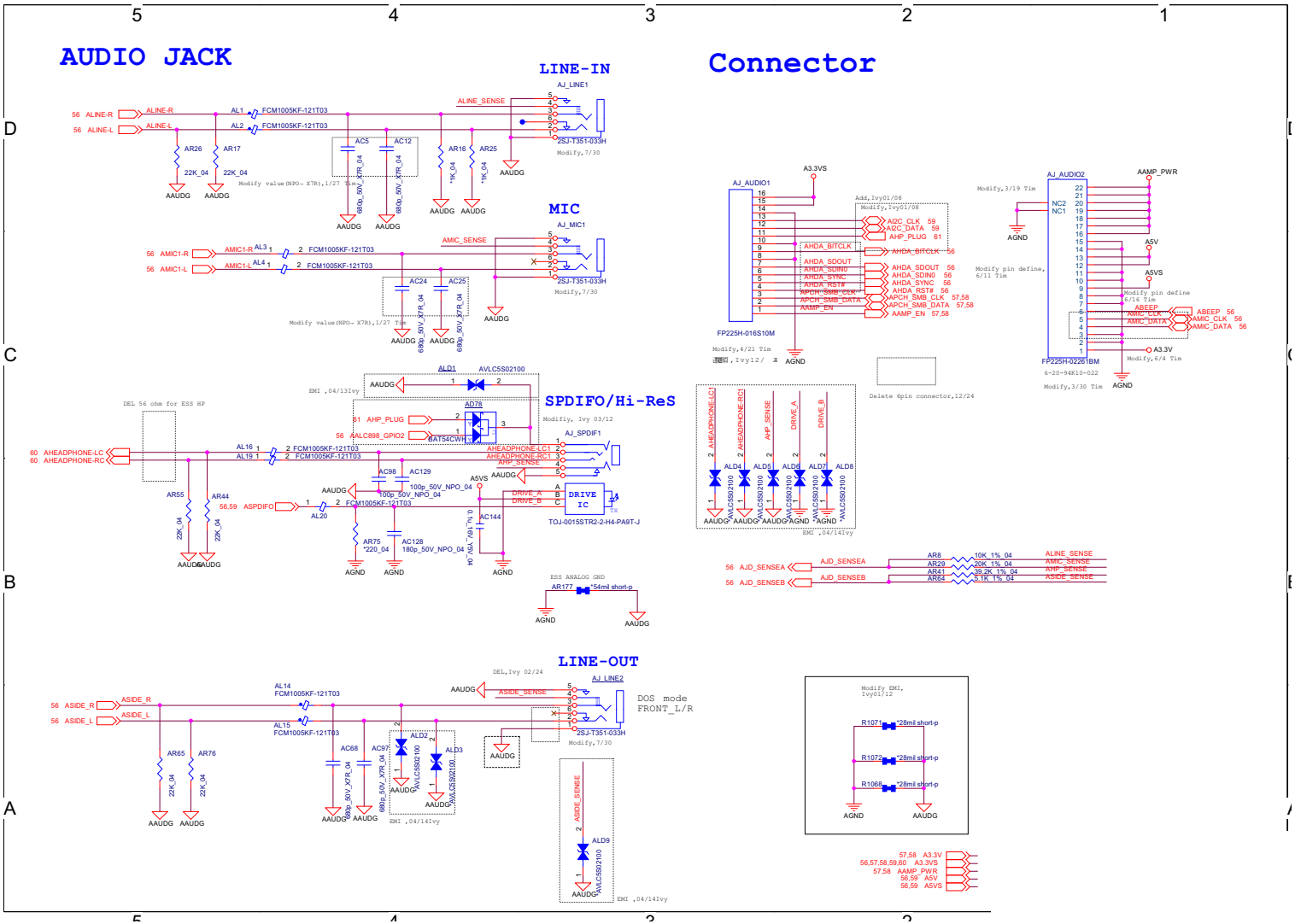
HP AMP



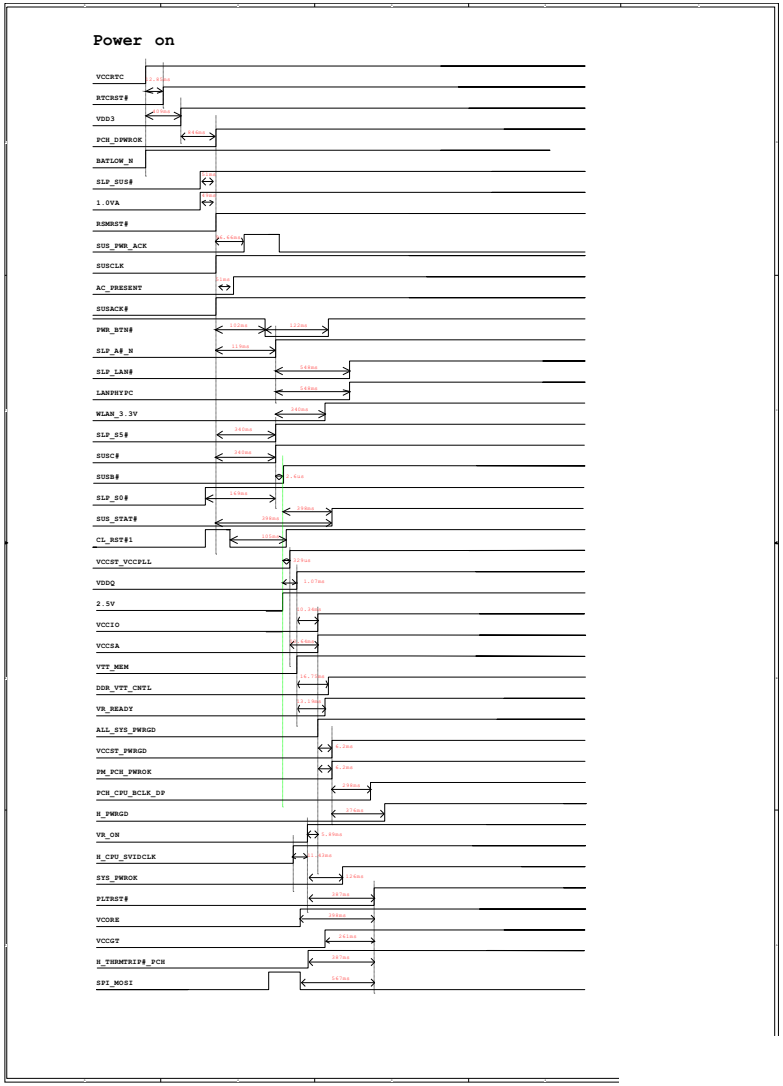
Sheet 60 of 62
HP AMP

Audio Jack

Sheet 61 of 62
Audio Jack



Power Sequence



Sheet 62 of 62
Power Sequence

Appendix C:Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS, you must:

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

Download the BIOS

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

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

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

Set the computer to boot from the external drive

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

BIOS Version

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

You should only download BIOS versions that are V1.0X.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 1.0X.05, you **MAY NOT** then go back and flash the BIOS to ver 1.0X.04).

Use the flash tools to update the BIOS

1. Make sure you are not loading any memory management programs such as HIMEM by holding the **F8** key as you see the message "**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.