

notebook



P150SM-A /
P151SM-A /
P151SM1-A
SERVICE
MANUAL

Notebook Computer

P150SM-A / P151SM-A / P151SM1-A

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 *P150SM-A* / *P151SM-A* / *P151SM1-A* series notebook PC.

The following information is included:

Chapter 1, Introduction, provides general information about the location of system elements and their specifications.

Chapter 2, Disassembly, provides step-by-step instructions for disassembling parts and subsystems and how to upgrade elements of the system.

Appendix A, Part Lists

Appendix B, Schematic Diagrams

Appendix C, Updating the FLASH ROM BIOS

IMPORTANT SAFETY INSTRUCTIONS

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

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit with an AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19.5V, 9.2A / 19V, 9.5A (**180** Watts for P150SM-A & P151SM-A) / 19.5V, 6.15A (**120** Watts for P151SM1-A) minimum AC/DC Adapter.

CAUTION

This Computer's Optical Device is a Laser Class 1 Product

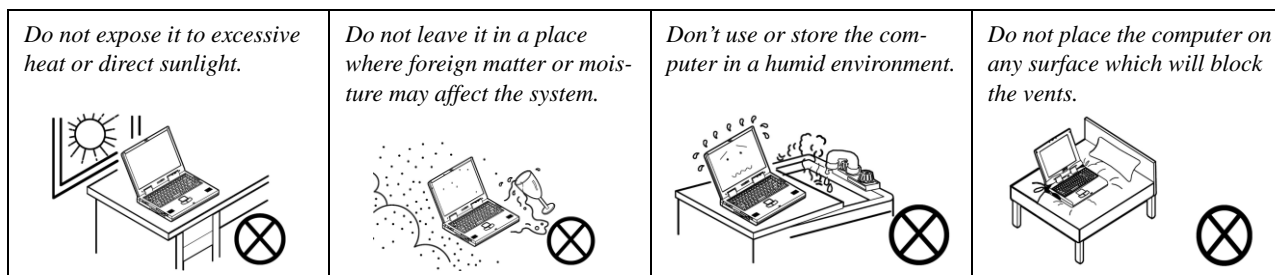
Instructions for Care and Operation

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

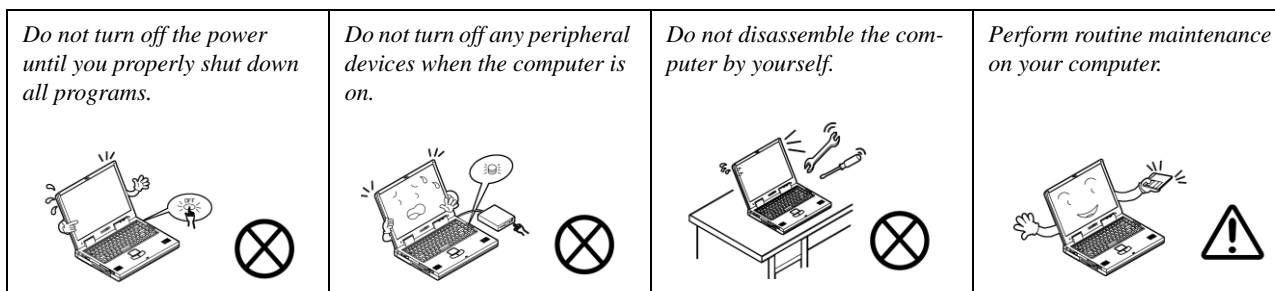
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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



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



Preface



Removal Warning

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

Also note the following when the cover is removed:

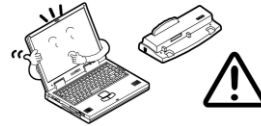
- Hazardous moving parts.
- Keep away from moving fan blades

Power Safety Warning

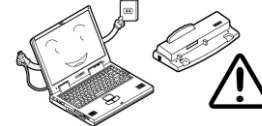
Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). You must also remove your battery in order to prevent accidentally turning the machine on.

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

Use only approved brands of peripherals.



Unplug the power cord before attaching peripheral devices.



Power Safety

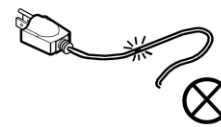
The computer has specific power requirements:

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

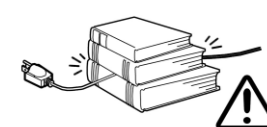
Do not plug in the power cord if you are wet.



Do not use the power cord if it is broken.



Do not place heavy objects on the power cord.



Battery Precautions

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

Battery Guidelines

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

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





Battery Disposal

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

Caution

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

Battery Level

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

Related Documents

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

User's Manual on Disc

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

System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Insert the battery and tighten the screws.
4. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
5. Attach the AC/DC adapter to the DC-In jack at the rear of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not 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".

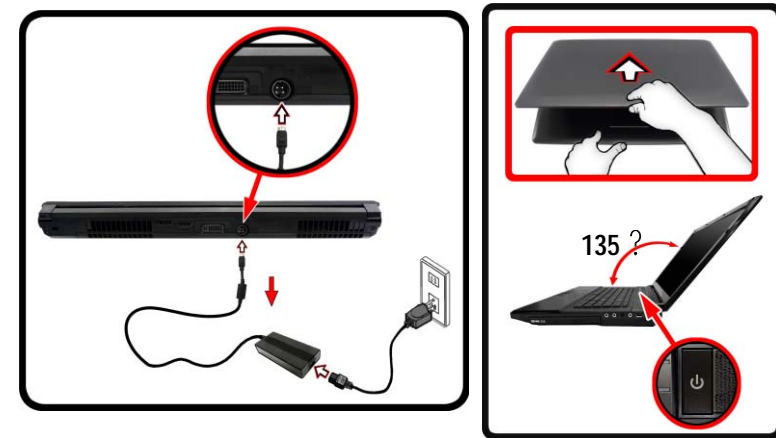


Figure 1
Opening the Lid/LCD/
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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the *P150SM-A / P151SM-A / P151SM1-A* series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in *User's Manual*. That manual is shipped with the computer.

Operating systems (e.g. *Windows 8*, 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 *P150SM-A / P151SM-A / P151SM1-A* series notebook is designed to be upgradeable. See *Disassembly on page 2 - 1* for a detailed description of the upgrade procedures for each specific component. Please note the warning and safety information indicated by the “” symbol.

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

Introduction

Specifications



Latest Specification Information

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



CPU

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

Processor Options

P150SM-A / P151SM-A:

Intel® Core™ i7 Processor

i7-4930MX (3.00GHz)

8MB L3 Cache, **22nm**, DDR3L-1600MHz, TDP 57W

All Models:

Intel® Core™ i7 Processor

i7-4900MQ (2.80GHz)

8MB L3 Cache, **22nm**, DDR3L-1600MHz, TDP 47W

i7-4800MQ (2.70GHz), i7-4700MQ (2.40GHz)

6MB L3 Cache, **22nm**, DDR3L-1600MHz, TDP 47W

i7-4600M (2.90GHz)

4MB L3 Cache, **22nm**, DDR3L-1600MHz, TDP 37W

Intel® Core™ i5 Processor

i5-4330M (2.80GHz), i5-4300M (2.60GHz), i5-4200M

(2.50GHz)

3MB L3 Cache, **22nm**, DDR3L-1600MHz, TDP 37W

Intel® Core™ i3 Processor

i3-4100M (2.50GHz), i3-4000M (2.40GHz)

3MB L3 Cache, **22nm**, DDR3L-1600MHz, TDP 37W

LCD

15.6" (39.62cm) FHD LCD

Memory

Four 204 Pin SO-DIMM Sockets Supporting **DDR3L**

1600MHz Memory

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

Memory Expandable up to 16GB/32GB

Note: Four SO-DIMMs are only supported by Quad-Core CPUs; Dual-Core CPUs support two SO-DIMMs maximum

Core Logic

Intel® HM87 Express Chipset

Security

Security (Kensington® Type) Lock Slot

BIOS Password

(Factory Option) Fingerprint Reader Module

(Factory Option) TPM 1.2

Storage

(Factory Option) One 12.7mm(h) Optical Device Type Drive (Super Multi Drive/Blu-Ray Combo Drive/Blu-Ray Writer Drive)

One Changeable 2.5" (6cm) 9.5mm (h) SATA (Serial) Hard Disk Drive/SSD

(Factory Option) 9.5mm 2nd HDD caddy

(Factory Option) Two mSATA Solid State Drives (SSD) supporting RAID Level 0/1

BIOS

AMI BIOS (48Mb SPI Flash-ROM)

Video Adapter

P150SM-A / P151SM-A:

Intel® Integrated GPU and NVIDIA® Discrete GPU

Supports Microsoft Hybrid Graphics

Intel Integrated GPU

Intel HD Graphics 4600

Dynamic Frequency (Intel Dynamic Video Memory Technology for up to **1.7GB**)

Microsoft DirectX® 11 Compatible

NVIDIA® Discrete GPU

NVIDIA® GeForce GTX 860M PCIe Video Card

4GB GDDR5 Video RAM on board

Microsoft DirectX® 11.1 Compatible

NVIDIA® GeForce GTX 870M PCIe Video Card

6GB GDDR5 Video RAM on board

Microsoft DirectX® 11.1 Compatible

NVIDIA® GeForce GTX 880M PCIe Video Card

8GB GDDR5 Video RAM on board

Microsoft DirectX® 11.1 Compatible

P151SM1-A:

Intel® Integrated GPU and NVIDIA® Discrete GPU

Supports Microsoft Hybrid Graphics

Intel HD Graphics 4600Dynamic Frequency (Intel Dynamic Video Memory Technology for up to **1.7GB**)

Microsoft DirectX® 11 Compatible

NVIDIA® Discrete GPU**NVIDIA® GeForce GTX 860M PCIe Video Card**

2GB GDDR5 Video RAM on board

Microsoft DirectX® 11.1 Compatible

Pointing Device

Built-in Touchpad (scrolling key functionality integrated)

Keyboard**P150SM-A:**

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

P151SM-A / P151SM1-A:

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

Audio

High Definition Audio Compliant Interface

S/PDIF Digital Output

Two Speakers

One Sub Woofer

Built-In Microphone

Sound Blaster Audio

ANSP™ 3D sound technology on headphone output

Mini-Card SlotsSlot 1 for **WLAN** Module or **Combo WLAN and Bluetooth** ModuleSlots 2 & 3 for mSATA **SSD****Card Reader**

Embedded Multi-In-1 Push-Push Card Reader

MMC (MultiMedia Card) / RS MMC

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

MS (Memory Stick) / MS Pro / MS Duo

Interface

Two USB 3.0 Ports (Including one AC/DC Powered USB port)

One USB 2.0 Port

One eSATA Port (USB 3.0 Port Combined)

One HDMI-Out Port

One DisplayPort (1.1a)

One Mini DisplayPort

One S/PDIF Out Jack

One Headphone/Speaker-Out Jack

One Microphone-In Jack

One Line-In Jack

One Mini-IEEE1394a Port

One RJ-45 LAN Jack

One DC-In Jack

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

Built-In Gigabit Ethernet LAN

2,0M FHD PC Camera Module

WLAN/ Bluetooth Half Mini-Card Modules:**(Factory Option)** Intel® Centrino® Ultimate-N 6300 Wireless LAN **(802.11a/g/n)****(Factory Option)** Intel® Wireless-AC 7260 Wireless LAN **(802.11a/c)** + Bluetooth **4.0****(Factory Option)** Intel® Wireless-N 7260 Wireless LAN **(802.11b/g/n)** + Bluetooth **4.0****(Factory Option)** Wireless LAN **(802.11b/g/n)** + Bluetooth **4.0****(Factory Option)** Wireless LAN **(802.11a/b/g/n)** + Bluetooth **4.0****Environmental Spec****Temperature**

Operating: 5°C - 35°C

Non-Operating: -20°C - 60°C

Relative Humidity

Operating: 20% - 80%

Non-Operating: 10% - 90%

Power

Removable 8-cell Smart Lithium-Ion Battery Pack, 76.96WH

Full Range AC/DC Adapter

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

P150SM-A / P151SM-A:DC Output: 19.5V, 9.2A/ 19V, 9.5A **(180W)****P151SM1-A:**DC Output: 19.5V, 6.15A **(120W)****Dimensions & Weight**

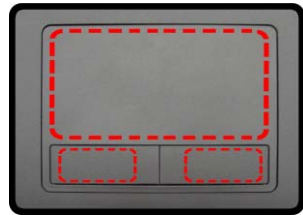
376mm (w) * 256mm (d) * 35 - 43mm (h)

Around 3.1kg with Battery and ODD

Introduction

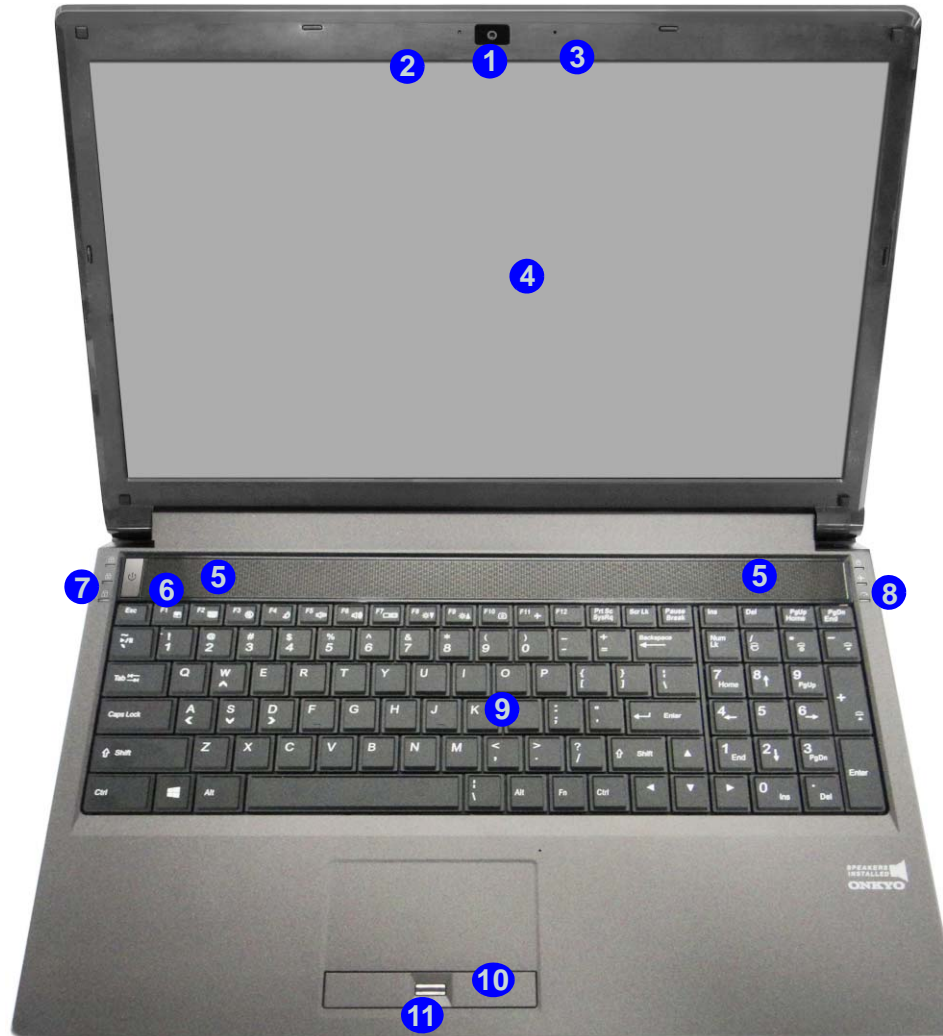
Figure 1
Top View

1. Built-In PC Camera
2. PC Camera LED
3. Built-In Microphone
4. LCD
5. Speakers
6. Power Button
7. LED Lock Indicators
8. LED Status Indicators
9. Keyboard (P150SM supports an Illuminated Keyboard)
10. TouchPad and Buttons
11. Fingerprint Reader (Optional)



Note that the Touchpad and Buttons has a valid operational area indicated within the red dotted lines above.

External Locator - Top View with LCD Panel Open



External Locator - Front & Right side Views

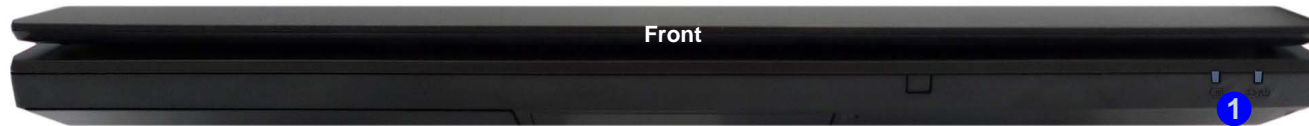


Figure 2
Front Views

1. LED Power Indicators



Figure 3
Right Side Views

1. Optical Device Drive Bay
2. Emergency Eject Hole
3. Headphone Jack
4. Microphone Jack
5. S/PDIF-Out Jack
6. Line-In Jack
7. USB 2.0 Port
8. Security Lock Slot

Introduction

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. Mini-IEEE 1394a Port
2. RJ-45 LAN Jack
3. USB 3.0 Ports
4. Combined eSATA/ Powered USB 3.0 Port
5. Multi-in-1 Card Reader



Figure 5
Rear View

1. Vent/Fan Intake
2. Display Port
3. HDMI-Out Port
4. Mini Display Port
5. DC-In Jack



External Locator - Bottom View

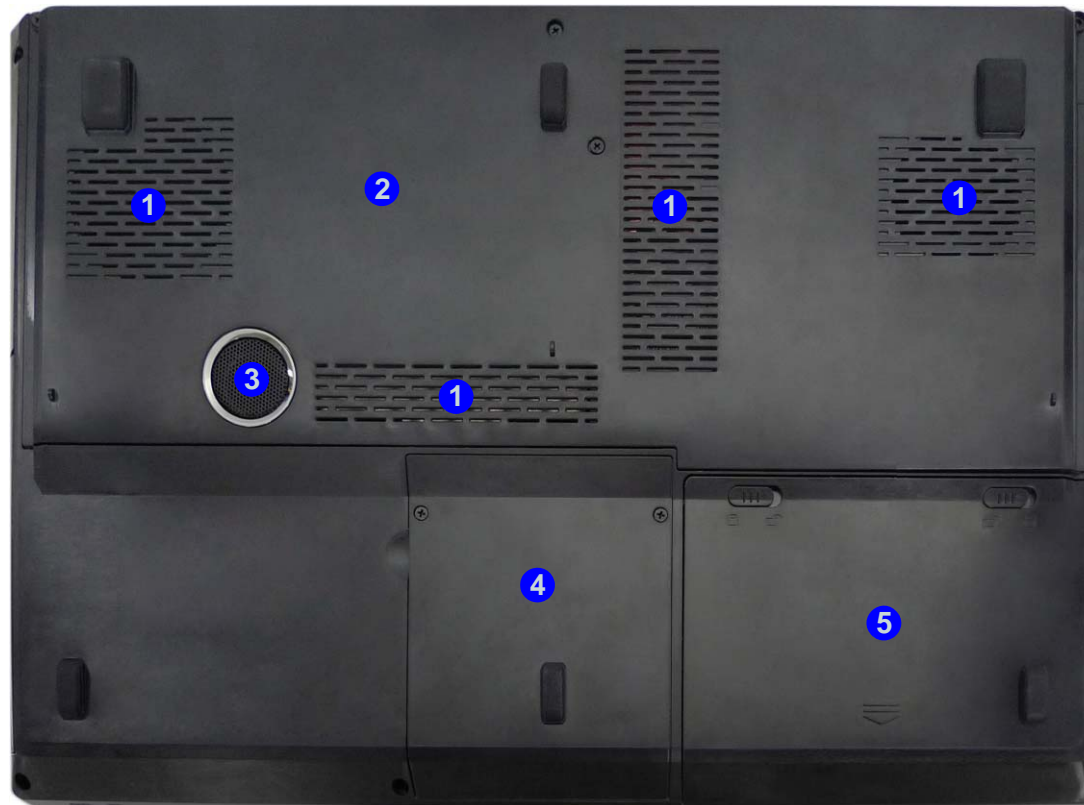


Figure 6
Bottom View

1. Vent
2. Component Bay Cover
3. Sub Woofer
4. HDD Bay
5. Battery



Overheating

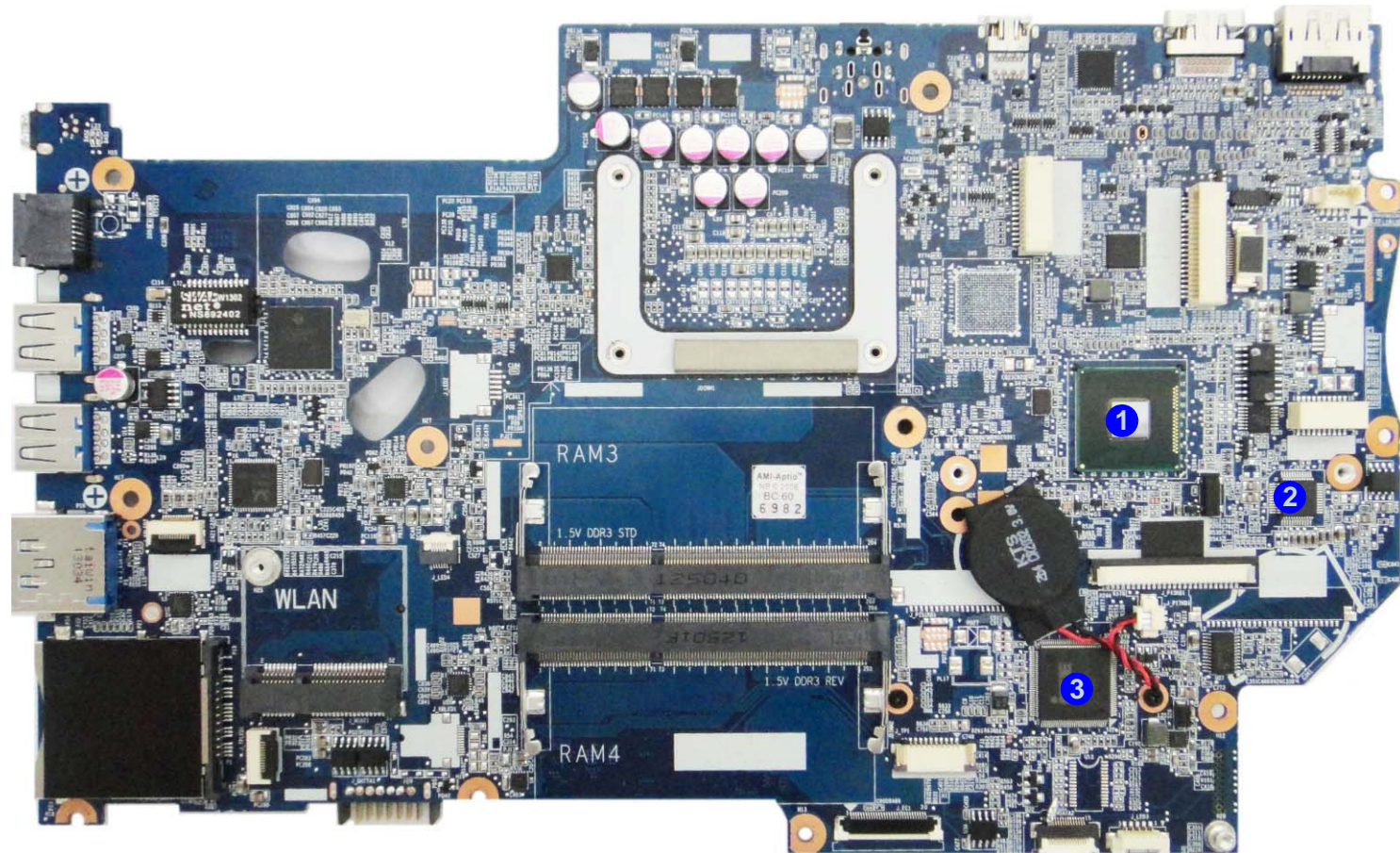
To prevent your computer from overheating make sure nothing blocks the vent/fan intakes while the computer is in use.

Introduction

Figure 7
**Mainboard Top
Key Parts**

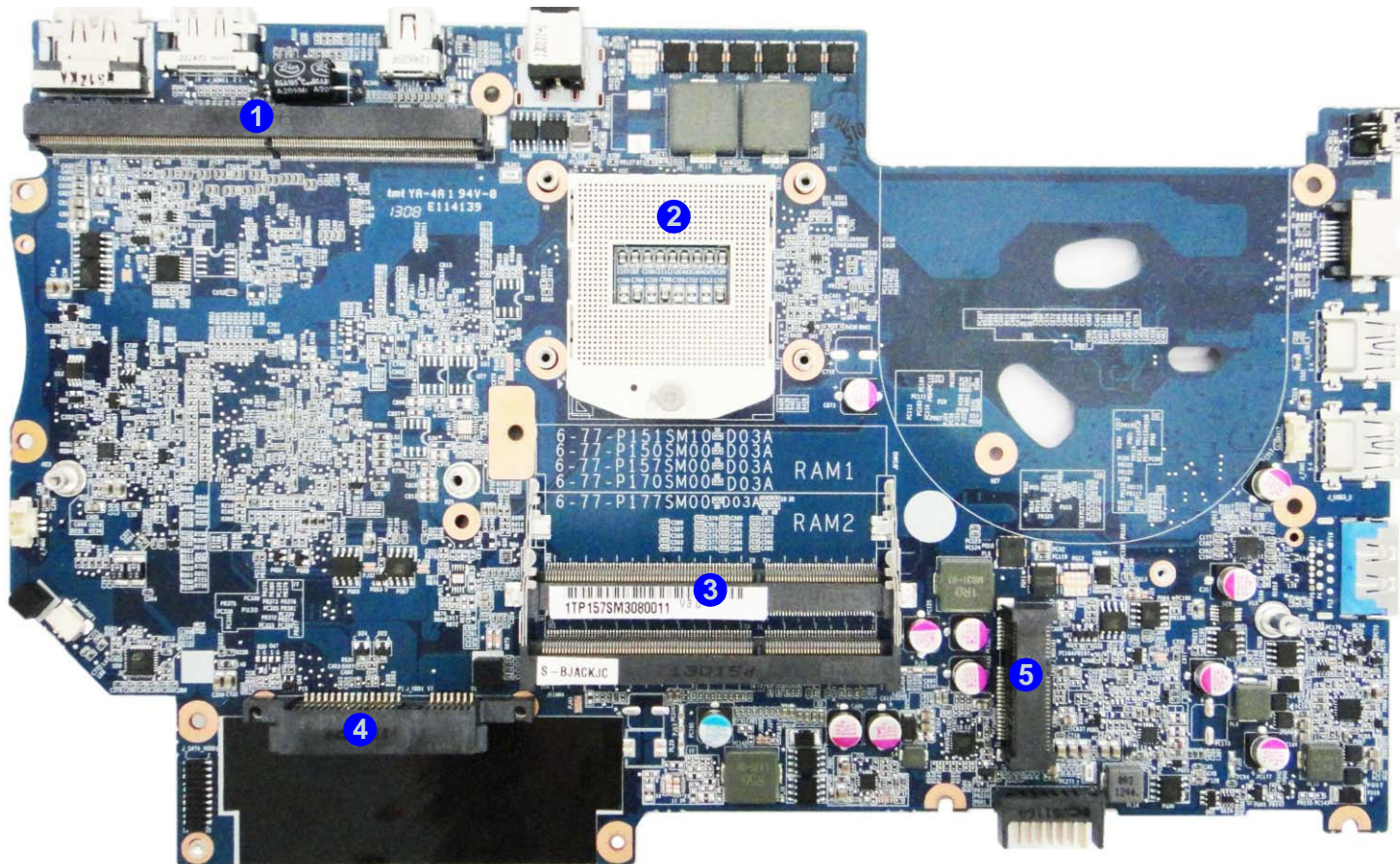
1. Platform
Controller Hub
2. Audio Codec
3. KBC ITE IT8587

Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

Figure 8
Mainboard Bottom
Key Parts



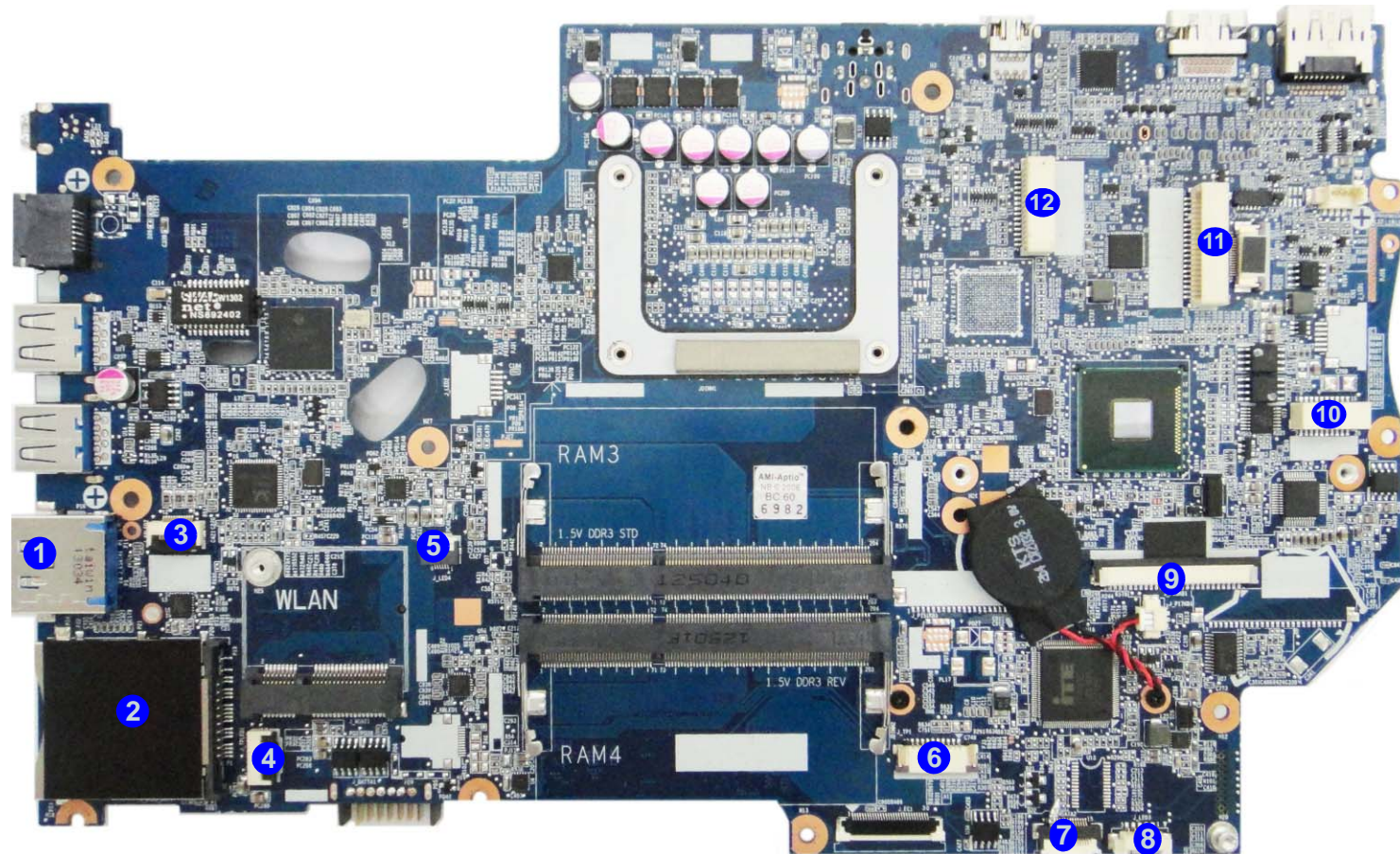
1. VGA-Card Connector
2. CPU Socket (no CPU installed)
3. Memory Slots DDR3L SO-DIMM (Primary)
4. Hard Disk Connector
5. MSATA Connector

Introduction

Figure 9
**Mainboard Top
Connectors**

1. USB 3.0 Port / e-SATA
2. Multi-in-1 Card Reader
3. KB LED Connector
4. TP LED Cable Connector
5. LED 4 Cable Connector
6. TouchPad Cable Connector
7. MSATA Cable Connector
8. LED 3 Cable Connector
9. Keyboard Cable Connector
10. Audio Cable Connector
11. LCD Cable Connector
12. eDP Cable Connector

Mainboard Overview - Top (Connectors)



Mainboard Overview - Bottom (Connectors)

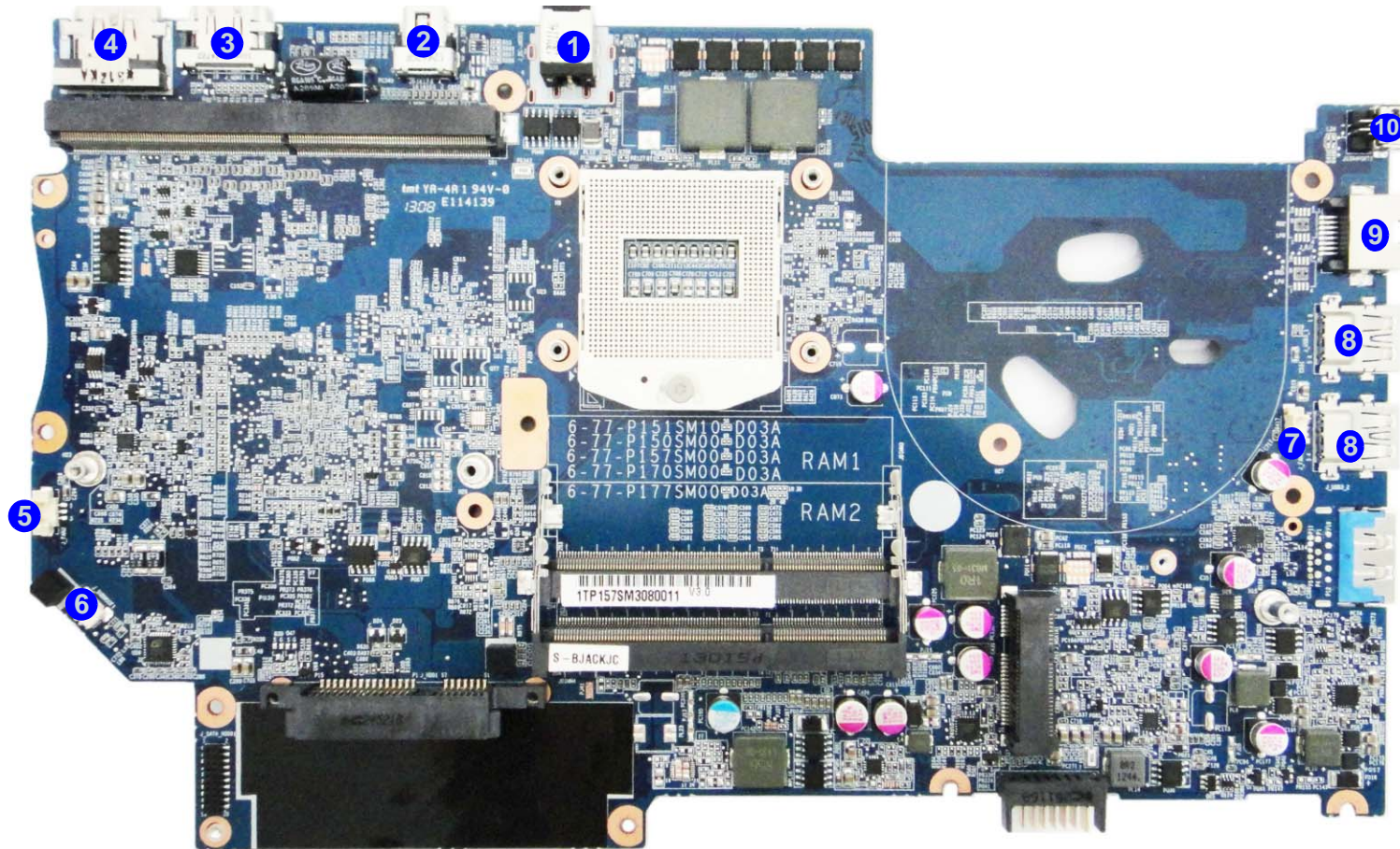


Figure 10
**Mainboard Bottom
Connectors**

1. DC-In Jack
2. Mini Display Port
3. HDMI-Out Port
4. Display Port
5. VGA Fan Cable Connector
6. Sub Woofer Cable Connector
7. CPU Fan Cable Connector
8. USB 3.0 Ports
9. RJ-45 LAN Jack
10. Mini-IEEE 1394a Port


Chapter 2: Disassembly


Overview

This chapter provides step-by-step instructions for disassembling the *P150SM-A / P151SM-A / P151SM1-A* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

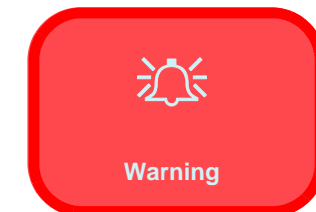
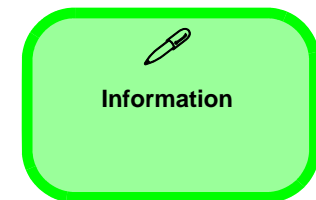
We suggest you completely review any procedure before you take the computer apart.

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

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

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

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



Disassembly

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

Maintenance Tools

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

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

Connections

Connections within the computer are one of four types:

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

Maintenance Precautions

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

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

Cleaning

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

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



Power Safety Warning

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

Disassembly Steps

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

To remove the Battery:

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

To remove and install the HDD:

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

To remove the SSD:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the SSD [page 2 - 10](#)

To remove the Optical Device:

1. Remove the battery [page 2 - 5](#)
2. Remove the Optical device [page 2 - 11](#)

To remove the HDD from the Secondary Bay:

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

To remove the Primary System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the system memory [page 2 - 14](#)

To remove the System Memory under the Keyboard:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 14](#)
3. Remove the system memory [page 2 - 17](#)

To remove and install the Processor:

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

To remove the WLAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 14](#)
3. Remove the wireless LAN [page 2 - 21](#)

To remove the MSATA Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the MSATA [page 2 - 23](#)

To remove and install the Video Card:

1. Remove the battery [page 2 - 5](#)
2. Remove the video card [page 2 - 24](#)
3. Install the video card [page 2 - 26](#)

Removing the Battery

1. Turn the computer **off**, and turn it over.
2. Slide the latch **1** in the direction of the arrow (*Figure 1a*).
3. Slide the latch **2** in the direction of the arrow, and hold it in place (*Figure 1a*).
4. Slide the battery in the direction of the arrow **3**.
5. Lift the battery **4** out of the compartment (*Figure 1c*).

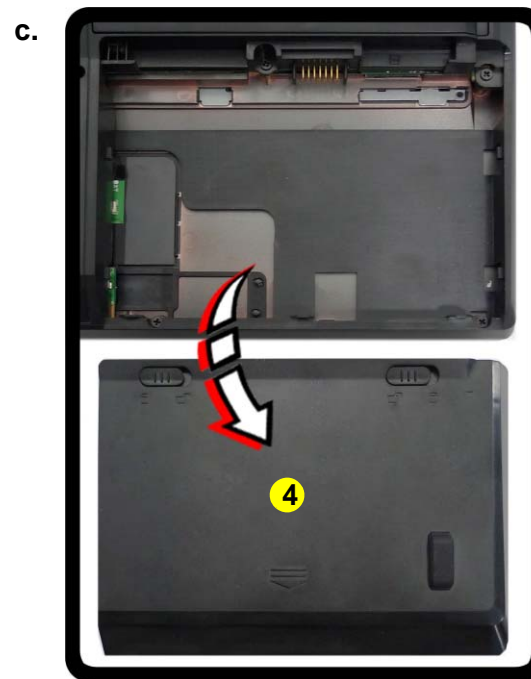
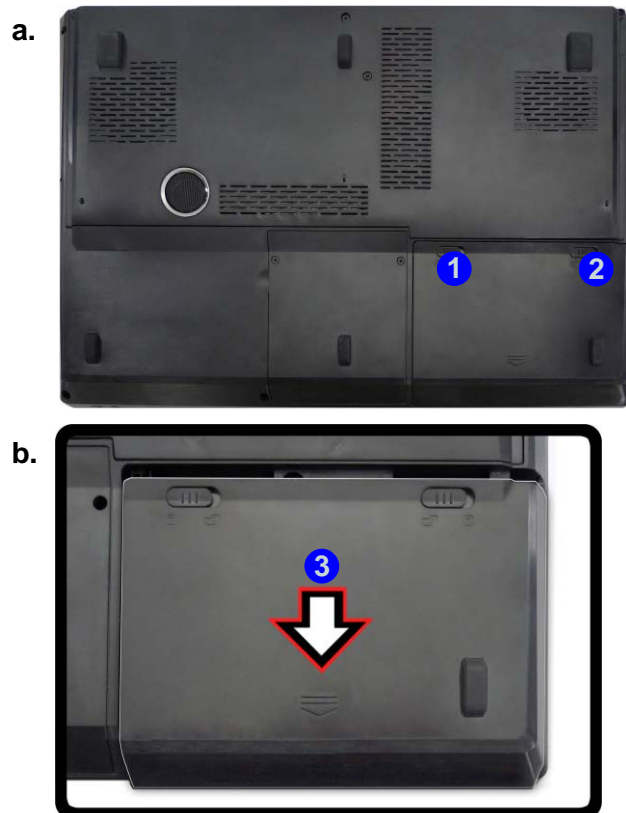
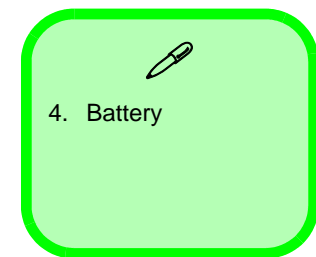


Figure 1
Battery Removal

- a. Slide the latch and hold in place.
- b. Lift the battery up toward the direction of the arrow.
- c. Lift the battery out.



Disassembly

Figure 2
**HDD Assembly
Removal**

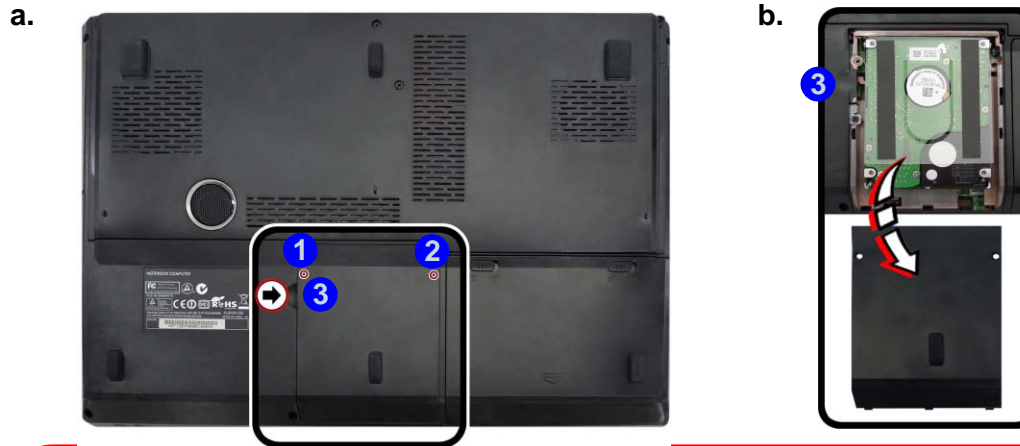
- Locate the HDD bay cover and remove the screws.
- Remove the hard disk bay cover by levering the cover at point ③.

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 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 Upgrade Process

- Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
- Locate the hard disk bay cover and remove screws ① - ② ([Figure 2a](#)).
- Remove the hard disk bay cover by levering the cover at point ③ ([Figure 2b](#)).



- 2 Screws



HDD System Warning

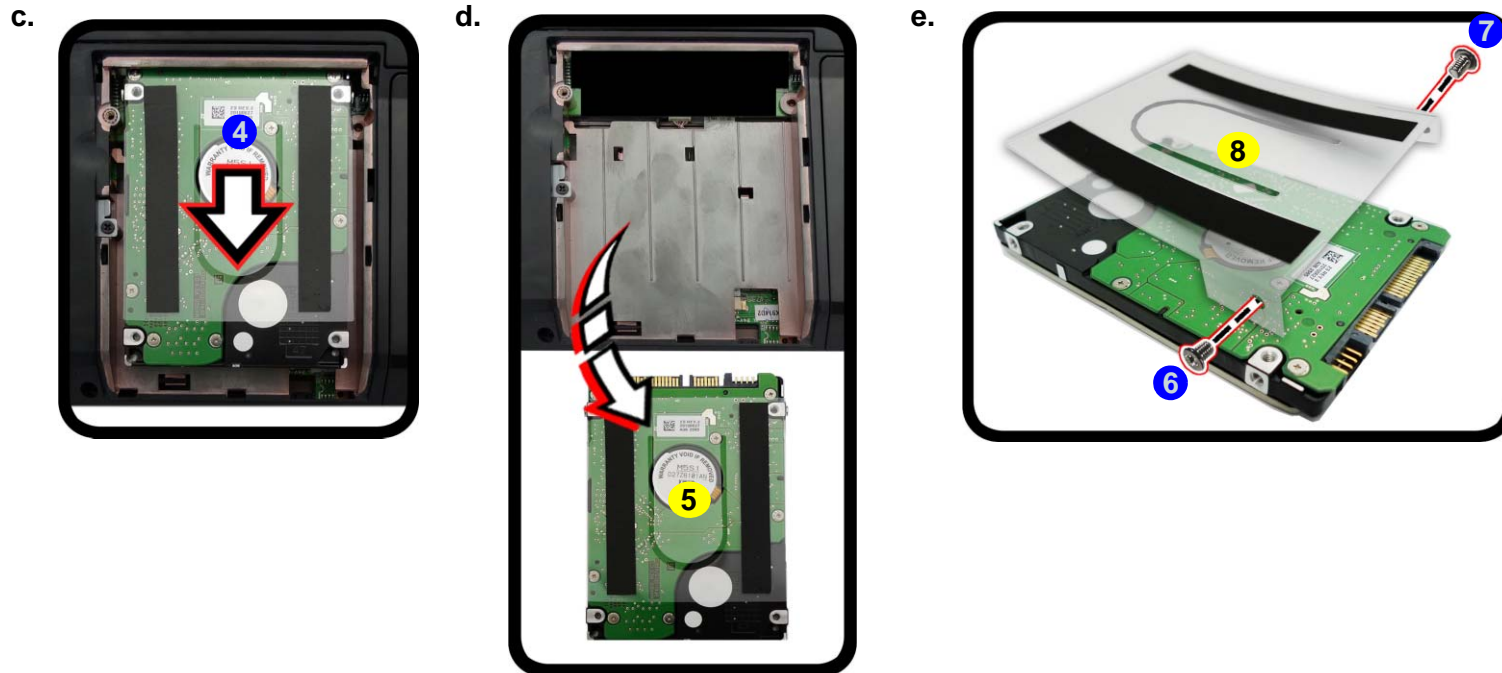
New HDD's are blank. Before you begin make sure:

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


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

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

- Slide the HDD assembly in the direction of the arrow **4** (*Figure 3c*).
- Remove the hard disk assembly **5** (*Figure 3d*).
- Remove screws **6** & **7** and the insulation plate **8** (*Figure 3e*).
- Reverse the process to install a new hard disk (do not forget to replace all the screws and covers).



- Figure 3*
HDD Assembly Removal (cont'd.)
- Slide the HDD assembly in the direction of the arrow.
 - Remove the hard disk assembly.
 - Remove the screws and the insulation plate.

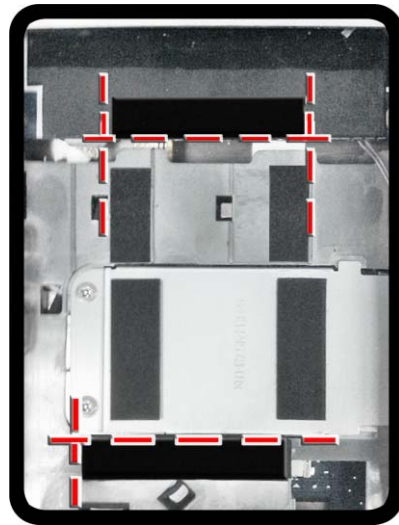
- 
- 5. HDD
 - 8. HDD Insulation Plate
 - 2 Screws

Disassembly

Hard Disk Size Note (Foam Rubber Insert)

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

Figure 4
**Foam Rubber
Insert for 7mm(H)
HDDs**



HDD-1

- 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.

Inserting the Hard Disk Into the HDD Bay

1. Make sure the HDD assembly is aligned with the black taped area **1** (*Figure 5a*).
2. When aligned, carefully insert the HDD assembly **2** into the case so that the connectors line up (*Figure 5a*).
3. Replace the hard disk bay covers and screws.

a.

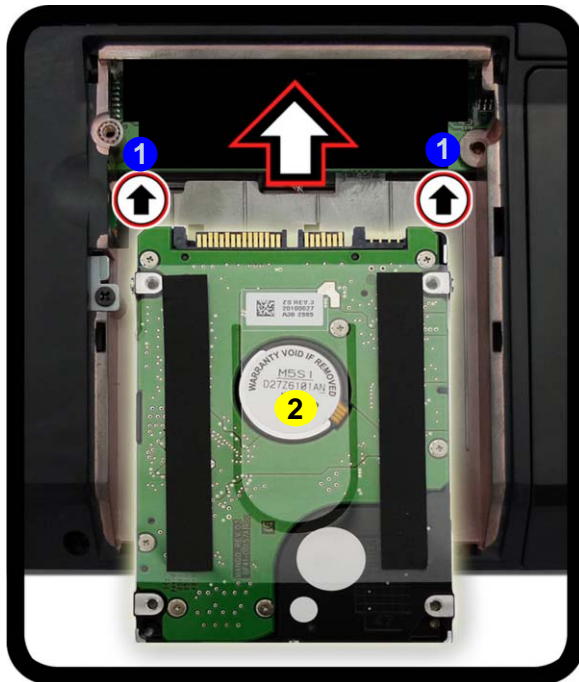


Figure 5
**Inserting the Hard
Disk Into the HDD
Bay**

- a. Make sure the HDD assembly is aligned with the black taped area. When aligned, carefully insert the HDD assembly into the case so that the connectors line up.



2. HDD Assembly

Disassembly

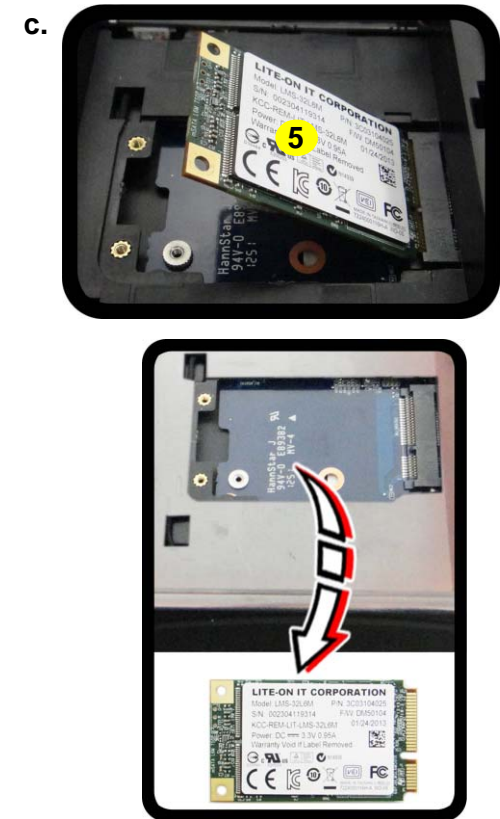
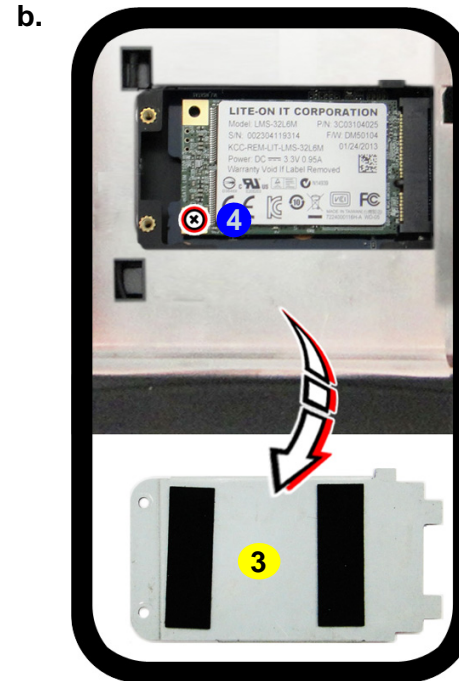
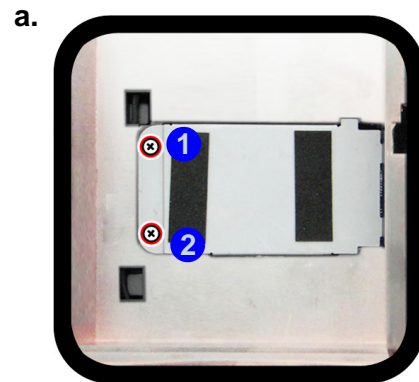
Figure 6
SSD Removal

- Remove the screws.
- Remove the shielding plate and screw.
- Remove the SSD module.

Removing the SSD

Note that the **SSD** (if installed) is located under the HDD bay.

- Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)) and HDD ([page 2 - 6](#)).
- Remove screws **1** - **2** from shielding plate ([Figure 6a](#)).
- Carefully remove the SSD shielding plate **3** and remove the screw **4** from the SSD ([Figure 6b](#)).
- The SSD module **5** will pop-up and you can remove it from the computer ([Figure 9c](#)).
- Reverse the process to install a new SSD.



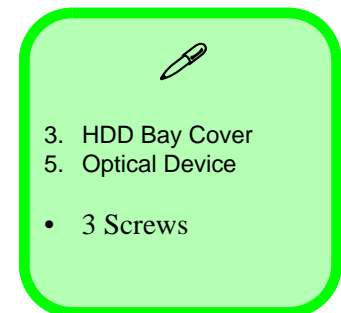
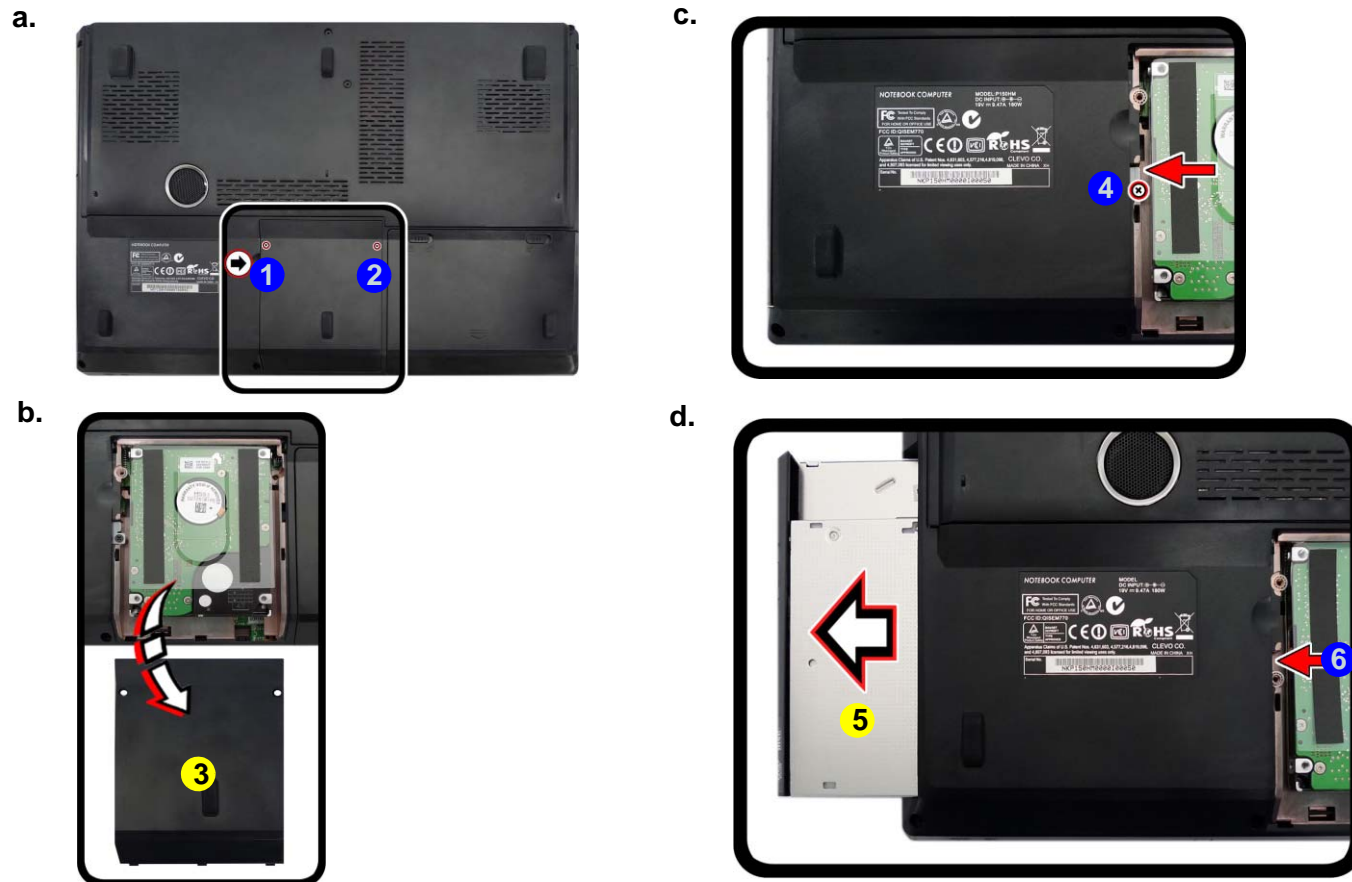
- 3. SSD Shielding Plate
- 5. SSD Module
- 3 Screws

Removing the Optical (CD/DVD) Device

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
2. Locate the hard disk bay cover and remove screws **1** & **2** ([Figure 7a](#)).
3. Remove the hard disk bay cover **3** ([Figure 7b](#)).
4. Remove the screw at point **4** ([Figure 7c](#)), and use a screwdriver to carefully push out the optical device **5** at point **6** ([Figure 7d](#)).
5. Reverse the process to install any new optical (CD/DVD) device.

Figure 7
Optical Device Removal

- a. Locate the hard disk bay cover and remove the screws.
- b. Remove the hard disk bay cover.
- c. Remove the screw.
- d. Use a screwdriver to carefully push the optical device out.



Disassembly

Figure 8 Optical Device Removal (cont'd.)

- e. Pry the bezel off the optical device.
- f. Separate the bezel and optical device
- g. Install the front bezel.

6. Carefully pry the bezel **8** off the optical device at point **7** (*Figure 8d*).
7. Separate the bezel **8** and the optical device.
8. Reverse the process to attach the front bezel **8** with the new optical device at point **9** (*Figure 8f*).
9. Insert the new device and carefully slide it into the computer (the device only fits one way. DO NOT FORCE IT; The screw holes should line up).
10. Replace the component bay cover and tighten the screws.
11. Restart the computer to allow it to automatically detect the new device.



8. Bezel Cover

- 1 Screw

Removing the Hard Disk from the Secondary HDD Bay

Note that the **secondary** hard disk (if installed) is located under the optical device bay (CD/DVD).

1. Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)) and optical device ([page 2 - 11](#)).
2. Remove the screw at point **1** ([Figure 9c](#)), and use a screwdriver to carefully push out the secondary HDD module **3** at point **2** ([Figure 9a](#) and [Figure 9b](#)).
3. When the module is removed turn it over to access the rear. Remove screws **4** - **7** from the secondary HDD module assembly ([Figure 9c](#)).
4. Remove the hard disk **8** from the caddy module **9** ([Figure 9d](#)).
5. Reverse the process to install a new hard disk (do not forget to replace all the screws and covers).

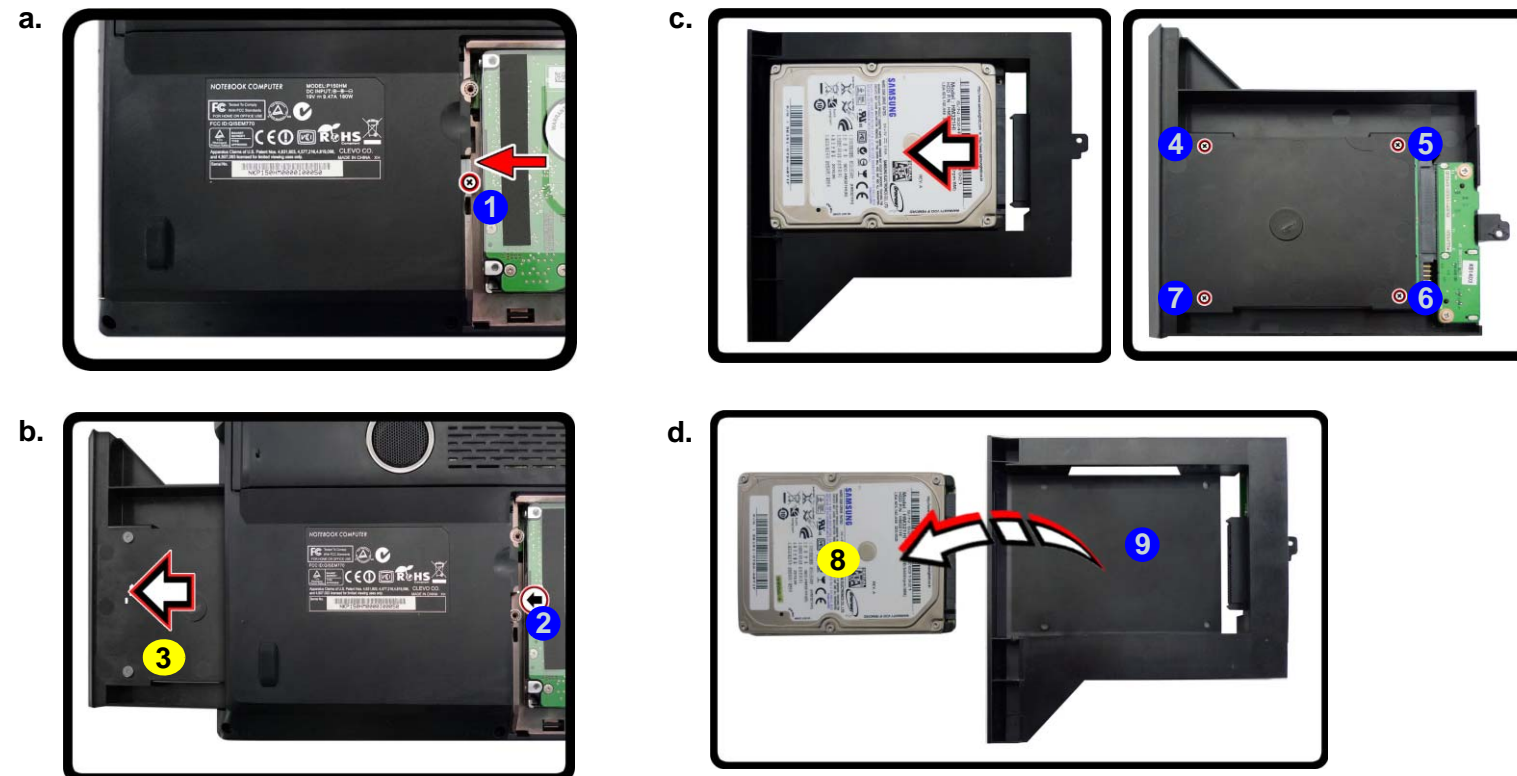
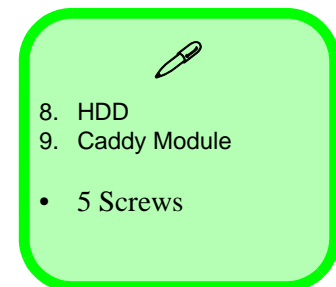


Figure 9
**Secondary HDD
Assembly Removal**

- a. Remove the screws.
- b. Use a screwdriver to carefully push the HDD module out.
- b. Remove the screws.
- c. Lift the secondary HDD assembly up and out of the caddy module.



Disassembly

Figure 10
RAM Module Removal

- a. Remove the screws. Slide the bottom cover until the cover and case indicators are aligned.

Removing the Primary System Memory (RAM)

The computer has **four** memory sockets for 204 pin Small Outline Dual In-line (SO-DIMM) DDR 3L type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

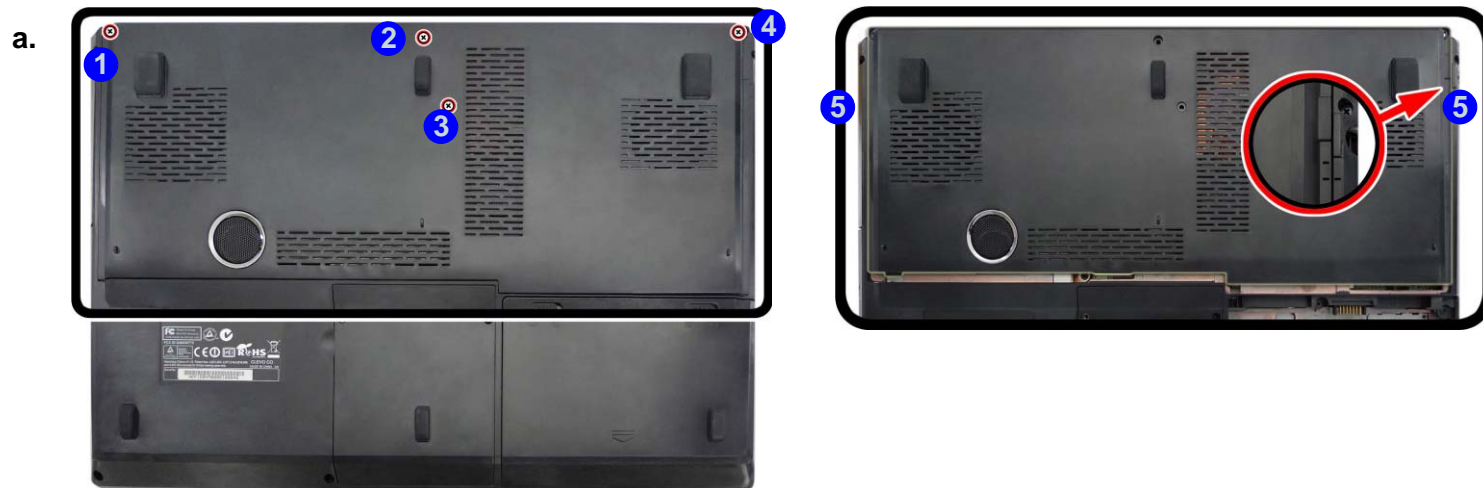
Note that **four SO-DIMMs are only supported by Quad-Core CPUs; Dual-Core CPUs support two SO-DIMMs maximum.**

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. Remove screws **1 - 4**.
3. Slide the bottom cover until the cover and case indicators **5** are aligned ([Figure 10a](#)).

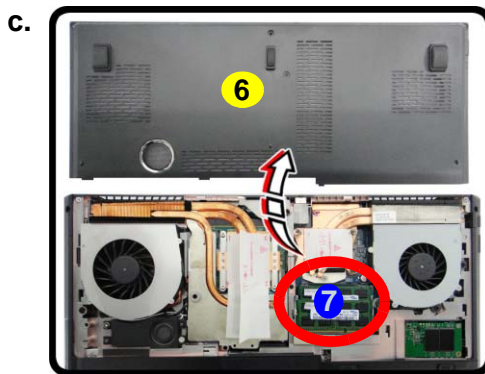



- 4 Screws

Figure 11
RAM Module Removal (cont'd.)


- c. Lift the component bay cover off the computer case. The modules will be visible at point **7**.
- d. Gently pull the two release latches on the sides of the memory socket(s) in the direction indicated below.
- e. The RAM module will pop-up, and you can remove it.

- 4. Lift the component bay cover **6** off the computer case. The modules will be visible at point **7** (*Figure 11c*).
- 5. Gently pull the two release latches (**8** & **9**) on the sides of the memory socket(s) in the direction indicated below (*Figure 11d*).
- 6. The RAM module **10** will pop-up, and you can remove it (*Figure 11e*).
- 7. Pull the latches to release the second module if necessary.
- 8. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
- 9. 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.
- 10. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
- 11. Replace the bay cover and screws.
- 12. 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.



6. Component Bay Cover
10. RAM Module

Disassembly

Figure 12
**Keyboard
Removal**

- Remove the component bay cover.
- Use the small tool provided to carefully push out the top cover module.
- Remove the top cover module.
- Remove the screws.
- Carefully lift the keyboard up, being careful not to bend the keyboard ribbon cable.

Removing the System Memory (RAM) from Under the Keyboard

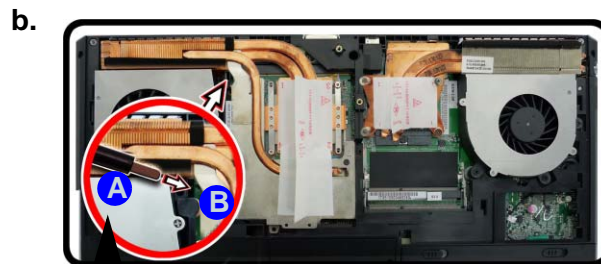
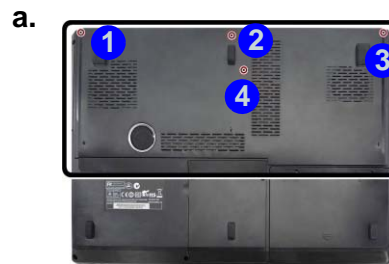
The computer has **four** memory sockets for 204 pin Small Outline Dual In-line (SO-DIMM) DDR 3L type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

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

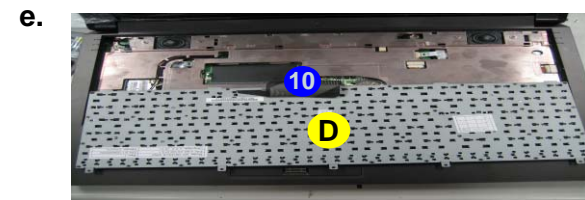
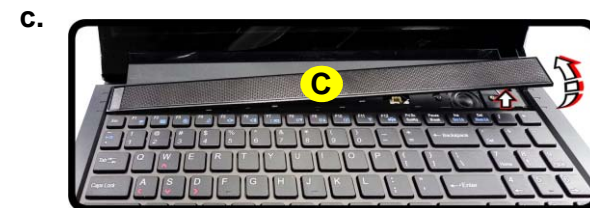
Two primary memory sockets are located under component bay cover (the bottom case cover), and two secondary memory sockets are located under the keyboard. If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay cover.

Memory Upgrade Process

- Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)).
- Remove screws **1 - 4** ([Figure 12a](#)).
- Use the small tool **A** provided (see picture below) to carefully push out the top cover module at point **B**.
- Remove the top cover module **C** and remove screws **5 - 9**.
- Carefully lift the keyboard **D** up, being careful not to bend the keyboard ribbon cable **10** ([Figure 12e](#)).



Top Cover Module Tool



- C. Top Cover Module
- D. Keyboard
- 9 Screws

6. Disconnect the keyboard ribbon cable **10** from the locking collar socket **11** by using a small flat-head screwdriver to pry the locking collar pins **12** away from the base (*Figure 13f*).
7. Remove the keyboard and the memory sockets **13** & **14** will be visible.
8. Gently pull the two release latches (**15** & **16**) on the sides of the memory socket(s) in the direction indicated below.
9. The RAM module **17** will pop-up, and you can remove it.
10. Pull the latches to release the second module if necessary.
11. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
12. 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.
13. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
14. Replace the bay cover and screws.
15. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

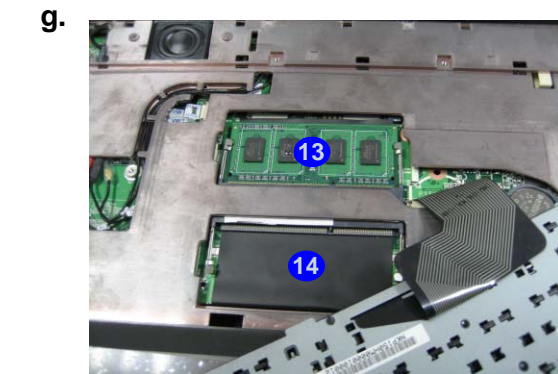
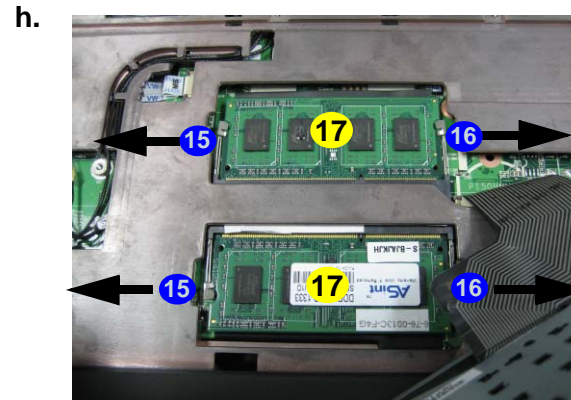
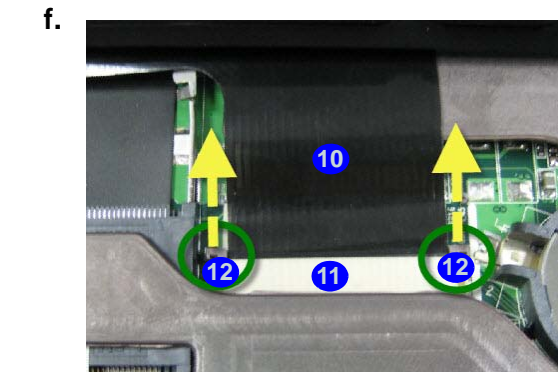




Figure 13
RAM Module Removal

- f. Disconnect the keyboard ribbon cable from the locking collar socket by using a small flat-head screwdriver to pry the locking collar pins away from the base.
- g. Remove the keyboard and the memory sockets will be visible.
- h. Gently pull the two release latches on the sides of the memory socket(s) in the direction indicated below.


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.


13. RAM Modules


Disassembly

Figure 14
**Processor
 Removal
 Procedure**

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


CPU Warning

In order to prevent damaging the contact pins when removing the CPU, it is necessary to first remove the WLAN module from the computer.


5. Heat Sink Unit

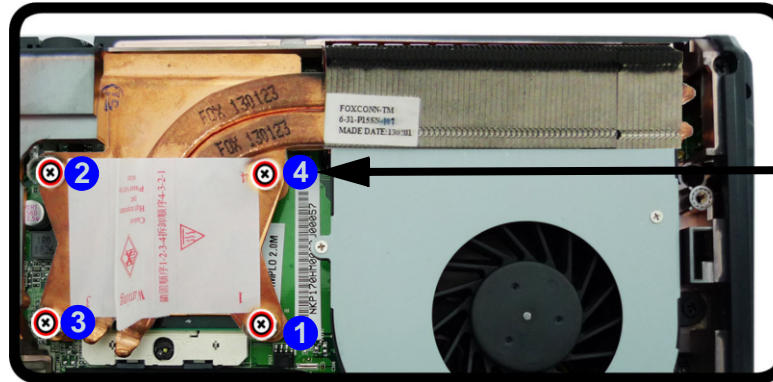
- 4 Screws

Removing and Installing the Processor

Processor Removal Procedure

1. Turn off the computer, remove the battery ([page 2 - 5](#)), and component bay cover ([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 14a](#)).
3. Carefully (it may be hot) remove the heat sink unit **5** ([Figure 14b](#)).

a.



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

b.




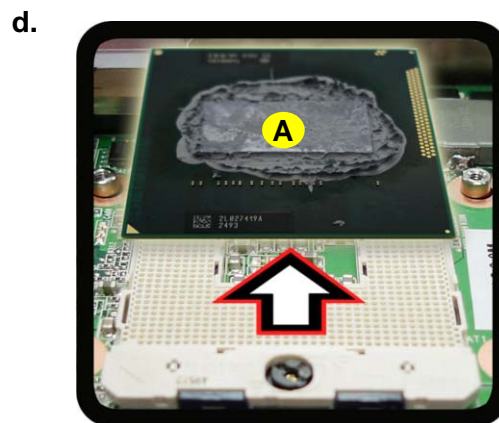
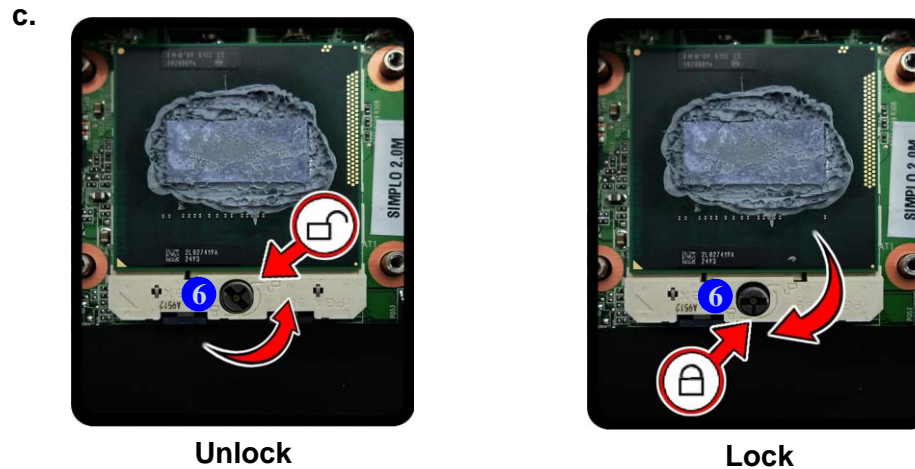

- Turn the release latch **6** towards the unlock symbol , to release the CPU (*Figure 15c*).
- Carefully (it may be hot) lift the CPU **A** up out of the socket (*Figure 15d*).
- See [page 2 - 20](#) for information on inserting a new CPU.
- When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

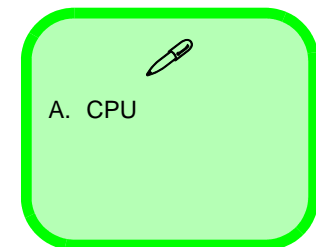
Figure 15
Processor Removal
(cont'd)

- Turn the release latch to unlock the CPU.
- Lift the CPU out of the socket.




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.




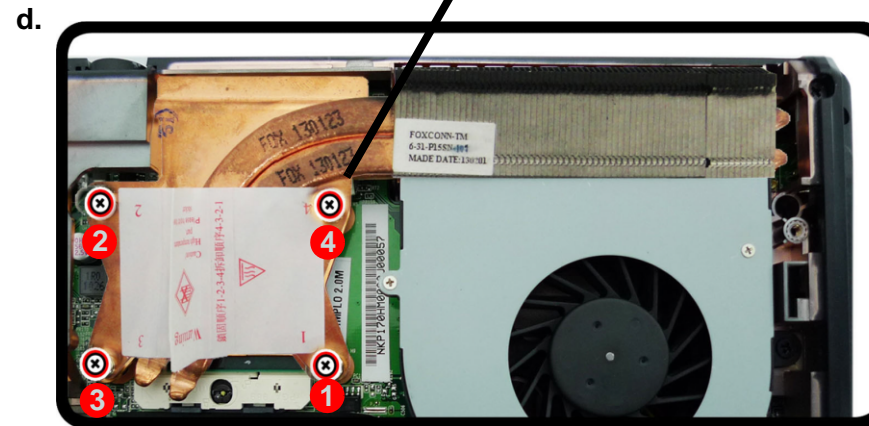
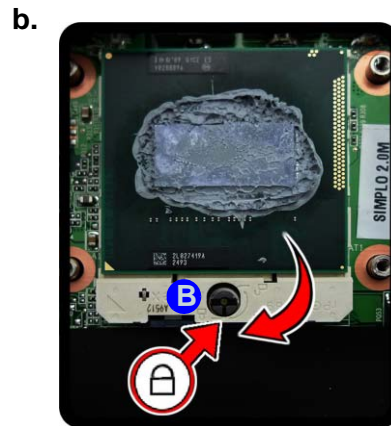
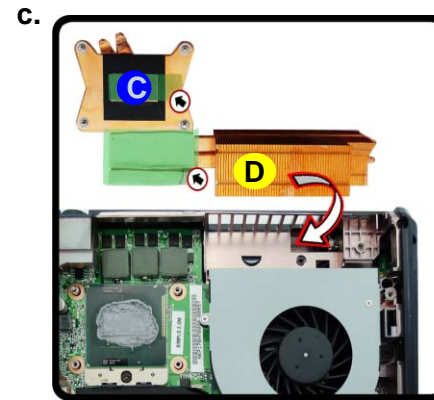
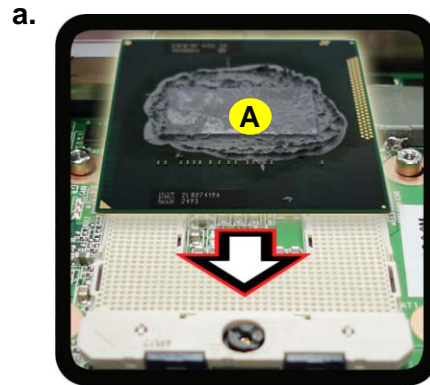
Disassembly

Figure 16
Processor Installation

- Insert the CPU.
- Turn the release latch towards the lock symbol.
- Remove the sticker from the heat sink unit and insert the heat sink.
- Tighten the screws.

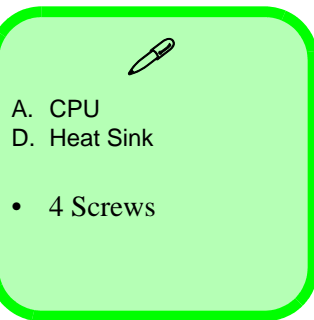
Processor Installation Procedure

- Insert the CPU **A**, pay careful attention to the pin alignment (*Figure 16a*), it will fit only one way (DO NOT FORCE IT!), and turn the release latch **B** towards the lock symbol  (*Figure 16b*).
- Remove the sticker **C**** (*Figure 16c*) from the heat sink unit (if it is a new unit).
- Insert the heat sink unit **D** as indicated in *Figure 16c*.
- Tighten the CPU heat sink screws in the order **1**, **2**, **3** & **4** (the order as indicated on the label and *Figure 16d*).
- Replace the CPU fan, component bay cover and tighten the screws (*page 2 - 18*).



Note:

Tighten the screws in the order 1-2-3-4 as indicated on the label.



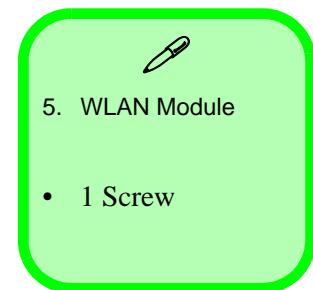
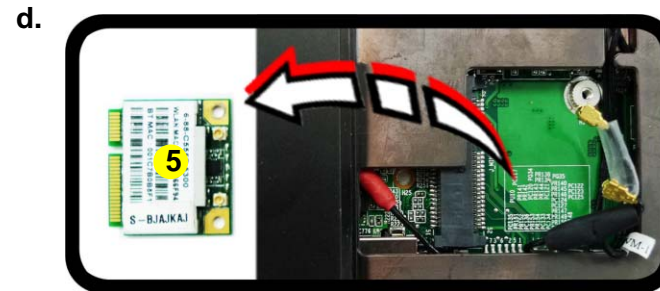
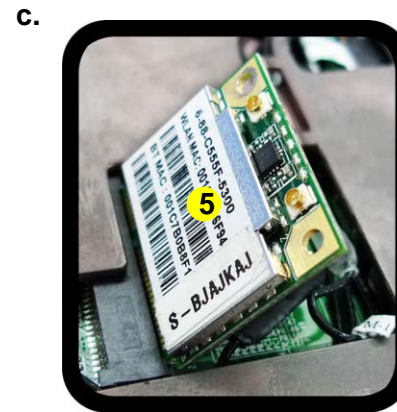
Removing the Wireless LAN Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and the keyboard ([page 2 - 16](#)).
2. The Wireless LAN module will be visible at point **1** under the keyboard ([Figure 17a](#)).
3. Carefully disconnect cables **2** - **3**, then remove screw **4** from the module socket ([Figure 17b](#)).
4. The Wireless LAN module **5** will pop-up ([Figure 17c](#)).
5. Lift the Wireless LAN module ([Figure 17d](#)) up and off the computer.

Figure 17

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.



Wireless LAN, Combo, 3G & LTE Module Cables

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

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

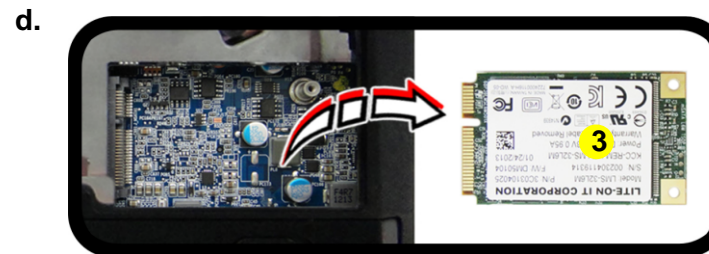
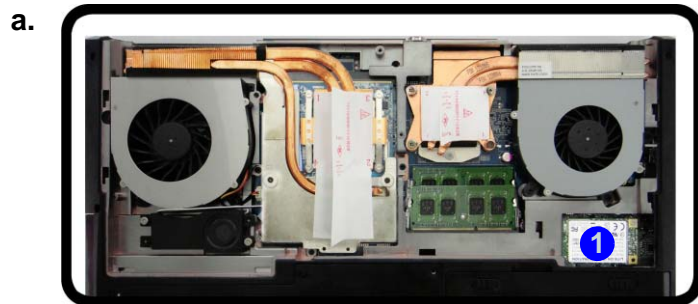
Cable 1 is usually connected to antenna 1 (Main) on the module, and cable 2 to antenna 2 (Aux).


Removing the MSATA Module

1. Turn off the computer, remove the battery ([page 2 - 5](#)), and component bay cover ([page 2 - 14](#)).
2. Locate the module; it is visible at point **1** ([Figure 18a](#)).
3. Carefully remove the screw **2** from the module ([Figure 18b](#)).
4. Lift the module **3** up and off the computer ([Figure 18b](#)).

Figure 18
MSATA 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. MSATA Module

- 1 Screw

Disassembly

Figure 19
Video Card
Removal Procedure

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



Caution

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



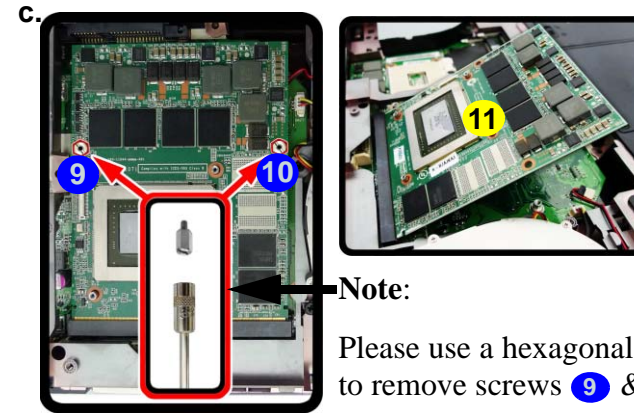
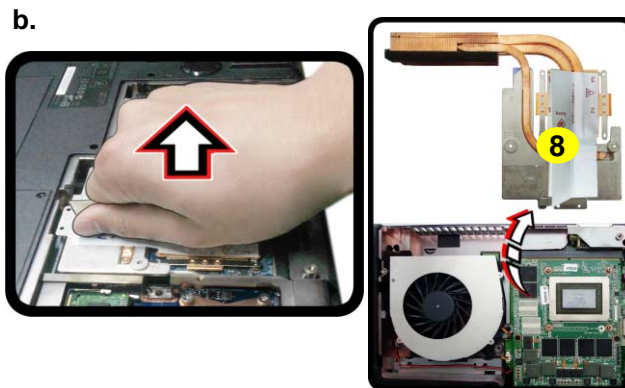
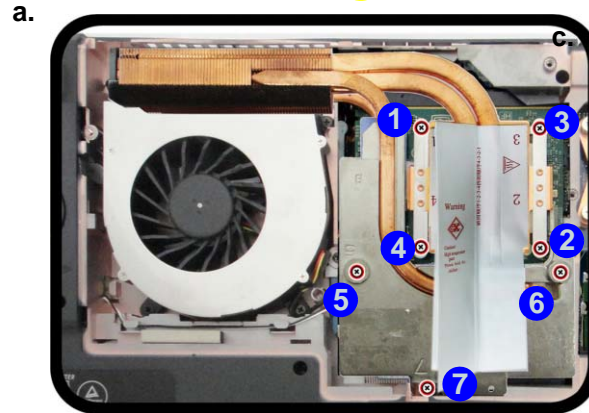
8. Heat Sink Units
11. Video Card

- 9 Screws

Removing and Installing the Video Card

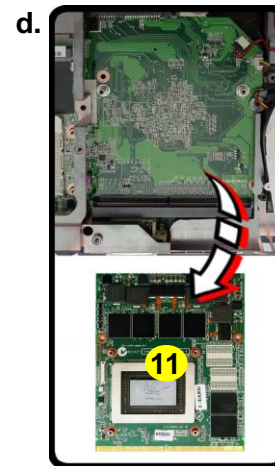
Video Card Removal Procedure

- Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)) and component cover ([page 2 - 14](#)).
- Remove screws **1** - **7** from the heat sink unit in the order indicated on the label (i.e screw **7** first through to screw **1** last) ([Figure 19a](#)).
- Carefully (**it may be hot**) remove the heat sink unit **8** ([Figure 19b](#)).
- Remove screws **9** & **10** from the video card. The video card **11** will pop up ([Figure 19c](#)).
- Remove the video card **11** ([Figure 19d](#)).



Note:

Please use a hexagonal screwdriver to remove screws **9** & **10**.



Heat Sink Screw Removal and Insertion

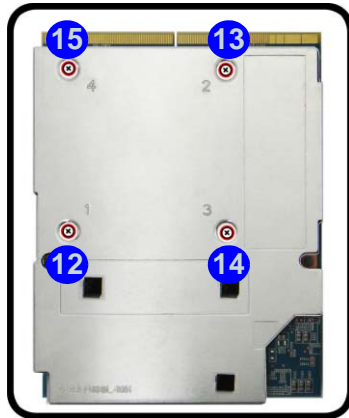
Remove the screws from the heat sink in the order indicated here: 7-6-5-4-3-2-1.

When tightening the screws, make sure that they are tightened in the order: 1-2-3-4-5-6-7.

For video card (N15E-GX) additional removal procedure

6. Remove screws 12 - 15 from the video card assembly (*Figure 20e*).
7. Separate the shielding plate 16 from the video card 11 (*Figure 19d*).

e.



f.

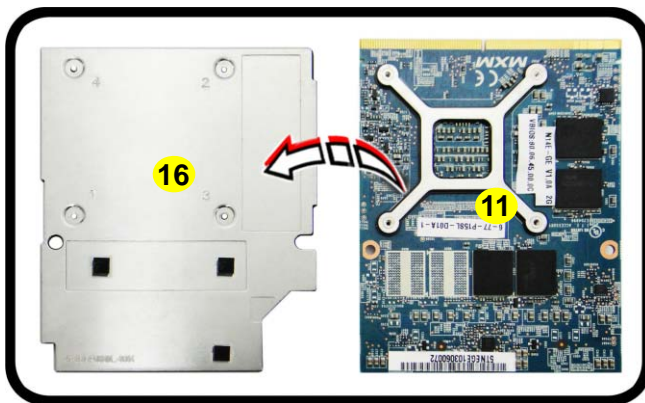



Figure 20
**Video Card
Removal Procedure
(cont'd.)**

- e. Remove the screws.
- f. Separate shielding plate and video card.



11. Video Card
16. Shielding Plate

- 4 Screws

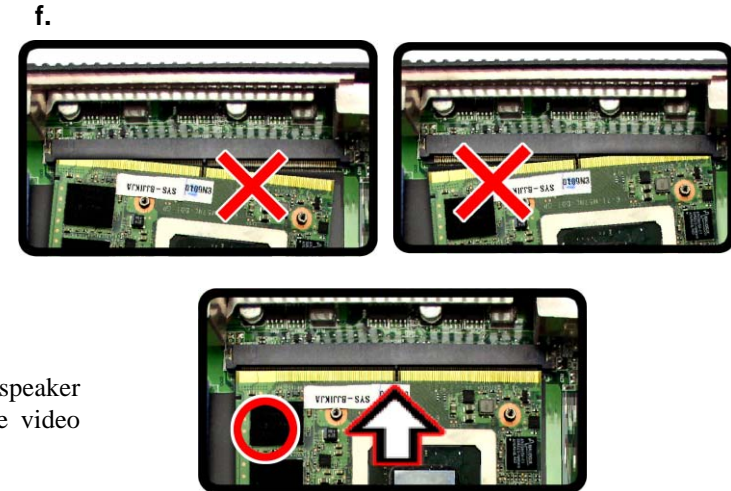
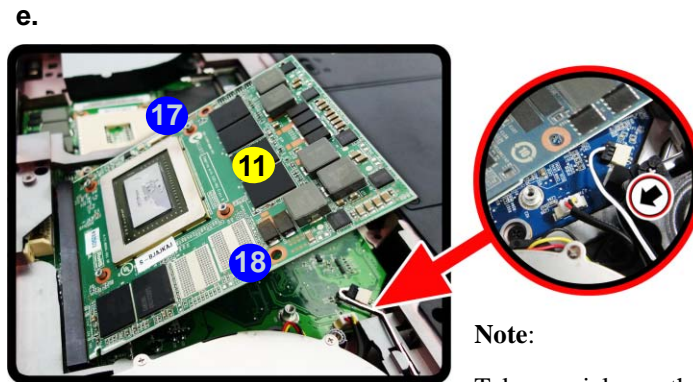
Disassembly

Figure 21
Installing a New Video Card

- e. Insert the video card at a 30 degree angle.
- f. Fit the connectors straight and even, and secure the card with screws **17** & **18**.

Installing a New Video Card

1. Prepare to fit the video card **11** into the slot by holding it at about a 30° angle (*Figure 21e*).
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 21f*).
3. Fit the connectors firmly into the socket, straight and evenly.



Note:

Take special care that the speaker cable is not hindering the video card during installation.

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** (none of the gold colored contact should be showing). DO NOT FORCE the card; it should fit without much pressure.
6. Secure the card with screws **17** & **18** (*Figure 19 on page 2 - 24*).
7. Place the heat sink back on the card, and secure the screws in the order indicated in *Figure 19 on page 2 - 24*.
8. Attach the video card fan and secure with the screws as indicated in *Figure 19 on page 2 - 24*.
9. Reinsert the component bay cover, and secure with the screws as indicated in *Figure 12 on page 2 - 16*.



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.



11. Video Card

- 2 Screws

Appendix A: Part Lists

This appendix breaks down the *P150SM-A / P151SM-A / P151SM1-A* 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 with Fingerprint	<i>page A - 3</i>
Top without Fingerprint	<i>page A - 4</i>
Bottom (N15E-GX)	<i>page A - 5</i>
Bottom (N15P-GX)	<i>page A - 6</i>
LCD	<i>page A - 7</i>
COMBO	<i>page A - 8</i>
DVD-Dual Drive	<i>page A - 9</i>
HDD	<i>page A - 10</i>
HDD Caddy	<i>page A - 11</i>

Top with Fingerprint

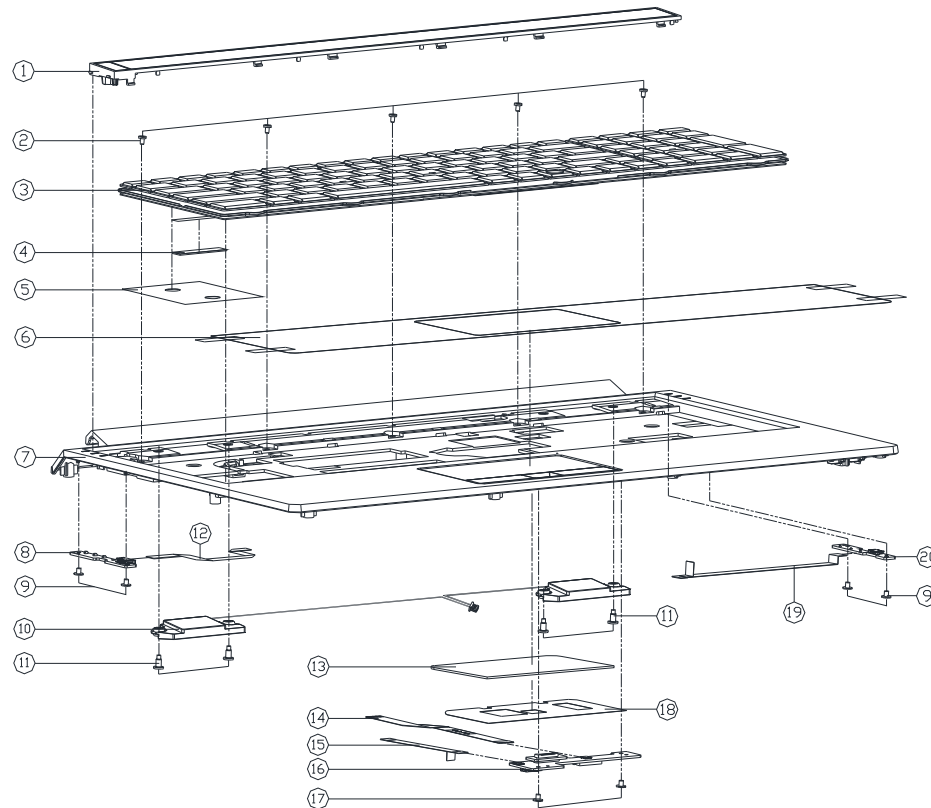


Figure A - 1
Top with
Fingerprint

ITEM	PART NAME	PART NO	REMARK
1	TOP CENTER COVER MODULE P150EM	6-42-P15E2-202	
2	SCREW M2*3L KI BZ ICT NY (DD=#4.5,DT=0.4)	6-35-B6120-3RD	
3	K/B USA V132150BK3-US-00R000 P170SM_BLACK	6-80-P17SD-010-3	
4	SPONGE CR 45*6*0.5T P170EM	6-47-0019A-007	
5	KEYBOARD MYLAR (75*70*0.1) P170EM	6-40-P17E2-010	
6	TOP PROTECT FILM SH71S P150HM	6-40-X5108-010	
7	PRE-PROCESSOR CASE WITH FINGER FOR EGRESS TP ASSY P150SM-A	6-78-P150SMA2-010	
8	INDICATORY LED BOARD L FOR BACKLIGHT KEYBOARD V20 P150SM	6-77-P15S3-D02	
9	SCREW M2*3L KI NI ICT NY (DD=#4.5,DT=0.4)	6-35-B1120-3RE	
10	SPK/CABLE FROM V4.0 S40 152 220 R CORRECT 4-220X500 P150SM-A	6-23-5P15S-011	
11	SCREW M2*6.2L NI ICT NY FOR SPEAKER	6-35-Z1120-6R2	
12	FFC CABLE FOR MB TO LED L BOARD 6PIN P150HM (HS)	6-43-X5100-073-2	
13	TOUCH PAD SYMPATICS TM-01146-003 MULTI-GES	6-49-C4802-010	
14	FFC CABLE FOR CLICK BOARD TO MB TOP P150SM	6-43-P15S0-010	
15	FFC CABLE FOR TP TO CLICK BOARD 6PIN P150HM (HS)	6-43-X5102-011-2	
16	CLICK BOARD V5.0+FINGERPRINT BOARD ASSY P150SM	6-77-P15SA-N05	
17	SCREW M2*4L KI NI ICT NY (DD=#4.5,DT=0.4)	6-35-B1120-4RE	
18	TOP TOUCH PAD MYLAR PET P150HM	6-40-X5102-010	
19	FFC CABLE FOR MB TO LED R BOARD 6PIN P150HM (HS)	6-43-X5100-013-2	
20	FUNCTION LED BOARD R V4.0 P150SM	6-77-P15SK-D04	

Top without Fingerprint

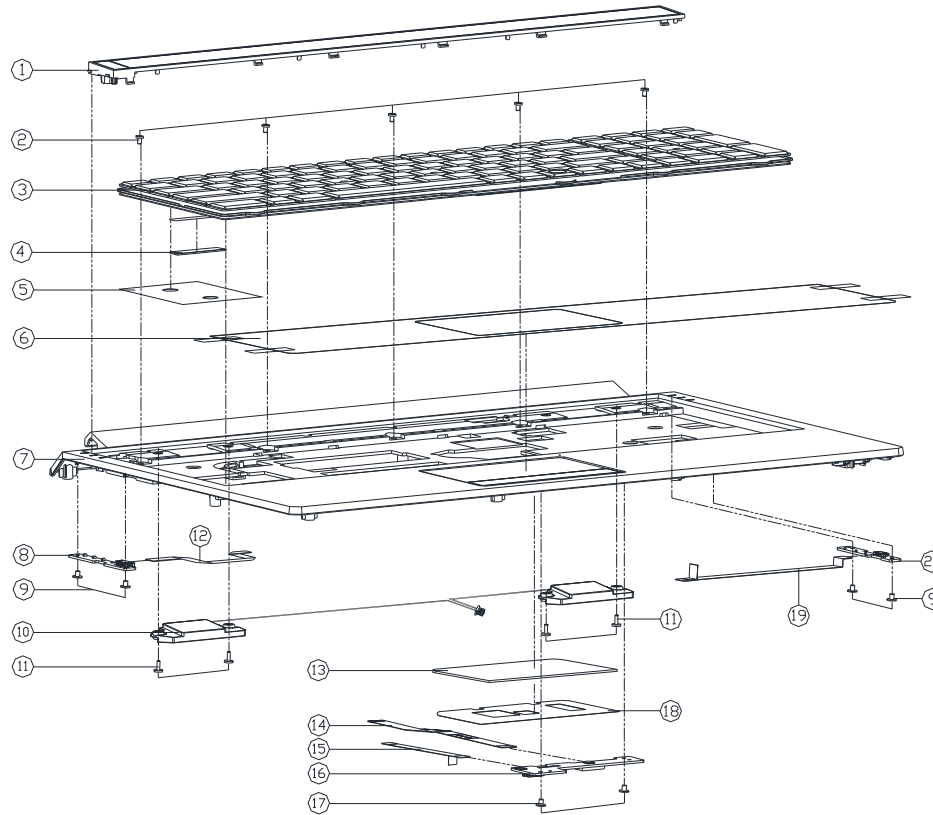
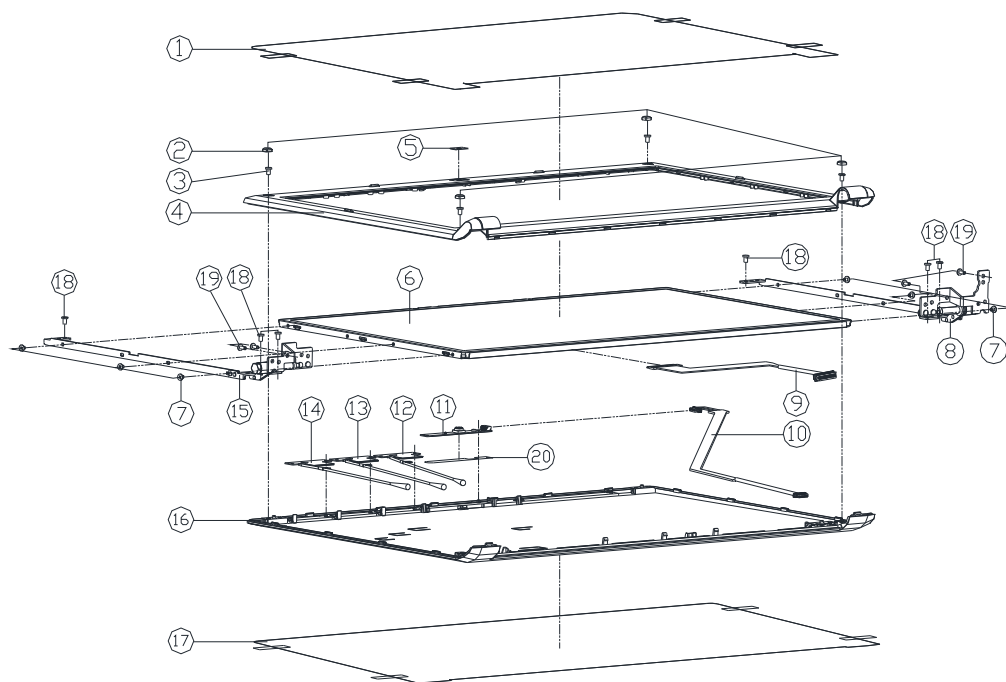


Figure A - 2
Top without
Fingerprint

ITEM	PART NAME	PART NO	REMARK
1	TOP CENTER COVER MODULE P150EM	6-42-P15E2-202	
2	SCREW M2xL KI BZ ICT NY COB=45,0T=0.4	6-35-B6120-3RD	
3	K/B USA V132P50B3-US-00000 P170SM BLACK	6-80-P17S0-010-3	
4	S/PINCE CR 45*6*0.5T P170EM	6-47-0019A-007	
5	KEYBOARD MYLAR (75*70*0.1) P170EM	6-40-P17E2-010	
6	TOP PROTECT FILM SH71S P150HM	6-40-XS108-010	
7	OPS-PROCESSTOP CASE W/O FINGER ASSY P150M-A	6-78-P150SMA2-020	
8	INDICATOR LED BOARD L TOP BRIGHT KEYBOARD V20 P150M	6-77-P15S3-D02	
9	SCREW M2xL KI NI ICT NY COB=45,0T=0.4	6-35-B1120-3RE	
10	SW/CABLE TRM PL SHD T20 2PH 0 COB=45,0T=0.4 P150M-A	6-23-5P15S-011	
11	SCREW M2x6.2L NI ICT NY FOR SPEAKER	6-35-Z1120-6R2	
12	FFC CABLE FOR MB TO LED L BOARD 6PIN P150M HSD	6-43-XS100-073-2	
13	TOUCH PAD SYNAPTICS TM-6046-003 MULTI-GE5	6-49-C4802-010	
14	FFC CABLE FOR CLICK BOARD TO MB TOP P150SM	6-43-P15S0-010	
15	FFC CABLE FOR TP TO CLICK BOARD 6PIN P150M HSD	6-43-XS102-011-2	
16	CLICK BOARD V5.0 (w/O FP) P150SM	6-77-P15S2-D05-1	
17	SCREW M2xL KI NI ICT NY COB=45,0T=0.4	6-35-B1120-4RE	
18	TOP TOUCH PAD MYLAR PET P150HM	6-40-XS102-010	
19	FFC CABLE FOR MB TO LED R BOARD 6PIN P150M HSD	6-43-XS100-013-2	
20	FUNCTION LED BOARD R V4.0 P150SM	6-77-P15SK-D04	

LCD



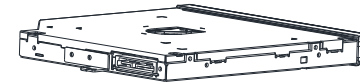
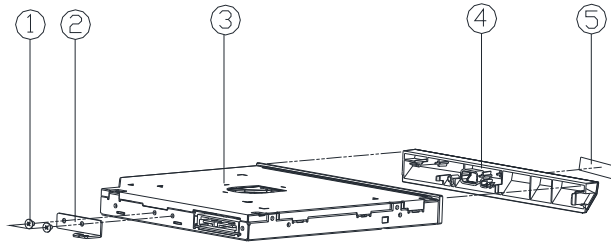
ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT COVER PROTECTION MILAR (PET)08050 BS00M	6-40-B51MB-010	
2	LCD HINGE SCREW RUBBER SILICON P150SM	6-47-X5101-021	
3	SCREW M2.5*5L K1 BK/Z ICT NY	6-35-B6125-5RA	
4	LCD FRONT COVER MODULE(PAINT) P150SM	6-39-P1551-012-W	
5	CCD LENS PC P150SM (CHANGE)	6-40-X5101-012	
6	LCD 15.6" FHD LG LP156WV1-TLF3 OLED 5.7M	6-50-LB257-L02	
6	LCD 15.6" FHD LG LP156WV1-TLF3 OLED 5.7M	6-50-LB257-L02	
6	LCD 15.6" FHD CHINESE MESSAGE-L11 5.5MM OLED	6-50-LB255-D00	
6	LCD 15.6" FHD INDIUM MESSAGE-L11 V 8 OLED 5.5M	6-50-LB255-V00	
7	SCREW M2*XL K1 NI ICT NY (00=04.531=04)	6-35-B1120-3RE	
8	LCD HINGE R SECC P150SM	6-33-P15E1-0R0	FDR P150SM
8	LCD HINGE R SECC P150SM	6-33-X5101-012	FDR P151SMI
9	WIRE CABLE FOR LCD TO BOARD (PC CONDUCTOR)P150SM	6-43-X1501-011-A	
10	WIRE CABLE CCD+MIC TO MR 6PIN (GL) P150SM	6-43-P15ST-011	
10	WIRE CABLE CCD+MIC TO MR 6PIN (GL) P150SM	6-43-P15ST-A11	
11	PC BOARD WITH INDUCTOR ON THE SURFACE P150SM	6-88-P37EC-4903	
11	PC BOARD WITH INDUCTOR ON THE SURFACE P150SM	6-88-A11SC-4900	
12	INDUCTOR WITH VET 1*2 FOR 24/250V/5% VOLTAGE P150SM	6-23-7X510-032	
13	INDUCTOR WITH VET 1*2 FOR 24/250V/5% VOLTAGE P150SM	6-23-7X510-042	
14	INDUCTOR WITH VET 1*2 FOR 24/250V/5% VOLTAGE P150SM	6-23-7X510-022	
15	LCD HINGE L SECC P150SM	6-33-P15E1-0L0	FDR P150SM
15	LCD HINGE L SECC P150SM	6-33-X5101-022	FDR P151SMI
16	LCD BACK COVER MODULE P150SM	6-39-P1551-022	FDR P150SM
16	LCD BACK COVER MODULE P151SMI	6-39-P1551-032	FDR P151SMI
17	BACK COVER PRD SH71S P150SM	6-40-X5101-070	
18	SCREW M2.5*4L F NI ICT NY	6-35-Z1125-4R0	
19	SCREW M2.5*6L K BZ ICT NY	6-35-B2125-6RA	
20	CCD CU FOIL P150SM-A	6-47-P1551-010-A	

Figure A - 5
LCD

A.Part Lists

COMBO

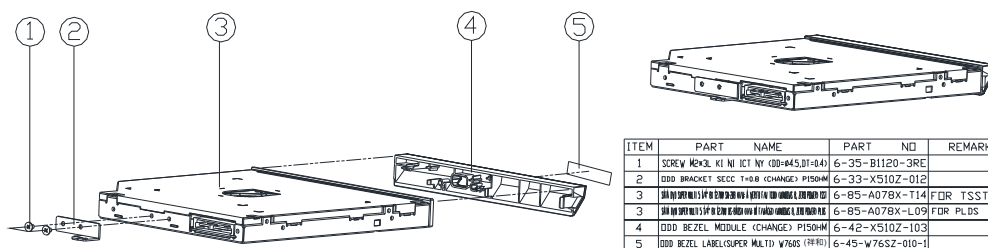
Figure A - 6
COMBO



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2x3L KI NI ICT NY (00-445,01-04)	6-35-B1120-3RE	
2	DDD BEZEL SECC (CHANGE) P1504W	6-33-X510Z-012	
3	DDD BEZEL LABEL SUPER MULTIRAY VHS	6-85-B076X-1P1	FOR PANASONIC
3	DDD BEZEL LABEL SUPER MULTIRAY VHS	6-85-B076X-P25	FOR PANASONIC
3	DDD BEZEL LABEL SUPER MULTIRAY VHS	6-85-B076X-1P0	FOR PANASONIC
3	DDD BEZEL LABEL SUPER MULTIRAY VHS	6-85-B076X-P24	FOR PANASONIC
4	DDD BEZEL MODULE (CHANGE) P1504W	6-42-X510Z-103	
5	DDD BEZEL LABEL SUPER MULTIRAY VHS	6-45-W765W-010	

DVD-Dual Drive

Figure A - 7
DVD-Dual Drive

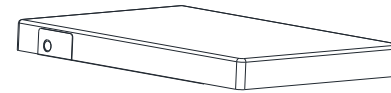
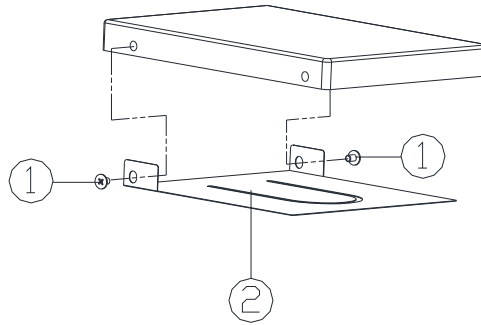


ITEM	PART NAME	PART NO	REMARK
1	SCREW Mx3. KI NI ICT NY (OD=4.5,DT=8.4)	6-35-B1120-3RE	
2	DDD BRACKET SECC T=0.8 (CHANGE) P150HM	6-33-X510Z-012	
3	DDD BEZEL MODULE (CHANGE) P150HM	6-B5-A078X-T14	FOR TSST
3	DDD BEZEL MODULE (CHANGE) P150HM	6-B5-A078X-L09	FOR PLDS
4	DDD BEZEL MODULE (CHANGE) P150HM	6-42-X510Z-103	
5	DDD BEZEL LABEL(SUPER MULTI) W766S (FFRD)	6-45-W76SZ-010-1	

A.Part Lists

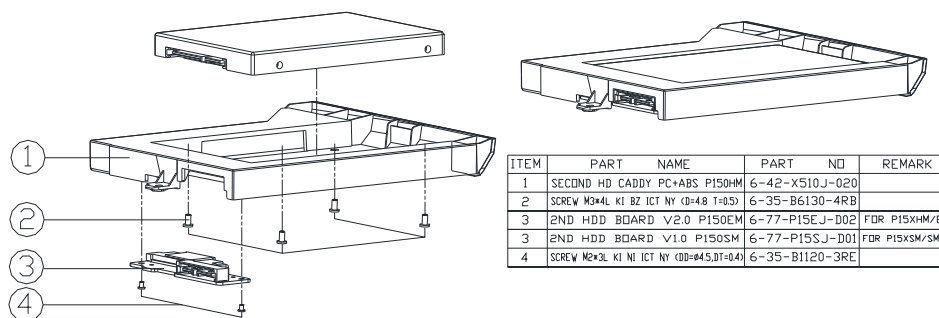
HDD

Figure A - 8
HDD



ITEM	PART NAME	PART NO	REMARK
1	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	
2	HDD MYLAR PET+SPONGE P150HM	6-40-X510J-011	

HDD Caddy



ITEM	PART NAME	PART NO	REMARK
1	SECOND HD CADDY PC+ABS P150HM	6-42-X510J-020	
2	SCREW M3*4L KI BZ ICT NY (D=4.8 T=0.5)	6-35-B6130-4RB	
3	2ND HDD BOARD V2.0 P150EM	6-77-P15EJ-D02	FOR P15XH/M/EM
3	2ND HDD BOARD V1.0 P150SM	6-77-P15SJ-D01	FOR P15XSM/SM-A
4	SCREW M2*3L KI NI ICT NY (DD=4.5,DT=0.4)	6-35-B1120-3RE	

Figure A - 9
HDD Caddy

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *P150SM-A / P151SM-A / P151SMI-A* notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page	Diagram - Page
<i>Block Diagram - Page B - 2</i>	<i>Lynix Point 2/9 - Page B - 21</i>	<i>DDR 1.35V/0.75VS PCH 1.5V - Page B - 40</i>	<i>P150 2nd HDD Board - Page B - 59</i>
<i>Processor 1/7 - Page B - 3</i>	<i>Lynix Point3/9 - Page B - 22</i>	<i>VDD3, VDD5 - Page B - 41</i>	<i>Indicatory LED Board - Page B - 60</i>
<i>Processor 2/7 - Page B - 4</i>	<i>Lynix Point 4/9 - Page B - 23</i>	<i>5V, 5VS, 3.3V, 3.3VS, 1.5VS - Page B - 42</i>	<i>Function LED Board - Page B - 61</i>
<i>Processor 3/7 - Page B - 5</i>	<i>Lynix Point 5/9 - Page B - 24</i>	<i>Power 1.05VS - Page B - 43</i>	<i>2nd mSATA Board - Page B - 63</i>
<i>Processor 4/7 - Page B - 6</i>	<i>Lynix Point 6/9 - Page B - 25</i>	<i>LED 5V - Page B - 44</i>	<i>Power on / S4 Resume Seq. - Page B - 64</i>
<i>Processor 5/7 - Page B - 7</i>	<i>Lynix Point 7/9 - Page B - 26</i>	<i>Power V-Core 1 - Page B - 45</i>	<i>S3 Resume Seq. - Page B - 65</i>
<i>Processor 6/7 - Page B - 8</i>	<i>Lynix Point 8/9 - Page B - 27</i>	<i>AC_In, Charger - Page B - 46</i>	<i>Into S3 Sequence - Page B - 66</i>
<i>Processor 7/7 - Page B - 9</i>	<i>Lynix Point 9/9 - Page B - 28</i>	<i>TPM - Page B - 47</i>	<i>Into S4 Sequence - Page B - 67</i>
<i>DDR3 CHA SO-DIMM_0 - Page B - 10</i>	<i>USB+eSATA, USB Charging - Page B - 29</i>	<i>Audio Board - Page B - 48</i>	
<i>DDR3 CHA SO-DIMM_1 - Page B - 11</i>	<i>USB 2.0, CCD, Mini PCIE, LID - Page B - 30</i>	<i>P150 ODD Board - Page B - 49</i>	
<i>DDR3 CHB SO-DIMM_1 - Page B - 12</i>	<i>LED, Hotkey, LID SW, Fan - Page B - 31</i>	<i>P150 Click Board - Page B - 50</i>	
<i>DDR3 CHB SO-DIMM_0 - Page B - 13</i>	<i>RJ 45 - Page B - 32</i>	<i>Power LED Board - Page B - 51</i>	
<i>MXM PCI-E - Page B - 14</i>	<i>Codec Realtek ALC892 - Page B - 33</i>	<i>Function LED Board - Page B - 52</i>	
<i>Panel, Inverter, CRT - Page B - 15</i>	<i>APA2607-TPA2008D2 - Page B - 34</i>	<i>Indicatory LED Board - Page B - 53</i>	
<i>PS8625 - Page B - 16</i>	<i>KBC-ITE IT8587A - Page B - 35</i>	<i>P170 2nd HDD Board - Page B - 54</i>	
<i>1394a_XIO2221 - Page B - 17</i>	<i>Backlight Keyboard - Page B - 36</i>	<i>Power & LED Board - Page B - 55</i>	
<i>Display Port - Page B - 18</i>	<i>mSATA, FAN, TP, FP, MULTI-CON - Page B - 37</i>	<i>P170 Click Board - Page B - 56</i>	
<i>HDMI - Page B - 19</i>	<i>Card Reader RTL8411 - Page B - 38</i>	<i>P150 Fingerprint Board - Page B - 57</i>	
<i>Lynix Point 1/9 - Page B - 20</i>	<i>USB 3.0 - Page B - 39</i>	<i>P170 Fingerprint Board - Page B - 58</i>	

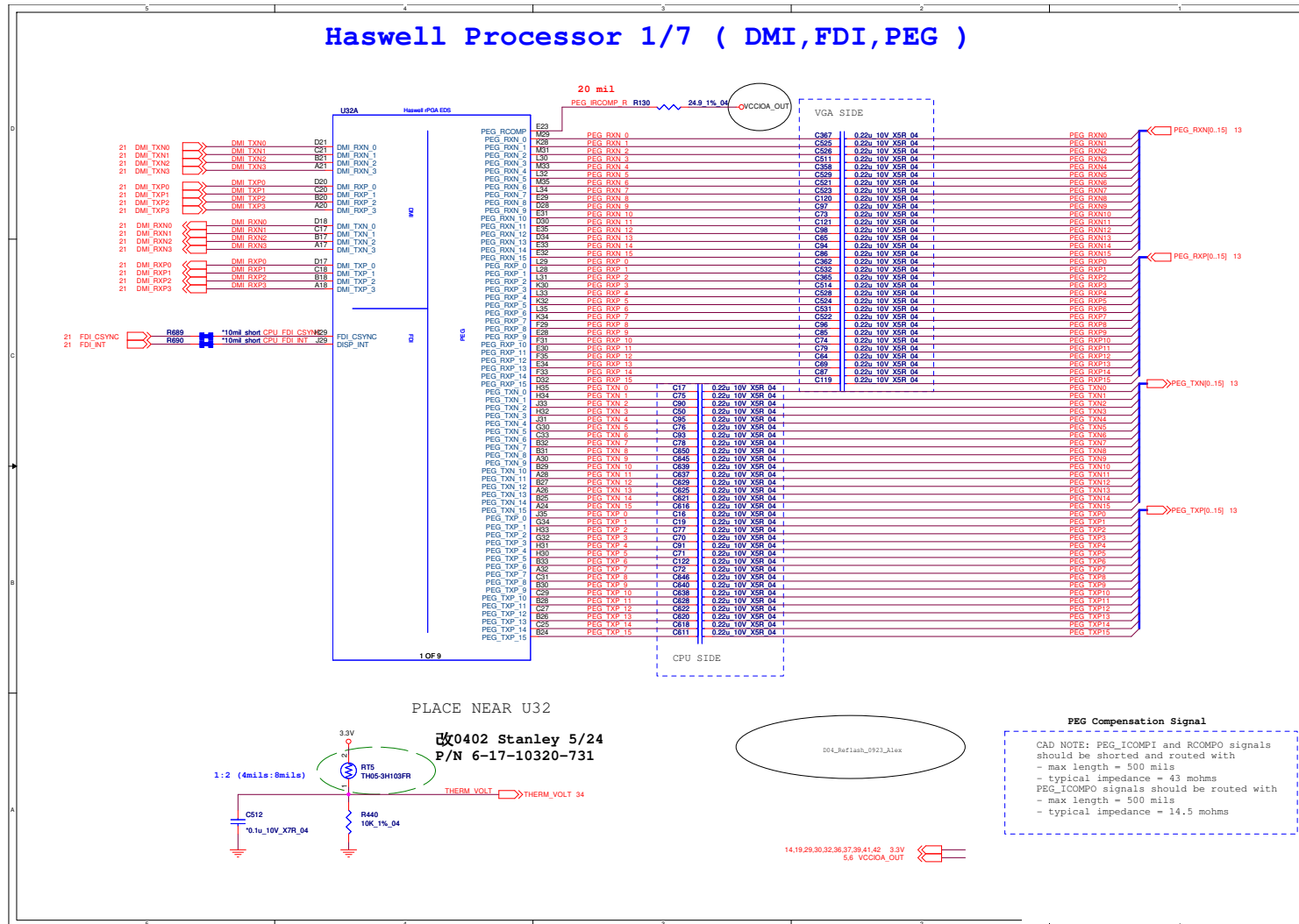
Table B - 1
Schematic Diagrams



Version Note

The schematic diagrams in this chapter are based upon version 6-7P-P15SG-0A3. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

Processor 1/7

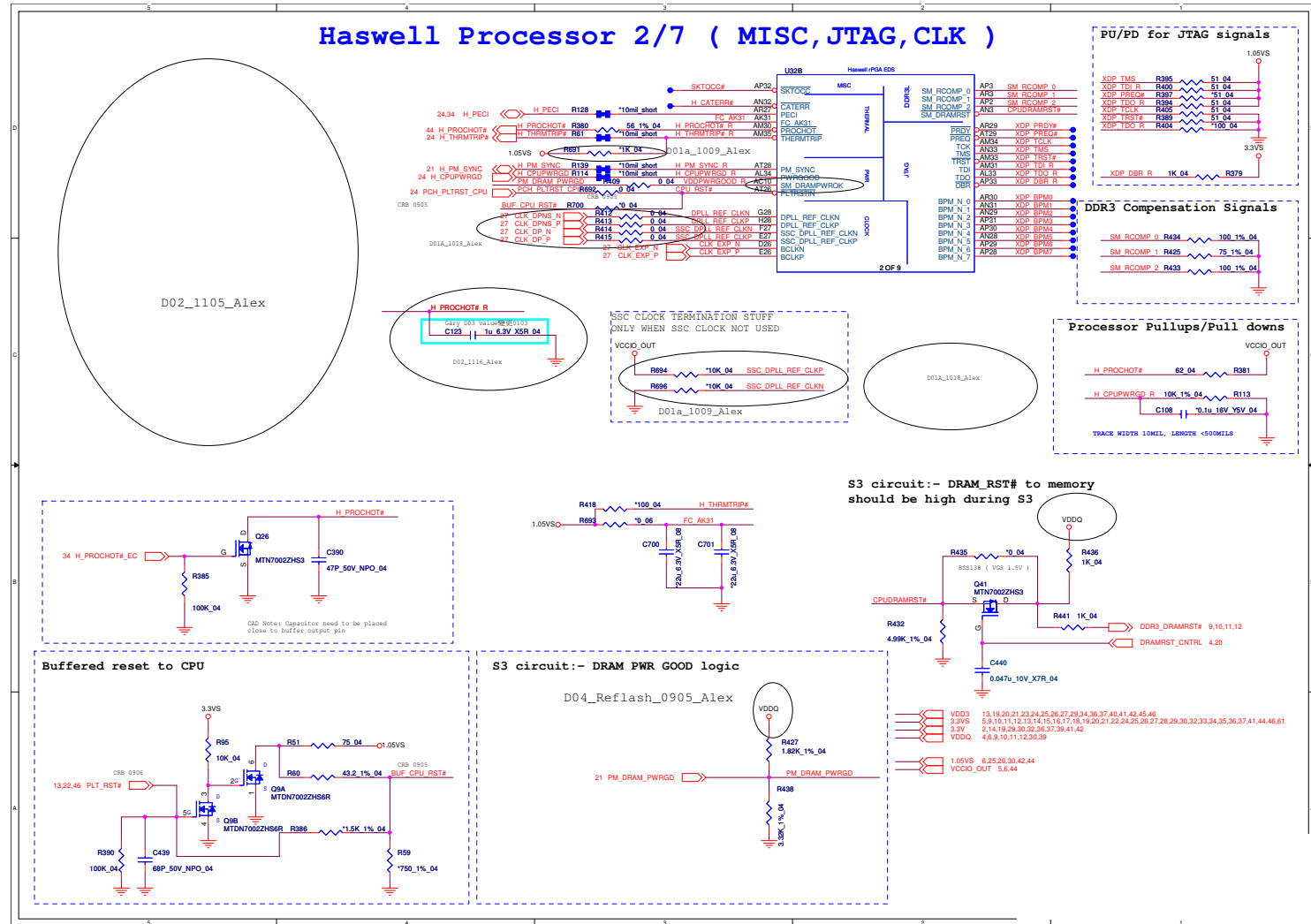


B.Schematic Diagrams

Sheet 2 of 66
Processor 1/7

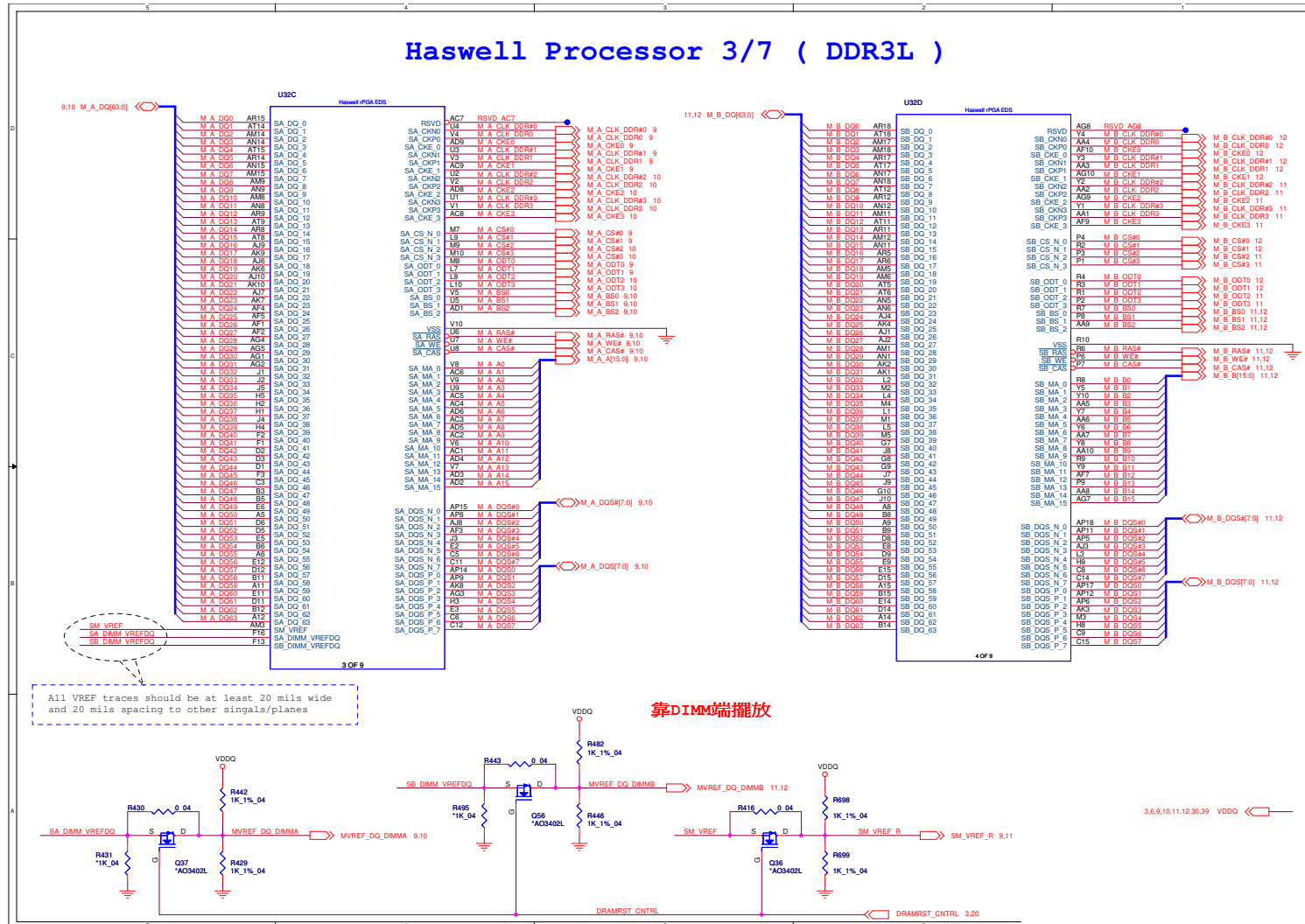
Processor 2/7

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Processor 2/7



Processor 3/7

Haswell Processor 3/7 (DDR3L)

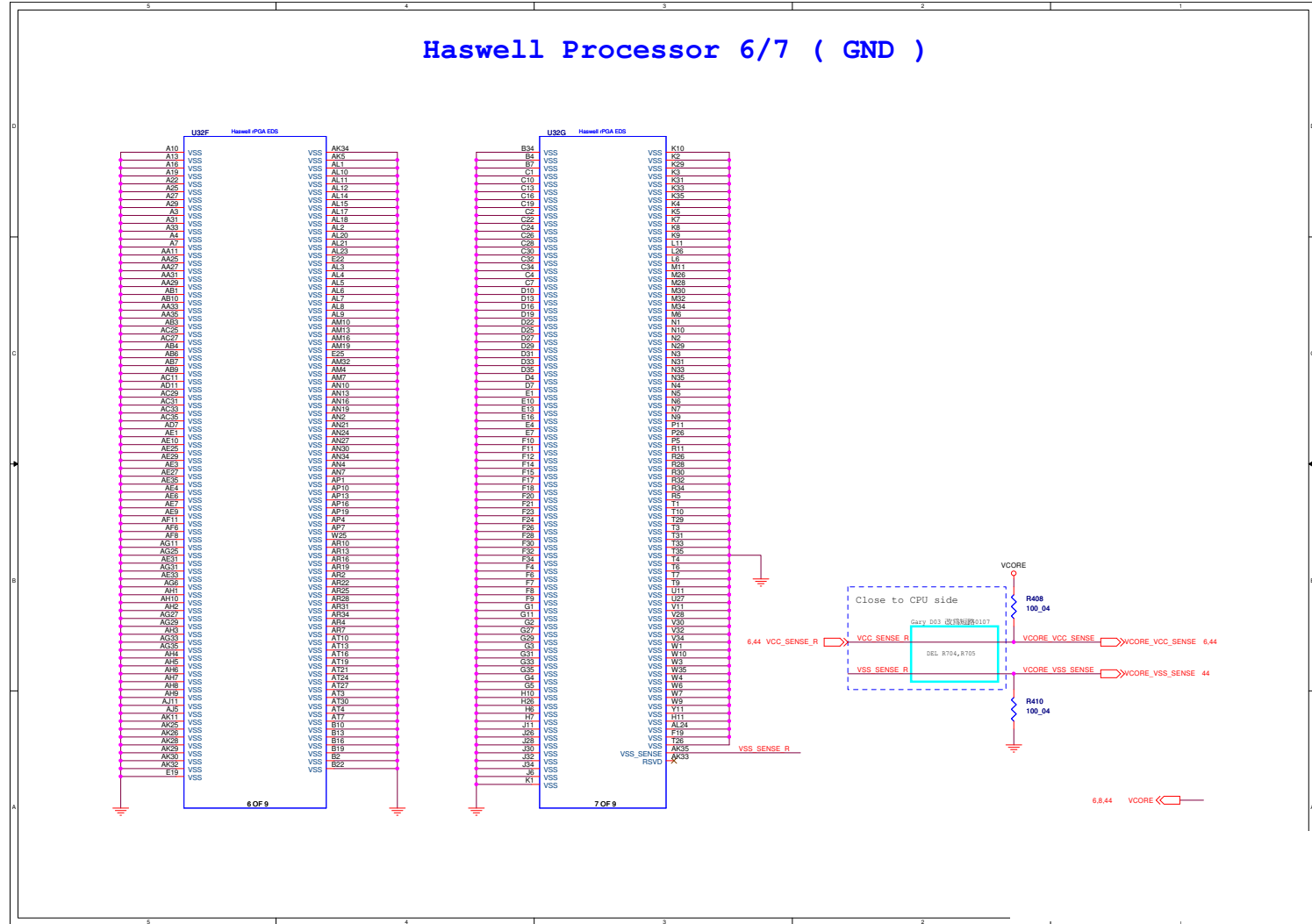


Sheet 4 of 66
Processor 3/7

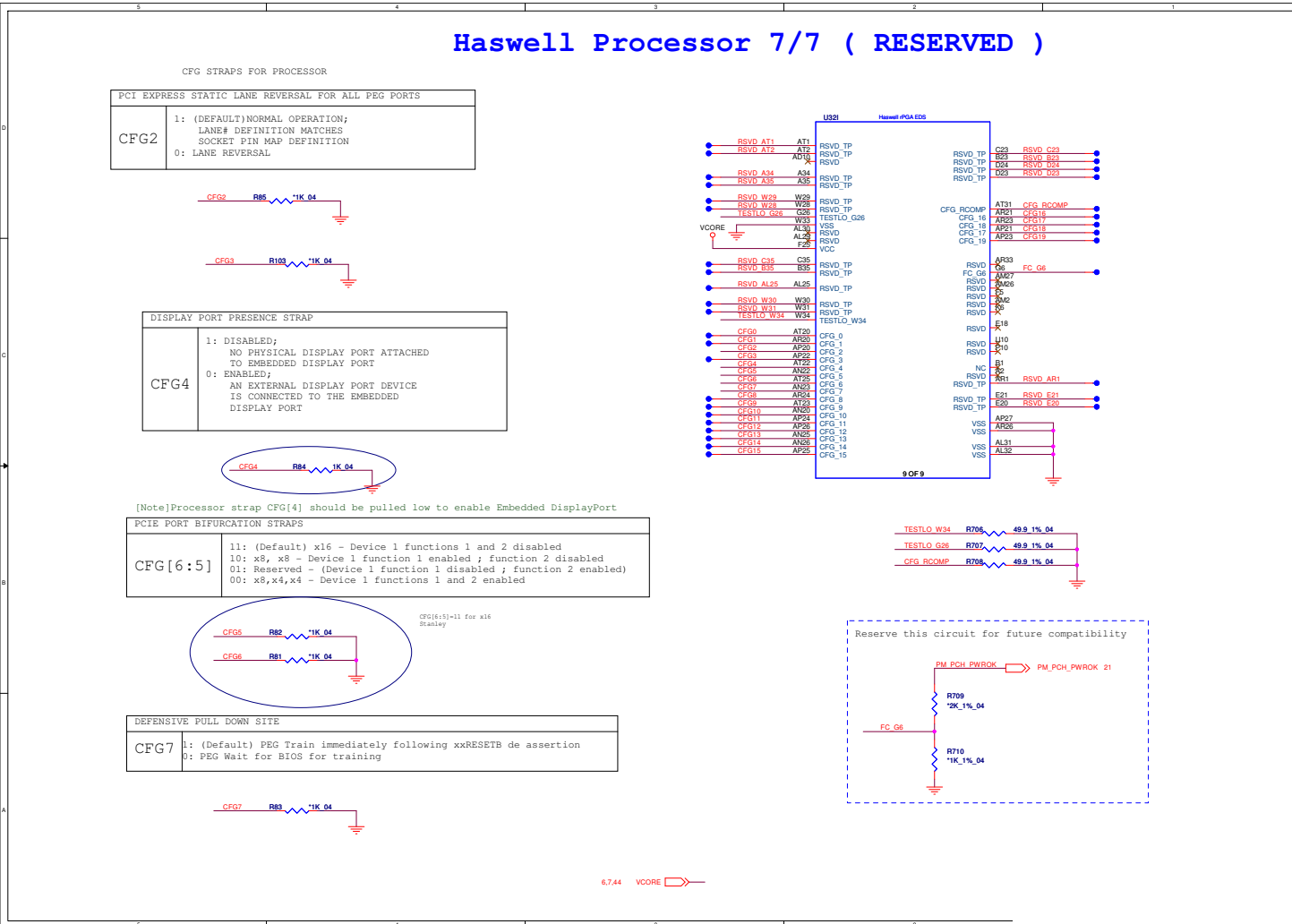
B.Schematic Diagrams

Processor 6/7

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Processor 6/7



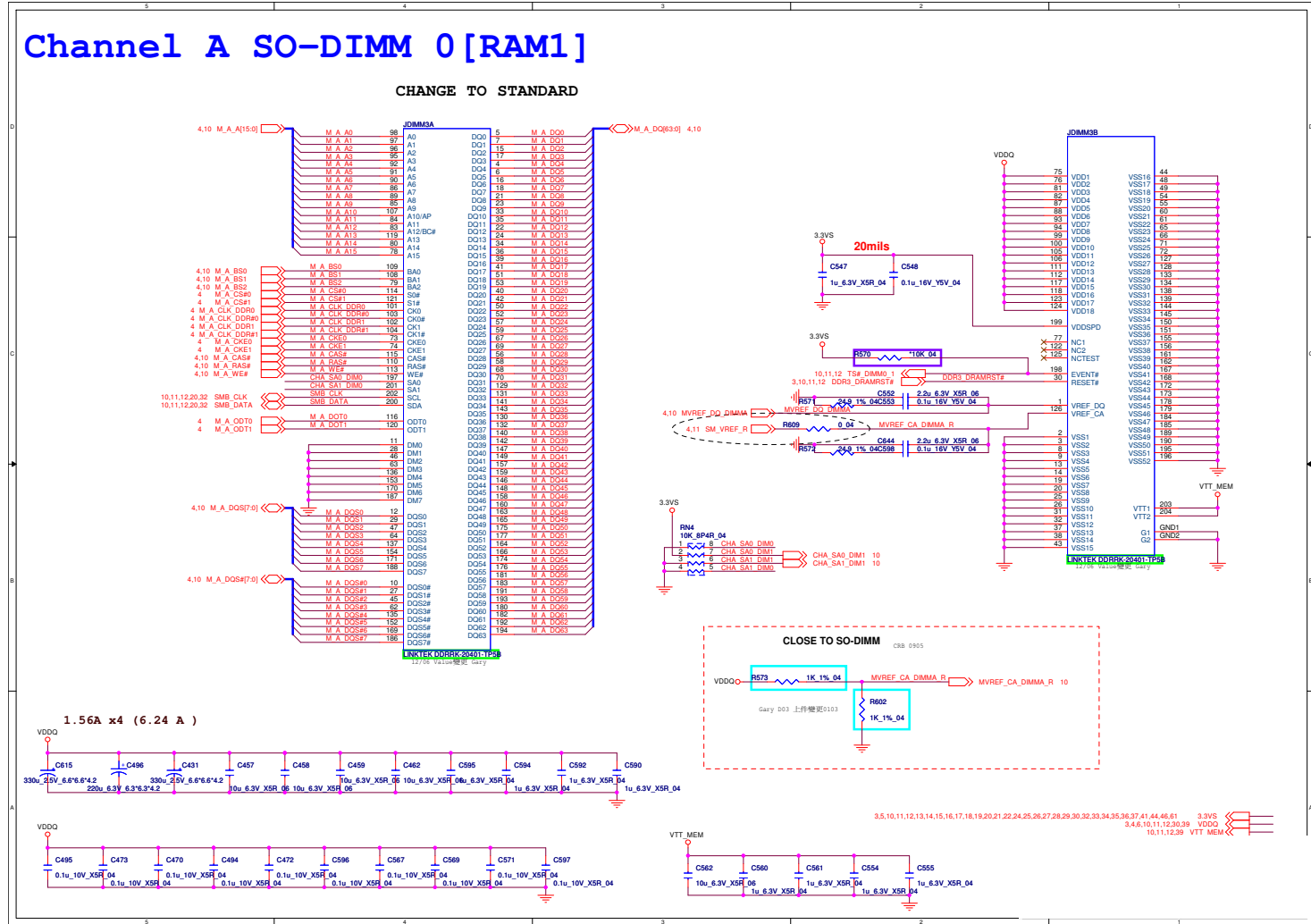
Processor 7/7



DDR3 CHA SO-DIMM_0

Channel A SO-DIMM 0 [RAM1]

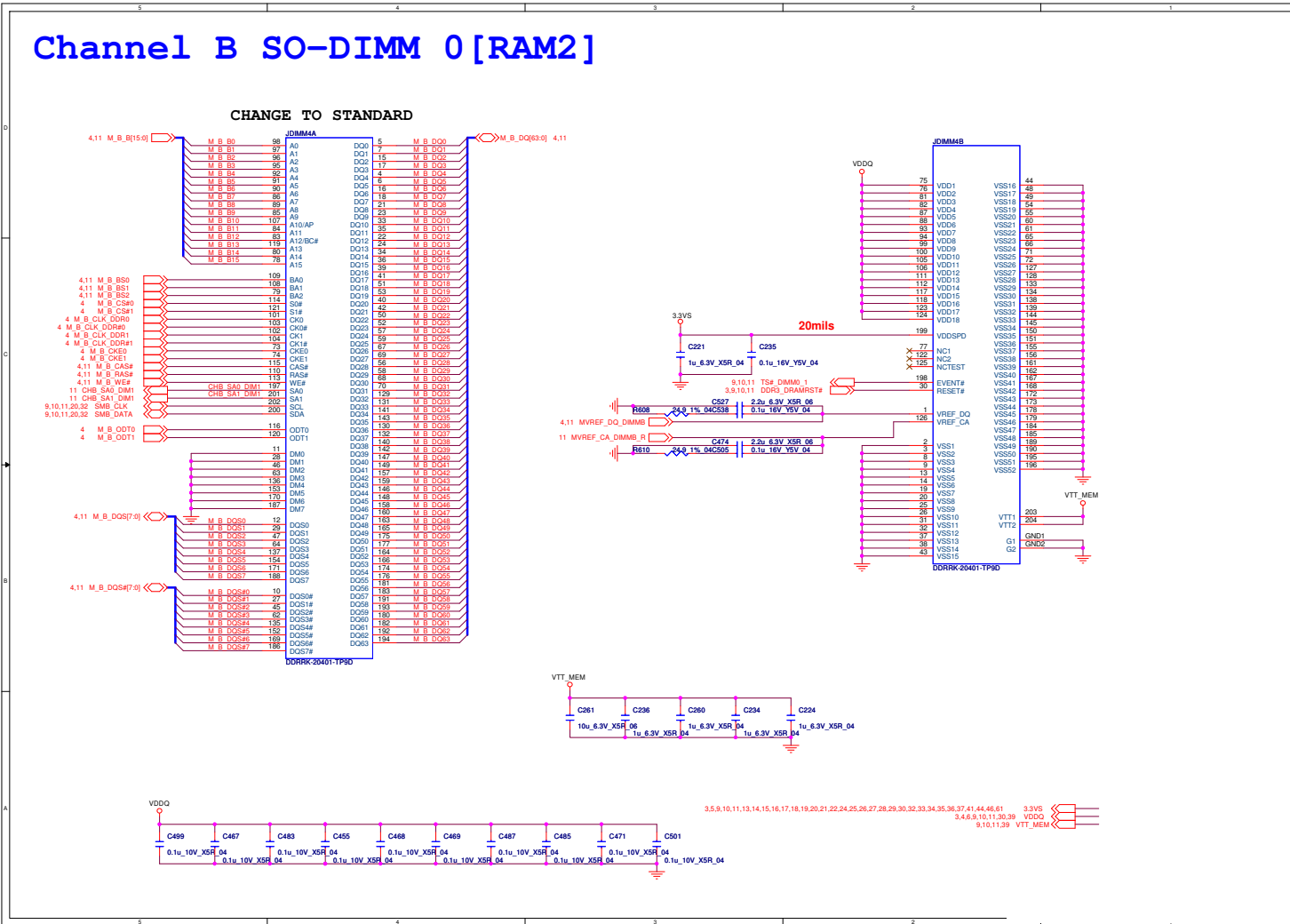
CHANGE TO STANDARD



B.Schematic Diagrams

Sheet 9 of 66
DDR3 CHA SO-DIMM_0

DDRIII CHB SO-DIMM_0

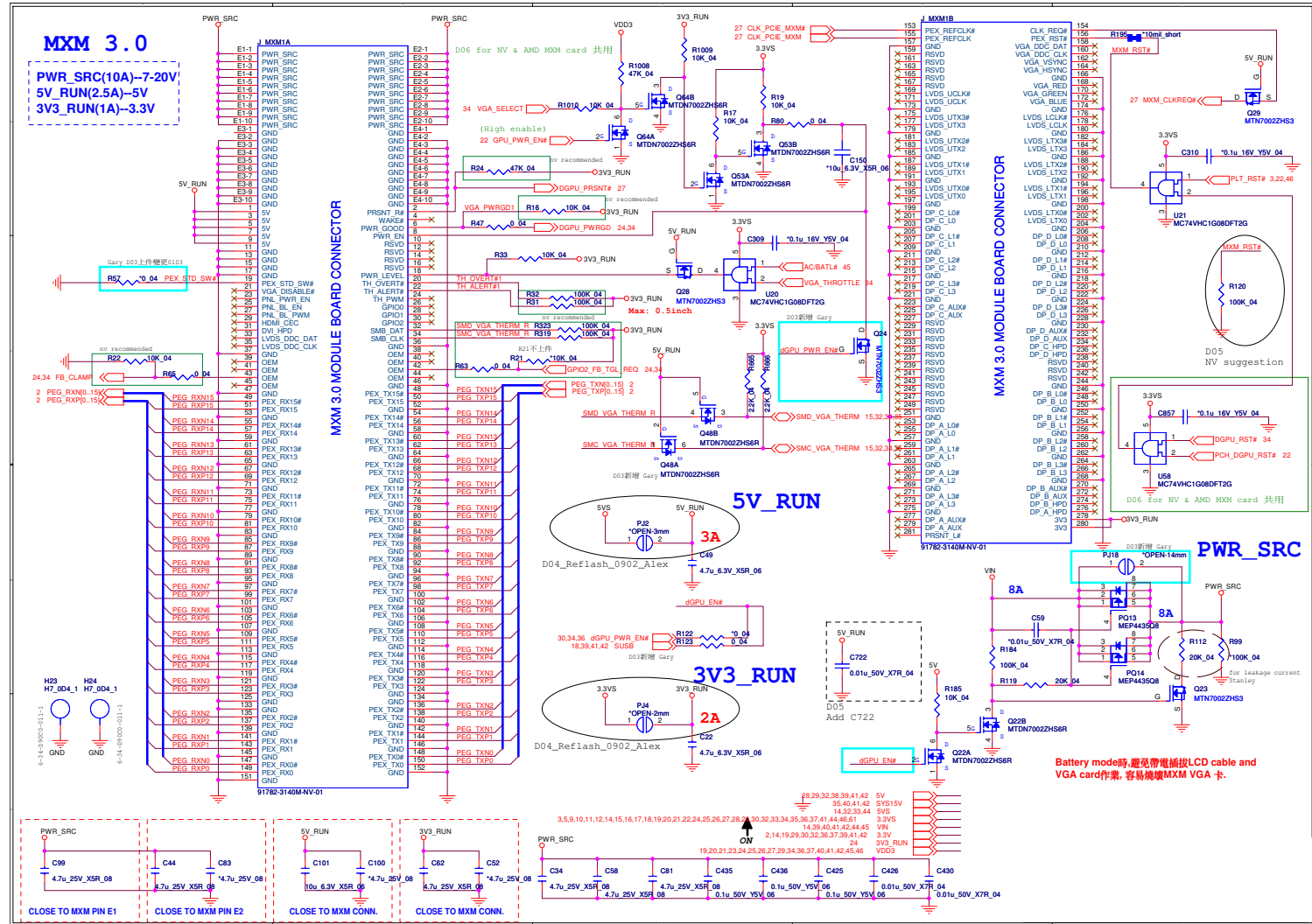


B.Schematic Diagrams

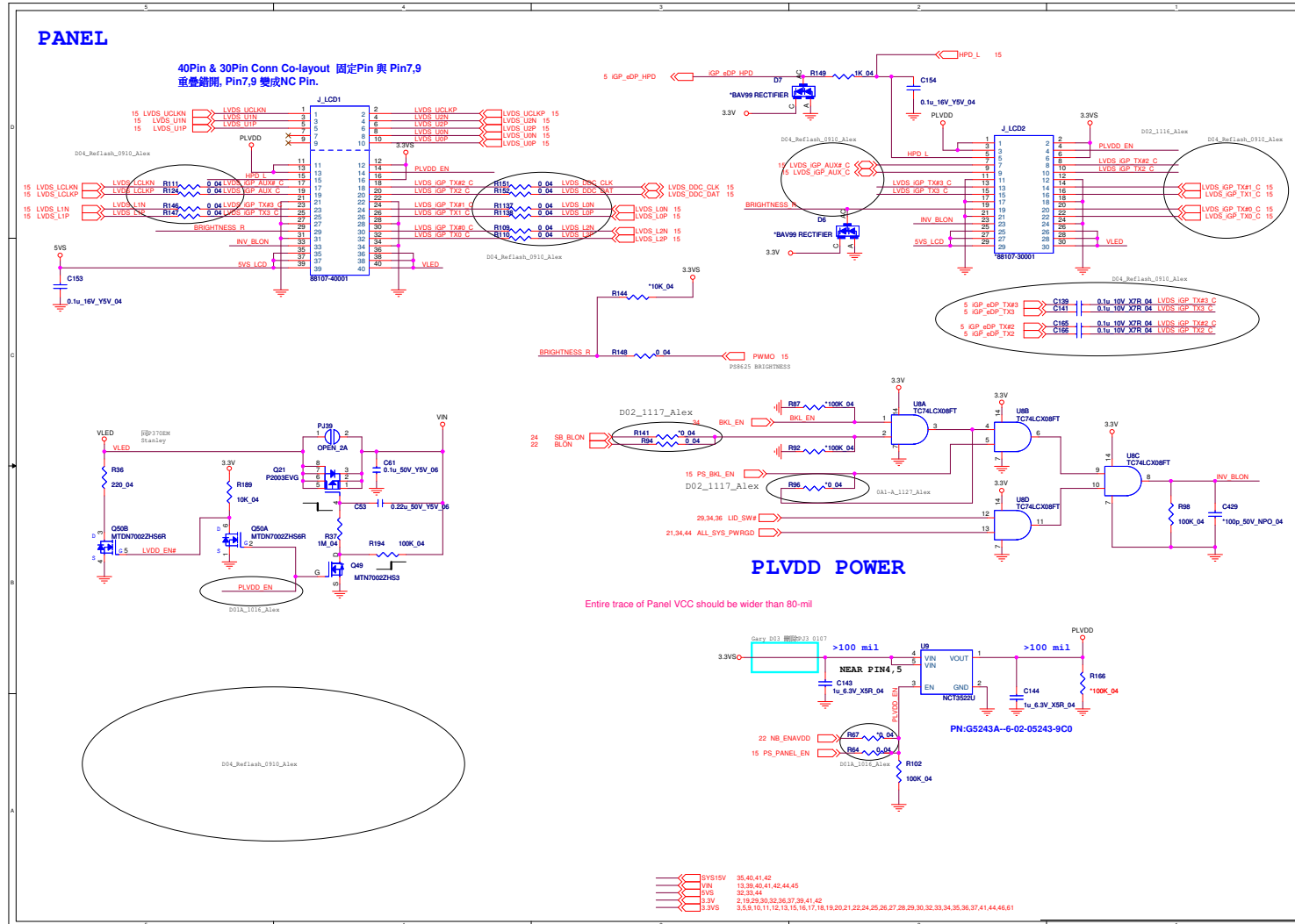
Sheet 12 of 66
DDRIII CHB SO-DIMM_0

MXM PCI-E

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MXM PCI-E

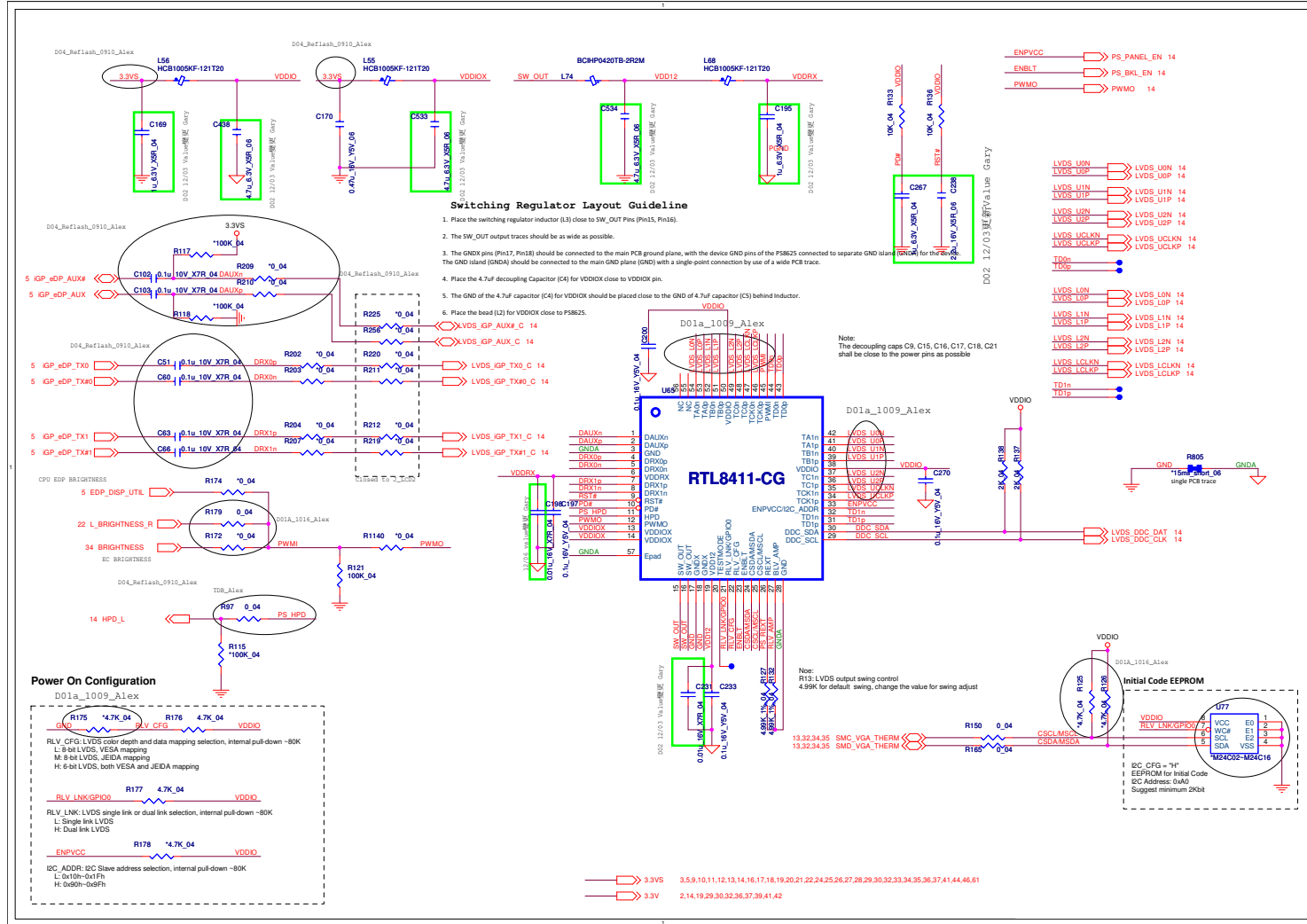


Panel, Inverter, CRT



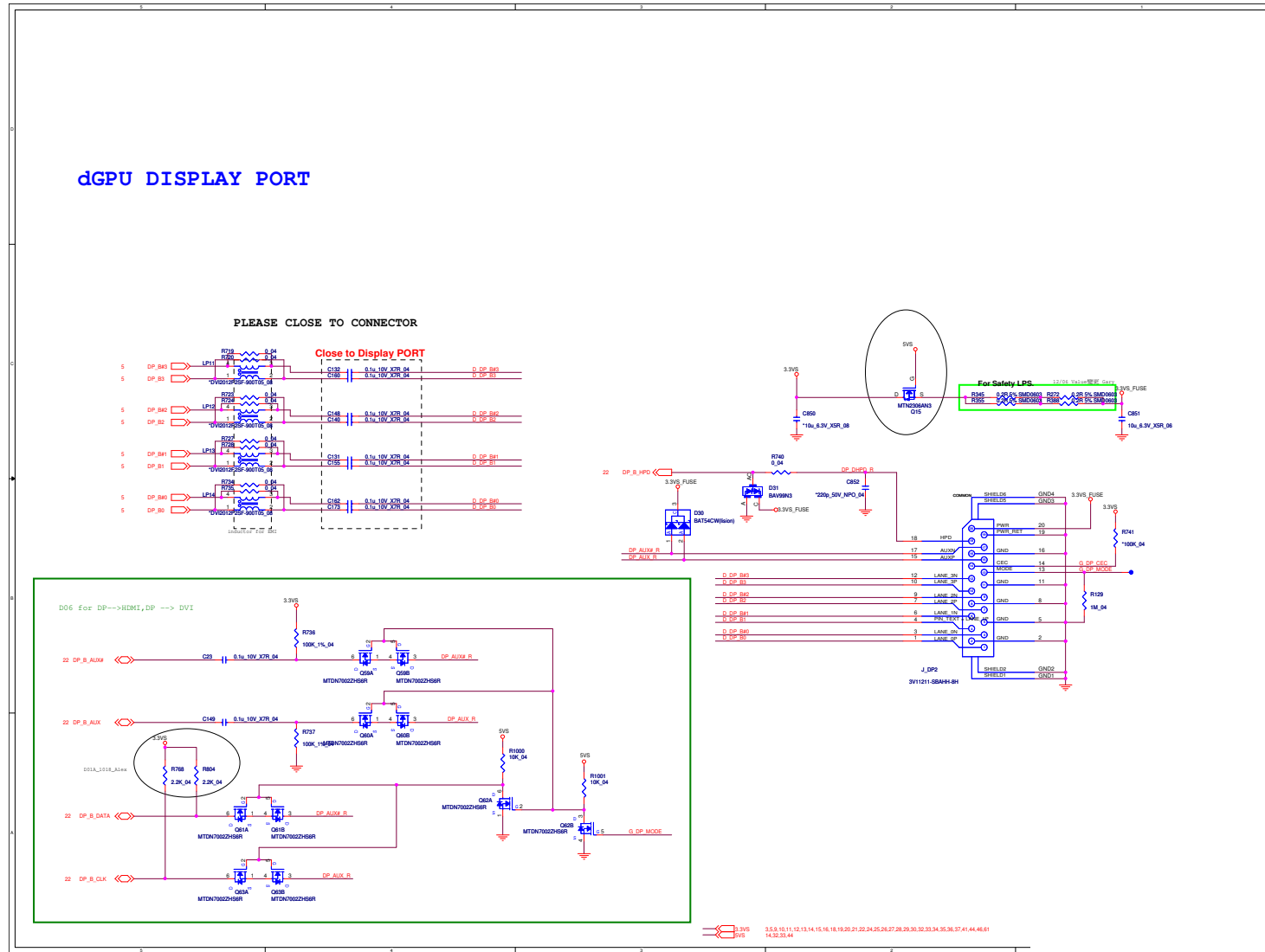
Sheet 14 of 66
Panel, Inverter,
CRT

PS8625



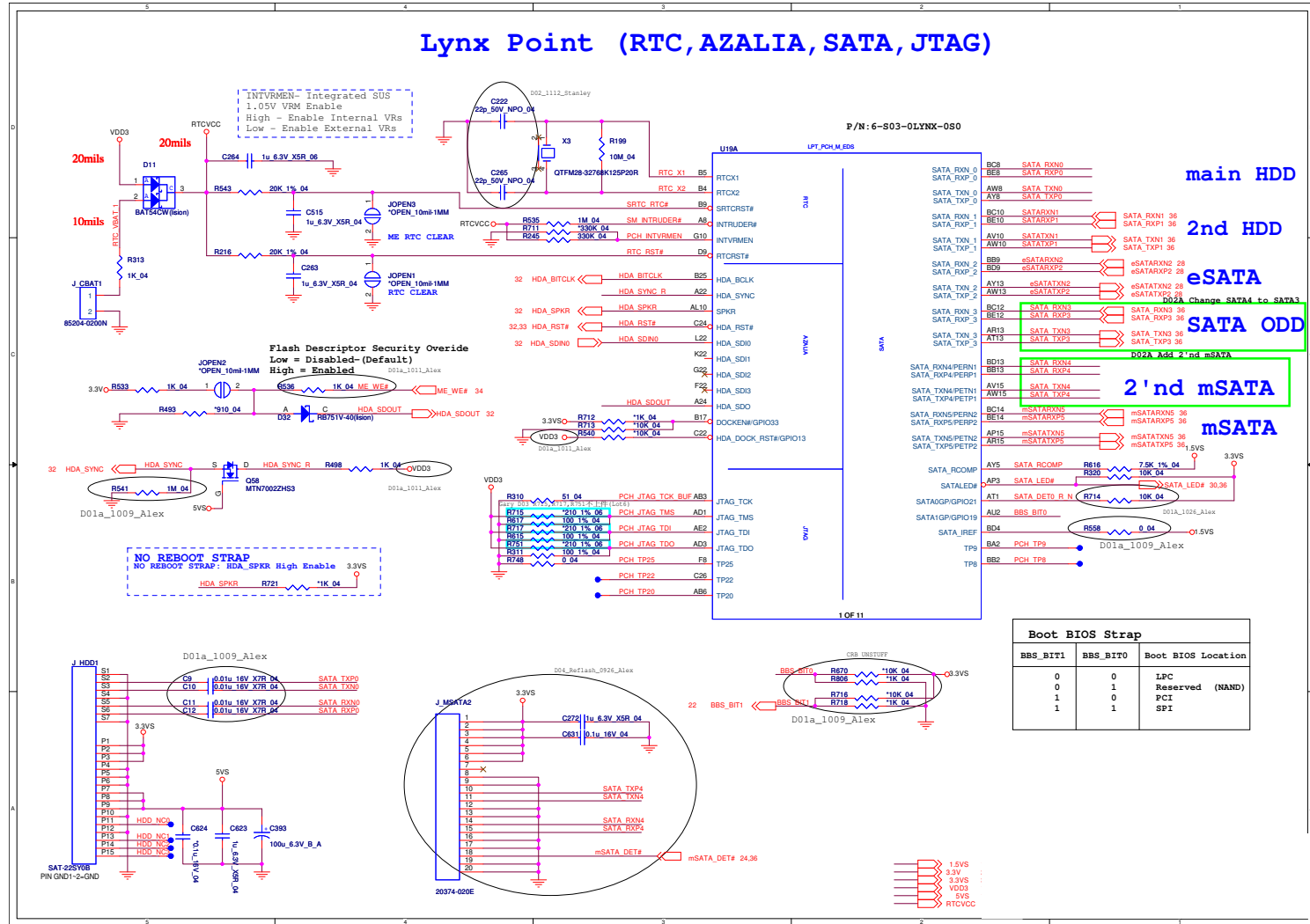
Display Port

Sheet 17 of 66
Display Port



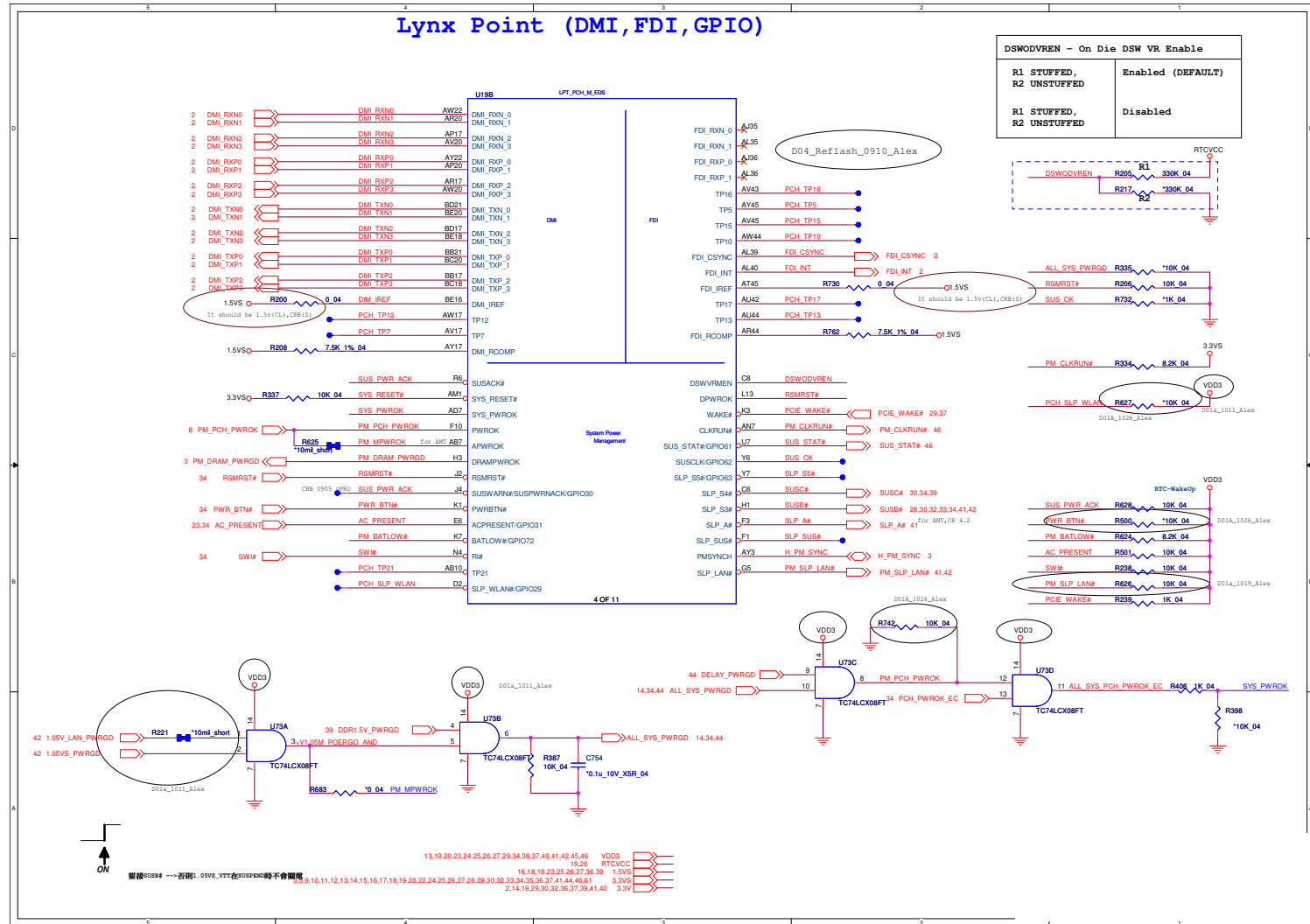
Lynx Point 1/9

Sheet 19 of 66
Lynx Point 1/9

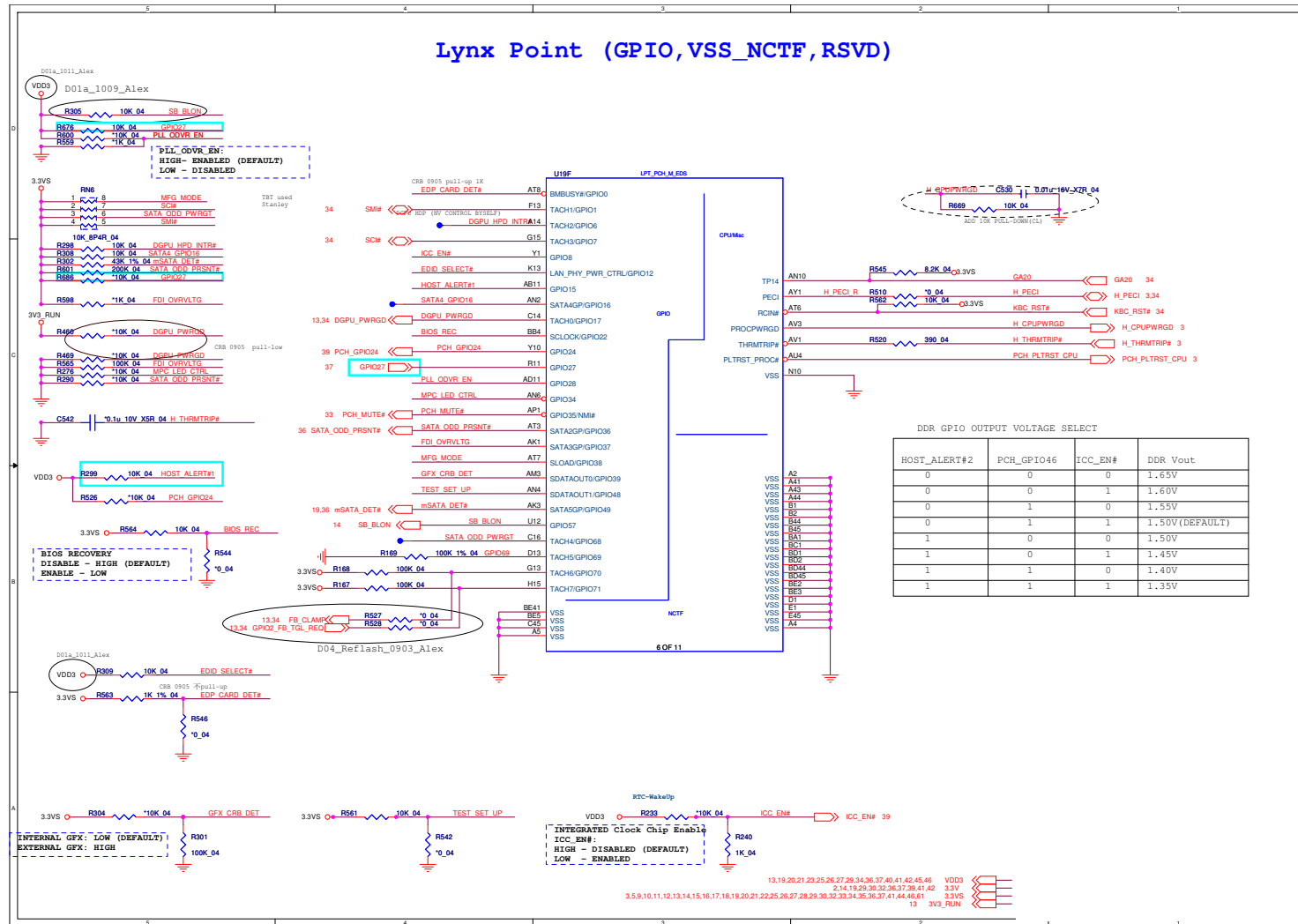


Lynx Point3/9

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Lynx Point 3/9



Lynx Point 6/9

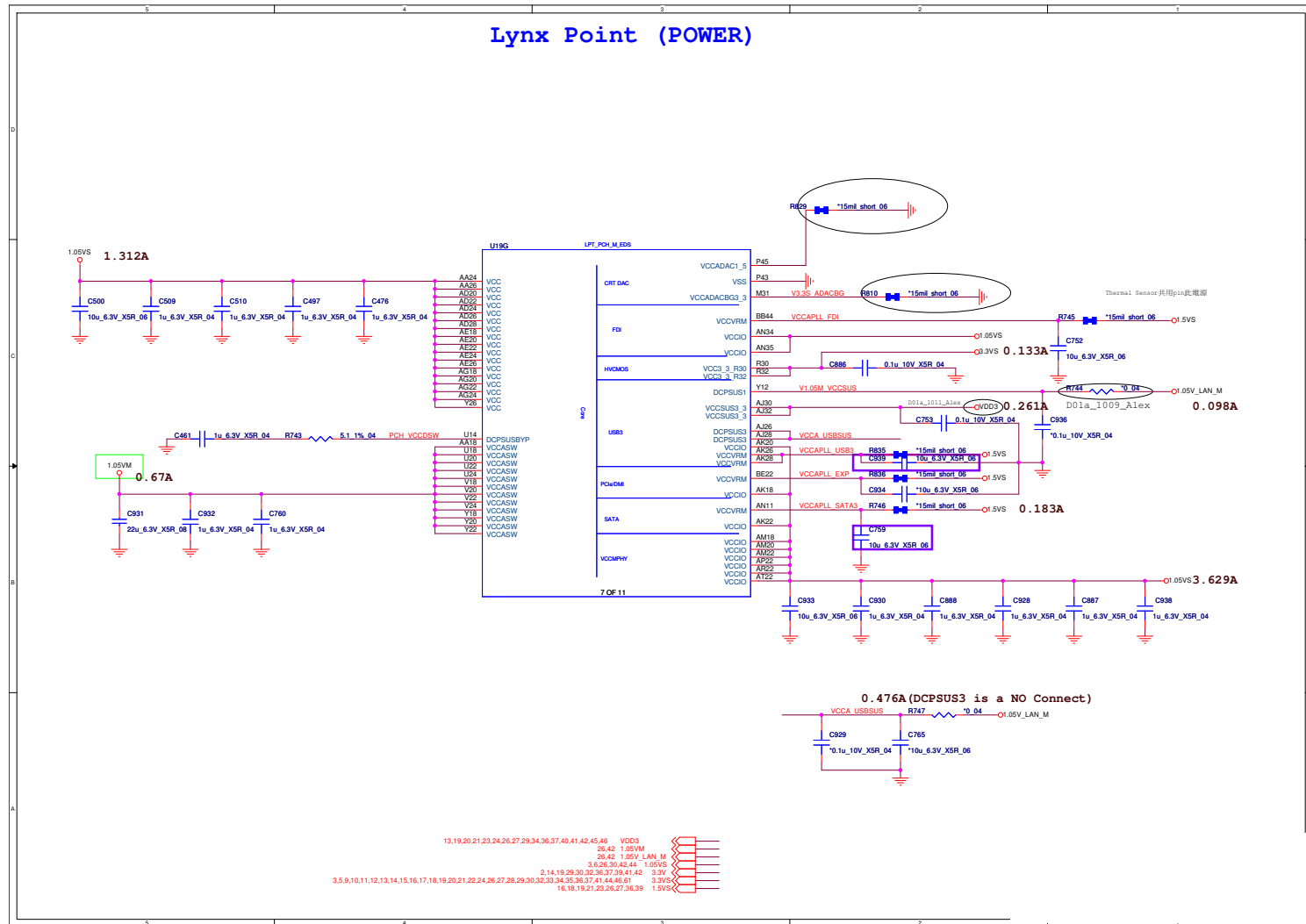


Sheet 24 of 66
Lynx Point 6/9

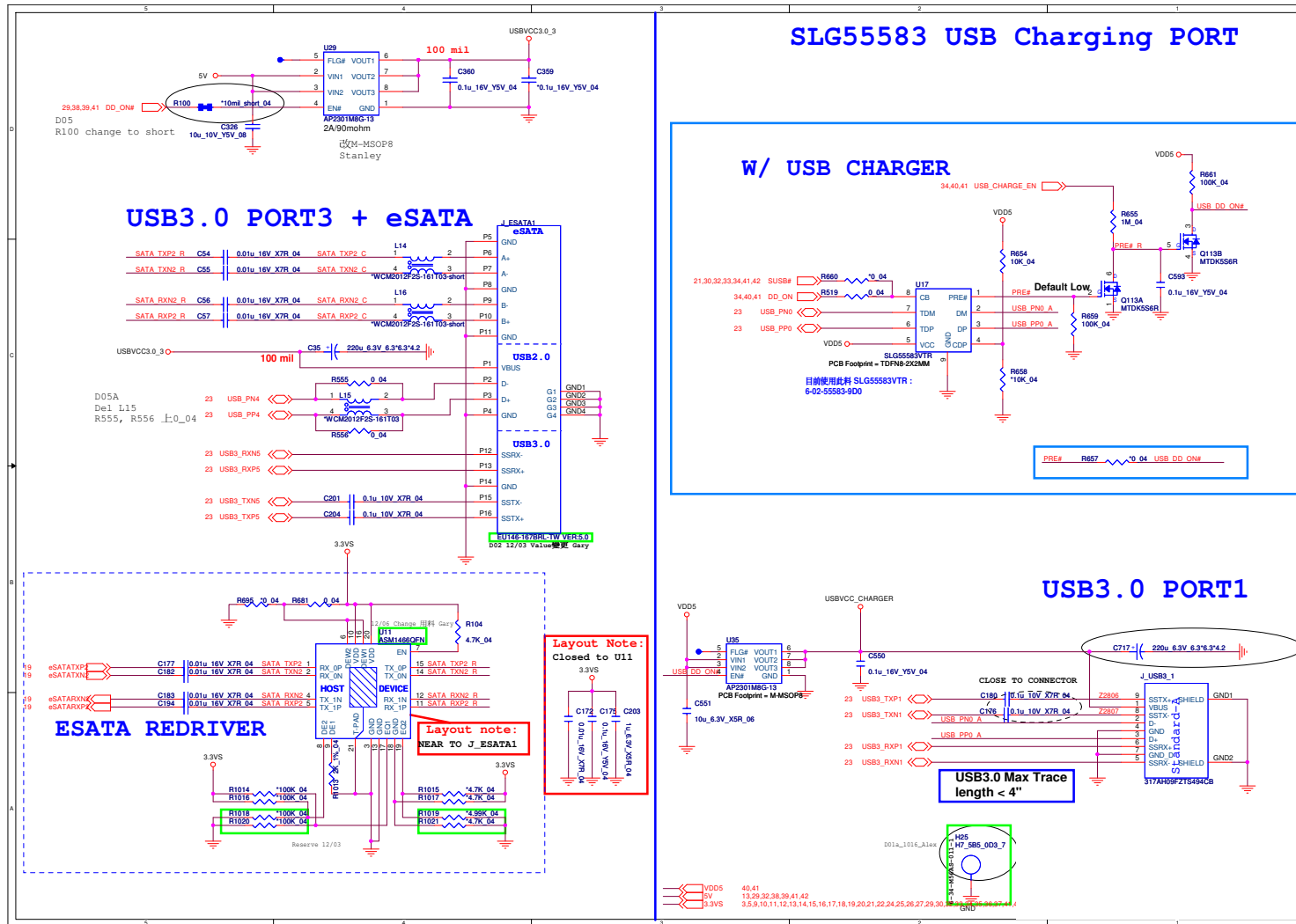
B.Schematic Diagrams

Lynx Point 7/9

Sheet 25 of 66
Lynx Point 7/9



USB+eSATA, USB Charging



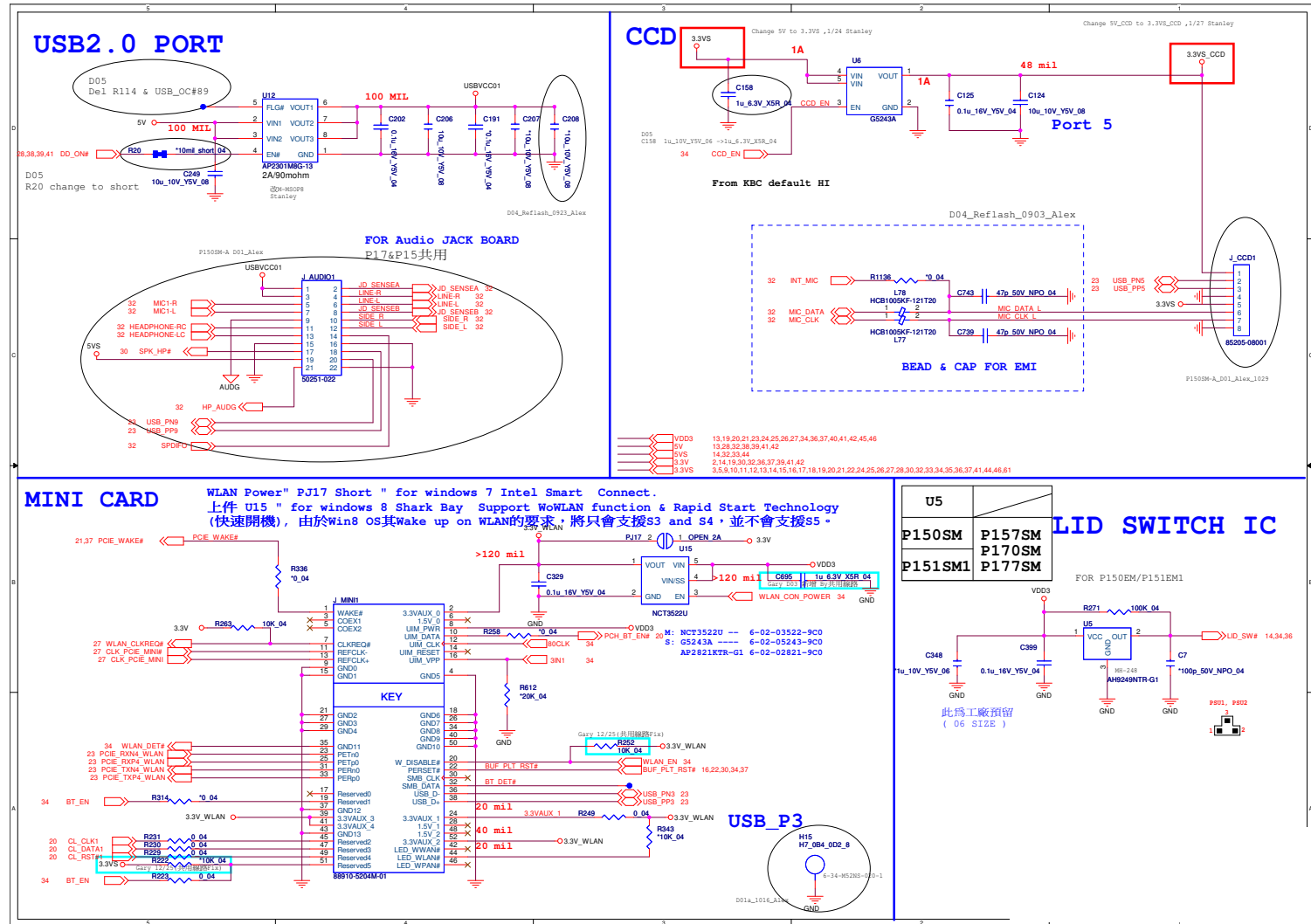
Sheet 28 of 66
USB+eSATA, USB Charging

B.Schematic Diagrams

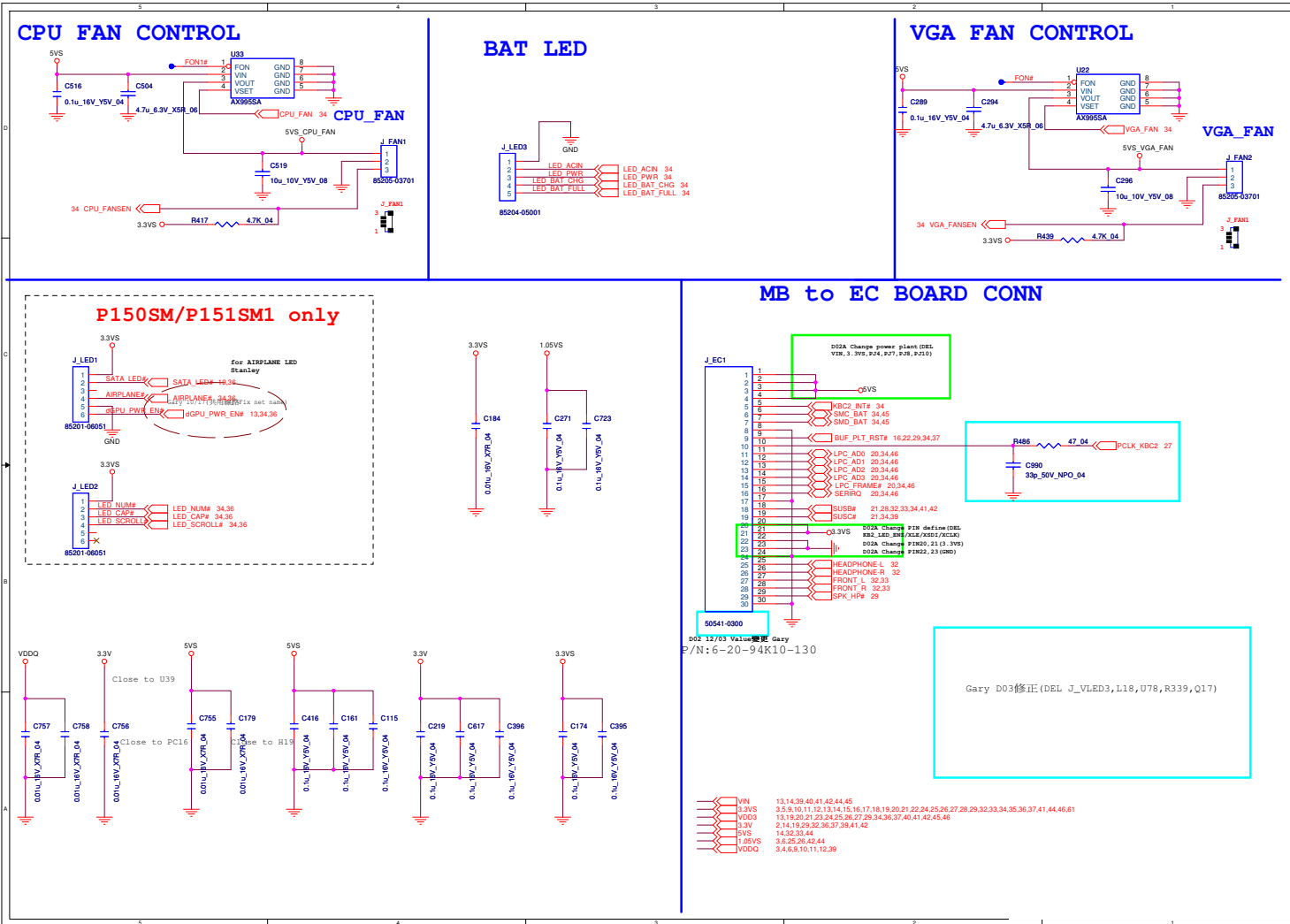
Schematic Diagrams

USB 2.0, CCD, Mini PCIE, LID

Sheet 29 of 66
USB 2.0, CCD,
Mini PCIE, LED



LED, Hotkey, LID SW, Fan

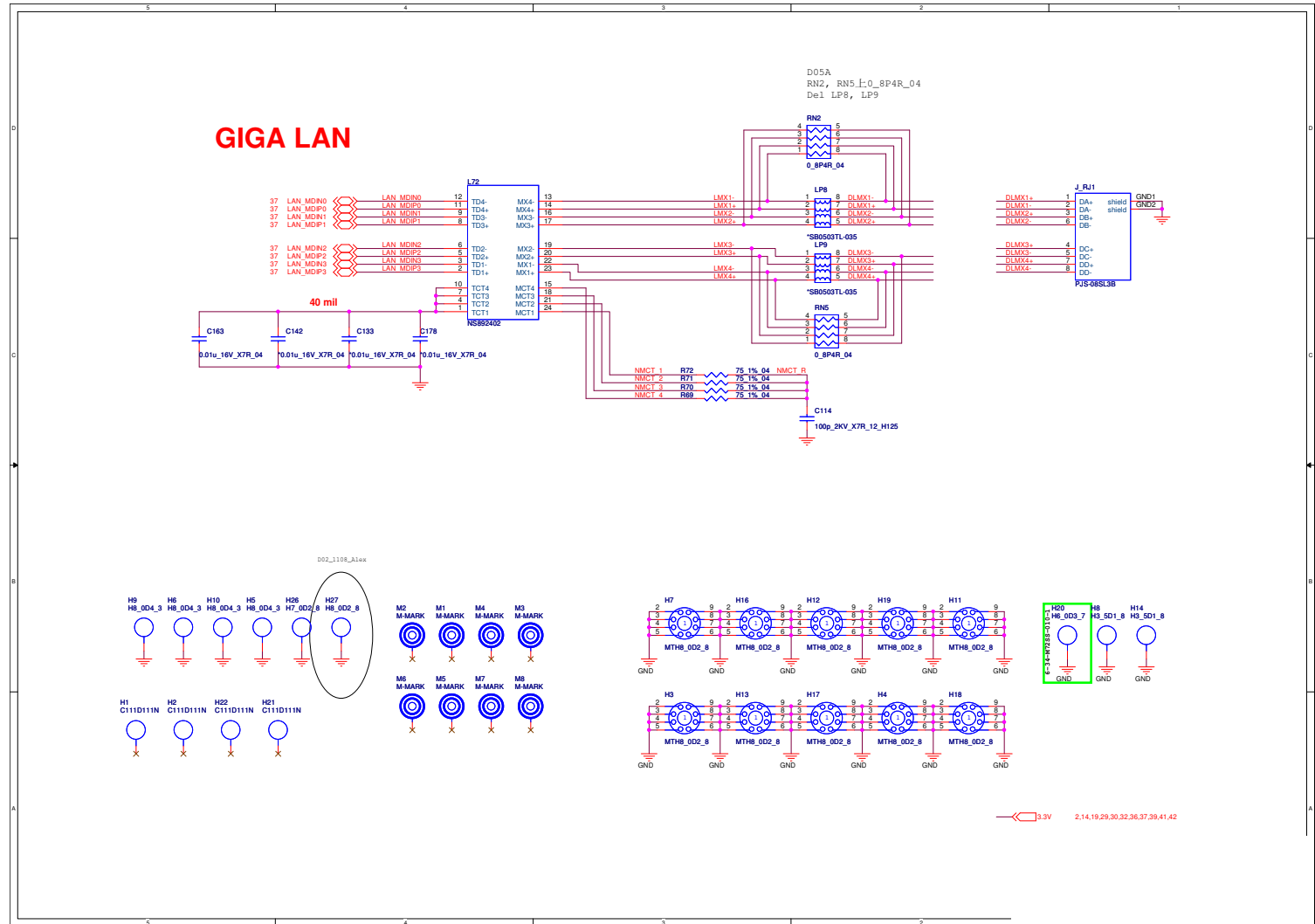


Sheet 30 of 66
LED, Hotkey,
LID SW, Fan

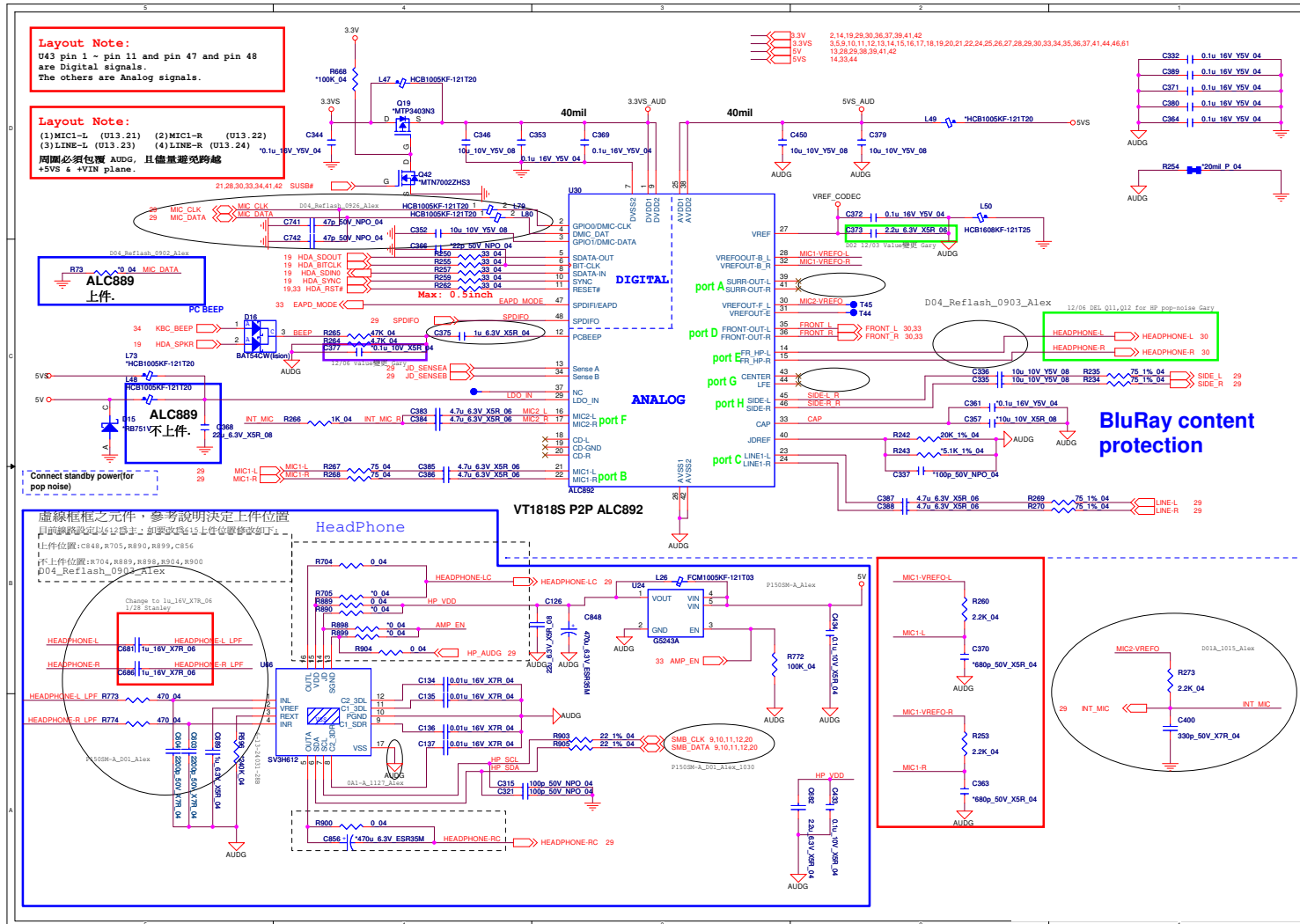
B.Schematic Diagrams

RJ 45

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RJ 45



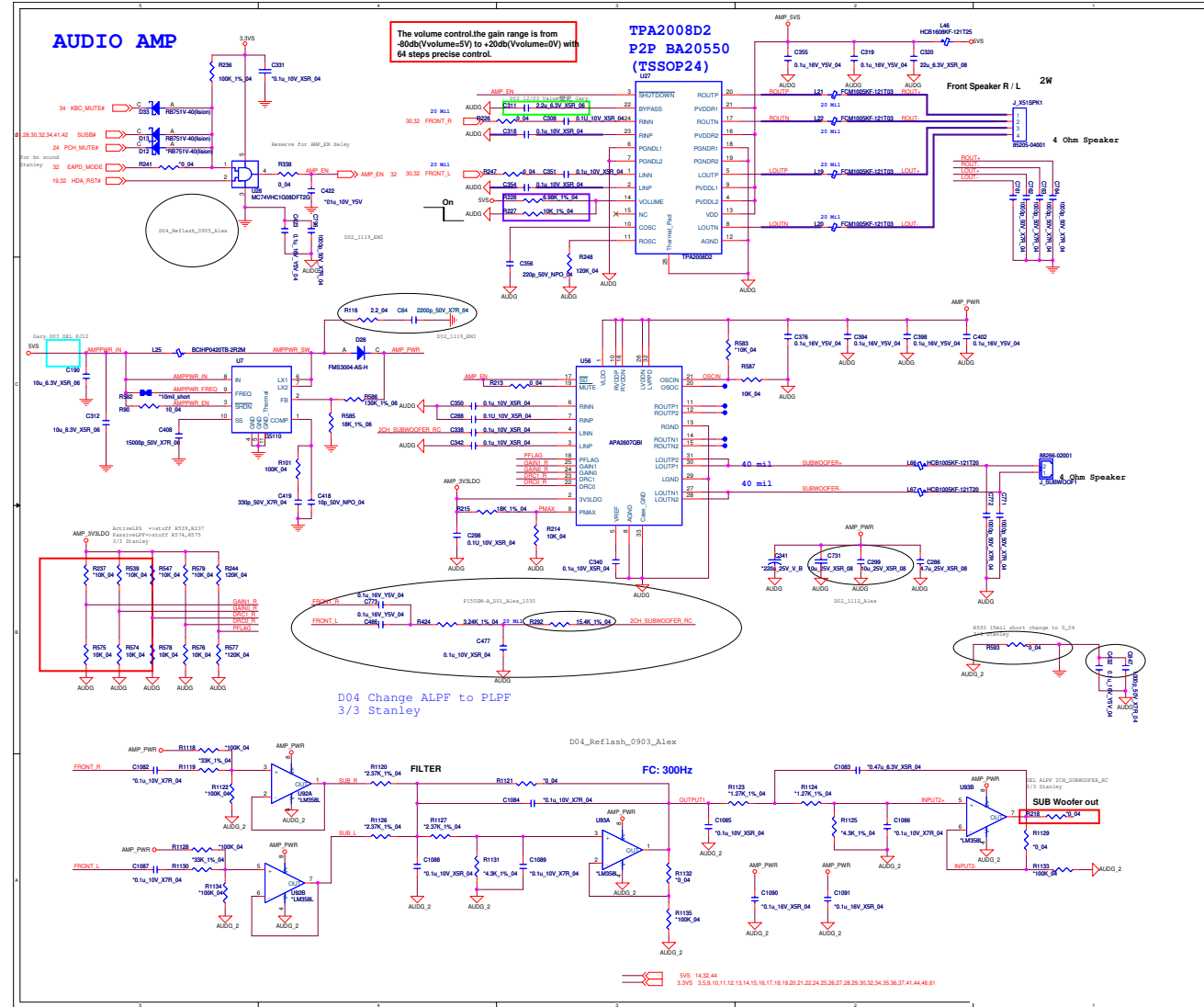
Codec Realtek ALC892



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Codec Realtek
ALC892

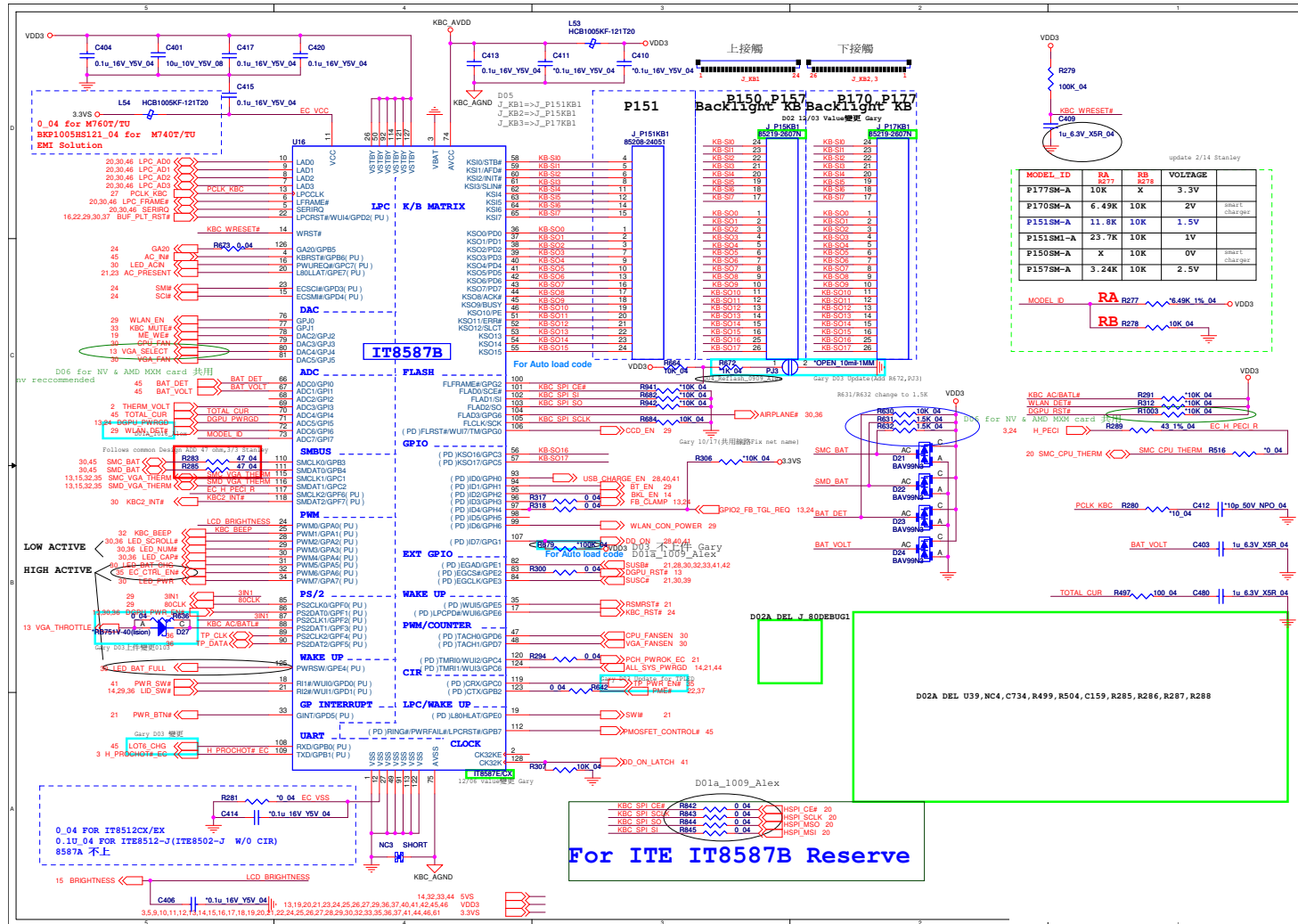
B.Schematic Diagrams

APA2607-TPA2008D2



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APA2607-
TPA2008D2

KBC-ITE IT8587A

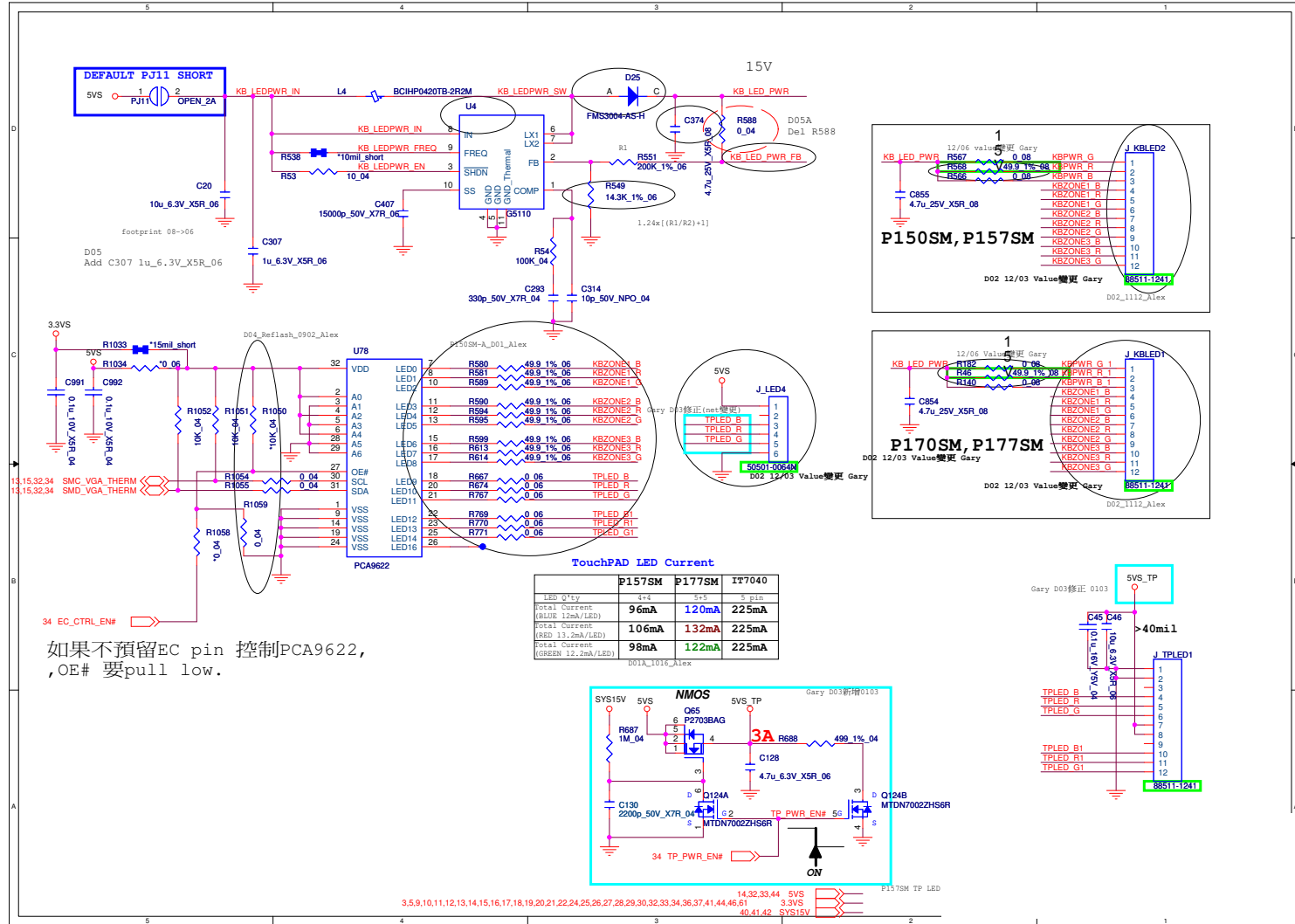


Sheet 34 of 66
KBC-ITE IT8587A

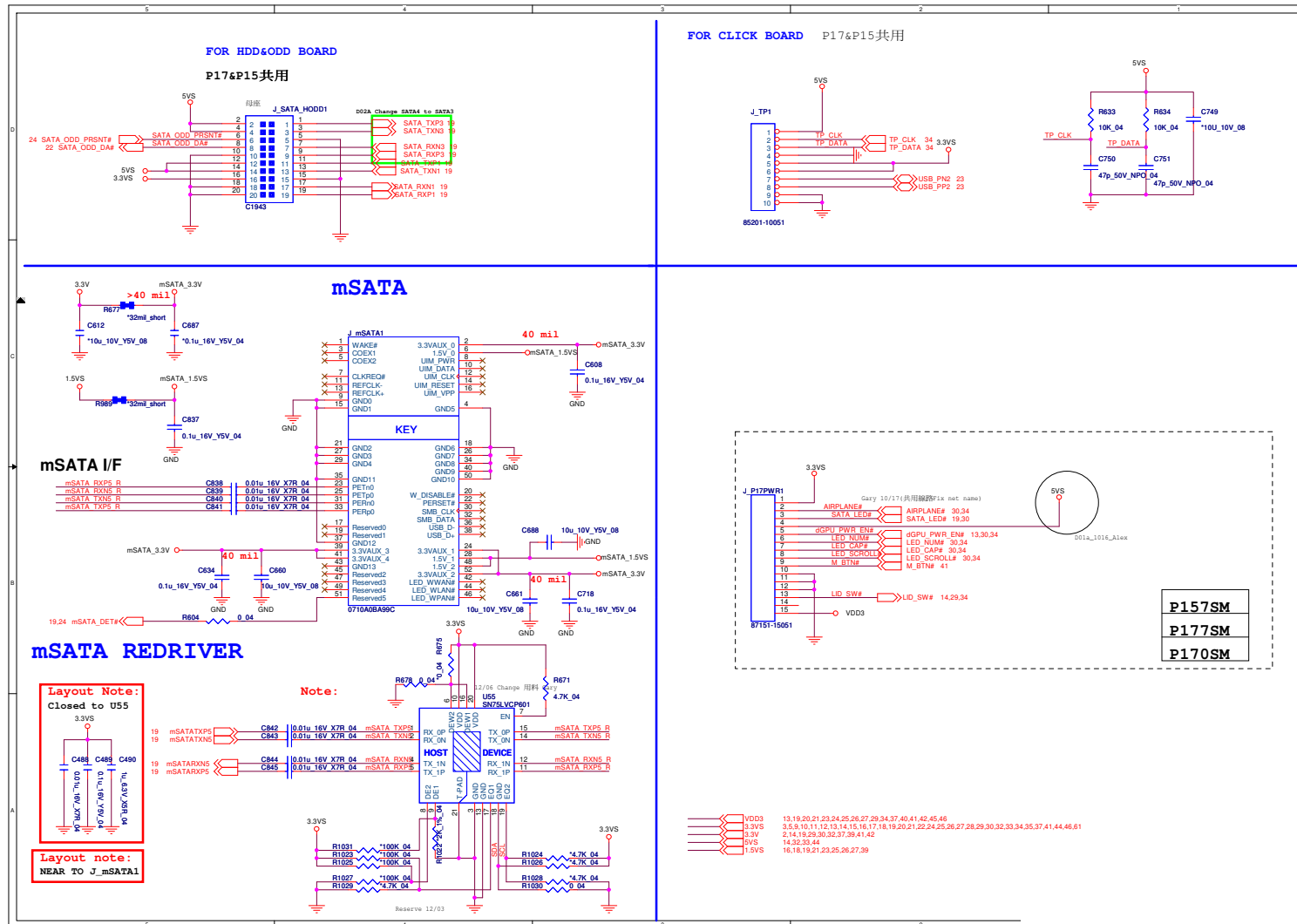
B.Schematic Diagrams

Backlight Keyboard

Sheet 35 of 66
Backlight
Keyboard

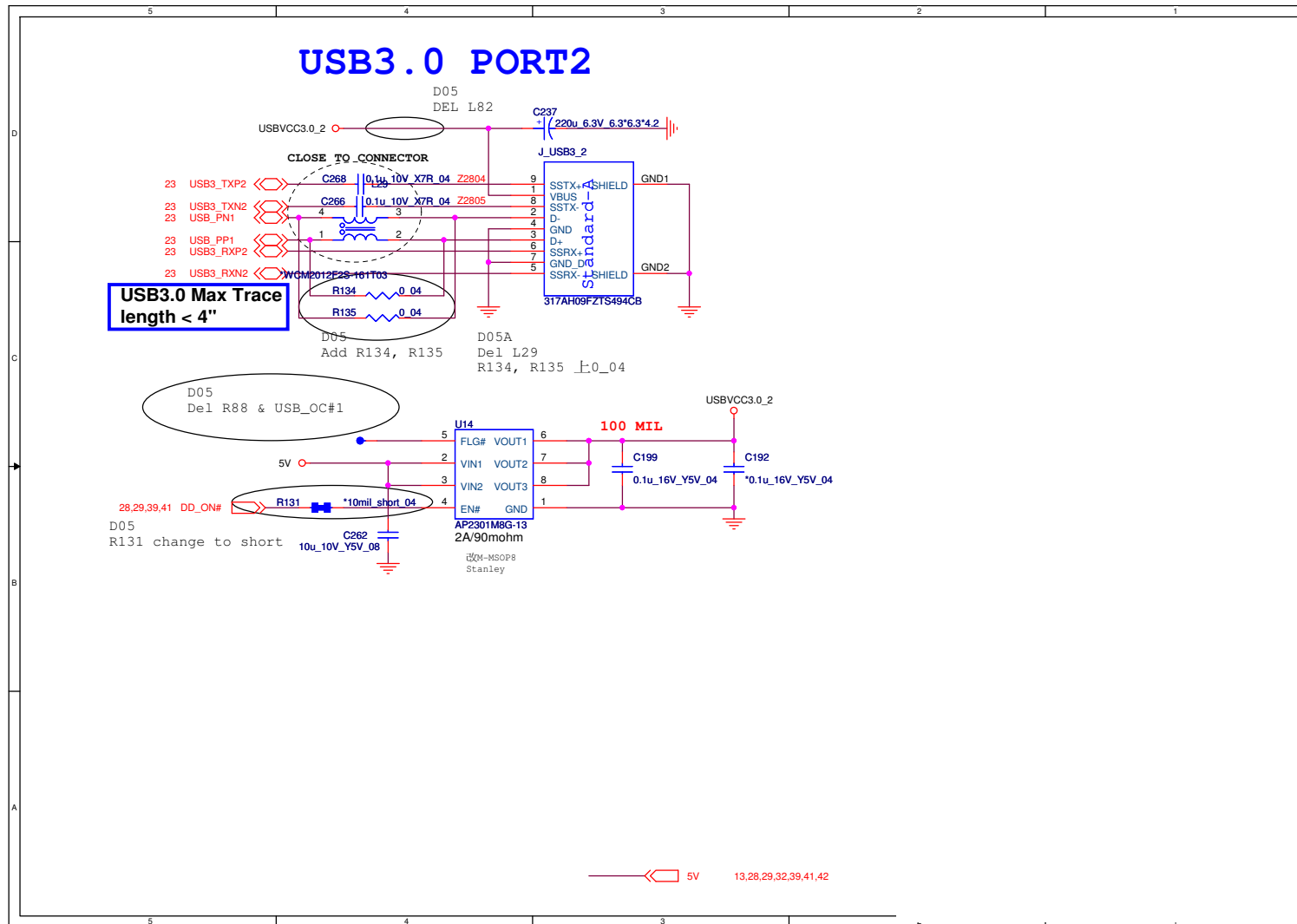


mSATA, FAN, TP, FP, MULTI-CON



Sheet 36 of 66
mSATA, FAN, TP,
FP, MULTI-CON

USB 3.0



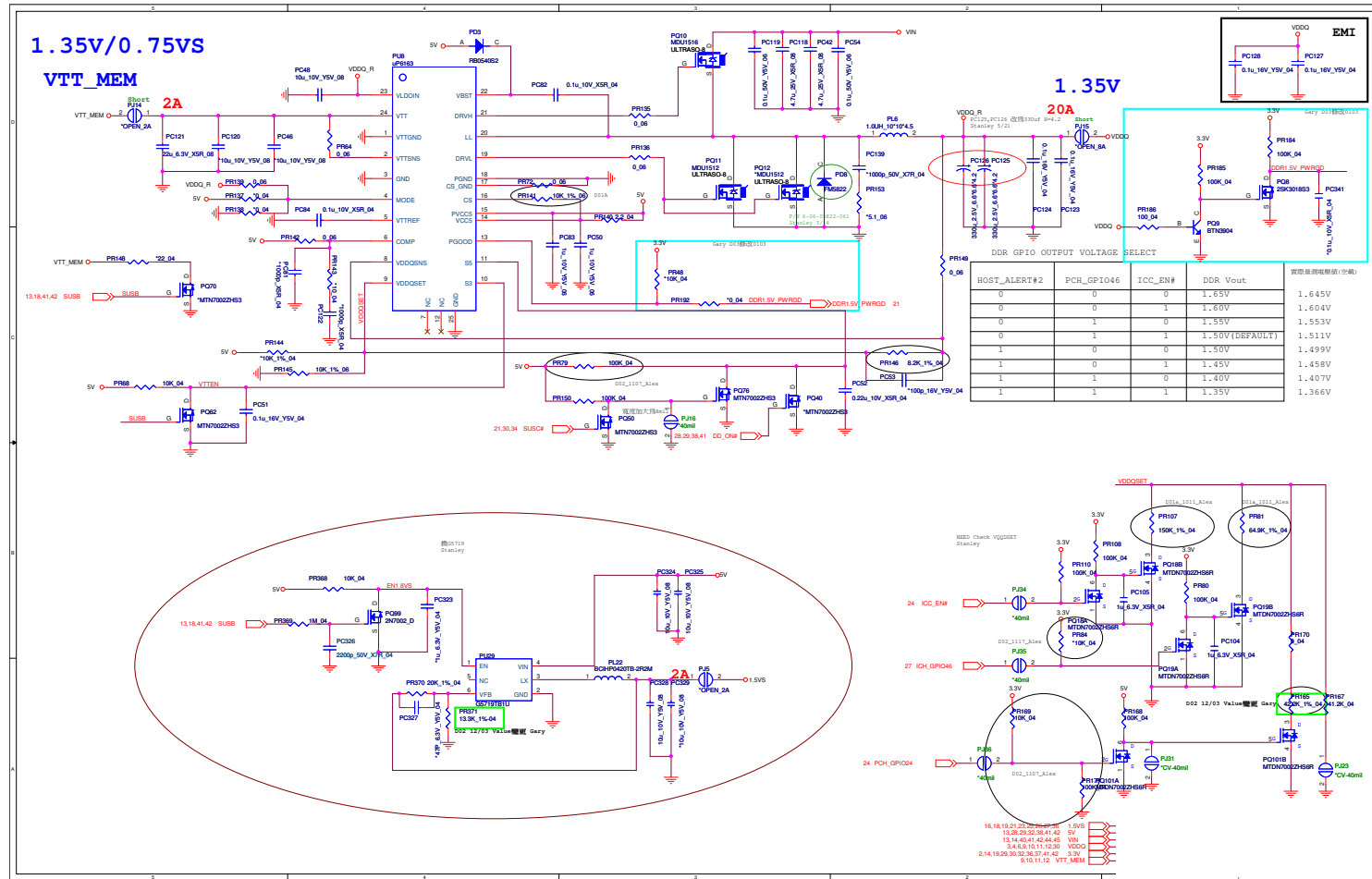
Sheet 38 of 66
USB 3.0

B.Schematic Diagrams

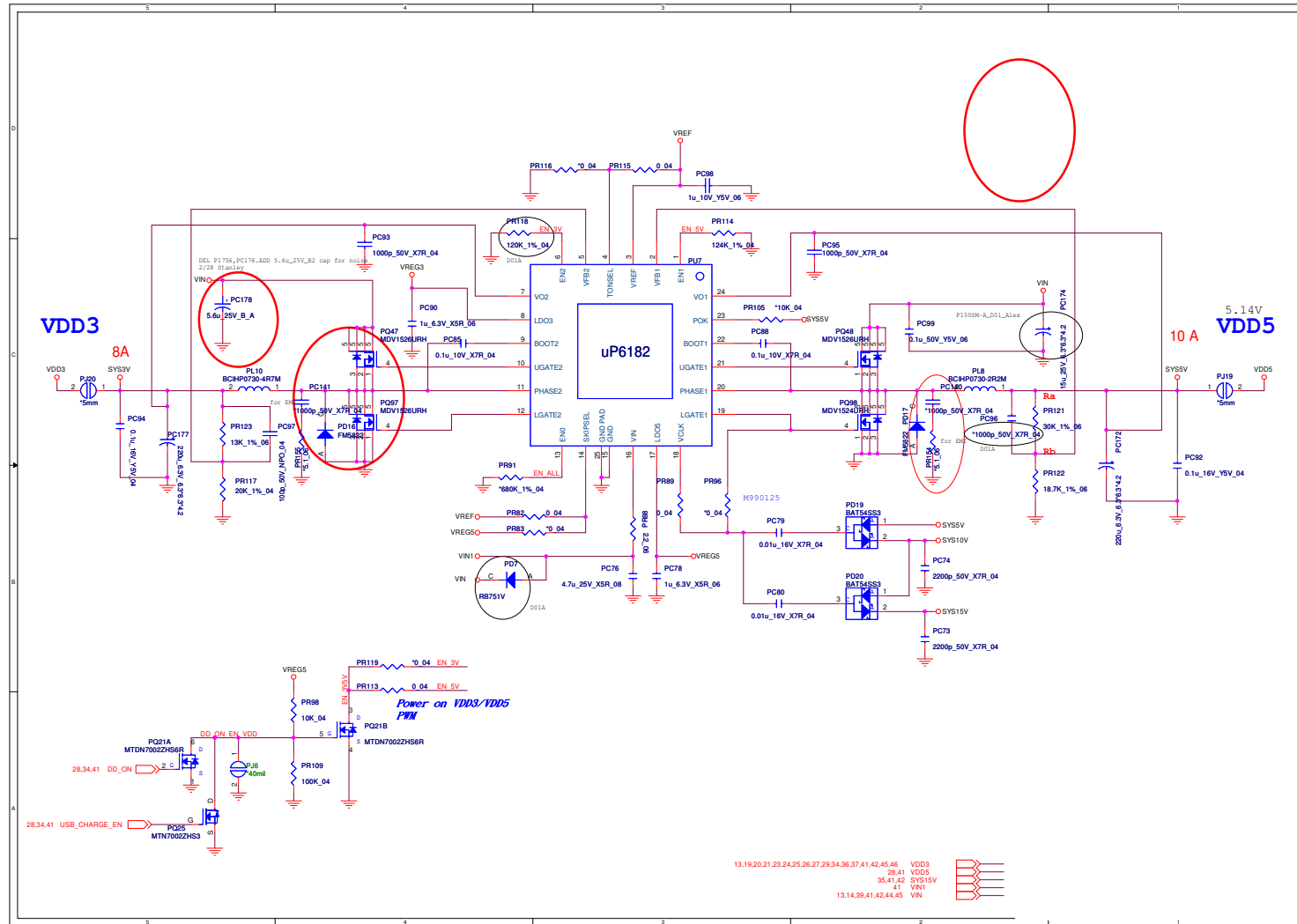
Schematic Diagrams

DDR 1.35V/0.75VS PCH 1.5V

Sheet 39 of 66
 DDR 1.35V/0.75VS
 PCH 1.5V

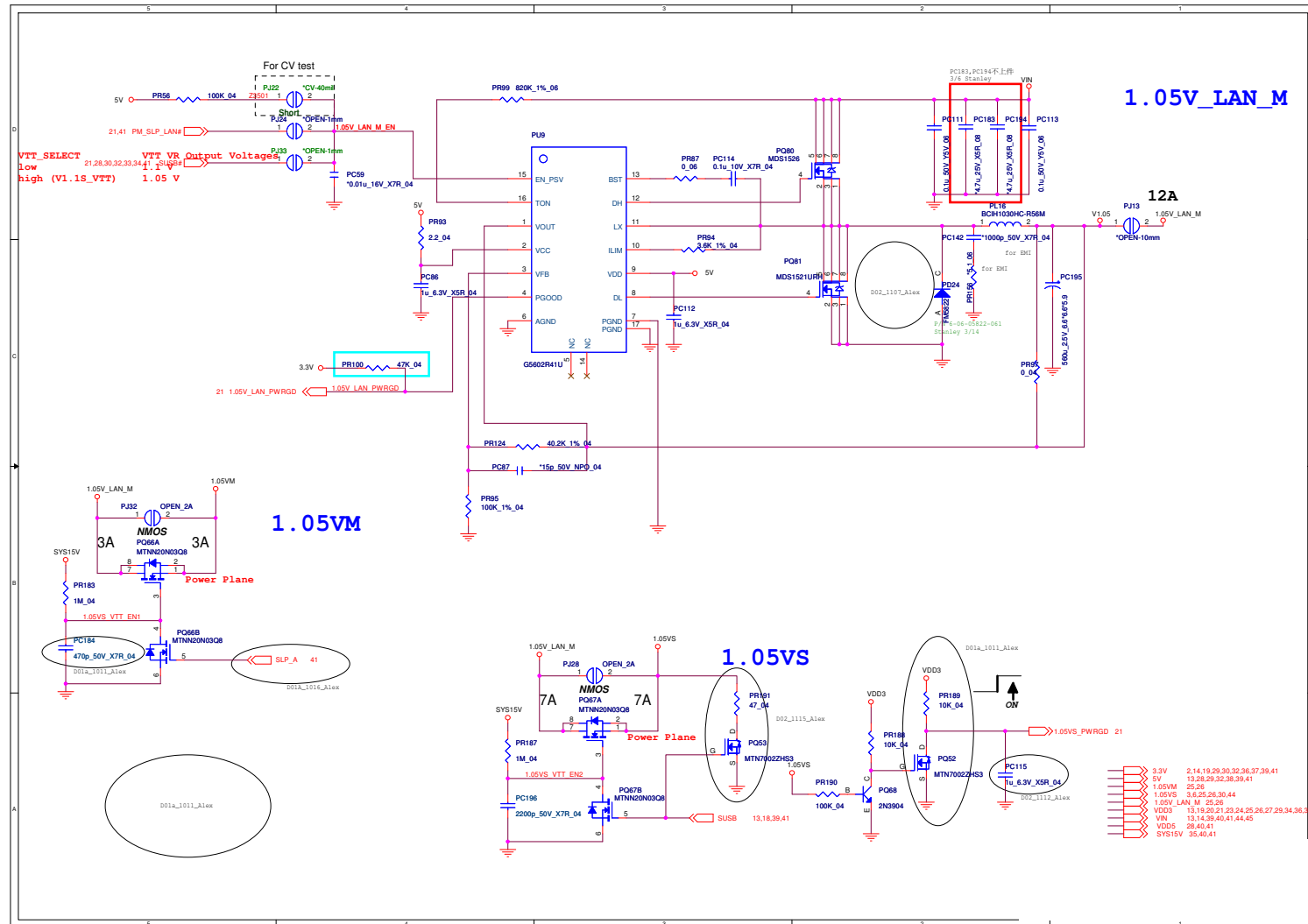


VDD3, VDD5



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VDD3, VDD5

Power 1.05VS

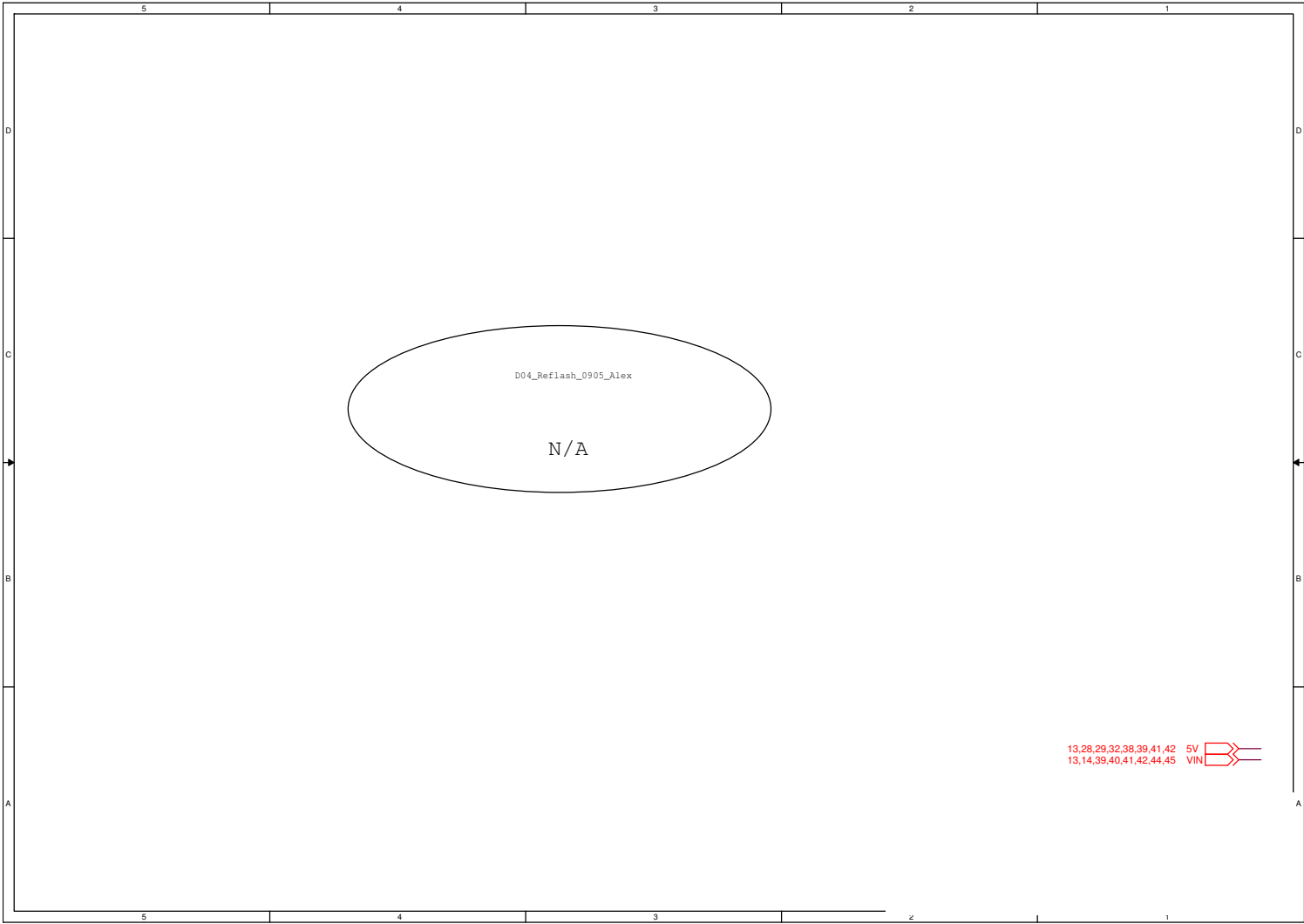


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Power 1.05VS

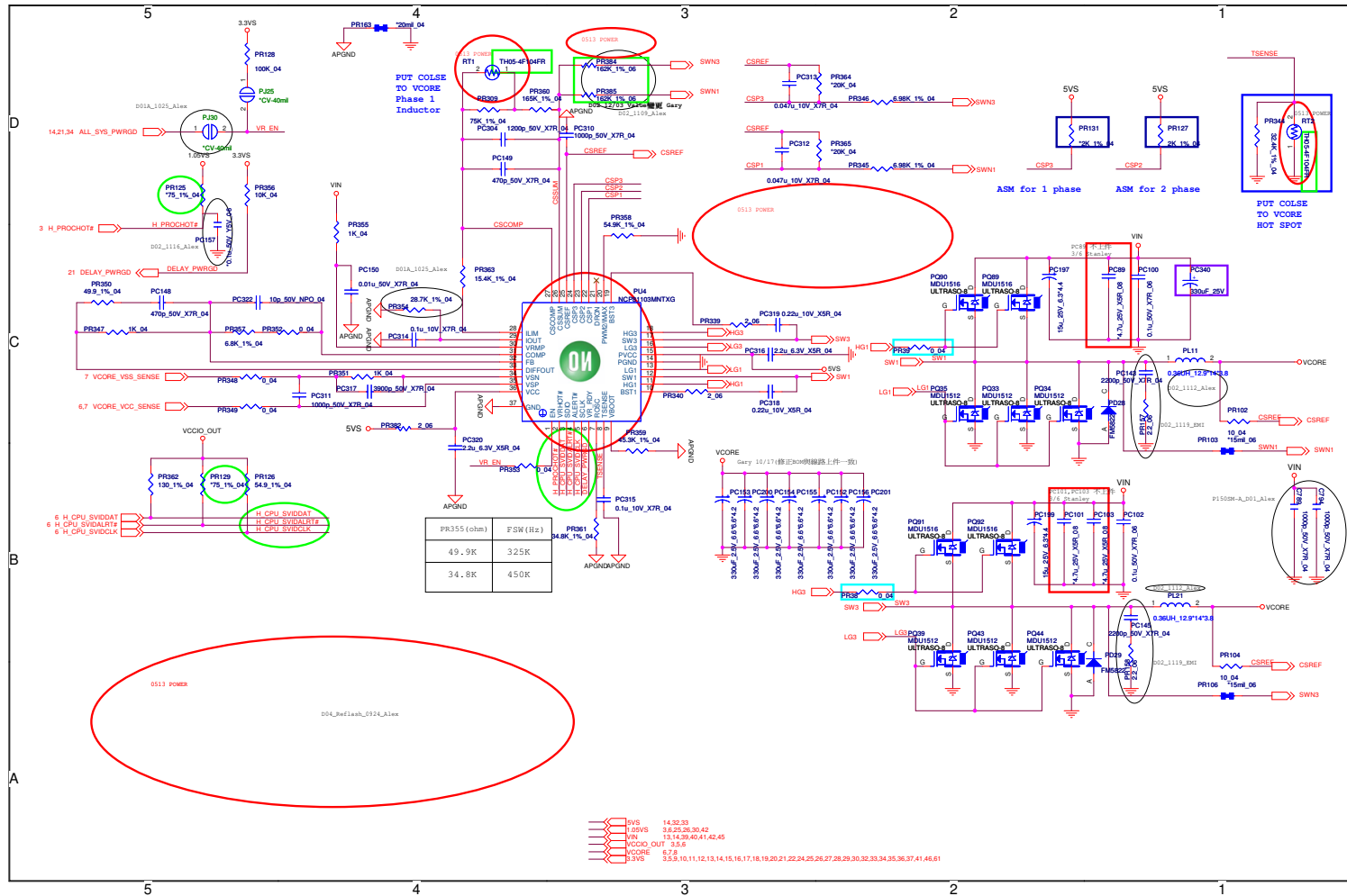
B.Schematic Diagrams

LED 5V

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LED 5V



Power V-Core 1



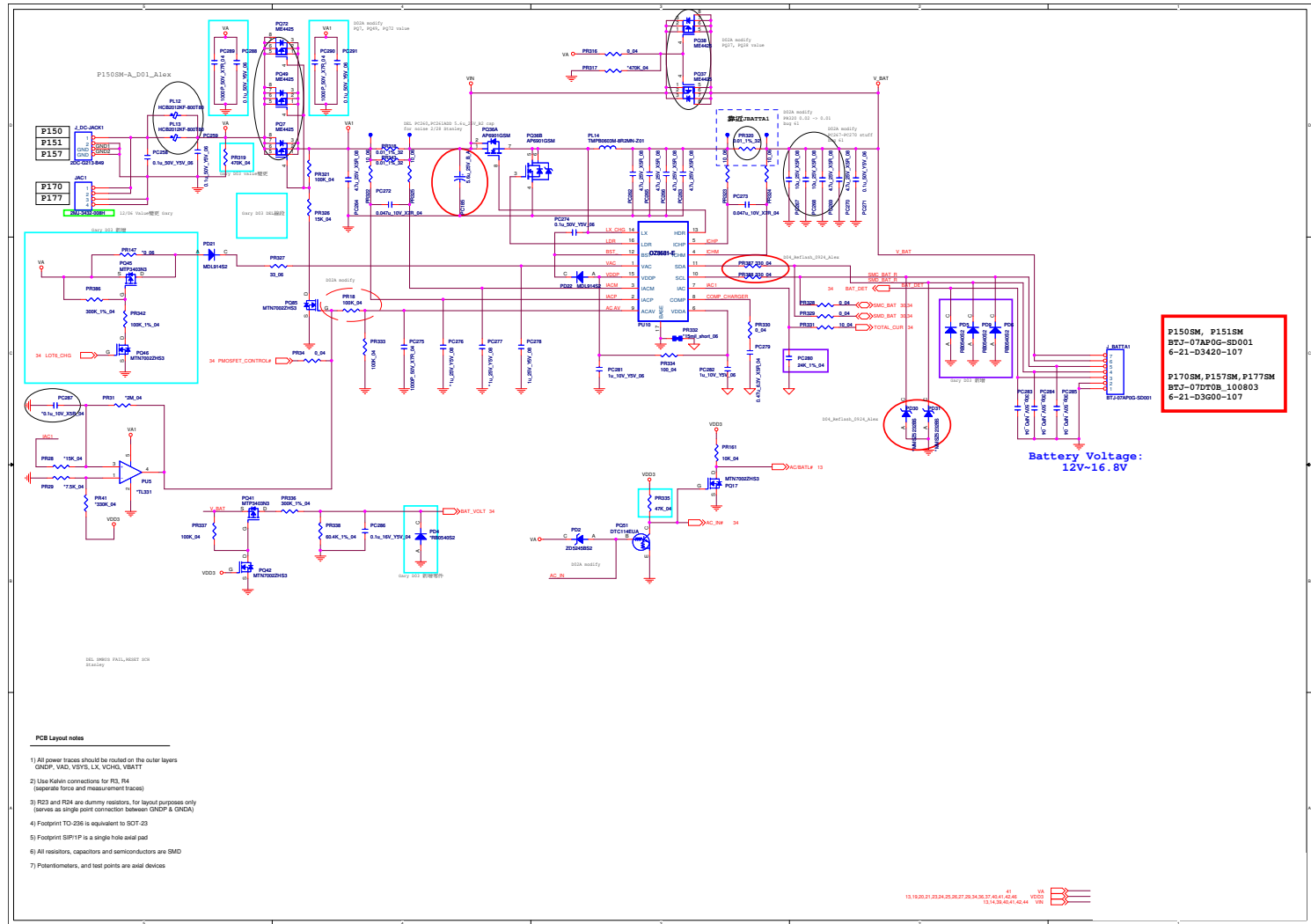
Sheet 44 of 66
Power V-Core 1

B.Schematic Diagrams

Schematic Diagrams

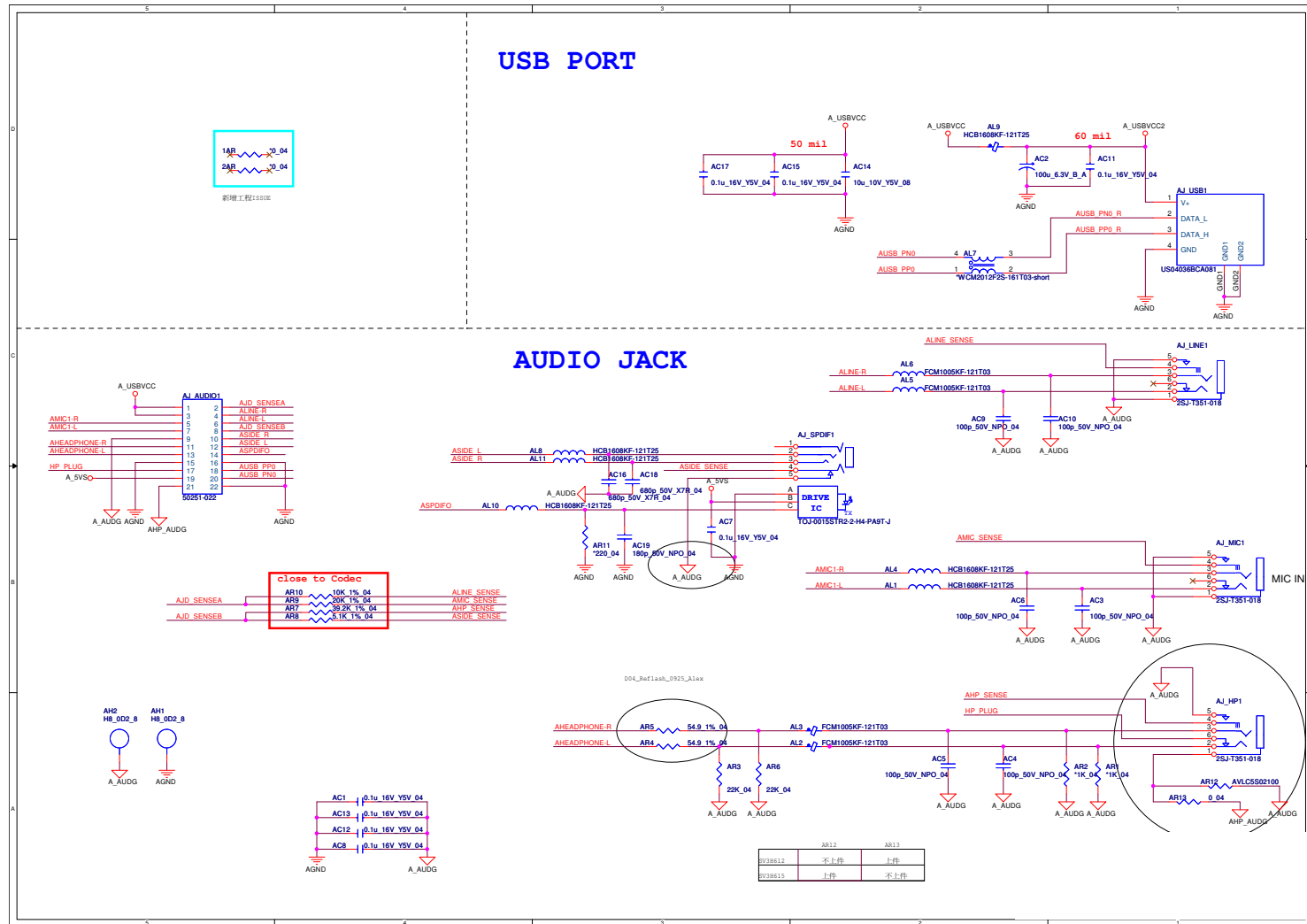
AC_In, Charger

Sheet 45 of 66
AC_In, Charger

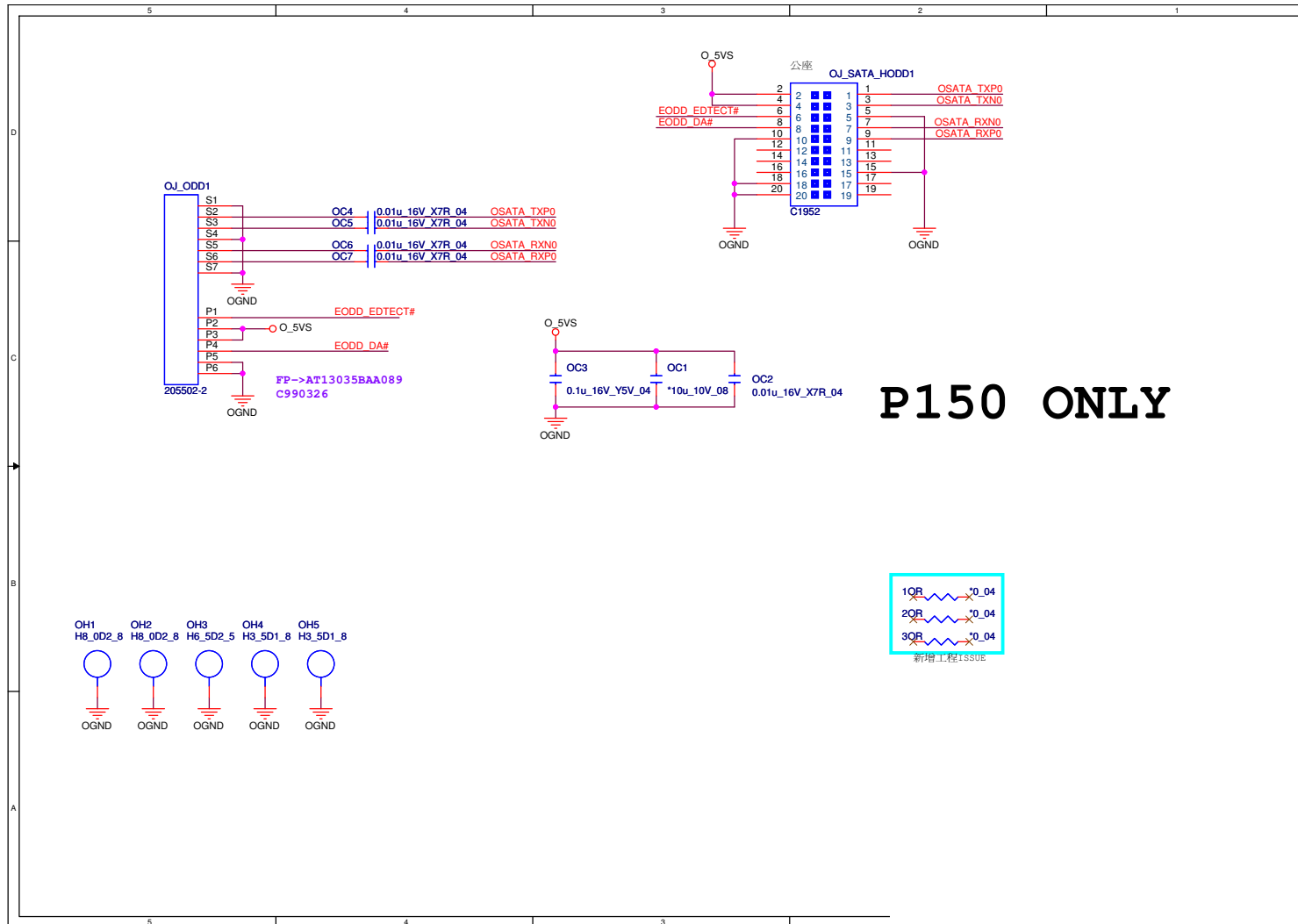


Audio Board

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Audio Board



P150 ODD Board

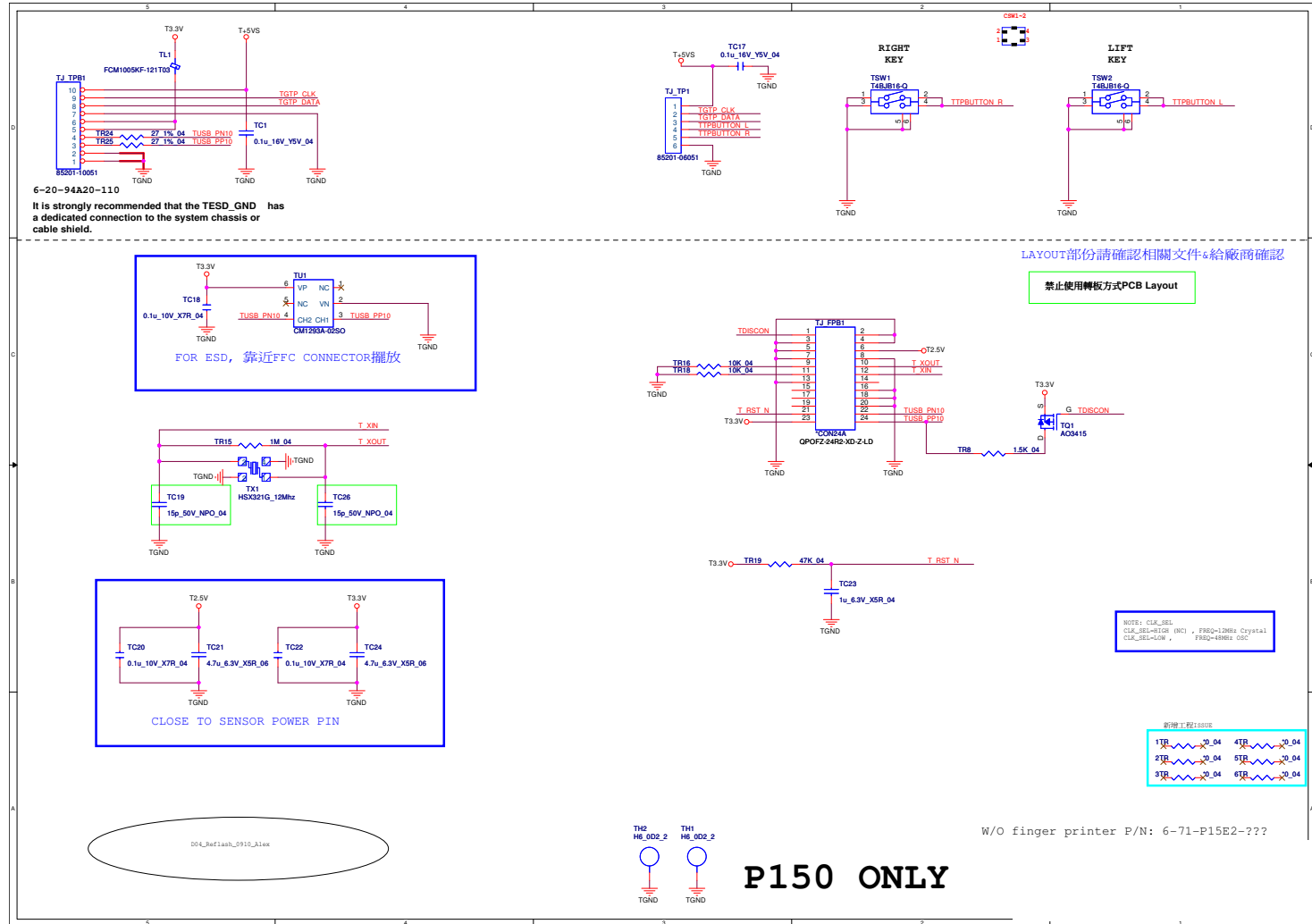


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P150 ODD Board

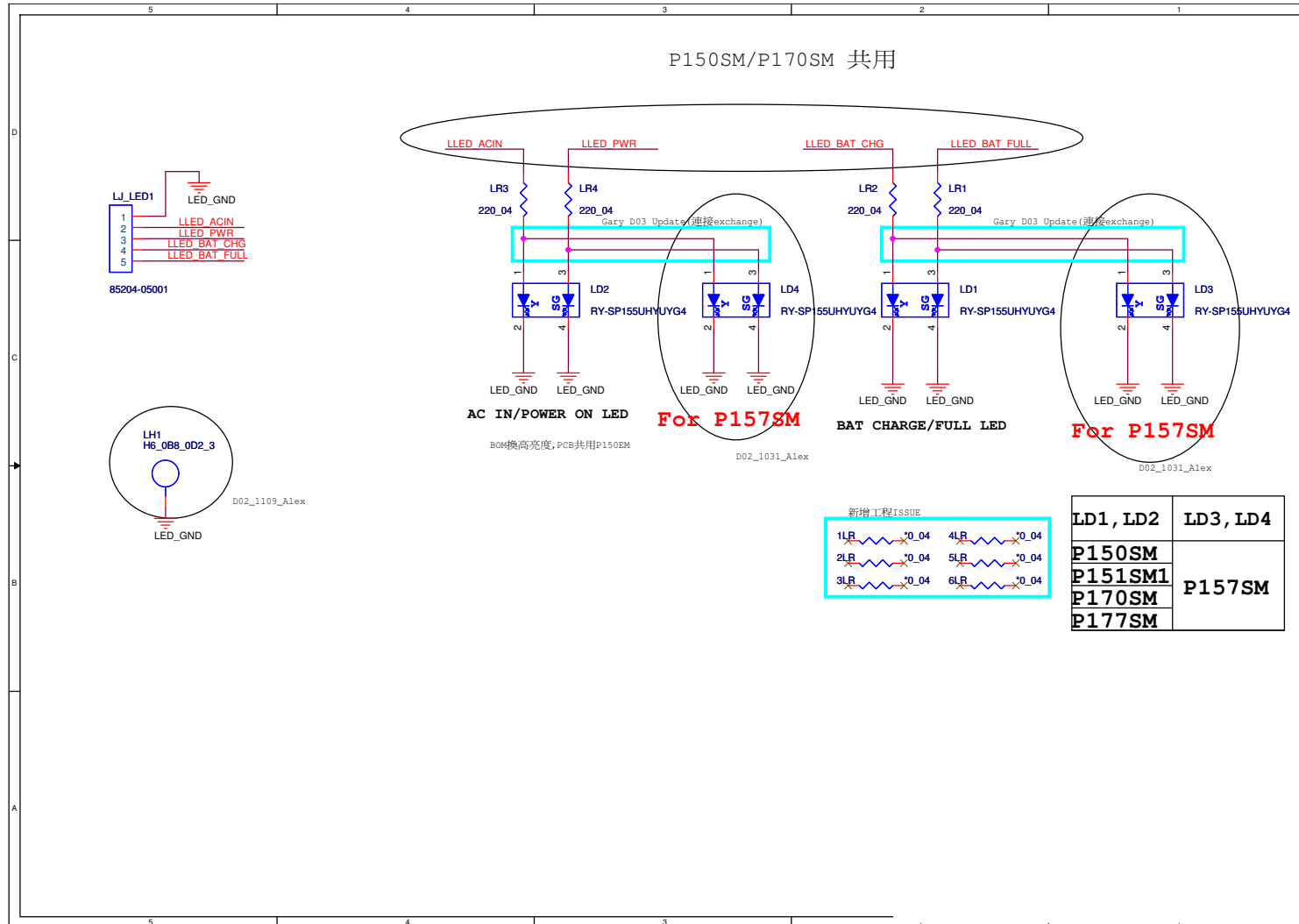
B.Schematic Diagrams

P150 Click Board

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P150 Click Board



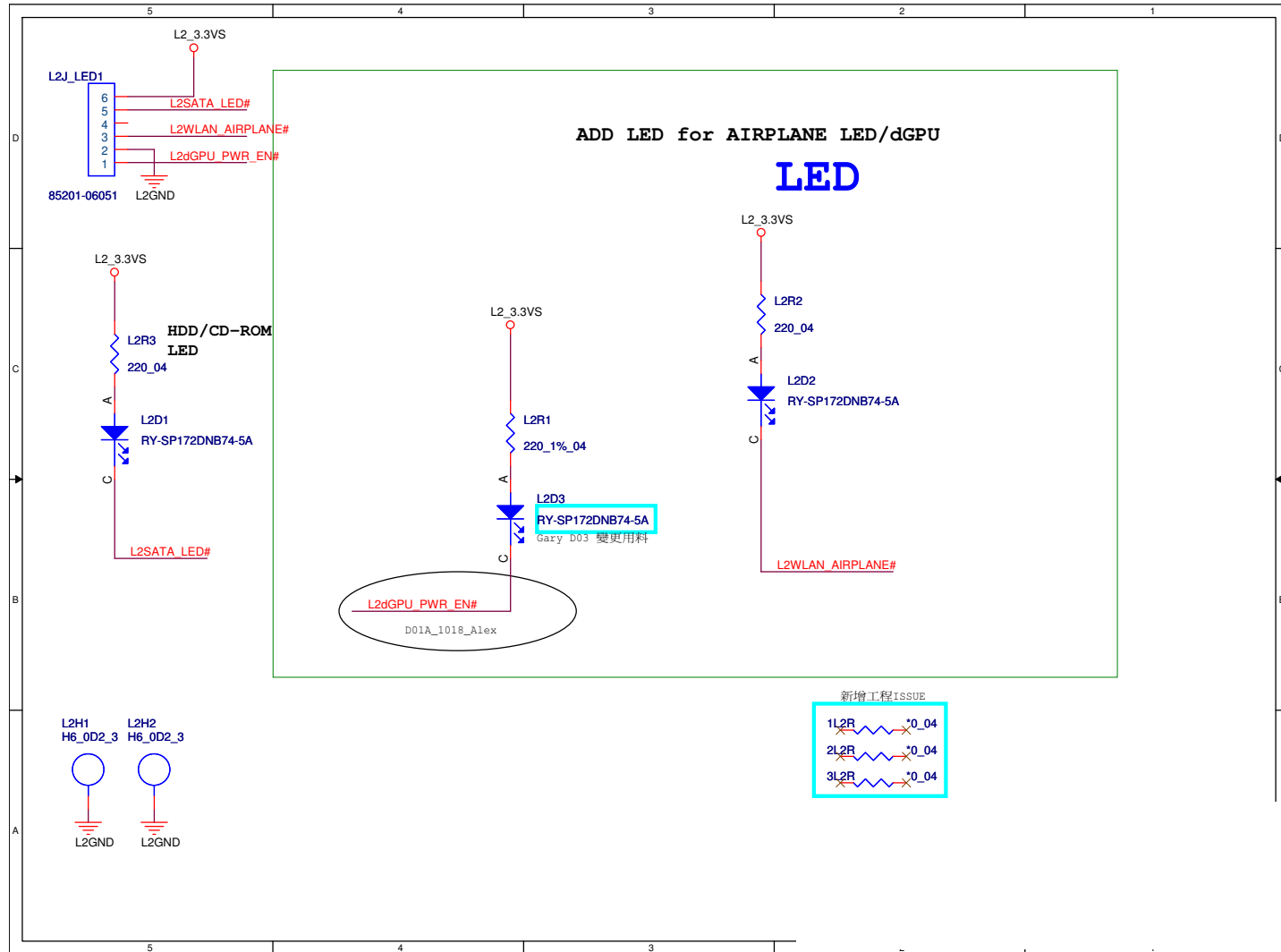
Power LED Board



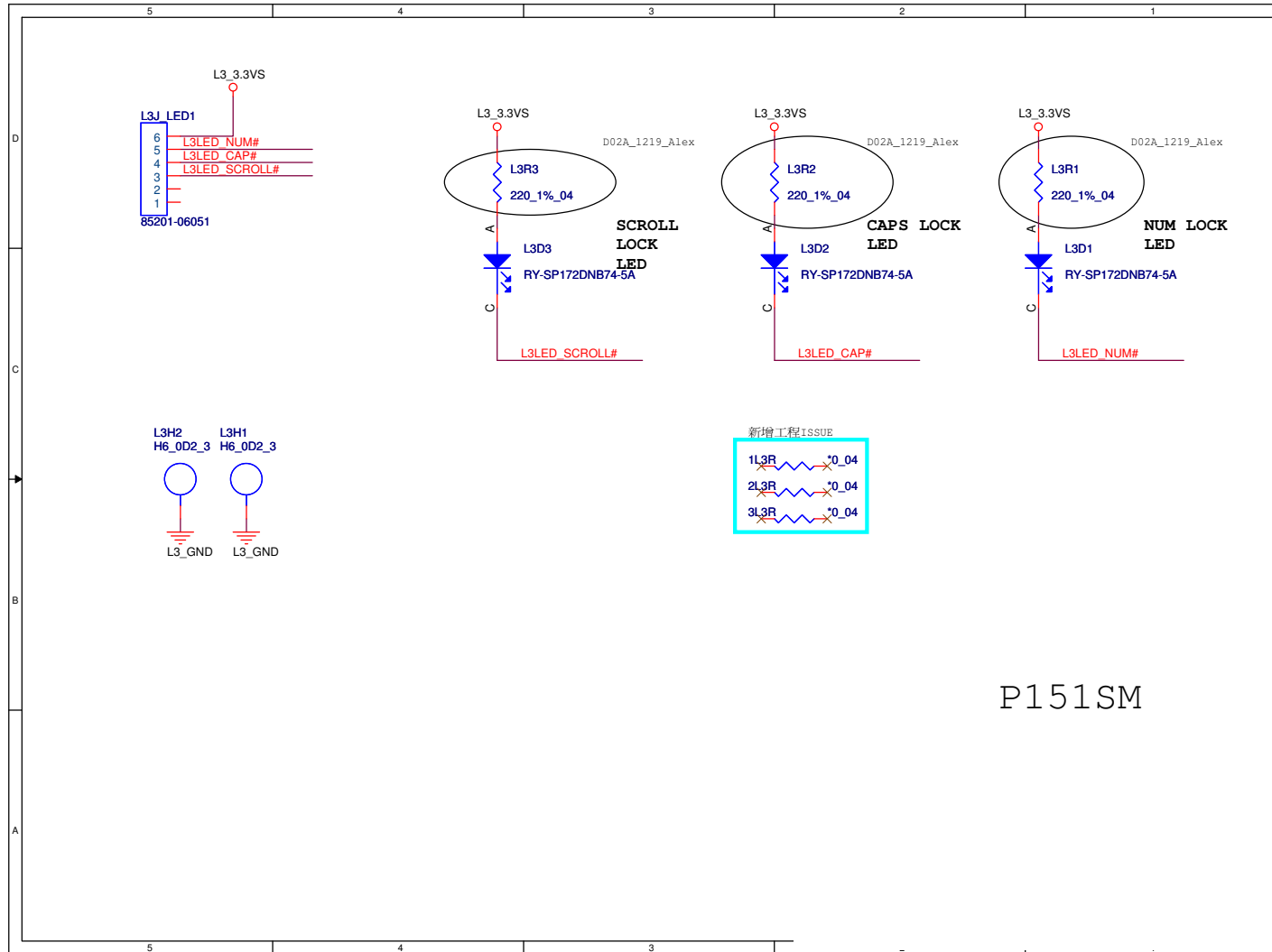
Sheet 50 of 66
Power LED Board

Function LED Board

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Function LED Board



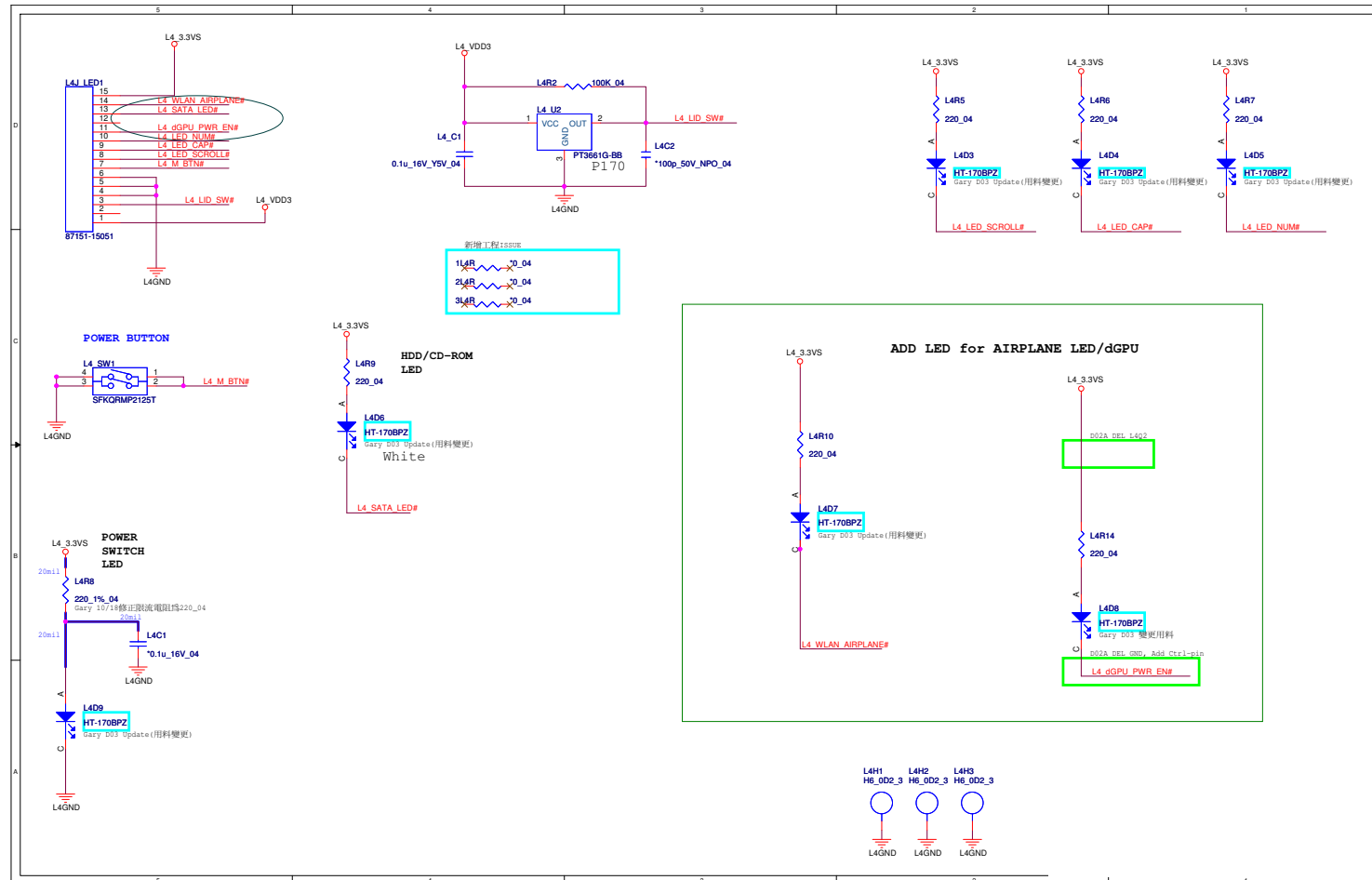
Indicatory LED Board



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Indicatory LED Board

B.Schematic Diagrams

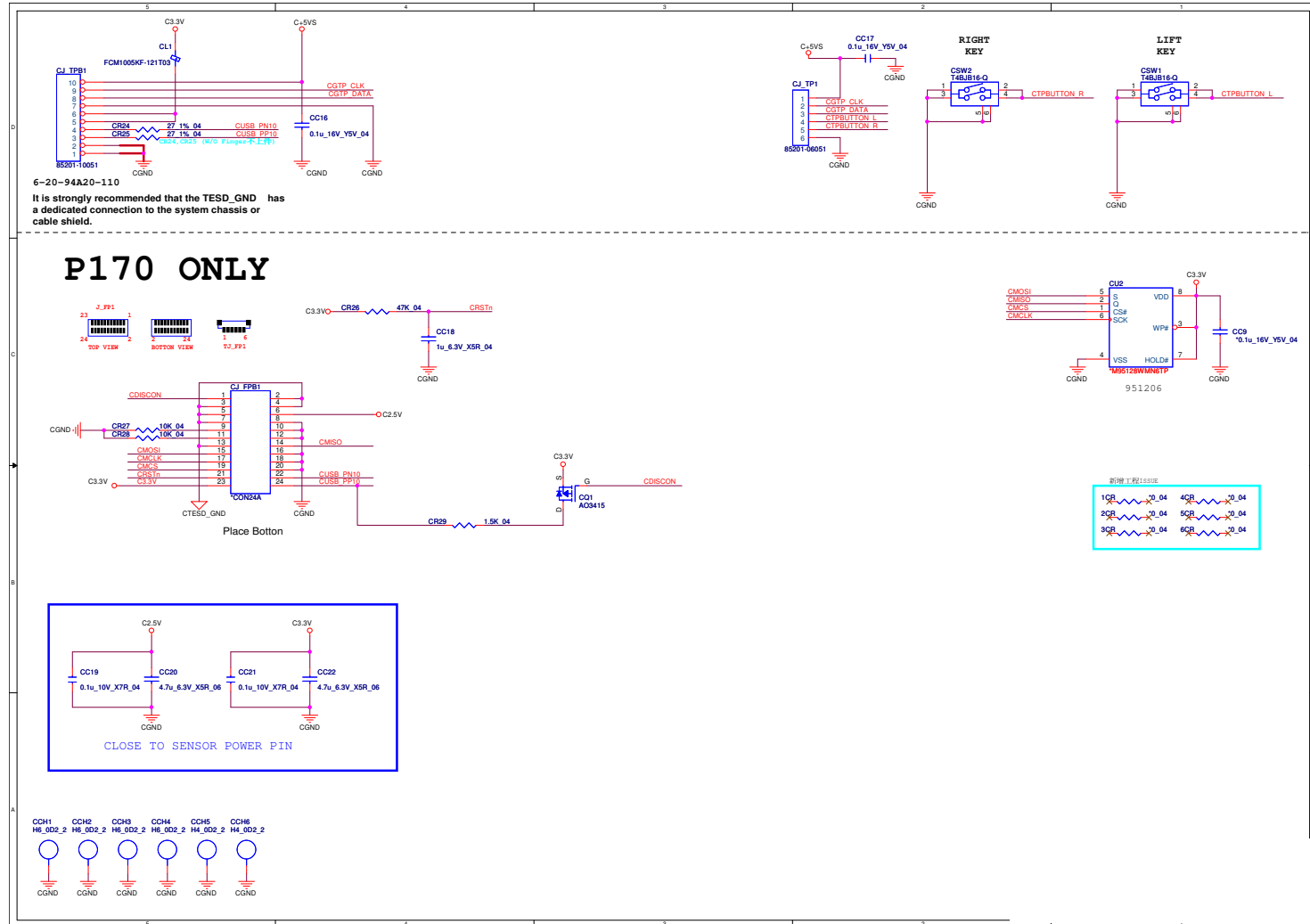
Power & LED Board



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Power & LED Board

B.Schematic Diagrams

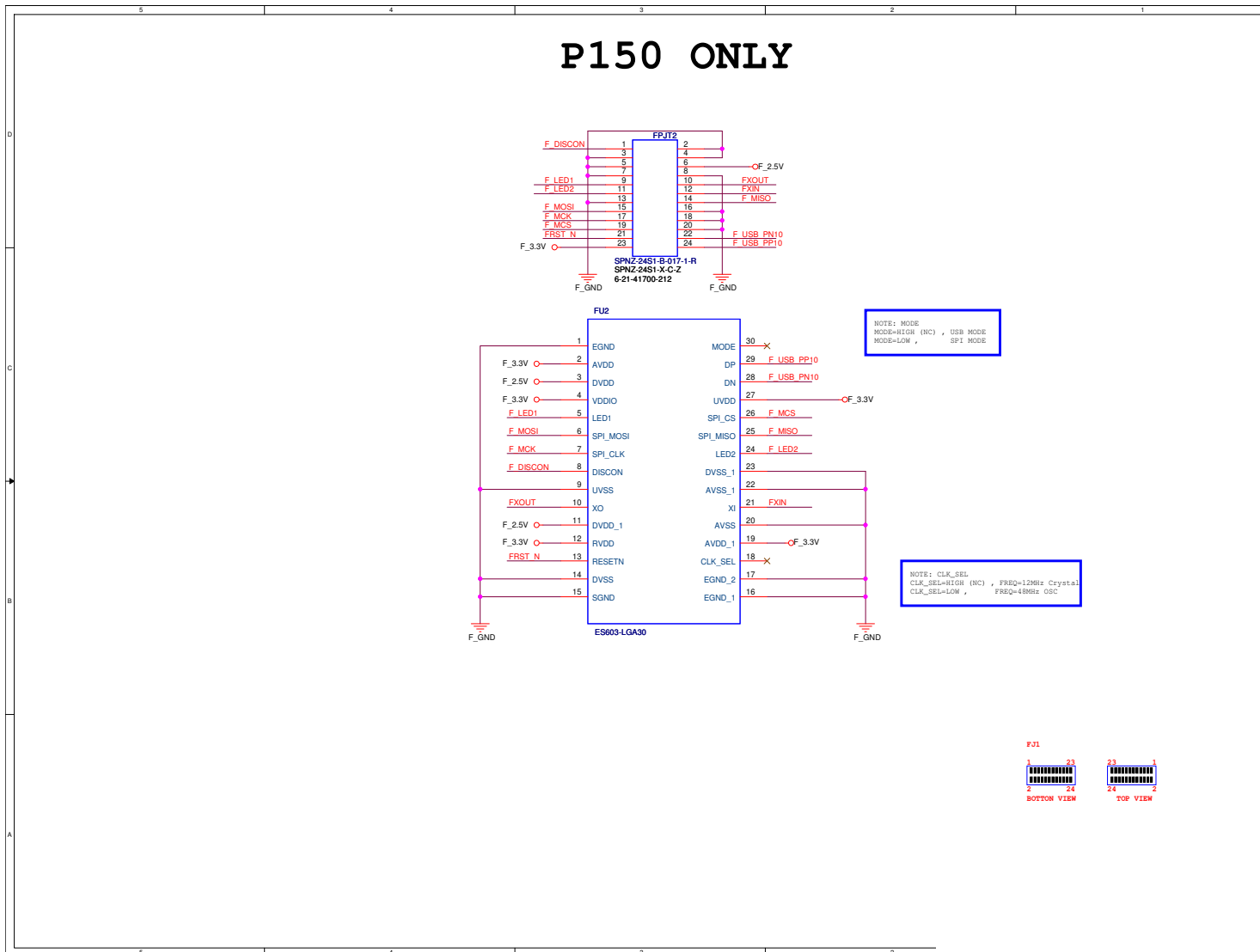
P170 Click Board



B.Schematic Diagrams

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P170 Click Board

P150 Fingerprint Board

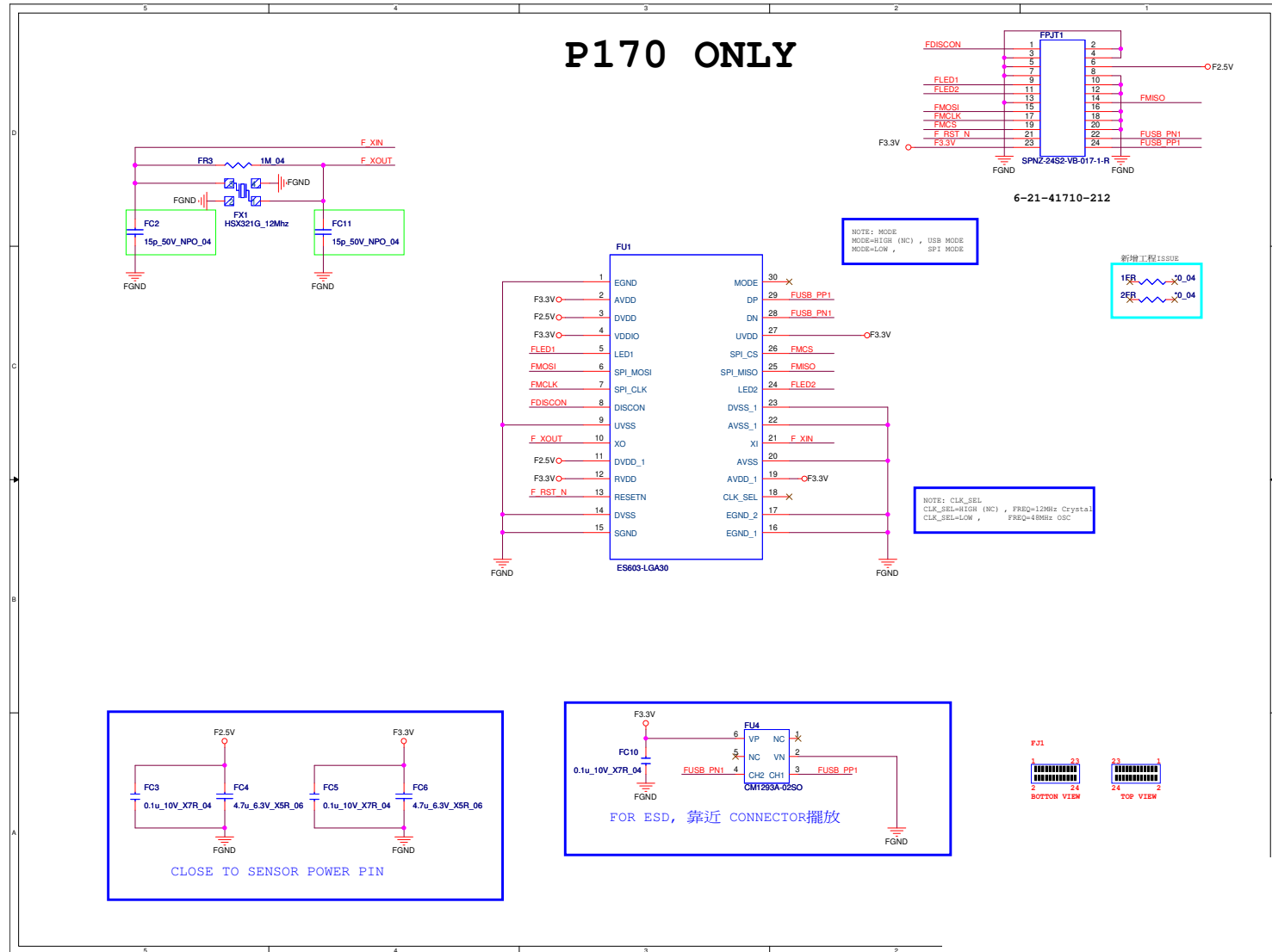


B.Schematic Diagrams

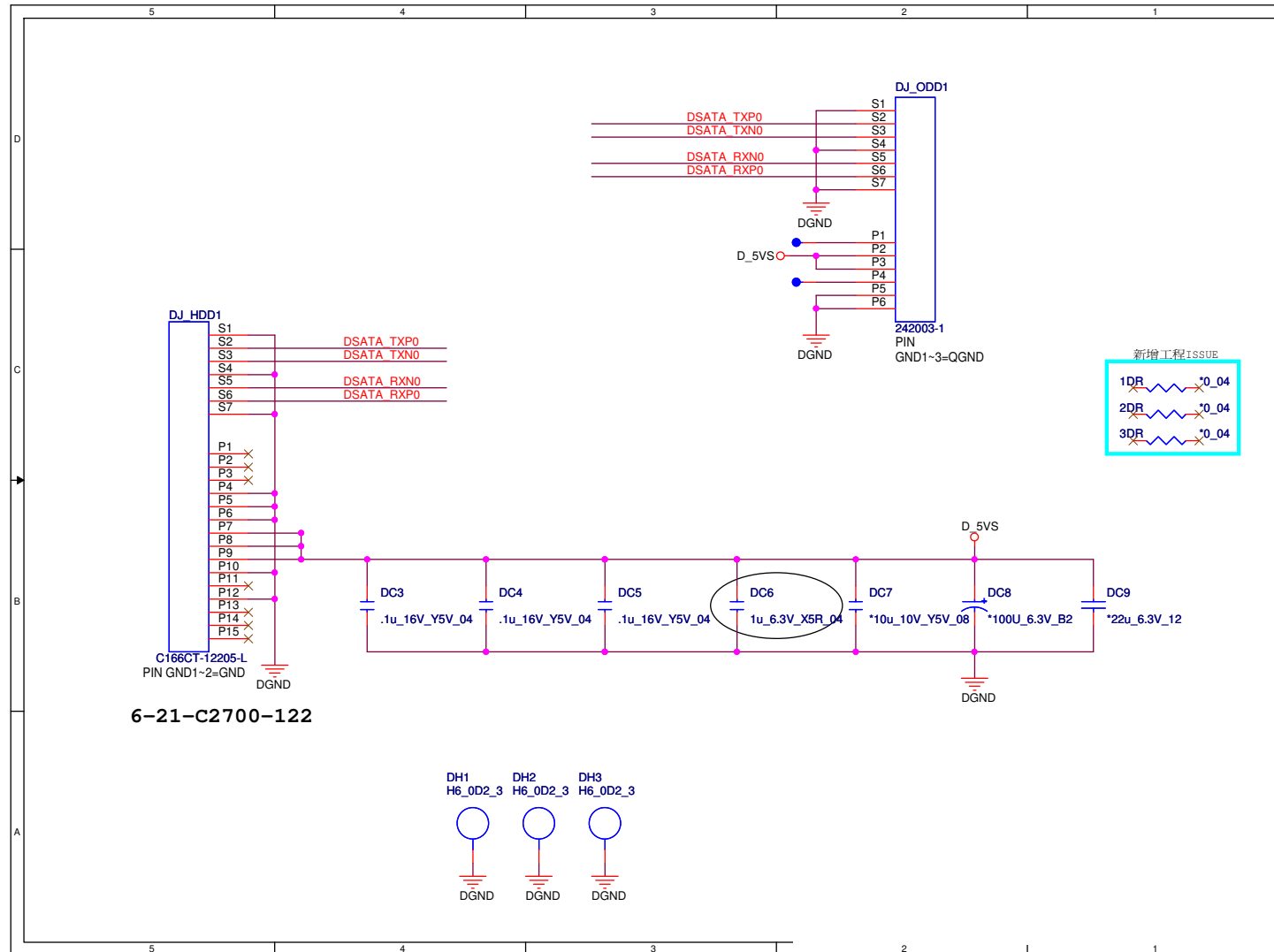
Sheet 56 of 66
 P150 Fingerprint Board

P170 Fingerprint Board

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P170 Fingerprint Board



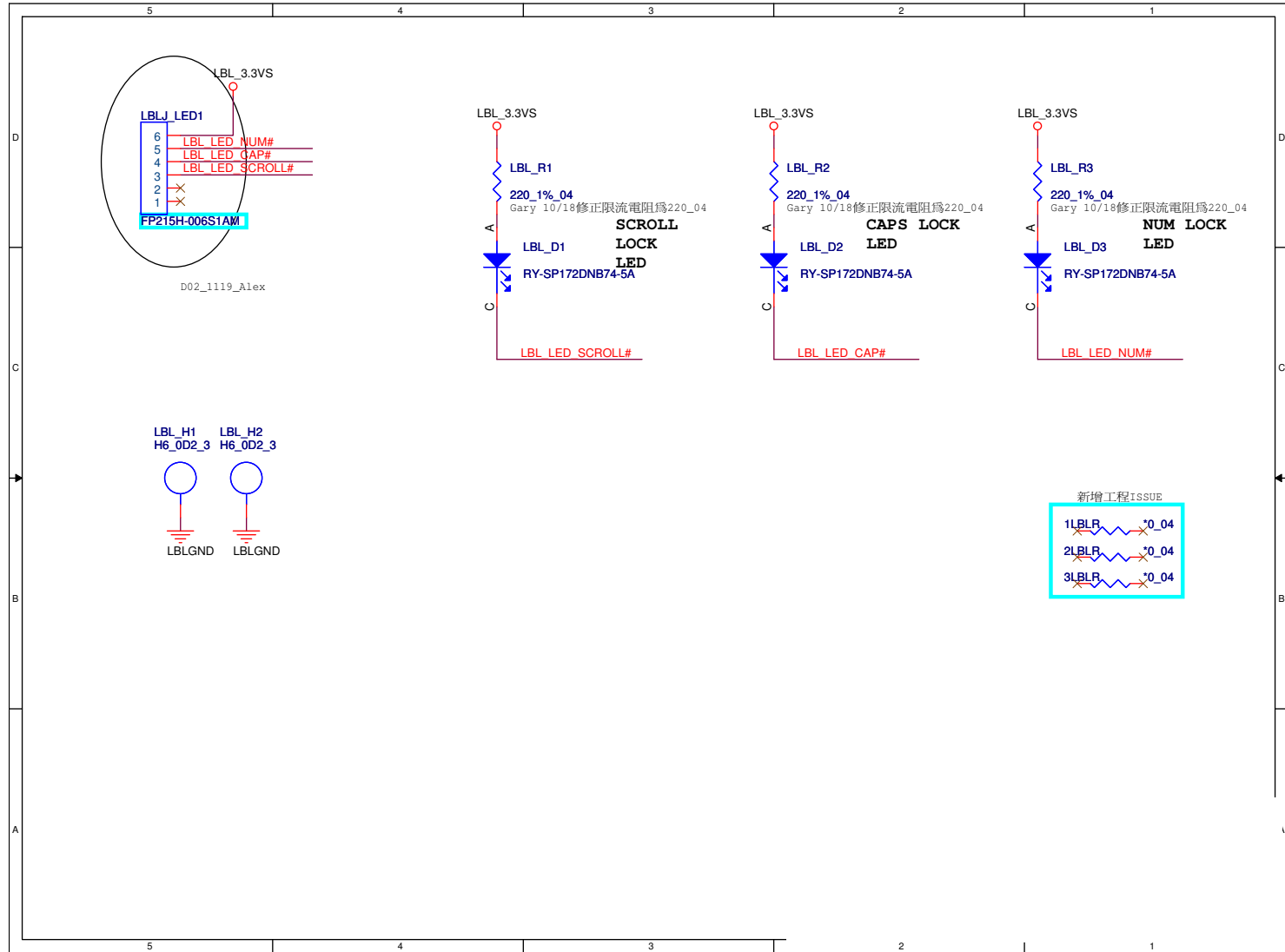
P150 2nd HDD Board



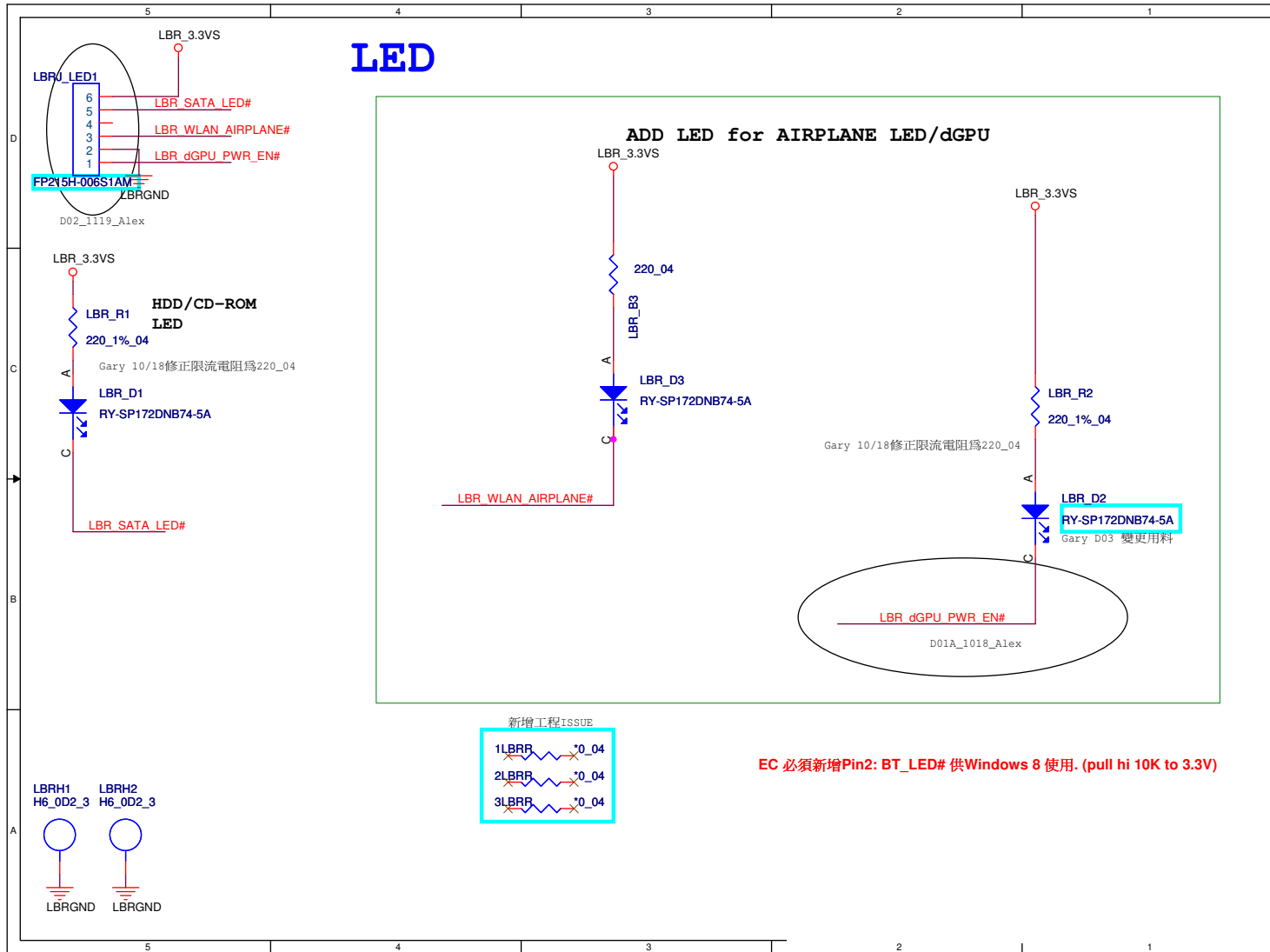
Sheet 58 of 66
P150 2nd HDD
Board

Indicator LED Board

Sheet 59 of 66
Indicator LED
Board



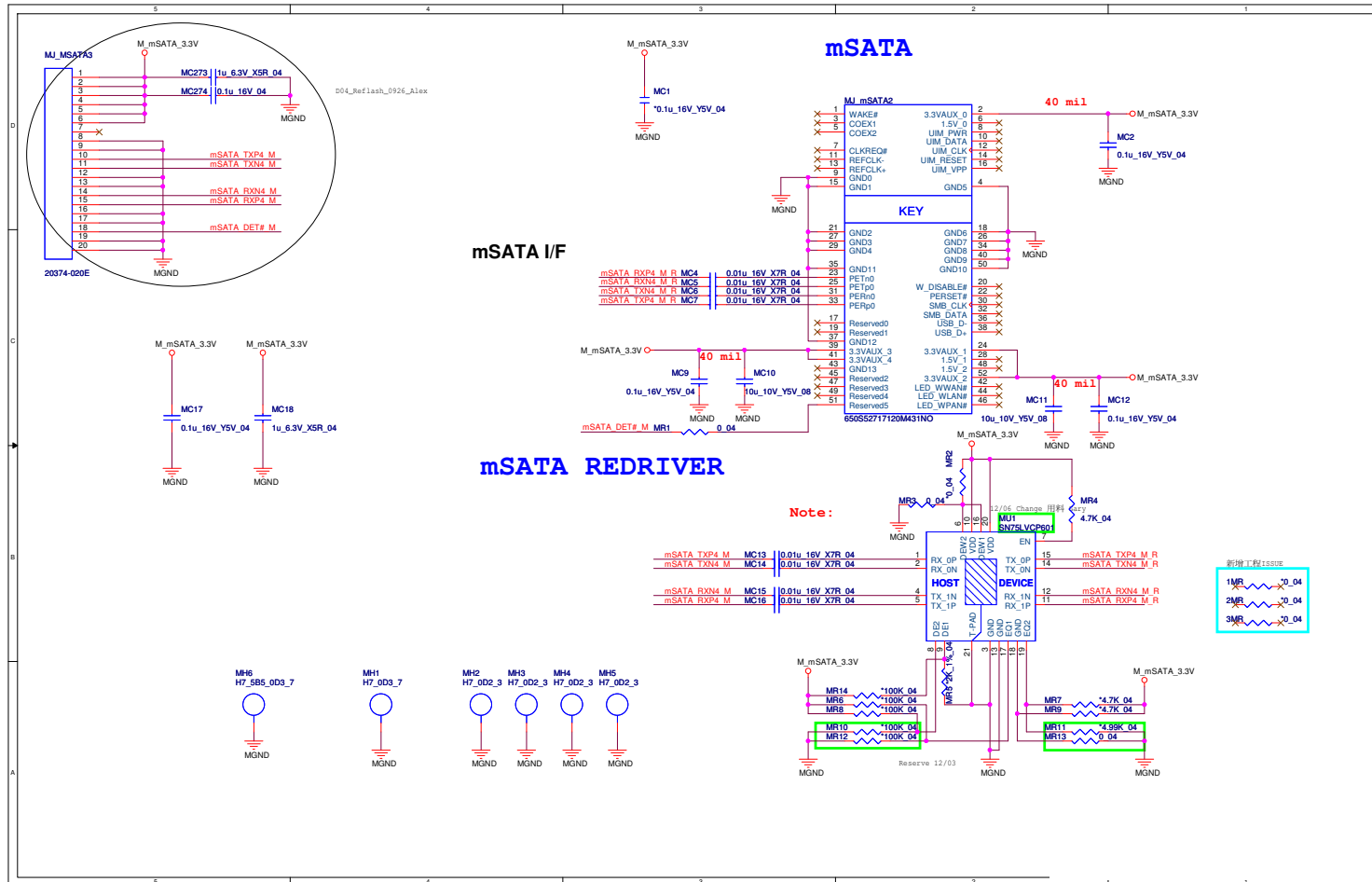
Function LED Board



Sheet 60 of 66
Function LED
Board

B.Schematic Diagrams

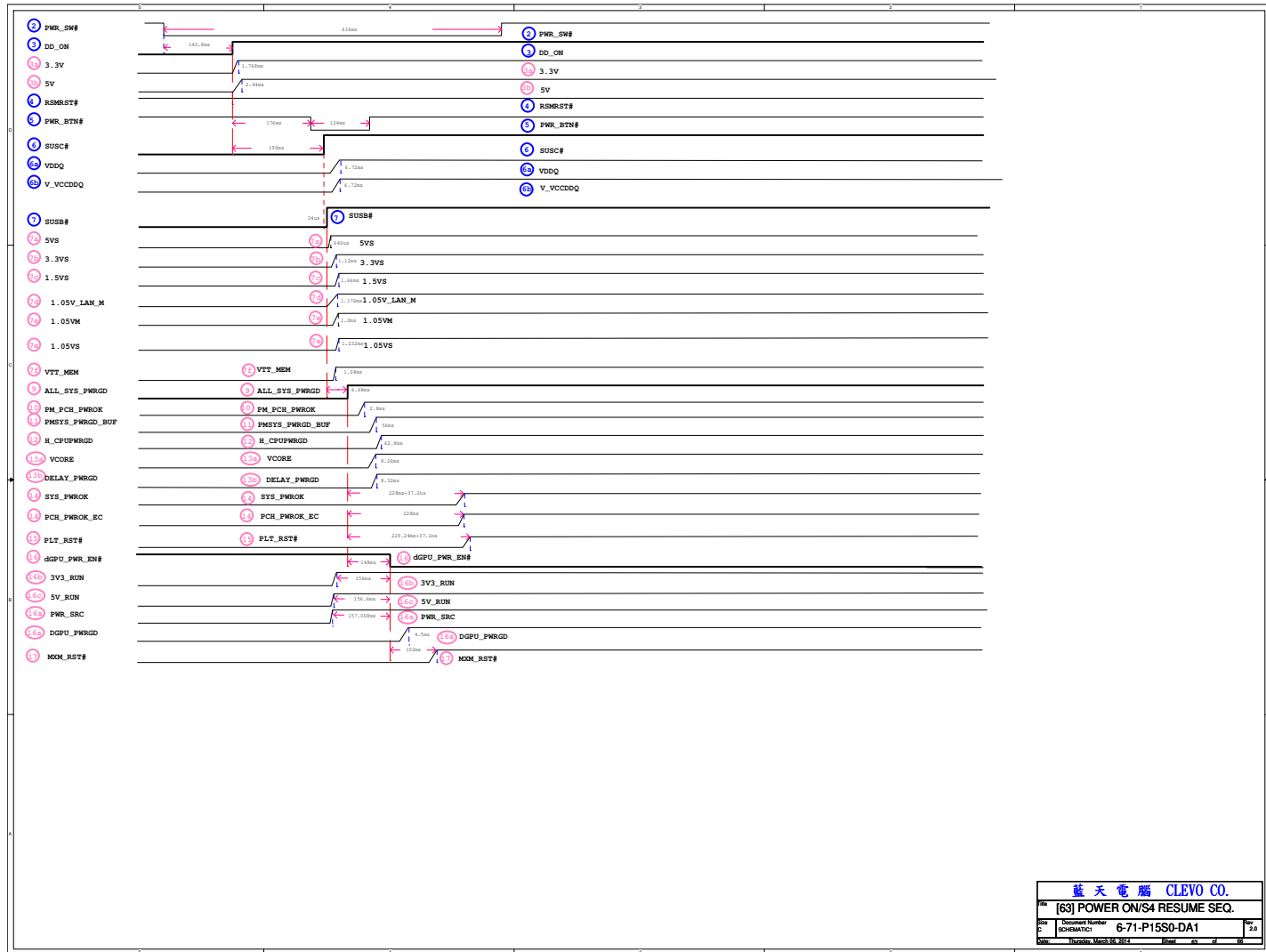
2nd mSATA Board



Sheet 62 of 66
2nd mSATA Board

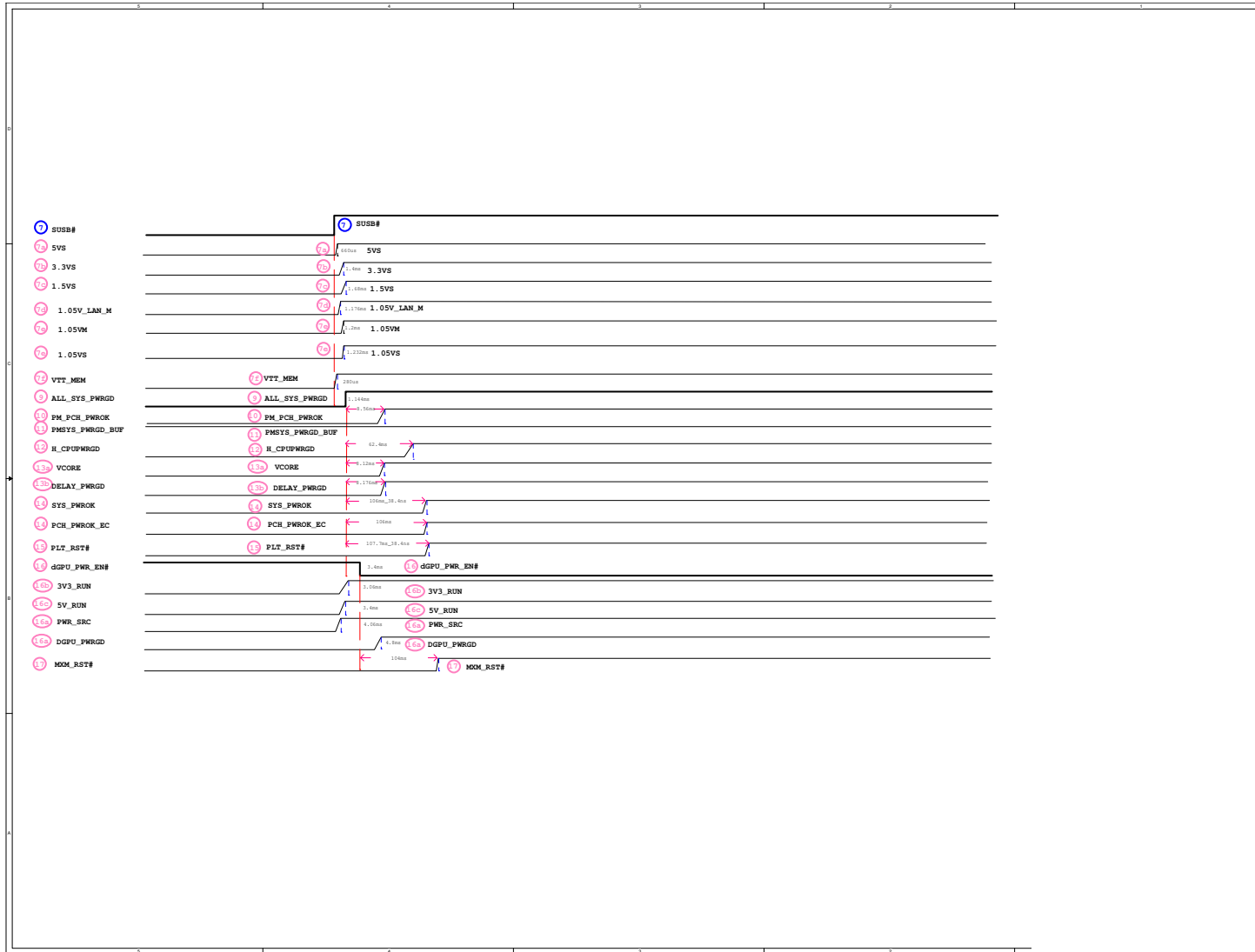
Power on / S4 Resume Seq.

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Power on /
S4 Resume Seq.



藍天電腦 CLEVO CO.			
[63] POWER ON/S4 RESUME SEQ.			
Doc. No.	Document Number	6-71-P15S0-DA1	2 of 2
Rev.	Schematic		
Rev.	Thursday, March 04 2010	Rev.	1 of 1

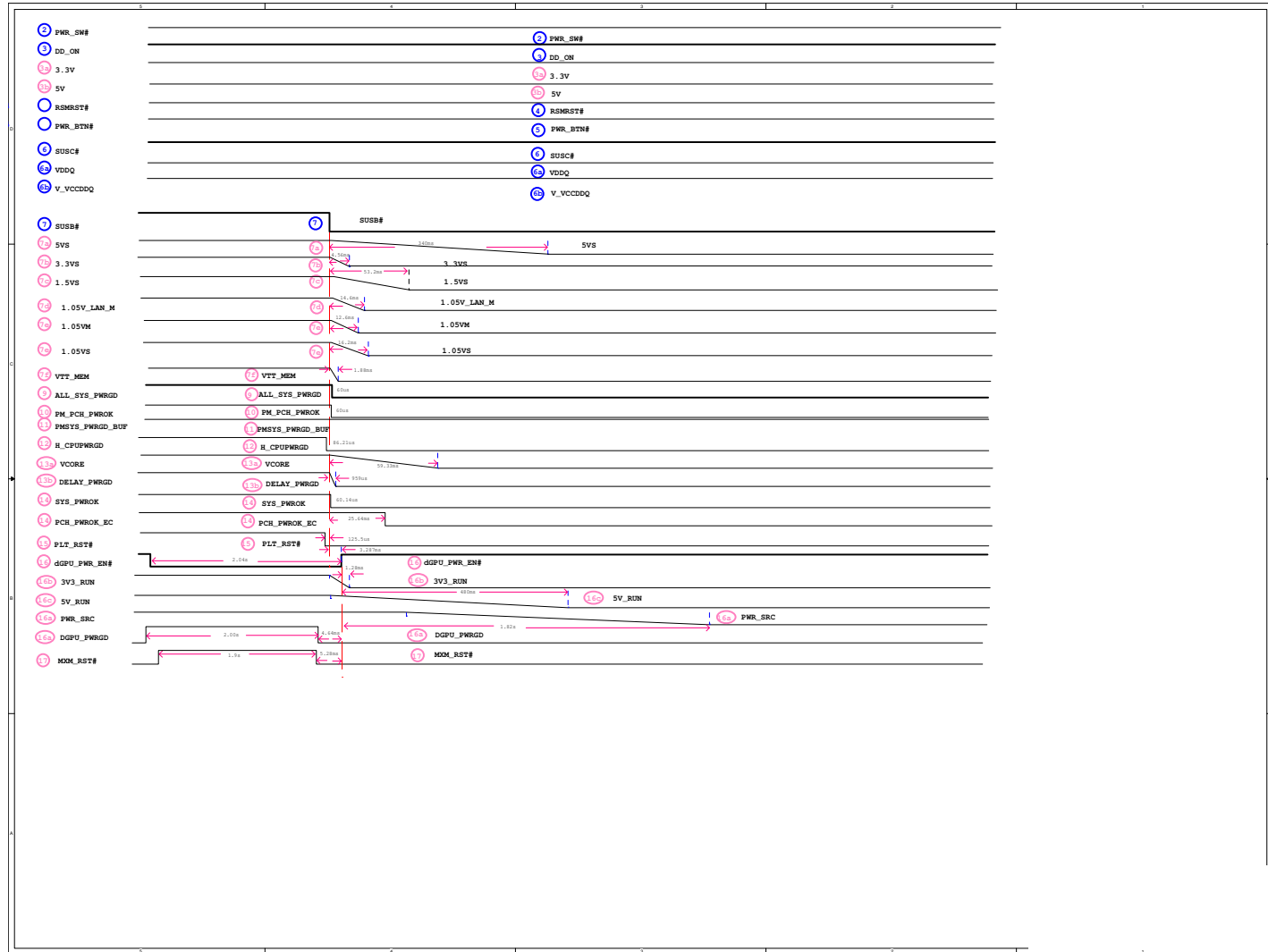
S3 Resume Seq.



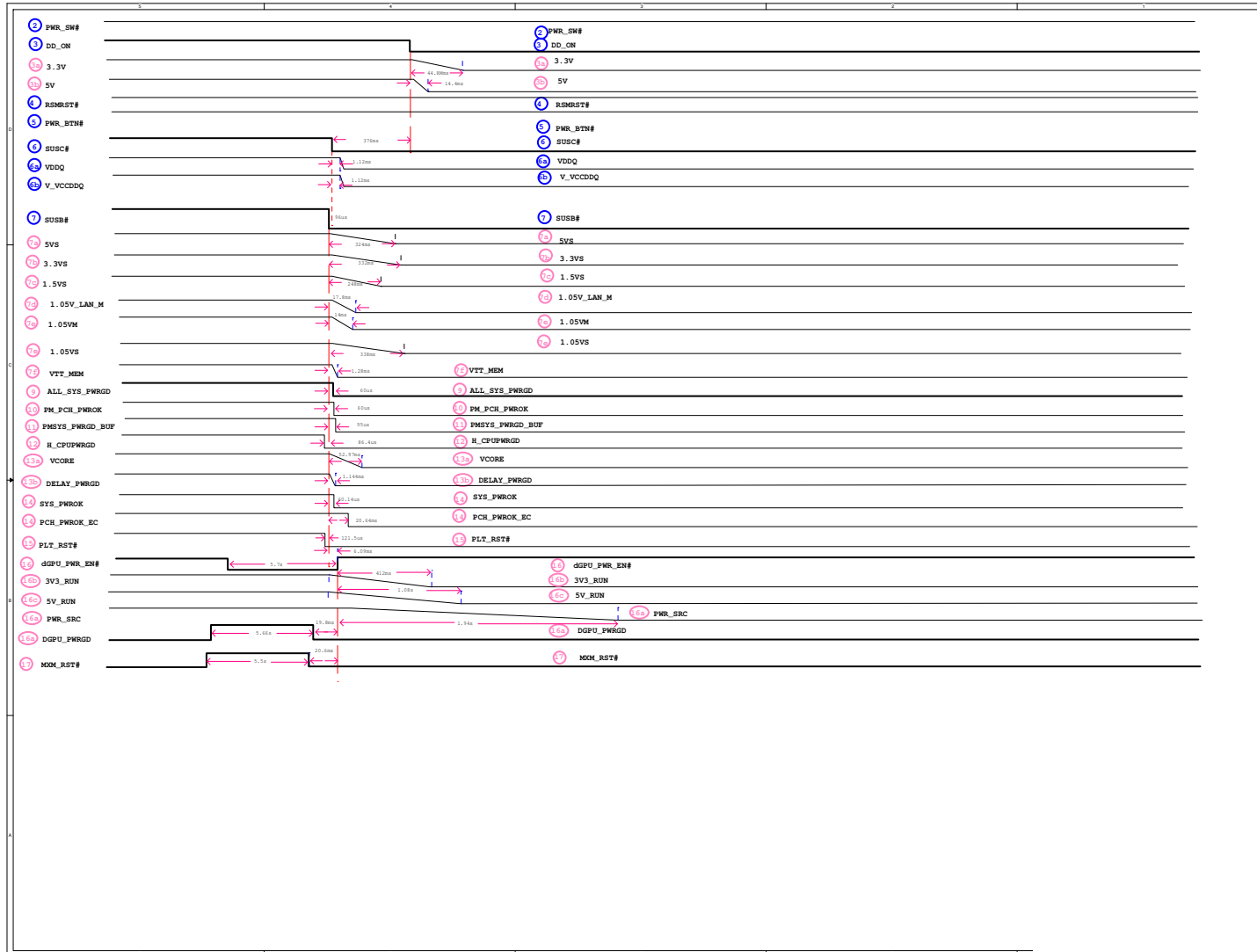
Sheet 64 of 66
S3 Resume Seq.

Into S3 Sequence

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Into S3 Sequence



Into S4 Sequence



Sheet 66 of 66
Into S4 Sequence

Schematic Diagrams

Appendix C: Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS, you must:

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

Download the BIOS

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

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

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

Set the computer to boot from the external drive

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



BIOS Version

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

You should only download BIOS versions that are **V1.01.XX or higher** as appropriate for your computer model.

Note that BIOS versions are not backward compatible and therefore **you may not downgrade your BIOS to an older version** after upgrading to a later version (e.g if you upgrade a BIOS to ver 1.01.05, you **MAY NOT** then go back and flash the BIOS to ver 1.01.04).

BIOS Update

Use the flash tools to update the BIOS

1. Make sure you are not loading any memory management programs such as HIMEM by holding the **F8** key as you see the message “**Starting MS-DOS**”. You will then be prompted to give “**Y**” or “**N**” responses to the programs being loaded by DOS. Choose “**N**” for any memory management programs.
2. You should now be at the DOS prompt e.g: DISK C:\> (C is the designated drive letter for the CD/DVD drive/USB flash drive).
3. **Type the following command** at the DOS prompt:

C:\> Flash.bat

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

Restart the computer (booting from the HDD)

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

Your computer is now running normally with the updated BIOS

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