

SERVICE MANUAL

W230SS

notebook



Notebook Computer

W230SS

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 **W230SS** series notebook PC.

The following information is included:

Chapter 1, Introduction, provides general information about the location of system elements and their specifications.
Chapter 2, Disassembly, provides step-by-step instructions for disassembling parts and subsystems and how to upgrade elements of the system.

Appendix A, Part Lists

Appendix B, Schematic Diagrams

IMPORTANT SAFETY INSTRUCTIONS

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

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

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

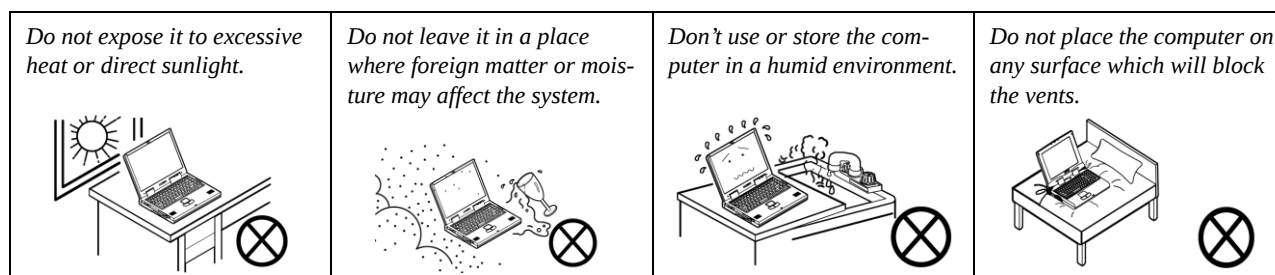
Instructions for Care and Operation

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.

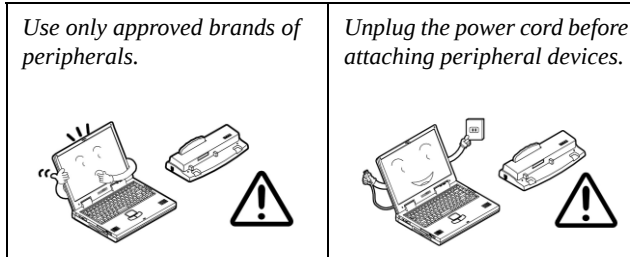


3. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



Preface

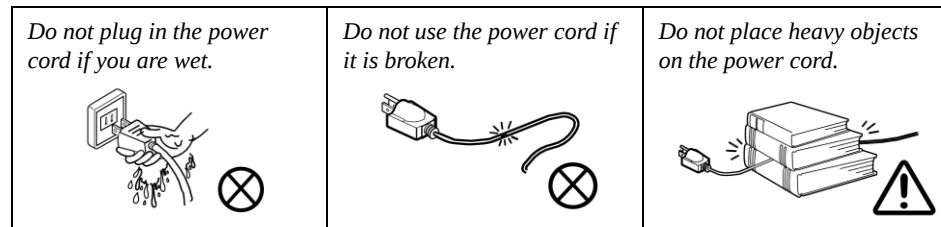
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

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



Power Safety Warning

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

Battery Precautions

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

Battery Guidelines

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

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



Battery Disposal

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

Caution

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

Battery Level

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

Preface

Related Documents

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

User's Manual on CD

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.

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **W230SS** 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 **W230SS** 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

System Specifications

Processor Options

Intel® Core™ i7 Processor

i7-4900MQ (2.80GHz)

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

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

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

i7-4600M (2.9GHz)

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

Core Logic

Intel® HM87 Chipset

BIOS

48Mb SPI Flash ROM

AMI BIOS

Memory

Two 204 Pin SO-DIMM Sockets Supporting

DDR3L 1600MHz Memory

Memory Expandable up to 16GB

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

Storage

One Changeable 2.5" 9.5mm/7.0mm (h) SATA HDD

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

LCD

13.3" (33.78cm) FHD/WQHD/QHD+

Audio

High Definition Audio Compliant Interface

2 * Built-In Speakers

Built-In Microphone

Sound Blaster™ Cinema

ANSP™ 3D sound technology on headphone output

Security

Security (Kensington® Type) Lock Slot

BIOS Password

(Factory Option) TPM 1.2

Keyboard

Illuminated "WinKey" keyboard (with embedded numeric keypad)

Pointing Device

Built-in Touchpad

Video Adapter

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

2GB GDDR3 Video RAM on board

Microsoft DirectX® 11.1 Compatible

Interface

One USB 2.0 Port

Three USB 3.0 Ports (Including one AC/DC Powered USB 3.0 Port)

One HDMI-Out Port

One External Monitor Port

One Headphone-Out Jack

One Microphone-In Jack

One RJ-45 LAN Jack

One DC-in Jack

Mini Card Slots

Slot 1 for **WLAN** Module or **WLAN and Bluetooth** Combo Module

Slot 2 for mSATA **SSD**

(Factory Option) Slot 3 for **3G** Module or mSATA **SSD**

Card Reader

Embedded Multi-In-1 Push-Push Card Reader

MMC (MultiMedia Card) / RS MMC

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

Communication

Built-In Gigabit Ethernet LAN

1.0M HD PC Camera Module

(Factory Option) 2.0M FHD PC Camera Module

(Factory Option) 3G Mini-Card Module

WLAN/Bluetooth Half Mini-Card Modules:

(Factory Option) Intel® Wireless-AC 7260 Wireless LAN (802.11a/c) + Bluetooth 4.0

(Factory Option) Intel® Wireless-N 7260 Wireless LAN (802.11a/g/n) + Bluetooth 4.0

(Factory Option) Intel® Wireless-N 7260 Wireless LAN (802.11b/g/n) + Bluetooth 4.0

(Factory Option) Third-Party Wireless LAN (802.11b/g/n)

(Factory Option) Third-Party Wireless LAN (802.11b/g/n) + Bluetooth 4.0

Environmental Spec

Temperature

Operating: 5°C - 35°C

Non-Operating: -20°C - 60°C

Relative Humidity

Operating: 20% - 80%

Non-Operating: 10% - 90%

Power

Full Range AC/DC Adapter

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

DC Output: 19.5V, 6.15A (120W)

6 Cell Smart Lithium-Ion Battery Pack, 62.16WH

Dimensions & Weight

330mm (w) * 227mm (d) * 31.9mm (h)

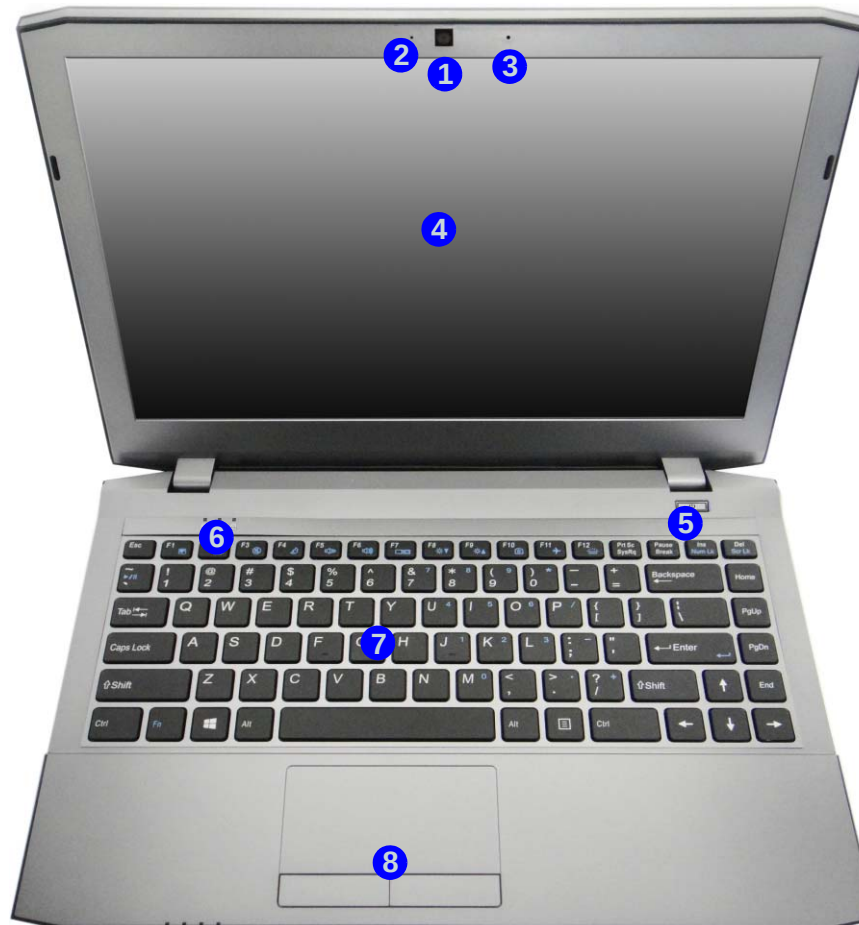
2.0kg (Barebone System with Battery)

Introduction

Figure 1
Top View

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

External Locator - Front View with LCD Panel Open



External Locator - Front & Right side Views



Figure 2
Front Views

1. LED Indicators
2. Vent
3. Multi-in-1 Card Reader



Figure 3
Right Side Views

1. USB 3.0 Ports
2. HDMI-Out Port
3. External Monitor Port
4. RJ-45 LAN Jack
5. DC-In Jack
6. Security Lock Slot

Introduction

External Locator - Left Side & Rear View

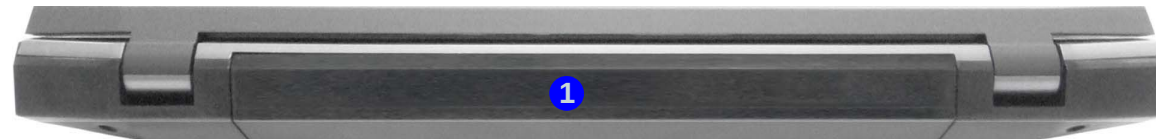
Figure 4
Left Side View

1. Vent
2. USB 2.0 Port
3. Headphone-Out Jack
4. Microphone-In Jack



Figure 5
Rear View

1. Battery



External Locator - Bottom View

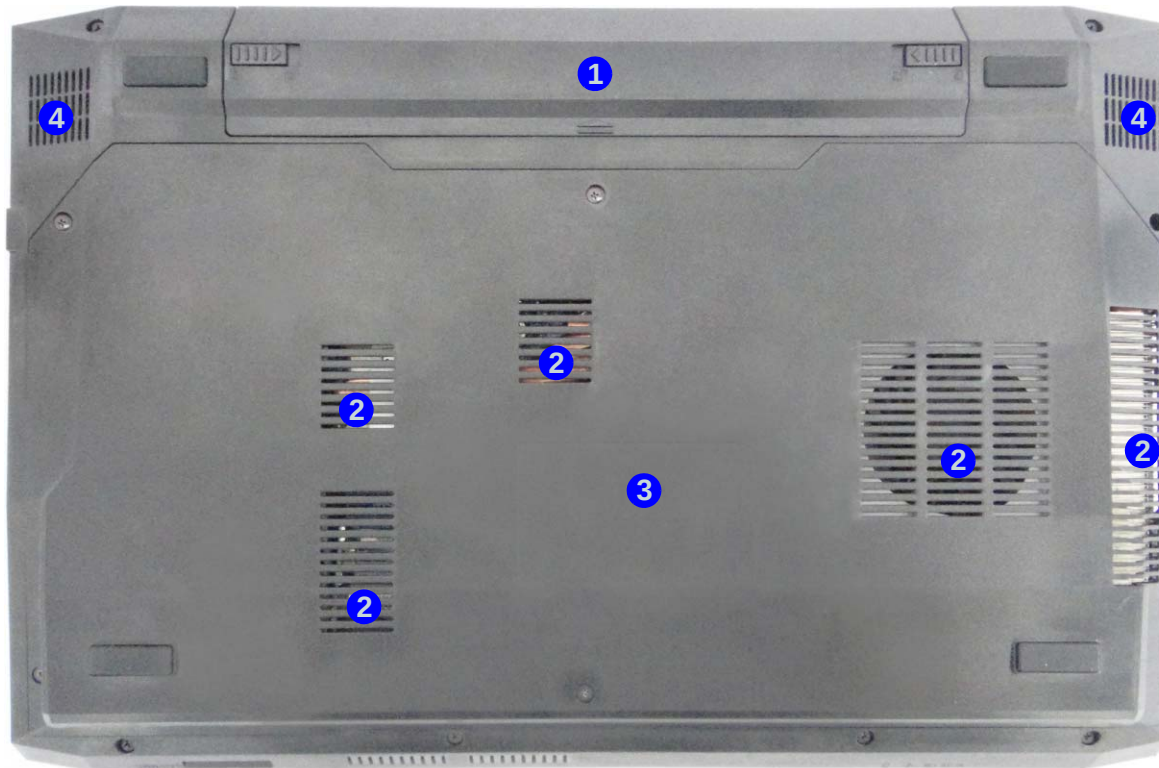


Figure 6
Bottom View

1. Battery
2. Vent
3. Component Bay Cover
4. Speakers



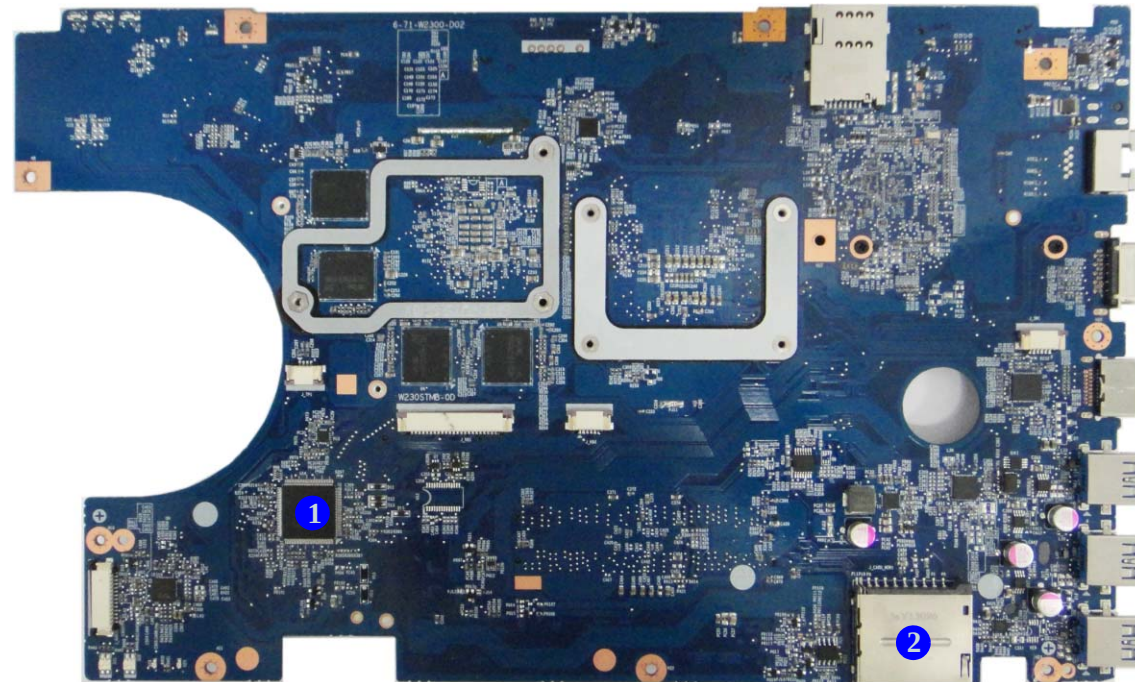
Overheating

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

Figure 7
Mainboard Top
Key Parts

1. KBC

Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

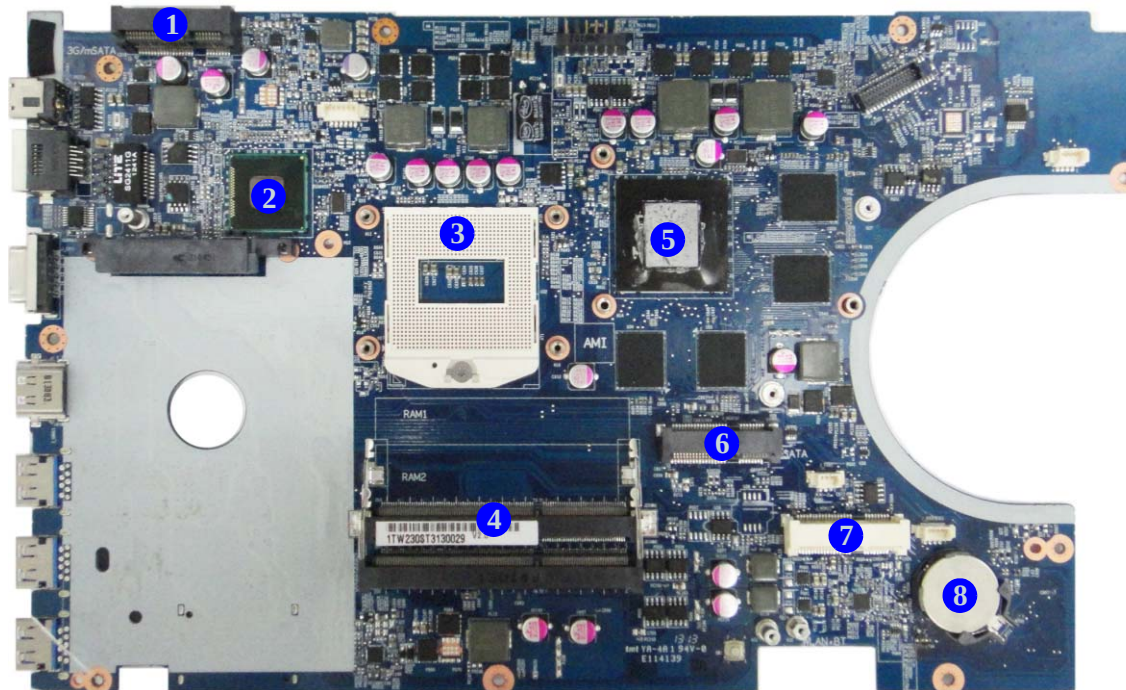


Figure 8
**Mainboard Bottom
Key Parts**

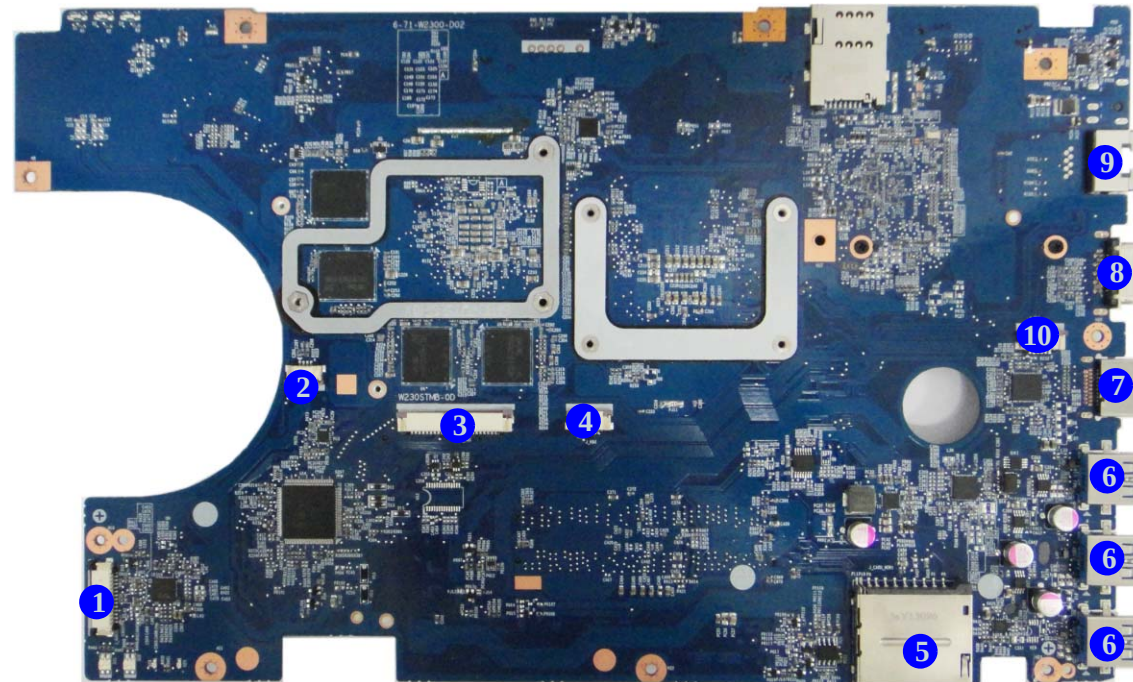
1. Mini-Card Connector (3G/MSATA Module)
2. Controller
3. CPU Socket
4. Memory Slots DDR3 So-DIMM
5. VGA NVidia
6. Mini-Card Connector (MSATA Module)
7. Mini-Card Connector (WLAN Module)
8. CMOS Battery

Introduction

Figure 9
**Mainboard Top
Connectors**

1. Audio Cable Connector
2. Touchpad Connector
3. Keyboard Cable Connector
4. Keyboard LED Connector
5. Multi-in-1 Card Reader
6. USB 3.0 Ports
7. HDMI-Out Port
8. External Monitor Port
9. RJ-45 LAN Jack
10. Power Switch Cable Connector

Mainboard Overview - Top (Connectors)



Mainboard Overview - Bottom (Connectors)

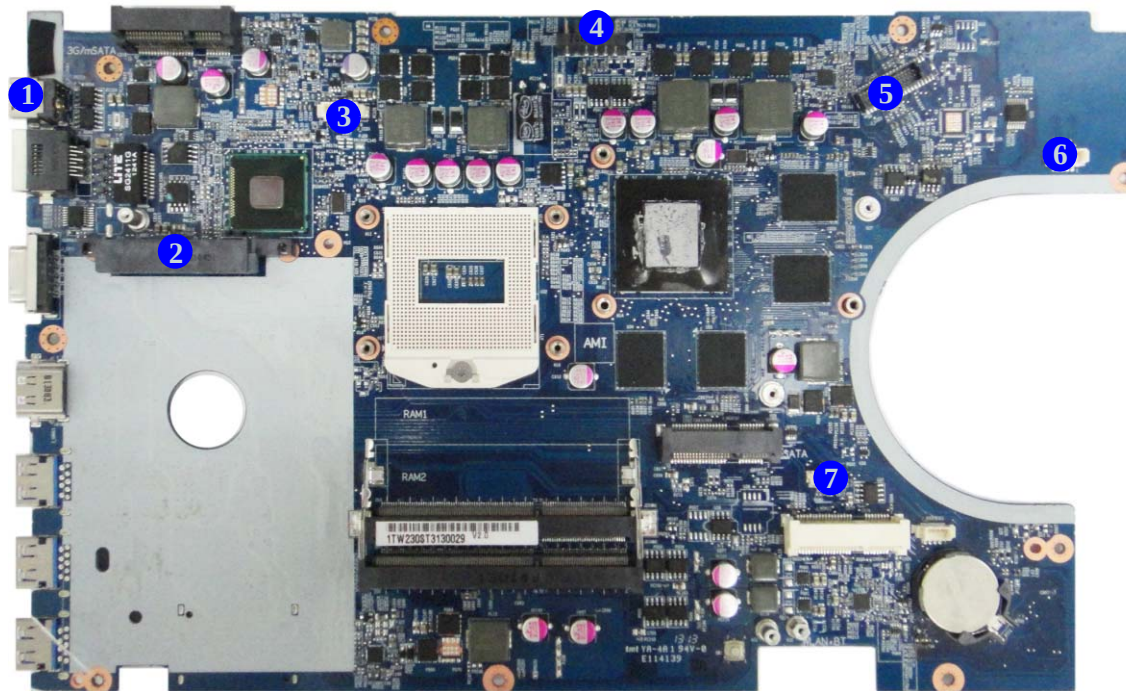


Figure 10
**Mainboard Bottom
Connectors**

1. DC-In Jack
2. HDD1 Connector
3. CCD Cable
Connector
4. Battery Connector
5. LCD Cable
Connector
6. Speaker Cable
Connector
7. Fan Cable
Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the **W230SS** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

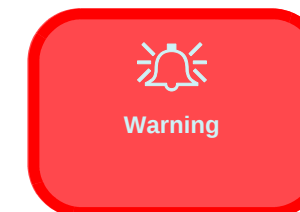
We suggest you completely review any procedure before you take the computer apart.

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-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.

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). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

Disassembly Steps

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

To remove and install the Battery:

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

To remove the HDD:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 7](#)

To remove and install the Processor:

1. Remove the battery [page 2 - 5](#)
2. Remove the Processor [page 2 - 10](#)
3. Install the Processor [page 2 - 12](#)

To remove the Keyboard:

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

To remove the System Memory:

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

To remove the 3G Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the 3G module [page 2 - 15](#)

To remove the WLAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the WLAN module [page 2 - 16](#)

To remove the mSATA Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the mSATA module [page 2 - 17](#)

To remove the CCD Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the CCD module [page 2 - 18](#)

Removing and Installing the Battery

Battery Removal Procedure

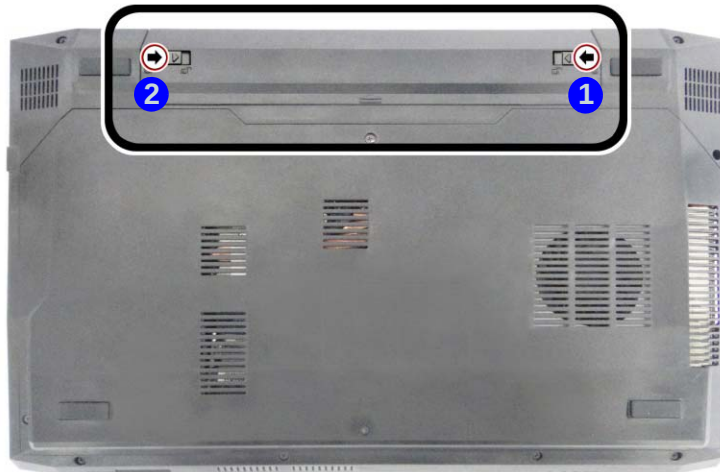
If you are confident in undertaking upgrade procedures yourself, for safety reasons it is best to remove the battery.

1. Turn the computer off, and turn it over.
2. Slide the latch **1** in the direction of the arrow.
3. Slide the latch **2** in the direction of the arrow.
4. While holding the latch **2**, slide the battery **3** (*Figure b*) out of the compartment.

Figure 1
Battery Removal

- a. Slide the latch **1** in the direction of the arrow, and slide the latch **2** in the direction of the arrow.
- b. Slide the battery out of the bay as indicated.

a.



b.



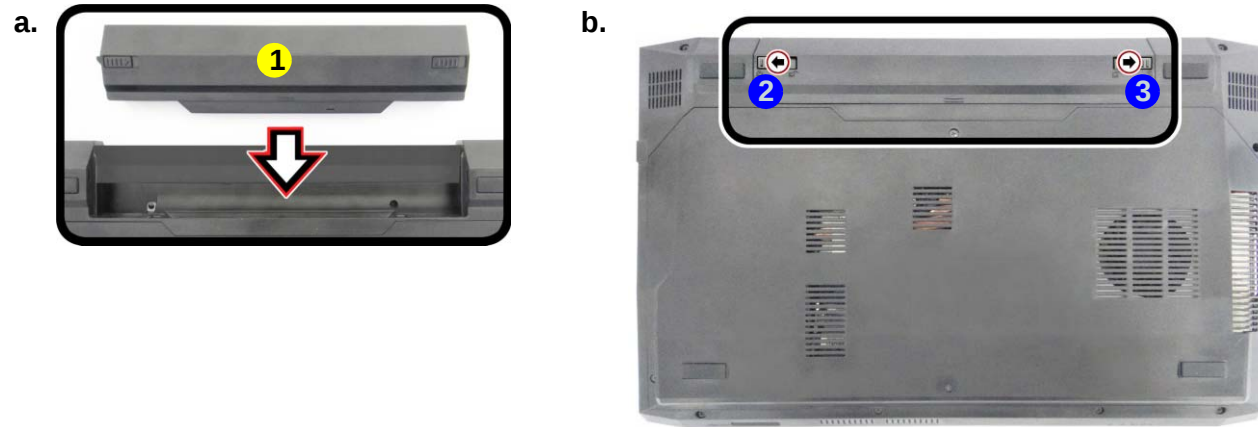
3. Battery

Disassembly

Figure 2

Battery Installation

- a. Slide the battery straight into the compartment.
 - b. Lock the battery as indicated.
1. Slide the battery **1** straight into the compartment (note that there are grooves on the side of the battery which should align up with the battery compartment).
 2. Lock the battery in place by sliding the latches in the direction of arrows **2** & **3**.



1. Battery

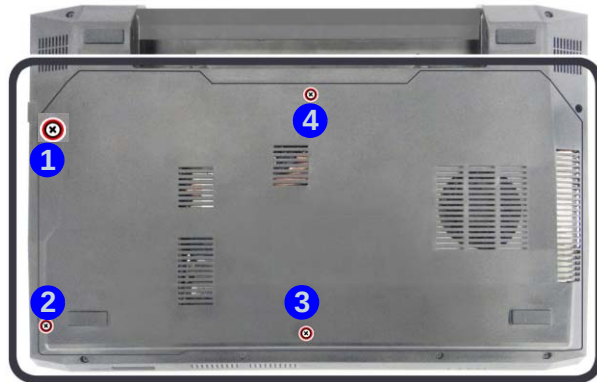
Removing the Hard Disk Drive

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

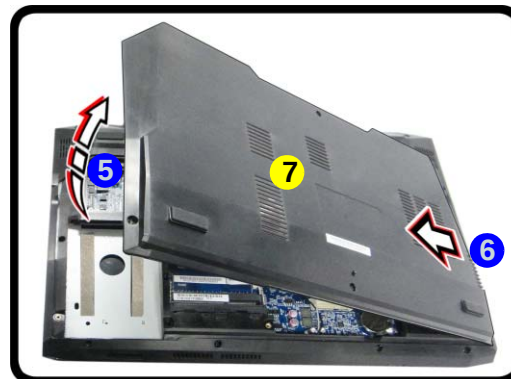
Hard Disk Upgrade Process

1. Turn off the computer, and turn it over and remove the battery ([page 2 - 5](#)).
2. Locate the hard disk bay cover and remove screws ① - ④.
3. Lift and pull the bay cover in the direction of the arrow ⑤ and ⑥.
4. Remove the bay cover ⑦.

a.



b.



c.

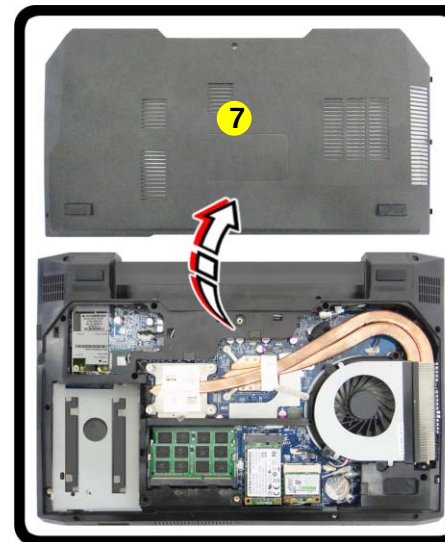


Figure 3
**HDD Assembly
Removal**

- a. Remove the screws.
- b. Lift and pull the bay cover.
- c. Remove the cover.



7. Component Bay
Cover

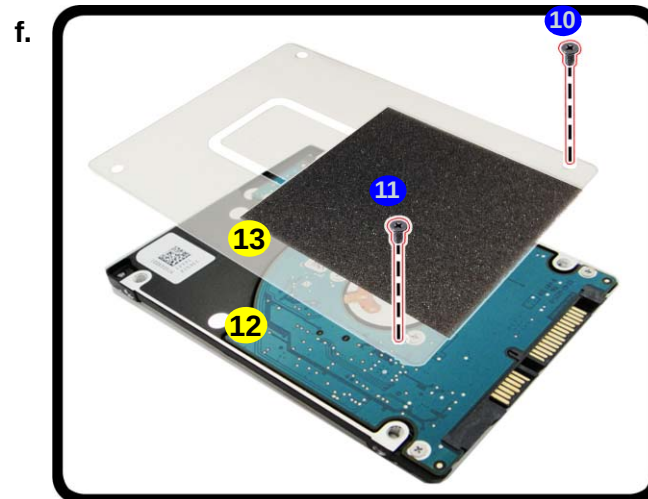
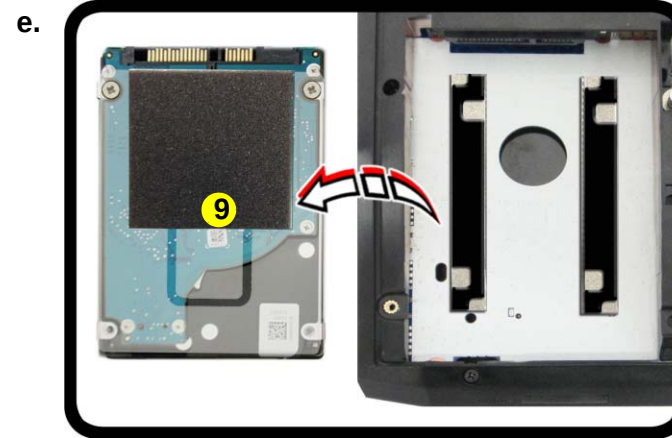
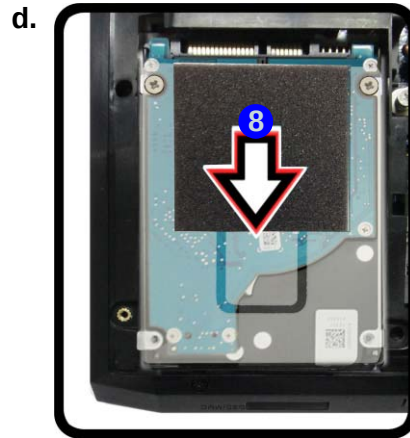
- 4 Screws

Disassembly

Figure 4 HDD Assembly Removal (cont'd.)

- d. Slide the hard disk assembly out.
- e. Lift the hard disk assembly out of the computer.
- f. Remove the screws to release the hard disk from the mylar.

5. Grip the tab and slide the hard disk in the direction of arrow **8** (Figure 4e).
6. Lift the hard disk assembly **9** out of the computer.
7. Remove screws **10** - **11**.
8. Separate the hard disk **12** and hard disk mylar **13**.
9. Reverse the process to install a new hard disk.



12. Hard Disk
13. Hard Disk Mylar

- 2 Screws

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

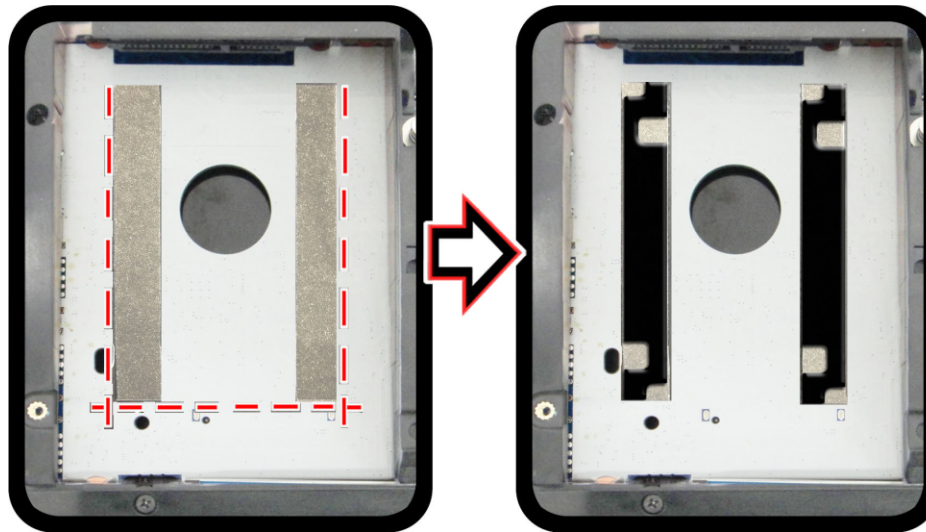


Figure 5
**Foam Rubber
Insert for 7mm(H)
HDDs**

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

Disassembly

Figure 6
Processor Removal

- Locate the heat sink.
- Remove/loosen the screws.
- Grip the heat sink tab and carefully lift the heat sink up and off the computer.



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.



9. CPU Heat Sink

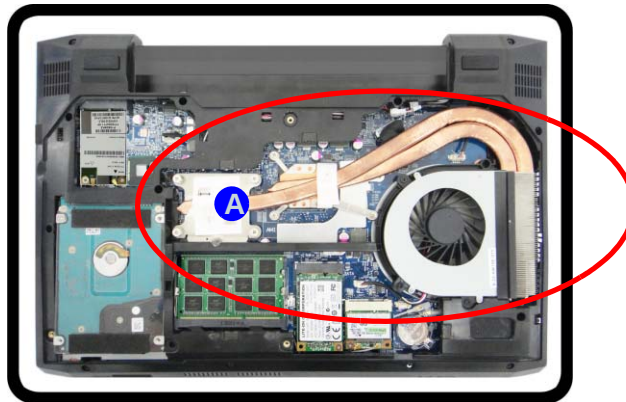
- 7 Screws

Removing and Installing the Processor

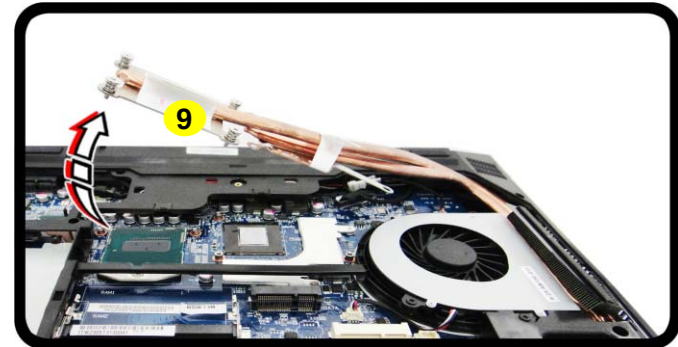
Processor Removal Procedure

- Turn off the computer, and turn it over, remove the battery ([page 2 - 5](#)), and component bay cover ([page 2 - 7](#)).
- The CPU heat sink will be visible at point **A** on the mainboard.
- Remove/loosen screws **7**, **6**, **5**, **4**, **3**, **2**, **1**, the reverse order indicated on the label ([Figure 6b](#)).
- Grip the heat sink tab **8** and carefully lift the heat sink **9** up straight (**do angle it as you lift it**) about a centimeter in order to clear the fan unit, and then angle it around 45° to remove it from the computer.

a.



c.



b.

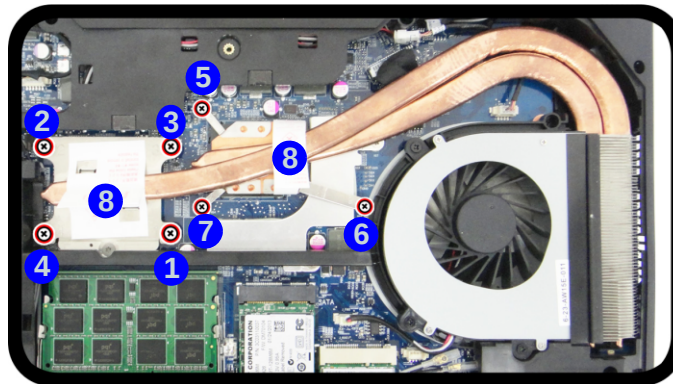
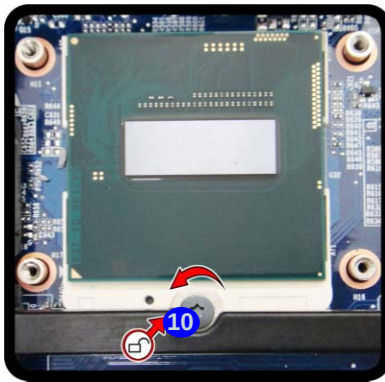


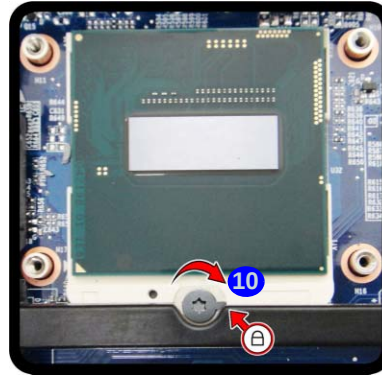
Figure 7
**Processor Removal
(cont'd)**

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

d.

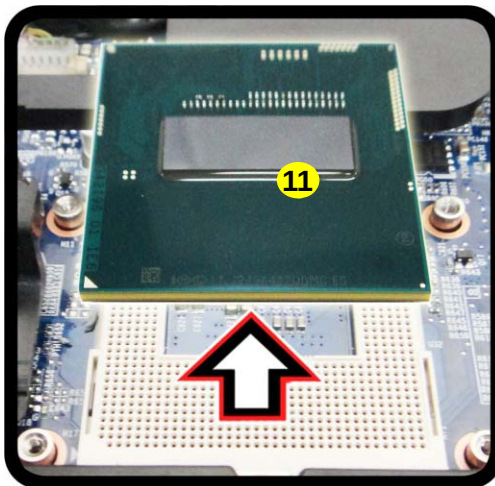


Unlock



Lock

e.



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.



11. CPU

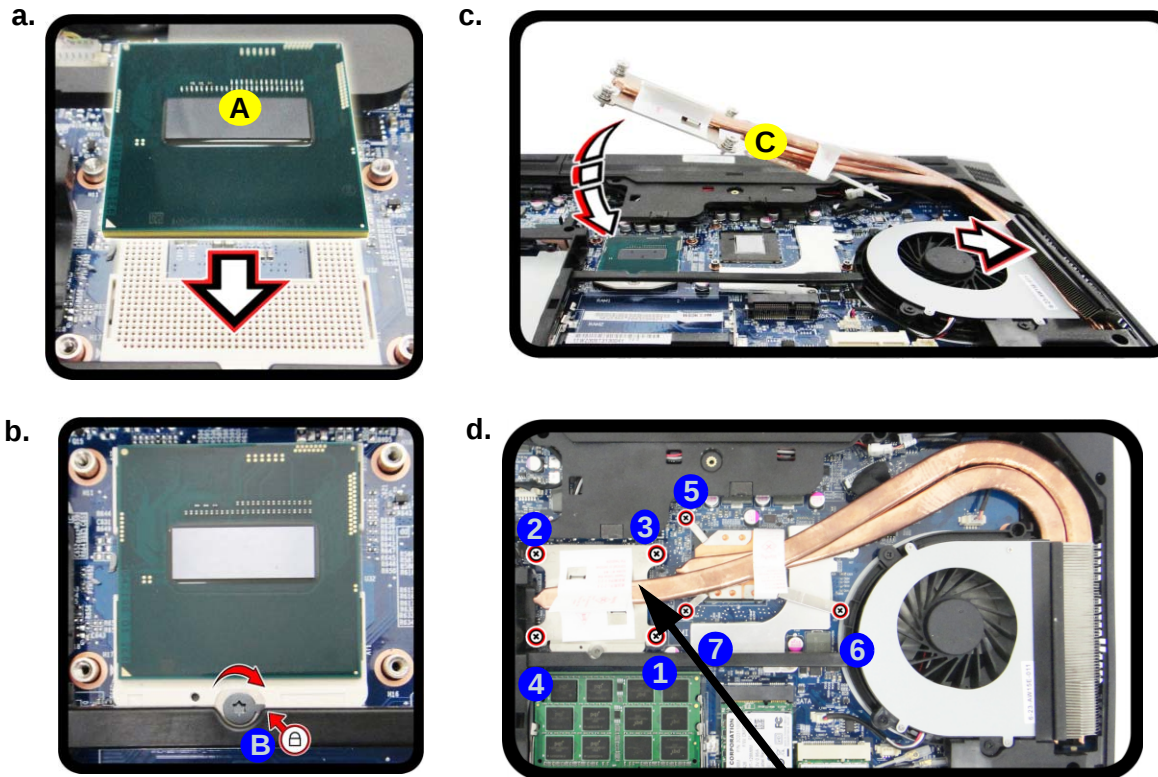
Disassembly

Figure 8
Processor Installation

- Insert the CPU.
- Turn the release latch towards the lock symbol.
- Insert the heat sink.
- Tighten the screws.

Processor Installation Procedure

- Insert the CPU **A** (*Figure 8a*), pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!), and turn the release latch **B** towards the lock symbol  (*Figure 8b*).
- Insert the heat sink **C** at an angle of around 30° as indicated in *Figure 8c*.
- Tighten the CPU heat sink screws in the order **1**, **2**, **3**, **4**, **5**, **6** & **7** (the order as indicated on the label and *Figure 8d*).
- Replace the component bay cover.



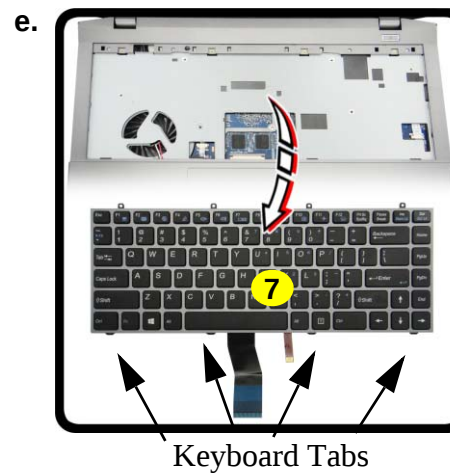
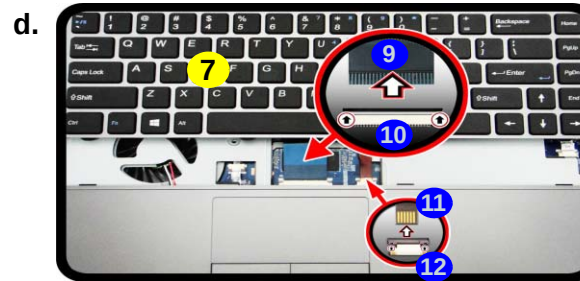
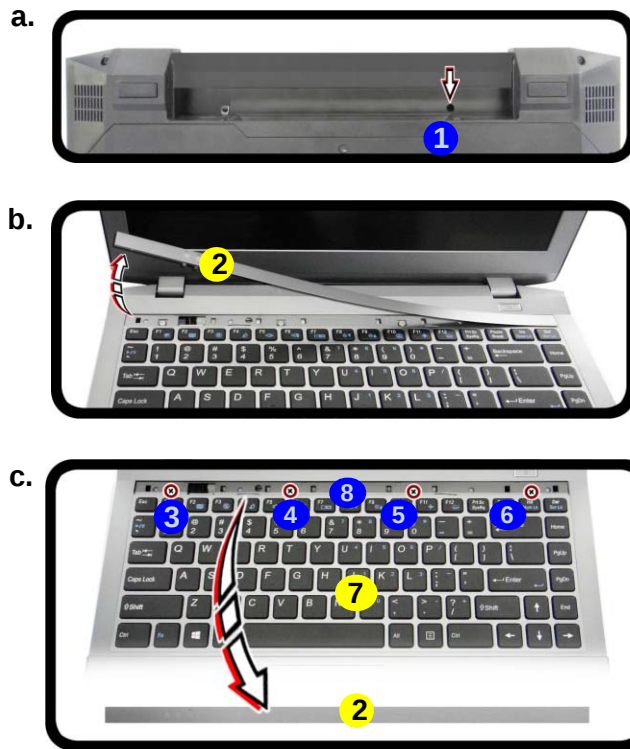
Note:
Tighten the screws in the order as indicated on the label.

A. CPU
C. Heat Sink

- 7 Screws

Removing the Keyboard

1. Turn off the computer, and turn it over and remove the battery ([page 2 - 5](#)), and component bay cover ([page 2 - 7](#)).
2. Use a screwdriver to carefully push out the center cover **2** at point **1**.
3. Turn the computer over, unsnap the center cover **2** upward from the center of the computer ([Figure 9b](#)).
4. Remove screws **3** - **6** from the keyboard ([Figure 9c](#)).
5. Carefully lift the keyboard **7** up from point **8**, being careful not to bend the keyboard cables.
6. Disconnect the keyboard ribbon cable **9** from the locking collar socket **10** and the keyboard LED cable **11** from its locking collar socket **12** ([Figure 9d](#)).
7. Carefully lift up the keyboard **7** ([Figure 9e](#)) off the computer.
8. Reverse the process to replace the keyboard (make sure to reconnect the keyboard cables).



Re-Inserting the Keyboard

When re-inserting the keyboard firstly align the **four** keyboard tabs at the bottom ([Figure 9e](#)) of the keyboard with the slots in the case.

Figure 9
Keyboard Removal

- a. Use a screwdriver to carefully push out the speakers cover at point **1**.
- b. Turn the computer over, unsnap the center cover module upward from the center of the computer.
- c. Lift the LED cover module and remove the screws from the keyboard.
- c. Carefully lift the keyboard up and disconnect the cables from the locking collar.
- e. Remove the keyboard.

- 2. Center Cover
- 7. Keyboard
- 4 Screws

Disassembly

Figure 10
RAM Module Removal

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



Contact Warning

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



4. RAM Module

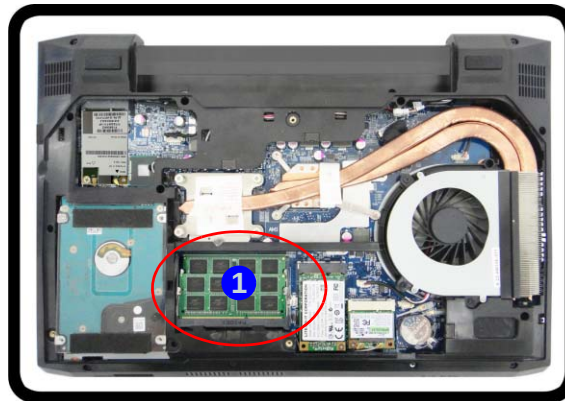
Removing the System Memory (RAM)

The computer has **two** memory sockets for 204 pin Small Outline Dual In-line (SO-DIMM) **DDR3L** type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

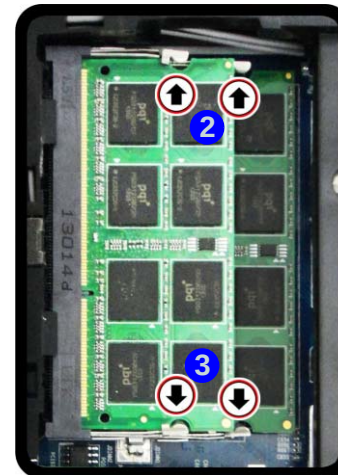
Primary System Memory Upgrade Process

- Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)) and component bay cover ([page 2 - 7](#)).
- The RAM modules will be visible at point ① on the mainboard.
- Gently pull the two release latches (② & ③) on the sides of the memory socket in the direction indicated by the arrows ([Figure 10b](#)). The RAM module ④ will pop-up ([Figure 10c](#)), and you can then remove it.
- Pull the latches to release the second module if necessary.

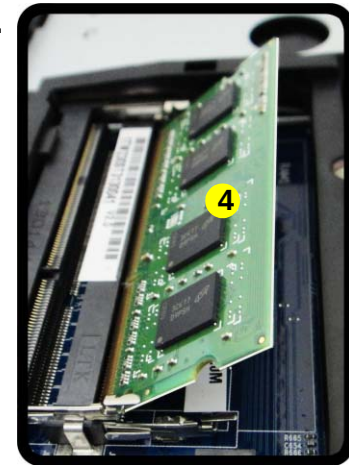
a.



b.



c.



- Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
- 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.
- Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
- Replace the bay cover and screws.
- Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

Removing the 3G Module

1. Turn off the computer, turn it over and remove the battery ([page 2 - 5](#)), and component bay cover ([page 2 - 7](#)).
2. The 3G module will be visible at point **1** on the mainboard ([Figure 11a](#)).
3. Carefully remove the screw **2** and disconnect cables **3** & **4** ([Figure 11b](#)).
4. The 3G module **5** ([Figure 11c](#)) will pop-up, and you can remove it from the computer ([Figure 11 d](#)).

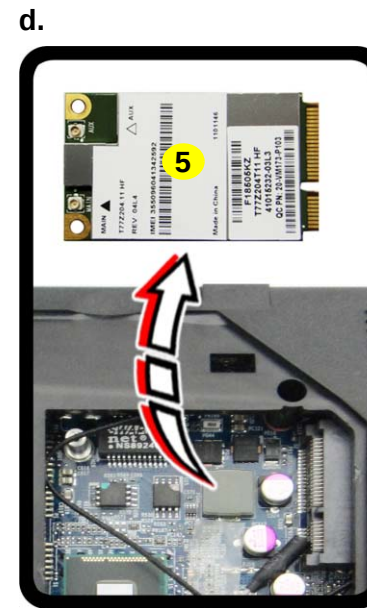
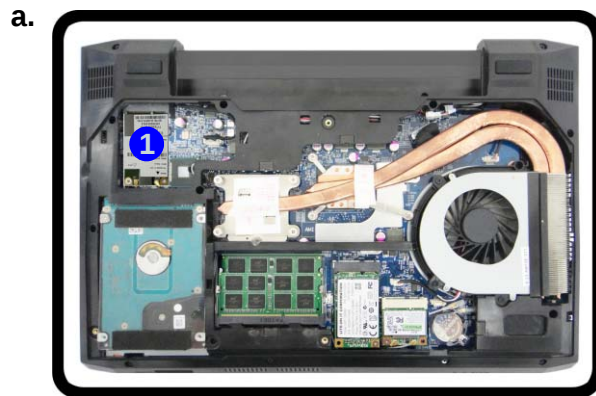


Figure 11
3G Module Removal

- a. Locate the 3G module.
- b. Remove the screw and disconnect the cables.
- c. The module will pop-up.
- d. Remove the 3G module.



5. 3G Module

- 1 Screw

Disassembly

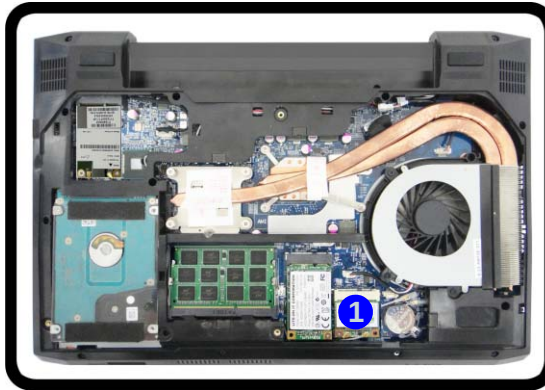
Figure 12
WLAN Module
Removal

- a. Locate the WLAN module.
- b. Remove the screw and disconnect the cables.
- c. The module will pop-up.
- d. Remove the WLAN module.

Removing the WLAN Module

1. Turn off the computer, turn it over and remove the battery (page 2 - 5), and component bay cover (page 2 - 7).
2. The WLAN module will be visible at point ① on the mainboard (Figure 12a).
3. Carefully remove the screw ② and disconnect cables ③ & ④ (Figure 12b).
4. The WLAN module ⑤ (Figure 12c) will pop-up, and you can remove it from the computer (Figure 12d).

a.



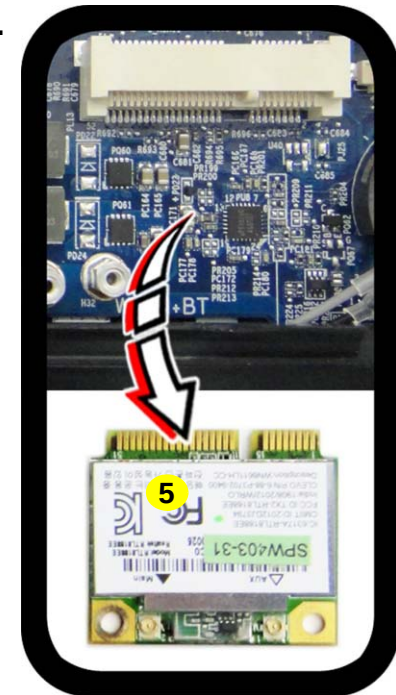
b.



c.



d.



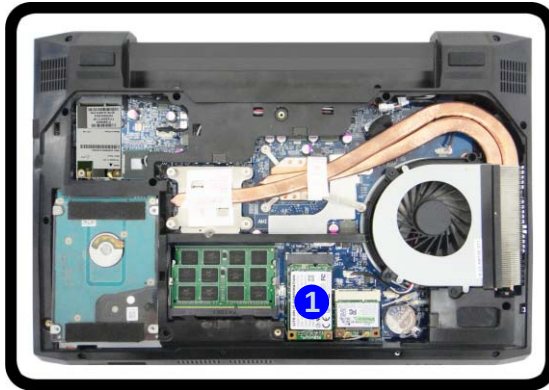
5. WLAN Module

- 1 Screw

Removing the mSATA Module

1. Turn off the computer, turn it over and remove the battery ([page 2 - 5](#)), and component bay cover ([page 2 - 7](#)).
2. The mSATA module will be visible at point **1** on the mainboard ([Figure 13a](#)).
3. Carefully remove the screw **2** ([Figure 13b](#)).
4. The mSATA module **3** ([Figure 13c](#)) will pop-up, and you can remove it from the computer ([Figure 13d](#)).

a.



b.



c.



d.

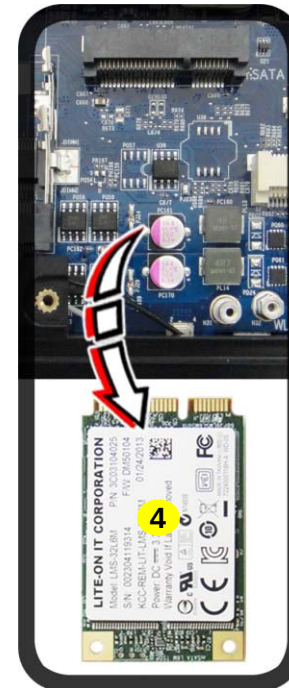


Figure 13
mSATA Module Removal

- a. Locate the mSATA module.
- b. Remove the screw.
- c. The module will pop-up.
- d. Remove the mSATA module.



4. mSATA Module

- 1 Screw

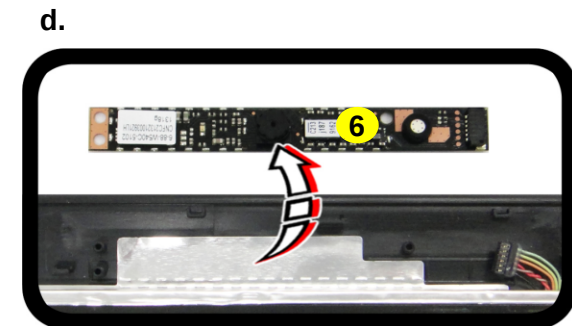
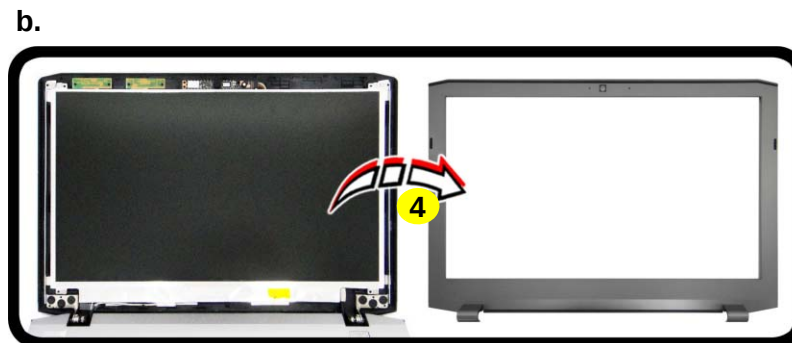
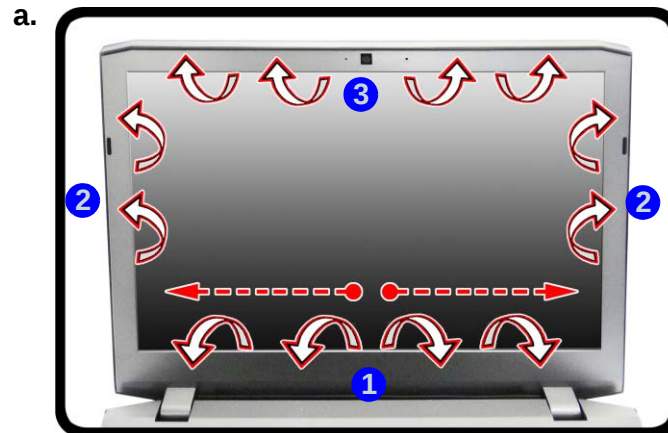
Disassembly

Figure 14
CCD Module
Removal

- a. Carefully run your fingers around the inner frame of the LCD panel at the points indicated by the arrows.
- b. Remove the LCD front panel.
- c. Disconnect the cable.
- d. Remove the CCD module.

Removing the CCD Module

1. Turn **off** the computer, turn it over, and remove the battery ([page 2 - 5](#)).
2. Carefully run your fingers around the inner frame of the LCD panel at the points as indicated by the arrows **1** - **3** ([Figure 14a](#)).
3. Carefully remove the LCD front panel **4** off ([Figure 14b](#)).
4. Disconnect the cable **5** ([Figure 14c](#)).
5. Remove the CCD module **6** ([Figure 14d](#)).
6. Reverse the process to install a new CCD module.



4. LCD Front Panel
6. CCD Module

Appendix A: Part Lists

This appendix breaks down the **W230SS** 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 Lists

Part List Illustration Location

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

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

Parts	
Top	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
LCD	<i>page A - 5</i>
HDD	<i>page A - 6</i>

Top

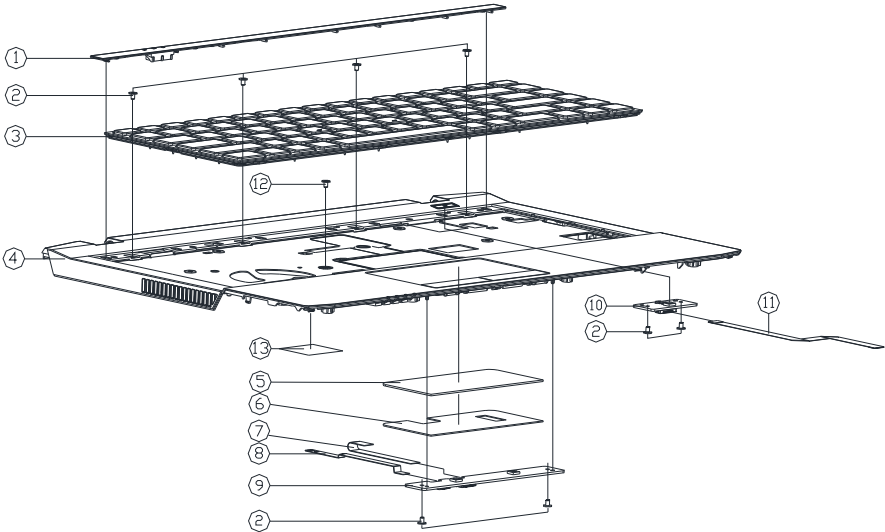


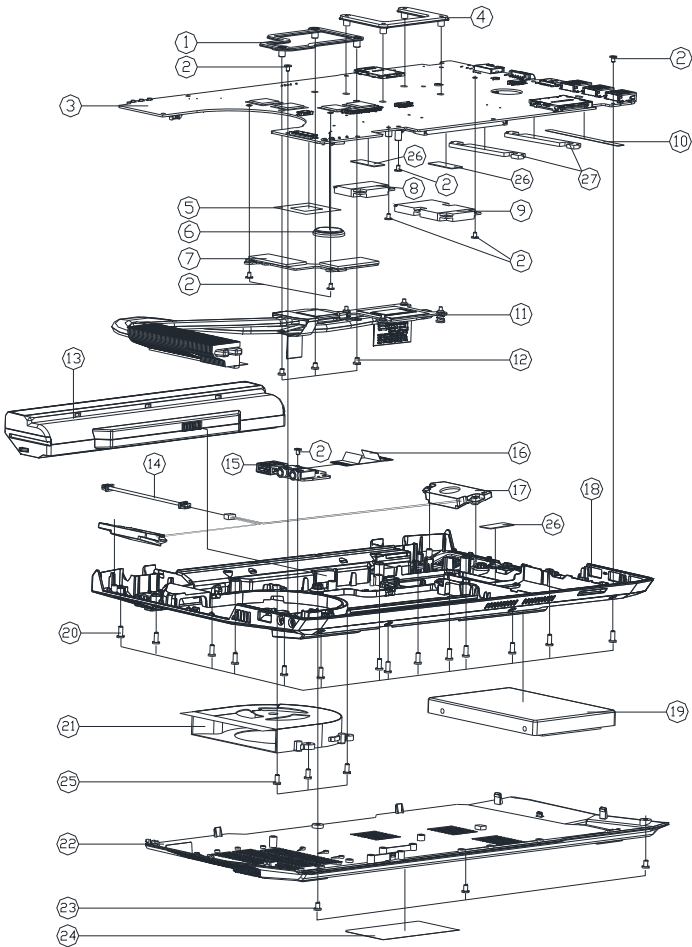
Figure A - 1
Top

ITEM	PART NAME	PART NO	REMARK
1	KB COVER MODULE W230ST	6-42-W2307-102	
2	SCREW HEX3L KI NI ICT NY 100-#4.5D1-040	6-35-B1120-3RE	
3	VINO X18 USABLACK FRAMELESS MODULE W230ST	6-79-W230ST0K-010-W	
4	TOP CASE MODULE (ENK10KAPDK) W230ST	6-39-W2302-015-N	
5	TOUCH PAD SYNOPSIS IN-H106-010 MULTI-GE5T0RE C400	6-49-C4802-010	
6	TP TAPE MYLAR PET W540EU	6-40-W5401-010	
7	FFC CABLE FOR TOUCH PAD 6PIN (HENGSHANG)	6-43-C4502-010-2	
8	FFC CABLE FOR W/B TO CLICK BOARD (HENGSHANG)	6-43-C4500-022-2	
9	CLICK BOARD V3.0 W230ST	6-77-W2302-DD3	
10	POWER SWITCH BOARD V3.0 W230ST	6-77-W230S-DD3	
11	FINGER BOARD FFC CABLE (HS) X7200/ P570VM	6-43-X720F-012-2	
12	SCREW M2.5*3L KI NI ICT NY	6-35-B1125-3R0	
13	AUDIO BOARD W/LAR 2IN2OUT51 GROUND (HS) 407 C4500	6-40-C450S-030	

Part Lists

Bottom

Figure A - 2
Bottom



ITEM	PART NAME	PART NO	REMARK
1	VGA SUPPORTER SECC W150ERQ	6-33-W15ES-012	
2	SCREW M2x3L KI NI ICT NY (D0-H45,0T-H4)	6-35-B1120-3RE	
3	MAIN BOARD V2.0A C W/3G.TPM W230SS	6-77-W230SS00-002A	
3	MAIN BOARD V2.0A C W/3G.V/D TPM W230SS	6-77-W230SS00-002A-1	
3	MAIN BOARD V2.0A C W/1PM.V/D 3G W230SS	6-77-W230SS00-002A-2	
3	MAIN BOARD V2.0A C W/D 3G.TPM W230SS	6-77-W230SS00-002A-3	
4	CPU SUPPORT BRACKET SECC T=15 P150W	6-33-X510S-011	
5	VGA CHIP MYLAR29x29 01511 N4E-02 W230ST	6-40-W35SS-010	
6	BATTERY 3V 220MA BB8CR2032B (KTS)	6-23-6A2B2-030	
7	VRAM THERMAL MODULE W230ST	6-33-W230S-101	
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W54SF-9400	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W54SF-7000	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W54SF-7010	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W34SF-9400	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W34SF-7000	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W25SF-4200	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-P3702-9400	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-P3702-7000	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W230F-4200	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W230F-4220	(OPTION)
8	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W230F-4210	(OPTION)
9	VRAM THERMAL MODULE W230ST (OPTION)	6-88-W650W-8800	(OPTION)
10	M/B HDD MYLAR PET W230ST	6-40-W230S-011	
11	CPU&VGA HEATSINK MODULE (DEL PAD) W230ST	6-31-W230N-102	
12	SCREW M2.5x3L KI NI ICT NY	6-35-B1125-3R0	
13	WIRE CABLE FOR SPEAKER TRANSFER (P. 7MM) W230ST	6-07-W230S-4271	
14	WIRE CABLE FOR SPEAKER TRANSFER (P. 7MM) W230ST	6-43-W2303-010	
15	AUDIO BOARD V1.0 W230SS	6-77-W2358-001	
16	WIRE CABLE FOR AUDIO BOARD TO MP (AP. 05) W230ST	6-43-W2300-012	
17	SPECIAL THERM. PASTE FOR CPU & VRAM W230ST	6-23-SP15S-011	
18	BOTTOM CASE MODULE W230ST	6-39-W2303-015	
19	W/D HDD ASS'Y W230ST	6-79-W230ST0J-010	
20	W/D HDD ASS'Y W230ST	6-79-W230ST0J-020	
20	SCREW M2.5x6L K BZ ICT NY	6-35-B2125-6RA	
21	VRAM THERMAL MODULE W230ST	6-23-AW15E-011	
22	CPU COVER MODULE W230ST	6-42-W2308-106	
23	SCREW M2.5x4L KKT=05 D=45 BK/Z ICT	6-35-B6125-4R0	
24	PRODUCT LABEL FOR W230SS	6-45-W230SS03-010	
25	SCREW M2.5x5L KI NI ICT NY	6-35-B1125-5RA	
26	TOP CASE MYLAR FR83 25x7x0.05 P180H	6-40-P1802-030	
27	SPRING (4x125) CHASIS FOR 7MM HDD (W/DOOR) W230ST	6-47-0019A-763	FOR 7mm hdd only

LCD

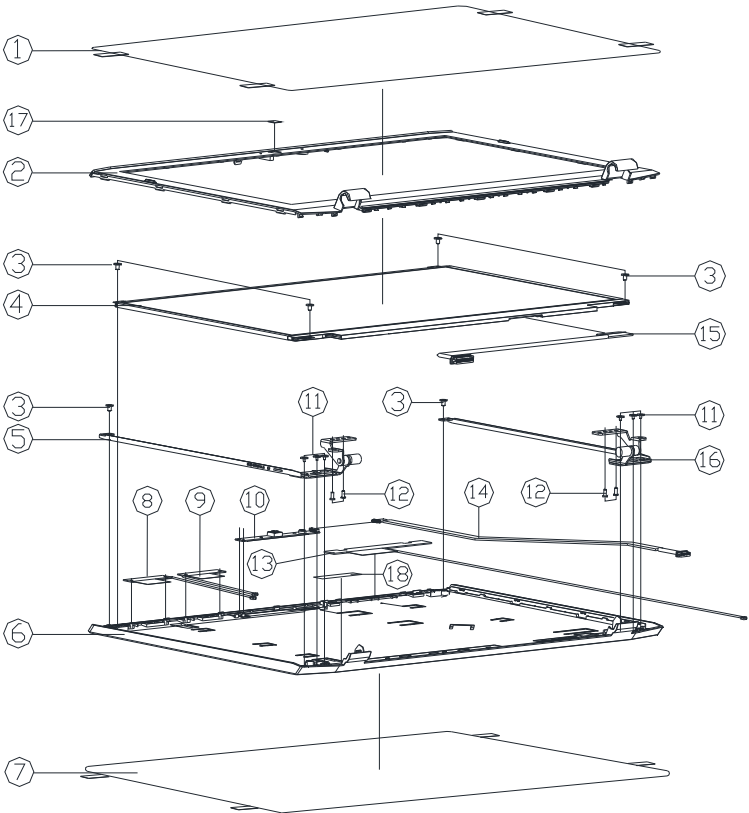
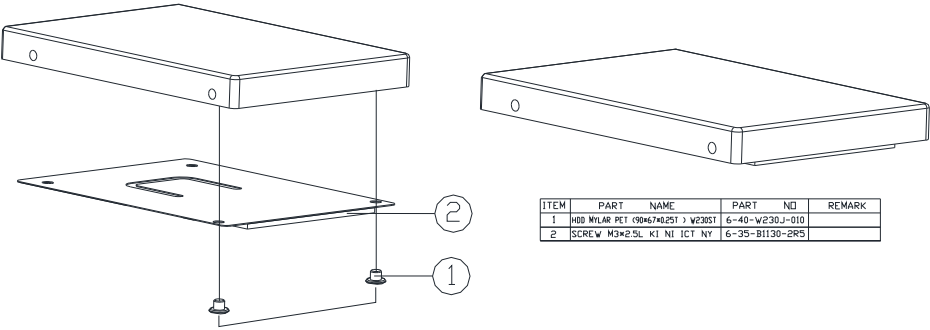


Figure A - 3
LCD

ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT COVER PROTECTION MYLAR (PET)0.065S W230ST	6-40-W2308-010	
2	LCD FRONT COVER MODULE W230ST	6-39-W2301-015	
3	SCREW M2X4 K1 NY ICT NY (00-44.5,01-84)	6-35-B1120-3RE	
4	LCD 13.3" FHD CHINEL NEOSHC-EAL (LED) (COP) 28MM	6-50-GB228-D00	OPTION
4	LCD 13.3" FHD CHINEL NEOSHC-EAL (LED) (COP) 28MM	6-50-GC226-M00	OPTION
4	LCD 13.3" FHD CHINEL NEOSHC-EAL (LED) (COP) 28MM	6-50-GG226-A00	OPTION
5	LCD HINGE L SGCC+SK7 W230ST	6-33-W2301-0L1	
6	LCD BACK COVER MODULE W230ST	6-39-W2301-023	
6	PRE-PROTECT BACK COVER MODULE FOR SHARP/LG/HTC/ASUS W230S	6-78-W230SS01-001	
6	PRE-PROTECT BACK COVER MODULE FOR SHARP/LG/HTC/ASUS W230S	6-78-W230SS01-002	
7	LCD BACK COVER PROTECTION MYLAR (PET)0.065S W230ST	6-40-W2308-020	
8	ANTENNA YINXIA W230 P23 2.4G/2500/5G W230MM W230ST	6-23-7W230-030	
9	ANTENNA YINXIA W230 P23 2.4G/2500/5G W230MM W230ST	6-23-7W230-040	
10	LCD CHINEL NEOSHC-EAL (LED) (COP) 28MM W230ST	6-50-GB228-D00	OPTION
10	LCD CHINEL NEOSHC-EAL (LED) (COP) 28MM W230ST	6-50-GC226-M00	OPTION
10	LCD CHINEL NEOSHC-EAL (LED) (COP) 28MM W230ST	6-50-GG226-A00	OPTION
10	LCD CHINEL NEOSHC-EAL (LED) (COP) 28MM W230ST	6-50-GB228-D00	OPTION
10	LCD CHINEL NEOSHC-EAL (LED) (COP) 28MM W230ST	6-50-GC226-M00	OPTION
10	LCD CHINEL NEOSHC-EAL (LED) (COP) 28MM W230ST	6-50-GG226-A00	OPTION
11	SCREW M2X2 K1 BK/Z ICT NY(08,T=06)	6-35-B6120-2RE	
12	SCREW M2.5X6 L K BZ ICT NY	6-35-82125-6RA	
13	ANTENNA YINXIA W230 P23 2.4G/2500/5G W230MM W230ST	6-23-7W230-011	
13	ANTENNA YINXIA W230 P23 2.4G/2500/5G W230MM W230ST	6-23-7W230-020	OPTION
14	WIRE CABLE FOR CCD 377MM 3.3V 8P (HL) W230ST	6-43-W23ST-010	
15	WIRE CABLE FOR EDP 283MM 3.3V 8P (HL) W230ST	6-43-W2301-010-K	FOR CHINEL NEOSHC-EAL
15	WIRE CABLE FOR EDP 283MM 3.3V 8P (HL) W230ST	6-43-W23S1-010-K	FOR SHARP LG/HTC/ASUS
15	WIRE CABLE FOR EDP 283MM 3.3V 8P (HL) W230ST	6-43-W23S1-020-K	FOR SHARP LG/HTC/ASUS
16	LCD HINGE R SGCC+SK7 W230ST	6-33-W2301-0R2	
17	CCD LENS (PMMA) P375SM	6-42-P3751-020	
18	TAPE MYLAR (B)MYLAR M550J	6-40-M55J2-020	

HDD

Figure A - 4
HDD



Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the **W230SS** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
System Block Diagram - Page B - 2	VGA Frame Buffer B - Page B - 19	SATA HDD, MSATA1, KB Control - Page B - 36
Haswell 1/7 - Page B - 3	VGA Frame Buffer B - Page B - 20	HDMI, RJ45 - Page B - 37
Haswell 2/7 - Page B - 4	VGA I/O - Page B - 21	Audio Codec VT1802S - Page B - 38
Haswell 3/7 - Page B - 5	VGA NVDD Decoupling - Page B - 22	KBC ITE IT8587 - Page B - 39
Haswell 4/7 - Page B - 6	Lynx 1/9 - Page B - 23	5V, 5VS, 3.3V, 3VS, 3.3VM - Page B - 40
Haswell 5/7 - Page B - 7	Lynx 2/9 - Page B - 24	VDD3, VDD5 - Page B - 41
Haswell 6/7 - Page B - 8	Lynx 3/9 - Page B - 25	1.5V or 1.35V, 0.75VS, 1.5VS - Page B - 42
Haswell 7/7 - Page B - 9	Lynx 4/9 - Page B - 26	1.05VS, 1.05V_M, 1.05V_LAN_M - Page B - 43
DDR3 SO-DIMM A_0 - Page B - 10	Lynx 5/9 - Page B - 27	Power V-Core - Page B - 44
DDR3 SO-DIMM B_0 - Page B - 11	Lynx 6/9 - Page B - 28	VGA NVVDD, PEX_VDD - Page B - 45
PS8625 - Page B - 12	Lynx 7/9 - Page B - 29	FBVDDQ - Page B - 46
Panel, Inverter, CRT - Page B - 13	Lynx 8/9 - Page B - 30	AC-In, Charger - Page B - 47
CRT - Page B - 14	Lynx 9/9 - Page B - 31	LED Board - Page B - 48
VGA PCI-E Interface - Page B - 15	Mini PCIE, 3G, Fan, Audio Con - Page B - 32	Audio Board - Page B - 49
VGA Frame Buffer Interface - Page B - 16	USB Charge, CCD, TPM, Multi-Con - Page B - 33	Click Board - Page B - 50
VGA Frame Buffer A - Page B - 17	USB3.0 Connector - Page B - 34	Power Switch Board - Page B - 51
VGA Frame Buffer A - Page B - 18	Card Reader / LAN RTL8411B - Page B - 35	POWER ON SEQUENCE - Page B - 52

Table B - 1
Schematic
Diagrams

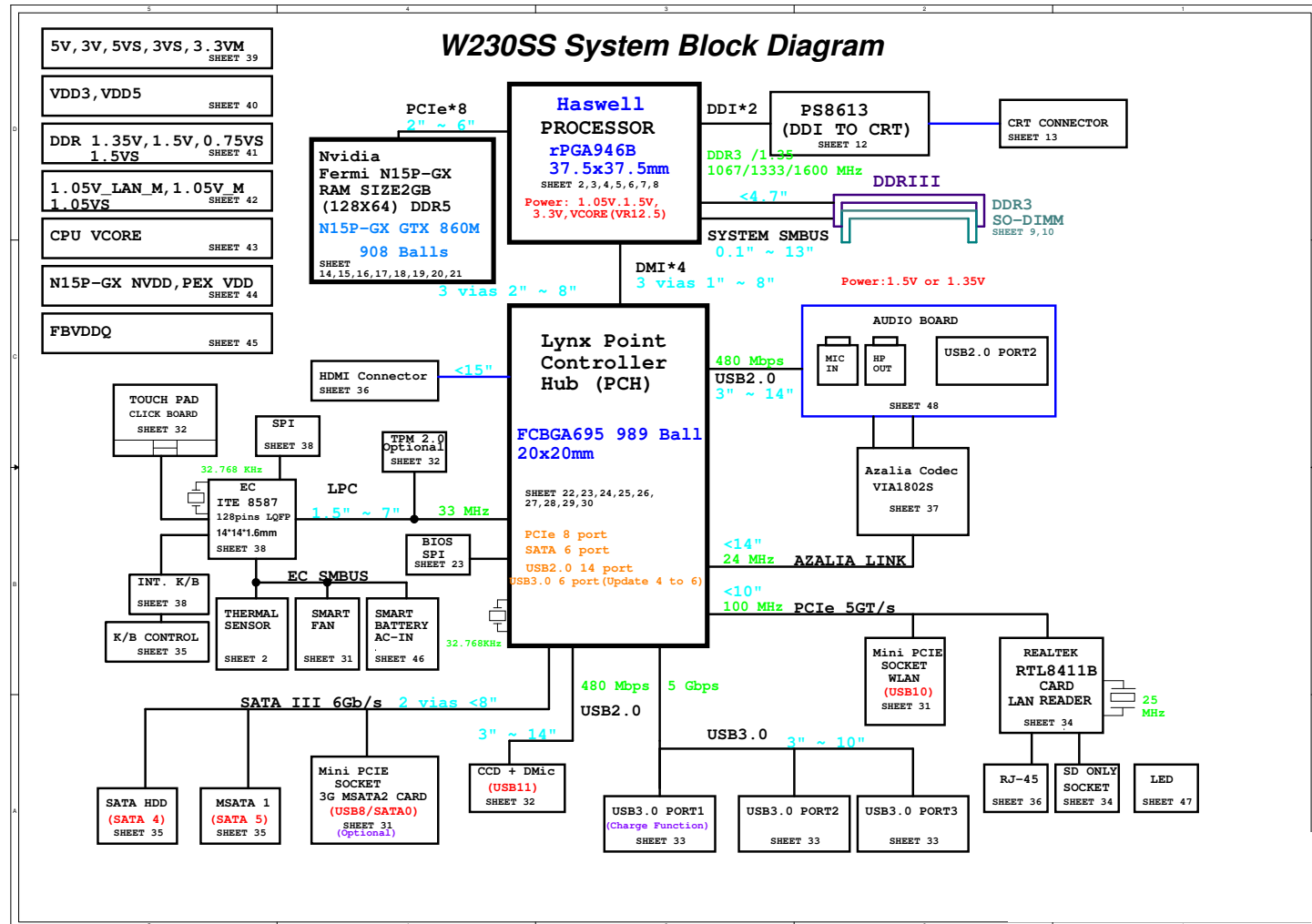


Version Note

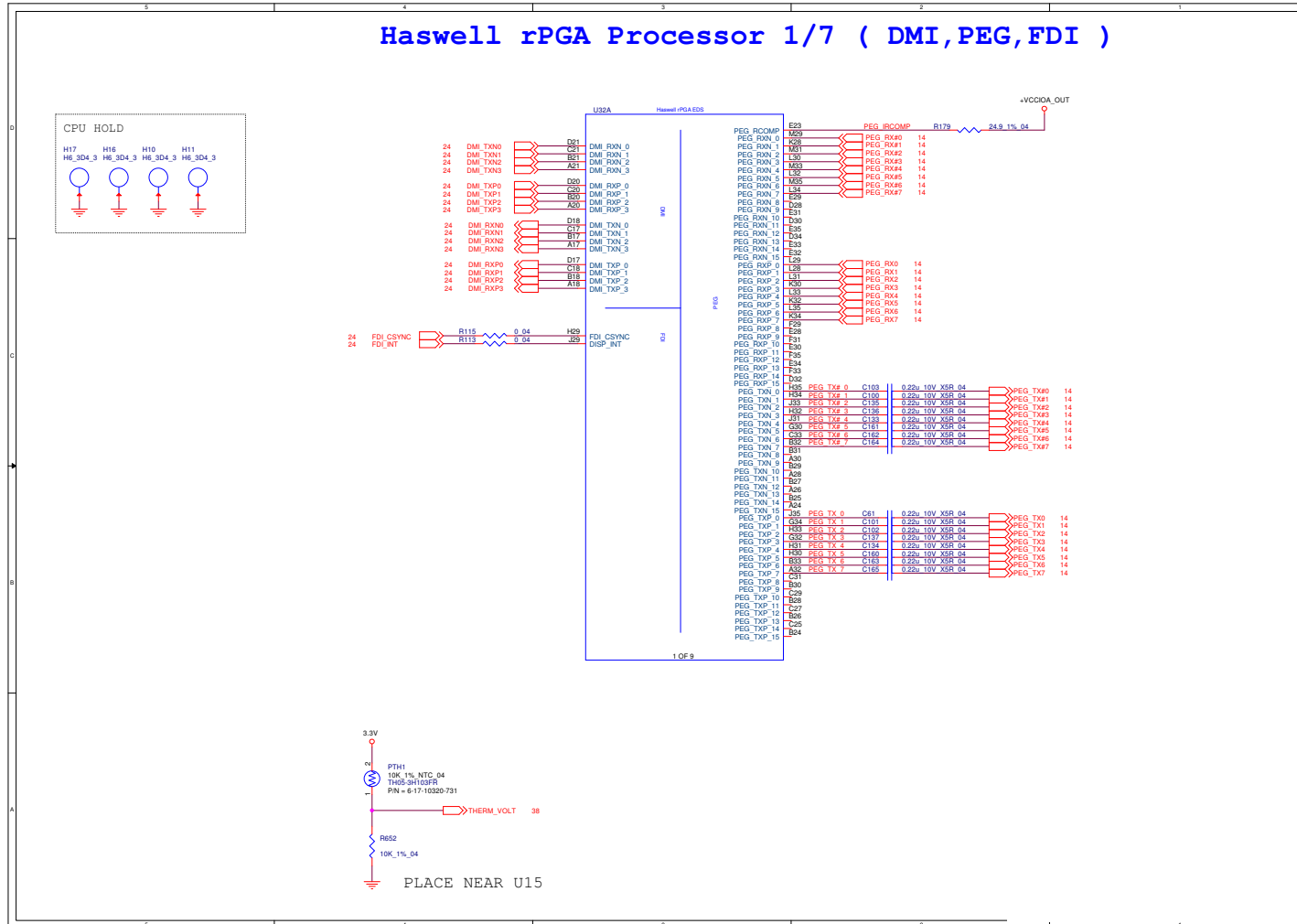
The schematic diagrams in this chapter are based upon version 6-7P-W23S4-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram

Sheet 1 of 51
System Block
Diagram

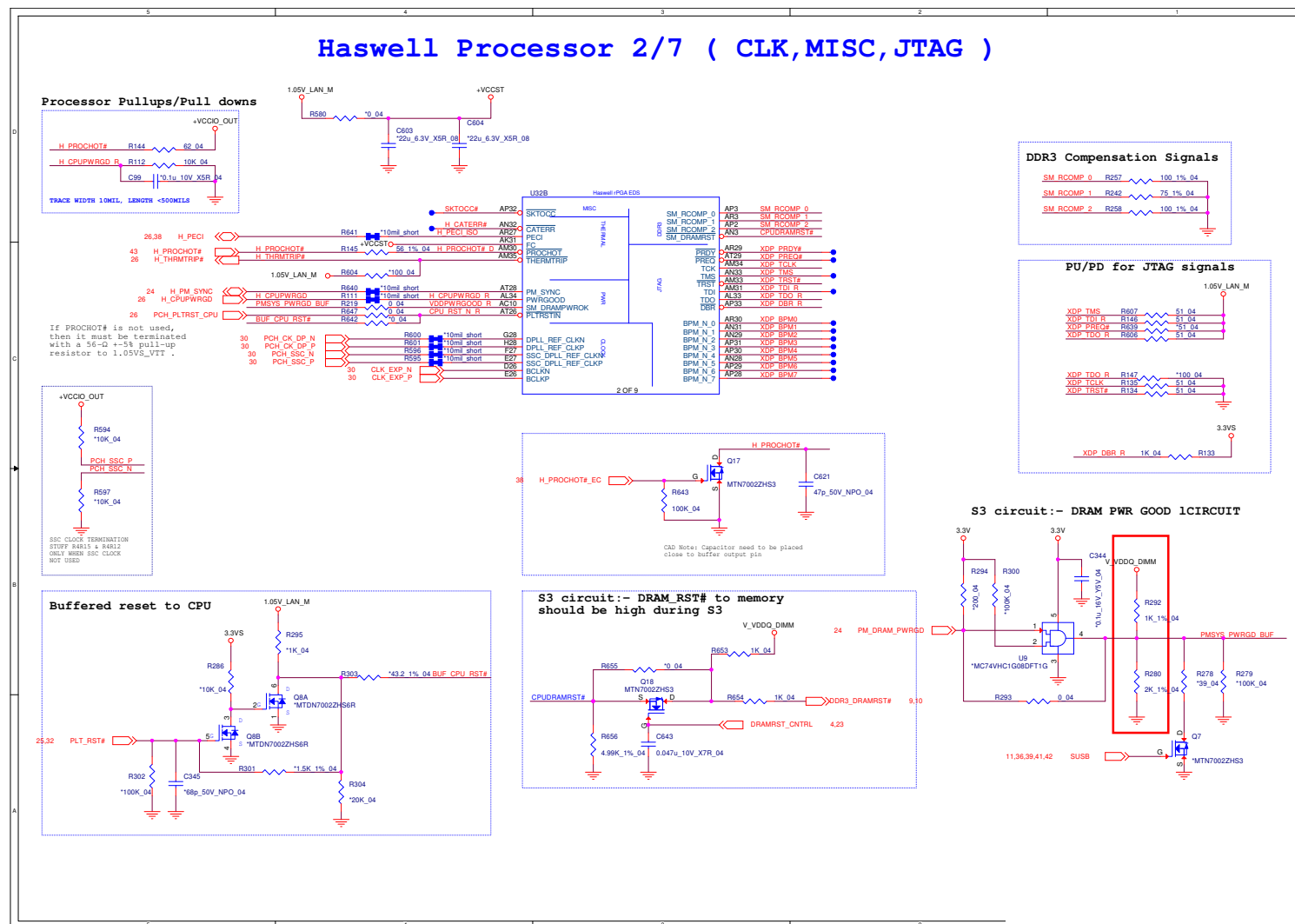


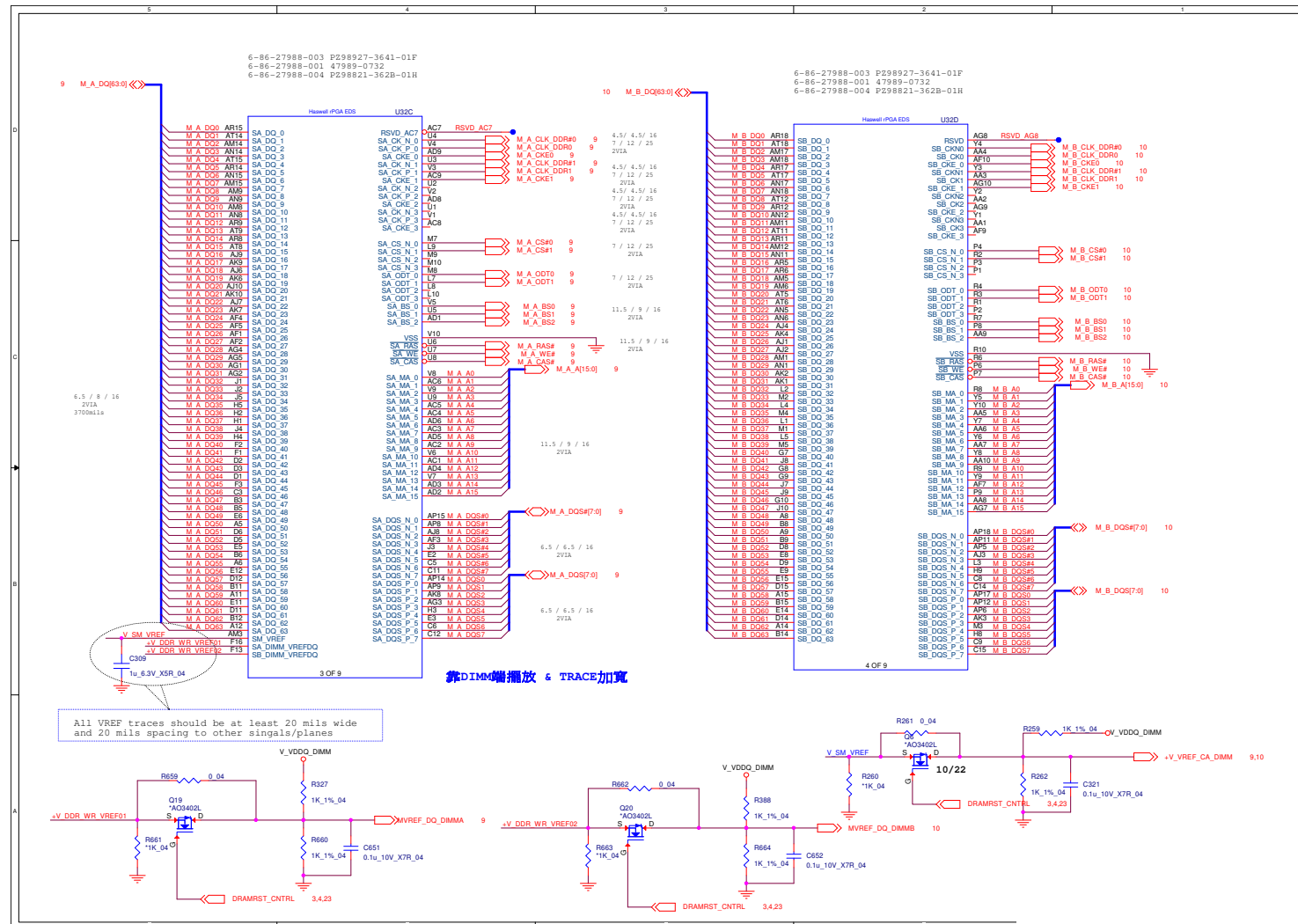
Haswell 1/7



Sheet 2 of 51
Haswell 1/7

B.Schematic Diagrams



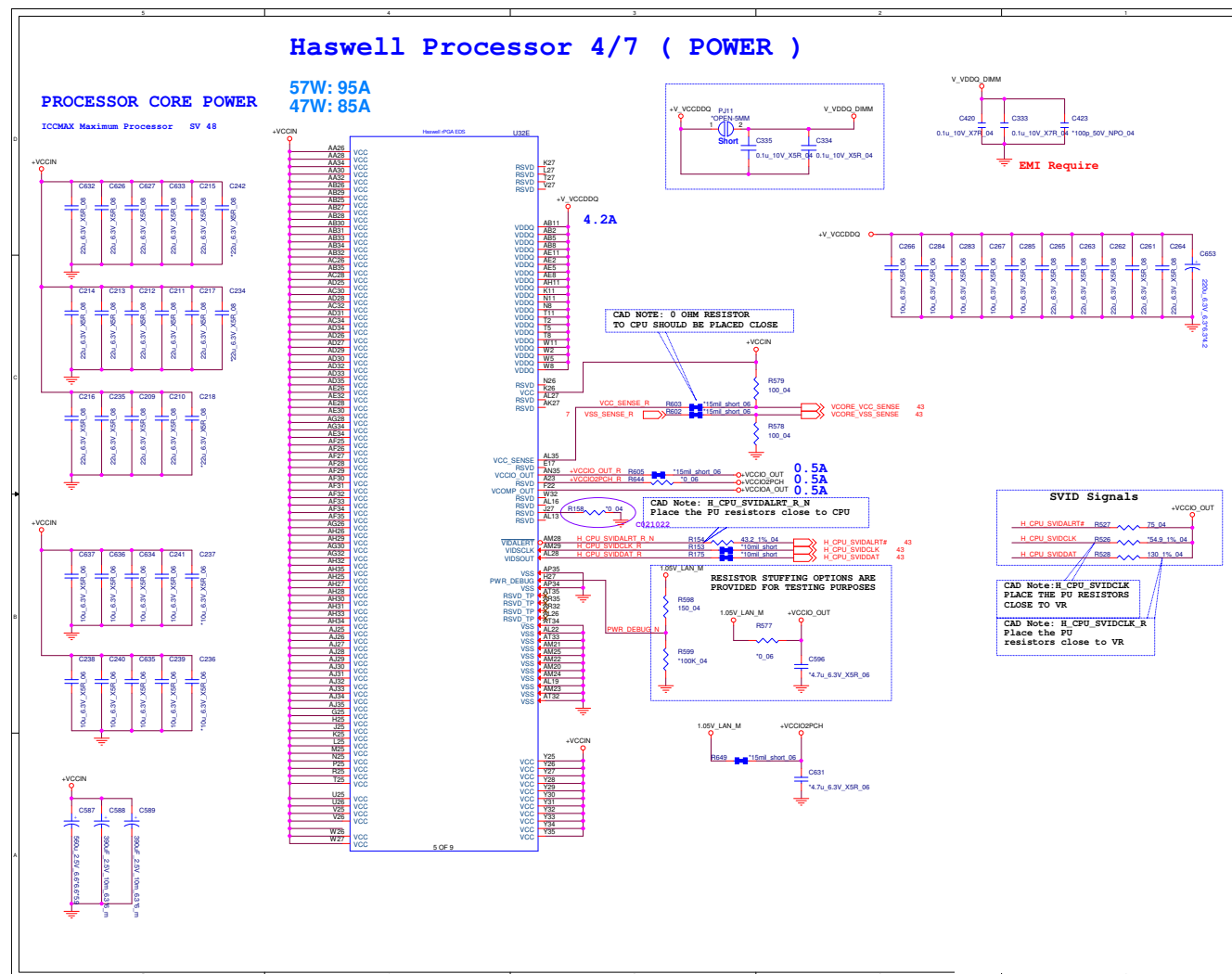


Sheet 4 of 51
Haswell 3/7

B.Schematic Diagrams

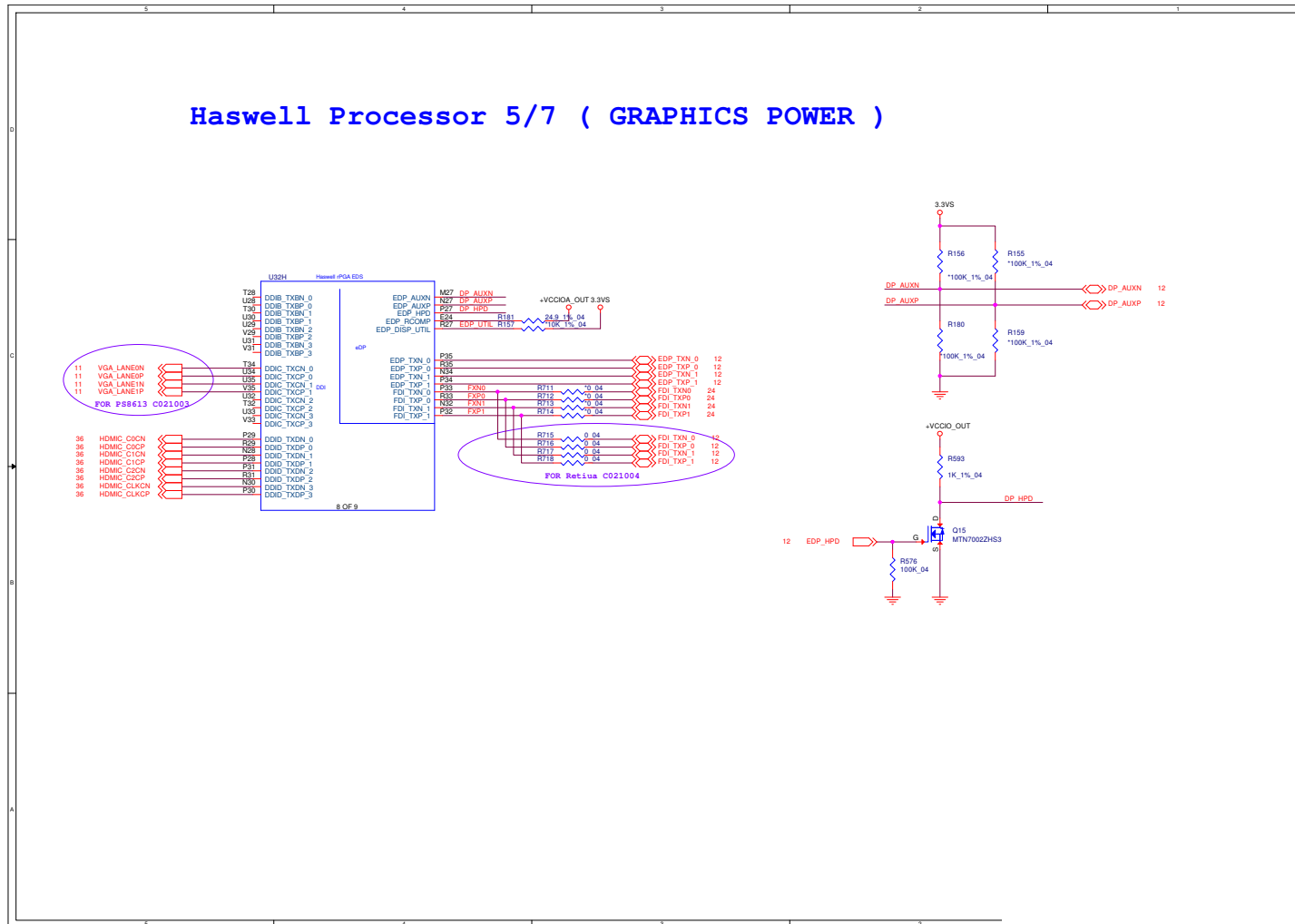
Haswell 4/7

Sheet 5 of 51
Haswell 4/7

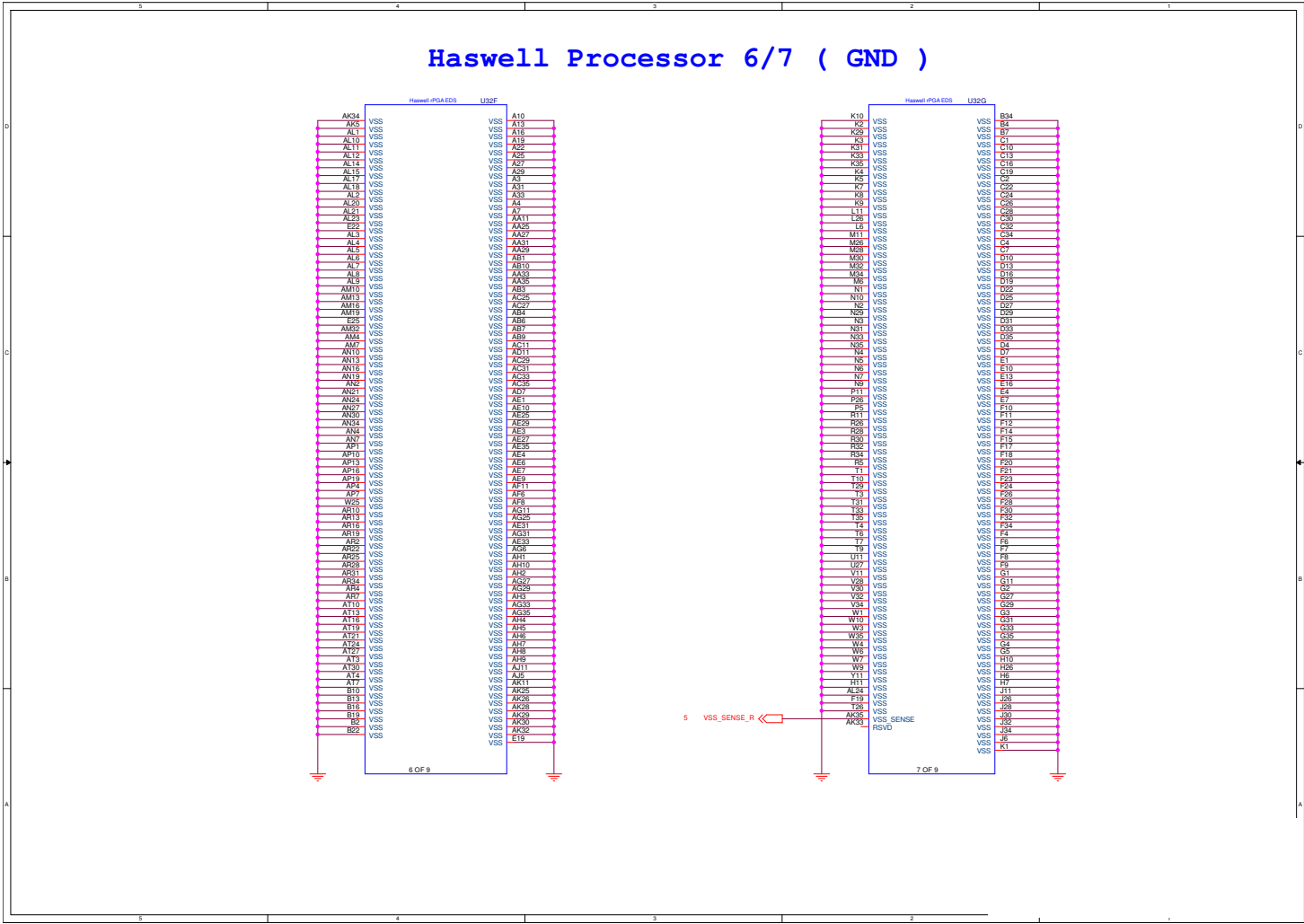


Haswell 5/7

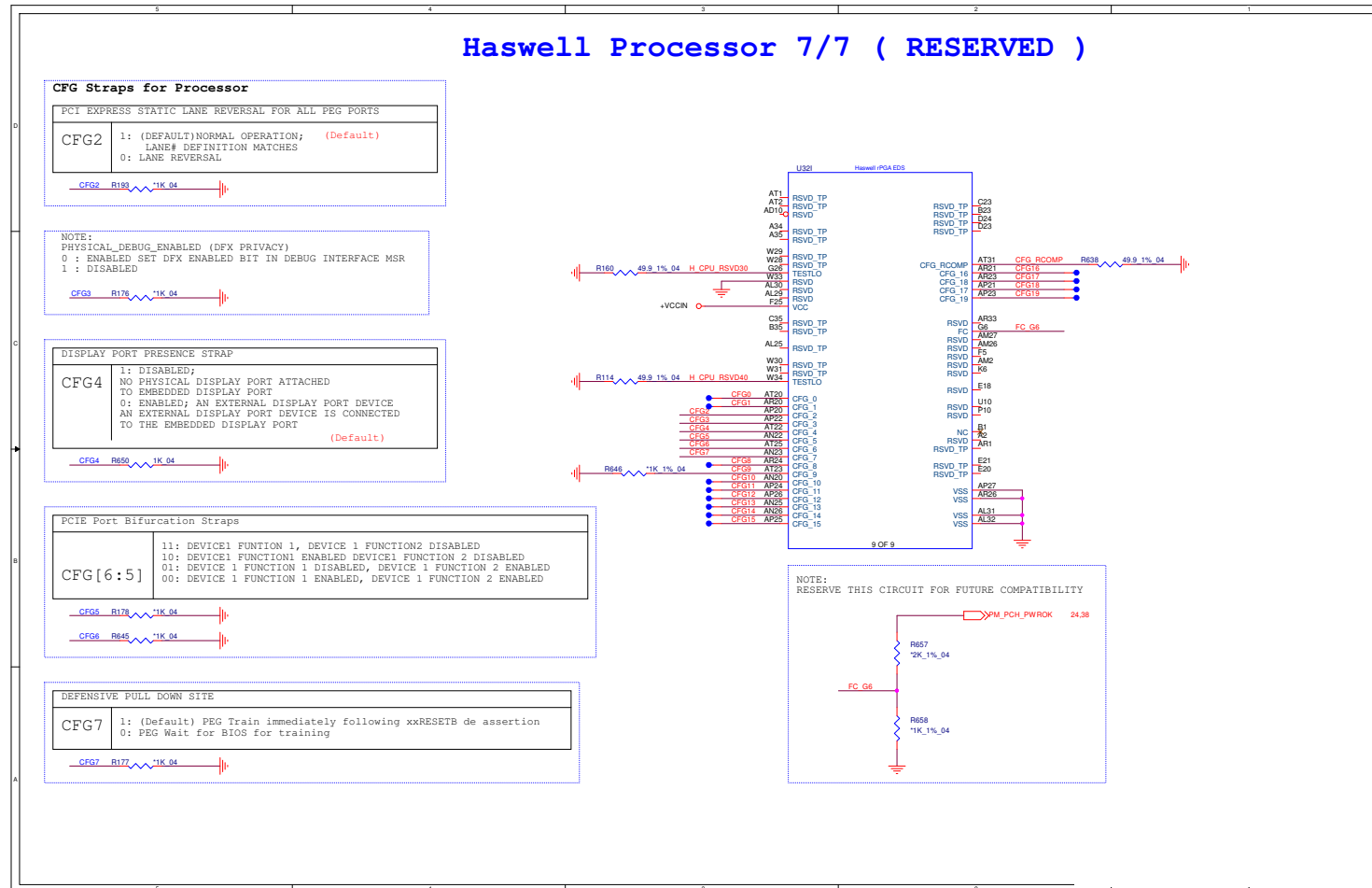
Sheet 6 of 51
Haswell 5/7



Haswell 6/7

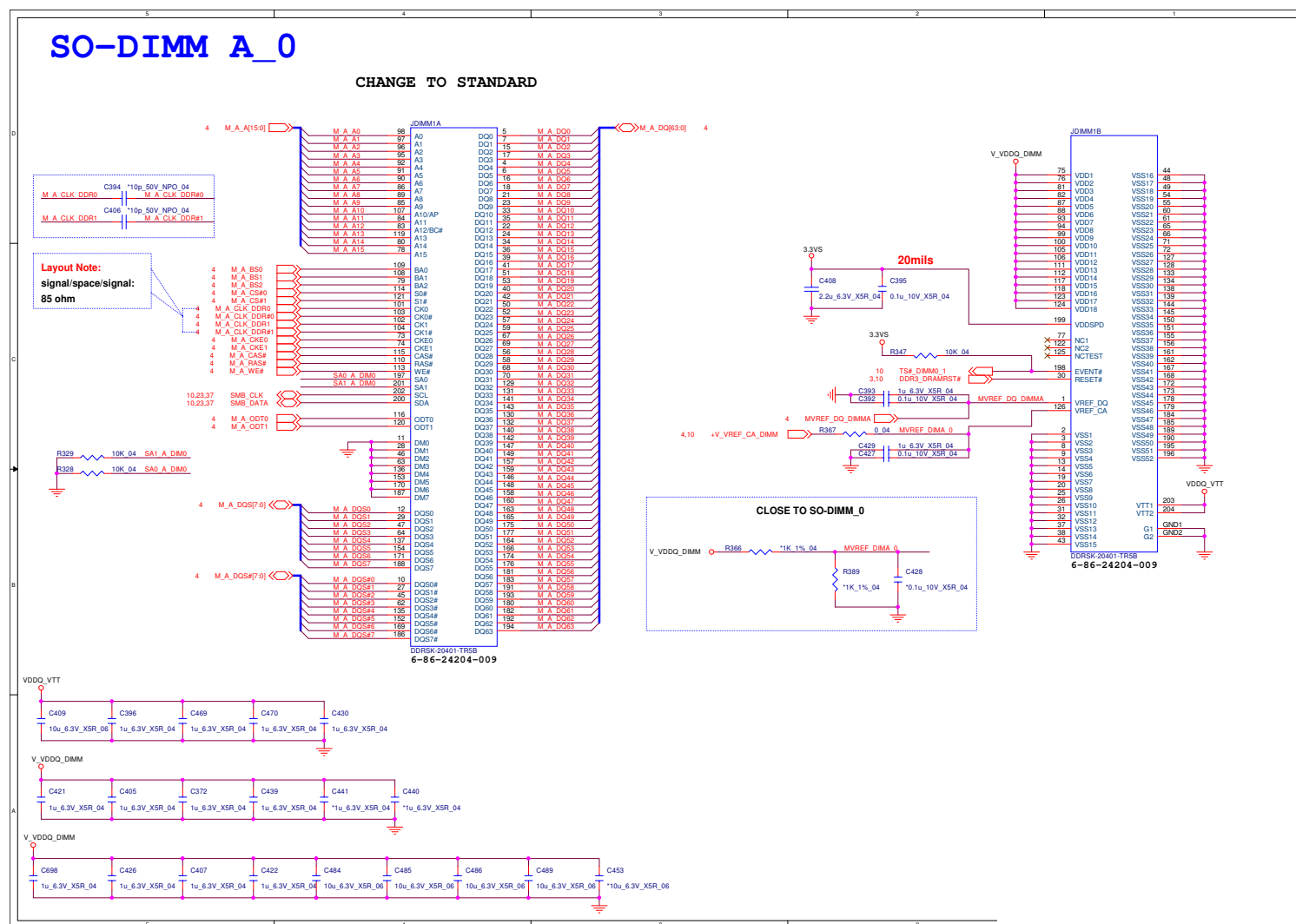


Haswell 7/7



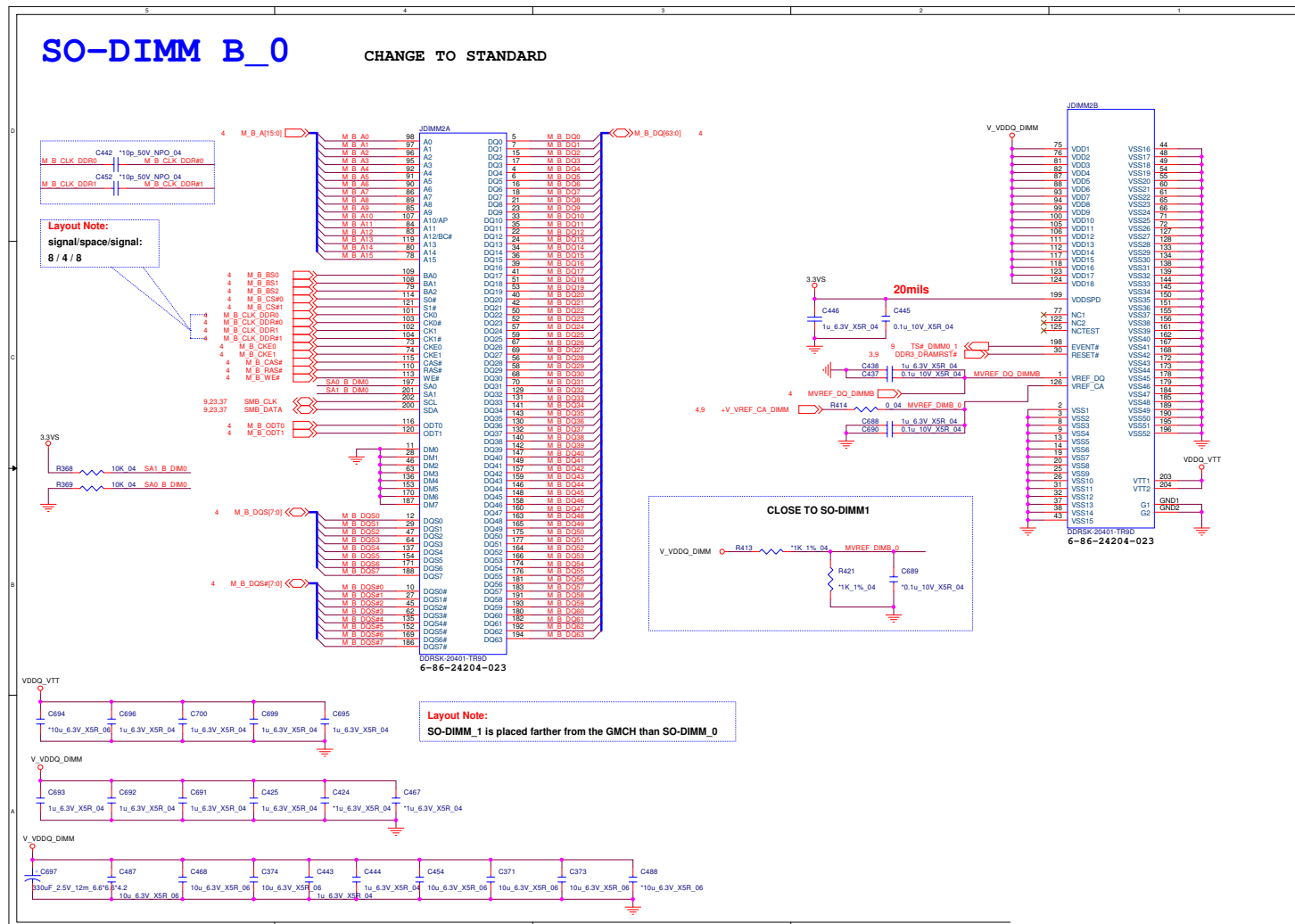
Sheet 8 of 51
Haswell 7/7

DDR3 SO-DIMM A_0



Schematic Diagrams

DDR3 SO-DIMM B_0



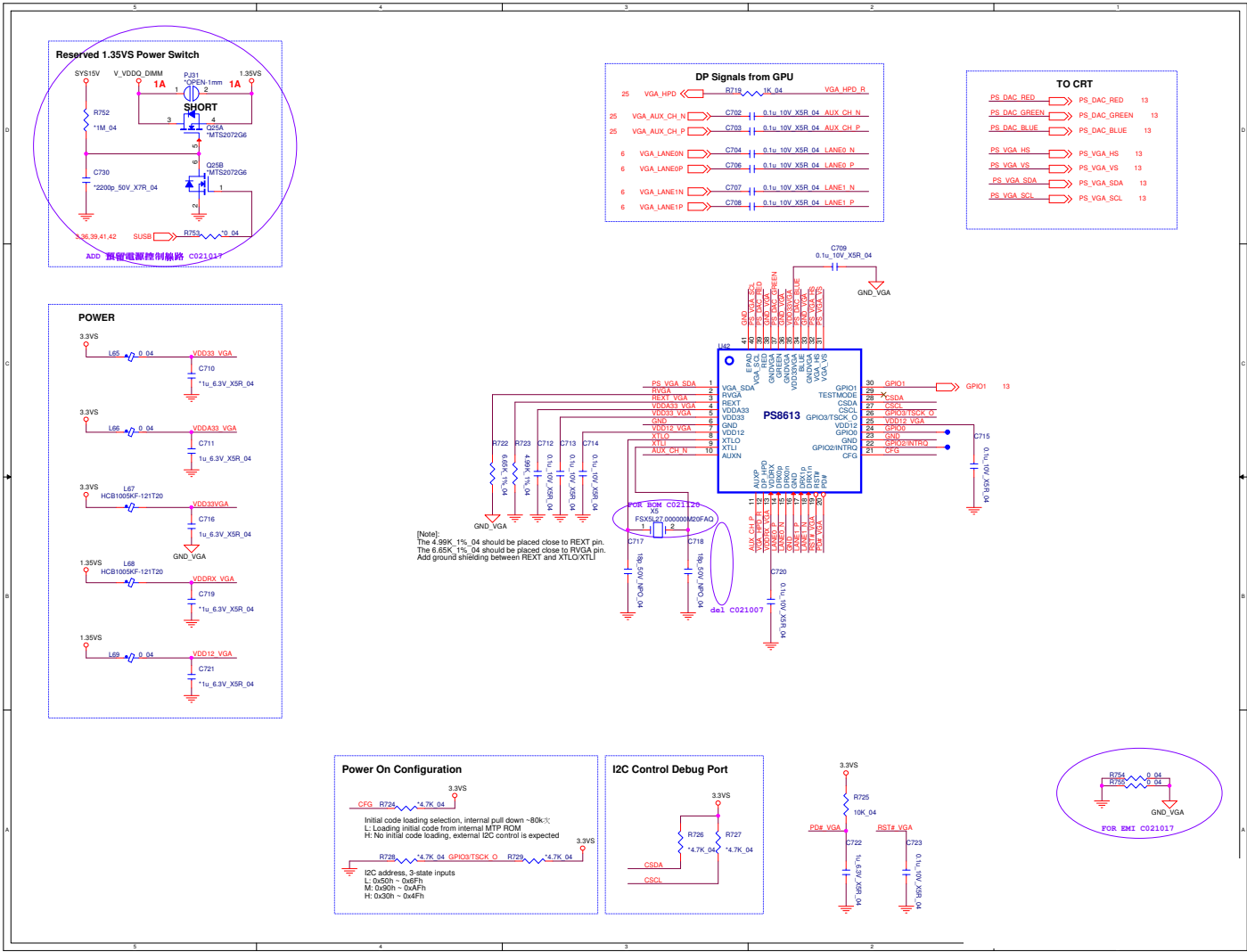
Sheet 10 of 51
DDR3 SO-DIMM
B_0

B.Schematic Diagrams

Schematic Diagrams

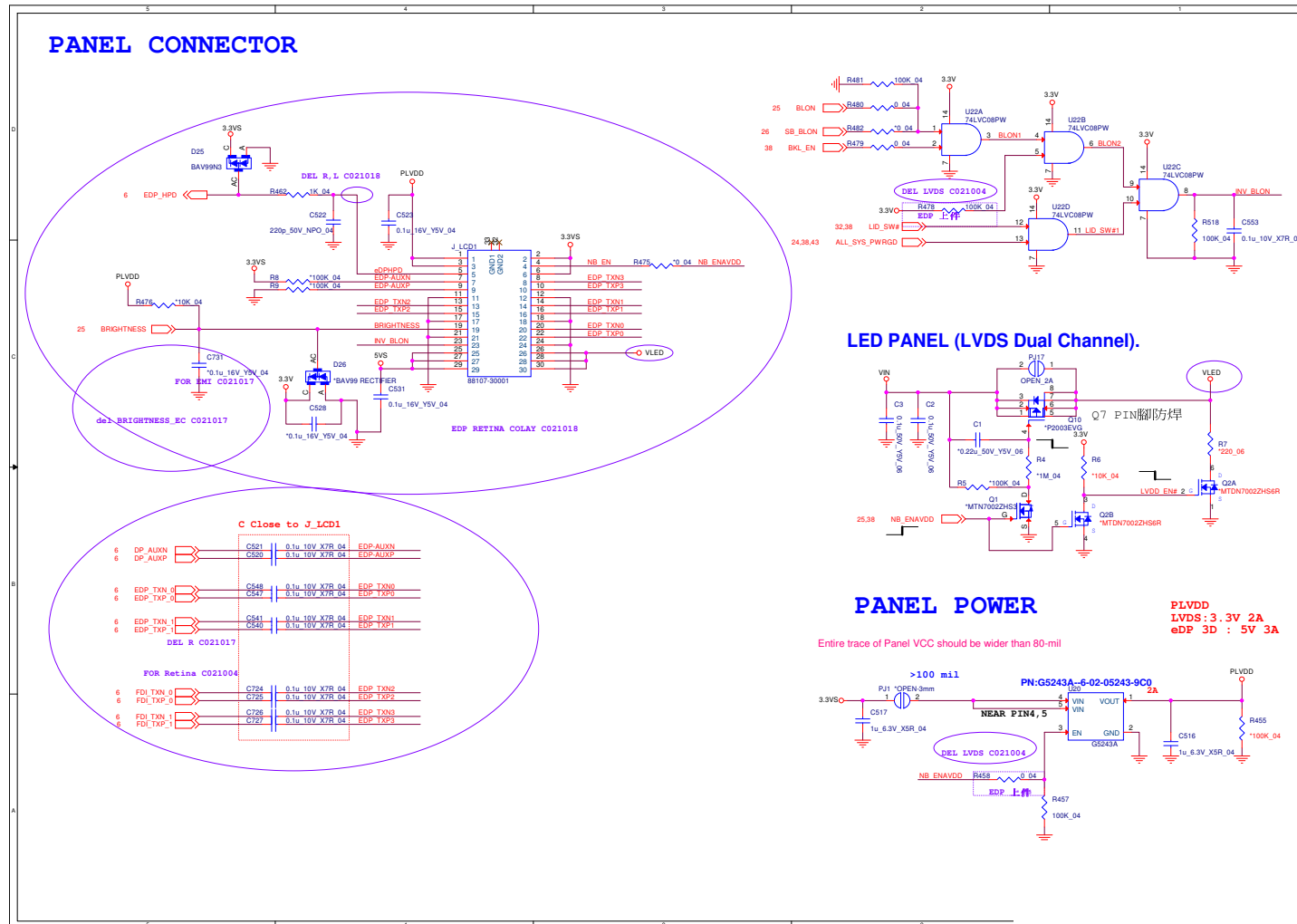
PS8625

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PS8625



Panel, Inverter, CRT

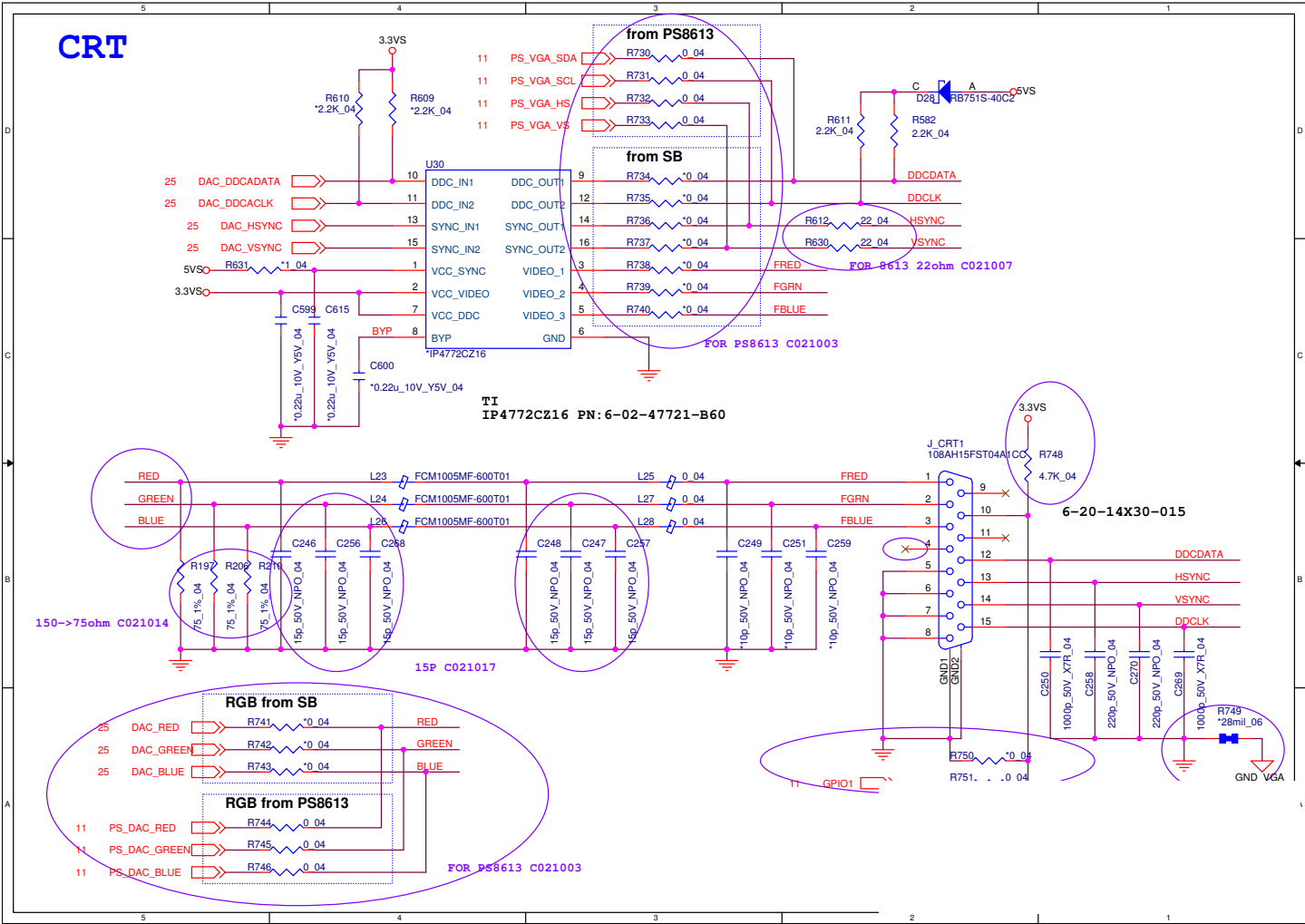
Sheet 12 of 51
Panel, Inverter,
CRT



Schematic Diagrams

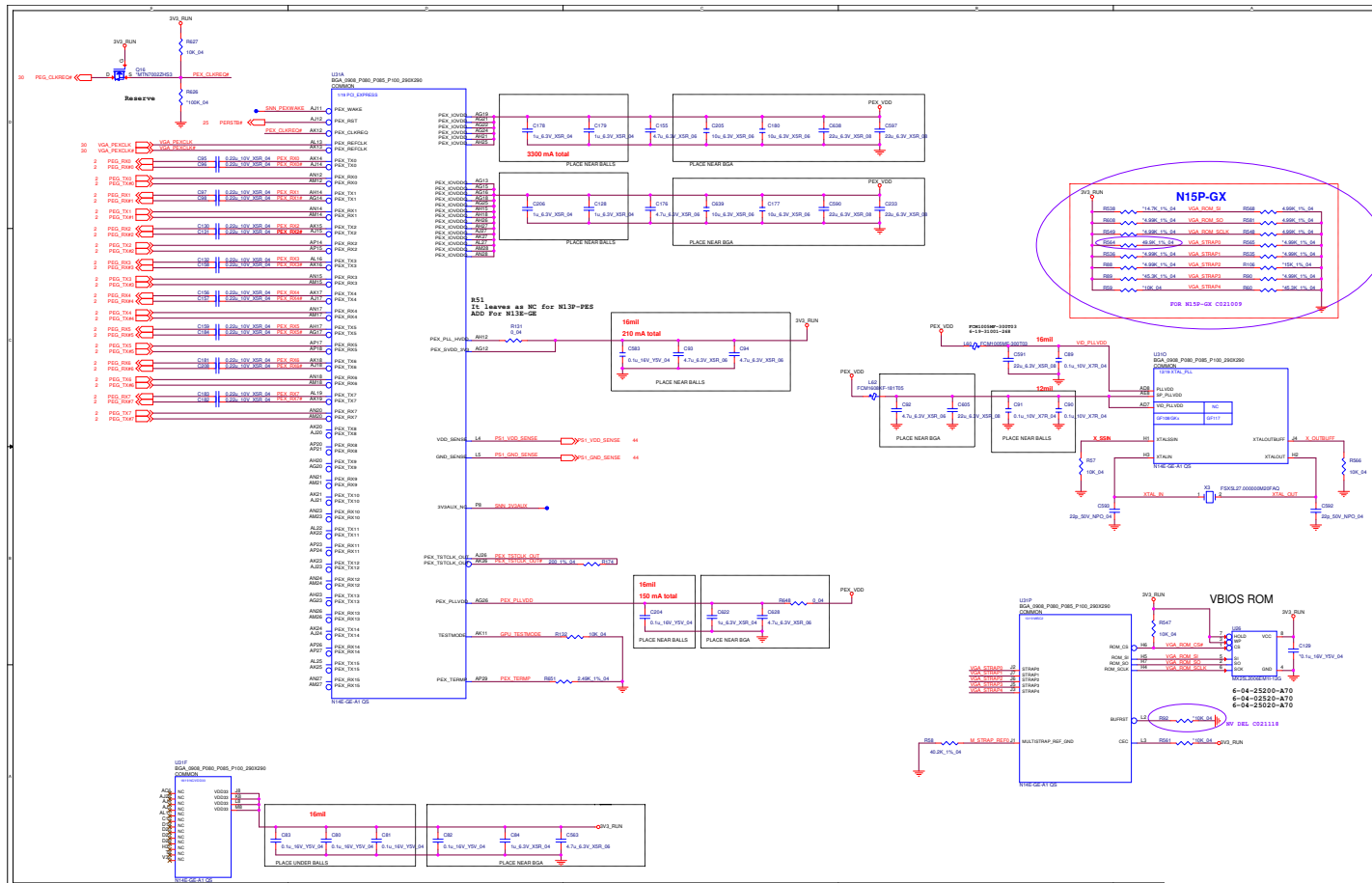
CRT

Sheet 13 of 51
CRT



VGA PCI-E Interface

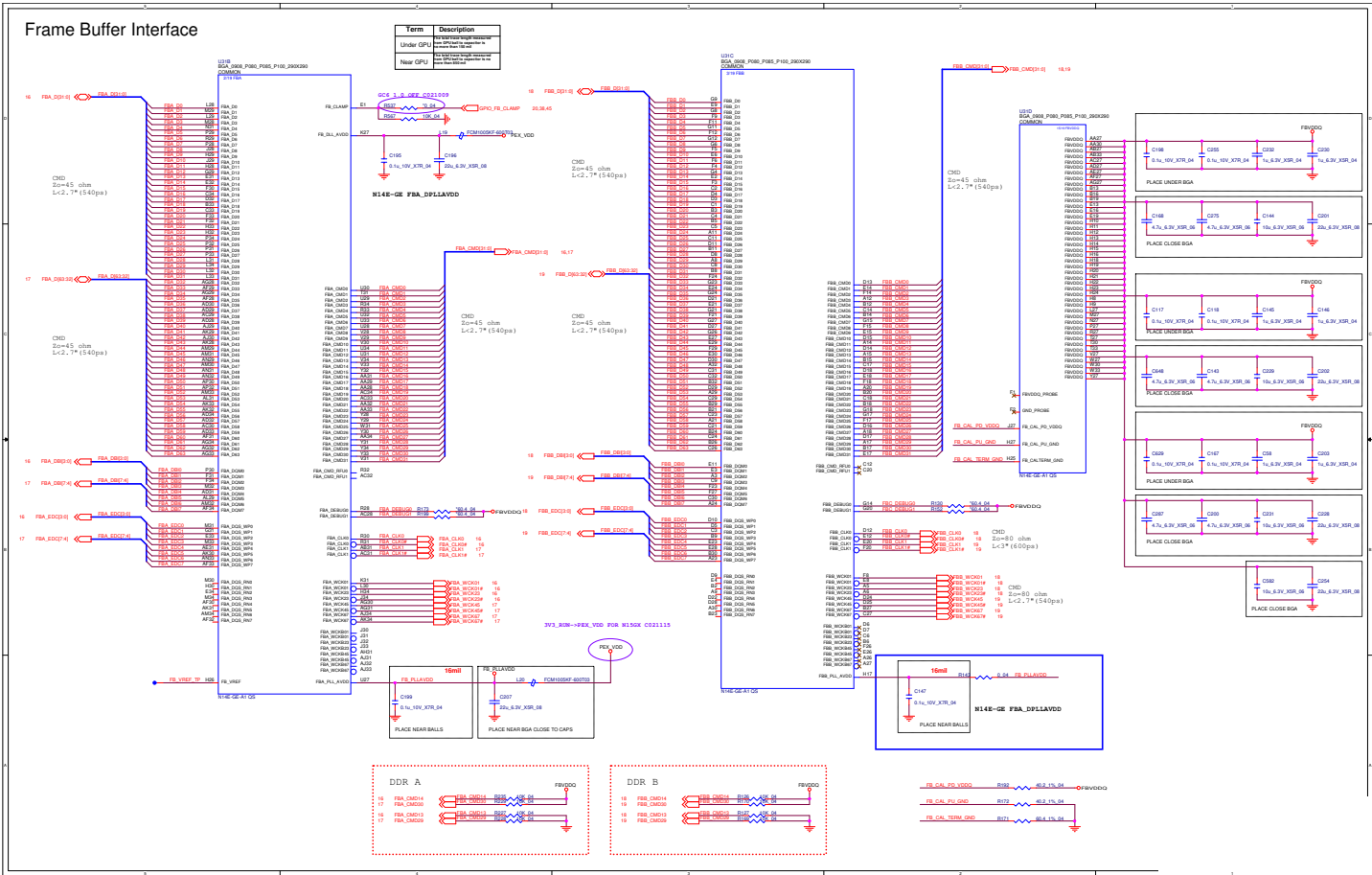
Sheet 14 of 51
VGA PCI-E
Interface



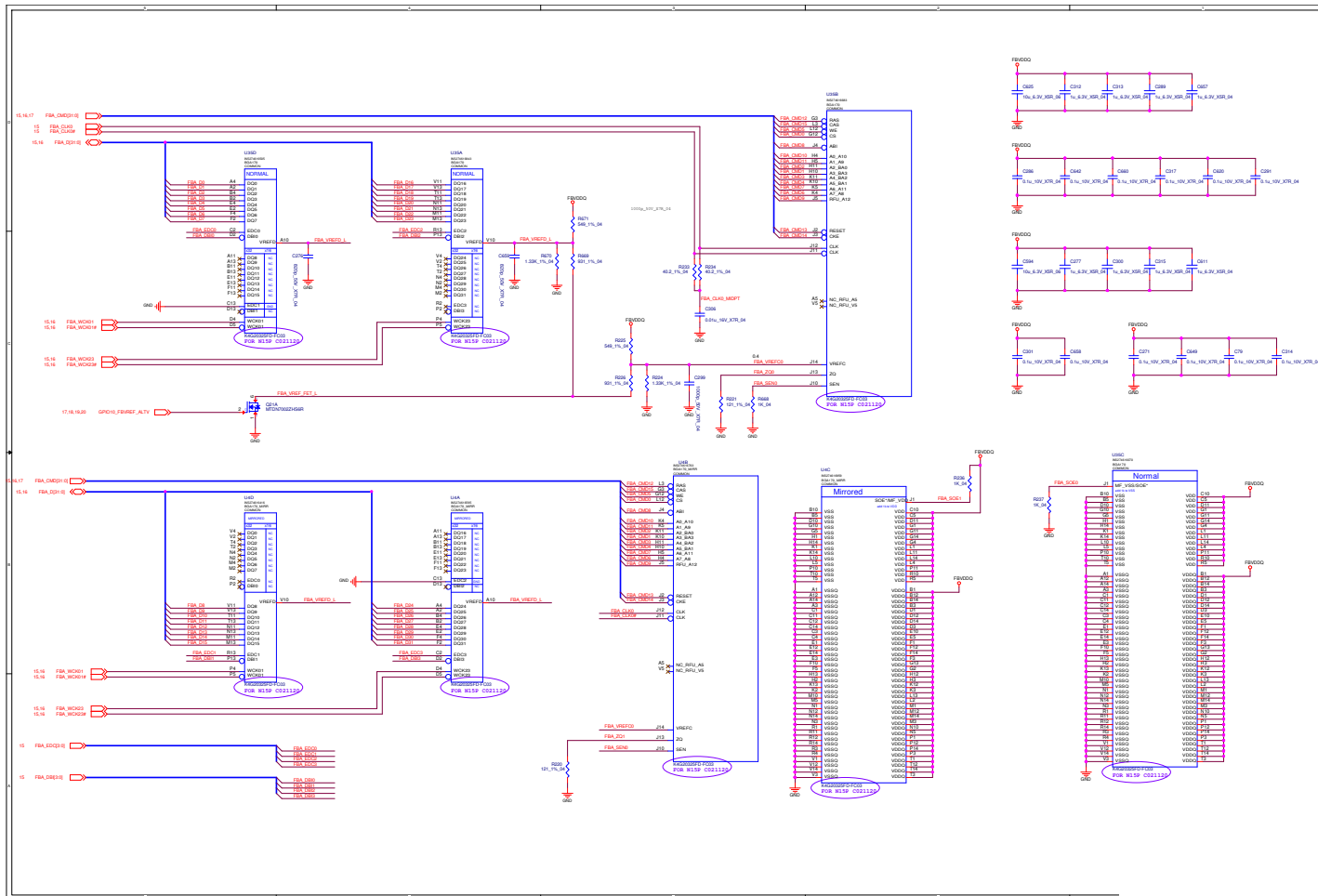
VGA Frame Buffer Interface

B. Schematic Diagrams

Sheet 15 of 51
VGA Frame Buffer
Interface

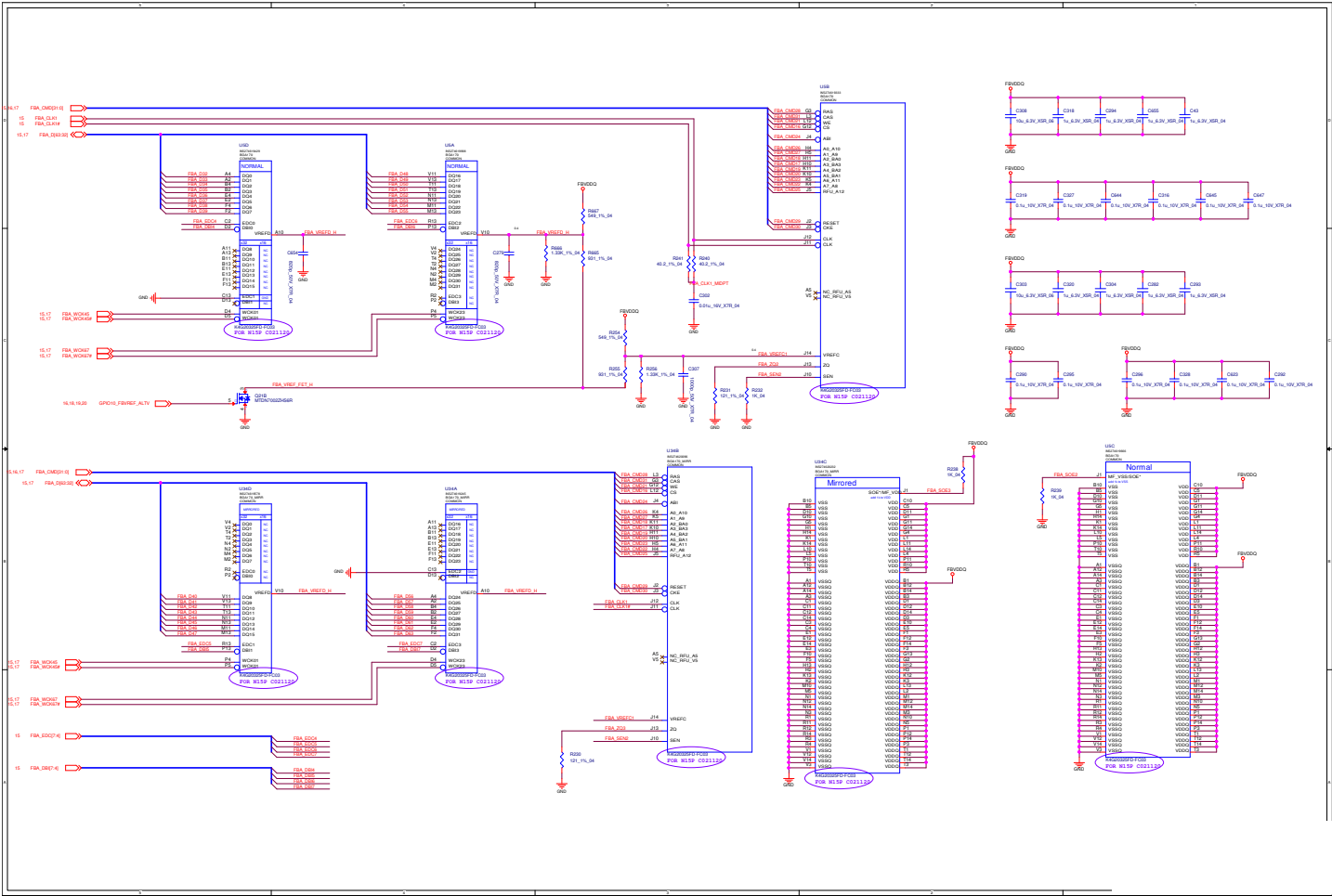


VGA Frame Buffer A



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VGA Frame Buffer A

VGA Frame Buffer A

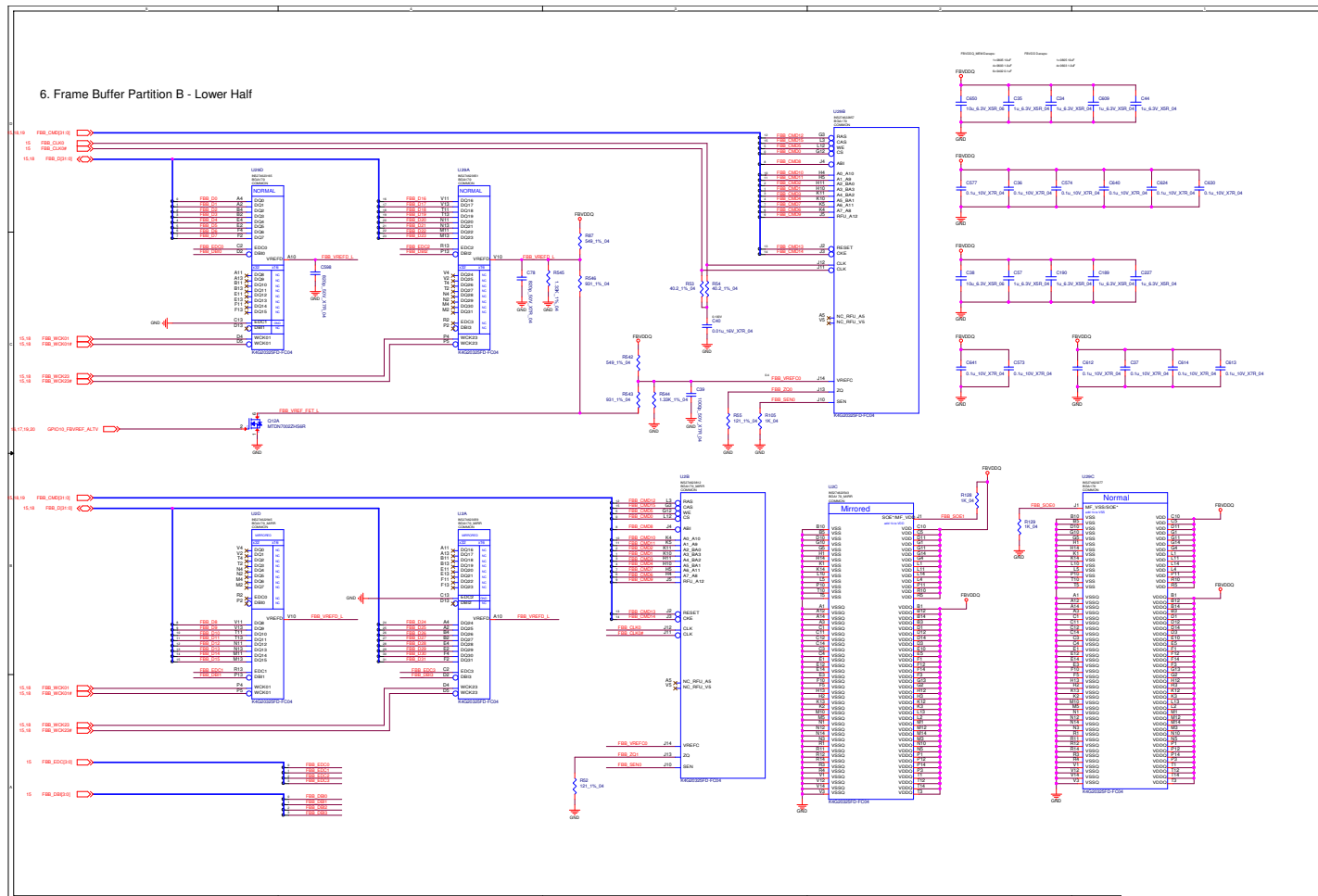


Sheet 17 of 51
VGA Frame Buffer
A

B.Schematic Diagrams

VGA Frame Buffer B

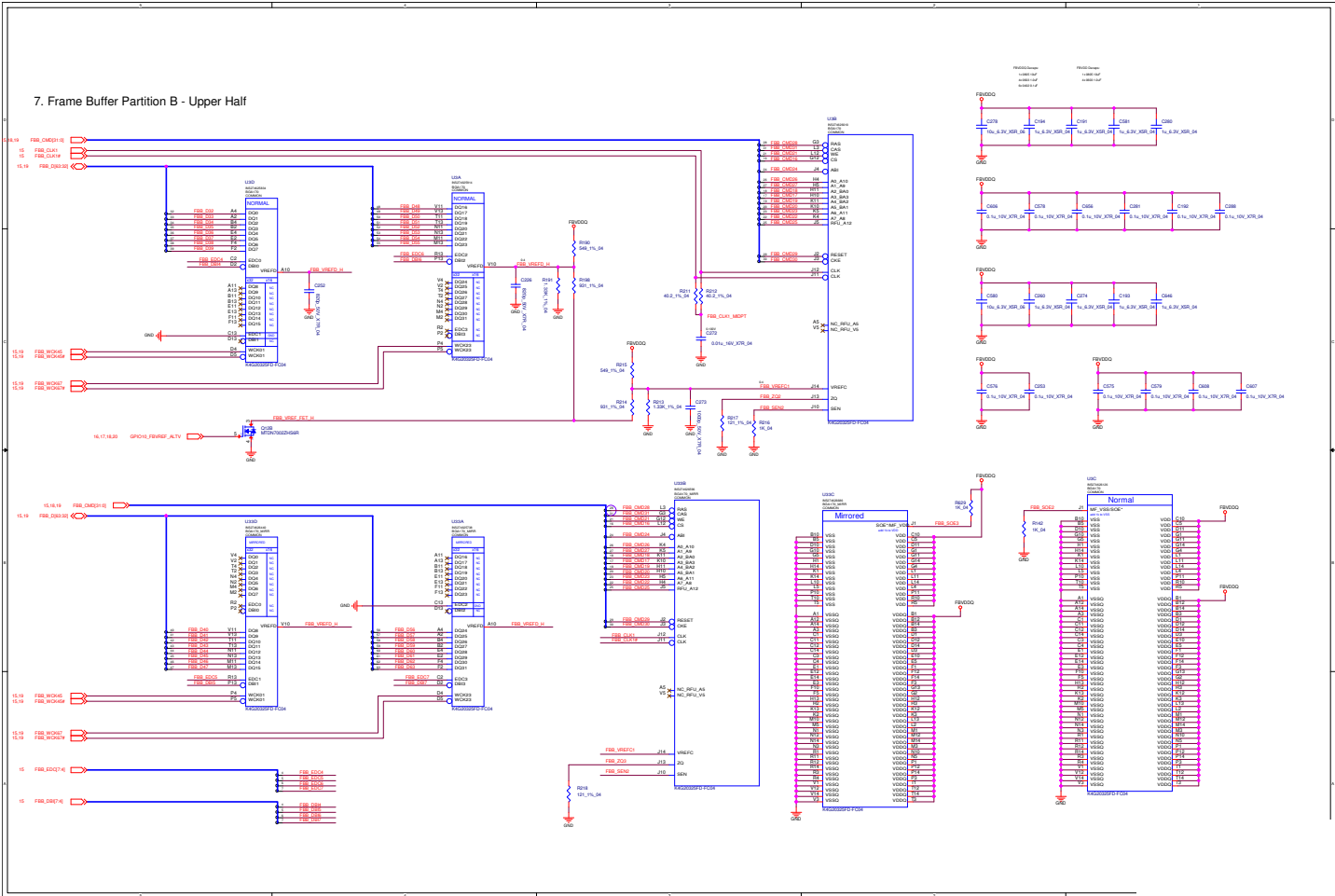
Sheet 18 of 51
VGA Frame Buffer
B



VGA Frame Buffer B

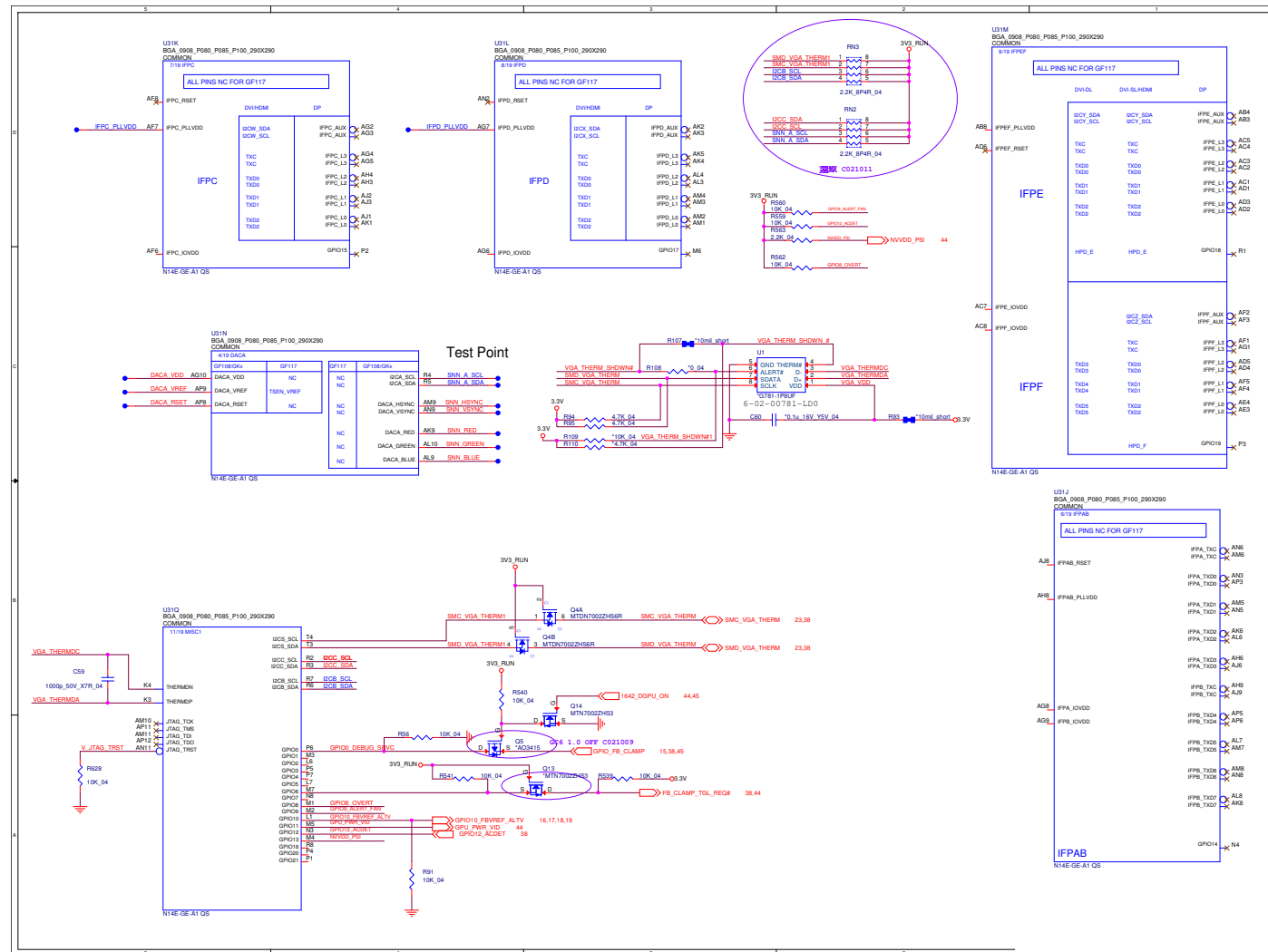
B.Schematic Diagrams

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VGA Frame Buffer
B



Schematic Diagrams

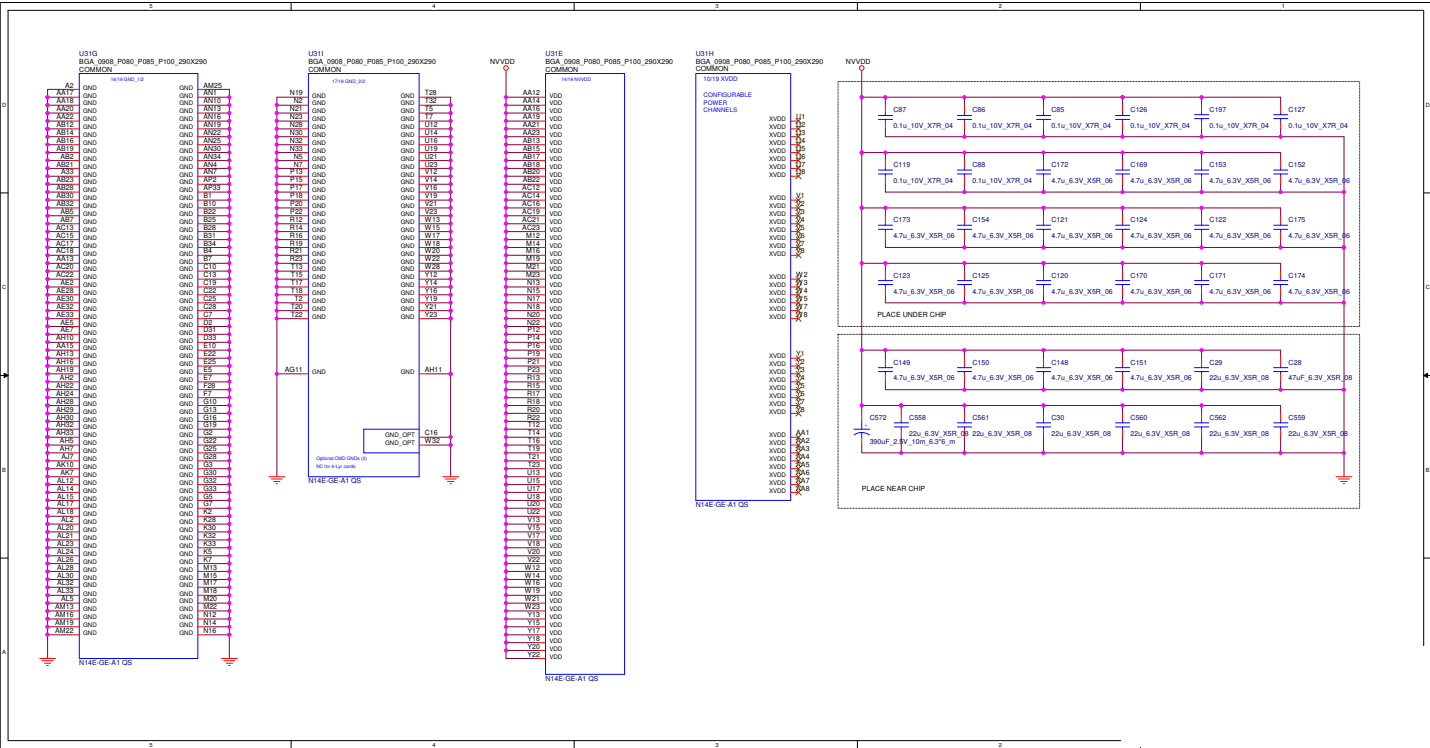
VGA I/O



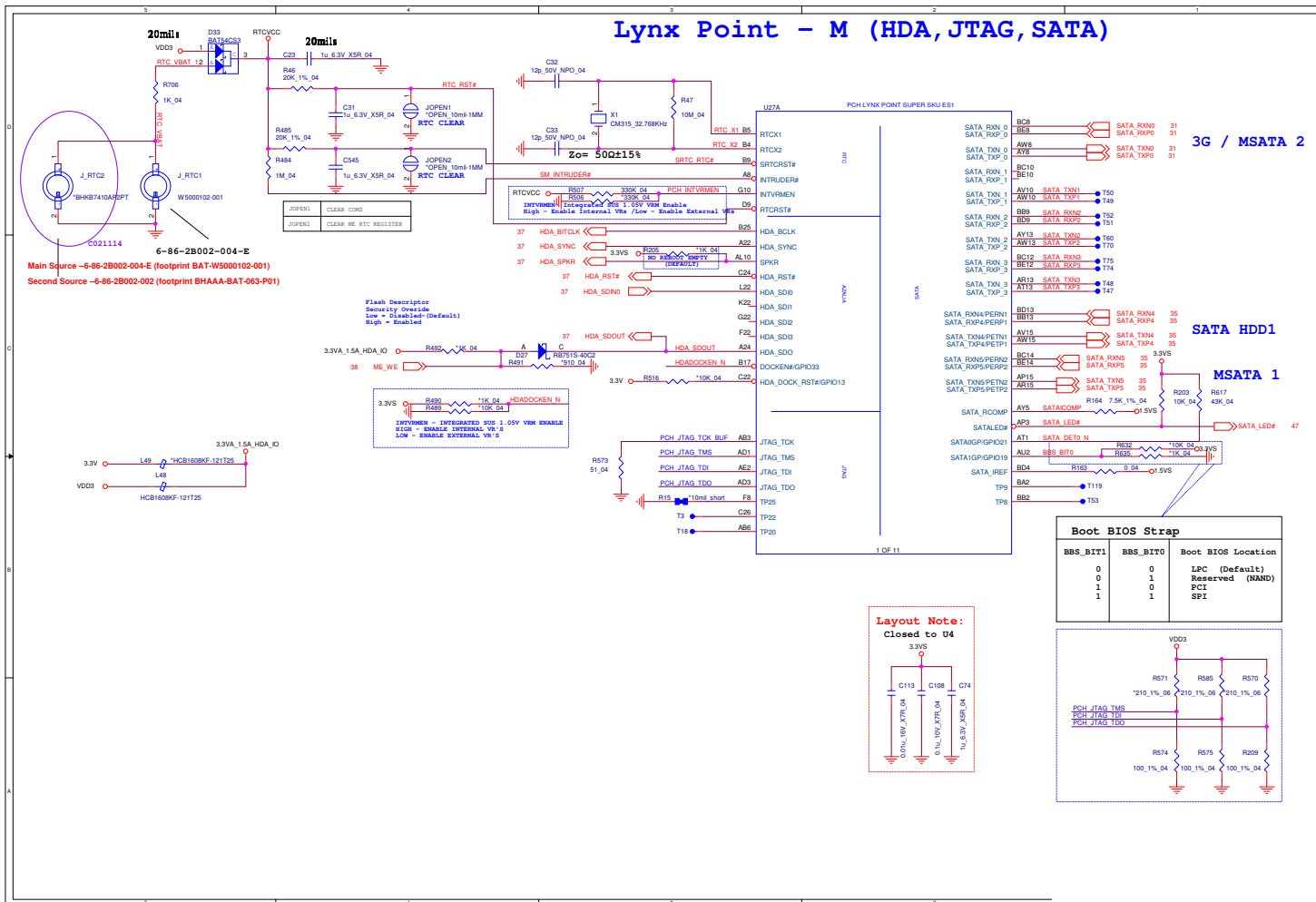
Schematic Diagrams

VGA NVDD Decoupling

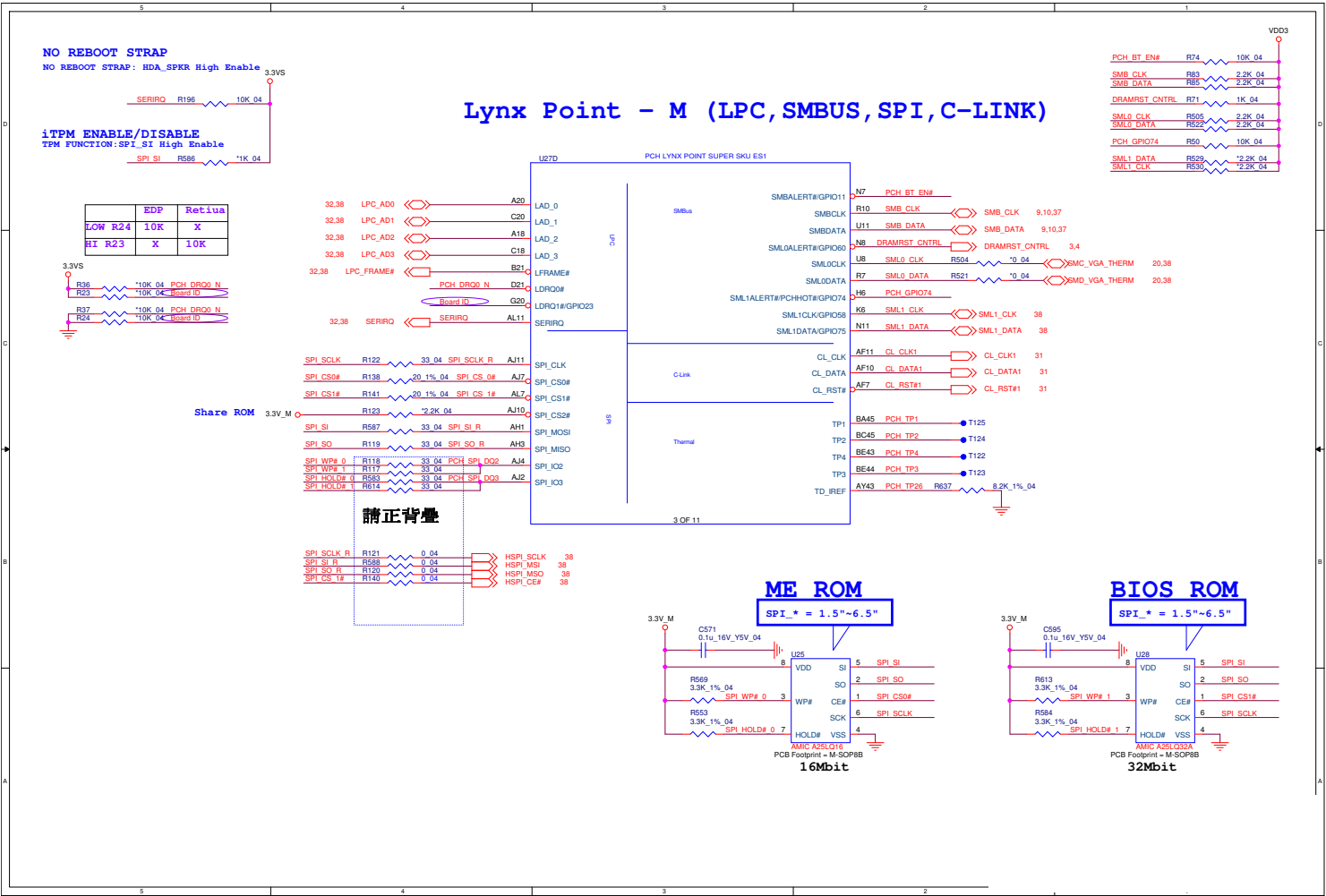
Sheet 21 of 51
VGA NVDD
Decoupling



Lynx 1/9

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Lynx 1/9

Lynx 2/9



Sheet 23 of 51
Lynx 2/9

B.Schematic Diagrams

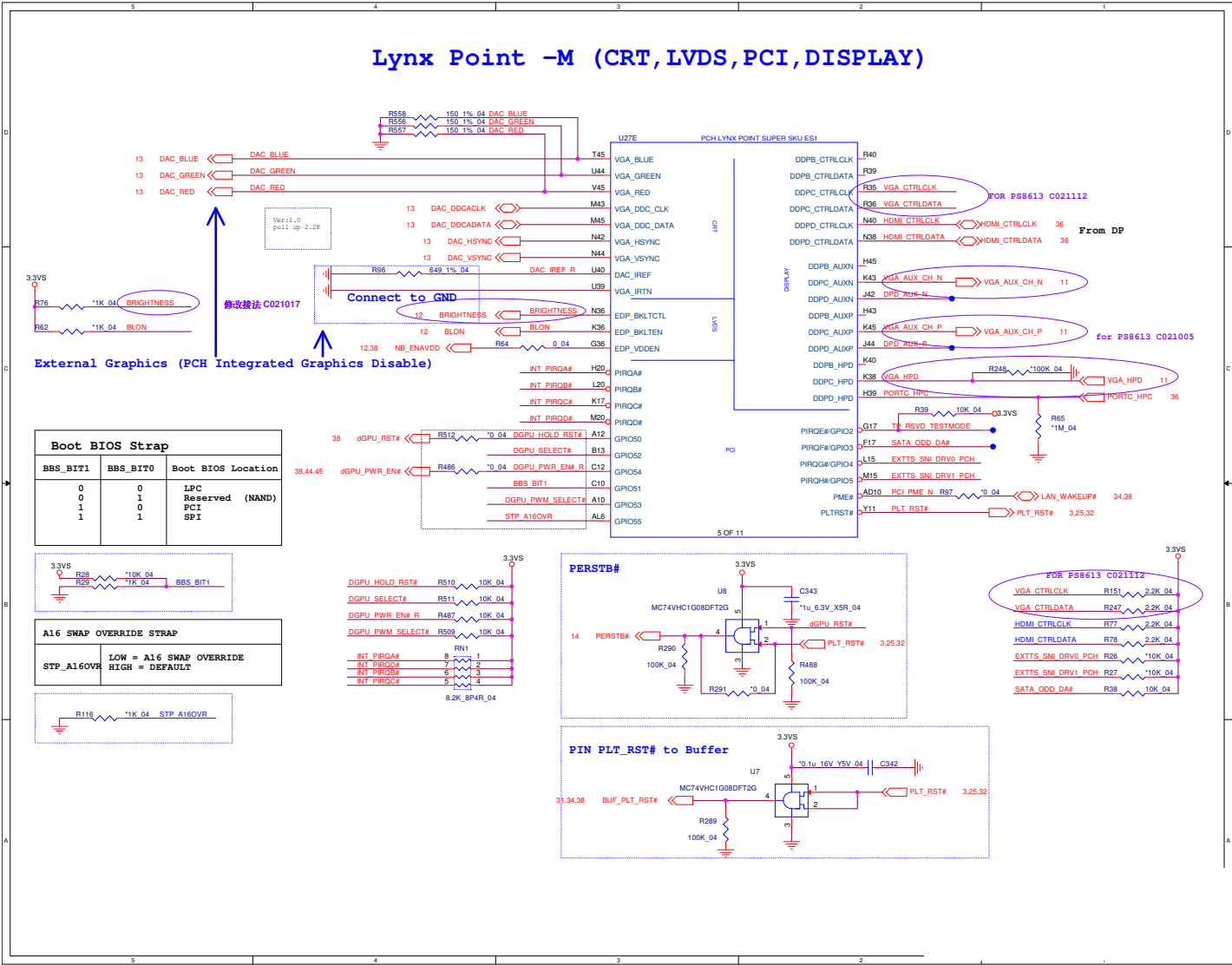
Sheet 24 of 51
Lynx 3/9



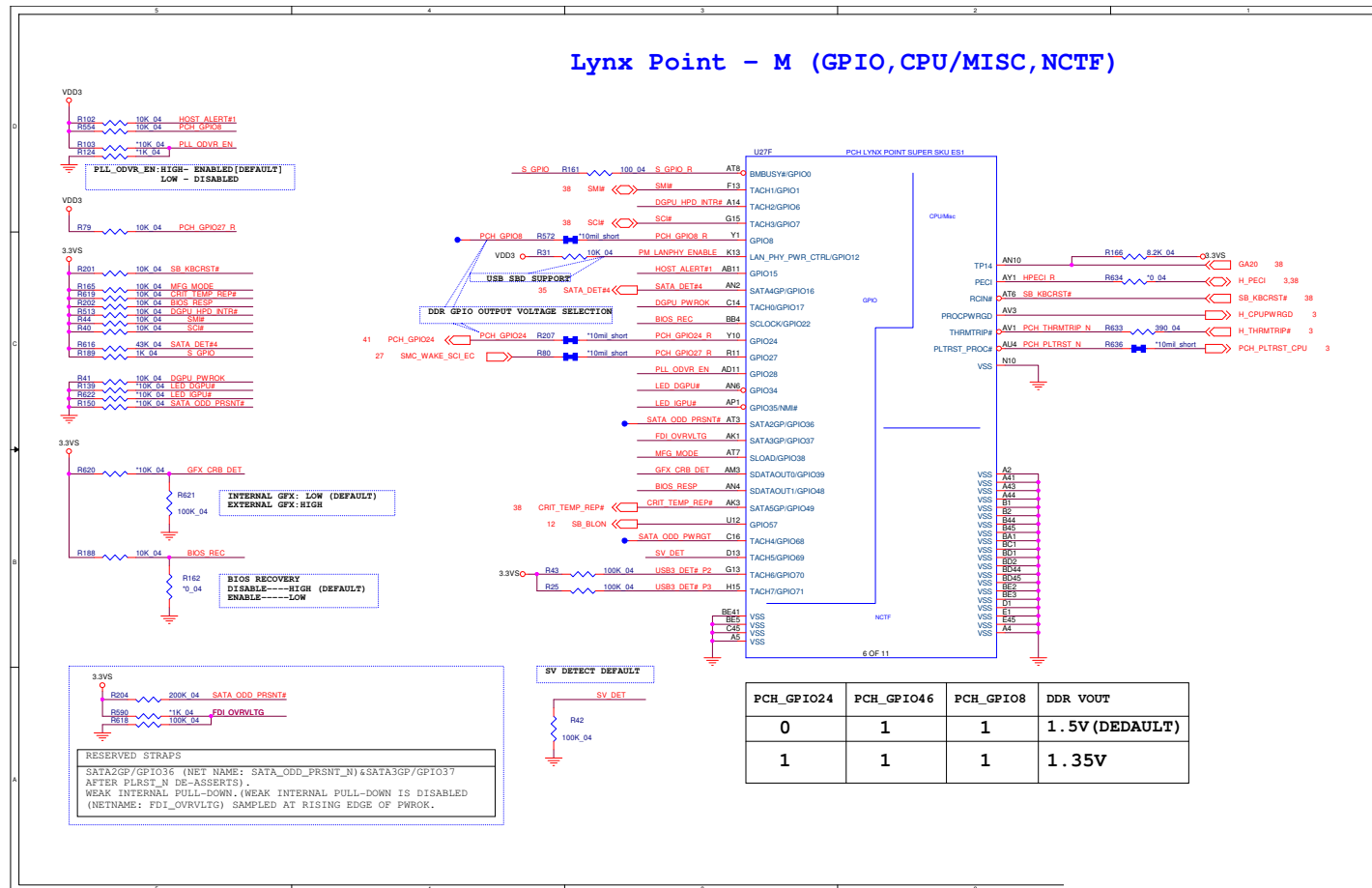
Schematic Diagrams

Lynx 4/9

Sheet 25 of 51
Lynx 4/9

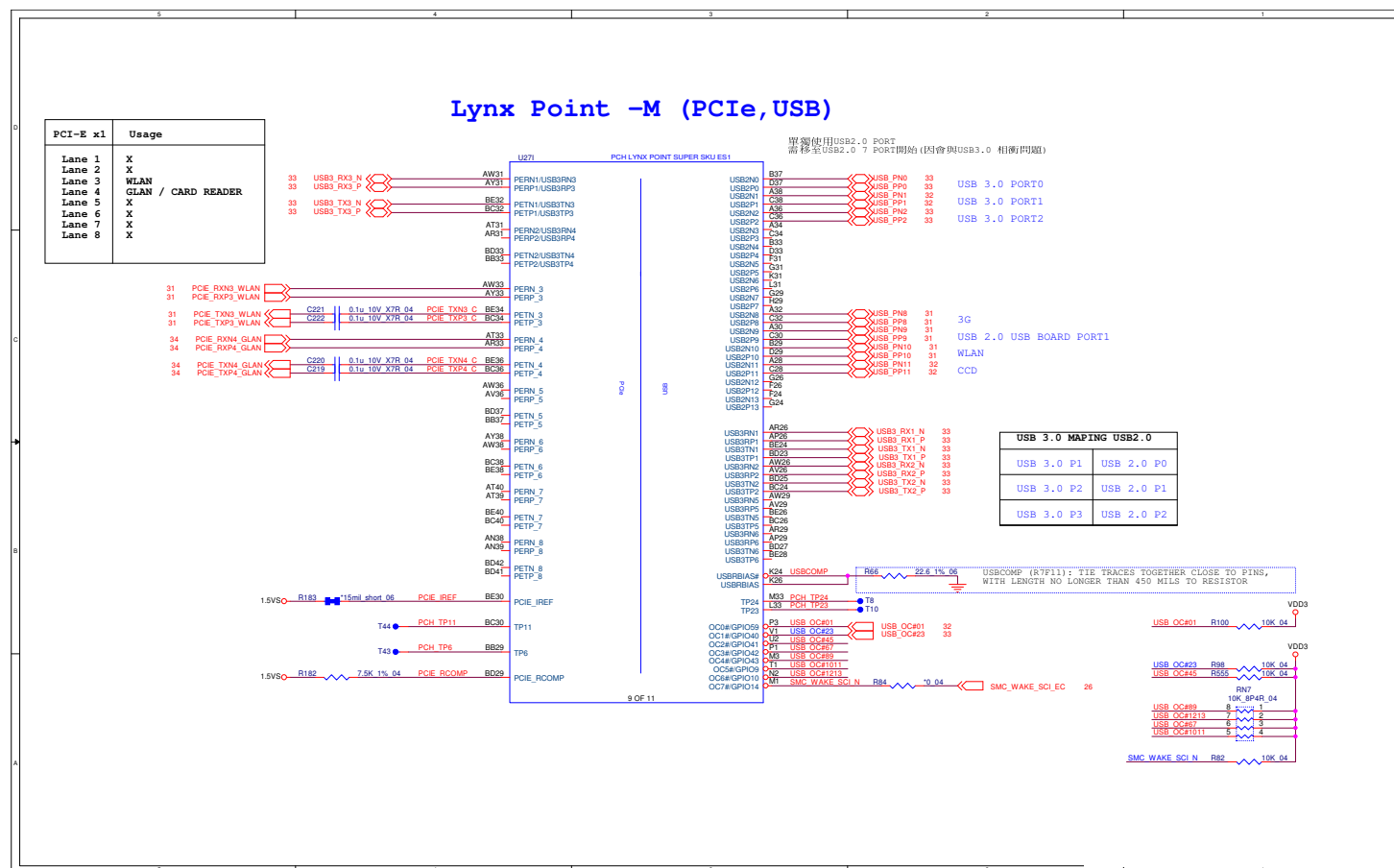


Lynx 5/9

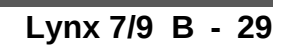
Sheet 26 of 51
Lynx 5/9

Lynx 6/9

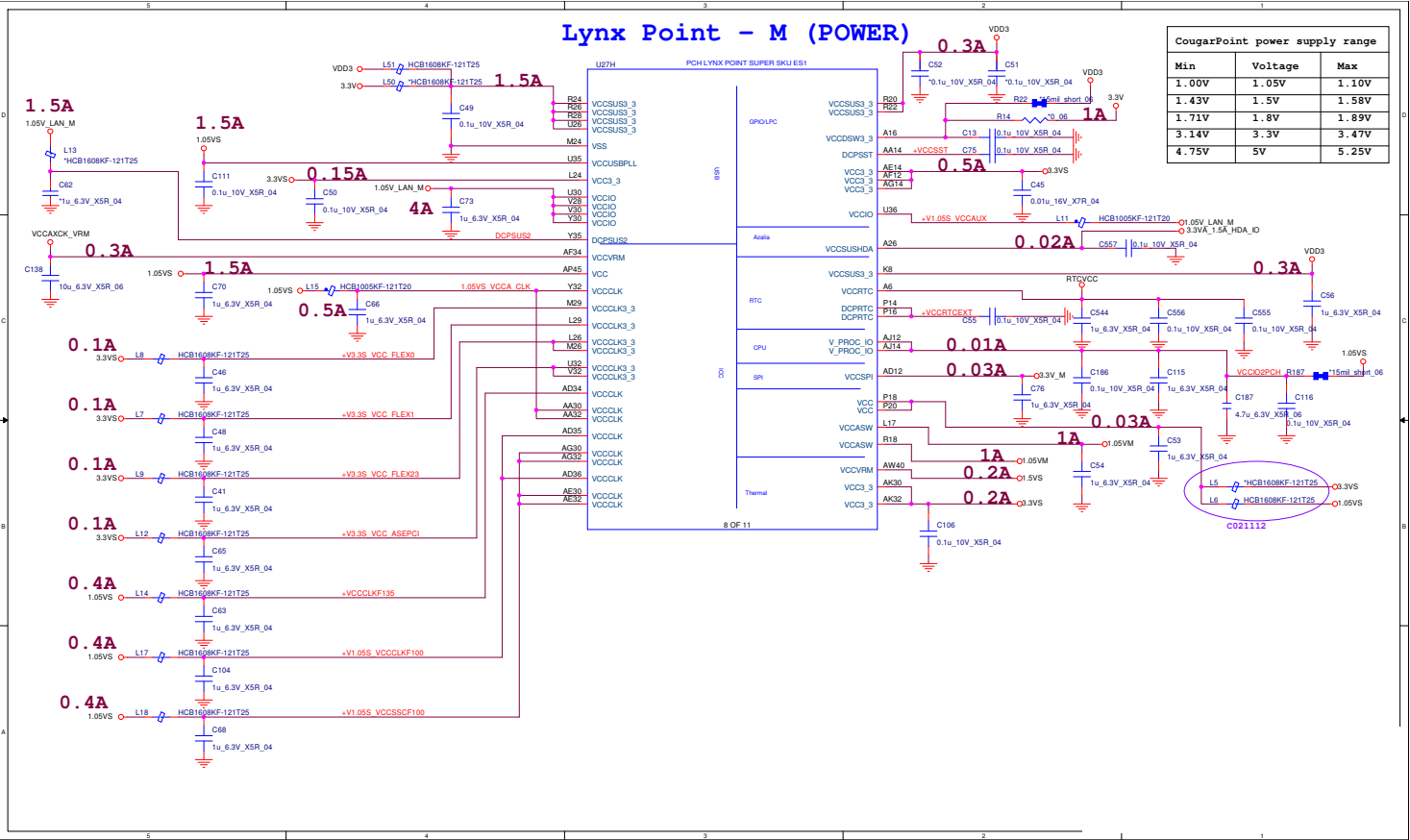
B. Schematic Diagrams



Sheet 28 of 51
Lynx 7/9

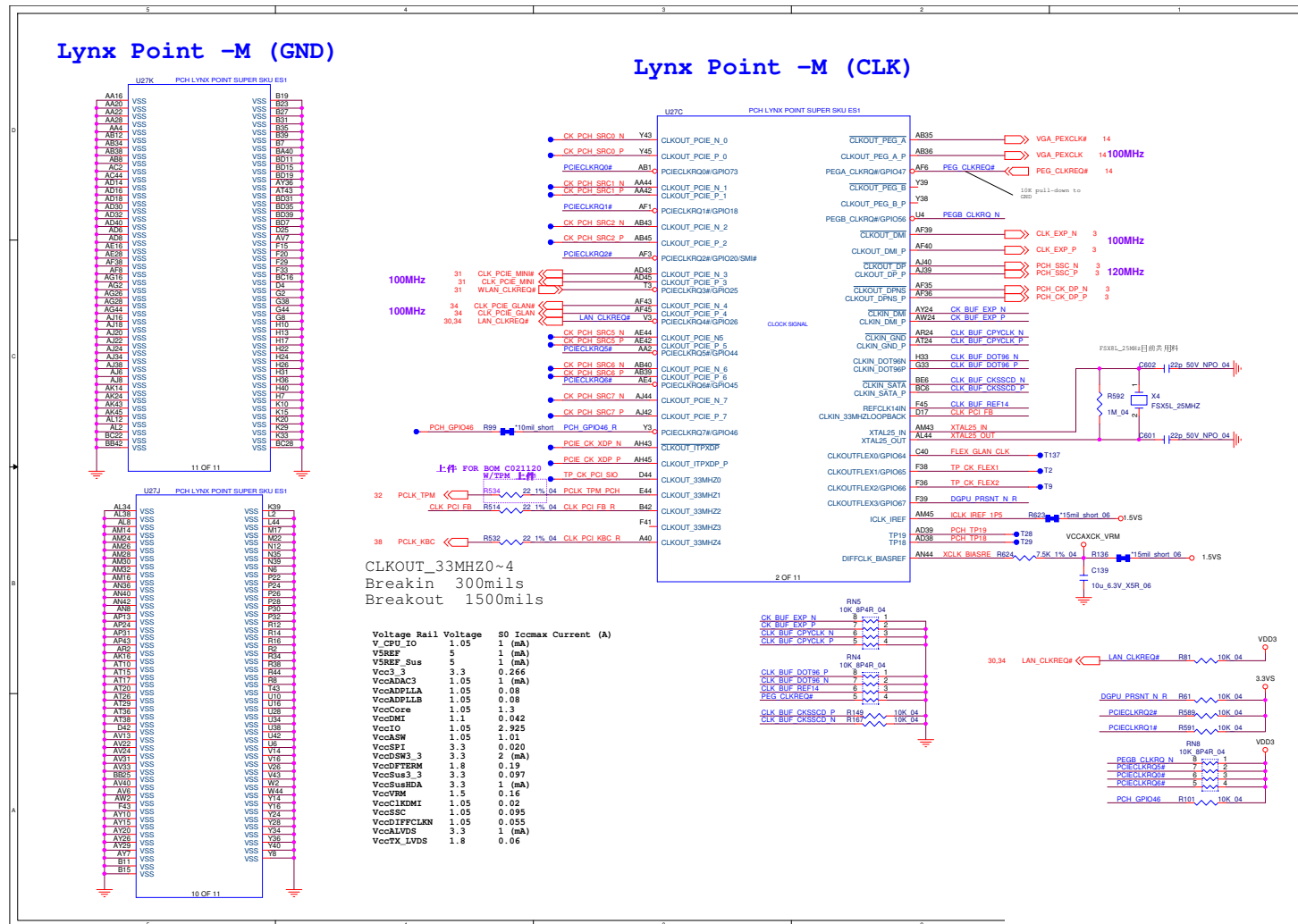


Lynx 8/9



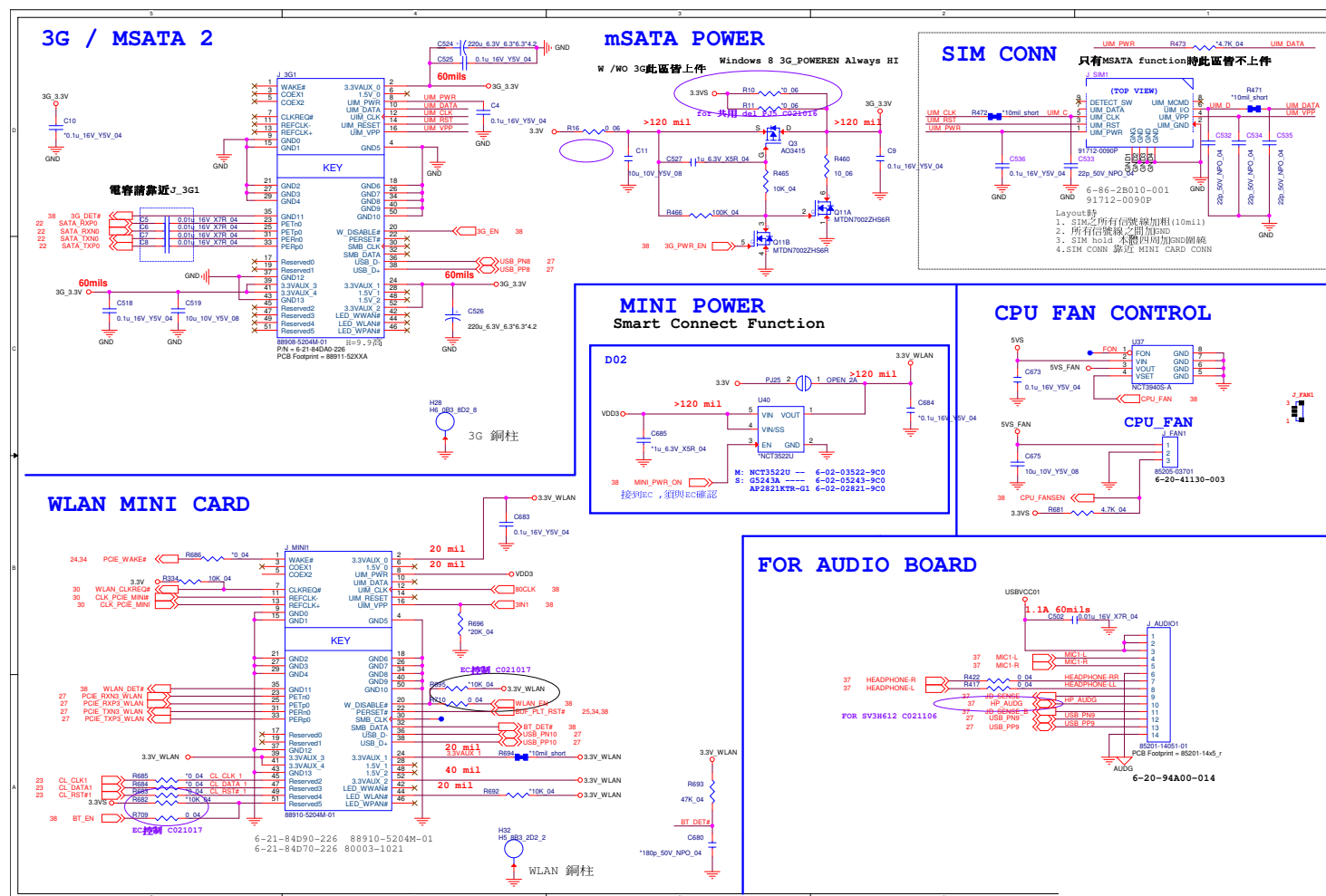
Sheet 29 of 51
Lynx 8/9

Lynx 9/9

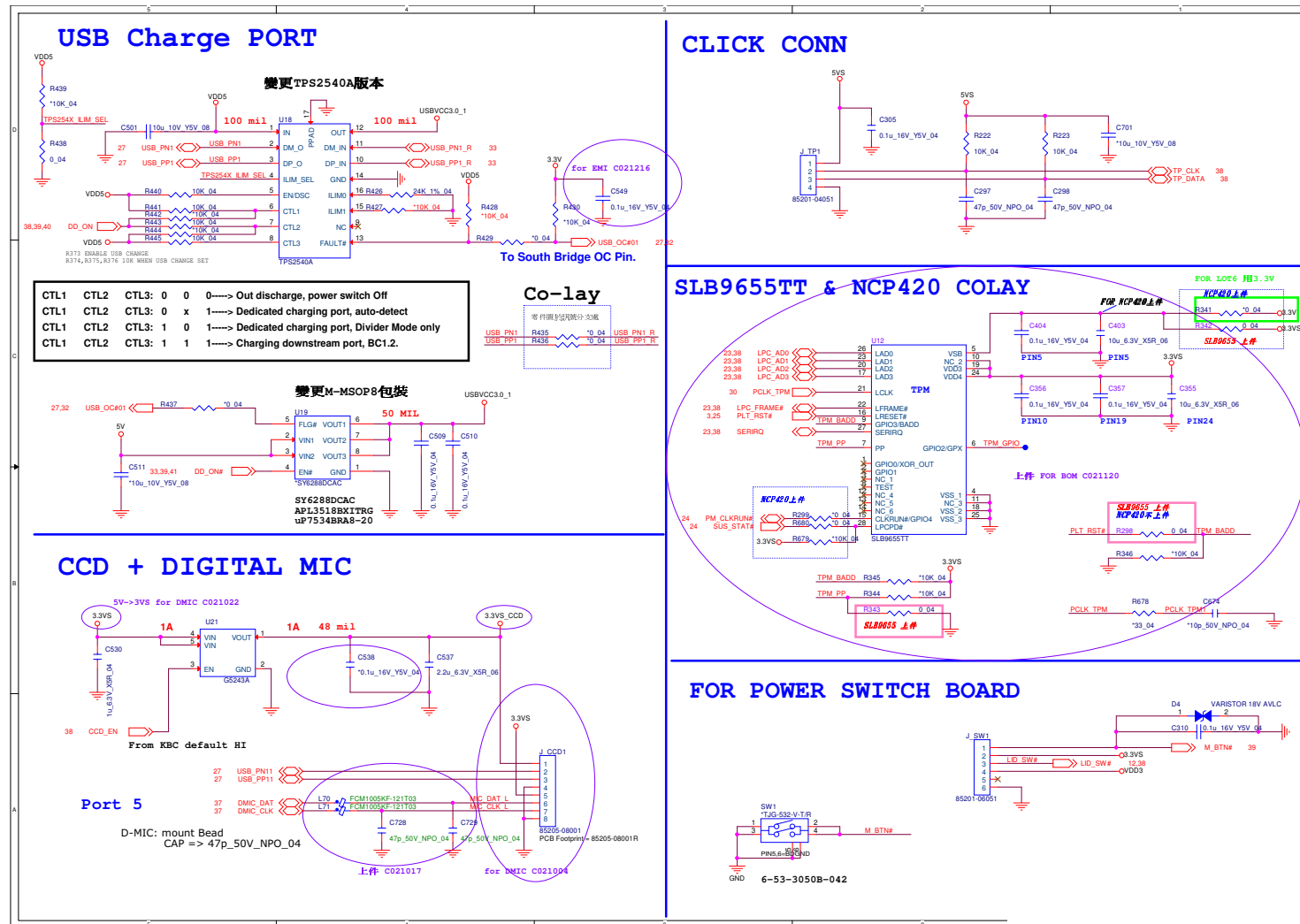
Sheet 30 of 51
Lynx 9/9

Mini PCIE, 3G, Fan, Audio Con

Sheet 31 of 51
Mini PCIE, 3G, FAN,
Audio Con



USB Charge, CCD, TPM, Multi-Con

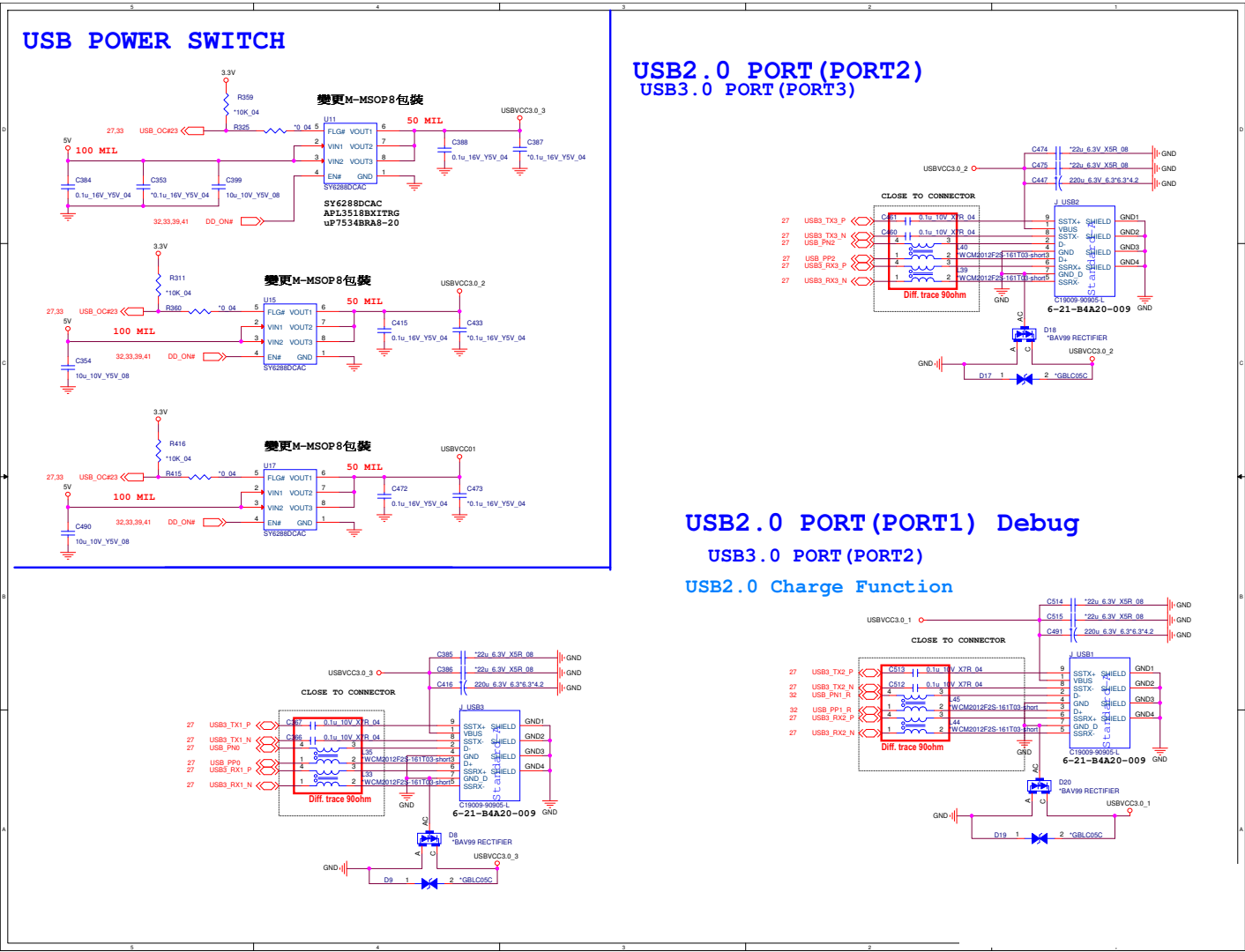


Sheet 32 of 51
 USB Charge, CCD,
 TPM, Multi-Con

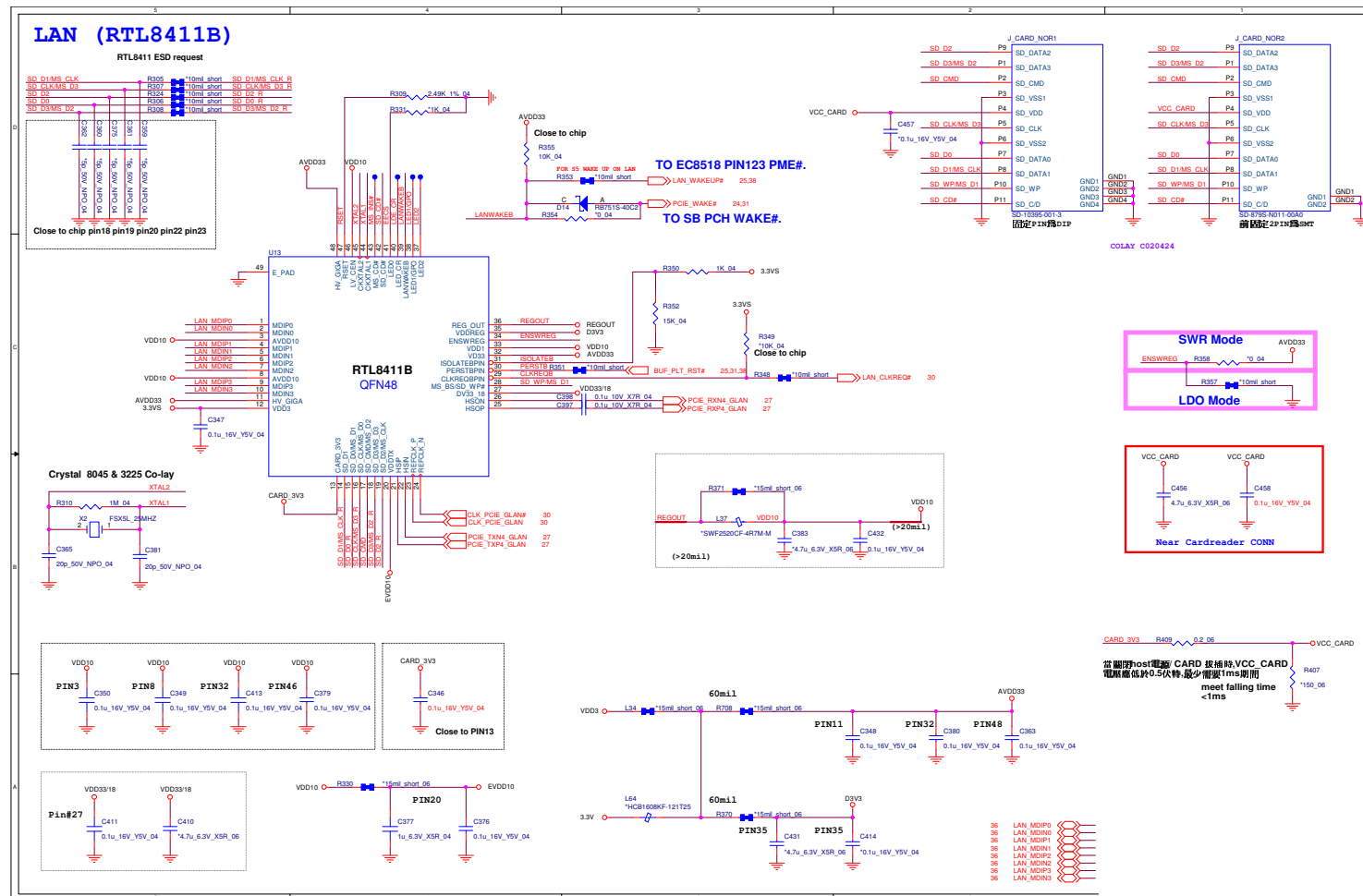
Schematic Diagrams

USB3.0 Connector

Sheet 33 of 51
USB3.0 Connector

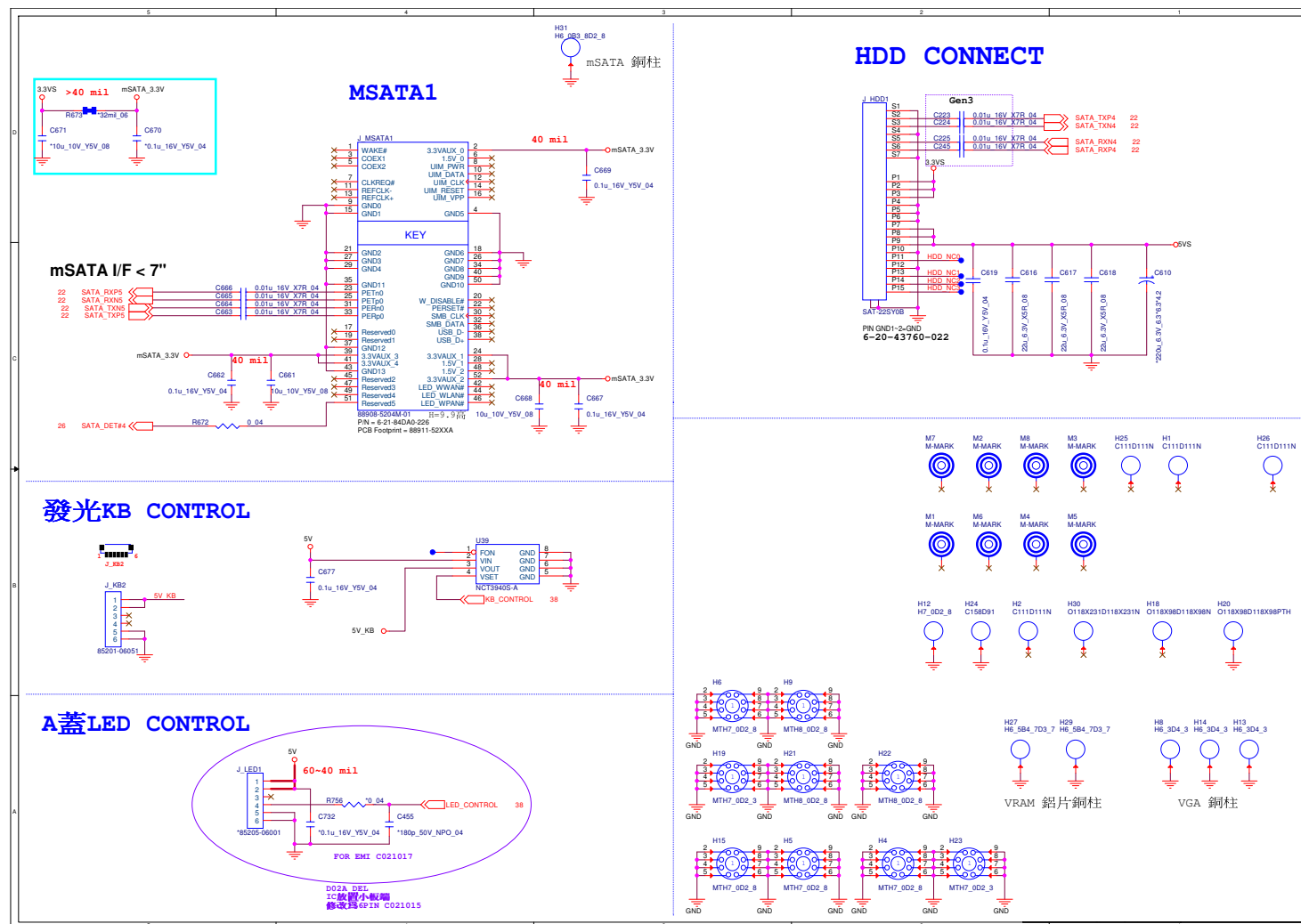


Card Reader / LAN RTL8411B

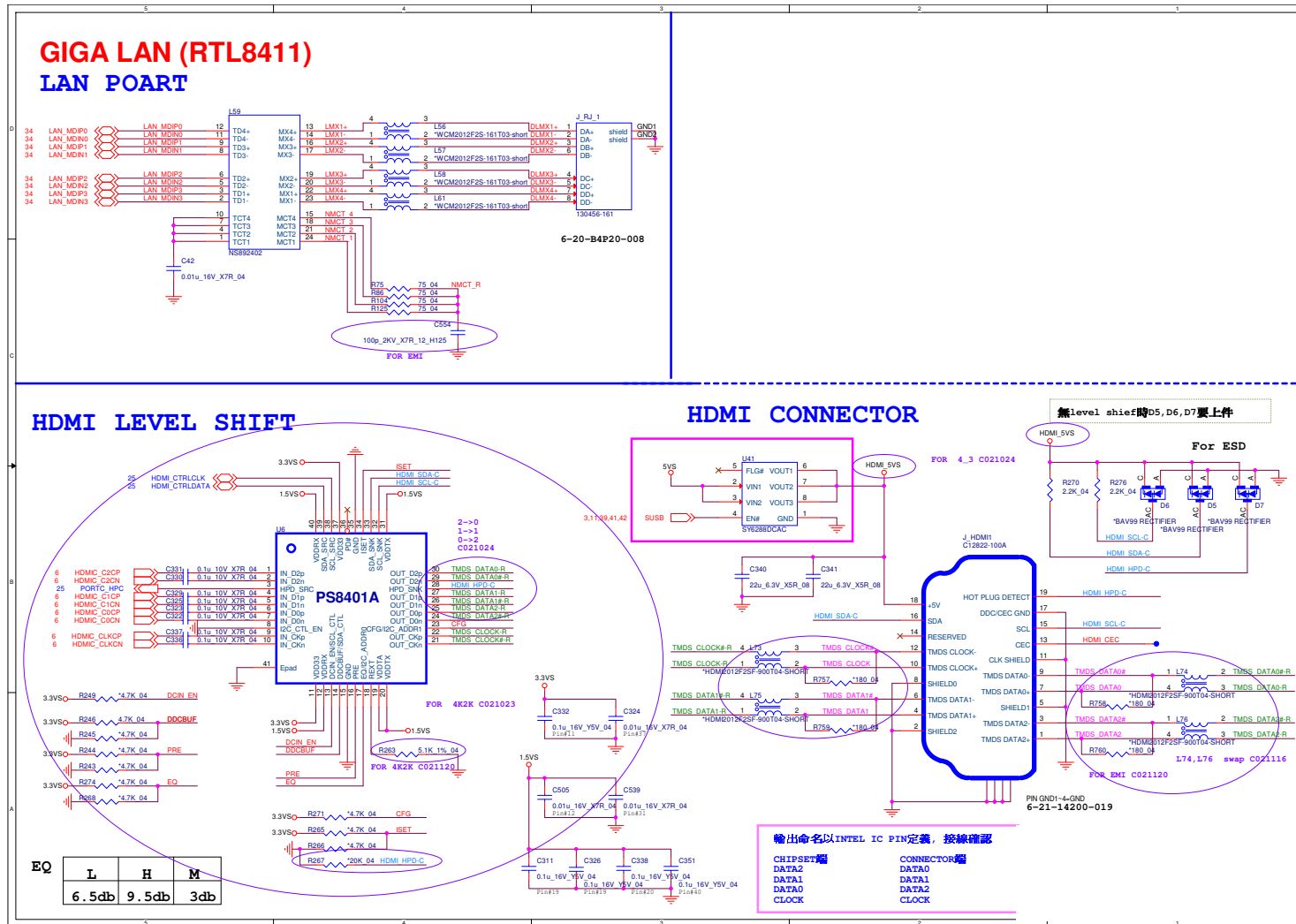


Sheet 34 of 51
Card Reader /
LAN RTL8411B

Sheet 35 of 51
SATA HDD,
MSATA1, KB
Control



HDMI, RJ45

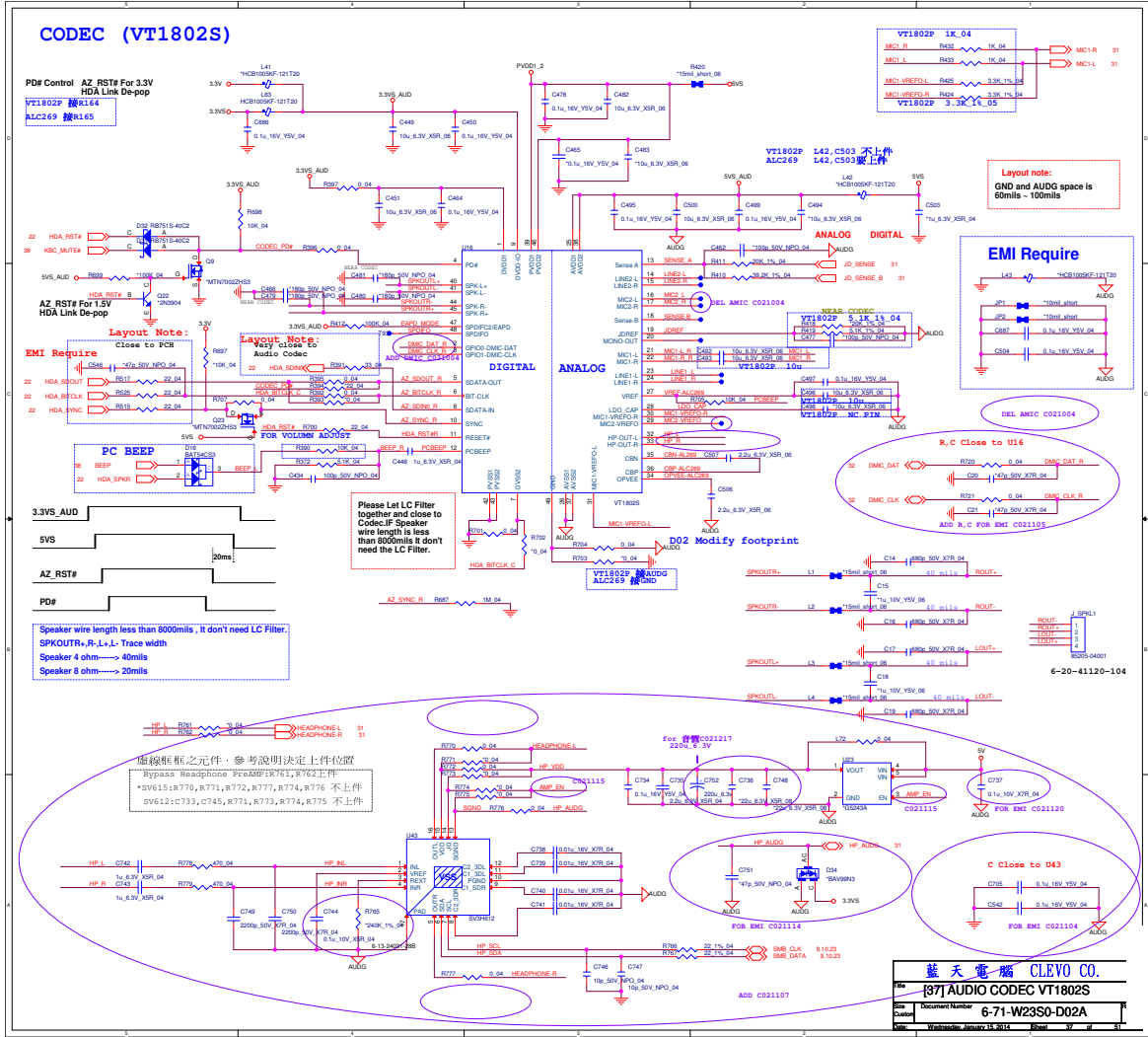


Sheet 36 of 51
HDMI, RJ45

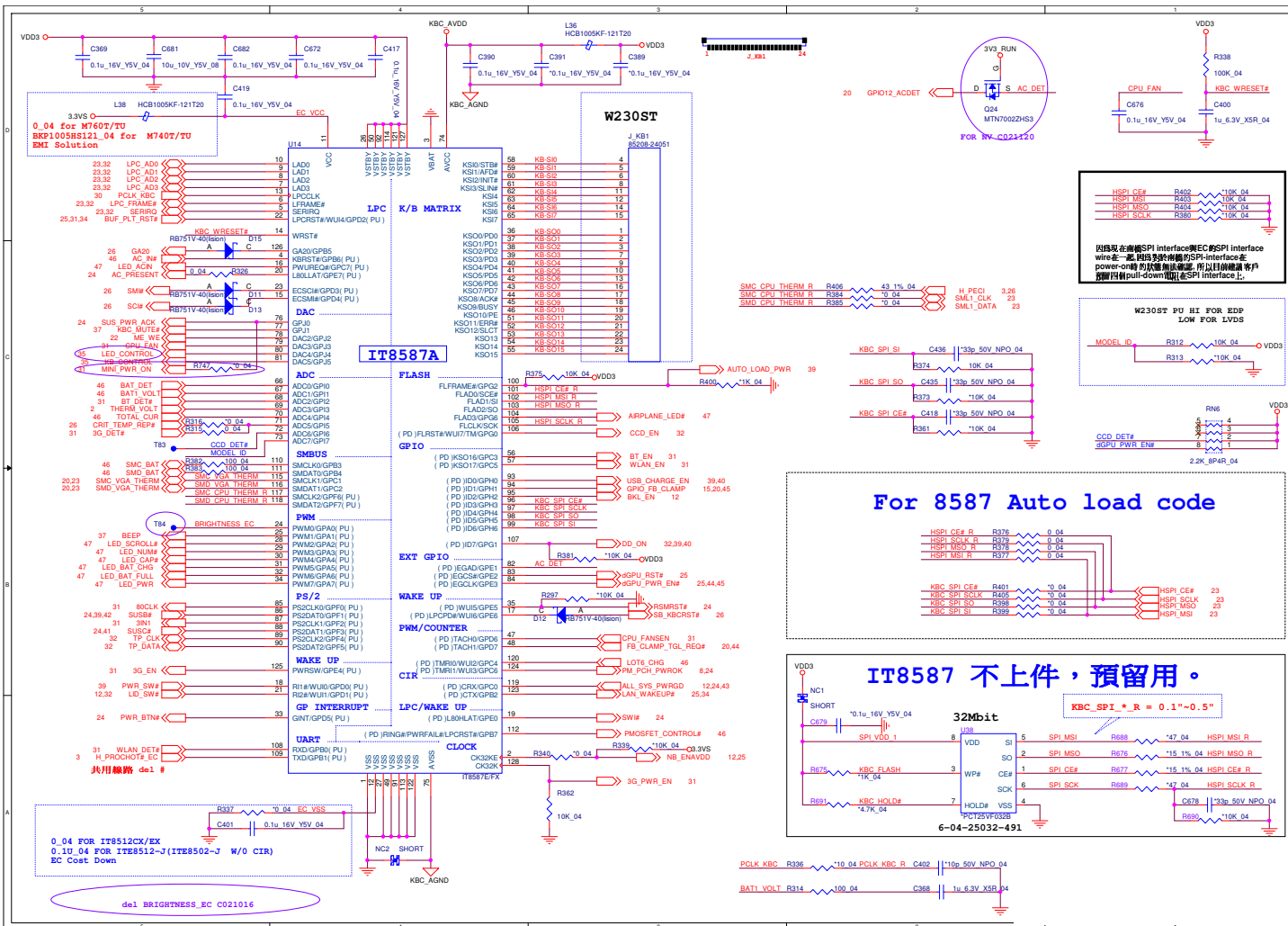
Audio Codec VT1802S

B.Schematic Diagrams

Sheet 37 of 51
Audio Codec
VT1802S



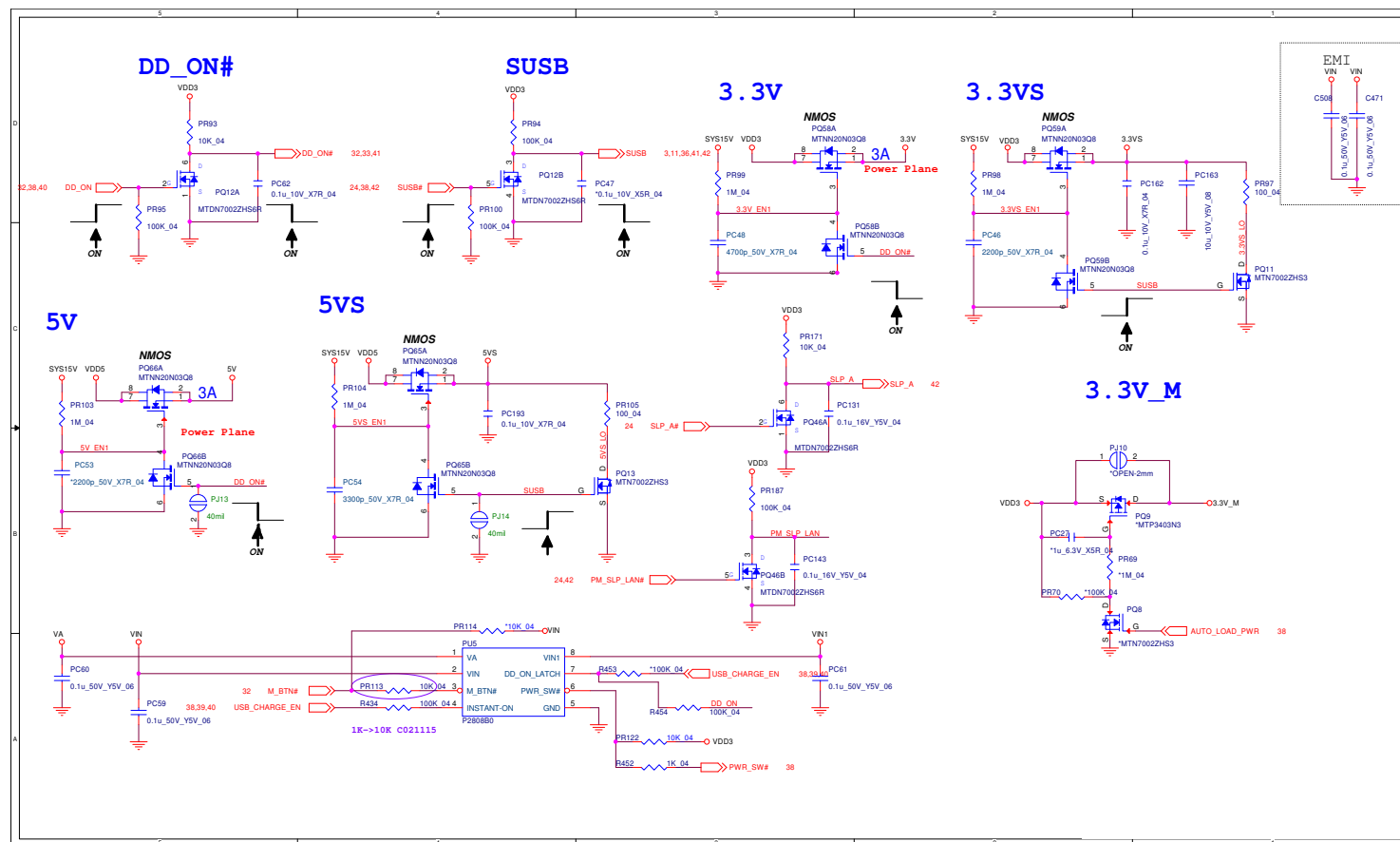
KBC ITE IT8587



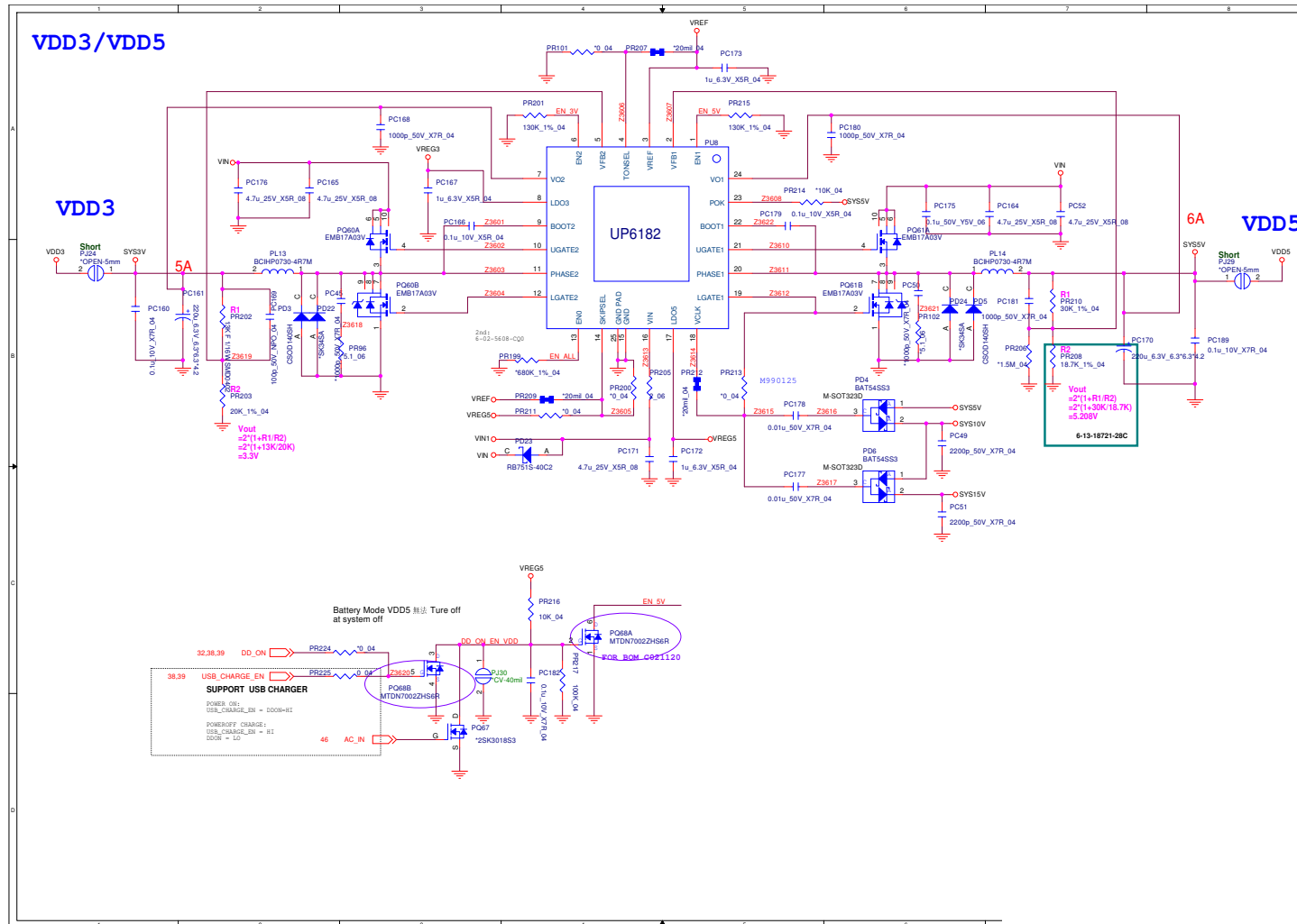
Sheet 38 of 51
KBC ITE IT8587

5V, 5VS, 3.3V, 3VS, 3.3VM

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5V, 5VS, 3.3V, 3VS,
3.3VM



VDD3, VDD5

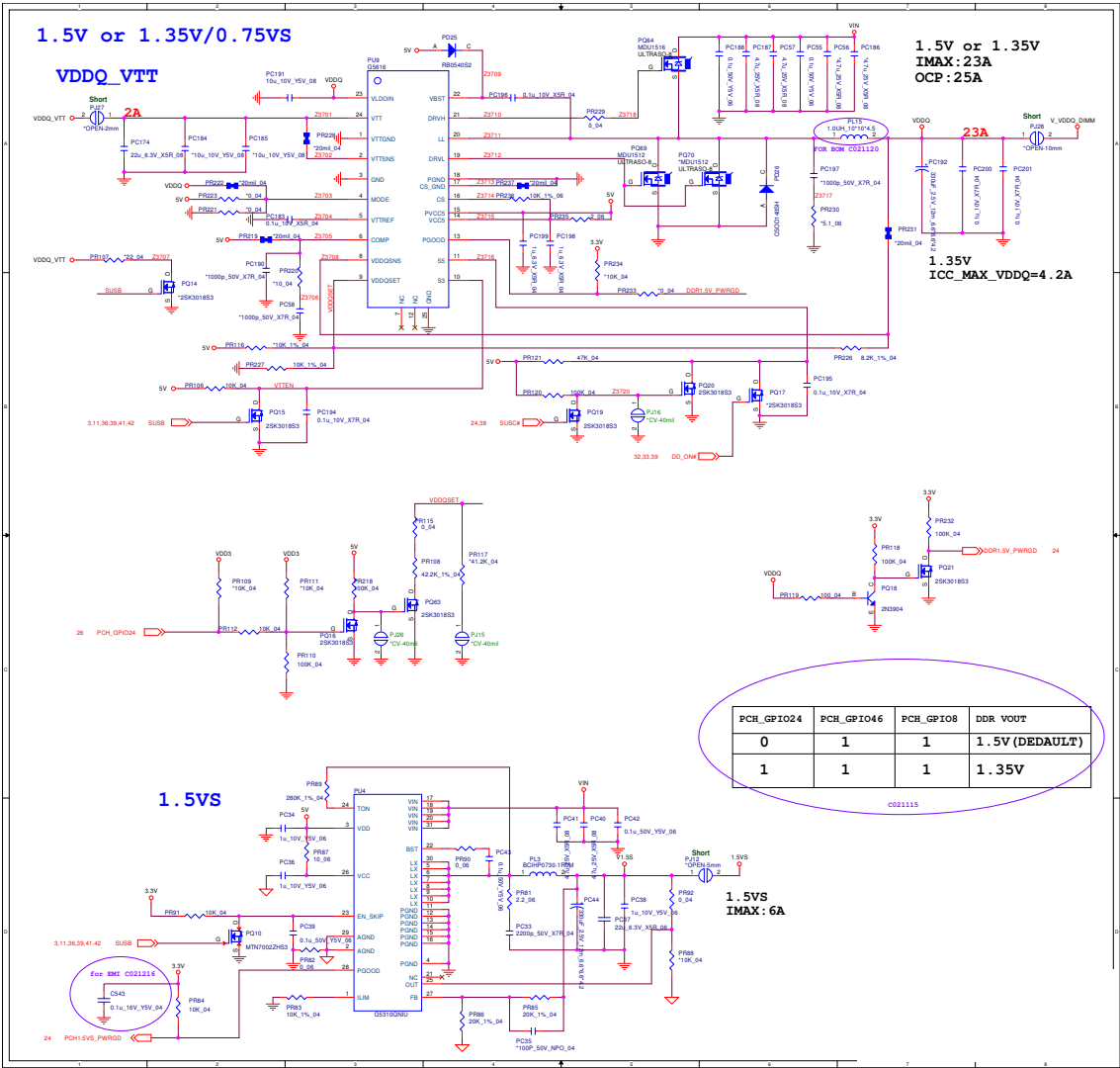


Sheet 40 of 51
VDD3, VDD5

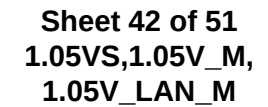
Schematic Diagrams

1.5V or 1.35V, 0.75VS, 1.5VS

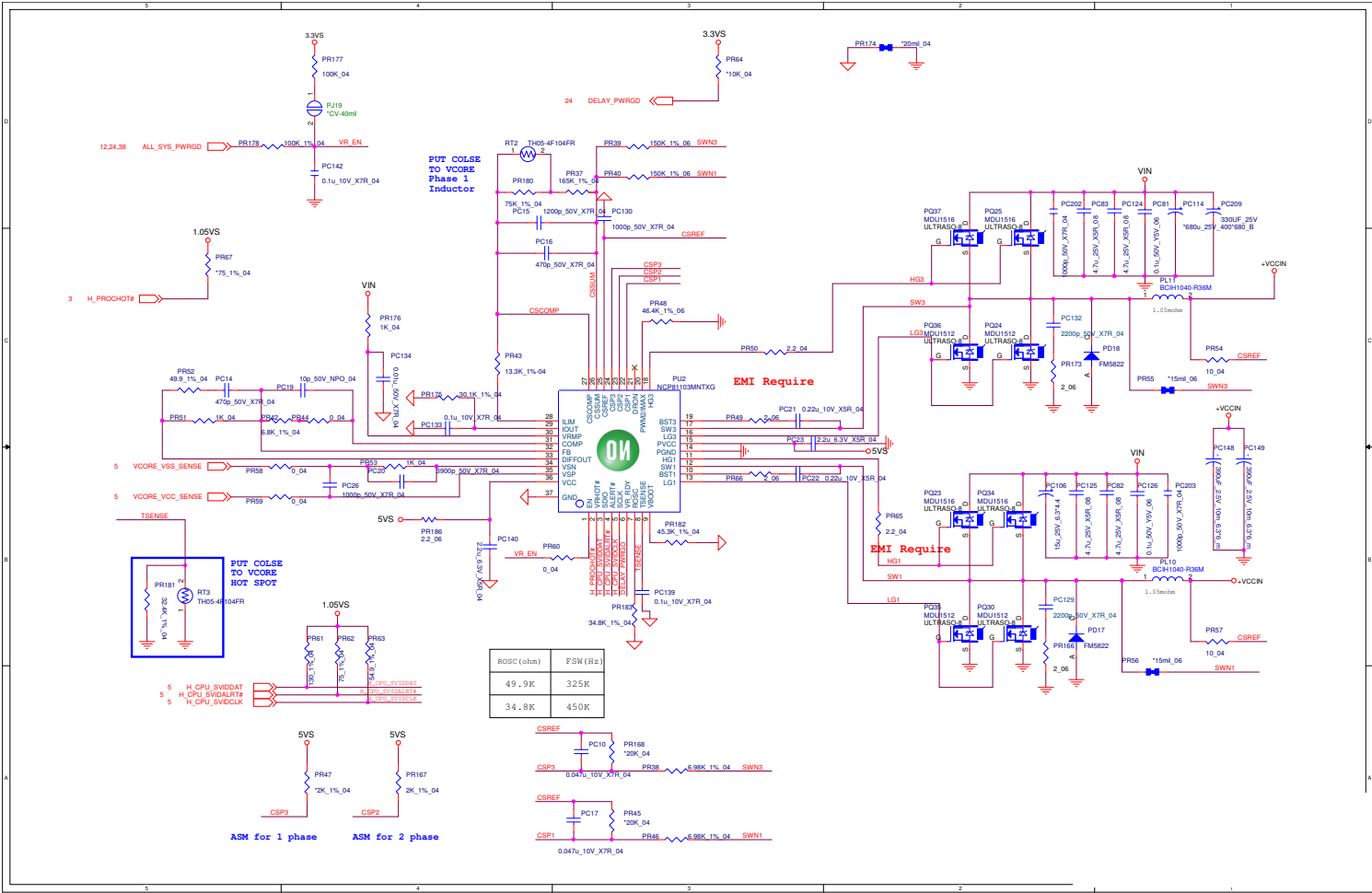
Sheet 41 of 51
1.5V or 1.35V,
0.75VS, 1.5VS



1.05VS, 1.05V_M, 1.05V_LAN_M B - 43



Power V-Core



Sheet 43 of 51
Power V-Core

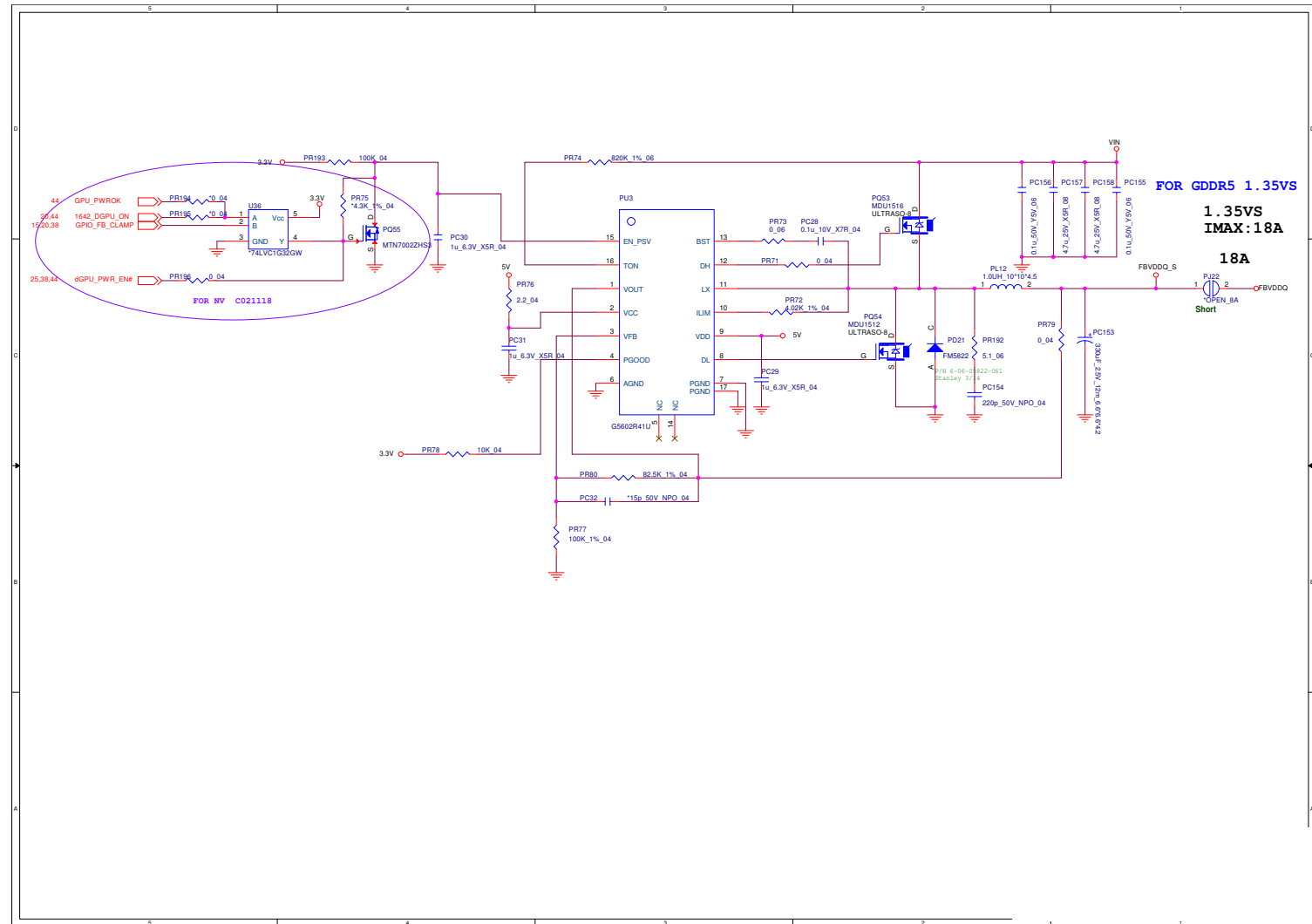
Sheet 44 of 51
VGA NVVDD,
PEX_VDD



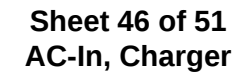
FBVDDQ

B.Schematic Diagrams

Sheet 45 of 51
FBVDDQ



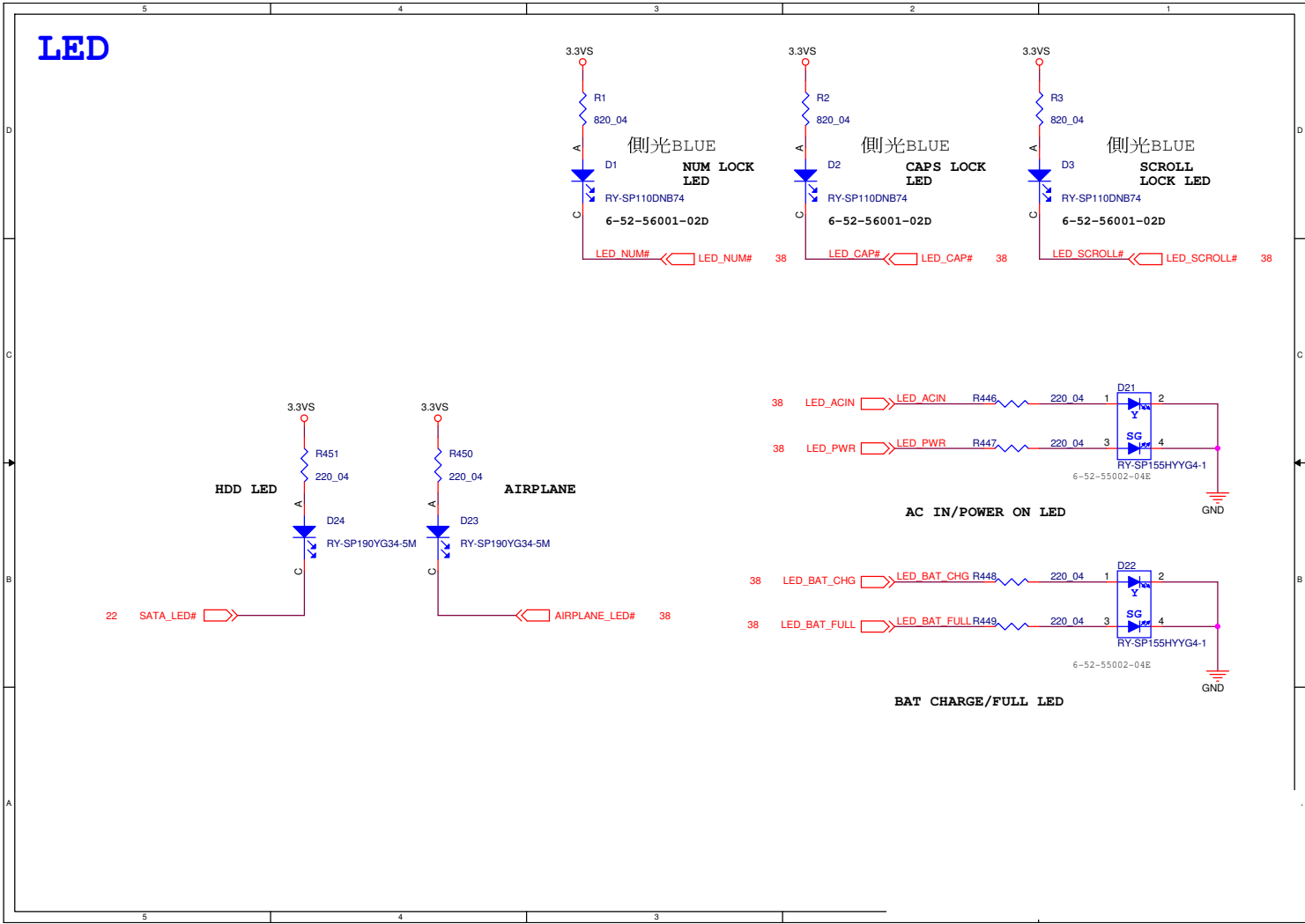
B.Schematic Diagrams



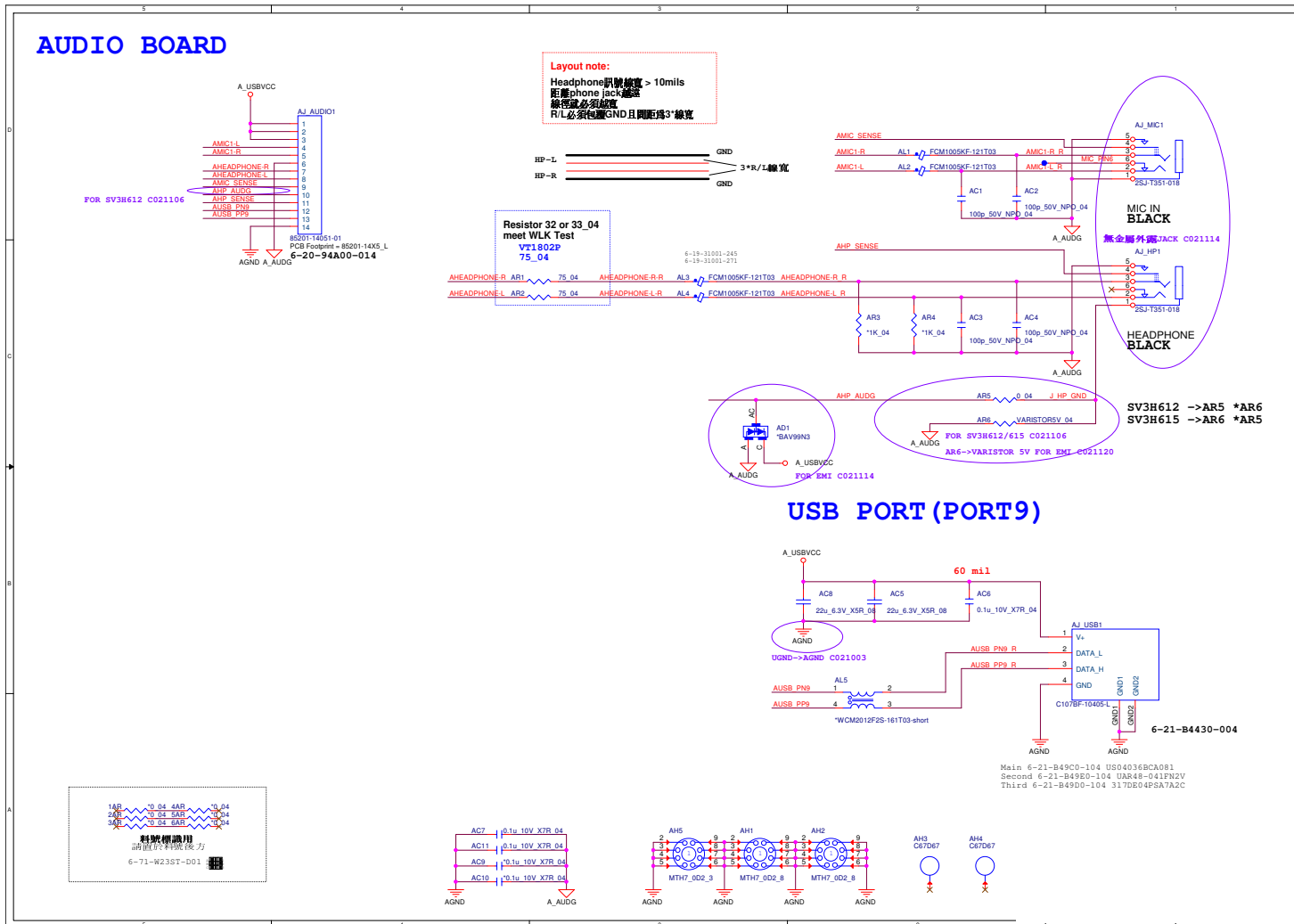
Schematic Diagrams

LED Board

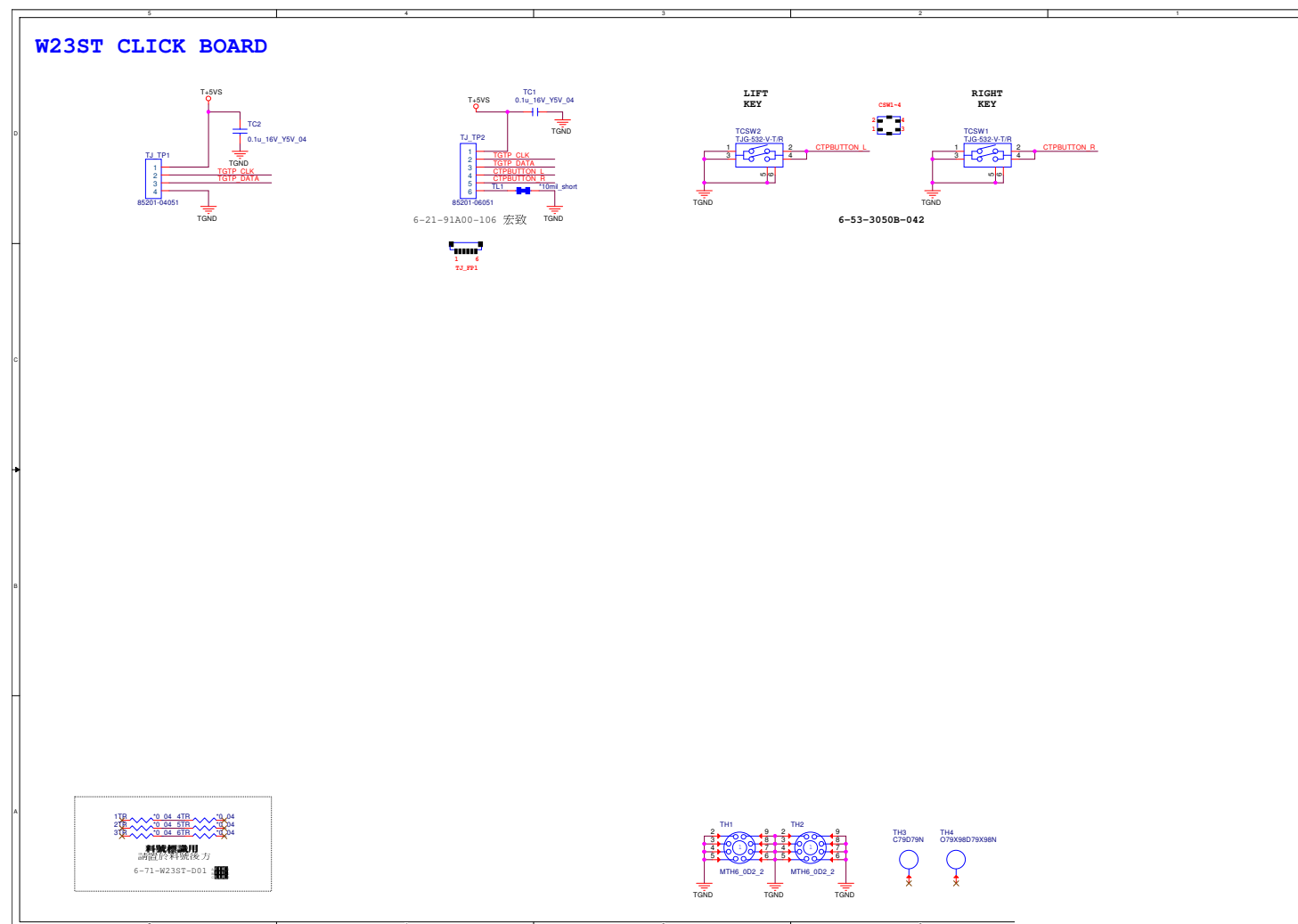
Sheet 47 of 51
LED Board



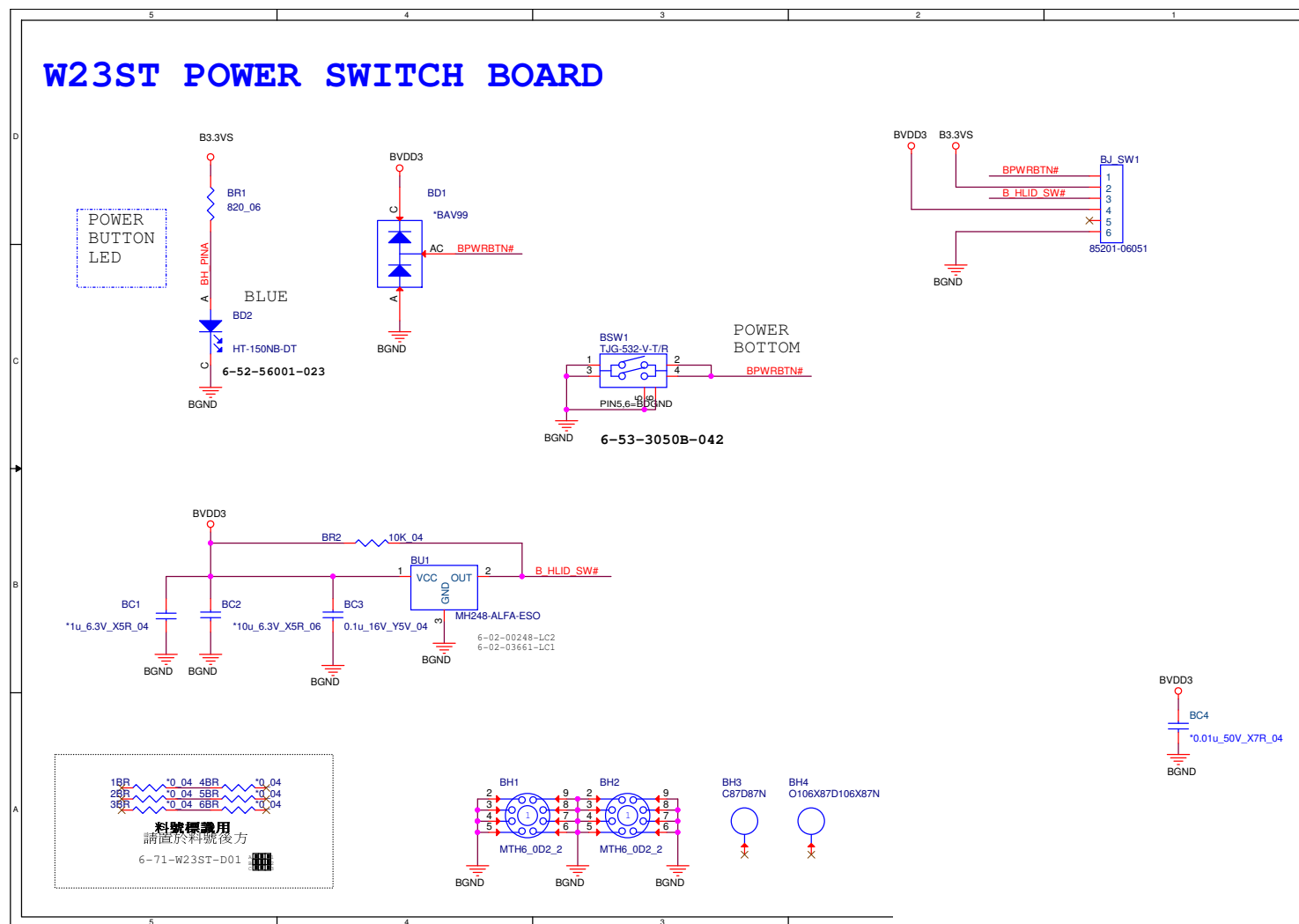
Audio Board

Sheet 48 of 51
Audio Board

Sheet 49 of 51
Click Board



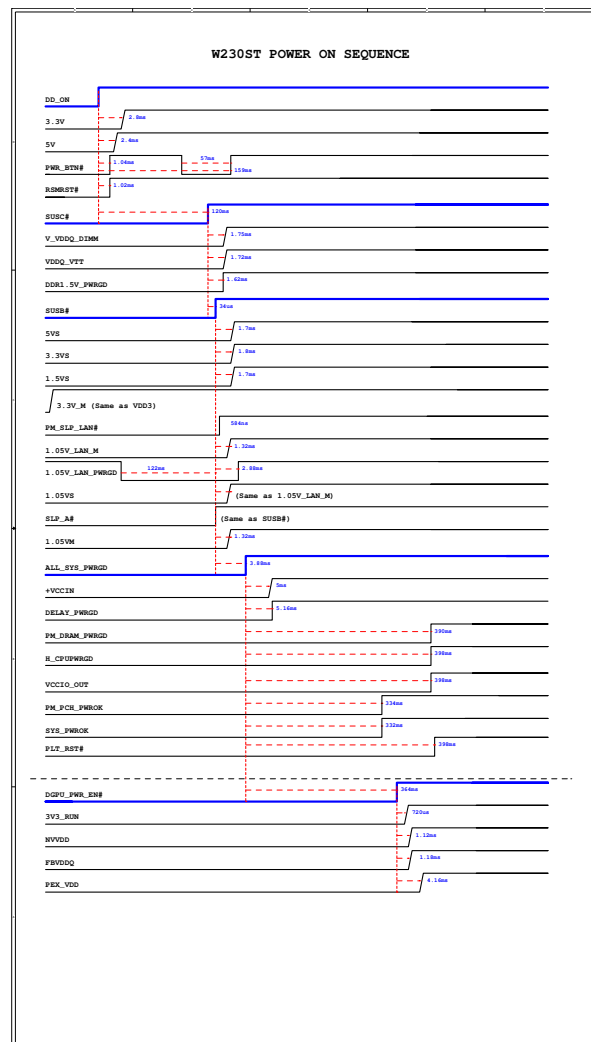
Power Switch Board



Sheet 50 of 51
Power Switch
Board

B.Schematic Diagrams

Sheet 51 of 51
POWER ON
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 **V1.01.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.