

# SERVICE MANUAL

W230SD

*notebook*





**Notebook Computer**

**W230SD**

**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 **W230SD** 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.

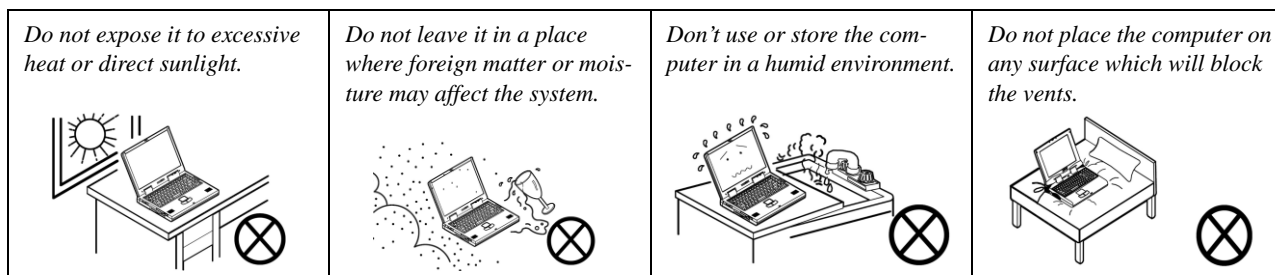
## Instructions for Care and Operation

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

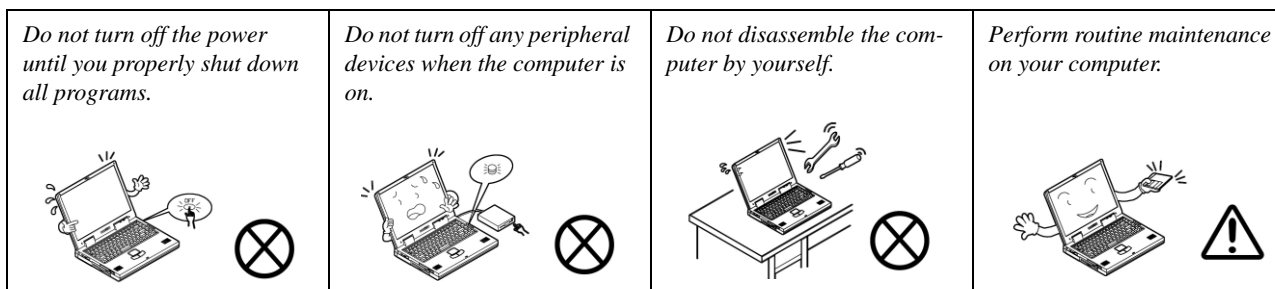
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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.

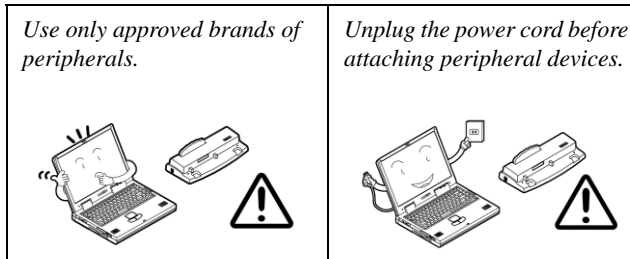


3. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



## Preface

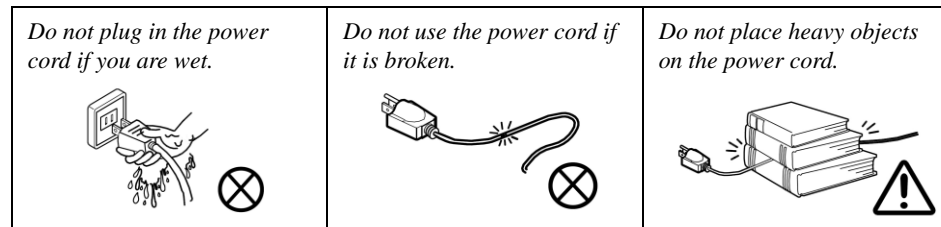
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



## 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

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### 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 **W230SD** series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in *User's Manual*. That manual is shipped with the computer.

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

The **W230SD** 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

##### i7-4910MQ (2.90GHz)

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

##### i7-4810MQ (2.80GHz), i7-4710MQ (2.50GHz)

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

##### i7-4712MQ (2.30GHz)

6MB L3 Cache, 22nm, DDR3L-1600MHz, TDP 37W

##### i7-4610M (3.00GHz)

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

#### Intel® Core™ i5 Processor

##### i5-4340M (2.90GHz), i5-4310M (2.70GHz), i5-4210M (2.60GHz)

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

#### Intel® Core™ i3 Processor

##### i3-4110M (2.60GHz)

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 Options

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

### Audio

High Definition Audio Compliant Interface

2 \* Built-In Speakers

Built-In Microphone

Sound Blaster™ Cinema 2

ANSP™ 3D sound technology on headphone output

### Keyboard

Illuminated "WinKey" keyboard

### Pointing Device

Built-in Touchpad

### Security

Security (Kensington® Type) Lock Slot

BIOS Password

(**Factory Option**) TPM 2.0

### 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®11.1 Compatible

#### NVIDIA® Discrete GPU

##### NVIDIA® GeForce GTX 960M

**2GB** GDDR5 Video RAM on board

Microsoft DirectX® 12 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**

Slot 3 for mSATA **SSD**

Or

(**Factory Option**) Slot 3 for **M.2 3G/4G** Module

### 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  
1M HD/2M FHD PC Camera Module  
(Factory Option) 3G or 4G M.2 Module

### WLAN/ Bluetooth Half Mini-Card Modules:

(Factory Option) Intel® Wireless-AC 3160 Wireless LAN (802.11ac) + Bluetooth 4.0

(Factory Option) Intel® Wireless-AC 7260 Wireless LAN (802.11ac) + 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)

Removable 6 Cell Smart Lithium-Ion Battery  
Pack, 62.16WH

### Dimensions & Weight

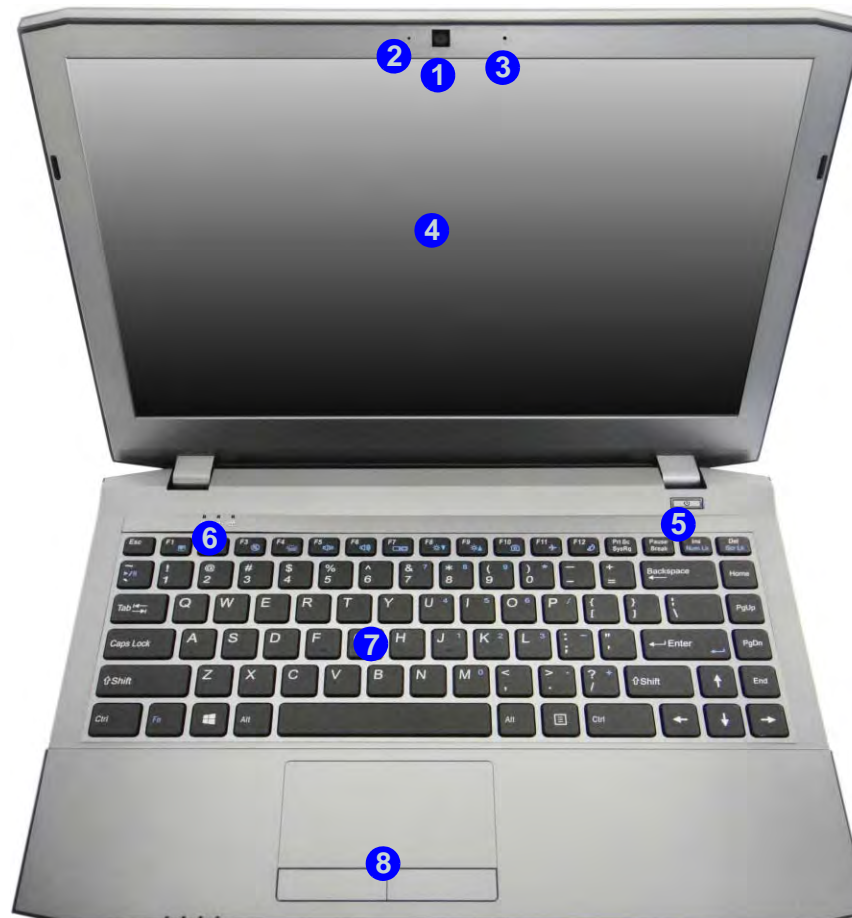
330mm (w) \* 227mm (d) \* 31.9mm (h)  
2.0kg (Barebone System with Battery)

## 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

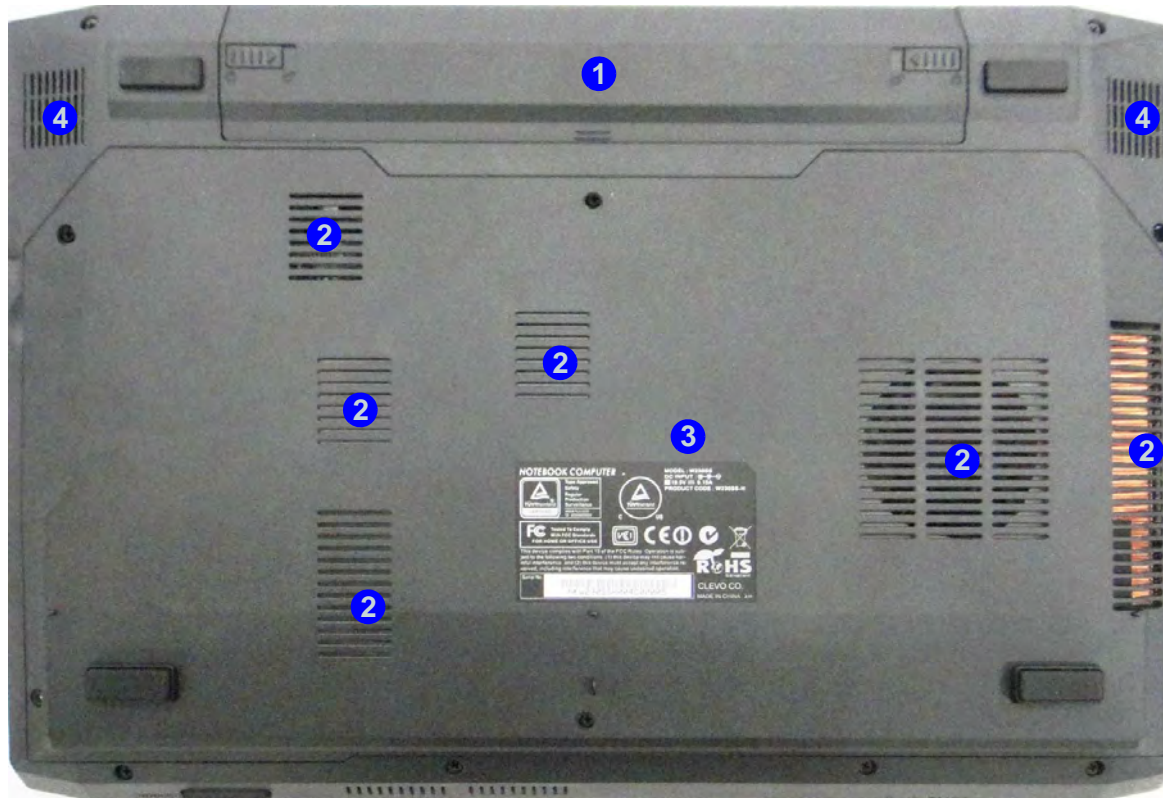


*Figure 5*  
**Rear View**

1. Battery



## External Locator - Bottom View



*Figure 6*  
**Bottom View**

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



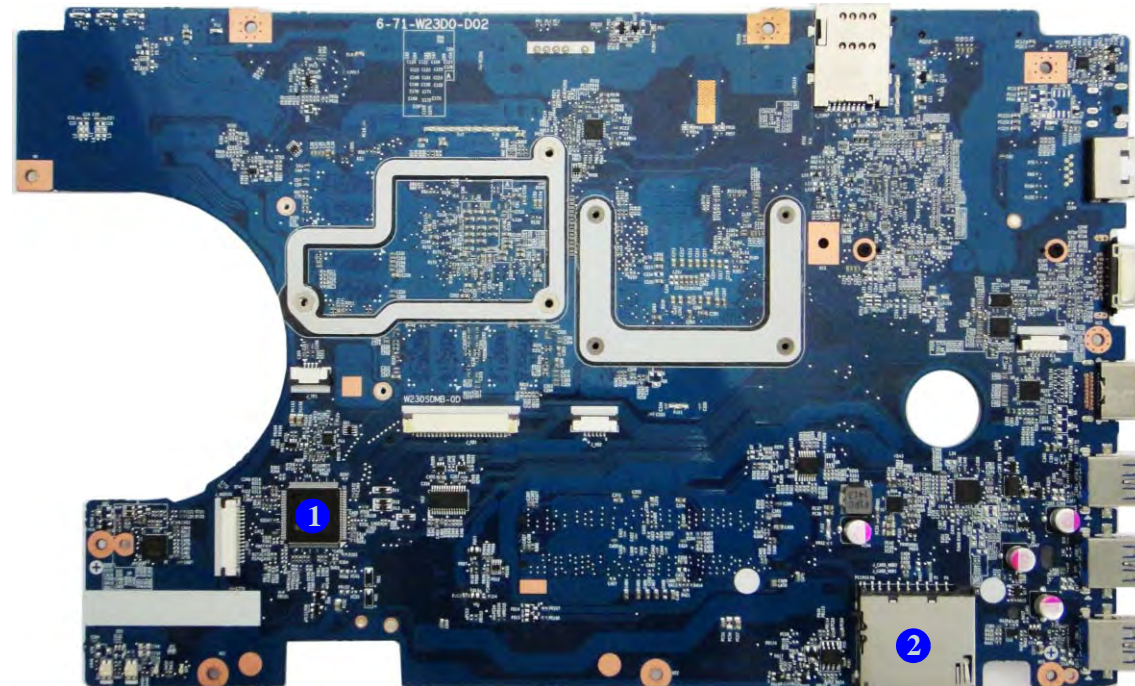
### Overheating

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**

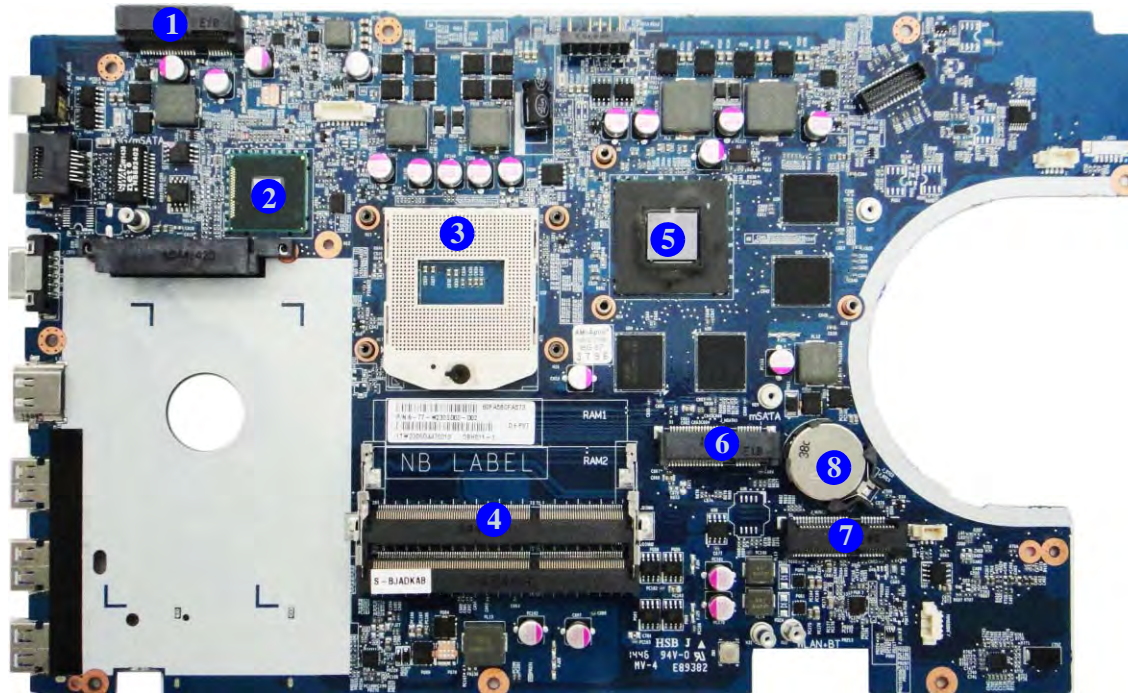
# Mainboard Overview - Top (Key Parts)

1. KBC





## Mainboard Overview - Bottom (Key Parts)



*Figure 8*  
**Mainboard Bottom  
Key Parts**

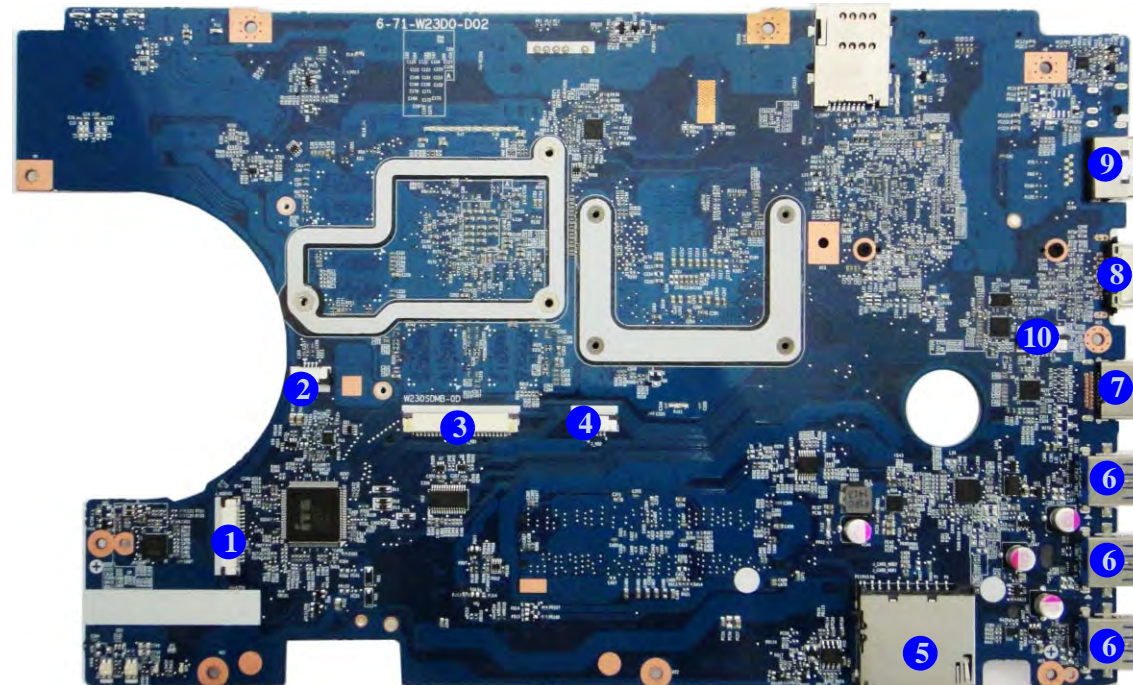
1. Mini-Card Connector (3G/MSATA Module)
2. Controller
3. CPU Socket
4. Memory Slots DDR3 So-DIMM
5. VGA NVidia
6. Mini-Card Connector (MSATA Module)
7. Mini-Card Connector (WLAN Module)
8. CMOS Battery

## Introduction

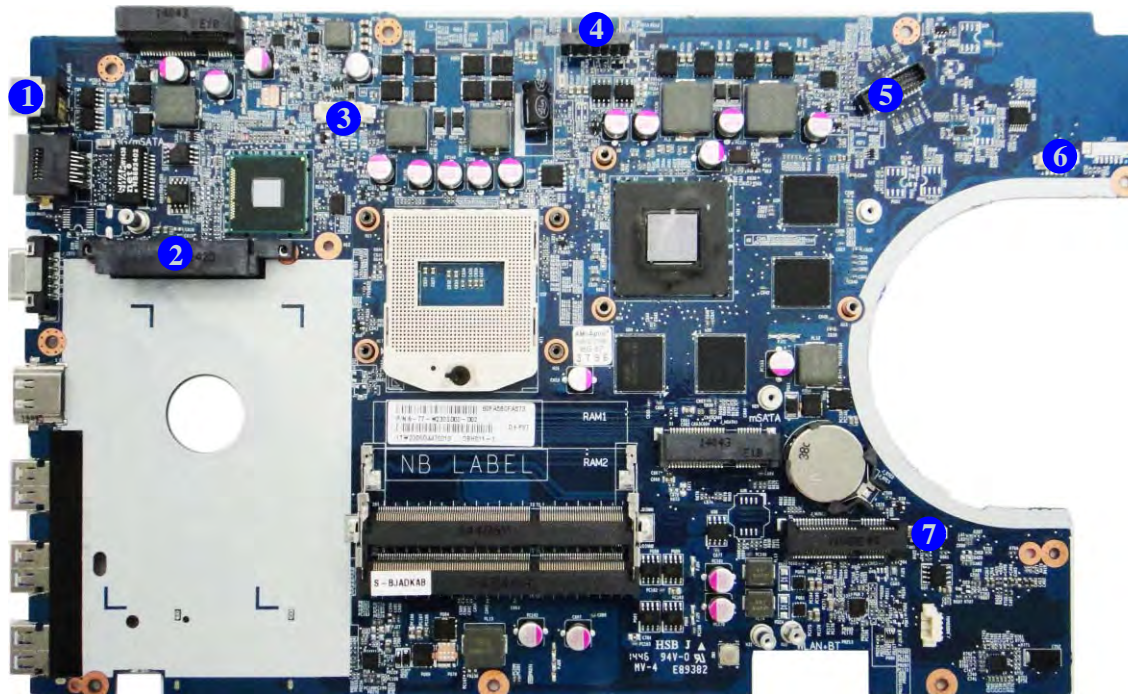
*Figure 9*  
**Mainboard Top  
Connectors**

1. Audio Cable Connector
2. TouchpadConnector
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 **W230SD** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

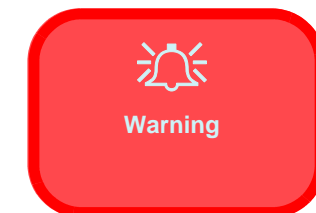
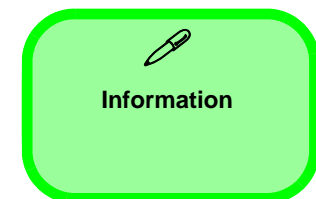
We suggest you completely review any procedure before you take the computer apart.

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

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**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 SSD Module:

1. Remove the battery *page 2 - 5*
2. Install the SSD module *page 2 - 16*
3. Remove the SSD module *page 2 - 17*

### To remove the WLAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the WLAN module *page 2 - 19*

### To remove the mSATA Module:

1. Remove the battery *page 2 - 5*
2. Remove the mSATA module *page 2 - 20*

### To remove the CCD Module:

1. Remove the battery *page 2 - 5*
2. Remove the CCD module *page 2 - 21*

# Removing and Installing the Battery

## Battery Removal Procedure

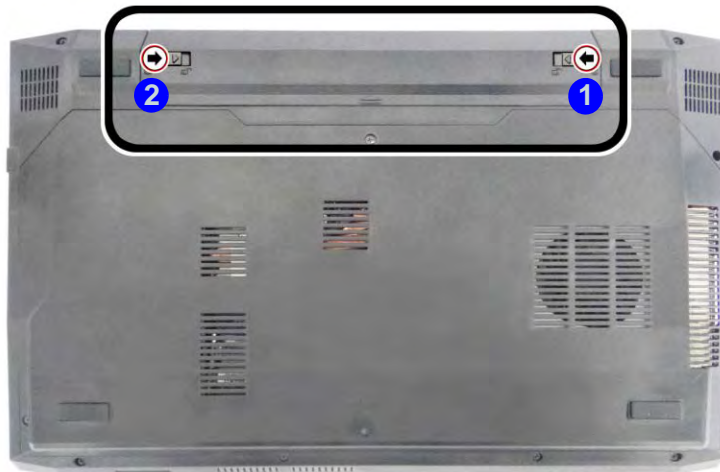
If you are confident in undertaking upgrade procedures yourself, for safety reasons it is best to remove the battery.

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.

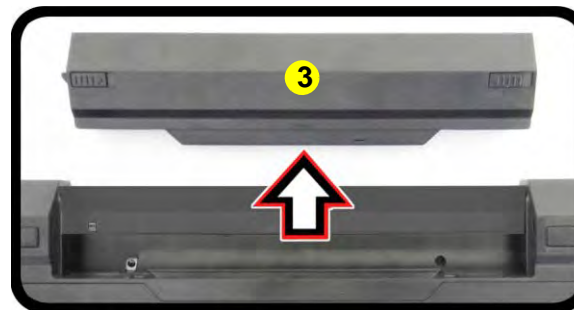
*Figure 1*  
**Battery Removal**

- 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.



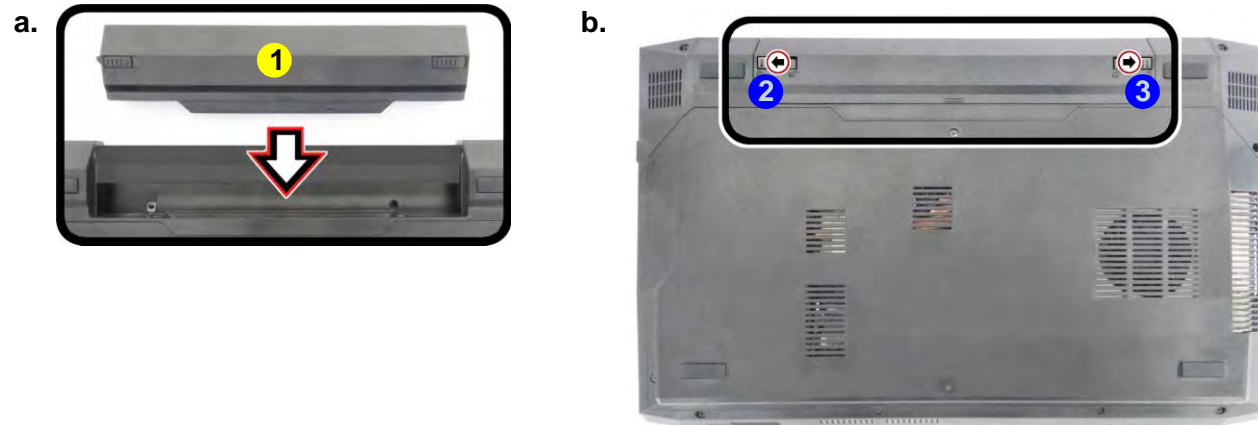
3. Battery

## 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

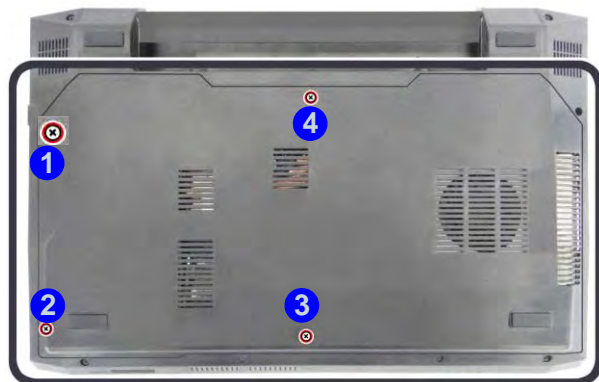
## Removing the Hard Disk Drive

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.

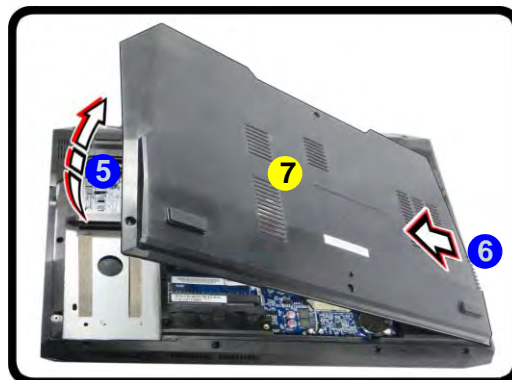
### Hard Disk Upgrade Process

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**.

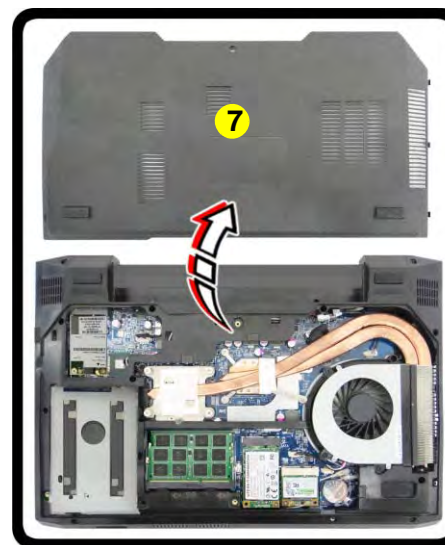
a.



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

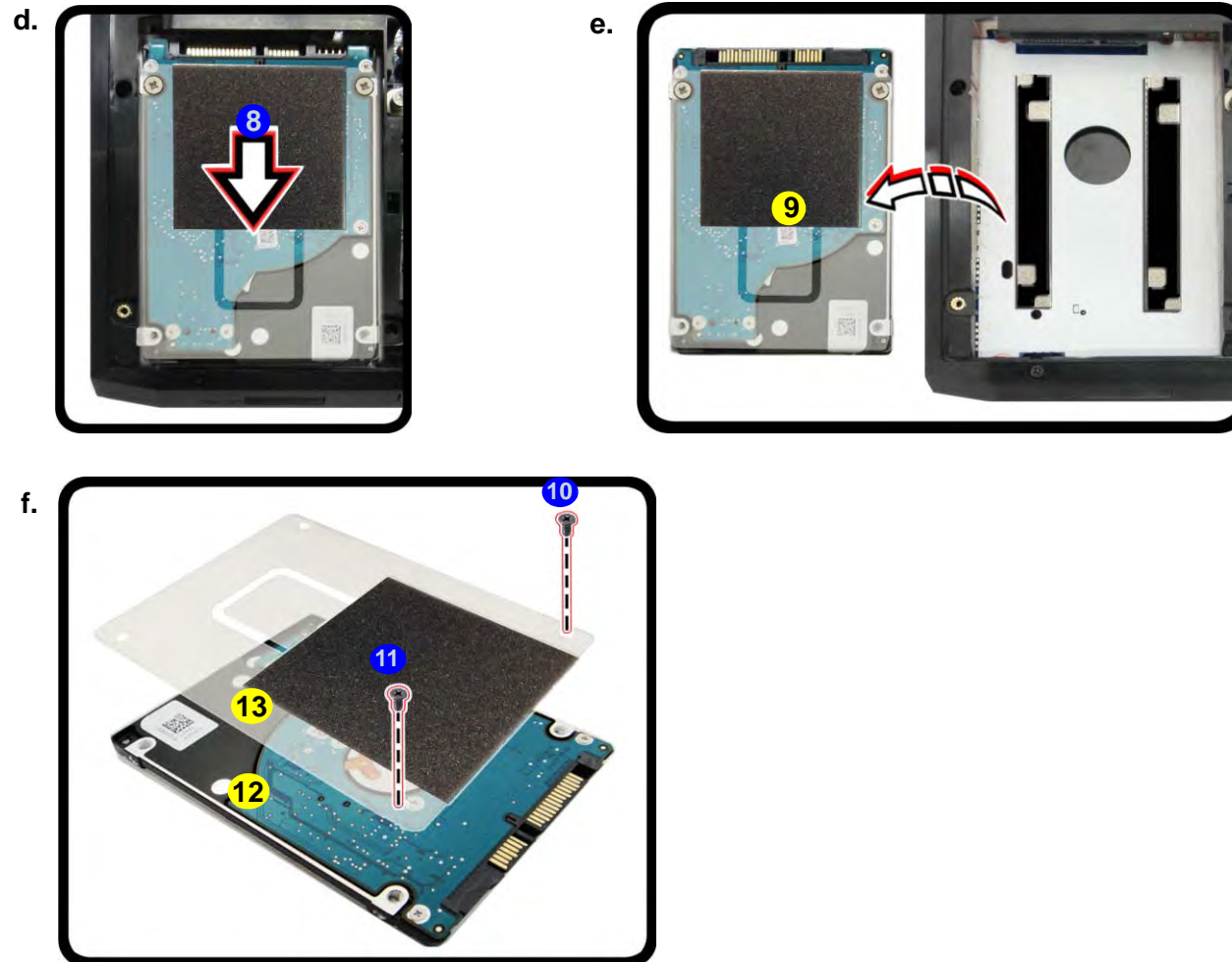


## Disassembly

*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.



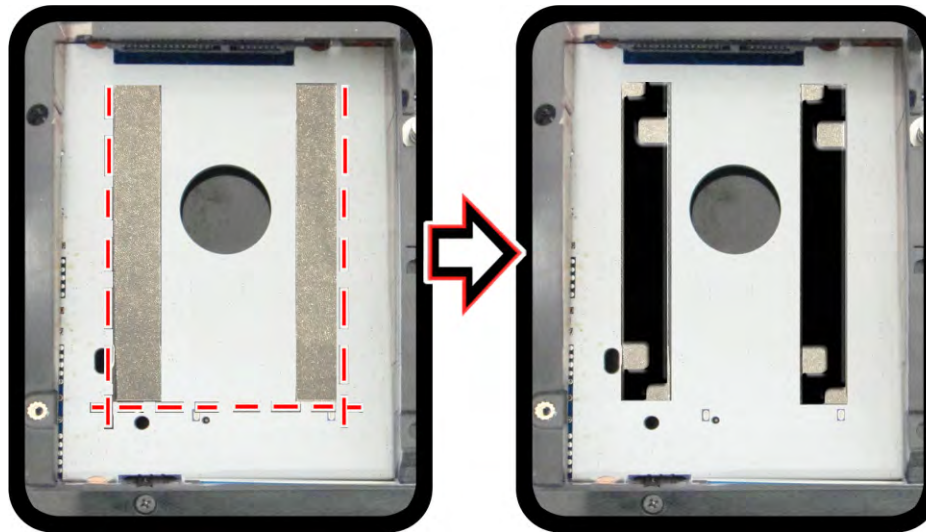
12. Hard Disk  
13. Hard Disk Mylar

- 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.



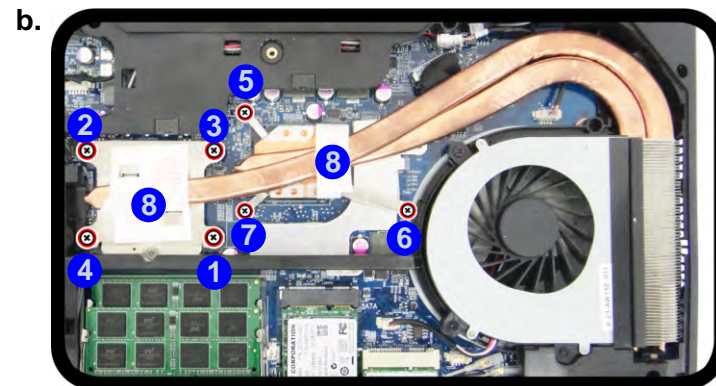
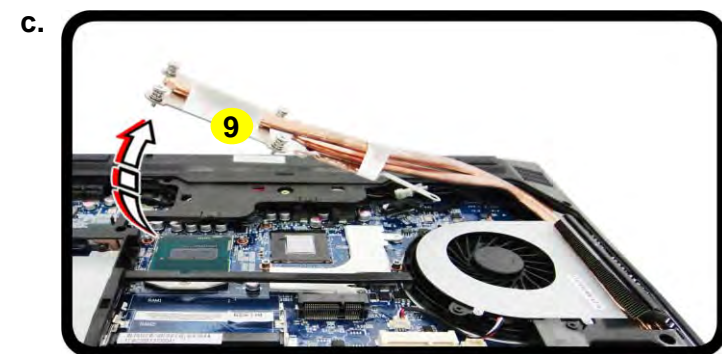
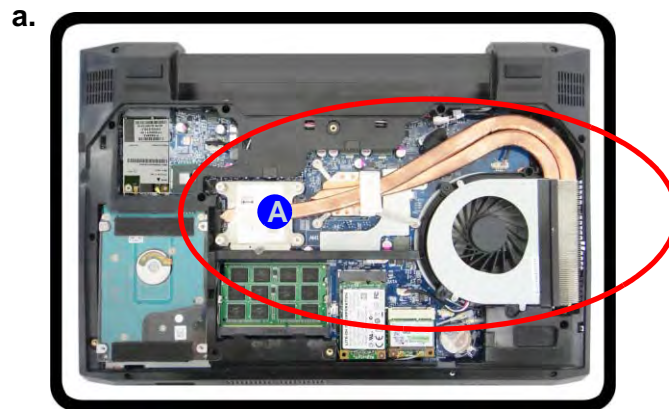
### 9. CPU Heat Sink


- 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.

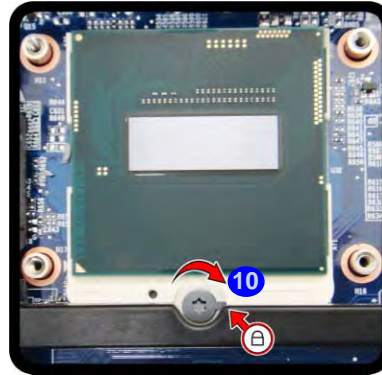


5. Turn the release latch **10** towards the unlock symbol  to release the CPU (**Figure 7d**).
6. Carefully (it may be hot) lift the CPU **11** up and out of the socket (**Figure 7e**).
7. Reverse the process to install a new CPU.
8. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

d.

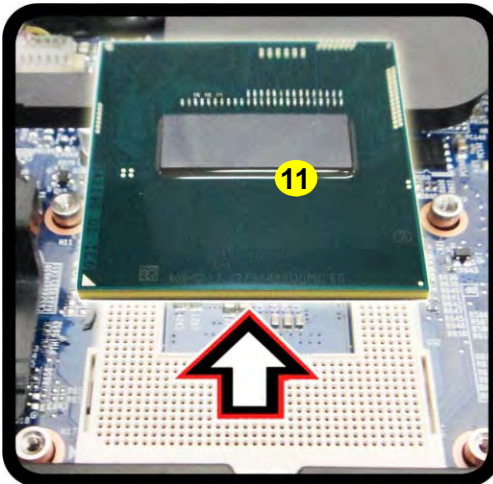


Unlock



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.

*Figure 7*

### Processor Removal (cont'd)

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




11. CPU

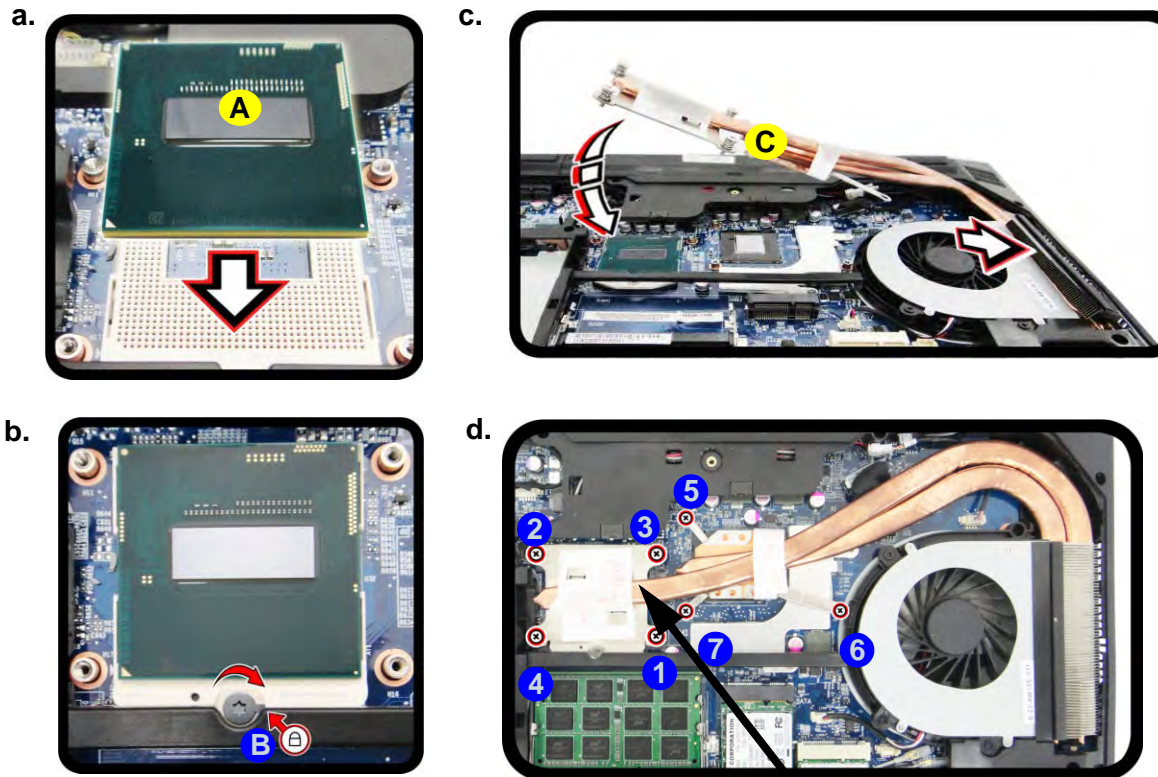
## Disassembly

*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.

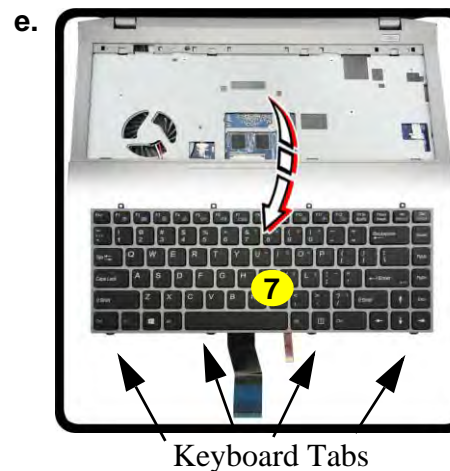
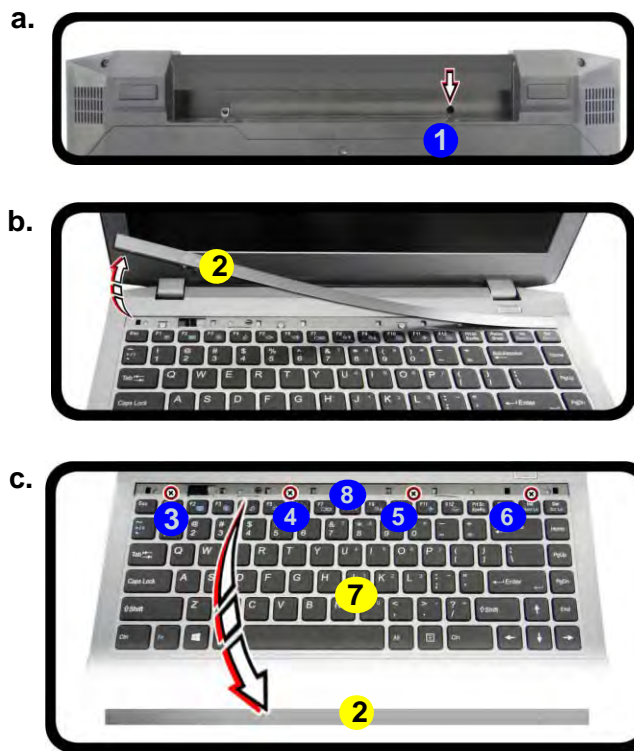
A. CPU  
C. Heat Sink

- 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

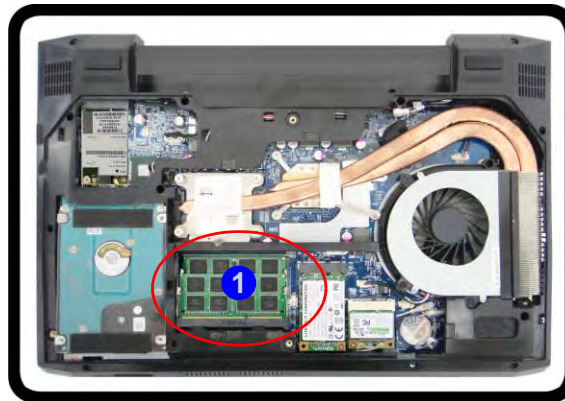
## Removing the System Memory (RAM)

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.

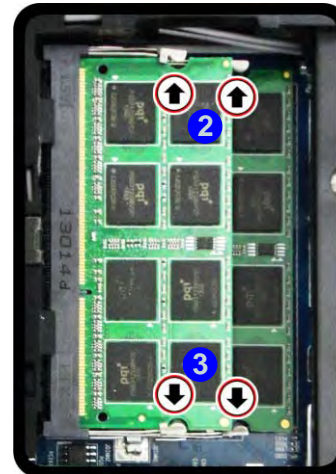
### Primary System Memory Upgrade Process

- 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.

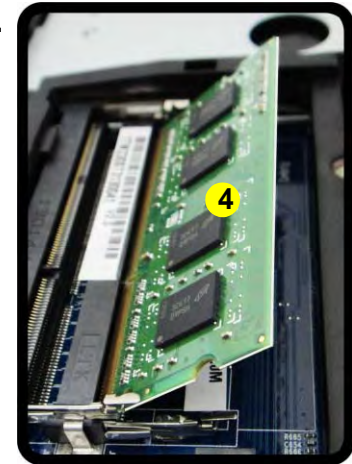
a.



b.



c.



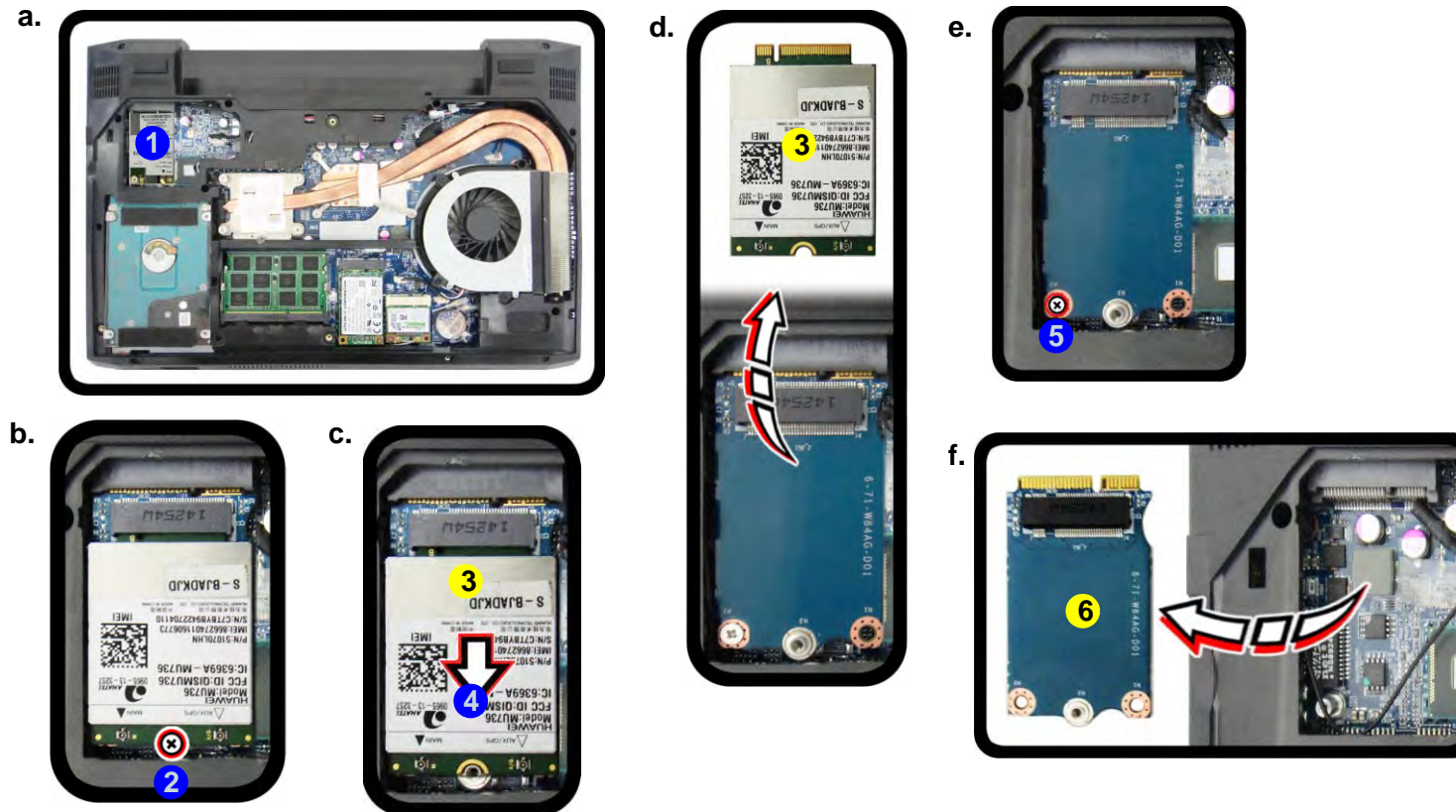
- Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
- The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the slot as it will go. **DO NOT FORCE** the module; it should fit without much pressure.
- 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** ([Figure 11b](#)).
4. Carefully slide the 3G module **3** (in the direction of the arrow **4** - [Figure 11c](#)) out of the interface adaptor and then lift it up (do not exceed 10 degrees) to remove it from the computer ([Figure 11d](#)).
5. Carefully remove the screw **5** ([Figure 11e](#)).
6. The min-card interface adaptor **6** will pop-up, and you can remove it from the computer ([Figure 11f](#)).

*Figure 11*  
**3G Module Removal**

- a. Locate the 3G module.
- b. Remove the screw.
- c. Slide the module in the direction of the arrow and lift it out.
- d. Remove the 3G module.
- e. Remove the screw.
- f. Remove the interface adaptor.



- 5. 3G Module
- 6. Interface Adaptor
- 2 Screws



## Disassembly

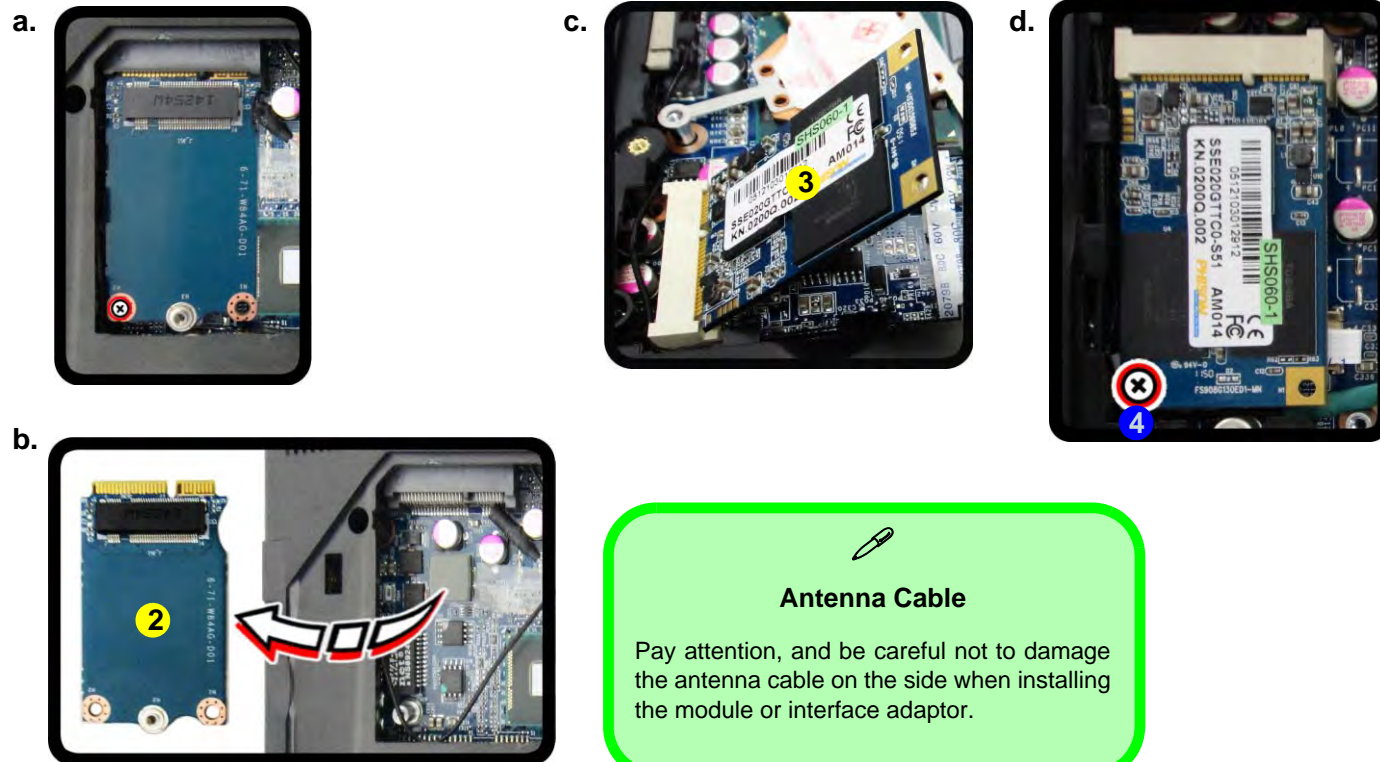
Figure 12  
SSD Module  
Installation

- a. Remove the screw.
- d. Remove the interface adaptor.
- c. Install the module.
- d. Tighten the screw.

## Installing and Removing the SSD Module

### SSD Module installation procedure:

1. Turn **off** the computer, turn it over, remove the battery ([page 2 - 5](#)), component bay cover ([page 2 - 10](#)) and 3G ([page 2 - 15](#)).
2. Carefully remove the screw ❶ ([Figure 12a](#)).
3. The interface adaptor ❷ will pop-up, and you can remove it from the computer ([Figure 12b](#)).
4. Insert the SSD module ❸ ([Figure 12c](#)), and you can tighten the screw ❹ ([Figure 12d](#)).



- 2. Interface Adaptor
- 3. SSD Module

- 2 Screws



#### Antenna Cable

Pay attention, and be careful not to damage the antenna cable on the side when installing the module or interface adaptor.

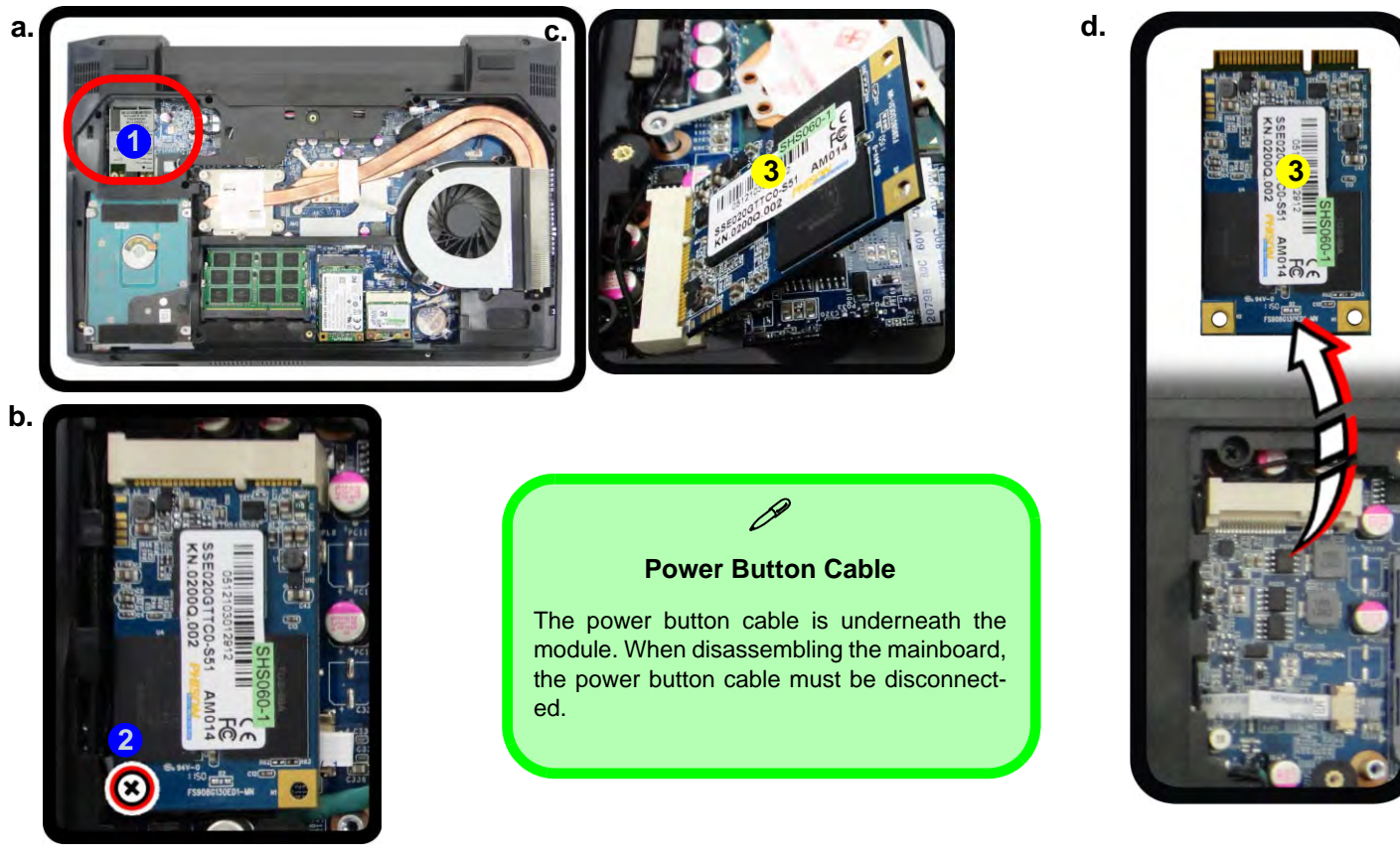


## SSD Module removal procedure:

1. Turn **off** the computer, turn it over, remove the battery ([page 2 - 5](#)), component bay cover ([page 2 - 10](#)) and 3G ([page 2 - 15](#)).
2. If an interface adaptor is installed (see [page 2 - 16](#)), remove it before installing an SSD.
3. The module will be visible at point **1** on the mainboard ([Figure 13a](#)).
4. Carefully remove the screw **2** ([Figure 13b](#)).
5. The module **3** ([Figure 13c](#)) will pop-up, and you can remove it from the computer ([Figure 13d](#)).
6. Reverse the process to install a new module.

*Figure 13*  
**SSD Module Removal**

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



## Disassembly

### Wireless LAN, Combo, 3G & LTE Module Cables

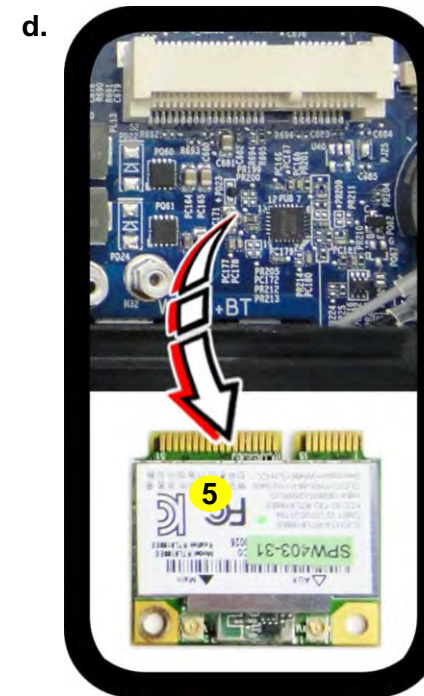
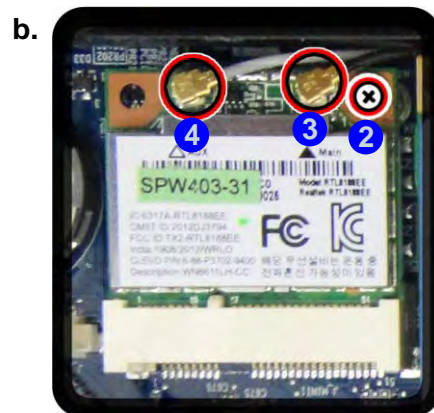
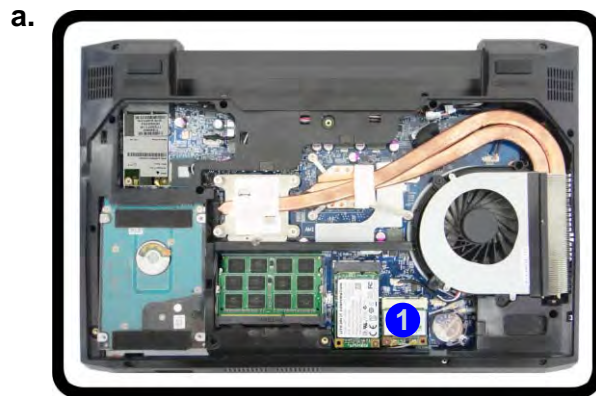
Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo, 3G and LTE modules are not labelled. The cables/covers (each cable will have either a black or transparent cable cover) are color coded for identification as outlined in the table below.

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 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 14a](#)).
3. Carefully remove the screw **2** and disconnect cables **3** & **4** ([Figure 14b](#)).
4. The WLAN module **5** ([Figure 14c](#)) will pop-up, and you can remove it from the computer ([Figure 14d](#)).



*Figure 14*  
**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.



5. WLAN Module

- 1 Screw

## Disassembly

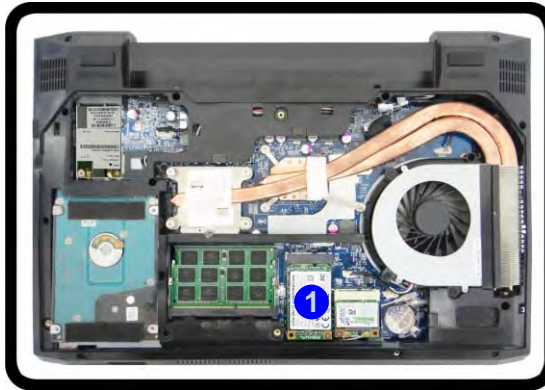
*Figure 15*  
**mSATA Module Removal**

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

## 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 15a](#)).
3. Carefully remove the screw ② ([Figure 15b](#)).
4. The mSATA module ③ ([Figure 15c](#)) will pop-up, and you can remove it from the computer ([Figure 15d](#)).

a.



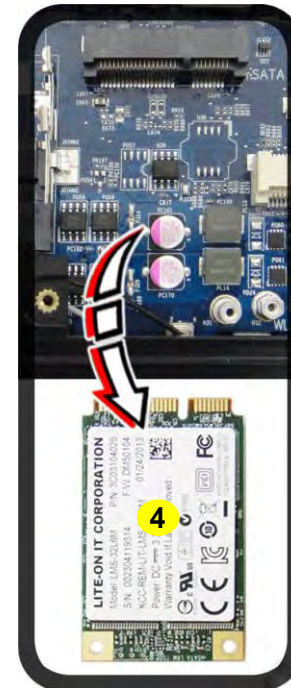
b.



c.



d.



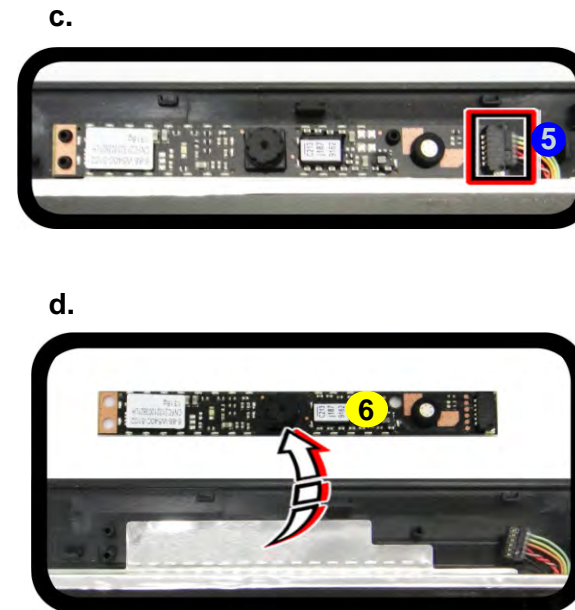
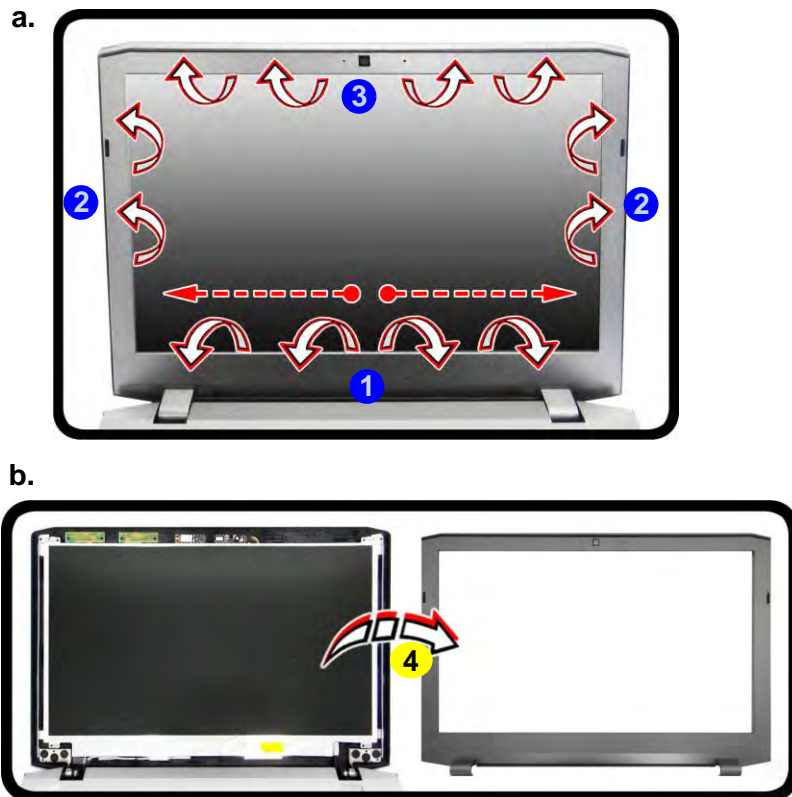
4. mSATA Module

- 1 Screw



## 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 16a](#)).
3. Carefully remove the LCD front panel **4** off ([Figure 16b](#)).
4. Disconnect the cable **5** ([Figure 16c](#)).
5. Remove the CCD module **6** ([Figure 16d](#)).
6. Reverse the process to install a new CCD module.



*Figure 16*  
**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.



4. LCD Front Panel  
6. CCD Module



# Appendix A: Part Lists

This appendix breaks down the *W230SD* series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

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

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

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

## Part List Illustration Location

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

Table A- 1  
Part List Illustration  
Location

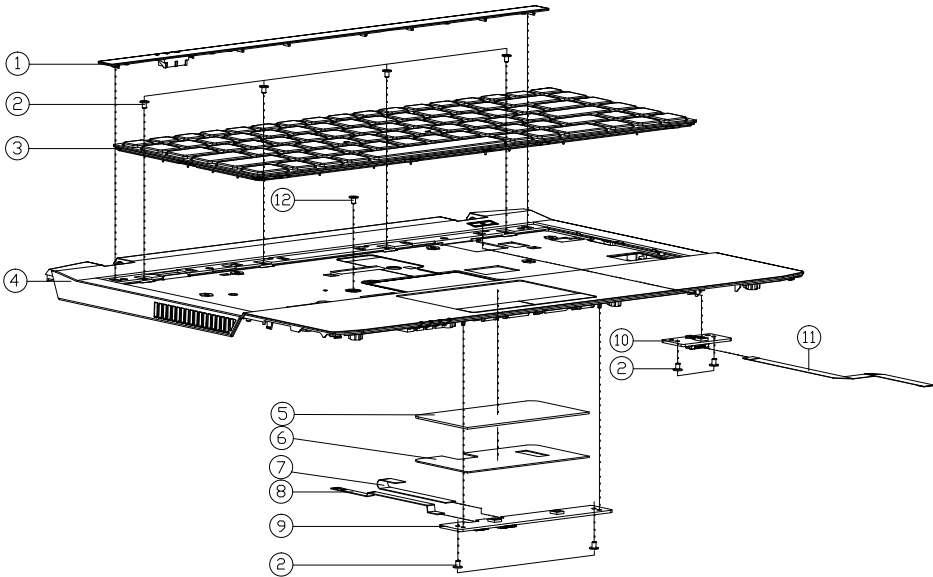
Parts	
Top	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
LCD	<i>page A - 5</i>
HDD	<i>page A - 6</i>



Top

Figure A - 1  
Top

A.Part Lists



ITEM	PART NAME	PART NO	REMARK
1	KB COVER MODULE W230ST	6-42-W2307-102	
2	SCREW M2*3L KI NI ICT NY (DD=04.5,DT=0.4)	6-35-B1120-3RE	
3	WHITE BL K/B USA MP-132285JCR W230ST BLACK ISOLATION WITH VINO KEY	6-80-W2300-013-1	
3	WHITE BL K/B USA MP-132285JCR W230SD BLACK ISOLATION WITH VINO KEY	6-80-W23D0-010-1	FOR W230SD
4	TOP CASE MODULE (INKYOKKAPDK) W230ST	6-39-W2302-016-N	
5	TOUCH PAD SYNAPTICS TM-0146-003 MULTI-GESTURE C4800	6-49-C4802-010	
6	TP TAPE MYLAR PET W540EU	6-40-W5401-010	
7	FFC CABLE FOR TOUCH PAD 67mm 60V 6PIN FOR W240BU (YD)	6-43-C4502-010-3	
8	FFC CABLE FOR M/B TO CLICK BOARD (YD) C4500	6-43-C4500-022-3	
9	CLICK BOARD V3.0 W230ST	6-77-W2302-D03	FOR W230SS
9	CLICK BOARD V3.0 W230SS-H	6-77-W2302-D03-H	FOR W230SS-H
10	POWER SWITCH BOARD V3.0 W230ST	6-77-W230S-D03	FOR W230SS
10	POWER SWITCH BOARD V3.0 W230SS-H	6-77-W230S-D03-H	FOR W230SS-H
11	FINGER BOARD FFC CABLE (CNLS) X7200/ P570VM	6-43-X720F-012-3	
12	SCREW M2.5*3L KI NI ICT NY	6-35-B1125-3R0	

## A.Part Lists

This exploded view diagram illustrates the assembly of the HP Z8 G4 Workstation. The components are numbered 1 through 30, indicating the sequence of assembly. The diagram shows the main chassis (1), the top cover (2), the front bezel (3), the front panel (4), the front panel bezel (5), the front panel bezel (6), the front panel bezel (7), the front panel bezel (8), the front panel bezel (9), the front panel bezel (10), the front panel bezel (11), the front panel bezel (12), the front panel bezel (13), the front panel bezel (14), the front panel bezel (15), the front panel bezel (16), the front panel bezel (17), the front panel bezel (18), the front panel bezel (19), the front panel bezel (20), the front panel bezel (21), the front panel bezel (22), the front panel bezel (23), the front panel bezel (24), the front panel bezel (25), the front panel bezel (26), the front panel bezel (27), the front panel bezel (28), the front panel bezel (29), and the front panel bezel (30).

ITEM	PART	NAME	PART	NO	REMARK
1	VGA SUPPORTER	SCREW W150ERQ	6-33-W15ES-012		
2	SCREW M2X3L KI NI ICT NY	00D=445,0T=40	6-35-B1120-3RE		
3	MAIN BOARD V2.0 (V/36/TPO)	W230SD	6-77-W230SD00-D02		
3	MAIN BOARD V2.0 (V/36/W/D TPO)	W230SD	6-77-W230SD00-D02-1		
3	MAIN BOARD V2.0 (V/TPO/W/D TPO)	W230SD	6-77-W230SD00-D02-2		
3	MAIN BOARD V2.0 (V/D/36/TPO)	W230SD	6-77-W230SD00-D02-3		
4	CPU SUPPORT BRACKET SECC T-15	P150PM	6-33-X150S-011		
5	VGA CHIP MYLAR (25H29M2T)	FOR NIE-531 W870U	6-40-W870L-010		
6	BATTERY 3V 220MA	BB08CR2032B KT80	6-23-6A2B2-030		
7	VRAM CHERM MODULE	W230ST	6-33-W230S-101		
8	VRAM CHERM MODULE	W230ST	6-88-W54SF-9400		(OPTION)
8	VRAM CHERM MODULE	W230ST	6-88-P3702-9400		(OPTION)
8	VRAM CHERM MODULE	W230ST	6-88-P6502-4280		(OPTION)
8	VRAM CHERM MODULE	W230ST	6-88-P6502-4270		(OPTION)
8	VRAM CHERM MODULE	W230ST	6-88-P6502-4240		(OPTION)
8	VRAM CHERM MODULE	W230ST	6-85-D405B-100		(OPTION)
8	VRAM CHERM MODULE	W230ST	6-85-D4000-201		(OPTION)
8	VRAM CHERM MODULE	W230ST	6-85-D401T-S00		(OPTION)
10	M/B HDD MYLAR PET	W230ST	6-40-W230S-011		
11	CPU/VGA HEATSINK MODULE	DEL PAB W230ST	6-31-W230N-102		
12	SCREW M2.5X3L KI NI ICT NY		6-35-B1125-3R0		
13	IMP S/L DVD/CD/RW/DRIVE	IMP S/L DVD/CD/RW/DRIVE	6-87-W230S-4271		
13	IMP S/L DVD/CD/RW/DRIVE	IMP S/L DVD/CD/RW/DRIVE	6-87-W230S-4272		
14	WIRE CABLE FOR SPEAKER	TRANSFER 4P 70MM PLU	W230ST	6-43-W2303-010	
15	AUDIO BOARD V1.0	W230SD	6-77-W23D8-010		
16	FPC CABLE FOR AUDIO BOARD	TO M/B PLU (CULS)	W230SD	6-43-W2303-010-1	
17	SPK/CABLE FOR PLU	50W 152 20W 1P (CULS)	W230SD	6-23-5P15S-011	
18	BOTTOM CASE MODULE	W230ST	6-39-W2303-010		
19	W/D HDD ASS'Y	W230ST	6-79-W230301J-010		
19	W/D HDD ASS'Y	W230ST	6-79-W230301J-020		
20	WDM RAIL M256 MB	W230ST	6-88-W230W-8810		(OPTION)
20	WDM RAIL M256 MB	W230ST	6-88-S3206-8841		(OPTION)
20	WDM RAIL M256 MB	W230ST	6-88-W3306-8830		(OPTION)
21	MINI PCIE TO NEFF CARD	FOR 35 00000 V10 W80H4-T	6-77-W84AG-D01		
22	PC CASE MYLAR FR83	25X74X05 P160M	6-40-P1802-030		
23	SPRNG (0.4M25P2) (0.4M25P2) (FOR 7MM H/D V50H100H4)		6-47-0019A-763		FOR 7mm hdd opt.
24	WDM RAIL M256 MB	W230ST	6-23-W23D2-020		
25	SCREW M2.5X6L K B ZT ICT NY		6-35-9B2125-6RA		
26	WDM RAIL M256 MB	W230ST	6-23-AW15E-011		
27	SCREW M2.5X5L KI NI ICT NY		6-35-B1125-5RA		
28	CPU COVER MODULE	W230ST	6-42-W2308-106		
29	SCREW M2.5X4L K1CT=0.5 D=45	BK/2 ICT	6-35-B6125-4R0		
30	SUPPORT LABEL FOR W230SD		6-45-W230SD03-010		
31	WDM RAIL M256 MB	W230ST	6-42-W-9708-010		

LCD

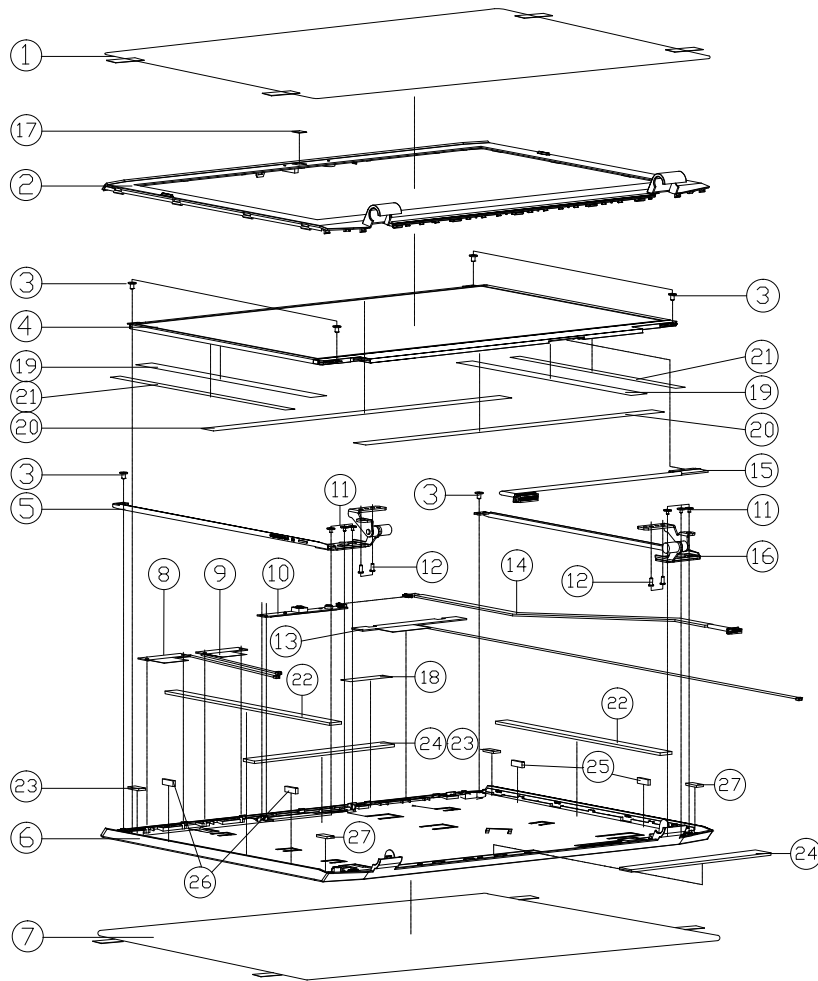
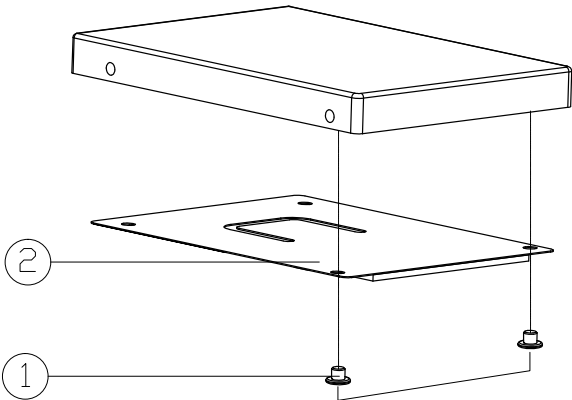


Figure A - 3  
LCD

ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT COVER PROTECTION MYLAR (PET+3M91S) W230ST	6-40-W2308-010	
2	LCD FRONT COVER MODULE W230ST	6-39-W2301-016	
3	SCREW M2x3L KI NI ICT NY (OD=0.45,DT=0.4)	6-35-B1120-3RE	
4	LCD 13.3" FHD CHIMEI N133HSE-EA1 (LED) (EDP) 2.8MM	6-50-GB228-D00	OPTION
4	LCD 13.3" WHD GLARE TYPE (CP) IPS/PLS SMOKE LTN33YL-L01 LED 2.8MM	6-50-GC226-M00	OPTION
4	LCD 13.3" WHD SHARP LQ133TLJW02L000AS469D LED (CP) 2.6MM	6-50-G6226-A00	OPTION
5	LCD HINGE L SGCC+SK7 W230ST	6-33-W2301-0L1	
6	BACK COVER MODULE W230ST(CHANGE)	6-39-W2301-024	
7	LCD BACK COVER PROTECTION MYLAR (PET+3M91S) W230ST	6-40-W2308-020	
8	ANTENNA WIMAX WGT VMT PCB 2.4G/3.5GHZ/SG WH=750MM W230ST	6-23-7W230-030	
9	ANTENNA WIMAX WGT VMT PCB 2.4G/3.5GHZ/SG L=750MM W230ST	6-23-7W230-040	
10	UVC CAMERA BOSTON FIX DNR666 3M 10 20 IN FIB INVERTA A0051 FWA66 WLED W/MC WLED	6-88-A11SC-4900	OPTION
10	UVC CAMERA CHOSNY FIX DNR666 3M 10 20 IN FIB INVERTA A0051 FWA66 WLED W/MC WLED	6-88-W940C-5100	OPTION
11	SCREW M2x2L KI BK/Z ICT NY(0.8,T=0.6)	6-35-B6120-2RE	
12	SCREW M2.5x6L K BZ ICT NY	6-35-82125-6RA	
13	ANTENNA BEAM 3G/4G LTE+1 PCB DNR666 3M 10 20 IN FIB INVERTA A0051 FWA66 WLED W/MC WLED	6-23-7W23D-010	OPTION
14	WIRE CABLE FOR CCD 377MM 3.3V 8P (GHL) W230SS	6-43-W23ST-010	
15	WIRE CABLE FOR EDP 2875MM GHL/YL CONK.S153036-S12-TT-HF) W230ST	6-43-W2301-010-K	FOR CHIMEI N133HSE-EA1
15	WIRE CABLE FOR RETINA EDP 188MM 3.3V 4P GHL/YL CONK.M400500-HF) W230SS	6-43-W23S1-010-K	FOR SAMSUNG LTN33YL-L01
15	WIRE CABLE FOR RETINA EDP 283MM 3.3V 4P GHL/YL CONK.M400500-HF) W230SS	6-43-W23S1-020-K	FOR SHARP LQ133TLJW02
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	
19	MYLAR( 140x15x0.2MM (0.008x0.008) FOR W230SS	6-40-W230S-020	ONLY FOR SHARP
20	MYLAR( 285x15x0.2MM (0.008x0.008) FOR W230SS	6-40-W230S-030	ONLY FOR SHARP
21	SHARP LCD NOISE MYLAR(140x7x0.2MM) FOR W230SD	6-40-W230S-040	ONLY FOR SHARP
22	LCD SPIDGE (172.5x110x6.5T) (CR4382+SONY G4000) W230SS	6-47-0019A-170	ONLY FOR SHARP/SAMSUNG
23	LCD SPONGE (8x3.5x1.65T) (CR1020+SONY G4000) W230ST	6-47-0019A-089	ONLY FOR SHARP/SAMSUNG
24	LCD SPONGE (95x20x1.65T) (CR1020+SONY G4000) W230ST	6-47-0019A-951	ONLY FOR SHARP/SAMSUNG
25	LCD PORON (14x3.5x2.15T) (PORON L32+SONY G4000) W230SS	6-47-W23S1-030	ONLY FOR SHARP
26	LCD PORON (14x3.5x4.75T) (PORON L32+SONY G4000) W230SS	6-47-W23S1-020	ONLY FOR SHARP
27	LCD SPONGE (7x3.5x2.15T) (CR1020+SONY G4000) W230ST	6-47-0019A-07A	ONLY FOR SHARP

HDD

Figure A - 4  
HDD



ITEM	PART NAME	PART NO	REMARK
1	HDD MYLAR PET (90*67*0.25T ) W230ST	6-40-W230J-010	
2	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	

# Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the **W230SD** 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

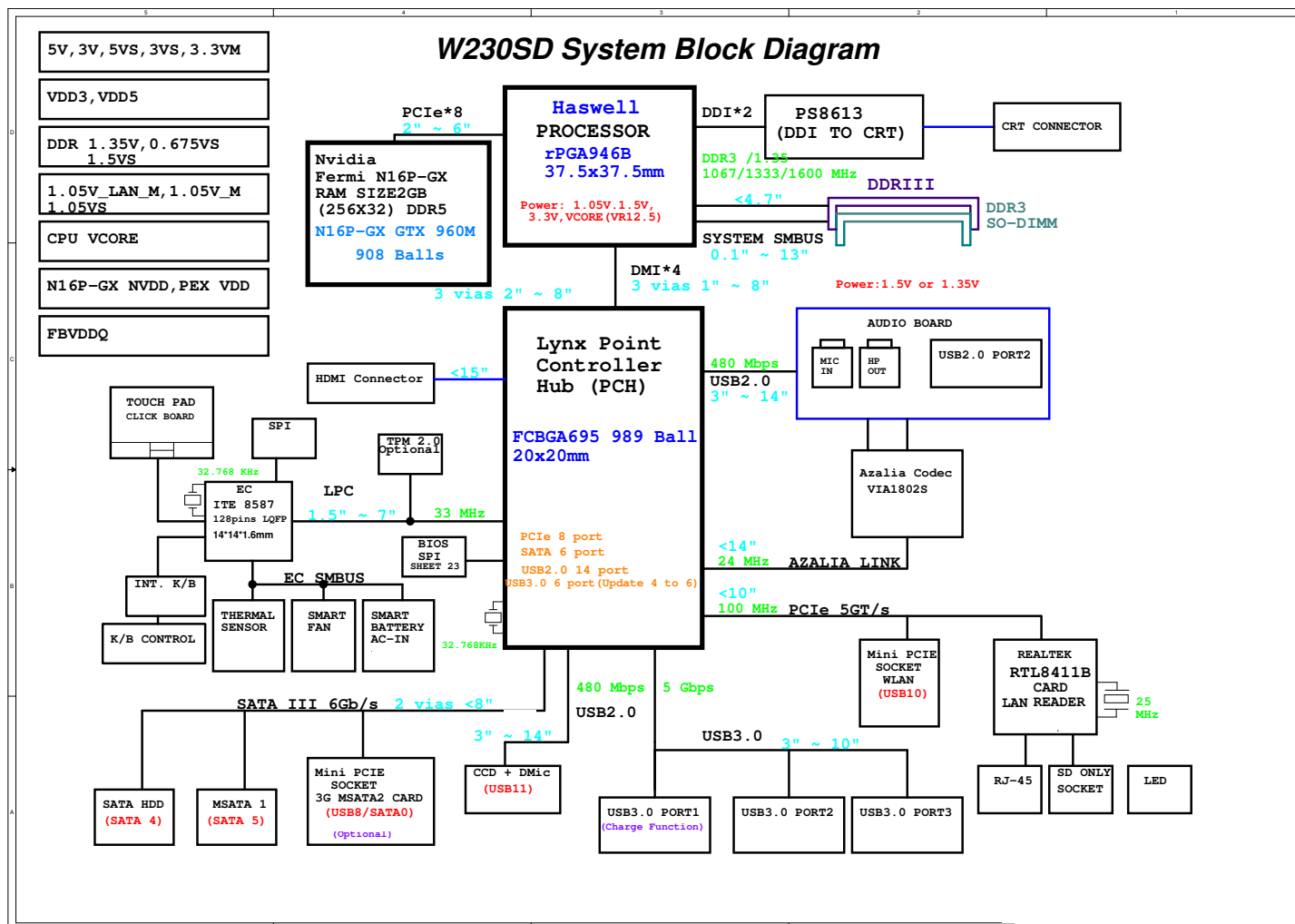
Table B - 1  
Schematic  
Diagrams



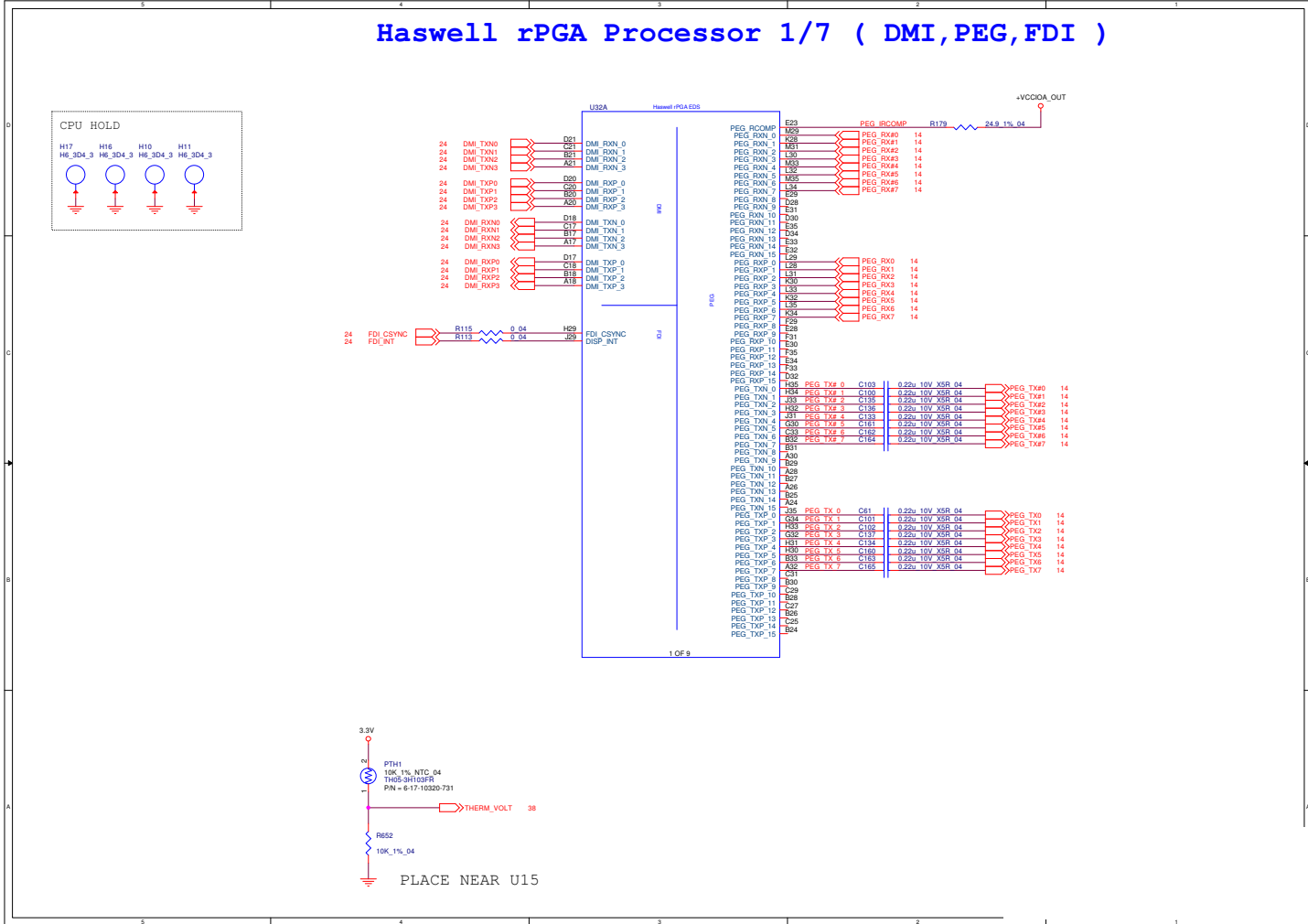
## Version Note

The schematic diagrams in this chapter are based upon version 6-7P-W23D4-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

**Sheet 1 of 51**  
**System Block**  
**Diagram**



# Haswell 1/7



Sheet 2 of 51  
Haswell 1/7

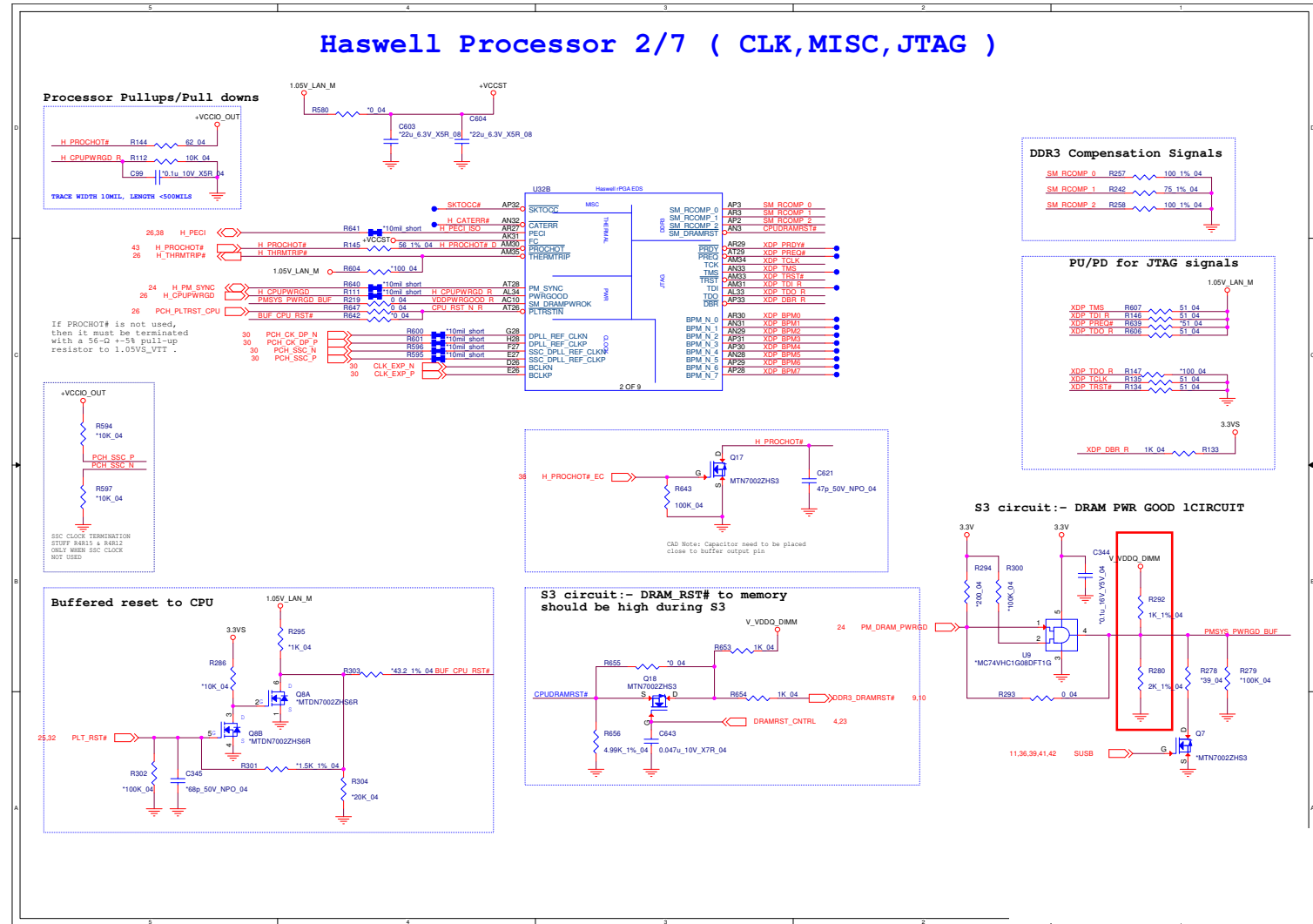
## B.Schematic Diagrams



## Schematic Diagrams

## Haswell 2/7

Sheet 3 of 51  
Haswell 2/7

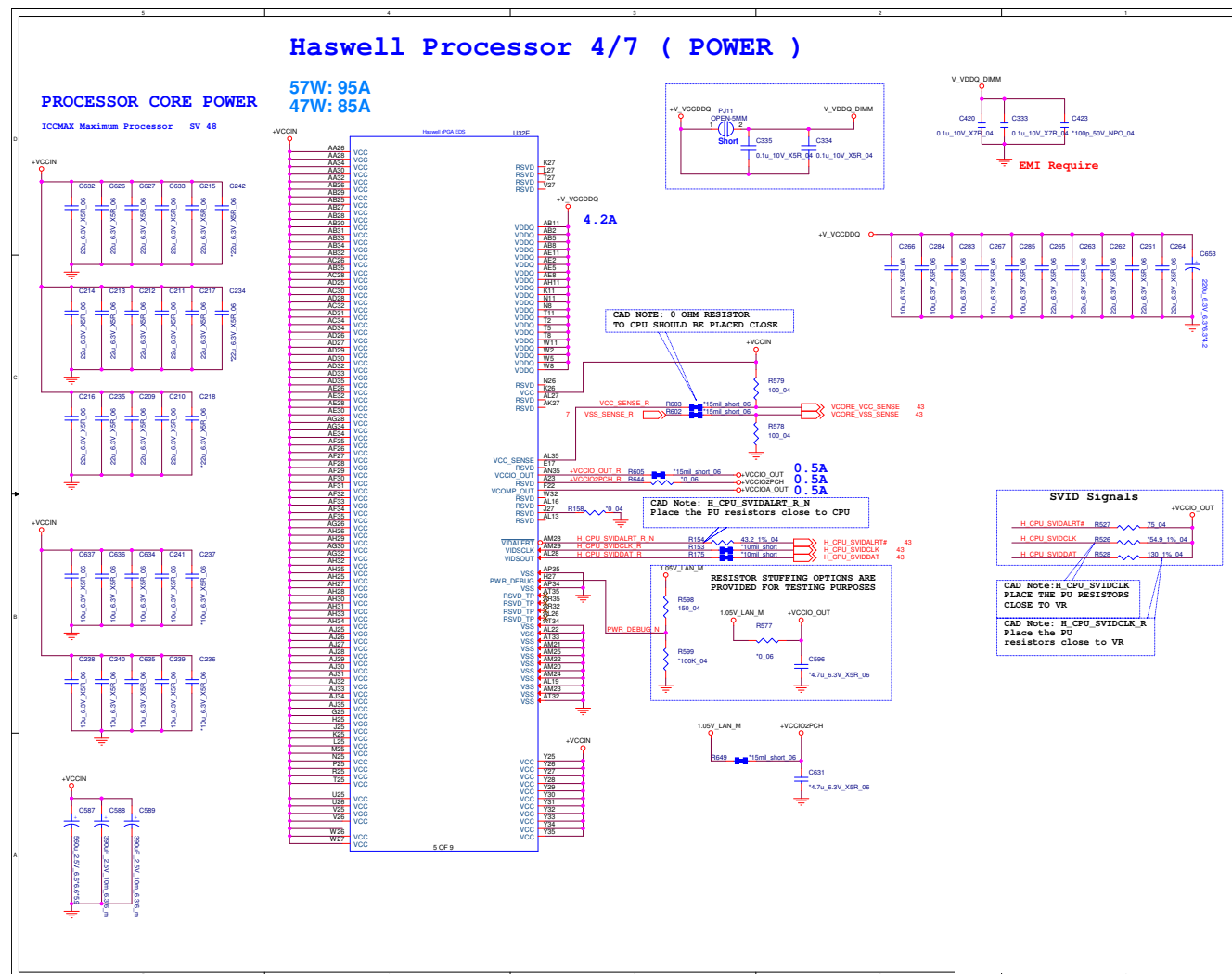


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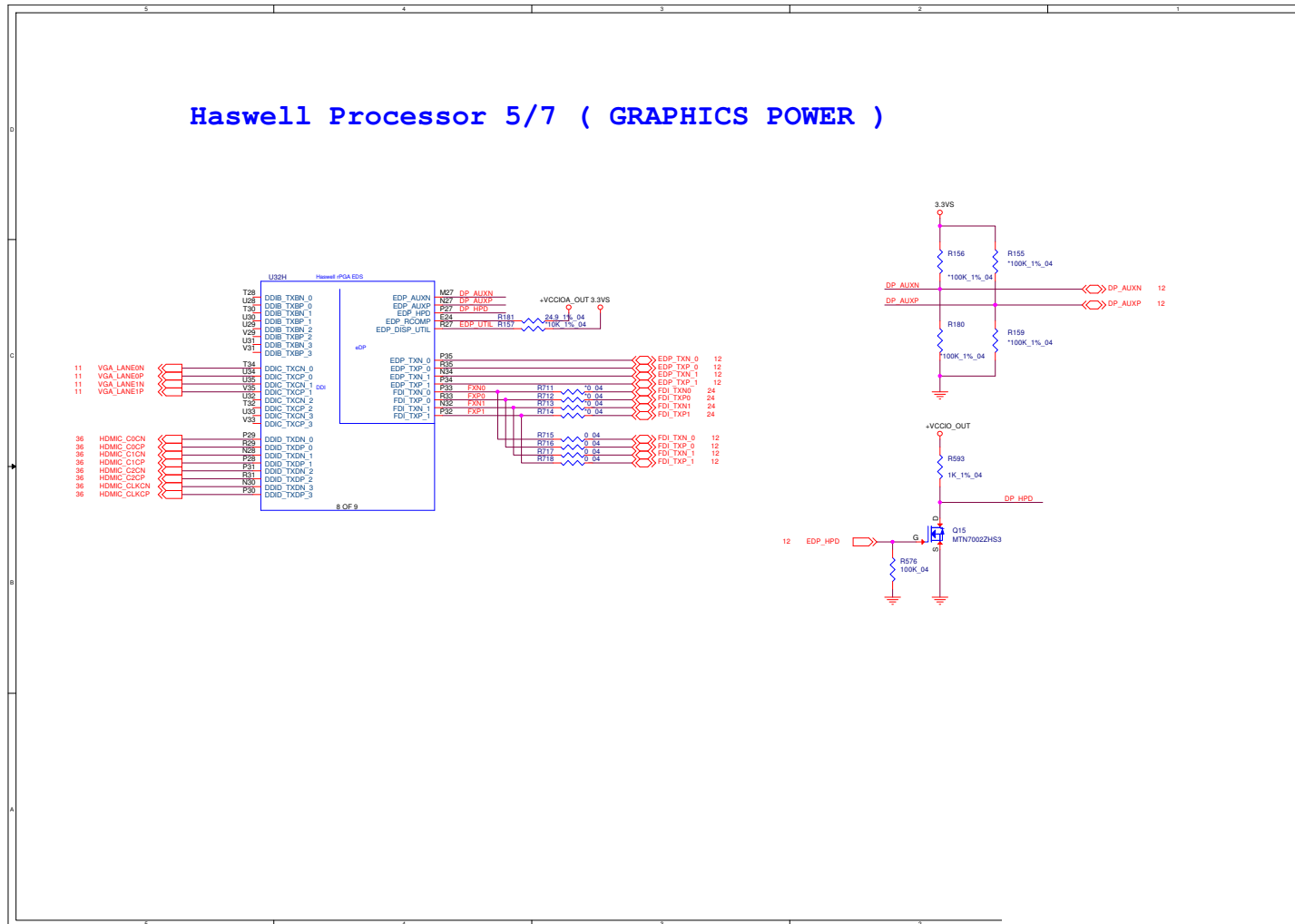
## Haswell 4/7

Sheet 5 of 51  
Haswell 4/7

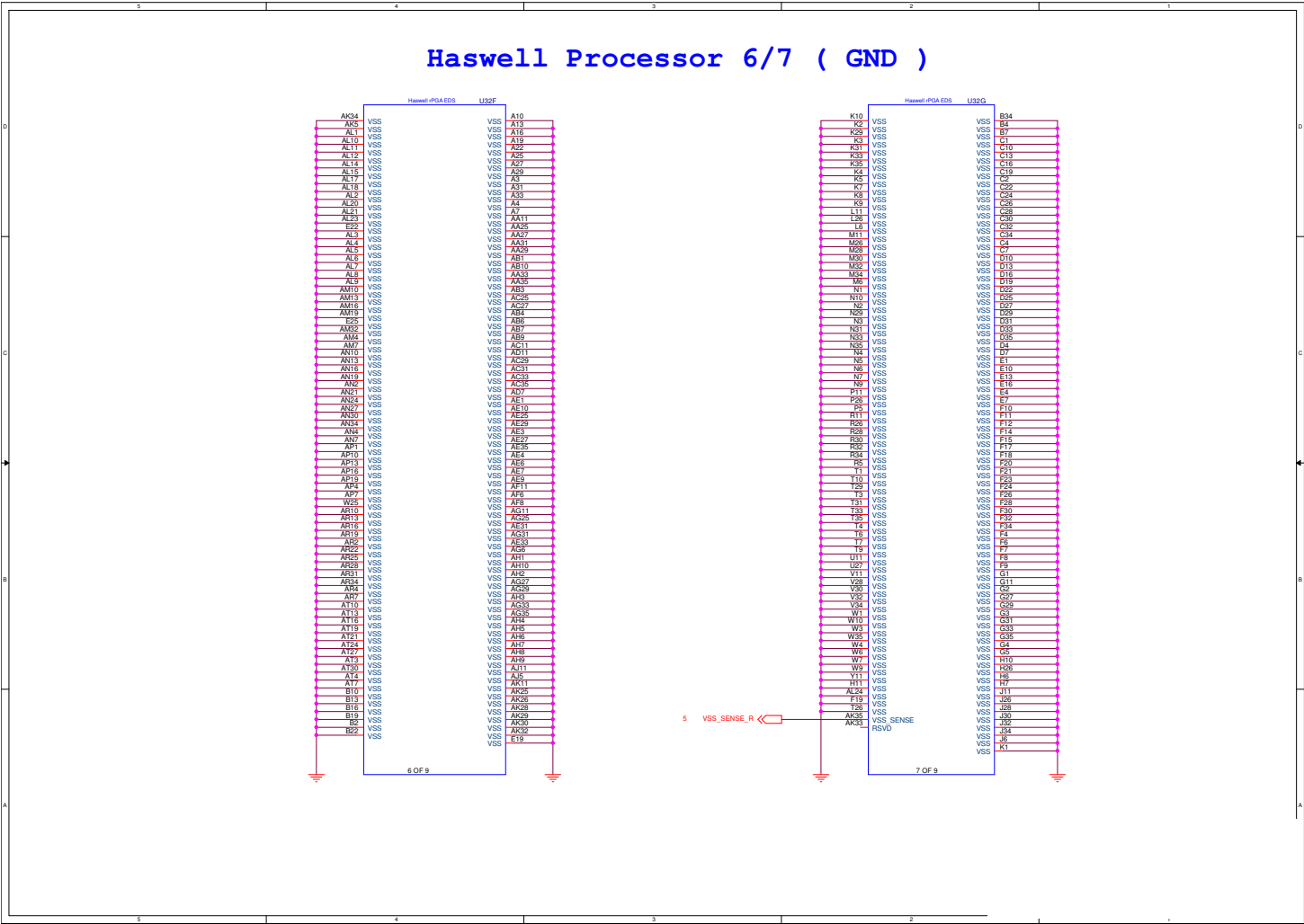


# Haswell 5/7

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Haswell 5/7

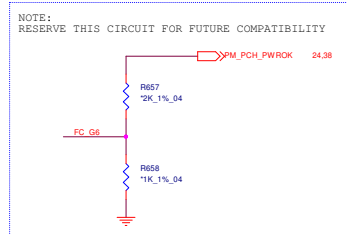


Haswell 6/7



Sheet 7 of 51  
Haswell 6/7

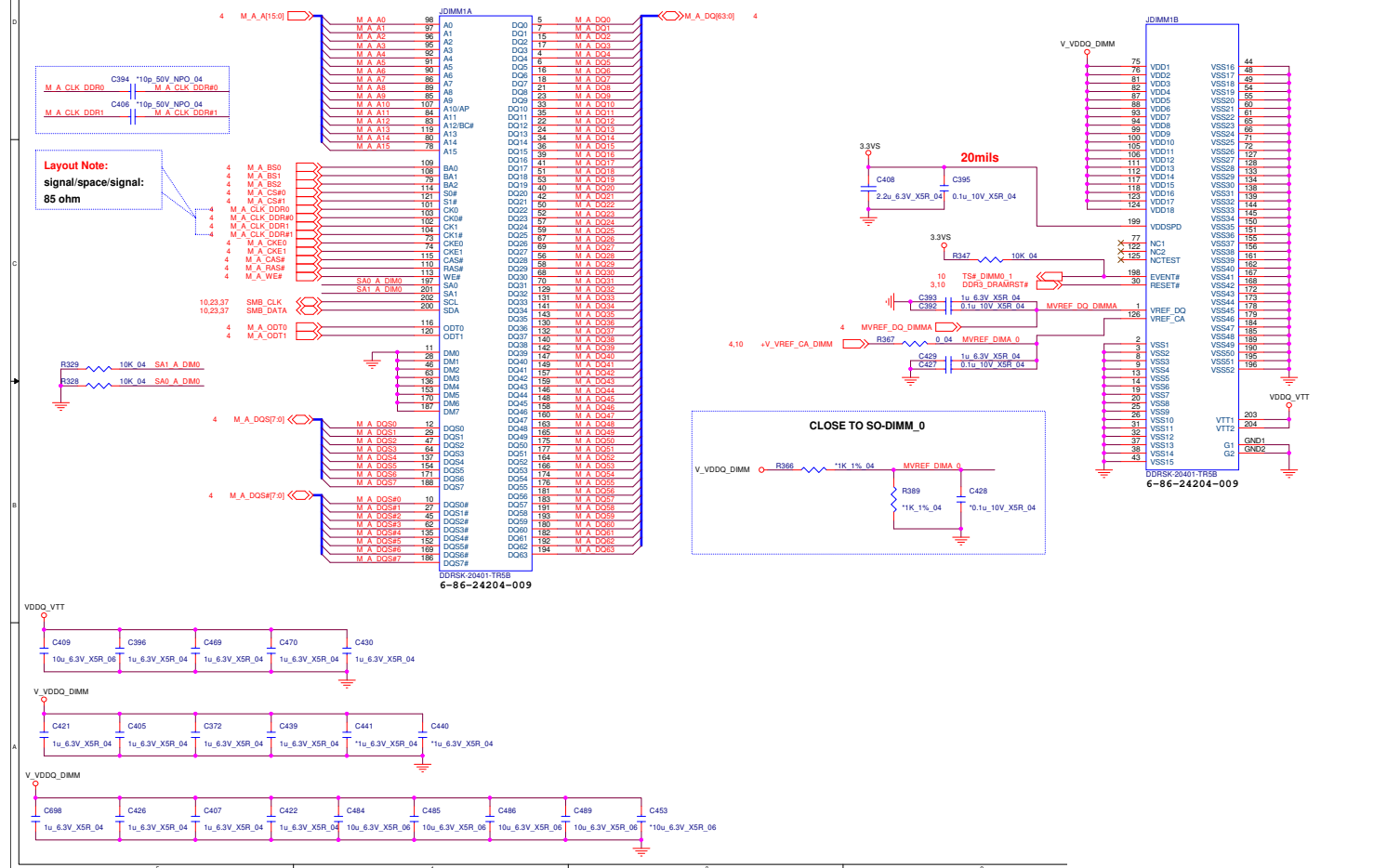
Sheet 8 of 51  
Haswell 7/7



## DDR3 SO-DIMM A\_0

SO-DIMM A 0

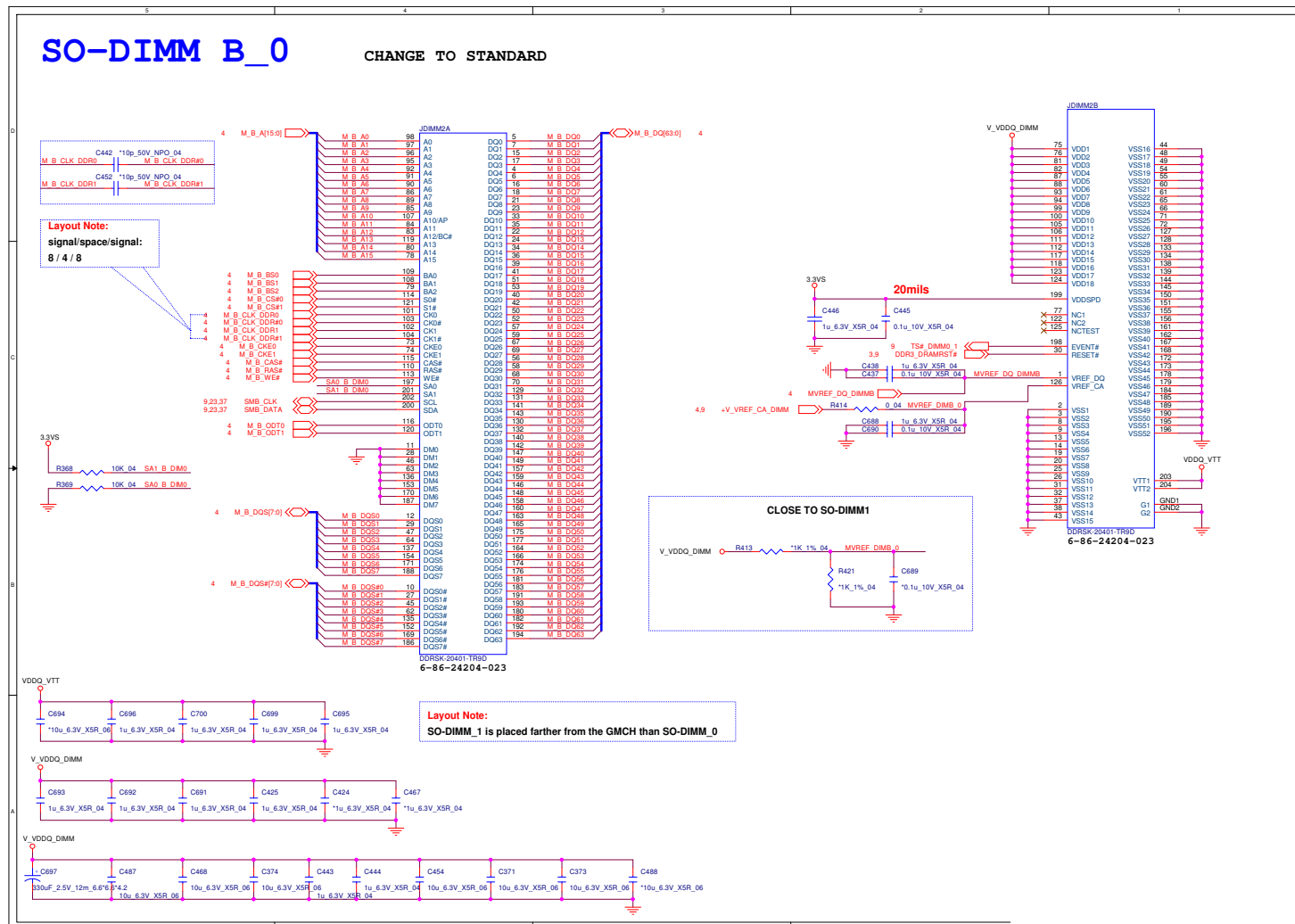
CHANGE TO STANDARD





## Schematic Diagrams

## DDR3 SO-DIMM B\_0



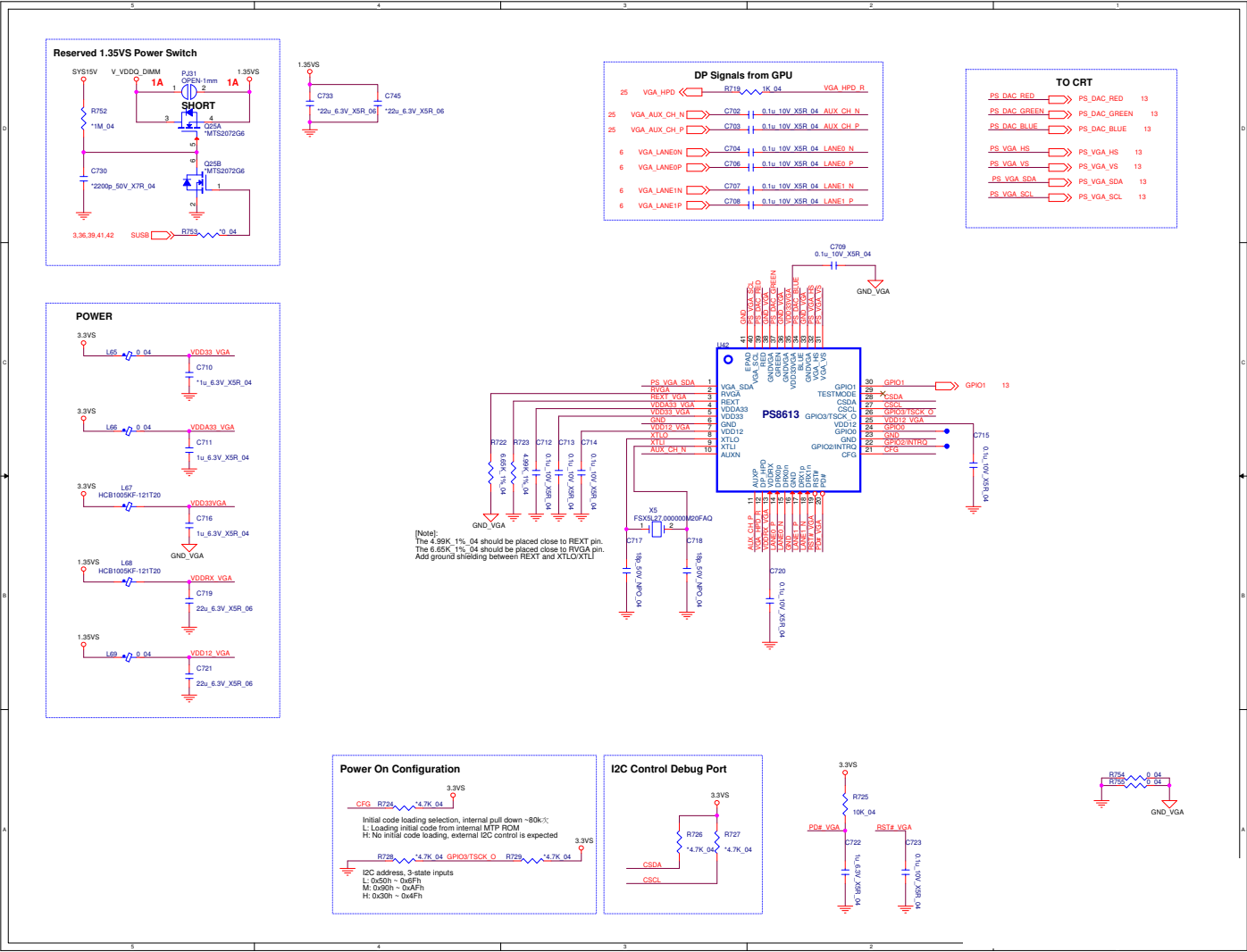
Sheet 10 of 51  
DDR3 SO-DIMM  
B\_0

## B.Schematic Diagrams

Schematic Diagrams

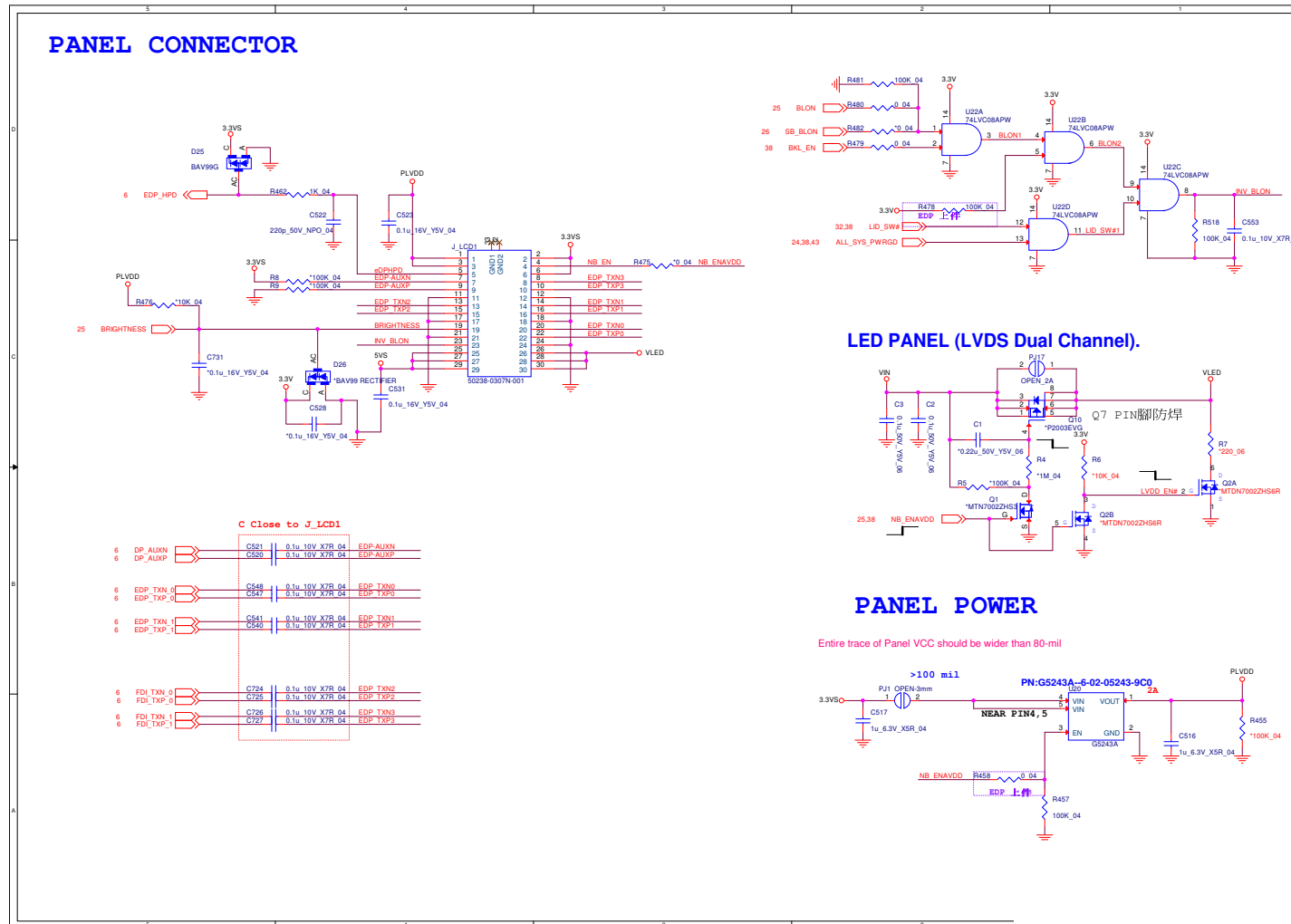
PS8625

Sheet 11 of 51  
PS8625



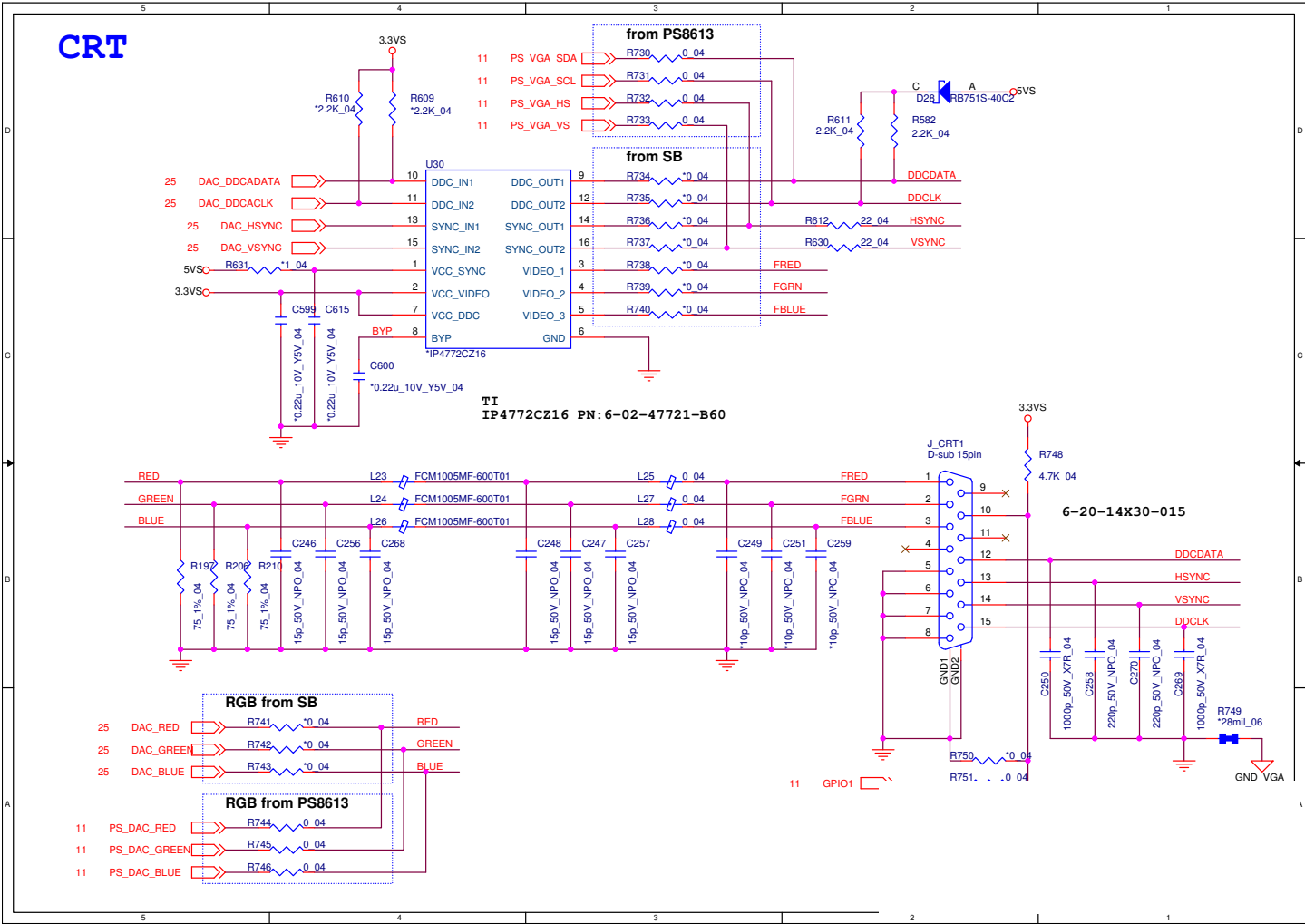
# Panel, Inverter, CRT

Sheet 12 of 51  
Panel, Inverter,  
CRT



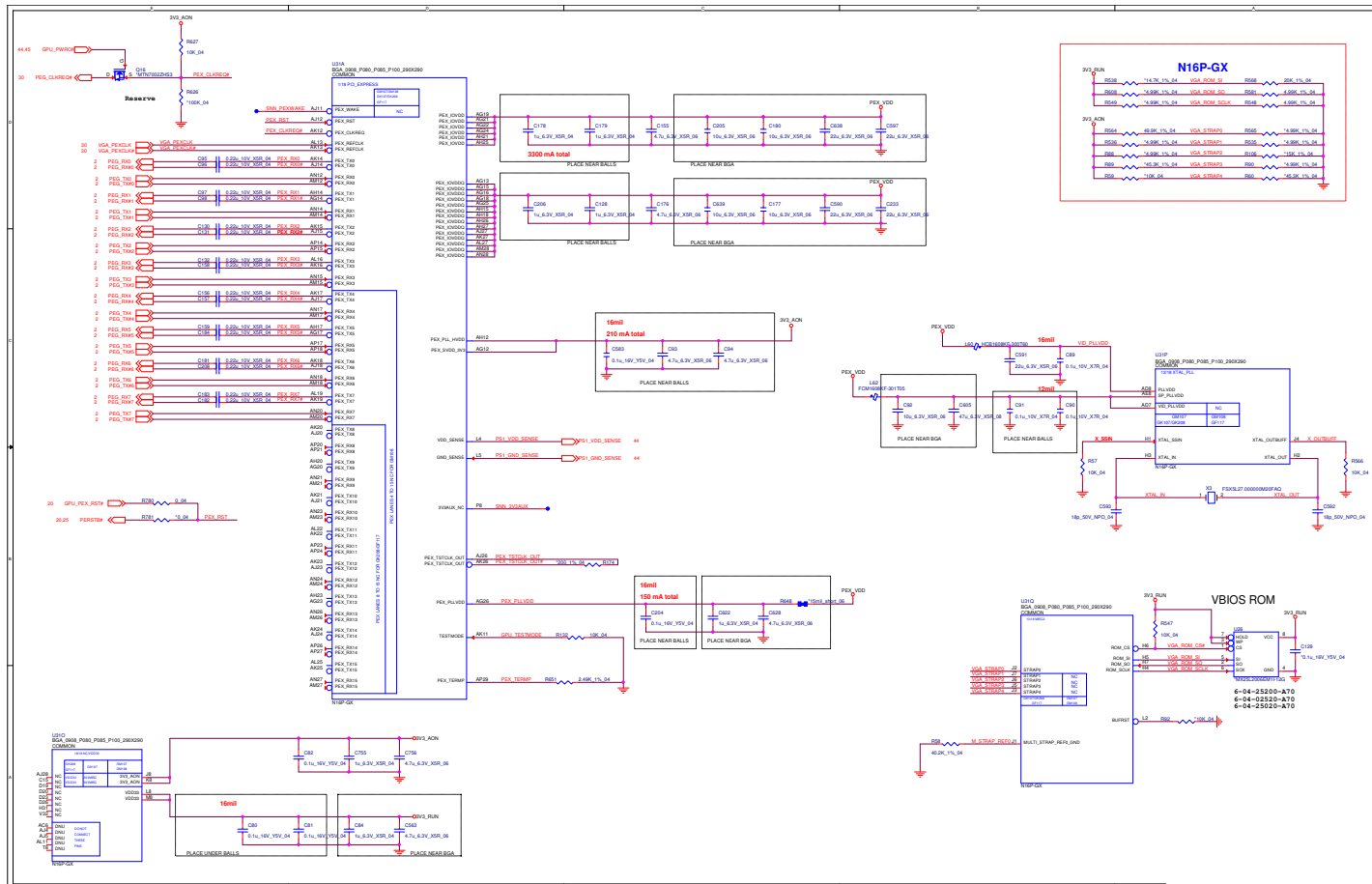
CRT

Sheet 13 of 51  
CRT



## VGA PCI-E Interface

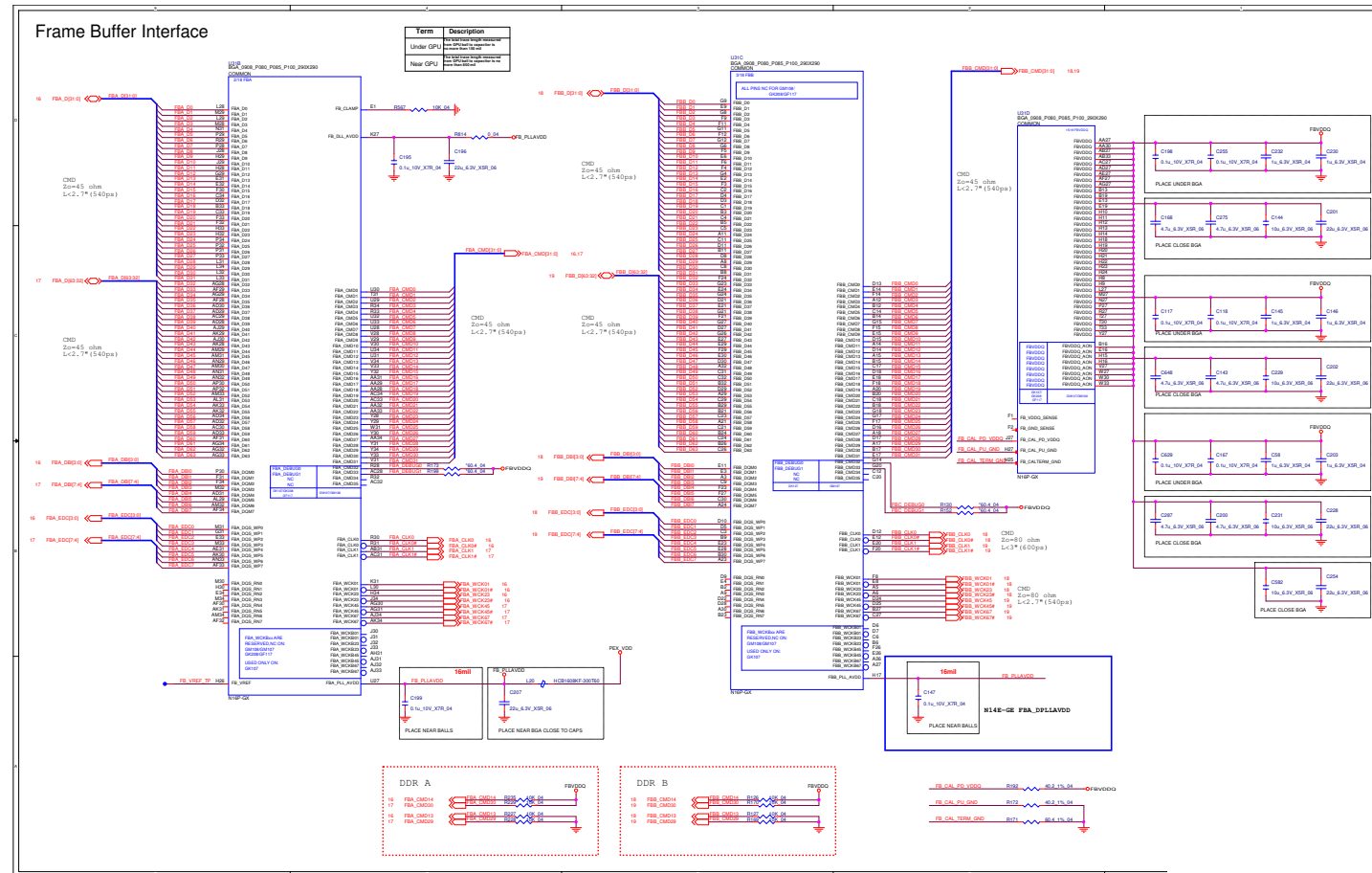
Sheet 14 of 51  
VGA PCI-E  
Interface



## VGA Frame Buffer Interface

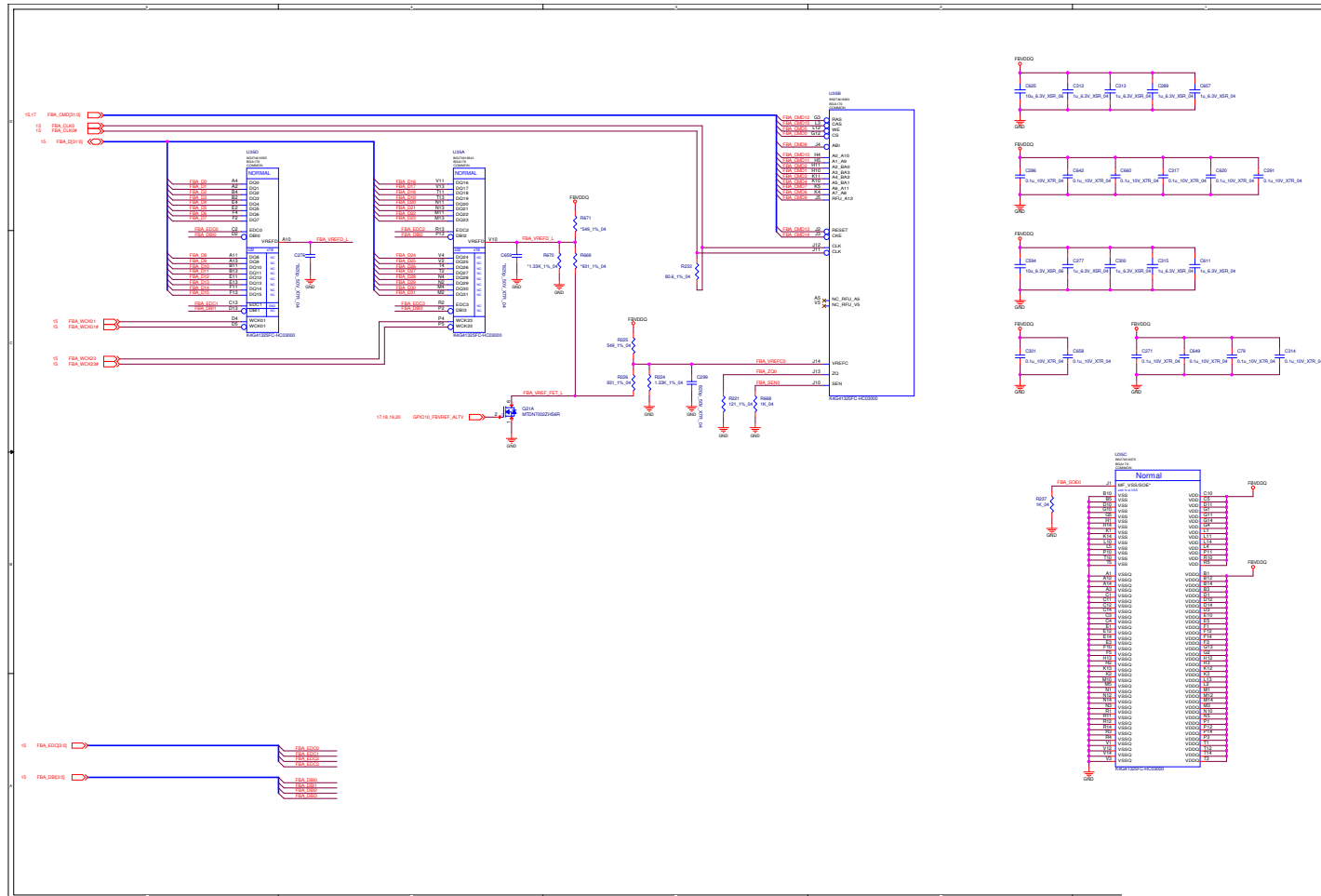
## B. Schematic Diagrams

**Sheet 15 of 51**  
**VGA Frame Buffer**  
**Interface**





## VGA Frame Buffer A

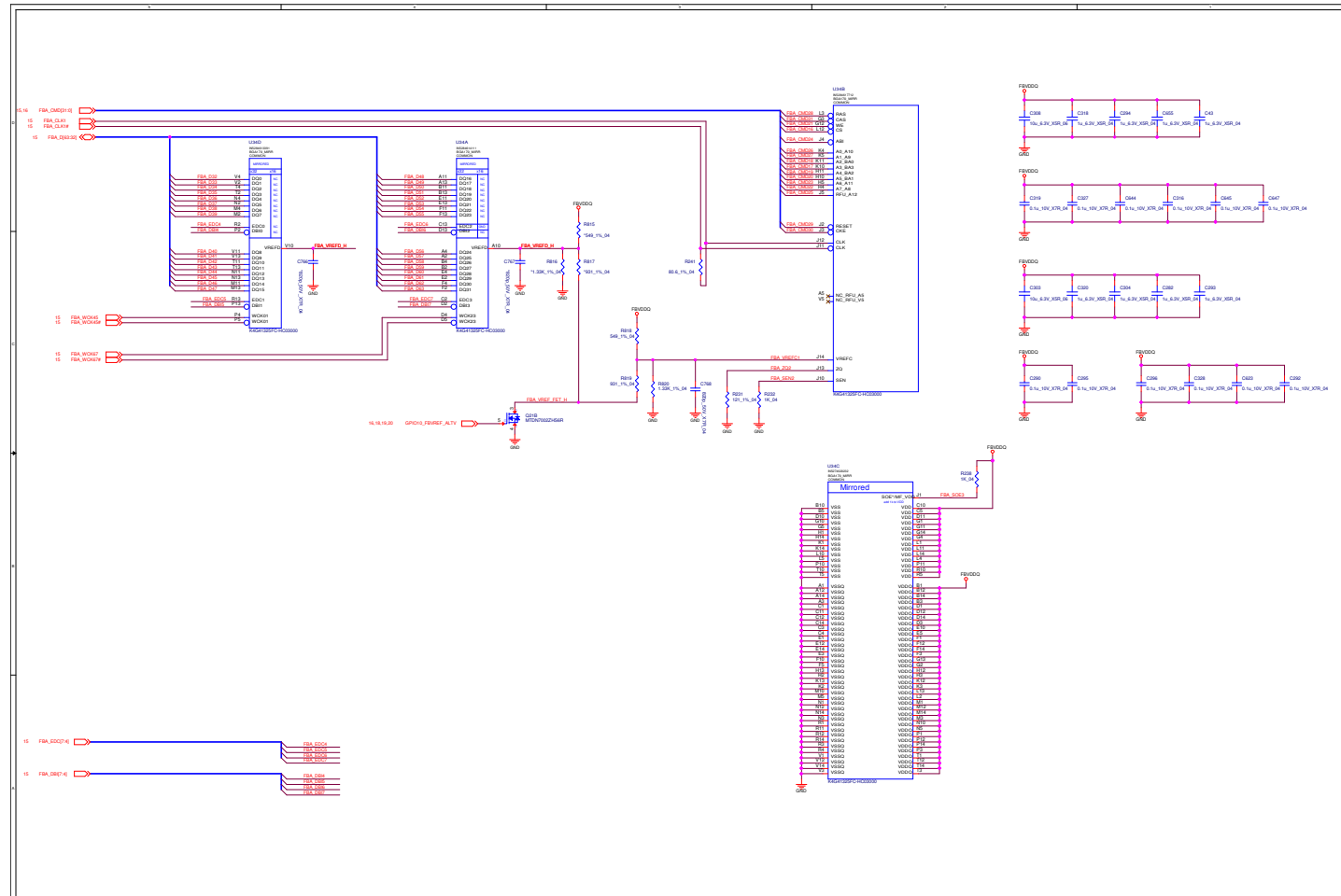


Sheet 16 of 51  
VGA Frame Buffer  
A

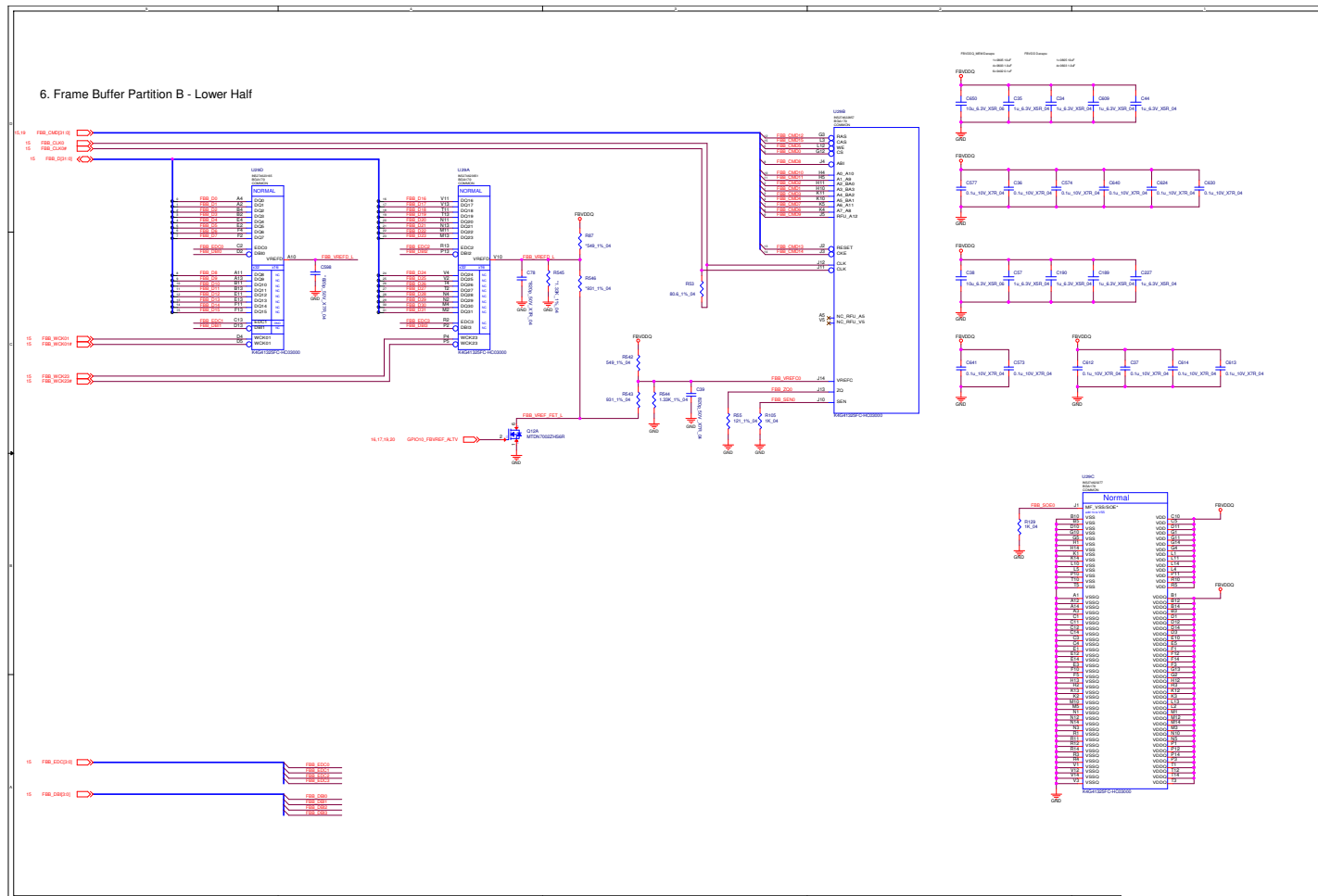
## VGA Frame Buffer A

## B. Schematic Diagrams

Sheet 17 of 51  
VGA Frame Buffer  
A

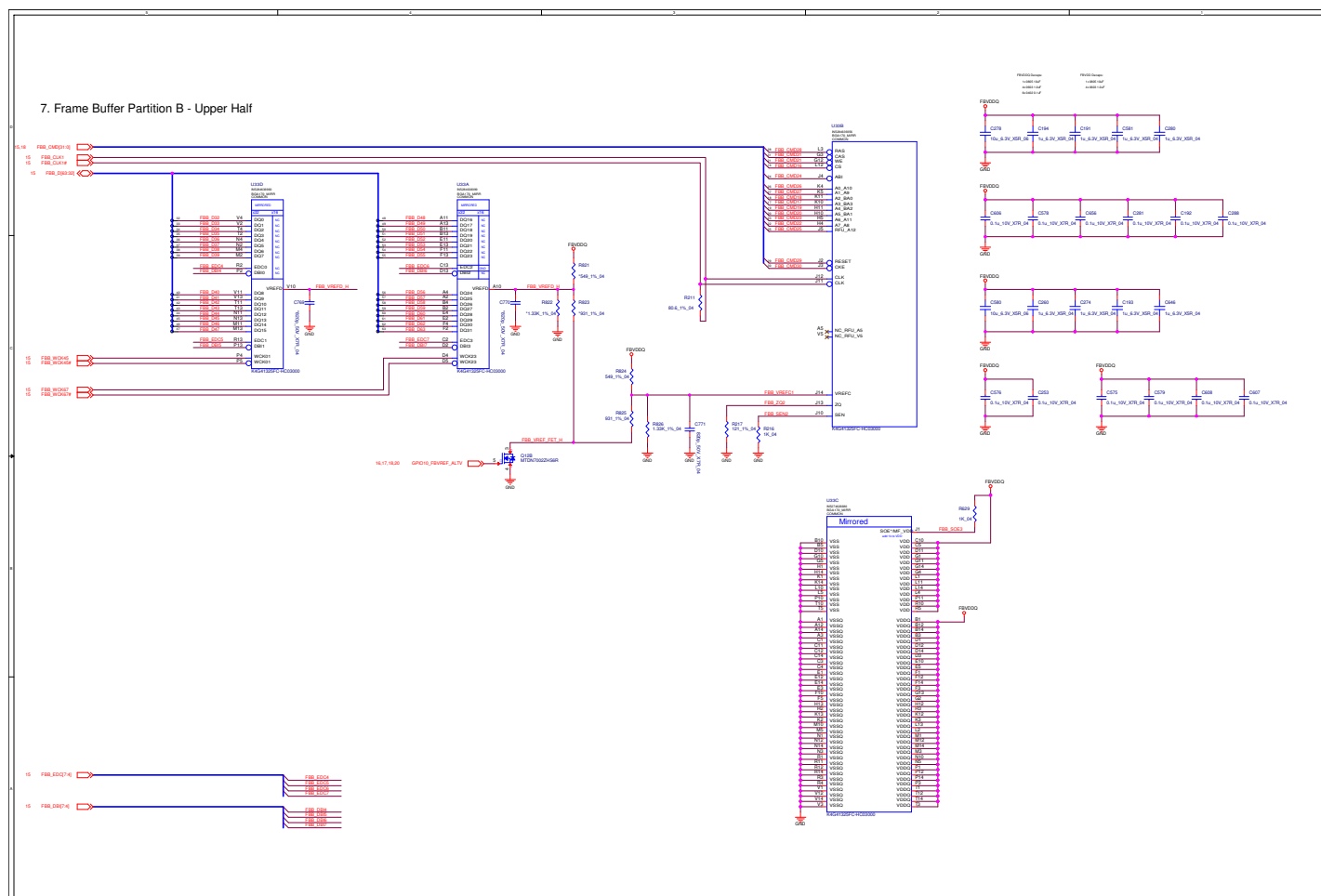


# VGA Frame Buffer B



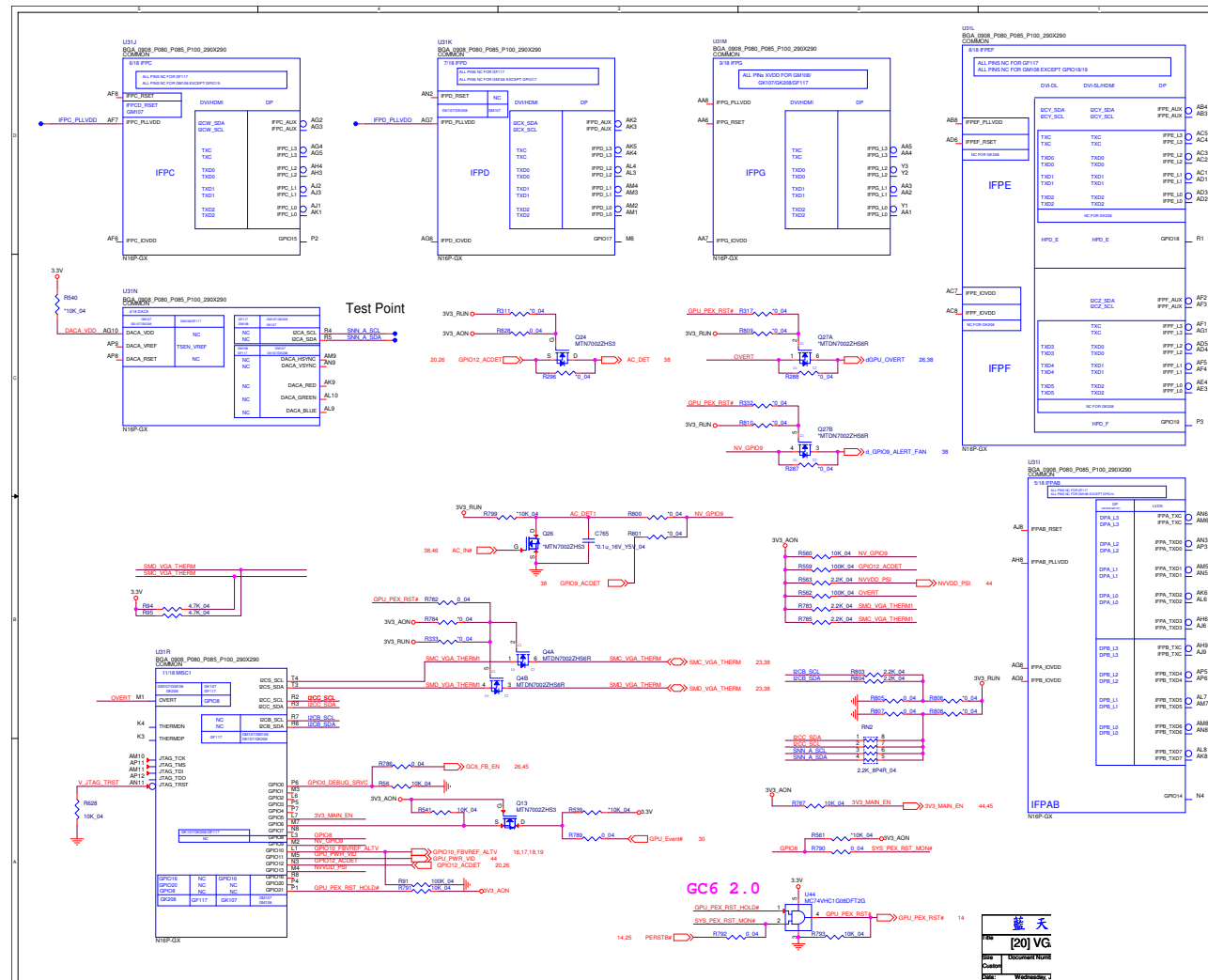
Sheet 18 of 51  
VGA Frame Buffer  
B

Sheet 19 of 51  
VGA Frame Buffer  
B



## Schematic Diagrams

## VGA I/O



**Sheet 20 of 51**  
**VGA I/O**

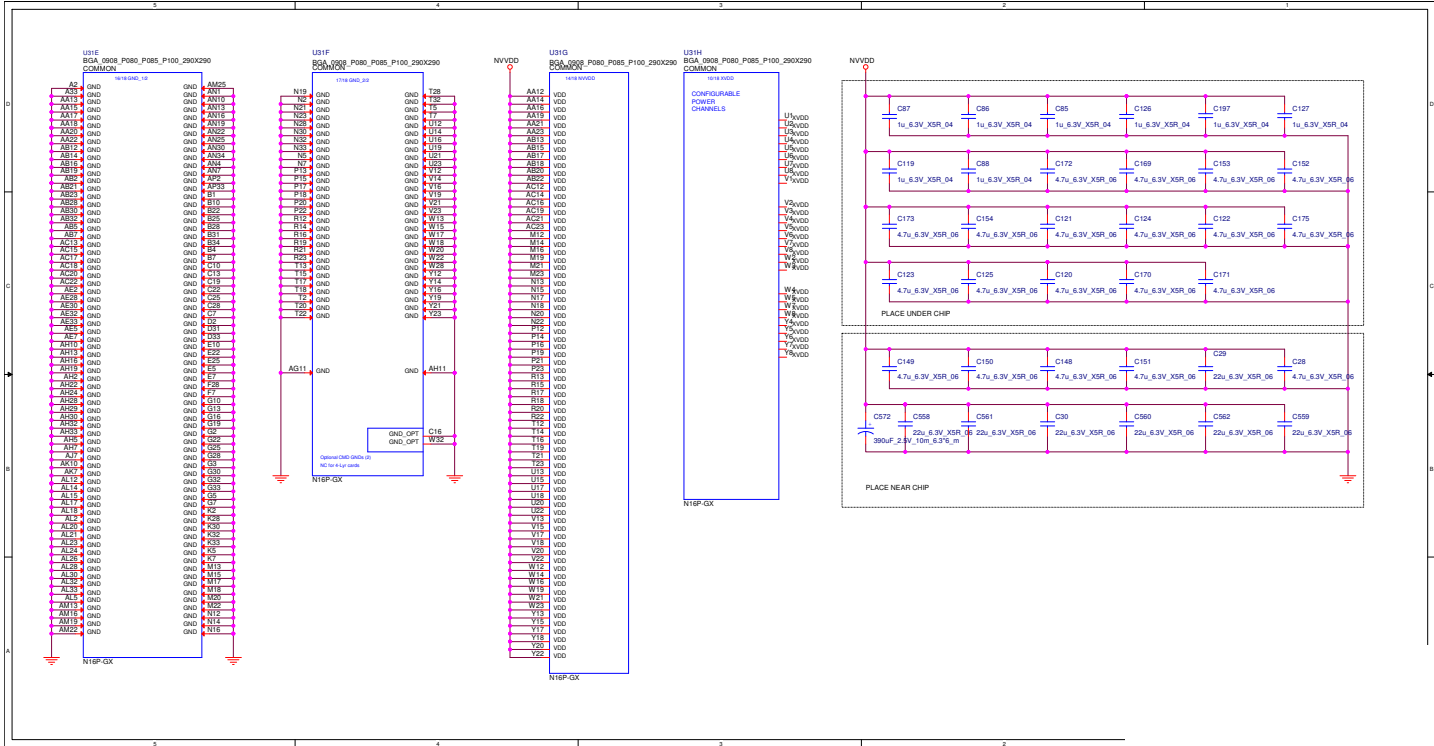
## B.Schematic Diagrams

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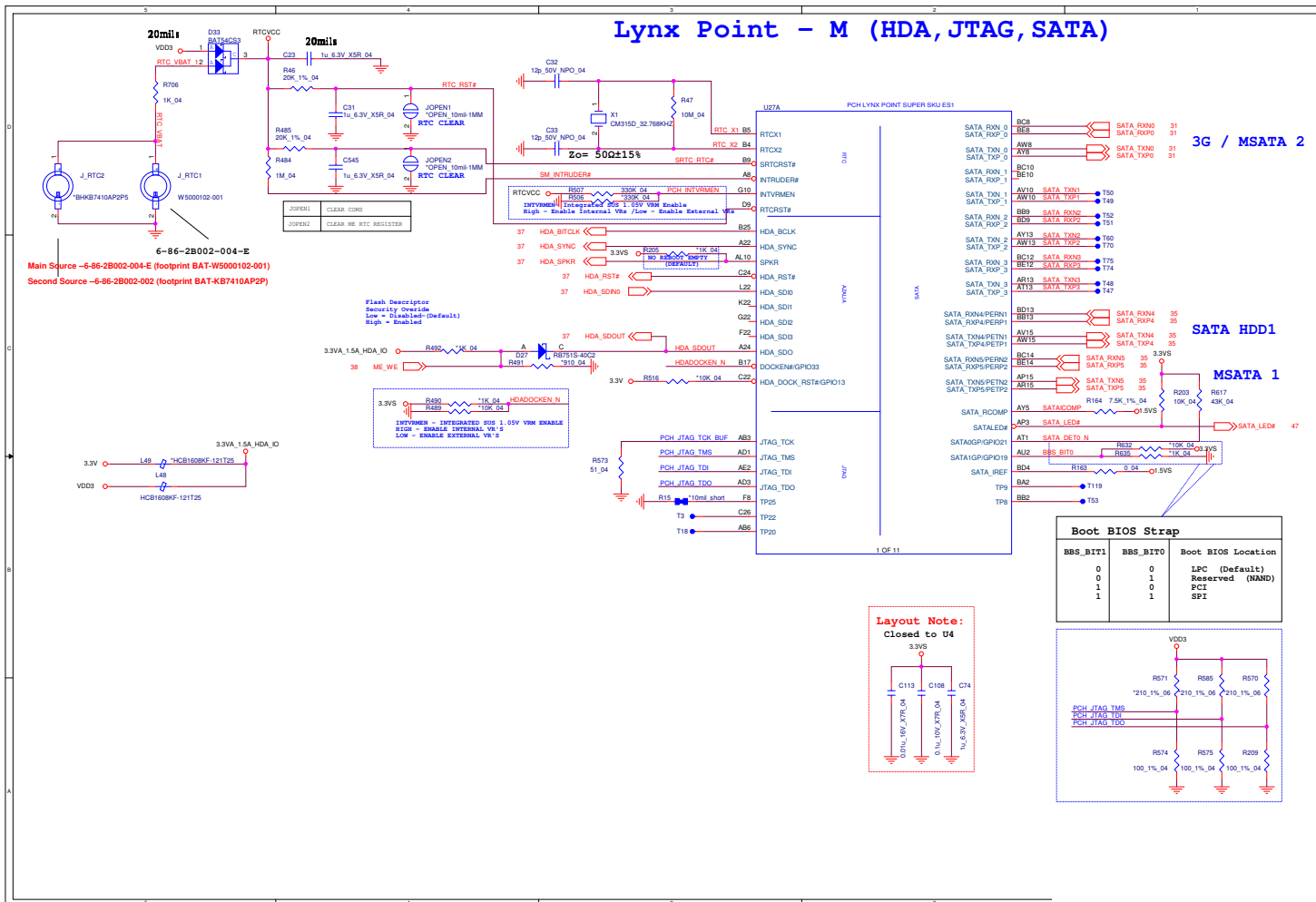
## VGA NVDD Decoupling

## B.Schematic Diagrams

**Sheet 21 of 51**  
**VGA NVDD**  
**Decoupling**



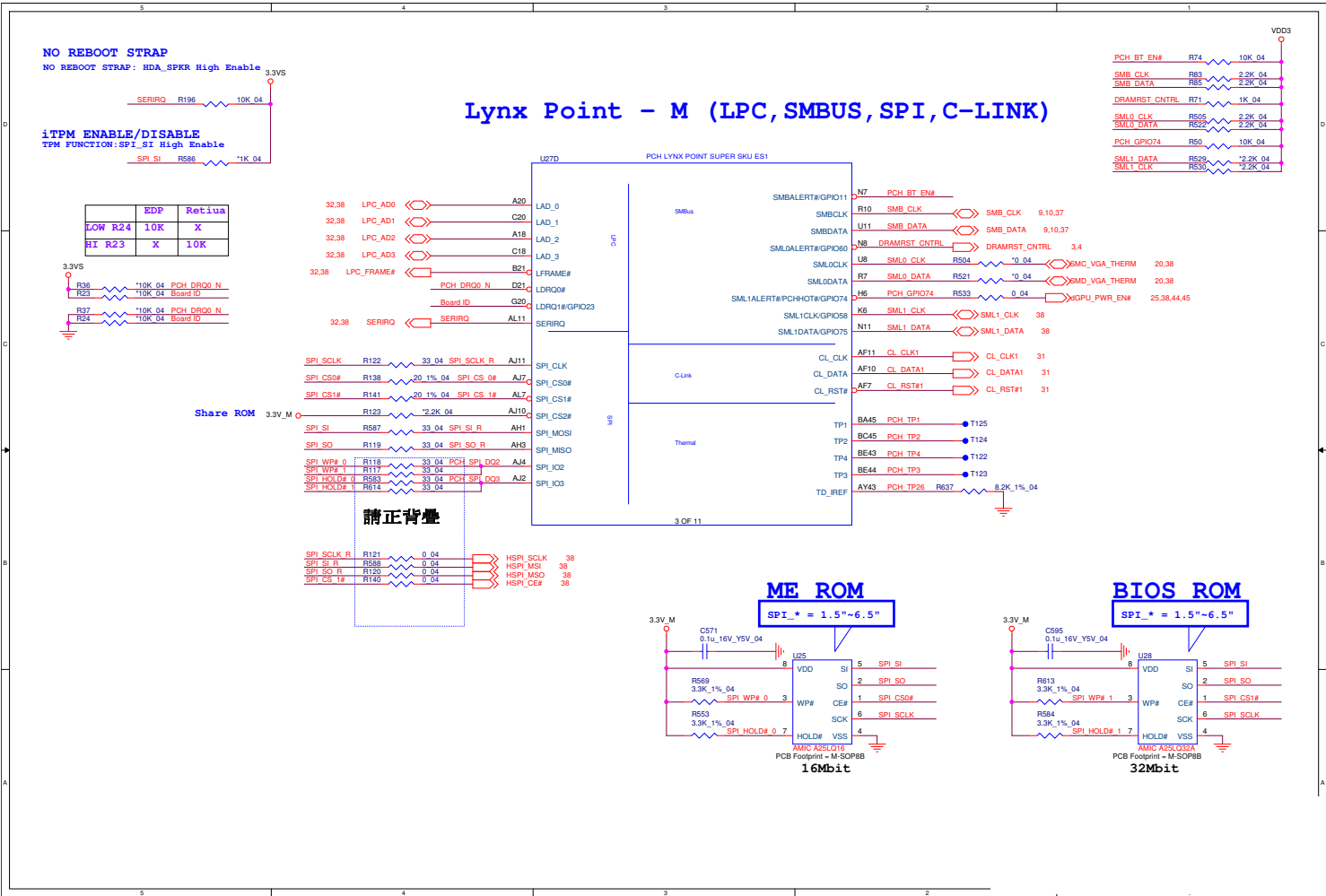
## Lynx 1/9

Sheet 22 of 51  
Lynx 1/9



Lynx 2/9

Sheet 23 of 51  
Lynx 2/9



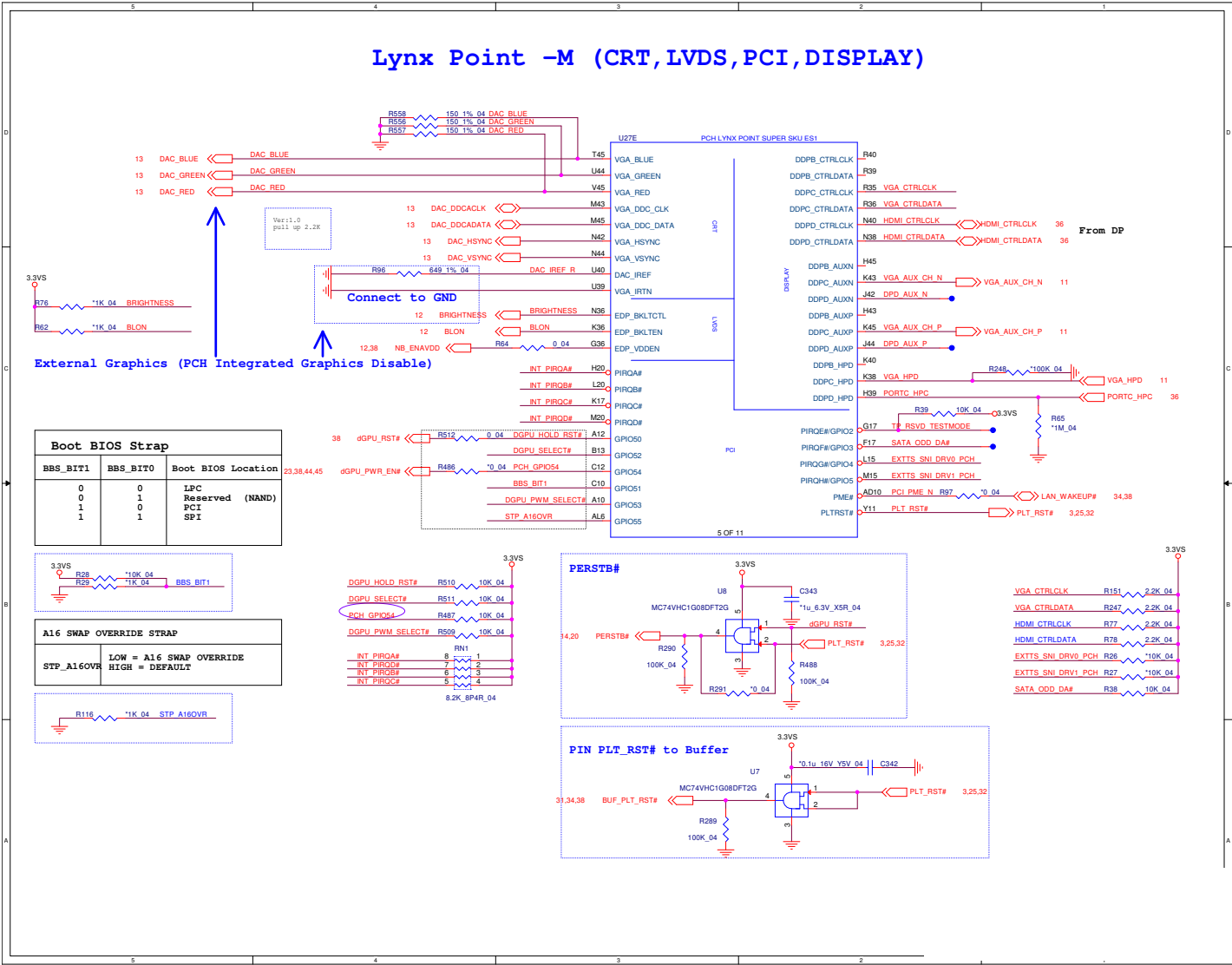
The diagram illustrates the electrical connections for the Lynx Point -M (DMI, FDI, PWRGD) interface. It features a central block labeled 'PCH LYNX POINT SUPER SKU E51' with multiple pins for DMI, FDI, and PWRGD. The connections are as follows:

- DMI (DMI0, DMI1, DMI2, DMI3, DMI4, DMI5, DMI6, DMI7, DMI8, DMI9, DMI10, DMI11, DMI12, DMI13, DMI14, DMI15, DMI16, DMI17, DMI18, DMI19, DMI20, DMI21, DMI22, DMI23, DMI24, DMI25, DMI26, DMI27, DMI28, DMI29, DMI30, DMI31, DMI32, DMI33, DMI34, DMI35, DMI36, DMI37, DMI38, DMI39, DMI40, DMI41, DMI42, DMI43, DMI44, DMI45, DMI46, DMI47, DMI48, DMI49, DMI50, DMI51, DMI52, DMI53, DMI54, DMI55, DMI56, DMI57, DMI58, DMI59, DMI60, DMI61, DMI62, DMI63, DMI64, DMI65, DMI66, DMI67, DMI68, DMI69, DMI70, DMI71, DMI72, DMI73, DMI74, DMI75, DMI76, DMI77, DMI78, DMI79, DMI80, DMI81, DMI82, DMI83, DMI84, DMI85, DMI86, DMI87, DMI88, DMI89, DMI90, DMI91, DMI92, DMI93, DMI94, DMI95, DMI96, DMI97, DMI98, DMI99, DMI100, DMI101, DMI102, DMI103, DMI104, DMI105, DMI106, DMI107, DMI108, DMI109, DMI110, DMI111, DMI112, DMI113, DMI114, DMI115, DMI116, DMI117, DMI118, DMI119, DMI120, DMI121, DMI122, DMI123, DMI124, DMI125, DMI126, DMI127, DMI128, DMI129, DMI130, DMI131, DMI132, DMI133, DMI134, DMI135, DMI136, DMI137, 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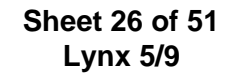
**Lynx 3/9 B - 25**

Lynx 4/9

Sheet 25 of 51  
Lynx 4/9

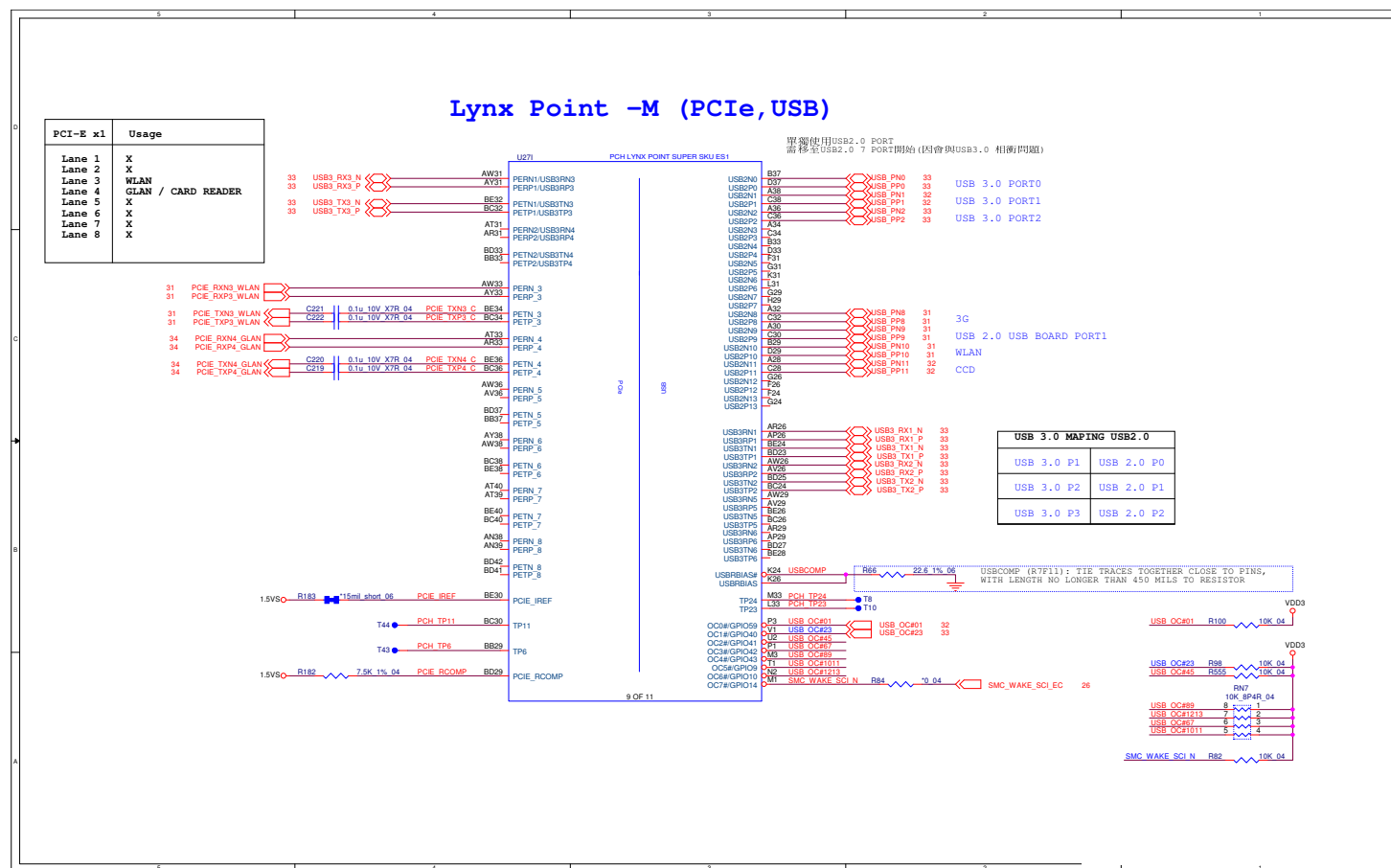


**Lynx 5/9 B - 27**

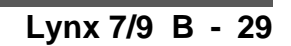


## Lynx 6/9

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Lynx 6/9

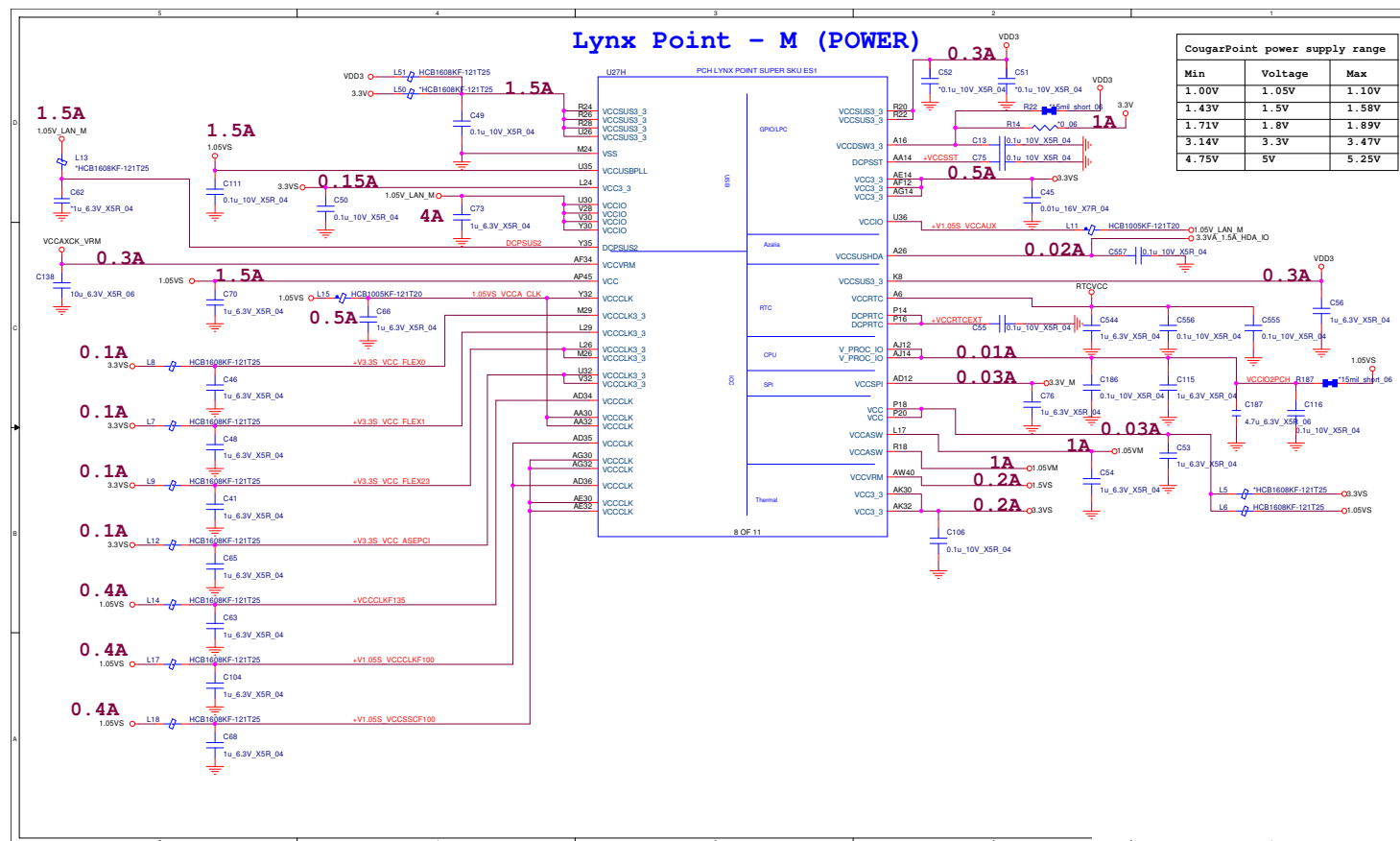


Sheet 28 of 51  
Lynx 7/9



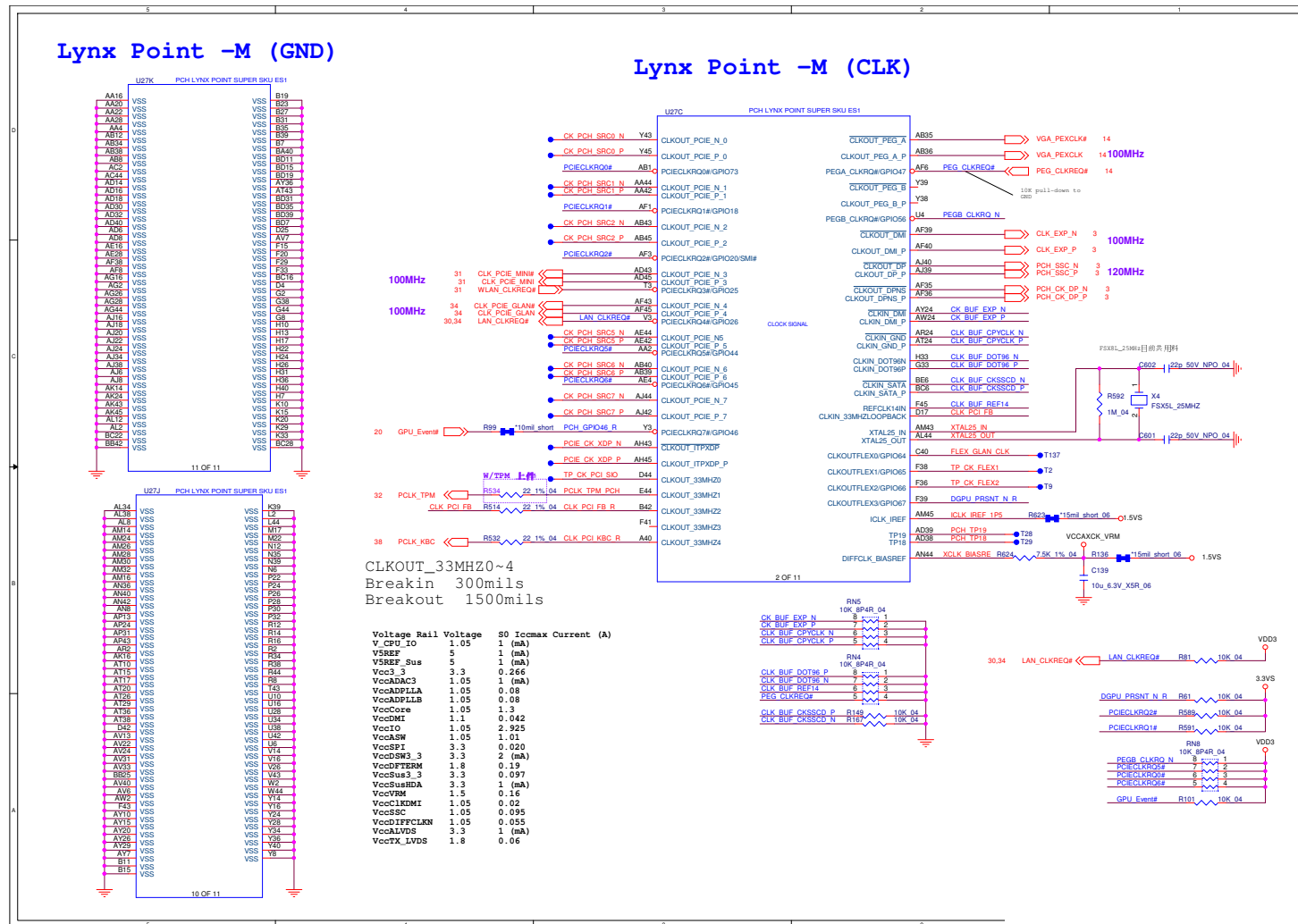
## Lynx 8/9

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Lynx 8/9



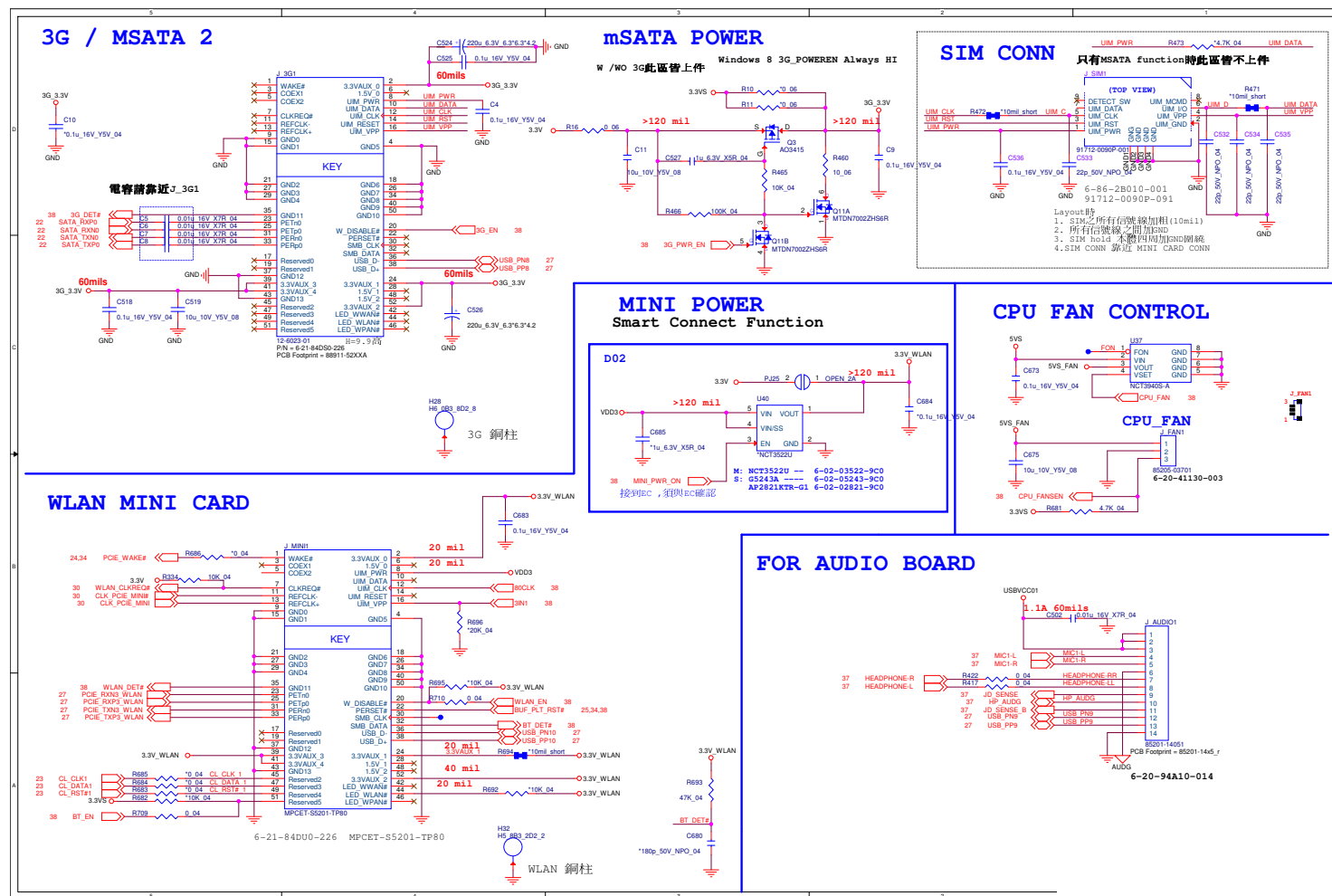


## Lynx 9/9

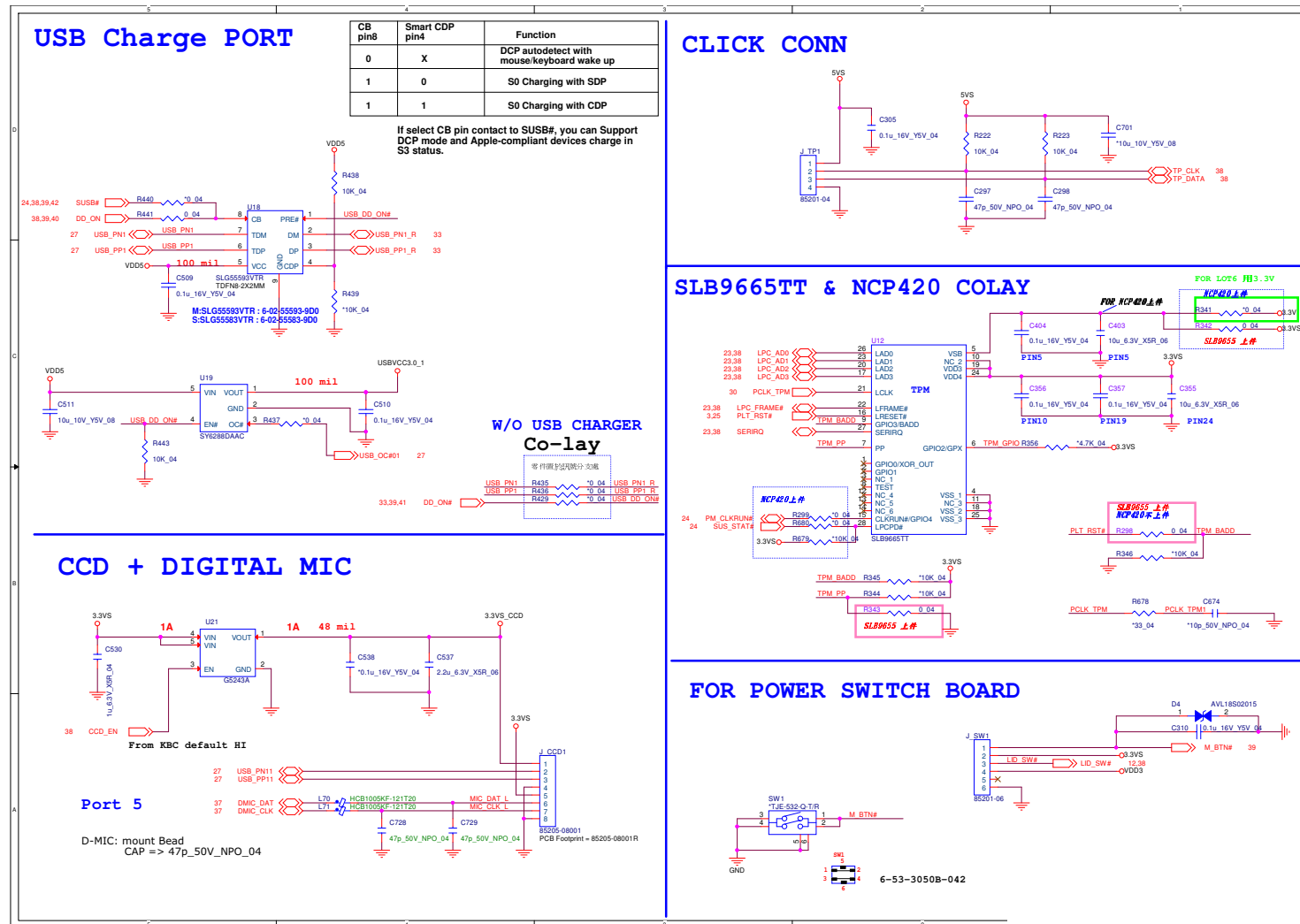
Sheet 30 of 51  
Lynx 9/9

## Mini PCIE, 3G, Fan, Audio Con

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



# USB Charge, CCD, TPM, Multi-Con

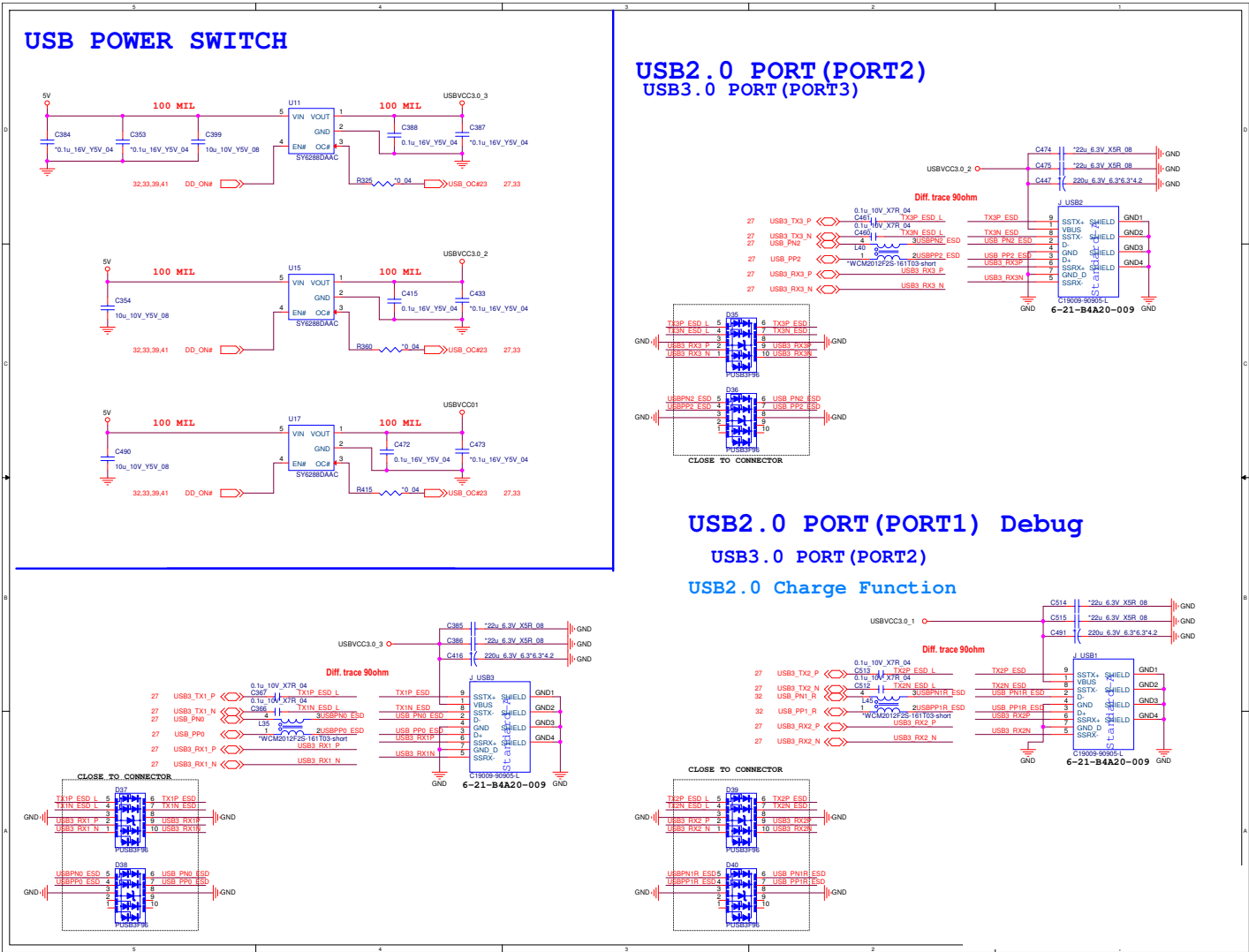


Sheet 32 of 51  
USB Charge, CCD,  
TPM, Multi-Con

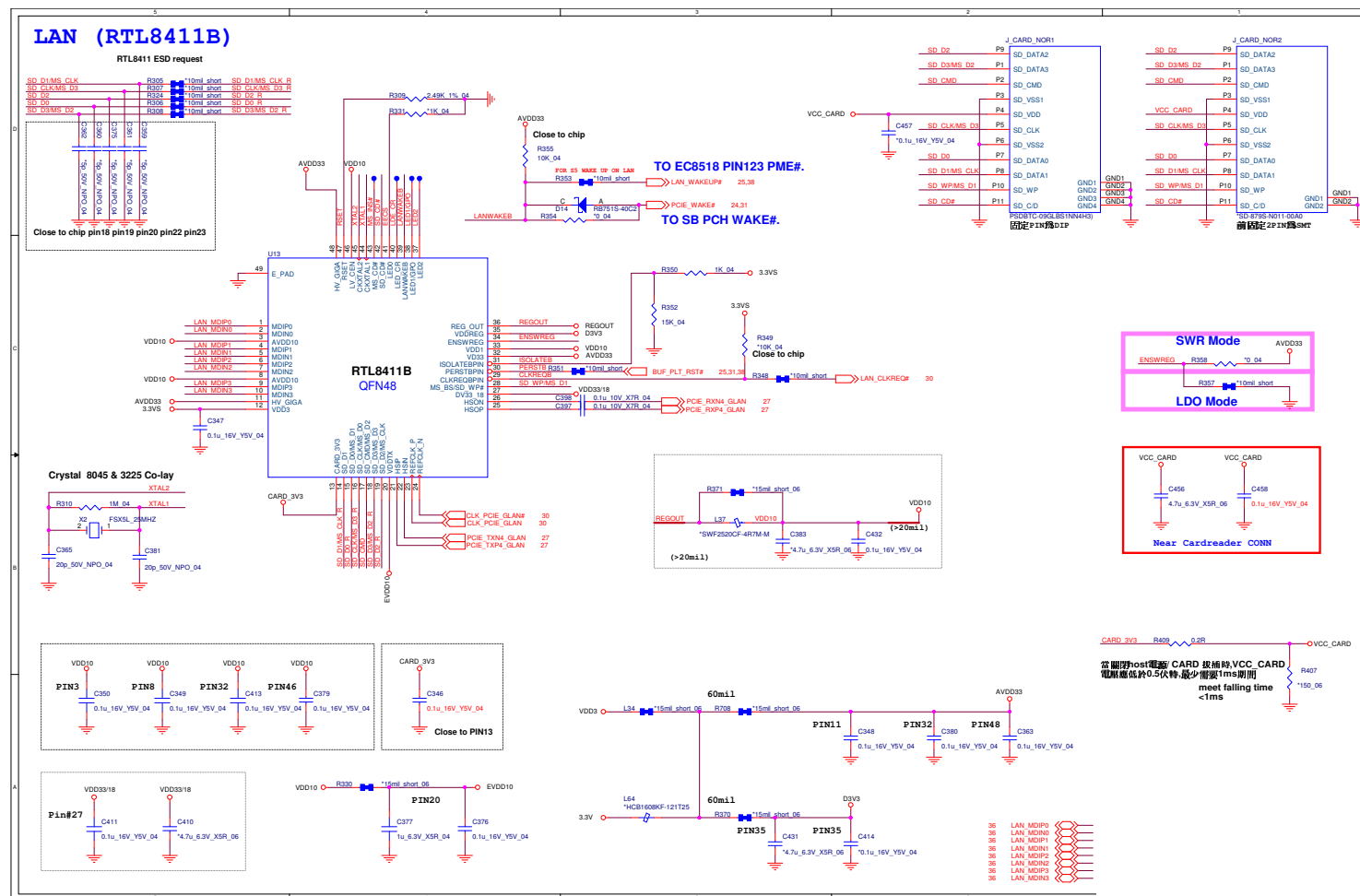
Schematic Diagrams

USB3.0 Connector

Sheet 33 of 51  
USB3.0 Connector

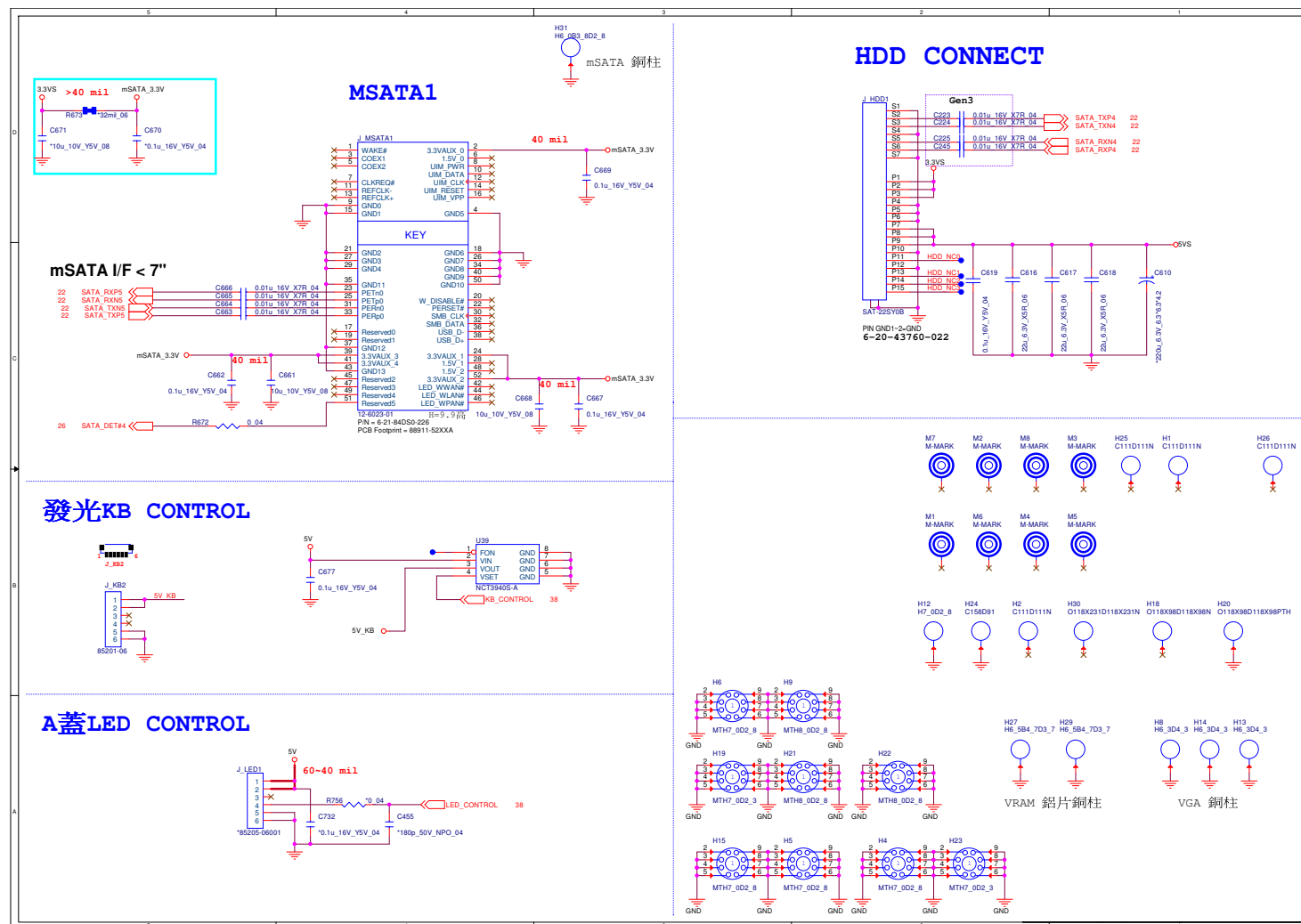


## Card Reader / LAN RTL8411B

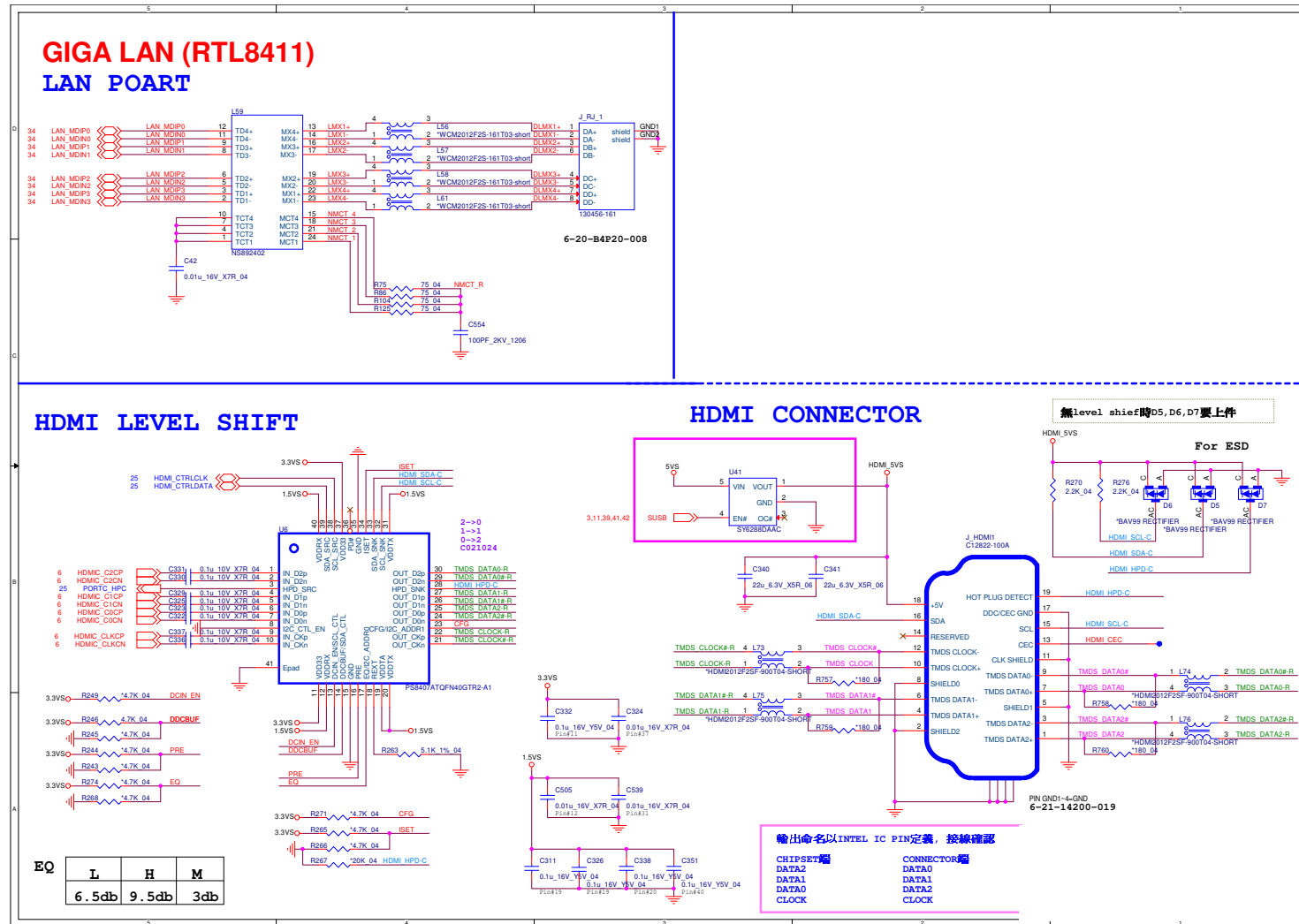


## B. Schematic Diagrams

Sheet 35 of 51  
SATA HDD,  
MSATA1, KB  
Control



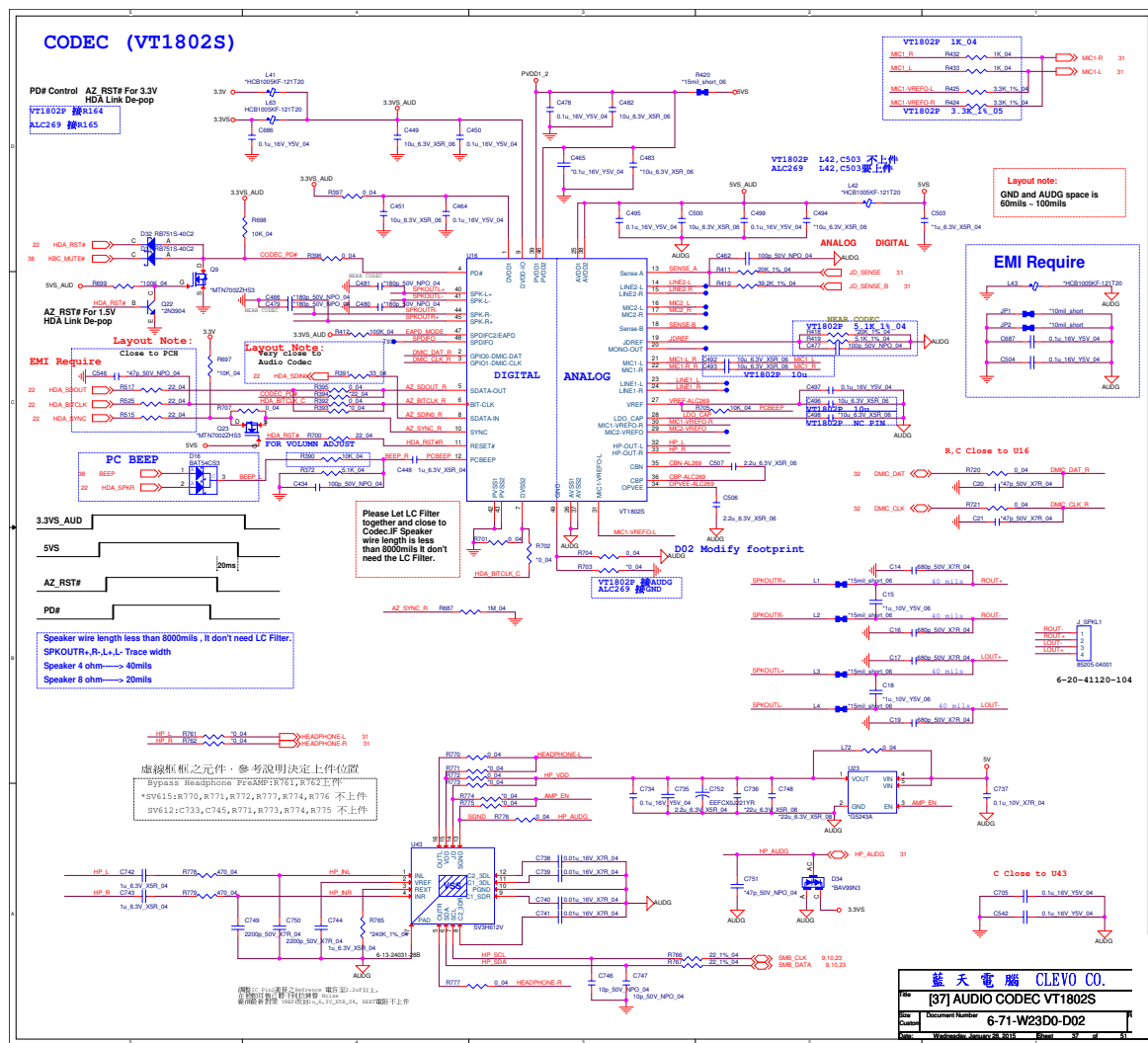
## HDMI, RJ45

Sheet 36 of 51  
HDMI, RJ45

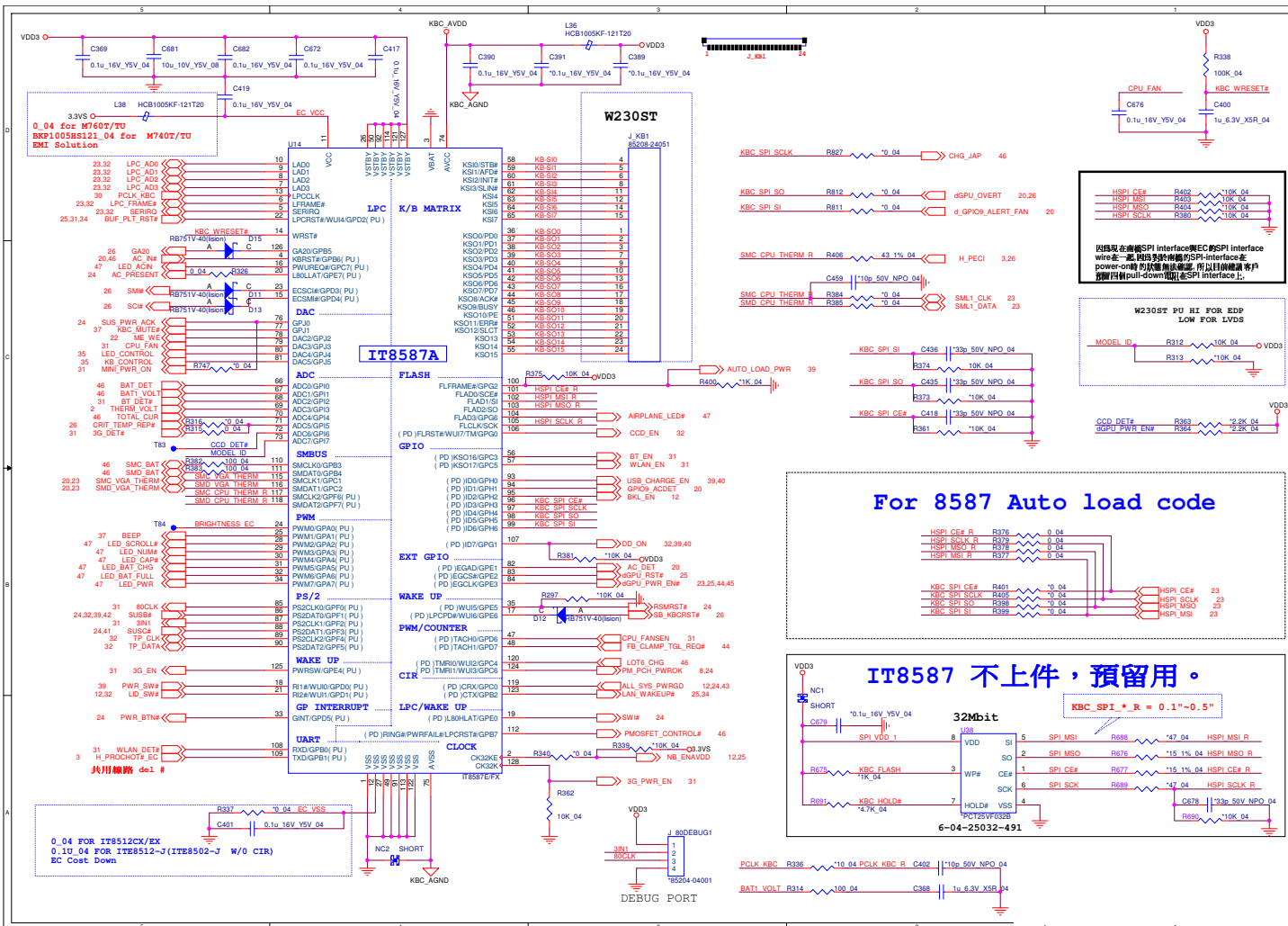


## Audio Codec VT1802S

Sheet 37 of 51  
Audio Codec  
VT1802S



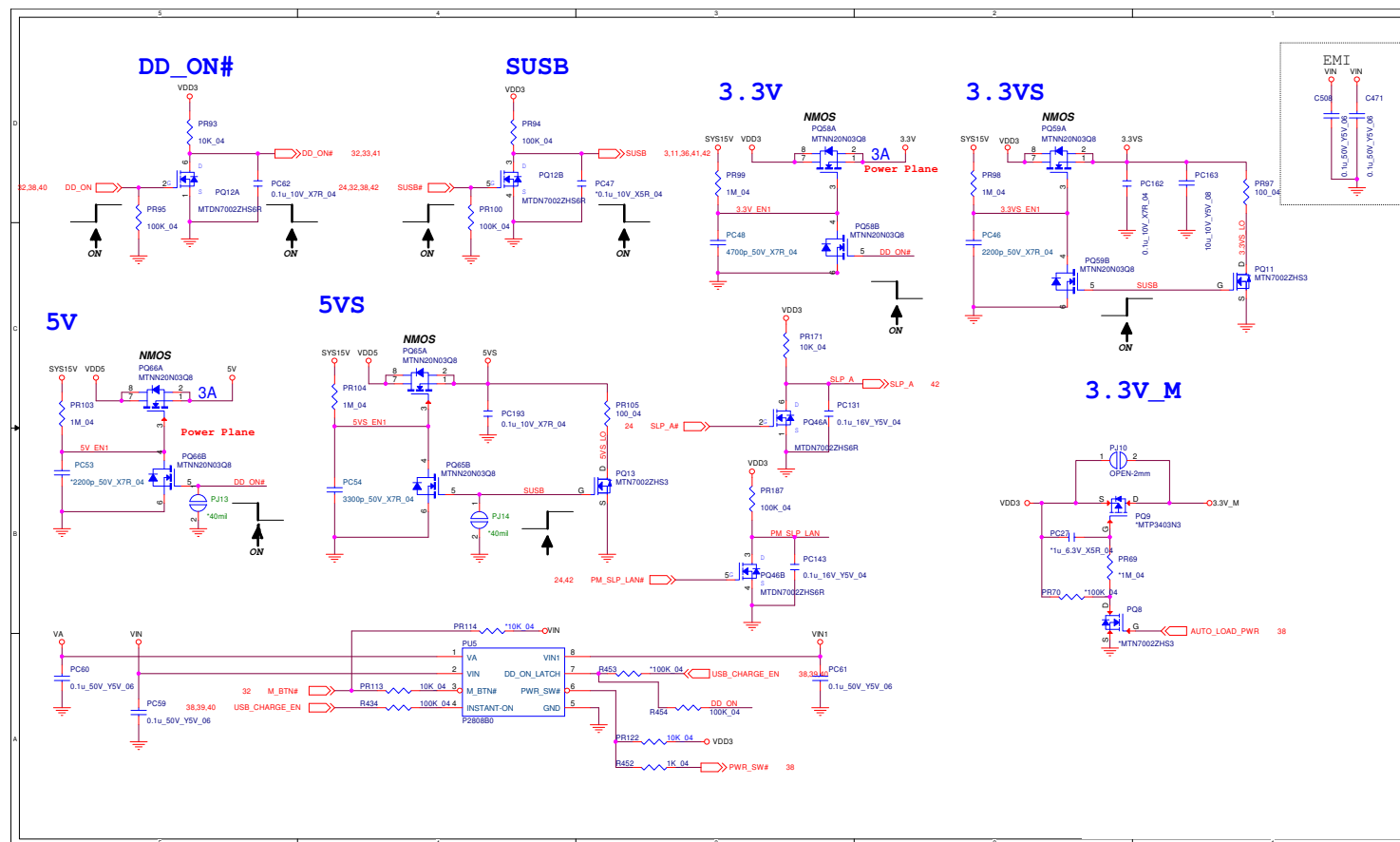
## KBC ITE IT8587



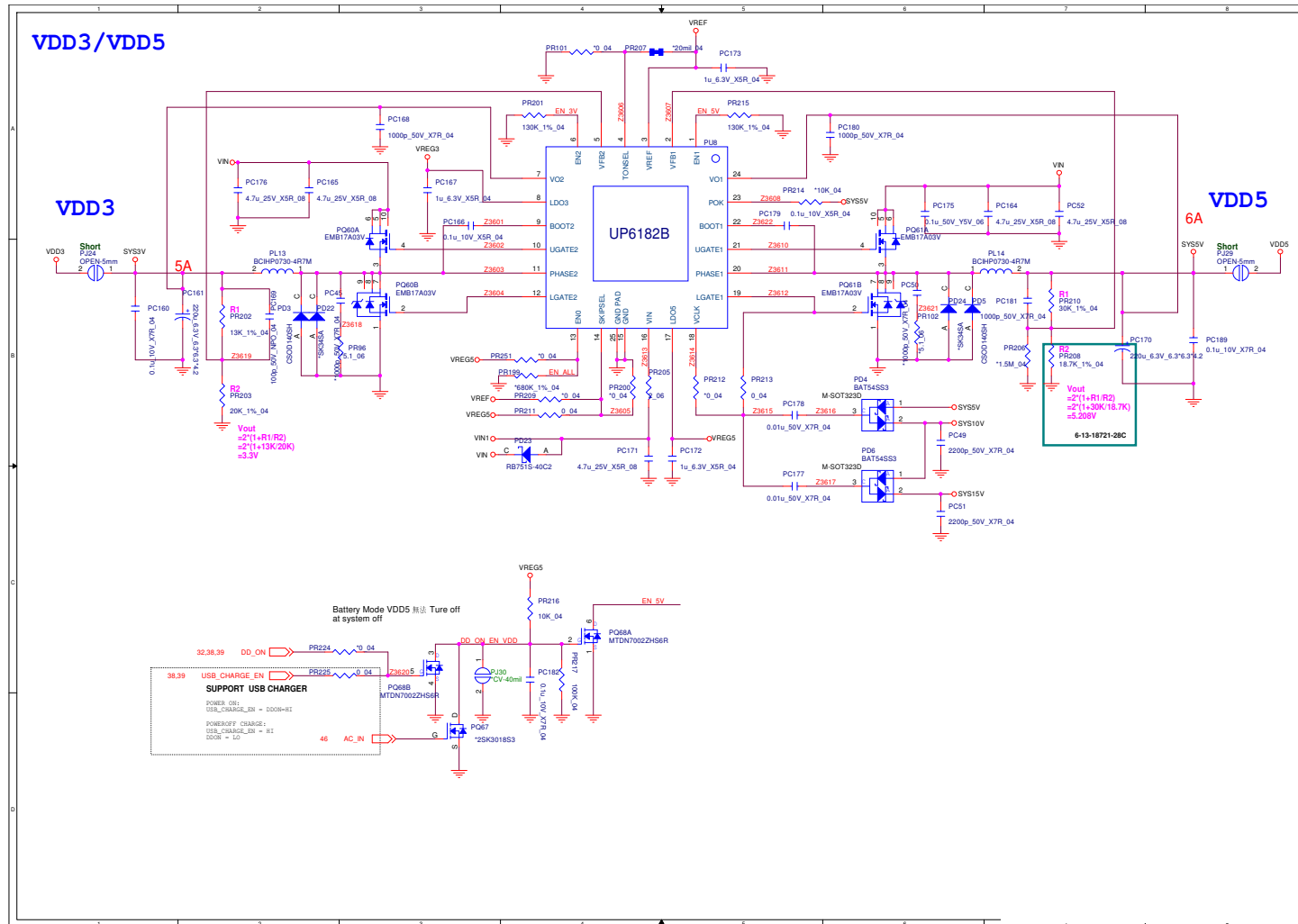
Sheet 38 of 51  
 KBC ITE IT8587

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

**Sheet 39 of 51**  
**5V, 5VS, 3.3V, 3VS,**  
**3.3VM**



# VDD3, VDD5

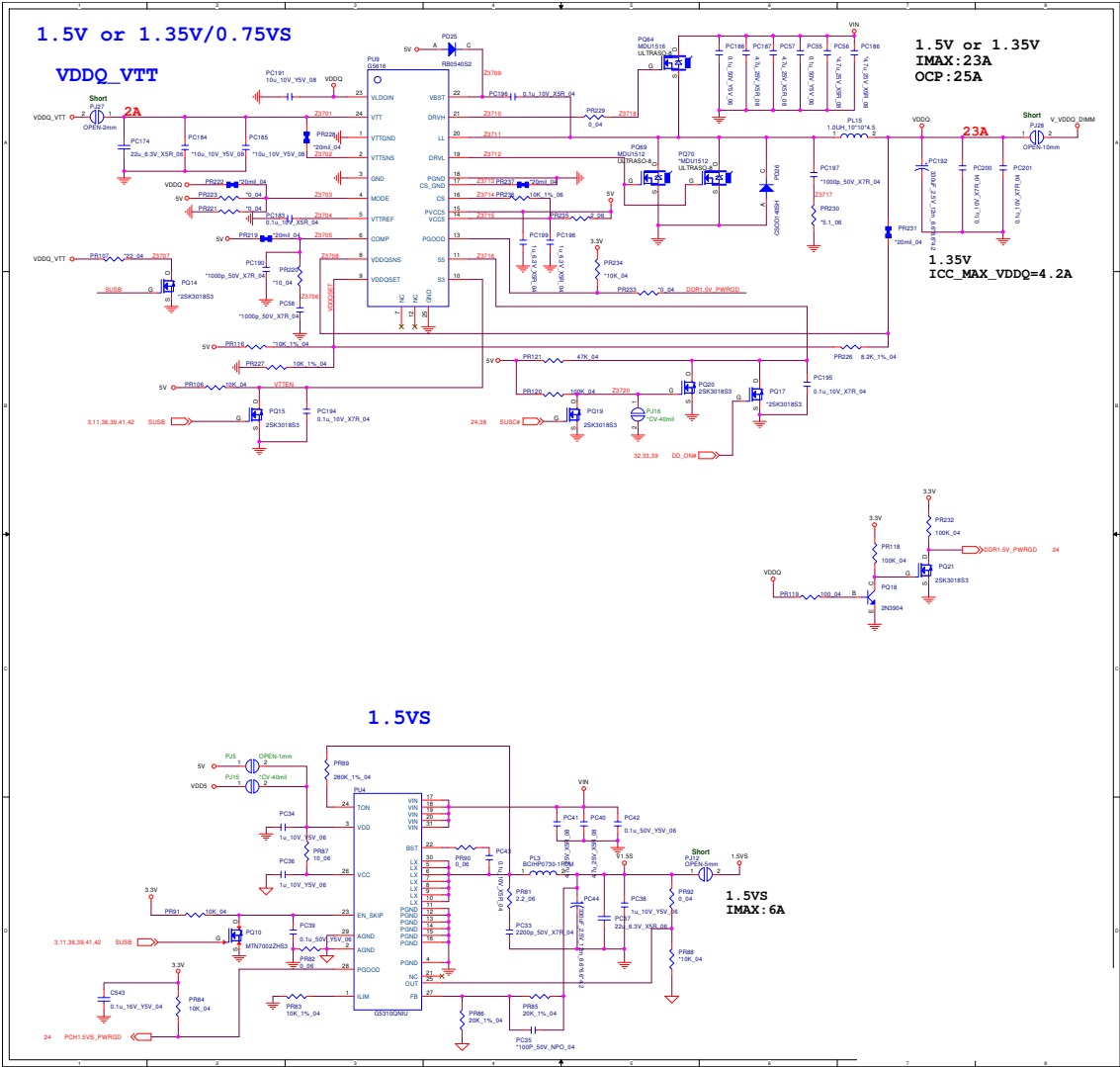


Sheet 40 of 51  
VDD3, VDD5

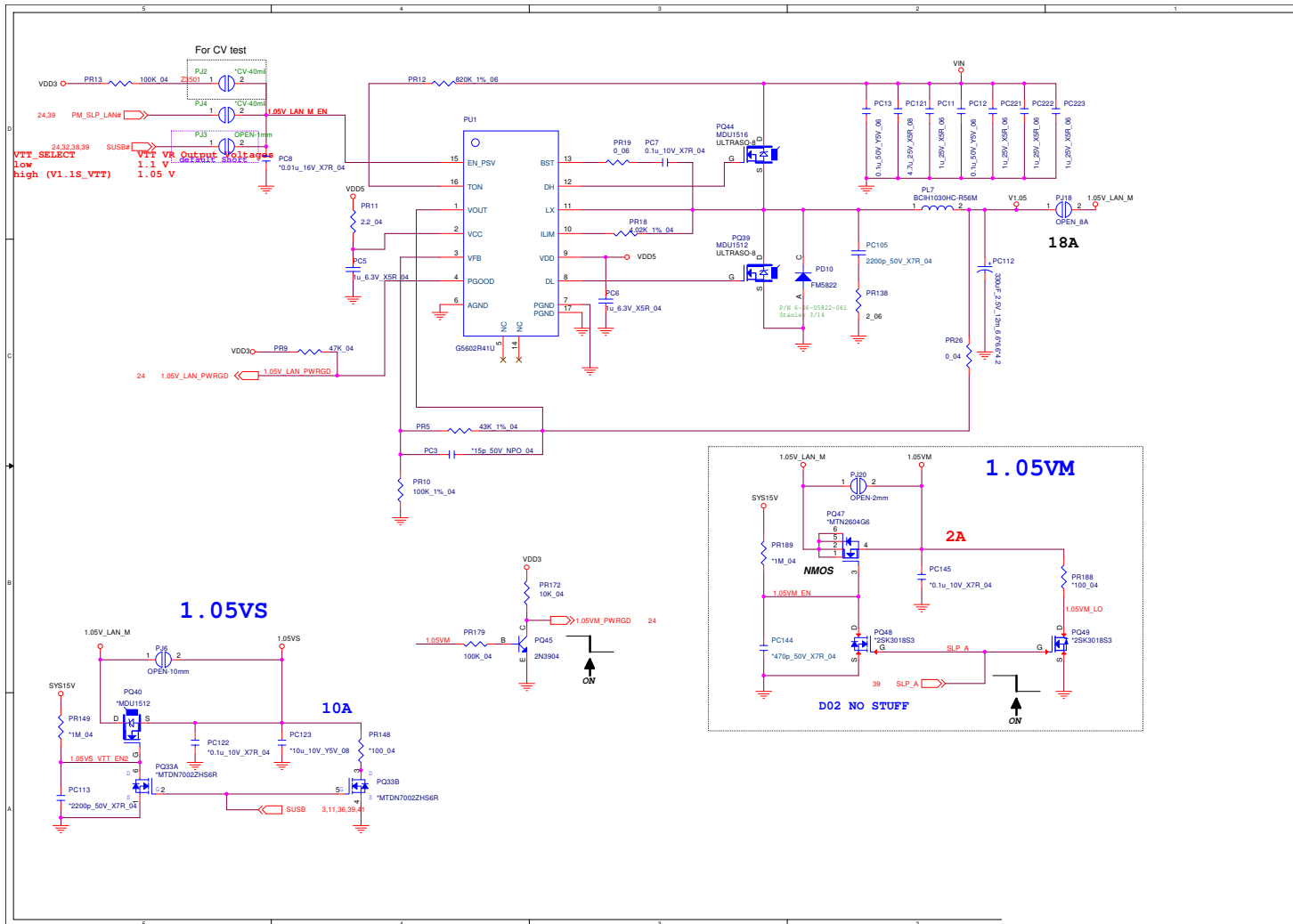
Schematic Diagrams

1.5V or 1.35V, 0.75VS, 1.5VS

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1.5V or 1.35V,  
0.75VS, 1.5VS



# 1.05VS, 1.05V\_M, 1.05V\_LAN\_M

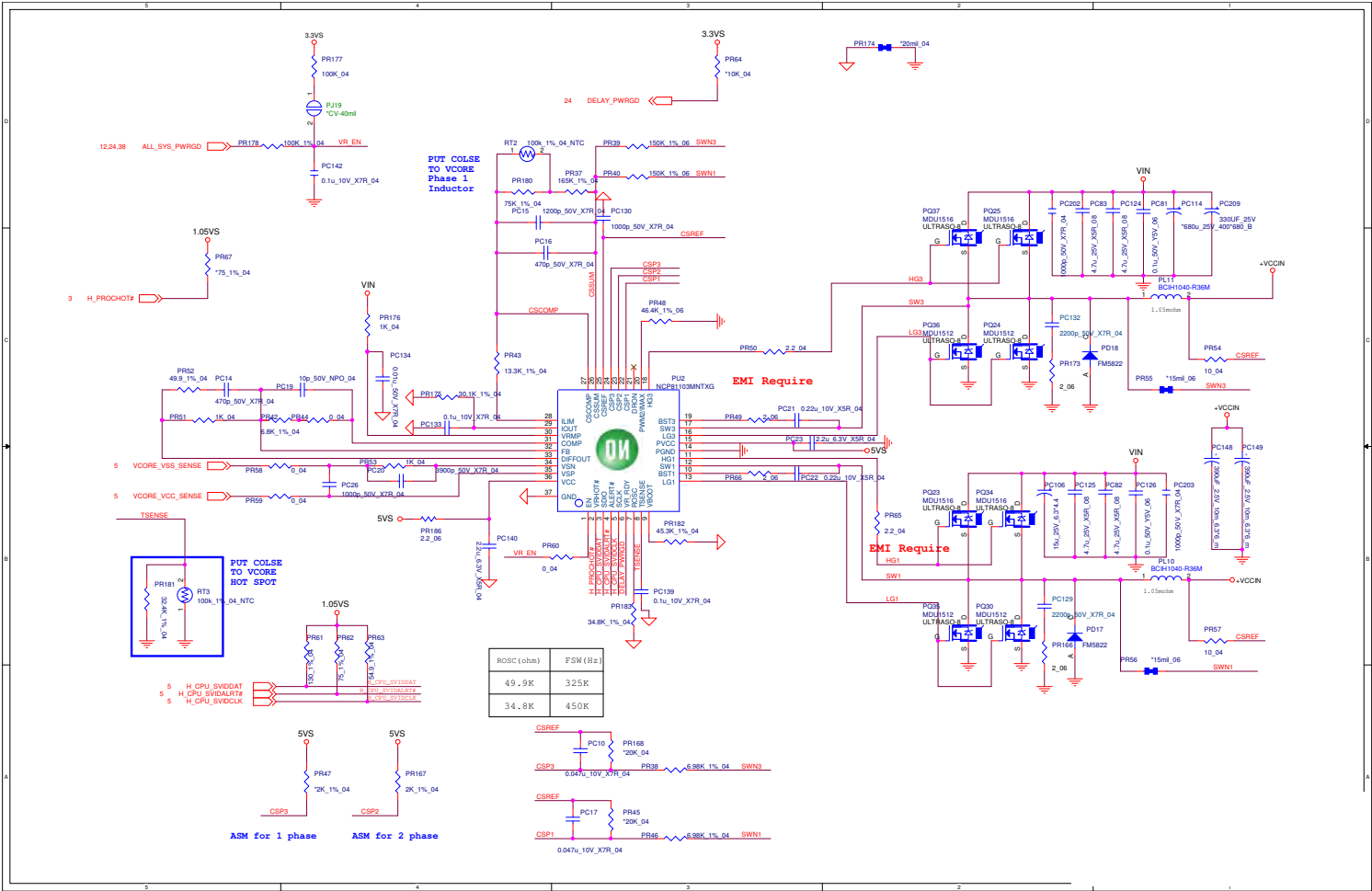


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1.05VS, 1.05V\_M,  
1.05V\_LAN\_M

# Power V-Core

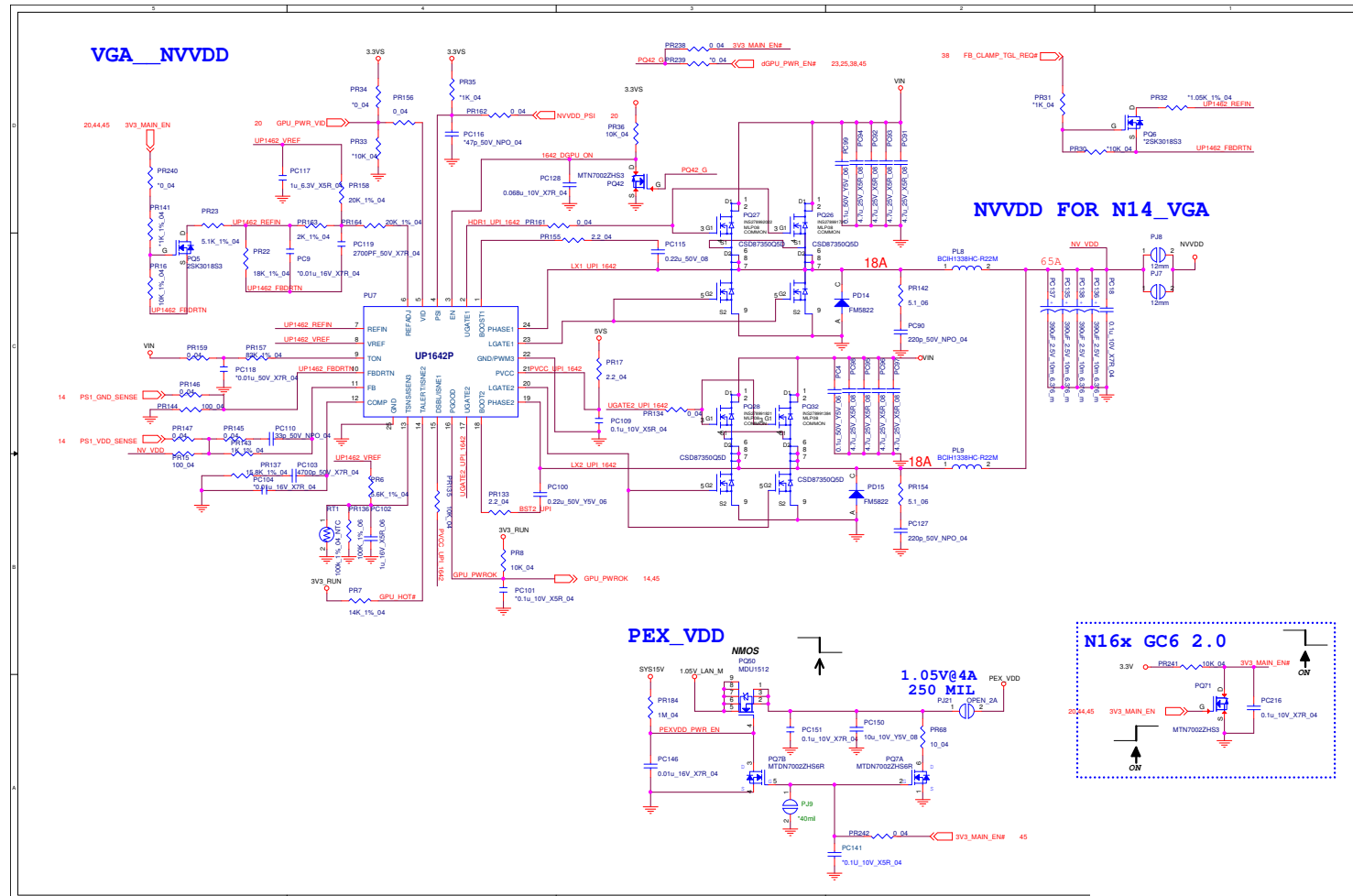
## B. Schematic Diagrams

**Sheet 43 of 51**  
**Power V-Core**





## VGA NVVDD, PEX\_VDD

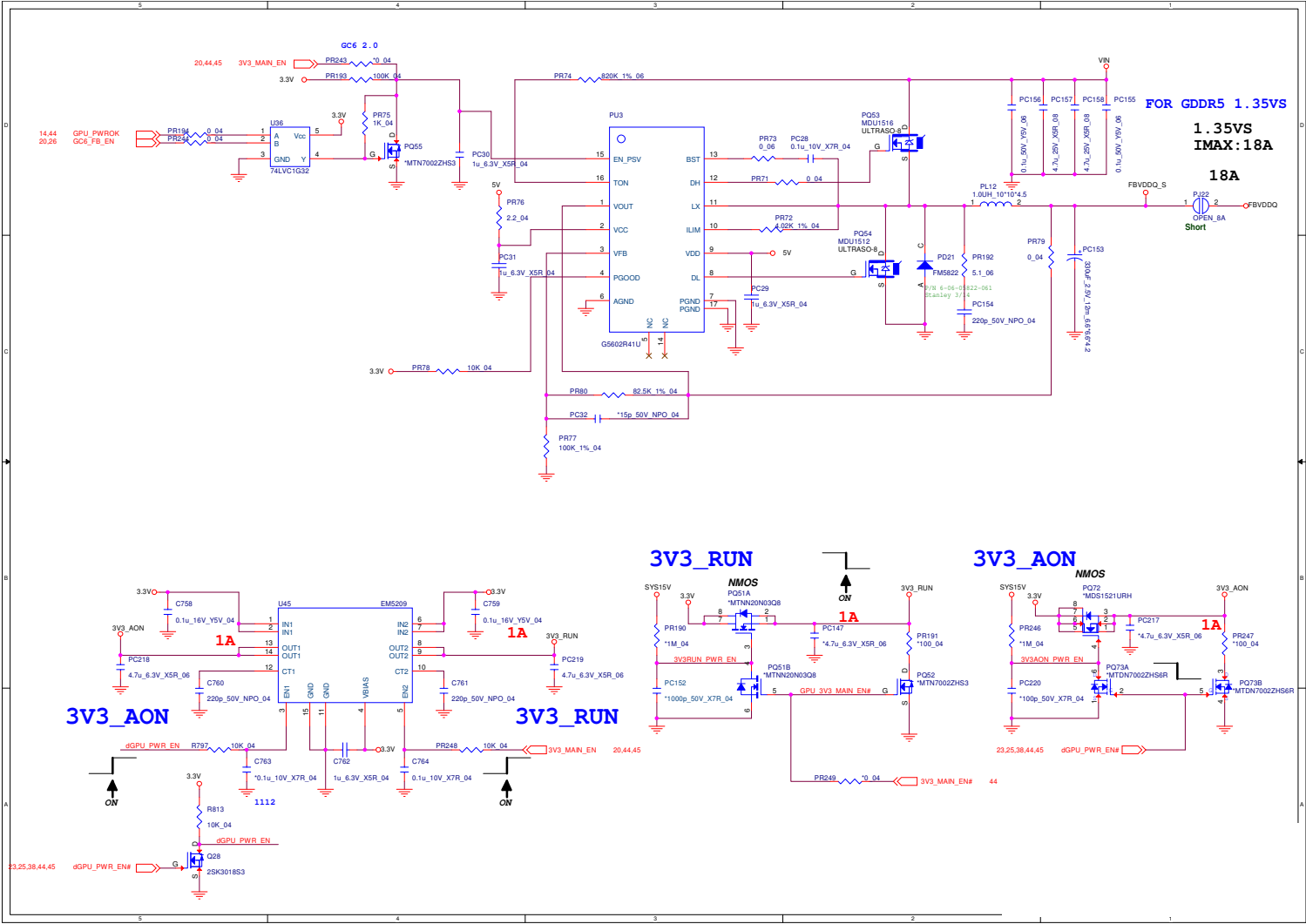


Sheet 44 of 51  
VGA NVVDD,  
PEX\_VDD

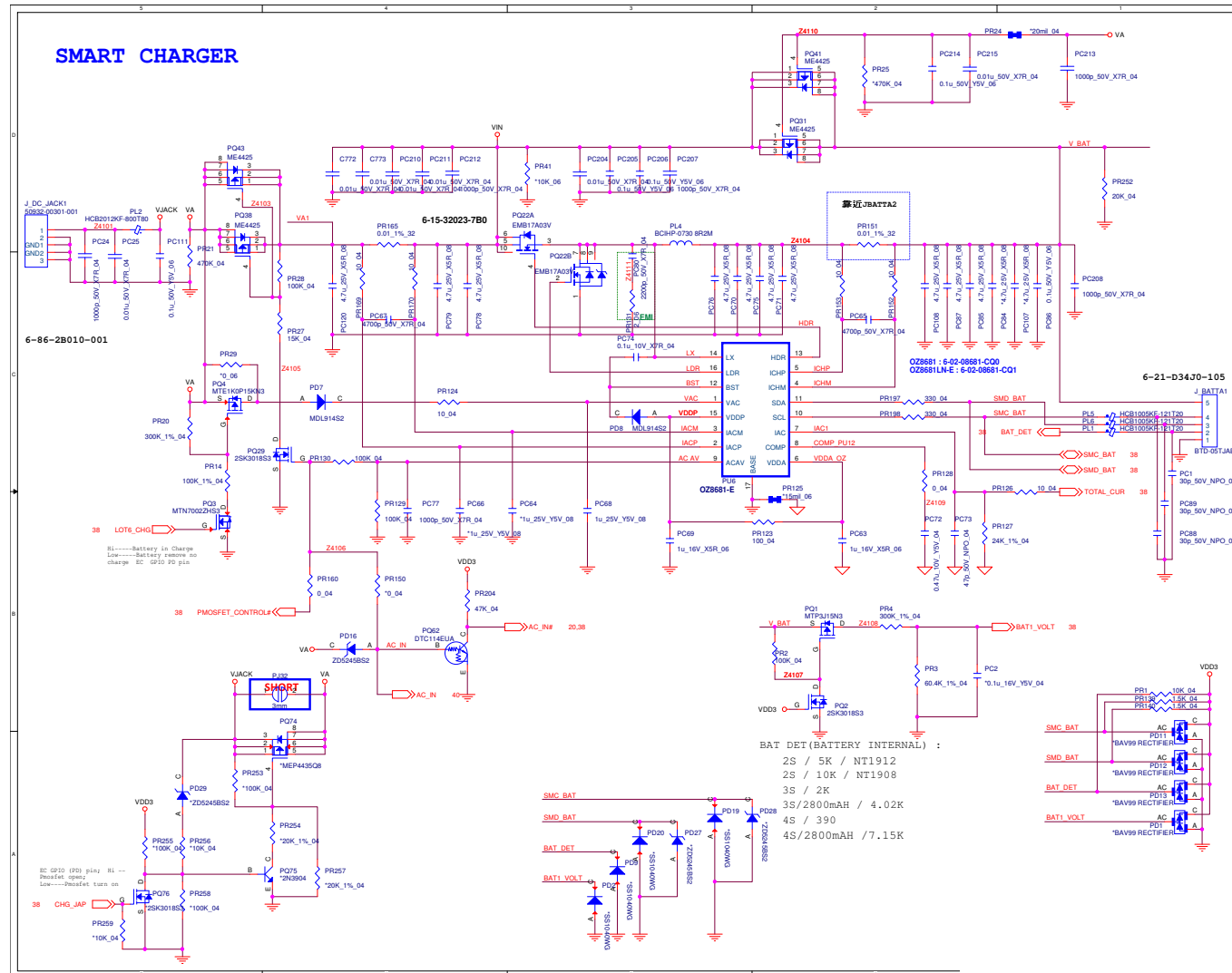
Schematic Diagrams

FBVDDQ

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FBVDDQ



## AC-In, Charger

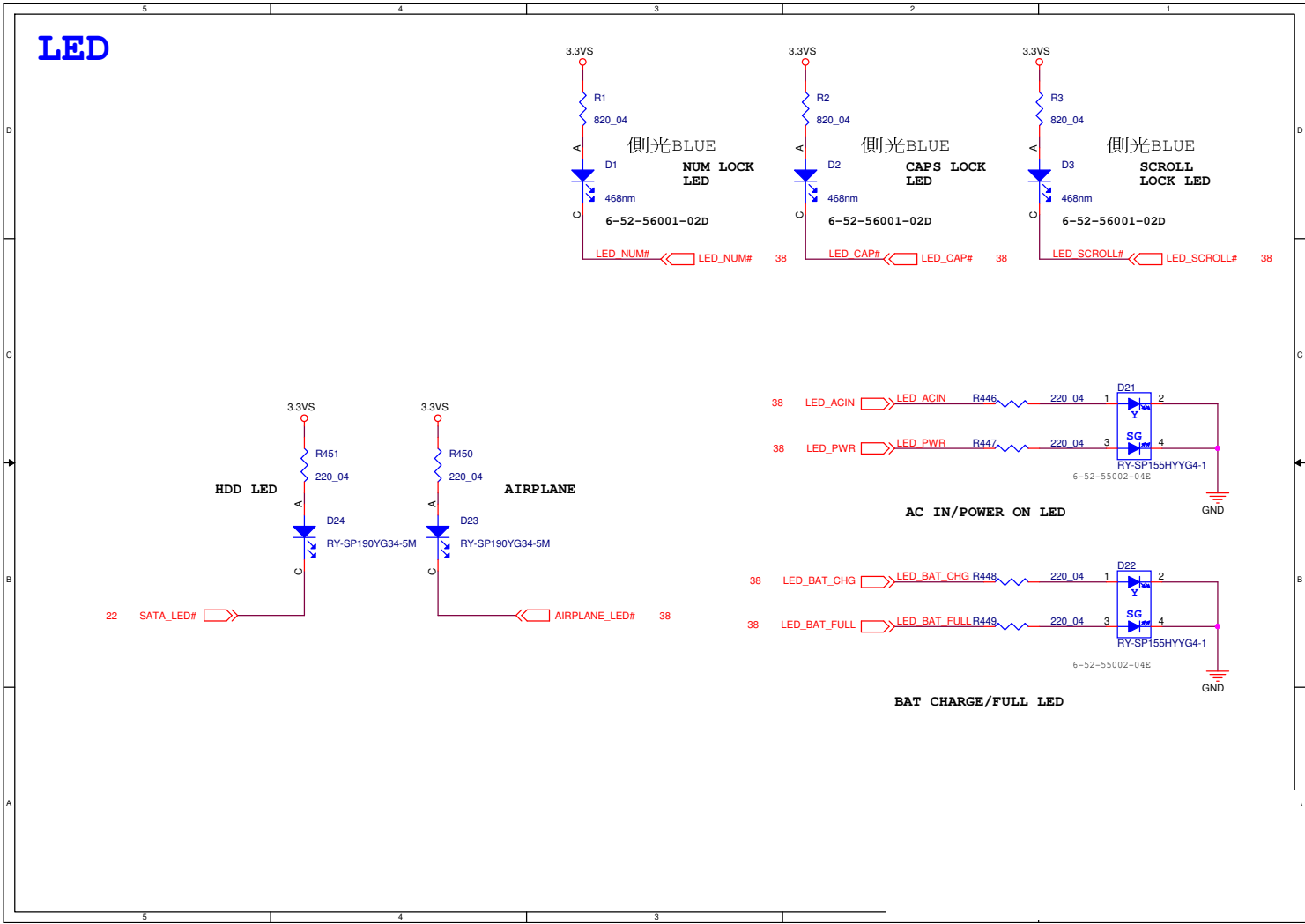


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AC-In, Charger

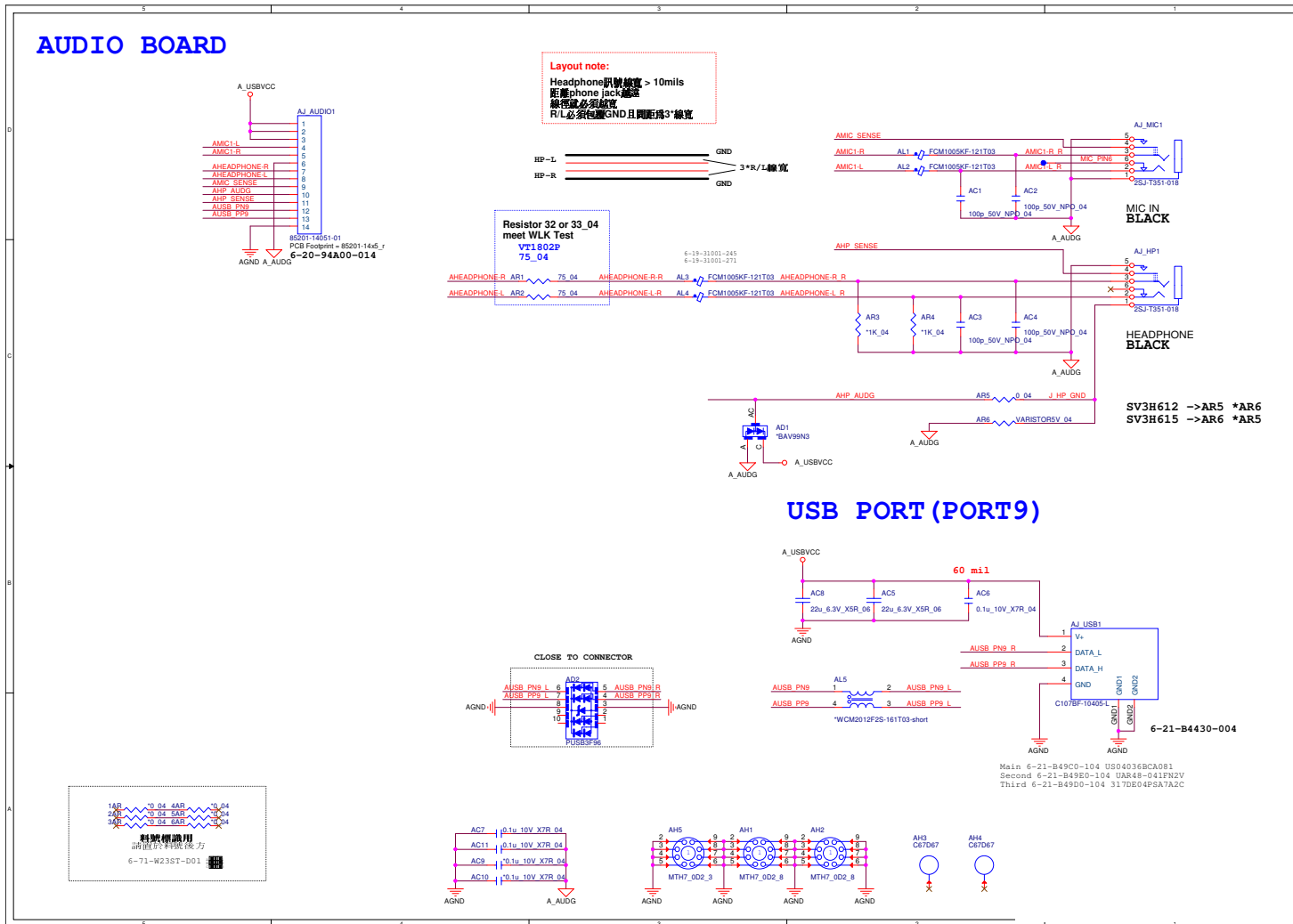
Schematic Diagrams

LED Board

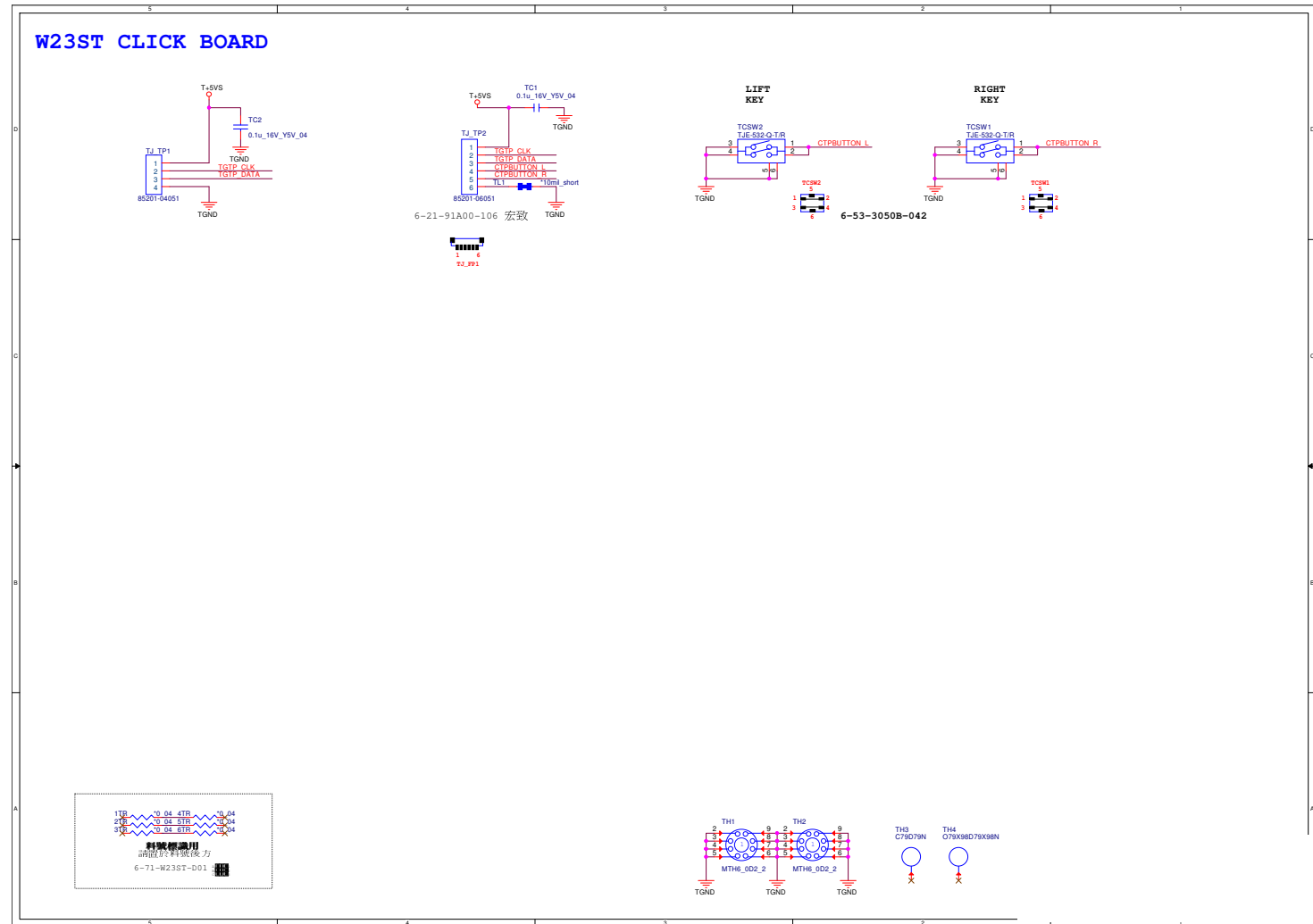
Sheet 47 of 51  
LED Board



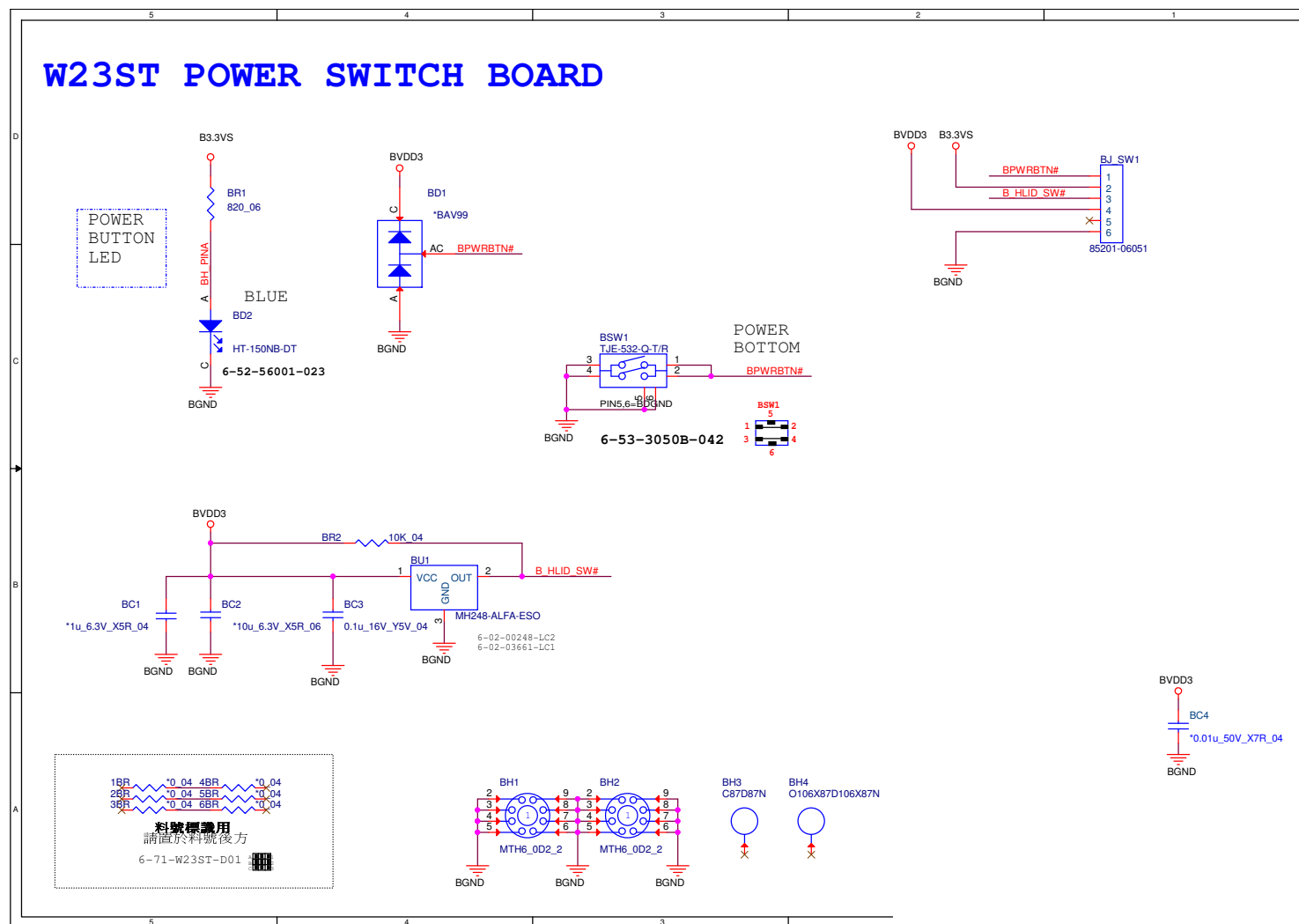
## Audio Board

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Audio Board

B.Schematic Diagrams



## Power Switch Board

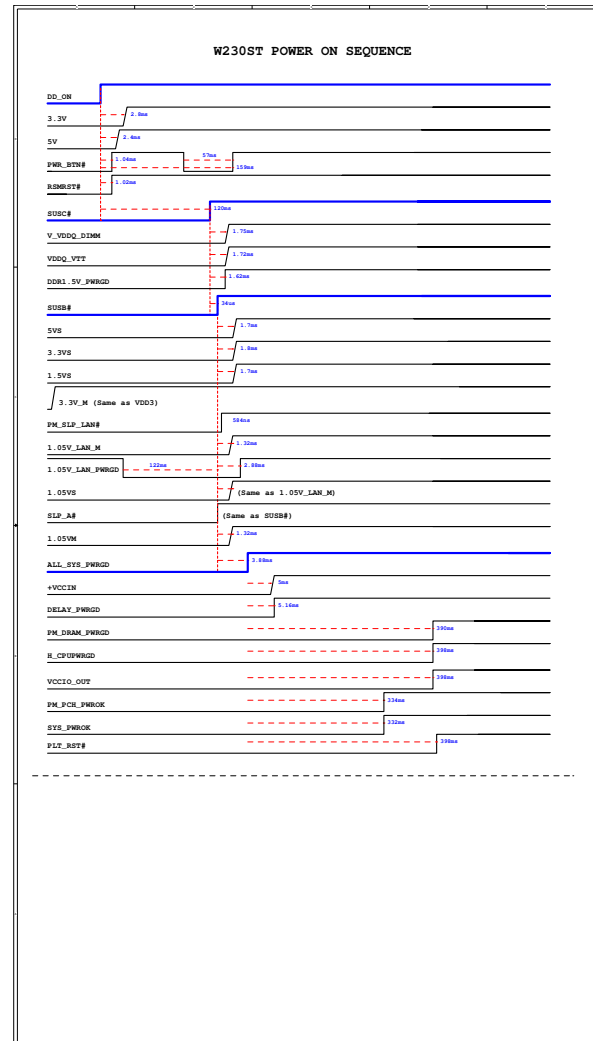


Sheet 50 of 51  
Power Switch  
Board

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](http://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.