

# SERVICE MANUAL

**W270HNQ/W270HPQ Series**

*notebook*





**Notebook Computer**  
**W270HNQ/ W270HPQ**  
**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 *W270HNQ/W270HPQ* series notebook PC.

The following information is included:

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

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

Appendix A, Part Lists

Appendix B, Schematic Diagrams

Appendix C, Updating the FLASH ROM BIOS

## IMPORTANT SAFETY INSTRUCTIONS

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

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit with an AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19V, 4.74A (90W) minimum AC/DC Adapter.

## CAUTION

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

### FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

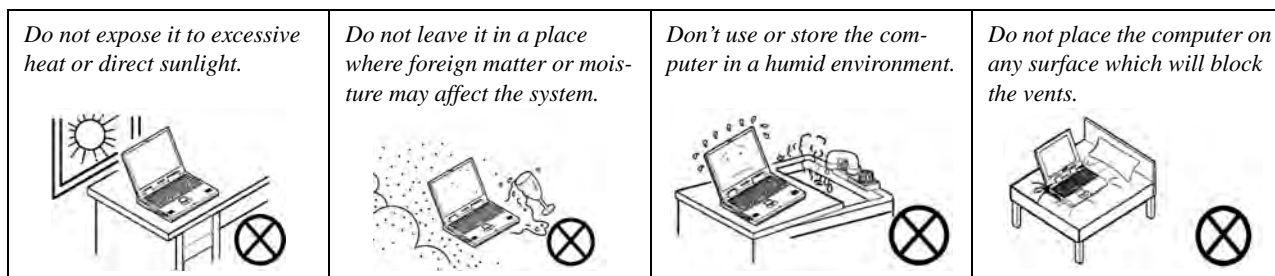
## Instructions for Care and Operation

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

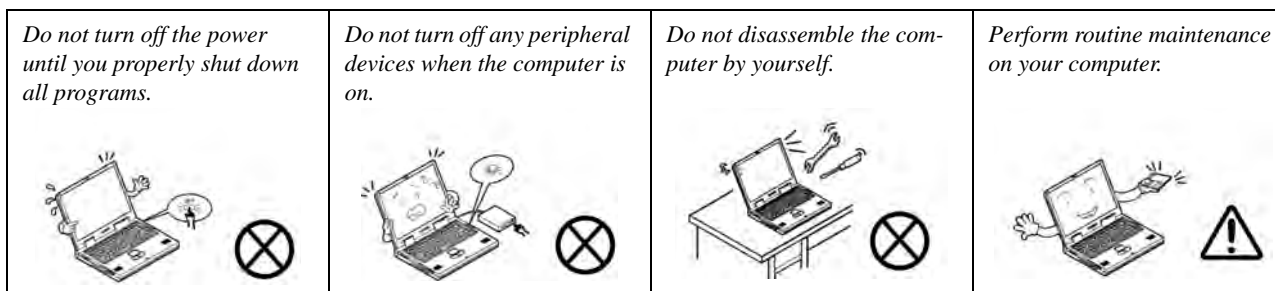
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



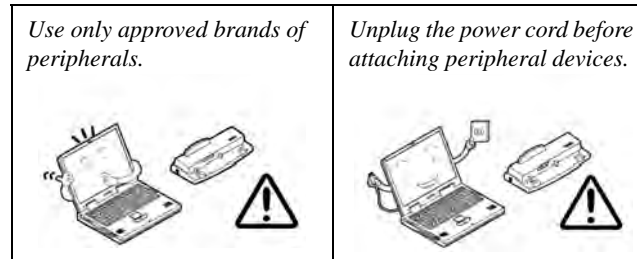
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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.



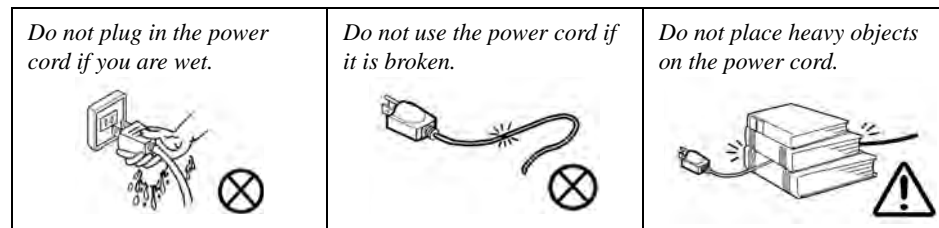
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



## 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.

## Related Documents

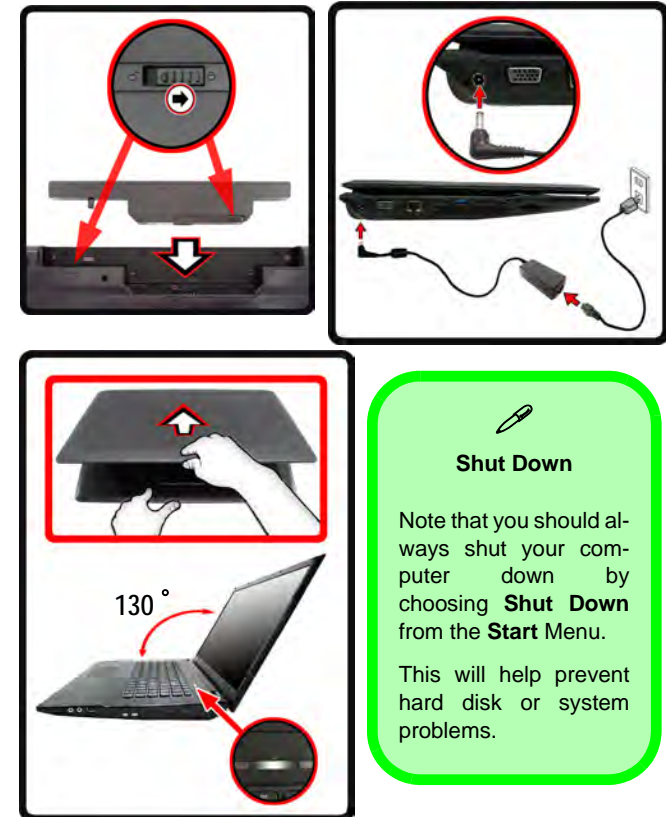
You may also need to consult the following manual for additional information:

### User's Manual on CD/DVD

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

## System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Insert the battery and make sure it is locked in position.
4. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
5. Attach the AC/DC adapter to the DC-In jack at the left of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 130 degrees); use the other hand (as illustrated in [Figure 1](#)) to support the base of the computer (**Note: Never** lift the computer by the lid/LCD).
7. Press the power button to turn the computer "on".



*Figure 1*  
Opening the Lid/LCD/  
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## Preface

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# Chapter 1: Introduction

## Overview

This manual covers the information you need to service or upgrade the **W270HNQ/W270HPQ** 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 the *User's Manual*. The manual is shipped with the computer.

Operating systems (e.g. *Window 7*, etc.) have their own manuals as do application softwares (e.g. word processing and database programs). If you have questions about those programs, you should consult those manuals.

The **W270HNQ/W270HPQ** 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 take note of the warning and safety information indicated by the “” symbol.

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

## Introduction

# Specifications



### Latest Specification Information

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



### CPU

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

## Processor Options

### Intel® Core™ i7 Processor

#### **i7-2820QM (2.30GHz)**

8MB L3 Cache, 32nm, DDR3-1600MHz, TDP 45W

#### **i7-2720QM (2.20GHz)**

6MB L3 Cache, 32nm, DDR3-1600MHz, TDP 45W

#### **i7-2630QM (2.00GHz)**

6MB L3 Cache, 32nm, DDR3-1333MHz, TDP 45W

#### **i7-2620M (2.70GHz)**

4MB L3 Cache, 32nm, DDR3-1333MHz, TDP 35W

### Intel® Core™ i5 Processor

#### **i5-2540M (2.60GHz), i5-2520M (2.50GHz),**

#### **i5-2410M (2.30GHz)**

3MB L3 Cache, 32nm, DDR3-1333MHz, TDP 35W

### Intel® Core™ i3 Processor

#### **i3-2310M (2.10GHz)**

3MB L3 Cache, 32nm, DDR3-1333MHz, TDP 35W

## Core Logic

Intel® HM65 Chipset

## BIOS

One 32Mb SPI Flash ROM

AMI BIOS

## LCD

### **W270HNQ:**

17.3" (43.94cm) HD+/ FHD LCD

### **W270HPQ:**

17.3" (43.94cm) HD+ LCD

## Memory

Two 204 Pin SO-DIMM Sockets Supporting **DDR3 1333/1600MHz** Memory

Memory Expandable up to 8GB

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

## Storage

**(Factory Option)** One Changeable 12.7mm(h) Optical Device Type Drive (Super Multi Drive Module or Blu-Ray Combo Drive Module)

One Changeable 2.5" 9.5mm (h) SATA HDD

## Audio

High Definition Audio Compliant Interface

3D Stereo Enhanced with THX Sound System

2 \* Built-In Speakers

Built-In Microphone

## Security

Security (Kensington® Type) Lock Slot

BIOS Password

## Keyboard

Full-size "WinKey" keyboard (with numeric keypad)

## Pointing Device

Built-in Touchpad

**Video Adapter****W270HNQ:**

Intel® GMA HD and NVIDIA® GeForce GT 540M  
Supports NVIDIA® Optimus Technology

**Intel Integrated GPU (Intel® GMA HD):**

Microsoft DirectX®10.1 Compatible

**NVIDIA Discrete GPU (NVIDIA® GeForce GT 540M):**

2GB GDDR3 Video RAM  
Microsoft DirectX®11 Compatible

**W270HPQ:**

Intel® GMA HD and NVIDIA® GeForce GT 520M  
Supports NVIDIA® Optimus Technology

**Intel Integrated GPU (Intel® GMA HD):**

Microsoft DirectX®10.1 Compatible

**NVIDIA Discrete GPU (NVIDIA® GeForce GT 520M):**

1GB GDDR3 Video RAM  
Microsoft DirectX®11 Compatible

**Communication**

Built-In Gigabit Ethernet LAN  
(Factory Option) 1.3M/2.0M Pixel USB PC Camera Module

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

(Factory Option) Intel® Centrino® Advanced-N 6230 Wireless LAN (802.11a/g/n) + Bluetooth 3.0

(Factory Option) Intel® Centrino® Wireless-N 1030 Wireless LAN (802.11b/g/n) + Bluetooth 3.0

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

(Factory Option) Third-Party Wireless LAN (802.11b/g/n) + Bluetooth 3.0

**Interface**

One USB 2.0 Port  
Two USB 3.0 Ports  
One eSATA 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

**Card Reader**

Embedded Multi-In-1 Card Reader  
MMC (MultiMedia Card) / RS MMC  
SD (Secure Digital) / Mini SD / SDHC/ SDXC  
MS (Memory Stick) / MS Pro / MS Duo

**Mini Card Slot**

Slot 1 for WLAN Module or WLAN and Bluetooth Combo Module

**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: 19V, 4.74A (90W)

6 Cell Smart Lithium-Ion Battery Pack, 48.84WH  
(Factory Option) 6 Cell Smart Lithium-Ion Battery Pack, 62.16WH

**Dimensions & Weight**

413mm (w) \* 270mm (d) \* 14 - 40.5mm (h)  
2.99 kg (with 48.84WH Battery and ODD)

## Introduction

*Figure 1*  
Top View

1. PC Camera  
(Optional)
2. LCD
3. Power Button
4. LED Status Indicators
5. Keyboard
6. Built-In Microphone
7. Touchpad & Buttons

## External Locator - Top View with LCD Panel Open





## External Locator - Front & Right Side Views

FRONT VIEW



*Figure 2*  
**Front View**

1. LED Power Indicators

RIGHT SIDE VIEW



*Figure 3*  
**Right Side View**

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

## Introduction

### External Locator - Left Side & Rear View

*Figure 4*  
**Left Side View**

1. DC-In Jack
2. External Monitor Port
3. RJ-45 LAN Jack
4. HDMI-Out Port
5. USB 3.0 Ports
6. Vent
7. e-SATA Port
8. Multi-in-1 Card Reader

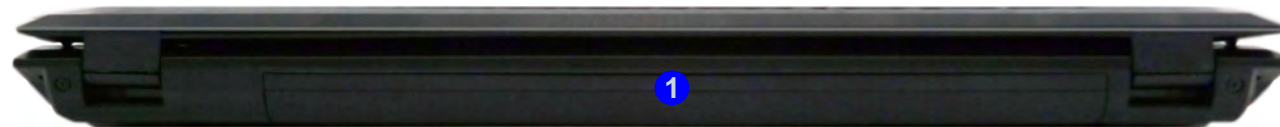
LEFT SIDE VIEW



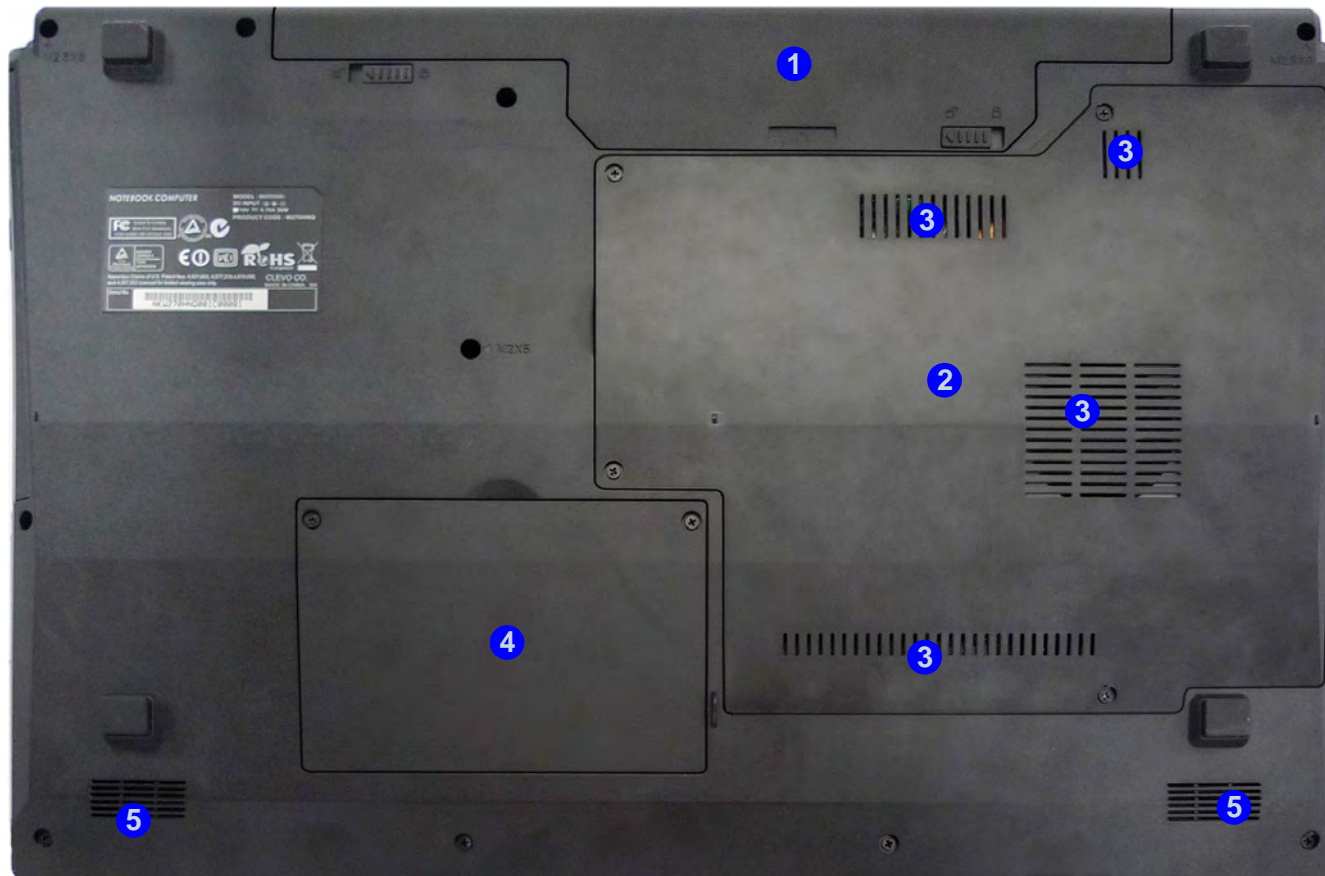
*Figure 5*  
**Rear View**

1. Battery

REAR VIEW



## External Locator - Bottom View



*Figure 6*  
**Bottom View**

1. Battery
2. Component Bay Cover
3. Vent
4. Hard Disk Bay Cover
5. Speakers

  
**Overheating**

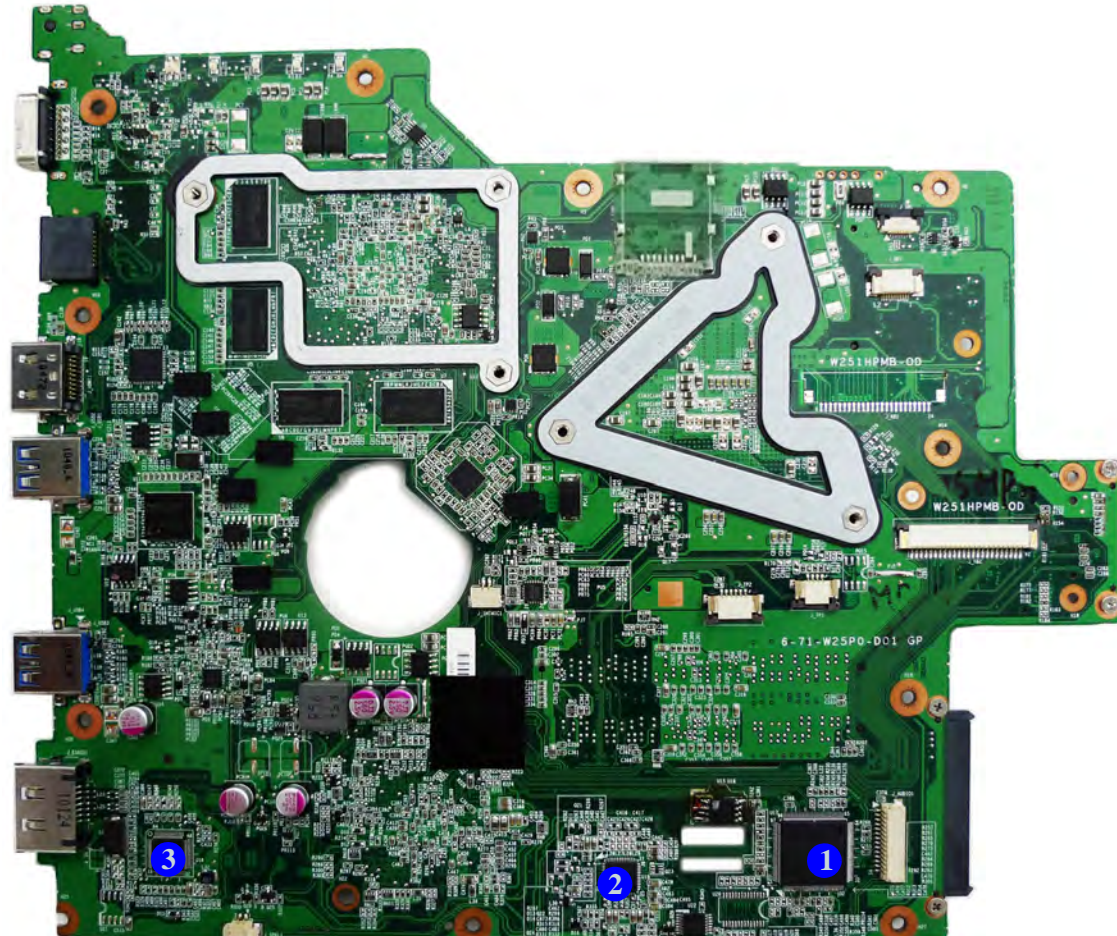
To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

## Introduction

*Figure 7*  
**Mainboard Top  
Key Parts**

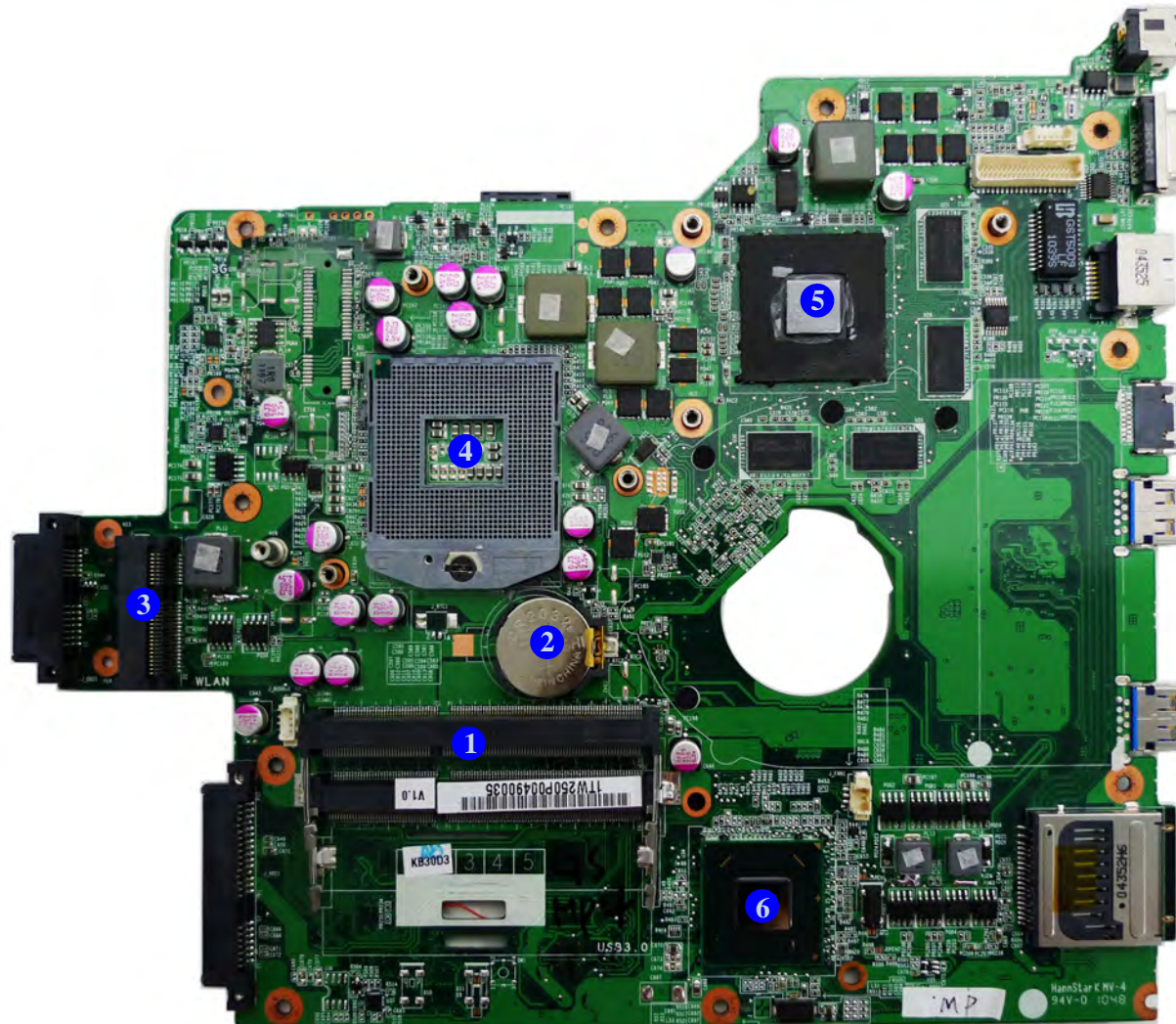
1. KBC-ITE IT8518
2. Audio Codec  
ALC269
3. JMICRO JMC251 C

## Mainboard Overview - Top (Key Parts)





## Mainboard Overview - Bottom (Key Parts)



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

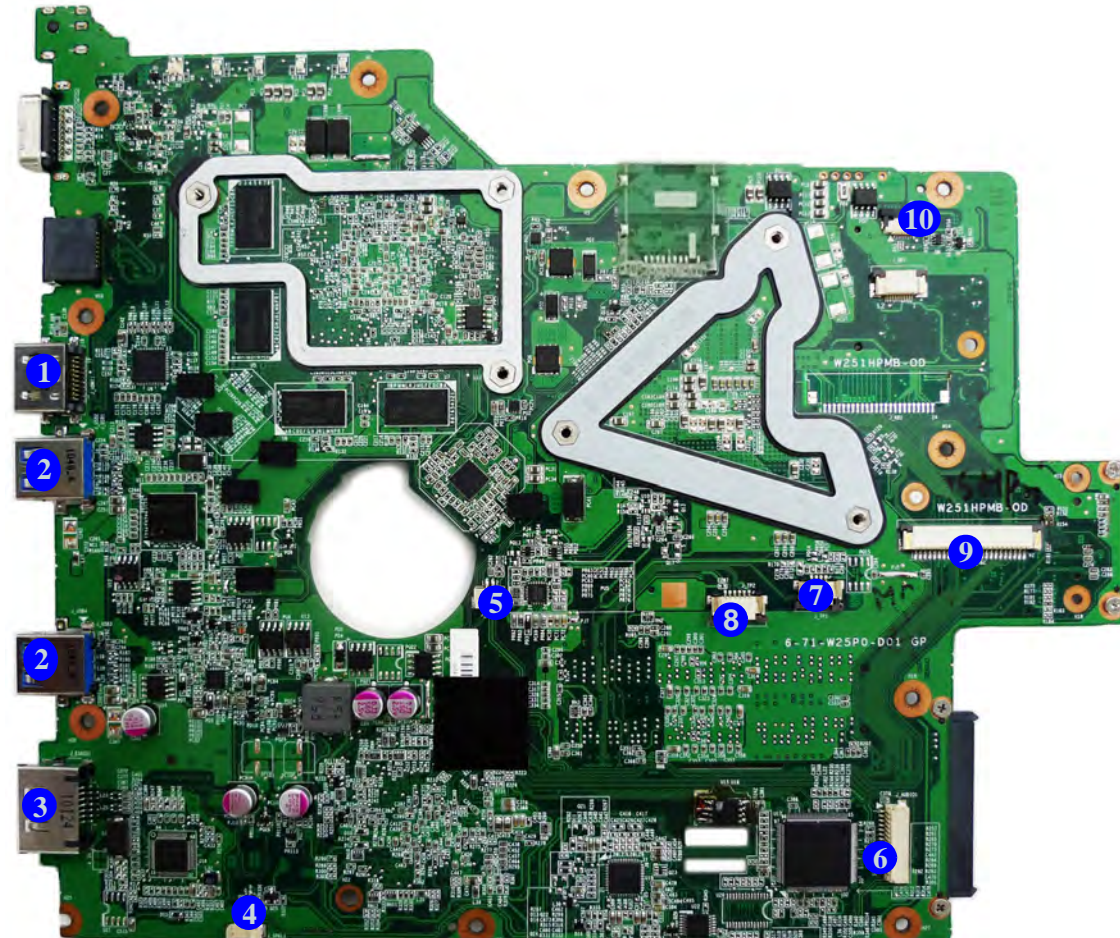
1. Memory Slots  
DDR3 SO-DIMM
2. CMOS Battery
3. Mini-Card  
Connector (WLAN  
Module)
4. CPU Socket (no  
CPU installed)
5. nVIDIA VGA
6. Platform Controller  
Hub

## Introduction

*Figure 9*  
**Mainboard Top  
Connectors**

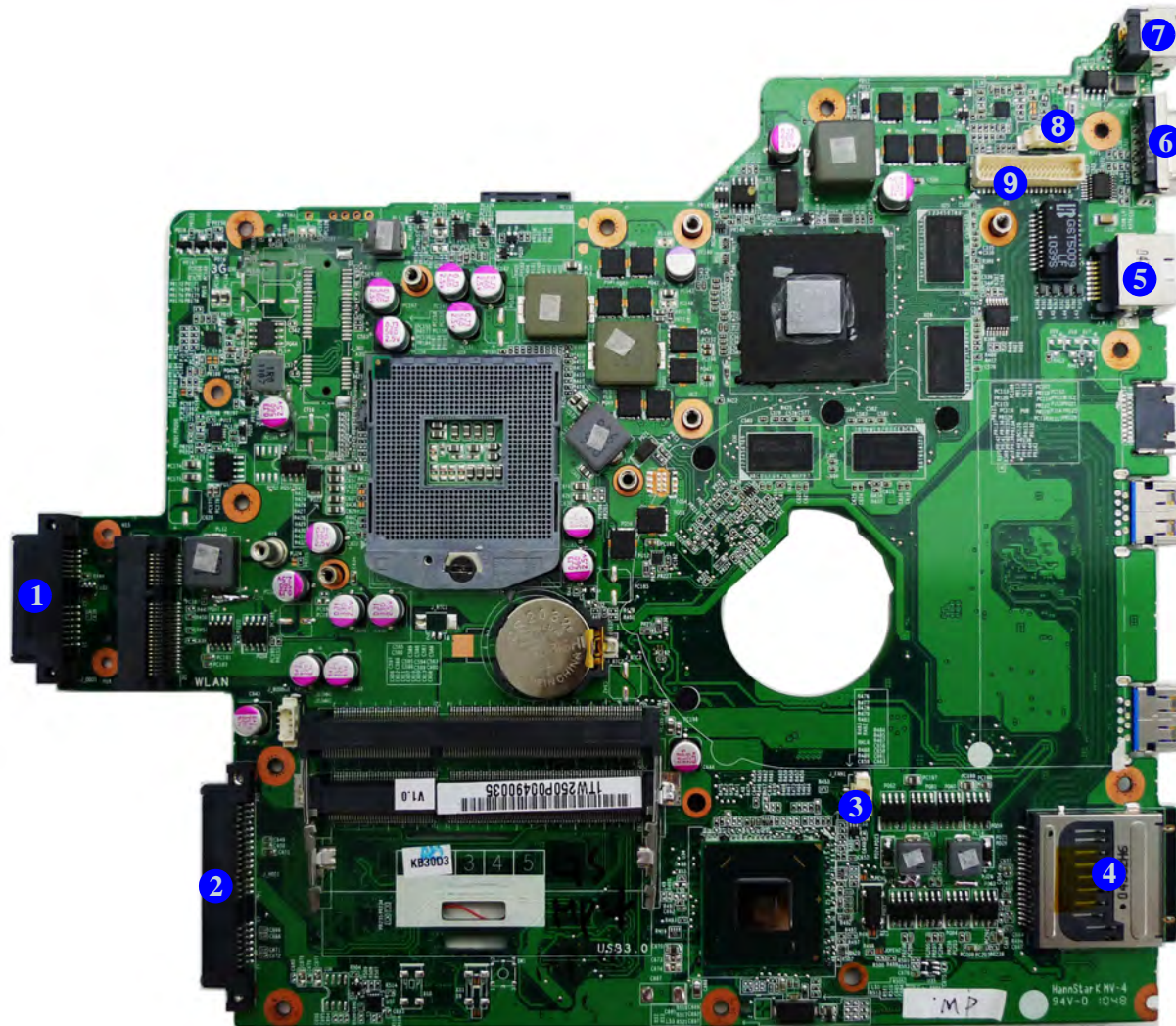
1. HDMI-Out Port
2. USB Port 3.0
3. eSATA Port
4. Speaker Cable Connector
5. Microphone Cable Connector
6. Audio Board Connector
7. TouchPad Cable Connector 1
8. TouchPad Cable Connector 2
9. Keyboard Cable Connector
10. Switch Board Cable Connector

## Mainboard Overview - Top (Connectors)





## Mainboard Overview - Bottom (Connectors)



*Figure 10*  
**Mainboard Bottom  
Connectors**

1. ODD Connector
2. HDD Connector
3. CPU Fan Cable Connector
4. Multi-in-1 Card Reader
5. RJ-45 LAN Jack
6. External Monitor Port
7. DC-In Jack
8. CCD Cable Connector
9. LCD Cable Connector






# Chapter 2: Disassembly

## Overview

This chapter provides step-by-step instructions for disassembling the **W270HNQ/W270HPQ** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

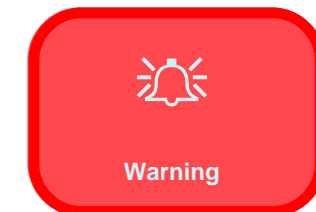
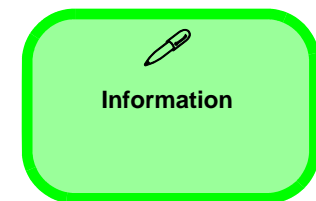
We suggest you completely review any procedure before you take the computer apart.

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

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

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

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



## Disassembly

---

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

### Maintenance Tools

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

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

### Connections

Connections within the computer are one of four types:

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

## Maintenance Precautions

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

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

## Cleaning

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

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



### Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines). 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 the Battery:

1. Remove the battery *page 2 - 5*

#### To remove the HDD:

1. Remove the battery *page 2 - 5*
2. Remove the HDD *page 2 - 6*

#### To remove the Optical Device:

1. Remove the battery *page 2 - 5*
2. Remove the Optical device *page 2 - 8*

#### To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 9*

#### To remove and install a Processor:

1. Remove the battery *page 2 - 5*
2. Remove the processor *page 2 - 11*
3. Install the processor *page 2 - 13*

#### To remove the Wireless LAN Module:

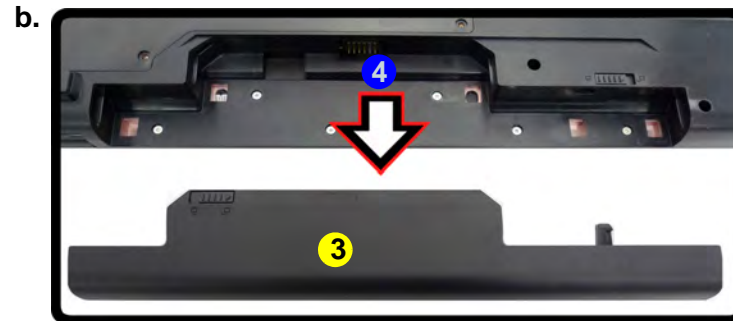
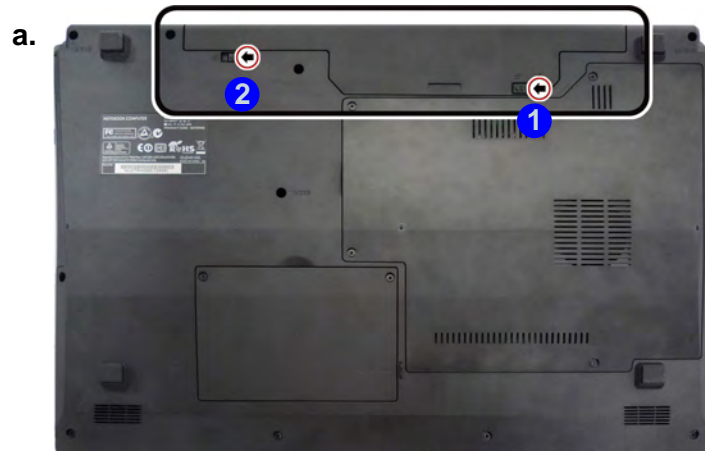
1. Remove the battery *page 2 - 5*
2. Remove the WLAN module *page 2 - 14*

#### To remove the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 15*

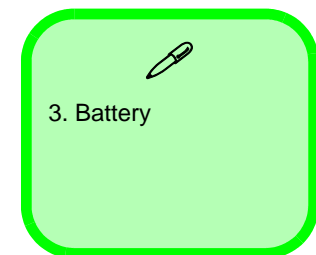
## Removing the Battery

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



*Figure 1*  
**Battery Removal**

- a. Slide the latch and hold it in place.
- b. Slide the battery in the direction of the arrow.



# Removing the Hard Disk Drive

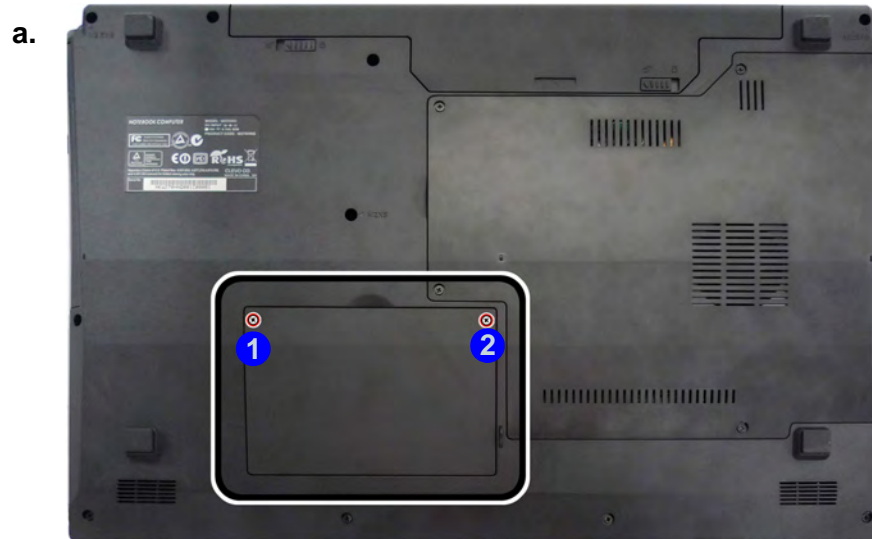
*Figure 2*  
**HDD Assembly  
Removal**

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

- a. Locate the HDD bay cover and remove the screws.

### Hard Disk Upgrade Process

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
2. Locate the hard disk bay cover and remove screws **1** & **2** ([Figure 2a](#)).



#### HDD System Warning

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

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

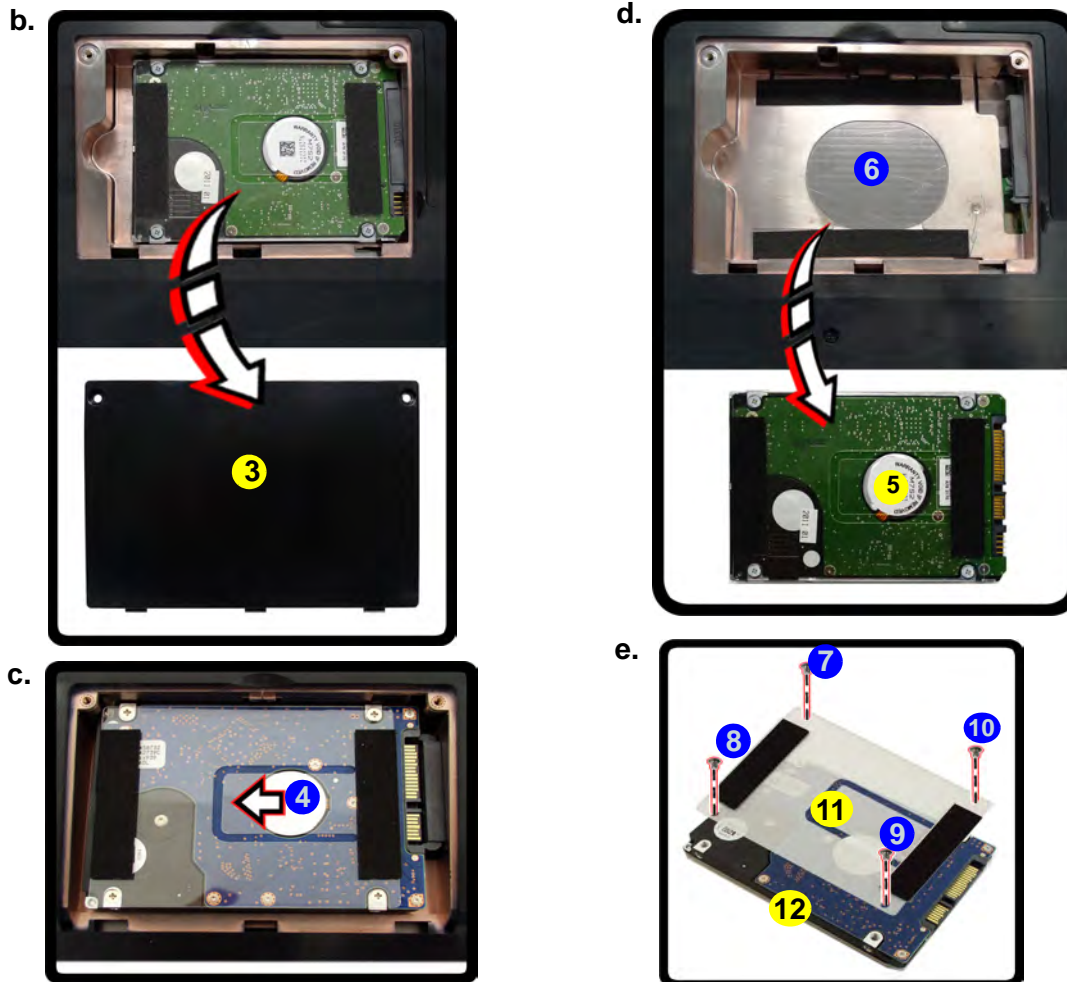
You have all the CD-ROMs and FDDs required to install your operating system and programs.

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



- 2 Screws

- Remove the hard disk bay cover **3** (*Figure 3b*).
- Grip the tab and slide the hard disk in the direction of arrow **4** (*Figure 3c*).
- Lift the hard disk assembly **5** out of the bay **6** (*Figure 3d*).
- Remove the screw **7** - **10** and the mylar cover **11** from the hard disk **12** (*Figure 3e*).
- Reverse the process to install a new hard disk (do not forget to replace all the screws and covers).



*Figure 3*  
**HDD Assembly  
Removal (cont'd.)**

- Remove the HDD bay cover.
- Grip the tab and slide the HDD assembly in the direction of the arrow.
- Lift the HDD assembly out of the bay.
- Remove the screws and mylar cover.





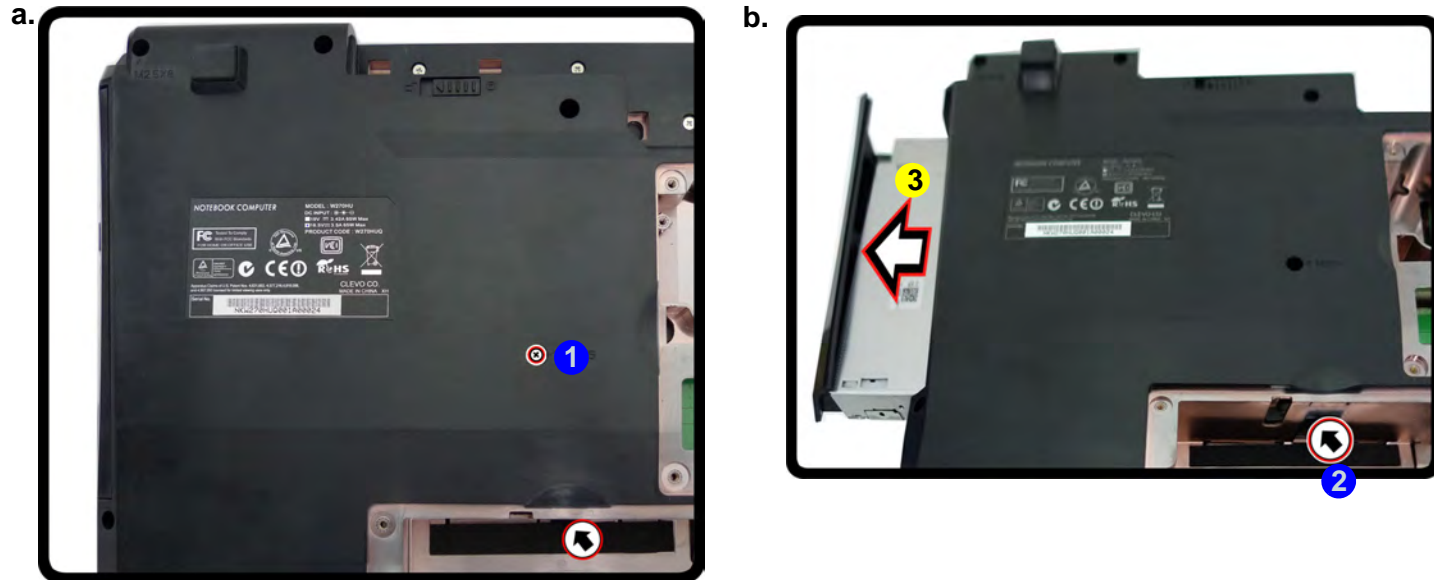
## Disassembly

*Figure 4*  
**Optical Device Removal**

- Remove the screw at point ①.
- Use a screwdriver to carefully push out the optical device at point ②.

## Removing the Optical (CD/DVD) Device

- Turn **off** the computer, remove the battery ([page 2 - 5](#)) and hard disk ([page 2 - 6](#)).
- Remove the screw at point ① ([Figure 4a](#)).
- Use a screwdriver to carefully push out the optical device ③ at point ② ([Figure 4b](#)).
- Insert the new device and carefully slide it into the computer (the device only fits one way. **DO NOT FORCE IT**; The screw holes should line up).
- Restart the computer to allow it to automatically detect the new device.



3. Optical Device

- 1 Screw



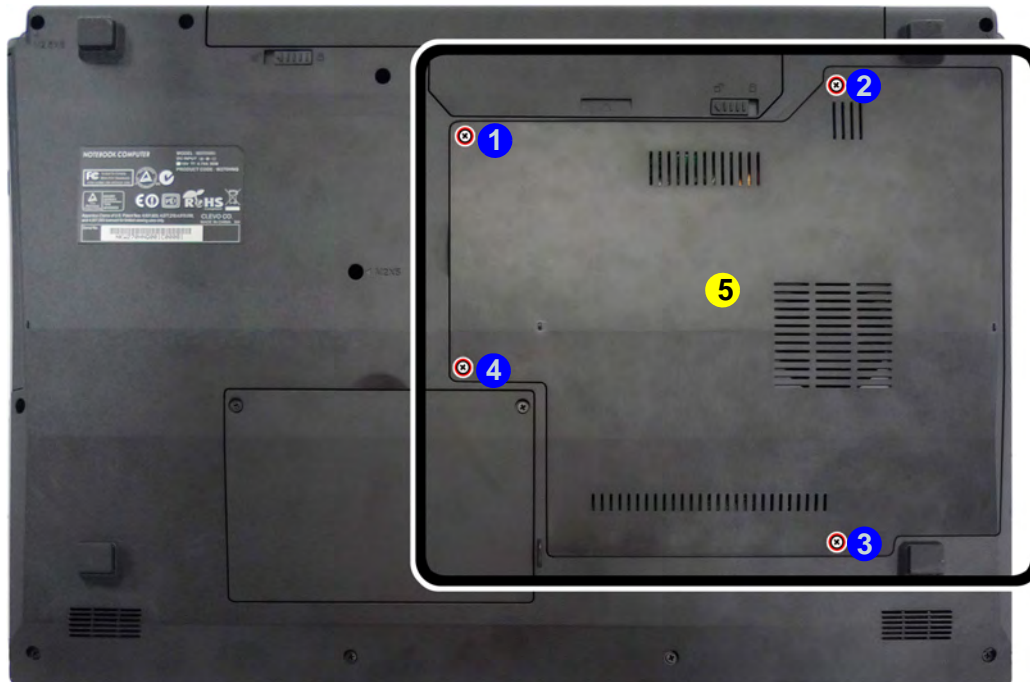
## Removing the System Memory (RAM)

The computer has two memory sockets for 204 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDRIII (DDR3) Up to 1066/1333 MHz. The main memory can be expanded up to 8GB. The SO-DIMM modules supported are 1024MB and 2048MB **DDRIII** Modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

### Memory Upgrade Process

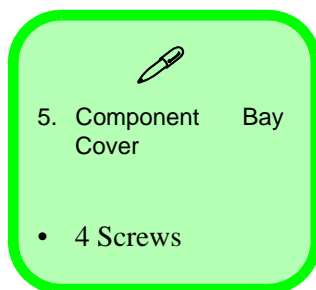
1. Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)).
2. Remove screws **1** - **4** from the component bay cover **5** ([Figure 5a](#)).

a.



*Figure 5*  
**RAM Module Removal**

- a. Remove the screws from the component bay cover.



## Disassembly

### Figure 6 RAM Module Removal (cont'd)

- b. The RAM modules will be visible at point **8** on the mainboard.
- c. Pull the release latches (**9** & **10**) on the sides of the memory socket in the direction indicated by the arrows.
- d. Remove the module.



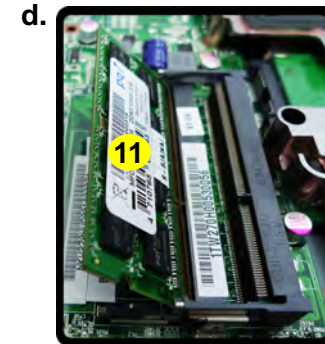
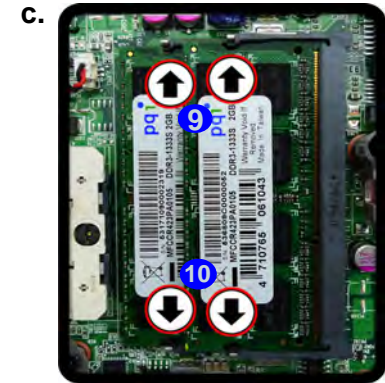
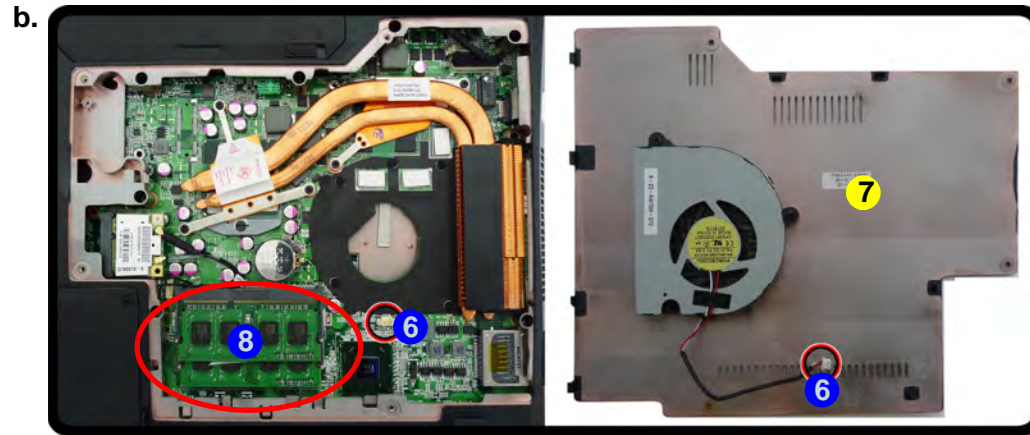
#### Contact Warning

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.



#### 11. RAM Module

3. Carefully (a fan and cable are attached to the under side of the cover) lift up the bay cover.
4. Carefully disconnect the fan cable **6**, and remove the cover **7**.
5. The RAM modules will be visible at point **8** on the mainboard (*Figure 5b*).
6. Gently pull the two release latches (**9** & **10**) on the sides of the memory socket in the direction indicated by the arrows (*Figure 5c*). The RAM module **11** will pop-up (*Figure 5d*), and you can then remove it.



7. Pull the latches to release the second module if necessary.
8. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
9. The module will only fit one way as defined by its pin alignment. Make sure the module is seated as far into the slot as it will go. **DO NOT FORCE IT**; it should fit without much pressure.
10. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
11. Replace the component bay cover and the screws (see [page 2 - 9](#)).
12. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

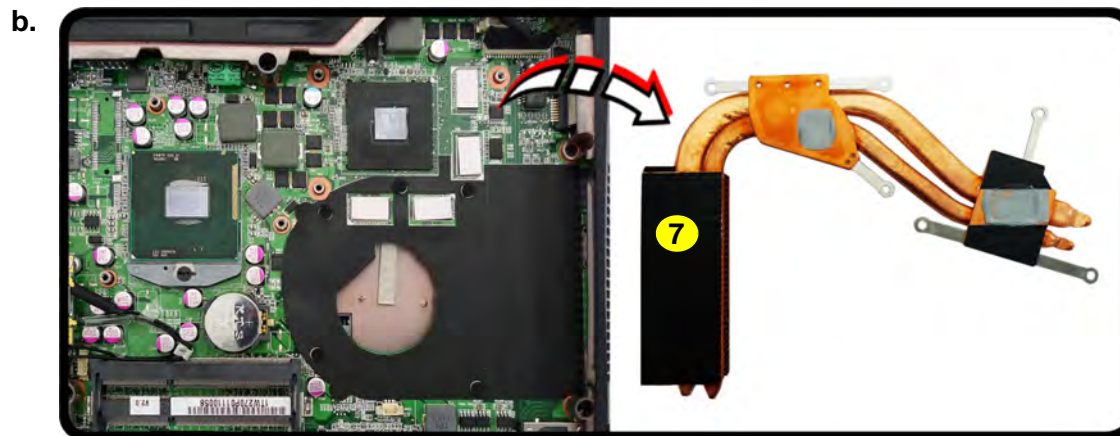
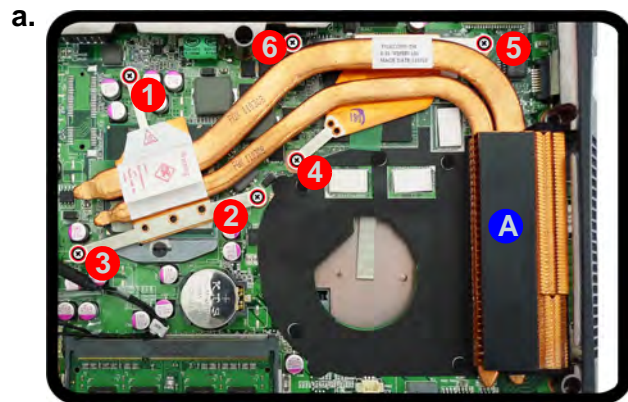
# Removing and Installing a Processor


## Processor Removal Procedure

1. Turn **off** the computer, turn it over, and remove the battery ([page 2 - 5](#)) and the component bay cover ([page 2 - 9](#)).
2. The CPU heat sink will be visible at point **A**.
3. Loosen the CPU heat sink screws in the order **6**, **5**, **4**, **3**, **2** & **1** (the reverse order as indicated on the label [Figure 7a](#)).
4. Grip the heat sink tab and carefully lift the heat sink **7** up ([Figure 7b](#)) and off the computer at a 60 degree angle.

*Figure 7*  
**Processor Removal**

- a. Remove the screws from the CPU heatsink.
- b. Grip the heat sink tab and carefully lift the heat sink up and off the computer at a 60 degree angle.






7. Heat Sink

- 6 Screws

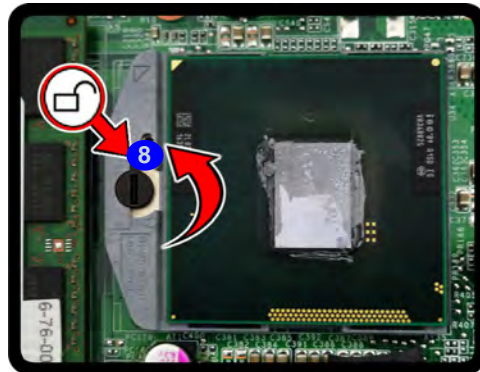
## Disassembly

### Figure 8 Processor Removal (cont'd)

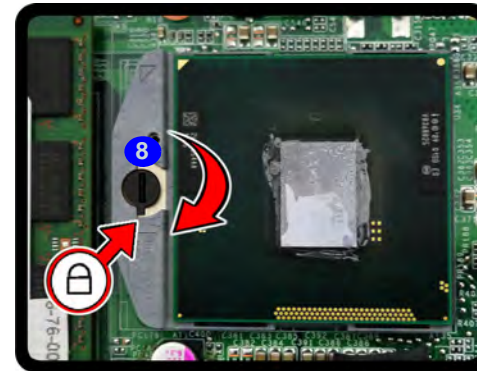
- d. Turn the release latch to unlock the CPU.  
e. Lift the CPU out of the socket.

5. Turn the release latch **8** towards the unlock symbol  to release the CPU (**Figure 9d**).
6. Carefully (it may be hot) lift the CPU **9** up and out of the socket (**Figure 9e**).
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!).

c.

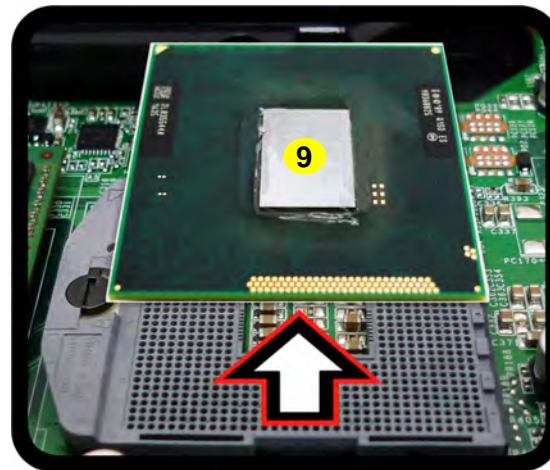


Unlock



Lock

d.




#### Caution

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

9. CPU

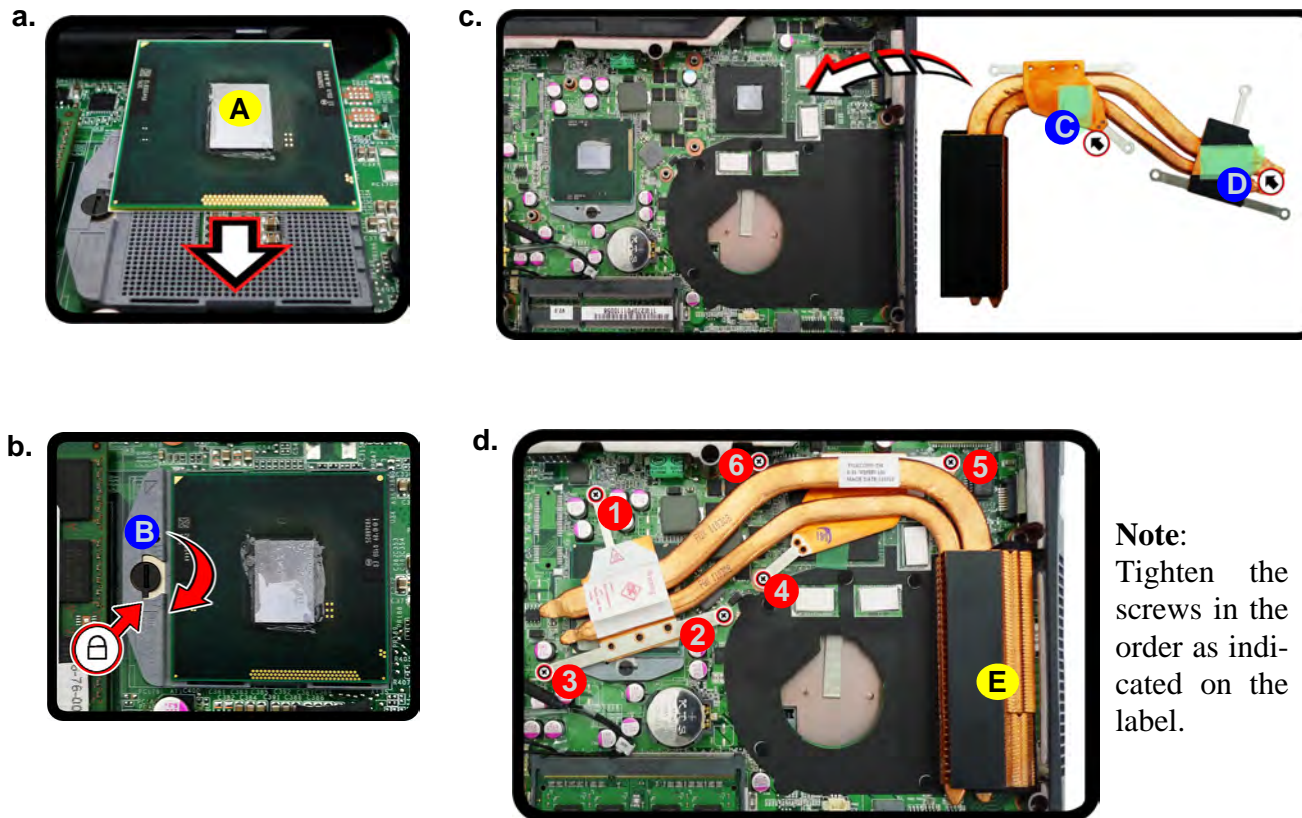


### Processor Installation Procedure


1. Insert the CPU **A** (*Figure 9a*), 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 9b*).
2. **Remove the stickers C - D** from the heat sink.
3. Insert the heat sink **E** as indicated in *Figure 9d*.
4. Tighten the CPU heat sink screws in the order **1**, **2**, **3**, **4**, **5** & **6** (the order as indicated on the label and *Figure 9d*).
5. Replace the component bay cover (don't forget to replace the fan cable) and tighten the screws (*page 2 - 9*).

*Figure 9*  
**Processor Installation**

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



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



A. CPU  
E. Heat Sink

- 6 Screws

## Disassembly

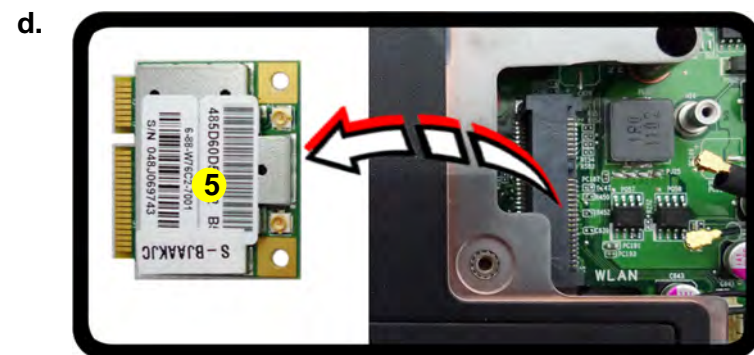
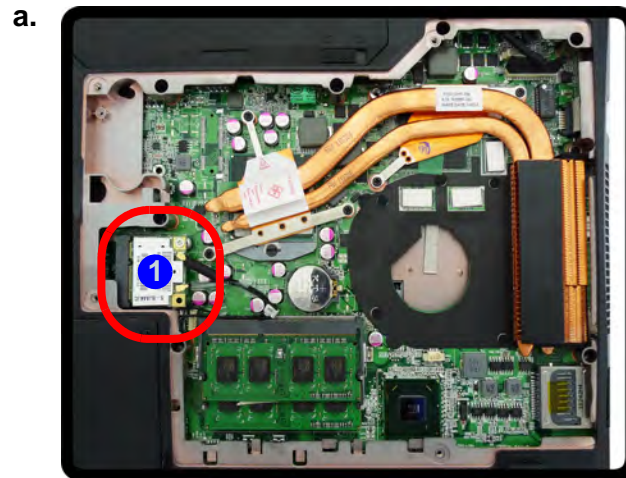
*Figure 10*  
**Wireless LAN  
Module Removal**

- Locate the WLAN.
- Disconnect the cables and remove the screw.
- The WLAN module will pop up.
- Remove the Wireless LAN module.

Note: Make sure you reconnect the antenna cable to the “1 + 2” socket (*Figure 11b*).

## Removing the Wireless LAN Module

- Turn **off** the computer, turn it over, and remove the battery (*page 2 - 5*) and the component bay cover (*page 2 - 9*).
- The Wireless LAN module will be visible at point **1** on the mainboard (*Figure 11a*).
- Carefully disconnect the cables **2** - **3**, and then remove the screw **4** (*Figure 11b*).
- The Wireless LAN module **5** (*Figure 11c*) will pop-up, and you can remove it from the computer (*Figure 11d*).

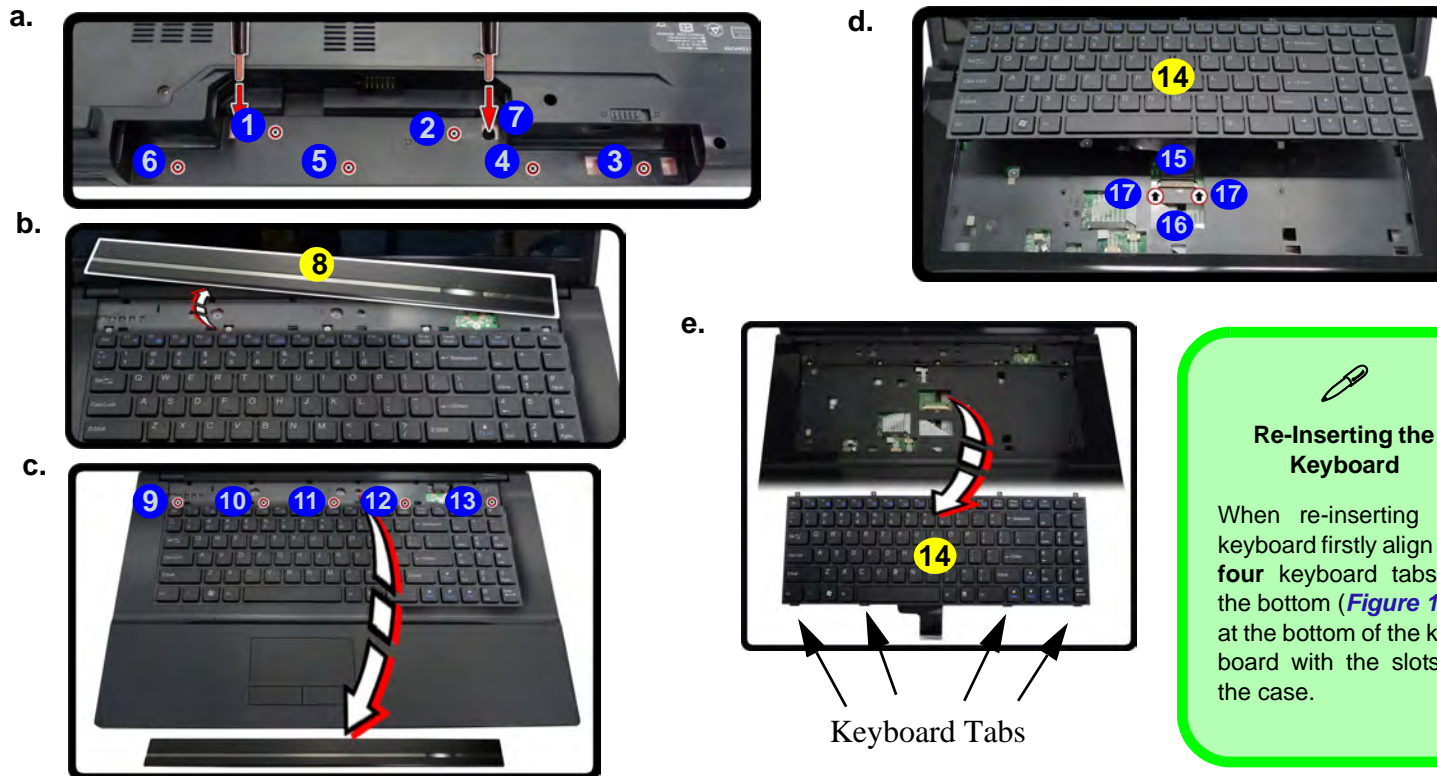


5. Wireless LAN Module

- 1 Screw

## Removing the Keyboard

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)) and the component bay cover ([page 2 - 9](#)).
2. Remove screws **1** - **6** from the bottom of the computer (inside the battery compartment), and then press at point **7** to unsnap the LED cover module (use the eject pin tool provided to do this [Figure 11a](#)).
3. Turn the computer over, unsnap up the LED cover module **8** from the center of the computer ([Figure 11b](#)).
4. Remove screws **9** - **13** from the keyboard ([Figure 11c](#)).
5. Carefully lift the keyboard **14** up, being careful not to bend the keyboard ribbon cable **15**. Disconnect the keyboard ribbon cable **15** from the locking collar socket **16** by using a flat-head screwdriver to pry the locking collar pins **17** away from the base ([Figure 11d](#)).
6. Carefully lift up the keyboard **14** ([Figure 11e](#)) off the computer.



**Re-Inserting the Keyboard**

When re-inserting the keyboard firstly align the **four** keyboard tabs at the bottom ([Figure 11e](#)) at the bottom of the keyboard with the slots in the case.

8. LED Cover Module  
14. Keyboard  
11 Screws

*Figure 11*  
**Keyboard Removal**

- Remove screws from the bottom of the computer.
- Turn the computer over, unsnap up the LED cover module from the center of the computer.
- Remove screws from the keyboard.
- Carefully lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins away from the base.
- Remove the keyboard.





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# Appendix A:Part Lists

This appendix breaks down the *W270HNQ/W270HPQ* 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.

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## Part List Illustration Location

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

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

Part	W270HNQ/W270HPQ
Top	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
SATA BLU-RAY COMBO	<i>page A - 5</i>
SATA DVD DUAL	<i>page A - 6</i>
LCD	<i>page A - 7</i>

# Top

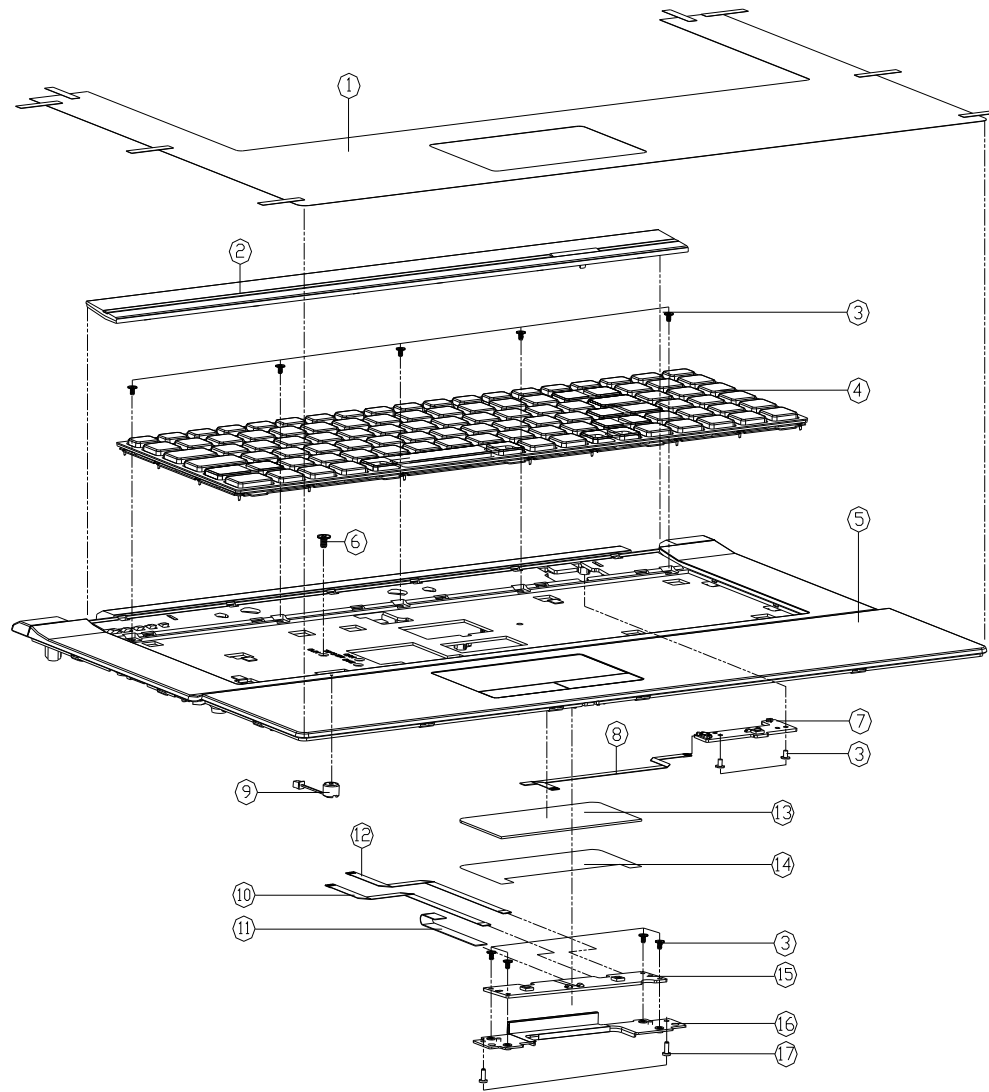
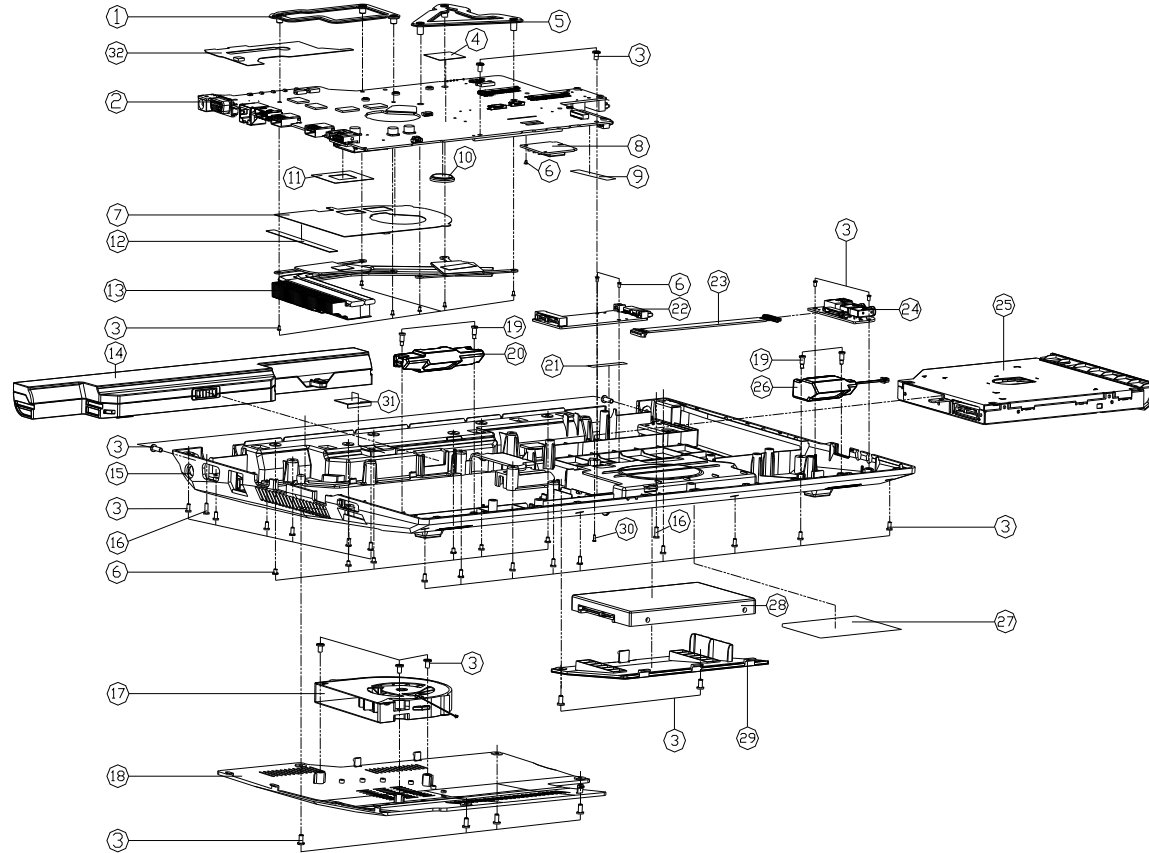


Figure A - 1  
Top

ITEM	PART NAME	PART NO	REMARK
1	PALM REST PROTECT MYLAR (8835) W270HUJ	6-40-W27H8-011	
2	KB COVER MODULE W270HUJ	6-42-W27H8-102	
3	SCREW M2*5L KI NI ICT NY (D0=4.5,D1=0.4)	6-35-B1120-3RE	
4	K/B US/BLACK/FRAMOUS) MODULE W270HUJ	6-79-W270HUOK-010	
5	TOP CASE MODULE W270HUJ	6-39-W27H2-012	
6	SCREW M2.5*5L KI BK/Z ICT NY	6-35-B6125-5RA	
7	POWER SWITCH BOARD V1.0 W270HPD	6-77-W25PS-D11-A	
8	FFC CABLE 6PIN FOR N/B TO POWER BOARD 08D W270AD	6-43-W27H0-041	
9	MC 0803SCREW-FR-0.24*0.28 W/CLIP (D=0.9) L=0.8MM	6-23-EM54G-012	
10	FFC CABLE 6PIN FOR N/B TO CLICK BOARD 08D W270AD	6-43-W27N0-011	
11	FFC CABLE FOR TOUCH PAD 6PIN C4500	6-43-C4502-010	
12	FFC CABLE 4PIN FOR N/B TO CLICK BOARD 08D W270AD	6-43-W27H0-031	
13	TOUCH PAD CLAY SHAPE 6PIN MULTI-FINGER GESTURE W250PP	6-49-W25A2-011	
14	TAPE MYLAR (C) (86*38.80MM) C4105	6-40-00150-861	
15	CLICK BOARD V2.0 W251HPD (MCN-V2.1)	6-77-W25P2-D02	
16	TP BRACKET MODULE (SECC 08T) W270HUJ	6-33-W27H2-101	
17	SCREW M2*5L KI CT-08 D=4.0) BK/Z ICT NY	6-35-B6120-5R0	

# Bottom

Figure A - 2  
Bottom



ITEM	PART NAME	PART NO	REMARK
1	VGA SUPPORTER SECC B7130	6-33-B713S-010	
2	MAIN BOARD VEA MFP-016 VIO 36.1 W270P	6-77-W27P0-D02-1	
2	MAIN BOARD VEA MFP-016 VIO 36.1 W270P	6-77-W27P0-D02-1N	
3	SCREW M2.5*SL KI BK/Z ICT NY	6-35-B612S-58A	
4	AUDIO BOARD MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-40-C450S-030	
5	CPU SUPPORT BRACKET SECC W25HP0	6-33-W25PS-011	
6	SCREW M2.5*SL KI ICT NY (00-443) (1.0)	6-35-B1120-3RE	
7	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-40-W25PS-400	
8	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-88-C555F-7001	(OPTION)
8	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-88-C555F-5300	(OPTION)
8	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-88-W76C2-7001	(OPTION)
8	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-88-W76C2-8702	(OPTION)
8	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-88-P170F-4210	(OPTION)
8	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-88-P170F-4200	(OPTION)
8	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-88-M77C2-4220	(OPTION)
9	TAPE MYLAR (C) MYLAR M550J	6-40-M55JL-030	
10	BATTERY 3V 200MA (BBS0200B) (KTS)	6-23-6A2B2-030	
11	VGA CHIP MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-40-H660S-091	
12	RUBBER GROUNDING STRIP FOR MAIN BOARD W25HP0	6-47-0019A-807	
13	CPU/VGA HEATSINK MODULE W25HP0	6-31-W25HN-101	
14	MIPS II (1.0) (1.0) (1.0) (1.0) (1.0) (1.0)	6-87-W27PS-494	(OPTION)
14	MIPS II (1.0) (1.0) (1.0) (1.0) (1.0) (1.0)	6-87-E412S-407A	(OPTION)
14	MIPS II (1.0) (1.0) (1.0) (1.0) (1.0) (1.0)	6-87-E412S-4Y4A	(OPTION)
15	BOTTOM CASE MODULE W270HU0	6-39-W27H3-011	
16	SCREW M2.5*SL KI BK/Z NY ICT	6-35-B612S-580	
17	CPU COVER MODULE W270HN0	6-23-AV15H-010	
18	CPU COVER MODULE W270HN0	6-42-W27N3-101	
19	SCREW M2.5*SL KI ICT NY FOR SPEAKER	6-35-Z1120-6R2	
20	SPEAKER (1.0) (1.0) (1.0) (1.0) (1.0) (1.0)	6-23-5W25P-020	
21	TAPE MYLAR (C) MYLAR M550J	6-40-M55JL-020	
22	BRIDGE ODD BOARD V10 W270HP0	6-77-W25PN-D02	
23	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-43-W27P0-010	
24	AUDIO BOARD V2.0 W25HP0	6-77-W25PE-D02	
25	SATA BLU-RAY COMBO ASSY (OPTION)	6-79-W270H0V-000	
25	SATA DVD SUPER MULTI ASSY (OPTION)	6-79-W270H0G-000	
25	SATA DVD SUPER MULTI ASSY (OPTION)	6-79-W270H0G-000	
25	W/O DVD ASSY W270HU0 (OPTION)	6-79-W270H0Z-000	
26	PRODUCT LABEL FOR W270HN0	6-23-5W25P-010	
27	PRODUCT LABEL FOR W270HP0	6-45-W270HP0-010	
28	W/O HDD ASSY E51200	6-79-E51200J-020	
28	W/O HDD ASSY C4800	6-79-C48000J-010	
29	HDD COVER PC-A8S W270HU0	6-42-W27HJ-011	
30	SCREW M2.5*SL KI BK/Z NY (00-443) (1.0)	6-35-B6120-580	
31	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-40-W27H3-020	
32	W/CD COVER MFCR0401 (1.0) (1.0) (1.0) (1.0)	6-40-W25PS-200	

# SATA BLU-RAY COMBO

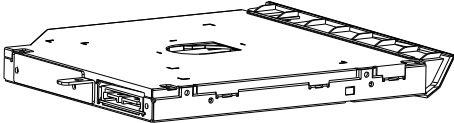
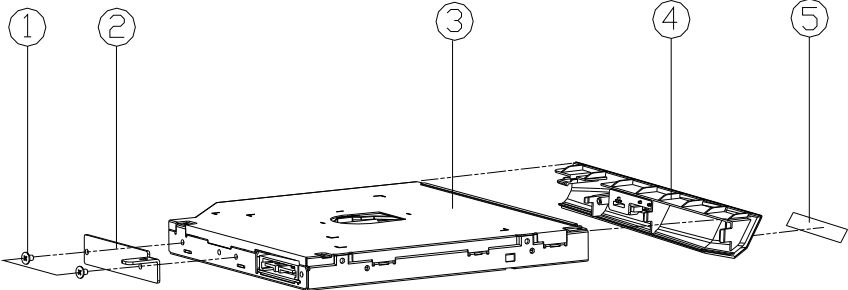
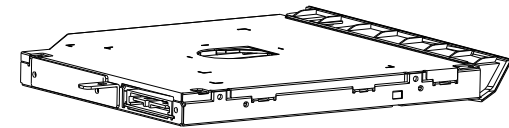
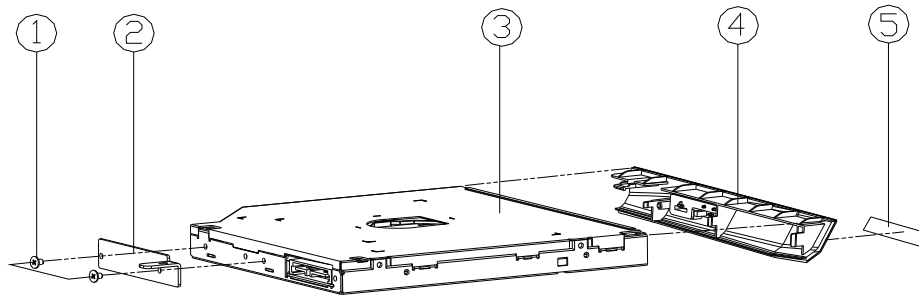


Figure 3  
SATA BLU-RAY  
COMBO

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*3L KI NI ICT NY (DD=04.5,DT=0.4)	6-35-B1120-3RE	
2	CD ROM BRACKET SECC (CFID) M740S	6-33-M74SZ-012-1	
3	SATA BLU-RAY COMBO 5 1/4" 6X 12.7MM UJ141 (ALAA-D) PANASONIC	6-85-B076X-P10	FOR PANASONIC
4	ODD BEZEL MODULE W270HUQ	6-42-W27HZ-101	
5	BLU-RAY ODD BEZEL LABEL (SIZE CHANGE) W860CU	6-45-W860W-011	

# SATA DVD DUAL

Figure 4  
SATA DVD DUAL



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*3L KI NI ICT NY (DD=04.5,DT=0.4)	6-35-B1120-3RE	
2	CD ROM BRACKET SECC (PH) M740S	6-33-M74SZ-012-1	
3	SATA DVD SUPER MULTI 5 24X 20 BURN CD/DVD RW REC. DVD REWRITING 7 SUPER DLDS	6-85-A078X-508	FDR HL DS
3	SATA DVD SUPER MULTI 5 24X 20 BURN CD/DVD RW REC. DVD REWRITING 7 SUPER DLDS	6-85-A078X-T09	FDR TSST
3	SATA DVD SUPER MULTI 5 24X 20 BURN CD/DVD RW REC. DVD REWRITING 7 SUPER DLDS	6-85-A078X-L05	FDR PLDS
4	ODD BEZEL MODULE W270HUQ	6-42-W27HZ-101	
5	SUPER MULTI ODD BEZEL LABEL (SIZE CHANGE) W860CU	6-45-W860Q-011	







# Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *W270HNQ/W270HPQ* notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
<i>System Block Diagram - Page B - 2</i>	<i>PCH 1/9- RTC, HDA, SATA - Page B - 19</i>	<i>5VS, 3VS, 3.3VM, 1.5VS CPU - Page B - 36</i>
<i>Processor 1/7-DMI, FDI, PEG - Page B - 3</i>	<i>PCH 2/9- PCIE, SMBUS, CLK - Page B - 20</i>	<i>VDD3, VDD5 - Page B - 37</i>
<i>Processor 2/7- CLK, MISC - Page B - 4</i>	<i>PCH 3/9- DMI, FDI, PWRGD - Page B - 21</i>	<i>Power 0.85VS, 1.8VS, PEX VDD - Page B - 38</i>
<i>Processor 3/7- (DDR3) - Page B - 5</i>	<i>PCH 4/9- LVDS, DDI, CRT - Page B - 22</i>	<i>POWER 1.5V/1.05VS/0.75V - Page B - 39</i>
<i>Processor 4/7- Power - Page B - 6</i>	<i>PCH 4/9- OCI, USB, RSVD - Page B - 23</i>	<i>POWER VCORE1 - Page B - 40</i>
<i>Processor 5/7- GFX PWR - Page B - 7</i>	<i>PCH 6/9- GPIO, CPU - Page B - 24</i>	<i>POWER VCORE2 - Page B - 41</i>
<i>Processor 6/7- GND - Page B - 8</i>	<i>PCH 7/9- PWR - Page B - 25</i>	<i>Power VGA NVVDD - Page B - 42</i>
<i>Processor 7/7- RSVD - Page B - 9</i>	<i>PCH 8/9 POWER - Page B - 26</i>	<i>AC IN, CHARGER - Page B - 43</i>
<i>DDR3 SO-DIMM_0 - Page B - 10</i>	<i>PCH 3/9- GRD - Page B - 27</i>	<i>AUDIO BOARD - Page B - 44</i>
<i>DDR3 SO-DIMM_1 - Page B - 11</i>	<i>WLAN 3G MINI PCIE - Page B - 28</i>	<i>CLICK BOARD - Page B - 45</i>
<i>PANEL, INVERTER, CRT - Page B - 12</i>	<i>CCD, TPM, MULTI CON - Page B - 29</i>	<i>W251HPQ POWER SW BOARD - Page B - 46</i>
<i>VGA PCI-E Interace - Page B - 13</i>	<i>USB2.0, USB3.0 NEC - Page B - 30</i>	<i>W270HU BRIDGE ODD BOARD - Page B - 47</i>
<i>VGA Frame Buffer Interface - Page B - 14</i>	<i>Card Reader (JMC251 C) - Page B - 31</i>	<i>W270HU POWER SW BOARD - Page B - 48</i>
<i>VGA Frame Buffer A - Page B - 15</i>	<i>SATA ODD, LED, USB CHARGE - Page B - 32</i>	<i>Power Diagram - Page B - 49</i>
<i>VGA Frame Buffer C - Page B - 16</i>	<i>HDMI, RJ45 - Page B - 33</i>	<i>Power On SEQ - Page B - 50</i>
<i>VGA I/O - Page B - 17</i>	<i>AUDIO CODEC ALC269 - Page B - 34</i>	
<i>VGA NVVDD Cecoupling - Page B - 18</i>	<i>KBC-ITE IT8518E - Page B - 35</i>	

*Table B - 1*  
**SCHEMATIC  
DIAGRAMS**

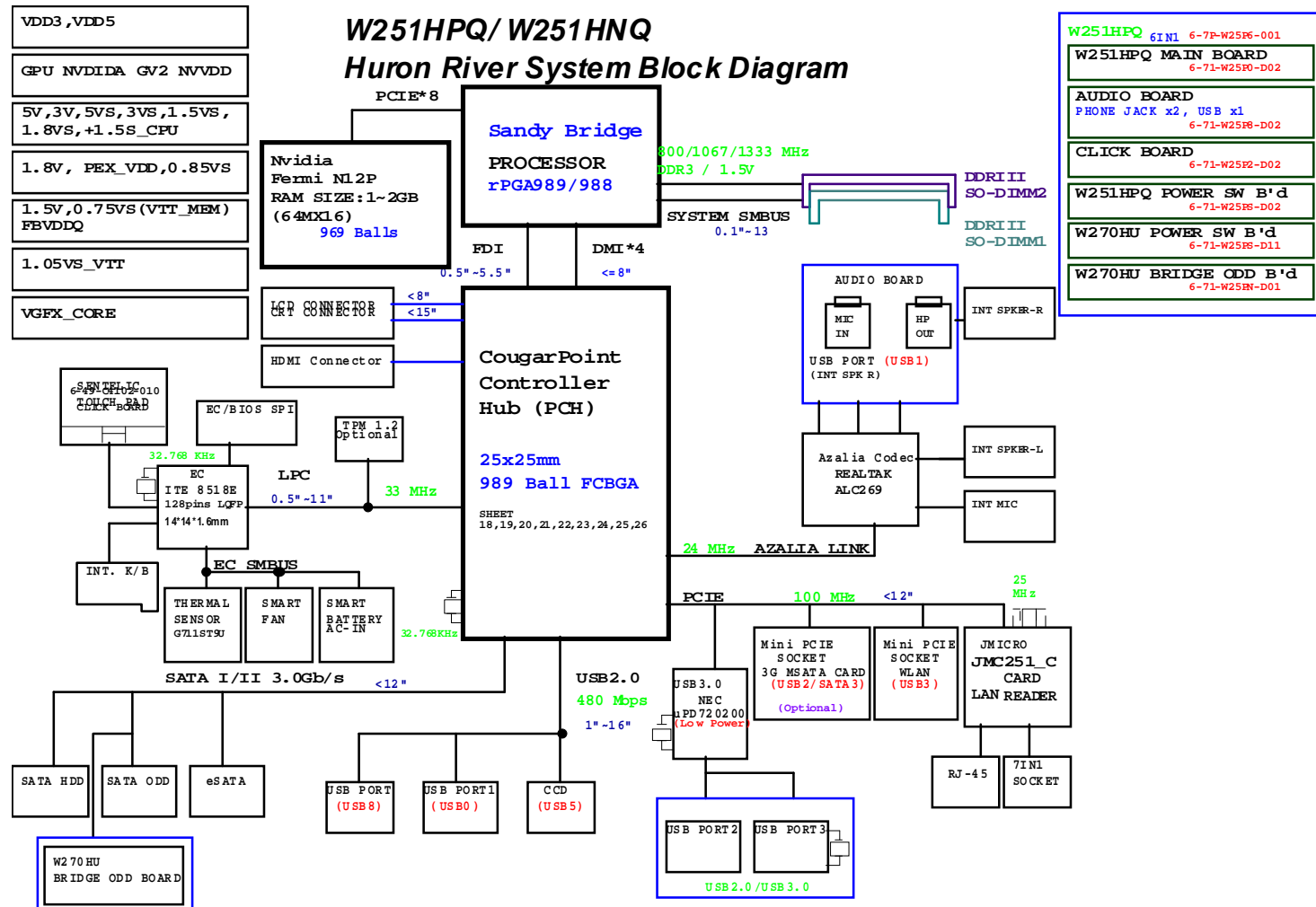


**Version Note**

The schematic diagrams in this chapter are based upon version 6-7P-W25p6-001. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

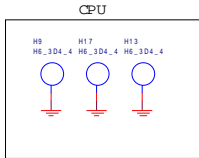
# System Block Diagram

Sheet 1 of 49  
System Block  
Diagram



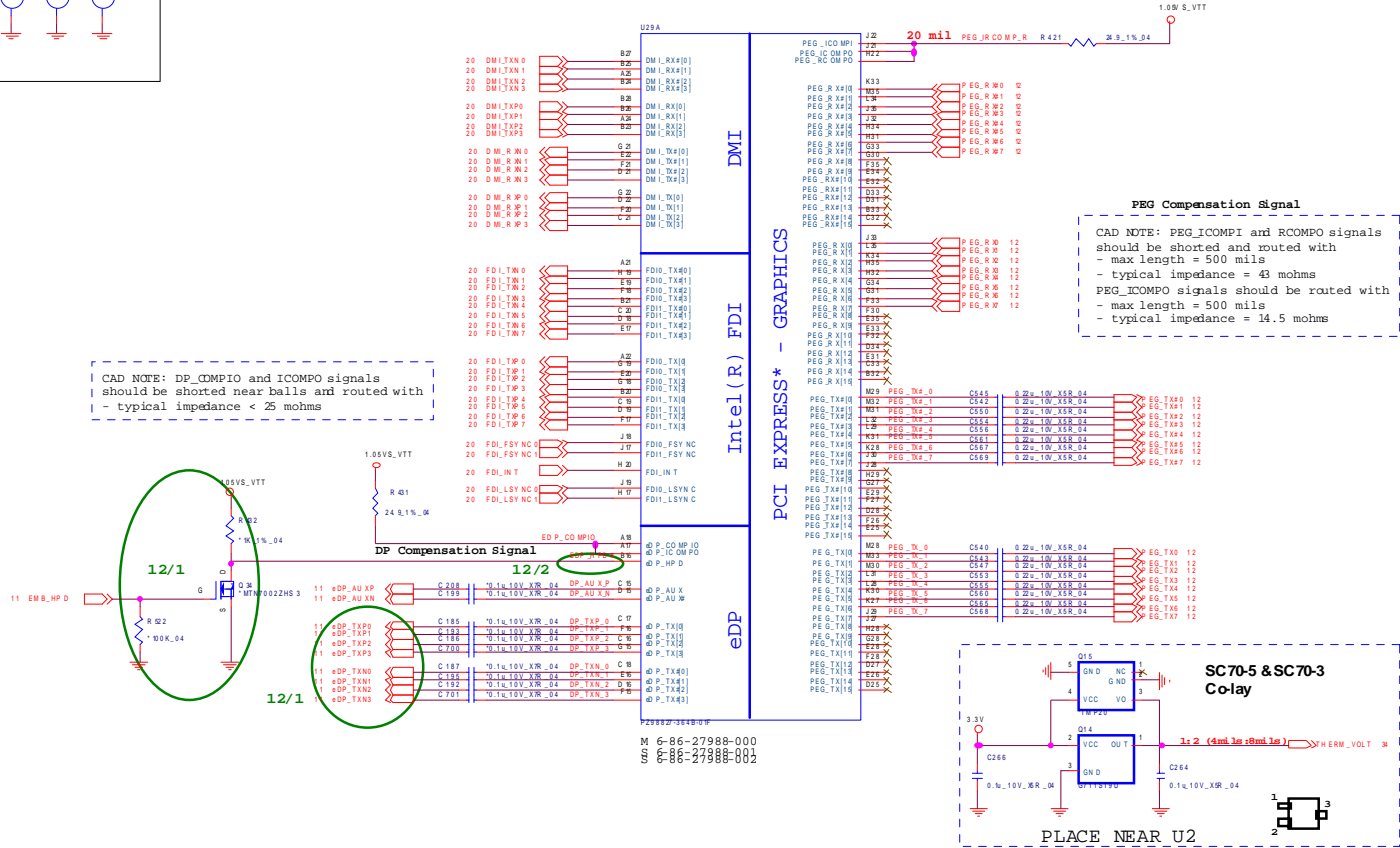
# Processor 1/7-DMI, FDI, PEG

## Sandy Bridge Processor 1/7 ( DMI,PEG,FDI )



CAD NOTE: DP\_CMPPIO and ICOMPO signals should be shorted near balls and routed with - typical impedance < 25 mohms

PEG Compensation Signal  
CAD NOTE: PEG\_ICOMPI and RCOMPO signals should be shorted and routed with  
- max length = 500 mils  
- typical impedance = 43 mohms  
PEG\_COMPO signals should be routed with  
- max length = 500 mils  
- typical impedance = 14.5 mohms



B.Schematic Diagrams

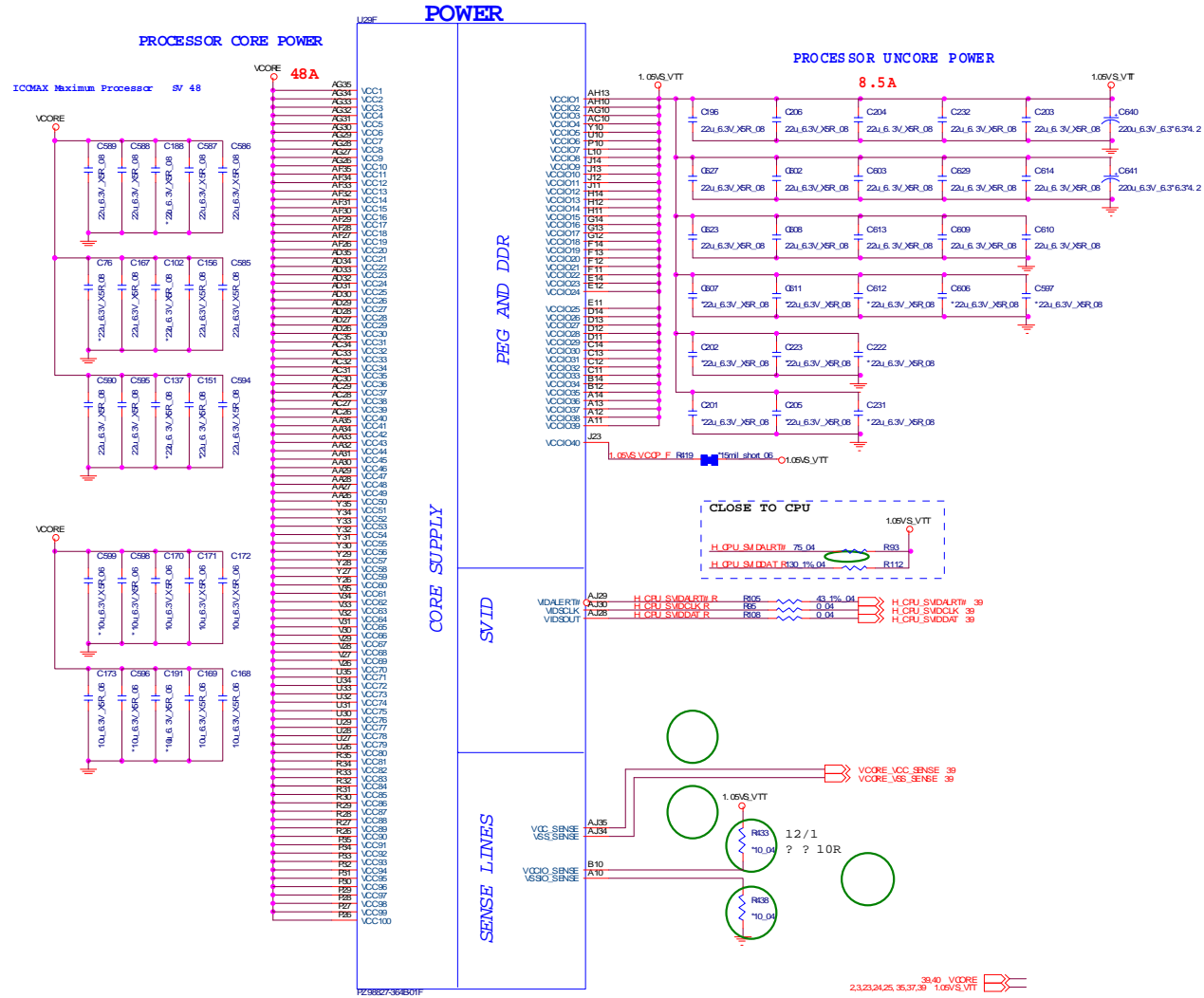
Sheet 2 of 49  
Processor 1/7-DMI,  
FDI, PEG





# Processor 4/7- Power

## Sandy Bridge Processor 4/7 ( POWER )

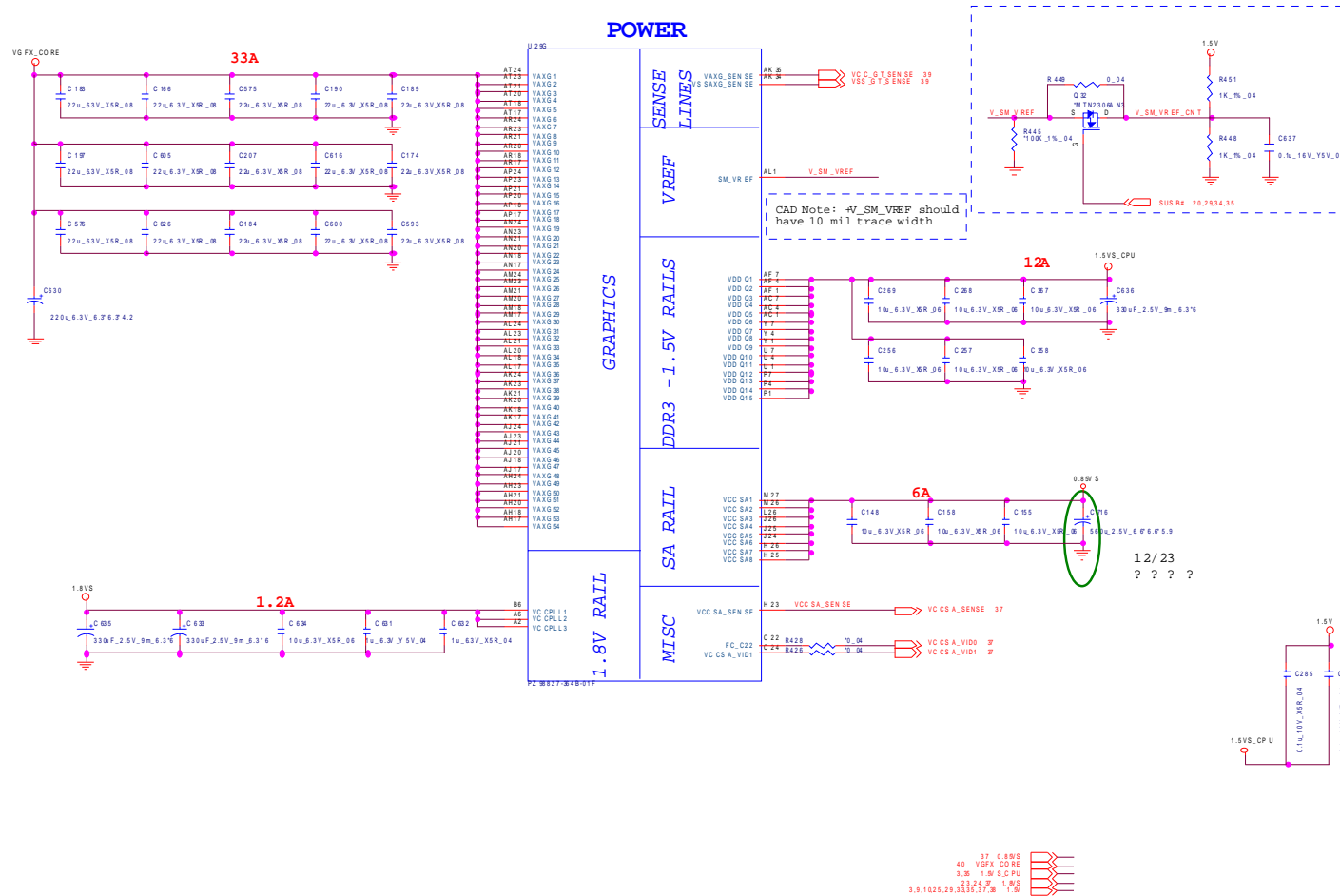


Sheet 5 of 49  
Processor 4/7-  
Power

B.Schematic Diagrams

# Processor 5/7- GFX PWR

## Sandy Bridge Processor 5/7 ( GRAPHICS POWER )



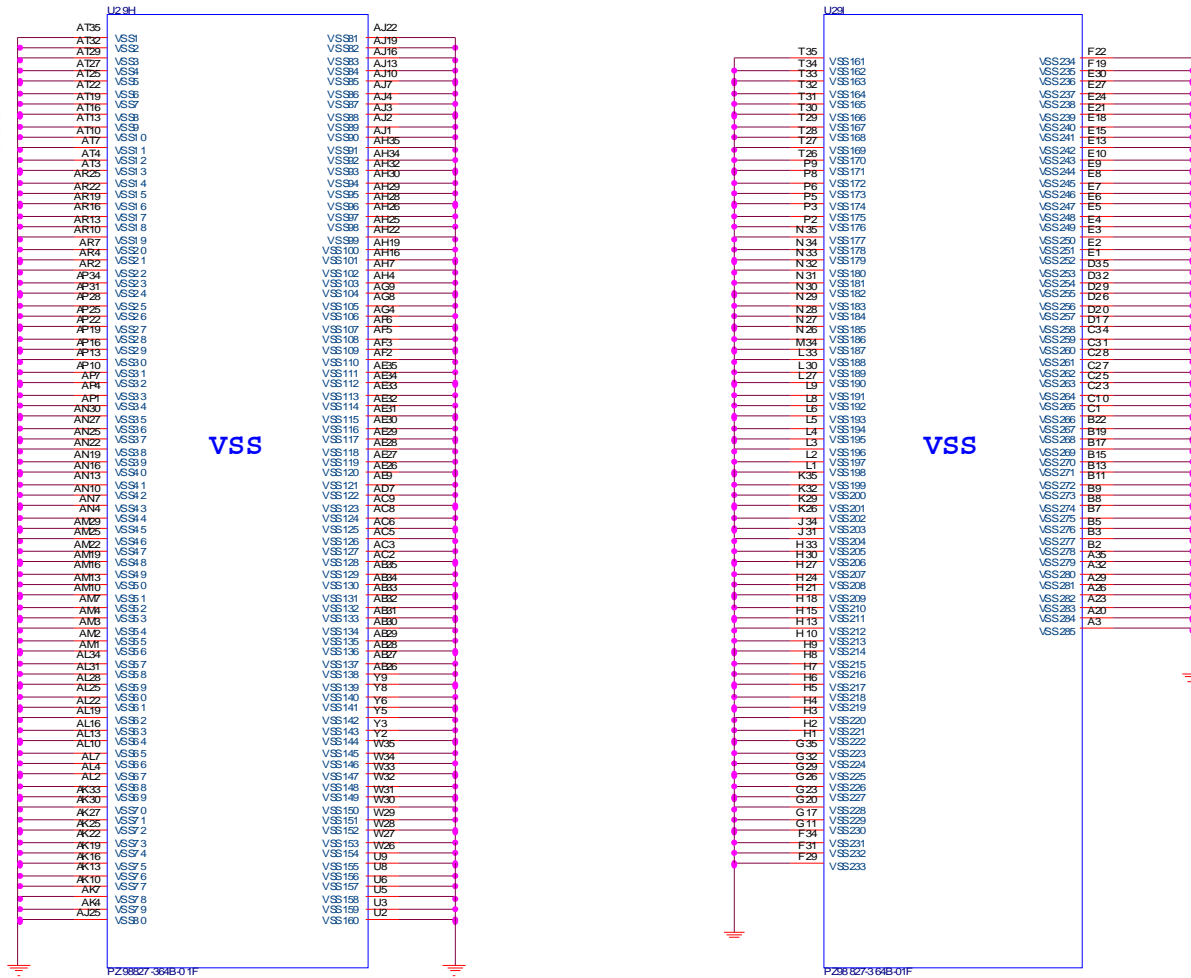
Sheet 6 of 49  
Processor 5/7- GFX  
PWR

# Processor 6/7- GND

## Sandy Bridge Processor 6/7 ( GND )

Sheet 7 of 49  
Processor 6/7- GND

CAD Note: 0 ohm resistor should be placed close to CPU





# Processor 7/7- RSVD

## Sandy Bridge Processor 7/7 ( RESERVED )

### CFG Straps for Processor

PEG Static Lane Reversal - CFG2 is for the 16x

**CFG2**  
 1: (Default) Normal Operation; Lane # definition matches socket pin map definition  
 0: Lane Reversed

CFG2 R417 \*1K\_04

Display Port Presence Strap

**CFG4**  
 1: (Default) Disabled; No Physical Display Port attached to Embedded Display Port  
 0: Enabled; An external Display Port device is connected to the Embedded Display Port

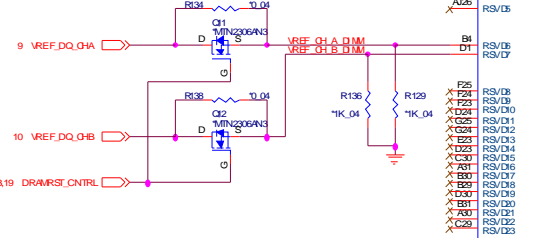
CFG4 R114 \*1K\_04

PCIe Port Bifurcation Straps

**CFG[6:5]**  
 11: (Default) x16 - Device 1 functions 1 and 2 disabled  
 10: x8, x8 - Device 1 function 1 enabled; function 2 disabled  
 01: Reserved - (Device 1 function 1 disabled; function 2 enabled)  
 00: x8, x4, x4 - Device 1 functions 1 and 2 enabled

CFG5 R111 \*1K\_04

CFG6 R109 \*1K\_04

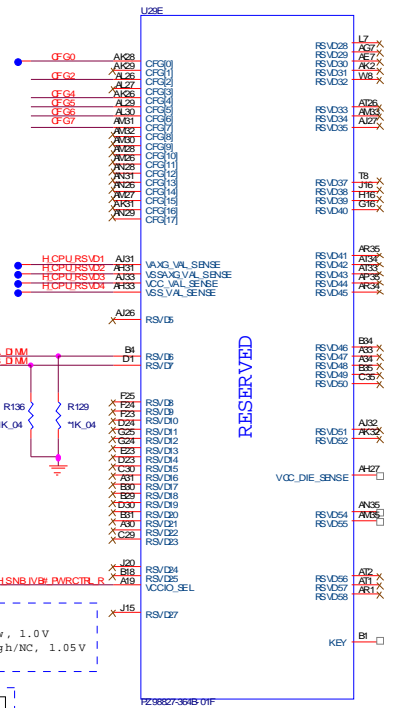


On CR.B  
 H\_SNB\_IVB#\_PWRCCTRL = low, 1.0V  
 H\_SNB\_IVB#\_PWRCCTRL = high/NC, 1.05V

PEG DEFER TRAINING

**CFG7**  
 1: (Default) PEG Train immediately following xxRESETB de assertion  
 0: PEG Wait for BIOS for training

CFG7 R107 \*1K\_04



RESERVED

2,3,11, 16,18,19,20,22, 23,24,25,27, 28,29,30,35,37, 38,39 3.3V

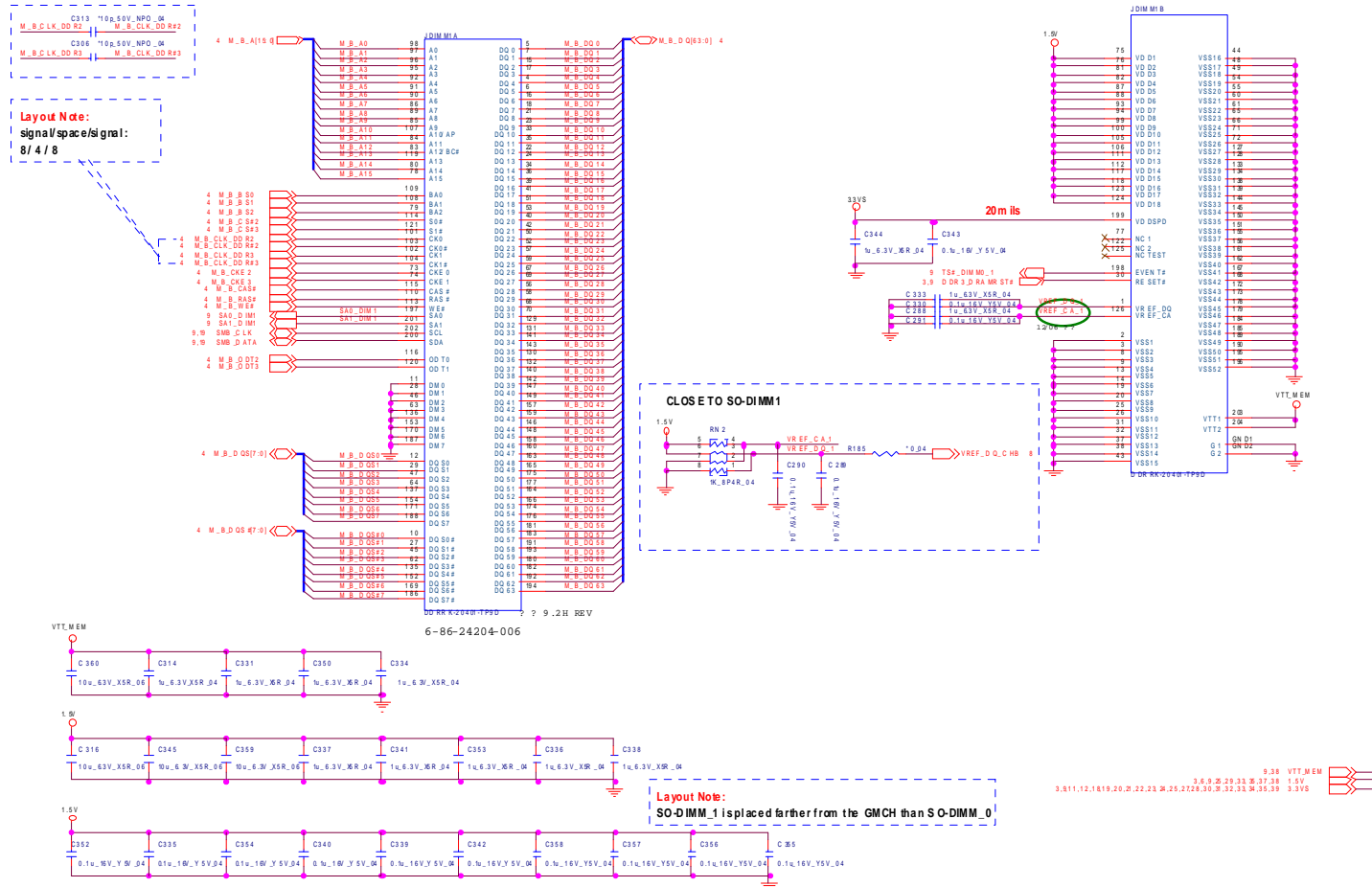
Sheet 8 of 49  
 Processor 7/7-  
 RSVD

B.Schematic Diagrams



# DDR3 SO-DIMM\_1

## SO-DIMM B

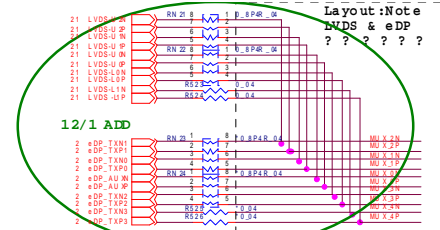
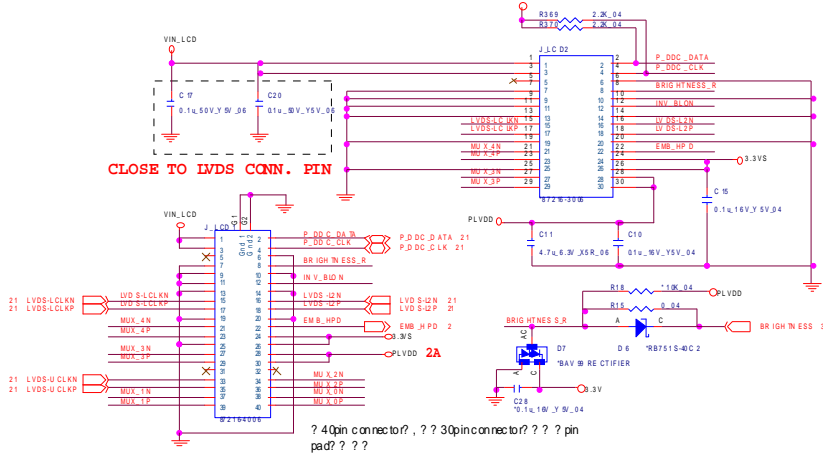


Sheet 10 of 49  
 DDR3 SO-DIMM\_1

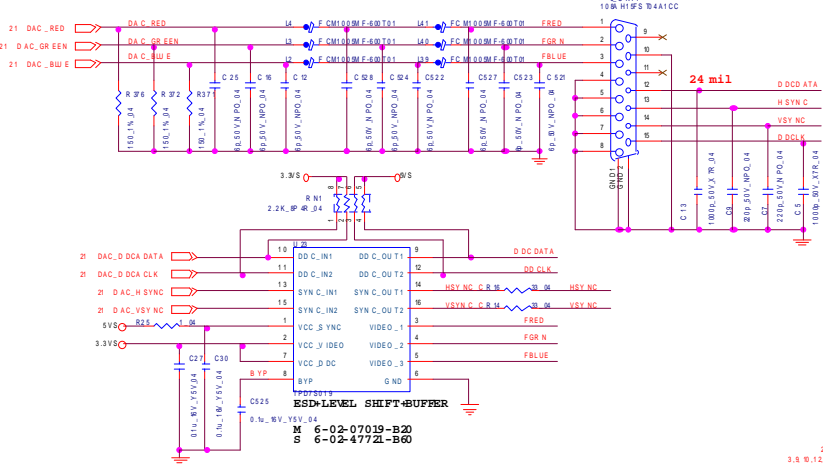
# PANEL, INVERTER, CRT

Sheet 11 of 49  
PANEL, INVERTER,  
CRT

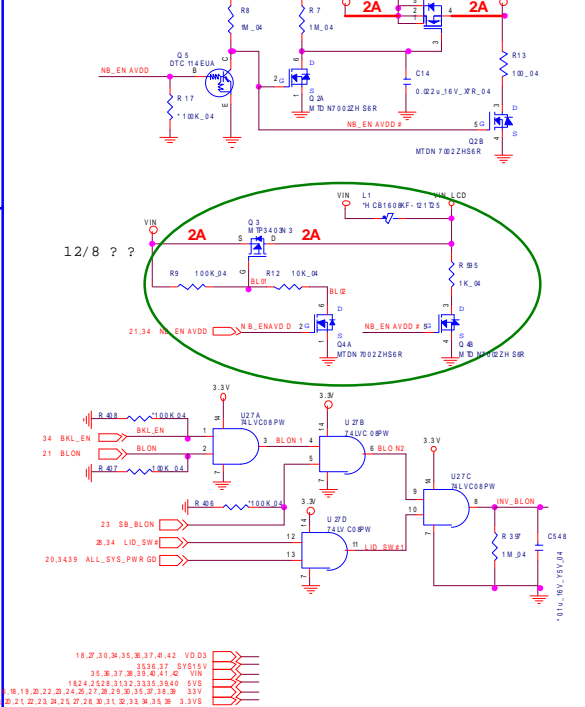
PANEL CONNECTOR (30Pin & 40Pin CO-lay)



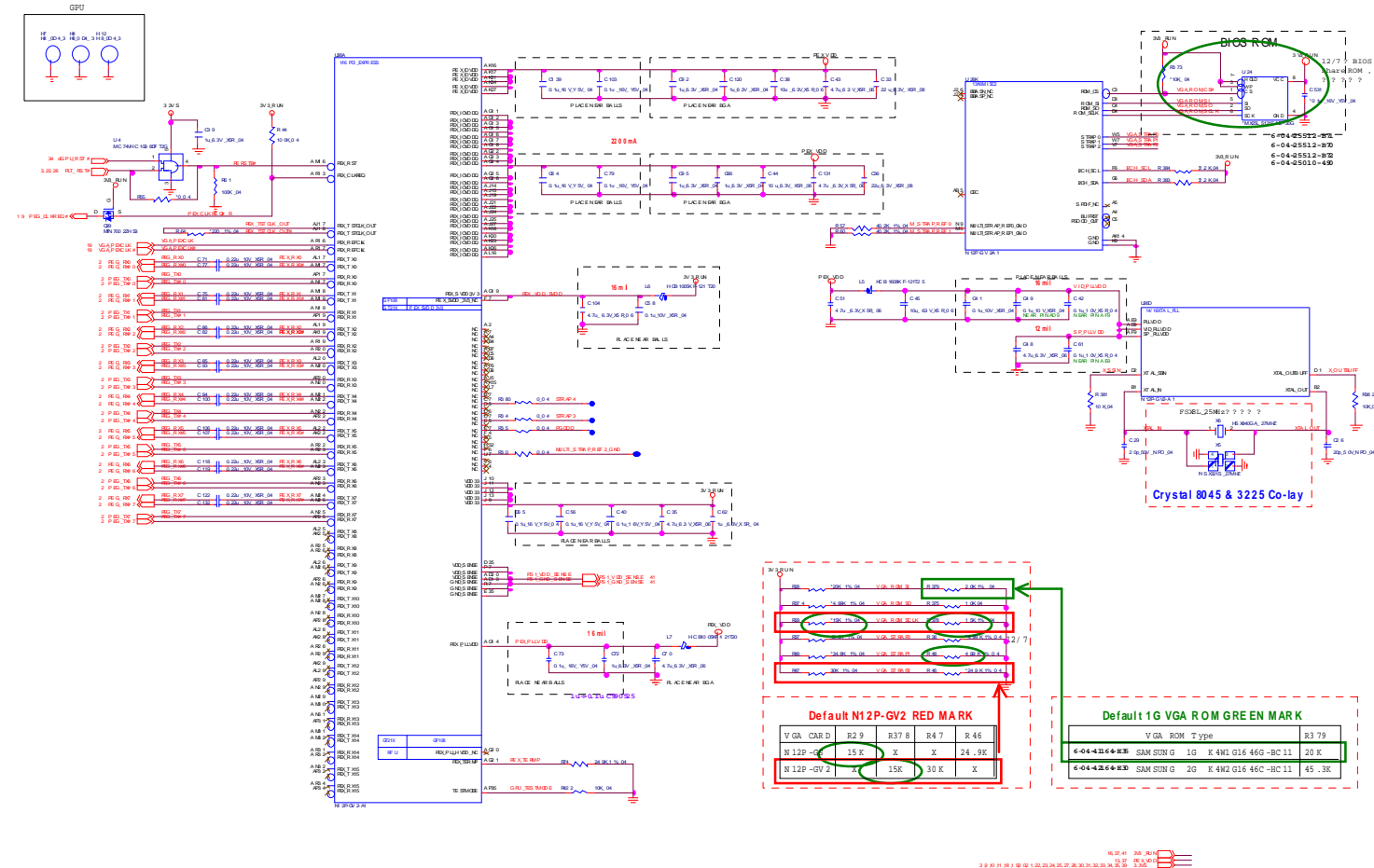
CRT



PANEL POWER



# VGA PCI-E Interface



Sheet 12 of 49  
VGA PCI-E Interface

B.Schematic Diagrams





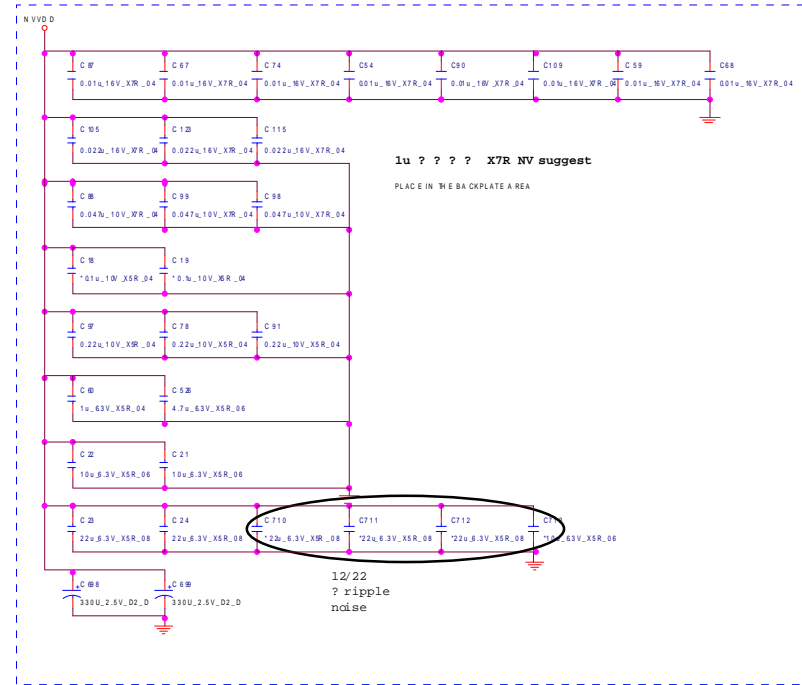
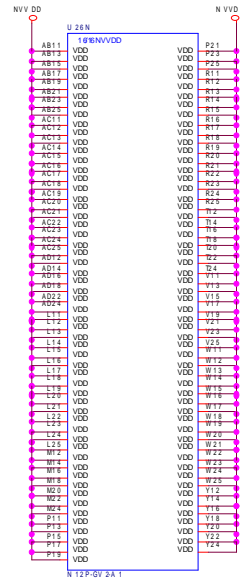
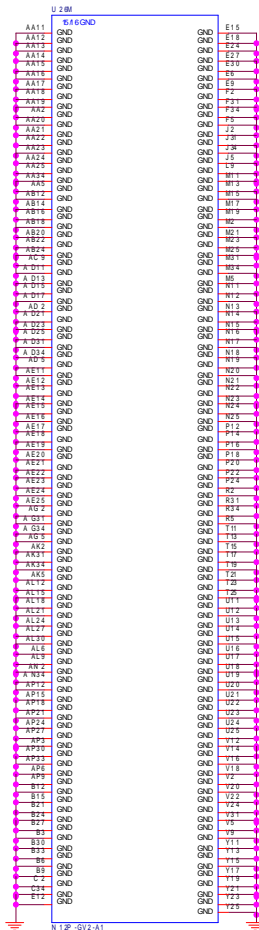






# VGA NVVDD Cecoupling

Sheet 17 of 49  
VGA NVVDD  
Cecoupling



BOM LIST for(GS+2G BOM & GV2+1G BOM)include special stuff Location SETTING

BOM LIST	R29	R378	R47	R46	PR137	PR136	PR135	PR134	HR142	HR141	PR140	PR139	R379	U26	U3,U5,U7,U8,U25,U28,U30,U31
GS+2G SDRAM BOM	15K	X	X	24.9K	12K	15K	12.7K	15K	10K	12.7K	10K	11.8K	45.3K	NL2P-GS QS	K4W2G1646C-HC11(2G)
GV2+1G SDRAM BOM	X	15K	30K	X	12K	15K	12K	16.2K	10K	11.8K	11.5K	10K	20K	N12P-GV2-AL MP	K4W1G1646G-BC11(1G)

PS: X= Un-stuff      CPU CHIP SET      GPU POWER SET      GPU SDRAM SET      GPU CHIP SELECT      GPU SDRAM SELECT





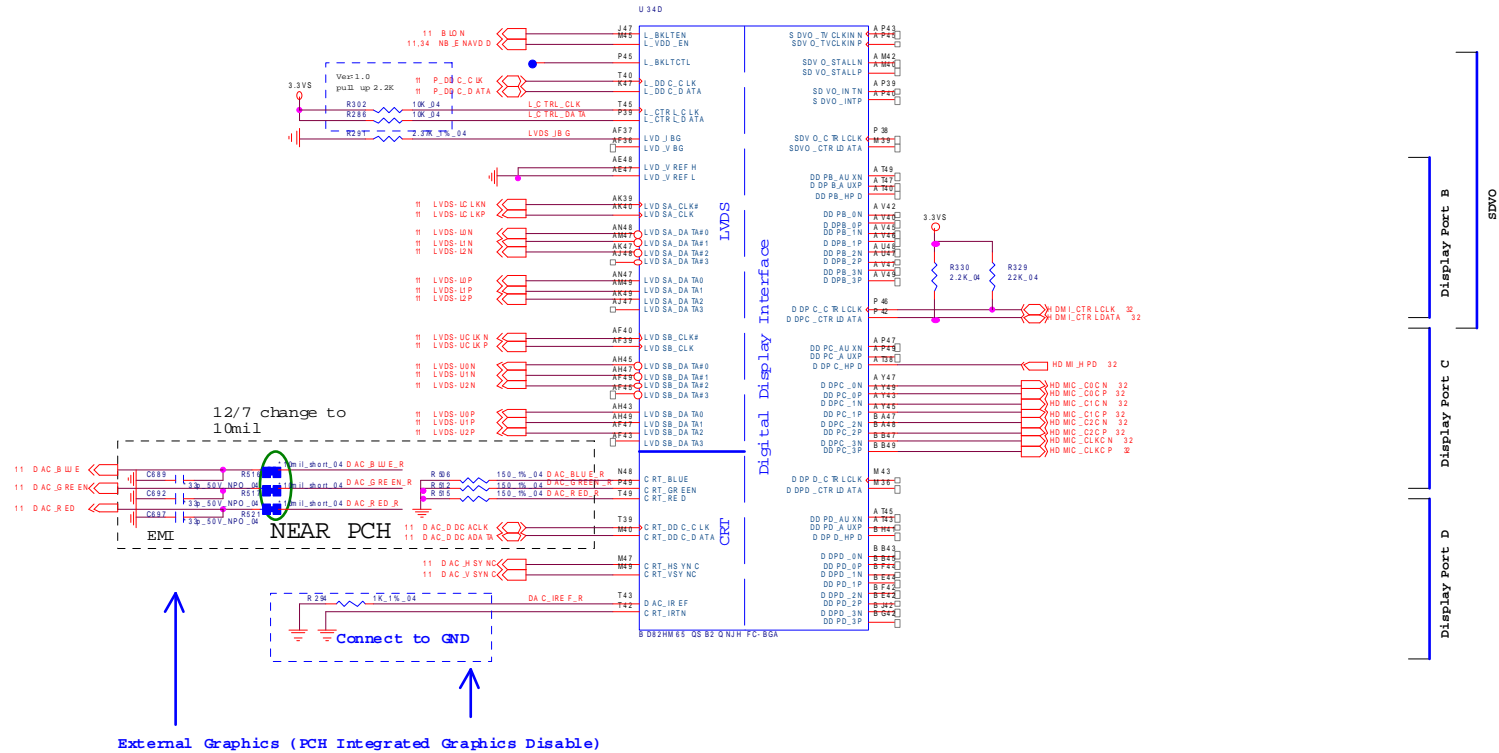




# PCH 4/9- LVDS, DDI, CRT

CougarPoint -M (LVDS, DDI)

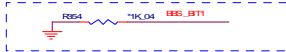
Sheet 21 of 49  
PCH 4/9- LVDS,  
DDI, CRT



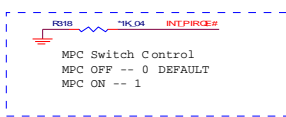
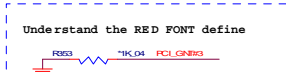
# PCH 4/9- OCI, USB, RSVD

## CougarPoint -M (PCI,USB,RSVD)

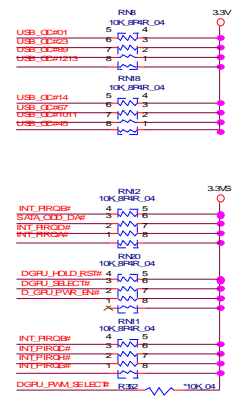
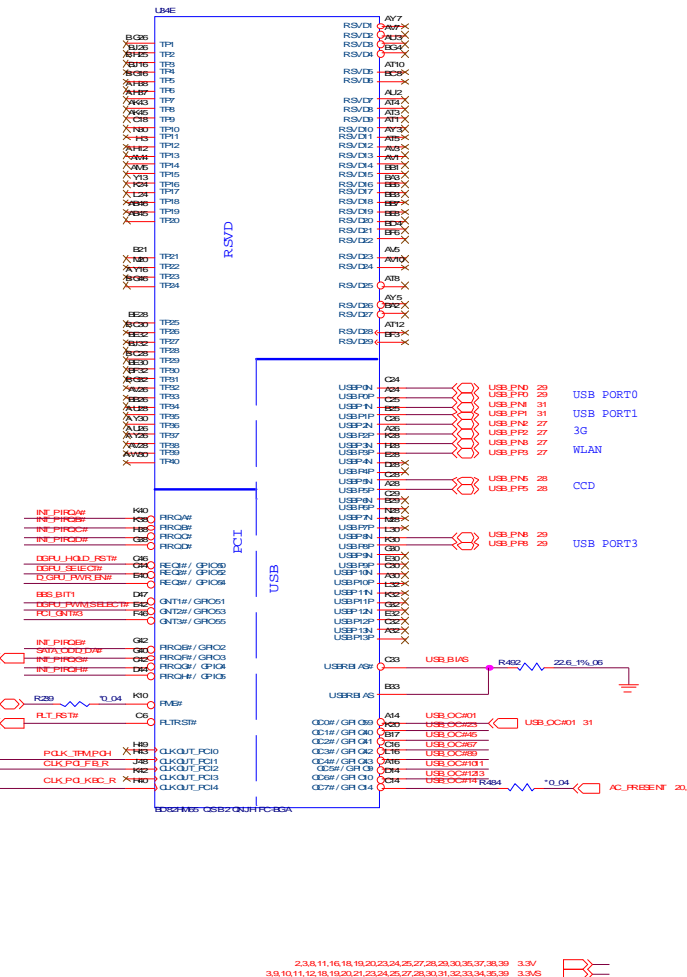
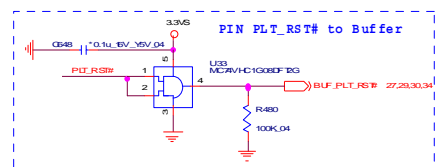
Boot BIOS Strap		
BBS_BIT1	BBS_BIT0	Boot BIOS Location
0	0	LPC
0	1	Reserved (NAND)
1	0	PCI
1	1	SPI



Flash Descriptor security override strap	
PCI_GNT#3	LOW = PCI_GNT#3 swap override HIGH = Default



MPC Switch Control  
MPC OFF -- 0 DEFAULT  
MPC ON -- 1

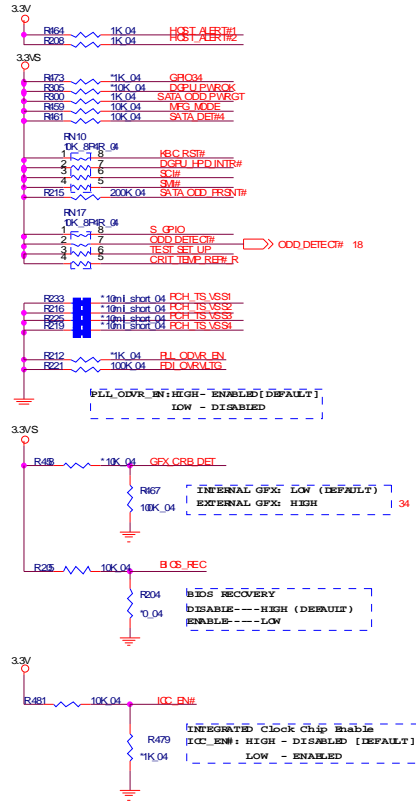


Sheet 22 of 49  
PCH 4/9- OCI, USB,  
RSVD

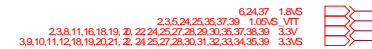
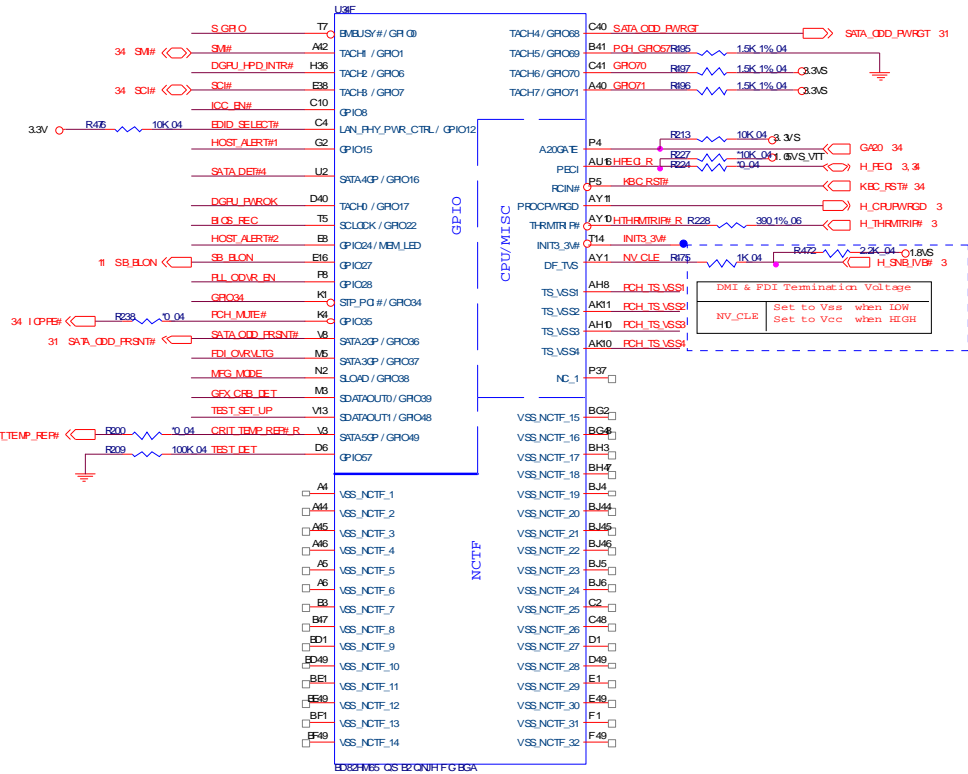
B.Schematic Diagrams

# PCH 6/9- GPIO, CPU

Sheet 23 of 49  
PCH 6/9- GPIO,  
CPU



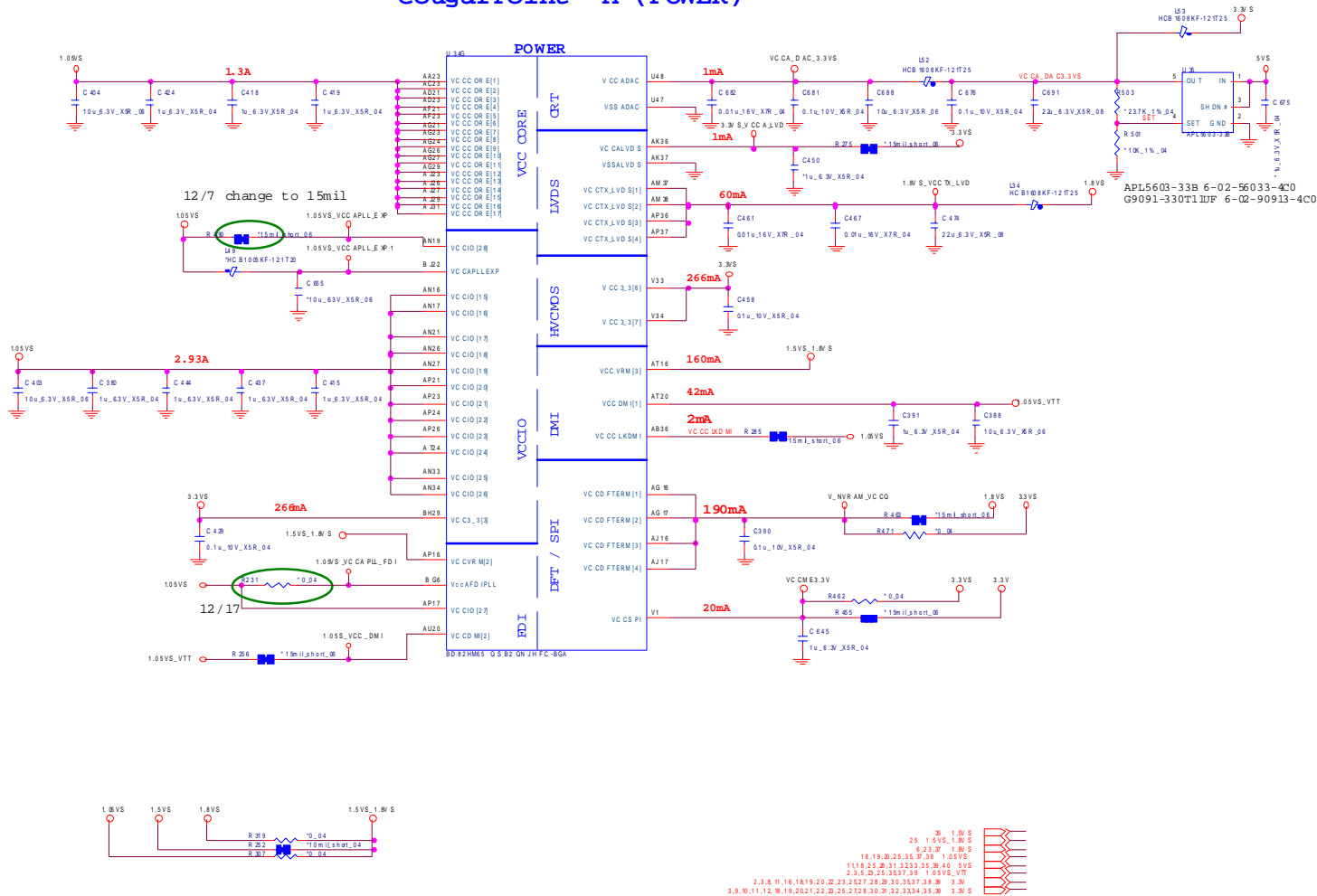
## CougarPoint - M (GPIO, VSS\_NCTF, RSVD)





# PCH 7/9- PWR

## CougarPoint -M (POWER)



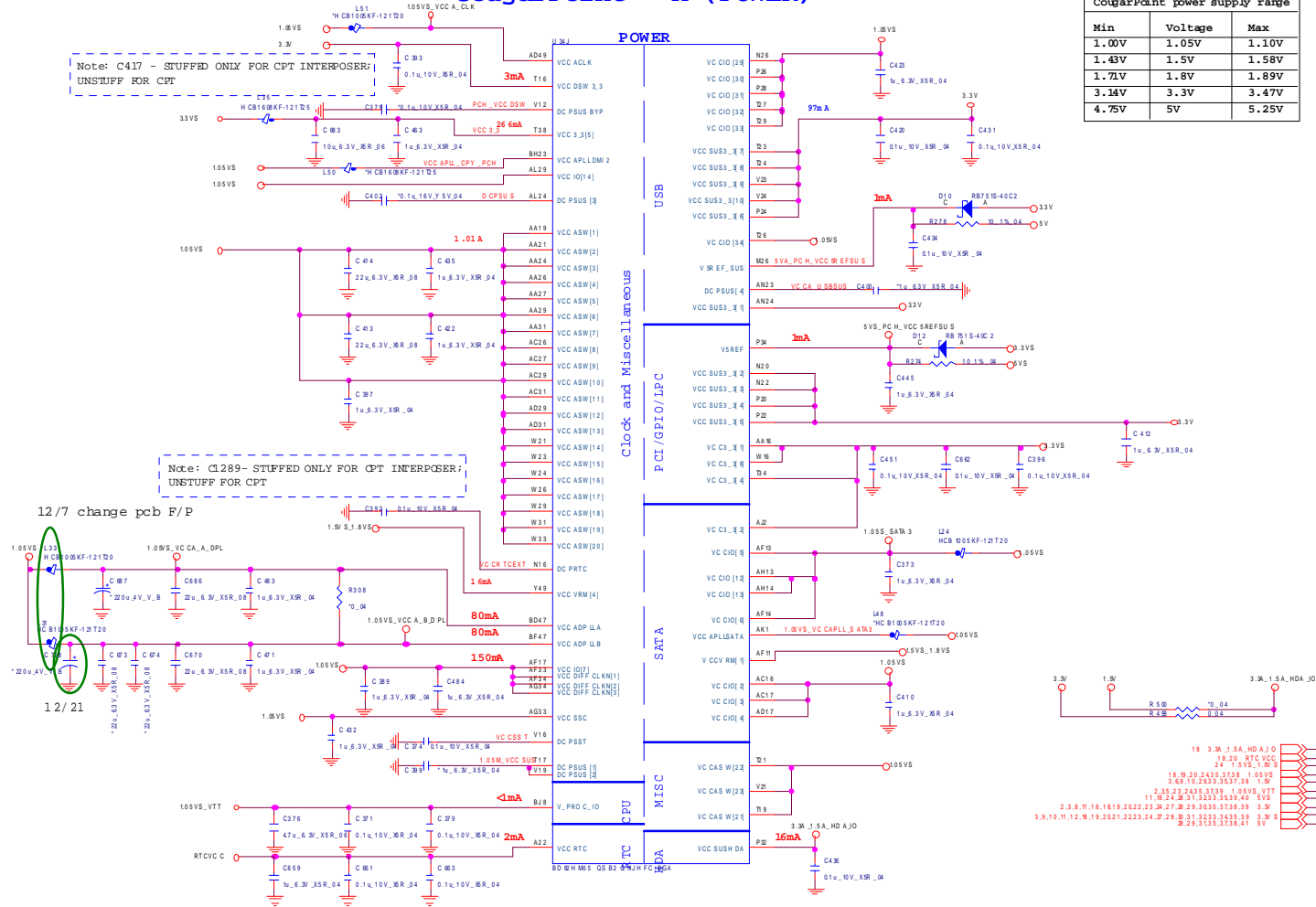
Sheet 24 of 49  
PCH 7/9- PWR

B.Schematic Diagrams

# PCH 8/9 POWER

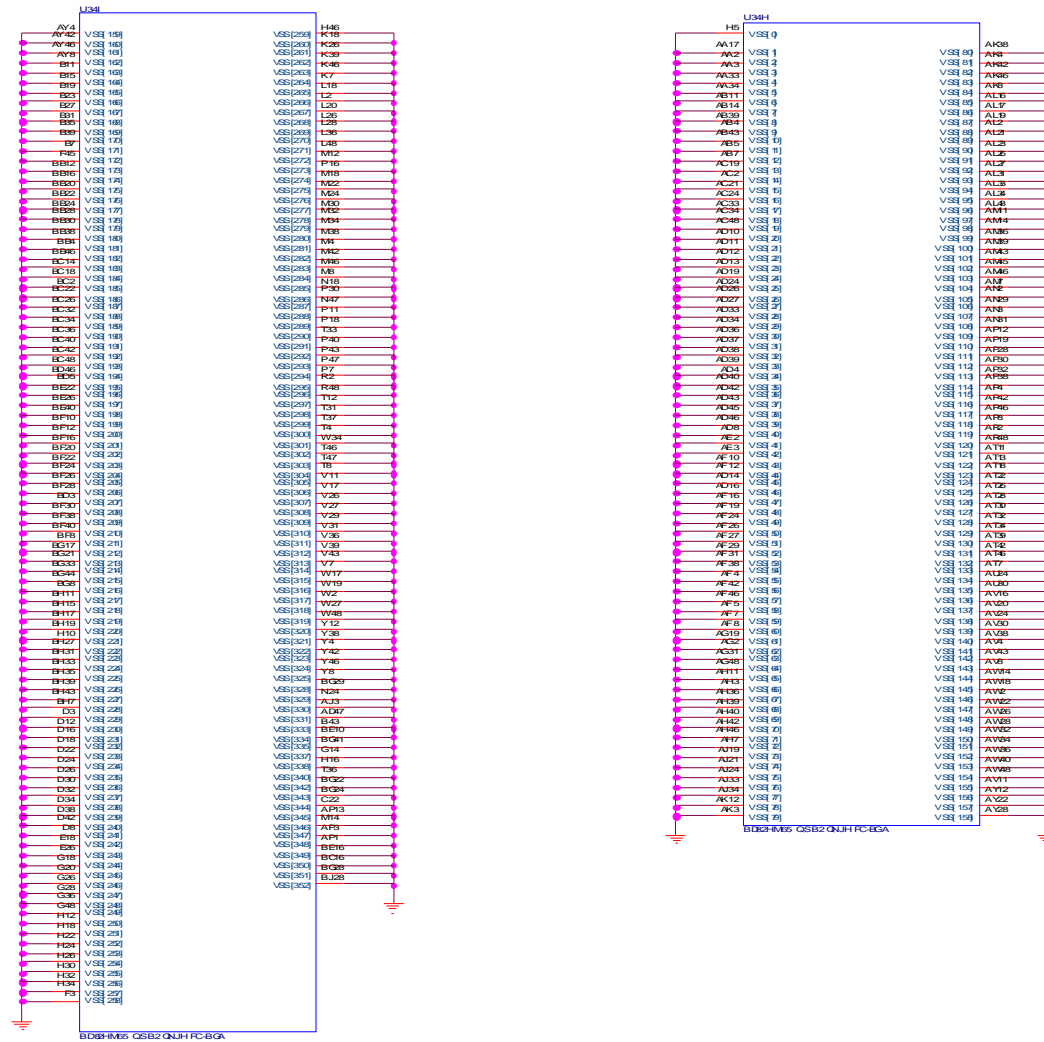
Sheet 25 of 49  
PCH 8/9 POWER

## CougarPoint - M (POWER)



# PCH 3/9- GRD

## CougarPoint -M (GND)



Voltage Rail	Voltage	SO	Iocmax	Current (A)
V_CPU_IO	1.05	1	1	1 (mA)
VREF	5			1 (mA)
Vcc3_Sus	5			1 (mA)
Vcc3_3	3.3			0.266
VccADAC3	1.05			1 (mA)
VccADPLLA	1.05			0.08
VccADPLLB	1.05			0.08
VccCore	1.05			1.3
VccDME	1.1			0.042
VccIO	1.05			2.925
VccASW	1.05			1.01
VccSEI	3.3			0.020
VccDSW3_3	3.3			2 (mA)
VccDPTERM	1.8			0.19
VccSus3_3	3.3			0.097
VccSusHDA	3.3			1 (mA)
VccVM	1.5			0.16
VccCKDMI	1.05			0.02
VccSSE	1.05			0.08
VccDFFCIKN	1.05			0.055
VccAUDS	3.3			1 (mA)
VccTX_LVDS	1.8			0.06

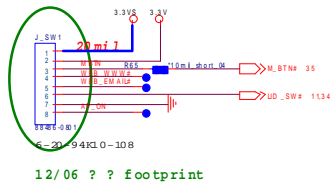
Sheet 26 of 49  
PCH 3/9- GRD

B.Schematic Diagrams



# CCD, TPM, MULTI CON

FOR POWER SW BOARD



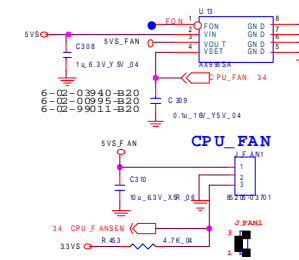
FOR OPTIMUS FUNCTION

12/14 DEL

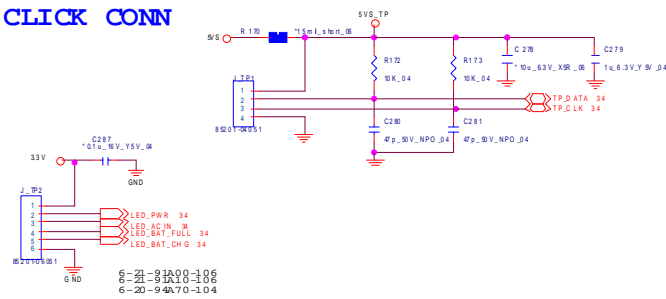
FOR TOUCH SENSOR BOARD

12/14 DEL

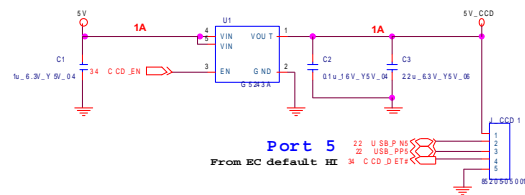
CPU FAN CONTROL



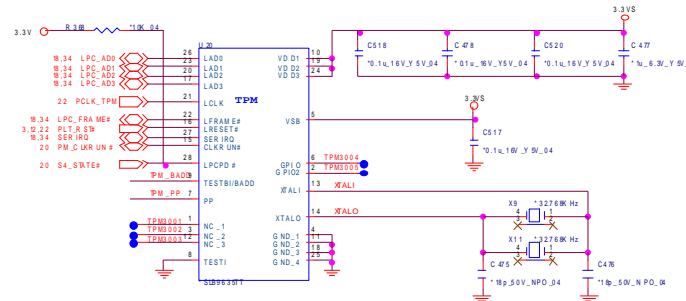
CLICK CONN



CCD



TPM 1.2



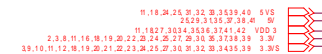
Assorted before entering S3

LPC reset timing:

LPCPD# inactive to LRST# inactive 32-96us

TRM\_PP HI: ACCESS  
LO: NORMAL (internal PD)

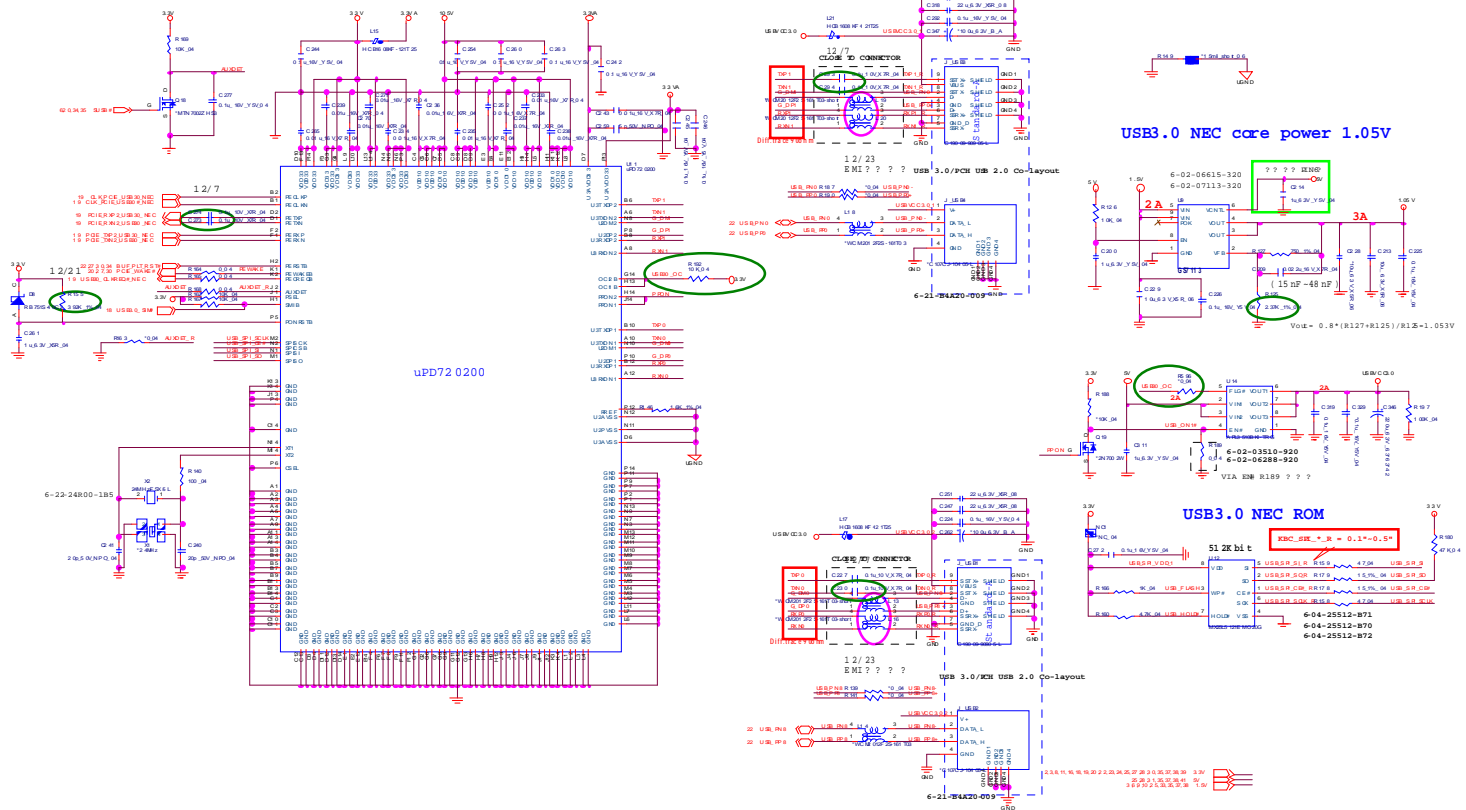
TRM\_BAD# HI: 4E/4FH  
LO: 2E/2FH



Sheet 28 of 49  
CCD, TPM, MULTI  
CON

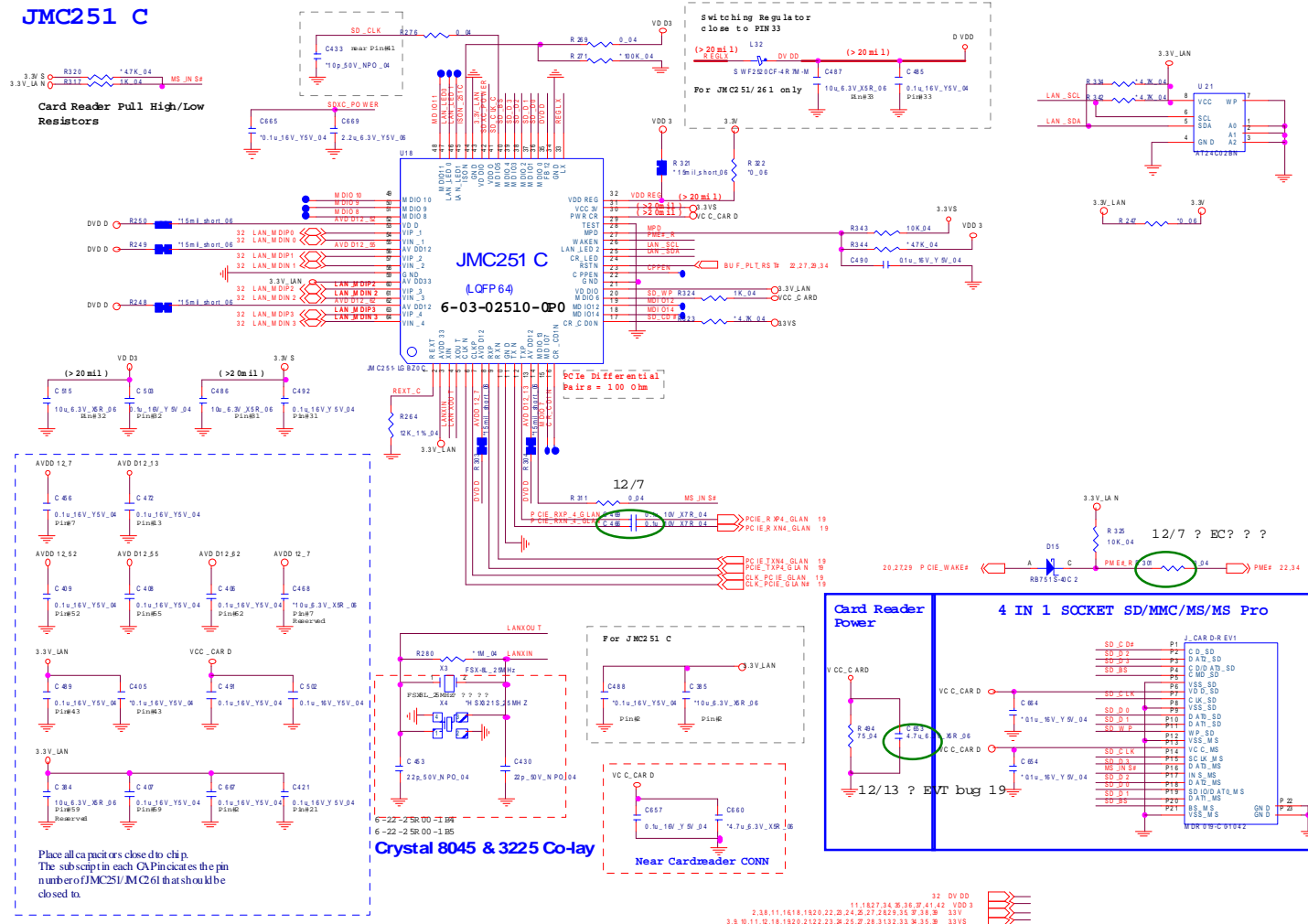
# USB2.0, USB3.0 NEC

Sheet 29 of 49  
USB2.0, USB3.0  
NEC





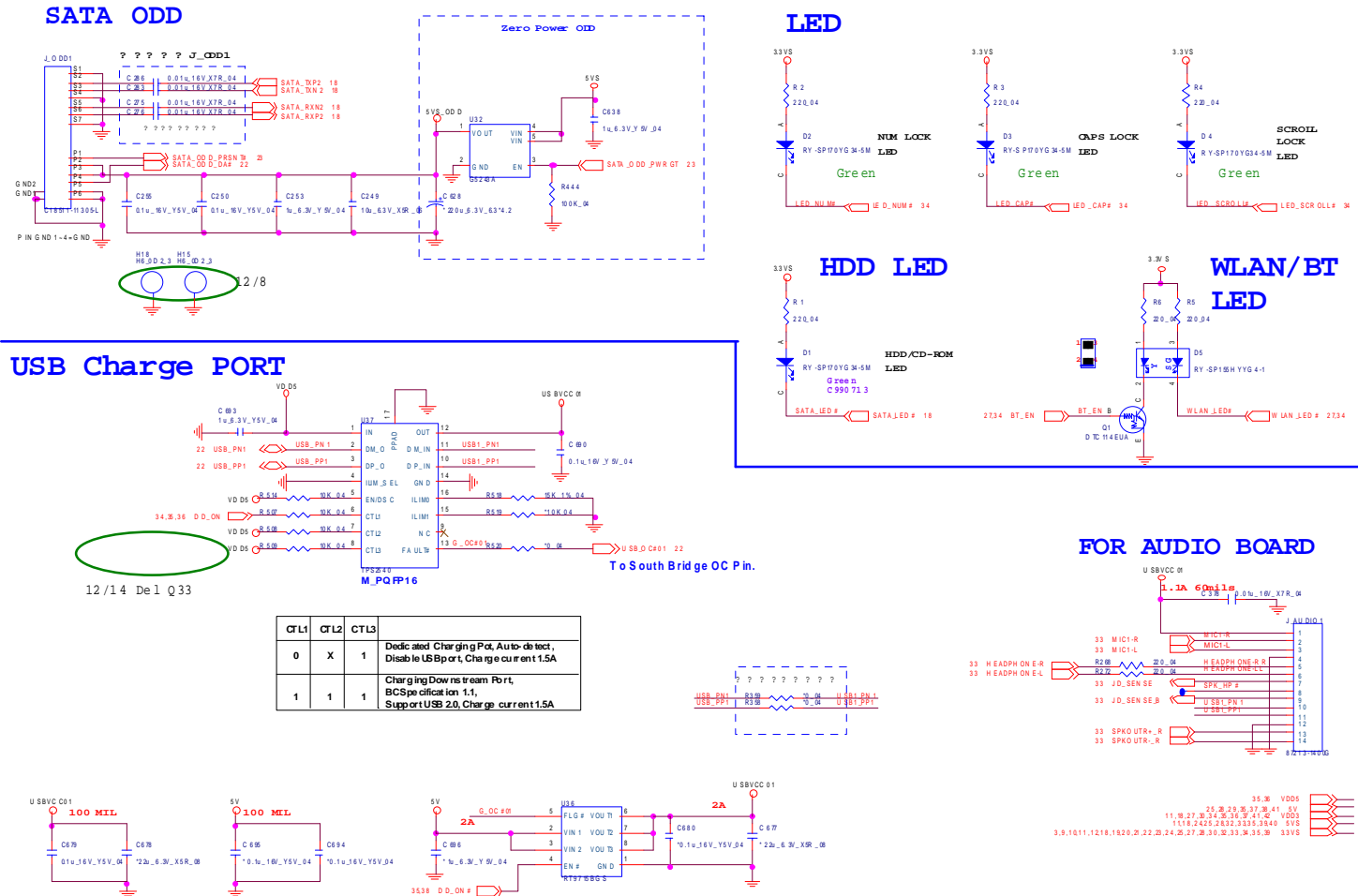
# Card Reader (JMC251 C)



Sheet 30 of 49  
Card Reader  
(JMC251 C)

# SATA ODD, LED, USB CHARGE

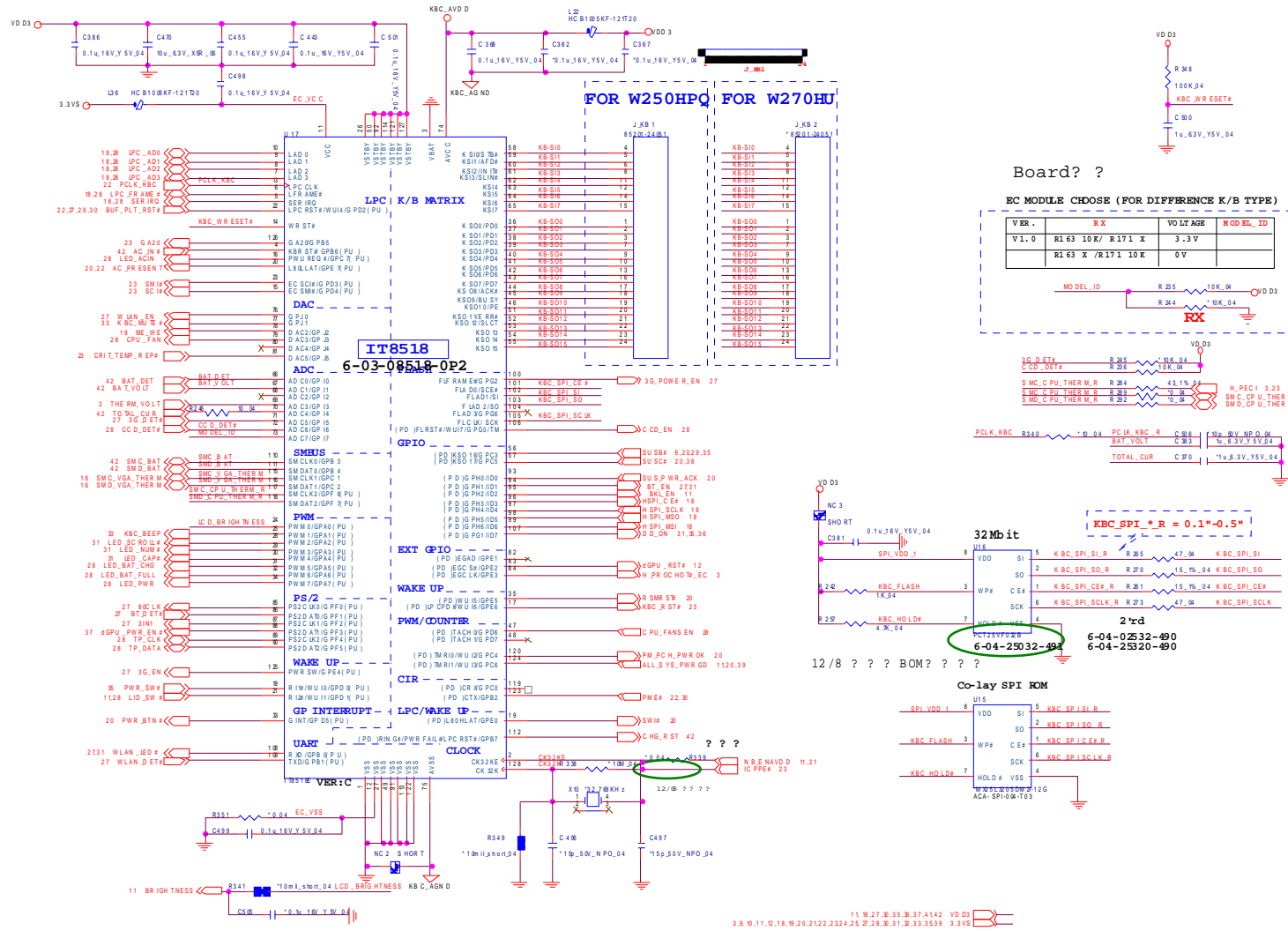
Sheet 31 of 49  
SATA ODD, LED,  
USB CHARGE







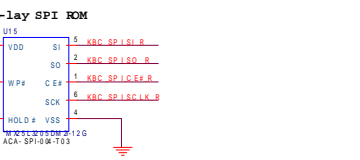
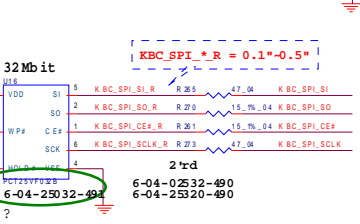
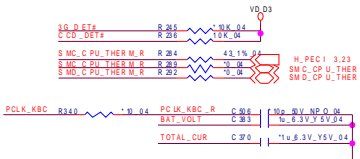
# KBC-ITE IT8518E



Board? ?

EC MODULE CHOOSE (FOR DIFFERENCE K/B TYPE)

V ER.	R X	VO LT AGE	MO DEL ID
V1.0	R1 63 10K/ R171 X	3.3V	
	R1 63 X /R171 10K	0V	



Sheet 34 of 49  
KBC-ITE IT8518E

B.Schematic Diagrams



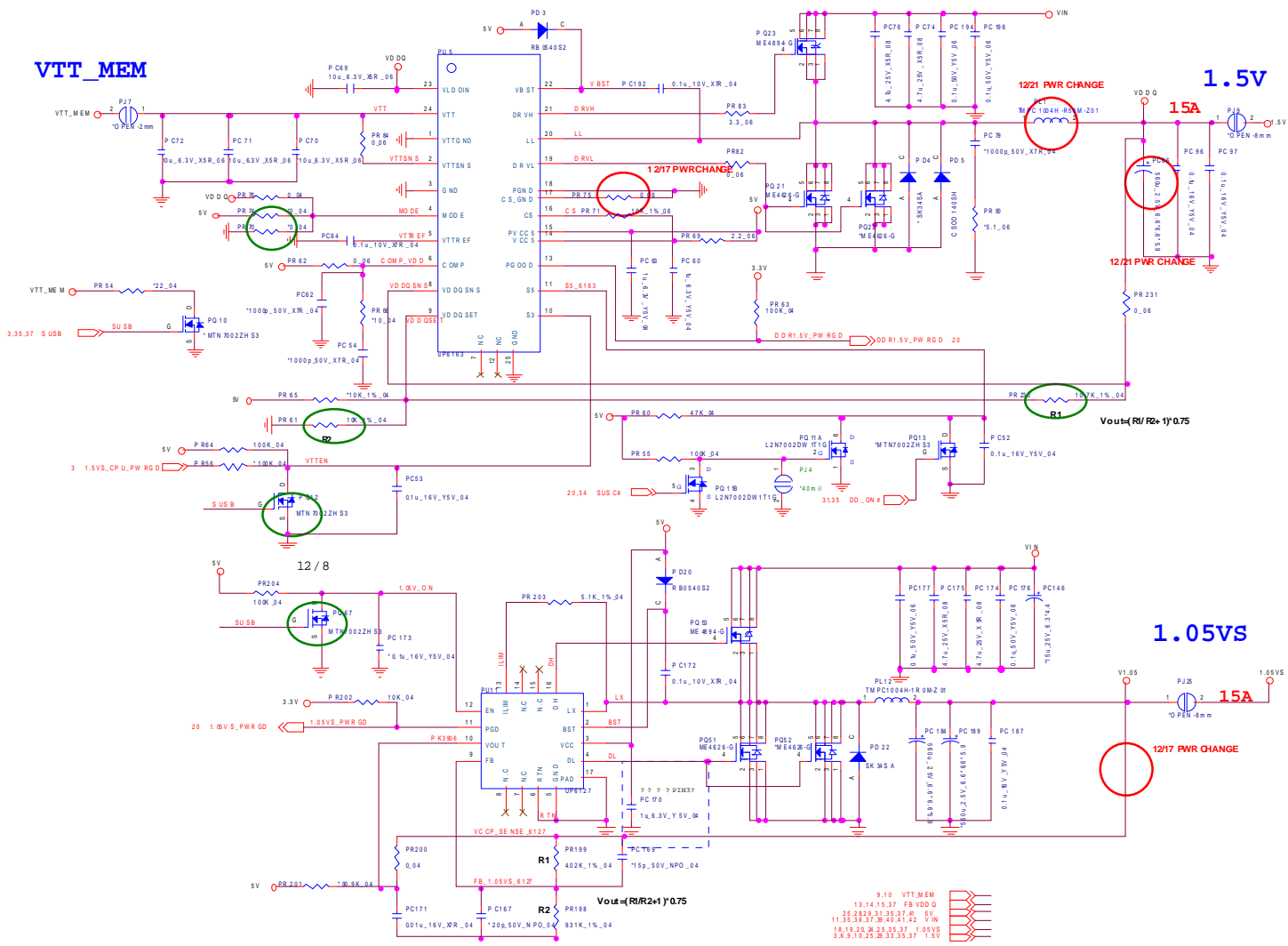






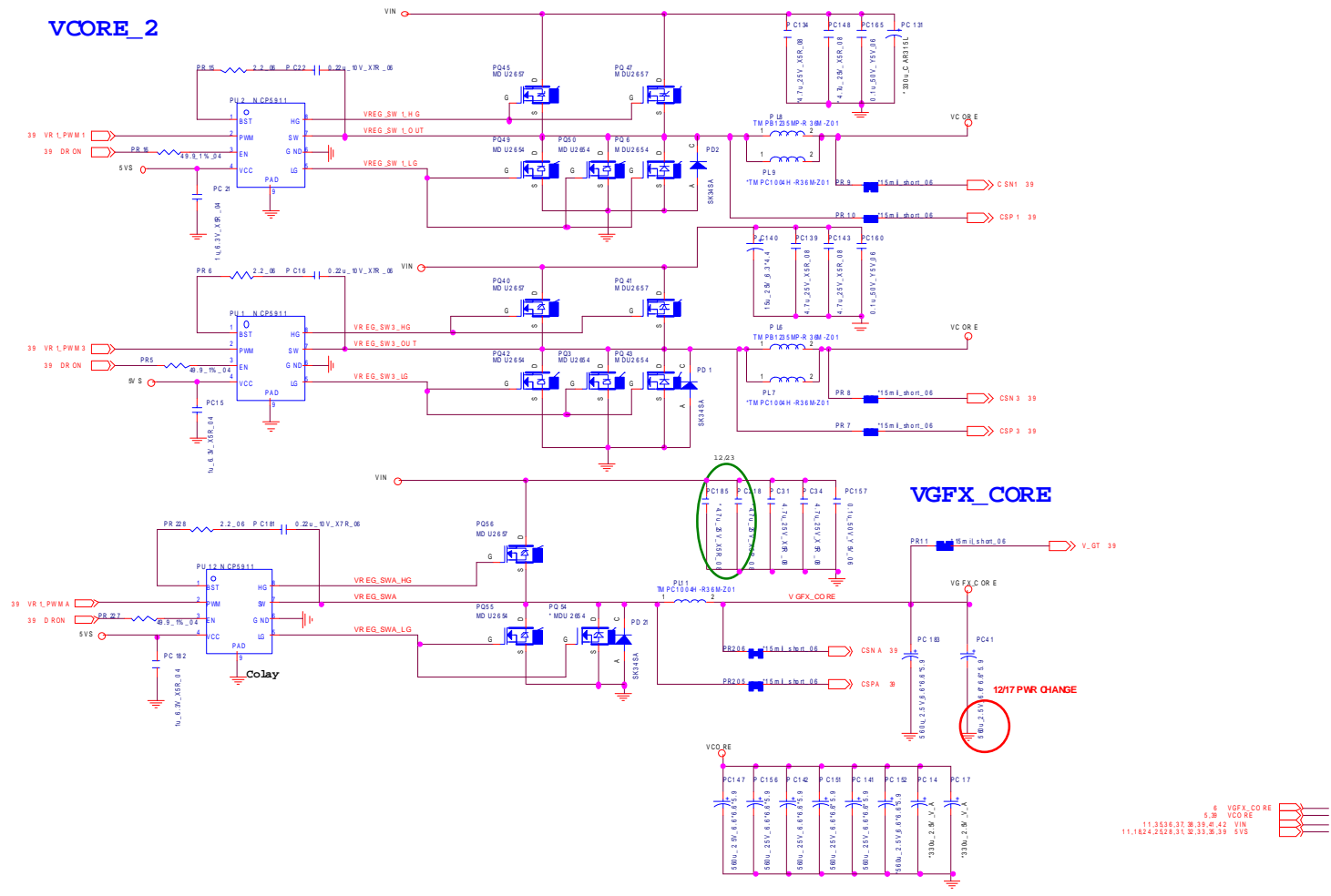
# POWER 1.5V/1.05VS/0.75V

Sheet 38 of 49  
POWER 1.5V/  
1.05VS/0.75V





# POWER VCORE2



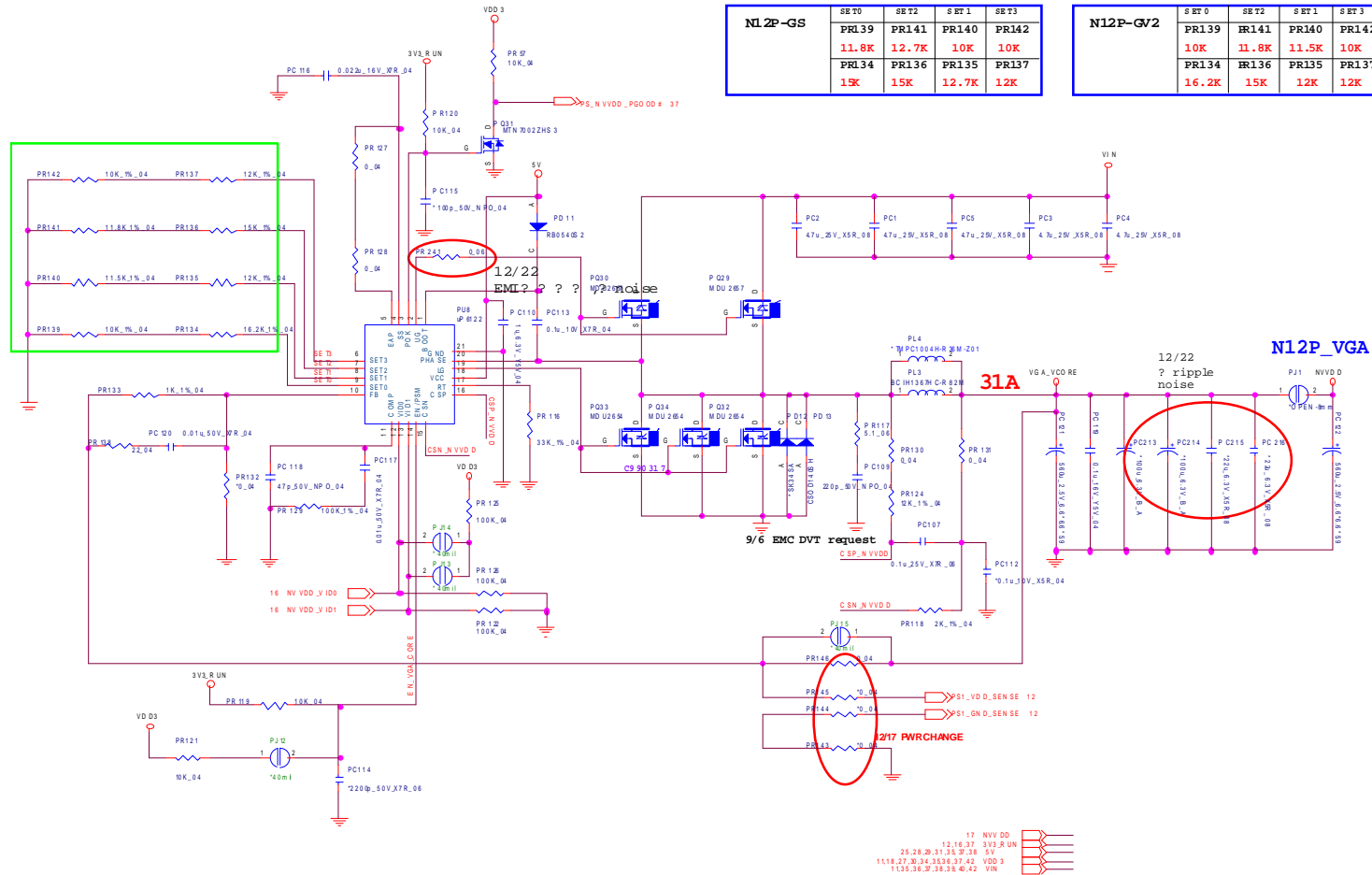
Sheet 40 of 49  
POWER VCORE2

B.Schematic Diagrams

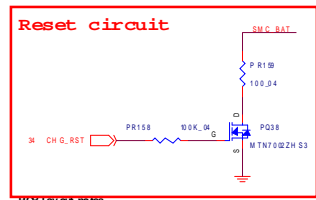
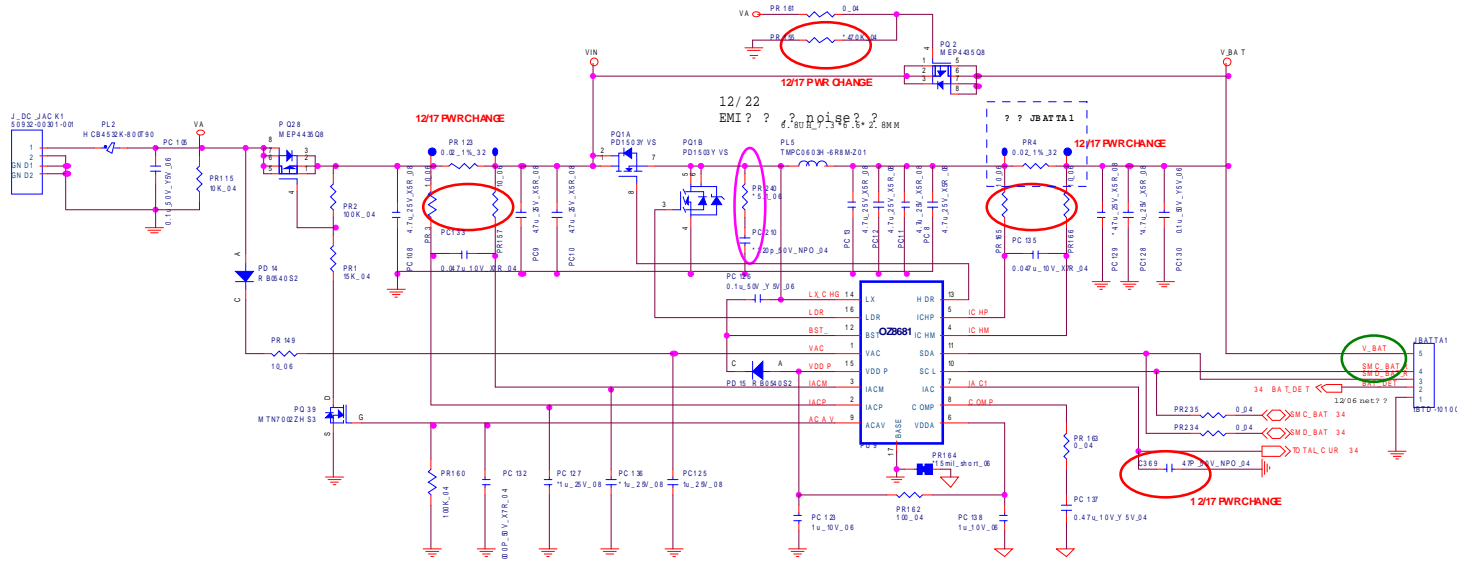
# Schematic Diagrams

## Power VGA NVVDD

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Power VGA NVVDD

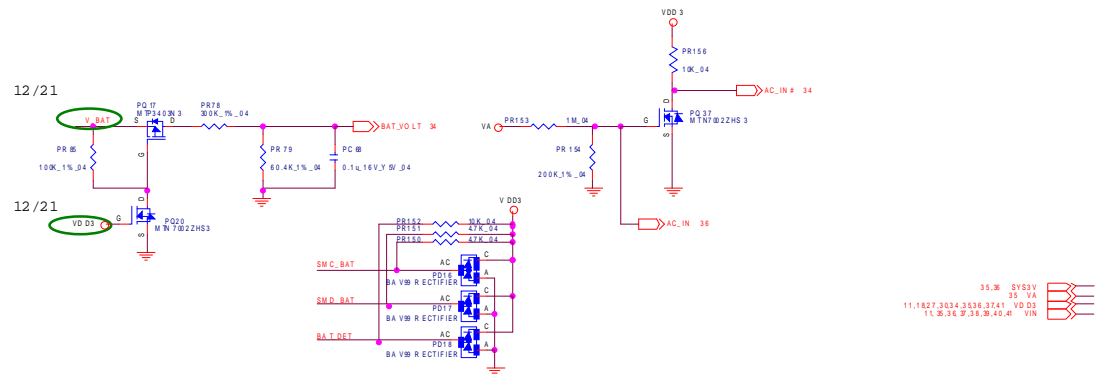


# AC IN, CHARGER



PC05 Lay out notes

- 1) All power traces should be routed on the outer layers GND, VAD, VSYS, LX, V0G, VBATT
- 2) Use Kelvin connections for R3, R4 (separate force and measurement traces)
- 3) R23 and R24 are dummy resistors, for layout purposes only (serve as single point connection between GND & GND4)
- 4) Footprint TO236 is equivalent to SOT-23
- 5) Footprint SIP1P is a single hole axial pad
- 6) All resistors, capacitors and semiconductors are SMD
- 7) Resistor meters, and test points are axial devices

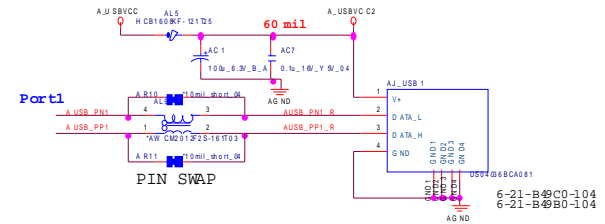


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AC IN, CHARGER

B.Schematic Diagrams

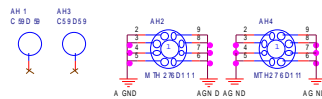
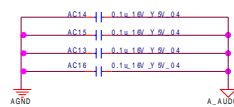
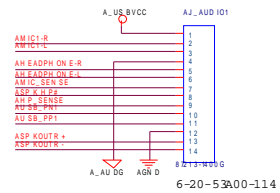
# AUDIO BOARD

## USB PORT

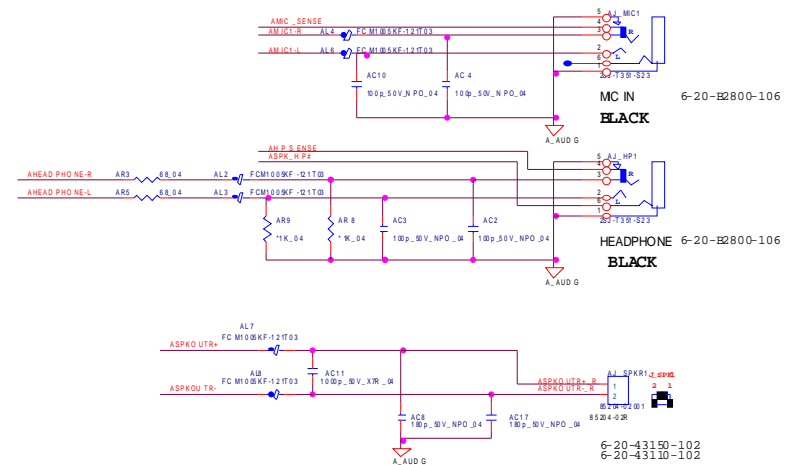


## TO M/B

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AUDIO BOARD



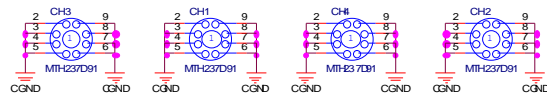
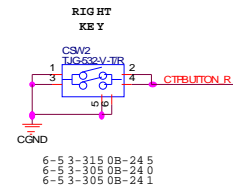
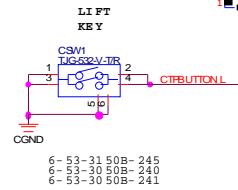
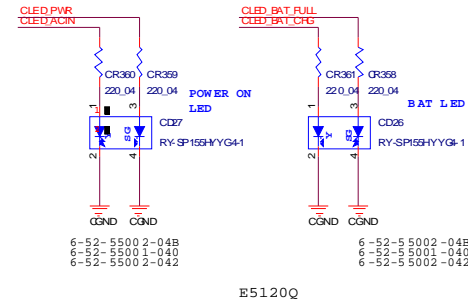
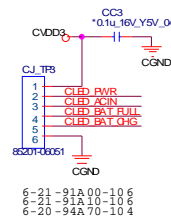
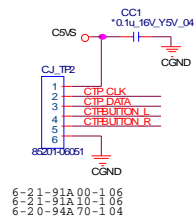
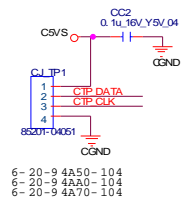
## AUDIO JACK





# CLICK BOARD

## CLICK BOARD

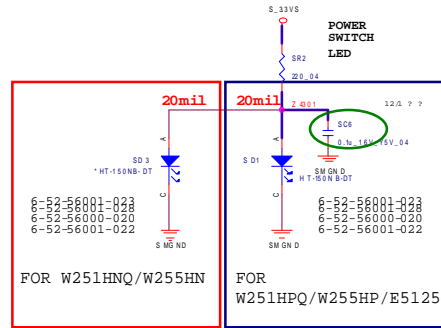
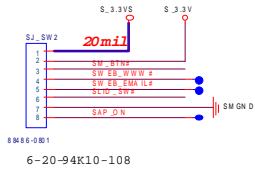


Sheet 44 of 49  
CLICK BOARD

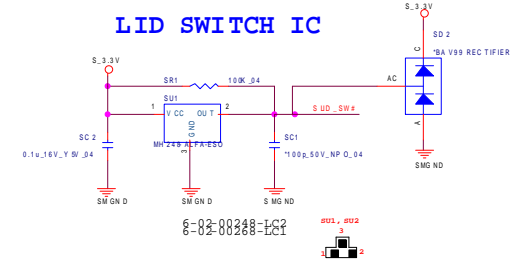
# Schematic Diagrams

## W251HPQ POWER SW BOARD

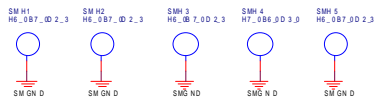
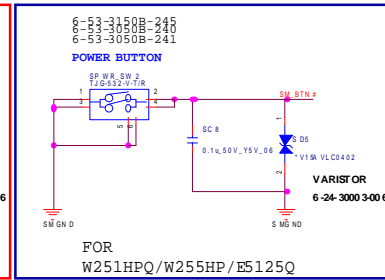
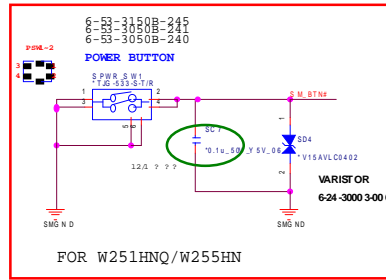
### POWER SW & LED



### LID SWITCH IC

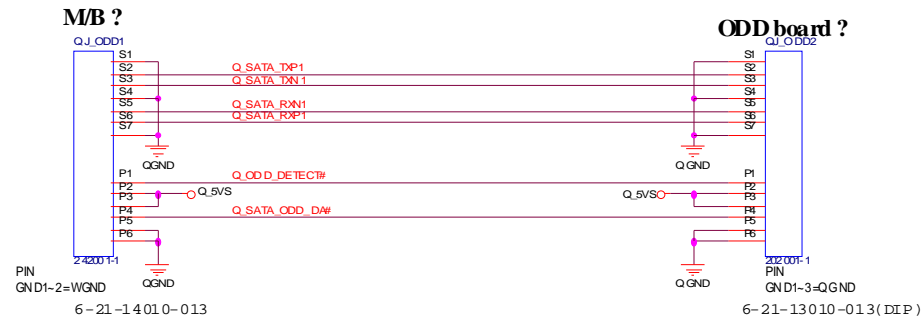


Sheet 45 of 49  
W251HPQ POWER SW BOARD

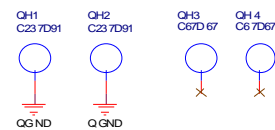
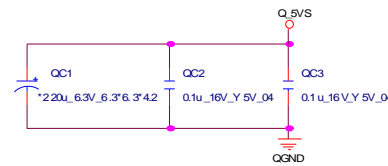


# W270HU BRIDGE ODD BOARD

## ODD BOARD FOR W270HU

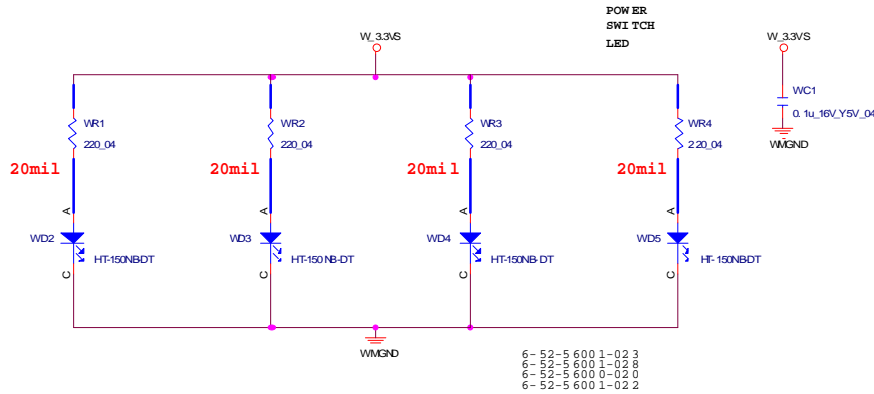


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 W270HU BRIDGE  
 ODD BOARD

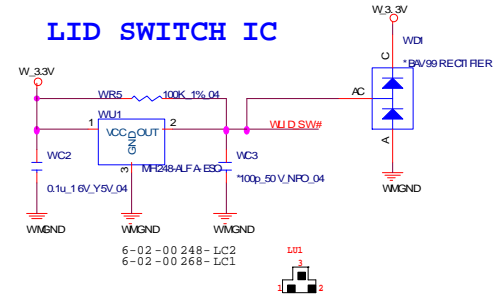


# W270HU POWER SW BOARD

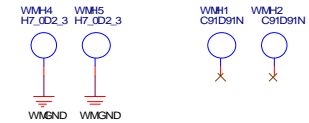
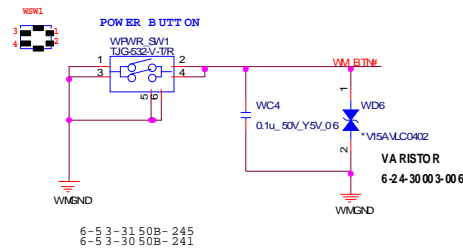
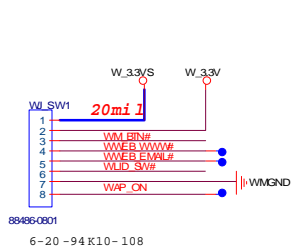
## POWER SW & LED



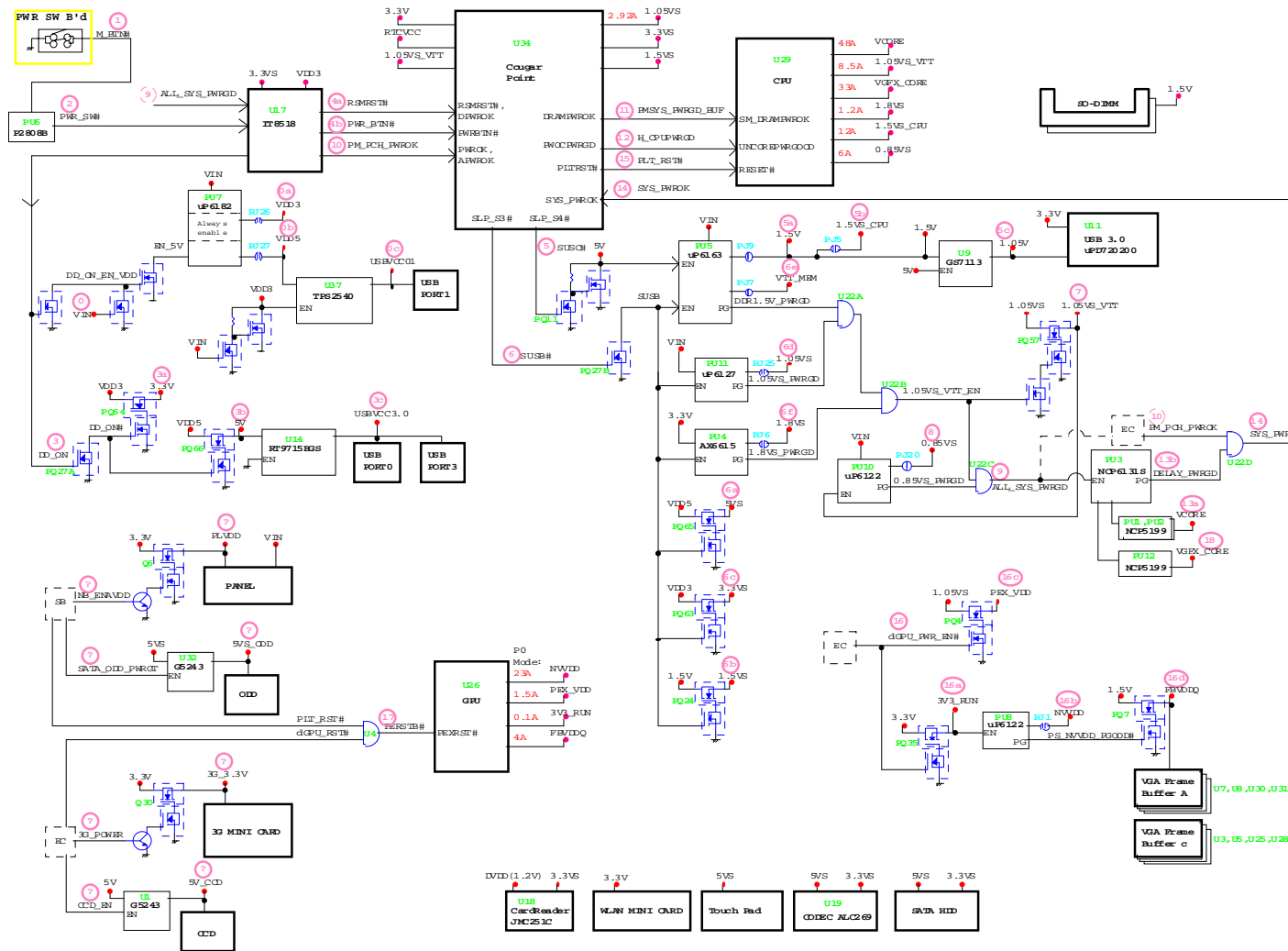
## LID SWITCH IC



Sheet 47 of 49  
W270HU POWER  
SW BOARD



# Power Diagram

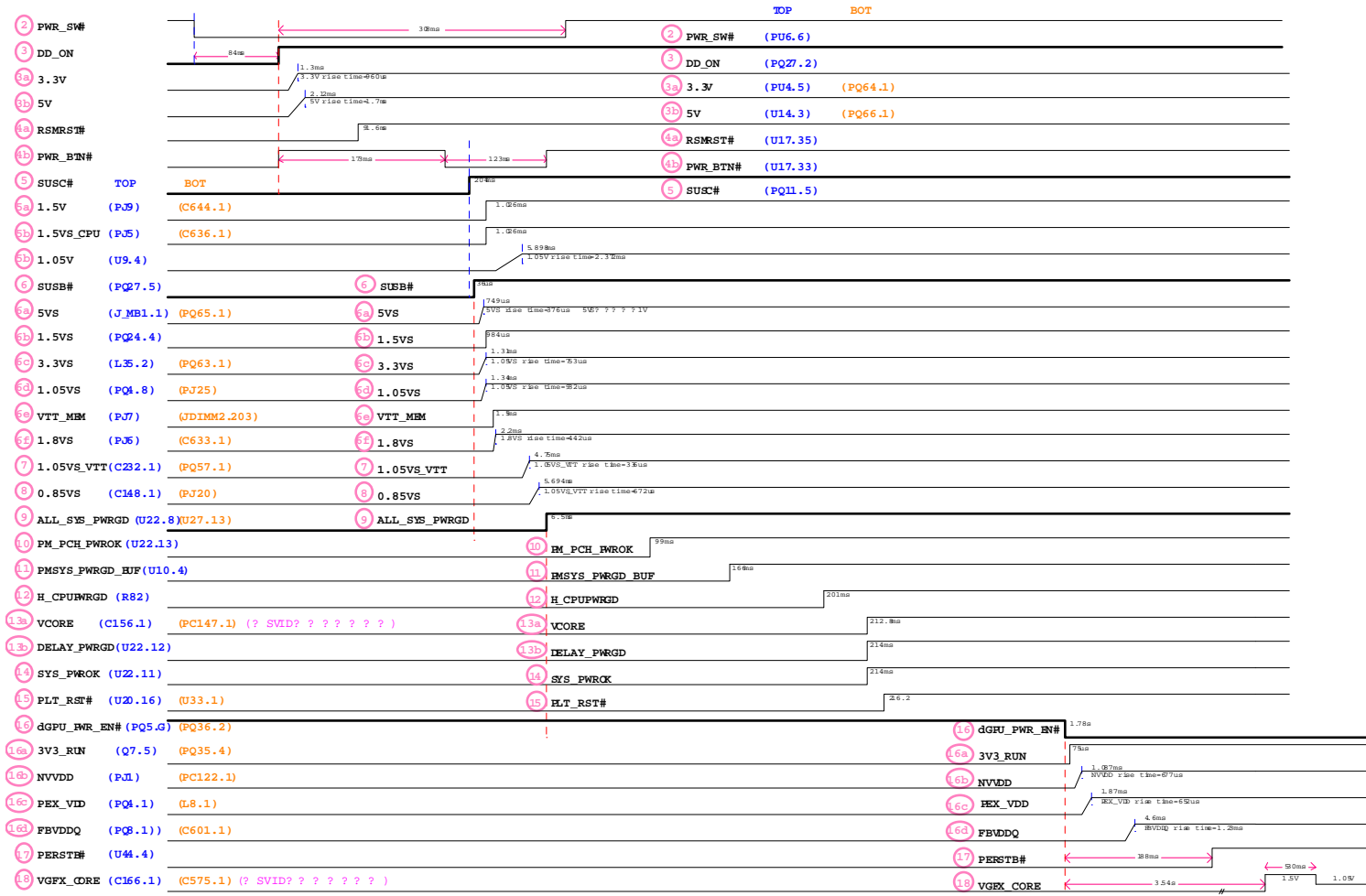


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Power Diagram

B.Schematic Diagrams

# Power On SEQ

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Power On SEQ



# 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.

[www.s-manuals.com](http://www.s-manuals.com)