



W150HRM / W150HRQ
SERVICE
MANUAL

Notebook Computer
W150HRM / W150HRQ
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 *W150HRM* / *W150HRQ* 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, 6.3A (**120W**) 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.

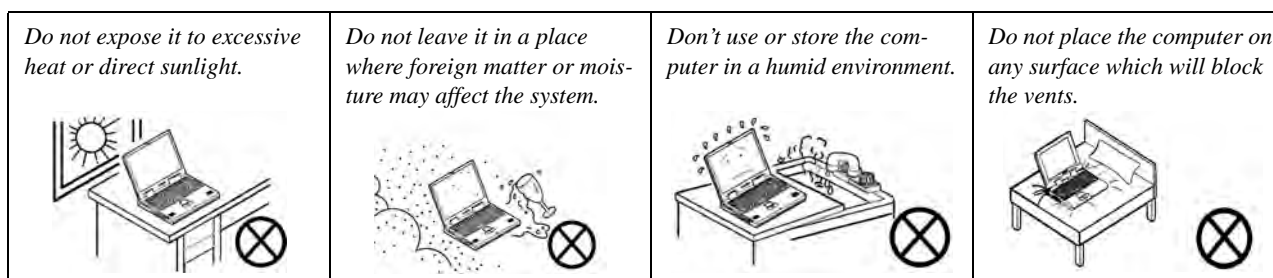
Instructions for Care and Operation

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

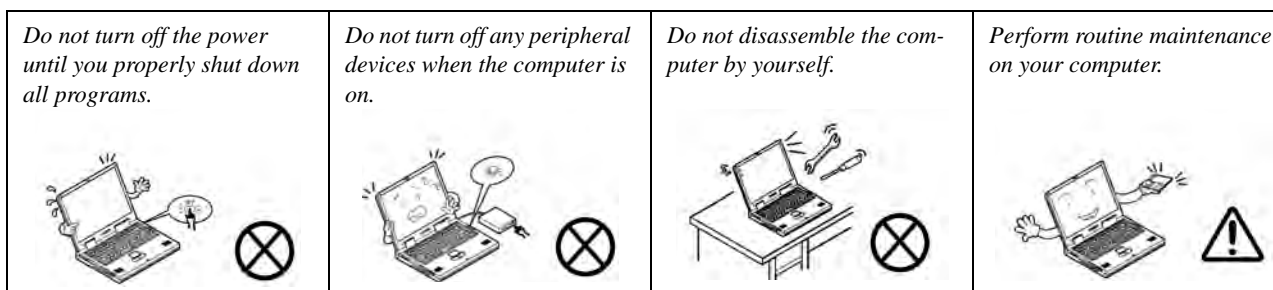
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



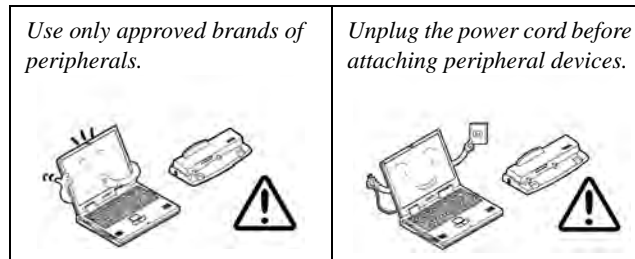
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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.



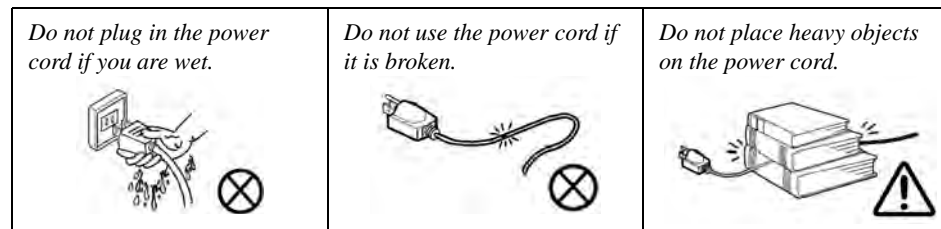
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



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 rear of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not 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/
Computer with AC/DC
Adapter Plugged-In**



Shut Down

Note that you should always shut your computer down by choosing **Shut Down** from the **Start** Menu.

This will help prevent hard disk or system problems.

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **W150HRM / W150HRQ** 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 **W150HRM / W150HRQ** 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® Pentium Dual-Core Processor

B950 (2.10GHz), B940 (2.00GHz)

2MB L3 Cache, 32nm, DDR3-1333MHz, TDP 35W

Core Logic

Intel® HM65 Chipset

BIOS

One 32Mb SPI Flash ROM

Phoenix™ BIOS

LCD

15.6" (39.62cm) HD/ HD+/ FHD LCD

Video Adapter

Intel® GMA HD and NVIDIA® GeForce GT 555M

Supports NVIDIA® Optimus Technology

Intel Integrated GPU (Intel® GMA HD):

Microsoft DirectX®10.1 Compatible

NVIDIA Discrete GPU (NVIDIA® GeForce GT 555M):

2GB GDDR3 Video RAM

Microsoft DirectX®11 Compatible

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.)

Security

BIOS Password

Security (Kensington® Type) Lock Slot

(**Factory Option**) Fingerprint Reader (**Model A Only**)

Audio

High Definition Audio Compliant Interface

THX TruStudio Pro

2 * Built-In Speakers

Built-In Microphone

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" 9.5 mm (h) **SATA** (Serial) HDD

Interface

Two USB 2.0 Ports
 Two USB 3.0 Ports
 One eSATA Port
 One HDMI-Out Port
 One Headphone-Out Jack
 One Microphone-In Jack
 One S/PDIF Out Jack
 One RJ-45 LAN Jack
 One External Monitor Port
 One DC-in Jack

Communication

Built-In Gigabit Ethernet LAN
 (Factory Option) 1.3M/2.0M Pixel USB PC Camera Module
 (Factory Option) 3.75G/HSPA Mini-Card 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) Intel® Centrino® Ultimate-N 6300 Wireless LAN (802.11a/g/n)
 (Factory Option) Third-Party Wireless LAN (802.11b/g/n) + Bluetooth 3.0
 (Factory Option) Third-Party Wireless LAN (802.11b/g/n)

Keyboard

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

Pointing Device

Built-in Touchpad (scrolling key functionality integrated)

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 Slots

Slot 1 for **WLAN** Module or **WLAN and Bluetooth** Combo Module
 (Factory Option) Slot 2 for **3.75G/HSPA** 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, 6.3A (120W)
 6 Cell Smart Lithium-Ion Battery Pack, 48.84WH
 (Factory Option) 6 Cell Smart Lithium-Ion Battery Pack, 62.16WH

Dimensions & Weight

374mm (w) * 250mm (d) * 25 - 40.2mm (h)
 2.6kg with ODD & 48.84WH Battery

Introduction

External Locator - Top View with LCD Panel Open

Figure 1
Top View

1. PC Camera
(Optional)
2. LCD
3. Power Button
4. GPU Button
5. LED Indicators
6. Hot Key Buttons
7. Keyboard
8. Built-In
Microphone
9. Touchpad &
Buttons
10. Fingerprint
Reader



External Locator - Front & Right Side Views

FRONT VIEW



Figure 2
Front View
1. LED Indicators

RIGHT SIDE VIEW



Figure 3
Right Side View
1. Headphone-Out Jack
2. Microphone-In Jack
3. S/PDIF-Out Jack
4. USB 2.0 Port
5. Optical Device Drive Bay
6. Emergency Eject Hole

Introduction

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. External Monitor Port
2. RJ-45 LAN Jack
3. HDMI-Out Port
4. USB 2.0 Port
5. 2 * USB 3.0 Ports
6. Vent
7. eSATA Port
8. Multi-in-1 Card Reader

LEFT SIDE VIEW

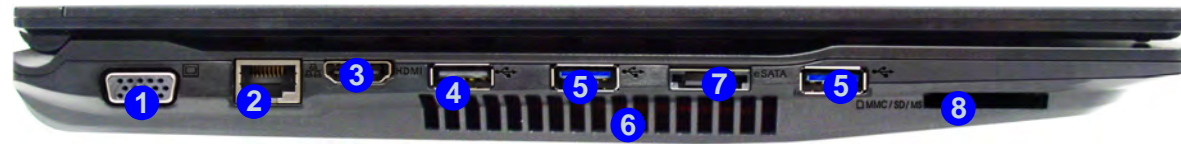


Figure 5
Rear View

1. Security Lock Slot
2. Battery
3. DC-In Jack

REAR VIEW



External Locator - Bottom View

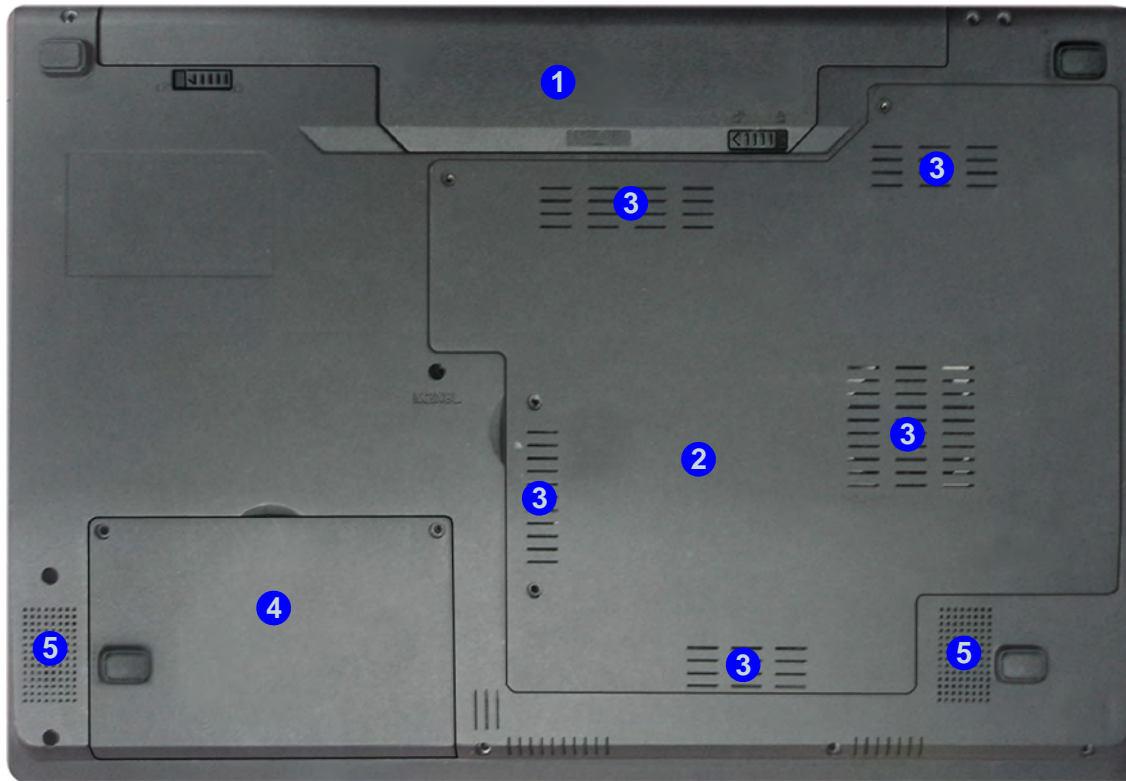


Figure 6
Bottom View

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


Overheating

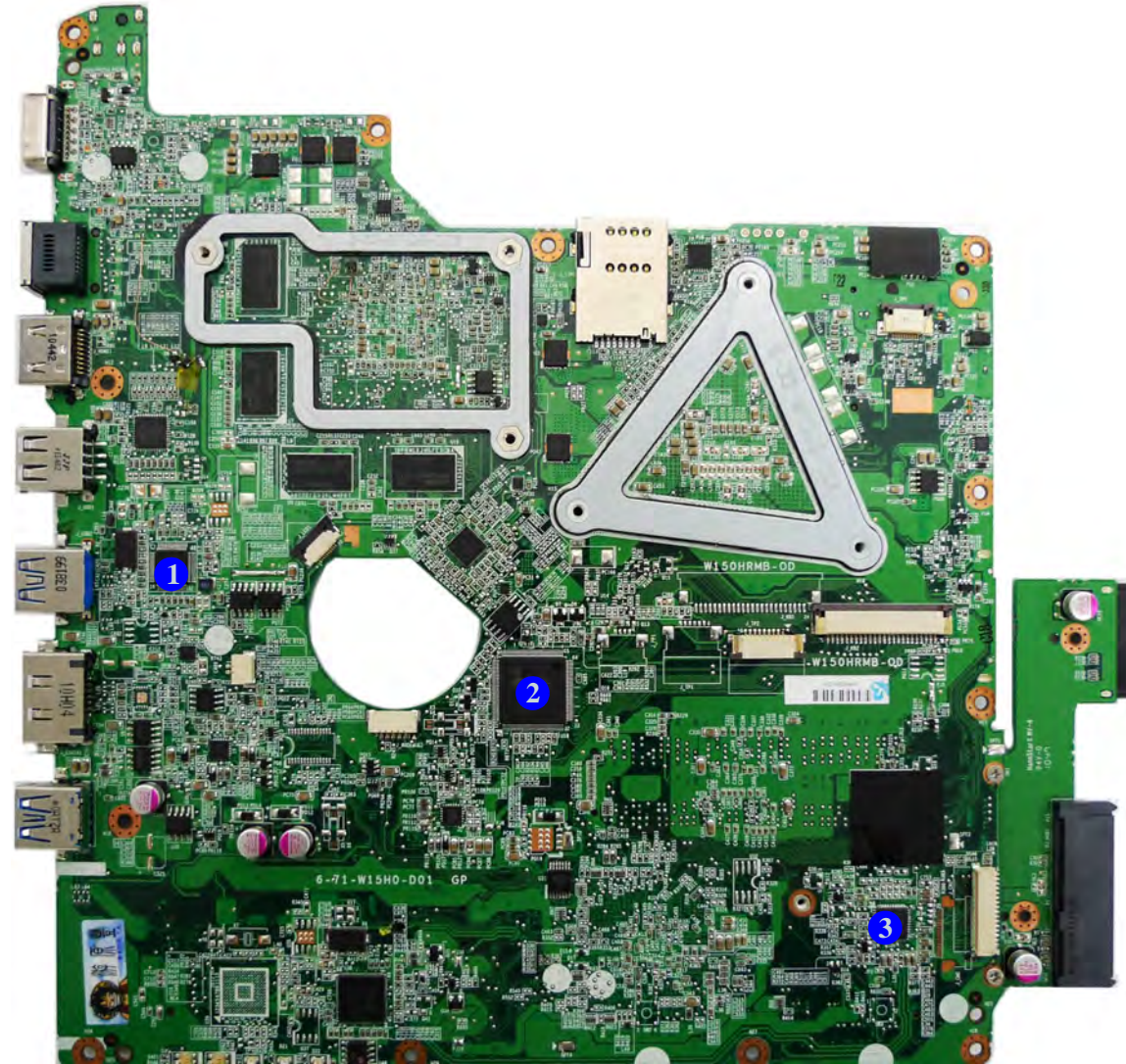
To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

Introduction

Figure 7
Mainboard Top
Key Parts

1. JMC251C
2. KBC-ITE IT8502E
3. Audio Codec

Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

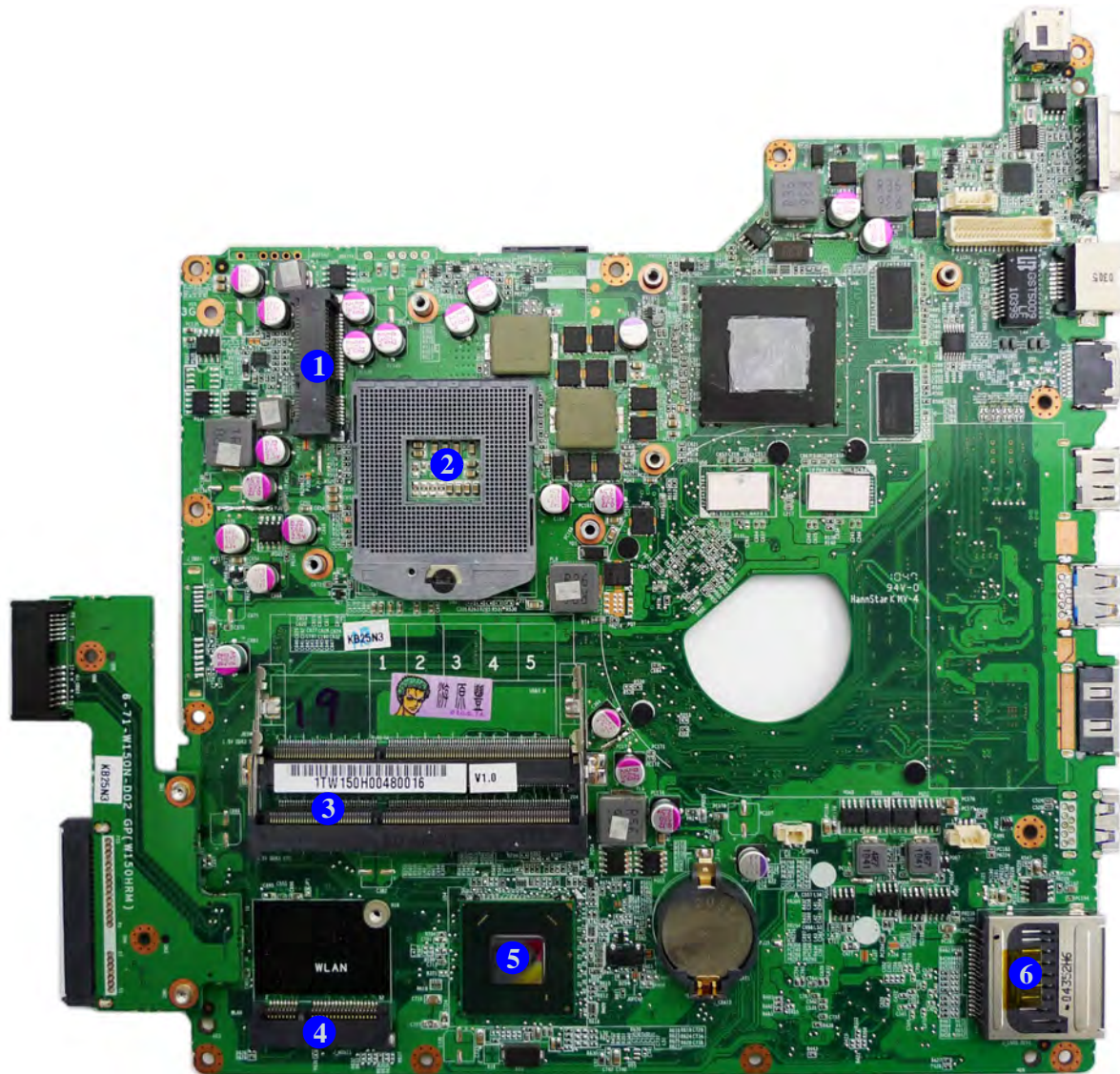


Figure 8
**Mainboard Bottom
Key Parts**

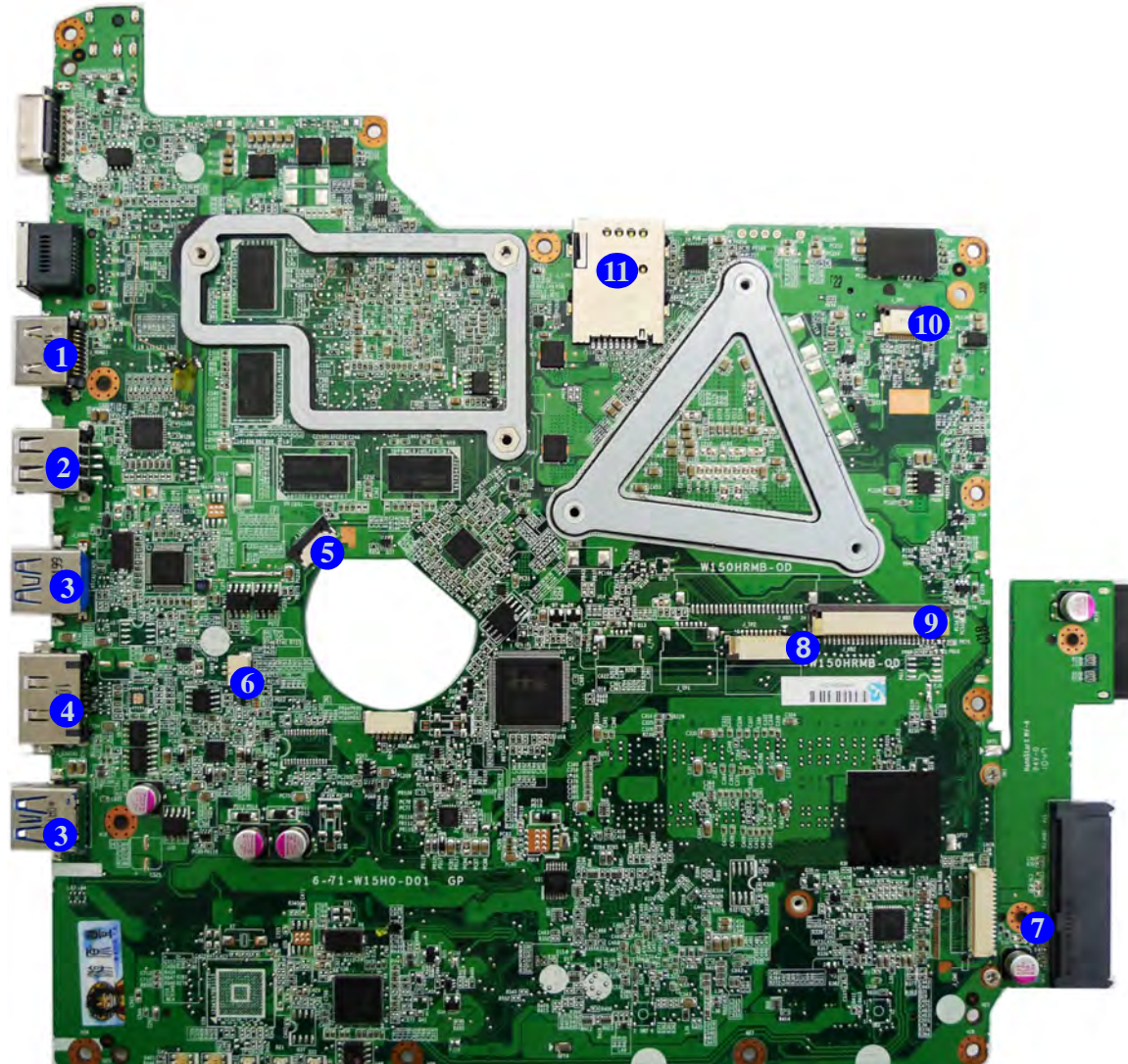
1. Mini-Card Connector (3.5G Module)
2. CPU Socket (no CPU installed)
3. Memory Slots (DDR3 SO-DIMM)
4. Mini-Card Connector (WLAN Module)
5. Controller Hub
6. Multi-in-1 Card Reader

Introduction

Mainboard Overview - Top (Connectors)

Figure 9
**Mainboard Top
Connectors**

1. HDMI-Out Port
2. USB 2.0 Port
3. USB 3.0 Ports
4. eSATA Port
5. LED Cable Connector
6. Microphone Cable Connector
7. Audio Cable Connector
8. TouchPad Cable Connector
9. Keyboard Cable Connector
10. Switch Board Cable Connector
11. USIM Card



Mainboard Overview - Bottom (Connectors)

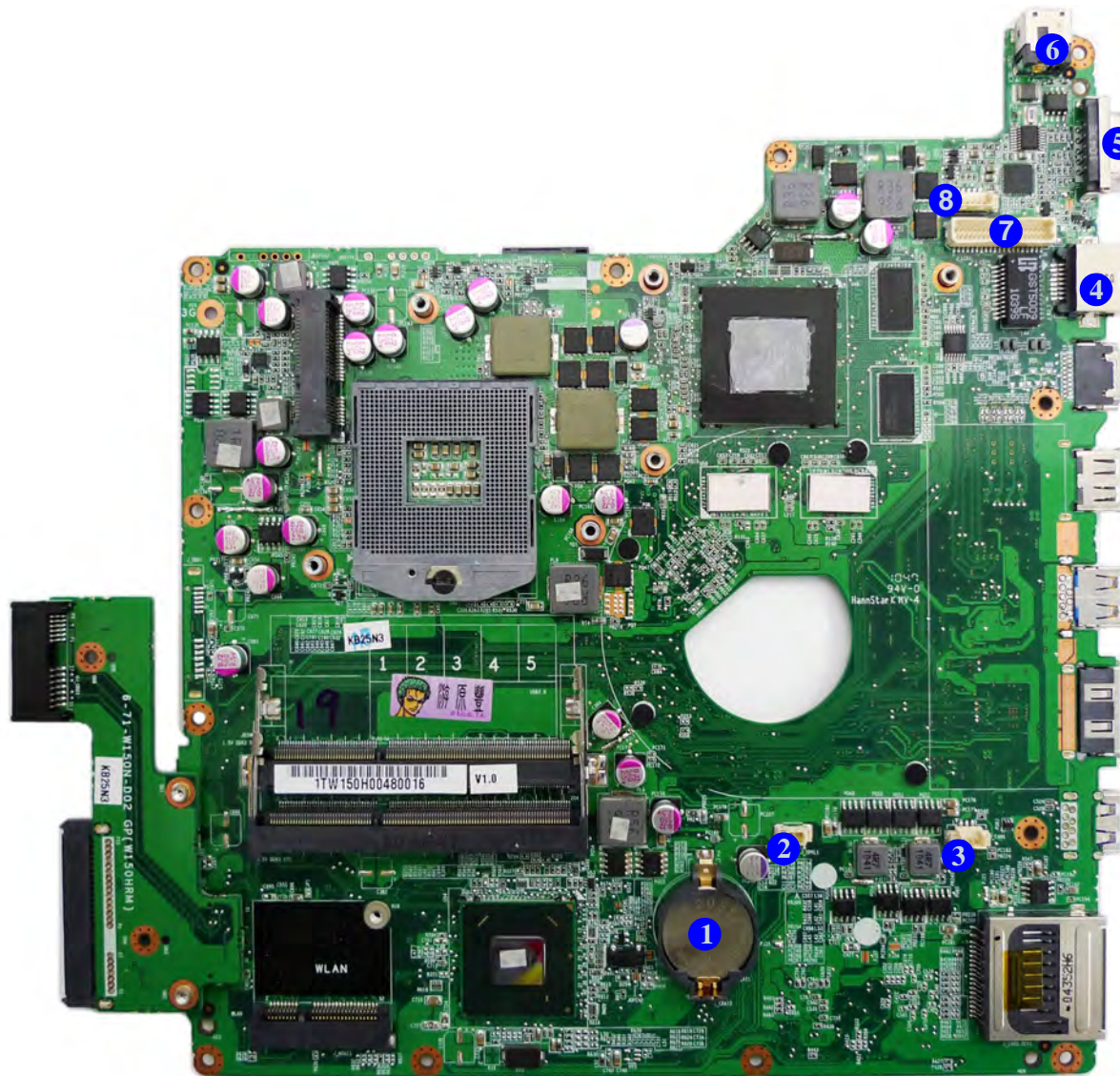


Figure 10
**Mainboard Bottom
Connectors**

1. CMOS Battery
2. Speaker Cable Connector
3. CPU Fan Cable Connector
4. RJ-45 LAN Jack
5. External Monitor Port
6. DC-In Jack
7. LCD Cable Connector
8. CCD Cable Connector


Chapter 2: Disassembly



Overview

This chapter provides step-by-step instructions for disassembling the *W150HRM / W150HRQ* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

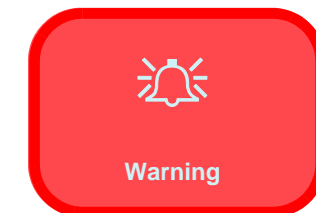
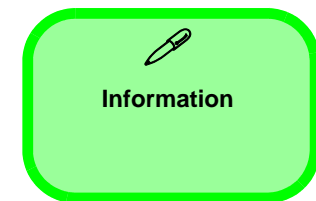
We suggest you completely review any procedure before you take the computer apart.

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 3G Module:

1. Remove the battery *page 2 - 5*
2. Remove the 3G module *page 2 - 14*

To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the WLAN module *page 2 - 15*

To remove the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 16*

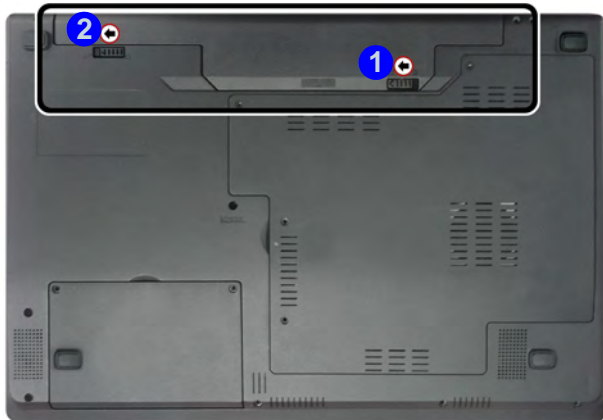
To remove the LCD Back Cover:

1. Remove the battery *page 2 - 5*
2. Remove the LCD back cover *page 2 - 17*

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*).

a.



b.

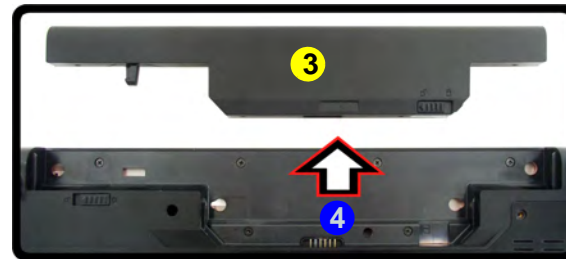
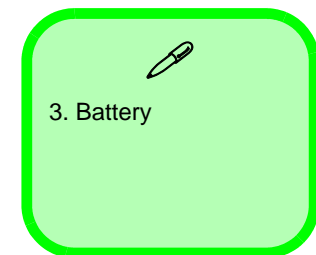


Figure 1
Battery Removal

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



Removing the Hard Disk Drive

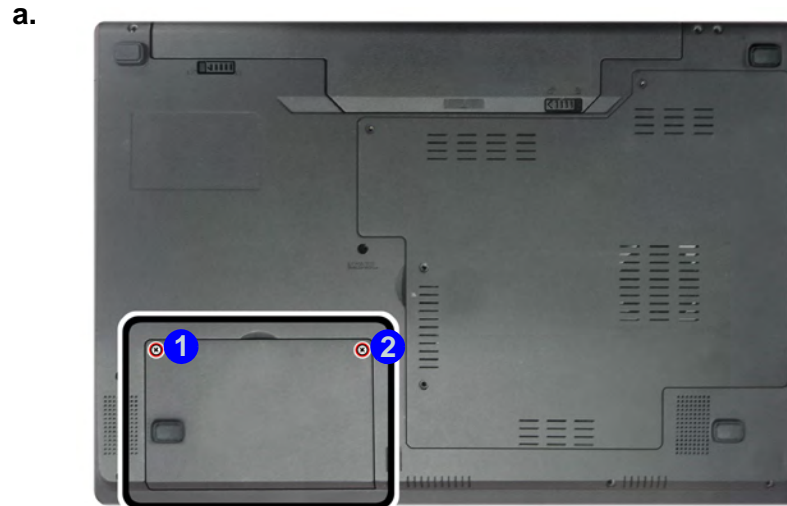
Figure 2
**HDD Assembly
Removal**

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.

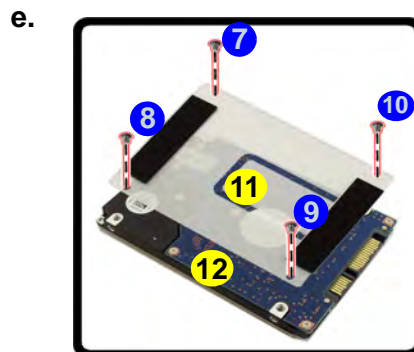
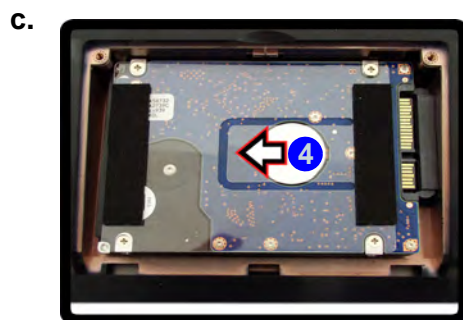
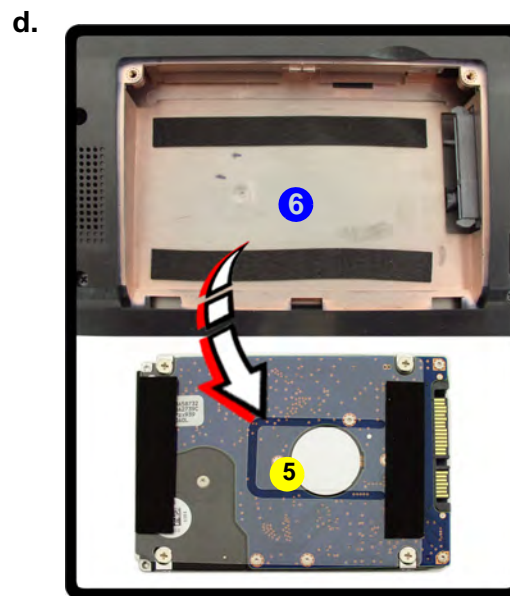
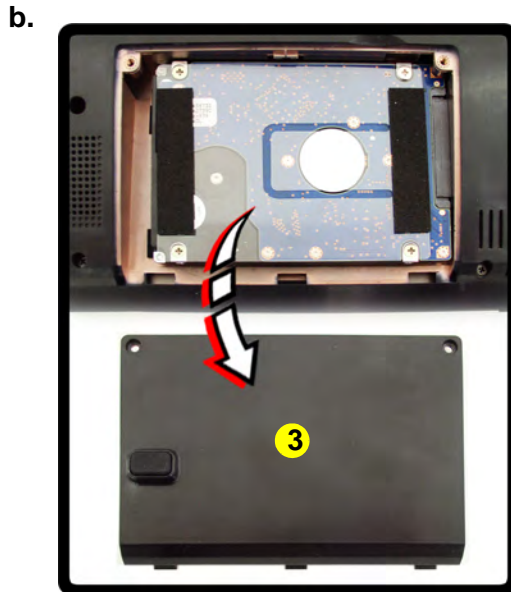


- 2 Screws

3. Remove the hard disk bay cover **3** (*Figure 3b*).
4. Grip the tab and slide the hard disk in the direction of arrow **4** (*Figure 3c*).
5. Lift the hard disk assembly **5** out of the bay **6** (*Figure 3d*).
6. Remove the screw **7** - **10** and the mylar cover **11** from the hard disk **12** (*Figure 3e*).
7. 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.)

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





- 3. HDD Bay Cover
- 5. HDD Assembly
- 11. Mylar Cover
- 12. HDD

- 4 Screws

Disassembly

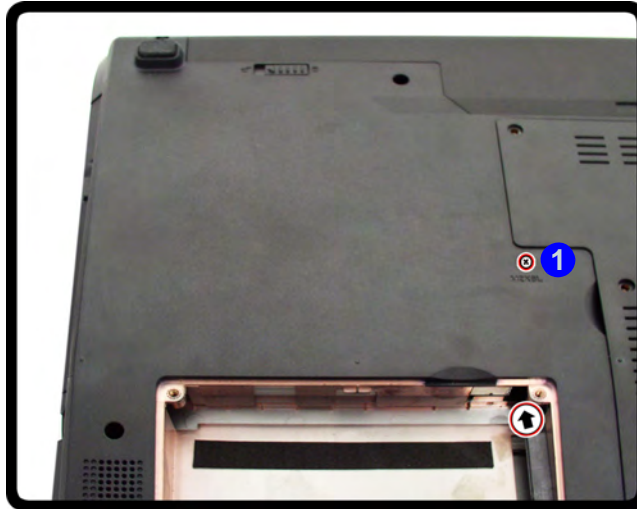
Figure 4 Optical Device Removal

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

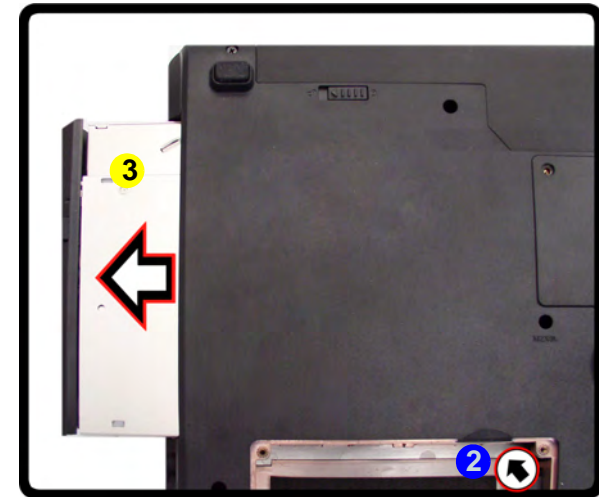
Removing the Optical (CD/DVD) Device

- 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.

a.



b.



3. Optical Device

- 1 Screw

Removing the System Memory (RAM)

The computer has two memory sockets for 200 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDRIII (DDR3) Up to 1333/1600MHz. 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 ([Figure 5a](#)).
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 **5**, and remove the cover ([Figure 5b](#)).
5. The RAM modules will be visible at point **6** on the mainboard ([Figure 5b](#)).

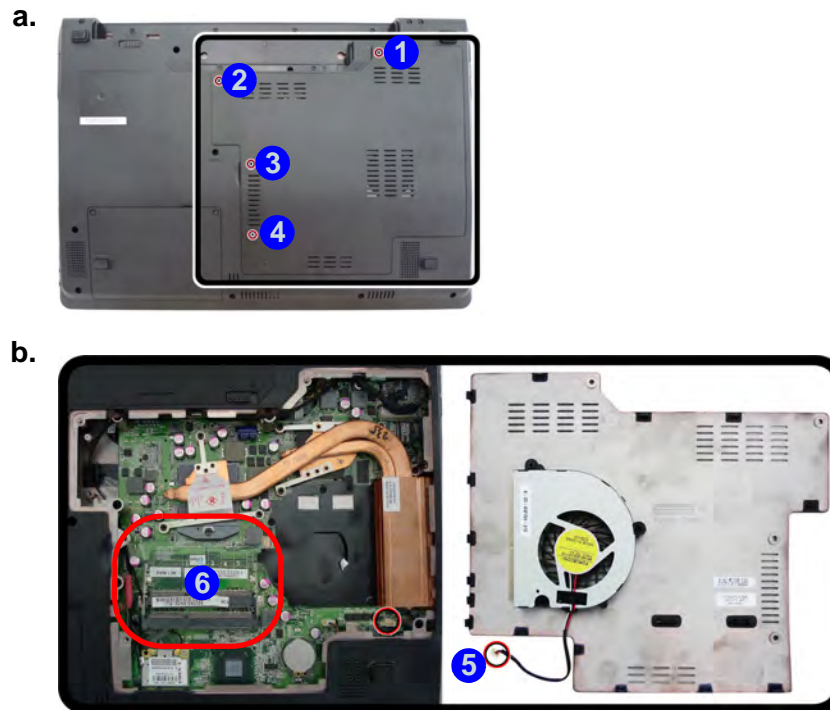


Figure 5
RAM Module Removal

- a. Remove the screws from the component bay cover.
- b. The RAM modules will be visible at point **6** on the mainboard.



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.

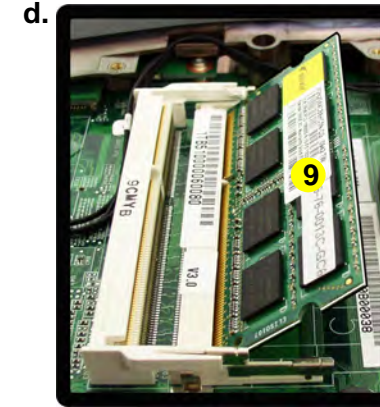


- 4 Screws

Disassembly

Figure 6 RAM Module Removal (cont'd)

- c. Pull the release latches.
d. Remove the module.



6. Gently pull the two release latches (7 & 8) on the sides of the memory socket in the direction indicated by the arrows (Figure 5c). The RAM module 9 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.



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.



9. RAM Module

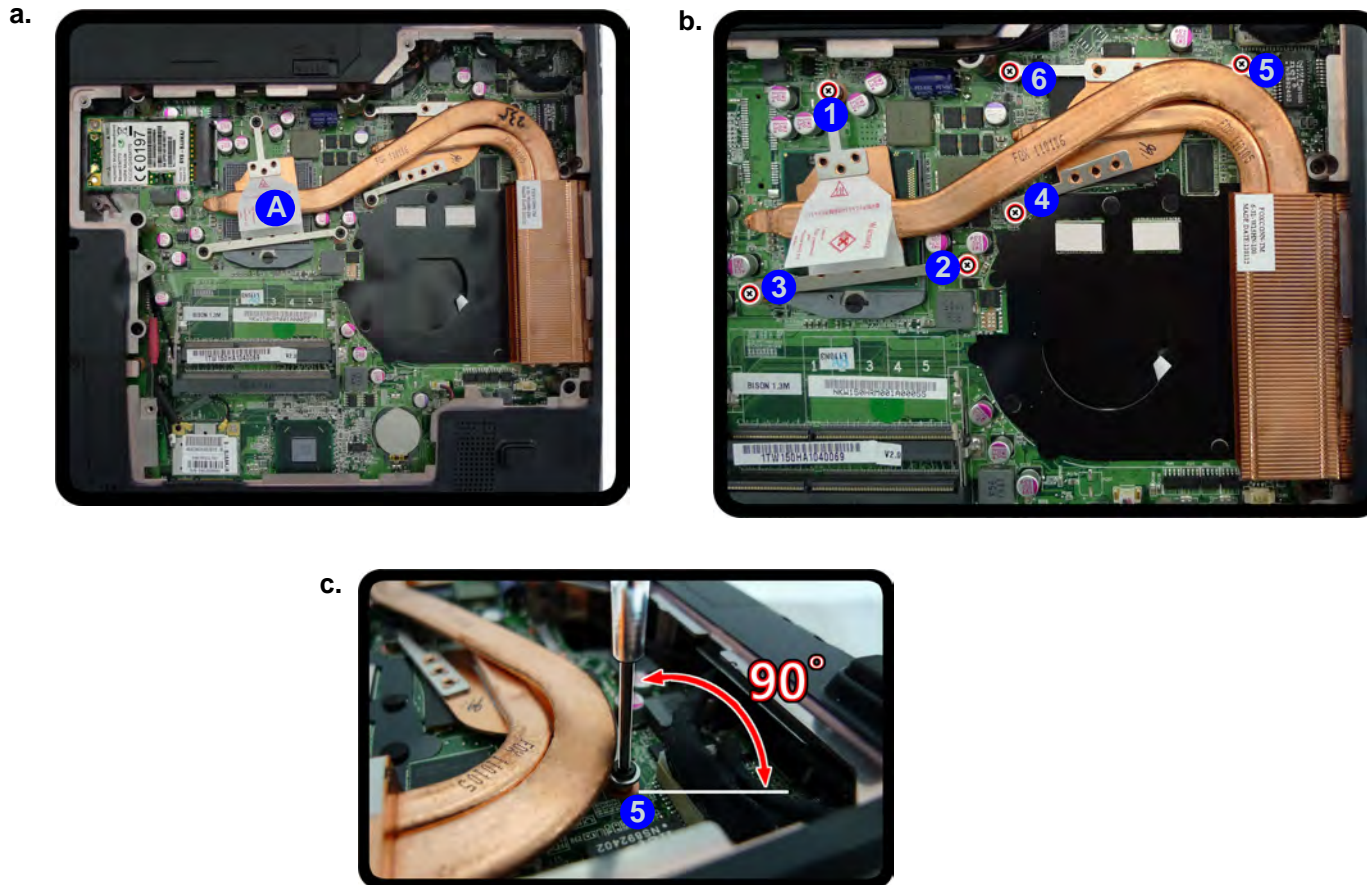
Removing and Installing a Processor


Processor Removal Procedure

1. Turn **off** the computer, 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** ([Figure 6a](#)) on the mainboard.
3. Remove screws **6**, **5**, **4**, **3**, **2** and **1**, the reverse order indicated on the label. *Note: Make sure that the size of the screwdriver is below 4mm. when removing or tightening screw **5**, and its position should be at a 90 degree angle from the mainboard. ([Figure 6c](#))

Figure 7
Processor Removal

- a. Remove the cover and locate the heat sink.
- b. Remove the screws in the order indicated.





- 6 Screws

Disassembly

Figure 8 Processor Removal (cont'd)

- c. Remove the heat sink.
- d. Turn the release latch to unlock the CPU.
- e. Lift the CPU out of the socket.




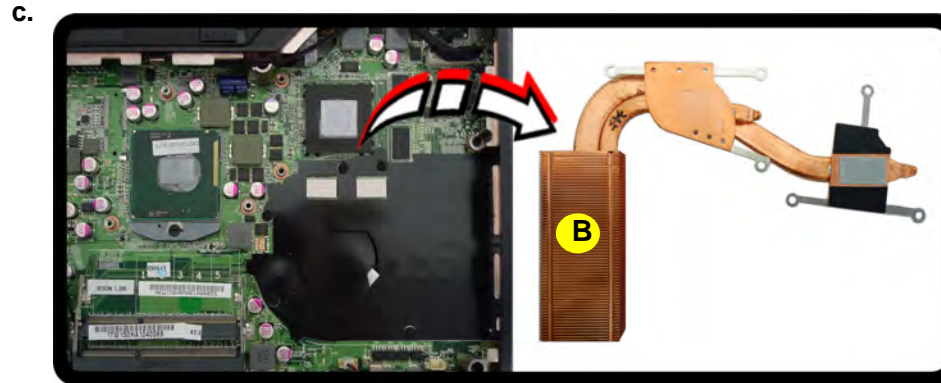
Caution

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

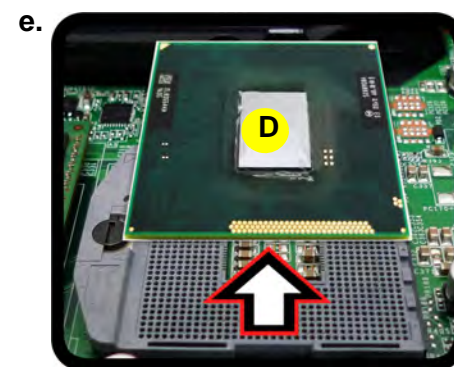


B. Heat Sink
D. CPU

4. Carefully lift up the heat sink **B** (*Figure 7c*) off the computer.
5. Turn the release latch **C** towards the unlock symbol , to release the CPU (*Figure 7d*).
6. Carefully (it may be hot) lift the CPU **D** up out of the socket (*Figure 7e*).
7. See [page 2 - 13](#) for information on inserting a new CPU.
8. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).



Unlock



Processor Installation Procedure


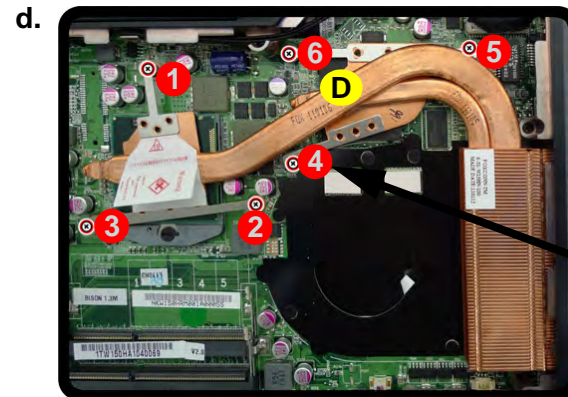
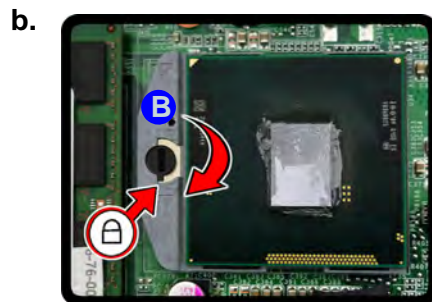
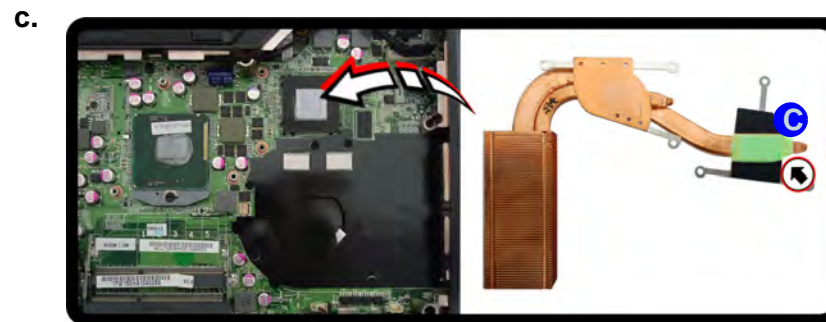
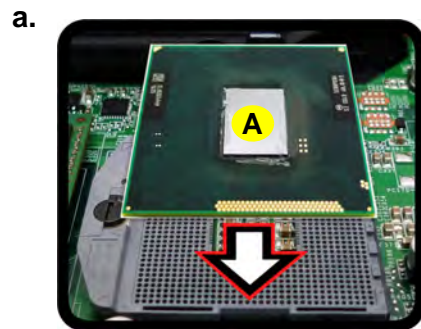
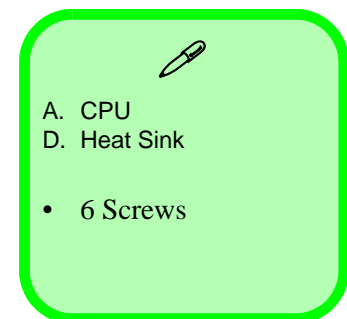
1. Insert the CPU **A** (*Figure 8a*), pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!), and turn the release latch **B** towards the lock symbol  (*Figure 8b*).
2. **Remove the sticker C** (*Figure 8c*) from the heat sink.
3. Insert the heat sink **D** as indicated in *Figure 8d*.
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 8d*) *Note: Make sure that the size of the screwdriver is below 4mm. when removing or tightening screw **5**, and its position should be at a 90 degree angle from the mainboard.
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
D. Heat Sink

- 6 Screws

Disassembly

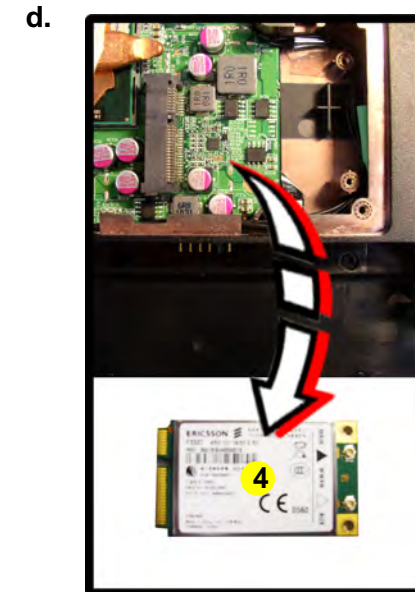
Figure 10
3G Module Removal

- Locate the 3G module.
- Disconnect the cable and remove the screw.
- The module will pop-up.
- Remove the 3G module.

Note: Make sure you reconnect the antenna cable to socket.

Removing the 3G Module

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



4. 3G Module

- 1 Screw

Removing the Wireless LAN Module

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 Wireless LAN module will be visible at point **1** on the mainboard ([Figure 10a](#)).
3. Carefully disconnect the cables **2** & **3**, and then remove the screw **4** ([Figure 10b](#)).
4. The Wireless LAN module **5** ([Figure 10c](#)) will pop-up, and you can remove it from the computer ([Figure 10d](#)).

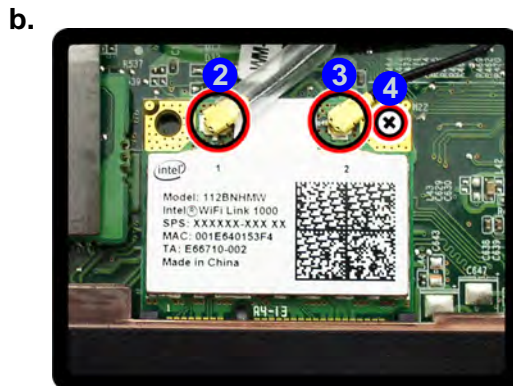
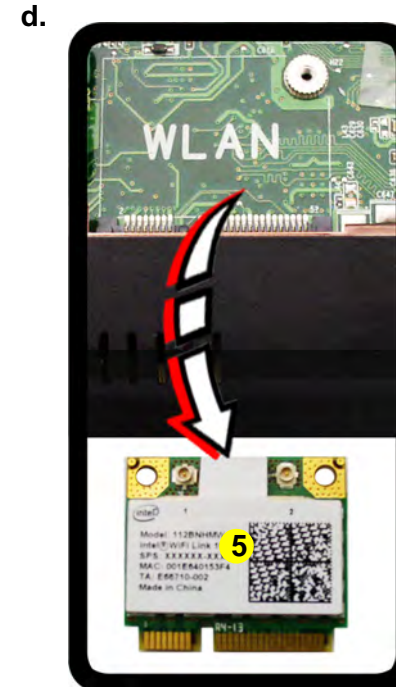
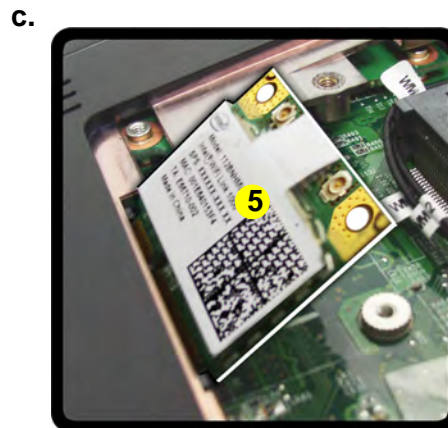
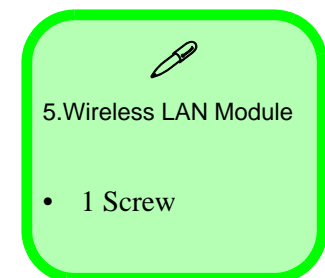


Figure 11
**Wireless LAN
Module Removal**

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

Note: Make sure you reconnect the antenna cable to the “1 + 2” socket ([Figure 10b](#)).



Disassembly

Figure 12
Keyboard Removal

- Remove screws from the bottom of the computer.
- Turn the computer over, unsnap up the LED cover module from point 5 towards the right.
- Remove screws from the keyboard.
- Carefully lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.
- Remove the keyboard.



Re-Inserting the Keyboard

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

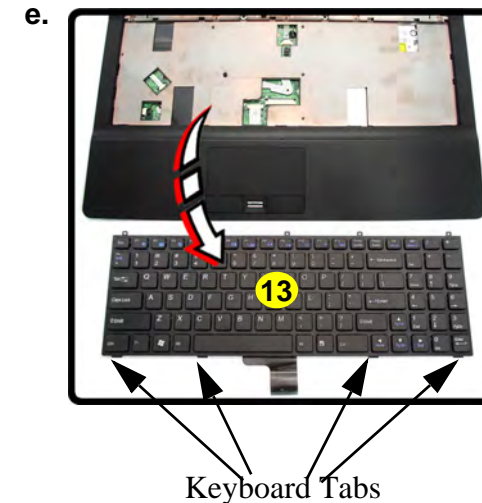
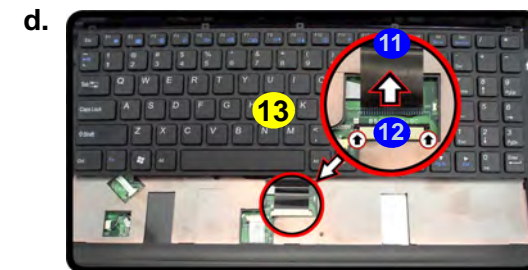
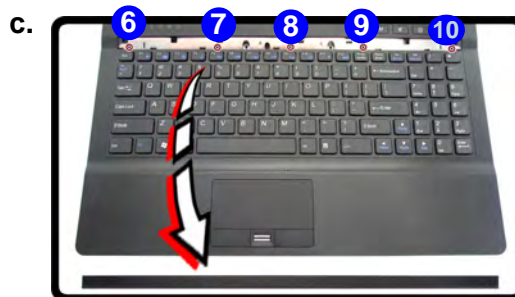
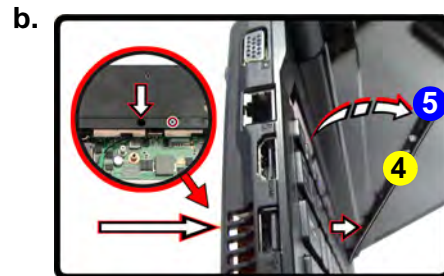
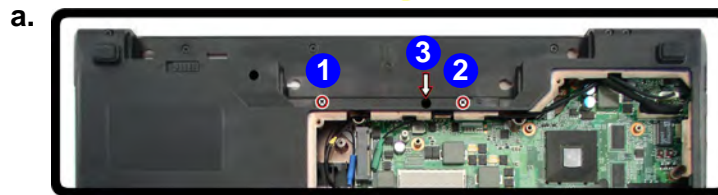


4. LED Cover Module
13. Keyboard

- 7 Screws

Removing the Keyboard

- Turn **off** the computer, and remove the battery (page 2 - 5).
- Remove screws 1 - 2 from the bottom of the computer. Press at point 3 to unsnap the LED cover module (you will need to use Pin Eject Tool to do this Figure 11a).
- Turn the computer over, unsnap up the LED cover module 4 from point 5 on the left of the computer, towards the right (Figure 11b) as indicated by arrow.
- Remove screws 6 - 10 from the keyboard (Figure 11c).
- Carefully lift the keyboard up, being careful not to bend the keyboard ribbon cable 11. Disconnect the keyboard ribbon cable 11 from the locking collar socket 12 (Figure 11d).
- Carefully lift up the keyboard 13 (Figure 11e) off the computer.




Removing the LCD Back Cover (W150HRM)

1. Turn **off** the computer, and turn the computer over to remove the battery ([page 2 - 5](#)).
2. Open the LCD and carefully remove the upper rubber screw covers **1** & **2** (2 corner rubber screw covers only) and set them aside ([Figure 12a](#)).
3. Remove screws **3** & **4** from the front cover ([Figure 12a](#)).
4. Carefully slide the cover forward in the direction of the arrows **5** & **6** as illustrated below ([Figure 12b](#)).
5. Remove the LCD back cover **7** ([Figure 12c](#)).

Figure 13
LCD Back Cover Removal (W150HNM)


- a. Remove the rubber covers and screws.
- b. Slide the cover forward.
- c. Remove the LCD back cover.





Rubber Screw Covers

After removing the rubber screw covers, place them on a clean dry surface (or attach them to the front cover itself) in order to prevent loss of adhesive.



7. LCD Back Cover

- 2 Screws

Appendix A:Part Lists

This appendix breaks down the *W150HRM / W150HRQ* 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**

Part	W150HRM	W150HRQ
Top with Fingerprint	<i>page A - 3</i>	
Top without Fingerprint	<i>page A - 4</i>	
Bottom	<i>page A - 5</i>	
Combo	<i>page A - 6</i>	
DVD Super Multi	<i>page A - 7</i>	
LCD	<i>page A - 8</i>	<i>page A - 9</i>

Top with Fingerprint

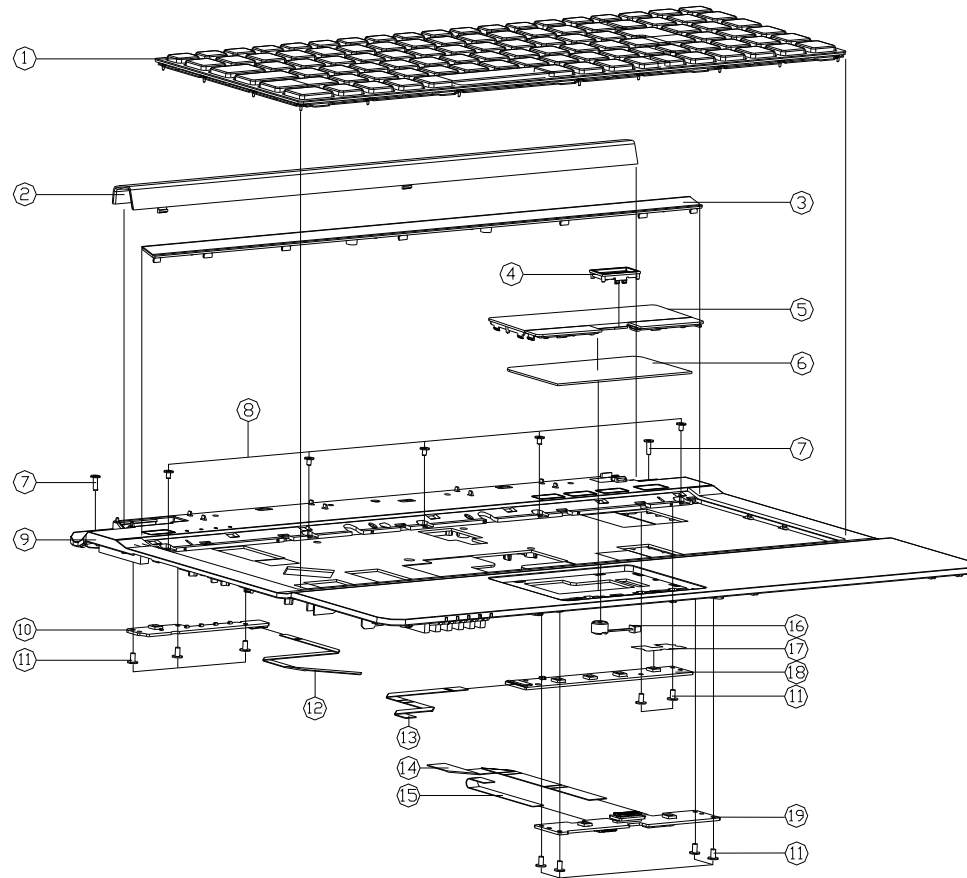
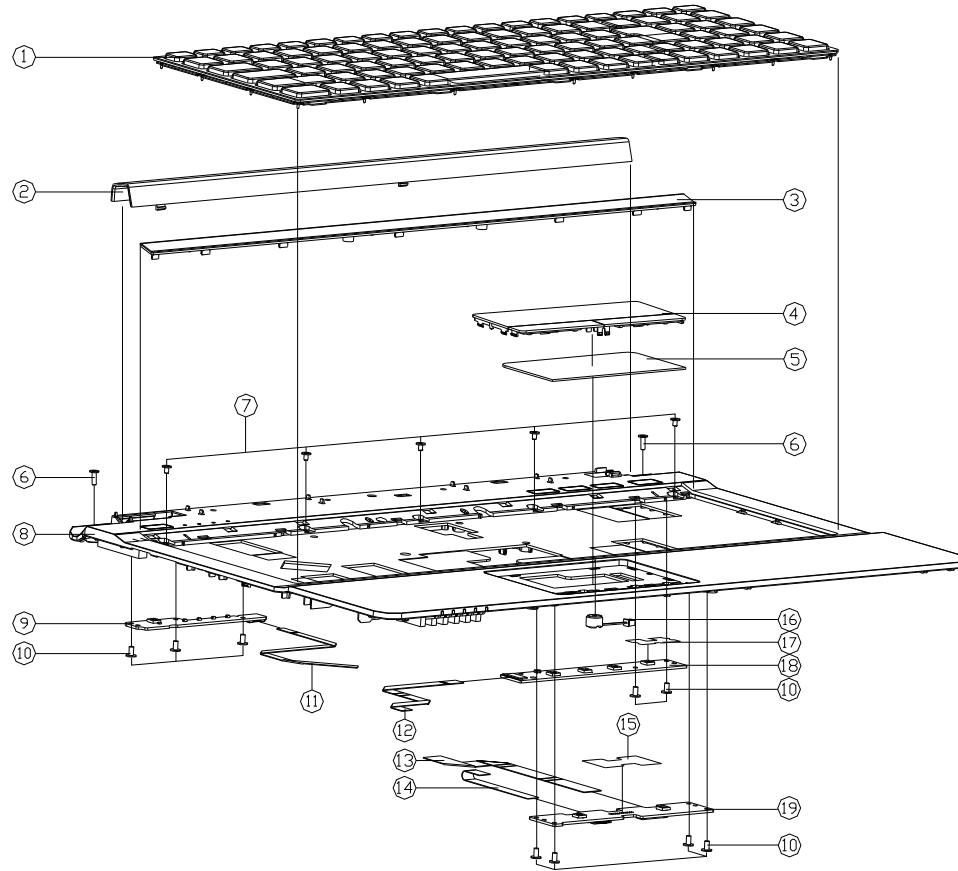


Figure A - 1
Top with Finger-
print

ITEM	PART NAME	PART NO	REMARK
1	KB USA (CHINA) FRAME COB MODULE B5100M/C5360	6-79-B5100MK-013	
2	HINGE COVER (PC+ABS) B5100M	6-42-B51M8-031	
3	KB COVER (PC+ABS) B5100M	6-42-B51M8-021	
4	FP COVER (PC+ABS) B5100M	6-42-B51M2-001	
5	TP COVER MODULE WT-FP B5100M	6-42-B51M2-500	
6	TOUCH PAD SAMPLES IN-0146-001 MULTI-DESIGNE CARB	6-49-C4802-010	
7	SCREW M2.5*BL KI BK/Z NY ICT	6-35-B6125-080	
8	SCREW M2*3L KI BK ICT NY (00#45,01#04)	6-35-B6125-3RD	
9	TOP CASE MODULE (CHANGE) B5100M	6-39-B51M2-015	
10	LED & VGA SWITCH BOARD V10 B5100M	6-77-B5134-001	
11	SCREW M2*4L KI NI ICT NY (00#44,01#05)	6-35-B1120-4RA	
12	FFC VGA RD TO MB (PITCH=0.50)P10 C30 B5100M	6-43-B5130-021	
13	FFC POWER RD TO MB (PITCH=0.50)P10K30 B5100M	6-43-B51M0-032	
14	FFC CLICK TO MB (PITCH=0.50)P10 C30 B5100M	6-43-B51M0-011	
15	FFC CABLE FOR TOUCH PAD 6PIN C4500	6-43-C4502-010-1	
16	MYLAR PWR BD B5100M	6-23-EM55G-011	
17	MYLAR PWR BD B5100M	6-40-B51M5-030	
18	POWER SWITCH BOARD V30 B5100M	6-77-B5105-003	
19	CLICK BOARD V4#RECAPAN SCREW BOARD V2#ASY B5100M	6-77-B510A-N04-A	

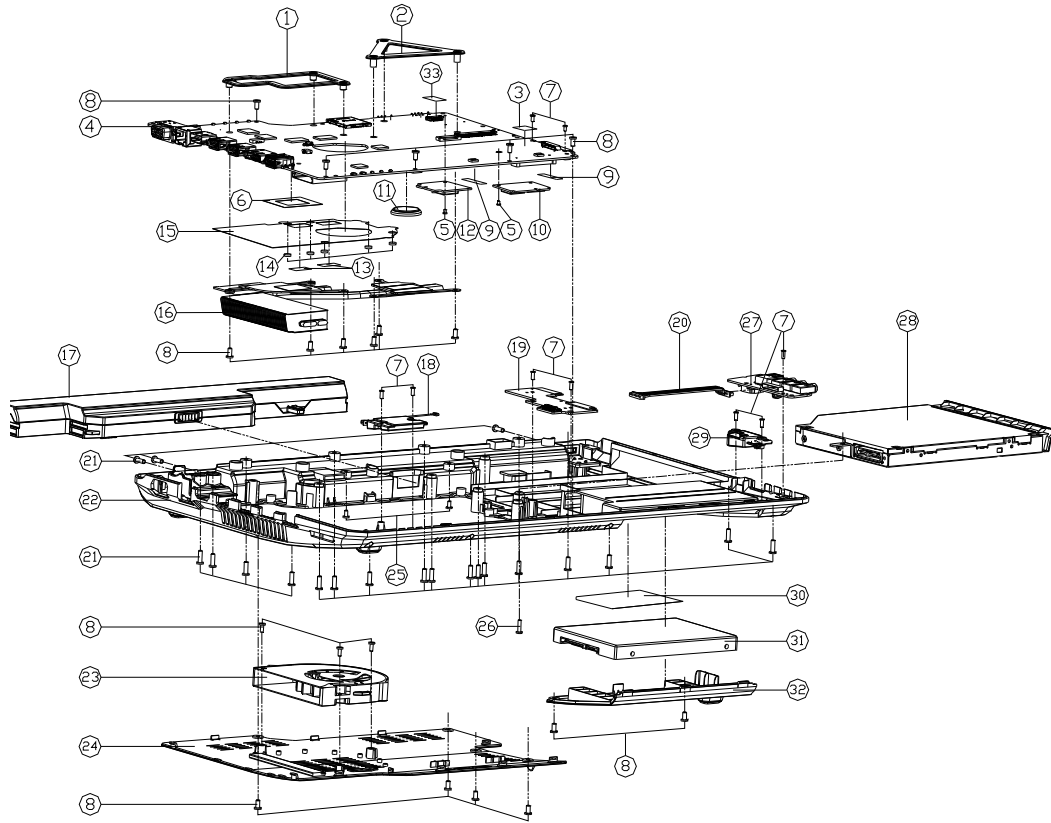
Top without Fingerprint

Figure A - 2
Top without Fingerprint



ITEM	PART NAME	PART NO	REMARK
1	1/8 USA (R)X FRAM QUS MIDDLE B510M0000	6-79-B510M00-013	
2	HINGE COVER (PC+ABS) B51000	6-42-B51M8-031	
3	KB COVER (PC+ABS) B51000	6-42-B51M8-021	
4	TP COVER MIDDLE WD-FP (CHANGE) B51000	6-42-B51M2-601	
5	TOUCH PAD SIMPLIES (R-4046-NO MULTI-GEASURE CAB) 6-49-C4802-010		
6	SCREW M2.5*BL KT BK/Z Z NY ICT	6-35-B6125-8R0	
7	SCREW M2*XL KT BZ ICT NY (DD+44.0T+04)	6-35-B6120-3RD	
8	TOP CASE MIDDLE (CHANGE) B51000	6-39-B51M2-015	
9	LED & VGA SWITCH BOARD V1.0 B51000	6-77-B5134-D01	
10	SCREW M2*XL KT NI ICT NY (DD+44.0T+05)	6-35-B1120-4RA	
11	FFC VGA 80 TO NB (PITCH=0.5,0.5)P/NO C/NO B51000	6-43-B5130-021	
12	FFC POWER 80 TO NB (PITCH=0.5,0.5)P/NO C/NO B51000	6-43-B5130-032	
13	FFC CLICK 10 TO NB (PITCH=0.5,0.5)P/NO C/NO B51000	6-43-B5130-011	
14	FFC CABLE FOR TOUCH PAD 6PIN C4500	6-43-C4502-010-1	
15	MYLAR CLK BD WD-FP B51000	6-40-B51MS-010	
16	MYLAR CLK BD WD-FP B51000	6-23-EM55G-011	
17	MYLAR PWR BD B51000	6-40-B51MS-030	
18	POWER SWITCH BOARD V3.0 B51000	6-77-B510S-D03	
19	CLICK BOARD V4.0(W/D FP) B51000	6-77-B5102-D04-1	

Bottom

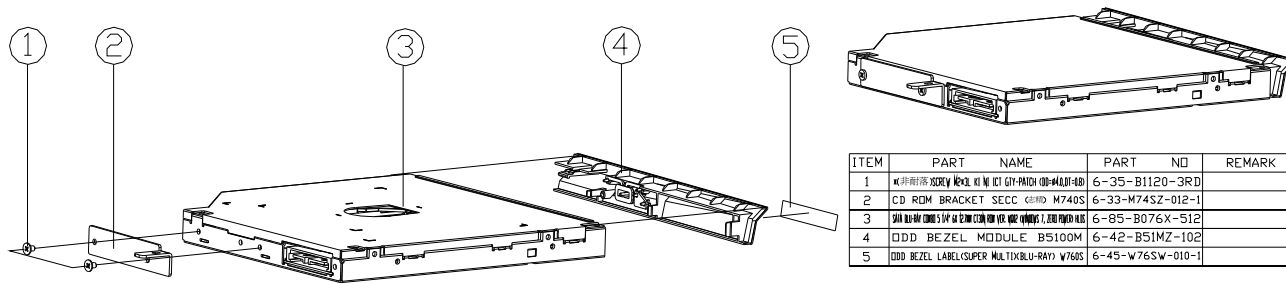


ITEM	PART NAME	PART NO	REMARK
1	VGA SUPPORTER SECC B7130	6-33-B713S-010	
2	CPU SUPPORTER FOR MORN RIVER SECC W150HM	6-33-W150S-011	
3	HEAT SINK FOR CPU W150HM FOR OPT1000	6-40-C450S-030	
4	HEAT SINK FOR GPU W150HM FOR OPT1000	6-77-W150G-D02	
5	SCREW M2.5X5L K1 BK/2 ICT NY	6-35-B612S-8R0	
6	VGA CHIP MYLAR 02929 NOE-GE W150HM	6-40-W15HS-010	
7	SCREW M2.5X5L K1 BK/2 ICT NY	6-35-B612S-4RA	
8	SCREW M2.5X5L K1 BK/2 ICT NY	6-35-B612S-5RA	
9	TAPE MYLAR (CD)MYLAR M550J	6-40-M55J2-030	
10	WARRANTY CARD FOR MORN RIVER SECC W150HM	6-88-W76C2-7001	(OPTION)
10	WARRANTY CARD FOR MORN RIVER SECC W150HM	6-88-W76C2-8702	(OPTION)
10	WARRANTY CARD FOR MORN RIVER SECC W150HM	6-88-C555F-7001	(OPTION)
10	WARRANTY CARD FOR MORN RIVER SECC W150HM	6-88-C555F-5300	(OPTION)
10	WARRANTY CARD FOR MORN RIVER SECC W150HM	6-88-P170F-4200	(OPTION)
10	WARRANTY CARD FOR MORN RIVER SECC W150HM	6-88-P170F-4210	(OPTION)
11	BATTERY 3V 230MA BCR2032 (DOUBLE)	6-23-6A2B2-040	
12	WARRANTY CARD FOR MORN RIVER SECC W150HM	6-88-W24HW-2410	(OPTION)
13	HEAT SINK FOR MORN RIVER SECC W150HM	6-48-B41MS-011	
14	LCD FRONT COVER RUBBER SILICON DB-43SM	6-47-W76S1-030	
15	MB FAN MYLAR PET W150HM	6-40-W150S-010	
16	CPU HEATSINK MODULE W150HM	6-31-W15HN-101	
17	BATTERY 3V 230MA BCR2032 (DOUBLE)	6-87-C480S-4P43	(OPTION)
17	BATTERY 3V 230MA BCR2032 (DOUBLE)	6-87-E412S-4Y4A	(OPTION)
17	BATTERY 3V 230MA BCR2032 (DOUBLE)	6-87-C412S-4P7A	(OPTION)
18	SCREW M2.5X5L K1 BK/2 ICT NY	6-23-5B410-021	
19	WARRANTY CARD FOR MORN RIVER SECC W150HM	6-77-W150G-D02	
20	HEAT SINK FOR CPU W150HM FOR OPT1000	6-43-W1500-010	
21	SCREW M2.5X5L K1 BK/2 NY ICT	6-35-B612S-8R0	
22	BOTTOM CASE MODULE PC48S W150HM	6-39-W15H3-011	
23	HEAT SINK FOR MORN RIVER SECC W150HM	6-35-AW15H-010	
24	CPU COVER MODULE W150HM	6-42-W15H8-101	
25	SCREW M2.5X5L K1 BZ ICT NY	6-35-B6120-4RA	
26	SCREW M2.5X5L K1 BK/2 ICT NY	6-35-B6120-8R0	
27	PHONE JACK & USB BOARD V2.0 W150HM	6-77-W150A-D02	
28	SATA DVD SUPER MULTI ASSY (OPTION)	6-79-B510HM-010	(OPTION)
28	SATA Blu-RAY Combo ASSY (OPTION)	6-79-B510HM-010	(OPTION)
28	SATA DVD SUPER MULTI ASSY (OPTION)	6-79-B510MD-030	(OPTION)
29	SCREW R 2.0X3 13.20X 4.0MM P0200 W150HM	6-23-5B51M-010	
30	PRODUCT LABEL FOR W150HM	6-45-W150HM3-010	
30	PRODUCT LABEL FOR W150HM	6-45-W150HM3-010	
31	W/O HDD ASS'Y B5100M	6-79-B5100M-J-010	
31	W/O HDD ASS'Y B5100M	6-79-B5100M-J-020	
32	HDD COVER MODULE W150HM	6-42-W15H-J-101	
33	MC MYLAR (CD)MYLAR M550J	6-40-M74SS-031	

Figure 3
Bottom

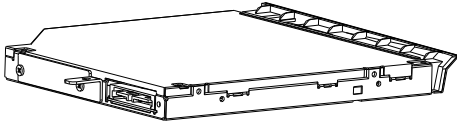
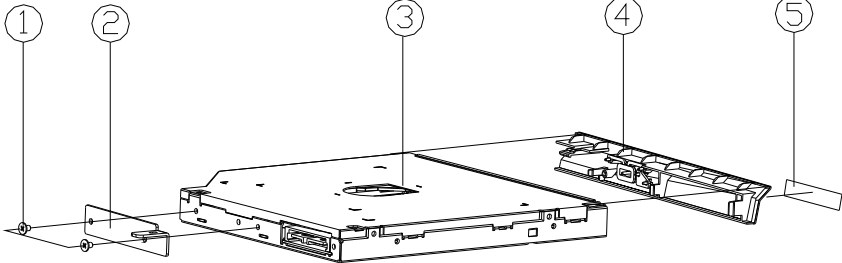
Combo

Figure A - 4
Combo



ITEM	PART NAME	PART NO	REMARK
1	CD ROM BRACKET SECC (M740S)	6-35-B1120-3RD	
2	CD ROM BRACKET SECC (M740S)	6-33-M74SZ-012-1	
3	CD ROM BRACKET SECC (M740S)	6-85-B076X-512	
4	ODD BEZEL MODULE B5100M	6-42-B51MZ-102	
5	ODD BEZEL LABEL(SUPER MULTIREAD-RAT) W760S	6-45-W76SW-010-1	

DVD SUPER MULTI

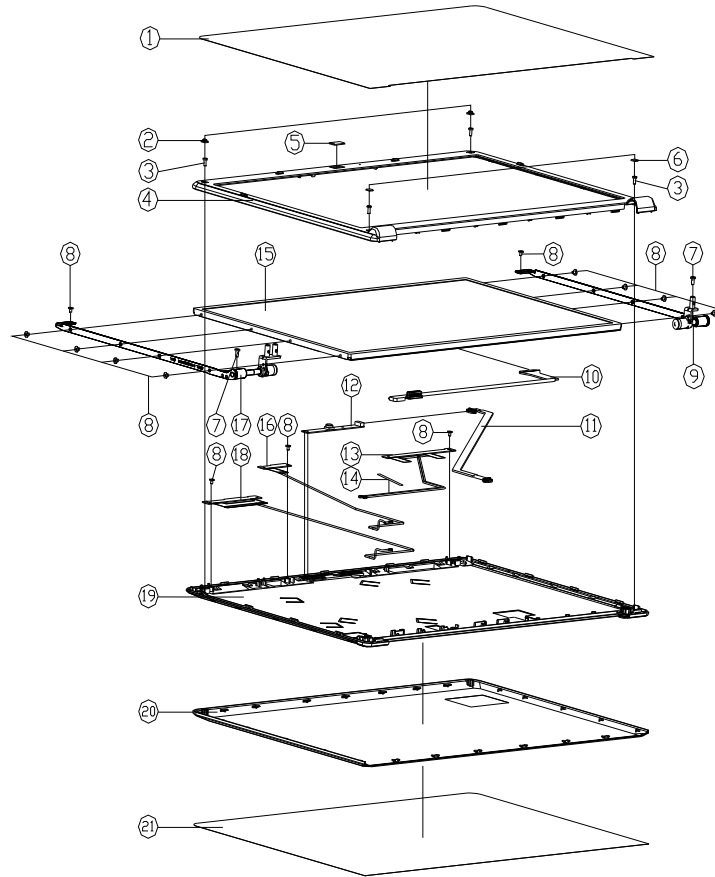


ITEM	PART NAME	PART NO	REMARK
1	CD ROM DISC (DVD-R) 120MIN 16X-4.7GB	6-35-B1120-3RD	
2	CD ROM BRACKET SECC (STD) M740S	6-33-M74SZ-012-1	
3	DVD SUPER MULTI DRIVE MODULE (16X-4.7GB) TSST	6-85-A07BX-T09	FDR TSST
4	DDD BEZEL MODULE BS100M	6-42-B51MZ-102	
5	DDD BEZEL LABEL(SUPER MULTI) W760S (A&Z)	6-45-W76SZ-010-1	

Figure A - 5
DVD SUPER MULTI

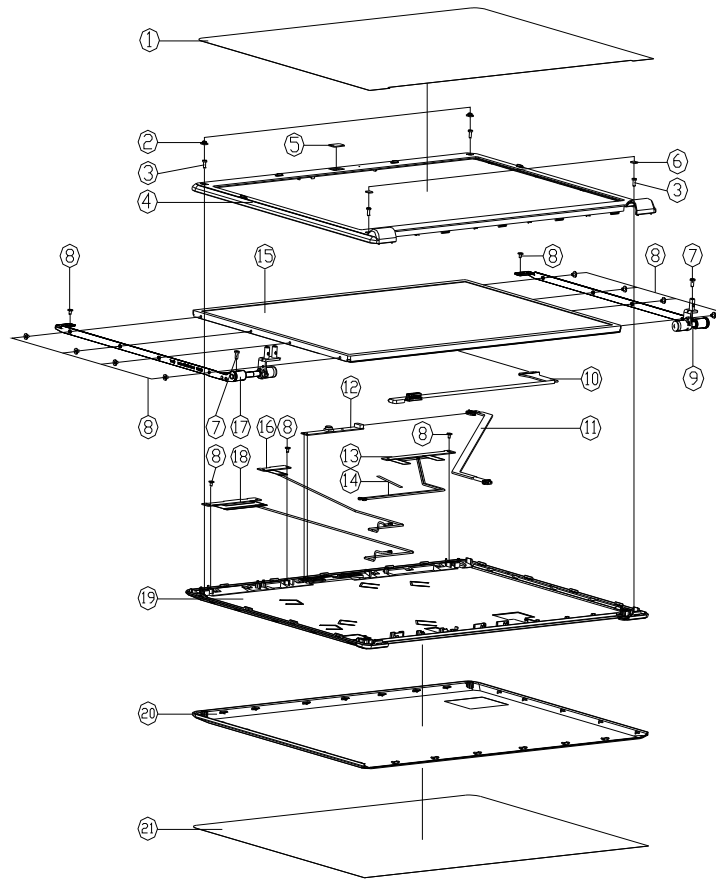
LCD (W150HRM)

Figure A - 6
LCD (W150HRM)



ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT COVER PROTECTOR MODULE	6-40-B51M8-010	
2	LCD FRONT COVER SCREW RUBBER SOLUTION COUPLER	6-47-C4501-031	
3	SCREW NUTS KIT-100 D-400 IN-27 ICT NY	6-35-B6120-580	
4	LCD FRONT COVER MODULE BOTTOM	6-39-B51M1-013	
5	LCD BEZEL FRAME MIDDLE	6-42-M6101-011	
6	LCD BEZEL FRAME TOP FOR SCREW COUPLER	6-40-C4501-071	
7	SCREW NUTS KIT-100 D-400 IN-27 ICT NY	6-35-B6120-580	
8	MOUNTING SCREW NUTS KIT-100 D-400 IN-27 ICT NY	6-35-B1120-38E	
9	LCD HINGE R SKT BOTTOM COUPLER	6-33-B51M1-022-1	
10	LCD CABLE LVDS 1.36MM 04.0 BOTTOM	6-43-B51M1-020-A	FOR 6-30-L4517-020 6-30-L4517-020
11	LCD CABLE LVDS 1.36MM 04.0 BOTTOM	6-43-B51M1-021	
12	LCD CAMERA MODULE MOUNTING KIT FOR 5MP	6-88-M810C-4911	OPTION
12	LCD CAMERA MODULE MOUNTING KIT FOR 5MP	6-88-M741C-5102	OPTION
12	LCD CAMERA MODULE MOUNTING KIT FOR 5MP	6-88-V765C-4900	OPTION
12	LCD CAMERA MODULE MOUNTING KIT FOR 5MP	6-88-M740C-9010	OPTION
12	LCD CAMERA MODULE MOUNTING KIT FOR 5MP	6-88-E510C-4900	OPTION
12	LCD CAMERA MODULE MOUNTING KIT FOR 5MP	6-88-E510C-4901	OPTION
12	LCD CAMERA MODULE MOUNTING KIT FOR 5MP	6-88-X510C-4900	OPTION
13	ADDITIONAL CAMERA MODULE MOUNTING KIT FOR 5MP	6-23-7851M-031	FOR 6-39-B51M1-013
13	ADDITIONAL CAMERA MODULE MOUNTING KIT FOR 5MP	6-23-78510-011	FOR W150HRM
14	TAPE MYLAR (CB) MYLAR M550J	6-40-M55J2-020	
15	LCD BEZEL HD LG LPS50VH-L1A2 GLARE TYPE	6-50-LA157-L00	OPTION
15	LCD BEZEL HD LG LPS50VH-L1A2 GLARE TYPE	6-50-LA157-L03	OPTION
15	LCD BEZEL HD AU RES50VH V0 GLARE TYPE	6-50-LB257-G01	OPTION
15	LCD BEZEL HD DUNEI RES50VH V0 GLARE TYPE	6-50-LB155-D00	OPTION
15	LCD BEZEL HD DUNEI RES50VH V0 GLARE TYPE	6-50-LB155-V02	OPTION
15	LCD BEZEL HD AU RES50VH V3 QLED 5.5M	6-50-LA157-G02	OPTION
15	LCD BEZEL HD DUNEI RES50VH V3 QLED 5.5M	6-50-LB155-D03	OPTION
15	LCD BEZEL HD LG LPS50VH-L1A2 QLED 5.5M	6-50-LB155-L07	OPTION
15	LCD BEZEL HD LG LPS50VH V1 QLED 5.5M	6-50-LB257-G03	OPTION
15	LCD BEZEL HD LG LPS50VH-L1A2 QLED 5.5M	6-50-LB155-L09	OPTION
15	LCD BEZEL HD LG LPS50VH-L1A2 QLED 5.5M	6-50-LA157-G03	OPTION
15	LCD BEZEL HD LG LPS50VH-L1A2 QLED 5.5M	6-50-LB257-L03	OPTION
16	MOUNTING SCREW NUTS KIT-100 D-400 IN-27 ICT NY	6-35-B51M1-041	
17	LCD HINGE L SKT BOTTOM COUPLER	6-33-B51M1-032-1	
18	MOUNTING SCREW NUTS KIT-100 D-400 IN-27 ICT NY	6-35-B51M1-020	FOR 6-39-B51M1-013
18	MOUNTING SCREW NUTS KIT-100 D-400 IN-27 ICT NY	6-35-B51M1-011	FOR W150HRM
19	MIDDLE COVER MODULE BOTTOM	6-39-B51M1-032	
20	LCD BACK COVER FRAME TOP FOR BEZEL	6-39-B51M1-022	FOR 6-39-B51M1-013
20	LCD BACK COVER MODULE BOTTOM	6-39-B51M1-022	FOR 6-39-B51M1-013
21	LCD BACK COVER PROTECTOR MODULE	6-40-B51M8-020	

LCD (W150HRQ)



ITEM	PART NAME	PART NO.	REMARK
1	LCD BACK COVER PROTECTION BLURR (PET) SHEET	6-40-BS1M8-010	
2	LCD FRONT COVER SCREW RUBBER SEAL	6-47-C4501-031	
3	SCREW NYLON KIT 0.8 Bx0.7 ICT NY	6-35-B6120-090	
4	LCD FRONT COVER MODULE	6-39-BS1M1-013	
5	CCD	6-42-M8101-011	
6	W/FD CCD COSMETIC PC	6-40-C4501-028	
7	FRONT COVER PC FOR SCREW CASE	6-35-B6120-090	
8	SCREW NYLON KIT 0.8x0.7 ICT NY	6-35-B1120-090	
9	LCD HINGE L SKT	6-33-BS1M-022-1	
10	LCD CABLE LVDS 1.240MM	6-43-BS1M-010-A	
11	LCD CABLE LVDS 1.240MM	6-43-BS1M-020-A	
12	INVC CAMERA	6-88-M810C-4911	OPTION
12	INVC CAMERA	6-88-M741C-5102	OPTION
12	INVC CAMERA	6-88-V765C-4900	OPTION
12	INVC CAMERA	6-88-M740C-9010	OPTION
12	INVC CAMERA	6-88-E510C-4900	OPTION
12	INVC CAMERA	6-88-E510C-4901	OPTION
12	INVC CAMERA	6-88-E510C-4900	OPTION
13	INVC CAMERA	6-23-7851M-031	FOR BS130M
13	INVC CAMERA	6-23-7851M-011	FOR W150HRM
14	TAPE NYLON	6-40-M55J2-020	
15	LCD	6-50-LA157-L00	OPTION
15	LCD	6-50-LA157-L03	OPTION
15	LCD	6-50-LB257-G01	OPTION
15	LCD	6-50-LB155-D00	OPTION
15	LCD	6-50-LB155-V02	OPTION
15	LCD	6-50-LA157-G02	OPTION
15	LCD	6-50-LB155-D03	OPTION
15	LCD	6-50-LB155-L07	OPTION
15	LCD	6-50-LB257-G03	OPTION
15	LCD	6-50-LB155-L09	OPTION
15	LCD	6-50-LA157-G03	OPTION
15	LCD	6-50-LB257-L03	OPTION
16	INVC CAMERA	6-23-7851M-044	
17	LCD HINGE L SKT	6-33-BS1M-022-1	
18	INVC CAMERA	6-23-7851M-023	FOR BS130M
19	MIDDLE COVER MODULE	6-39-BS1M-011	FOR W150HRM
19	MIDDLE COVER MODULE	6-39-BS1M-032	
20	LCD BACK COVER	6-39-BS1M-022	FOR ME1A
20	LCD BACK COVER	6-39-BS1M-022	FOR ME1B
21	LCD BACK COVER PROTECTION BLURR (PET) SHEET	6-40-BS1M8-020	

Figure A - 7
LCD (W150HRQ)



Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *W150HRM / W150HRQ* 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>CougarPoint - M 1/9 - Page B - 19</i>	<i>5VS, 3VS, 3.3VM, 1.5VS_CPU - Page B - 36</i>
<i>Sandy Bridge Processor 1/7 - Page B - 3</i>	<i>CougarPoint - M 2/9 - Page B - 20</i>	<i>VDD3, VDD5 - Page B - 37</i>
<i>Sandy Bridge Processor 2/7 - Page B - 4</i>	<i>CougarPoint - M 3/9 - Page B - 21</i>	<i>Power 0.85VS, 1.8VS, PEX_VDD - Page B - 38</i>
<i>Sandy Bridge Processor 3/7 - Page B - 5</i>	<i>CougarPoint - M 4/9 - Page B - 22</i>	<i>Power 1.5V/1.05VS/0.75V - Page B - 39</i>
<i>Sandy Bridge Processor 4/7 - Page B - 6</i>	<i>CougarPoint - M 5/9 - Page B - 23</i>	<i>Power V-Core1 - Page B - 40</i>
<i>Sandy Bridge Processor 5/7 - Page B - 7</i>	<i>CougarPoint - M 6/9 - Page B - 24</i>	<i>Power V-Core2 - Page B - 41</i>
<i>Sandy Bridge Processor 6/7 - Page B - 8</i>	<i>CougarPoint - M 7/9 - Page B - 25</i>	<i>Power VGA NVVDD - Page B - 42</i>
<i>Sandy Bridge Processor 7/7 - Page B - 9</i>	<i>CougarPoint - M 8/9 - Page B - 26</i>	<i>AC_IN, Charger - Page B - 43</i>
<i>DDR3 SO-DIMM_0 - Page B - 10</i>	<i>CougarPoint - M 9/9 - Page B - 27</i>	<i>W150HNM 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>W150HNM Second HDD Board - Page B - 45</i>
<i>Panel, Inverter, CRT - Page B - 12</i>	<i>USB, Fan, TP, FP, Multi-Conn - Page B - 29</i>	<i>B5100 Click Board - Page B - 46</i>
<i>VGA PCI-E Interface - Page B - 13</i>	<i>USB 3.0 - Page B - 30</i>	<i>B5100 Fingerprint Board - Page B - 47</i>
<i>VGA Frame Buffer Interface - Page B - 14</i>	<i>Card Reader (JMC251C) - Page B - 31</i>	<i>B5130 LED & VGA SW Board - Page B - 48</i>
<i>VGA Frame Buffer A - Page B - 15</i>	<i>SATA ODD, LED, Hotkey, LID SW - Page B - 32</i>	<i>B5100 Power Switch Board - Page B - 49</i>
<i>VGA Frame Buffer B - Page B - 16</i>	<i>HDMI, RJ45 - Page B - 33</i>	<i>Sequence - 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**

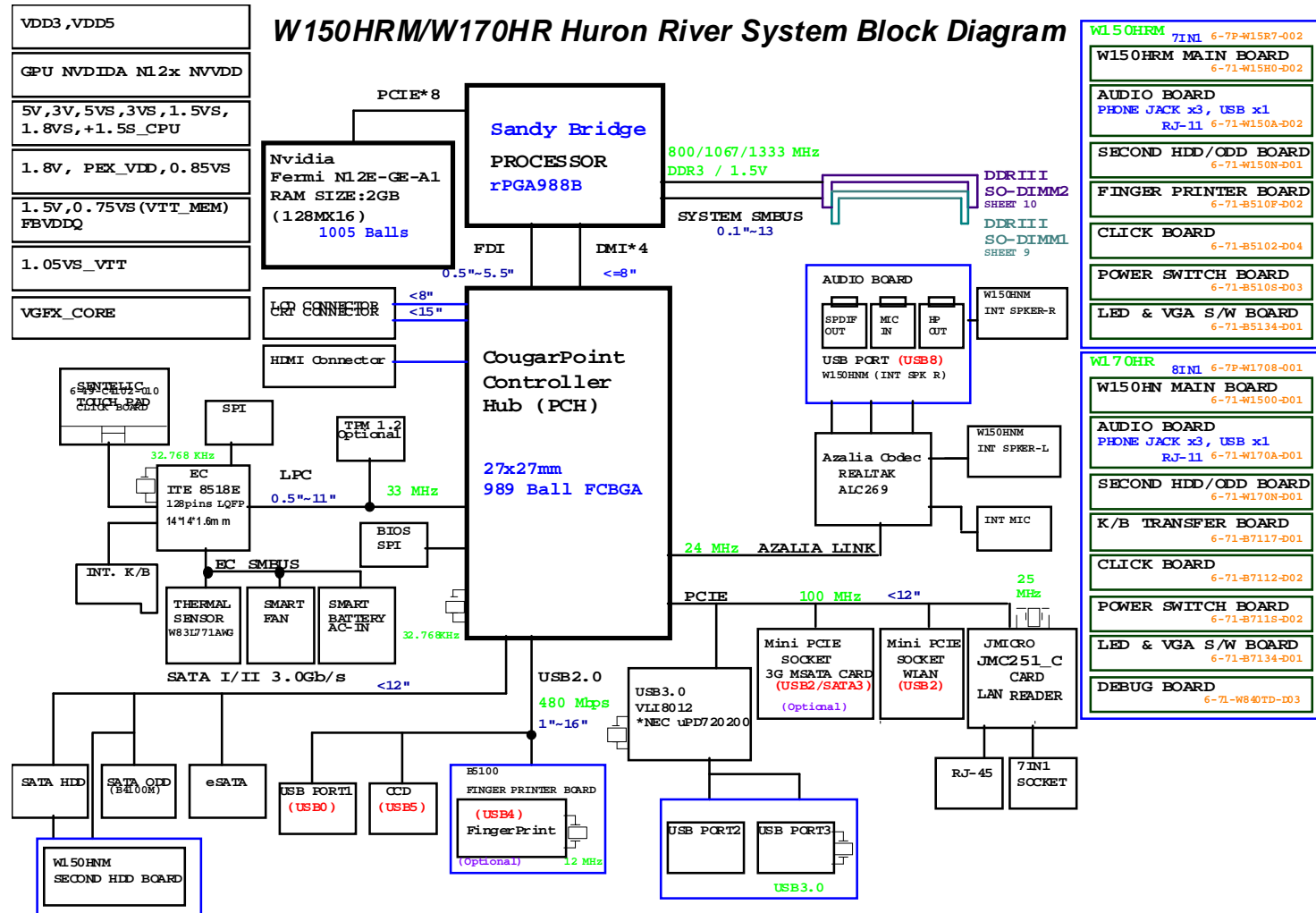


Version Note

The schematic diagrams in this chapter are based upon version 6-7P-W15H7-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

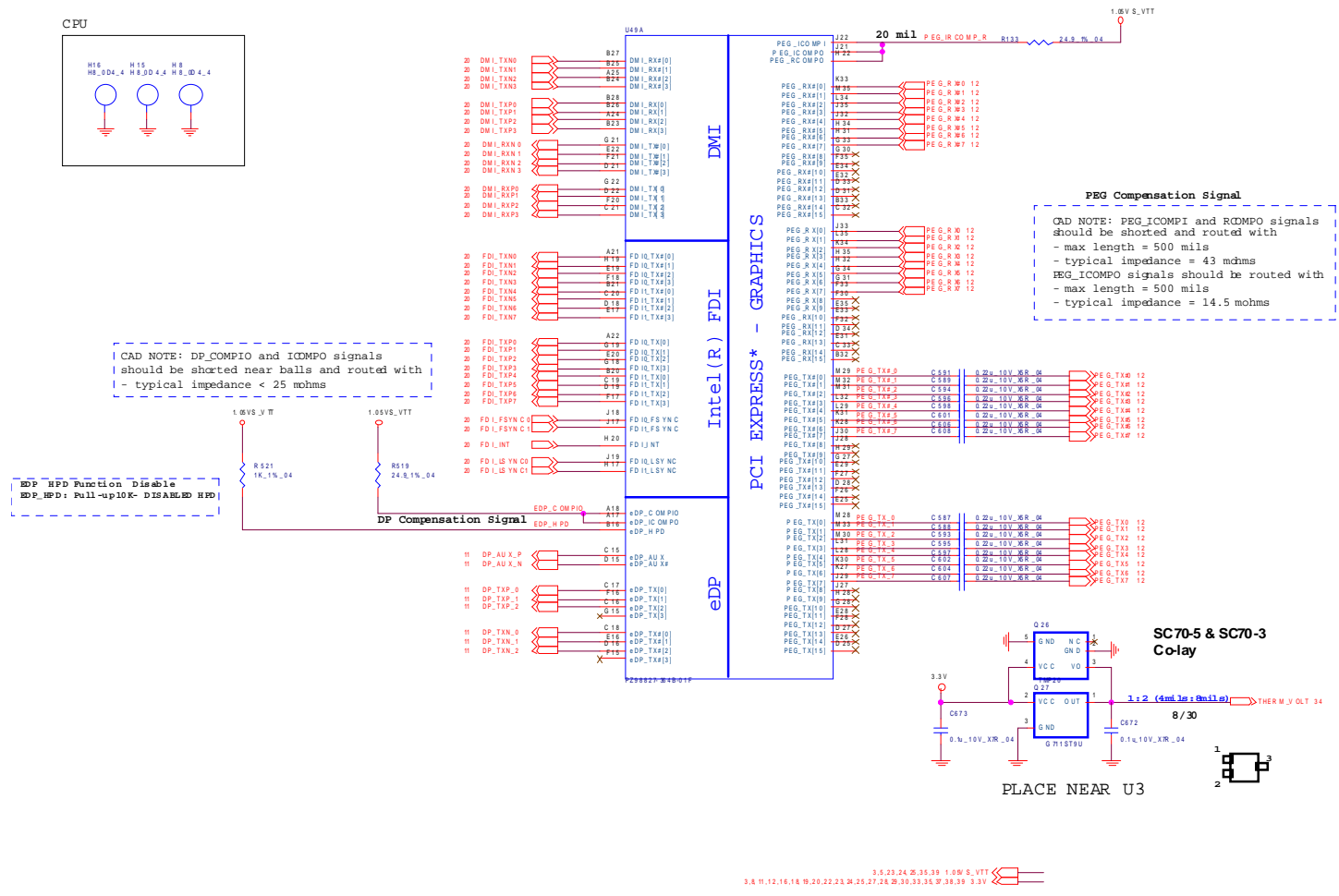
System Block Diagram

Sheet 1 of 49
System Block
Diagram



Sandy Bridge Processor 1/7

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

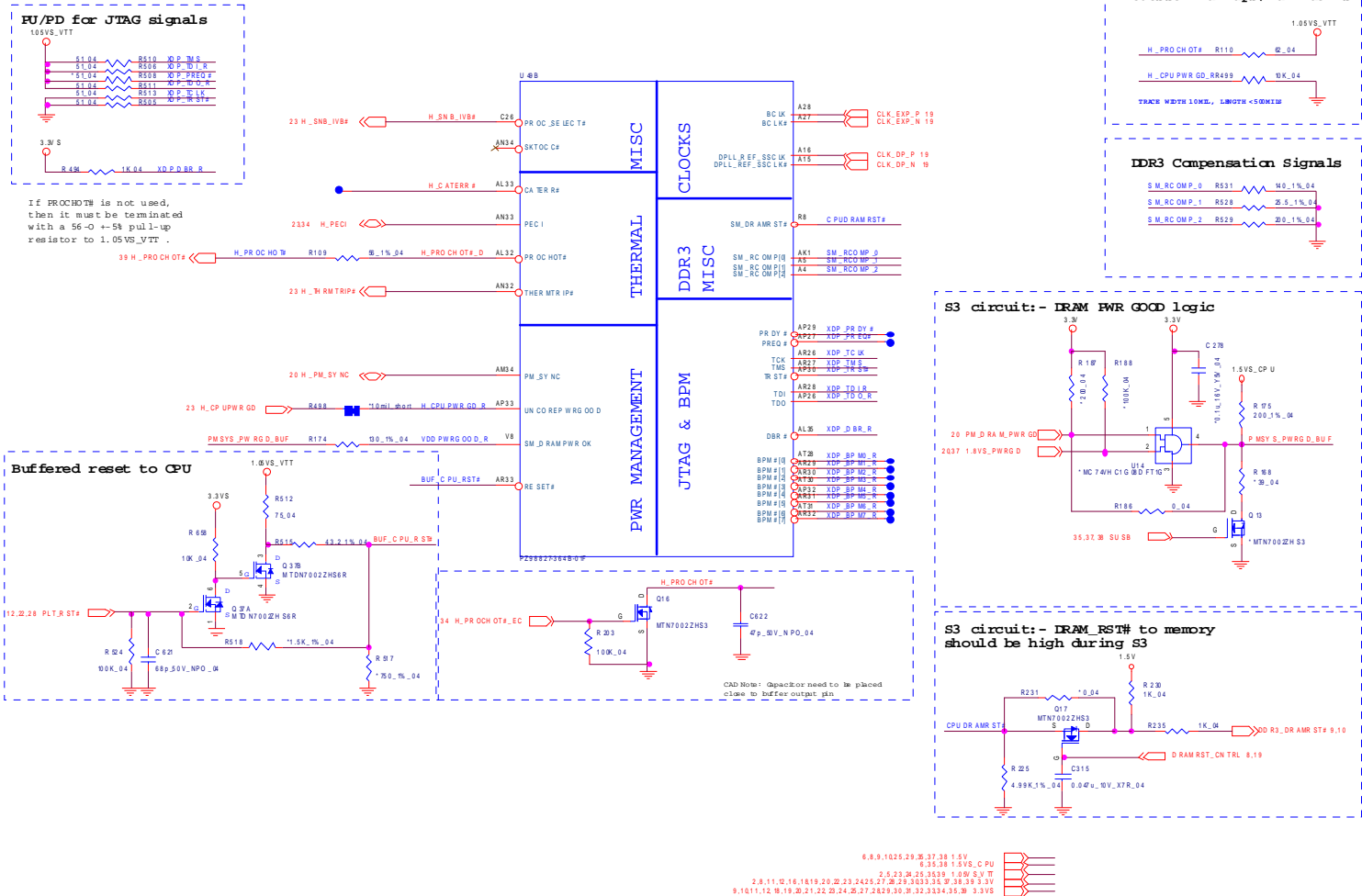


B.Schematic Diagrams

Sheet 2 of 49
Sandy Bridge
Processor 1/7

Sandy Bridge Processor 2/7

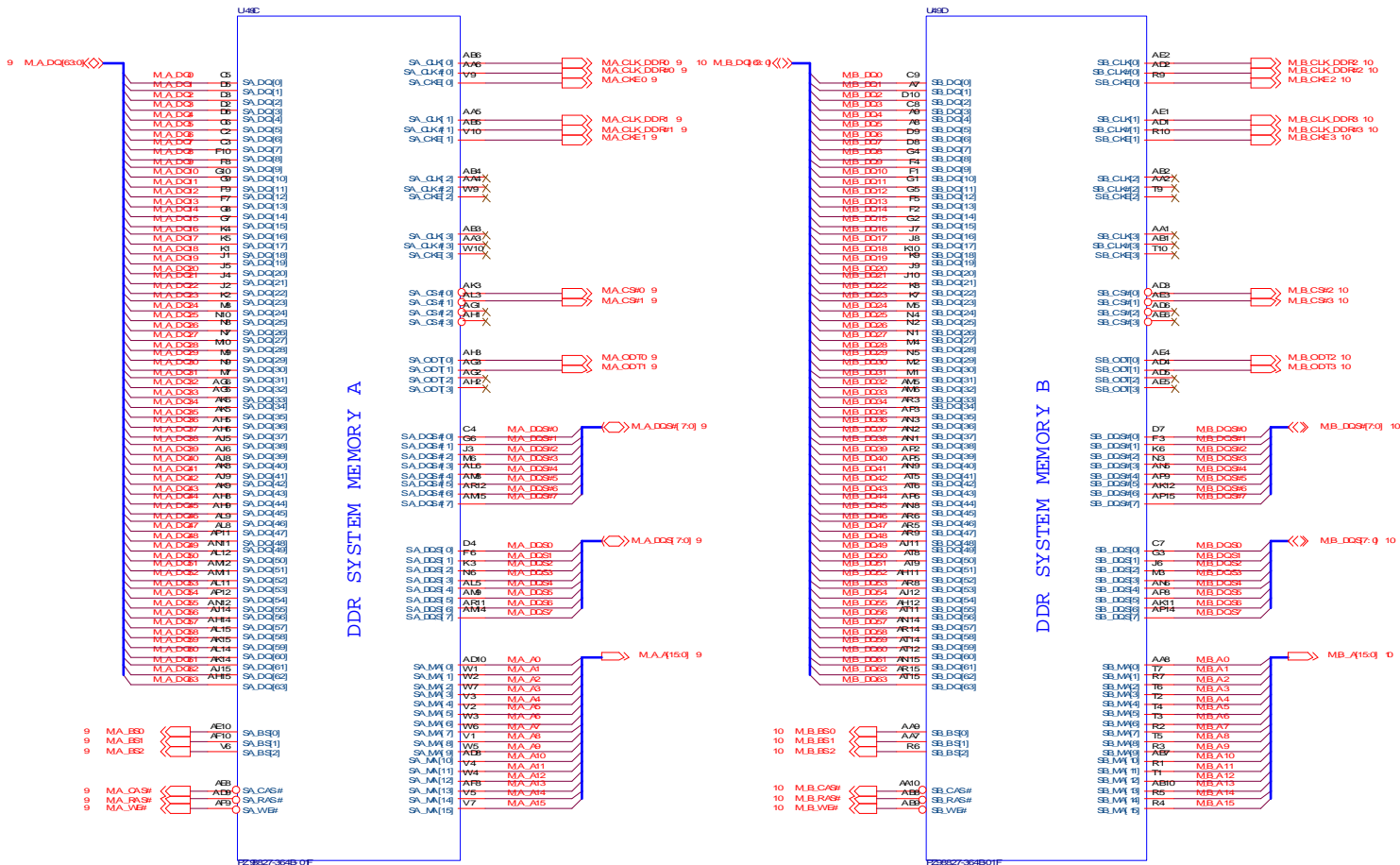
Sandy Bridge Processor 2/7 (CLK,MISC,JTAG)



Sheet 3 of 49
Sandy Bridge
Processor 2/7

Sandy Bridge Processor 3/7

Sandy Bridge Processor 3/7 (DDR3)

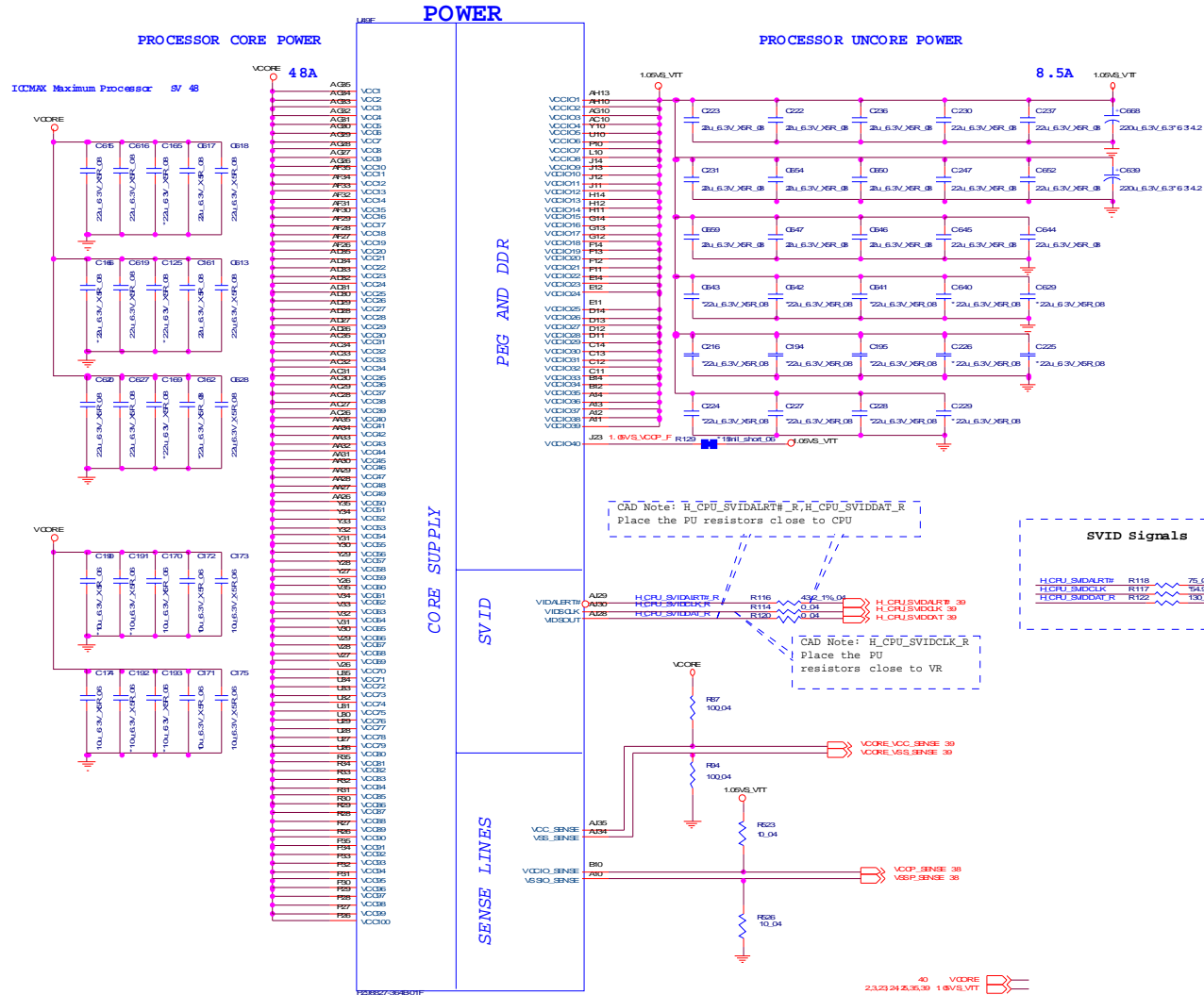


Sheet 4 of 49
Sandy Bridge
Processor 3/7

B. Schematic Diagrams

Sandy Bridge Processor 4/7

Sandy Bridge Processor 4/7 (POWER)



Sheet 5 of 49
Sandy Bridge
Processor 4/7

B.Schematic Diagrams

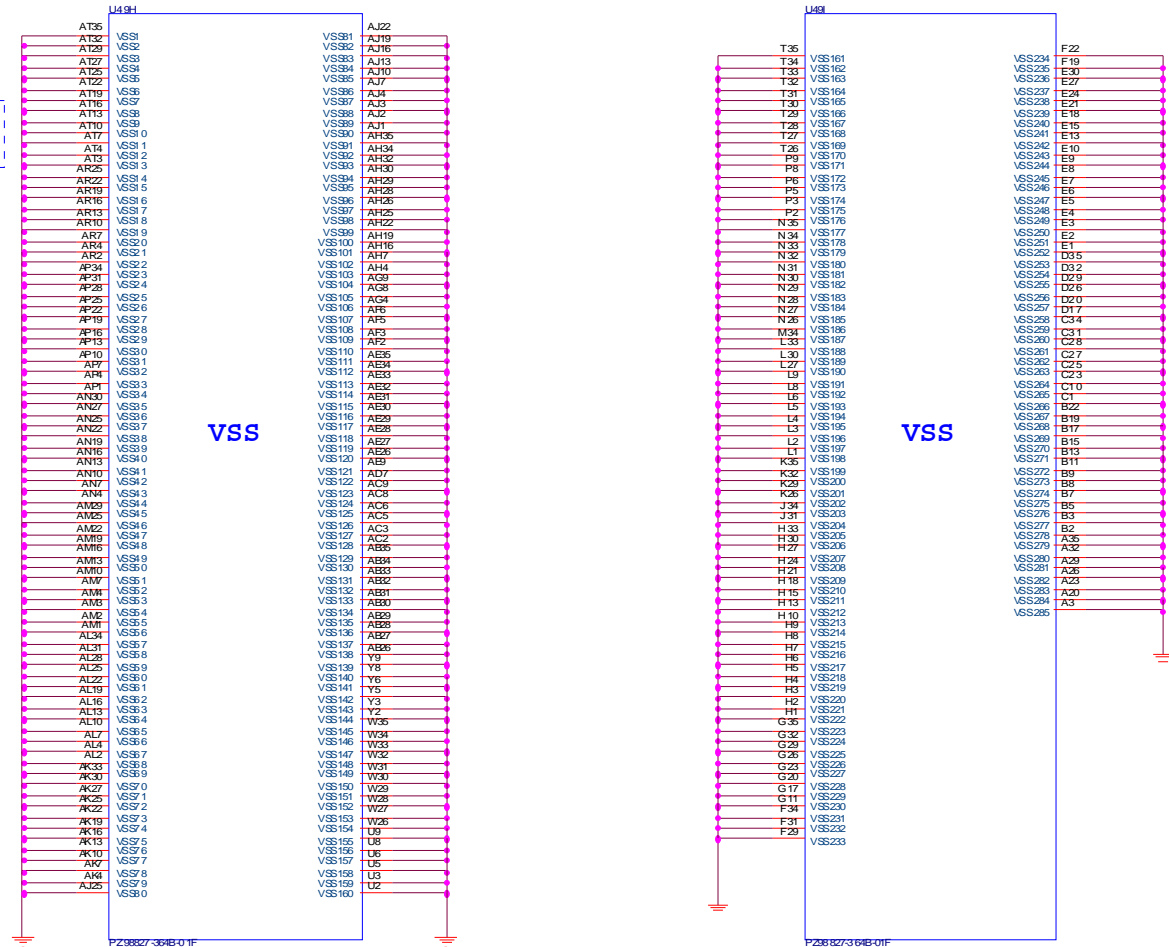
Sandy Bridge Processor 6/7

Sandy Bridge Processor 6/7 (GND)

B.Schematic Diagrams

Sheet 7 of 49
Sandy Bridge
Processor 6/7

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



Sandy Bridge Processor 7/7

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
------	--

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
------	--

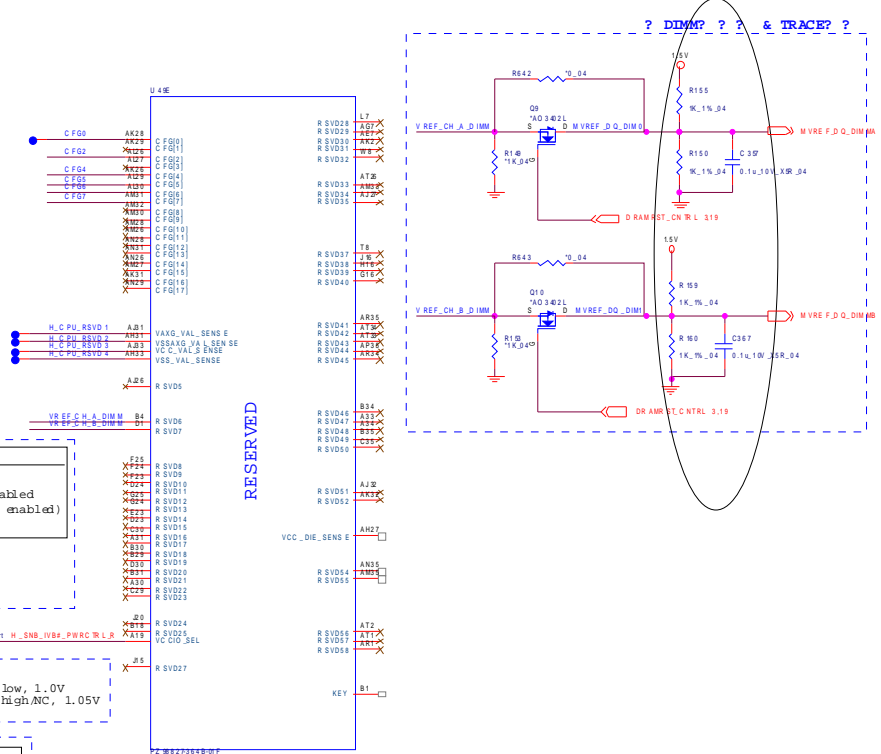
PCIe Port Bifurcation Straps

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
---------------	--

On CRB
H_SNB_IVB#_PWRCTRL = low, 1.0V
H_SNB_IVB#_PWRCTRL = high, 1.05V

PEG DEFER TRAINING

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



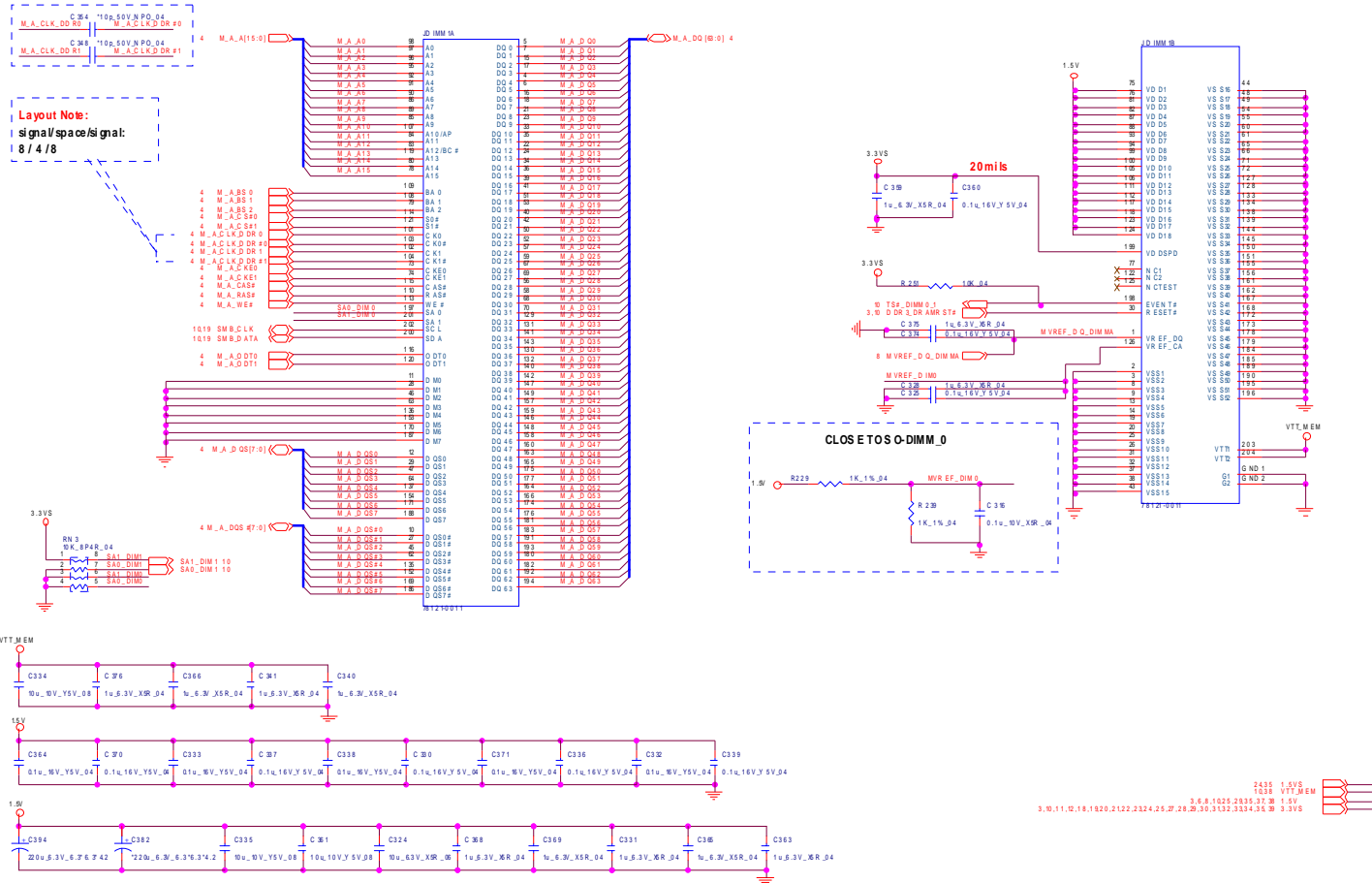
36, 9, 10, 25, 29, 30, 37, 38 1.5V
23, 11, 10, 16, 1619, 2022, 2324, 2127, 2829, 30, 35, 37, 38, 39 1.05V

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Sandy Bridge
Processor 7/7

DDR3 SO-DIMM_0

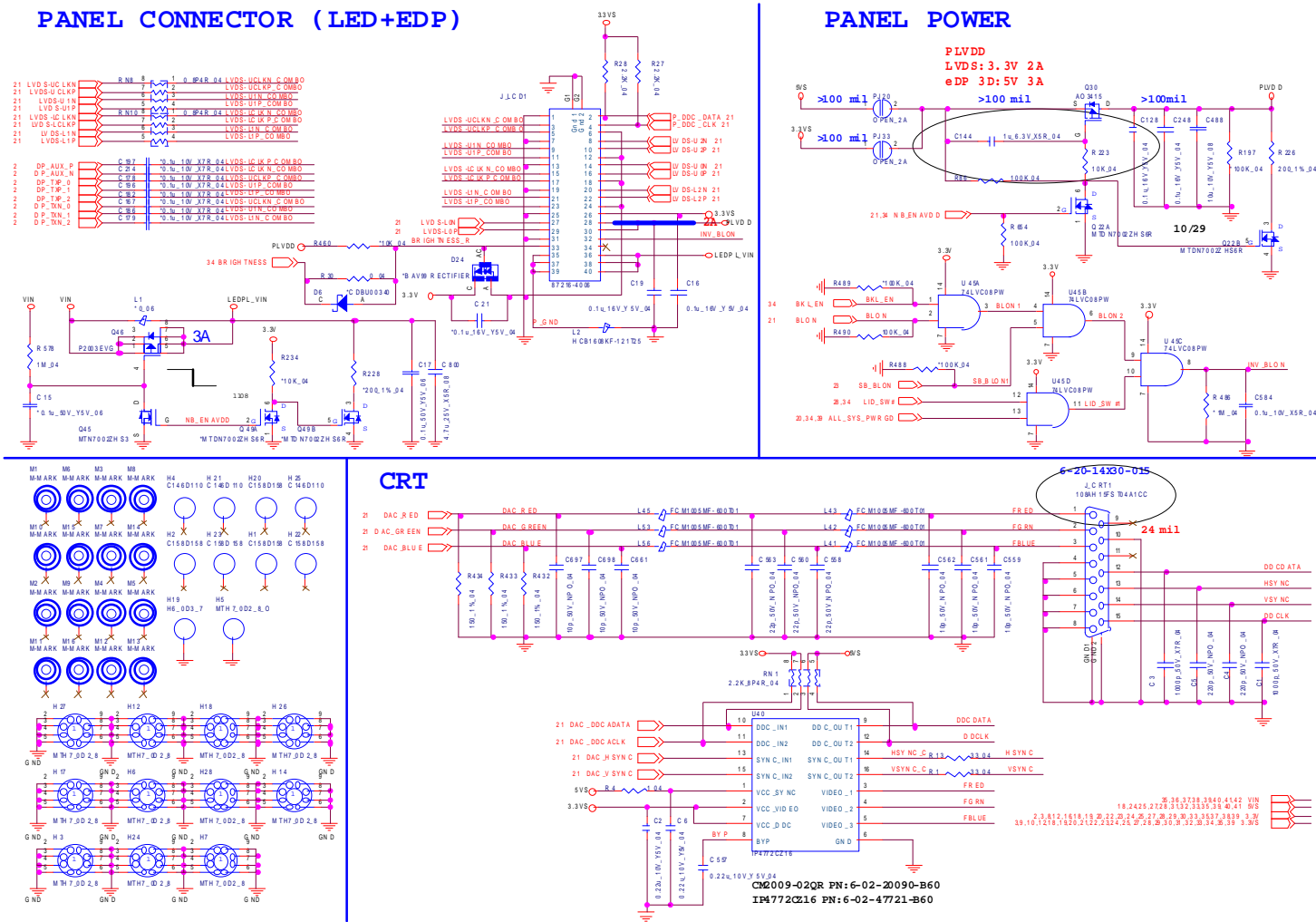
SO-DIMM A

CHANGE TO STANDARD



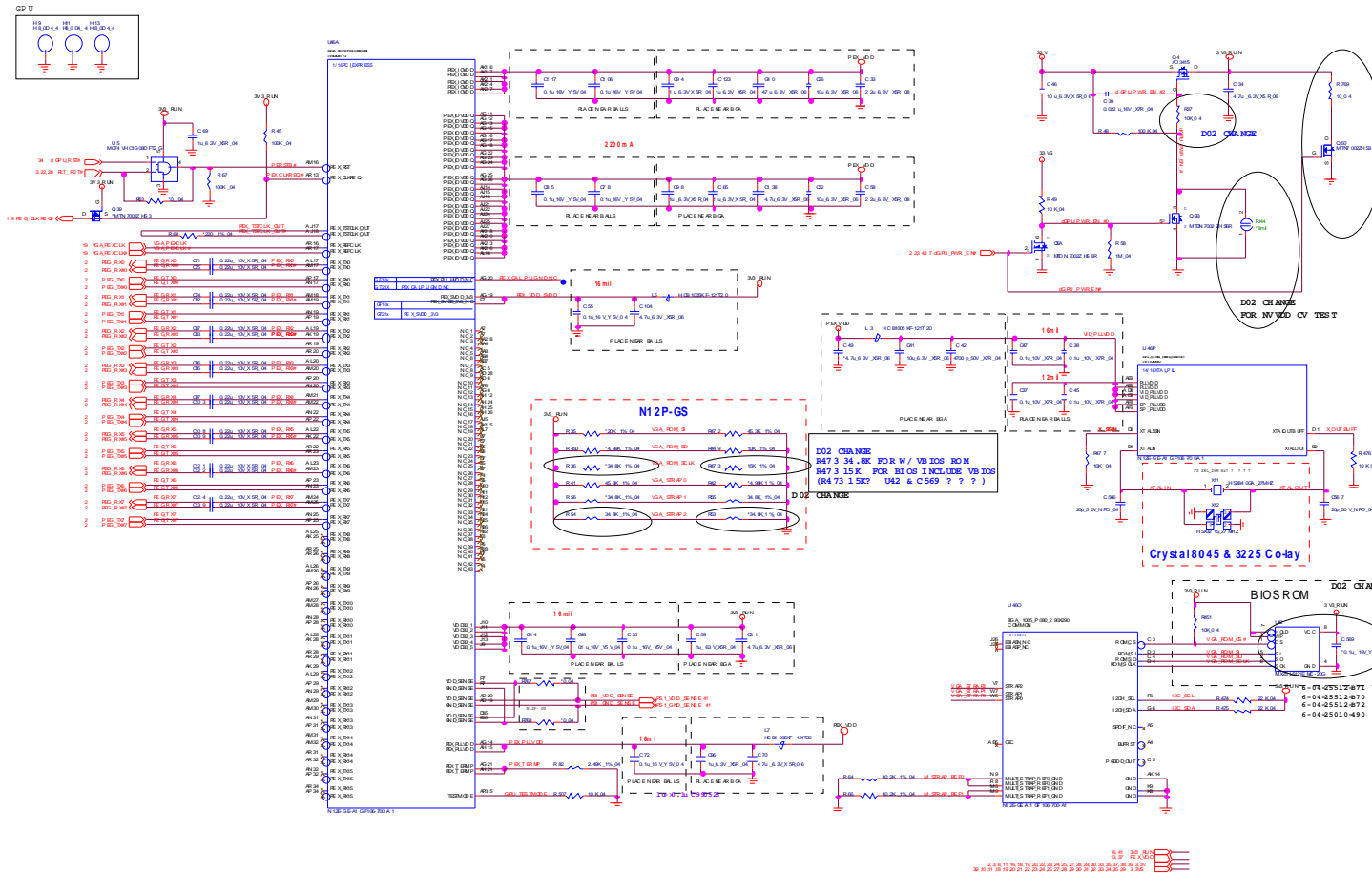
Panel, Inverter, CRT

Sheet 11 of 49
Panel, Inverter,
CRT



VGA PCI-E Interface

Sheet 12 of 49
VGA PCI-E
Interface

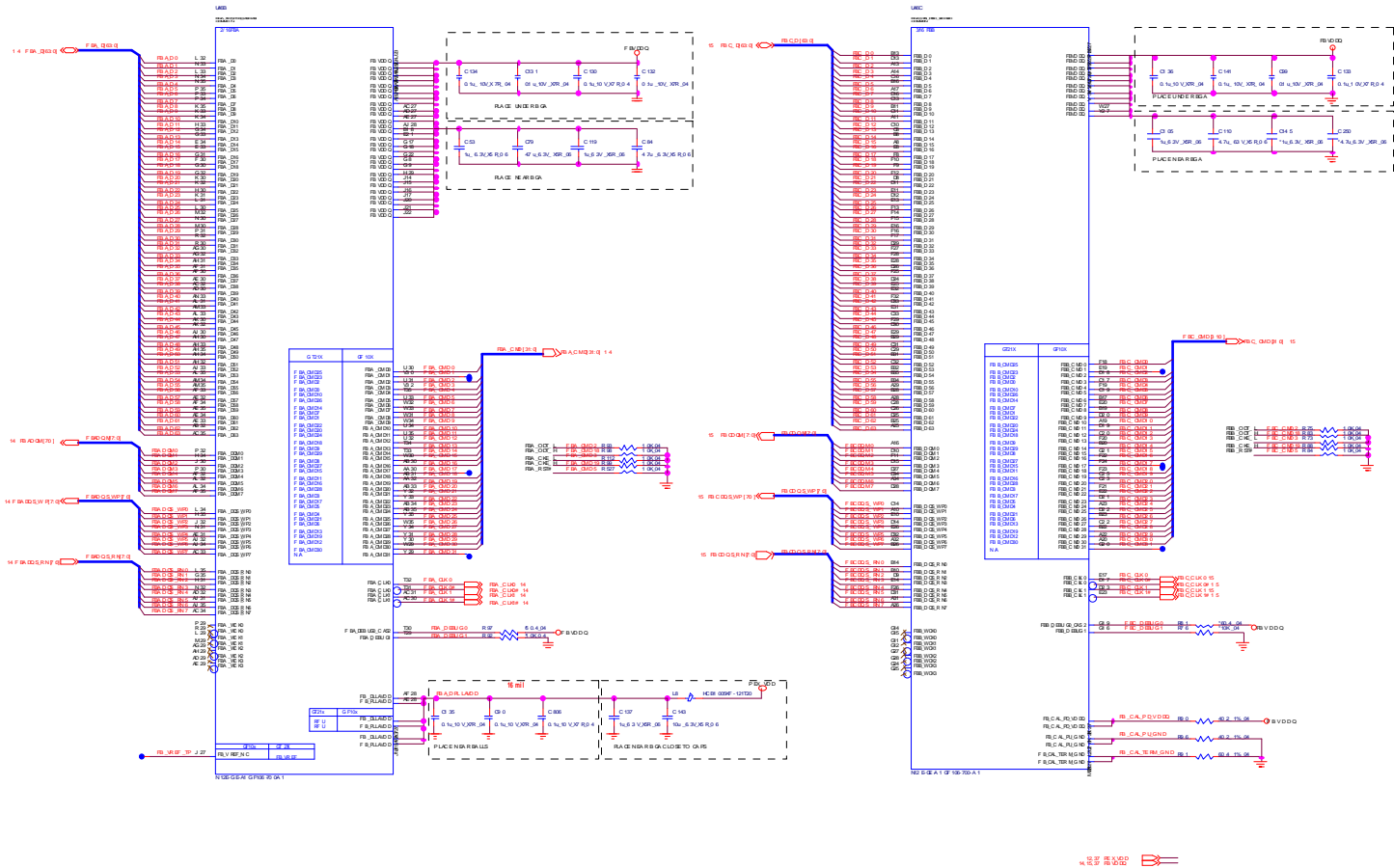


VGA Frame Buffer Interface

Frame Buffer Interface

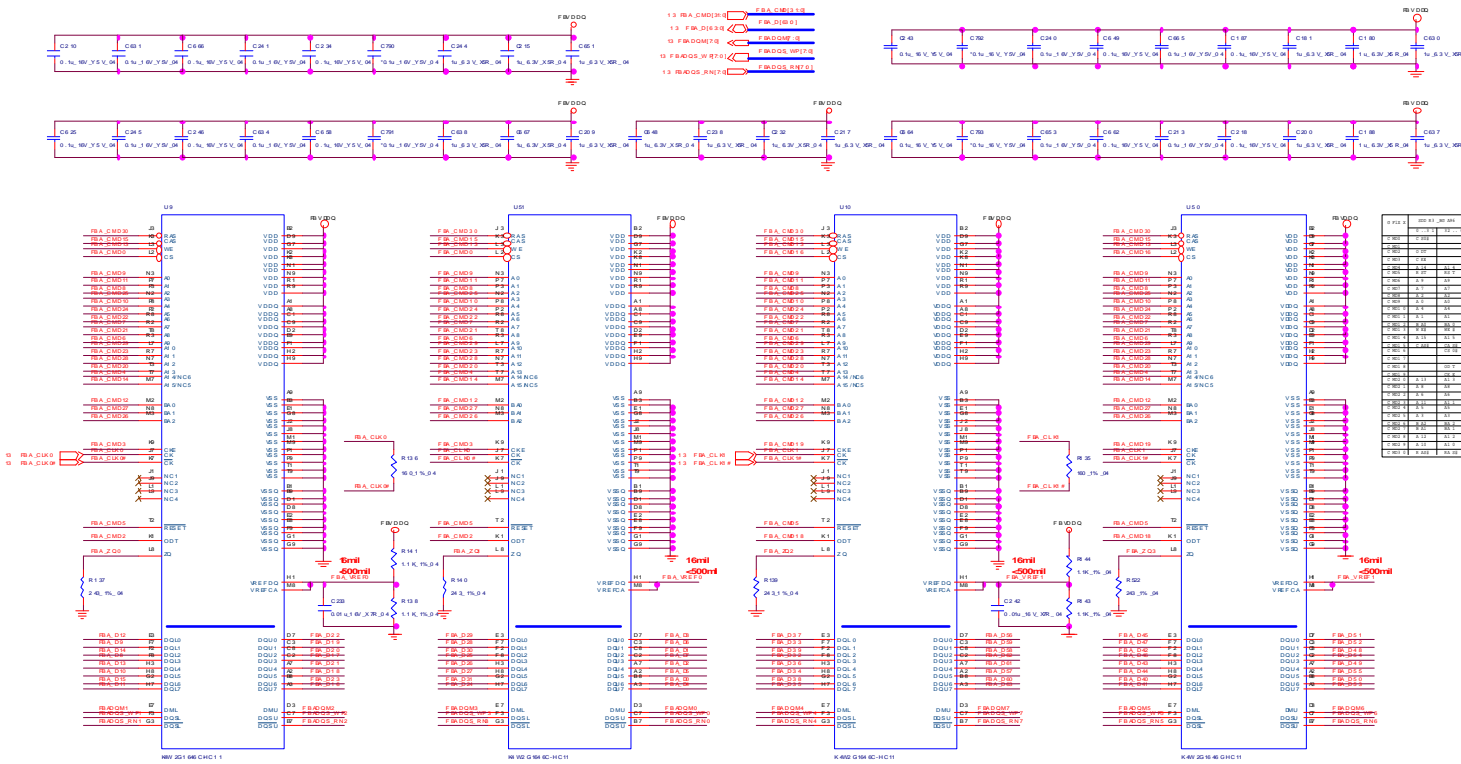
B.Schematic Diagrams

Sheet 13 of 49
VGA Frame Buffer Interface



VGA Frame Buffer A

Frame Buffer Partition A

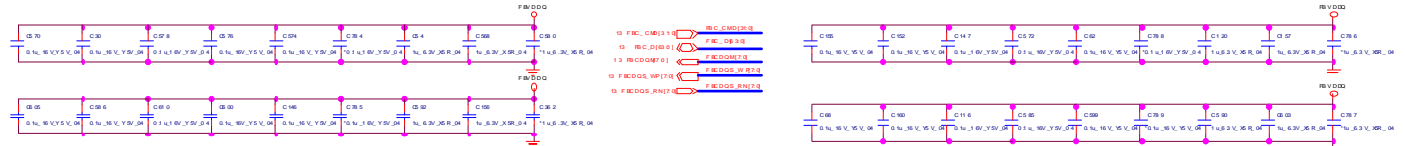


Sheet 14 of 49
VGA Frame Buffer
A

B.Schematic Diagrams

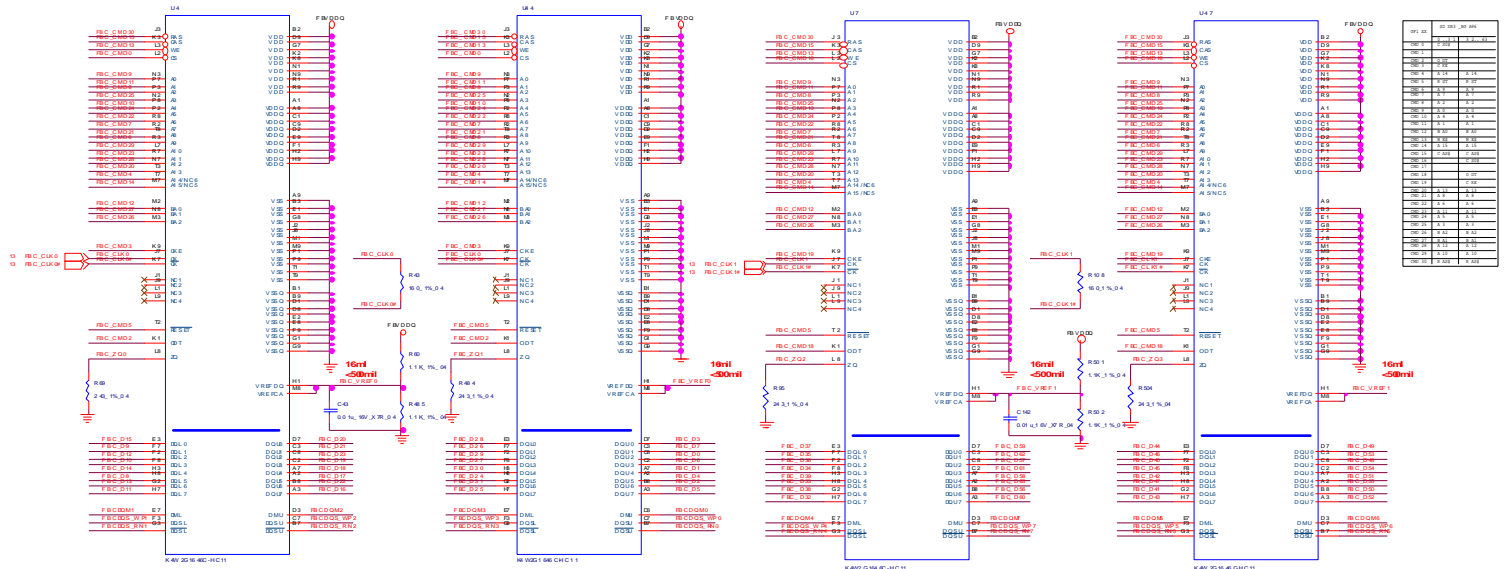
VGA Frame Buffer B

Frame Buffer Partition B

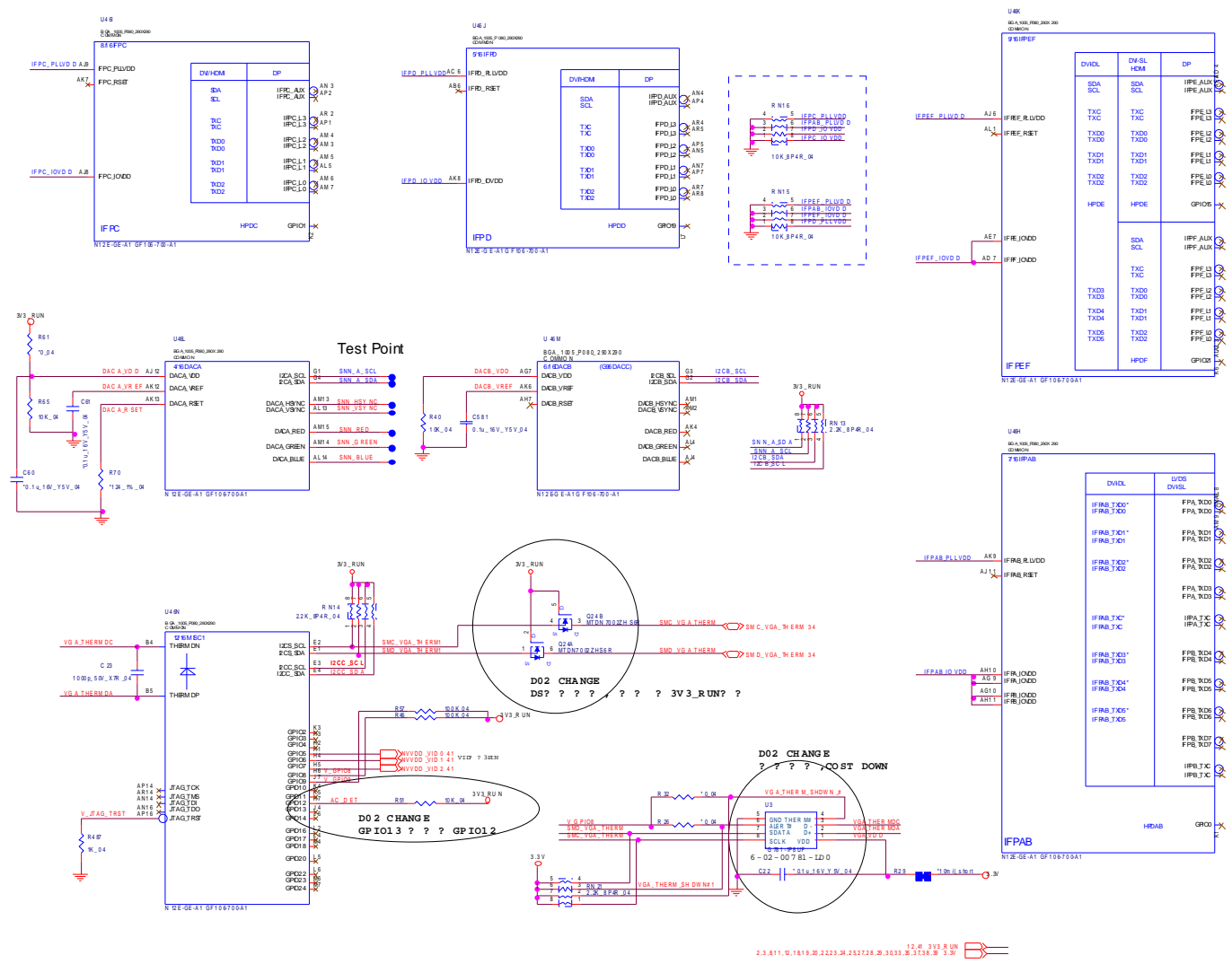


B.Schematic Diagrams

Sheet 15 of 49
VGA Frame Buffer
B



VGA I/O

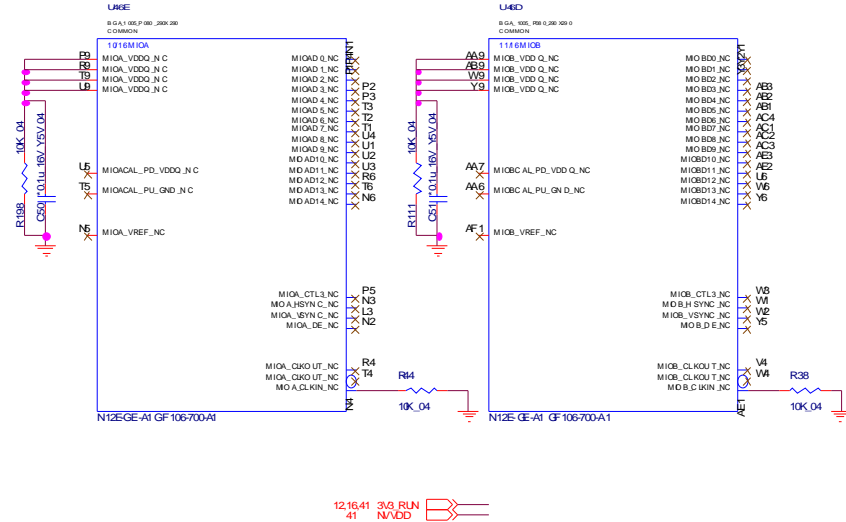
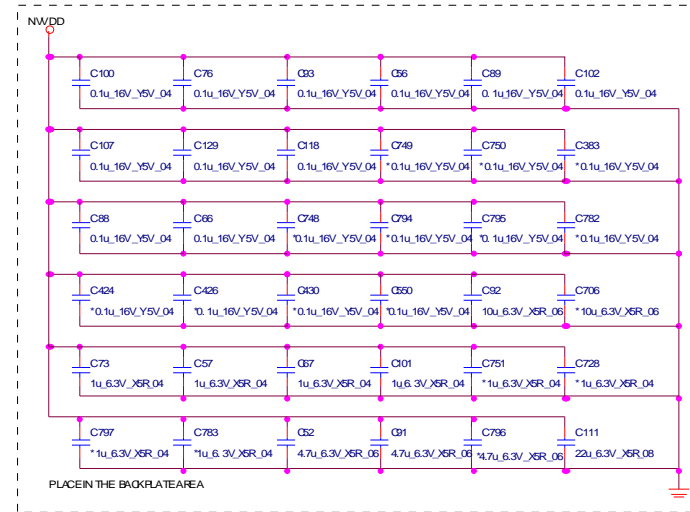
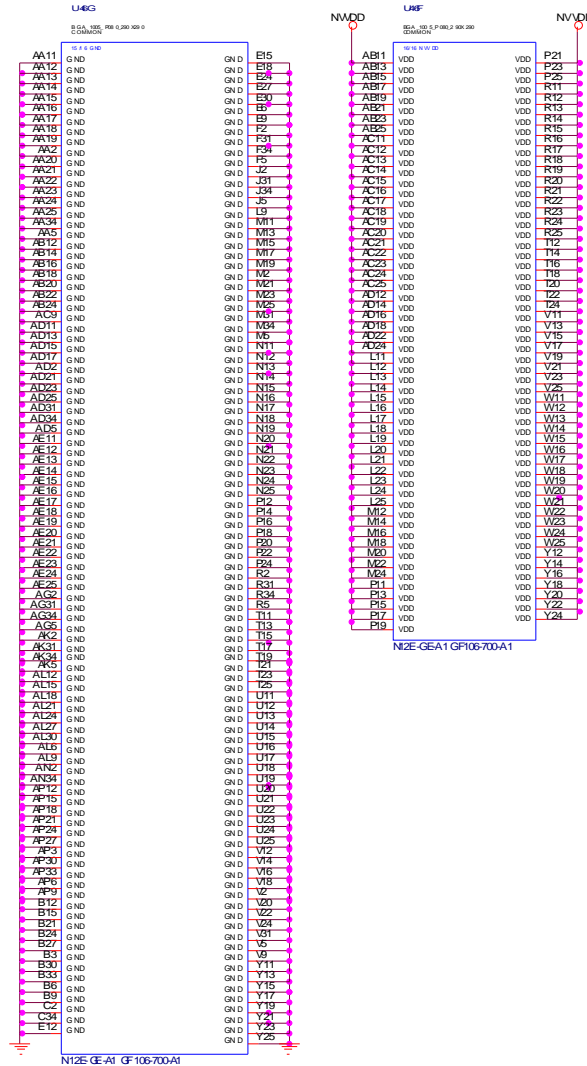


B.Schematic Diagrams

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VGA I/O

VGA NVVDD Cecoupling

Sheet 17 of 49
VGA NVVDD
Cecoupling



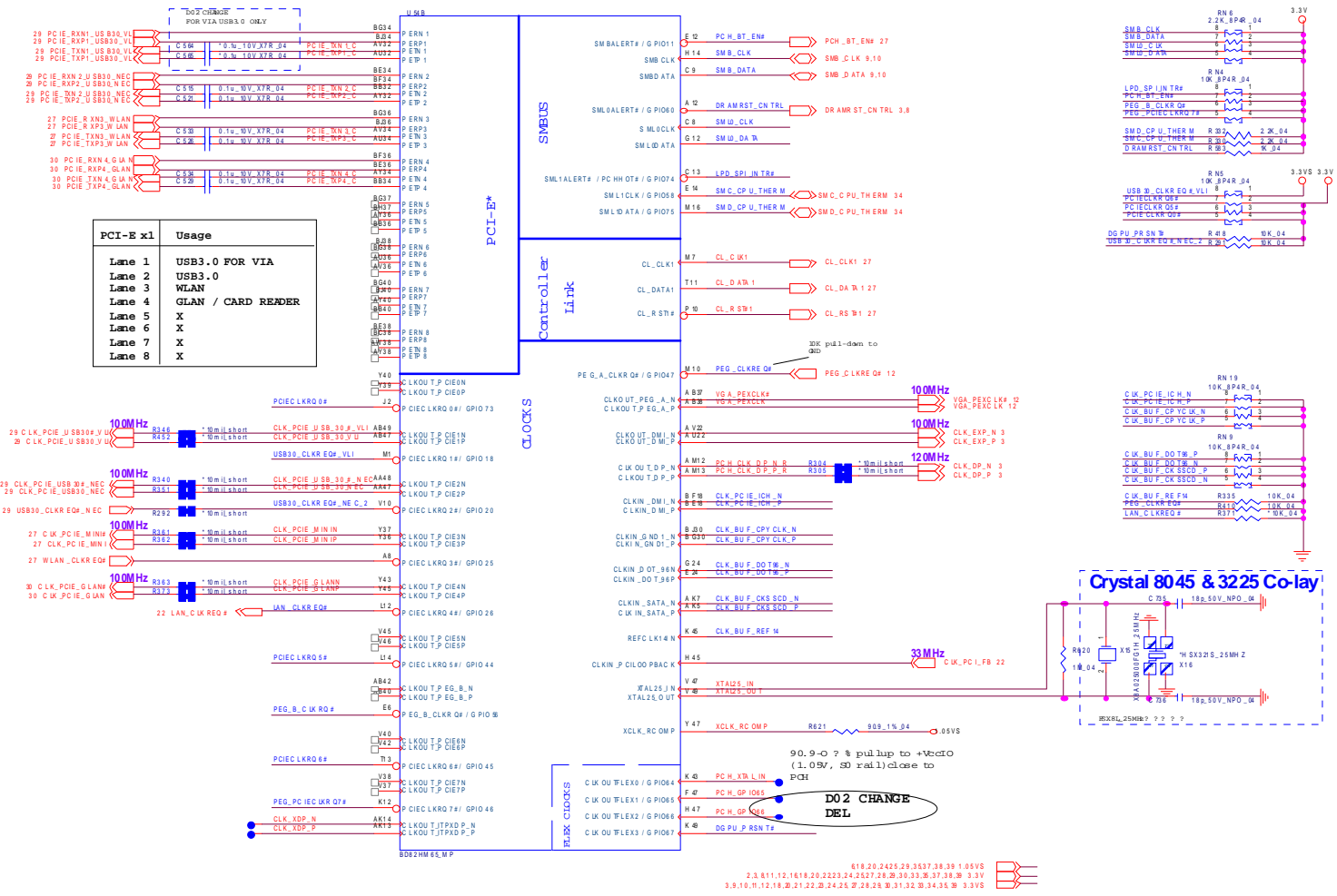
CougarPoint - M 2/9

CougarPoint - M (PCI-E, SMBUS, CLK)

B.Schematic Diagrams

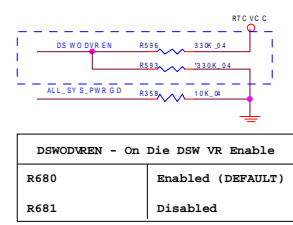
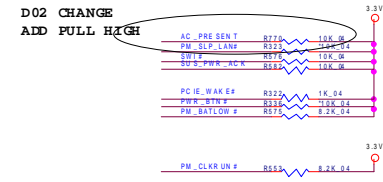
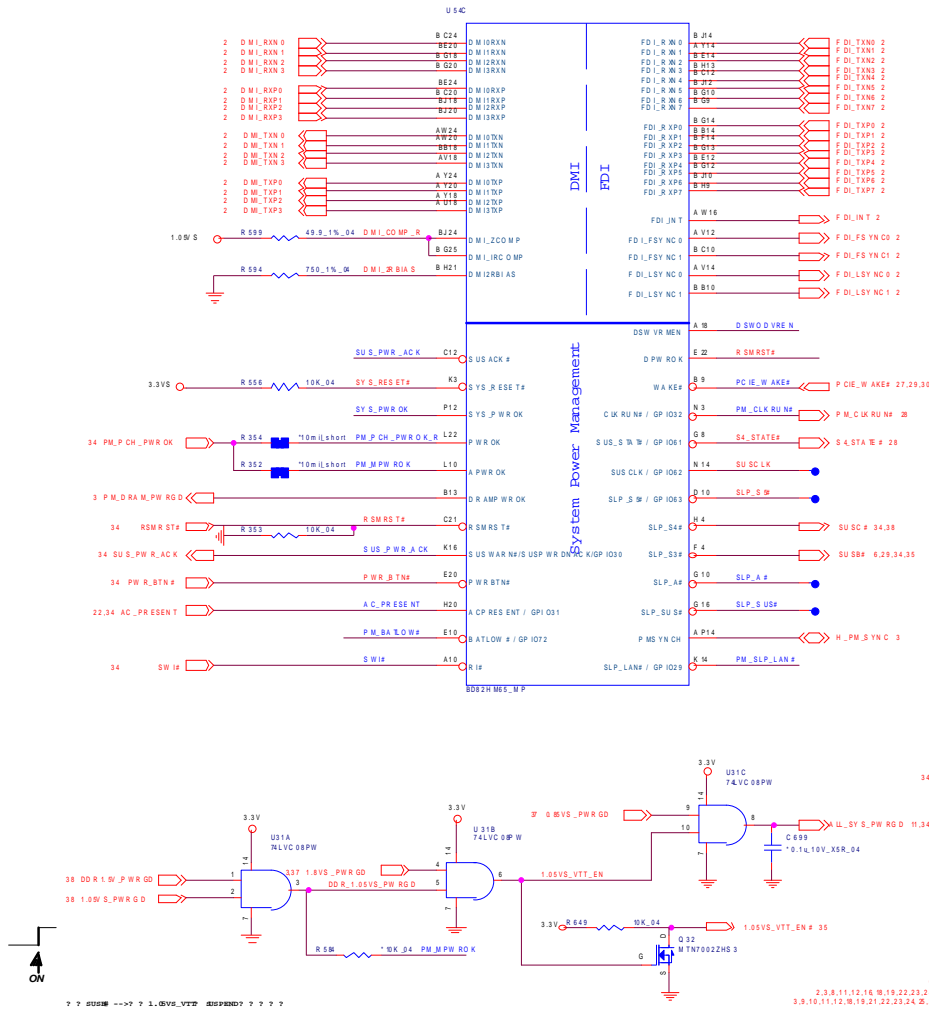
Sheet 19 of 49
CougarPoint - M 2/9

PCI-E x1	Usage
Lane 1	USB3.0 FOR VIA
Lane 2	USB3.0
Lane 3	WLAN
Lane 4	GLAN / CARD READER
Lane 5	X
Lane 6	X
Lane 7	X
Lane 8	X

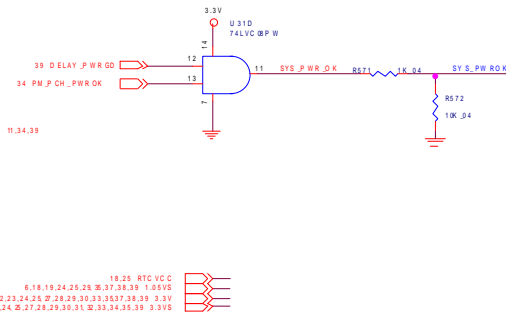


CougarPoint - M 3/9

CougarPoint -M (DMI,FDI,GPIO)



DSWODVREN - On Die DSW VR Enable	
R680	Enabled (DEFAULT)
R681	Disabled



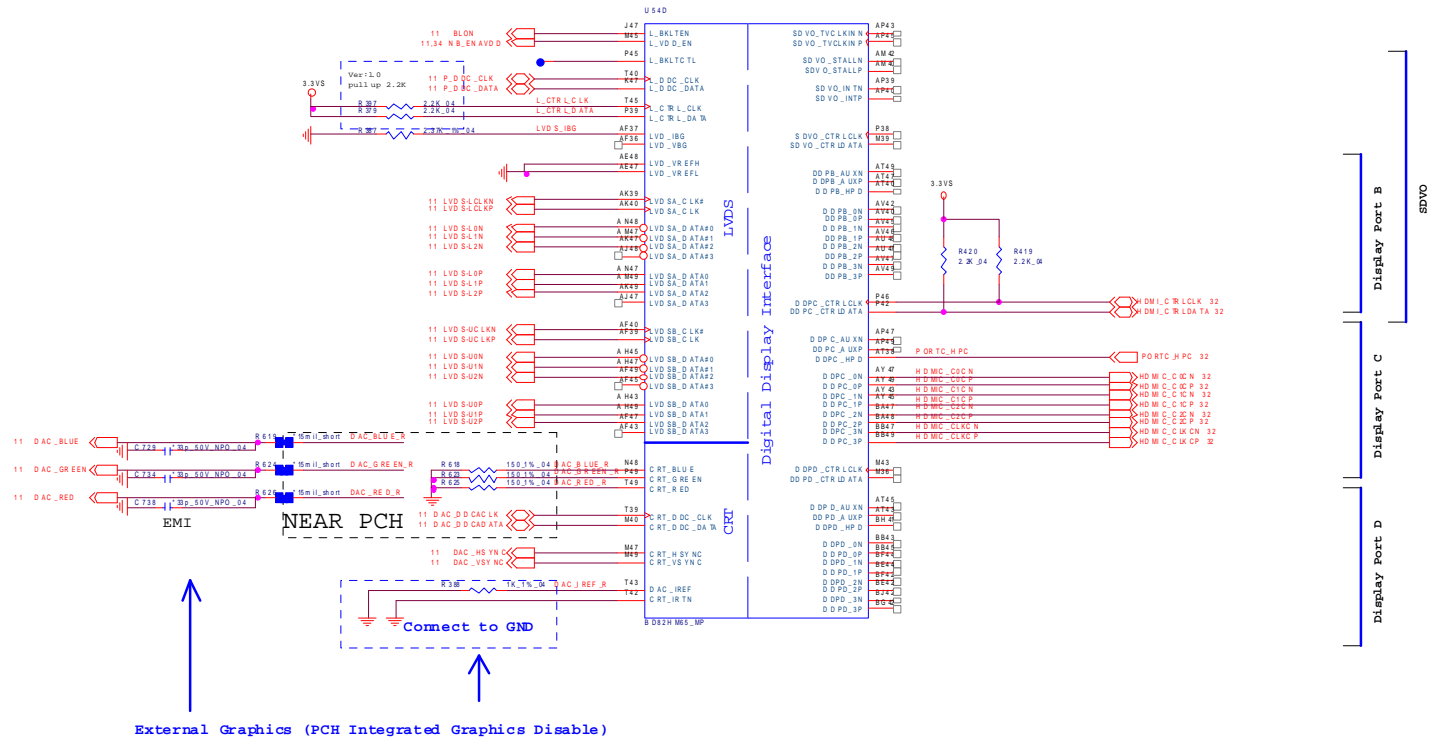
Sheet 20 of 49
CougarPoint - M 3/9

B. Schematic Diagrams

CougarPoint - M 4/9

Sheet 21 of 49
CougarPoint - M 4/9

CougarPoint -M (LVDS,DDI)

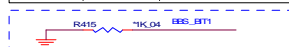


3,9,10,11,12,16,19,20,22,23,26,27,28,29,30,31,32,33,34,35,39,41,5V5
11,16,24,25,27,28,30,32,33,35,39,40,41,5V5

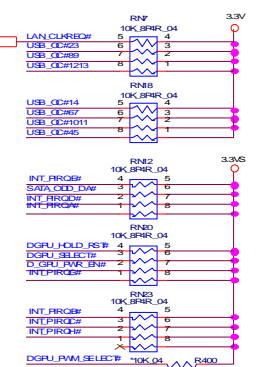
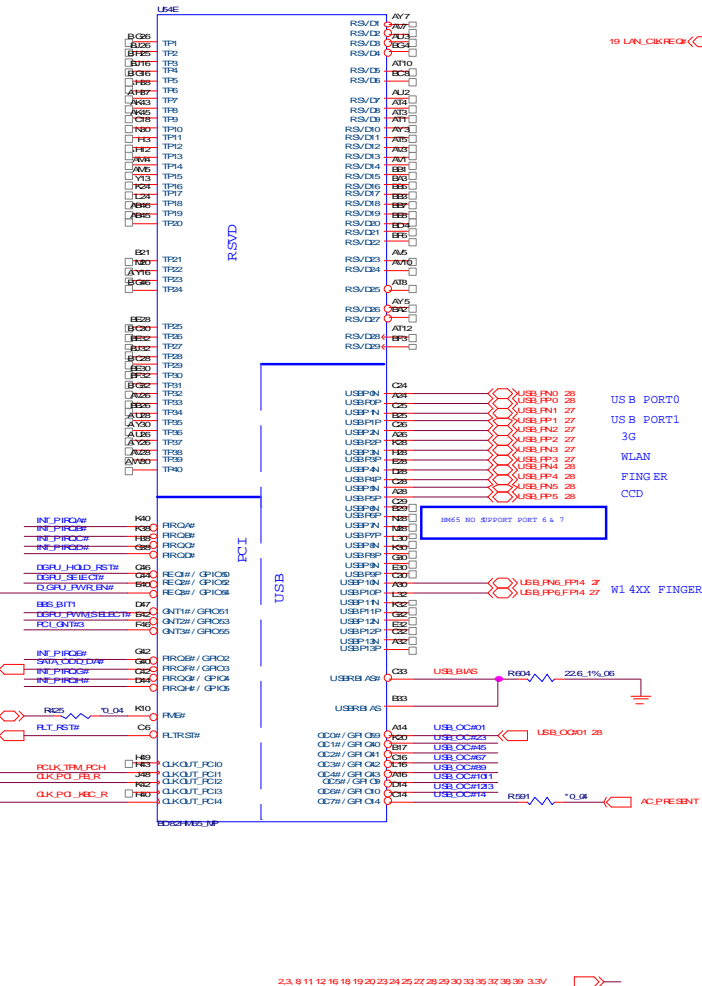
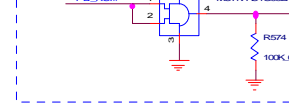
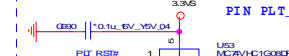
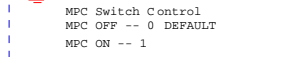
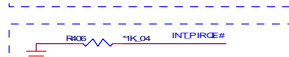
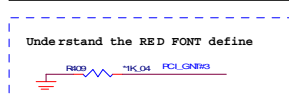
CougarPoint - M 5/9

CougarPoint -M (PCI,USB,NVRAM)

Boot BIOS Strap		
BBS_BITL	BBS_BIT0	Boot BIOS Location
0	0	LRC
0	1	Reserved (NAND)
1	0	PCI
1	1	SEI



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



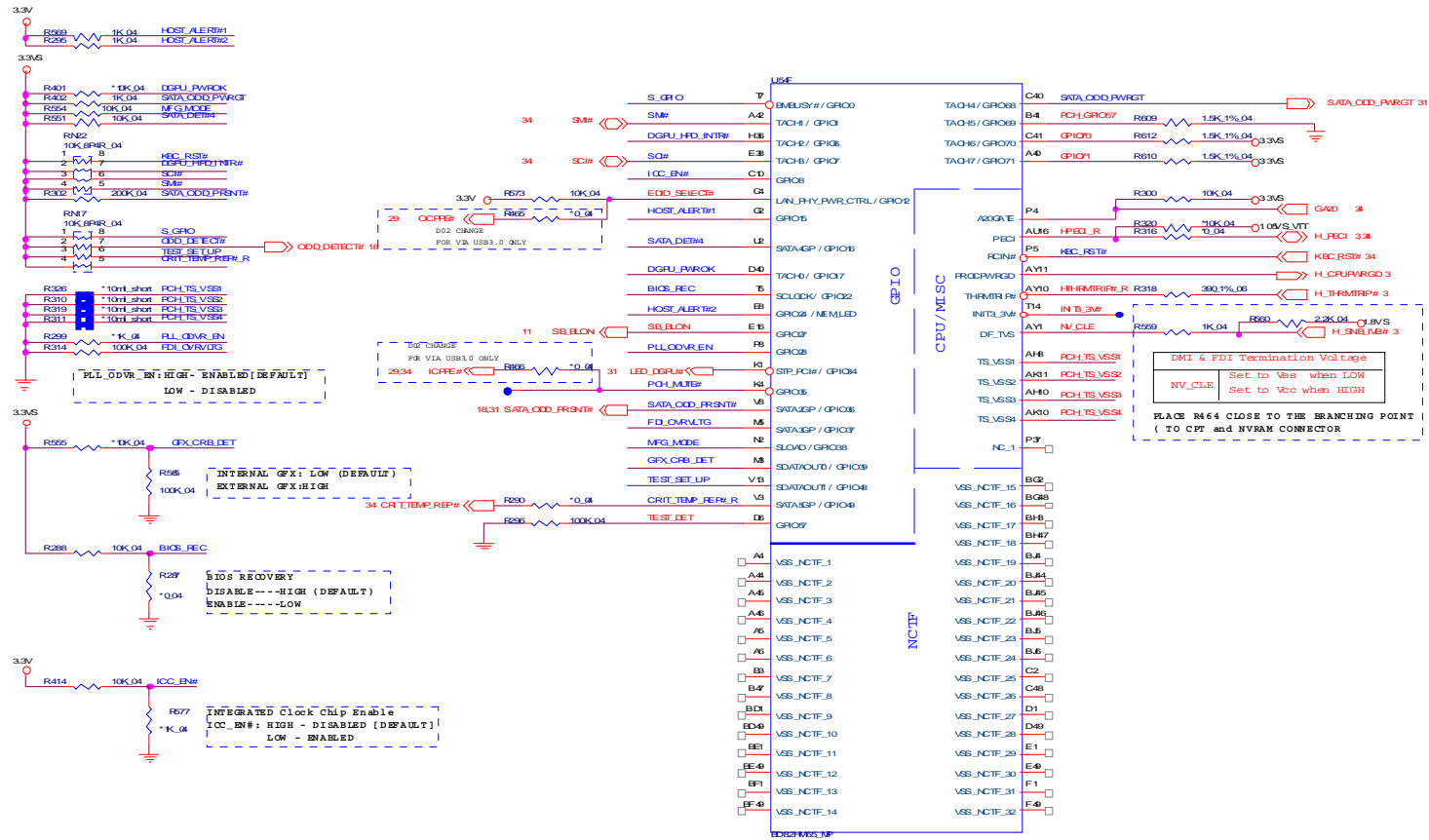
Sheet 22 of 49
CougarPoint - M 5/9

B.Schematic Diagrams

2,3, 8, 11, 12, 16, 18, 19, 20, 23, 24, 25, 27, 28, 29, 30, 33, 35, 37, 38, 39, 3, 3V
3, 9, 10, 11, 12, 18, 19, 20, 21, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 39, 3, 3V

CougarPoint - M 6/9

CougarPoint - M (GPIO, VSS_NCTF, RSVD)



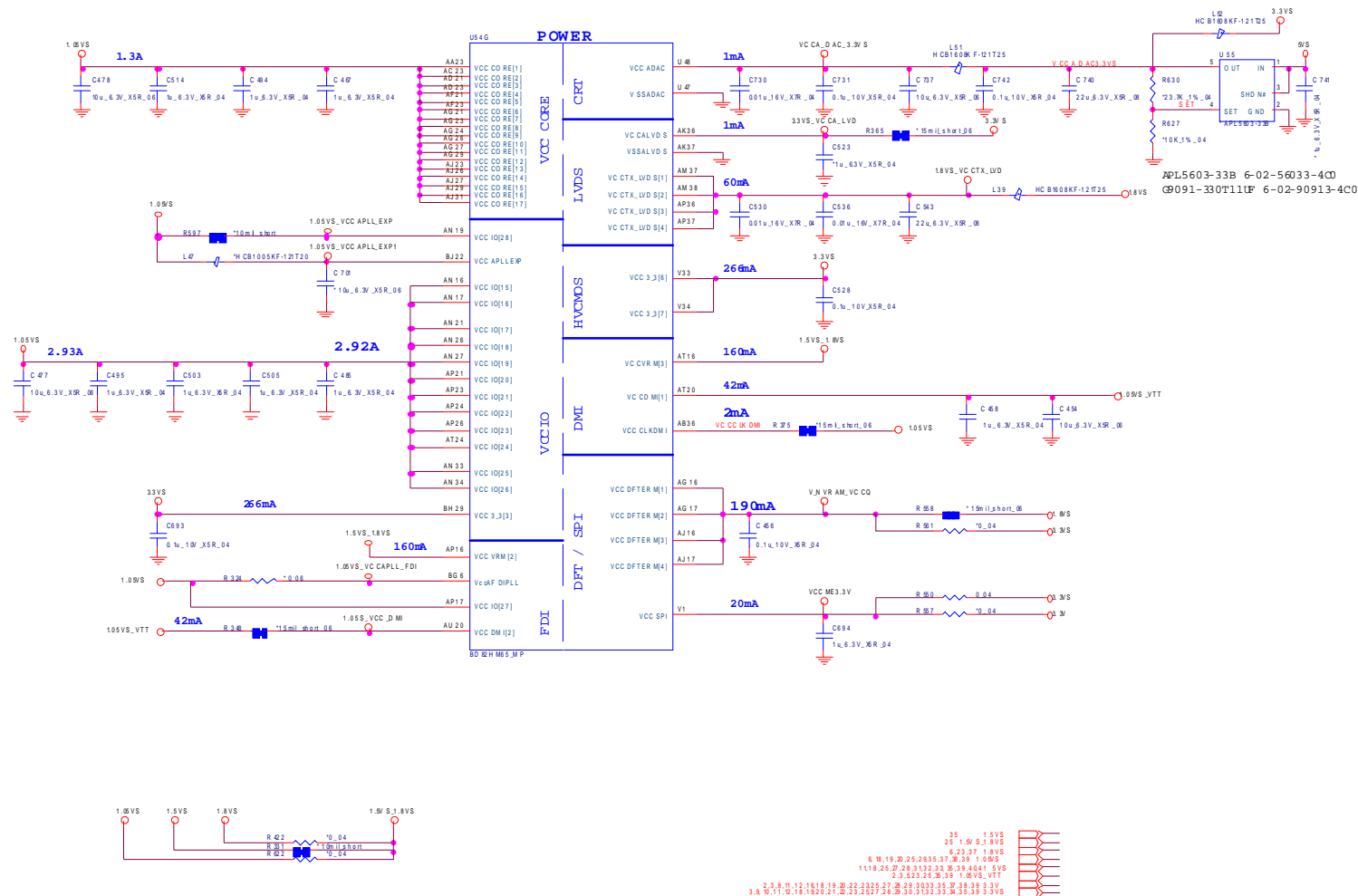
Sheet 23 of 49
CougarPoint - M 6/9

B.Schematic Diagrams

6,34,37 1.8V S
2,3,5,24,25,26,39 1.05V_VTT
2,3,8,11,12,16,18,19,20,22,24,25,27,28,29,30,33,35,39,39 3.3V
3,9,10,11,12,16,18,19,20,21,22,24,25,27,28,29,30,31,32,33,34,35,39 3.3V S

CougarPoint - M 7/9

CougarPoint -M (POWER)

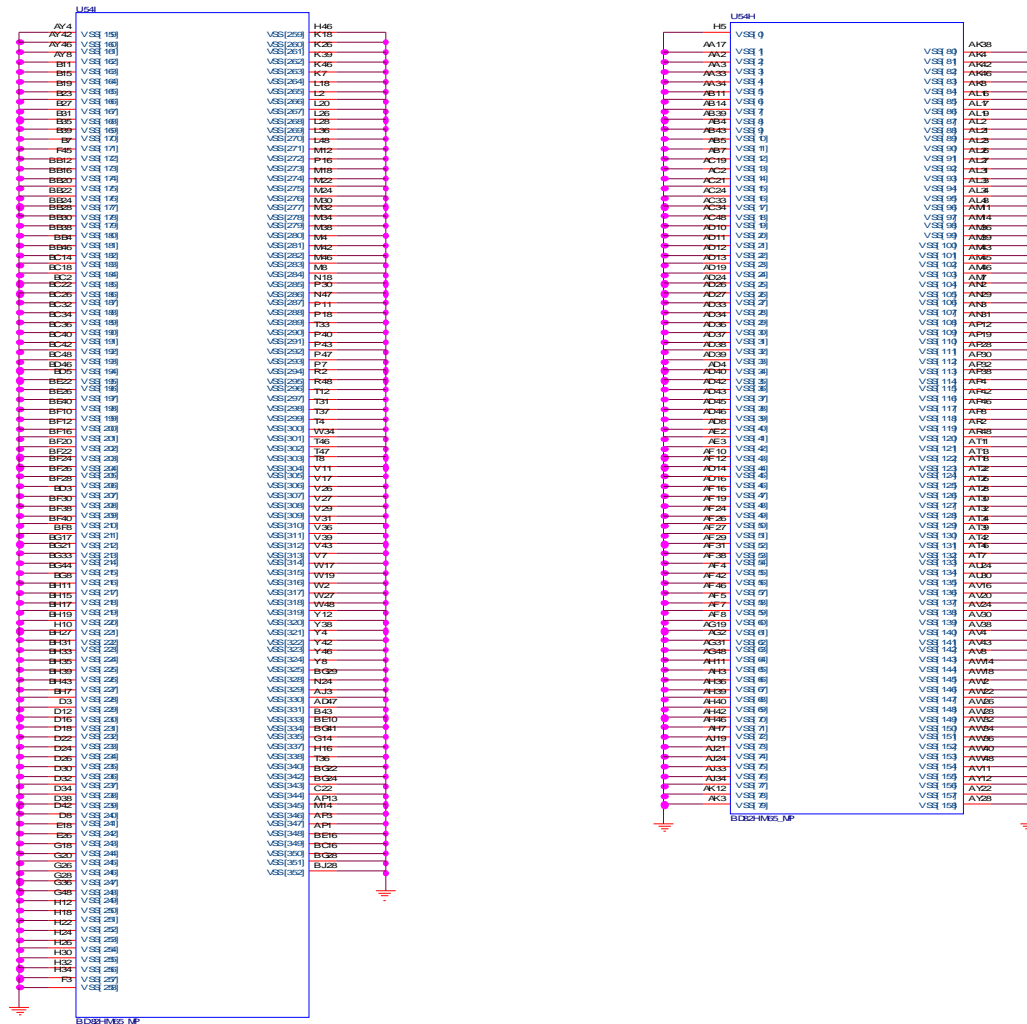


Sheet 24 of 49
CougarPoint - M 7/9

B. Schematic Diagrams

CougarPoint - M 9/9

CougarPoint -M (GND)



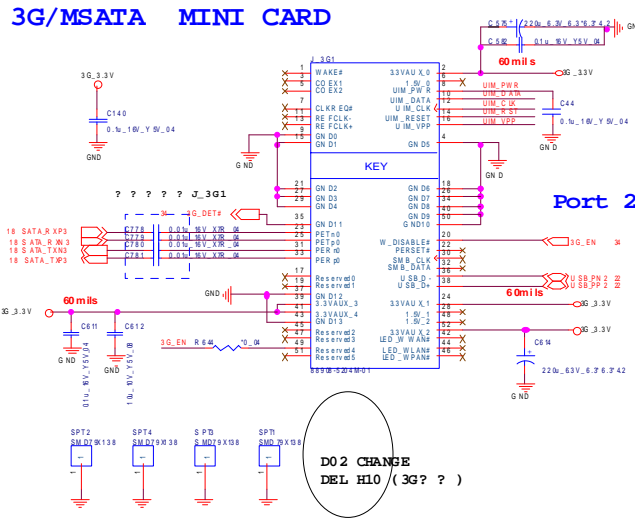
Voltage Rail	Voltage	SO	Iccmax	Current (A)
V_CPU_IO	1.05	1	1	1 (mA)
VREF	5	1	1	1 (mA)
VREF_Sus	5	1	1	1 (mA)
Vcc3_3	3.3	0	0.266	
VccADAC3	1.05	1	1	1 (mA)
VccADFLLA	1.05	0	0.08	
VccADFLLB	1.05	0	0.08	
VccCore	1.05	1	1.3	
VccDMI	1.1	0	0.042	
VccIO	1.05	2	2.925	
VccASW	1.05	1	1.01	
VccSEI	3.3	0	0.020	
VccDW3_3	3.3	2	2 (mA)	
VccDPTERM	1.8	0	0.19	
VccSus3_3	3.3	0	0.097	
VccSusHDA	3.3	1	1 (mA)	
VccVBI	1.5	0	0.16	
VccCLKDMI	1.05	0	0.02	
VccSRC	1.05	0	0.095	
VccDFFCLKN	1.05	0	0.055	
VccALVDS	3.3	1	1 (mA)	
VccTXLVDS	1.8	0	0.06	

Sheet 26 of 49
CougarPoint - M 9/9

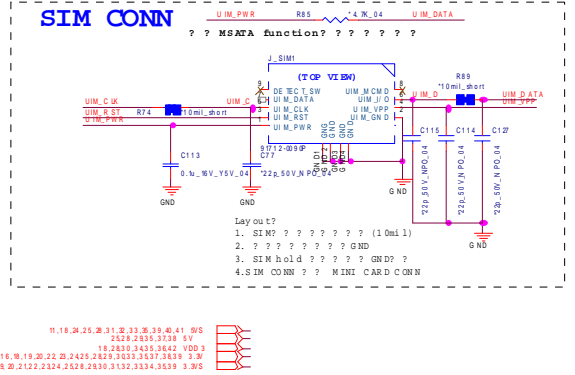
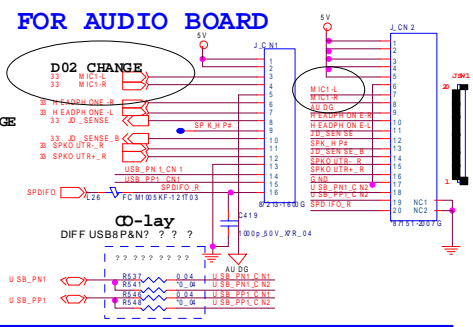
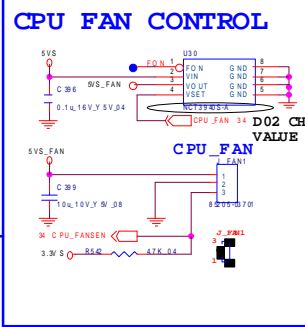
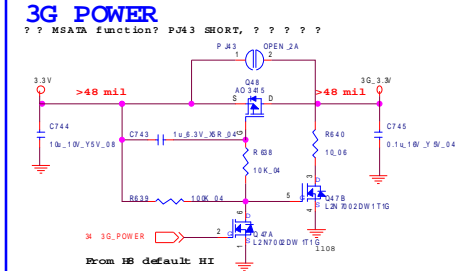
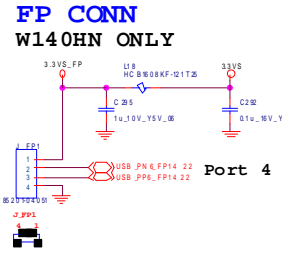
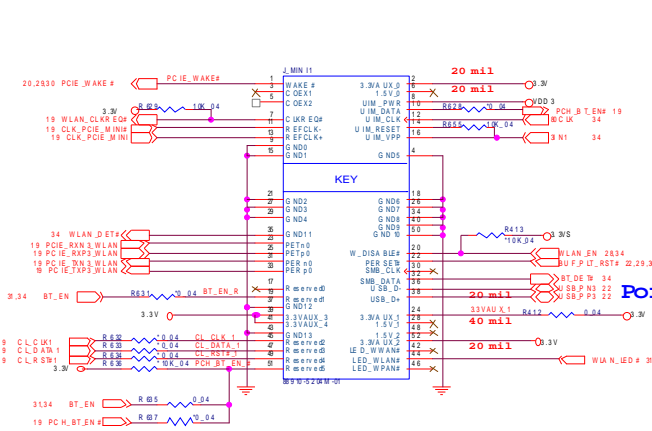
B. Schematic Diagrams

WLAN, 3G, Mini PCIE

Sheet 27 of 49
WLAN, 3G, Mini
PCIE

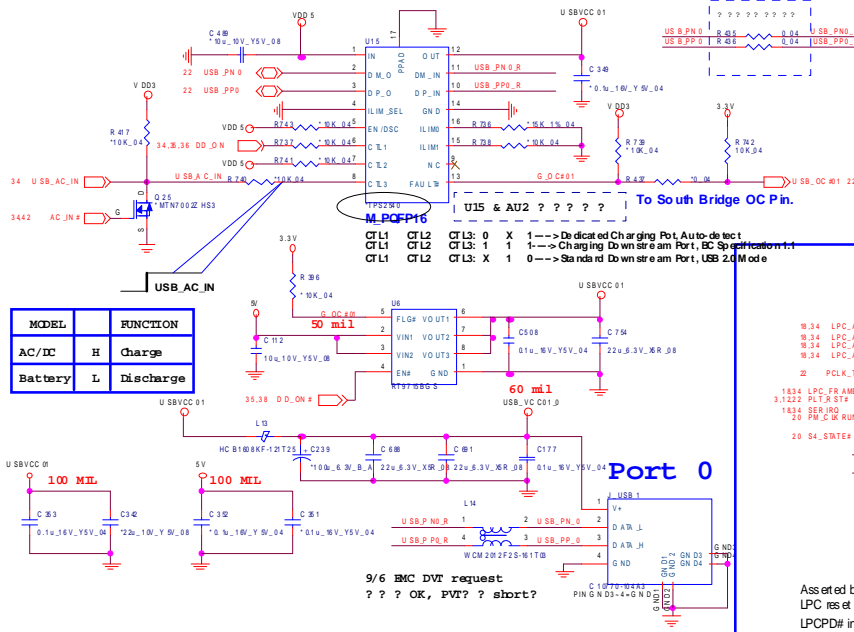


WLAN MINI CARD

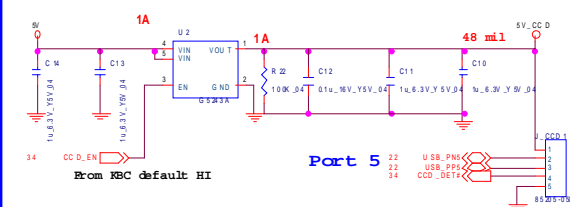


USB, Fan, TP, FP, Multi-Conn

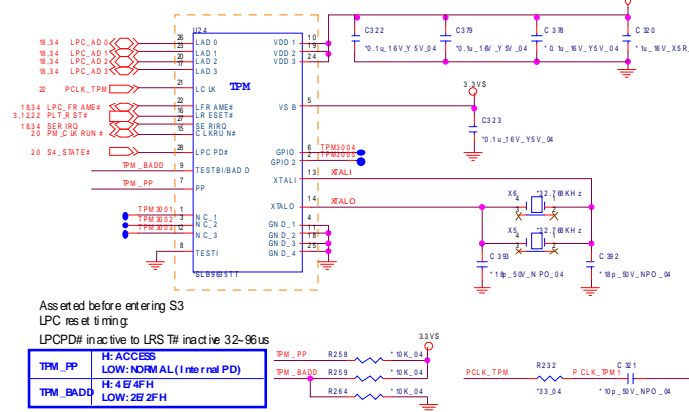
USB Charge PORT



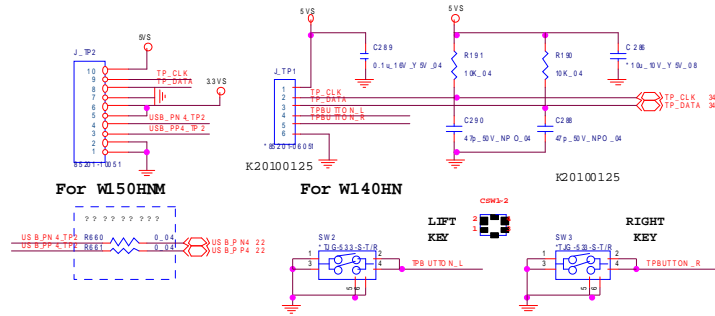
CCD



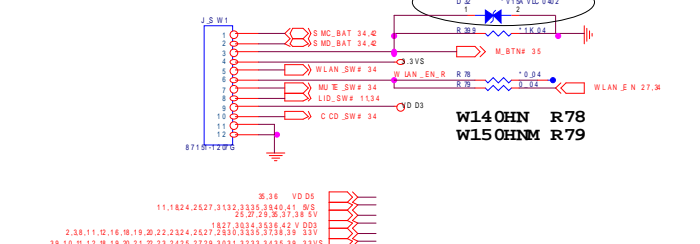
TPM 1.2



CLICK CONN



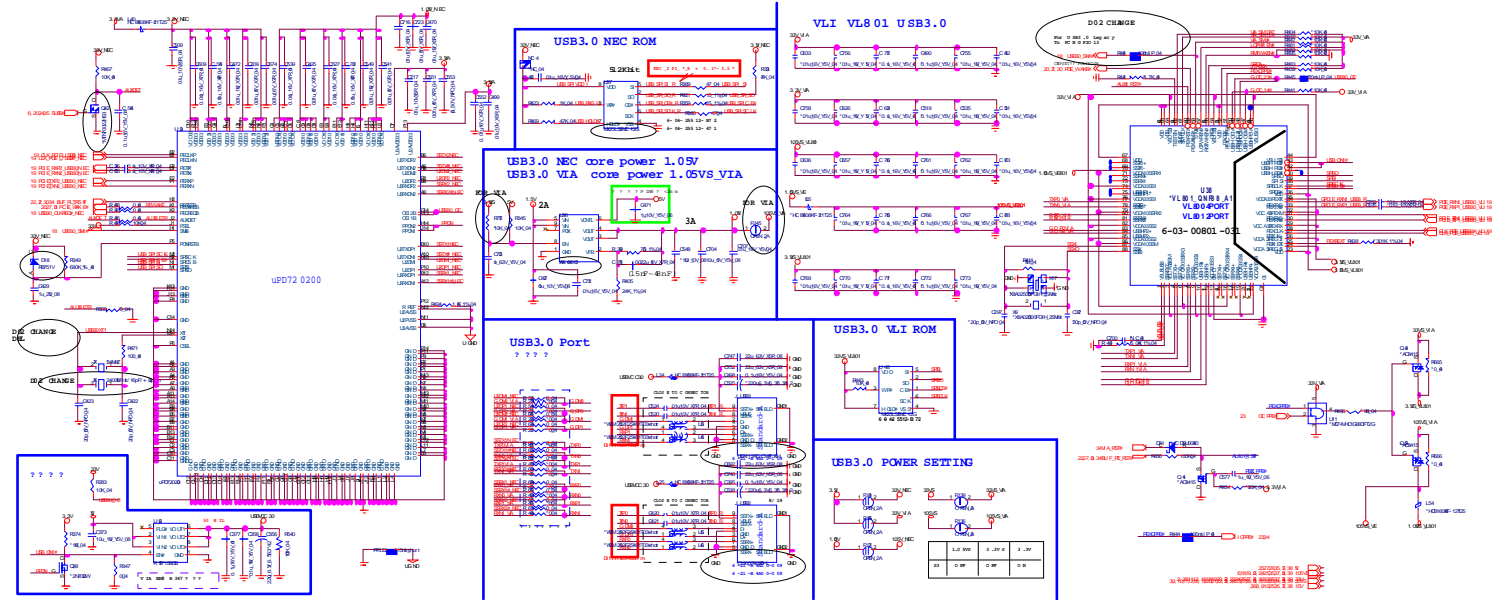
FOR POWER SWITCH BOARD



Sheet 28 of 49
USB, Fan, TP, FP,
Multi-Conn

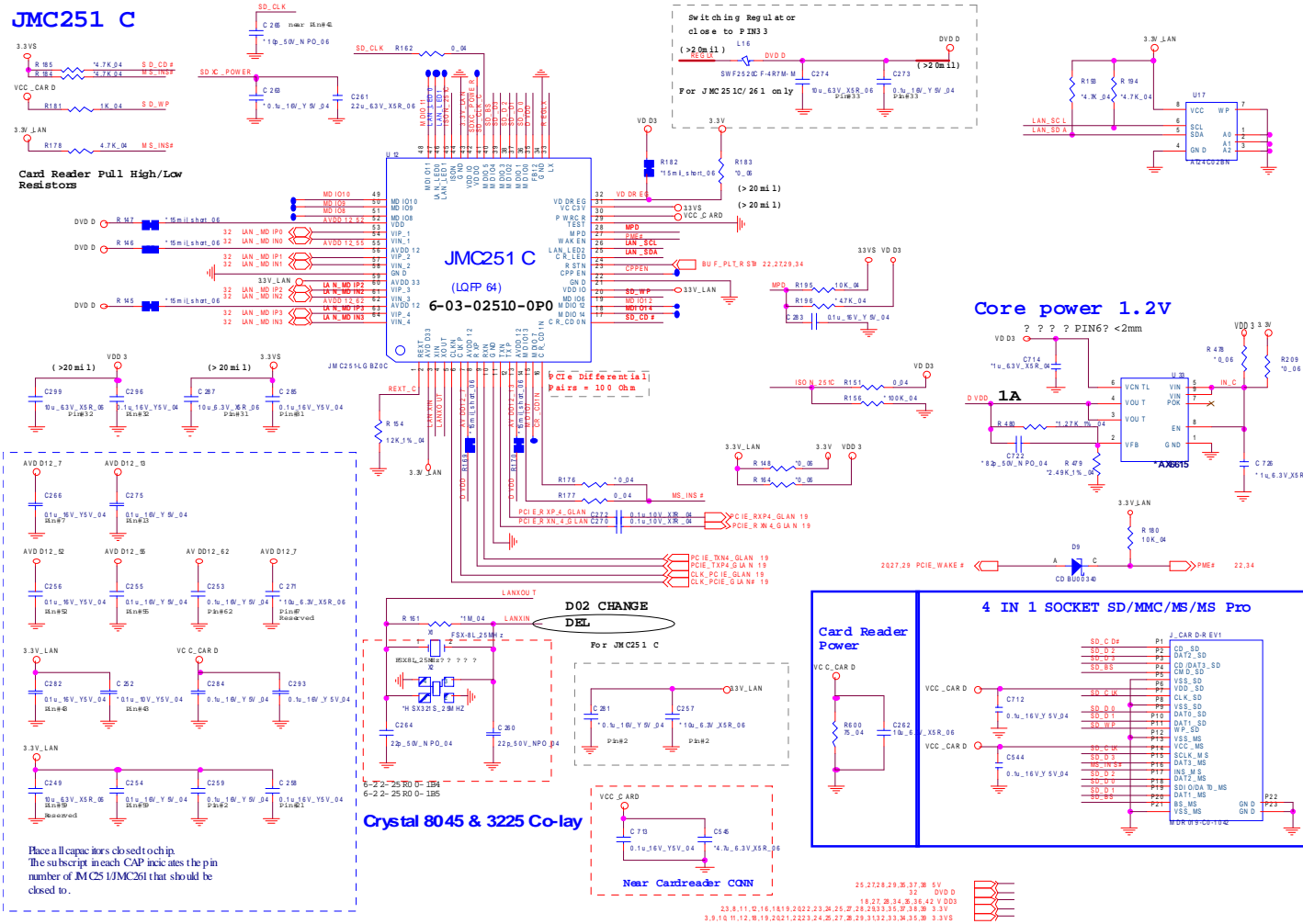
B.Schematic Diagrams

USB 3.0



Sheet 29 of 49
USB 3.0

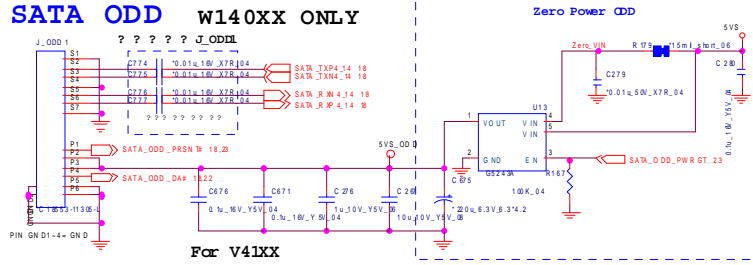
Card Reader (JMC251C)



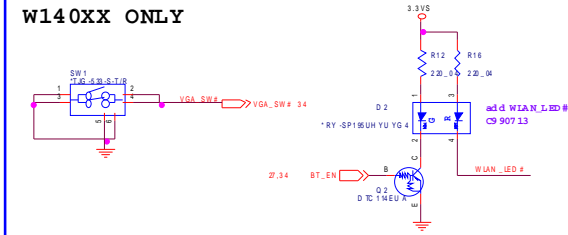
Sheet 30 of 49
Card Reader
(JMC251C)

B. Schematic Diagrams

SATA ODD, LED, Hotkey, LID SW

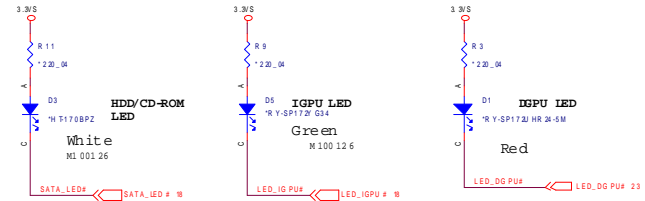
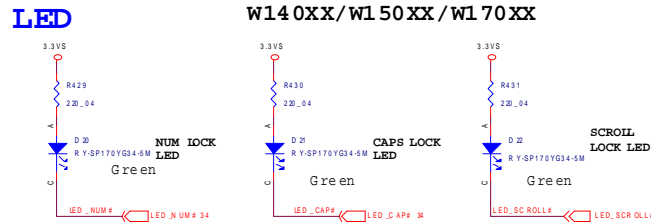


W140XX ONLY

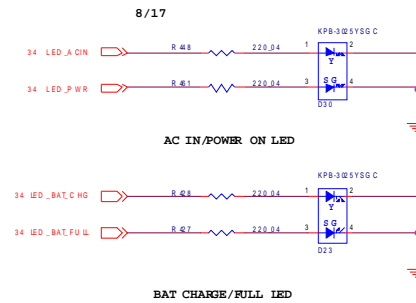


B.Schematic Diagrams

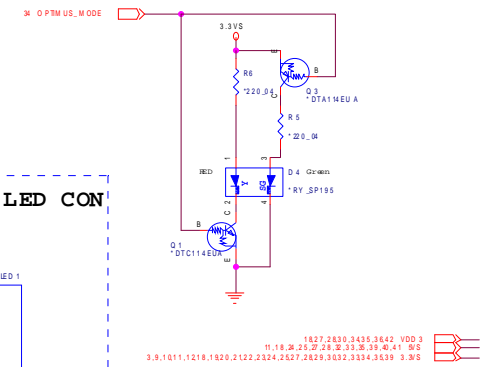
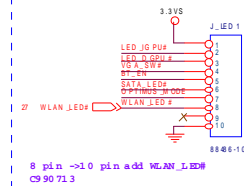
Sheet 31 of 49
SATA ODD, LED,
Hotkey, LID SW



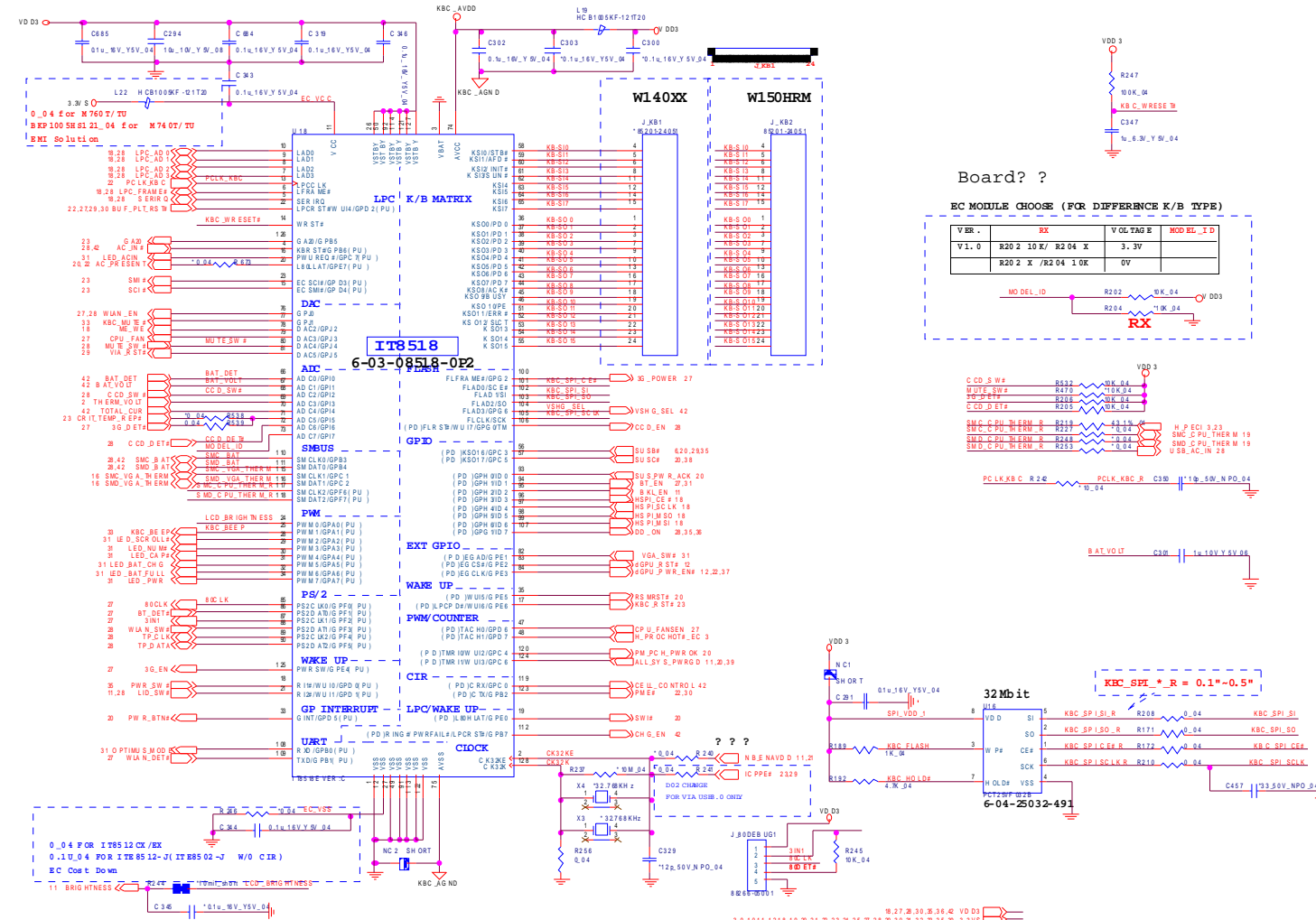
W140XX/W150XX/W170XX



W150XX/W170XX LED CON



KBC-ITE IT8518E

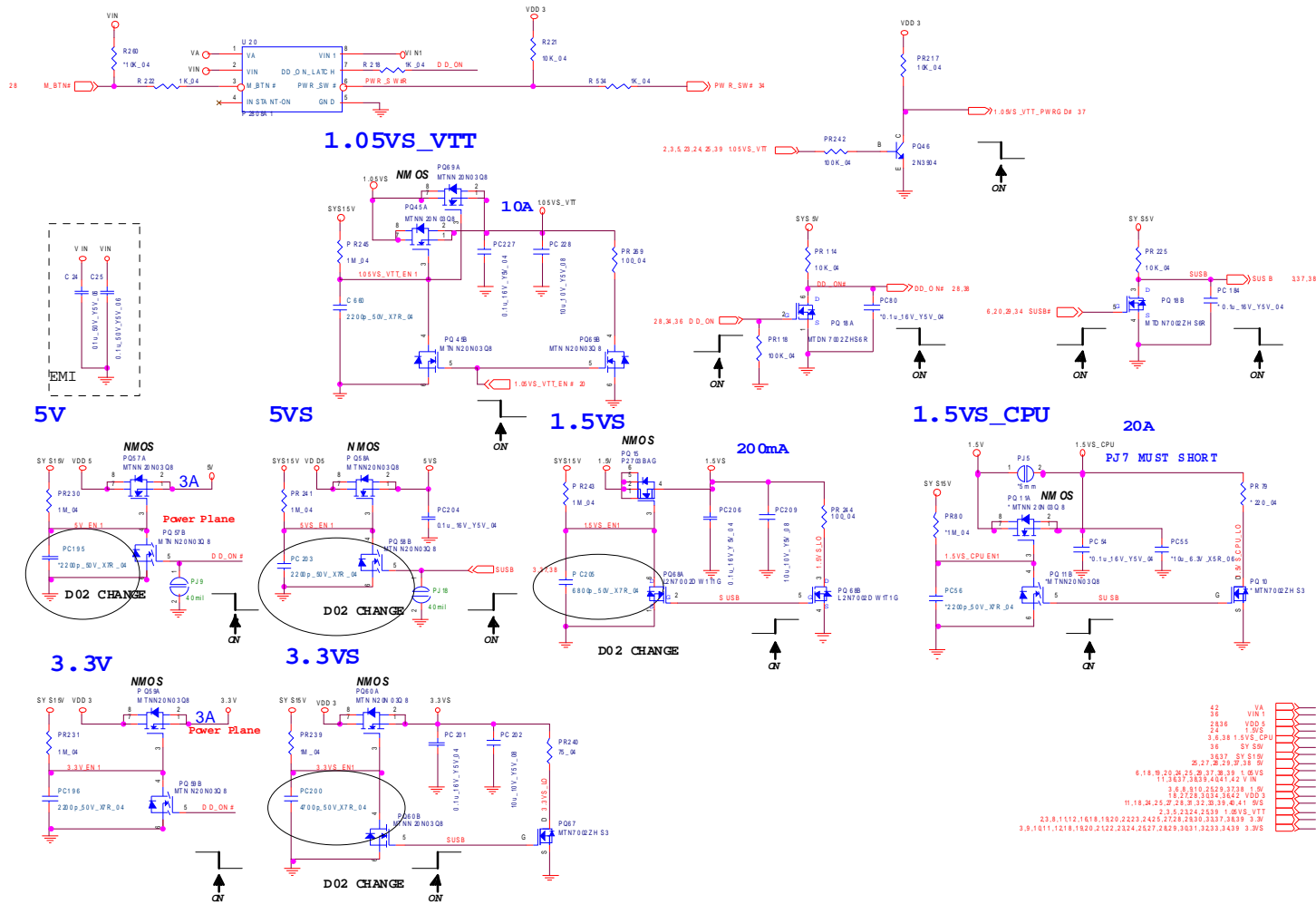


Sheet 34 of 49
KBC-ITE IT8518E

B.Schematic Diagrams

Schematic Diagrams

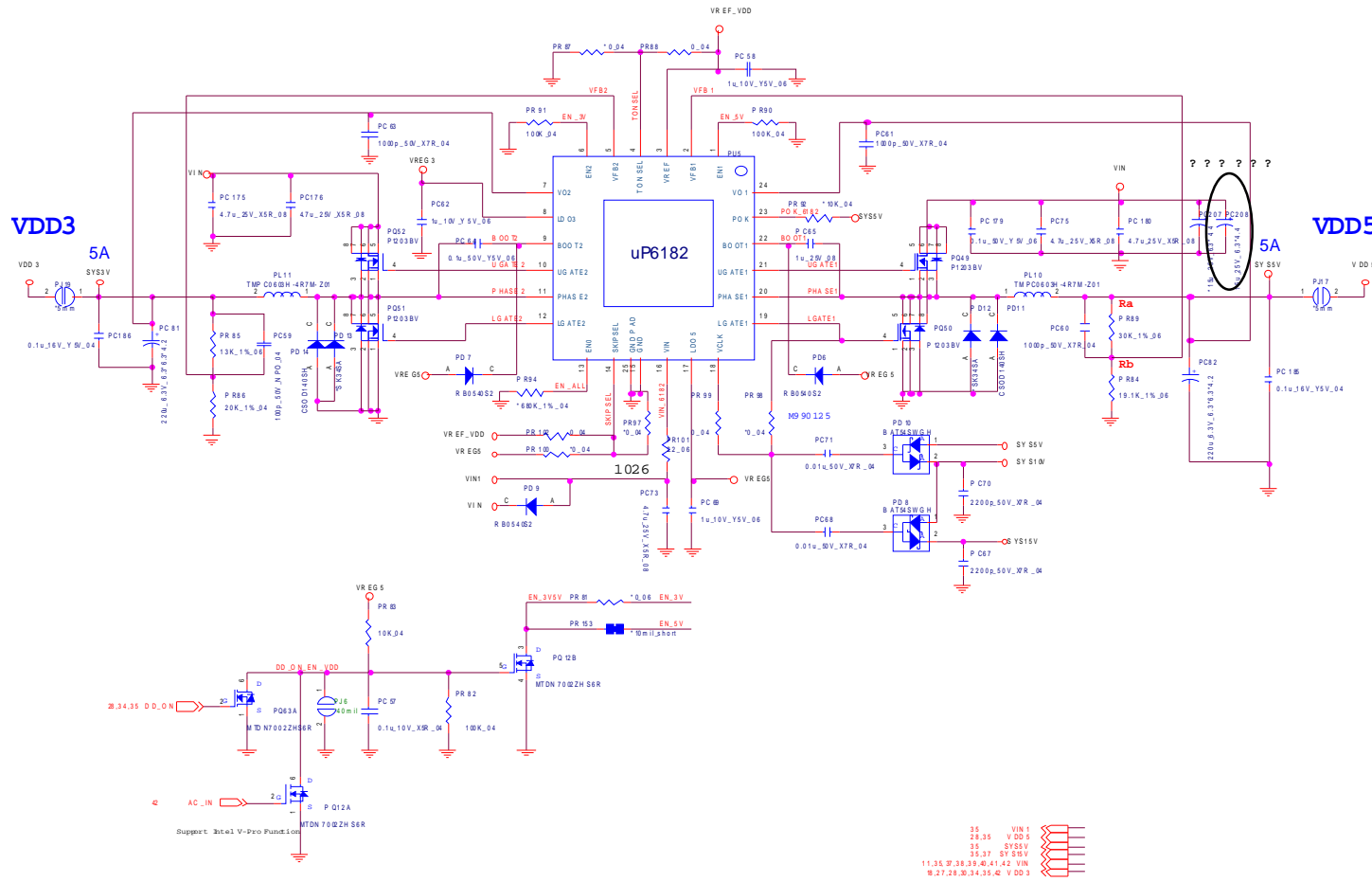
5VS, 3VS, 3.3VM, 1.5VS_CPU



Sheet 35 of 49
5VS, 3VS, 3.3VM,
1.5VS_CPU

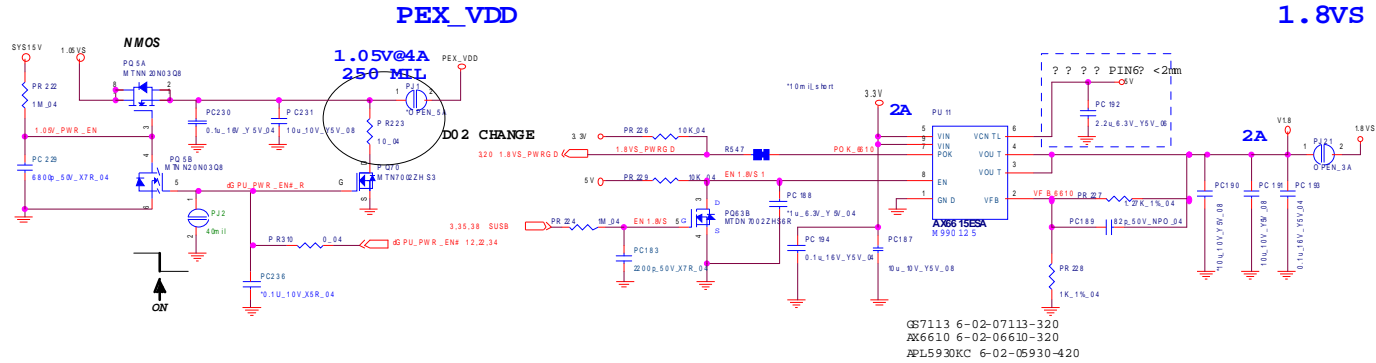
B.Schematic Diagrams

VDD3, VDD5

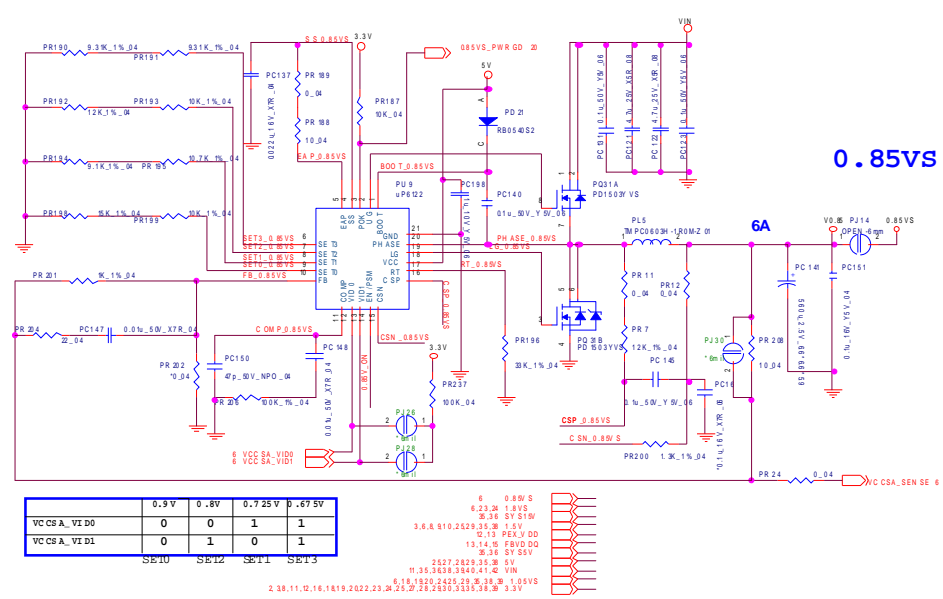
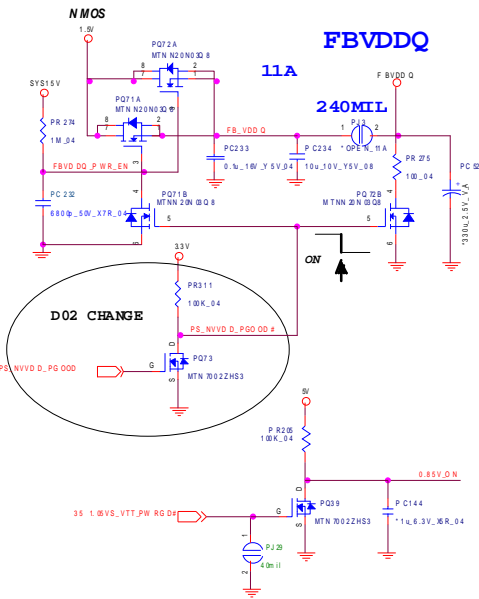


Sheet 36 of 49
VDD3, VDD5

Power 0.85VS, 1.8VS, PEX_VDD

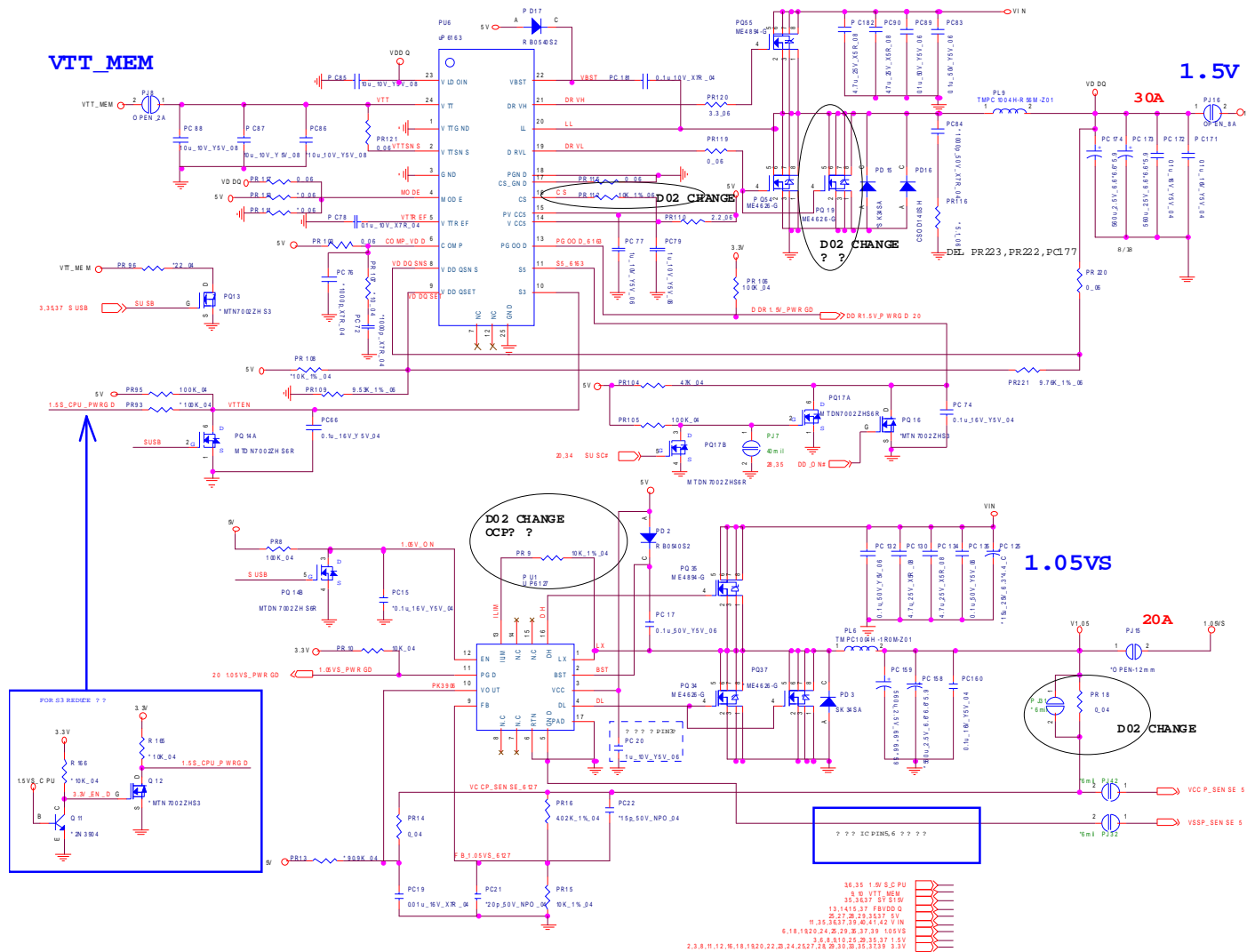


Sheet 37 of 49
Power 0.85VS,
1.8VS, PEX_VDD



B.Schematic Diagrams

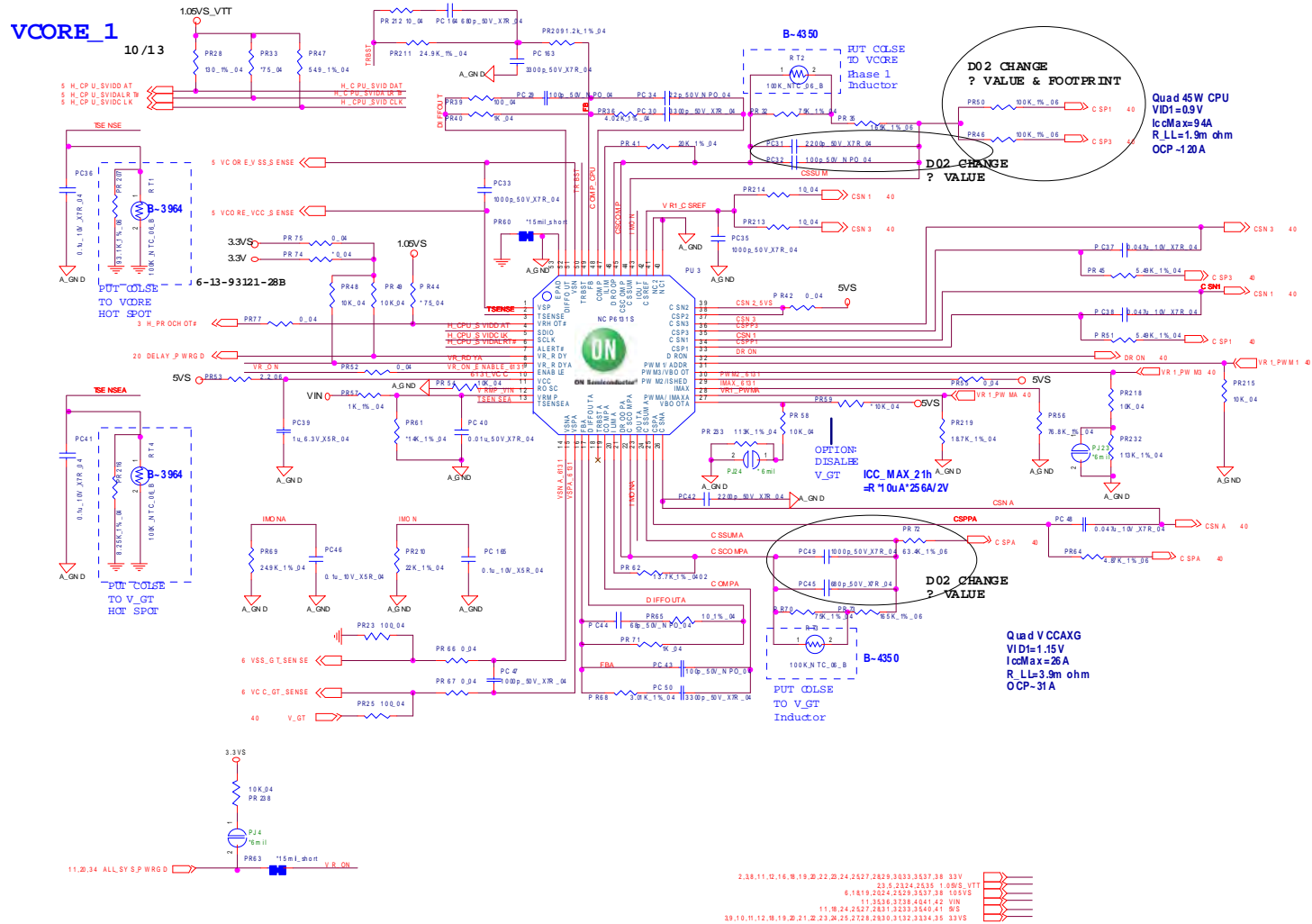
Power 1.5V/1.05VS/0.75V



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

B. Schematic Diagrams

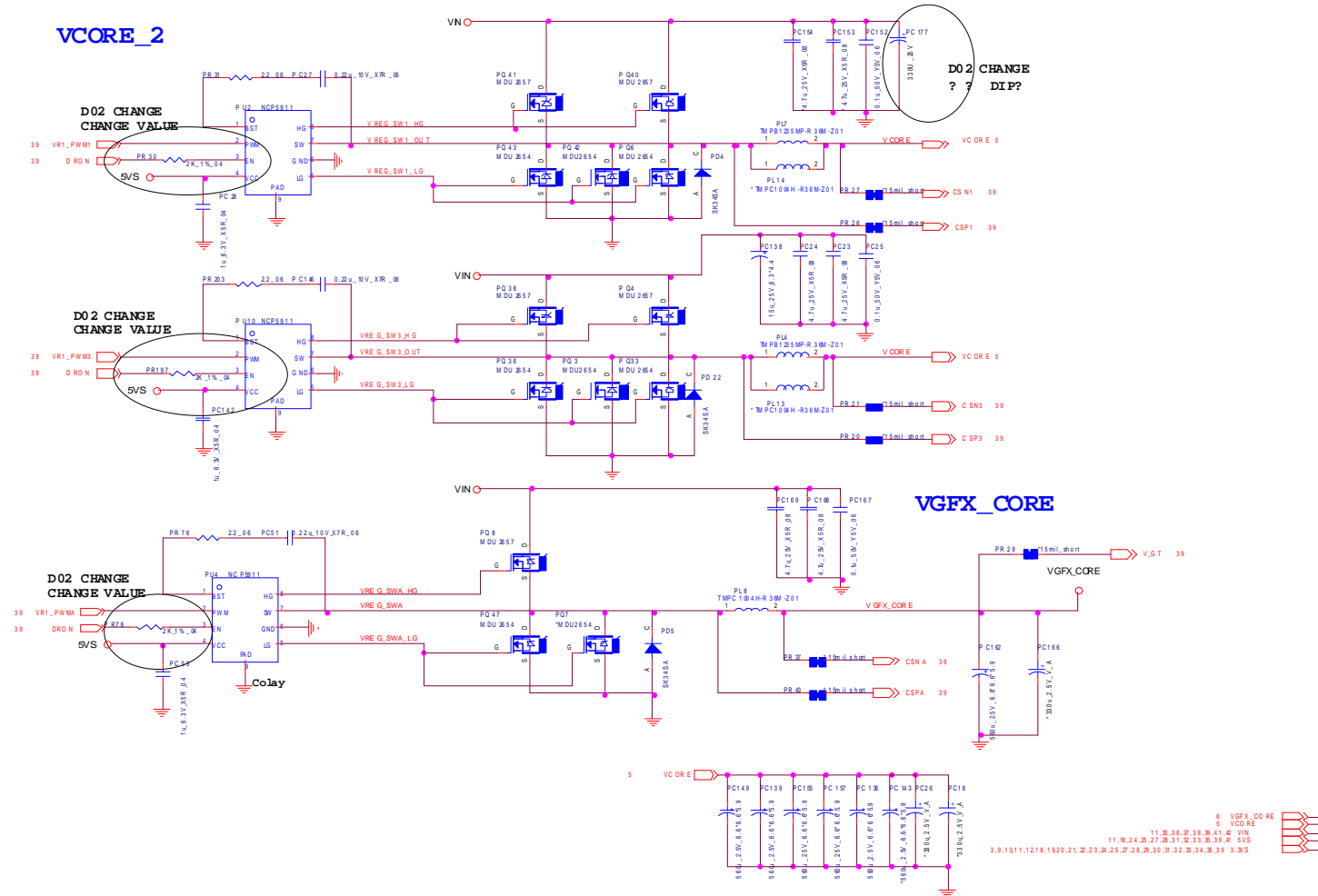
Power V-Core1



Sheet 39 of 49
Power V-Core1

B.Schematic Diagrams

Power V-Core2

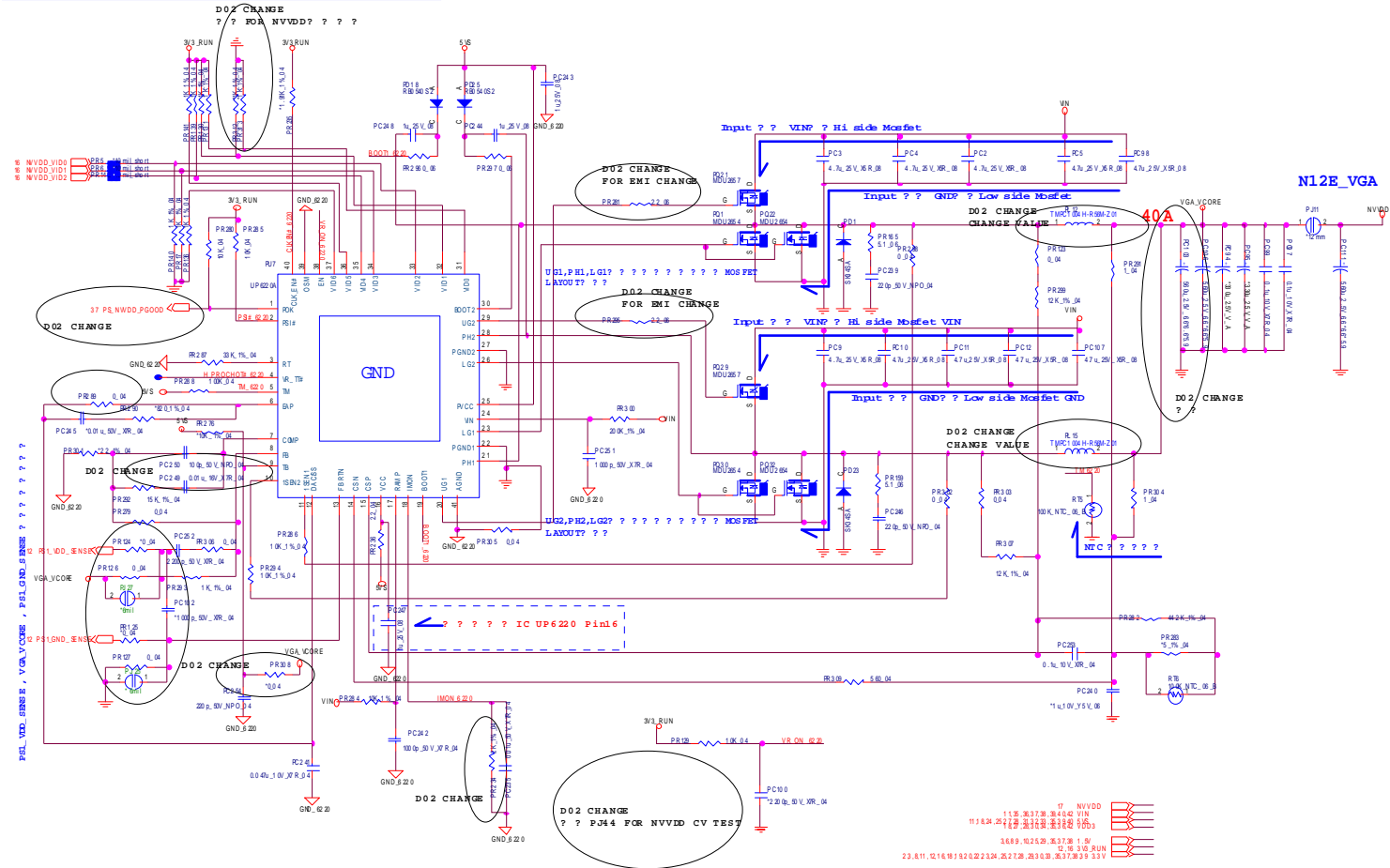


Sheet 40 of 49
Power V-Core2

B.Schematic Diagrams

Power VGA NVVDD

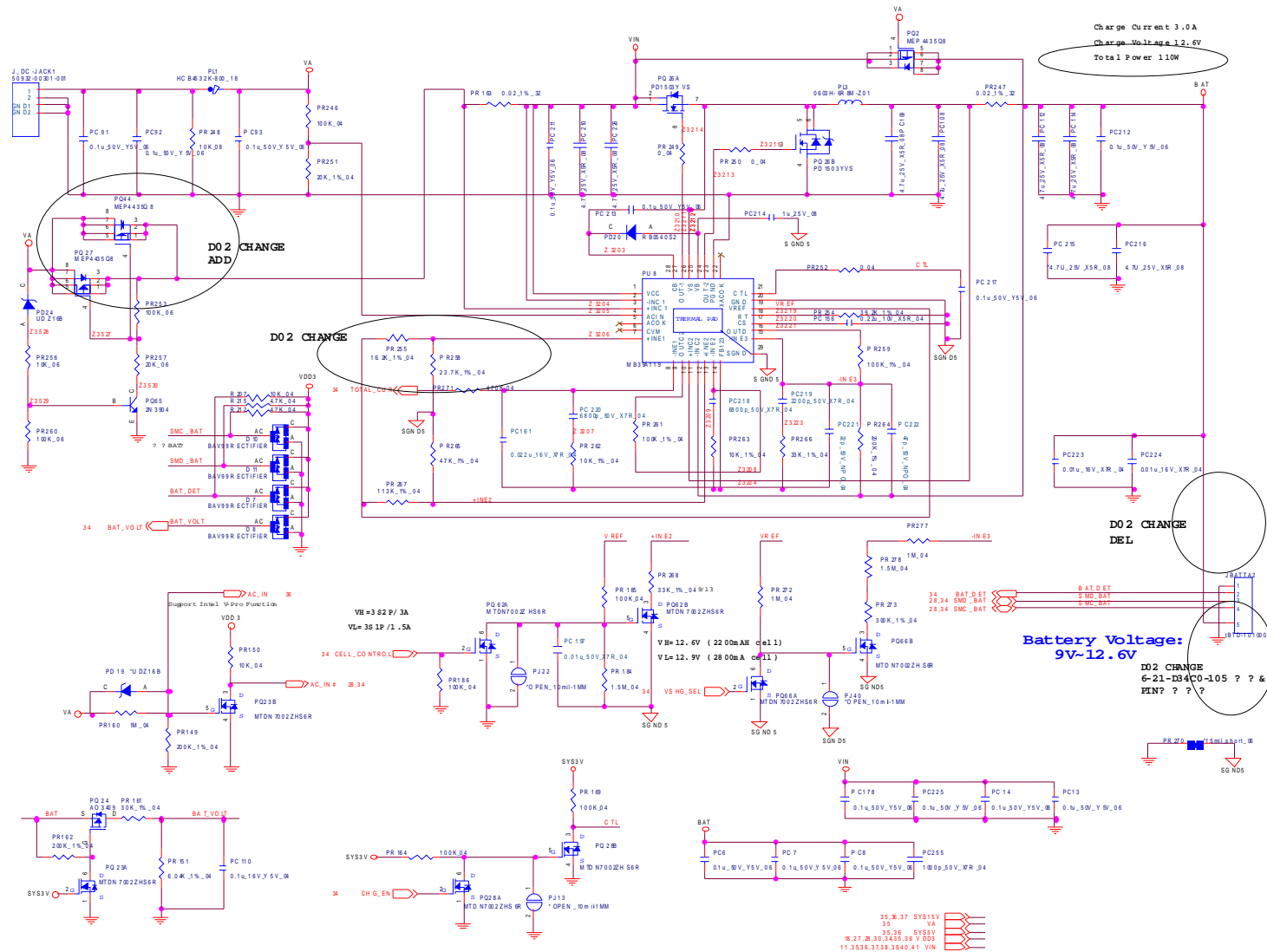
	0.8125V	0.8625V	0.9125V	
NVVDD_VIB	1	0	1	(GME5)
NVVDD_VIA	0	0	1	(GME6)
NVVDD_VIE	1	1	0	(GME7)



Sheet 41 of 49
Power VGA NVVDD

AC_IN, Charger

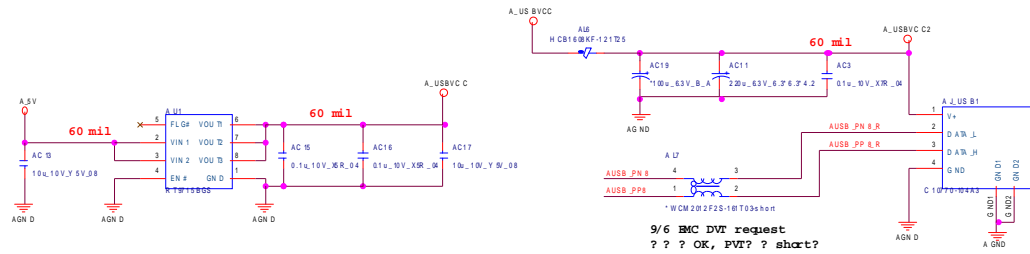
B.Schematic Diagrams



Sheet 42 of 49
AC_IN, Charger

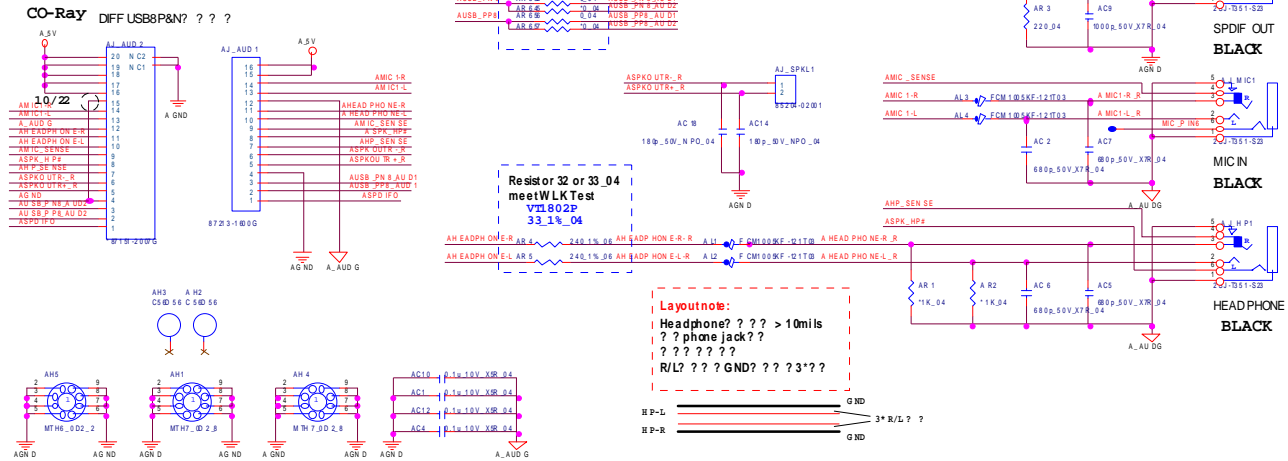
W150HNM Audio Board

USB PORT (PORT3)



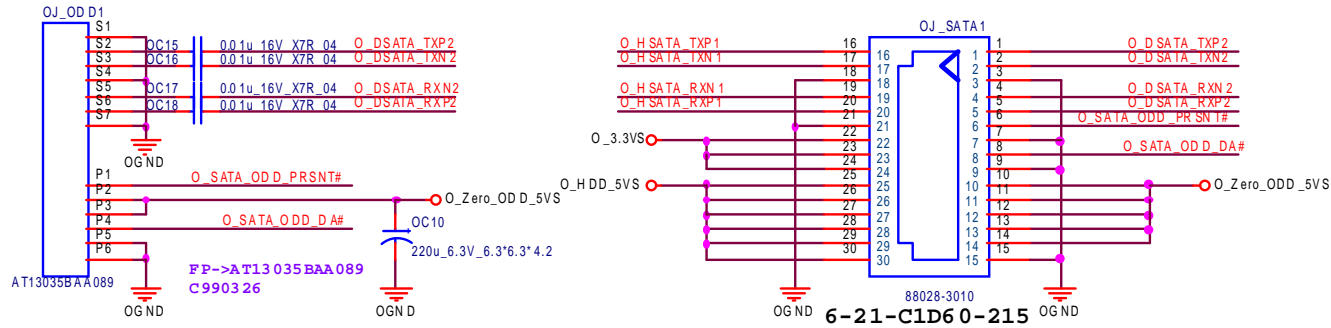
Sheet 43 of 49
W150HNM Audio
Board

AUDIO BOARD

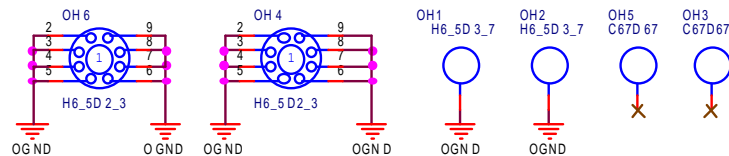
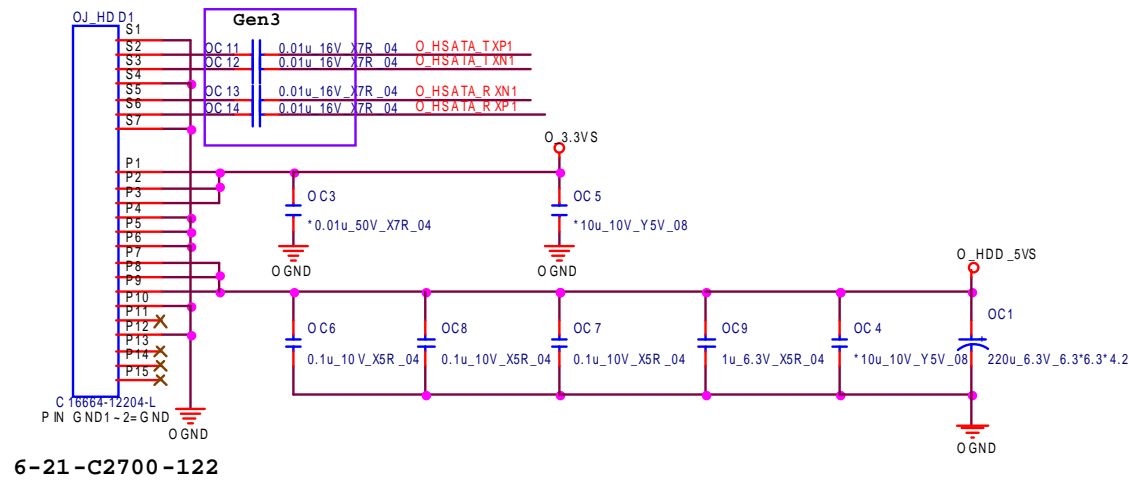


B.Schematic Diagrams

W150HNM Second HDD Board



W150HNM Zero Power

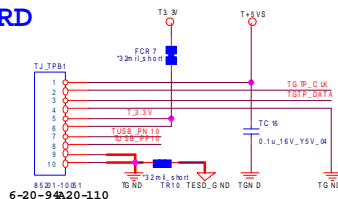


Sheet 44 of 49
W150HNM Second
HDD Board

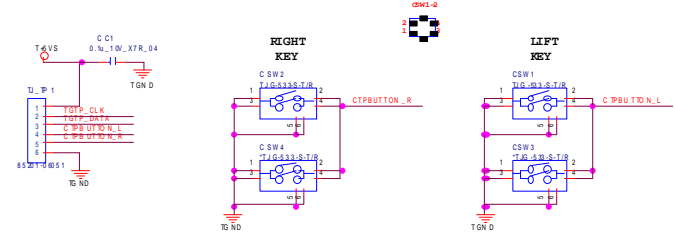
Schematic Diagrams

B5100 Click Board

V15XX CLICK BOARD

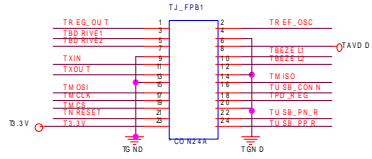


6-20-9420-110
It is strongly recommended that the TES0_GND has a dedicated connection to the system chassis or cable shield.

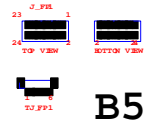


B.Schematic Diagrams

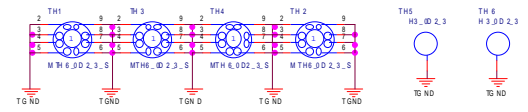
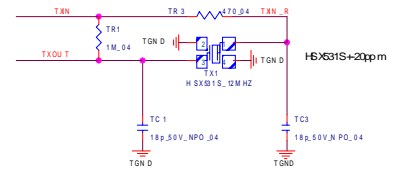
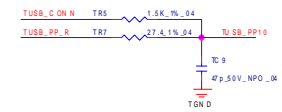
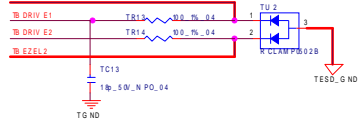
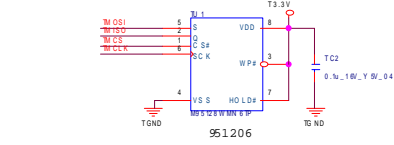
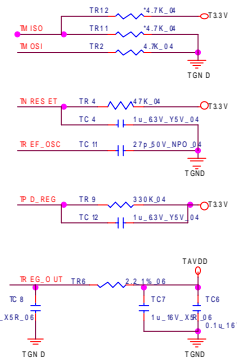
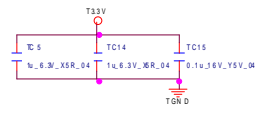
Sheet 45 of 49
B5100 Click Board



Place Button

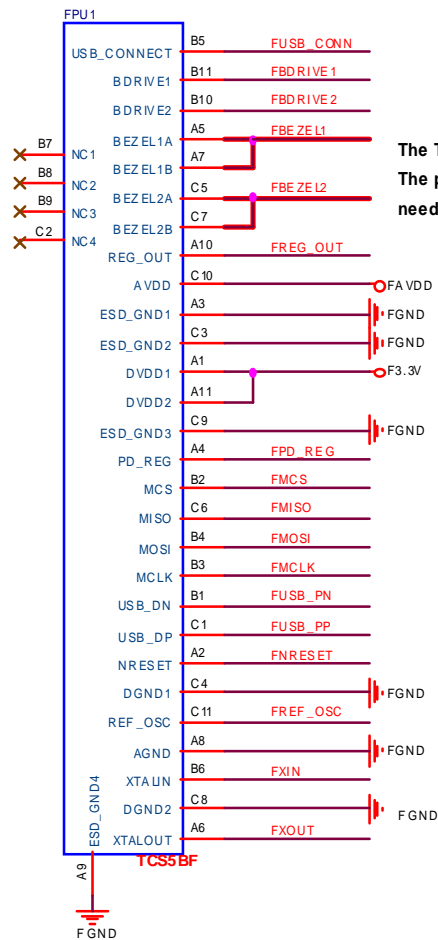


B5100M ONLY

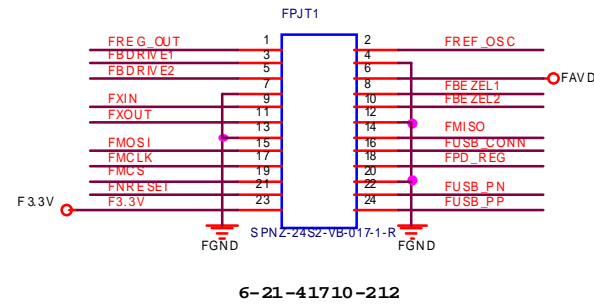


B5100 Fingerprint Board

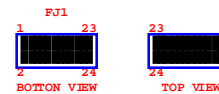
V51XX FINGERPRINT BOARD



The TESD_GND trace has to be wide (> 20mil)
 The path be marked in RED
 needs to be design to be short and at low impedance.



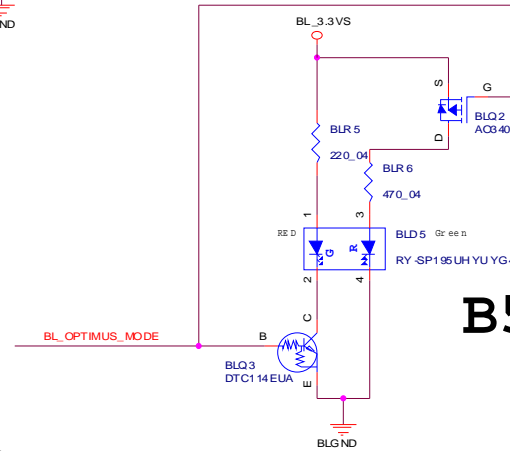
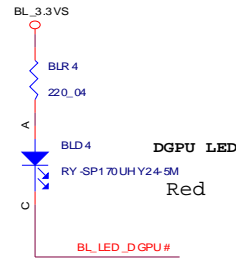
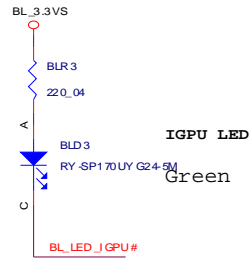
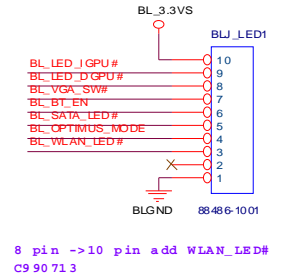
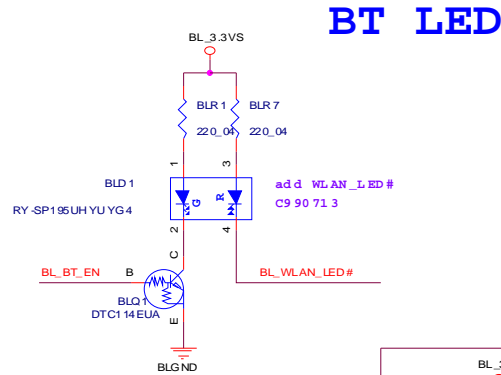
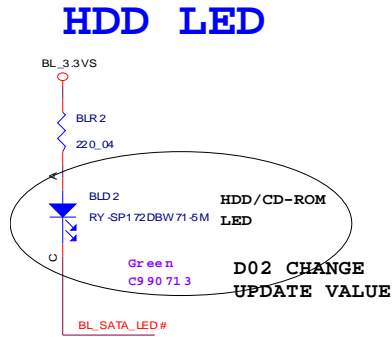
B5100M ONLY



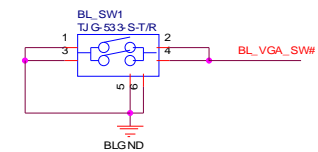
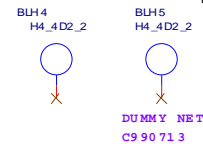
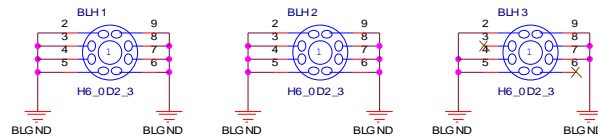
Sheet 46 of 49
 B5100 Fingerprint
 Board

B5130 LED & VGA SW Board

Sheet 47 of 49
B5130 LED & VGA
SW Board

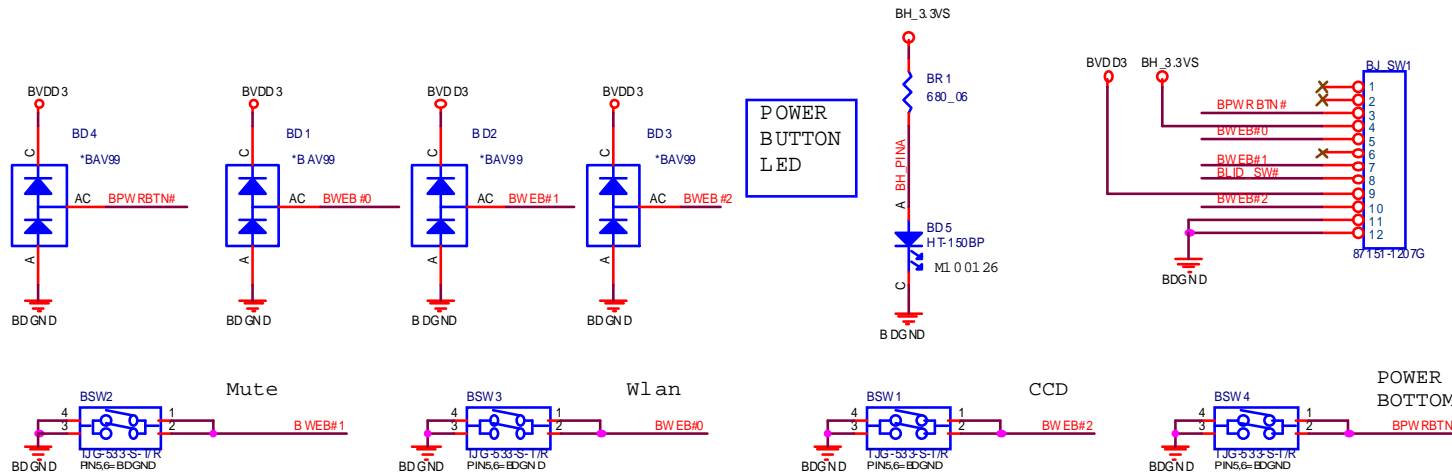


B5130M ONLY



B5100 Power Switch Board

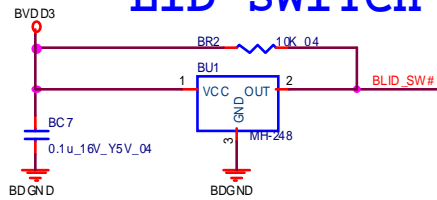
V51XX POWER SWITCH BOARD



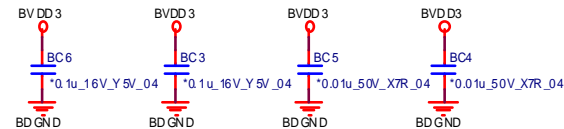
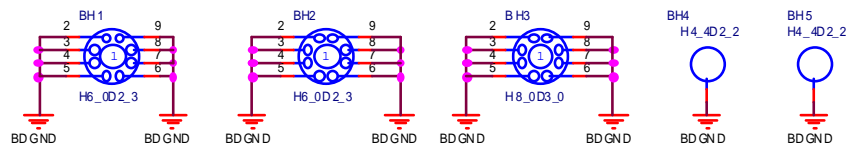
Sheet 48 of 49
B5100 Power
Switch Board

B. Schematic Diagrams

LID SWITCH IC



B5100M ONLY



Sequence

Sheet 49 of 49
Sequence

PB50/PB70 Huron River POWER SEQUENCE



Appendix C: Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS you must:

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

Download the BIOS

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

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

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

Set the computer to boot from the external drive

1. With the bootable CD/DVD/USB flash drive containing the BIOS files in your CD/DVD drive/USB port, restart the computer and press **F2** (in most cases) to enter the BIOS.
2. Use the arrow keys to highlight the **Boot** menu.
3. Use the “+” and “-” keys to move boot devices up and down the priority order.
4. Make sure that the CD/DVD drive/USB flash drive is set first in the boot priority of the BIOS.
5. Press **F10** 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 **F9**) and select “**Yes**” to confirm the selection.
5. Press **F10** 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.