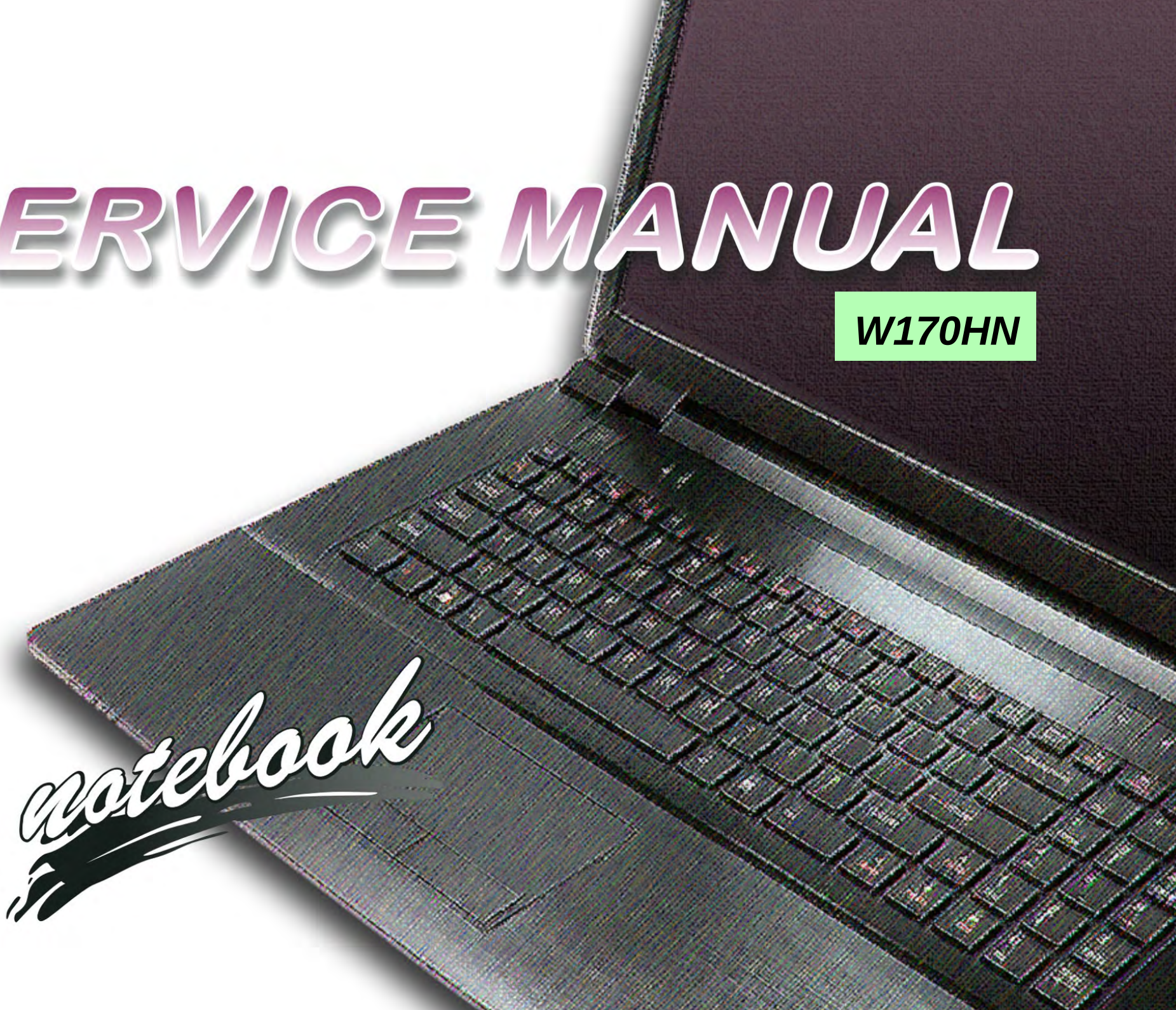


SERVICE MANUAL

W170HN

notebook



Notebook Computer

W170HN

Service Manual

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Version 1.0
April 2011

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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 **W170HN** 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

Preface

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.

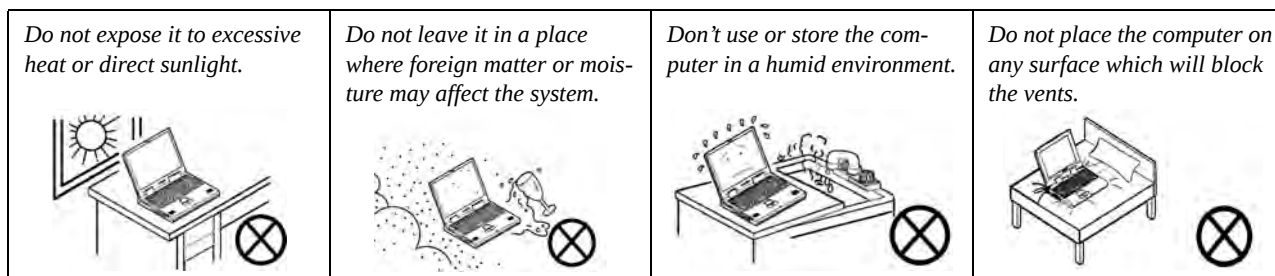
Instructions for Care and Operation

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

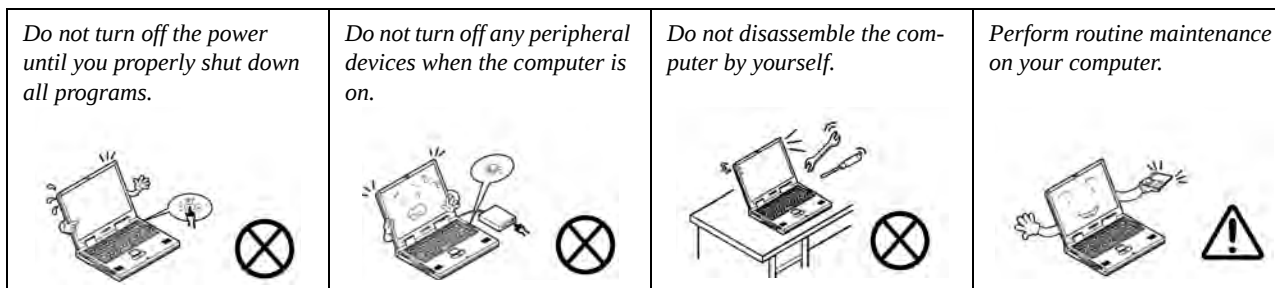
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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.

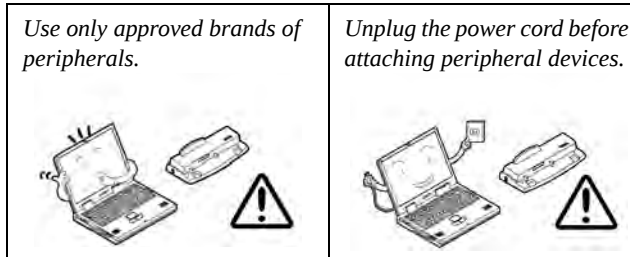


3. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



Preface

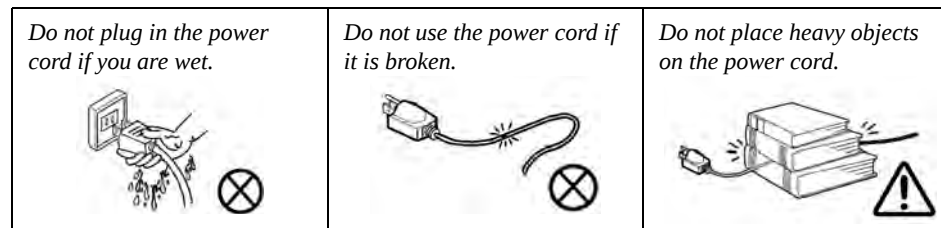
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

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



Power Safety Warning

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

Battery Precautions

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

Battery Guidelines

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

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



Battery Disposal

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

Caution

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

Battery Level

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

Preface

Related Documents

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

User's Manual on CD/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".



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.

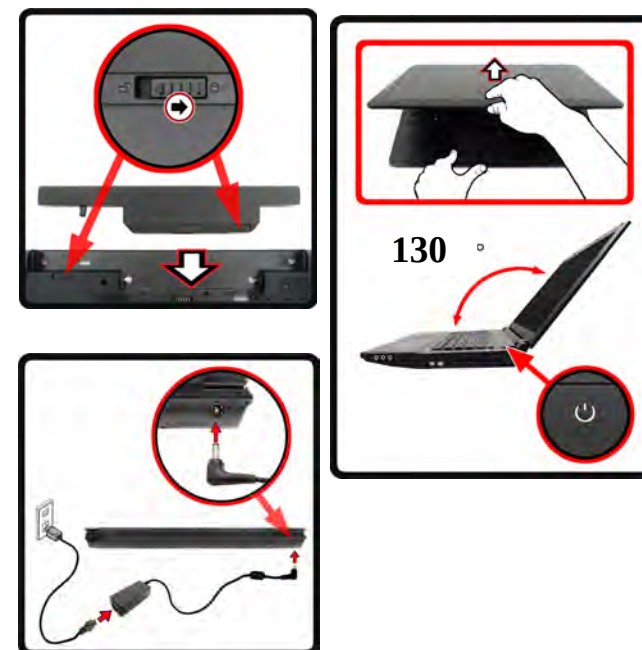


Figure 1
**Opening the Lid/LCD/
Computer with AC/DC
Adapter Plugged-In**

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **W170HN** 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 **W170HN** 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

Phoenix™ BIOS

LCD

17.3" (43.94cm) HD+/ FHD LCD

Memory

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

1600MHz Memory

Memory Expandable up to **8GB**

Video Adapter

Intel® GMA HD and NVIDIA® GeForce N12P-GS

Supports NVIDIA® Optimus Technology

Intel Integrated GPU (Intel® GMA HD):

Microsoft DirectX®10.1 Compatible

NVIDIA Discrete GPU (NVIDIA® GeForce N12P-GS):

1GB GDDR3 Video RAM

Microsoft DirectX®11 Compatible

Security

BIOS Password

Security (Kensington® Type) Lock Slot

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

Keyboard

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

Pointing Device

Built-in Touchpad (scrolling key functionality integrated)

Communication

Built-In Gigabit Ethernet LAN

(Factory Option) 1.3M/2.0M Pixel USB PC Camera Module

(Factory Option) Intel® WiFi Link 6230 (802.11a/g/n) Wireless LAN + Bluetooth 3.0 Half Mini-Card Combo Module

(Factory Option) Intel® WiFi Link 1030 (802.11b/g/n) Wireless LAN + Bluetooth 3.0 Half Mini-Card Combo Module

(Factory Option) Intel® WiFi Link 6300 (802.11a/g/n) Wireless LAN Half Mini-Card Module

(Factory Option) Third-Party Wireless LAN (802.11b/g/n) + Bluetooth 3.0 Half Mini-Card Combo Module

(Factory Option) Third-Party 802.11b/g/n Wireless LAN Half Mini-Card Module

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

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) * 277.5mm (d) * 25.1 - 38.9mm (h)

3.1kg 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



External Locator - Front & Right Side Views

Figure 2
Front View

1. LED Indicators



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

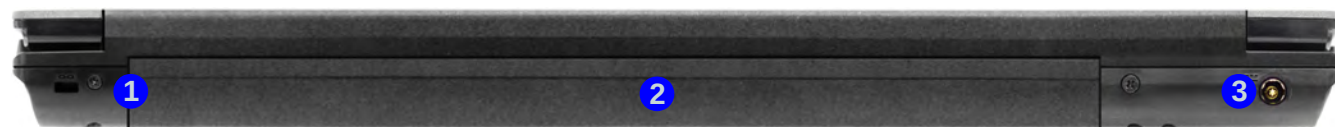
1. External Monitor Port
2. RJ-45 LAN Jack
3. HDMI-Out Port
4. USB 2.0 Port
5. 2 * USB 3.0 Ports
6. Vent
7. eSATA Port
8. Multi-in-1 Card Reader



Figure 5

Rear View

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



External Locator - Bottom View

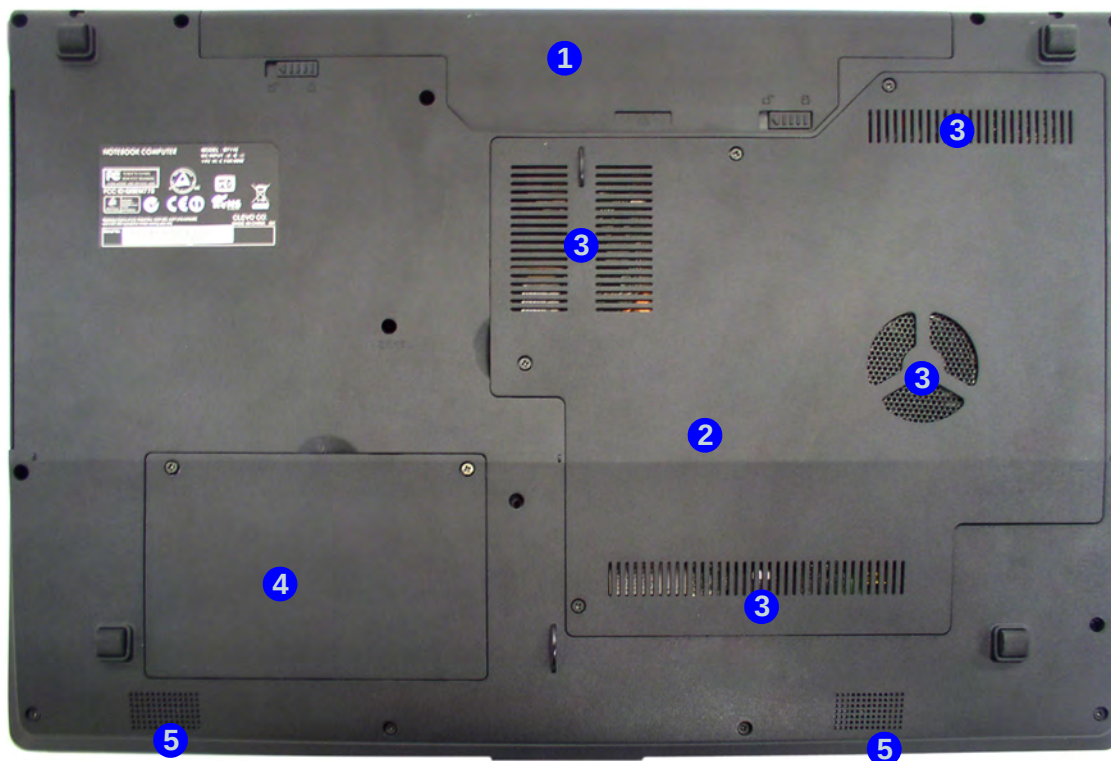


Figure 5
Bottom View

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



Overheating

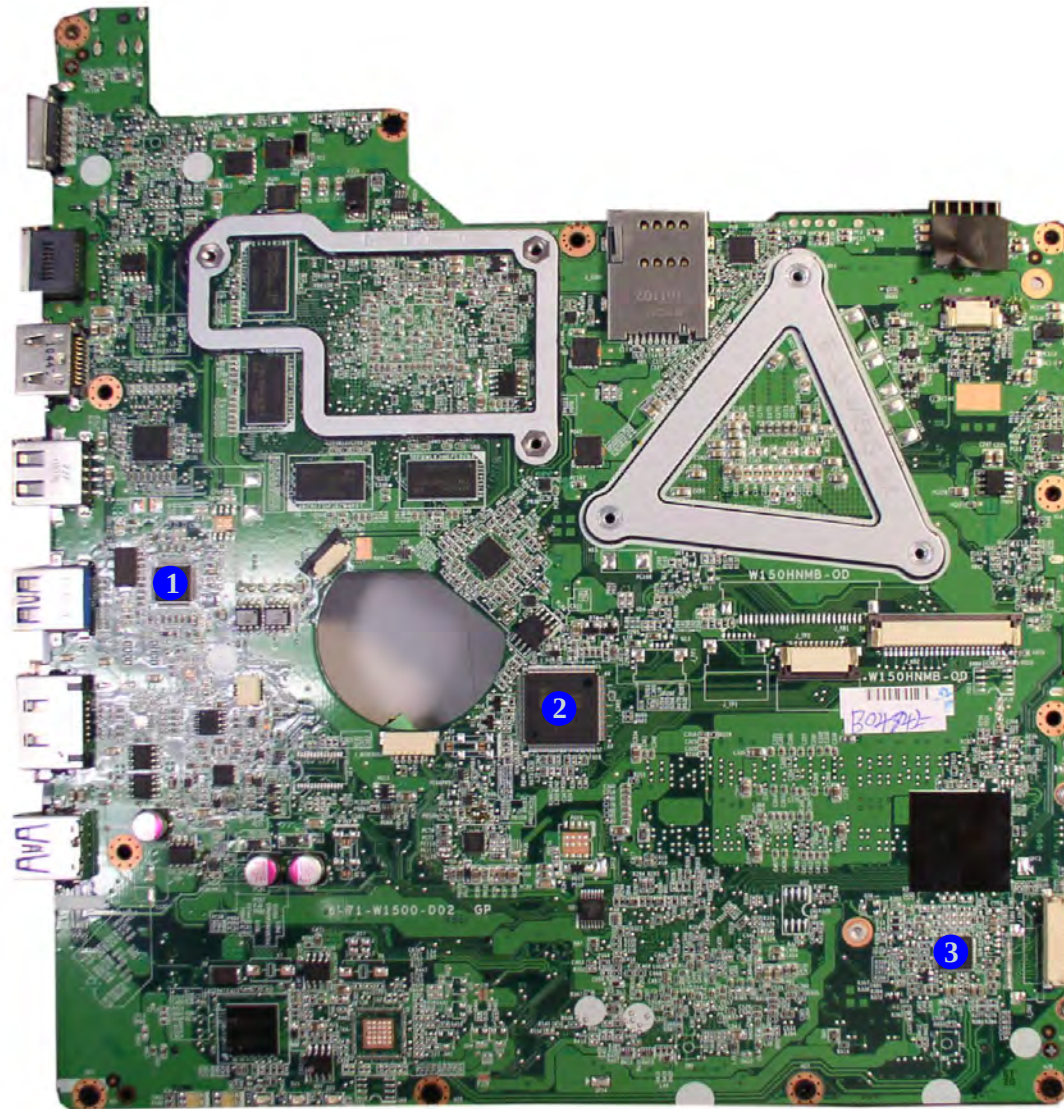
To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

Introduction

Figure 6
Mainboard Top
Key Parts

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

Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

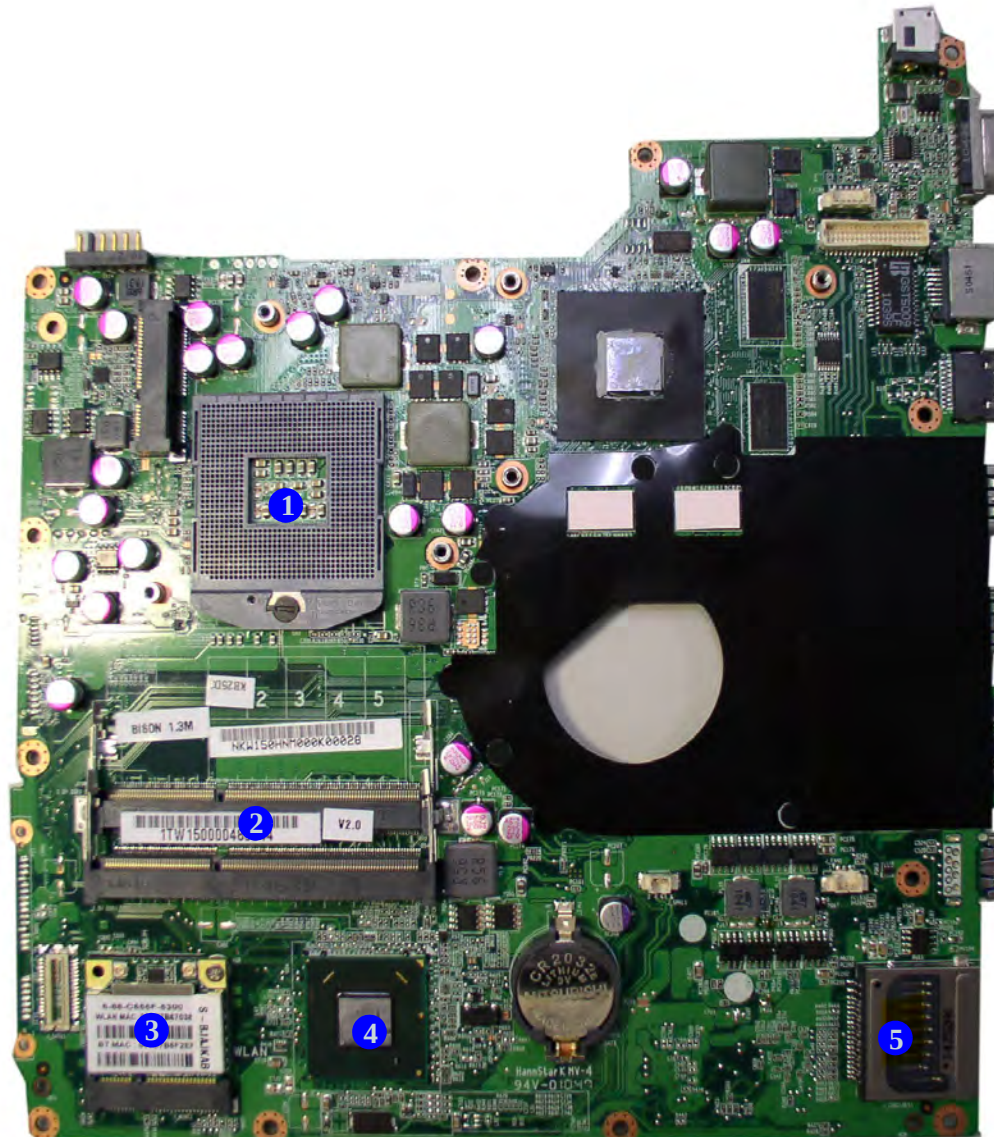


Figure 7
**Mainboard Bottom
Key Parts**

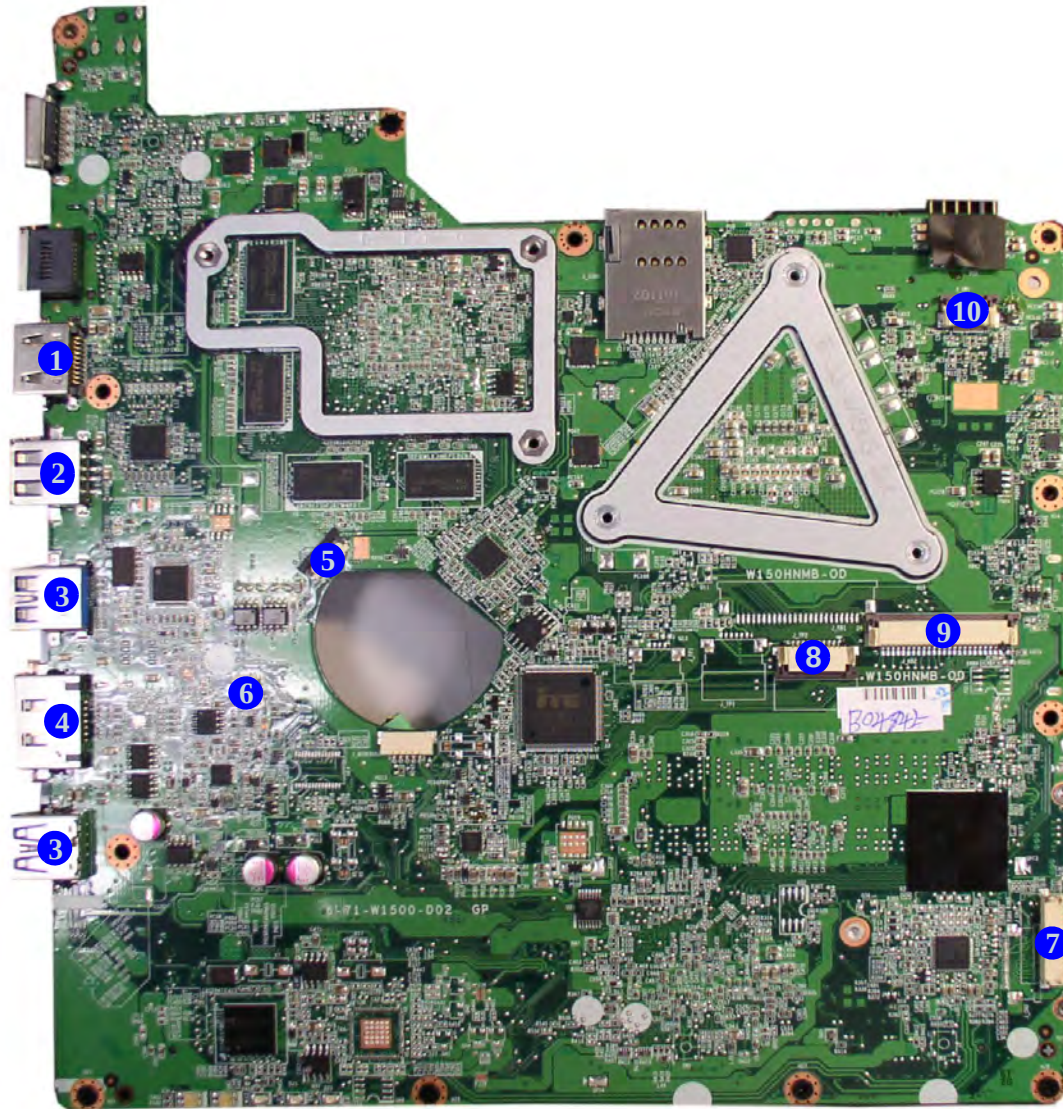
1. CPU Socket (no CPU installed)
2. Memory Slots
DDR3 SO-DIMM
3. Mini-Card
Connector (WLAN
Module)
4. Platform Controller
Hub
5. Multi-in-1 Card
Reader

Introduction

Figure 8
**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

Mainboard Overview - Top (Connectors)



Mainboard Overview - Bottom (Connectors)



Figure 9
**Mainboard Bottom
Connectors**

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

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the **W170HN** 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.


Information

Warning

Disassembly

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

Maintenance Tools

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

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

Connections

Connections within the computer are one of four types:

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

Maintenance Precautions

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

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

Cleaning

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

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



Power Safety Warning

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

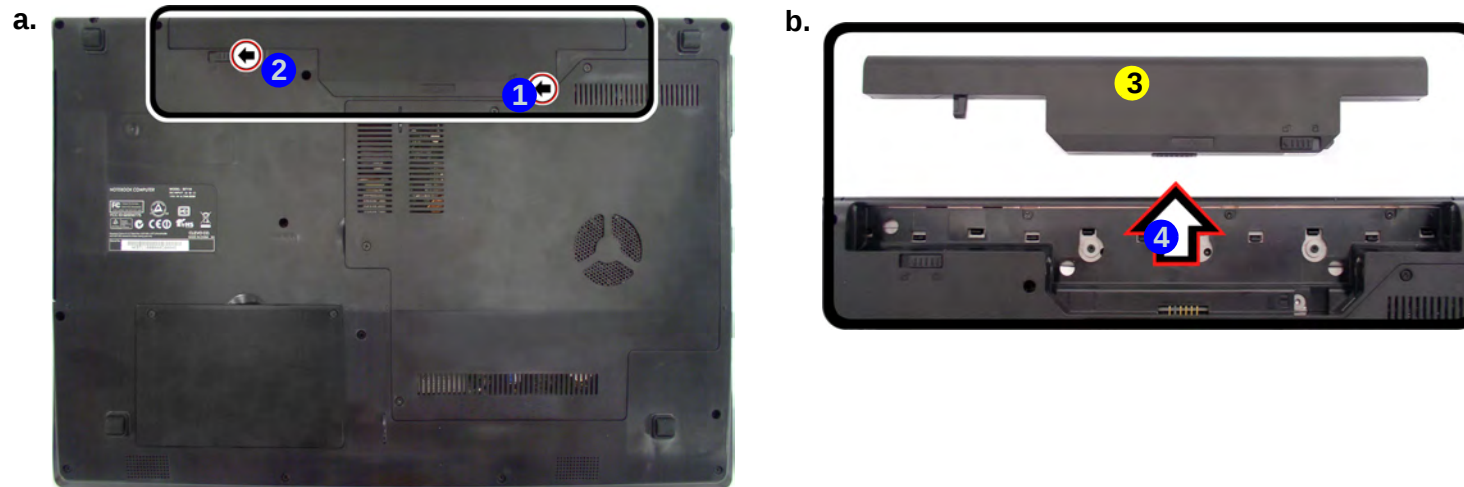


Figure 1
Battery Removal

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



3. Battery

Disassembly

Figure 2
**HDD Assembly
Removal**

Removing the Hard Disk Drive

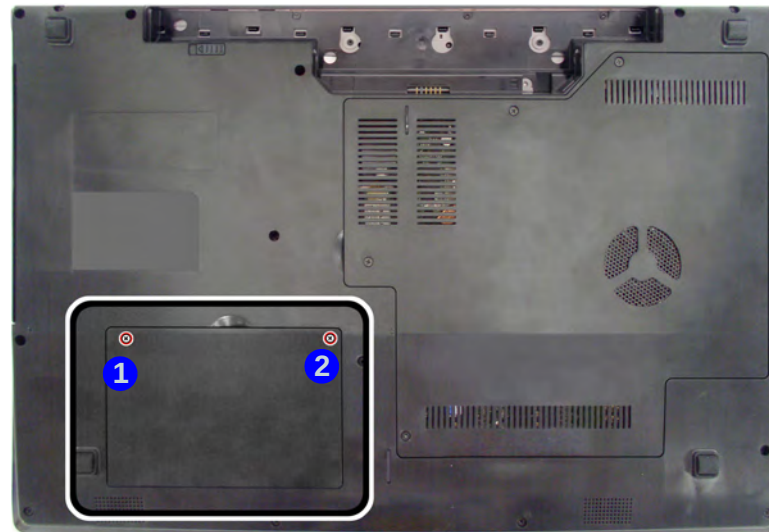
The hard disk drive can be taken out to accommodate other 2.5" serial (SATA) hard disk drives with a height of 9.5mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up a new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

- 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](#)).

a.



- 2 Screws



HDD System Warning

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

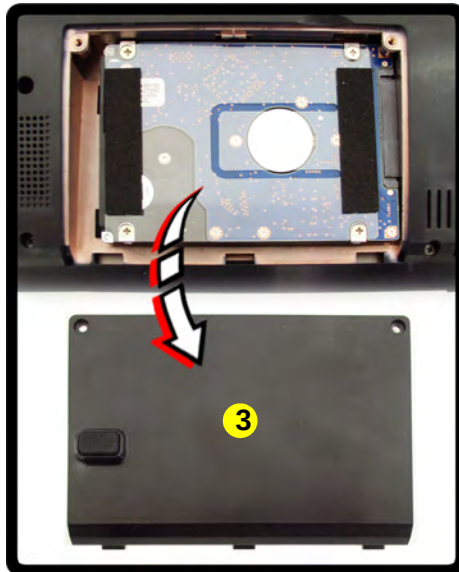
You have backed up any data you want to keep from your old HDD.

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

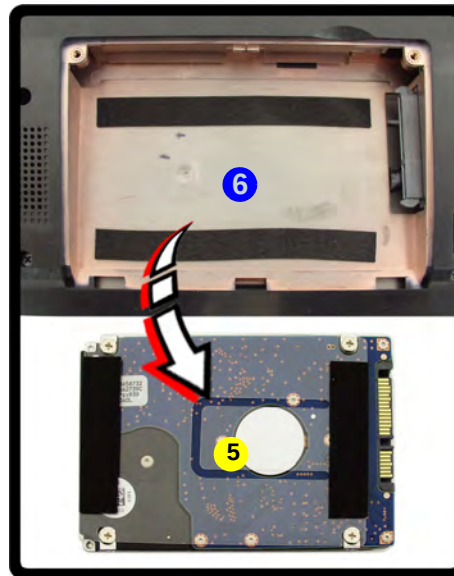
If you have access to the internet, download the latest application and hardware driver updates for the operating system you plan to install. Copy these to a removable medium.

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).

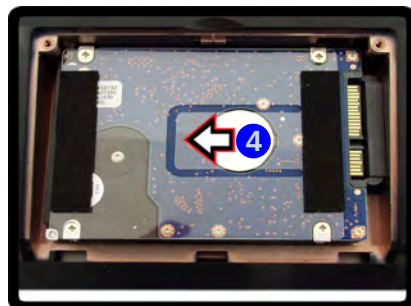
b.



d.



c.



e.

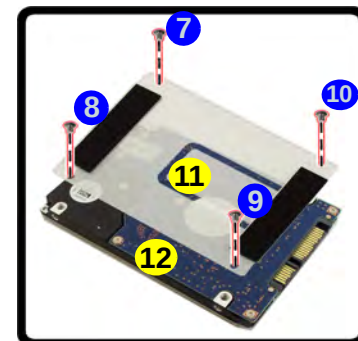


Figure 3
**HDD Assembly
Removal (cont'd.)**

- 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

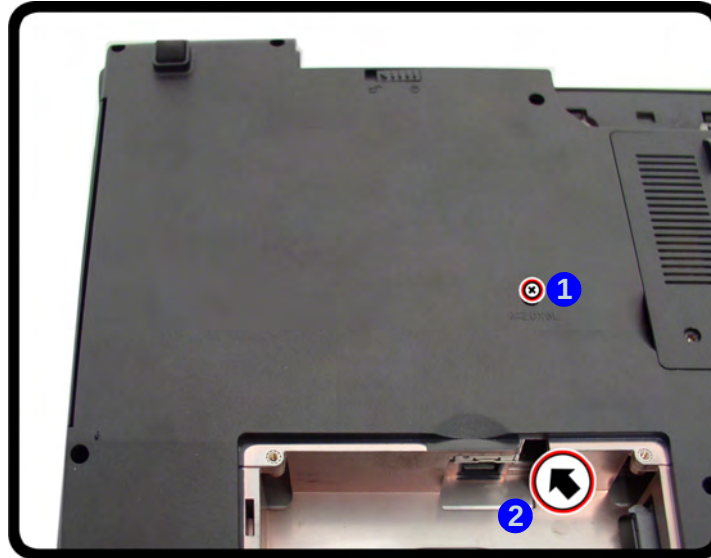
Figure 4
**Optical Device
Removal**

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

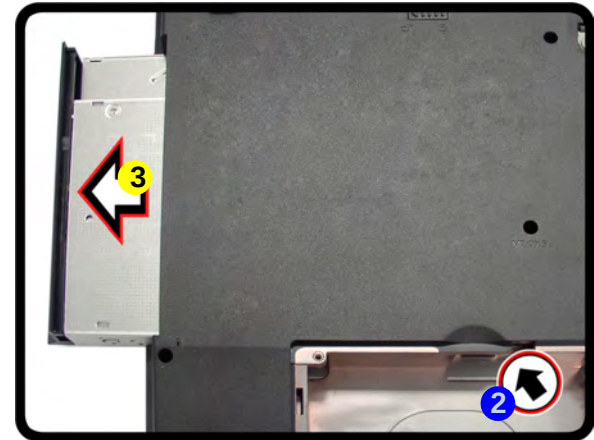
Removing the Optical (CD/DVD) Device

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and hard disk ([page 2 - 6](#)).
2. Remove the screw at point ① ([Figure 4a](#)).
3. Use a screwdriver to carefully push out the optical device ③ at point ② ([Figure 4b](#)).
4. 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).
5. 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. The RAM modules will be visible at point **5** on the mainboard ([Figure 5b](#)).

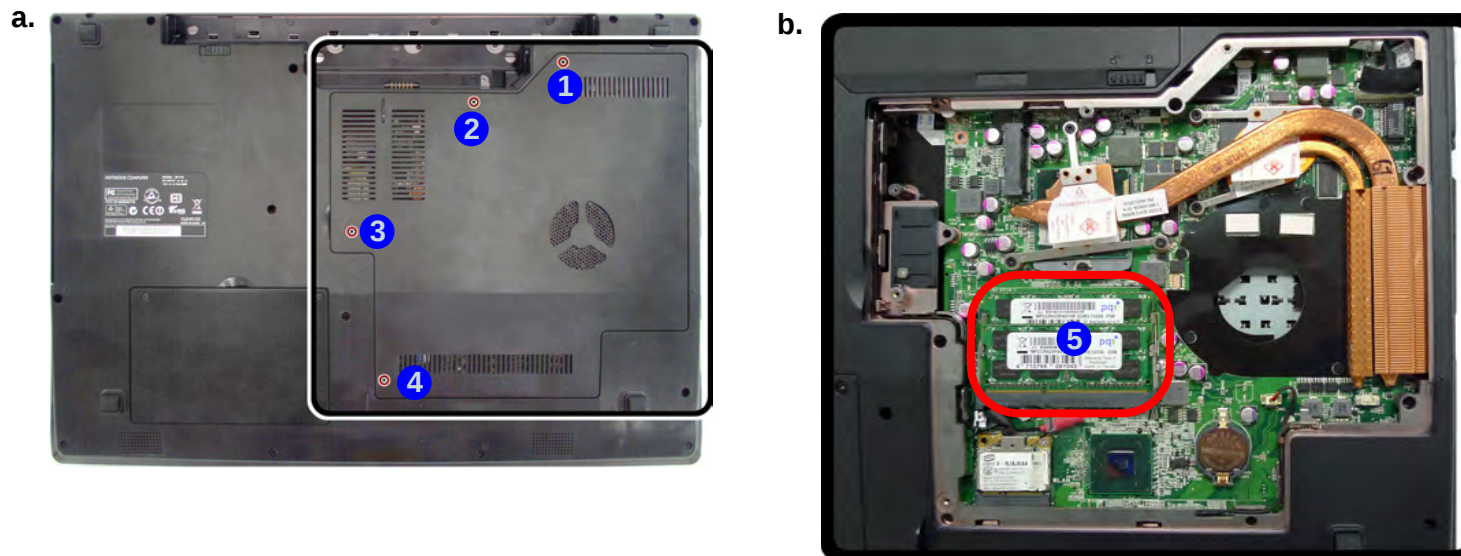


Figure 5
RAM Module Removal

- a. Remove the screws from the component bay cover.
- b. The RAM modules will be visible at point **5** on the mainboard.
- c. Pull the release latches.
- 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.



- 4 Screw

Disassembly

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

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



Contact Warning

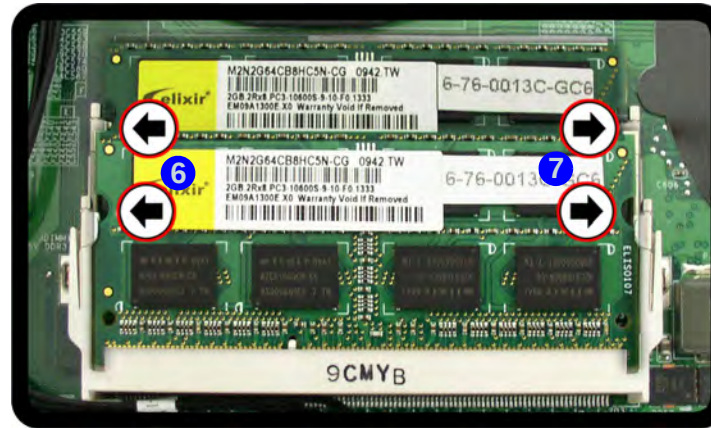
Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.



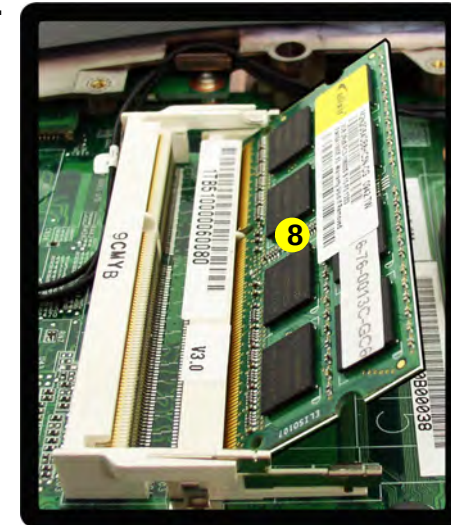
8. RAM Module

4. Gently pull the two release latches (6 & 7) on the sides of the memory socket in the direction indicated by the arrows (*Figure 5c*). The RAM module 8 will pop-up (*Figure 6d*), and you can then remove it.
5. Pull the latches to release the second module if necessary.

c.



d.



6. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
7. 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.
8. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
9. Replace the component bay cover and the screws (see [page 2 - 9](#)).
10. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

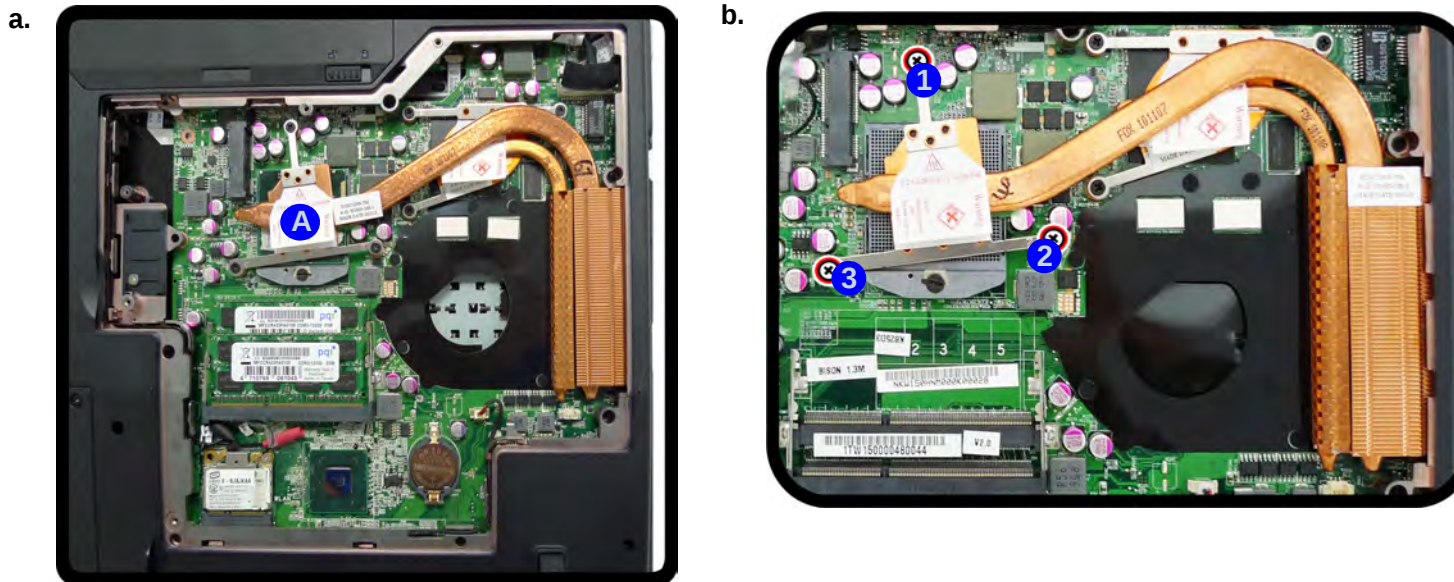
Removing and Installing a Processor

Processor Removal Procedure

1. Turn **off** the computer, 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 7a](#)) on the mainboard.
3. Remove screws **3**, **2**, **1**, the reverse order indicated on the label ([Figure 7b](#)).

Figure 7
Processor Removal

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



- 3 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

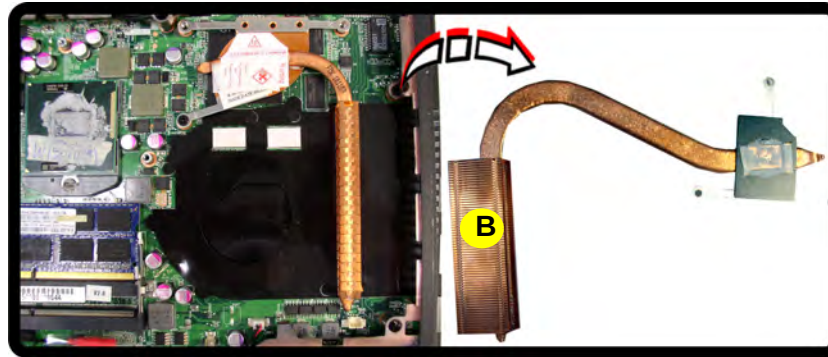
The heat sink, and CPU area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.



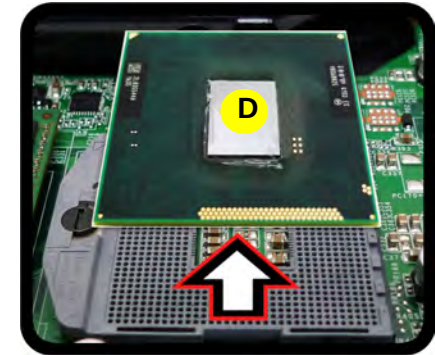
B. Heat Sink
D. CPU

- 4. Carefully lift up the heat sink **B** (*Figure 8c*) off the computer.
- 5. Turn the release latch **C** towards the unlock symbol , to release the CPU (*Figure 8d*).
- 6. Carefully (it may be hot) lift the CPU **D** up out of the socket (*Figure 8e*).
- 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!).

c.



e.



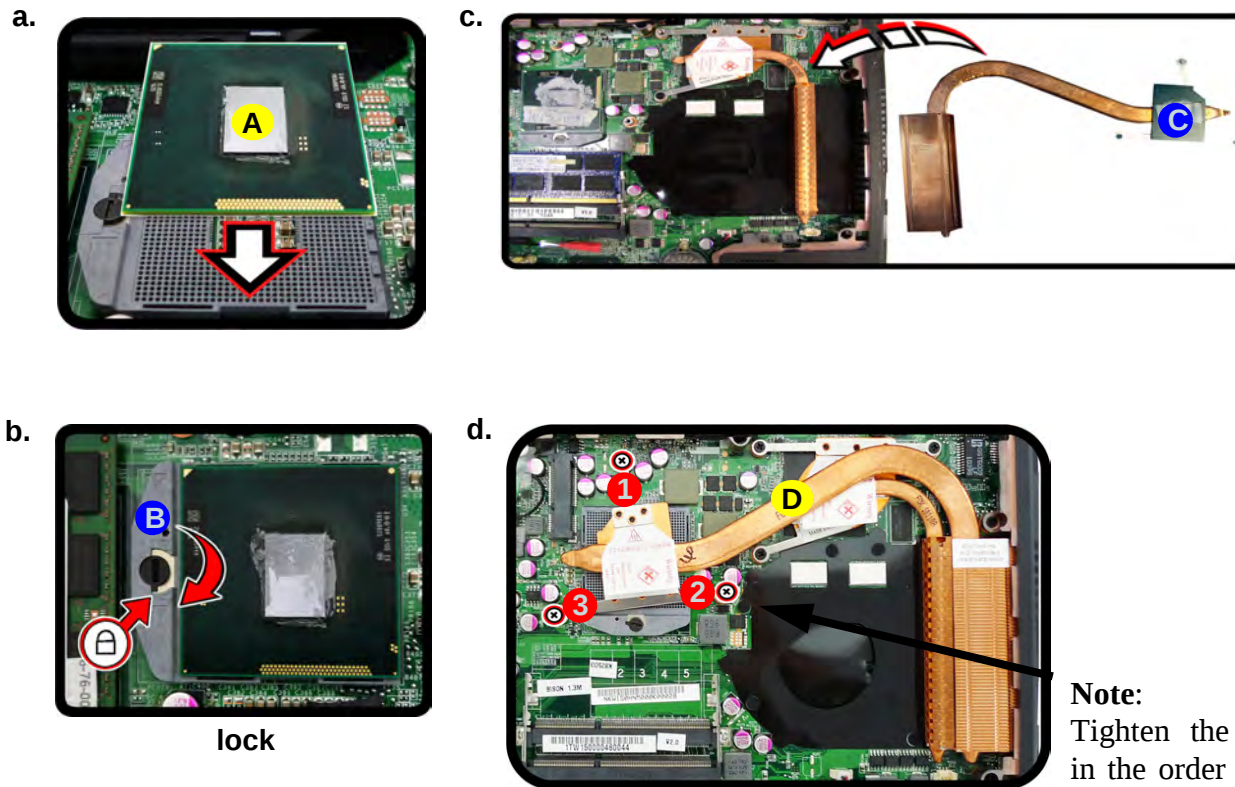
d.



Unlock

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 sticker C** (**Figure 9c**) from the heat sink.
3. Insert the heat sink **D** as indicated in **Figure 9d**.
4. Tighten the CPU heat sink screws in the order **1**, **2** & **3** (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**).



Note:
Tighten the screws
in the order as indi-
cated on the label.

Figure 9
**Processor
Installation**

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

- 
- A. CPU
 - D. Heat Sink
 - 3 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 10b*).

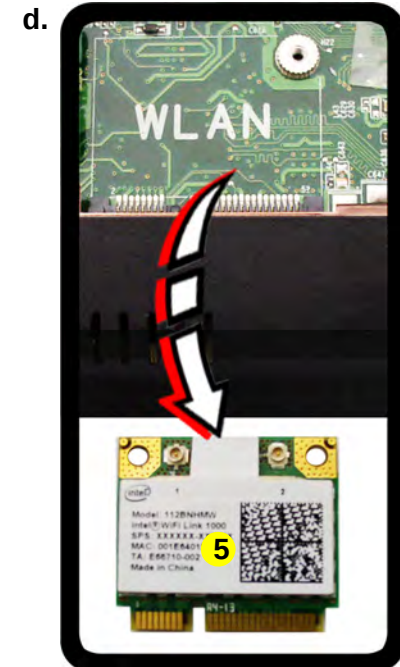
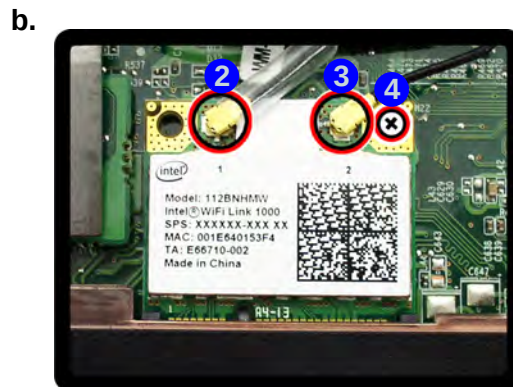


5.Wireless LAN Module

- 1 Screw

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 10a*).
- Carefully disconnect the cables **2** & **3**, and then remove the screw **4** (*Figure 10b*).
- The Wireless LAN module **5** (*Figure 10c*) will pop-up, and you can remove it from the computer (*Figure 10d*).



Removing the Keyboard

1. Turn **off** the computer and remove the battery ([page 2 - 5](#)).
2. Remove the screws **1** - **2** and use a screwdriver to carefully push out the top cover module at point **3** ([Figure 11a](#)).
3. Remove the top cover module **4** ([Figure 11b](#)) and the screws **5** - **9** ([Figure 11c](#)).
4. Carefully lift the keyboard **10** up, being careful not to bend the keyboard ribbon cable ([Figure 11d](#)).
5. Disconnect the keyboard ribbon cable **11** from the locking collar socket **12** ([Figure 11d](#)).
6. Carefully lift up the keyboard **10** ([Figure 11e](#)) off the computer.

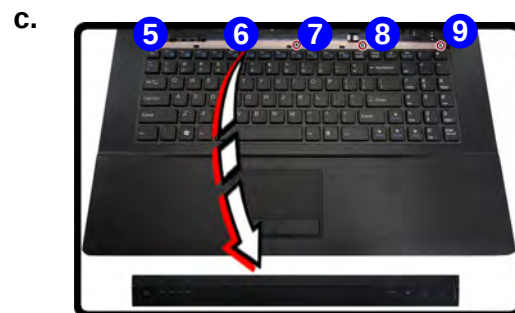
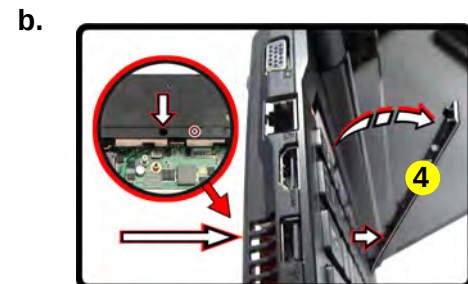
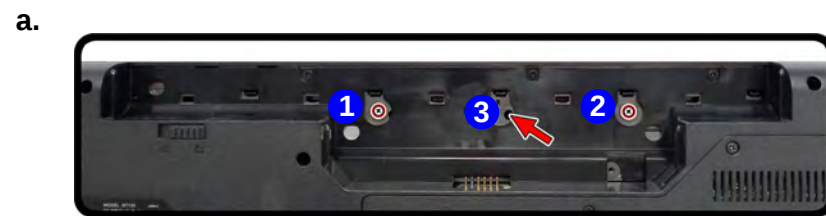
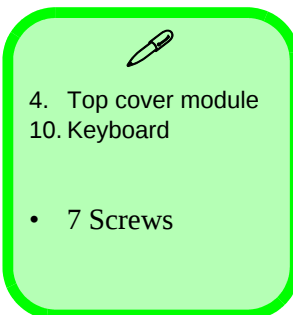


Figure 11
Keyboard Removal

- a. Remove the screws and use a screwdriver to carefully push out the top cover module at point **3**.
- b. Remove the top cover module.
- c. Remove the screws.
- d. Lift the keyboard up and disconnect the cable from the locking collar.
- e. Remove the keyboard.



Appendix A:Part Lists

This appendix breaks down the **W170HN** 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	W170HN
Top	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
LCD	<i>page A - 5</i>
Combo	<i>page A - 6</i>
DVD	<i>page A - 7</i>
HDD	<i>page A - 8</i>

Top

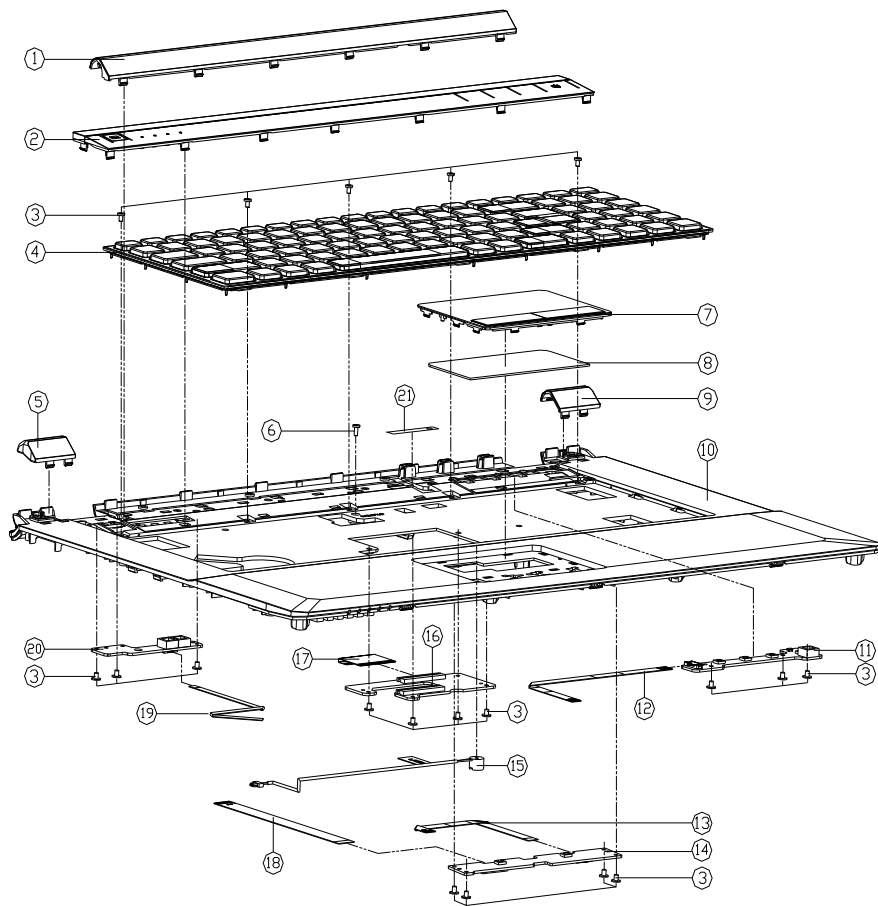
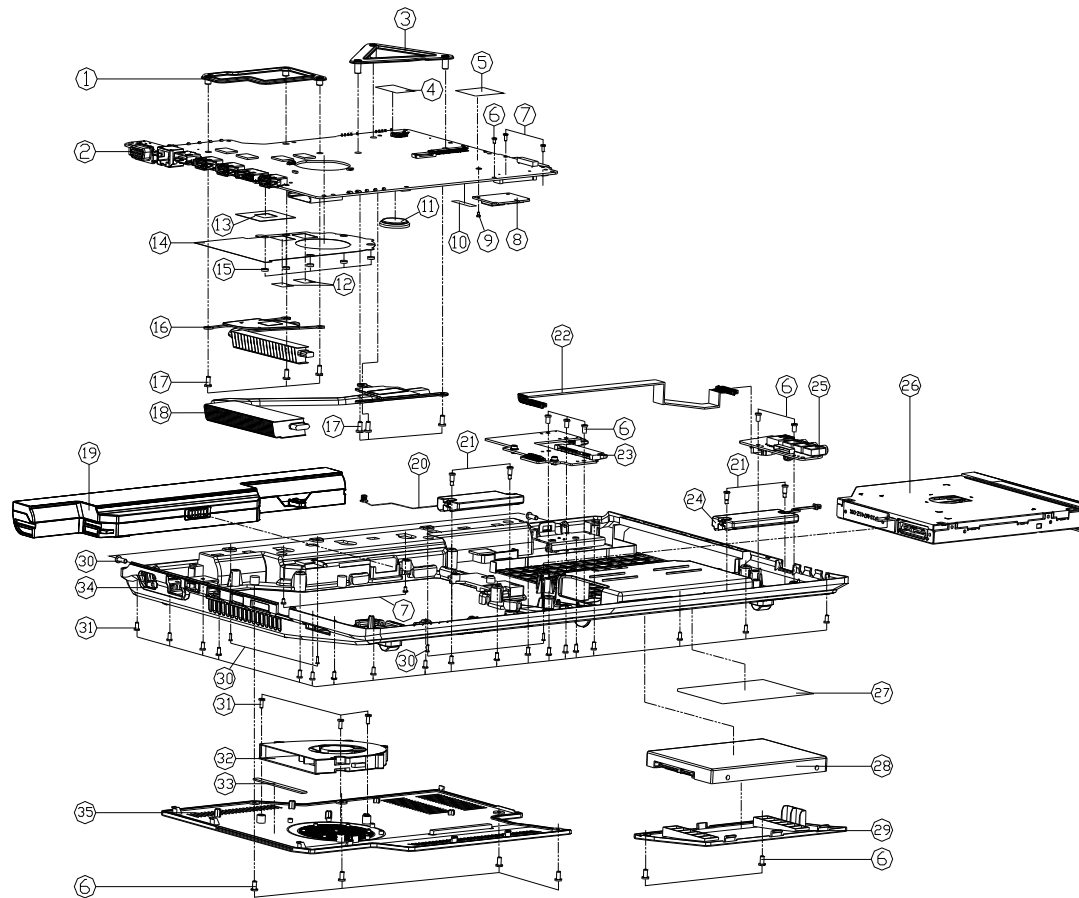


Figure A - 1
Top

ITEM	PART NAME	PART NO	REMARK
1	HINGE COVER SANS ONLAD 7000E B710	6-42-B7112-032	
2	CENTER COVER MODULE B7110	6-42-B7112-203	FOR B710-V1700-A4
2	CENTER COVER MODULE B7130	6-42-B7132-100	FOR B7130
2	CENTER COVER MODULE E7130	6-42-E7132-100	FOR E7130
3	MODULAR KEYBOARD KEYBOARD KIT KIT G11-PATCH	6-35-B1120-3RE	
4	K/8 USA C/8/8 K/8 USA C/8/8 K/8 USA C/8/8	6-79-B71000K-010	
5	HINGE COVER L SANS ONLAD 7000E B710	6-42-B7112-022	
6	SCREW M2.5x6L K BZ TCT NY	6-35-B2125-6RA	
7	TOP COVER MODULE B7110	6-42-B7112-103	
8	TOP COVER MODULE B7130	6-42-B7132-103	
9	HINGE COVER R SANS ONLAD 7000E B710	6-42-B7112-012	
10	TOP CASE MODULE B7110	6-39-B7112-013	
11	POWER SWITCH BOARD V2.0 B7110	6-77-B7115-D02	
12	FFC POWER BOARD PITCH=45.0MM B710	6-43-B7110-032	
13	FFC CLICK TO TOP PITCH=45.0MM B710	6-43-B7112-022	
14	CLICK BOARD V2.0 B7110	6-77-B7112-D02	
15	KEYBOARD SWITCH BOARD V1.0 B7110	6-23-EM55G-011	
16	KEYBOARD SWITCH BOARD V1.0 B7110	6-77-B7117-D01	
17	FFC CLICK TO K/8 BOARD PITCH=45.0MM B710	6-43-B7110-022	
18	FFC CLICK TO K/8 BOARD PITCH=45.0MM B710	6-43-B7110-012	
19	FFC VGA BOARD PITCH=45.0MM B710	6-43-B7112-011	FOR B710
19	FFC VGA BOARD PITCH=45.0MM B710	6-43-B7132-011	FOR B7130
20	LED & VGA SWITCH BOARD V2.0 B710	6-77-B7114-D02	FOR B710
20	LED & VGA SWITCH BOARD V1.0 B7130	6-77-B7134-D01	FOR B7130
20	LED & VGA SWITCH BOARD V1.0 E7130	6-77-B7134-D01-A	FOR E7130
21	W/MAX MYLAR 21.8x40.21 B710	6-40-B7112-040	

Bottom

Figure 2
Bottom



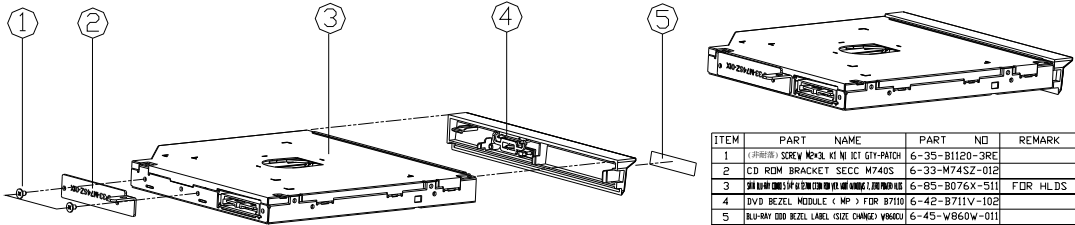
ITEM	PART NAME	PART NO	REMARK
1	VGA SUPPORTER SECC B7130	6-33-B713S-010	
2	MAIN BOARD V.E.D. W170HN	6-77-W170H-000	
3	CPU SUPPORTER FOR MAIN BOARD V.E.D. W170HN	6-33-W150S-011	
4	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-40-M74SS-031	
5	W/O DVD/BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-40-C450S-030	
6	SCREW M2.5x4L KI BK/2 ICT NY	6-35-B412S-4RA	
7	SCREW M2x4L KI BZ ICT NY	6-35-B6120-4RA	
8	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-88-W76C2-070R (OPTION)	
9	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-88-C555F-700I (OPTION)	
10	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-88-M77C2-4200 (OPTION)	
11	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-88-P170F-4210 (OPTION)	
12	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-88-P170F-4210 (OPTION)	
13	SCREW M2x4L KI BZ ICT NY (OPTIONAL)	6-35-B1120-3RE	
14	TAPE MYLAR (C) MYLAR M550J	6-40-M55J2-030	
15	BATTERY 2V COIN CR2032 (W170HN)	6-23-6201S-607	
16	HEAT SINK FOR CPU (W170HN)	6-40-B41MS-011	
17	VGA CHIP MYLAR (W170HN)	6-40-M860S-090	
18	MB FAN MYLAR PET W150HN	6-40-W150S-010	
19	LED FRONT COVER RUBBER SILICON (W170HN)	6-47-W76S1-030	
20	VGA HEATSINK MODULE W150HN	6-31-W150N-201	
21	SCREW M2.5x4L KI BK/2 ICT NY	6-35-B612S-5RA	
22	CPU THERMAL MODULE W150HN	6-31-W150N-101-I	
23	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-87-C480S-4P42 (OPTION)	
24	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-87-E412S-4D7 (OPTION)	
25	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-87-E412S-4Y4 (OPTION)	
26	SPARKERABLE (OPTIONAL) (W170HN)	6-23-58711-011	
27	SPARKERABLE (OPTIONAL) (W170HN)	6-35-20220-000	
28	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-43-W1700-010	
29	W/O BLU-RAY/HD-DVD/CD/DVD DRIVE (OPTIONAL)	6-77-W170N-101	
30	SPARKERABLE (OPTIONAL) (W170HN)	6-23-58711-021	
31	PHONE JACK & USB HUB V.E.D. W170HN	6-77-W150A-000	
32	SATA DVD SUPER MULTI ASSY (OPTIONAL)	6-79-W170H00-000	
33	SATA DVD SUPER MULTI ASSY (OPTIONAL)	6-79-W170H00-010	
34	SATA DVD SUPER MULTI ASSY (OPTIONAL)	6-79-B7130000-010	
35	W/O DVD ASSY B7110 (OPTIONAL)	6-79-B710002-000	
36	PRODUCT LABEL FOR W170HN	6-45-W170H00-010	
37	W/O DVD ASSY B7110	6-79-B710000-010	
38	W/O DVD ASSY B7110	6-79-B710000-020	
39	HDD COVER (MP) FOR B7110	6-42-B711J-012	
40	SCREW M2x4L KI BK/2 ICT NY	6-35-B6120-8R0	
41	SCREW M2.5x6L KI BZ ICT NY	6-35-B212S-6RA	
42	FAN MODULE (OPTIONAL) (W170HN)	6-31-B41MS-104	
43	SACKET (OPTIONAL) FOR CPU HUB (W170HN)	6-47-00190-70A	
44	BOTTOM CASE MODULE (MP) FOR B7110	6-39-B7113-012	
45	CPU COVER MODULE (MP) FOR B7110	6-42-B7113-102	



A.Part Lists

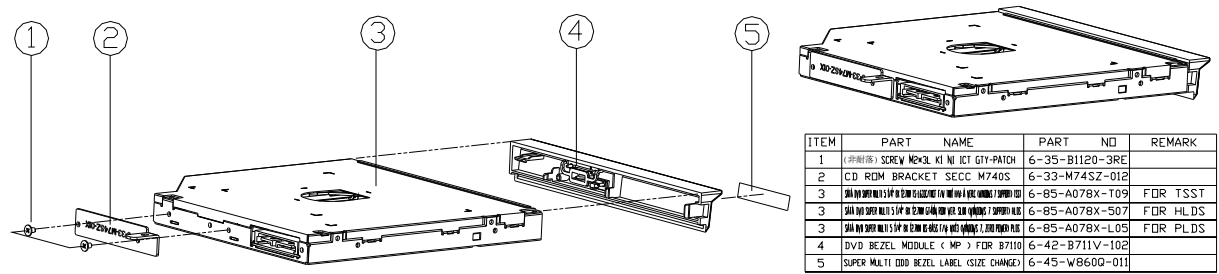
ITEM	PART	NAME	PART NO	REMARK
1	LCD FRONT CASE PROJECT MULAR PET	B7110	6-40-871118-012	
2	FRONT CASE RUBBER SLIPPER	B7110	6-47-87111-032	
3	SCREW NEXEL KCT-88 B-40 INCT NY	NY	6-35-86120-580	
4	LCD FRONT COVER MODULE	B7110	6-39-87111-012	
5	CCD-RING PCCPVT	B7110	6-42-87111-011	OPTION
6	W/O CCD LENS PC	B7110	6-42-87111-020	
7	FRONT RUBBER SLIPPER SLIPPER SLIPPER	B7110	6-47-87111-021	
7	SCREW M25X50 KCT BK/2 ICT NY	NY	6-35-86125-58A	
8	SCREW NEXEL KCT NY ICT NY-40-45X10-B-40	NY	6-35-86120-3RE	
9	HINGE R (SECC) SK77	PPV17B110	6-33-87111-011	
10	WIRE CABLE FOR LCD L HANG NY B7110	B7110	6-43-87111-011	
11	WIRE CABLE FOR LCD L HANG NY B7110	B7110	6-43-87111-011	
12	LCD I2Z NO.1 (LPT) I2Z NO.1 (LPT) I2Z NO.1 (LPT)	NO.1	6-50-NA1658-N00	OPTION
12	LCD I2Z NO.1 (LPT) I2Z NO.1 (LPT) I2Z NO.1 (LPT)	NO.1	6-50-NA160-L00	OPTION
12	LCD I2Z NO.1 (LPT) I2Z NO.1 (LPT) I2Z NO.1 (LPT)	NO.1	6-50-NA158-D00	OPTION
12	LCD I2Z NO.1 (LPT) I2Z NO.1 (LPT) I2Z NO.1 (LPT)	NO.1	6-50-NA158-M01	OPTION
12	LCD I2Z NO.1 (LPT) I2Z NO.1 (LPT) I2Z NO.1 (LPT)	NO.1	6-50-NA260-L00	OPTION
13	TAPE MYLAR (C) MYLAR M550J	NO.1	6-40-M55-2-020	
14	HINGE L (SECC) SK77	B7110	6-23-78710-022	
15	HINGE L (SECC) SK77	B7110	6-33-87111-021	
16	HINGE L (SECC) SK77	B7110	6-23-78710-031	
17	NYC CAMEO BUSH TO BUSH/NO.1 (LPT) I2Z NO.1 (LPT)	NO.1	6-88-E510C-4900	OPTION
17	NYC CAMEO BUSH TO BUSH/NO.1 (LPT) I2Z NO.1 (LPT)	NO.1	6-88-E510C-4900	OPTION
17	NYC CAMEO BUSH TO BUSH/NO.1 (LPT) I2Z NO.1 (LPT)	NO.1	6-88-E510C-4901	OPTION
18	LCD BACK COVER MODULE	B7110	6-39-87111-022	
19	LCD BACK CASE PROJECT MULAR PET	B7110	6-40-87111-012	

Figure A - 4
**SATA BLU-RAY
Combo**



ITEM	PART	NAME	PART NO	REMARK
1	(非附番)	SCREW HEXCL KI NI JCT GY-PATCH	6-35-B1120-3RE	
2		CD ROM BRACKET SECC M740S	6-33-M74S2-012	
3		200 KBIT CMOS 1/2 IN CDROM CTRN CHG. W/RECORD 1.28 MB/SEC	6-85-B076X-511	FOR HLDS
4		BDU BEZEL MODULE (MP) FOR B7110	6-42-B711V-102	
5		BLU-RAY BDU BEZEL LABEL (SIZE CHANGE) W/60001	6-45-W606V-011	

SATA DVD

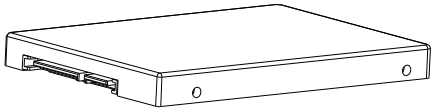
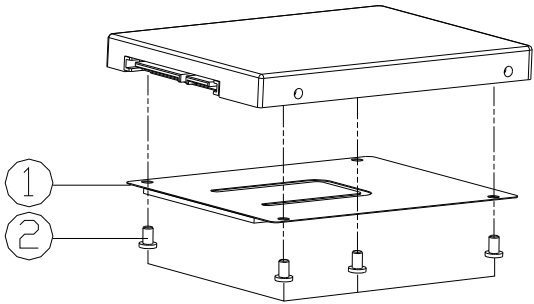


ITEM	PART NAME	PART NO	REMARK
1	SCREW M2X1.6 KI NI ICT GY-PATCH	6-35-B1120-3RE	
2	CD ROM BRACKET SECC M740S	6-33-M74SZ-012	
3	SATA DVD MULTI 16X 9.5MM SLIM TYPE FOR MP3 & VIDEO (12.7MM) / SUPPORT DVD	6-85-A078X-T09	FOR TSST
3	SATA DVD MULTI 16X 9.5MM SLIM TYPE FOR MP3 & VIDEO (12.7MM) / SUPPORT DVD	6-85-A078X-507	FOR HLDS
3	SATA DVD MULTI 16X 9.5MM SLIM TYPE FOR MP3 & VIDEO (12.7MM) / SUPPORT DVD	6-85-A078X-L05	FOR PLDS
4	DVD BEZEL MODULE (MP) FOR B7110	6-42-B711V-102	
5	SUPER MULTI DVD BEZEL LABEL (SIZE CHANGE)	6-45-W860Q-011	

Figure A - 5
SATA DVD

HDD

Figure A - 6
HDD



ITEM	PART NAME	PART NO	REMARK
1	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	
2	HDD MYLAR <PET+CR> C4500	6-40-C450J-010	

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the **W170HN** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
System Block Diagram - Page B - 2	CougarPoint - M 1/9 - Page B - 19	5VS, 3VS, 3.3VM, 1.5VS_CPU - Page B - 36
CPU 1/7 (DMI, PEG, FDI) - Page B - 3	CougarPoint - M 2/9 - Page B - 20	VDD3, VDD5 - Page B - 37
CPU 2/7 (CLK, MISC, JTAG) - Page B - 4	CougarPoint - M 3/9 - Page B - 21	Power 0.85VS, 1.8VS, PEX_VDD - Page B - 38
CPU 3/7 (DDR3) - Page B - 5	CougarPoint - M 4/9 - Page B - 22	Power 1.5V/1.05VS/0.75V - Page B - 39
CPU 4/7 (Power) - Page B - 6	CougarPoint - M 5/9 - Page B - 23	Power V-Core1 - Page B - 40
CPU 5/7 (Graphics Power) - Page B - 7	CougarPoint - M 6/9 - Page B - 24	Power V-Core2 - Page B - 41
CPU 6/7 (GND) - Page B - 8	CougarPoint - M 7/9 - Page B - 25	Power VGA NVVDD - Page B - 42
CPU 7/7 (RESERVED) - Page B - 9	CougarPoint - M 8/9 - Page B - 26	AC_IN, Charger - Page B - 43
DDR3 SO-DIMM_0 - Page B - 10	CougarPoint - M 9/9 - Page B - 27	W150HNM Audio Board - Page B - 44
DDR3 SO-DIMM_1 - Page B - 11	WLAN, 3G, Mini PCIE - Page B - 28	W150HNM Second HDD Board - Page B - 45
Panel, Inverter, CRT - Page B - 12	USB, Fan, TP, FP, Multi-Conn - Page B - 29	B5100 Click Board - Page B - 46
VGA PCI-E Interface - Page B - 13	USB 3.0 - Page B - 30	B5100 Fingerprint Board - Page B - 47
VGA Frame Buffer Interface - Page B - 14	Card Reader (JMC251C) - Page B - 31	B5100 LED & VGA SW Board - Page B - 48
VGA Frame Buffer A - Page B - 15	SATA ODD, LED, Hotkey, LID SW - Page B - 32	B5100 Power Switch Board - Page B - 49
VGA Frame Buffer C - Page B - 16	HDMI, RJ45 - Page B - 33	Sequence - Page B - 50
VGA I/O - Page B - 17	Audio Codec ALC269 - Page B - 34	
VGA NVVDD Cecoupling - Page B - 18	KBC-ITE IT8518E - Page B - 35	

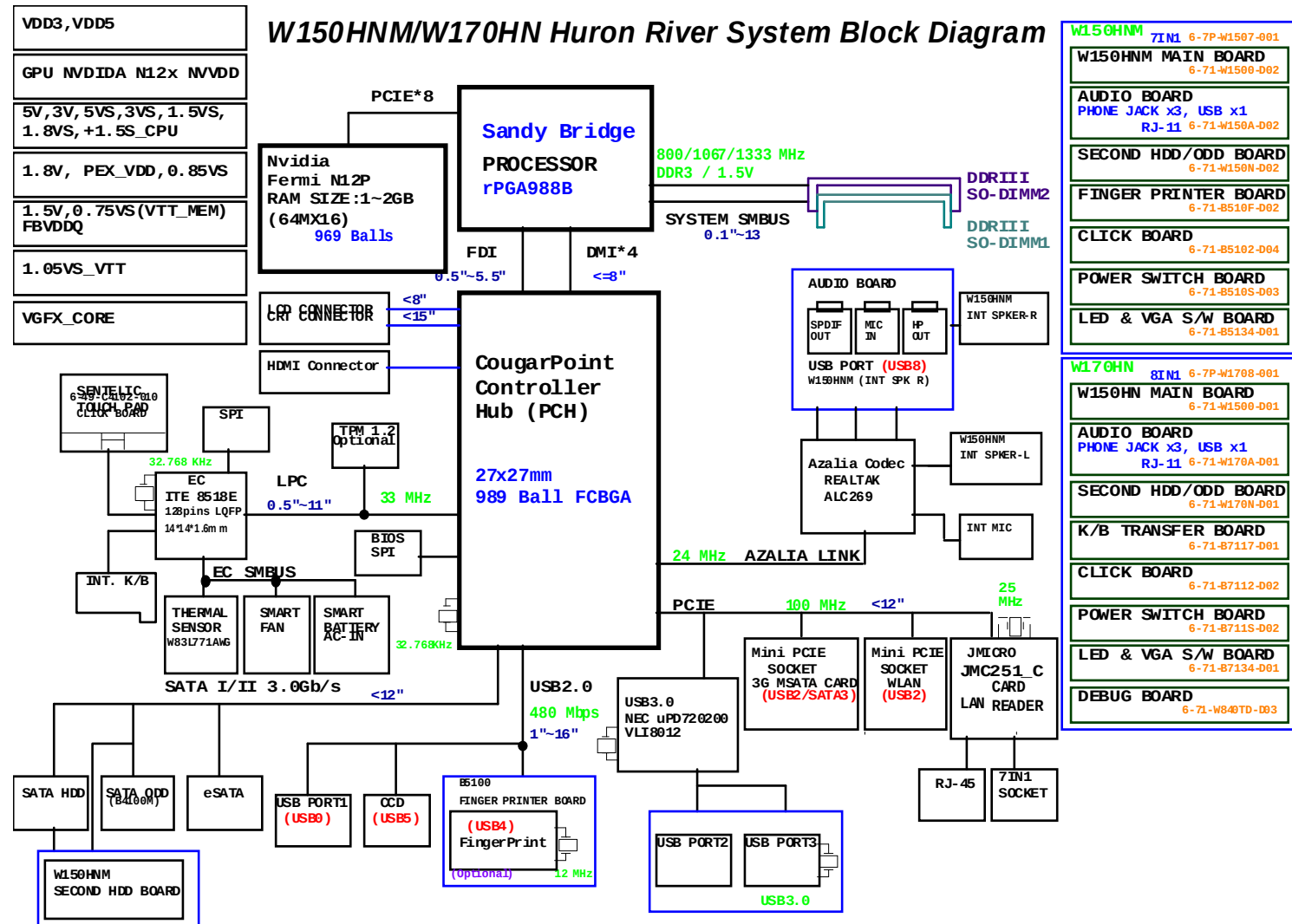
Table B - 1
**SCHEMATIC
DIAGRAMS**



Version Note

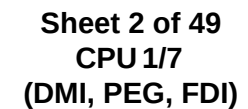
The schematic diagrams in this chapter are based upon version 6-7P-W1507-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram



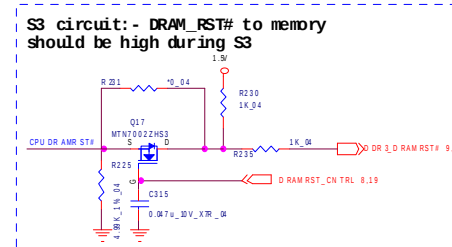
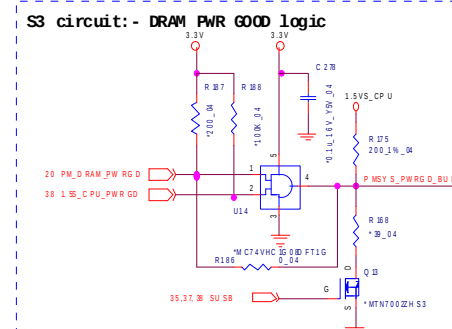
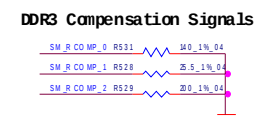
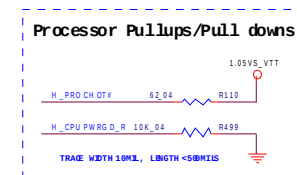
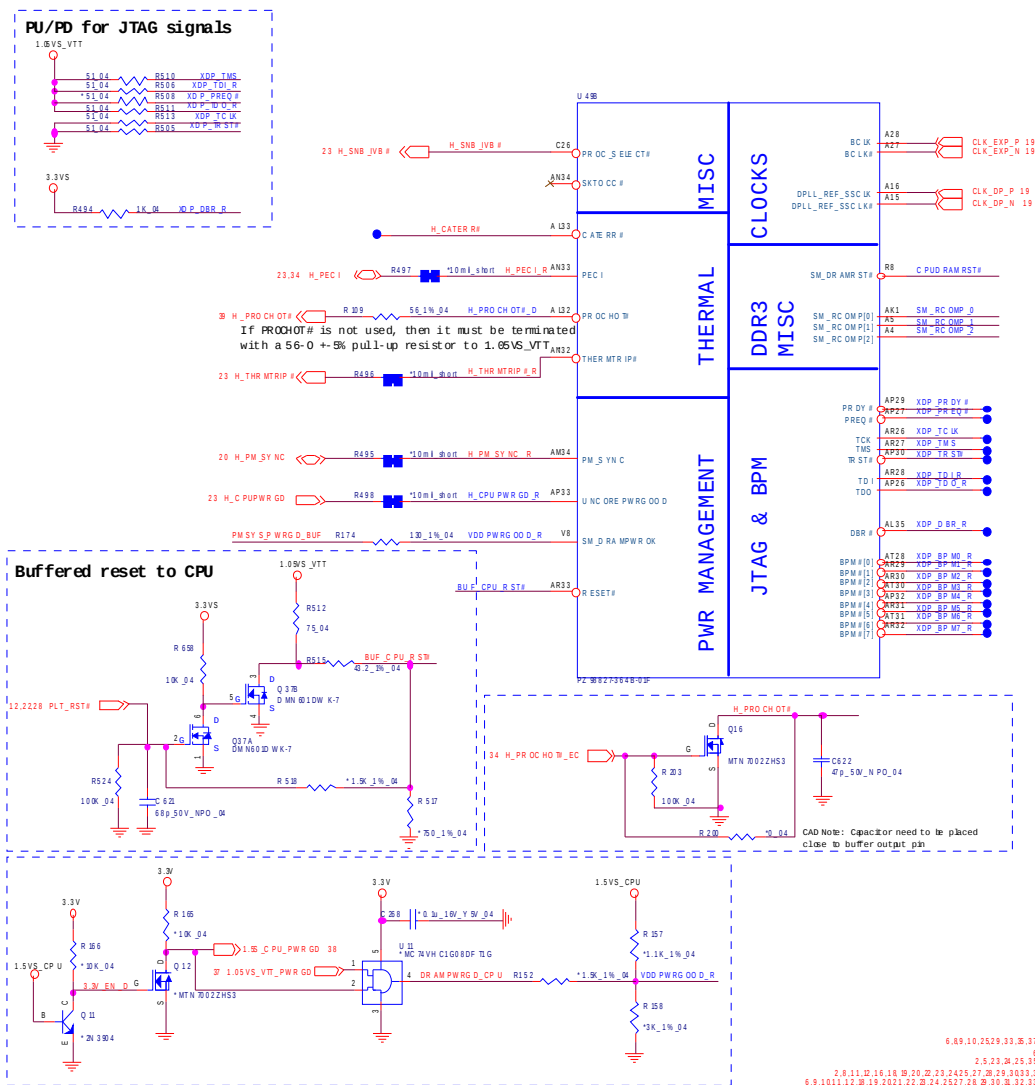
Sheet 1 of 49
System Block
Diagram

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

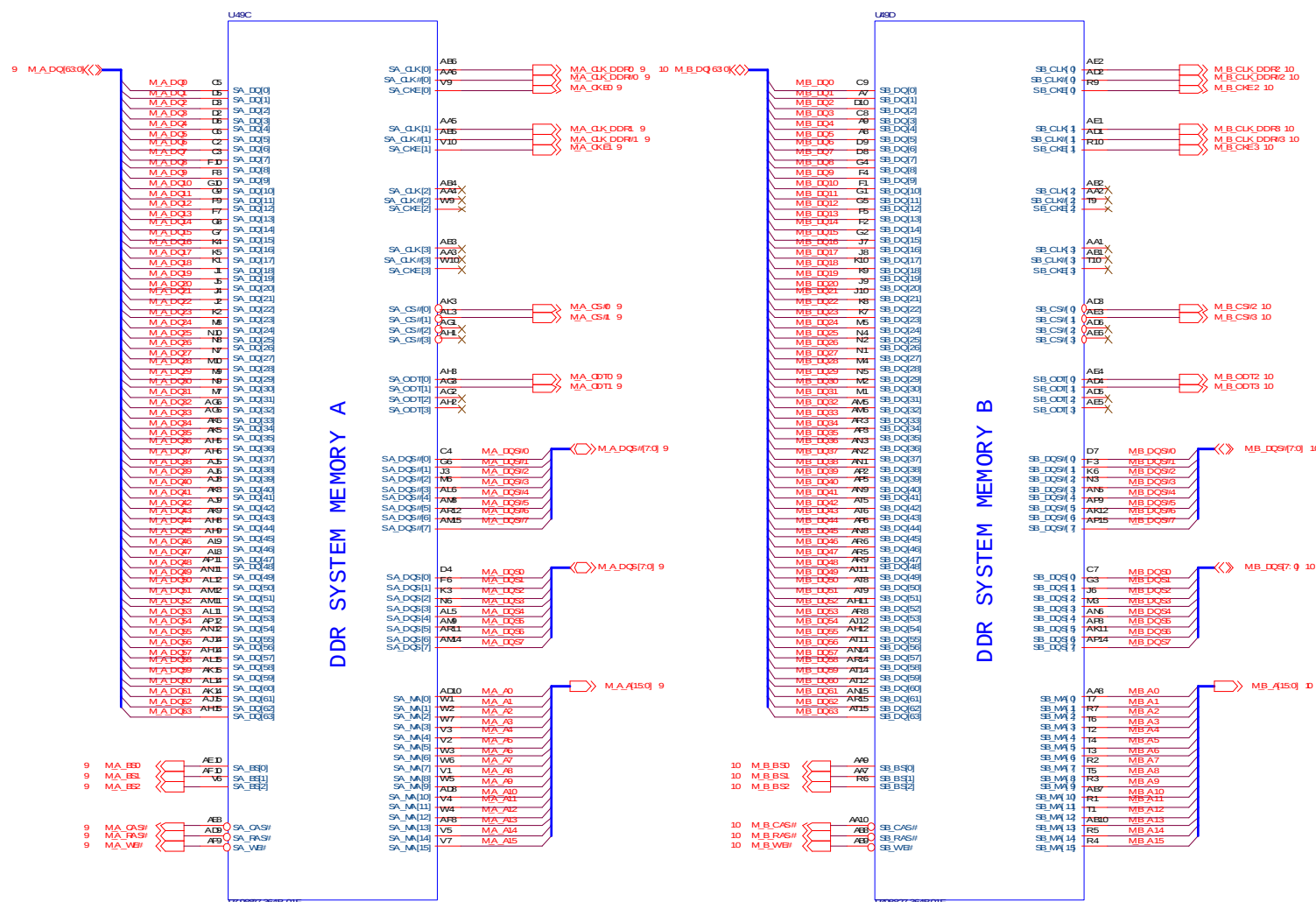


B.Schematic Diagrams

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

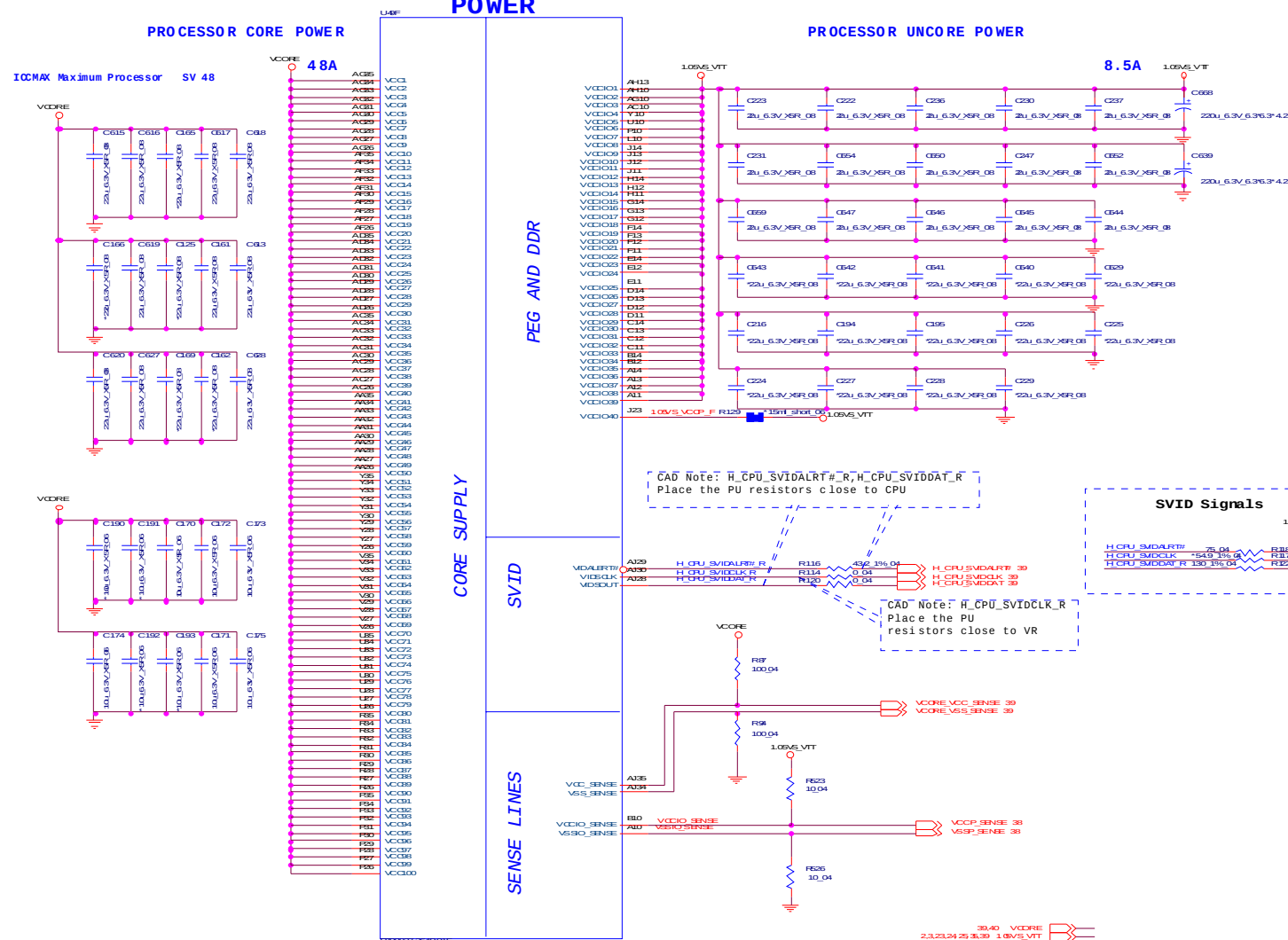


Sandy Bridge Processor 3/7 (DDR3)



Sandy Bridge Processor 4/7 (POWER)

PROCESSOR UNCORE POWER



Sandy Bridge Processor 5/7 (GRAPHICS POWER)



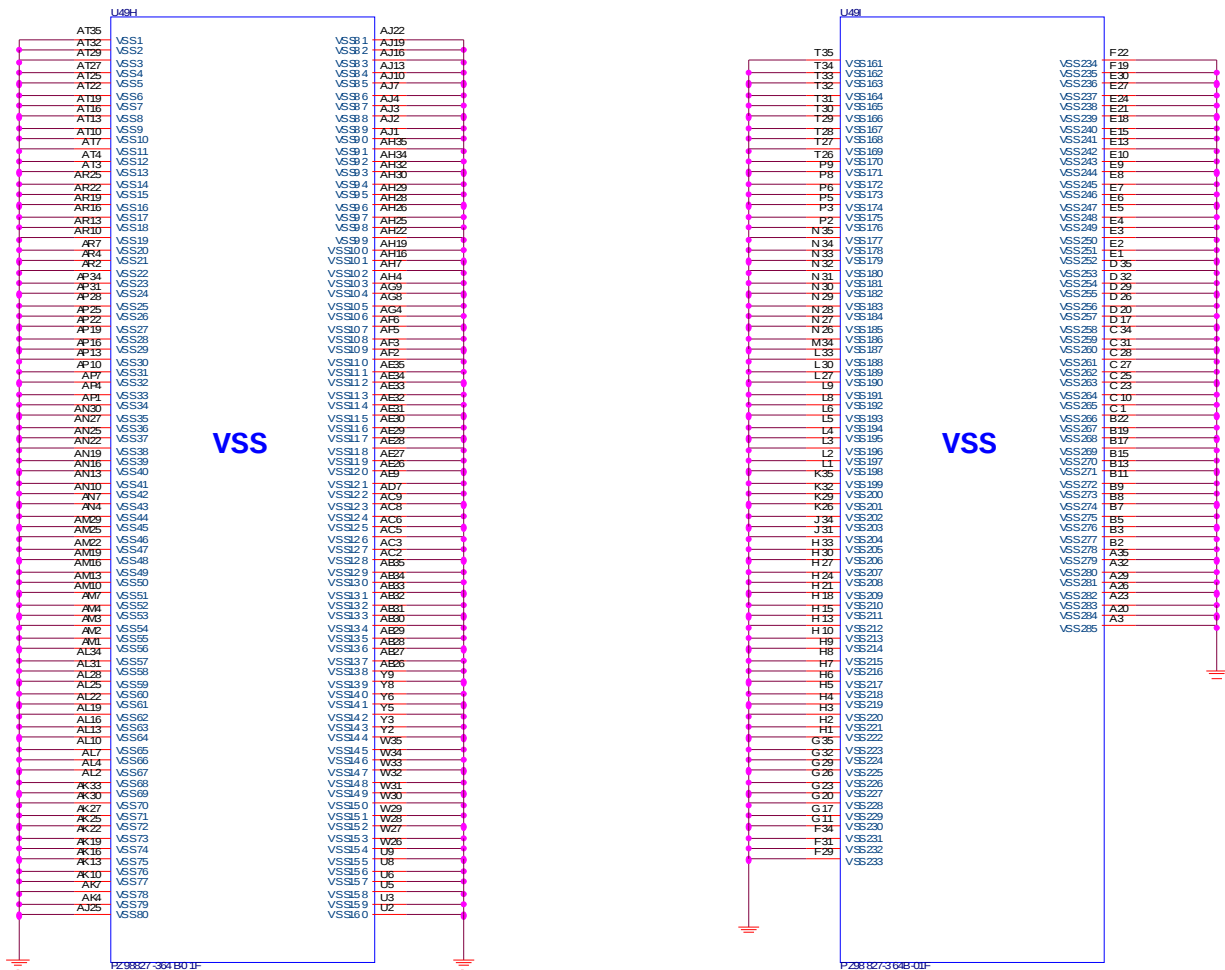
Schematic Diagrams

CPU 6/7 (GND)

Sandy Bridge Processor 6/7 (GND)

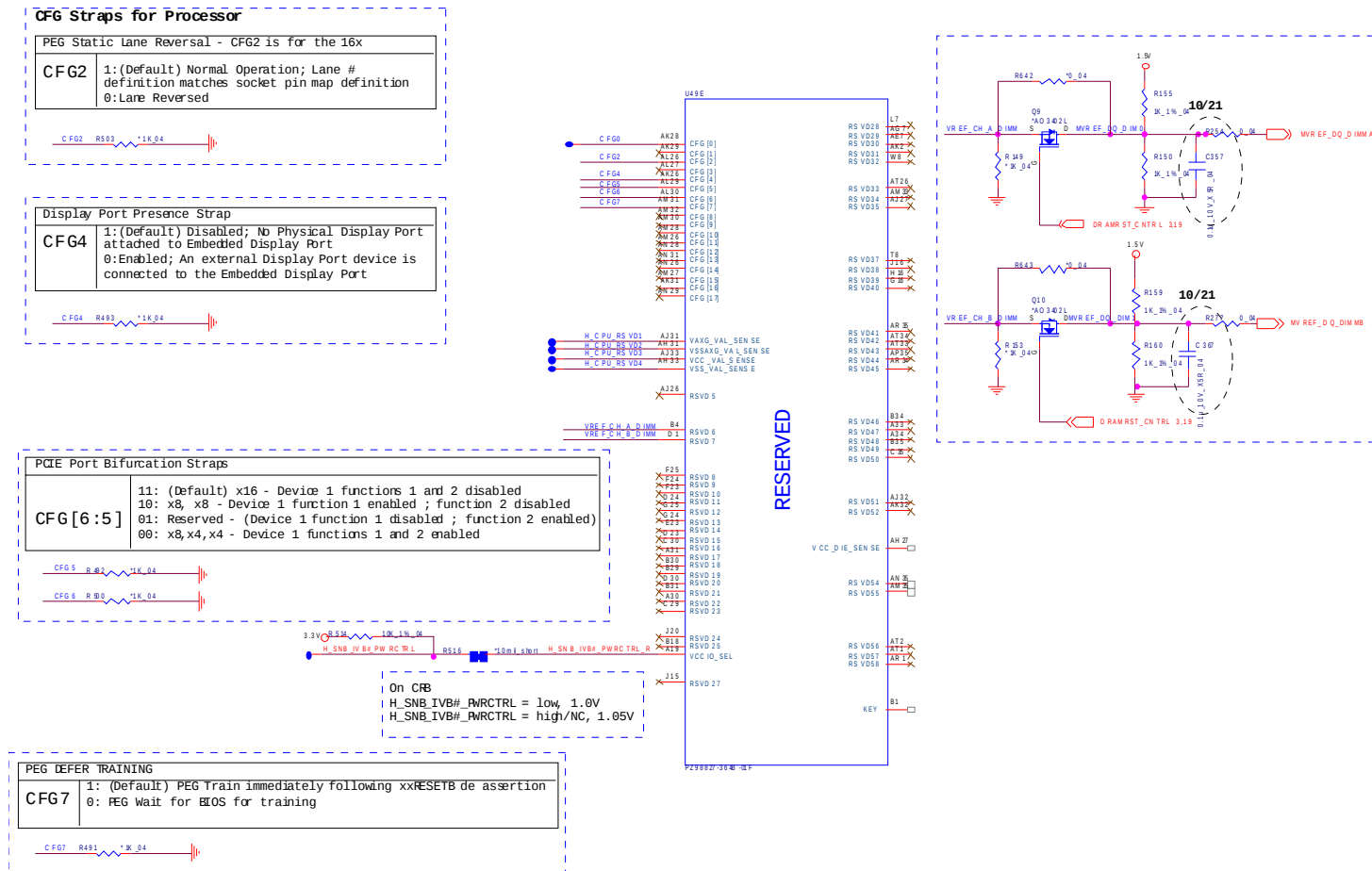
Sheet 7 of 49
CPU 6/7 (GND)

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



CPU 7/7 (RESERVED)

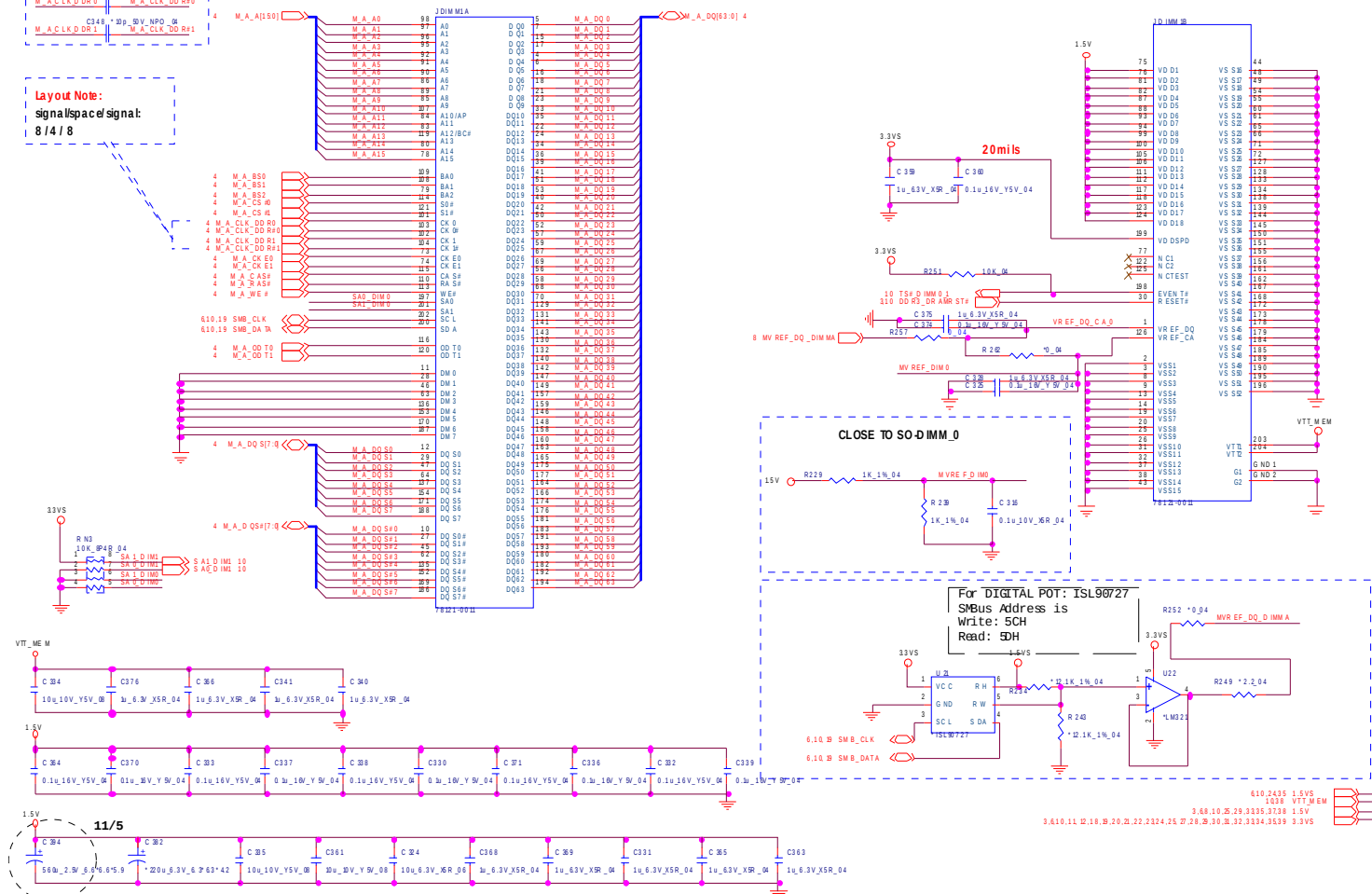
Sandy Bridge Processor 7/7 (RESERVED)

Sheet 8 of 49
CPU 7/7
(RESERVED)

B.Schematic Diagrams

SO-DIMM A

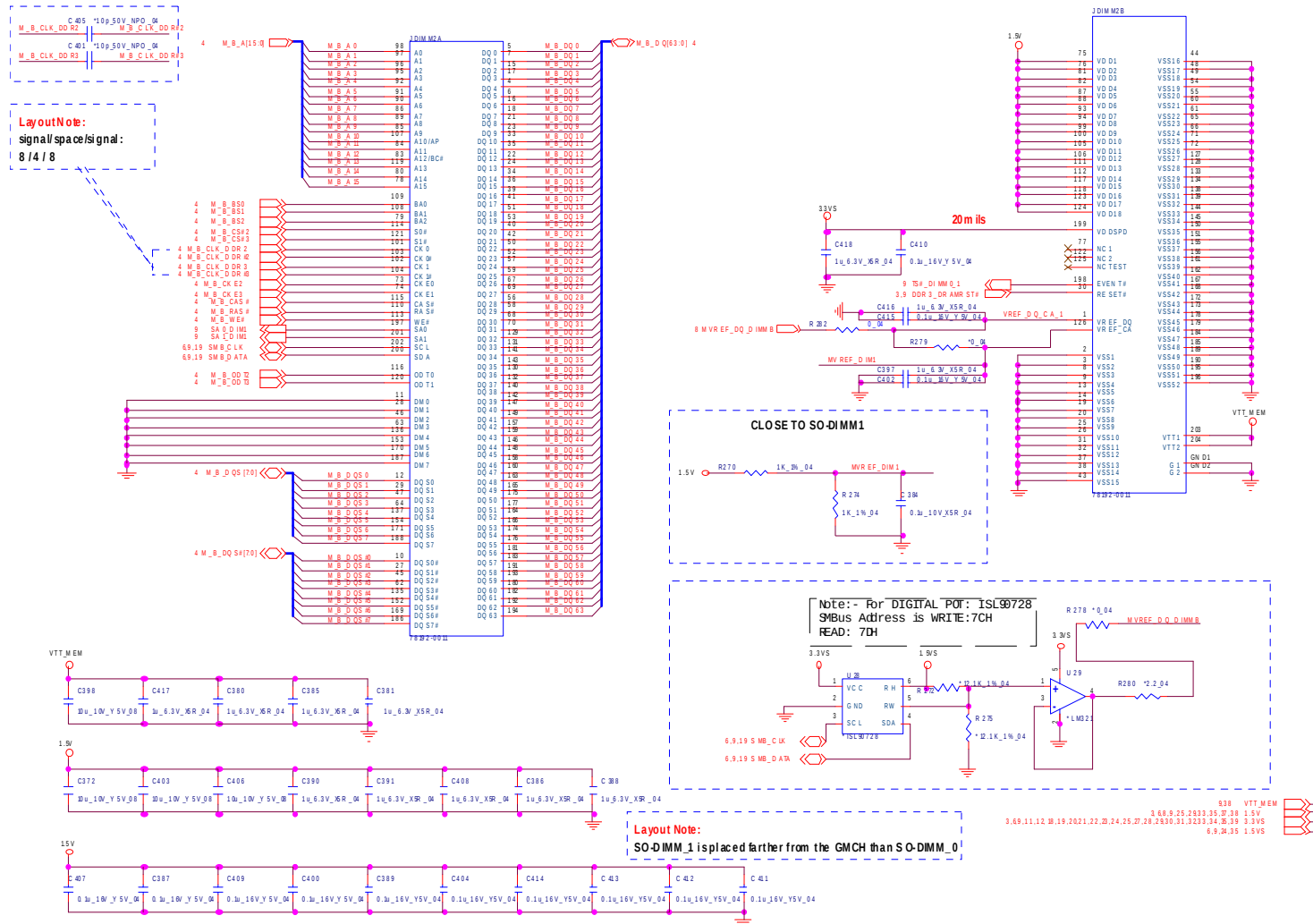
Sheet 9 of 49
DDR3 SO-DIMM 0



DDR3 SO-DIMM_1

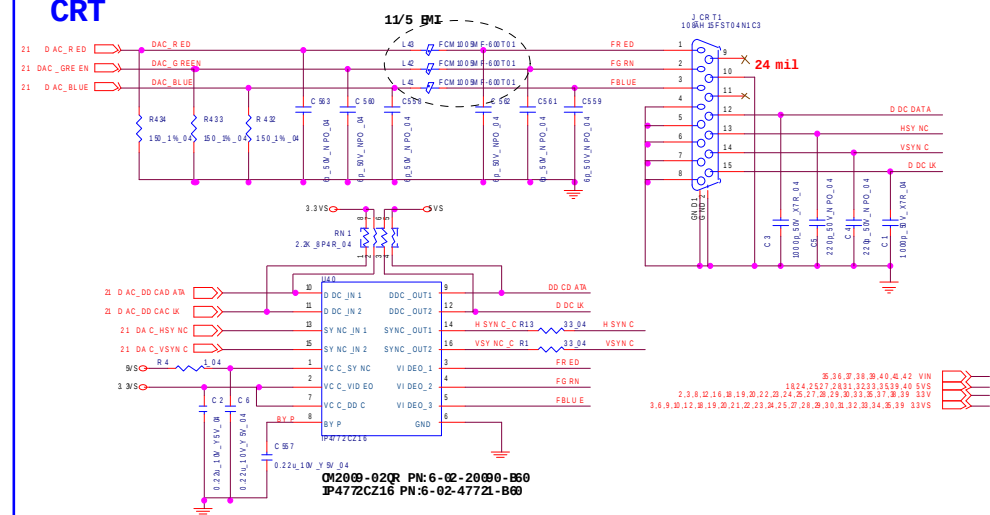
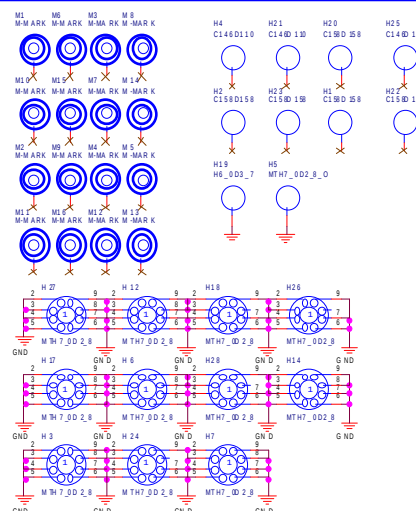
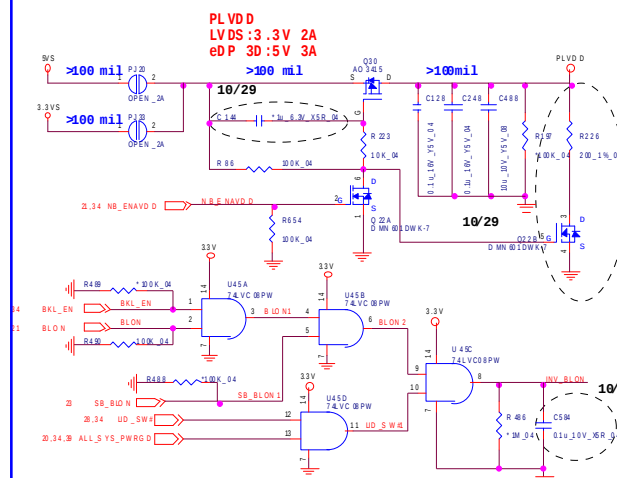
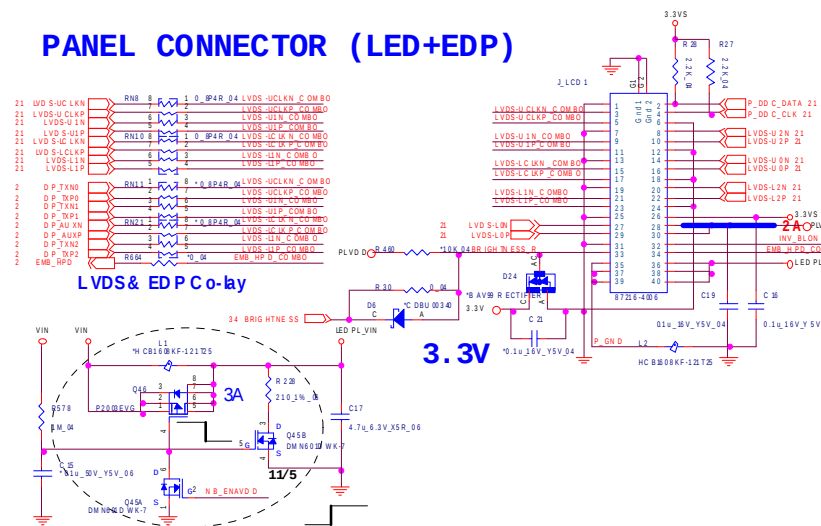
SO-DIMM B

CHANGE TO STANDARD



B.Schematic Diagrams

PANEL CONNECTOR (LED+EDP)



The schematic diagram illustrates a complex PCB layout for a custom computer system. Key components and sections include:

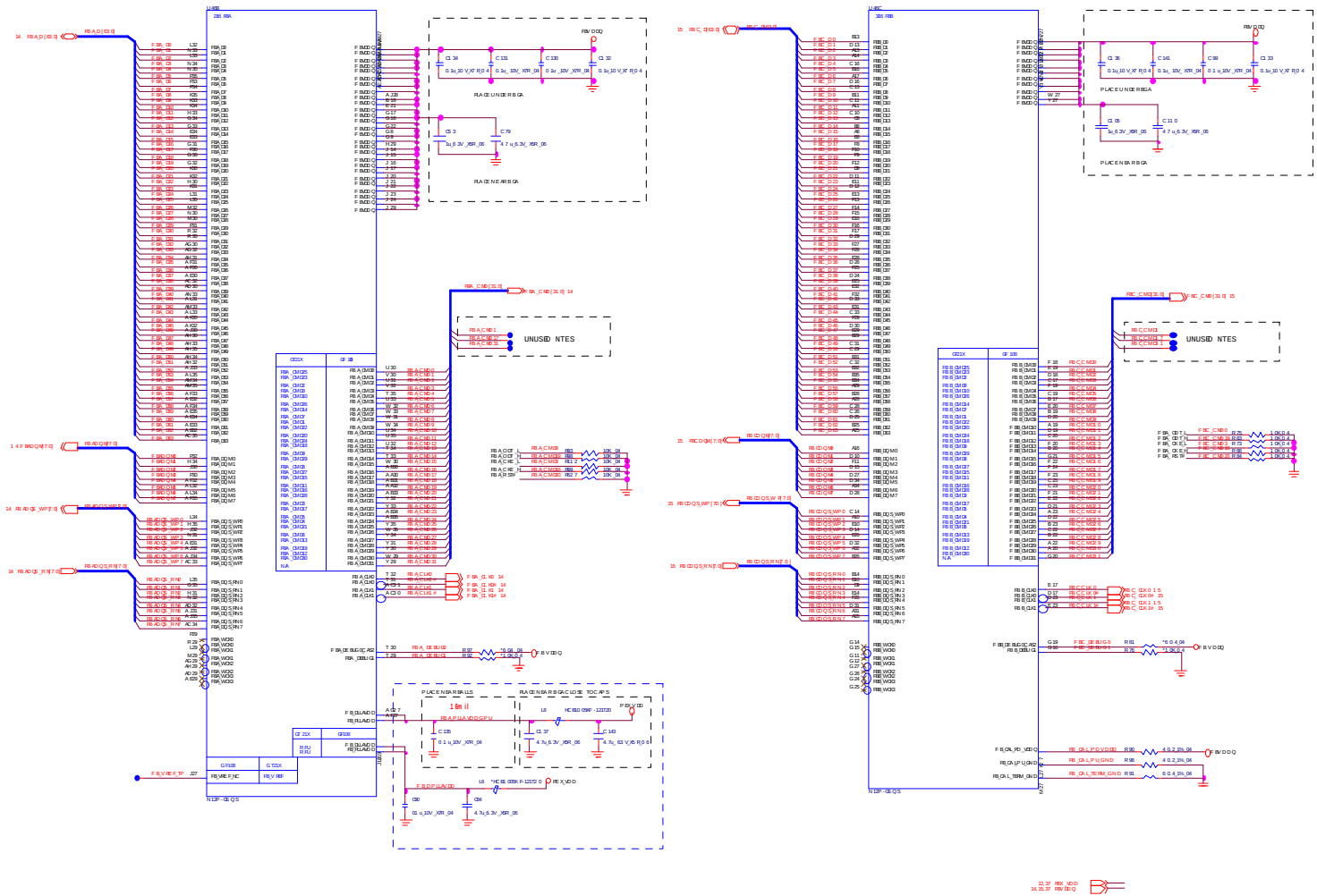
- BIOS ROM:** Located in the top right, it features a 28-pin DIP package with connections for VCC, GND, and data lines.
- N17P-GS:** A central component, likely a microcontroller or logic chip, with multiple pins connected to various logic levels.
- Power Supply Section:** Includes a 10/28V regulator, a 10/28V output, and a 10/28V output section.
- Component Labels:** Numerous components are labeled with their values and types, such as resistors (e.g., 10K, 100K, 1M), capacitors (e.g., 100pF, 1nF, 10nF), and integrated circuits (e.g., 74LS00, 74LS04, 74LS10, 74LS125, 74LS138, 74LS14, 74LS153, 74LS155, 74LS157, 74LS159, 74LS161, 74LS162, 74LS163, 74LS164, 74LS165, 74LS166, 74LS167, 74LS168, 74LS169, 74LS170, 74LS171, 74LS172, 74LS173, 74LS174, 74LS175, 74LS176, 74LS177, 74LS178, 74LS179, 74LS180, 74LS181, 74LS182, 74LS183, 74LS184, 74LS185, 74LS186, 74LS187, 74LS188, 74LS189, 74LS190, 74LS191, 74LS192, 74LS193, 74LS194, 74LS195, 74LS196, 74LS197, 74LS198, 74LS199, 74LS200, 74LS201, 74LS202, 74LS203, 74LS204, 74LS205, 74LS206, 74LS207, 74LS208, 74LS209, 74LS210, 74LS211, 74LS212, 74LS213, 74LS214, 74LS215, 74LS216, 74LS217, 74LS218, 74LS219, 74LS220, 74LS221, 74LS222, 74LS223, 74LS224, 74LS225, 74LS226, 74LS227, 74LS228, 74LS229, 74LS230, 74LS231, 74LS232, 74LS233, 74LS234, 74LS235, 74LS236, 74LS237, 74LS238, 74LS239, 74LS240, 74LS241, 74LS242, 74LS243, 74LS244, 74LS245, 74LS246, 74LS247, 74LS248, 74LS249, 74LS250, 74LS251, 74LS252, 74LS253, 74LS254, 74LS255, 74LS256, 74LS257, 74LS258, 74LS259, 74LS260, 74LS261, 74LS262, 74LS263, 74LS264, 74LS265, 74LS266, 74LS267, 74LS268, 74LS269, 74LS270, 74LS271, 74LS272, 74LS273, 74LS274, 74LS275, 74LS276, 74LS277, 74LS278, 74LS279, 74LS280, 74LS281, 74LS282, 74LS283, 74LS284, 74LS285, 74LS286, 74LS287, 74LS288, 74LS289, 74LS290, 74LS291, 74LS292, 74LS293, 74LS294, 74LS295, 74LS296, 74LS297, 74LS298, 74LS299, 74LS300, 74LS301, 74LS302, 74LS303, 74LS304, 74LS305, 74LS306, 74LS307, 74LS308, 74LS309, 74LS310, 74LS311, 74LS312, 74LS313, 74LS314, 74LS315, 74LS316, 74LS317, 74LS318, 74LS319, 74LS320, 74LS321, 74LS322, 74LS323, 74LS324, 74LS325, 74LS326, 74LS327, 74LS328, 74LS329, 74LS330, 74LS331, 74LS332, 74LS333, 74LS334, 74LS335, 74LS336, 74LS337, 74LS338, 74LS339, 74LS340, 74LS341, 74LS342, 74LS343, 74LS344, 74LS345, 74LS346, 74LS347, 74LS348, 74LS349, 74LS350, 74LS351, 74LS352, 74LS353, 74LS354, 74LS355, 74LS356, 74LS357, 74LS358, 74LS359, 74LS360, 74LS361, 74LS362, 74LS363, 74LS364, 74LS365, 74LS366, 74LS367, 74LS368, 74LS369, 74LS370, 74LS371, 74LS372, 74LS373, 74LS374, 74LS375, 74LS376, 74LS377, 74LS378, 74LS379, 74LS380, 74LS381, 74LS382, 74LS383, 74LS384, 74LS385, 74LS386, 74LS387, 74LS388, 74LS389, 74LS390, 74LS391, 74LS392, 74LS393, 74LS394, 74LS395, 74LS396, 74LS397, 74LS398, 74LS399, 74LS400, 74LS401, 74LS402, 74LS403, 74LS404, 74LS405, 74LS406, 74LS407, 74LS408, 74LS409, 74LS410, 74LS411, 74LS412, 74LS413, 74LS414, 74LS415, 74LS416, 74LS417, 74LS418, 74LS419, 74LS420, 74LS421, 74LS422, 74LS423, 74LS424, 74LS425, 74LS426, 74LS427, 74LS428, 74LS429, 74LS430, 74LS431, 74LS432, 74LS433, 74LS434, 74LS435, 74LS436, 74LS437, 74LS438, 74LS439, 74LS440, 74LS441, 74LS442, 74LS443, 74LS444, 74LS445, 74LS446, 74LS447, 74LS448, 74LS449, 74LS450, 74LS451, 74LS452, 74LS453, 74LS454, 74LS455, 74LS456, 74LS457, 74LS458, 74LS459, 74LS460, 74LS461, 74LS462, 74LS463, 74LS464, 74LS465, 74LS466, 74LS467, 74LS468, 74LS469, 74LS470, 74LS471, 74LS472, 74LS473, 74LS474, 74LS475, 74LS476, 74LS477, 74LS478, 74LS479, 74LS480, 74LS481, 74LS482, 74LS483, 74LS484, 74LS485, 74LS486, 74LS487, 74LS488, 74LS489, 74LS490, 74LS491, 74LS492, 74LS493, 74LS494, 74LS495, 74LS496, 74LS497, 74LS498, 74LS499, 74LS500, 74LS501, 74LS502, 74LS503, 74LS504, 74LS505, 74LS506, 74LS507, 74LS508, 74LS509, 74LS510, 74LS511, 74LS512, 74LS513, 74LS514, 74LS515, 74LS516, 74LS517, 74LS518, 74LS519, 74LS520, 74LS521, 74LS522, 74LS523, 74LS524, 74LS525, 74LS526, 74LS527, 74LS528, 74LS529, 74LS530, 74LS531, 74LS532, 74LS533, 74LS534, 74LS535, 74LS536, 74LS537, 74LS538, 74LS539, 74LS540, 74LS541, 74LS542, 74LS543, 74LS544, 74LS545, 74LS546, 74LS547, 74LS548, 74LS549, 74LS550, 74LS551, 74LS552, 74LS553, 74LS554, 74LS555, 74LS556, 74LS557, 74LS558, 74LS559, 74LS560, 74LS561, 74LS562, 74LS563, 74LS564, 74LS565, 74LS566, 74LS567, 74LS568, 74LS569, 74LS570, 74LS571, 74LS572, 74LS573, 74LS574, 74LS575, 74LS576, 74LS577, 74LS578, 74LS579, 74LS580, 74LS581, 74LS582, 74LS583, 74LS584, 74LS585, 74LS586, 74LS587, 74LS588, 74LS589, 74LS590, 74LS591, 74LS592, 74LS593, 74LS594, 74LS595, 74LS596, 74LS597, 74LS598, 74LS599, 74LS600, 74LS601, 74LS602, 74LS603, 74LS604, 74LS605, 74LS606, 74LS607, 74LS608, 74LS609, 74LS610, 74LS611, 74LS612, 74LS613, 74LS614, 74LS615, 74LS616, 74LS617, 74LS618, 74LS619, 74LS620, 74LS621, 74LS622, 74LS623, 74LS624, 74LS625, 74LS626, 74LS627,

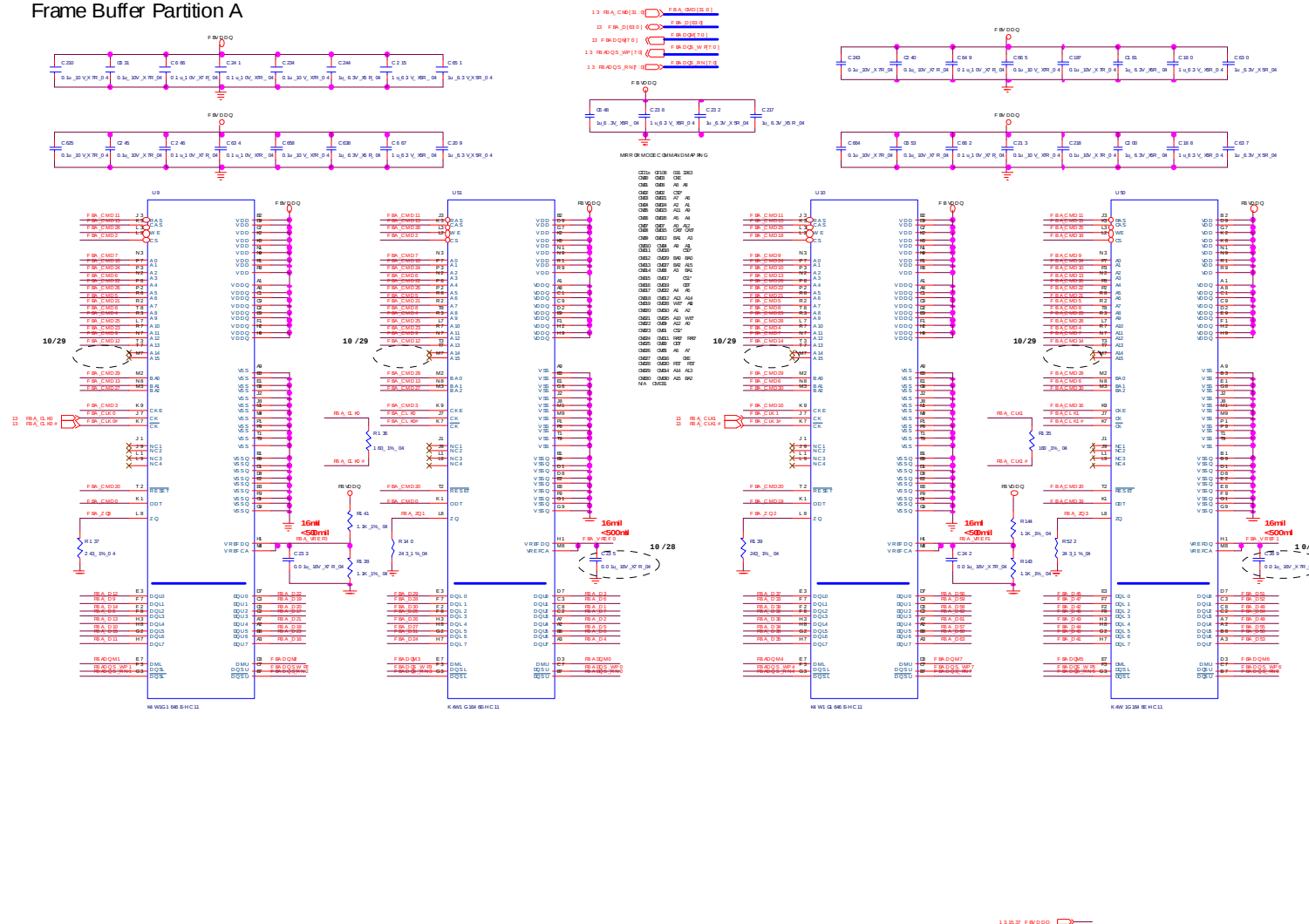
Schematic Diagrams

VGA Frame Buffer Interface

Frame Buffer Interface

Sheet 13 of 49
VGA Frame Buffer Interface

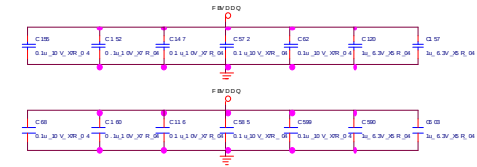
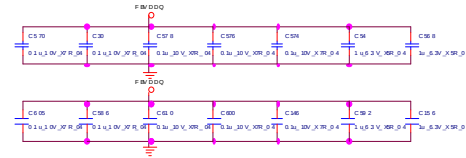




Schematic Diagrams

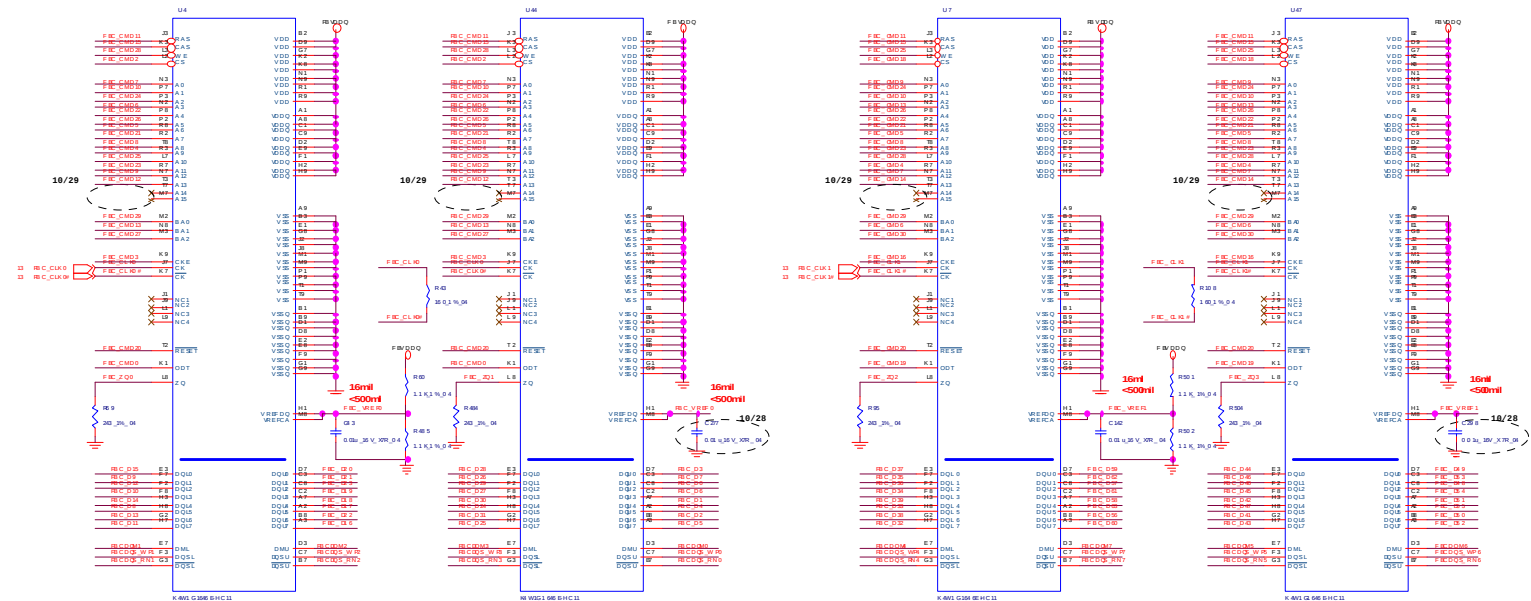
VGA Frame Buffer C

Frame Buffer Partition C



B.Schematic Diagrams

Sheet 15 of 49
VGA Frame Buffer
C

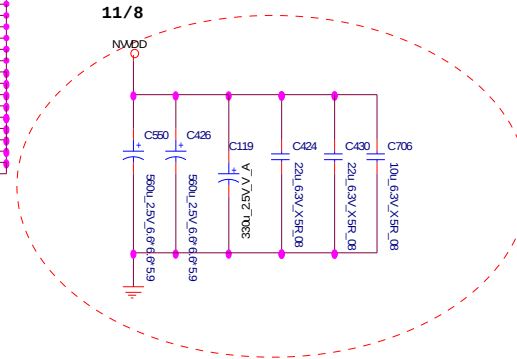
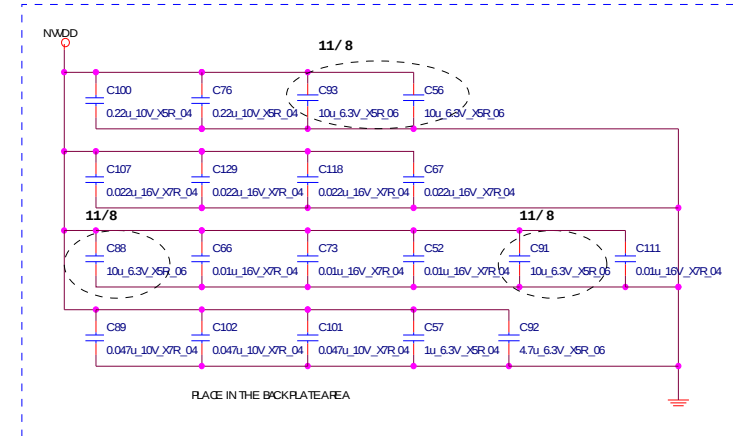
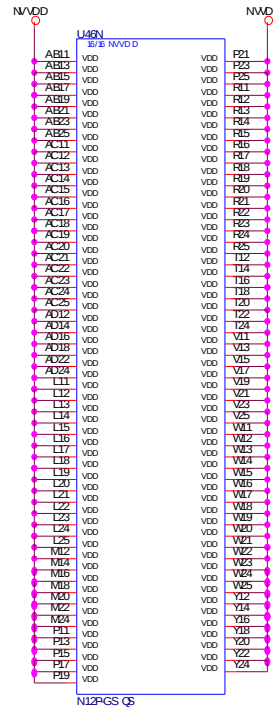
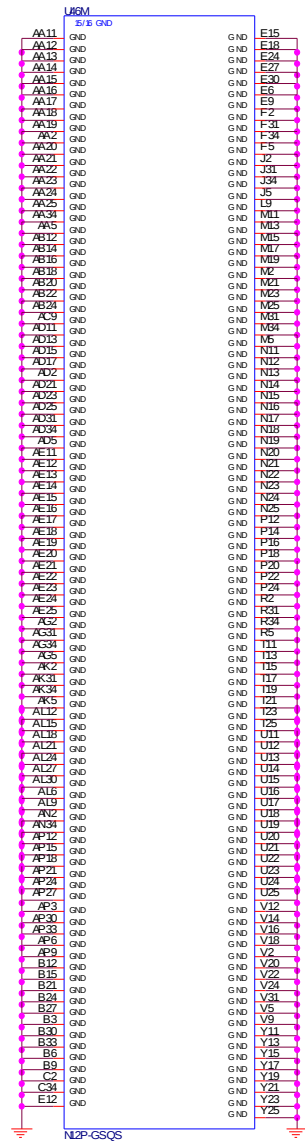


1.1k, 30V, X7R, 0.4

The image displays a complex PCB layout for a 128Gbit/s 100G Ethernet PHY. The layout is organized into several functional blocks, each with its own set of components and connections. The central area is labeled "Test Point" and contains a large circular area with a dashed border, likely for testing or debugging. The layout includes numerous components, traces, and labels for different signal and power planes. The components are labeled with their respective values and functions, such as resistors (R1, R2, R3, etc.), capacitors (C1, C2, C3, etc.), and integrated circuits (IC1, IC2, etc.). The traces are labeled with their respective signal names, such as "IFC_PLVDD_A3", "IFC_PLVDD_A3", "IFC_PLVDD_A3", etc. The layout is a detailed representation of the physical design of the PHY, showing the placement of components and the routing of signals and power.

VGA NVVDD Cecoupling

Sheet 17 of 49
VGA NVVDD
Cecoupling



41 NVVDD

CougarPoint - M (HDA, JTAG, SATA)

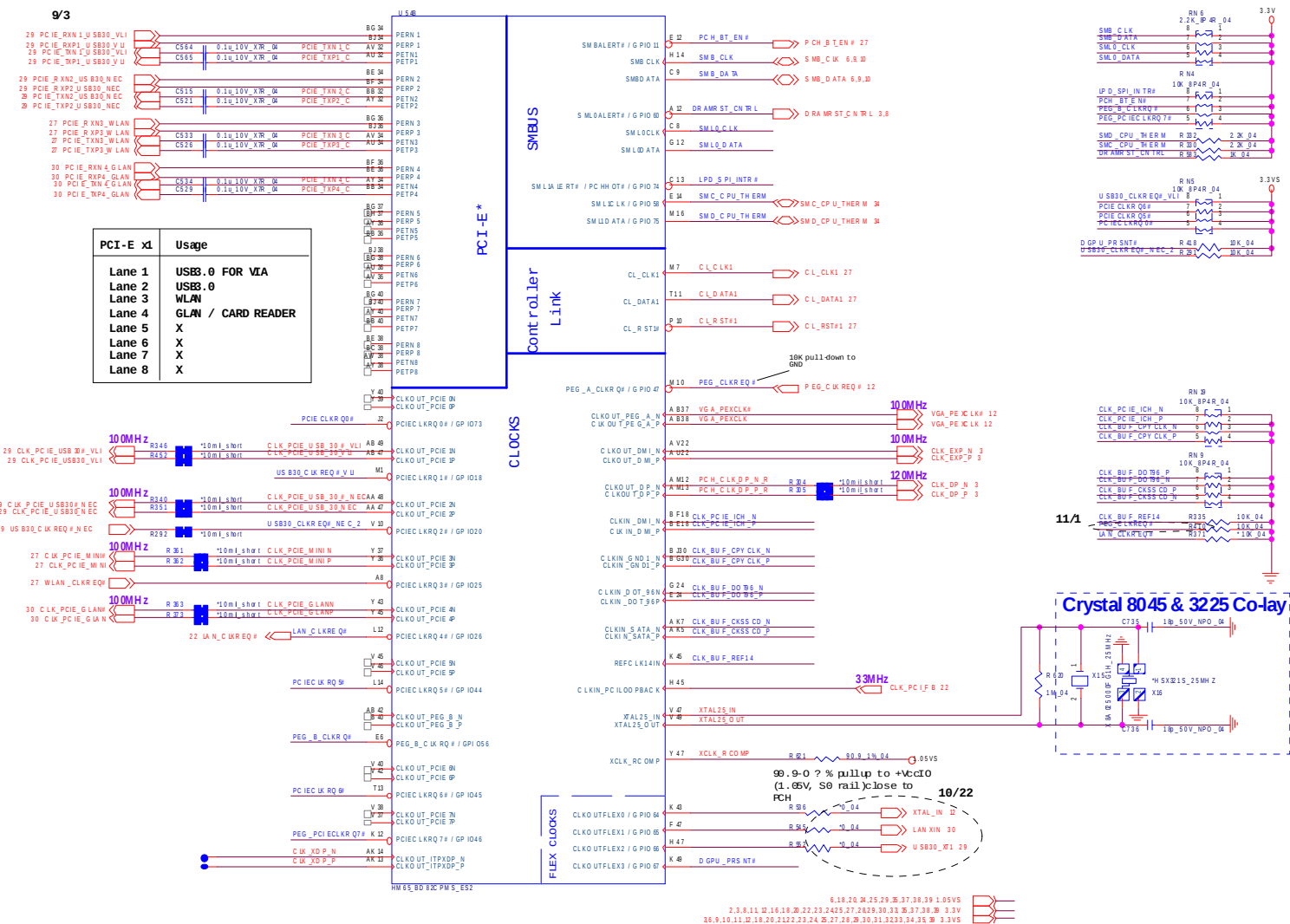


Schematic Diagrams

CougarPoint - M 2/9

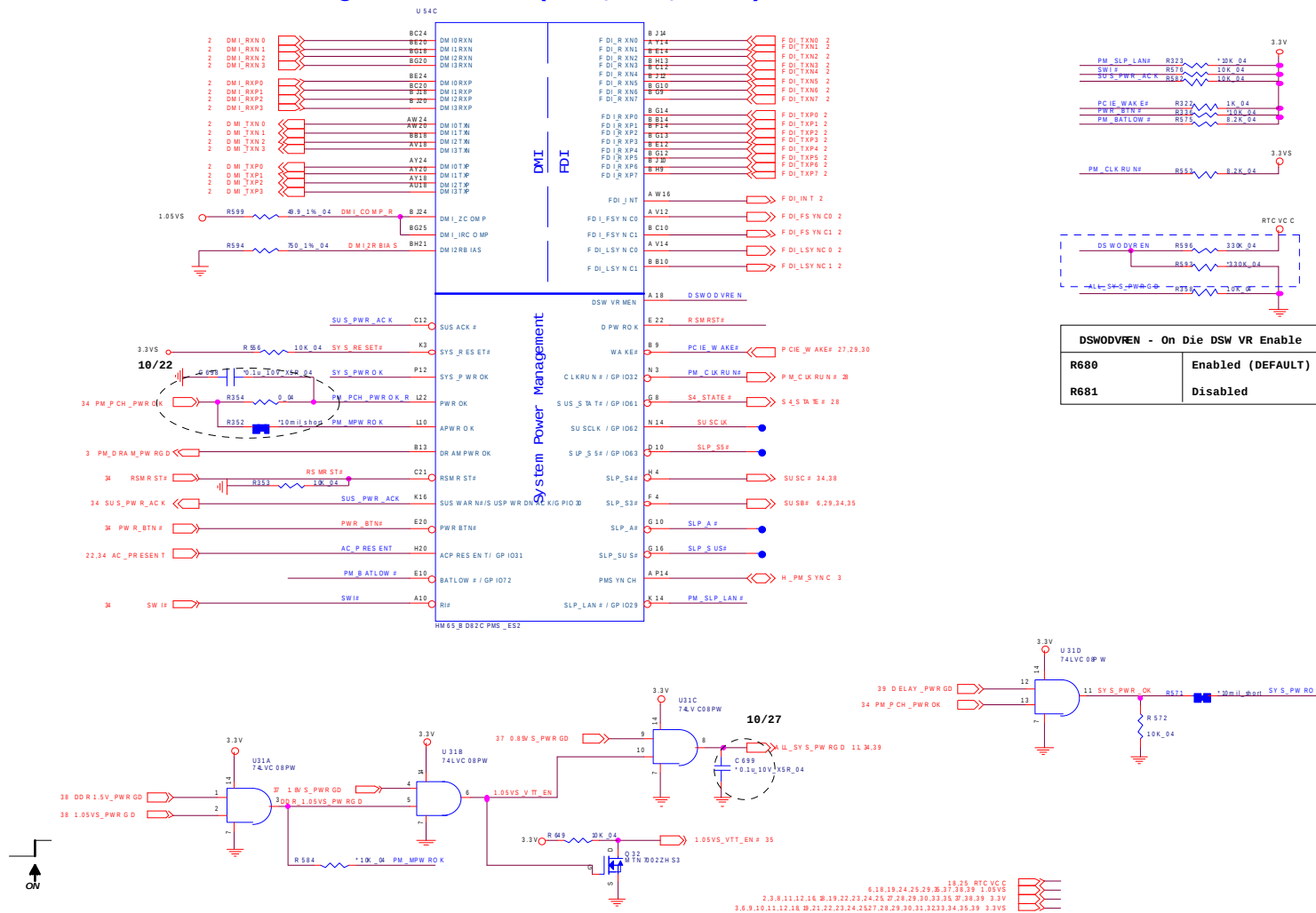
CougarPoint - M (PCI-E, SMBUS, CLK)

Sheet 19 of 49
CougarPoint - M 2/9



CougarPoint - M 3/9

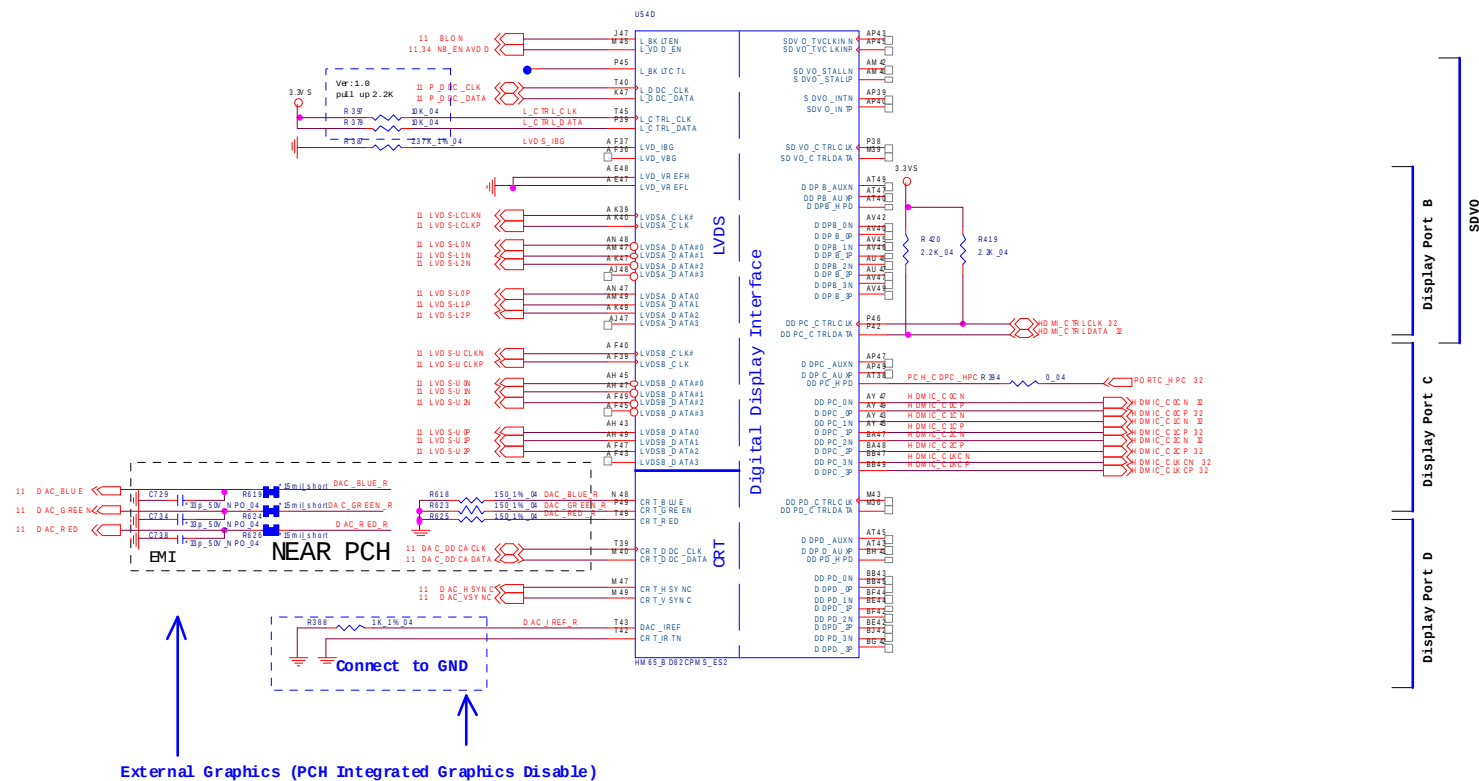
CougarPoint -M (DMI,FDI,GPIO)



Sheet 20 of 49
CougarPoint - M 3/9

B.Schematic Diagrams

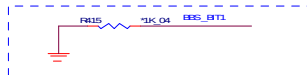
CougarPoint -M (LVDS,DDI)



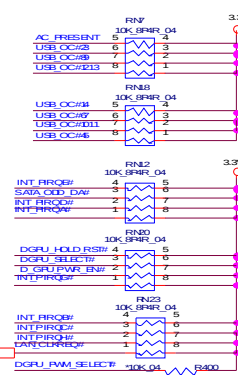
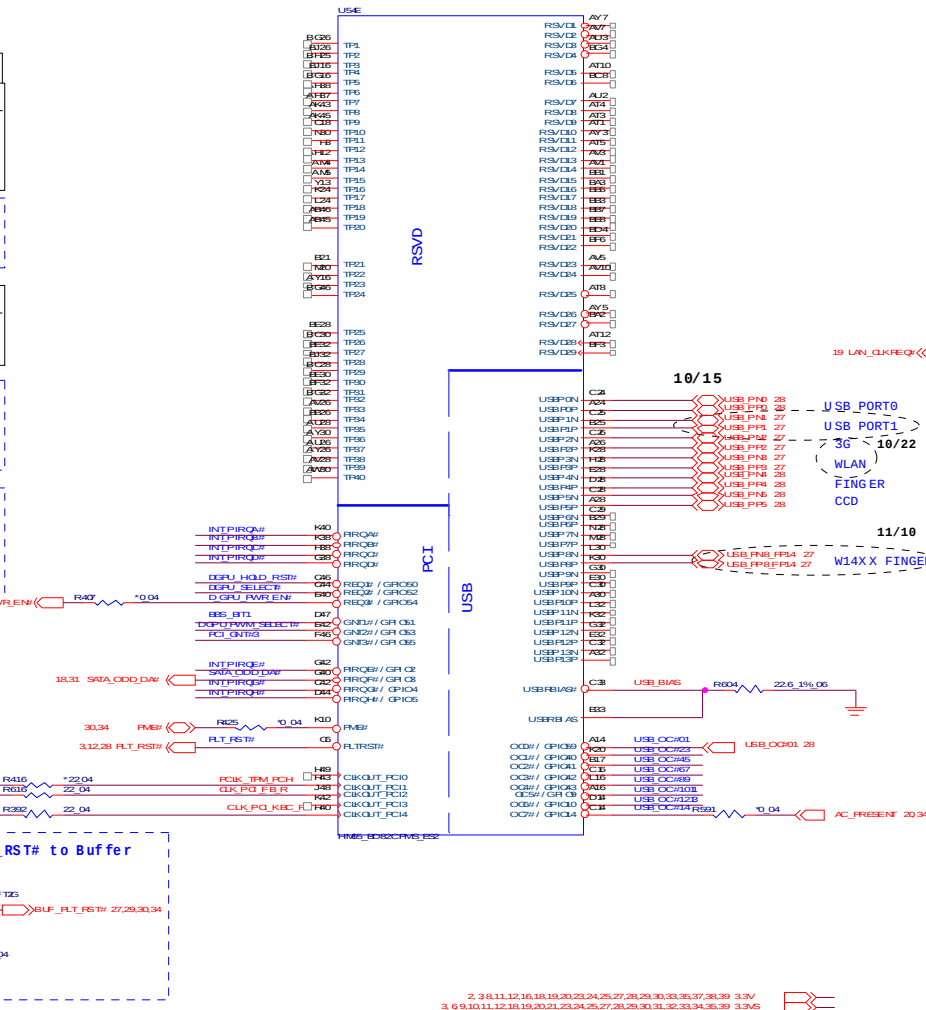
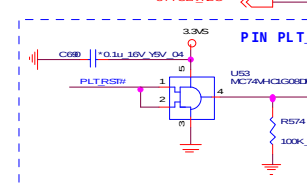
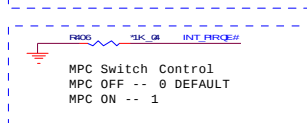
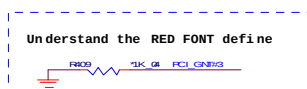
CougarPoint - M 5/9

CougarPoint -M (PCI,USB,NVRAM)

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



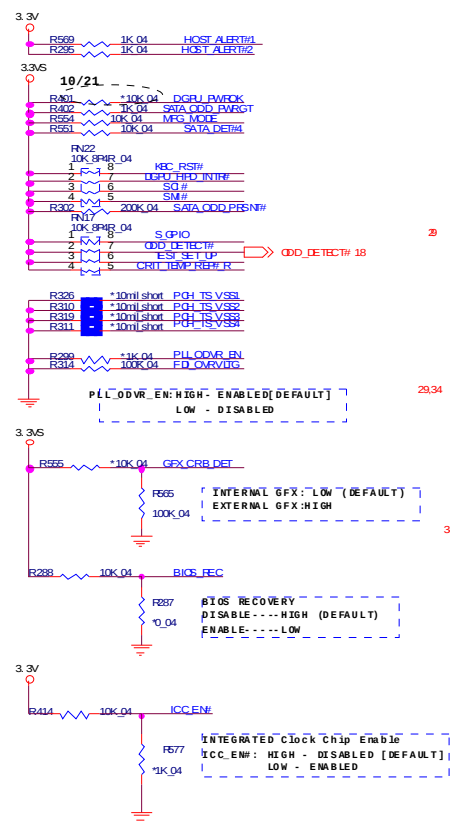
Flash Descriptor security override strap	
PCI_GNT#3	LOW = PCI_GNT#3 swap override HIGH = Default



Sheet 22 of 49
CougarPoint - M 5/9

B.Schematic Diagrams

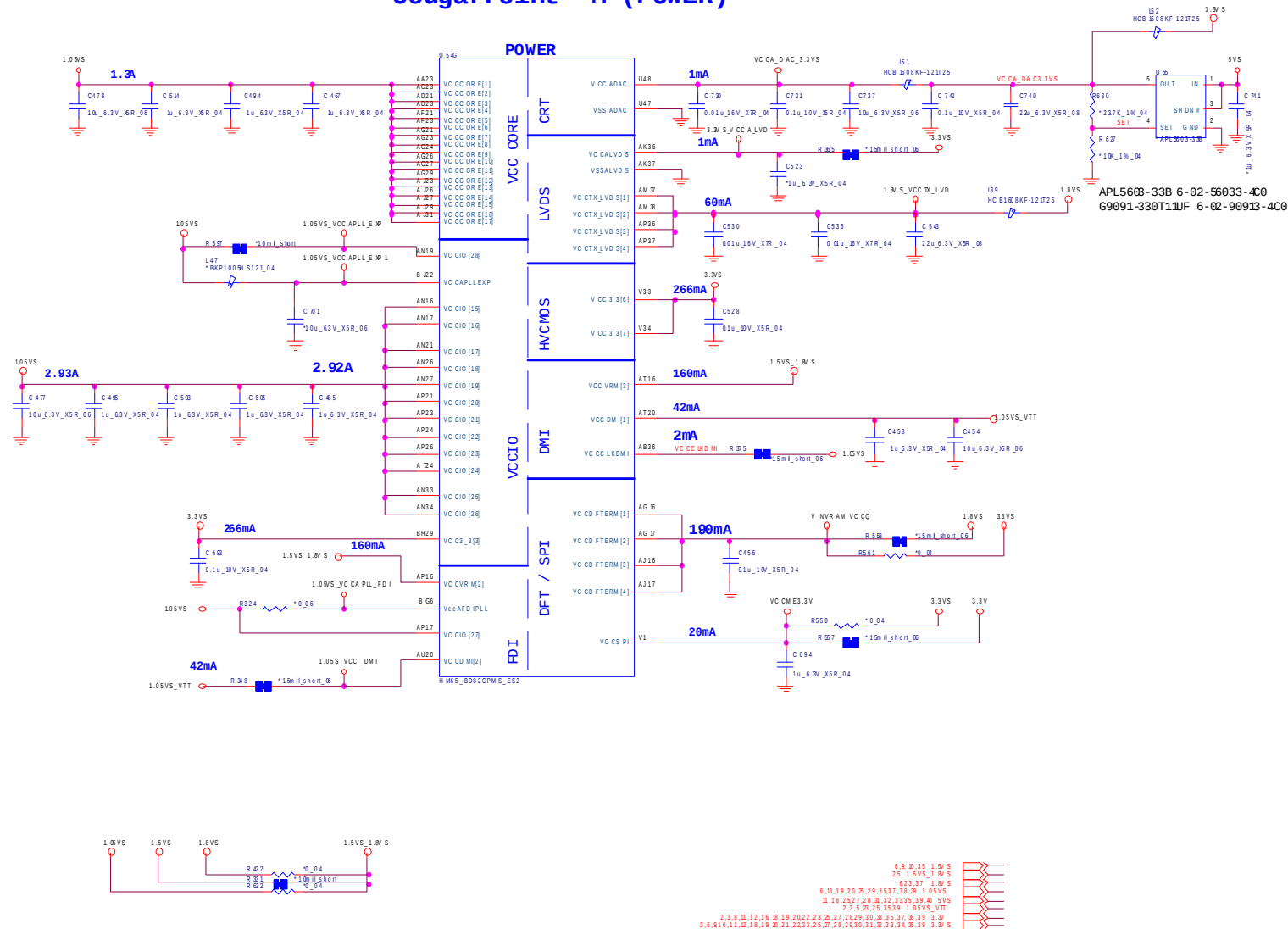
Sheet 23 of 49
CougarPoint - M 6/9

[illegible]

6, 24 37 18VS
2 3,5,24,25,35,39 1.05VS VTT
2 3,8,11,12,16,18,19,20,22,24,25,27,28,29,30,33 3, 37, 38 39 33V
3, 6,9,10,11,12,18,19,20,21,22,24,25,27,28,29,30,31,32 3, 34, 35 39 33VS

CougarPoint - M 7/9

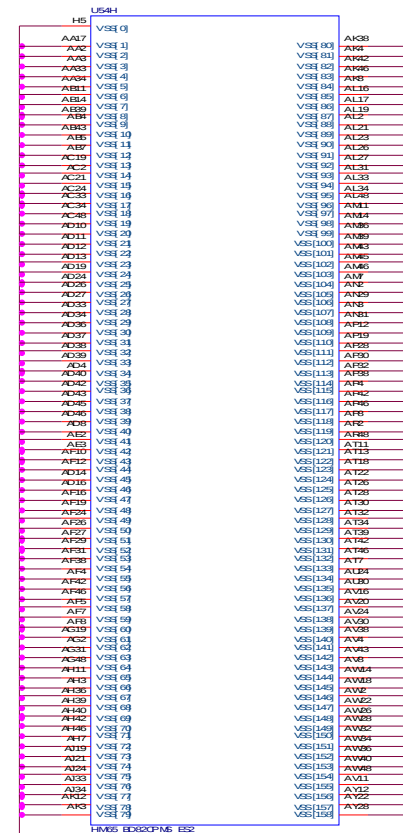
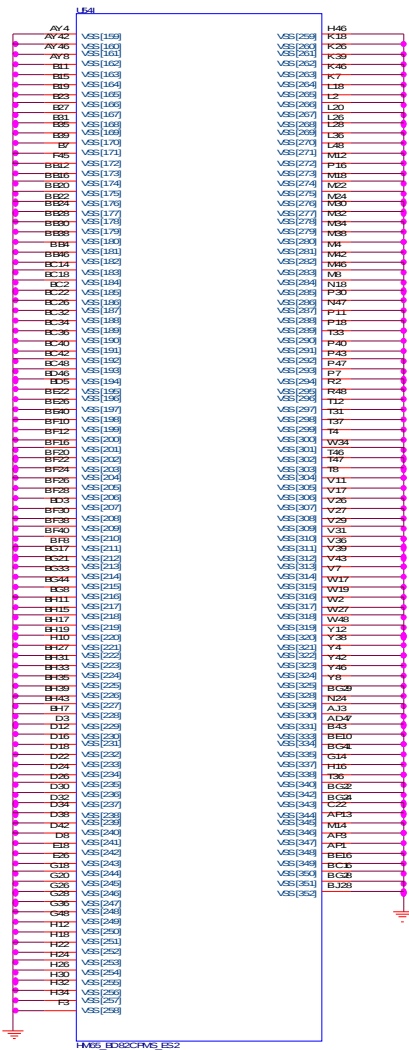
CougarPoint -M (POWER)



Sheet 24 of 49
CougarPoint - M 7/9

CougarPoint - M 9/9

CougarPoint -M (GND)



Voltage Rail	Voltage	S0	Iccmax	Current (A)
V_CPU_IO	1.05	1	(mA)	
VREF	5	1	(mA)	
VREF_Sus	5	1	(mA)	
Vcc3_3	3.3	0.266		
VccADAC3	1.05	1	(mA)	
VccADPLLA	1.05	0.08		
VccADRLB	1.05	0.08		
VccCore	1.05	1.3		
VccDMI	1.1	0.042		
VccIO	1.05	2.925		
VccASW	1.05	1.01		
VccSPT	3.3	0.020		
VccDSW6_3	3.3	2	(mA)	
VccDFTERM	1.8	0.19		
VccSus3_3	3.3	0.087		
VccSusHDA	3.3	1	(mA)	
VccVRM	1.5	0.16		
VccCLNOMI	1.05	0.02		
VccSSC	1.05	0.085		
VccDIFCLKIN	1.05	0.085		
VccALVDS	3.3	1	(mA)	
VccTX_LVDS	1.8	0.06		

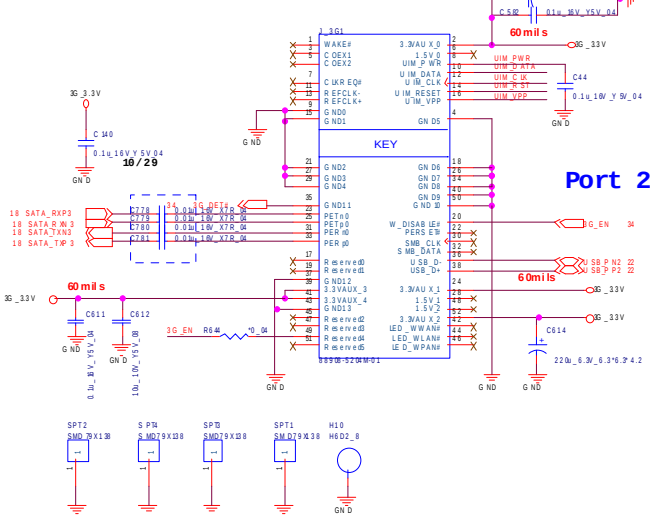
Sheet 26 of 49
CougarPoint - M 9/9

Schematic Diagrams

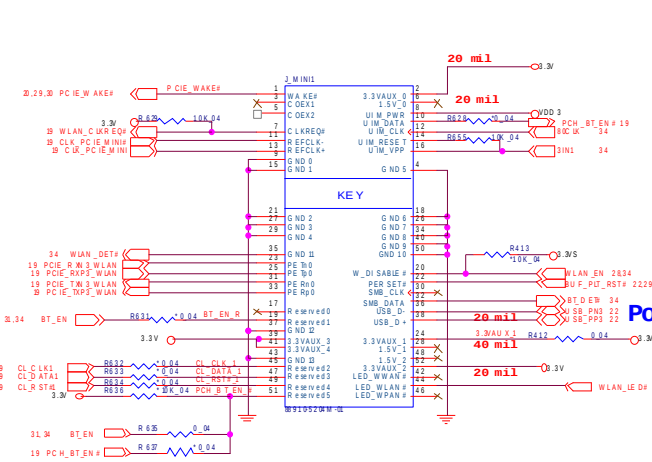
WLAN, 3G, Mini PCIE

Sheet 27 of 49
WLAN, 3G, Mini
PCIE

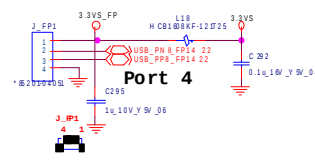
3G/MSATA MINI CARD



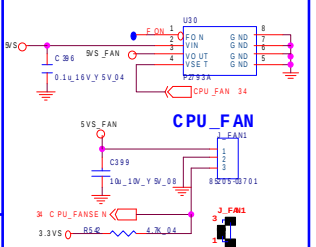
WLAN MINI CARD



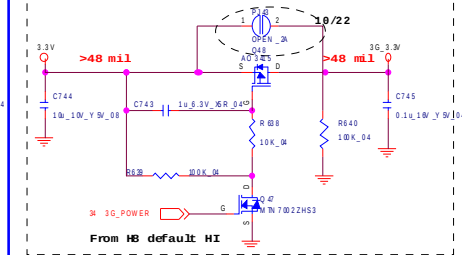
FP CONN
W140HN ONLY



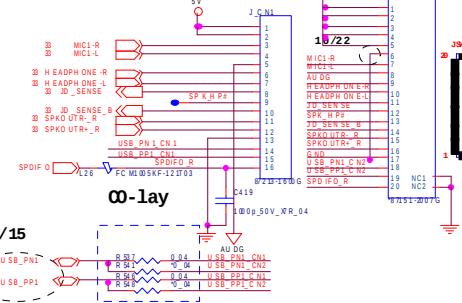
CPU FAN CONTROL



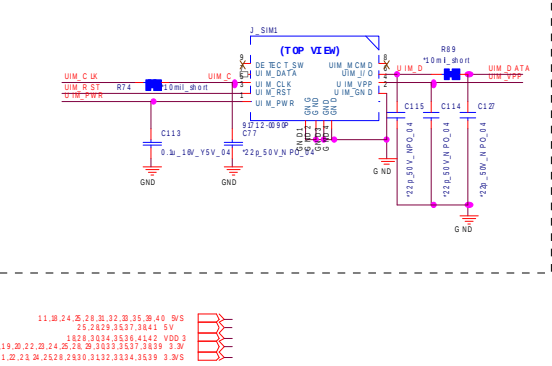
3G POWER



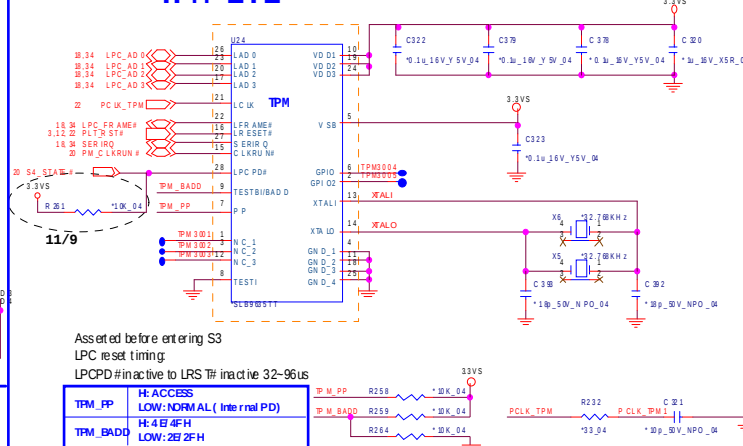
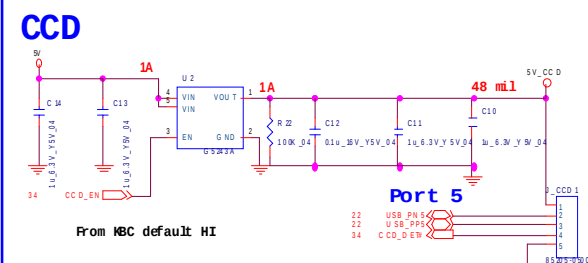
FOR AUDIO BOARD



SIM CONN



USB Charge PORT



The figure contains two main schematic diagrams for the USB interface of the W150HNM and W140HN modules.

Top Section: USB Connector and Power

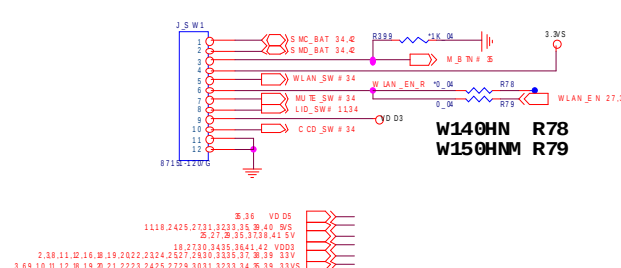
- Left (W150HNM):** Shows a USB connector J_TP2 with pins 1 (D-), 2 (D+), 3 (GND), 4 (D-), 5 (D+), and 6 (GND). It is connected to a 5V S supply and ground. The internal USB controller IC R660 is connected to the D+ and D- pins.
- Right (W140HN):** Shows a USB connector J_TP1 with pins 1 (D-), 2 (D+), 3 (GND), 4 (D-), 5 (D+), and 6 (GND). It is connected to a 5V S supply and ground. The internal USB controller IC R661 is connected to the D+ and D- pins.

Bottom Section: Internal USB Controller and Module Logic

- Left (W150HNM):** Shows the internal USB controller IC R660 connected to the USB pins and the module's internal logic via TP_CLK, TP_DATA, and TP_PDATA pins.
- Right (W140HN):** Shows the internal USB controller IC R661 connected to the USB pins and the module's internal logic via TP_CLK, TP_DATA, and TP_PDATA pins.

The diagrams also show the connection to the module's internal logic via TP_CLK, TP_DATA, and TP_PDATA pins, which are connected to the module's internal logic via TP_CLK, TP_DATA, and TP_PDATA pins.

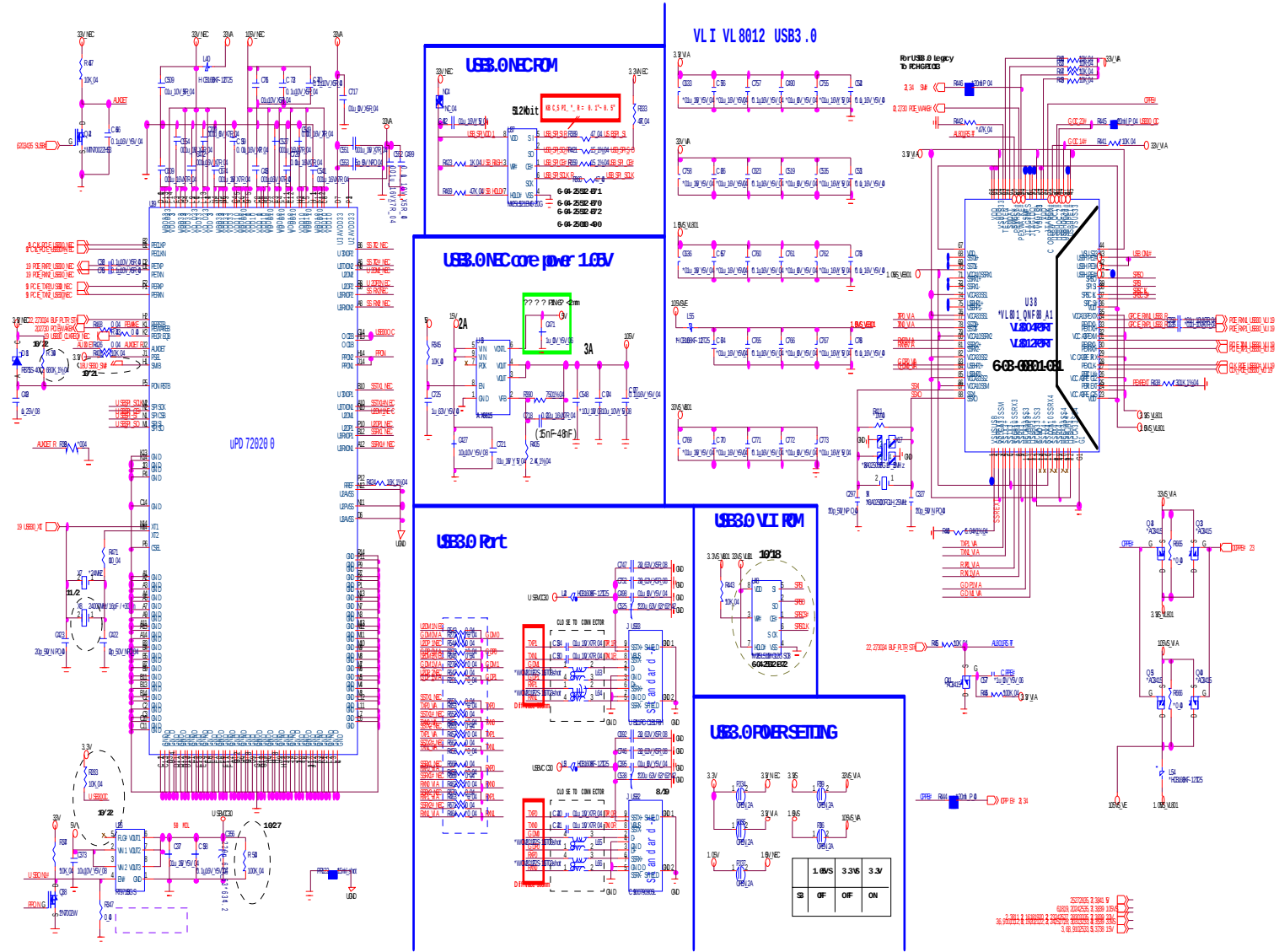
FOR POWER SWITCH BOARD



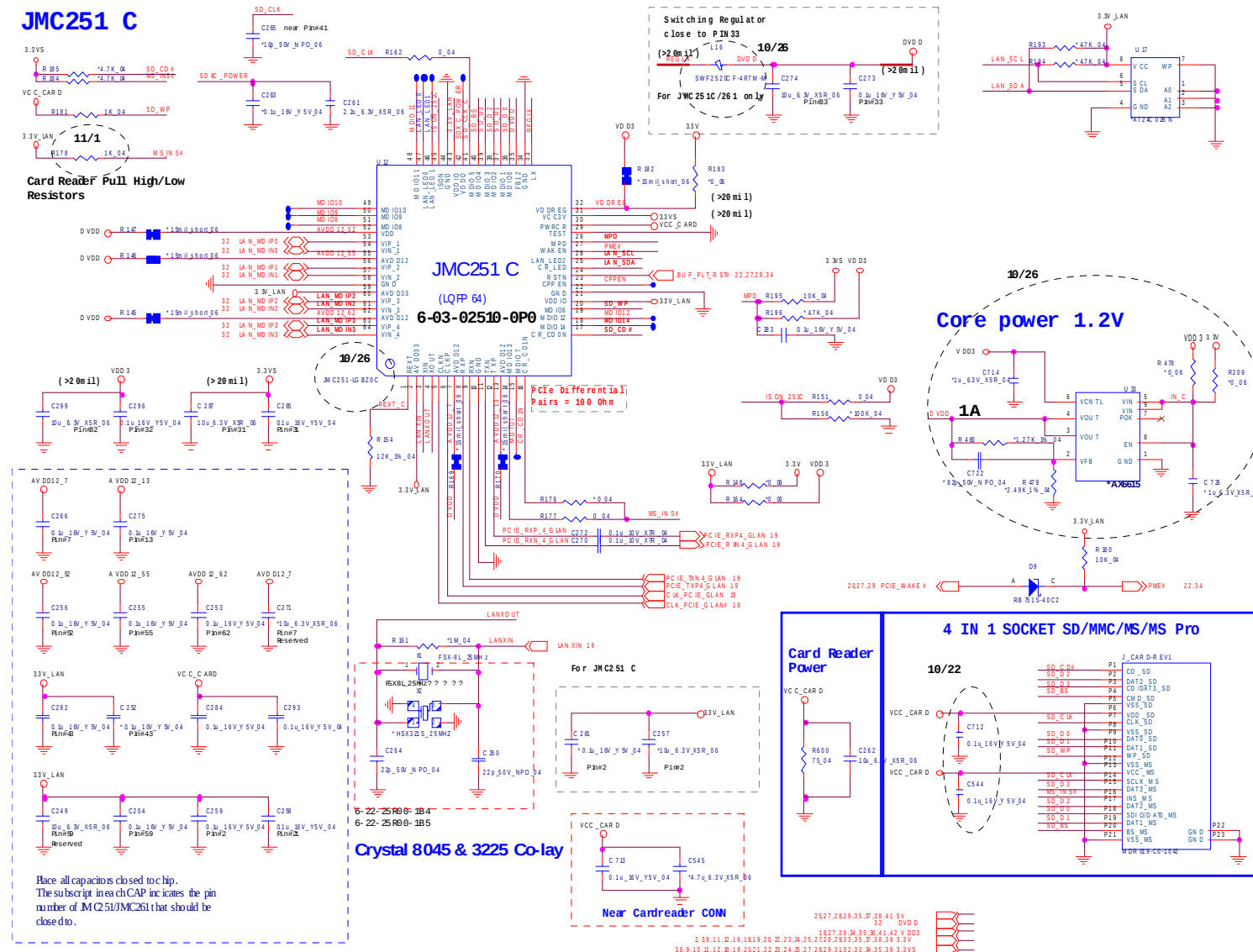
Schematic Diagrams

USB 3.0

Sheet 29 of 49
USB 3.0



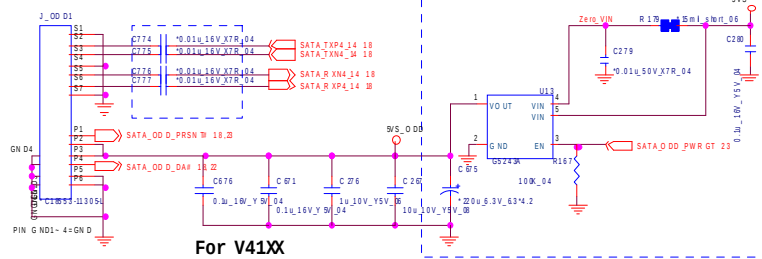
Card Reader (JMC251C)

Sheet 30 of 49
Card Reader
(JMC251C)

Schematic Diagrams

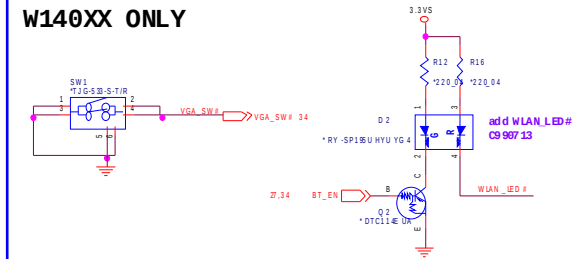
SATA ODD, LED, Hotkey, LID SW

SATA ODD W140XX ONLY



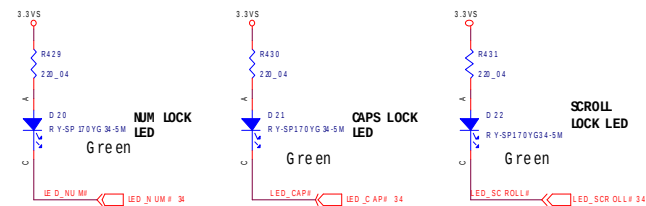
Zero Power ODD

W140XX ONLY



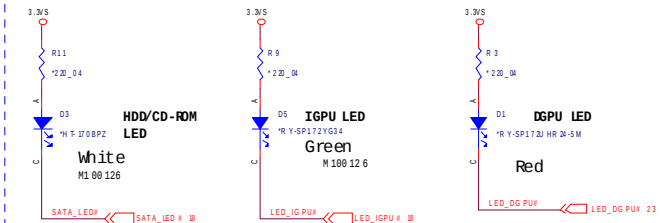
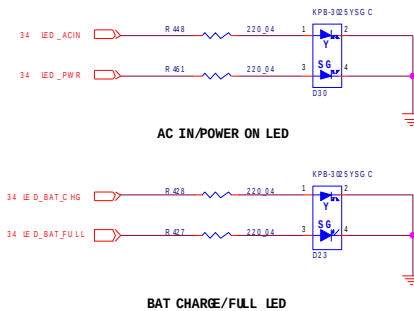
LED

W140XX/W150XX/W170XX

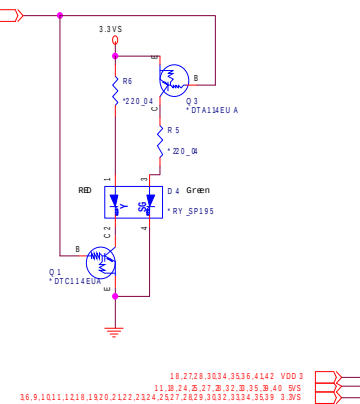
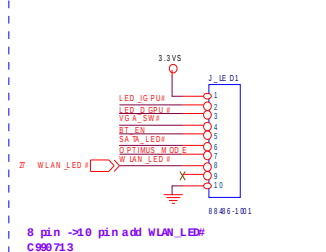


W140XX/W150XX/W170XX

8/17



W150XX/W170XX LED CON

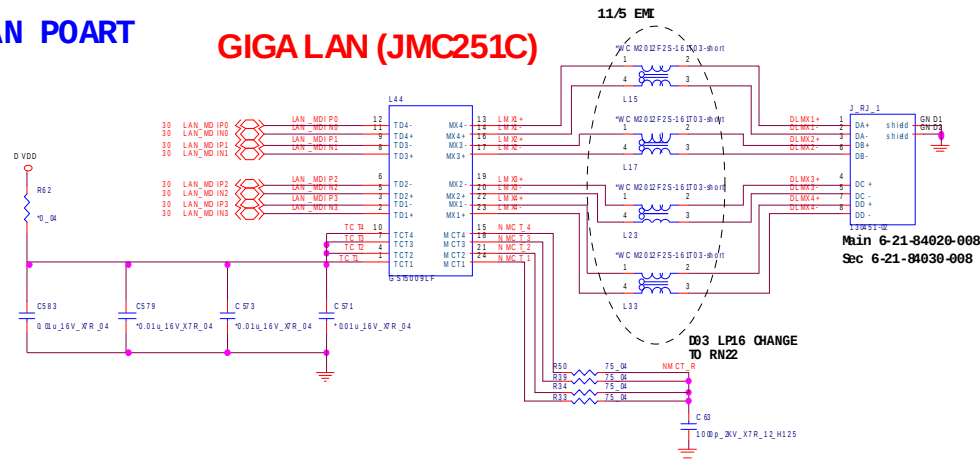


Sheet 31 of 49
SATA ODD, LED,
Hotkey, LID SW

HDMI, RJ45

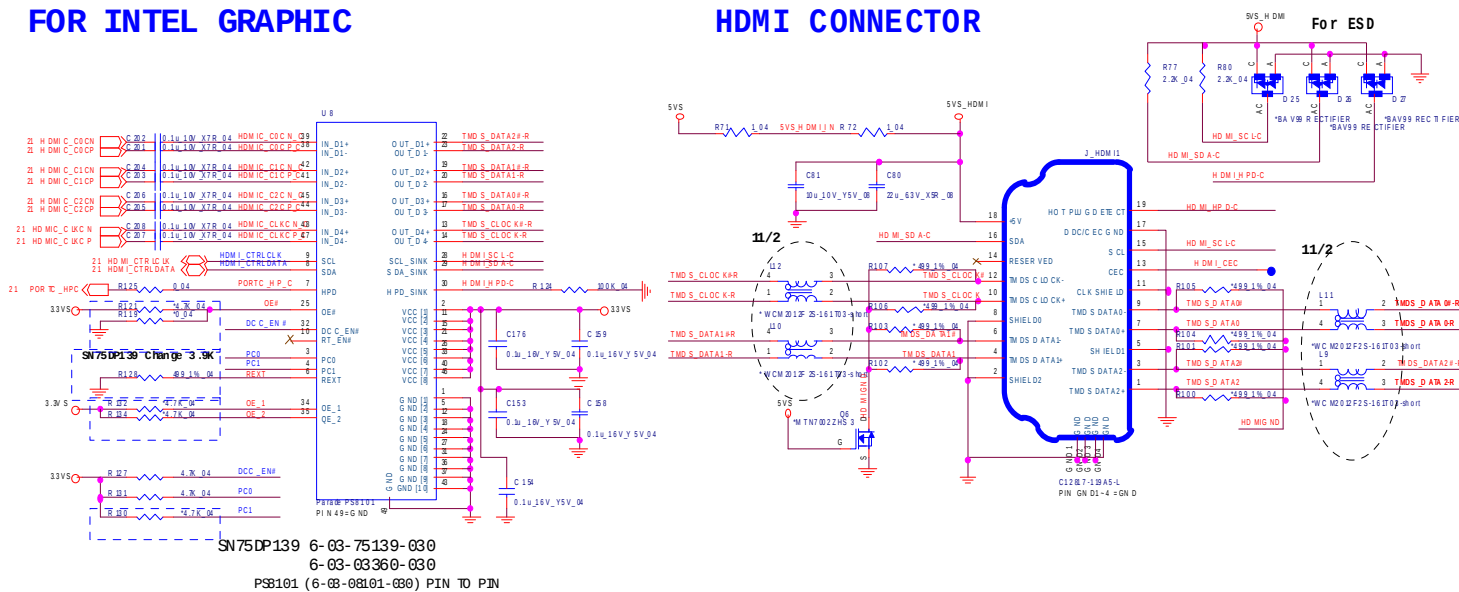
LAN POART

GIGA LAN (JMC251C)

Sheet 32 of 49
HDMI, RJ45

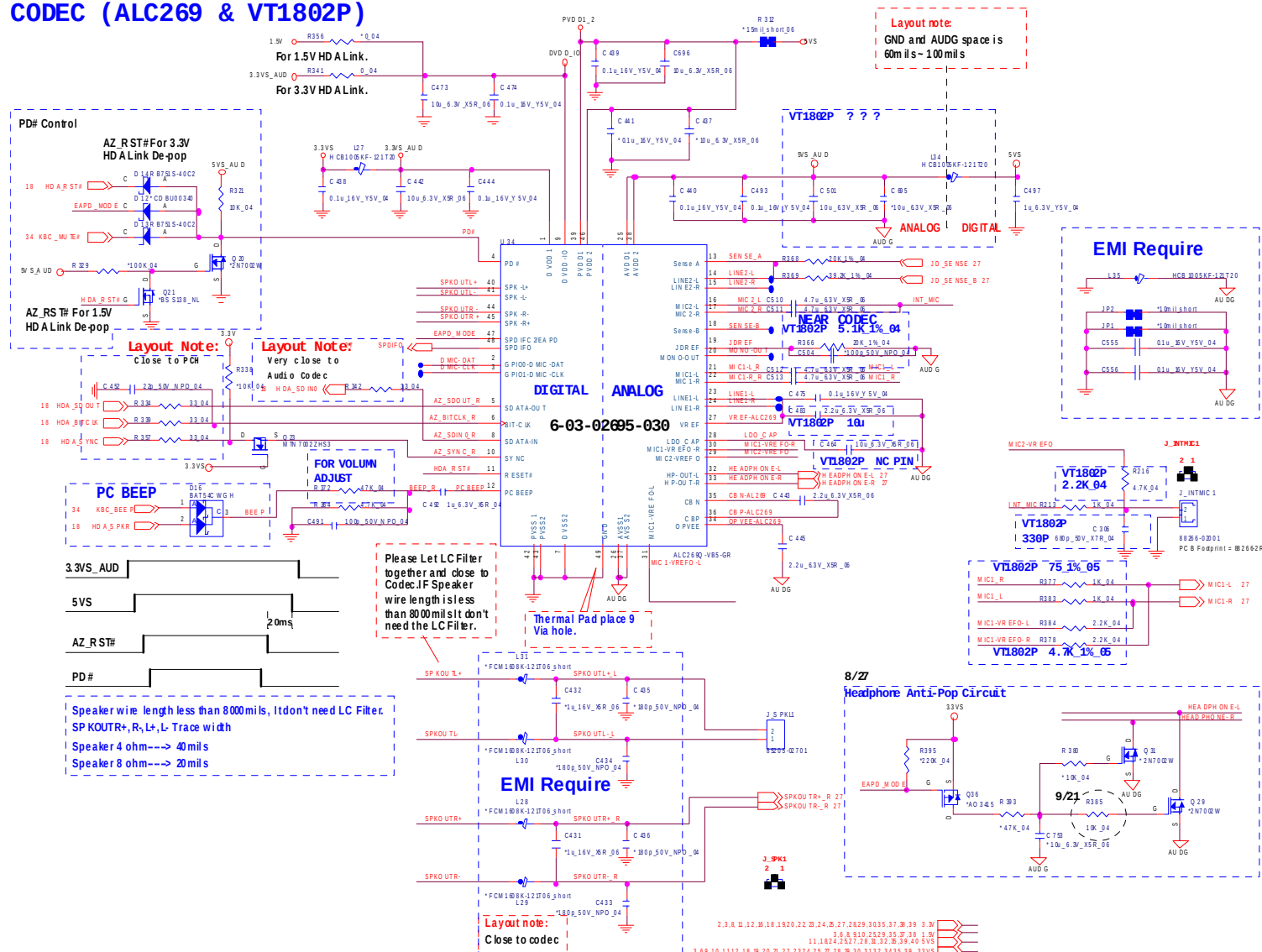
FOR INTEL GRAPHIC

HDMI CONNECTOR



HDMI, RJ45 B - 33

CODEC (ALC269 & VT1802P)



The schematic diagram illustrates the internal layout of a custom PCB for a TI8518-2J microcontroller. The microcontroller is the central component, with various pins connected to peripheral components. The components are organized into functional blocks, such as power management, memory, and I/O. The diagram includes a table for component values and a section for the EC module choice.

Component Values Table:

VER.	RX	VOLTAGE	MODEL ID
V1.0	R2 02 10K / R204 X	3.3V	
	R2 02 X / R204 10K	0V	

EC MODULE CHOOSE (FOR DIFFERENCE K/B TYPE)

The diagram also includes a section for the EC module choice, which is a table with two columns: "VER." and "MODEL ID". The table lists two versions of the module, V1.0 and V1.1, with their respective model IDs and component values.

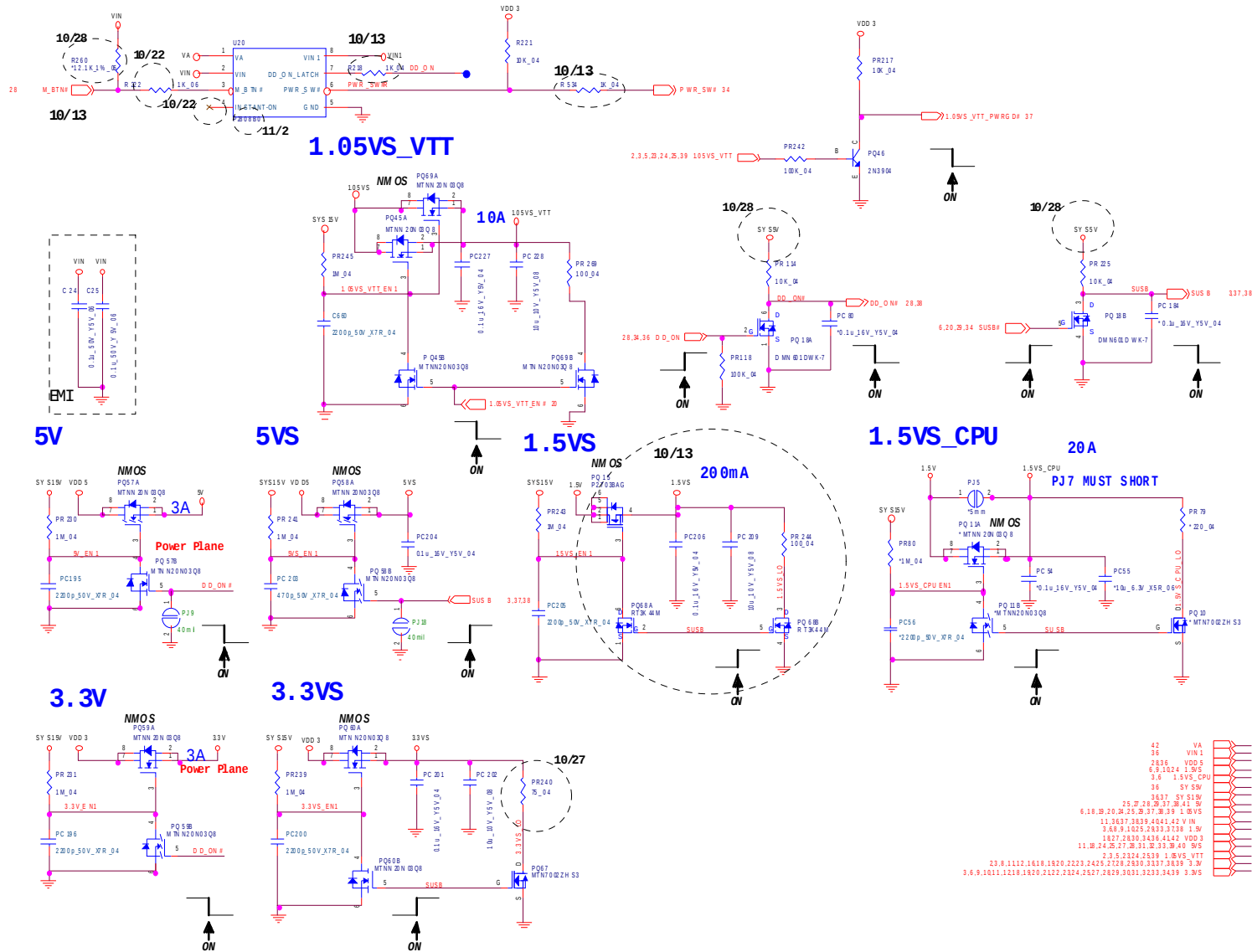
Component Values Table:

VER.	RX	VOLTAGE	MODEL ID
V1.0	R2 02 10K / R204 X	3.3V	
	R2 02 X / R204 10K	0V	

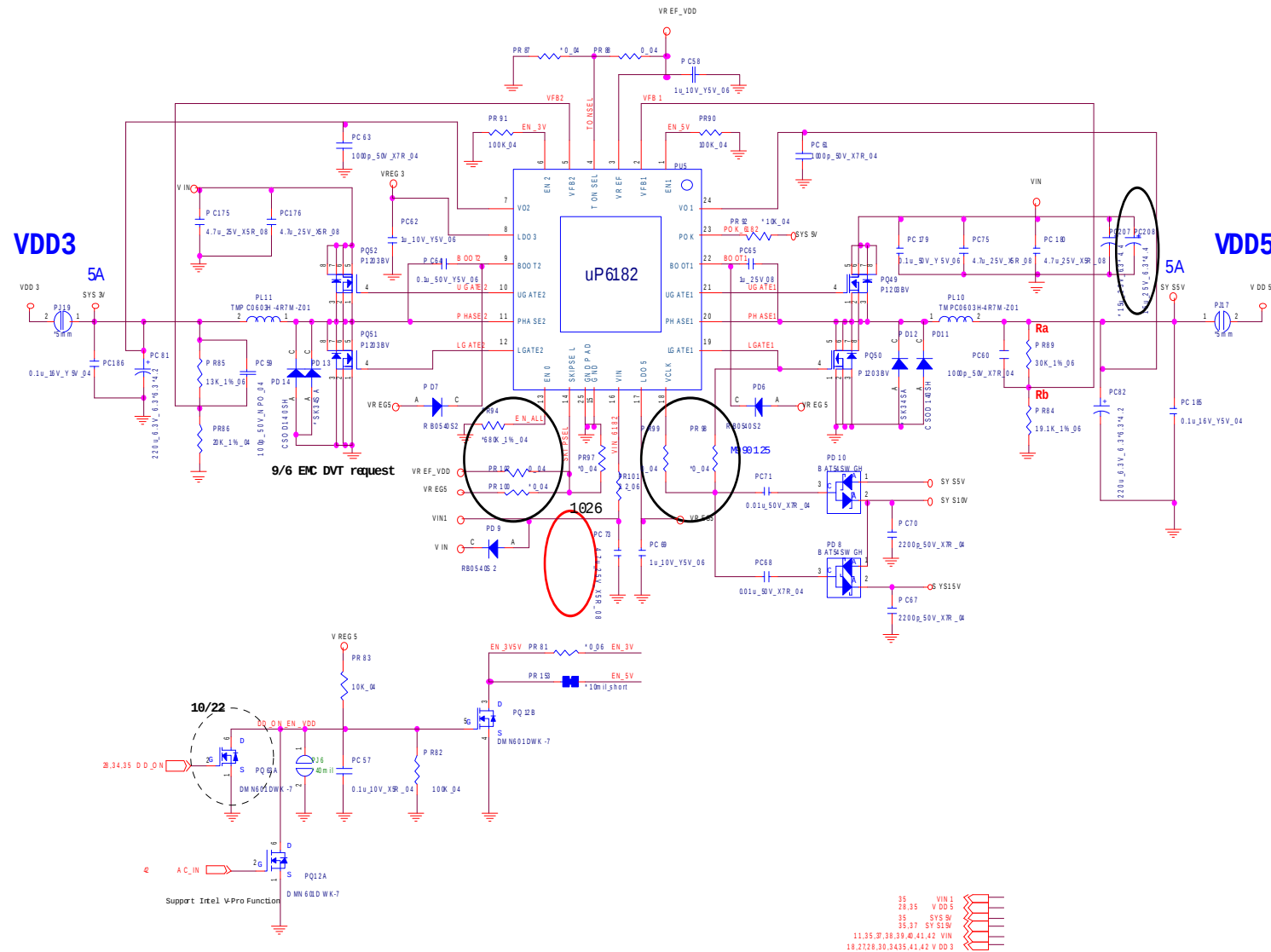
Schematic Diagrams

5VS, 3VS, 3.3VM, 1.5VS_CPU

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



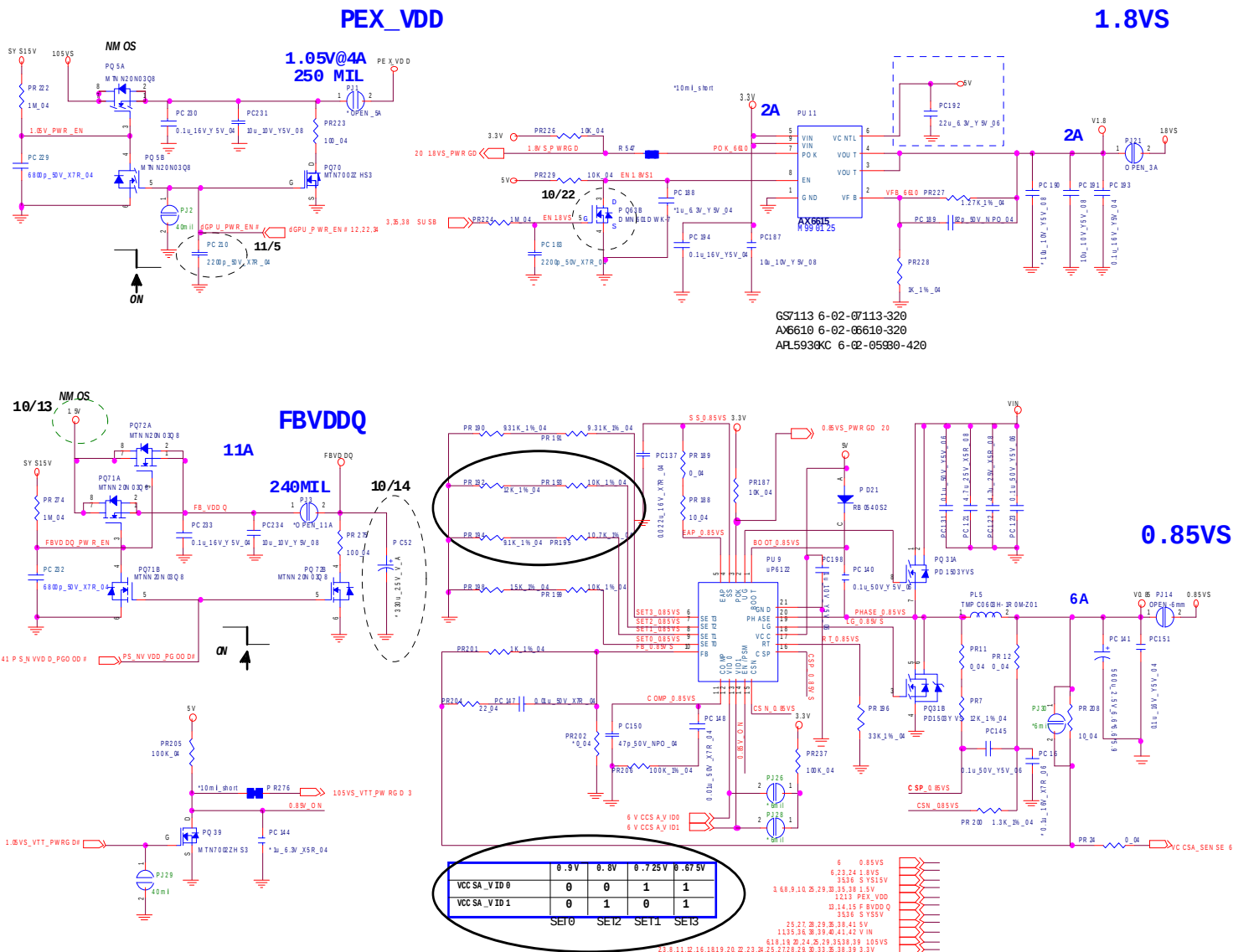
VDD3, VDD5



Sheet 36 of 49
VDD3, VDD5

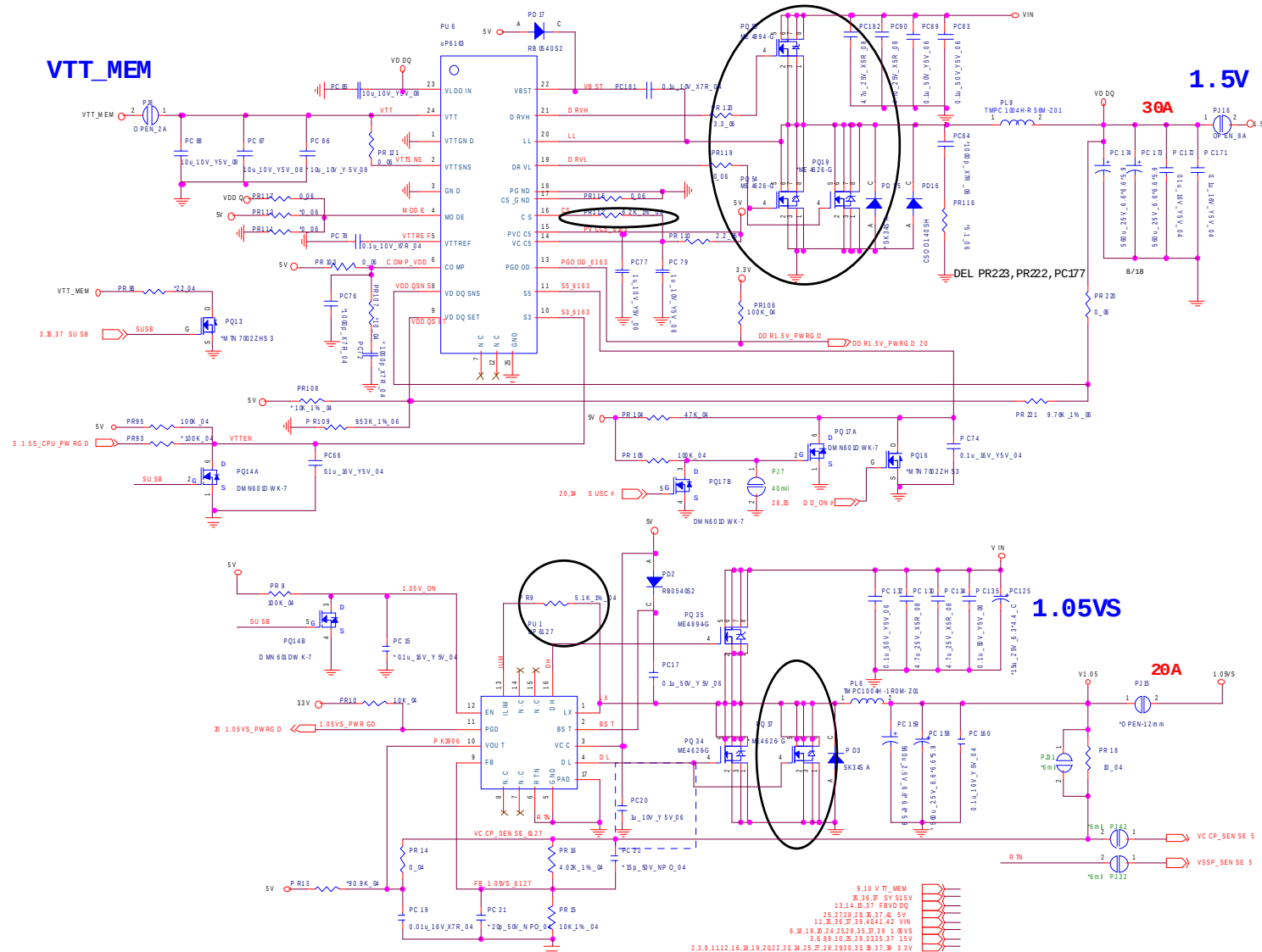
Schematic Diagrams

Power 0.85VS, 1.8VS, PEX_VDD



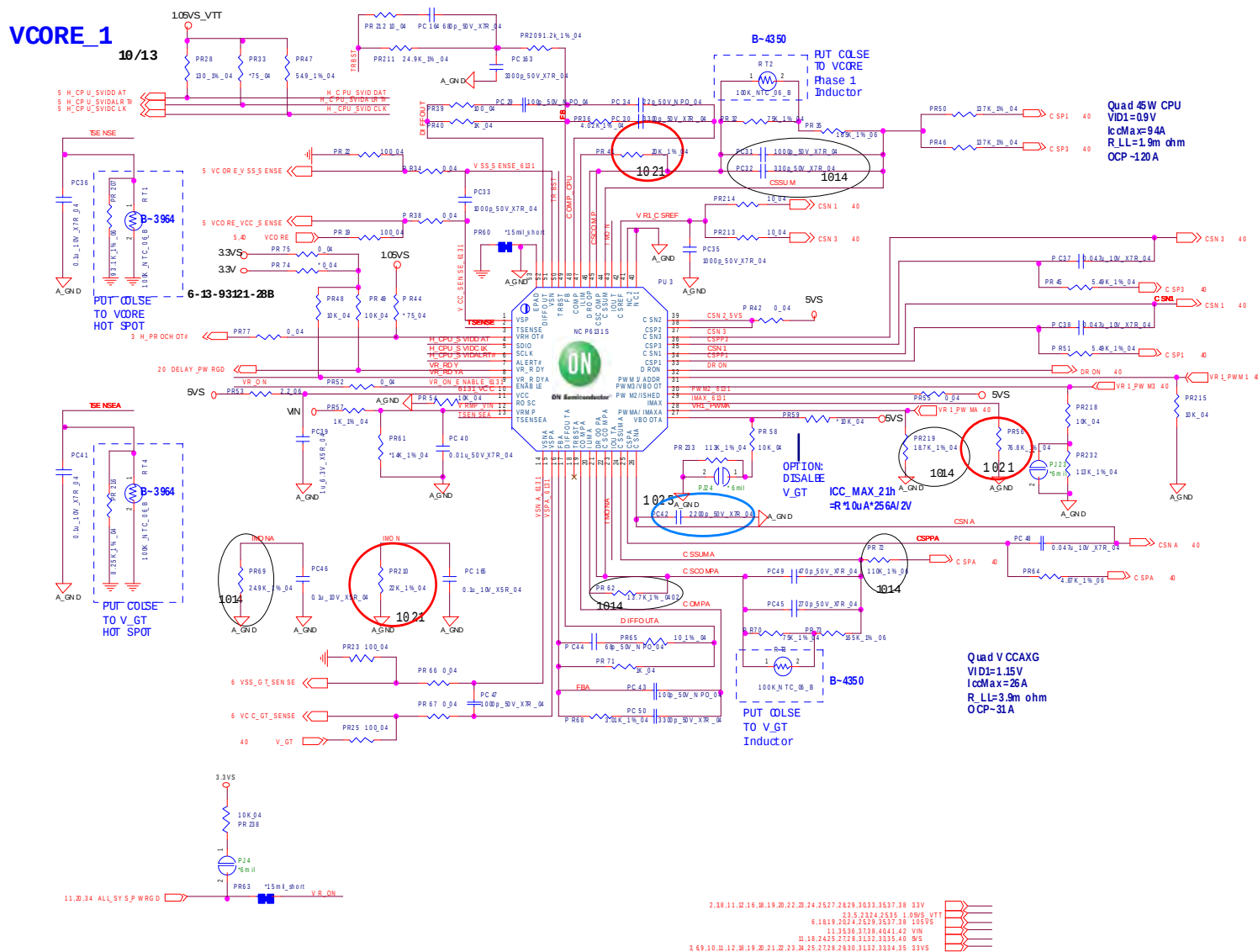
Sheet 37 of 49
Power 0.85VS,
1.8VS, PEX_VDD

Power 1.5V/1.05VS/0.75V



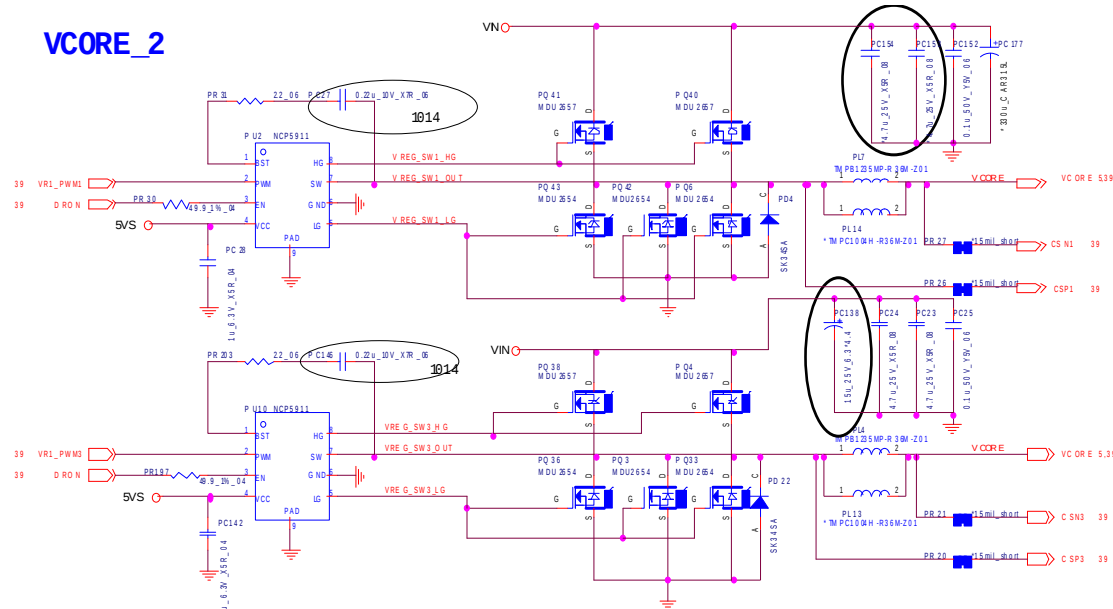
Sheet 38 of 49
Power 1.5V/1.05VS/
0.75V

VCORE_1 10/13



Power V-Core2

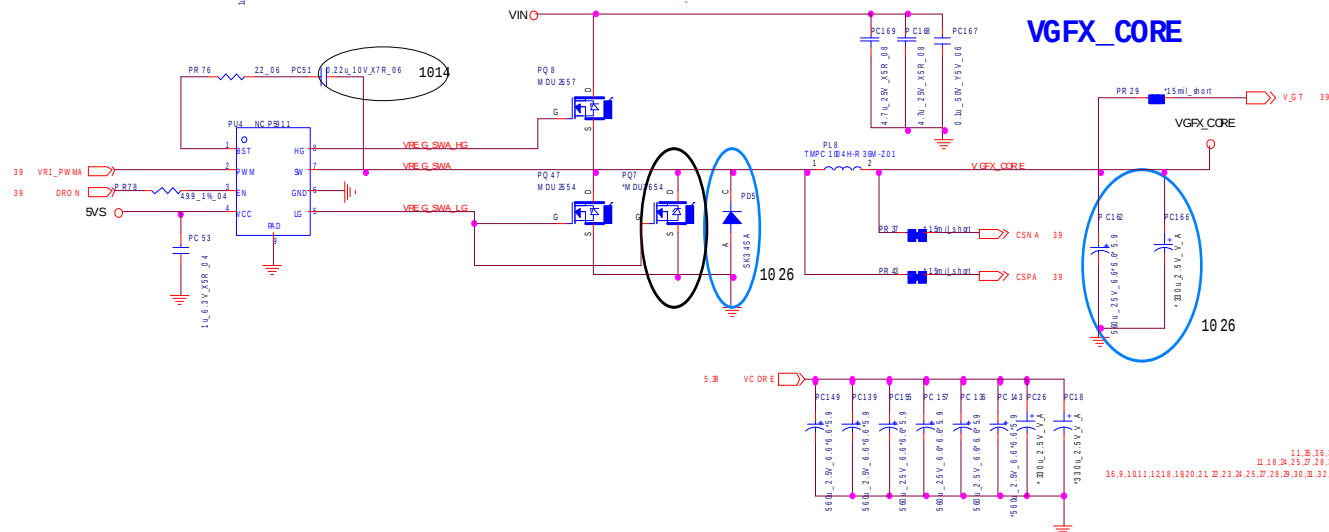
VCORE_2



Sheet 40 of 49
Power V-Core2

B.Schematic Diagrams

VGFX_CORE



B.Schematic Diagrams

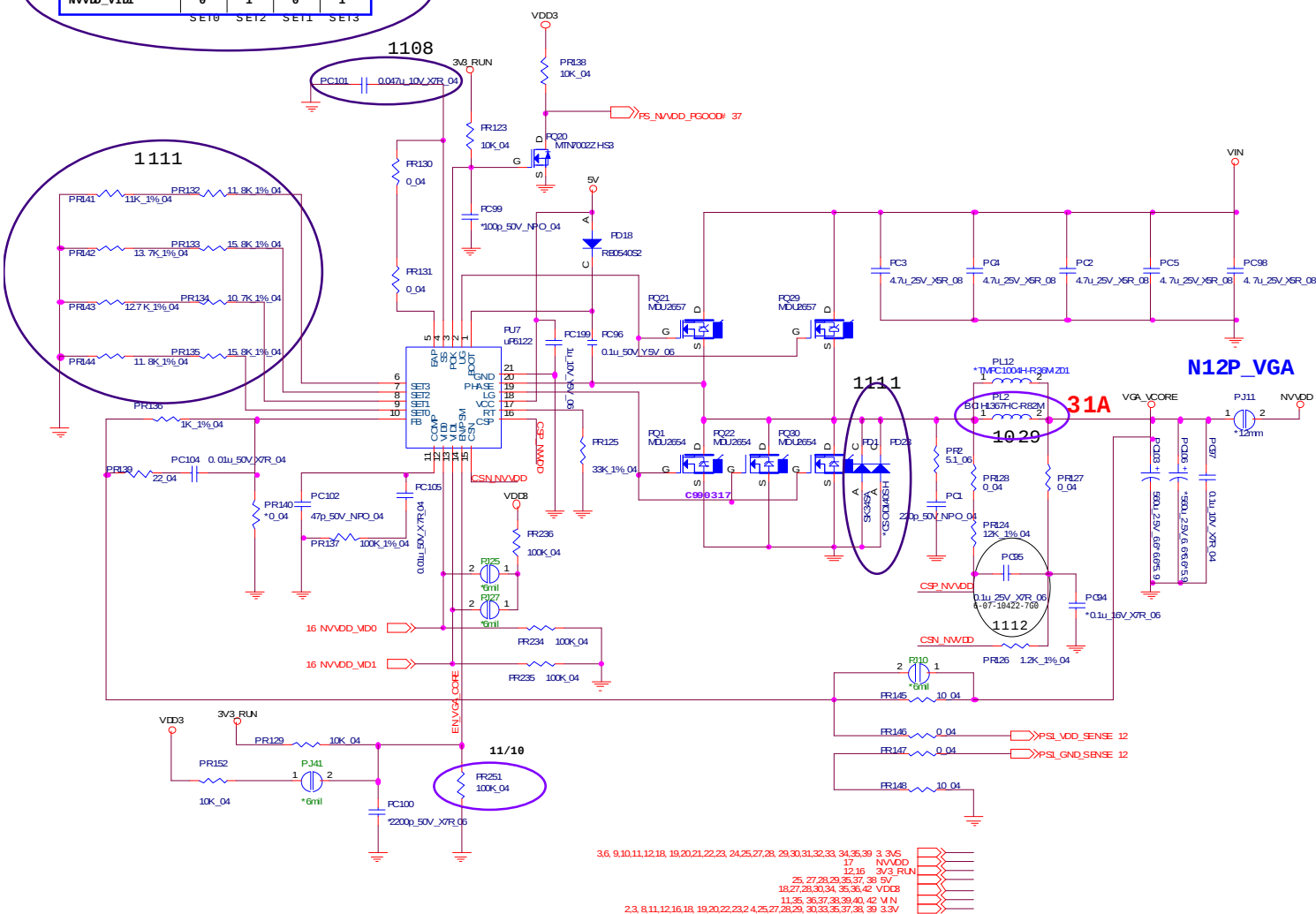
1029

	0.975	1V	0.825	0.8V
NVDD_VIDD	0	0	1	1
NVDD_VIDL	0	1	0	1
	0	0	0	0

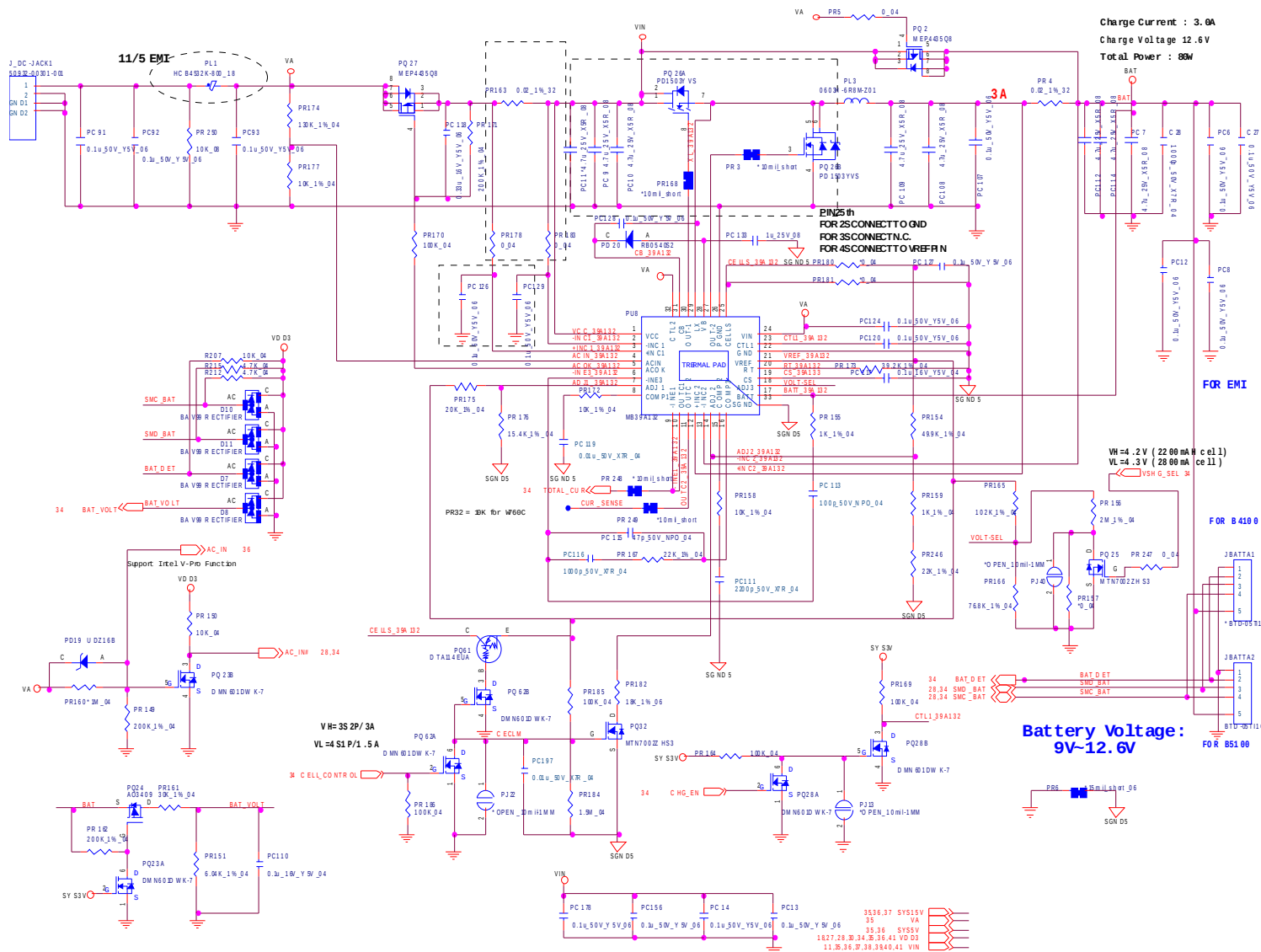
SE10 SE12 SE11 SE13

1108

The diagram shows a 4-bit parallel adder circuit. It consists of a 74181 ALU and a 74180 majority gate. The 74181 is configured with carry-in 1111 and carry-out 1000. The 74180 is configured with inputs 1000 and 1111, and its output 1000 is connected to the carry-in of the 74181.



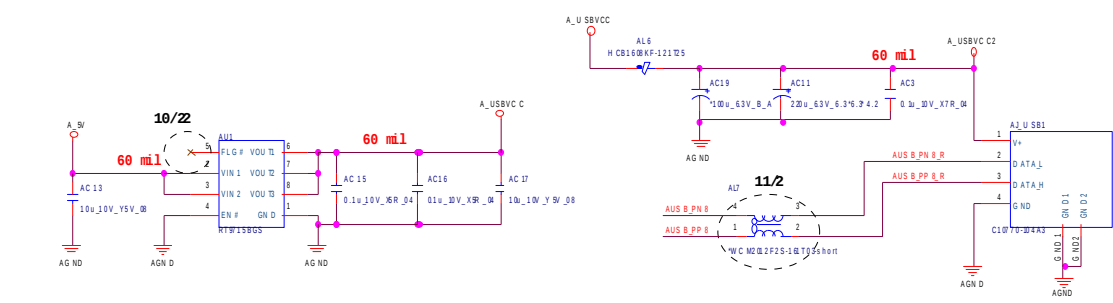
AC_IN, Charger



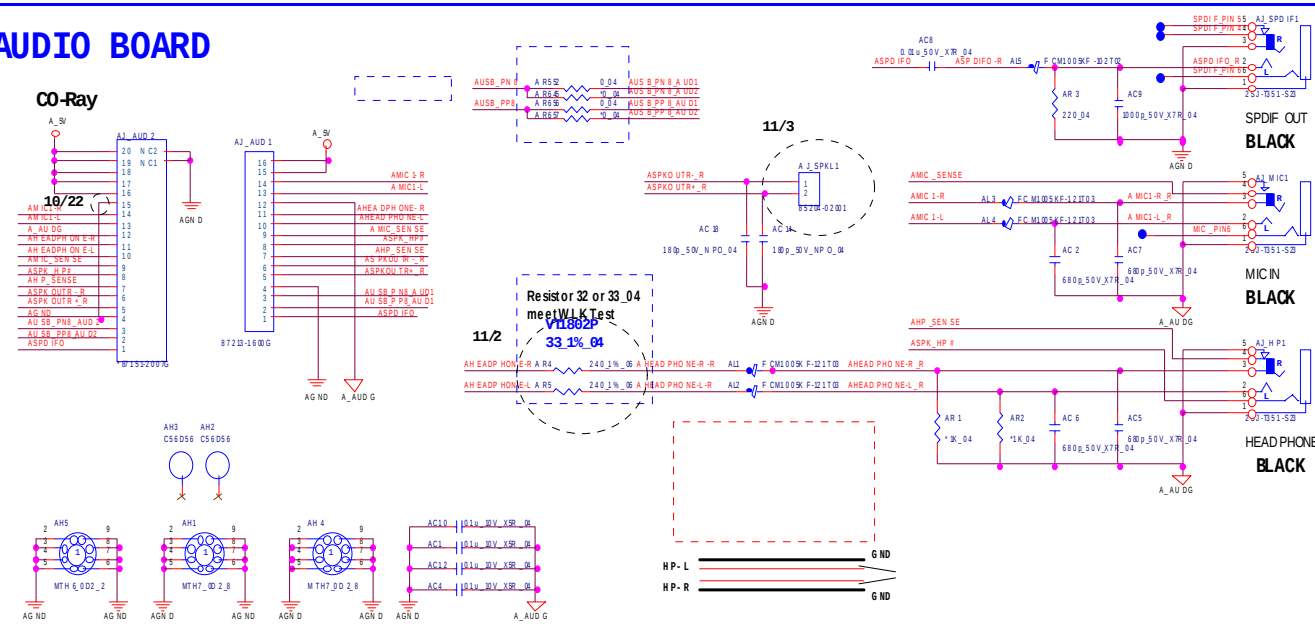
Schematic Diagrams

W150HNM Audio Board
USB PORT(PORT3)

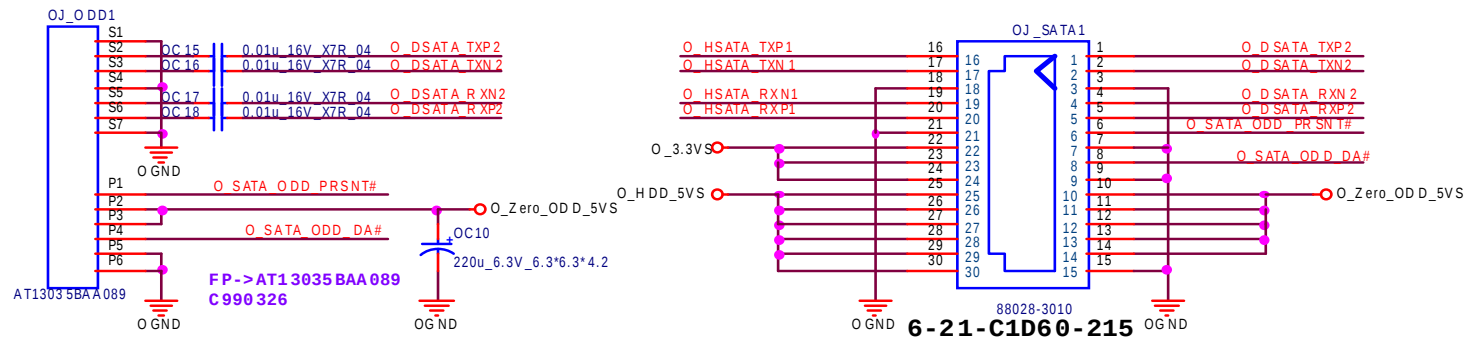
Sheet 43 of 49
W150HNM Audio
Board



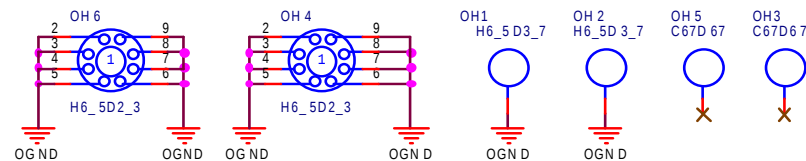
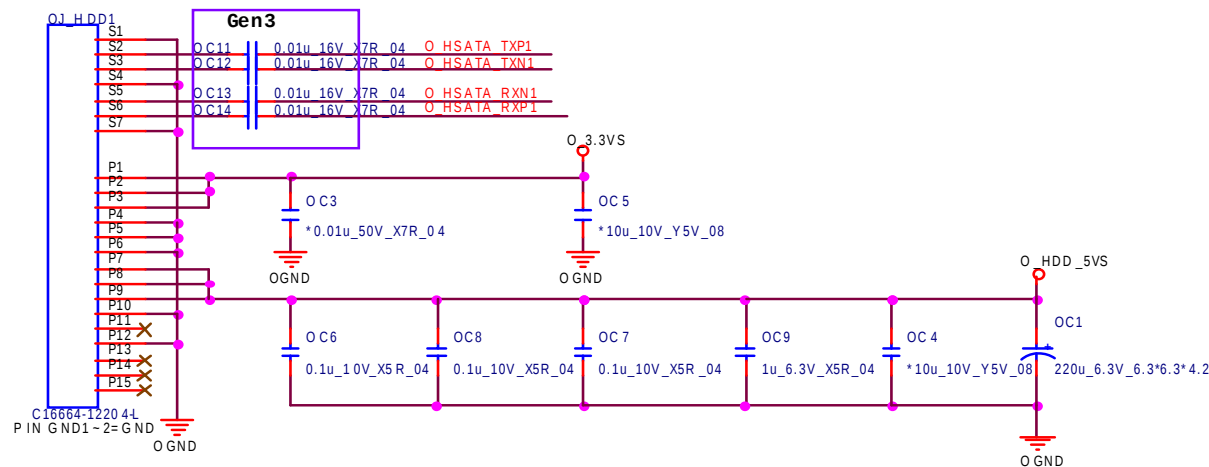
AUDIO BOARD



W150HNM Second HDD Board



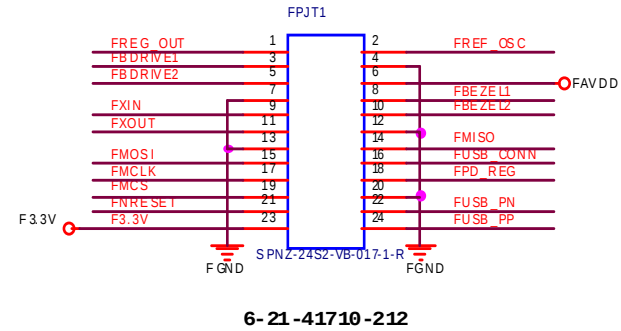
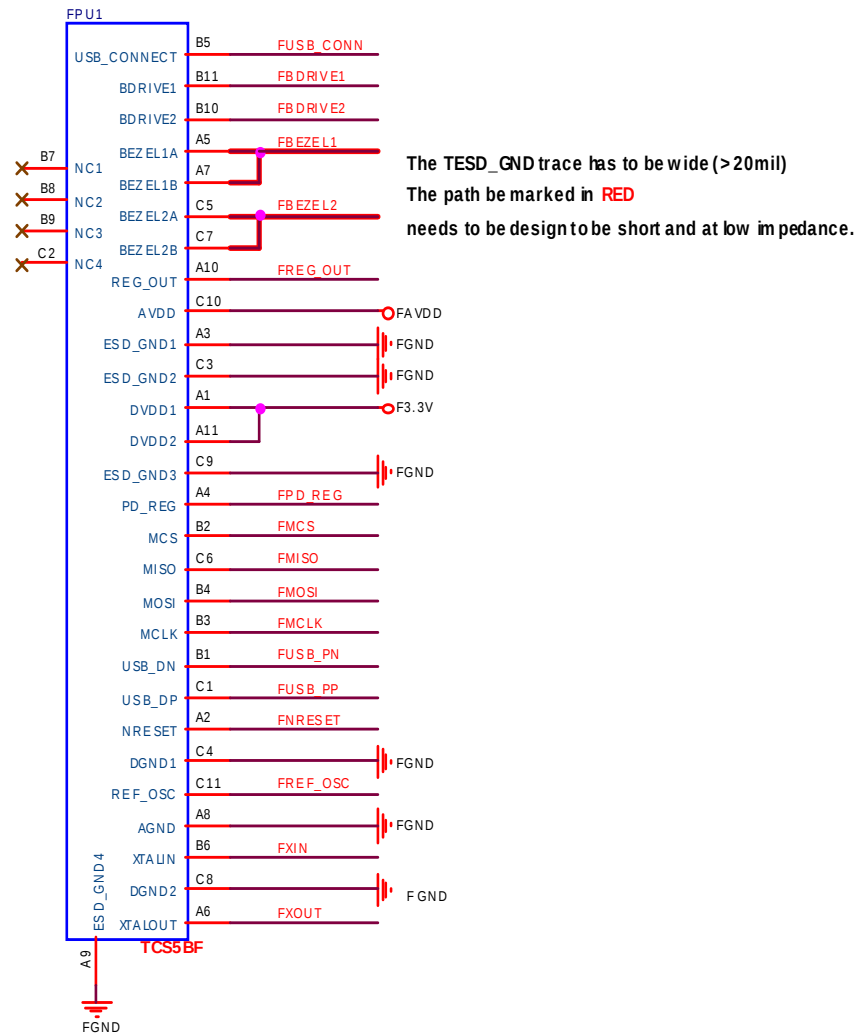
W150HNM Zero Power



Sheet 44 of 49
W150HNM Second
HDD Board

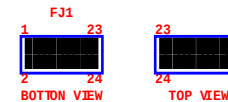
B5100 Fingerprint Board

V51XX FINGERPRINT BOARD



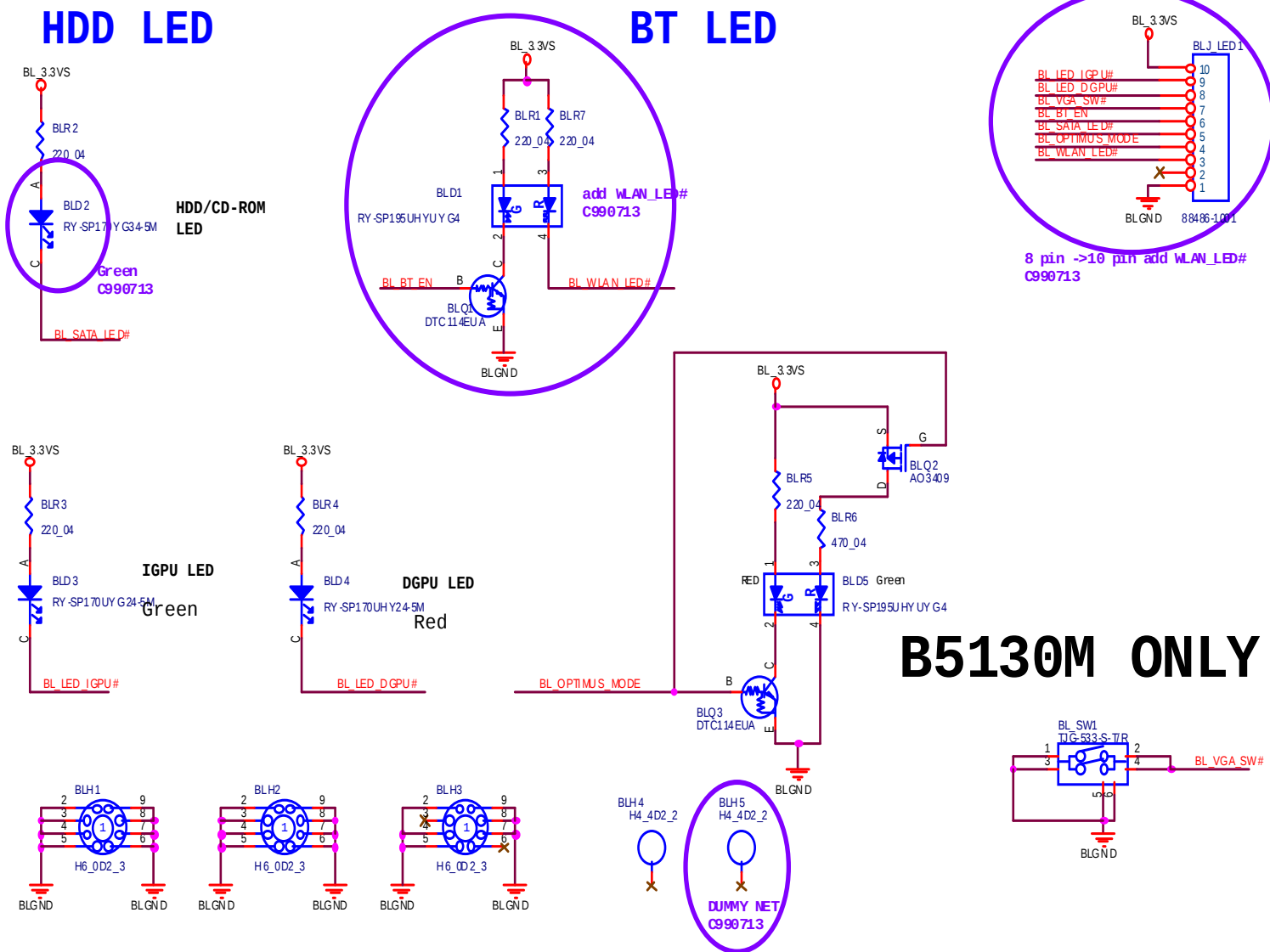
Sheet 46 of 49
B5100 Fingerprint
Board

B5100M ONLY



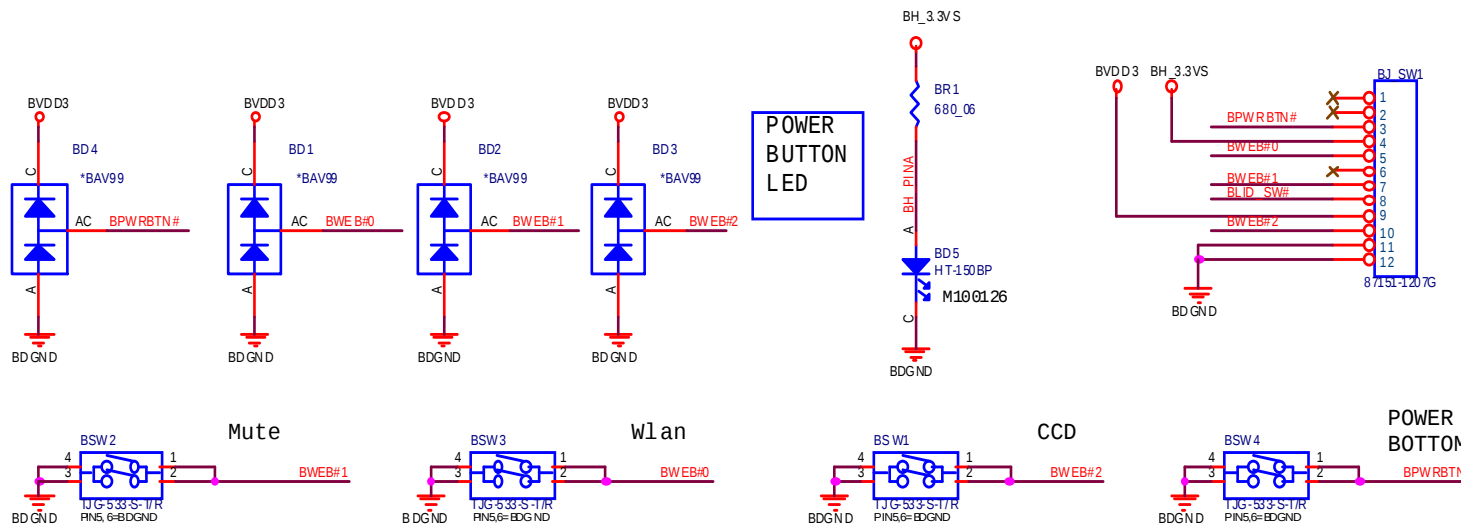
Schematic Diagrams

B5100 LED & VGA SW Board



B5100 Power Switch Board

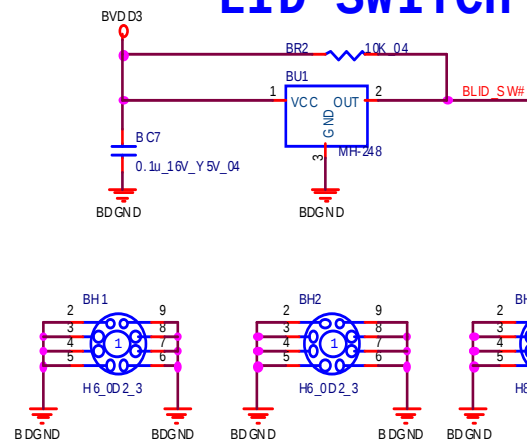
V51XX POWER SWITCH BOARD



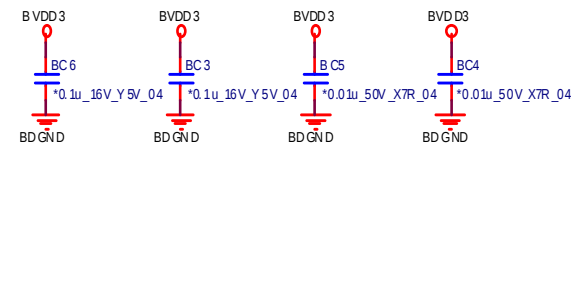
Sheet 48 of 49
B5100 Power
Switch Board

B.Schematic Diagrams

LID SWITCH IC

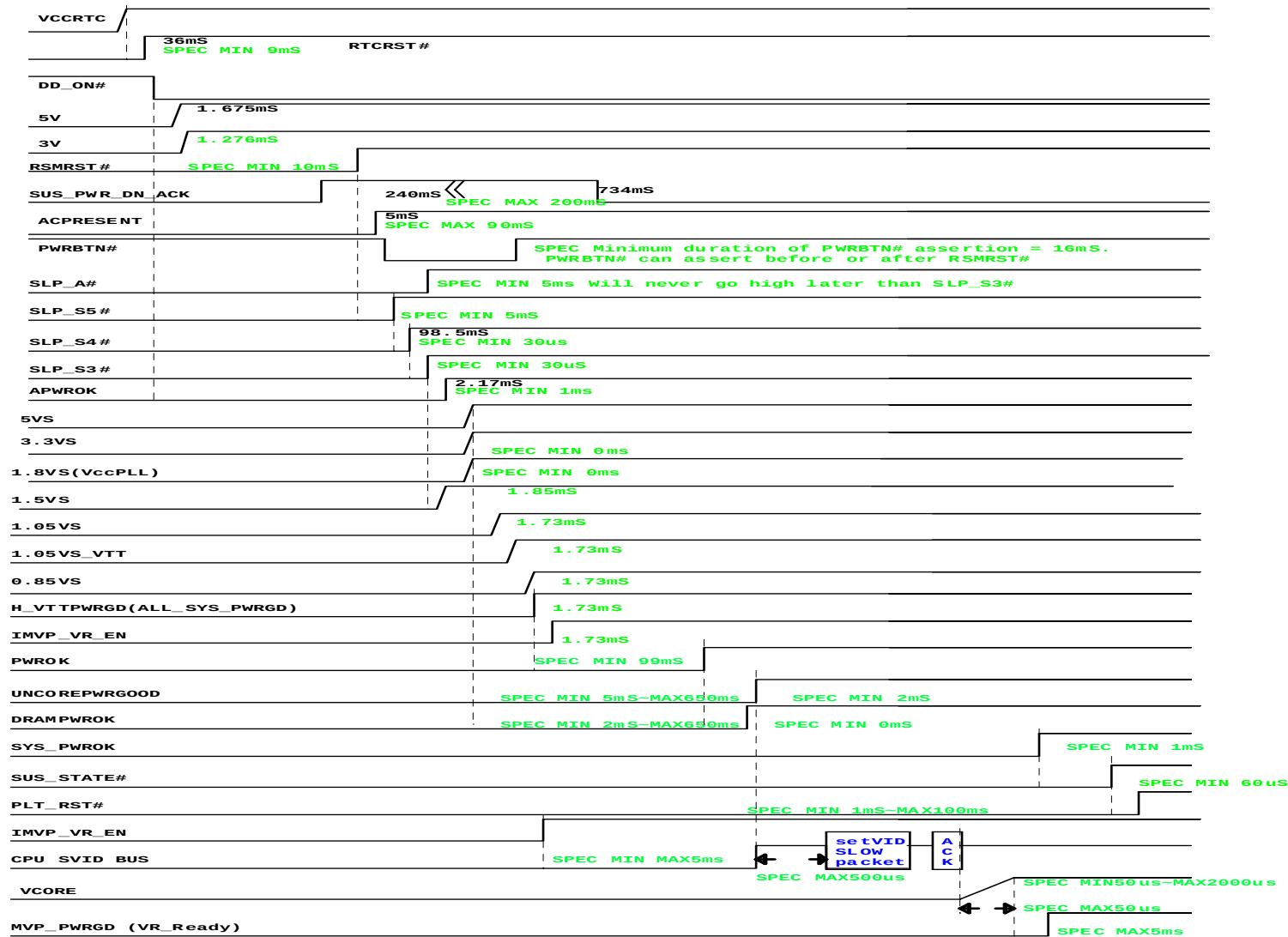


B5100M ONLY



Sequence

PB50 / PB70 Huron River POWER SEQUENCE



Sheet 49 of 49
Sequence

B.Schematic Diagrams

Appendix C: Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS you must:

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

Download the BIOS

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

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

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

Set the computer to boot from the external drive

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