

SERVICE MANUAL

W170ER

notebook



Notebook Computer

W170ER

Service Manual

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Version 1.0
April 2012

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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 **W170ER** 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, 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.

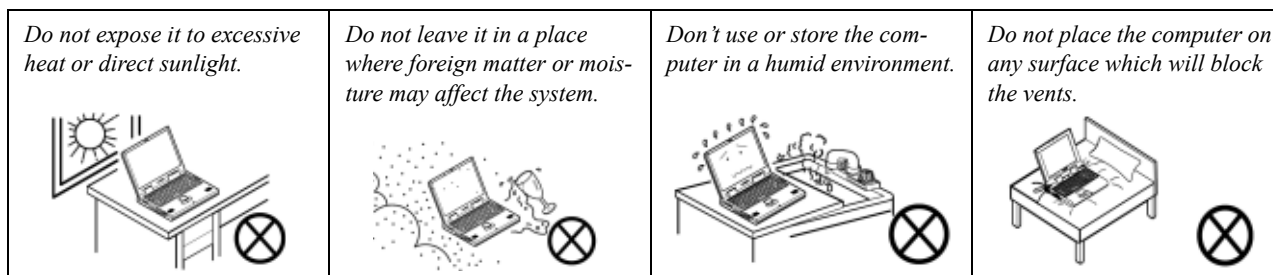
Instructions for Care and Operation

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

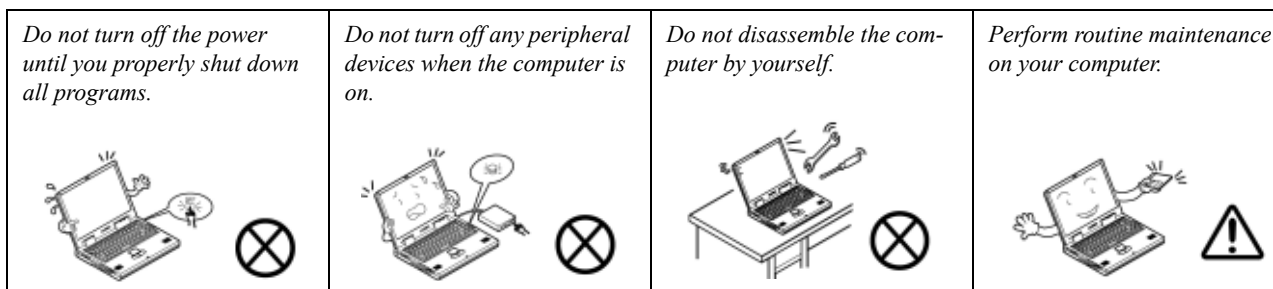
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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.



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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.**

Use only approved brands of peripherals.



Unplug the power cord before attaching peripheral devices.



Power Safety Warning

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

You must also remove your battery in order to prevent accidentally turning the machine on. **Before removing the battery disconnect the AC/DC adapter from the computer.**

Power Safety

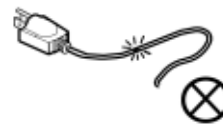
The computer has specific power requirements:

- 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.

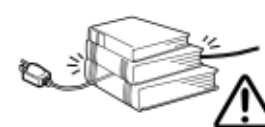
Do not plug in the power cord if you are wet.



Do not use the power cord if it is broken.



Do not place heavy objects on the power cord.



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 **W170ER** 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 **W170ER** 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

i7-3820QM (2.70GHz)

8MB L3 Cache, 22nm, DDR3-1600MHz, TDP 45W

i7-3720QM (2.60GHz), i7-3610QM (2.30GHz)

6MB L3 Cache, 22nm, DDR3-1600MHz, TDP 45W

i7-3520M (2.90GHz)

4MB L3 Cache, 22nm, DDR3-1600MHz, TDP 35W

Intel® Core™ i5 Processor

i5-3360M (2.80GHz), i5-3320M (2.60GHz), i5-3210M (2.50GHz), i5-3110M (2.40GHz)

3MB L3 Cache, 22nm, DDR3-1600MHz, TDP 35W

Intel® Core™ i7 Processor

i7-2860QM (2.50GHz), i7-2820QM (2.30GHz)

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

i7-2760QM (2.40GHz), i7-2720QM (2.20GHz)

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

i7-2670QM (2.20GHz), i7-2650QM (2.10GHz), i7-2630QM (2.00GHz)

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

i7-2640M (2.80GHz), i7-2620M (2.70GHz)

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

Intel® Core™ i5 Processor

i5-2540M (2.60GHz), i5-2520M (2.50GHz), i5-2450M (2.50GHz), i5-2430M (2.40GHz), i5-2410M (2.30GHz)

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

Intel® Core™ i3 Processor

i3-2370M (2.40GHz), i3-2350M (2.30GHz), i3-2330M (2.20GHz), i3-2310M (2.10GHz)

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

Core Logic

Intel® HM76 Chipset

BIOS

One 48Mb SPI Flash ROM

AMI BIOS

LCD

17.3" (43.94cm) HD+/ FHD LCD

Video Adapter

Intel® Integrated GPU and NVIDIA® Discrete GPU

Supports NVIDIA® Optimus Technology

Intel Integrated GPU (GPU is Dependent on Processor)

Intel® HD Graphics 3000

Dynamic Frequency (Intel Dynamic Video Memory Technology for up to **1.7GB**)

Microsoft DirectX®10 Compatible

Intel® HD Graphics 4000

Dynamic Frequency (Intel Dynamic Video Memory Technology for up to **1.7GB**)

Microsoft DirectX®11 Compatible

NVIDIA Discrete GPU

NVIDIA® GeForce GT 650M

1GB GDDR5 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

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 or Blu-Ray Writer Module)
 Two Changeable 2.5" 9.5 mm (h) **SATA** (Serial) HDD

Interface

One USB 2.0 Port
 Two USB 3.0 Ports
 One eSATA Port (USB 3.0 Port Combined)
 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

WLAN/ Bluetooth Half Mini-Card Modules:

(Factory Option) Intel® Centrino® Ultimate-N 6300 Wireless LAN **(802.11a/g/n)**

(Factory Option) Intel® Centrino® Wireless-N 105 Wireless LAN **(802.11b/g/n)**

(Factory Option) Intel® Centrino® Advanced-N 6235 Wireless LAN **(802.11a/g/n)** + Bluetooth **4.0**

(Factory Option) Intel® Centrino® Wireless-N 2230 Wireless LAN **(802.11b/g/n)** + Bluetooth **4.0**

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

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

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, 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

413mm (w) * 277.5mm (d) * 17.1 - 41.5mm (h)
 3.2kg with ODD & 48.84WH Battery

Introduction

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 - Top View with LCD Panel Open



External Locator - Front & Right Side Views

FRONT VIEW



RIGHT SIDE VIEW



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

LEFT SIDE VIEW



Figure 5
Rear View

1. Security Lock Slot
2. Battery

REAR VIEW



External Locator - Bottom View

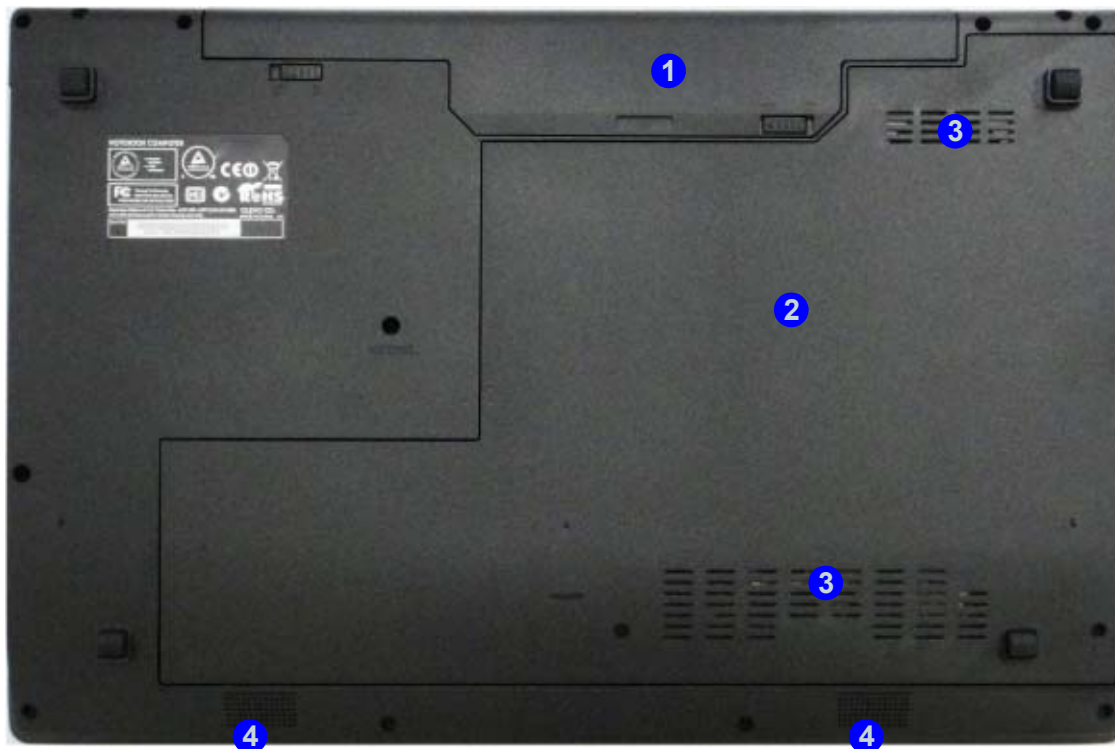


Figure 6
Bottom View

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



Overheating

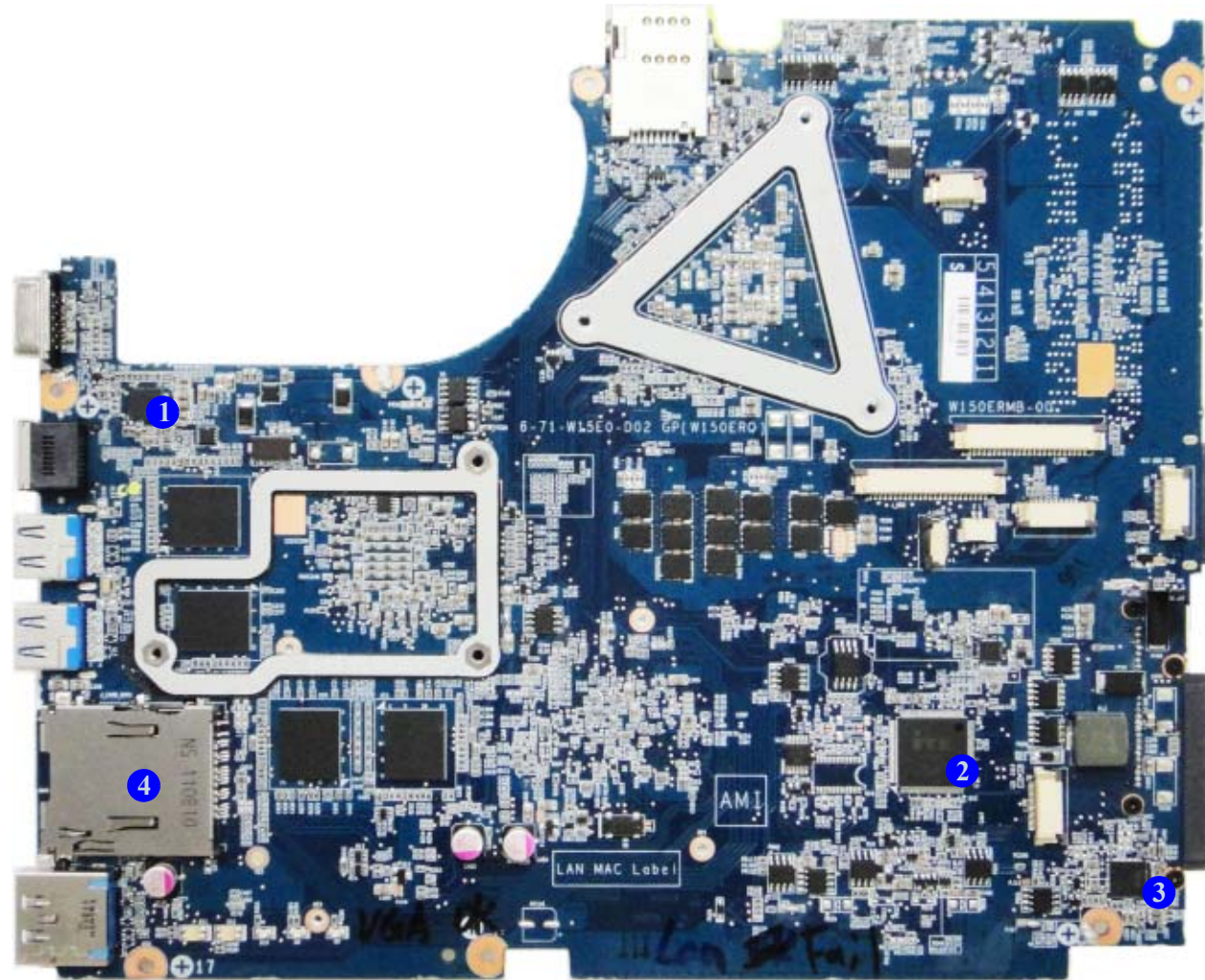
To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

Introduction

Figure 7
**Mainboard Top
Key Parts**

1. Realtek RTL8411-CG
2. ITE8518E/HX
3. Audio Codec
4. Multi-in-1 Card Reader

Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

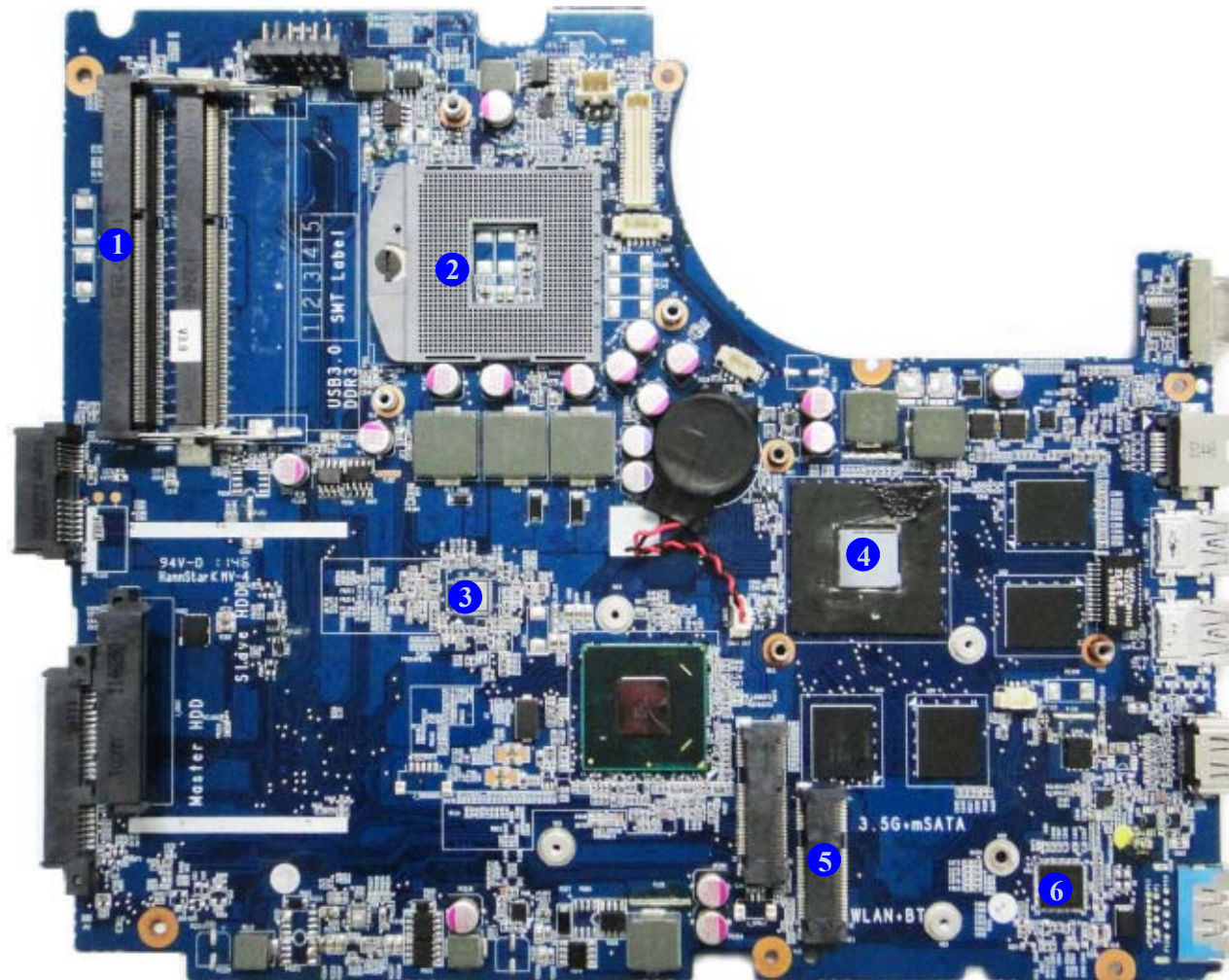


Figure 8
**Mainboard Bottom
Key Parts**

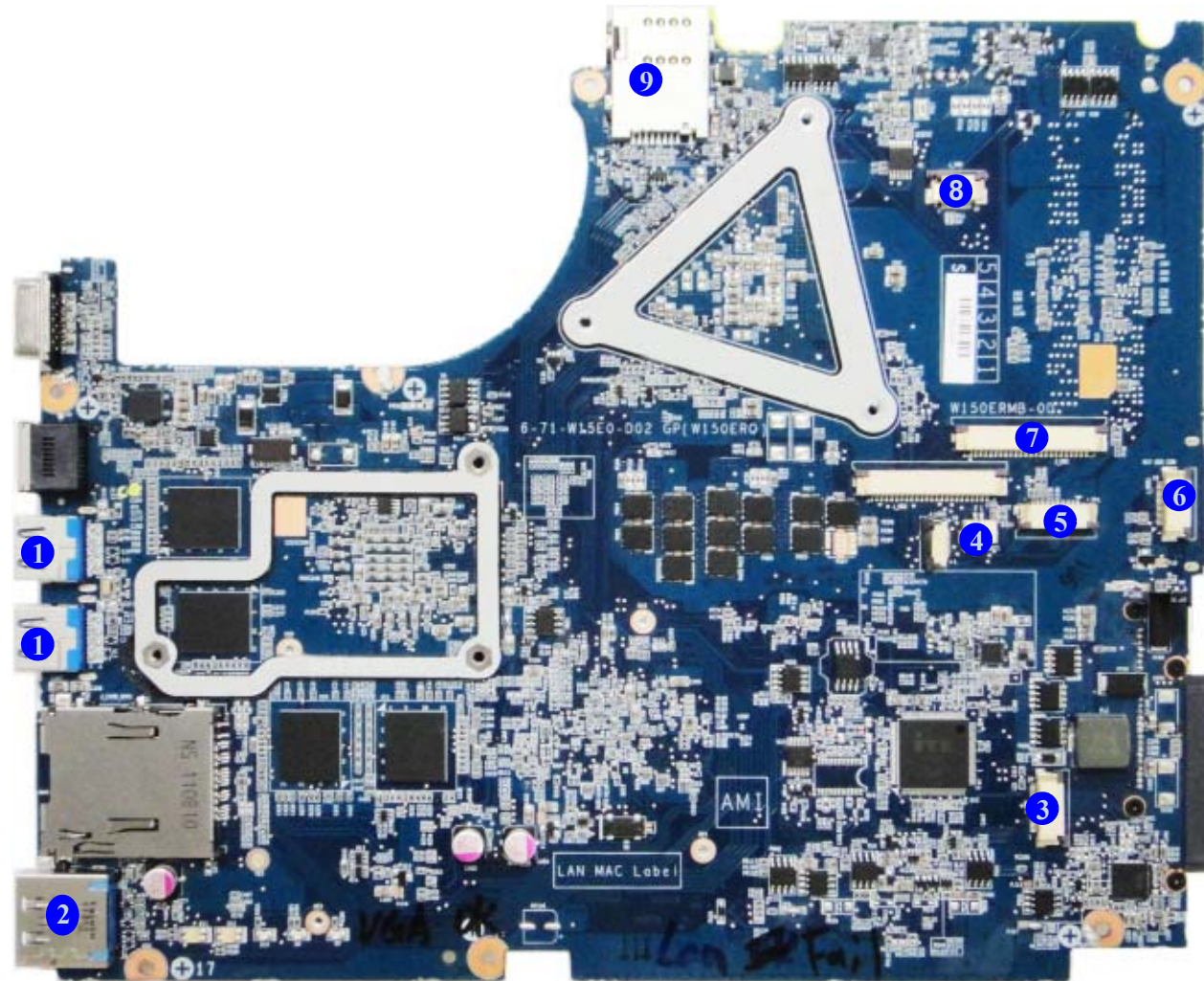
1. Memory Slots
DDR3 SO-DIMM
2. CPU Socket (no
CPU installed)
3. VCore
4. Controller Hub
5. Mini-Card
Connector
6. LAN Chips

Introduction

Figure 9
**Mainboard Top
Connectors**

1. USB Ports
2. eSATA Port
3. Audio Cable Connector
4. VGA LED Cable Connector
5. TouchPad Cable Connector
6. ODD Board Cable Connector
7. Keyboard Cable Connector
8. Power Cable Connector
9. USIM Card

Mainboard Overview - Top (Connectors)



Mainboard Overview - Bottom (Connectors)

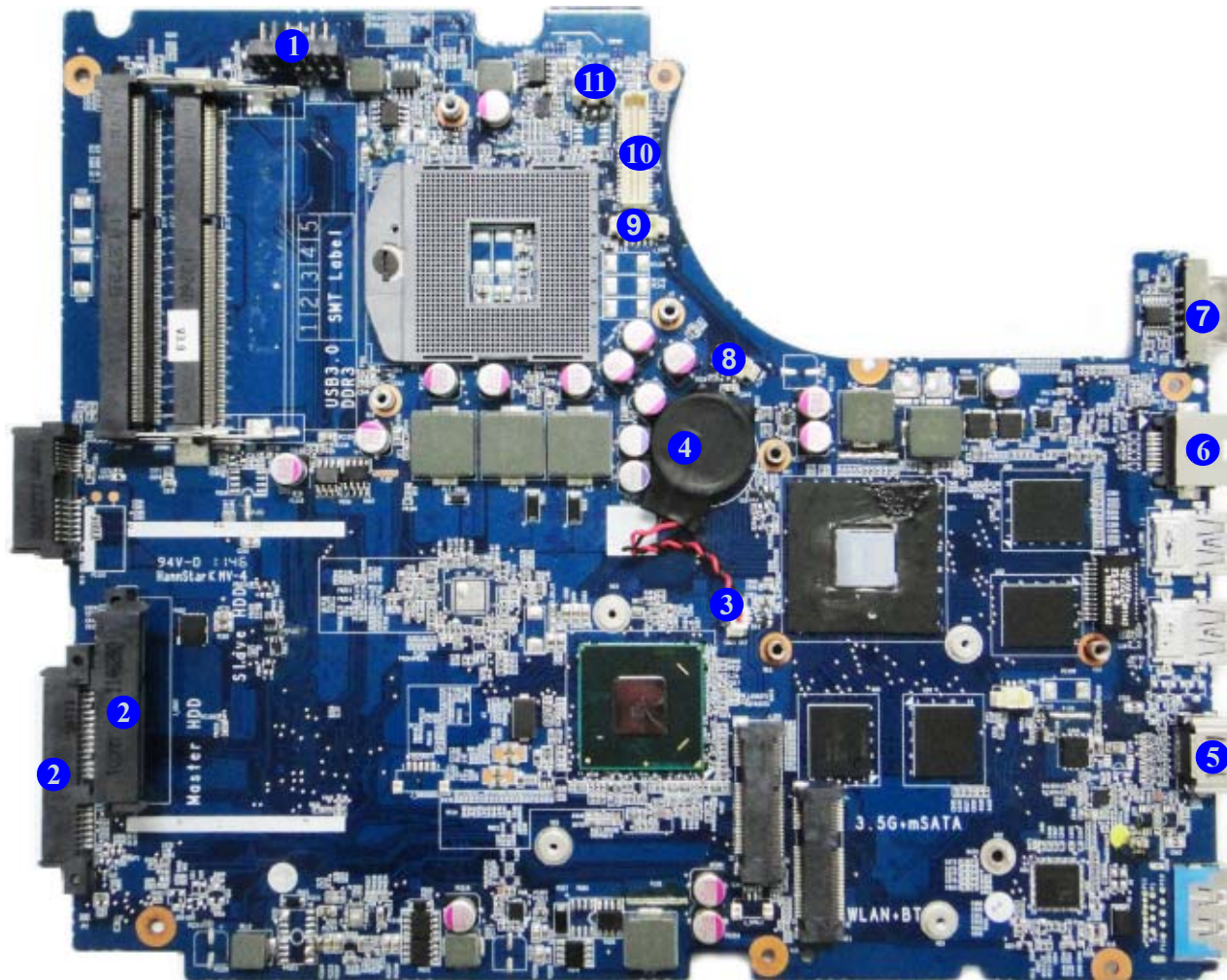


Figure 10
**Mainboard Bottom
Connectors**

1. Battery Connector
2. HDD Connector
3. RTC Cable Connector
4. CMOS Battery
5. HDMI-Out Port
6. RJ-45 LAN Jack
7. External Monitor Port
8. CPU Fan Cable Connector
9. CCD Cable Connector
10. LVDS Cable Connector
11. DC Jack Connector


Chapter 2: Disassembly


Overview

This chapter provides step-by-step instructions for disassembling the **W170ER** 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-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 System Memory:

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

To remove the HDD:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 8](#)

To remove the Optical Device:

1. Remove the battery [page 2 - 5](#)
2. Remove the Optical device [page 2 - 11](#)

To remove and install a Processor:

1. Remove the battery [page 2 - 5](#)
2. Remove the processor [page 2 - 12](#)
3. Install the processor [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 Mainboard:

1. Remove the battery [page 2 - 5](#)
2. Remove the system memory [page 2 - 6](#)
3. Remove the HDD [page 2 - 8](#)
4. Remove the Optical device [page 2 - 11](#)
5. Remove the processor [page 2 - 12](#)
6. Remove the WLAN module [page 2 - 15](#)
7. Remove the keyboard [page 2 - 16](#)
8. Remove the mainboard [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.

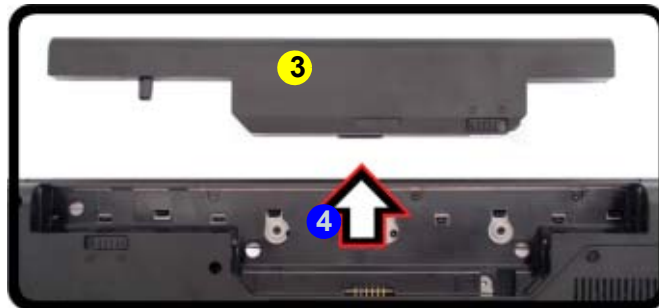


Figure 1
Battery Removal

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



3. Battery

Disassembly

Figure 2
RAM Module Removal

- Remove the screws.
- Slide out the component bay cover.
- The RAM modules will be visible at point ⑤ 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.



3. Component Bay Cover

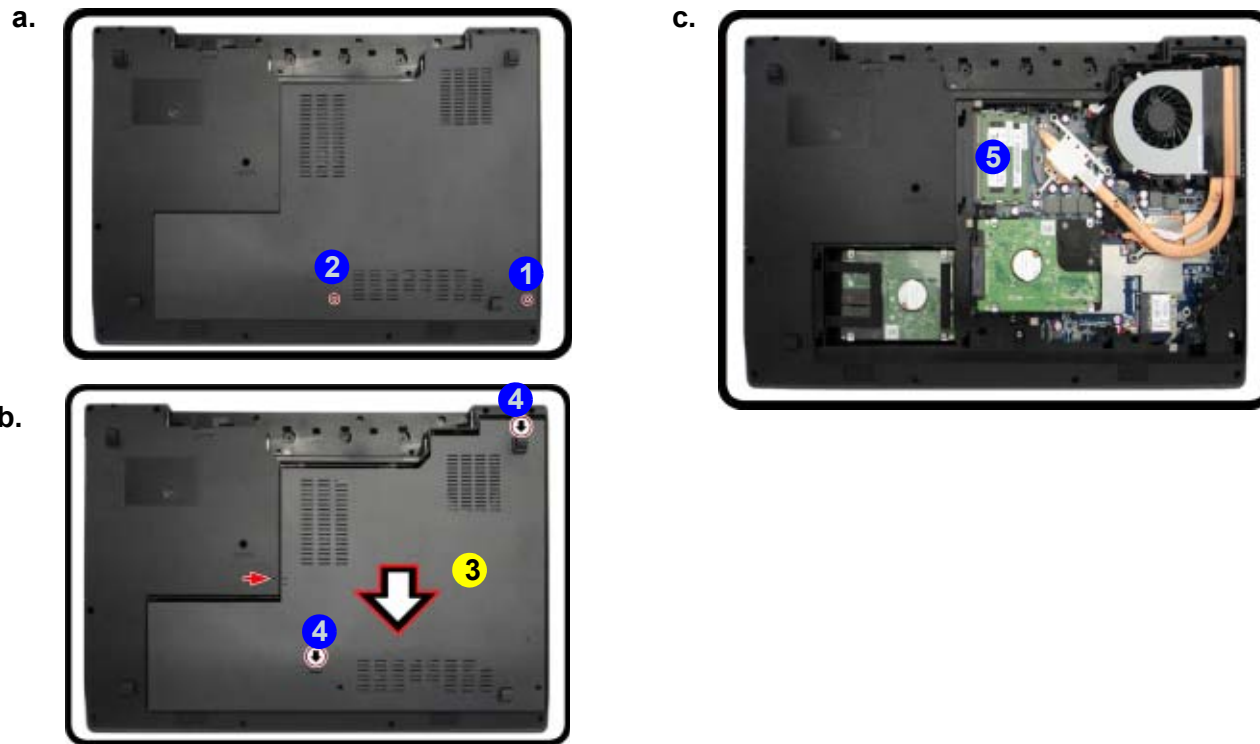
- 2 Screws

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

- Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)).
- Remove screws ① - ② from the component bay cover ([Figure 2a](#)).
- Remove the component bay cover ③ ([Figure 2b](#)) by sliding the cover at point ④ in the direction of arrow.
- The RAM modules will be visible at point ⑤ on the mainboard ([Figure 2c](#)).

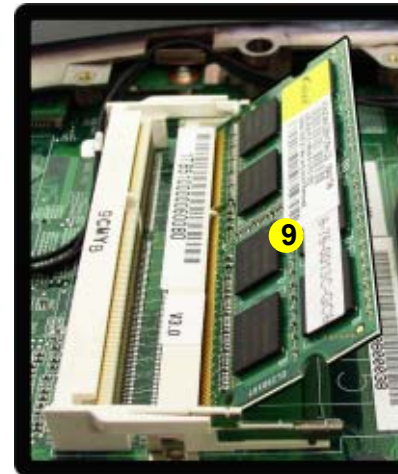


5. Gently pull the two release latches (7 & 8) on the sides of the memory socket in the direction indicated by the arrows (**Figure 2d**). The RAM module 9 will pop-up (**Figure 3e**), and you can then remove it.
6. Pull the latches to release the second module if necessary.

d.



e.



f.

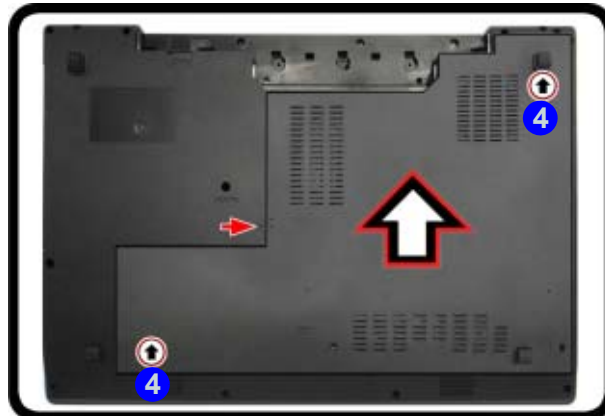


Figure 3
RAM Module
Removal (cont'd)

- d. Pull the release latches.
- e. Remove the module.
- f. Slide in the component bay cover.



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.

7. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
8. 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.
9. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
10. Replace the component bay cover 3 (**Figure 3f**) by sliding the cover at point 4 in the direction of arrow.
11. Tighten the screws (see [page 2 - 6](#)).
12. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.
13. Pull the latches to release the second module if necessary.



9. RAM Module

Disassembly

Figure 4
**HDD Assembly
Removal**

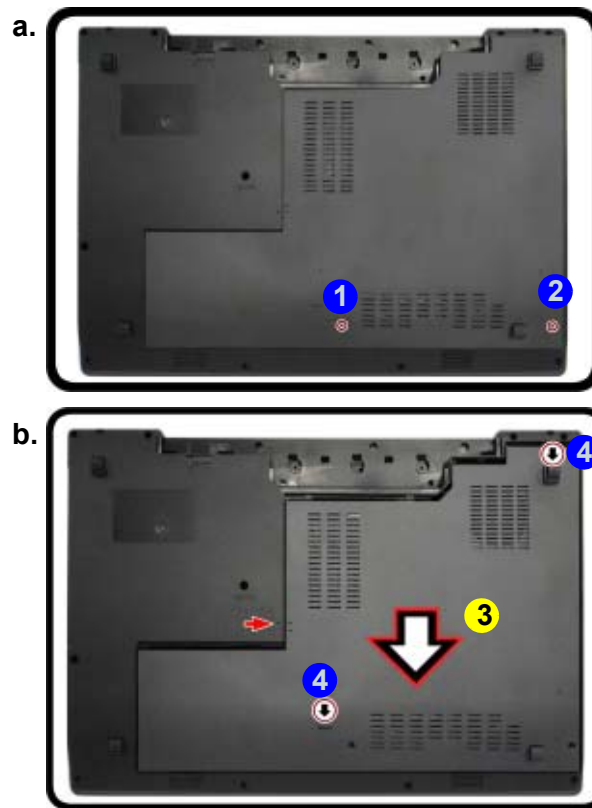
Removing the Hard Disk Drive

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.

- Locate the HDD bay cover and remove the screws.
- Slide the component bay cover out.

Hard Disk Upgrade Process

- Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
- Locate the hard disk bay cover and remove screws ① & ② ([Figure 4a](#)).
- Remove the hard disk bay cover ③ ([Figure 4b](#)) by sliding the hard disk at point ④ in the direction of arrow.



3. HDD Bay Cover

- 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.

4. Remove the hard disk bay cover **3** (*Figure 5c*).
5. Grip the tab and slide the 1st hard disk assembly in the direction of arrow **4** (*Figure 5d*).
6. Lift the hard disk assembly **5** out of the bay **6** (*Figure 5e*).
7. Remove the screw **7** - **8** and the mylar cover **11** from the hard disk **12** (*Figure 5f*).

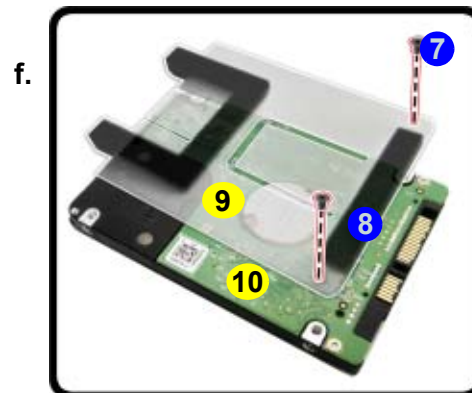
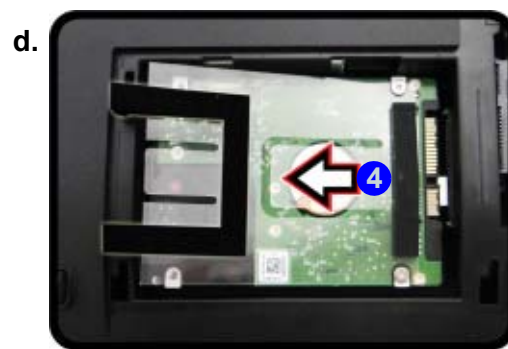
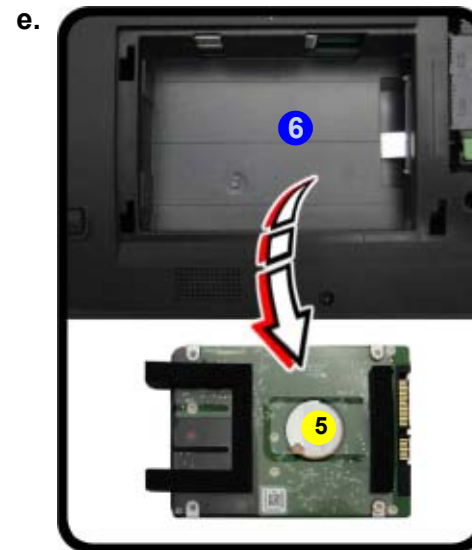
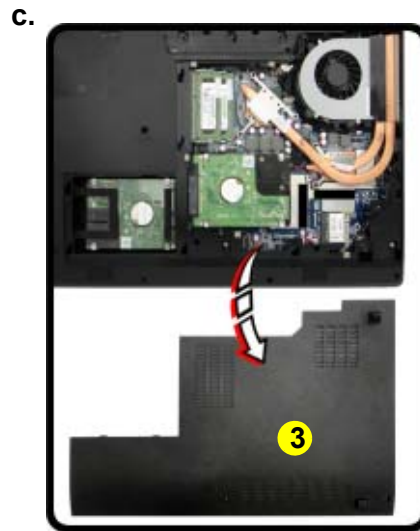


Figure 5
**HDD Assembly
Removal (cont'd.)**

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



- 3. HDD Bay Cover
- 5. HDD Assembly
- 9. Mylar Cover
- 10. HDD 1

- 2 Screws

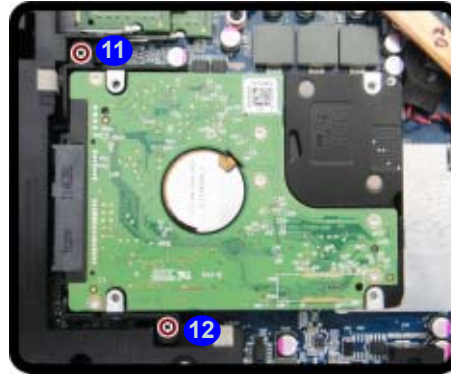
Disassembly

Figure 6
**HDD Assembly
Removal (cont'd.)**

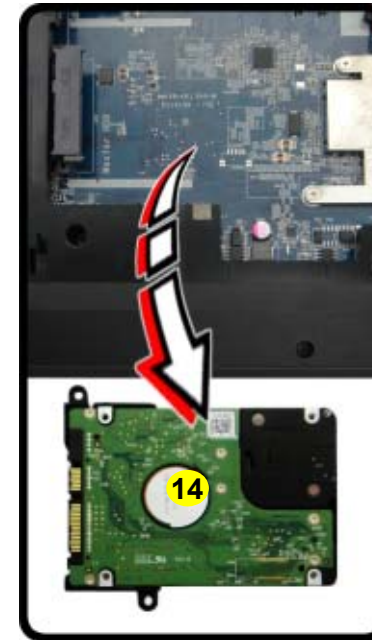
- g. Remove the HDD bay cover.
- h. Slide the 2nd HDD assembly in the direction of the arrow.
- i. Lift the HDD assembly out of the bay.
- j. Remove the screws and casing.

- 8. Remove screws 11 - 12 from the 2nd hard disk assembly (*Figure 6g*).
- 9. Slide the 2nd hard disk in the direction of arrow 13 (*Figure 6h*).
- 10. Lift the 2nd hard disk assembly 14 out of the bay (*Figure 6i*).
- 11. Remove the screw 15 - 16 and the casing 17 from the hard disk 18 (*Figure 6j*).
- 12. Reverse the process to install a new hard disk (do not forget to replace all the screws and covers).

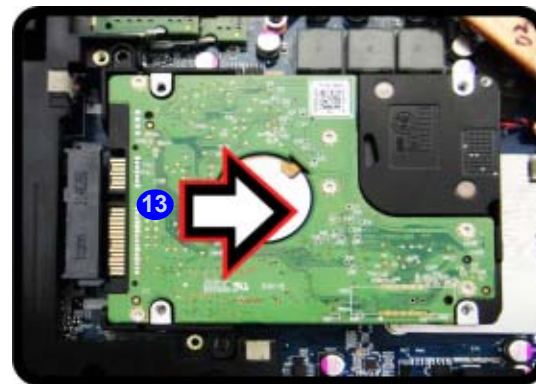
g.



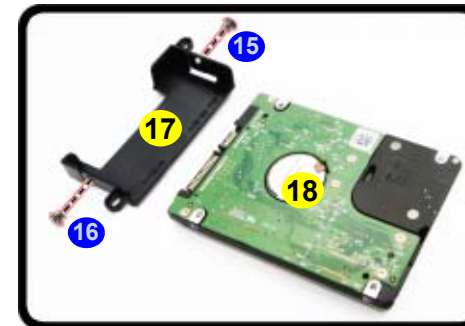
i.



h.



j.



14. 2nd HDD Assembly
17. Casing
18. HDD 2

- 4 Screws

Removing the Optical (CD/DVD) Device

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and hard disk ([page 2 - 8](#)).
2. Remove the screw at point **1** ([Figure 7a](#)).
3. Use a screwdriver to carefully push out the optical device **3** at point **2** ([Figure 7b](#)).
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.



Figure 7
**Optical Device
Removal**

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



3. Optical Device

- 1 Screw

Disassembly

Removing and Installing a Processor

Processor Removal Procedure

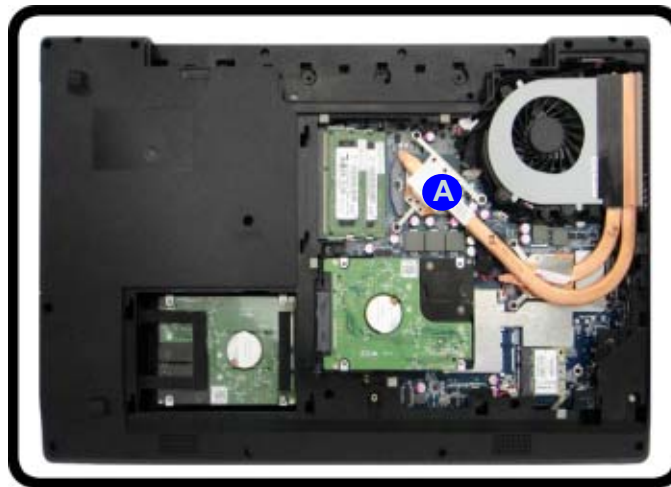
Figure 8

Processor Removal

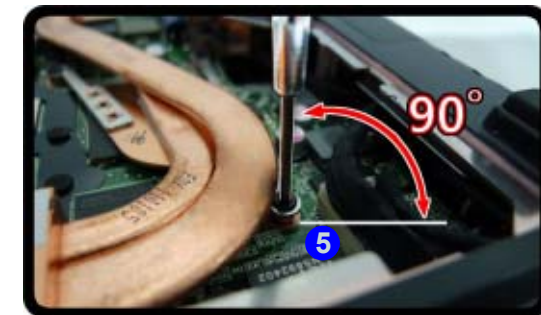
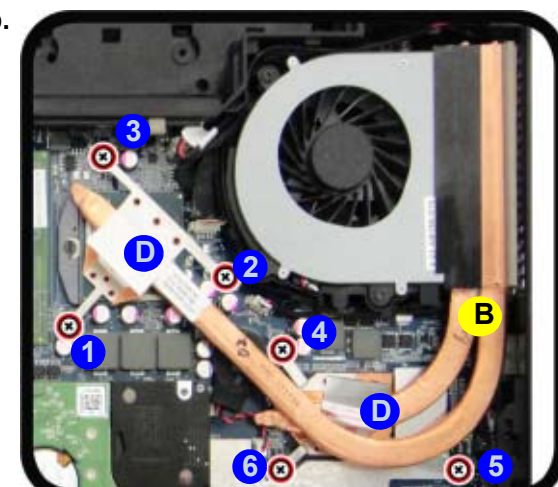
- Remove the cover and locate the heat sink.
- Remove the screws in the order indicated.

- Turn **off** the computer, remove the battery ([page 2 - 5](#)) and the component bay cover ([page 2 - 6](#)).
- The CPU heat sink will be visible at point **A** ([Figure 8a](#)) on the mainboard.
- 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 8b](#)).
- Carefully lift up the heat sink **B** off the computer by pulling the two tabs **D**.

a.



b.



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

- 6 Screws


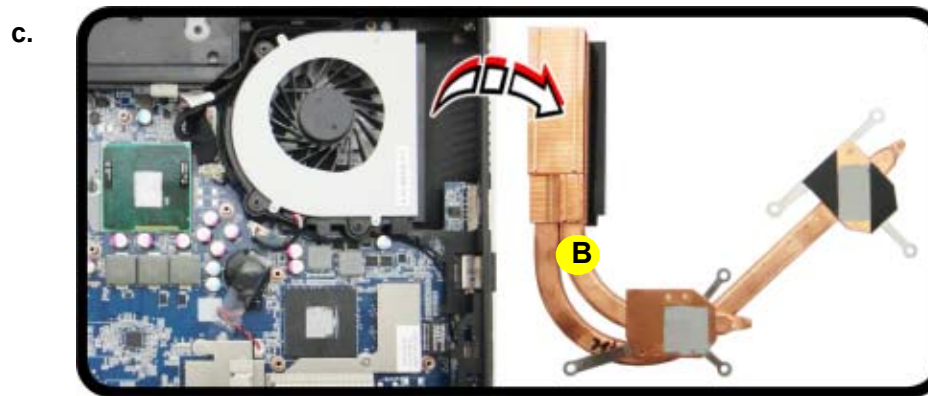
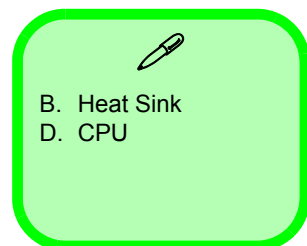
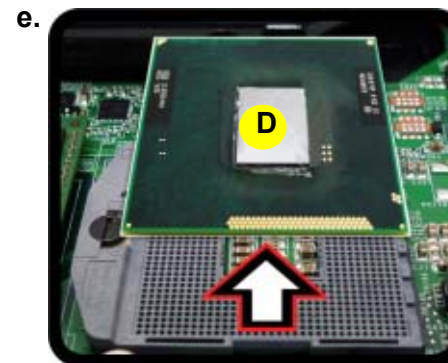
5. Carefully lift up the heat sink **B** (*Figure 9c*) off the computer.
6. Turn the release latch **C** towards the unlock symbol , to release the CPU (*Figure 9d*).
7. Carefully (it may be hot) lift the CPU **D** up out of the socket (*Figure 9e*).
8. See [page 2 - 14](#) for information on inserting a new CPU.
9. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

Figure 9
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.



Unlock




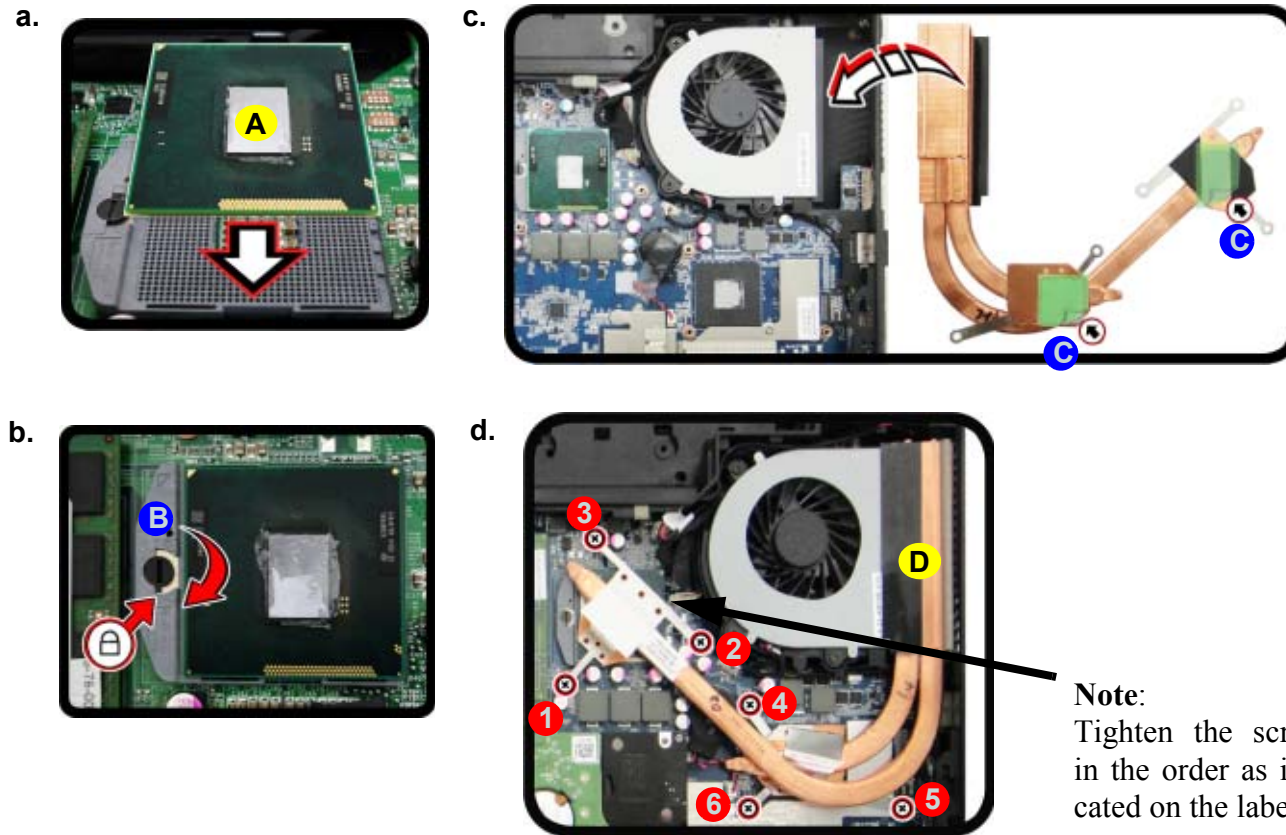
Disassembly

Figure 10
Processor Installation

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

Processor Installation Procedure

- Insert the CPU **A** (*Figure 10a*), 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 10b*).
- Remove the sticker **C**** (*Figure 10c*) from the heat sink.
- Insert the heat sink **D** as indicated in *Figure 10d*.
- Tighten the CPU heat sink screws in the order **1**, **2**, **3**, **4**, **5** & **6** (the order as indicated on the label and *Figure 10d*) ***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.
- Replace the component bay cover (don't forget to replace the fan cable) and tighten the screws (*page 2 - 6*).



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

A. CPU
D. Heat Sink

- 6 Screws

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 - 6](#)).
2. The Wireless LAN module will be visible at point **1** on the mainboard ([Figure 11a](#)).
3. Carefully disconnect the cables **2** & **3**, and then remove the screw **4** ([Figure 11b](#)).
4. The Wireless LAN module **5** ([Figure 11c](#)) will pop-up, and you can remove it from the computer ([Figure 11d](#)).

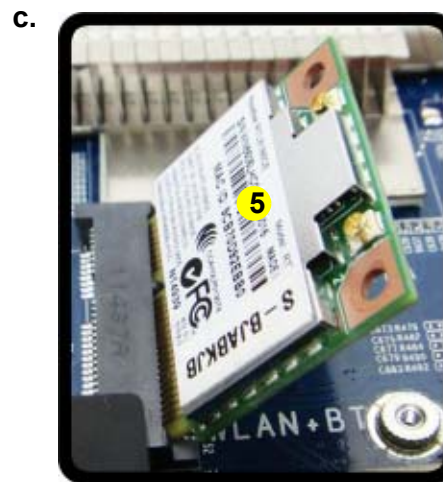


Figure 11
**Wireless LAN
Module Removal**

- 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 11b](#)).



5. Wireless LAN Module

- 1 Screw

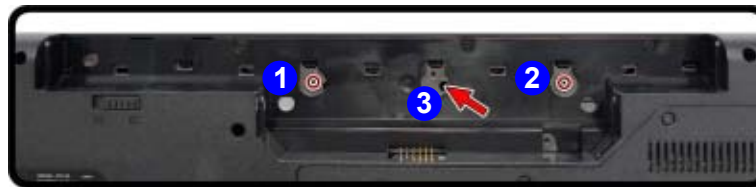
Disassembly

Figure 12

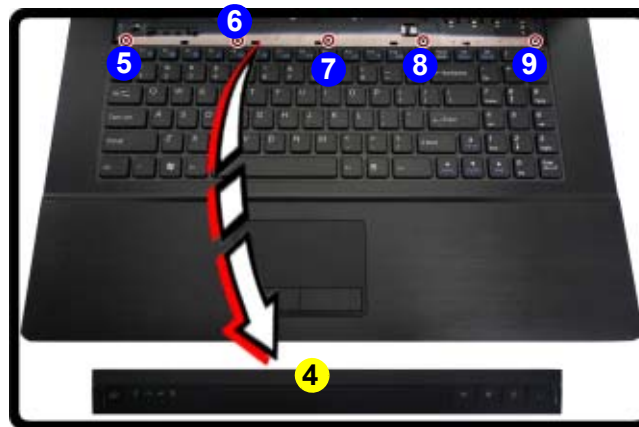
Keyboard Removal

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

a.



b.



c.



d.



4. Top cover module
10. Keyboard

• 7 Screws

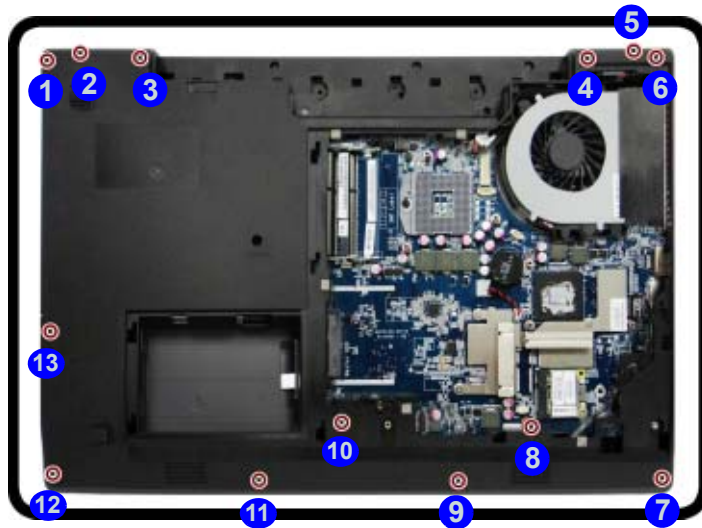
Removing the Mainboard

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)), RAM ([page 2 - 6](#)), HDD ([page 2 - 8](#)), optical device ([page 2 - 11](#)), CPU ([page 2 - 12](#)), WLAN ([page 2 - 15](#)), and keyboard ([page 2 - 16](#)).
2. Remove screws ① - ⑬ from the bottom case ([Figure 13a](#)).
3. Separate the top case and the bottom case at point ⑭ ([Figure 13b](#)) and then slide the top case in the direction of the arrow ⑮.
4. Carefully lift the top case ⑰ off the computer in the direction of the arrow ⑯ ([Figure 13c](#)).

Figure 13
Mainboard Removal

- a. Remove the screws.
- b. Separate the top and bottom case.
- c. Lift the top case off.

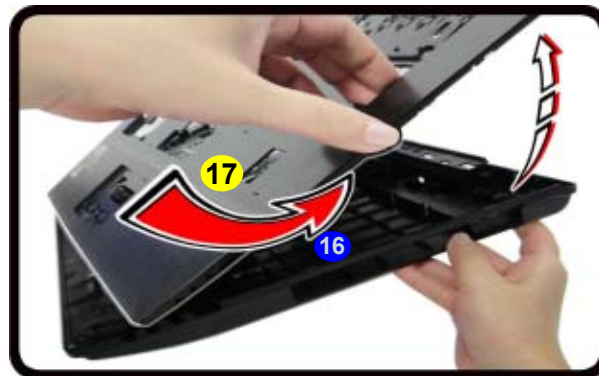
a.



b.



c.



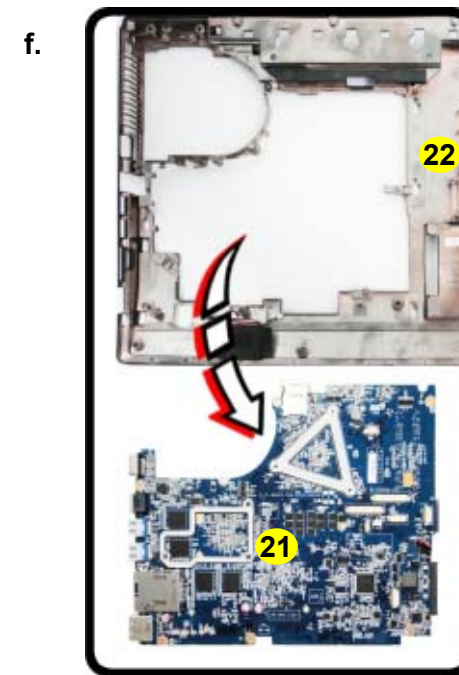
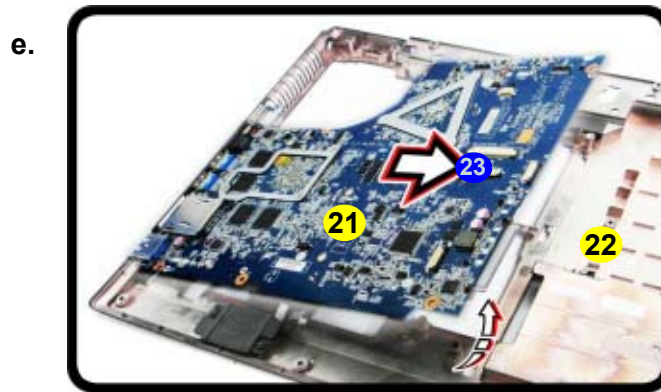
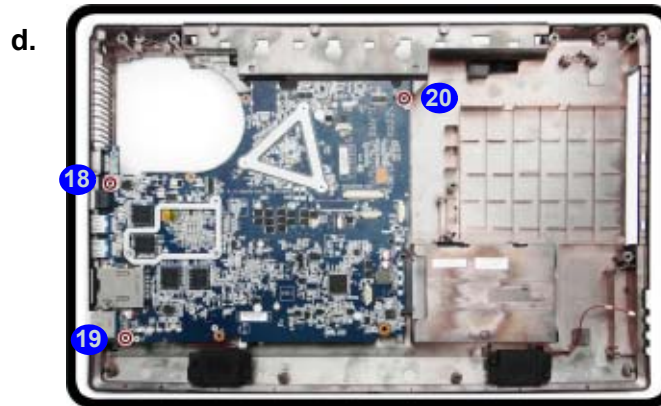
- ⑰. Top Case
- 13 Screws

Disassembly

Figure 14
Mainboard Removal
(cont'd.)

- d. Remove the screws (disconnect the connectors).
- e. Separate the mainboard from the bottom case.
- f. Remove the mainboard.

- 5. Remove screws 18 - 20 and disconnect the connectors from the mainboard.
- 6. Separate the mainboard 21 from the bottom case 22 by lift the mainboard in the direction of the arrow 23.
- 7. Remove the mainboard 21 (Figure 14f).



21. Mainboard
22. Bottom Case

- 3 Screws

Appendix A:Part Lists

This appendix breaks down the *W170ER* 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	W170ER
Top	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
Combo	<i>page A - 5</i>
DVD	<i>page A - 6</i>
LCD	<i>page A - 7</i>
HDD	<i>page A - 8</i>

Top

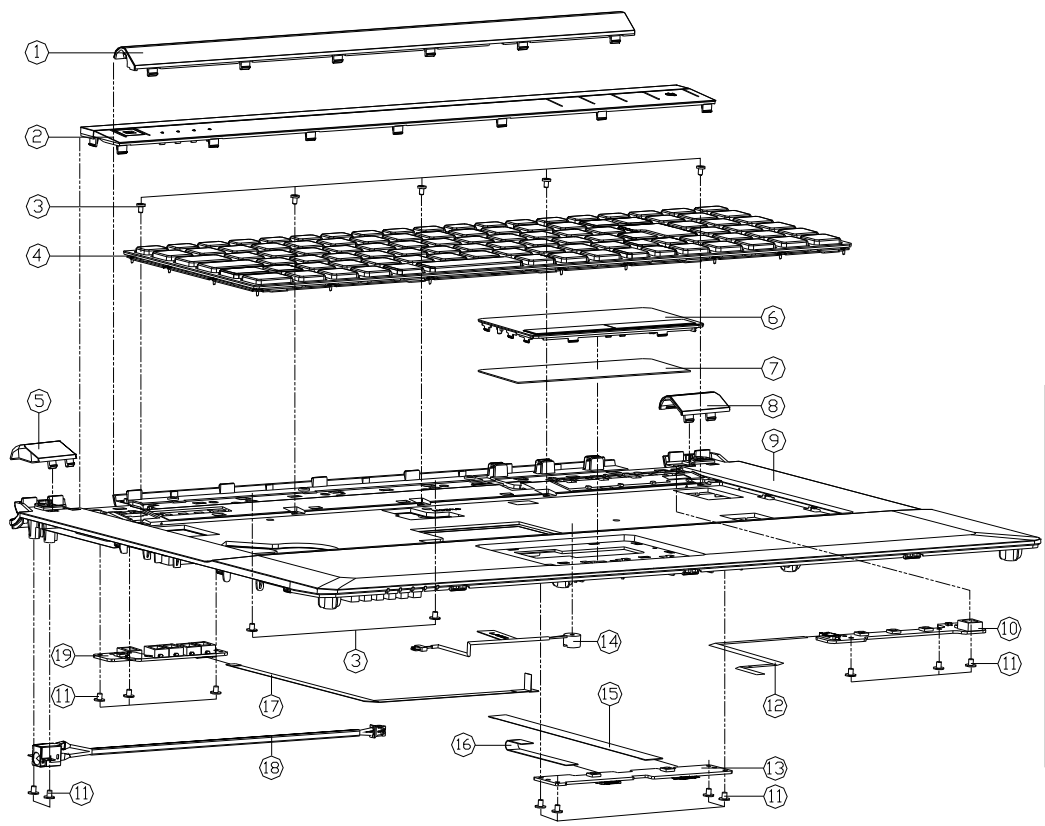
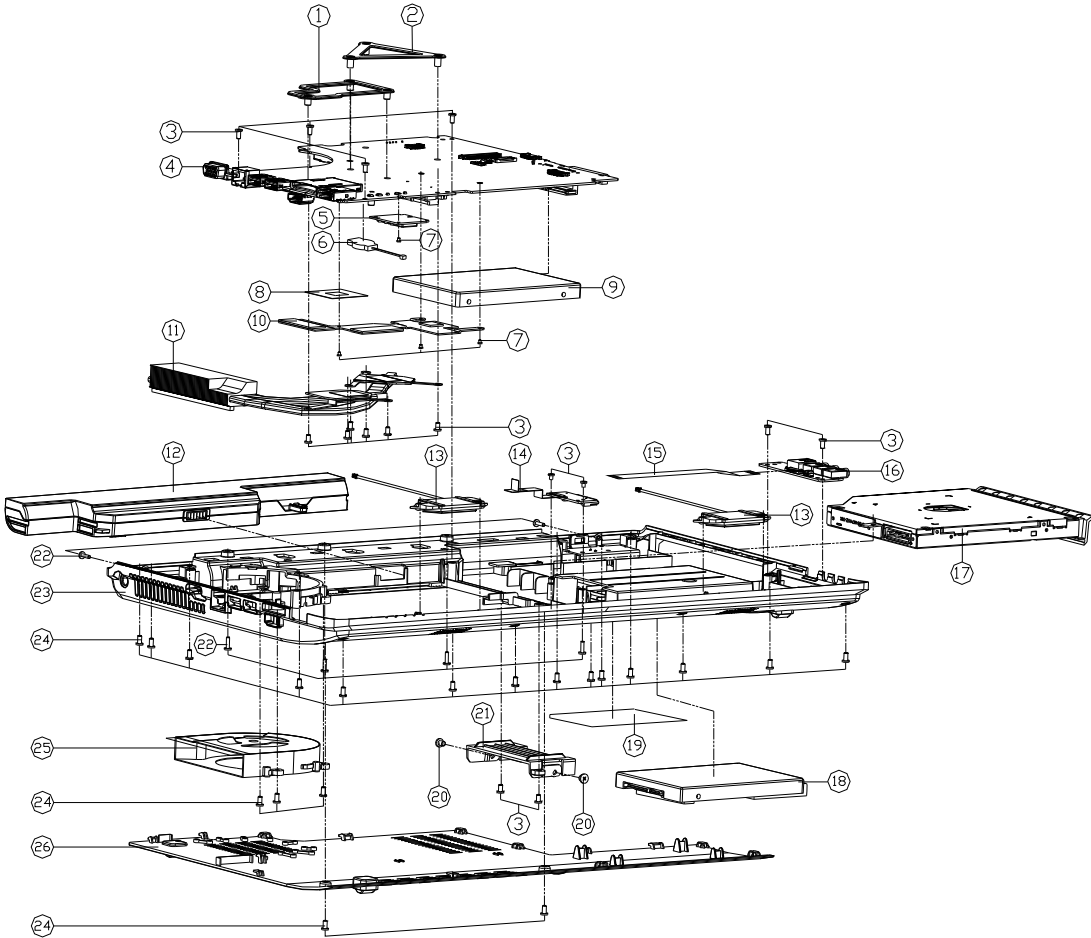


Figure A - 1
Top

ITEM	PART NAME	PART NO	REMARK
1	HINGE COVER SABIC CM6140 701DE B7110	6-42-B7112-032	
2	CENTER COVER MODULE B7110	6-42-B7112-203	
3	SCREW M2*3L KI BZ ICT NY (DD=04.5,DT=04)	6-35-B6120-3RD	
4	K/B USA (中国) FRAME (US) MODULE B7110	6-79-B711000K-010	
5	HINGE COVER L SABIC CM6140 701DE B7110	6-42-B7112-022	
6	TP COVER MODULE B7110	6-42-B7112-103	
7	TOUCH PAD CLM 38400-000 MULTI-FINGER GESTURE V25000	6-49-W25A2-011	
8	HINGE COVER R SABIC CM6140 701DE B7110	6-42-B7112-012	
9	TOP CASE MODULE W170ER	6-39-W17E2-012	
10	POWER SWITCH BOARD V3.0 W170ER	6-77-W17ES-D03	
11	SCREW M2*3L KI NI ICT NY (DD=04.5,DT=04)	6-35-B1120-3RE	
12	FFC POWER BOARD (PITCH=0.5,LEAD=1515) B7110	6-43-B7110-032-2	
13	CLICK BOARD V2.0 (W/B) FPC W170ER FOR CLICK SWITCH 100G	6-77-W15E2-D02-A	
14	FFC CABLE TO W/B (PITCH=1.0,LEAD=1160) (中国) (中国) (中国)	6-23-EM54G-012-2	
15	FFC CABLE TO W/B (PITCH=1.0,LEAD=1160) (中国) (中国) (中国)	6-43-B7110-012-2	
16	FFC CABLE FOR TOUCH PAD 6PIN C4500	6-43-C4502-010	
17	FFC CABLE LED BD TO MB (6PIN) (中国) W150ER	6-43-W15E0-011	
18	FFC CABLE FOR JIG 80000-011 TO MB (6PIN) (中国) W150ER	6-43-W15E0-040	
19	LED & VGA SWITCH BOARD V2.0 W170ER	6-77-W17E4-D02	

Bottom

Figure 2
Bottom



ITEM	PART NAME	PART NO	REMARK
1	VGA SUPPORTER SECC W150ER	6-33-W15ES-012	
2	CPU SUPPORTER FOR HADON RIVER SECC W150AM	6-33-W15OS-011	
3	SCREW M2.5*5L K1 BK/Z ICT NY	6-35-B6125-5RA	
4	MAIN BOARD V40 QVD 3G/USB CHARGED W170ER	6-77-W17EO-D04	
5	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-88-C555F-7001	(OPTION)
5	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-88-C555F-5300	(OPTION)
5	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-88-W1102-9400	(OPTION)
5	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-88-W1102-7000	(OPTION)
5	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-88-M77C2-4220	(OPTION)
5	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-88-P17EF-4200	(OPTION)
5	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-88-W255F-4200	(OPTION)
6	BAT 2000 mV 2200mAh W/CABLE 330mAh 1000000mAh	6-23-22015-TC0	
7	SCREW M2*4L K1 NI ICT NY (00-645,DT-HA)	6-35-B1120-3RE	
8	VGA CHIP M14K 38400 MPP-422 (OPTIONAL) W150ER	6-40-M860S-092	
9	W/D 2HDD ASSY W150ERQ/W150ERM	6-79-W150ERQJ-040	
10	PCB AND VRAM HEATSINK+FIN W150ER	6-31-W15ES-030	
11	CPU HEATSINK MODULE W150ER	6-31-W15EN-102	
12	W150ER HEATSINK MODULE FOR W150ERQ/W150ERM	6-87-C480S-404B	(OPTION)
12	W150ER HEATSINK MODULE FOR W150ERQ/W150ERM	6-87-W24ES-4W4	(OPTION)
12	W150ER HEATSINK MODULE FOR W150ERQ/W150ERM	6-87-E412S-4D7A	(OPTION)
13	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-23-W1130-0LD	
14	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-23-FW17E-010	
15	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-43-W17H0-010-1	
16	PHONE JACK & USB BOARD V40 W150ER	6-77-W15EA-D04	
17	SATA DVD SUPER MULTI ASSY (OPTIONAL)	6-79-W170ERQ0-000	(OPTION)
17	SATA BLU-RAY COMBO ASSY (OPTIONAL)	6-79-W170ERQW-000	(OPTION)
18	W/D HDD ASSY W150ERQ/W150ERM	6-79-W150ERQJ-010	
19	W/HDD ASSY W150ERQ/W150ERM	6-79-W150ERQJ-020	
19	PRODUCT LABEL FOR W170ER	6-45-W170ERQ3-011	
20	SCREW M2*4L K1 BZ ICT NY (0-48 1-05)	6-35-B6130-4RB	
21	SECOND HDD HEATSINK+FIN+VRAM FOR W150ER	6-42-W15EJ-011	
22	SCREW M2*5L K1 BK/Z ICT NY	6-35-B6120-8R0	
23	BOTTOM CASE MODULE W170ER	6-39-W17E3-012	
24	SCREW M2.5*6L K BZ ICT NY	6-35-B2125-6RA	
25	OPTIONAL DVD/CD ROM DRIVE (OPTIONAL)	6-23-AW15E-011	
26	CPU COVER MODULE W170ER	6-42-W17E3-101	

Combo

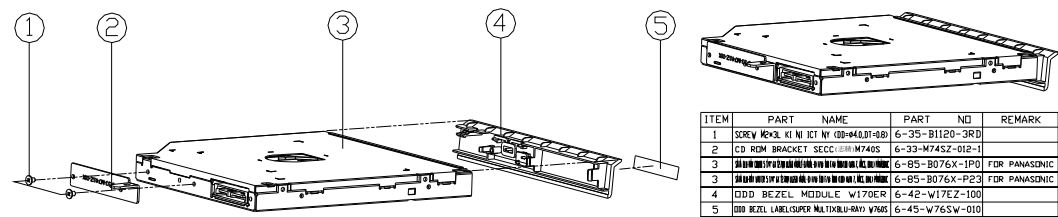
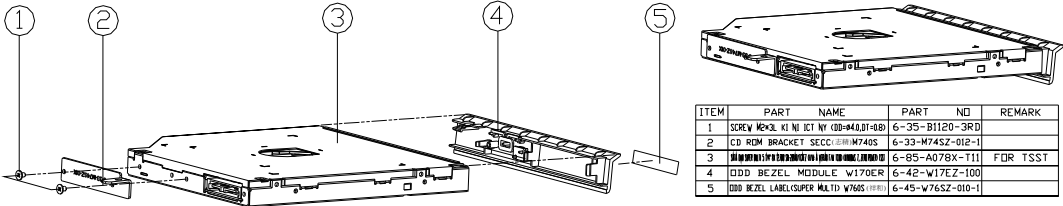


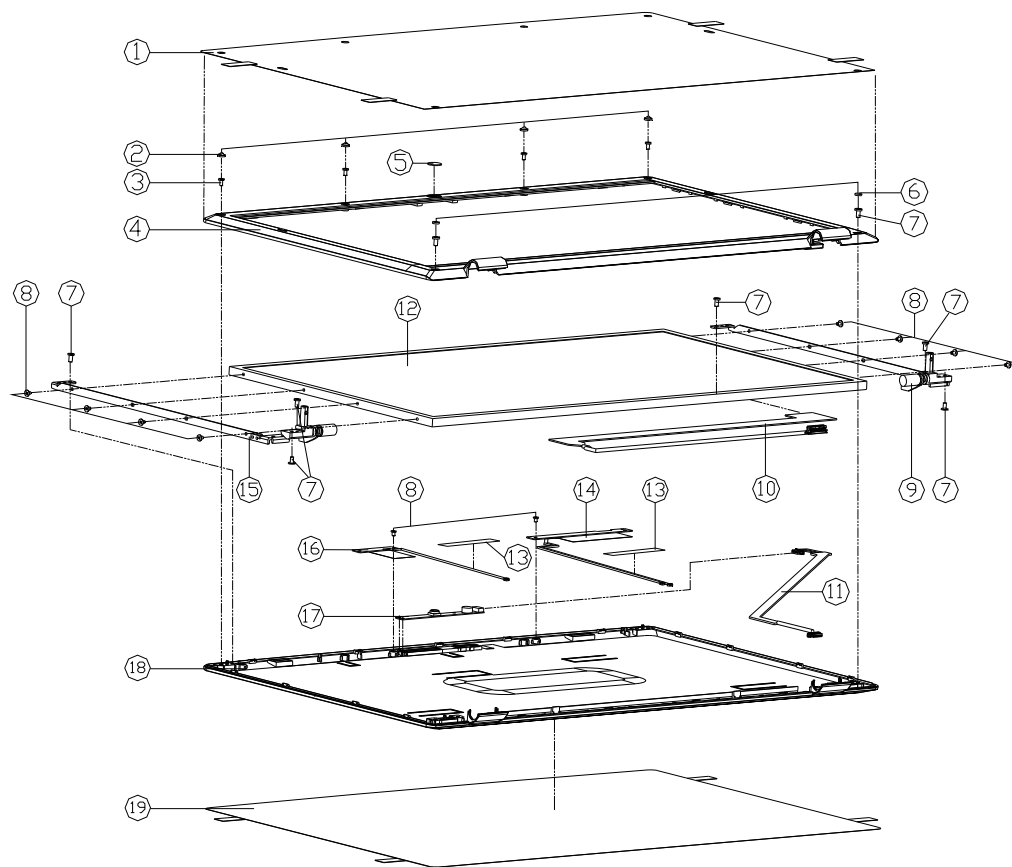
Figure A - 3
Combo

DVD

Figure A - 4
DVD



LCD

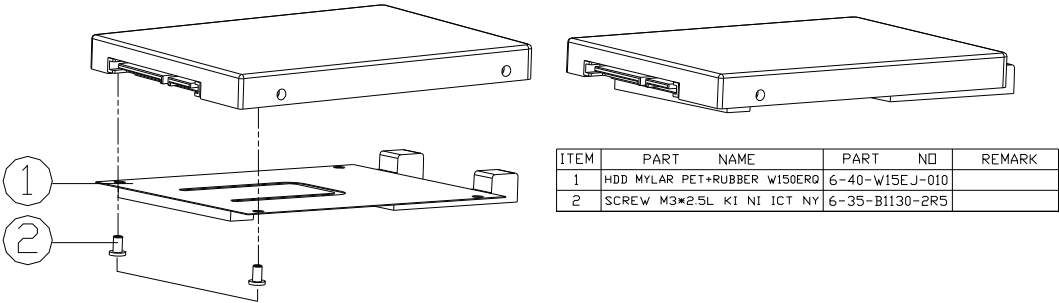


ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT CASE PROTECT MYLAR PET B7110	6-40-B7118-012	
2	FRONT COVER (HARD) RUBBER SLICEN 60 B7110	6-47-B7111-033	
3	SCREW M2.5XSL K1 BK/Z 1CT NY	6-35-B6120-5R0	
4	LCD FRONT COVER MODULE B7110	6-39-B7111-012	
5	LCD FRONT COVER AS IN NO. 1 AND 2 AND 3 AND 4 AND 5 AND 6 AND 7 AND 8 AND 9 AND 10 AND 11 AND 12 AND 13 AND 14 AND 15 AND 16 AND 17 AND 18 AND 19	6-42-B7111-012	OPTION
6	W/O CCD LENS PC B7110	6-42-B7111-020	OPTION
7	FRONT RUBBER (HARD) SILICON 60PVT1 B7110	6-47-B7111-021	
8	SCREW M2.5XSL K1 BK/Z 1CT NY	6-35-B6125-5RA	
9	SCREW M2.5XSL K1 NI 1CT NY (00-445,01-04)	6-35-B1120-3RE	
10	HINGE R (SECC+SK7) (PVT)B7110	6-33-B7111-011	
11	HINGE L (SECC+SK7) (PVT)B7110	6-33-B7111-011	
12	WIRE CABLE FOR LCD (HARD) RUBBER SLICEN 60 B7110	6-43-W17E1-011-C	FOR W170H/HR
13	WIRE CABLE FOR LCD (HARD) RUBBER SLICEN 60 B7110	6-43-W17E1-011-C	FOR W170ER
14	WIRE CABLE FOR LCD (HARD) RUBBER SLICEN 60 B7110	6-43-W17E1-011-C	FOR W170H/HR
15	WIRE CABLE FOR LCD (HARD) RUBBER SLICEN 60 B7110	6-43-W17E1-011-C	FOR W170ER
16	LCD 17.3" HD LG LPT7300-FL03 QLED 6.5" W	6-50-NA160-L07	OPTION
17	LCD 17.3" HD LG LPT7300-FL03 QLED 6.5" W	6-50-NB260-D00	OPTION
18	LCD 17.3" HD LG LPT7300-FL03 QLED 6.5" W	6-50-NB260-D01	OPTION
19	LCD 17.3" HD LG LPT7300-FL03 QLED 6.5" W	6-50-NA160-L02	OPTION
20	LCD 17.3" HD LG LPT7300-FL03 QLED 6.5" W	6-50-NB258-N00	OPTION
21	LCD 17.3" HD LG LPT7300-FL03 QLED 6.5" W	6-50-NA160-L00	OPTION
22	LCD 17.3" HD LG LPT7300-FL03 QLED 6.5" W	6-50-NA158-D00	OPTION
23	LCD 17.3" HD LG LPT7300-FL03 QLED 6.5" W	6-50-NA158-M01	OPTION
24	LCD 17.3" HD LG LPT7300-FL03 QLED 6.5" W	6-50-NB260-L00	OPTION
25	TAPE MYLAR (CB) MYLAR M550J	6-40-M55J2-020	
26	ADHESIVE TAPE FOR LCD (HARD) RUBBER SLICEN 60 B7110	6-23-B7110-022	
27	ADHESIVE TAPE FOR LCD (HARD) RUBBER SLICEN 60 B7110	6-23-7B51M-031	
28	ADHESIVE TAPE FOR LCD (HARD) RUBBER SLICEN 60 B7110	6-23-7B51E-010	
29	HINGE L (SECC+SK7) B7110	6-33-B7111-021	
30	HINGE R (SECC+SK7) B7110	6-33-B7111-021	
31	HINGE L (SECC+SK7) B7110	6-23-B7110-031	
32	HINGE R (SECC+SK7) B7110	6-23-B7110-031	
33	HINGE L (SECC+SK7) B7110	6-88-ES10C-4904	OPTION
34	HINGE R (SECC+SK7) B7110	6-88-ES10C-4904	OPTION
35	HINGE L (SECC+SK7) B7110	6-88-W25UC-5100	OPTION
36	HINGE R (SECC+SK7) B7110	6-88-W25UC-5100	OPTION
37	HINGE L (SECC+SK7) B7110	6-88-W25CC-4900	OPTION
38	HINGE R (SECC+SK7) B7110	6-88-W25CC-4900	OPTION
39	HINGE L (SECC+SK7) B7110	6-88-XS10C-4900	OPTION
40	HINGE R (SECC+SK7) B7110	6-88-XS10C-4900	OPTION
41	HINGE L (SECC+SK7) B7110	6-88-ES10C-4900	OPTION
42	HINGE R (SECC+SK7) B7110	6-88-ES10C-4900	OPTION
43	LCD BACK COVER MODULE B7110	6-39-B7111-022	
44	LCD BACK CASE PROTECT MYLAR PET B7110	6-40-B7111-012	

Figure A - 5
LCD

HDD

Figure A - 6
HDD



Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the **W170ER** 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>VGA NVVDD Cecoupling - Page B - 20</i>	<i>5VS, 3VS, 3.3VM, 1.5VS_CPU - Page B - 38</i>
<i>Ivy Bridge Processor 1/7 - Page B - 3</i>	<i>PantherPoint - M 1/9 - Page B - 21</i>	<i>VDD3, VDD5 - Page B - 39</i>
<i>Ivy Bridge Processor 2/7 - Page B - 4</i>	<i>PantherPoint - M 2/9 - Page B - 22</i>	<i>Power 0.85VS, 1.8VS - Page B - 40</i>
<i>Ivy Bridge Processor 3/7 - Page B - 5</i>	<i>PantherPoint - M 3/9 - Page B - 23</i>	<i>Power 1.5V/0.75V/PEX_VDD - Page B - 41</i>
<i>Ivy Bridge Processor 4/7 - Page B - 6</i>	<i>PantherPoint - M 4/9 - Page B - 24</i>	<i>Power 1.05VS - Page B - 42</i>
<i>Ivy Bridge Processor 5/7 - Page B - 7</i>	<i>PantherPoint - M 5/9 - Page B - 25</i>	<i>Power V-Core1 - Page B - 43</i>
<i>Ivy Bridge Processor 6/7 - Page B - 8</i>	<i>PantherPoint - M 6/9 - Page B - 26</i>	<i>Power V-Core2 - Page B - 44</i>
<i>Ivy Bridge Processor 7/7 - Page B - 9</i>	<i>PantherPoint - M 7/9 - Page B - 27</i>	<i>VGA NVVDD - Page B - 45</i>
<i>DDR3 SO-DIMM_0 - Page B - 10</i>	<i>PantherPoint - M 8/9 - Page B - 28</i>	<i>AC_IN, Charger - Page B - 46</i>
<i>DDR3 SO-DIMM_1 - Page B - 11</i>	<i>PantherPoint - M 9/9 - Page B - 29</i>	<i>W150ERQ Audio Board - Page B - 47</i>
<i>Panel, Inverter, CRT - Page B - 12</i>	<i>WLAN, 3G, Mini PCIE - Page B - 30</i>	<i>W150ERQ Click Board - Page B - 48</i>
<i>VGA PCI-E Interface - Page B - 13</i>	<i>Charge, TP, FP, Multi-Conn - Page B - 31</i>	<i>W150ERQ Fingerprint Board - Page B - 49</i>
<i>VGA Frame Buffer Interface - Page B - 14</i>	<i>eSATA/USB 3.0 Connector - Page B - 32</i>	<i>W170ER LED & VGA SW Board - Page B - 50</i>
<i>VGA Frame Buffer A - Page B - 15</i>	<i>Card Reader / LAN RTL8411 - Page B - 33</i>	<i>W170ER Power Switch Board - Page B - 51</i>
<i>VGA Frame Buffer A - Page B - 16</i>	<i>SATA HDD, LED, Hotkey, LID SW - Page B - 34</i>	<i>Sequence - Page B - 52</i>
<i>VGA Frame Buffer B - Page B - 17</i>	<i>HDMI, RJ45 - Page B - 35</i>	
<i>VGA Frame Buffer B - Page B - 18</i>	<i>Audio Codec VT1802P - Page B - 36</i>	
<i>VGA I/O - Page B - 19</i>	<i>KBC-ITE IT8518E - Page B - 37</i>	

Table B - 1
**SCHEMATIC
DIAGRAMS**

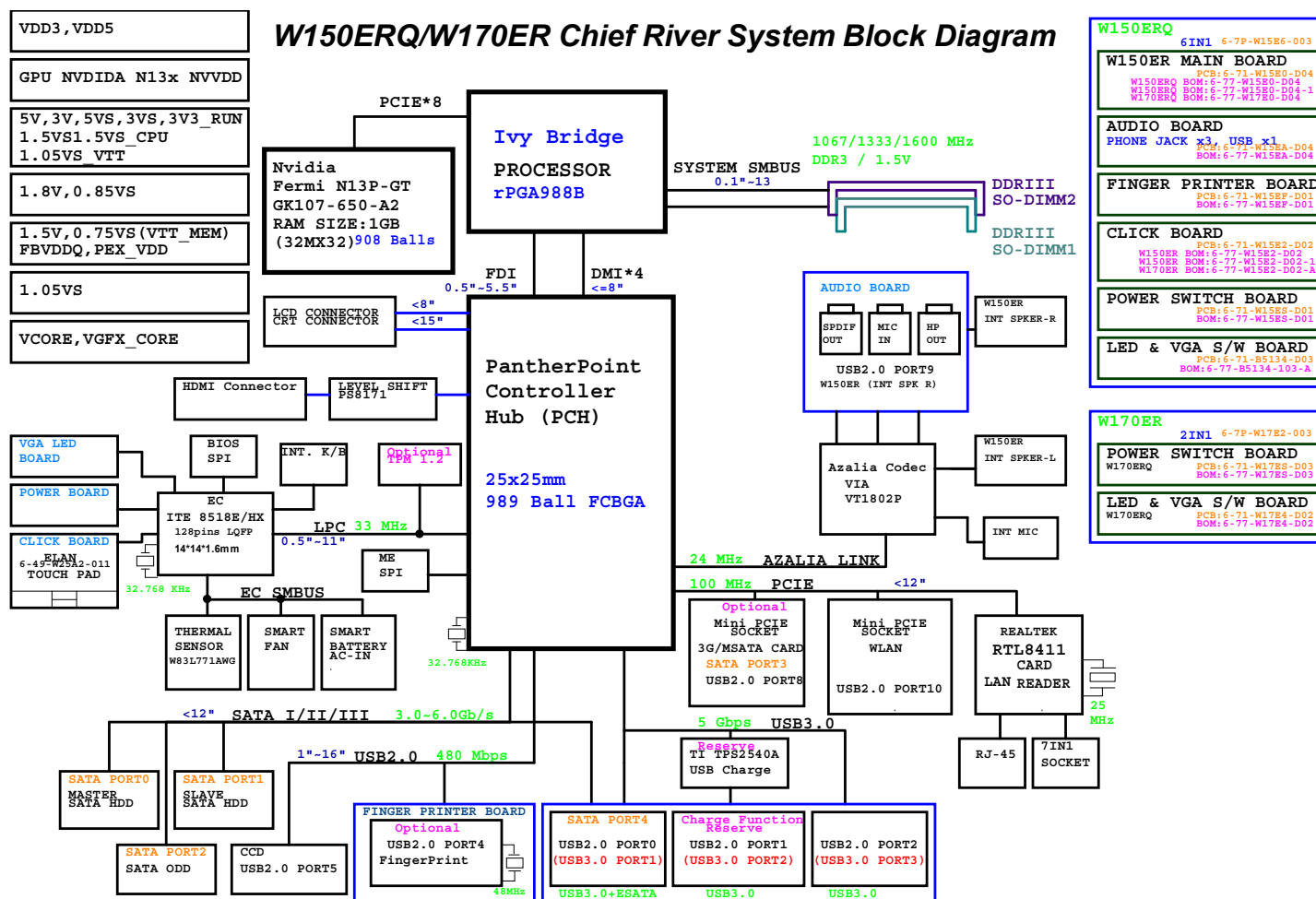


Version Note

The schematic diagrams in this chapter are based upon version 6-7P-W17E2-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

B.Schematic Diagrams

Sheet 1 of 51
System Block
Diagram



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

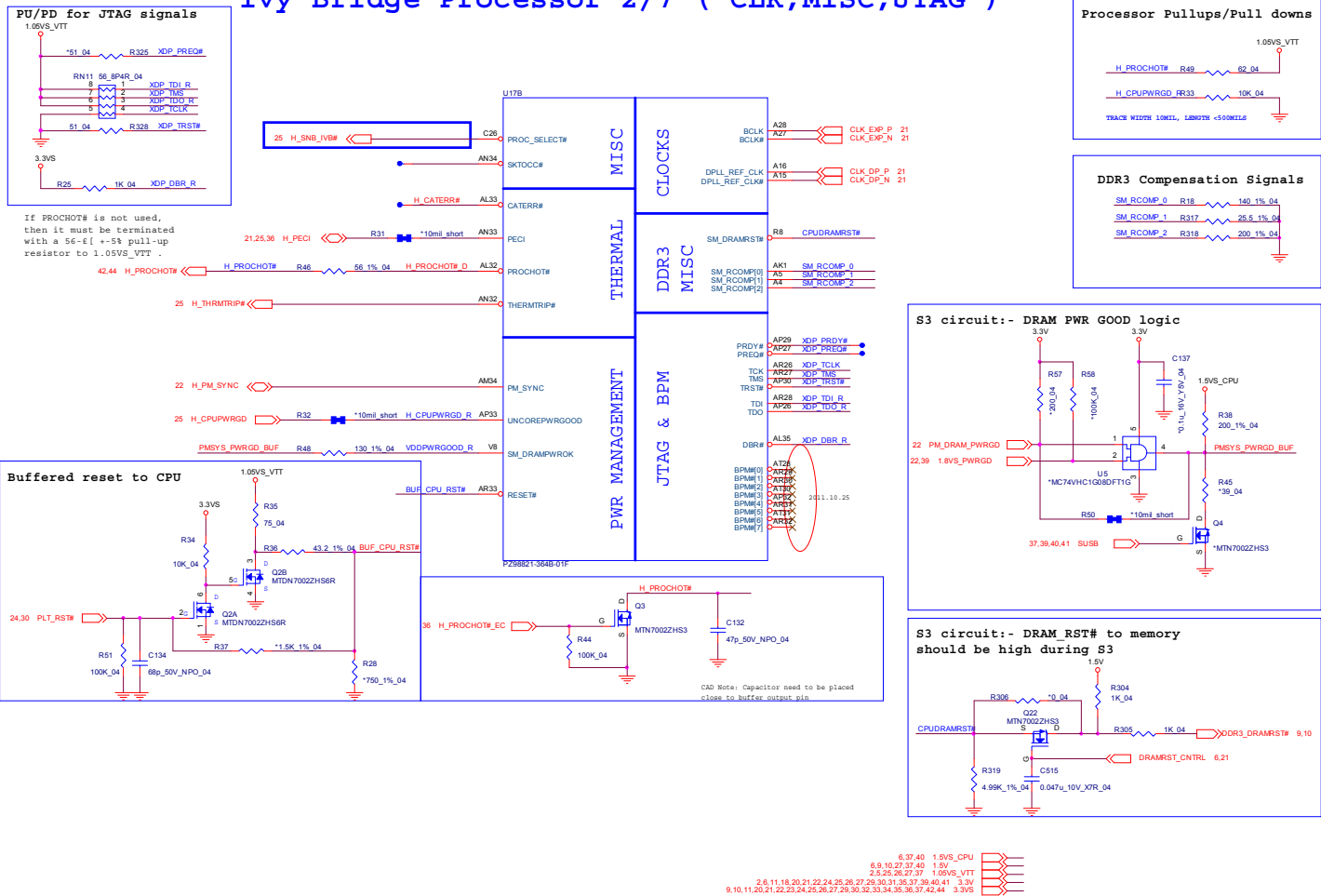


Schematic Diagrams

Ivy Bridge Processor 2/7

Sheet 3 of 51
Ivy Bridge
Processor 2/7

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



Ivy Bridge Processor 3/7 (DDR3)

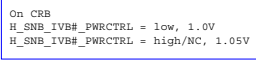


B. Schematic Diagrams

Sheet 5 of 51
Ivy Bridge
Processor 4/7



Ivy Bridge Processor 5/7 (GRAPHICS POWER)



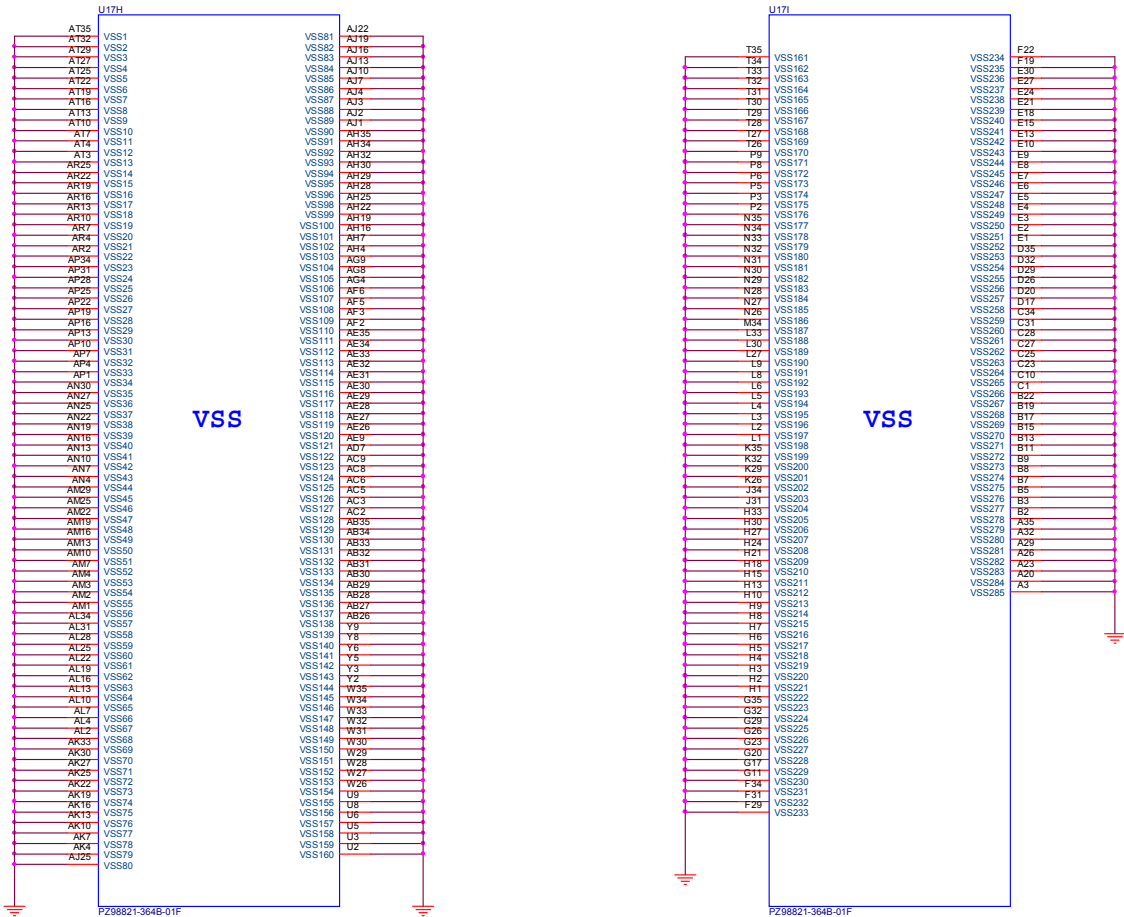
Schematic Diagrams

Ivy Bridge Processor 6/7

Ivy Bridge Processor 6/7 (GND)

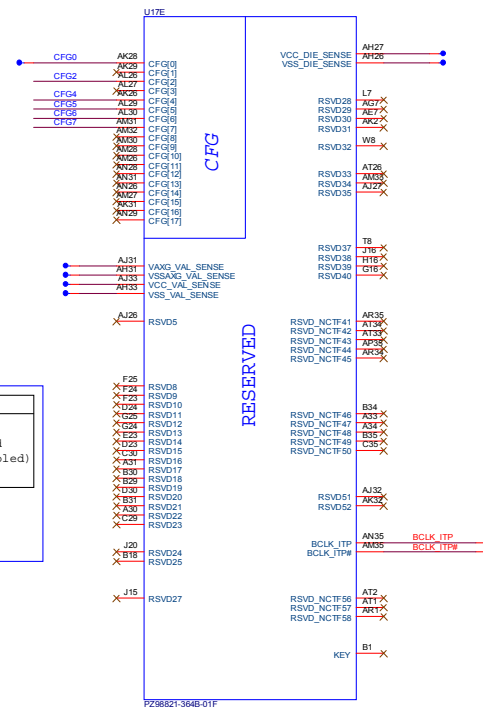
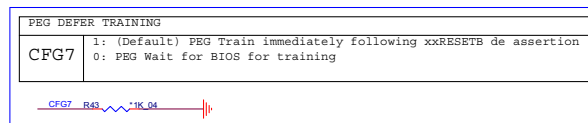
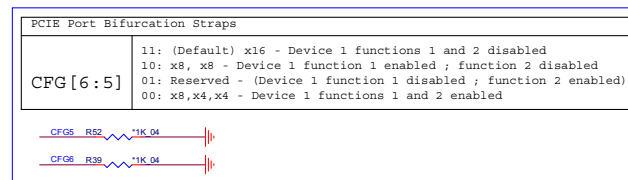
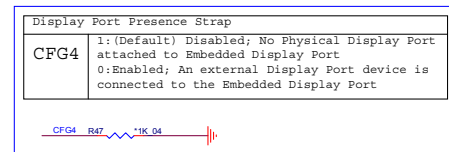
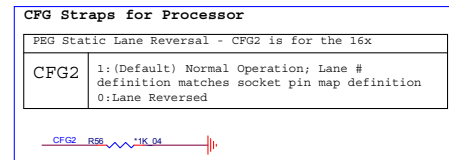
Sheet 7 of 51
Ivy Bridge
Processor 6/7

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



Ivy Bridge Processor 7/7

Ivy Bridge Processor 7/7 (RESERVED)



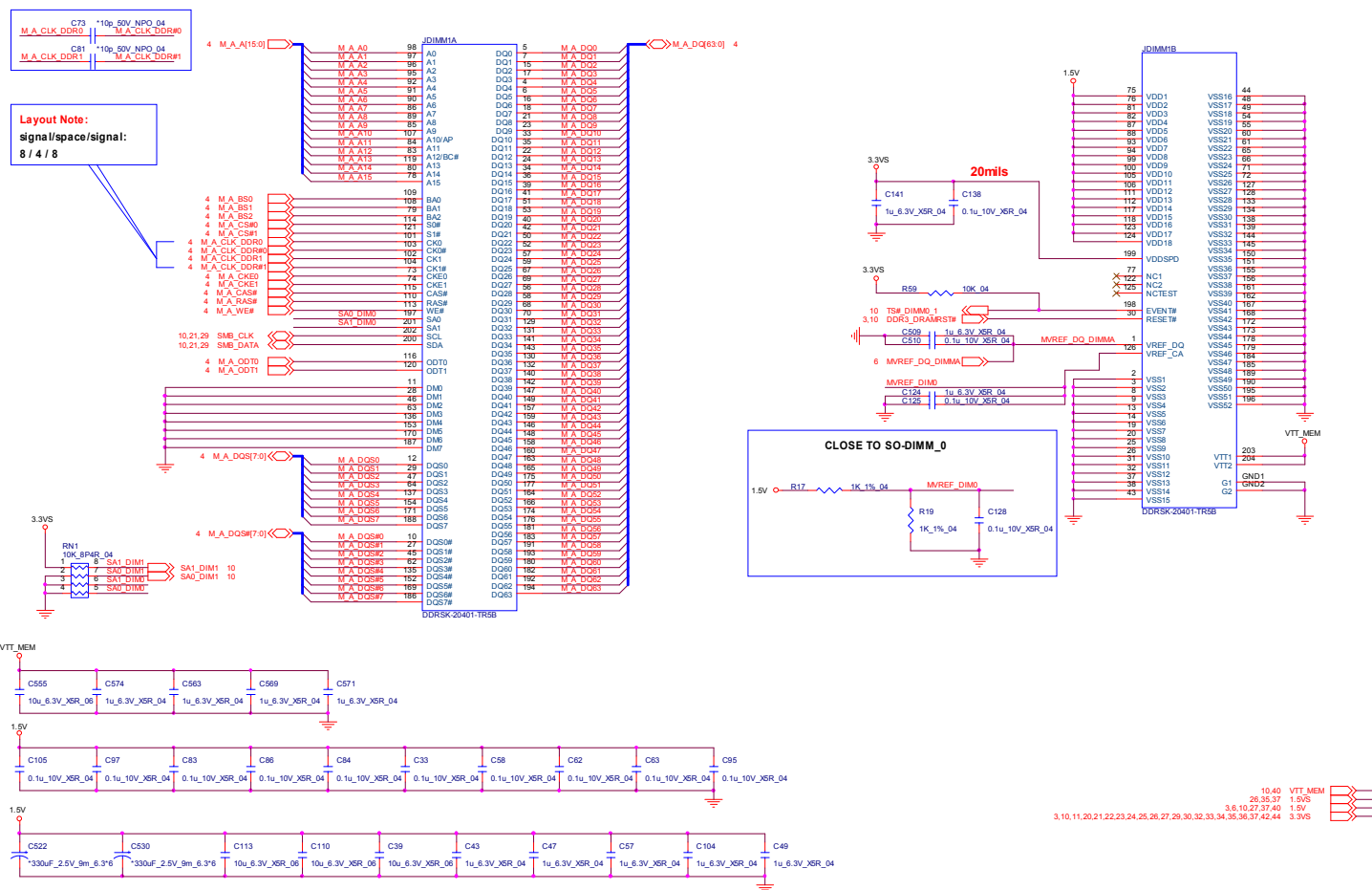
Sheet 8 of 51
Ivy Bridge
Processor 7/7

3, 6, 9, 10, 27, 37, 40 1.5V
2, 3, 6, 11, 18, 20, 21, 22, 24, 25, 26, 27, 29, 30, 31, 35, 37, 39, 40, 41 3.3V

DDR3 SO-DIMM_0

SO-DIMM A

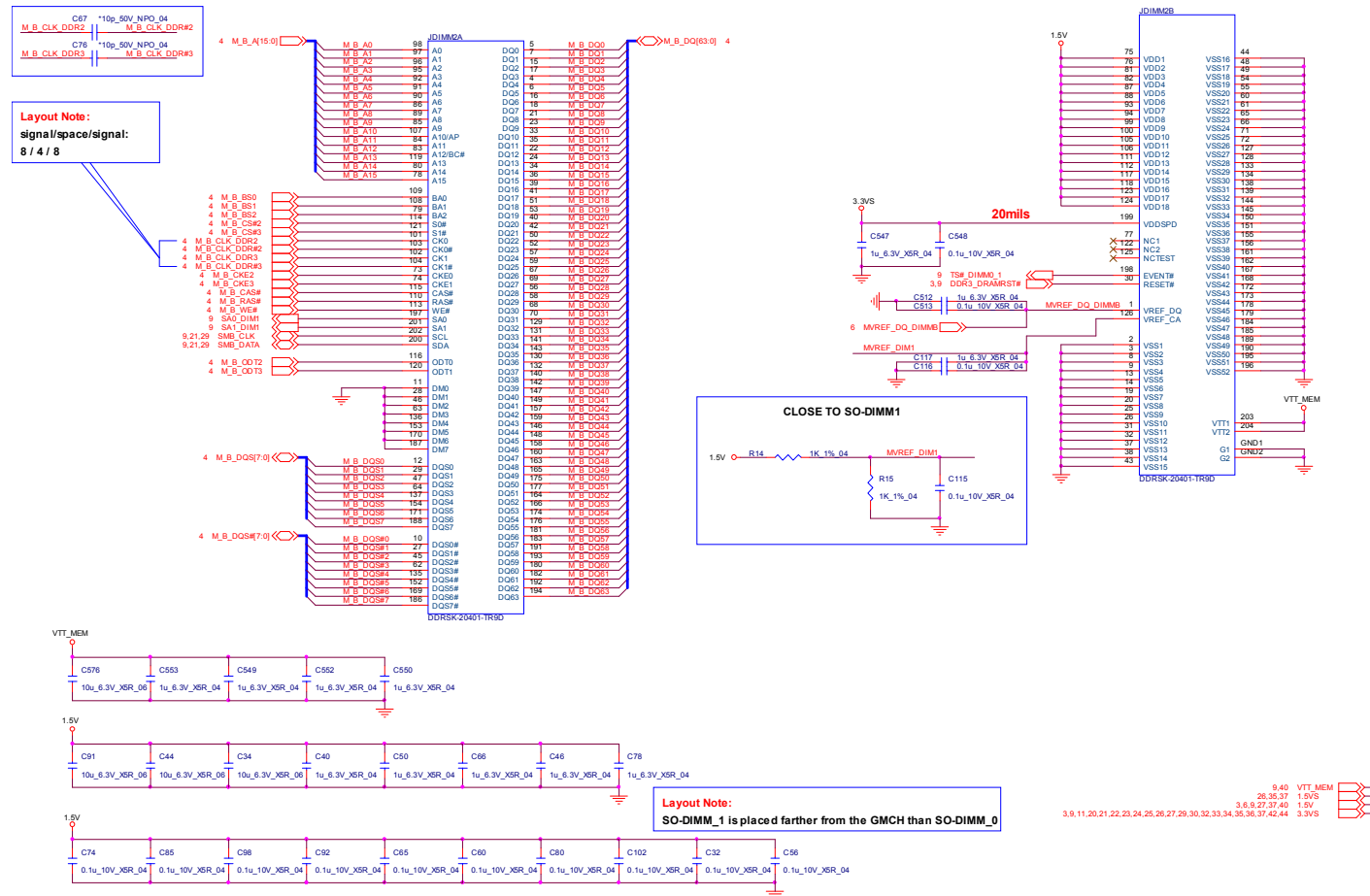
CHANGE TO STANDARD



DDR3 SO-DIMM_1

SO-DIMM B

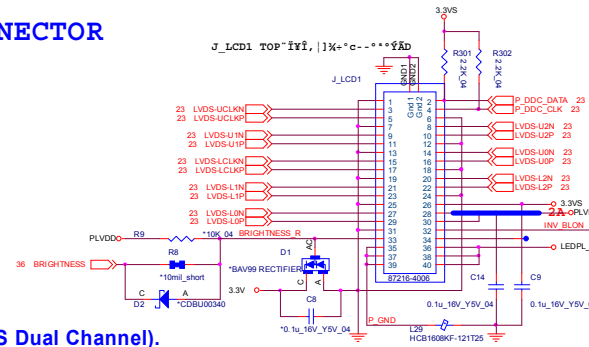
CHANGE TO STANDARD



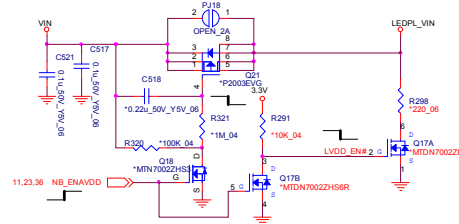
Panel, Inverter, CRT

Sheet 11 of 51
Panel, Inverter,
CRT

PANEL CONNECTOR

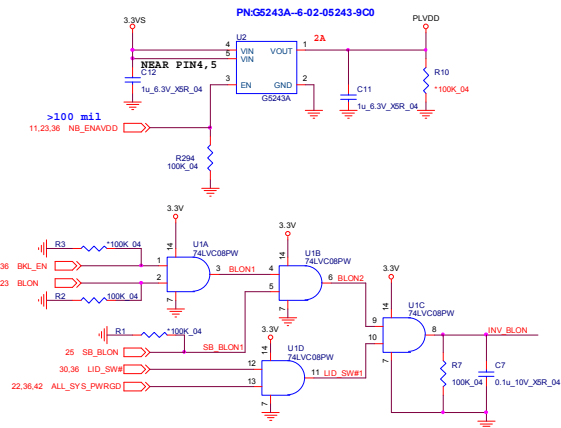


LED PANEL (LVDS Dual Channel).

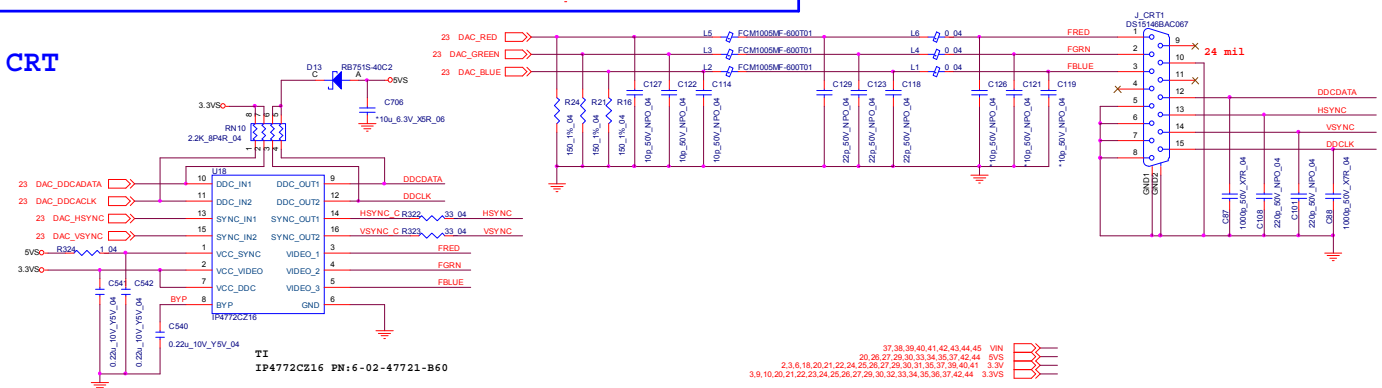


PANEL POWER

W150ERQÄY®694V-0 -G-ú®«OÄ®:q*ý
A & B Y6,¼*®¶i®E**¼OöµV-ñ-ä:Ä|XUL 94V-0
`NViVH0E¶¶|A`E`Ñµipanel**i:q-¼½u,ö**«OÄ®:q*ý

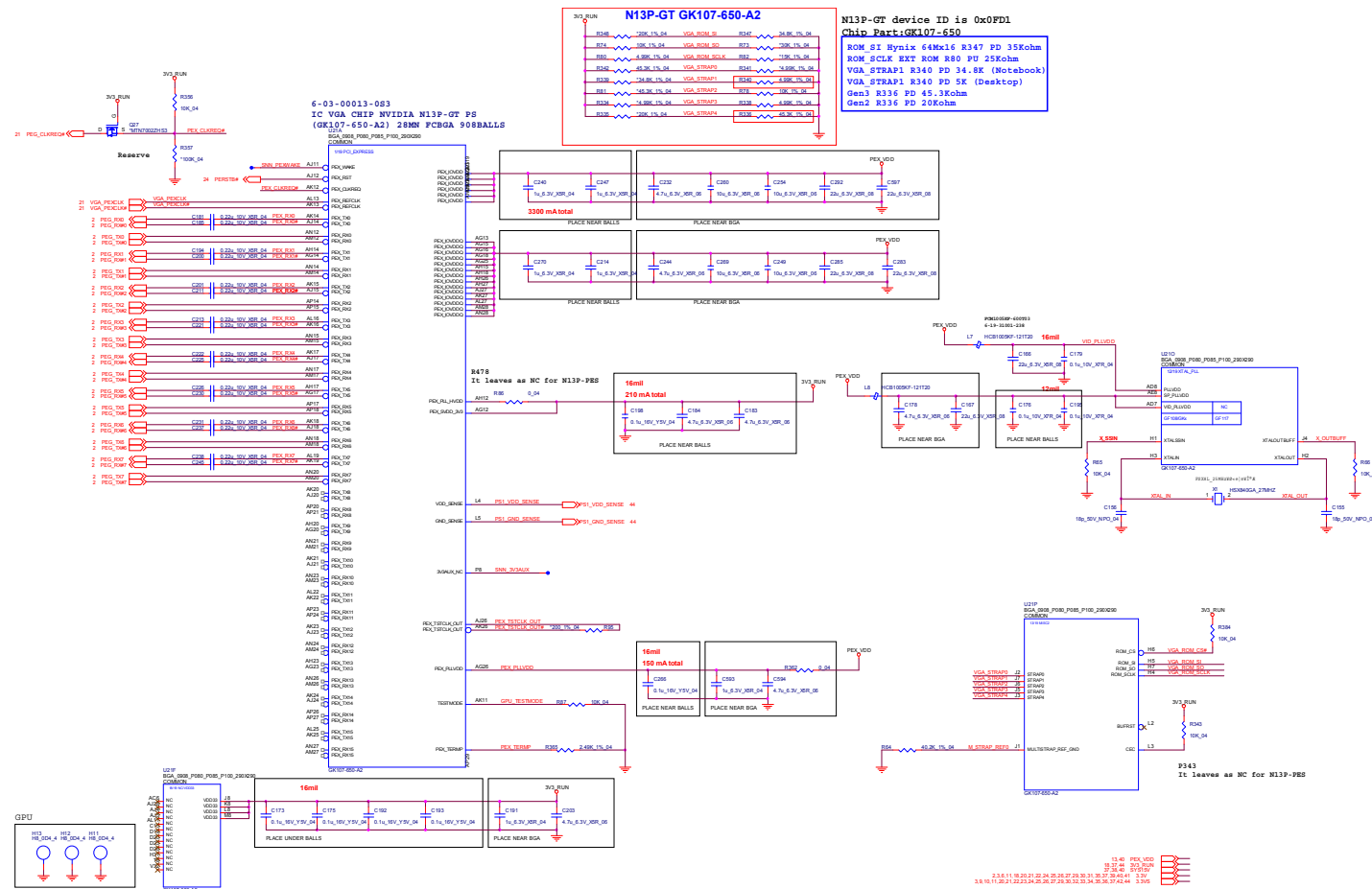


CRT



Schematic Diagrams

VGA PCI-E Interface



Sheet 12 of 51
VGA PCI-E
Interface

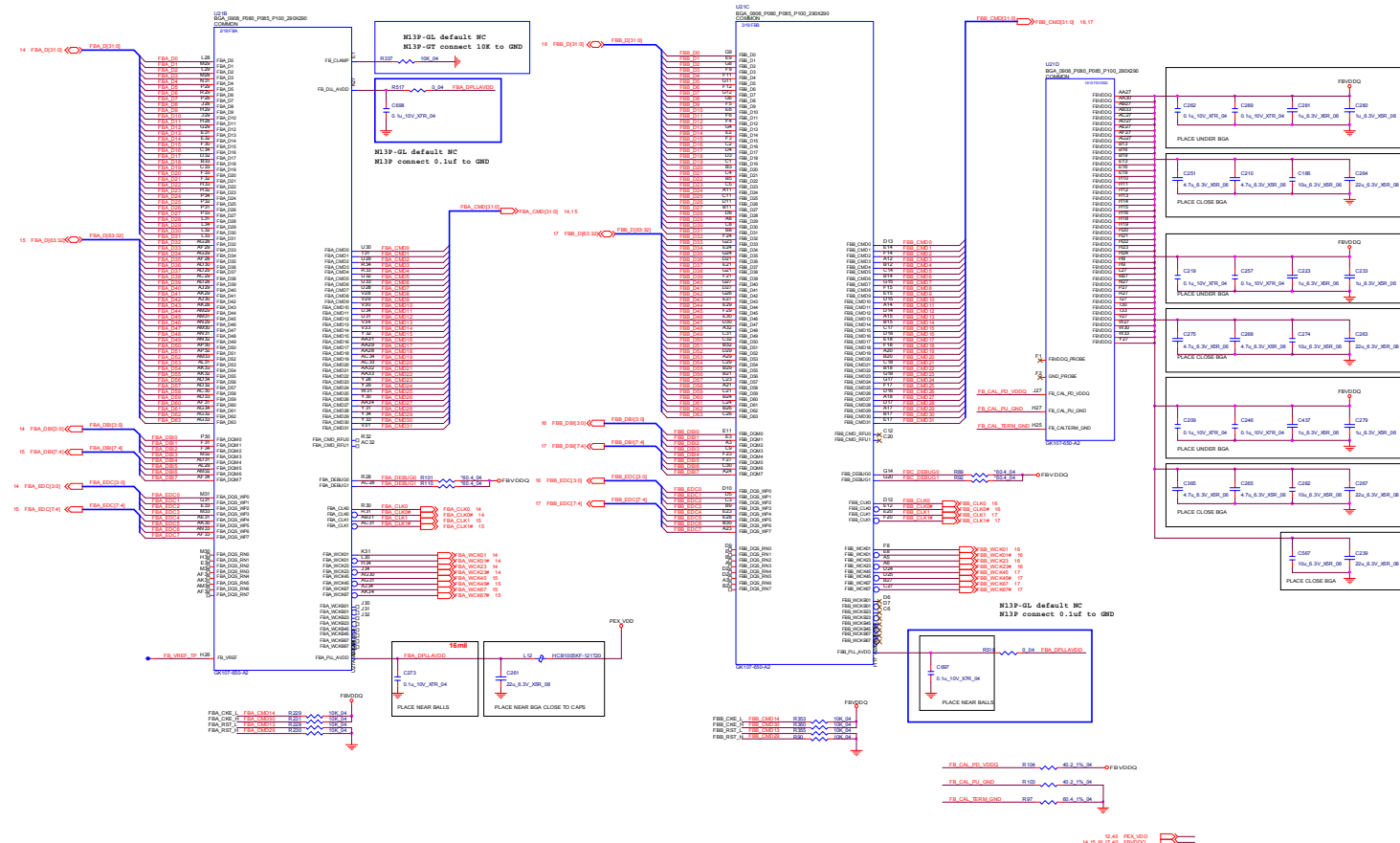
B.Schematic Diagrams

Schematic Diagrams

VGA Frame Buffer Interface

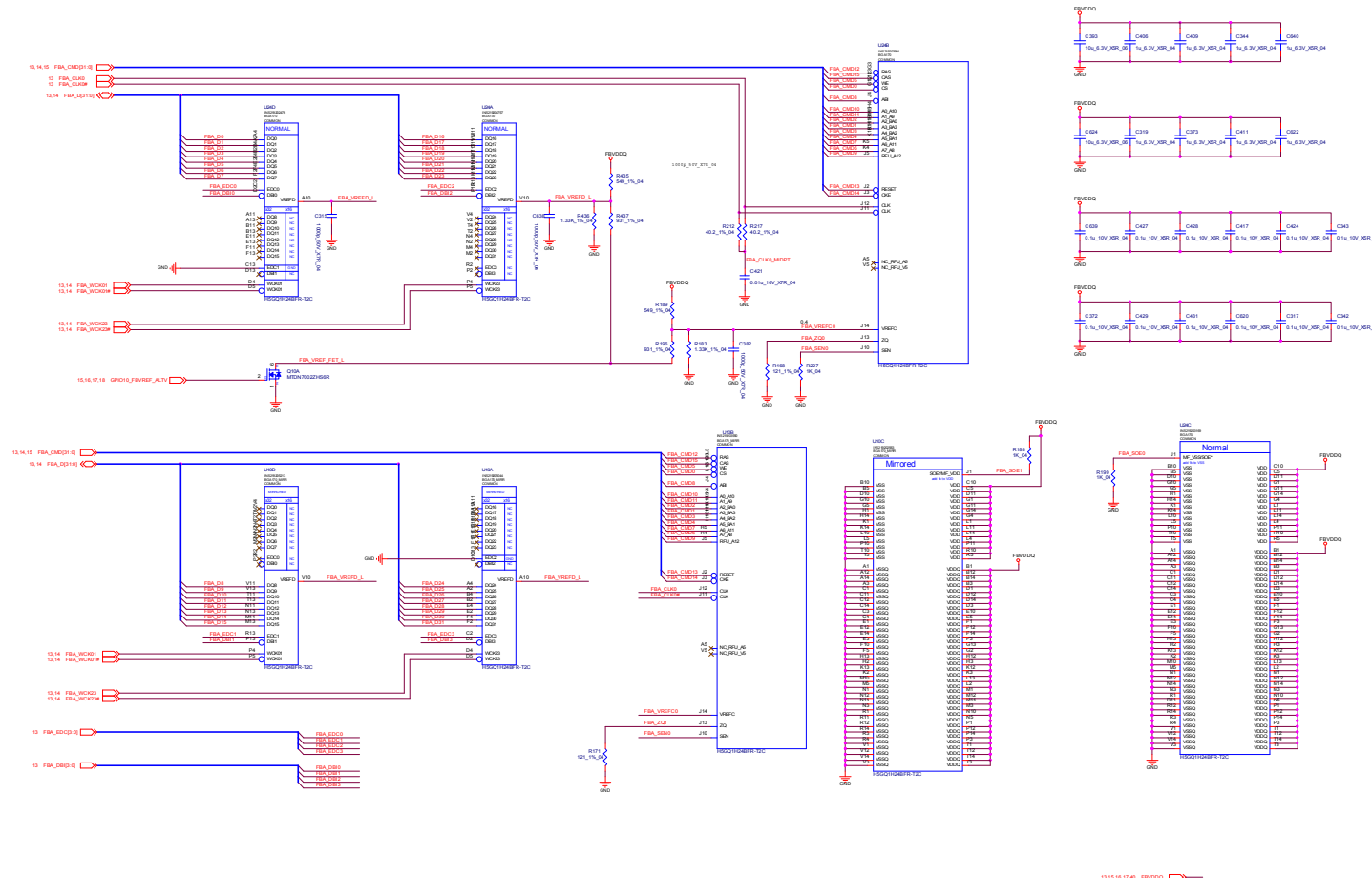
Sheet 13 of 51
VGA Frame Buffer
Interface

Frame Buffer Interface



Schematic Diagrams

VGA Frame Buffer A



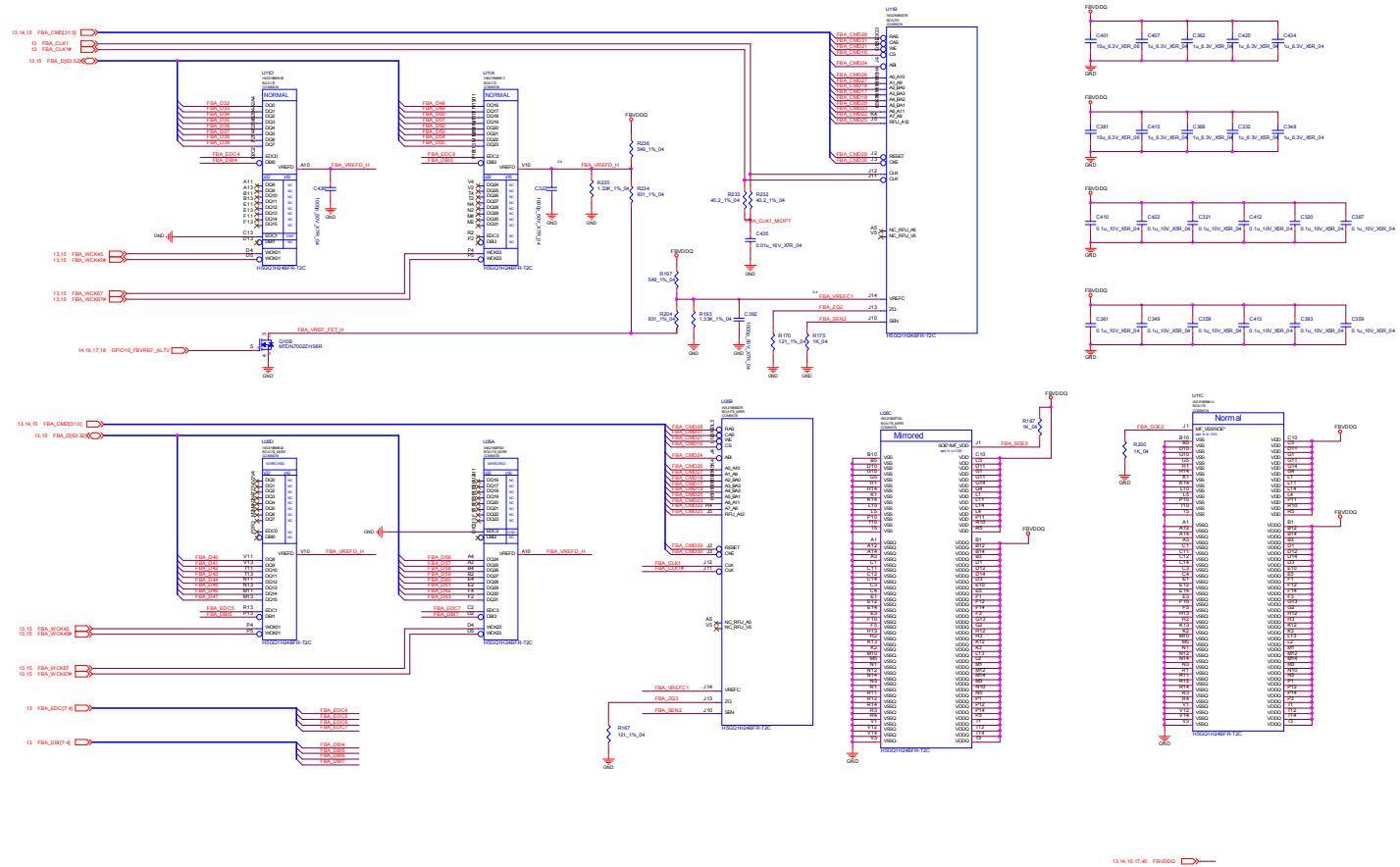
Sheet 14 of 51
VGA Frame Buffer
A

B.Schematic Diagrams

VGA Frame Buffer A

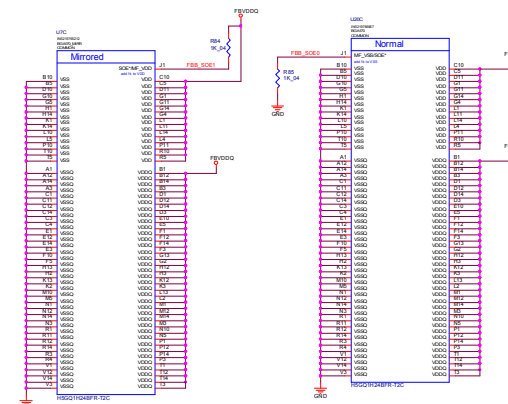
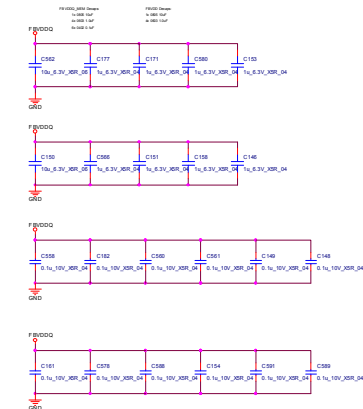
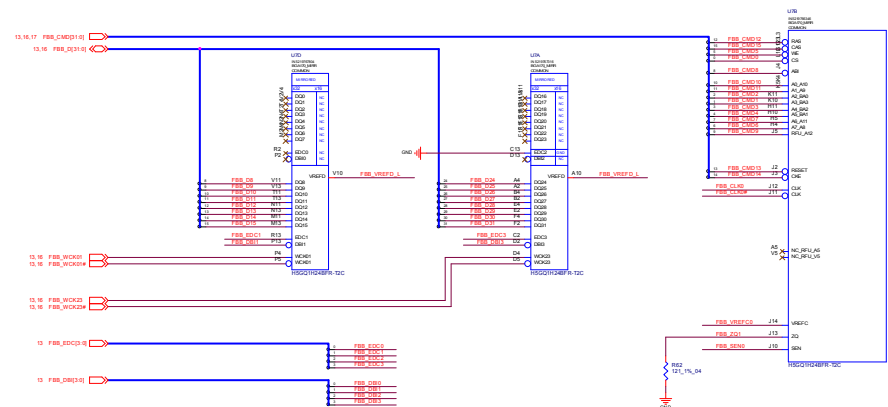
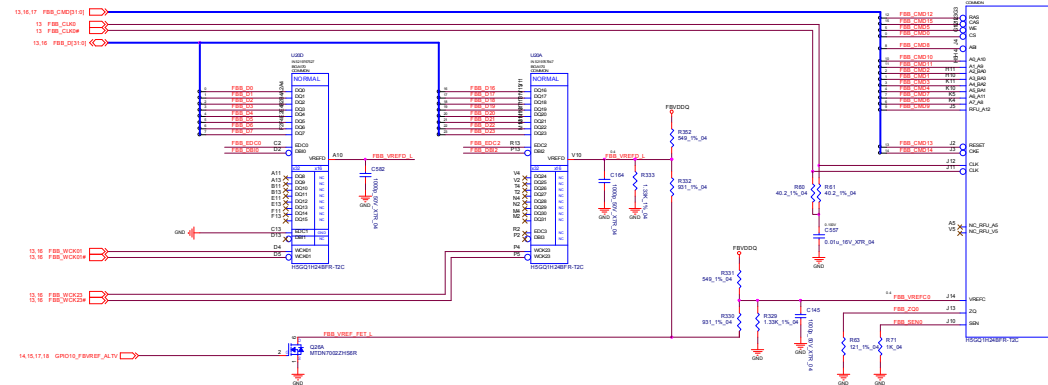
B.Schematic Diagrams

Sheet 15 of 51
VGA Frame Buffer
A



VGA Frame Buffer B

6. Frame Buffer Partition B - Lower Half

13,14,15,17,40 FINDOQ

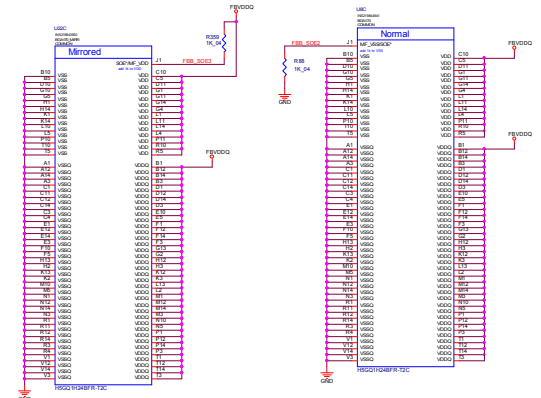
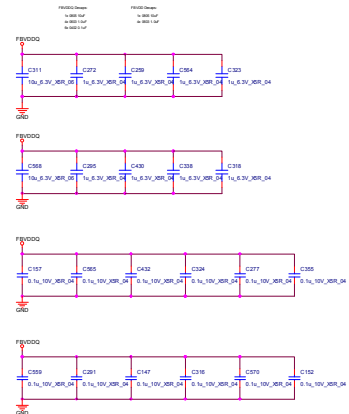
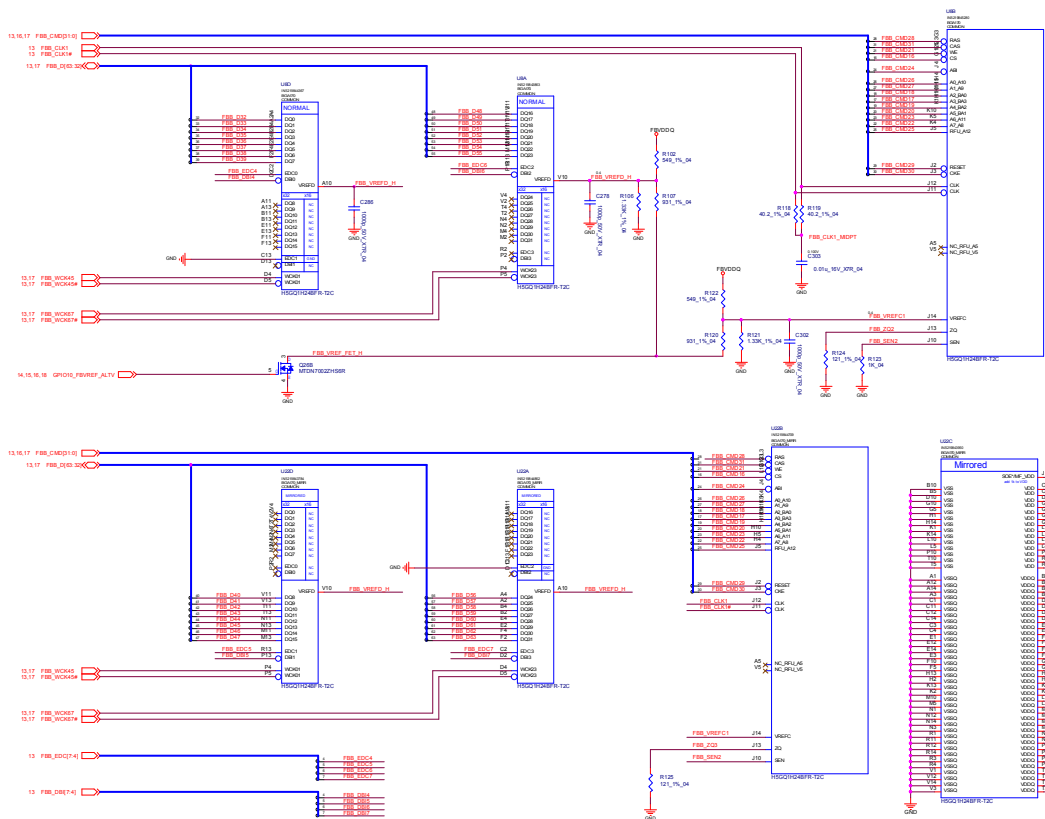
Sheet 16 of 51
VGA Frame Buffer
B

Schematic Diagrams

VGA Frame Buffer B

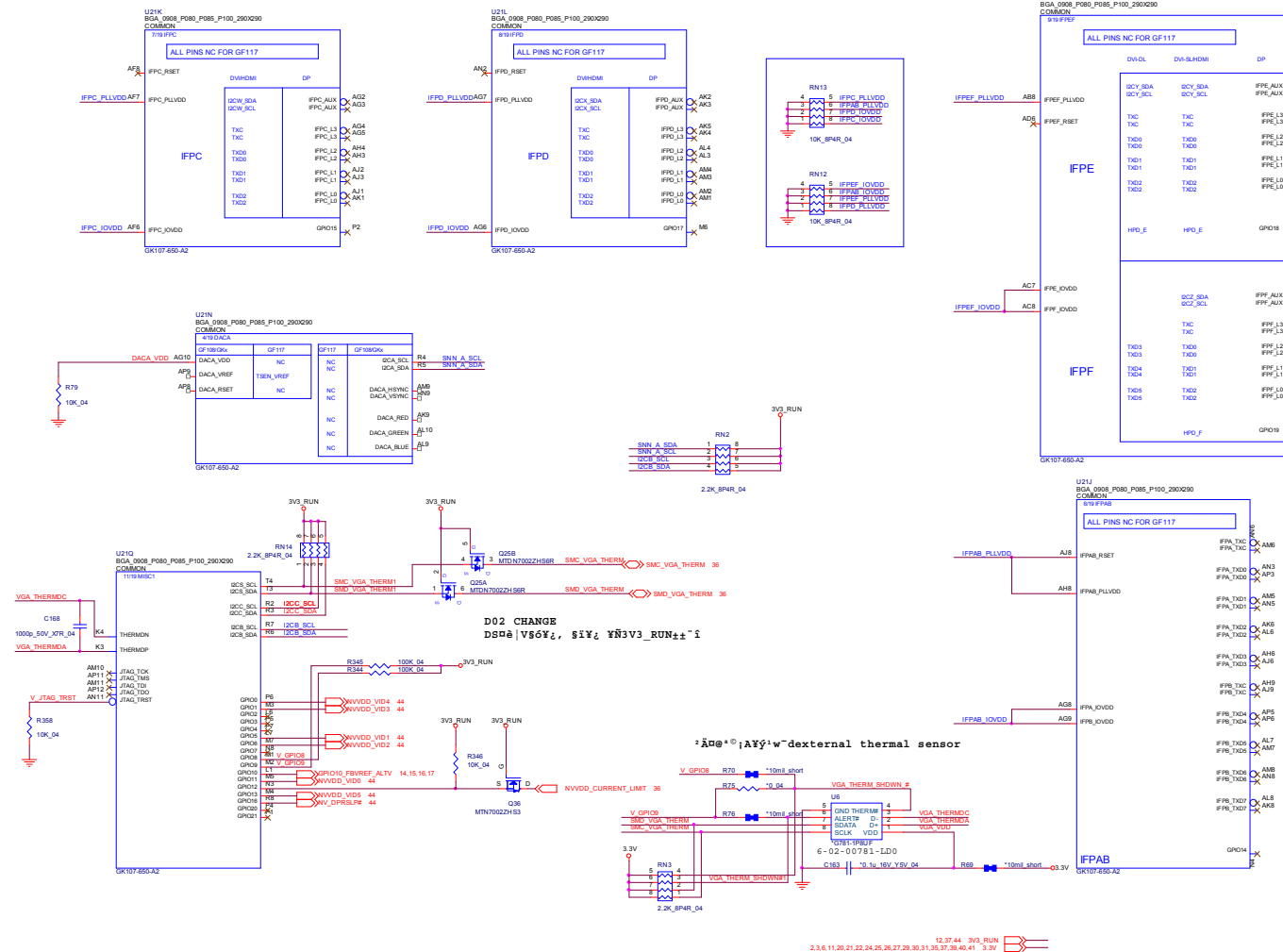
Sheet 17 of 51
VGA Frame Buffer
B

7. Frame Buffer Partition B - Upper Half



13.14, 15, 16, 40 FBVDDQ

VGA I/O

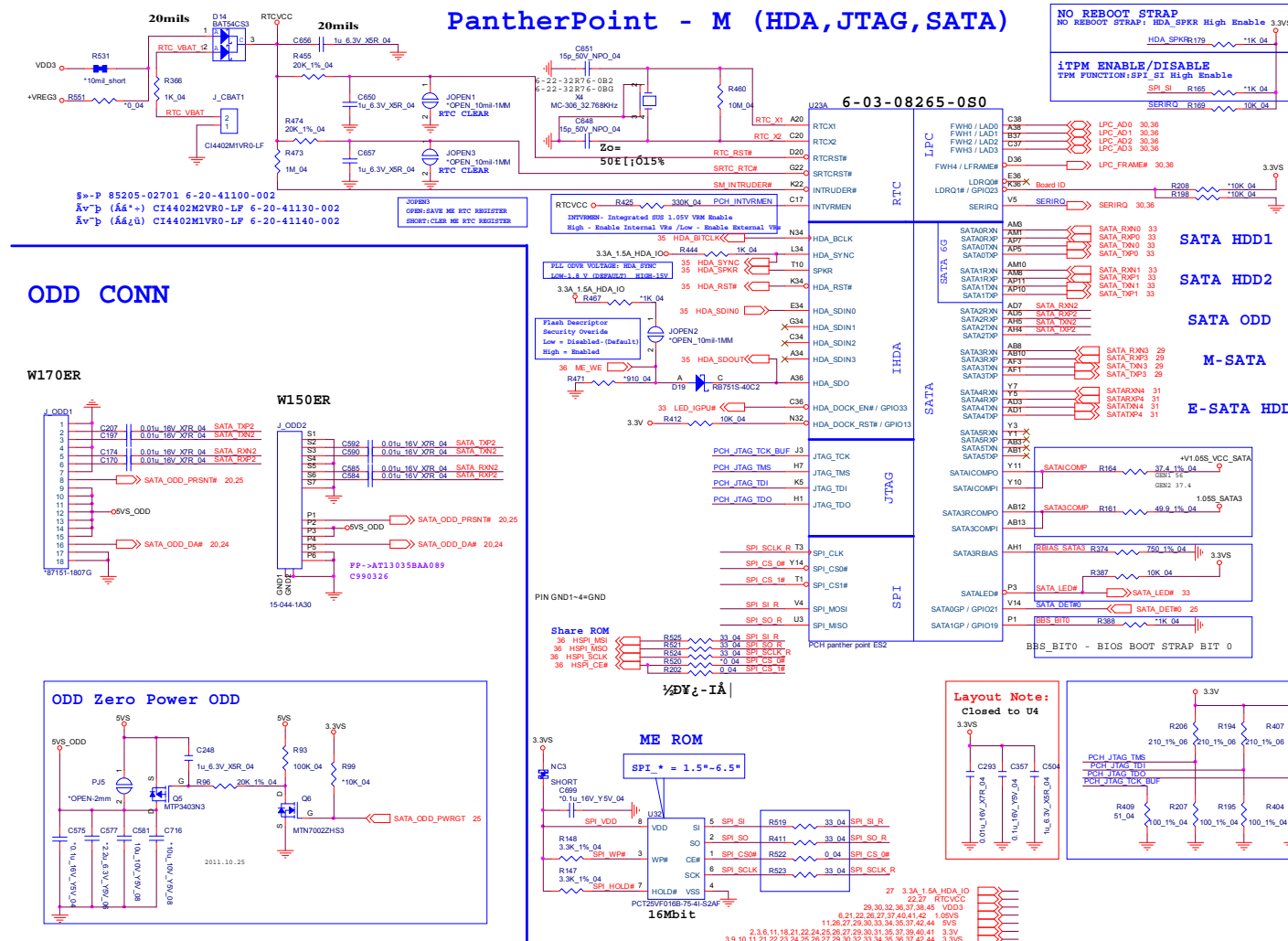


Sheet 18 of 51
VGA I/O

VGA NVVDD Cdecoupling

Sheet 19 of 51
VGA NVVDD
Cecoupling

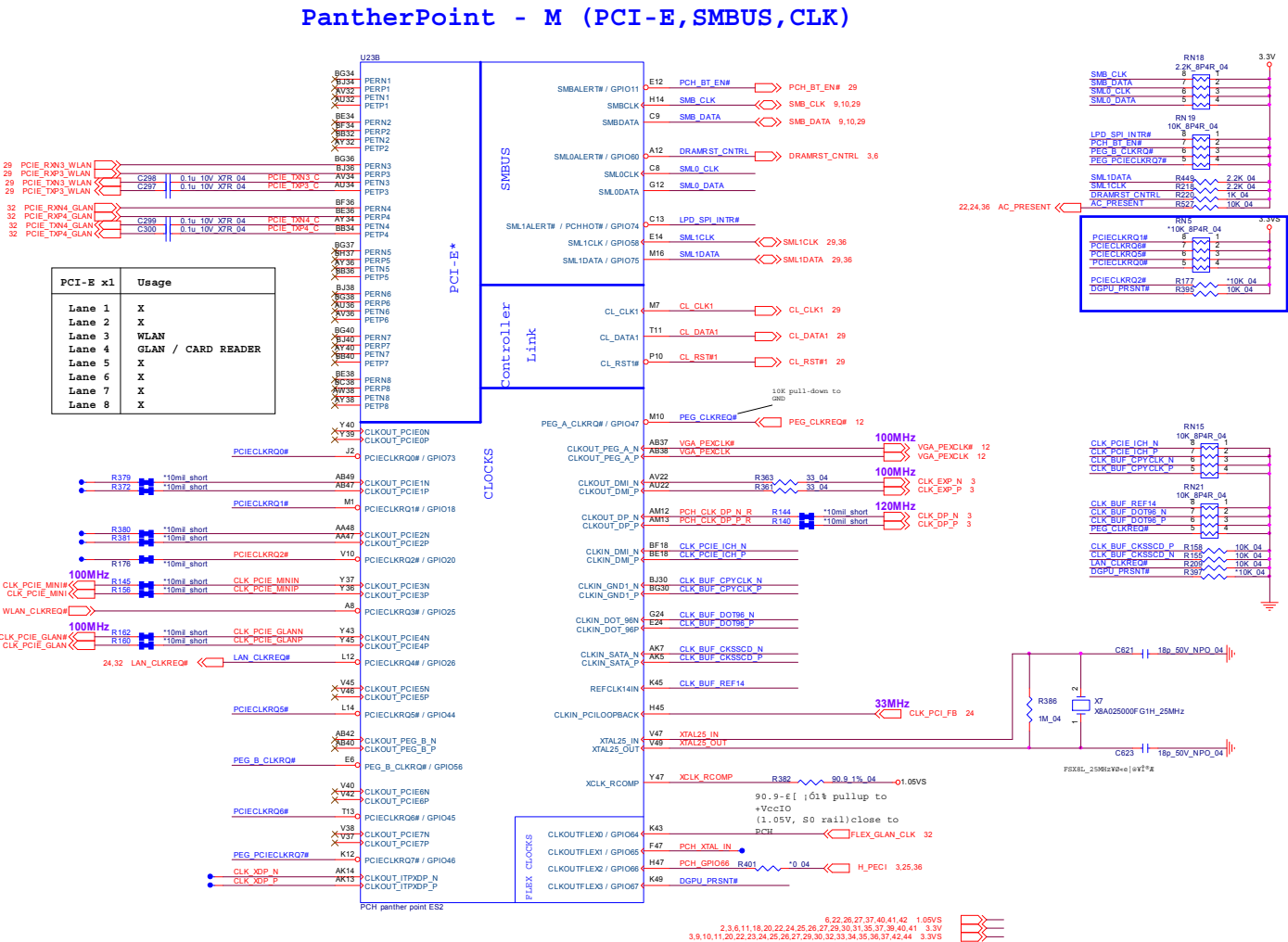




Schematic Diagrams

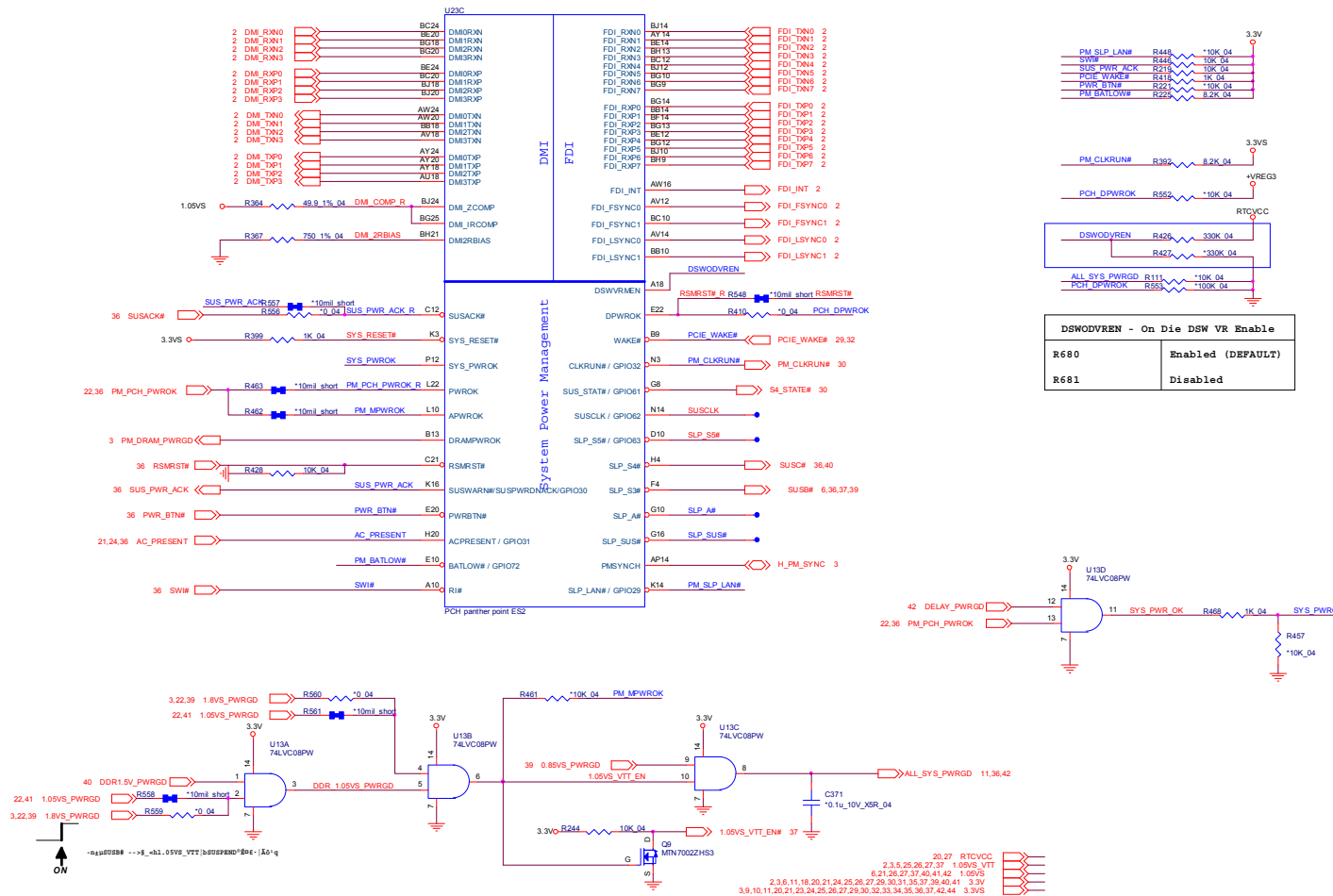
PantherPoint - M 2/9

Sheet 21 of 51
PantherPoint -
M 2/9



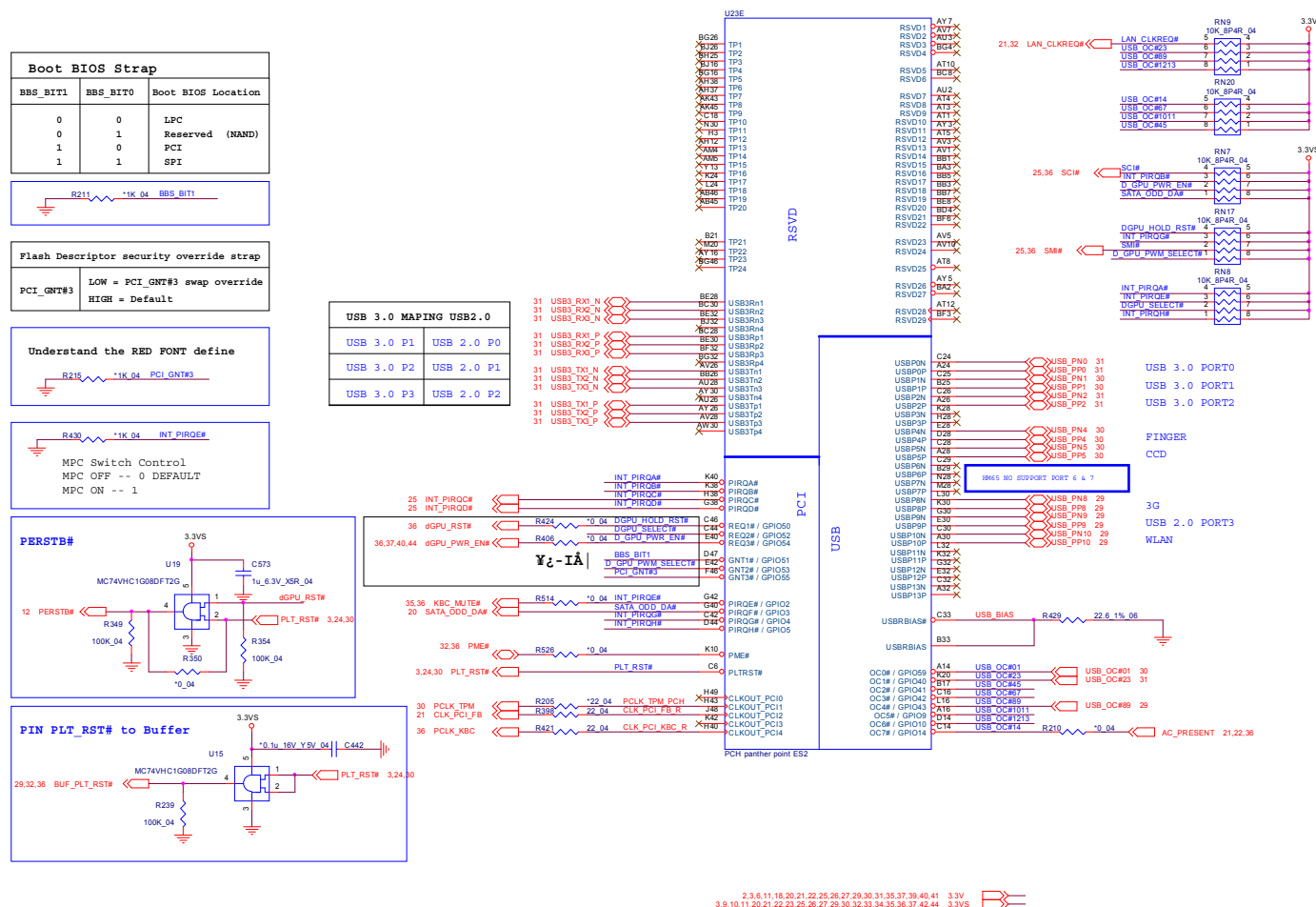
PantherPoint - M 3/9

PantherPoint -M (DMI,FDI,GPIO)



Sheet 22 of 51
PantherPoint -
M 3/9

PantherPoint -M (PCI,USB,NVRAM)

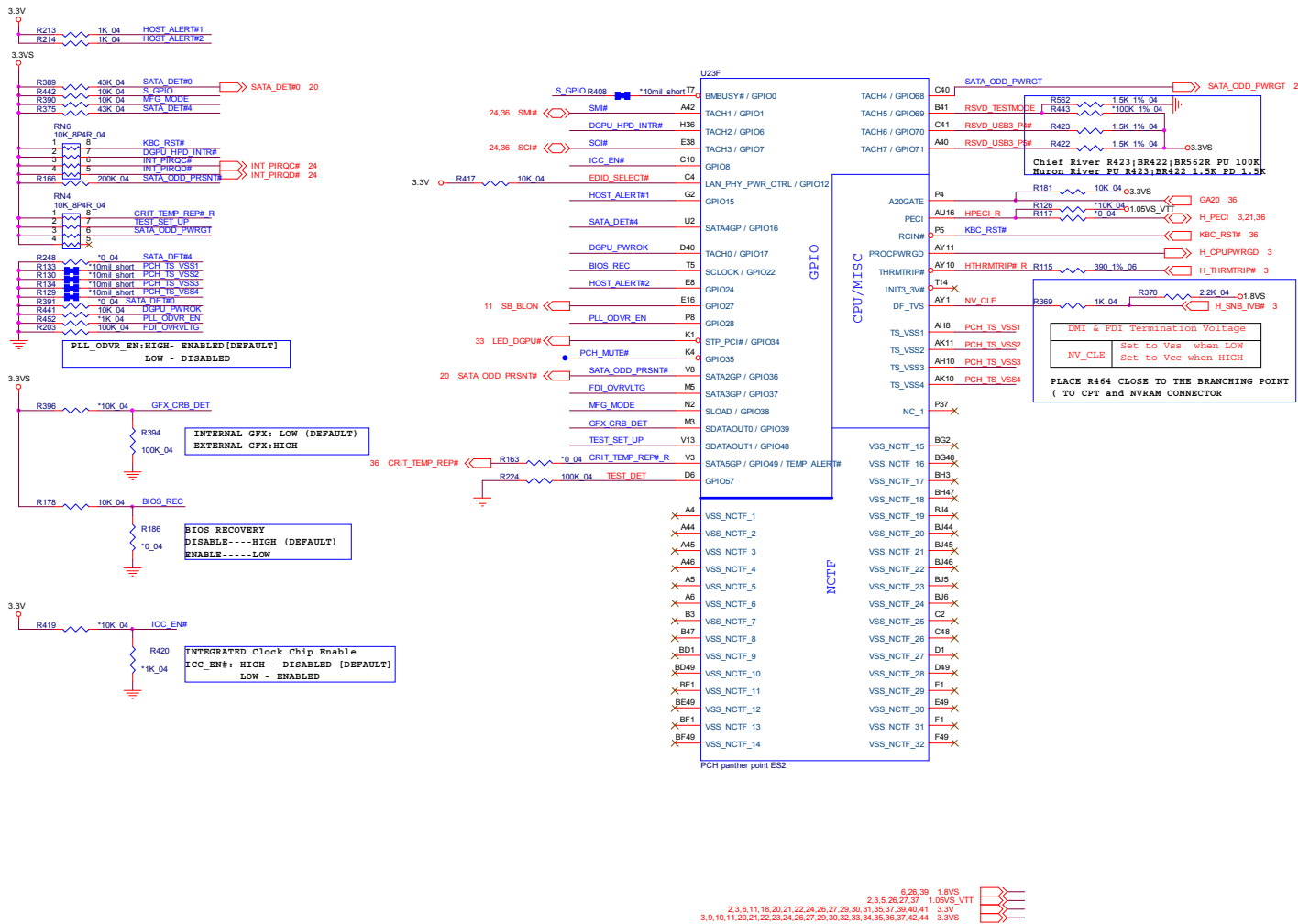


Schematic Diagrams

PantherPoint - M 6/9

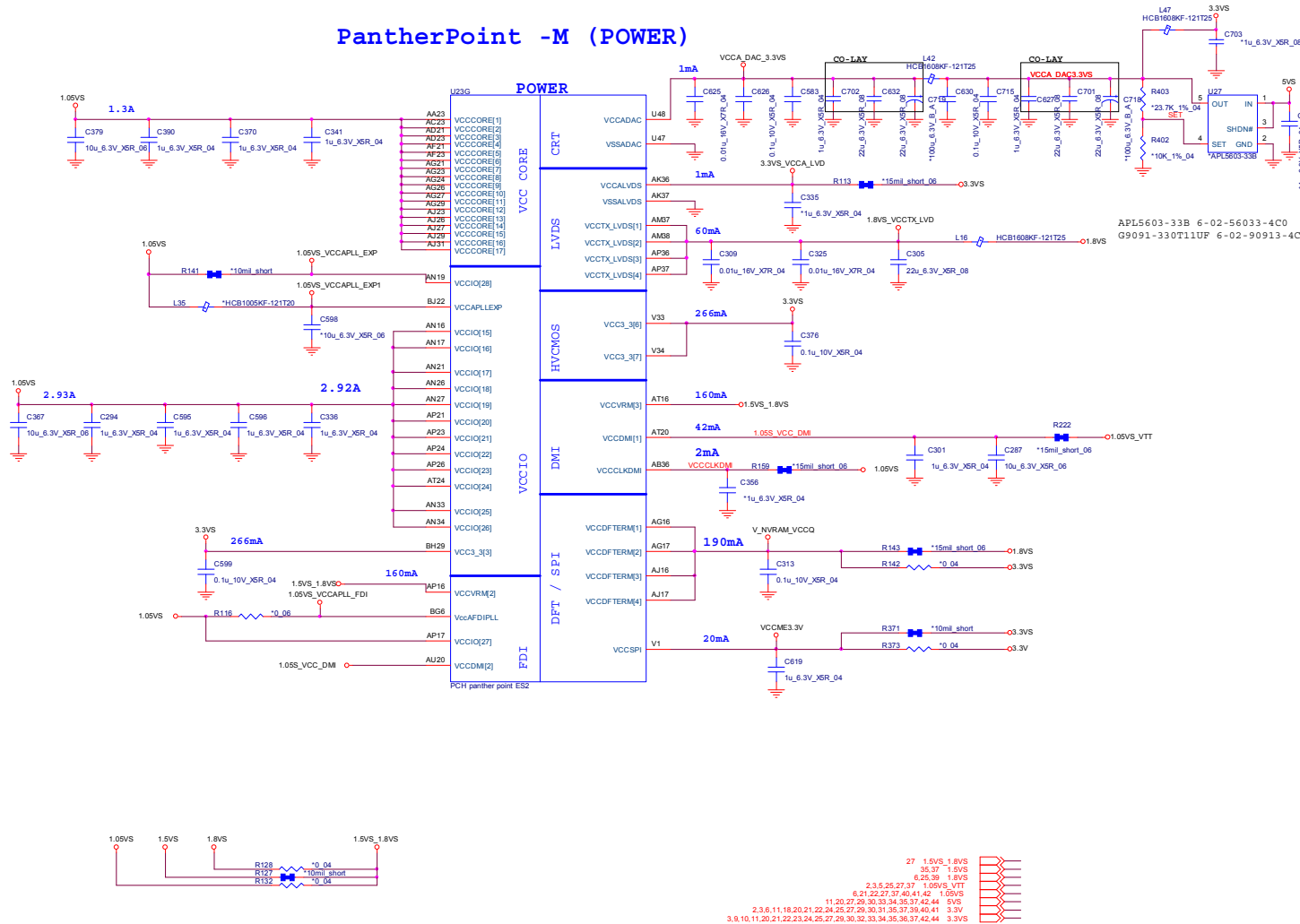
Sheet 25 of 51
PantherPoint -
M 6/9

PantherPoint - M (GPIO,VSS_NCTF,RSVD)



PantherPoint - M 7/9

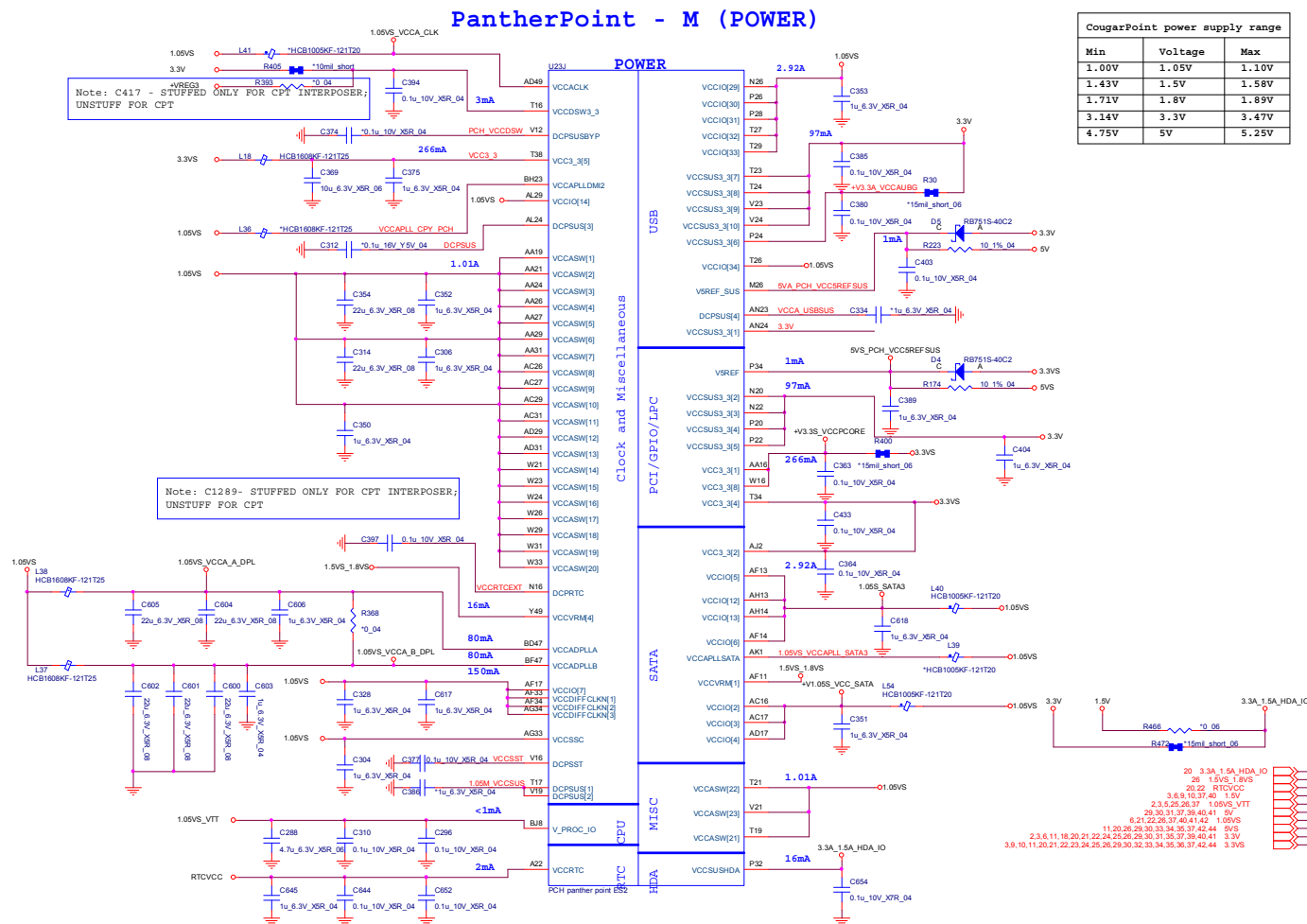
PantherPoint -M (POWER)



Sheet 26 of 51
PantherPoint -
M 7/9

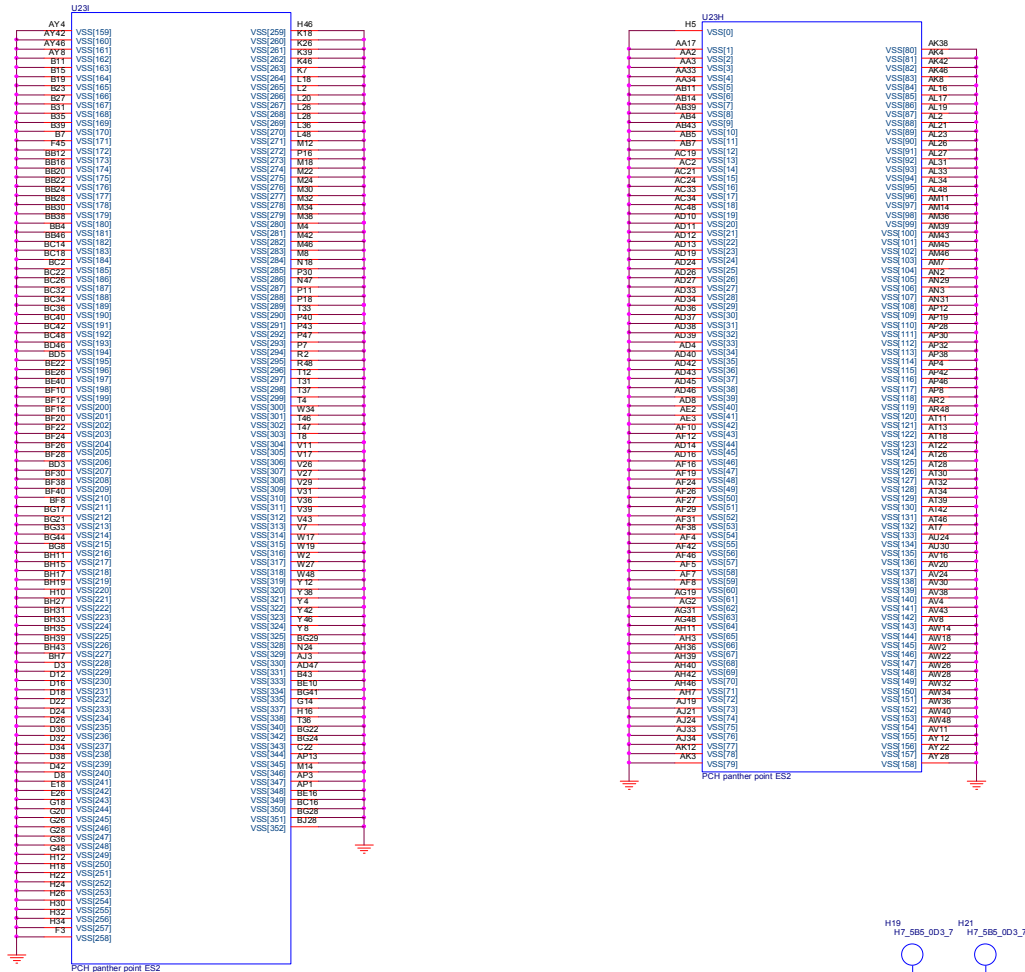
PantherPoint - M 8/9

Sheet 27 of 51
PantherPoint -
M 8/9



PantherPoint - M 9/9

PantherPoint -M (GND)



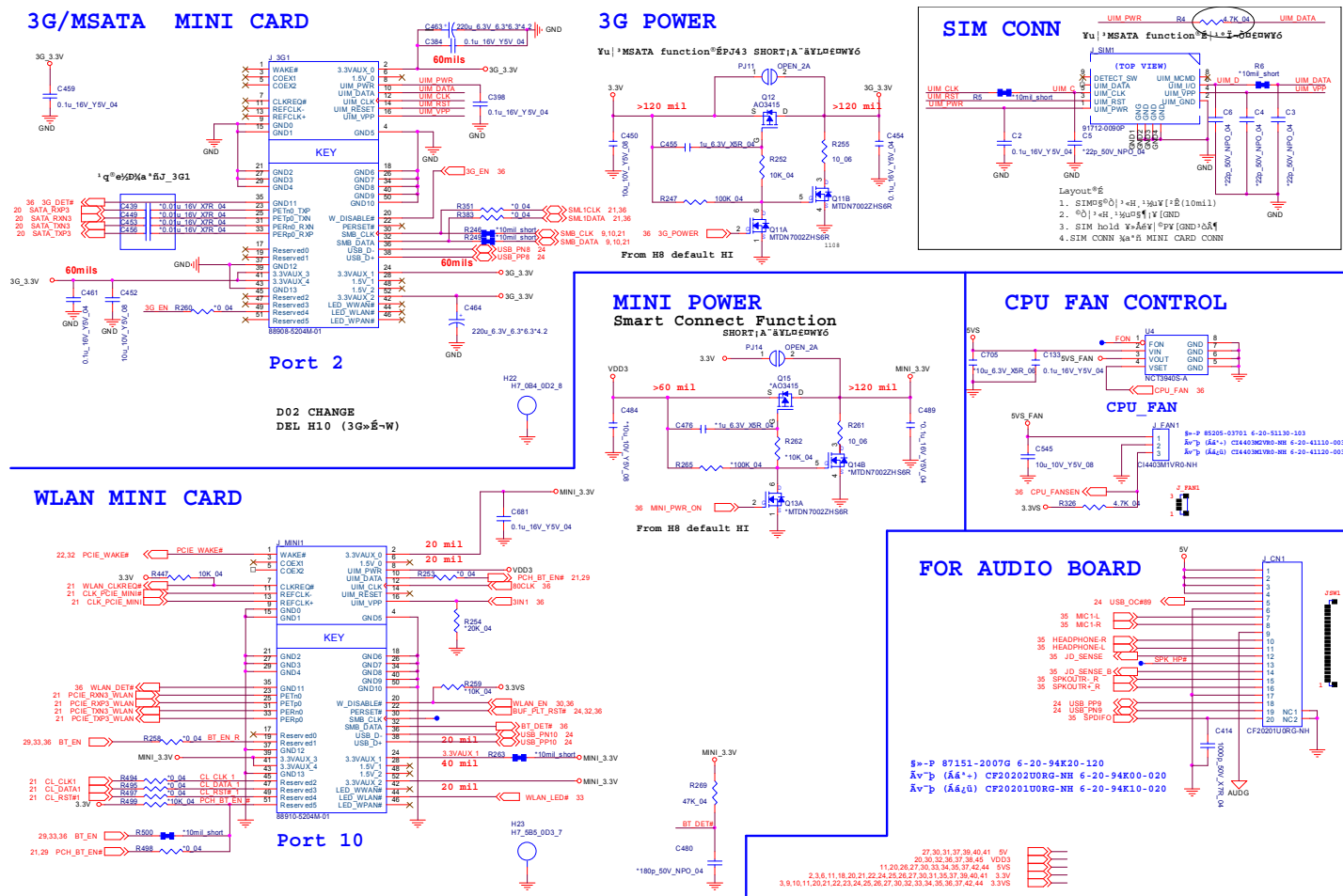
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V_CPU_IO	1.05	1 (mA)
V5REF	5	1 (mA)
V5REF_Sus	5	1 (mA)
Vcc3_3	3.3	0.266
VccADAC3	1.05	1 (mA)
VccADPLLA	1.05	0.08
VccADPLL	1.05	0.08
VccCore	1.05	1.3
VccDMI	1.1	0.042
VccIO	1.05	2.925
VccASW	1.05	1.01
VccSPI	3.3	0.020
VccDSW3_3	3.3	2 (mA)
VccDFTerm	1.8	0.19
VccSus3_3	3.3	0.097
VccSusHDA	3.3	1 (mA)
VccVRM	1.5	0.16
VccCLKDMI	1.05	0.02
VccSSC	1.05	0.095
VccDIFFCLKN	1.05	0.055
VccALVDS	3.3	1 (mA)
VccTX_LVDS	1.8	0.06

Sheet 28 of 51
PantherPoint -
M 9/9

WLAN, 3G, Mini PCIE

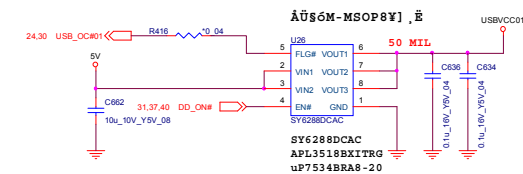
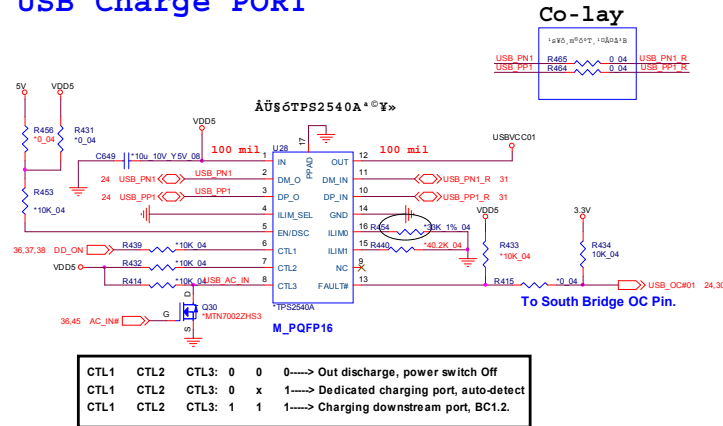
B.Schematic Diagrams

Sheet 29 of 51
WLAN, 3G, Mini
PCIE

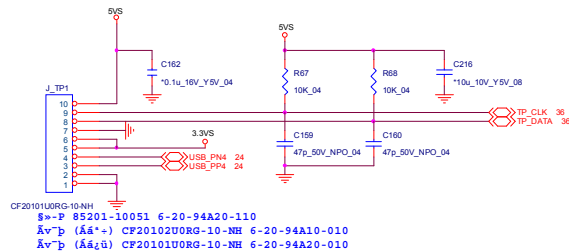


Charge, TP, FP, Multi-Conn

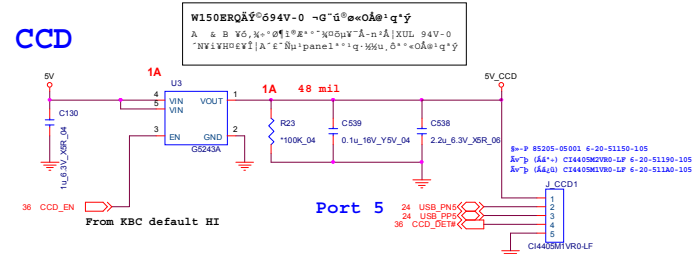
USB Charge PORT



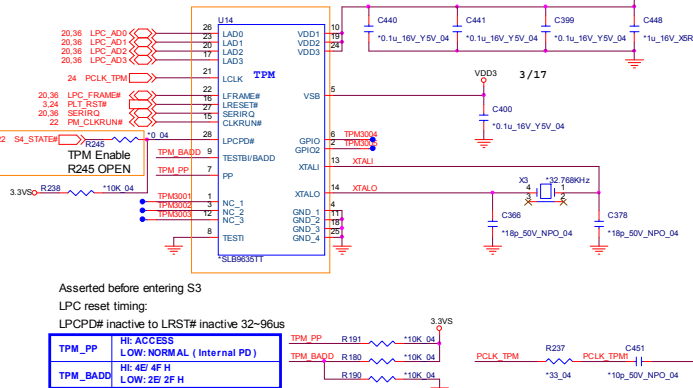
CLICK CONN



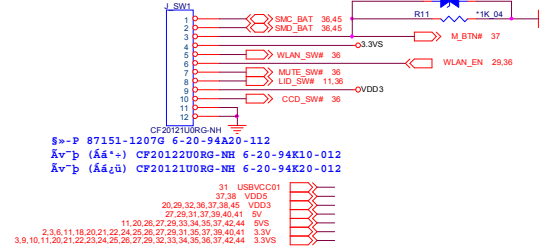
CCD



TPM 1.2



FOR POWER SWITCH BOARD



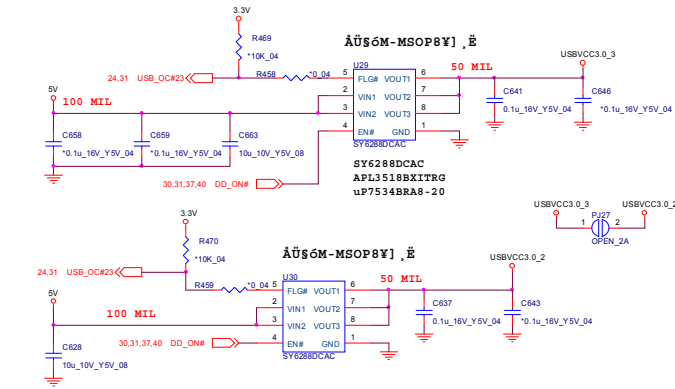
Sheet 30 of 51
Charge, TP, FP,
Multi-Conn

Schematic Diagrams

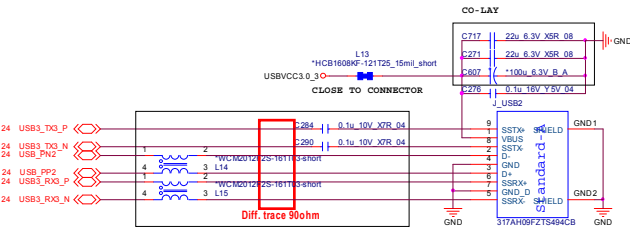
eSATA/USB 3.0 Connector

Sheet 31 of 51
eSATA/USB 3.0
Connector

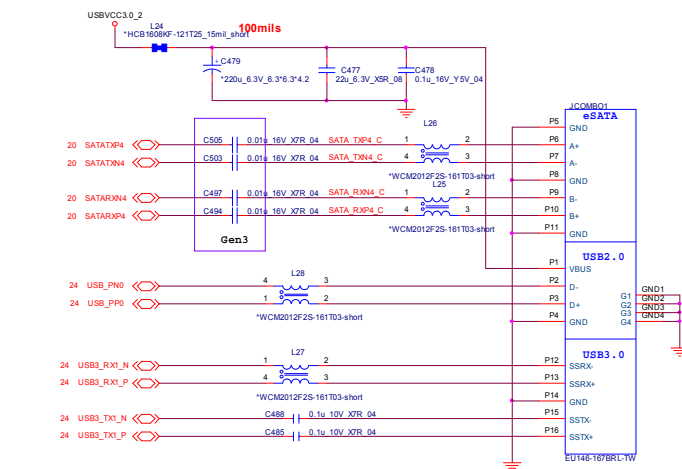
USB POWER SWITCH



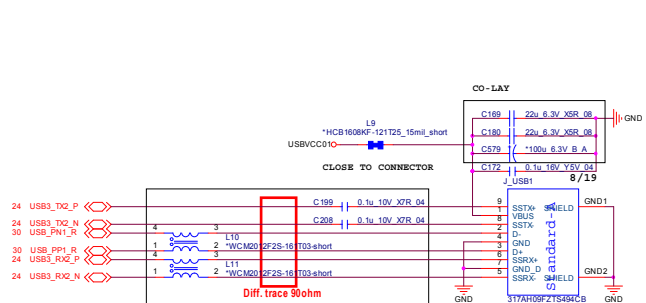
USB2.0 PORT (PORT2)
USB3.0 PORT (PORT3)



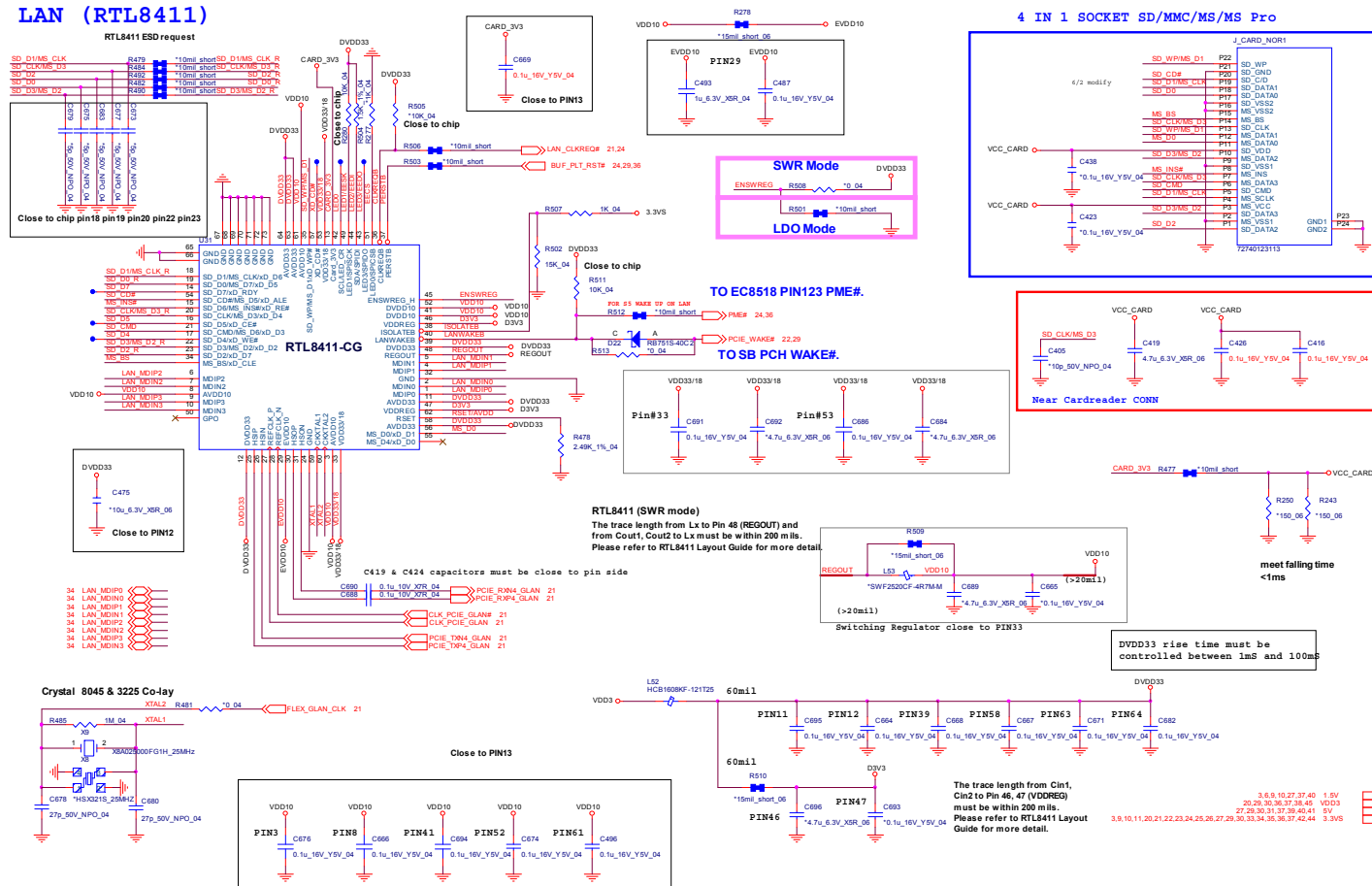
ESATA+USB3.0
USB2.0 PORT (PORT0)
USB3.0 PORT (PORT1)



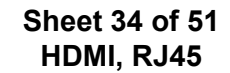
USB2.0 PORT (PORT1) Debug
USB3.0 PORT (PORT2)
USB2.0 Charge Function



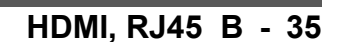
/ LAN RTL8411 B - 33



GIGA LAN (RTL8411)
LAN POART

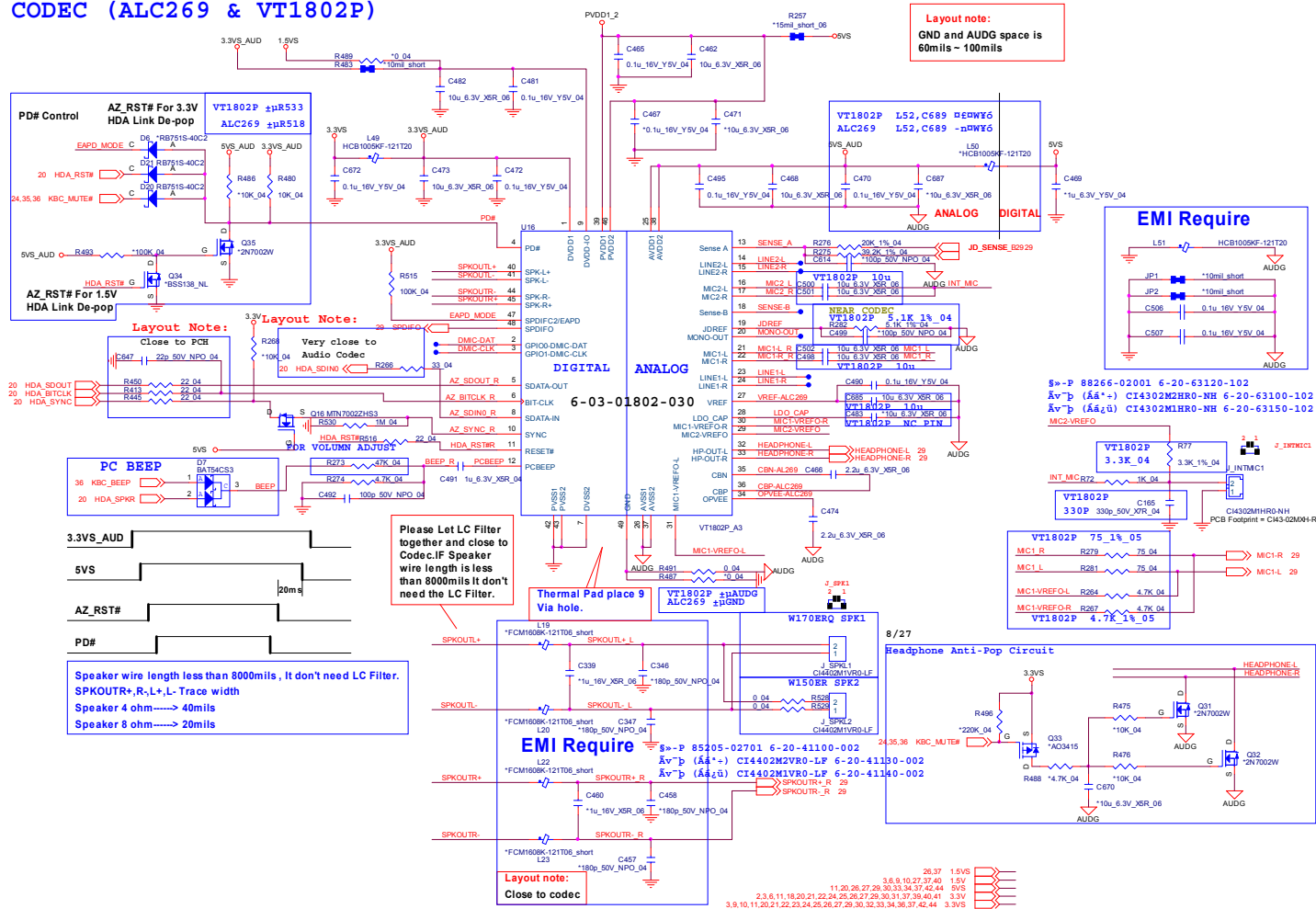


HDMI CONNECTOR



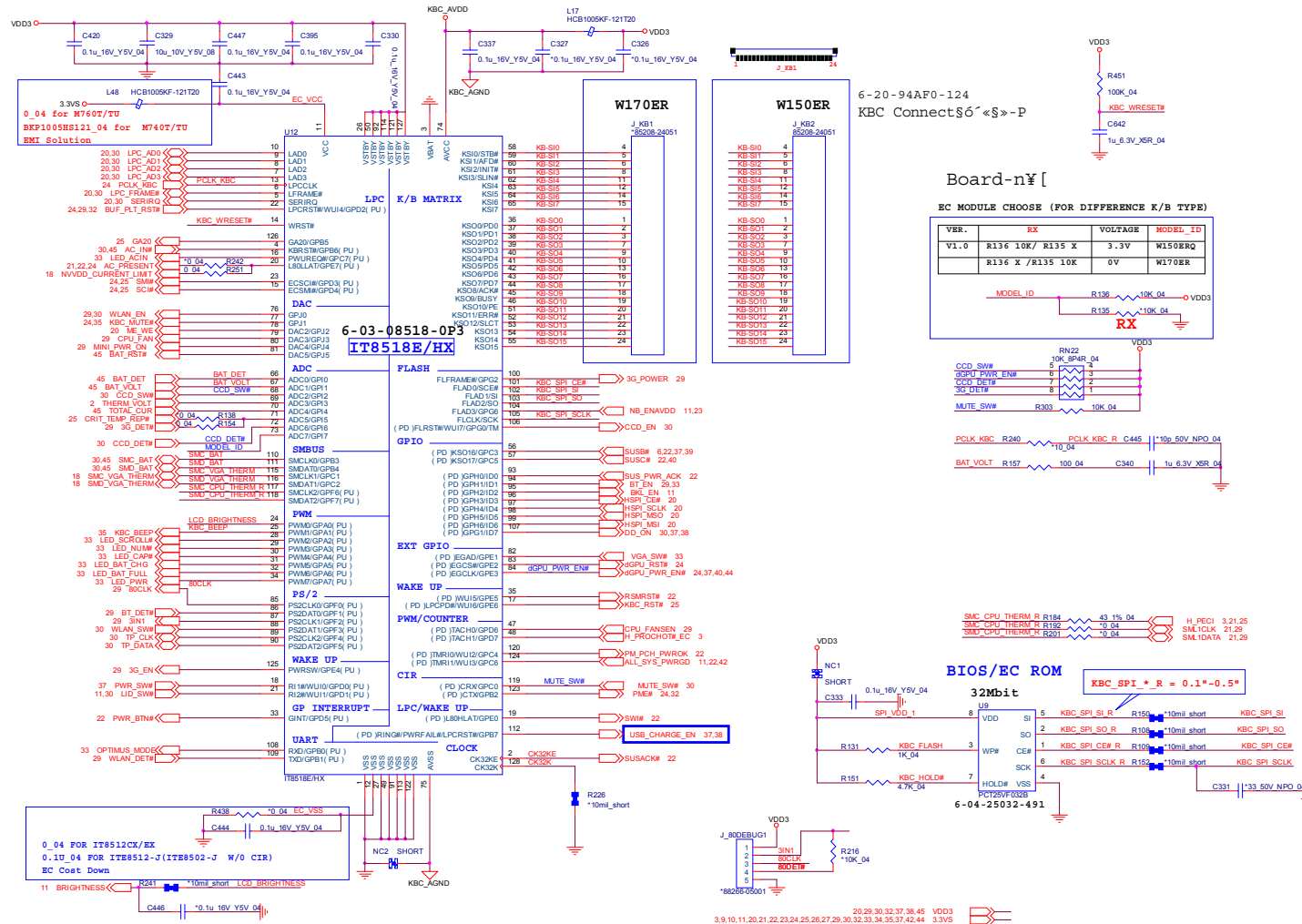
Audio Codec VT1802P

CODEC (ALC269 & VT1802P)



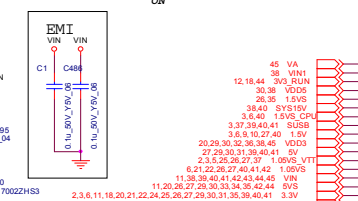
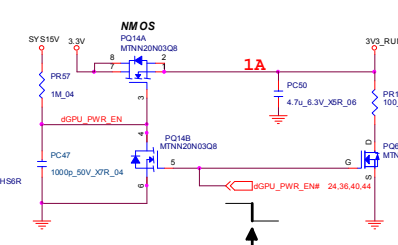
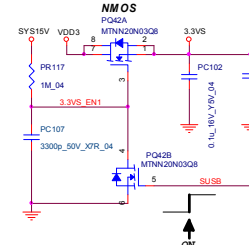
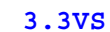
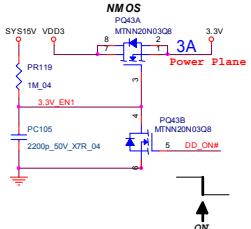
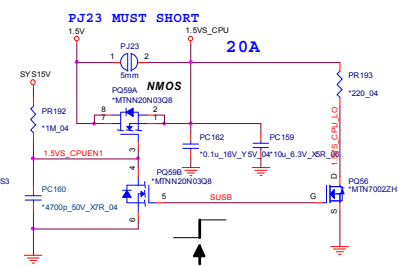
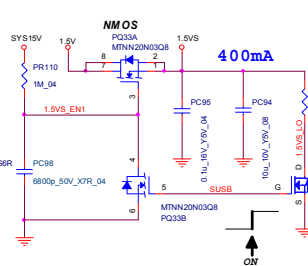
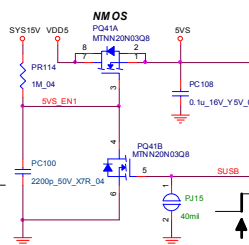
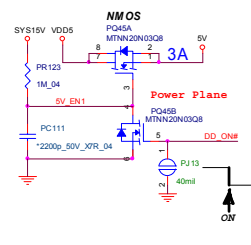
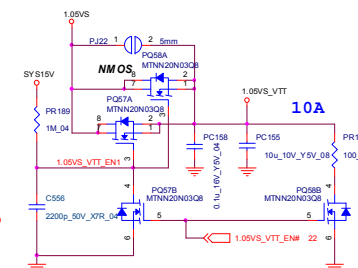
Sheet 35 of 51
Audio Codec
VT1802P

KBC-ITE IT8518E



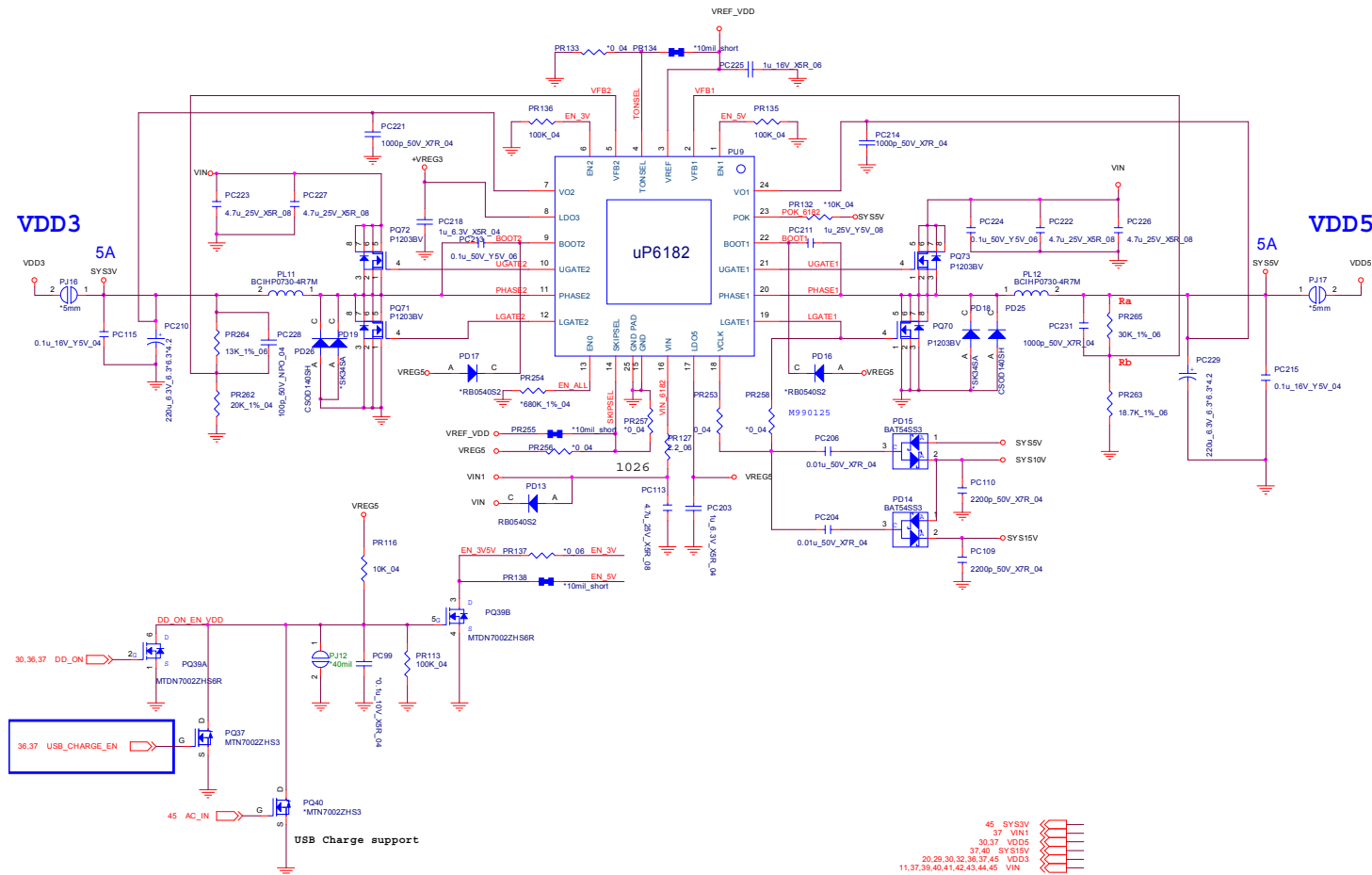
B.Schematic Diagrams

Sheet 37 of 51
5VS, 3VS, 3.3VM,
1.5VS_CPU



VDD3, VDD5

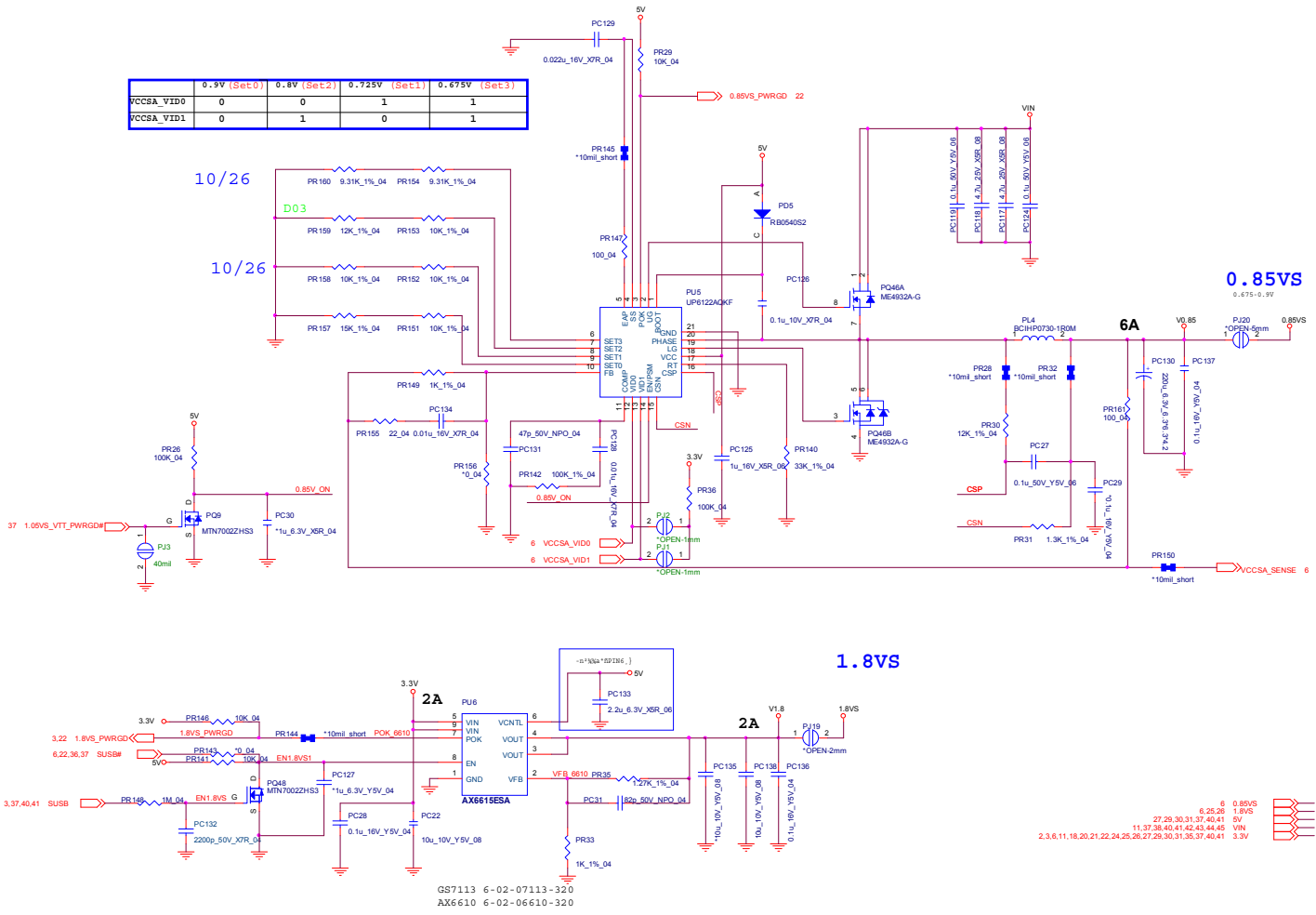
Sheet 38 of 51
VDD3, VDD5



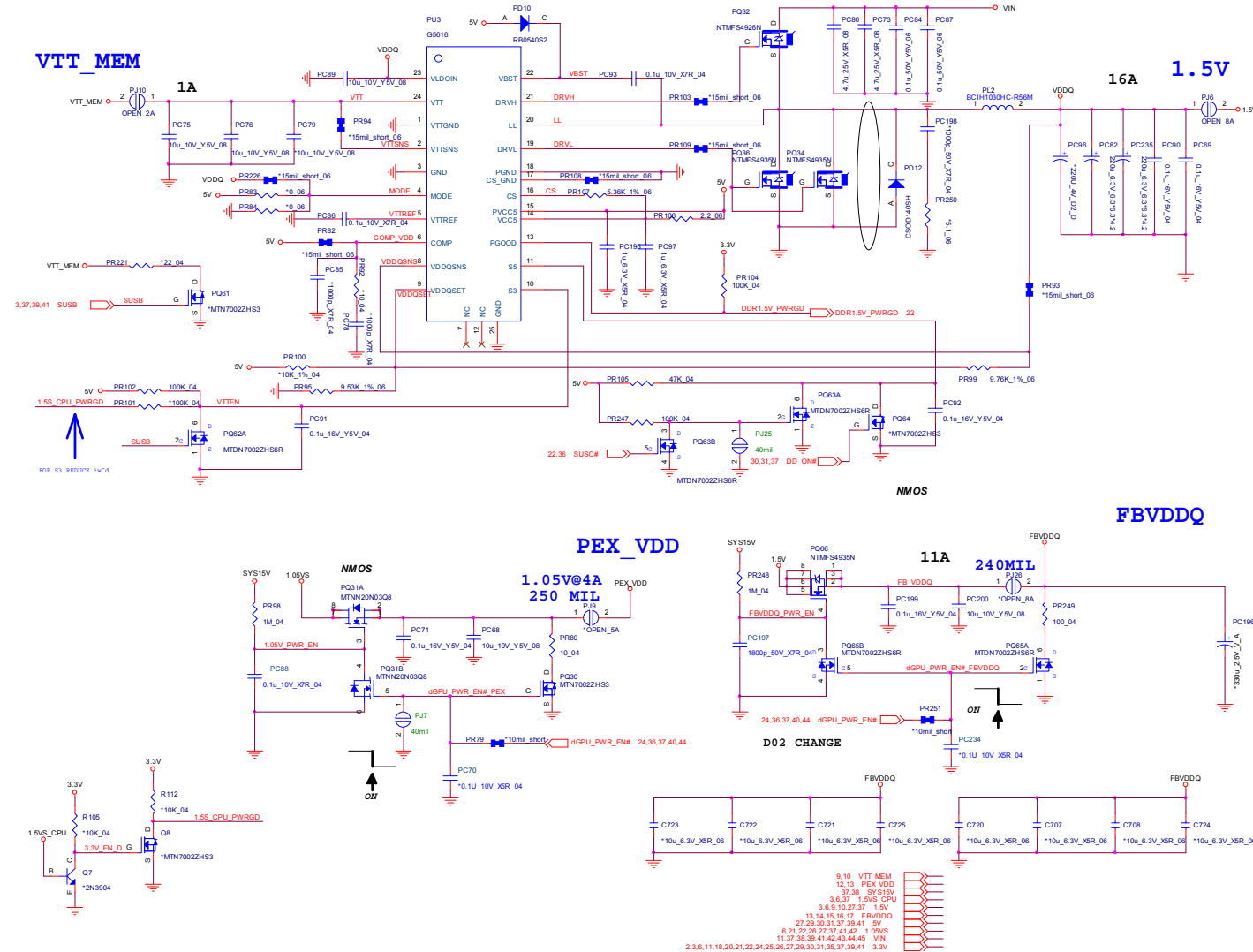
Schematic Diagrams

Power 0.85VS, 1.8VS

Sheet 39 of 51
Power 0.85VS,
1.8VS



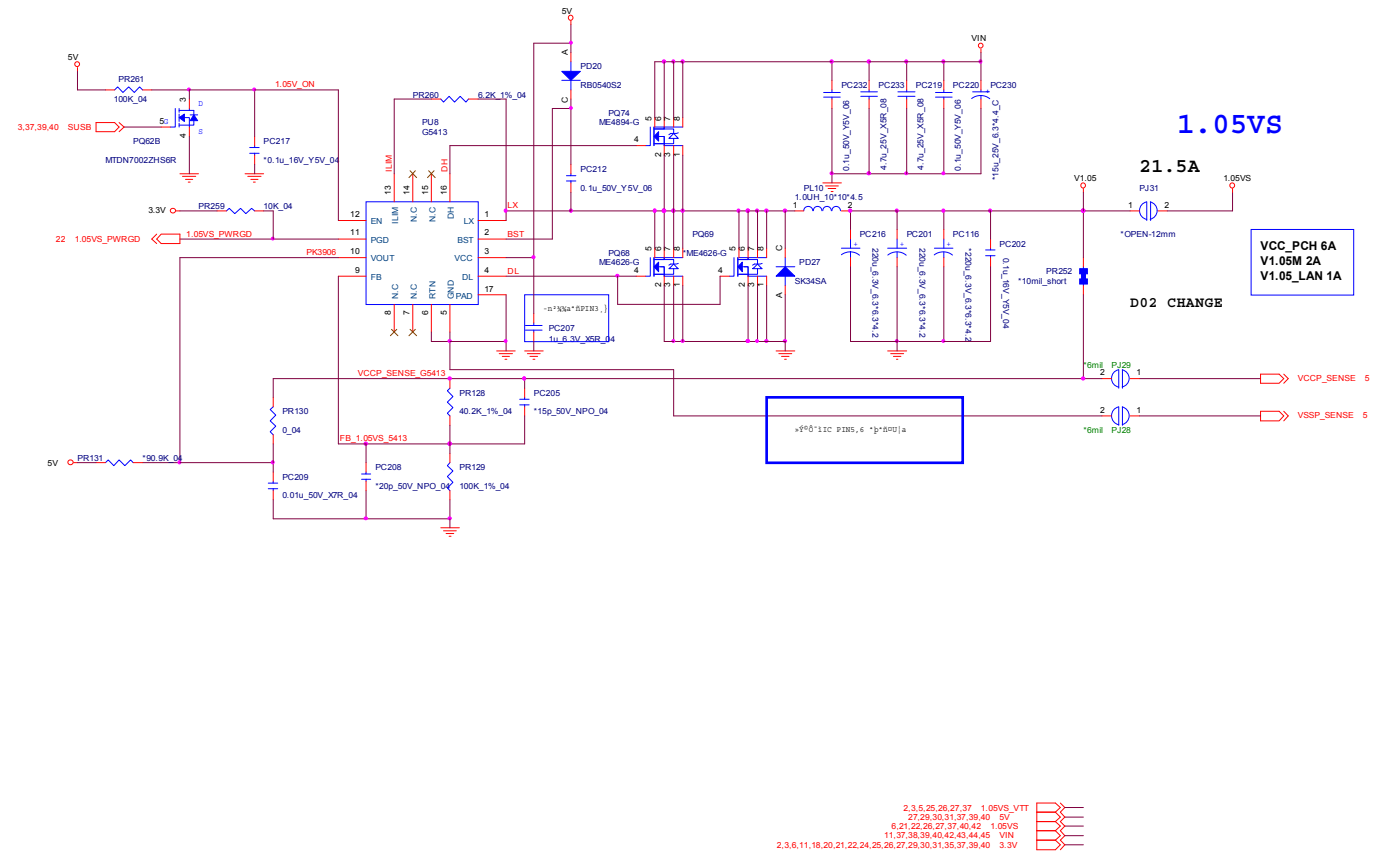
Power 1.5V/0.75V/PEX_VDD



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Power 1.5V/0.75V/
PEX_VDD

Power 1.05VS

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Power 1.05VS



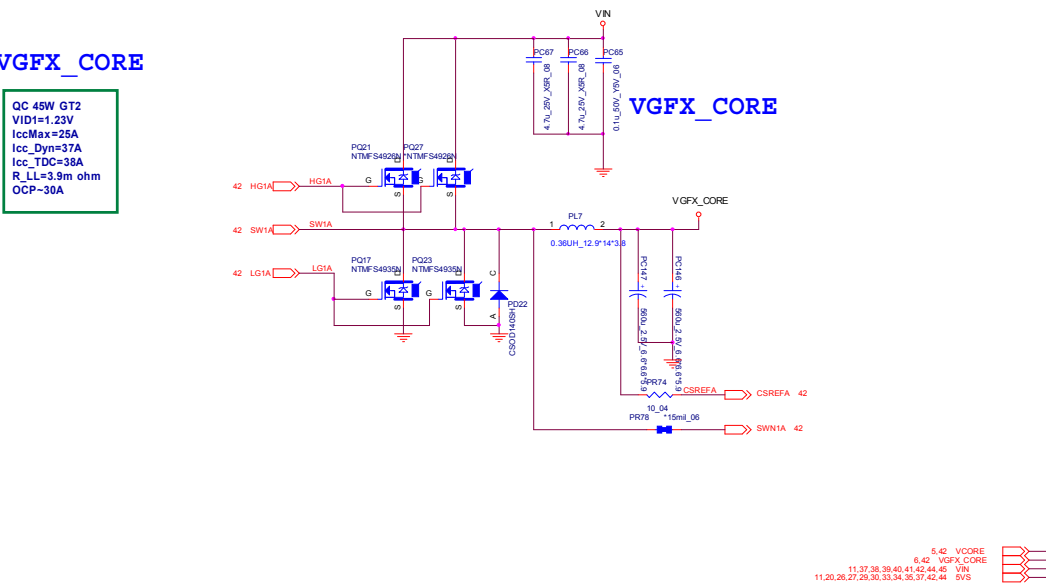
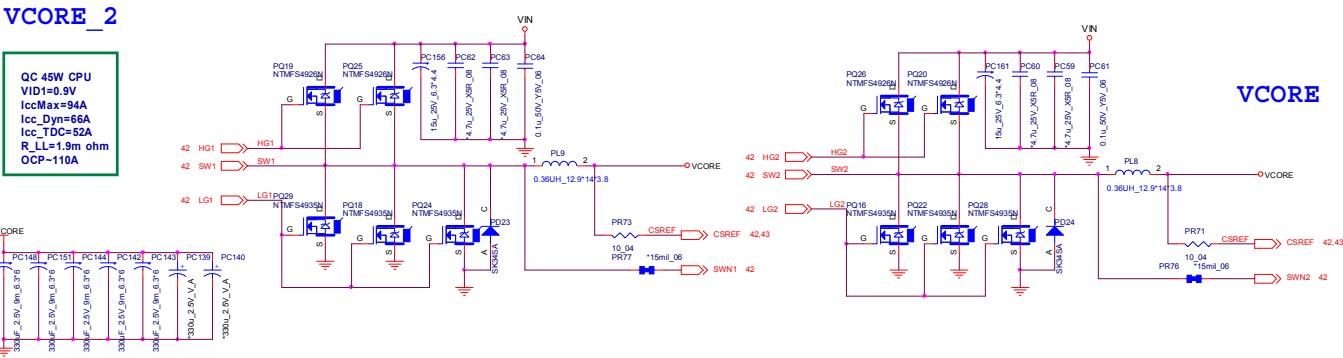
B.Schematic Diagrams



Schematic Diagrams

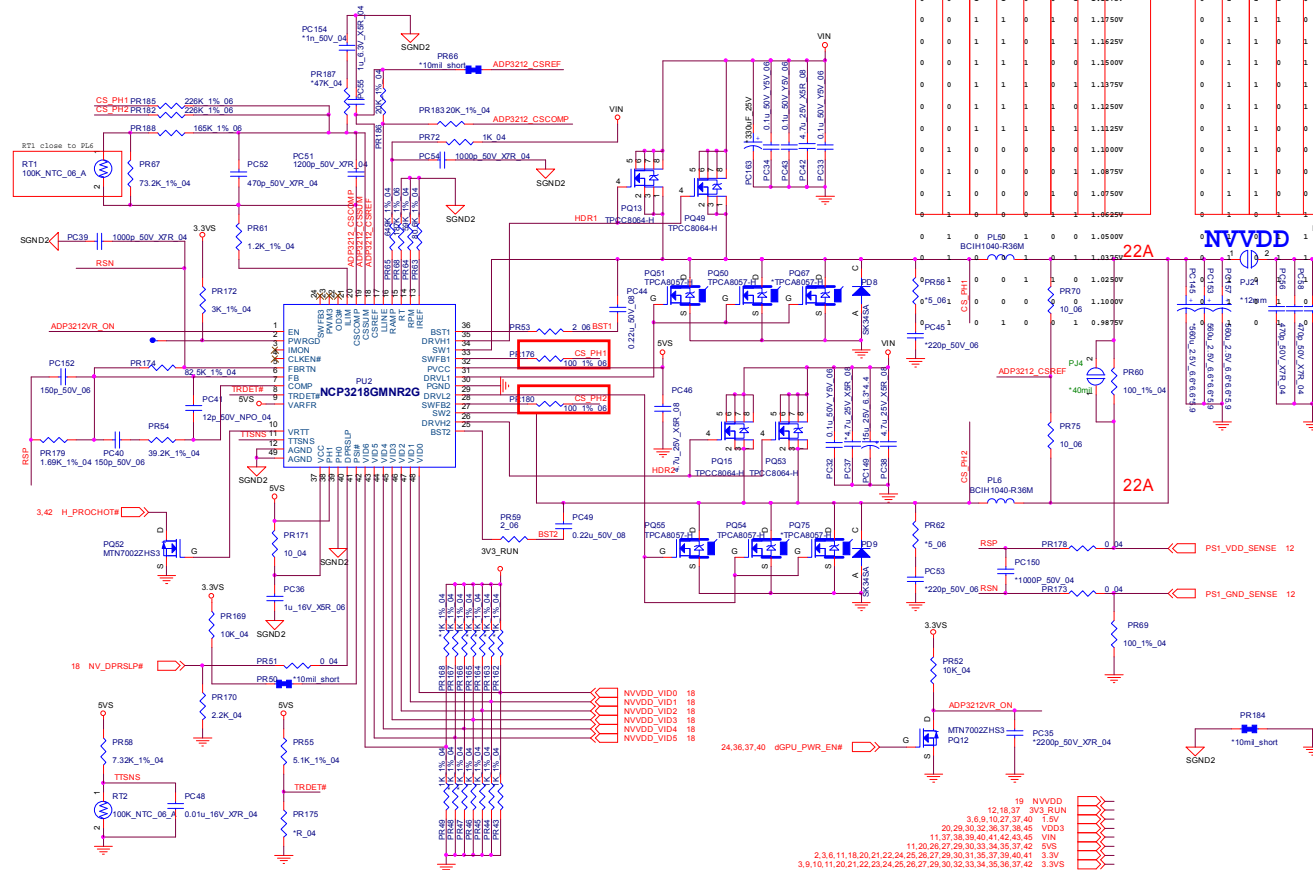
Power V-Core2

Sheet 43 of 51
Power V-Core2



VGA NVVDD

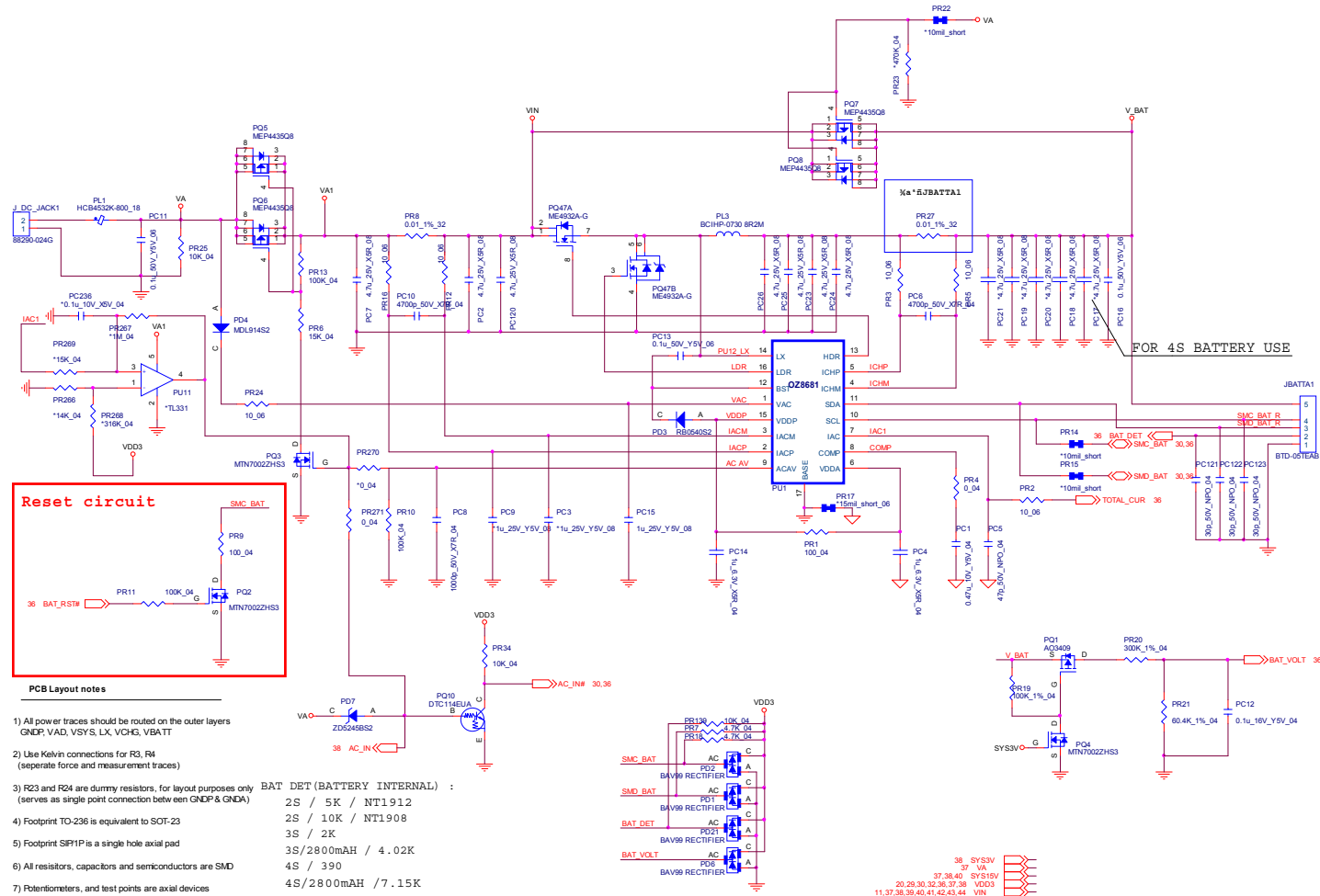
VGA_NVVDD

Sheet 44 of 51
VGA NVVDD

Schematic Diagrams

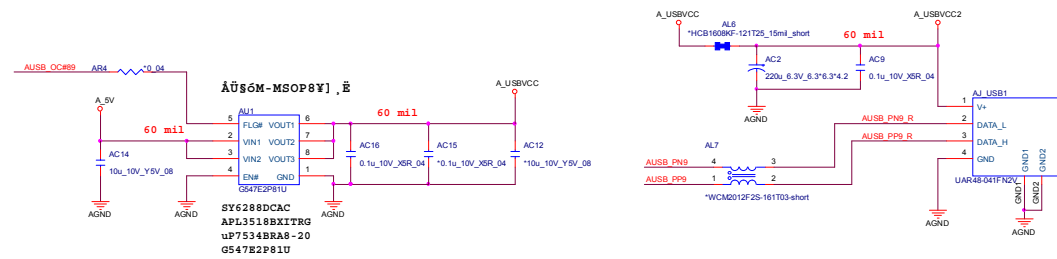
AC_IN, Charger

Sheet 45 of 51
AC_IN, Charger

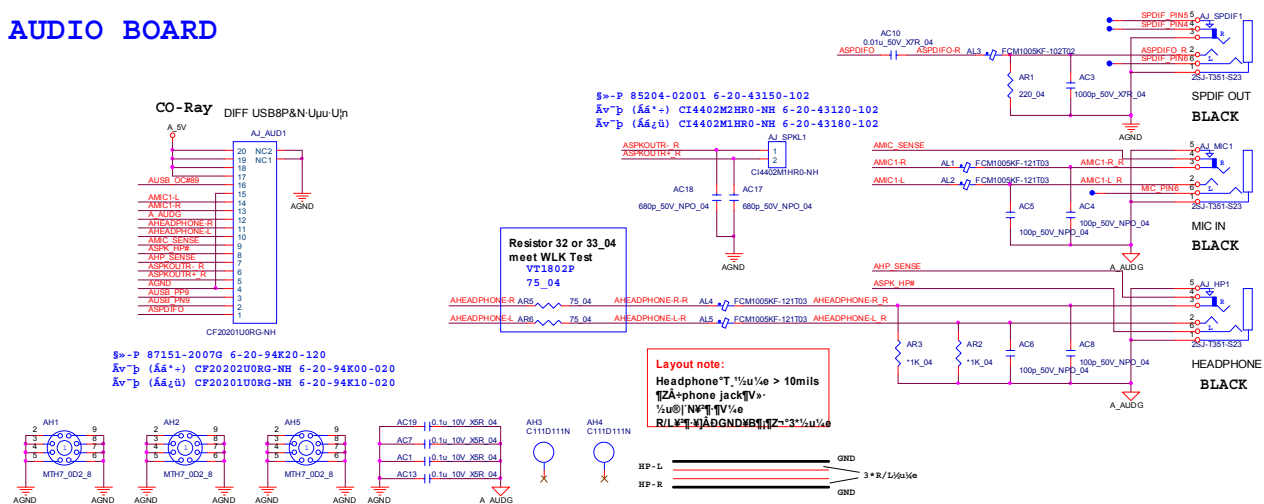


W150ERQ Audio Board

USB PORT (PORT9)



AUDIO BOARD



Sheet 46 of 51
W150ERQ Audio
Board

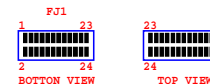
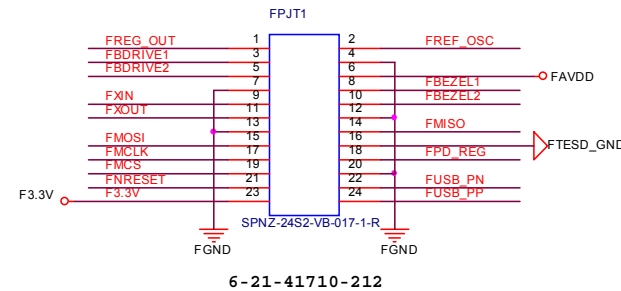
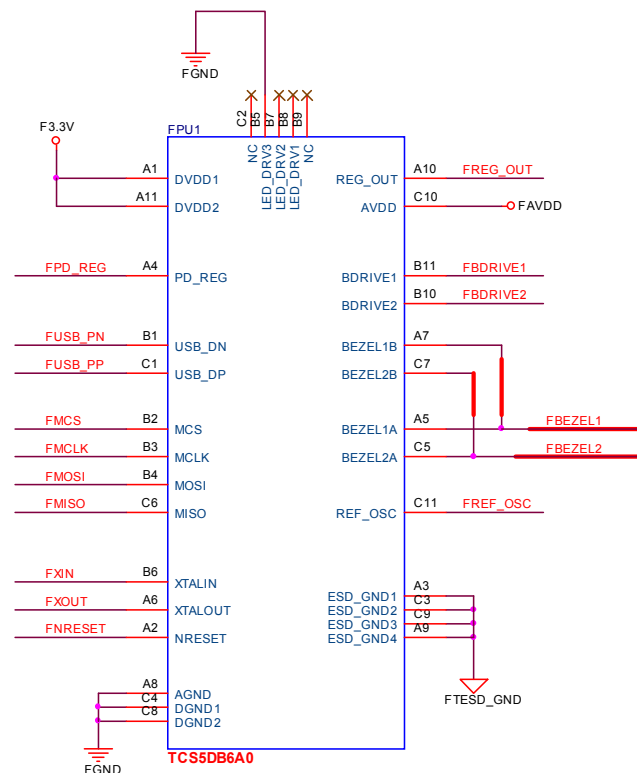
W150ERQ Fingerprint Board

W150ERQ 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.

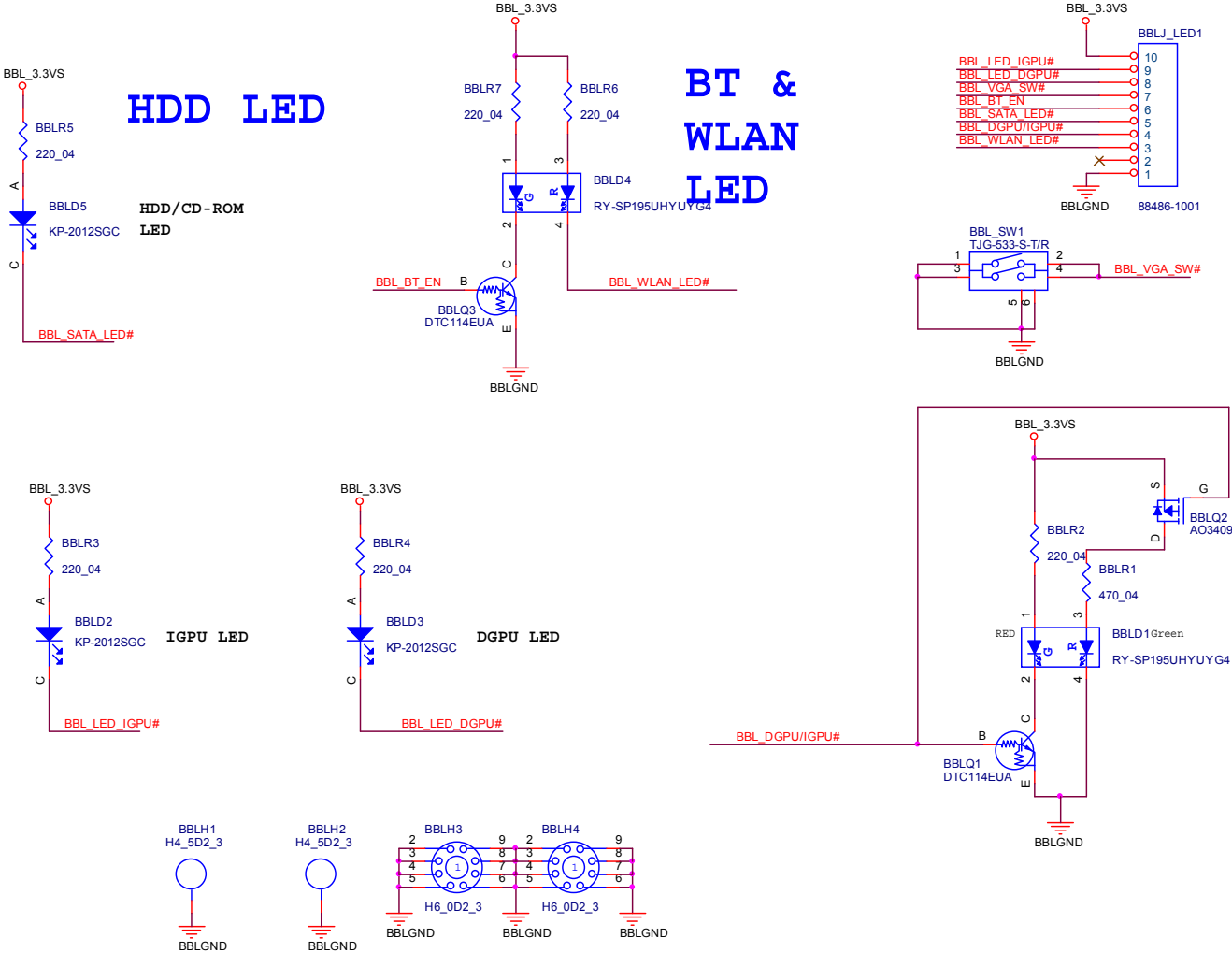


Sheet 48 of 51
W150ERQ
Fingerprint Board

Schematic Diagrams

W170ER LED & VGA SW Board

Sheet 49 of 51
W170ER LED &
VGA SW Board



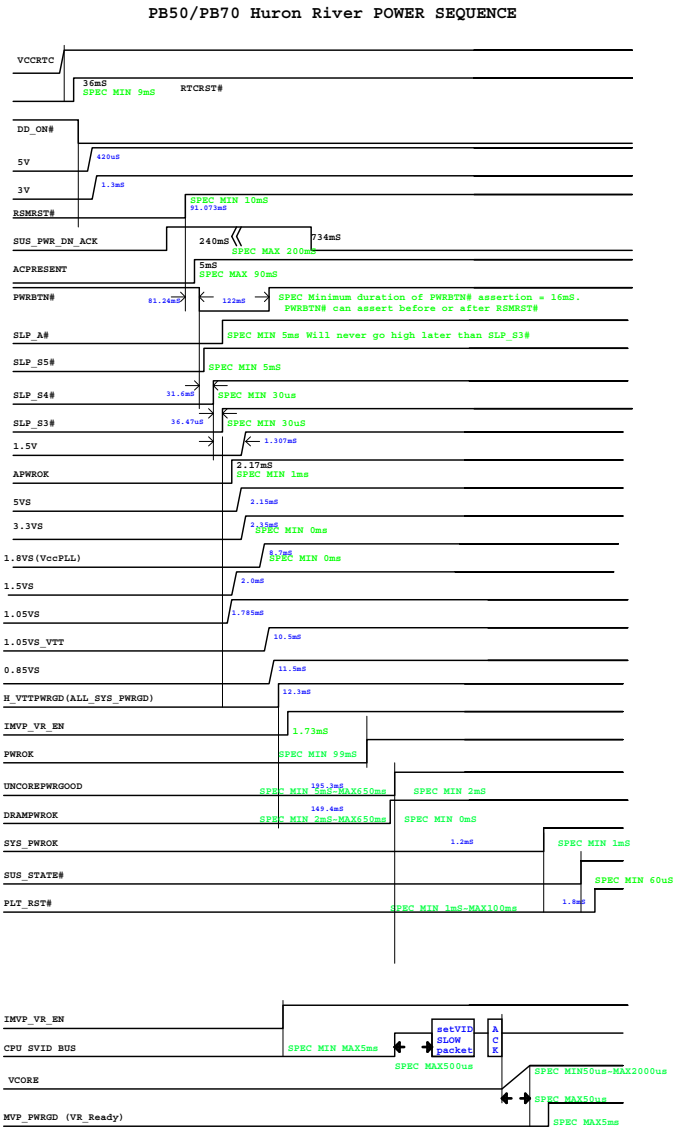
Sheet 50 of 51
W170ER Power
Switch Board



Schematic Diagrams

Sequence

Sheet 51 of 51
Sequence



Appendix C: Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS, you must:

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

Download the BIOS

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

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

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

Set the computer to boot from the external drive

1. With the bootable CD/DVD/USB flash drive containing the BIOS files in your CD/DVD drive/USB port, restart the computer and press **F2** (in most cases) to enter the BIOS.
2. Use the arrow keys to highlight the **Boot** menu.
3. Use the “+” and “-” keys to move boot devices up and down the priority order.
4. Make sure that the CD/DVD drive/USB flash drive is set first in the boot priority of the BIOS.
5. Press **F4** to save any changes you have made and exit the BIOS to restart the computer.



BIOS Version

Make sure you download the latest correct version of the BIOS appropriate for the computer model you are working on.

You should only download BIOS versions that are **V1.01.XX or higher** as appropriate for your computer model.

Note that BIOS versions are not backward compatible and therefore **you may not downgrade your BIOS to an older version** after upgrading to a later version (e.g if you upgrade a BIOS to ver 1.01.05, you **MAY NOT** then go back and flash the BIOS to ver 1.01.04).

BIOS Update

Use the flash tools to update the BIOS

1. Make sure you are not loading any memory management programs such as HIMEM by holding the **F8** key as you see the message “**Starting MS-DOS**”. You will then be prompted to give “**Y**” or “**N**” responses to the programs being loaded by DOS. Choose “**N**” for any memory management programs.
2. You should now be at the DOS prompt e.g: **DISK C:\>** (C is the designated drive letter for the CD/DVD drive/USB flash drive).
3. **Type the following command** at the DOS prompt:

C:\> Flash.bat

4. The utility will then proceed to flash the BIOS.
5. You should then be prompted to press any key to restart the system or turn the power off, and then on again but make sure you remove the CD/DVD/USB flash drive from the CD/DVD drive/USB port before the computer restarts.

Restart the computer (booting from the HDD)

1. With the CD/DVD/USB flash drive removed from the CD/DVD drive/USB port the computer should restart from the HDD.
2. Press **F2** as the computer restarts to enter the BIOS.
3. Use the arrow keys to highlight the **Exit** menu.
4. Select **Load Setup Defaults** (or press **F3**) and select “**Yes**” to confirm the selection.
5. Press **F4** to save any changes you have made and exit the BIOS to restart the computer.

Your computer is now running normally with the updated BIOS

You may now enter the BIOS and make any changes you require to the default settings.