

notebook



P150HM/
P151HM1
SERVICE
MANUAL

Notebook Computer

P150HM/P151HM1

Service Manual

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About this Manual

This manual is intended for service personnel who have completed sufficient training to undertake the maintenance and inspection of personal computers.

It is organized to allow you to look up basic information for servicing and/or upgrading components of the *P150HM/P151HMI* series notebook PC.

The following information is included:

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

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

Appendix A, Part Lists

Appendix B, Schematic Diagrams

Appendix C, Updating the FLASH ROM BIOS

IMPORTANT SAFETY INSTRUCTIONS

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

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit with an AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19V, 9.47A (**180** Watts) minimum AC/DC Adapter.

CAUTION

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

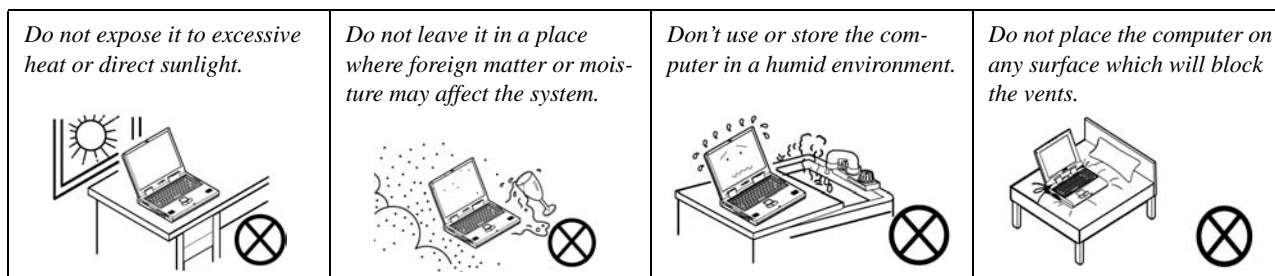
Instructions for Care and Operation

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

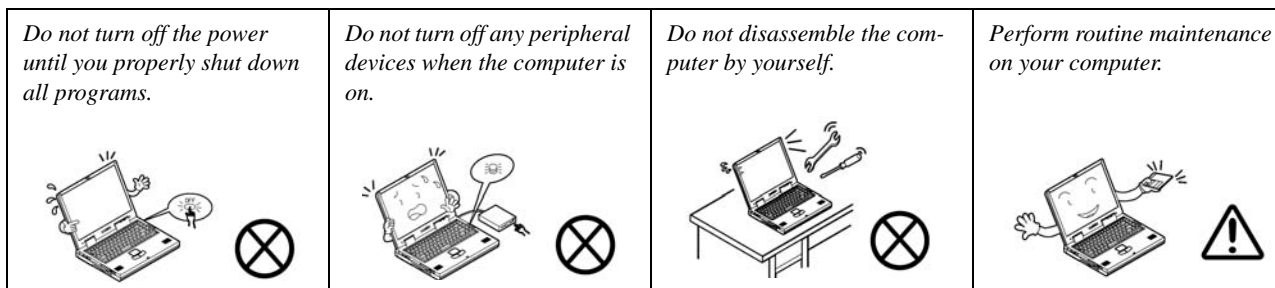
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



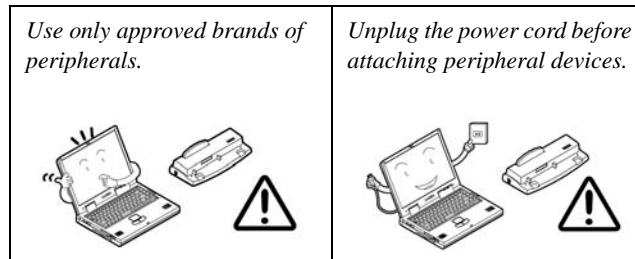
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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



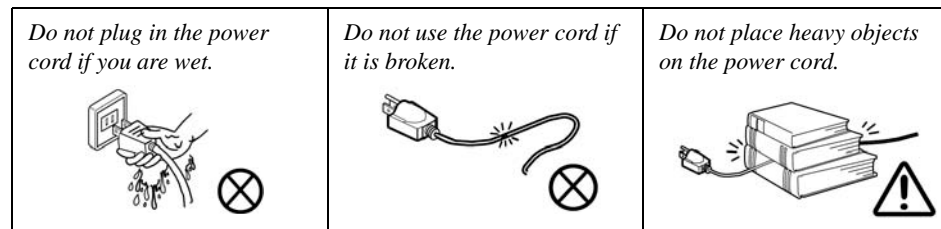
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

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



Power Safety Warning

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

Battery Precautions

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

Battery Guidelines

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

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




Battery Disposal

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

Caution

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

Battery Level

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

Related Documents

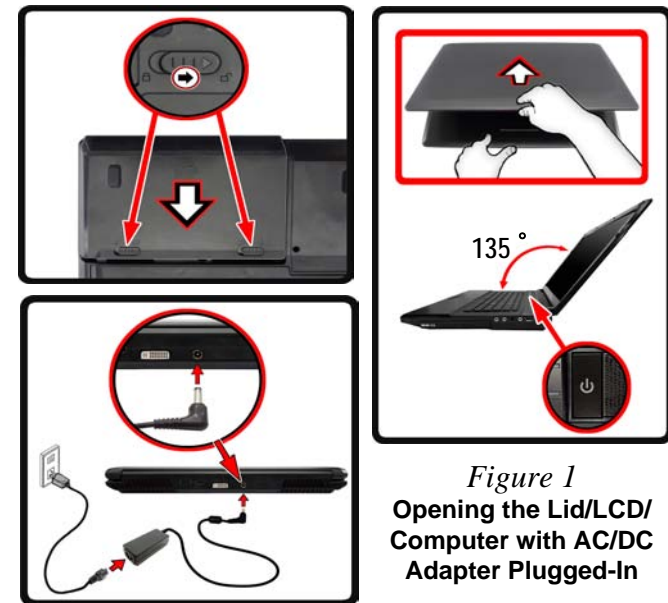
You may also need to consult the following manual for additional information:

User's Manual on Disc

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 tighten the screws.
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 to exceed **135** degrees); use the other hand (as illustrated in <Hyperlink B n l>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".



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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the *P150HM/P151HMI* series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in *User's Manual*. That manual is shipped with the computer.

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

The *P150HM/P151HMI* series notebook is designed to be upgradeable. See [Disassembly on page 2 - 1](#) for a detailed description of the upgrade procedures for each specific component. Please note the warning and safety information indicated by the “” symbol.

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

Introduction

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

P150HM:

Intel® Core™ i7 Processor Extreme Edition i7-2920XM (2.50GHz)

8MB L3 Cache, 32nm, DDR3-1600MHz, TDP 55W

Intel® Core™ i7 Processor

i7-2820QM (2.30GHz)

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

i7-2720QM (2.20GHz) , i7-2630QM (2.0GHz)

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

i7-2520M (2.50GHz)

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

P151HM1:

Intel® Core™ i7 Processor

i7-2820QM (2.30GHz)

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

i7-2720QM (2.20GHz) , i7-2630QM (2.0GHz)

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

i7-2520M (2.50GHz)

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

Intel® Core™ i5 Processor

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

Memory

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

Memory Expandable up to 16GB

Compatible with 2GB or 4GB Modules

*Note: Four SO-DIMMs are only supported by Quad-Core CPUs; Dual-Core CPUs support two SO-DIMMs maximum

**Note: 1600 MHz Memory Modules are only supported by Quad-Core CPUs to a maximum of two SO-DIMMs

LCD

P150HM:

15.6" (39.62cm) FHD (1920 * 1080)

P151HM1:

15.6" (39.62cm) HD+ (1600 * 900)

BIOS

AMI BIOS (32Mb SPI Flash-ROM)

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" (6cm) 9.5mm (h) **SATA** (Serial) Hard Disk Drive

Core Logic

Intel® HM65 Chipset

Video Adapter

P150HM:

nVIDIA® GeForce GTX 485M PCIe Video Card

2GB GDDR5 Video RAM on board

Microsoft DirectX® 11 Compatible

nVIDIA® GeForce GTX 460M PCIe Video Card

1.5GB GDDR5 Video RAM on board

Microsoft DirectX® 11 Compatible

P151HM1:

nVIDIA® GeForce GTX 460M PCIe Video Card

1.5GB GDDR5 Video RAM on board

Microsoft DirectX® 11 Compatible

Security

Security (Kensington® Type) Lock Slot

BIOS Password

(Factory Option) Fingerprint Reader Module

Audio

High Definition Audio Compliant Interface

THX TruStudio Pro

S/PDIF Digital Output

One (3W) Sub Woofer

Built-In Microphone

2 Speakers

Pointing Device

Built-in TouchPad (scrolling key functionality integrated)

Keyboard

Full-size "WinKey" keyboard with numeric keypad

Communication

Built-In Giga Base-TX Ethernet LAN
2.0M Pixel USB PC Camera Module

(Factory Option) 3.75G/HSPA Mini-Card Module **(Models A & B Only)**

(Factory Option) TV Tuner Mini-Card Module **(Model C Only)**

(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 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

Interface

Two USB 3.0 Ports
Two USB 2.0 Ports (Note one USB 2.0 port can supply power when the system is off but still powered by the AC/DC adapter - see [page 11.](#))
One eSATA & USB 2.0 Combo Port
One HDMI-Out Port
One DVI-Out Port
One IEEE1394a Port
One S/PDIF-Out & Surround-Out Combo Jack
One Headphone/Speaker-Out Jack
One Microphone-In Jack
One Line-In Jack
One RJ-45 LAN Jack
One DC-In Jack

Note: External 7.1CH Audio Output Supported by Headphone, Microphone, Line-In and Surround-Out Jacks

Mini Card Slots

Slot 1 for **WLAN** Module or **Combo WLAN and Bluetooth** Module
(Factory Option) Slot 2 for **3.75G/HSPA** Half Mini-Card 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

Removable 8-cell cylinder battery, 76.96Wh (5200mAh)

P150HM :

Full Range AC/DC Adapter
AC Input: 100 - 240V, 50 - 60Hz
DC Output: 19V, 9.47A (**180W**)

P151HM1 :

Full Range AC/DC Adapter
AC Input: 100 - 240V, 50 - 60Hz
DC Output: 19V, 6.3A (**120W**)

Dimensions & Weight

376mm (w) * 256mm (d) * 35 - 43mm (h)
Around 3.1kg with Battery and ODD

Introduction

Figure 1
Top View

1. PC Camera
2. LCD
3. LED Status Indicators
4. Power Button
5. Speakers
6. Keyboard
7. Built-In Microphone
8. TouchPad and Buttons
9. Fingerprint Reader (Optional)

External Locator - Top View with LCD Panel Open



External Locator - Front & Right side Views



Figure 2
Front Views

1. LED Power Indicators

Figure 3
Right Side Views

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

Introduction

External Locator - Left Side & Rear View

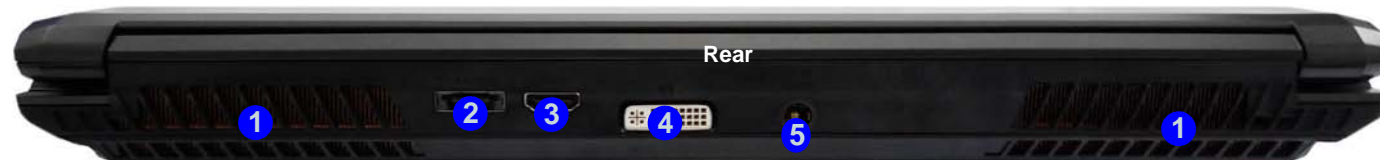
Figure 4
Left Side View

1. RJ-45 LAN Jack
2. USB 3.0 Ports
3. USB 2.0 Port
4. Mini-IEEE 1394a Port
5. Multi-in-1 Card Reader



Figure 5
Rear View

1. Vent
2. eSATA/USB 2.0 Combo Port
3. HDMI-Out Port
4. DVI-Out Port
5. DC-In Jack



External Locator - Bottom View

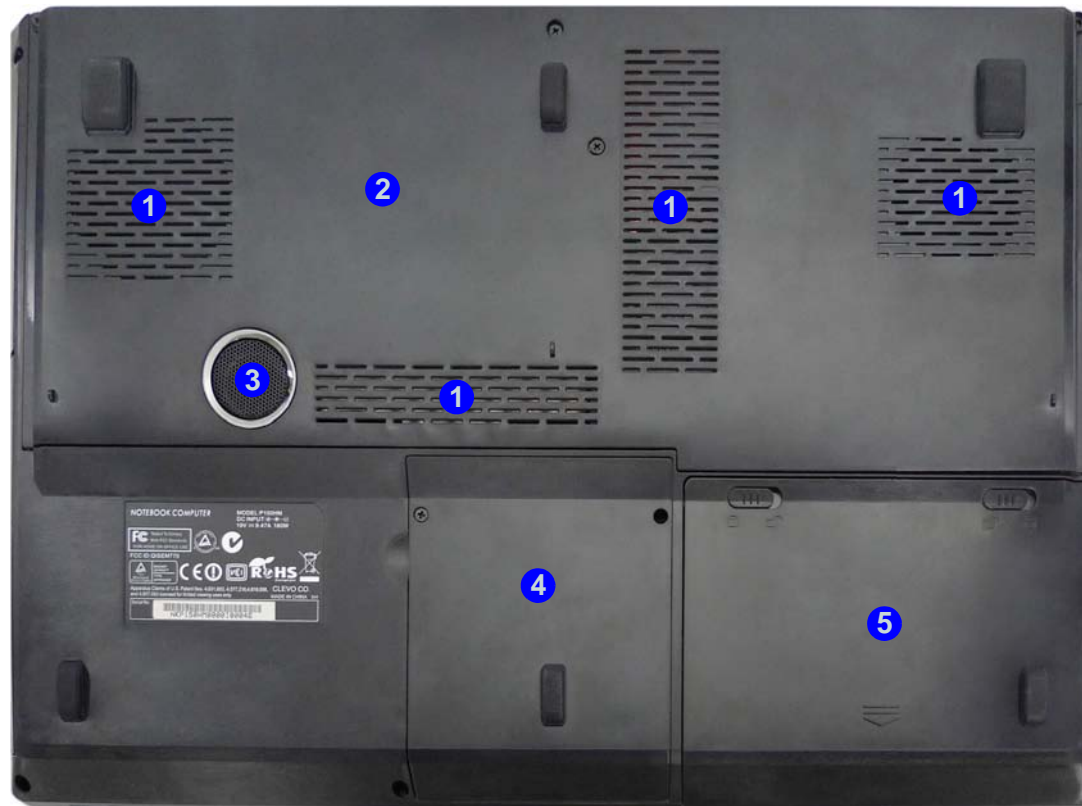


Figure 6
Bottom View

1. Vent
2. Component Bay Cover
3. Sub Woofer
4. HDD Bay
5. Battery


Overheating

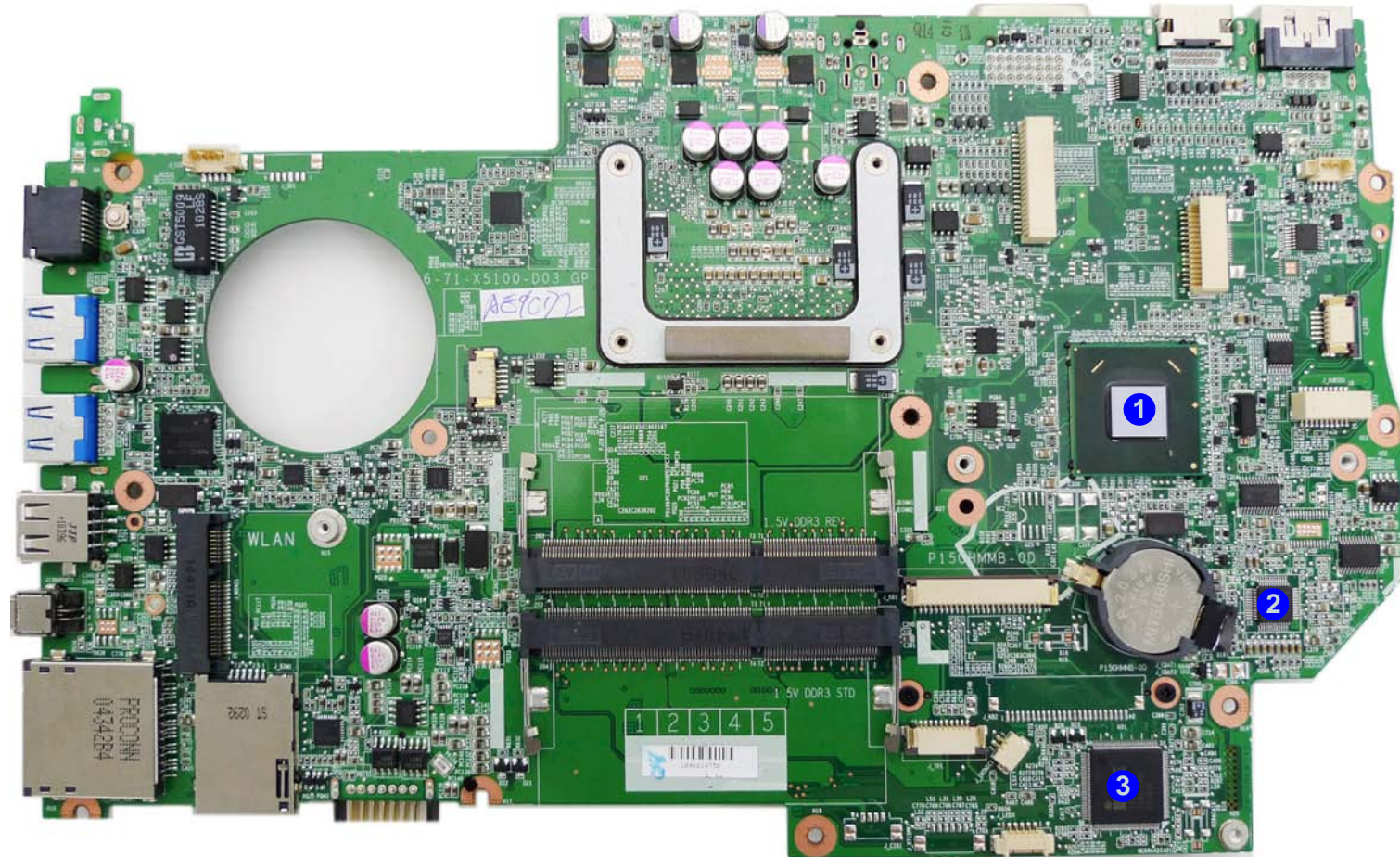
To prevent your computer from overheating make sure nothing blocks the vent/fan intakes while the computer is in use.

Introduction

Figure 7
**Mainboard Top
Key Parts**

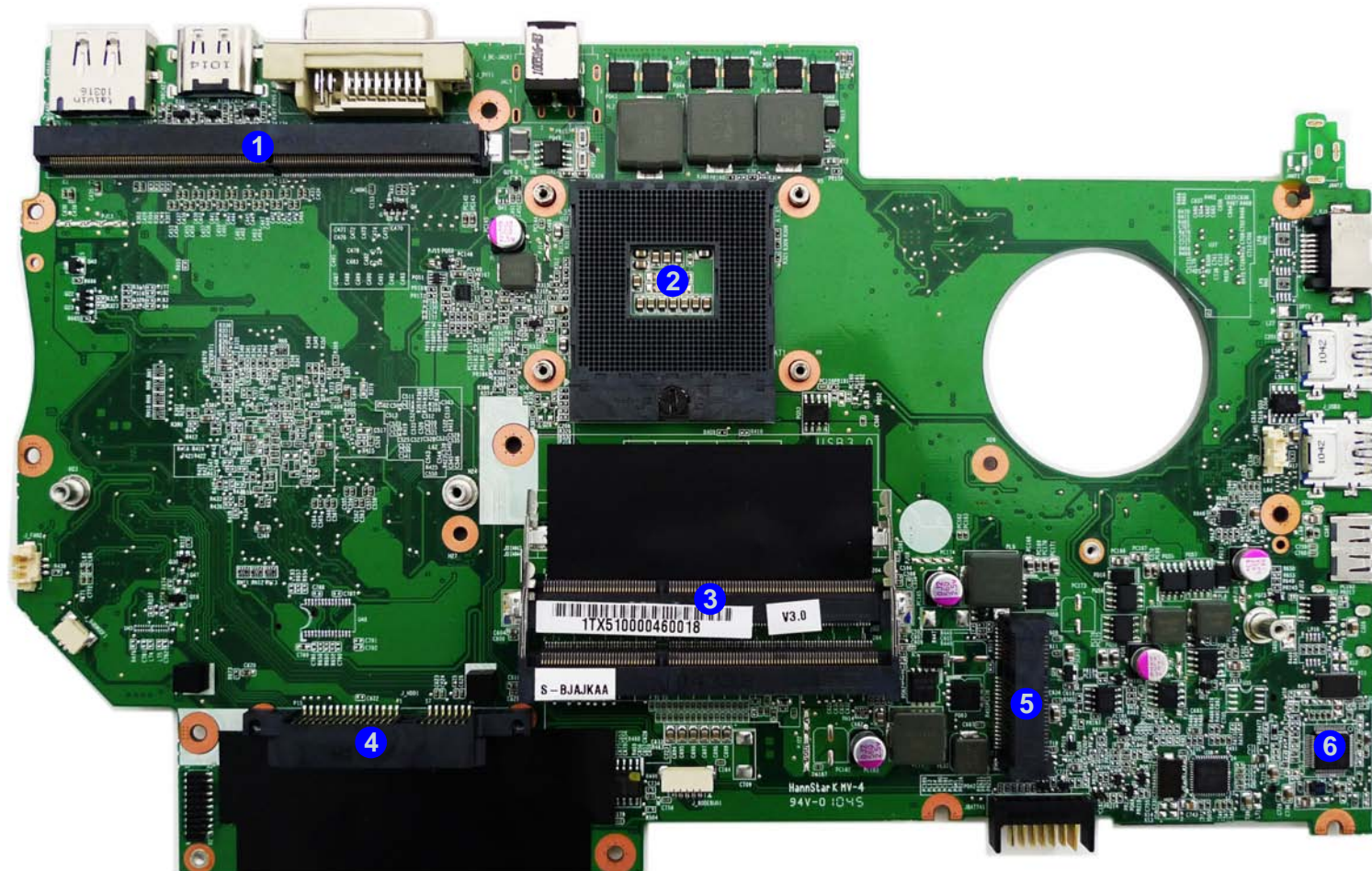
1. Platform
Controller Hub
2. Audio Codec
3. KBC ITE IT8519E

Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

Figure 8
Mainboard Bottom
Key Parts



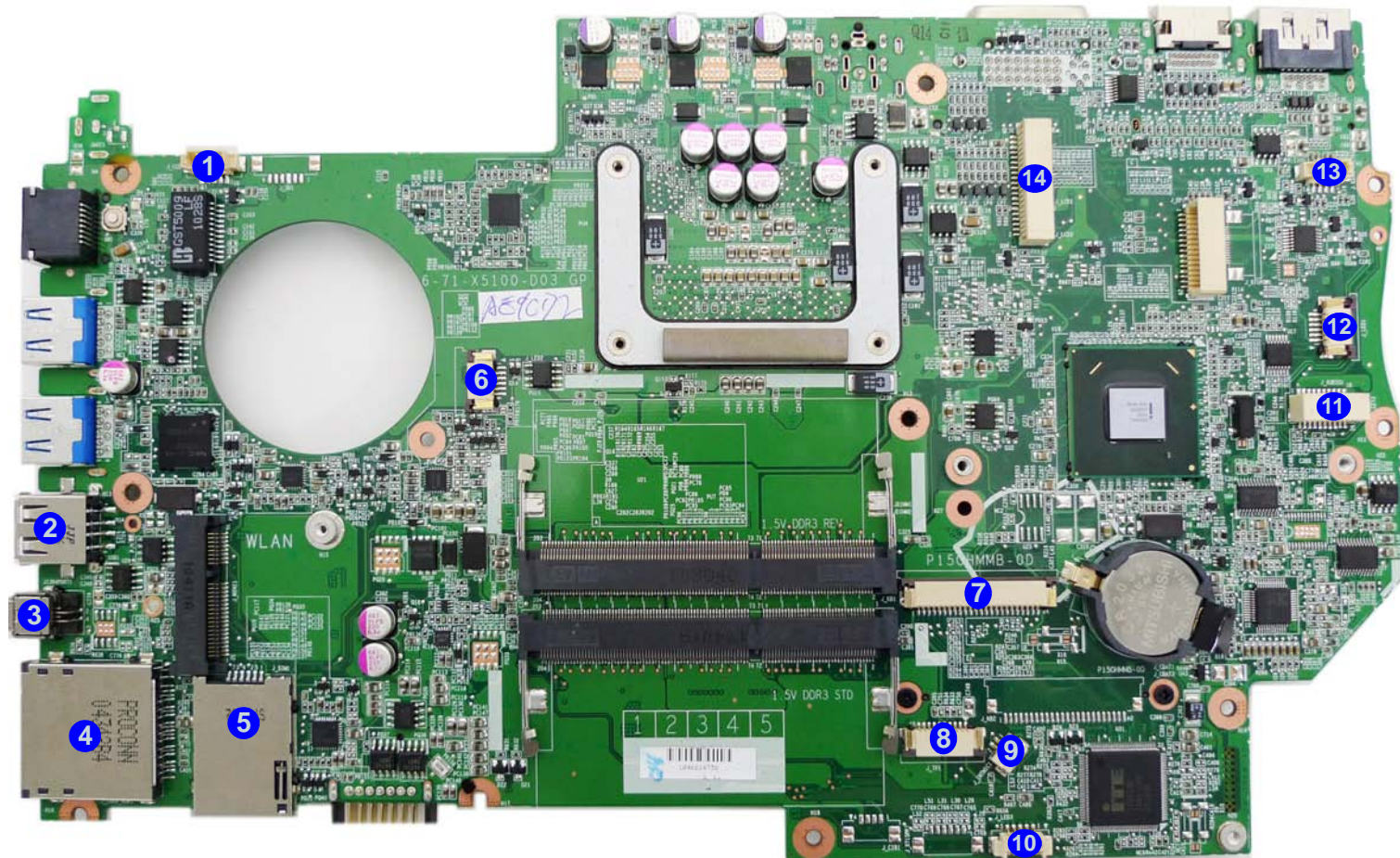
1. VGA-Card Connector
2. CPU Socket (no CPU installed)
3. Memory Slots DDR3 SO-DIMM (Primary)
4. Hard Disk Connector
5. Mini-Card Connector (3G Module)
6. JMC 251C

Introduction

Mainboard Overview - Top (Connectors)

Figure 9
Mainboard Top
Connectors

1. CCD Connector
2. USB 2.0 Port
3. Mini-IEEE 1394a Port
4. Multi-in-1 Card Reader
5. USIM Card
6. LED 2 Cable Connector
7. Keyboard Cable Connector
8. TouchPad Cable Connector
9. Microphone Cable Connector
10. LED 3 Cable Connector
11. Audio Cable Connector
12. LED 1 Cable Connector
13. Speaker Connector
14. LCD Cable Connector



Mainboard Overview - Bottom (Connectors)

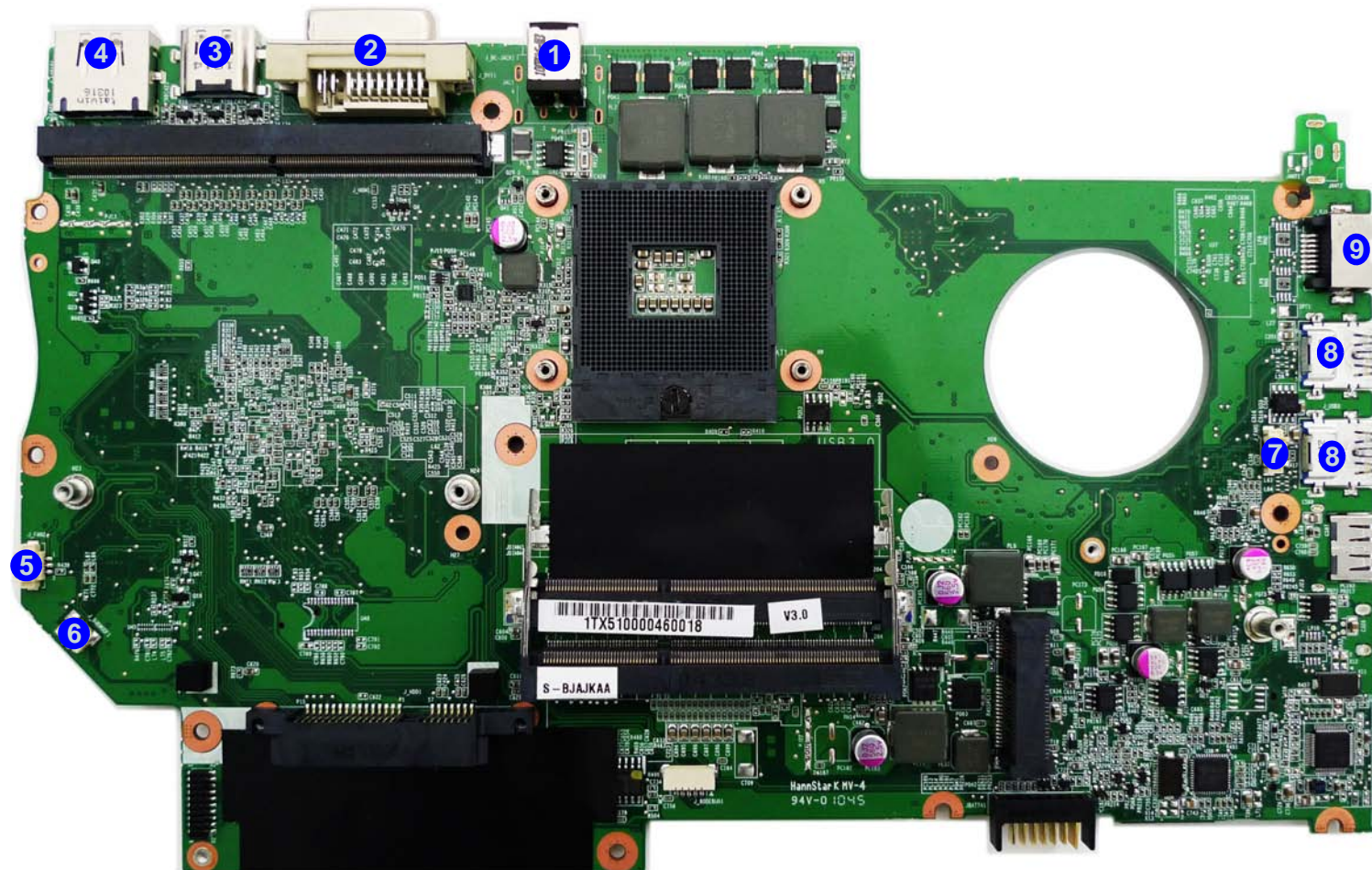


Figure 10
**Mainboard Bottom
Connectors**

1. DC-In Jack
2. DVI-Out Port
3. HDMI-Out Port
4. eSATA/USB 2.0 Combo Port
5. VGA Fan Cable Connector
6. Sub Woofer Cable Connector
7. CPU Fan Cable Connector
8. USB 3.0 Ports
9. RJ-45 LAN Jack


Chapter 2: Disassembly



Overview

This chapter provides step-by-step instructions for disassembling the *P150HM/P151HMI* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

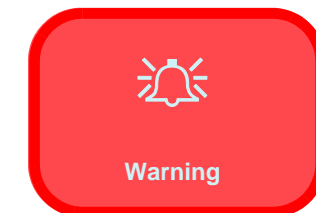
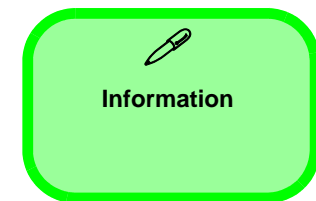
We suggest you completely review any procedure before you take the computer apart.

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

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

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

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



Disassembly

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

Maintenance Tools

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

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

Connections

Connections within the computer are one of four types:

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

Maintenance Precautions

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

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

Cleaning

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

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



Power Safety Warning

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

Disassembly Steps

The following table lists the disassembly steps, and on which page to find the related information. **PLEASE PERFORM THE DISASSEMBLY STEPS IN THE ORDER INDICATED.**

To remove the Battery:

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

To remove and install the HDD:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Install the HDD [page 2 - 8](#)

To remove the Optical Device:

1. Remove the battery [page 2 - 5](#)
2. Remove the Optical device [page 2 - 9](#)

To remove the Primary System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the system memory [page 2 - 12](#)

To remove the System Memory under the Keyboard:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 10](#)
3. Remove the system memory [page 2 - 13](#)

To remove and install the Processor:

1. Remove the battery [page 2 - 5](#)
2. Remove the system memory [page 2 - 10](#)
3. Remove the processor [page 2 - 14](#)
4. Install the processor [page 2 - 16](#)

To remove the WLAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 10](#)
3. Remove the wireless LAN [page 2 - 17](#)

To remove the 3G:

1. Remove the battery [page 2 - 5](#)
2. Remove the 3G [page 2 - 18](#)

To remove and install the Video Card:

1. Remove the battery [page 2 - 5](#)
2. Remove the video card [page 2 - 19](#)
3. Install the video card [page 2 - 20](#)

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. Lift the battery **3** out in the direction of the arrow **4** (*Figure 1b & Figure 1c*).

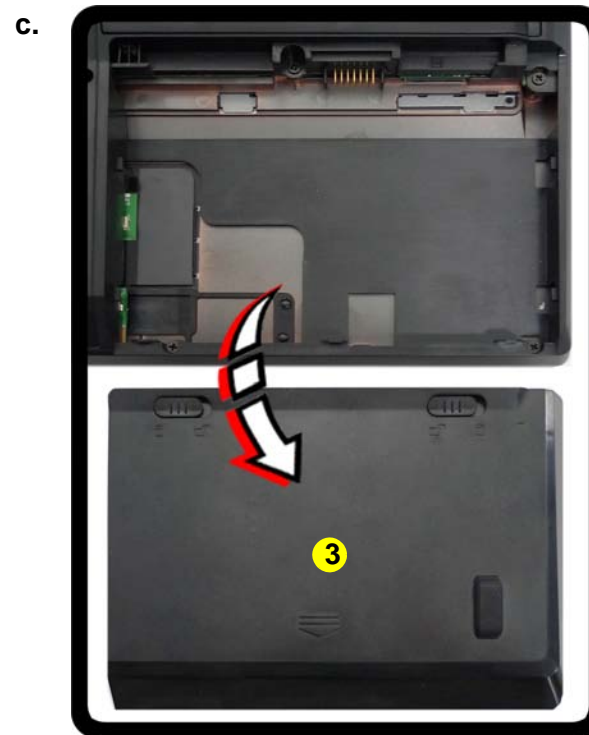
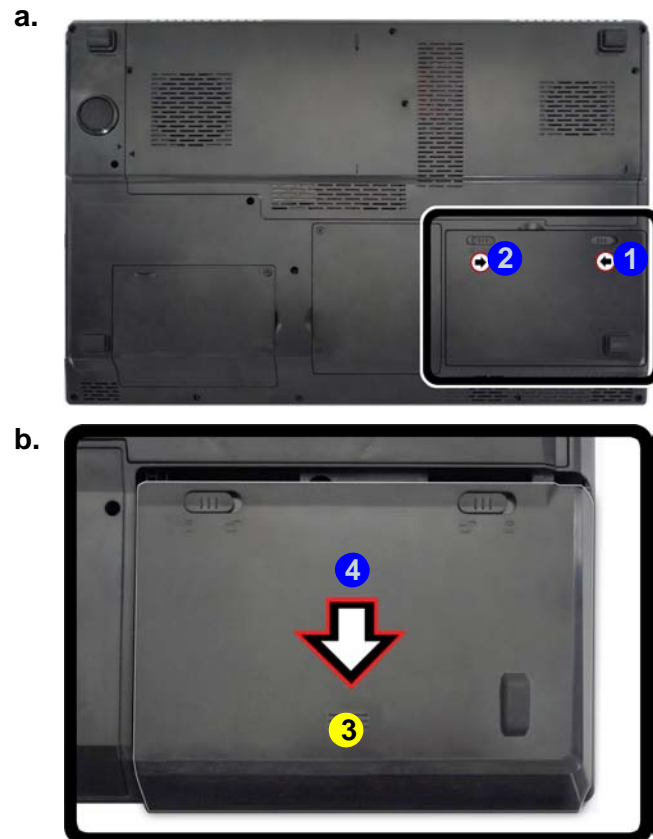
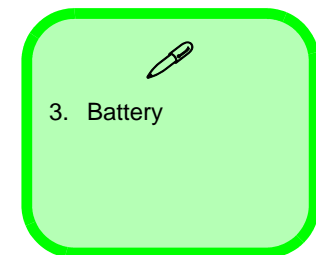


Figure 1
Battery Removal

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



Disassembly

Figure 2
**HDD Assembly
Removal**

- Locate the HDD bay cover and remove the screws.
- Remove the hard disk bay cover by levering the cover at point ③.

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.

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 2a](#)).
- Remove the hard disk bay cover by levering the cover at point ③ ([Figure 2b](#)).



HDD System Warning

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

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

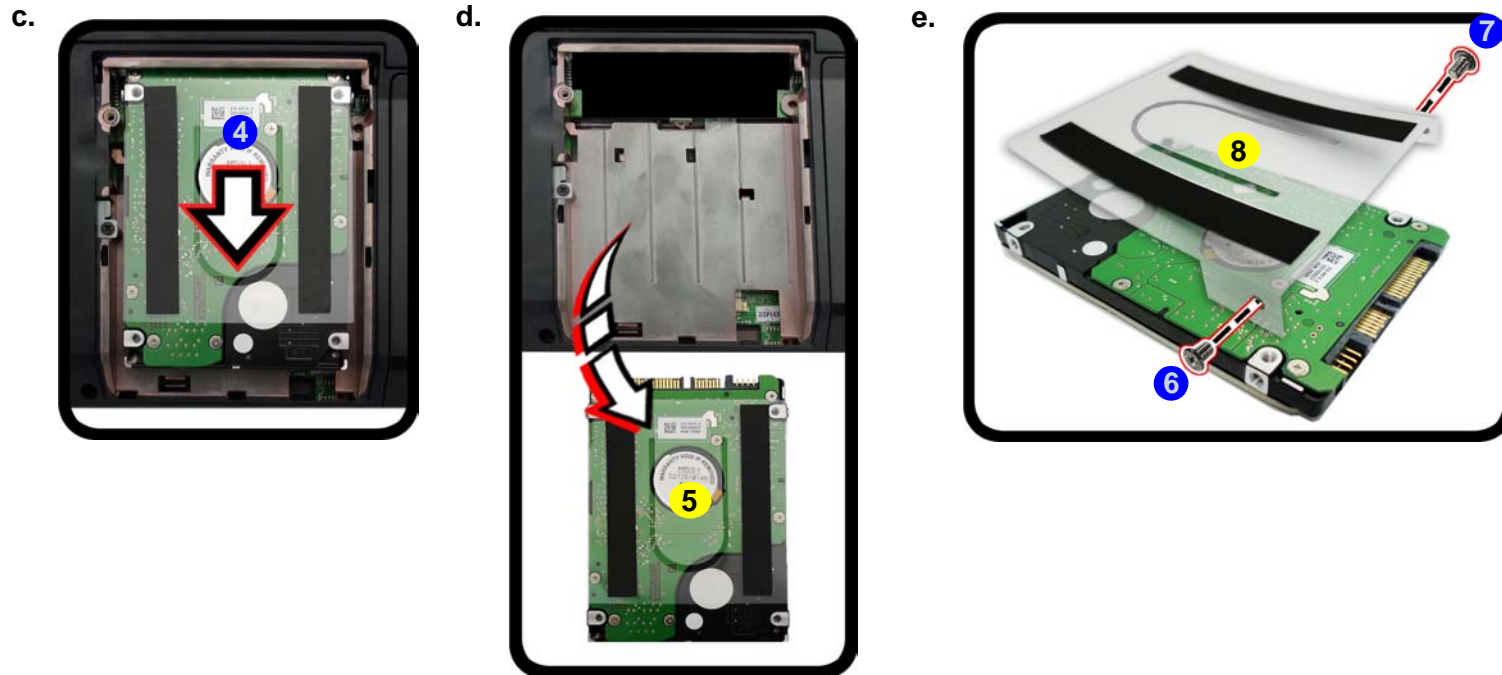
You have all the CD-ROMs and FDDs required to install your operating system and programs.

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




- 2 Screws

4. Slide the HDD assembly in the direction of the arrow **4** (*Figure 3c*).
5. Remove the hard disk assembly **5** (*Figure 3d*).
6. Remove screws **6** & **7** and the insulation plate **8** (*Figure 3e*).
7. Reverse the process to install a new hard disk (do not forget to replace all the screws and covers).



- Figure 3*
HDD Assembly Removal (cont'd.)
- c. Slide the HDD assembly in the direction of the arrow.
 - d. Remove the hard disk assembly.
 - e. Remove the screws and the insulation plate.

- 
- 5. HDD
 - 8. HDD Insulation Plate
 - 2 Screws

Disassembly

Inserting the Hard Disk Into the HDD Bay

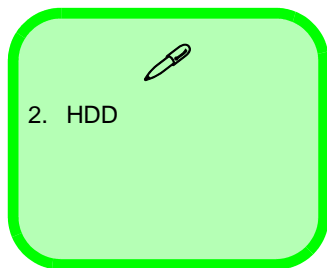
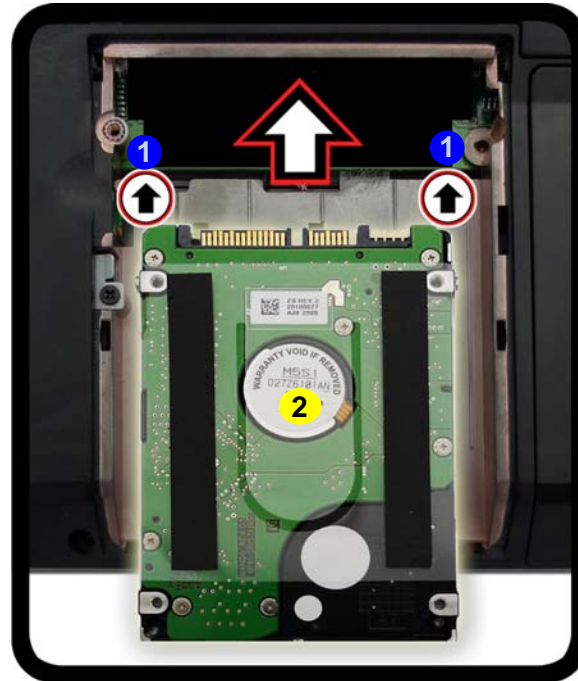
Figure 4

Inserting the Hard Disk Into the HDD Bay

1. Make sure the HDD assembly is aligned with the black taped area **1** (Figure 4a).
2. When aligned, carefully insert the HDD assembly **2** into the case so that the connectors line up (Figure 4a).
3. Replace the hard disk bay covers and screws.

a. Make sure the HDD assembly is aligned with the black taped area. When aligned, carefully insert the HDD assembly into the case so that the connectors line up.

a.



Removing the Optical (CD/DVD) Device

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 5a](#)).
3. Remove the hard disk bay cover **3** ([Figure 5b](#)).
4. Remove the screw at point **4** ([Figure 5c](#)), and use a screwdriver to carefully push out the optical device **5** at point **6** ([Figure 5d](#)).
5. Reverse the process to install any new optical (CD/DVD) device.

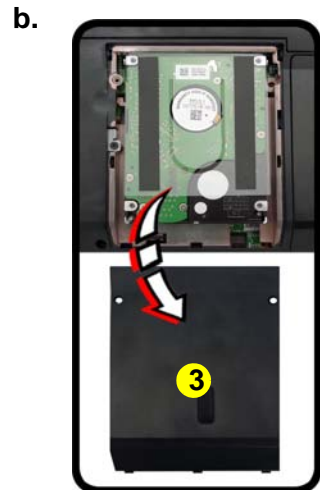
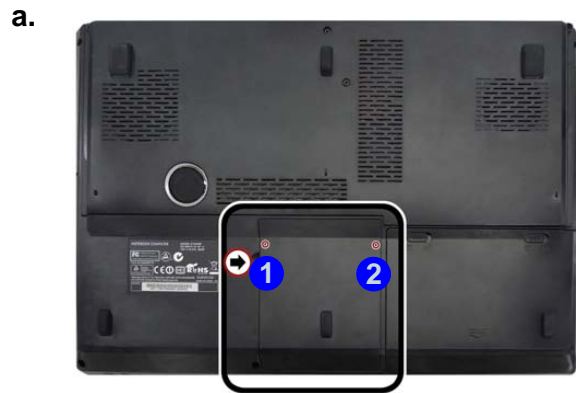
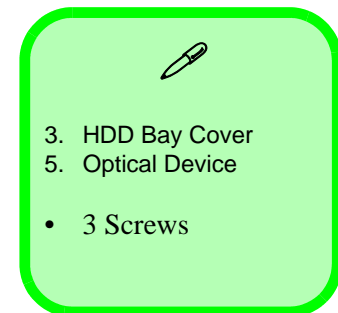


Figure 5
Optical Device Removal

- a. Locate the hard disk bay cover and remove the screws.
- b. Remove the hard disk bay cover.
- c. Remove the screw.
- d. Use a screwdriver to carefully push the optical device out.



Disassembly

Figure 6
RAM Module Removal

- Remove the screws.
- Slide the bottom cover until the cover and case indicators are aligned.

Removing the Primary System Memory (RAM)

The computer has **four** memory sockets for 204 pin Small Outline Dual In-line (SO-DIMM) **DDR III (DDR3)** type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

Note that **four SO-DIMMs are only supported by Quad-Core CPUs; Dual-Core CPUs support two SO-DIMMs maximum.**

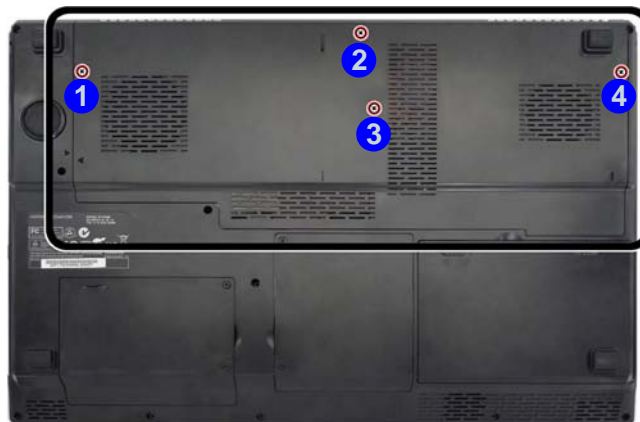
Two primary memory sockets are located under component bay cover (the bottom case cover), and two secondary memory sockets are located under the keyboard (not user upgradable). If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay cover.

Note that the RAM located under the keyboard is not user upgradable. Contact your service center for more information if you wish to upgrade the memory in the secondary memory sockets.

Memory Upgrade Process

- Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)).
- Remove screws **1 - 4** ([Figure 6a](#)).
- Slide the bottom cover until the cover and case indicators **5** are aligned ([Figure 6b](#)).

a.



b.

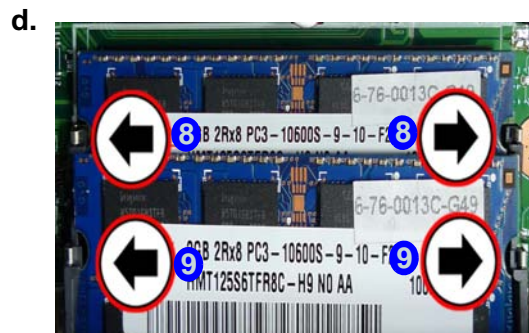
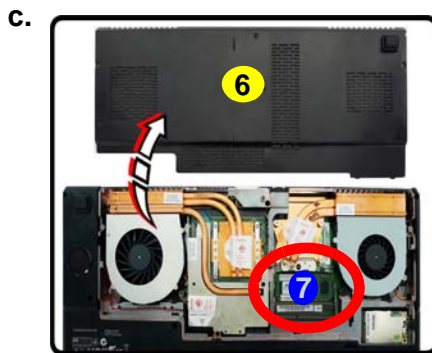


- 4 Screws

4. Lift the component bay cover **6** off the computer case. The modules will be visible at point **7** (*Figure 7c*).
5. Gently pull the two release latches (**8** & **9**) on the sides of the memory socket(s) in the direction indicated below (*Figure 7d*).
6. The RAM module **10** will pop-up, and you can remove it (*Figure 7e*).
7. Pull the latches to release the second module if necessary.
8. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
9. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the slot as it will go. **DO NOT FORCE** the module; it should fit without much pressure.
10. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
11. Replace the bay cover and screws.
12. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

Figure 7
RAM Module Removal (cont'd.)

- c. Lift the component bay cover off the computer case. The modules will be visible at point **7**.
- d. Gently pull the two release latches on the sides of the memory socket(s) in the direction indicated below.
- e. The RAM module will pop-up, and you can remove it.



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.



6. Component Bay Cover
10. RAM Module

Disassembly

Figure 8
RAM Module Removal

- Remove the component bay cover.
- Use the small tool provided to carefully push out the top cover module.
- Remove the top cover module.
- Remove the screws.
- Carefully lift the keyboard up, being careful not to bend the keyboard ribbon cable.

Removing the System Memory (RAM) from Under the Keyboard

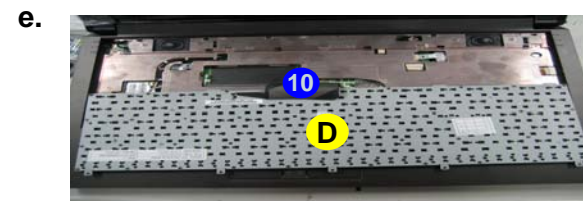
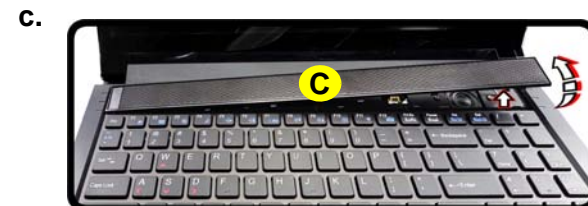
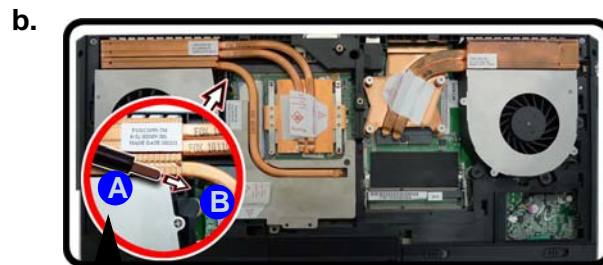
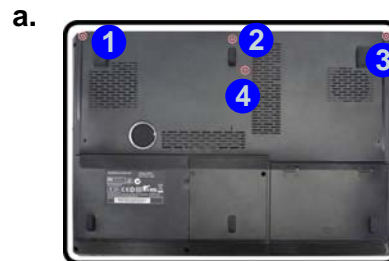
The computer has **four** memory sockets for 204 pin Small Outline Dual In-line (SO-DIMM) DDR III (DDR3) type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

Note that **four SO-DIMMs are only supported by Quad-Core CPUs; Dual-Core CPUs support two SO-DIMMs maximum.**

Two primary memory sockets are located under component bay cover (the bottom case cover), and two secondary memory sockets are located under the keyboard. If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay cover.

Memory Upgrade Process

- Remove screws **1** - **4**.
- Use the small tool **A** provided (see picture below) to carefully push out the top cover module at point **B**.
- Remove the top cover module **C** and remove screws **5** - **9**.
- Carefully lift the keyboard **D** up, being careful not to bend the keyboard ribbon cable **10**.



C. Top Cover Module
D. Keyboard

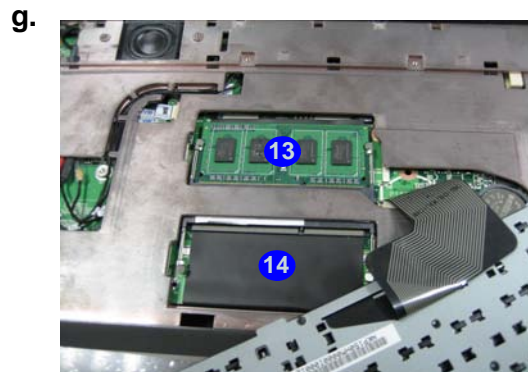
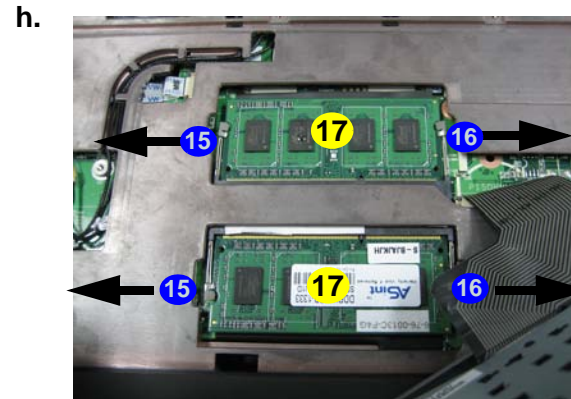
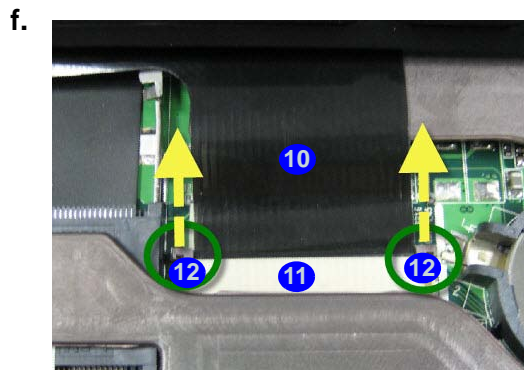
- 9 Screws


Top Cover Module Tool

5. Disconnect the keyboard ribbon cable **10** from the locking collar socket **11** by using a small flat-head screwdriver to pry the locking collar pins **12** away from the base. (*Figure 9c*).
6. Remove the keyboard and the memory sockets **13** & **14** will be visible.
7. Gently pull the two release latches (**15** & **16**) on the sides of the memory socket(s) in the direction indicated below.
8. The RAM module **17** will pop-up, and you can remove it.
9. Pull the latches to release the second module if necessary.
10. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
11. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the slot as it will go. **DO NOT FORCE** the module; it should fit without much pressure.
12. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
13. Replace the bay cover and screws.
14. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.


Figure 9
RAM Module Removal (cont'd.)

- f. Disconnect the keyboard ribbon cable from the locking collar socket by using a small flat-head screwdriver to pry the locking collar pins away from the base.
- g. Remove the keyboard and the memory sockets will be visible.
- h. Gently pull the two release latches on the sides of the memory socket(s) in the direction indicated below.




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.


17. RAM Modules

Disassembly

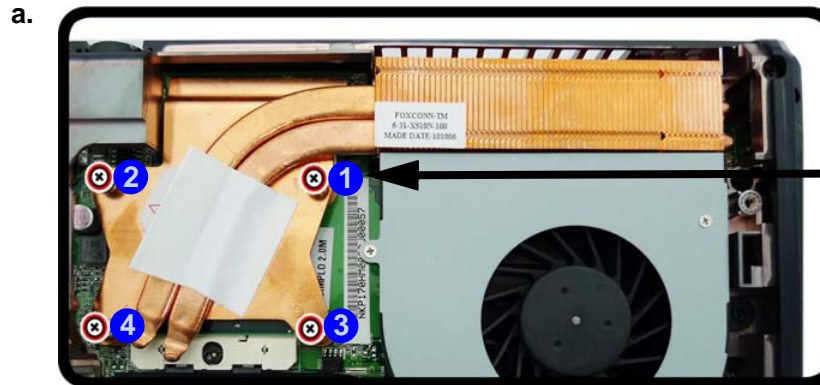
Figure 10 Processor Removal Procedure

- Remove the screws in the correct order.
- Carefully remove the heat sink unit.

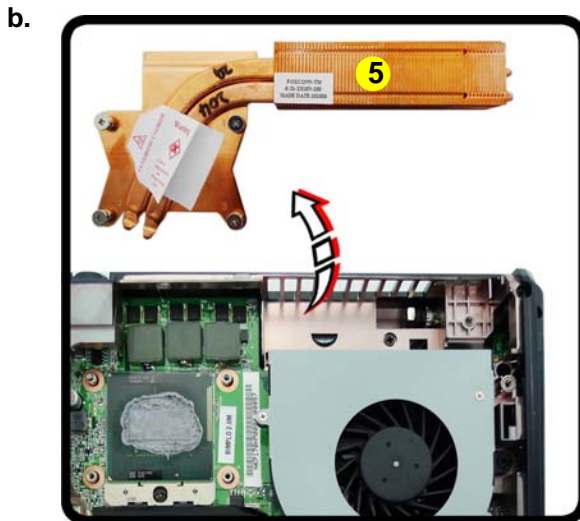
Removing and Installing the Processor

Processor Removal Procedure

- Turn off the computer, remove the battery ([page 2 - 5](#)), and component bay cover ([page 2 - 10](#)).
- Remove screws **1** - **4** from the heat sink unit in the order indicated on the label (i.e screw 4 first through to screw 1 last [Figure 10a](#)).
- Carefully (it may be hot) remove the heat sink unit **5** ([Figure 10b](#)).



Note: Loosen the screws in the reverse order 4-3-2-1 as indicated on the label.



CPU Warning

In order to prevent damaging the contact pins when removing the CPU, it is necessary to first remove the WLAN module from the computer.



5. Heat Sink Unit

- 4 Screws


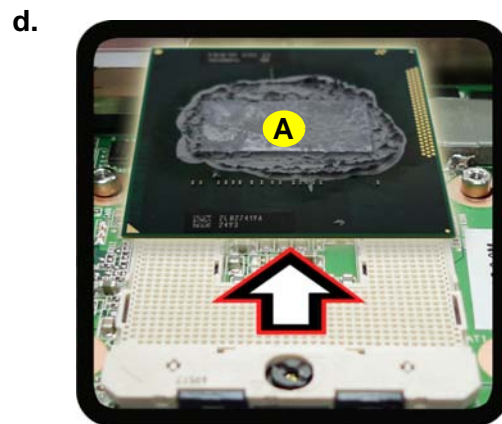
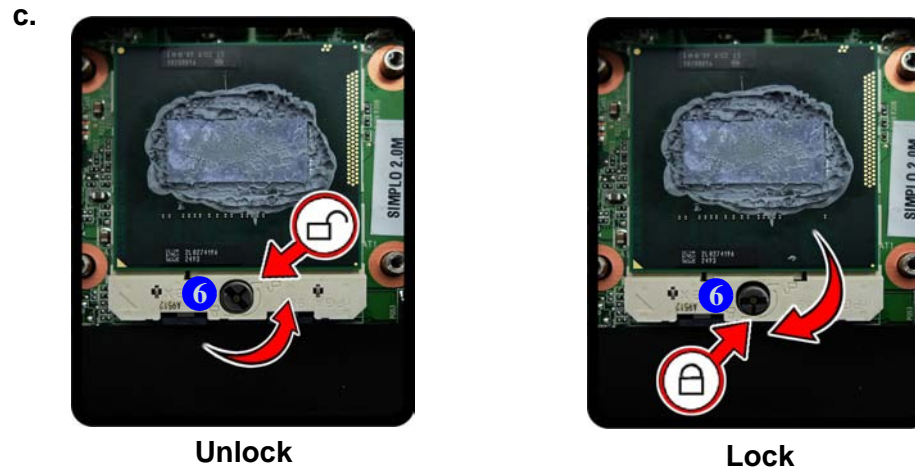

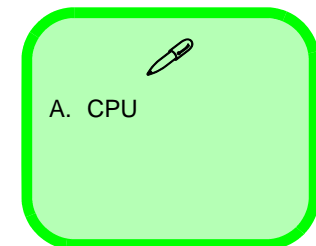
- Turn the release latch **6** towards the unlock symbol , to release the CPU (*Figure 11c*).
- Carefully (it may be hot) lift the CPU **A** up out of the socket (*Figure 11d*).
- See [page 2 - 16](#) for information on inserting a new CPU.
- When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

Figure 11
Processor Removal
(cont'd)

- Turn the release latch to unlock the CPU.
- 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.




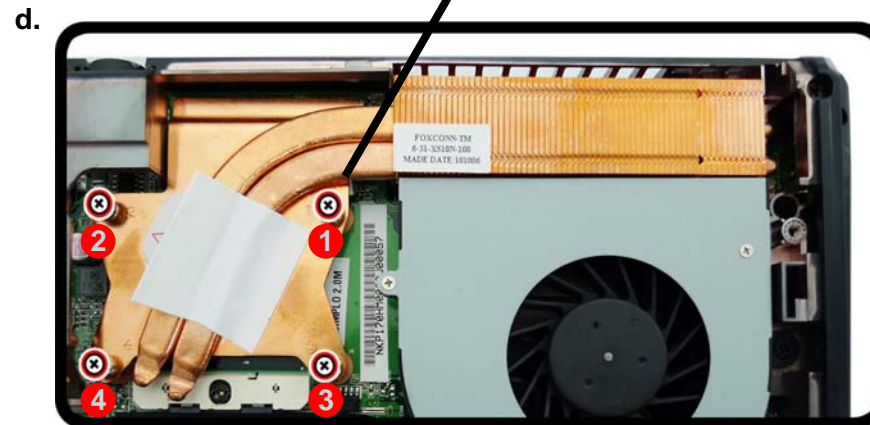
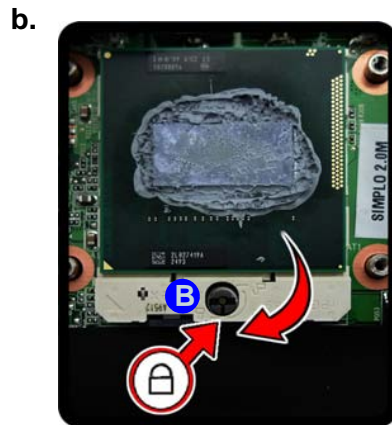
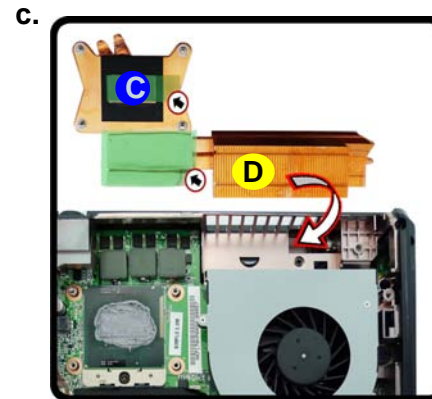
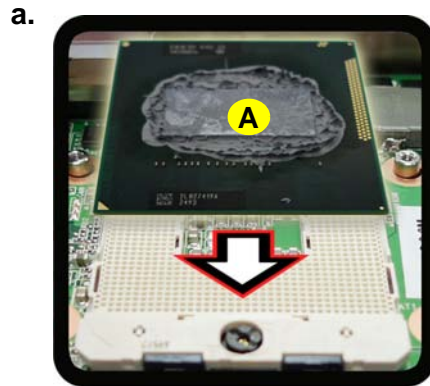
Disassembly

Figure 12
Processor Installation

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

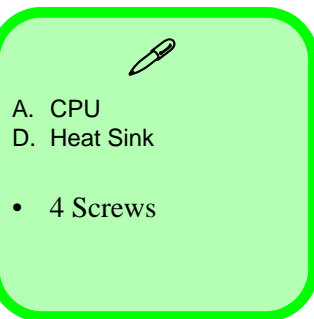
Processor Installation Procedure

- Insert the CPU **A**, pay careful attention to the pin alignment (*Figure 12a*), it will fit only one way (DO NOT FORCE IT!), and turn the release latch **B** towards the lock symbol  (*Figure 12b*).
- Remove the sticker C** (*Figure 12c*) from the heat sink unit.
- Insert the heat sink unit **D** as indicated in *Figure 12c*.
- Tighten the CPU heat sink screws in the order **1**, **2**, **3** & **4** (the order as indicated on the label and *Figure 12d*).
- Replace the CPU fan, component bay cover and tighten the screws (*page 2 - 14*).



Note:

Tighten the screws in the order 1-2-3-4 as indicated on the label.

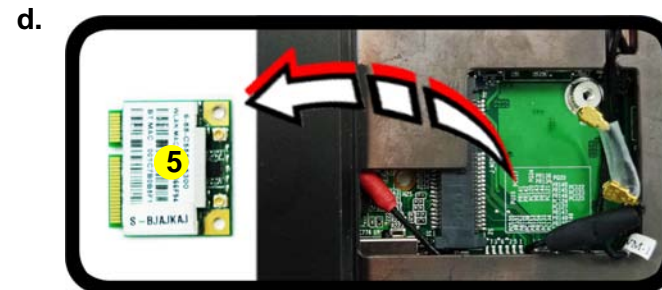
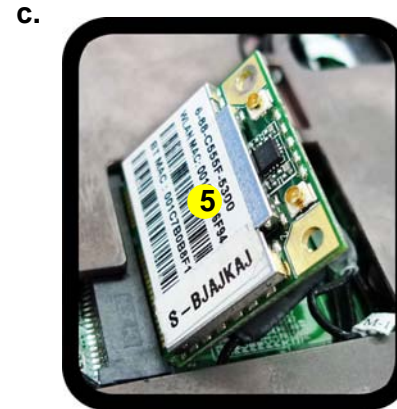



Removing the Wireless LAN Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and the keyboard ([page 2 - 12](#)).
2. The Wireless LAN module will be visible at point **1** under the keyboard ([Figure 13a](#)).
3. Carefully disconnect cables **2** - **3**, then remove screw **4** from the module socket ([Figure 13b](#)).
4. The Wireless LAN module **5** will pop-up ([Figure 13c](#)).
5. Lift the Wireless LAN module ([Figure 13d](#)) up and off the computer.

Figure 13
**Wireless LAN
Module Removal**

- a. The Wireless LAN module will be visible at point **1** under the keyboard
- b. Disconnect the cables and remove the screw.
- c. The WLAN module will pop up.
- d. Lift the WLAN module out.





5. WLAN Module

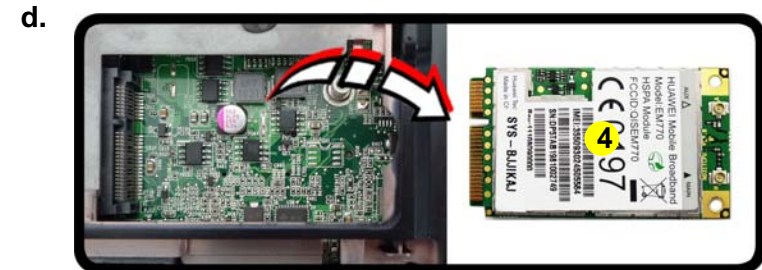
- 1 Screw

Disassembly

Figure 14
3G Module Removal

Removing the 3G Module

1. Turn off the computer, remove the battery (page 2 - 5), and component bay cover (page 2 - 10).
- a. Remove the screw.
- b. Disconnect the cable and remove the screw.
- c. Lift the 3G module up off the socket.
2. Locate the 3G, it is visible at point ① (Figure 14a).
3. Carefully disconnect the cable ② and remove screw ③ from the 3G module (Figure 14b).
4. Lift the 3G module ④ up and off the computer (Figure 14b).



4. 3G Module

• 1 Screw

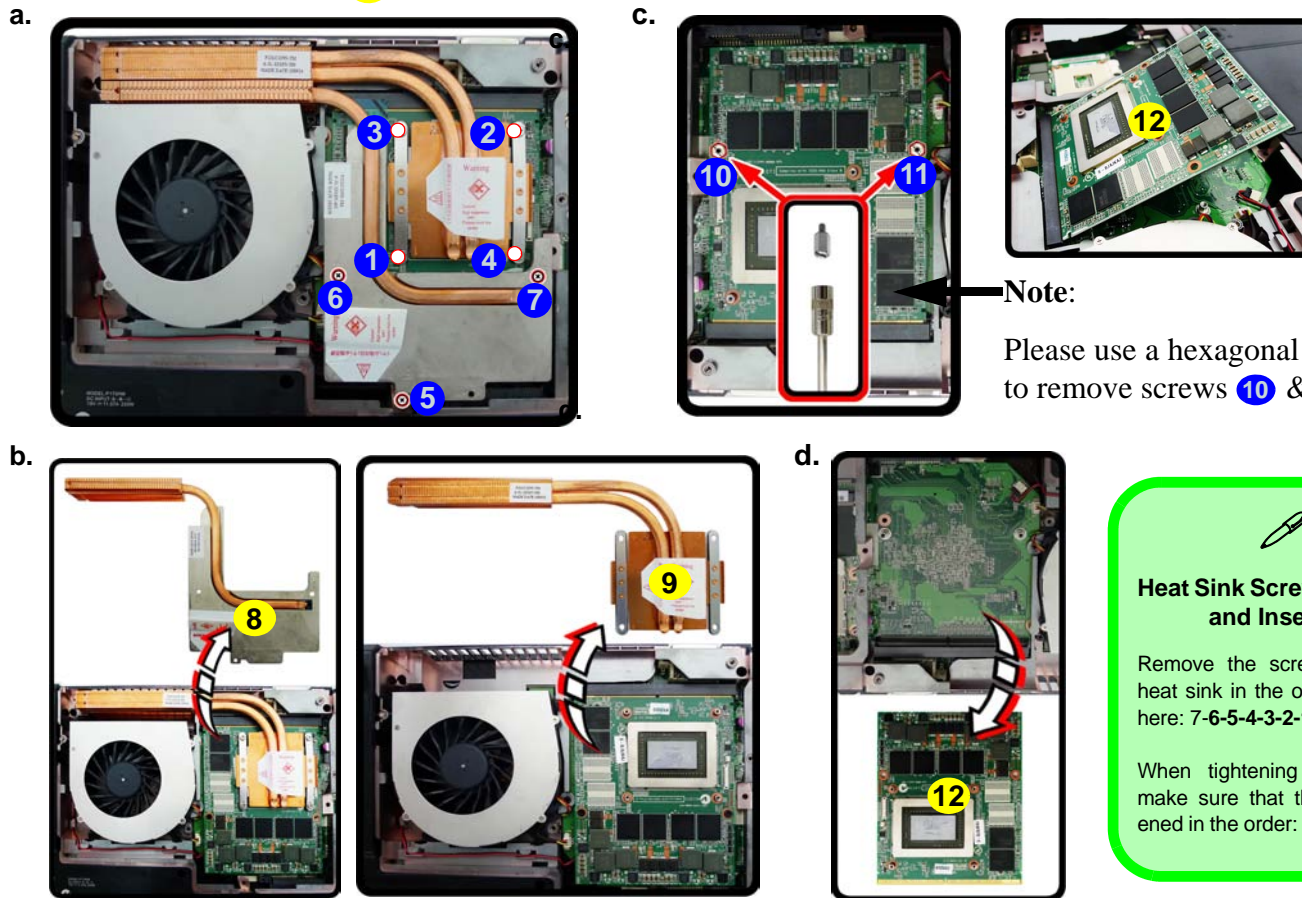
Removing and Installing the Video Card

Video Card Removal Procedure

1. Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)) and component cover ([page 2 - 10](#)).
2. Remove screws **1** - **7** from the heat sink unit in the order indicated on the label (i.e screw **7** first through to screw **1** last) ([Figure 15a](#)).
3. Carefully (**it may be hot**) remove the heat sink units **8** & **9** ([Figure 15b](#)).
4. Remove screws **10** & **11** from the video card. The video card **12** will pop up ([Figure 15c](#)).
5. Remove the video card **12** ([Figure 15d](#)).

Figure 15
Video Card Removal Procedure


- a. Remove the screws in the correct order.
- b. Carefully remove the heat sink units.
- c. Remove the video card screws. The video card will pop up.
- d. Remove the video card.



Note:
Please use a hexagonal screwdriver to remove screws **10** & **11**.



Caution

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


Heat Sink Screw Removal and Insertion

Remove the screws from the heat sink in the order indicated here: 7-6-5-4-3-2-1.

When tightening the screws, make sure that they are tightened in the order: 1-2-3-4-5-6-7.


8 & 9. Heat Sink Units
12. Video Card

- 9 Screws

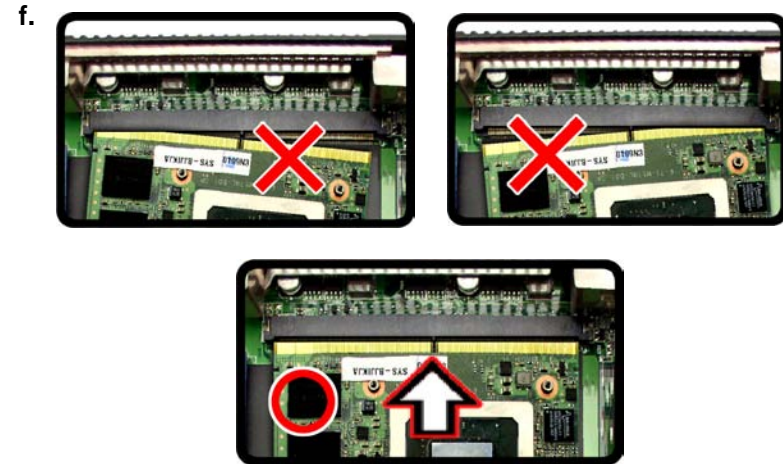
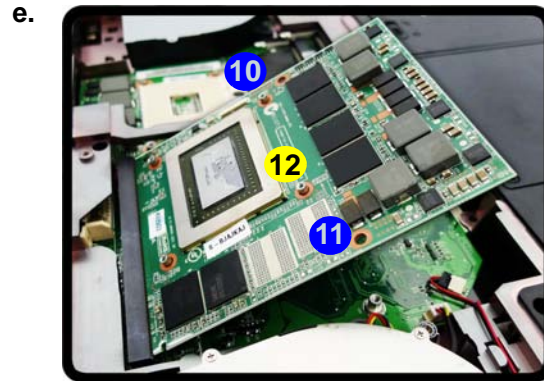
Disassembly

Figure 16
Installing a New Video Card

- e. Insert the video card at a 30 degree angle.
- f. Fit the connectors straight and even, and secure the card with screws 10 & 11.

Installing a New Video Card

1. Prepare to fit the video card 12 into the slot by holding it at about a 30° angle (*Figure 16e*).
2. The card needs to be fully into the slot, and the video card and socket have a guide-key and pin which align to allow the card to fit securely (*Figure 16f*).
3. Fit the connectors firmly into the socket, straight and evenly.



Caution

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



12. Video Card

- 2 Screws

4. DO NOT attempt to push one end of the card in ahead of the other.
5. The card's pin alignment will allow it to only fit one way. **Make sure the module is seated as far into the socket as it will go** (none of the gold colored contact should be showing). DO NOT FORCE the card; it should fit without much pressure.
6. Secure the card with screws 10 & 11 (*Figure 15 on page 2 - 19*).
7. Place the heat sink back on the card, and secure the screws in the order indicated in *Figure 15 on page 2 - 19*.
8. Attach the video card fan and secure with the screws as indicated in *Figure 15 on page 2 - 19*.
9. Reinsert the component bay cover, and secure with the screws as indicated in *Figure 8 on page 2 - 12*.

Appendix A: Part Lists

This appendix breaks down the *P150HM/P151HM1* series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

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

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

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

Part List Illustration Location

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

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

Parts	W870CU
Top with Fingerprint	<i>page A - 3</i>
Top without Fingerprint	<i>page A - 4</i>
Bottom	<i>page A - 5</i>
LCD	<i>page A - 6</i>
COMBO	<i>page A - 7</i>
DVD-Dual Drive	<i>page A - 8</i>
2nd HDD	<i>page A - 9</i>

Top with Fingerprint

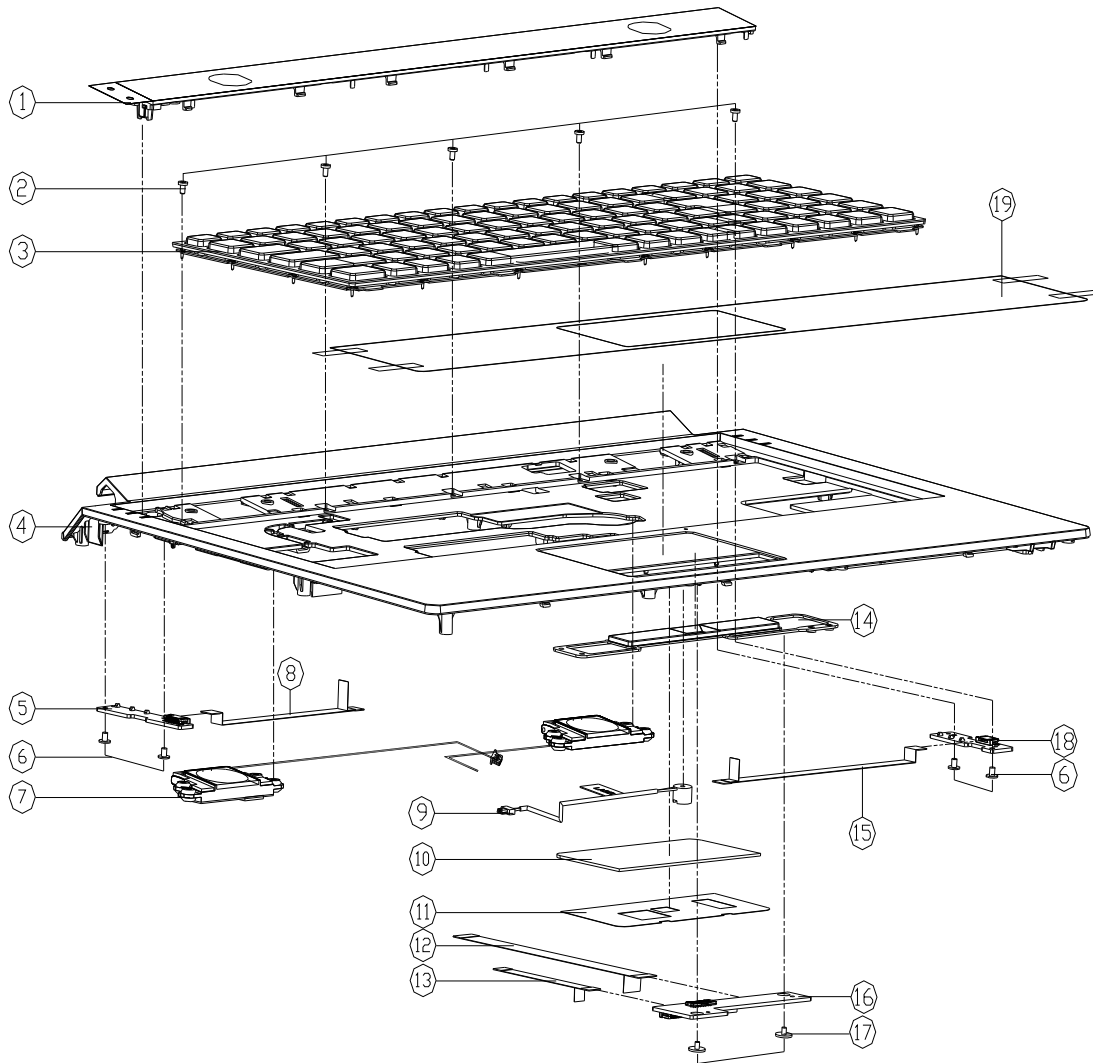


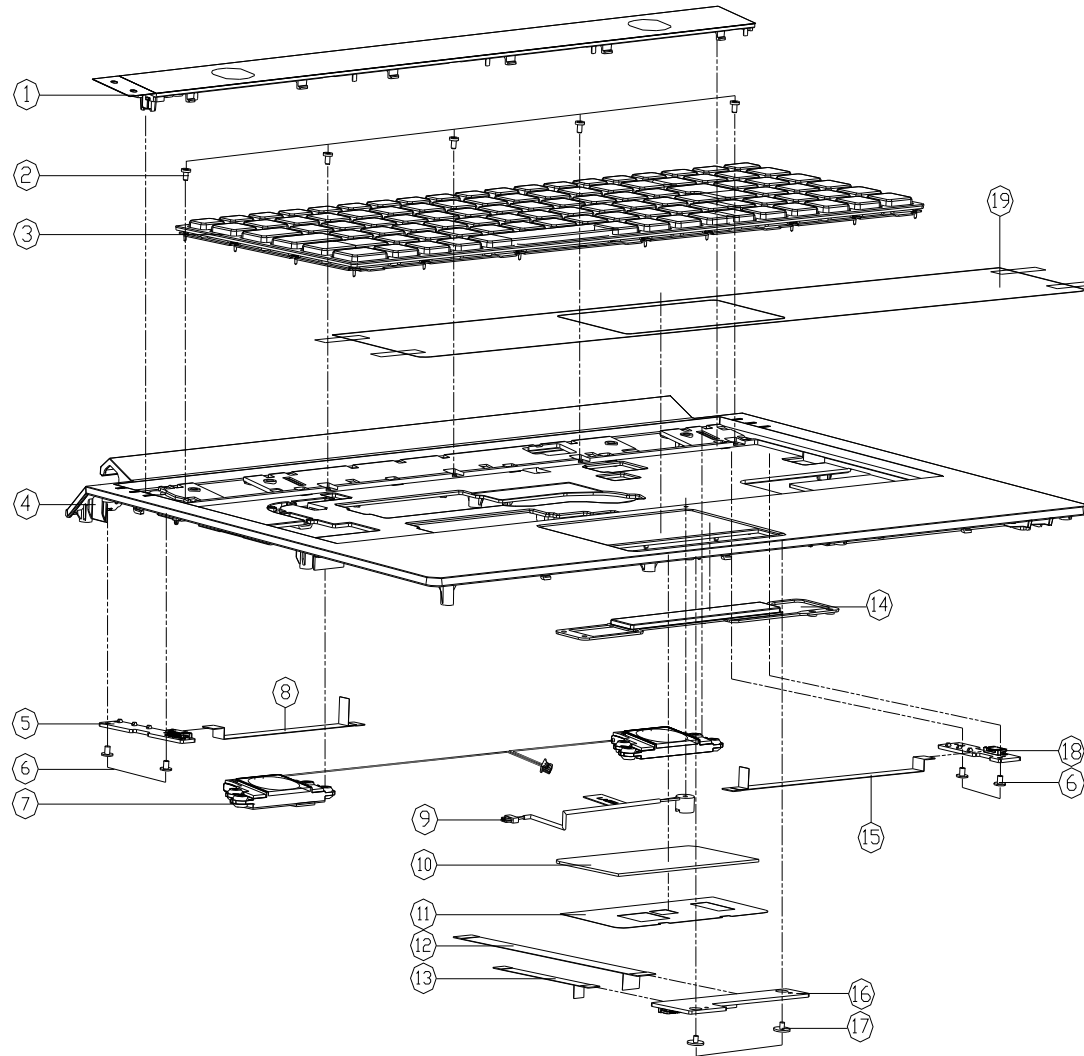
Figure A - 1
Top with
Fingerprint

ITEM	PART NAME	PART NO	REMARK
1	TOP CENTER COVER MODULE P150HM	6-42-X5102-102	
2	TOP CENTER COVER MODULE P151HM	6-42-P1512-101	
3	SCREW M2xL K1 BZ ICT NY (00=45,01=84)	6-35-B6120-3RD	
3	K/R USA (BLACK) FRAME (US) MODULE P150HM	6-79-P150HMK-010	
4	TOP CASE MODULE W/FINGER P150HM	6-39-X5102-012	
5	TOP CASE MODULE W/FINGER P151HM	6-39-P1512-011	
6	INDICATORY BOARD V3.0 P150HM	6-77-X510K-D03	
6	SCREW M2xL K1 NI ICT NY (00=45,01=84)	6-35-B1120-3RE	
7	SPK+CABLE R 24x20 145 20W 4: P2520MGM	6-23-5X510-022	
8	FFC CABLE FOR NB TO LED.L BOARD 6PIN P150HM	6-43-X5100-072	
9	NO OMISSIONS-FIL-0 2PIN 2K W/CLIP L-4MM NONG	6-23-EM54G-012	
10	TOUCH PAD SYNAPTICS TM-0146-003 MULTI-GE5	6-49-C4802-010	
11	TOP TOUCH PAD MYLAR PET P150HM	6-40-X5102-010	
12	FFC CABLE FOR CLICK BOARD TO NB 10PIN P150HM	6-43-X5100-062	
13	FFC CABLE FOR TP TO CLICK BOARD 6PIN P150HM	6-43-X5102-011	
14	CLICK BUTTON W/FINGER PC+ABS P150HM	6-42-X5102-022	
14	CLICK BUTTON W/FINGERPRINT PC+ABS P150HM	6-42-P1512-021	
15	FFC CABLE FOR NB TO LED.R BOARD 6PIN P150HM	6-43-X5100-012	
16	CLICK BOARD V3.0 (W/FINGER) P150HM	6-77-X5102-D03	
17	SCREW M2xL K1 BK/2 ICT NY(00,1=06)	6-35-B6120-2RE	
18	FUNCTION LED BOARD V3.0 P150HM	6-77-X5107-D03	
19	TOP PROTECT FILM SH71S P150HM	6-40-X5108-010	

A.Part Lists

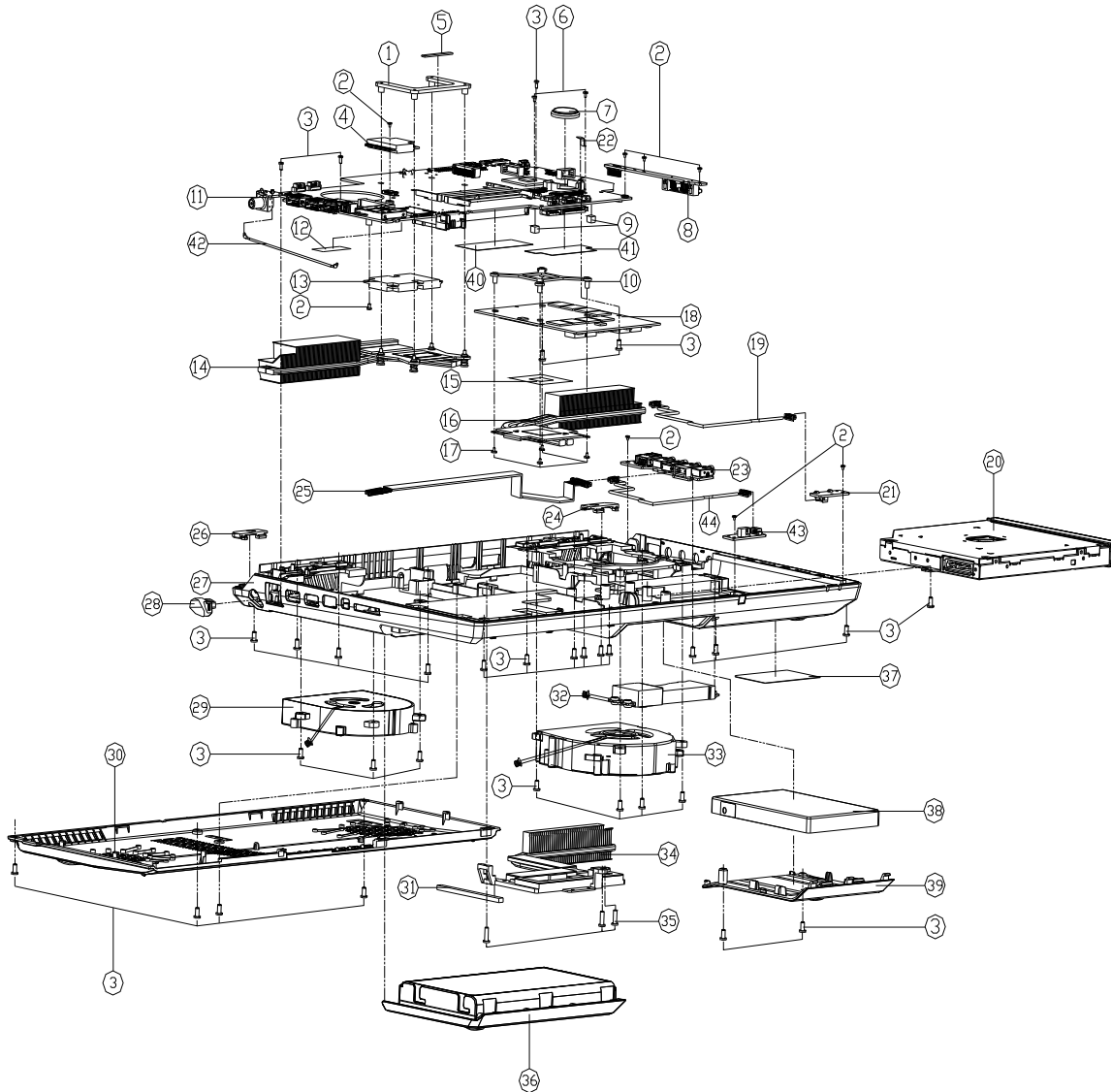
Top without Fingerprint

Figure A - 2
Top without Fingerprint



ITEM	PART NAME	PART NO	REMARK
1	TOP CENTER COVER MODULE P150HM	6-42-X5102-102	
1	TOP CENTER COVER MODULE P15HM	6-42-P1512-101	
2	SCREW M2x3. KI BZ ICT NY (00=845,01=84)	6-35-B6120-3RD	
3	K/B USA (BLACK) FRAME (US) MIDDLE P150HM	6-79-P150HMOK-010	
4	TOP CASE MODULE W/O FINGER P150HM	6-39-X5102-012	
4	TOP CASE MODULE W/O FINGER P15HM	6-39-P1512-011	
5	INDICATORY BOARD V3.0 P150HM	6-77-X510K-D03	
6	SCREW M2x3. KI NI ICT NY (00=845,01=84)	6-35-B1120-3RE	
7	SPK+CABLE R 24x20 145 2.0W 4? P250HM04	6-23-5X510-022	
8	FFC CABLE FOR MB TO LED_L BOARD 6PIN P15H	6-43-X5100-072	
9	WE 0MMX30MM-TL-W 24-WV 2X W04L079 L=0MM W=6	6-23-EM54G-012	
10	TOUCH PAD SYNAPTICS TM-90146-003 MULTI-GE5	6-49-C4802-010	
11	TOP TOUCH PAD MYLAR PET P150HM	6-40-X5102-010	
12	FFC CABLE FOR CLICK BOARD TO MB TOPIN P15HM	6-43-X5100-062	
13	FFC CABLE FOR TP TO CLICK BOARD 6PIN P15HM	6-43-X5102-011	
14	CLICK BUTTON W/O FINGER PC+ABS P150HM	6-42-X5102-012	
14	CLICK BUTTON W/O FINGERPRINT PC+ABS P15HM	6-42-P1512-031	
15	FFC CABLE FOR MB TO LED_R BOARD 6PIN P15HM	6-43-X5100-012	
16	CLICK BOARD V3.0 (W/O FINGER) P150HM	6-77-X5102-003-1	
17	SCREW M2x2L KI BK/2 ICT NY(8,1=0.6)	6-35-B6120-2RE	
18	FUNCTION LED BOARD V3.0 P150HM	6-77-X5107-D03	
19	TOP PROTECT FILM SH71S P150HM	6-40-X5108-010	

Bottom

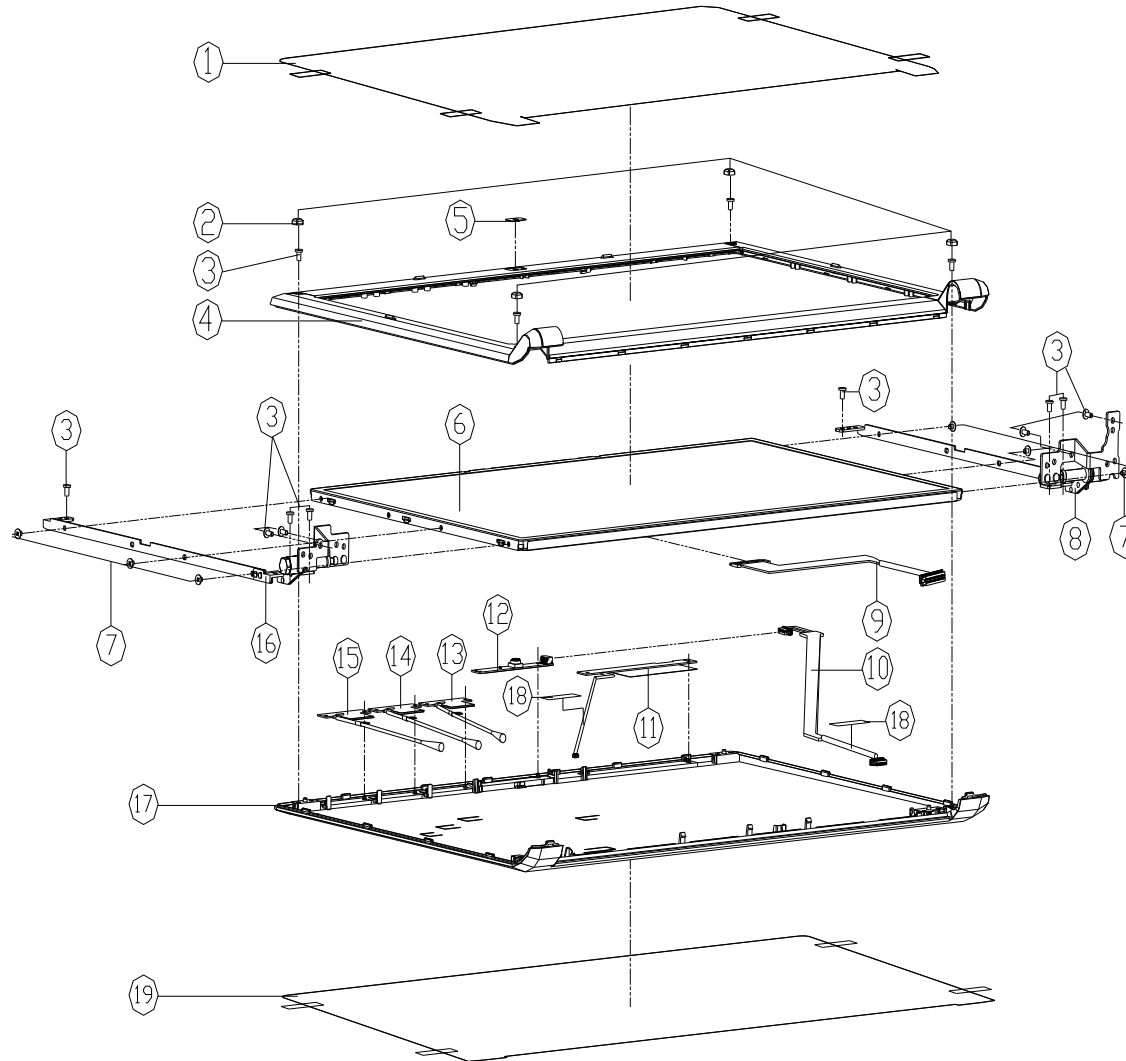


ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT BRACKET SEC1 T45 P150HM	6-33-X510S-011	
2	SCREW M2X4.0 W/ ICT NY (00445JH-04)	6-35-B1120-3RE	
3	SCREW M2.5X6L K BZ ICT NY	6-35-B2125-6RA	
4	LEAD FRAME FOR CPU COVER (00445JH-04)	6-88-M77C2-4228	(OPTION)
4	LEAD FRAME FOR CPU COVER (00445JH-04)	6-88-P170F-4228	(OPTION)
4	LEAD FRAME FOR CPU COVER (00445JH-04)	6-88-C555F-6701	(OPTION)
4	LEAD FRAME FOR CPU COVER (00445JH-04)	6-88-W76C2-7001	(OPTION)
4	VLANT COMBO ADAPTER V4188CELEF-0393	6-88-C555F-5300	(OPTION)
4	VLANT COMBO ADAPTER V4188CELEF-0393	6-88-C555F-7001	(OPTION)
5	GASKET (00445JH-25) FOR W/O MYLAR MS04	6-47-00190-35D	
6	SCREW M2X4.0 K11-08 D-40 BKZ ICT NY	6-35-B6120-5R0	
7	BATTERY 3V 20MA CR2032 (NITSUBISHI)	6-23-62015-607	
8	ODD BRIDGE BOARD V3.0 P150HM	6-77-X510H-003	
9	VGA SUPPORT RUBBER B SILICONE P150HM	6-47-X510S-010	
10	VGA SUPPORTER SUS430 X7200	6-33-X720S-040	
11	MAIN BOARD V3.0 (Q/TV TUNER) P150HM	6-77-X5100-003	
11	MAIN BOARD V3.0 (Q/TV TUNER) P150HM	6-77-X5100-003-1	
11	MAIN BOARD V3.0 (Q/TV TUNER) P150HM	6-77-P1510-003	
11	MAIN BOARD V3.0 (Q/TV TUNER) P150HM	6-77-P1510-003-1	
12	TAPE MYLAR (C)MYLAR MS05J1	6-40-M55J2-030	
13	PCBA BRIDGE FOR W/O MYLAR (00445JH-04)	6-88-W150W-9100	
14	CPU HEATSINK MODULE P150HM	6-31-X510H-102	
15	VGA CHIP MYLAR FOR NITE-GS VRANGS1	6-40-W860S-060	ONLY FOR NITE-0300
16	GPU/GS HEATSINK MODULE P150HM	6-31-X510H-202	ONLY FOR NITE-0300
16	GPU/GS HEATSINK MODULE P150HM	6-31-X510H-302	ONLY FOR NITE-0300
17	SCREW M2.5X3.0 K11-12 D-40 BKZ ICT NY	6-35-B2116-3R3	
18	W/O MYLAR (00445JH-25) FOR W/O MYLAR MS04	6-77-W860L-112-E	
18	W/O MYLAR (00445JH-25) FOR W/O MYLAR MS04	6-77-W860L-121-E	
19	WIRE CABLE FOR FRONT LED BOARD TO W/O P150HM (00)	6-43-X5100-041	
20	SATA I/O SUPER MULTI ASSY (OPTION)	6-79-P150M00-010	
20	SATA BLUE-RAY WRITER ASSY (OPTION)	6-79-P150M00-010	
20	W/O ODD ASS'Y P150HM	6-79-P150M00Z-000	
21	LED BOARD V1.0A P150HM	6-77-X5104-001A	
22	W/O CPU BATTERY SOCKET MYLAR P150HM GASK	6-40-X510S-020	
23	AUDIO BOARD V3.0 P150HM	6-77-X5108-003	
24	TOP HINGE COVER R PC+ABS P150HM	6-42-X5102-072	
24	TOP HINGE COVER R PC+ABS P150HM	6-42-P1518-011	
25	WIRE CABLE FOR AUDIO BOARD TO W/O P150HM	6-43-X5100-031	
26	TOP HINGE COVER L PC+ABS P150HM	6-42-X5102-082	
26	TOP HINGE COVER L PC+ABS P150HM	6-42-P1518-021	
27	BOTTOM CASE MODULE P150HM	6-39-X5103-012	
28	TV JACK DUMMY RUBBER SILICONE P150HM	6-47-X5103-012	
29	FRONT PROTECTOR FOR REMOTE AND SENSING FRONT	6-23-AX510-012	
30	CPU COVER MODULE P150HM	6-42-X5108-102	
31	ODD BRIDGE BOARD V3.0 FOR CPU COVER (00445JH-25)	6-47-00190-650	
32	SPRING CABLE SUPPORTER END JAW AT P150HM P150HM	6-23-X5101-012	
33	W/O MYLAR (00445JH-25) FOR W/O MYLAR MS04	6-31-X720S-101	
34	VRANGS1 HEATSINK MODULE P150HM	6-31-X510H-402	
34	VRANGS1 HEATSINK MODULE P150HM	6-31-X510H-502	
35	SCREW M2X4.0 K11-08 D-40 BKZ ICT NY	6-35-B6120-5R0	
36	W/O CPU BATTERY SOCKET MYLAR P150HM GASK	6-40-X510S-020	(OPTION)
36	W/O CPU BATTERY SOCKET MYLAR P150HM GASK	6-40-X510S-020	(OPTION)
37	PRODUCT LABEL P150HM	6-45-P150M03-010	
37	PRODUCT LABEL P150HM	6-45-P150M13-010	
38	W/O HDD ASS'Y P150HM	6-79-P150M0J-020	
38	W/O HDD ASS'Y P150HM	6-79-P150M0J-010	
39	HDD COVER MODULE P150HM	6-42-X510J-102	
40	MS200 MYLAR FOR DDR (00445JH-25)	6-40-M520S-010-1	
41	MYLAR (00445JH-25) FOR W/O SATA HDD CON	6-40-X510S-010	
42	CABLE CABLE FOR TV TUNER (00445JH-25) FOR W/O P150HM	6-43-X510T-020	
43	CIR. BOARD V3.0 P150HM	6-77-X510H-003	(OPTION)
44	WIRE CABLE FOR IR BOARD TO W/O P150HM	6-43-X5100-051	(OPTION)
45	SCREW M2.5X4.0 D-30M ICT NY FOR VGA CARD	6-35-Z1125-4R0-1	

Figure A - 3
Bottom

LCD

Figure A - 4
LCD



ITEM	PART NAME	PART NO	REMARK
1	LED FRONT COVER PROTECTION MYLAR (PET) 005051 ISHM	6-40-B51M8-010	
2	LCD HINGE SCREW RUBBER SILICON P150HM	6-47-X5101-021	
3	SCREW M2.5x5L KI BK/Z ICT NY	6-35-B6125-5RA	
4	LCD FRONT COVER MODULE P150HM	6-39-X5101-012	
5	CCD LENS PC P150HM	6-40-X5101-010	
5	W/D CCD LENS PC P150HM	6-40-X5101-020	
6	LED 156" HD+ AU BISCAPROT V3 QLED 5.7MM	6-50-LA157-G02	
6	LED 156" HD+ LG LPI56WH01-ULR GLARE TYPE	6-50-LA157-L03	
6	LED 156" FHD AU BISCAPROT V0 GLARE TYPE	6-50-LB257-G01	
6	LED 156" FHD AU BISCAPROT V1 QLED 5.7MM	6-50-LB257-G03	
7	SCREW M2x4 KI NI ICT NY 008-M4.5J1-04	6-35-B1120-3RE	
8	LCD HINGE R SECC P150HM	6-33-X5101-012	
9	WIRE CABLE FOR LCD TO MAIN PCB (CONDUCTIVE) HD P150HM	6-43-X5101-011-A	
10	WIRE CABLE FOR CCD SP P150HM (GL)	6-43-X5101-011	
11	MAIN PCB V0 V1 V2 PER 24X350X75 V0E-000M P150HM	6-23-7X510-011	
12	LCD CAMERA BEZEL FOR BISCAPROT HD ON GLASS W/RGB	6-88-W76SC-4900	
12	LCD CAMERA BEZEL FOR BISCAPROT HD ON GLASS PCB P150HM	6-88-X510C-4900	
13	MAIN PCB V0 V1 V2 PER 24X350X75 V0E-000M P150HM	6-23-7X510-032	
14	MAIN PCB V0 V1 V2 PER 24X350X75 V0E-000M P150HM	6-23-7X510-042	
15	MAIN PCB V0 V1 V2 PER 24X350X75 V0E-000M P150HM	6-23-7X510-022	
16	LCD HINGE L SECC P150HM	6-33-X5101-022	
17	LCD BACK COVER MODULE P150HM	6-39-X5101-022	
17	LCD BACK COVER MODULE P151HM	6-39-PI511-021	
18	TAPE MYLAR (C) MYLAR M550J	6-40-M55J2-030	
19	BACK COVER PRO SH71S P150HM	6-40-X5101-070	

COMBO

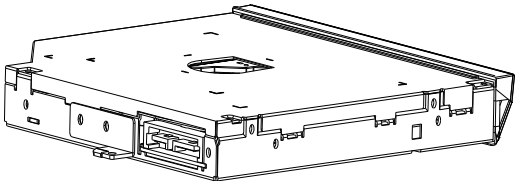
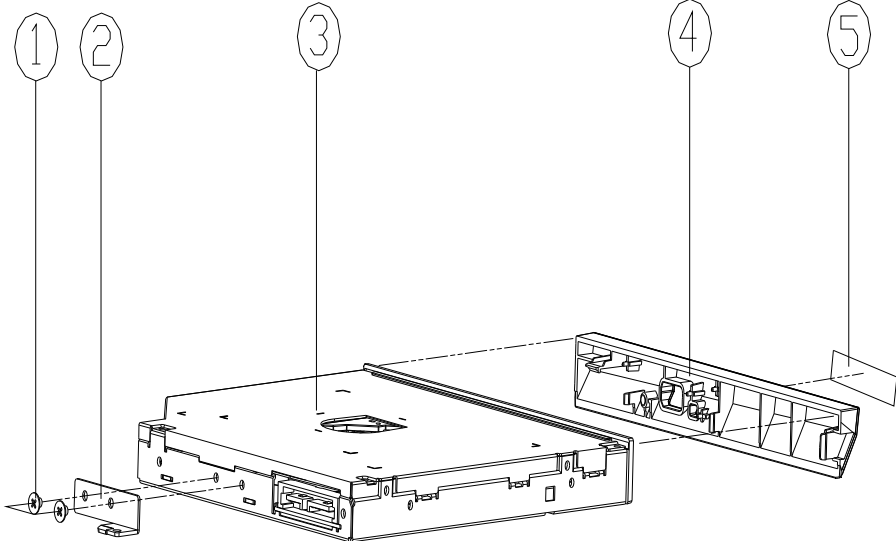
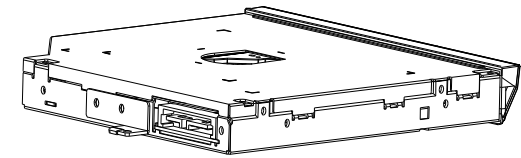
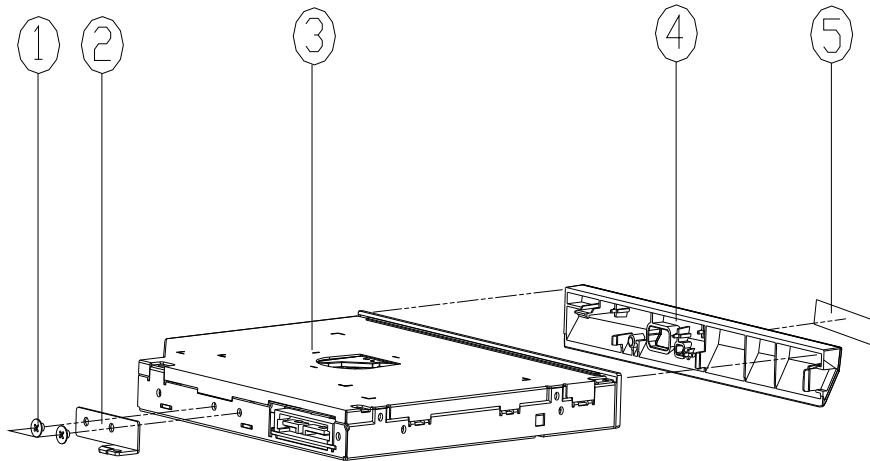


Figure A - 5
COMBO

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2x3L KI NI ICT NY (DD-045,DT=0.4)	6-35-B1120-3RE	
2	DDD BRACKET SECC T=0.8 P150HM	6-33-X510Z-011	
3	SATA BLU-RAY WRITER 5.25" 24X DVD RW 16X DVD RW 8X DVD RW 7.2X DVD RW 7.2X DVD RW	6-85-B076X-P21	FOR PANASONIC
3	SATA BLU-RAY COMBO 5.25" 24X DVD RW 16X DVD RW 8X DVD RW 7.2X DVD RW 7.2X DVD RW	6-85-B076X-512	FOR HLDS
4	DDD BEZEL MODULE P150HM	6-42-X510Z-102	
5	DDD BEZEL LABEL SUPER MULTIXBLU-RAY W760S (半青)	6-45-W76SW-010-1	

DVD-Dual Drive

Figure A - 6
DVD-Dual Drive



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2x3L KI NI (CT NY (DD-#45,DT-0.4)	6-35-B1120-3RE	
2	ODD BRACKET SECC T=0.8 P150HM	6-33-X510Z-011	
3	ODD SUPER MULTI 5 LAYER DISC HOLDER (FOR DVD RW & REEL RECORD / SUPPORT DVD)	6-85-A078X-T09	FOR TSST
3	ODD SUPER MULTI 5 LAYER DISC HOLDER (FOR DVD RW & REEL RECORD / SUPPORT DVD)	6-85-A078X-507	FOR HLDS
4	ODD BEZEL MODULE P150HM	6-42-X510Z-102	
5	ODD BEZEL LABEL(SUPER MULTI) W760S (中国)	6-45-W76SZ-010-1	

2nd HDD

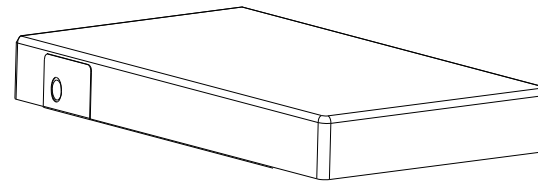
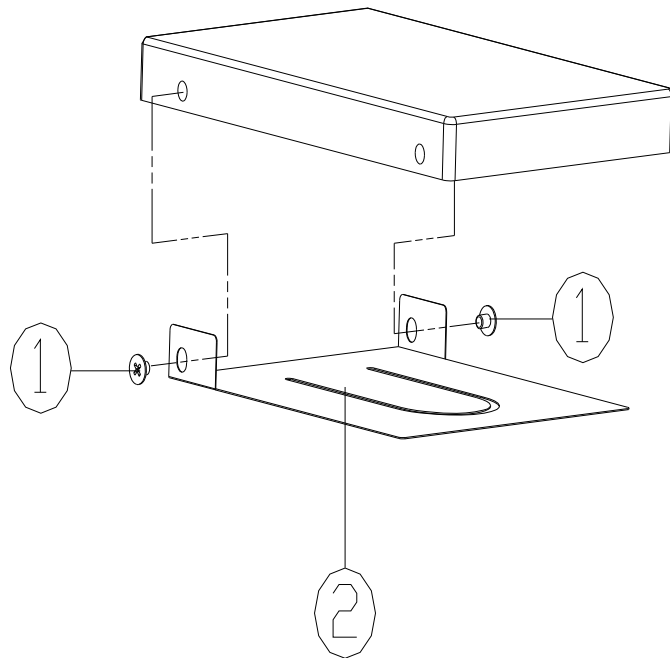


Figure A - 7
2nd HDD

ITEM	PART NAME	PART NO	REMARK
1	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	
2	HDD MYLAR PET+SPONGE P150HM	6-40-X510J-011	

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *P150HM/P151HM1* notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
<i>System Block Diagram - Page B - 2</i>	<i>CougarPoint - M 4/9 - Page B - 22</i>	<i>Power 1.8VS - Page B - 42</i>
<i>Processor 1/7 - Page B - 3</i>	<i>CougarPoint - M 5/9 - Page B - 23</i>	<i>Power V-Core 1 - Page B - 43</i>
<i>Processor 2/7 - Page B - 4</i>	<i>CougarPoint - M 6/9 - Page B - 24</i>	<i>Power V-Core 2 - Page B - 44</i>
<i>Processor 3/7 - Page B - 5</i>	<i>CougarPoint - M 7/9 - Page B - 25</i>	<i>AC_In, Charger - Page B - 45</i>
<i>Processor 4/7 - Page B - 6</i>	<i>CougarPoint - M 8/9 - Page B - 26</i>	<i>Power 0.85VS - Page B - 46</i>
<i>Processor 5/7 - Page B - 7</i>	<i>CougarPoint - M 9/9 - Page B - 27</i>	<i>Audio Jack - Page B - 47</i>
<i>Processor 6/7 - Page B - 8</i>	<i>3G, CCD - Page B - 28</i>	<i>X5100 ODD Board - Page B - 48</i>
<i>Processor 7/7 - Page B - 9</i>	<i>Mini PCIE, LID - Page B - 29</i>	<i>X5100 Click Board - Page B - 49</i>
<i>DDRIII CHA SO-DIMM_0 - Page B - 10</i>	<i>LED, Hotkey, LID SW, Fan - Page B - 30</i>	<i>X5100 LED 1 Board - Page B - 50</i>
<i>DDRIII CHA SO-DIMM_1 - Page B - 11</i>	<i>RJ 45 - Page B - 31</i>	<i>X5100 LED 2 Board - Page B - 51</i>
<i>DDRIII CHB SO-DIMM_0 - Page B - 12</i>	<i>Codec Realtek ALC892 - Page B - 32</i>	<i>X5100 LED 3 Board - Page B - 52</i>
<i>DDRIII CHB SO-DIMM_1 - Page B - 13</i>	<i>APA2010D1-TPA2008D2 - Page B - 33</i>	<i>X7100 HDD & ODD Board - Page B - 53</i>
<i>MXM PCI-E - Page B - 14</i>	<i>KBC-ITE IT8519 - Page B - 34</i>	<i>CIR - Page B - 54</i>
<i>Panel, Inverter, CRT - Page B - 15</i>	<i>USB, TP, FP, MULTI-CONN - Page B - 35</i>	<i>X7100 LED Board - Page B - 55</i>
<i>1394_JMB380C - Page B - 16</i>	<i>Card Reader (JMC 251C) - Page B - 36</i>	<i>X7100 Click Board - Page B - 56</i>
<i>DVI - Page B - 17</i>	<i>USB 3.0 - Page B - 37</i>	<i>X7100 Fingerprint Board - Page B - 57</i>
<i>HDMI - Page B - 18</i>	<i>VDD3, VDD5 - Page B - 38</i>	<i>TPM - Page B - 58</i>
<i>CougarPoint - M 1/9 - Page B - 19</i>	<i>5V, 3.3V, 5VS, 3VS, 1.5VS, VIN1 - Page B - 39</i>	<i>X5100 HDD Board - Page B - 59</i>
<i>CougarPoint - M 2/9 - Page B - 20</i>	<i>Power 1.05VS, 1.05VS_VTT - Page B - 40</i>	
<i>CougarPoint - M 3/9 - Page B - 21</i>	<i>Power 1.5V/VTT_MEM - Page B - 41</i>	

Table B - 1
**Schematic
Diagrams**

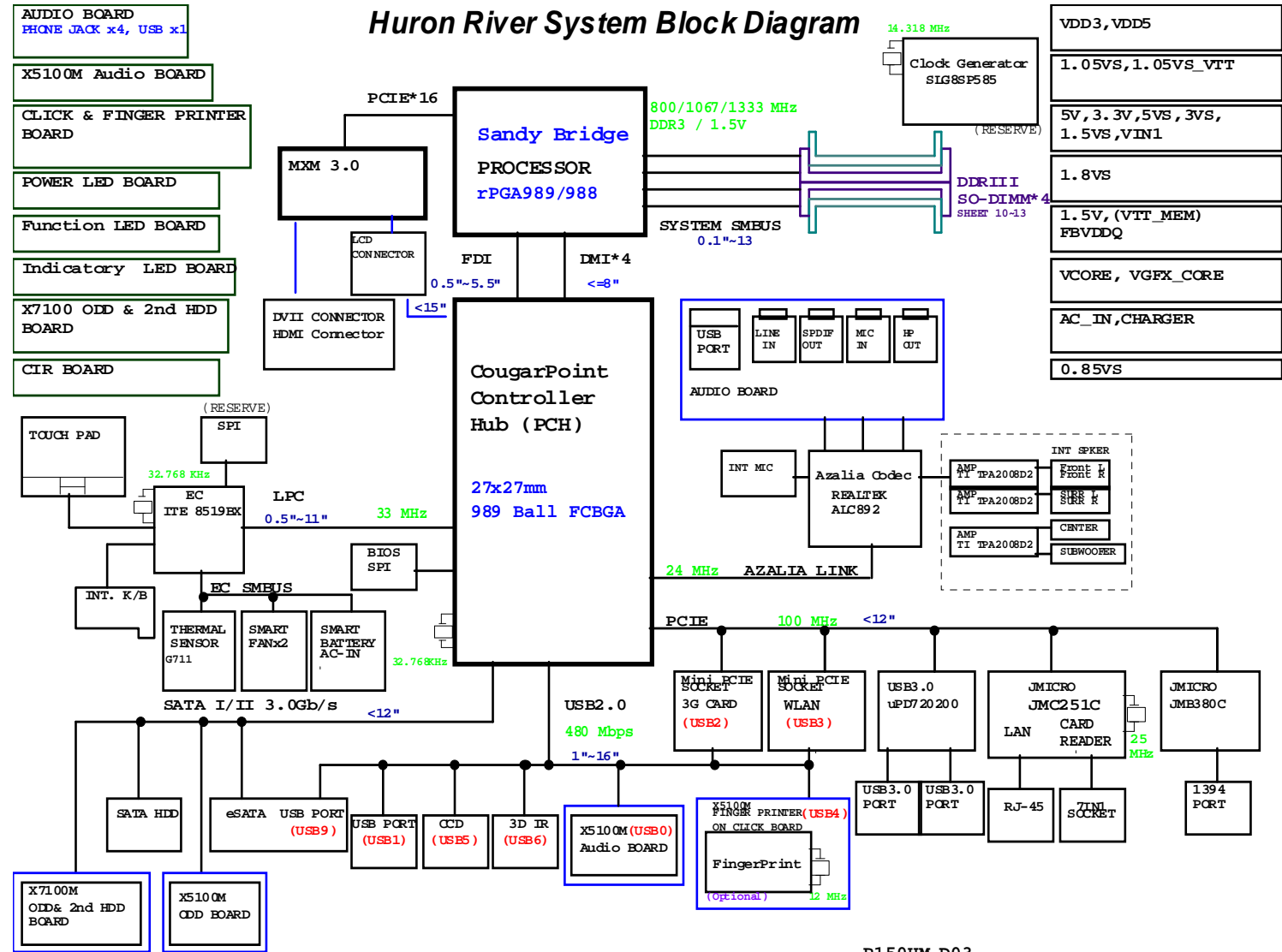


Version Note

The schematic diagrams in this chapter are based upon version 6-7P-X510D-001. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

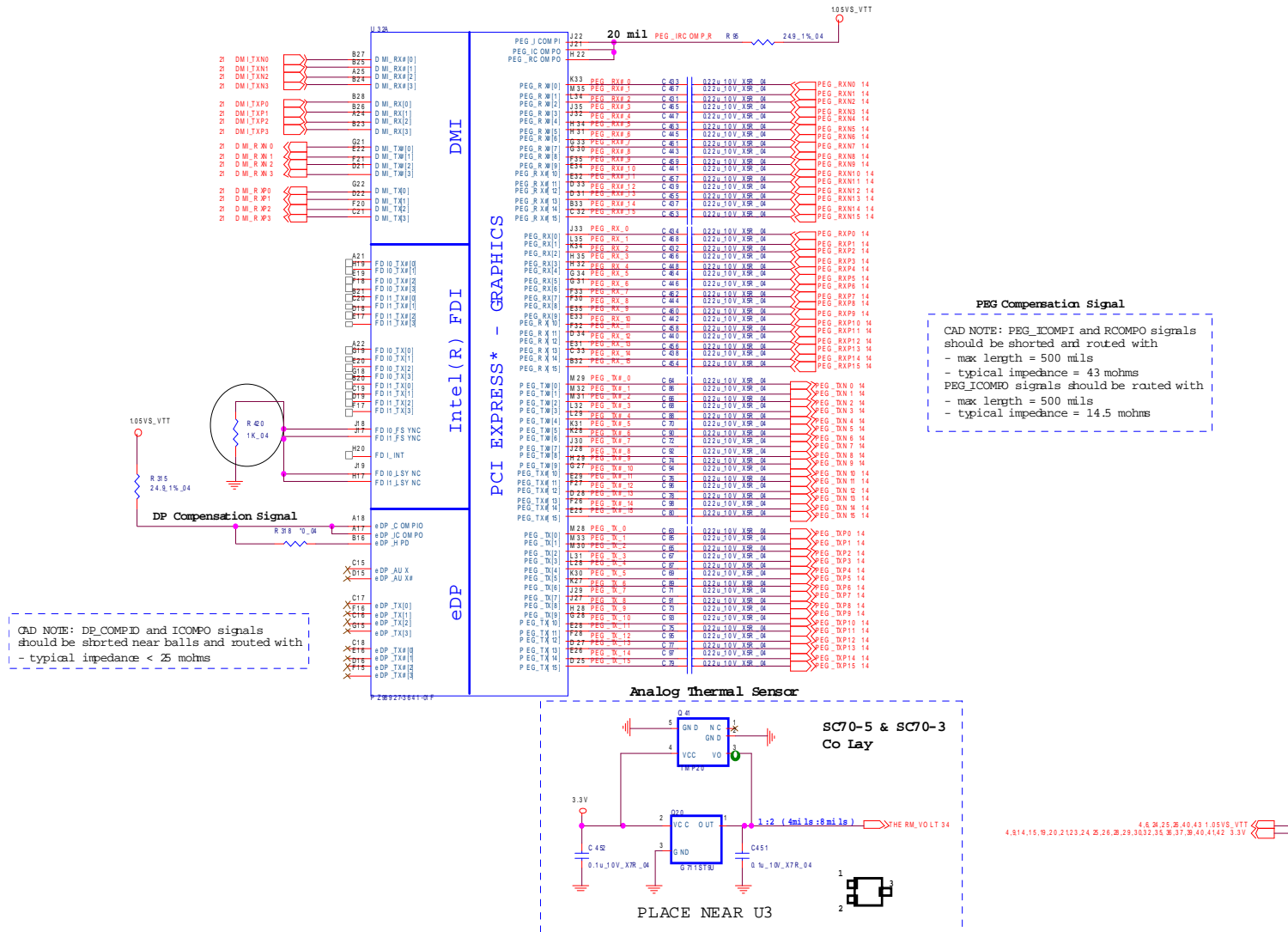
System Block Diagram

Sheet 1 of 58
System Block
Diagram



Processor 1/7

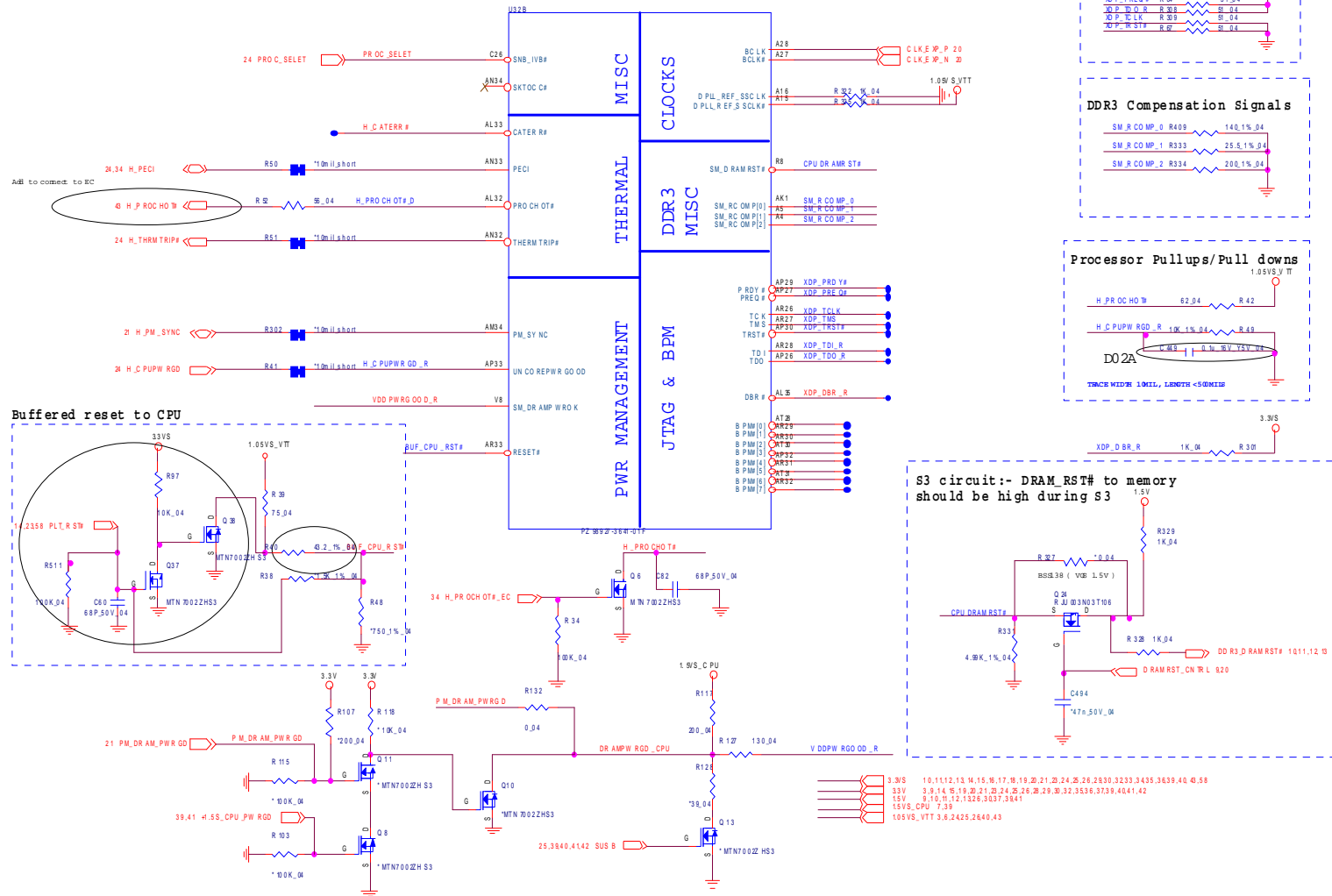
Sandy Bridge Processor 1/7 (DMI,PEG,FDI)



Sheet 2 of 58
Processor 1/7

Processor 2/7

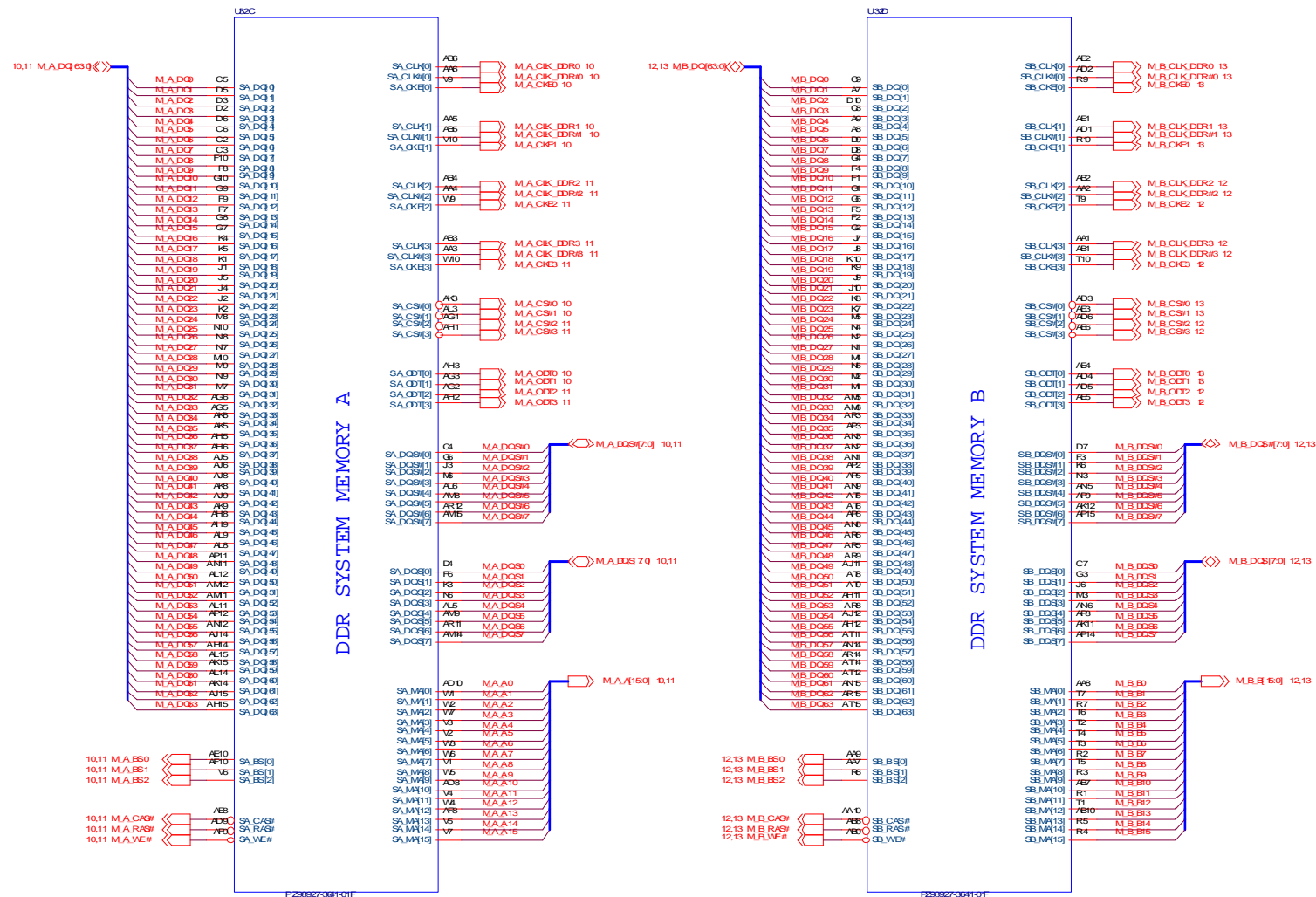
Sandy Bridge Processor 2/7 (CLK,MISC,JTAG)



Sheet 3 of 58
Processor 2/7

Processor 3/7

Sandy Bridge Processor 3/7 (DDR3)



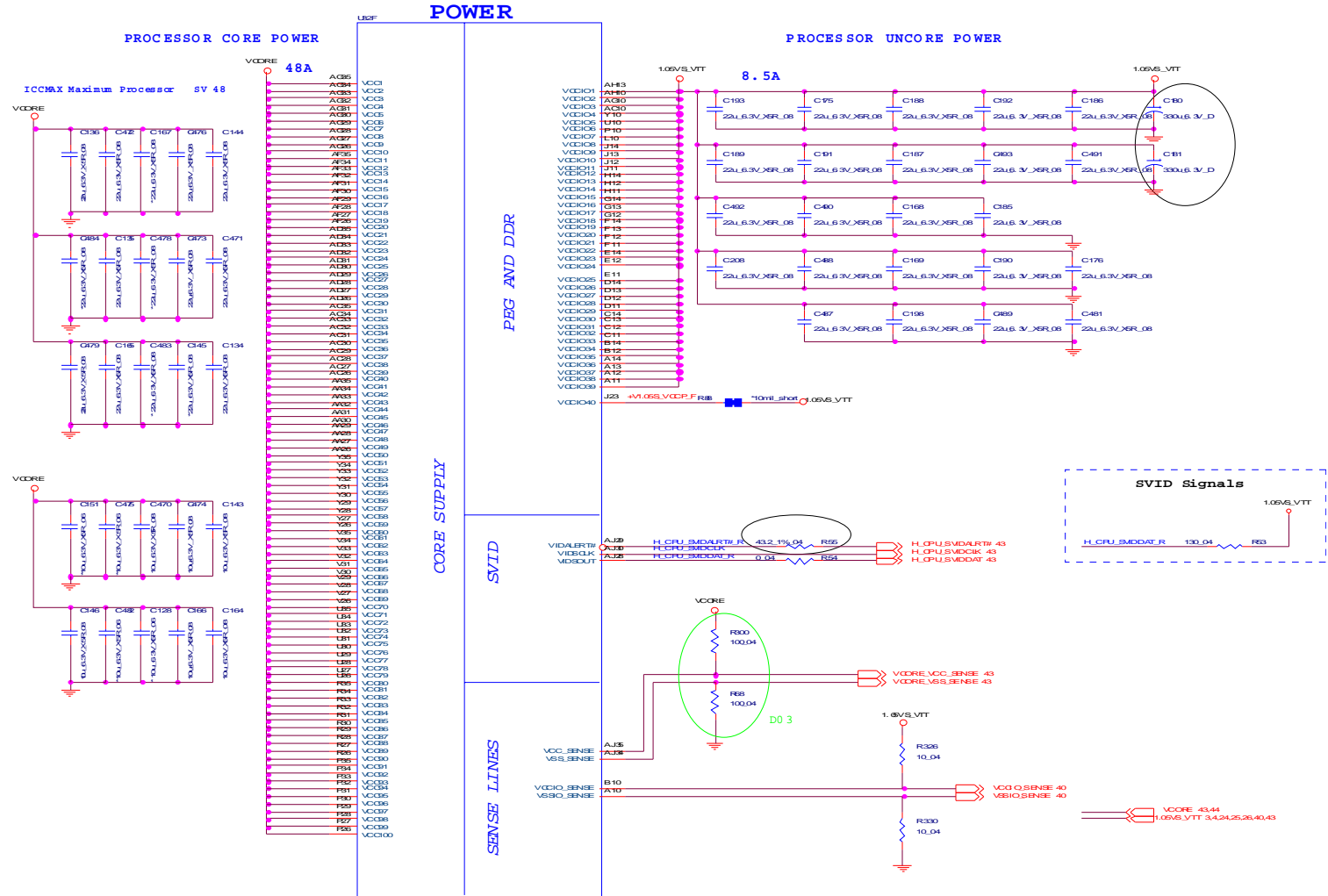
Sheet 4 of 58
Processor 3/7

B.Schematic Diagrams

Processor 4/7

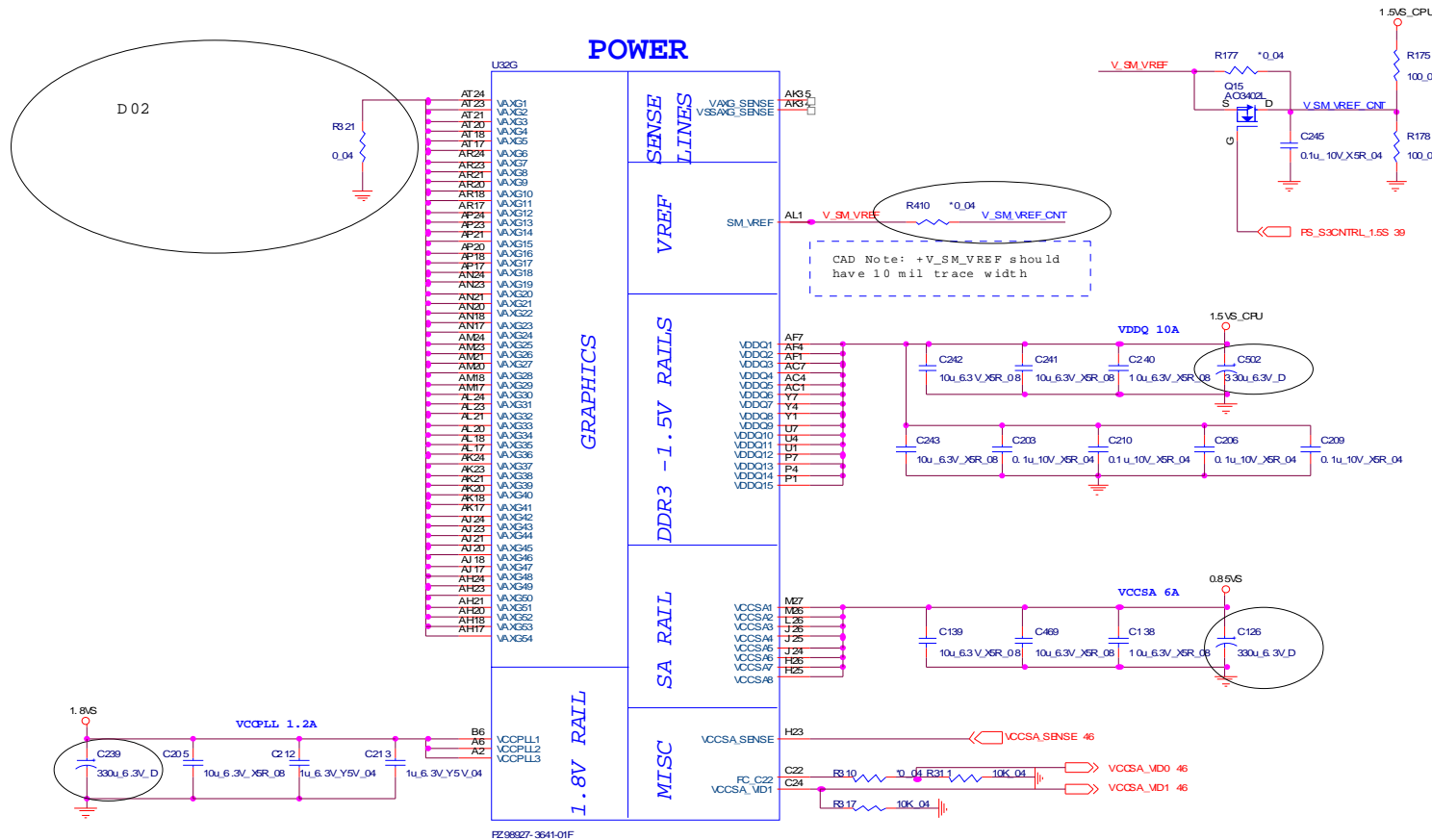
Sandy Bridge Processor 4/7 (POWER)

Sheet 5 of 58
Processor 4/7



Processor 5/7

Sandy Bridge Processor 5/7 (GRAPHICS POWER)



PZ98927-3641-01F

- 0.85V_S 46
- 1.5V_S_CPU 4,39
- 1.8V_S 16,25,42
- 1.05V_VTT 3,4,6,24,25,26,40,43
- 1.5V 4,9,10,11,12,13,2,6,30,37,39,41

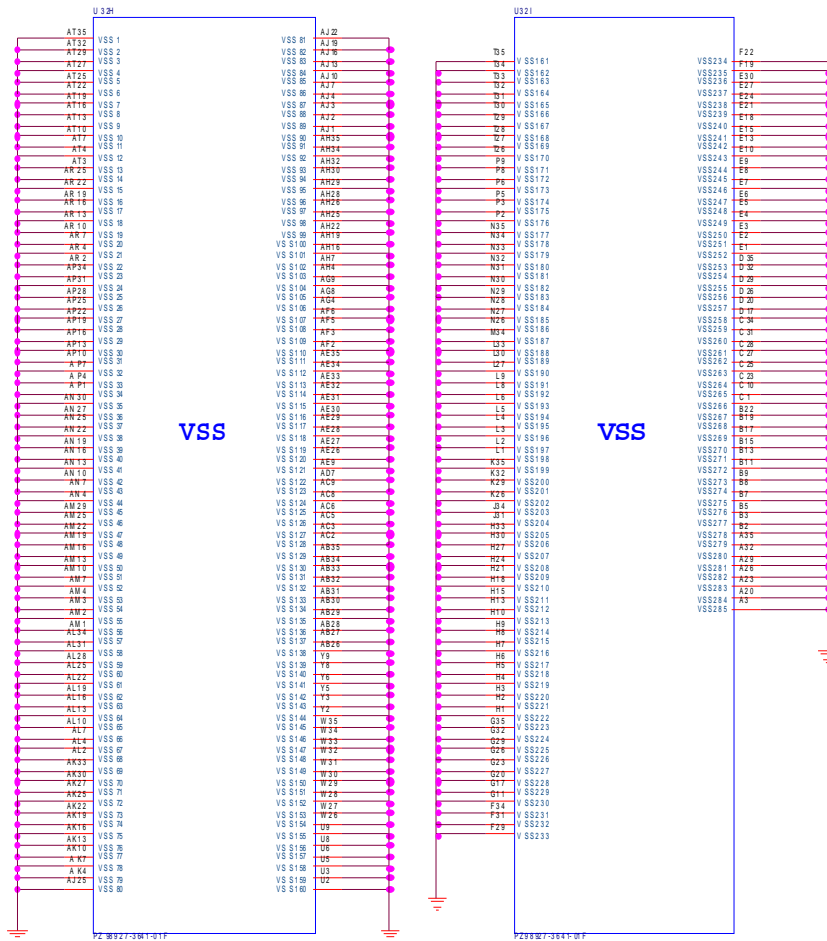
Sheet 6 of 58
Processor 5/7

B.Schematic Diagrams

Processor 6/7

Sandy Bridge Processor 6/7 (GND)

Sheet 7 of 58
Processor 6/7



Processor 7/7

Sandy Bridge Processor 7/7 (RESERVED)

CFG Straps for Processor

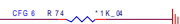
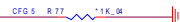
PEG Static Lane Reversal - CFG2 is for the 16x	
CFG2	1:(Default) Normal Operation; Lane # definition matches socket pin map definition 0:Lane Reversed



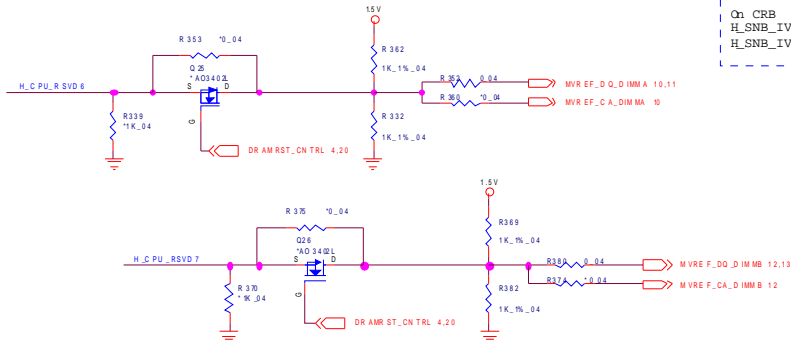
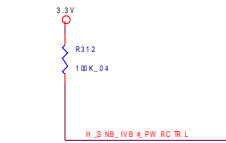
Display Port Presence Strap	
CFG4	1:(Default) Disabled; No Physical Display Port attached to Embedded Display Port 0:Enabled; An external Display Port device is connected to the Embedded Display Port



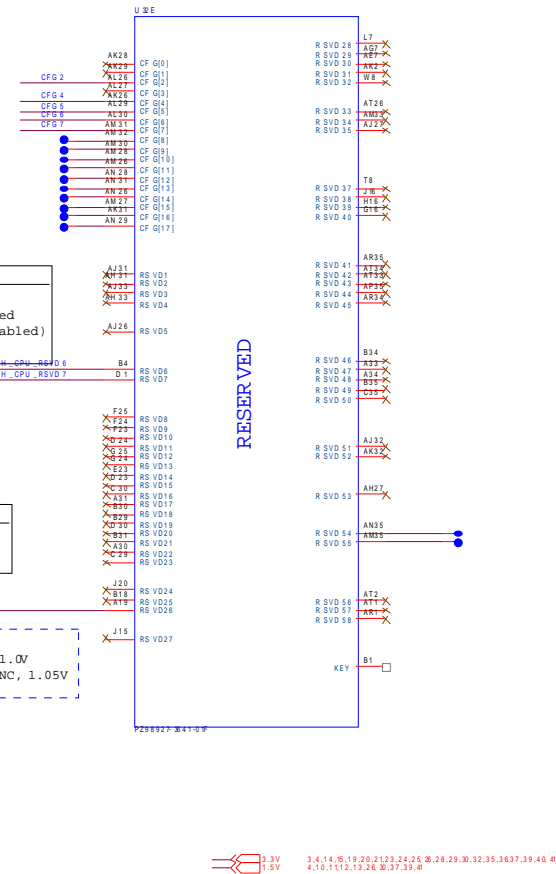
PCIe Port Bifurcation Straps	
CFG[6:5]	11: (Default) x16 - Device 1 functions 1 and 2 disabled 10: x8, x8 - Device 1 function 1 enabled ; function 2 disabled 01: Reserved - (Device 1 function 1 disabled ; function 2 enabled) 00: x8,x4,x4 - Device 1 functions 1 and 2 enabled



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



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



Sheet 8 of 58
Processor 7/7

Schematic Diagrams

DDRIII CHA SO-DIMM_0

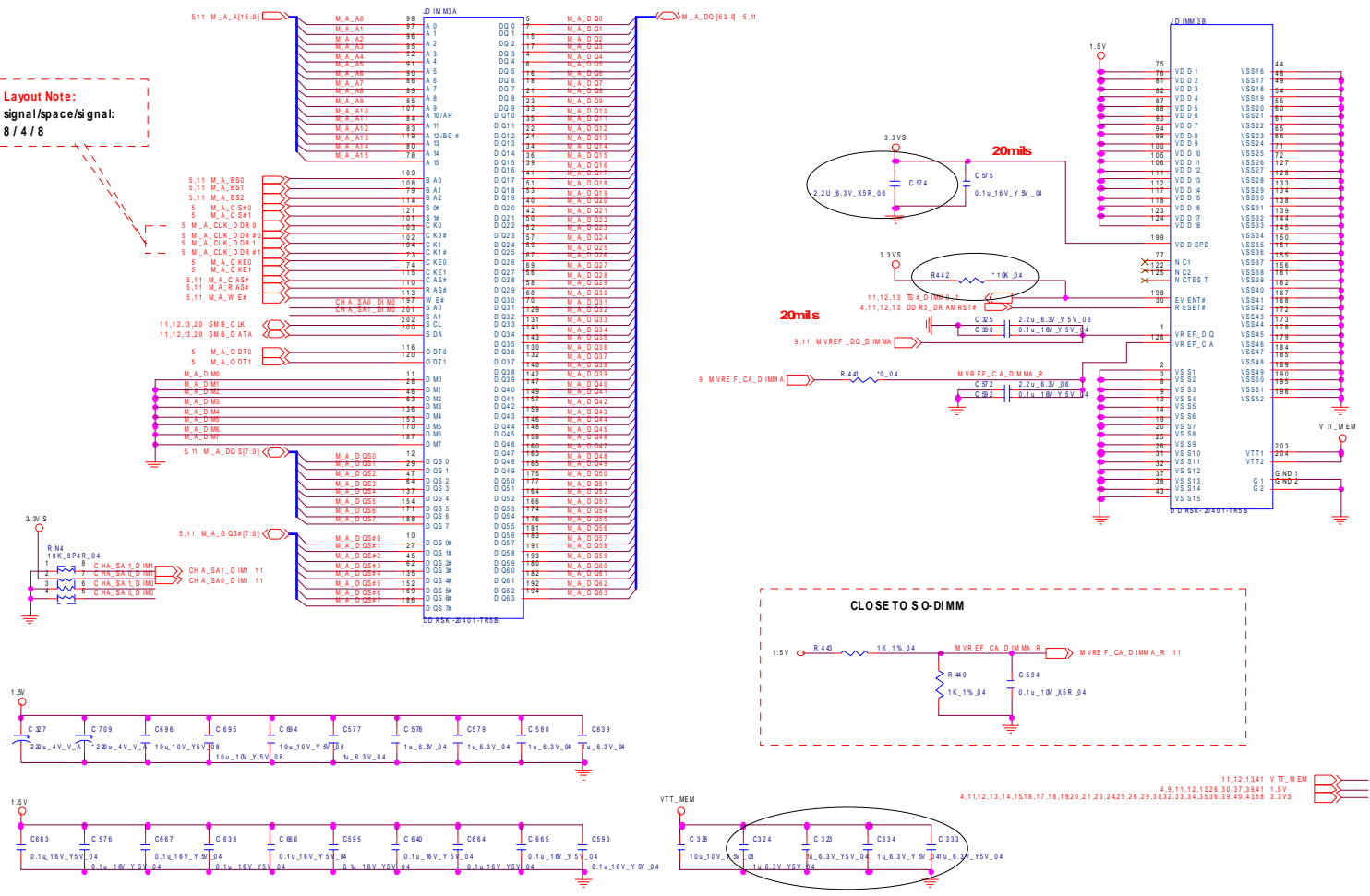
Channel A SO-DIMM 0

CHANGE TO STANDARD

B.Schematic Diagrams

Sheet 9 of 58
DDRIII CHA SO-DIMM_0

Layout Note:
signal/space/signal:
8 / 4 / 8

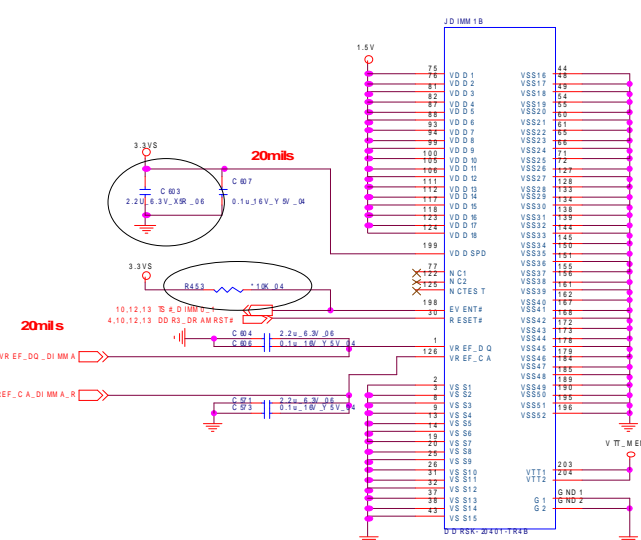
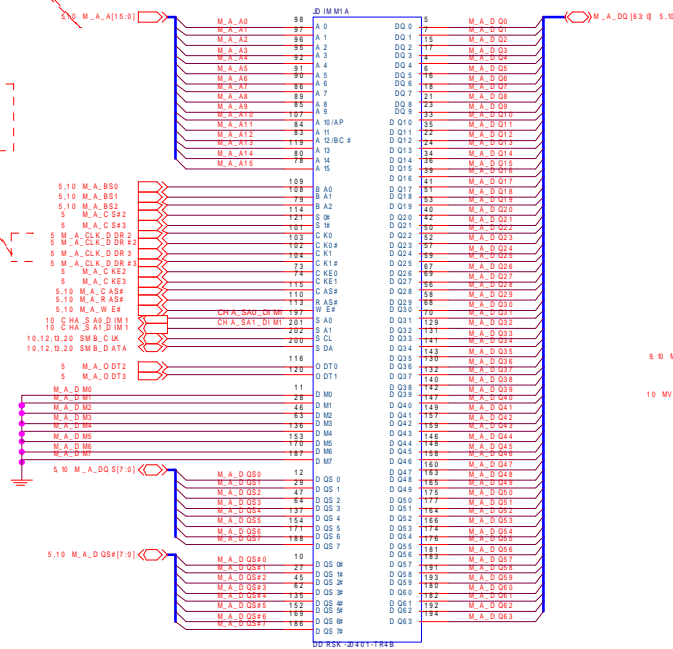


DDRIII CHA SO-DIMM_1

Channel A SO-DIMM 1

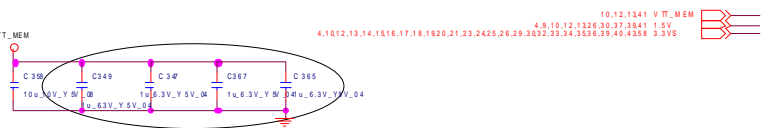
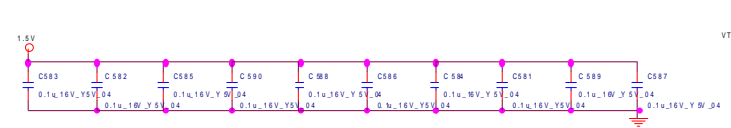
CHANGE TO STANDARD

Layout Note:
signal/space/signal:
8 / 4 / 8



Sheet 10 of 58
DDRIII CHA SO-DIMM_1

B. Schematic Diagrams

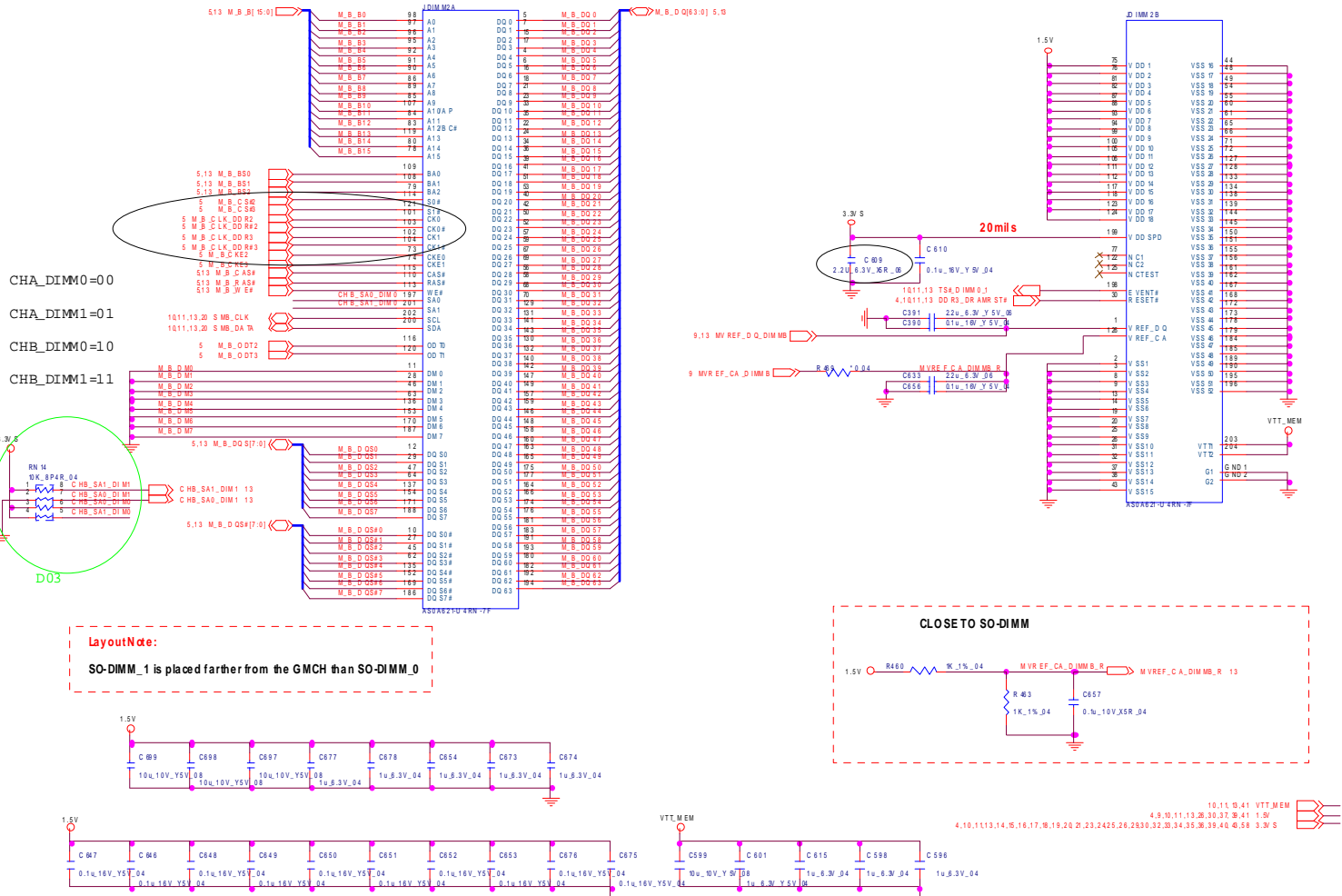


DDRIII CHB SO-DIMM_0

Channel B SO-DIMM 0

CHANGE TO STANDARD

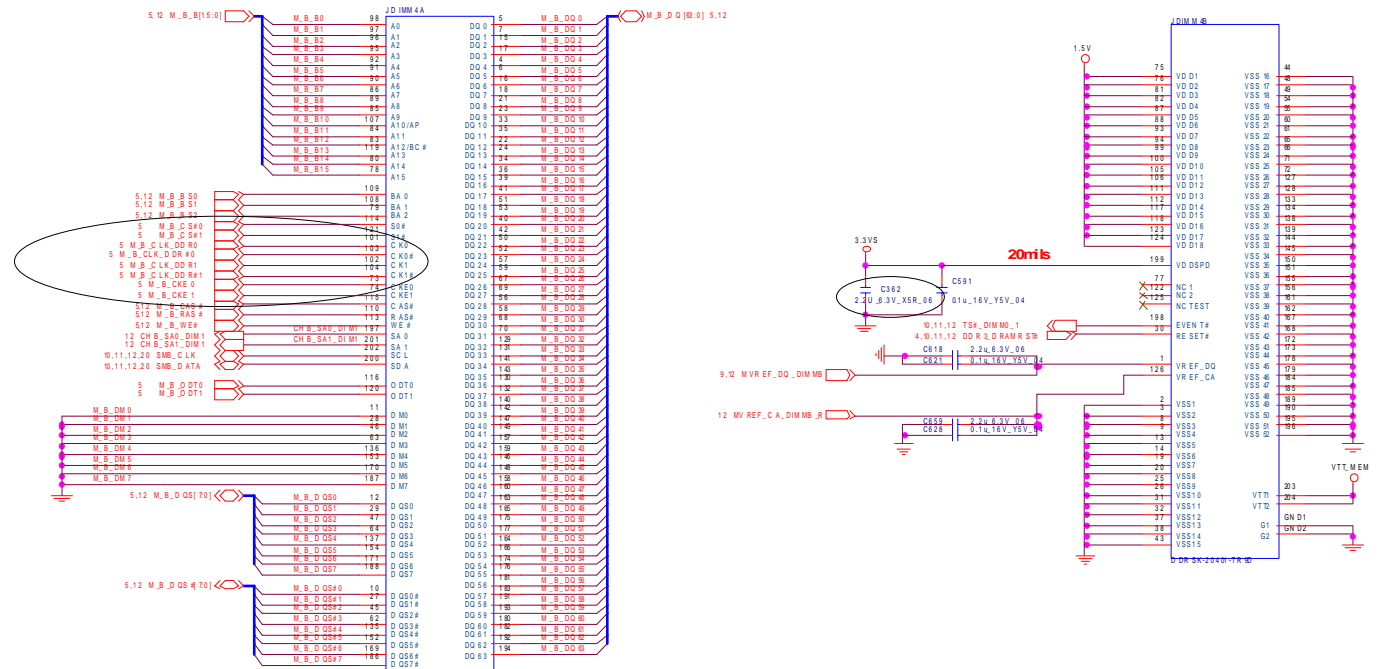
Sheet 11 of 58
DDRIII CHB SO-DIMM_0



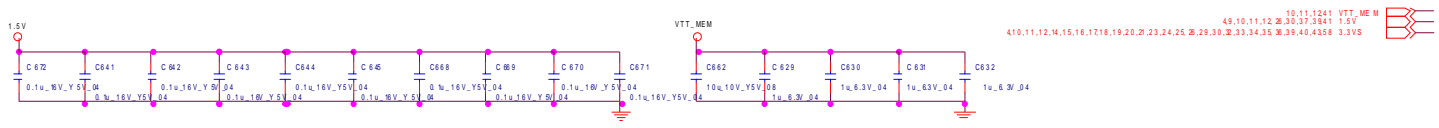
DDRIII CHB SO-DIMM_1

Channel B SO-DIMM 1

CHANGE TO STANDARD



Layout Note:
SO-DIMM_1 is placed farther from the GMCH than SO-DIMM_0

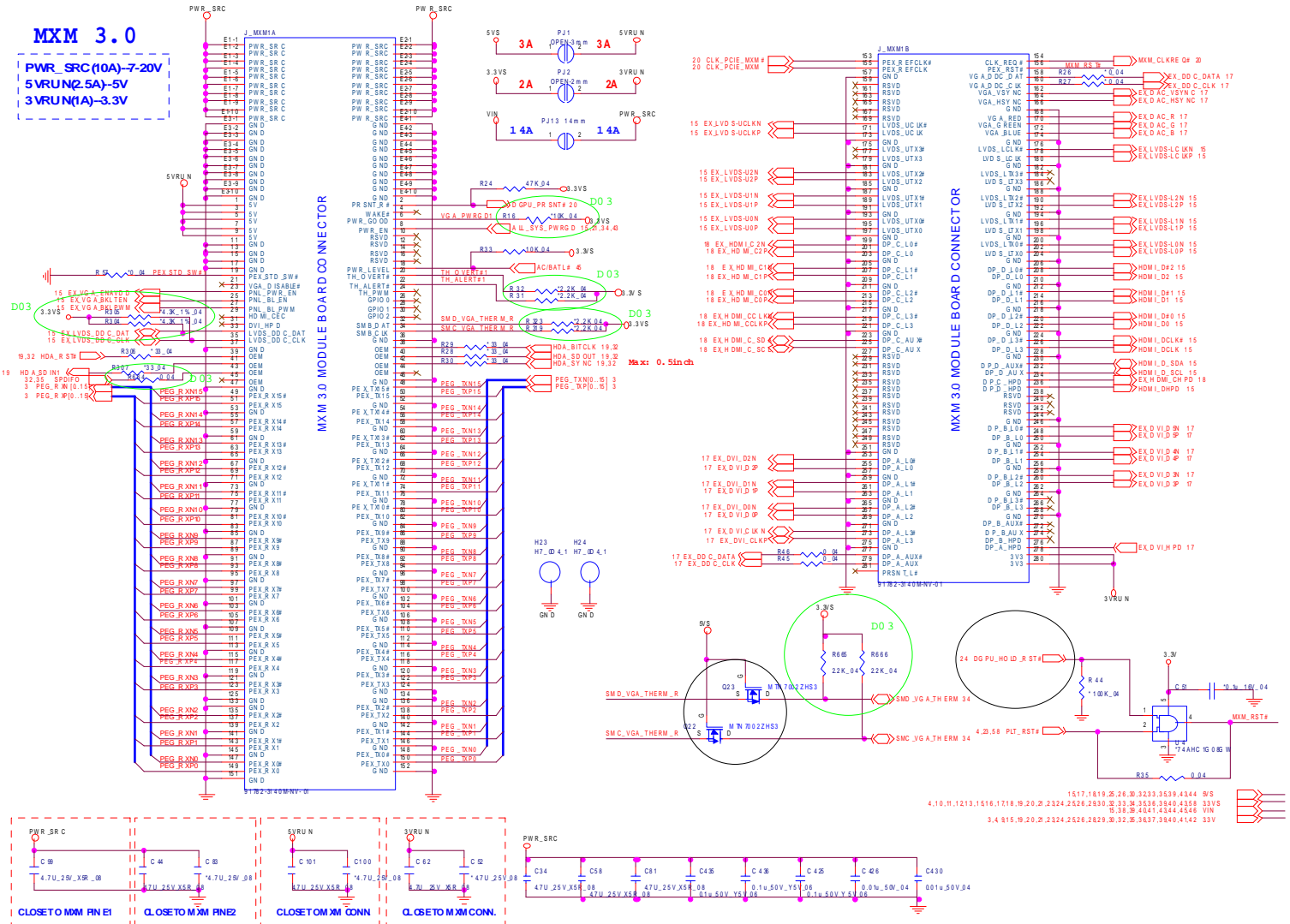


Sheet 12 of 58
DDRIII CHB SO-DIMM_1

B.Schematic Diagrams

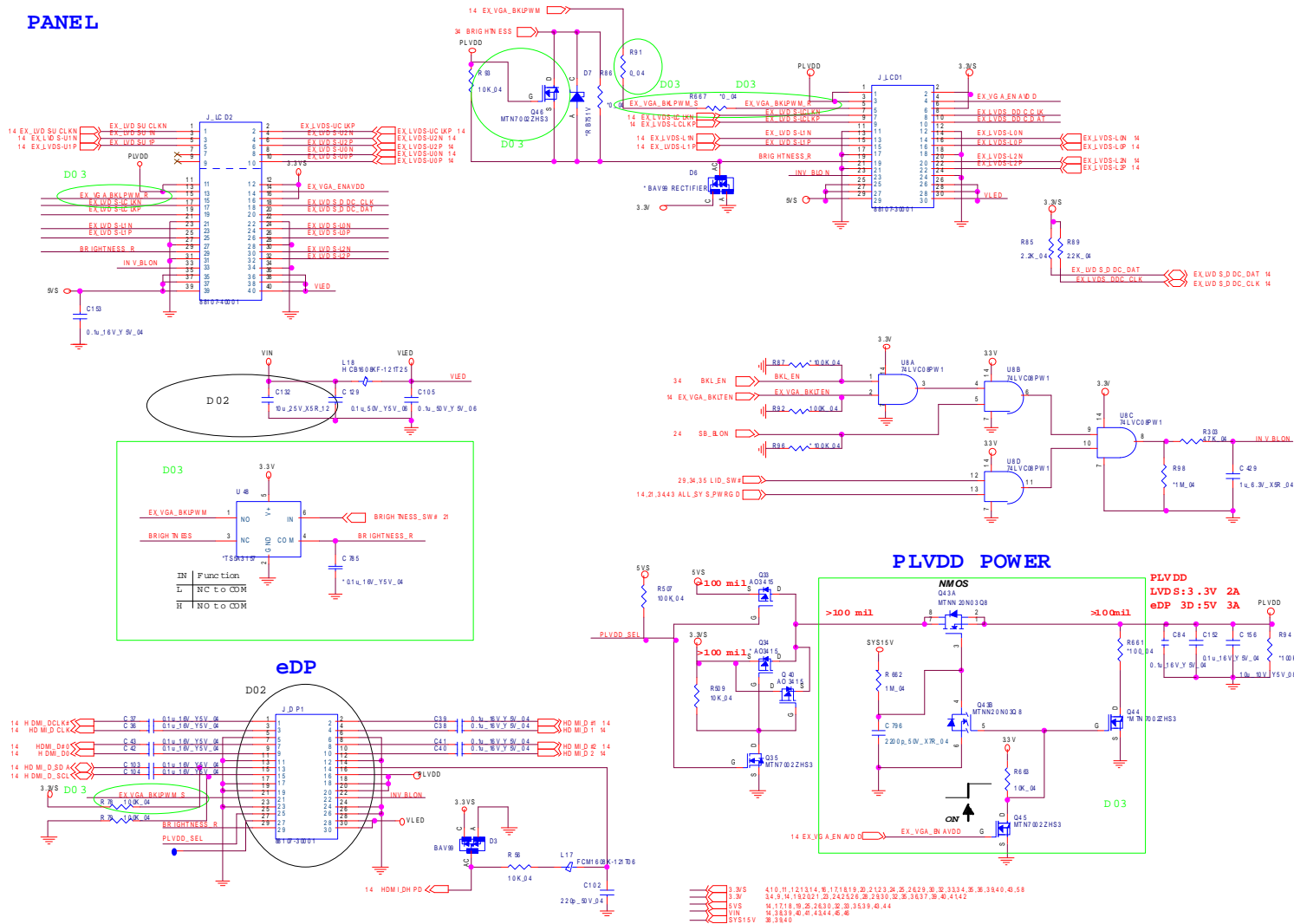
MXM PCI-E

Sheet 13 of 58
MXM PCI-E



Panel, Inverter, CRT

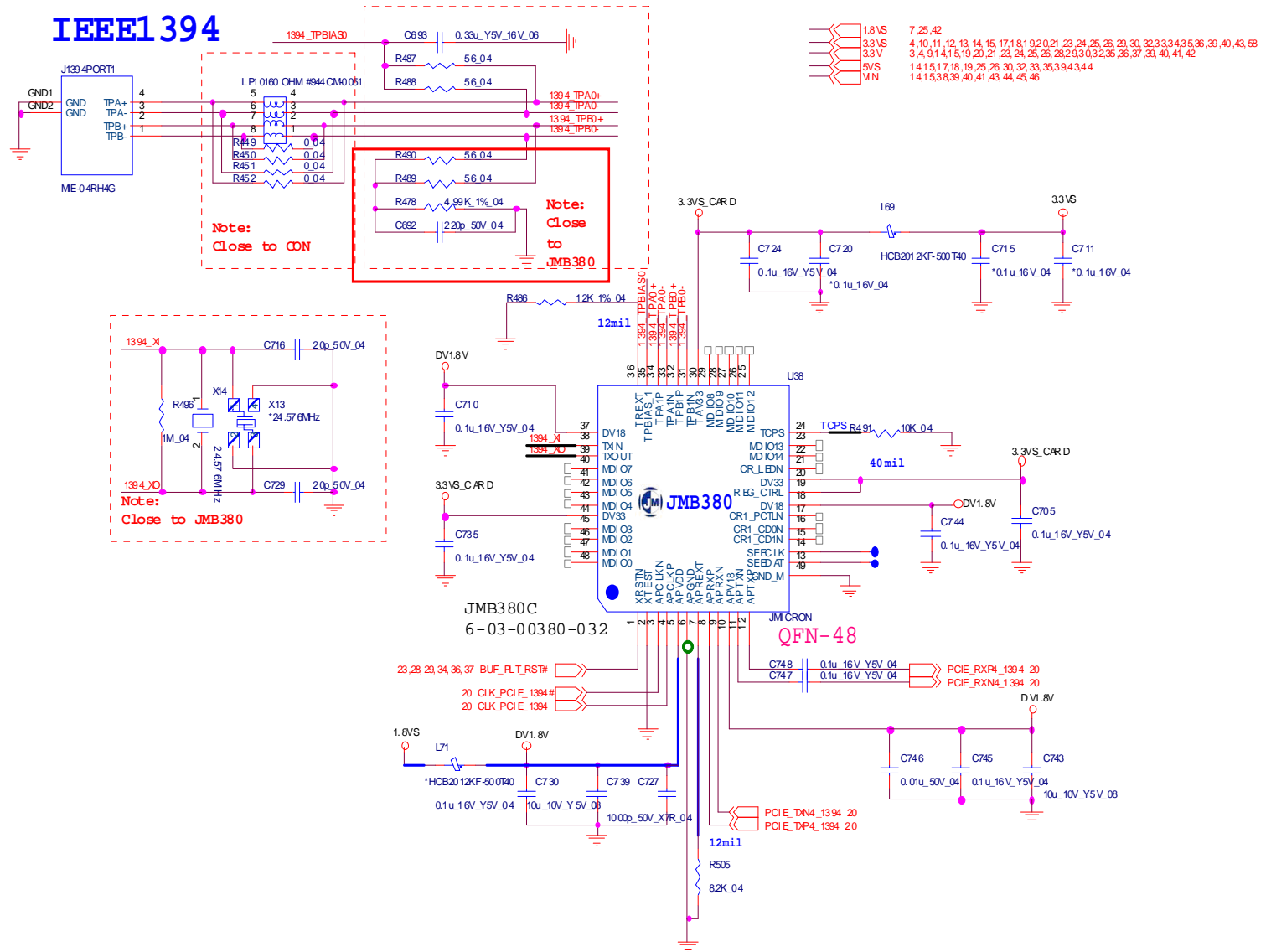
PANEL



Sheet 14 of 58
Panel, Inverter,
CRT

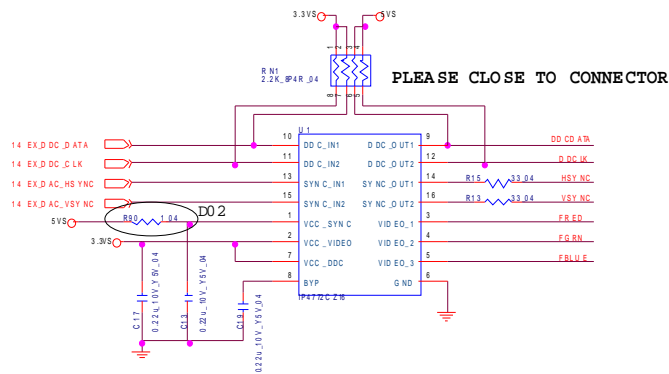
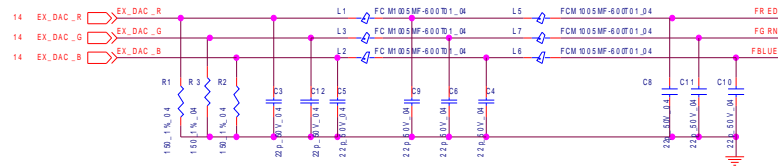
1394_JMB380C

IEEE1394

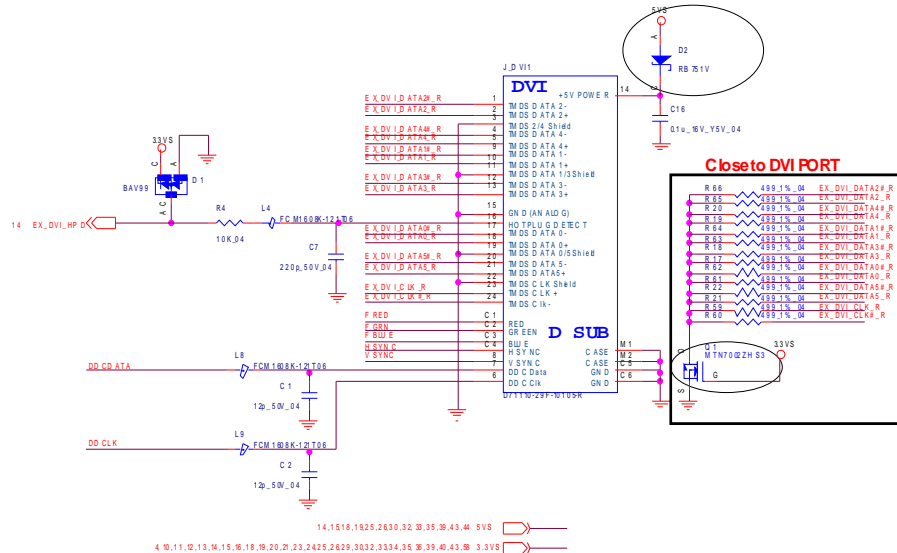
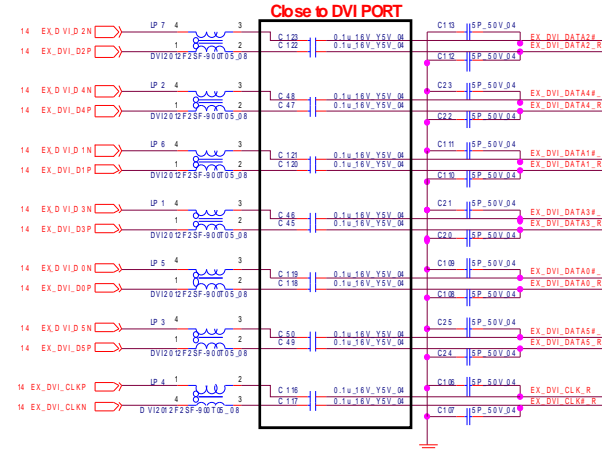


Sheet 15 of 58
1394_JMB380C

DVI



PLEASE CLOSE TO CONNECTOR

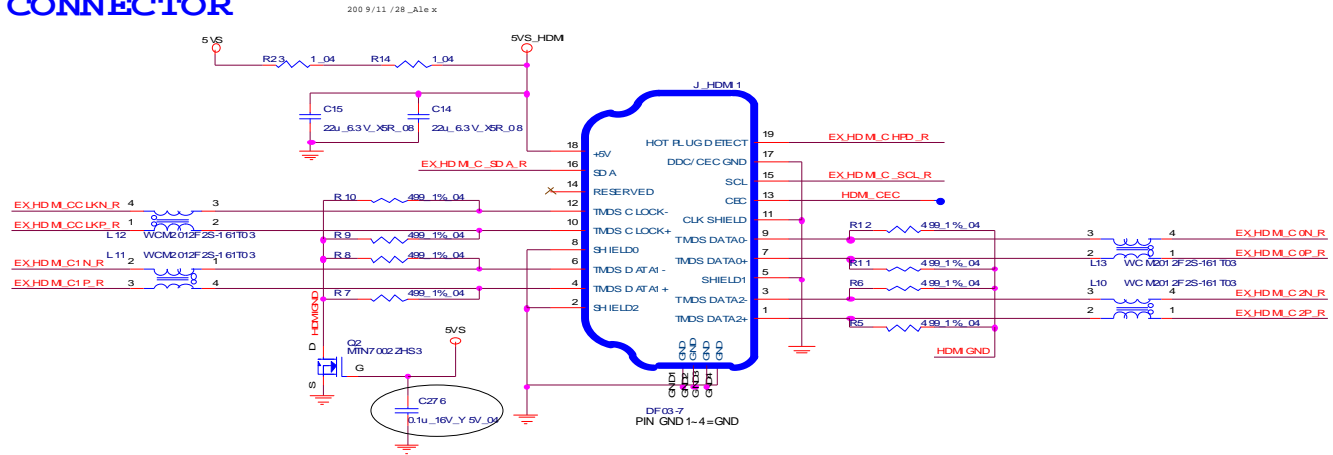


Sheet 16 of 58
DVI

B.Schematic Diagrams

HDMI

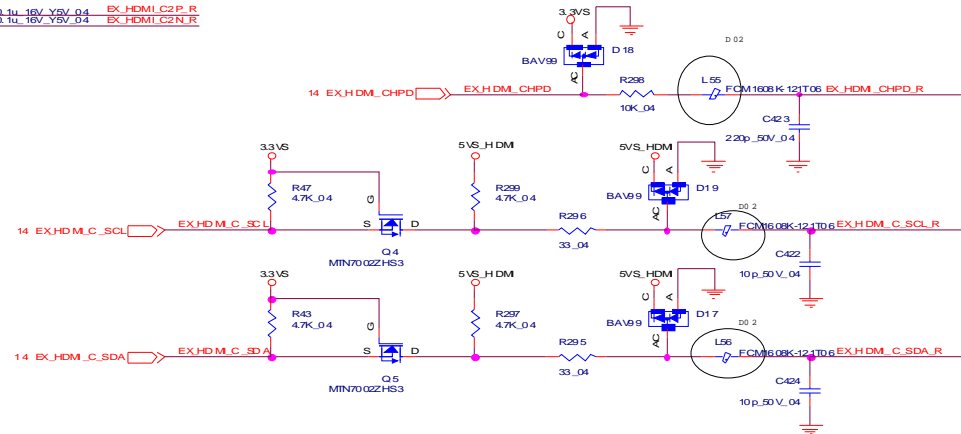
HDMI CONNECTOR



Sheet 17 of 58
HDMI

14 EX_HDM_C_CCLKP	EX_HDM_C_CCLKP	C33	0.1u_16V_Y5V_04	EX_HDM_C_CCLKP_R
14 EX_HDM_C_CCLKN	EX_HDM_C_CCLKN	C31	0.1u_16V_Y5V_04	EX_HDM_C_CCLKN_R
14 EX_HDM_C_C0P	EX_HDM_C_C0P	C32	0.1u_16V_Y5V_04	EX_HDM_C_C0P_R
14 EX_HDM_C_C0N	EX_HDM_C_C0N	C33	0.1u_16V_Y5V_04	EX_HDM_C_C0N_R
14 EX_HDM_C_C1P	EX_HDM_C_C1P	C28	0.1u_16V_Y5V_04	EX_HDM_C_C1P_R
14 EX_HDM_C_C1N	EX_HDM_C_C1N	C29	0.1u_16V_Y5V_04	EX_HDM_C_C1N_R
14 EX_HDM_C_C2P	EX_HDM_C_C2P	C26	0.1u_16V_Y5V_04	EX_HDM_C_C2P_R
14 EX_HDM_C_C2N	EX_HDM_C_C2N	C27	0.1u_16V_Y5V_04	EX_HDM_C_C2N_R

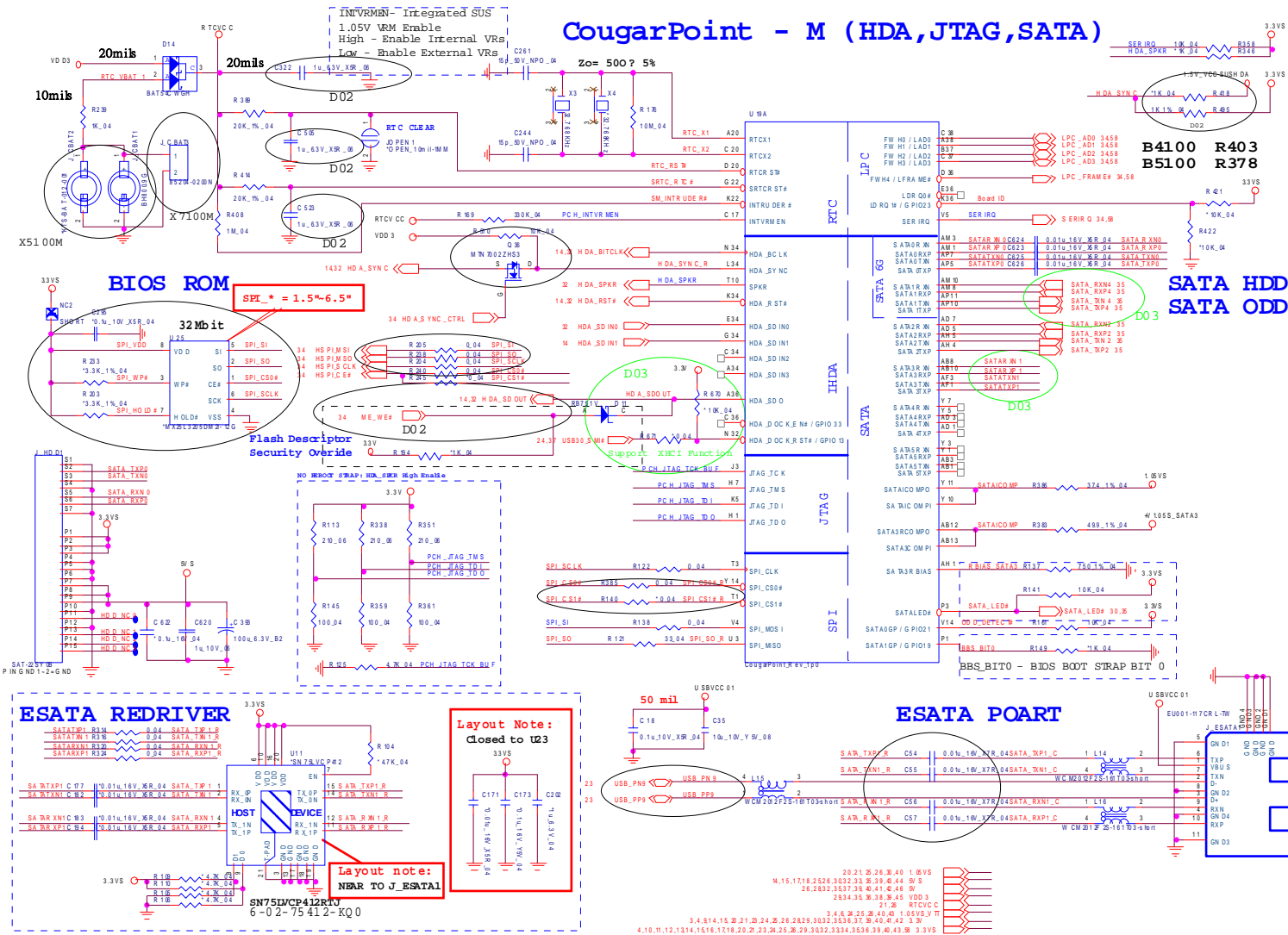
FOR HDMI SWITCH



3.3V 4, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 23, 24, 25, 26, 29, 30, 32, 33, 34, 53, 63, 69, 40, 43, 68
 5V 14, 15, 17, 19, 2, 5, 2, 6, 3, 0, 32, 33, 35, 38, 43, 44

CougarPoint - M 1/9

CougarPoint - M (HDA, JTAG, SATA)



Sheet 18 of 58
 CougarPoint - M 1/9

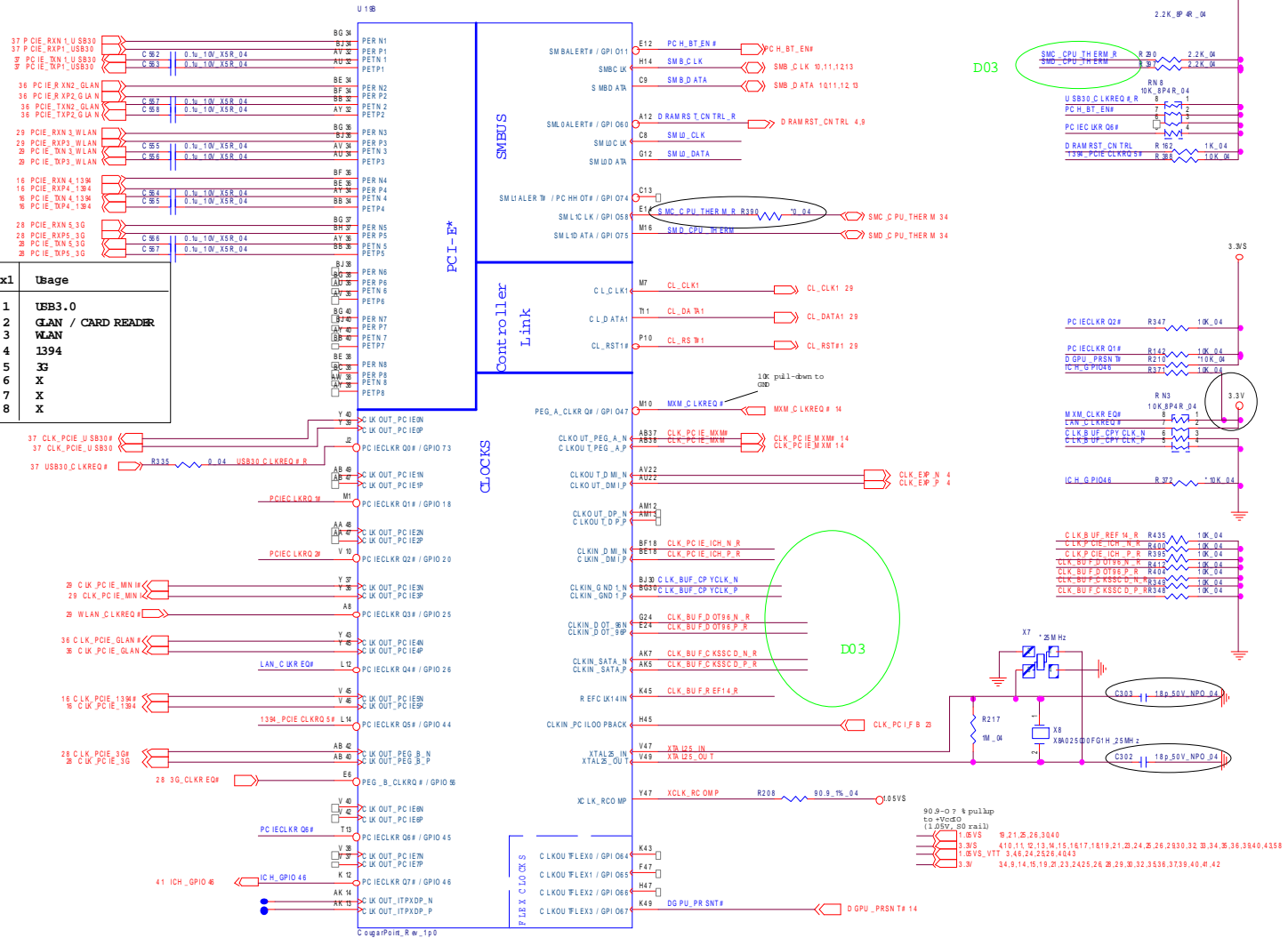
B.Schematic Diagrams

CougarPoint - M 2/9

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

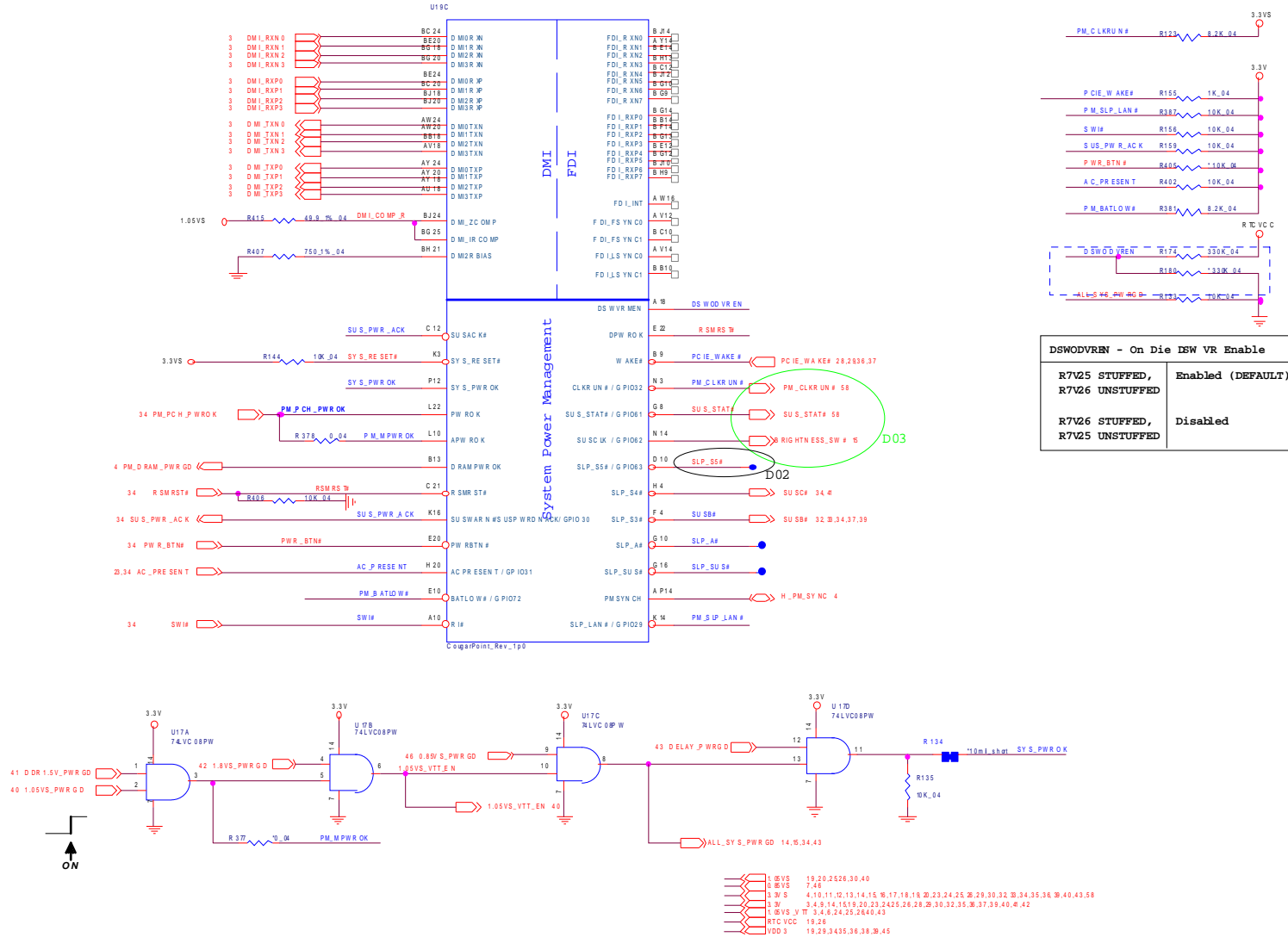
Sheet 19 of 58
CougarPoint - M 2/9

PCI-E x1	Usage
Lane 1	USB3.0
Lane 2	GLAN / CARD READER
Lane 3	WLAN
Lane 4	1394
Lane 5	3G
Lane 6	X
Lane 7	X
Lane 8	X



CougarPoint - M 3/9

CougarPoint -M (DMI,FDI,GPIO)

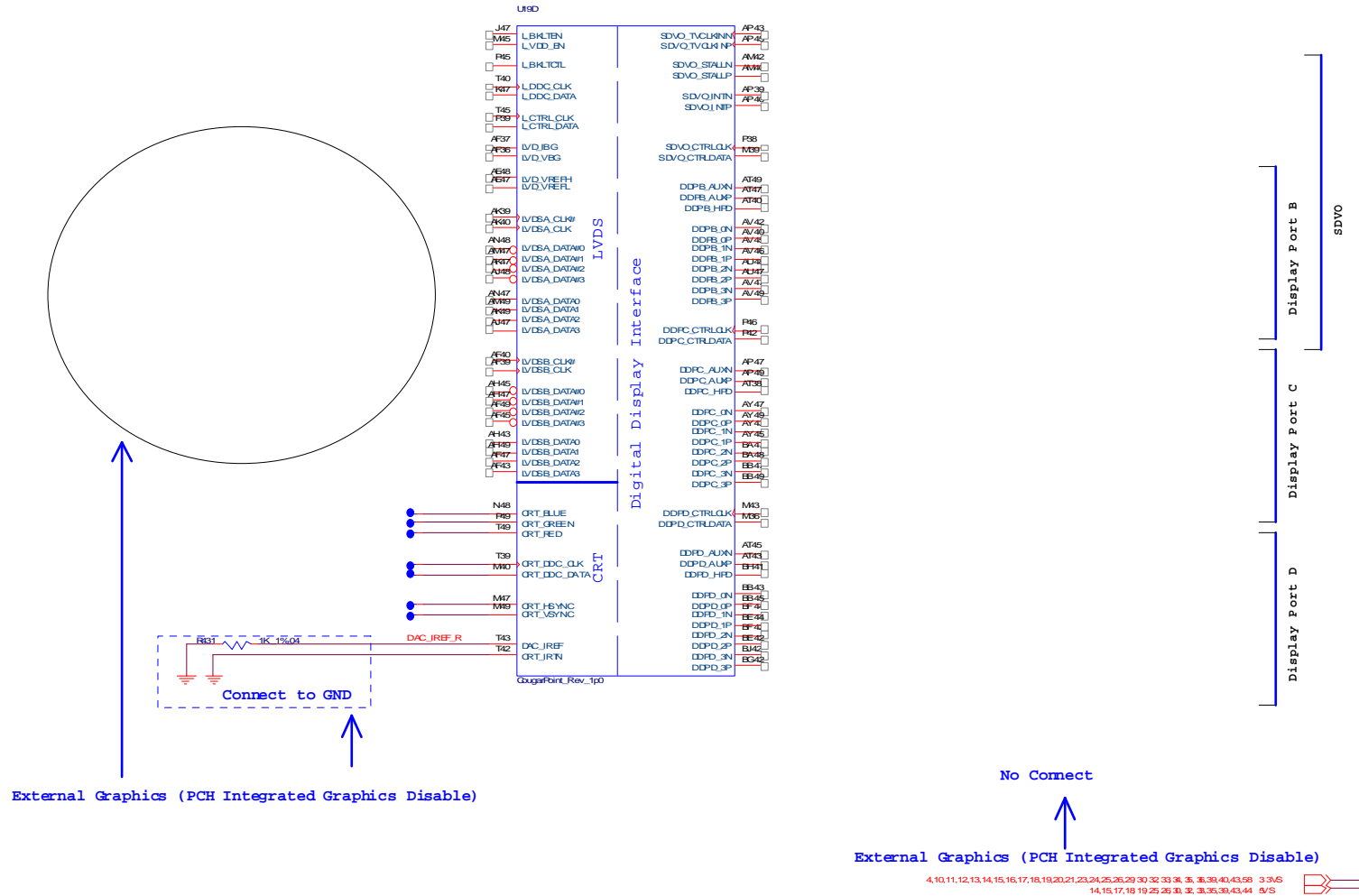


Sheet 20 of 58
CougarPoint - M 3/9

CougarPoint - M 4/9

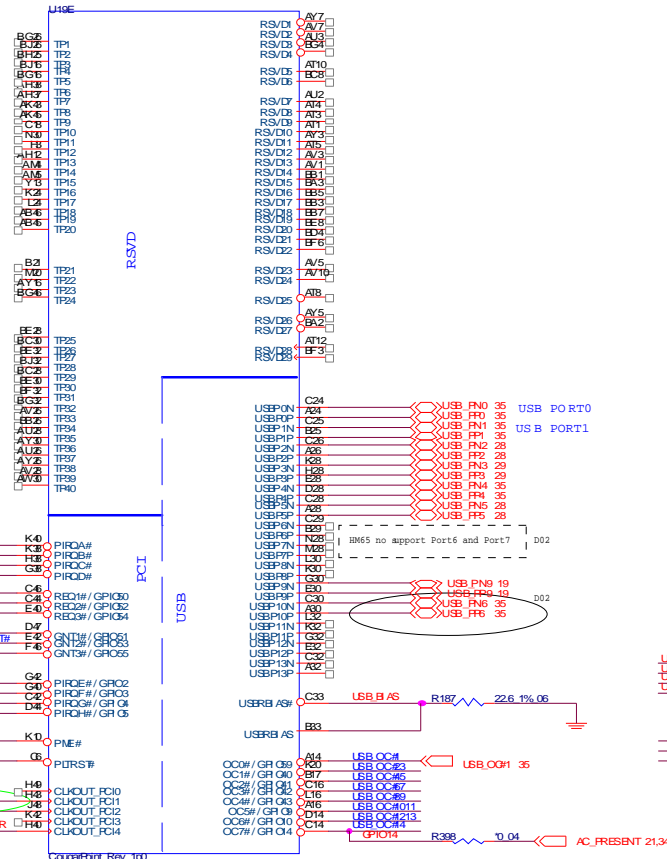
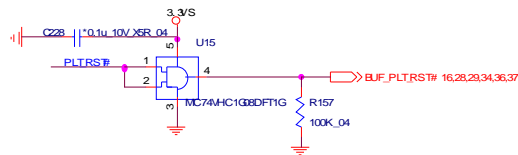
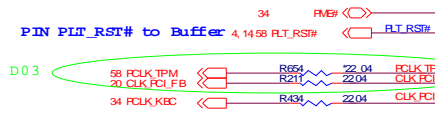
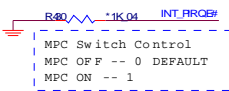
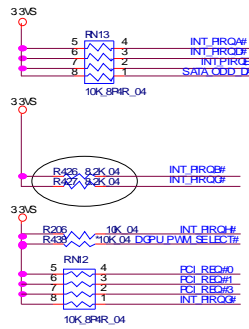
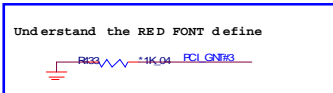
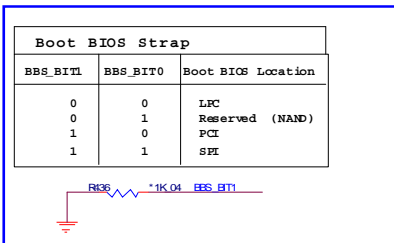
CougarPoint -M (LVDS,DDI)

Sheet 21 of 58
CougarPoint - M 4/9

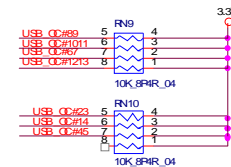


CougarPoint - M 5/9

CougarPoint -M (PCI,USB,NVRAM)



Sheet 22 of 58
CougarPoint - M 5/9

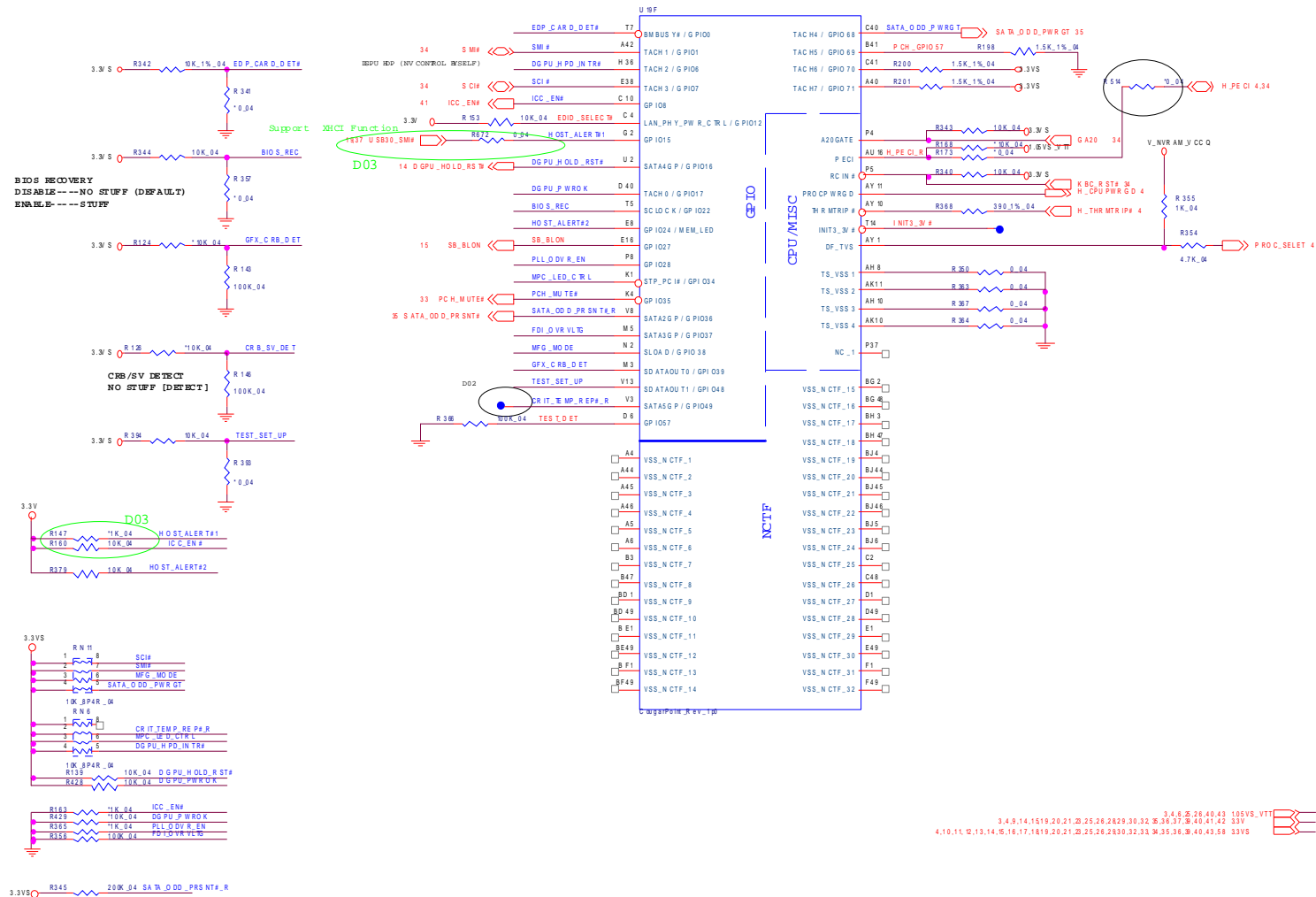


4,10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 2, 24, 25, 26, 29, 30, 32, 33, 34, 35, 36, 39, 40, 43, 58, 3, 3/V5
 3, 4, 9, 14, 15, 19, 23, 2, 24, 25, 26, 29, 29, 30, 32, 35, 36, 37, 39, 40, 41, 42, 3, 3/V

CougarPoint - M 6/9

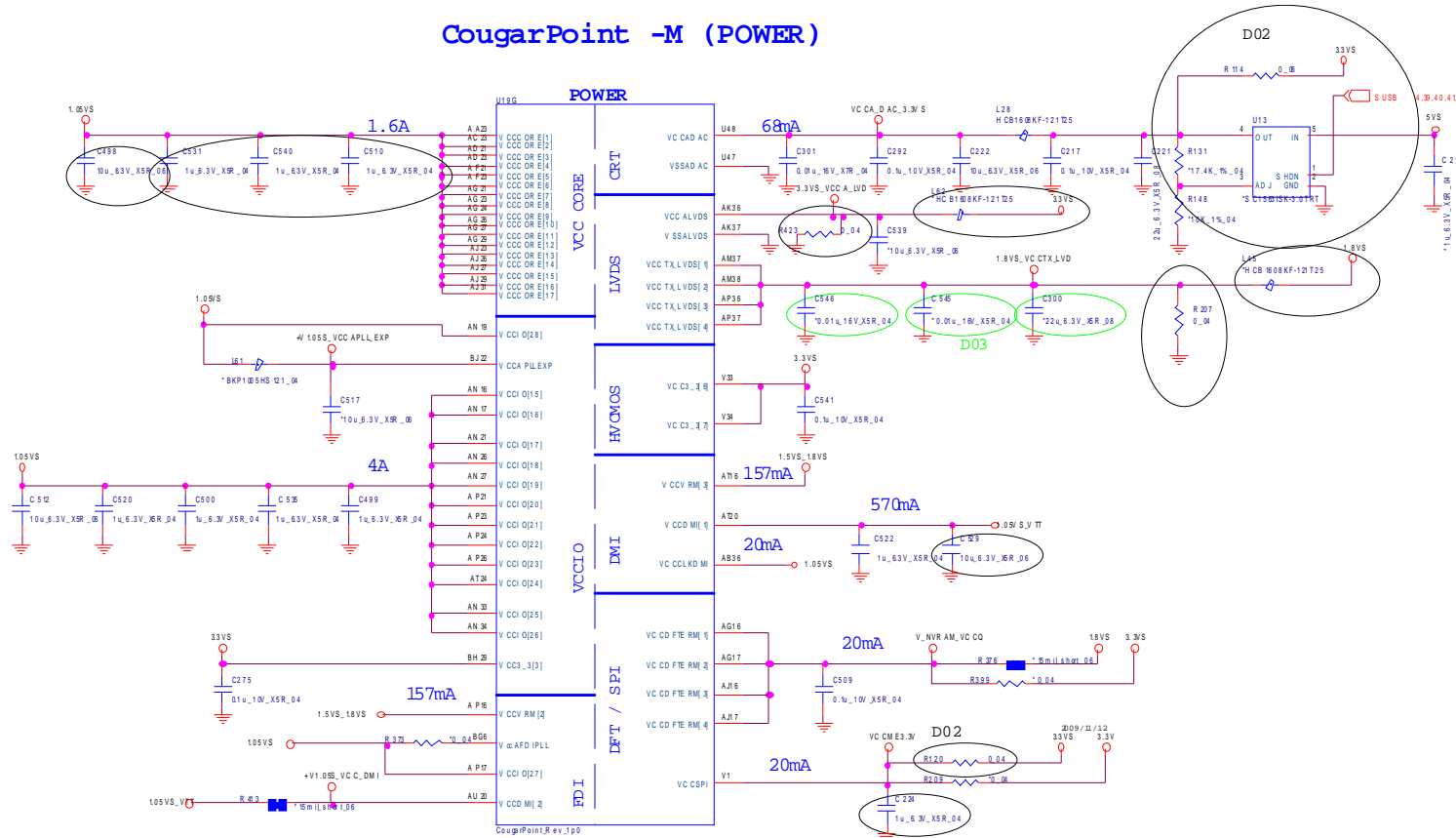
Sheet 23 of 58
CougarPoint - M 6/9

CougarPoint - M (GPIO, VSS_NCTF, RSVD)



CougarPoint - M 7/9

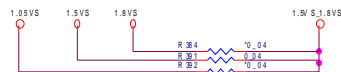
CougarPoint -M (POWER)



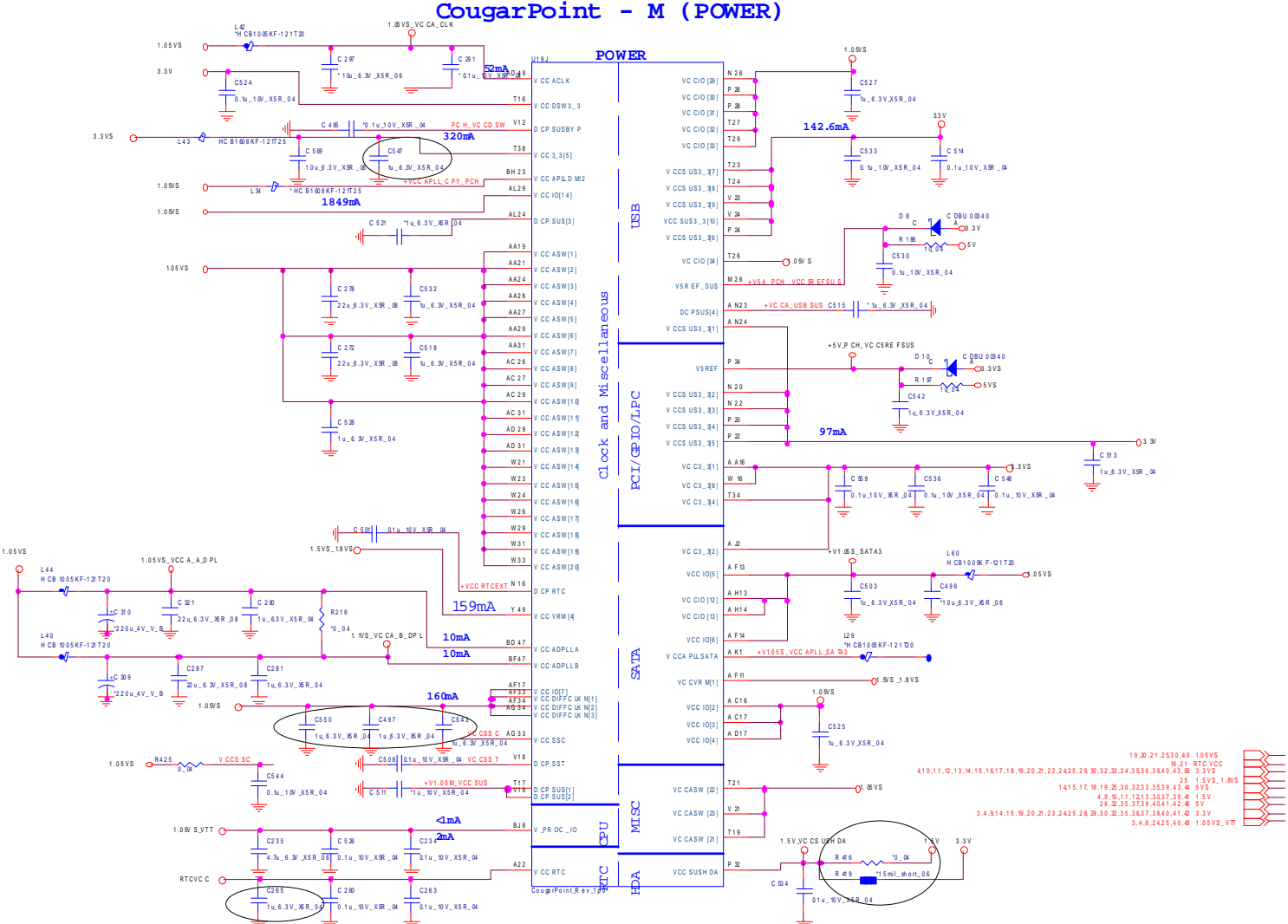
Sheet 24 of 58
CougarPoint - M 7/9

B.Schematic Diagrams

19,20,21,30,30,40 1.05VS
 3,40,14,15,19,20,21,23,24,26,28,29,30,35,36,37,38,40,41 3.3V
 1 1.5VS
 14,15,17,18,19,20,30,32,33,35,39,43,44 5VS
 2 1.5VS, 1.8VS
 7,16 1.8VS
 3,4,6,8,44,45 3.3VS
 3,4,6,24,25,40,4 1.05VS, VTT



CougarPoint - M 8/9

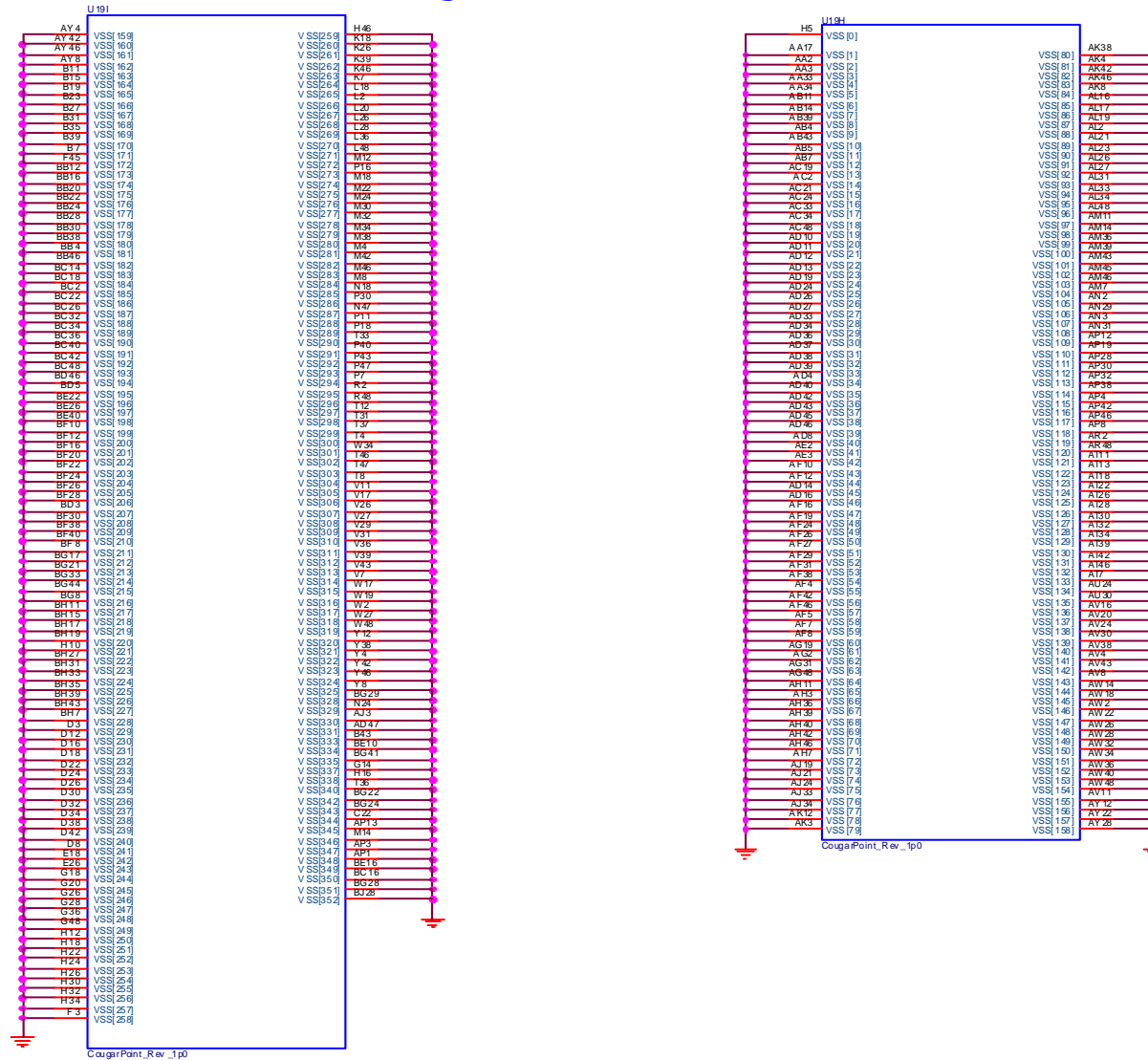


B. Schematic Diagrams

Sheet 25 of 58
CougarPoint - M 8/9

CougarPoint - M 9/9

CougarPoint -M (GND)



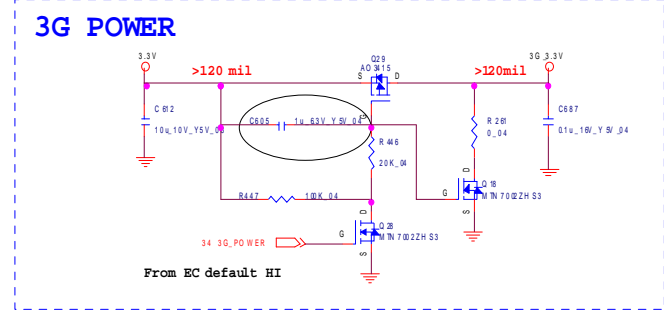
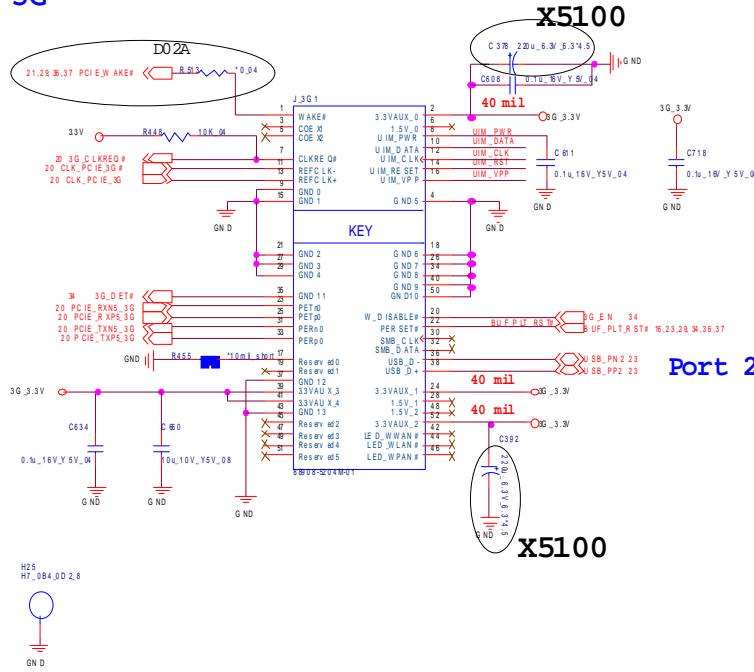
Sheet 26 of 58
CougarPoint - M 9/9

B.Schematic Diagrams

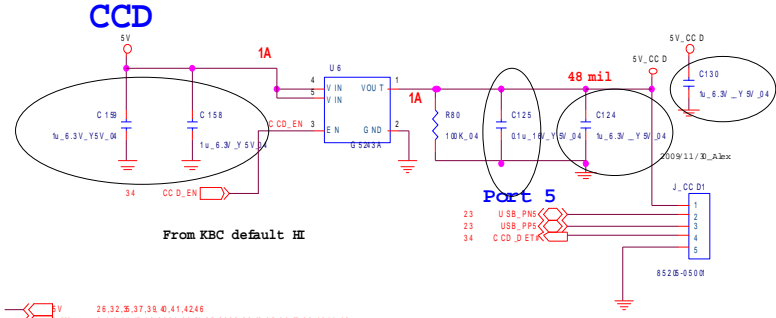
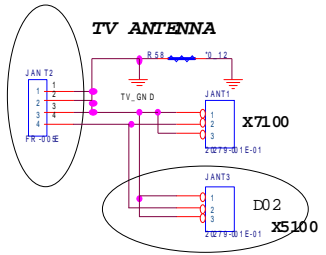
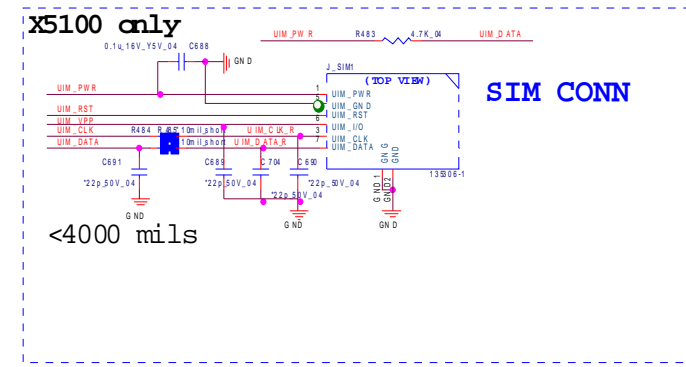
Schematic Diagrams

3G, CCD

3G



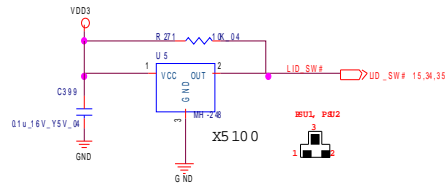
Sheet 27 of 58
3G, CCD



5V	26,32,36,37,39,41,42,44
3.3V	3,4,9,14,15,19,20,21,23,24,25,26,29,30,35,36,37,39,40,41,42
3VS	4,10,11,12,13,14,15,16,17,18,18,20,21,22,24,25,26,29,30,32,33,34,35,36,39,40,41,58
DD 5	35,38,39

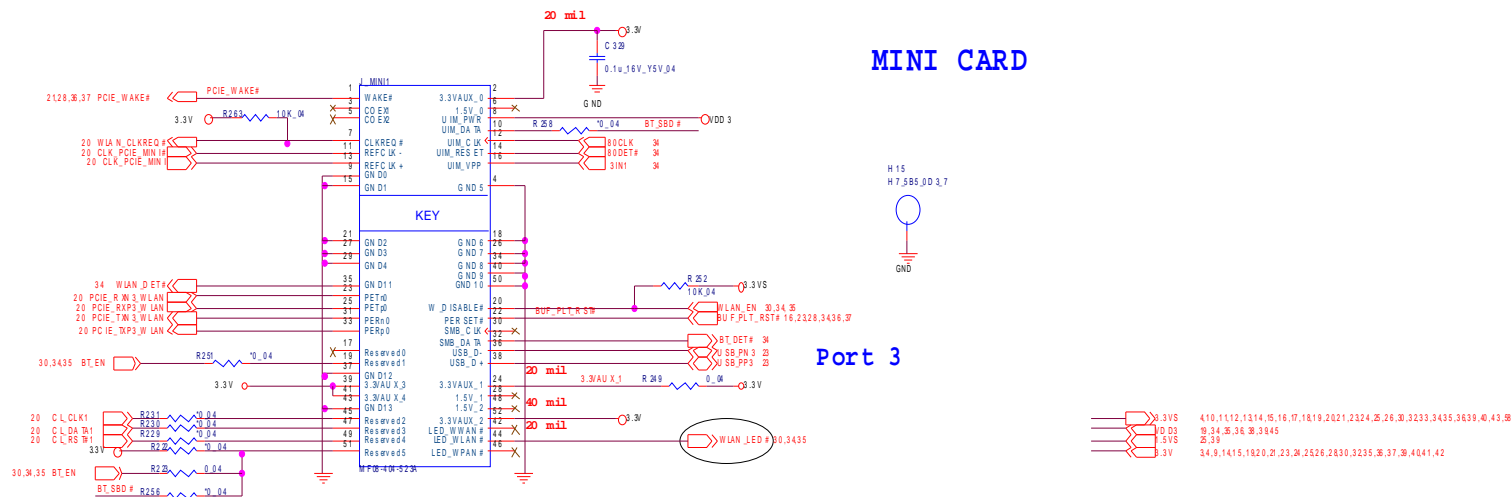
B.Schematic Diagrams

Mini PCIE, LID



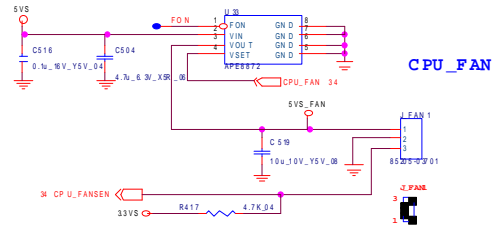
LID SWITCH IC

Sheet 28 of 58
Mini PCIE, LED

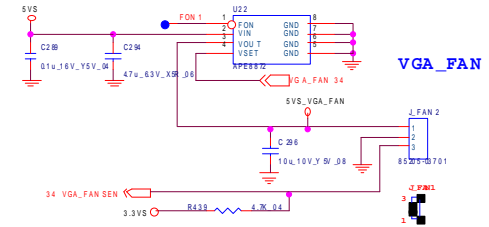


LED, Hotkey, LID SW, Fan

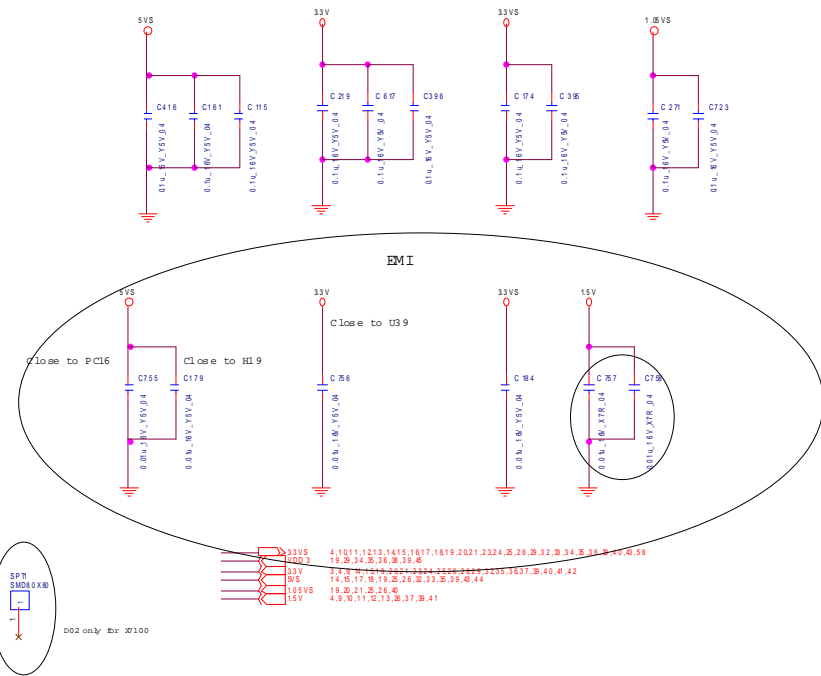
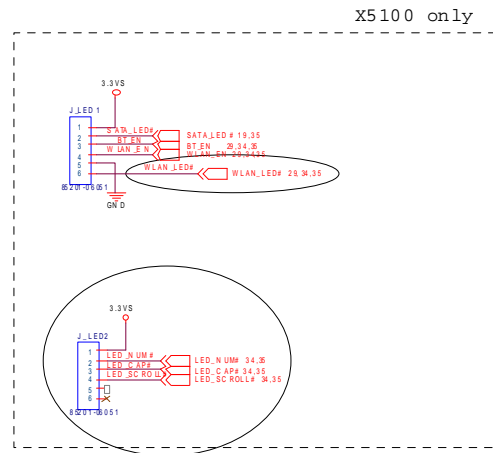
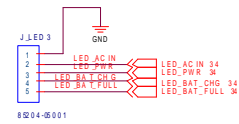
CPU FAN CONTROL



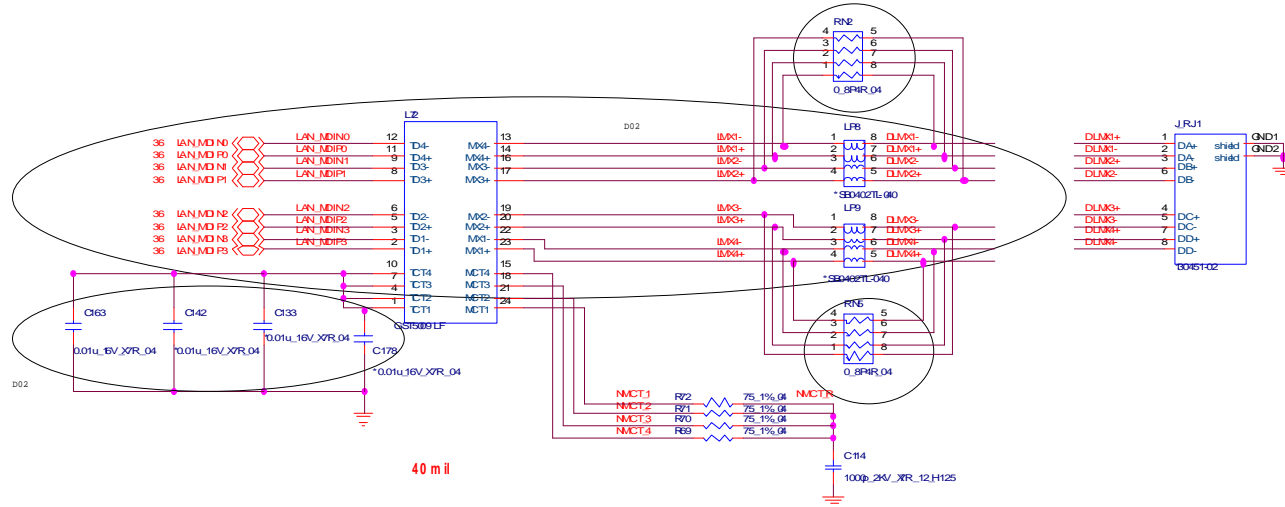
VGA FAN CONTROL



Sheet 29 of 58
LED, Hotkey, LID
SW, Fan

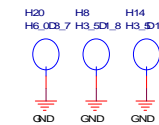
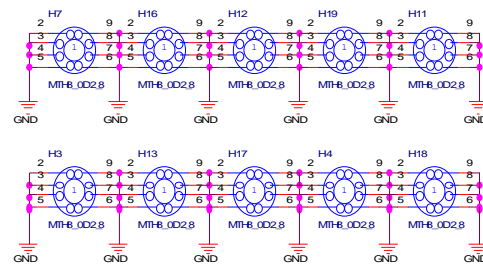
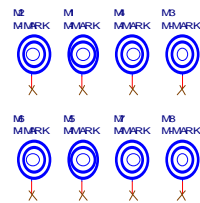
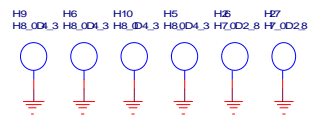


RJ 45



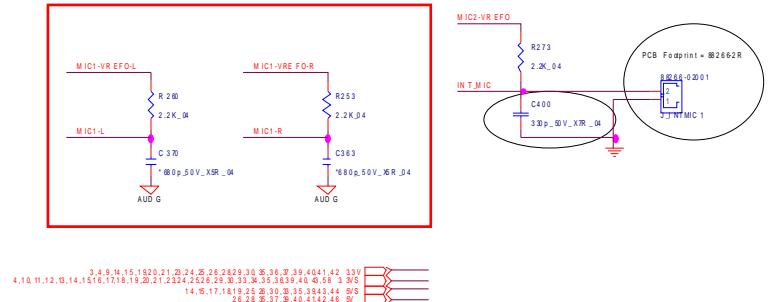
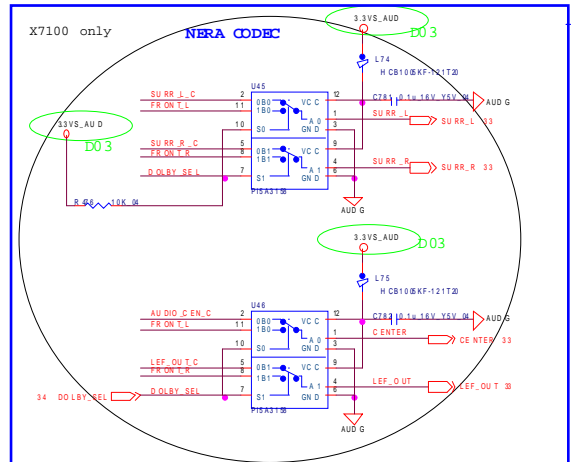
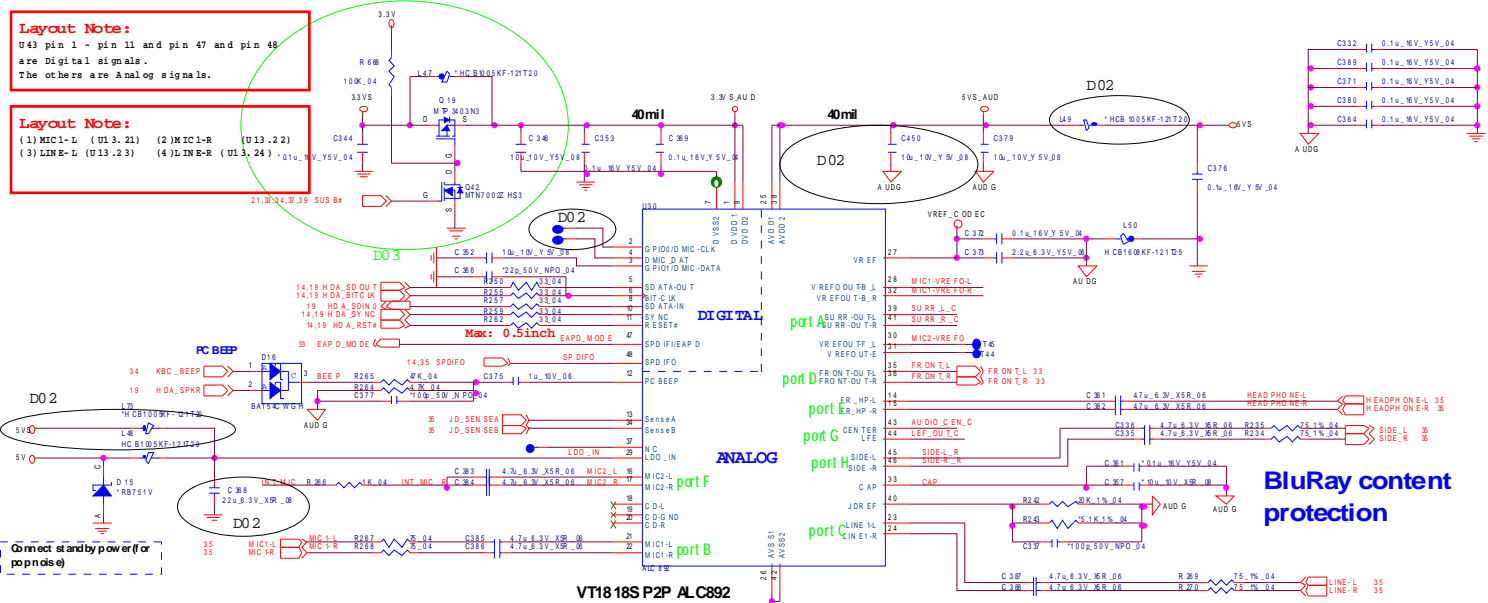
Sheet 30 of 58
RJ 45

B. Schematic Diagrams



Legend: 3V, DDD 36
3,4,9,14,15,19,20,21,23,24,25,26,28,29,30,32,33,36,37,39,40,41,42

Codec Realtek ALC892



3, 4, 9, 11, 12, 13, 14, 16, 18, 19, 20, 21, 22, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	33V
--	-----

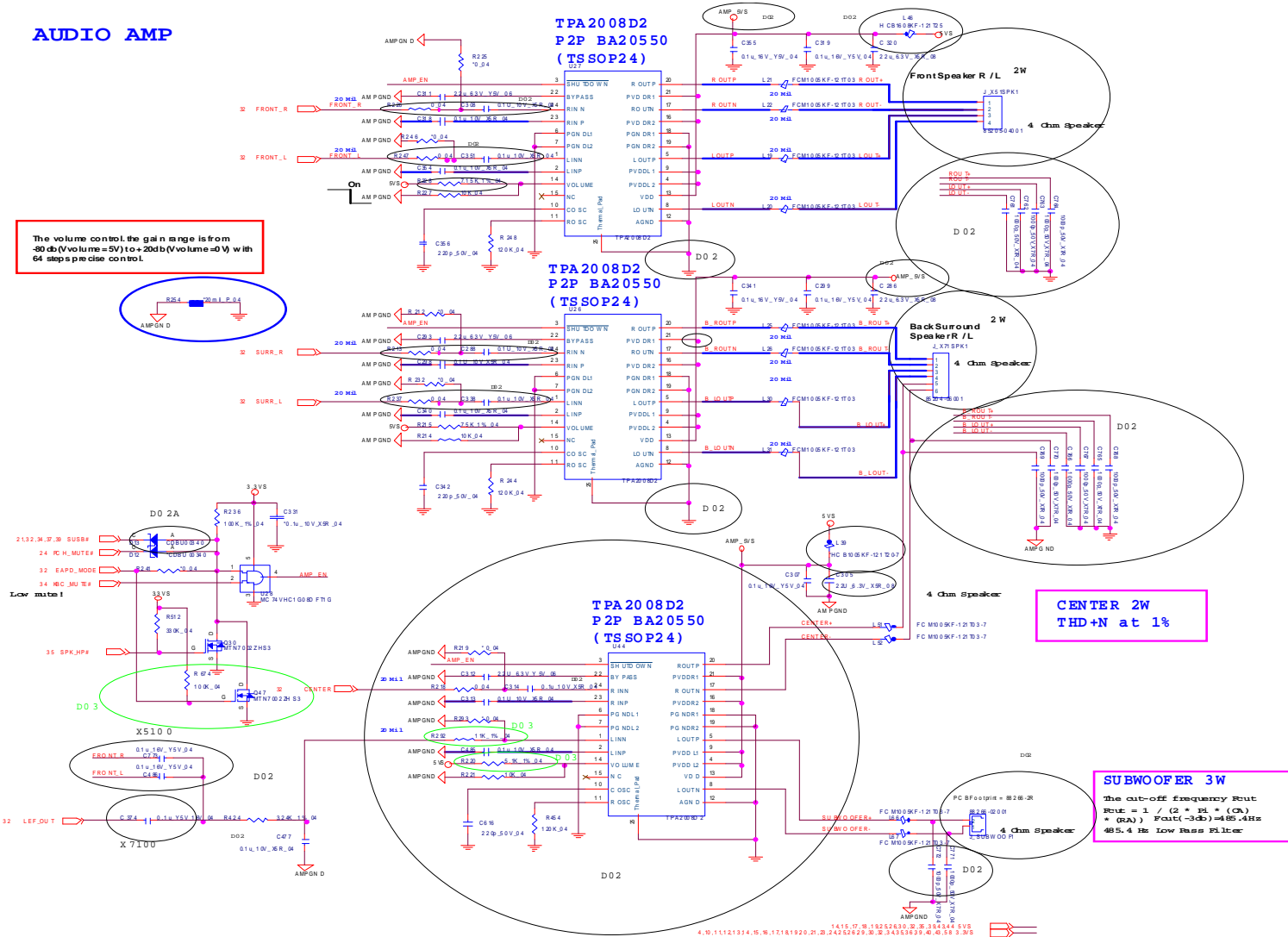
B. Schematic Diagrams

Sheet 31 of 58
Codec Realtek
ALC892

APA2010D1-TPA2008D2

AUDIO AMP

The volume control, the gain range is from -80 db (Volume = 5V) to +20db (Volume = 0V) with 64 steps precise control.



Sheet 32 of 58
APA2010D1-
TPA2008D2

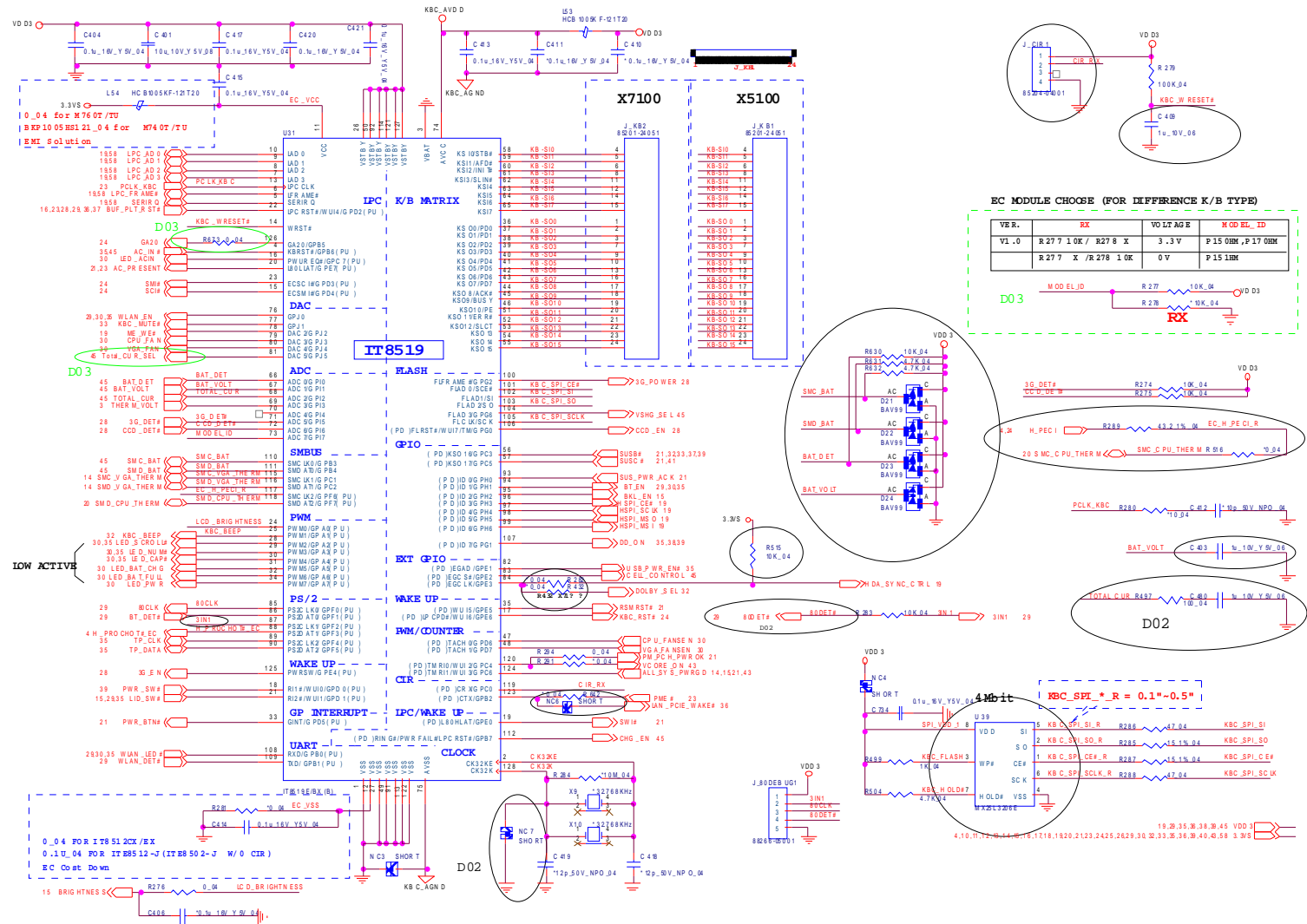
B. Schematic Diagrams

CENTER 2W
THD+N at 1%

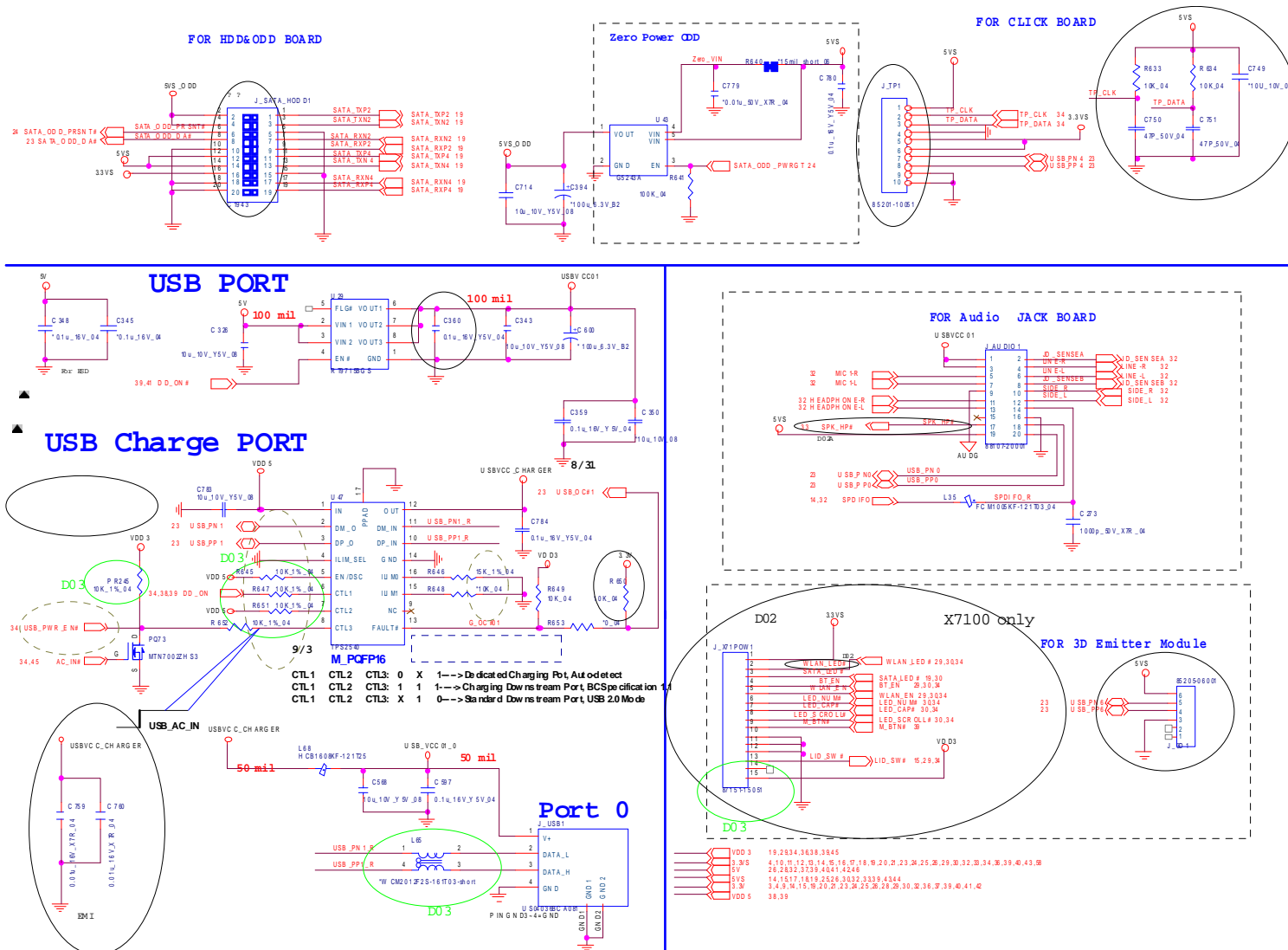
SUBWOOFER 3W
The cut-off frequency f_{cut}
 $f_{cut} = 1 / (2 * \pi * (C) * R)$
= (RA) $f_{cut} = (3db) = 485.4Hz$
485.4 Hz Low Pass Filter

KBC-ITE IT8519

Sheet 33 of 58
KBC-ITE IT8519



USB, TP, FP, MULTI-CONN

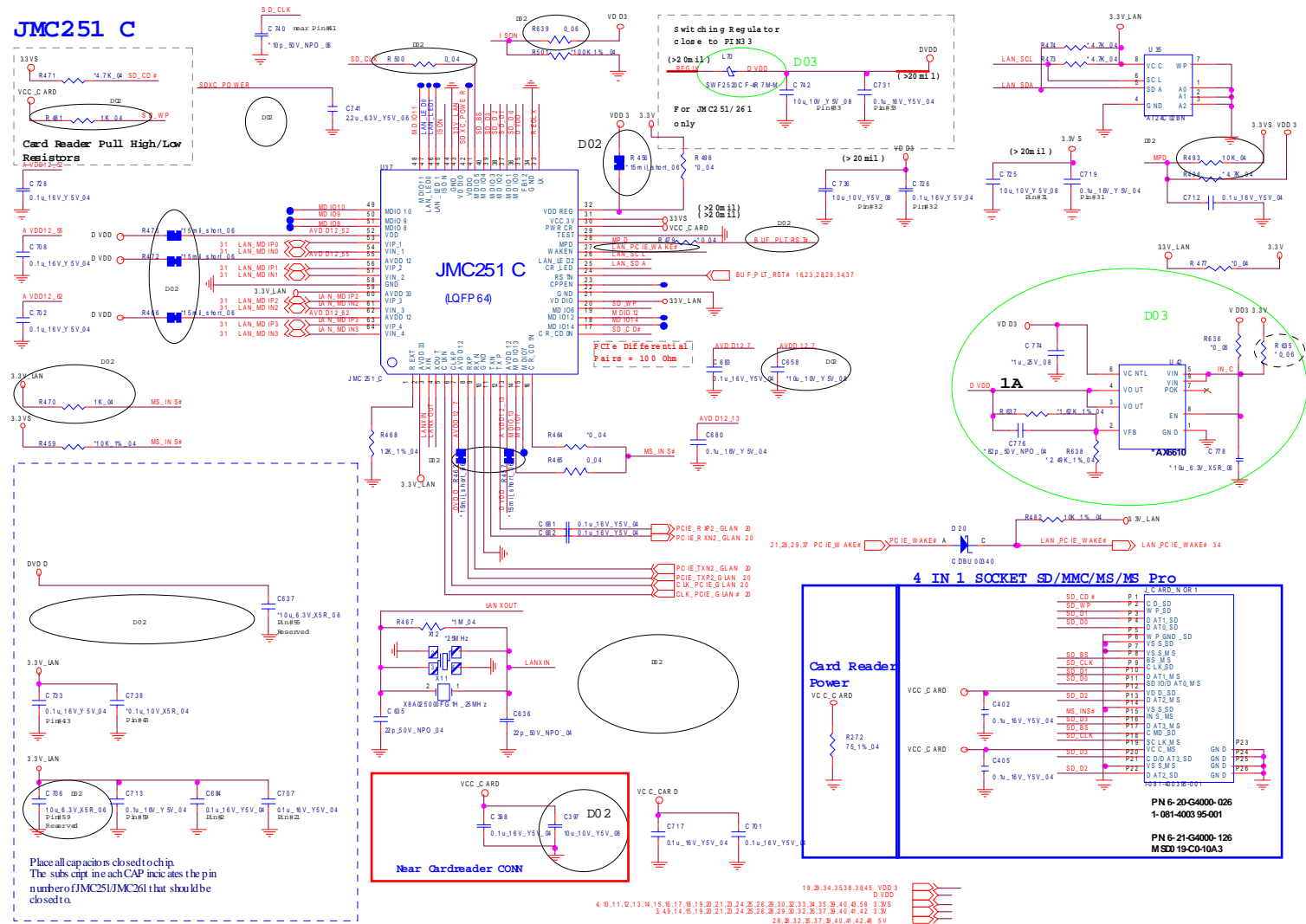


Sheet 34 of 58
 USB, TP, FP,
 MULTI-CONN

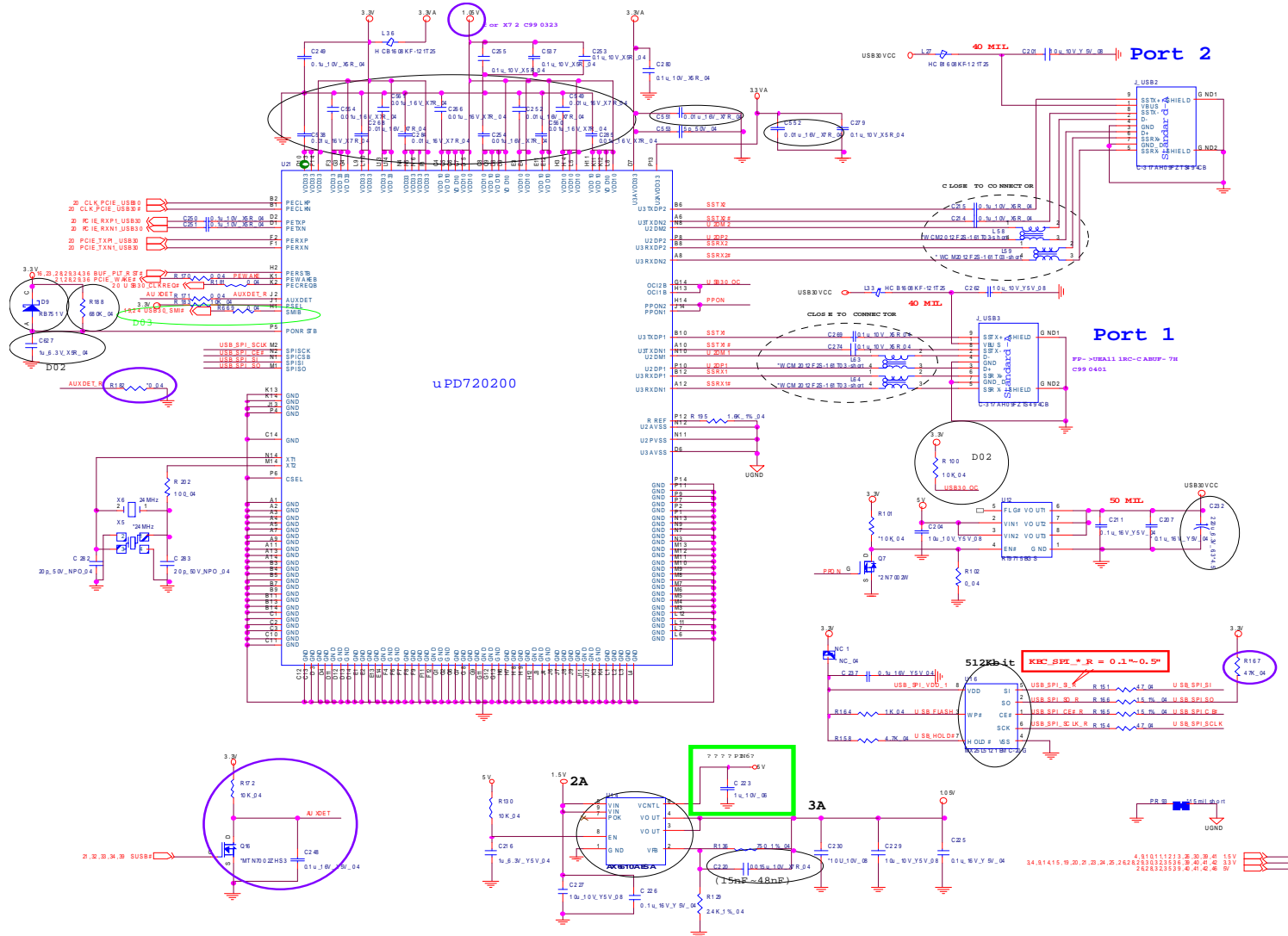
B.Schematic Diagrams

Card Reader (JMC 251C)

Sheet 35 of 58
Card Reader (JMC 251C)



USB 3.0

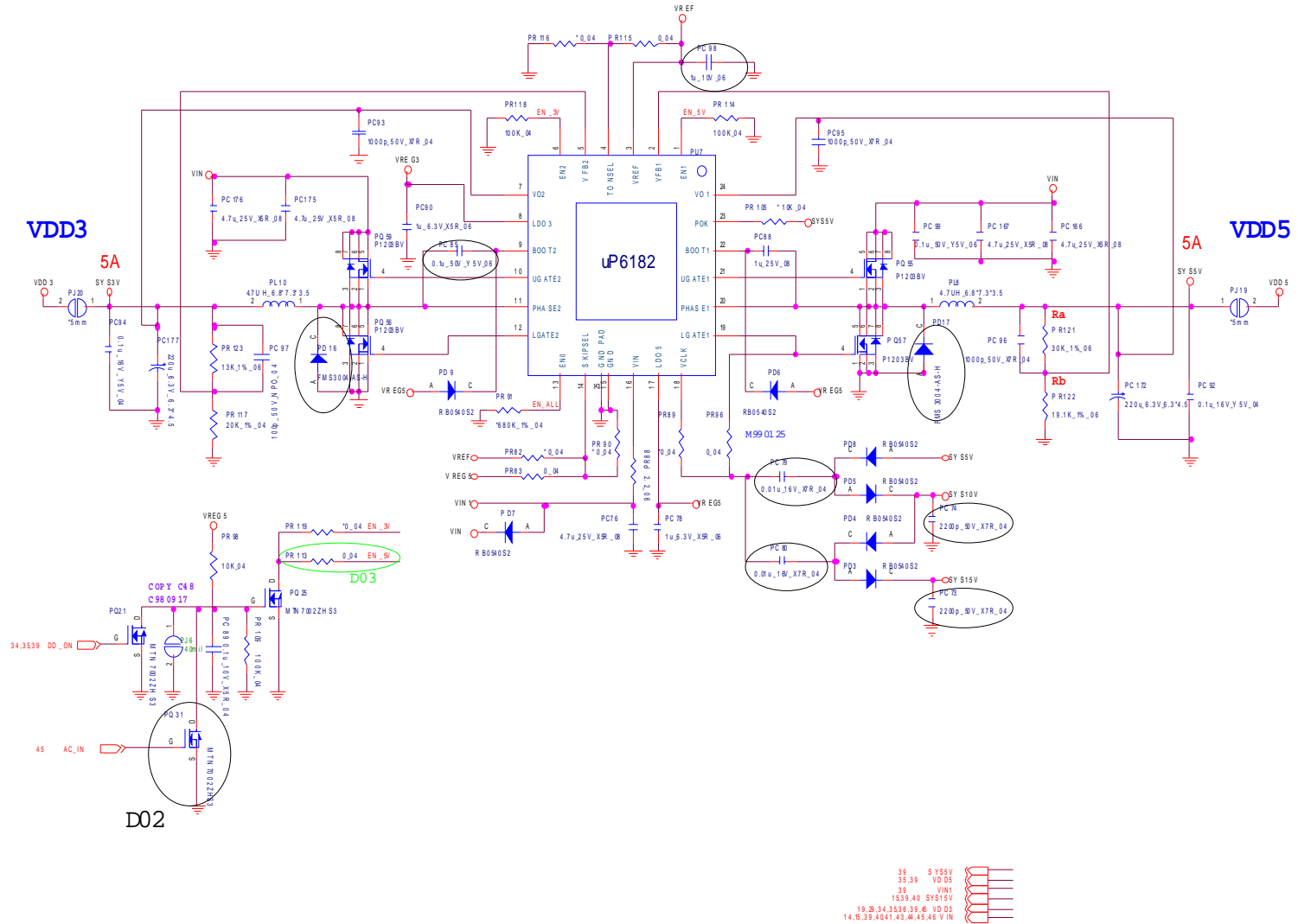


Sheet 36 of 58
USB 3.0

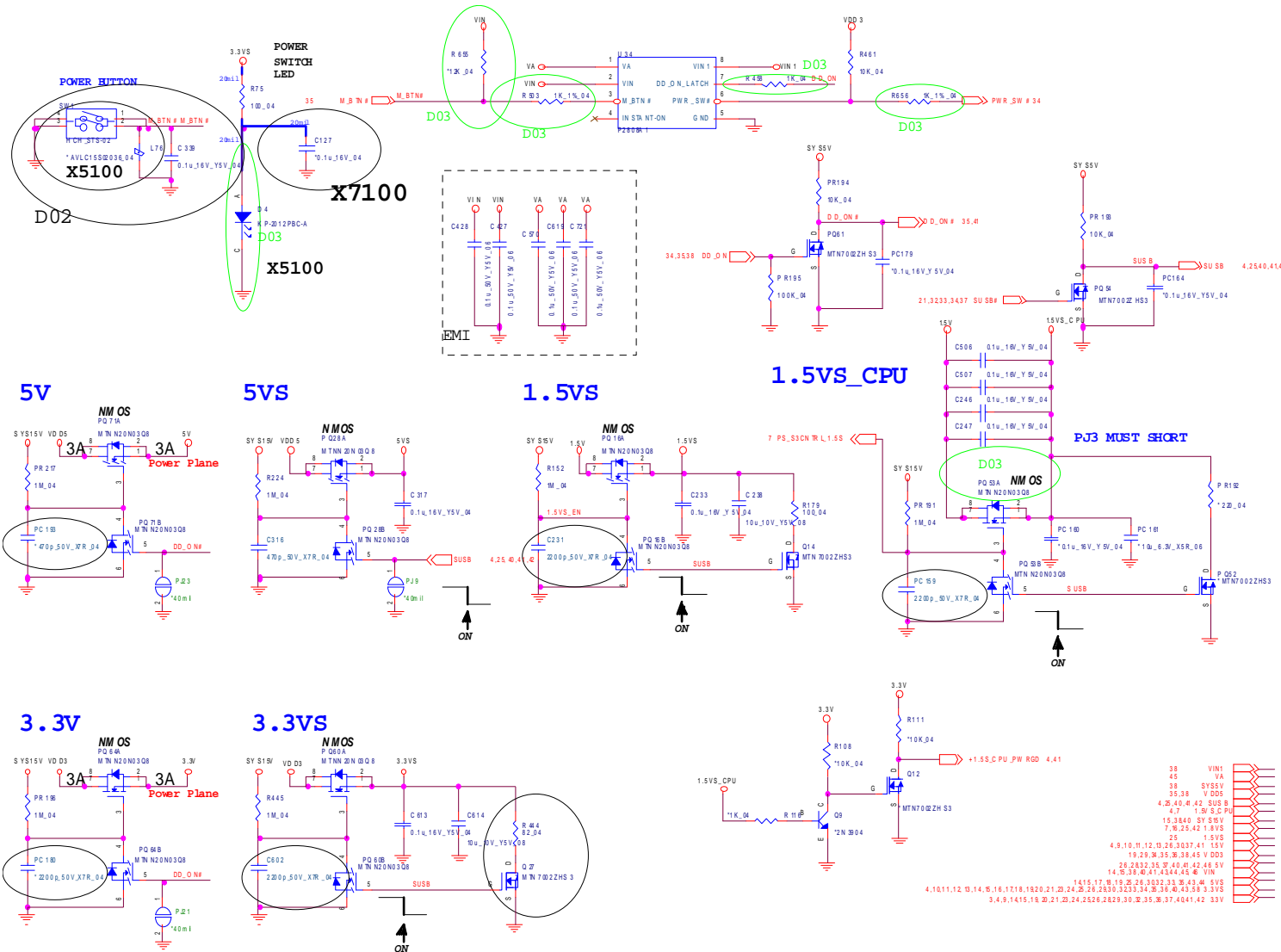
B.Schematic Diagrams

VDD3, VDD5

Sheet 37 of 58
VDD3, VDD5



5V, 3.3V, 5VS, 3VS, 1.5VS, VIN1



Sheet 38 of 58
5V, 3.3V, 5VS, 3VS,
1.5VS, VIN1

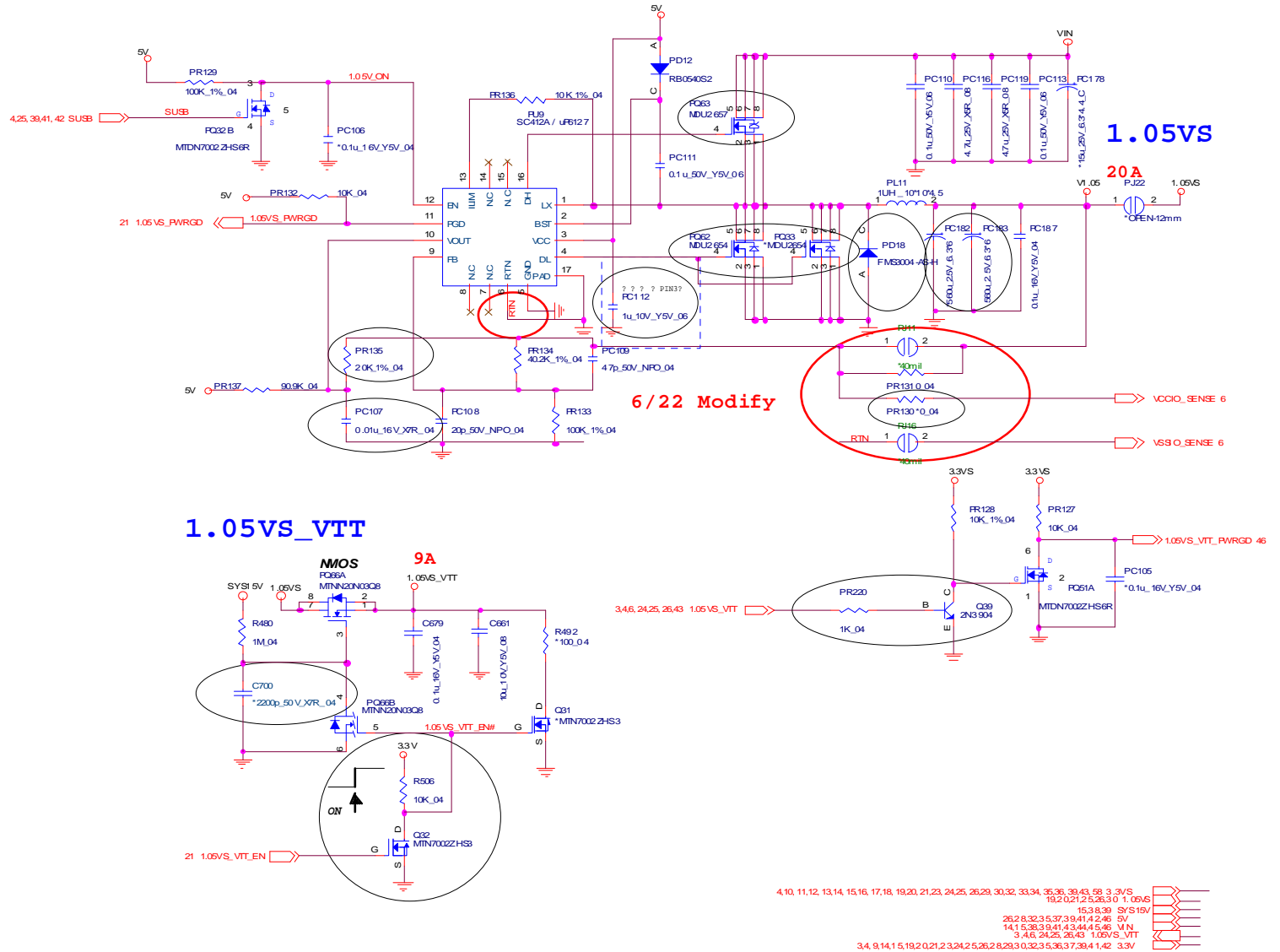
B. Schematic Diagrams

Schematic Diagrams

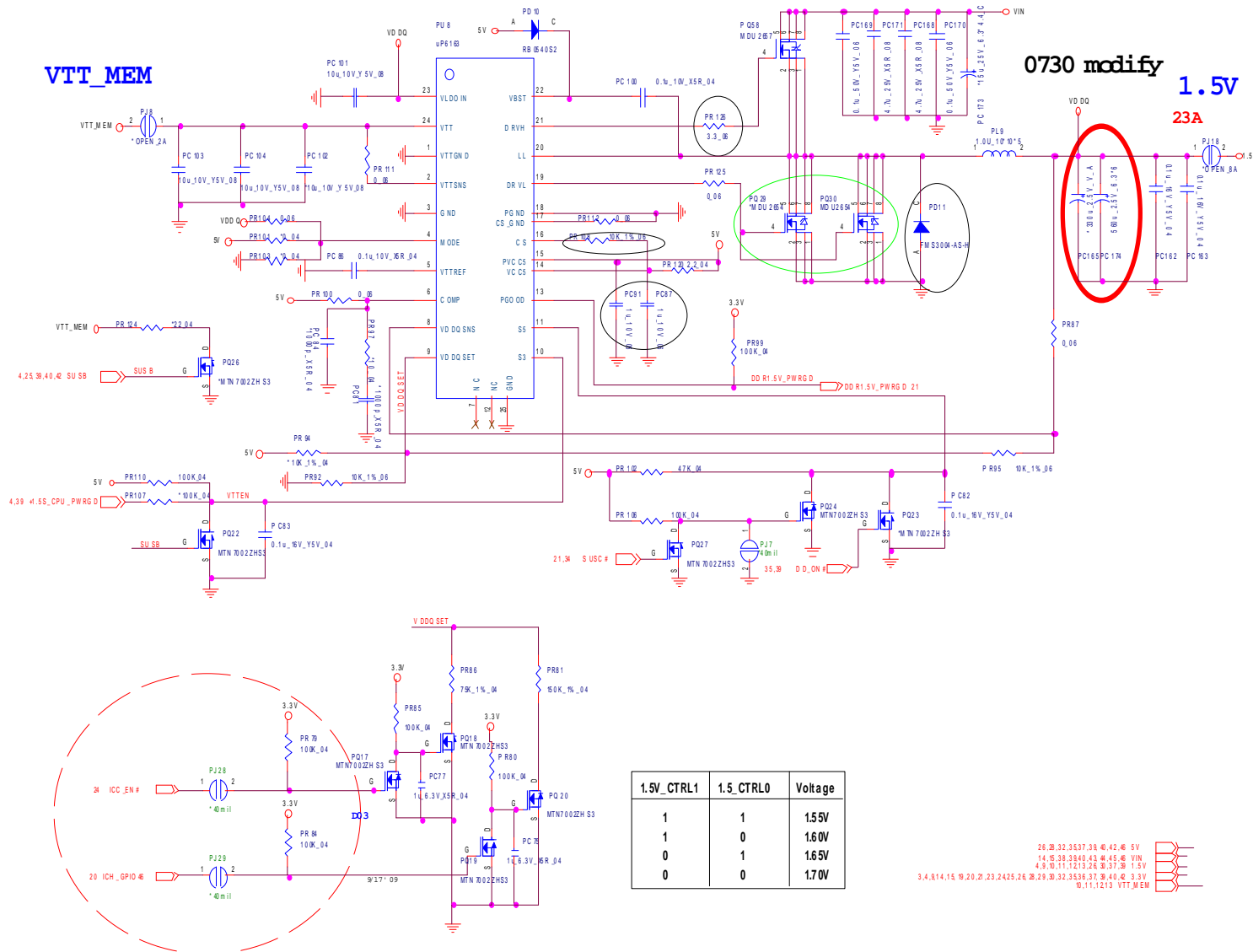
Power 1.05VS, 1.05VS_VTT

B.Schematic Diagrams

Sheet 39 of 58
Power 1.05VS,
1.05VS_VTT



Power 1.5V/VTT_MEM

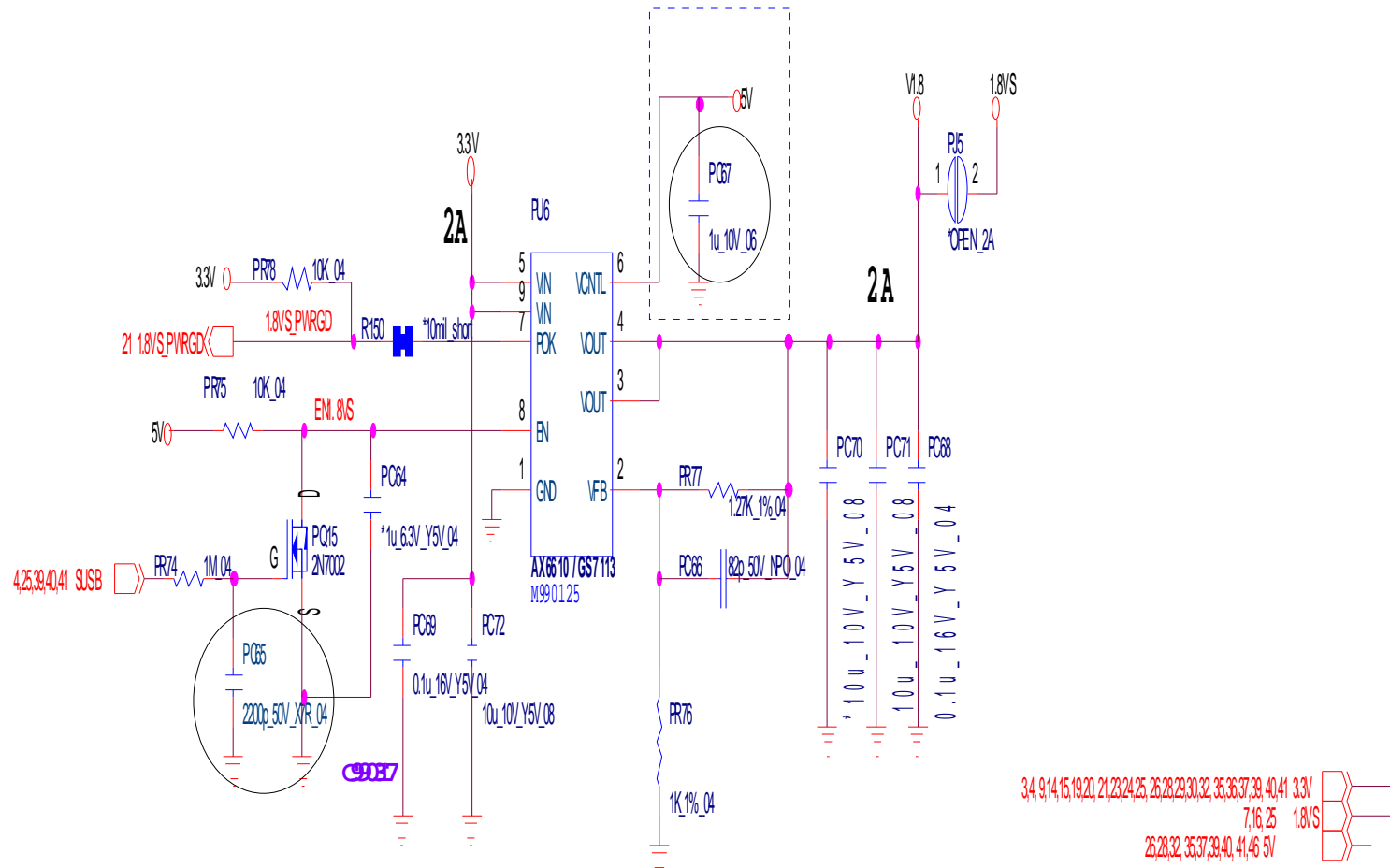


Sheet 40 of 58
Power 1.5V/
VTT_MEM

Power 1.8VS

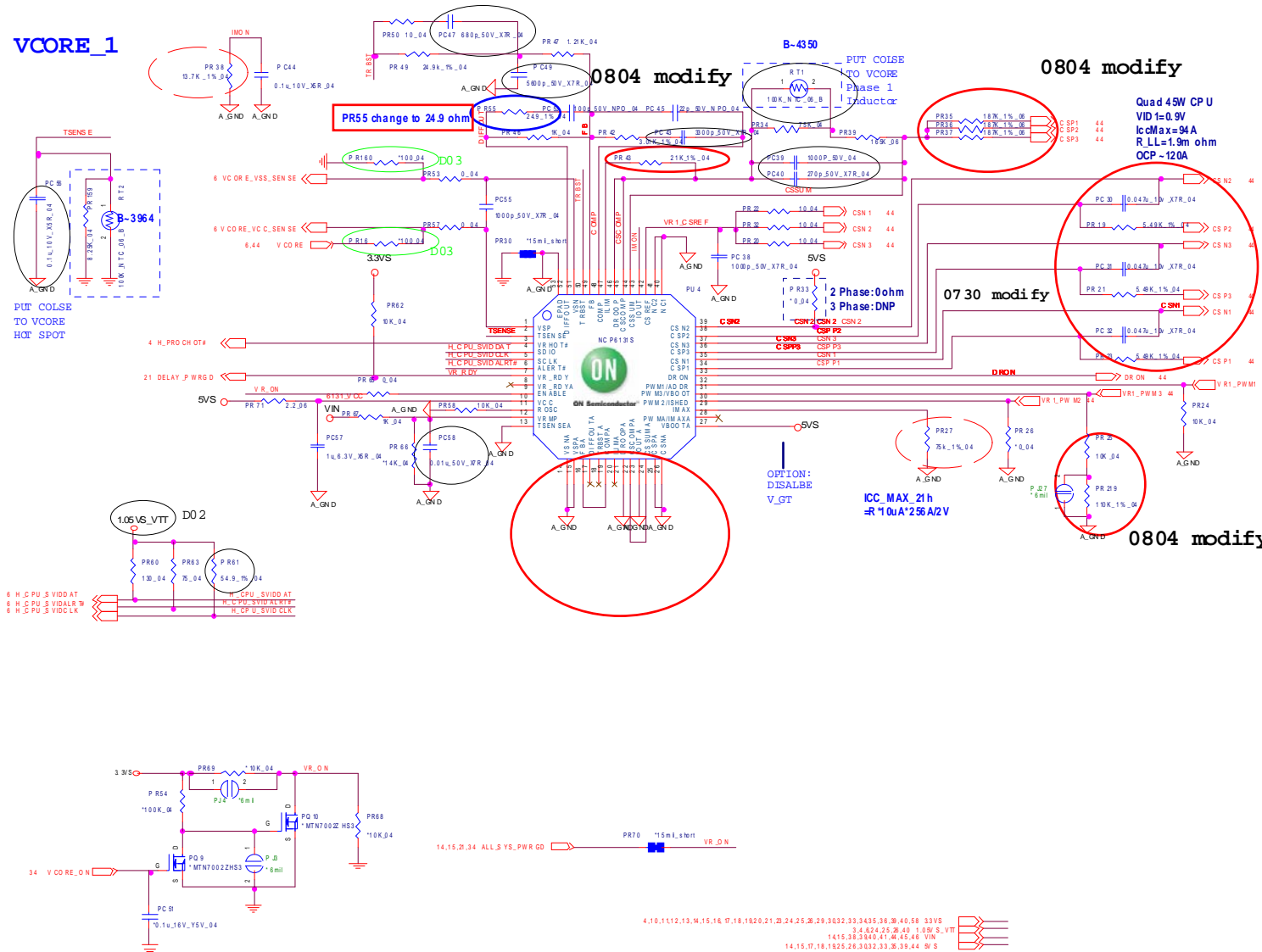
1.8VS

Sheet 41 of 58
Power 1.8VS



3,4,9,14,15,19,20,21,23,24,25,26,28,29,30,32,35,36,37,39,40,41 3.3V
7,16,25 1.8VS
26,28,32,35,37,39,40,41,46 5V

Power V-Core 1

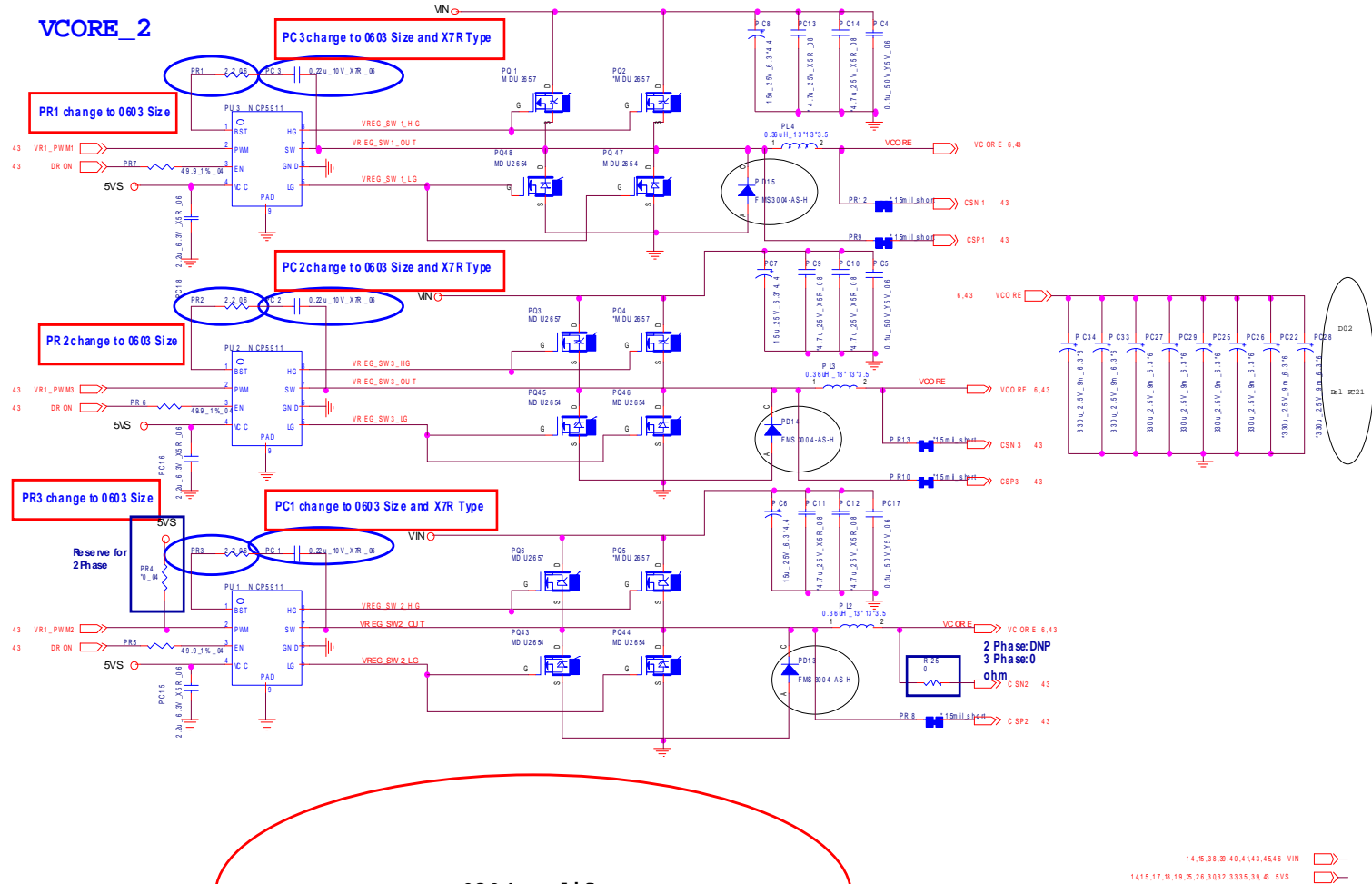


Sheet 42 of 58
Power V-Core 1

B. Schematic Diagrams

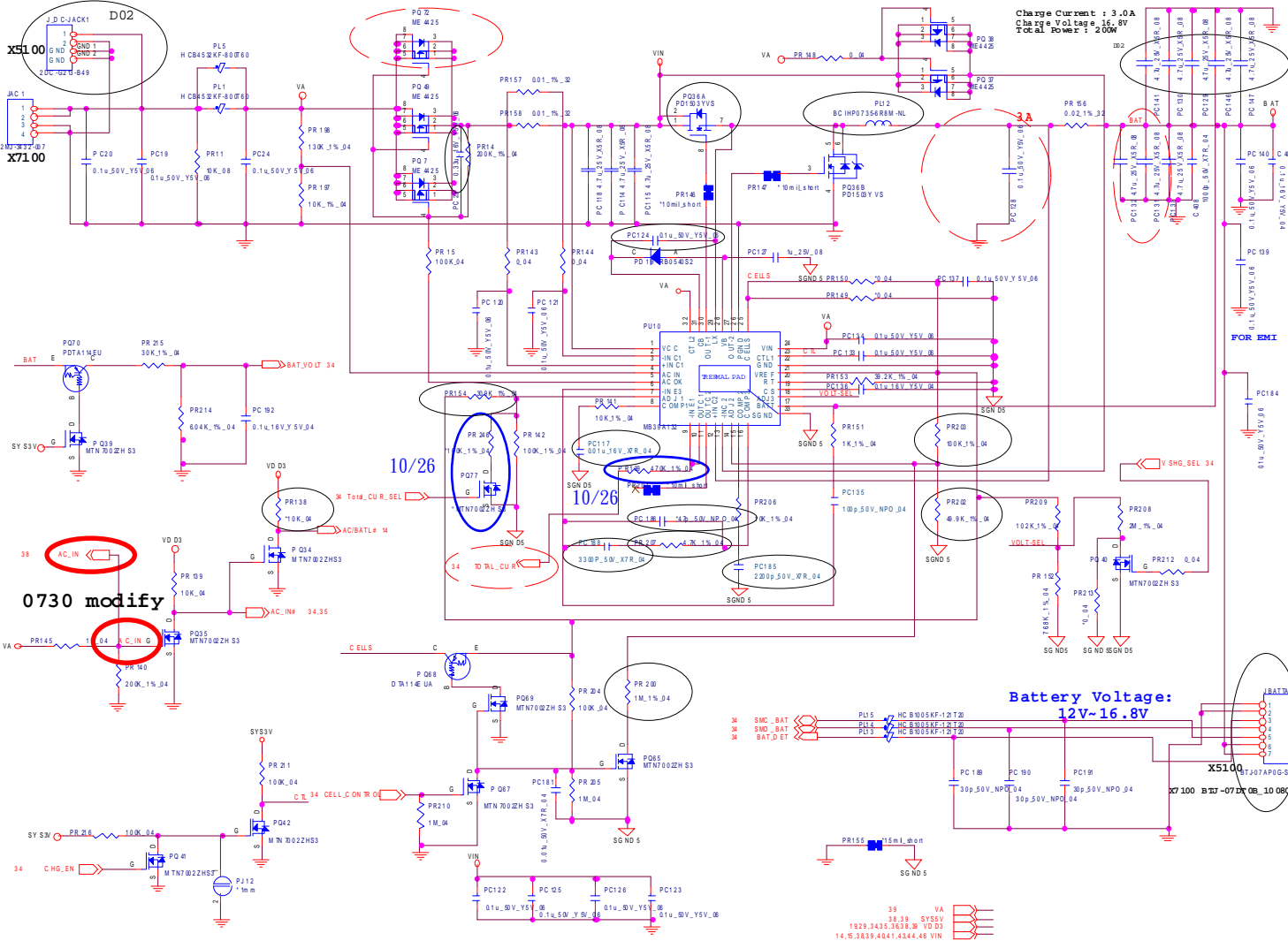
Power V-Core 2

Sheet 43 of 58
Power V-Core 2



0804 modify

AC_In, Charger

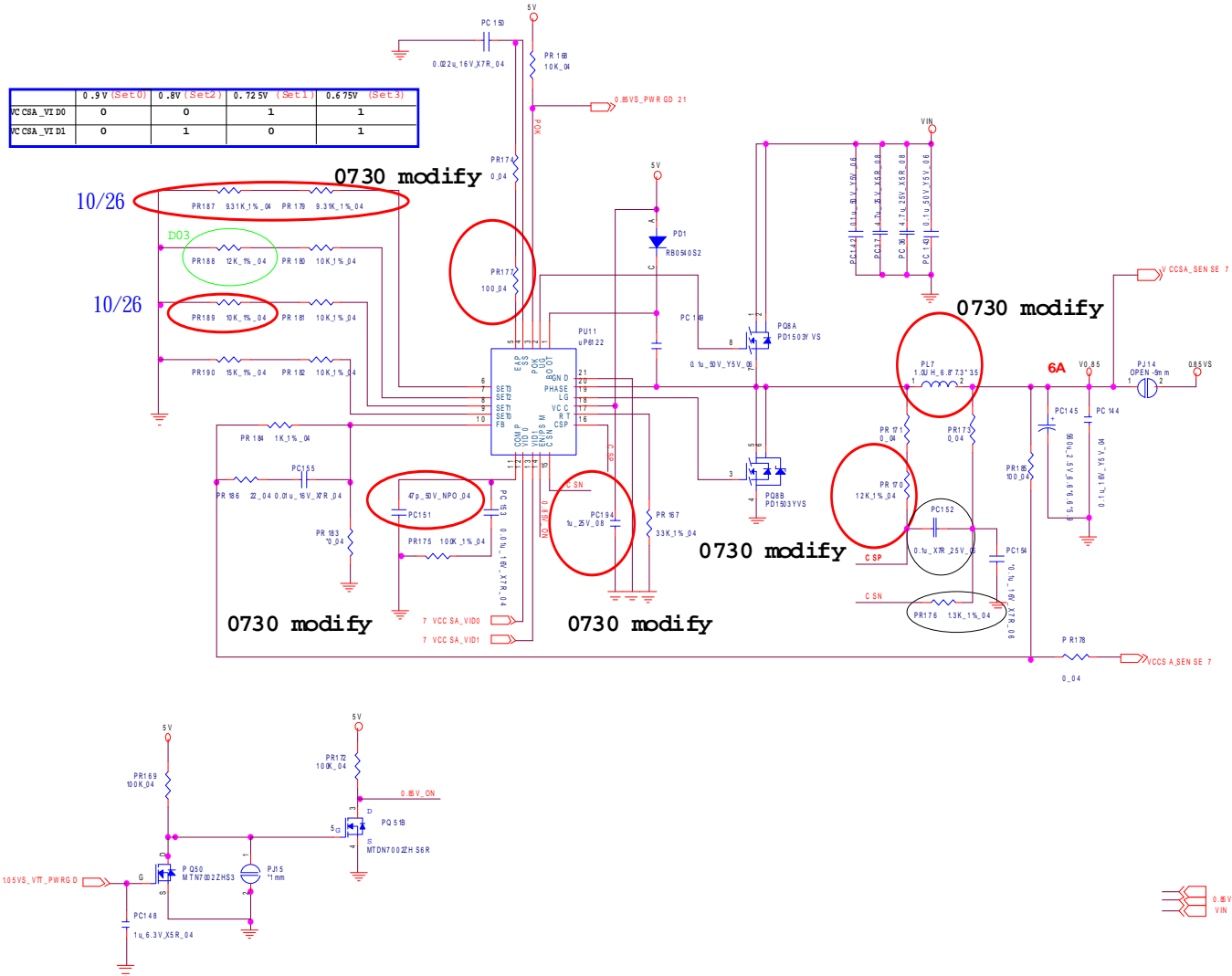


Sheet 44 of 58
AC_In, Charger

B. Schematic Diagrams

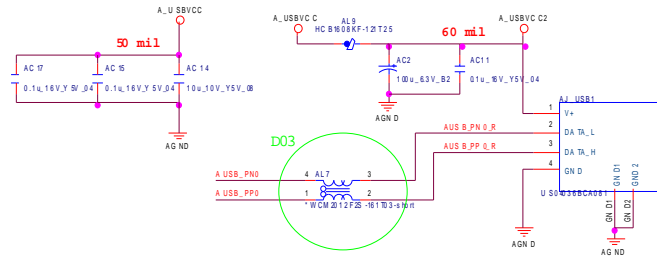
Power 0.85VS

Sheet 45 of 58
Power 0.85VS

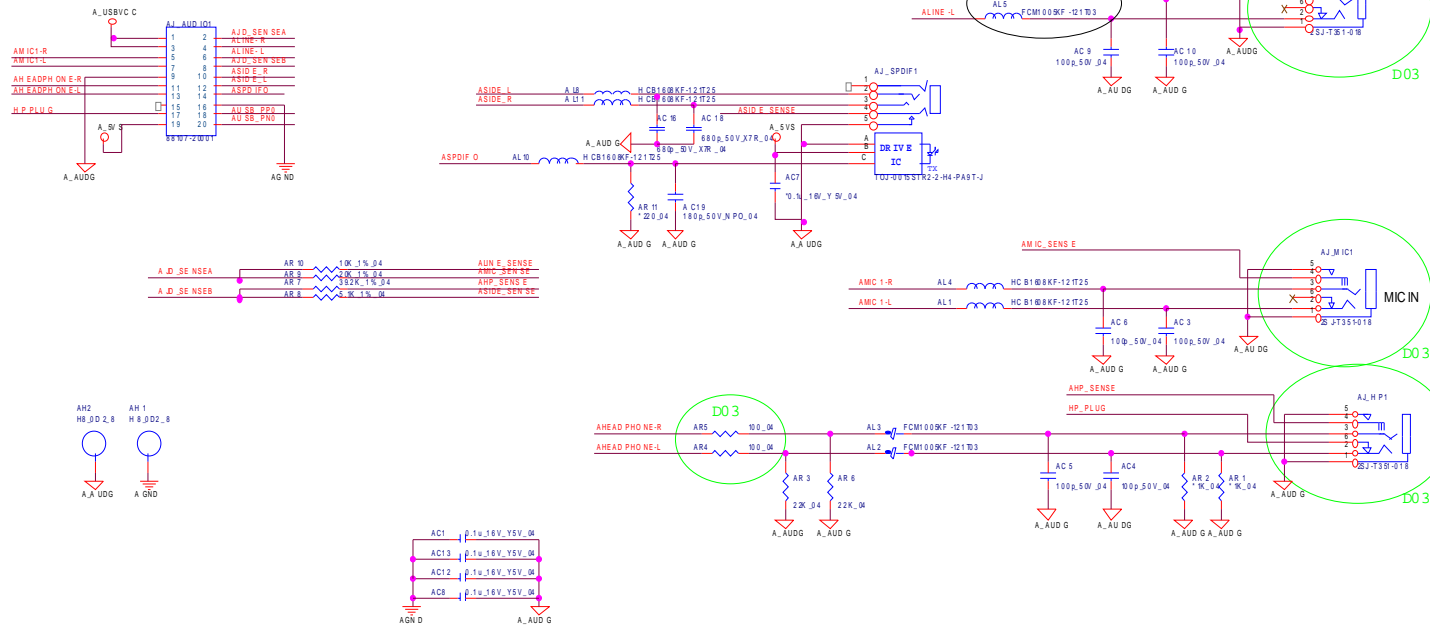


Audio Jack

USB PORT



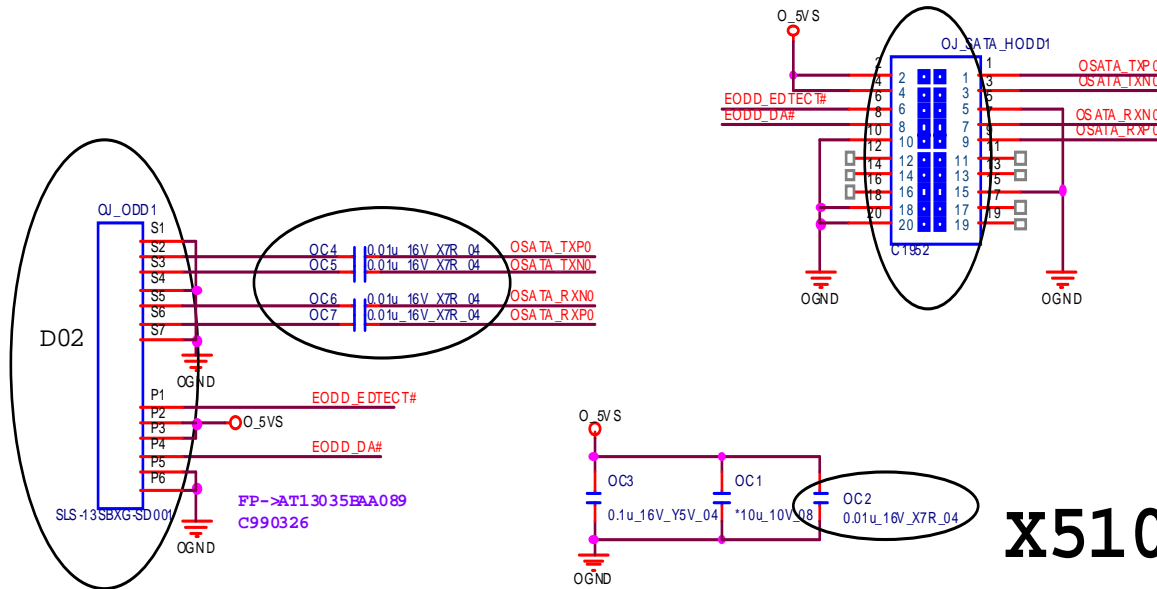
AUDIO JACK



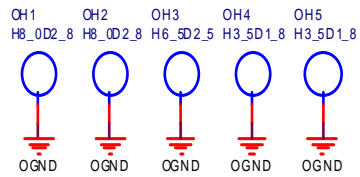
Sheet 46 of 58
Audio Jack

X5100 ODD Board

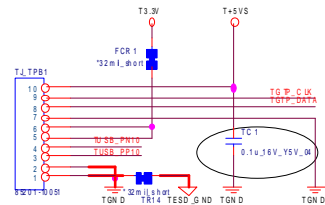
Sheet 47 of 58
X5100 ODD Board



X5100M ONLY

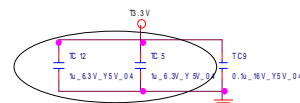
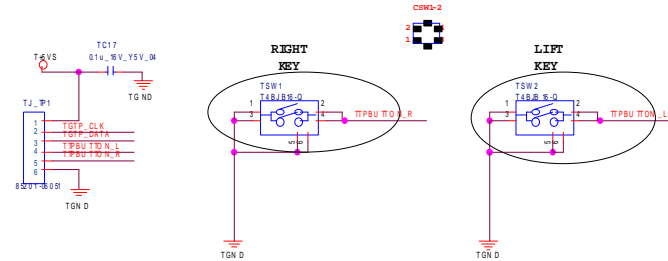


X5100 Click Board

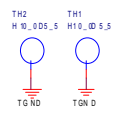
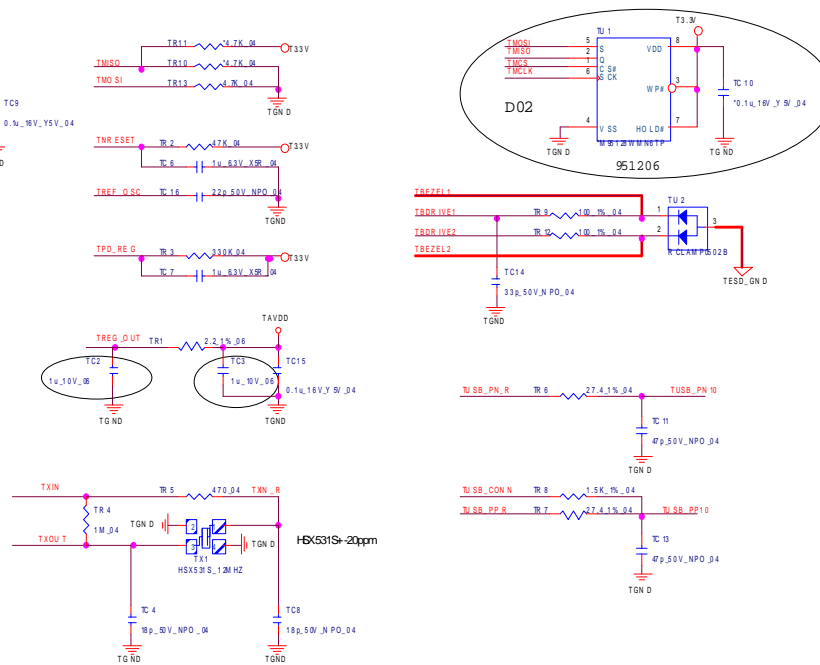
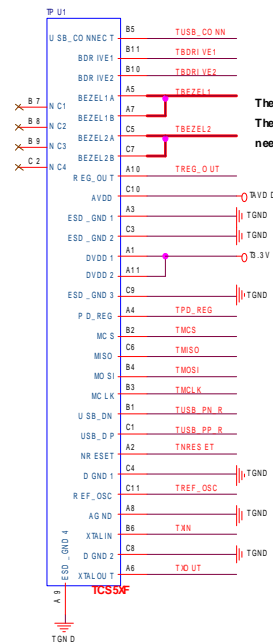


6-20-94A20-110

It is strongly recommended that the TESD_GND has a dedicated connection to the system chassis or cable shield.



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



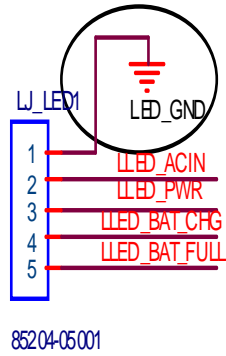
X5100M ONLY

Sheet 48 of 58
X5100 Click Board

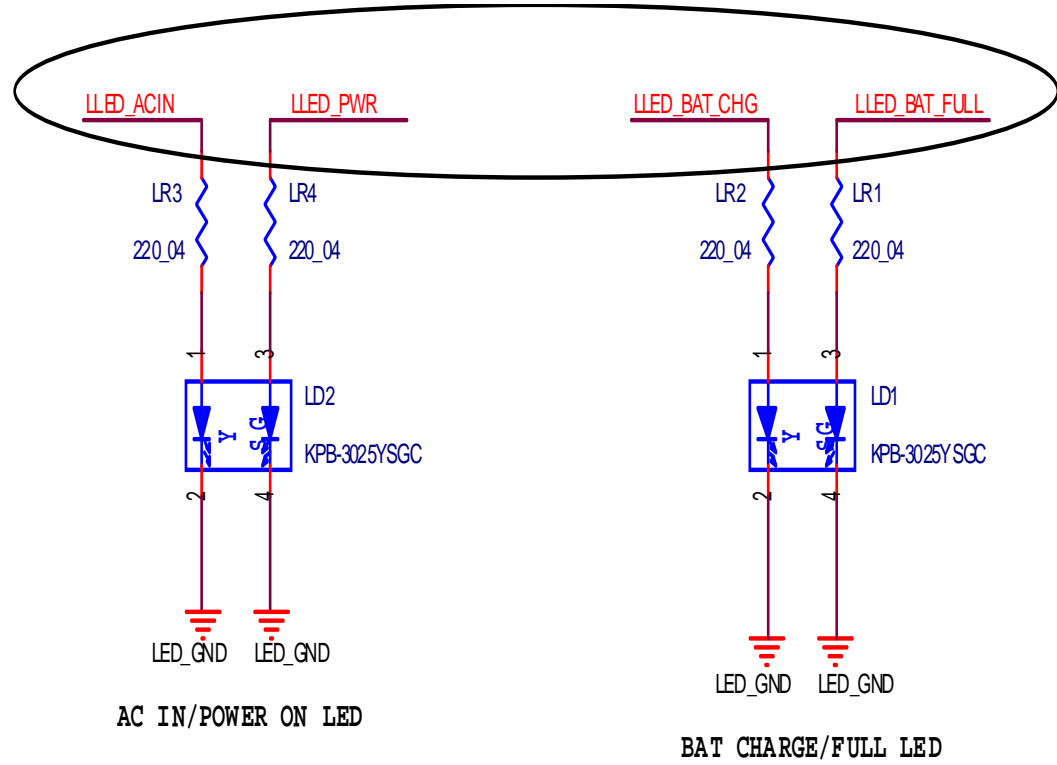
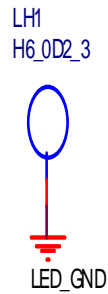
B. Schematic Diagrams

X5100 LED 1 Board

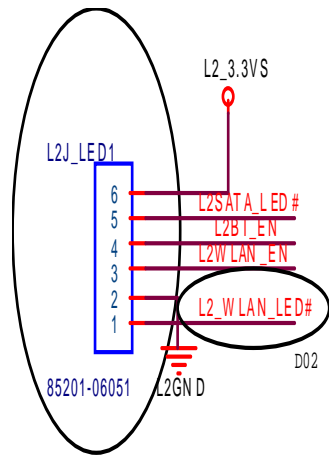
Sheet 49 of 58
X5100 LED 1 Board



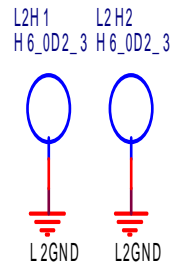
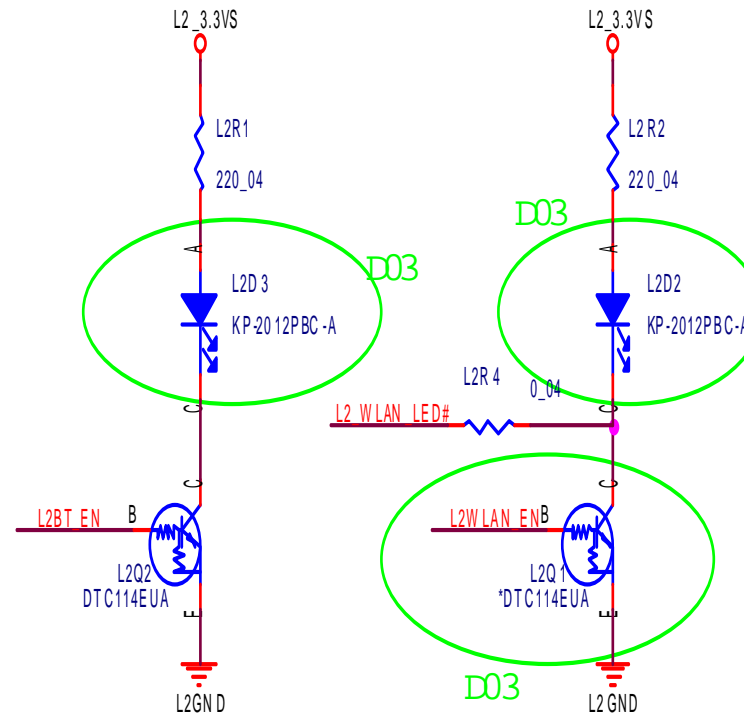
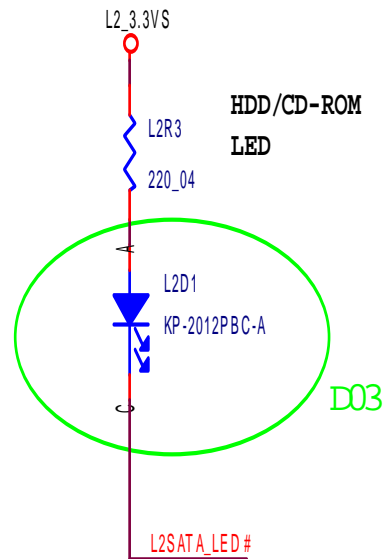
85204-05.001



X5100 LED 2 Board



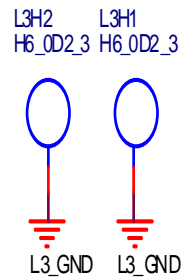
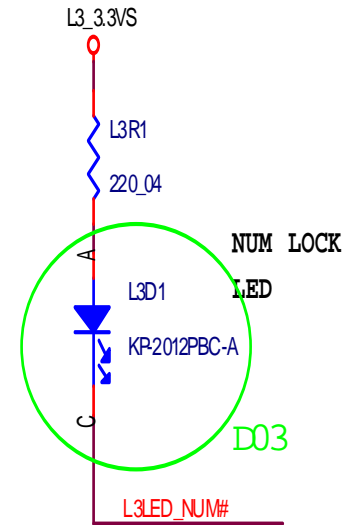
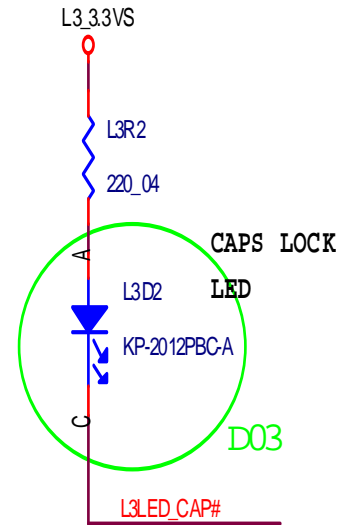
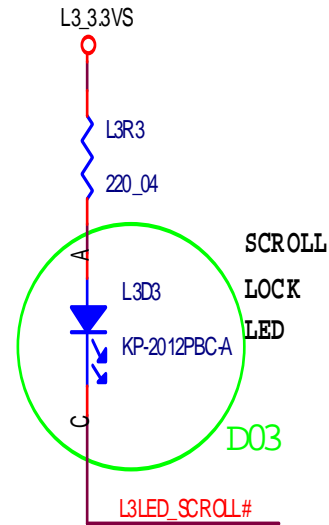
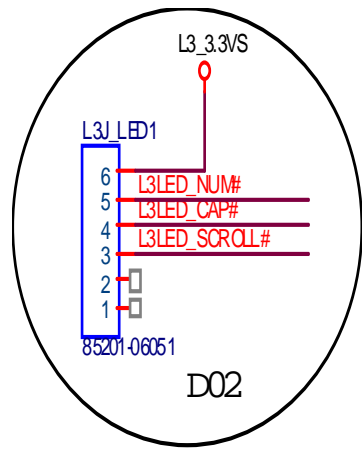
LED



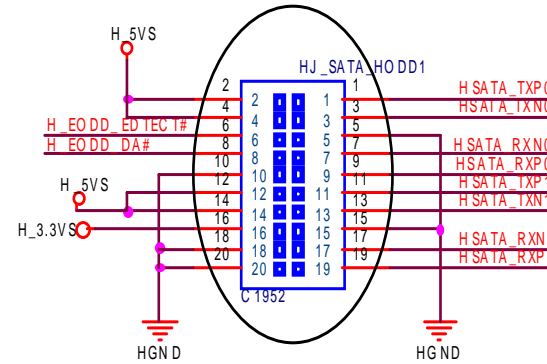
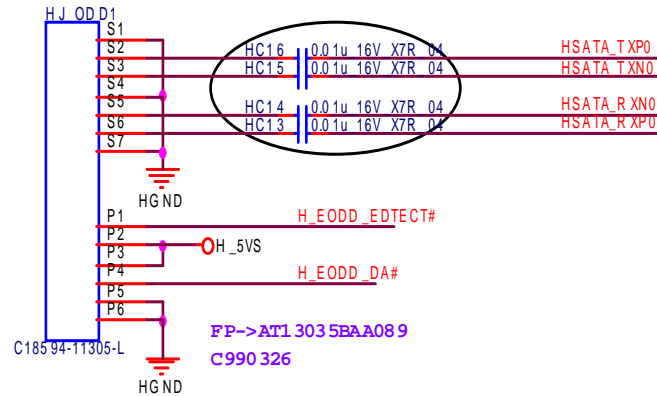
Sheet 50 of 58
 X5100 LED 2 Board

X5100 LED 3 Board

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X5100 LED 3 Board



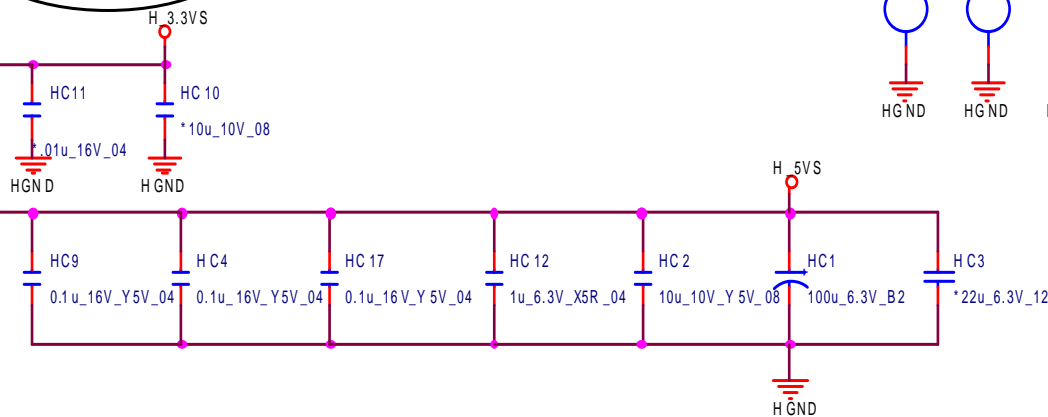
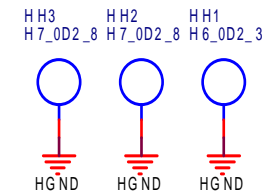
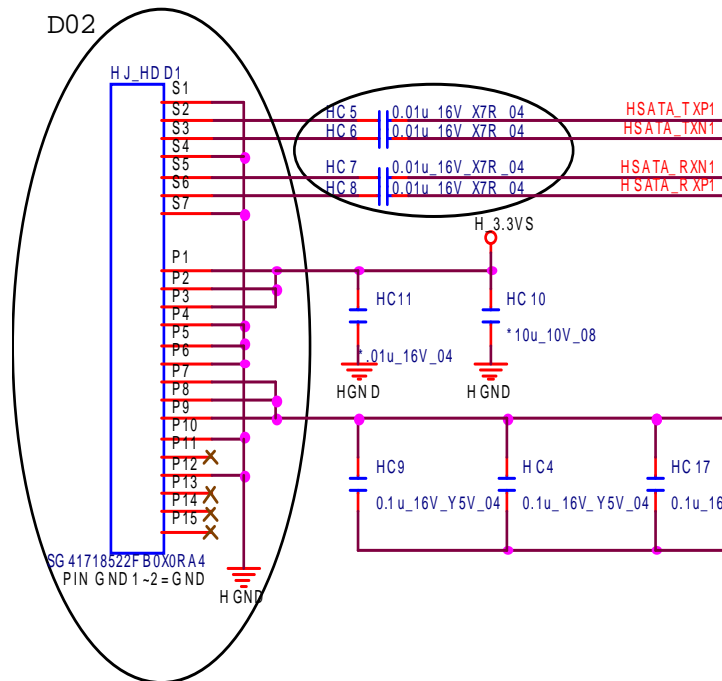
X7100 HDD & ODD Board



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X7100 HDD& ODD
Board

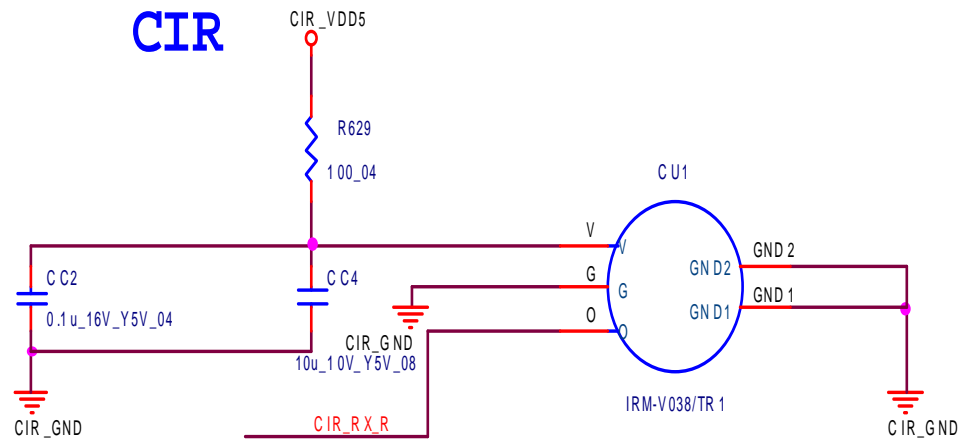
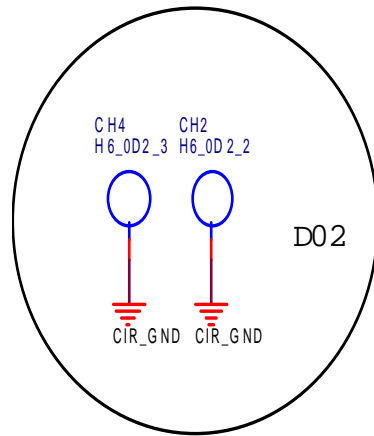
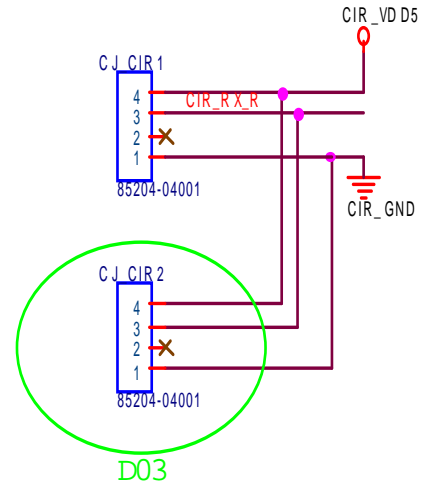
B.Schematic Diagrams

X7100M ONLY

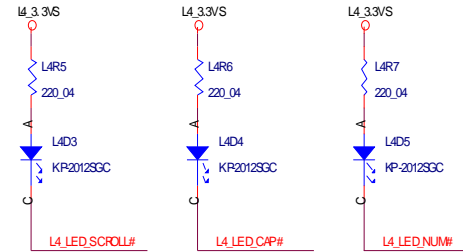
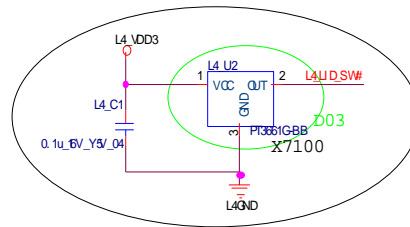
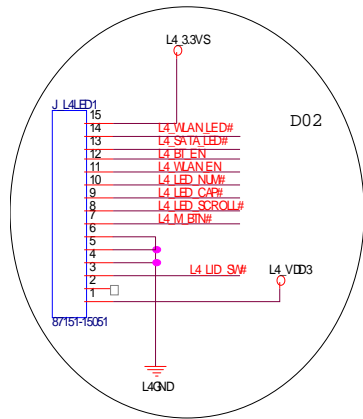


CIR

Sheet 53 of 58
CIR

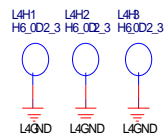
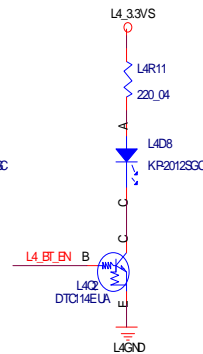
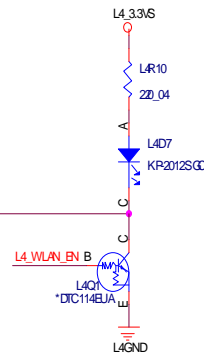
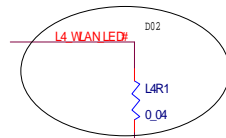
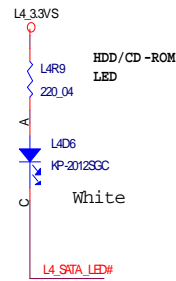
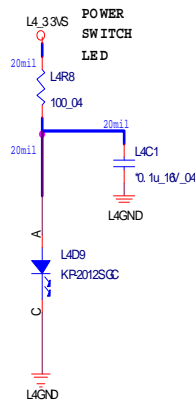
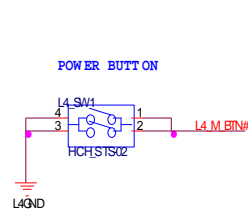


X7100 LED Board

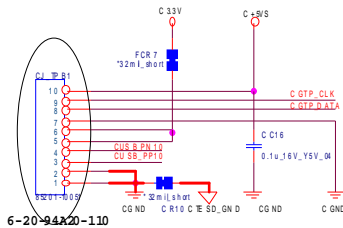


Sheet 54 of 58
X7100 LED Board

B.Schematic Diagrams

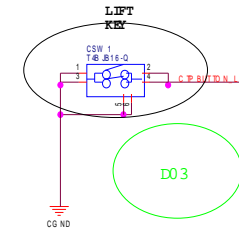
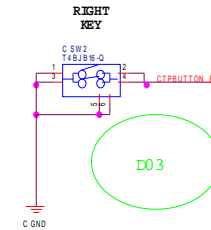
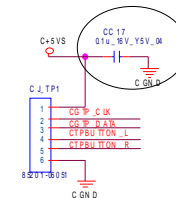


X7100 Click Board

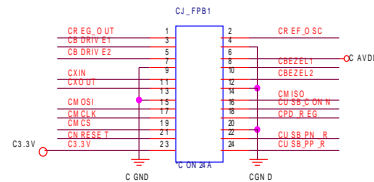


6-20-2010-110

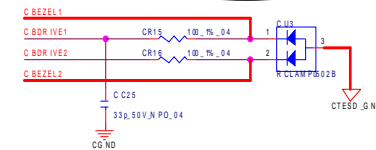
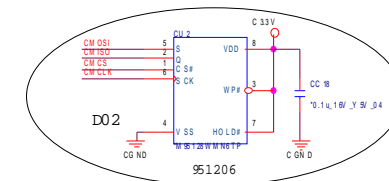
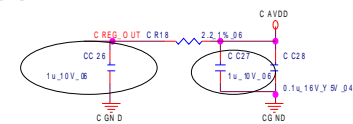
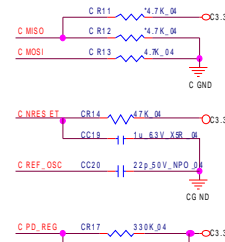
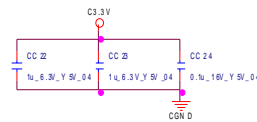
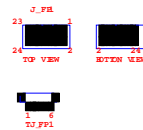
It is strongly recommended that the TESD_GND has a dedicated connection to the system chassis or cable shield.



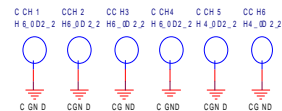
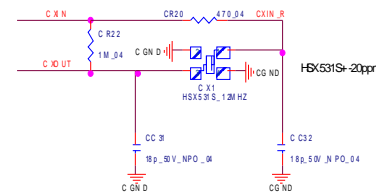
Sheet 55 of 58
X7100 Click Board



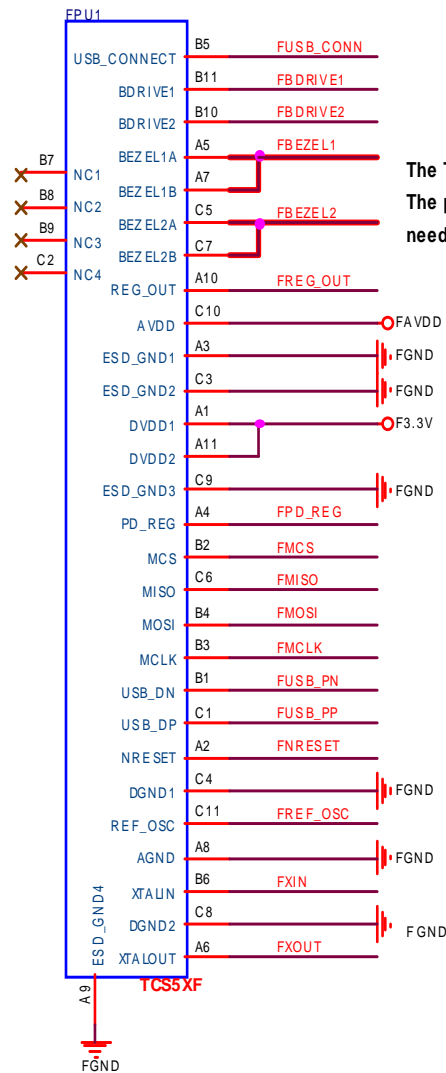
Place Bottom



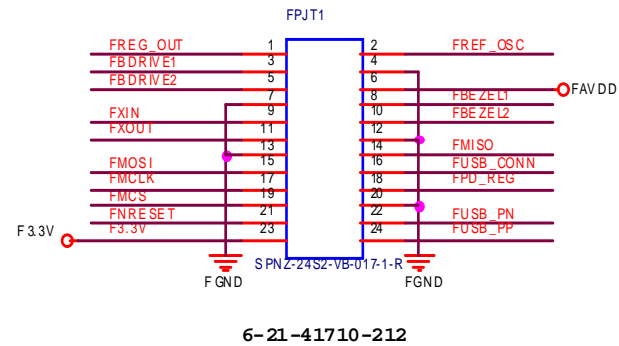
X7100M ONLY



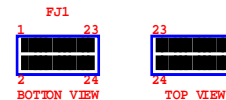
X7100 Fingerprint Board



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.



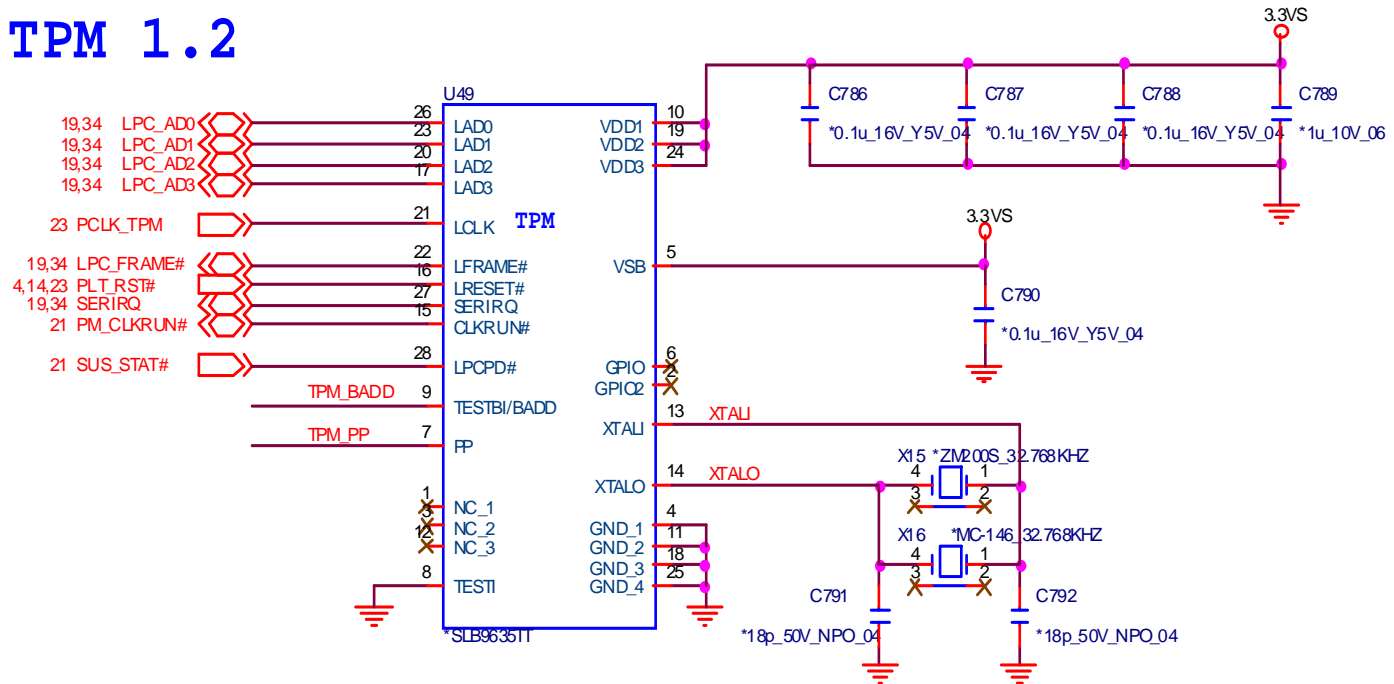
X7100M ONLY



Sheet 56 of 58
 X7100 Fingerprint
 Board

TPM

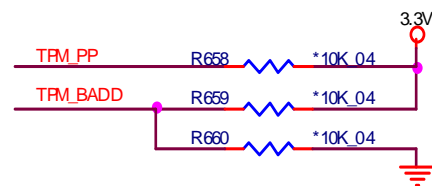
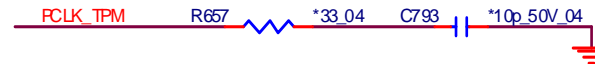
TPM 1.2



Sheet 57 of 58
TPM

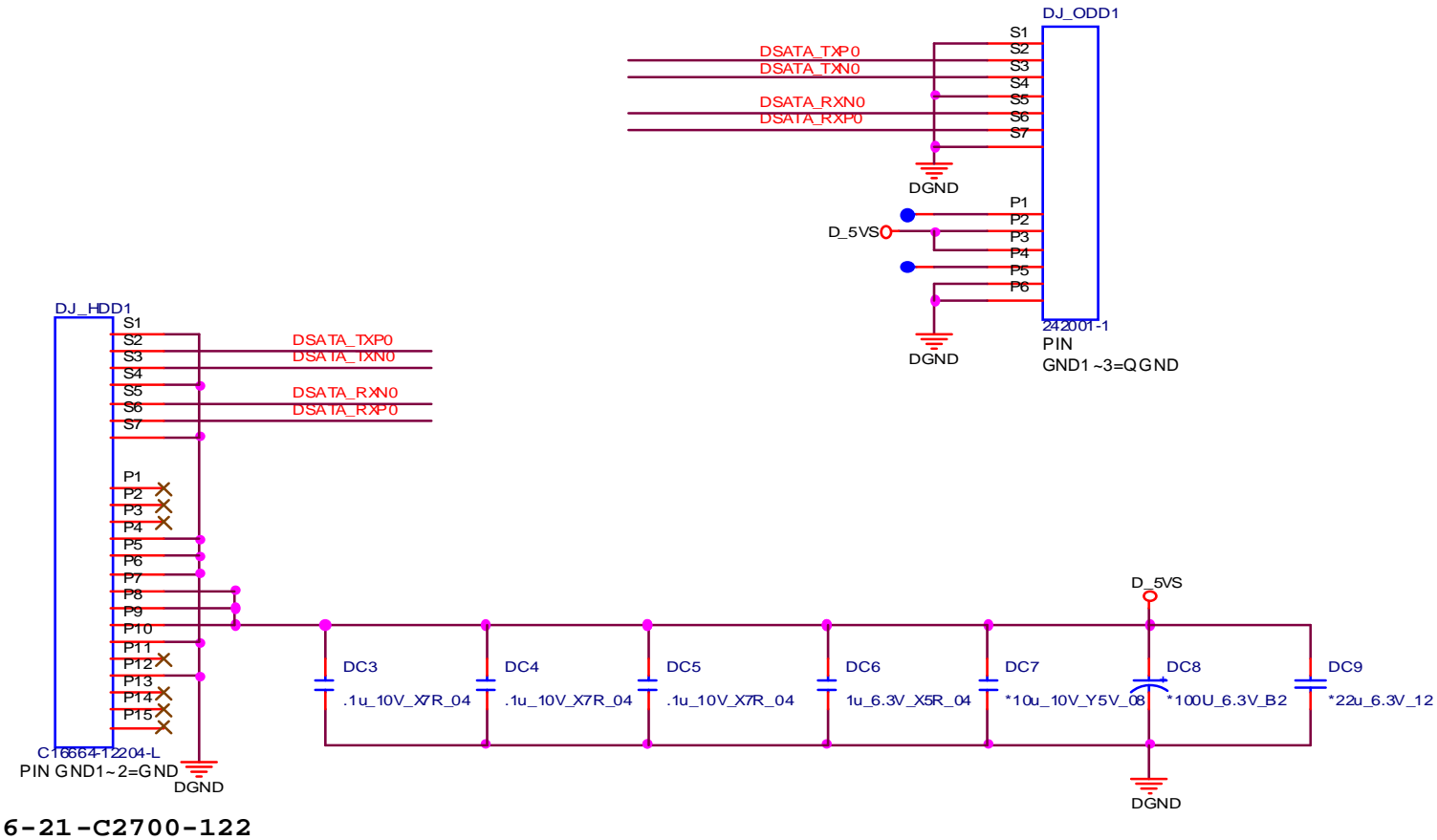
Asserted before entering S3
LPC reset timing:
LPCPD# inactive to LRST# inactive 32~96us

TPM_PP	HE ACCESS LOW: NORMAL (Internal PD)
TPM_BADD	HE 4E/ 4F H LOW: 2E/ 2F H

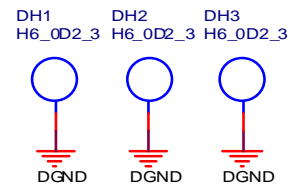


4, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 29, 30, 32, 33, 34, 35, 36, 39, 40, 43 3.3VS

X5100 HDD Board



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X5100 HDD Board

B. Schematic Diagrams

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.