

notebook



P170EM SERVICE MANUAL

Notebook Computer

P170EM

Service Manual

Preface

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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 *PI70EM* series notebook PC.

The following information is included:

Chapter 1, Introduction, provides general information about the location of system elements and their specifications.
Chapter 2, Disassembly, provides step-by-step instructions for disassembling parts and subsystems and how to upgrade elements of the system.

Appendix A, Part Lists

Appendix B, Schematic Diagrams

Appendix C, Updating the FLASH ROM BIOS

Preface

IMPORTANT SAFETY INSTRUCTIONS

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

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit with an AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19V, 11.57A (**220 Watts**) minimum AC/DC Adapter.

CAUTION

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

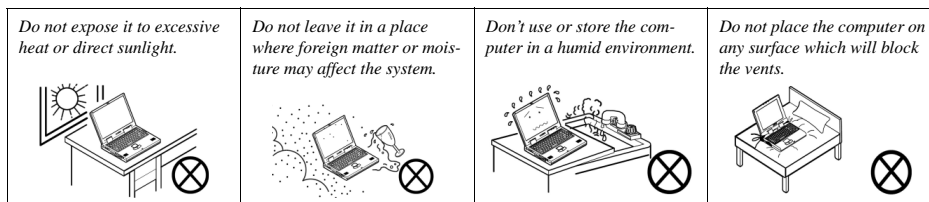
Instructions for Care and Operation

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

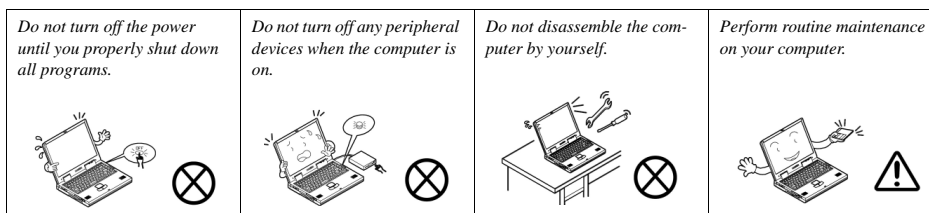
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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.



Preface



Removal Warning

When removing any cover(s) and screw(s) for the purposes of device upgrade, remember to replace the cover(s) and screw(s) before restoring power to the system.

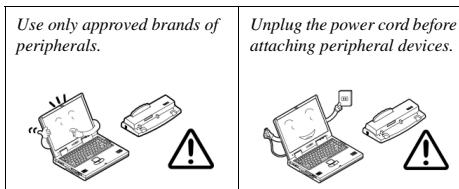
Also note the following when the cover is removed:

- Hazardous moving parts.
- Keep away from moving fan blades

Power Safety Warning

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

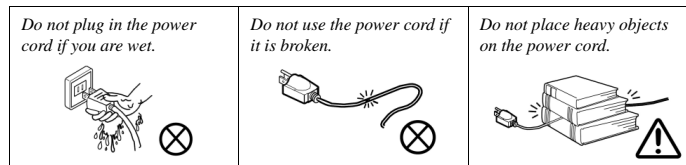
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



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.



Battery Precautions

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

Battery Guidelines

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

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




Battery Disposal

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

Caution

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

Battery Level

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

Preface

Related Documents

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

User's Manual on 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 **130** degrees); use the other hand (as illustrated in Figure 1) to support the base of the computer (**Note: Never** lift the computer by the lid/LCD).
7. Press the power button to turn the computer "on".

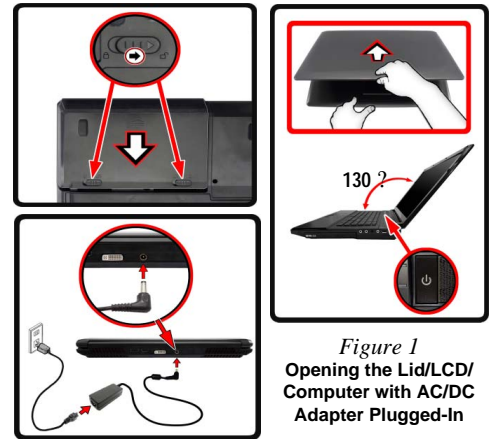


Figure 1
Opening the Lid/LCD/
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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **PI70EM** 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 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 **PI70EM** 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.



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

Processor Options

Intel® Core™ i7 Processor

i7-3920XM (2.90GHz)

8MB L3 Cache, 22nm, DDR3-1600MHz, TDP 55W

Intel® Core™ i7 Processor

i7-3820QM (2.70GHz)

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

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

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

i7-3520M (2.90GHz)

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

Intel® Core™ i5 Processor

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

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

Intel® Core™ i7 Processor

i7-2960XM (2.70GHz)

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

Intel® Core™ i7 Processor

i7-2760QM (2.40GHz)

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

i7-2670QM (2.20GHz)

4MB L3 Cache, 32nm, DDR3-1333MHz, TDP 45W

i7-2640M (2.80GHz)

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

Intel® Core™ i5 Processor

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

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

17.3" (46.94cm) FHD (1920 * 1080)

BIOS

AMI BIOS (48Mb SPI Flash-ROM)

Storage

One Changeable 2.5" (6cm) 9.5mm (h) **SATA** (Serial) Hard Disk Drives

(**Factory Option**) One 12.7mm(h) Optical Device Type Drive (Super Multi Drive/Blu-Ray Combo Drive/Blu-Ray Writer Drive)

(**Factory Option**) One mSATA Solid State Drive (SSD)

(**Factory Option**) Up to Two Changeable 2.5" (6cm) 9.5mm (h) **SATA** (Serial) Hard Disk Drives supporting RAID level 0/1/ Recovery

Core Logic

Intel® HM77 Chipset

Video Adapter

Intel® Integrated GPU and NVIDIA® Discrete GPU

Supports NVIDIA® Optimus Technology

Intel Integrated GPU (GPU is Dependent on Processor)

Intel® HD Graphics 3000

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

Microsoft DirectX®10 Compatible

Intel® HD Graphics 4000

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

Microsoft DirectX®11 Compatible

nVIDIA® GeForce GTX 675M PCIe Video Card

2GB GDDR5 Video RAM on board

Microsoft DirectX® 11 Compatible

nVIDIA® GeForce GTX 670M 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
 (Factory Option) 2.0M Pixel FHD PC Camera Module

WLAN/ Bluetooth Half Mini-Card Modules:

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

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

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

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

(Factory Option) Wireless LAN (802.11b/g/n) + Bluetooth 4.0

Card Reader

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

Mini Card Slots

Slot 1 for WLAN Module or Combo WLAN and Bluetooth Module

(Factory Option) Slot 2 for mSATA SSD

Interface

Three USB 3.0 Ports (Including one AC/DC Powered USB/ eSATA port)

One USB 2.0 Port

One eSATA Port (USB 3.0 Port Combined)

One HDMI-Out (1.4a) Port

One DVI-Out Port

One S/PDIF Out Jack

One Headphone/Speaker-Out Jack

One Microphone-In Jack

One Line-In Jack

One Mini-IEEE1394b Port

One RJ-45 LAN Jack

One Display (1.1a) Port

One DC-In Jack

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

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)

Full Range AC/DC Adapter

AC Input: 100 - 240V, 50 - 60Hz

DC Output: 19V, 11.57A (220W)

Dimensions & Weight

412mm (w) * 276mm (d) * 41.8 - 45.4mm (h)

Around 3.9kg 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



1 - 4 External Locator - Top View with LCD Panel Open

Introduction

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

Introduction

External Locator - Left Side & Rear View

Figure 4

Left Side View

1. Mini-IEEE 1394a Port
2. RJ-45 LAN Jack
3. USB 3.0 Port / USB Charge
4. USB 3.0 Port
5. Combined eSATA/ Powered USB 3.0 Port
6. Multi-in-1 Card Reader



Figure 5

Rear View

1. Vent/Fan Intake
2. Display Port
3. HDMI-Out Port
4. DVI-Out Port
5. DC-In Jack
6. Security Lock Slot



1 - 6 External Locator - Left Side & Rear View

External Locator - Bottom View

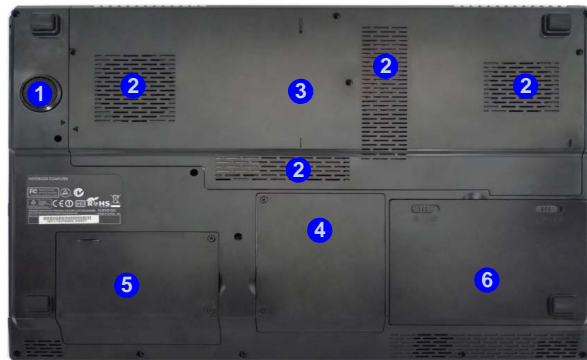


Figure 6
Bottom View

1. Sub Woofer
2. Fan Outlet/Intake
3. Component Bay Cover
4. Primary HDD Bay
5. Secondary HDD Bay
6. Battery



Overheating

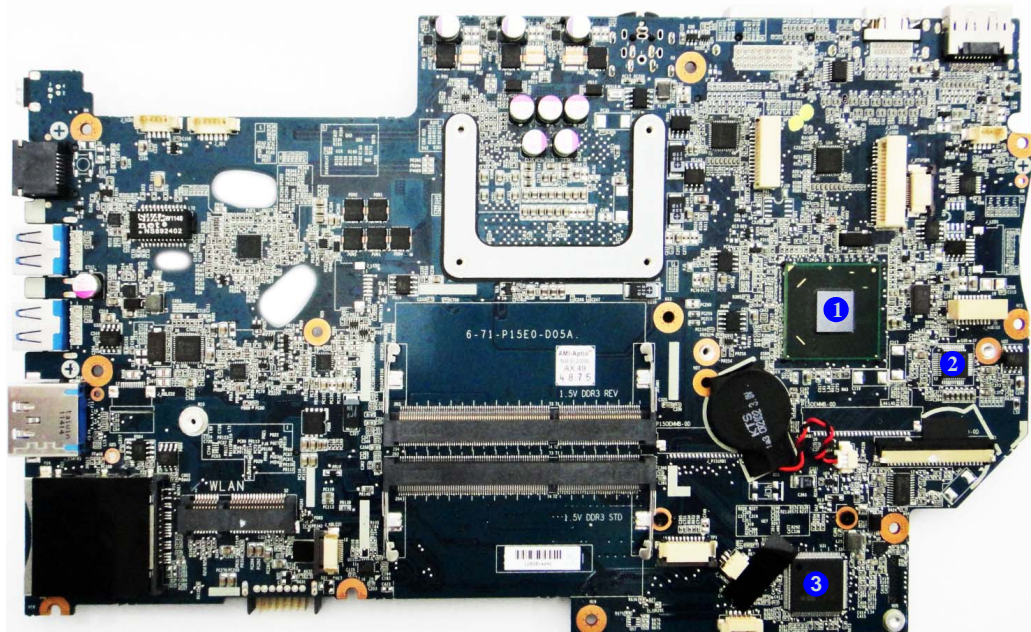
To prevent your computer from overheating make sure nothing blocks the vent/fan intakes while the computer is in use.

Introduction

Figure 7
Mainboard Top
Key Parts

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

Mainboard Overview - Top (Key Parts)



1 - 8 Mainboard Overview - Top (Key Parts)

Mainboard Overview - Bottom (Key Parts)

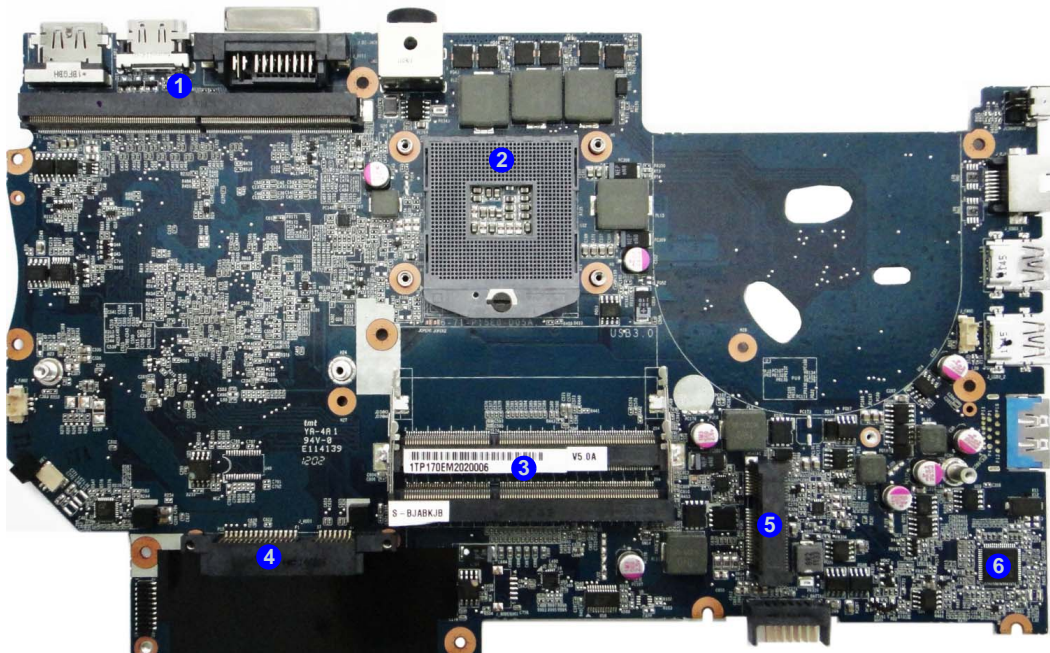


Figure 8
**Mainboard Bottom
Key Parts**

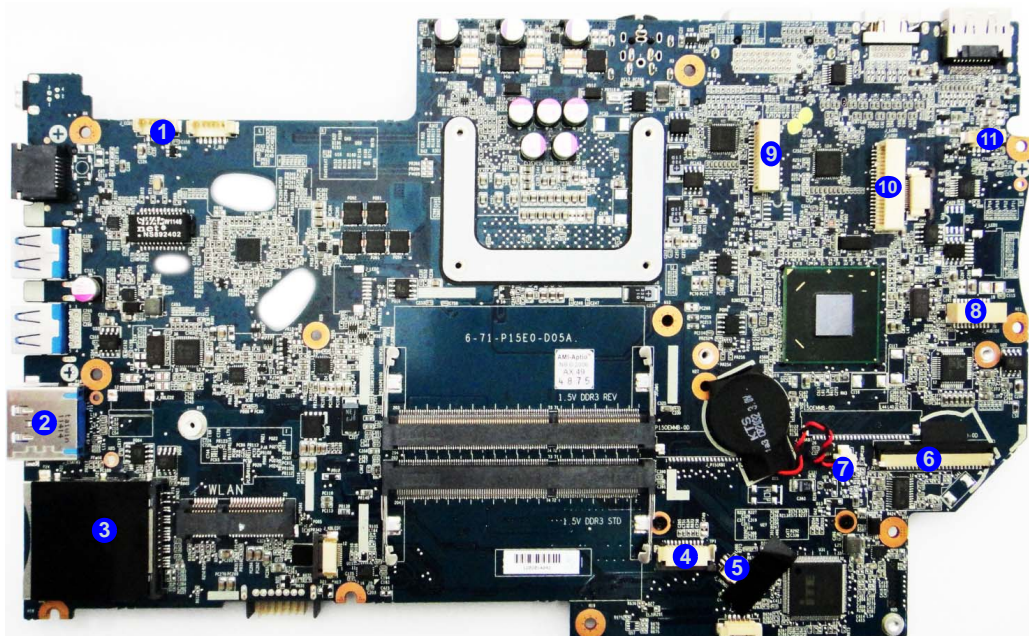
1. VGA-Card Connector
2. CPU Socket (no CPU installed)
3. Memory Slots (DDR3 SO-DIMM)
4. Hard Disk Connector
5. Mini-Card MSATA Connector
6. RTL8411

Introduction

Figure 9
Mainboard Top Connectors

Mainboard Overview - Top (Connectors)

1. CCD Connector
2. USB 3.0 Port / eSATA
3. Multi-in-1 Card Reader
4. TouchPad Cable Connector
5. Microphone Cable Connector
6. Keyboard Cable Connector
7. CMOS Battery Connector
8. Audio Cable Connector
9. LCD Cable Connector 2
10. LCD Cable Connector 1
11. Speaker Connector



1 - 10 Mainboard Overview - Top (Connectors)

Mainboard Overview - Bottom (Connectors)

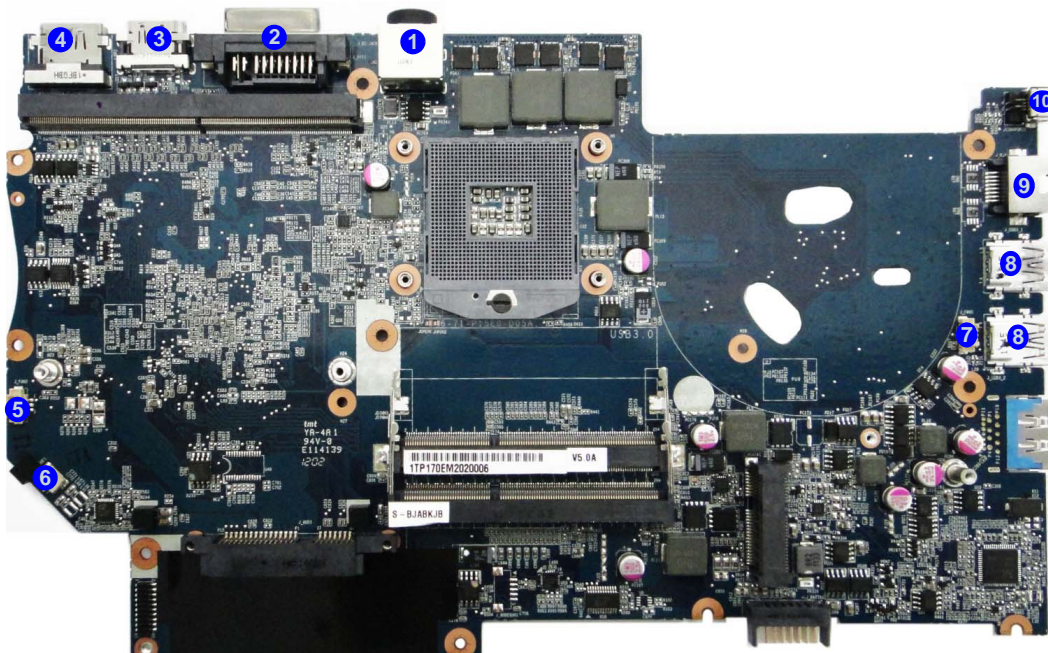


Figure 10
Mainboard Bottom Connectors

1. DC-In Jack
2. DVI-Out Port
3. HDMI-Out Port
4. Display 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
10. Mini-IEEE 1394a Port

Introduction


Chapter 2: Disassembly



Overview

This chapter provides step-by-step instructions for disassembling the *PI70EM* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

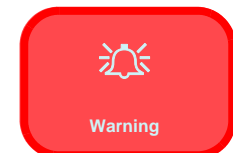
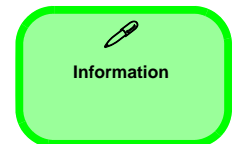
We suggest you completely review any procedure before you take the computer apart.

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.

2 - 2 Overview

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 and power cord). You must also remove your battery in order to prevent accidentally turning the machine on.

Disassembly

Disassembly Steps

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

To remove the Battery:

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

To remove the HDD from the Primary Bay:

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

To remove the Optical Device:

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

To remove the HDD from the Secondary Bay:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 10](#)

To remove the Primary System Memory:

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

To remove the Secondary System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 14](#)
3. Remove the system memory [page 2 - 15](#)

To remove the WLAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 14](#)
3. Remove the wireless LAN [page 2 - 16](#)

To remove and install a Processor:

1. Remove the battery [page 2 - 5](#)
2. Remove the processor [page 2 - 17](#)
3. Install the processor [page 2 - 19](#)

To remove and install a Video Card:

1. Remove the battery [page 2 - 5](#)
2. Remove the video card [page 2 - 20](#)
3. Install the video card [page 2 - 21](#)

To remove the Microphone:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the Optical device [page 2 - 9](#)
4. Remove the HDD [page 2 - 10](#)
5. Remove the system memory [page 2 - 12](#)
6. Remove the processor [page 2 - 17](#)
7. Remove the video card [page 2 - 20](#)
8. Remove the microphone [page 2 - 22](#)

2 - 4 Disassembly Steps

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. The battery may be levered up at point **3** (*Figure 1b*).
5. Lift the battery **4** out of the compartment (*Figure 1c*).

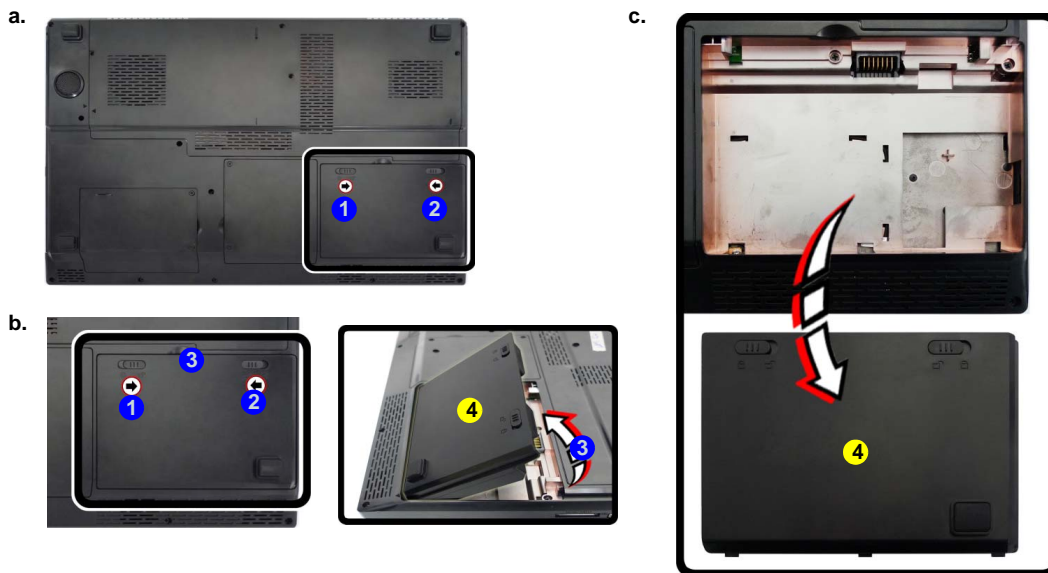
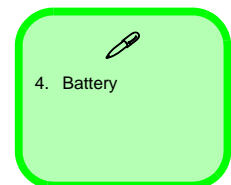


Figure 1
Battery Removal

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



Disassembly

Figure 2 HDD Assembly Removal

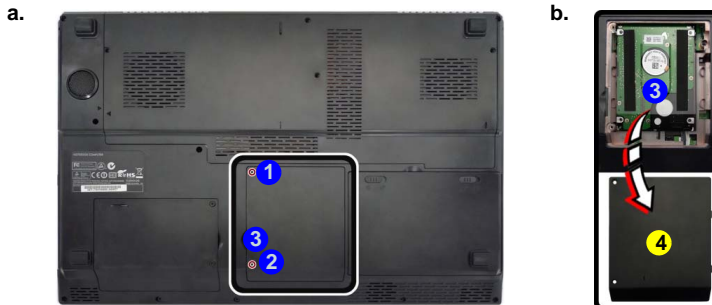
- Locate the HDD bay cover and remove the screws.
- Remove the hard disk bay cover by levering the cover at point 3.

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 4 by levering the cover at point 3 ([Figure 2b](#)).



4. Hard Disk Bay Cover

- 2 Screws



HDD System Warning

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

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

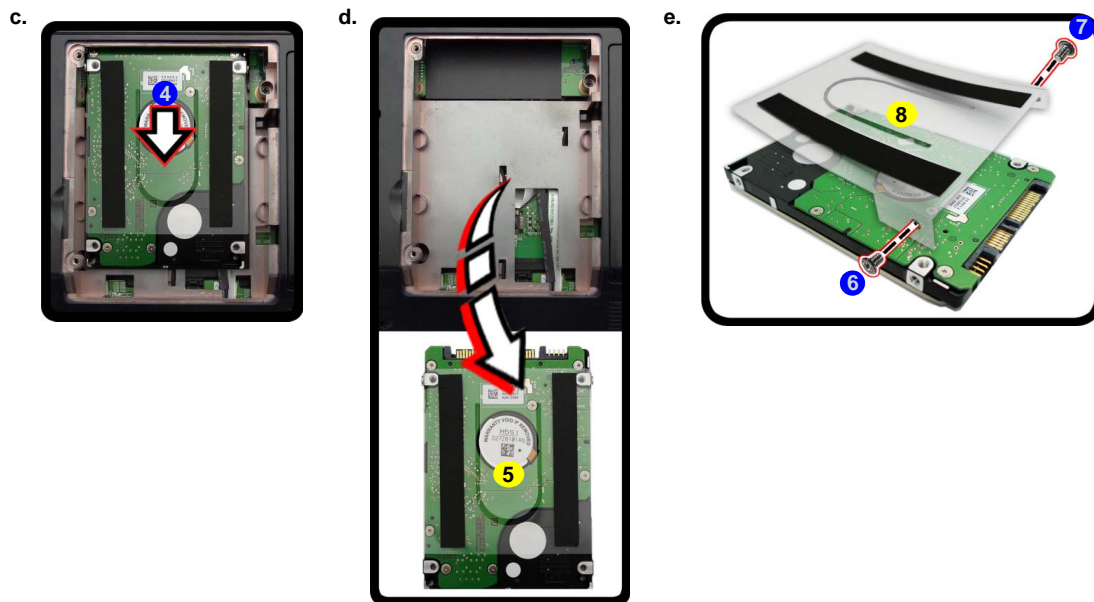
You have all the CD-ROMs and FDDs required to install your operating system and programs.

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

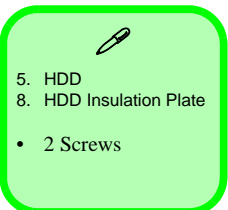
2 - 6 Removing the Hard Disk Drive

Disassembly

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



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



Disassembly

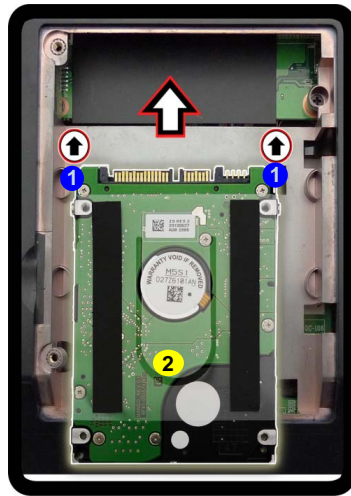
Figure 4 Inserting the Hard Disk Into the HDD Bay

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.

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.



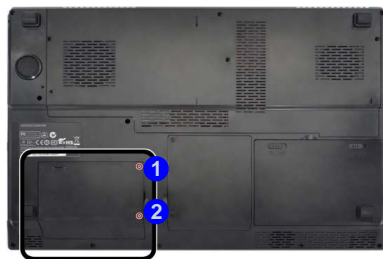
2. HDD

2 - 8 Removing the Hard Disk Drive

Removing the Optical (CD/DVD) Device

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
2. Locate the **secondary** 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** out of the bay at point **6** ([Figure 5d](#)).
5. Reverse the process to install any new optical (CD/DVD) device.

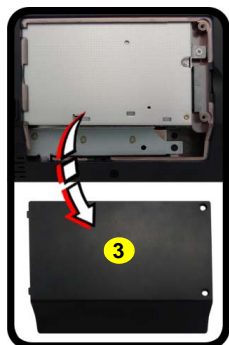
a.



c.



b.



d.

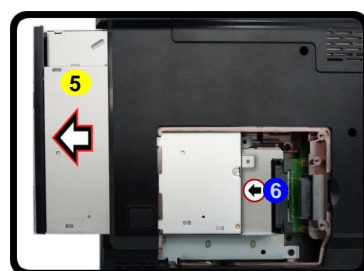
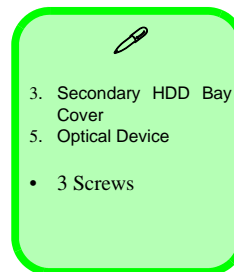


Figure 5
Optical Device Removal

- a. Locate the secondary hard disk bay cover and remove the screws.
- b. Remove the cover.
- c. Remove the screw.
- d. Push the optical device out off the computer at point 6.



Disassembly

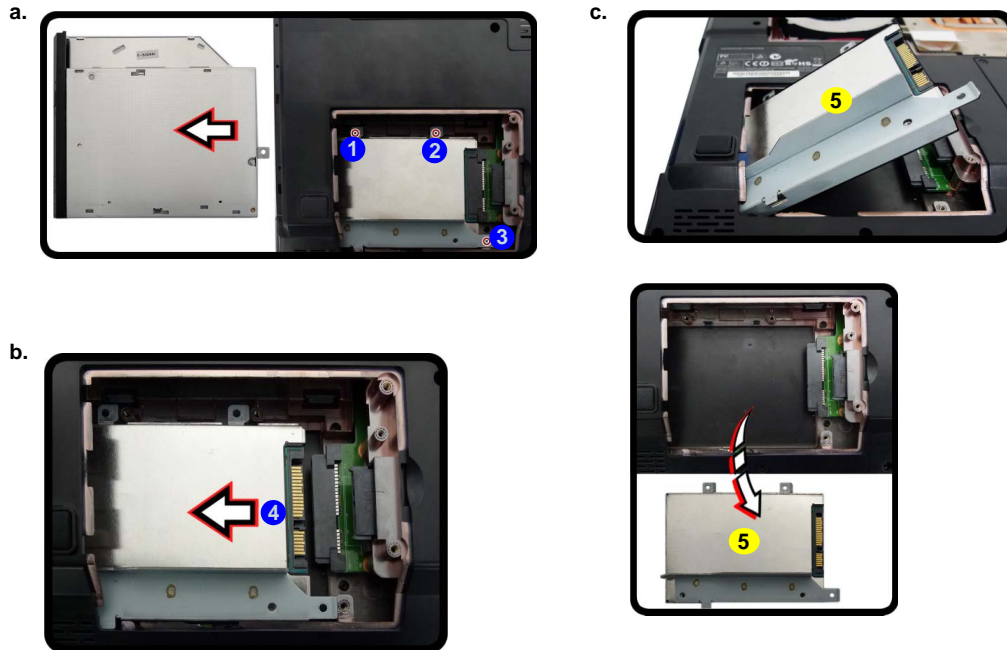
Figure 6
**Secondary HDD
 Assembly Removal**

- Remove the screws from the secondary HDD assembly.
- Slide the secondary HDD assembly in the direction of the arrow.
- Lift the secondary HDD assembly up and out of the bay.

Removing the Hard Disk from the Secondary HDD Bay

Note that the **secondary** hard disk (if installed) is located under the optical device bay (CD/DVD).

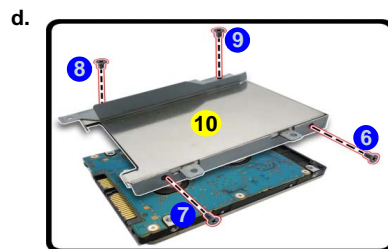
- Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)) and optical device ([page 2 - 9](#)).
- Remove screws ① - ③ from the secondary HDD assembly ([Figure 6a](#)).
- Slide the secondary HDD assembly in the direction of the arrow ④ (it will not move fully out of the bay [Figure 6a](#)).
- Lift the secondary HDD assembly ⑤ up and out of the bay (in the reverse direction of the arrow ④ [Figure 6c](#)).



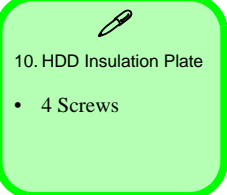
5. Hard Disk Assembly
- 3 Screws

Disassembly

- Remove screws 6 - 9 and the insulation plate 10 (Figure 7d).



- Reverse the process to install a new disk (make sure you install the insulation plate).
- Slide the HDD assembly into the bay at an angle as illustrated.
- Make sure the insulation plate slides under the HDD bay guide at point 11.
- Slide the assembly in the direction of the arrow 12 and secure the assembly with the screws.



Disassembly

Figure 8 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 (see [“Memory” on page 1 - 2](#)). 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** (see [“Memory” on page 1 - 2](#) for full details).

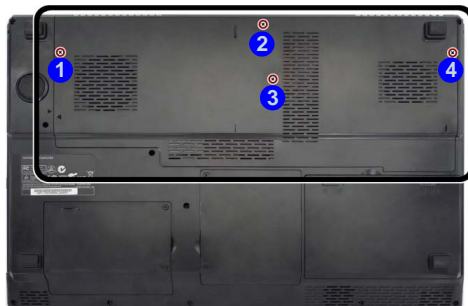
Two primary memory sockets are located under component bay cover (the bottom case cover), and two secondary memory sockets are located under the keyboard (not user upgradable). If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay 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 8a](#)).
- Slide the bottom cover until the cover and case indicators **5** are aligned ([Figure 8b](#)).

a.



b.



- 4 Screws

2 - 12 Removing the Primary System Memory (RAM)

Disassembly

- Lift the component bay cover **6** off the computer case. The modules will be visible at point **7** (*Figure 9c*).
- Gently pull the two release latches (**8** & **9**) on the sides of the memory socket(s) in the direction indicated below (*Figure 9d*).
- The RAM module **10** will pop-up, and you can remove it (*Figure 9e*).
- Pull the latches to release the second module if necessary.
- Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
- 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.
- Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
- Replace the bay cover and screws.
- Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

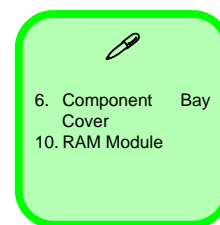
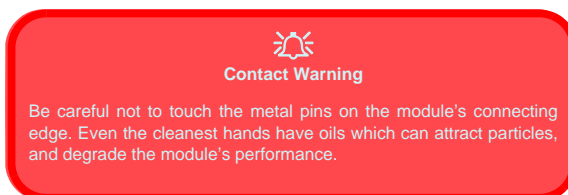
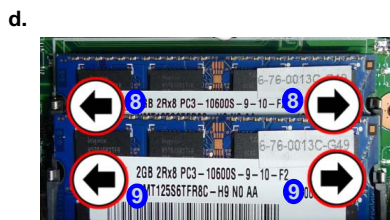
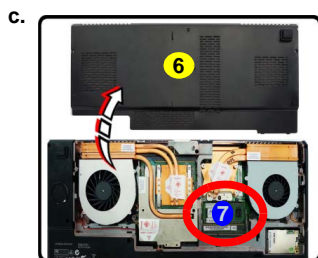


Figure 9
RAM Module Removal (cont'd.)

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

Disassembly

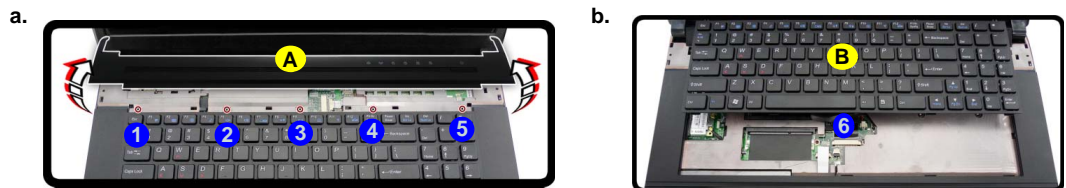
Figure 10
RAM Module
Removal

- Remove the top cover module.
- Remove the screws.
- Carefully lift the keyboard up, being careful not to bend the keyboard ribbon cable.

Removing the Secondary System Memory (RAM)

Memory Upgrade Process

- Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)) and the component bay cover.
- Remove the top cover module **A** ([Figure 10a](#)).
- Remove screws **1 - 5** ([Figure 10a](#)).
- Carefully lift the keyboard **B** up, being careful not to bend the keyboard ribbon cable **6** ([Figure 10c](#)).



- A. Top Cover Module
B. Keyboard

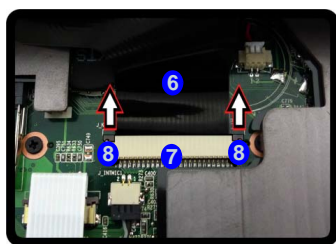
- 5 Screws

2 - 14 Removing the Secondary System Memory (RAM)

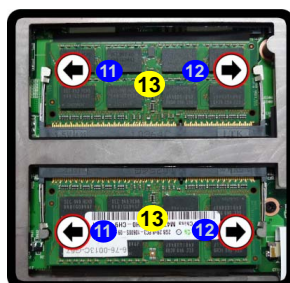
Disassembly

5. Disconnect the keyboard ribbon cable **6** from the locking collar socket **7** by using a small flat-head screwdriver to pry the locking collar pins **8** away from the base. (*Figure 11e*).
6. Remove the keyboard and the memory sockets **9** & **10** will be visible (*Figure 11f*).
7. Gently pull the two release latches (**11** & **12**) on the sides of the memory socket(s) in the direction indicated below (*Figure 11g*).
8. The RAM module **13** 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.

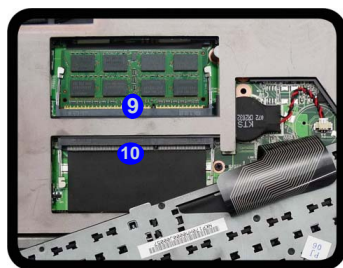
e.



g.



f.



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.



13. RAM Modules

Figure 11
RAM Module Removal (cont'd.)

- e. 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.
- f. Remove the keyboard and the memory sockets will be visible.
- g. Gently pull the two release latches on the sides of the memory socket(s) in the direction indicated below.

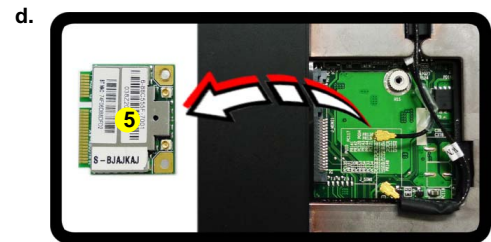
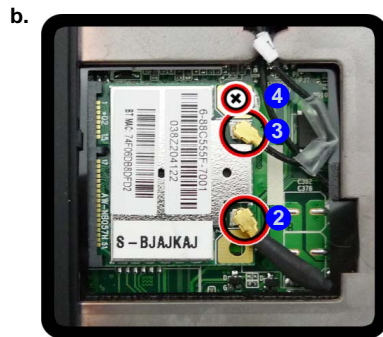
Disassembly

Figure 12 Wireless LAN Module Removal

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

Removing the Wireless LAN Module

- Turn off the computer, remove the battery (page 2 - 5) and the keyboard (page 2 - 10).
- The Wireless LAN module will be visible at point 1 under the keyboard (Figure 12a).
- Carefully disconnect cables 2 - 3, then remove screw 4 from the module socket (Figure 12b).
- The Wireless LAN module 5 will pop-up (Figure 12c).
- Lift the Wireless LAN module (Figure 12d) up and off the computer.



5. WLAN Module

- 1 Screw

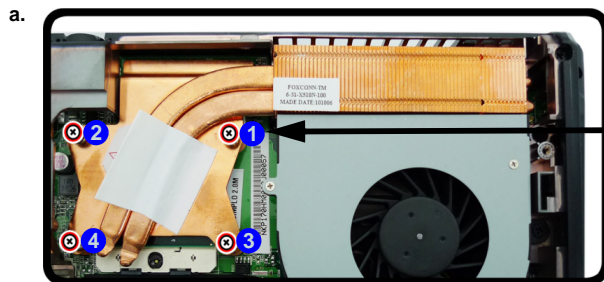
Figure 13
Processor
Removal
Procedure

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

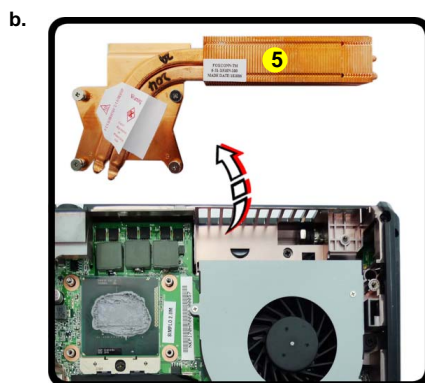
Removing and Installing the Processor

Processor Removal Procedure

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)), and component bay cover ([page 2 - 10](#)).
2. 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 13a](#)).
3. Carefully (it may be hot) remove the heat sink unit **5** ([Figure 13b](#)).



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

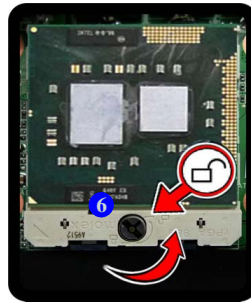
Disassembly

Figure 14 Processor Removal (cont'd)

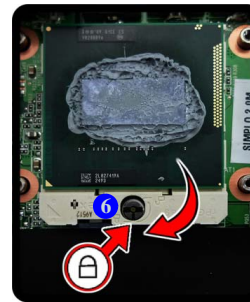
- c. Turn the release latch to unlock the CPU.
d. Lift the CPU out of the socket.

4. Turn the release latch **6** towards the unlock symbol , to release the CPU (*Figure 14c*).
5. Carefully (it may be hot) lift the CPU **A** up out of the socket (*Figure 14d*).
6. See [page 2 - 19](#) for information on inserting a new CPU.
7. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

c.

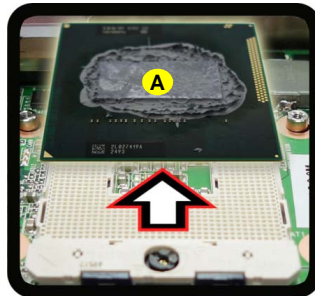


Unlock



Lock

d.



Caution


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

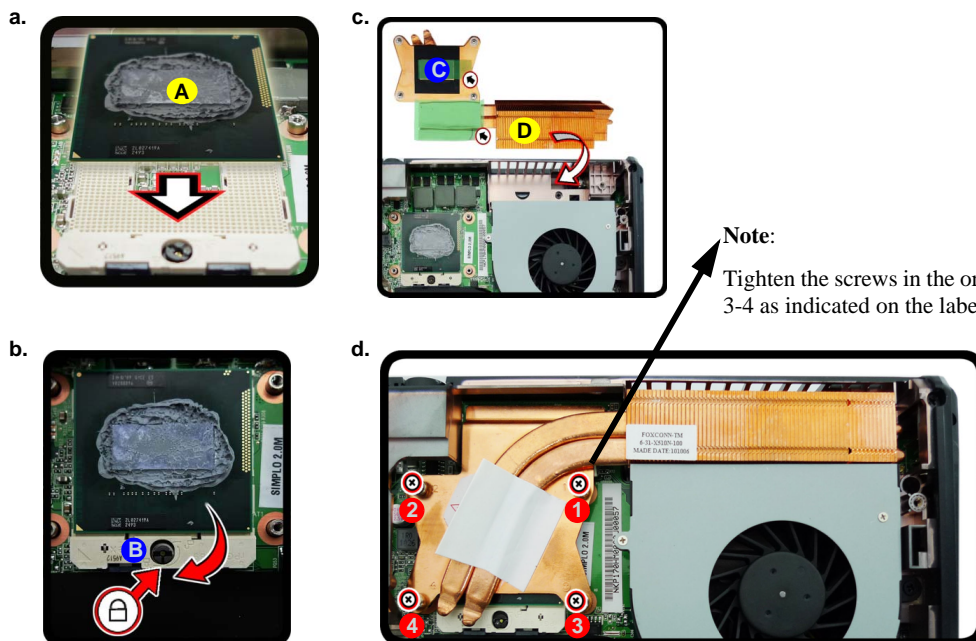
A. CPU

Figure 15
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 15a*), it will fit only one way (DO NOT FORCE IT!), and turn the release latch **B** towards the lock symbol  (*Figure 15b*).
- Remove the sticker **C** (*Figure 15c*) from the heat sink unit.
- Insert the heat sink unit **D** as indicated in *Figure 15c*.
- Tighten the CPU heat sink screws in the order **1**, **2**, **3** & **4** (the order as indicated on the label and *Figure 15d*).
- Replace the CPU fan, component bay cover and tighten the screws (*page 2 - 17*).



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



A. CPU
D. Heat Sink

- 4 Screws

Disassembly

Figure 16
Video Card
Removal Procedure

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



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.



8 & 9. Heat Sink Units
12. Video Card

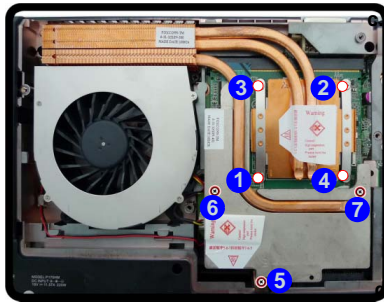
- 9 Screws

Removing and Installing the Video Card

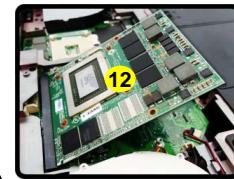
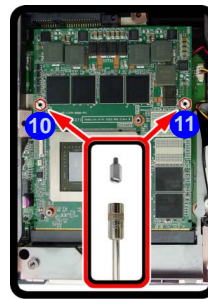
Video Card Removal Procedure

- Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)) and component cover ([page 2 - 10](#)).
- 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 16a](#)).
- Carefully (**they may be hot**) remove the heat sink units **8** & **9** ([Figure 16b](#)).
- Remove screws **10** & **11** from the video card and the video card **12** will pop up ([Figure 16c](#)).
- Remove the video card **12** ([Figure 16d](#)).

a.



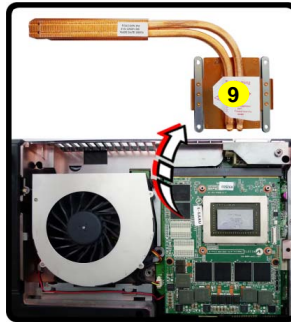
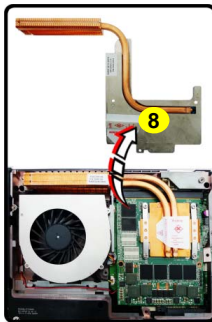
c.



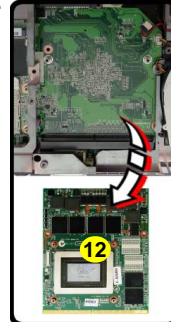
Note:

Please use a flat head screwdriver to remove screws **10** & **11**.

b.



d.



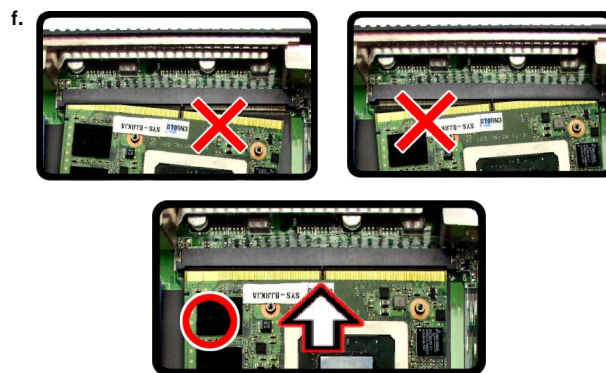
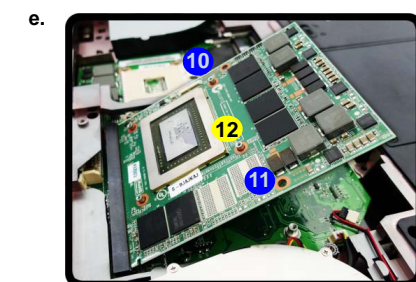
Heat Sink Screw Removal and Insertion

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.

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 17e*).
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 17f*).
3. Fit the connectors firmly into the socket, straight and evenly.



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 17 on page 2 - 21*).
7. Place the heat sink back on the card, and secure the screws in the order indicated in *Figure 17 on page 2 - 21*.
8. Attach the video card fan and secure with the screws as indicated in *Figure 16 on page 2 - 20*.
9. Reinsert the component bay cover, and secure with the screws as indicated in *Figure 10 on page 2 - 14*.

Figure 17
Installing a New Video Card

- e. Insert the video card at a 30 degree angle.
- f. Fit the connectors straight and even.



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

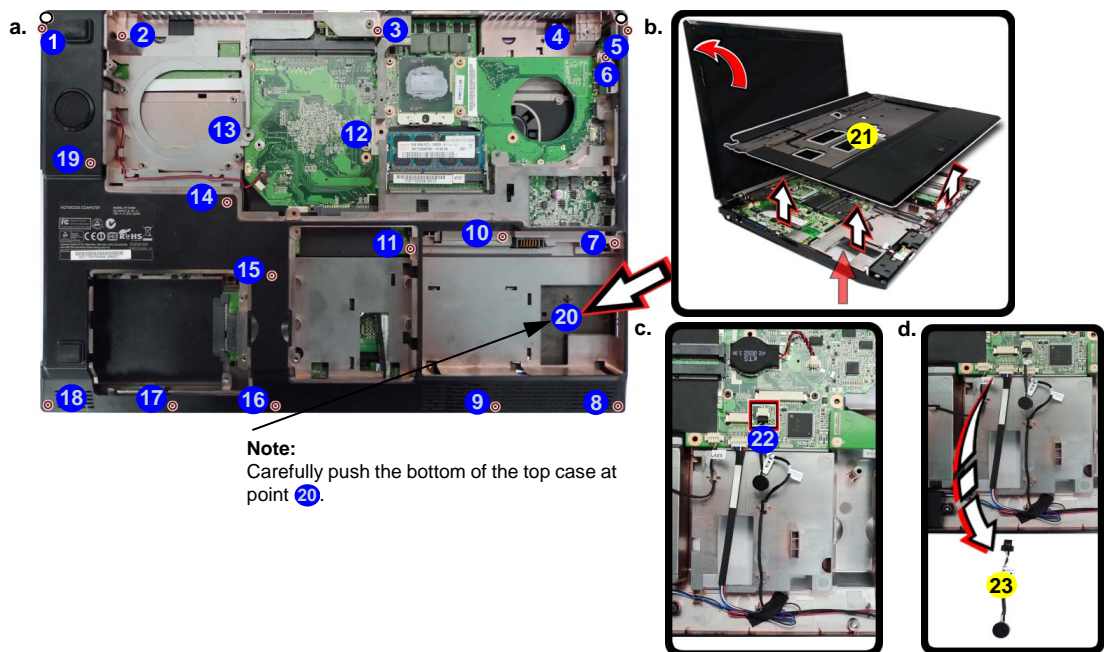
Disassembly

Figure 18
Microphone Removal

- Remove the screws.
- Lift the top case up, keeping it level (do not tilt it).
- Disconnect the microphone cable.
- Remove the microphone.

Removing the Microphone

- Turn off the computer, and remove the battery ([page 2 - 5](#)), component bay cover ([page 2 - 10](#)), processor ([page 2 - 17](#)), hard disk ([page 2 - 6](#)) ([page 2 - 10](#)), optical device ([page 2 - 9](#)), and video card ([page 2 - 20](#)).
- Remove screws 1 - 19 and carefully push the bottom of the top case at point 20 ([Figure 18a](#)).
- Lift the top case 21 up, keeping it level (do not tilt it) [Figure 18b](#).
- Disconnect the microphone cable 22 ([Figure 18c](#)).
- Remove the microphone 23 ([Figure 18d](#)).



21. Top Case
23. Microphone

- 19 Screws

2 - 22 Removing the Microphone

Appendix A: Part Lists

This appendix breaks down the *P170EM* 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 Lists

Part List Illustration Location

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

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

Parts	
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>
HDD	<i>page A - 7</i>
COMBO	<i>page A - 8</i>
DVD-Dual Drive	<i>page A - 9</i>

A - 2 Part List Illustration Location

Top with Fingerprint

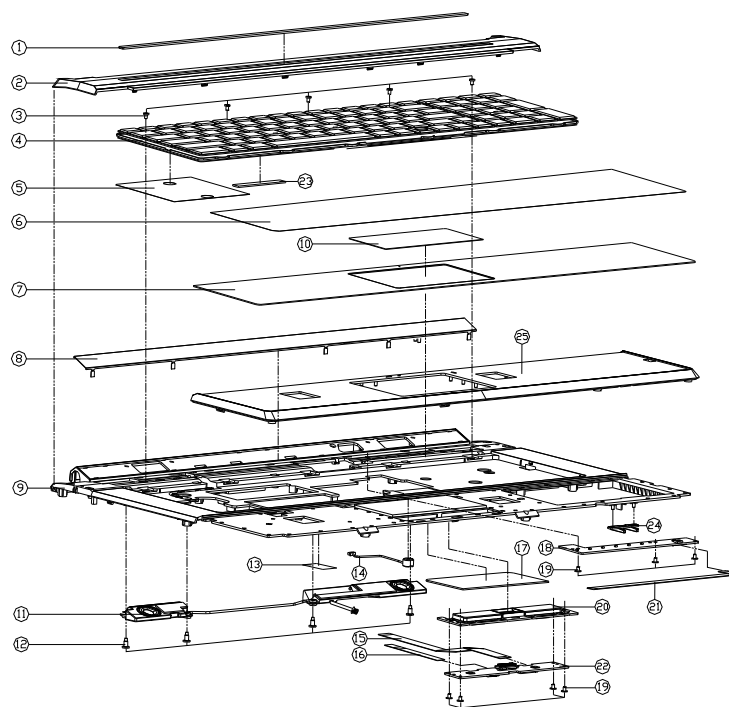


Figure A - 1
Top with Fingerprint

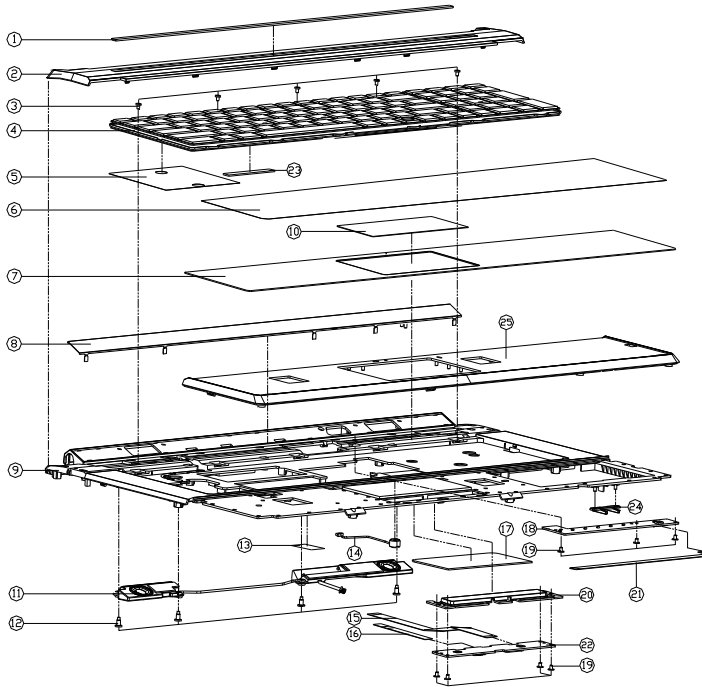
ITEM	PART NAME	PART NO	REMARK
1	TOP COSMETIC PLATE PRIMA P170M	6-42-P1702-022	
2	DRIVER BOARD UPPER PART UPPER PART P170M	6-42-P17E2-382-N	
3	SCREW HEXA. 4X1.6X0.45 (00-44531-00)	6-35-01120-39C	
4	KEYBOARD MYLAR (75x70x0.1) P170M	6-80-P2700-010-3	
5	KEYBOARD MYLAR (75x70x0.1) P170M	6-40-P17E2-010	
6	TOP CASE PROTECT MILANIKY-08010 P170M	6-40-P1702-020	
7	AL PLATE FOR PALM REST P170M	6-33-P1702-021	
8	TOP SPEAKER MESH SUS304 P170M	6-33-P17E2-010	
9	TOP CASE MODULE (IMP) P170M	6-39-P17E2-012	
10	T.F.P. - MYLAR P170M	6-40-P1702-030	
11	SPRING FOR PL. SW. 02 2M 4T CERAM P170M	6-23-SP15E-051	
12	SCREW HEXA. 4X1.6X0.45 (00-44531-00)	6-35-21120-6R2	
13	AL FEEL (40X15X0.25) P170M	6-47-P1702-010	
14	KEYBOARD MYLAR (75x70x0.1) P170M	6-23-ER130-010-1	
15	KEYBOARD MYLAR (75x70x0.1) P170M	6-43-P1700-022	
16	FPC CABLE FOR TOUCH PAD (00-44531-00)	6-43-C4502-010	
17	TOUCH PAD CONTACTS (00-44531-00) MULTI-USE	6-49-C4802-010	
18	LED BOARD V3.0 P170M	6-77-P17E4-003	
19	SCREW HEXA. 4X1.6X0.45 (00-44531-00)	6-35-01120-4RA	
20	CLICK MODULE W-FP (IMP) P170M	6-42-P17E2-202	
21	KEYBOARD MYLAR (75x70x0.1) P170M	6-43-P1700-012	
22	CLICK BOARD V3.0 P170M	6-77-P17E4-N03	
23	SPONGE CR 45X40X5 P170M	6-47-0019A-007	
24	FRONT LED LENS ABS (00-44531-00)	6-42-P1702-030	
25	PALM REST COVER (00-44531-00)	6-42-P17E2-042-1	

A Part Lists

Part Lists

Top without Fingerprint

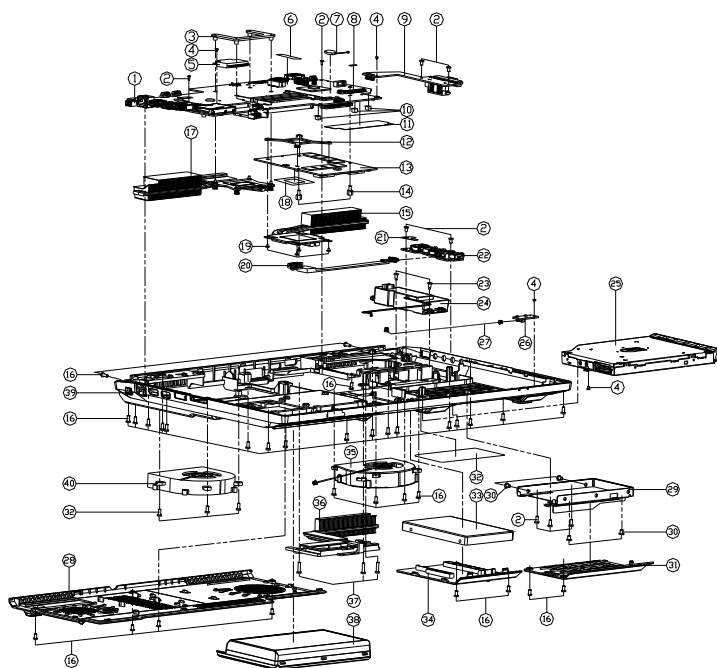
Figure A - 2
Top without Fingerprint



ITEM	PART NAME	PART NO	REMARK
1	TOP COSMETIC PLATE PMMA P170M	6-42-P1702-022	
2	COVER COVER MIDDLE MARK MARK SPIN COB P170M	6-42-P17E2-502-N	
3	SCREW M4x2.5 NI 100-443.31-443	6-35-B1120-38C	
4	100 GR VIBRATION MOTOR 1.5V 100-2700-010-3	6-80-P2700-010-3	
5	KEYBOARD W/LAR (75x70x11) P170M	6-40-P17E2-010	
6	TOP CASE PROTECT M/LAMP(1.5x10x10) P170M	6-40-P1702-020	
7	AL PLATE FOR PALM REST(P170) P170M	6-33-P1702-021	
8	TOP SPEAKER MESH SUS304 P170M	6-33-P17E2-010	
9	TOP CASE MODULE (MP1) P170M	6-39-P17E2-012	
10	T.F.P. NYLON AIR P170M(H)	6-40-P1702-030	
11	BRACKET FOR KEY BOARD P170M	6-23-SP15E-051	
12	SCREW M4x2.5 NI 100-443.31-443	6-35-21120-68R2	
13	AL F.D.I.L.(40x15x0.25) P170M	6-47-P1702-010	
14	AL F.D.I.L.(40x15x0.25) P170M	6-23-ER130-010-1	
15	PLATE FOR LED (1.5x10x10) P170M	6-43-P1700-022	
16	SPONGE FOR TOUCH PAD (10x10) P170M	6-43-C4502-010	
17	TOUCH PAD SWAPTICS (M-10x10) MULTI-25	6-49-C4802-010	
18	L.C.D. BOARD V3.0 P170M	6-77-P17E4-003	
19	SCREW M4L NI 100-443.31-443	6-35-B1120-48A	
20	CLOCK BUTTON W/O-FP MEDALE P170M	6-42-P1702-102	
21	PLATE FOR LED (1.5x10x10) P170M	6-43-P1700-012	
22	CLOCK BOARD (4x3) (W/O) P170M	6-77-P17E2-004-1	
23	SPONGE CR 45x6x0.5T P170M	6-47-0019A-007	
24	FRONT LED LENS (ABS/P4750) P170M	6-42-P1702-030	
25	PALM REST COVER (MARK UNIFORM) P170M	6-42-P17E2-042-1	

A - 4 Top without Fingerprint

Bottom



ITEM	PART NAME	PART NO	REMARK
1	MAIN BOARD V2.0A P170CM	6-77-P17C-000A	
2	SCREW M2x4L KI BVD ICT NY	6-35-B412S-4RA	
3	CPU SUPPORT BRACKET ECU 145 P170CM	6-33-X510S-011	
4	DRIVE NICKL KI NI ICT NY (80x45x1.64)	6-35-B112S-3RC	
5	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-88-W77C2-4200	(OPTION)
5	OPTIONAL CPU COOLING FAN BRACKET (OPTION)	6-88-C595F-5300	(OPTION)
5	OPTIONAL CPU COOLING FAN BRACKET (OPTION)	6-88-C595F-7300	(OPTION)
5	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-88-P17C7-4200	(OPTION)
5	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-88-V255F-4200	(OPTION)
6	TAPIC MYLAR (C) MYLAR H550J	6-40-M55J2-030	
7	MOUSE W/ CORD KEYM 2000 P170CM	6-23-S201S-1C0	
8	M/B KEYBOARD MYLAR PET M80L	6-40-M810S-011	
9	HDD/ODD BOARD V2.0 P170CM	6-77-P17E-J-002	
10	VGA SUPPORT RUBBER G LELINE P170CM	6-47-X510S-010	
11	FLAT ASSEMBLY FOR 3.5 IN CHASSIS P170CM	6-40-X510S-010	
12	VGA SUPPORTER SUS430 X7200	6-33-X720S-040	
13	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-77-X510L-101-2	
13	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-77-X510L-200-2	
13	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-77-X510L-101-3	
13	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-77-X510L-200-3	
14	DRIVE REMOVAL TOOL ICT NY FOR V2.0A	6-35-2102S-4RA-1	
15	OPTIONAL KEYBOARD COOLER P170CM	6-31-X510H-3000	FOR MODEL-G1X
16	SCREW M2x4L X B2 ICT NY	6-35-B212S-6RA	
17	OPTIONAL KEYBOARD COOLER P170CM	6-31-P170H-101	
18	MYLAR VGA CHIP NV P270CM	6-40-P270S-030	
19	DRIVE NICKL KI NI BVD KI CT NY	6-35-B211S-3RA	
20	MYLAR FOR HDD BOARD TO BE 3P P170CM	6-43-P170S-032-1	
21	AUDIO MYLAR FRB2 P150CM	6-40-X510S-030	
22	AUDIO BOARD V2.0 P150CM	6-77-P15E8-002	
23	DRIVE NICKL KI NI NY FOR P170CM	6-35-2112S-6RA-2	
24	SMALL SUPPORT BRACKET FOR HDD P170CM	6-23-S151S-0V1	
25	W/O ODD ASS'Y P170CM	6-79-P170M0V-000	
25	SATA DVD SUPER MULTI ASSY (OPTION)	6-79-P170M0V-010	
25	SATA BLU-RAY COMBO ASSY (OPTION)	6-79-P170M0V-011	
26	LED BOARD V2.0 P150CM	6-77-P15E4-502	
27	MYLAR CASE FOR LED BOARD TO BE 3P P170CM	6-43-P170S-041	
28	CPU COVER NICKL KI NI NY FOR P170CM	6-42-P170S-100	
29	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-33-P170-J-012	
30	OPTIONAL SCREW NICKL KI NI ICT NY	6-35-B1130-4RB	
31	OPTIONAL CPU COOLING FAN BRACKET (OPTION)	6-42-P170-J-021	
32	OPTIONAL FAN FOR CPU COOLING (OPTION)	6-43-P170M0V-012	
33	W/O HDD ASS'Y P170CM	6-79-P170M0V-000	
33	W/O HDD ASS'Y P170CM	6-79-P170M0V-010	
33	W/O HDD ASS'Y P170CM	6-79-P170M0V-011	
33	W/O HDD ASS'Y P170CM	6-79-P170M0V-012	
34	MYLAR CASE FOR CPU COOLING FAN BRACKET (OPTION)	6-42-P170-J-012	
35	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-31-X720S-101	
36	OPTIONAL CPU COOLING FAN BRACKET (OPTION)	6-31-P15E7-300	
37	DRIVE NICKL KI NI BVD KI CT NY	6-35-B412S-5RA	
38	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-87-X702S-472	(OPTION)
38	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-87-X702S-472	(OPTION)
39	OPTIONAL CPU COOLING FAN BRACKET (OPTION)	6-39-P17C3-012	
40	OPTIONAL KEYBOARD SUPPORT BRACKET (OPTION)	6-23-A5310-012	

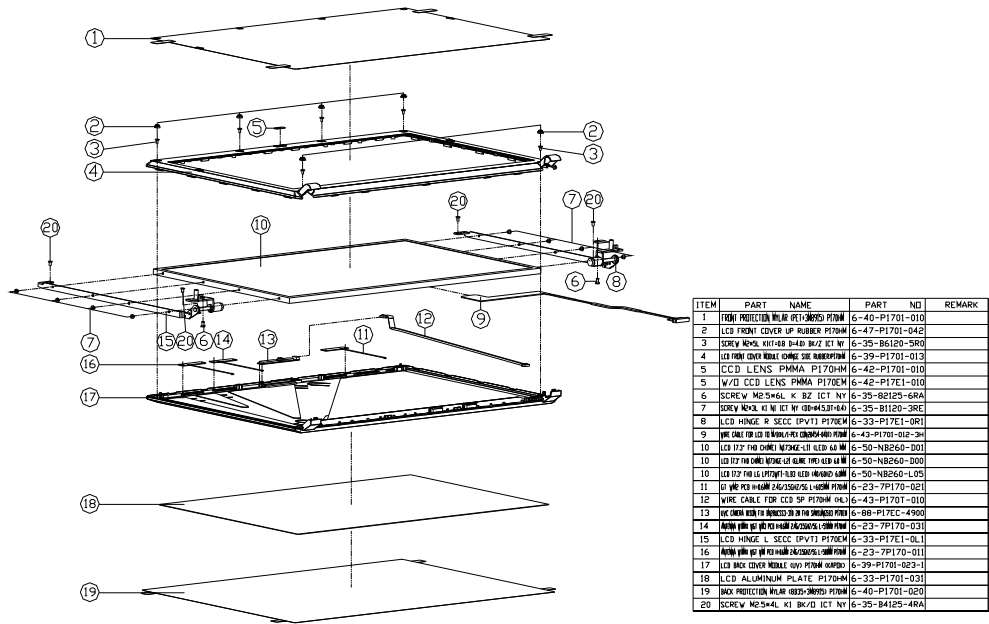
Figure A - 3
Bottom

A Part Lists

Part Lists

LCD

Figure A - 4
LCD



ITEM	PART NAME	PART NO	REMARK
1	FRONT PROTECTION W/IN RPT. 300X20 P/FORM	6-40-P1701-010	
2	LCD FRONT COVER W/ RUBBER P/FORM	6-47-P1701-042	
3	SCREW HEXFL. RHT-148 D-148 H-142 ICI NY	6-35-B6120-SR0	
4	LCD FRONT COVER MIDDLE COVER W/IN RUBBER P/FORM	6-39-P1701-013	
5	CCD LENS PMMA P170H-M	6-42-P1701-010	
5	W/D CCD LENS PMMA P170E-M	6-42-P17E1-010	
6	SCREW HD-254-HL. X. 3/2 ICI NY	6-35-B2125-60A	
7	SCREW HEXFL. 41 M. ICI NY 180-44537-040	6-35-B1120-SRE	
8	LCD HINGE, R. SECC. (P.V1) P170E-M	6-33-P17E1-001	
9	WIRE CABLE FOR LCD TO MAIN UNIT CONNECTOR P/FORM	6-43-P1701-012-3H	
10	LCD TOP FRAME COVER W/SPACE-LIN. 42X62.5 M	6-50-NB260-000	
10	LCD TOP FRAME COVER W/SPACE-LIN. 42X62.5 M	6-50-NB260-000	
10	LCD TOP FRAME COVER W/SPACE-LIN. 42X62.5 M	6-50-NB260-L105	
11	ICI WIRE P/FORM 24G/250/250 L-420M P/FORM	6-23-7P170-021	
12	WIRE CABLE FOR CCD SP. P170H. 04L	6-43-P1701-010	
13	WIRE CABLE W/IN RUBBER W/IN P/FORM CONNECTOR P/FORM	6-88-P17EC-4900	
14	WIRE P/FORM W/IN RUBBER W/IN P/FORM	6-23-7P170-031	
15	LCD HINGE, L. SECC. (P.V1) P170E-M	6-33-P17E1-001	
16	WIRE P/FORM W/IN RUBBER W/IN P/FORM	6-23-7P170-011	
17	LCD BACK COVER MIDDLE COVER P/FORM	6-39-P1701-023-1	
18	LCD ALUMINUM PLATE P170H-M	6-33-P1701-031	
19	BACK PROTECTION W/IN RUBBER W/IN P/FORM	6-40-P1701-020	
20	SCREW HD-254-HL. X1. 3/2 ICI NY	6-35-B4125-40A	

A - 6 LCD

HDD

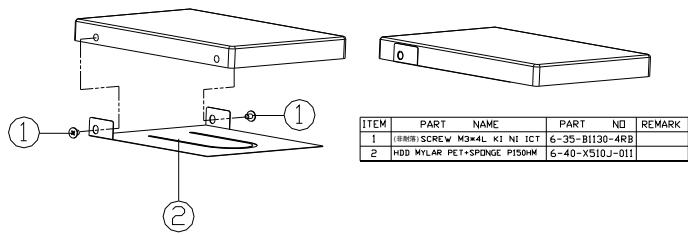
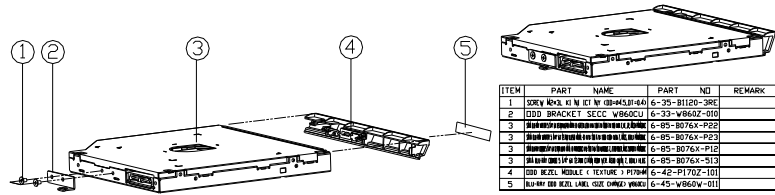


Figure A - 5
HDD

Part Lists

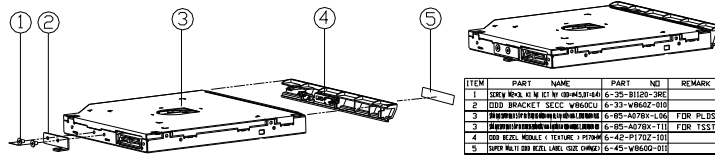
COMBO

Figure A - 6
COMBO



ITEM	PART NAME	PART NO	REMARK
1	SCREW HEX3.4X14 (ST.NI) (88-445,811-14)	G-35-B1120-3RE	
2	ODD BRACKET SECC (V8600U)	G-33-W860Z-010	
3	ODD MODULE (TEXTURE) (P1704)	G-42-P170Z-011	
4	ODD MODULE (TEXTURE) (P1704)	G-42-P170Z-011	
5	ODD LABEL (TEXTURE) (P1704)	G-45-W860W-011	

DVD-Dual Drive



ITEM	PART NAME	PART NO	REMARK
1	DRIVE DVD, 16 X 10 X 14 (DB-4531F-140)	6-35-B1120-0RE	
2	TOP BRACKET SCREW (V85020)	6-33-V8502-010	
3	DRIVE DVD, 16 X 10 X 14 (DB-4531F-140)	6-35-A078X-L06	FDR PLUS
3	DRIVE DVD, 16 X 10 X 14 (DB-4531F-140)	6-35-A078X-Y11	FDR TSS1
4	DRIVE DVD, 16 X 10 X 14 (DB-4531F-140)	6-42-P1702-01	
5	DRIVE DVD, 16 X 10 X 14 (DB-4531F-140)	6-45-V8420-01	

Figure A - 7
DVD-Dual Drive

Part Lists

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *P170EM* 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>PCH3/9 - DMI, FDI, PWRGD - Page B - 23</i>	<i>Power 1.5V/VTT_MEM - Page B - 44</i>
<i>TPM - Page B - 3</i>	<i>PCH 4/9 - LVDS, DDI, CRT - Page B - 24</i>	<i>Power IV, 1.8VS - Page B - 45</i>
<i>Processor 1/7 - Page B - 4</i>	<i>PCH 5/9 - PCI, USB, RSVD - Page B - 25</i>	<i>Power V-Core 1 - Page B - 46</i>
<i>Processor 2/7 - Page B - 5</i>	<i>PCH 6/9 - GPIO, CPU - Page B - 26</i>	<i>Power V-Core 2 - Page B - 47</i>
<i>Processor 3/7 - Page B - 6</i>	<i>PCH 7/9 - Power - Page B - 27</i>	<i>AC_In, Charger - Page B - 48</i>
<i>Processor 4/7 - Page B - 7</i>	<i>PCH 8/9 - Power - Page B - 28</i>	<i>Power 0.85VS - Page B - 49</i>
<i>Processor 5/7 - Page B - 8</i>	<i>PCH 9/9 - GND - Page B - 29</i>	<i>Audio Board - Page B - 50</i>
<i>Processor 6/7 - Page B - 9</i>	<i>USB+eSATA, USB Charging - Page B - 30</i>	<i>P150 ODD Board - Page B - 51</i>
<i>Processor 7/7 - Page B - 10</i>	<i>USB 2.0, CCD, Mini PCIE, LID - Page B - 31</i>	<i>P150 Click Board - Page B - 52</i>
<i>DDRIII CHA SO-DIMM_0 - Page B - 11</i>	<i>LED, Hotkey, LID SW, Fan - Page B - 32</i>	<i>P150 LED 1 Board - Page B - 53</i>
<i>DDRIII CHA SO-DIMM_1 - Page B - 12</i>	<i>RJ 45 - Page B - 33</i>	<i>P150 LED 2 Board - Page B - 54</i>
<i>DDRIII CHB SO-DIMM_0 - Page B - 13</i>	<i>Codec Realtek ALC892 - Page B - 34</i>	<i>P150 LED 3 Board - Page B - 55</i>
<i>DDRIII CHB SO-DIMM_1 - Page B - 14</i>	<i>APA2607-TPA2008D2 - Page B - 35</i>	<i>P170 HDD & ODD Board - Page B - 56</i>
<i>MXM PCI-E - Page B - 15</i>	<i>KBC-ITE IT8518E - Page B - 36</i>	<i>P170 LED Board - Page B - 57</i>
<i>Panel, Inverter, CRT - Page B - 16</i>	<i>Backlight Keyboard - Page B - 37</i>	<i>P170 Click Board - Page B - 58</i>
<i>I394_JMB380C - Page B - 17</i>	<i>mSATA, FAN, TP, FP, MULTI-CON - Page B - 38</i>	<i>P170 Fingerprint Board - Page B - 59</i>
<i>DVI - Page B - 18</i>	<i>Card Reader RTL8411 - Page B - 39</i>	<i>P170 Fingerprint Board - Page B - 59</i>
<i>Display Port - Page B - 19</i>	<i>USB 3.0 - Page B - 40</i>	<i>P150 HDD Board - Page B - 60</i>
<i>HDMI - Page B - 20</i>	<i>VDD3, VDD5 - Page B - 41</i>	<i>P150 LED Board_L - Page B - 61</i>
<i>PCH 1/9 - RTC, HDA, SATA - Page B - 21</i>	<i>5VS, 3.3VS, 1.5VS - Page B - 42</i>	<i>P150 LED Board_R - Page B - 62</i>
<i>PCH 2/9 - PCIE, SMBUS, CLK - Page B - 22</i>	<i>Power 1.05VS - Page B - 43</i>	<i>Power on Sequence - Page B - 63</i>

Table B - 1
Schematic
Diagrams



Version Note

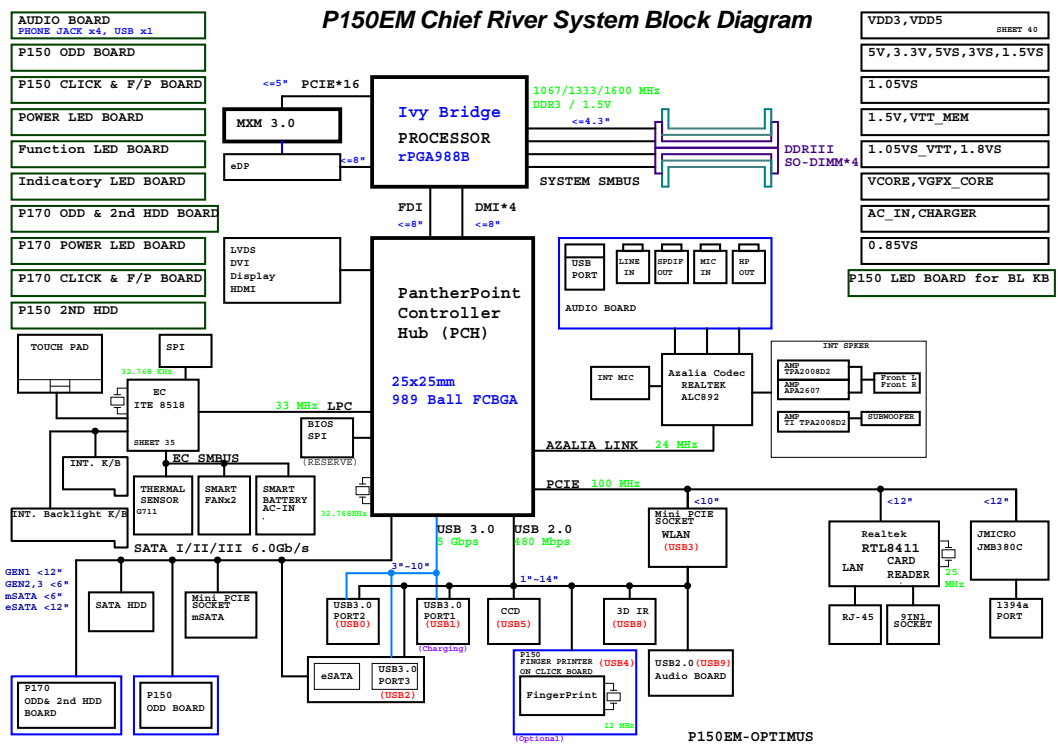
The schematic diagrams in this chapter are based upon version 6-7P-P15EE-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

Schematic Diagrams

System Block Diagram

B. Schematic Diagrams

Sheet 1 of 61
System Block Diagram

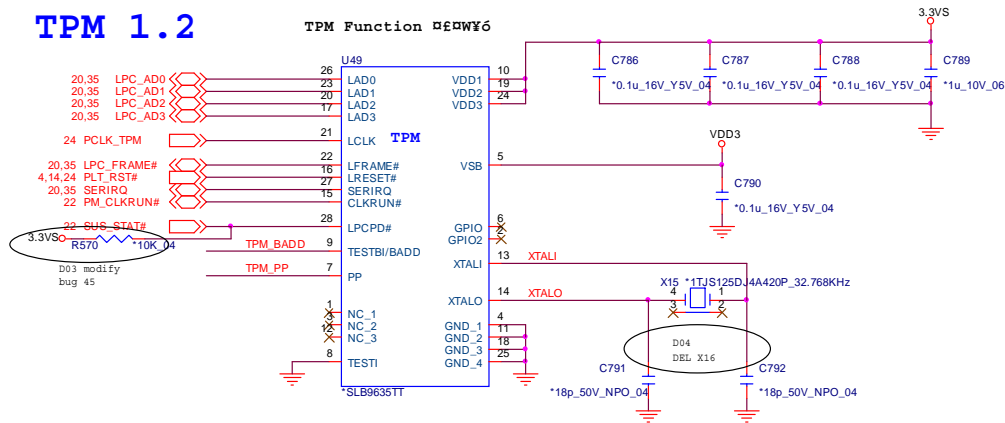


B - 2 System Block Diagram

TPM

TPM 1.2

TPM Function

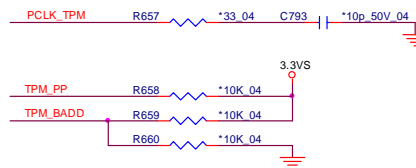


Asserted before entering S3

LPC reset timing:

LPCPD# inactive to LRST# inactive 32-96us

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



Sheet 2 of 61
TPM

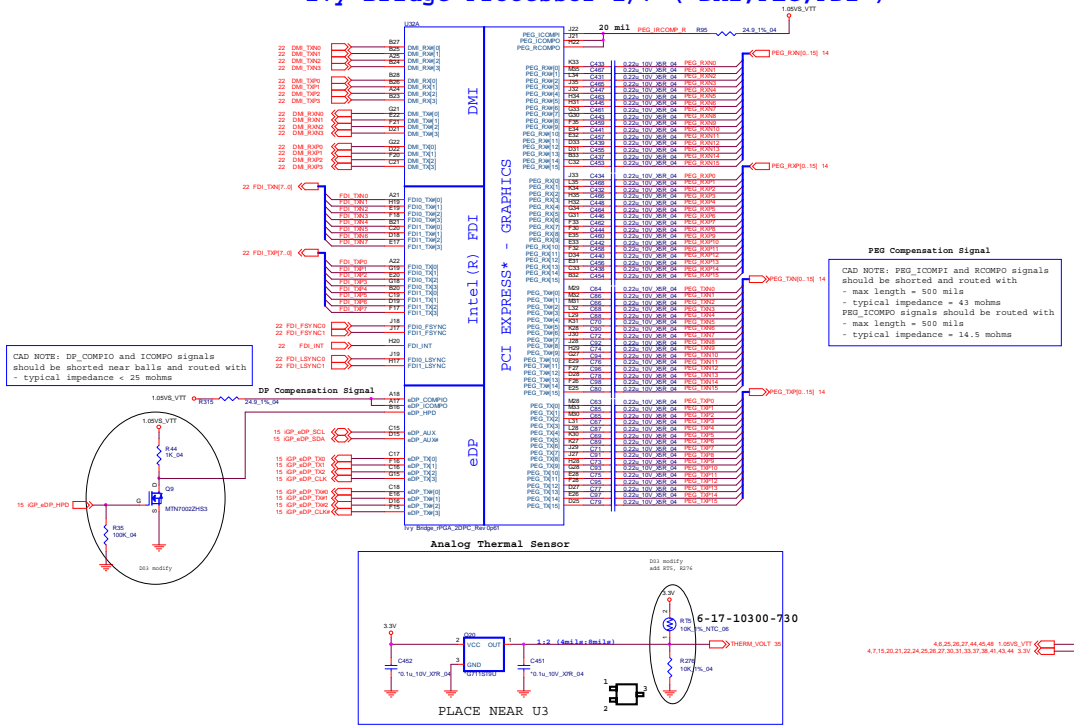
B.Schematic Diagrams

Schematic Diagrams

Processor 1/7

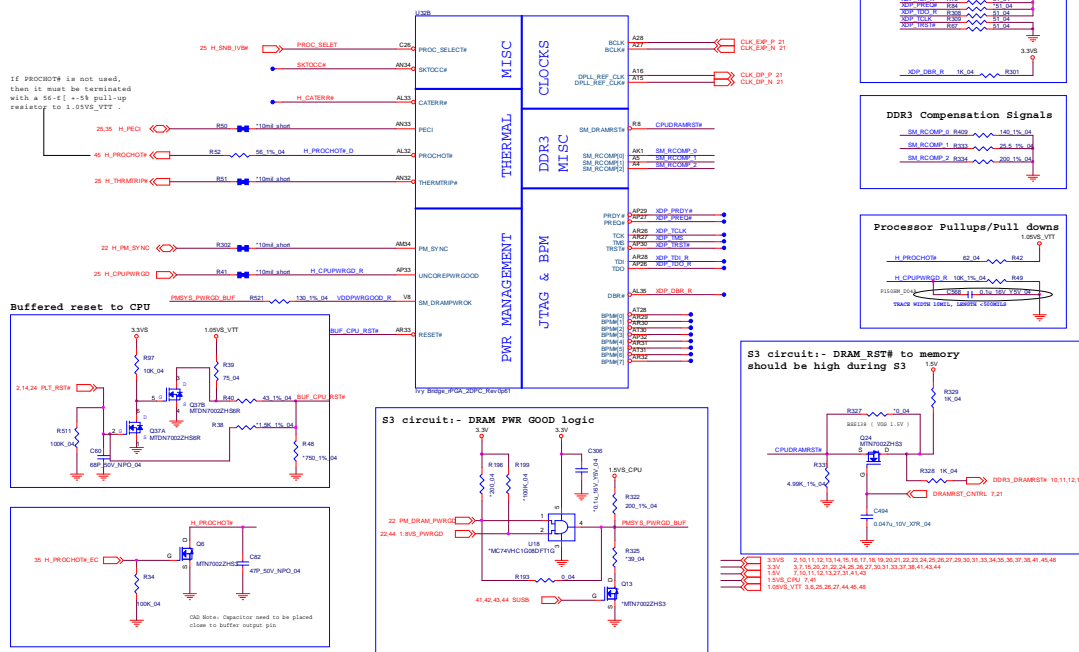
Sheet 3 of 61
Processor 1/7

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



Processor 2/7

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

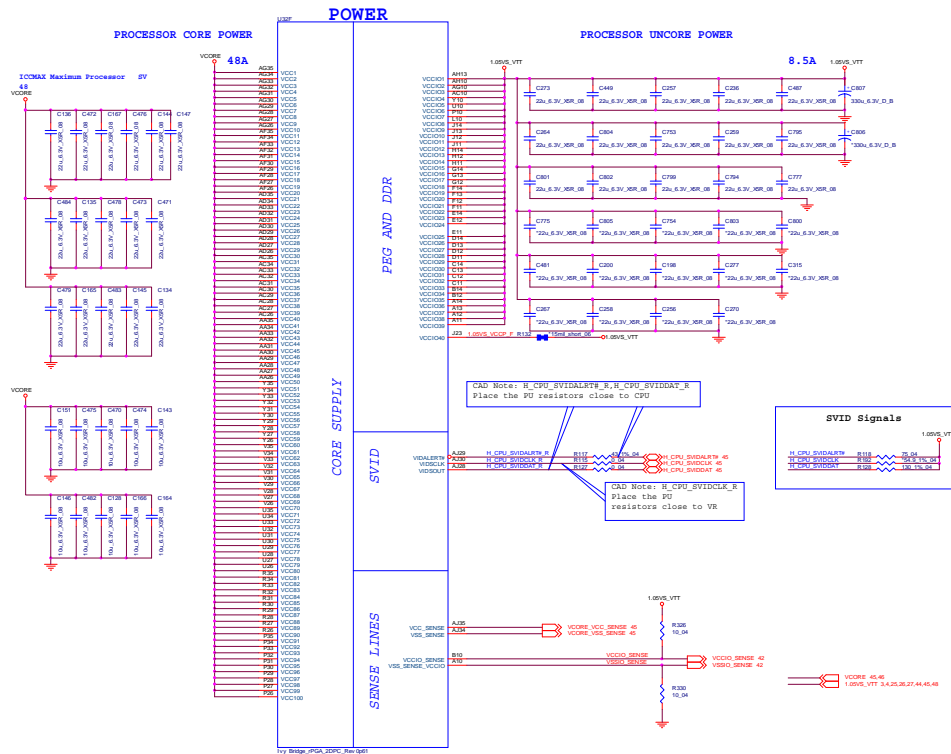


Sheet 4 of 61
Processor 2/7

B.Schematic Diagrams

Processor 4/7

Ivy Bridge Processor 4/7 (POWER)



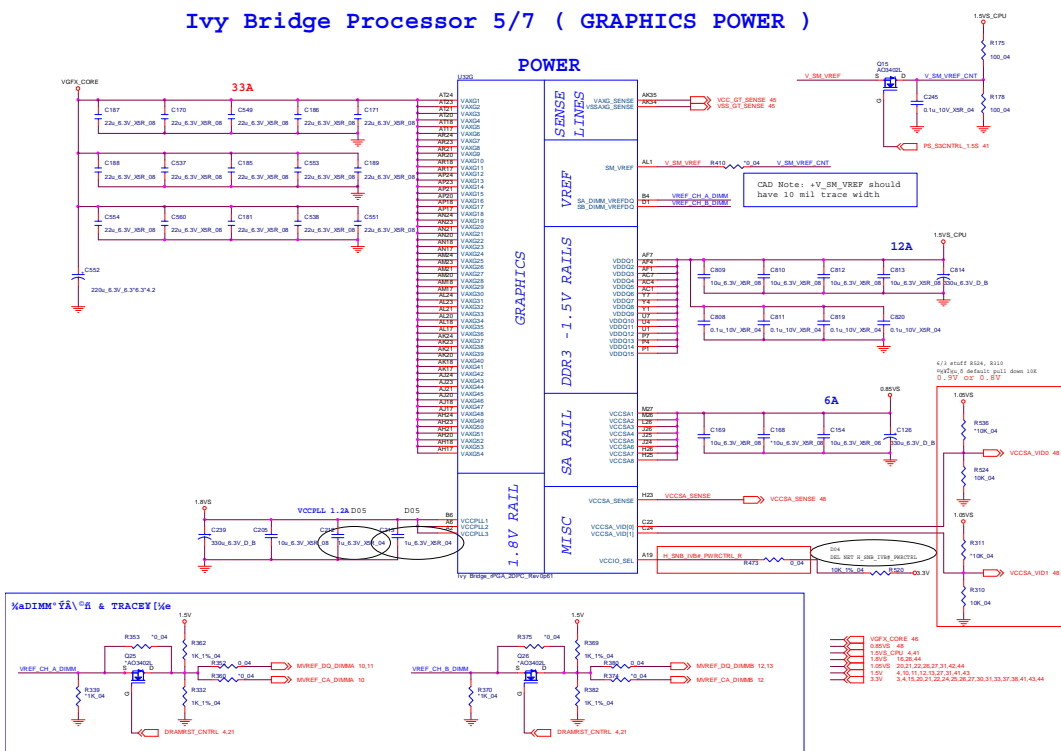
Sheet 6 of 61
Processor 4/7

B.Schematic Diagrams

Schematic Diagrams

Processor 5/7

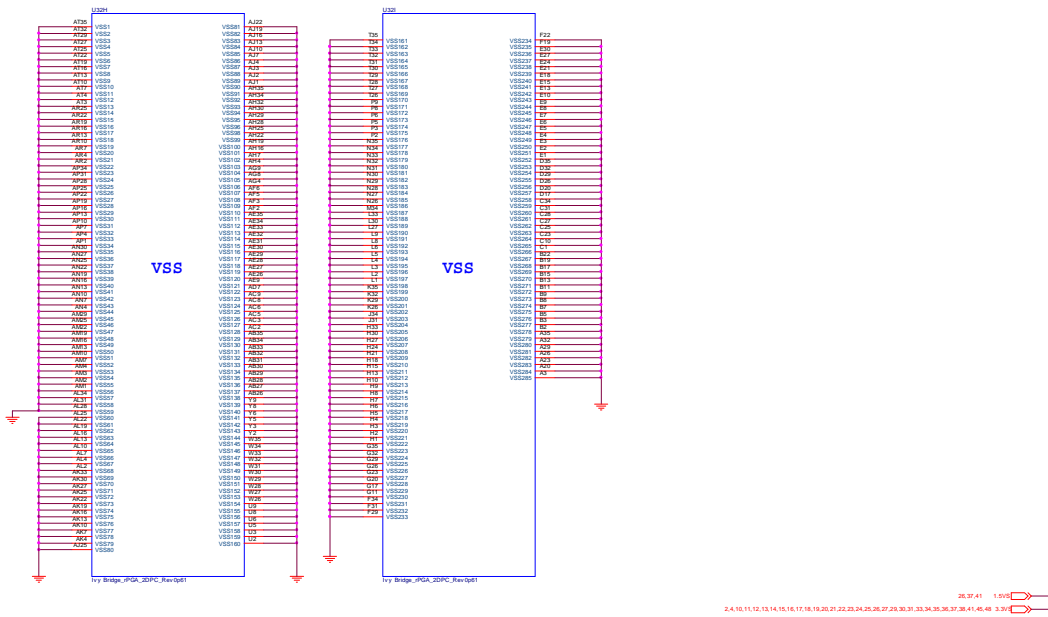
Ivy Bridge Processor 5/7 (GRAPHICS POWER)



B - 8 Processor 5/7

Processor 6/7

Ivy Bridge Processor 6/7 (GND)



Sheet 8 of 61
Processor 6/7

B.Schematic Diagrams

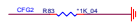
Schematic Diagrams

Processor 7/7

Ivy Bridge Processor 7/7 (RESERVED)

CFG Straps for Processor

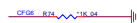
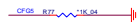
FBG Static Lane Reversal - CFG2 is for the 16x	
CFG2	1: (Default) Normal Operation; Lane # definition matches socket pin map definition 0: Lane Reversed



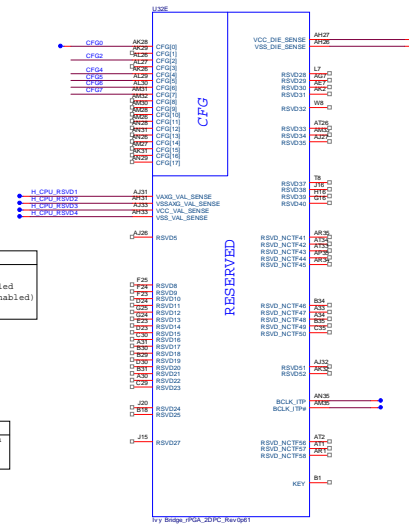
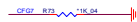
Display Port Presence Strap	
CFG4	1: (Default) Disabled; No Physical Display Port attached to Embedded Display Port 0: Enabled; An external Display Port device is connected to the Embedded Display Port



PCIe Port Bifurcation Straps	
CFG [6 : 5]	11: (Default) x16 - Device 1 functions 1 and 2 disabled 01: 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

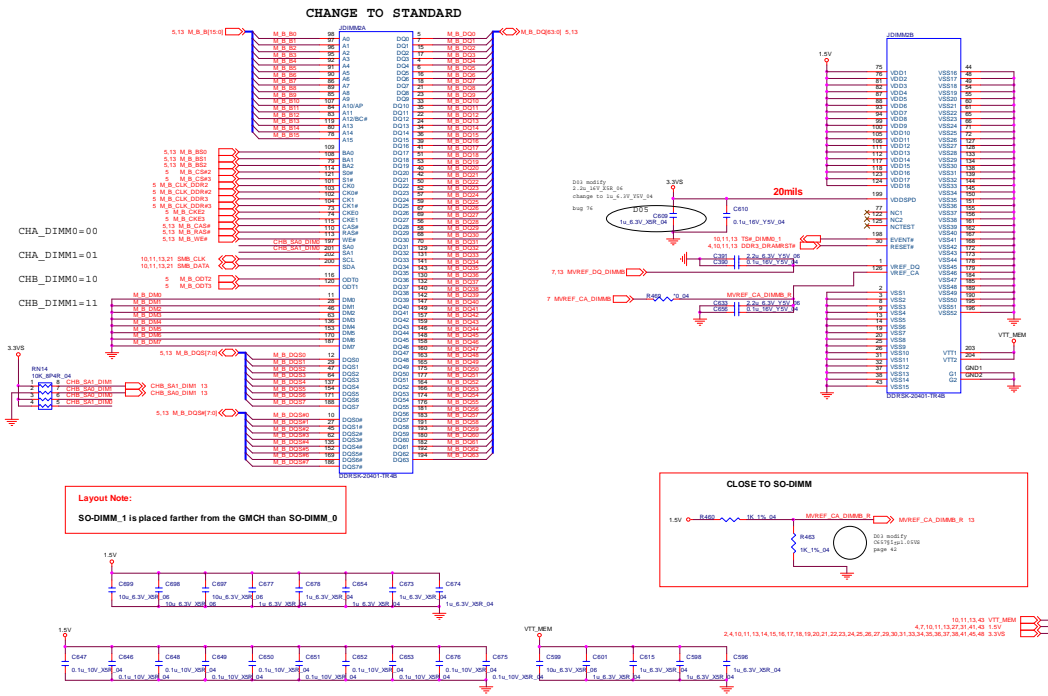


PEG DEFER TRAINING	
CFG7	1: (Default) PEG Train immediately following xRESRTB de assertion 0: PEG wait for BIOS for training



DDRIII CHB SO-DIMM_0

Channel B SO-DIMM 0



Sheet 12 of 61
DDRIII CHB SO-DIMM_0

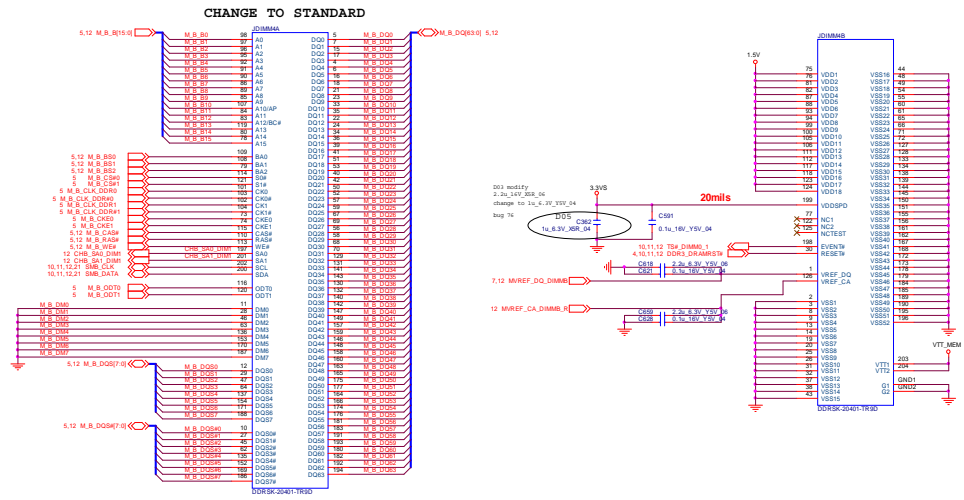
B.Schematic Diagrams

Schematic Diagrams

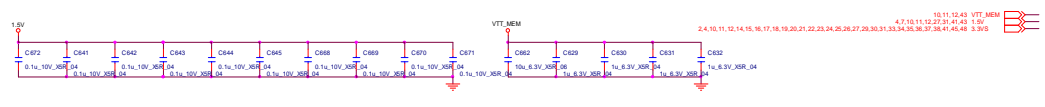
DDRIII CHB SO-DIMM_1

Channel B SO-DIMM 1

Sheet 13 of 61
DDRIII CHB SO-
DIMM_1



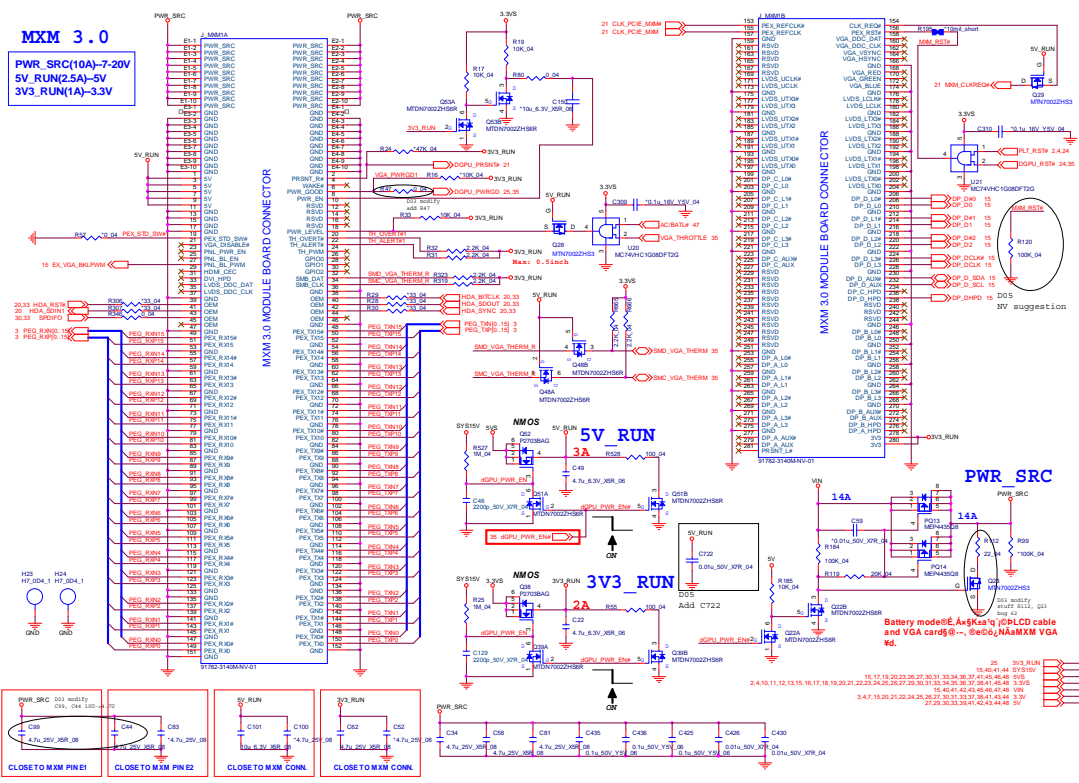
Layout Note:
SO-DIMM_1 is placed farther from the GMCH than SO-DIMM_0



B - 14 DDRIII CHB SO-DIMM_1

B. Schematic Diagrams

MXM PCI-E



Sheet 14 of 61
MXM PCI-E

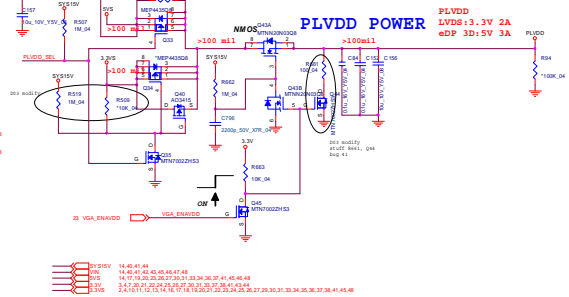
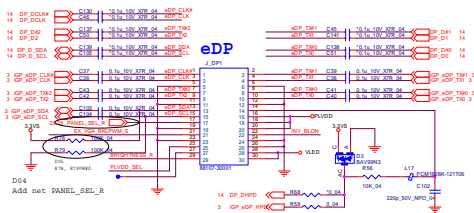
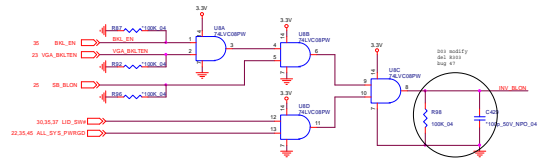
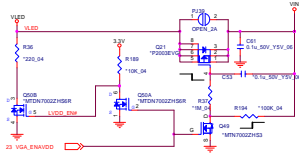
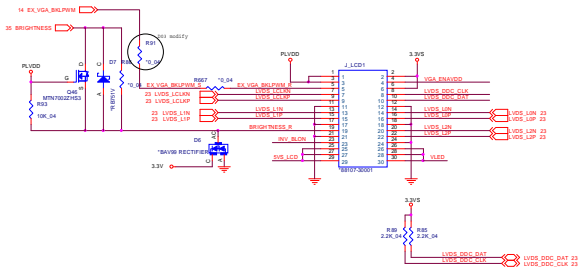
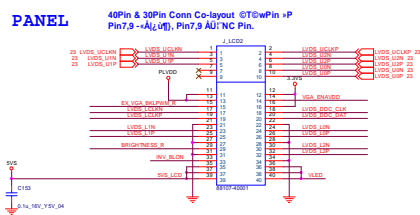
B. Schematic Diagrams

Schematic Diagrams

Panel, Inverter, CRT

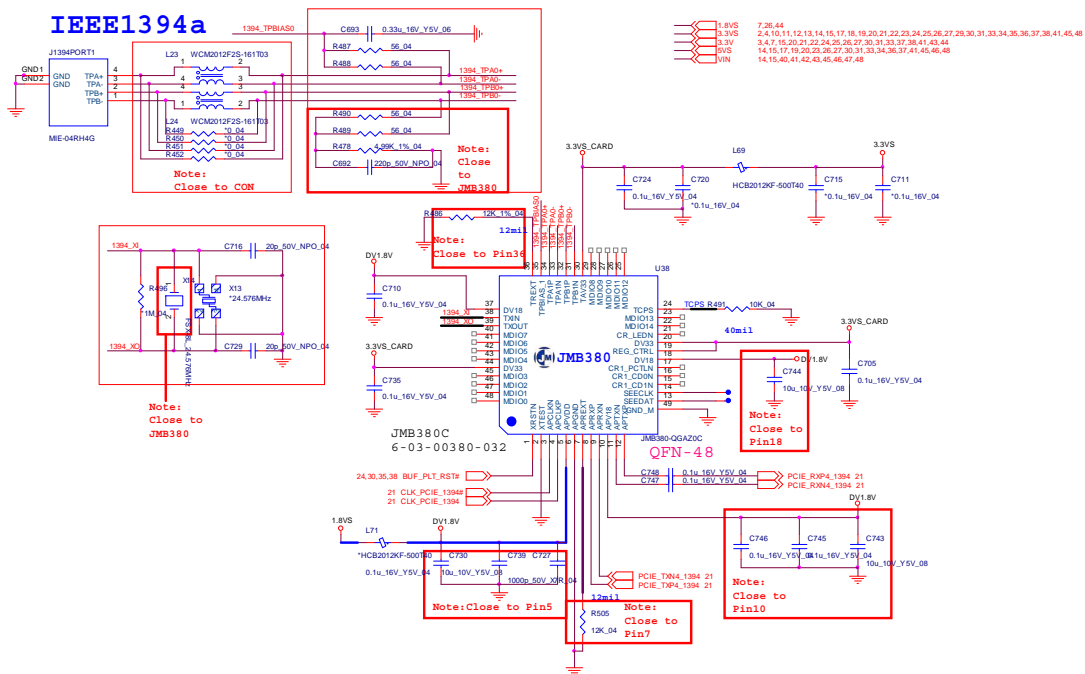
Sheet 15 of 61
Panel, Inverter,
CRT

PANEL



B - 16 Panel, Inverter, CRT

1394_JMB380C



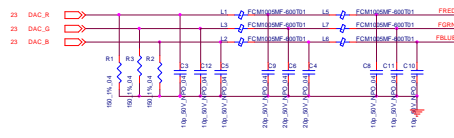
Sheet 16 of 61
1394_JMB380C

B.Schematic Diagrams

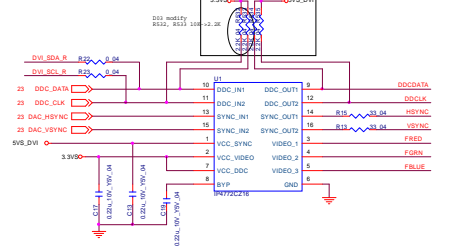
Schematic Diagrams

DVI

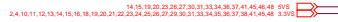
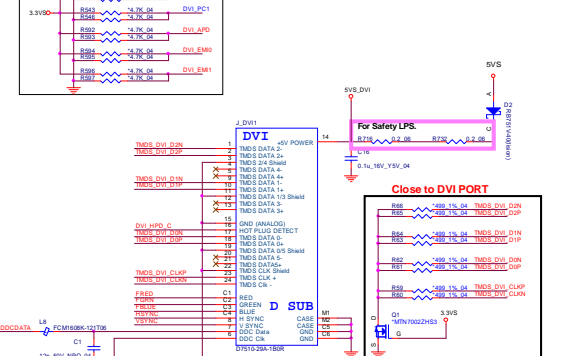
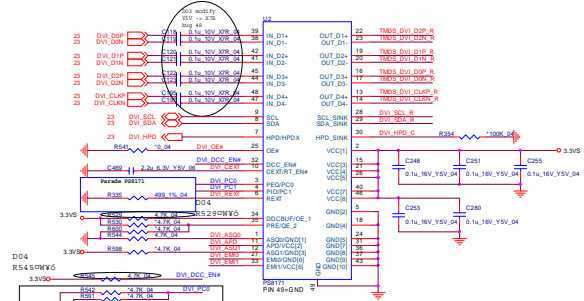
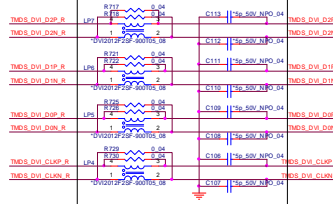
Sheet 17 of 61
DVI



PLEASE CLOSE TO CONNECTOR

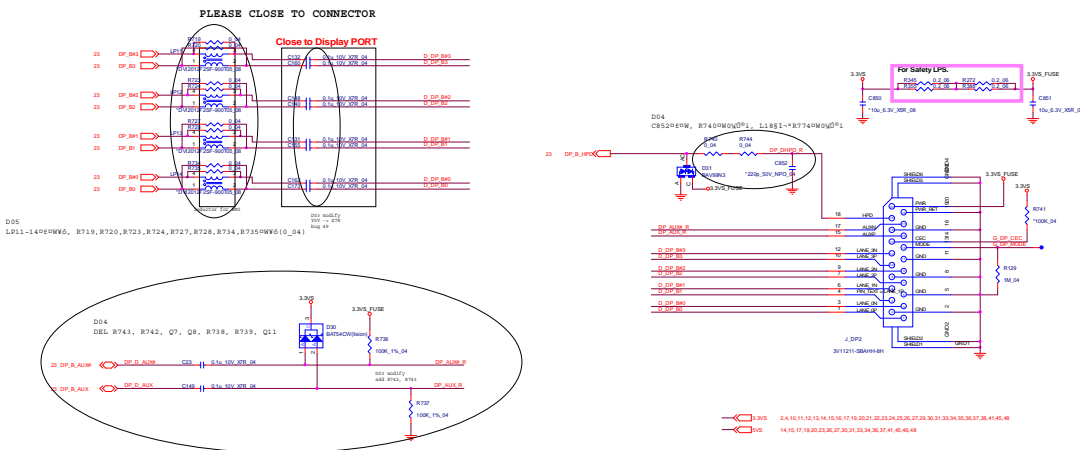


PLEASE CLOSE TO CONNECTOR



Display Port

dGPU DISPLAY PORT



Sheet 18 of 61
Display Port

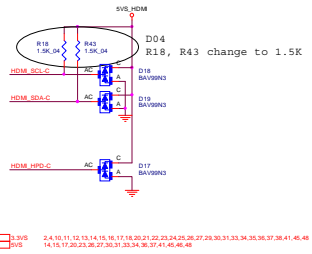
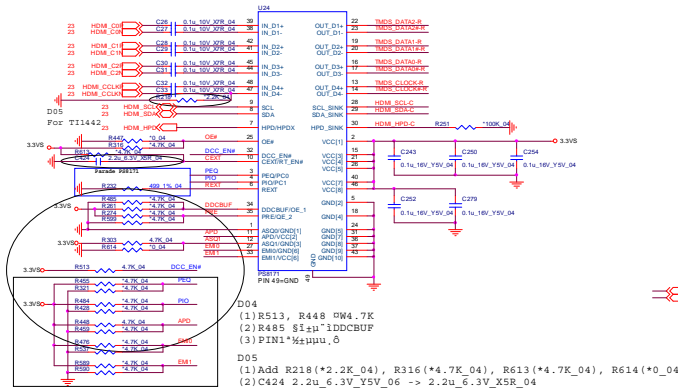
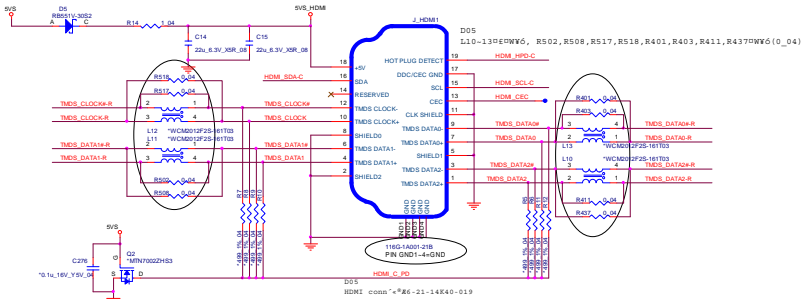
B.Schematic Diagrams

Schematic Diagrams

HDMI

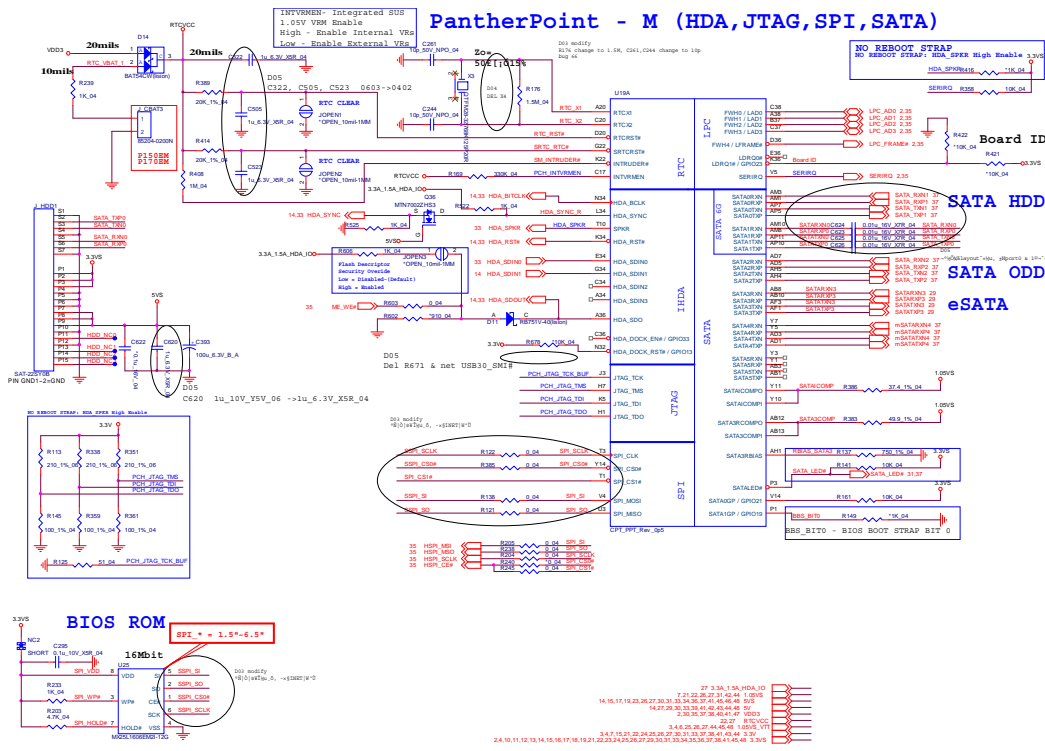
Sheet 19 of 61
HDMI

HDMI CONNECTOR



B - 20 HDMI

PCH 1/9 - RTC, HDA, SATA



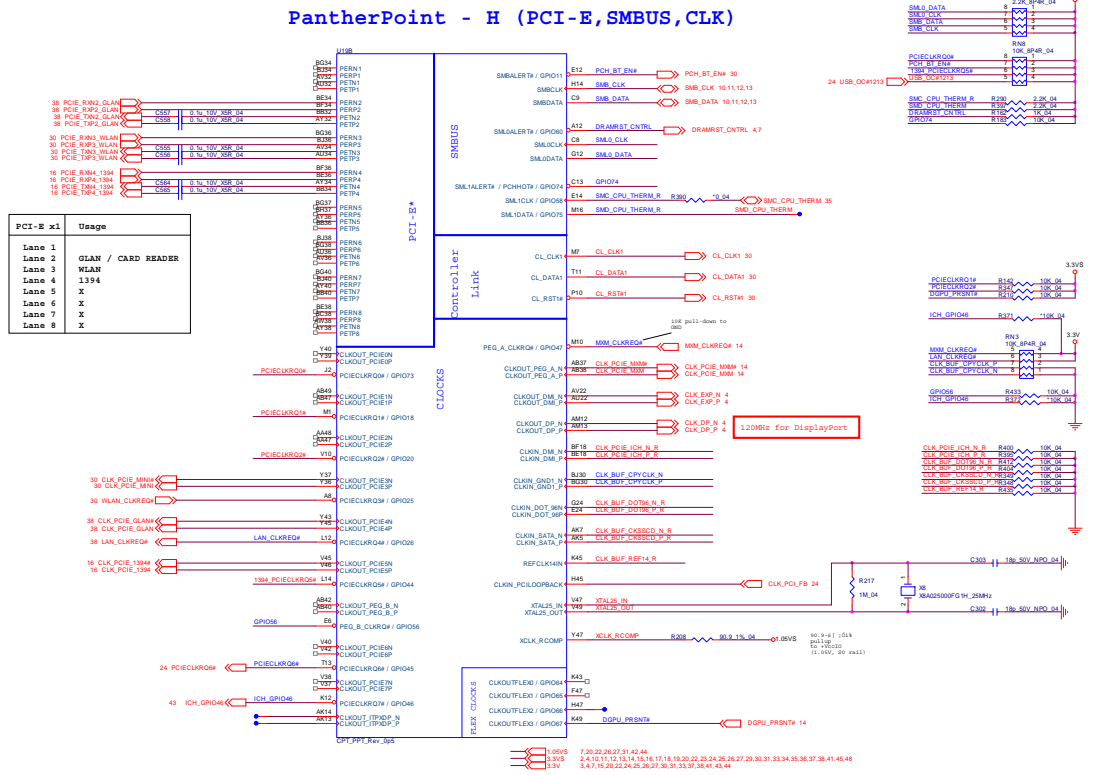
Sheet 20 of 61
PCH 1/9 - RTC,
HDA, SATA

B.Schematic Diagrams

Schematic Diagrams

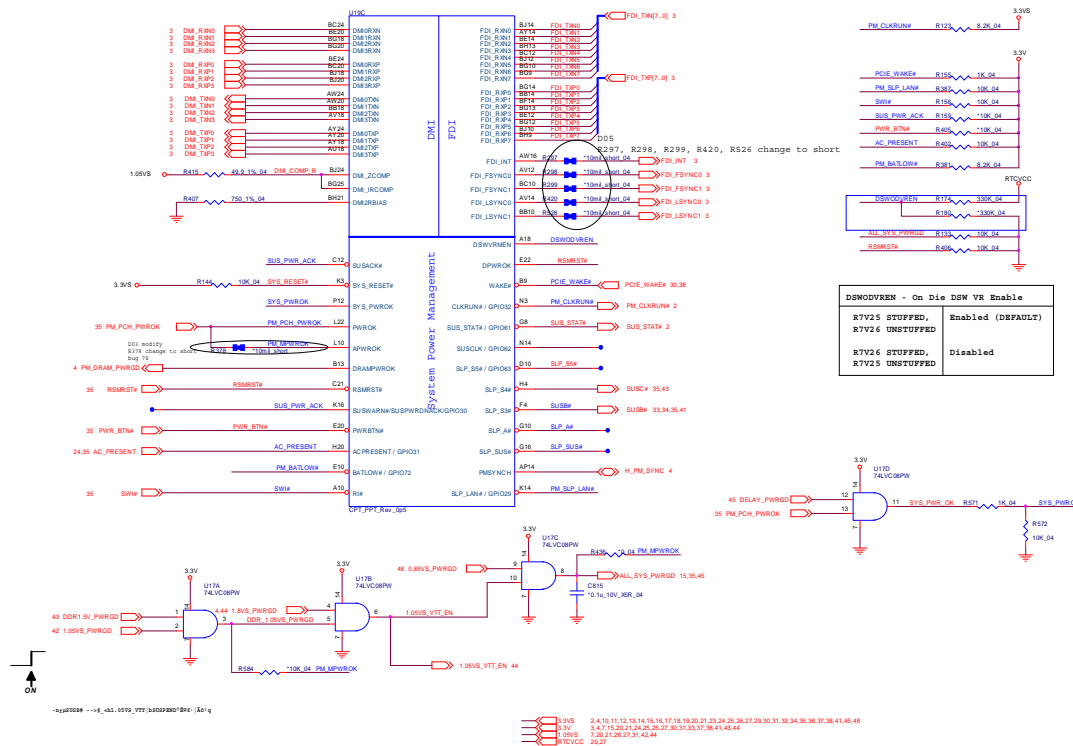
PCH 2/9 - PCIe, SMBUS, CLK

Sheet 21 of 61
PCH 2/9 - PCIe,
SMBUS, CLK



PCH3/9 - DMI, FDI, PWRGD

PantherPoint - H (DMI, FDI, GPIO)



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PCH 3/9 - DMI, FDI,
PWRGD

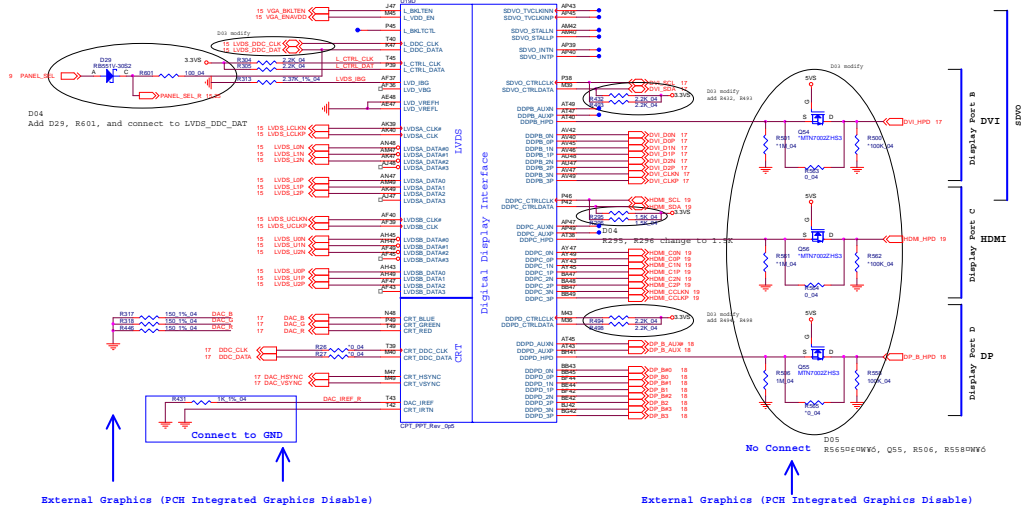
B.Schematic Diagrams

Schematic Diagrams

PCH 4/9 - LVDS, DDI, CRT

PantherPoint - H (LVDS, DDI)

Sheet 23 of 61
PCH 4/9 - LVDS,
DDI, CRT



PCH 5/9 - PCI, USB, RSVD

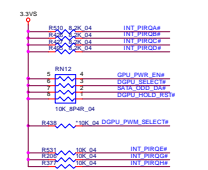
Boot BIOS Strap		
RSB_BIT1	RSB_BITO	Boot BIOS Location
0	0	LPC
0	1	Reserved (BIAS)
1	0	PCI
1	1	SPI



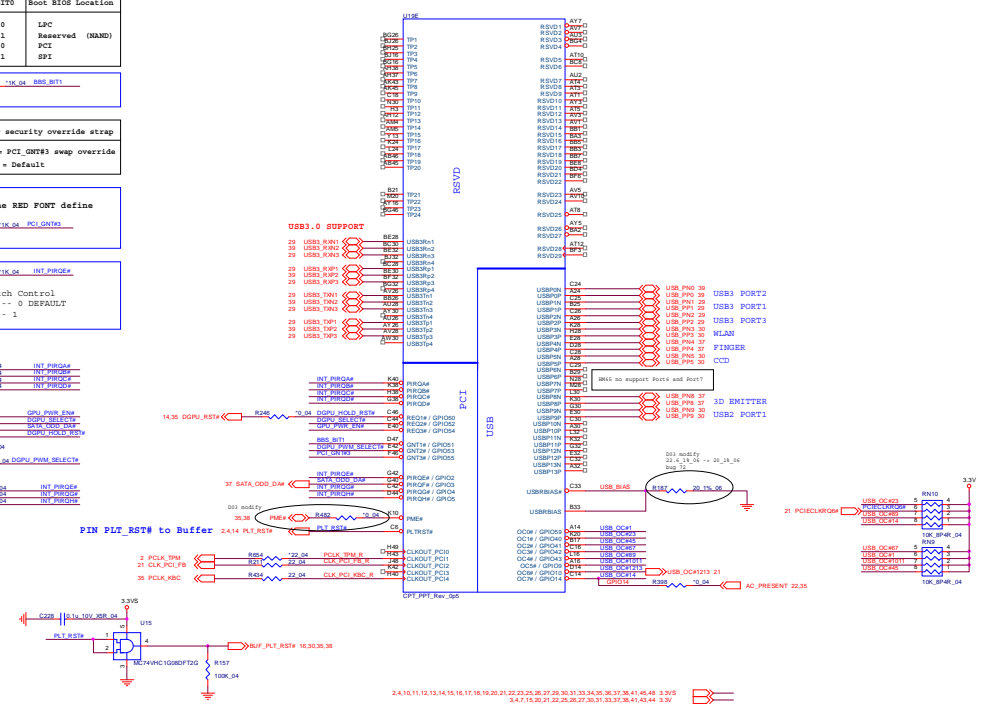
Flash Descriptor security override strap
 PCI_GNT#3 LOW = PCI_GNT#3 swap override
 HIGH = Default



Understand the RED FONT DEFINE
 MPC Switch Control
 MPC OFF -- 0 DEFAULT
 MPC ON -- 1



PantherPoint - H (PCI,USB,NVRAM)



Sheet 24 of 61
 PCH 5/9 - PCI, USB,
 RSVD

B.Schematic Diagrams

Schematic Diagrams

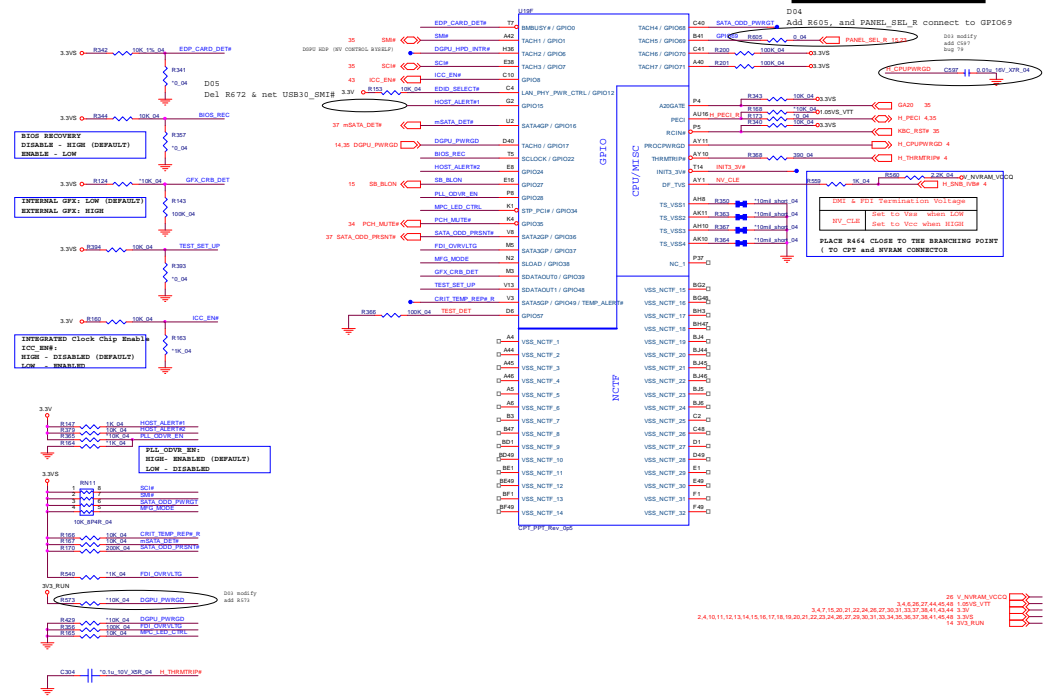
PCH 6/9 - GPIO, CPU

B. Schematic Diagrams

Sheet 25 of 61
PCH 6/9 - GPIO, CPU

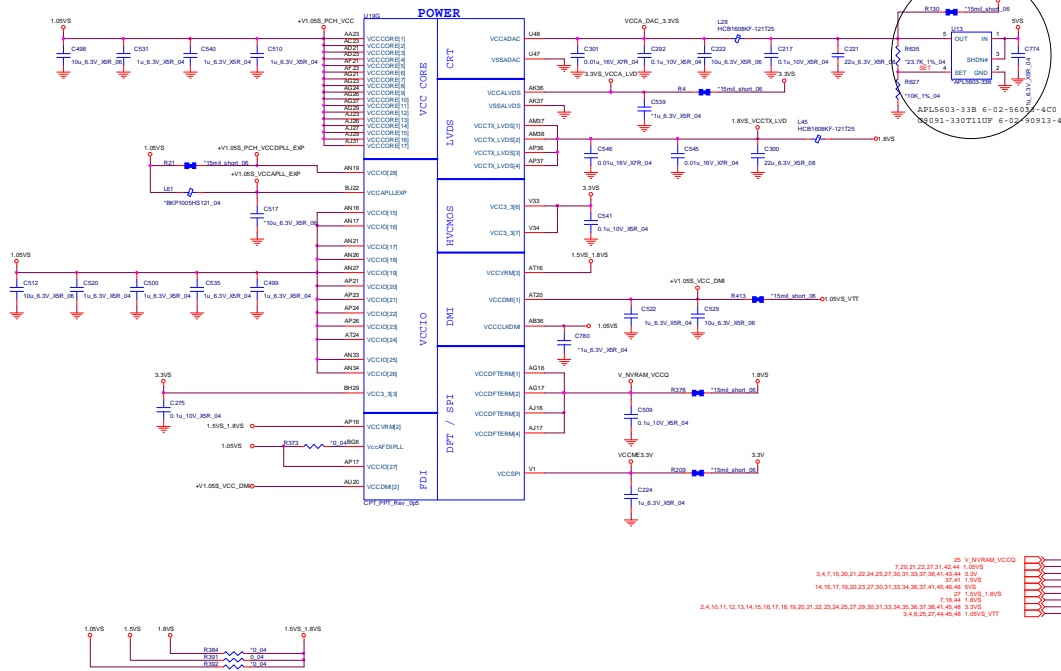
PantherPoint - H (GPIO, VSS_NCTF, RSVD)

	HIGH	LOW
PANEL_SEL_R	LVDS	eDP



PCH 7/9 - Power

PantherPoint - H (POWER)



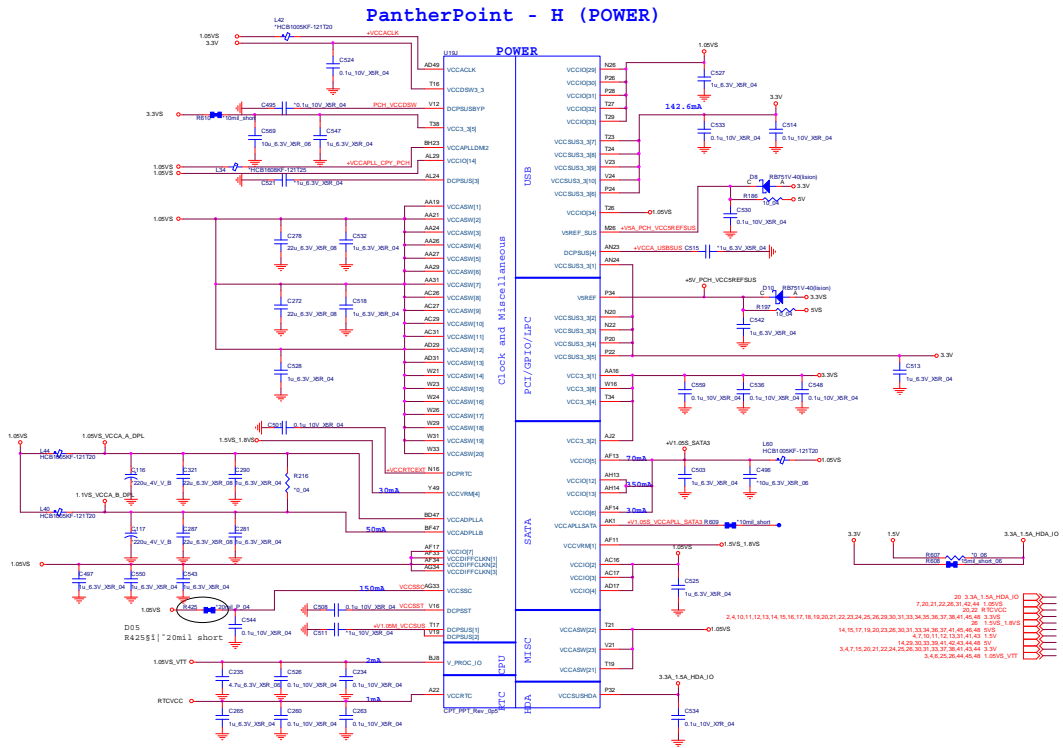
Sheet 26 of 61
PCH 7/9 - Power

B.Schematic Diagrams

Schematic Diagrams

PCH 8/9 - Power

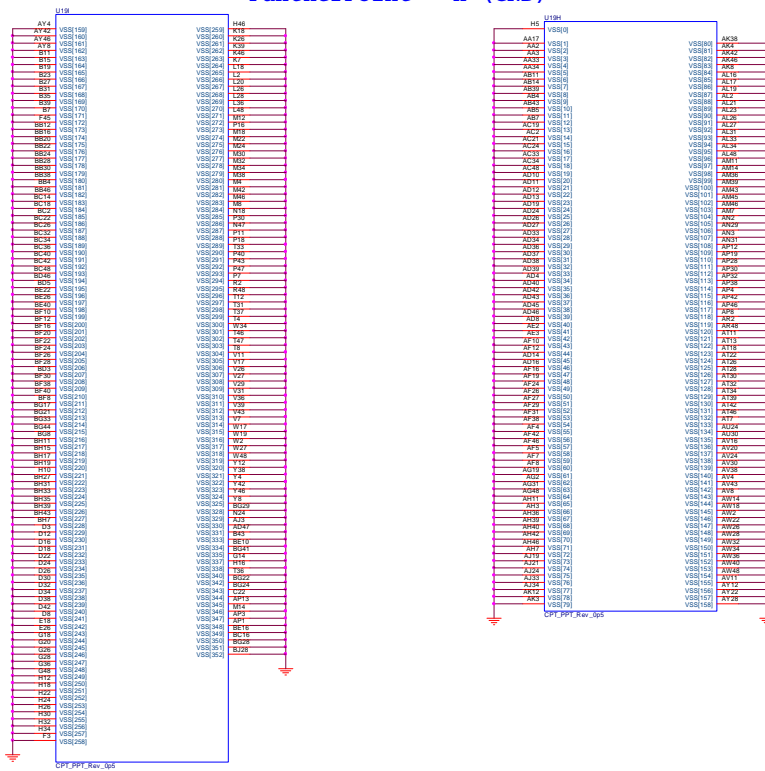
Sheet 27 of 61
PCH 8/9 - Power



B - 28 PCH 8/9 - Power

PCH 9/9 - GND

PantherPoint - H (GND)



Sheet 28 of 61
PCH 9/9 - GND

B. Schematic Diagrams

B. Schematic Diagrams

Schematic Diagrams

USB+eSATA, USB Charging

Sheet 29 of 61
USB+eSATA, USB
Charging

USB3.0 PORT3 + eSATA

ESATA REDRIVER

TPS2540 USB Charging PORT

	(DD_ON)	(VDD5)	(VDD5)	
	CTL1	CTL2	CTL3	
Mode 1	Power off & Discharge	0	0	0
Mode 2	Power off & Charge	0	1	1
Mode 3	Power on & Charge	1	0	1
Mode 4	Power on & Charge	1	1	1

CTL1 CTL2 CTL3: 0 0 0 → Out discharge, power switch Off
 CTL1 CTL2 CTL3: 0 x 1 → Dedicated charging port, auto-detect
 CTL1 CTL2 CTL3: 1 0 1 → Dedicated charging port, Divider Mode only
 CTL1 CTL2 CTL3: 1 1 1 → Charging downstream port, BCI.2

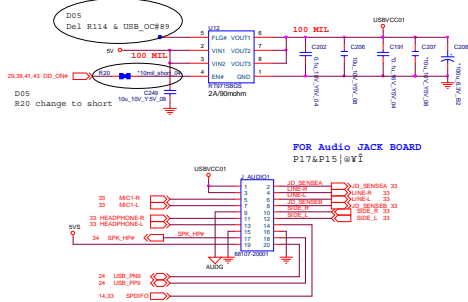
USB3.0 PORT1

B - 30 USB+eSATA, USB Charging

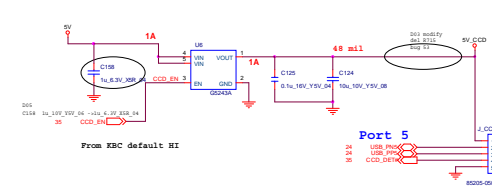
Downloaded from www.Manualslib.com manuals search engine

USB 2.0, CCD, Mini PCIE, LID

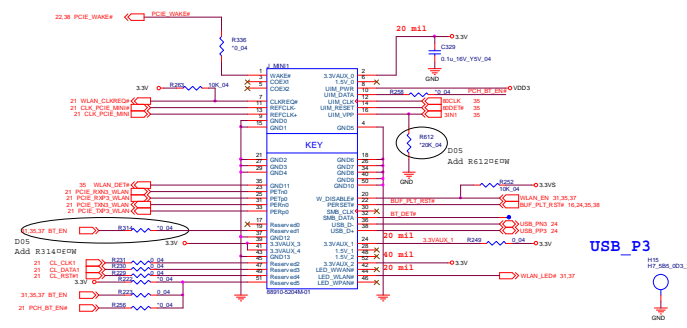
USB 2.0 PORT



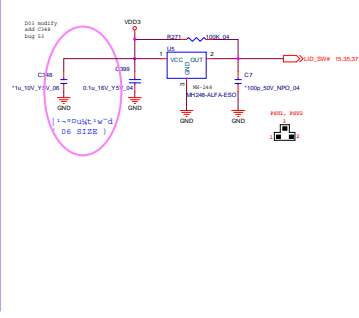
CCD



MINI CARD



LID SWITCH IC



Sheet 30 of 61
USB 2.0, CCD,
Mini PCIE, LED

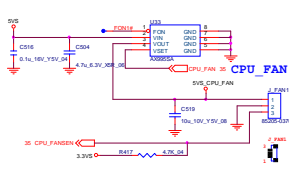
B.Schematic Diagrams

Schematic Diagrams

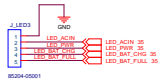
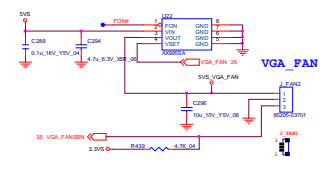
LED, Hotkey, LID SW, Fan

Sheet 31 of 61
LED, Hotkey, LID SW, Fan

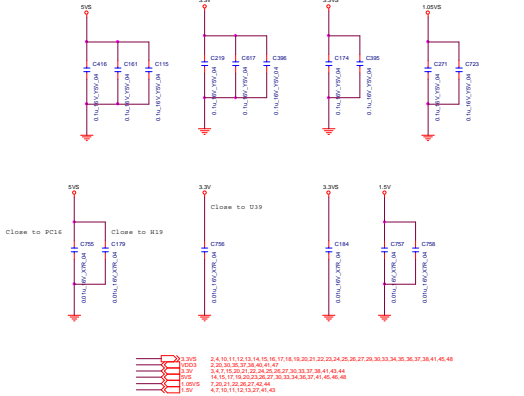
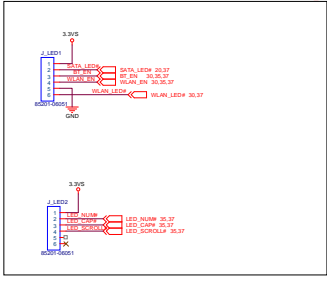
CPU FAN CONTROL



VGA FAN CONTROL



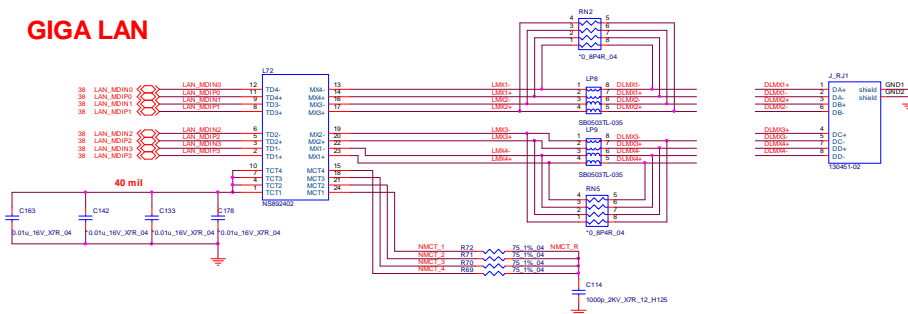
P150 only



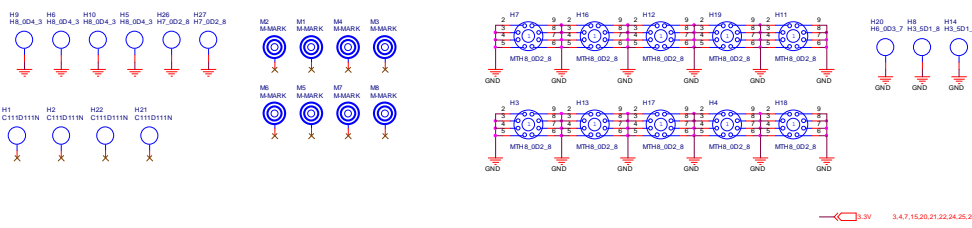
3.3V	2, 4, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 33, 34, 35, 36, 37, 38, 41, 45, 48
3.3V	2, 3, 35, 36, 37, 38, 45, 47
3.3V	5, 7, 13, 20, 21, 22, 24, 25, 26, 27, 30, 33, 37, 38, 41, 45, 48
3.3V	14, 15, 16, 23, 24, 25, 27, 28, 33, 34, 35, 37, 41, 45, 46, 48
3.3V	7, 20, 21, 22, 27, 45, 48
3.3V	4, 7, 15, 17, 18, 23, 27, 41, 45

RJ 45

GIGA LAN

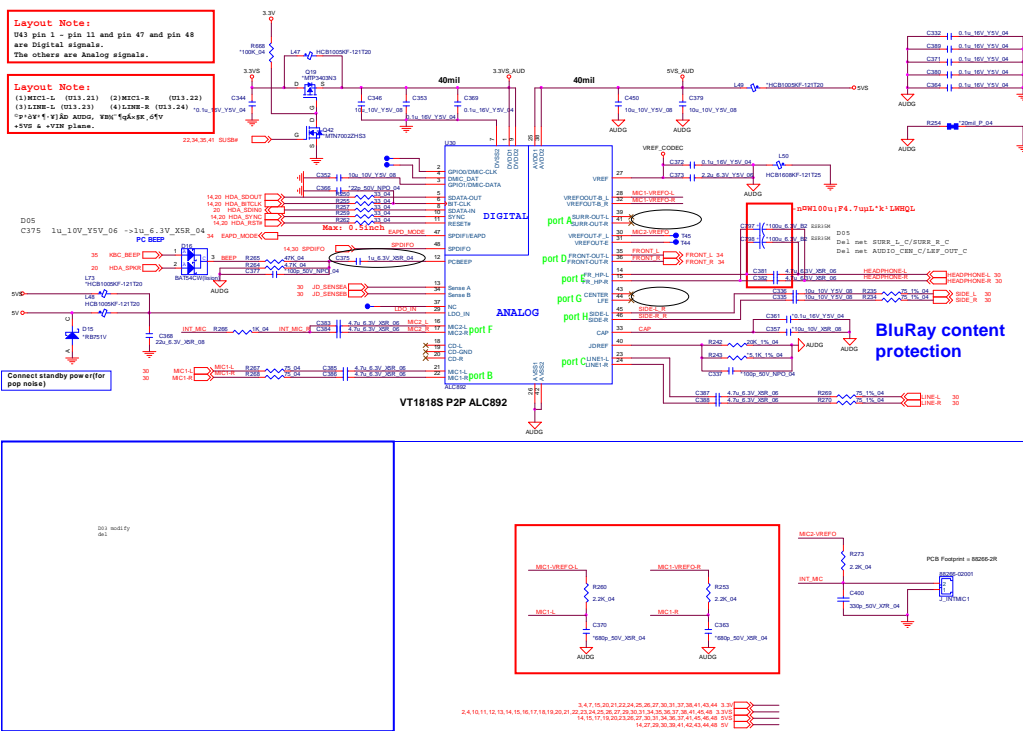


Sheet 32 of 61
RJ 45



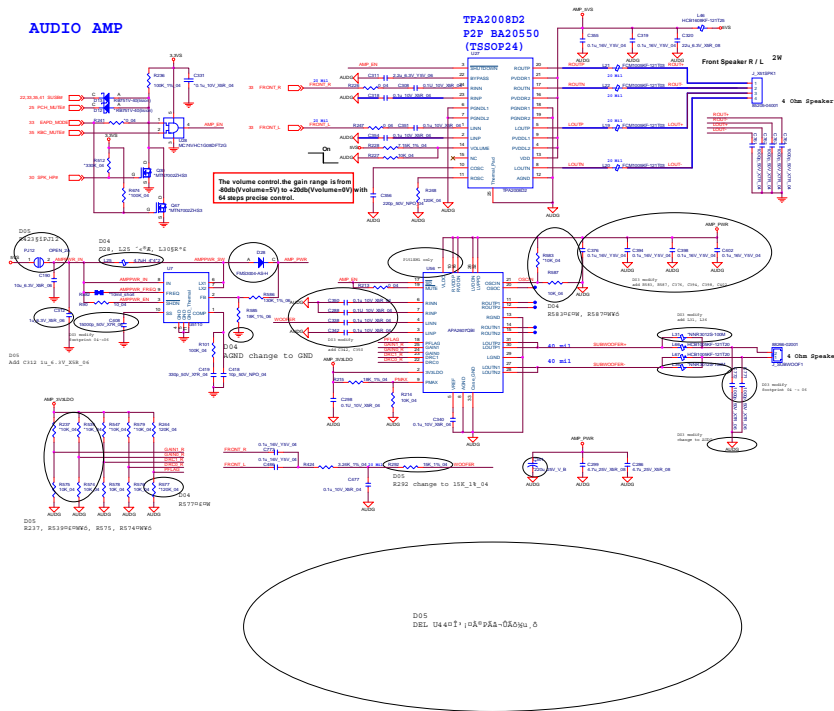
Schematic Diagrams

Codec Realtek ALC892

Sheet 33 of 61
Codec Realtek
ALC892

B - 34 Codec Realtek ALC892

APA2607-TPA2008D2



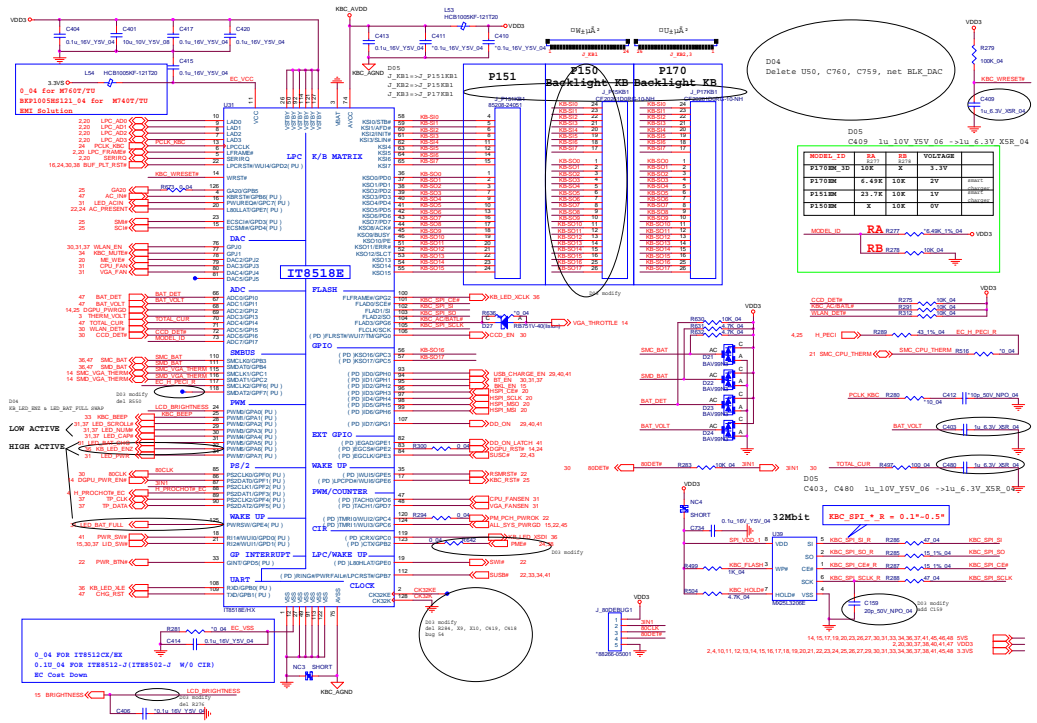
Sheet 34 of 61
APA2607-
TPA2008D2

B.Schematic Diagrams

Schematic Diagrams

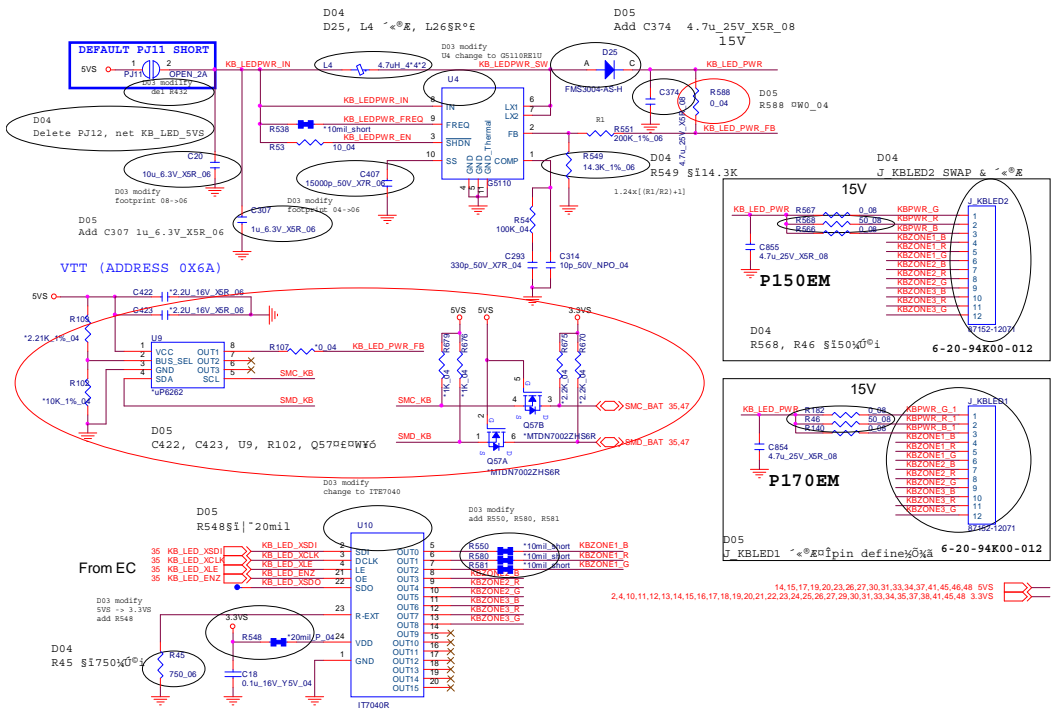
KBC-ITE IT8518E

Sheet 35 of 61
KBC-ITE IT8518E



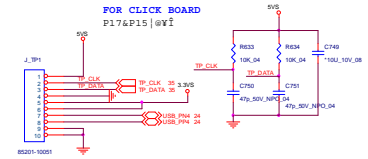
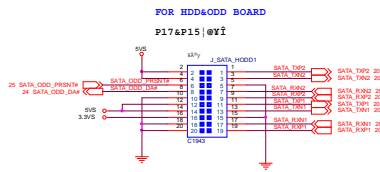
Backlight Keyboard

Sheet 36 of 61
Backlight
Keyboard

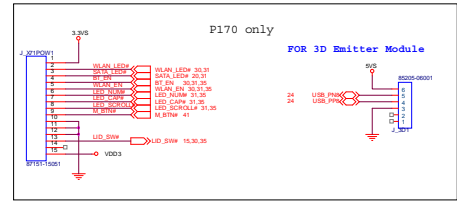
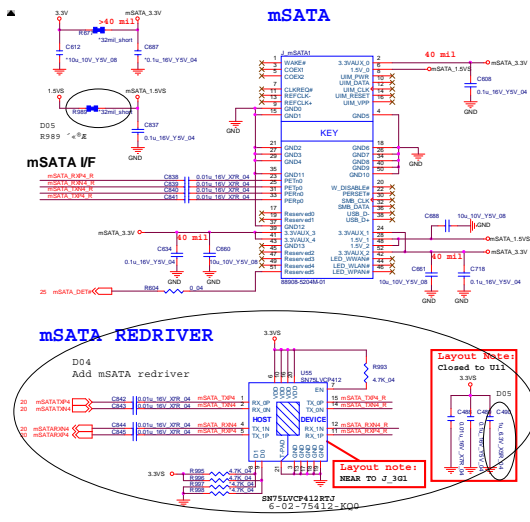


Schematic Diagrams

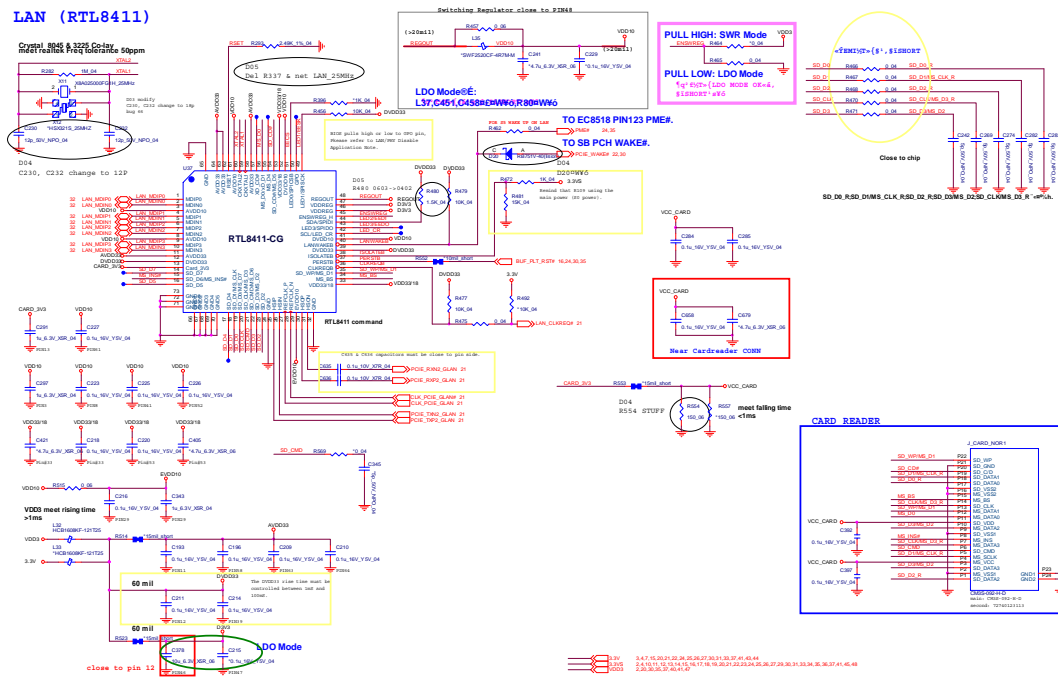
mSATA, FAN, TP, FP, MULTI-CON



Sheet 37 of 61
mSATA, FAN, TP,
FP, MULTI-CON



Card Reader RTL8411



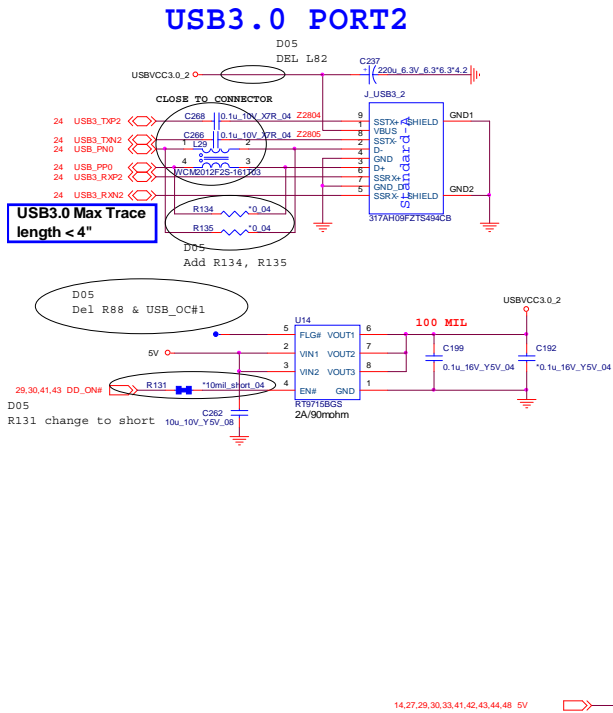
Sheet 38 of 61
Card Reader
RTL8411

B.Schematic Diagrams

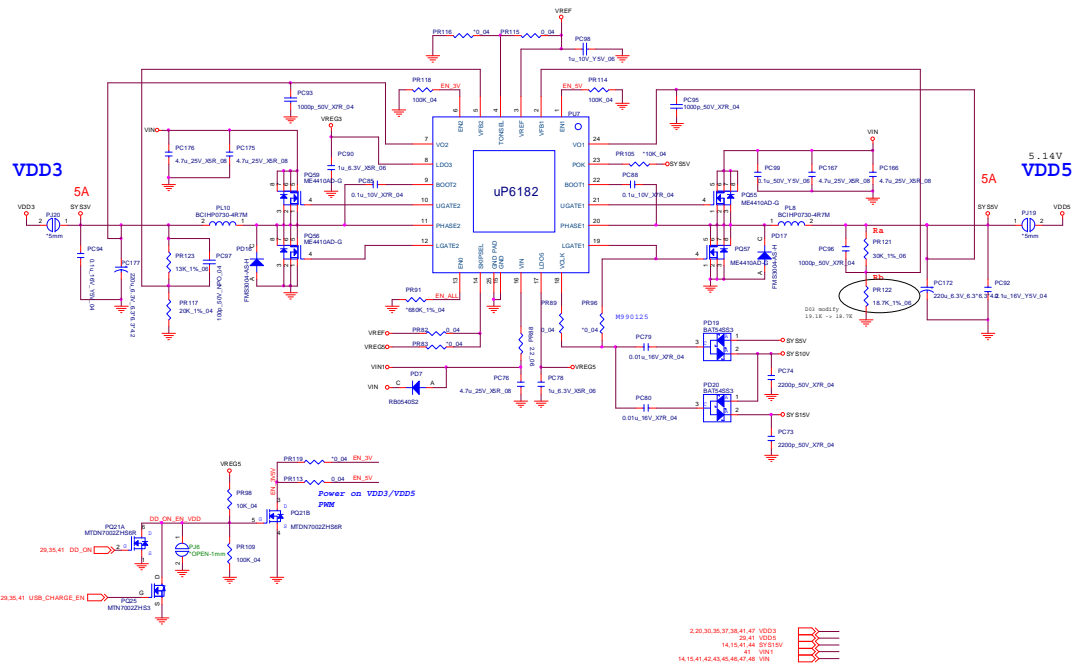
Schematic Diagrams

USB 3.0

Sheet 39 of 61
USB 3.0

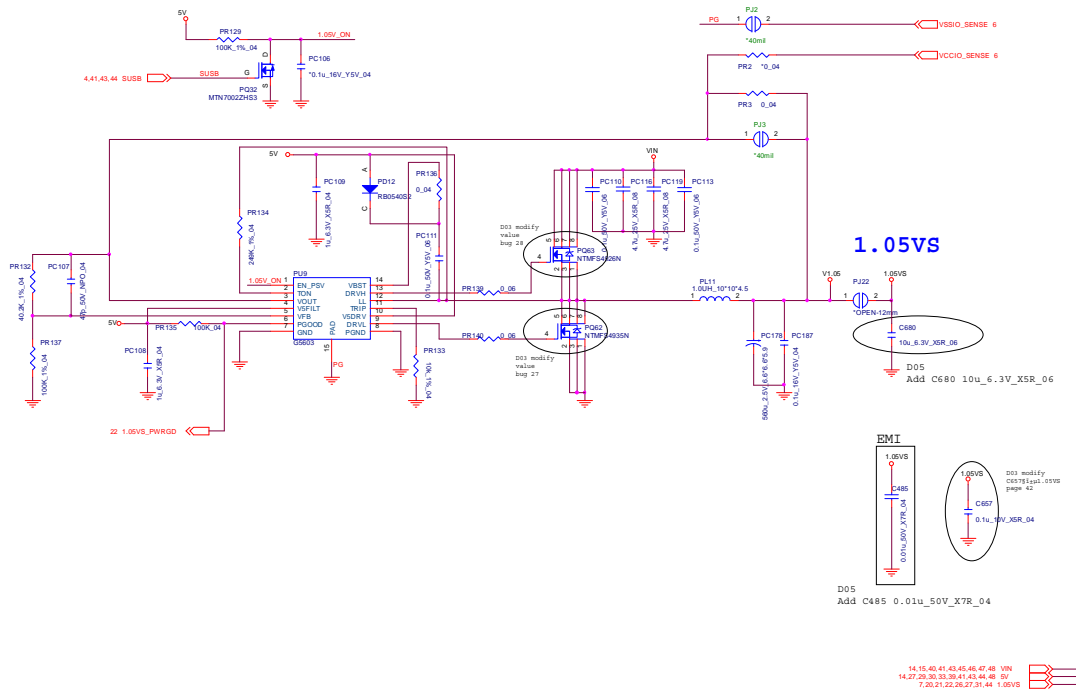


VDD3, VDD5



Sheet 40 of 61
 VDD3, VDD5

Power 1.05VS

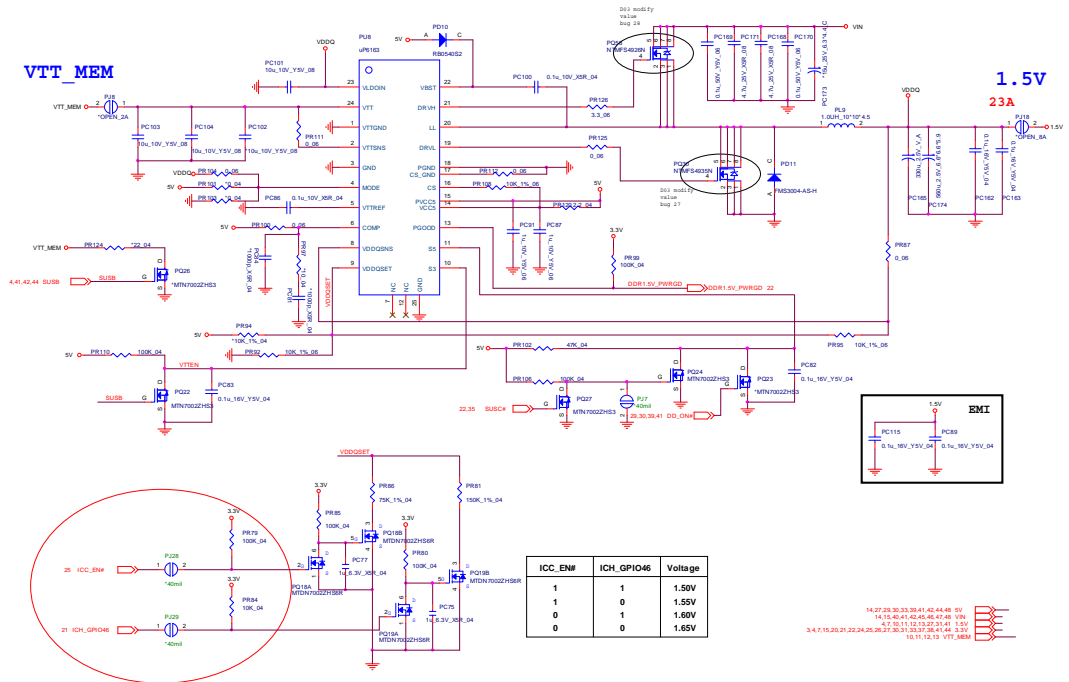


Sheet 42 of 61
Power 1.05VS

Schematic Diagrams

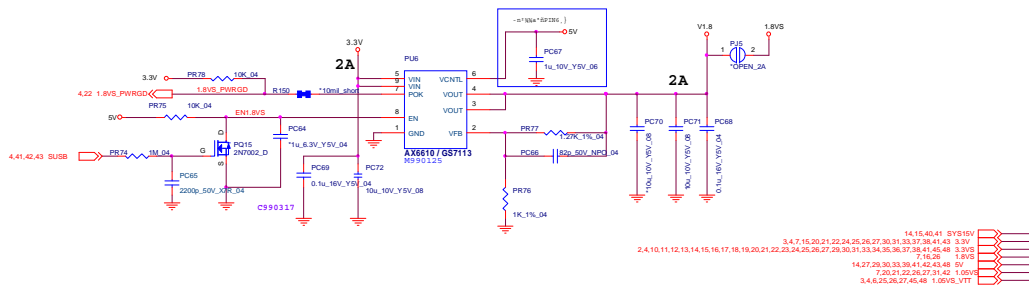
Power 1.5V/VTT_MEM

Sheet 43 of 61
Power 1.5V/
VTT_MEM



Power 1V, 1.8VS

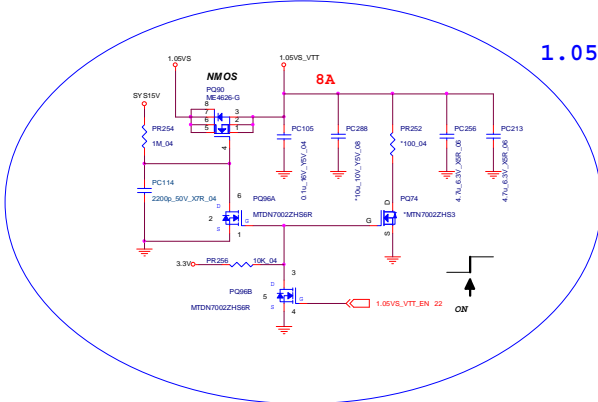
1.8VS



Sheet 44 of 61
Power 1V, 1.8VS

D04
1.05VS_VTT re-design

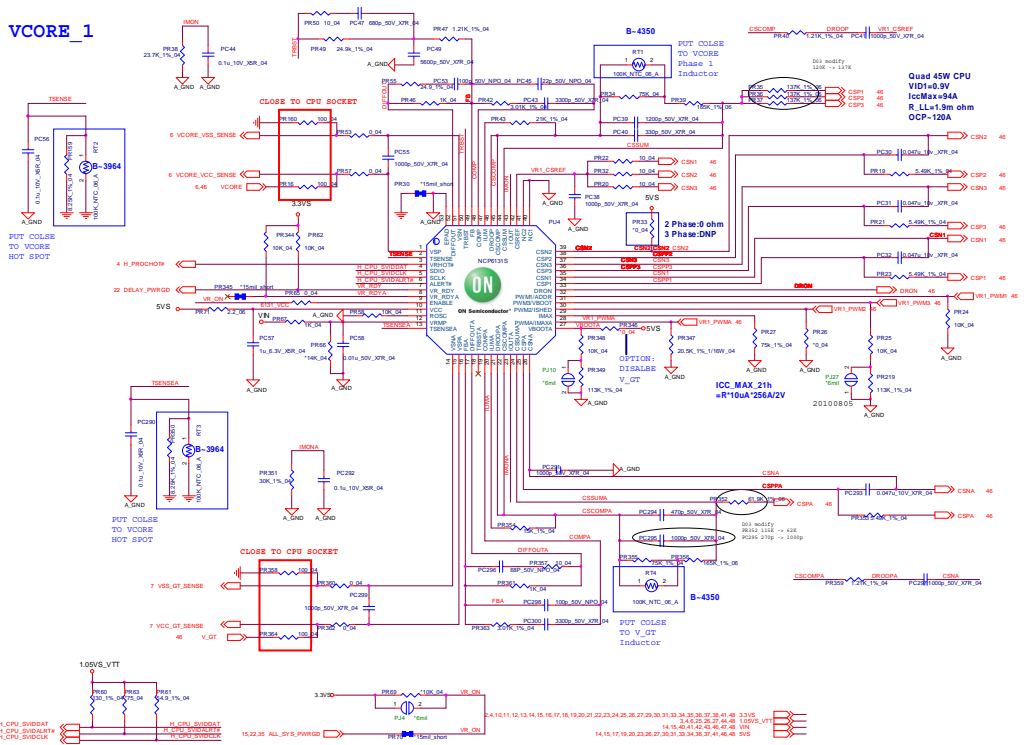
1.05VS_VTT



Schematic Diagrams

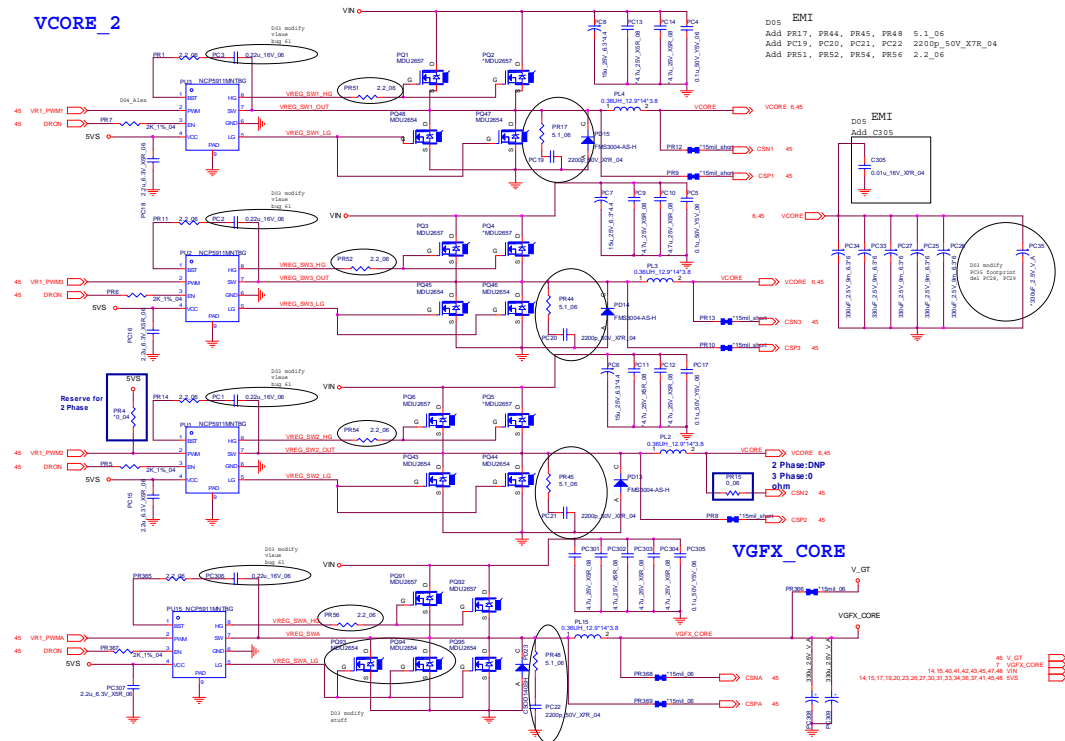
Power V-Core 1

Sheet 45 of 61
Power V-Core 1



B - 46 Power V-Core 1

Power V-Core 2



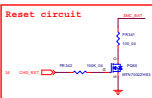
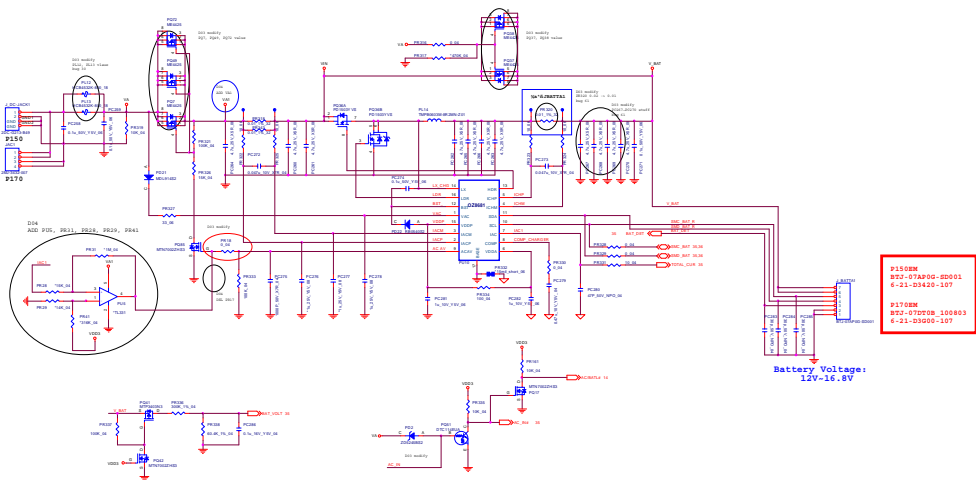
Sheet 46 of 61
Power V-Core 2

B.Schematic Diagrams

Schematic Diagrams

AC_In, Charger

Sheet 47 of 61
AC_In, Charger



- 1) All ground points should be connected to the same network (GND, VAG, VPS, LX, VDG, VBATT)
- 2) Use proper connections for RS, SR (Resistor force and resistor force)
- 3) RS and SR are dummy resistors, for resistor protection only (never in single point connection between GND & GND)
- 4) Resistor TO GND is equivalent to SOT-23
- 5) Resistor SOT-23 is a single hole axial part
- 6) All resistors, capacitors and semiconductor parts (SMD)
- 7) Dimensions, and test points are axial devices

P1500M
REV: 07/09/00-0001
4-21-03420-107

P1700M
REV: 07/09/00-100803
4-21-03000-107

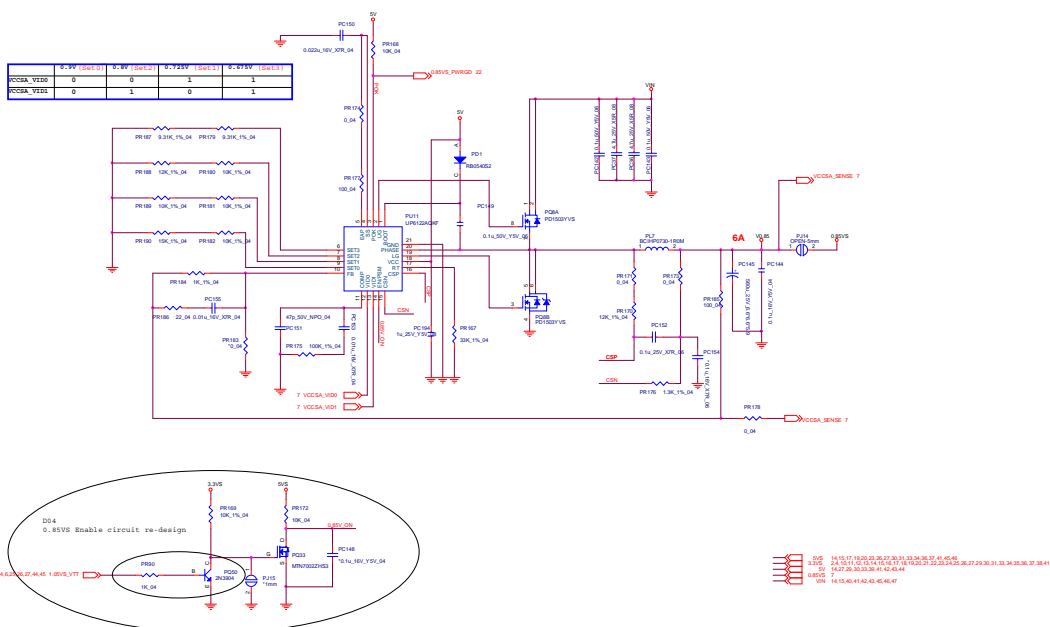
Battery Voltage:
12V-16.8V



Power 0.85VS

Sheet 48 of 61
Power 0.85VS

B. Schematic Diagrams

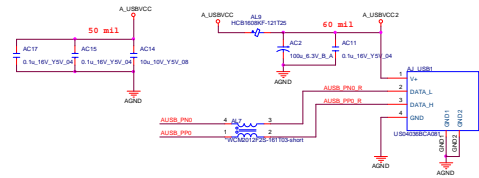


Schematic Diagrams

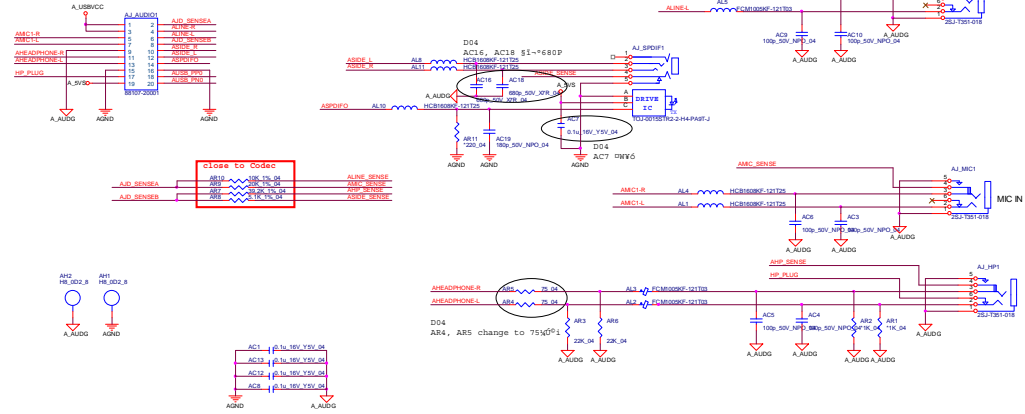
Audio Board

Sheet 49 of 61
Audio Board

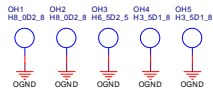
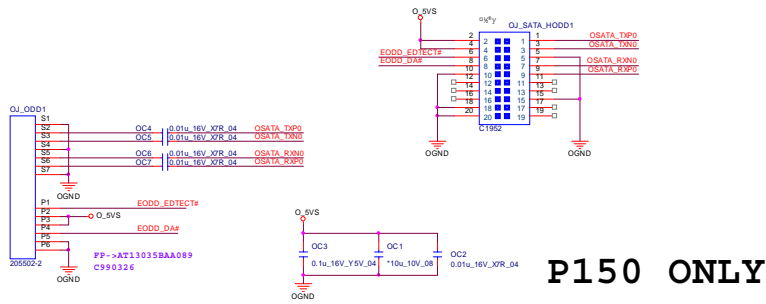
USB PORT



AUDIO JACK



P150 ODD Board

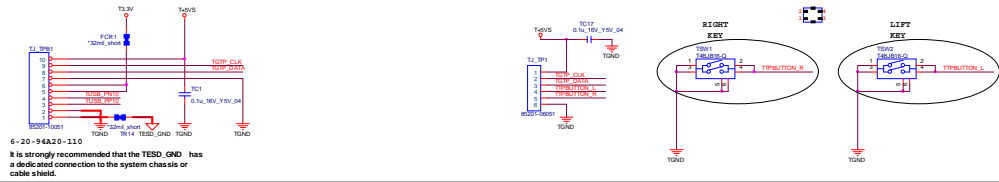


Sheet 50 of 61
P150 ODD Board

B.Schematic Diagrams

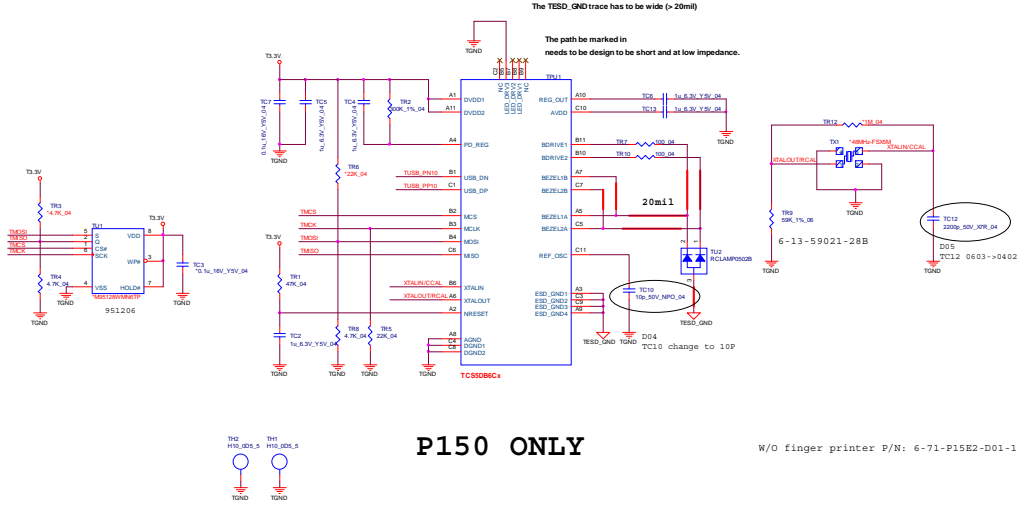
Schematic Diagrams

P150 Click Board



Sheet 51 of 61
P150 Click Board

B. Schematic Diagrams

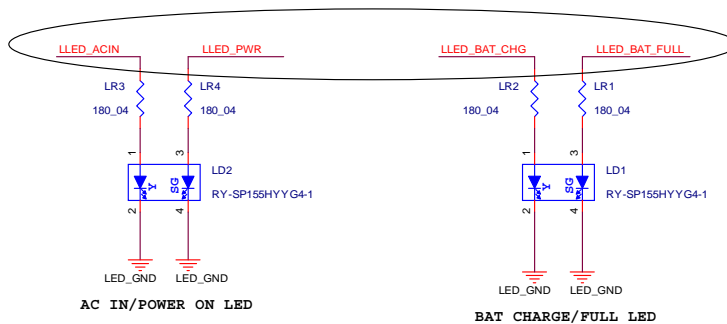
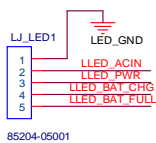


P150 LED 1 Board

P17&P15

Sheet 52 of 61
P150 LED 1 Board

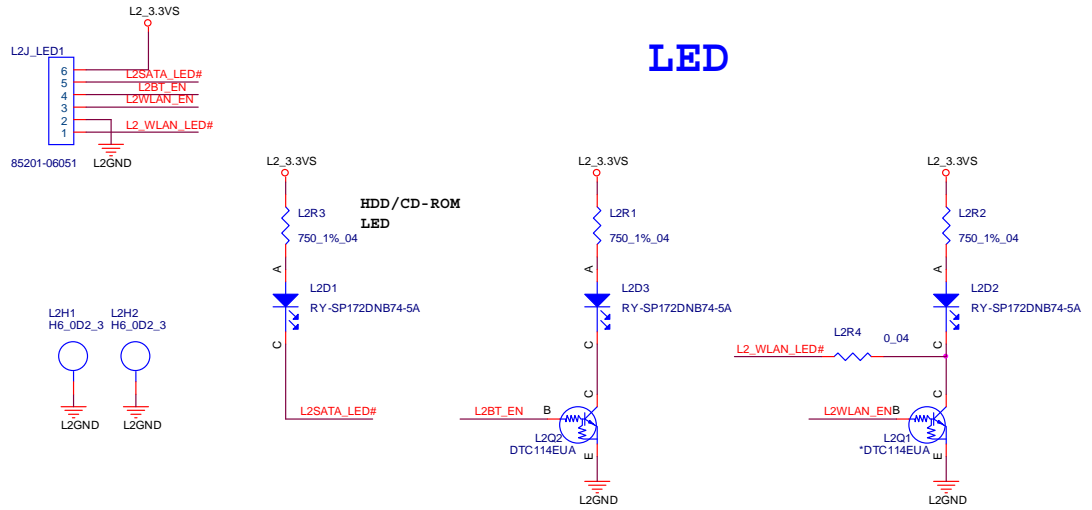
B.Schematic Diagrams



Schematic Diagrams

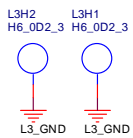
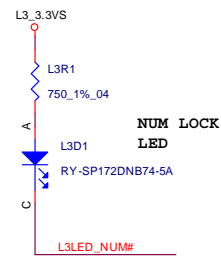
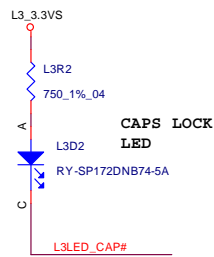
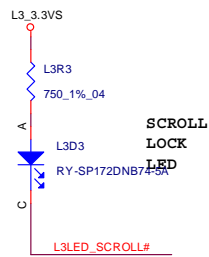
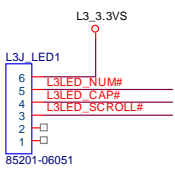
P150 LED 2 Board

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P150 LED 2 Board



LED

P150 LED 3 Board



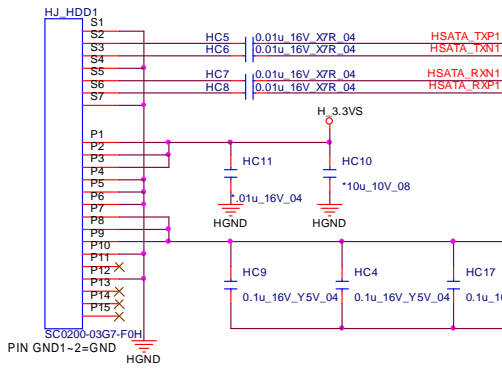
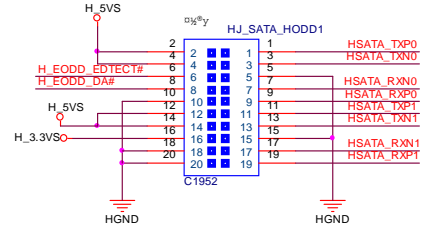
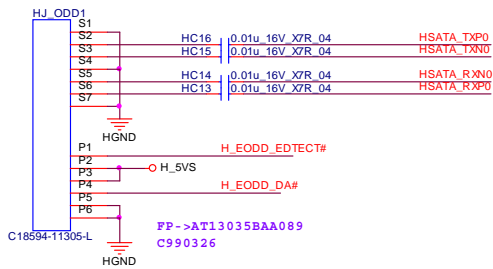
Sheet 54 of 61
P150 LED 3 Board

B.Schematic Diagrams

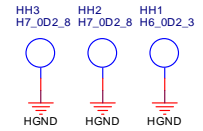
Schematic Diagrams

P170 HDD & ODD Board

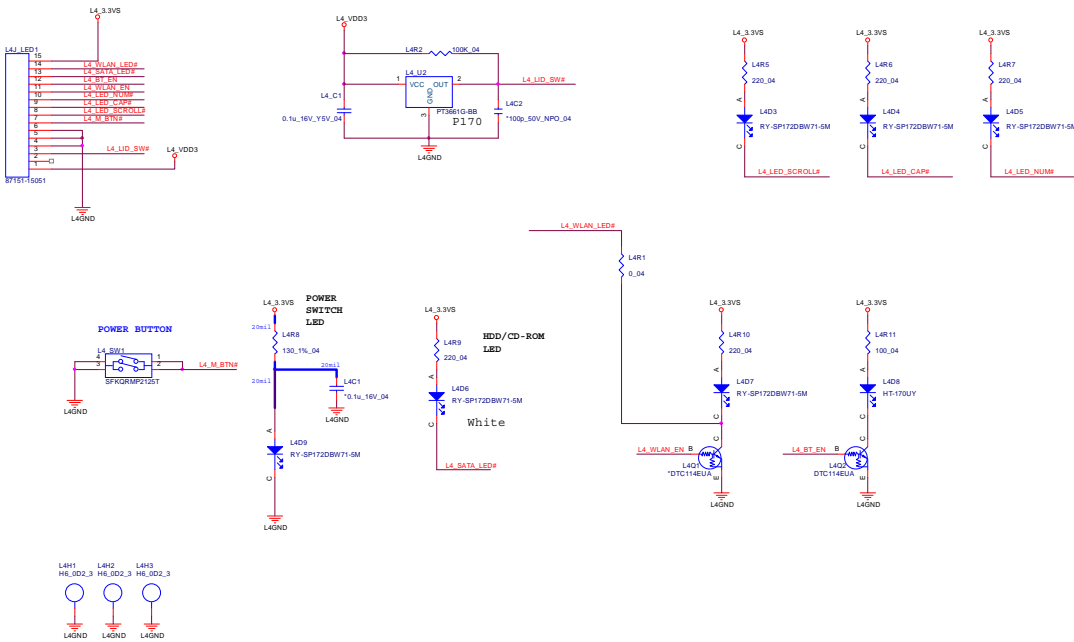
Sheet 55 of 61
P170 HDD& ODD
Board



P170 ONLY



P170 LED Board

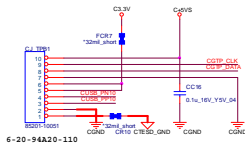


Sheet 56 of 61
P170 LED Board

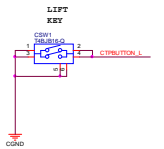
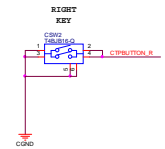
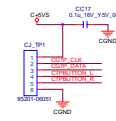
B.Schematic Diagrams

Schematic Diagrams

P170 Click Board

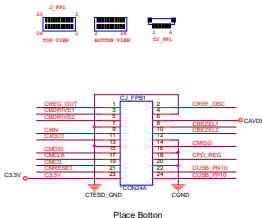


It is strongly recommended that the TEST_GND has a dedicated connection to the system chassis or cable shield.

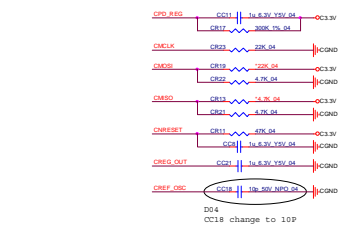
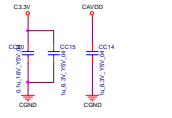


Sheet 57 of 61
P170 Click Board

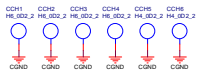
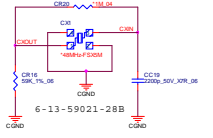
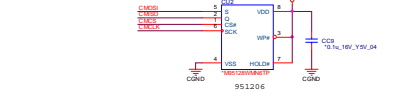
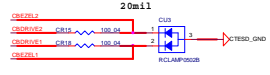
P170 ONLY



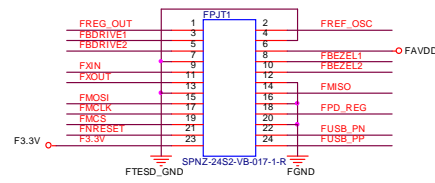
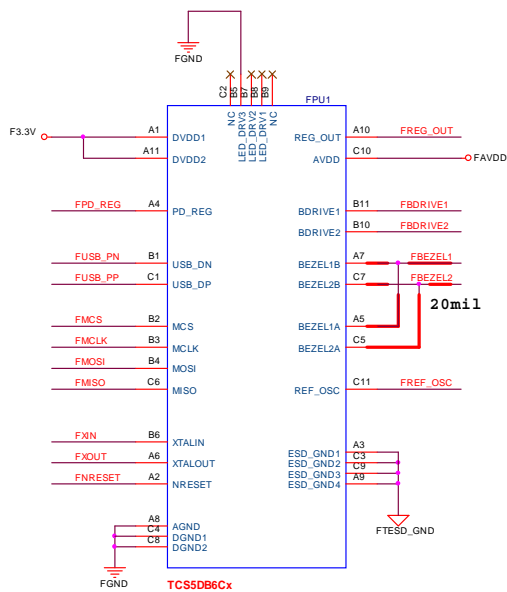
Place Bottom



D04
OC18 change to 10P



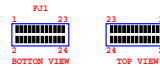
P170 Fingerprint Board



6-21-41710-212

Sheet 58 of 61
P170 Fingerprint Board

P170 ONLY

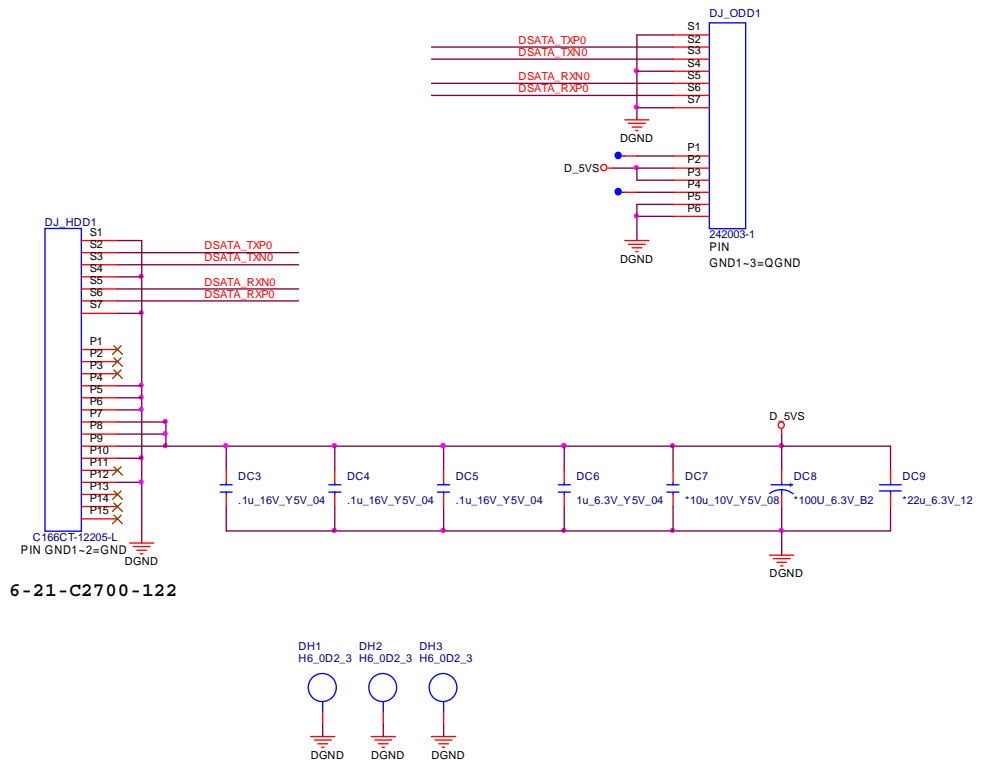


B.Schematic Diagrams

Schematic Diagrams

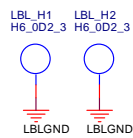
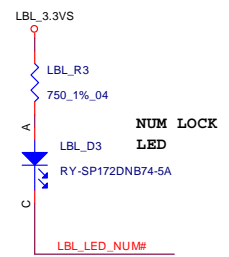
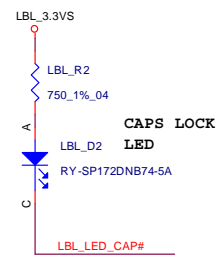
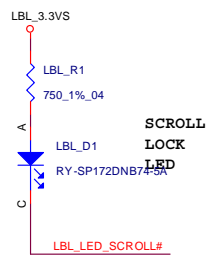
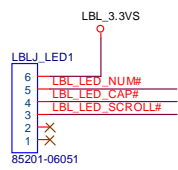
P150 HDD Board

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P150 HDD Board



Schematic Diagrams

P150 LED Board_L

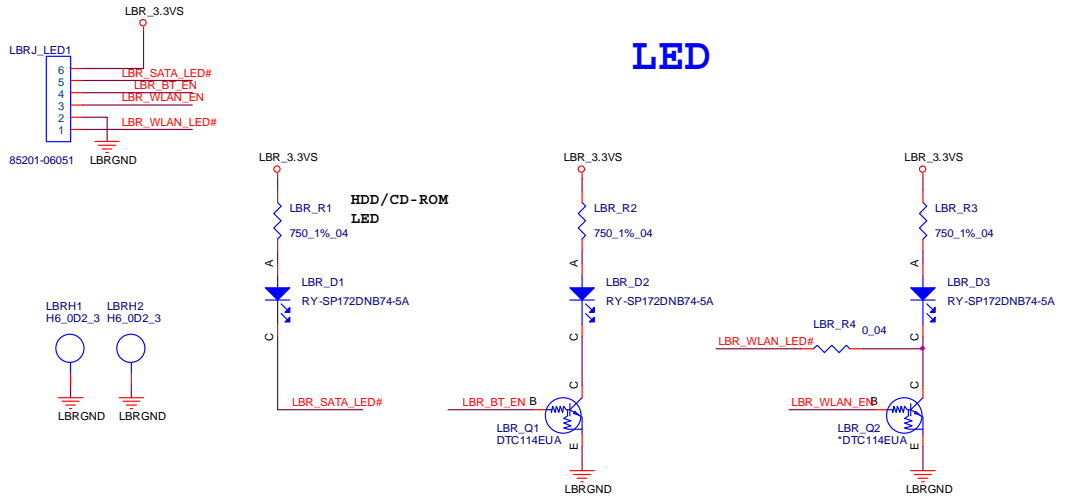


B. Schematic Diagrams
Sheet 60
P150 LED

Schematic Diagrams

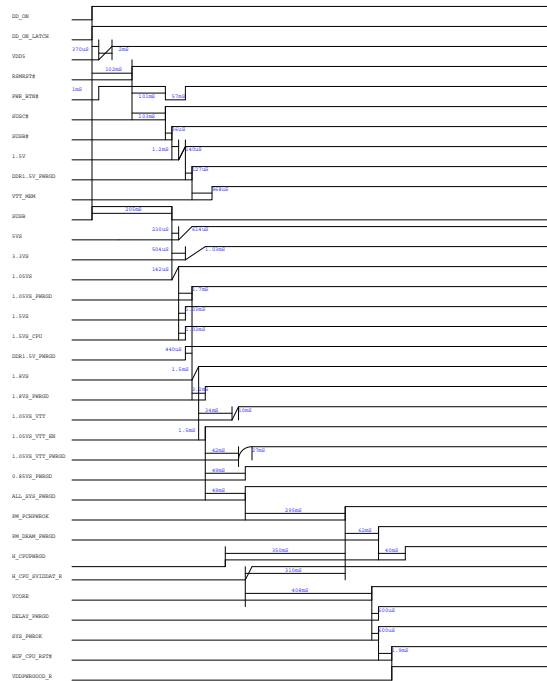
P150 LED Board_R

Sheet 61 of 61
P150 LED Board_R



Power on Sequence

P150EM_D02 POWER on SEQUENCE



B. Schematic Diagrams
Sheet 62
Power
Sequence

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 **F4** to save any changes you have made and exit the BIOS to restart the computer.



BIOS Version

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

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

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

BIOS Update

Use the flash tools to update the BIOS

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

```
C:\> Flash.bat
```

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

Restart the computer (booting from the HDD)

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

Your computer is now running normally with the updated BIOS

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