

SERVICE MANUAL

P370EM / P370EM3

notebook



Notebook Computer

P370EM / P370EM3

Service Manual

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About this Manual

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

It is organized to allow you to look up basic information for servicing and/or upgrading components of the *P370EM* / *P370EM3* 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

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 (Full Range AC/DC Adapter – AC Input 100 - 240V, 50 - 60Hz, DC Output 19.5V, 16.9A (330W) minimum).

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

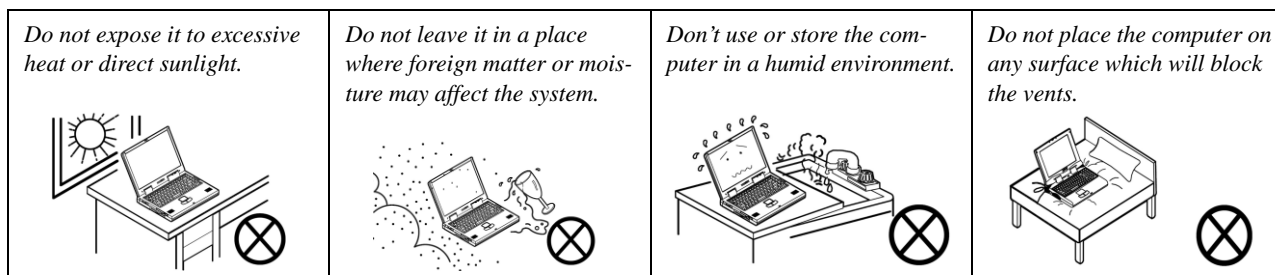
Instructions for Care and Operation

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

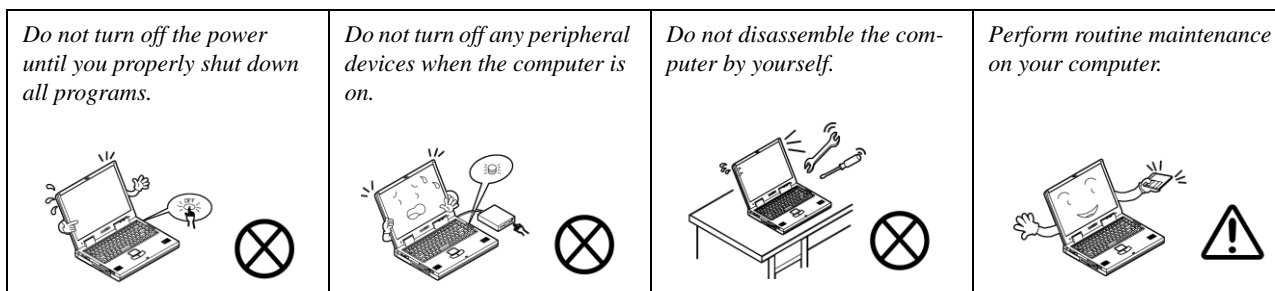
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



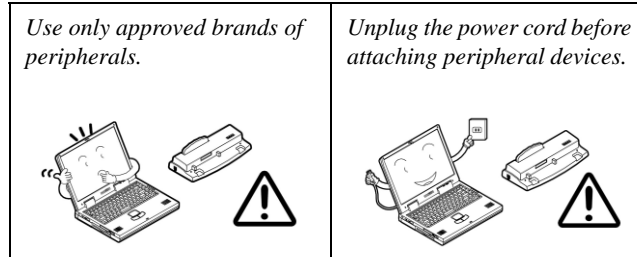
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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



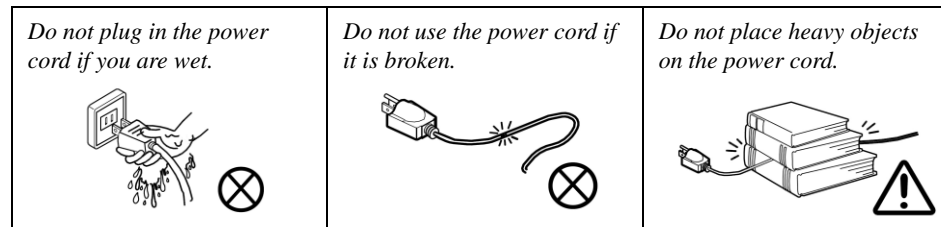
- 4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
- 5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

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



Power Safety Warning

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

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

Battery Precautions

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

Battery Guidelines

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

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




Battery Disposal

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

Caution

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

Battery Level

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

Related Documents

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

User's Manual on CD

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, and place the computer on a stable surface.
2. Insert the battery and make sure it is locked in position.
3. Securely attach any peripherals you want to use with the notebook (e.g. keyboard and mouse) to their ports.
4. 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.
5. Use one hand to raise the lid/LCD to a comfortable viewing angle (it is preferable not to exceed 135 degrees); use the other hand to support the base of the computer (**Note: Never** lift the computer by the lid/LCD).
6. Raise the lid/LCD to a comfortable viewing angle, and press the power button.

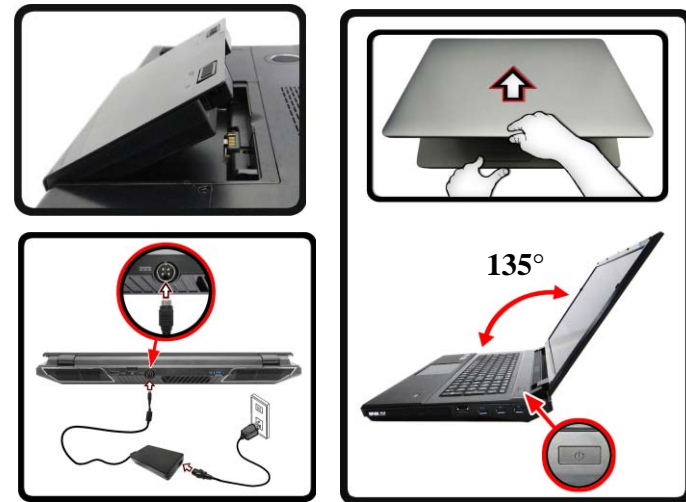


Figure 1
Computer with AC/DC Adapter Plugged-In /
Opening the Lid/LCD

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **P370EM / P370EM3** 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 **P370EM / P370EM3** 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.

System Specifications

Processor Options

Intel® Core™ i7 Processor

i7-3940XM (3.00GHz), i7-3920XM (2.90GHz)
8MB L3 Cache, 22nm, DDR3-1600MHz, TDP 55W

i7-3840QM (2.80GHz), i7-3820QM (2.70GHz)
8MB L3 Cache, 22nm, DDR3-1600MHz, TDP 45W

i7-3740QM (2.70GHz), i7-3720QM (2.60GHz), i7-3610QM (2.30GHz)
6MB L3 Cache, 22nm, DDR3-1600MHz, TDP 45W

LCD

P370EM:

17.3" (43.94cm) FHD LCD

P370EM3:

17.3" (43.94cm) FHD (1920 * 1080), 120Hz
Support 3D solution with NV 3D VISION Kit (Shutter Glasses Only)
Built-in 3D IR Emitter

Memory

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

Memory Expandable up to 32GB

Core Logic

Intel® HM77 Chipset

BIOS

AMI BIOS (48Mb SPI Flash-ROM)

Security

Security (Kensington® Type) Lock Slot
BIOS Password
Fingerprint Reader Module
TPM 1.2

Video Adapter

P370EM:

AMD Radeon™ HD 7970M PCIe Video Card

2GB GDDR5 Video RAM on board
Microsoft DirectX® 11 (2nd Generation) Compatible
Supports AMD CrossFireX Technology

nVIDIA® GeForce GTX 670M PCIe Video Card

1.5GB GDDR5 Video RAM on board
Microsoft DirectX® 11 Compatible
Supports nVIDIA® SLI Technology

nVIDIA® GeForce GTX 670MX PCIe Video Card

3GB GDDR5 Video RAM on board
Microsoft DirectX® 11 Compatible
Supports nVIDIA® SLI Technology

nVIDIA® GeForce GTX 680M PCIe Video Card

4GB GDDR5 Video RAM on board
Microsoft DirectX® 11 Compatible
Supports nVIDIA® SLI Technology

nVIDIA® Quadro K5000M PCIe Video Card

4GB GDDR5 Video RAM on board
Microsoft DirectX® 11 Compatible
OpenGL 4.1 Compatible

P370EM3:

nVIDIA® GeForce GTX 680M PCIe Video Card

4GB GDDR5 Video RAM on board
Microsoft DirectX® 11 Compatible
Supports nVIDIA® SLI Technology

Keyboard

Illuminated Full-Size "WinKey" Keyboard (with W/A/S/D Gaming Keys and Numeric keypad)

Pointing Device

Built-in ClickPad (with Multi Gesture Functionality)

Audio

High Definition Audio Compliant Interface
S/PDIF Digital Output
Two Speakers
One Sub Woofer
Built-In Microphone
Sound Blaster® X-Fi™ MB2

Interface

Four USB 3.0 Ports (Including one AC/DC Powered USB port)
One USB 2.0 Port
One eSATA Port (USB 2.0 Port Combined)
One HDMI-Out Port
One DisplayPort (Version is Video Controller Dependent)
One S/PDIF Out Jack
One Headphone/Speaker-Out Jack
One Microphone-In Jack
One Line-In Jack
One RJ-45 LAN Jack
One DC-In Jack

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

Storage

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

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

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

Mini-Card Slots

Slot 1 for **WLAN** Module or **Combo WLAN and Bluetooth** Module

Slot 2 for mSATA **SSD**

Card Reader

Embedded Multi-In-1 Push-Push Card Reader

MMC (MultiMedia Card) / RS MMC

SD (Secure Digital) / Mini SD / SDHC/ SDXC

MS (Memory Stick) / MS Pro / MS Duo

Communication

Built-In Giga Base-TX Ethernet LAN

(Factory Option) 2.0M FHD PC Camera Module

(Factory Option) Bluetooth 2.1 + EDR 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 **(802.11b/g/n)** + Bluetooth

4.0

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

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 Smart Lithium-Ion Battery Pack, 89.21WH

Full Range AC/DC Adapter

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

DC Output: 19.5V, 16.9A **(330W)**

Dimensions & Weight

419mm (w) * 293mm (d) * 39.3 - 49.7mm (h)

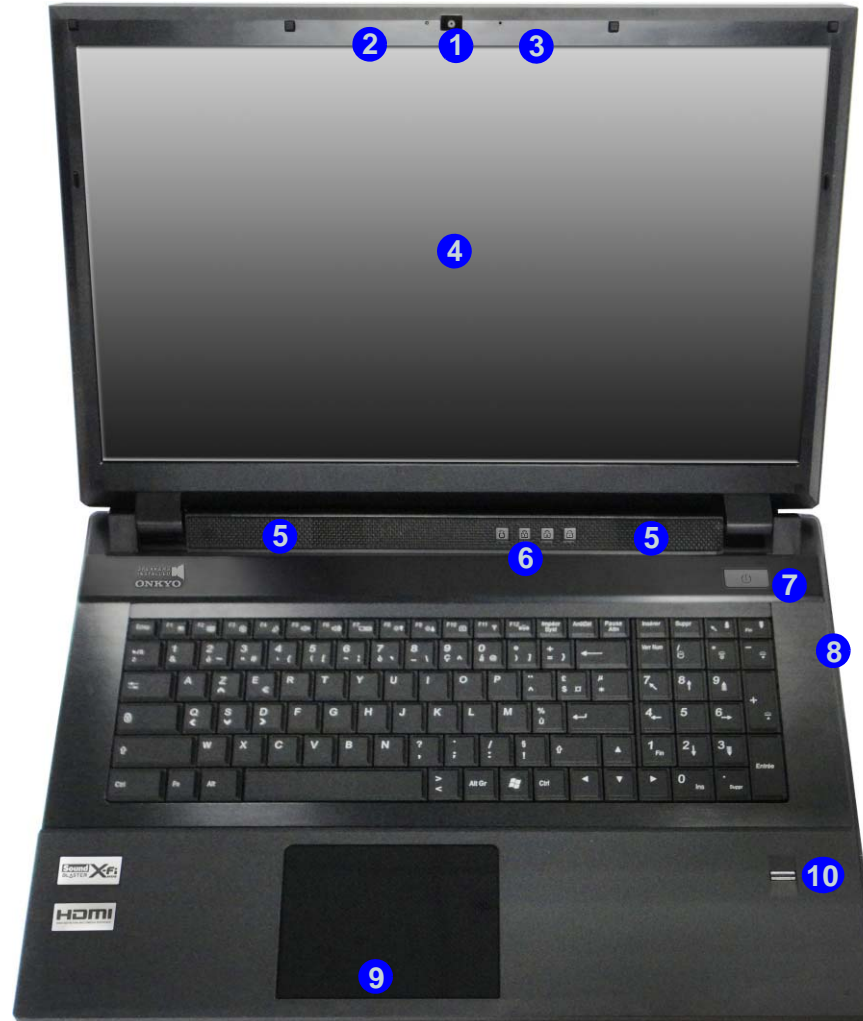
Around 3.9kg with 1 Video Card, Battery and ODD

Introduction

Figure 1
Top View

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

External Locator - Top View with LCD Panel Open



External Locator - Front & Right side Views



Figure 2
Front Views

1. LED Power Indicators

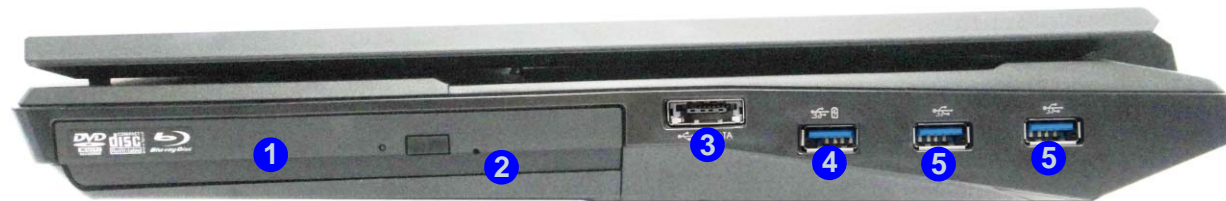


Figure 3
Right Side Views

1. Optical Device Drive Bay
2. Emergency Eject Hole
3. Combined eSATA/USB 2.0 Port
4. Powered USB 3.0 Port
5. 2 * USB 3.0 Ports

Introduction

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. Security Lock Slot
2. RJ-45 LAN Jack
3. Multi-In-1 Card Reader
4. Line-In Jack
5. S/PDIF-Out Jack
6. Microphone-In Jack
7. Headphone-Out Jack



Figure 5
Rear View

1. Fan Outlet/Intake
2. HDMI-Out Port
3. Display Port
4. DC-In Jack
5. 1 * USB 3.0 Port



External Locator - Bottom View

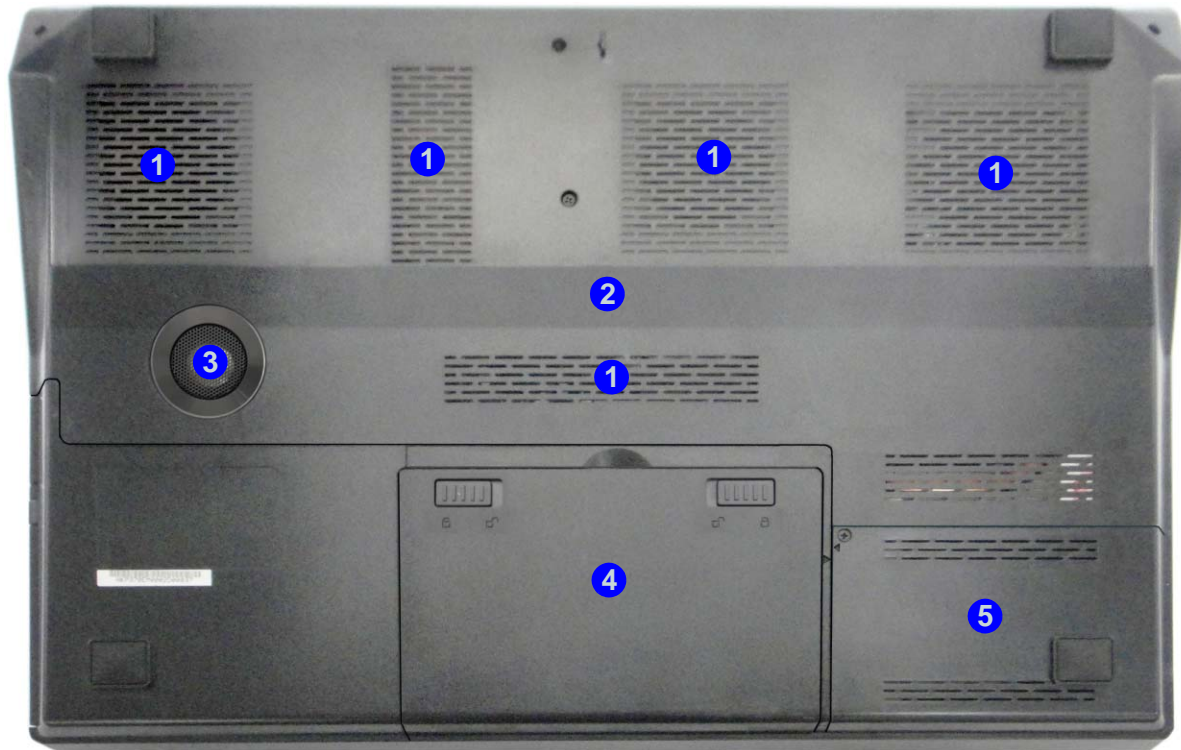


Figure 6
Bottom View

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



Overheating

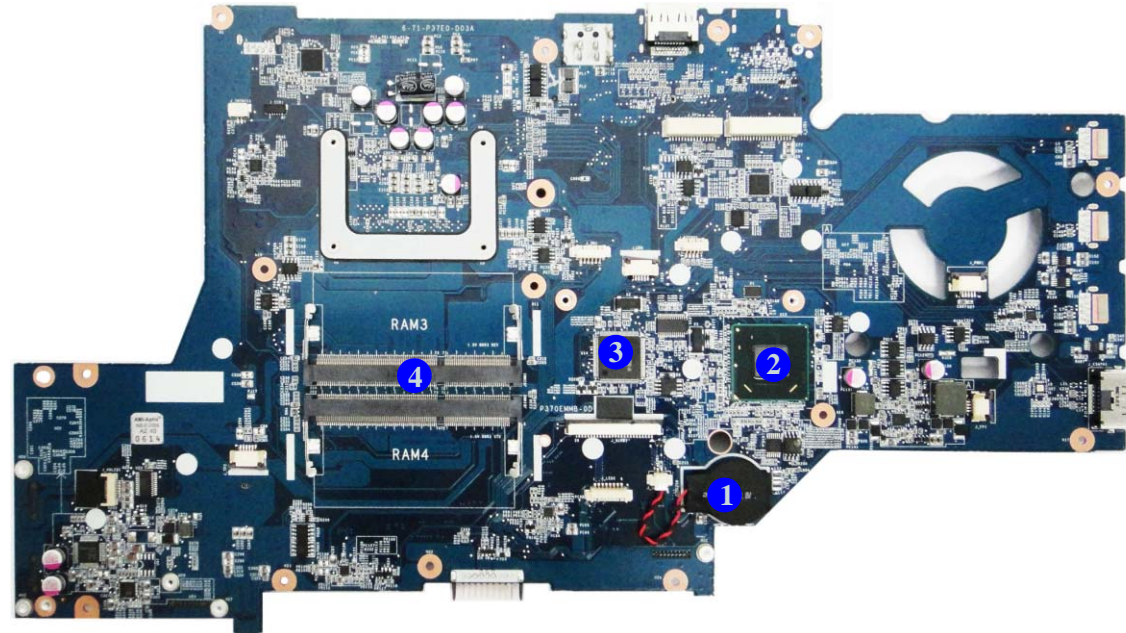
To prevent your computer from overheating make sure nothing blocks the vent/fan intakes while the computer is in use.

Introduction

Figure 7
**Mainboard Top
Key Parts**

1. CMOS Battery
2. Platform Controller Hub
3. ITE
4. Memory Slots DDR3 So-DIMM

Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

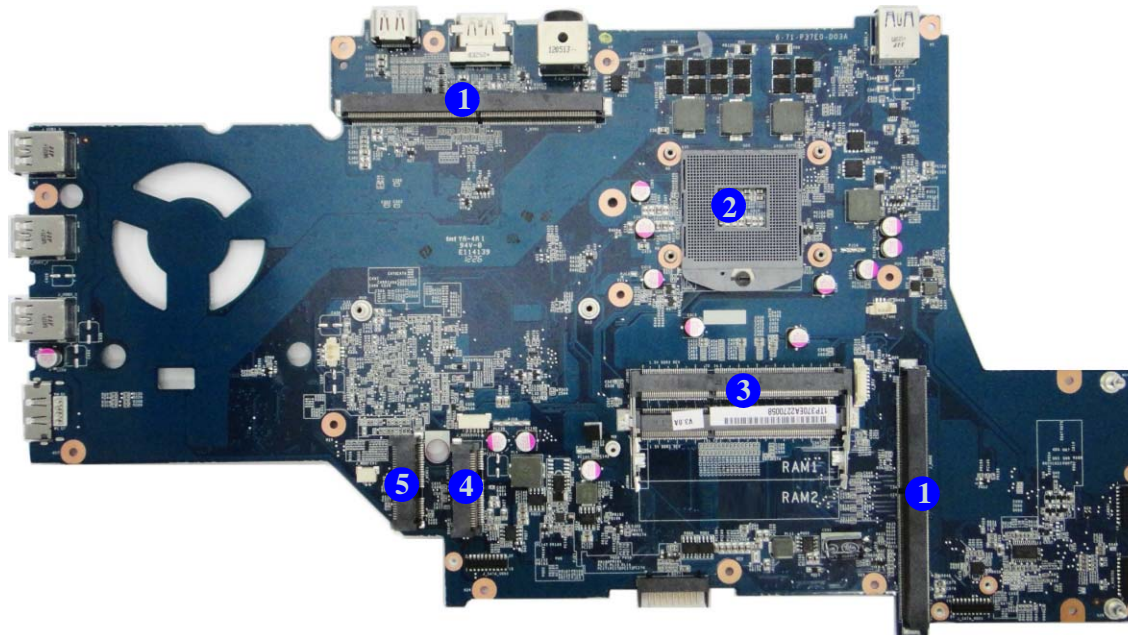


Figure 8
**Mainboard Bottom
Key Parts**

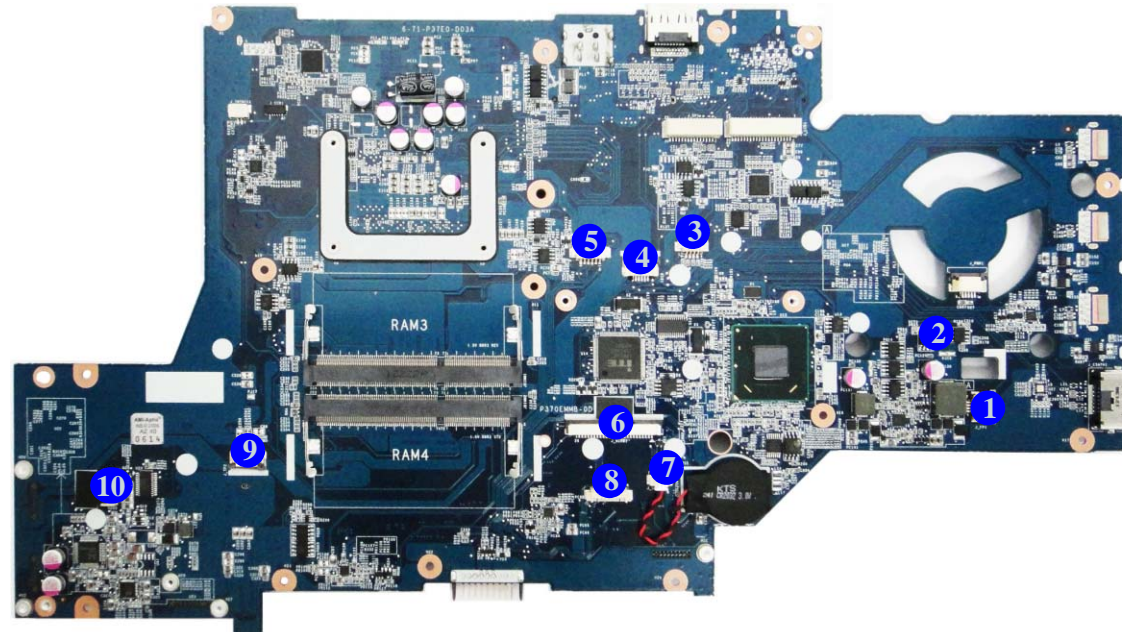
1. VGA Sockets
2. CPU Socket
3. Memory Slots DDR3 So-DIMM
4. Mini-Card Connector (SSD Module)
5. Mini-Card Connector (WLAN/3G Module)

Introduction

Figure 9
**Mainboard Top
Connectors**

Mainboard Overview - Top (Connectors)

1. Fingerprint Cable Connector
2. Power Cable Connector
3. Stereo Speaker Connector
4. LED Connector
5. 3D Emitter Cable Connector
6. Keyboard Cable Connector
7. CMOS Battery Connector
8. LED Connector
9. Touch Pad Connector
10. Keyboard LED Cable Connector



Mainboard Overview - Bottom (Connectors)

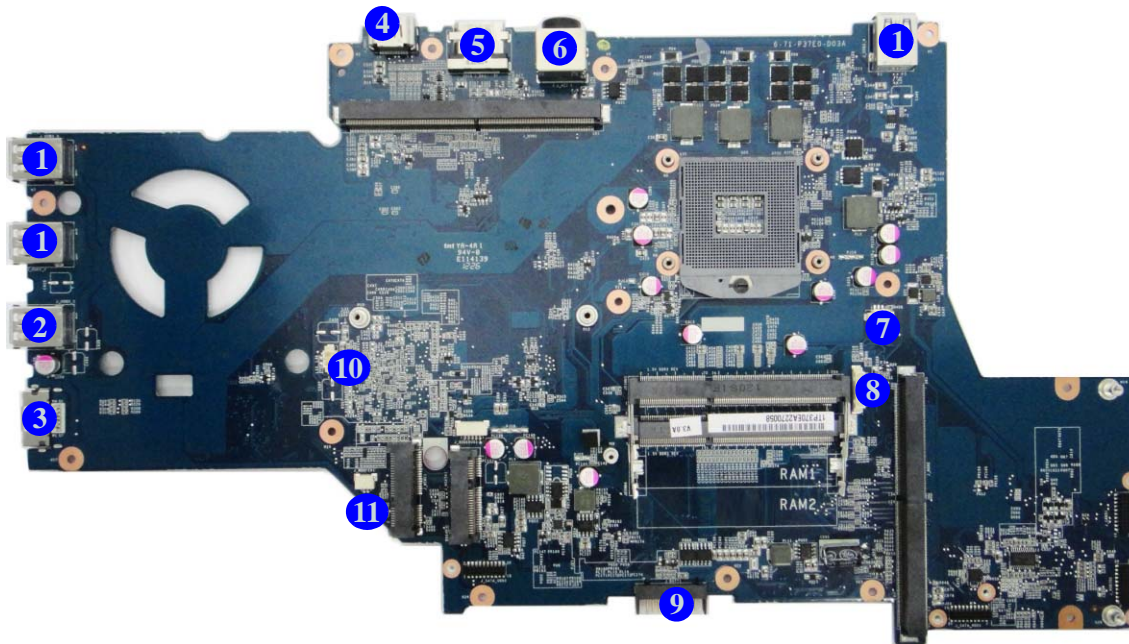


Figure 10
**Mainboard Bottom
Connectors**

1. USB 3.0 Port
2. Powered USB 3.0 Port
3. eSATA/USB 2.0 Port
4. HDMI-Out Port
5. Display Port
6. DC-In Jack
7. CPU Fan Connector
8. Bluetooth Cable Connector
9. Battery Connector
10. VGA Fan Connector
11. Subwoofer Speaker Connector


Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the *P370EM / P370EM3* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

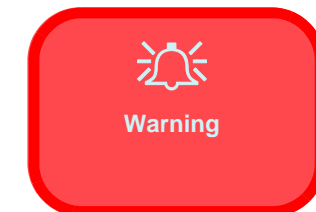
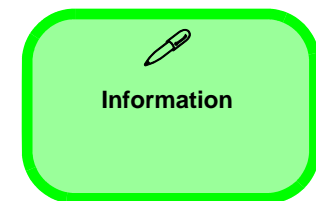
We suggest you completely review any procedure before you take the computer apart.

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

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

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

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



Disassembly

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

Maintenance Tools

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

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

Connections

Connections within the computer are one of four types:

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

Maintenance Precautions

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

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

Cleaning

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

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



Power Safety Warning

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

Disassembly Steps

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

To remove the Battery:

1. Remove the battery *page 2 - 5*

To remove the Optical Device:

1. Remove the battery *page 2 - 5*
2. Remove the Optical device *page 2 - 6*

To remove the HDD:

1. Remove the battery *page 2 - 5*
2. Remove the HDD *page 2 - 7*

To remove the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 10*

To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 11*

To remove and install the Processor:

1. Remove the battery *page 2 - 5*
2. Remove the processor *page 2 - 14*
3. Install the processor *page 2 - 16*

To remove the VGA card:

1. Remove the battery *page 2 - 5*
2. Remove the VGA card *page 2 - 17*
3. Install the VGA card *page 2 - 21*

To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the Keyboard *page 2 - 10*
3. Remove the Wireless LAN *page 2 - 25*

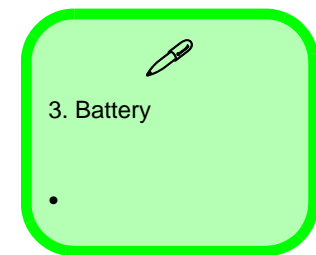
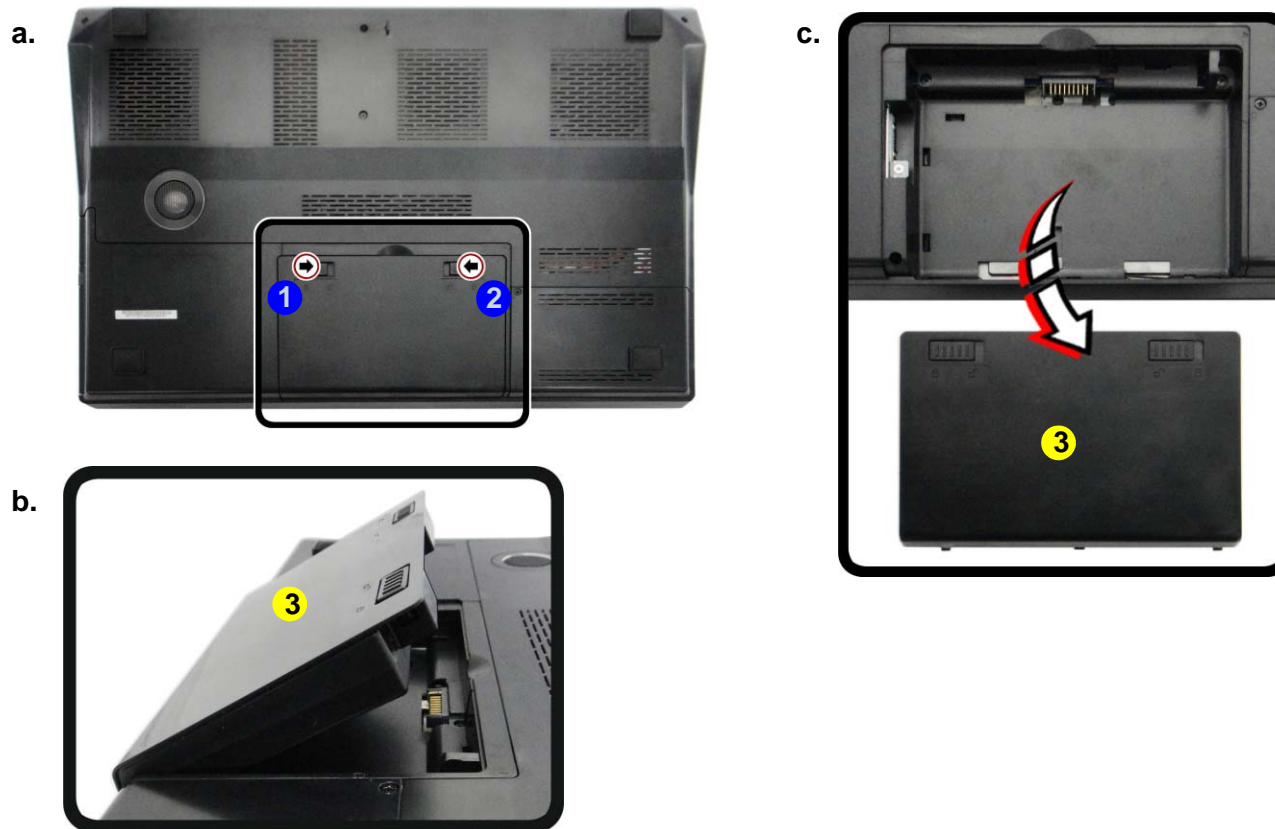
Removing the Battery

If you are confident in undertaking upgrade procedures yourself, for safety reasons it is best to remove the battery.

1. Turn the computer off, remove the AC/DC adapter and turn it over.
2. Slide the latch **1** - **2** in the direction of the arrow and carefully pull the battery **3** up.
3. Lift the battery **3** up (*Figure b*) and out of the battery bay.

Figure 1
Battery Removal

- a. Slide the latch and hold it in place.
- b. Pull the battery up.
- c. Lift the battery out of the bay as indicated.



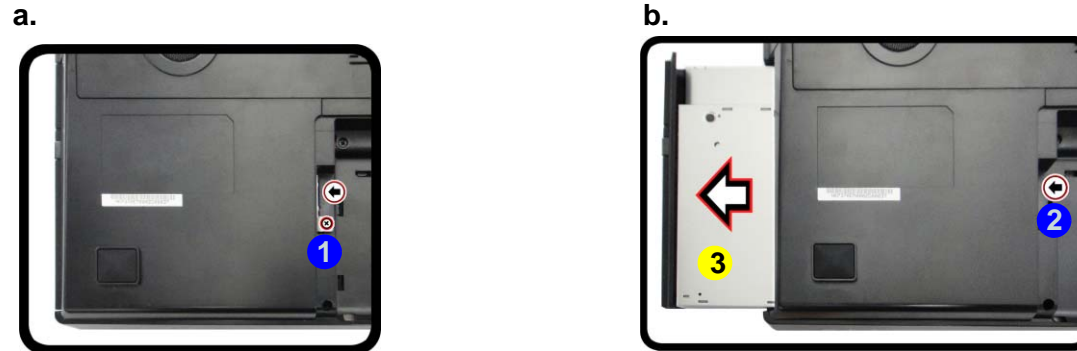
Disassembly

Figure 2
**Optical Device
Removal**

- Remove the screw.
- Push the optical device out of the computer.

Removing the Optical (CD/DVD) Device

- Turn off the computer, and turn it over and remove the battery ([page 2 - 5](#)).
- Remove the screw at point **1**, and use a screwdriver to carefully push out the optical device at point **2**.
- Push the optical device drive **3** out of the bay and reverse the process to install the new device.



Blu-Ray Device Bezel Removal

Note that some Blu-Ray modules (e.g. Pioneer) have a small piece of mylar inserted in the left side (as viewed front on) of the bezel cover; in order to prevent the bezel cover of the module from being removed accidentally. If you need to replace the bezel cover, you will need to use a screwdriver to ease out and remove the mylar before attempting to remove the bezel cover. You will need to re-insert the mylar when replacing the bezel cover.



- Optical Device
 - 1 Screw

Removing the Hard Disk Drive

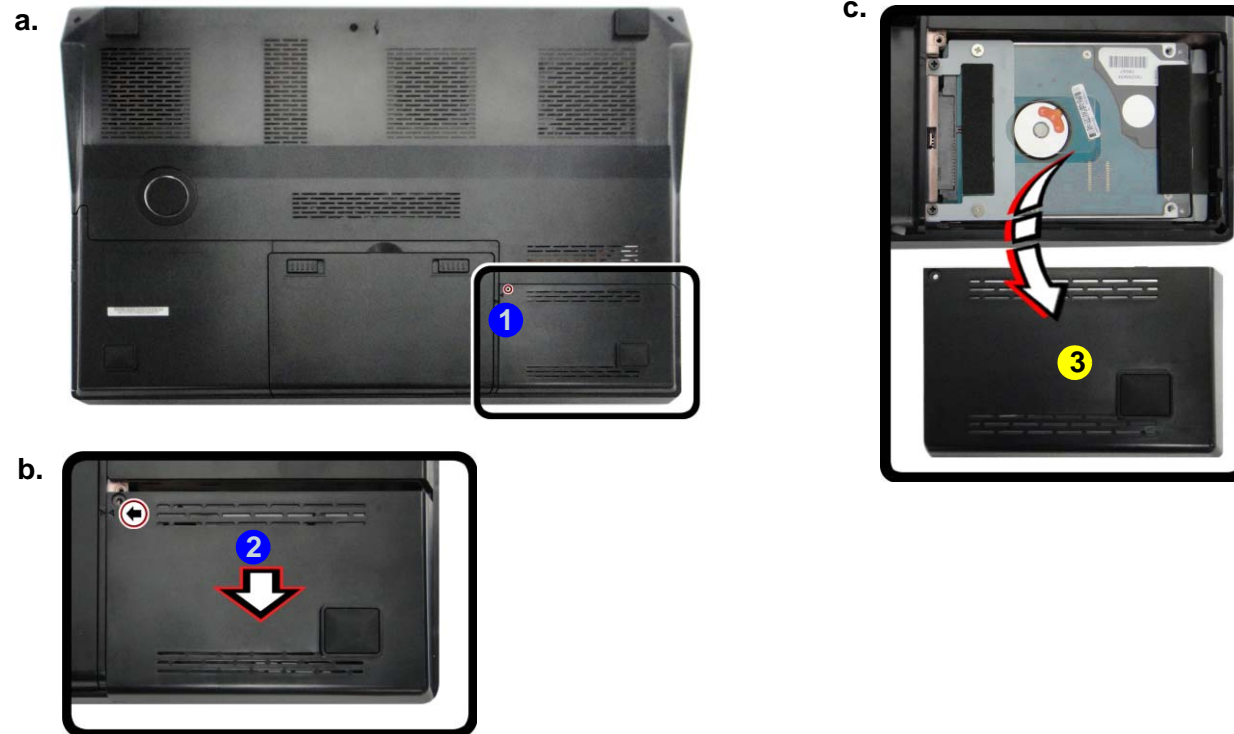
The hard disk drive is mounted in a removable case and can be taken out to accommodate other 2.5" SATA hard disk drives with a height of 9.5mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**)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


Hard Disk Upgrade Process

1. Turn off the computer, and turn it over and remove the battery ([page 2 - 5](#)).
2. Locate the Hard disk bay cover and remove the screw **1**.
3. Slide the bay cover **3** in the direction of the arrow **2**.
4. Carefully lift the bay cover **3** off the computer ([Figure 3c](#)).

Figure 3
HDD Assembly Removal

- a. Remove the screw.
- b. Slide the cover in the direction of the arrow.
- c. Remove the bay cover.





3. Hard disk Bay Cover

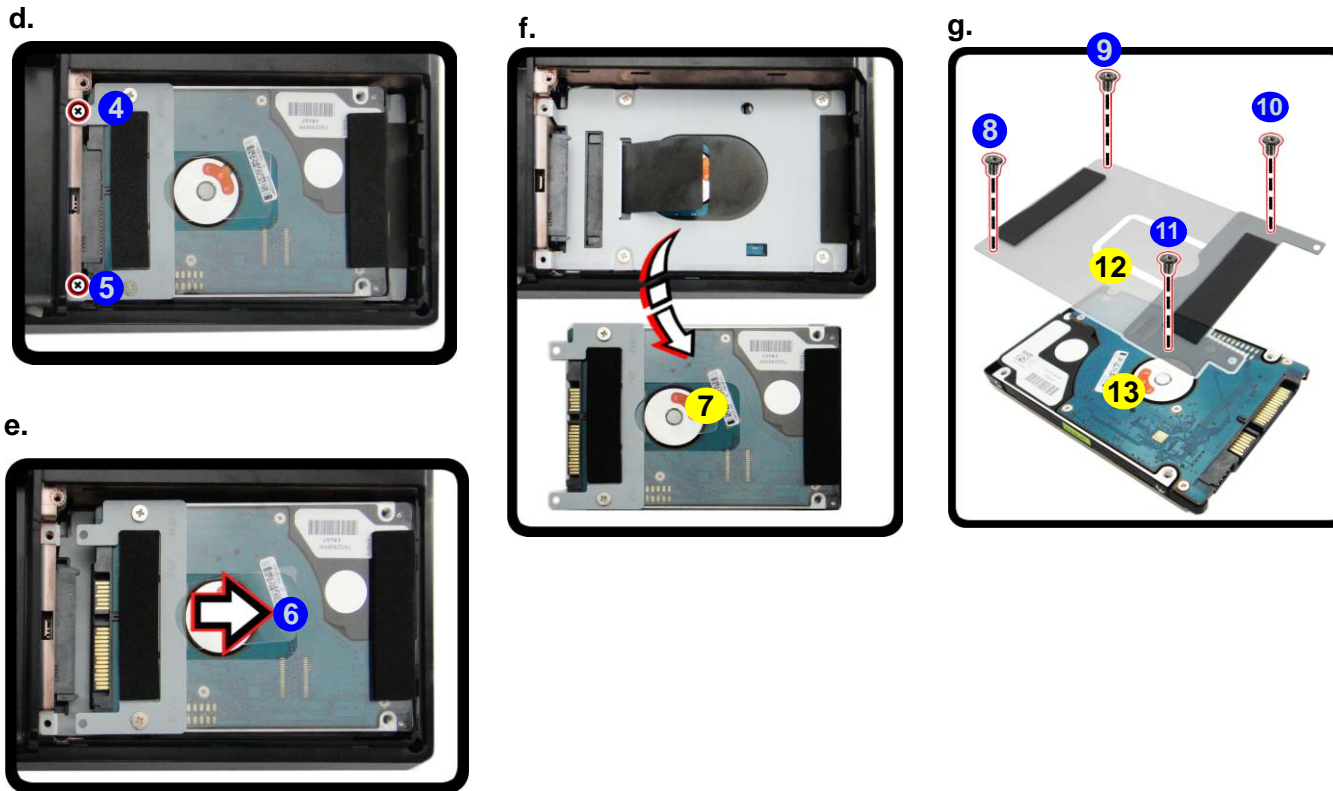
- 1 Screw

Disassembly

Figure 4 HDD Assembly Removal (cont'd.)

- d. Remove the screws.
e. Slide the HDD in the direction of the arrow.
f. Lift the hard disk assembly out of the computer.
g. Remove the screws and mylar from HDD.

5. Remove screws 4 - 5.
6. Grip the tab and slide the hard disk assembly in the direction of the arrow 6 (Figure 4e).
7. Carefully lift the hard disk assembly 7 out of the computer (Figure 4f).
8. Remove screws 8 - 11 and hard disk mylar 12 from the hard disk(s) 13 (Figure 4g).
9. Reverse the process to install a new hard disk (do not forget to replace all the screws and cover).



- 7 Hard Disk Assembly
12. Hard Disk Mylar
13. Hard Disk

- 6 Screws

Removing the Hard Disk(s) in the Secondary HDD Bay

1. Turn **off** the computer, and turn it over and remove the battery.
2. The secondary hard disk bay is located under the first hard disk.
3. Grip the tab and slide the hard disk assembly in the direction of the arrow **1** (*Figure 5a*).
4. Lift the hard disk assembly **2** out of the compartment (*Figure 5b*).
5. Remove the screws **3** - **6** to release the hard disk **8** from the case **7** (*Figure 5c*).
6. Reverse the process to install any new hard disk(s).

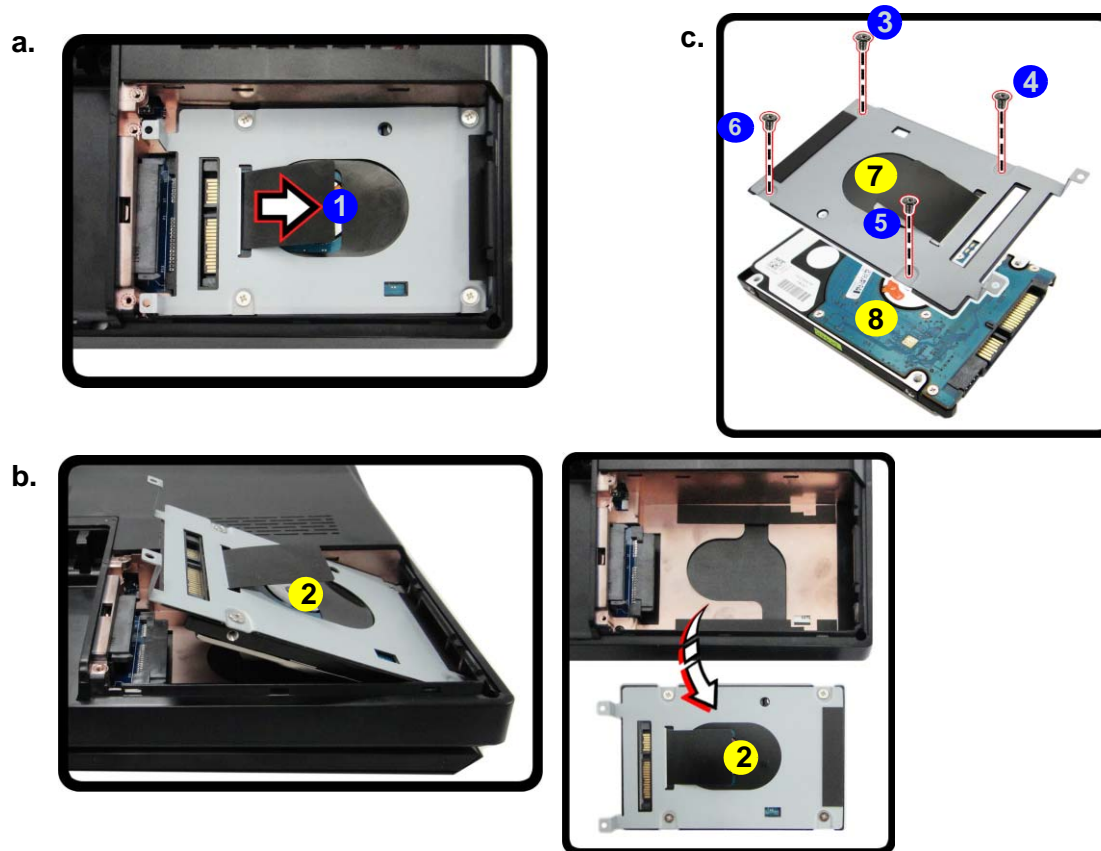



Figure 5
**Secondary HDD
Assembly Removal**

- a. Slide the secondary hard disk assembly in the direction of the arrow.
- b. Lift the secondary hard disk assembly out of the computer.
- c. Remove the screws to release the hard disk from the case.



- 2. Hard Disk Assembly
- 7. Hard Disk Case
- 8. Hard Disks
- 4 Screws

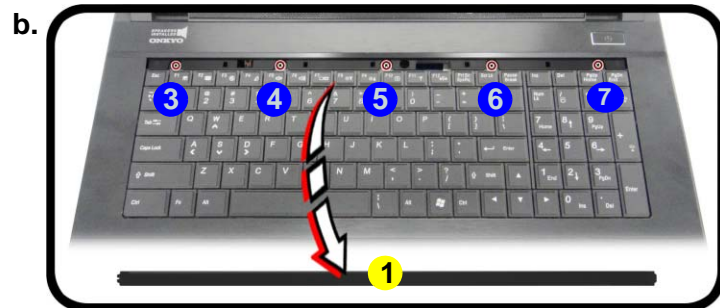
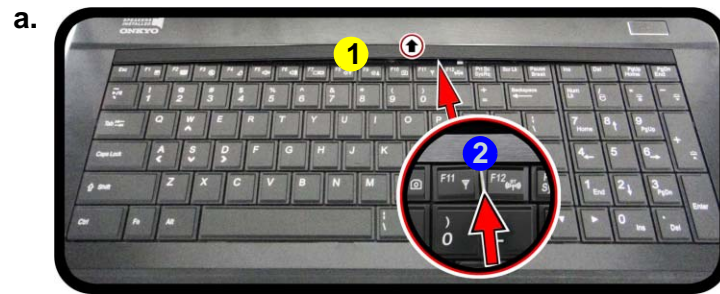
Disassembly

Figure 6
Keyboard Removal

- Unsnap the LED cover at point 2 using non-metallic instrument.
- Lift the LED cover module and remove the screws from the keyboard.
- Disconnect the cables from the locking collar.
- Remove the keyboard.

Removing the Keyboard

- Turn off the computer, and turn it over and remove the battery ([page 2 - 5](#)).
- Turn the computer over, open the Lid/LCD, and carefully unsnap up the center cover module **1** from point **2** (between F11 & F12) using non-metallic instrument.
- Lift up the center cover module **1** off the computer.
- Remove screws **3** - **7** from the keyboard.
- Carefully lift the keyboard **8** up, being careful not to bend the keyboard ribbon cable.
- Disconnect the keyboard ribbon cable **9** from the locking collar socket **10**, and the keyboard LED cable **11** from its locking collar socket **12**.
- Remove the keyboard **8**.
- Reverse the process to replace the keyboard (make sure to reconnect the keyboard cable).



- 1. Center Cover Module
- 8. Keyboard
- 5 Screws



Re-Inserting the Keyboard

When re-inserting the keyboard firstly align the keyboard tabs at the bottom of the keyboard with the slots in the case.

Removing the System Memory (RAM)

The computer has three memory sockets for 204 pin Small Outline Dual In-line Memory Modules (SO-DIMM) DDR III (DDR3) supporting 1333/1600 MHz. The main memory can be expanded up to 16GB. The total memory size is automatically detected by the POST routine once you turn on your computer.

Primary System Memory Upgrade Process

1. Turn off the computer, and turn it over to remove the battery ([page 2 - 5](#)).
2. Remove screws **1** - **4** and component bay cover **5**.
3. The RAM module will be visible at point **6** on the mainboard ([Figure 7b](#)).

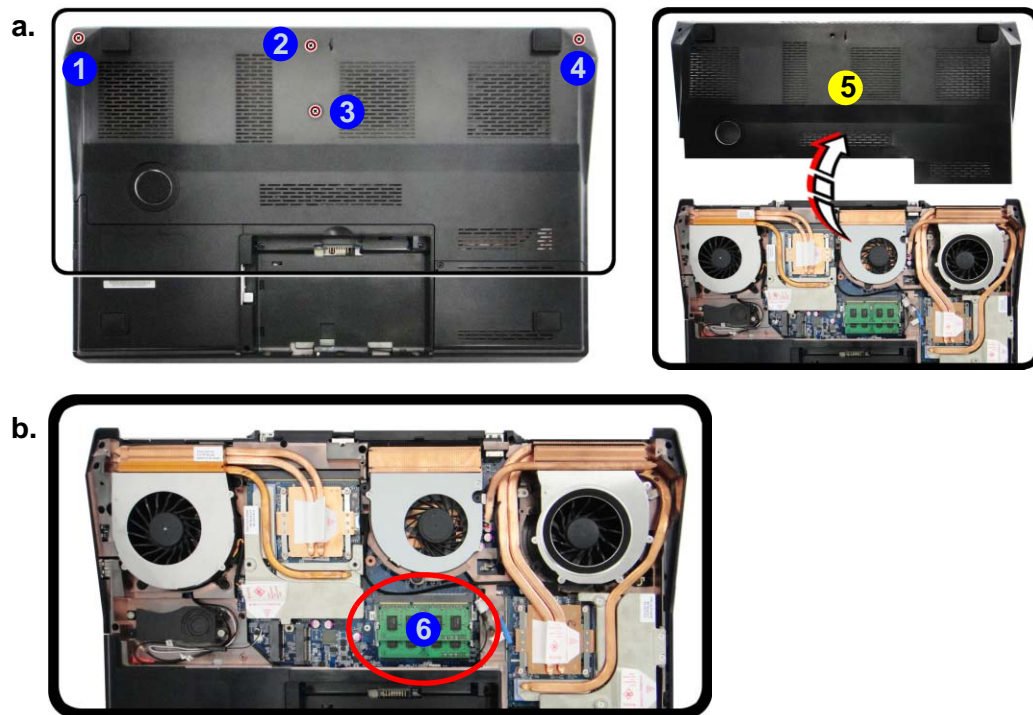


Figure 7
RAM-1 Module Removal

- a. Remove screws and component bay cover.
- b. Locate the module.



Contact Warning

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



5. Component Bay Cover

- 4 Screws

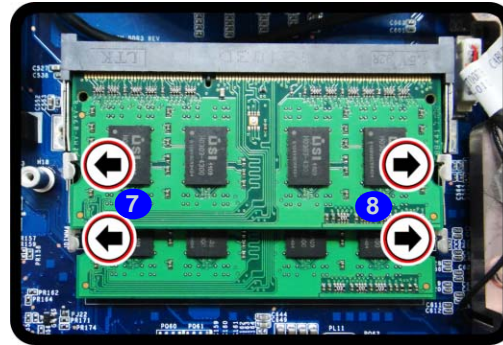
Disassembly

Figure 8
RAM-1 Module
Removal (cont'd.)

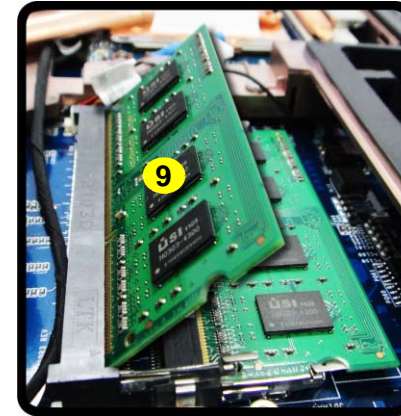
- c. Gently pull the release latch in the direction indicated.
- d. Remove the module.

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

c.



d.



7. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
8. The module'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. **DO NOT FORCE** the module; it should fit without much pressure.
9. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
10. Replace the component bay cover and screws.
11. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.



9. RAM Module

Secondary System Memory Upgrade Process

1. Turn off the computer, and turn it over to remove the battery ([page 2 - 5](#)), and keyboard ([page 2 - 10](#)).
2. The RAM module will be visible at point **1** on the mainboard ([Figure 9a](#)).



3. Gently pull the two **release latches 2 & 3** on the sides of the memory socket in the direction indicated by the arrows ([Figure 8c](#)).
4. The RAM module **4** will pop-up, and you can then remove it.
5. Pull the latches to release the second module if necessary
6. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
7. The module'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. **DO NOT FORCE** the module; it should fit without much pressure.
8. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
9. Replace the screws and keyboard.
10. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

Figure 9
RAM-2 Module Removal

- a. Locate the module.
- b. Gently pull the release latch in the direction indicated.
- c. Remove the module.



Contact Warning

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



4. RAM Module

Disassembly

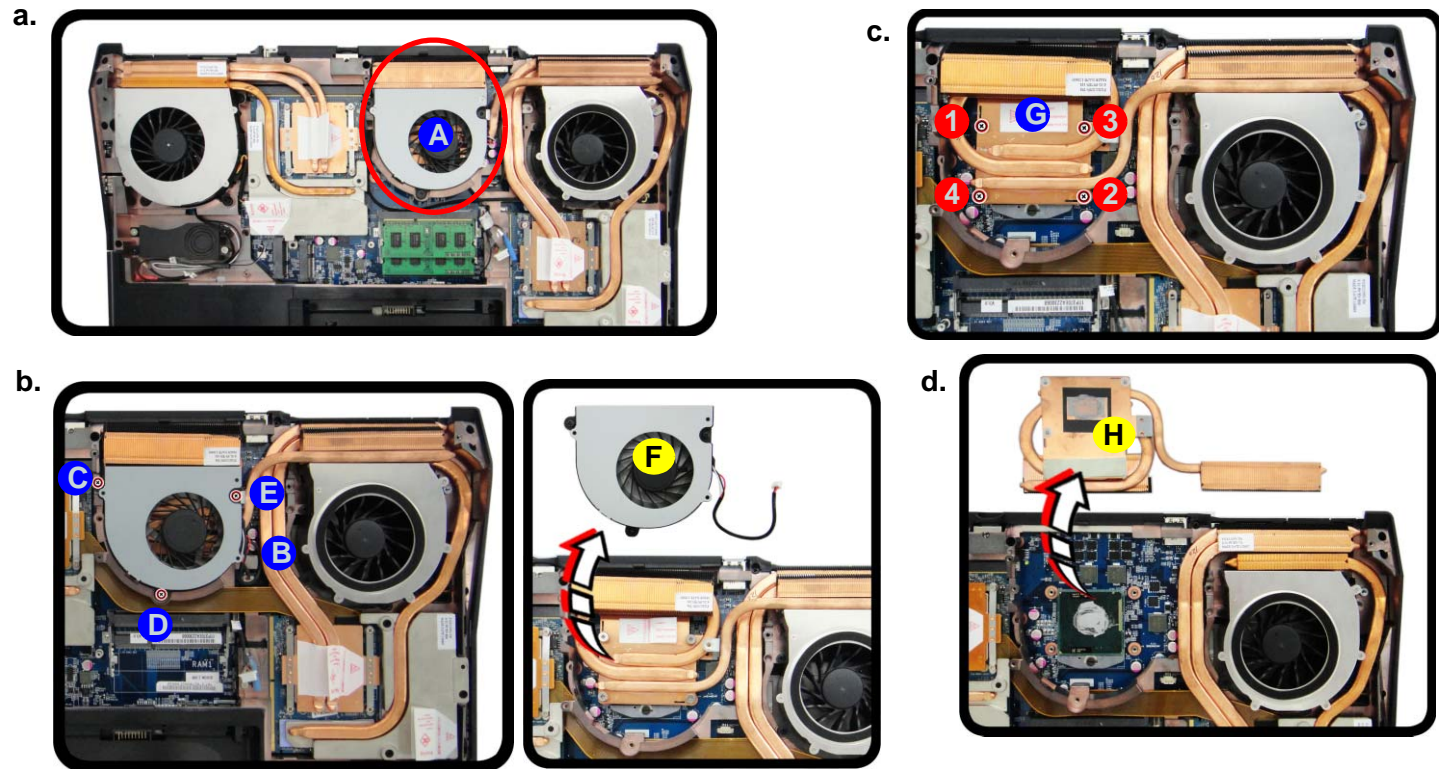
Figure 10
Processor Removal

- Locate the heat sink.
- Remove the CPU fan cables and screws. Lift up the CPU fan off the computer.
- Remove the screws.
- Remove the heat sink.

Removing and Installing the Processor

Processor Removal Procedure

- Turn off the computer, and turn it over to remove the battery ([page 2 - 5](#)), and component bay cover ([page 2 - 11](#)).
- The heat sink fan and heat sink will be visible at point **A** on the mainboard.
- Carefully disconnect heat sink fan cable **B**, and remove screws **C** - **E**. Lift up the heat sink fan **F** off the computer ([Figure 10b](#)).
- Remove screws **4**, **3**, **2**, **1**, the reverse order indicated on the label ([Figure 10c](#)) and carefully pull the tabs **G** to disconnect the heat sink.
- Carefully (it may be hot) lift up the heat sink **H** off the computer ([Figure 10d](#)).



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.



F. Heat Sink Fan
H. Heat Sink

- 7 Screws


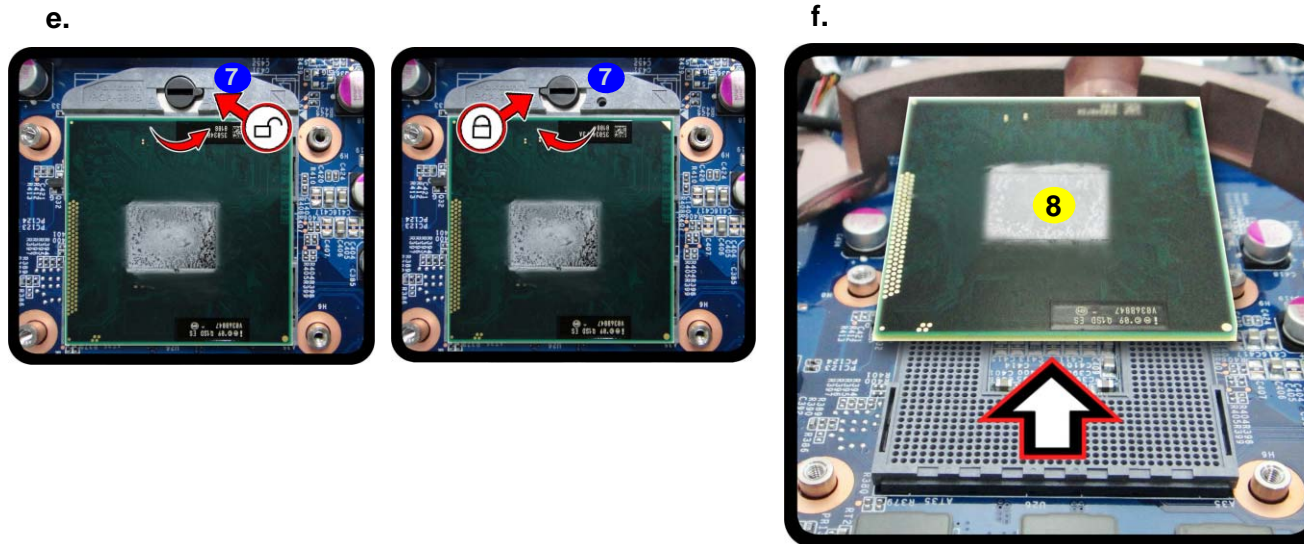
6. Turn the release latch **7** (towards the unlock symbol , to release the CPU (*Figure 11e*).
7. Carefully (it may be hot) lift the CPU **8** up out of the socket (*Figure 11e*).
8. See [page 2 - 16](#) for information on inserting a new CPU.
9. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT).

Figure 11
Processor Removal
(cont'd)

- e. Turn the release latch to unlock the CPU.
- f. Lift the CPU out of the socket.



Caution

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




8. CPU

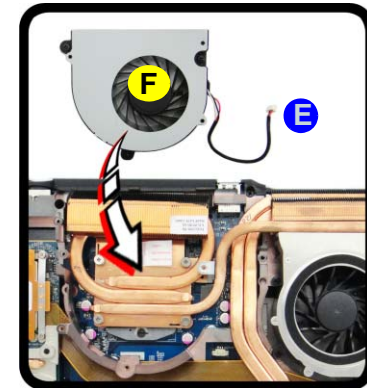
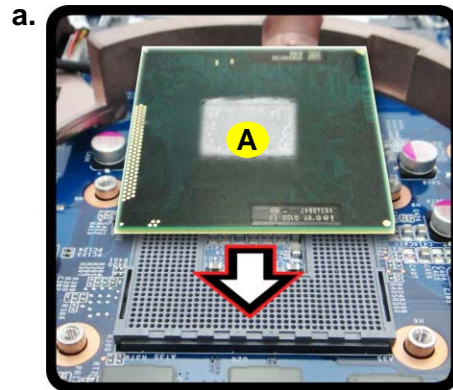
Disassembly

Figure 12
Processor Installation

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

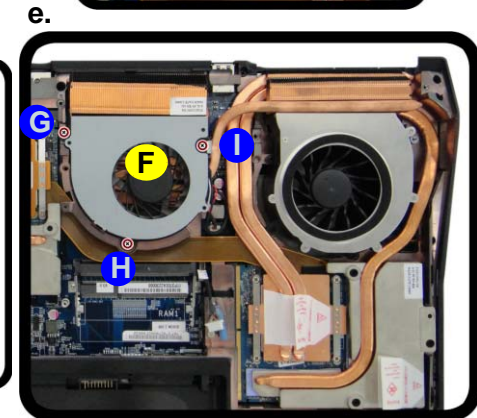
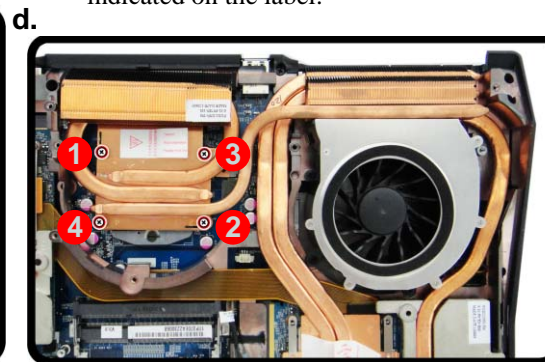
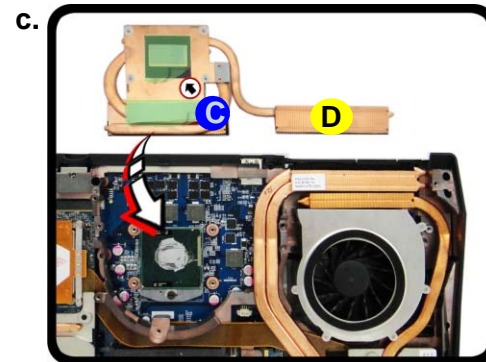
Processor Installation Procedure

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



Note:

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



A. CPU
D. Heat Sink
F. Heat Sink Fan

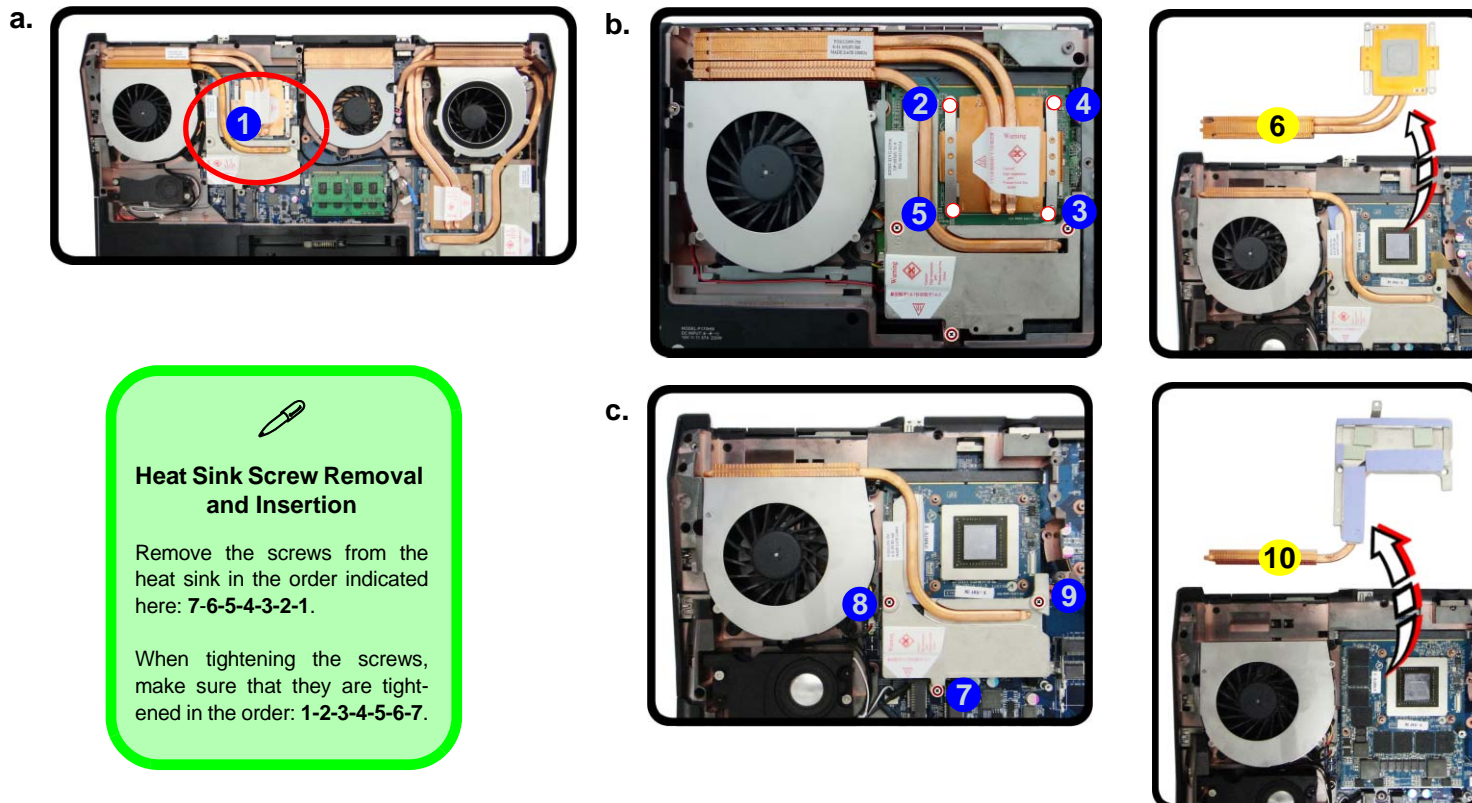
- 7 Screws


Removing the VGA-1 Card

1. Turn off the computer, and turn it over to remove the battery ([page 2 - 5](#)) and component bay cover ([page 2 - 5](#)).
2. The VGA-1 card will be visible at point ① on the mainboard ([Figure 13a](#)).
3. Remove screws ② - ⑤ from the heat sink **in the order indicated on the label** (and on the heat sink unit itself).
4. Carefully (**they may be hot**) remove the heat sink-1 ⑥ from VGA assembly.
5. Remove screws ⑦ - ⑨ from the heat sink **in the order indicated on the label** (and on the heat sink unit itself).
6. Carefully (**they may be hot**) remove the heat sink-2 ⑩ from VGA assembly.

Figure 13
VGA-1 Card Removal

- a. Locate the VGA card.
- b. Remove the screws and VGA heat sink-1.
- c. Remove the screws and VGA heat sink-2.





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.



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.



6. VGA Heat sink-1
10. VGA Heat sink-2

- 7 Screws

Disassembly

Figure 14 VGA-1 Card Removal (cont'd)

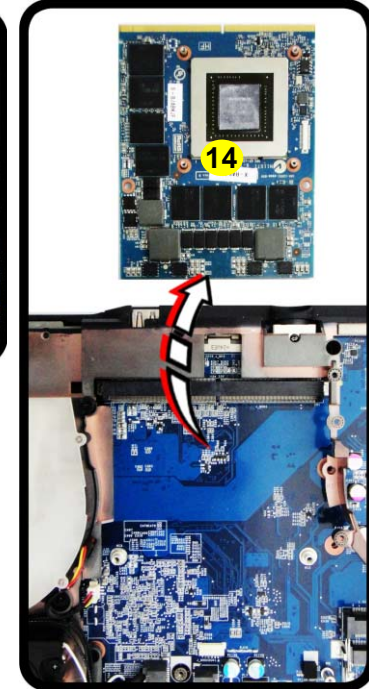
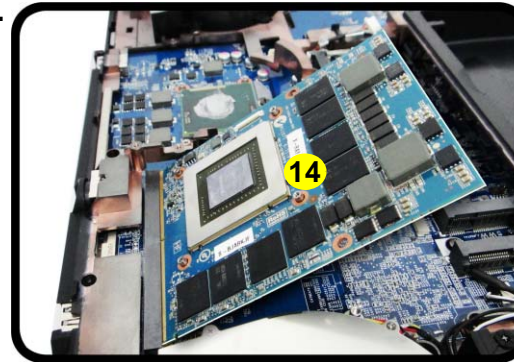
- d. Remove the screws and disconnect the VGA cable if applicable.
e. Lift the VGA-1 card out.

7. Remove screws 11 & 12 from the VGA-1 assembly.
8. If your system includes two video cards you will need to disconnect the cable 13 between the master and slave cards (do not forget to reconnect the cable if you are replacing two cards).
9. Carefully lift the VGA-1 card 14 off the mainboard.

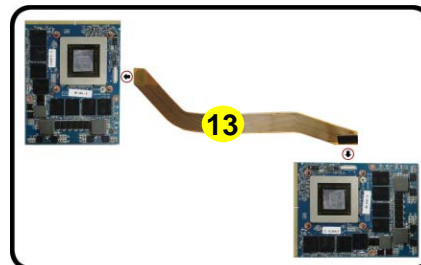
d.



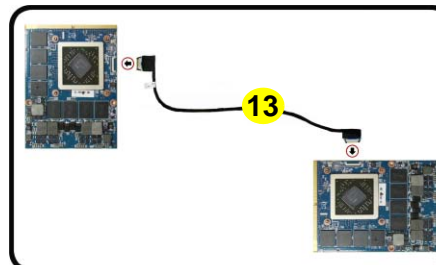
e.



NVIDIA VGA Cable



AMD VGA Cable



13. VGA Cable
14. VGA-2 Card

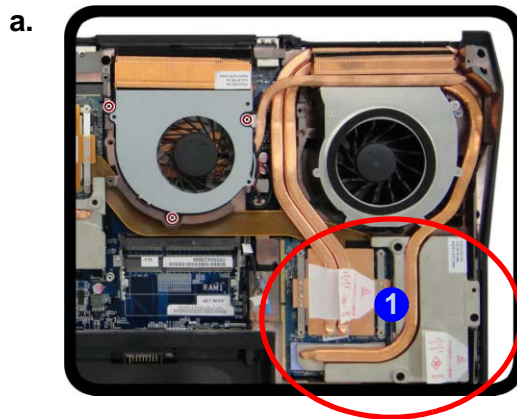
- 2 Screws


Removing the VGA-2 Card

1. Turn off the computer, and turn it over to remove the battery ([page 2 - 5](#)), component bay cover ([page 2 - 11](#)) and CPU ([page 2 - 14](#)).
2. The VGA-2 card will be visible at point **1** on the mainboard ([Figure 15a](#)).
3. Remove screws **2** - **5** from the heat sink-1 **in the order indicated on the label** (and on the heat sink unit itself).
4. Carefully (**they may be hot**) remove the VGA heat sink-1 **6**.
5. Remove screws **7** - **9** from the heat sink-2 **in the order indicated on the label** (and on the heat sink unit itself).
6. Carefully (**they may be hot**) remove the VGA heat sink-2 **10**.

Figure 15
VGA-2 Card Removal

- a. Locate the VGA cards.
- b. Remove the screws and VGA heat sink-1.
- c. Remove the screws and VGA heat sink-2.

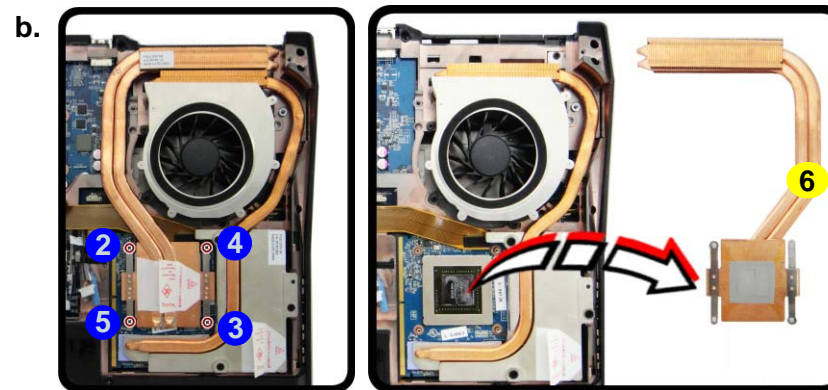





Heat Sink Screw Removal and Insertion

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

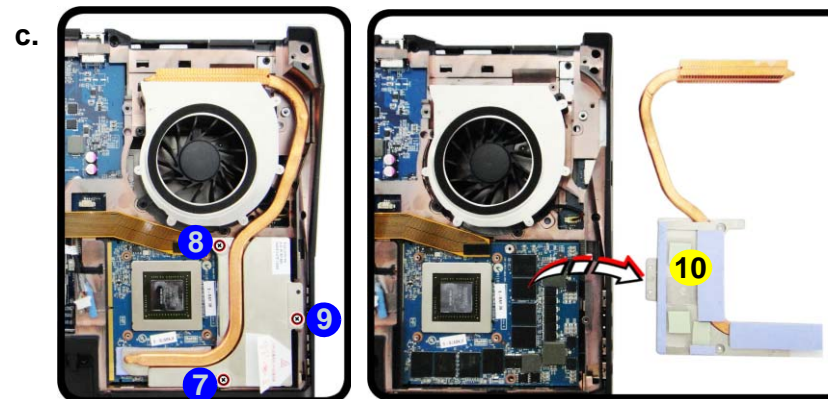
When tightening the screws, make sure that they are tightened in the order: **1-2-3-4-5-6-7**.






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.





6. VGA Heat sink-1
10. VGA Heat sink-2

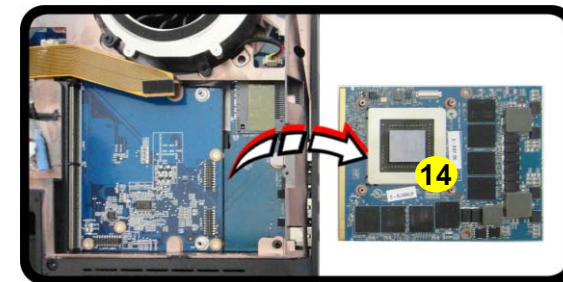
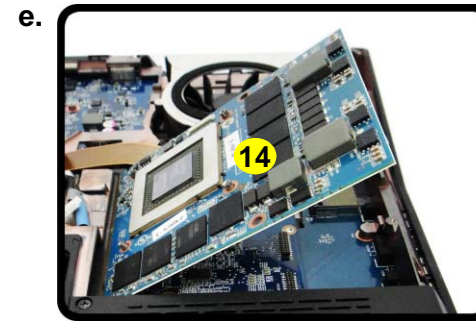
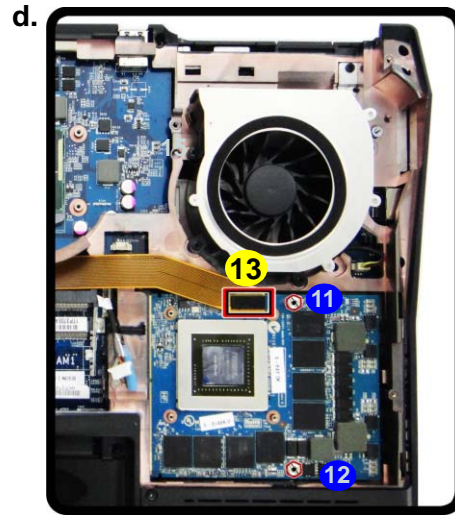
- 7 Screws

Disassembly

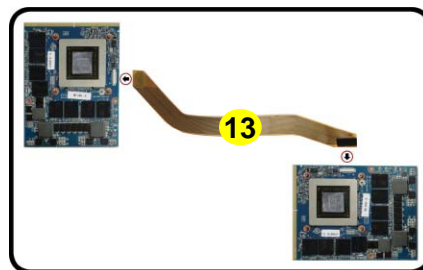
Figure 16 VGA-2 Card Removal (cont'd)

- d. Remove the screws and disconnect the VGA cable.
- e. Lift the VGA-2 card out.

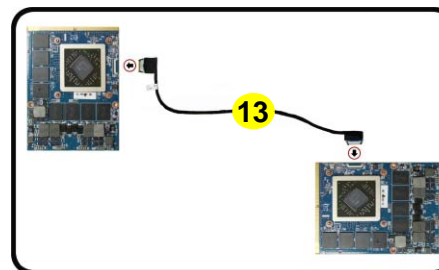
7. Remove screws 11 & 12 from the VGA-1 assembly.
8. Disconnect the VGA cable 13 between the master and slave cards (do not forget to reconnect the cable if you are replacing two cards).
9. Carefully lift the VGA-2 card 14 off the mainboard.



NVidia VGA Cable



AMD VGA Cable



13. VGA Cable
14. VGA-2 Card

- 2 Screws

Installing the VGA-1 Card

1. Do not forget to replace the master and slave cable if you are replacing two video cards.
2. Prepare to fit the VGA card **1** into the slot by holding it at about a 30° angle.
3. The card needs to be fully into the slot, and the VGA card and socket have a guide-key and pin which align to allow the card to fit securely. 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. Replace the master and slave cable **2** by connecting it to the two VGA cards (if applicable).
7. Secure the card with screws **3** & **4**.

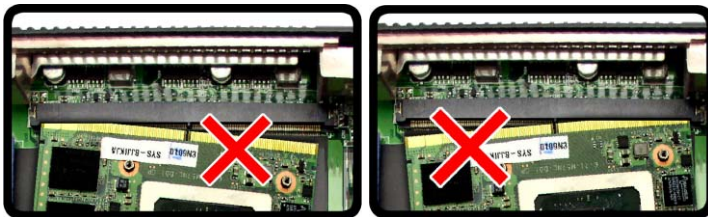
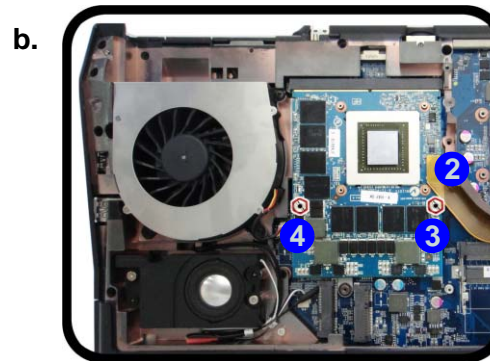
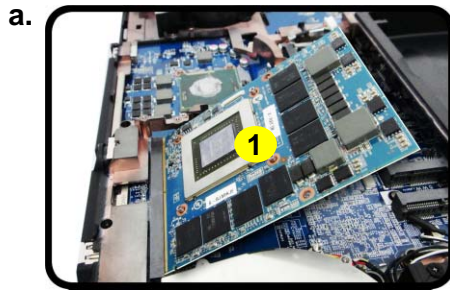


Figure 17
**VGA-1 Card
Installation**

- a. Carefully Insert the VGA Card.
- b. Tighten the screws.



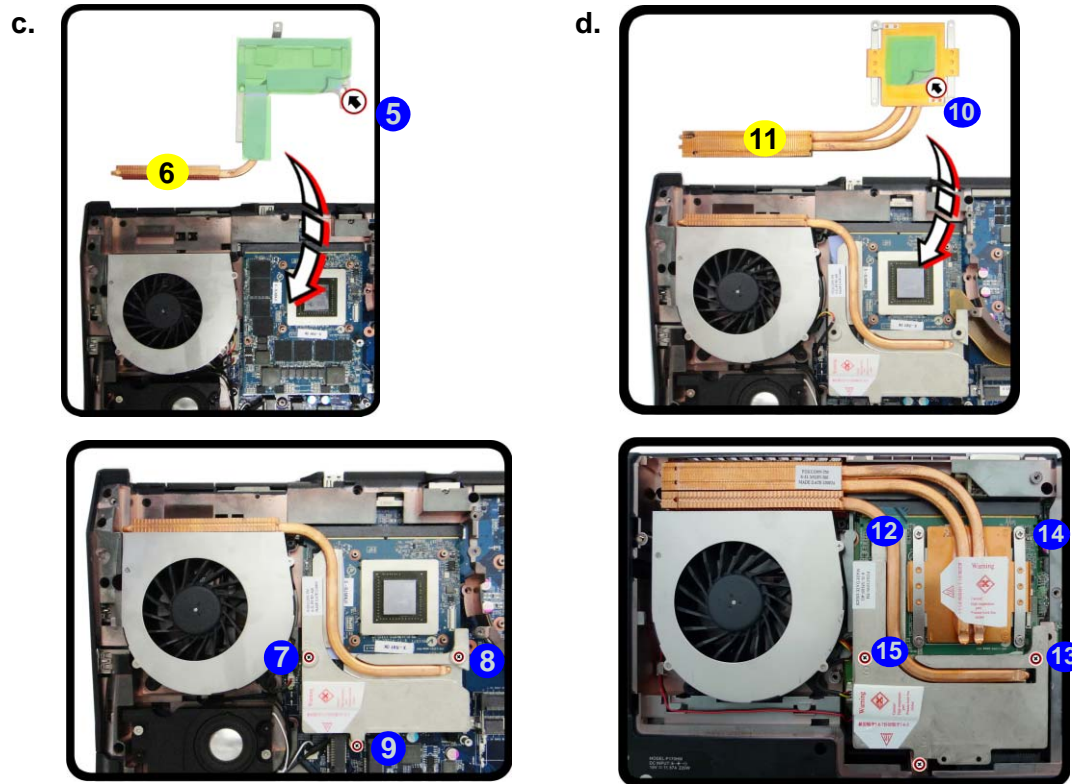
1. VGA-1 card Module


Disassembly

Figure 18 VGA-1 Card Installation (cont'd)

- c. Remove the sticker from the heat sink-2 and Insert the VGA heat sink-2 and tighten the screws.
- d. Remove the sticker from the heat sink-1 and Insert the VGA heat sink-1 and tighten the screws.


8. Remove the sticker **5** from the heat sink (*Figure 18c*).
9. Hold the VGA heatsink-2 **6** by the tab and insert it back on the card and secure screws **7** - **9** in the order indicated in (*page 2 - 19*).
10. Remove the sticker **10** from the heat sink (*Figure 18d*).
11. Hold the VGA heatsink-1 **11** by the tab and insert it back on the card and secure screws **12** - **15** in the order indicated in (*page 2 - 19*).
12. Reinsert the component bay cover, and secure with the screws as indicated in (*page 2 - 11*).




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.

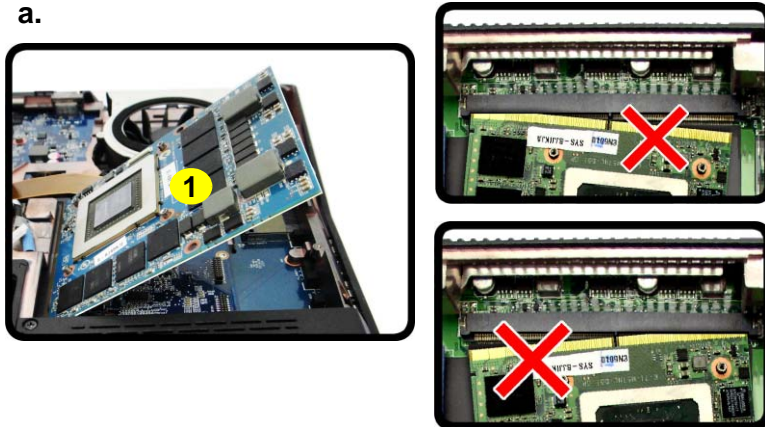

6. VGA Heat sink-2
11. VGA Heat sink-1

- 7 Screws

Installing the VGA-2 Card

1. Connect the master and slave cable (2) to the two VGA cards before preparing to fit the VGA-2 card (1) into the slot by holding it at about a 30° angle.
2. The card needs to be fully into the slot, and the VGA card and socket have a guide-key and pin which align to allow the card to fit securely.
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 (3) & (4) (Figure 19b).

a.



b.



NVidia VGA Cable

AMD VGA Cable

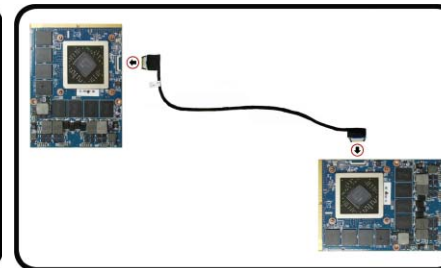
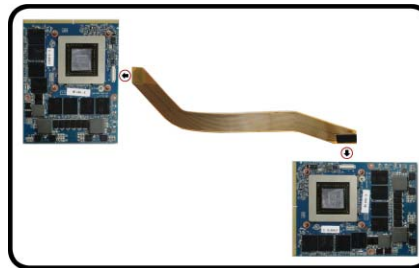


Figure 19
VGA-2 Card
Installation

- a. Carefully connect the VGA cable before inserting the VGA Card.
- b. Tighten the screws.



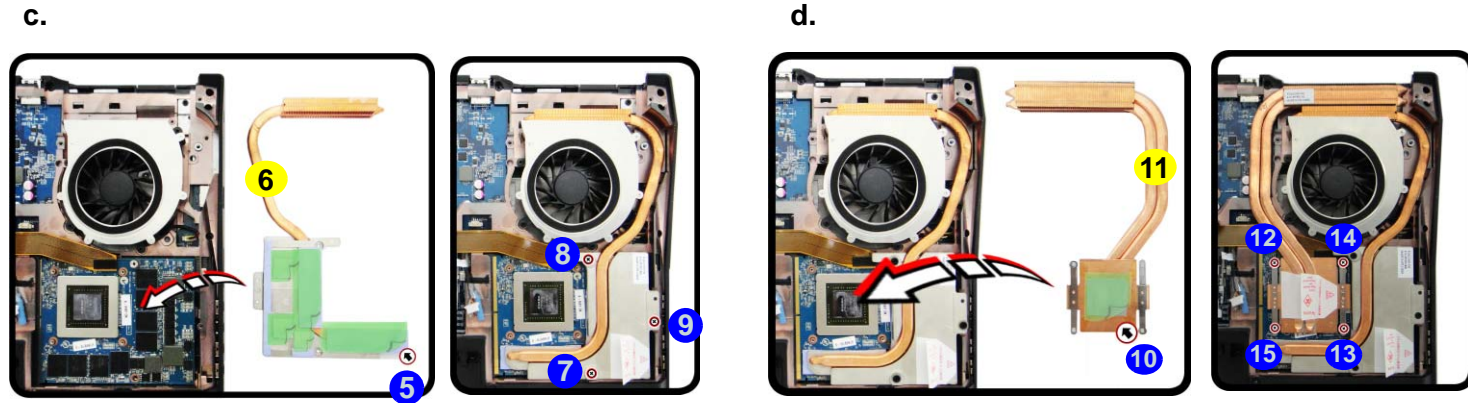
1. VGA-2 card Module
- 2 Screws

Disassembly

Figure 20 VGA-2 Card Installation (cont'd)

- c. Remove the sticker from the heat sink-2 and Insert the VGA heat sink-2 and tighten the screws.
- d. Remove the sticker from the heat sink-1 and Insert the VGA heat sink-1 and tighten the screws.

7. Remove the sticker **5** from the heat sink (*Figure 20c*).
8. Hold the VGA heatsink-2 **6** by the tab and insert it back on the card and secure screws **7** - **9** in the order indicated in (*page 2 - 19*).
9. Remove the sticker **10** from the heat sink (*Figure 20d*).
10. Hold the VGA heatsink-1 **11** by the tab and insert it back on the card and secure screws **12** - **15** in the order indicated in (*page 2 - 19*).
11. Reinsert the component bay cover, and secure with the screws as indicated in (*page 2 - 11*).



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**.

- 6. VGA Heat sink-2
- 11. VGA Heat sink-1

- 7 Screws

Removing the Wireless LAN Module

1. Turn off the computer, and turn it over, remove the battery ([page 2 - 5](#)), keyboard and keyboard shielding plate ([page 2 - 10](#)).
2. The Wireless LAN Module will be visible at point **1**.
3. Remove the screw **2** and carefully disconnect cables **3** - **4**.
4. The Wireless LAN Module **5** ([Figure c](#)) will pop-up, and you can remove it.

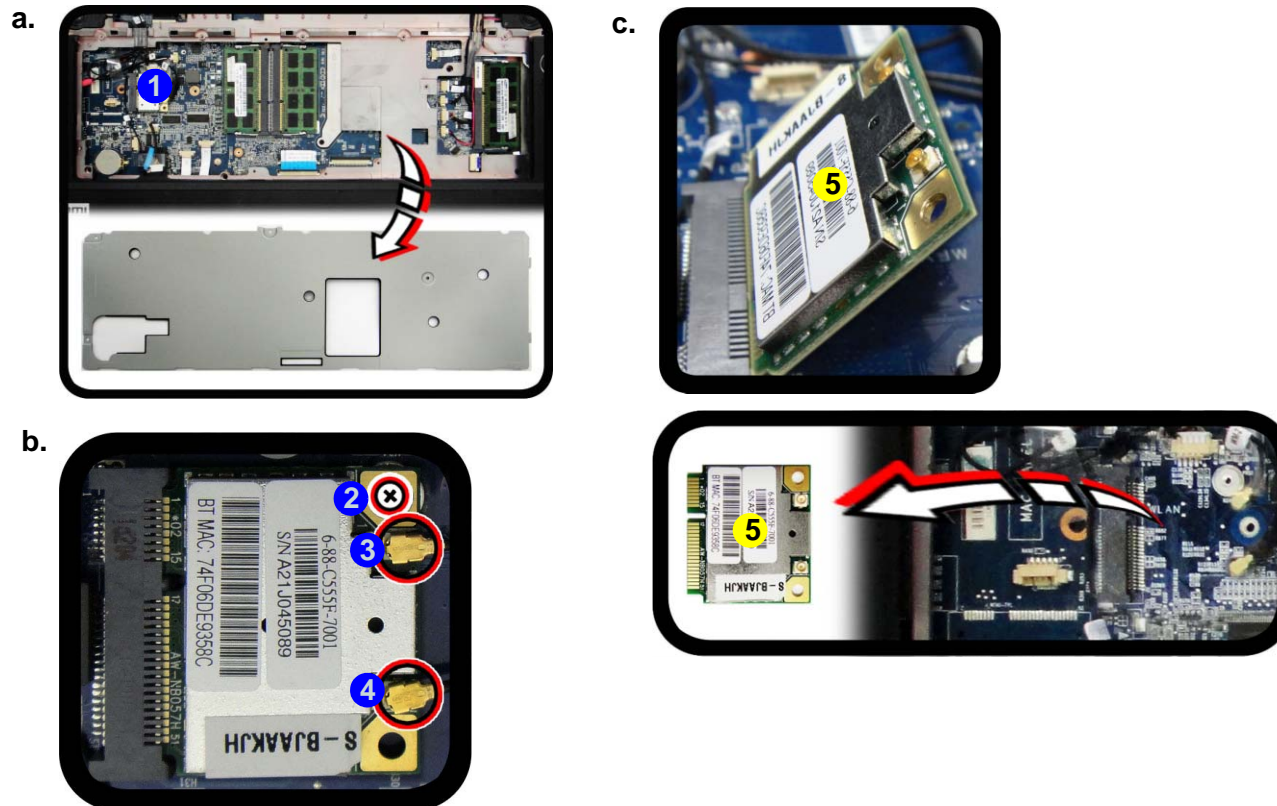



Figure 21
**Wireless LAN
Module Removal**

- a. Locate the WLAN module.
- b. Remove the screw and disconnect the cables.
- c. Remove the WLAN module.

Note: Make sure you reconnect the antenna cables.



5. Wireless LAN Module

- 1 Screw

Appendix A: Part Lists

This appendix breaks down the *P370EM / P370EM3* series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

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

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

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

Part List Illustration Location

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

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

Parts	P370EM	P370EM3
Top	<i>page A - 3</i>	<i>page A - 4</i>
Bottom	<i>page A - 5</i>	
LCD with CCD	<i>page A - 6</i>	<i>page A - 7</i>
LCD without CCD	<i>page A - 8</i>	<i>page A - 9</i>
Mainboard	<i>page A - 10</i>	<i>page A - 11</i>
HDD	<i>page A - 12</i>	
2nd HDD	<i>page A - 13</i>	
DVD	<i>page A - 14</i>	<i>page A - 15</i>
COMBO	<i>page A - 16</i>	<i>page A - 17</i>

Top (P370EM)

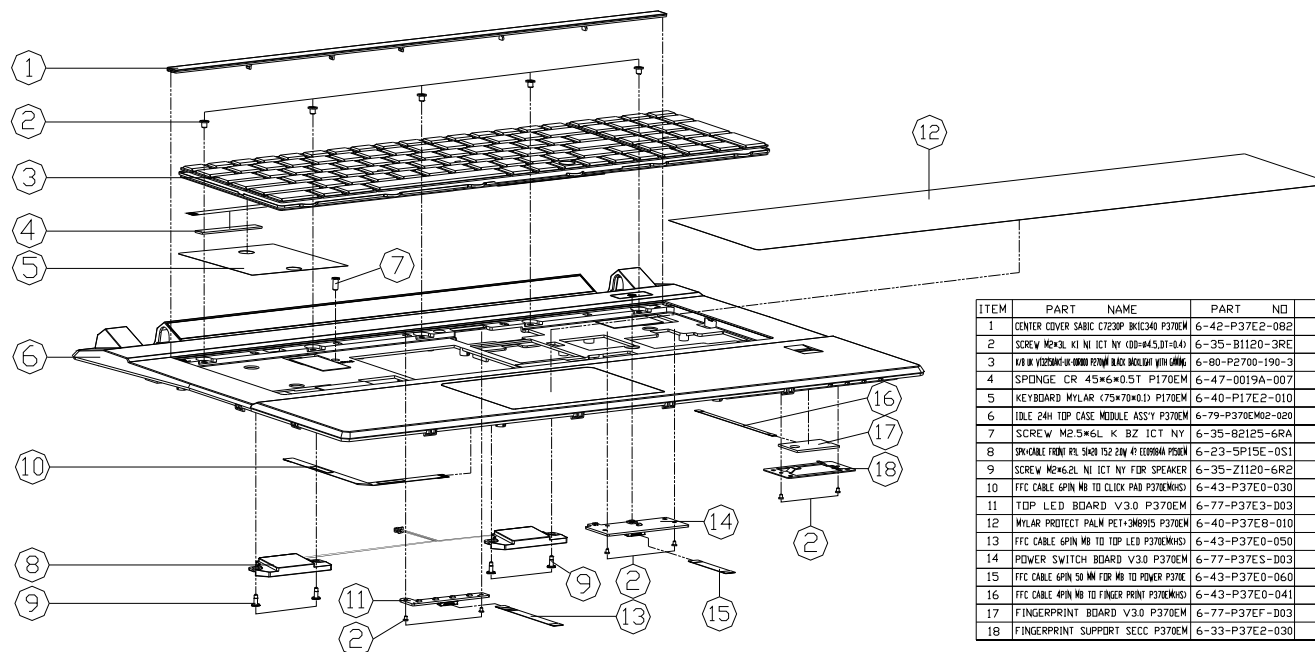


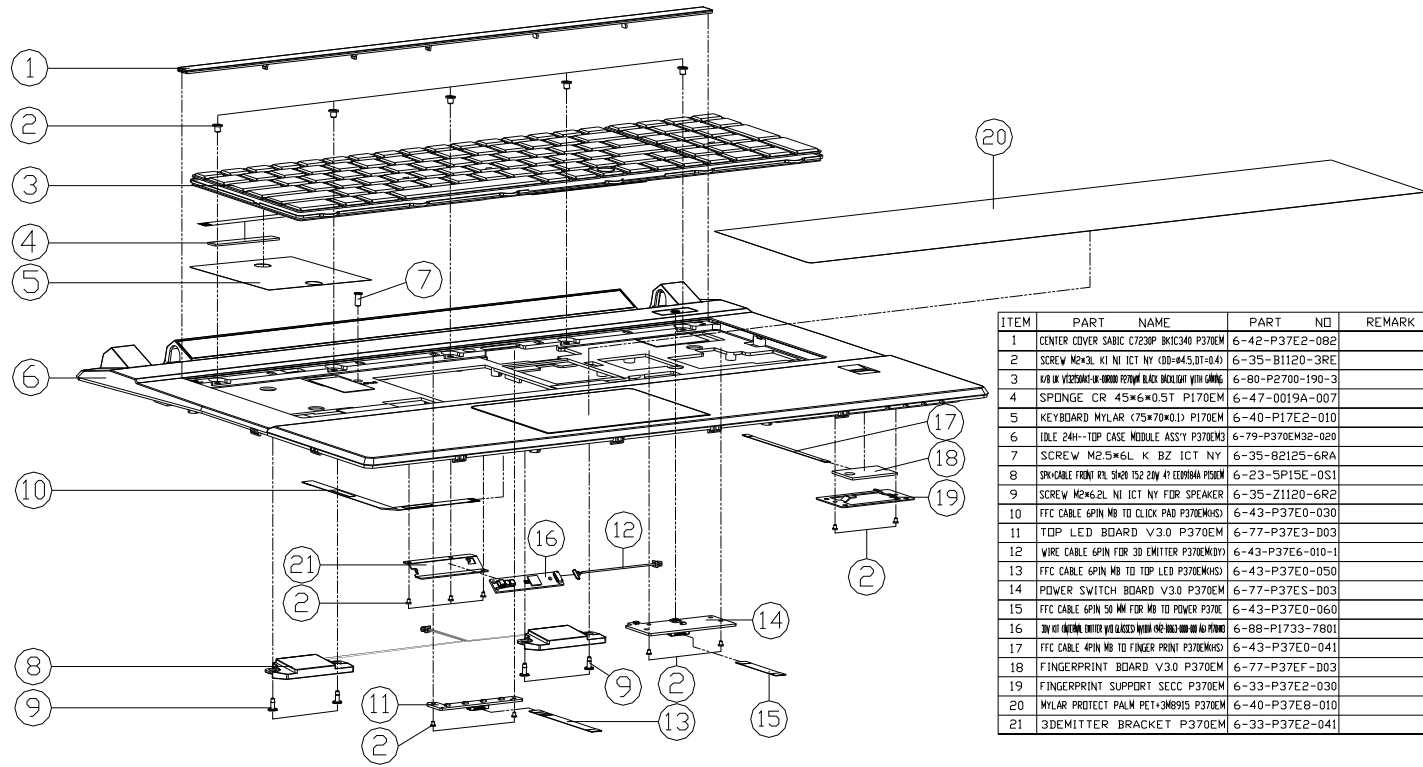
Figure A - 1
Top (P370EM)

ITEM	PART NAME	PART NO	REMARK
1	CENTER COVER SABIC C723P BKIC340 P370EM	6-42-P37E2-082	
2	SCREW M2xL KI NI ICT NY (D=04.5,DT=04)	6-35-B1120-3RE	
3	KEYBOARD KEYBOARD P370EM BLACK KEYBOARD WITH GMBG	6-80-P2700-190-3	
4	SPONGE CR 45*6*0.5T P170EM	6-47-0019A-007	
5	KEYBOARD MYLAR (75*70*0.1) P170EM	6-40-P17E2-010	
6	TABLE 24H TOP CASE MODULE ASSY P370EM	6-79-P370EM02-020	
7	SCREW M2.5*6L K BZ ICT NY	6-35-0212S-6RA	
8	SPONGE FRONT R/L SH28 152 22W 4F E09804 P05EM	6-23-5P15E-0S1	
9	SCREW M2*6.2L NI ICT NY FOR SPEAKER	6-35-Z1120-6R2	
10	FFC CABLE 6PIN M8 TO CLICK PAD P370EMHS	6-43-P37E0-030	
11	TDP LED BOARD V3.0 P370EM	6-77-P37E3-D03	
12	MYLAR PROTECT PALM PET+3M915 P370EM	6-40-P37EB-010	
13	FFC CABLE 6PIN M8 TO TOP LED P370EMHS	6-43-P37E0-050	
14	POWER SWITCH BOARD V3.0 P370EM	6-77-P37ES-D03	
15	FFC CABLE 6PIN 50 MM FOR M8 TO POWER P37E	6-43-P37E0-060	
16	FFC CABLE 4PIN M8 TO FINGER PRINT P370EMHS	6-43-P37E0-041	
17	FINGERPRINT BOARD V3.0 P370EM	6-77-P37EF-D03	
18	FINGERPRINT SUPPORT SECC P370EM	6-33-P37E2-030	

A.Part Lists

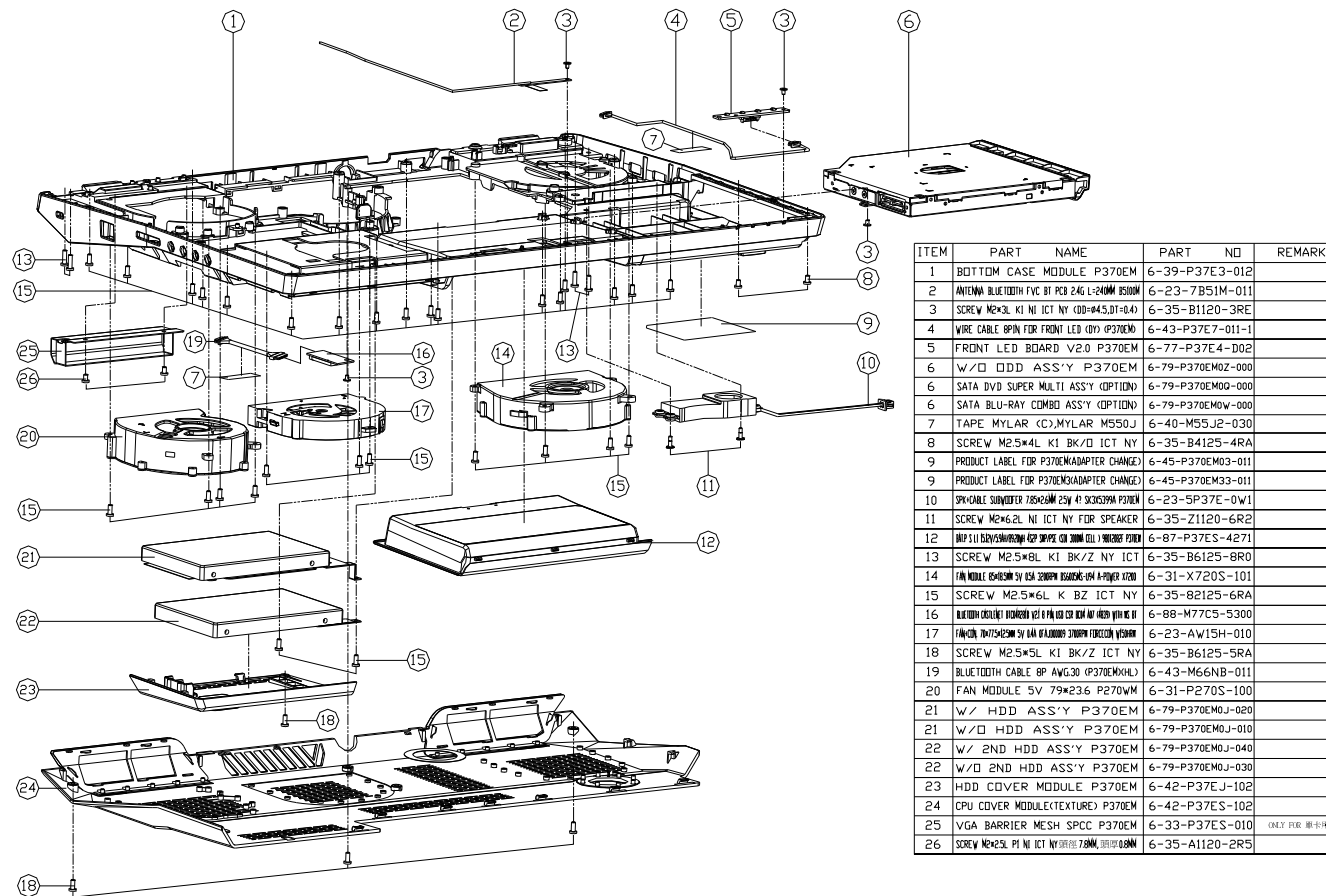
Top (P370EM3)

Figure A - 2
Top (P370EM3)



ITEM	PART NAME	PART NO	REMARK
1	CENTER COVER SABC C723P BKIC340 P370EM	6-42-P37E2-082	
2	SCREW M2x3L KI NI ICT NY (OD=0.45,DT=0.4)	6-35-B1120-3RE	
3	K/8 UK VERTICAL-UK-0000 P370M BLACK BRIGHT WITH GING	6-80-P2700-190-3	
4	SPONGE CR 45*6*0.5T P170EM	6-47-0019A-007	
5	KEYBOARD MYLAR (75*70*0.1) P170EM	6-40-P17E2-010	
6	TOLE 24H-TOP CASE MODULE ASSY P370EM3	6-79-P370EM3E-020	
7	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
8	SPEAKER FRONT RL SH20 152 20W 40 EC0988A P370EM	6-23-5P15E-0S1	
9	SCREW M2*6.2L NI ICT NY FDR SPEAKER	6-35-Z1120-6R2	
10	FFC CABLE 6PIN MB TO CLICK PAD P370EM3S	6-43-P37E0-030	
11	TOP LED BOARD V3.0 P370EM	6-77-P37E3-D03	
12	WIRE CABLE 6PIN FDR 30 EMITTER P370EM3D1	6-43-P37E6-010-1	
13	FFC CABLE 6PIN MB TO TOP LED P370EM3S	6-43-P37E0-050	
14	POWER SWITCH BOARD V3.0 P370EM	6-77-P37ES-D03	
15	FFC CABLE 6PIN 50 MM FDR MB TO POWER P370E	6-43-P37E0-060	
16	2IN 40 CHANNEL CENTER PAD GLASS WITH ONE BRASS PIN NO PINING	6-88-P1733-7801	
17	FFC CABLE 4PIN MB TO FINGER PRINT P370EM3S	6-43-P37E0-041	
18	FINGERPRINT BOARD V3.0 P370EM	6-77-P37EF-D03	
19	FINGERPRINT SUPPORT SECC P370EM	6-33-P37E2-030	
20	MYLAR PROTECT PALM PET-388915 P370EM	6-40-P37E8-010	
21	3DEMITTER BRACKET P370EM	6-33-P37E2-041	

Bottom



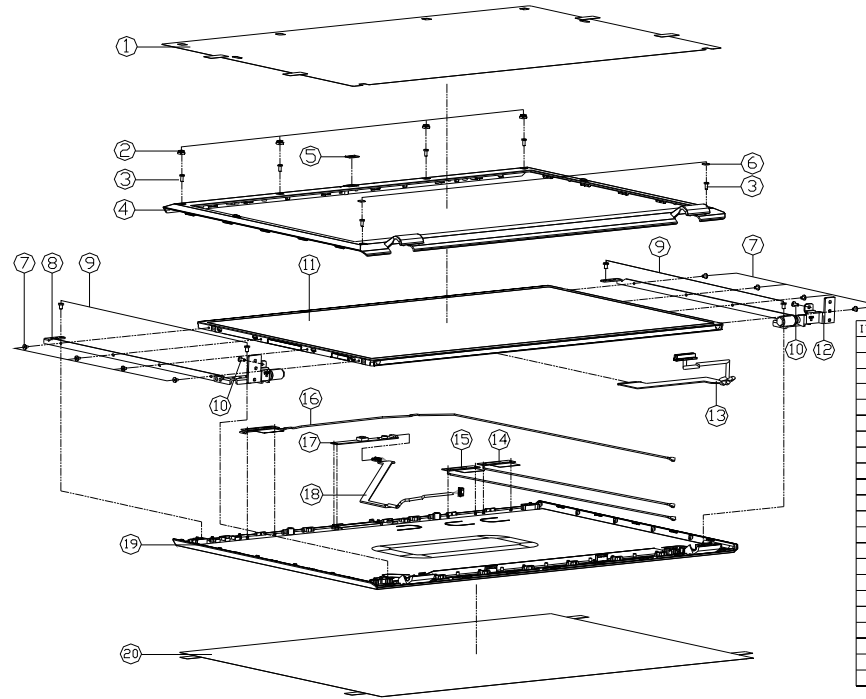
ITEM	PART NAME	PART NO	REMARK
1	BOTTOM CASE MODULE P370EM	6-39-P37E3-012	
2	ANTENNA BLUETOOTH FIVE BT PCB 24G L240MM 8500M	6-23-7B51M-011	
3	SCREW M2x3L KI NI ICT NY (OD=04.5,DT=0.4)	6-35-B1120-3RE	
4	WIRE CABLE 8PIN FOR FRONT LED (OP) (P370EM)	6-43-P37E7-011-1	
5	FRONT LED BOARD V2.0 P370EM	6-77-P37E4-D02	
6	W/O DDD ASS'Y P370EM	6-79-P370EM0Z-000	
6	SATA DVD SUPER MULTI ASSY (OPTION)	6-79-P370EM0Q-000	
6	SATA BLU-RAY COMBO ASSY (OPTION)	6-79-P370EM0W-000	
7	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	
8	SCREW M2.5x4L KI BK/O ICT NY	6-35-B4125-4RA	
9	PRODUCT LABEL FOR P370EM(ADAPTER CHANGE)	6-45-P370EM03-011	
9	PRODUCT LABEL FOR P370EM(ADAPTER CHANGE)	6-45-P370EM33-011	
10	SPEAKER SUBWOOFER 78x28x26 25W 4Ω SDC3539A P370EM	6-23-5P37E-0W1	
11	SCREW M2x6.2L NI ICT NY FOR SPEAKER	6-35-Z1120-6R2	
12	HDD 5.11 64GB/5400RPM 8.9 9.5MM (CELL) SILENCE P370EM	6-87-P37ES-4271	
13	SCREW M2.5x8L KI BK/Z NY ICT	6-35-B6125-8R0	
14	FAN MODULE 65x65x20 5V 79x23.6 P270W	6-31-X720S-101	
15	SCREW M2.5x6L K BZ ICT NY	6-35-82125-6RA	
16	BLUETOOTH COAXIAL ISOLATED 125 6 PIN FOR COX BEM AIR (HDD) WITH NI KI	6-88-M77C5-5300	
17	FAN/CPU 70x75x25MM 5V 8A 60 ALUMINUM 2700RPM FUSION P370EM	6-23-AW15H-010	
18	SCREW M2.5x5L KI BK/Z ICT NY	6-35-B6125-5RA	
19	BLUETOOTH CABLE 8P AWG30 (P370EM)(KHL)	6-43-M66NB-011	
20	FAN MODULE 5V 79x23.6 P270W	6-31-P270S-100	
21	W/ HDD ASS'Y P370EM	6-79-P370EM0J-020	
21	W/O HDD ASS'Y P370EM	6-79-P370EM0J-010	
22	W/ 2ND HDD ASS'Y P370EM	6-79-P370EM0J-040	
22	W/O 2ND HDD ASS'Y P370EM	6-79-P370EM0J-030	
23	HDD COVER MODULE P370EM	6-42-P37EJ-102	
24	CPU COVER MODULE(TEXTURE) P370EM	6-42-P37ES-102	
25	VGA BARRIER MESH SPCC P370EM	6-33-P37ES-010	(ONLY FOR 8840)
26	SCREW M2x2.5L PI NI ICT NY (FOR 78MM, 80MM, 88MM)	6-35-A1120-2RS	

Figure A - 3
Bottom

A.Part Lists

LCD with CCD (P370EM)

Figure A - 4
LCD with CCD
(P370EM)



ITEM	PART NAME	PART NO	REMARK
1	FRONT COVER PRO PET P370EM	6-40-P37E1-020	
2	LCD FRONT UP RUBBER P370EM	6-47-P37E1-060	
3	SCREW M2.5*4L KI1+B8 D=4.0D BK/Z ICT NY	6-35-B6120-5R0	
4	LCD FRONT COVER MODULE P370EM	6-39-P37E1-012	
5	LCD CCD LENS P370EM	6-42-P37E1-070	OPTION
6	LCD FRONT DOWN RUBBER P370EM	6-47-P37E1-040	
7	SCREW M2*3L KI N ICT NY (D=4.5D1+B4)	6-35-B1120-3RE	
8	LCD HINGE L SECC (MPI) P370EM	6-33-P37E1-0L2	
9	SCREW M2.5*4L KI BK/Z ICT NY	6-35-B4125-4RA	
10	SCREW M2.5*5L KI BK/Z ICT NY	6-35-B6125-5RA	
11	LCD 17.3" FHD OHMI N73KG-L11 QLED 6.0MM	6-50-NB260-D00	OPTION
11	LCD 17.3" FHD LG LP17WV1-F183 QLED 4K/60HZ 6.0MM	6-50-NB260-L05	OPTION
11	LCD 17.3" FHD OHMI N73KG-L11 QLED 6.0MM	6-50-NB260-D01	OPTION
12	LCD HINGE R SECC (MPI) P370EM	6-33-P37E1-0R2	
13	WIRE CABLE FOR LCD TO MAIN BOARD (OPTION) P370EM	6-43-P37E1-011-A	
14	WIRE CABLE FOR VIB MOTOR P370EM	6-23-7P170-011	
15	WIRE CABLE FOR VIB MOTOR P370EM	6-23-7P170-031	
16	WIRE CABLE FOR VIB MOTOR P370EM	6-23-7P37E-021	
17	WIRE CABLE FOR VIB MOTOR P370EM	6-88-P37EC-4902	OPTION
18	WIRE CABLE FOR VIB MOTOR P370EM	6-43-P37E1-012	
19	LCD BACK MODULE (MPI) P370EM	6-39-P37E1-022	
20	BACK COVER PRO PET P370EM	6-40-P37E1-010	

LCD with CCD (P370EM3)

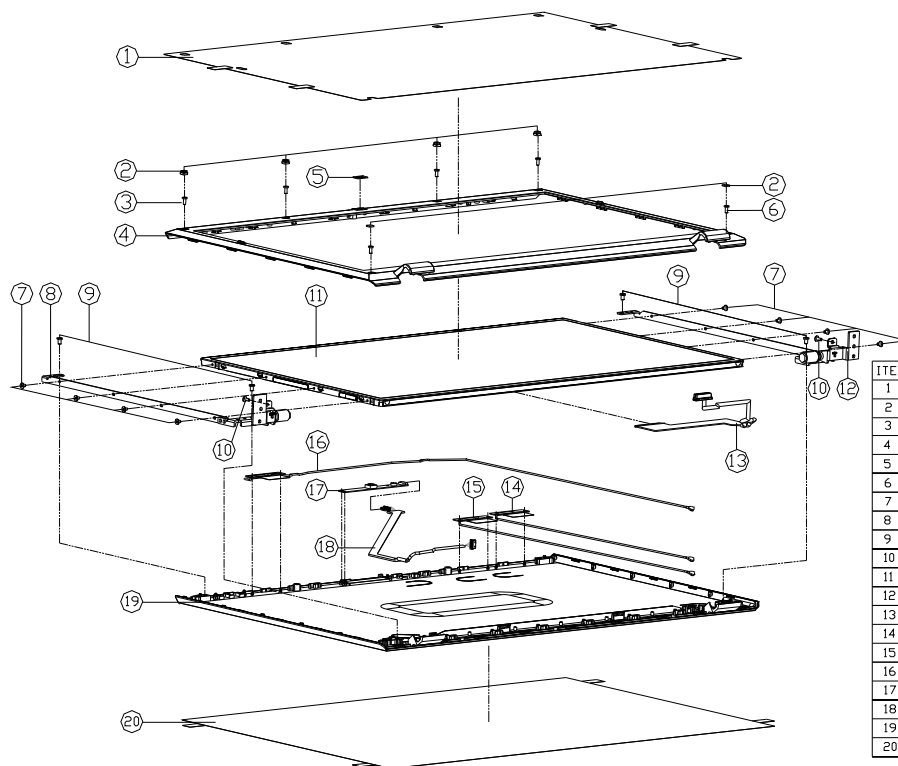


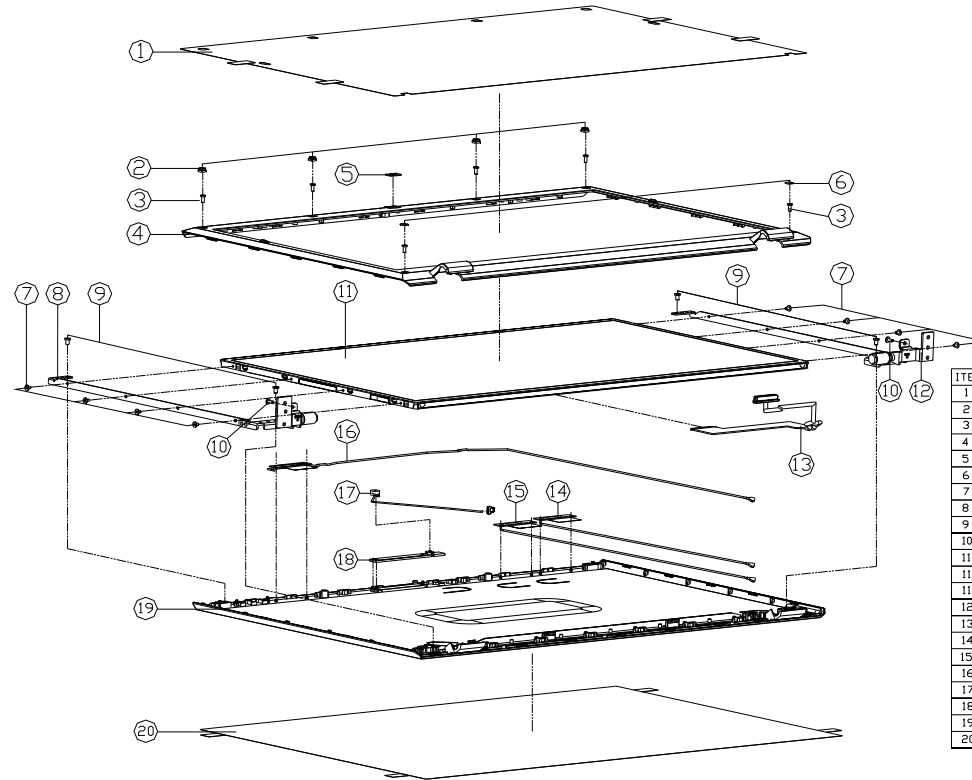
Figure A - 5
LCD with CCD
(P370EM3)

ITEM	PART NAME	PART NO	REMARK
1	FRONT COVER PRO PET P370EM	6-40-P37E1-020	
2	LCD FRONT UP RUBBER P370EM	6-47-P37E1-060	
3	SCREW M2.5*4L K1K1-08 B-4.0 BK/Z ICT NY	6-35-B6120-5R0	
4	LCD FRONT COVER MODULE P370EM	6-39-P37E1-012	
5	LCD CCD LENS P370EM	6-42-P37E1-070	OPTION
6	LCD FRONT DOWN RUBBER P370EM	6-47-P37E1-040	
7	SCREW M2*3L KI NI ICT NY (OD=4.5,DT=0.4)	6-35-B1120-3RE	
8	LCD HINGE L SECC (MPI) P370EM	6-33-P37E1-0L2	
9	SCREW M2.5*4L K1 BK/O ICT NY	6-35-B4125-4RA	
10	SCREW M2.5*5L KI BK/Z ICT NY-	6-35-B6125-5RA	
11	LCD 17.3" FHD LG LP173WV2-1P81 QLED 65MM	6-50-NB265-L04	
12	LCD HINGE R SECC (MPI) P370EM	6-33-P37E1-0R2	
13	WIRE CABLE FOR LG IN PANEL TO MAIN PCB (CMT) P370EM	6-43-P37E1-020-J	
14	ANTENNA VIBRA VET VET PEB 24G/2500/25G VIB-550MM P370EM	6-23-7P170-011	
15	ANTENNA VIBRA VET VET PEB 24G/2500/25G VIB-550MM P370EM	6-23-7P170-031	
16	ANTENNA VIBRA VET VET PEB 24G/2500/25G VIB-550MM P370EM	6-23-7P37E-021	
17	WIRE CABLE FOR ANTENNA IN PCB TO MAIN PCB (CMT) P370EM	6-88-P37EC-4902	OPTION
18	WIRE CABLE EPIN W/O TO CCD-MIC COMBO (CMT) P370EM	6-43-P37ET-012	
19	LCD BACK MODULE (MPI) P370EM	6-39-P37E1-022	
20	BACK COVER PRO PET P370EM	6-40-P37E1-010	

A.Part Lists

LCD without CCD (P370EM)

Figure A - 6
LCD without CCD
(P370EM)



ITEM	PART NAME	PART NO	REMARK
1	FRONT COVER PRO PET P370EM	6-40-P37E1-020	
2	LCD FRONT UP RUBBER P370EM	6-47-P37E1-060	
3	SCREW M2*5L K11+0.8 D=4.0 BK/2 ICT NY	6-35-B6120-5R0	
4	LCD FRONT COVER MODULE P370EM	6-39-P37E1-012	
5	LCD W/D CCD LENS P370EM	6-42-P37E1-080	OPTION
6	LCD FRONT DDOWN RUBBER P370EM	6-47-P37E1-040	
7	SCREW M2*3L KI NI ICT NY (OD=4.5,DT=0.4)	6-35-B1120-3RE	
8	LCD HINGE L SECC (MPI) P370EM	6-33-P37E1-0L2	
9	SCREW M2.5*4L K1 BK/2 ICT NY	6-35-B4125-4RA	
10	SCREW M2.5*5L K1 BK/2 ICT NY	6-35-B6125-5RA	
11	LCD 11.7" FHD CAMERA 1.3MP 4.0UM TPO 4.0UM	6-50-NB260-000	OPTION
11	LCD 11.7" FHD LG (L775) 4.0UM TPO 4.0UM	6-50-NB260-L05	OPTION
11	LCD 11.7" FHD CHINEE M730GE-L11 CCD 4.0UM	6-50-NB260-001	OPTION
12	LCD HINGE R SECC (MPI) P370EM	6-33-P37E1-0R2	
13	WIRE CABLE FOR LCD TO MB (OPTION) (OPTION) P370EM	6-43-P37E1-011-A	
14	ANTENNA YINXI YI W/ PCB 2462550/55 W/ 50MM PIN	6-23-7P170-011	
15	ANTENNA YINXI YI W/ PCB 2462550/55 W/ 50MM PIN	6-23-7P170-031	
16	ANTENNA YINXI YI W/ PCB 2462550/55 W/ 50MM PIN	6-23-7P37E-021	
17	CCM 4.3" 5M - 44318045-4431-04-11-395M P370EM	6-23-EP37E-010	
18	LCD MIC FRAME (MPI) P370EM	6-42-P37E1-032	
19	LCD BACK MODULE (MPI) P370EM	6-39-P37E1-022	
20	BACK COVER PRO PET P370EM	6-40-P37E1-010	

LCD without CCD (P370EM3)

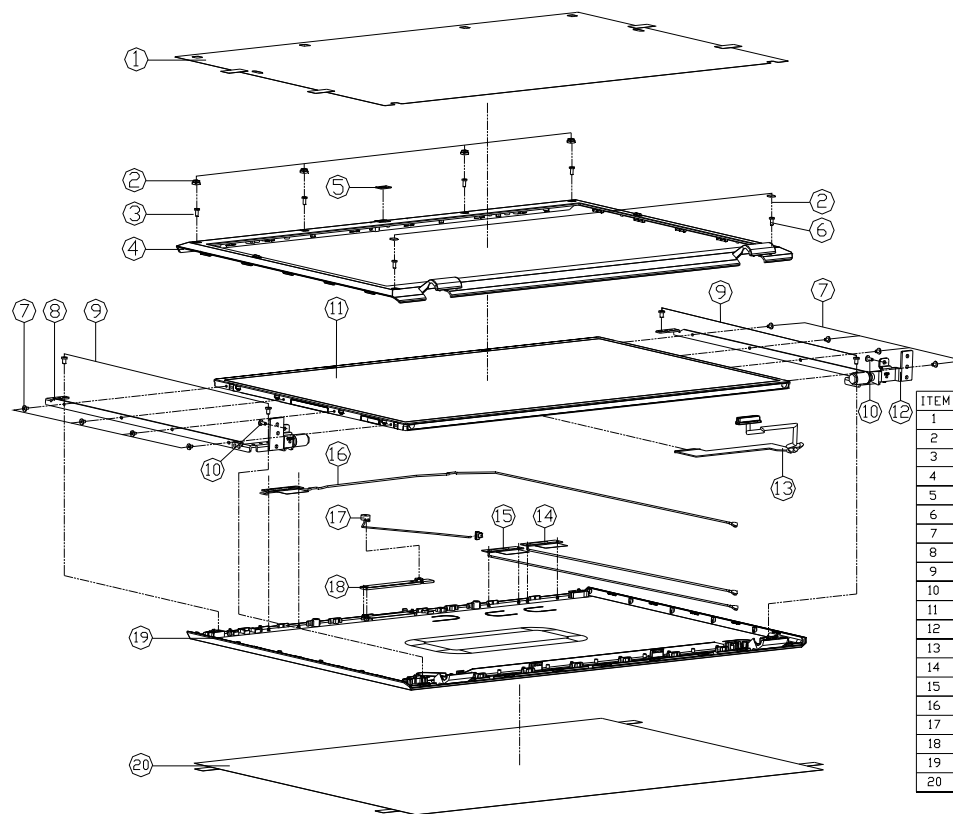


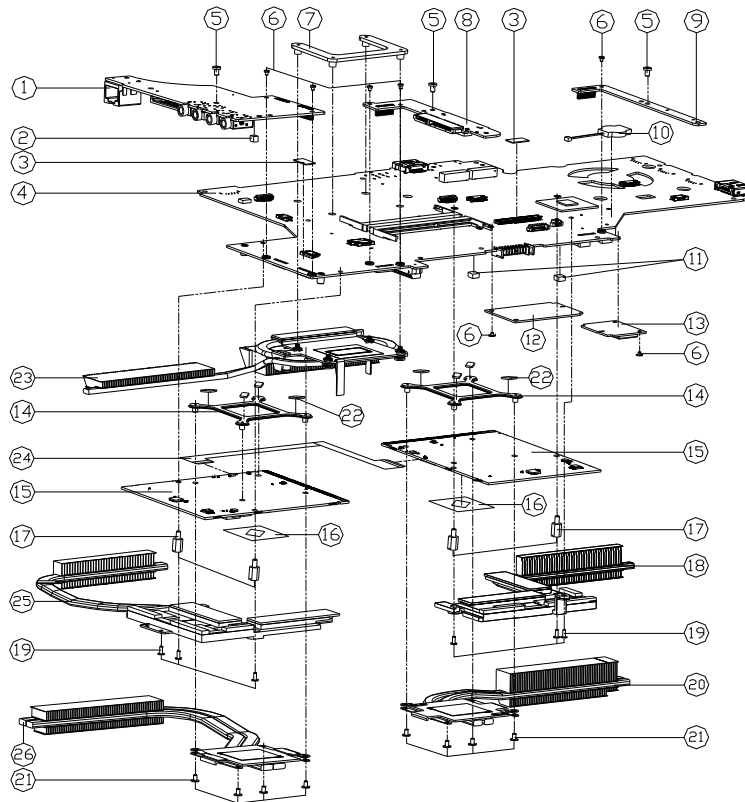
Figure A - 7
LCD without CCD
(P370EM3)

ITEM	PART NAME	PART NO	REMARK
1	FRONT COVER PRD PET P370EM	6-40-P37E1-020	
2	LCD FRONT UP RUBBER P370EM	6-47-P37E1-060	
3	SCREW M2.5xL K1K1-08 D=4.0 BK/Z ICT NY	6-35-B6120-5R0	
4	LCD FRONT COVER MODULE P370EM	6-39-P37E1-012	
5	LCD W/D CCD LENS P370EM	6-42-P37E1-080	OPTION
6	LCD FRONT DOWN RUBBER P370EM	6-47-P37E1-040	
7	SCREW M2x3L KI NI ICT NY (D=4.5,D1=4.4)	6-35-B1120-3RE	
8	LCD HINGE L SECC (MPI) P370EM	6-33-P37E1-0L2	
9	SCREW M2.5x4L K1 BK/D ICT NY	6-35-B4125-4RA	
10	SCREW M2.5x5L K1 BK/Z ICT NY-	6-35-B6125-5RA	
11	LCD 17.3" FHD LG LP173WQ2-TPB1 QLED 65MM	6-50-NB265-L04	OPTION
12	LCD HINGE R SECC (MPI) P370EM	6-33-P37E1-0R2	
13	WIRE CABLE FOR LG 20 PIN TO WIRE FOR COM-VIDEO PORT	6-43-P37E1-020-J	
14	ANTENNA VIBRA VCI W/ PCB 24G/2500/56 W/ 50MM FT/2M	6-23-7P170-011	
15	ANTENNA VIBRA VCI W/ PCB 24G/2500/56 W/ 50MM FT/2M	6-23-7P170-031	
16	ANTENNA VIBRA VCI W/ PCB 24G/2500/56 W/ 50MM FT/2M	6-23-7P37E-021	
17	CDM 4015M 443300GHS 443-L00-10-LX-390M P370EM	6-23-EP37E-010	
18	LCD MIC FRAME (MPI) P370EM	6-42-P37E1-032	
19	LCD BACK MODULE (MPI) P370EM	6-39-P37E1-022	
20	BACK COVER PRD PET P370EM	6-40-P37E1-010	

A.Part Lists

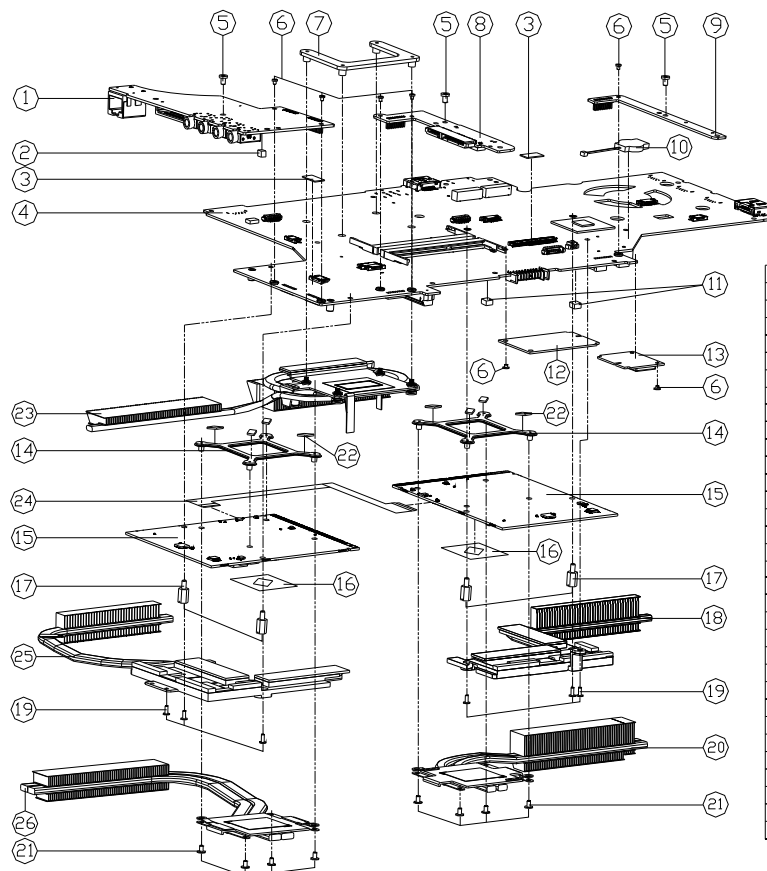
Mainboard (P370EM)

Figure A - 8
Mainboard
(P370EM)



ITEM	PART NAME	PART NO	REMARK
1	AUDIO BOARD V3.0 P370EM	6-77-P37EB-003	
2	VGA SUPPORT RUBBERS*5*7 P370EM	6-47-P37ES-021	
3	M/B KEYBOARD MYLAR PET MB10L	6-40-MB10S-011	
4	MAIN BOARD V3.0A P370EM	6-77-P37E0-003A	
5	SCREW M2.5*4L KI BK/0 ICT NY	6-35-B412S-4RA	
6	SCREW NYL6.40 M1 ICT NY (08-4453144)	6-35-B1120-3RE	
7	CPU SUPPORT BRACKET SECC 1*1.5 P370EM	6-33-X510S-011	
8	HDD BOARD V3.0 P370EM	6-77-P37EJ-003	
9	DDD BRIDGE BOARD V3.0 P370EM	6-23-P37EN-003	
10	MT 20M 3V 200MH VIO/AL 55M 800024V5	6-23-2201S-TC0	
11	VGA SUPPORT RUBBER B SILICONE P370EM	6-47-X510S-010	
12	MT 20M 3V 200MH VIO/AL 55M 800024V5	6-85-D4040-Z00	
13	MT 20M 3V 200MH VIO/AL 55M 800024V5	6-88-M77C2-4220	(OPTION)
13	MT 20M 3V 200MH VIO/AL 55M 800024V5	6-88-W25SF-4200	(OPTION)
13	MT 20M 3V 200MH VIO/AL 55M 800024V5	6-88-W345F-9400	(OPTION)
13	MT 20M 3V 200MH VIO/AL 55M 800024V5	6-88-P17EF-4200	(OPTION)
13	MT 20M 3V 200MH VIO/AL 55M 800024V5	6-88-W345F-8700	(OPTION)
13	MT 20M 3V 200MH VIO/AL 55M 800024V5	6-88-W345F-7000	(OPTION)
14	VGA(GATI) SUPPORTER SUS430 X7200	6-33-X720S-050	FOR VIBRALEON COORS
14	VGA SUPPORTER SUS430 X7200	6-33-X720S-040	FOR VIBRA NICE-GTX
15	VGA CHIP NYLON PET FOR ATT BLOCKING P370EM	6-77-PISEL-111-1	FOR VIBRALEON COORS
15	VGA CHIP NYLON PET FOR ATT BLOCKING P370EM	6-77-PISEL-211-1	FOR VIBRALEON COORS
15	VGA CHIP NYLON PET FOR ATT BLOCKING P370EM	6-77-PISEL-121-1	FOR NICE-GTX
15	VGA CHIP NYLON PET FOR ATT BLOCKING P370EM	6-77-PISEL-221-1	FOR NICE-GTX
16	VGA CHIP MYLAR PET FOR ATT BLOCKING P370EM	6-40-X510S-040	FOR VIBRALEON COORS
16	VGA CHIP MYLAR PET FOR ATT BLOCKING P370EM	6-40-PISES-020	FOR NICE-GTX
17	SCREW M2.5*4L KI BK/0 ICT NY FOR VGA CARD	6-35-Z112S-4R8-1	
18	VIBRA/VIBRALEON HEATSINK MODULE-1 P370EM	6-31-P37EN-800	FOR AND VIBRALEON
18	VIBRA/VIBRALEON HEATSINK MODULE-1 P370EM	6-31-P37EN-A00	FOR (NICE-GTX)
19	SCREW NYL6.40 M1 BK/2 ICT NY(44)	6-35-B6120-6R3	
20	GPU/VIBRALEON HEATSINK MODULE-1 P370EM	6-21-P37EN-600	FOR AND VIBRALEON
21	SCREW M2.4*3S KI*1.2 (3-4S) B2 ICT NY	6-35-B2116-3R5	FOR (NICE-GTX)
22	PCBON BOARD FOR M/B-GM SUPPORTER P370EM	6-47-X510S-030	
23	CPU HEATSINK MODULE P370EM	6-31-P37EN-101	
24	PC CASE FOR ALUMINUM HEATSINK VIA CARD OR VIA FAN	6-43-P37E0-020	FOR AND VIBRALEON
24	PC CASE FOR ALUMINUM HEATSINK VIA CARD OR VIA FAN	6-43-P37E0-011	FOR (NICE-GTX)
25	VIBRA/VIBRALEON HEATSINK MODULE-2 P370EM	6-31-P37EN-901	FOR AND VIBRALEON
25	VIBRA/VIBRALEON HEATSINK MODULE-2 P370EM	6-31-P37EN-B00	FOR (NICE-GTX)
26	GPU/VIBRALEON HEATSINK MODULE-2 P370EM	6-31-P37EN-701	FOR AND VIBRALEON

Mainboard (P370EM3)



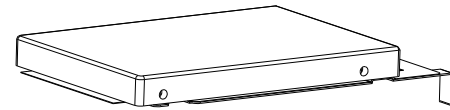
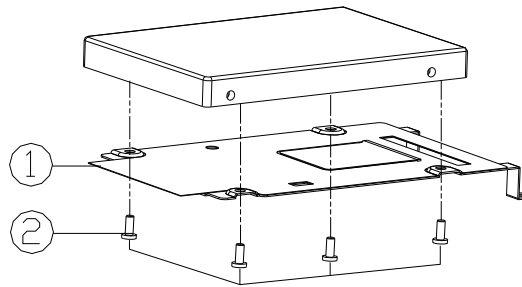
ITEM	PART NAME	PART NO	REMARK
1	AUDDIO BOARD V3.0 P370EM	6-77-P37E8-D03	
2	VGA SUPPORT RUBBER(5*5*7) P370EM	6-47-P37ES-022	
3	M/B KEYBOARD MYLAR PET MB0L	6-40-M810S-011	
4	MAIN BOARD V3.0A P370EM3	6-77-P37E0-D33A	
5	SCREW M2.5*4L KI BK/D ICT NY	6-35-B4125-4RA	
6	SCREW M2*3L KI NI ICT NY (DD#45,DT#4)	6-35-B1120-3RE	
7	CPU SUPPORT BRACKET SECC T=1.5 P150MM	6-33-X510S-011	
8	HDD BOARD V3.0 P370EM	6-77-P37EJ-D03	
9	DDD BRIDGE BOARD V3.0 P370EM	6-77-P37EN-D03	
10	BAT. 20MM 3V 220MAH W/CABLE 55MM BCR2024V5	6-23-22015-1C0	
11	VGA SUPPORT RUBBER 8 SILICONE P150MM	6-47-X510S-010	
12	GRID STAINLESS STEEL SPRING CONTACT PATTERN FOR P370EM3	6-85-D4040-Z00	
13	KEY BOARD RUBBER CONTACT PATTERN FOR P370EM3	6-88-M770C-4220	(OPTION)
13	KEY BOARD RUBBER CONTACT PATTERN FOR P370EM3	6-88-W255F-4200	(OPTION)
13	KEY BOARD RUBBER CONTACT PATTERN FOR P370EM3	6-88-W345F-9400	(OPTION)
13	KEY BOARD RUBBER CONTACT PATTERN FOR P370EM3	6-88-P17EF-4200	(OPTION)
13	KEY BOARD RUBBER CONTACT PATTERN FOR P370EM3	6-88-W345F-8700	(OPTION)
13	KEY BOARD RUBBER CONTACT PATTERN FOR P370EM3	6-88-W345F-7000	(OPTION)
14	VGA SUPPORTER SUS430 X7200	6-33-X720S-040	FOR NVIDIA NISE-GTX
15	VGA BRIDGE G1X OF GABORING, N13E-GTX	6-77-P1SEL-121-1	FOR NISE-GTX
15	VGA BRIDGE G1X OF GABORING, N13E-GTX	6-77-P1SEL-221-1	FOR NISE-GTX
16	VGA CHIP MYLAR FOR NV NISE-GTX P150MM	6-40-P15ES-020	FOR NISE-GTX
17	SCREW M2.5*4L(T=1.5) NI ICT NY FOR VGA CARD	6-35-Z1125-4R8-1	
18	VRM/NISE-GTX HEATSINK MODULE-1 P370EM	6-31-P37EN-600	FOR (NISE-GTX)
19	SCREW M2*3L KI BK/D ICT NY#435 1#4)	6-35-B6120-6RB	
20	GPU/VMELEDDO HEATSINK MODULE-1 P370EM	6-31-P37EN-600	FOR AMD WINDLEDDO FOR (NISE-GTX)
21	SCREW M1.6*3.5L KI#12 (D=4.5) BZ ICT NY	6-35-82116-3R5	
22	FORON (10#*3) FOR NISE-GTX SUPPORT P150MM	6-47-X510S-030	
23	CPU HEATSINK MODULE P370EM	6-31-P37EN-102	
24	HEAT SINK FOR CPU AND GPU FOR P370EM	6-43-P37E0-012	FOR (NISE-GTX)
25	VRM/NISE-GTX HEATSINK MODULE-2 P370EM	6-31-P37EN-800	FOR (NISE-GTX)
26	GPU/VMELEDDO HEATSINK MODULE-2 P370EM	6-31-P37EN-701	FOR AMD WINDLEDDO FOR (NISE-GTX)

Figure A - 9
Mainboard
(P370EM3)

A.Part Lists

HDD

Figure A - 10
HDD



ITEM	PART NAME	PART NO	REMARK
1	MAIN HDD BRACKET SECC P370EM	6-33-P37EJ-012	
2	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	

2nd HDD

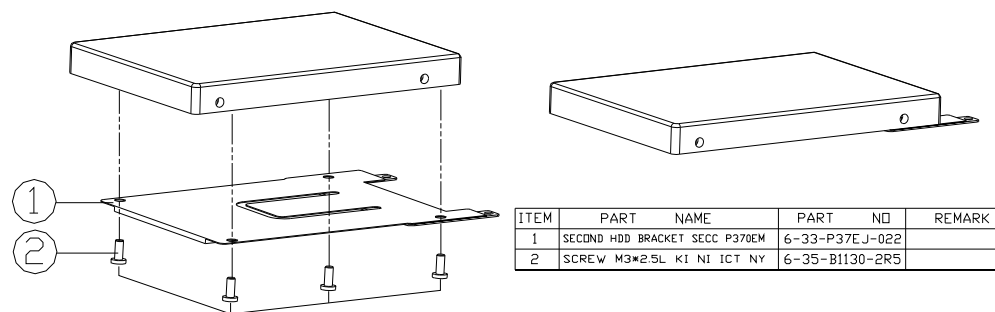
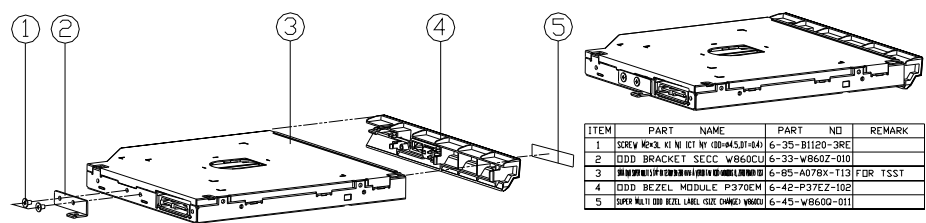


Figure A - 11
2nd HDD

A.Part Lists

DVD (P370EM3)

Figure A - 13
DVD (P370EM3)

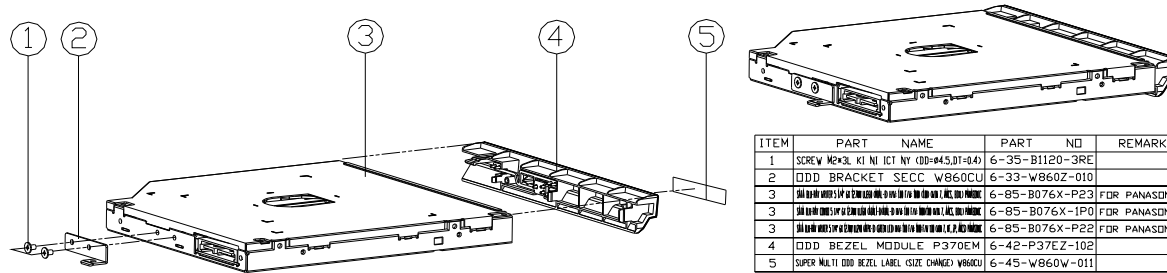


ITEM	PART NAME	PART NO	REMARK
1	SCREW M3X 11 W/ KT W/ OD=45.81+0.04	6-35-B1120-3RE	
2	ODD BRACKET SECC W860CU	6-33-W860Z-010	
3	ODD BEZEL MODULE P370EM	6-85-A076X-T13	FOR TSSST
4	ODD BEZEL MODULE P370EM	6-42-P37E2-102	
5	SUPER MULTI ODD BEZEL LABEL SIZE CHANGE W860U	6-45-W8600-011	

A.Part Lists

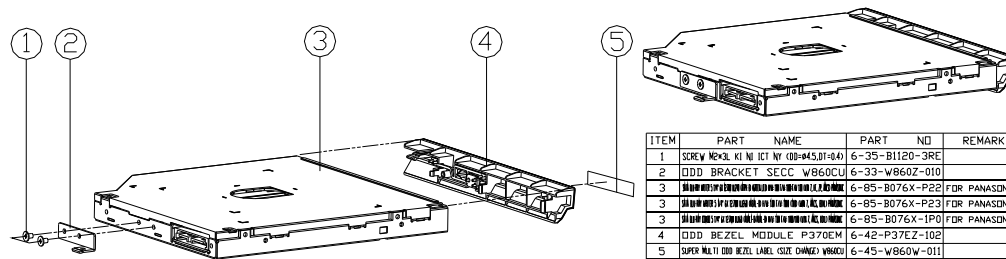
COMBO (P730EM)

Figure A - 14
COMBO (P370EM)



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2X3. KI NI ICT NY (DD=045,DI=04)	6-35-B1120-3RE	
2	ODD BRACKET SECC W860CU	6-33-W860Z-010	
3	ODD BEZEL MODULE P370EM	6-42-P37EZ-102	FOR PANASONIC
3	ODD BEZEL MODULE P370EM	6-42-P37EZ-102	FOR PANASONIC
3	ODD BEZEL MODULE P370EM	6-42-P37EZ-102	FOR PANASONIC
4	ODD BEZEL MODULE P370EM	6-42-P37EZ-102	
5	SUPER MULTI ODD BEZEL LABEL (SIZE CHANGED) W860CU	6-45-W860W-011	

COMBO (P370EM3)



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2X3. KI NI ICT NY (00#445,01#04)	6-35-B1120-3RE	
2	DDD BRACKET SECC W860CU	6-33-W8602-010	
3	DRIVE OPTICAL DVD RW COMBO (00#445,01#04)	6-85-B076X-P22	FDR PANASONIC
3	DRIVE OPTICAL DVD RW COMBO (00#445,01#04)	6-85-B076X-P23	FDR PANASONIC
3	DRIVE OPTICAL DVD RW COMBO (00#445,01#04)	6-85-B076X-IP0	FDR PANASONIC
4	DDD BEZEL MODULE P370EM	6-42-P37E2-102	
5	SUPER MULTI DDD BEZEL LABEL (SIZE CHANGED) W860C	6-45-W860W-011	

Figure A - 15
COMBO
(P370EM3)

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *P370EM / P370EM3* 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>PCH 3/9 - DMI, FDI, PWRGRD - Page B - 21</i>	<i>Power 1.05VS - Page B - 40</i>
<i>Processor 1/7 - DMI, FDI, PEG - Page B - 3</i>	<i>PCH 4/9 - LVDS, DDI, CRT - Page B - 22</i>	<i>Power 1.5V / VTT_MEM - Page B - 41</i>
<i>Processor 2/7 - CLK, MISC - Page B - 4</i>	<i>PCH 5/9 - PCI, USB, RSVD - Page B - 23</i>	<i>Power 1V, 1.8VS - Page B - 42</i>
<i>Processor 3/7 - DDR3 - Page B - 5</i>	<i>PCH 6/9 - GPIO, CPU - Page B - 24</i>	<i>Power V-Core1 - Page B - 43</i>
<i>Processor 4/7 - POWER - Page B - 6</i>	<i>PCH 7/9 - Power - Page B - 25</i>	<i>Power V-Core2 - Page B - 44</i>
<i>Processor 5/7 - GFX PWR - Page B - 7</i>	<i>PCH 8/9 - Power - Page B - 26</i>	<i>Power 0.85VS - Page B - 45</i>
<i>Processor 6/7 - GND - Page B - 8</i>	<i>PCH 9/9 - GND - Page B - 27</i>	<i>Audio Board - Page B - 46</i>
<i>Processor 7/7 - RSVD - Page B - 9</i>	<i>USB+eSATA, USB Charging - Page B - 28</i>	<i>LAN (RTL8411) - Page B - 47</i>
<i>DDR3 CHA SO-DIMM 0 - Page B - 10</i>	<i>GEN-III SATA HDD Re-driver - Page B - 29</i>	<i>Power Charger, DC IN - Page B - 48</i>
<i>DDR3 CHA SO-DIMM 1 - Page B - 11</i>	<i>BT, CCD+MIC, MINI PCIE - Page B - 30</i>	<i>ODD Board - Page B - 49</i>
<i>DDR3 CHB SO-DIMM 0 - Page B - 12</i>	<i>Fan Control - Page B - 31</i>	<i>HDD Board - Page B - 50</i>
<i>DDR3 CHB SO-DIMM 1 - Page B - 13</i>	<i>Codec Realtek ALC892 - Page B - 32</i>	<i>Power Board - Page B - 51</i>
<i>MXM 3.0 MASTER - Page B - 14</i>	<i>APA2607 / TPA2008D2 - Page B - 33</i>	<i>Front LED Board - Page B - 52</i>
<i>MXM 3.0 SLAVE - Page B - 15</i>	<i>KBC-ITEIT8518E - Page B - 34</i>	<i>Top LED Board - Page B - 53</i>
<i>Panel, Inverter, eDP - Page B - 16</i>	<i>mSATA, Fan, TP, FP, MULTI CON - Page B - 35</i>	<i>Fingerprint Board - Page B - 54</i>
<i>Display Port - Page B - 17</i>	<i>Backlight Keyboard - Page B - 36</i>	<i>TPM - Page B - 55</i>
<i>HDMI - Page B - 18</i>	<i>USB3.0 - Page B - 37</i>	<i>Power On Sequence - Page B - 56</i>
<i>PCH 1/9 - RTC, HDA, SATA - Page B - 19</i>	<i>VDD3, VDD5 - Page B - 38</i>	
<i>PCH 2/9 - PCIE, SMBUS, CLK - Page B - 20</i>	<i>5VS, 3.3VS, 1.5VS - Page B - 39</i>	

Table B - 1
**Schematic
Diagrams**

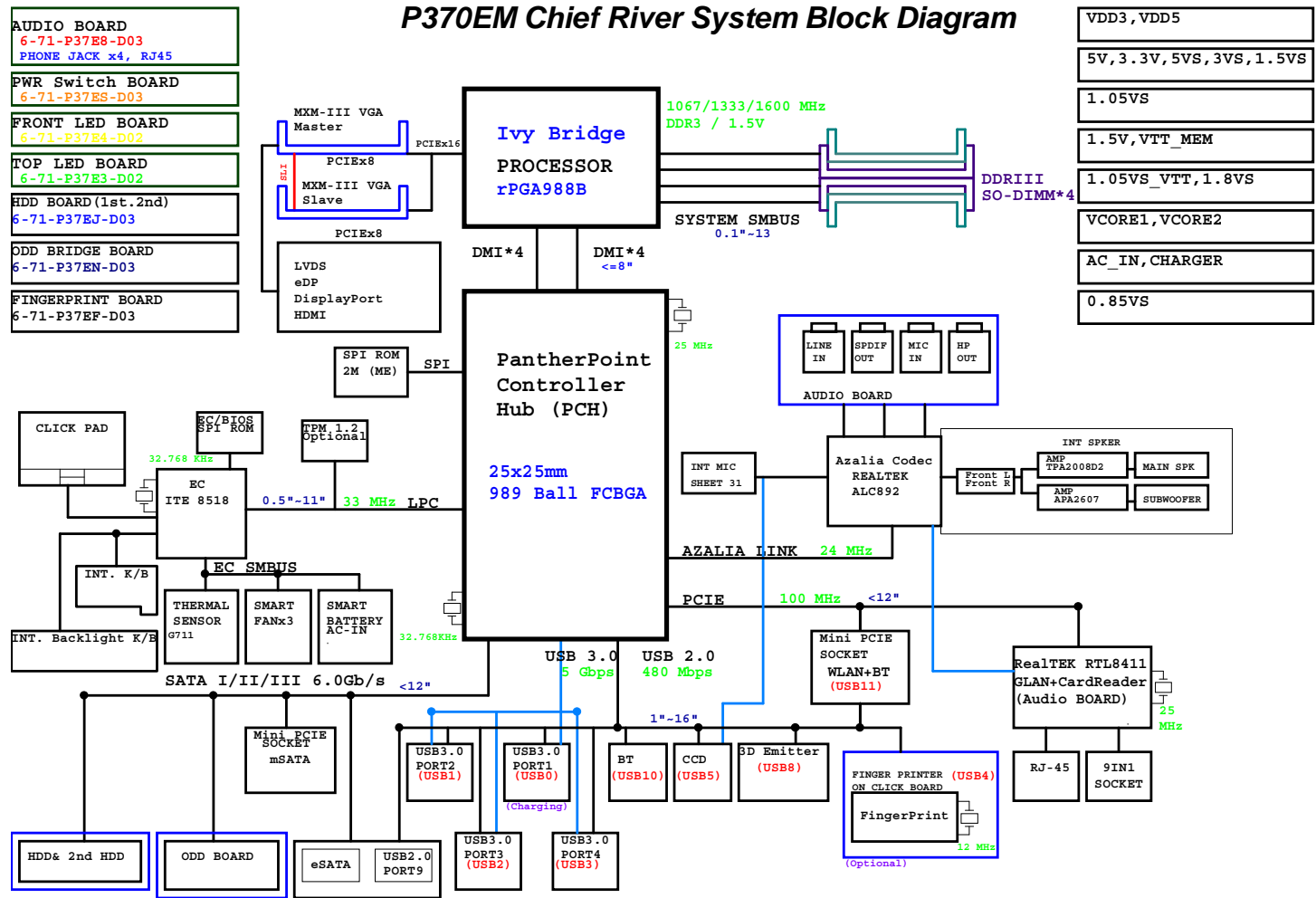


Version Note

The schematic diagrams in this chapter are based upon version 6-7P-P37E8-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

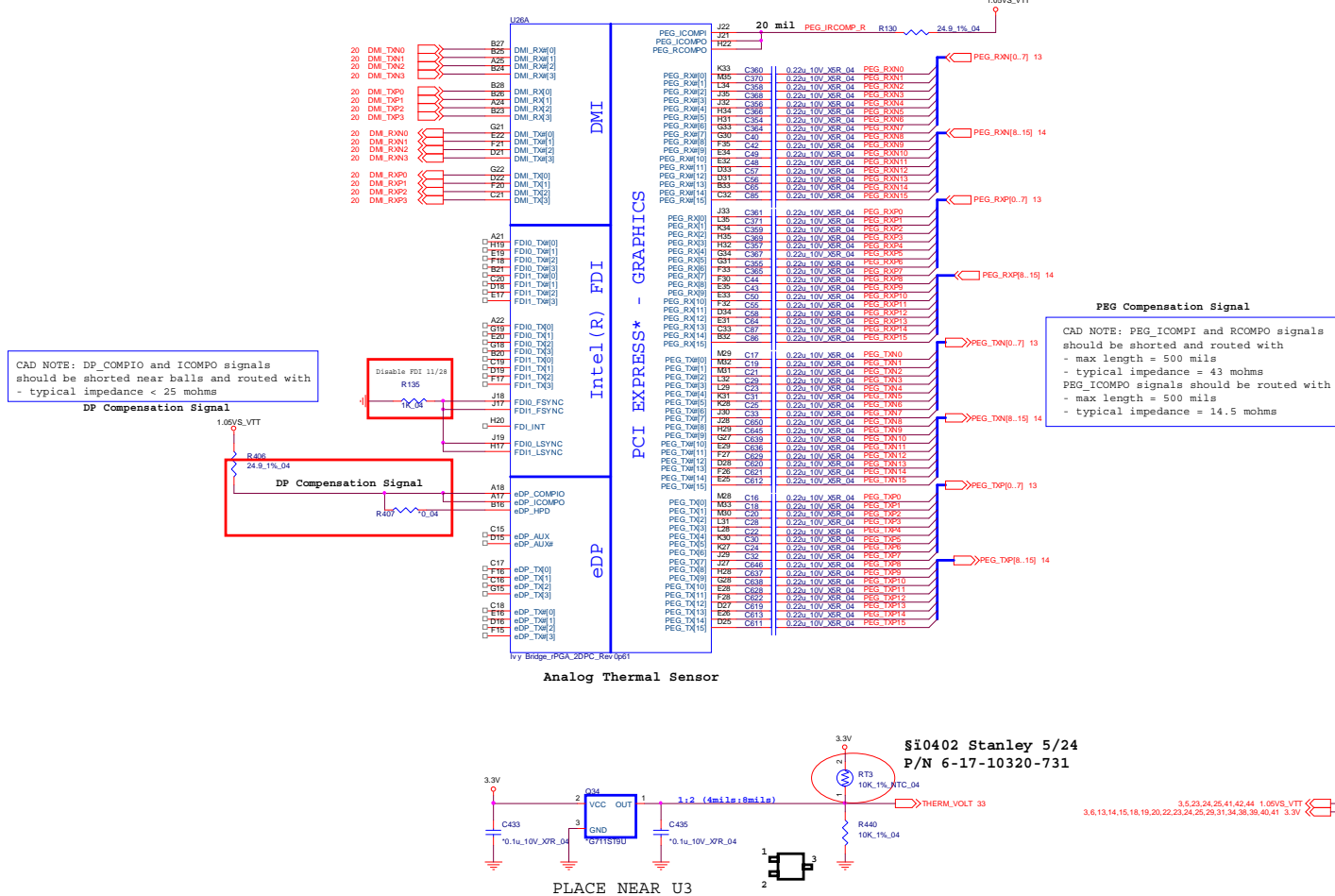
System Block Diagram

Sheet 1 of 54
System Block
Diagram



Processor 1/7 - DMI, FDI, PEG

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

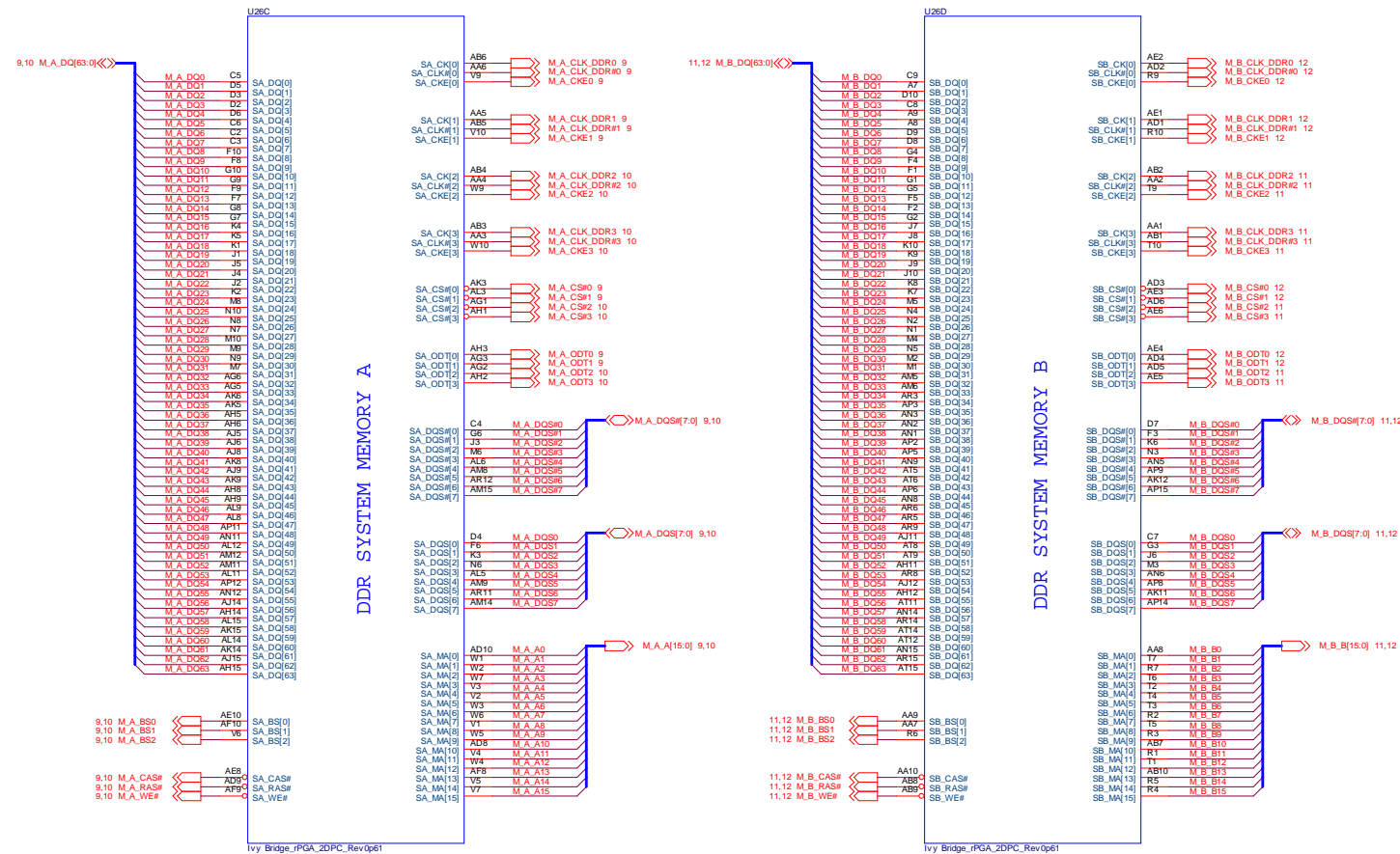


Sheet 2 of 54
Processor 1/7 -
DMI, FDI, PEG

B.Schematic Diagrams

Processor 3/7 - DDR3

Ivy Bridge Processor 3/7 (DDR3)

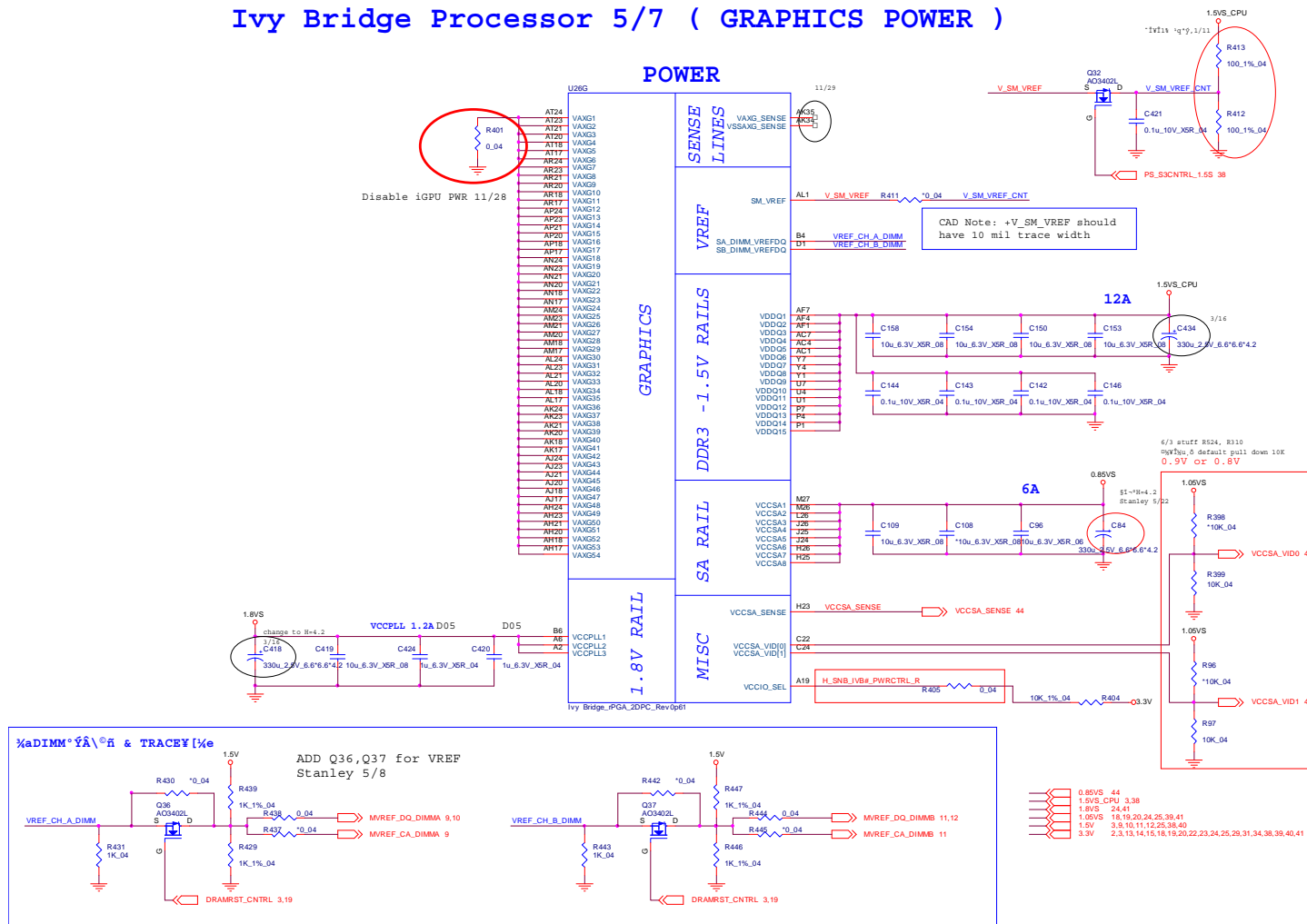


Sheet 4 of 54
Processor 3/7 -
DDR3

B.Schematic Diagrams

Processor 5/7 - GFX PWR

Ivy Bridge Processor 5/7 (GRAPHICS POWER)



Sheet 6 of 54
Processor 5/7 -
GFX PWR

B.Schematic Diagrams

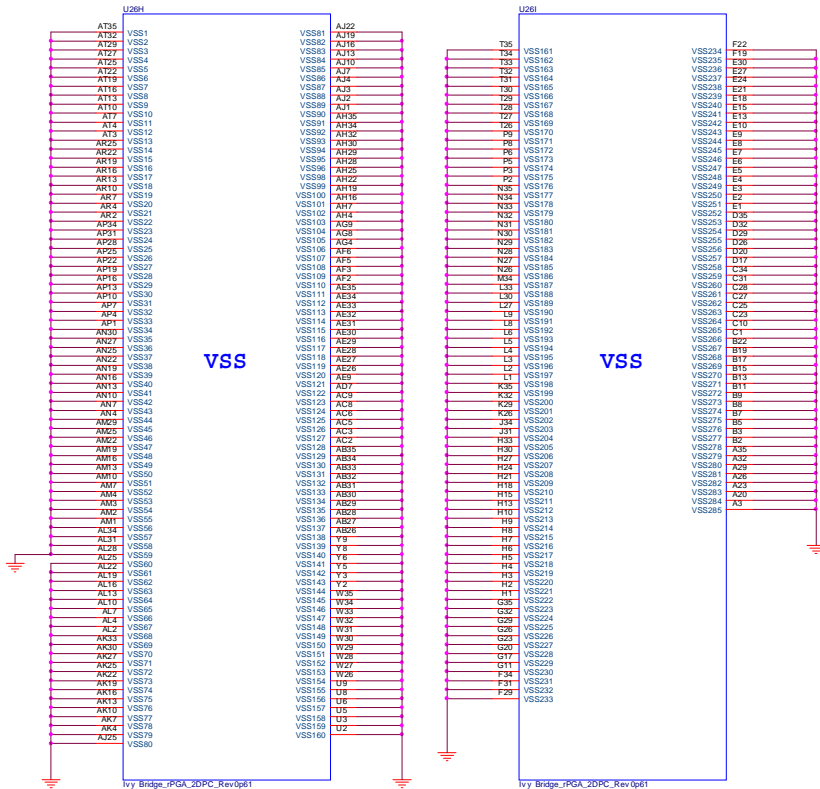
Schematic Diagrams

Processor 6/7 - GND

Ivy Bridge Processor 6/7 (GND)

B.Schematic Diagrams

Sheet 7 of 54
Processor 6/7 -
GND



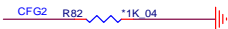
24,34,38 1.51S
3,9,10,11,12,13,14,15,16,17,18,19,20,22,23,24,25,27,28,29,30,31,32,33,34,35,38,42,44,54 3.9V

Processor 7/7 - RSVD

Ivy Bridge Processor 7/7 (RESERVED)

CFG Straps for Processor

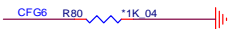
PEG Static Lane Reversal - CFG2 is for the 16x	
CFG2	1: (Default) Normal Operation; Lane # definition matches socket pin map definition 0: Lane Reversed



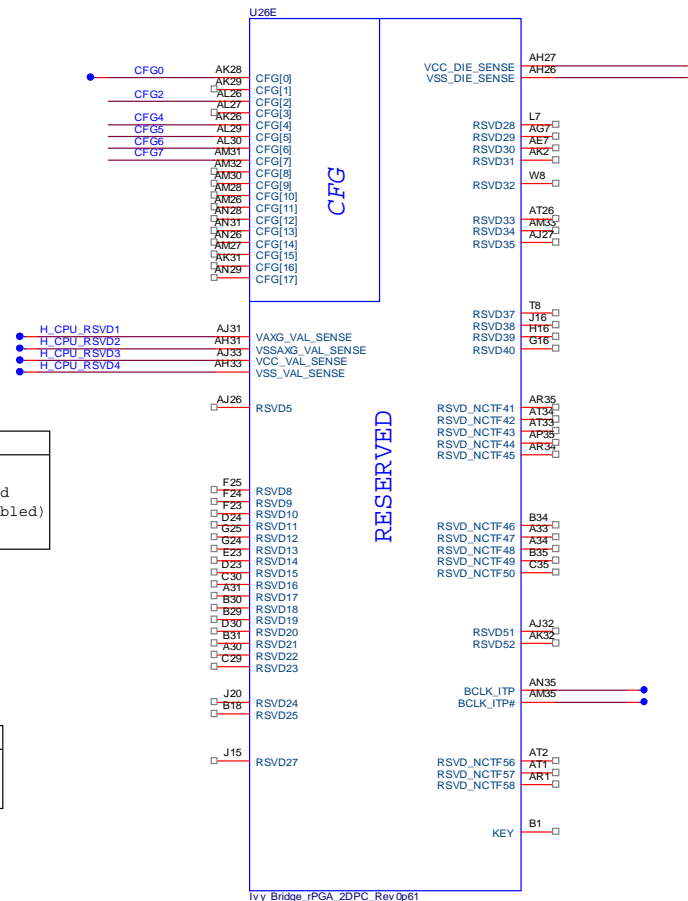
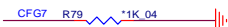
Display Port Presence Strap	
CFG4	1: (Default) Disabled; No Physical Display Port attached to Embedded Display Port 0: Enabled; An external Display Port device is connected to the Embedded Display Port



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



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



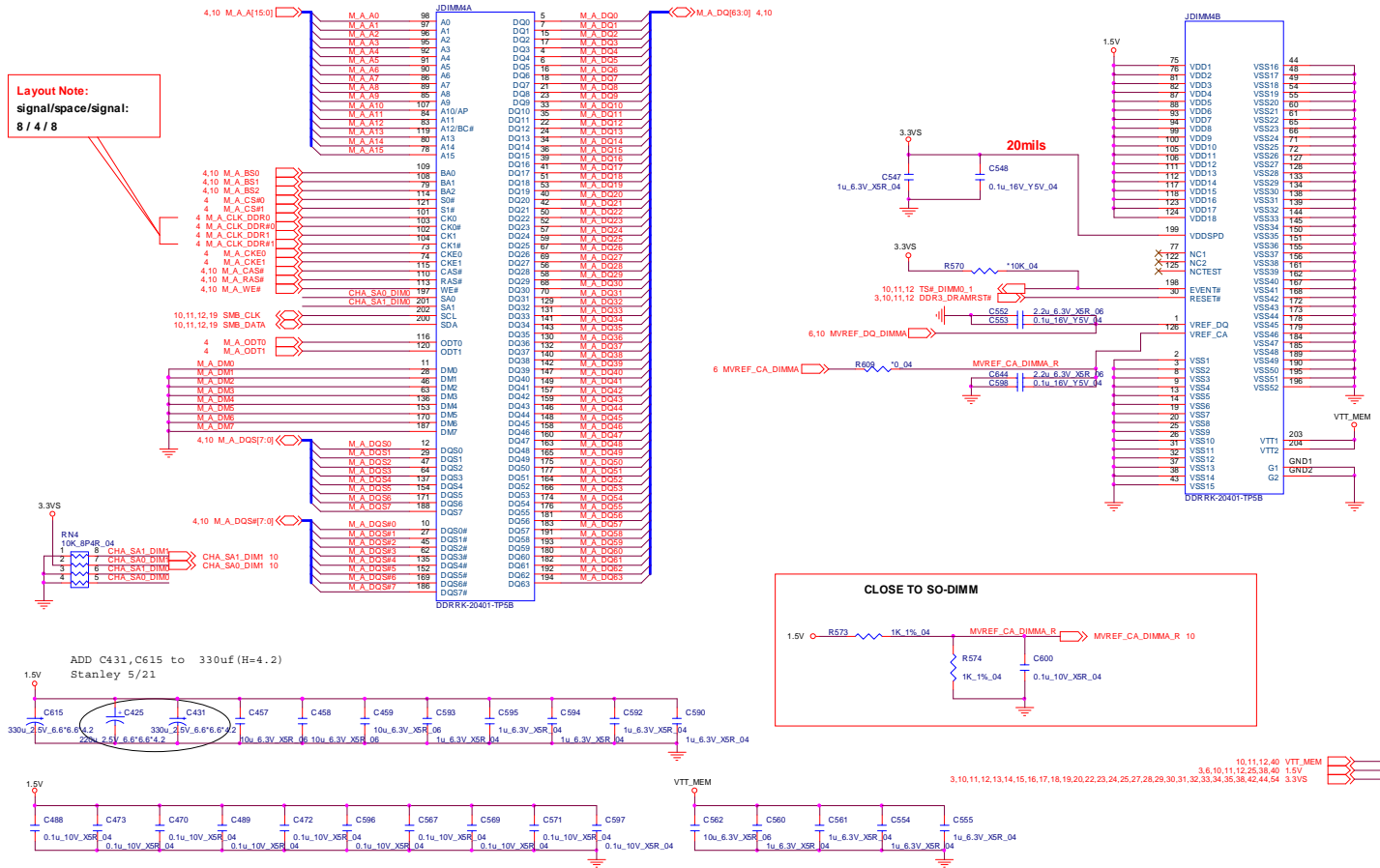
Sheet 8 of 54
Processor 7/7 -
RSVD

B.Schematic Diagrams

DDR3 CHA SO-DIMM 0

Channel A SO-DIMM 0

CHANGE TO STANDARD



B.Schematic Diagrams

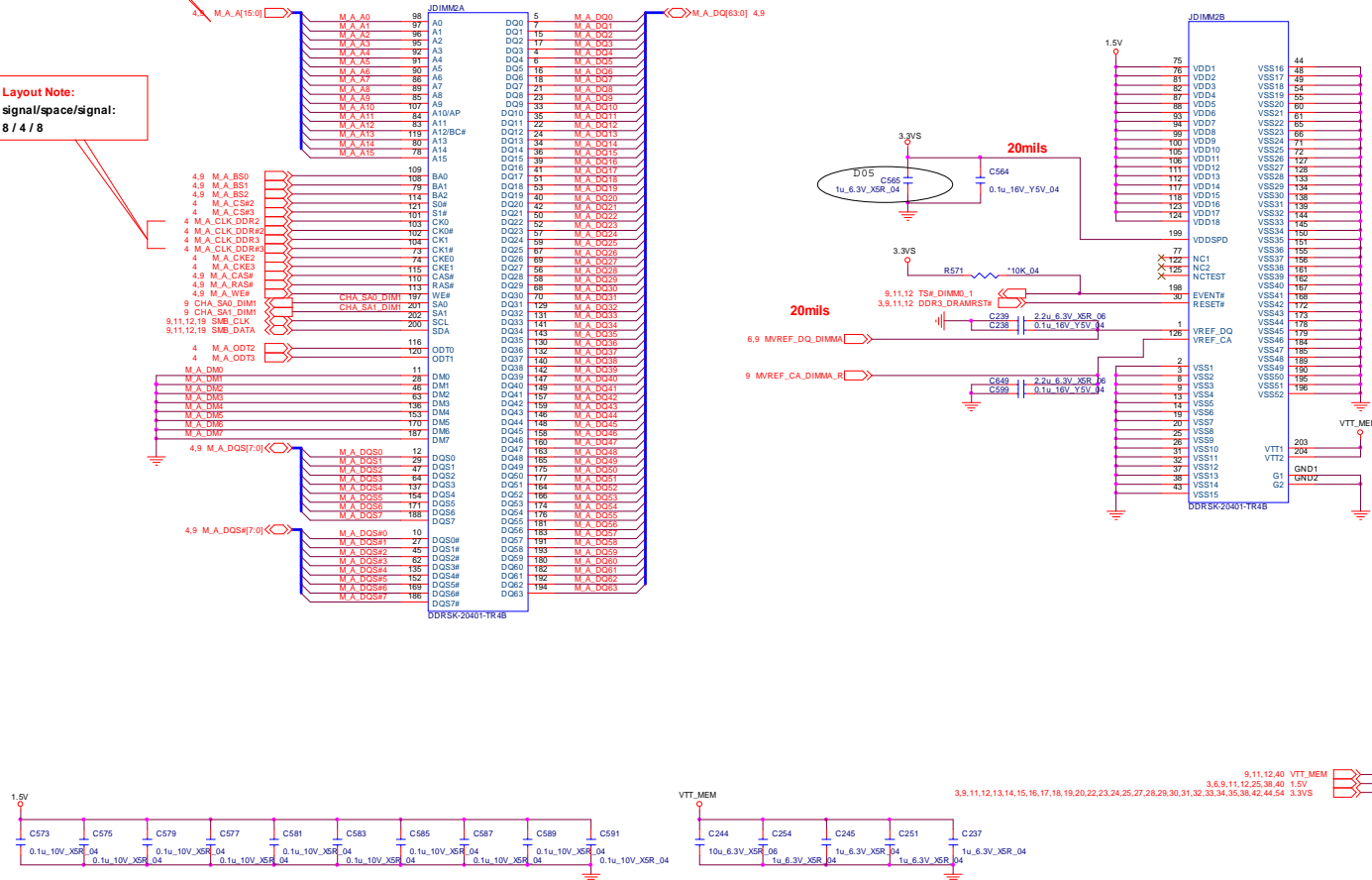
Sheet 9 of 54
DDR3 CHA
SO-DIMM 0

DDR3 CHA SO-DIMM 1

Channel A SO-DIMM 1

CHANGE TO STANDARD

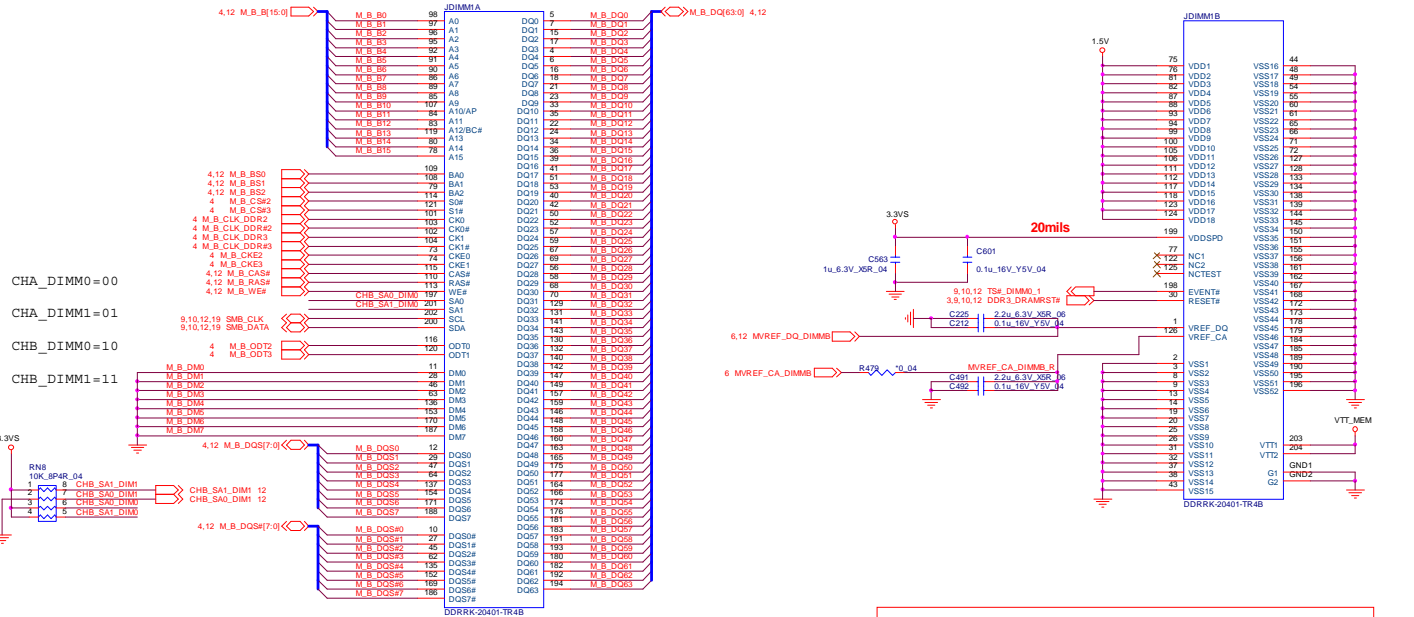
Layout Note:
signal/space/signal:
8 / 4 / 8



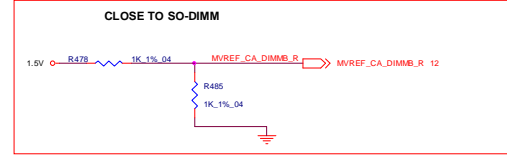
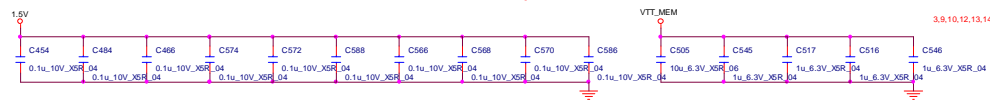
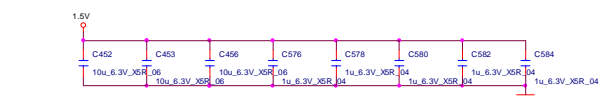
DDR3 CHB SO-DIMM 0

Channel B SO-DIMM 0

CHANGE TO STANDARD



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



8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 42, 44, 54, 3.3VS

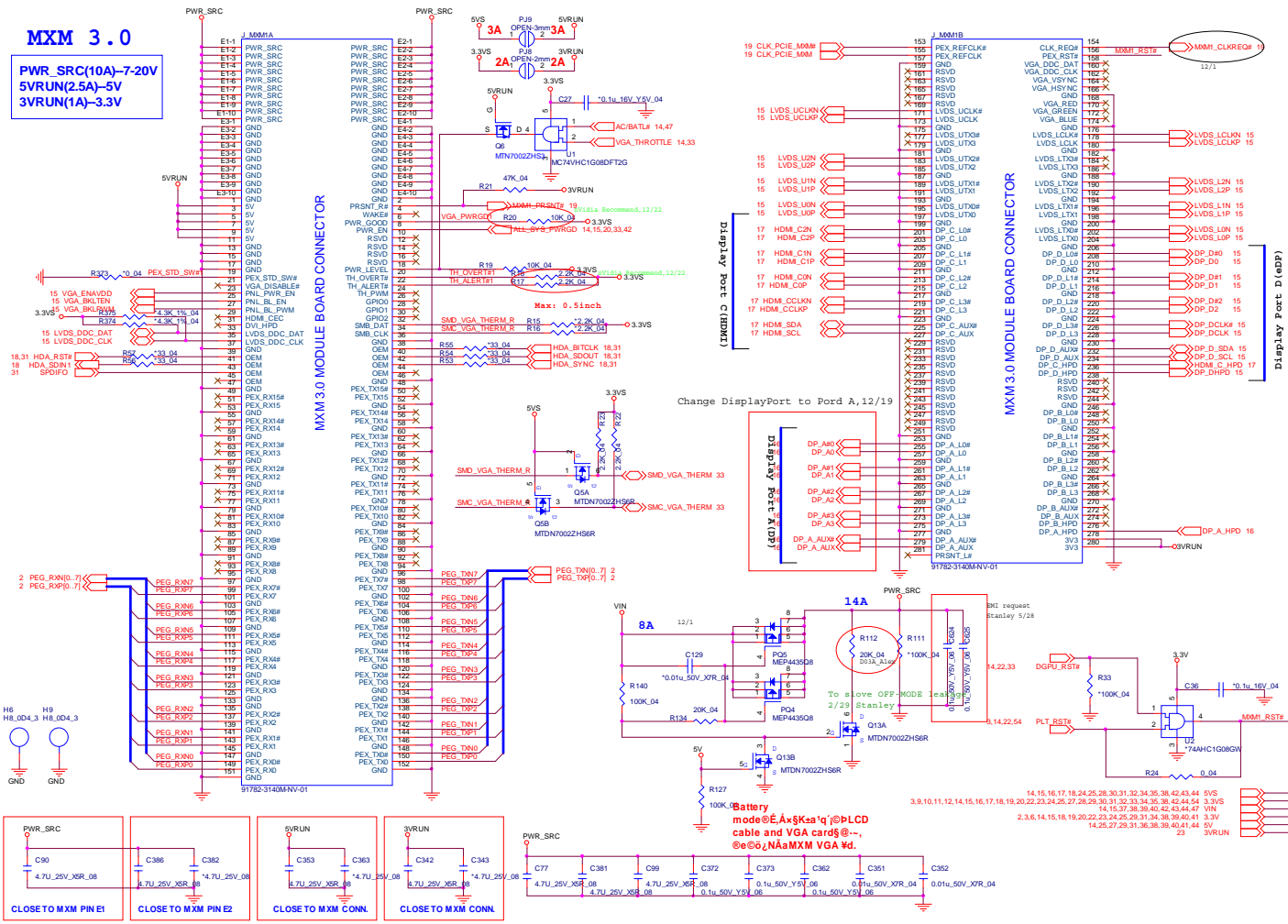
B.Schematic Diagrams

Sheet 11 of 54
DDR3 CHB
SO-DIMM 0

CHA_DIMM0=00
CHA_DIMM1=01
CHB_DIMM0=10
CHB_DIMM1=11

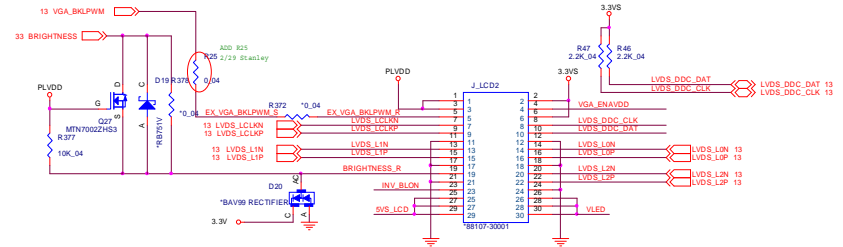
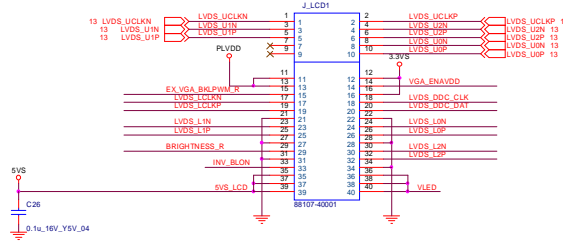
MXM 3.0 MASTER

Sheet 13 of 54
MXM 3.0 PCI-E
MASTER



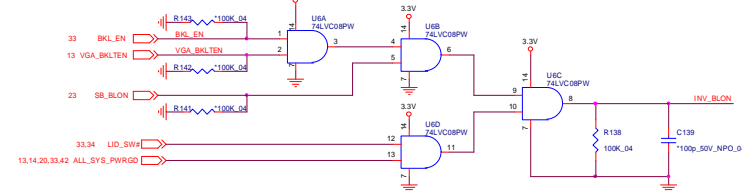
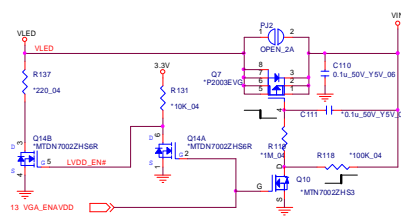
Panel, Inverter, eDP

PANEL

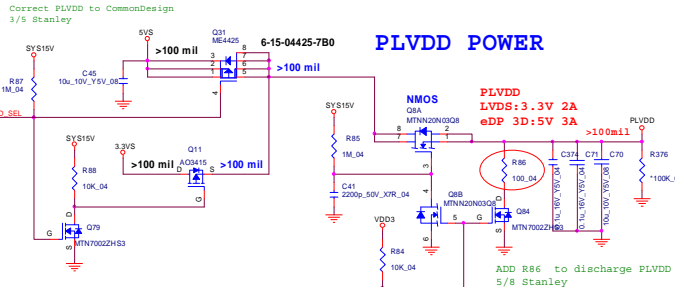
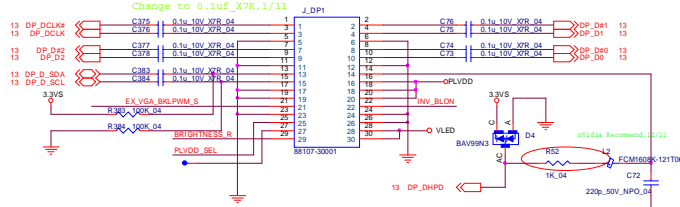


Sheet 15 of 54
Panel, Inverter, eDP

B.Schematic Diagrams



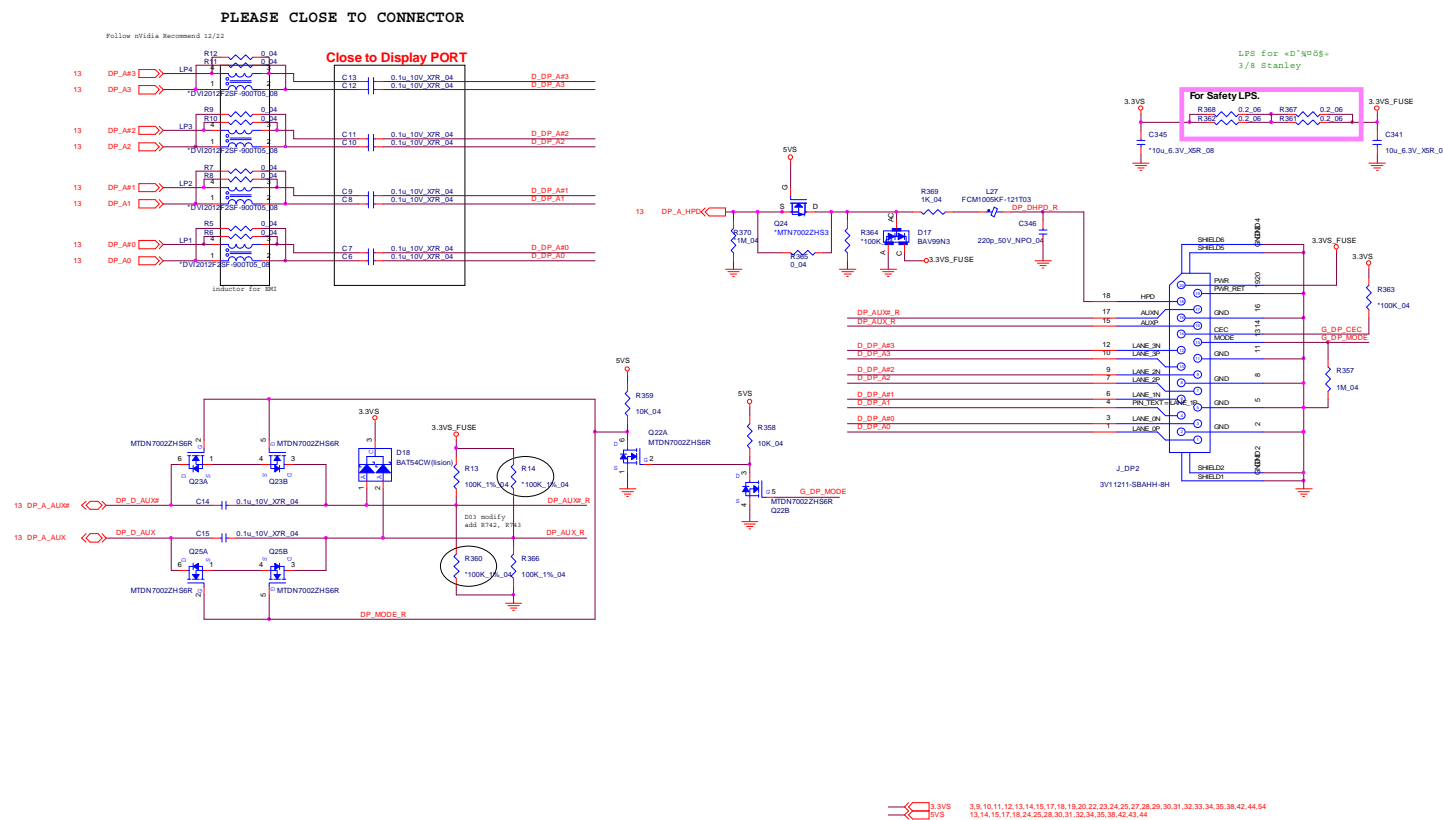
eDP



VDD3	18,29,33,34,37,38,47,54
SY515V	37,38,41
SY515V	13,14,37,38,39,40,42,43,44,47
5V5	13,14,16,17,18,24,25,28,30,31,32,34,35,38,42,43,44
3.3V	2,3,6,8,11,18,19,20,22,23,24,25,29,31,34,35,39,40,41
3.3VS	3,9,10,11,12,13,14,16,17,18,19,20,22,23,24,25,27,28,29,30,31,32,33,34,35,38,42,44,54

Display Port

DISPLAY PORT

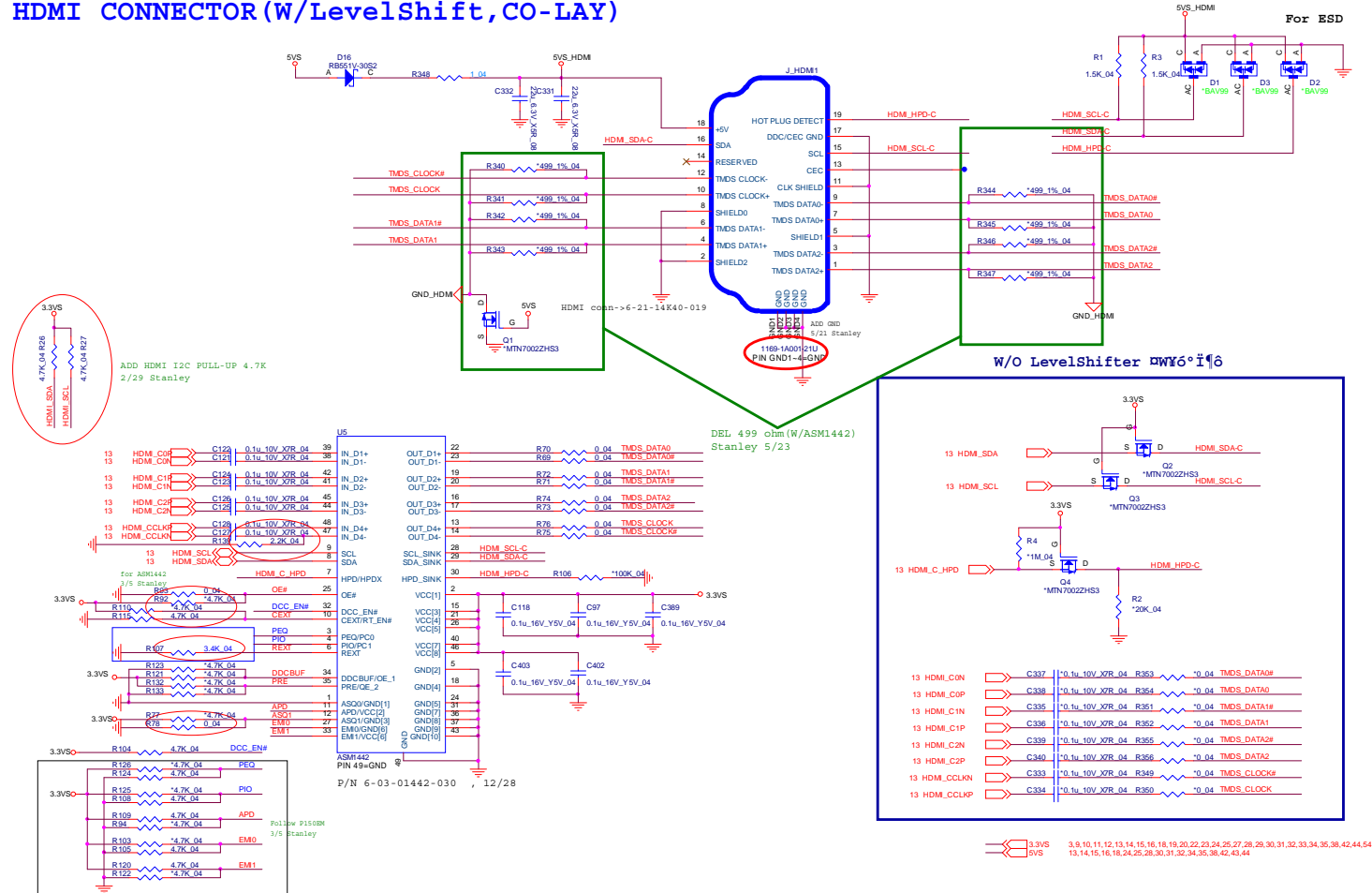


Sheet 16 of 54
Display Port

Schematic Diagrams

HDMI

HDMI CONNECTOR (W/LevelShift, CO-LAY)



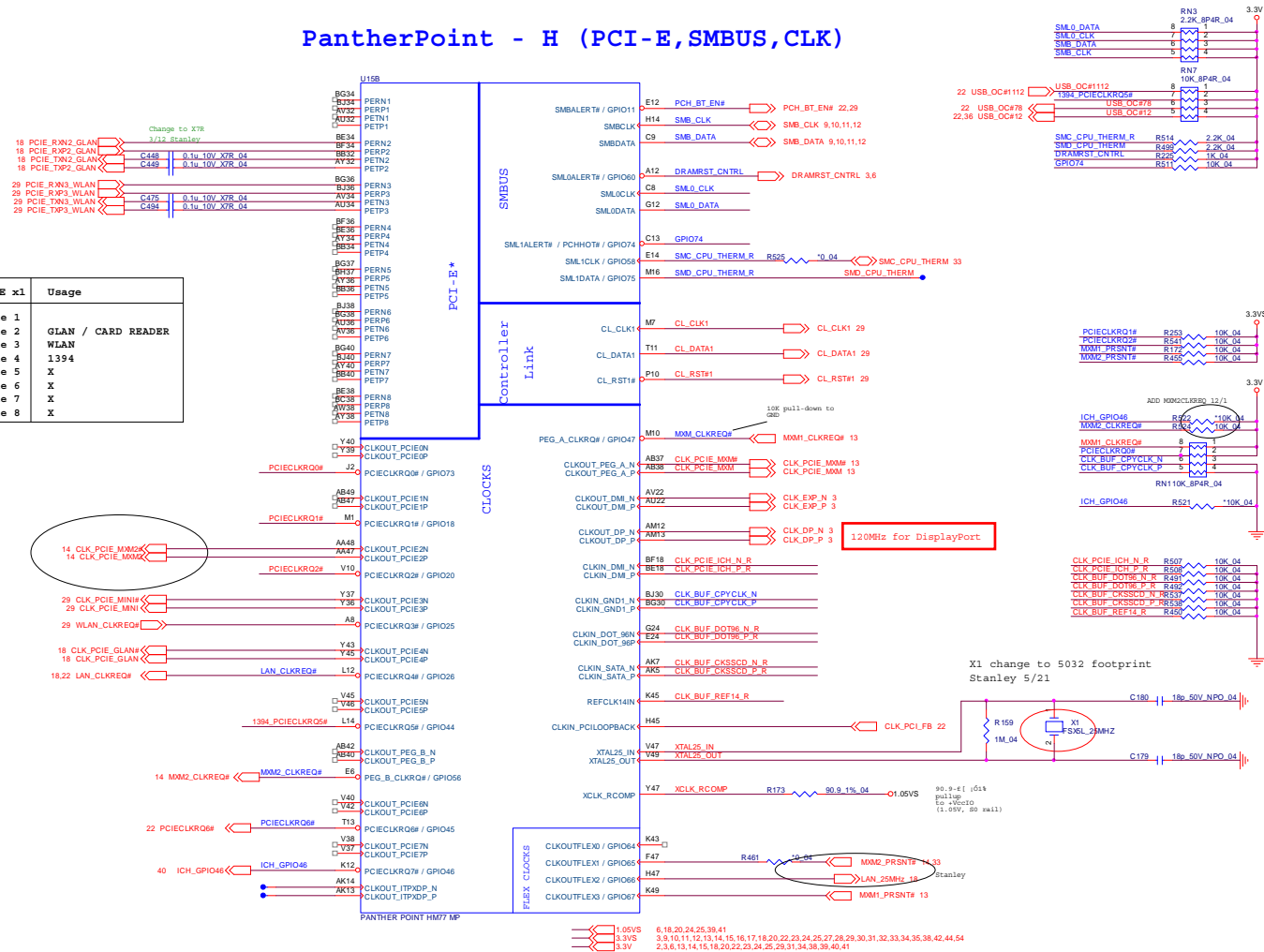
Sheet 17 of 54
HDMI

B.Schematic Diagrams

PCH 2/9 - PCIE, SMBUS, CLK

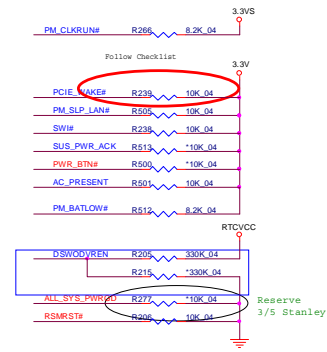
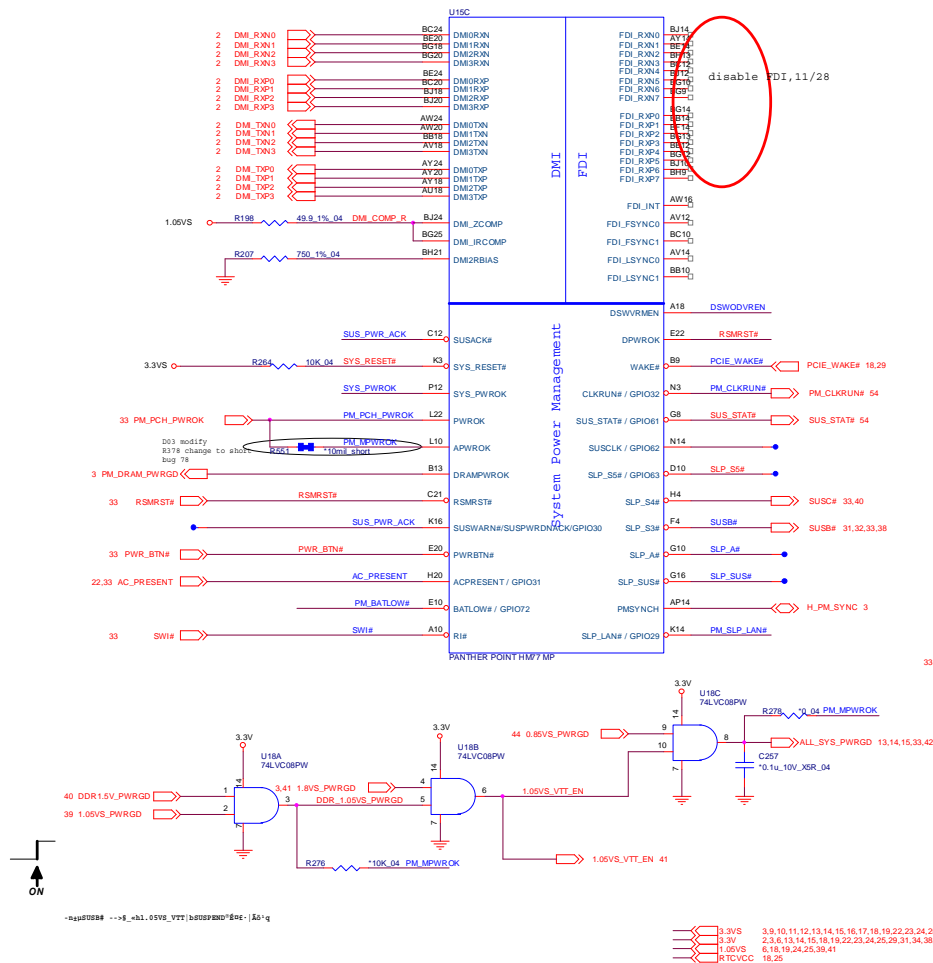
Sheet 19 of 54
PCH 2/9 - PCIE,
SMBUS, CLK

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

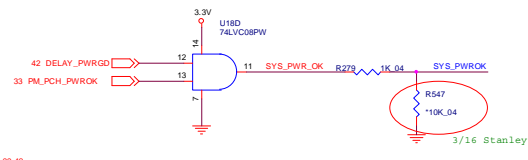


PCH 3/9 - DMI, FDI, PWRGRD

PantherPoint - H (DMI, FDI, GPIO)



DSWODVREN - On Die DSW VR Enable	
R7V25 STUFFED, R7V26 UNSTUFFED	Enabled (DEFAULT)
R7V26 STUFFED, R7V25 UNSTUFFED	Disabled



Sheet 20 of 54
PCH 3/9 - DMI, FDI,
PWRGRD

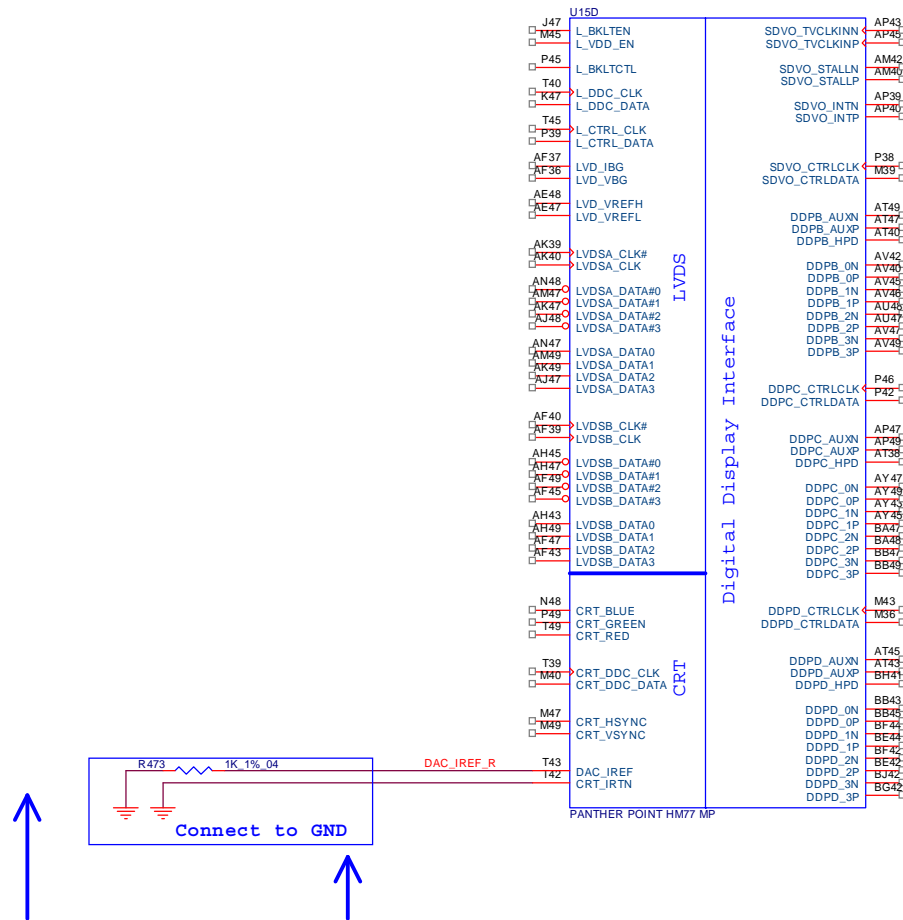
B.Schematic Diagrams

Schematic Diagrams

PCH 4/9 - LVDS, DDI, CRT

PantherPoint - H (LVDS, DDI)

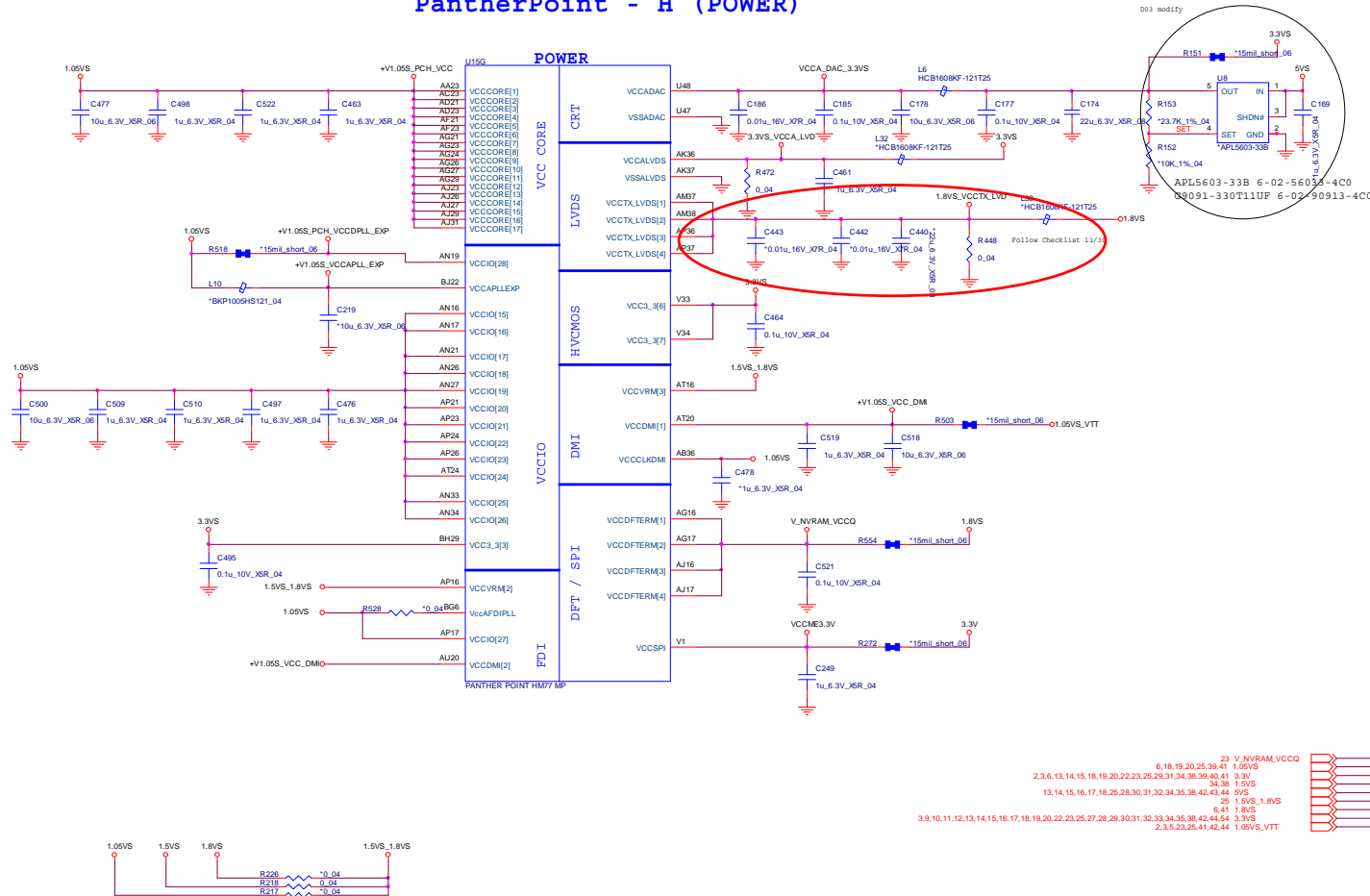
Sheet 21 of 54
PCH 4/9 - LVDS,
DDI, CRT



External Graphics (PCH Integrated Graphics Disable)

PCH 7/9 - Power

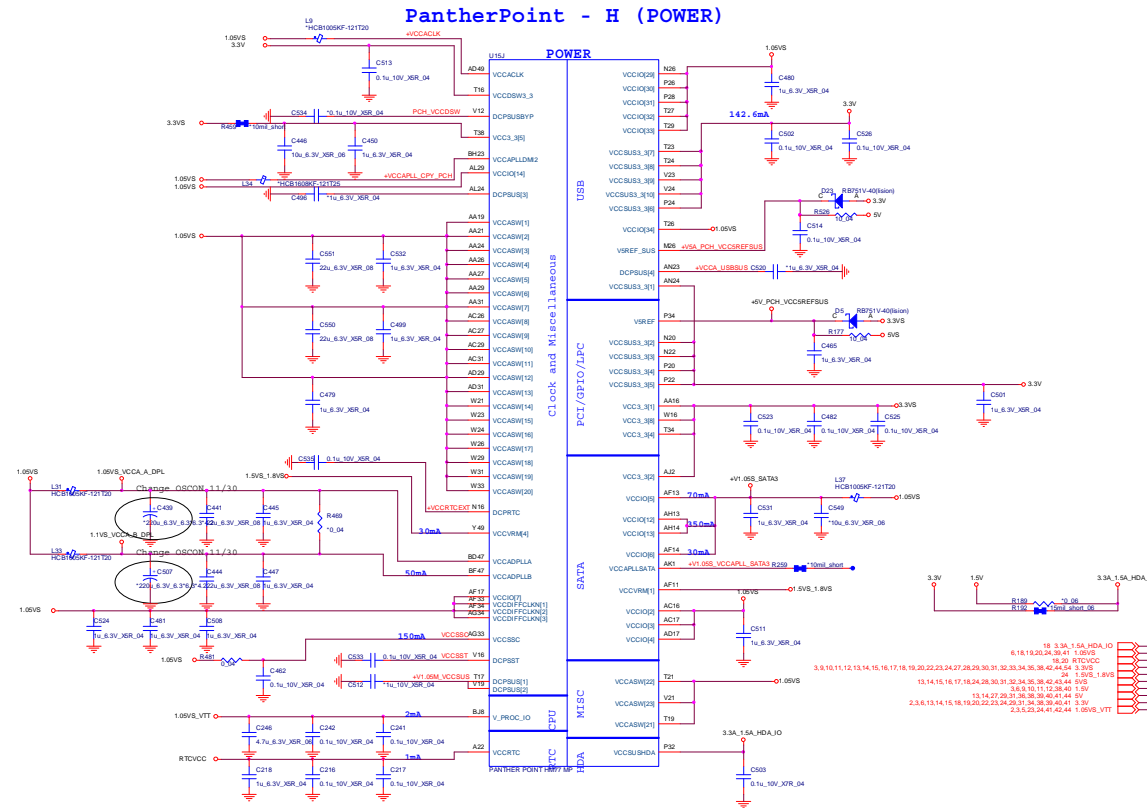
PantherPoint - H (POWER)



Sheet 24 of 54
PCH 7/9 - Power

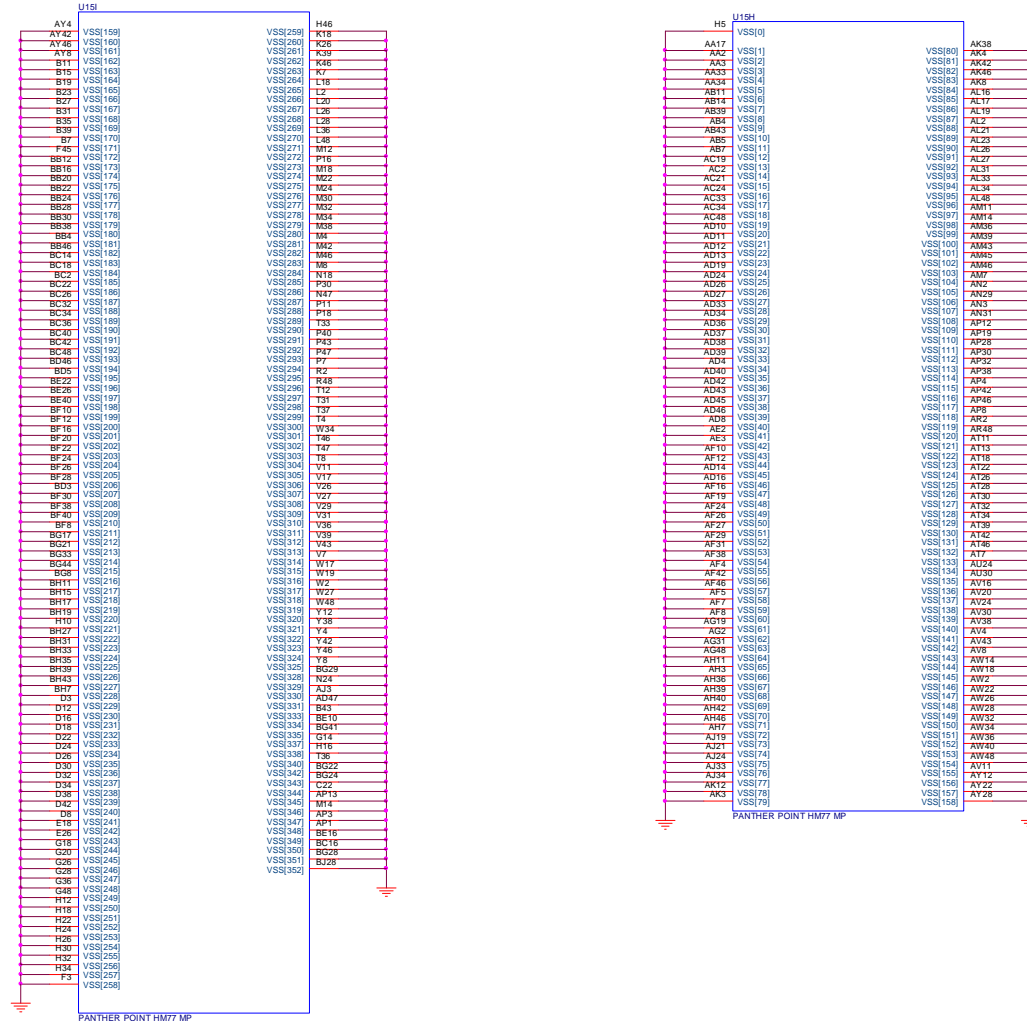
PCH 8/9 - Power

Sheet 25 of 54
PCH 8/9 - Power



PCH 9/9 - GND

PantherPoint - H (GND)

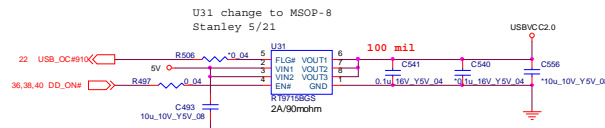


Sheet 26 of 54
PCH 9/ -GND

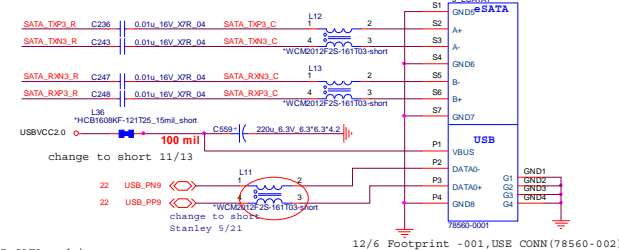
B.Schematic Diagrams

USB+eSATA, USB Charging

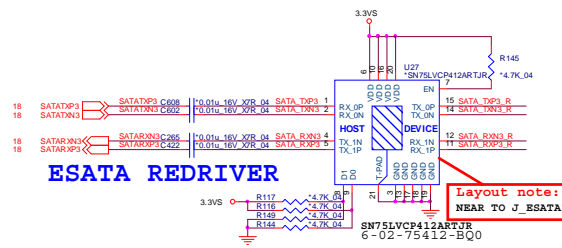
Sheet 27 of 54
USB+eSATA, USB
Charging



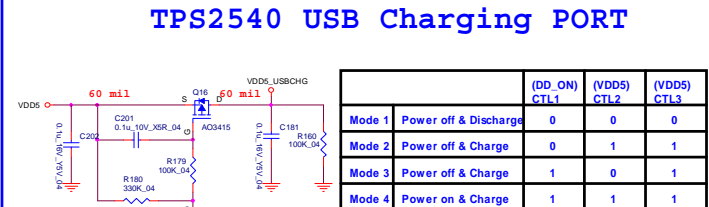
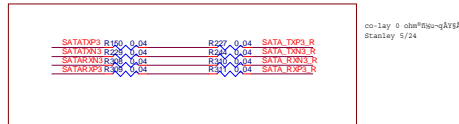
USB2.0 PORT + eSATA



ADD SATA redriver
5/21 Stanley



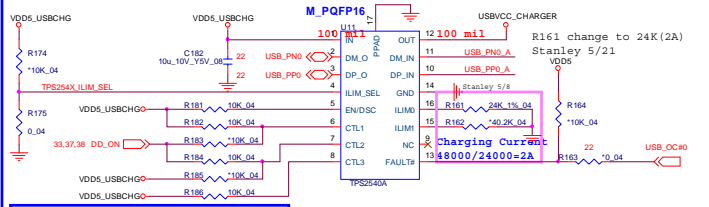
ESATA REDRIVER



TPS2540 USB Charging PORT

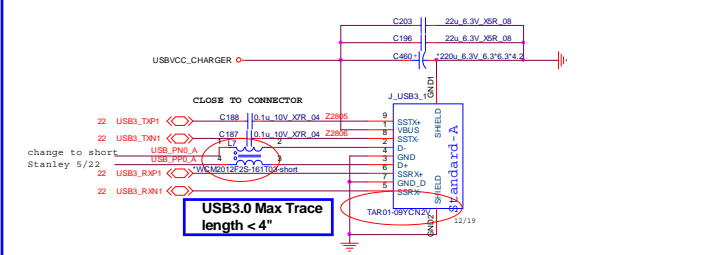
	(DD_ON) CTL1	(VDD5) CTL2	(VDD5) CTL3
Mode 1	Power off & Discharge	0	0
Mode 2	Power off & Charge	0	1
Mode 3	Power off & Charge	1	0
Mode 4	Power on & Charge	1	1

CTL1 CTL2 CTL3: 0 0 0 ----> Out discharge, power switch Off
 CTL1 CTL2 CTL3: 0 x x ----> 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, BC1.2.



ILIM SEL
 (FOR TPS2543/TPS2540 | 3P|P)
 ILIM SEL=HI , FOR TPS2543
 ILIM SEL=LOW, FOR TPS2540A

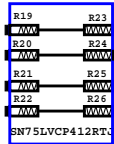
USB3.0 PORT1



USB3.0 Max Trace
 length < 4"

GEN-III SATA HDD Re-driver

Layout



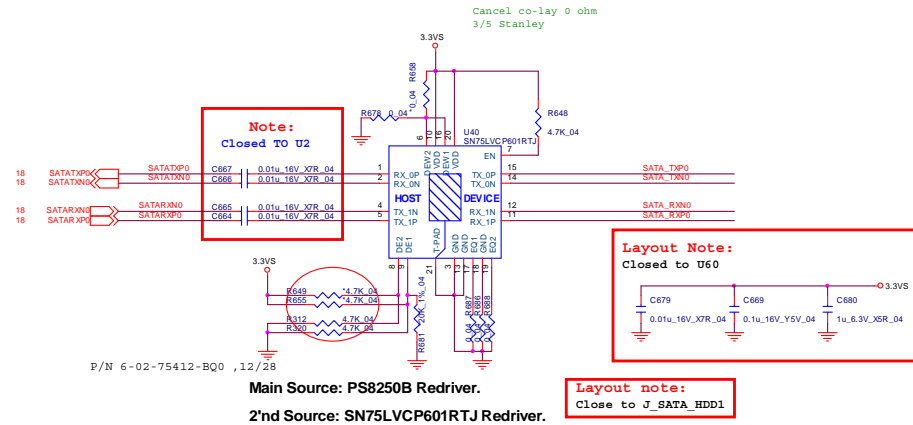
SN75LVCP601RTJ Redriver.

DE1	DE2	De-Emphasis dB (at 6Gbps)
NC	NC	-4 (default)
0	0	0
1	1	-2

DQ1	DQ2	Equalization dB (at 6Gbps)
NC	NC	0 (default)
0	0	7
1	1	14

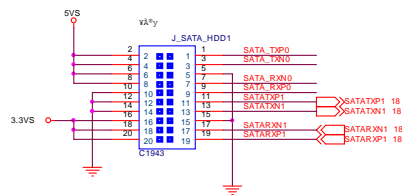
DEW1	DEW2	DE Width
0	0	Short (at SATA 1.5/3/6 Gbps)
1	1	Long (at SATA 1.5/3 Gbps)

EN	Device Function--Standy Mode
0	Device in standby mode
1	Device enabled



Sheet 28 of 54
GEN-III SATA HDD
Re-driver

B.Schematic Diagrams



PORT1 Re-driver IC
move to HDD B'D
3/16

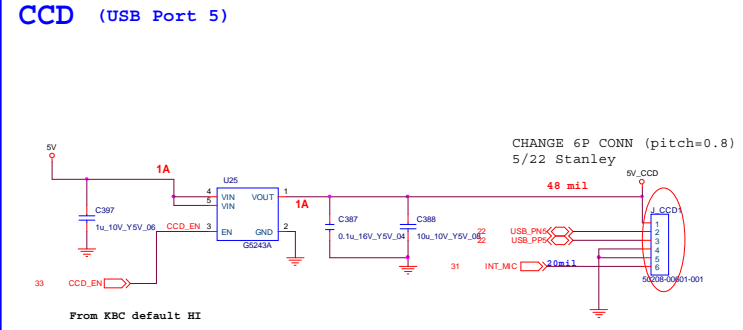
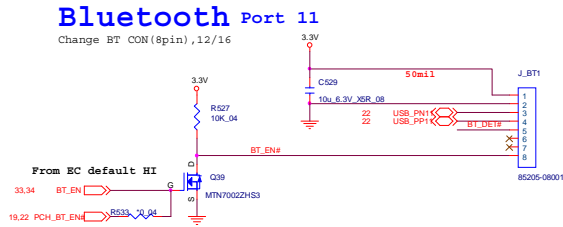
3,9,10,11,12,13,14,15,16,17,18,19,20,22,23,24,25,27,29,30,31,32,33,34,35,38,42,44,54 3,3V5
13,14,15,16,17,18,24,25,30,31,32,34,35,38,42,43,44 5V5

Schematic Diagrams

BT, CCD+MIC, MINI PCIE

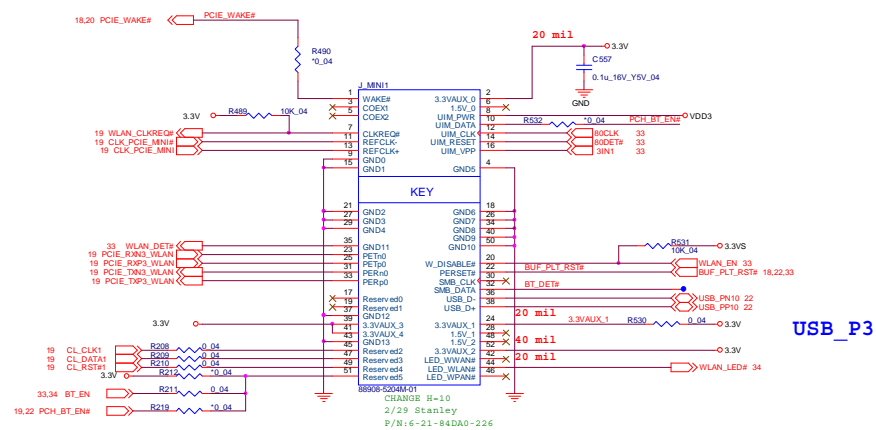
B.Schematic Diagrams

Sheet 29 of 54
BT, CCD+MIC, MINI PCIE



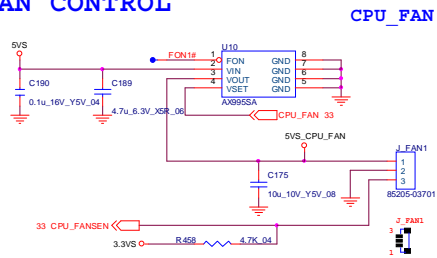
VDD3	15,18,33,34,37,38,47,54
3V	13,14,25,27,31,38,38,38,40,41,44
DVS	13,14,15,16,17,18,24,25,28,30,31,32,34,35,38,42,43,44
3.3V	2,3,6,13,14,15,18,19,20,22,23,24,25,31,34,38,39,40,41
3.3VS	3,8,10,11,12,13,14,15,16,17,18,19,20,23,24,25,27,28,30,31,32,33,34,35,38,42,44,54

MINI CARD



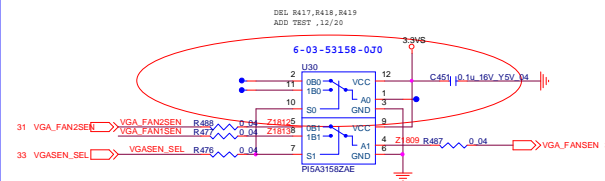
Fan Control

CPU FAN CONTROL

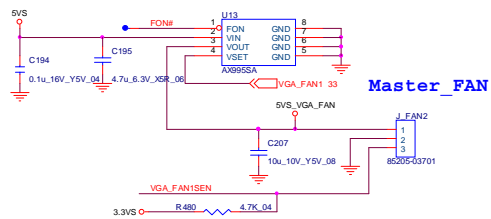


CPU_FAN

VGA FAN CONTROL-Selector



VGA FAN CONTROL



Master_FAN

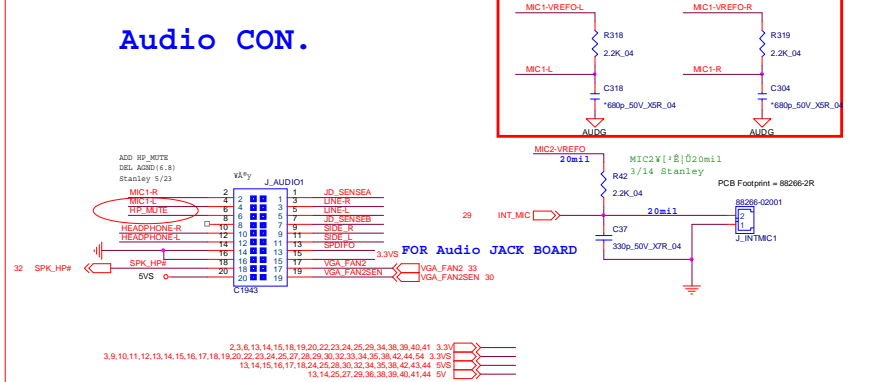
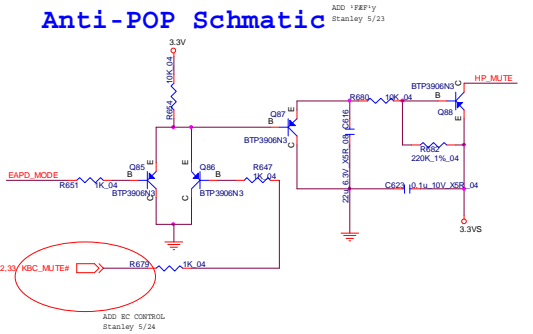
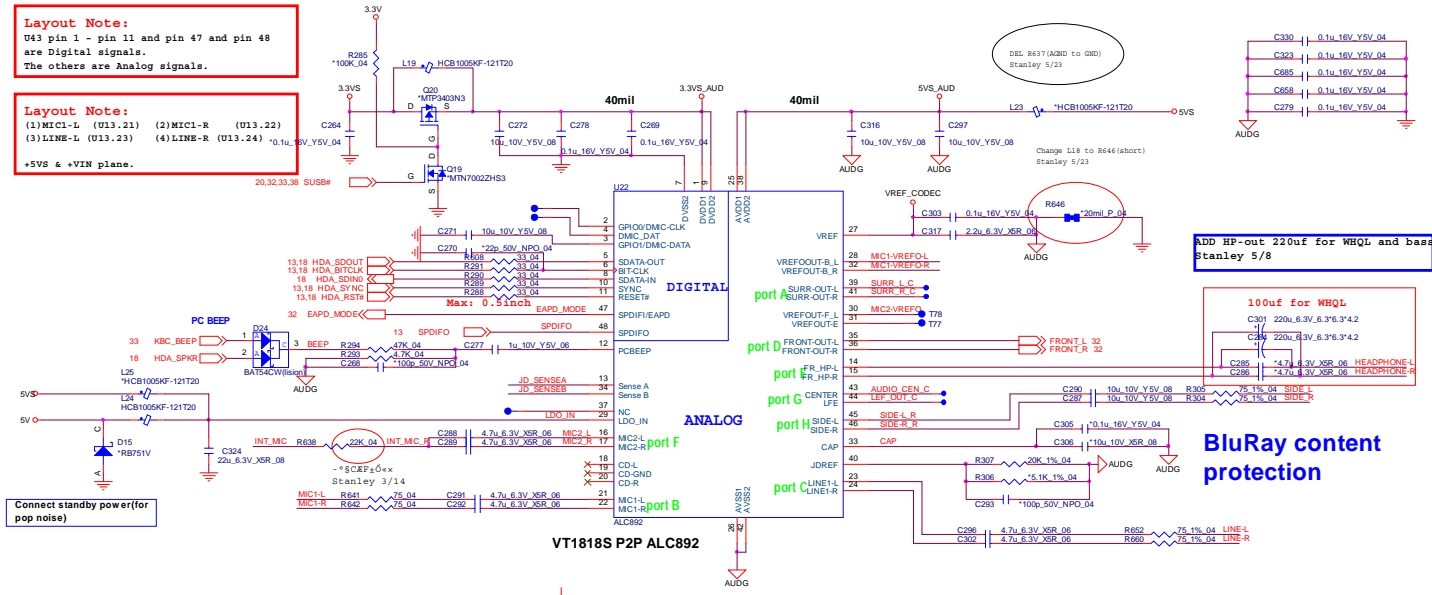
Sheet 30 of 54
Fan Control

B.Schematic Diagrams

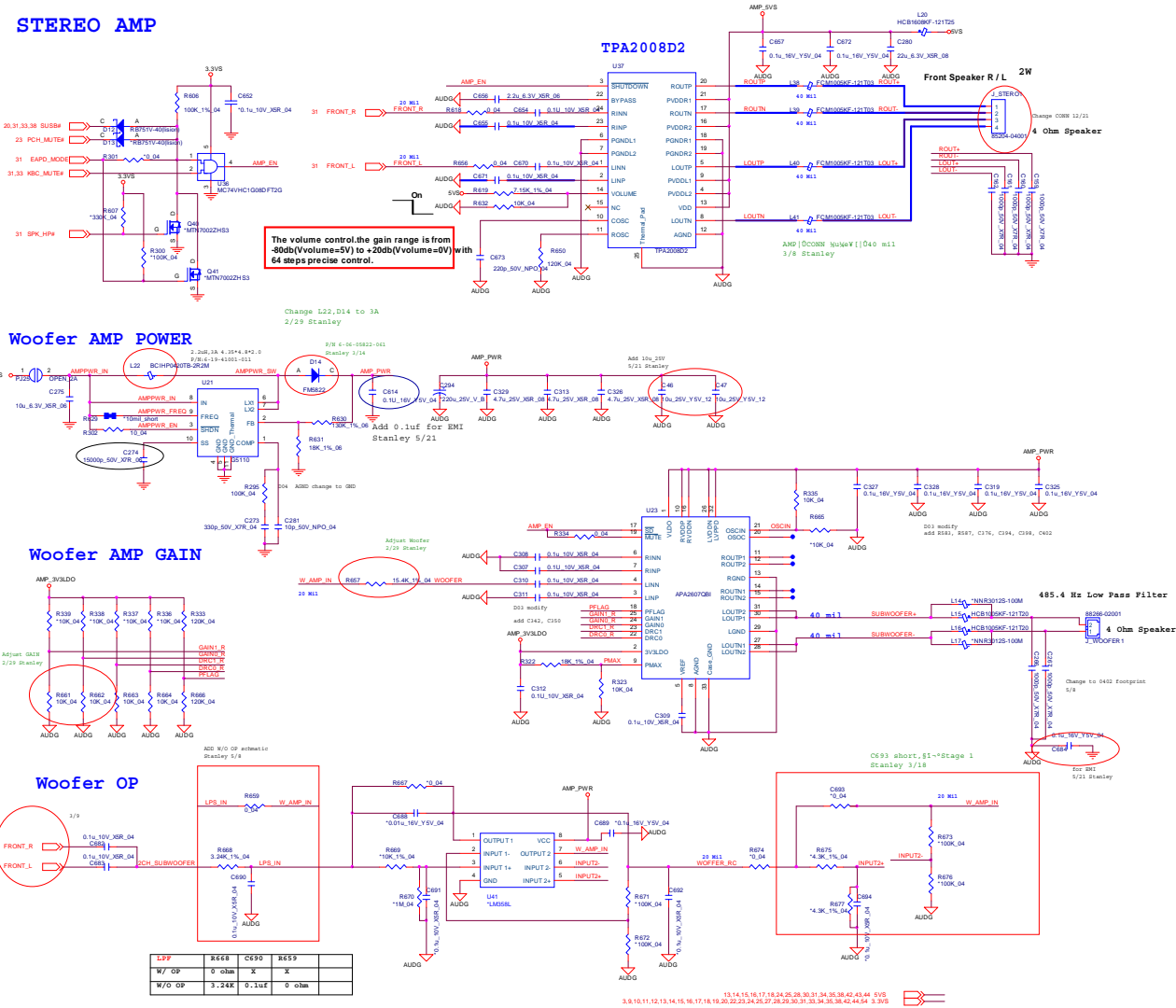
3.3VS	3,9,10,11,12,13,14,15,16,17,18,19,20,22,23,24,25,27,28,29,31,32,33,34,35,36,42,44,54
VDD3	15,16,23,33,34,37,38,47,54
3.3V	2,3,6,13,14,15,18,19,20,22,23,24,25,29,31,34,36,39,40,41
2VS	13,14,15,16,17,18,24,25,28,31,32,34,35,36,42,43,44
1.05VS	6,18,19,20,24,25,39,41
1.5V	5,6,9,10,11,12,25,38,40

Codec Realtek ALC892

Sheet 31 of 54
Codec Realtek
ALC892



APA2607 / TPA2008D2

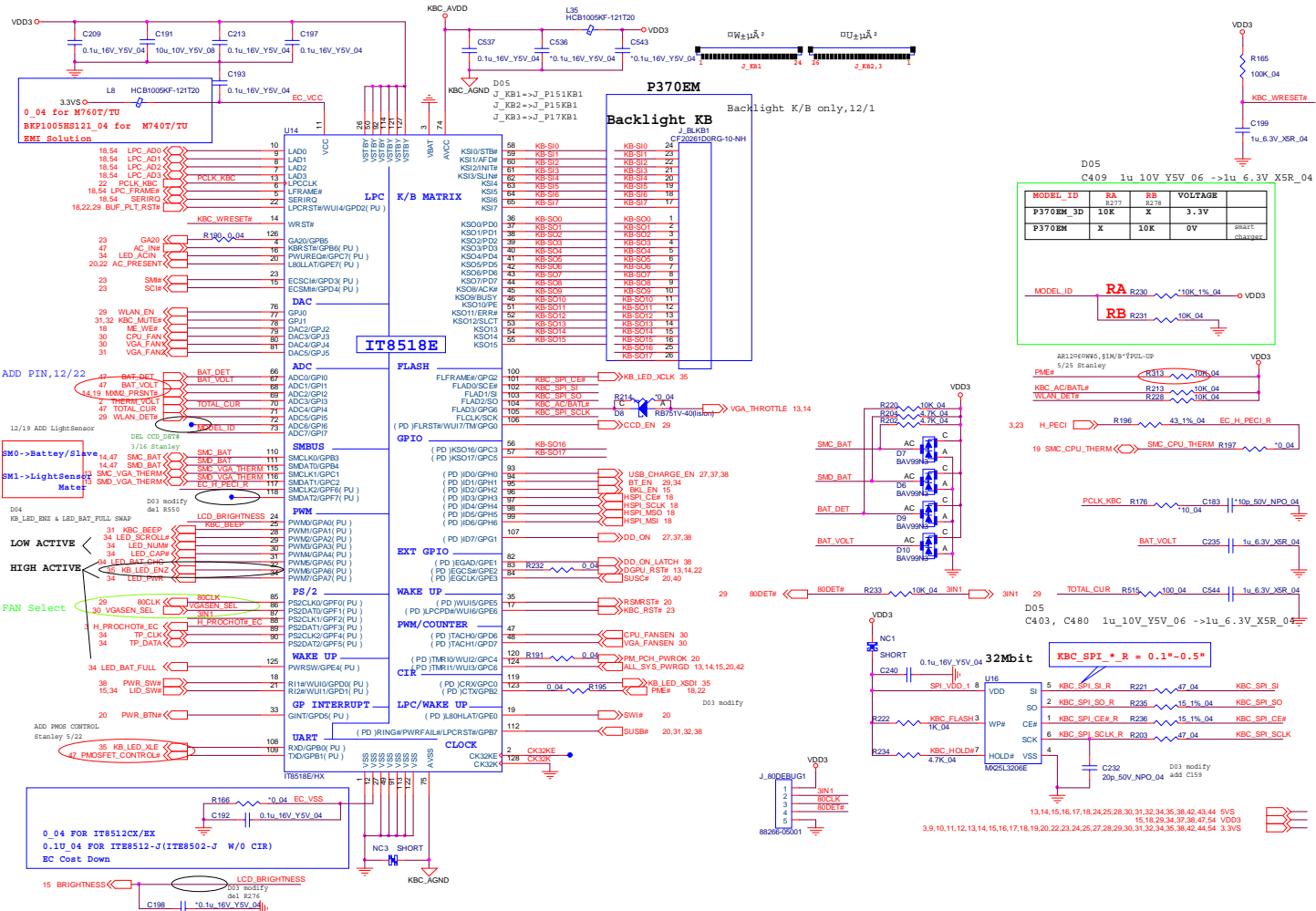


Sheet 32 of 54
APA2607 /
TPA2008D2

B.Schematic Diagrams

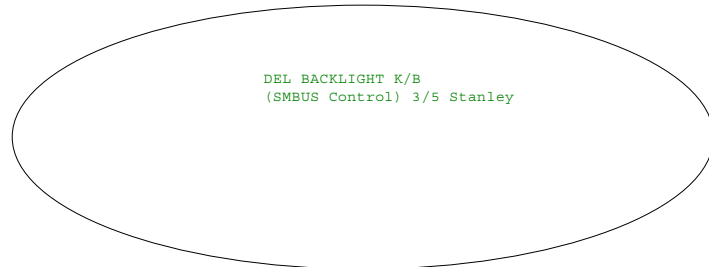
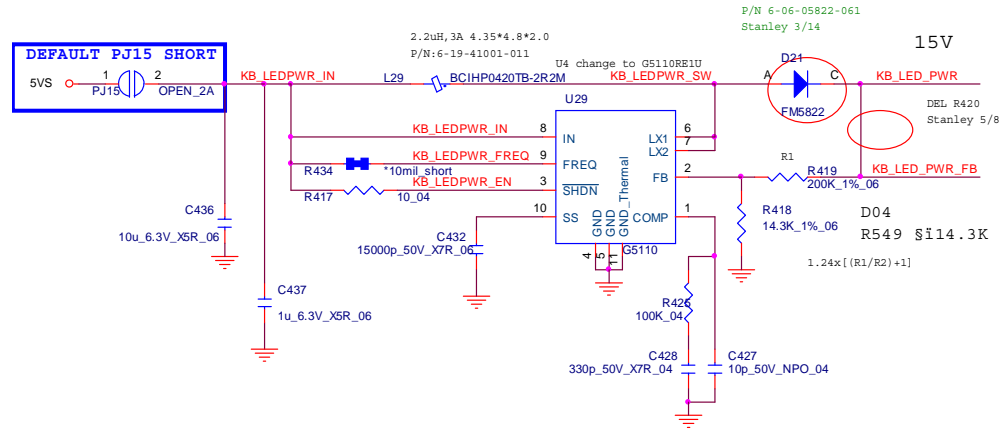
KBC-ITEIT8518E

Sheet 33 of 54
KBC-ITEIT8518E

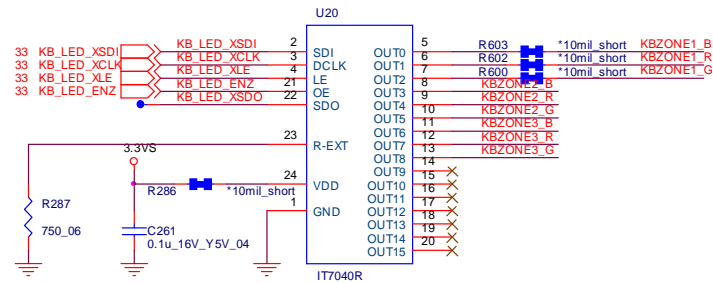
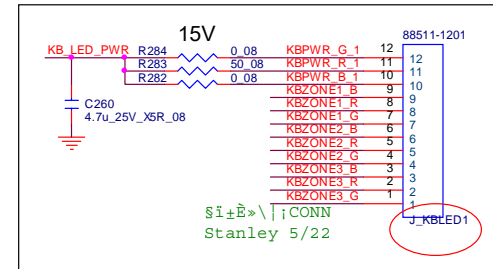


Backlight Keyboard

Sheet 35 of 54
Backlight
Keyboard



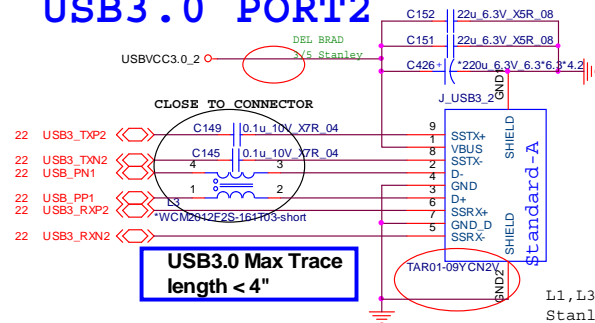
DEL BACKLIGHT K/B
(SMBUS Control) 3/5 Stanley



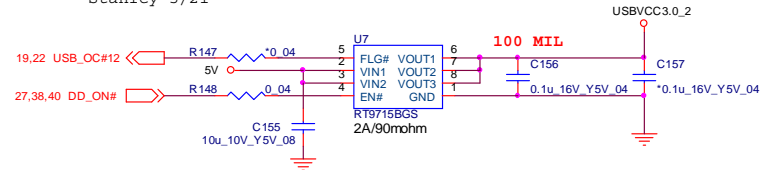
13, 14, 15, 16, 17, 18, 24, 25, 26, 30, 31, 32, 34, 38, 42, 43, 44, 5V5
3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 38, 42, 44, 54, 3.3V5

USB3.0

USB3.0 PORT2

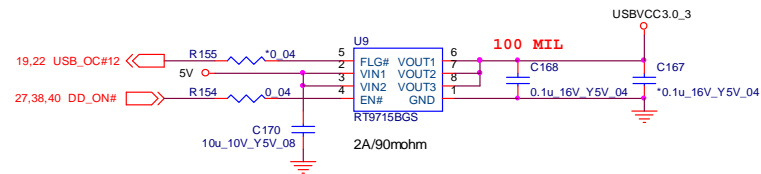
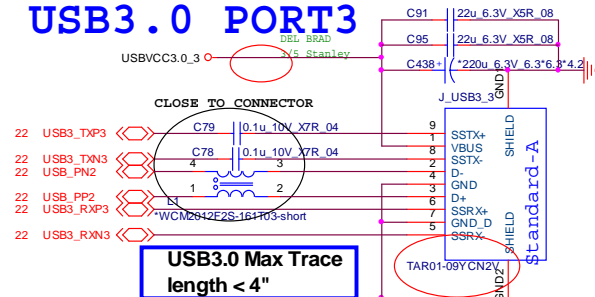


U7,U9,U24 change to MSOP-8
Stanley 5/21

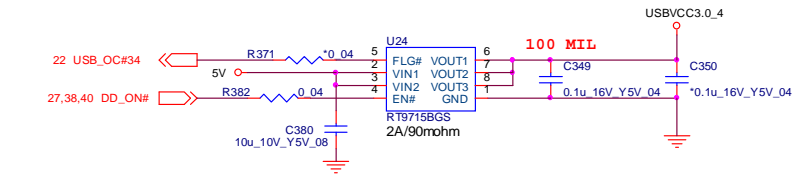
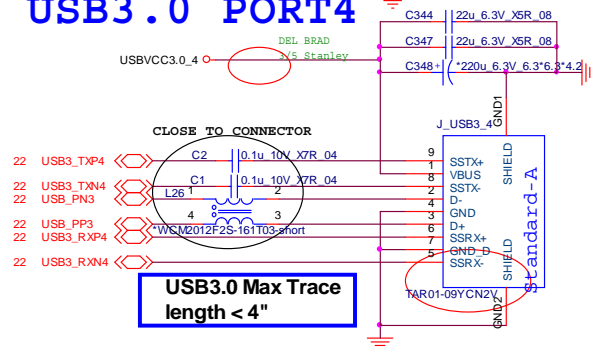


L1,L3,L26 change to short (swap ok)
Stanley 5/22

USB3.0 PORT3



USB3.0 PORT4



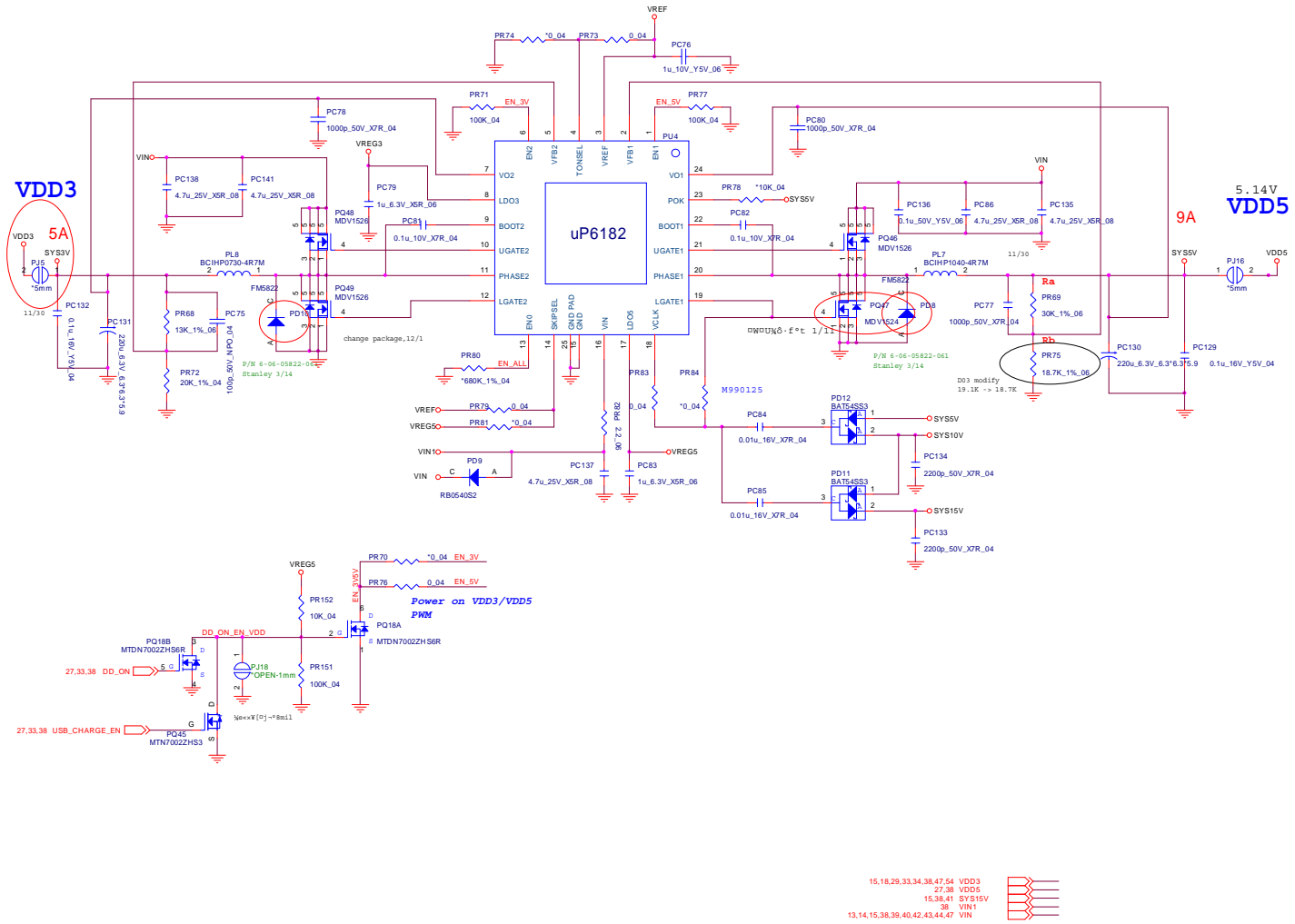
13,14,25,27,29,31,38,39,40,41,44 5V

Sheet 36 of 54
USB3.0

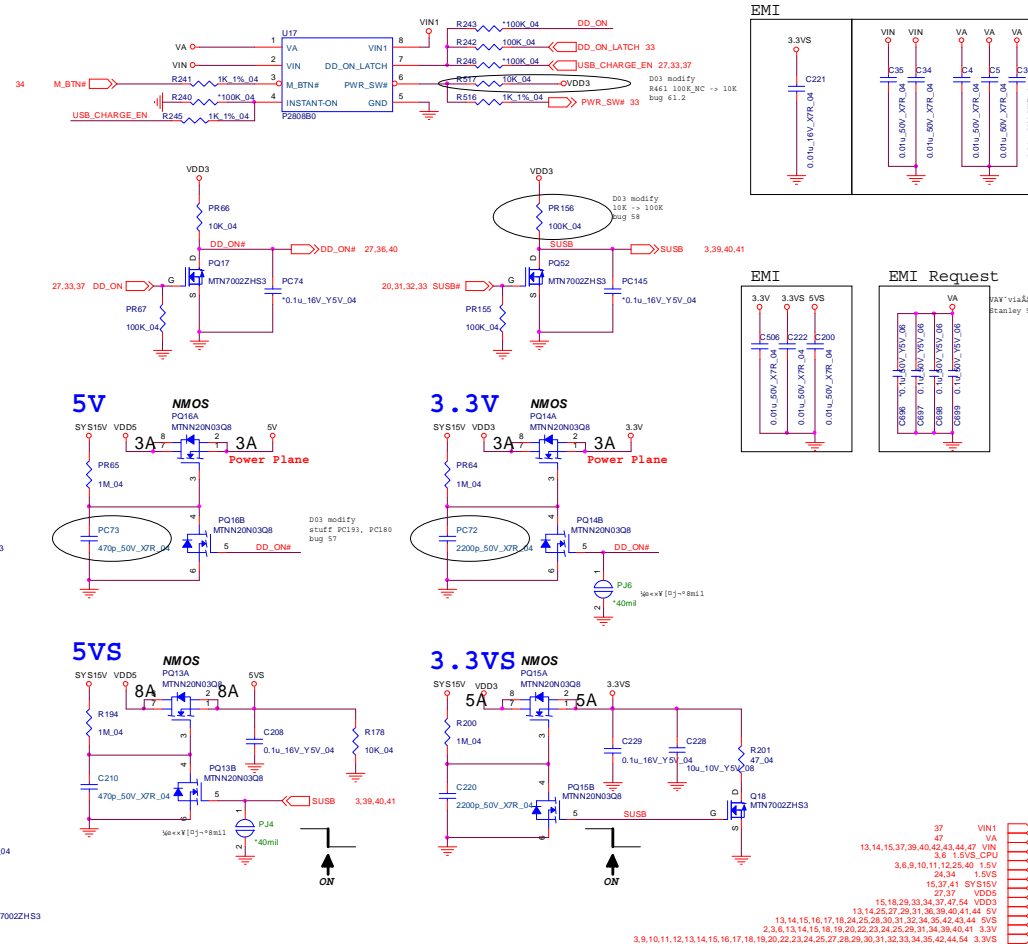
Schematic Diagrams

VDD3, VDD5

Sheet 37 of 54
VDD3, VDD5



5VS, 3.3VS, 1.5VS



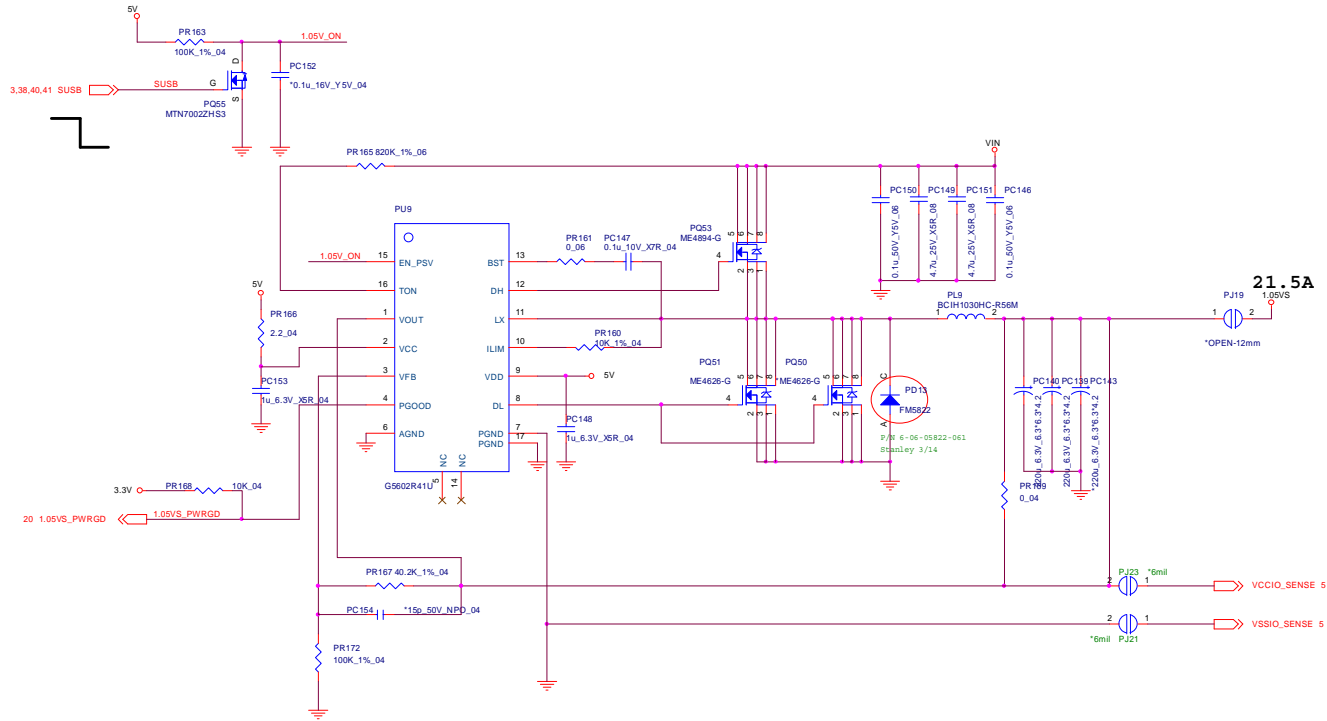
Sheet 38 of 54
5VS, 3.3VS, 1.5VS

B.Schematic Diagrams

Schematic Diagrams

Power 1.05VS

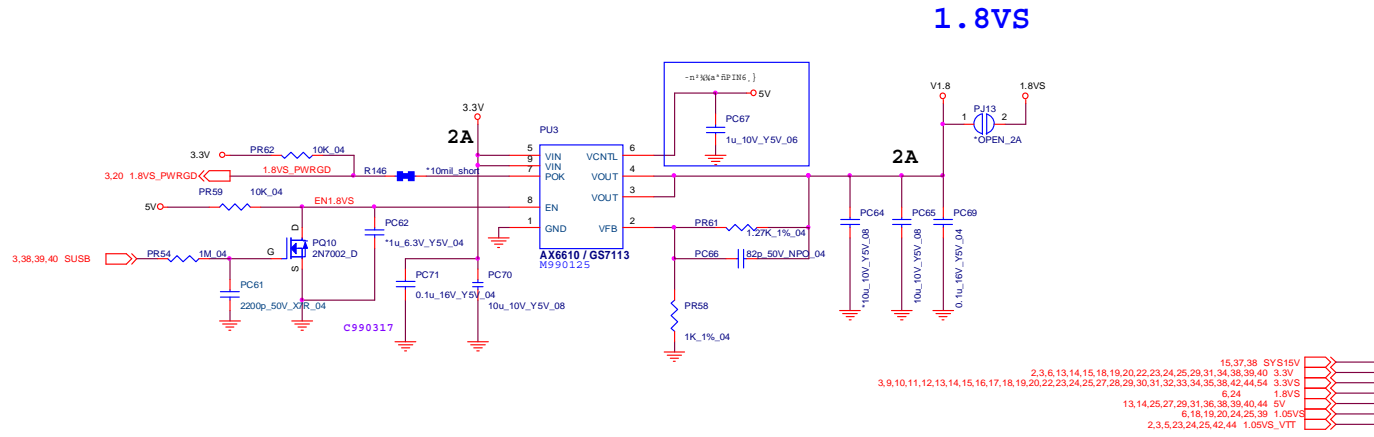
Sheet 39 of 54
Power 1.05VS



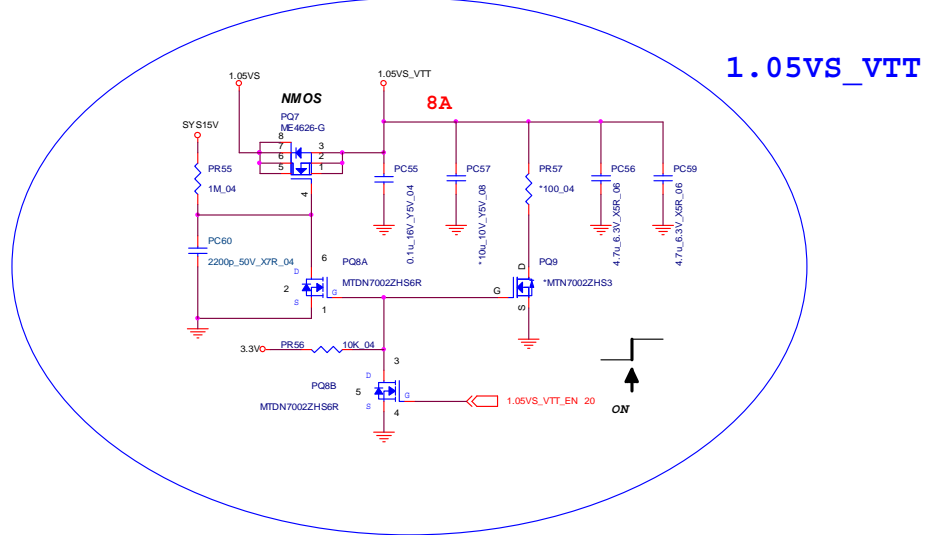
2,3,6,13,14,15,18,19,20,22,23,24,25,29,31,34,38,40,41 3.3V
13,14,15,37,38,40,42,43,44,47 VIN
13,14,25,27,29,31,38,38,40,41,44 5V
6,18,19,20,24,25,41 1.05VS

Power 1V, 1.8VS

Sheet 41 of 54
Power 1V, 1.8VS



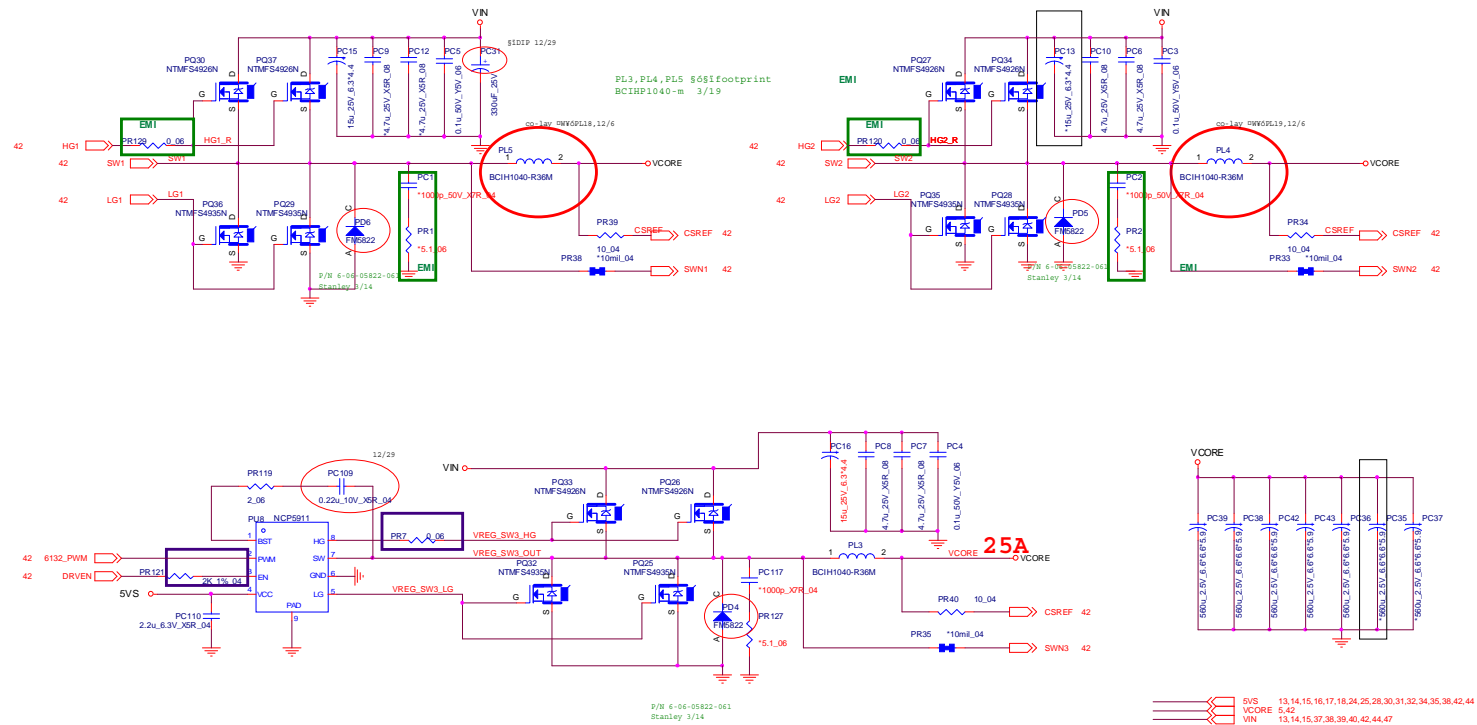
D04
1.05VS_VTT re-design



Power V-Core2

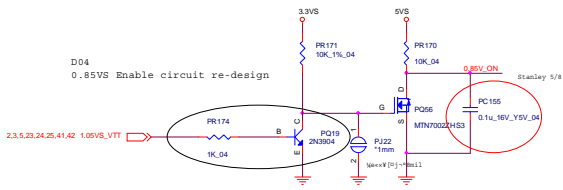
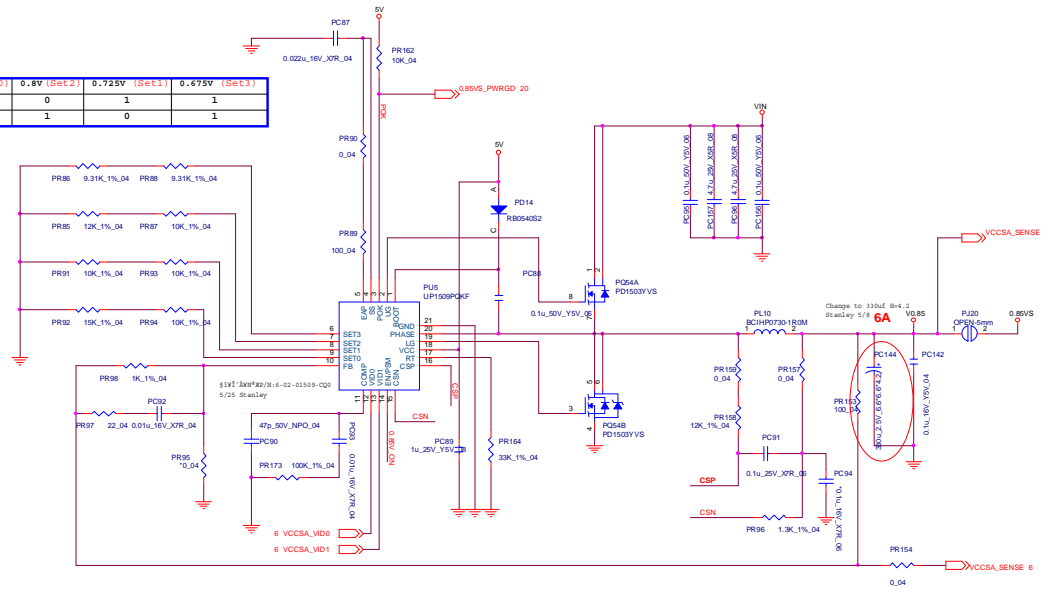
VCORE_2

Sheet 43 of 54
Power V-Core2



Power 0.85VS

	0.3V (Set0)	0.8V (Set2)	0.725V (Set1)	0.675V (Set3)
VCCSA_VID0	0	0	1	1
VCCSA_VID1	0	1	0	1



- 5VS 13, 14, 15, 16, 17, 18, 24, 25, 26, 30, 31, 32, 34, 35, 38, 42, 43
- 3.3VS 3, 6, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 38, 42, 44
- 5V 13, 14, 25, 27, 29, 31, 35, 38, 39, 40, 41
- 0.85VS 13, 14, 15, 17, 38, 39, 40, 42, 43, 47

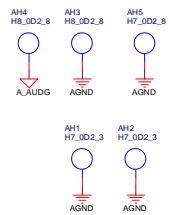
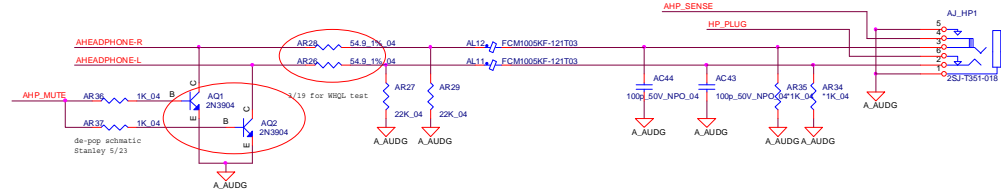
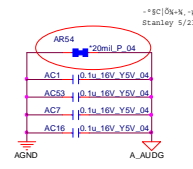
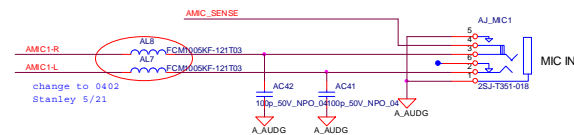
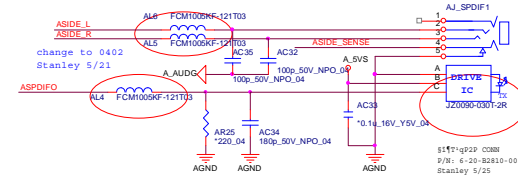
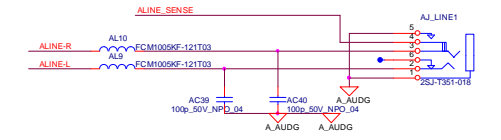
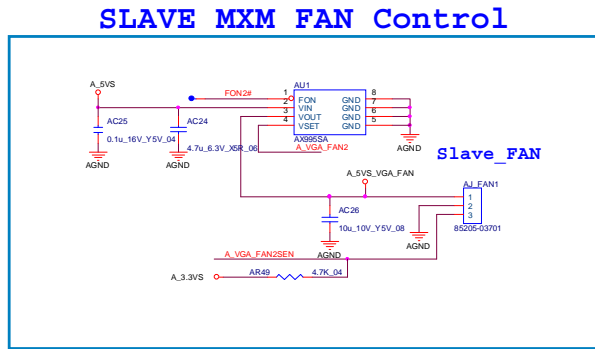
Sheet 44 of 54
Power 0.85VS

B.Schematic Diagrams

Schematic Diagrams

Audio Board

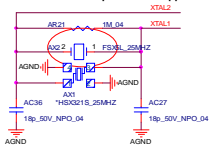
Sheet 45 of 54
Audio Board



LAN (RTL8411)

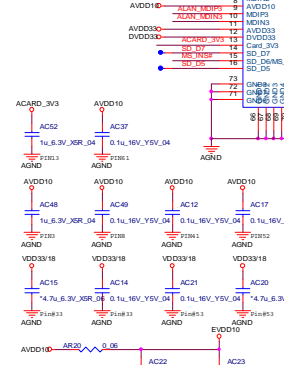
LAN (RTL8411)

Crystal 5032 Co-lay meet realtek Freq tolerance 50ppm



AX2 change to 5032 footprint Stanley 5/21

AU2 change footprint Stanley 5/23



RTL8411-CG

RTL8411 command

VDD3 meet rising time >1ms

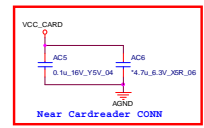
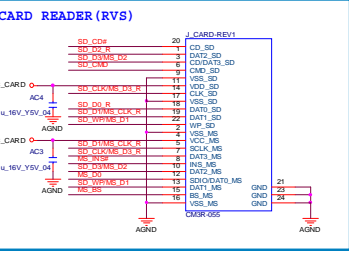
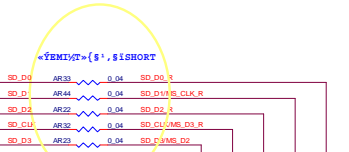
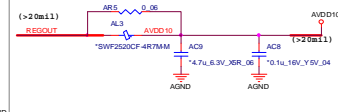
60 mil

60 mil

DO Mode

close to pin 12

Switching Regulator close to PIN48



Near Cardreader CONN

meet falling time <1ms

change to short Stanley 5/21

change TRANSFORMER (P150EM)

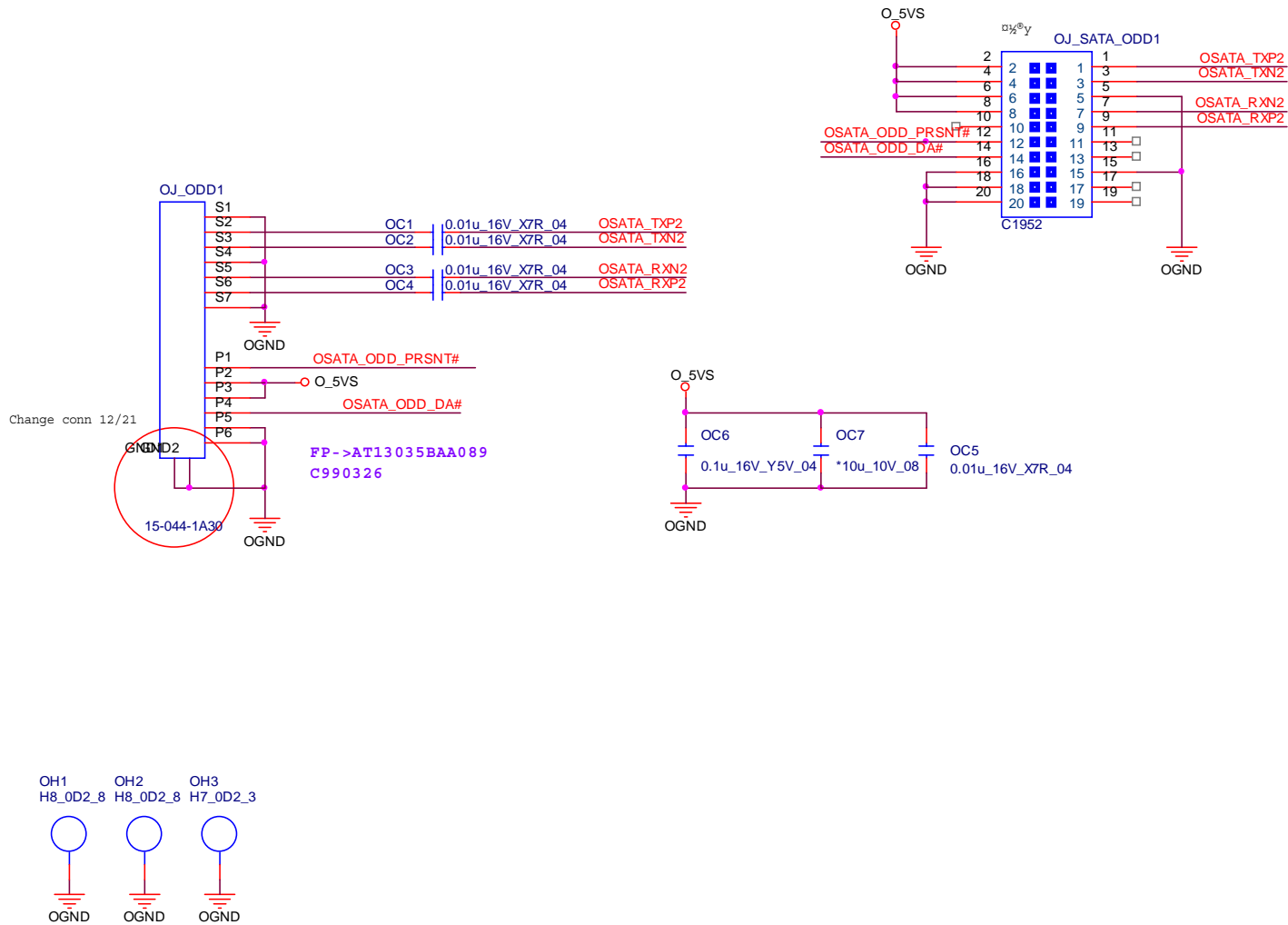
12/21

1000p_3KV_XR_12

Sheet 46 of 54
LAN (RTL8411)

B.Schematic Diagrams

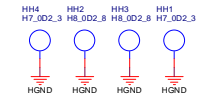
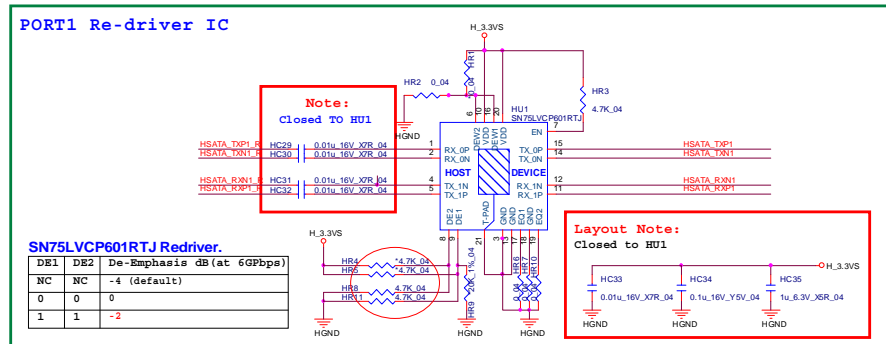
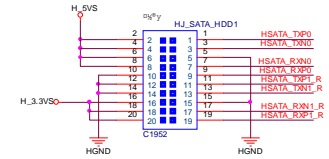
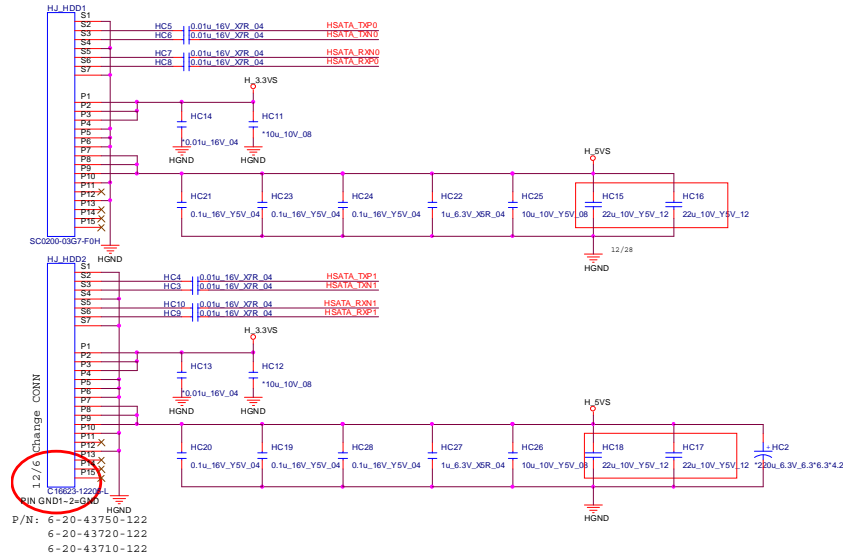
ODD Board



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ODD Board

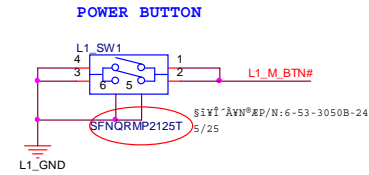
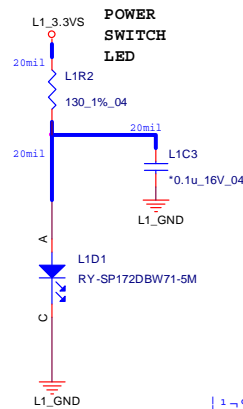
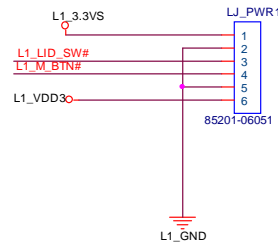
HDD Board

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HDD Board

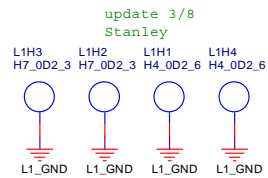
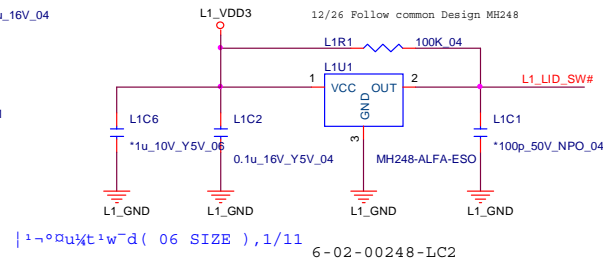


Power Board

POWER SWITCH B'D



LID SWITCH IC

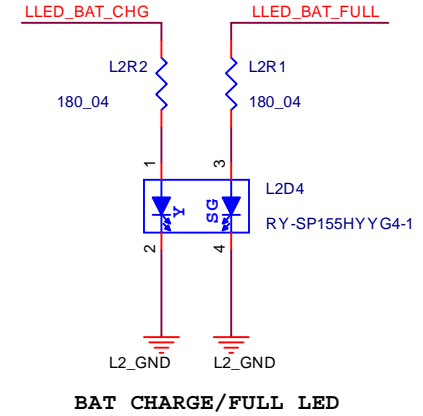
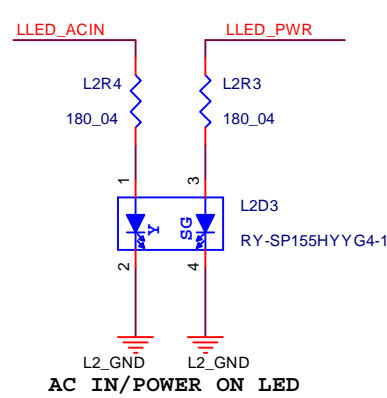
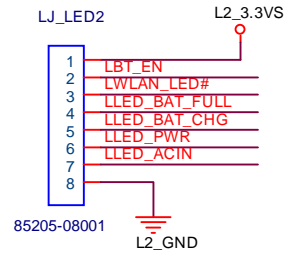


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Power Board

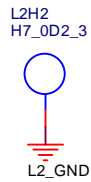
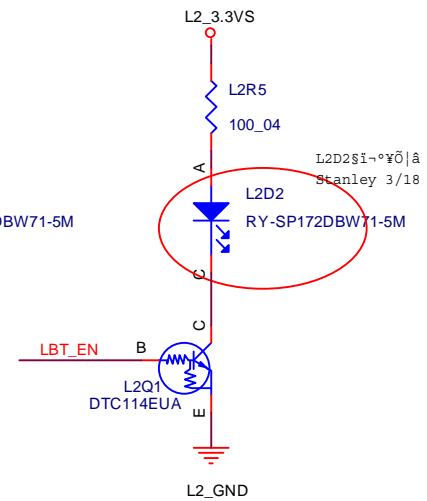
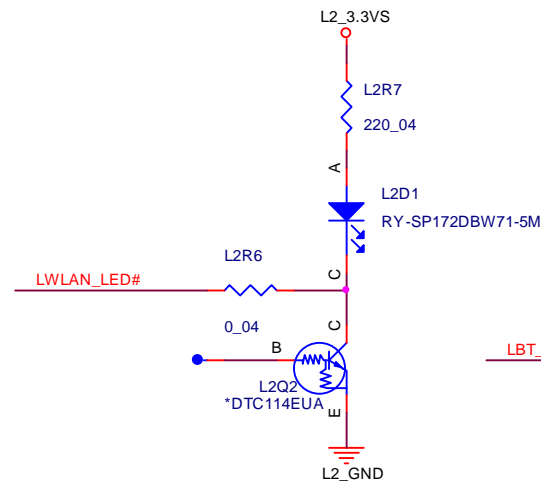
Schematic Diagrams

Front LED Board

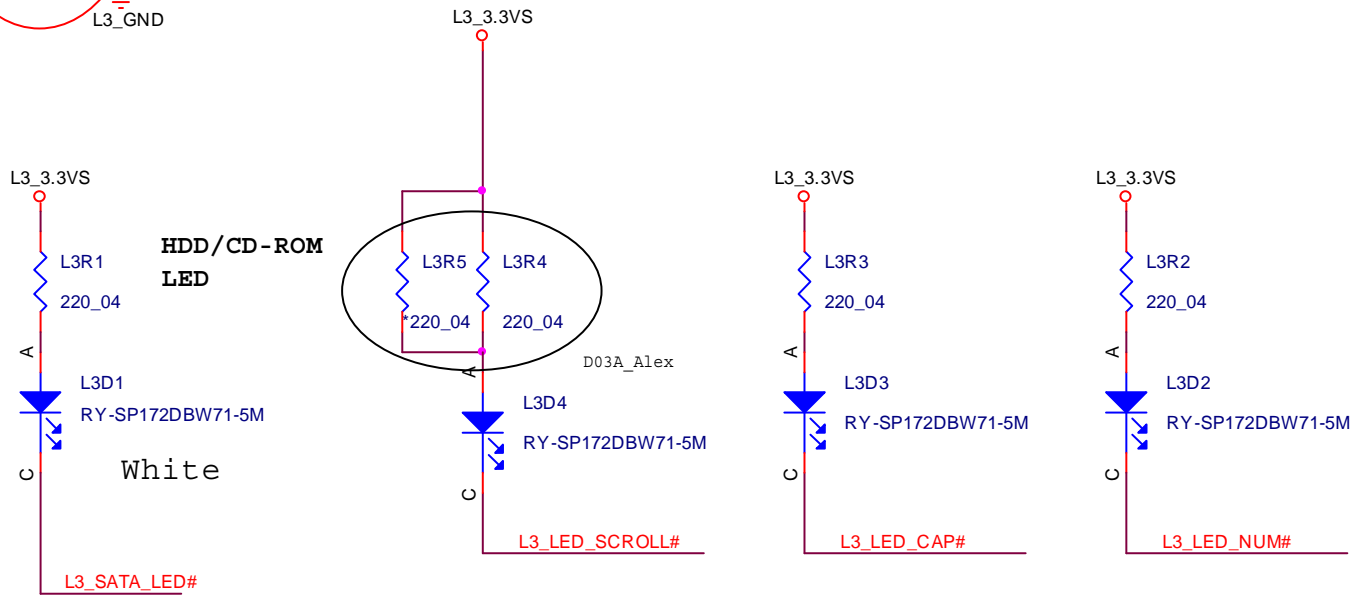
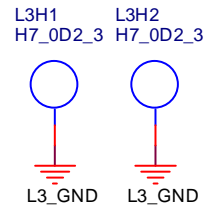
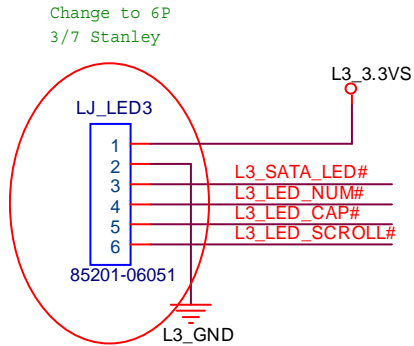
Change conn(85205) 12/20



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Front LED Board



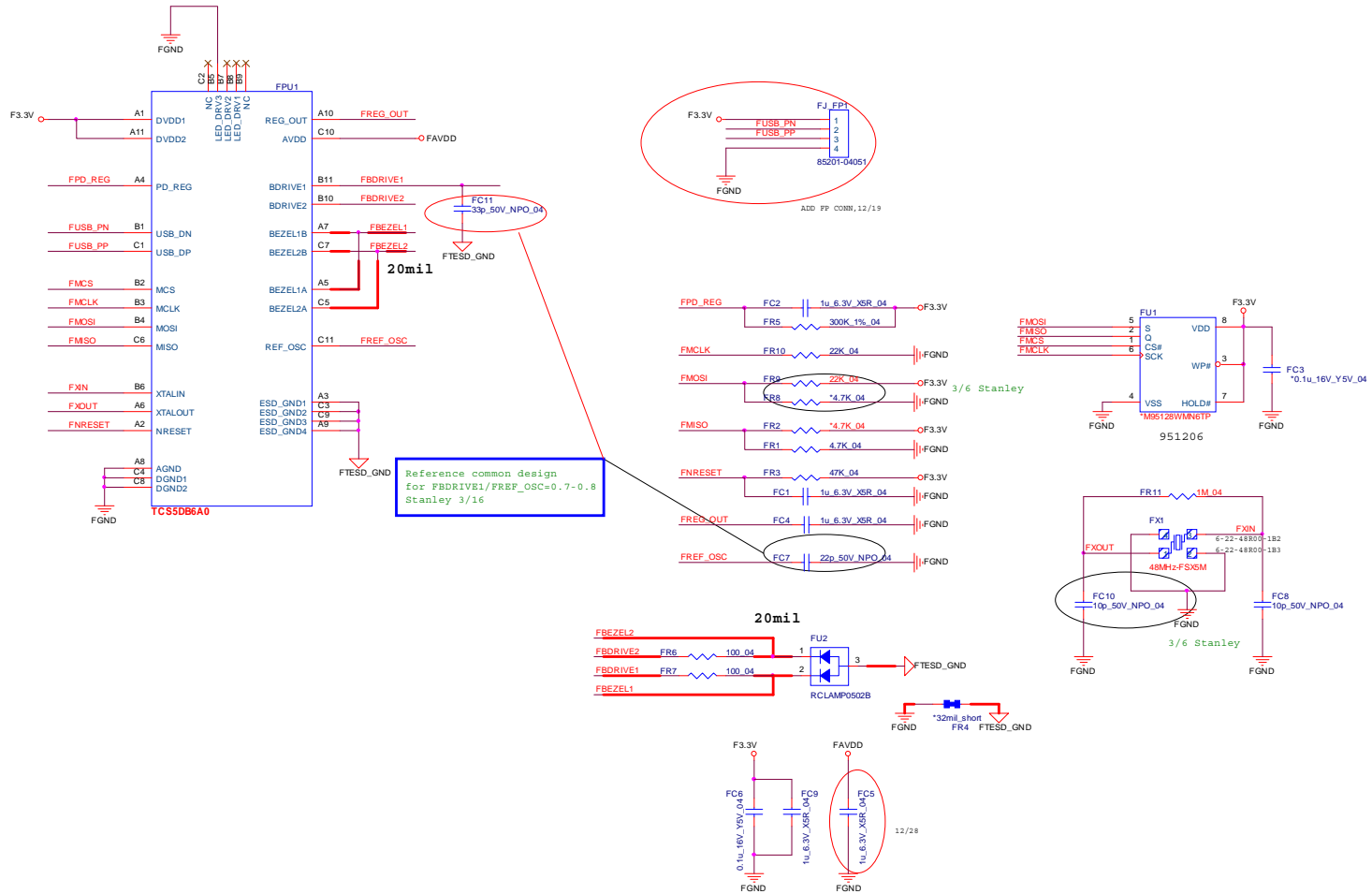
Top LED Board



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Top LED Board

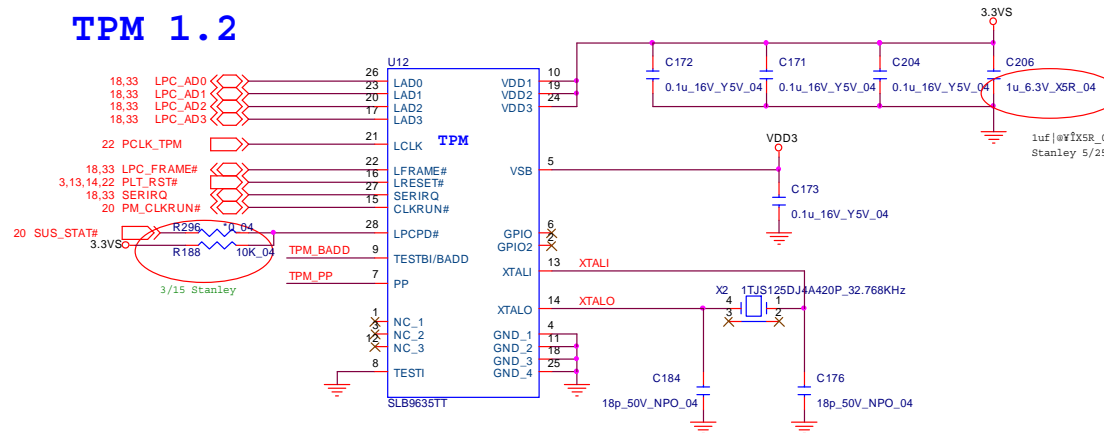
Fingerprint Board

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Fingerprint Board



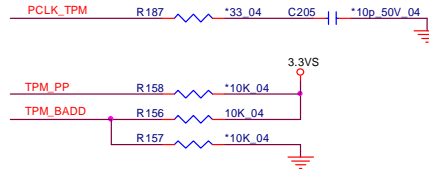
TPM

TPM 1.2



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



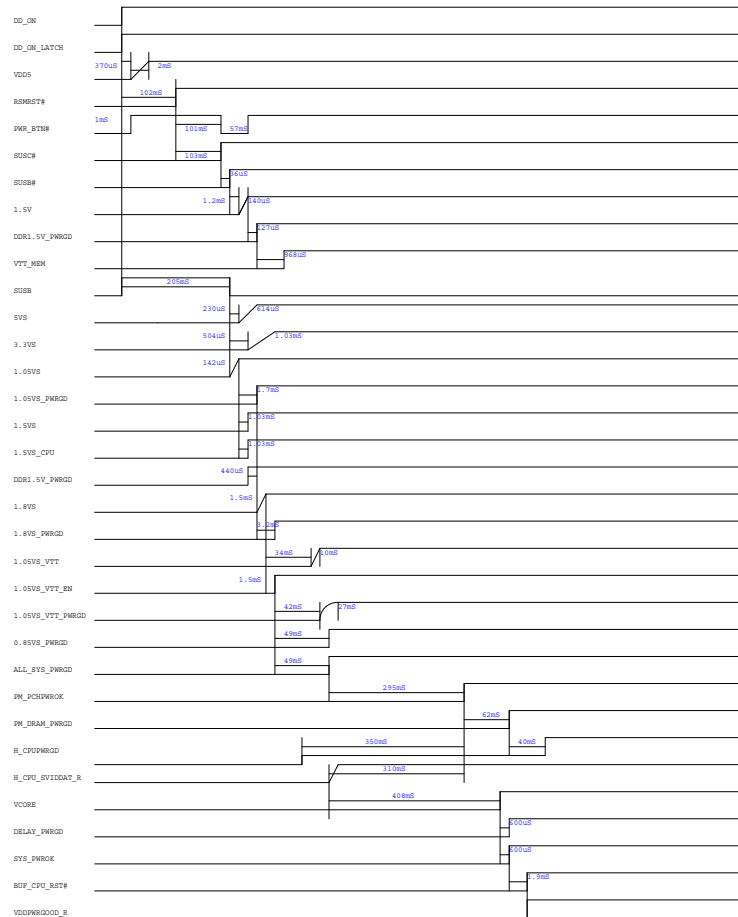
3,9,10,11,12,13,14,15,16,17,18,19,20,22,23,24,25,27,28,29,30,31,32,33,34,35,38,42,44 3.3VS

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 TPM

Power On Sequence

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Power On
Sequence

P370EM_D01 POWER ON SEQUENCE



Appendix C: Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS, you must:

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

Download the BIOS

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

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

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

Set the computer to boot from the external drive

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



BIOS Version

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

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

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

BIOS Update

Use the flash tools to update the BIOS

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

C:\> Flash.bat

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

Restart the computer (booting from the HDD)

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

Your computer is now running normally with the updated BIOS

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