

# *SERVICE MANUAL*

M860TU

*notebook*





**Notebook Computer**

**M860TU**

**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 *M860TU* 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 20V, 6.A (**120W**) minimum).

### CAUTION

Always disconnect all telephone lines from the wall outlet before servicing or disassembling this equipment.

**TO REDUCE THE RISK OF FIRE, USE ONLY NO. 26 AWG OR LARGER,  
TELECOMMUNICATION LINE CORD**

**This Computer's Optical Device is a Laser Class I Product**

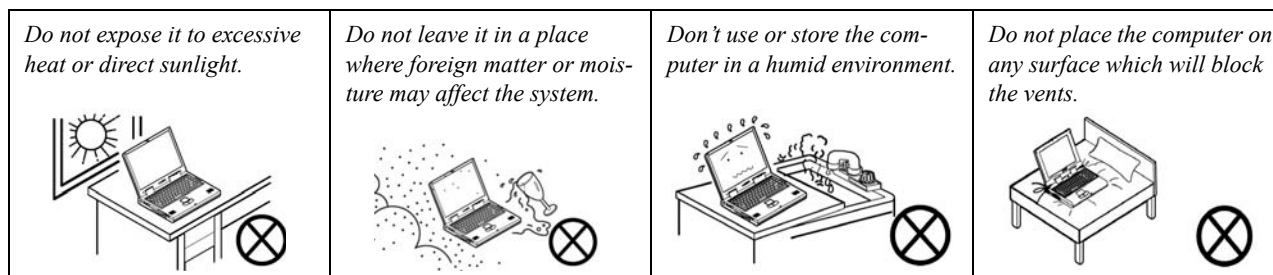
## Instructions for Care and Operation

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

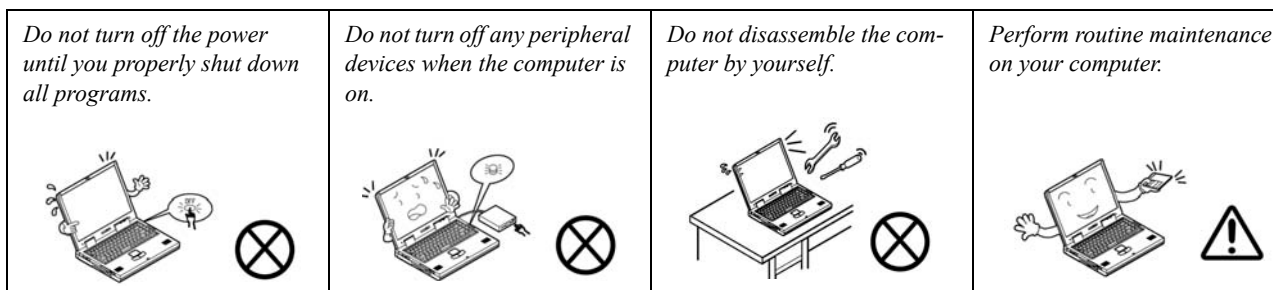
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



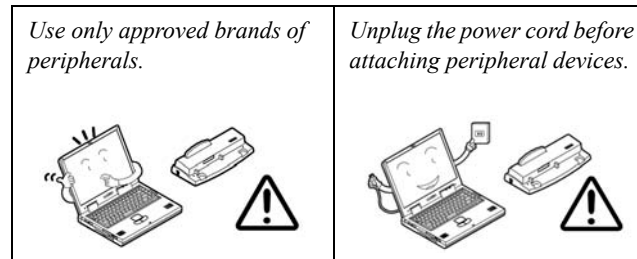
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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.



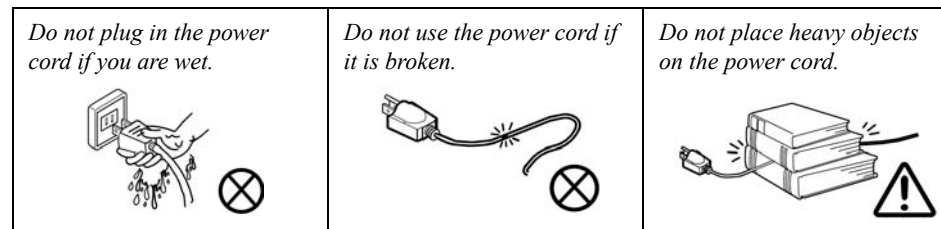
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



## 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 (i.e. AC/DC adapter or car adapter).



### Power Safety Warning

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



## Battery Precautions

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



### Battery 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.

### **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.

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# 1: Introduction

## Overview

This manual covers the information you need to service or upgrade the **M860TU** 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 XP*, 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 **M860TU** 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

Feature	Specification	
Processor Types	Intel® Core™2 Duo Processor (478-pin) Micro-FC-PGA Package, Socket P <b>T9400/ T9600</b>	45nm (45 Nanometer) Process Technology 6MB On-die L2 Cache & 1066MHz FSB (35W) <b>2.53GHz / 2.8GHz</b>
	Intel® Core™2 Duo Processor (478-pin) Micro-FC-PGA Package, Socket P <b>P9500</b>	45nm (45 Nanometer) Process Technology 6MB On-die L2 Cache & 1066MHz FSB (25W) <b>2.53GHz</b>
	Intel® Core™2 Duo Processor (478-pin) Micro-FC-PGA Package, Socket P <b>P8400/ P8600</b>	45nm (45 Nanometer) Process Technology 3MB On-die L2 Cache & 1066MHz FSB (25W) <b>2.26/ 2.40GHz</b>
Core Logic	Intel(R) PM45 + ICH9M Chipset	
LCD	Flat Panel TFT (For <b>One</b> of the Following Options)  15.4" WXGA (1280 * 800) TFT LCD (Glare Type) <b>OR</b> 15.4" WXGA+ (1440 * 900) TFT LCD <b>OR</b> 15.4" WSXGA+ (1680 * 1050) TFT LCD (Glare Type) <b>OR</b> 15.4" WUXGA (1920 * 1200) TFT LCD	
Security	Security (Kensington® Type) Lock Slot BIOS Password	Fingerprint Reader Module ( <b>Factory Option</b> )
Memory	Two 204 Pin SO-DIMM Sockets Supporting <b>DDRIII (DDR3)</b> at 1066 MHz Supports Dual Channel DDRIII (DDR3) SDRAM 64-bit Wide Per Data Channel Memory Expandable up to 4GB (1024/ 2048 MB <b>DDRIII</b> Modules)	

Feature	Specification	
<b>Video Adapter Options</b>	<b>NVIDIA GeForce 9600M GS</b> PCI-E Video Card 256MB GDDR3 Video RAM On Board MS DirectX® 10.0 Compatible MXM-II Supports HDCP  <b>NVIDIA GeForce 9800M GT</b> PCI-E Video Card 512MB GDDR3 Video RAM On Board MS DirectX® 10.0 Compatible MXM-III Supports HDCP	<b>NVIDIA GeForce 8800M GTX</b> PCI-E Video Card 512MB GDDR3 Video RAM On Board MS DirectX® 10.0 Compatible MXM-III Supports HDCP  <div data-bbox="1111 432 1659 711" style="border: 2px solid green; border-radius: 15px; padding: 10px; text-align: center;">   <b>Video Card Options</b>            Note that card types, specifications and drivers are subject to continual updates and changes. Check with your service center for the latest details on video cards supported.         </div>
<b>BIOS</b>	One 32Mb SPI Flash ROM	Phoenix™ BIOS
<b>Storage</b>	One Changeable 12.7mm(h) SATA Optical Device (CD/DVD) Type Drive (see <i>“Optional” on page 1 - 5</i> for drive options) Easy Changeable 2.5" 9.5 mm (h) SATA (Serial) HDD	
<b>Card Reader</b>	Embedded 7-in-1 Card Reader (MS/ MS Pro/ SD/ Mini SD/ MMC/ RS MMC/ MS Duo) <b>Note:</b> MS Duo/ Mini SD/ RS MMC Cards Require a PC Adapter	
<b>Audio</b>	High Definition Audio 3D Stereo Enhanced Sound System Sound-Blaster PRO™ Compatible	Built-In Microphone 2 * Built-In Speakers S/PDIF Digital Output
<b>Keyboard &amp; Pointing Device</b>	Full Size Winkey Keyboard with Numeric Keypad	Built-In TouchPad (Scroll Functionality Included)
<b>ExpressCard Slot</b>	ExpressCard/34/54 Slot	
<b>Mini-Card Slots</b>	One Mini-Card Slot for <b>3.5G Module</b> One Mini-Card Slot for <b>Wireless LAN Module</b>	

## Introduction

Feature	Specification	
I/O Ports	Four USB 2.0 Ports One Combined eSATA Port/USB Port eSATA Port (hot swapping supported in <b>Windows Vista</b> only): AHCI mode supports hot swapping IDE mode does not support hot swapping  One HDMI (High-Definition Multimedia Interface) Port with 5.1Channel Support One Headphone/Speaker-Out Jack One Microphone-In Jack	One S/PDIF Out Jack One RJ-45 LAN Jack One RJ-11 Modem Jack One Mini-IEEE1394a Port One DC-In Jack One DVI-Out Port (No HDCP Support)
Communication	Built-In 56K Fax Modem Built-In 10/100/1000Mb Base-TX Ethernet LAN Intel® WiFi Link 5300 Series (3*3 - 802.11a/g/n) Wireless LAN Mini-Card Module ( <b>Option</b> ) Intel® WiFi Link 5100 Series (1*2 - 802.11a/g/n) Wireless LAN Mini-Card Module ( <b>Option</b> ) 3rd Party 802.11b/g Wireless LAN Mini-Card Module with USB interface ( <b>Option</b> ) Bluetooth 2.0 + EDR (Enhanced Data Rate) Module ( <b>Factory Option</b> ) 1.3M or 2.0M Pixel PC Camera Module with USB interface ( <b>Factory Option</b> )  <b>3.5G Module:</b> UMTS/HSPDA-based 3.5G Mini-Card Module with USB Interface (Factory <b>Option</b> ) Quad-band GSM/GPRS (850 MHz, 900 MHz, 1800 MHz, 1900 MHz) UMTS WCDMA FDD (2100 MHz)	
Operating Systems Supported	Windows XP SP2	Windows Vista 64bit SP1 Home Premium/ Business/ Enterprise/ Ultimate
Power Management	Supports ACPI 3.0	Supports Resume from Modem Ring Supports Wake on LAN




**UMTS Modes**

Note that UMTS modes CAN NOT be used in North America.



Feature	Specification	
<b>Power</b>	Full Range AC/DC Adapter – AC in 100 - 240V, 50 - 60Hz DC Output 20V, 6A (120 Watts) Easy Changeable 8-Cell Smart Lithium-Ion 4400mAH Main Battery	
<b>Environmental Spec</b>	<b>Temperature</b> Operating: 5°C - 35°C Non-Operating: -20°C - 60°C	<b>Relative Humidity</b> Operating: 20% - 80% Non-Operating: 10% - 90%
<b>Physical Dimensions &amp; Weight</b>	364mm (w) * 269.5mm (d) * 29 ~ 41mm (h)      Around 3.2kg with 8 Cell Battery and ODD	
<b>Optional</b>	<p><b><u>SATA Optical Drive Module Options:</u></b>            Combo DVD Drive Module            Super Multi Drive Module            Blu-Ray Drive Module</p> <p>Intel® WiFi Link 5300/5100 Series (3*3/1*2 - 802.11a/g/n)            Wireless LAN Mini-Card Module</p> <p>3rd Party 802.11b/g Wireless LAN Mini-Card Module with USB interface</p> <p>Bluetooth 2.0 + EDR (Enhanced Data Rate) Module  <b>(Factory Option)</b></p> <p>1.3M or 2.0M Pixel USB 2.0 PC Camera Module <b>(Factory Option)</b></p>	



**UMTS Modes**  
 Note that UMTS modes CAN NOT be used in North America.

## Introduction

*Figure 1*  
**Top View**

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

## External Locator - Top View with LCD Panel Open



## External Locator - Front and Rear View



*Figure 2*  
**Front View**

1. Headphone-Out Jack
2. Microphone-In Jack
3. S/PDIF-Out Jack
4. Mini-IEEE 1394 Port
5. LED Indicators



*Figure 3*  
**Rear View**

1. Vent/Fan Intake/Outlet
2. DVI-Out Port
3. HDMI-Out Port
4. \*Combined eSATA/USB Port
5. USB 2.0 Port
6. DC-In Jack
7. Security Lock Slot

\*Note that the eSATA port does not support hot-swapping in **Windows XP**. Make sure you install the **Intel Matrix** driver for e-SATA support in **Windows Vista**.

## Introduction

### External Locator - Left & Right Side View

*Figure 4*  
**Left Side View**

1. Optional Device Drive Bay (for CD/DVD Device)

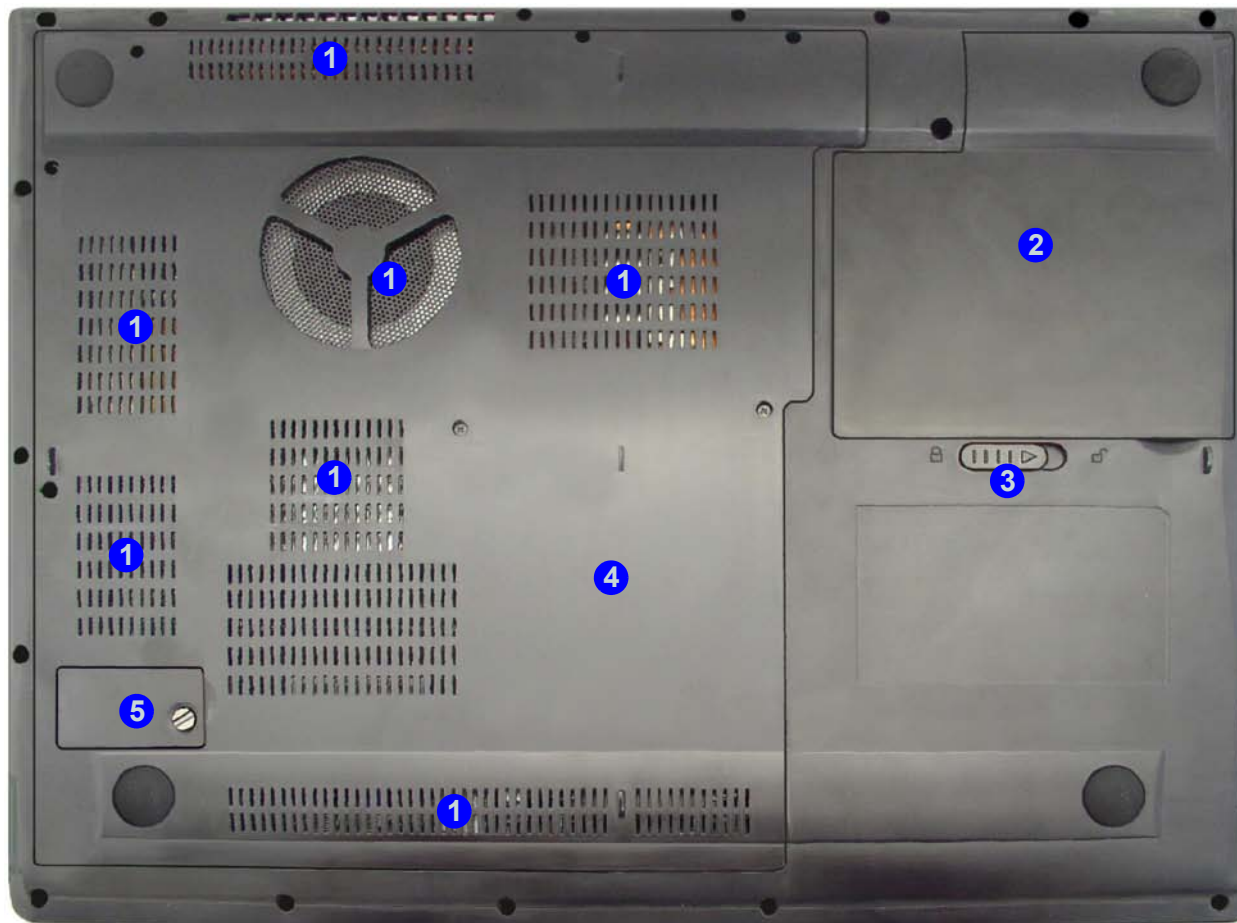


*Figure 5*  
**Right Side View**

1. Express Card Slot
2. 7-in-1 Card Reader
3. 2 \* USB 2.0 Ports
4. RJ-45 LAN Jack
5. RJ-11 Phone Jack



## External Locator - Bottom View



*Figure 6*  
**Bottom View**

1. Vent/Fan Intake/Outlet
2. Battery
3. Battery Release Latch
4. Component Bay Cover
5. 3.5G USIM Card Cover



### Overheating

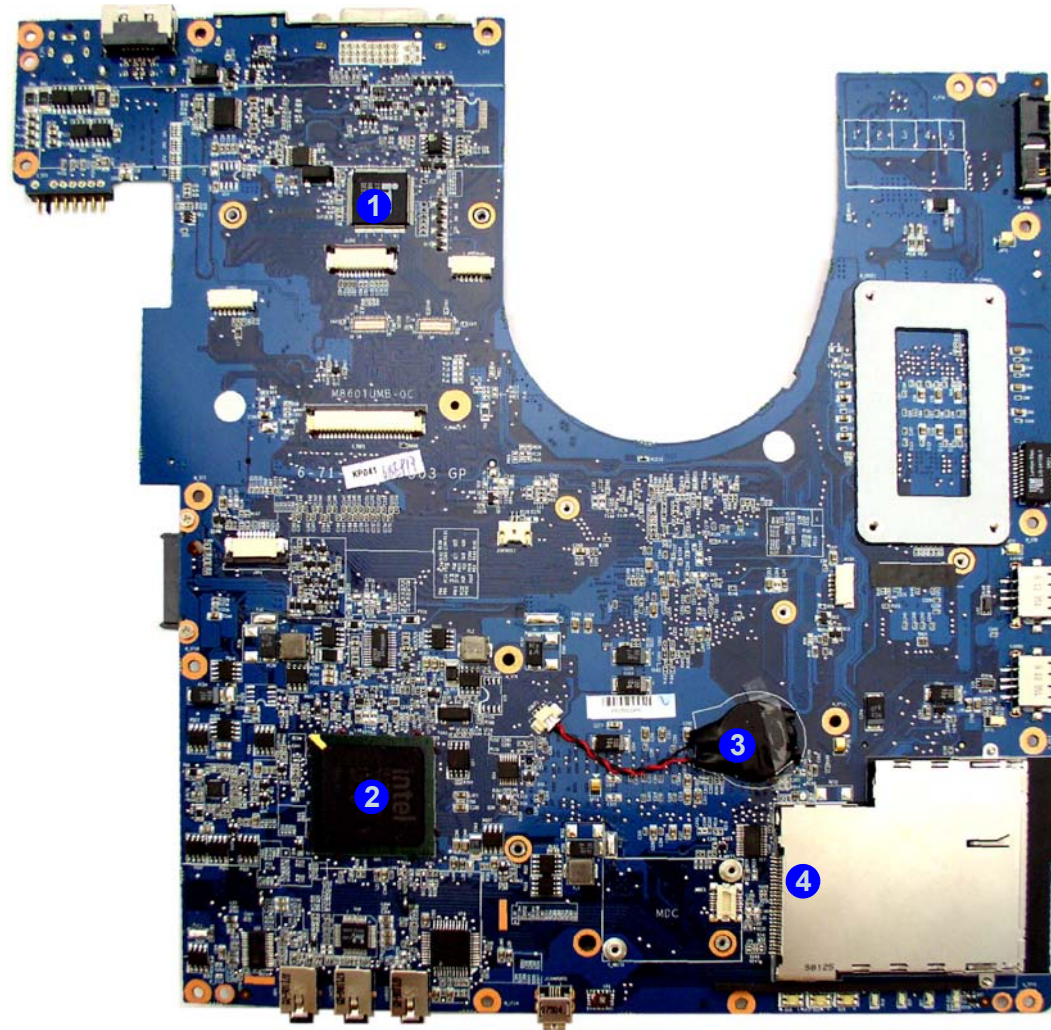
To prevent your computer from overheating make sure nothing blocks the vent/fan intakes while the computer is in use.

## Introduction

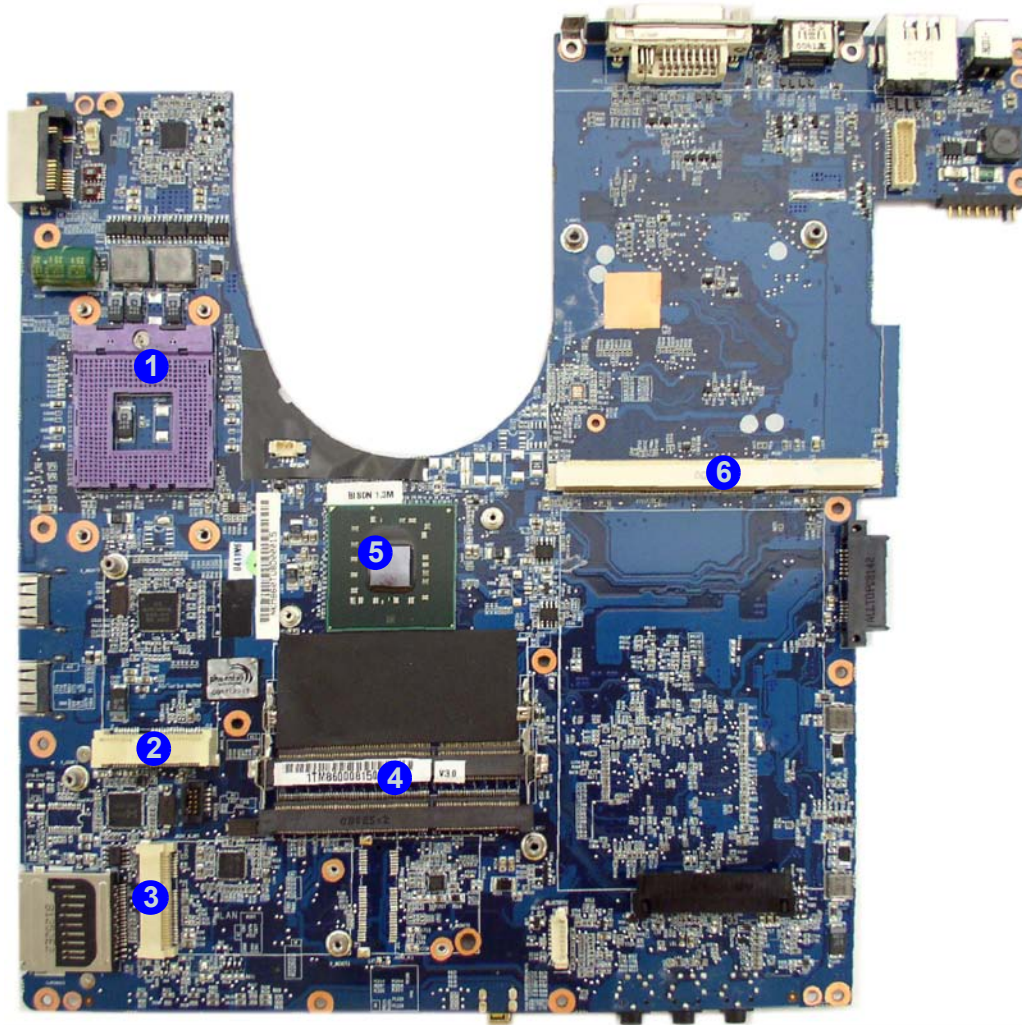
*Figure 7*  
**Mainboard Top  
Key Parts**

1. ITE
2. Southbridge
3. CMOS Battery
4. New Card Assembly

## Mainboard Overview - Top (Key Parts)



## Mainboard Overview - Bottom (Key Parts)



*Figure 8*  
**Mainboard Bottom  
Key Parts**

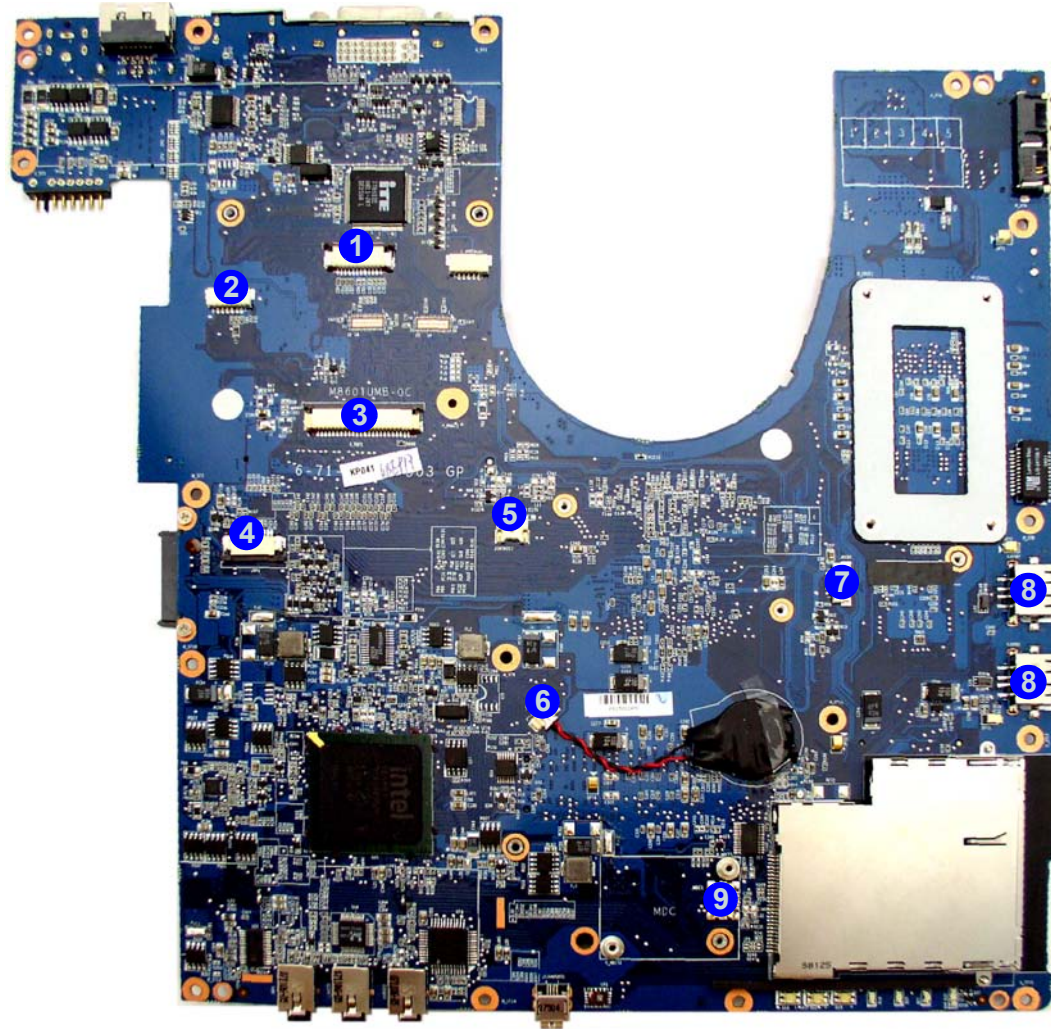
1. CPU Socket (no CPU installed)
2. Mini-PCIe Socket (3G Module)
3. Mini-PCIe Socket (Wireless Lan Module)
4. Memory Slots (DDR2 So-DIMM)
5. NorthBridge
6. 160-Pin VGA Socket

## Introduction

*Figure 9*  
**Mainboard Top  
Connectors**

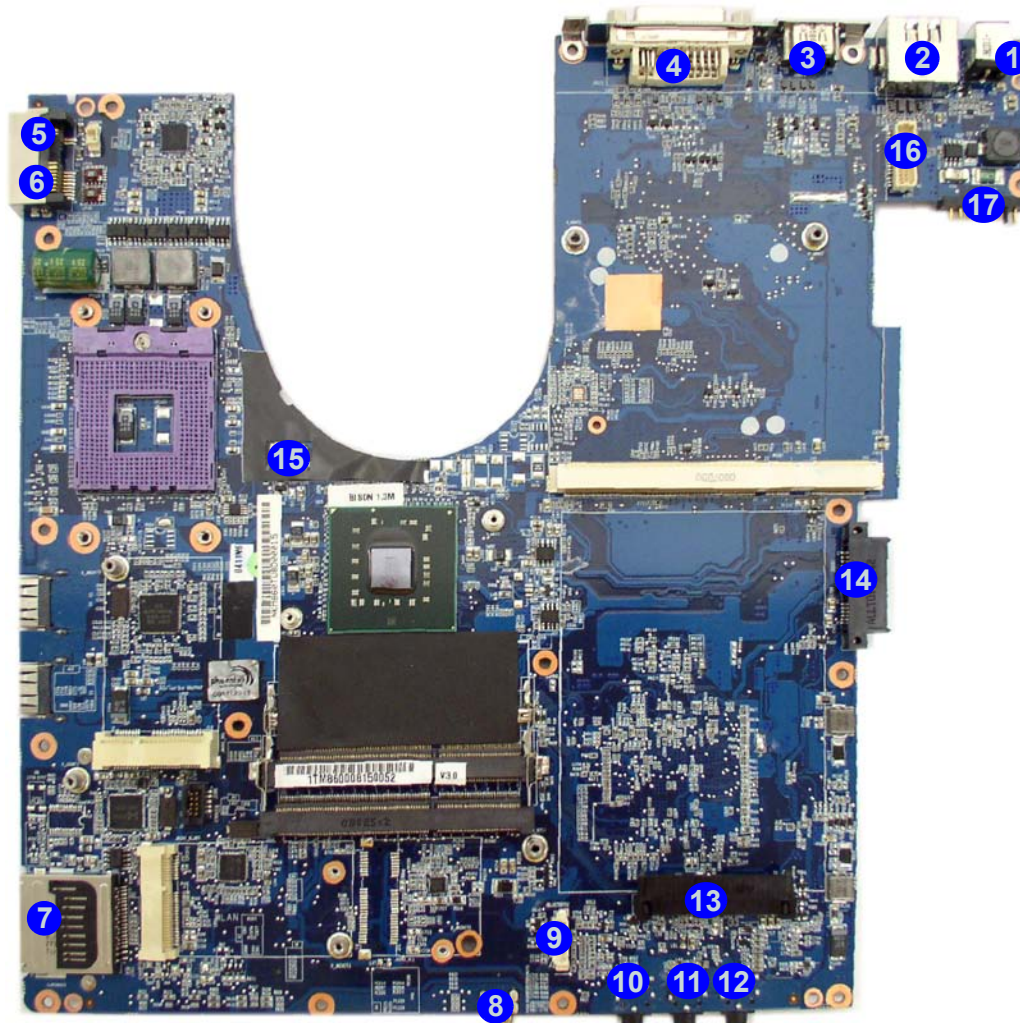
1. LED Cable Connector
2. Inverter Board Cable Connector
3. Keyboard Cable Connector
4. TouchPad Cable Connector
5. Microphone Cable Connector
6. CMOS Battery Connector
7. CCD Cable Connector
8. USB Port
9. MDC Connector

## Mainboard Overview - Top (Connectors)





## Mainboard Overview - Bottom (Connectors)



*Figure 10*  
**Mainboard Bottom  
Connectors**

1. DC-In Jack
2. eSATA + USB Port
3. HDMI Port
4. DVI-Out Port
5. RJ-11 Jack
6. RJ-45 Jack
7. 7-in-1 Card Reader Connector
8. Mini-IEEE 1394a Port
9. Bluetooth Cable Connector
10. S/PDIF-Out Jack
11. Microphone Jack
12. Headphone Jack
13. HDD Connector
14. CD Connector
15. CPU Fan Cable Connector
16. LCD Cable Connector
17. Battery Connector




# 2: Disassembly



## Overview

This chapter provides step-by-step instructions for disassembling the *M860TU* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

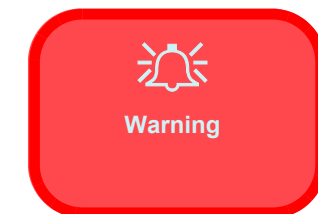
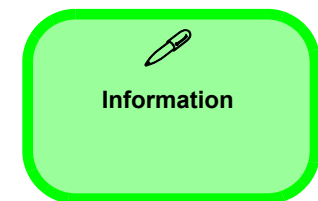
We suggest you completely review any procedure before you take the computer apart.

Procedures such as upgrading/replacing the RAM, CD 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 HDD:

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

#### To remove the Optical Device:

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

#### To remove the System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the system memory [page 2 - 9](#)

#### To remove and install a Processor:

1. Remove the battery [page 2 - 5](#)
2. Remove the processor [page 2 - 10](#)
3. Install the processor [page 2 - 12](#)

#### To remove the VGA Card:

1. Remove the battery [page 2 - 5](#)
2. Remove the VGA Card [page 2 - 13](#)

#### To remove the 3G Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the 3G module [page 2 - 14](#)

#### To remove the Wireless LAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the WLAN module [page 2 - 15](#)

#### To remove the Bluetooth Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the Bluetooth Module [page 2 - 16](#)

#### To remove the Inverter Board:

1. Remove the battery [page 2 - 5](#)
2. Remove the inverter board [page 2 - 17](#)

#### To remove the Keyboard:

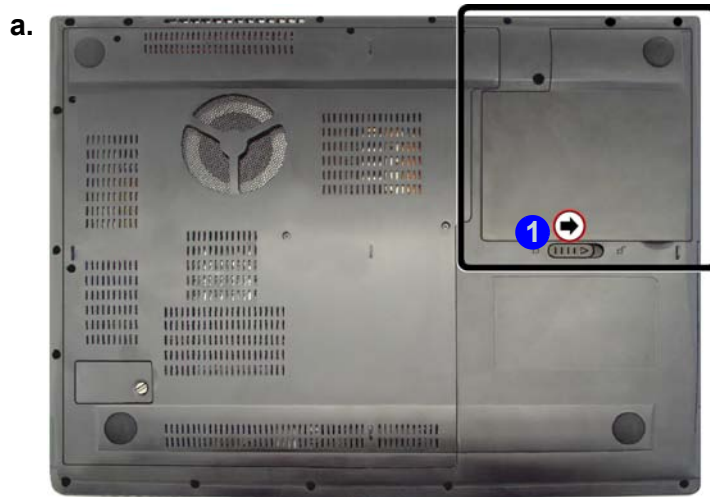
1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 18](#)

#### To remove the Modem:

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the Optical device [page 2 - 8](#)
4. Remove the system memory [page 2 - 9](#)
5. Remove the processor [page 2 - 10](#)
6. Remove the VGA Card [page 2 - 13](#)
7. Remove the 3G module [page 2 - 14](#)
8. Remove the WLAN module [page 2 - 15](#)
9. Remove the Bluetooth Module [page 2 - 16](#)
10. Remove the keyboard [page 2 - 18](#)
11. Remove the Modem [page 2 - 19](#)

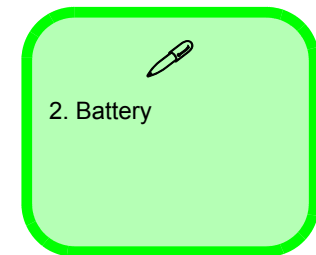
## Removing the Battery

1. Turn the computer off, and turn it over.
2. Slide latch **1** towards the unlock symbol and hold it in place, and lift the battery **2** up and out of the battery bay.



*Figure 1*  
**Battery Removal**

- a. Slide latch at point 1 towards the unlock symbol and hold it in place.
- b. Lift the battery out.



## Disassembly

*Figure 2*  
**HDD Assembly  
Removal**

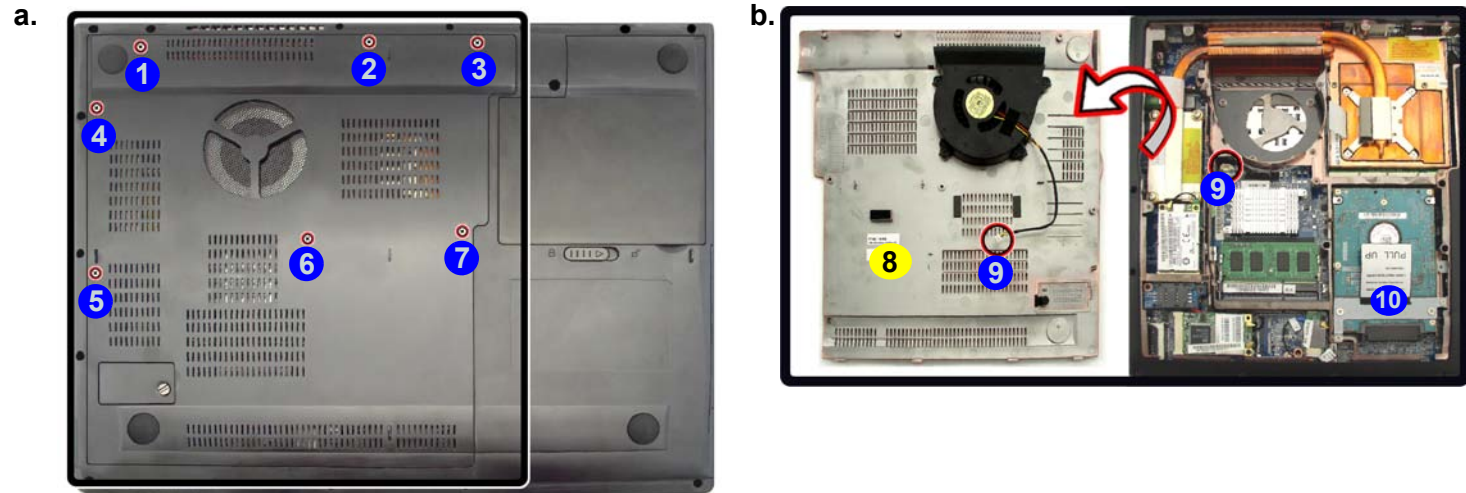
- Remove the screws.
- Remove the cover and locate the hdd.

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

### Hard Disk Upgrade Process

- Turn **off** the computer, and turn it over and remove the battery ([page 2 - 5](#)).
- Locate the component bay cover and remove screws **1 - 7**.
- Carefully (**a fan and cable are attached to the under side of the cover**) lift up the bay cover **8**.
- Carefully disconnect the fan cable **9**, and remove the cover **8**.
- The hard disk assembly cover will be visible at point **10** on the mainboard.



#### Fan Cable

Make sure you reconnect the fan cable **9** before screwing down the bay cover.



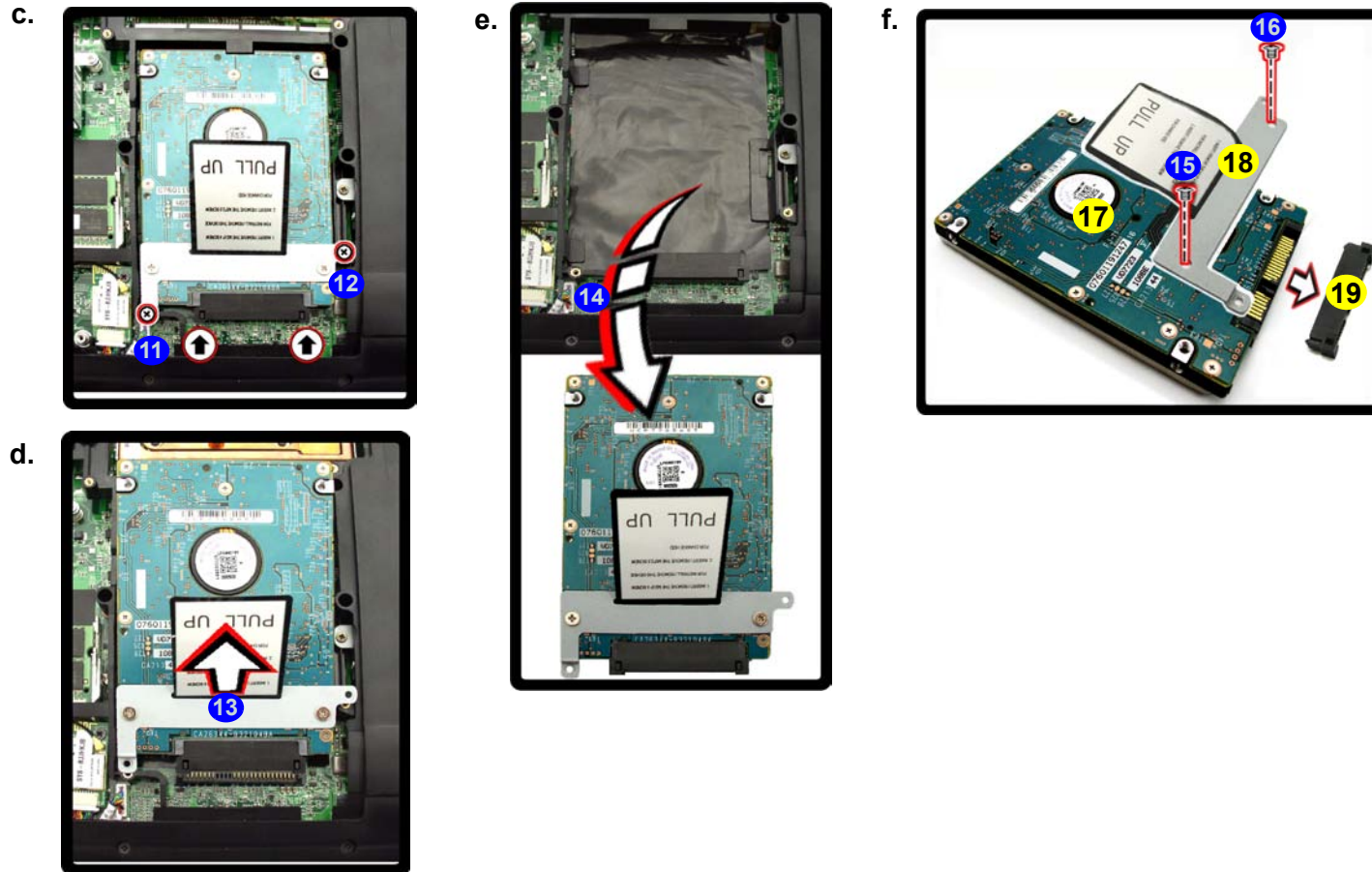
#### 8. Component Bay Cover

- 7 Screws



6. Remove screws 11 - 12 from the hard disk assembly.
7. Pull the hard disk assembly in the direction of the arrow 13.
8. Carefully remove the hard disk assembly in the direction of the arrow 14.
9. Remove screws 15 - 16 to separate the hard disk 17 from the bracket 18 and connector 19.
10. Reverse the process to install a new hard disk(s).

Figure 3  
HDD Assembly  
Removal (cont'd)



- c. Remove screws.
- d. Pull the HDD module in the direction of the arrow.
- e. Remove the HDD module.
- f. Remove the screws and separate the bracket and connector from the HDD.

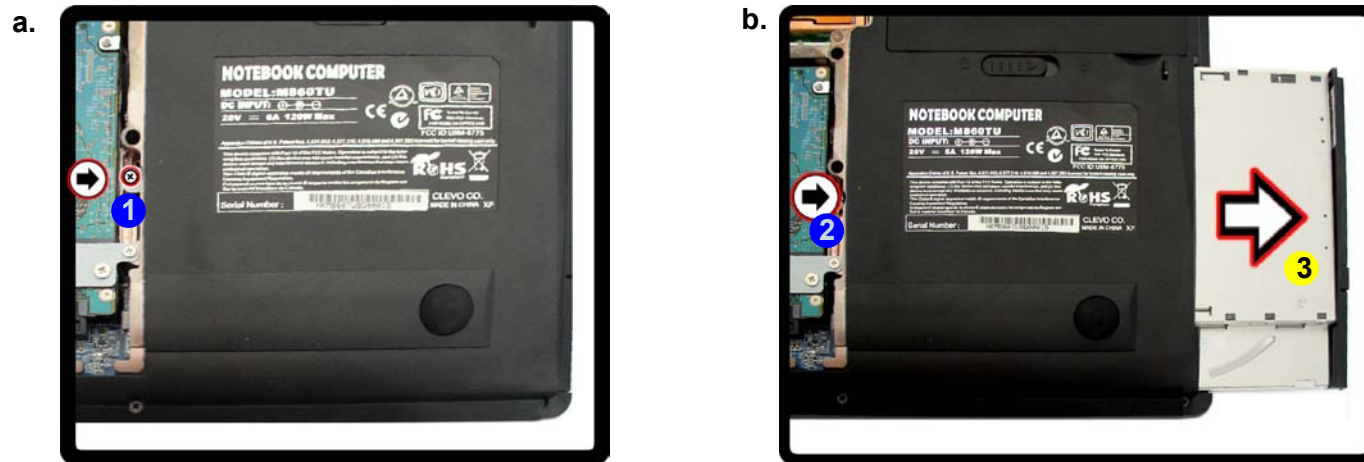
## Disassembly

*Figure 4*  
**Optical Device  
Removal**

- Remove the screw.
- Slide the optical device out of the computer at point 2.

## Removing the Optical (CD/DVD) Device

- Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)) and component bay cover ([page 2 - 6](#)).
- Remove the screw at point **1**, and use a screwdriver to carefully push out the optical device **3** at point **2** out of the computer.
- Restart the computer to allow it to automatically detect the new device.



### Fan Cable

Make sure you re-connect the fan cable **9** (see [page 2 - 6](#)) before screwing down the bay cover.



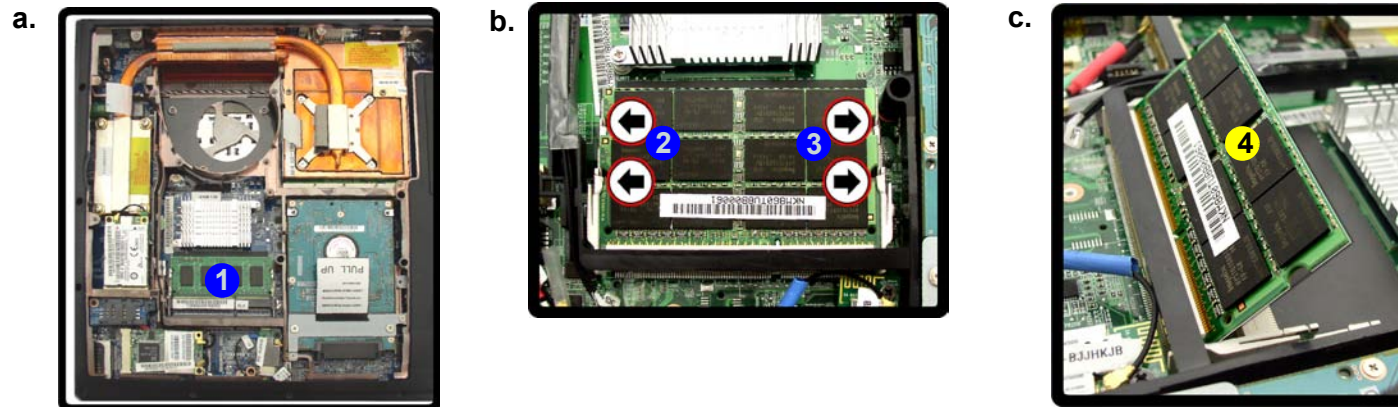
### 3. Optical Device

## Removing the System Memory (RAM)

The computer has two memory sockets for 200 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDRIII (DDR3) Up to 1066 MHz. The main memory can be expanded up to 4GB. The SO-DIMM modules supported are 1024MB and 2048MB **DDRIII** Modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

### Memory Upgrade Process

1. Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)) and the component bay cover ([page 2 - 6](#)).
2. The RAM module(s) will be visible at point **1** on the mainboard.
3. Gently pull the two release latches (**2** & **3**) on the sides of the memory socket in the direction indicated by the arrows ([Figure 5b](#)).



4. The RAM module(s) **4** will pop-up ([Figure 5c](#)), 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 will only fit one way as defined by its pin alignment. Make sure the module is seated as far into the slot as it will go. **DO NOT FORCE IT**; it should fit without much pressure.
8. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
9. Replace the component bay cover and the screws (see [page 2 - 6](#)).
10. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

*Figure 5*  
**RAM Module Removal**

- a. Locate the memory socket.
- b. Pull the release latch(es).
- c. Remove the module(s).



#### 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

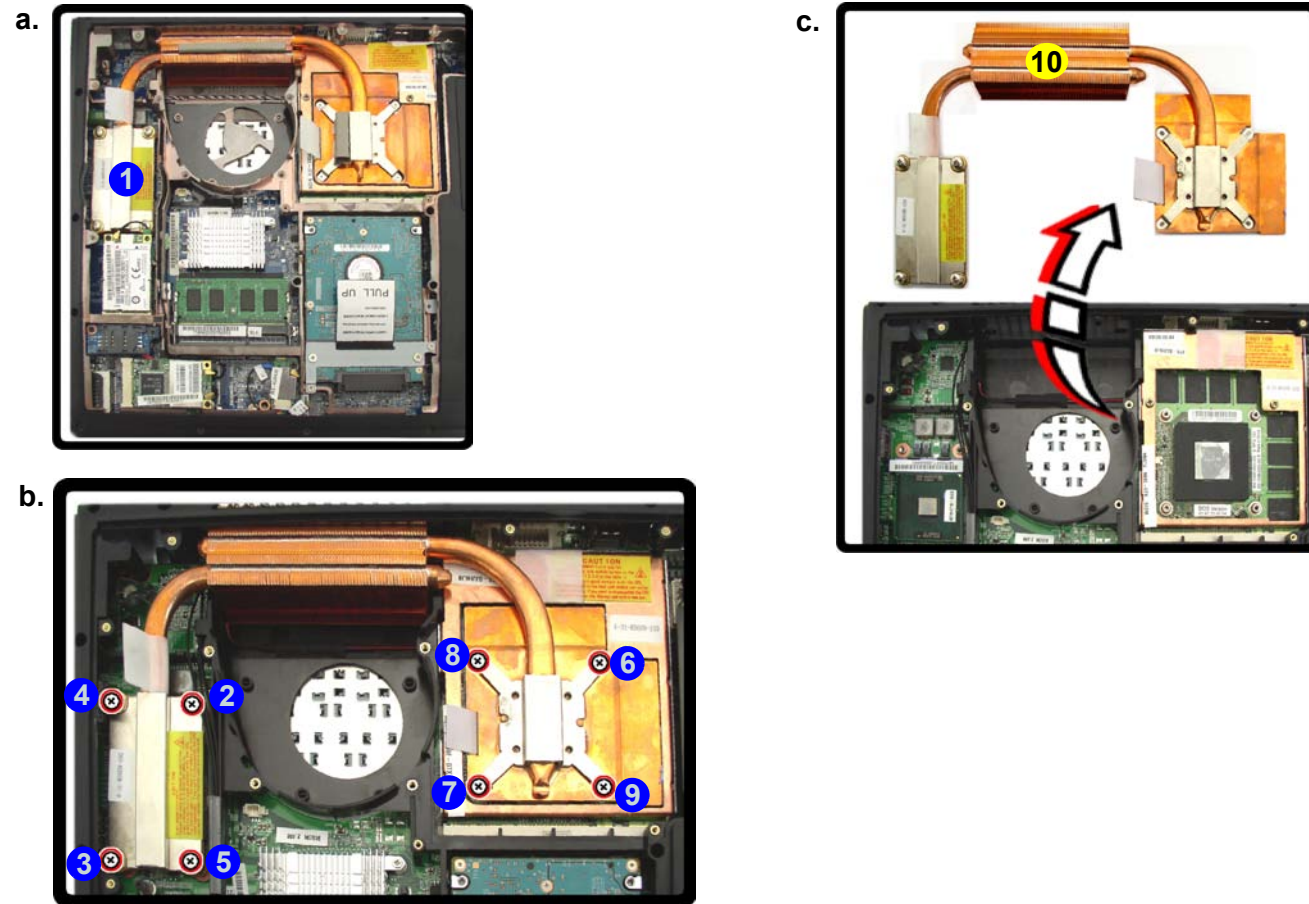
## Removing and Installing a Processor

### Processor Removal Procedure

1. Turn off the computer, turn it over, and remove the battery ([page 2 - 5](#)) and the component bay cover ([page 2 - 6](#)).
2. The heat sink will be visible at point **1** on the mainboard
3. Remove the screws **2** - **9** from the heat sink in the order indicated ([Figure 6b](#)).
4. Carefully lift the heat sink **10** ([Figure 6c](#)) up off the computer.


*Figure 6*  
**Processor Removal**

- a. Locate the heat sink.
- b. Remove the screws in the order indicated.
- c. Remove the heat sink.



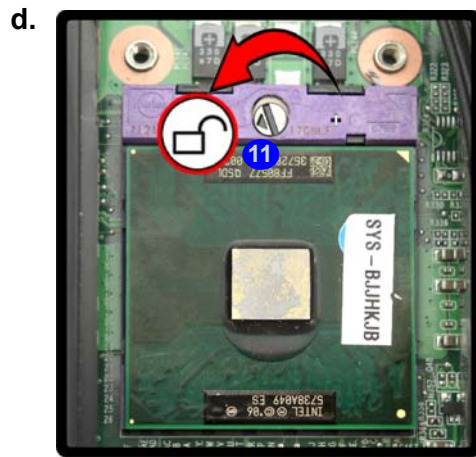
  
10. Heat Sink

- 8 Screws

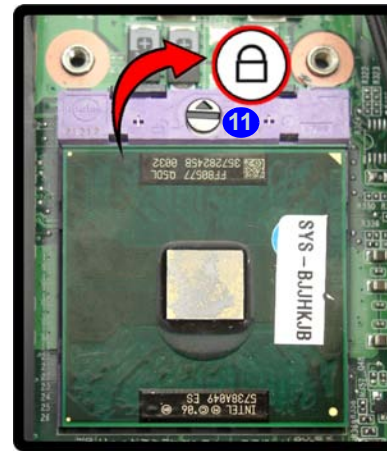
- Turn the release latch **11** towards the unlock symbol  to release the CPU.
- Carefully (it may be hot) lift the CPU **12** up and out of the socket (*Figure 7e*).
- Reverse the process to install a new CPU.
- When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

*Figure 7*  
**Processor Removal (cont'd)**


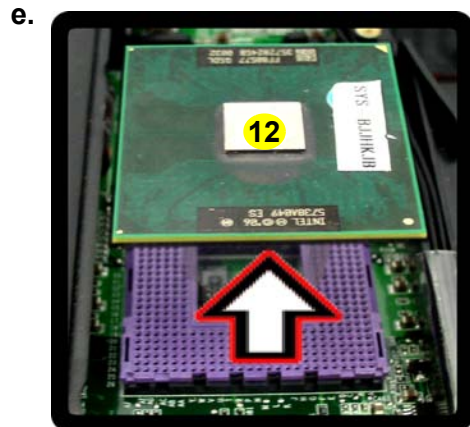
- Turn the release latch to unlock the CPU.
- Lift the CPU out of the socket.



Unlock

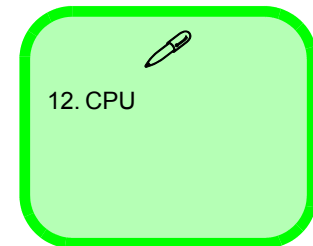


Lock



**Caution**

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




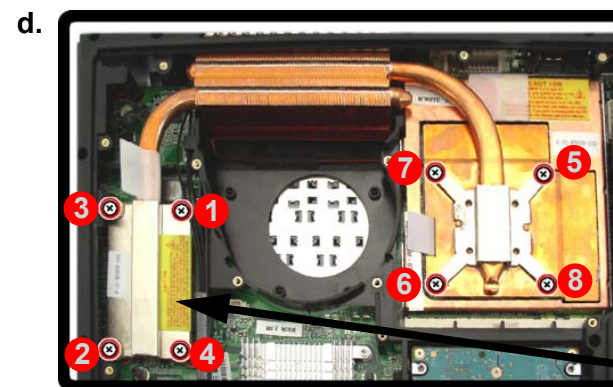
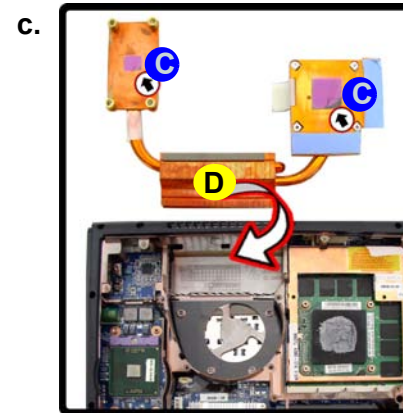
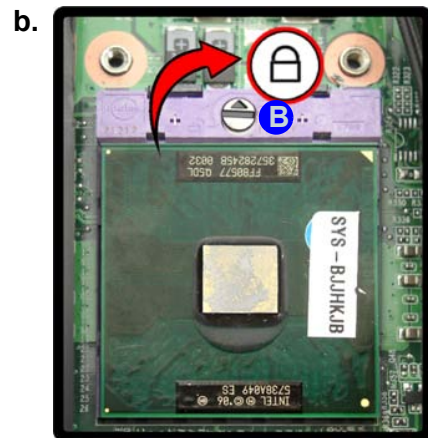
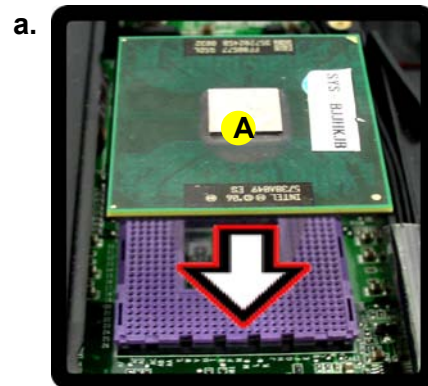
## Disassembly

Figure 8  
Processor  
Installation

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

### Processor Installation Procedure

- Insert the CPU **A**, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!), and turn the release latch **B** towards the lock symbol  (*Figure 8b*).
- Remove the sticker **C** (*Figure 8c*) from the heat sink.
- Insert the heat sink **D** as indicated in *Figure 8c*.
- Tighten the CPU heat sink screws in the order **1** to **4** and **5** to **8** (the order as indicated on the label and *Figure 8d*).
- Replace the component bay cover and tighten the screws (see *page 2 - 6*).



**Note:**

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

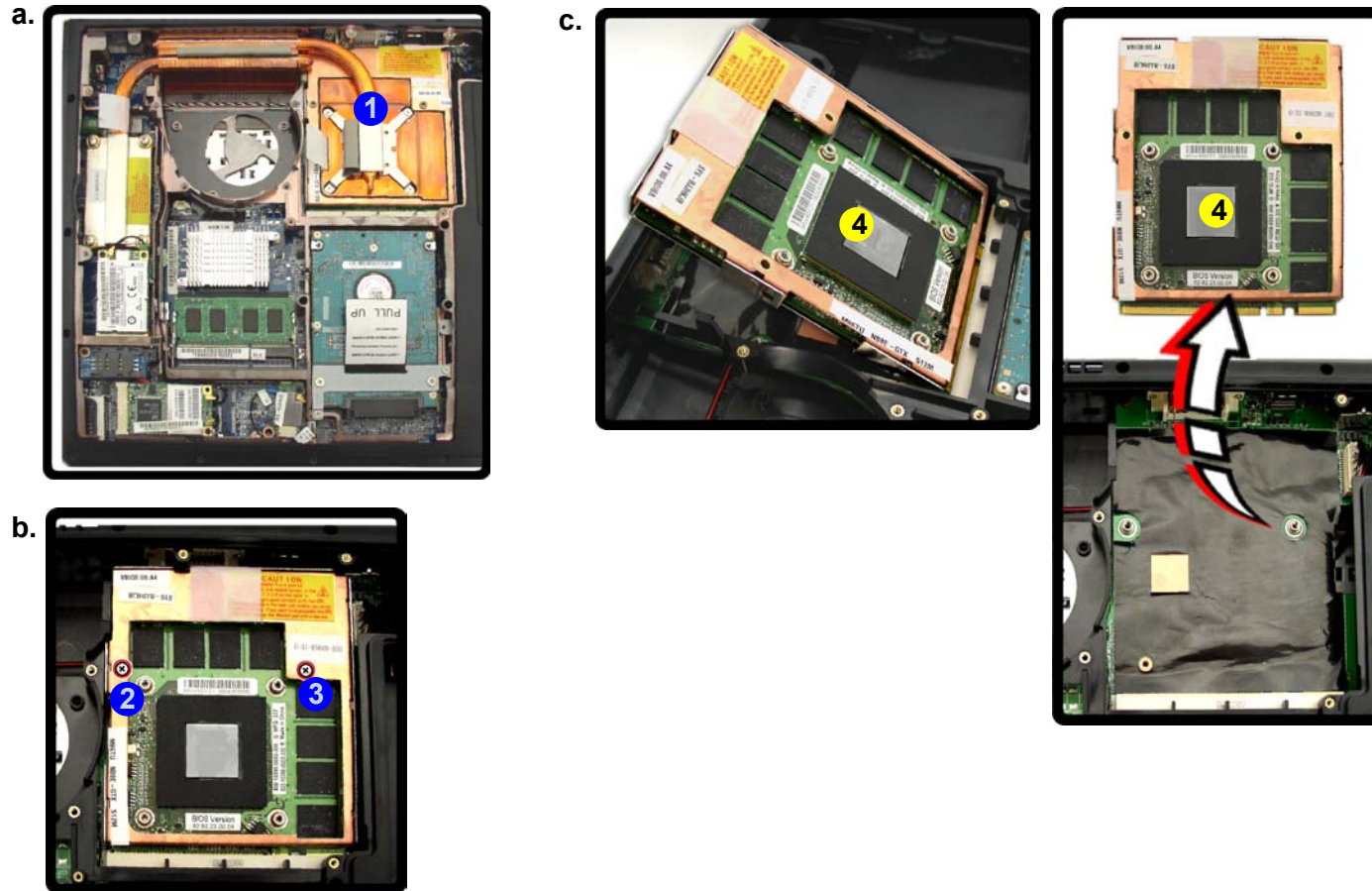
- A. CPU
- D. Heat Sink
- 8 Screws

## Removing the VGA Card

1. Turn **off** the computer, turn it over, and remove the battery ([page 2 - 5](#)), the component bay cover ([page 2 - 6](#)) and the CPU heat sink ([page 2 - 10](#)).
2. The VGA Card(s) will be visible at point **1** on the mainboard.
3. Remove screws **2** - **3** ([Figure 9b](#)).
4. Carefully grip the plastic holder and lift the video card **4** up and off the sockets.
5. Reverse the process to install the new VGA Card.

*Figure 9*  
**VGA Card Removal**

- a. Locate the VGA.
- b. Remove the screws.
- c. Lift the VGA card up and off the sockets.



✎

4. VGA Card

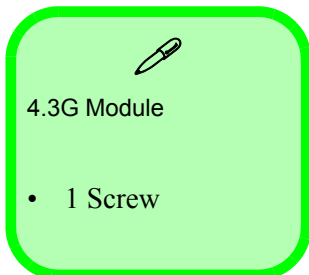
- 2 Screws

## Disassembly

Figure 10  
3G Module Removal

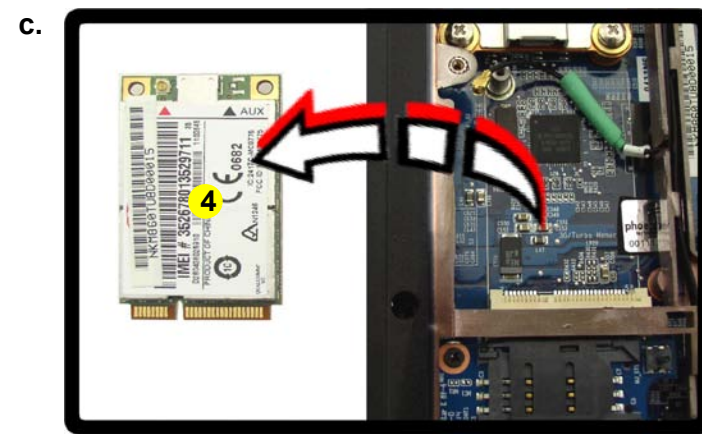
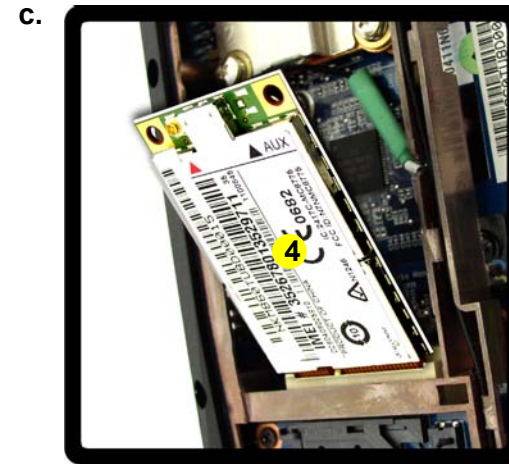
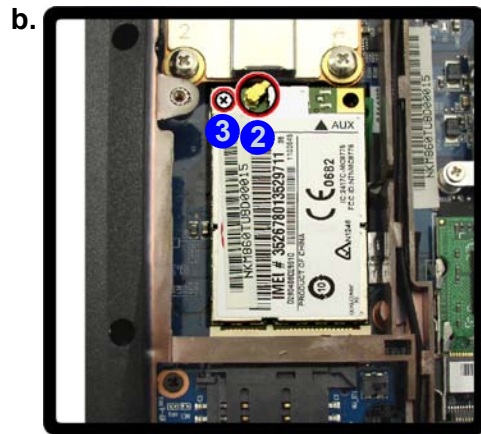
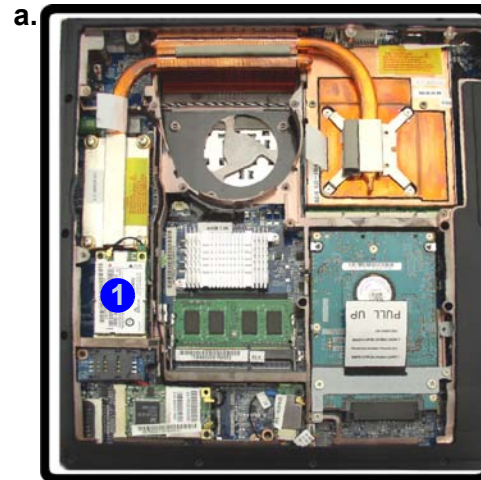
- Locate the 3G module.
- Disconnect the cable and remove the screw.
- The 3G module will pop up.
- Remove the 3G module.

Note: Make sure you reconnect the antenna cable to socket (Figure 10b).



## Removing the 3G Module

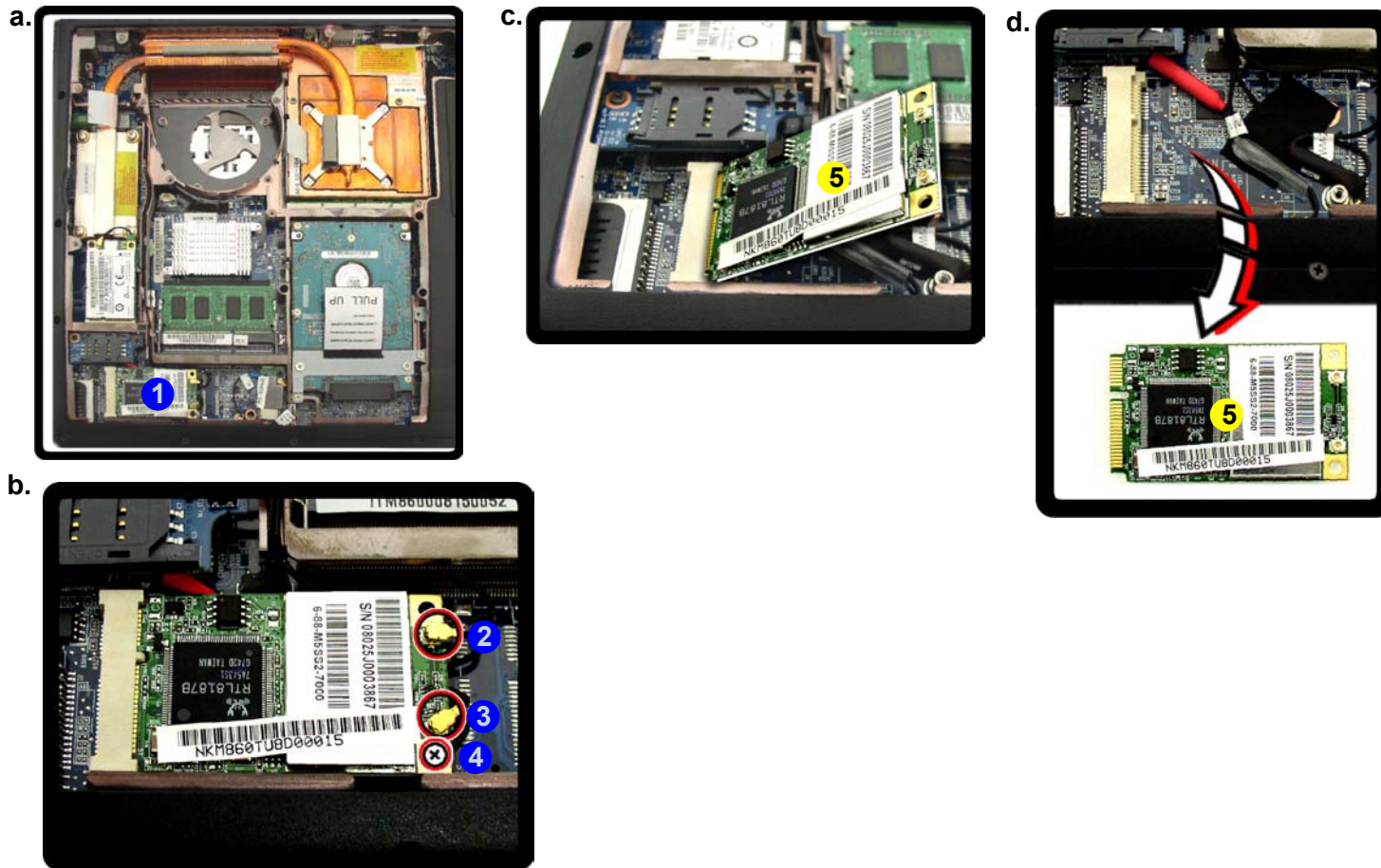
- Turn off the computer, turn it over, and remove the battery (page 2 - 5) and the component bay cover (page 2 - 6).
- The 3G module will be visible at point ① on the mainboard.
- Carefully disconnect the cable ②, and then remove the screw ③.
- The 3G module ④ (Figure 11c) will pop-up, and you can remove it off the computer.





## Removing the Wireless LAN Module

1. Turn **off** the computer, turn it over, and remove the battery ([page 2 - 5](#)) and the component bay cover ([page 2 - 6](#)).
2. The wireless LAN module will be visible at point **1** on the mainboard.
3. Carefully disconnect the cables **2 - 3**, and then remove the screw **4**.
4. The wireless LAN module **5** ([Figure 11c](#)) will pop-up, and you can remove it off the computer.



*Figure 11*  
**Wireless LAN  
Module Removal**

- a. Locate the WLAN.
- b. Disconnect the cable and remove the screw.
- c. The WLAN module will pop up.
- d. Remove the Wireless LAN module.

Note: Make sure you reconnect the antenna cable to the “1 + 2” socket ([Figure 11b](#)).

✎

5. Wireless LAN Module

- 1 Screw

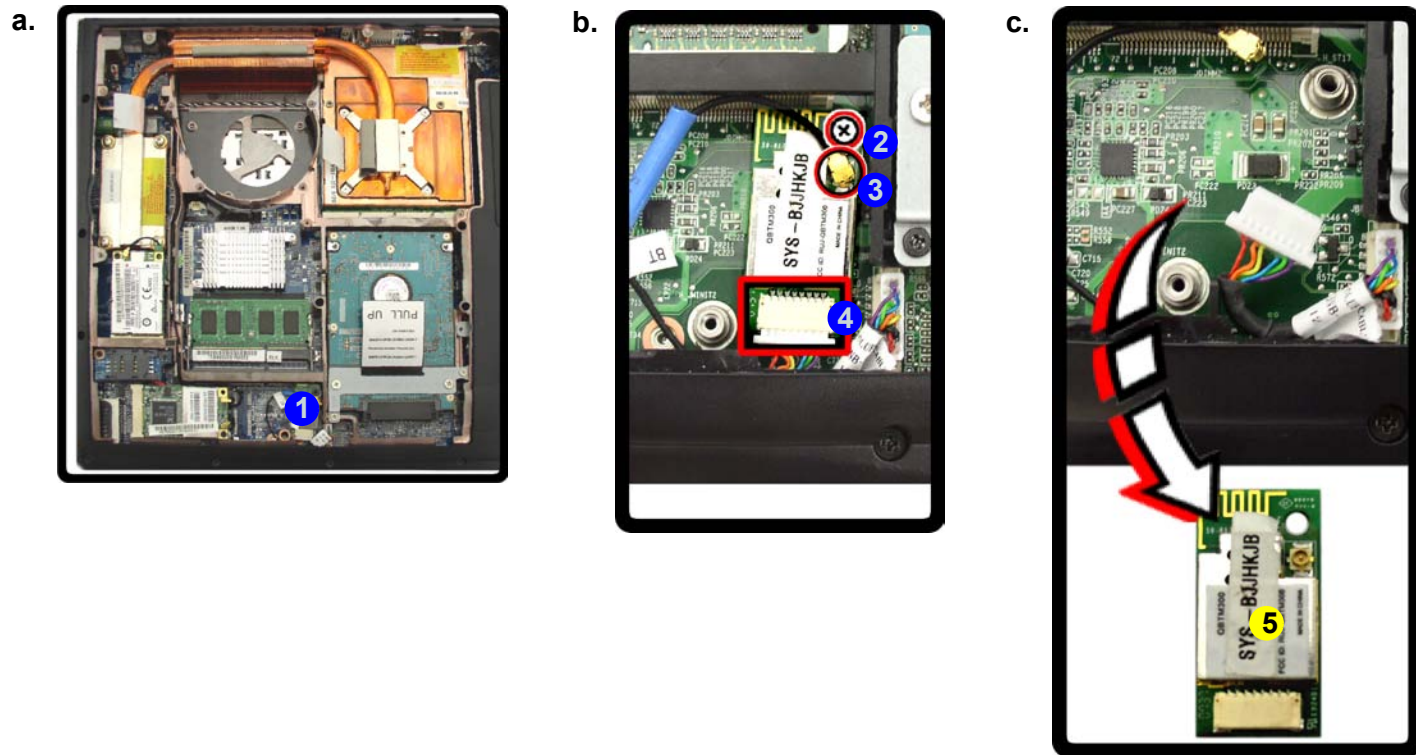
## Disassembly

*Figure 12*  
**Bluetooth Module Removal**

- a. Locate the Bluetooth module.
- b. Remove the screw and disconnect the cable and the connector from the bluetooth module.
- c. Lift the Bluetooth module out.

## Removing the Bluetooth Module

1. Turn **off** the computer, turn it over, and remove the battery ([page 2 - 5](#)) and the component bay cover ([page 2 - 6](#)).
2. The Bluetooth module will be visible at point **1** on the mainboard.
3. Remove the screw **2** and carefully disconnect the cable **3** and separate the connector **4** ([Figure 12b](#)) from the Bluetooth Module.
4. Lift the Bluetooth Module **5** ([Figure 12c](#)) up and off the computer.

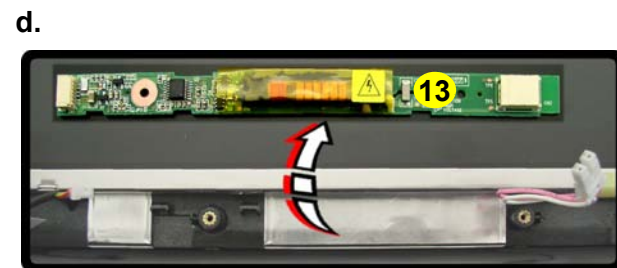
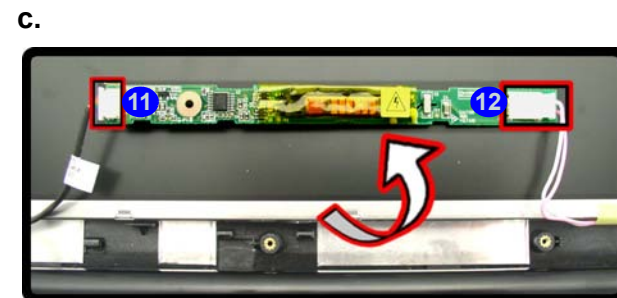
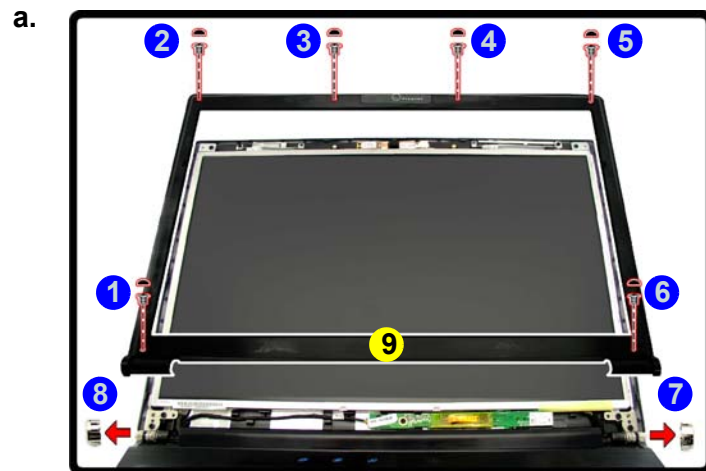


5. Bluetooth Module

- 1 Screw

## Removing the Inverter Board

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
2. Remove any rubber covers, screws **1** - **6** and hinge covers **7** - **8** ([Figure 13a](#)), then run your finger around the middle of the frame to carefully unsnap the LCD front panel module **9** from the back.
3. Discharge the remaining system power (see [“Inverter Power Warning”](#) below).
4. Remove screw **10** ([Figure 13b](#)) from the inverter, and carefully lift the inverter board up slightly.
5. Disconnect cables **11** & **12** ([Figure 13c](#)) from the inverter, then remove the inverter **13** ([Figure 13d](#)) from the top case assembly.



*Figure 13*  
**Inverter Board Removal**

- a. Remove the 6 screws and unsnap the LCD front panel module from the back.
- b. Remove the screw from the inverter board and lift the board up slightly.
- c. Disconnect the cables from the inverter.
- d. Remove the inverter.



### Inverter Power Warning

In order to prevent a short circuit when removing the inverter it is necessary to discharge any remaining system power. To do so, press the computer's power button for a few seconds before disconnecting the inverter cable.



9. LCD Front Panel  
13. Inverter Board

- 6 Screws

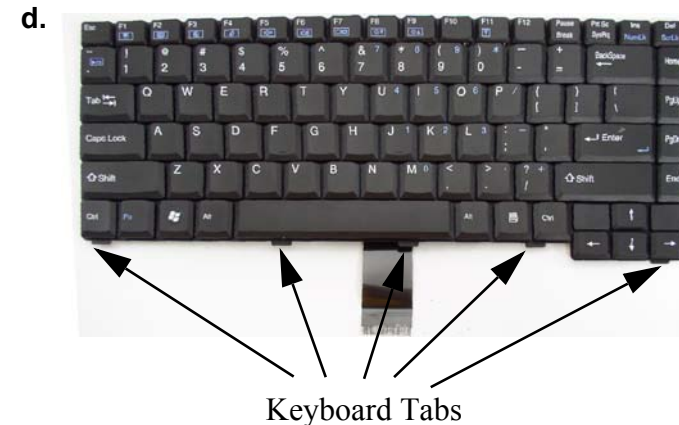
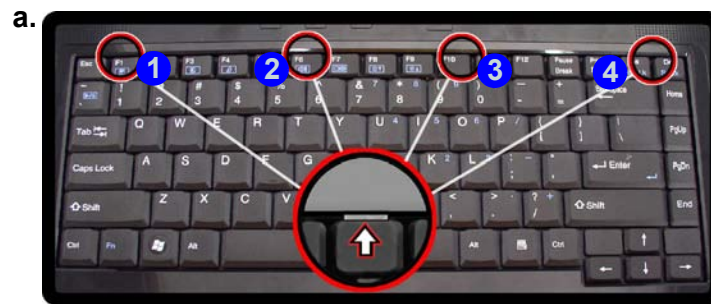
## Disassembly

Figure 14  
Keyboard Removal

- Press the four latches to release the keyboard.
- Lift the keyboard up and disconnect the cable from the locking collar.
- Remove the keyboard.

## Removing the Keyboard

- Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
- Press the **four** keyboard latches at the top of the keyboard to elevate the keyboard from its normal position (you may need to use a small screwdriver to do this).
- Carefully lift the keyboard up, being careful not to bend the keyboard ribbon cable **5** ([Figure 14b](#)).
- Disconnect the keyboard ribbon cable **5** from the locking collar socket **6**.
- Carefully lift up the keyboard **7** ([Figure 14c](#)) off the computer.



### Re-Inserting the Keyboard

When re-inserting the keyboard firstly align the **five** keyboard tabs at the bottom ([Figure 14d](#)) at the bottom of the keyboard with the slots in the case.



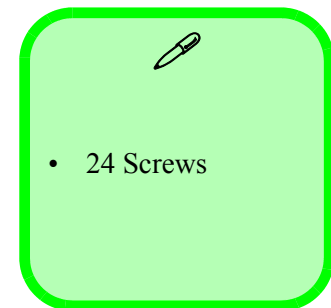
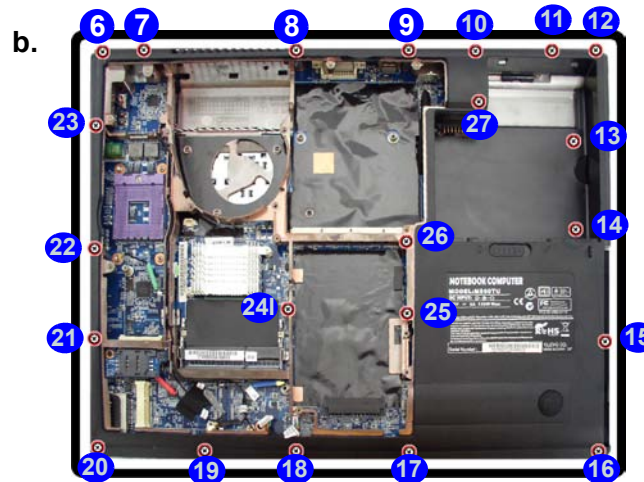
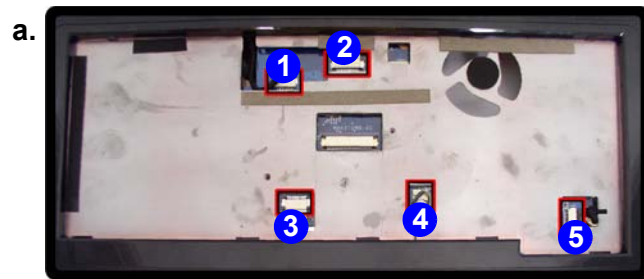
7. Keyboard

## Removing the Modem

1. Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)), hard disk ([page 2 - 6](#)), optical device ([page 2 - 8](#)), RAM ([page 2 - 9](#)), CPU ([page 2 - 10](#)), VGA card ([page 2 - 13](#)), 3G ([page 2 - 14](#)), wireless LAN ([page 2 - 15](#)), Bluetooth ([page 2 - 16](#)) and keyboard ([page 2 - 18](#)).
2. Carefully disconnect connectors (1 - 5) and turn the computer over.
3. Remove screws 6 - 27 from the bottom case ([Figure 15d](#)) and remove screws 28 - 29 from the rear of the computer.

*Figure 15*  
**Modem Removal**

- a. Disconnect the connectors.
- b. Remove the screws.

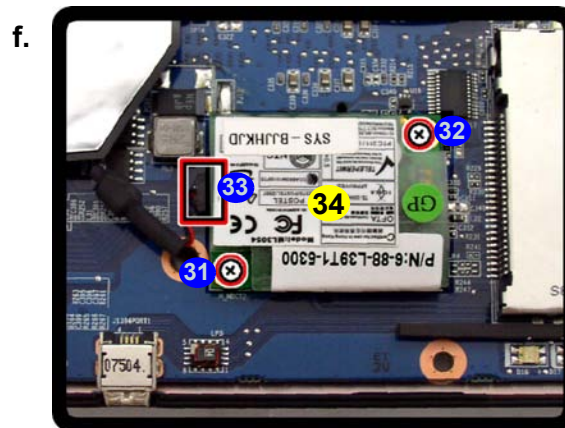
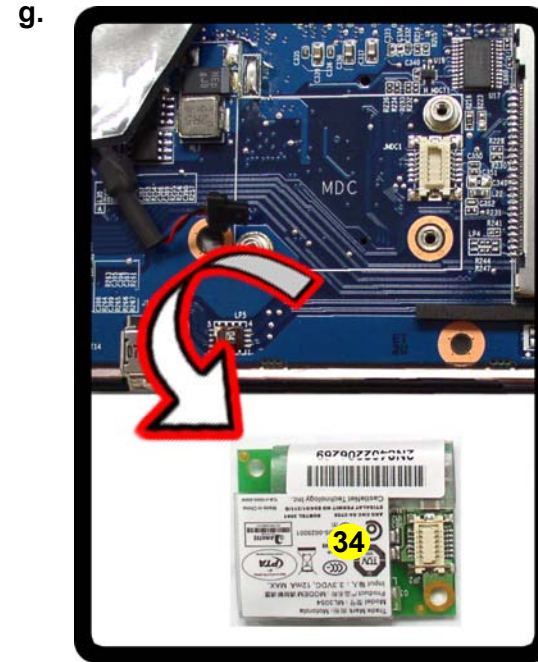
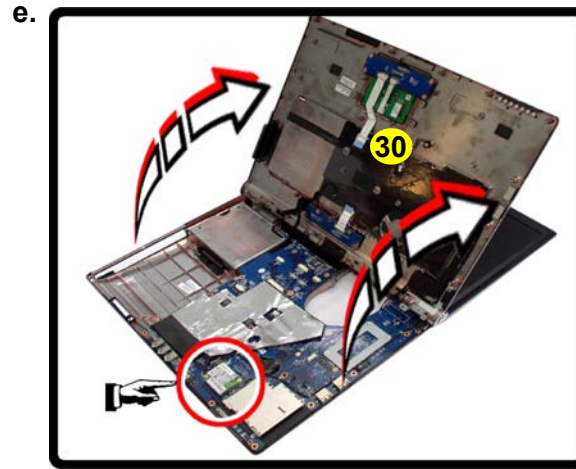


## Disassembly

*Figure 16*  
**Modem Removal**  
 (cont'd)

4. Carefully lift the top case **30** (*Figure 16e*) up and off the computer.
5. Remove screws **31** - **32** from the modem and disconnect cable **33**.
6. Lift the modem **34** (*Figure 16g*) up and off the computer.

- e. Lift the top case off the computer.
- f. Remove the screws and disconnect the cable.
- g. Lift the modem off the computer.



30. Top Case  
 34. Modem

- 2 Screws

# Appendix A:Part Lists

This appendix breaks down the *M860TU* series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

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

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

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

## Part List Illustration Location

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

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

Part	M860TU
Top without Fingerprint	<i>page A - 3</i>
Top with Fingerprint	<i>page A - 4</i>
Bottom	<i>page A - 5</i>
LCD	<i>page A - 6</i>
DVD-ROM Drive	<i>page A - 7</i>
Combo Drive	<i>page A - 8</i>
HDD	<i>page A - 9</i>



# Top without Fingerprint

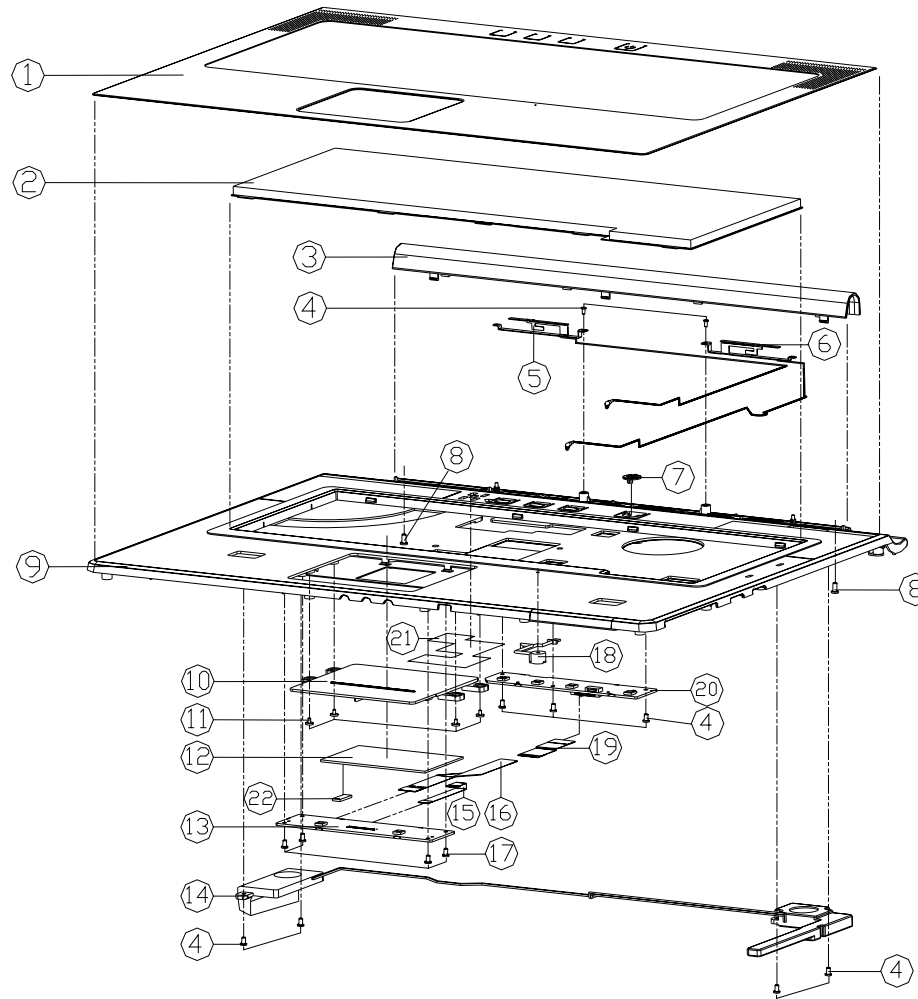


Figure A - 1  
Top without Fin-  
gerprint

ITEM	PART NAME	PART NO	REMARK
1	M. PLATE FOR TOP CASE (OPTION) FOR MB60U	6-33-MB602-012	
2	KEYBOARD(OPTION)	6-80-M55G0-013-1	
3	HINGE COVER (FOR TOP CASE) FOR MB60U	6-42-MB602-052	
4	SCREW M2*4L K1 BNI ICT NY	6-35-B9120-4RA	
5	ANTENNA VJAN 24G/3G/5G PIFA VMS (BLACK)	6-23-7MB60-031	
6	ANTENNA VJAN 24G/3G/5G PIFA VMS (GRAY)	6-23-7MB60-021	
7	POWER LENS (FOR MB60U)	6-42-MB602-082	
8	SCREW M2.5*5L K1 BK/Z ICT NY	6-35-B6125-SRA	
9	TOP CASE MODULE (LCD) FOR MB60U	6-39-MB602-012	
10	TOP COVER (FOR TOP CASE) FOR MB60U	6-42-MB602-101	
11	SOFT KEYS PLATE (FOR MB60U)	6-35-A1125-3R0	
12	TOUCH PAD SYMPTICS TM-00398-001 M740S	6-49-M74S2-010	
13	CLICK BOARD V30 (W/D FP) MB60U	6-77-MB602-D03-1	
14	SPEAKER L/R #182V4120M/142MM P18CEG0	6-23-5MB60-011	
15	FFC CABLE FOR OLID BOARD TO TOP CP PROH4 (54MM)	6-43-MB600-030	
16	FFC CABLE FOR OLID BOARD TO W/O CP PROH4 (54MM)	6-43-MB600-020	
17	SCREW M0*3.5L K1 NI ICT NY (W/O T-6.0)	6-35-B1120-3R5-1	
18	HEAT SHIELDING FILM FOR TOP CASE (FOR MB60U)	6-23-EM860-011	
19	FFC CABLE FOR BUTTON TO W/O CP PROH4 (42MM)	6-43-MB600-010	
20	BUTTON BOARD V3.0 MB60U	6-77-MB60W-D03	
21	SOLENOID (FOR TOP CASE) FOR MB60U	6-40-MB602-070	
22	TOUCH PAD SPONGE (54*64) 42000 FOR MB60U	6-47-0019A-154	

A.Part Lists

# Top with Fingerprint

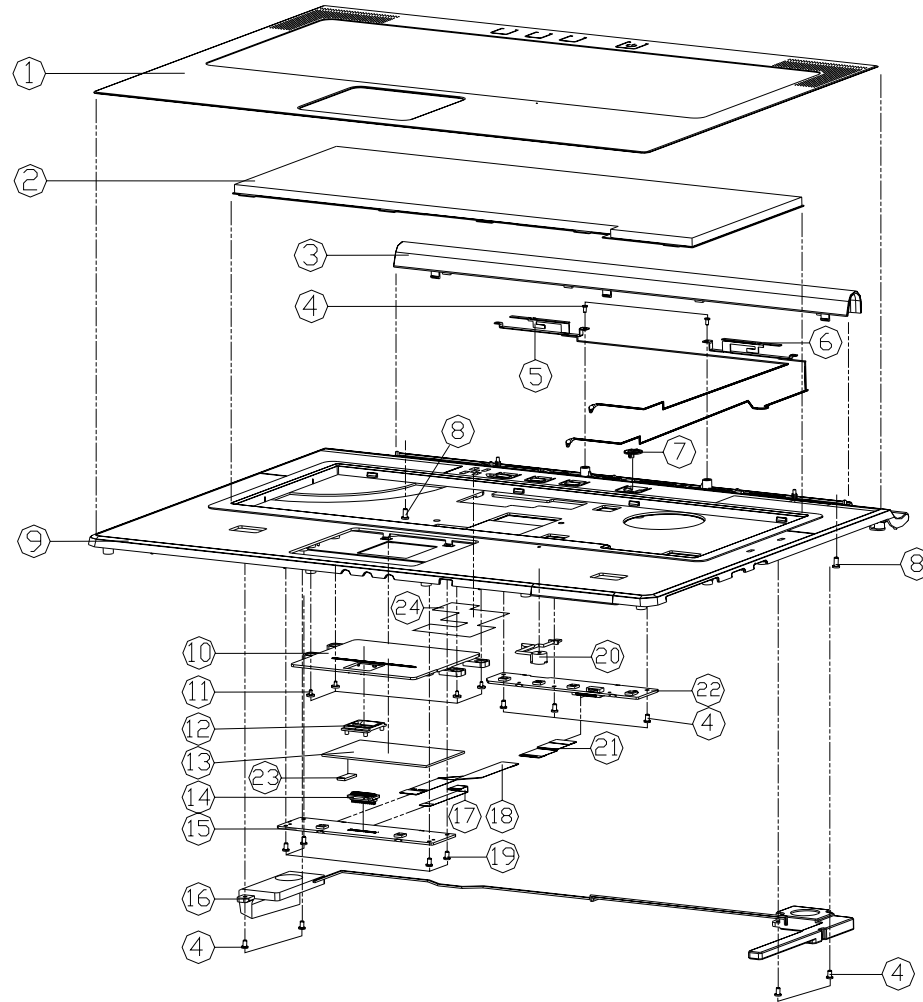
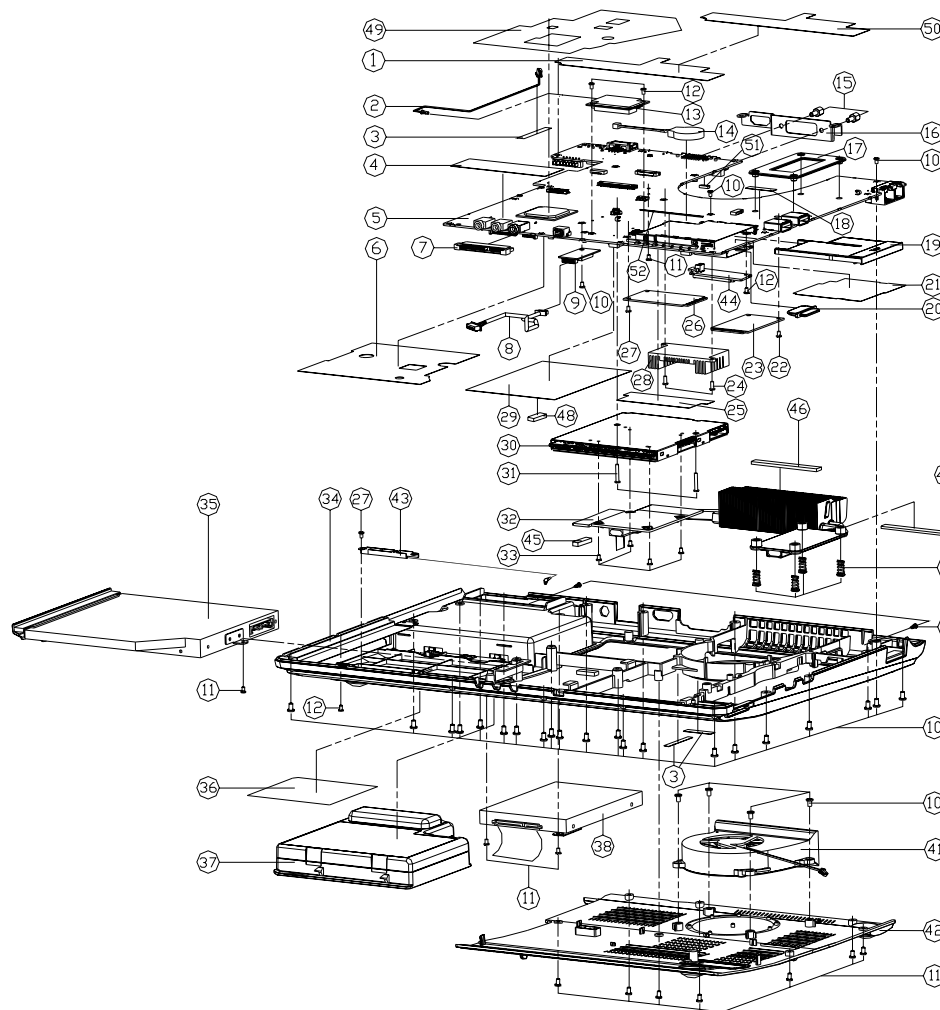


Figure A - 1  
Top with Fingerprint

A.Part Lists

ITEM	PART NAME	PART NO	REMARK
1	AL PLATE FOR TOP CASE (OPTIONAL) FOR M860U (FR)	6-33-M8602-012	
2	KEYBOARD(OPTION)	6-80-M5500-013-1	
3	HINGE COVER (FRONT) FOR M860U (FR)	6-42-M8602-052	
4	SCREW M2*4L K1 BNI ICT NY (FR)	6-35-B9120-4RA	
5	ANTENNA VLAJN 24G/33G/5G PIFA V42 (BLACK) (FR)	6-23-7M860-031	
6	ANTENNA VLAJN 24G/33G/5G PIFA V42 (GRAY) (FR)	6-23-7M860-021	
7	POWER KNOB LENS (OPTION) FOR M860U (FR)	6-42-M8602-082	
8	SCREW M2.5*5L K1 BK/Z ICT NY (FR)	6-35-B6125-5RA	
9	TOP CASE MODULE (OPTION) FOR M860U (FR)	6-39-M8602-012	
10	TOP COVER (WITH FINGER XTPAD) FOR M860U (FR)	6-42-M8602-201	
11	SOFT BUSH IN KIT NY (FR)	6-35-A1125-3R0	
12	FINGER PRINT COVER (OPTION) FOR M860U (FR)	6-42-M8602-062	
13	TOUCH PAD SYMPTICS TM-00398-001 NY40S (FR)	6-49-M7452-010	
14	FINGERPRINT BOARD V1.0 M860U (FR)	6-77-M860F-D01	
15	CLICK BOARD V3.0 (W/FP) M860U (FR)	6-77-M8602-D03	
16	SPEAKER L/R M82V4721W/45MM_PIECE (FR)	6-23-5M860-011	
17	RTC CABLE FOR CLK BUND TO TOP PROH45 (45MM) M860U (FR)	6-43-M8600-030	
18	RTC CABLE FOR CLK BUND TO TOP PROH45 (50MM) M860U (FR)	6-43-M8600-020	
19	SCREW M2*2.5L K1 NI ICT NY (638 1-0-0) (FR)	6-35-B1120-3R5-1	
20	MC CABLES FOR HD 2PIN PER BOARD (FR)	6-23-EM860-011	
21	RTC CABLE FOR BATA IN TO TOP PROH45 (45MM) M860U (FR)	6-43-M8600-010	
22	BUTTON BOARD V3.0 M860U (FR)	6-77-M860W-D03	
23	TOUCH PAD SPONGE(CS846) 45*90MM FOR M860U (FR)	6-47-0019A-154	
24	MAIN BOARD, L100 (BLACK, CAN) 1 FOR TOP CASE M860U (FR)	6-40-M8602-070	

# Bottom



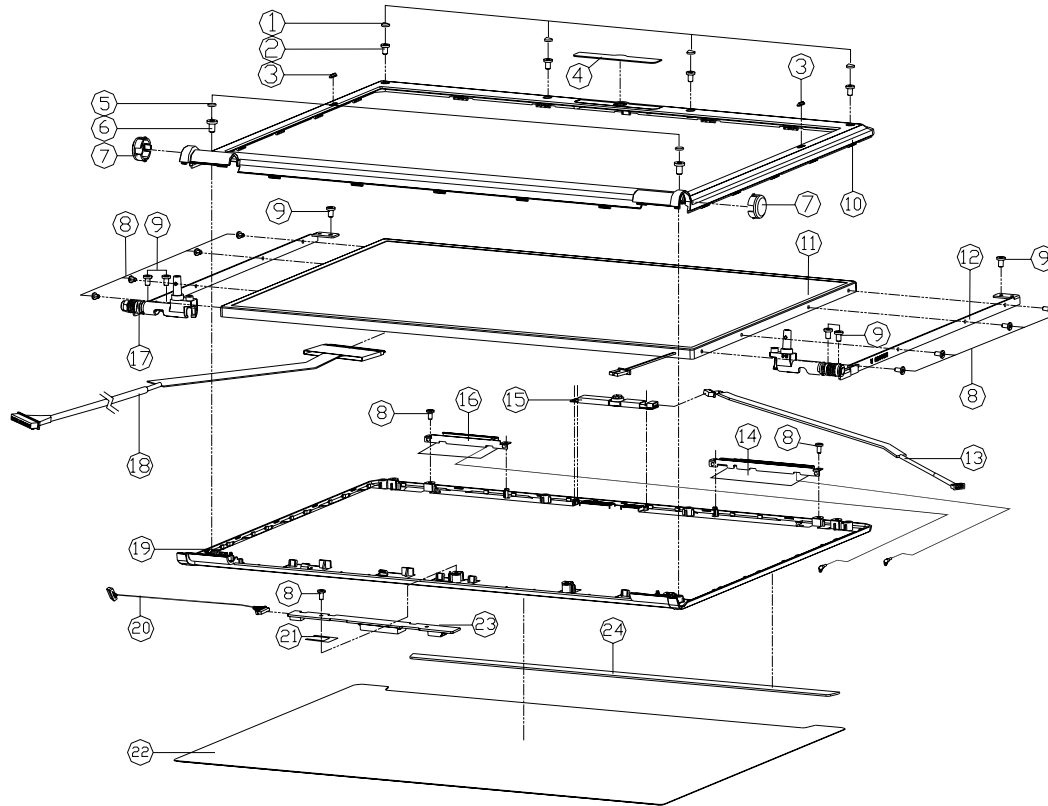
ITEM	PART NAME	PART NO	REMARK
1	MYLAR FOR HOT-KEY PCB ON MB M860TU (M86)	6-40-M860S-02E2	
2	MDC CABLE (GOLD) M860TU (M86)	6-43-M860U-011	
3	TAPE MYLAR (CB)MYLAR M860J (M86)	6-40-M55J2-020	
4	MYLAR FOR CLICK PCB ON MB M860TU (M86)	6-40-M860S-011	
5	MAIN BOARD V3.0 M860TU (M86)	6-77-M860G-003	
6	MYLAR FOR MAIN ON MB M860TU (M86)	6-40-M860S-03E	
7	CON GR 3-1 DATA HD PAK 344-2062 (M86)	6-21-14000-12E2	
8	BLUETOOTH CABLE 8P AVX30 (M86)	6-43-M66NB-010	
9	HEAT SINK WITH THERMISTOR M860TU (M86)	6-88-M5545-390	(OPTI) (IND)
9	HEAT SINK WITH THERMISTOR M860TU (M86)	6-88-M5545-620	(OPTI) (IND)
10	SCREW M2x5L KI BK/2 ICT NY (M86)	6-35-B612S-SRA	
11	SCREW M2x4L KI BK/2 ICT NY (M86)	6-35-B6120-4RA	
12	SCREW M2x3L KI NI ICT NY (M86)	6-35-B1120-3RA	
13	HEAT SINK WITH THERMISTOR M860TU (M86)	6-88-L3911-5300	(OPTI) (IND)
14	MYLAR FOR MAIN BOARD V3.0 M860TU (M86)	6-23-E2015-P2E	
15	HEAT SINK COVER M PAK 10M 010-1010 (M86)	6-34-07009-01E2	
16	ID BRACKET DIVI SUS304 M860TU (M86)	6-33-M860S-011	
17	CPU SUPPORTER MIDDLE M860TU (M86)	6-33-M860S-101	
18	MYLAR FOR CCD COVER ON MB M860TU (M86)	6-40-T12R3-011	
19	DUMMY NEW CARD PCB ASS IN200R (M86)	6-42-T12R3-011	
20	M860G CARD READER RUBBER (M86)	6-47-M82CB-010	
21	MYLAR FOR NEW CARD M860TU (M86)	6-40-M860S-06E2	
22	SCREW M2x4L KI BK/2 ICT NY (M86)	6-35-B612S-SRA-G	
23	HEAT SINK WITH THERMISTOR M860TU (M86)	6-88-M725W-720	
24	SCREW M2x3L KI NI ICT NY (M86)	6-35-B1120-SR0	
25	HEAT SINK COVER M PAK 10M 010-1010 (M86)	6-40-M66NB-040	
26	HEAT SINK COVER M PAK 10M 010-1010 (M86)	6-88-M5532-7020	(OPTI) (IND)
26	COMPLEMENTAL BRIDGE-GAN INTEL SHREY FEK 12 (M86)	6-88-M7212-4210	(OPTI) (IND)
26	COMPLEMENTAL BRIDGE-GAN INTEL SHREY FEK 12 (M86)	6-88-M7212-4240	(OPTI) (IND)
26	COMPLEMENTAL BRIDGE-GAN INTEL SHREY FEK 12 (M86)	6-88-M7212-4241	(OPTI) (IND)
26	COMPLEMENTAL BRIDGE-GAN INTEL SHREY FEK 12 (M86)	6-88-M7212-4211	(OPTI) (IND)
27	SCREW M2x4L KI BK/2 ICT NY (M86)	6-35-B9120-4RA	
28	HEAT SINK WITH THERMISTOR M860TU (M86)	6-31-M860N-200	
29	MYLAR FOR HDD ON MB M860TU (M86)	6-40-M860S-05E	
30	HEAT SINK COVER M PAK 10M 010-1010 (M86)	6-77-M860L-040	(OPTI) (IND)
30	HEAT SINK COVER M PAK 10M 010-1010 (M86)	6-77-M860L-10E2	(OPTI) (IND)
31	SCREW M2x4L KI BK/2 ICT NY (M86)	6-35-B612S-L20	
32	CPU HEATSINK MIDDLE M860TU (M86)	6-31-M860N-401	
33	SCREW M2x3L KI NI ICT NY (M86)	6-35-B1120-SR3-1	
34	BOTTOM CASE MIDDLE (OPTI) M860TU (M86)	6-39-M8603-01E	
35	DATA DVD COMBO 24X/8X ASSY M860TU (M86)	6-79-M860UX-010	(OPTI) (IND)
35	DATA DVD SUPER MULTI 24X/8X ASSY M860TU (M86)	6-79-M860UJ00-000	(OPTI) (IND)
36	PRODUCT LABEL M860TU (M86)	6-45-M8603-010	
37	HEAT SINK COVER M PAK 10M 010-1010 (M86)	6-87-M860S-4P4	
37	HEAT SINK COVER M PAK 10M 010-1010 (M86)	6-87-M860S-4S4	
38	W/O HDD ASSY M860TU (M86)	6-79-M860UJ01-000	
39	HEAT SINK WITH THERMISTOR M860TU (M86)	6-35-4102S-09S	
40	SCREW M2x4L KI BK/2 ICT NY (M86)	6-35-B6120-6RA	
41	CPU HEAT SINK WITH THERMISTOR M860TU (M86)	6-31-M860S-10E	
42	BOTTOM CASE COVER MIDDLE M860TU (M86)	6-42-M8603-10E	
43	HEAT SINK COVER M PAK 10M 010-1010 (M86)	6-23-7M860-051	
44	3G SIM BOARD V3.0 M860TU (M86)	6-77-M860G-003	
45	GASKET (OPTI) FOR HEAT SINK M860TU (M86)	6-47-00190-29E	
46	GASKET (OPTI) FOR HEAT SINK M860TU (M86)	6-47-00190-10S	
47	GASKET (OPTI) FOR HEAT SINK M860TU (M86)	6-47-00190-06E	
48	HDD CUSHION PAPER 10x14x15 M860TU (M86)	6-47-M860J-020	
49	AL FIL MYLAR FOR SOUTH BRIDGE M860TU (M86)	6-40-M8602-041	
50	HEAT KEY THERMAL THERMAL - BLACK MYLAR (M86)	6-40-M8602-050	
51	LED SPONGE M860G (M86)	6-47-M82E1-050	
52	EMI GASKET L20xW6xH8 (M86)	6-47-00190-Z0F	

Figure A - 2  
Bottom

A.Part Lists

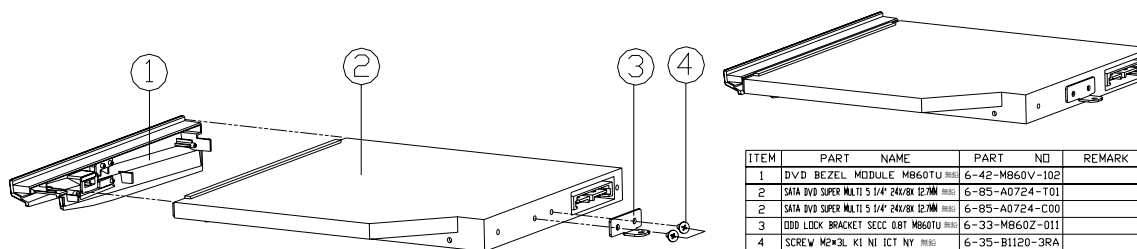
# LCD

Figure A - 3  
LCD



ITEM	PART NAME	PART NO	REMARK
1	FRONT COVER TOP RUBBER SILICONE	MS60TU 6-47-M8601-011	
2	SCREW M2.5X4.0 K1 NI ICT NY	6-35-B1120-SR0	
3	LCD FRONT COVER RUBBER	M720S 6-47-M72S1-030	
4	CCD COUPLER PLATE	MS60TU 6-42-M8601-021	FOR CCD
4	CCD COUPLER PLATE	FRONT COVER	FOR W/O CCD
5	FRONT COVER BOTTOM RUBBER SILICONE	MS60TU 6-47-M8601-021	
6	SCREW M2.5X4.0 K BZ ICT NY	6-35-82125-6RA	
7	INVERTER COUPLER PLATE	MS60TU 6-42-M8601-011	
8	INVERTER COUPLER PLATE	MS60TU 6-35-B1120-3RE	
9	SCREW M2.5X4.0 K1 NI ICT NY	6-35-B4125-4RA	
10	LCD FRONT COVER MIDDLE	MS60TU 6-39-M8601-012	
11	LCD 15.4" Y550A AU B550V01 VI GLARE TYPE	6-50-LC261-G01	COPTION
11	LCD 15.4" Y550A AU B550V01 VS G05A02	6-50-LA265-G00	COPTION
11	LCD AU B550V01 VI 15.4" Y550A (H48V0)	6-50-L7261-G01	COPTION
11	LCD 15.4" Y550A LG L05A01 T01 L30M	6-50-LB265-L01	COPTION
11	LCD 15.4" Y550A AU B550V01 VI GLARE TYPE	6-50-LC261-G01-C	COPTION
11	LCD 15.4" Y550A AU B550V01 VS G05A02	6-50-LA265-G00-C	COPTION
12	LCD HINGE R (SECC+SK7)	MS60TU 6-33-M8601-013	
13	CABLE CCD ISP (GOLD)	MS60TU 6-43-M8601-011	FOR CCD
14	INVERTER VCM PFA 30 GRADO SCRM	MS60TU 6-23-7M860-040	COPTION
15	UVX CAMERA BEZEL FOR B08007-001 2M W/400	6-88-M740C-4921	COPTION
15	UVX CAMERA BEZEL FOR B08007-001 2M W/400	6-88-M740C-4911	COPTION
16	INVERTER VCM 240/330/35 PFA VMC GRADO	MS60TU 6-23-7M860-010	
17	LCD HINGE L (SECC+SK7)	MS60TU 6-33-M8601-023	
18	LCD CABLE LVDS (GOLD)	MS60TU 6-43-M8601-012	COPTION
19	LCD BACK COVER MIDDLE	MS60TU 6-39-M8601-022	
20	INVERTER CABLE GP ANCHOR (GOLD)	MS60TU 6-43-M860R-011	
21	INVERTER RELAY (FR3-NITTON 501)	MS60TU 6-40-M76S1-010	
22	AL PLATE FOR BACK COVER (AL)	MS60TU 6-33-M8601-031	
23	INVERTER HUBLE (MIXE IN INVERTER)	MS60TU 6-76-M6R6R-010	COPTION
23	INVERTER HUBLE (MIXE IN INVERTER)	MS60TU 6-76-M6R6R-011	COPTION
24	FRONT COVER RUBBER	MS60TU 6-42-M8601-032	

# DVD-ROM Drive

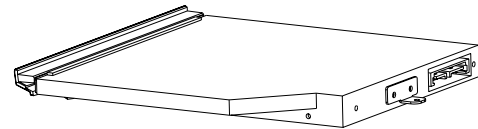
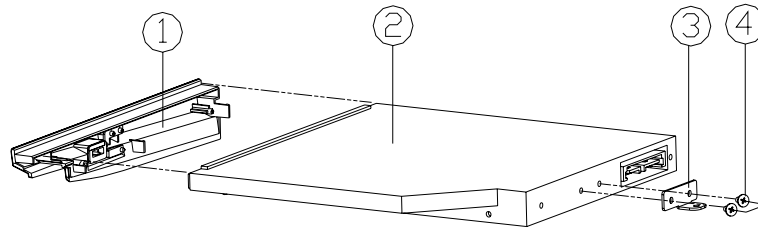


ITEM	PART NAME	PART NO	REMARK
1	DVD BEZEL MODULE MB60TU	6-42-MB60V-102	
2	SATA DVD SUPER MULTI 5 1/4" 24X/8X 12.7MM	6-85-A0724-T01	
2	SATA DVD SUPER MULTI 5 1/4" 24X/8X 12.7MM	6-85-A0724-C00	
3	DDD LOCK BRACKET SECC 08T MB60TU	6-33-MB60Z-011	
4	SCREW M2*3L KI NI ICT NY	6-35-B1120-3RA	

Figure A - 4  
DVD-ROM Drive

# Combo Drive

Figure A - 5  
Combo Drive



ITEM	PART NAME	PART NO	REMARK
1	COMBO DVD BEZEL MODULE M860TU 0000	6-42-M860X-102	
2	SATA DVD COMBO 5 1/4" 24X16X 12.7MM CR89NS S00 0000	6-85-90724-C01	
3	ODD LOCK BRACKET SECC 0.8T M860TU 0000	6-33-M860Z-011	
4	SCREW M2*3L K1 NI ICT NY 0000	6-35-B1120-3RA	

HDD

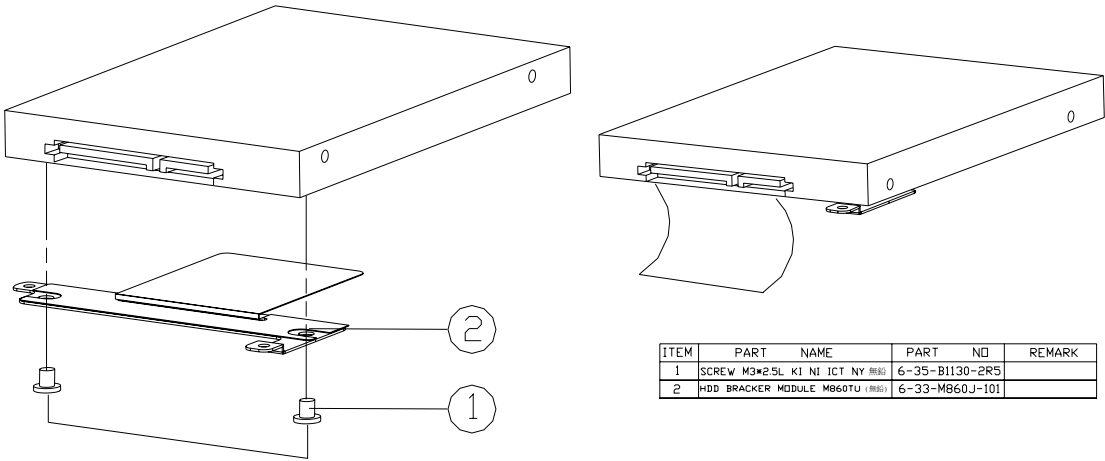


Figure A - 6  
HDD

ITEM	PART NAME	PART NO	REMARK
1	SCREW M3*2.5L KI NI ICT NY (H80)	6-35-B1130-2R5	
2	HDD BRACKER MODULE M860U (H80)	6-33-M860J-101	





# Appendix B:Schematic Diagrams

This appendix has circuit diagrams of the *M860TU* 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>ICH9-M 4/4, Power - Page B - 17</i>	<i>Power 1.5V/0.75V - Page B - 32</i>
<i>Penryn 1/2 - Page B - 3</i>	<i>ODD, USB2.0 &amp; eSATA - Page B - 18</i>	<i>Power 3.3VM/1.8VS/1.05VM - Page B - 33</i>
<i>Penryn 2/2 - Page B - 4</i>	<i>Clock Generator - Page B - 19</i>	<i>Power 3VS/5VS / Power S/W - Page B - 34</i>
<i>Cantiga 1/6, Host - Page B - 5</i>	<i>PCI-E LAN RTL8111C, RJ45RJ11 - Page B - 20</i>	<i>Power VDD3/VDD5/3.3V/5V - Page B - 35</i>
<i>Cantiga 2/6, PEG - Page B - 6</i>	<i>Card Reader &amp; 1394 JMB380 - Page B - 21</i>	<i>Power VCORE - Page B - 36</i>
<i>Cantiga 3/6, DDR - Page B - 7</i>	<i>New Card, CCD, Fan - Page B - 22</i>	<i>Mini Card/WLAN - Page B - 37</i>
<i>Cantiga 4/6, Power 1 - Page B - 8</i>	<i>KBC-ITE IT8512 - Page B - 23</i>	<i>MXM PCI-E Type III - Page B - 38</i>
<i>Cantiga 5/6, GND - Page B - 9</i>	<i>HDMI, 3G - Page B - 24</i>	<i>Board to Board CON/TPM - Page B - 39</i>
<i>Cantiga 6/6, Power 2 - Page B - 10</i>	<i>LED, Screw Hole - Page B - 25</i>	<i>Button Board - Page B - 40</i>
<i>DDR3 SO-DIMM 1 - Page B - 11</i>	<i>Azalia CODEC ALC662 - Page B - 26</i>	<i>Click Board - Page B - 41</i>
<i>DDR3 SO-DIMM 2 - Page B - 12</i>	<i>Audio AMP - Page B - 27</i>	<i>Finger Printer Board - Page B - 42</i>
<i>LCD - Page B - 13</i>	<i>SRS, MDC, BT - Page B - 28</i>	<i>SIM Card Board - Page B - 43</i>
<i>ICH9-M 1/4, SATA - Page B - 14</i>	<i>DVI, INV - Page B - 29</i>	
<i>ICH9-M 2/4, PCI, USB - Page B - 15</i>	<i>Power Charger, DC-In - Page B - 30</i>	
<i>ICH9-M 3/4 - Page B - 16</i>	<i>Power GPU - Page B - 31</i>	

*Table B - 1*  
**Schematic  
Diagrams**

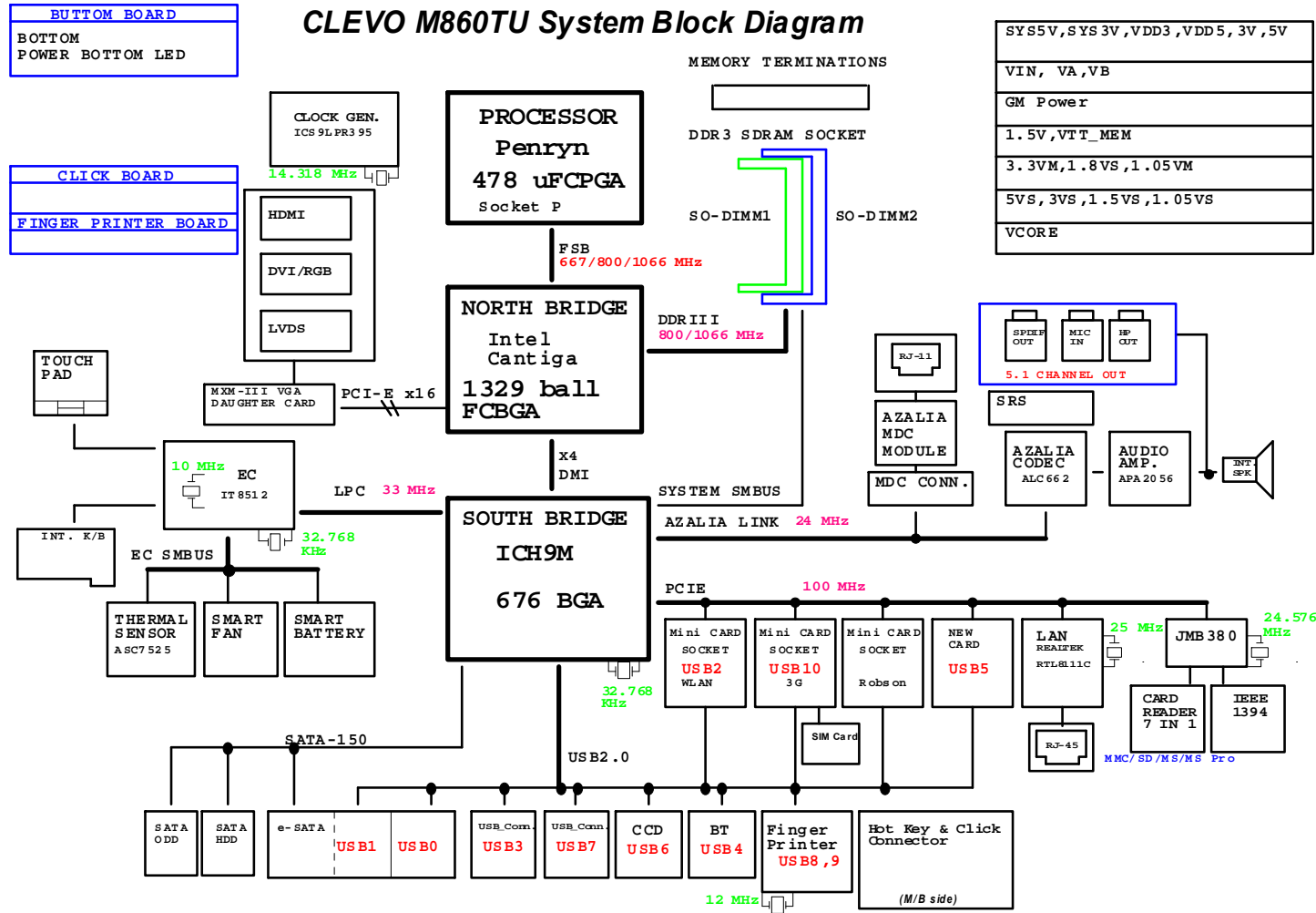


### Version Note

The schematic diagrams in this chapter are based upon version 6-7P-M8605-003. 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 42  
SYSTEM BLOCK  
DIAGRAM



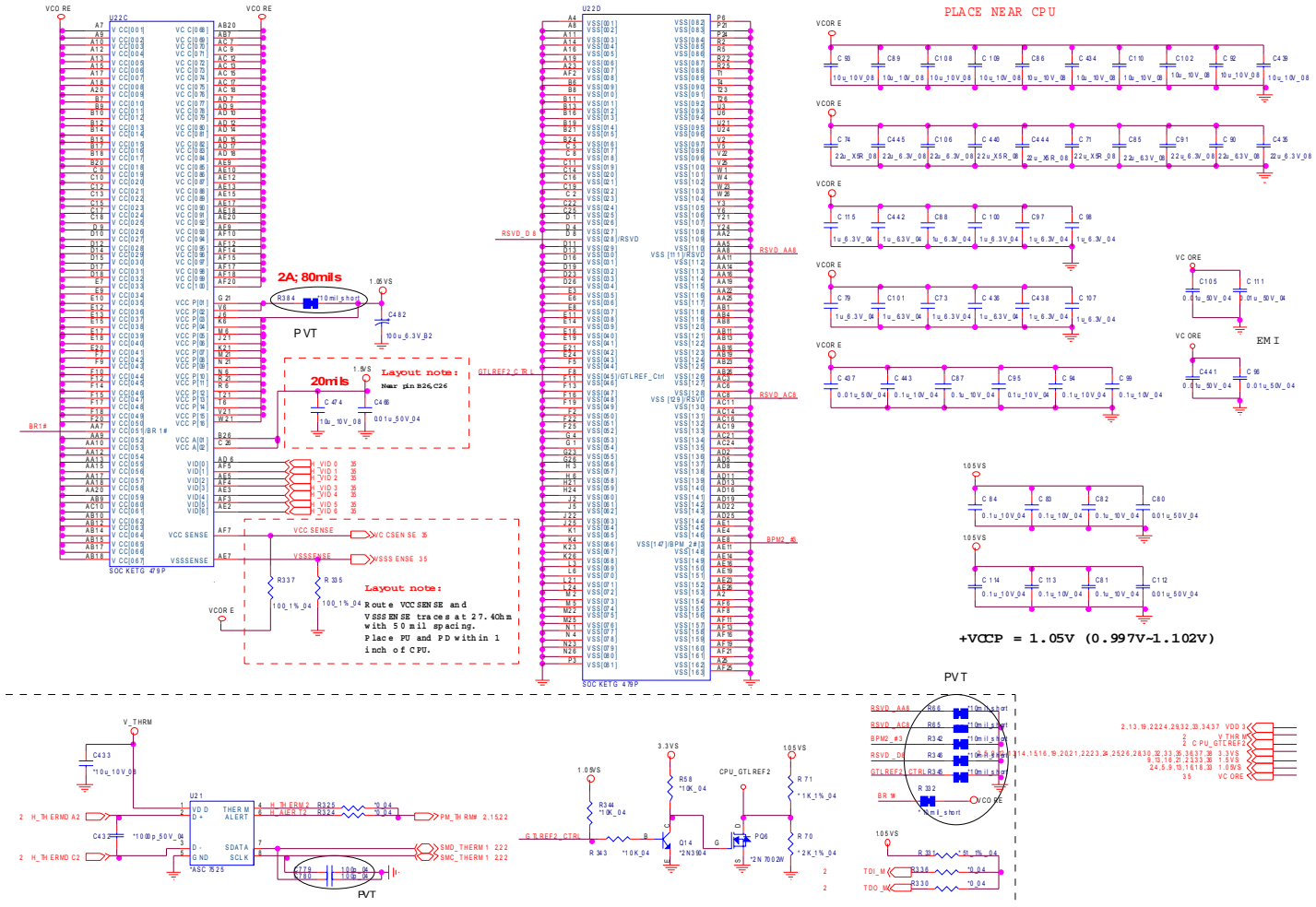


# Schematic Diagrams

## Penryn 2/2

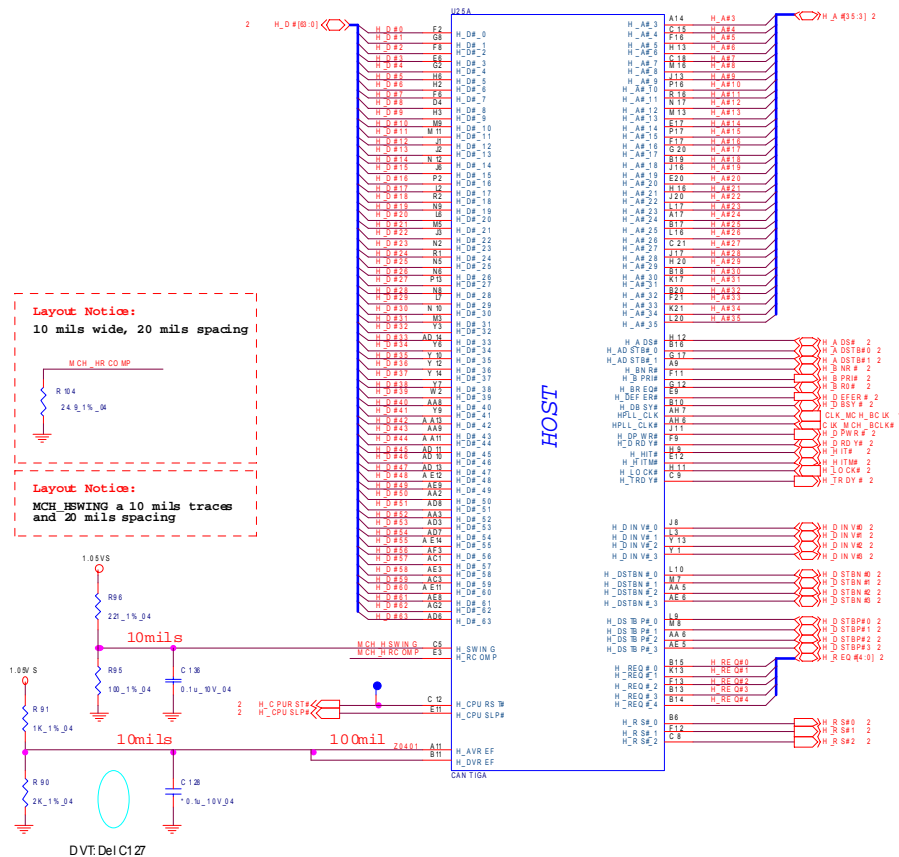
B.Schematic Diagrams

Sheet 3 of 42  
Penryn 2/2



# Cantiga 1/6, Host

Sheet 4 of 42  
Cantiga 1/6, Host

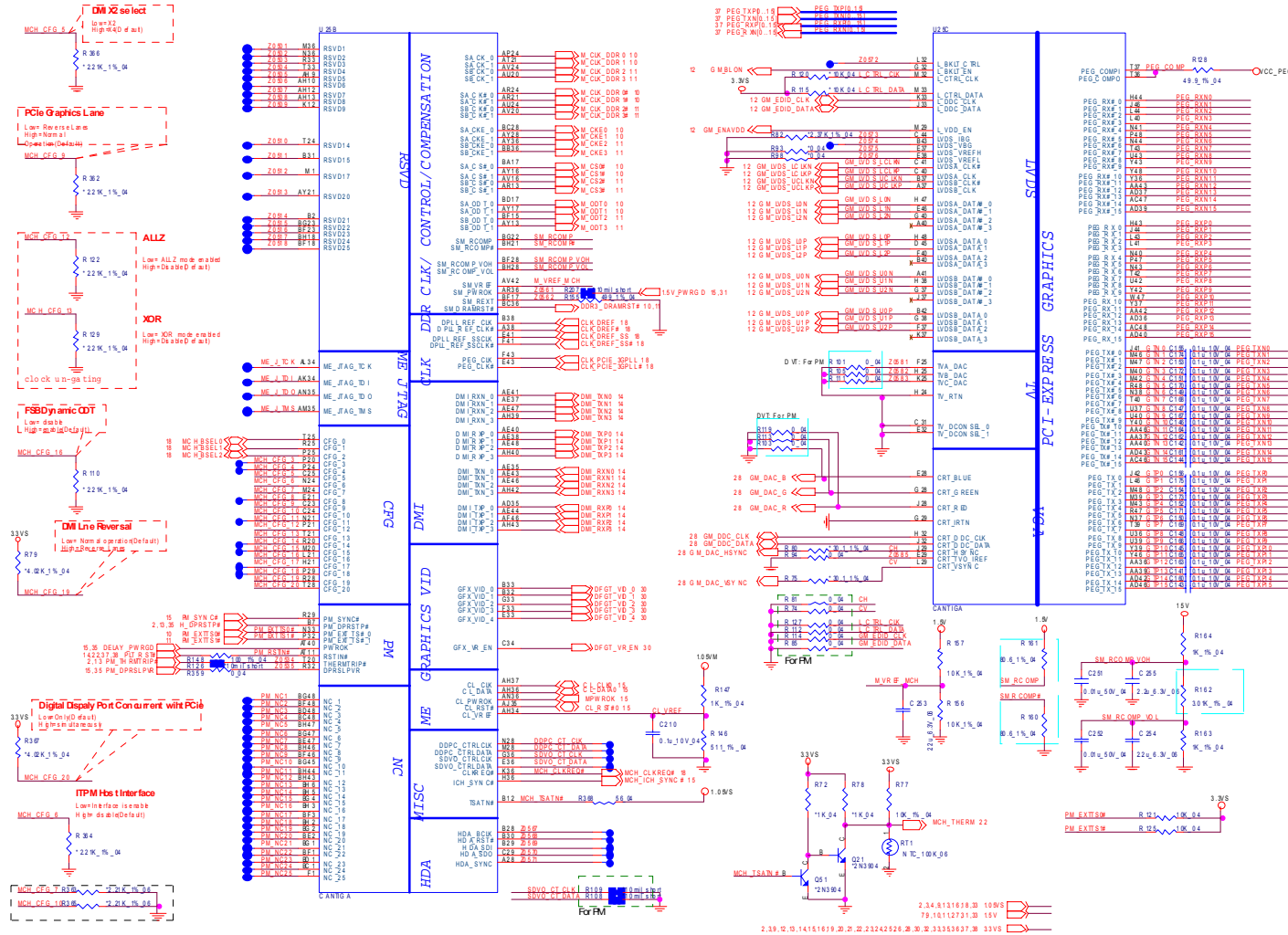


Pin Name	Strap Description	Configuration
CFG2:0	FSB Frequency	000 = 10.66 010 = 80.0 011 = 66.7 Others = Reserved
CFG4:3	Reserved	
CFG5	DMI x2 Select	Low = DMI x2 High = DMI x4 (Default)
CFG6	Integrated Trusted Platform Module (TPM) Host Interface	Low = The TPM Host Interface is enabled High = Disabled (Default)
CFG7	Intel Management Engine Crypto Strap	Low = Intel Management Engine Crypto Transport Layer Security (TLS) cipher suite with no confidentiality High = Intel Management Engine Crypto TLS cipher suite with confidentiality (default)
CFG8	Reserved	
CFG9	PCIe Graphics Lane	Low = Reverse Lanes, 15->0, 14->1 etc Lane Numbered in Order High = Normal operation (default)
CFG10	PCIe Loopback enable	Low = Enabled High = Disabled (default)
CFG11	Reserved	
CFG12	ALLZ	Low = ALLZ mode enabled High = Disabled (default)
CFG13	XCR	Low = XCR mode enabled High = Disabled (default)
CFG15:14	Reserved	
CFG16	FSB Dynamic ODT	Low = Dynamic ODT disabled High = Dynamic ODT enabled (default)
CFG18:17	Reserved	
CFG19	DMI Lane Reversal	Low = Normal operation (Default): Lane Numbered in Order High = Reverse Lanes DMIx4 mode [(GMCH=ICH): (3=0, 2>= 1, 1=2 and 0=>3) DMIx2 mode [(GMCH=ICH): (3=0, 2>=1)
CFG20	Digital Display Port (SDVO/DP/HDMI) Concurrent with PCIe	Low = Only digital display port (SDVO/DP/HDMI) or PCIe is operational (default) High = Digital display port (SDVO/DP/HDMI) and PCIe are operating simultaneously via the PEG port

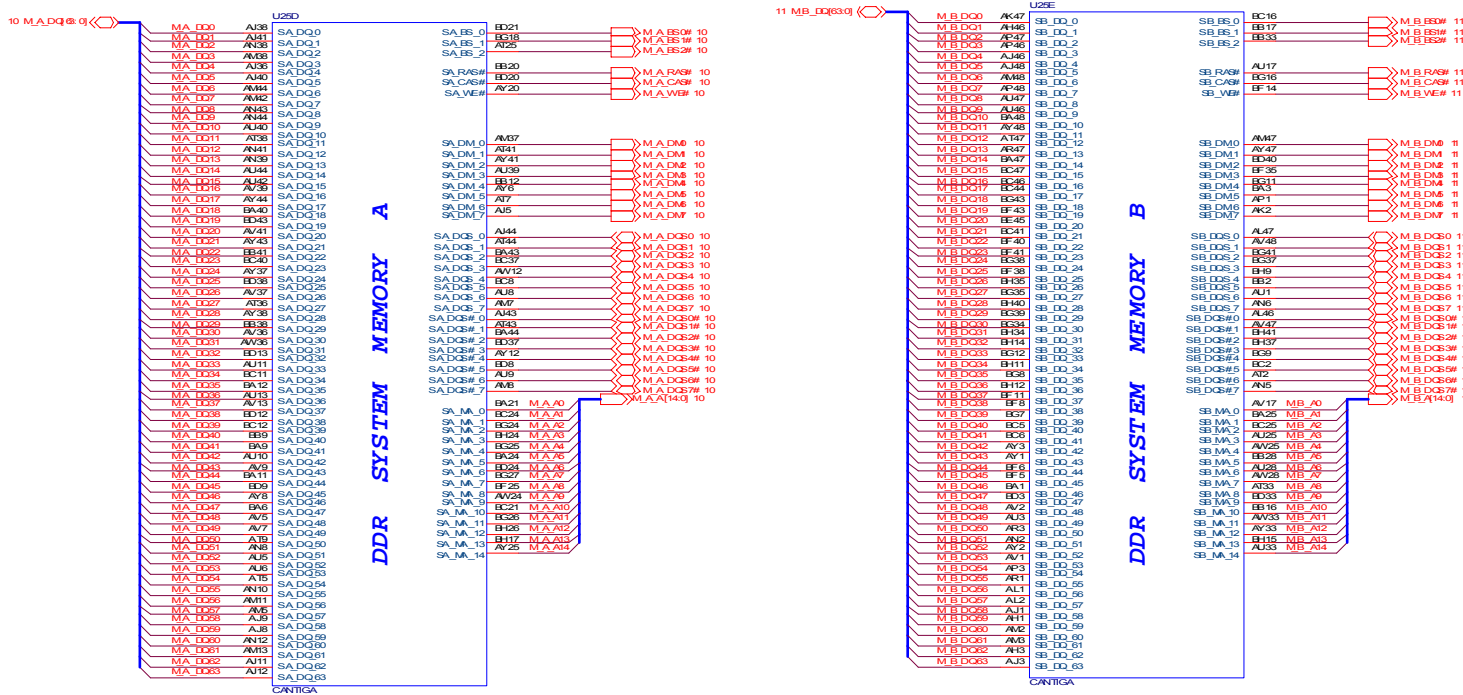
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# Cantiga 2/6, PEG

Sheet 5 of 42  
Cantiga 2/6, PEG



# Cantiga 3/6, DDR

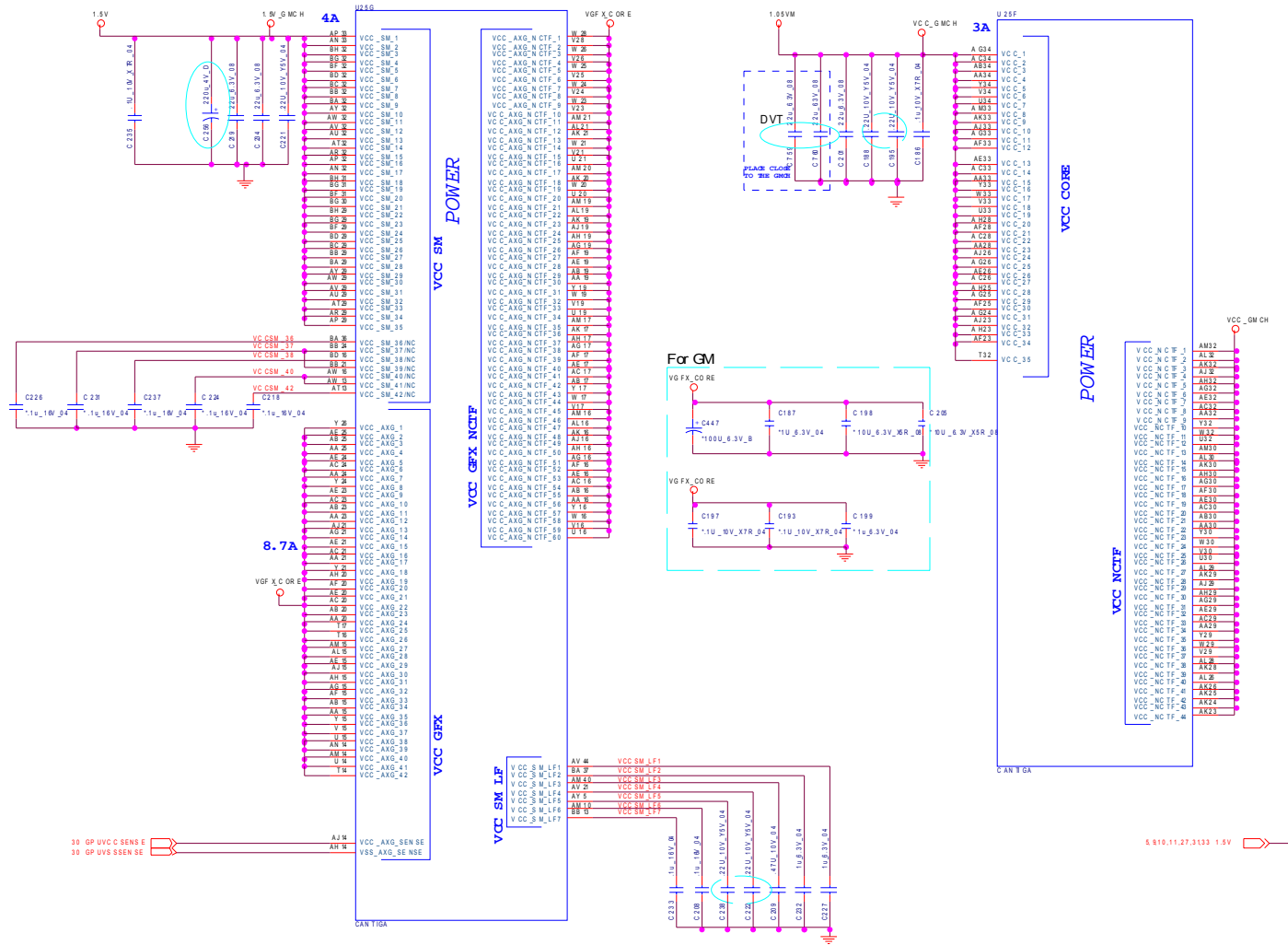


Sheet 6 of 42  
Cantiga 3/6, DDR

B.Schematic Diagrams

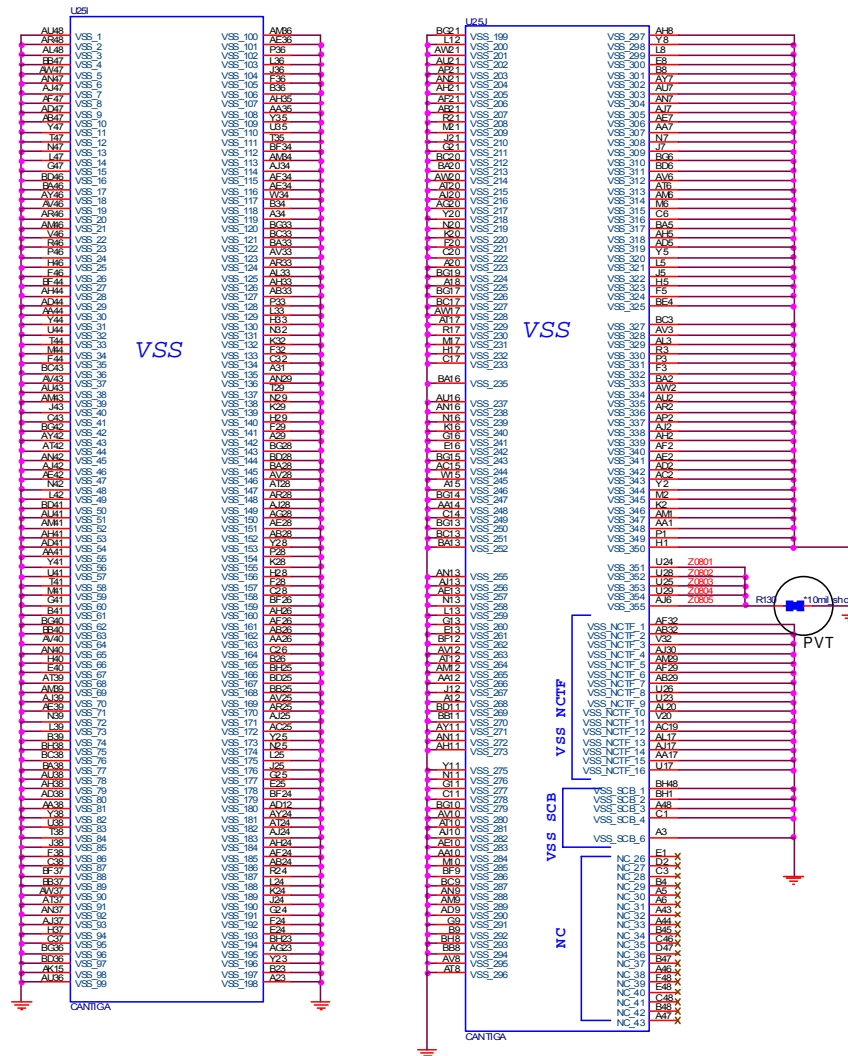
# Cantiga 4/6, Power 1

Sheet 7 of 42  
Cantiga 4/6, Power  
1





# Cantiga 5/6, GND

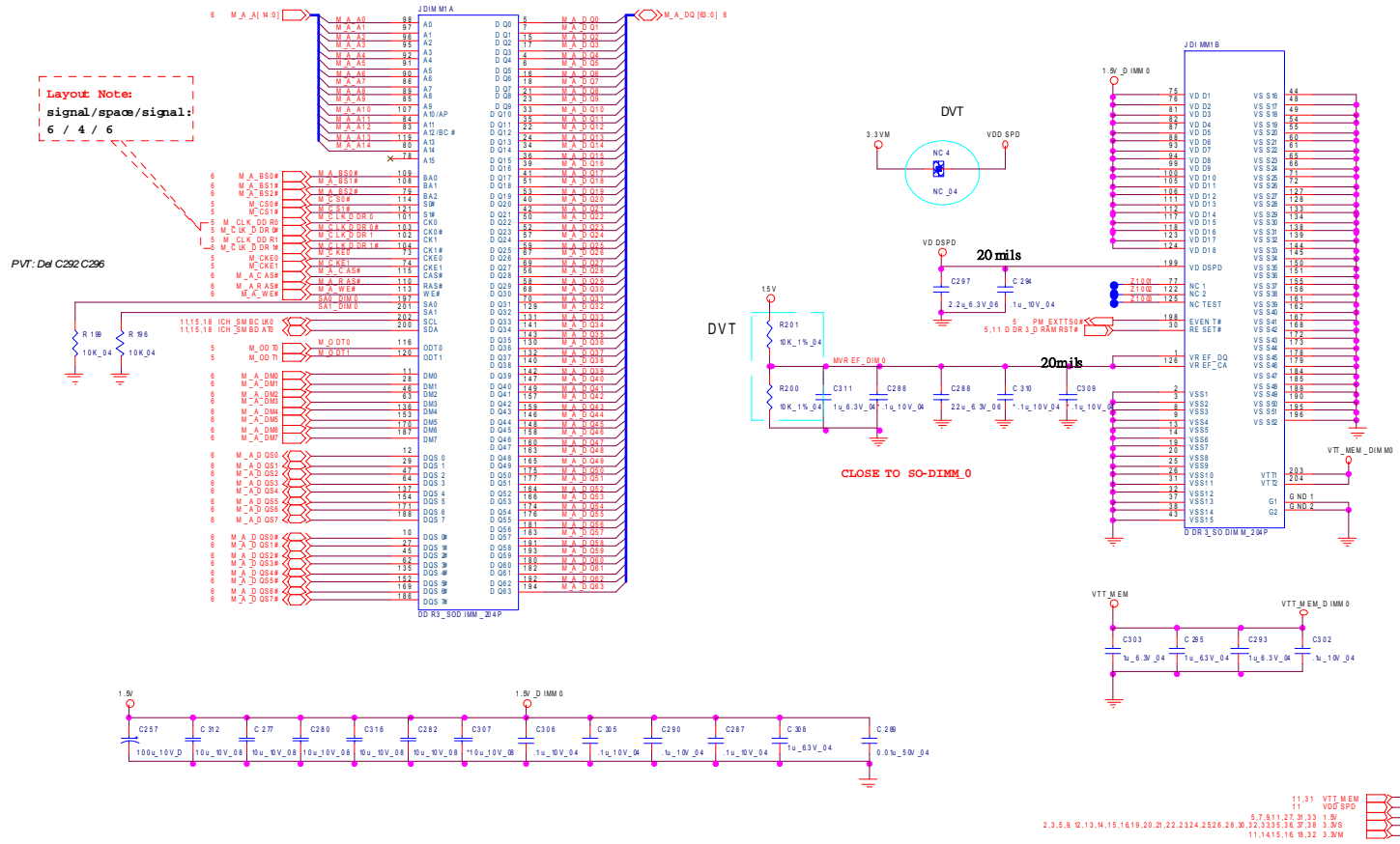


Sheet 8 of 42  
Cantiga 5/6, GND



# DDR3 SO-DIMM 1

## SO-DIMM 0



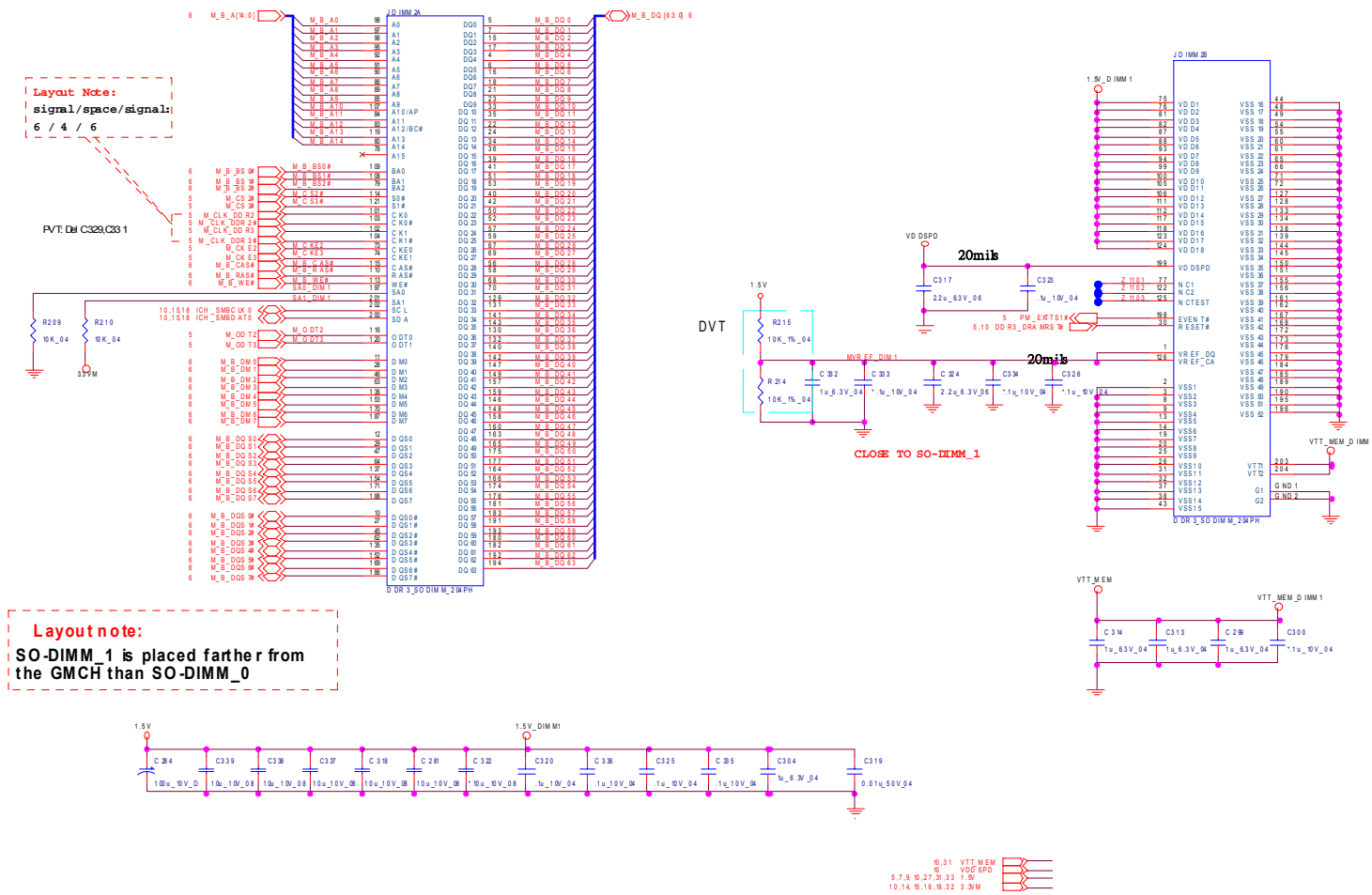
B.Schematic Diagrams

Schematic Diagrams

# DDR3 SO-DIMM 2

## SO-DIMM 1

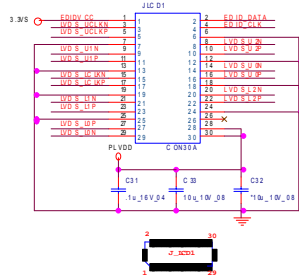
Sheet 11 of 42  
DDR3 SO-DIMM 2



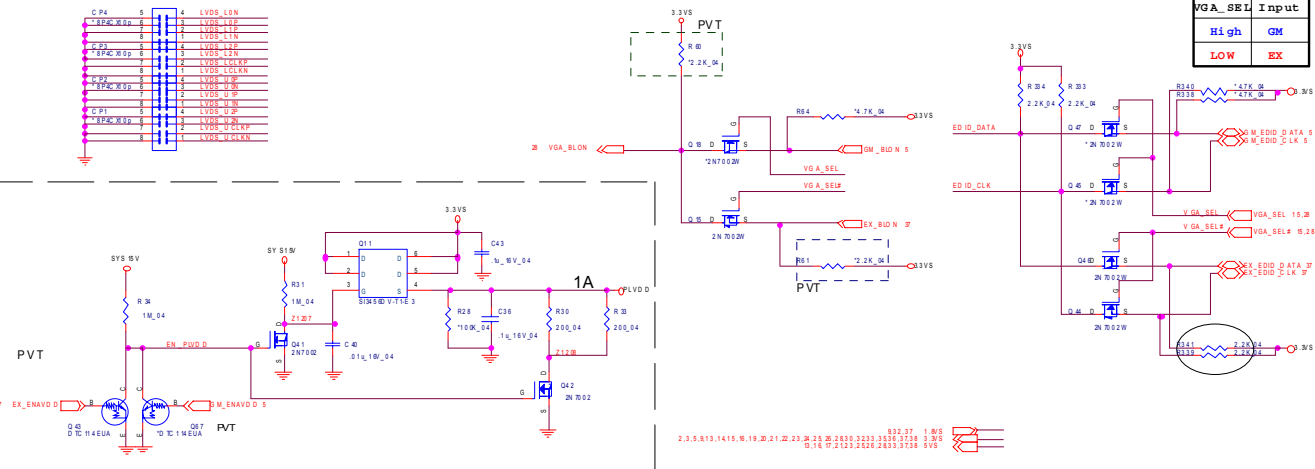
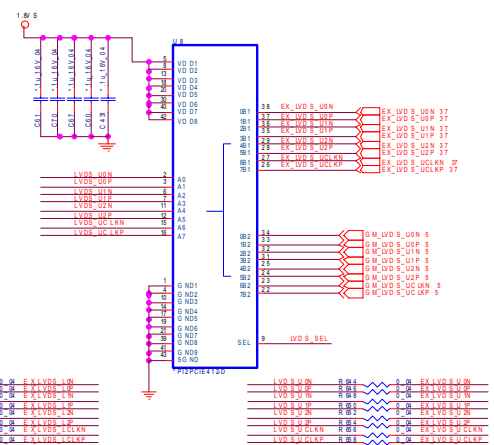
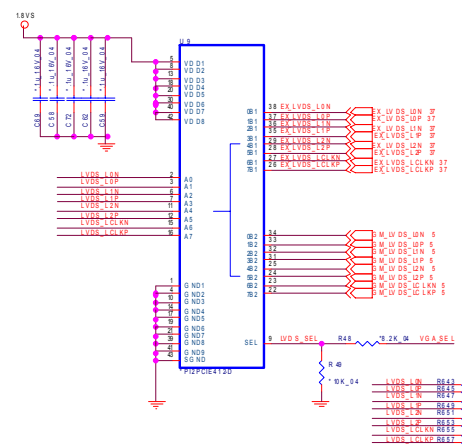
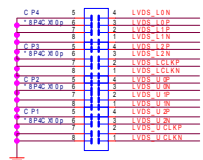
# LCD

## PANEL

### PVT: DaR302



Close to connector



VGA_SEL Input	
High	GM
Low	EX

Sheet 12 of 42  
LCD

B.Schematic Diagrams



# ICH9-M 2/4, PCI, USB

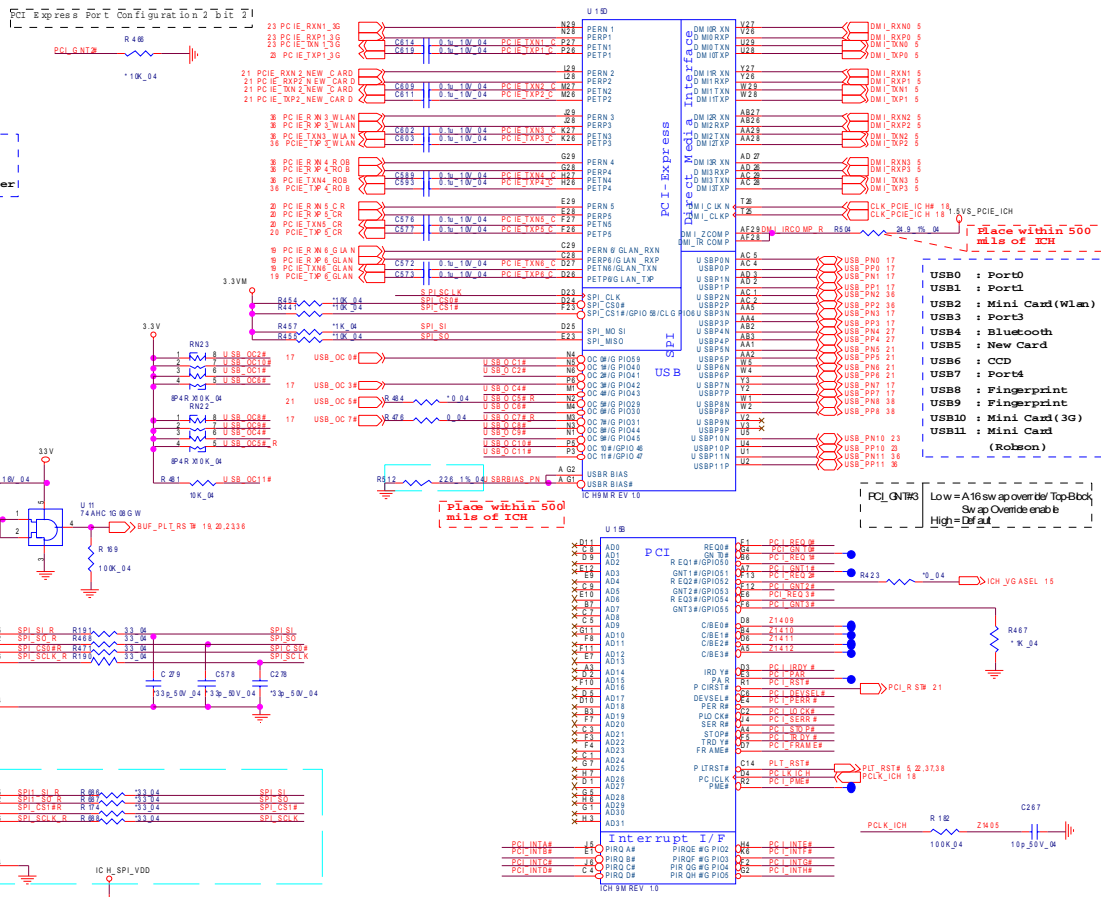
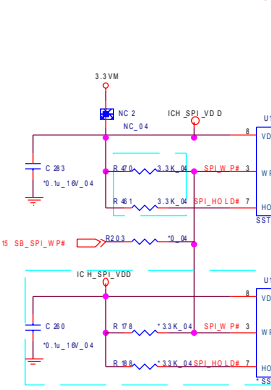
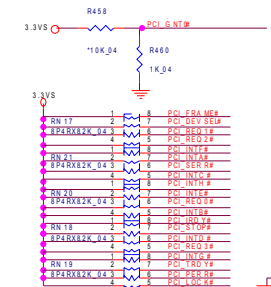
GN10# and SPI\_CS#1 have internal pull up.

SPI\_MOSI have a weak internal pull-down

Boot BIOS Strap	PCI_GN#	SPI_CS#	SH
0	1	0	SH
1	0	1	PC
1	1	1	LFC

SPI_S1	ITPM Enable
High(ZK)	Enable
Low	Disable

PCIRST# : New Card  
 FLT\_RST# : N/B, EC, MM  
 BUF FLT\_RST# : MINI CARD-1/2/3, GLAN, Card Reader

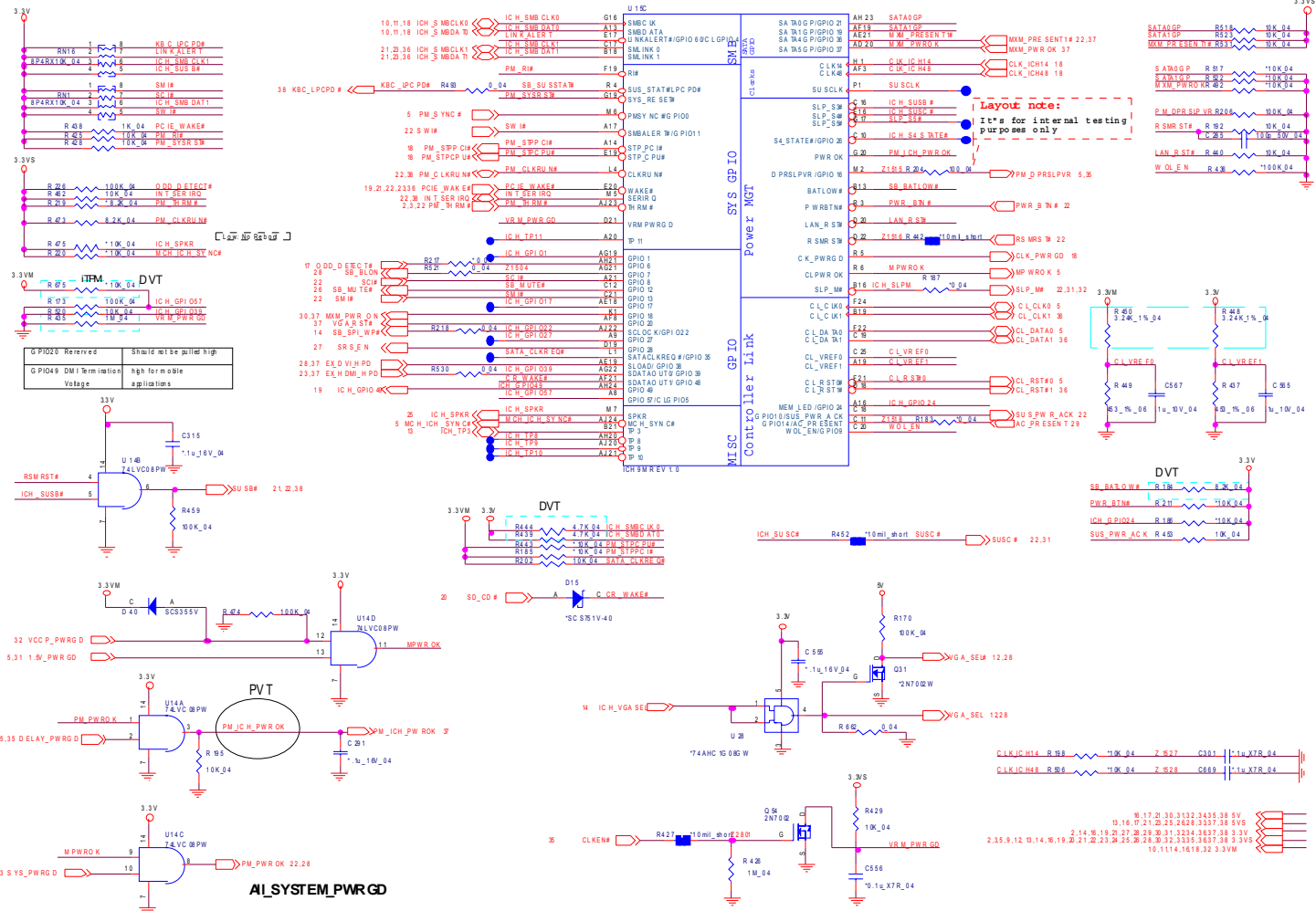


- USB0 : Port0
- USB1 : Port1
- USB3 : Port3
- USB4 : Bluetooth
- USB5 : New Card
- USB6 : CCD
- USB7 : Port4
- USB8 : Fingerprint
- USB9 : Fingerprint
- USB10 : Mini Cam(3G)
- USB11 : Mini Cam (Robson)

Sheet 14 of 42  
 ICH9-M 2/4, PCI,  
 USB

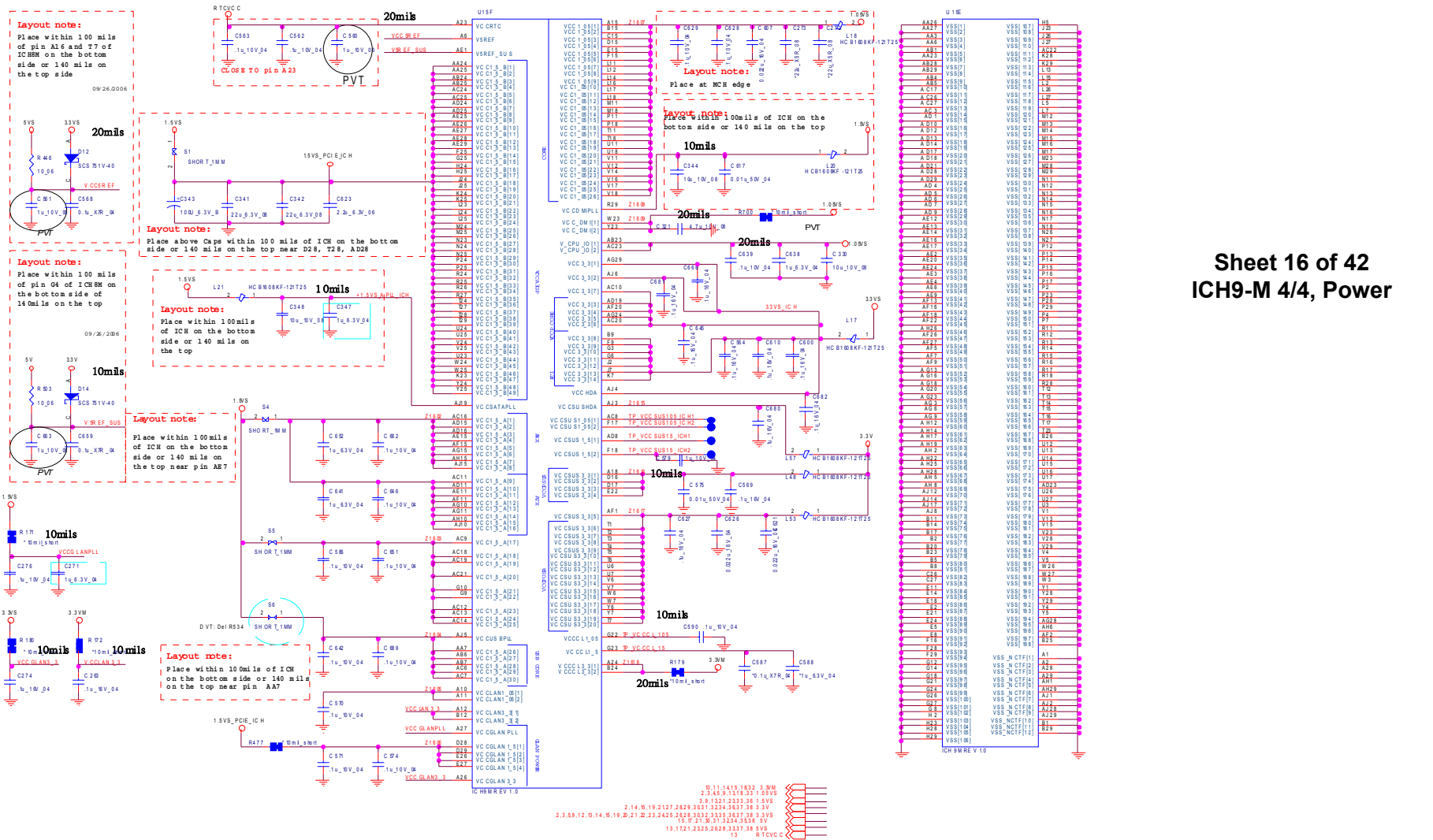
# ICH9-M 3/4

Sheet 15 of 42  
ICH9-M 3/4





# ICH9-M 4/4, Power



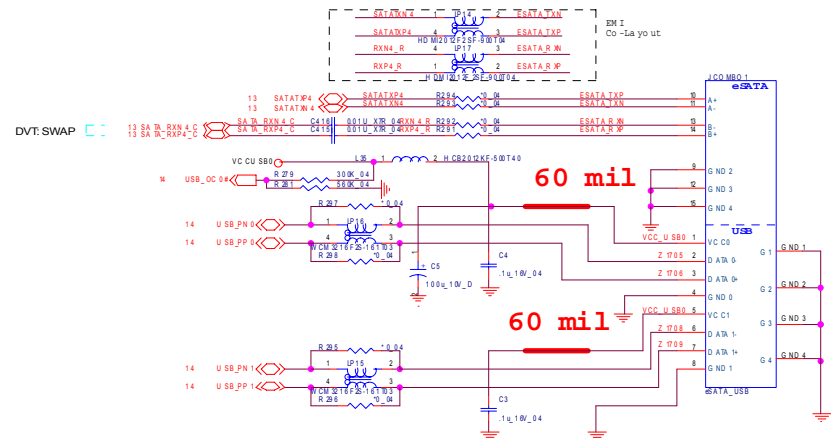
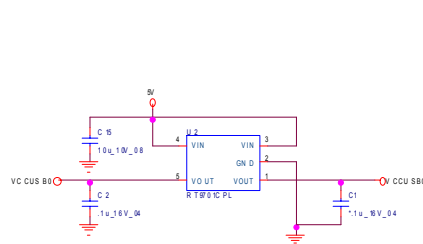
B.Schematic Diagrams

Sheet 16 of 42  
ICH9-M 4/4, Power

## Schematic Diagrams

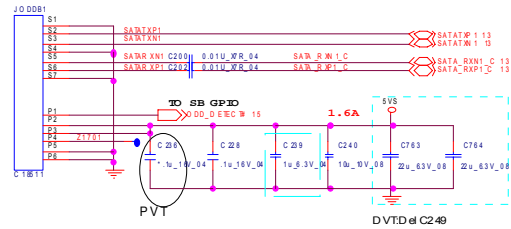
# ODD, USB2.0 & eSATA

### USB 2.0& eSATA

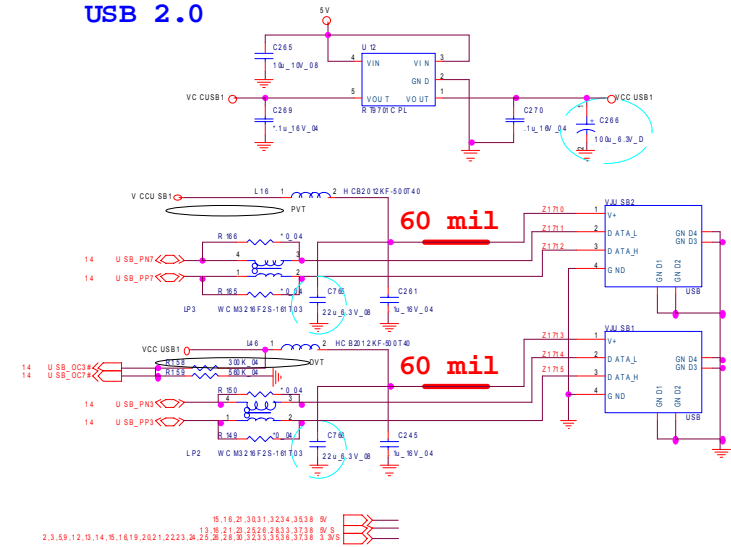


Sheet 17 of 42  
ODD, USB2.0 &  
eSATA

### SATA ODD



### USB 2.0

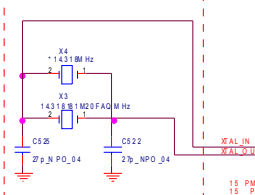


# Clock Generator

## CLOCK GENERATOR

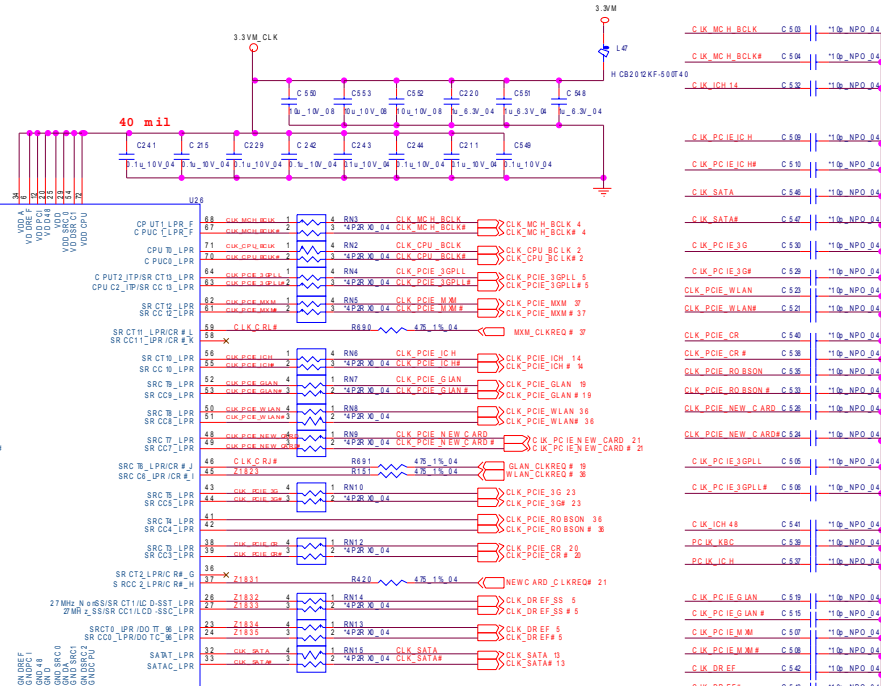
Layout note:

PLACE CRYSTAL WITHIN 500 MILS OF IC591PR363



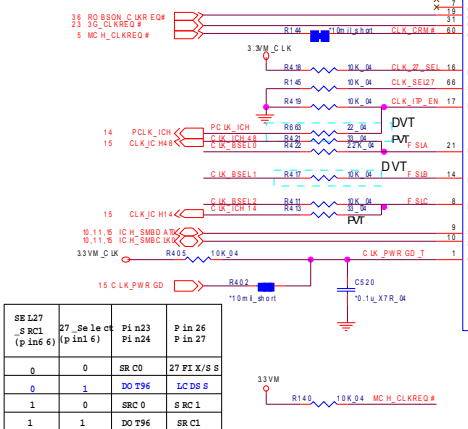
BSEL2	BSEL1	BSEL0	Host Clock Frequency
0	0	1	533 MHz
0	1	1	667 MHz
0	1	0	800 MHz
0	0	0	1066 MHz

CR#A:  
CR#B:  
CR#C:  
CR#D:  
CR#E



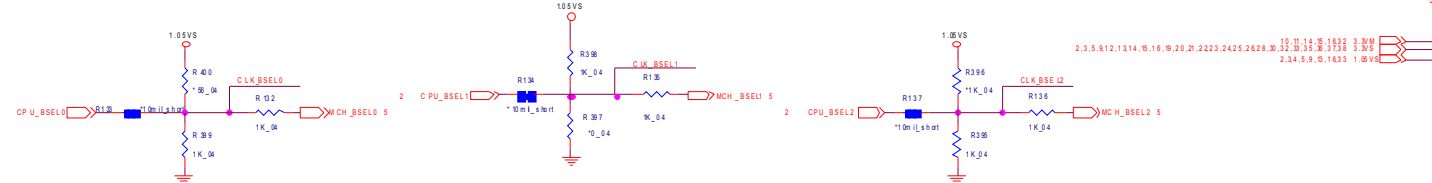
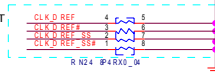
CLK_MCH_BCLK	C50	10	NPO_04
CLK_MCH_BCLK#	C50	10	NPO_04
CLK_ICH14	C50	10	NPO_04
CLK_PCIE_ICH	C50	10	NPO_04
CLK_PCIE_ICH#	C50	10	NPO_04
CLK_SATA#	C50	10	NPO_04
CLK_PCIE_3G	C50	10	NPO_04
CLK_PCIE_3G#	C50	10	NPO_04
CLK_PCIE_3G#	C50	10	NPO_04
CLK_PCIE_WLAN	C50	10	NPO_04
CLK_PCIE_WLAN#	C50	10	NPO_04
CLK_PCIE_CR	C50	10	NPO_04
CLK_PCIE_CR#	C50	10	NPO_04
CLK_PCIE_ICH#	C50	10	NPO_04
CLK_PCIE_ROBSON	C50	10	NPO_04
CLK_PCIE_ROBSON#	C50	10	NPO_04
CLK_PCIE_NEW_CARD	C50	10	NPO_04
CLK_PCIE_NEW_CARD#	C50	10	NPO_04
CLK_PCIE_3G#	C50	10	NPO_04
CLK_PCIE_3G#	C50	10	NPO_04
CLK_ICH_48	C54	10	NPO_04
CLK_ICH_KBC	C50	10	NPO_04
CLK_ICH_0	C50	10	NPO_04
CLK_PCIE_GLAN	C50	10	NPO_04
CLK_PCIE_GLAN#	C50	10	NPO_04
CLK_PCIE_WMM#	C50	10	NPO_04
CLK_DRDF	C50	10	NPO_04
CLK_DRDF#	C50	10	NPO_04
CLK_DRDF#	C50	10	NPO_04
CLK_DRDF#	C50	10	NPO_04

Sheet 18 of 42  
Clock Generator



SE L27 S RCL (pin 6)	27_Sel0 (pin 6)	P1 n23 P1 n24	P In 26 P In 27
0	0	SR C0	27 FI X/S
0	1	DO T96	IC DS
1	0	SR C0	SR C1
1	1	DO T96	SR C1

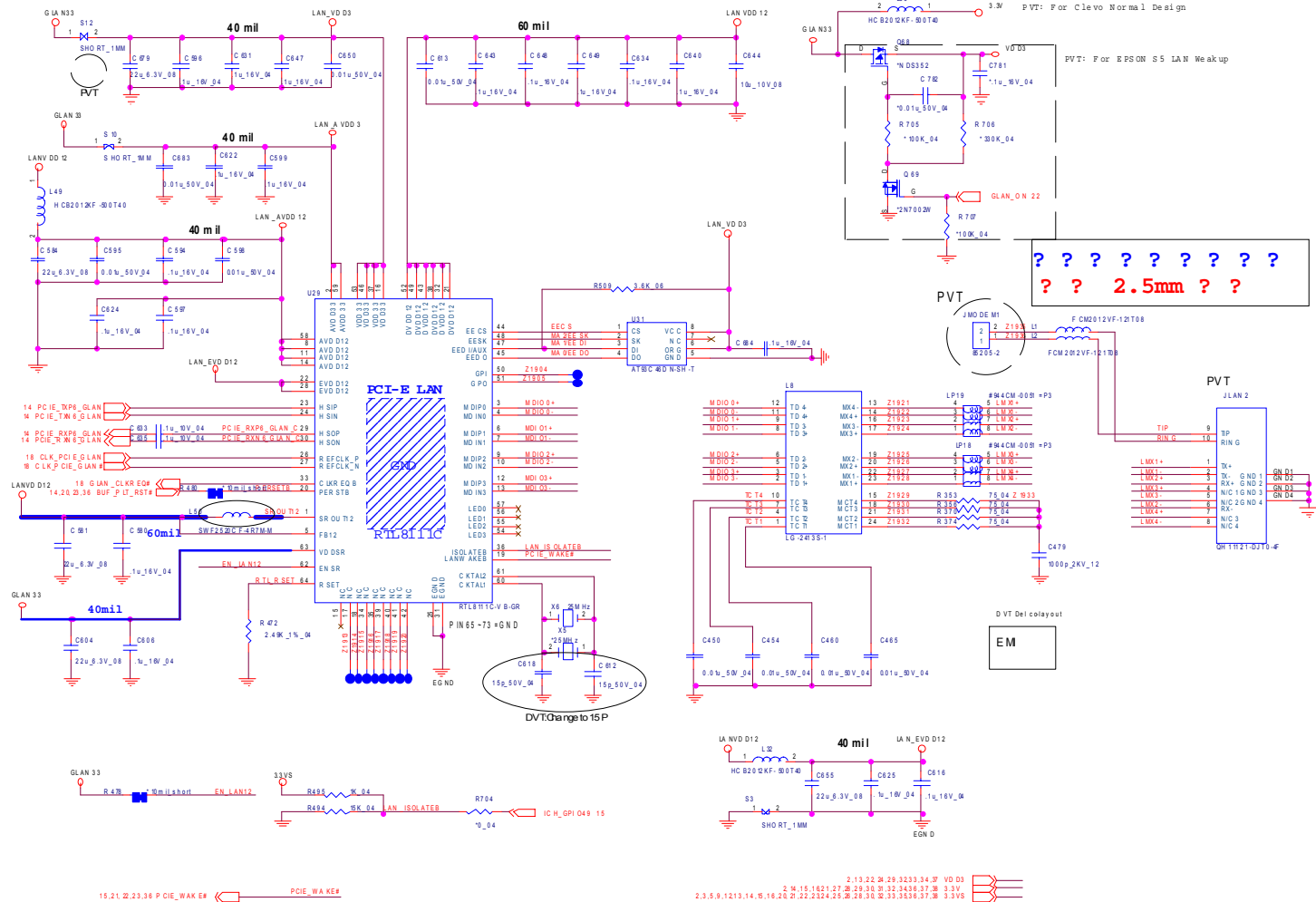
Layout note:  
Place termination close to IC591PR363



B.Schematic Diagrams

# PCI-E LAN RTL8111C, RJ45RJ11

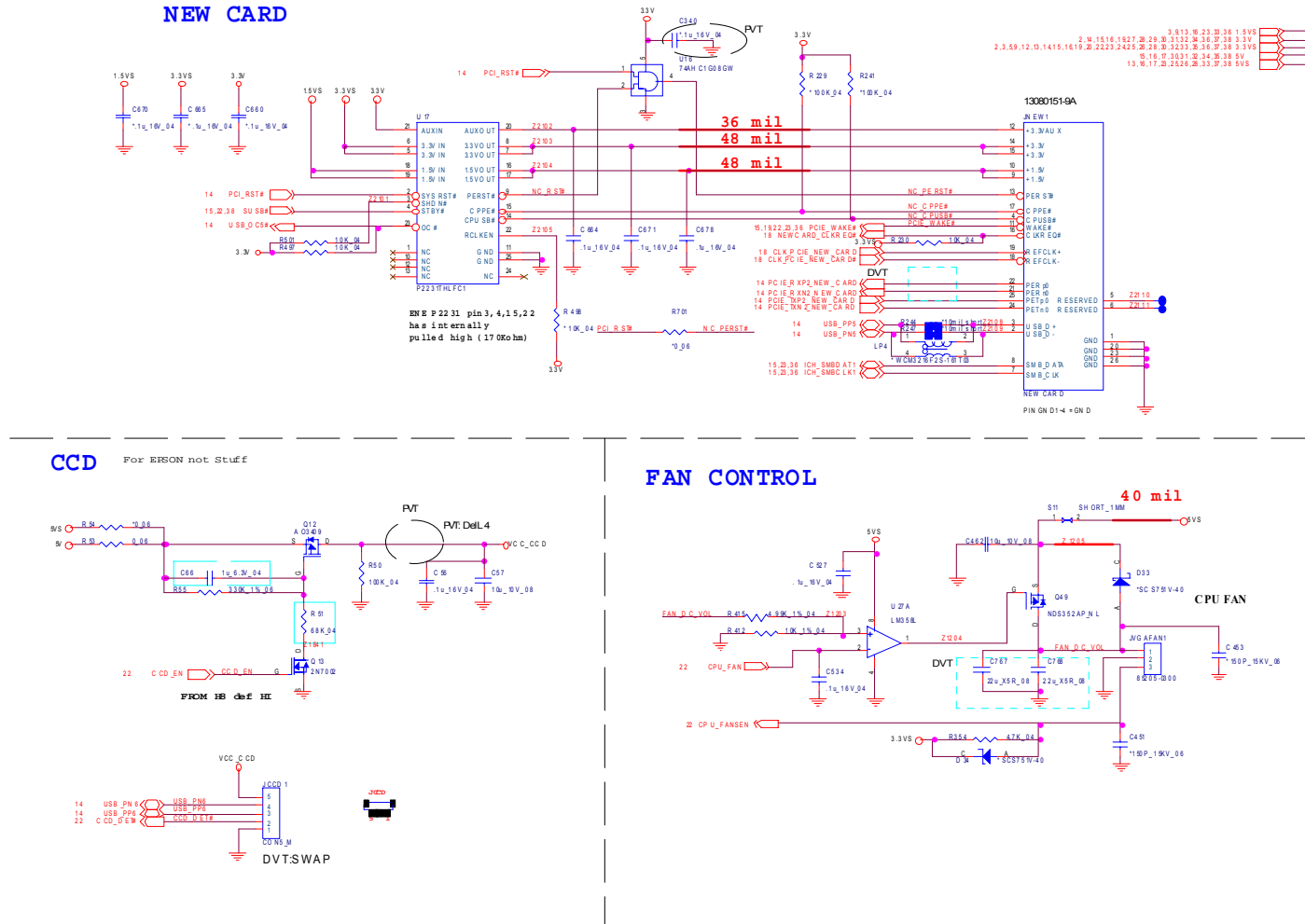
Sheet 19 of 42  
PCI-E LAN  
RTL8111C,  
RJ45RJ11



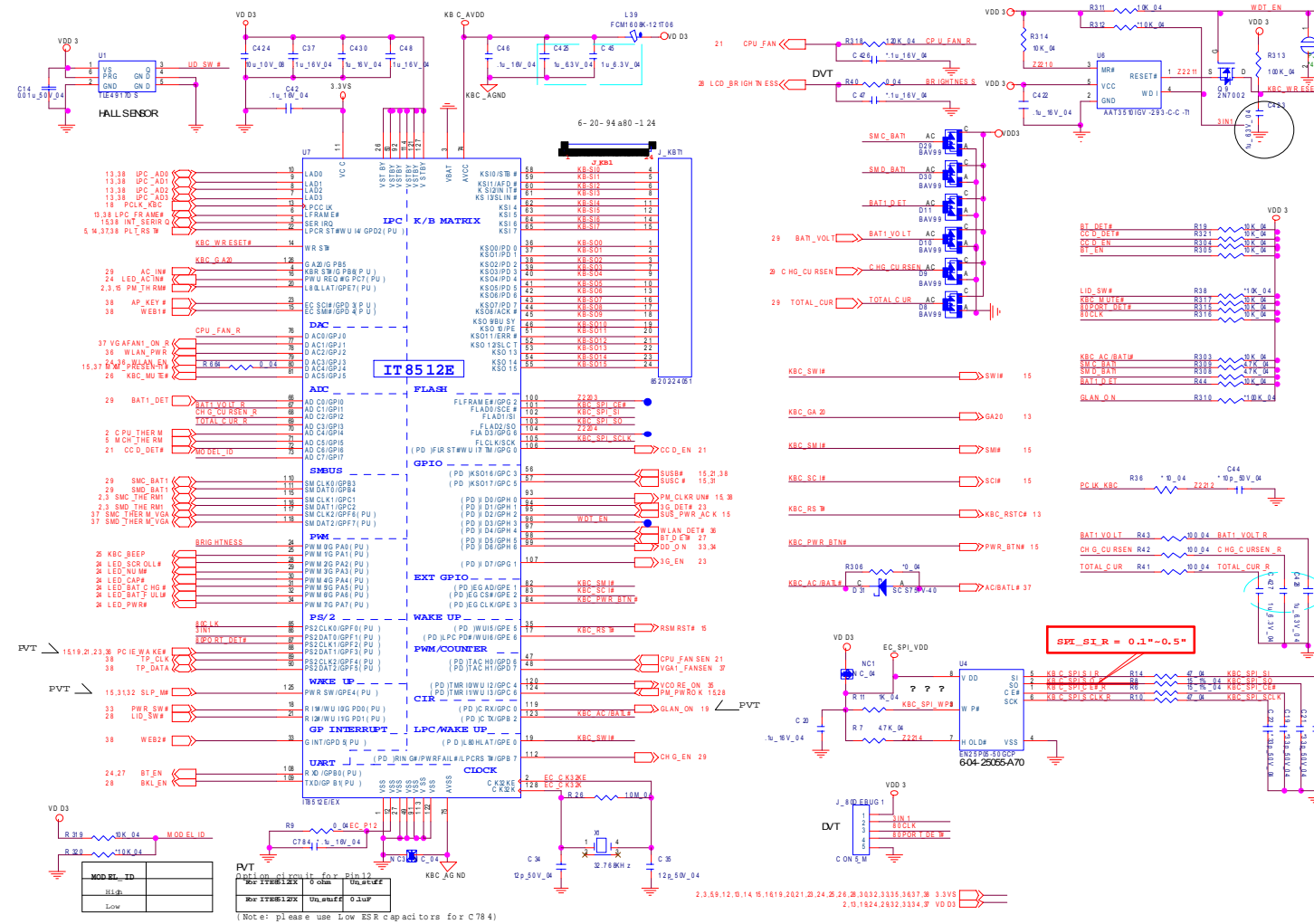


# New Card, CCD, Fan

Sheet 21 of 42  
New Card, CCD,  
Fan



# KBC-ITE IT8512



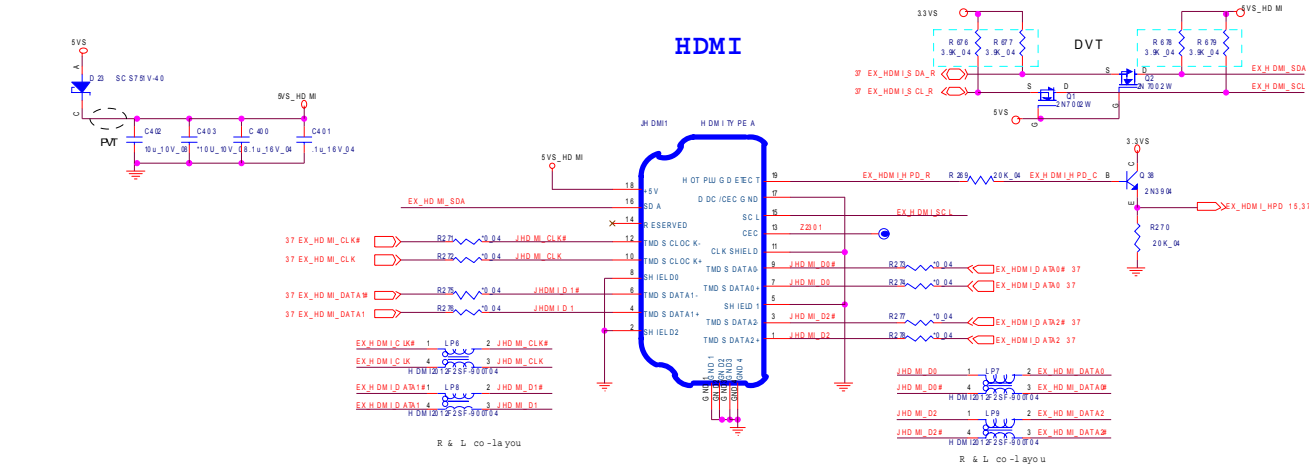
Sheet 22 of 42  
KBC-ITE IT8512

B.Schematic Diagrams

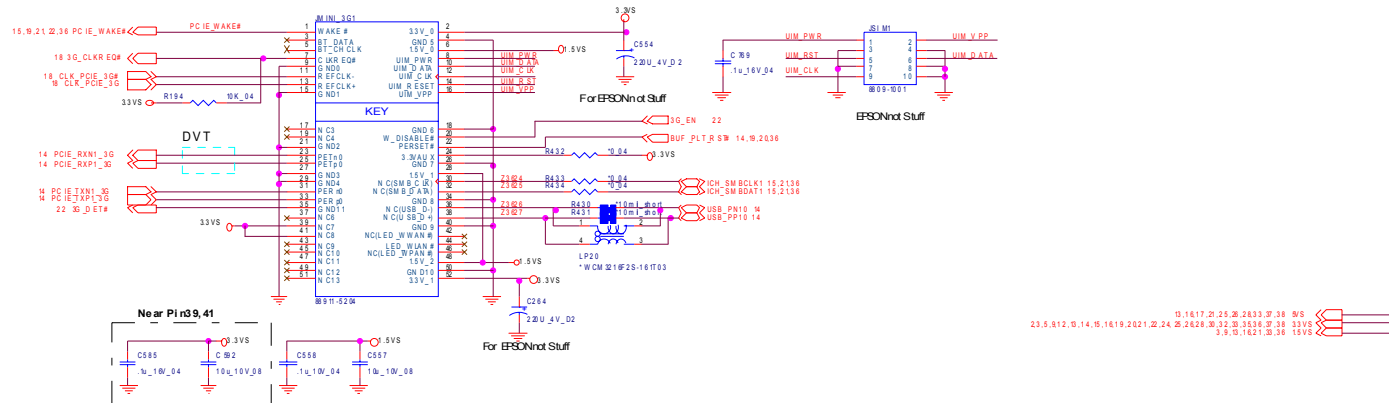
# Schematic Diagrams

## HDMI, 3G

Sheet 23 of 42  
HDMI, 3G

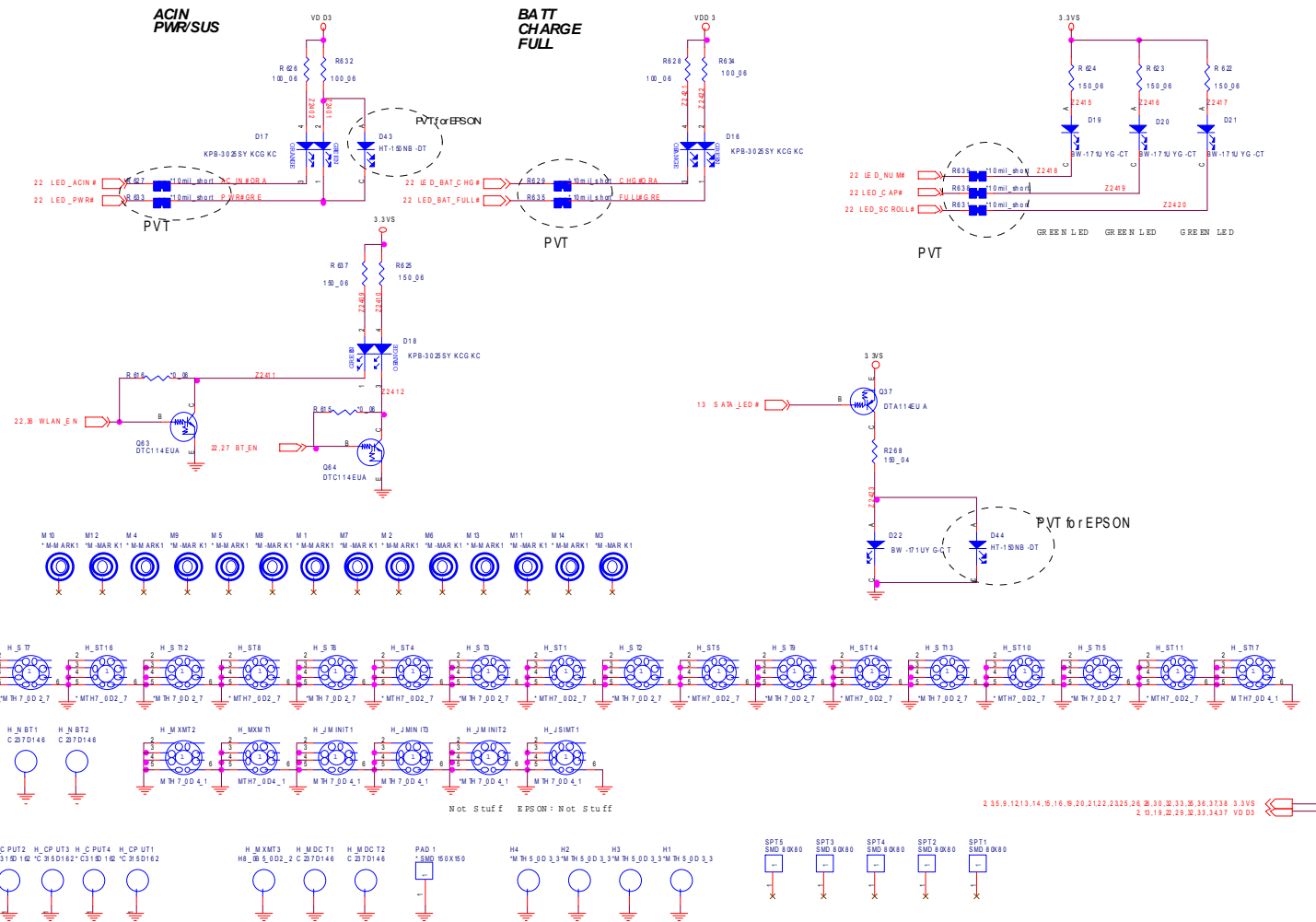


### MINI-PCIE CARD For 3G





# LED, Screw Hole



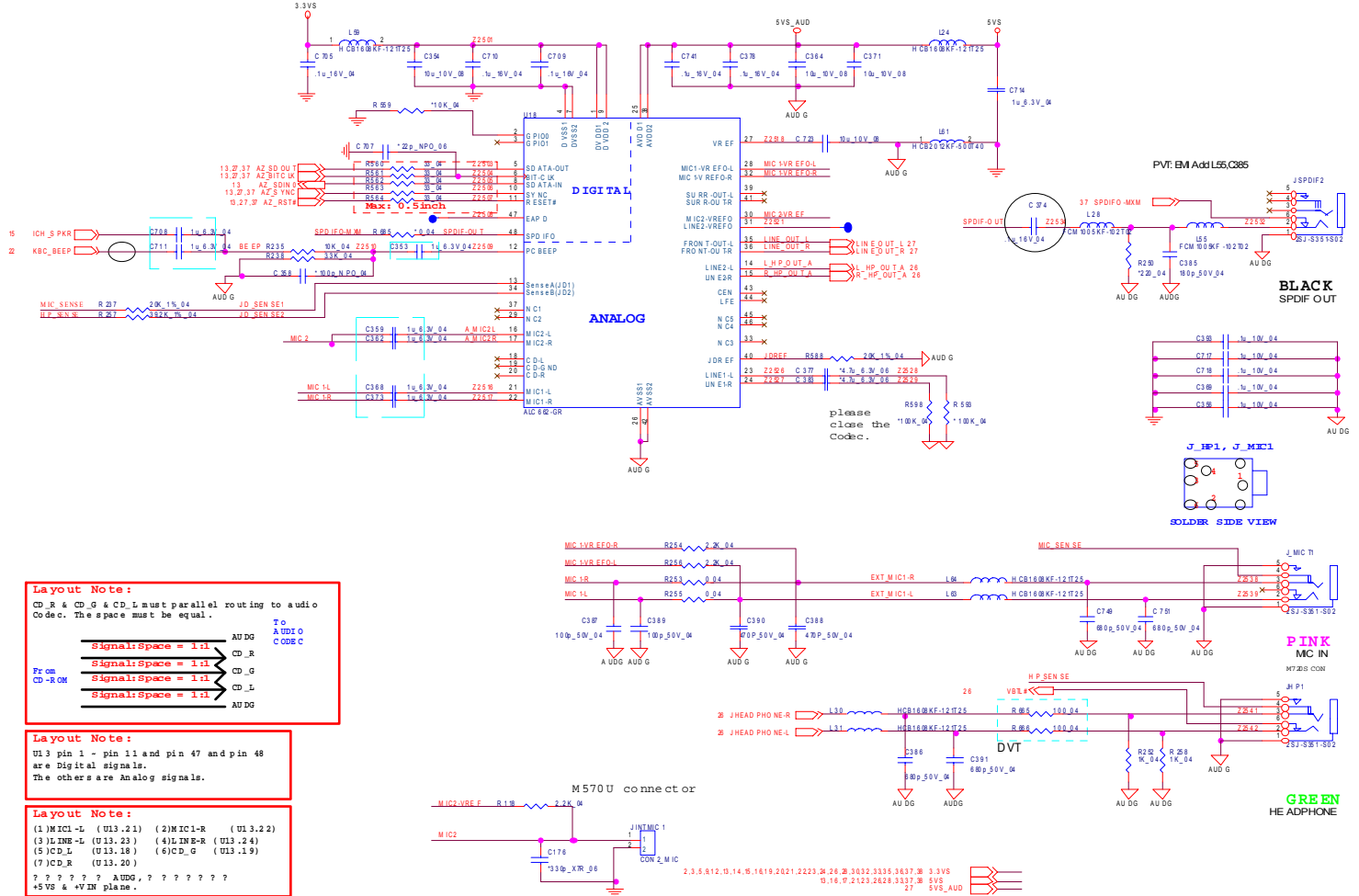
Sheet 24 of 42  
LED, Screw Hole

B.Schematic Diagrams

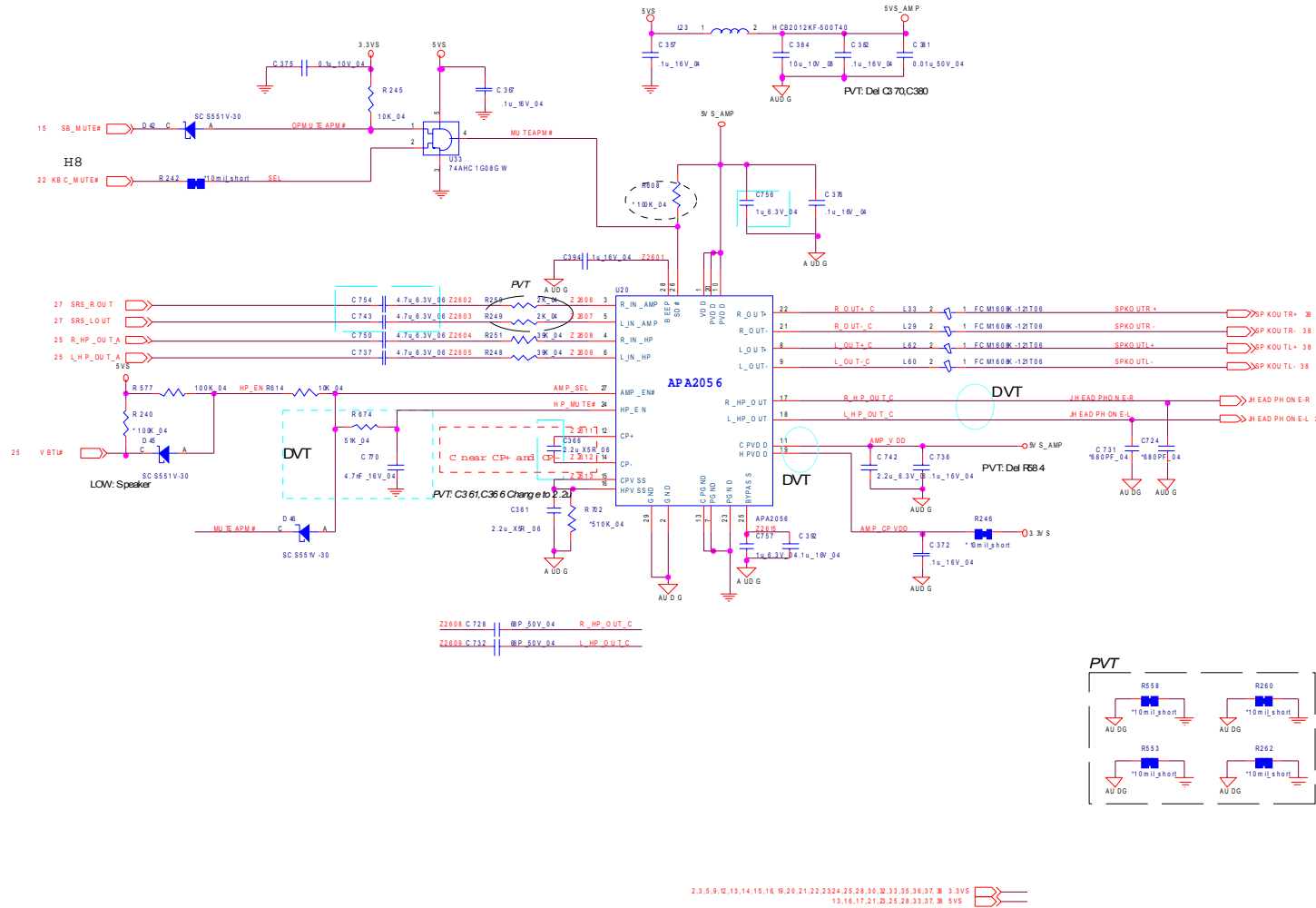
## Schematic Diagrams

# Azalia CODEC ALC662

Sheet 25 of 42  
Azalia CODEC  
ALC662



# Audio AMP



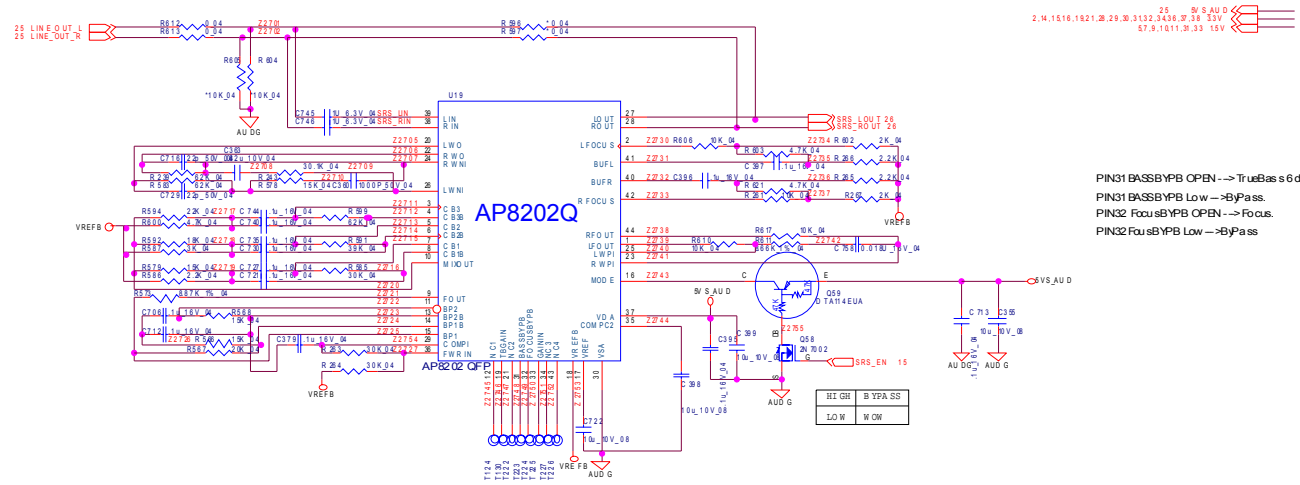
Sheet 26 of 42  
Audio AMP

B.Schematic Diagrams

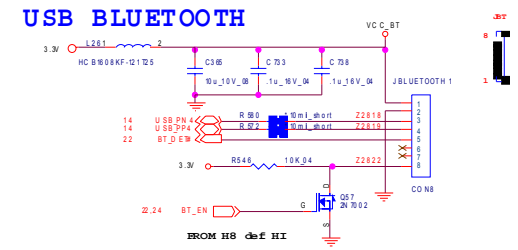
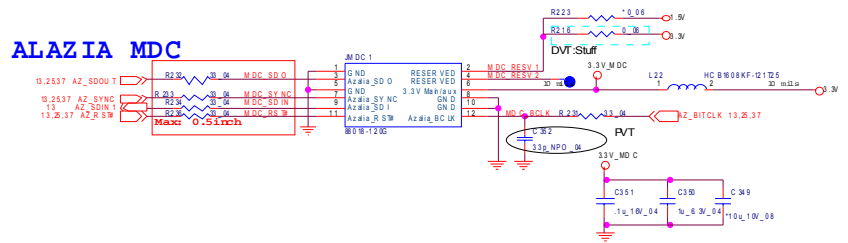
# SRS, MDC, BT

Sheet 27 of 42  
SRS, MDC, BT

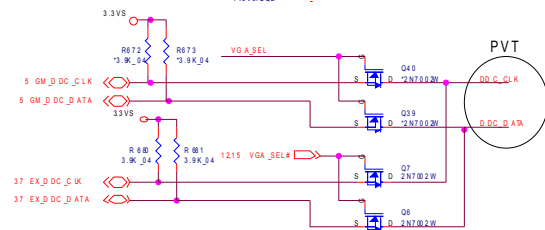
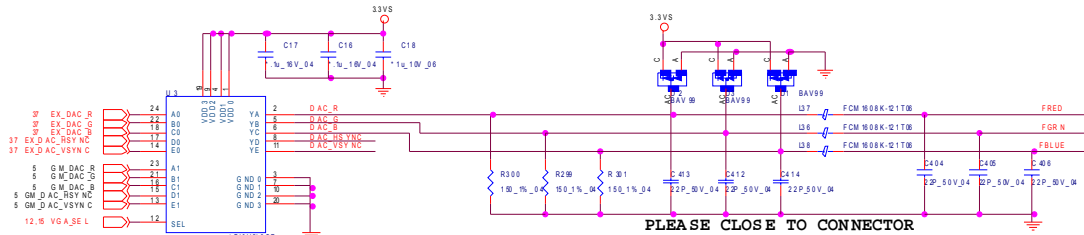
## AUDIO PROCESSOR PRE-AMP



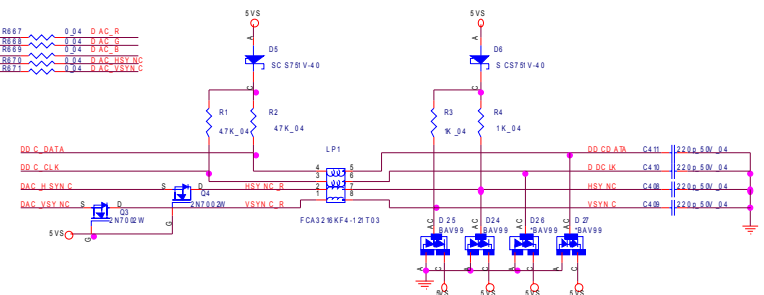
PIN31 BASSBYB OPEN --> TrusBas s 6 d8  
PIN31 BASSBYB Low --> ByPass.  
PIN32 FocusBYB OPEN --> Focus.  
PIN32 FocusBYB Low --> ByPass



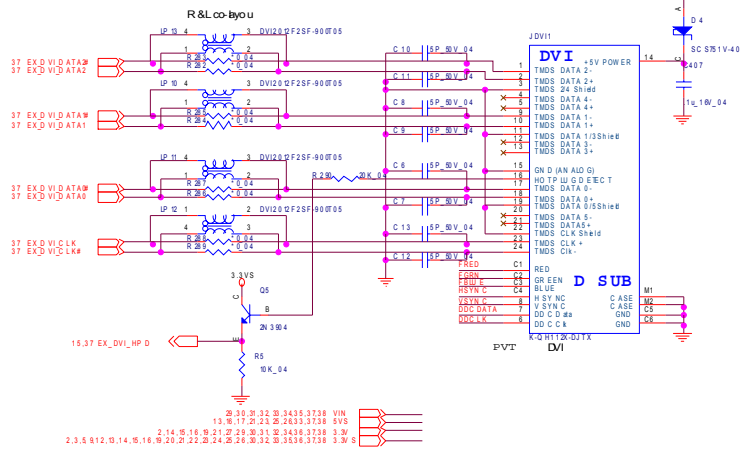
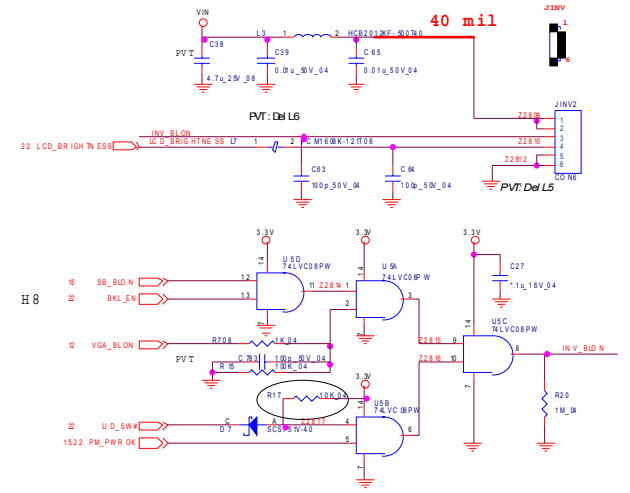
# DVI, INV



EX_D_AC_R	R867	0.04	DAC_B
EX_D_AC_G	R868	0.04	DAC_G
EX_D_AC_B	R869	0.04	DAC_G
EX_D_AC_HSYN_C	R872	0.04	DAC_HSYN_C
EX_D_AC_VSYN_C	R871	0.04	DAC_VSYN_C



## INVERTER CONNECTOR

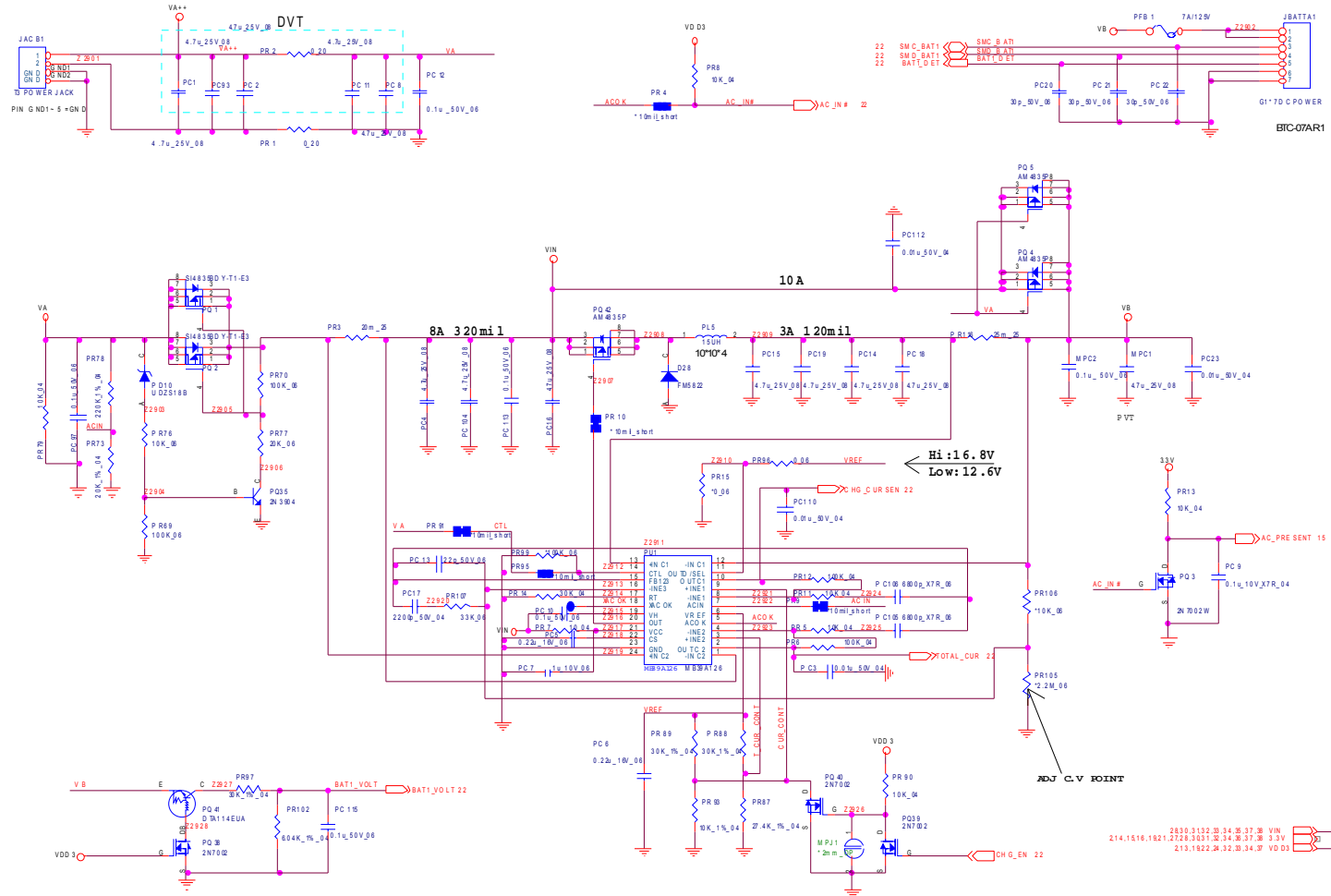


Sheet 28 of 42  
DVI, INV

B.Schematic Diagrams

# Schematic Diagrams

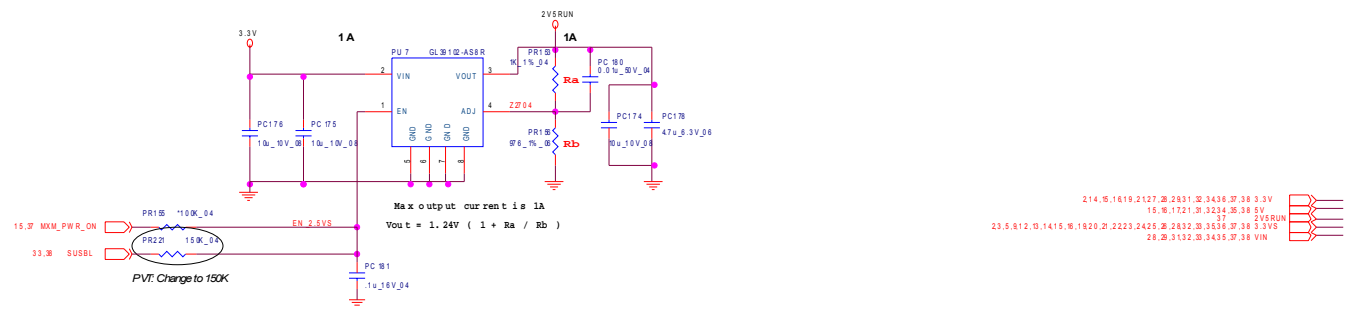
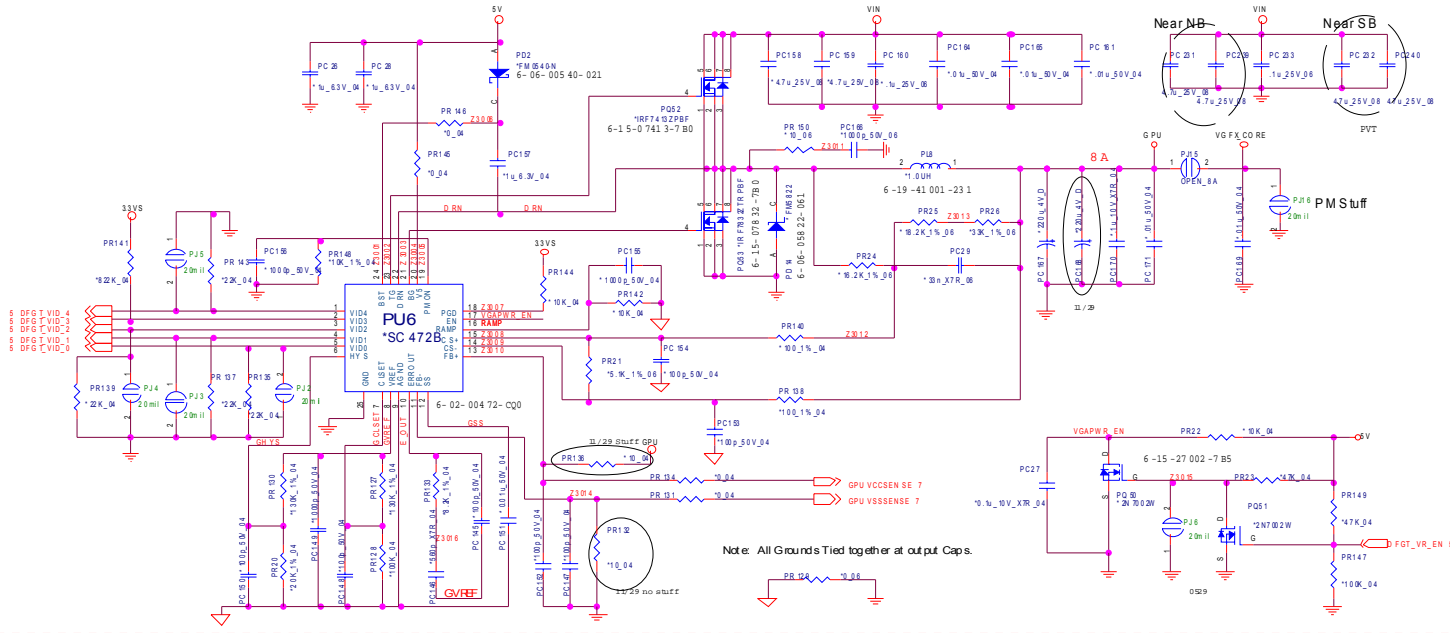
## Power Charger, DC-In



Sheet 29 of 42  
Power Charger,  
DC-In

B.Schematic Diagrams

# Power GPU



Sheet 30 of 42  
Power GPU

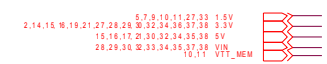
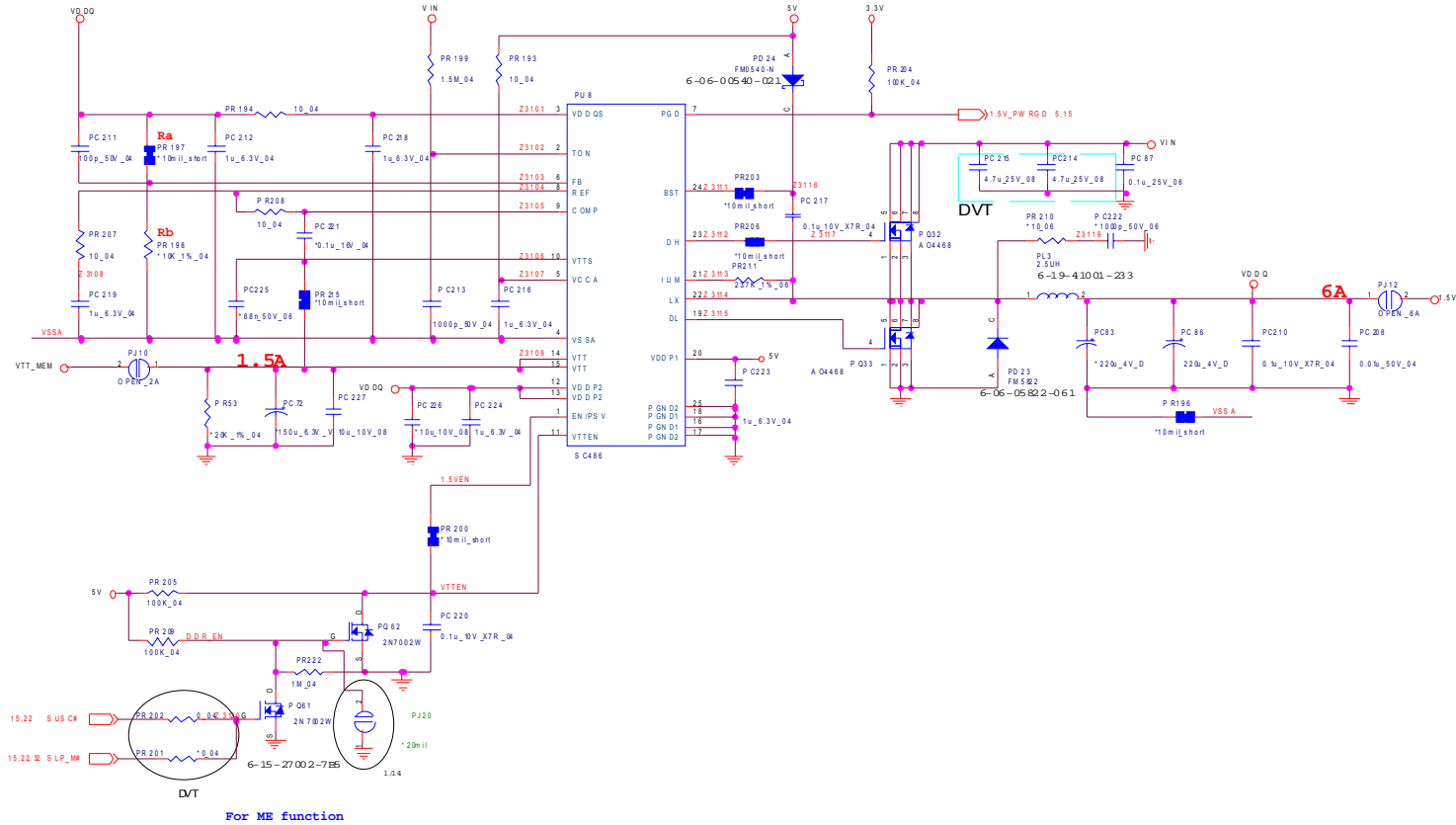
B.Schematic Diagrams

# Schematic Diagrams

## Power 1.5V/0.75V

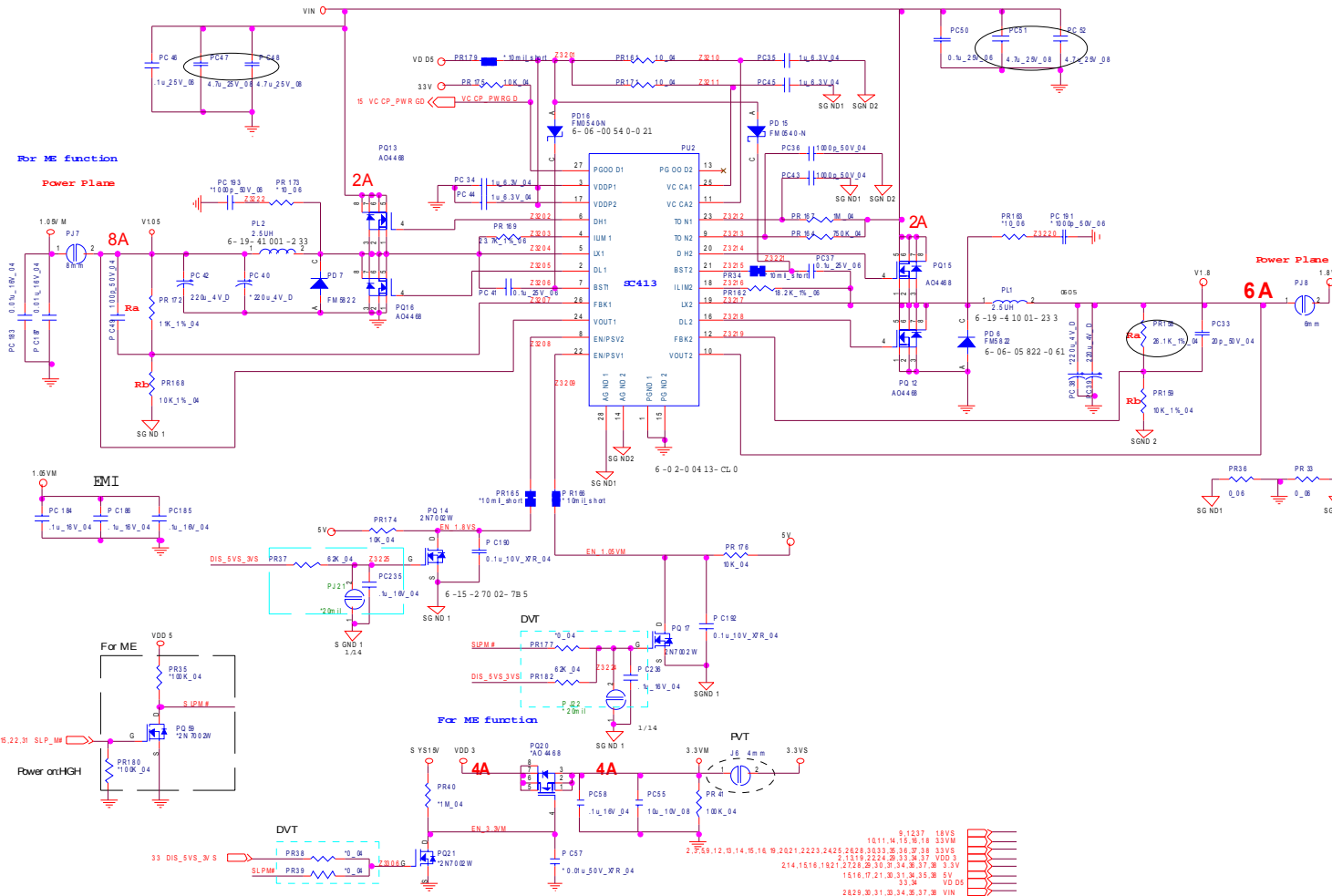
B.Schematic Diagrams

Sheet 31 of 42  
Power 1.5V/0.75V





# Power 3.3VM/1.8VS/1.05VM



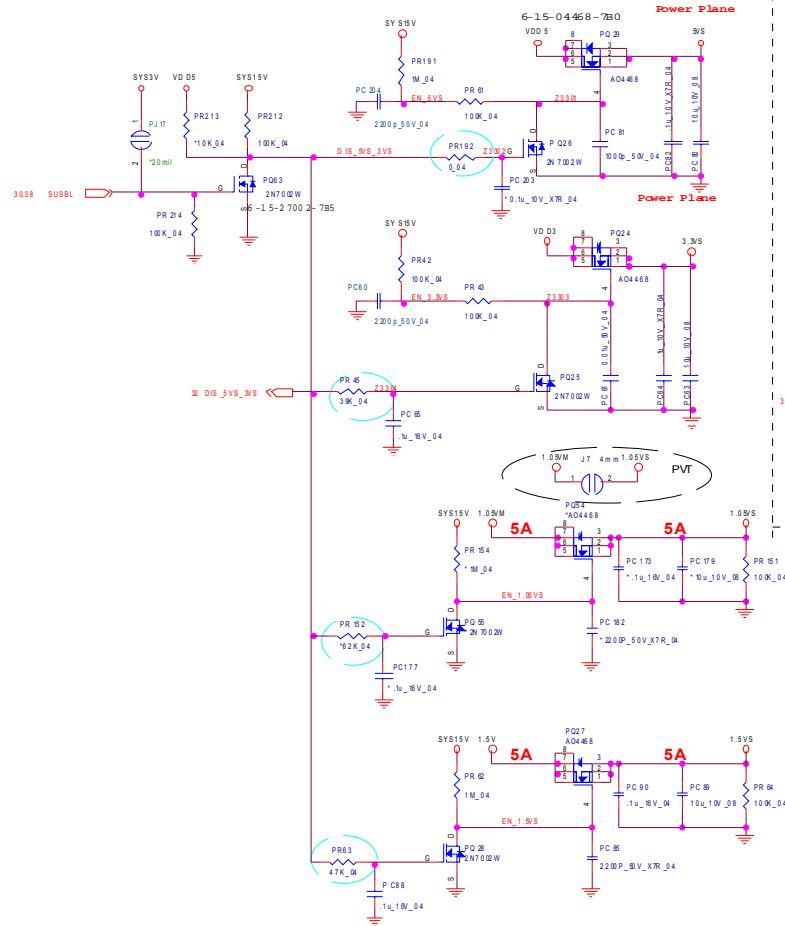
Sheet 32 of 42  
Power 3.3VM/  
1.8VS/1.05VM

B.Schematic Diagrams

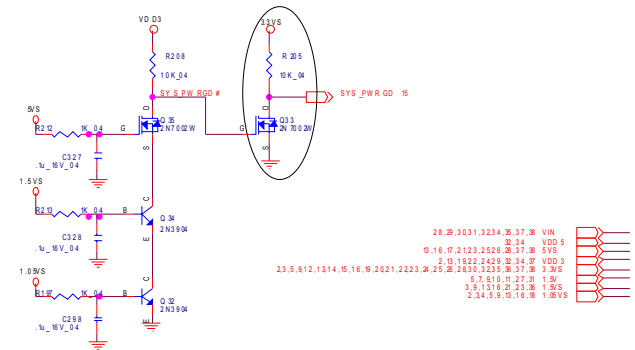
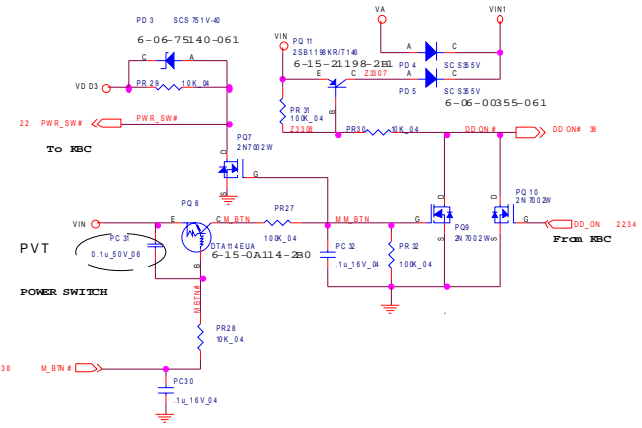
# Schematic Diagrams

## Power 3VS/5VS / Power S/W

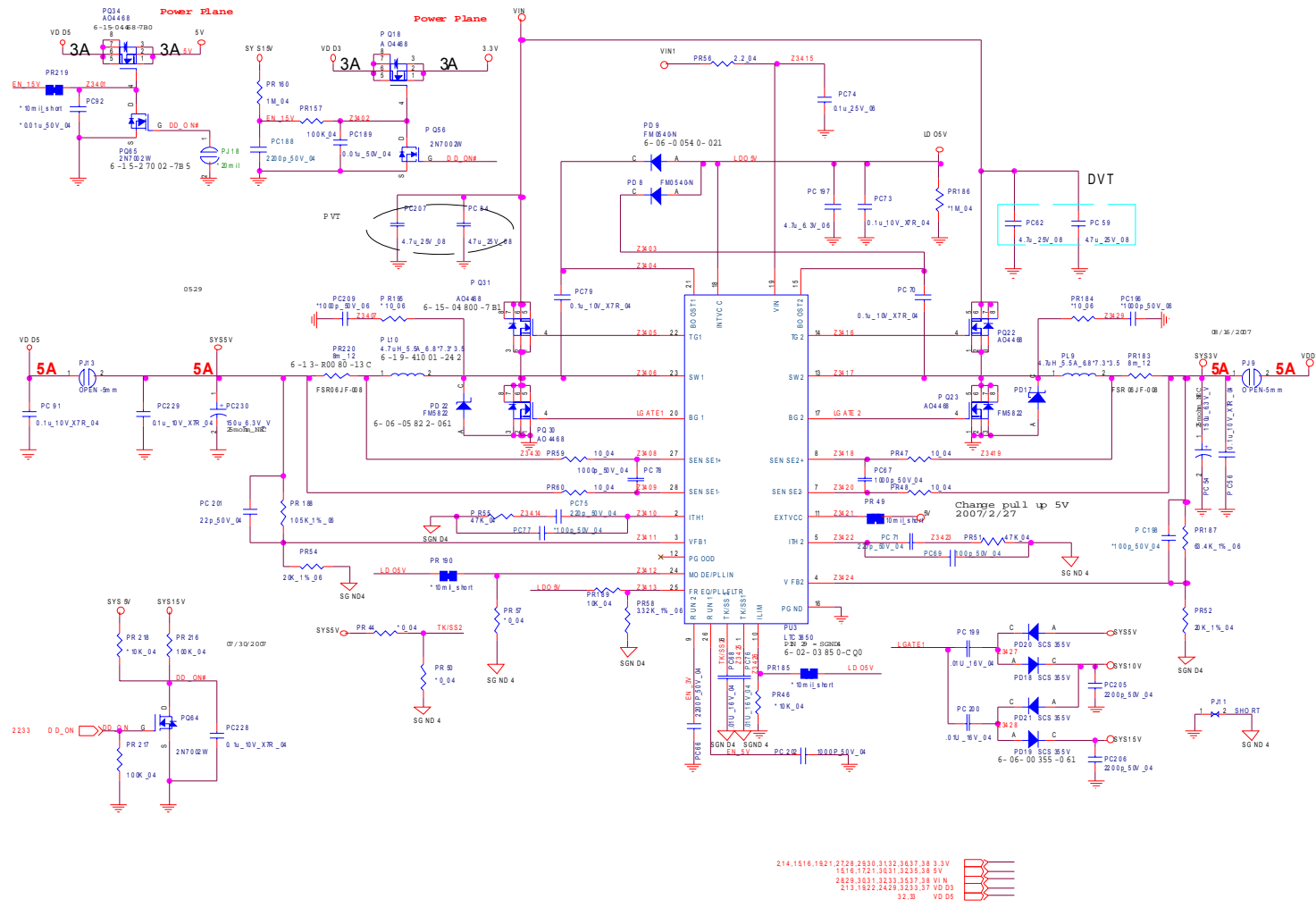
Sheet 33 of 42  
Power 3VS/5VS/  
Power S/W



### POWER SW



# Power VDD3/VDD5/3.3V/5V



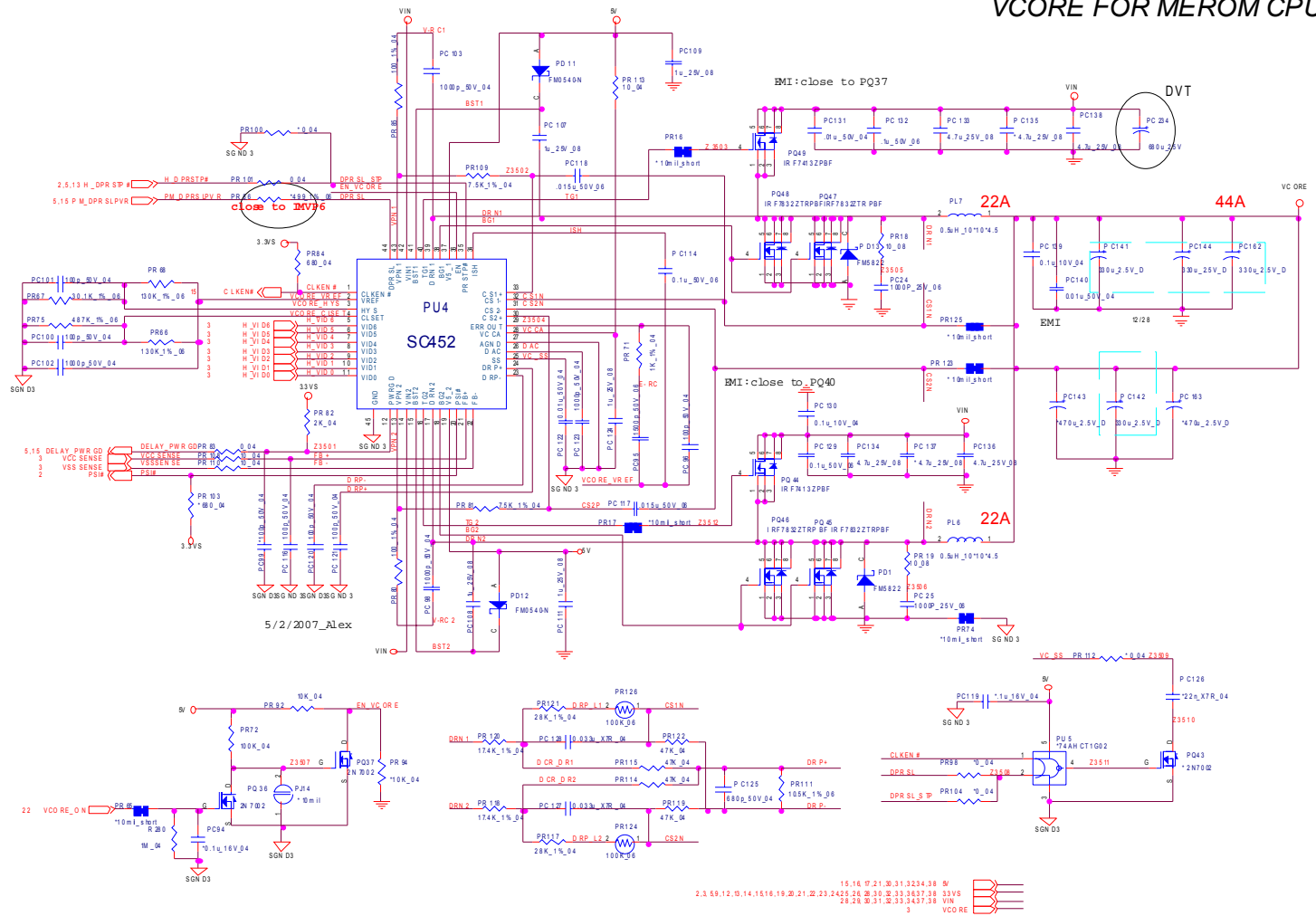
Sheet 34 of 42  
 Power VDD3/VDD5/  
 3.3V/5V

B.Schematic Diagrams

# Power VCORE

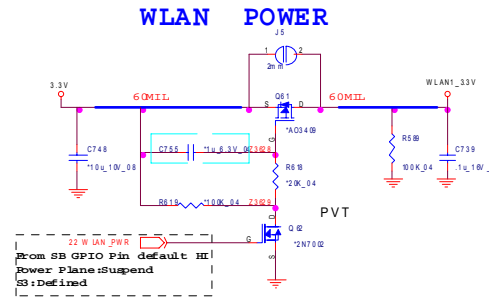
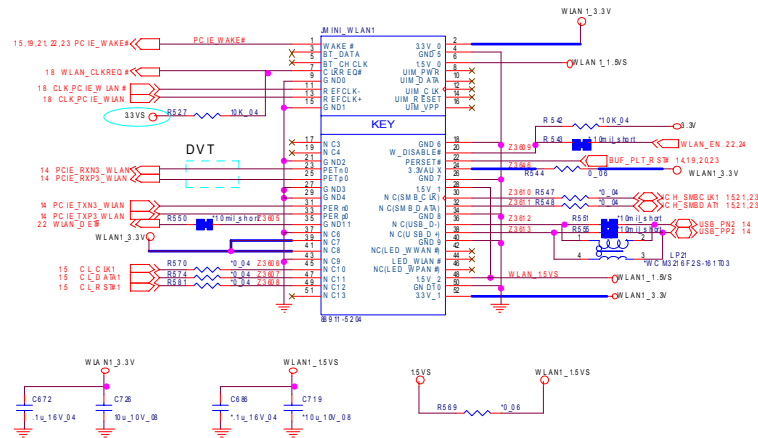
VCORE FOR MEROM CPU

Sheet 35 of 42  
Power VCORE



# Mini Card/WLAN

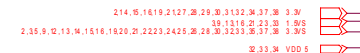
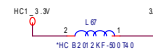
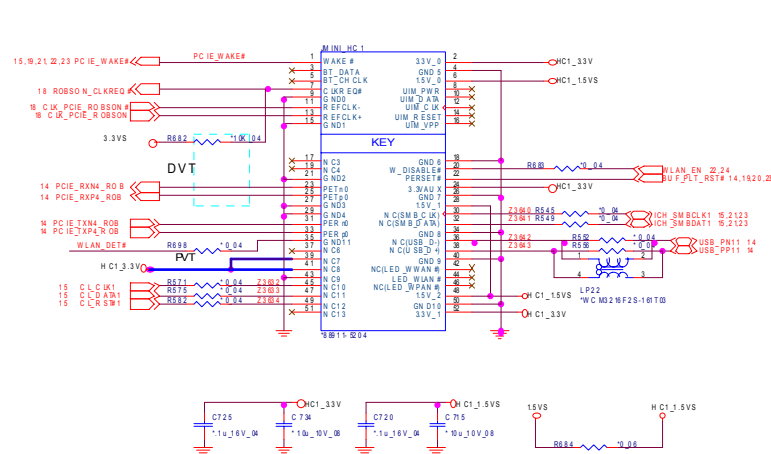
## MINI-PCIE CARD



Sheet 36 of 42  
Mini Card/WLAN

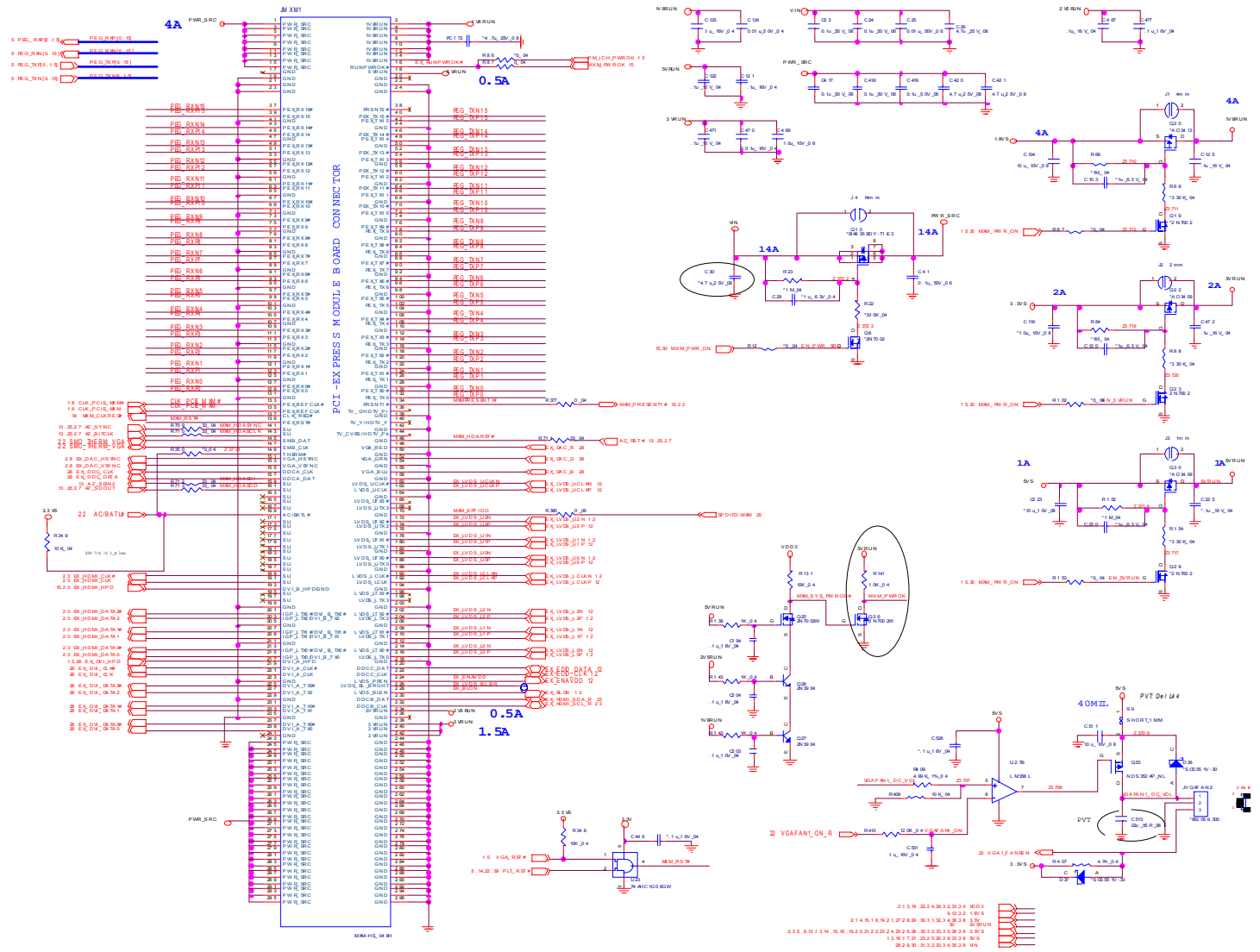
B.Schematic Diagrams

## MINI-PCIE CARD



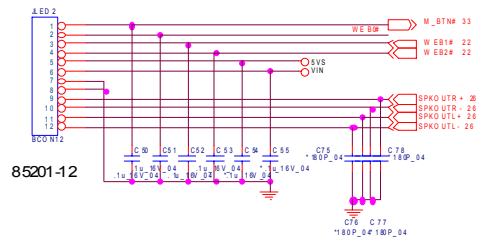
# MXM PCI-E Type III

Sheet 37 of 42  
MXM PCI-E Type III

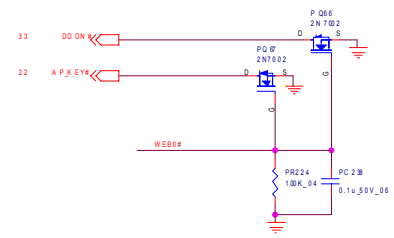
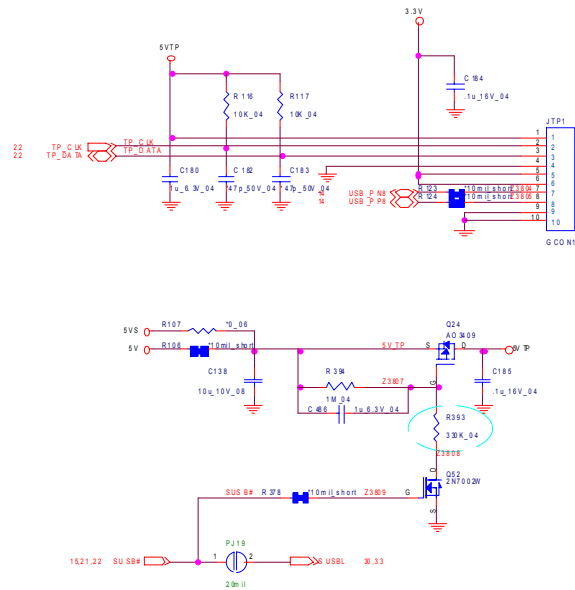


# Board to Board CON/TPM

## HOT KEY (M/B side)

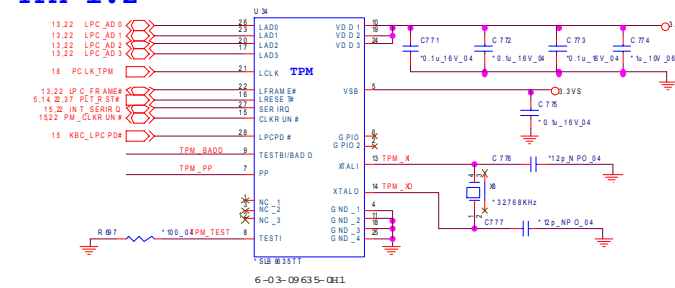


## CLICK(M/B side)



## TPM 1.2

PVT: ADD TPM Circuit For EPSON

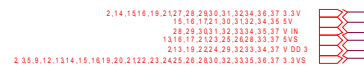
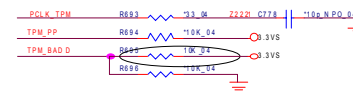


asserted before entering S3

LPC reset timing:

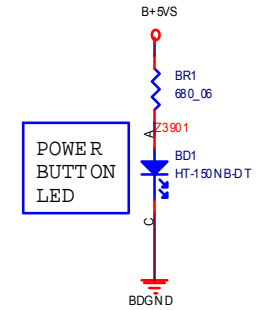
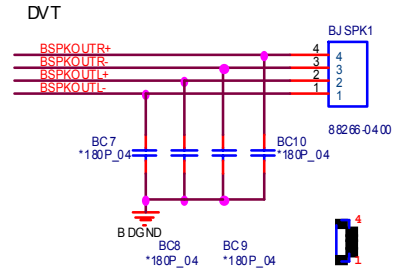
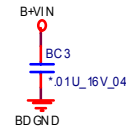
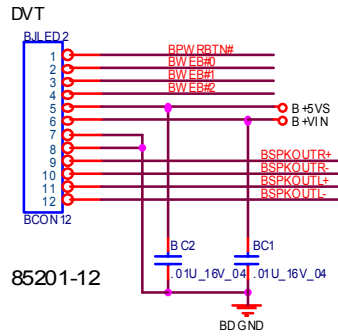
LPCPD# inactive to IRST# inactive 32-96us

TPM_PP	H: ACCESS
	LOW: NORMAL (Internal PD)
TPM_BADD	H: 4E4fh
	LOW: 2E/2Fh

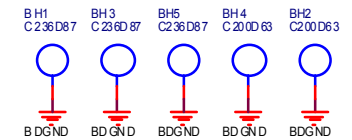
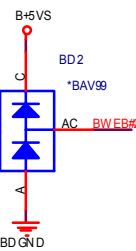
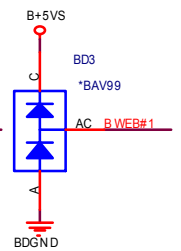
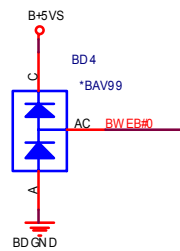
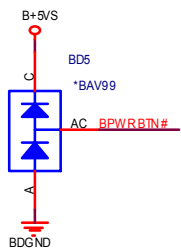
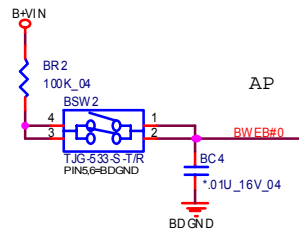
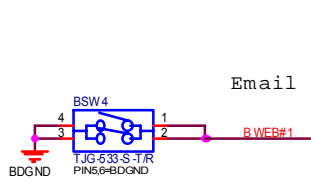
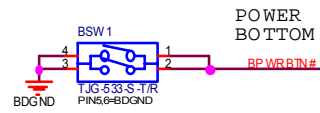
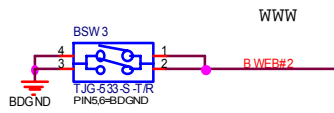


Sheet 38 of 42  
Board to Board  
CON/TPM

# Button Board

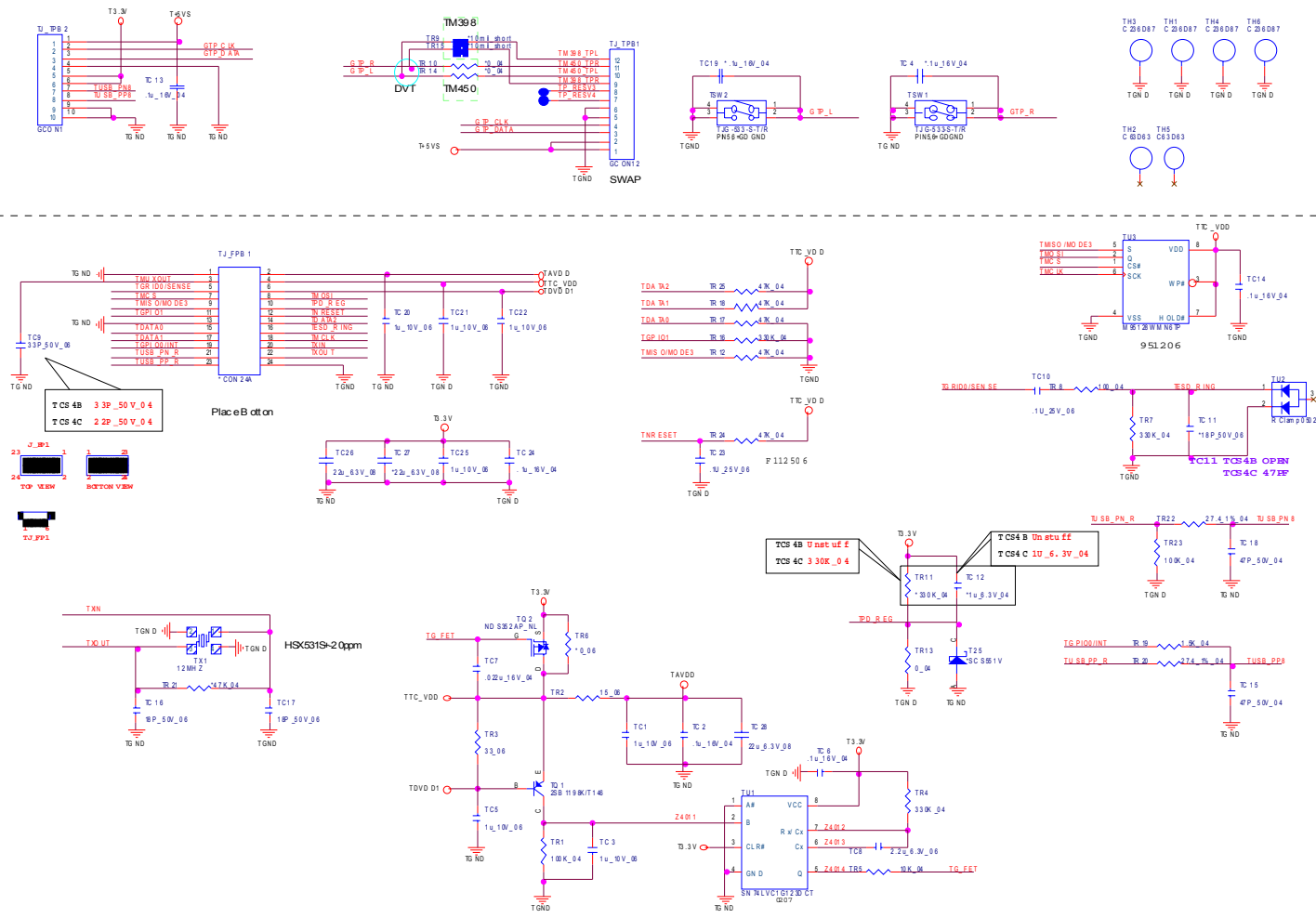


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Button Board





# Click Board

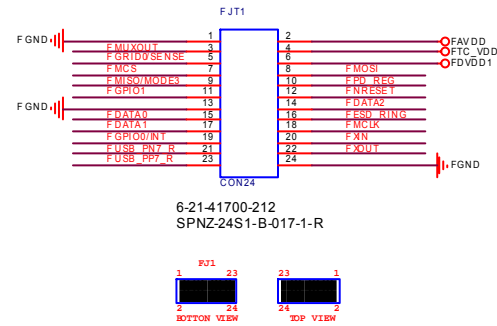
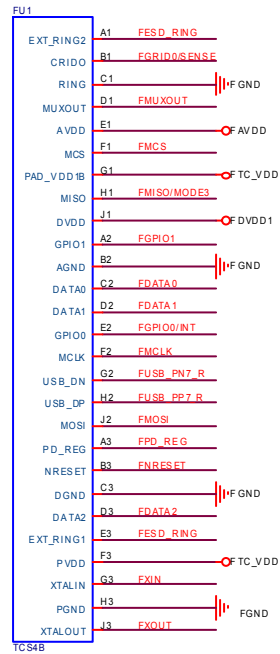


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Click Board

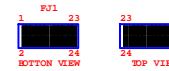
B.Schematic Diagrams

# Finger Printer Board

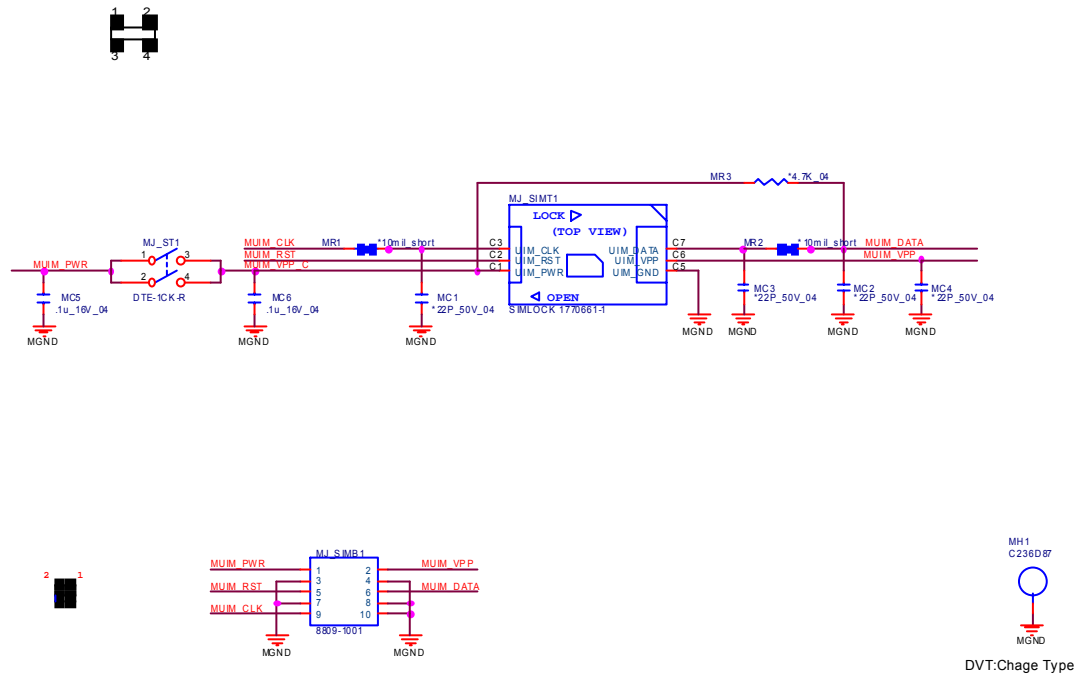
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Finger Printer  
Board



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# SIM Card Board



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SIM Card Board

**Schematic Diagrams**