

SERVICE MANUAL

D470W / D480W

notebook



Notebook Computer

D470W/D480W

Service Manual

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Version 1.0
August 2003

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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 *D470W*/*D480W* series notebook PC.

The following information is included:

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

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

Appendix A, Part Lists

Appendix B, Schematic Diagrams

Appendix C, Switches and Jumpers

IMPORTANT SAFETY INSTRUCTIONS

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

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 (DC Output 20V, 6A).

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**

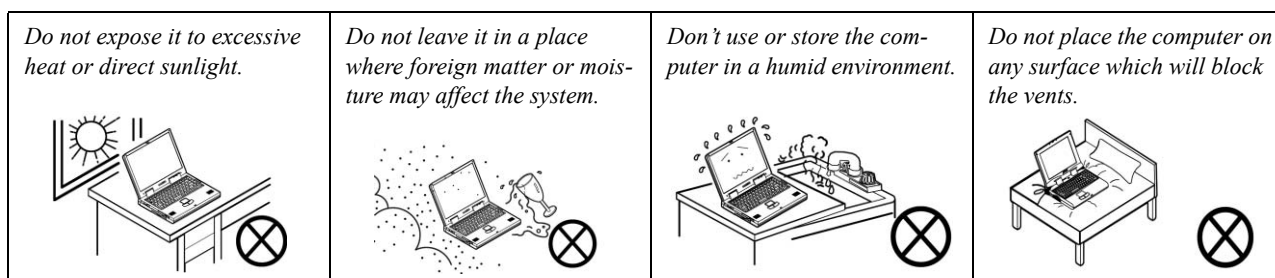
Instructions for Care and Operation

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

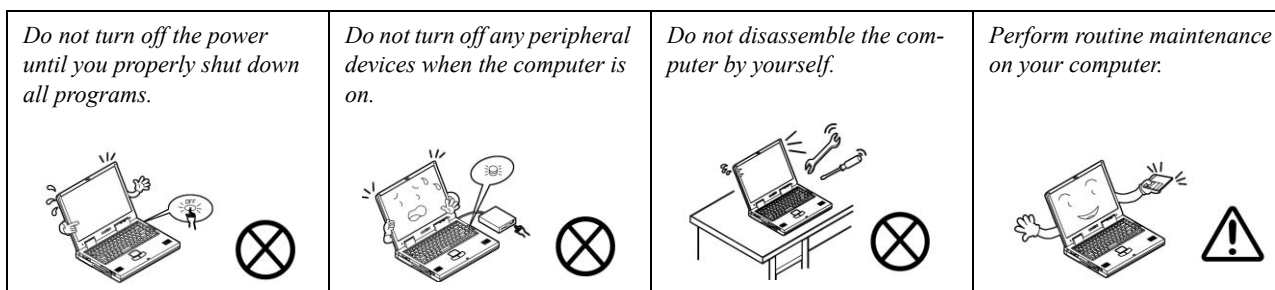
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



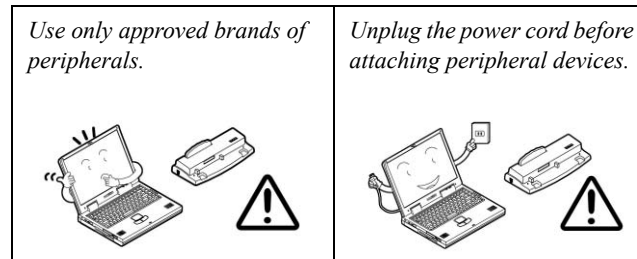
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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



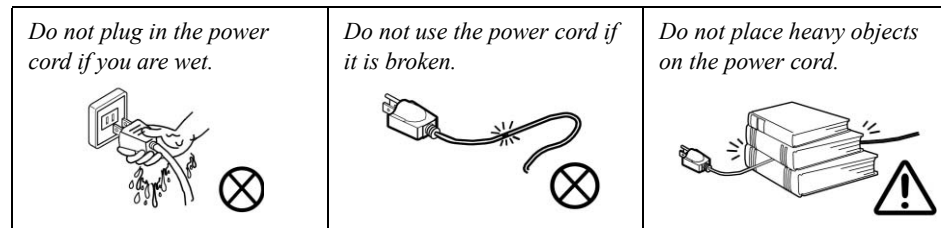
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

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



Power Safety Warning

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

Battery Precautions

- Only use batteries designed for this computer. The wrong battery type may explode, leak or damage the computer.
- 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 **D470W/D480W** 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. *DOS*, *Windows 9x*, *Windows NT 4.0*, *Windows 2000*, *Windows XP*, *OS/2 Warp*, *UNIX*, 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 **D470W/D480W** 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

- Intel Pentium 4 Processor - (478-pin) FC-PGA2 package

(μ0.13) 0.13 Micron Process Technology, 512KB L2 Cache & 400MHz FSB - 2.0/ 2.2/ 2.4/ 2.5 /2.6 GHz
(μ0.13) 0.13 Micron Process Technology, 512KB L2 Cache & 533MHz FSB - 2.26/ 2.4/ 2.53/ 2.66/ 2.8/ 3.06 GHz

* Only notebooks with Pentium 4 processors of **3.06GHz** support **Hyper-Threading**

Core Logic

- SIS M645DX + 962 Chipset + M9-P

Structure

- PC99 compliant

Security

- Security (Kensington® Type) Lock
- BIOS Password

Memory

- Two 200-pin DDR SODIMM sockets, supporting DDR SDRAM SODIMM (2.5V) - DDR 200/ DDR 266/ DDR 333 compliant
- Memory expandable up to 1024MB (128/256/512MB SODIMM Modules)

BIOS

- One 512KB Flash ROM
- Phoenix BIOS

LCD Options

- 17.0" WXGA+ TFT (1440*900)

Display

- ATI Mobility Radeon 9000 high performance chip
- Support AGP™ 4X
- Integrated 128-bit 2D/3D Graphics Accelerator
Advanced HW accelerator for DVD playback
Fully Direct X 8.0 compliant graphics engine
- External memory up to 64MB DDR SGRAM on-board
- Dual-View display monitor



Video Memory

The system allocates or "shares" a portion of system memory for video use. "Shared" memory is user-configurable via the SCU. The default setting is set to 32MB.

Storage Devices

- 3.5" 3-mode **Floppy Disk Drive**
- Easy changeable 2.5" 9.5 mm (h) Hard Disk Drive
 - Supporting Master mode IDE
 - Supports PIO mode 4
 - ATA-33/66/100/133
 - Ultra DMA
- 12.7mm(h) **Device Bay** for **ONE** of the following drive configuration options:
 - CD-ROM
 - DVD-ROM
 - CD-RW
 - DVD-RW
 - Combo CD-RW + DVD-ROM
- Optional 6-in-1 card reader for the following formats:
 - MMC (MultiMedia Card)
 - SD (Secure Digital)
 - MS (Memory Stick)
 - SM (SmartMedia Card)
 - CF (Compact Flash)
 - IBM Microdrive

Keyboard

- “Win Key” keyboard

PC Card

- One type II PCMCIA 3.3V/5V socket supporting CardBus

Audio

- AC'97 2.1 compliant interface
- 3D stereo enhanced sound system
- Compatible with Sound-Blaster PRO™
- S/P DIF Digital output (5.1 CH) for DVD content and stereo audio
- Microphone-in jack
- Headphone-out jack
- Built-in microphone
- 4 built-in speakers
- **Optional** sub woofer

Interface

- Built-in TouchPad (scrolling key functionality integrated)
- Three USB 2.0 ports
- One Mini-IEEE 1394 port
- One S-Video jack for TV output
- One serial port
- One parallel port (LPT1), supporting ECP / EPP
- One infrared transceiver supporting IrDA 1.1 FIR/SIR/ASKIR
- One consumer Infrared transceiver which functions with the **optional** TV Tuner
- One external CRT monitor port
- One external keyboard/mouse (through Y cable) PS/2 port
- One speaker-out/headphone-out jack
- One microphone-in jack
- One RJ-11 jack for modem
- One RJ-45 jack for 100M/10M LAN
- One S/P DIF out port
- One DC-in jack
- Wireless Device On/Off switch
- One-S-Video-In port with **optional** TV Tuner
- One Line-In jack for audio input with **optional** TV Tuner

Introduction

Communication

- Wireless Infrared transfer IrDA 1.1 compliant, 1cm - 1M operating distance, 115.2K bps SIR/ 4Mbps FIR
- Built-in 10/100Mb Ethernet LAN
- 56K MDC modem V.90 & V.92 compliant
- 802.11b wireless LAN module (available as a factory **option**)
- Bluetooth module (available as a factory **option**)
- PC Video Camera module (available as a factory **option**)

Power Management

- Supports ACPI v1.0b
- Supports Hibernate mode
- Supports Standby mode
- Supports battery low sleep
- Supports resume from modem ring

Power

- Full range AC adapter
- AC-Input 100~240V, 50~60Hz
- DC 20V, 6A (**120W**)
- Supports one removable Smart Li-Ion battery 220mAh/8 cell

Indicators

- LED indicators (Power On/ AC-In/ Suspend, Battery Charging/Battery Full, E-Mail, HDD, Num Lock, Caps Lock, Scroll Lock)

Environmental Spec

- Temperature
 - Operating: 5°C ~ 35°C (w/o packing)
 - Non-Operating: -20°C ~ 60°C (packing)
- Relative Humidity
 - Operating: 20% ~ 80%
 - Non-Operating: 10% ~ 90%

Physical Dimensions

- 393 (w) x 275 (d) x 37.5 (h) mm

Weight

- 3.85 Kg (-50/+250g) with battery

Optional

- DVD-ROM Drive
- CD-RW Drive
- Combination Drive
- DVD-RW Drive
- Software DVD player
- Wireless LAN module
- Bluetooth module
- PC Camera module
- 6-in-1 Flash Card Reader module
- TV-Tuner module
- Sub Woofer module

External Locator - Top View



Figure 1
Top View

1. Optional PC Camera
2. LCD
3. Built-In Microphone
4. LED Power & Communication Indicators
5. LED Status Indicators
6. Hot-Key buttons
7. Close Cover/Lid Switch
8. Power Button
9. Keyboard
10. TouchPad and Buttons
11. Built-In Speakers

Introduction

Figure 2
Front View

1. LCD Latches
2. Consumer Infrared Transceiver (functions with optional TV Tuner)
3. Mini IEEE 1394 Port
4. S/P DIF Out Port
5. Microphone-In Jack
6. Headphone-Out Jack
7. Infrared Transceiver
8. Wireless Device ON/OFF Switch
9. Built-In Speakers

External Locator - Front & Left Side Views



Figure 3
Left Side View

1. CD Device Bay
2. USB 2.0/1.1 Port
3. Floppy Disk Drive
4. PC Card/ PCMCIA Slot
5. PC Card/PCMCIA Slot Eject Buttons



External Locator - Right Side & Rear Views



Figure 4
Right Side View

1. Security Lock Slot



Figure 5
Rear View

1. Vent
2. DC-In Jack
3. 2 * USB 2.0/1.1 Ports
4. External Monitor (CRT) Port
5. Parallel Port
6. Serial Port
7. S-Video-Out Port
8. PS/2 Type Port
9. RJ-11 Phone Jack
10. RJ-45 LAN Jack

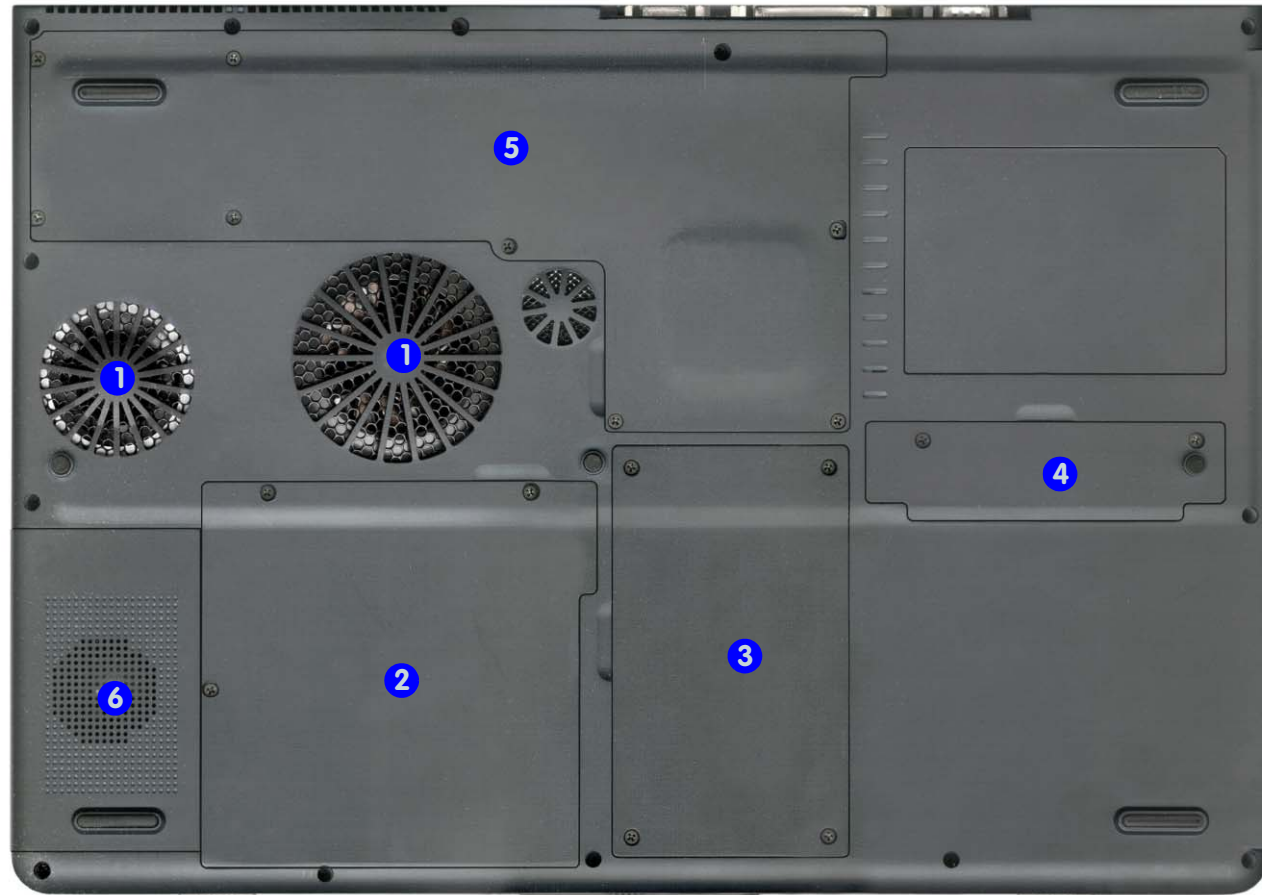


External Locator - Bottom View

Figure 6
Bottom View

1. Vent/Fan Intake
2. Battery Cover
3. Hard Disk Cover
4. Bluetooth Module Cover
5. CPU & Memory Socket Cover
6. Optional Module Cover (Sub Woofer or TV Tuner or 6-in-1 Flash Card Reader)

Note: The RAM and optional Wireless LAN module are located under the CPU Heatsink Cover.



Mainboard Overview - Top (Key Parts)

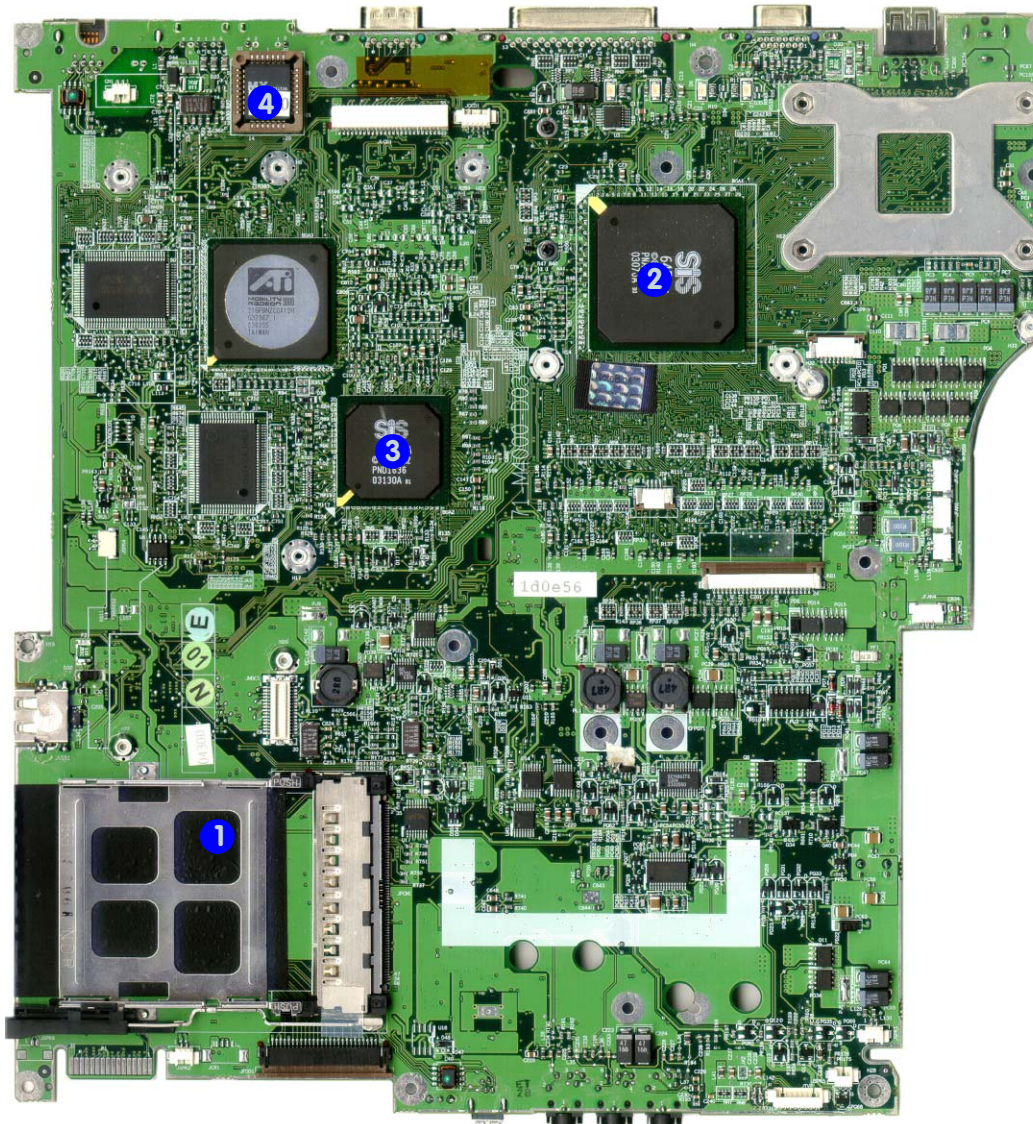


Figure 7
**Mainboard Top
Key Parts**

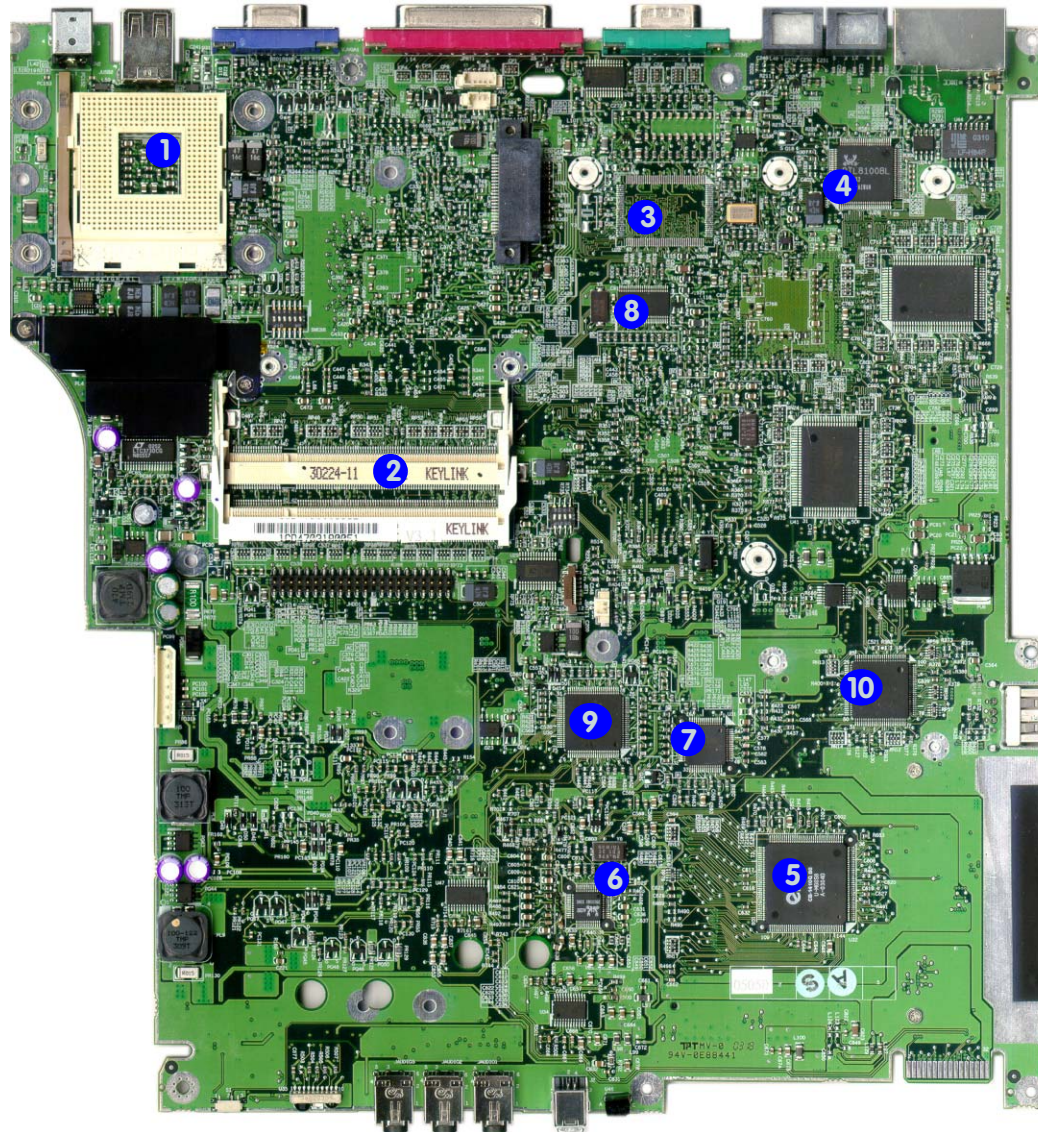
1. PC Card Assembly
2. Northbridge - SiS M645DX
3. Southbridge - SiS 962
4. Flash BIOS ROM

Introduction

Figure 8
**Mainboard Bottom
Key Parts**

1. CPU Socket (no CPU installed)
2. Memory Slots (no memory installed)
3. SiS 302LV TV-Out Controller
4. LAN Controller
RTL8100BL
5. CardBus ENE
CB1410
6. ALC202 - Audio
Codec
7. 1394 PHY
TSB41AB1
8. Clock Generator
9. Keyboard
Controller - KBC
H8 H8S-2149 HM
10. LPC Super I/O
NS PC87393

Mainboard Overview - Bottom (Key Parts)



Mainboard Overview - Top (Connectors)

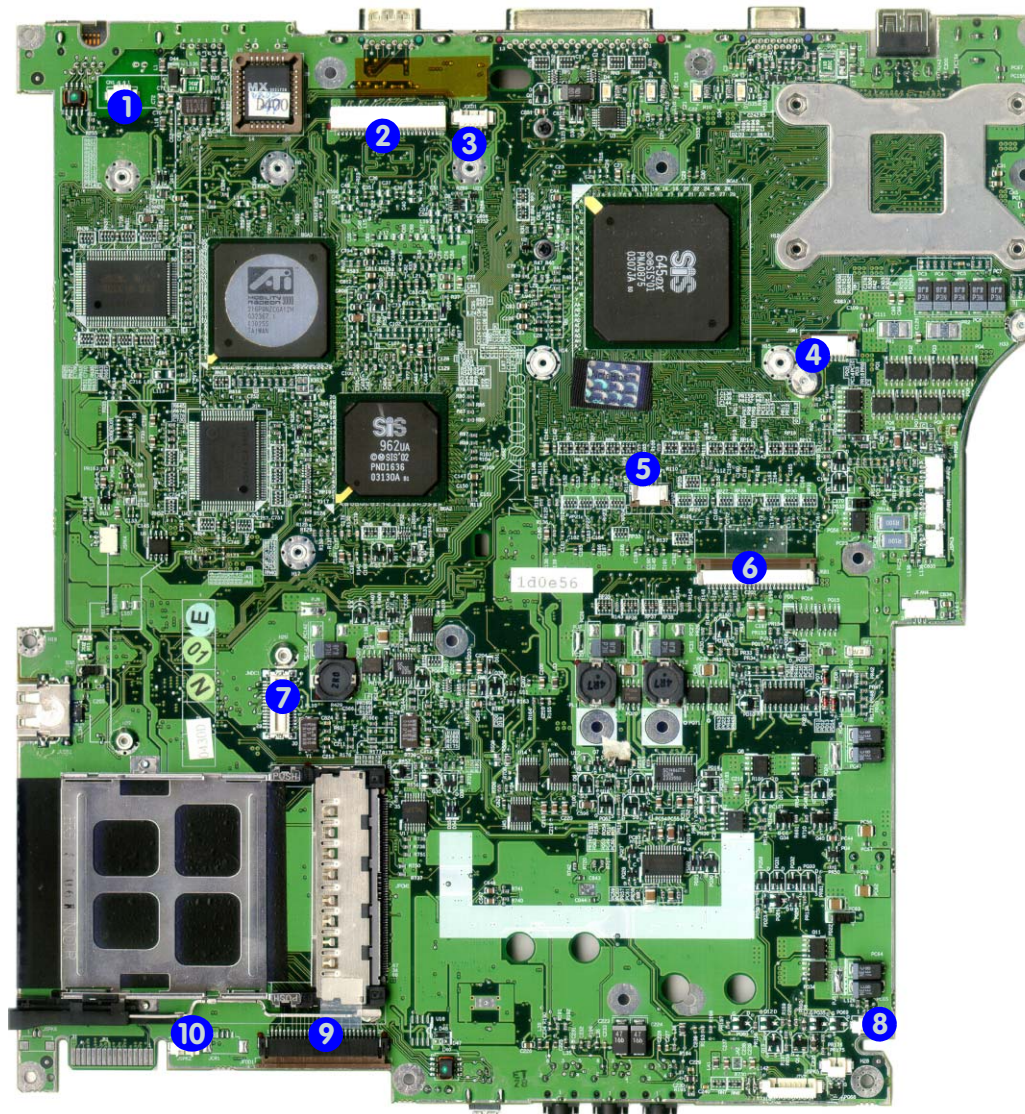


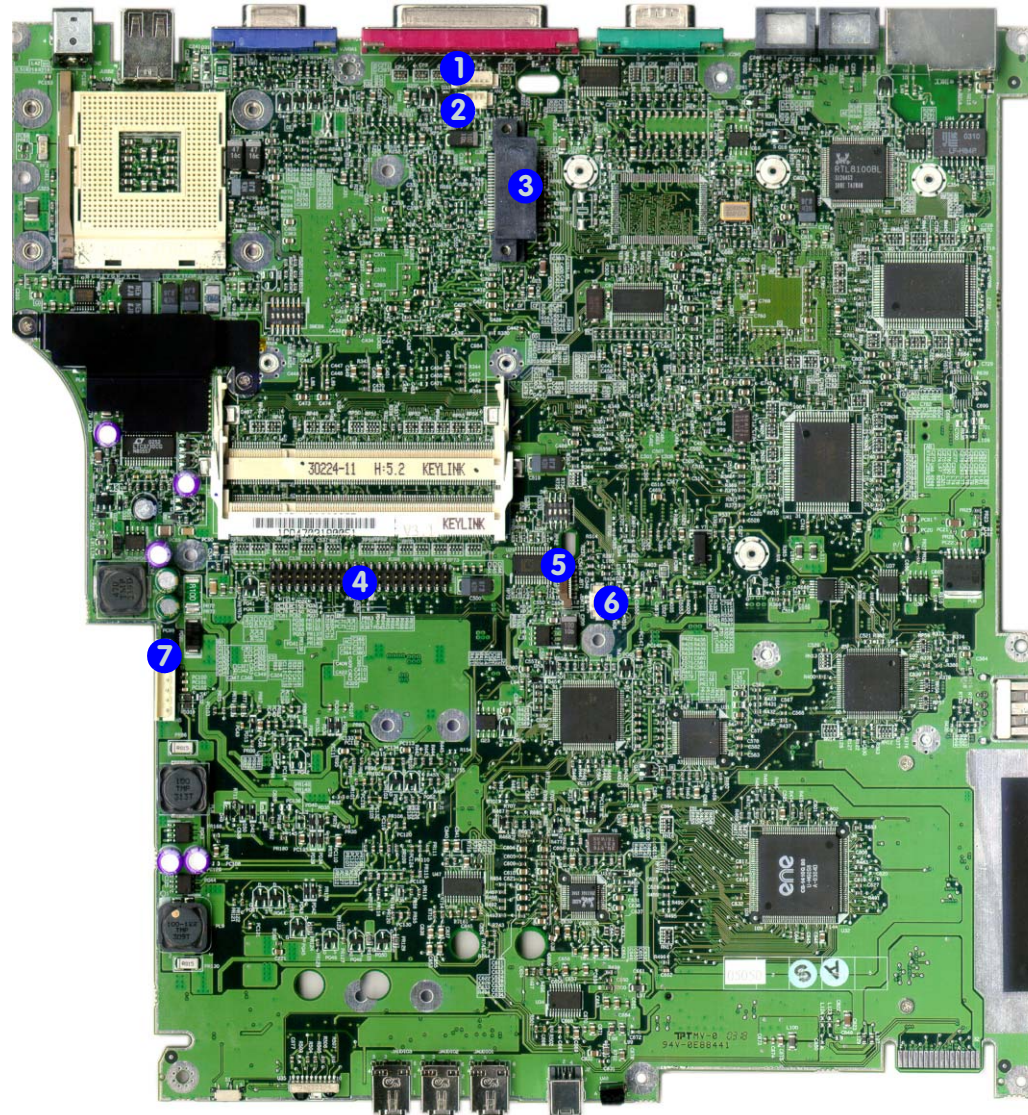
Figure 9
**Mainboard Top
Connectors**

1. Modem Cable Connector (CN1)
2. LCD (and Inverter) Connector (JLCD1)
3. Video Camera Cable Connector (JCCD1)
4. Power Switch Board Cable Connector (JSW1)
5. TouchPad Cable Connector (JTP1)
6. Keyboard Cable Connector (JKB1)
7. Modem Module Connector (JMDC1)
8. Speaker Cable Connector (JSPK1)
9. Floppy Disk Connector (JFDD1)
10. Speaker Cable Connector (JSPK2)

Mainboard Overview - Bottom (Connectors)

Figure 10
Mainboard Bottom
Connectors

1. Wireless LAN Connector (JWL1)
2. DDR Fan Cable Connector (JFAN3)
3. CD-ROM Device Connector (JCDROM1)
4. Hard Disk Cable Connector (JHDD1)
5. Bluetooth Module Connector (JBT1)
6. CMOS Battery Cable Connector (JBAT1)
7. Battery Cable Connector (CN5)




2: Disassembly



Overview

This chapter provides step-by-step instructions for disassembling the *D470W/D480W* series notebook's parts and sub-systems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

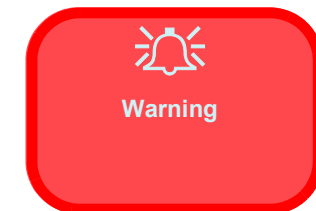
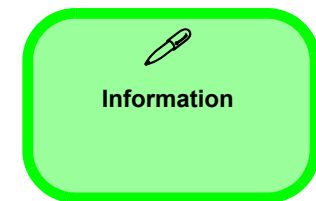
We suggest you completely review any procedure before you take the computer apart.

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 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 Processor:

1. Remove the battery *page 2 - 5*
2. Remove the processor *page 2 - 13*

To remove the HDD:

1. Remove the battery *page 2 - 5*
2. Remove the HDD *page 2 - 6*

To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 7*

To remove the CD Device:

1. Remove the battery *page 2 - 5*
2. Remove the CD Device *page 2 - 9*

To remove the Bluetooth Module:

1. Remove the battery *page 2 - 5*
2. Remove the Bluetooth module *page 2 - 11*

To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the Wireless LAN module *page 2 - 12*

Removing the Battery

1. Turn the computer **off**, and turn it over.
2. Remove screws **1** - **3** (*Figure 1a*) from the battery cover **4**, and remove the cover.
3. Carefully (use a small screwdriver) disconnect the battery cable at point **5** (*Figure 1b*).
4. Lift the battery **6** out of the computer.
5. When replacing the battery, connect the cable first.

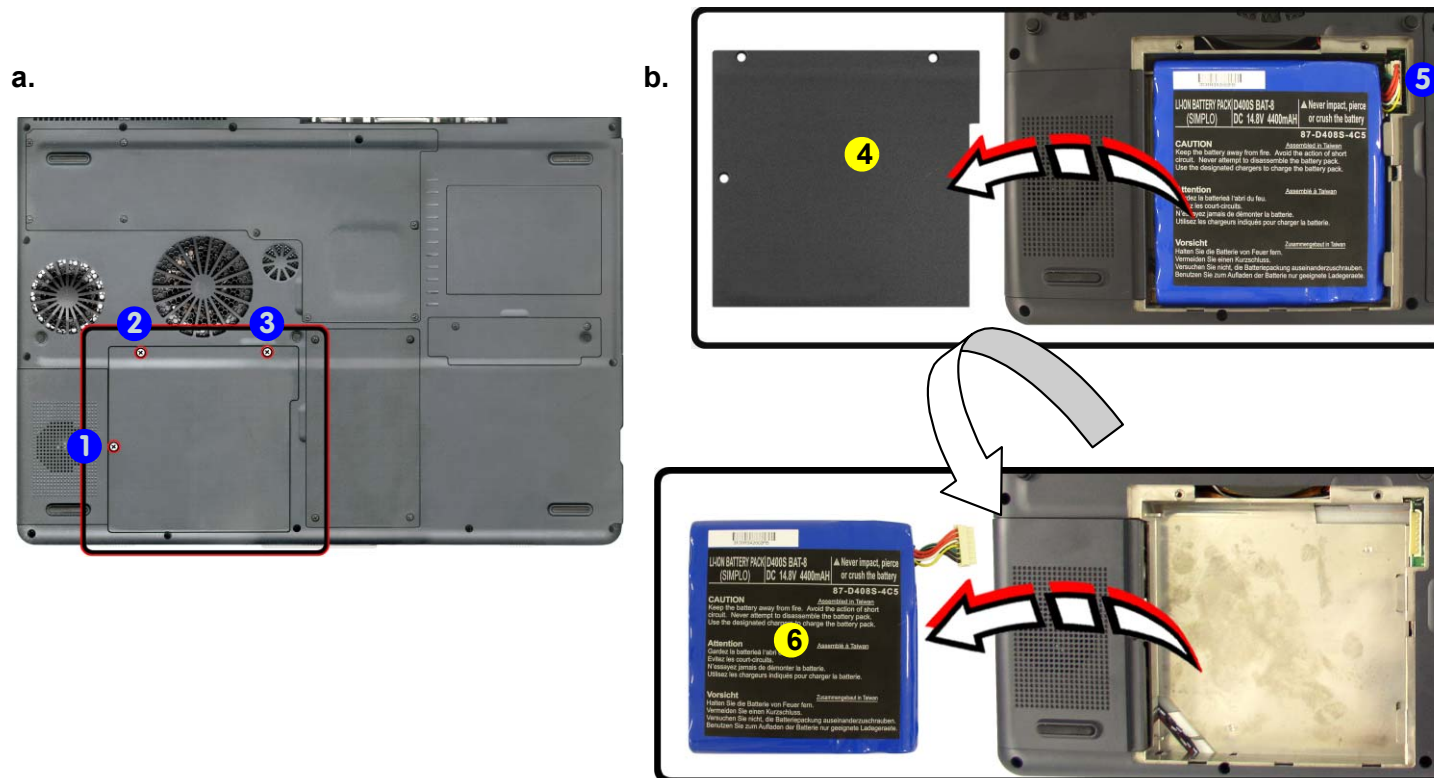
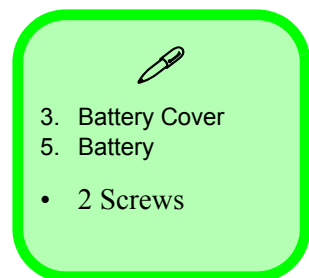


Figure 1
Battery Removal

- Remove the 2 screws and the battery cover.
- Carefully disconnect the battery cable and remove the battery.



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" IDE 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, remove the battery ([page 2 - 5](#)) and turn it over.
2. Remove screws **1** - **4** ([Figure 2a](#)) from the hard disk cover **5**, and remove the cover.
3. Carefully (use a small screwdriver) disconnect the battery cable at point **6** ([Figure 2b](#)).
4. Lift the HDD assembly **7** out of the computer.
5. Reverse the process to install a new hard disk.

Figure 2
**HDD Assembly
Assembly Removal**

- a. Remove the 4 screws.
- b. Disconnect the HDD cable and lift the HDD assembly out of the bay.



HDD System Warning

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

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

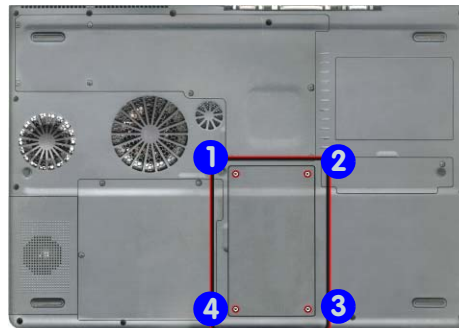
You have all the CD-ROMs and FDDs required to install your operating system and programs.

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

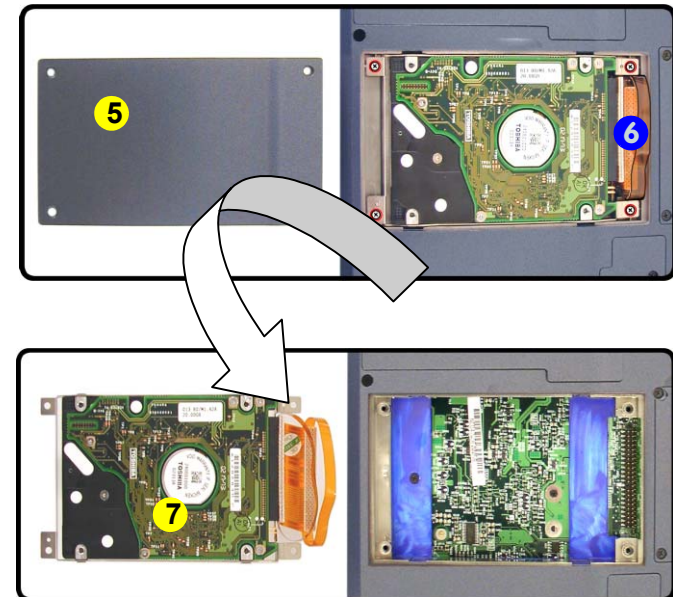


- 5. Hard Disk Cover
- 7. Hard Disk
- 4 Screws

a.



b.



Removing the System Memory (RAM)

The computer has two memory sockets for 200 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR 200/266 MHz. The main memory can be expanded up to 1024MB. The SO-DIMM modules supported are 128Mb, 256Mb, and 512Mb. 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, remove the battery ([page 2 - 5](#)) and turn it over.
2. Remove screws **1** - **8** ([Figure 3a](#)) from the memory socket cover.
3. Carefully lift up the memory socket cover **9** ([Figure 3b](#)) (a fan cable **10** is still attached to the mainboard and you can disconnect it).
4. If there is a module currently installed which needs to be upgraded/replaced then remove it.

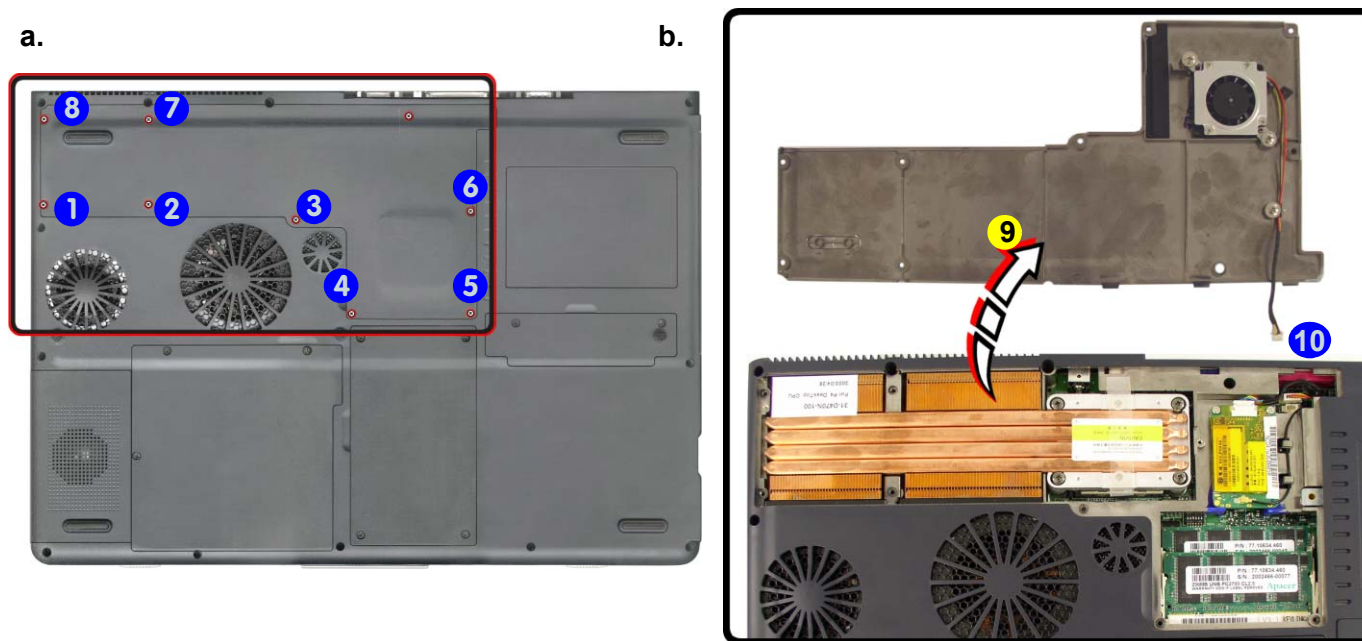


Figure 3
**Memory Socket
Cover Removal**

- Remove the screws.
- Carefully lift the cover off the computer.



- 7. Socket Cover
- 6 Screws

Disassembly

Figure 4 Removing/ Installing a RAM Module

- a. Pull the release latches.
- b. Remove the module.



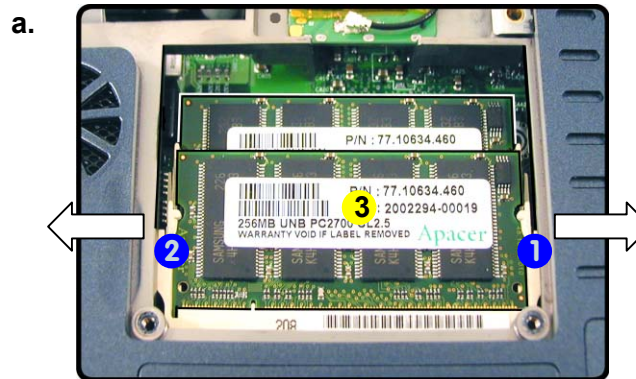
Contact Warning

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.



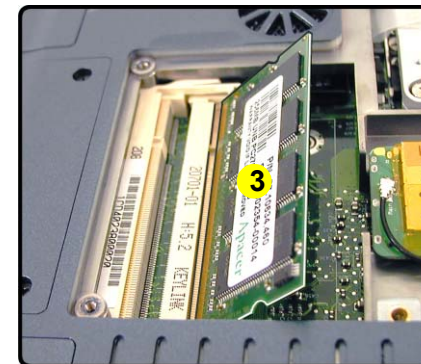
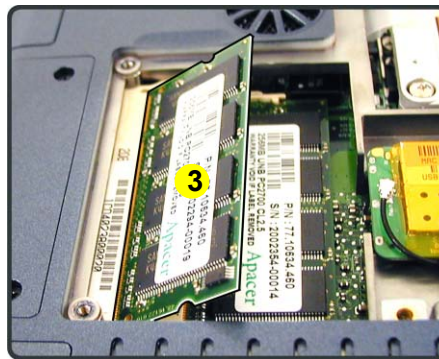
3. RAM Module

5. Gently pull the two release latches (1 & 2) on the sides of the memory socket toward the sides of the computer.



6. The module 3 (Figure 4b) will pop-up, and you can remove it.
7. Repeat the process for the second module if necessary.
8. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
9. The module 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.

b.



10. Press the module down towards the mainboard until the slot levers click into place to secure the module.
11. Replace the memory socket cover (be careful with the fan cable) and the 6 screws (see page 2 - 7).
12. Restart the computer.
13. The BIOS will register the new memory configuration as it starts up.

Removing the CD Device

The easy changeable CD device may be upgraded or changed.

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and turn it over.
2. Remove screws **1** - **8** ([Figure 5a](#)) from the memory socket cover.
3. Carefully lift up the memory socket cover **9** (a fan cable **10** is still attached to the mainboard and you can disconnect it).

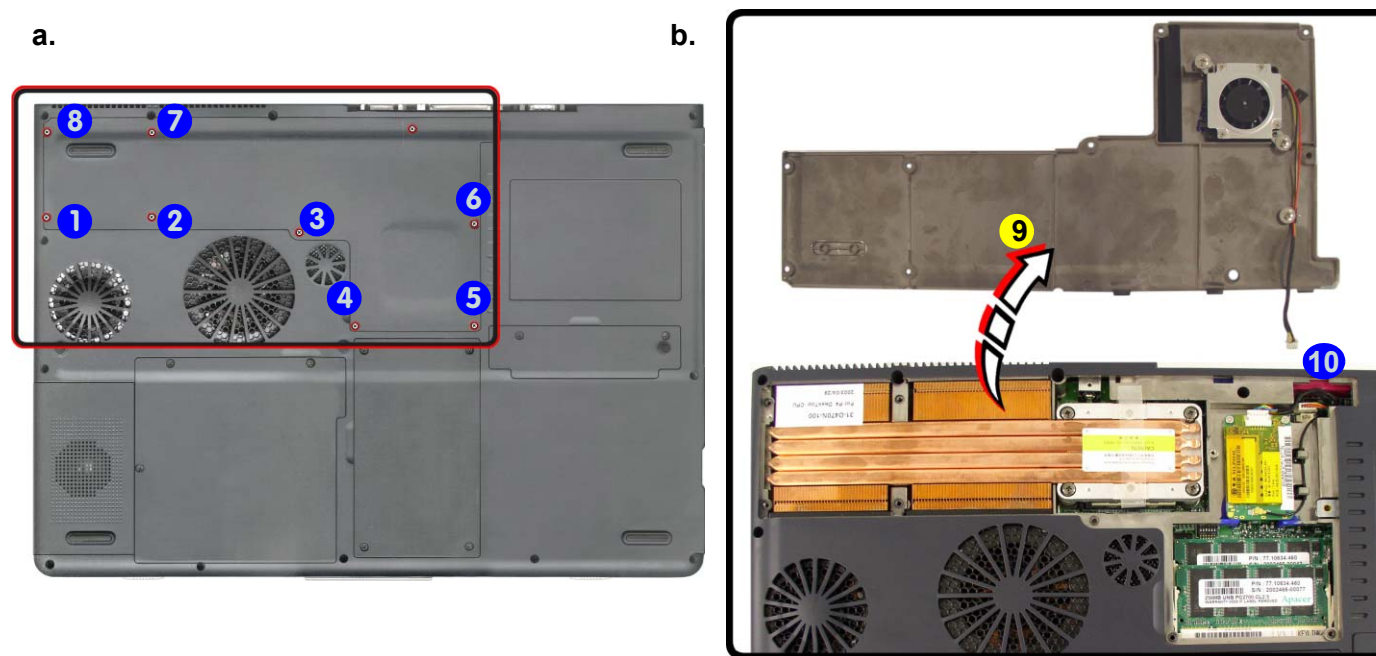


Figure 5
**Memory Socket
Cover Removal**

- Remove the screws.
- Carefully lift the cover off the computer.



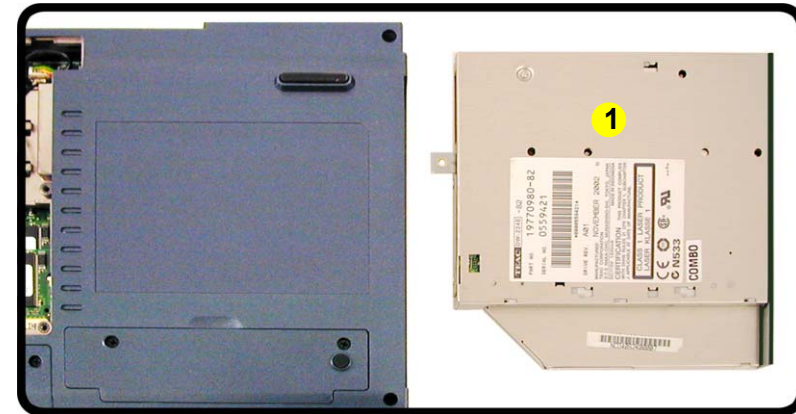
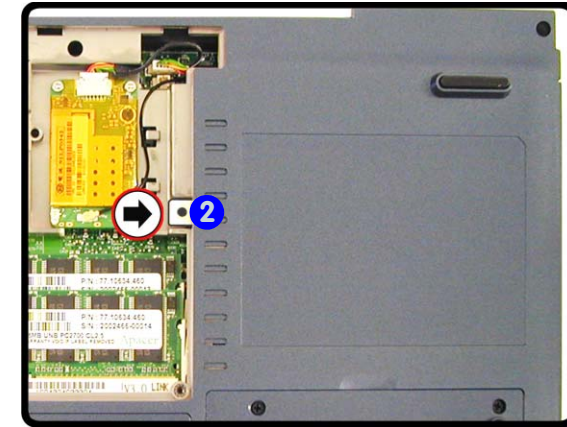
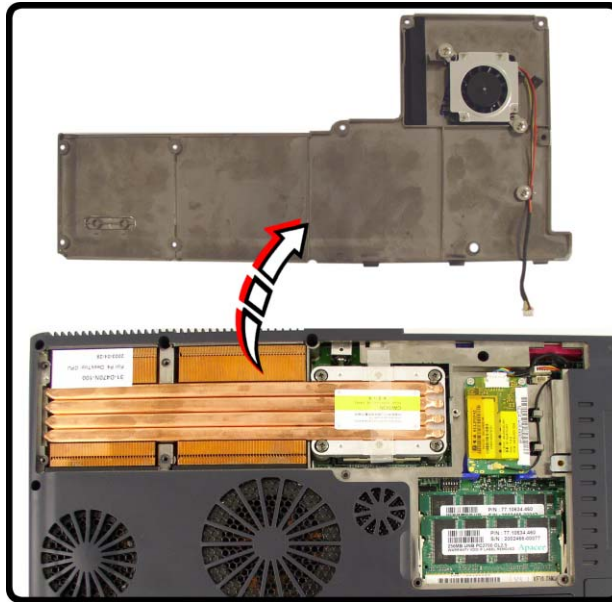
- 7. Socket Cover
- 6 Screws

Disassembly

Figure 6
CD Device Removal

Push the CD device out off the computer at point 2.

- Use a screwdriver to carefully push the CD device assembly **1** out of the computer at point **2**.



1. CD Device

- Insert the new device and carefully slide it into the computer (the device only fits one way. DO NOT FORCE IT; The screw holes should line up.
- Replace the memory socket cover (be careful with the fan cable) and the **6** screws (see [page 2 - 9](#)).
- Restart the computer to allow it to automatically detect the new device.

Removing the Bluetooth Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and turn it over.
2. Remove screws **1** - **2** ([Figure 7a](#)) from the Bluetooth module cover.
3. Carefully lift up the Bluetooth module cover **3** off the computer.
4. Remove screws **3** - **4** ([Figure 7c](#)) and carefully disconnect cables **5** - **6**, then remove the Bluetooth module **9** ([Figure 7d](#)).

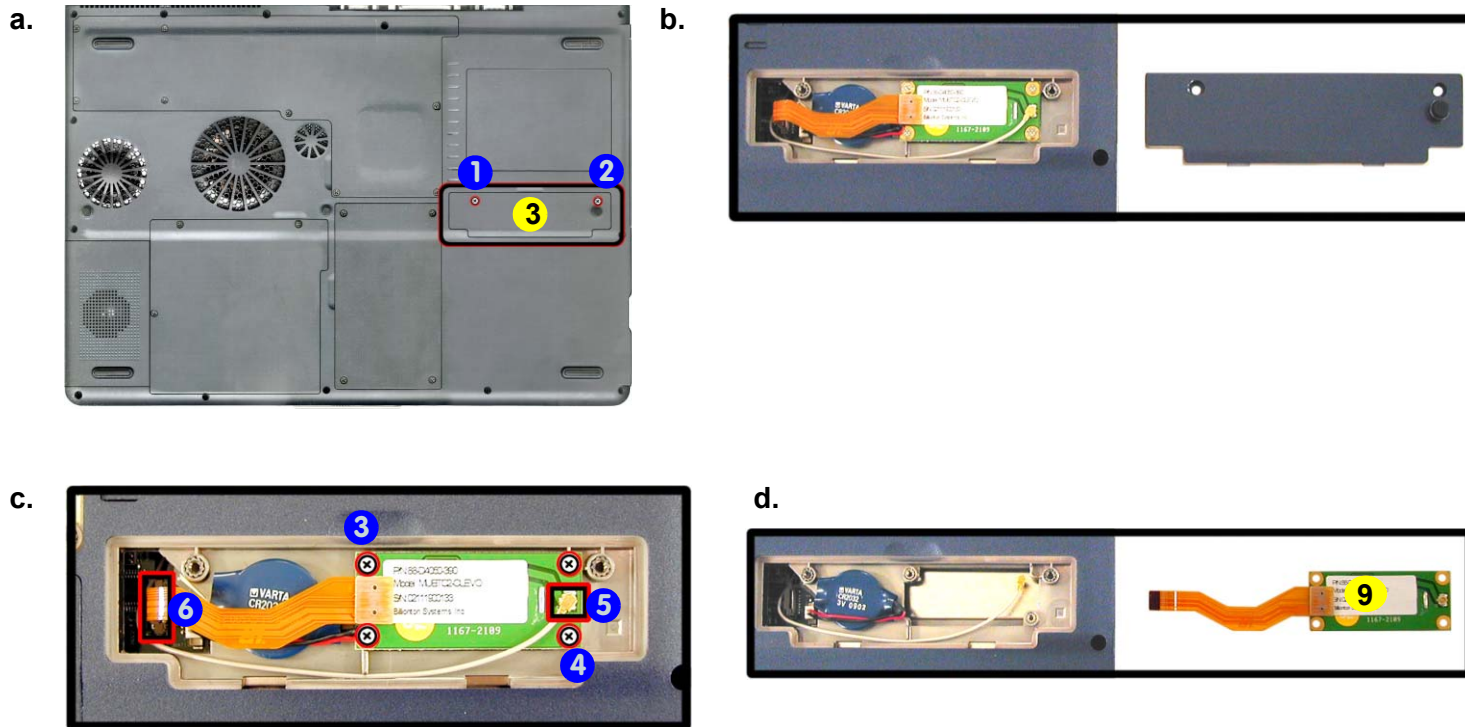



Figure 7
Bluetooth Module Removal

- a. Remove the screws.
- b. Carefully lift the cover off the computer.
- c. Remove the screws and disconnect the cables.
- d. Remove the Bluetooth module.



3. Bluetooth Cover
10. Bluetooth Module

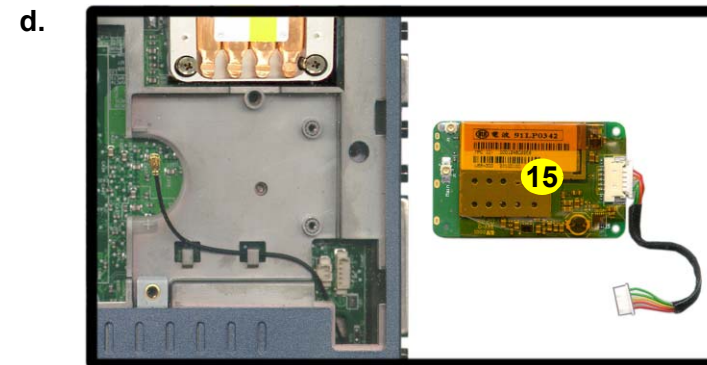
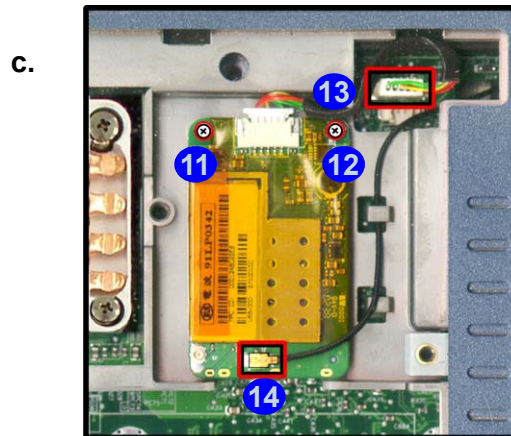
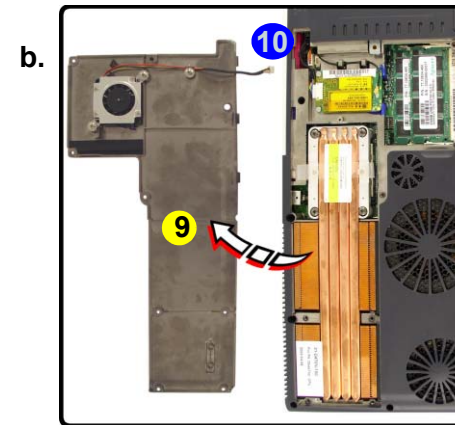
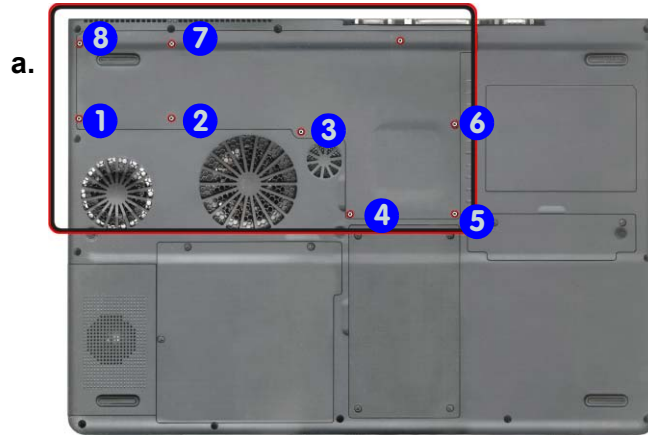
- 6 Screws

Removing the Wireless LAN Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and turn it over.
2. Remove screws **1** - **6** from the memory socket cover.
3. Carefully lift up the memory socket cover **9** (a fan cable **10** is still attached to the mainboard and you can disconnect it).
4. Remove screws **11** - **12** ([Figure 8c](#)), and carefully disconnect cables **13** & **14**.
5. Lift the Wireless LAN module **15** ([Figure 8d](#)) off the computer.

Figure 8
**Wireless LAN
Module Removal**

- a. Remove the screws.
- b. Carefully lift the cover off the computer.



Antenna Cable Connection

When re-inserting a Wireless LAN module, make sure the antenna cable connects to the connector **J1** which is indicated as point **12** in [Figure 8c](#).



7. Socket Cover
13. WLAN Module

- 8 Screws

Removing the Processor

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and turn it over.
2. Remove screws **1** - **6** from the memory socket cover.
3. Carefully lift up the memory socket cover **7** (a fan cable **8** is still attached to the mainboard and you can disconnect it).
4. Remove screws **9** - **12** ([Figure 9c](#)) from the heat sink, **in the order indicated on the label**.
5. Carefully lift up the heat sink **13** ([Figure 9d](#)) off the computer.

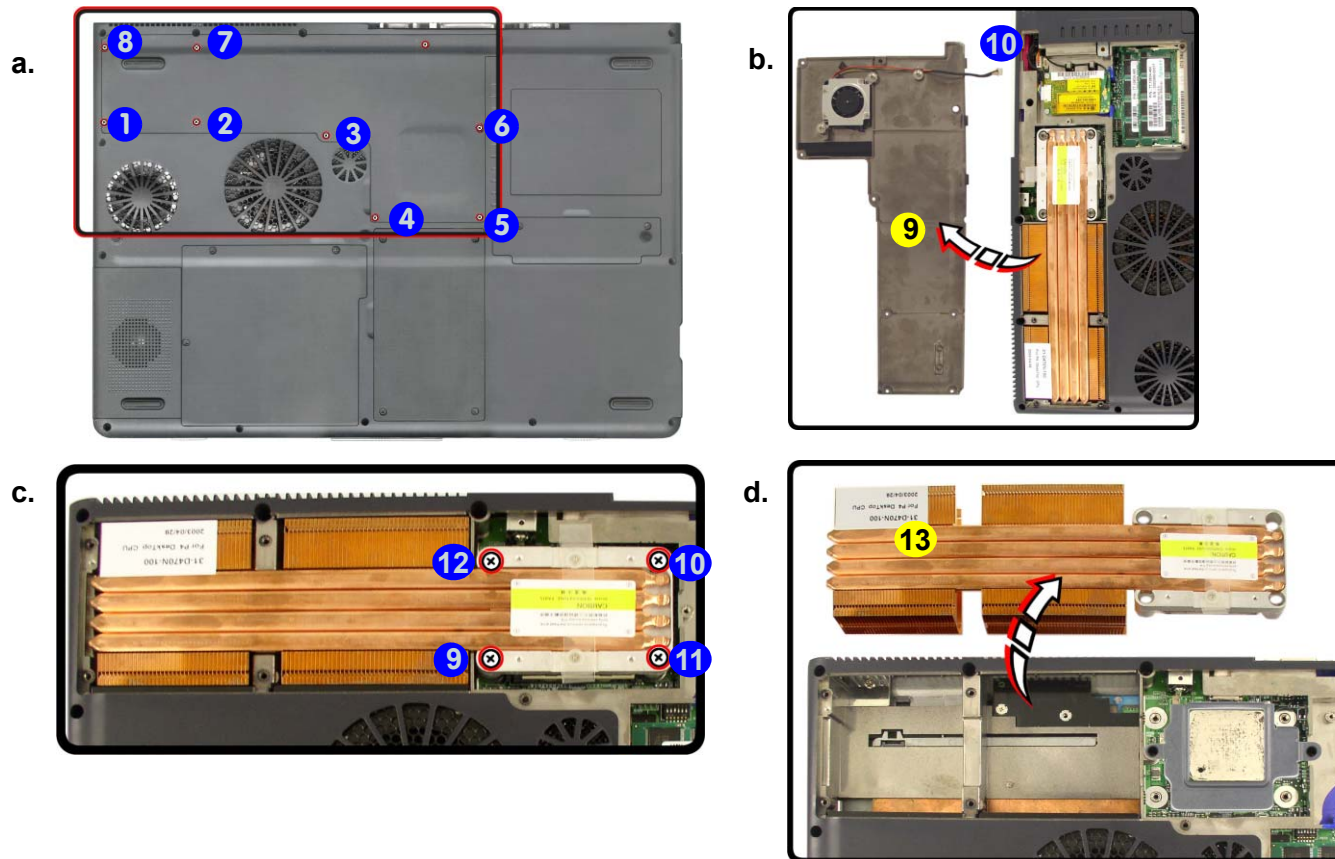


Figure 9
Processor Removal

- Remove the screws.
- Carefully lift the cover off the computer.
- Remove the screws in the order indicated.
- Remove the heat sink.



Reassembly Screw Order

When replacing the heat sink, make sure you insert the screws in the same order indicated on the label.



7. Socket Cover
13. Heat Sink

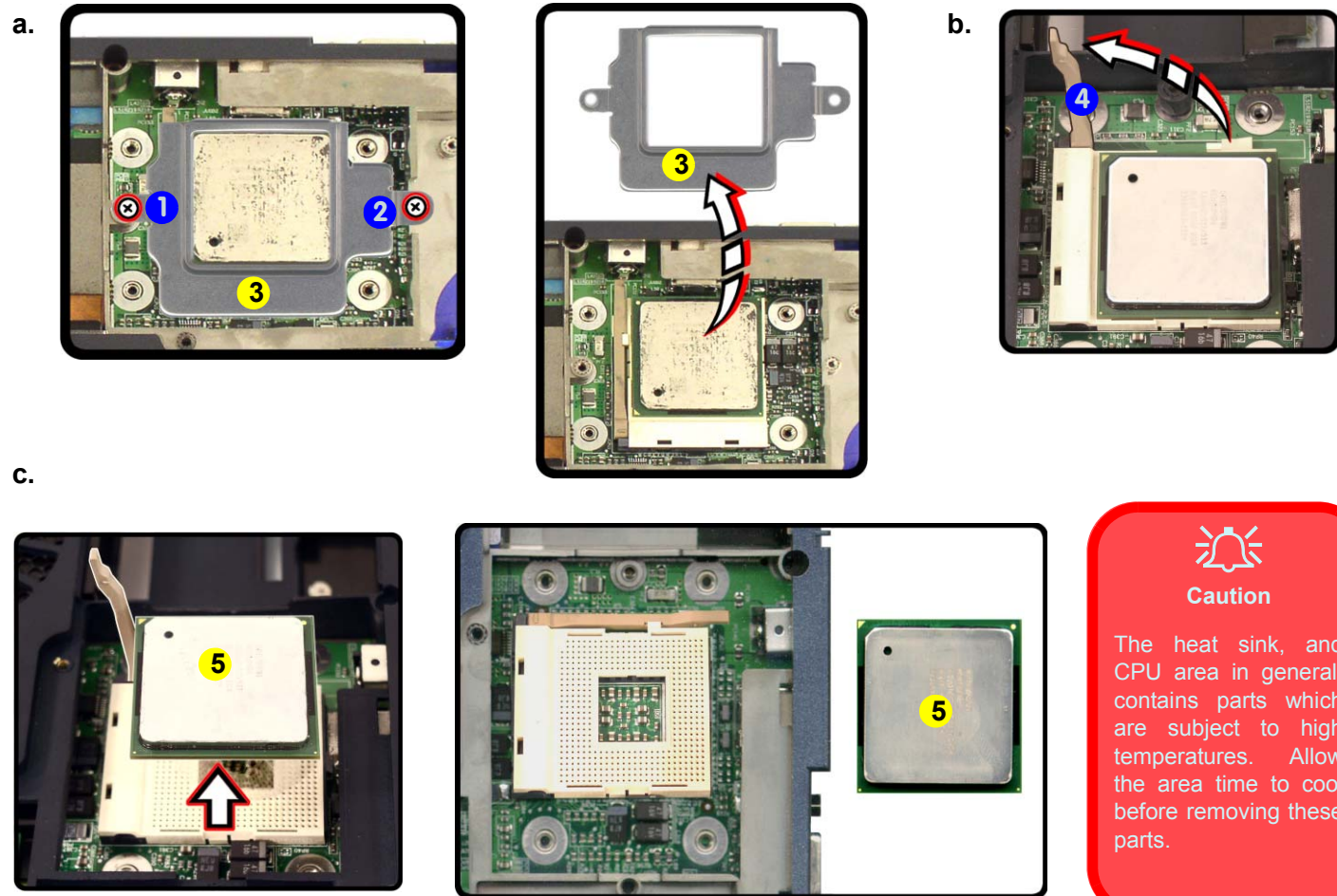
- 10 Screws

Disassembly

6. Remove screws 1 - 2 (Figure 10a) and lift the CPU holder 3 off the computer.
7. Unlock the processor by raising lever 4 (Figure 10b).
8. Lift the CPU 5 (Figure 10c) off the computer.

Figure 10
Processor Removal
(cont'd)

- a. Remove the screws and lift the CPU holder off the computer.
- b. Raise the lever to unlock the CPU.
- c. Lift the CPU off the socket.



Appendix A:Part Lists

This appendix breaks down the *D470W/D480W* 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 1 - 1
Part List Illustration
Location

Part	D470W	D480W
Top	<i>page A - 3</i>	<i>page A - 15</i>
Bottom	<i>page A - 4</i>	<i>page A - 16</i>
LCD 17"	<i>page A - 5</i>	<i>page A - 17</i>
CD-ROM Drive	<i>page A - 6</i>	<i>page A - 18</i>
CD-RW Drive	<i>page A - 7</i>	<i>page A - 19</i>
DVD-ROM Drive	<i>page A - 8</i>	<i>page A - 20</i>
Combo Drive	<i>page A - 9</i>	<i>page A - 21</i>
Card Reader	<i>page A - 10</i>	<i>page A - 22</i>
Sub-Woofer Speaker	<i>page A - 11</i>	<i>page A - 23</i>
TV Tuner	<i>page A - 12</i>	<i>page A - 24</i>
Floppy Disk Drive	<i>page A - 13</i>	<i>page A - 25</i>
Hard Disk Drive	<i>page A - 14</i>	<i>page A - 26</i>

Top (D470W)

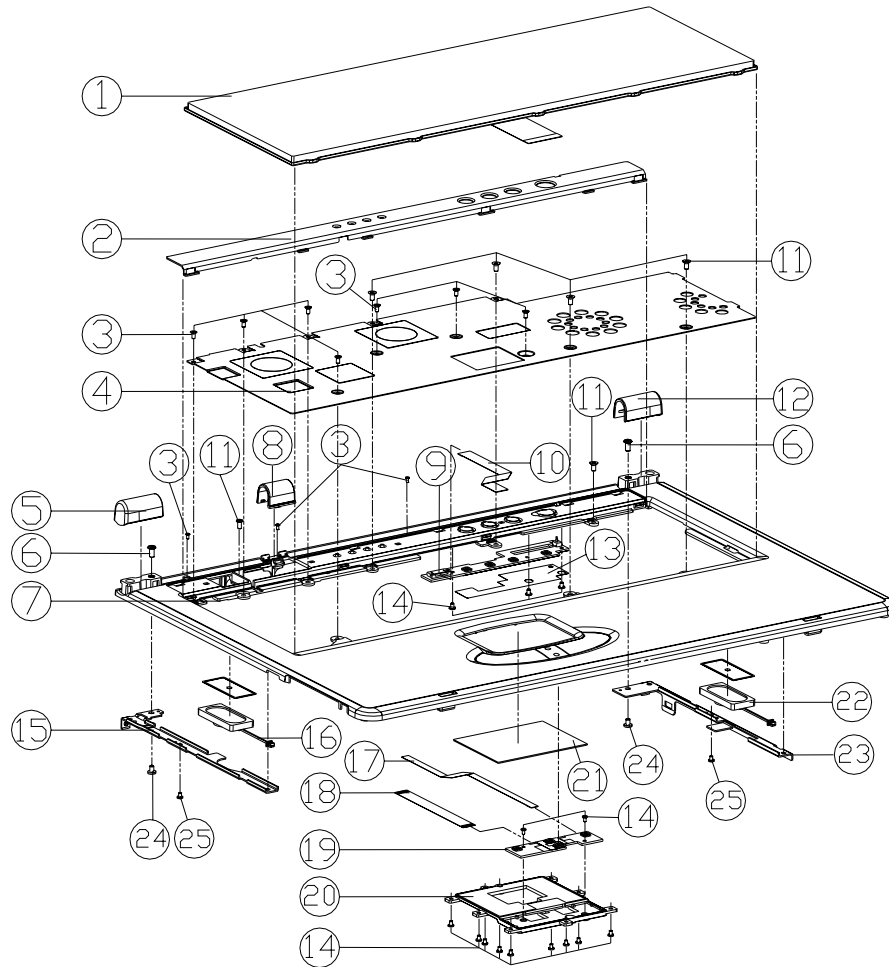
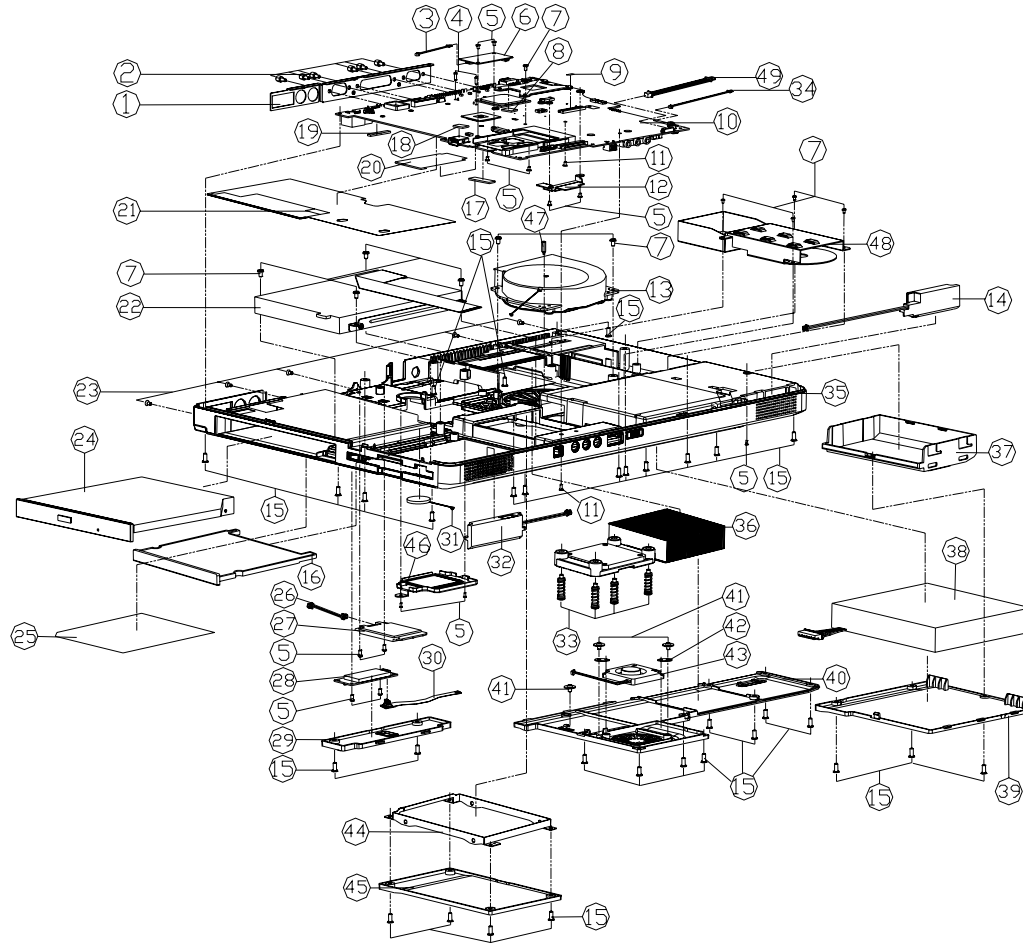


Figure 1
Top (D470W)

ITEM	PART NAME	PART NO	REMARK
1	KEYBOARD	80-D4708-7G0	
2	D470W CENTER COVER	42-D4702-011	
3	SCREW M2*4L F NI ICT NY	35-21120-4RA	
4	D470W KB SHIELDING	33-D4707-011	
5	D470W HINGE COVER(L)	42-D470Y-020	
6	SCREW M3*6L K1 NI ICT NY	35-B1130-6RA	
7	D470W TOP CASE MODULE	39-D4702-011	
8	D470W CONNECTER COVER	42-D4708-011	
9	SWITCH BOARD	77-D400S-D0X	
10	FFC CABLE FOR POWER SWITCH BOARD	43-D4702-010	
11	SCREW M2.5*5L K1 BNI ICT NY	35-B9125-5R0	
12	HINGE COVER (R)	42-D470Y-010	
13	MYLAR FOR FUNCTION BOARD	40-D400S-011	
14	SCREW M2*3L K1 NI ICT NY	35-B1120-3RB	
15	D470W HINGE BRACKET(L)	33-D470Y-041	
16	SPEAKER LEFT 50mm 1W 8?	23-5A410-501	
17	FFC CABLE FOR CLICK BOARD	43-D470S-010	
18	FFC CABLE FOR CLICK TO TOUCH PAD 49M	43-D4000-040	
19	CLICK BOARD	77-D4002-D0X	
20	G/P HOLDER	42-D4002-020	
21	TOUCHPAD ALPS KKGD0F1956A M1905	49-M1902-010	
22	SPEAKER RIGHT 1W 8?	23-5A410-201	
23	D470W HINGE BRACKET(R)	33-D470Y-031	
24	SCREW M3*5L K1 NI ICT NY	35-B1130-5RA	
25	SCREW M2.5*4L K1 BK/D ICT NY	35-B4125-4RA	

Bottom (D470W)

Figure 2
Bottom (D470W)



ITEM	PART NAME	PART NO	REMARK
1	I/O BRACKET	33-D400S-010	
2	HEX STUD(S)M22 NI-PL 11MM	34-07009-011-A	
3	CABLE FOR MDC179M_UK F1-SESACES 8526	43-D400U-012	
4	SCREW M2*6L P BZ ICT NY	35-06120-6RA	
5	SCREW M2*3L KI NI ICT NY	35-B1120-3RB	
6	MDC MODEM+TEL.CABLE MODULE	76-32200-100	
7	SCREW M2.5*5L K1 BNI ICT NY	35-B9125-5R0	
8	GASKET FOR USB(W10mm H2mm L17mm)	47-00190-174	
9	MYLAR(MYLAR251) FOR 85V LCD(SAMSUNG)	40-00150-150	
10	MAIN BOARD	77-D4700-D0X	
11	SCREW M2*4L I BZ ICT NY	35-C6120-4RA	
12	CHDCK SINK FOR MB	33-D40ES-010	
13	FAN MODULE D400S	31-D400S-102	
14	SPK WITH CABLE 165MM R	23-5A420-651	
15	SCREW M2.5*6L K BZ ICT	35-B2125-6R0	
16	PCMCIA DUMMY CARD	42-D470P-010	
17	GASKET FOR LEFT SIDE OF M/B(W10mm H2mm L20mm)	47-00190-30B	
18	GASKET FOR USB CONNECTOR(S10mm H2mm L25mm)	47-00190-157	
19	GASKET FOR PSE AND S-VIBROTOR(S10mm H2mm L25mm)	47-00190-353	
20	PCMCIA MYLAR MYLAR 320	40-32004-000	
21	EMI SHIELDING FOR M/B	47-D400S-021	
22	FDD ASS'Y(OPTION)	79-D400J-010	Reference Assy. No 099-14700-370A
23	SCREW M2*4L F NI ICT NY	35-21120-4RB	
24	CD-ROM OS(SCR-242) ASSY D400S	79-D470Z-000	Reference Assy. No 099-14700-370A
24	DVD-ROM OS(SCR-283) ASSY D400S	79-D470V-000	Reference Assy. No 099-14700-370A
24	CD-RW TEAC(CR-V224E-283) ASSY D400S	79-D470W-000	Reference Assy. No 099-14700-370A
24	COMBO OS(SISW-161) ASSY D400S	79-D470X-000	Reference Assy. No 099-14700-370A
25	PRODUCT LABEL D470W	45-D4703-010	
26	WIRE CABLE FOR MAIN BD TO WLAN USB BD	43-D4000-070	
27	WLAN 802.11 b USB INTERFACE USB-300	88-D4020-380	
28	BLUETOOTH MODULE V11 USB INTERFACE(OS)	88-18250-370	
29	D470W BLUETOOTH COVER MODULE	42-D470B-100	
30	FPC CABLE FOR MAIN BD TO BLUETOOTH BD 840	43-D4000-011	
31	BAT 2000 3V 230mAh V(CABLE SWM CR2032/230HP)	23-22015-P2B	
32	SPK WITH CABLE BOMM L	23-5A420-800	
33	SCREW M2.5*4.5P#155 dl-35 L-155 S-125	35-49025-155	
34	WIRE CABLE 2PIN SUB WOODFER	43-D4701-010	
35	BOTTOM CASE MODULE	39-D4703-011	
36	HEAT SINK MODULE	31-D40EN-100	
37	CARD READER ASS'Y(OPTION)	79-D470R-010	
37	TV TUNER ASS'Y(OPTION)	79-D470T-010	
37	SUB SPEAKER ASS'Y(OPTION)	79-D470S-010	
37	DUMMY CASE ASS'Y(OPTION)	79-D470D-010	
38	Smart batt 452P 148V 4400MAH(SMP)	87-D408S-4DS	
38	Smart batt 452P 148V 4400MAH(G/LD)	87-D408S-4E5	
39	BATTERY COVER	42-D470M-011	
40	CPU COVER MODULE	42-D470S-101	
41	SCREW M2.5*2.5L B NI ICT W/WAS NY	35-41025-2R5	
42	FAN BRACKET	33-D400S-060	
43	FAN 35*35*6T	23-A3510-463	
44	HDD BRACKET	33-D4001-010	
45	D470W HDD COVER MODULE	42-D4701-100	
46	CPU HOLDER	33-D40ES-030	
47	STUD2.5*4M-NI	34-D4703-011	
48	D470W SECOND FAN BRACKET	33-D470S-020	
49	WIRE CABLE CARD RE	43-D470E-010	

LCD 17" (D470W)

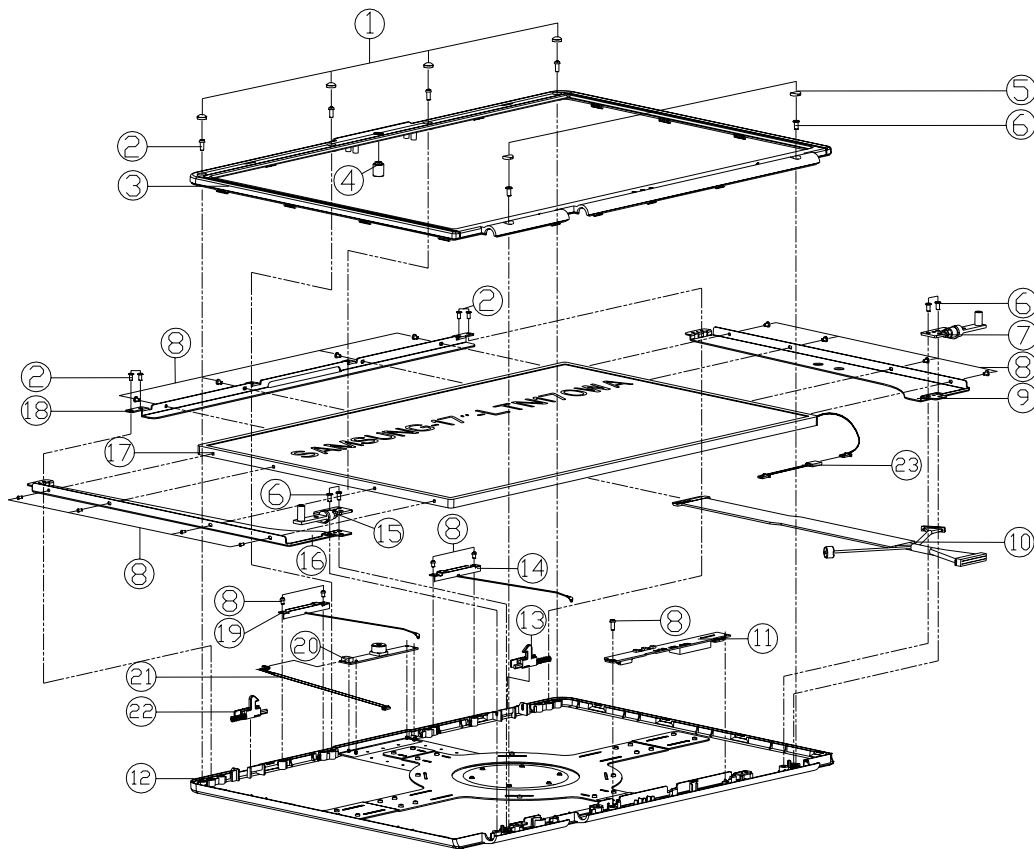


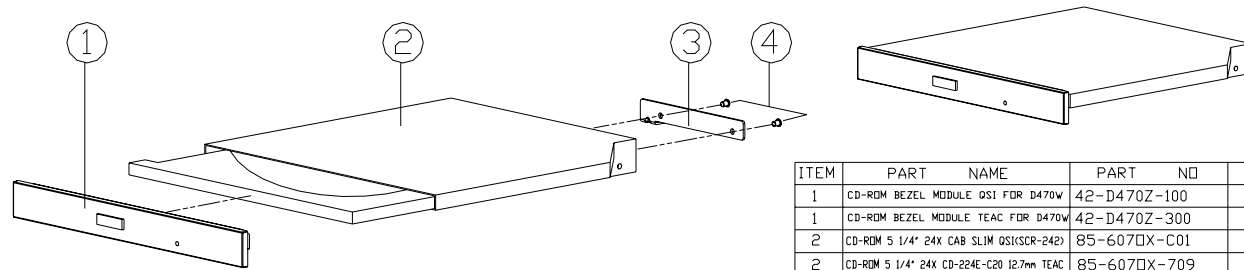
Figure 3
LCD 17" (D470W)

ITEM	PART NAME	PART NO	REMARK
1	RUBBER FOR LCD (TOP)	47-56P32-010	
2	SCREW M2*4L I BZ ICT NY	35-C6120-4RA	
3	D470W DISPLAY FRONT PANEL MODULE	39-D4701-101	
4	D470W CCD ORNAMENT RUBBER	47-D4701-010	
5	DISPLAY RUBBER PAD (DOWN)	47-D4001-020	
6	SCREW M3*6L K1 NI ICT NY	35-B1130-6RA	
7	D470W HINGE (R)	33-D470Y-010	
8	SCREW M2*3L K1 NI ICT NY	35-B1120-3RA	
9	D470W LCD BRACKET (R) FOR SAMSUNG	33-D4701-030	
9	D470W LCD BRACKET (R) FOR LG	33-D4701-011	
10	WIRE CABLE FOR SAMSUNG LTN170WA-L01 17.1"	43-D4701-020	
10	WIRE CABLE FOR LG LP171W01 17.1" WGA LGR	43-D4701-011-P	
11	INVERTER BOARD	77-4200R-D02-1	
12	D470W DISPLAY BACK PANEL MODULE	39-D4701-201	
13	D470W HOOK KINDB (R) MODULE	42-D4702-700	
14	ANTENNA 24G PIFA FOR WLAN DB-13W L173W	23-742R4-B30	
15	D470W HINGE (L)	33-D470Y-020	
16	D470W LCD BRACKET (L) FOR SAMSUNG	33-D4701-040	
16	D470W LCD BRACKET (L) FOR LG	33-D4701-021	
17	LCD 17" SAMSUNG LTN170WA-L01(1440*900)	50-M7262-M00	
17	LCD 17" LG LP171W01(WGA) 1440*900	50-N7265-L00	
18	D470W BACK CASE BRACKET (TOP)	33-D4701-181	
19	ANTENNA 24G PIFA FOR BLUETOOTH DB-13W L	23-742R4-B20	
20	VIDEO CAMERA CM3030, 300K Pixels Resolu	88-D40C0-410	OPTION
21	WIRE CABLE MAIN BB TO CCD MODULE V180	43-D4000-060	
22	D470W HOOK KINDB MODULE (L)	42-D4702-800	
23	WIRE CABLE CONVERTER	43-56P01-090	

A.Part Lists

CD-ROM Drive (D470W)

Figure 4
CD-ROM Drive
(D470W)



ITEM	PART NAME	PART NO	REMARK
1	CD-ROM BEZEL MODULE OSI FOR D470W	42-D470Z-100	
1	CD-ROM BEZEL MODULE TEAC FOR D470W	42-D470Z-300	
2	CD-ROM 5 1/4" 24X CAB SLIM OS(SCR-242)	85-607DX-C01	
2	CD-ROM 5 1/4" 24X CD-224E-C20 12.7mm TEAC	85-607DX-709	
3	CDROM LOCK BRACKET	33-D400Z-010	
4	SCREW M2*3L K1 NI ICT NY	35-B1120-3RB	

CD-RW Drive (D470W)

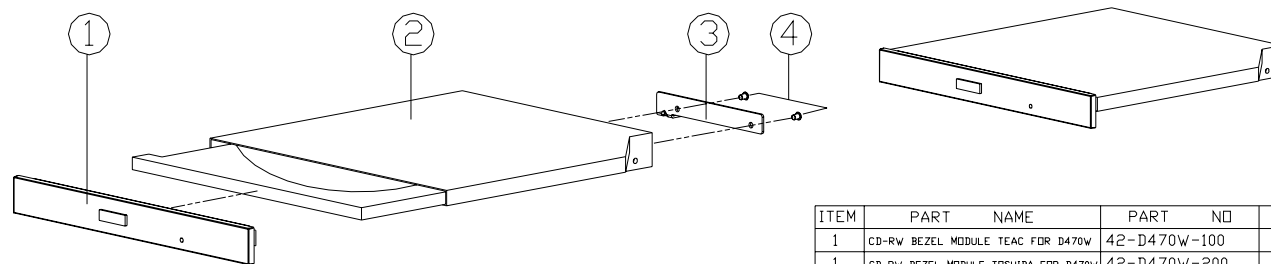


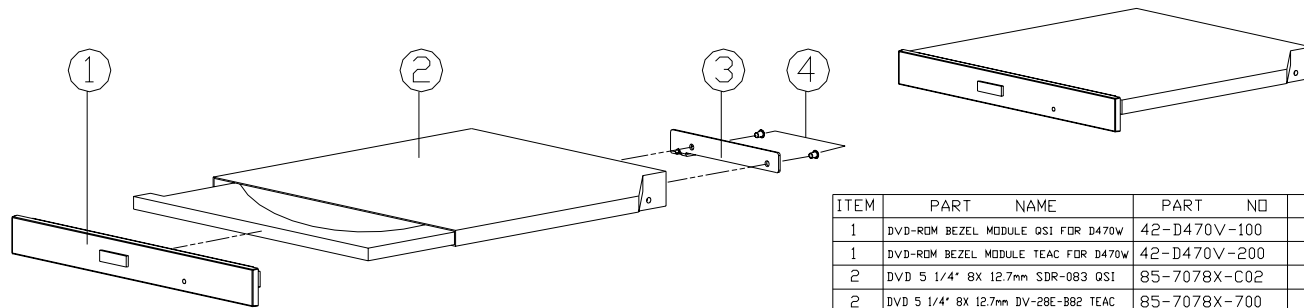
Figure 5
CD-RW Drive
(D470W)

ITEM	PART NAME	PART NO	REMARK
1	CD-RW BEZEL MODULE TEAC FOR D470W	42-D470W-100	
1	CD-RW BEZEL MODULE TOSHIBA FOR D470W	42-D470W-200	
2	CD-R/W 5 1/4" 24X CD-W224E-A82 12.7mm TEAC	85-807□X-700	
2	CD-R/W 5 1/4" 16X SR-CB102 12.7mm TOSHIBA	85-807GX-T00	
3	CDROM LOCK BRACKET	33-D400Z-010	
4	SCREW M2*3L KI NI ICT NY	35-B1120-3RB	

A.Part Lists

DVD-ROM Drive (D470W)

Figure 6
DVD-ROM Drive
(D470W)



ITEM	PART NAME	PART NO	REMARK
1	DVD-ROM BEZEL MODULE OSI FOR D470W	42-D470V-100	
1	DVD-ROM BEZEL MODULE TEAC FOR D470W	42-D470V-200	
2	DVD 5 1/4" 8X 12.7mm SDR-083 OSI	85-7078X-C02	
2	DVD 5 1/4" 8X 12.7mm DV-28E-B82 TEAC	85-7078X-700	
3	CDROM LOCK BRACKET	33-D400Z-010	
4	SCREW M2*3L K1 NI ICT NY	35-B1120-3RB	

Combo Drive (D470W)

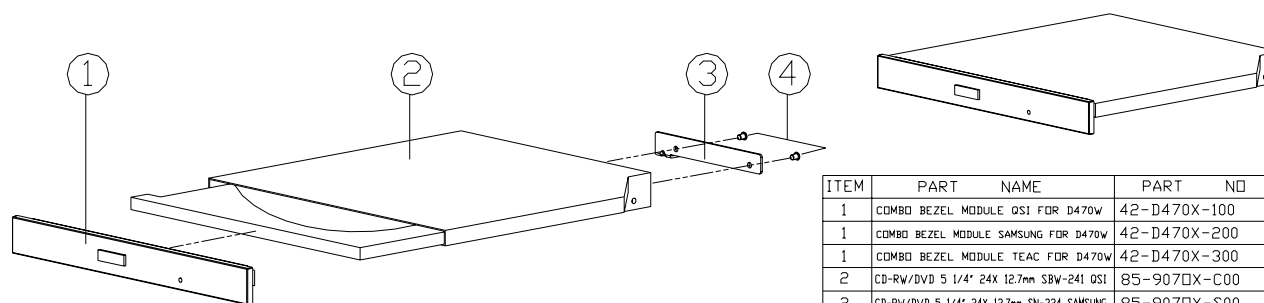


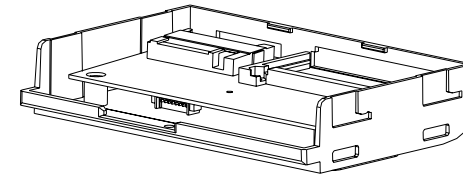
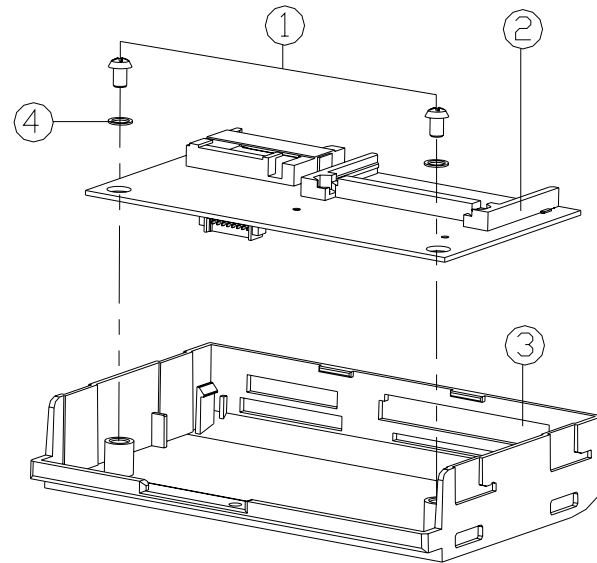
Figure 7
Combo Drive
(D470W)

ITEM	PART NAME	PART NO	REMARK
1	COMBO BEZEL MODULE OSI FOR D470W	42-D470X-100	
1	COMBO BEZEL MODULE SAMSUNG FOR D470W	42-D470X-200	
1	COMBO BEZEL MODULE TEAC FOR D470W	42-D470X-300	
2	CD-RW/DVD 5 1/4" 24X 12.7mm SBW-241 OSI	85-9070X-C00	
2	CD-RW/DVD 5 1/4" 24X 12.7mm SN-324 SAMSUNG	85-9070X-S00	
2	CD-RW/DVD 5 1/4" 24X 12.7mm DW-224E-82 TEAC	85-9070X-700	
3	CDROM LOCK BRACKET	33-D400Z-010	
4	SCREW M2*3L K1 NI ICT NY	35-B1120-3RB	

A.Part Lists

Card Reader (D470W)

Figure 8
Card Reader
(D470W)



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2.5*SL K1 BNI ICT NY	35-B9125-5R0	
2	CARD READER ASS'Y(OPTION)	79-D470R-010	
3	CARD READER CASE MODULE	42-D470E-101	
4	PLASTIC WASHER D7 ø2.65 t2	42-D470E-A10	

Sub-Woofer Speaker (D470W)

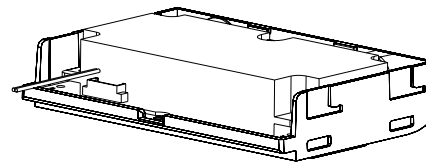
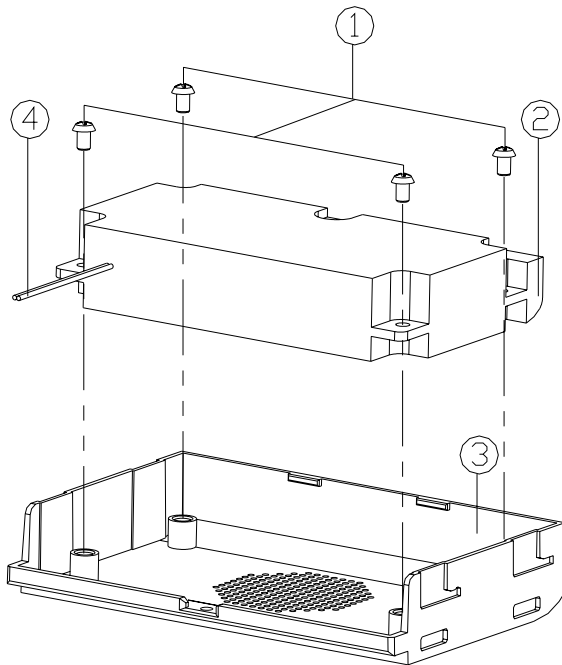
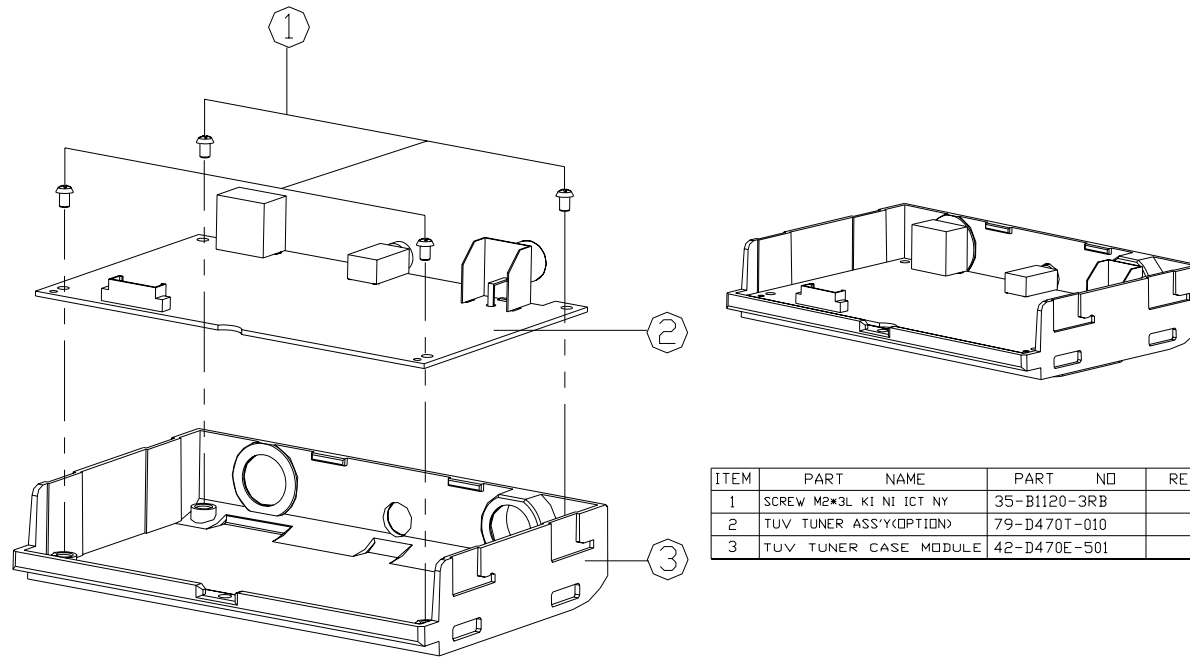


Figure 9
Sub-Woofer
Speaker (D470W)

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2.5*5L KI BNI ICT NY	35-B9125-5R0	
2	SHIM FOR SPEAKER	40-18N0T-010	
3	SUB SPEAKER CASE MODULE	42-D470E-401	
4	SPK WITH CABLE 35MM 3W	23-5A430-351	

TV Tuner (D470W)

Figure 10
TV Tuner (D470W)



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*3L KI NI ICT NY	35-B1120-3RB	
2	TUV TUNER ASS'Y<OPTION>	79-D470T-010	
3	TUV TUNER CASE MODULE	42-D470E-501	

Floppy Disk Drive (D470W)

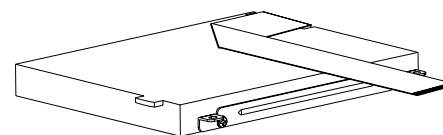
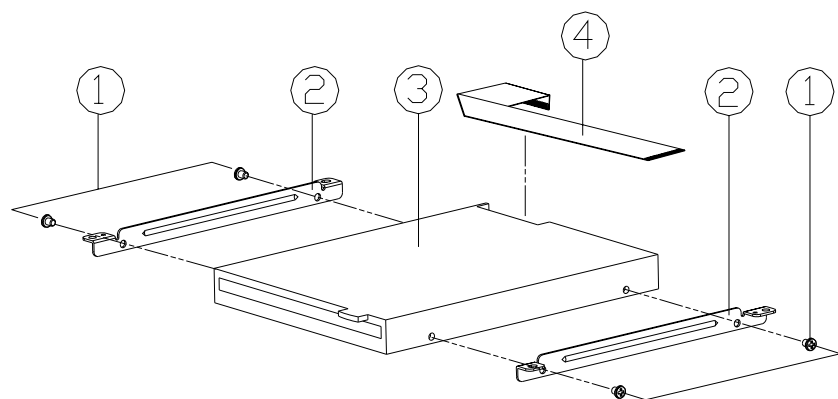


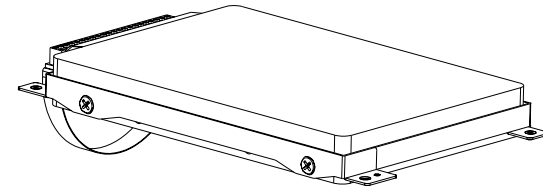
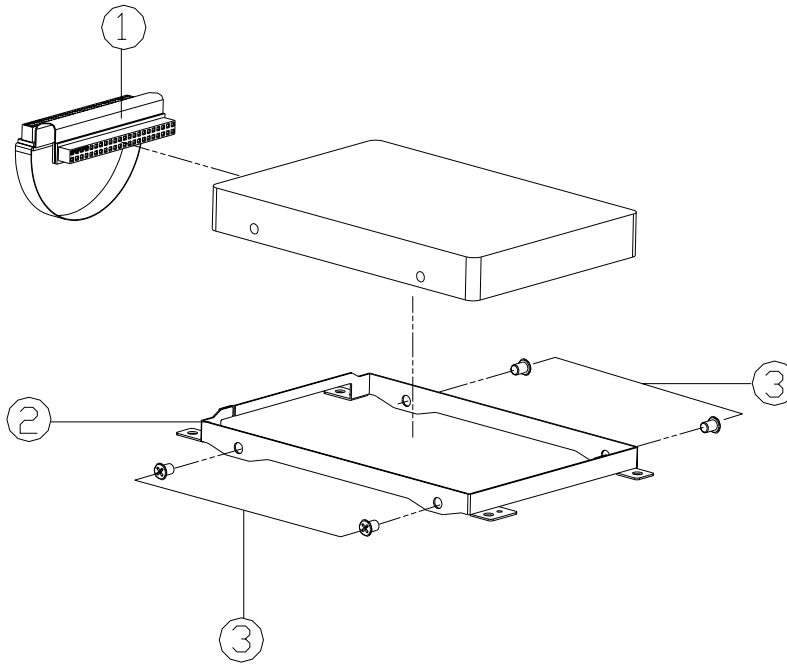
Figure 11
Floppy Disk Drive
(D470W)

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2.5*3L KI BK/D.NY	35-B4125-3RA	
2	FDD BRACKET	33-D400J-010	
3	FDD 3.5" 1.44MB 12.7mm (YD-702J-6637J)	85-11700-Y01-01	
4	FFC CABLE FOR MAIN BD TO FDD 180MM	43-D4000-050	

A.Part Lists

Hard Disk Drive (D470W)

Figure 12
HDD Drive
(D470W)



ITEM	PART NAME	PART NO	REMARK
1	FPC CABLE FOR HD TO MAIN BD., 30MM,8980	43-88800-010	
2	HDD BRACKET	77-22004-D03A	
3	SCREW M3*4L KI BZ ICT NY	35-B6130-4RB	

Top (D480W)

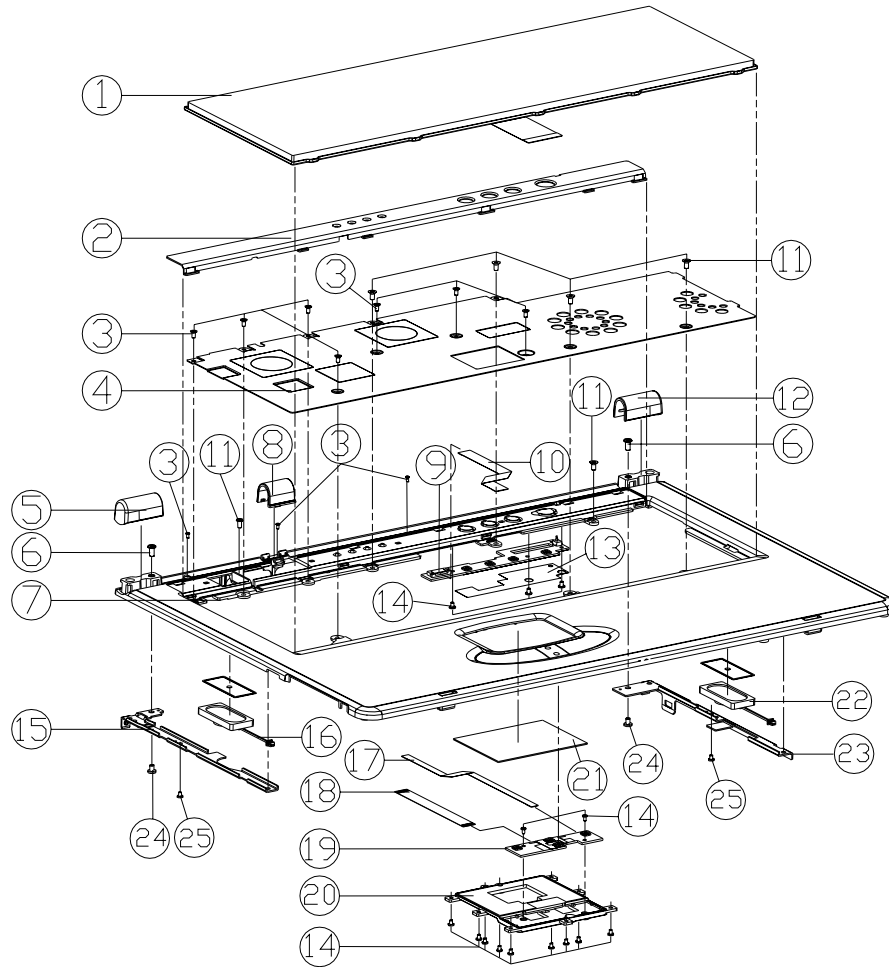


Figure 13
Top (D480W)

ITEM	PART NAME	PART NO	REMARK
1	KEYBOARD	80-D4708-7G0	
2	D470W CENTER COVER	42-D4702-012	
3	SCREW M2*4L F NI ICT NY	35-21120-4RA	
4	D470W KB SHIELDING	33-D4707-012	
5	D480W HINGE COVER(L)	42-D480Y-020	
6	SCREW M3*6L K1 NI ICT NY	35-B1130-6RA	
7	D480W TOP CASE MODULE	39-D4802-012	
8	D480W CONNECTER COVER	42-D4808-010	
9	SWITCH BOARD	77-D4005-DOX	
10	FFC CABLE FOR POWER SWITCH BOARD	43-D4702-010	
11	SCREW M2.5*5L K1 BNI ICT NY	35-B9125-5R0	
12	D480W HINGE COVER (R)	42-D480Y-010	
13	MYLAR FOR FUNCTION BOARD	40-D400S-011	
14	SCREW M2*3L K1 NI ICT NY	35-B1120-3RB	
15	D470W HINGE BRACKET(L)	33-D470Y-041	
16	SPEAKER LEFT 50mm 1W 8?	23-5A410-501	
17	FFC CABLE FOR CLICK BOARD	43-D470S-010	
18	FFC CABLE FOR CLICK TO TOUCH PAD 45MM	43-D4000-040	
19	CLICK BOARD	77-D4002-DOX	
20	G/P HOLDER	42-D4002-020	
21	TOUCHPAD ALPS KKGDF1956A M190S	49-M1902-010	
22	SPEAKER RIGHT 1W 8?	23-5A410-201	
23	D470W HINGE BRACKET(R)	33-D470Y-031	
24	SCREW M3*5L K1 NI ICT NY	35-B1130-5RA	
25	SCREW M2.5*4L K1 BK/D ICT NY	35-B4125-4RA	

Bottom (D480W)

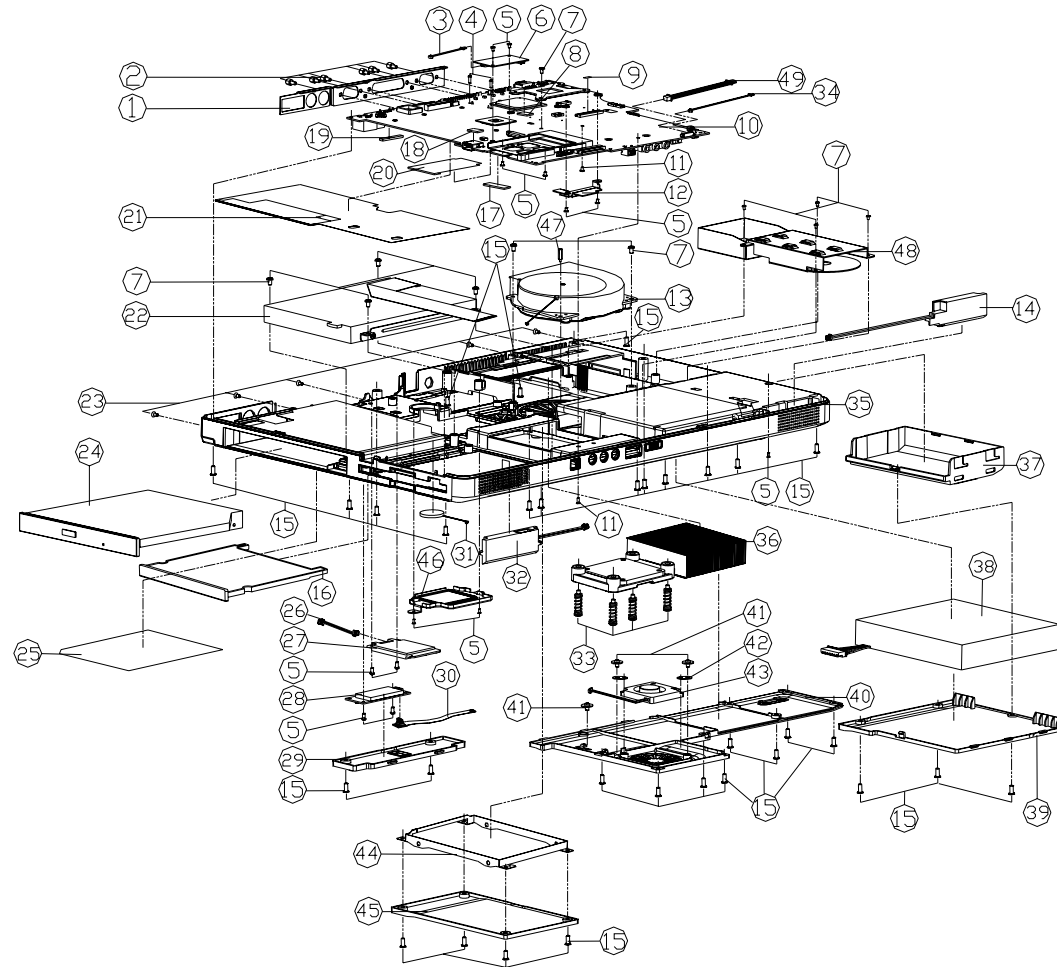


Figure 14
Bottom (D480W)

A.Part Lists

ITEM	PART NAME	PART NO	REMARK
1	I/O BRACKET	33-D400S-010	
2	HEX STUD(SUM22 NI-PL) 11MM	34-07009-011-A	
3	CABLE FOR MDC175MM, IAE FI-252ACES 8506	43-D400U-012	
4	SCREW M2*6L P BZ ICT NY	35-06120-6RA	
5	SCREW M2*6L KI NI ICT NY	35-B1120-3RB	
6	MDC MODEM+TEL.CABLE MODULE	76-32200-100	
7	SCREW M2.5*5L KI BNI ICT NY	35-B9125-5R0	
8	GASKET FOR USB(W10mm H2mm L17mm)	47-00190-174	
9	MYLAR(5*6*25U) FOR 85V LC(BSAGUNG)	40-00150-150	
10	MAIN BOARD	77-D4700-DOX	
11	SCREW M2*4L I BZ ICT NY	35-C6120-4RA	
12	CHOCK SINK FOR MB	33-D40ES-010	
13	FAN MODULE D400S	31-D400S-102	
14	SPK WITH CABLE 165MM R	23-SA420-651	
15	SCREW M2.5*6L K BZ ICT	35-82125-6R0	
16	PCMCIA DUMMY CARD	42-D480P-010	
17	GASKET FOR LEFT SIDE OF M/B(W10mm H3mm L30mm)	47-00190-30B	
18	GASKET FOR USB CONNECTION(W10mm H3mm L30mm)	47-00190-157	
19	GASKET FOR PS2 AND S-VIDEO(W10mm H3mm L30mm)	47-00190-353	
20	PCMCIA MYLAR MYLAR 320	40-32004-000	
21	EMI SHIELDING FOR M/B	47-D400S-021	
22	FDD ASS'Y(OPTION)	79-D400J-010	Reference Assy. Ver. (99-D480S-164)
23	SCREW M2*4L F NI ICT NY	35-21120-4RB	
24	CD-ROM OS(SCR-242) ASS'Y D480W	79-D480Z-000	Reference Assy. Ver. (99-D480S-071)
24	DVD-ROM OS(SCR-083) ASS'Y D480W	79-D480V-000	Reference Assy. Ver. (99-D480S-080)
24	CD-RW TEAC(CD-V22AE-482) ASS'Y D480W	79-D480W-000	Reference Assy. Ver. (99-D480S-090)
24	COMBO OS(SBW-161) ASS'Y D480W	79-D480X-000	Reference Assy. Ver. (99-D480S-100)
24	DVD-RW TOSHIBA(SB-R602) ASS'Y D480W	79-D480U-000	Reference Assy. Ver. (99-D480S-110)
25	PRODUCT LABEL D480W	45-D4803-010	
26	WIRE CABLE FOR MAIN BD TO WLAN USB BD	43-D4000-070	
27	WLAN 802.11 b USB INTERFACE USB-300	88-D4020-380	
28	BLUETOOTH MODULE V11 USB INTERFACE(USD)	88-18250-370	
29	D480W BLUETOOTH COVER MODULE	42-D480B-100	
30	FPC CABLE FOR MAIN BD TO BLUETOOTH BD D400	43-D4000-011	
31	BAT 2000 3V 230MAH W/CABLE 5MM (2003-0730P)	23-22015-P2B	
32	SPK WITH CABLE 80MM L	23-SA420-800	
33	SCREW M2.5*4.5PH155 dl-35 L155 S125	35-49025-155	
34	WIRE CABLE 2PIN SUB W/OFFER	43-D470T-010	
35	BOTTOM CASE MODULE	39-D4803-010	
36	HEAT SINK MODULE	31-D40EN-101	
37	CARD READER ASS'Y(OPTION)	79-D480R-010	Reference Assy. Ver. (99-D480S-120)
37	TV TUNER ASS'Y(OPTION)	79-D480T-010	Reference Assy. Ver. (99-D480S-130)
37	SUB SPEAKER ASS'Y(OPTION)	79-D480S-010	Reference Assy. Ver. (99-D480S-140)
37	DUMMY CASE ASS'Y(OPTION)	79-D480D-010	Reference Assy. Ver. (99-D480S-150)
38	Smart batt 452P 148V 4400MAH(SMP)	87-D408S-4D5	
38	Smart batt 452P 148V 4400MAH(G/LD)	87-D408S-4E5	
39	BATTERY COVER	42-D480M-011	
40	CPU COVER MODULE	42-D480S-100	
41	SCREW M2.5*2.5L 8 NI ICT W/WAS NY	35-41025-2R5	
42	FAN BRACKET	33-D400S-060	
43	FAN 35*35*6T	23-A3510-463	
44	HDD BRACKET	33-D4001-010	
45	D480W HDD COVER MODULE	42-D4801-100	
46	CPU HOLDER	33-D40ES-030	
47	STUD2.5*4M-NI	34-D4703-011	
48	D470W SECOND FAN BRACKET	33-D470S-020	
49	WIRE CABLE CARD RE	43-D470E-010	

LCD 17" (D480W)

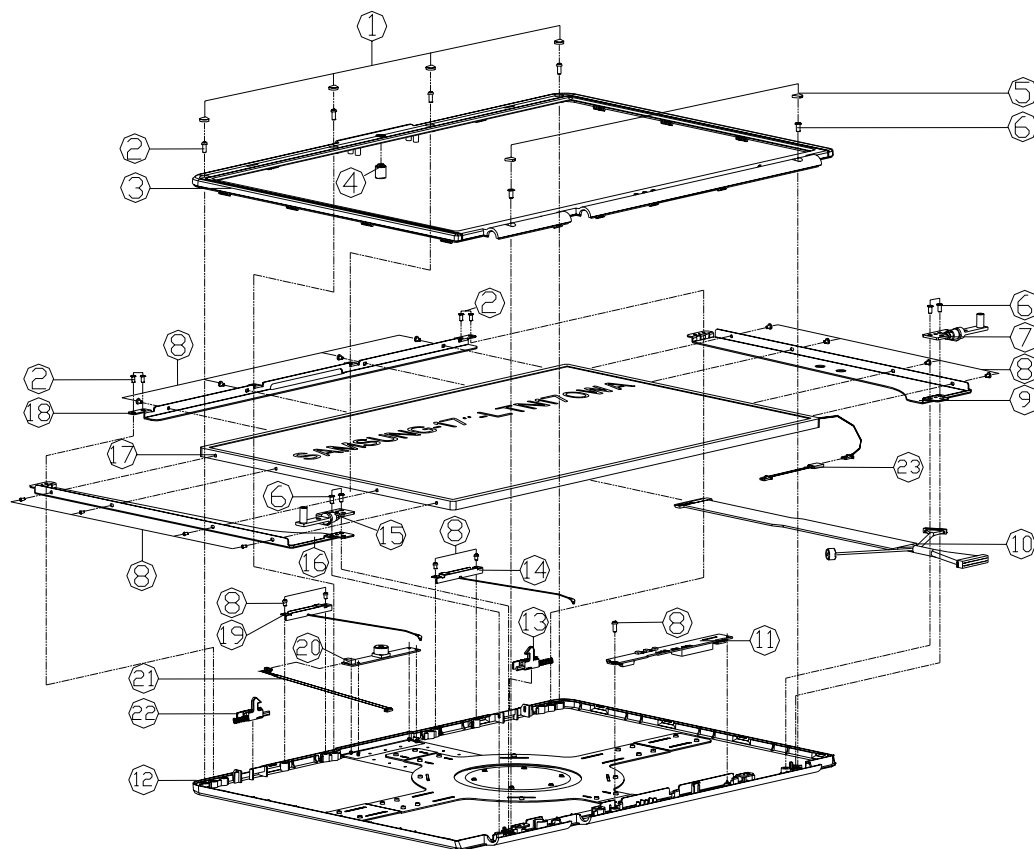


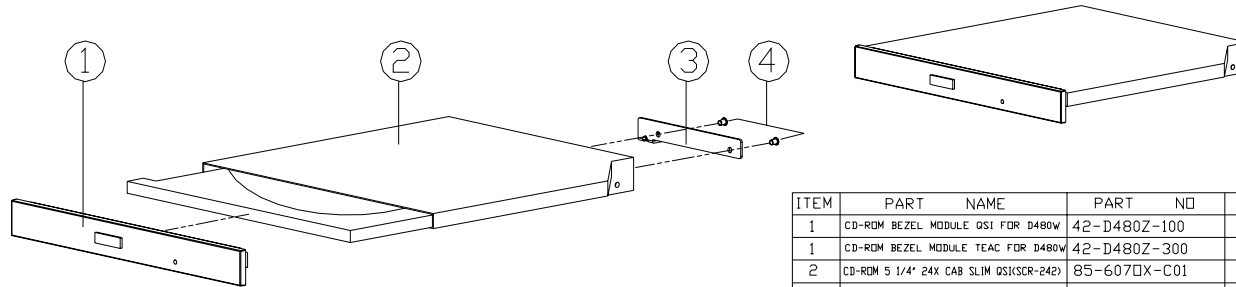
Figure 15
LCD 17" (D480W)

ITEM	PART NAME	PART NO	REMARK
1	RUBBER FOR LCD (TOP)	47-56P32-010	
2	SCREW M2*4L T BZ ICT NY	35-C6120-4RA	
3	D480W DISPLAY FRONT PANEL MODULE	39-D4801-100	
4	D470W CCD ORNAMENT RUBBER	47-D4701-010	
5	DISPLAY RUBBER PAD (DOWN)	47-D4001-020	
6	SCREW M3*6L K1 NI ICT NY	35-B1130-6RA	
7	D470W HINGE (R)	33-D470Y-010	
8	SCREW M2*3L K1 NI ICT NY	35-B1120-3RA	
9	D470W LCD BRACKET (R) FOR SAMSUNG	33-D4701-030	
9	D470W LCD BRACKET (R) FOR LG	33-D4701-011	
10	WIRE CABLE FOR SAMSUNG LTN170VA-L01 17.1"	43-D4701-020	
10	WIRE CABLE FOR LG LP171W01 17.1" WGA LCD	43-D4701-011-P	
11	INVERTER BOARD	77-4200R-D02-1	
12	D480W DISPLAY BACK PANEL MODULE	39-D4801-200	
13	D470W HOOK KINDB (R) MODULE	42-D4702-700	
14	ANTENNA 24G PFA FOR WLAN DB-13M L-173M	23-742R4-B30	
15	D470W HINGE (L)	33-D470Y-020	
16	D470W LCD BRACKET (L) FOR SAMSUNG	33-D4701-040	
16	D470W LCD BRACKET (L) FOR LG	33-D4701-021	
17	LCD 17" SAMSUNG LTN170VA-L01(1440*900)	50-M7262-M00	
17	LCD 17" LG LP171W01(WGA) 1440*900	50-N7265-L00	
18	D470W BACK CASE BRACKET (TOP)	33-D4701-181	
19	ANTENNA 24G PFA FOR BLUETOOTH DB-13M L	23-742R4-B20	
20	VIDEO CAMERA CMOS30, 300K Pixels Resolu	88-D40C0-410	OPTION
21	WIRE CABLE MAIN 80 TO CCD MODULE V100	43-D4000-060	
22	D470W HOOK KINDB MODULE (L)	42-D4702-800	
23	WIRE CABLE CONVERTER	43-56P01-090	

A.Part Lists

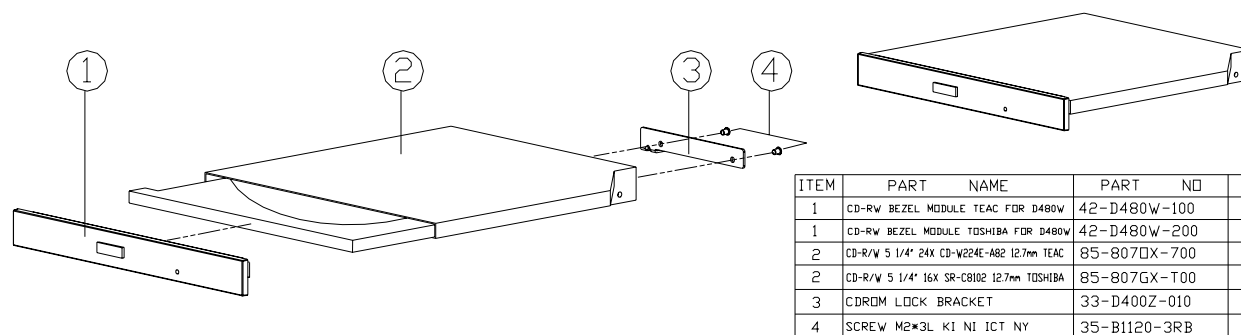
CD-ROM Drive (D480W)

Figure 16
CD-ROM Drive
(D480W)



ITEM	PART NAME	PART NO	REMARK
1	CD-ROM BEZEL MODULE OS1 FOR D480W	42-D480Z-100	
1	CD-ROM BEZEL MODULE TEAC FOR D480W	42-D480Z-300	
2	CD-ROM 5 1/4" 24X CAB SLIM OS1(SCR-242)	85-607□X-C01	
2	CD-ROM 5 1/4" 24X CD-224E-C20 12.7mm TEAC	85-607□X-709	
3	CDROM LOCK BRACKET	33-D400Z-010	
4	SCREW M2*3L KI NI ICT NY	35-B1120-3RB	

CD-RW Drive (D480W)

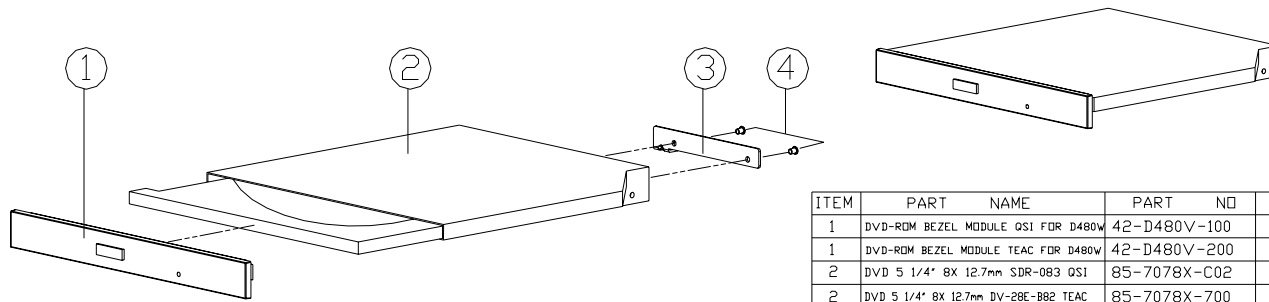


ITEM	PART NAME	PART NO	REMARK
1	CD-RW BEZEL MODULE TEAC FOR D480W	42-D480W-100	
1	CD-RW BEZEL MODULE TOSHIBA FOR D480W	42-D480W-200	
2	CD-R/W 5 1/4" 24X CD-W224E-182 12.7mm TEAC	85-807DX-700	
2	CD-R/W 5 1/4" 16X SR-C8102 12.7mm TOSHIBA	85-807GX-T00	
3	CDROM LOCK BRACKET	33-D400Z-010	
4	SCREW M2*3L K1 NI ICT NY	35-B1120-3RB	

Figure 17
CD-RW Drive
(D480W)

DVD-ROM Drive (D480W)

Figure 18
DVD-ROM Drive
(D40W)



ITEM	PART NAME	PART NO	REMARK
1	DVD-ROM BEZEL MODULE OSI FOR D480W	42-D480V-100	
1	DVD-ROM BEZEL MODULE TEAC FOR D480W	42-D480V-200	
2	DVD 5 1/4" 8X 12.7mm SDR-083 OSI	85-7078X-C02	
2	DVD 5 1/4" 8X 12.7mm DV-28E-882 TEAC	85-7078X-700	
3	CDROM LOCK BRACKET	33-D400Z-010	
4	SCREW M2*3L KI NI ICT NY	35-B1120-3RB	

Combo Drive (D480W)

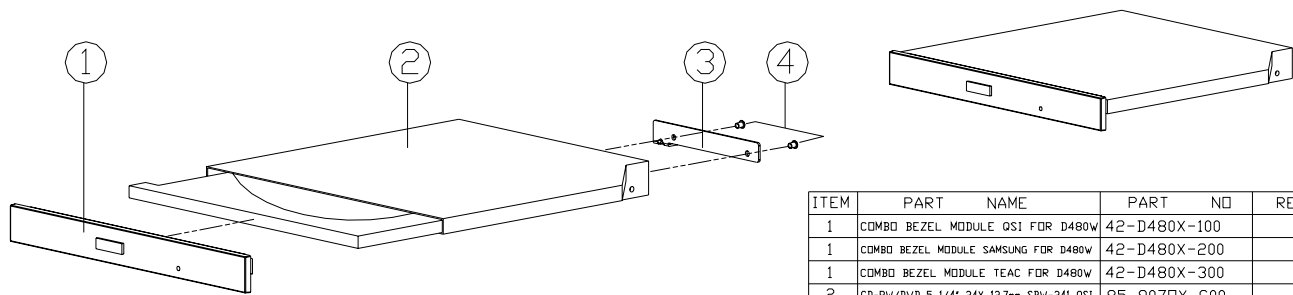


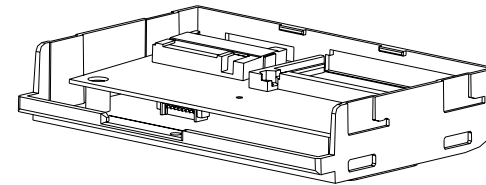
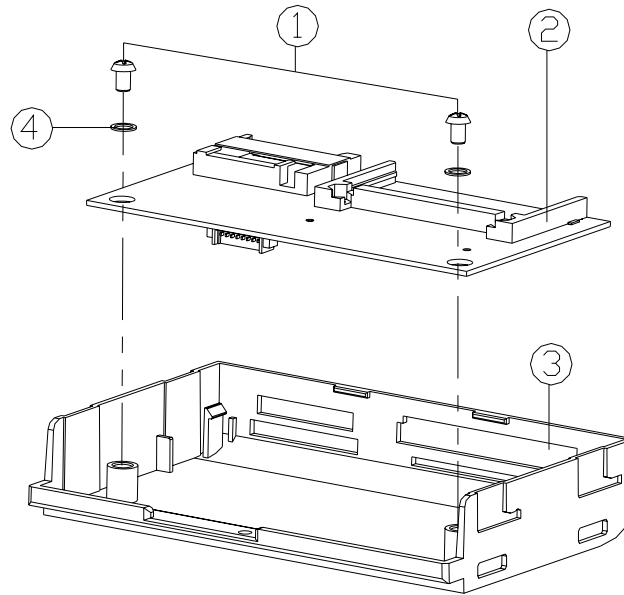
Figure 19
Combo Drive
(D480W)

ITEM	PART NAME	PART NO	REMARK
1	COMBO BEZEL MODULE OSI FOR D480W	42-D480X-100	
1	COMBO BEZEL MODULE SAMSUNG FOR D480W	42-D480X-200	
1	COMBO BEZEL MODULE TEAC FOR D480W	42-D480X-300	
2	CD-RW/DVD 5 1/4" 24X 12.7mm SBW-241 OSI	85-9070X-C00	
2	CD-RW/DVD 5 1/4" 24X 12.7mm SN-324 SAMSUNG	85-9070X-S00	
2	CD-RW/DVD 5 1/4" 24X 12.7mm DW-224E-B2 TEAC	85-9070X-700	
3	CDROM LOCK BRACKET	33-D400Z-010	
4	SCREW M2*3L KI NI ICT NY	35-B1120-3RB	

A.Part Lists

Card Reader (D480W)

Figure 20
Card Reader
(D480W)



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2.5*5L K1 BNI ICT NY	35-B9125-5R0	
2	CARD READER MODULE FOR D470W	88-D47E0-430	
3	CARD READER CASE MODULE	42-D480E-100	
4	PLASTIC WASHER D7 d2.65 t2	42-D470E-A10	

Sub-Woofer Speaker (D480W)

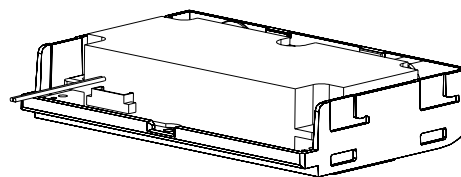
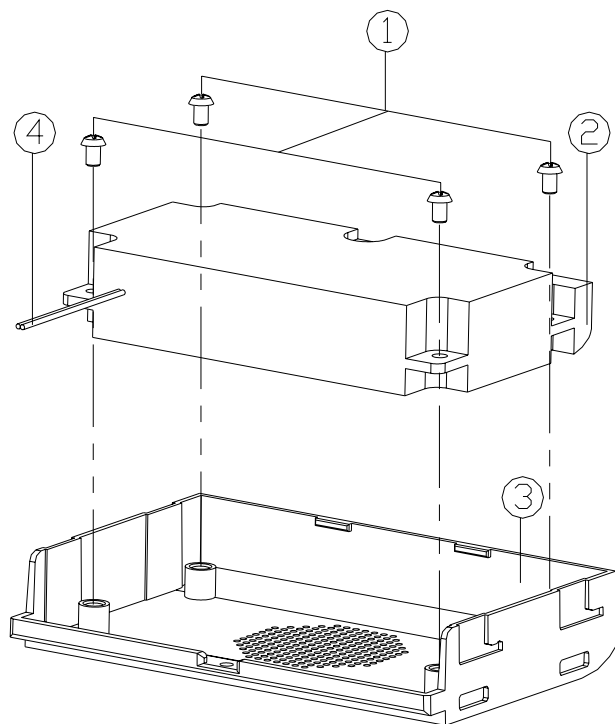


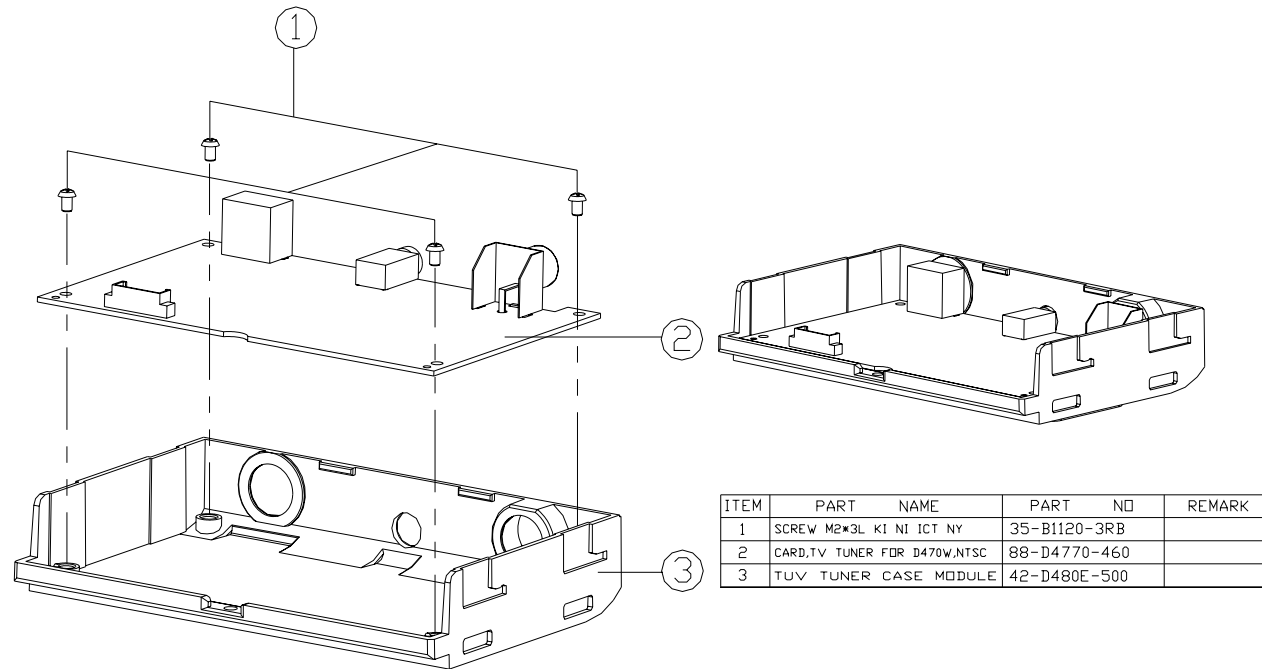
Figure 21
Sub-Woofer
Speaker (D480W)

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2.5*SL K1 BNI ICT NY	35-B9125-5R0	
2	HIMILON FOR SPEAKER	40-18N0T-010	
3	SUB SPEAKER CASE MODULE	42-D480E-400	
4	SPK. WITH CABLE 35MM,3W,4 OHM,34SA041	23-5A430-352	

A.Part Lists

TV Tuner (D480W)

Figure 22
TV Tuner (D480W)



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*3L KI NI ICT NY	35-B1120-3RB	
2	CARD,TV TUNER FOR D470W,NTSC	88-D4770-460	
3	TUV TUNER CASE MODULE	42-D480E-500	

Floppy Disk Drive (D480W)

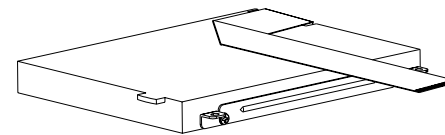
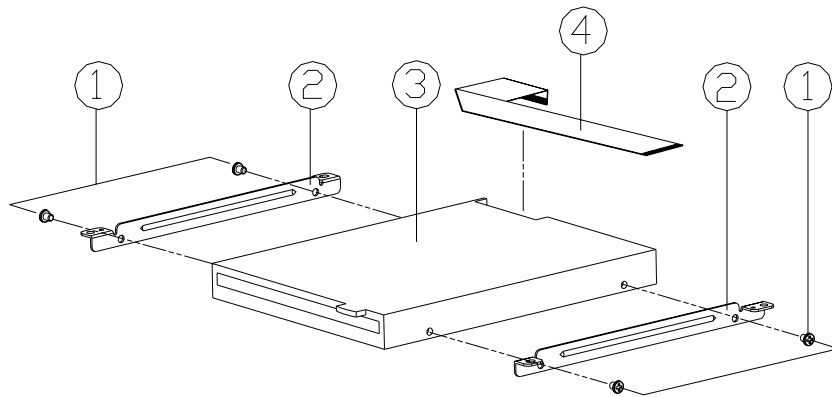
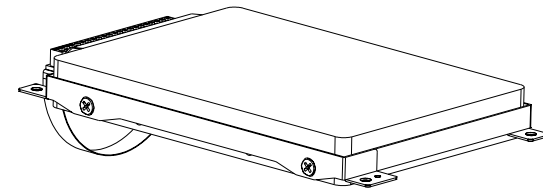
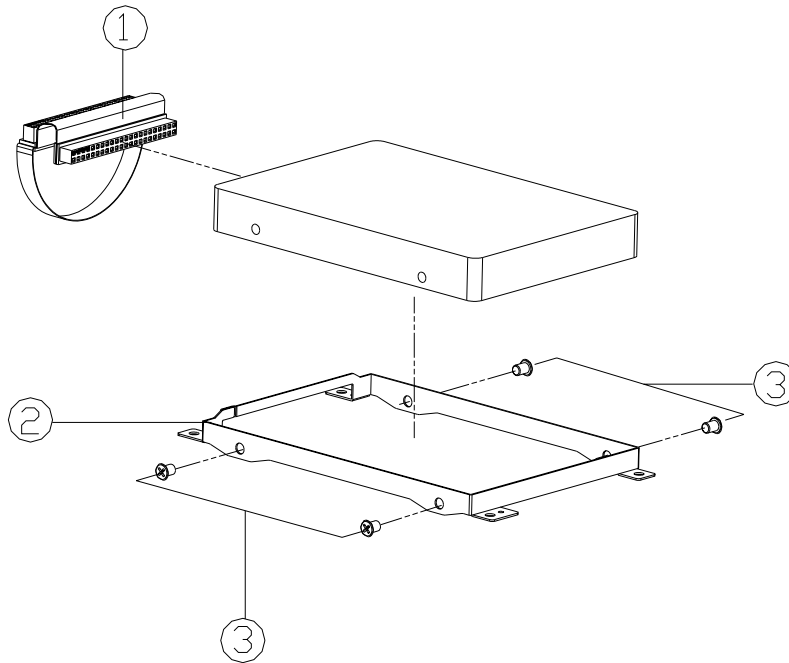


Figure 23
Floppy Disk Drive
(D480W)

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2.5*3L KI BK/D.NY	35-B4125-3RA	
2	FDD BRACKET	33-D400J-010	
3	FDD 3.5" 1.44MB 12.7mm (YD-702J-6637J)	85-11700-Y01-01	
4	FFC CABLE FOR MAIN BD TO FDD 180MM	43-D4000-050	

Hard Disk Drive (D480W)

Figure 24
HDD Drive
(D480W)



ITEM	PART NAME	PART NO	REMARK
1	FPC CABLE FOR HD TO MAIN BD, 30MM,8880	43-88800-010	
2	HDD BRACKET	77-22004-D03A	
3	SCREW M3*4L KI BZ ICT NY	35-B6130-4RB	

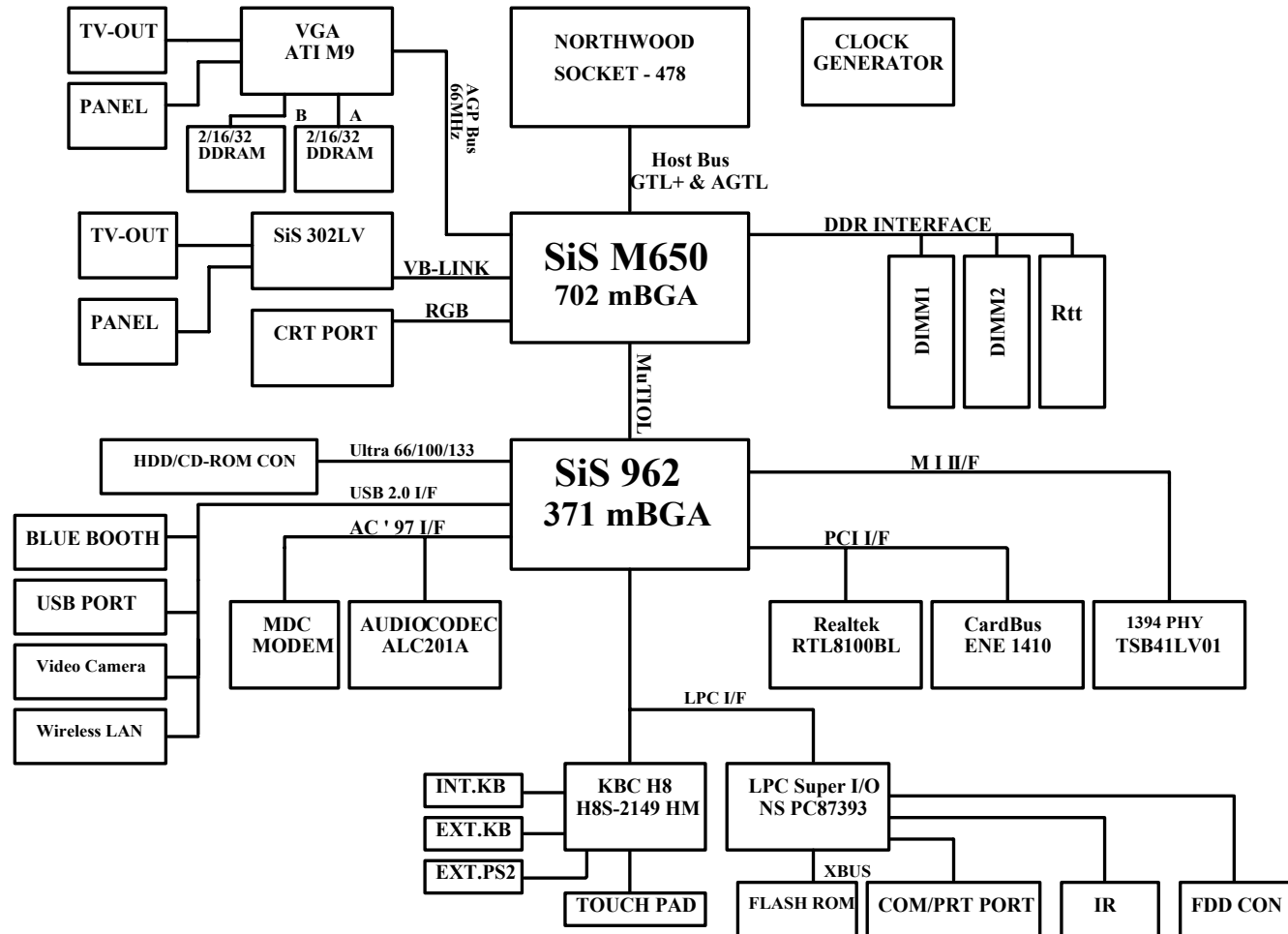
Appendix B:Schematic Diagrams

This appendix has circuit diagrams of the *D470W/D480W* 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>962 (USB I/F) 3 of 4 - Page B - 16</i>	<i>Fan Control and SpeedStep - Page B - 30</i>
<i>Socket 478 1 of 2 - Page B - 3</i>	<i>962 (Power & RTC) 4 of 4 - Page B - 17</i>	<i>Mobility M9-P - Page B - 31</i>
<i>Socket 478 & ITP 2 of 2 - Page B - 4</i>	<i>HDD/Combo Connector - Page B - 18</i>	<i>Mobility M9-P MEM A/B - Page B - 32</i>
<i>Clock Generator - Page B - 5</i>	<i>USB Port - Page B - 19</i>	<i>VGA DRAM 1 of 2 - Page B - 33</i>
<i>M650 (Host/AGP) 1 of 4 - Page B - 6</i>	<i>PCMCIA ENE1410 - Page B - 20</i>	<i>VGA DRAM 1 of 2 - Termination - Page B - 34</i>
<i>M650 (Memory for DDR) 2 of 4 - Page B - 7</i>	<i>PCMCIA Power & Bluetooth Interface - Page B - 21</i>	<i>VGA DRAM 2 of 2 - Page B - 35</i>
<i>M650 (& CRT Out) 3 of 4 - Page B - 8</i>	<i>1394 PHY TSB41LV01 - Page B - 22</i>	<i>Mobility M9-P POW - Page B - 36</i>
<i>M650 (Power) 4 of 4 - Page B - 9</i>	<i>LPC Super I/O - Page B - 23</i>	<i>Mobility M9-P - Page B - 31</i>
<i>DDR Memory DIMM - Page B - 10</i>	<i>LPT/COM Port - Page B - 24</i>	<i>DDR Power - Page B - 38</i>
<i>DDR SSTL-2 Termination - Page B - 11</i>	<i>LPC H8 - Page B - 25</i>	<i>System Power - Page B - 39</i>
<i>LVDS Interface (SiS302LV) - Page B - 12</i>	<i>LAN RTL8100BL - Page B - 26</i>	<i>Charger - Page B - 40</i>
<i>Panel Con & LED Indicator - Page B - 13</i>	<i>Audio Codec ALC201A - Page B - 27</i>	<i>SW Board and HotKey - Page B - 41</i>
<i>962 (PCI/IDE/HyperZip) 1 of 4 - Page B - 14</i>	<i>Audio Out & Off Board Connectors - Page B - 28</i>	<i>TouchPad and Switch Board - Page B - 42</i>
<i>962 (Misc Signals) 2 of 4 - Page B - 15</i>	<i>System Power Control - Page B - 29</i>	

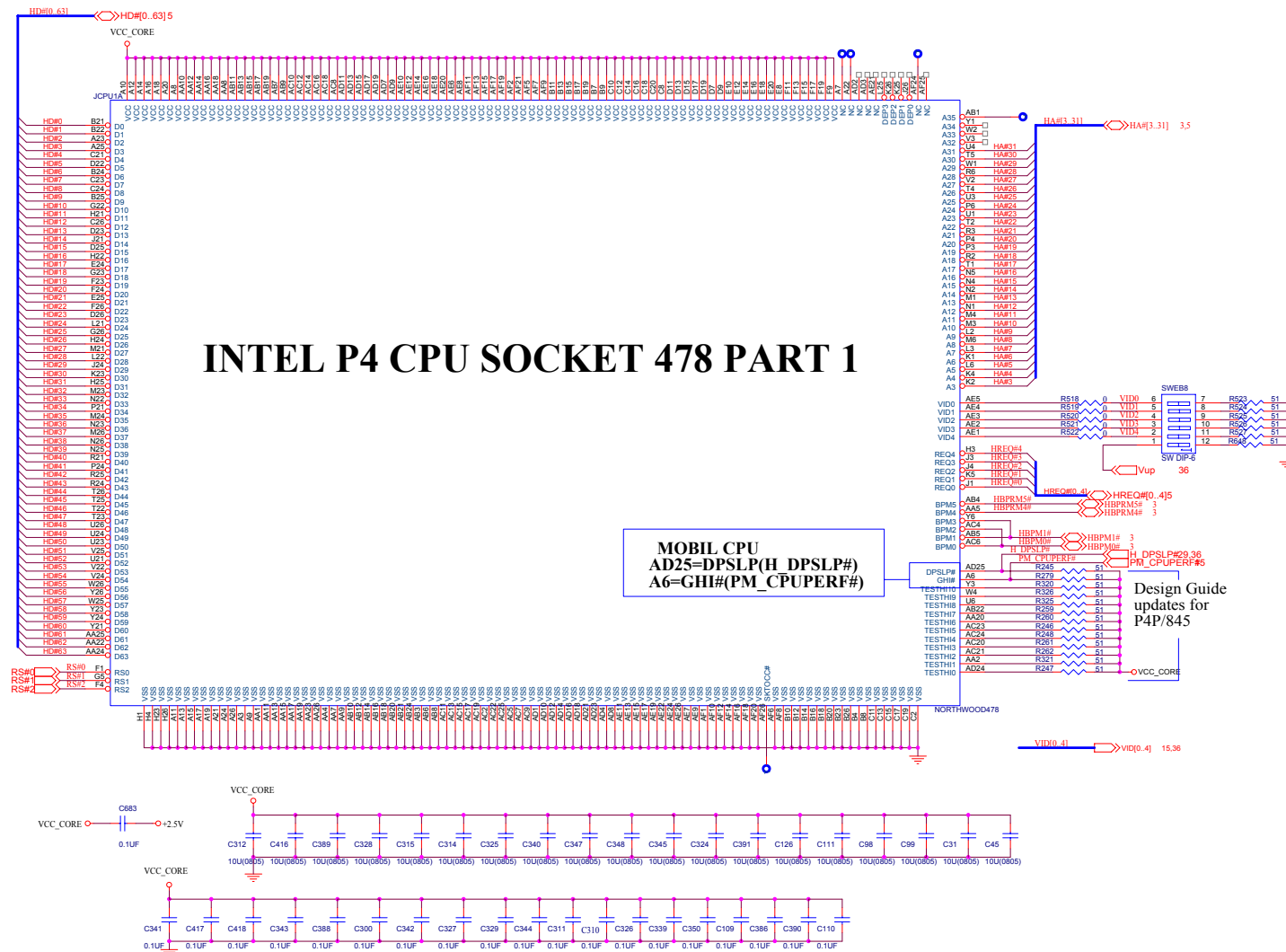
Table 1
Schematic
Diagrams

System Block Diagram



Sheet 1 of 41
System Block
Diagram

Socket 478 1 of 2

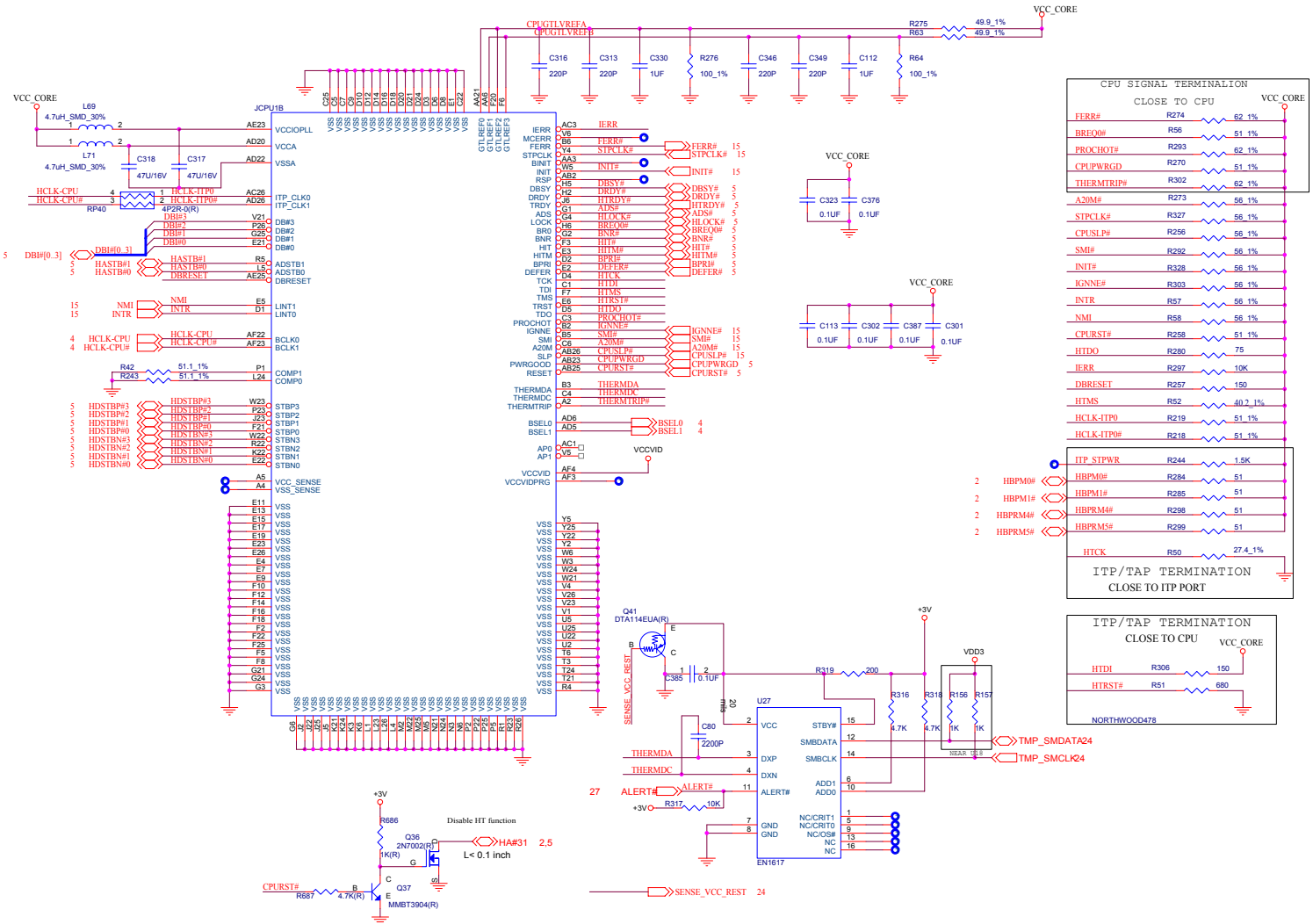


Sheet 2 of 41
Socket 478 1 of 2

B. Schematic Diagrams

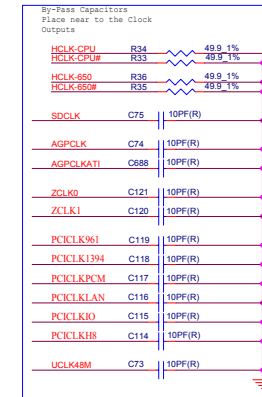
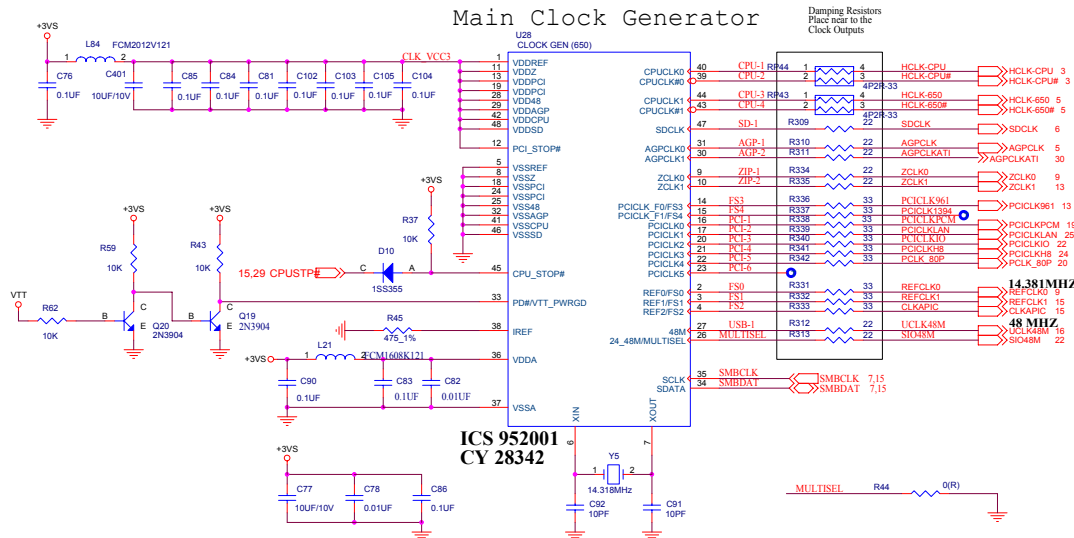
Socket 478 & ITP 2 of 2

Sheet 3 of 41
Socket 478 & ITP
2 of 2

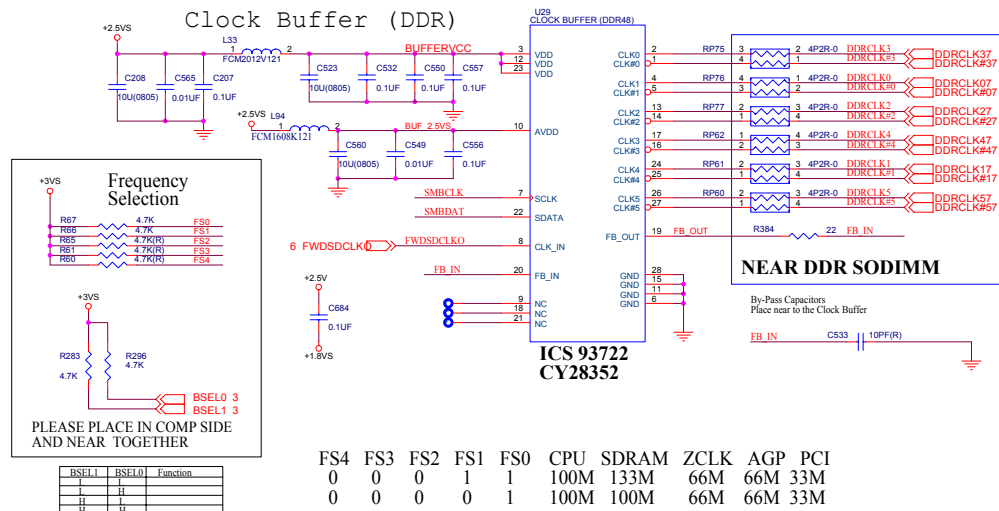


Clock Generator

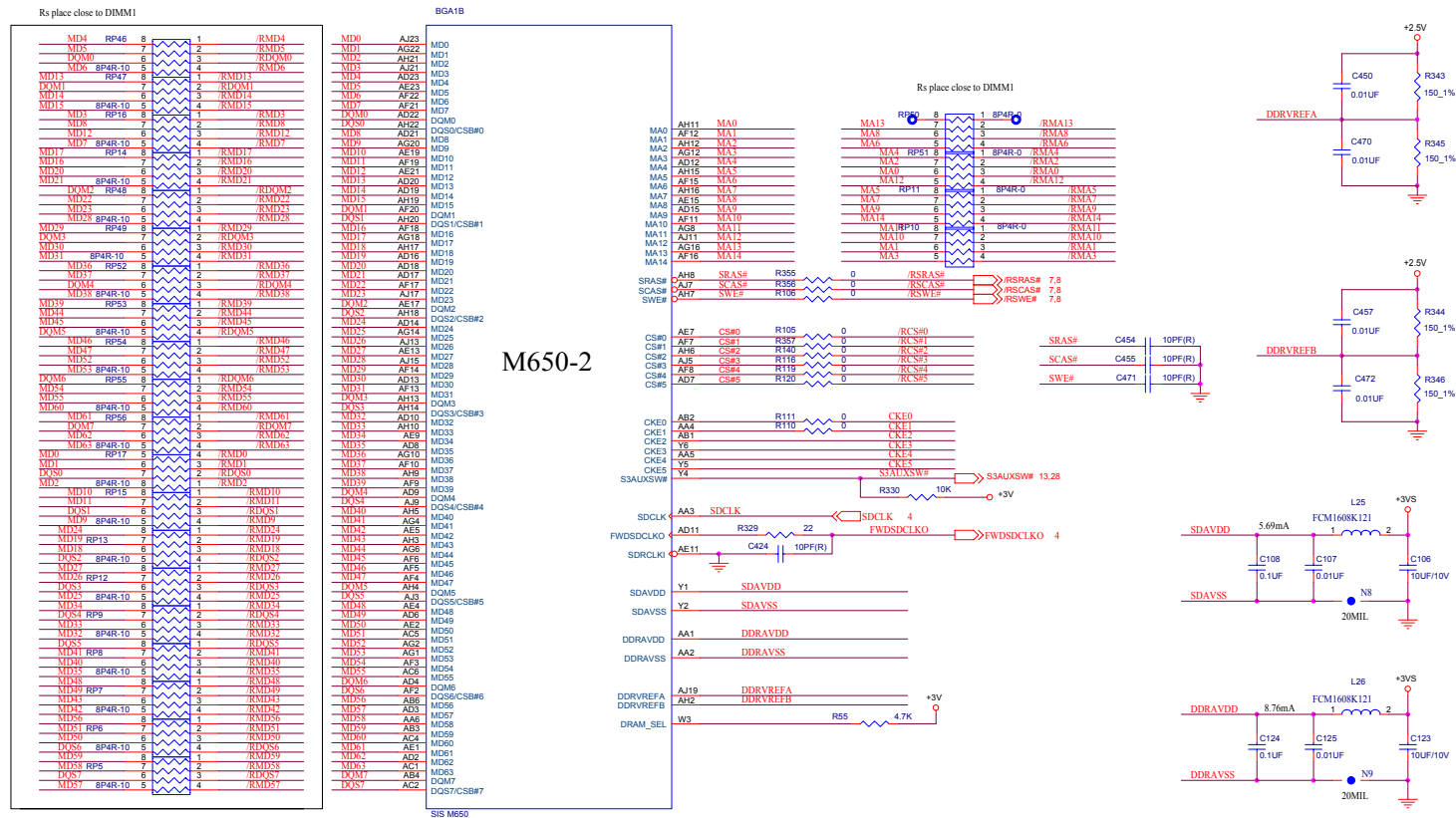
B. Schematic Diagrams



Sheet 4 of 41
Clock Generator



M650 (Memory for DDR) 2 of 4



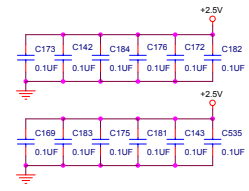
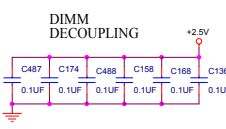
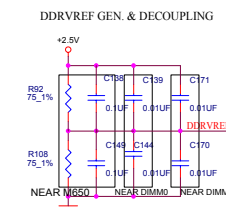
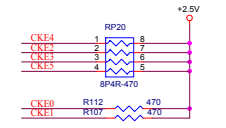
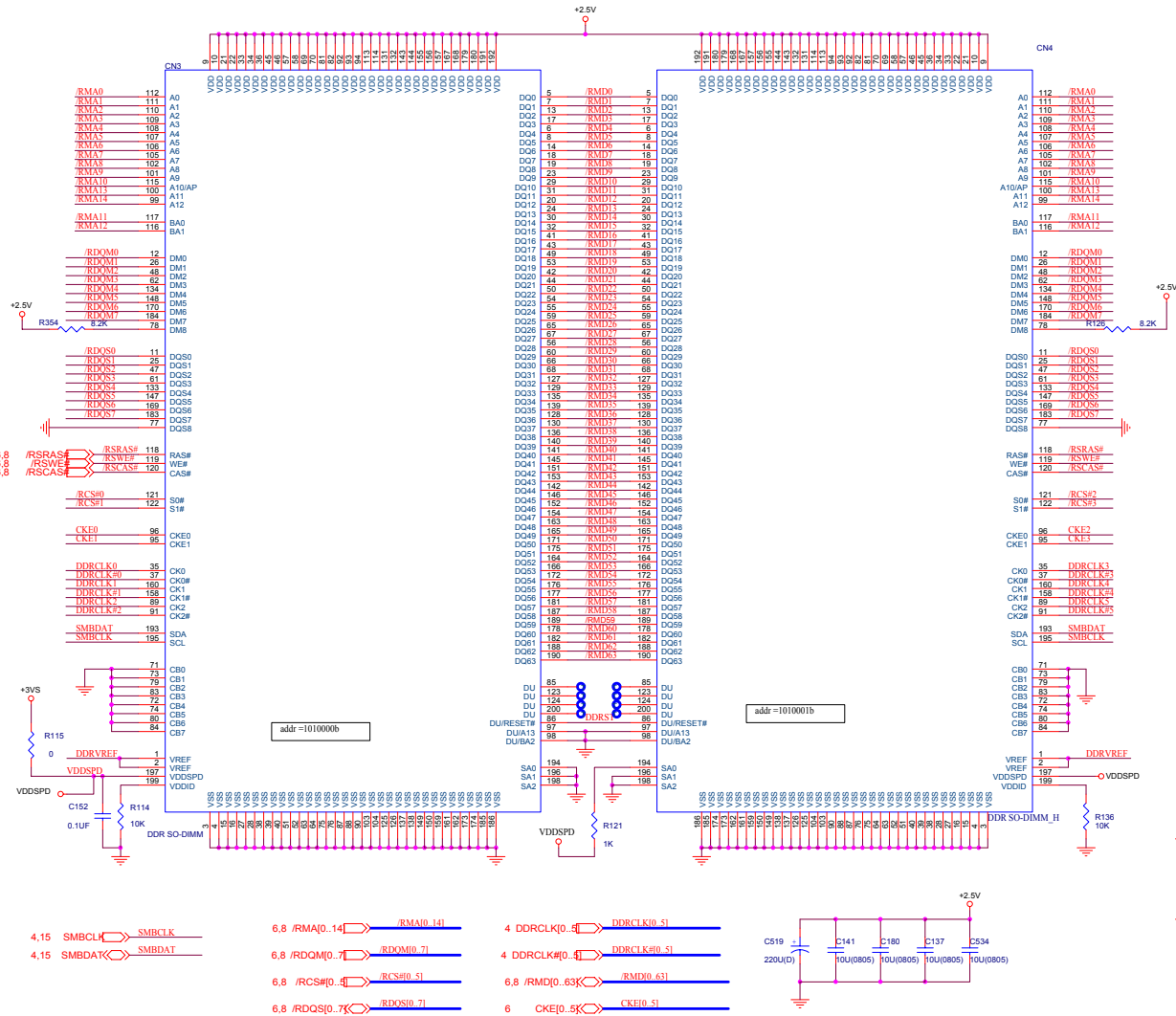
Sheet 6 of 41
M650
(Memory for DDR)
2 of 4

B.Schematic Diagrams

DDR Memory DIMM

B.Schematic Diagrams

Sheet 9 of 41
DDR Memory DIMM

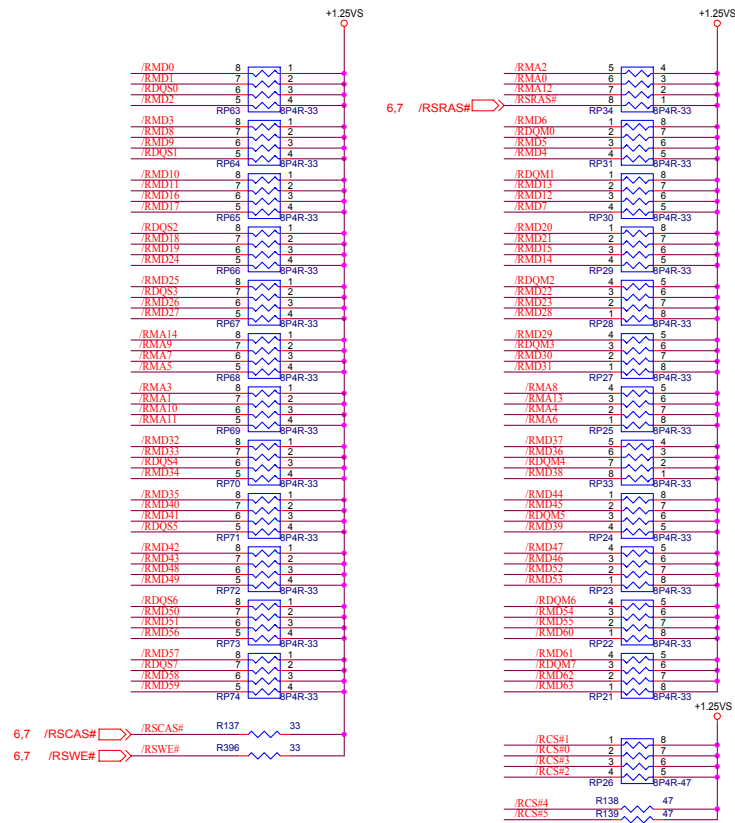


- | | | | | | | | |
|------|--------------|---|--------------|-----|--------------|---|--------------|
| 4.15 | SBCLK | ⇌ | SMBCLK | 4 | DDRCLK[0..4] | ⇌ | DDRCLK[0..5] |
| 4.15 | SMBDAT | ⇌ | SMBDAT | 4 | DDRCLK# | ⇌ | DDRCLK#0..5 |
| 6.8 | /RMAJ[0..14] | ⇌ | /RMAJ[0..14] | 6.8 | /RDMQ[0..7] | ⇌ | /RDMQ[0..7] |
| 6.8 | /RDOM[0..7] | ⇌ | /RDOM[0..7] | 6.8 | /RCS# | ⇌ | /RCS#0..5 |
| 6.8 | /RCS# | ⇌ | /RCS#0..5 | 6.8 | /RMD[0..63] | ⇌ | /RMD[0..63] |
| 6.8 | /RDOS[0..7] | ⇌ | /RDOS[0..7] | 6 | CKE[0..5] | ⇌ | CKE[0..5] |

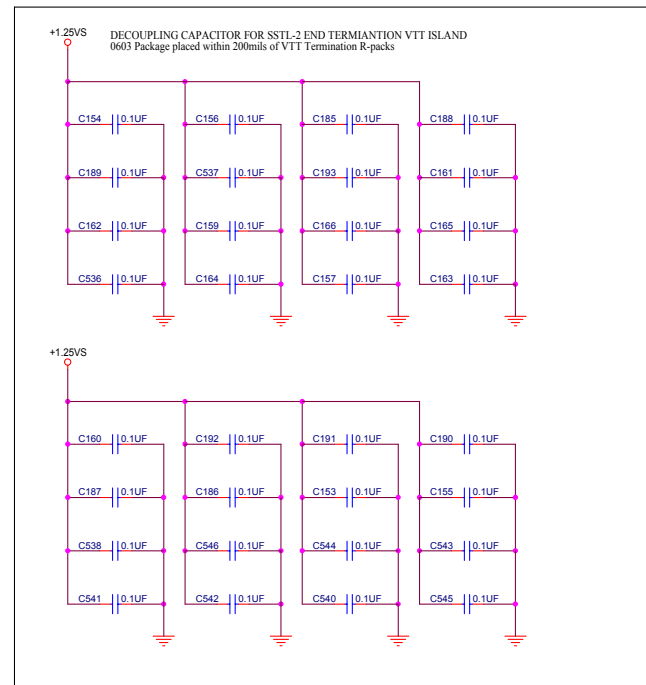
DDR SSTL-2 Termination

SSTL-2 Termination Resistors

	DDR	R _s	R _{tt}							
MD/DQM(DQS)	SSTL-2	10	33							
MA Control	SSTL-2	0	CS	SSTL-2	0	47	CKE	OD 2.5V		
CS	SSTL-2	0	47							
CKE	OD 2.5V									



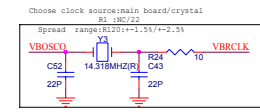
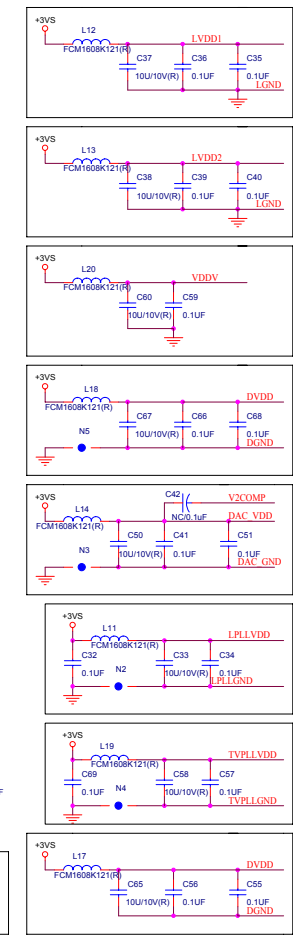
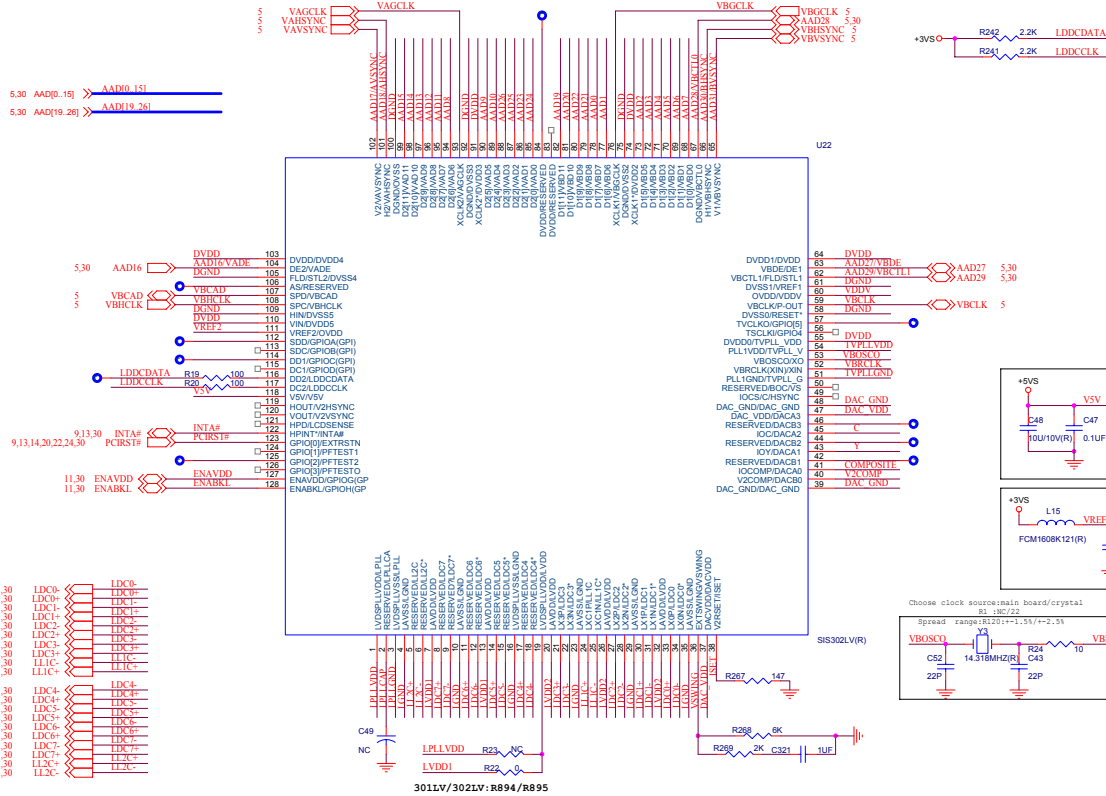
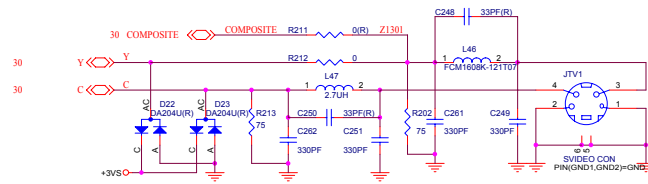
Sheet 10 of 41
DDR SSTL-2
Termination



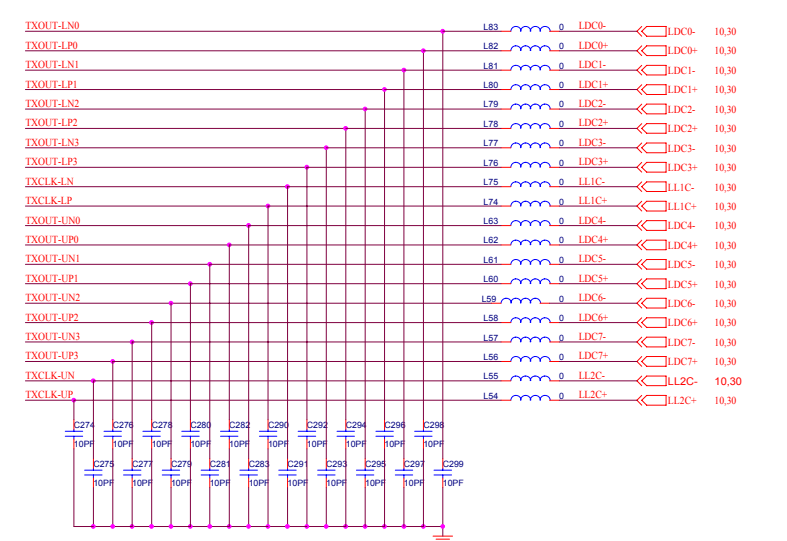
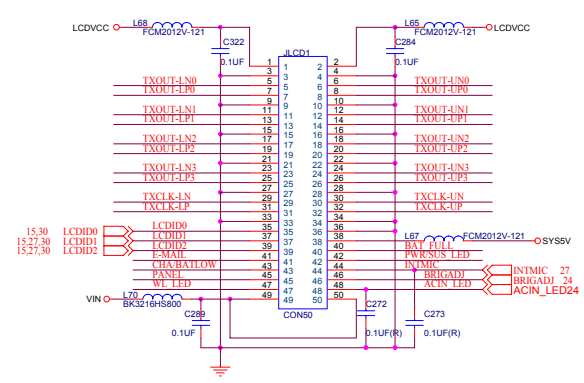
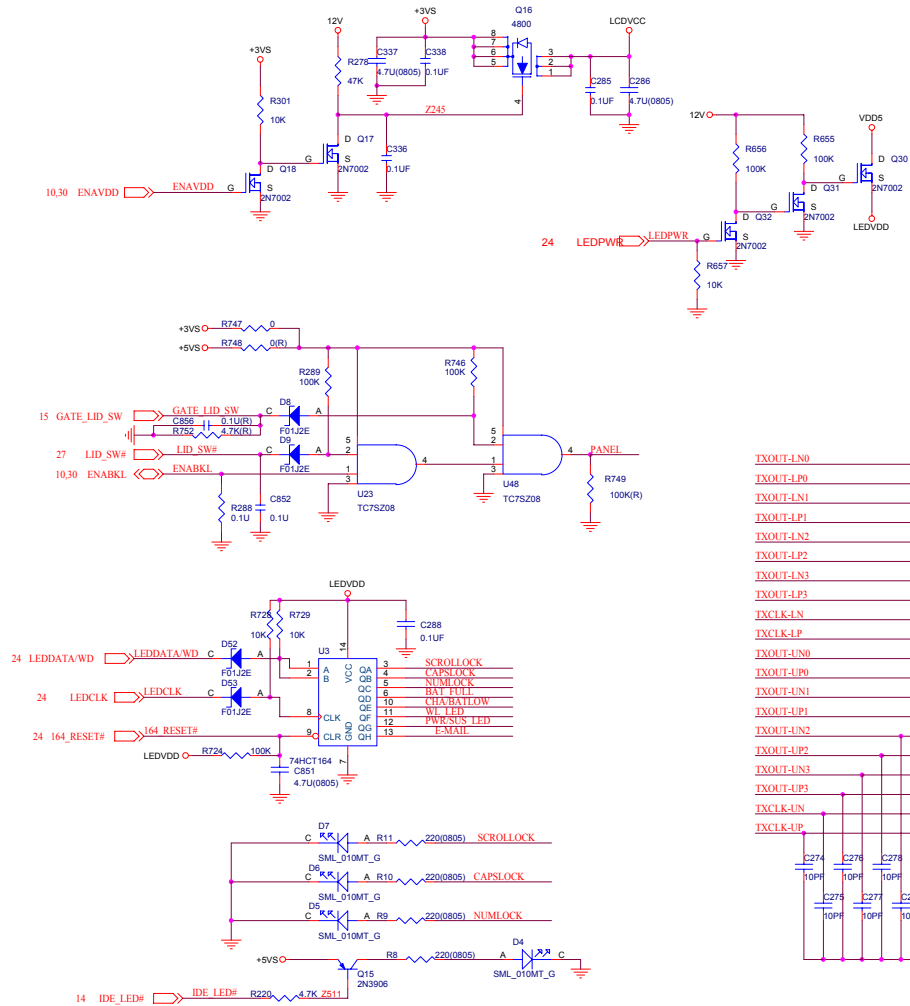
B.Schematic Diagrams

LVDS Interface (SiS302LV)

Sheet 11 of 41
LVDS interface
(SiS302LV)



Panel Con & LED Indicator



Sheet 12 of 41
Panel Con & LED Indicator

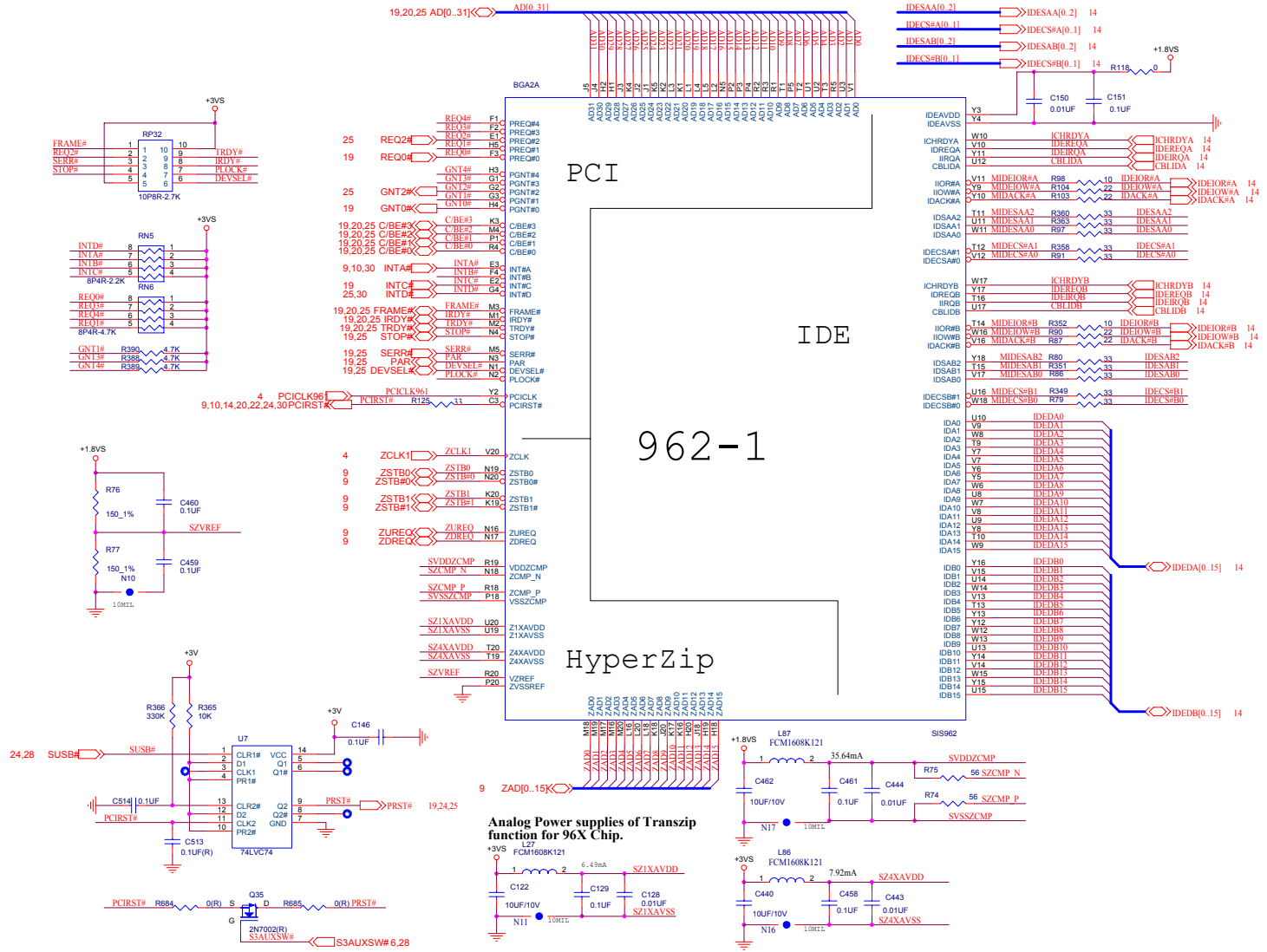
B.Schematic Diagrams

Schematic Diagrams

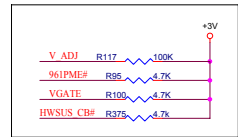
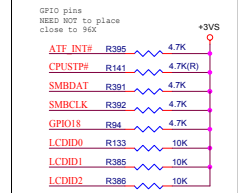
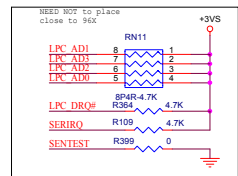
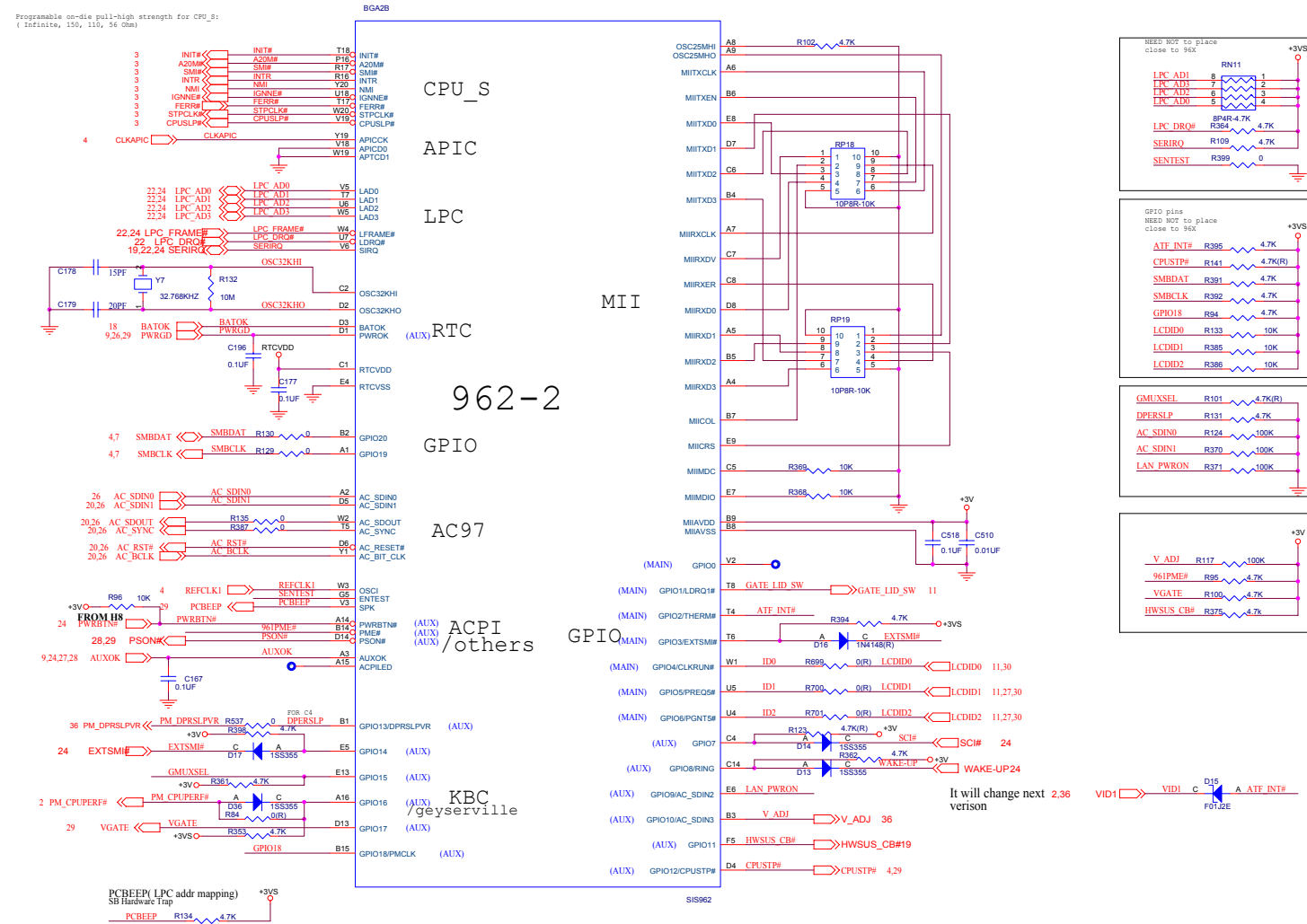
962 (PCI/IDE/HyperZip) 1 of 4

B.Schematic Diagrams

Sheet 13 of 41
962 (PCI/IDE/
HyperZip)
1 of 4



962 (Misc Signals) 2 of 4



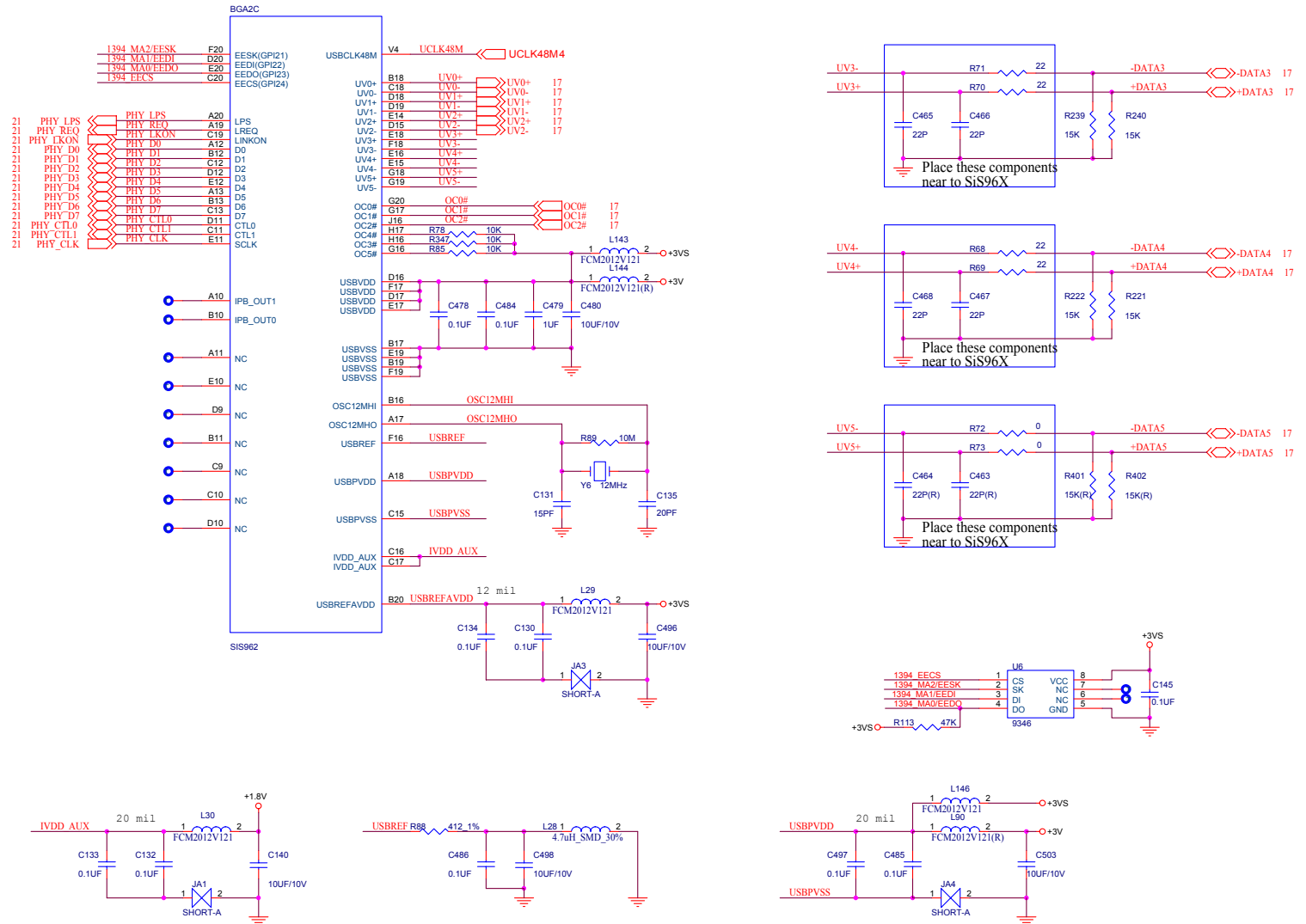
Sheet 14 of 41
962 (Misc Signals)
2 of 4

B.Schematic Diagrams

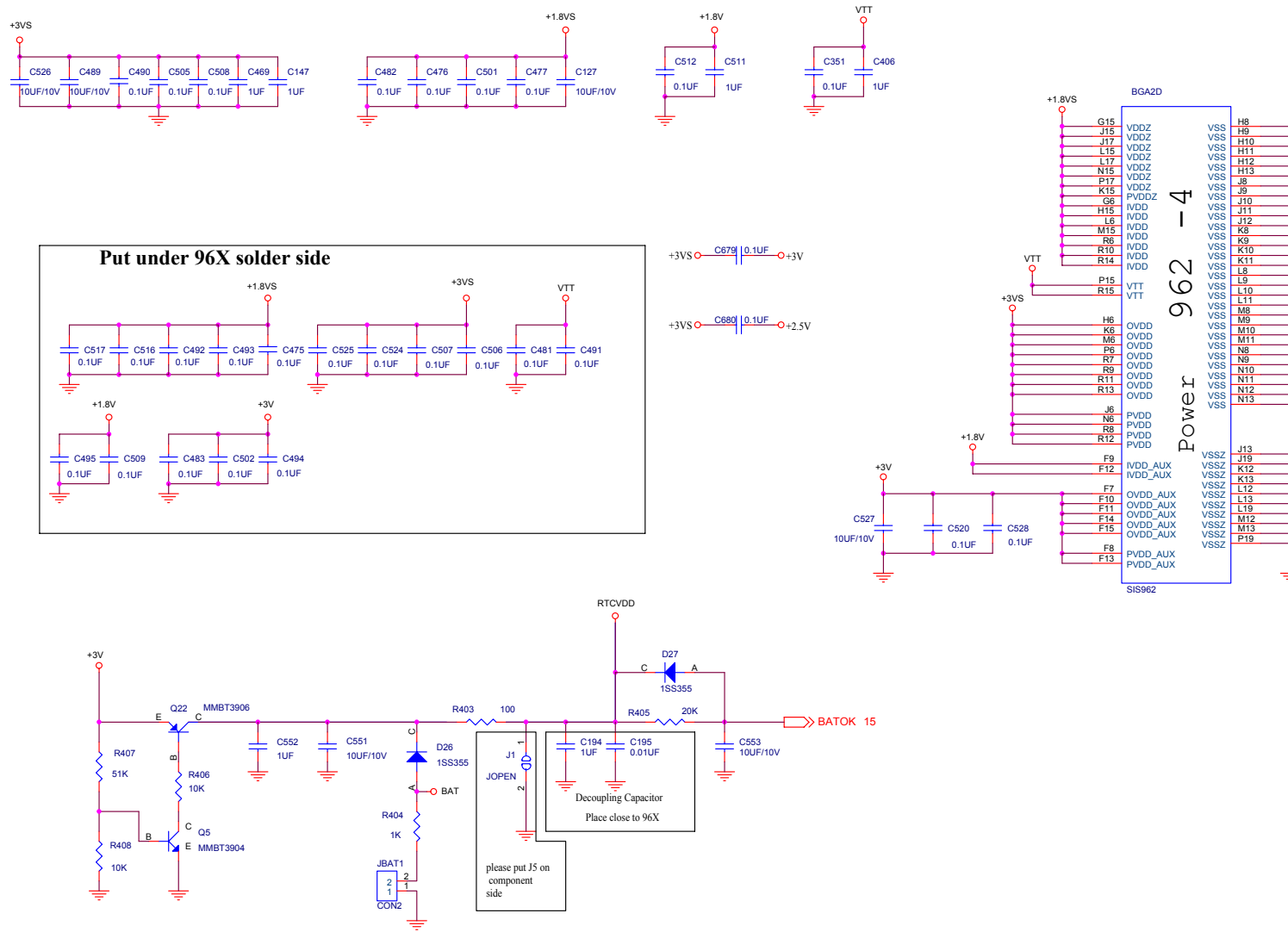
It will change next version VID1 C D15 F0T12E

962 (USB I/F) 3 of 4

Sheet 15 of 41
962 (USB I/F)
3 of 4

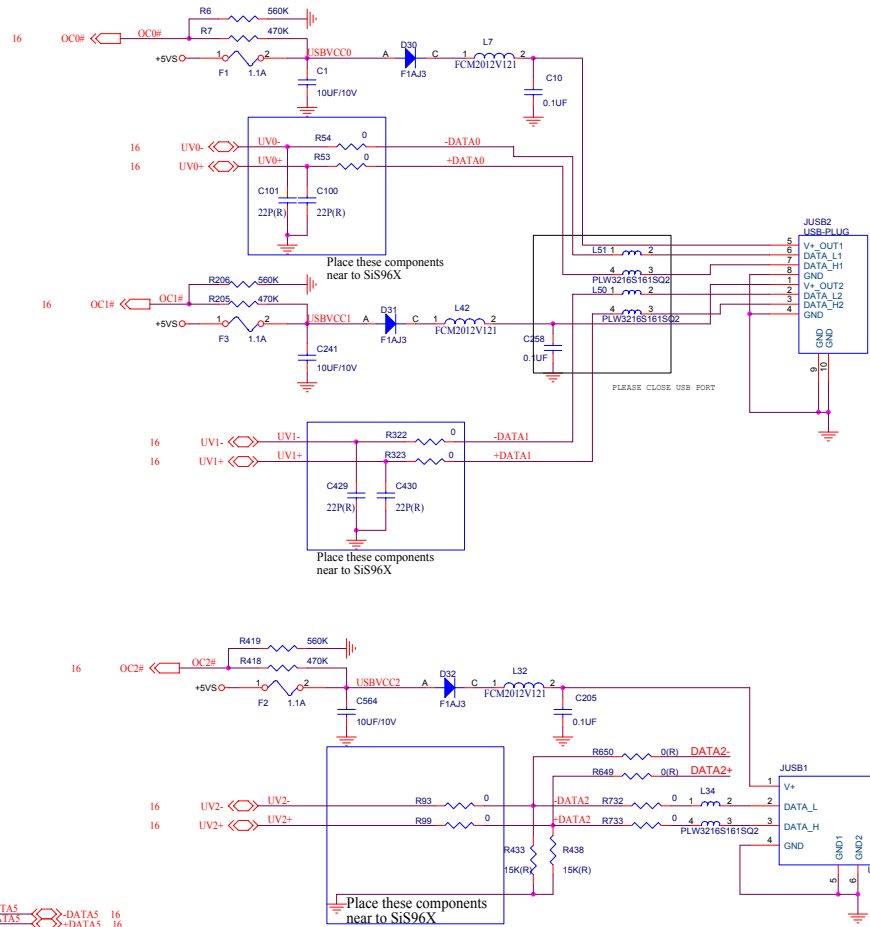
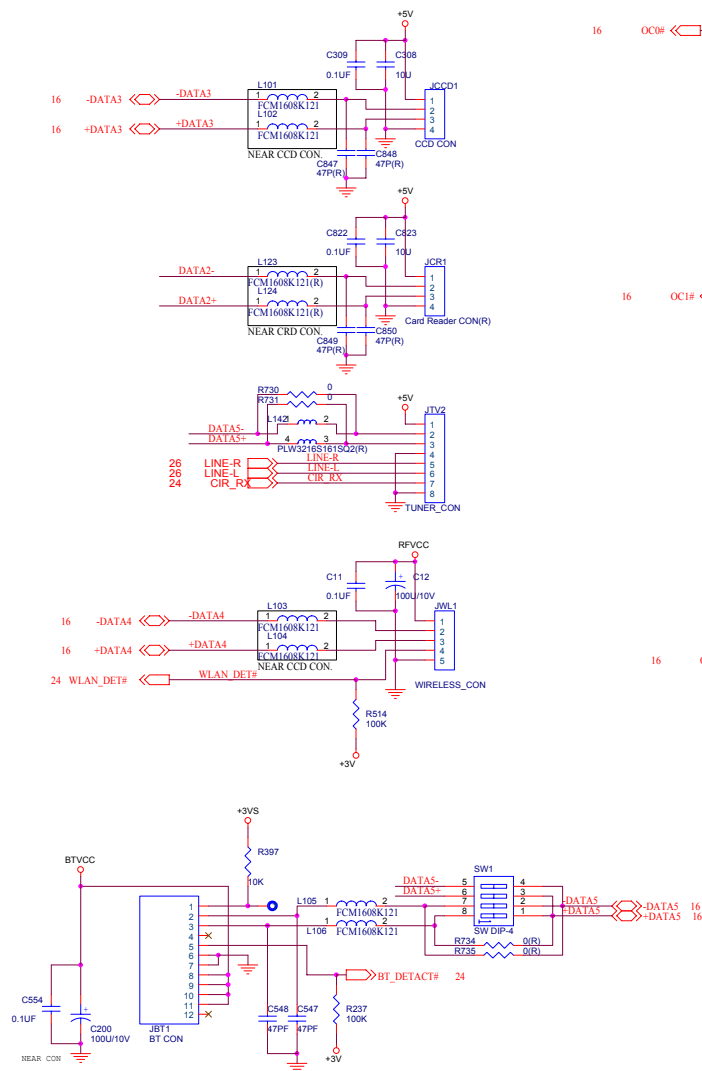


962 (Power & RTC) 4 of 4



Sheet 16 of 41
962 (Power & RTC)
4 of 4

USB Port

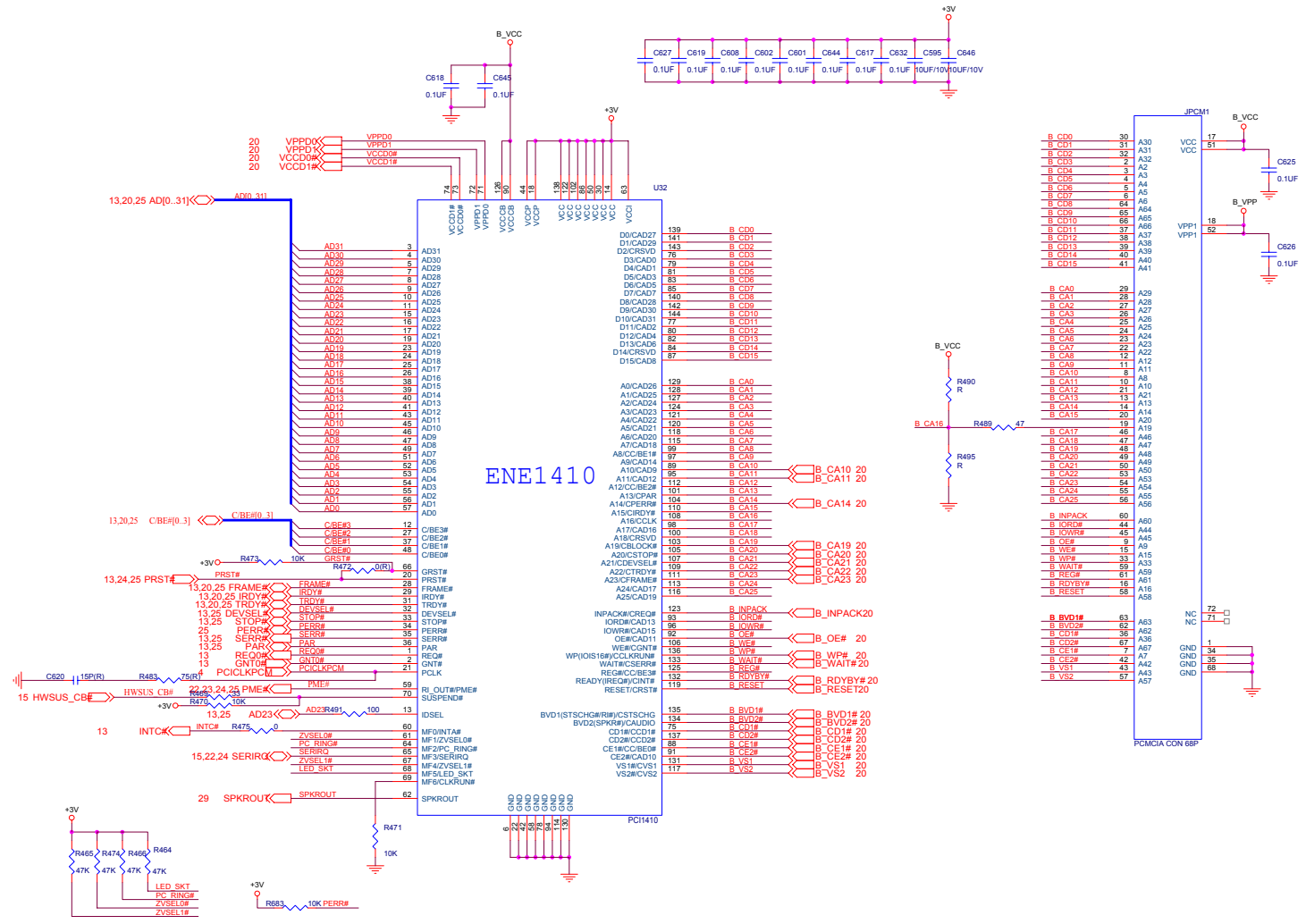


Sheet 18 of 41
USB Port

B. Schematic Diagrams

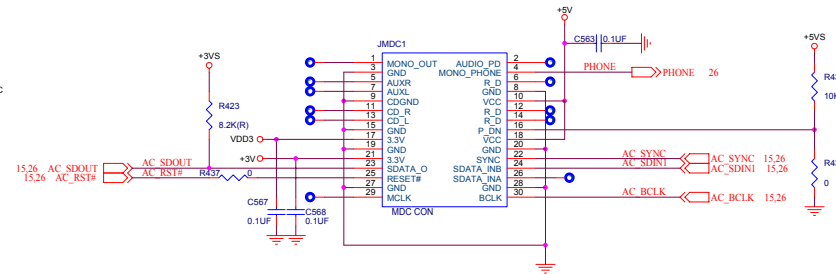
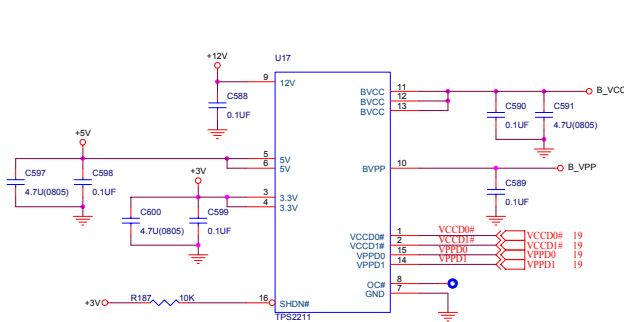
PCMCIA ENE1410

Sheet 19 of 41
PCMCIA ENE1410

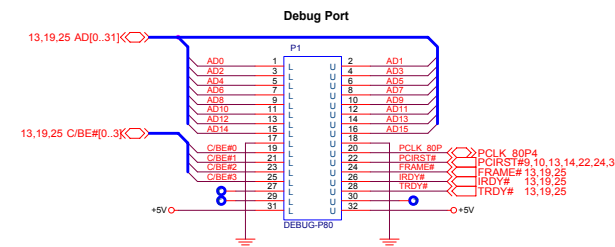
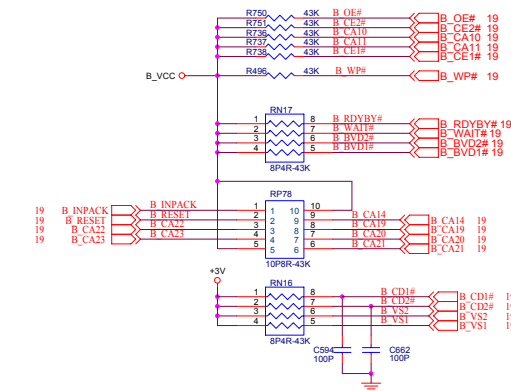


B - 20 PCMCIA ENE1410 (71-M4000-D04)

PCMCIA Power & Bluetooth Interface



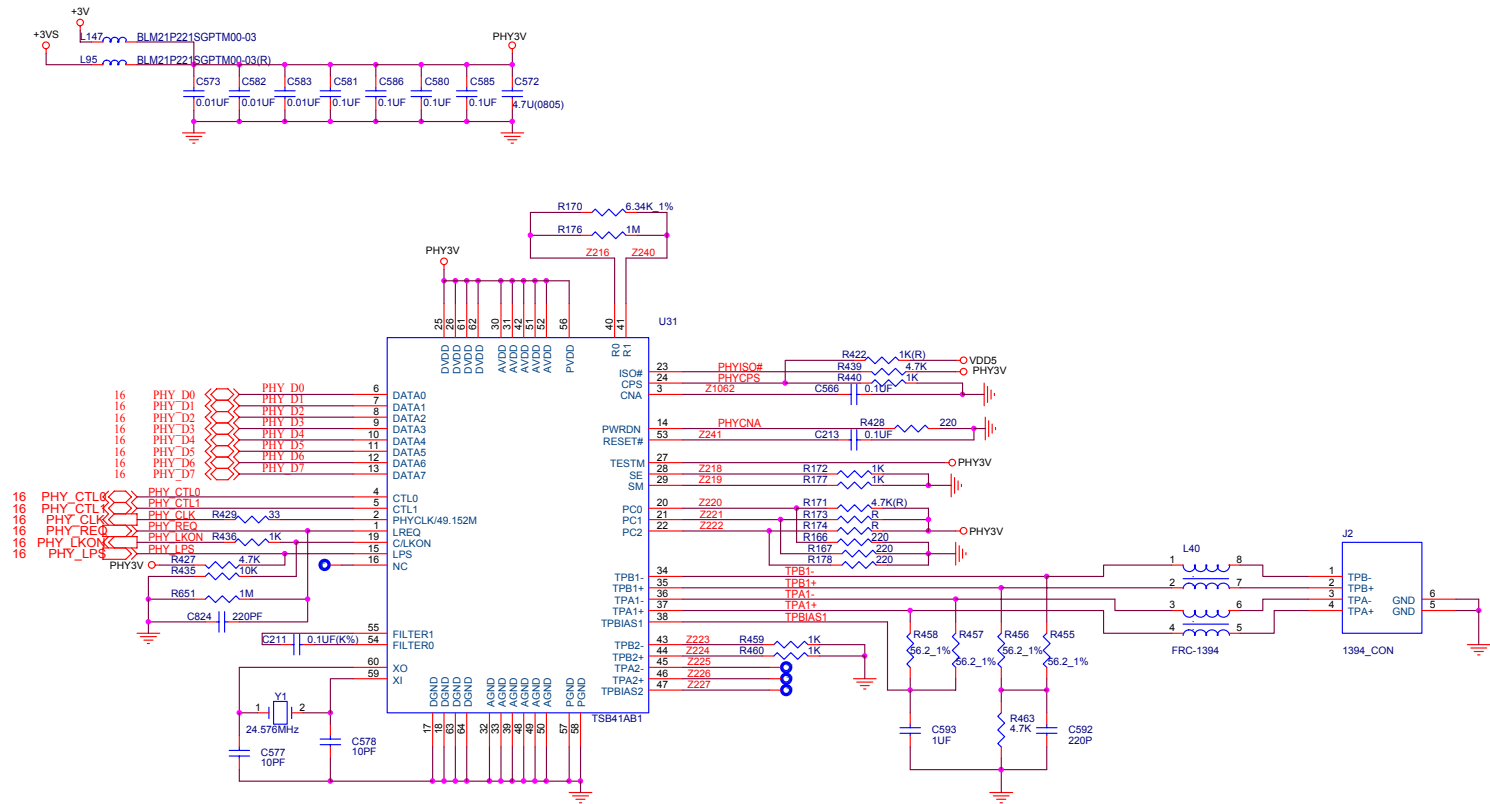
Sheet 20 of 41
PCMCIA Power & Bluetooth Interface



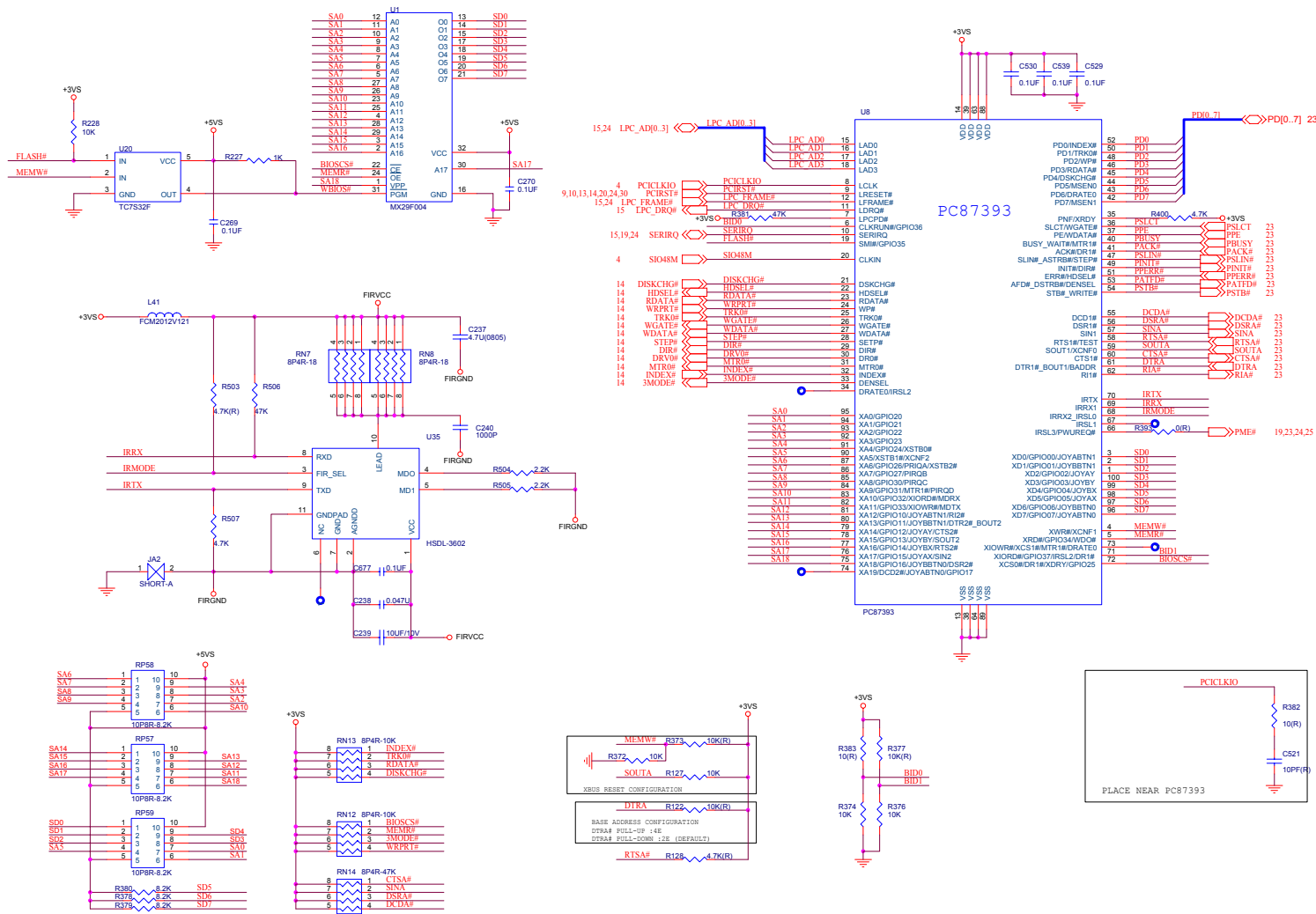
B. Schematic Diagrams

1394 PHY TSB41LV01

Sheet 21 of 41
1394 PHY
TSB41LV01



LPC Super I/O



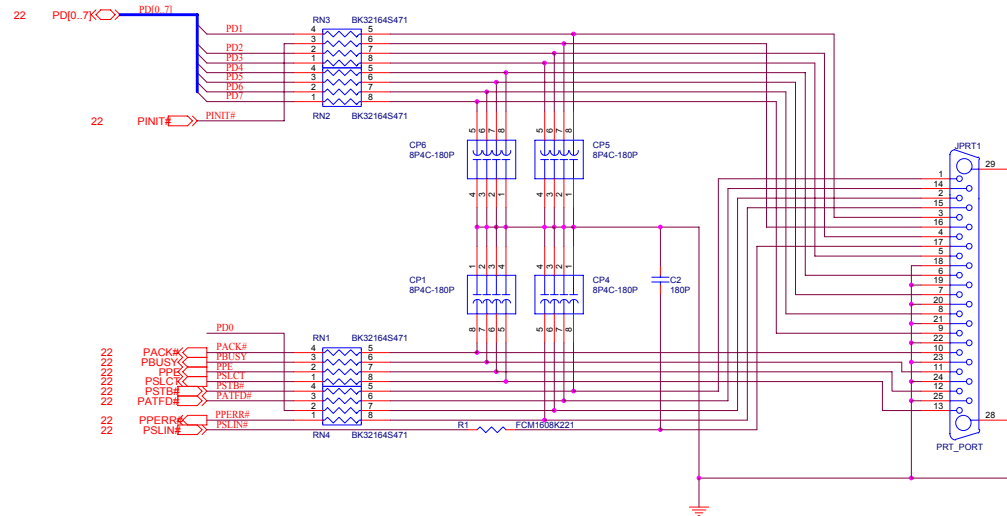
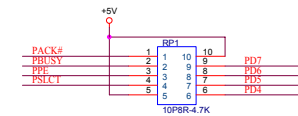
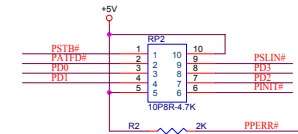
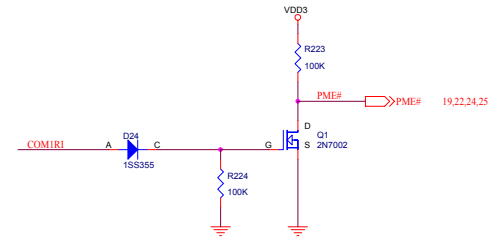
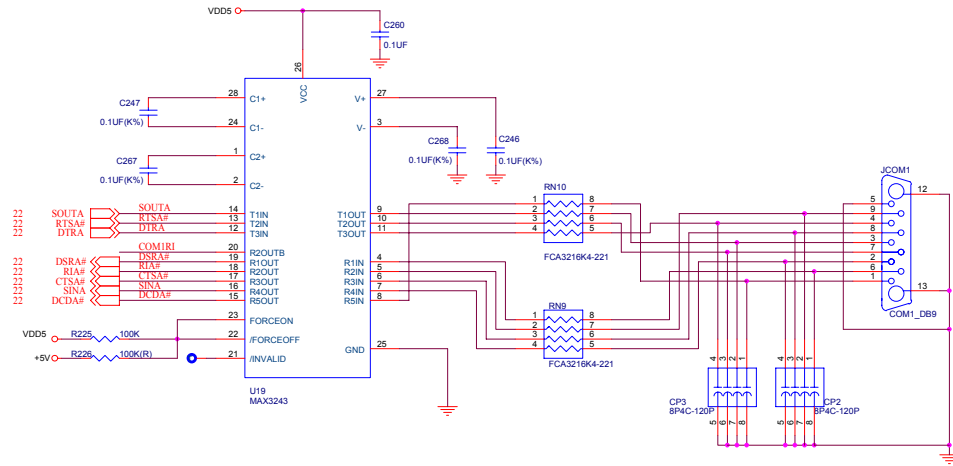
Sheet 22 of 41
LPC Super I/O

B. Schematic Diagrams

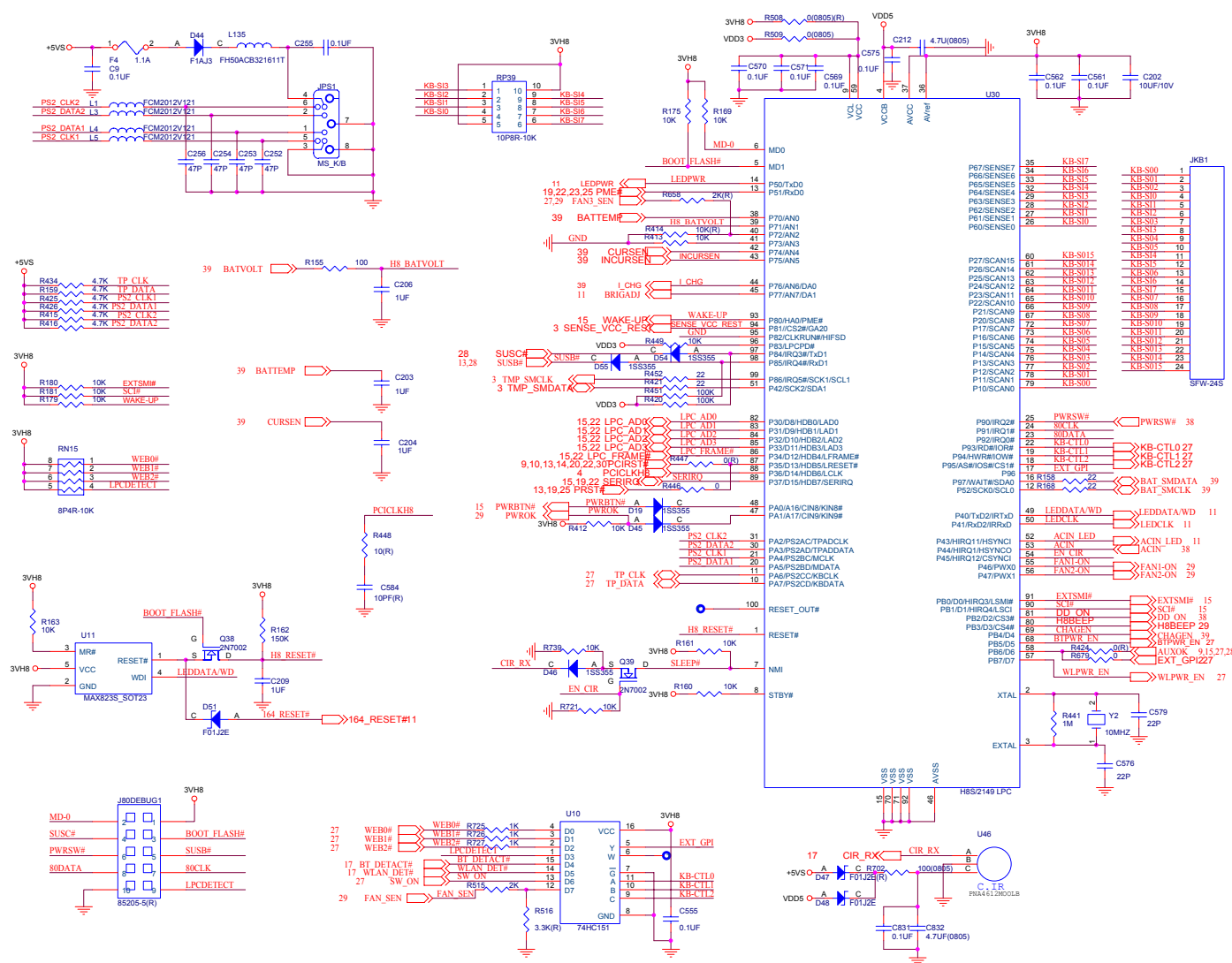
Schematic Diagrams

LPT/COM Port

Sheet 23 of 41
LPT/COM Port



LPC H8

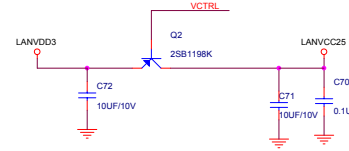
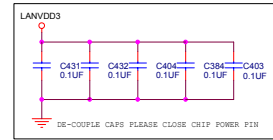


Sheet 24 of 41
LPC H8

B.Schematic Diagrams

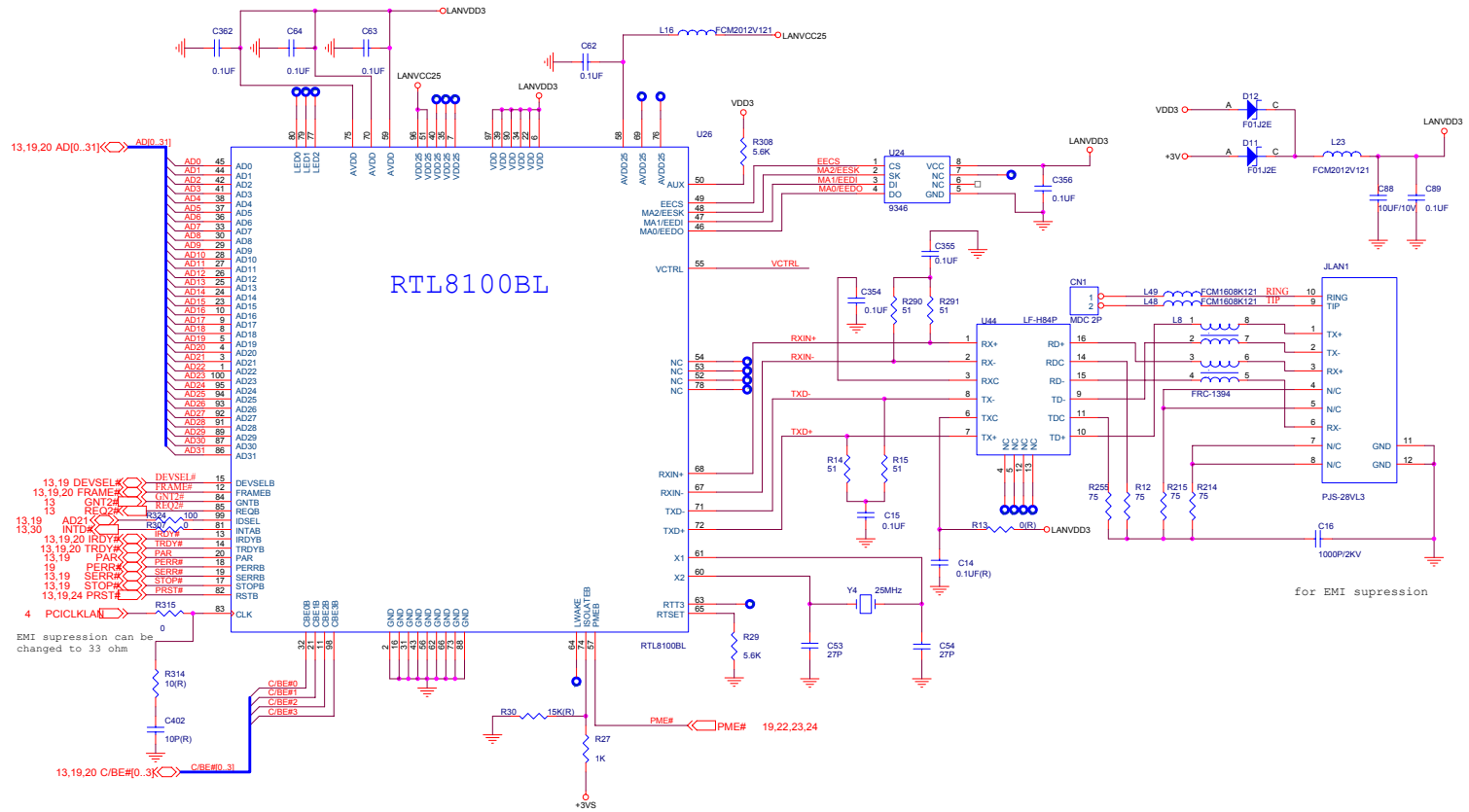
Schematic Diagrams

LAN RTL8100BL



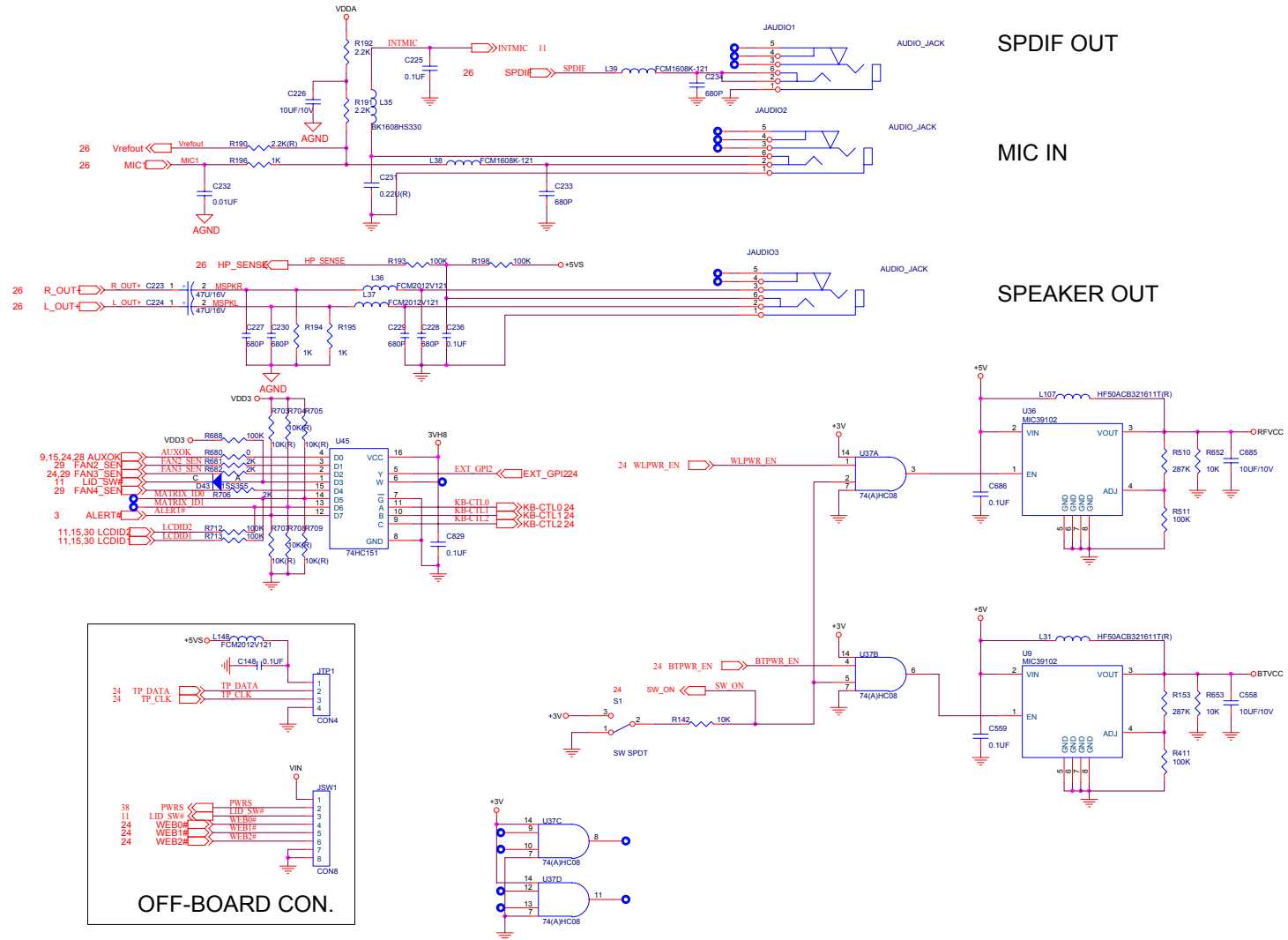
*For RTL8100C application, all bead must be rated 300mA/100ohm@100Mhz
The maximum voltage drop when on should be less than 0.3V

Sheet 25 of 41
LAN RTL8100BL

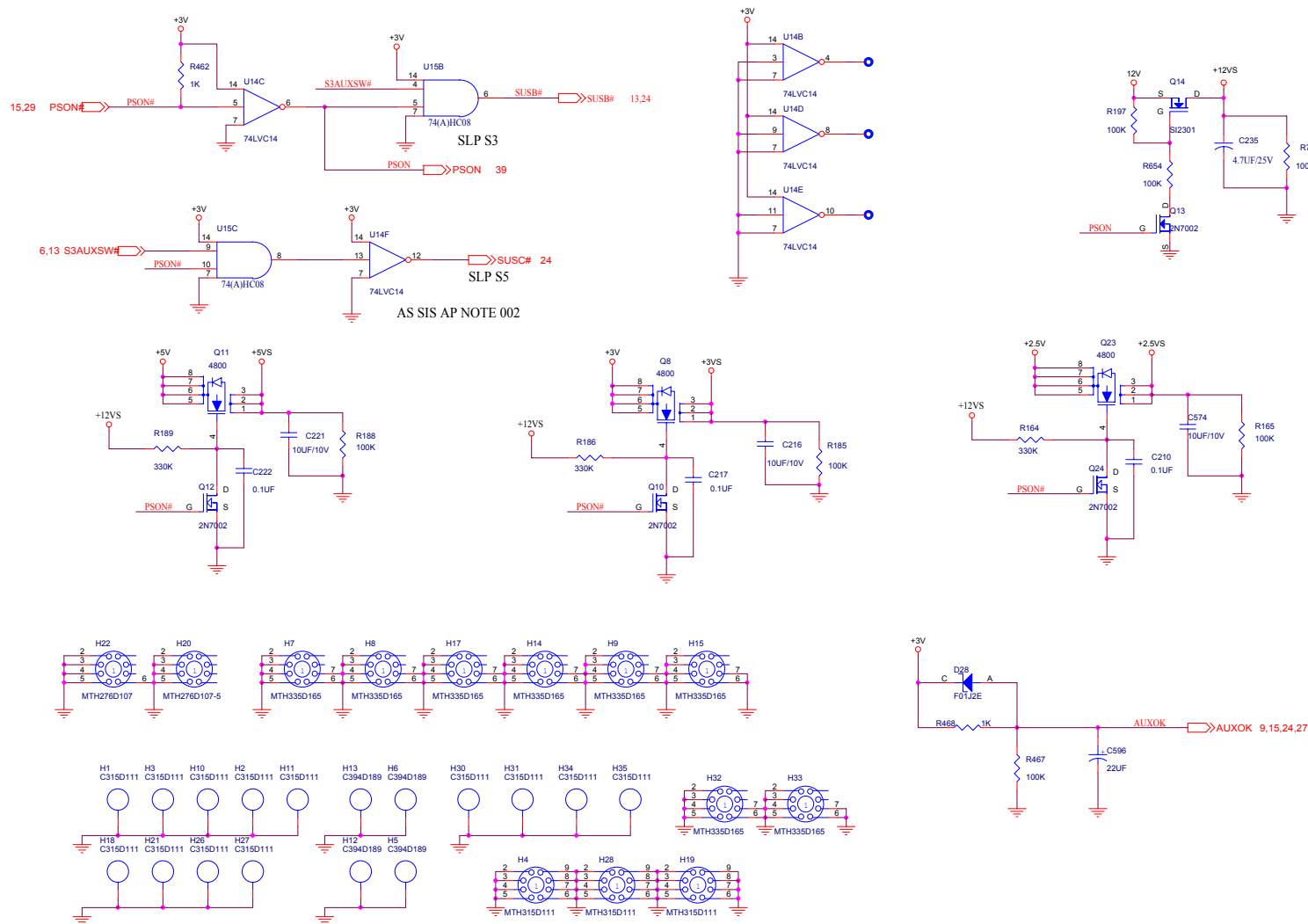


Audio Out & Off Board Connectors

Sheet 27 of 41
Audio Out & Off Board Connectors



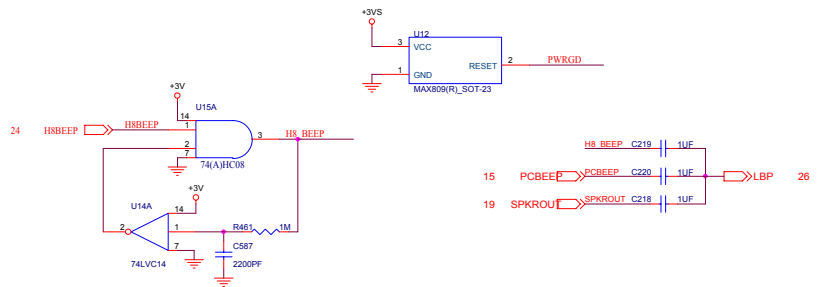
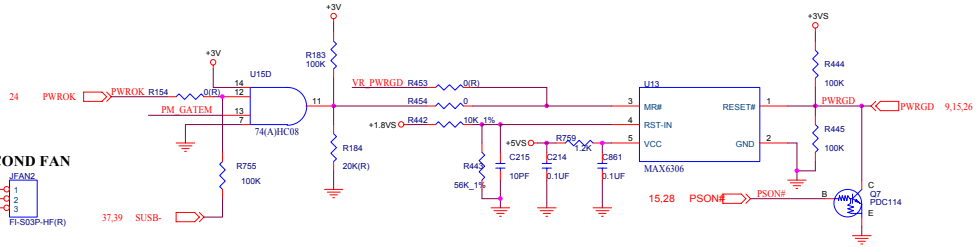
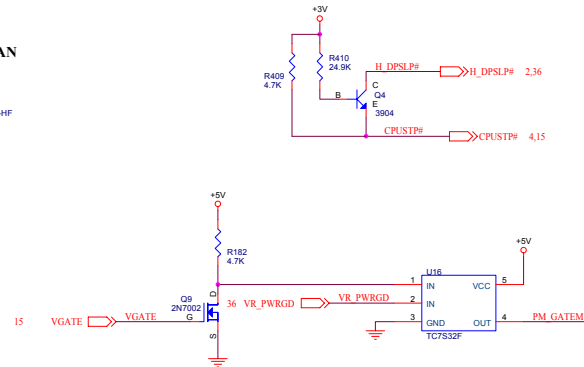
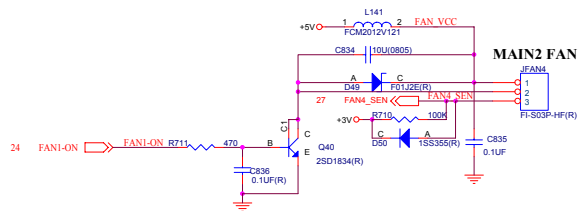
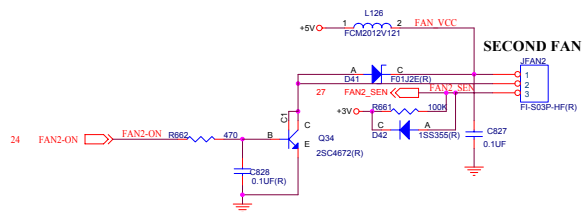
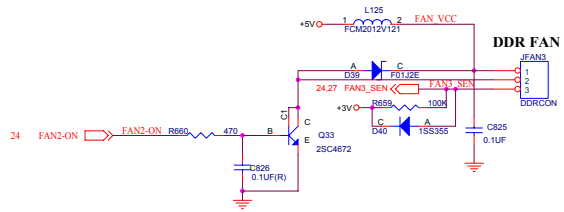
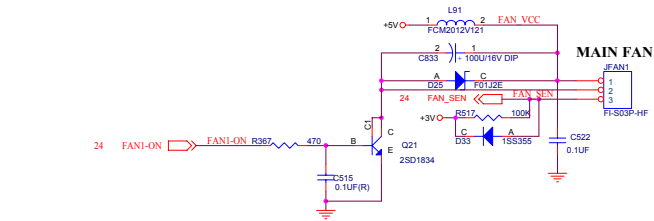
System Power Control



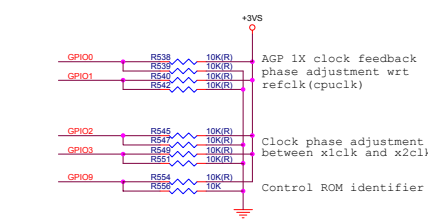
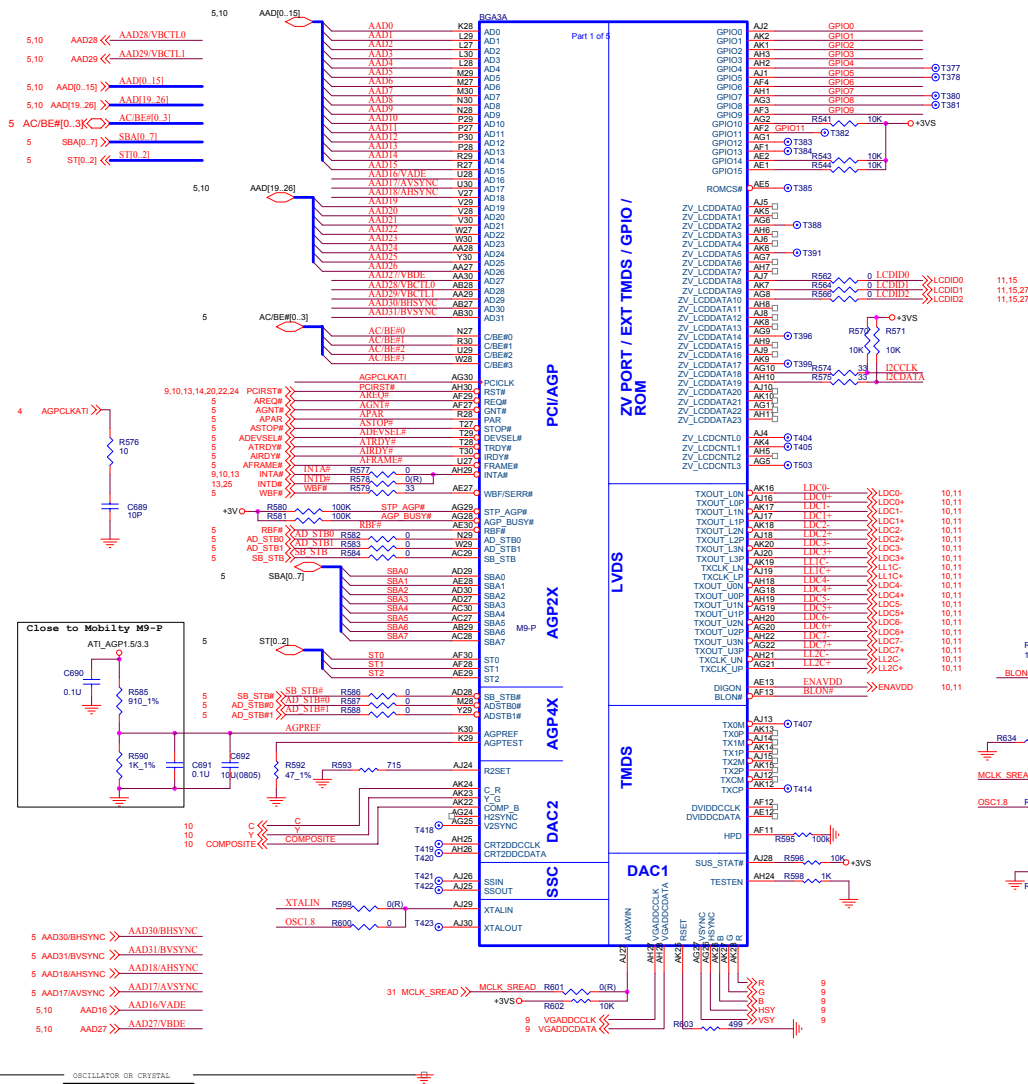
Sheet 28 of 41
System Power
Control

Fan Control and SpeedStep

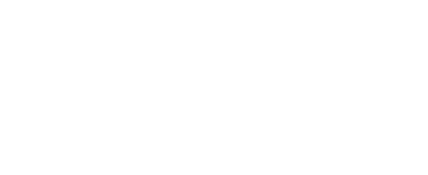
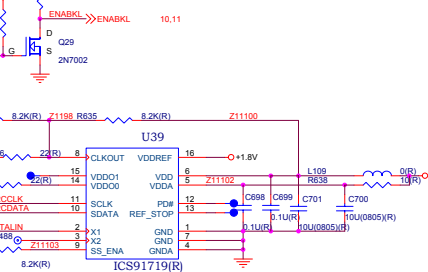
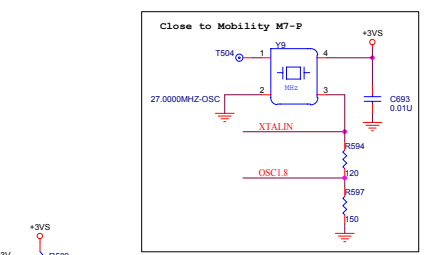
Sheet 29 of 41
Fan Control &
SpeedStep



Mobility M9-P



RSET	MOBILITY	THE VALUES OF RSET AND R2SET SHOWN IN THE TABLE MAY BE APPROXIMATE VALUES ONLY (SUITABLE FOR PROTOTYPING) BEFORE GOING INTO PRODUCTION CONTACT YOUR ATI REPRESENTATIVE FOR THE RSET/R2SET VALUES QUALIFIED FOR MASS PRODUCTION
RSET	715R	
R2SET	715R	

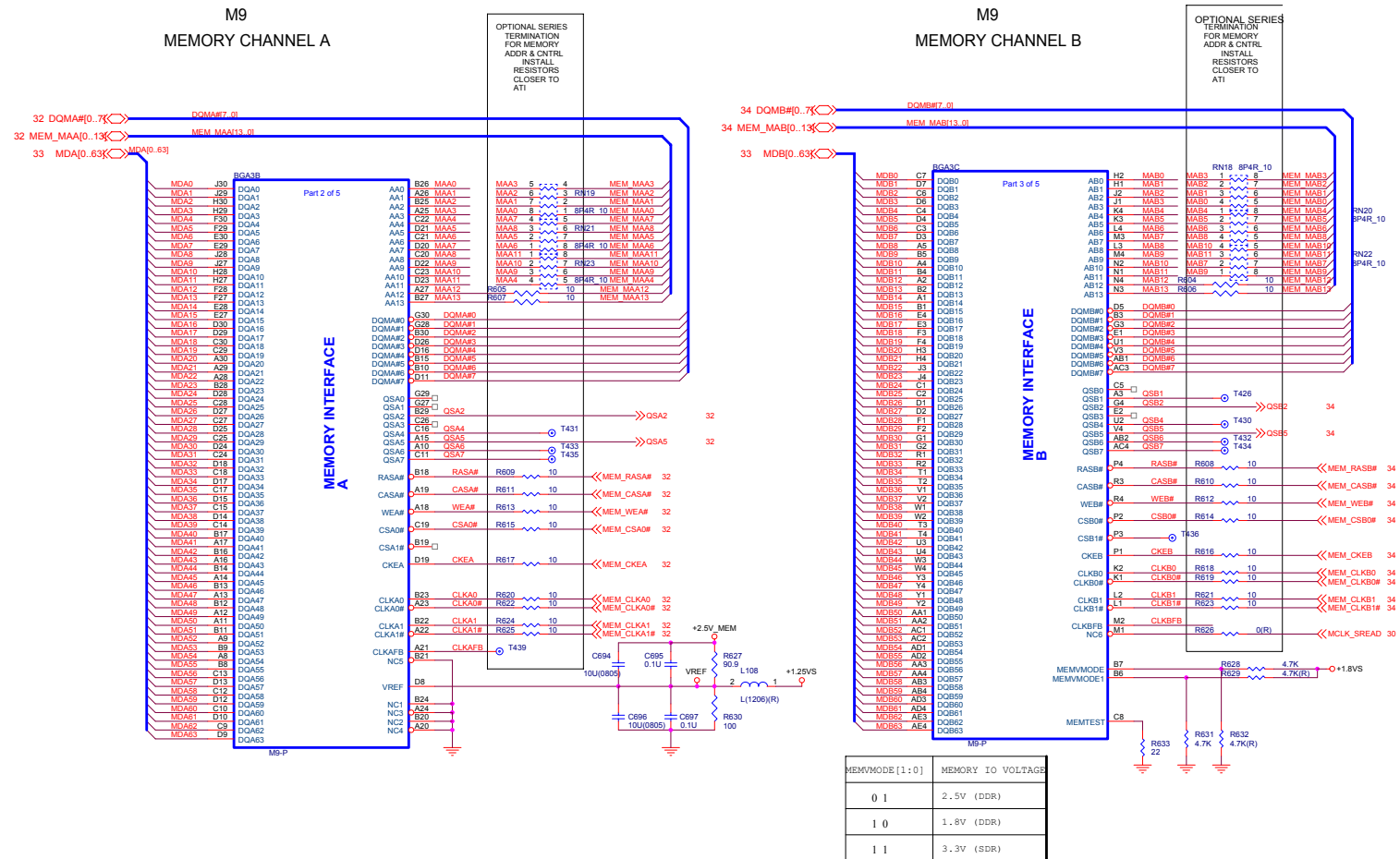


Sheet 30 of 41
Mobility M9-P

B.Schematic Diagrams

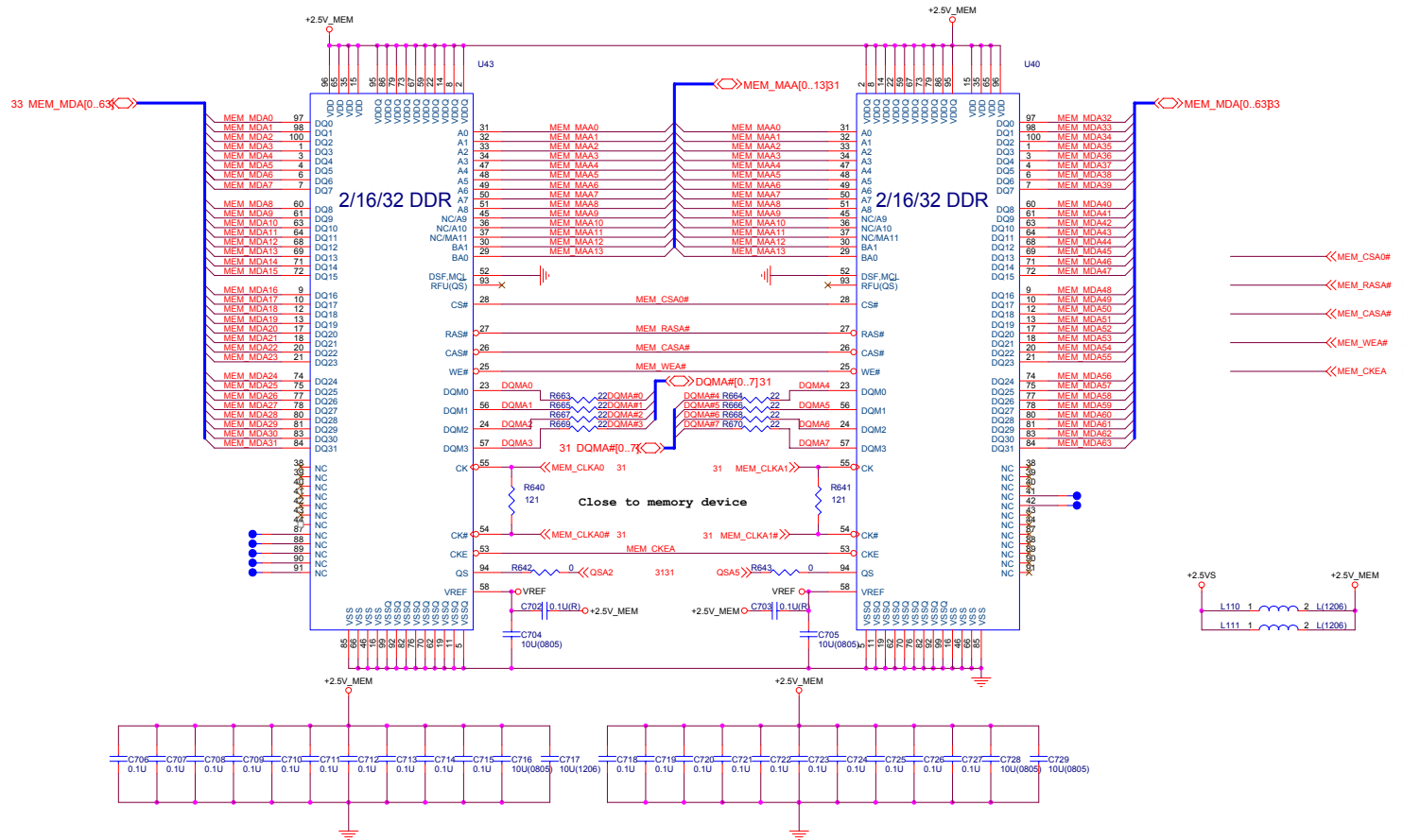
Mobility M9-P MEM A/B

Sheet 31 of 41
Mobility M9-P
MEM A/B



VGA DRAM 1 of 2

CHANNEL A

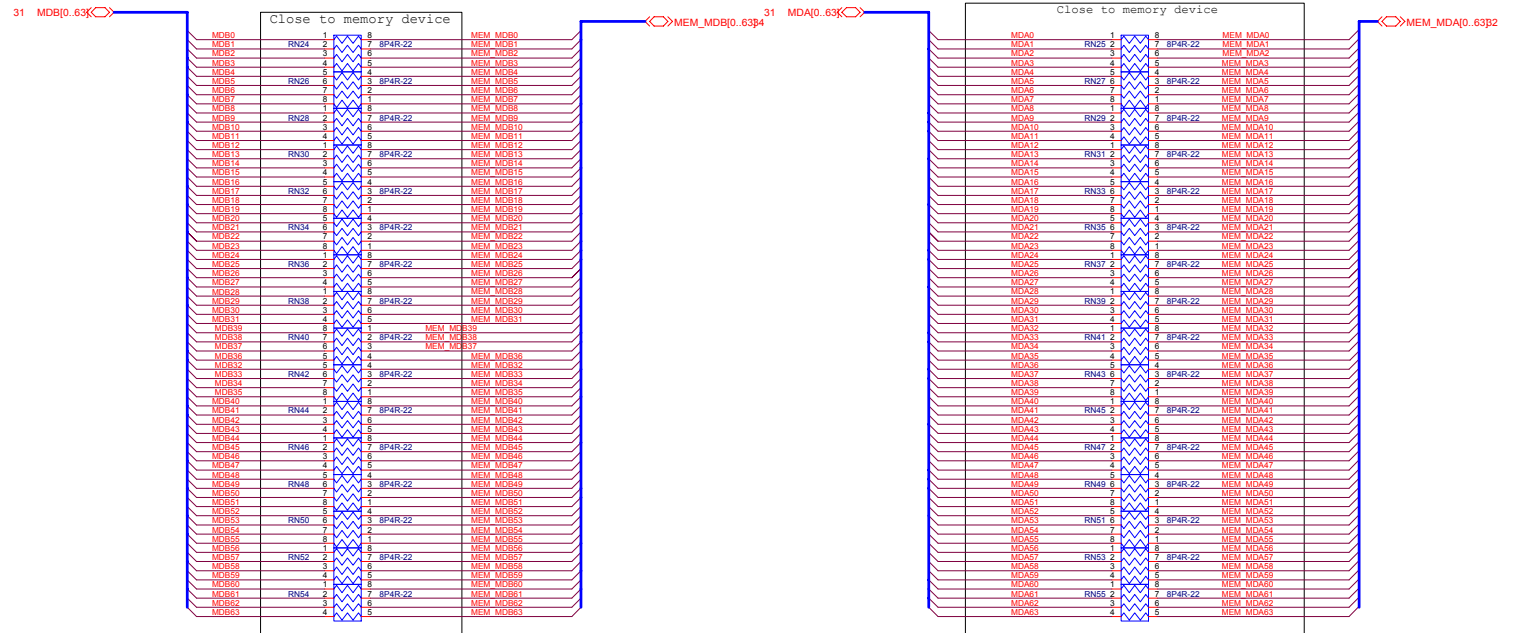


Sheet 32 of 41
VGA DRAM
1 of 2

B. Schematic Diagrams

VGA DRAM 1 of 2 - Termination

Sheet 33 of 41
VGA DRAM
1 of 2 - Termination

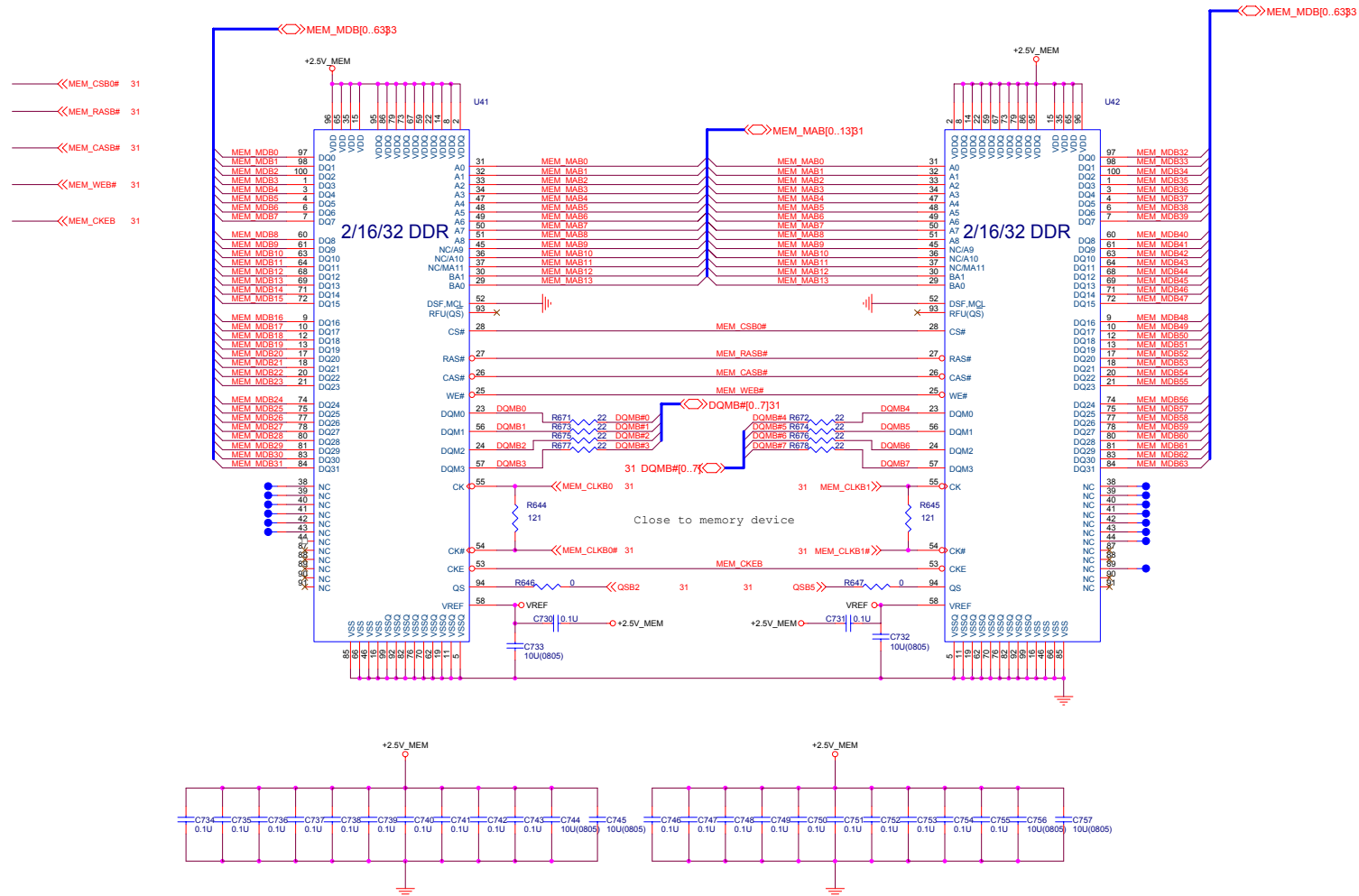


CHANNEL B

CHANNEL A

VGA DRAM 2 of 2

CHANNL B



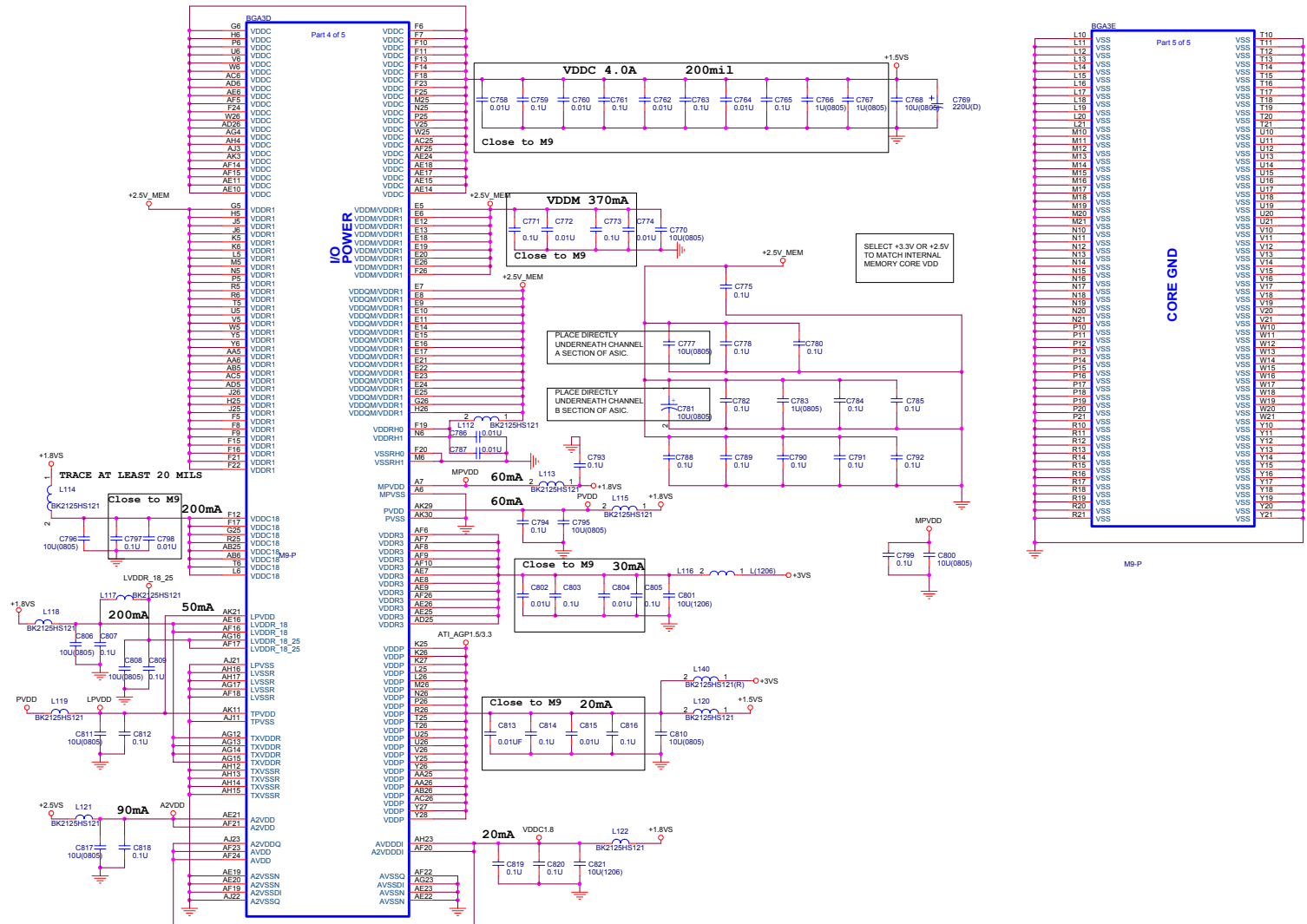
Sheet 34 of 41
VGA DRAM
2 of 2

B. Schematic Diagrams

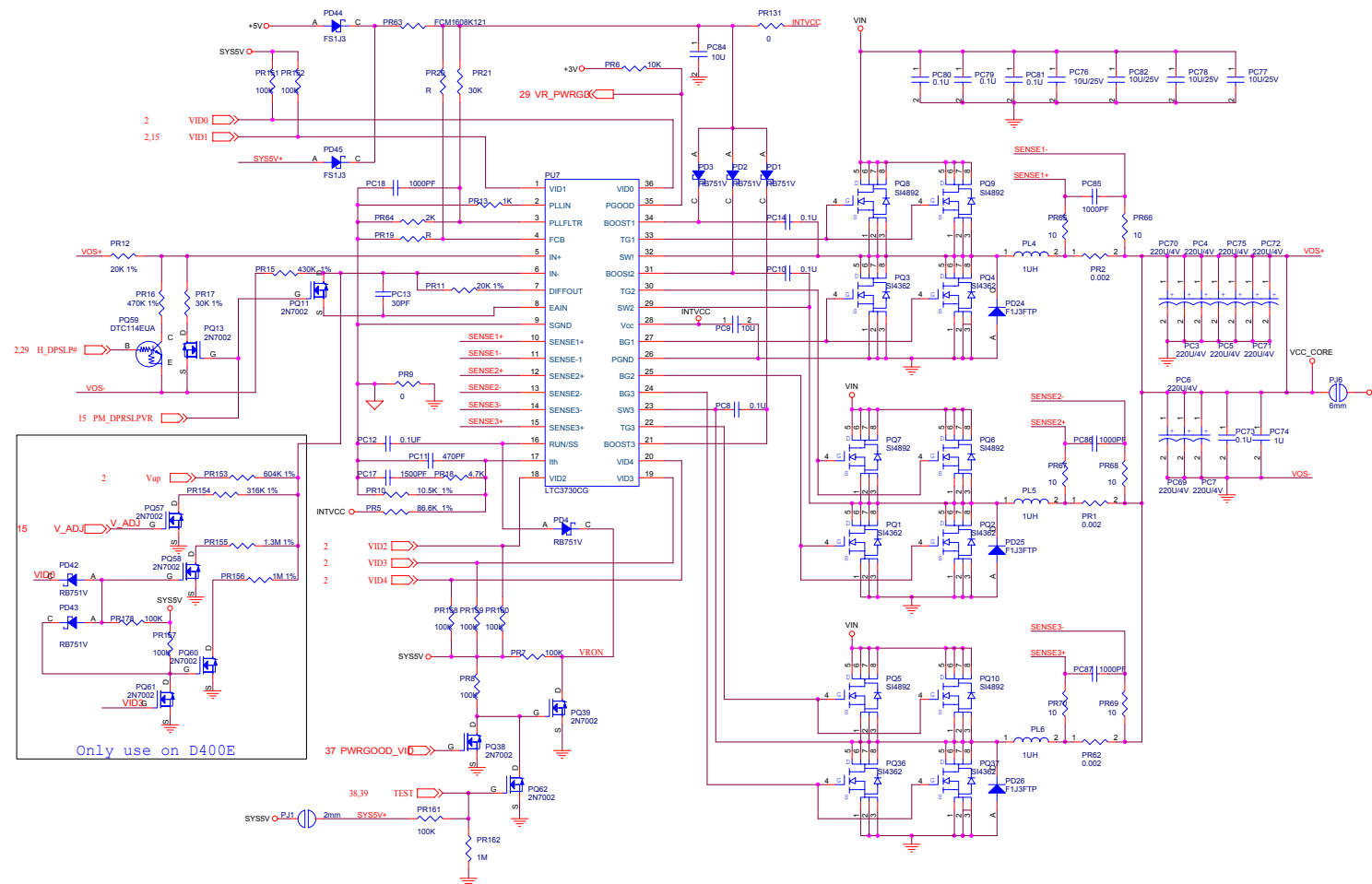
Mobility M9-P POW

B.Schematic Diagrams

Sheet 35 of 41
Mobility M9-P POW



VCORE

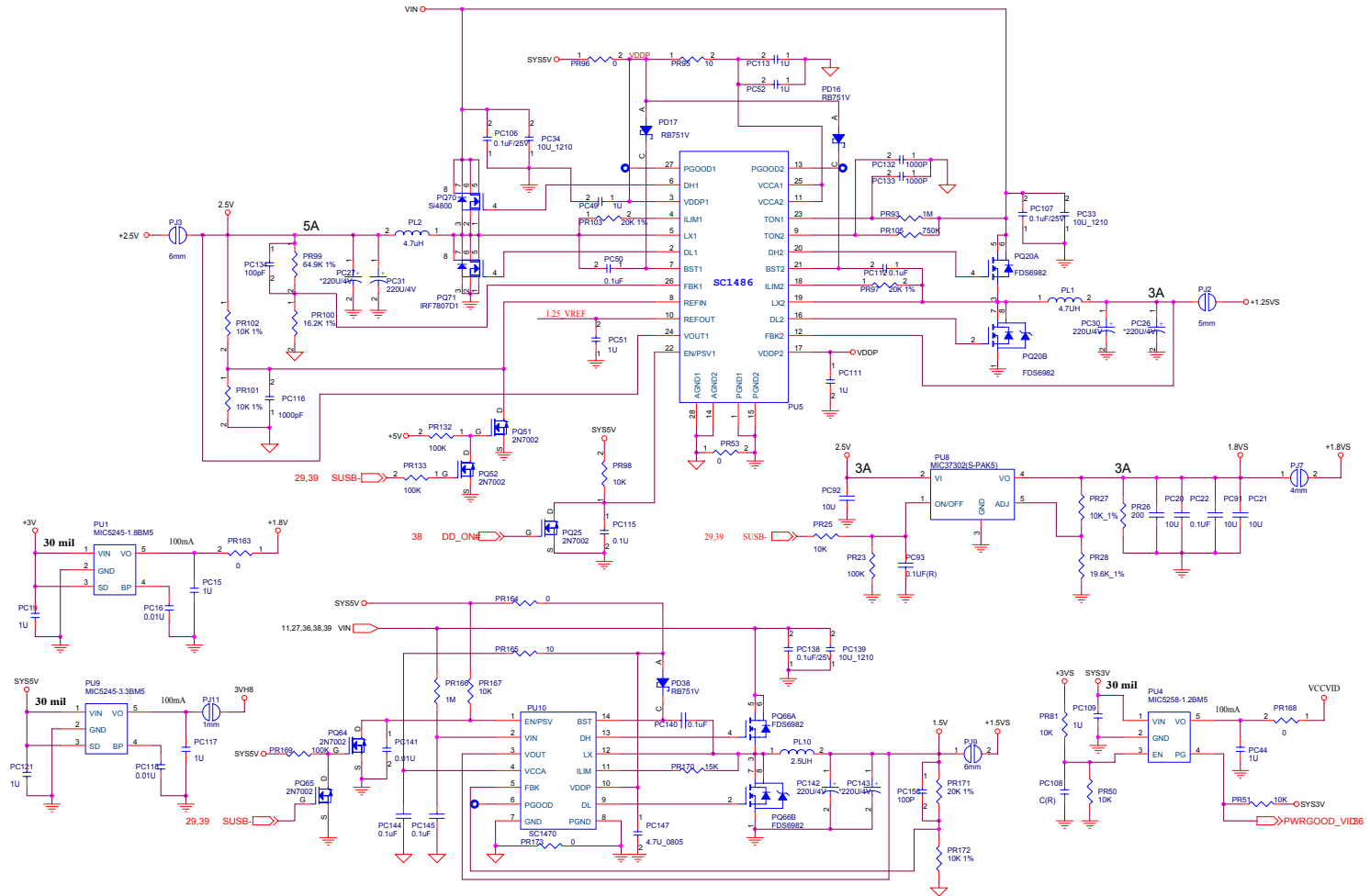


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VCORE

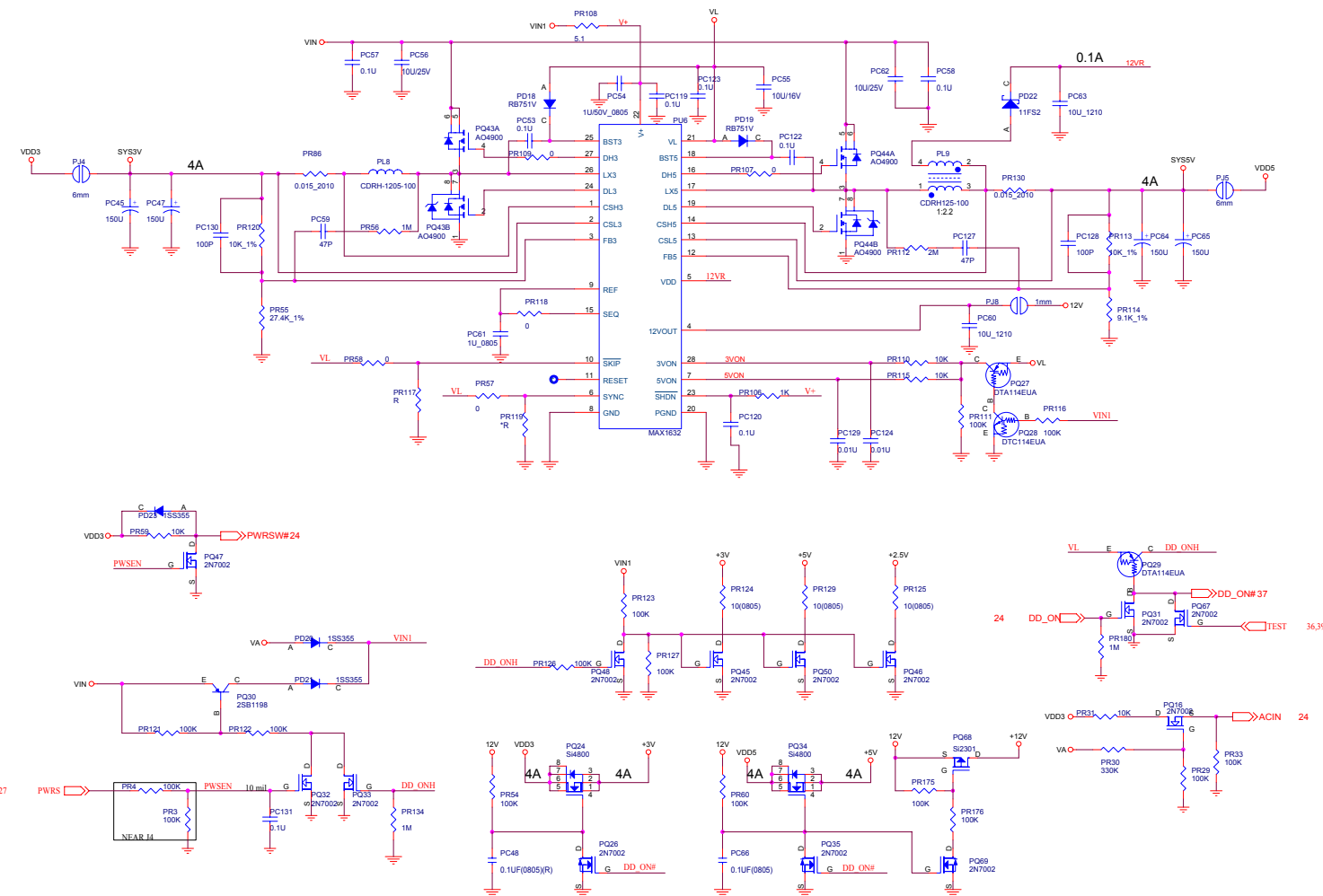
B. Schematic Diagrams

DDR Power

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DDR Power



System Power

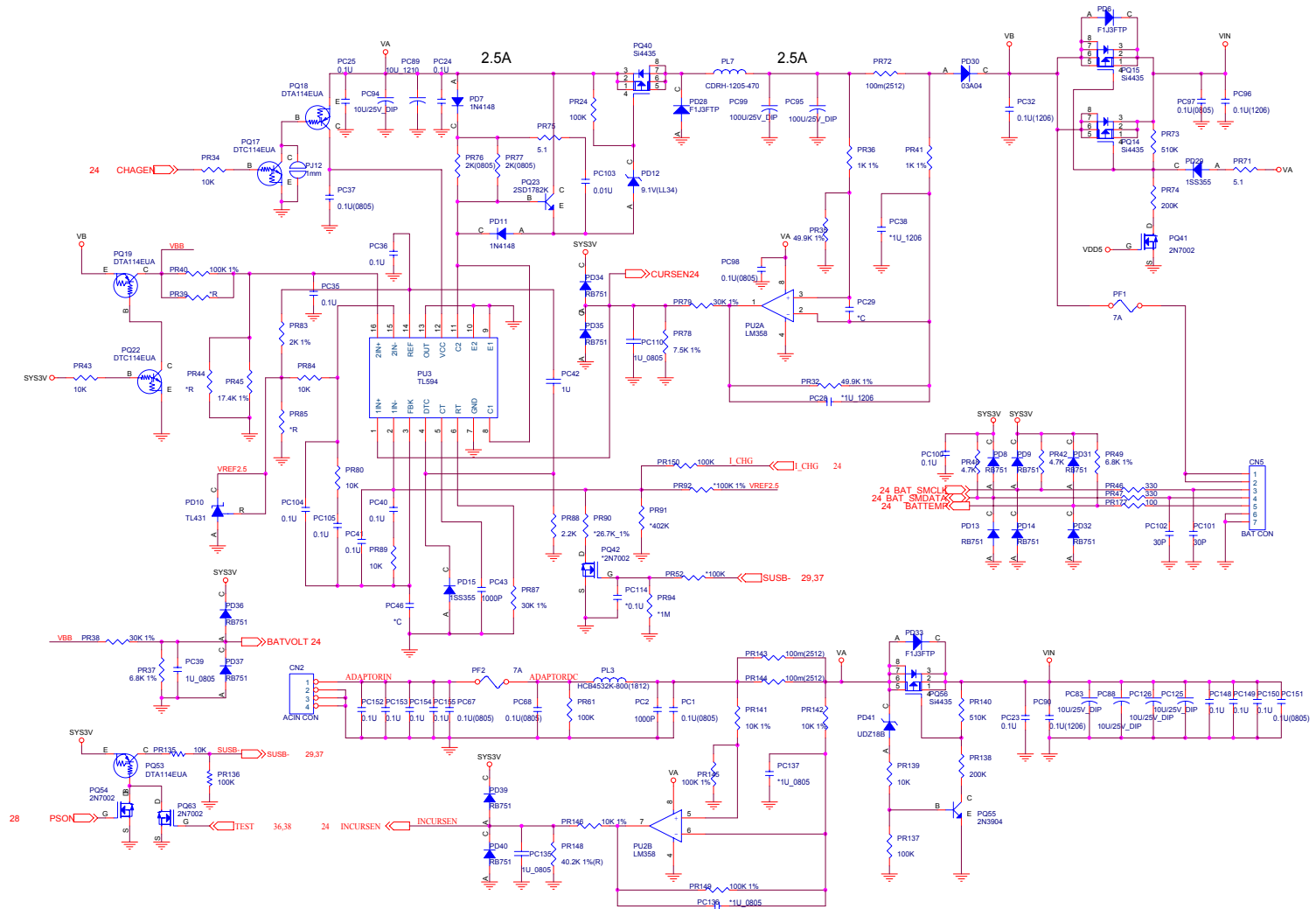


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System Power

B. Schematic Diagrams

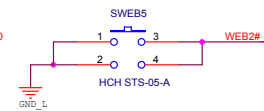
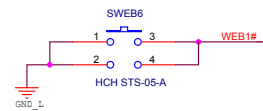
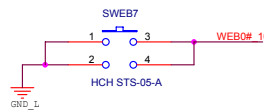
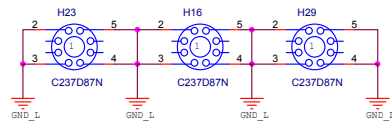
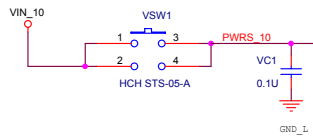
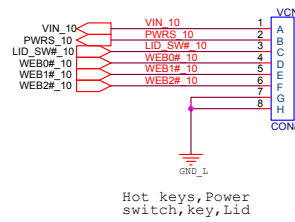
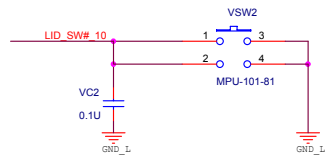
Charger

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Charger



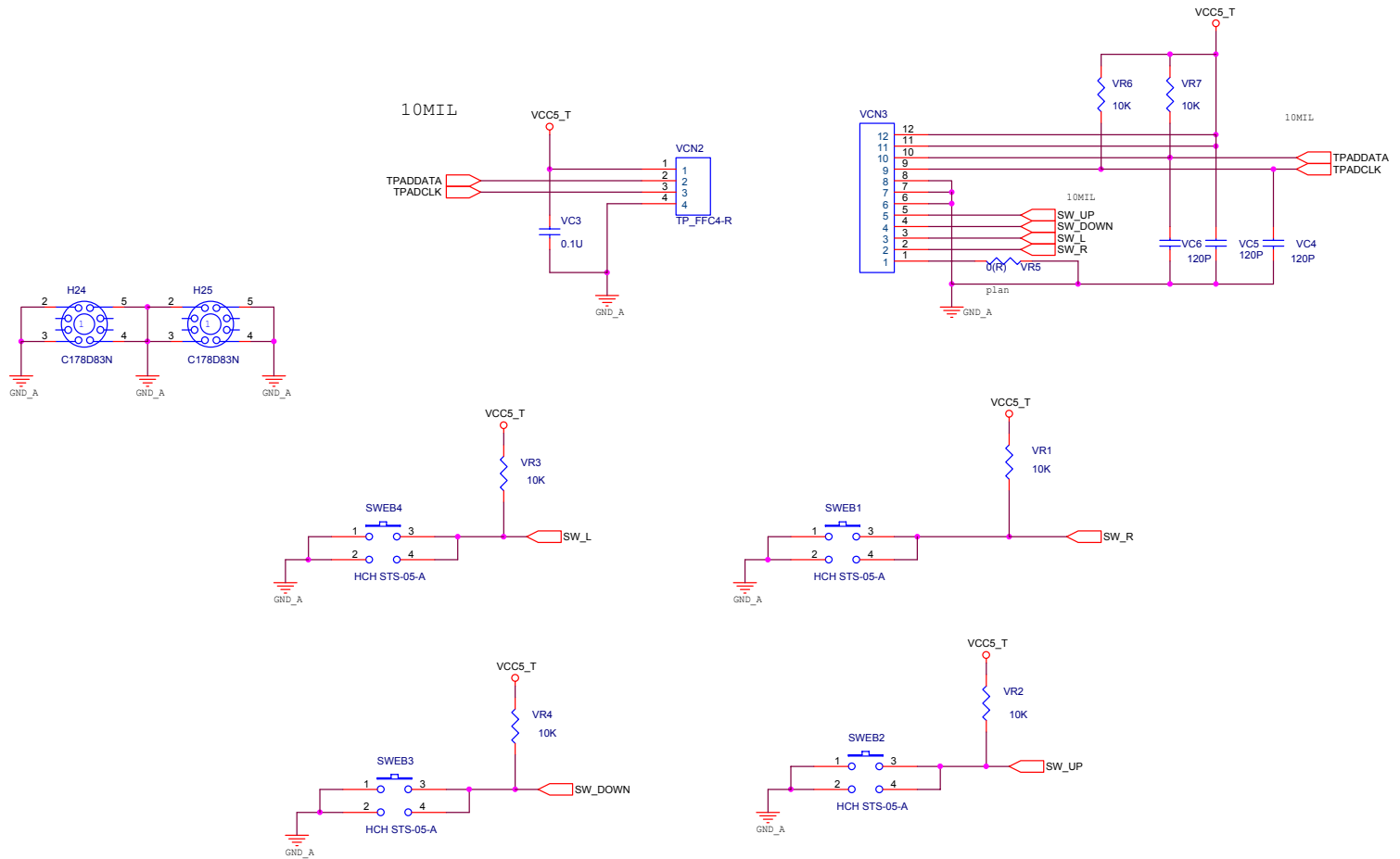
SW Board and HotKey

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SW Board and
HotKey



TouchPad and Switch Board

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TouchPad and
Switch Board



Appendix C: Switches and Jumpers

This appendix is about the system's switch and jumper settings.

The following figure shows the location of the DIP Switch and Jumper the system uses. You can access them after you remove the Back Cover. Be sure to turn OFF the system before you perform any part removal procedure.

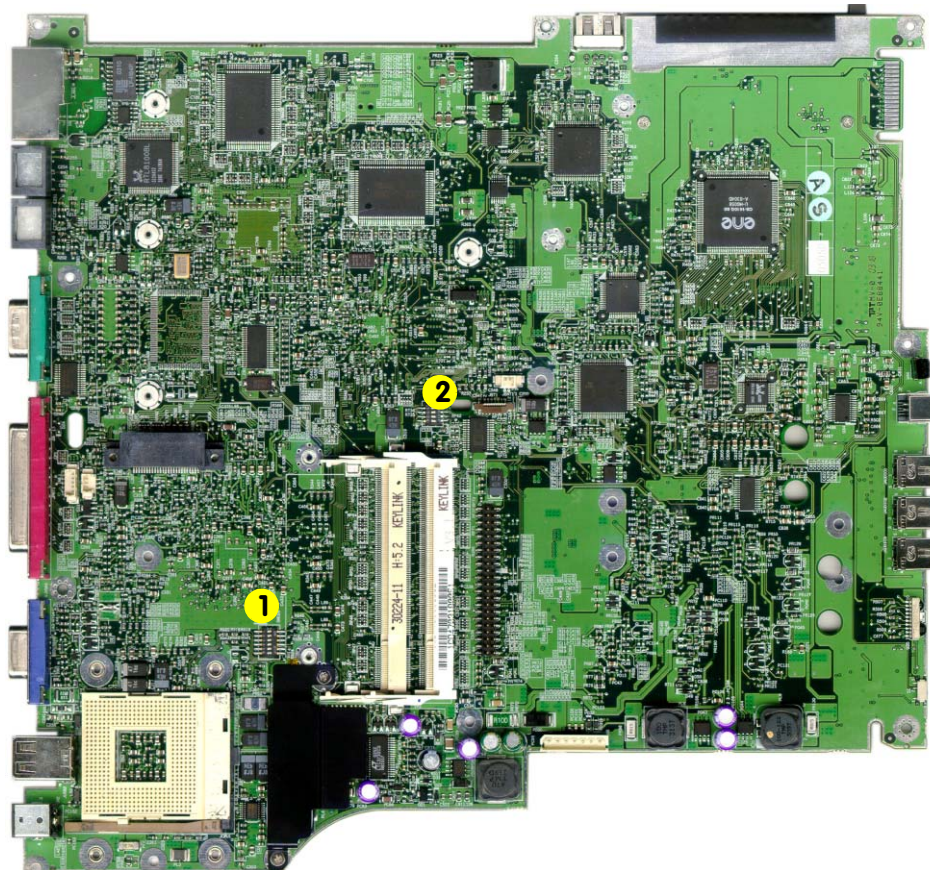


Figure C - 1
**Mainboard Switch
and Jumper
Location**

1. SWEB8
2. SW1

Settings

CPU Type/Voltage Jumper Settings (SWEB8)

CPU Type	Voltage	SWEB8-1 Vup	SWEB8-2 VID4	SWEB8-3 VID3	SWEB8-4 VID2	SWEB8-5 VID1	SWEB8-6 VID0
P4-Mobile	1.30V	OFF	OFF	OFF	OFF	OFF	OFF
P4-2.0~2.8G (DT)	1.50V	OFF	ON	ON	OFF	OFF	ON
P4-Celeron (DT)	1.525V	OFF	ON	ON	OFF	ON	OFF
P4-3.06G (DT)	1.55V	ON	ON	ON	OFF	ON	ON
P4-Portability 2.4~2.8G	1.525V	ON	ON	ON	OFF	OFF	ON

Function Jumper Settings (SW1)

Function Settings	SW1-1	SW1-2	SW1-3	SW1-4
Bluetooth	ON	ON	OFF	OFF
Card Reader / TV Tuner	OFF	OFF	ON	ON