

SERVICE MANUAL

W251ESQ/W255ES

notebook



Notebook Computer
W251ESQ/W255ES
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 *W251ESQ/W255ES* series notebook PC.

The following information is included:

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

Appendix A, Part Lists

Appendix B, Schematic Diagrams

Appendix C, Updating the FLASH ROM BIOS

Preface

IMPORTANT SAFETY INSTRUCTIONS

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

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit with an AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19V, 4.74A (**90W**) minimum AC/DC Adapter.

CAUTION

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

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

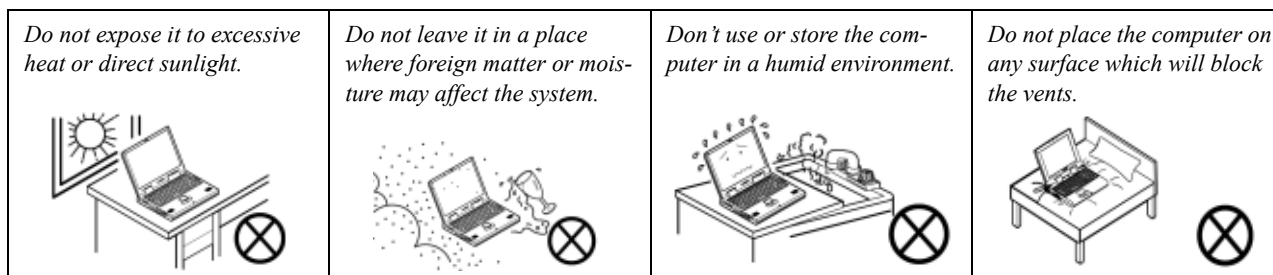
Instructions for Care and Operation

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

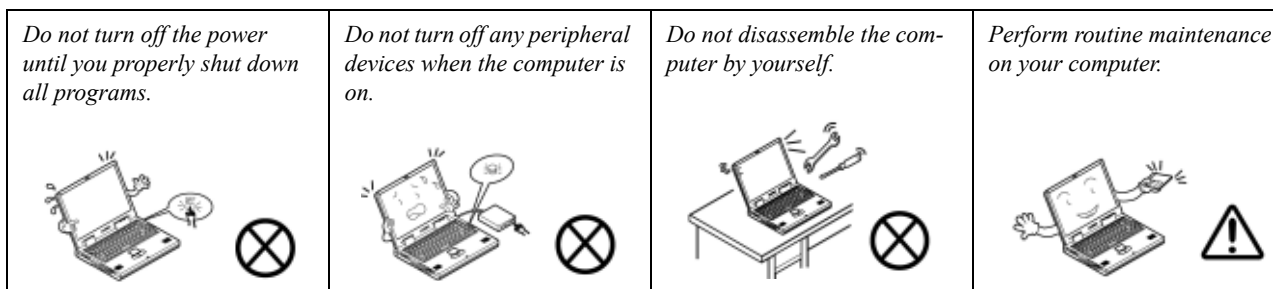
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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

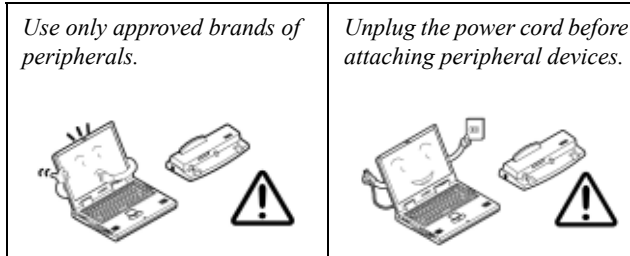


3. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



Preface

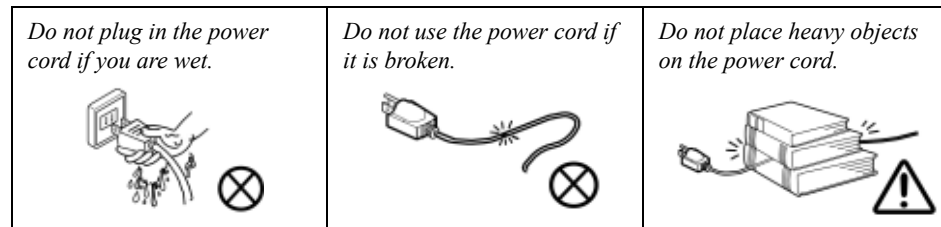
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

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



Power Safety Warning

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

Battery Precautions

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

Battery Guidelines

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

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



Battery Disposal

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

Caution

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

Battery Level

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

Related Documents

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

User's Manual on CD/DVD

This describes the notebook PC's features and the procedures for operating the computer and its ROM-based setup program. It also describes the installation and operation of the utility programs provided with the notebook PC.

System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Insert the battery and make sure it is locked in position.
4. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
5. Attach the AC/DC adapter to the DC-In jack at the rear of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 130 degrees); use the other hand (as illustrated in Figure 1) to support the base of the computer (**Note: Never** lift the computer by the lid/LCD).
7. Press the power button to turn the computer "on".



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



Shut Down

Note that you should always shut your computer down by choosing **Shut Down** from the **Start** Menu.

This will help prevent hard disk or system problems.

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **W251ESQ/W255ES** 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 the *User's Manual*. The manual is shipped with the computer.

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

The **W251ESQ/W255ES** 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 take note of the warning and safety information indicated by the “” symbol.

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

Introduction

Specifications



Latest Specification Information

The specifications listed here are correct at the time of sending them to the press. Certain items (particularly processor types/speeds) may be changed, delayed or updated due to the manufacturer's release schedule. Check with your service center for more details.



CPU

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

Processor

Note all processor packages are rPGA988B

Intel® Core i7-3820QM (2.7GHz)

Quad-Core Mobile Processor

8M L3 Cache, 22nm (22 Nanometer), DDR3-1600MHz, TDP 45W

Intel® Core i7-3720QM (2.6GHz)

Quad-Core Mobile Processor

6M L3 Cache, 22nm (22 Nanometer), DDR3-1600MHz, TDP 45W

Intel® Core i7-3610QM (2.3GHz)

Quad-Core Mobile Processor

6M L3 Cache, 22nm (22 Nanometer), DDR3-1600MHz, TDP 45W

Intel® Core i7-3520M (2.9GHz) Mobile Processor

4M L3 Cache, 22nm (22 Nanometer), DDR3-1600MHz, TDP 35W

Intel® Core i5-3360M (2.8GHz) Mobile Processor

3M L3 Cache, 22nm (22 Nanometer), DDR3-1600MHz, TDP 35W

Intel® Core i5-3320M (2.6GHz) Mobile Processor

3M L3 Cache, 22nm (22 Nanometer), DDR3-1600MHz, TDP 35W

Intel® Core i5-3210M (2.5GHz) Mobile Processor

3M L3 Cache, 22nm (22 Nanometer), DDR3-1600MHz, TDP 35W

Intel® Core i5-3110M (2.4GHz) Mobile Processor

3M L3 Cache, 22nm (22 Nanometer), DDR3-1600MHz, TDP 35W

Intel® Core i7-2860QM (2.5GHz)

Quad-Core Mobile Processor

8M L3 Cache, 32nm (32 Nanometer), DDR3-1600MHz, TDP 45W

Intel® Core i7-2820QM (2.3GHz)

Quad-Core Mobile Processor

8M L3 Cache, 32nm (32 Nanometer), DDR3-1600MHz, TDP 45W

Intel® Core i7-2760QM (2.4GHz)

Quad-Core Mobile Processor

6M L3 Cache, 32nm (32 Nanometer), DDR3-1600MHz, TDP 45W

Intel® Core i7-2720QM (2.2GHz)

Quad-Core Mobile Processor

6M L3 Cache, 32nm (32 Nanometer), DDR3-1600MHz, TDP 45W

Intel® Core i7-2670QM (2.2GHz)

Quad-Core Mobile Processor

6M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz, TDP 45W

Intel® Core i7-2630QM (2.0GHz)

Quad-Core Mobile Processor

6M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz, TDP 45W

Intel® Core i7-2640M (2.8GHz) Mobile Processor

4M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz, TDP 35W

Intel® Core i7-2620M (2.7GHz) Mobile Processor

4M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz, TDP 35W

Intel® Core i5-2540M (2.6GHz) Mobile Processor
3M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Core i5-2520M (2.5GHz) Mobile Processor
3M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Core i5-2450M (2.5GHz) Mobile Processor
3M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Core i5-2430M (2.4GHz) Mobile Processor
3M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Core i5-2410M (2.3GHz) Mobile Processor
3M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Core i3-2370M (2.4GHz) Mobile Processor
3M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Core i3-2350M (2.3GHz) Mobile Processor
3M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Core i3-2330M (2.2GHz) Mobile Processor
3M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Core i3-2310M (2.1GHz) Mobile Processor
3M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Pentium® B970 (2.3GHz)
2M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Pentium® B960 (2.2GHz)
2M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Pentium® B950 (2.1GHz)
2M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Intel® Pentium® B940 (2.0GHz)
2M L3 Cache, 32nm (32 Nanometer), DDR3-1333MHz,
TDP 35W

Core Logic

Mobile Intel® HM76 Express Chipset

Display

15.6" / 39.62cm HD (1366 * 768) / HD+ (1600 * 900) / FHD
(1920 * 1080) 16:9 Backlit Panel

Memory

Dual Channel **DDRIII (DDR3)**

Two 204 Pin SO-DIMM sockets supporting DDR3
1333MHz/1600MHz (real operational frequency depends
on the FSB of the processor)

Memory Expandable up to **8GB** (using 1GB / 2GB / 4GB
SO-DIMM Modules)

Video Controller

**Intel® Integrated GPU and NVIDIA® GeForce GT 630M
Video:**

***Supports NVIDIA® Optimus Switchable GPU
Technology between iGPU and dGPU***

**Intel® HD Graphics 4000 / Intel® HD Graphics 3000 /
Intel® HD Graphics**

(GPU is Dependent on Processor):

Dynamic Frequency

Intel Dynamic Video Memory Technology for up to 1.7GB
Microsoft DirectX®10 Compatible (*for Intel® HD Graphics
3000 / Intel® HD Graphics*)

Microsoft DirectX®11 Compatible (*for Intel® HD Graphics
4000*)

NVIDIA® GeForce GT 630M Discrete GPU:

1GB DDR3 Video RAM

Supports PCIe * 8

Microsoft DirectX®11 Compatible

NVIDIA PhysX™

GeForce CUDA™ Technology

NVIDIA® Optimus 2012 Technology

BIOS

48Mb SPI Flash ROM

AMI BIOS

Storage

One Changeable 12.7mm(h) Super Multi/Blu-ray Combo
Optical Device Drive with SATA Interface (**Factory Option**)

One Changeable 2.5" / 9.5 mm (h) HDD with SATA (Serial)
Interface

Introduction

Audio	Communication	Security
High Definition Audio Interface Built-In Microphone 2 * Built-In Speakers THX TruStudio Pro	Built-In 10/100/1000Mb Base-TX Ethernet LAN Intel® Centrino® Advanced-N 6235 (2*2 802.11 a/g/n) Half Mini-Card PCIe WLAN & Bluetooth 4.0 Combo Module (Factory Option) Intel® Centrino® Wireless-N 2230 (1*2 802.11 b/g/n) Half Mini-Card PCIe WLAN & Bluetooth 4.0 Combo Module (Factory Option) Combo WLAN (802.11b/g/n) and Bluetooth v3.0+HS Half Mini-Card Module with PCIe Interface (Factory Option) WLAN 802.11b/g/n Half Mini-Card Module with PCIe Interface (Factory Option) 1.3M/2.0M Pixel PC Camera Module with USB interface (Factory Option) =====	Security (Kensington® Type) Lock Slot BIOS Password
Keyboard, Pointing Device & Buttons		Operating System
Isolated Keyboard with Numeric Keypad Built-in Touchpad with Multi-Gesture Functionality		Windows® 7 with Service Pack 1
Interface		Design Feature
One USB 2.0 Port Two USB 3.0 Ports One eSATA Port One External Monitor Port One HDMI1.4a Out Port (with HDCP) One Headphone-Out Jack One Microphone-In Jack One RJ-45 LAN Jack One DC-In Jack		Painted Style Covers (For Some Designs Only) IMR (Injected Molded Resin) LCD Back Covers (For Some Model Designs)
Card Reader		Environmental Spec
Embedded Multi-In-1 Card Reader - MMC/ RS MMC - SD/ Mini SD / SDHC/ SDXC - MS/ MS Pro/ MS Duo Note: Some of these cards require PC adapters that are usually supplied with the cards.		Temperature Operating: 5°C - 35°C Non-Operating: -20°C - 60°C Relative Humidity Operating: 20% - 80% Non-Operating: 10% - 90%
Slots	Power Management	Dimensions & Weight
Two Mini-Card Slots: Slot 1 for Half Size WLAN Combo Module with PCIe and USB Interface Slot 2 for Full Size 3.75G Module with USB Interface	Supports Wake on LAN Supports Wake on USB	374mm (w) * 25.0mm (d) * 14.3 - 37.2mm (h) OR (Design Style Dependent) 374mm (w) * 25.0mm (d) * 20 - 37.2mm (h) 2.6 kg with ODD & 48.84WH Battery
	Power	
	Full Range AC/DC Adapter AC input 100 - 240V, 50 - 60Hz, DC Output 19V, 4.74A (90 Watts) Removable 6 Cell Smart Lithium Ion Battery Pack 48.84WH Removable 6 Cell Smart Lithium Ion Battery Pack 62.16WH (Factory Option)	

External Locator - Top View with LCD Panel Open



Figure 1
Top View

1. PC Camera
(Optional)
2. LCD
3. Power Button
4. LED Status
Indicators
5. Keyboard
6. Built-In
Microphone
7. Touchpad &
Buttons

*Note that the
microphone location is
dependent upon your
model design

Introduction

Figure 2
Front View

1. LED Power Indicator

External Locator - Front & Right Side Views

FRONT VIEW



Figure 3
Right Side View

1. Microphone-In Jack
2. Headphone-Out Jack
3. USB 2.0 Port
4. Optical Device Drive Bay
5. Emergency Eject Hole

RIGHT SIDE VIEW



External Locator - Left Side & Rear View

LEFT SIDE VIEW



Figure 4
Left Side View

1. DC-In Jack
2. External Monitor Port
3. RJ-45 LAN Jack
4. HDMI-Out Port
5. USB 3.0 Ports
6. Vent
7. Multi-in-1 Card Reader
8. e-SATA Port

REAR VIEW



Figure 5
Rear View

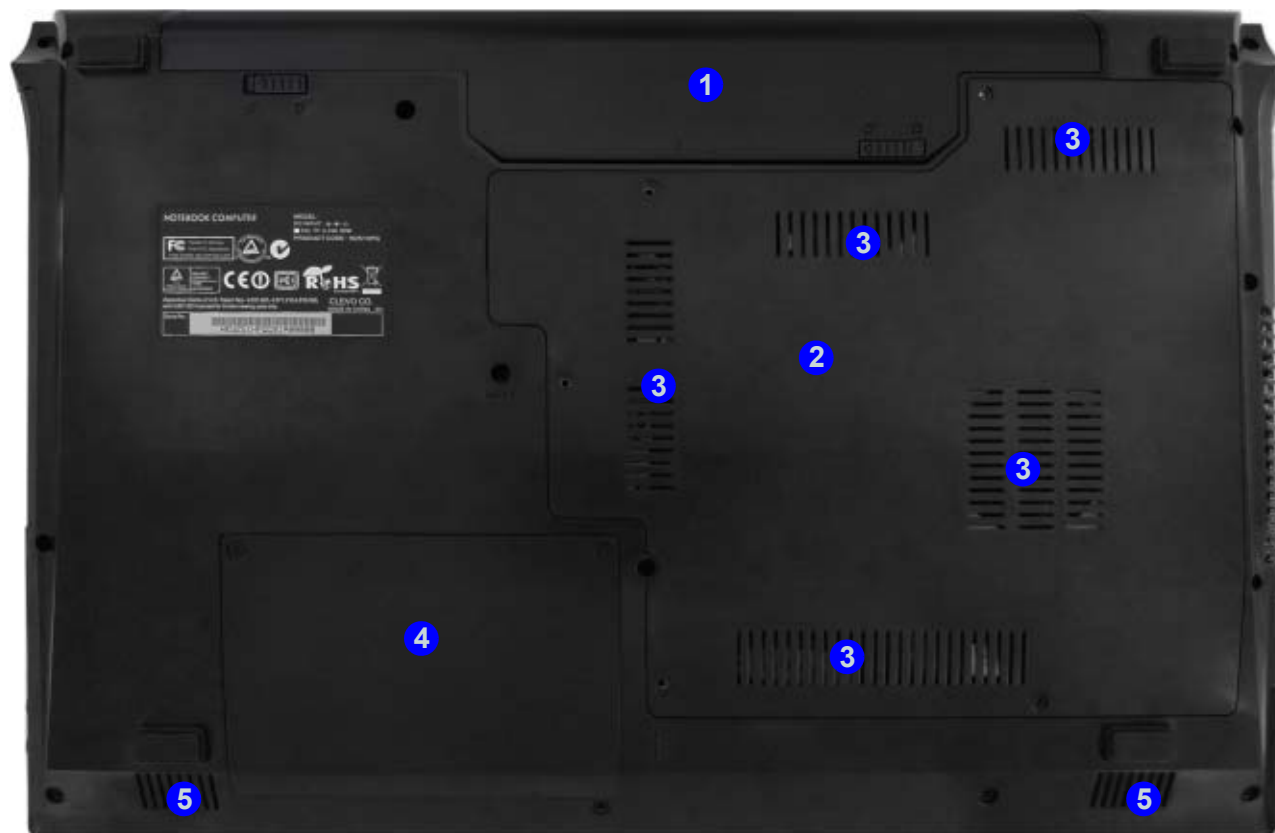
1. Security Lock Slot
2. Battery

Introduction

External Locator - Bottom View

Figure 6
Bottom View

1. Battery
2. Component Bay Cover
3. Vent
4. Hard Disk Bay Cover
5. Speakers



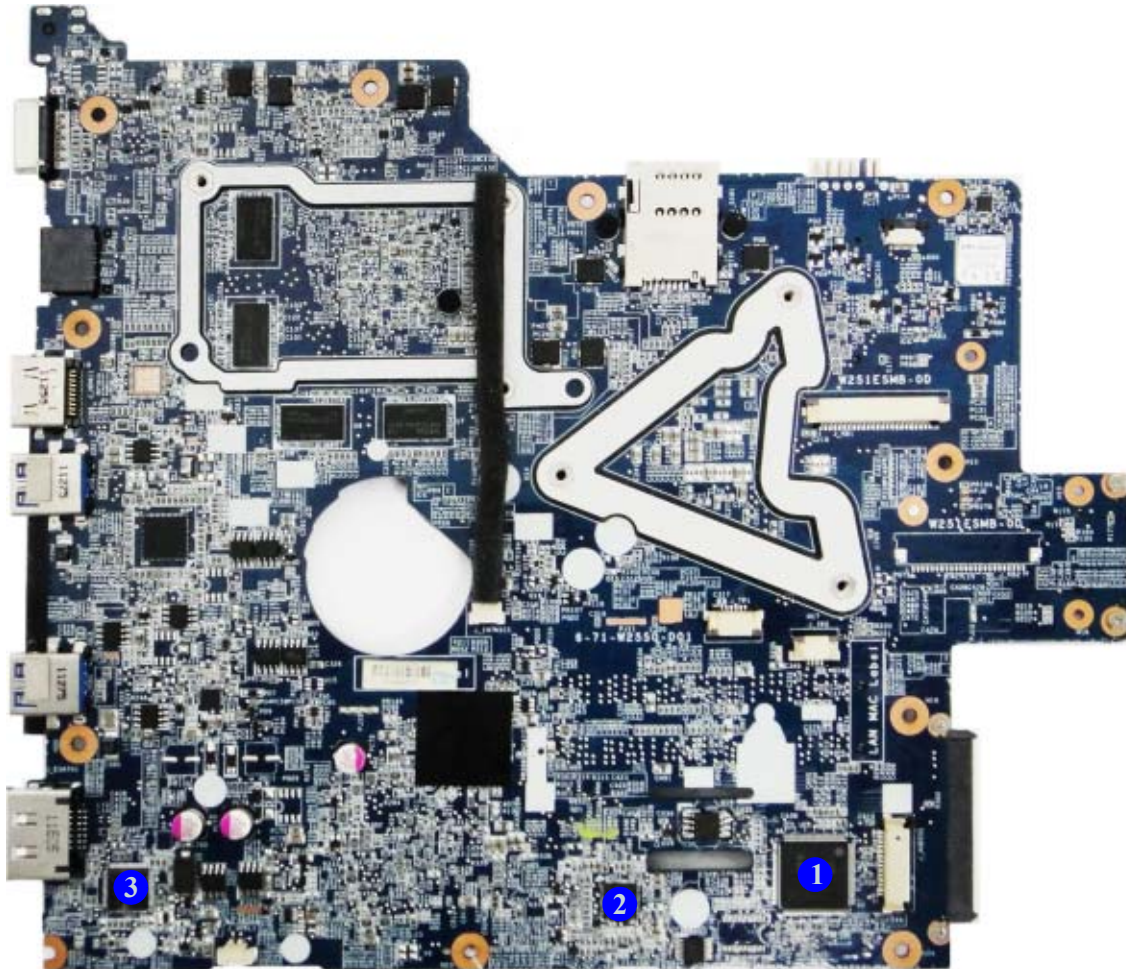
Overheating

To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

Mainboard Overview - Top (Key Parts)

Figure 7
**Mainboard Top
Key Parts**

1. KBC-ITE IT8518
2. VIA VT1802P
3. Realtek RTL8411



Introduction

Figure 8
**Mainboard Bottom
Key Parts**

1. Memory Slots
DDR3 SO-DIMM
2. CMOS Battery
3. Mini-Card
Connector (WLAN
Module)
4. CPU Socket (no
CPU installed)
5. Mini-Card
Connector (3G
Module)
6. nVIDIA VGA
7. Platform Controller
Hub

Mainboard Overview - Bottom (Key Parts)



Mainboard Overview - Top (Connectors)

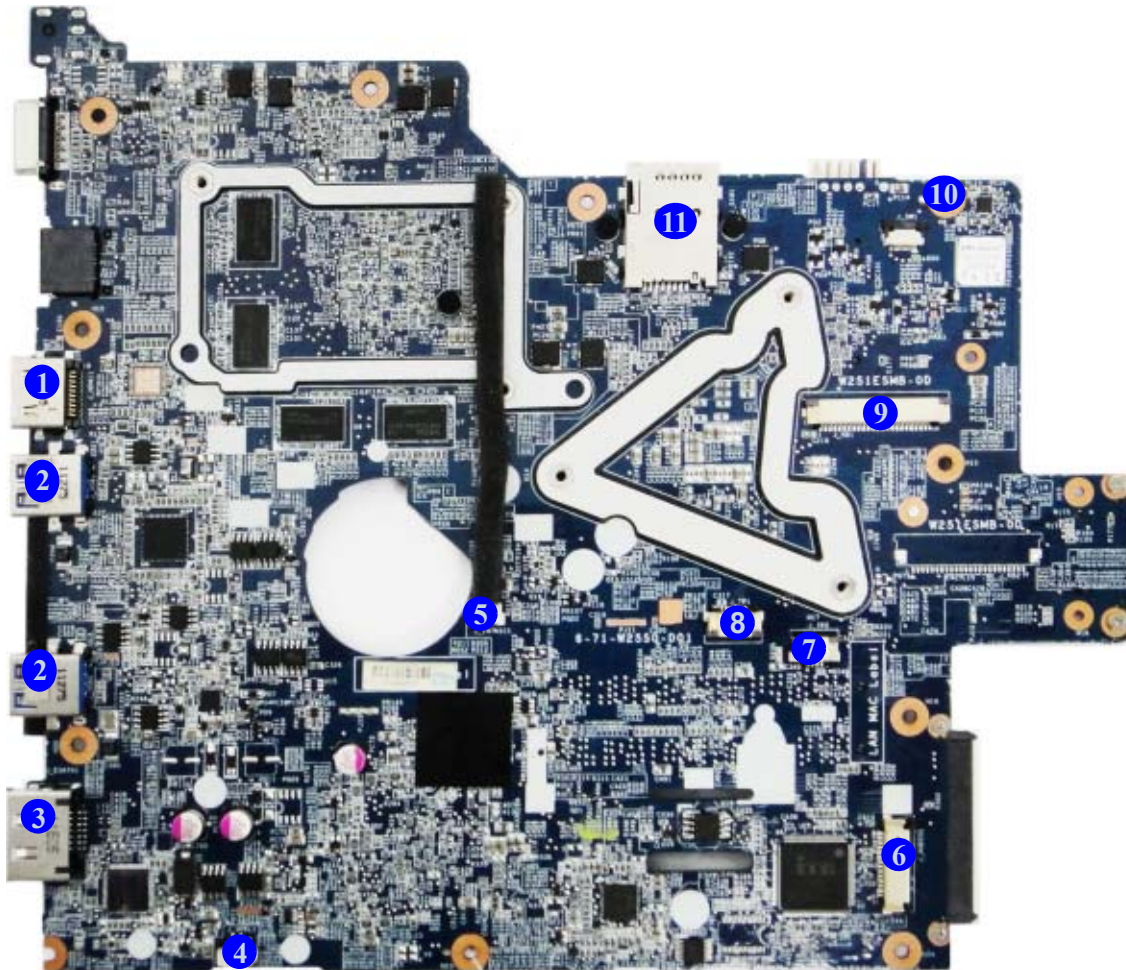


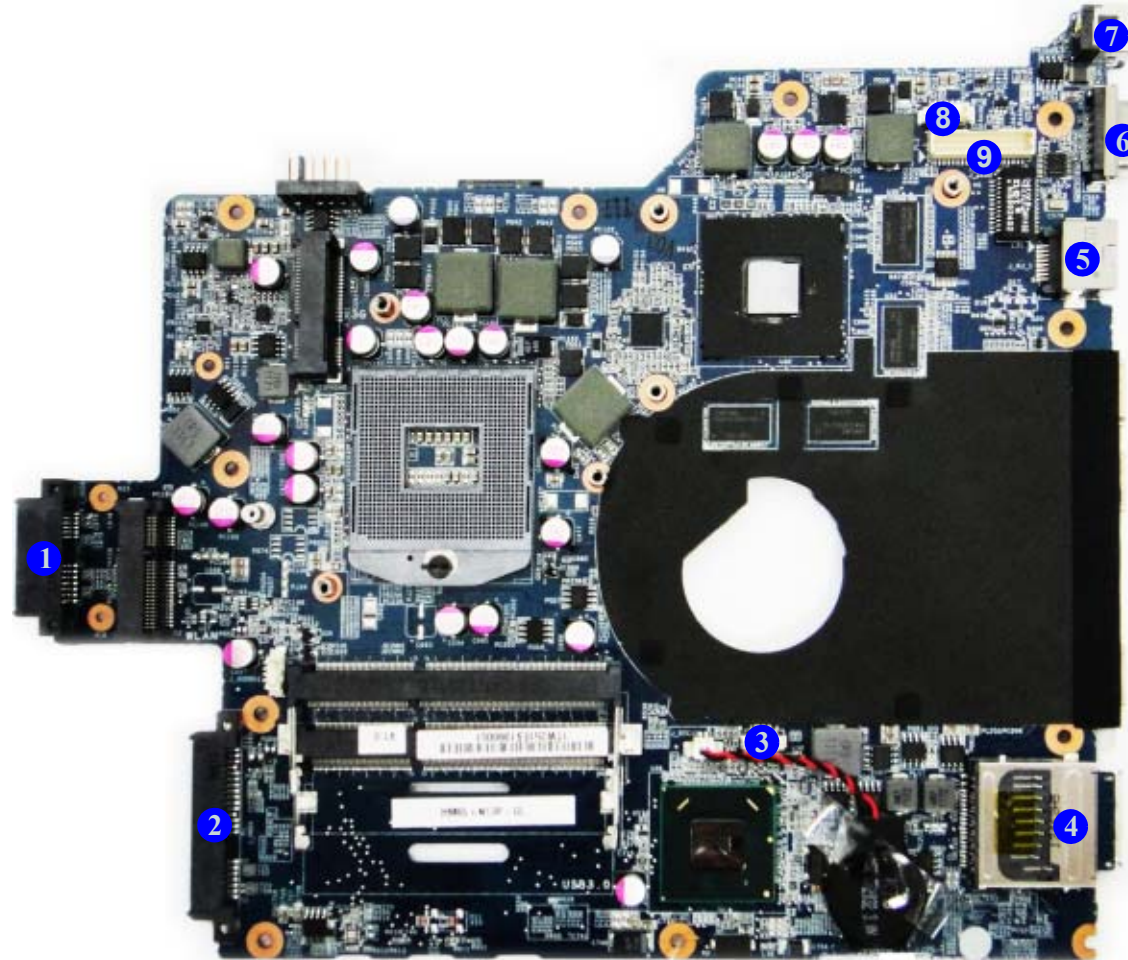
Figure 9
**Mainboard Top
Connectors**

1. HDMI-Out Port
2. USB Port 3.0
3. eSATA Port
4. Speaker Cable Connector
5. Microphone Cable Connector
6. Audio Board Connector
7. TouchPad Cable Connector 1
8. TouchPad Cable Connector 2
9. Keyboard Cable Connector
10. Switch Board Cable Connector
11. SIMLOCK

Introduction

Figure 10
**Mainboard Bottom
Connectors**

1. ODD Connector
2. HDD Connector
3. CPU Fan Cable Connector
4. Multi-in-1 Card Reader
5. RJ-45 LAN Jack
6. External Monitor Port
7. DC-In Jack
8. CCD Cable Connector
9. LCD Cable Connector



Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the *W251ESQ/W255ES* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

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

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

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

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

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


Information

Warning

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-born 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 - 11*
3. Install the processor *page 2 - 13*

To remove the 3.75G Module:

1. Remove the battery *page 2 - 5*
2. Remove the 3.75G 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 Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 16*

Removing the Battery

1. Turn the computer **off**, and turn it over.
2. Slide the latch ① in the direction of the arrow (*Figure 1a*).
3. Slide the latch ② in the direction of the arrow, and hold it in place (*Figure 1a*).
4. Slide the battery ③ in the direction of the arrow ④ (*Figure 1b*).

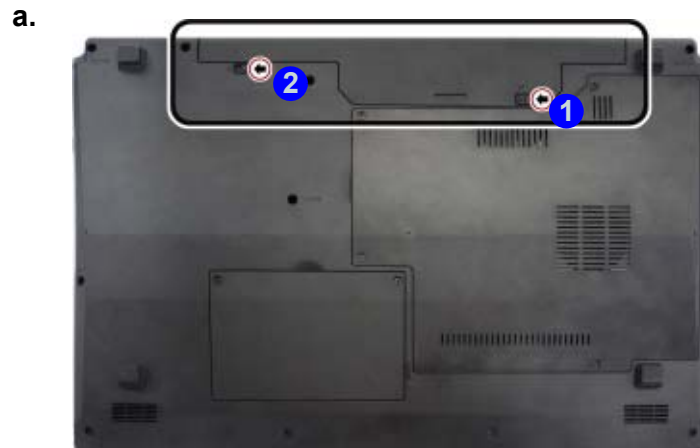
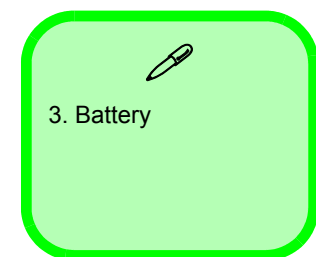


Figure 1
Battery Removal

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



Disassembly

Figure 2
**HDD Assembly
Removal**

Removing the Hard Disk Drive

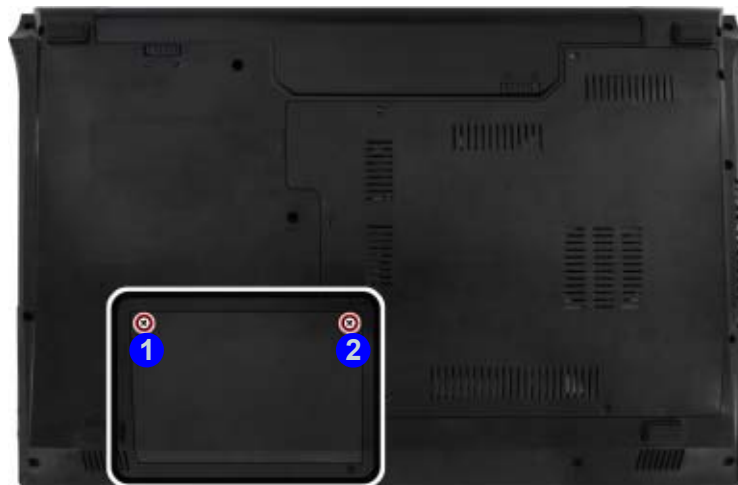
The hard disk drive can be taken out to accommodate other 2.5" serial (SATA) hard disk drives with a height of 9.5mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up a new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

- a. Locate the HDD bay cover and remove the screws.

Hard Disk Upgrade Process

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
2. Locate the hard disk bay cover and remove screws **1** & **2** ([Figure 2a](#)).

a.



- 2 Screws



HDD System Warning

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

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

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

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

3. Remove the hard disk bay cover **3** (*Figure 3b*).
4. Grip the tab and slide the hard disk in the direction of arrow **4** (*Figure 3c*).
5. Lift the hard disk assembly **5** out of the bay **6** (*Figure 3d*).
6. Remove the screw **7** - **10** and the mylar cover **11** from the hard disk **12** (*Figure 3e*).
7. Reverse the process to install a new hard disk (do not forget to replace all the screws and covers).

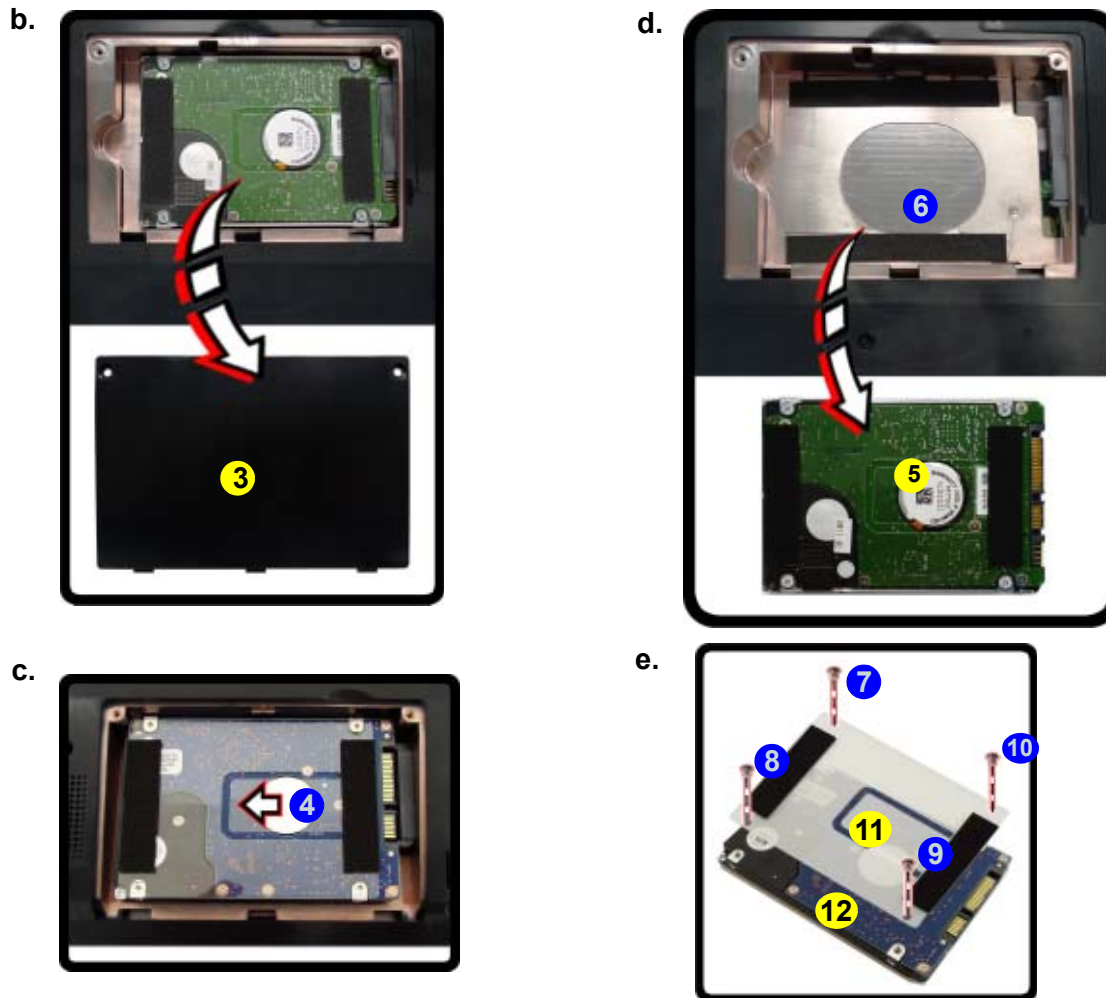


Figure 3
**HDD Assembly
Removal (cont'd.)**

- b. Remove the HDD bay cover.
- c. Grip the tab and slide the HDD assembly in the direction of the arrow.
- d. Lift the HDD assembly out of the bay.
- e. Remove the screws and mylar cover.



- 3. HDD Bay Cover
- 5. HDD Assembly
- 11. Mylar Cover
- 12. HDD
- 4 Screws

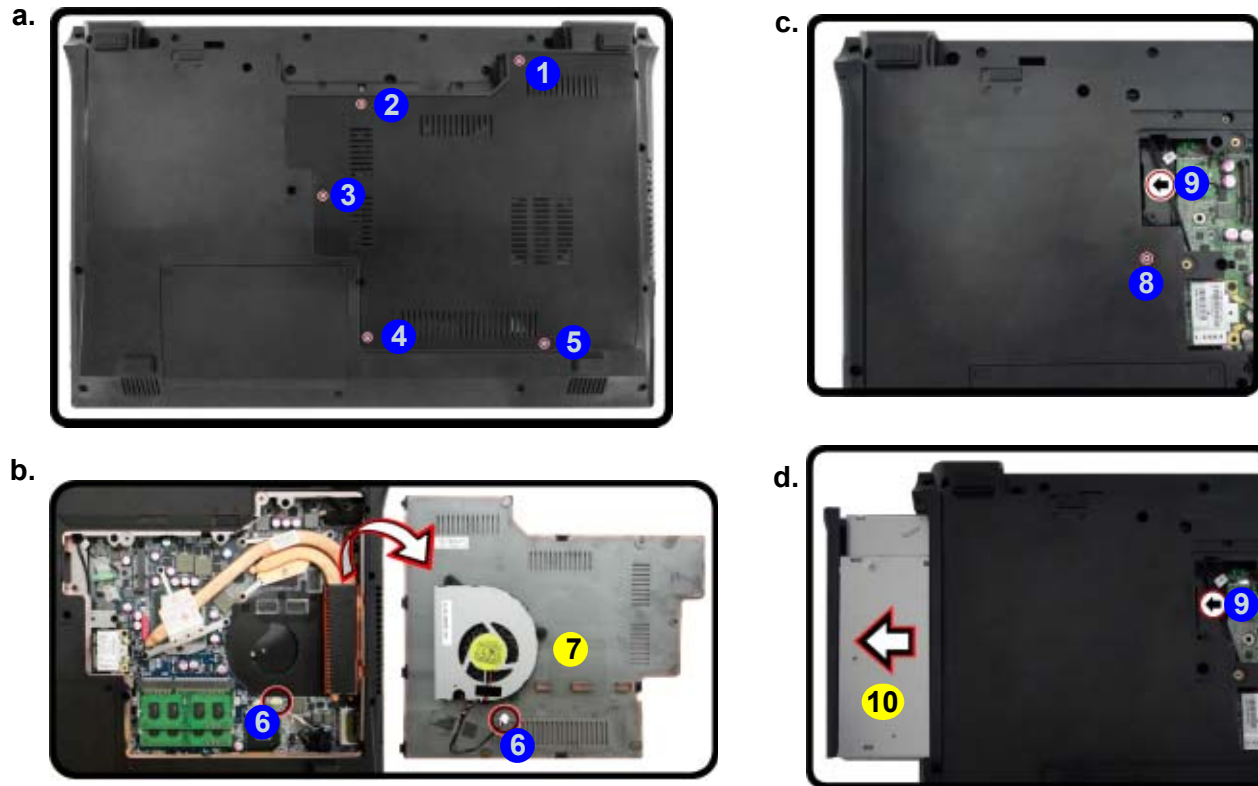
Disassembly

Figure 4
Optical Device Removal

- Remove the screws.
- Remove the bay cover.
- Remove the screw.
- Use a screwdriver to carefully push out the optical device at point 9.

Removing the Optical (CD/DVD) Device

- Turn **off** the computer, remove the battery ([page 2 - 5](#)).
- Locate the component bay cover and remove screws 1 - 5 ([Figure 4a](#)).
- Carefully (**a fan and cable are attached to the under side of the cover**) lift up the bay cover.
- Carefully disconnect the fan cable 6, and remove the cover 7.
- Remove the screw 8.
- Use a screwdriver to carefully push out the optical device 10 at point 9 ([Figure 4b](#)).
- 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).
- Restart the computer to allow it to automatically detect the new device.



7. Component Bay Cover
10. Optical Device

- 6 Screws

Removing the System Memory (RAM)

The computer has two memory sockets for 204 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDRIII (DDR3) Up to 1066/1333 MHz. The main memory can be expanded up to 8GB. 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](#)).
2. Remove screws **1** - **5** from the component bay cover ([Figure 5a](#)).
3. Carefully (**a fan and cable are attached to the under side of the cover**) lift up the bay cover **6**.
4. Carefully disconnect the fan cable **7**, and remove the cover **6** ([Figure 5b](#)).
5. The RAM modules will be visible at point **8** on the mainboard.

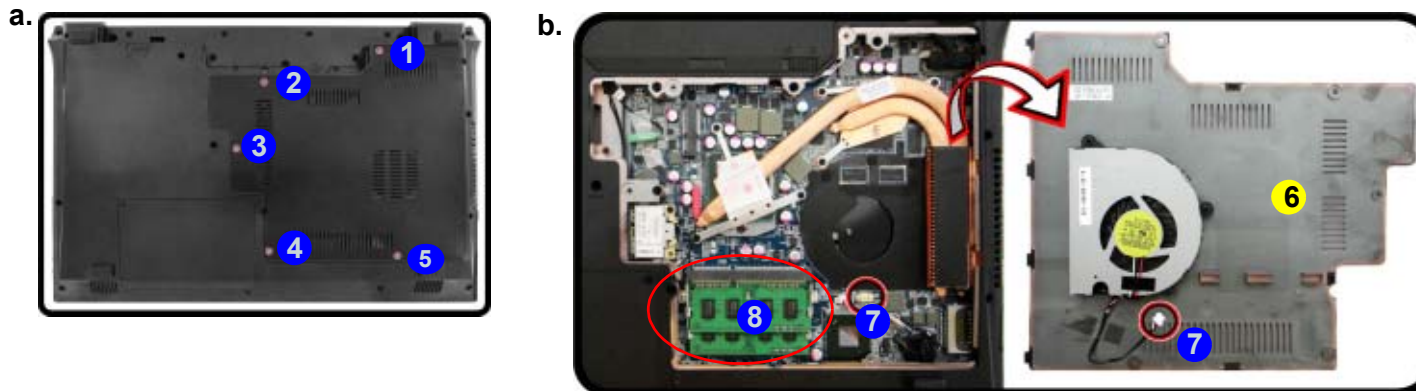


Figure 5
RAM Module Removal

- a. Remove the screws from the component bay cover.
- b. The RAM modules will be visible at point **5** on the mainboard.
- c. Pull the release latches.
- d. 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.



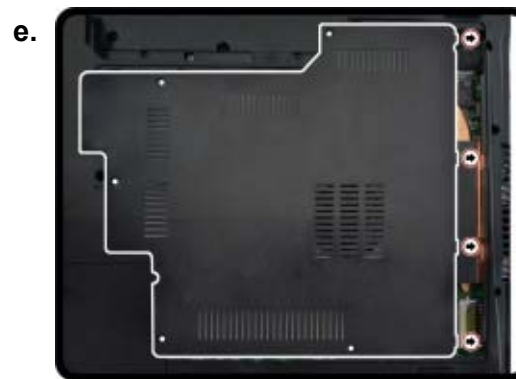
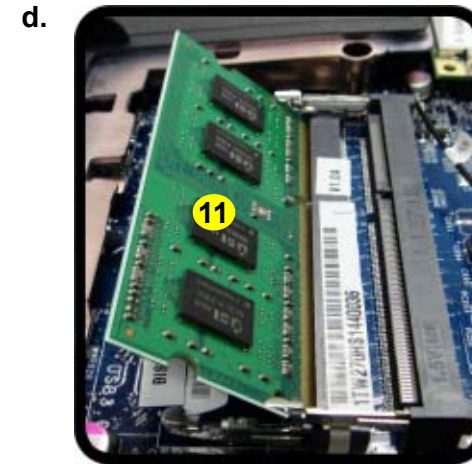
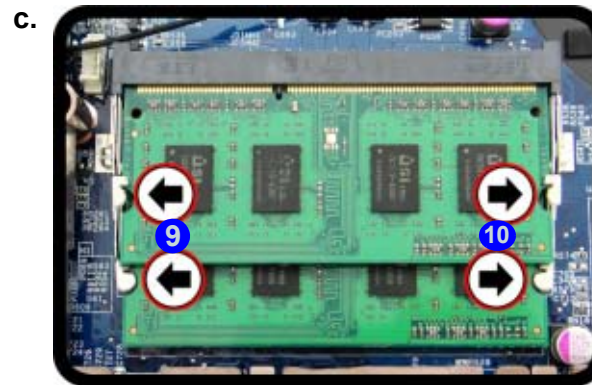
- 5 Screws

Disassembly

Figure 6 RAM Module Removal (cont'd)

- c. Pull the release latches.
- d. Remove the module.
- e. Replace bay cover.

6. Gently pull the two release latches (9 & 10) on the sides of the memory socket in the direction indicated by the arrows (Figure 6c). The RAM module 11 will pop-up (Figure 6d), and you can then remove it.
7. Pull the latches to release the second module if necessary.
8. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
9. The module 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.
10. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
11. Replace the bay cover (Figure 6e) and the screws (**make sure you reconnect the fan cable before screwing down the bay cover**).
12. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.



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.



11. RAM



Cover Pins

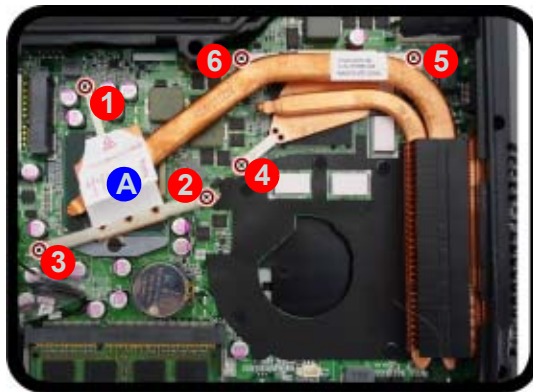
Note that this computer model has **four** cover pins. These pins need to be aligned with slots in the case to insure a proper cover fit, before screwing down the bay cover.

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 - 8](#)).
2. The CPU heat sink will be visible at point **A** ([Figure 7a](#)).
3. Loosen the CPU heat sink screws in the order **6**, **5**, **4**, **3**, **2** & **1** (the reverse order as indicated on the label [Figure 7a](#)).
4. Grip the heat sink tab and carefully lift the heat sink **7** up and off the computer ([Figure 7b](#)).

a.



b.

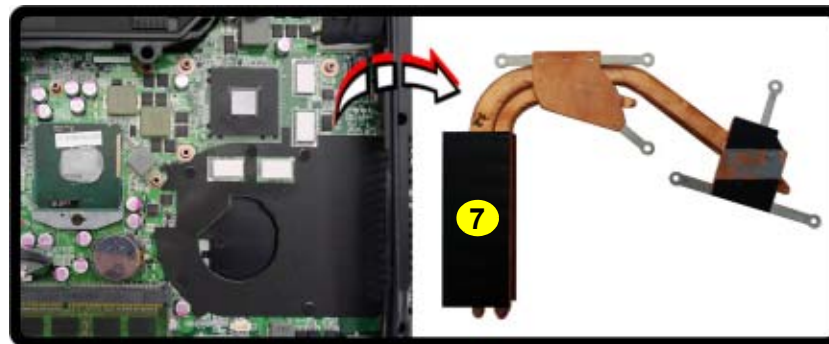


Figure 7
Processor Removal

- a. The CPU heat sink will be visible at point **A**. Remove the screws from the CPU heatsink.
- b. Grip the heat sink tab and carefully lift the heat sink up and off the computer.



7. Heat Sink

- 6 Screws

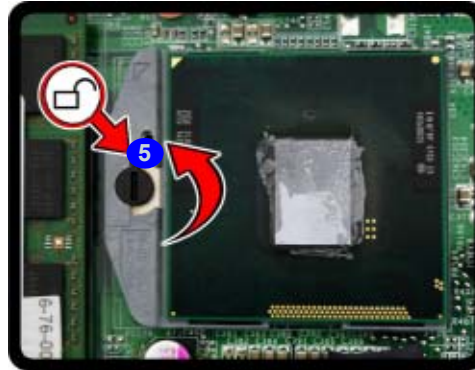
Disassembly

Figure 8
Processor Removal
(cont'd)

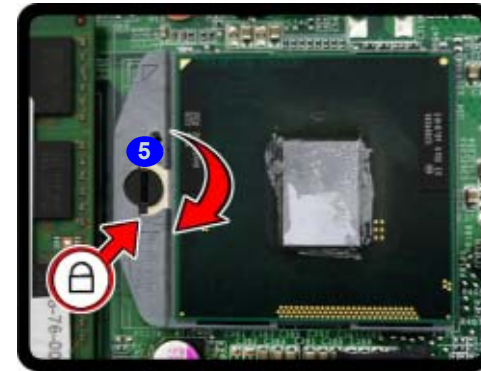
- c. Turn the release latch to unlock the CPU.
- d. Lift the CPU out of the socket.

- 5. Turn the release latch **5** towards the unlock symbol  to release the CPU (*Figure 8d*).
- 6. Carefully (it may be hot) lift the CPU **6** up and out of the socket (*Figure 8e*).
- 7. Reverse the process to install a new CPU.
- 8. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

c.

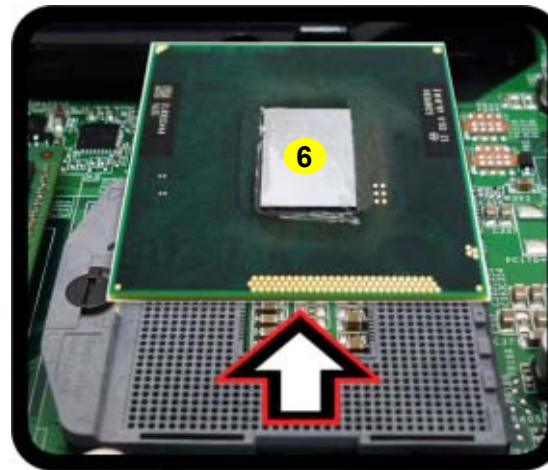


Unlock



Lock

d.



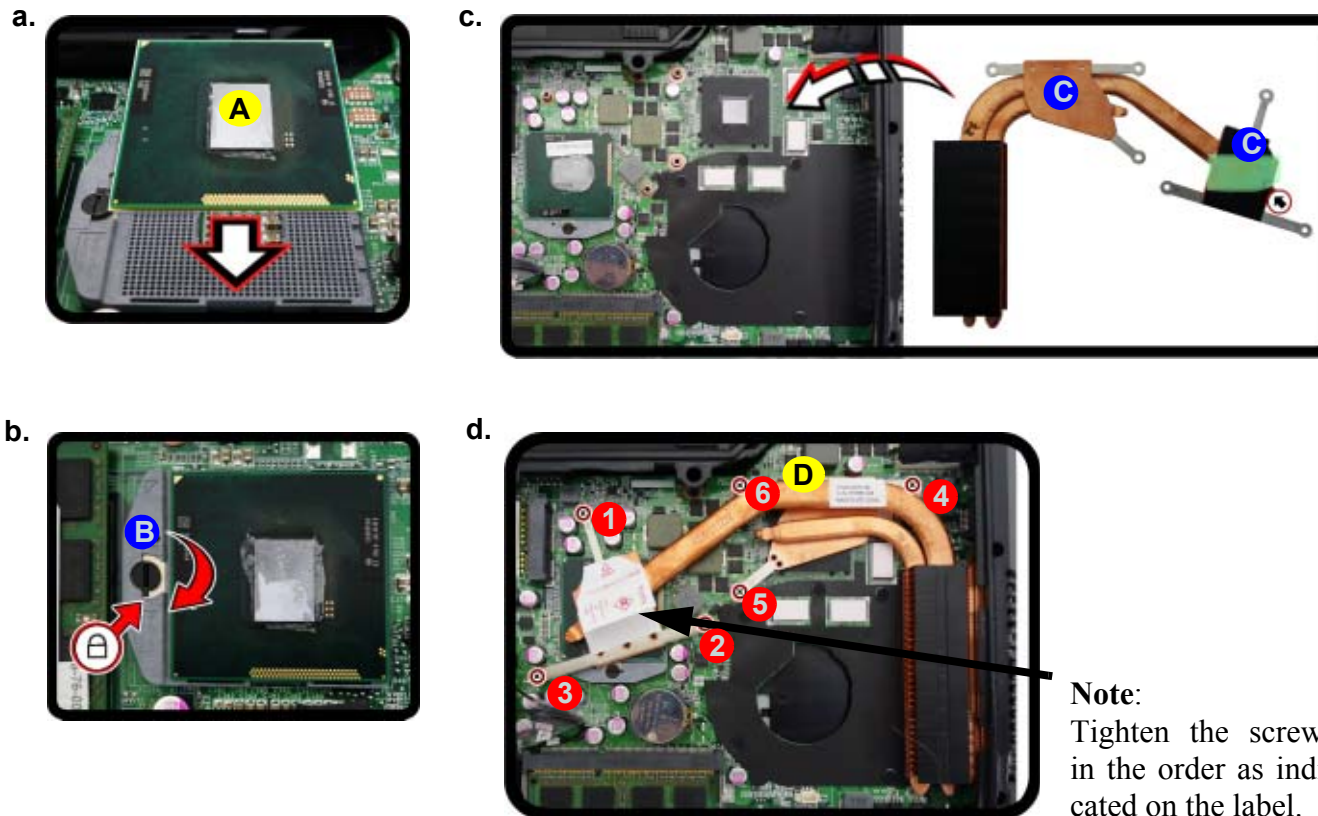
Caution

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

6. CPU

Processor Installation Procedure

1. Insert the CPU **A** (**Figure 9a**), 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 9b**).
2. **Remove the sticker C** (**Figure 9c**) from the heat sink.
3. Insert the heat sink **D** as indicated in **Figure 9d**.
4. Tighten the CPU heat sink screws in the order **1**, **2**, **3**, **4**, **5** & **3** (the order as indicated on the label and **Figure 9d**).
5. Replace the component bay cover (don't forget to replace the fan cable) and tighten the screws (**page 2 - 9**).



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

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

Figure 9
**Processor
Installation**

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

Disassembly

Figure 10
3G Module Removal

- Locate the 3.75G module.
- Disconnect the cable and remove the screw.
- The module will pop-up.
- Remove the 3.75G module.

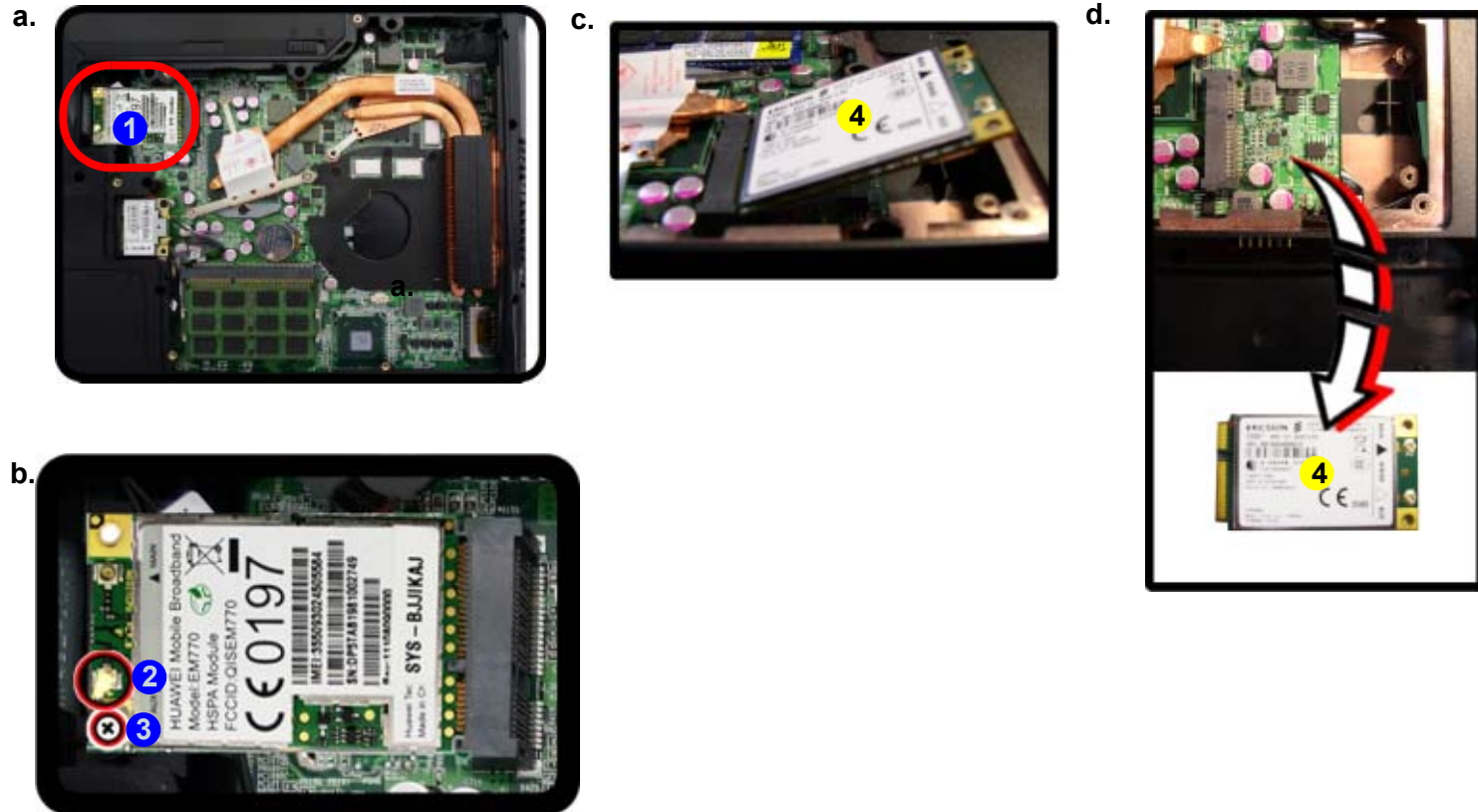
Note: Make sure you reconnect the antenna cable to socket.

4. 3.75G Module

- 1 Screw

Removing the 3.75G Module

- Turn **off** the computer, turn it over, and remove the battery ([page 2 - 5](#)) and the component bay cover ([page 2 - 9](#)).
- The 3.75G module will be visible at point **1** on the mainboard ([Figure 10a](#)).
- Carefully disconnect the cable **2**, and then remove the screw **3** ([Figure 10b](#)).
- The 3.75G module **4** ([Figure 10c](#)) will pop-up, and you can remove it from the computer ([Figure 10d](#)).



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 - 9](#)).
2. The Wireless LAN module will be visible at point **1** on the mainboard ([Figure 11a](#)).
3. Carefully disconnect the cables **2** - **3**, and then remove the screw **4** ([Figure 11b](#)).
4. The Wireless LAN module **4** ([Figure 11c](#)) will pop-up, and you can remove it from the computer.

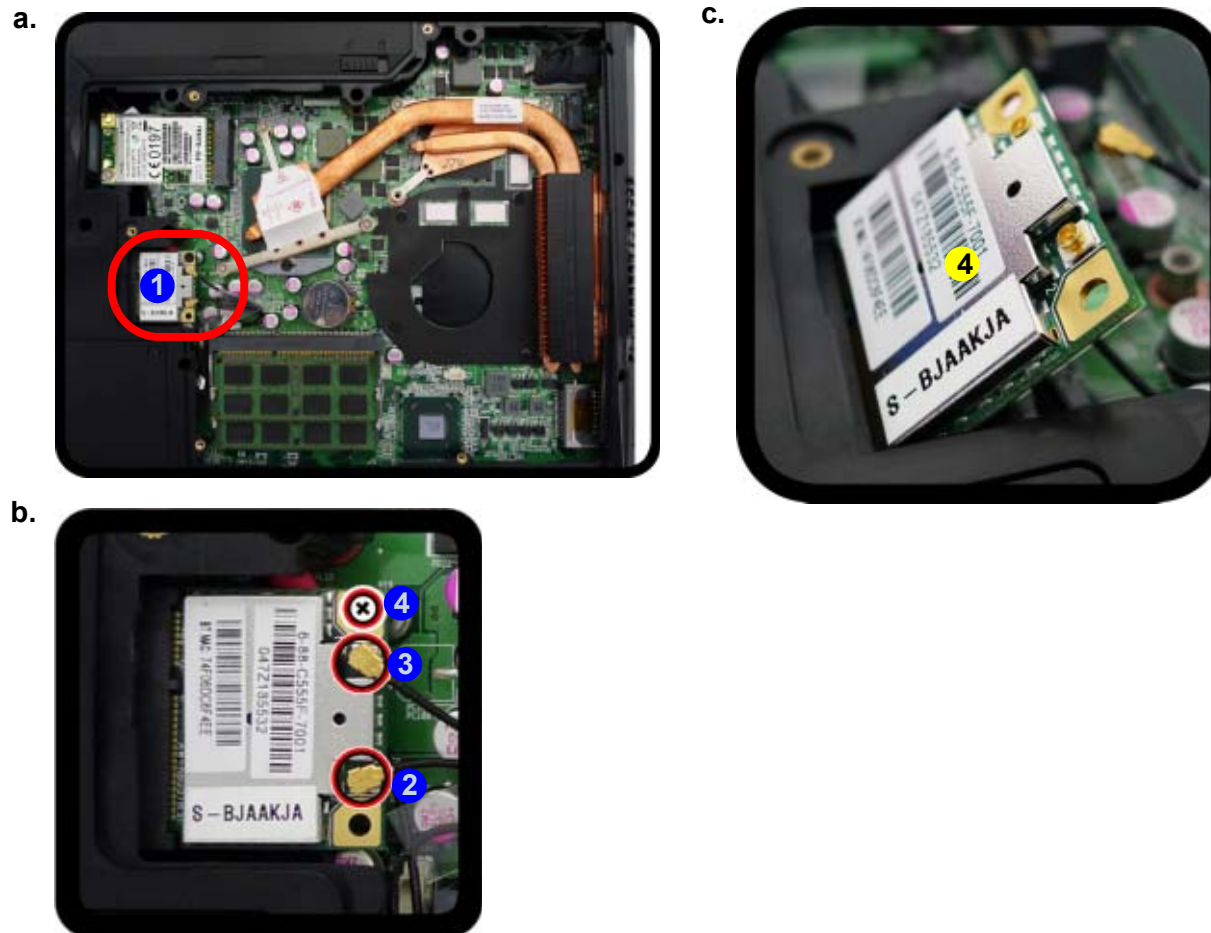


Figure 11
**Wireless LAN
Module Removal**

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

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



4. Wireless LAN Module

- 2 Screw

Disassembly

Figure 12

Keyboard Removal

- Remove screws from the bottom of the computer. Press at points ③ to un-snap the LED cover module.
 - Remove the LED cover module and screws from the keyboard.
 - Carefully lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.
 - Remove the keyboard.
- Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
 - Remove screws ① - ② from the bottom of the computer. Press at points ③ to un-snap the LED cover module ④ (you may need to use the Eject Pin Tool to do this ([Figure 12a](#))).
 - Remove the LED cover module ④ and screws ⑤ - ⑨ from the keyboard ([Figure 12b](#)).
 - Carefully lift the keyboard up, being careful not to bend the keyboard ribbon cable ⑩. Disconnect the keyboard ribbon cable ⑩ from the locking collar socket ⑪ ([Figure 12c](#)).
 - Carefully lift up the keyboard ⑫ ([Figure 12d](#)) off the computer.

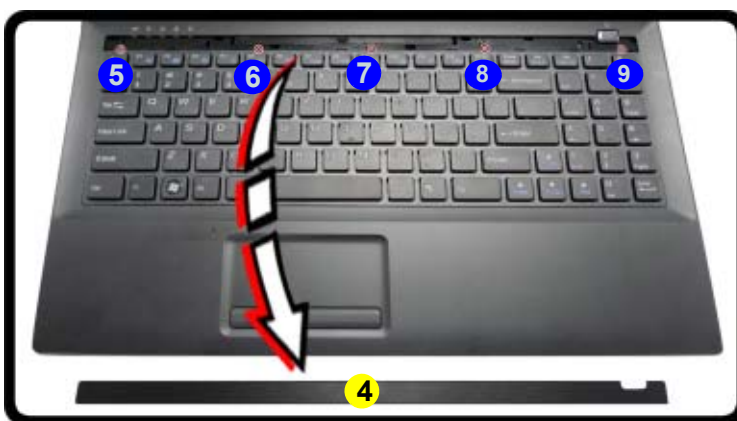
a.



c.



b.



d.



Keyboard Tabs

Re-Inserting the Keyboard

When re-inserting the keyboard firstly align the **four** keyboard tabs at the bottom ([Figure 12c](#)) at the bottom of the keyboard with the slots in the case.

4. LED Cover Module
12. Keyboard

- 7 Screws

Appendix A:Part Lists

This appendix breaks down the *W251ESQ/W255ES* 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	W251ESQ	W255ES
Top	<i>page A - 3</i>	<i>page A - 4</i>
Bottom	<i>page A - 5</i>	
SATA BLU RAY COMBO	<i>page A - 6</i>	
DVD Dual Drive	<i>page A - 7</i>	
LCD	<i>page A - 8</i>	

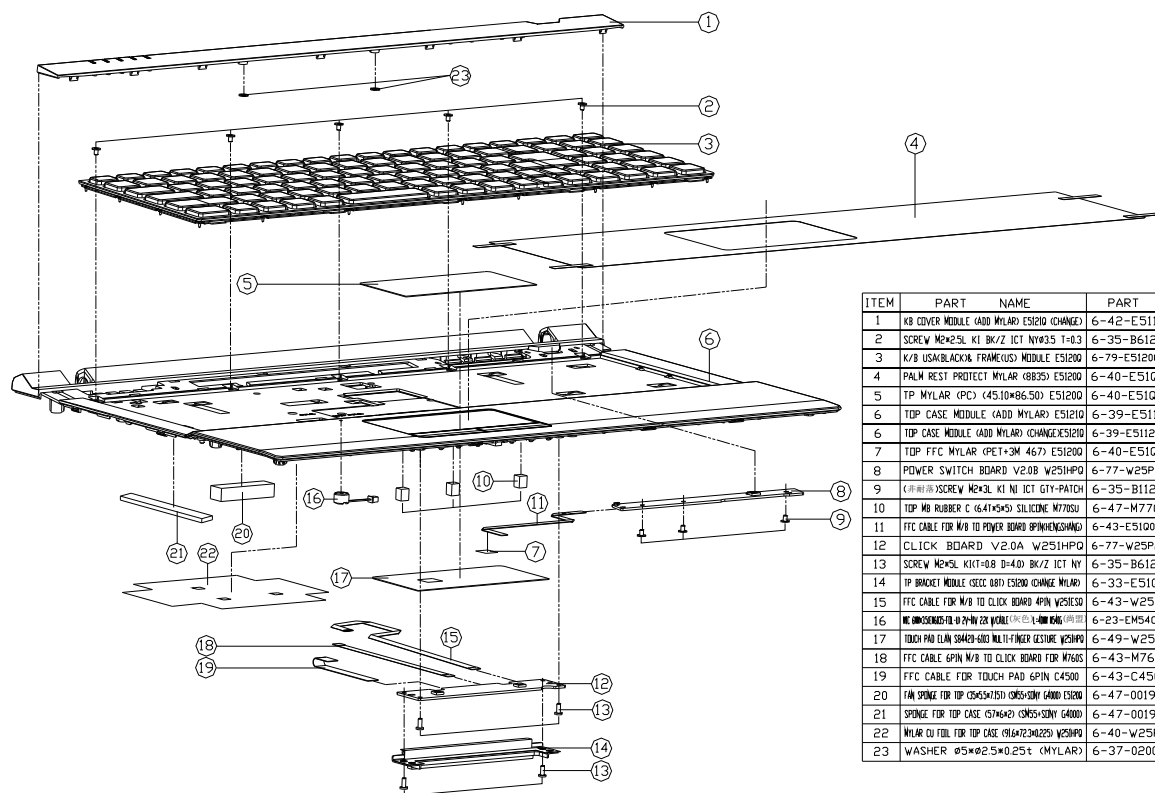
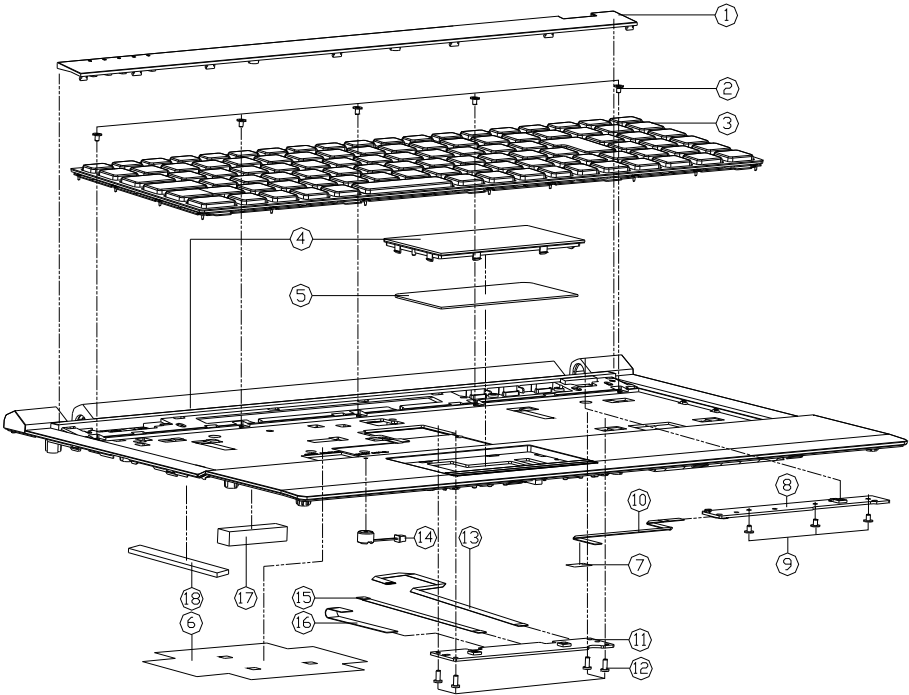


Figure A - 1
Top (W251ESQ)

ITEM	PART	NAME	PART	NO	REMARK
1	K8 COVER MIDDLE (ADD MYLAR) ES200 (CHANGE)		6-42-E5112-10S		
2	SCREW M2x2.5 K1 BKZ I/T NY#315 1=3		6-35-B6120-2RB		
3	K/B USABLACKA FRAME(S) MIDDLE ES120		6-79-E51200K-01		
4	PALM REST PROTECT MYLAR (B80) ES120		6-40-E5102-05I		
5	TP MYLAR (PC) (45.10X66.50) ES120		6-40-E5102-042		
6	TOP CASE MIDDLE (ADD MYLAR) ES120		6-39-E5112-01S		
6	TOP CASE MIDDLE (ADD MYLAR) CHANGE ES120		6-39-E5112-01S-C		
7	TOP FFC MYLAR (PET+30N 46P) ES120		6-40-E5102-080		
8	POWER SWITCH BOARD V20B W25HP0		6-77-W25PS-DO2B		
9	(###) SCREW M2x1 KI NI ICT GY-PATCH		6-35-B1120-3RE		
10	TOP W RUBBER C (64.10X64.5) SILICONE MT7050		6-47-M770S-01R		
11	FFC CABLE FOR W/B IN POWER BOARD SPWNGHAWG		6-43-E5100-022-2		
12	CLICK BOARD V2.0A W25HP0		6-77-W25P2-D02A		
13	SCREW M2x1 KI/ND B=3.40 BKZ ICT NY		6-35-B6120-50I		
14	TP BRACKET MIDDLE (CCC BAR) ES200 CHARGE MIDDLE		6-33-E5102-102		
15	FFC CABLE FOR W/B TO TOUCH PAD PIN V25S10		6-43-W25S0-01I		
16	HE OMSERES-0100-0120-20 ZIGBEE (C/L LAME) (###)		6-23-EM542-012-2		
17	TOUCH PAD CLAN SRAE-S00 BLT/FINGER GESTURE V25S10		6-49-W25A2-01I		
18	FFC CABLE PIN# W/B TO CLICK BOARD FOR W/MGS		6-43-W76S0-01I		
19	FFC CABLE FOR TOUCH PAD PIN C4500		6-43-C4502-01A		
20	FIL SPRING FOR TOP C5450/S10 QMS-S00 CHARGE MIDDLE		6-47-O019A-353		
21	SPONGE FOR TOP CASE C5450/H45-S00Y SONY GAD00		6-47-0019A-570		
22	MYLAR DI FILM TOP CASE (0.16X2.25X25) W25P0		6-40-W25P2-01O		
23	WASHER Ø5WØ2.5=25.0MM (MYLAR)		6-37-02000-500		

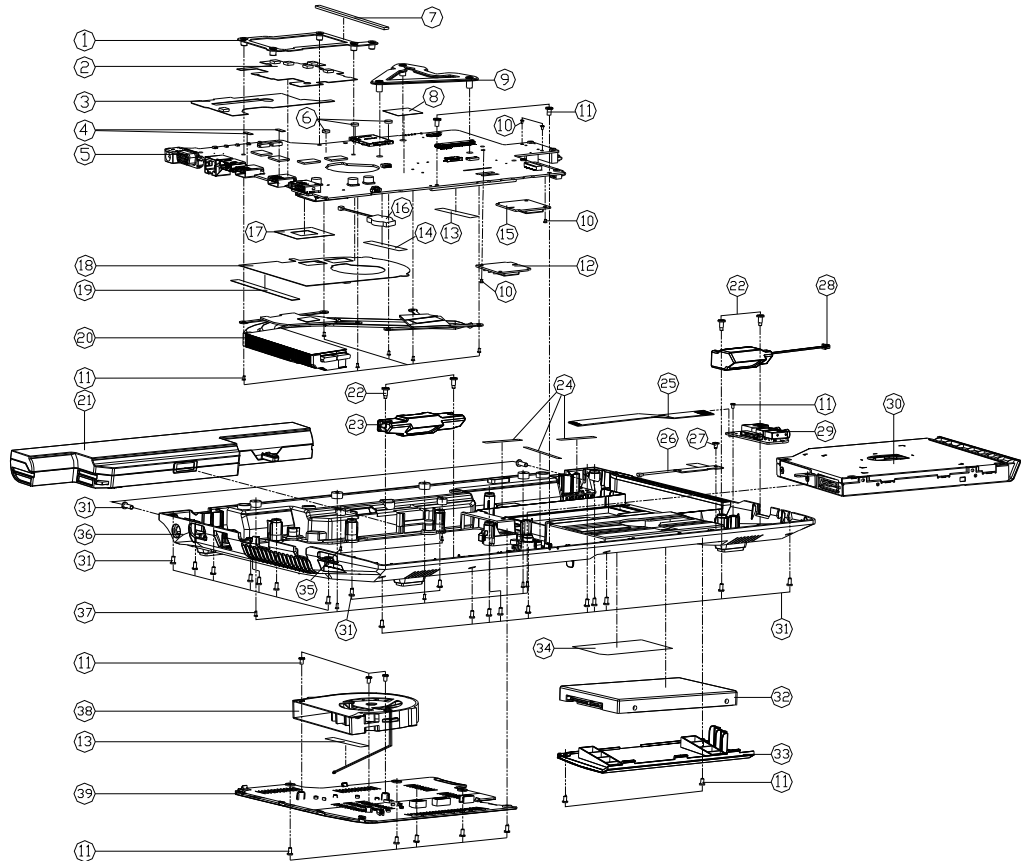
Top (W255ES)

Figure A - 2
Top (W255ES)



ITEM	PART	NAME	PART NO	REMARK
1	KB COVER MODULE ES125	6-42-E5158-101		
2	SCREW M2x2.5L KI BK/Z ICT NY#35 T=03	6-35-B6120-2RB		
3	K/B USA/BLACK/ FRAME(US) MODULE ES1200	6-79-E512000K-010		
4	TOP CASE MODULE ES125	6-39-E5152-112		
5	TOUCH PAD CLIN SH420-610 MULTI-TOUCH GESTURE W25HPD	6-49-W25A2-011		
6	MYLAR CU FILM FOR TOP CASE (9647340225) W25HPD	6-40-W25P2-010		
7	TOP FFC MYLAR (PET+3M 467) ES1200	6-40-E51Q2-080		
8	POWER SWITCH BOARD V2.0B W25HPD	6-77-W25PS-D02B		
9	SCREW M2x3L KI NI ICT GTY-PATCH	6-35-B1120-3RE		
10	FFC CABLE FOR W/B TO POWER BOARD 6PIN ES1200	6-43-E5100-022-2		
11	CLICK BOARD V2.0A W251HPD	6-77-W25P2-D02A		
12	SCREW M2x5L KI(T=0.8 D=4.0) BK/Z ICT NY	6-35-B6120-5R0		
13	FFC CABLE FOR W/B TO CLICK BOARD 4PIN W25ESD 010	6-43-W25S0-010		
14	MECHANICAL FILM 2x10 22K 100UM (0.001) 1.4MM KAL (0.001)	6-23-EM54G-012-2		
15	FFC CABLE 6PIN W/B TO CLICK BOARD FOR W25ES	6-43-M76S0-011		
16	FFC CABLE 6PIN TOUCH PAD 6PIN C4500	6-43-C4502-010		
17	FAN SPONGE FOR TOP CASE(575X75) 13M5X100Y C4000	6-47-0019A-353		
18	SPONGE FOR TOP CASE (574x42) 13M5X100Y C4000	6-47-0019A-570		

Bottom

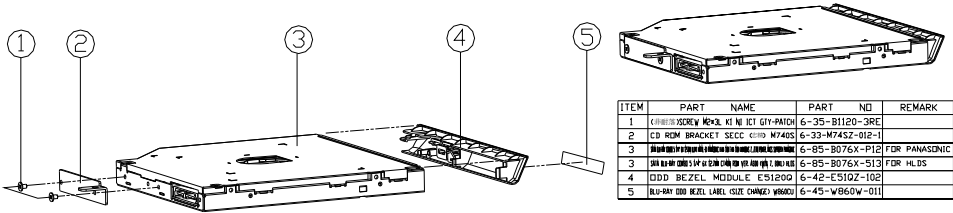


ITEM	PART NAME	PART NO	REMARK
1	VGA SUPPORTER SECC W270X50	6-33-W27SS-010	
2	ACME NEW MOUNTING BRACKET W250P	6-40-W25PS-101	
3	NEW MOUNTING BRACKET W250P	6-40-W25PS-200	
4	GASKET (9*5*0.5) M720S	6-47-00190-096	
5	MAIN BOARD V1.0 (V/D 3G) W251ESD	6-77-W25SO-001-I	
5	MAIN BOARD V1.0 (V/D 3G) W251ESD	6-77-W25SO-001	
6	NEW CPU MOUNTING BRACKET W250P	6-47-W25PS-010	
7	SPONGE (9*5*5) SMD FOR NO TOP	6-47-0019A-906	
8	NEW CPU MOUNTING BRACKET W250P	6-40-C450S-030	
9	CPU SUPPORT BRACKET SECC W250P	6-33-W25PS-010	
10	SCREW M2.5X6 KI BT ICT NY (80*45.0)44	6-35-B6120-3RD	
11	SCREW M2.5X6 KI BK/2 ICT NY	6-35-B6120-5RA	
12	NEW CPU MOUNTING BRACKET W250P	6-88-C555F-700	(OPTION)
12	NEW CPU MOUNTING BRACKET W250P	6-88-C555F-5300	(OPTION)
12	NEW CPU MOUNTING BRACKET W250P	6-88-W100S-7000	(OPTION)
12	NEW CPU MOUNTING BRACKET W250P	6-88-W170C-4220	(OPTION)
12	NEW CPU MOUNTING BRACKET W250P	6-88-P17E7-4200	(OPTION)
12	NEW CPU MOUNTING BRACKET W250P	6-88-W100S-9400	(OPTION)
12	NEW CPU MOUNTING BRACKET W250P	6-88-W25SP-4200	(OPTION)
12	NEW CPU MOUNTING BRACKET W250P	6-88-C555F-5301	(OPTION)
12	NEW CPU MOUNTING BRACKET W250P	6-88-W25HP-9400	(OPTION)
12	NEW CPU MOUNTING BRACKET W250P	6-88-W170C-4220	(OPTION)
13	TAPE MYLAR (C)MYLAR M550J	6-40-W55J2-030	
14	TAPE MYLAR (A)MYLAR M550J	6-40-W55J2-010	
15	NEW CPU MOUNTING BRACKET W250P	6-88-W24HW-2410	(OPTION)
16	NEW CPU MOUNTING BRACKET W250P	6-23-Z220S-1TC0	
17	VGA CAP MOUNT BRACKET W250P	6-40-MB60S-091	
18	NEW CPU MOUNTING BRACKET W250P	6-40-W25PS-400	
19	RUBBER PROTECT SHEET FOR NO BOTTOM W250P	6-47-W25PS-020	
20	NEW CPU MOUNTING BRACKET W250P	6-31-W270A-101	
21	NEW CPU MOUNTING BRACKET W250P	6-87-C480S-404B	(OPTION)
21	NEW CPU MOUNTING BRACKET W250P	6-87-E412S-407A	
21	NEW CPU MOUNTING BRACKET W250P	6-87-W24ES-4W4	(OPTION)
22	SCREW M2.5X6 KI BT NY FOR SPEAKER	6-35-Z1120-6R2	
23	SCREW M2.5X6 KI BT NY FOR SPEAKER	6-23-W25SP-020-2	
24	TAPE MYLAR TRANSPARENT COVER W250P	6-40-W25P3-010	
25	ITC CASE TOP KEY TO ADD NEW W250P	6-43-W25SO-011-2	
26	NEW CPU MOUNTING BRACKET W250P	6-23-W25P-030	
27	SCREW M2.5X6 KI BT NY (80*45.0)44	6-35-B1120-3RC	
28	SCREW M2.5X6 KI BT NY (80*45.0)44	6-23-W25SP-010-2	
29	AUDIO BOARD V2.0B W251ESD	6-77-W25SP-008A	
30	SATA BLU-RAY COMBO ASSY (OPTION)	6-79-W25ES0W-010	
30	SATA DVD SUPER MULTI ASSY W251ESD	6-79-W25ES00-000	
30	W/D HDD ASS'Y E5120Q	6-79-E51000J-000	
30	SATA BLU-RAY COMBO ASSY W251EN	6-79-W25EN0W-010	
31	SCREW M2.5X6 KI BK/2 NY ICT	6-35-B6120-5BR0	
32	W/D HDD ASS'Y E5120Q	6-79-E51000J-010	
32	W/HDD ASS'Y E5120Q	6-79-E51000J-000	
33	HDD COVER PC-ABS(C)640 W251PQ	6-42-W25P-J-011	
33	HDD COVER PC-ABS(C)640 W251PQ-C	6-42-W25P-J-011-C	
34	PRODUCT LABEL FOR W251ESD	6-49-W25ES03-010	
34	PRODUCT LABEL FOR W251ES	6-49-W25ES03-010	
35	SCREW M2.5X6 KI BT NY (80*45.0)44	6-35-C6120-3RD	
36	BOTTOM CASE MOUNTING BRACKET FOR W250P	6-39-W25P3-015	
36	BOTTOM CASE MOUNTING BRACKET FOR W250P-C	6-39-W25P3-015-C	
37	SCREW M2.5X6 KI BT NY (80*45.0)44	6-35-B6120-5RD0	
38	NEW CPU MOUNTING BRACKET W250P	6-23-W15H-010	
39	CPU COVER MODULE W251PQ(CHANGED)	6-42-W25PB-102	
39	CPU COVER MODULE W251PQ-C(CHANGED)	6-42-W25PB-102-C	

Figure A - 3
Bottom

SATA BLU RAY COMBO

Figure A - 4
SATA BLU RAY
COMBO



DVD DUAL

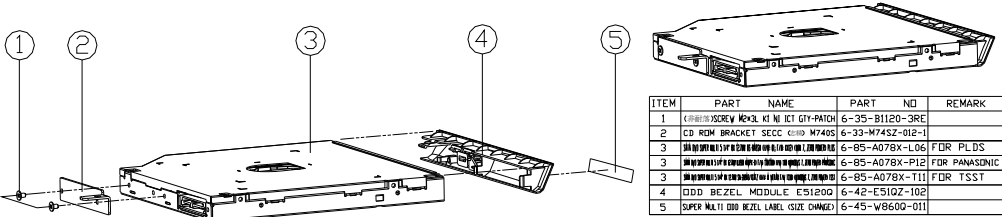
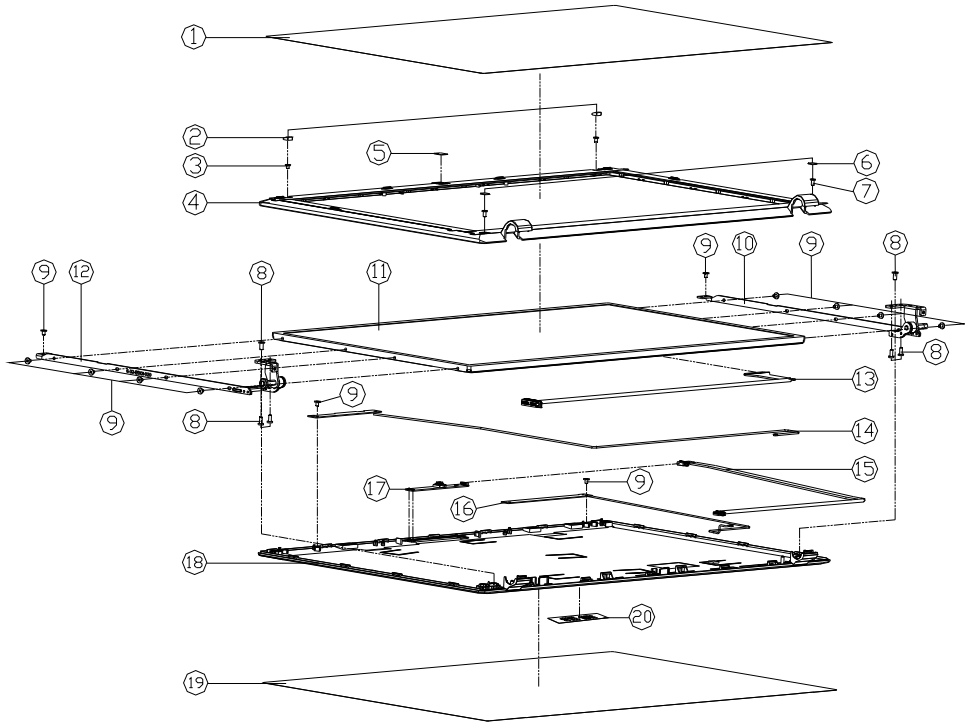


Figure A - 5
DVD DUAL

LCD

Figure A - 6
LCD



ITEM	PART	NAME	PART	NO	REMARK
1	LCD FRONT COVER PROTECTION FILM (PET-3000) (ES200)		6-40-ES101-030		
2	LCD FRONT COVER SCREW RUBBER SUCTION (ES200)		6-47-ES108-011		
3	SCREW (M5X0.8) (KT 10) (KT NY 100-445311-040)		6-35-B6120-3RD		
4	LCD FRONT COVER MODULE (ES200) (G0000)		6-39-ES101-012		
5	CCD LENS (PMMA) (ES1200)		6-42-ES101-031		
6	W/O CCD LENS (PMMA) (ES1200)		6-42-ES101-040		
7	FRONT COVER FILM FOR SCREW (ES200)		6-40-ES108-011		
8	SCREW (M5X0.8) (KT 10) (KT NY 100-445311-040)		6-35-B6120-6RB		
9	LCD HINGE (R SK7 W255HUM) (SINHER)		6-33-B1120-3RE		
10	LCD HINGE (R SK7 W255HUM) (SINHER)		6-33-W25U1-010		
11	LCD 15.6" HD LG LPS6VH4-TL01 (GLARE TYPE) (6-50-LB257-L05)		6-50-LB257-L05		
12	LCD 15.6" HD LG LPS6VH4-TL02 (GLARE TYPE) (6-50-LB155-L08)		6-50-LB155-L08		
13	LCD 15.6" HD CHINEE NIS608-L0A (GLARE TYPE) (6-50-LB155-L04)		6-50-LB155-L04		
14	LCD 15.6" HD LG LPS6VH4-TL01 (GLARE TYPE) (6-50-LB257-L05)		6-50-LB257-L05		
15	LCD 15.6" HD LG LPS6VH4-TL02 (GLARE TYPE) (6-50-LB155-L08)		6-50-LB155-L08		
16	LCD 15.6" HD LG LPS6VH4-TL02 (GLARE TYPE) (6-50-LB155-L09)		6-50-LB155-L09		
17	LCD 15.6" HD LG LPS6VH4-TL02 (GLARE TYPE) (6-50-LB155-L09)		6-50-LB155-L09		
18	LCD 15.6" HD LG LPS6VH4-TL02 (GLARE TYPE) (6-50-LB155-L09)		6-50-LB155-L09		
19	LCD 15.6" HD LG LPS6VH4-TL02 (GLARE TYPE) (6-50-LB155-L09)		6-50-LB155-L09		
20	LCD 15.6" HD LG LPS6VH4-TL02 (GLARE TYPE) (6-50-LB155-L09)		6-50-LB155-L09		

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *W251ESQ/W255ES* notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
System Block Diagram - Page B - 2	PCH 1/9- RTC, HDA, SATA - Page B - 19	5VS, 3VS, 1.5VS CPU - Page B - 36
Processor 1/7- DMI, FDI, PEG - Page B - 3	PCH 2/9- PCIE, SMBUS, CLK - Page B - 20	VDD3, VDD5 - Page B - 37
Processor 2/7- CLK, MISC - Page B - 4	PCH 3/9- DMI, FDI, PWRGD - Page B - 21	Power 0.85VS, 1.8VS - Page B - 38
Processor 3/7- (DDR3) - Page B - 5	PCH 4/9- LVDS, DDI, CRT - Page B - 22	POWER 1.5V/1.05VS - Page B - 39
Processor 4/7- Power - Page B - 6	PCH 4/9- PCI, USB, RSVD - Page B - 23	POWER 1.05V/1.05VS VTT - Page B - 40
Processor 5/7- GFX PWR - Page B - 7	PCH 6/9- GPIO, CPU - Page B - 24	POWER VCORE1 - Page B - 41
Processor 6/7- GND - Page B - 8	PCH 7/9- PWR - Page B - 25	POWER VCORE2 - Page B - 42
Processor 7/7- RSVD - Page B - 9	PCH 8/9 POWER - Page B - 26	Power VGA NVVDD/PEX_VDD - Page B - 43
DDR3 SO-DIMM_0 - Page B - 10	PCH 9/9- GND - Page B - 27	AC IN, CHARGER - Page B - 44
DDR3 SO-DIMM_1 - Page B - 11	WLAN, 3G, MINI PCIE - Page B - 28	AUDIO BOARD - Page B - 45
PANEL, INVERTER, CRT - Page B - 12	CCD, TPM, MULTI CON - Page B - 29	CLICK BOARD - Page B - 46
VGA PCI-E Interface - Page B - 13	USB3.0 - Page B - 30	W251HPQ POWER SW BOARD - Page B - 47
VGA Frame Buffer Interface - Page B - 14	Card Reader (RTL8411) - Page B - 31	W270HU BRIDGE ODD BOARD - Page B - 48
VGA Frame Buffer A - Page B - 15	SATA ODD, LED, USB CHARGE - Page B - 32	W270HU POWER SW BOARD - Page B - 49
VGA Frame Buffer C - Page B - 16	HDMI, RJ45 - Page B - 33	Power Diagram - Page B - 50
VGA I/O - Page B - 17	AUDIO CODEC VT1802P - Page B - 34	Power On SEQ - Page B - 51
VGA NVVDD Cecoupling - Page B - 18	KBC-ITE IT8518E - Page B - 35	

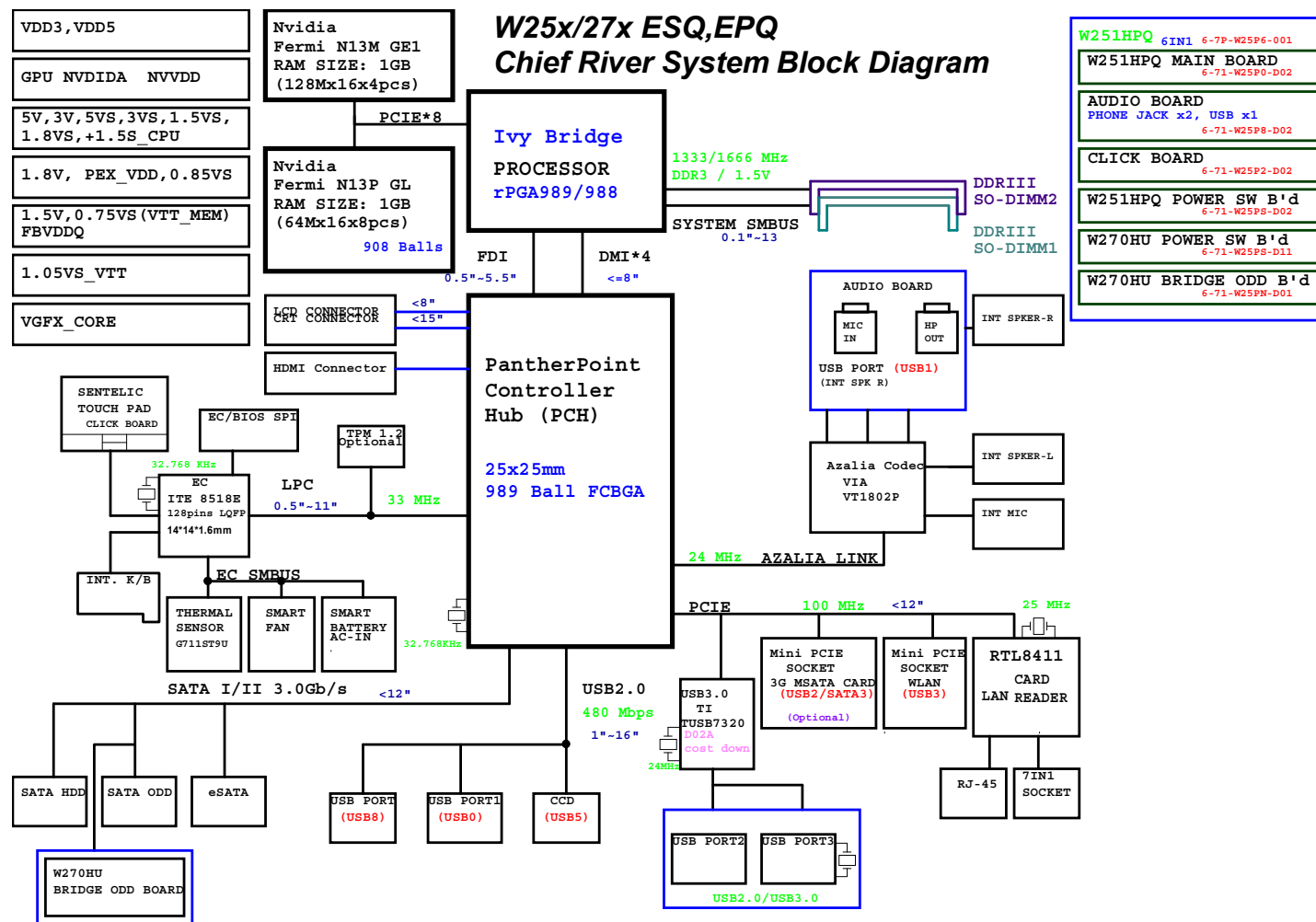
Table B - 1
**SCHEMATIC
DIAGRAMS**



Version Note

The schematic diagrams in this chapter are based upon version 6-7P-W25S6-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

Sheet 1 of 50
System Block
Diagram



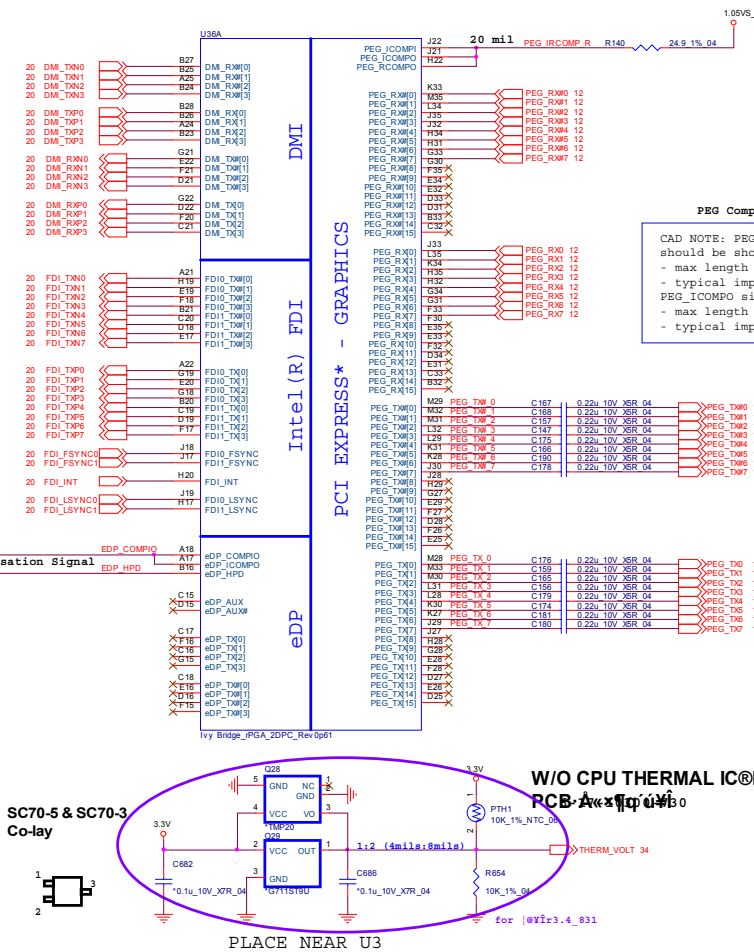
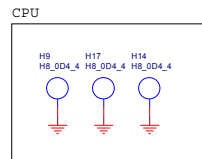
Processor 1/7-DMI, FDI, PEG

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

- Ivy Bridge Quad Core 55W
- Ivy Bridge Dual Core 35W
- Ivy Bridge LV/ULV 25/17W
- 2012 Ivy Bridge Socket compatible with Sandy Bridge.
- 2012 Ivy Bridge Same TDP as Sandy Bridge.
- 2012 Ivy DDR3-1600 and DDR3L-1333 Support.
- 2012 Ivy PCIe*Gen3.0(PEGX16).
- 2012 Ivy DX11 Support, 3 Simultaneous Displays.

CAD NOTE: DP_COMPIO and ICOMPO signals should be shorted near balls and routed with - typical impedance < 25 mohms

EDP HPD Function Disable
EDP_HPDI: Pull-up10K- DISABLED HPD



PEG Compensation Signal

CAD NOTE: PEG_ICOMPI and RCOMPO signals should be shorted and routed with - max length = 500 mils - typical impedance = 43 mohms PEG_ICOMPO signals should be shorted with - max length = 500 mils - typical impedance = 14.5 mohms

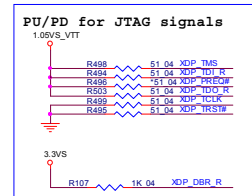
Sheet 2 of 50
Processor 1/7-DMI,
FDI, PEG

B.Schematic Diagrams

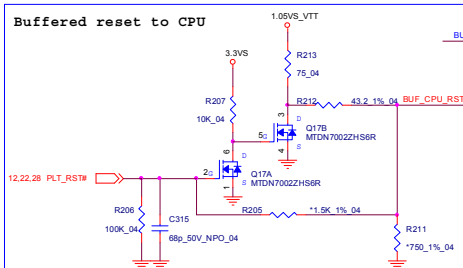
Schematic Diagrams

Processor 2/7- CLK, MISC

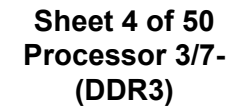
Ivy Bridge Processor 2/7 (CLK,MISC,JTAG)



If PROCHOT# is not used, then it must be terminated with a 56- Ω pull-up resistor to 1.05VS_VTT.



Ivy Bridge Processor 3/7 (DDR3)

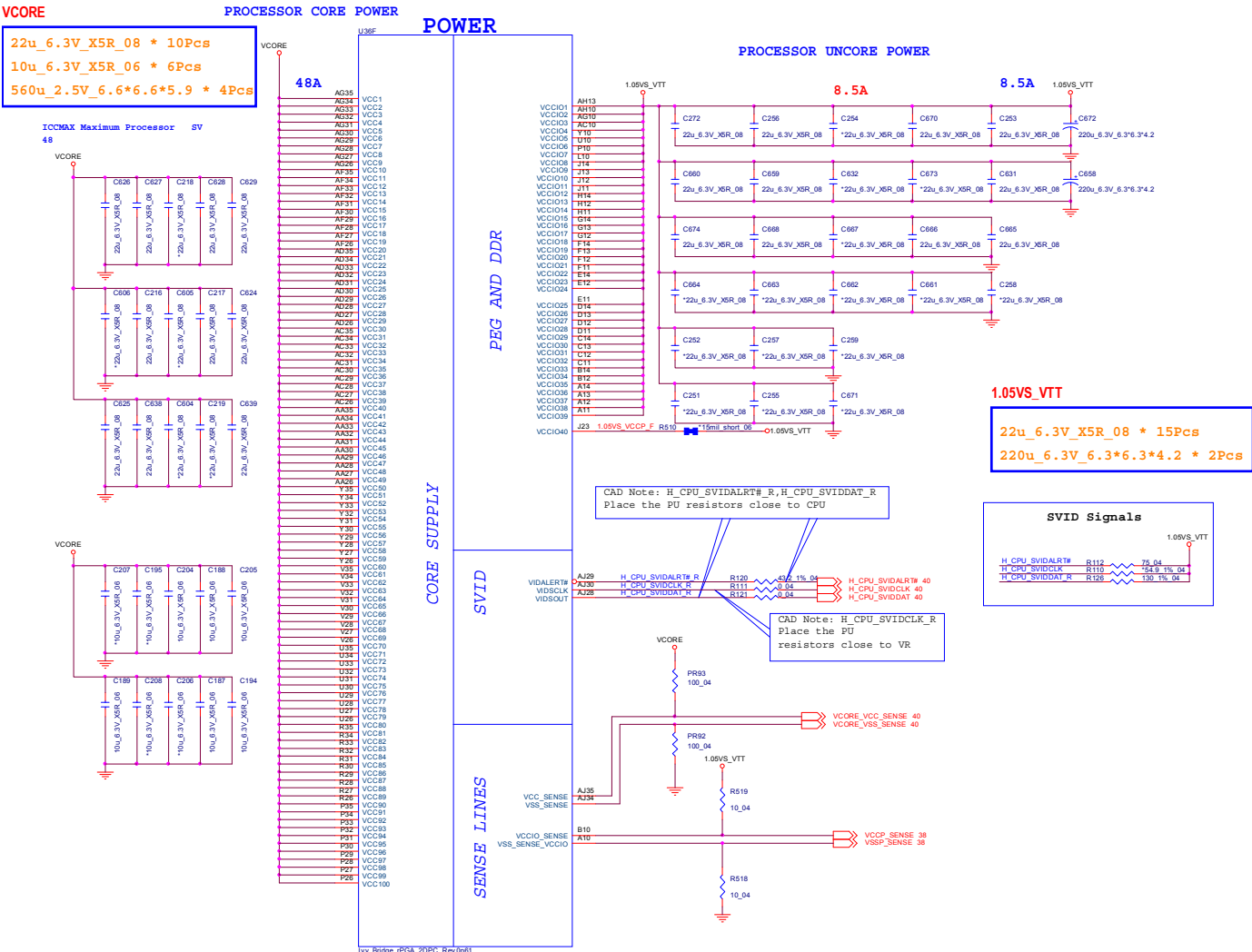


Schematic Diagrams

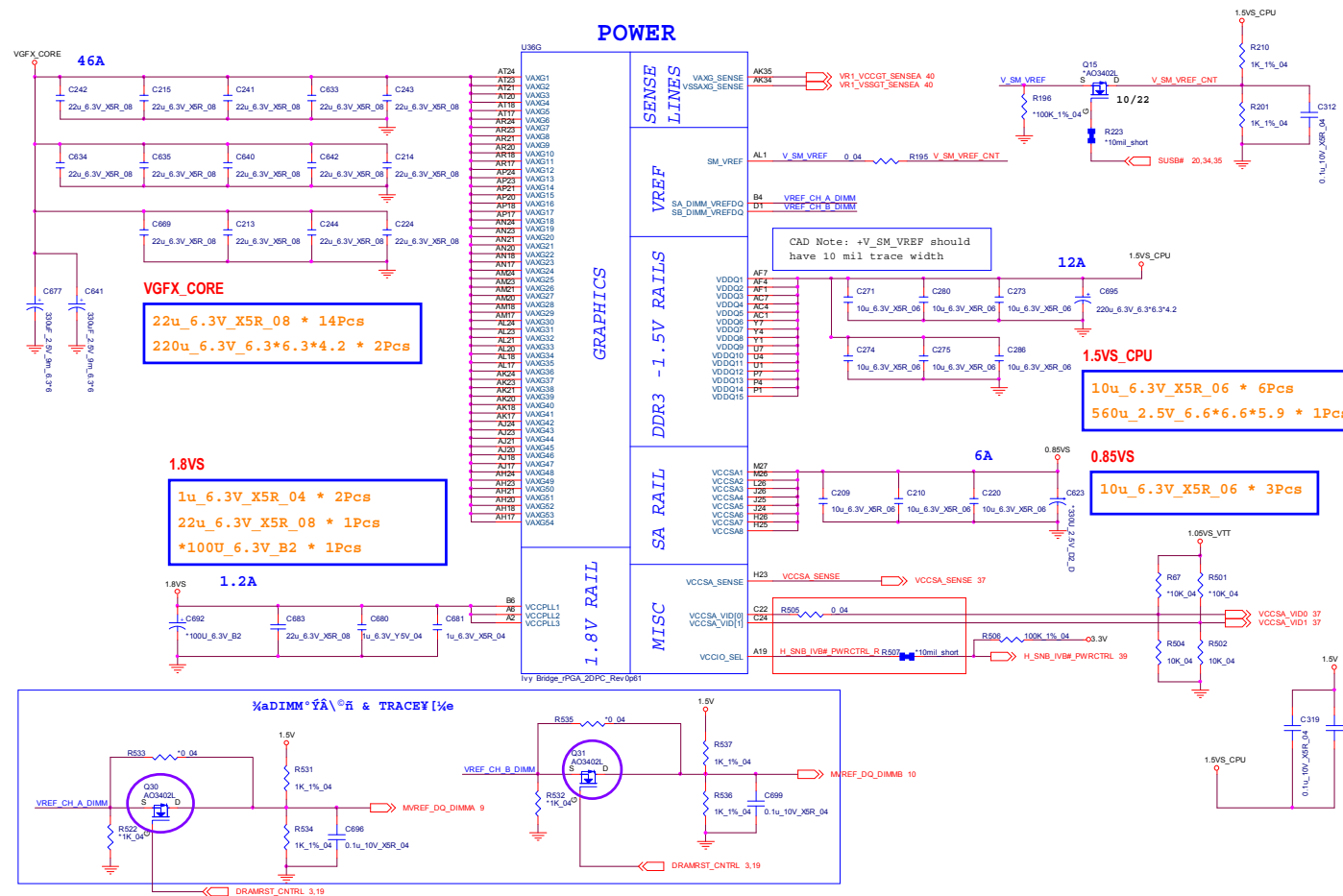
Processor 4/7- Power

Ivy Bridge Processor 4/7 (POWER)

Sheet 5 of 50
Processor 4/7-
Power



Ivy Bridge Processor 5/7 (GRAPHICS POWER)



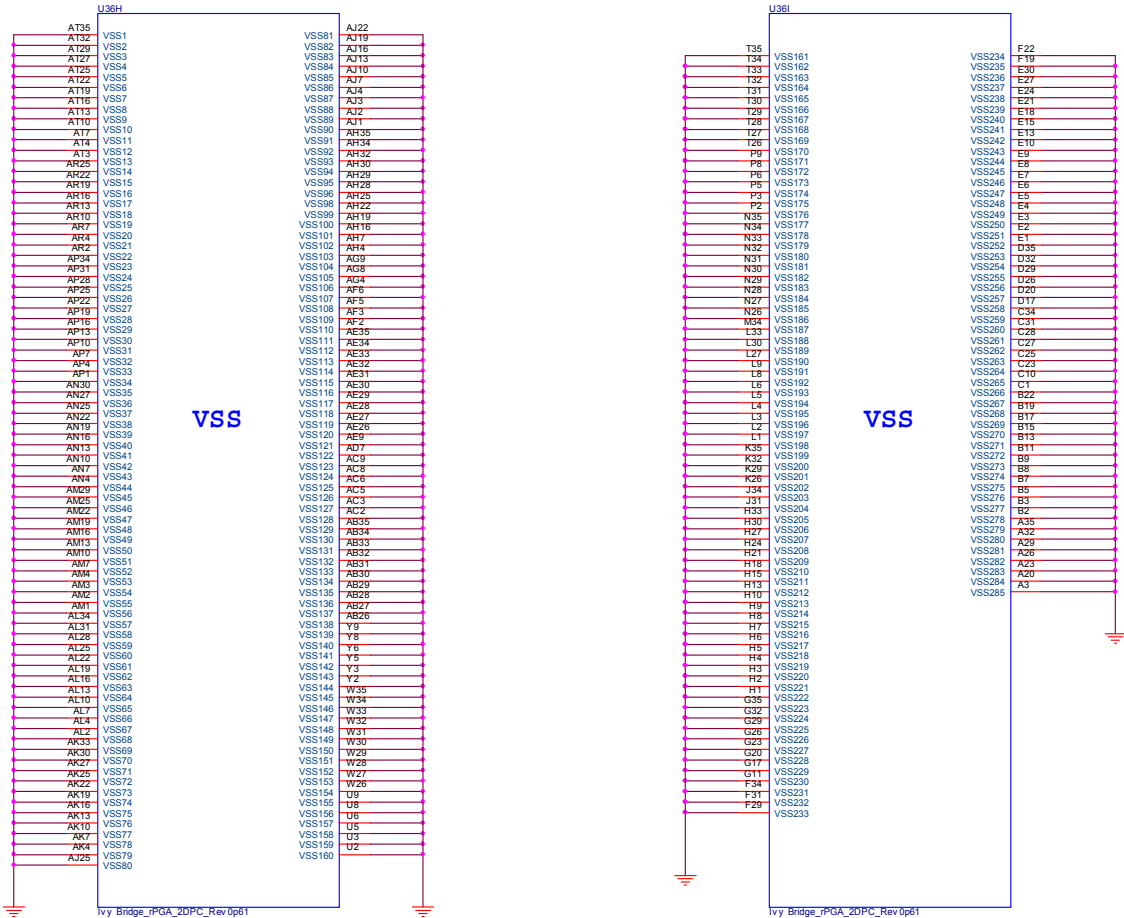
Schematic Diagrams

Processor 6/7- GND

Ivy Bridge Processor 6/7 (GND)

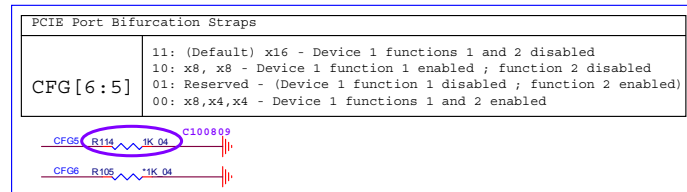
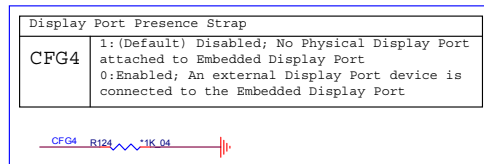
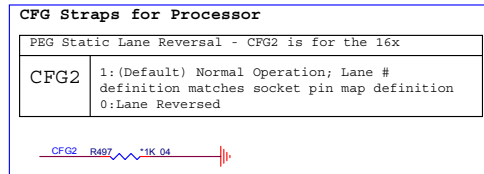
CAD Note: 0 ohm resistor should be placed close to CPU

Sheet 7 of 50
Processor 6/7- GND

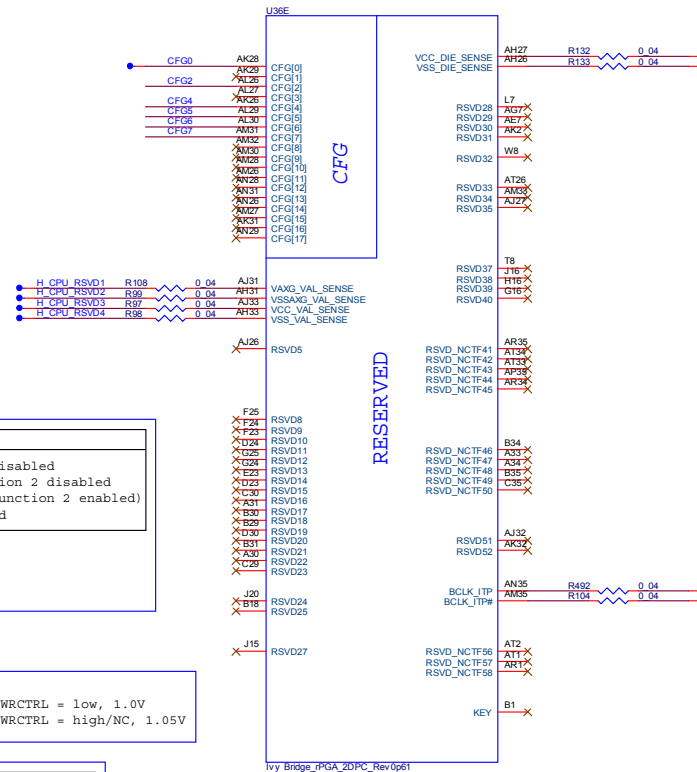
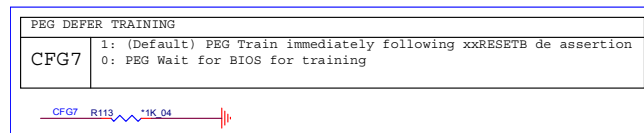


Processor 7/7- RSVD

Ivy Bridge Processor 7/7 (RESERVED)



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



Sheet 8 of 50
Processor 7/7-
RSVD

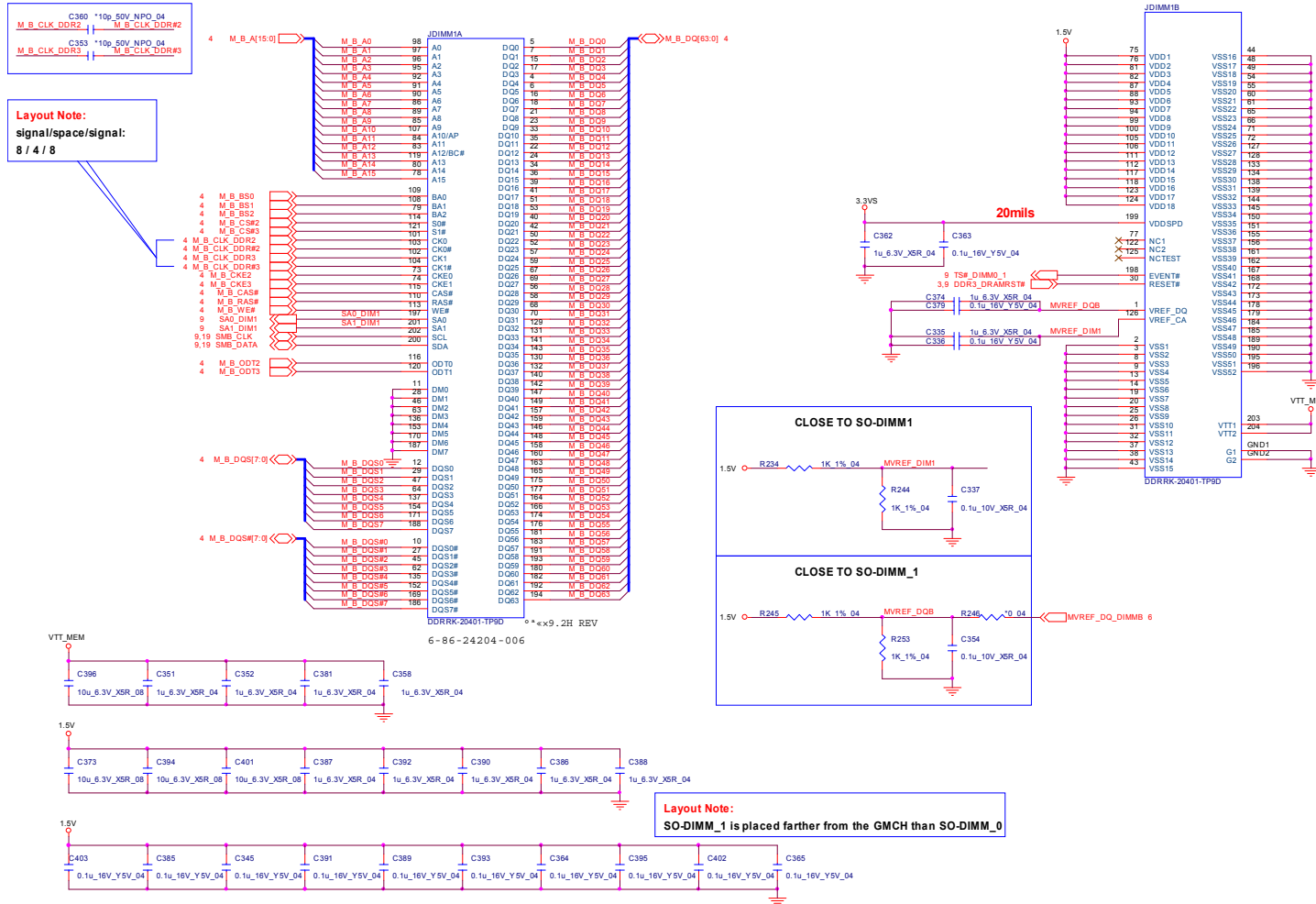
B.Schematic Diagrams

SO-DIMM A



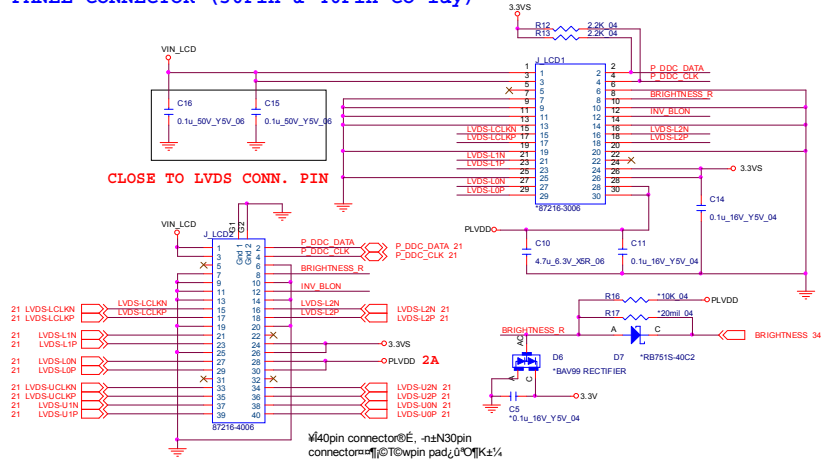
DDR3 SO-DIMM_1

SO-DIMM B



PANEL, INVERTER, CRT

Sheet 11 of 50
PANEL, INVERTER,
CRT

[illegible]

B.Schematic Diagrams

The image shows a detailed PCB layout for the NVIDIA GeForce 440M graphics card. The layout includes various components such as capacitors, resistors, and integrated circuits. Key components highlighted include the NVIDIA GPU (N13P-GL), the BIOS ROM (N13M-081), and the Crystal 8045 & 3225 Co-Lay. The layout also includes a table of component values and a list of component footprints. The layout is color-coded with red and blue lines indicating different signal paths or power planes. The overall design is a complex, multi-layered PCB layout.

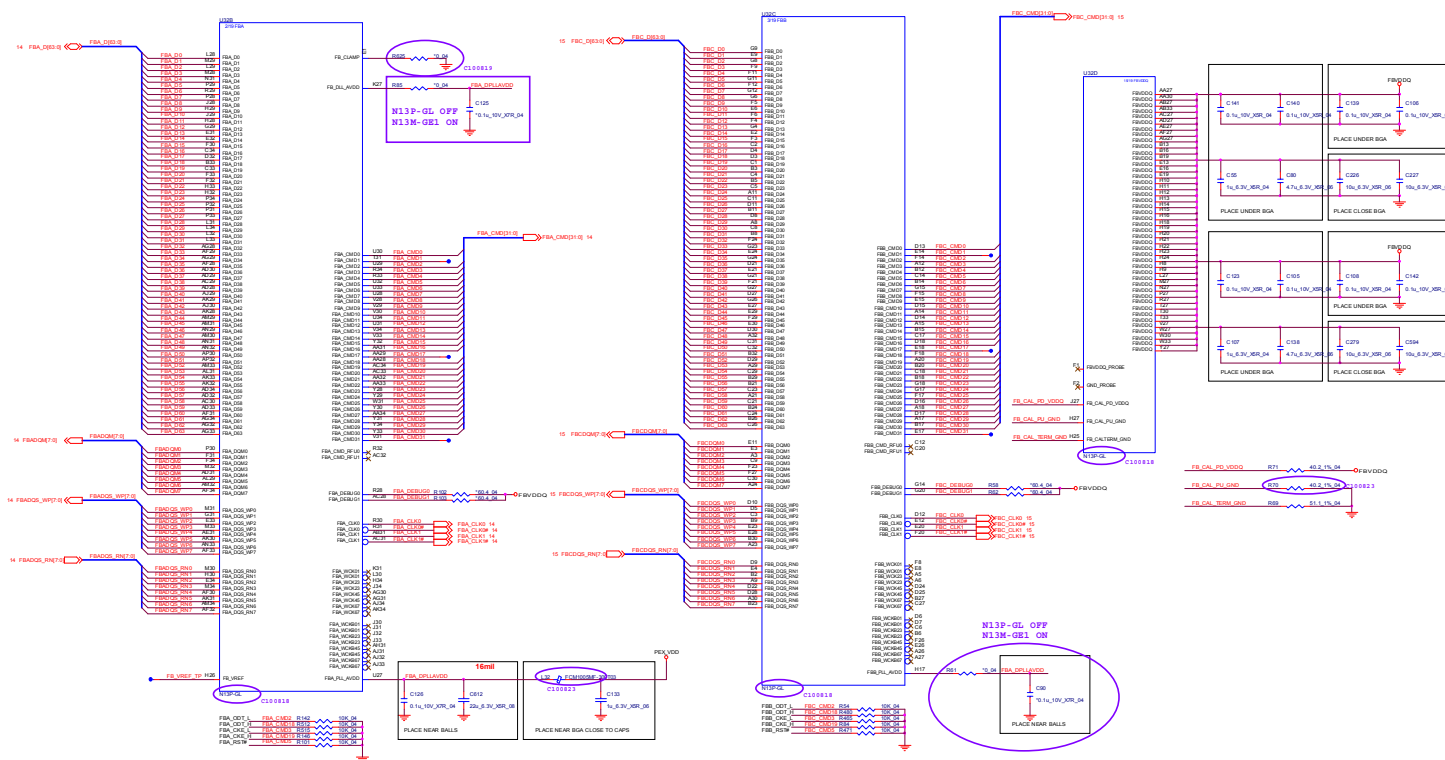
Strap	VGA	N13P-GL	N13M-081
VGA_ROM_S1	20K / Low	45.3K / Low	
VGA_ROM_S0	30K / Low	30K / Low	
VGA_ROM_SCLK	15K / Low	15K / High	
VGA_STRAP0	45.3K / High	45.3K / High	
VGA_STRAP1	34.8K / Low	34.8K / Low	
VGA_STRAP2	10K / High	4.99K / High	
VGA_STRAP3	NC	NC	
VGA_STRAP4	NC	NC	

Component values and footprints are listed in the table below:

Component	Value	Footprint
C134	100nF	0603
C135	100nF	0603
C136	100nF	0603
C137	100nF	0603
C138	100nF	0603
C139	100nF	0603
C140	100nF	0603
C141	100nF	0603
C142	100nF	0603
C143	100nF	0603
C144	100nF	0603
C145	100nF	0603
C146	100nF	0603
C147	100nF	0603
C148	100nF	0603
C149	100nF	0603
C150	100nF	0603
C151	100nF	0603
C152	100nF	0603
C153	100nF	0603
C154	100nF	0603
C155	100nF	0603
C156	100nF	0603
C157	100nF	0603
C158	100nF	0603
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C161	100nF	0603
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C218	100nF	0603
C219	100nF	0603
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C221	100nF	0603
C222	100nF	0603
C223	100nF	0603
C224	100	

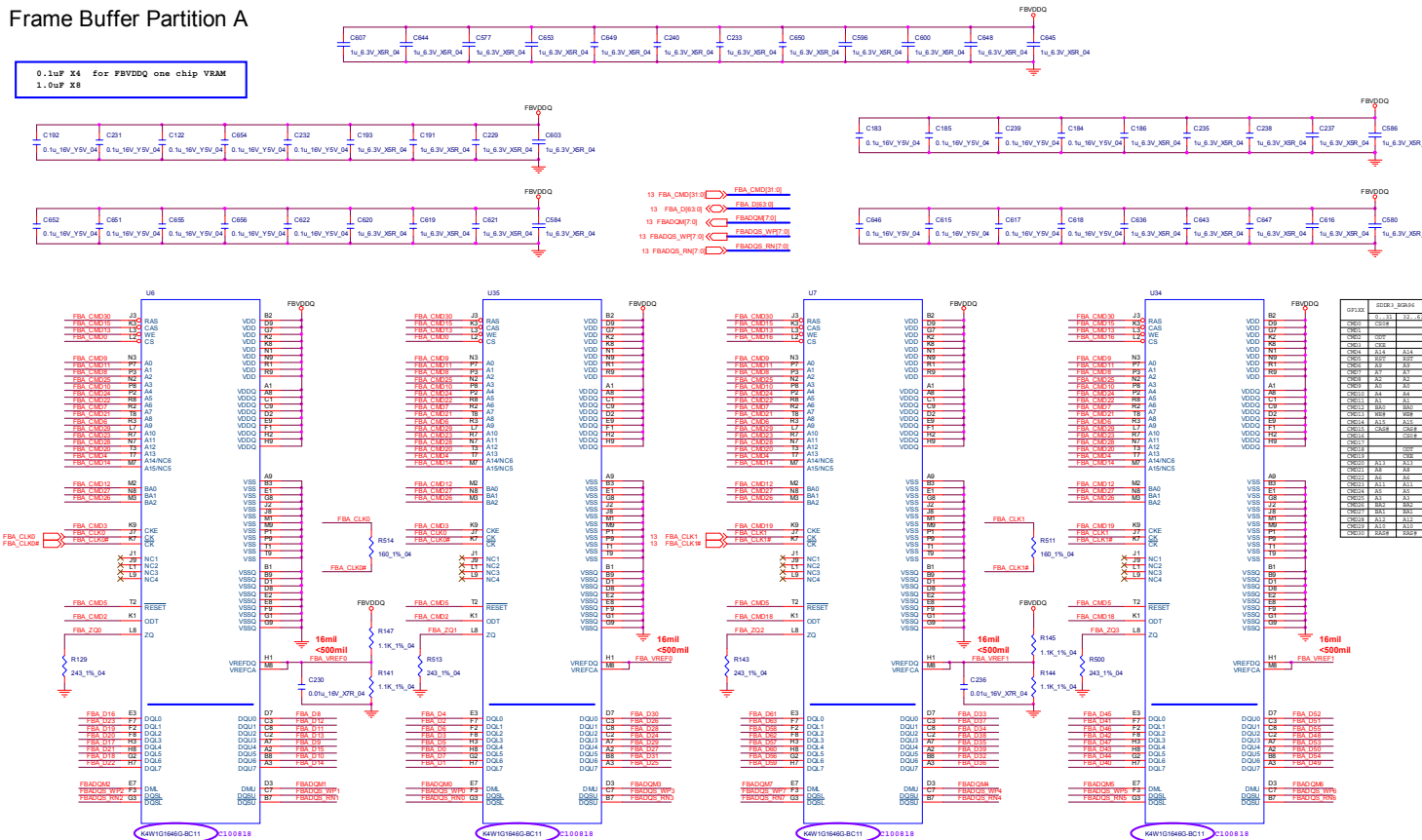
VGA Frame Buffer Interface

Frame Buffer Interface



VGA Frame Buffer A

Frame Buffer Partition A



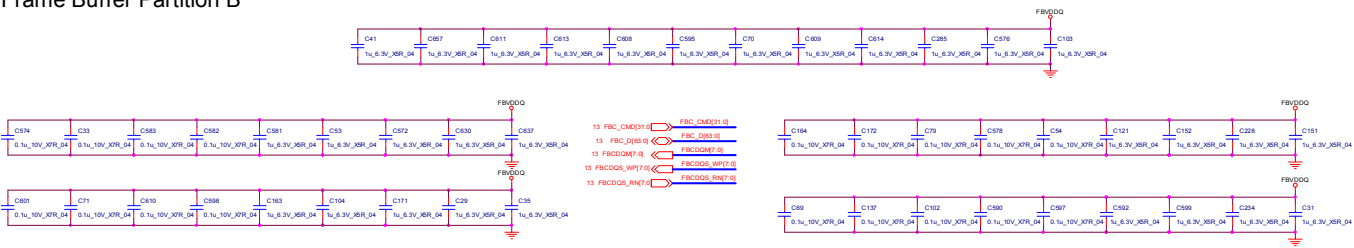
Sheet 14 of 50
VGA Frame Buffer
A

Schematic Diagrams

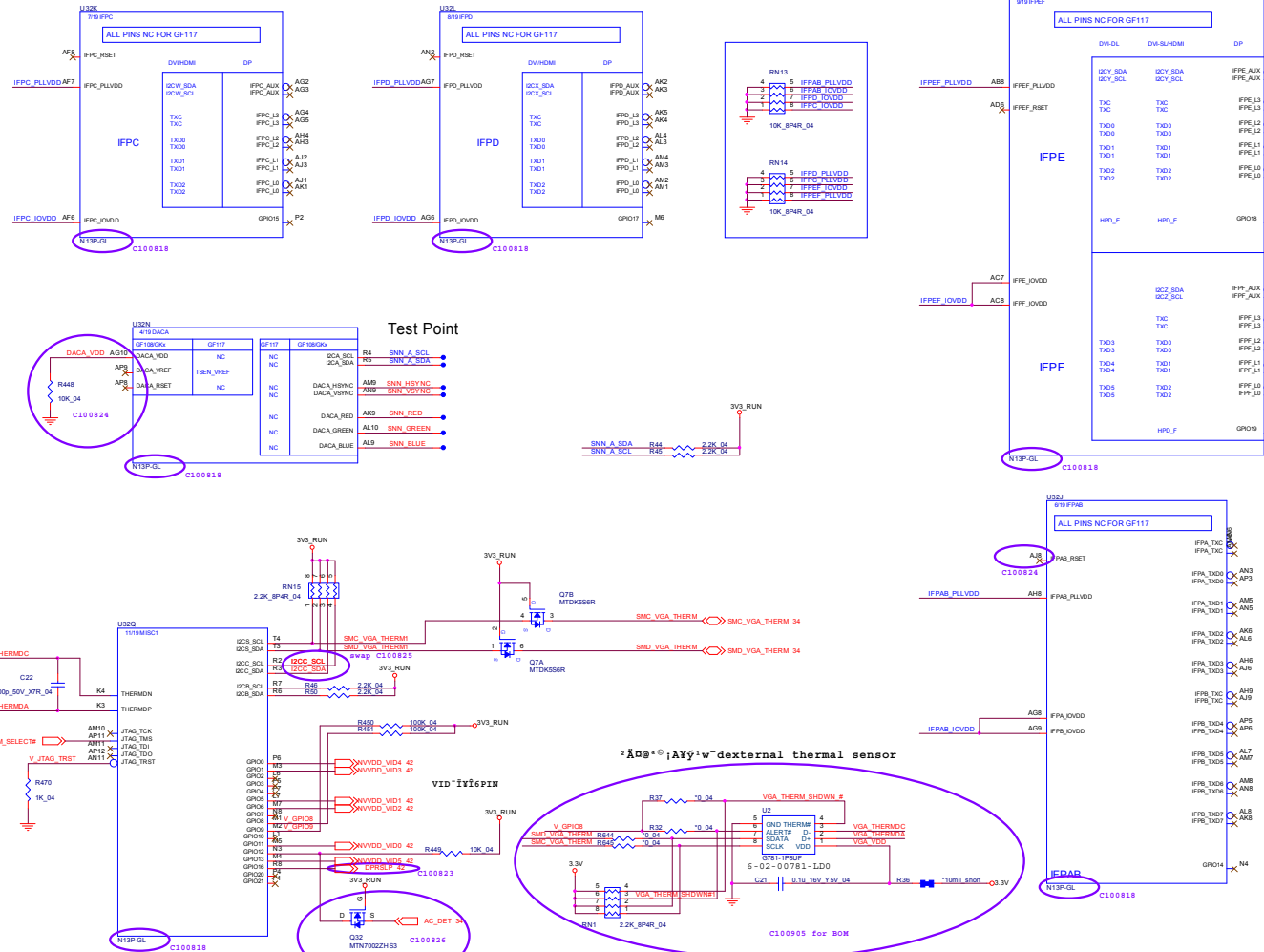
VGA Frame Buffer C

Sheet 15 of 50
VGA Frame Buffer
C

Frame Buffer Partition B



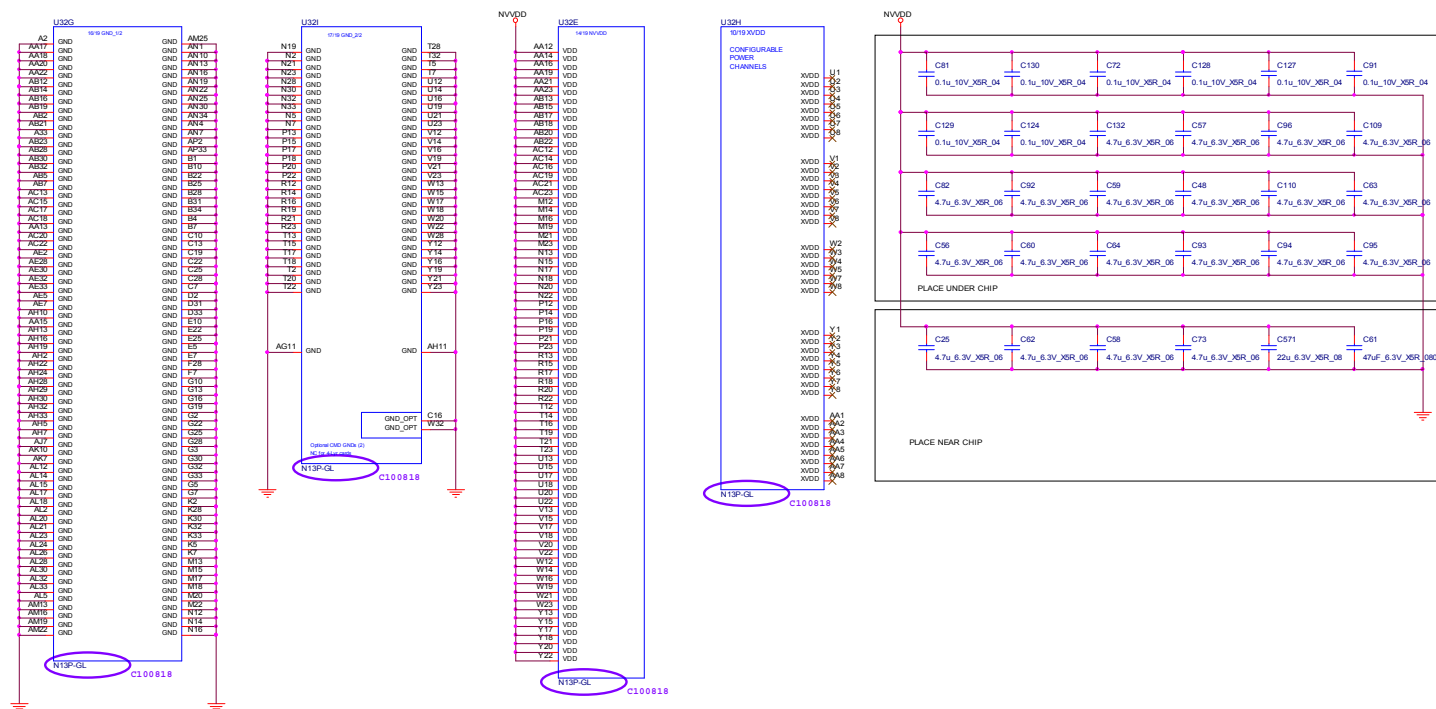
VGA I/O



Sheet 16 of 50
VGA I/O

VGA NVVDD Cdecoupling

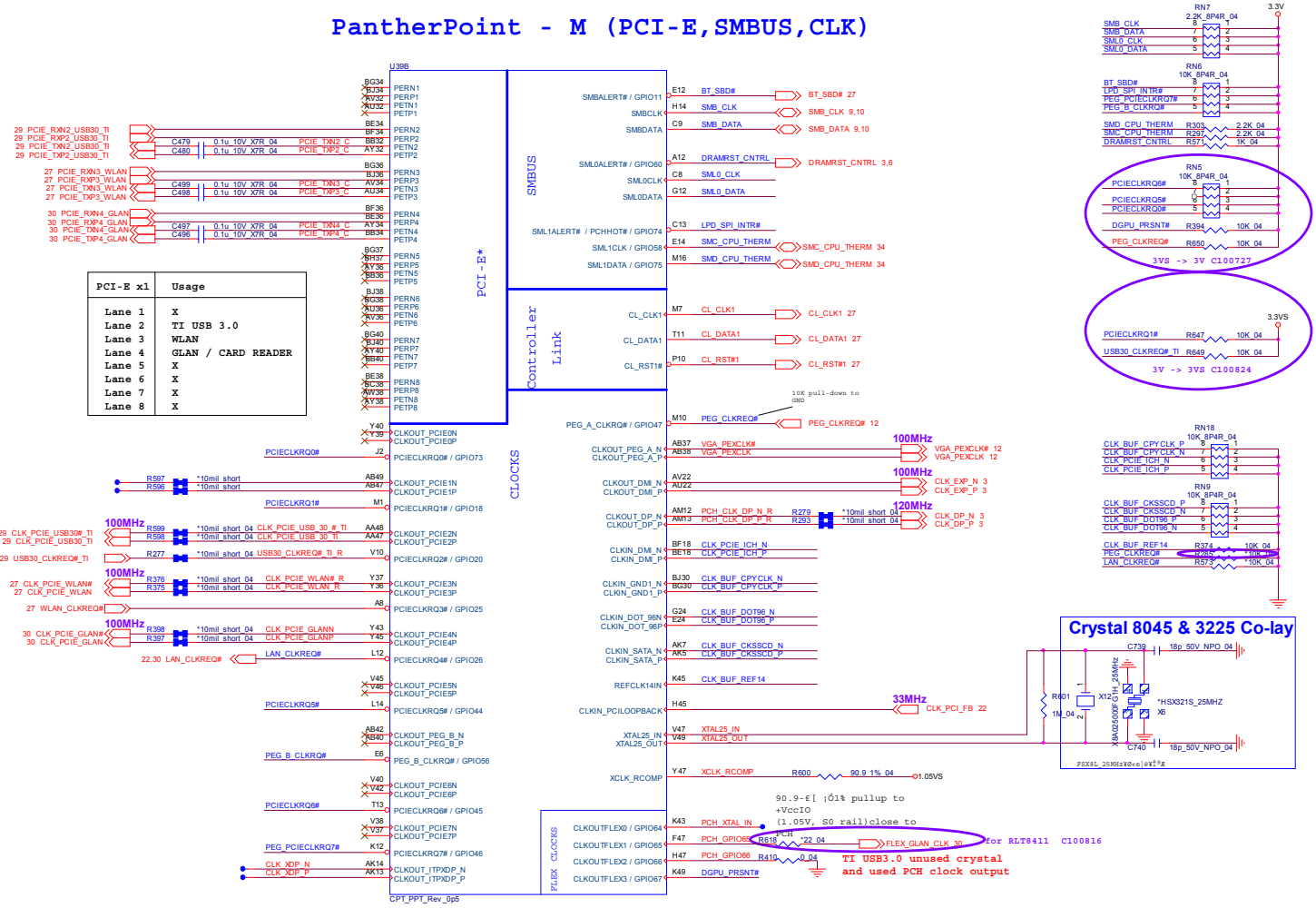
Sheet 17 of 50
VGA NVVDD
Cecoupling



Schematic Diagrams

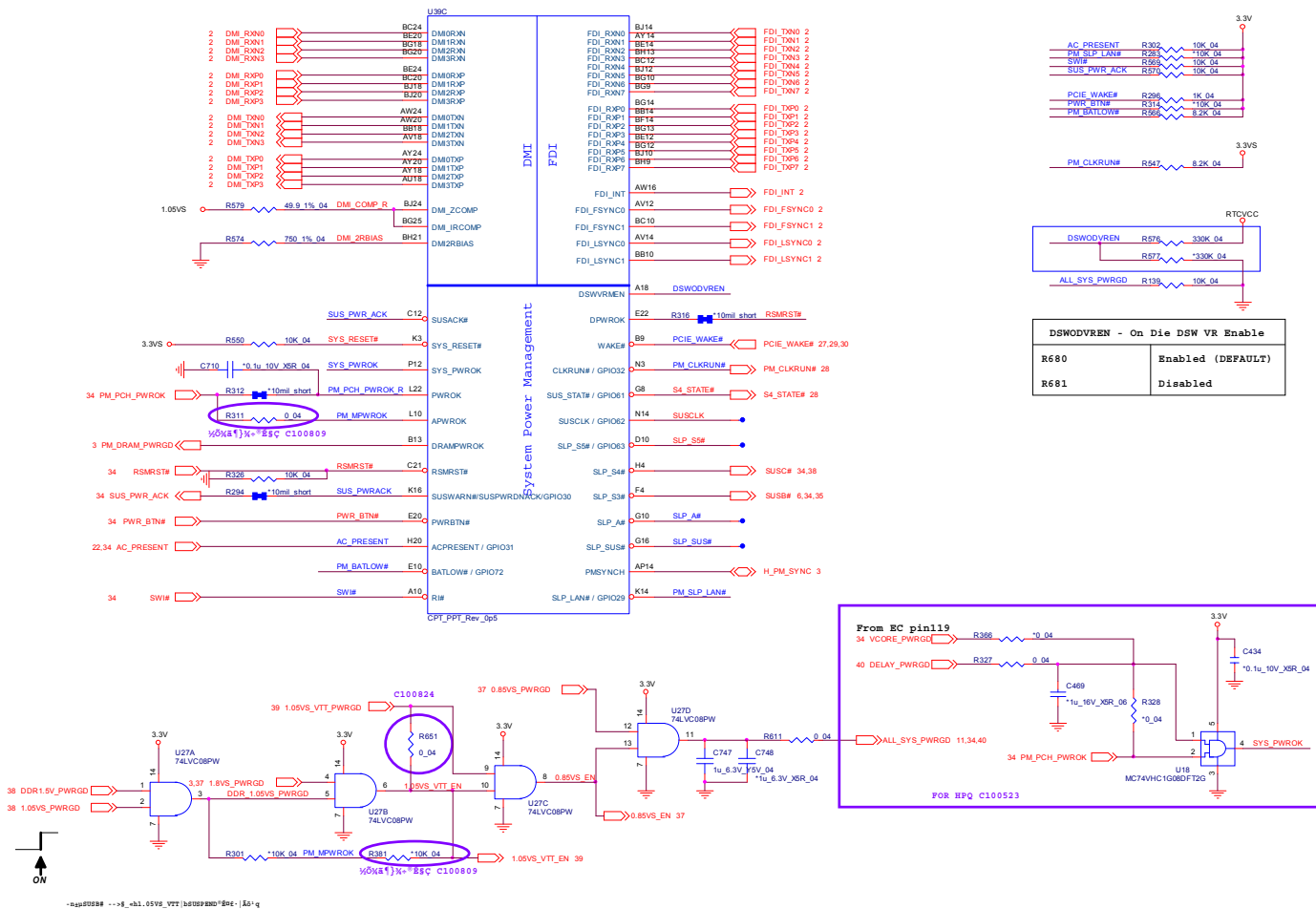
PCH 2/9- PCIE, SMBUS, CLK

Sheet 19 of 50
PCH 2/9- PCIE,
SMBUS, CLK



PCH 3/9- DMI, FDI, PWRGD

PantherPoint -M (DMI, FDI, GPIO)

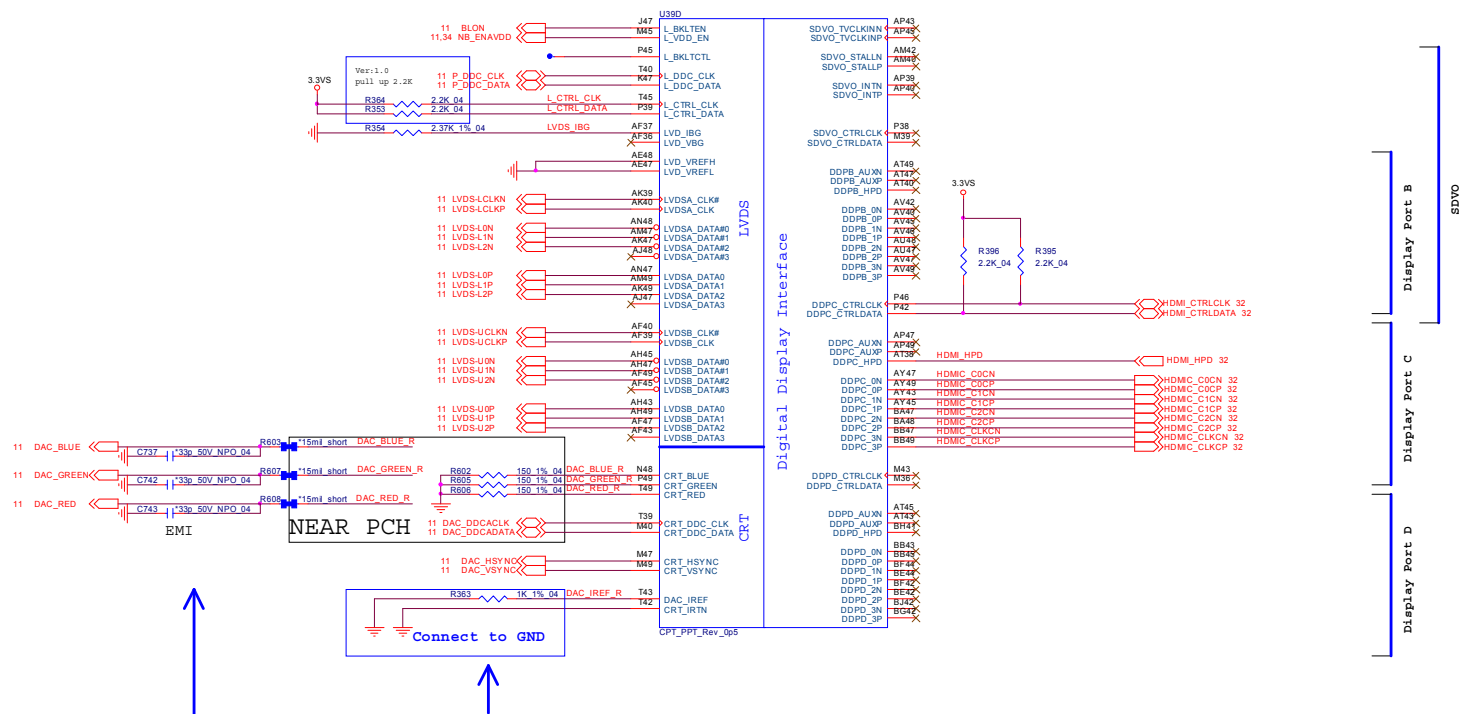


Sheet 20 of 50
PCH 3/9- DMI, FDI,
PWRGD

B.Schematic Diagrams

PantherPoint -M (LVDS,DDI)

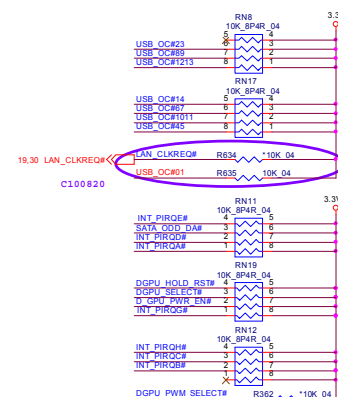
External Graphics (PCH Integrated Graphics Disable)



PantherPoint -M (PCI,USB,NVRAM)

R392 *1K 04 INT_PIRQ#

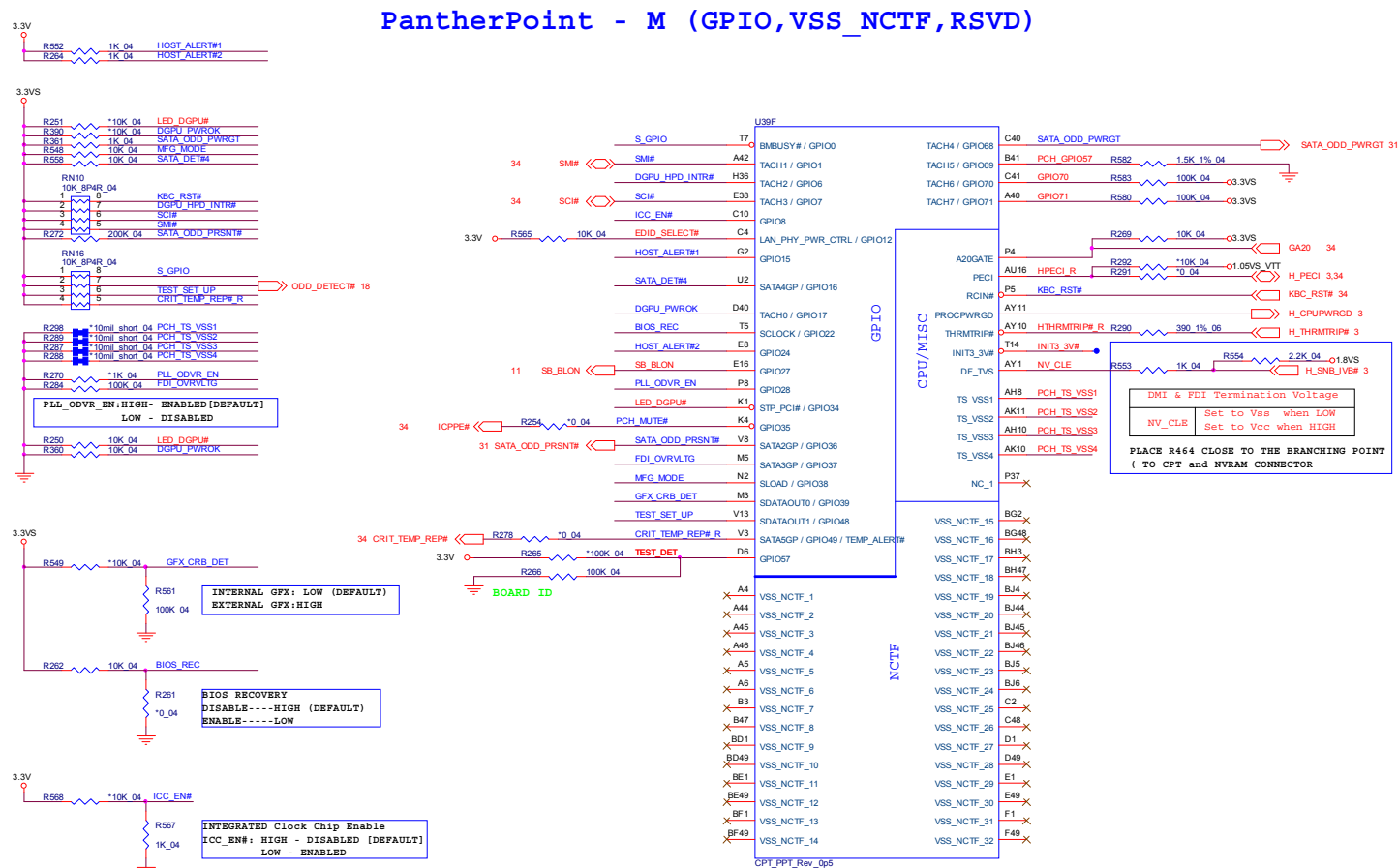
MPC Switch Control
MPC OFF -- 0 DEFAULT
MPC ON -- 1



PCH 4/9- PCI, USB, RSVD B - 23

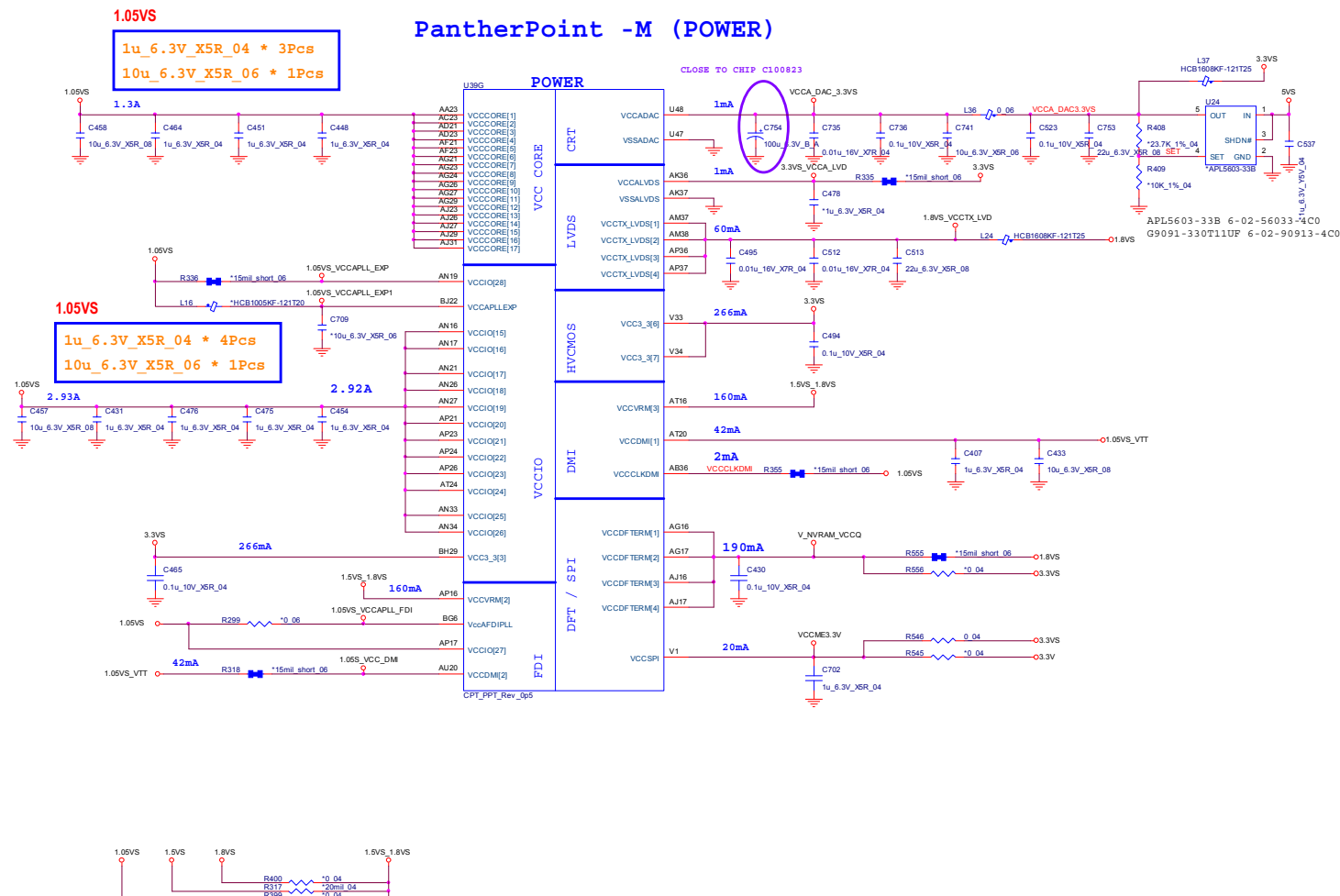
B.Schematic Diagrams

Sheet 23 of 50
PCH 6/9- GPIO,
CPU



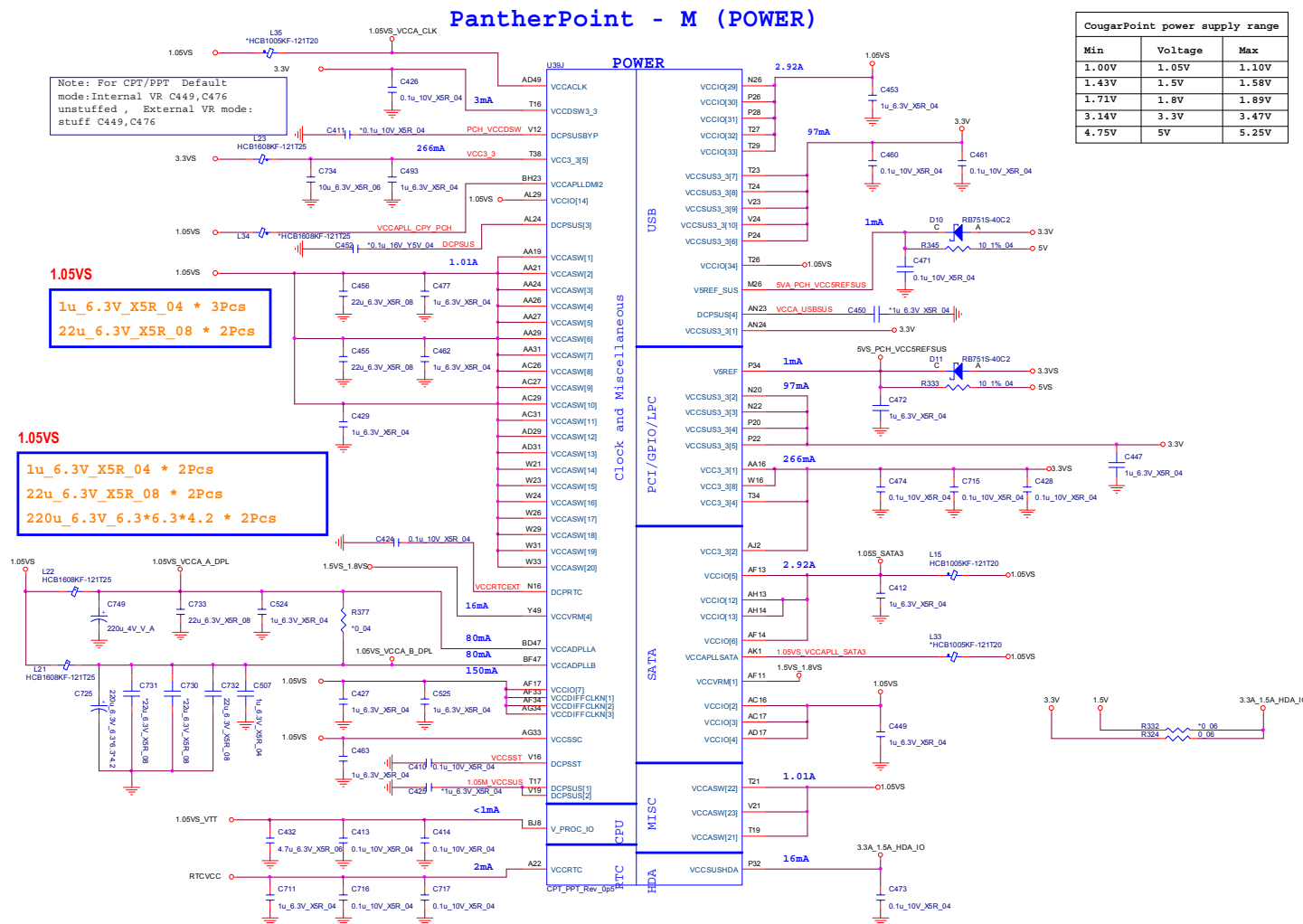
PCH 7/9- PWR B - 25

B.Schematic Diagrams



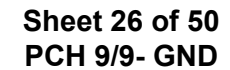
PCH 8/9 POWER

Sheet 25 of 50
PCH 8/9 POWER



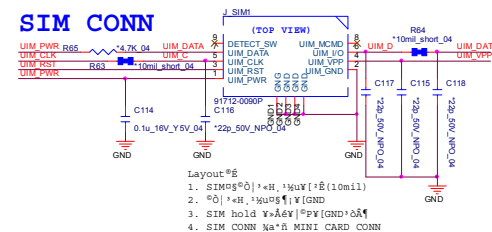
B.Schematic Diagrams

PCH 9/9- GND B - 27



B.Schematic Diagrams

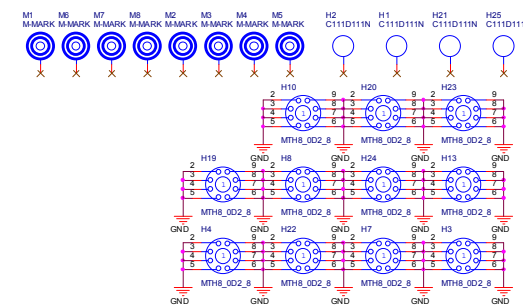
Sheet 27 of 50
WLAN, 3G, MINI
PCIE

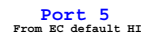
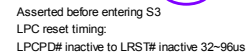


The diagram shows a power management circuit. A 3.3V supply is connected to a network of components. A red line labeled "3A" indicates a signal or power path from the MT8670 module's 3A pin through transistor Q10 and resistor R73 to the MT8670 module's 3G_3V pin. Another red line labeled "3A" indicates a signal or power path from the MT8670 module's 3G_3V pin through transistor Q11B and resistor R66 back to the MT8670 module's 3G_3V pin. Capacitors C149, C148, and C770 are used for decoupling. Resistor R74 is connected to the 3A pin. Transistors Q10, Q11A, and Q11B are used for switching or level shifting.

From EC default HI

for @Yr3.4 831

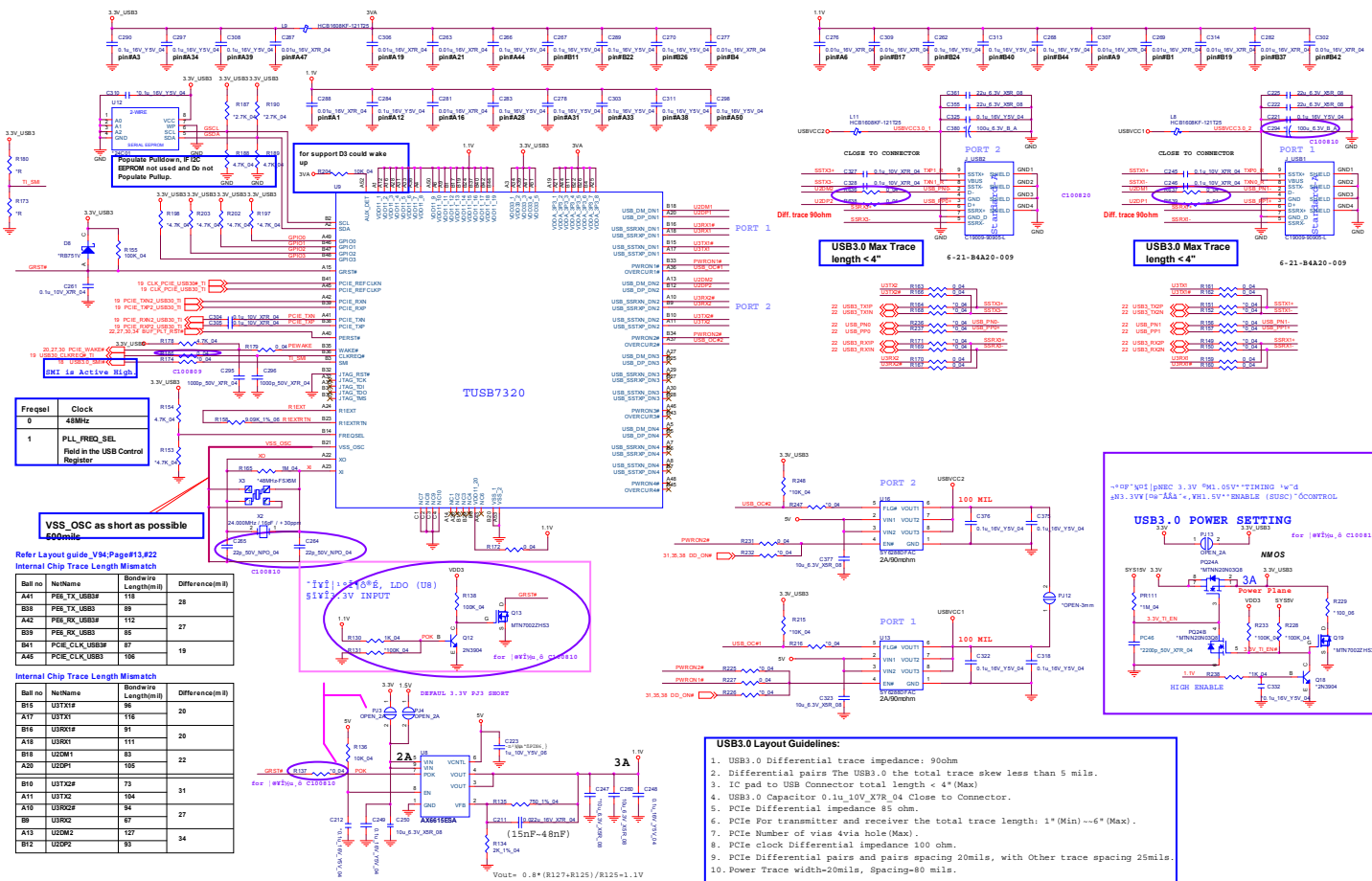
[illegible]



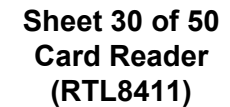
Schematic Diagrams

USB3.0

Sheet 29 of 50
USB3.0

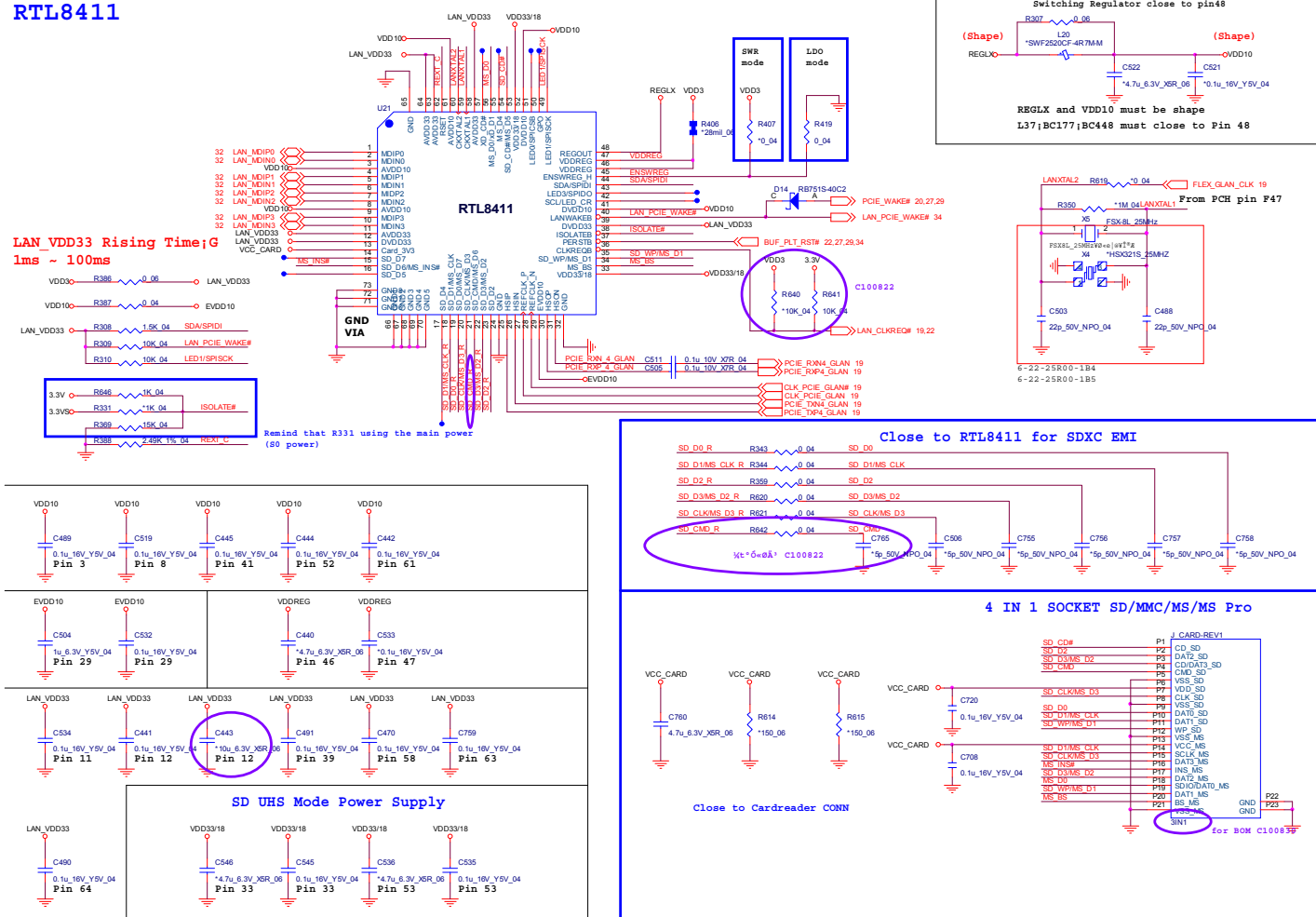


RTL8411



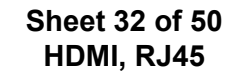
B.Schematic Diagrams

Sheet 31 of 50
SATA ODD, LED,
USB CHARGE

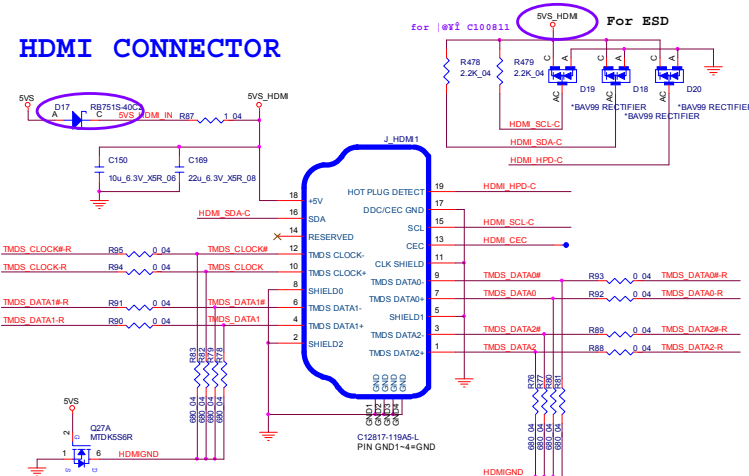


B.Schematic Diagrams

LAN PORT GIGA LAN (JMC251C)

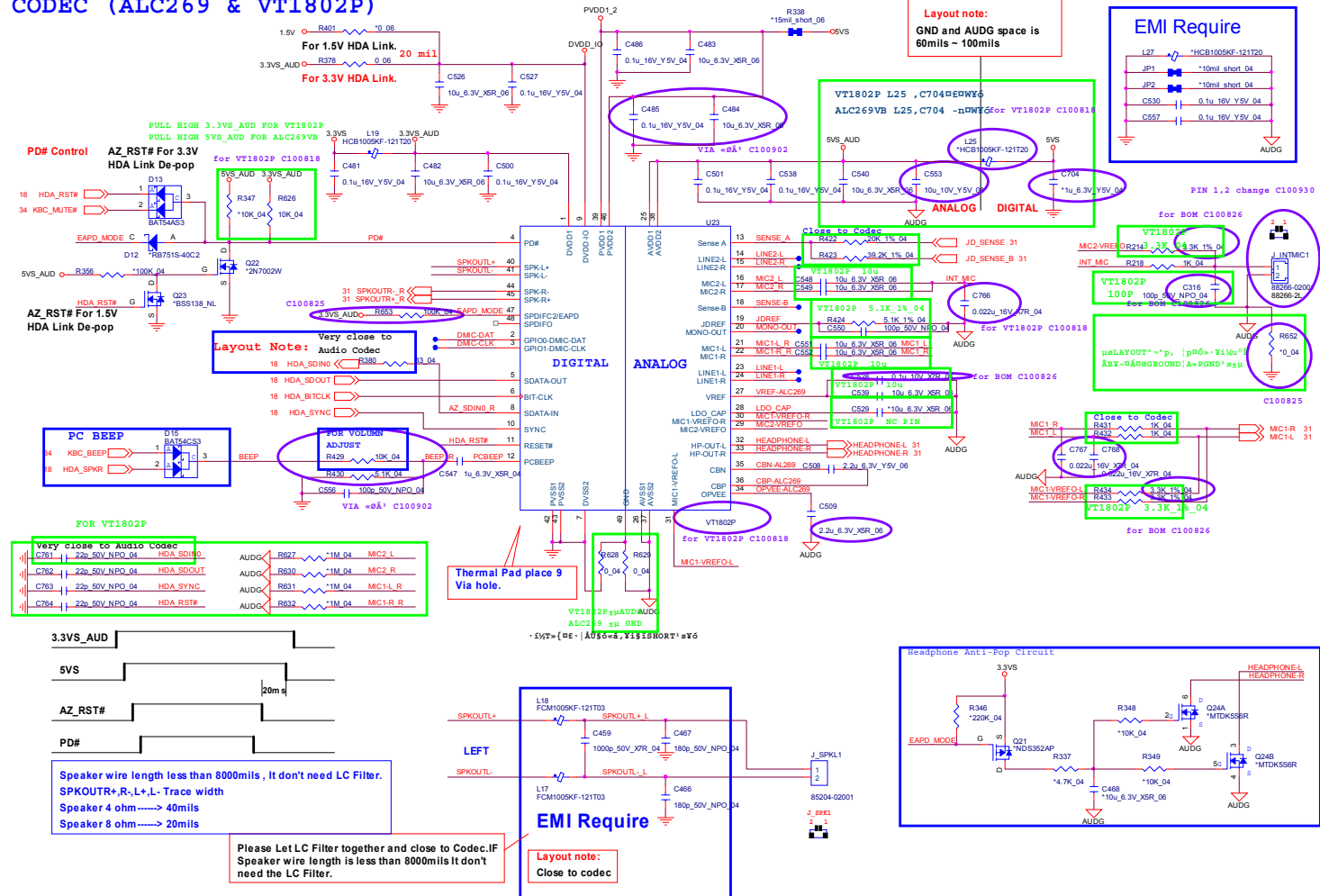


HDMI CONNECTOR

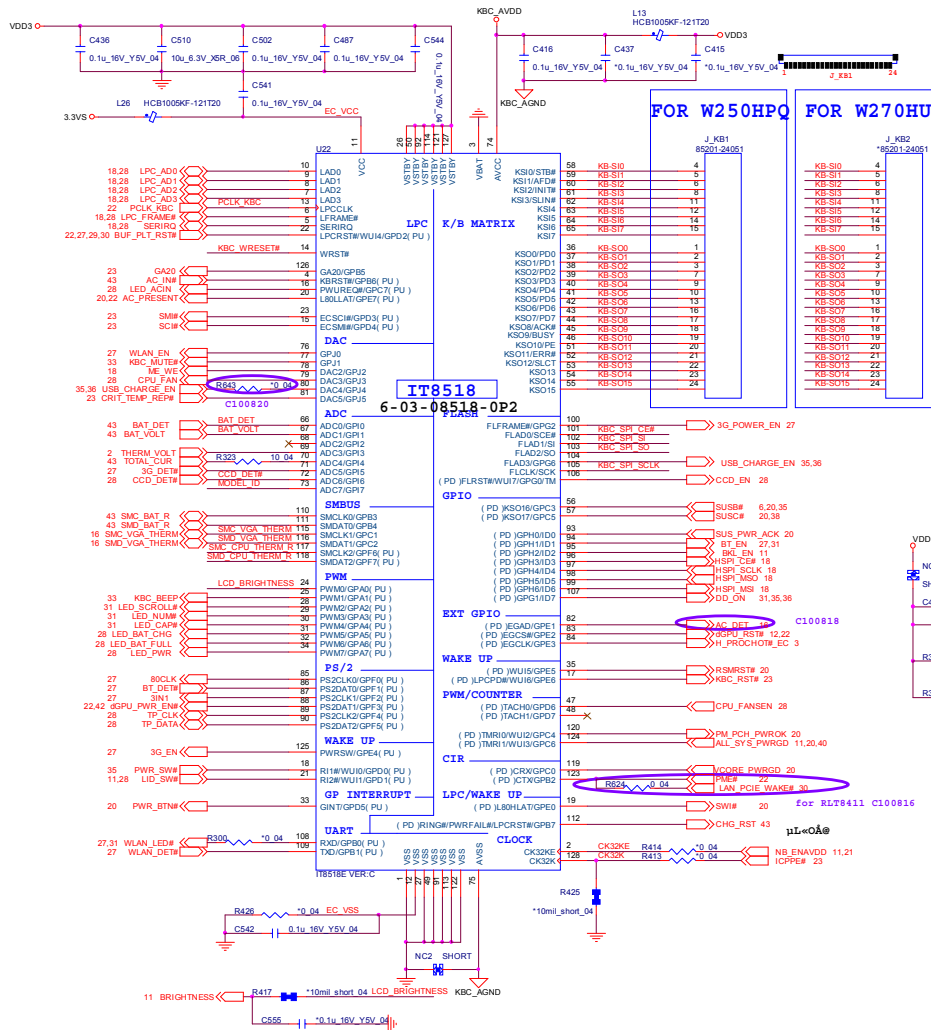


AUDIO CODEC VT1802P

CODEC (ALC269 & VT1802P)



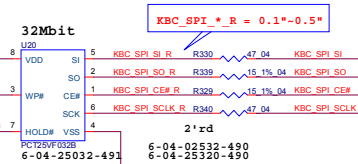
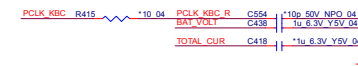
KBC-ITE IT8518E



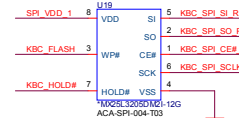
Board-n[

EC MODULE CHOOSE (FOR DIFFERENCE K/B TYPE)

VER.	RX	VOLTAGE	MODEL_ID
V1.0	R163 10K/ R171 X	3.3V	
	R163 X /R171 10K	0V	

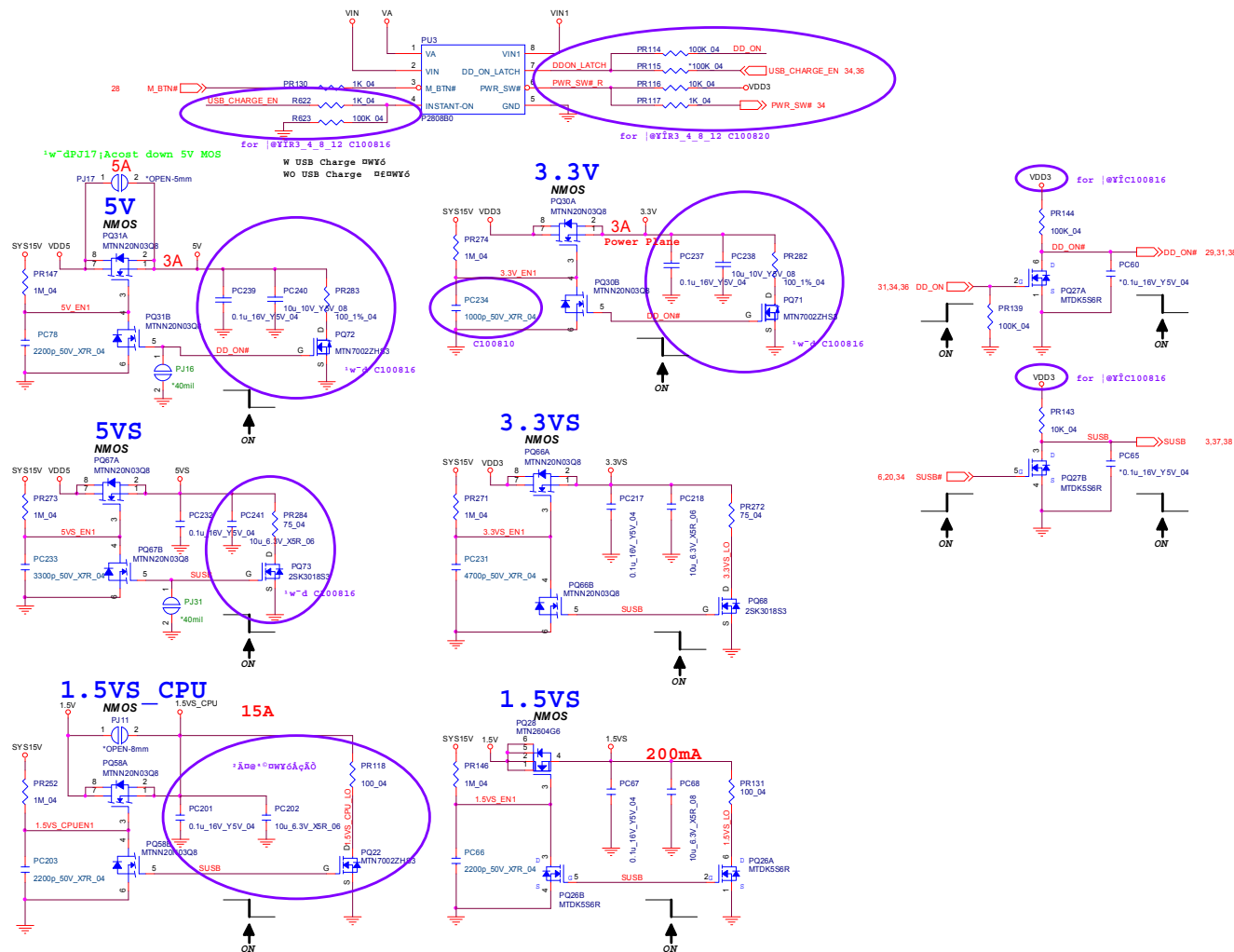
Sheet 34 of 50
KBC-ITE IT8518E

Co-layer SPI ROM

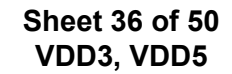


B.Schematic Diagrams

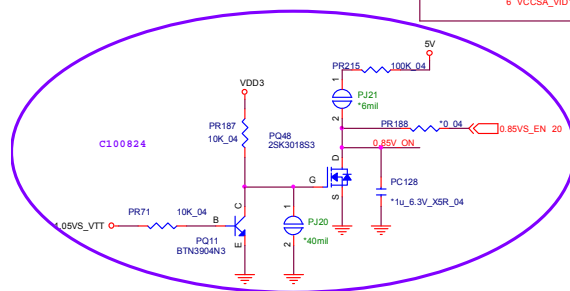
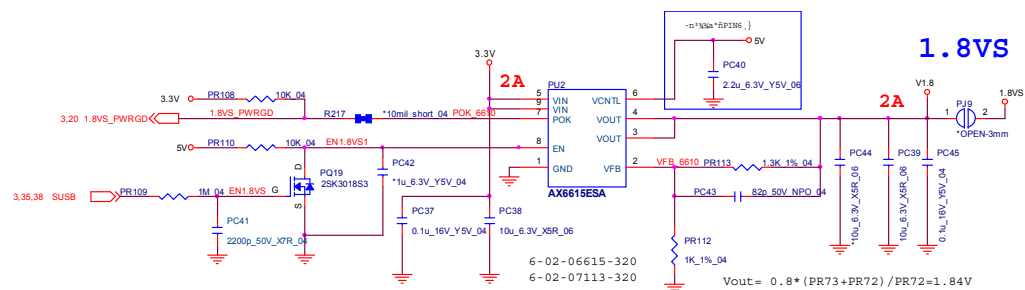
Sheet 35 of 50
5VS, 3VS, 1.5VS
CPU



VDD3, VDD5 B - 37

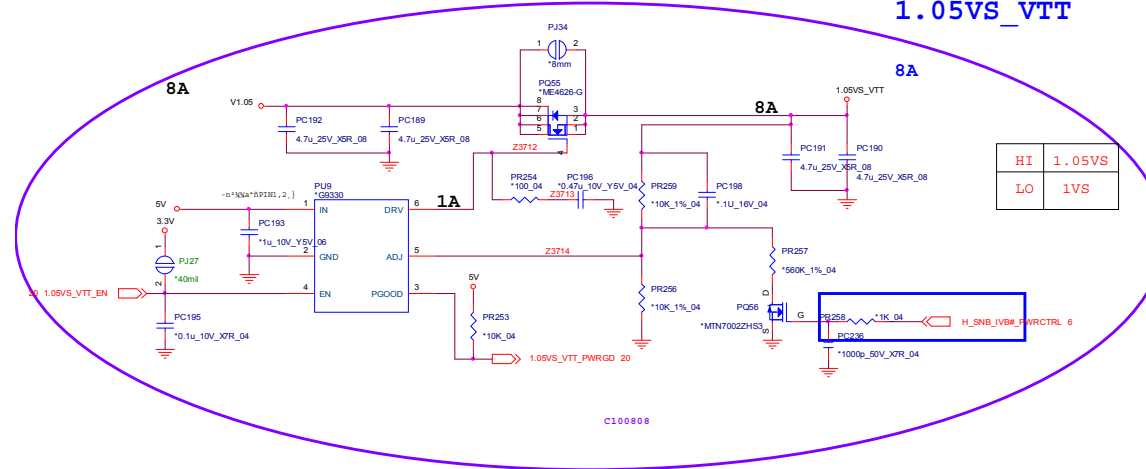


Power 0.85VS, 1.8VS



	0.9V	0.8V	0.725V	0.675V
VCCSA_VID0	0	0	1	1
VCCSA_VID1	0	1	0	1

Sheet 39 of 50
POWER 1.05VS/
1.05VS VTT



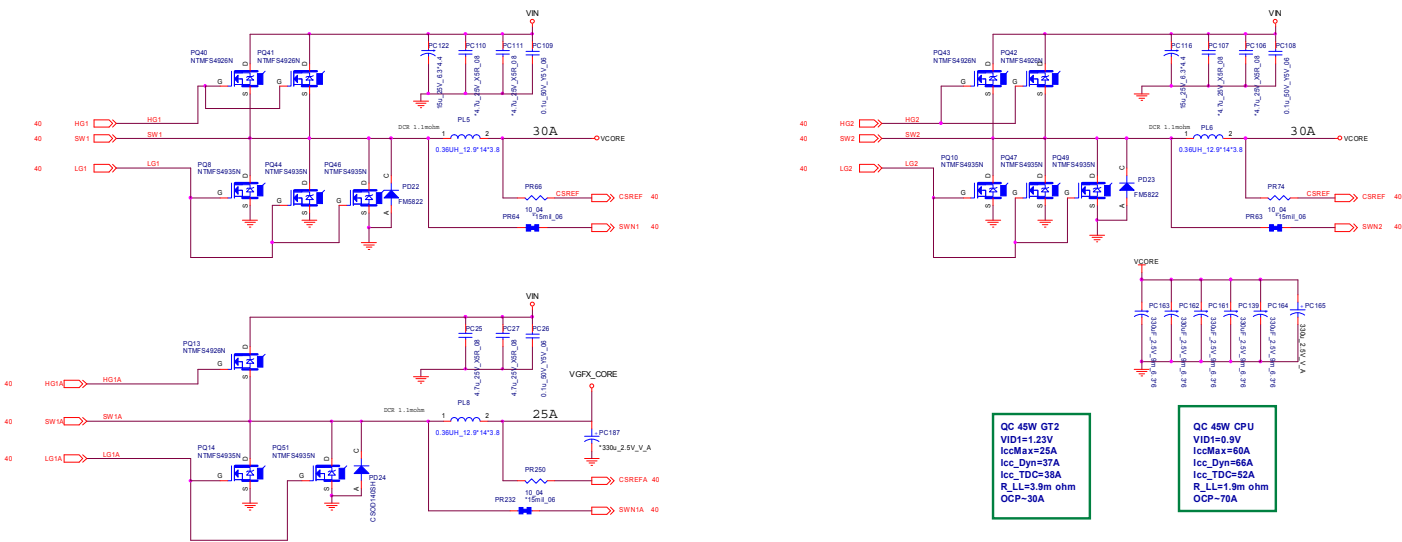
POWER VCORE1 B - 41



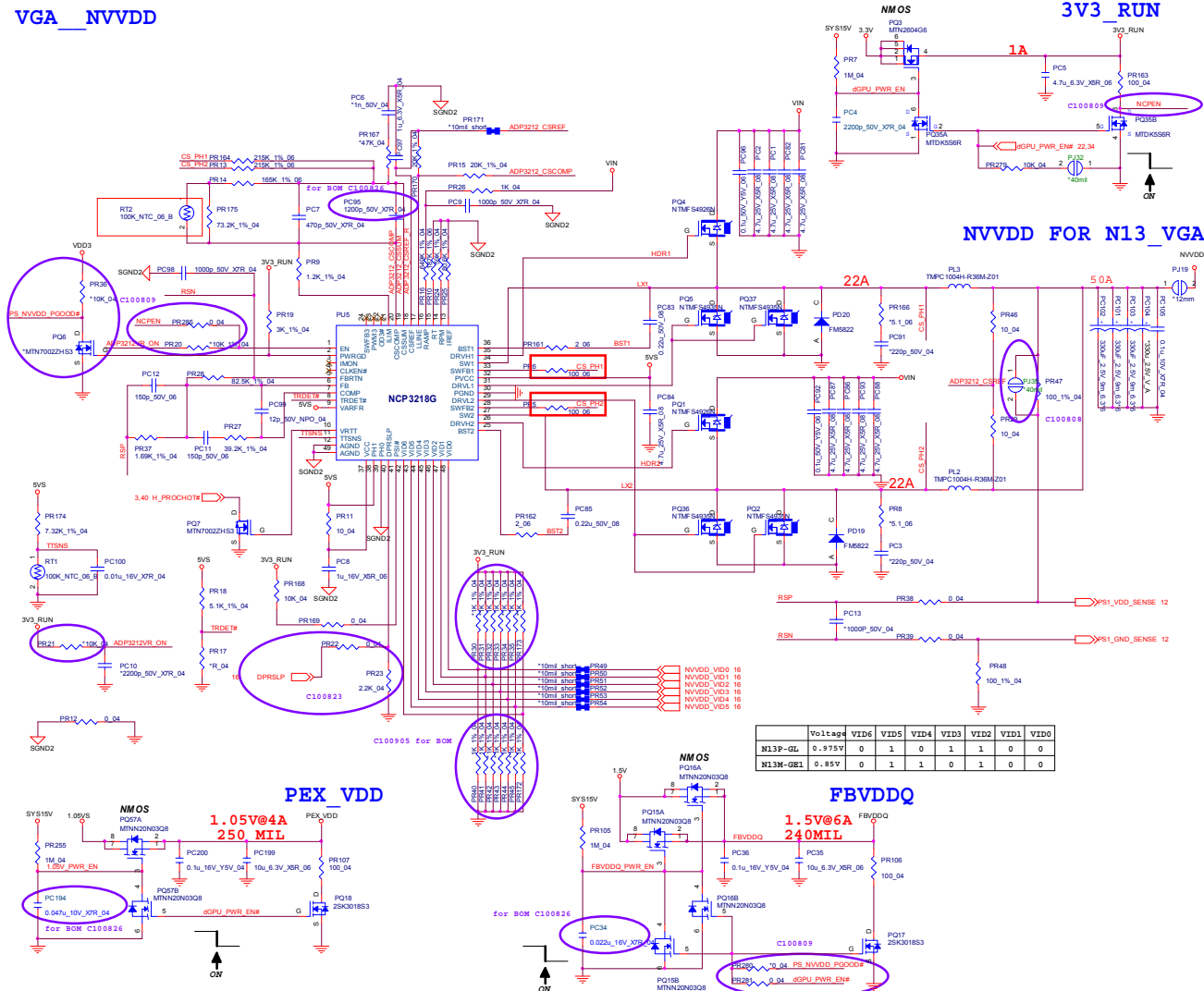
Schematic Diagrams

POWER VCORE2

Sheet 41 of 50
POWER VCORE2



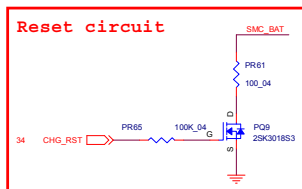
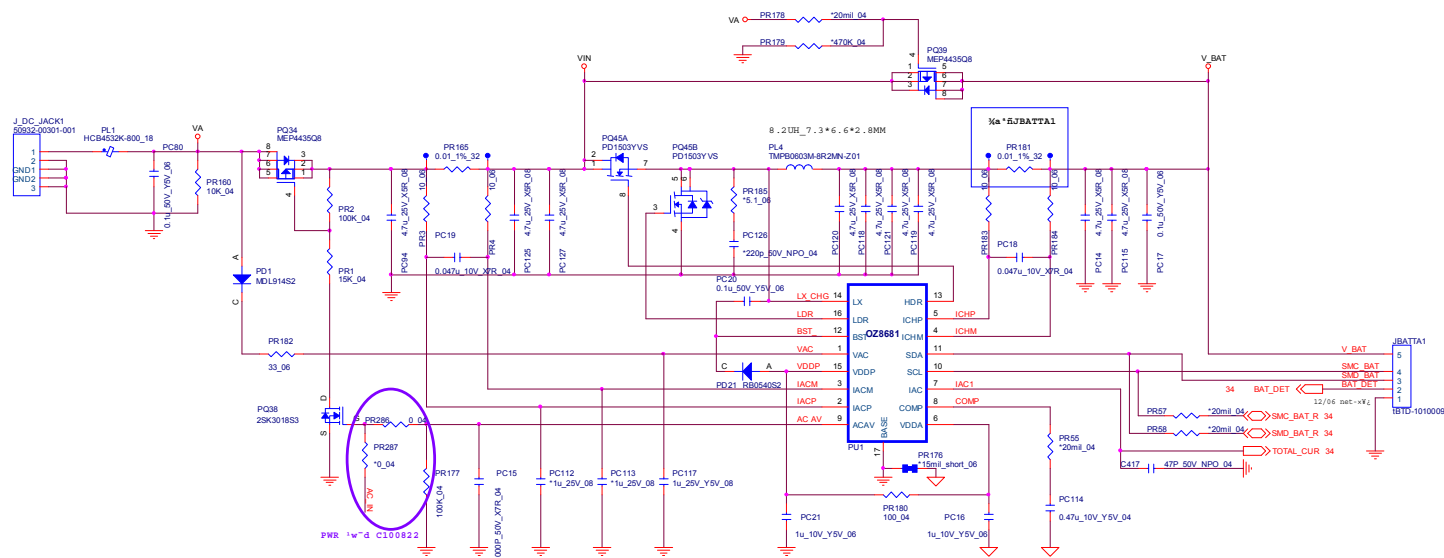
Power VGA NVVDD/PEX_VDD



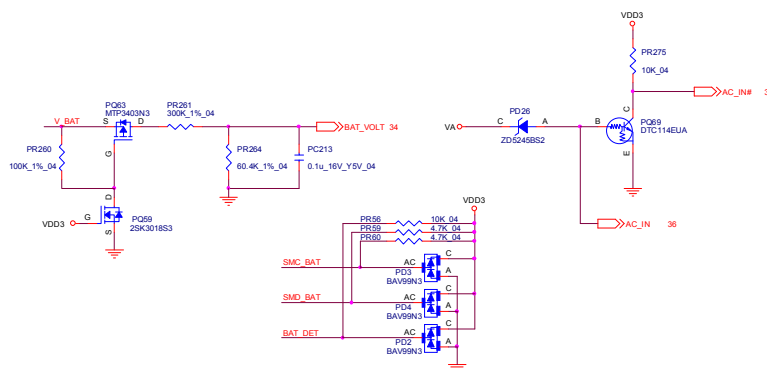
Sheet 42 of 50
Power VGA
NVVDD/PEX_VDD

AC IN, CHARGER

Sheet 43 of 50
AC IN, CHARGER

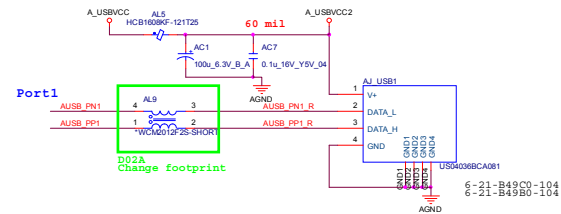


- 1) All power traces should be routed on the outer layers
GNDP, VAD, VSYS, LX, VCHG, VBATT
- 2) Use Kelvin connections for R3, R4
(separate force and measurement traces)
- 3) R23 and R24 are dummy resistors, for layout purposes only
(serves as single point connection between GNDP & GNDIA)
- 4) Footprint TO-236 is equivalent to SOT-23
- 5) Footprint SF1P1 is a single hole axial pad
- 6) All resistors, capacitors and semiconductors are SMD
- 7) Potentiometers, and test points are axial devices

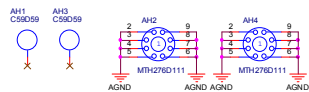
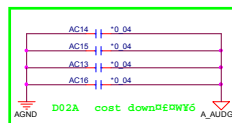
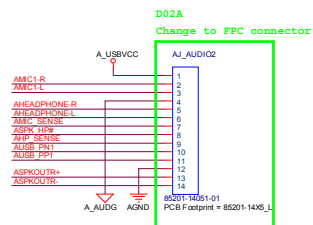


AUDIO BOARD

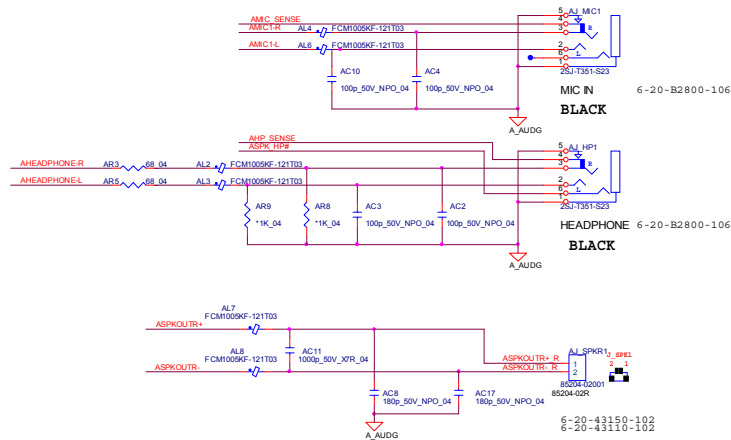
USB PORT



TO M/B



AUDIO JACK

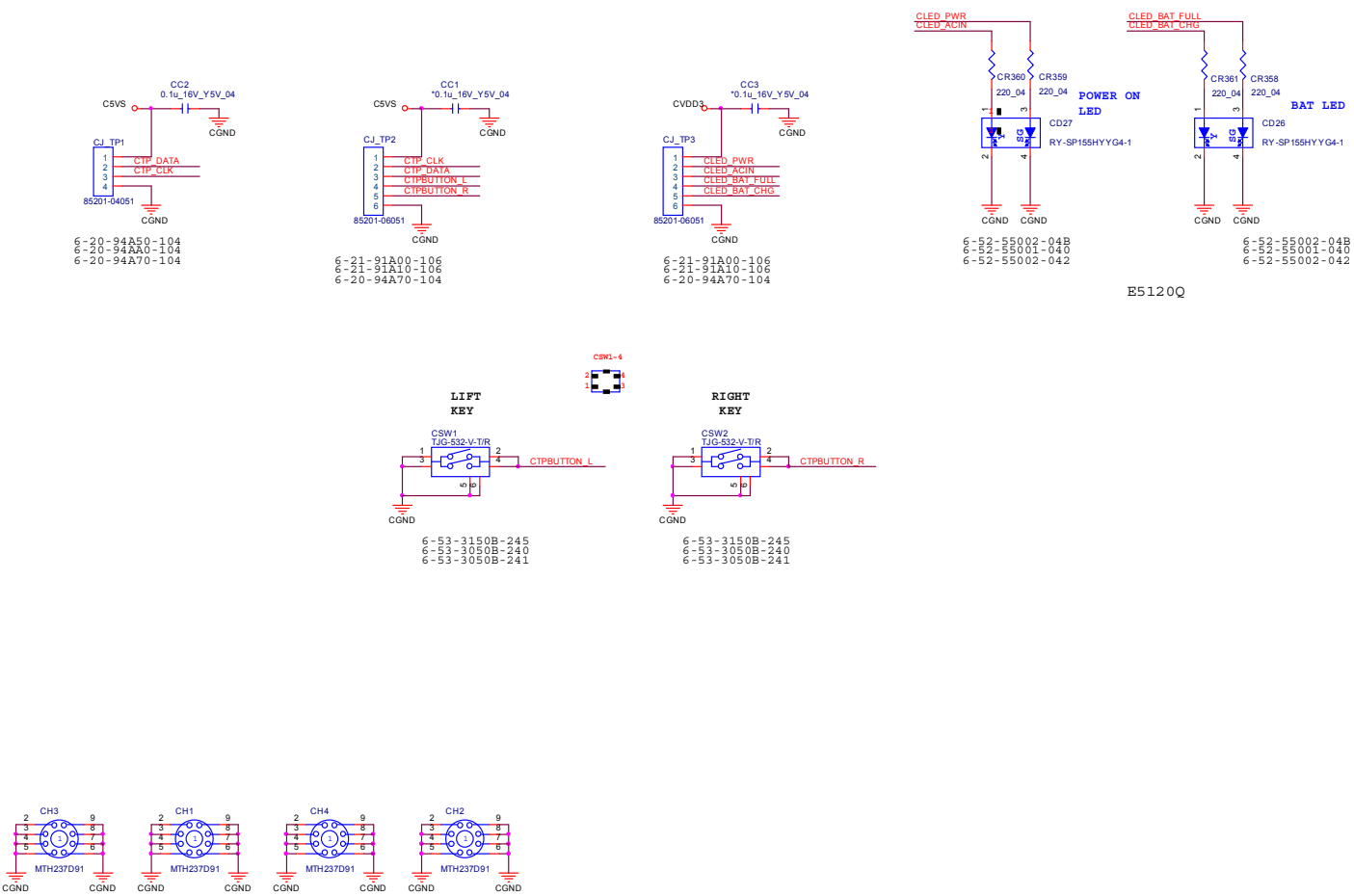
Sheet 44 of 50
AUDIO BOARD

Schematic Diagrams

CLICK BOARD

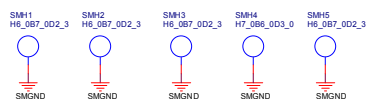
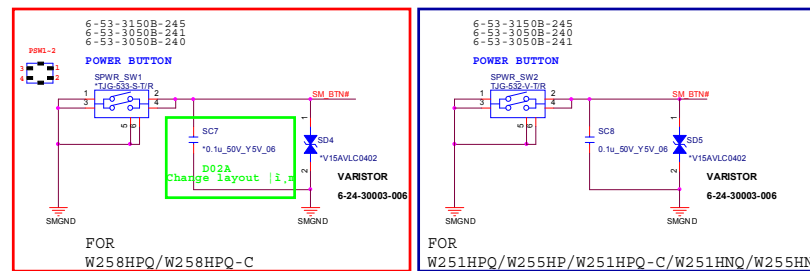
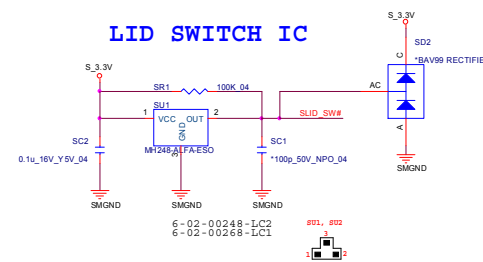
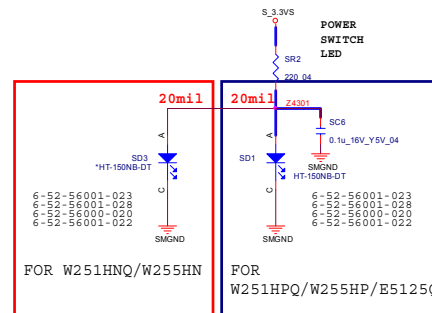
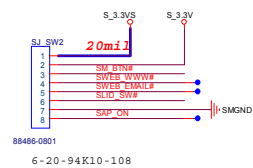
CLICK BOARD

Sheet 45 of 50
CLICK BOARD



W251HPQ POWER SW BOARD

POWER SW & LED

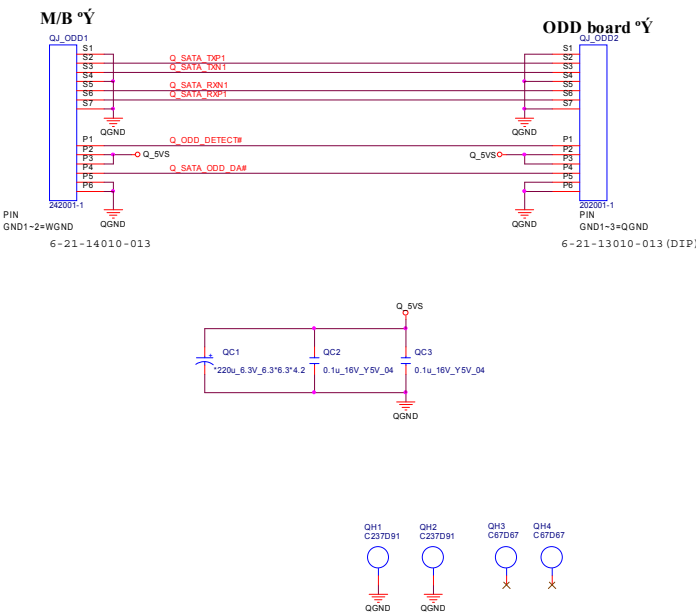


Sheet 46 of 50
W251HPQ POWER
SW BOARD

W270HU BRIDGE ODD BOARD

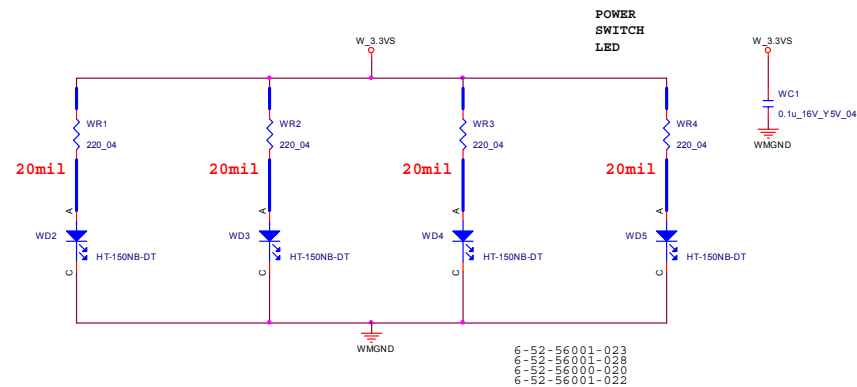
ODD BOARD FOR W270HU

Sheet 47 of 50
W270HU BRIDGE
ODD BOARD

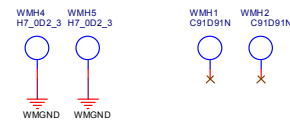
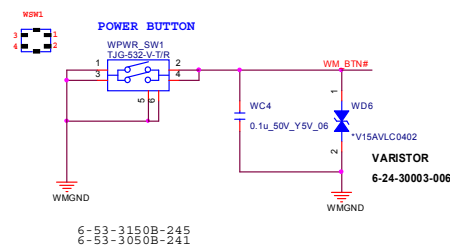
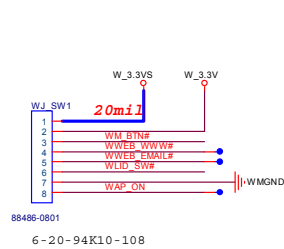
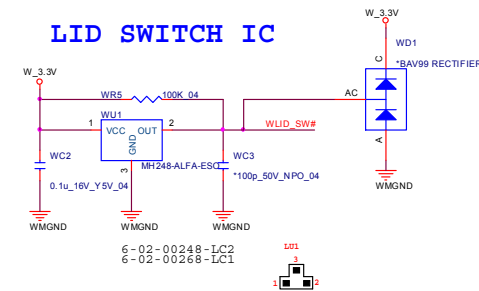


W270HU POWER SW BOARD

POWER SW & LED



LID SWITCH IC

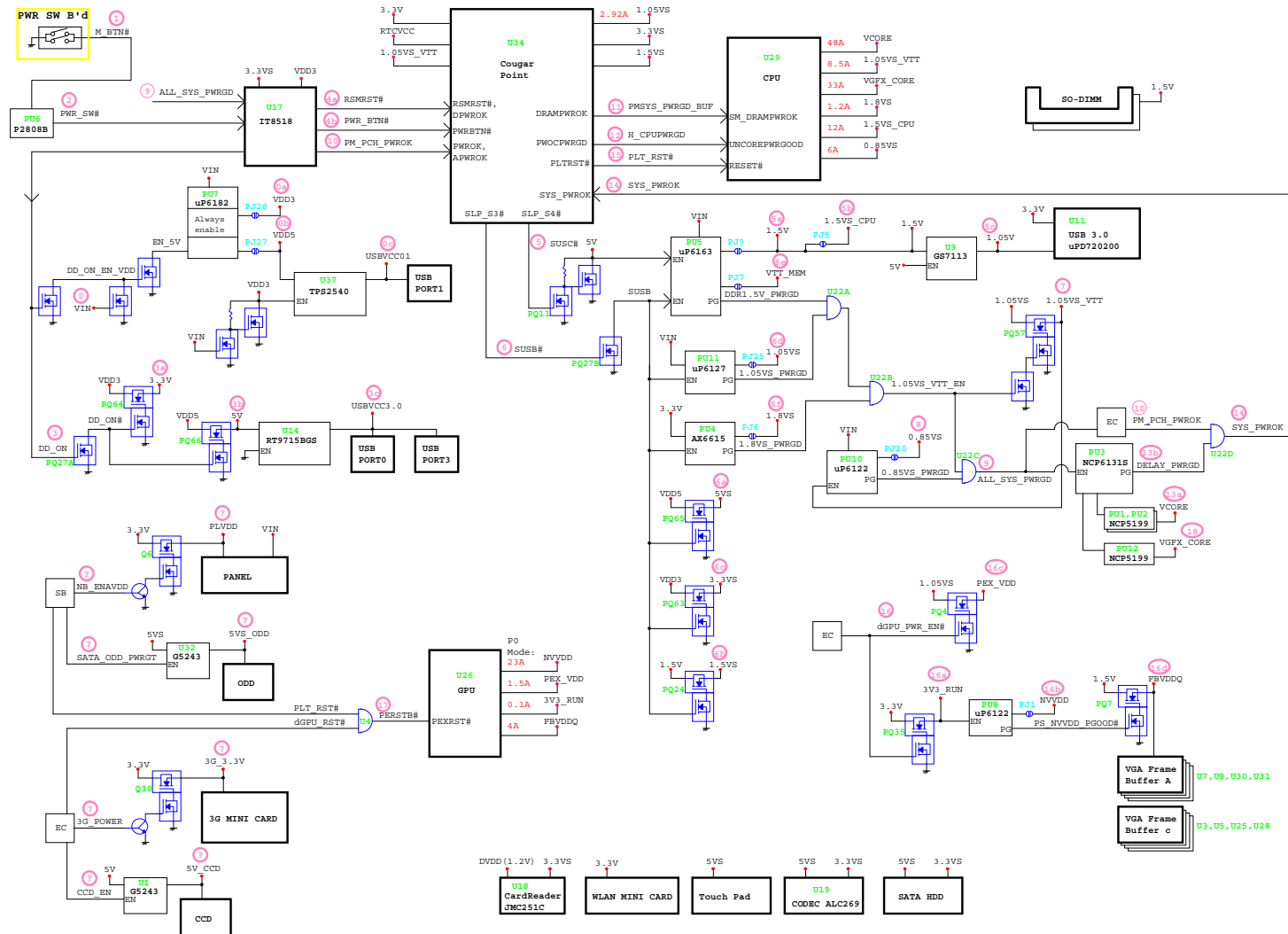


Sheet 48 of 50
W270HU POWER
SW BOARD

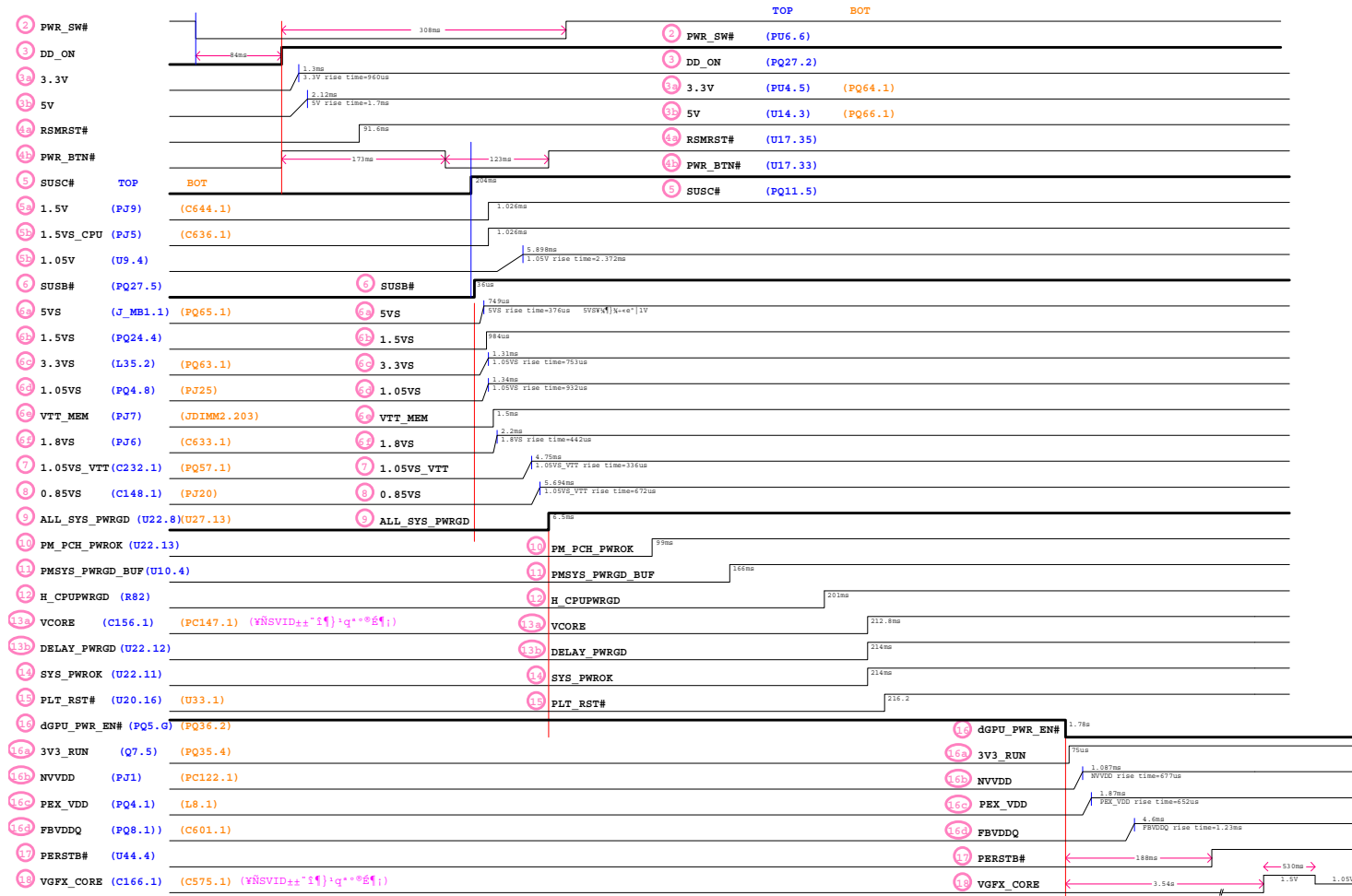
Schematic Diagrams

Power Diagram

Sheet 49 of 50
Power Diagram



Power On SEQ

Sheet 50 of 50
Power On SEQ

Appendix C: Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS, you must:

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

Download the BIOS

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

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

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

Set the computer to boot from the external drive

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



BIOS Version

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

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

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

BIOS Update

Use the flash tools to update the BIOS

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

C:\> Flash.bat

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

Restart the computer (booting from the HDD)

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

Your computer is now running normally with the updated BIOS

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