SERVICE MANUAL

W110ER/W110ERF

notebook

Notebook Computer

W110ER / W110ERF

Service Manual

Notice

The company reserves the right to revise this publication or to change its contents without notice. Information contained herein is for reference only and does not constitute a commitment on the part of the manufacturer or any subsequent vendor. They assume no responsibility or liability for any errors or inaccuracies that may appear in this publication nor are they in anyway responsible for any loss or damage resulting from the use (or misuse) of this publication.

This publication and any accompanying software may not, in whole or in part, be reproduced, translated, transmitted or reduced to any machine readable form without prior consent from the vendor, manufacturer or creators of this publication, except for copies kept by the user for backup purposes.

Brand and product names mentioned in this publication may or may not be copyrights and/or registered trademarks of their respective companies. They are mentioned for identification purposes only and are not intended as an endorsement of that product or its manufacturer.

Version 1.0
April 2012

Trademarks

Intel, **Pentium** and **Intel Core** are trademarks/registered trademarks of Intel Corporation.
Windows® is a registered trademark of Microsoft Corporation.
Other brand and product names are trademarks and /or registered trademarks of their respective companies.

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 ***W110ER/ W110ERF*** 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

IMPORTANT SAFETY INSTRUCTIONS

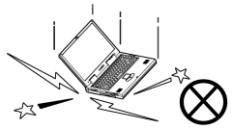
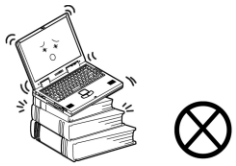
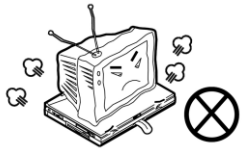
Follow basic safety precautions, including those listed below, to reduce the risk of fire, electric shock and injury to persons when using any electrical equipment:

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 (**90 Watts**) minimum AC/DC Adapter.

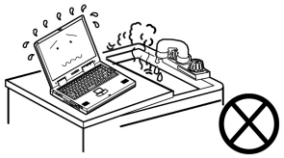
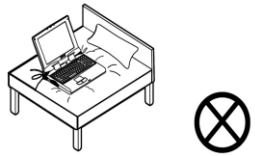
Instructions for Care and Operation

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

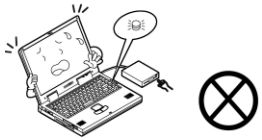
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.

Do not expose the computer to any shock or vibration.	*Do not place it on an unstable surface.*	*Do not place anything heavy on the computer.*
		

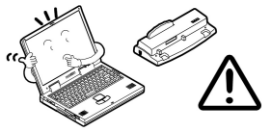
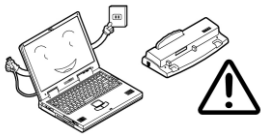
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.

Do not expose it to excessive heat or direct sunlight.	*Do not leave it in a place where foreign matter or moisture may affect the system.*	*Don't use or store the computer in a humid environment.*	*Do not place the computer on any surface which will block the vents.*
			

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.

Do not turn off the power until you properly shut down all programs.	*Do not turn off any peripheral devices when the computer is on.*	*Do not disassemble the computer by yourself.*	*Perform routine maintenance on your computer.*
			

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**.

Use only approved brands of peripherals.	*Unplug the power cord before attaching peripheral devices.*
	

Power Safety Warning

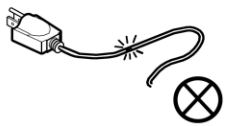
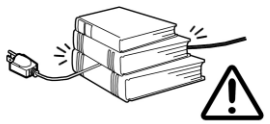
Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord).

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

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.

Do not plug in the power cord if you are wet.	*Do not use the power cord if it is broken.*	*Do not place heavy objects on the power cord.*
		

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 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.

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.

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. Attach the AC/DC adapter to the DC-In jack on the left of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter.
5. Use one hand to raise the lid/LCD to a comfortable viewing angle (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).
6. Press the power button to turn the computer “on”.

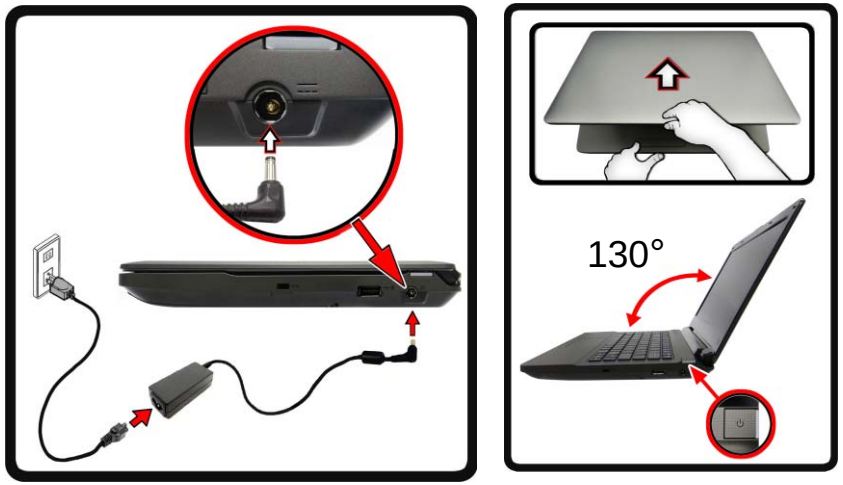


Figure 1
Opening the Lid/LCD/Computer with AC/DC Adapter Plugged-In

Contents

Introduction 1-1

Overview 1-1
Specifications 1-2
External Locator - Top View with LCD Panel Open 1-4
External Locator - Front & Right Side Views 1-5
External Locator - Left Side & Rear View 1-6
External Locator - Bottom View 1-7
Mainboard Overview - Top (Key Parts) 1-8
Mainboard Overview - Bottom (Key Parts) 1-9
Mainboard Overview - Top (Connectors) 1-10
Mainboard Overview - Bottom (Connectors) 1-11

Disassembly 2-1

Overview 2-1
Maintenance Tools 2-2
Connections 2-2
Maintenance Precautions 2-3
Disassembly Steps 2-4
Removing the Battery 2-5
Removing the CMOS Battery 2-6
Removing the Hard Disk Drive 2-7
Removing and Installing a Processor 2-9
Removing the System Memory (RAM) 2-12
Removing the Wireless LAN Module 2-14
Removing the Keyboard 2-15

Part Lists A-1

Parts List Illustration Location A-2
Top A-3
Bottom A-4
MB A-5
LCD A-6
HDD A-7

Schematic Diagrams.....B-1

System Block Diagram B-2
Processor 1/7 - DMI, FDI, PEG B-3
Processor 2/7 - CLK, MISC B-4
Processor 3/7 - DDR3 .....B-5
Processor 4/7 - Power B-6
Processor 5/7 - GFX PWR B-7
Processor 6/7 - GND B-8
Processor 7/7 - RSVD B-9
DDR3 SO-DIMM_0 .....B-10
DDR3 SO-DIMM_1 .....B-11
PANEL, INVERTER, CRT B-12
VGA PCI-E Interface B-13
VGA Frame Buffer Interface B-14
VGA Frame Buffer A B-15
VGA Frame Buffer C B-16
VGA I/O B-17
VGA NVVDD Cecoupling B-18
PCH 1/9 - RTC, HDA, SATA B-19
PCH 2/9 - PCIE, SMBUS, CLK B-20
PCH 3/9 - DMI, FDI, PWRGD B-21
PCH 4/9 - LVDS, DDI, CRT B-22
PCH 5/9 - PCI, USB, RSVD B-23
PCH 6/9 - GPIO, CPU B-24
PCH 7/9 - PWR B-25
PCH 8/9 - POWER B-26
PCH 9/9 - GND B-27
WLAN, 3G, MINI PCIE B-28

CCD, TPM, MULTI CON B-29
USB3.0 ..... B-30
Card Reader, LAN (RTL8411) B-31
LED, USB CHARGE B-32
HDMI, RJ45 ..... B-33
AUDIO CODEC VT1802P B-34
KBC-ITE IT8518E B-35
5VS, 3VS, 3.3VM, 1.5VS CPU B-36
VDD3, VDD5 ..... B-37
Power 0.85VS, 1.8VS B-38
POWER 1.5V B-39
POWER 1.05VS/1.05VS VTT B-40
POWER VCORE1 ..... B-41
POWER VCORE2 ..... B-42
Power VGA NVVDD B-43
AC IN, CHARGER B-44
CLICK BOARD B-45
POWER SW BOARD B-46
HDD BOARD B-47
Power Diagram B-48
Power On SEQ B-49
..... B-50

Updating the FLASH ROM BIOS..... C-1

Download the BIOS C-1
Unzip the downloaded files to a bootable CD/DVD/ or
USB Flash drive C-1
Set the computer to boot from the external drive C-1
Use the flash tools to update the BIOS C-2
Restart the computer (booting from the HDD) C-2

Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the ***W110ER/W110ERF*** series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about dri-vers (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.) has its 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 ***W110ER/W110ERF*** 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.

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

Intel® Core™ i7 Processor

i7-3612QM (2.10GHz)

6MB L3 Cache, **22nm**, DDR3-1600MHz, TDP 35W

i7-3520M (2.90GHz)

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

Intel® Core™ i5 Processor

i5-3360M (2.80GHz), i5-3320M (2.60GHz), i5-3210M (2.50GHz), i5-3110M (2.40GHz)

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

Intel® Core™ i7 Processor

i7-2640M (2.80GHz), i7-2620M (2.70GHz)

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

Intel® Core™ i5 Processor

i5-2540M (2.60GHz), i5-2520M (2.50GHz), i5-2450M (2.50GHz), i5-2430M (2.40GHz), i5-2410M (2.30GHz)

3MB L3 Cache, **32nm**, DDR3-1333MHz, TDP 35W

Intel® Core™ i3 Processor

i3-2370M (2.40GHz), i3-2350M (2.30GHz), i3-2330M (2.20GHz), i3-2310M (2.10GHz)

3MB L3 Cache, **32nm**, DDR3-1333MHz, TDP 35W

Intel® Pentium® Processor

B970 (2.30GHz), B960 (2.20GHz), B950 (2.10GHz), B940 (2.00GHz)

2MB L3 Cache, **32nm**, DDR3-1333MHz, TDP 35W

Display

11.6" (29.46cm) HD LCD

Core Logic

Intel® HM76 Chipset

BIOS

48Mb SPI Flash ROM

AMI BIOS

Memory

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

Memory Expandable up to 8GB

(The real memory operating frequency depends on the FSB of the processor.)

Video Adapter

Intel® Integrated GPU and NVIDIA® Discrete GPU

Supports NVIDIA® Optimus Technology

Intel Integrated GPU (GPU is Dependent on Processor)

Intel® HD Graphics 3000

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

Microsoft DirectX®10 Compatible

Intel® HD Graphics 4000

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

Microsoft DirectX®11 Compatible

NVIDIA Discrete GPU

NVIDIA® GeForce GT 650M

2GB GDDR3 Video RAM

Microsoft DirectX®11 Compatible

Storage

One Changeable 2.5" 9.5mm (h) SATA Hard Disk Drive

Audio

High Definition Audio Compliant Interface

2 * Built-In Speakers

Built-In Microphone

THX TruStudio Pro

Security

Kensington Lock Slot
BIOS Password

Interface

One Powered USB 2.0 Port
Two USB 3.0 Ports
One HDMI-Out Port
One External Monitor Port
One Headphone-Out Jack
One Microphone-In Jack
One RJ-45 LAN Jack
One DC-in Jack

Keyboard

"WinKey" keyboard

Pointing Device

Built-in Touchpad

Card Reader

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

Mini Card Slot

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

Communication

Built-In Gigabit Ethernet LAN
(**Factory Option**) 1.3M Pixel USB PC Camera Module

WLAN/ Bluetooth Half Mini-Card Modules:

(**Factory Option**) Intel® Centrino® Advanced-N 6235 Wireless LAN (**802.11a/g/n**) + Bluetooth 4.0
(**Factory Option**) Intel® Centrino® Wireless-N 2230 Wireless LAN (**802.11b/g/n**) + Bluetooth 4.0
(**Factory Option**) Third-Party Wireless LAN (**802.11b/g/n**)
(**Factory Option**) Third-Party Wireless LAN (**802.11b/g/n**) + Bluetooth 4.0

Power

Full Range AC/DC Adapter
AC Input: 100 - 240V, 50 - 60Hz
DC Output: 19V, 4.74A (**90W**)

6 Cell Smart Lithium-Ion Battery Pack, 62.16WH

Environmental Spec

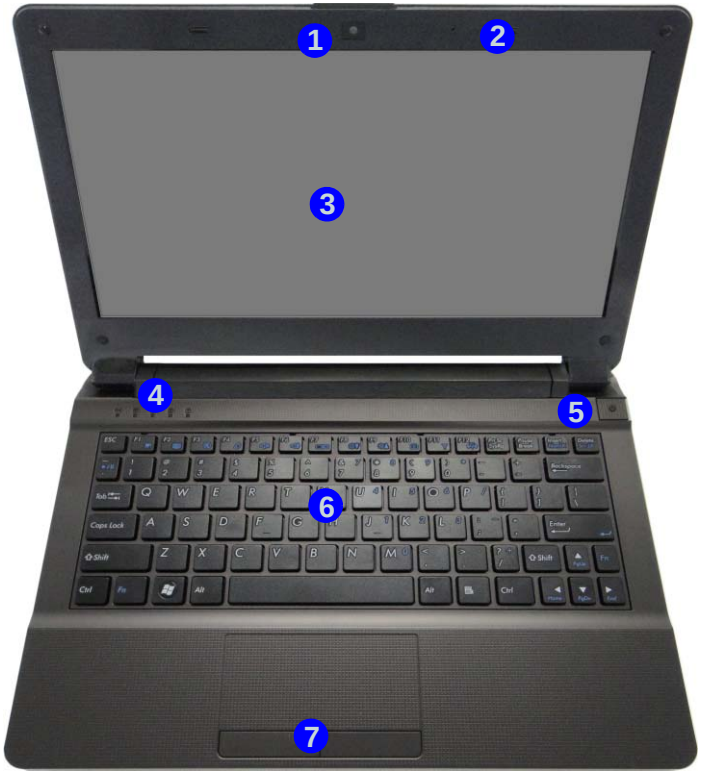
Temperature
Operating: 5°C - 35°C
Non-Operating: -20°C - 60°C
Relative Humidity
Operating: 20% - 80%
Non-Operating: 10% - 90%

Dimensions & Weight

287mm (w) * 207mm (d) * 12.7 - 37.1mm (h)
1.8kg (with 62.16WH Battery)

External Locator - Top View with LCD Panel Open

Figure 1
Top View



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

External Locator - Front & Right Side Views

FRONT VIEW

Figure 2
Front View

1. LED Indicators
2. Multi-In-1 Card Reader

RIGHT SIDE VIEW

Figure 3
Right Side View

1. Security Lock Slot
2. 1 * Powered USB 2.0 Port
3. DC-In Jack

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. RJ-45 LAN Jack
2. External Monitor Port
3. HDMI-Out Port
4. Headphone-Out Jack
5. Microphone-In Jack
6. Vent/Fan Intake
7. 2 * USB 3.0 Ports

LEFT SIDE VIEW

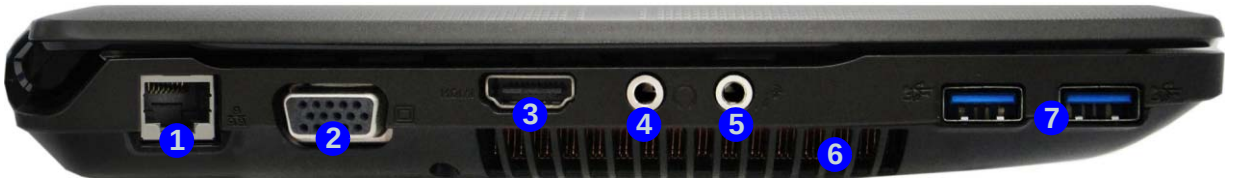


Figure 5
Rear View

1. Battery

REAR VIEW

External Locator - Bottom View

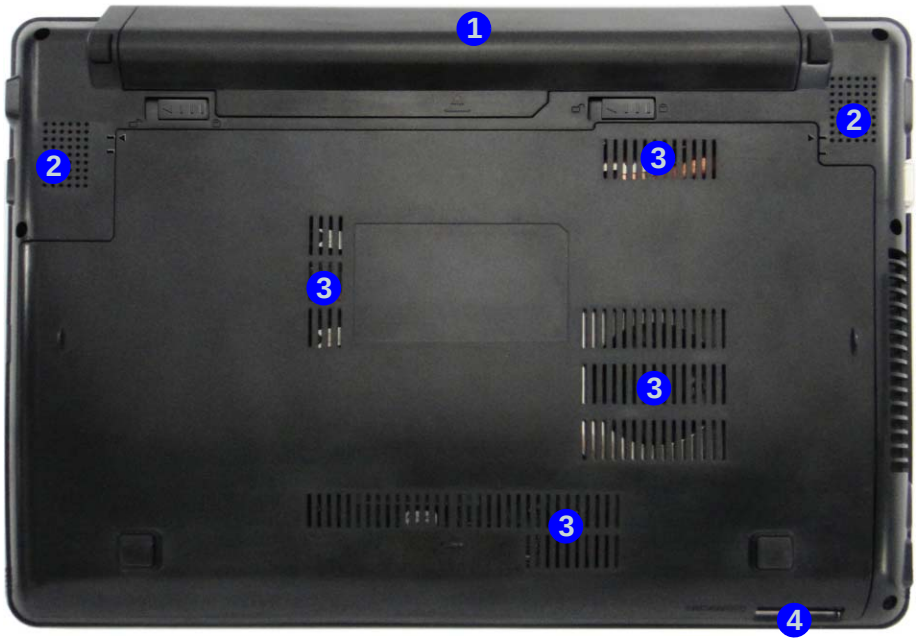


Figure 6
Bottom View

1. Battery
2. Speakers
3. Fan Intake/Vent
4. Multi-In-1 Card Reader

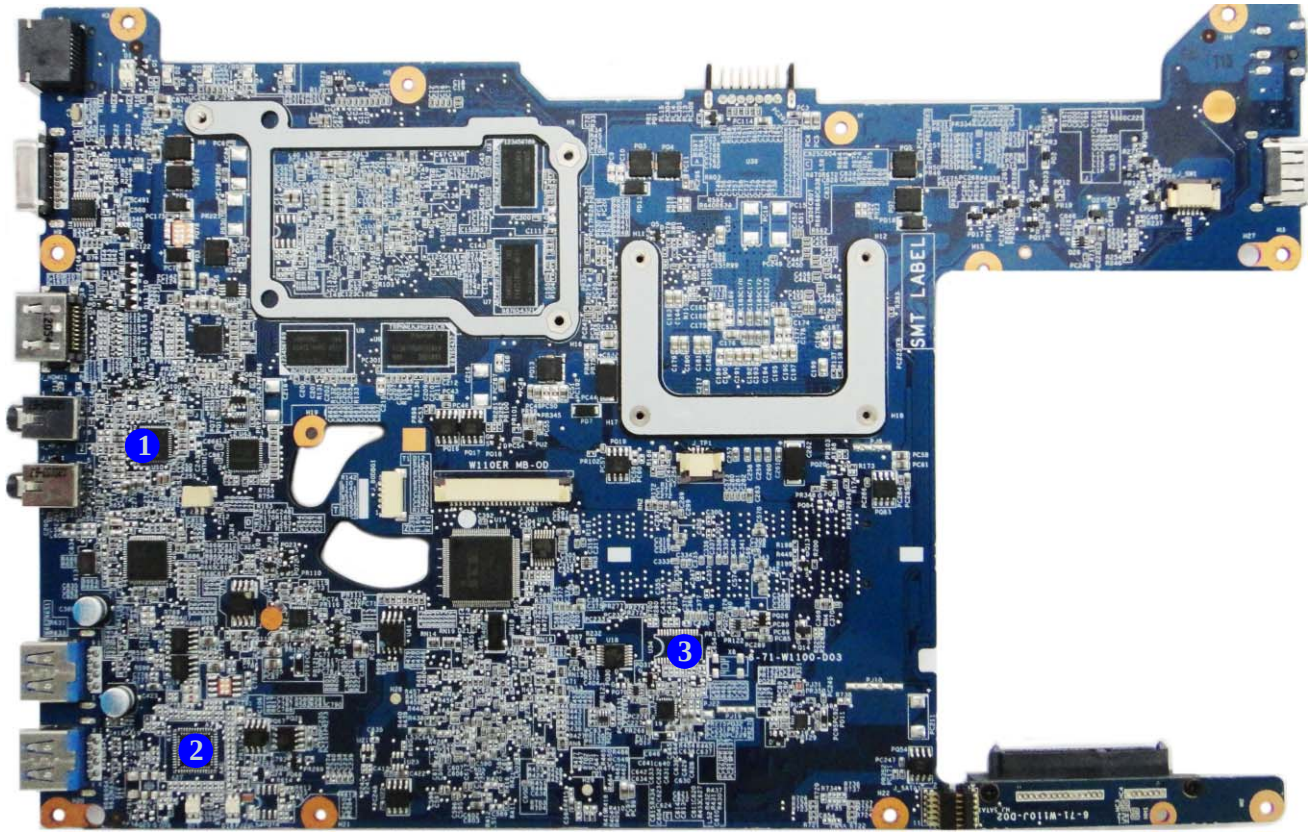
Overheating

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. Audio Codec
2. TI USB 3.0
3. TPM



Mainboard Overview - Bottom (Key Parts)

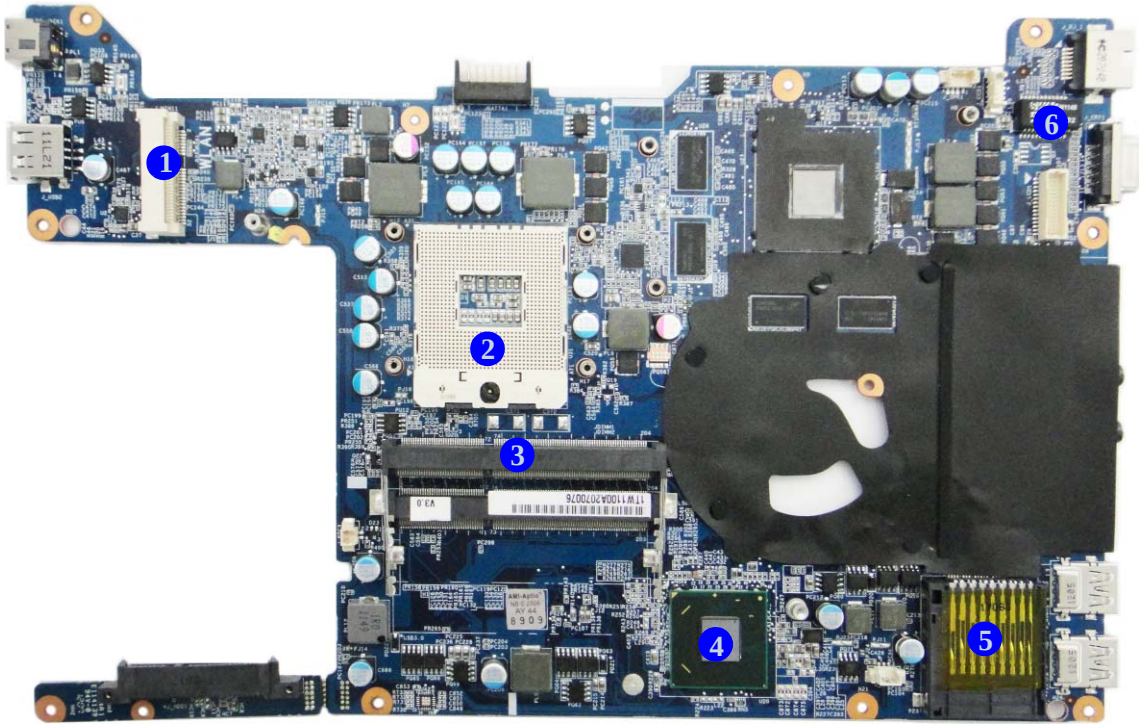


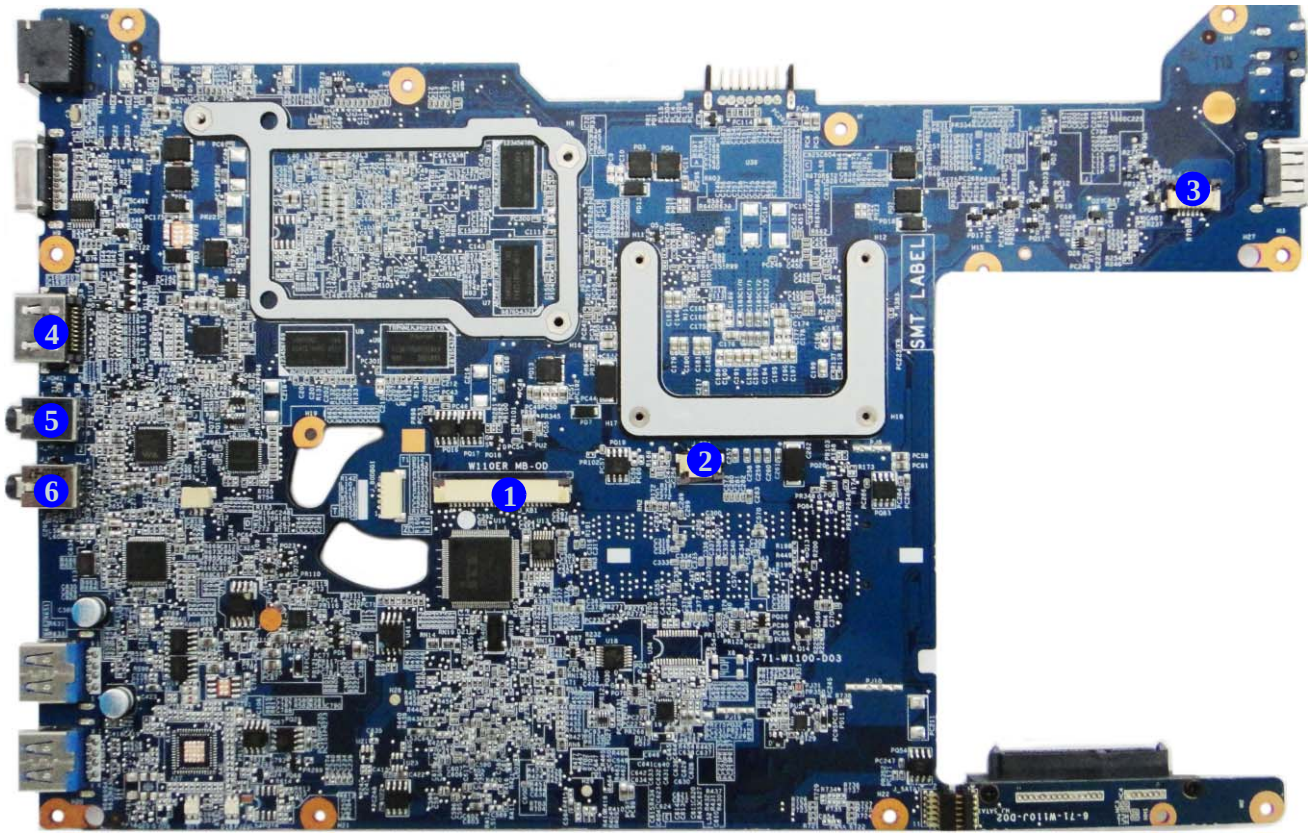
Figure 8
Mainboard Bottom Key Parts

1. Mini-Card Connector (WLAN Module)
2. CPU Socket
3. Memory Slot DDR3 SO-DIMM
4. Intel PCH
5. Card Reader Socket
6. Transformer

Mainboard Overview - Top (Connectors)

Figure 9
Mainboard Top Connectors

1. Keyboard Cable Connector
2. Touchpad Connector
3. Power Switch Connector
4. HDMI-Out Port
5. Headphone-Out Jack
6. Microphone-In Jack



Mainboard Overview - Bottom (Connectors)

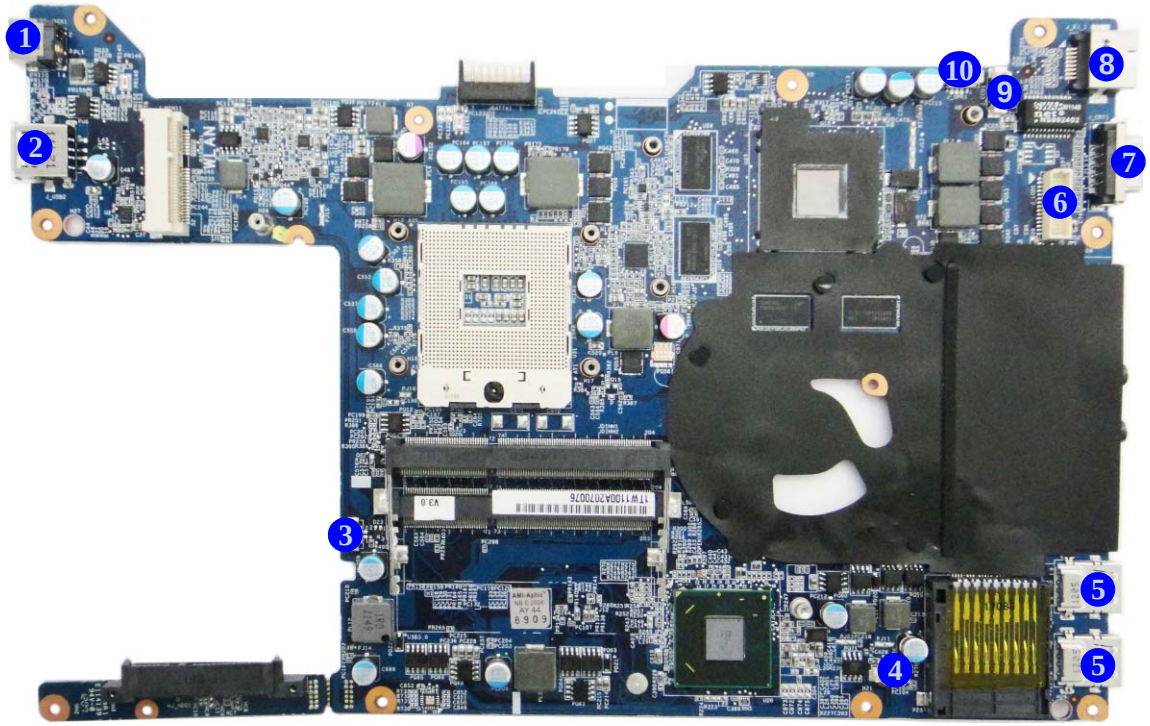


Figure 10
Mainboard Bottom Connectors

1. DC-In Jack
2. USB 2.0 Ports
3. CMOS Battery Connector
4. Fan Cable Connector
5. USB Port
6. LVDS Cable Connector
7. External Monitor Port
8. RJ-45 Lan Port
9. CCD Cable Connector
10. Speaker Cable Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***W110ER/W110ERF*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

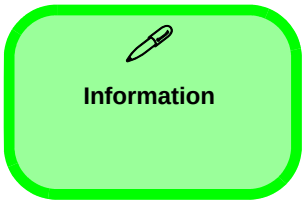
We suggest you completely review any procedure before you take the computer apart.

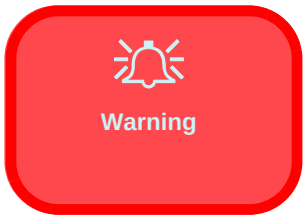
Procedures such as upgrading/replacing the RAM, optical device and hard disk are included in the User's Manual but are repeated here for your convenience.

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.





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.

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.

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.

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 CMOS Battery:

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

To remove the HDD:

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

To remove and install a Processor:

1. Remove the battery *page 2 - 5*
2. Remove the processor *page 2 - 9*
3. Install the processor *page 2 - 11*

To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 12*

To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the wireless LAN *page 2 - 14*

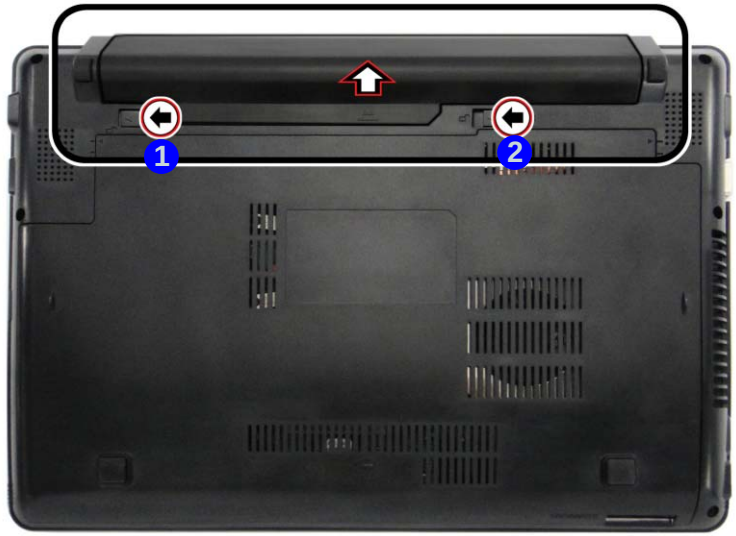
To remove the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 15*

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***).

a.



b.

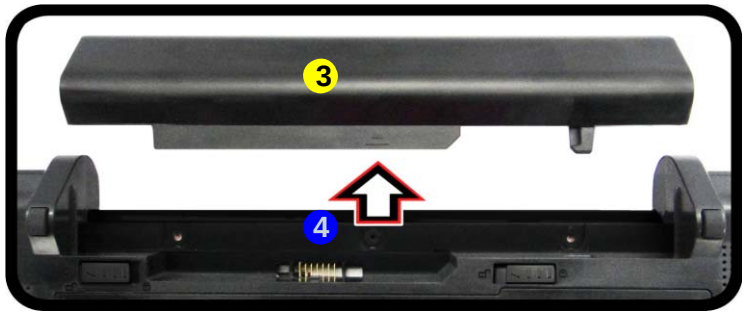


Figure 1
Battery Removal

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

3. Battery

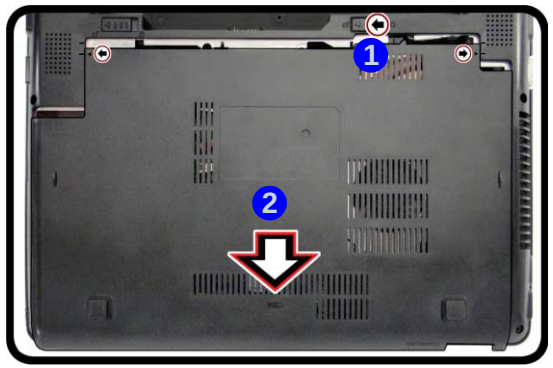
Figure 2
CMOS battery Assembly Removal

a. Slide the latch and hold in place.
b. Remove the bay cover up.
c. Remove the screw.
d. Remove the HDD.
e. Disconnect the cable and remove the CMOS battery.

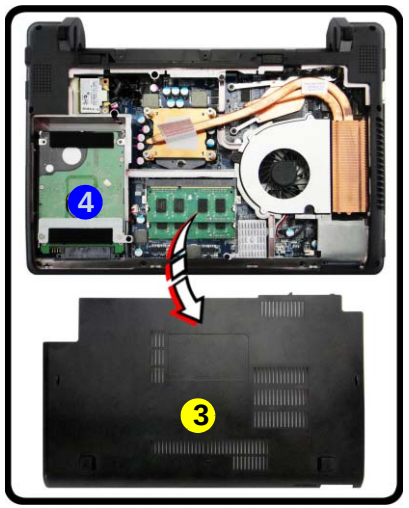
Removing the CMOS Battery

1. Turn **off** the computer, remove the battery (*page 2 - 5*).
2. Slide the latch 1 in the direction of the arrow, and hold it in place (*Figure 2a*).
3. Slide the component bay cover 2 in the direction of the arrow,
4. Carefully lift the component bay cover 3 up (*Figure 2b*).
5. The CMOS battery is located under the hard disk at point 4.
6. Remove the screw 5.
7. Remove the HDD module 6 (*Figure 4b*).
8. Carefully disconnect the cable 7, then remove the CMOS baterry 8 from the computer.
9. Reverse the process to install a new CMOS battery (do not forget to replace the screw and cover).

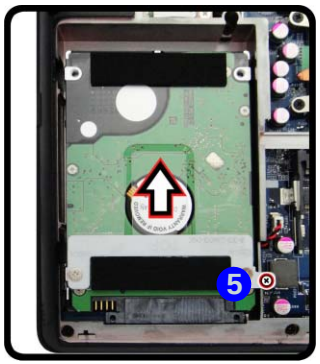
a.



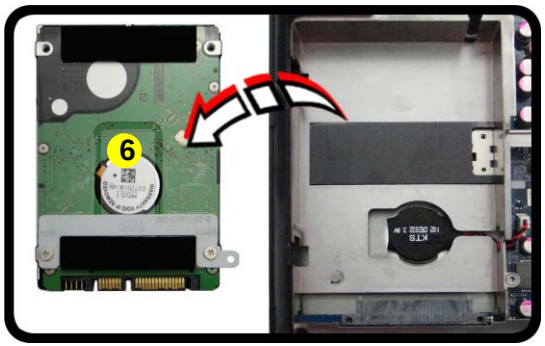
b.



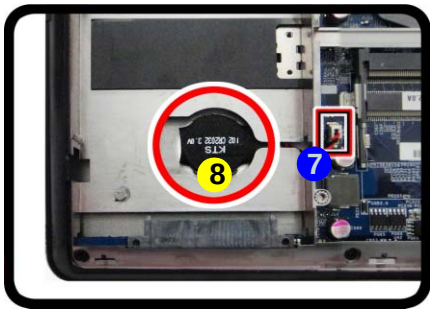
c.



d.



e.



3. Component bay cover.
6. HDD module.
8. CMOS battery.

- 1 Screw

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) and a speed of **5400 RPM** or lower. 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 component bay cover (***page 2 - 6***).
2. The hard disk will be visible at point 1 on the computer. (***Figure 2a***)
3. Remove the screw 2 (***Figure 2b***).

a.

b.

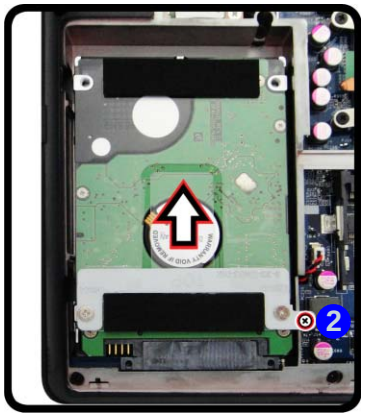


Figure 3
HDD Assembly Removal

a. Locate the hard disk.
b. Remove the screw.

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.

- 1 Screw

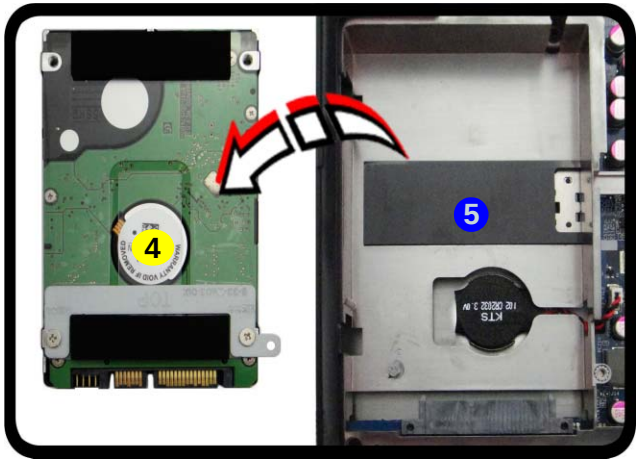
Figure 4
HDD Assembly Removal (cont'd.)

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

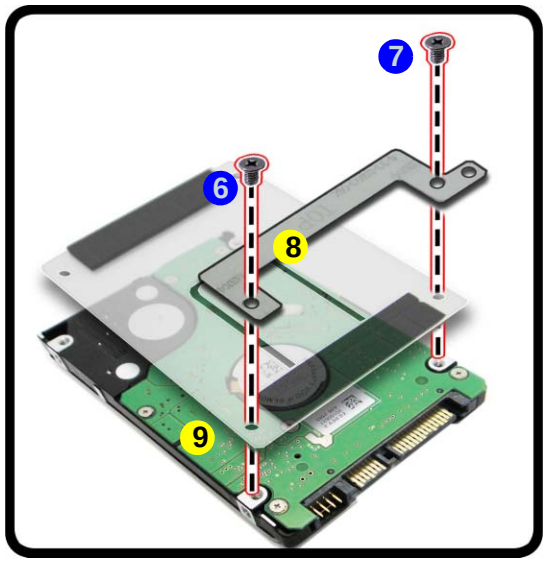
4. Grip the mylar cover and slide the hard disk in the direction of arrow 3 (*Figure 4b*).
5. Lift the hard disk assembly 4 out of the bay 5 (*Figure 4c*).
6. Remove the screws 6 & 7, and bracket-mylar cover 8 from the hard disk 9 (*Figure 4d*).
7. Reverse the process to install a new hard disk (do not forget to replace all the screws and cover).

c.

d.



e.



4. HDD assembly
8. HDD Bracket - Mylar Cover
9. HDD

- 2 Screws

Removing and Installing a Processor

Processor Removal Procedure

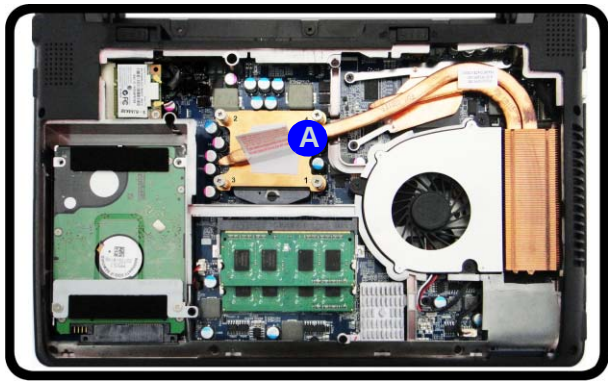
1. Turn **off** the computer, remove the battery (*page 2 - 5*) and the component bay cover (*page 2 - 12*).
2. The CPU heat sink will be visible at point A (*Figure 5a*) on the mainboard.
3. Remove screws 7, 6, 5, 4, 3, 2 and 1, the reverse order indicated on the label. *Note: Make sure that the size of the screwdriver is below 4mm. when removing or tighting screw 6, and its position should be at a 90 degree angle from the mainboard (*Figure 5b*).wo tab
4. Carefully lift up the heat sink B off the computer by pulling the two tabs C.

h

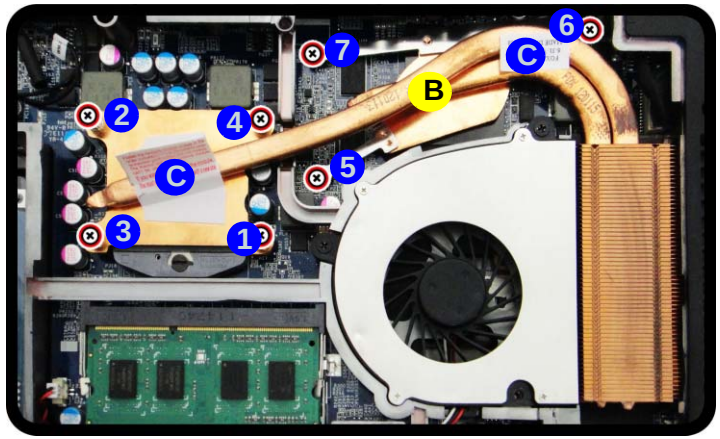
Figure 5
Processor Removal

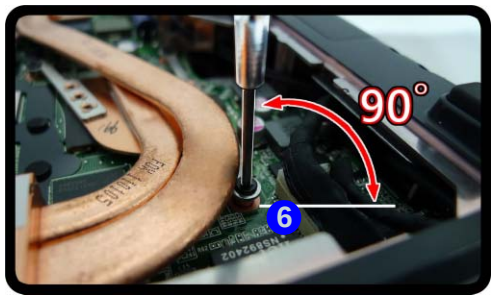
a. Remove the cover and locate the heat sink.
b. Remove the screws in the order indicated.

a.



b.





B. Heat Sink

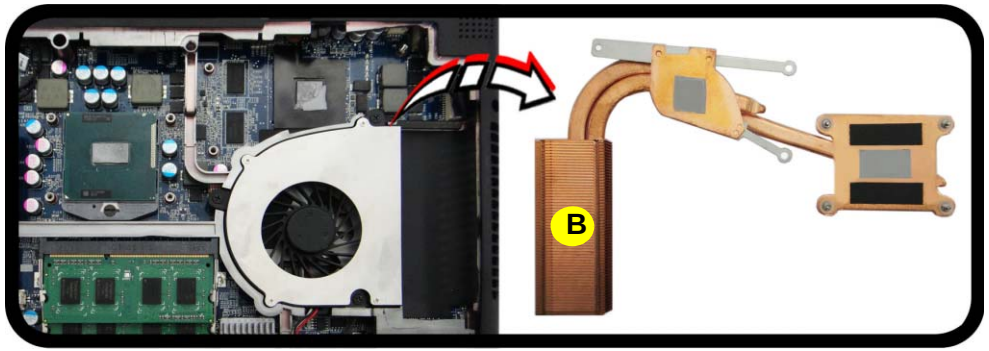
- 7 Screws

Figure 6
Processor Removal (cont'd)

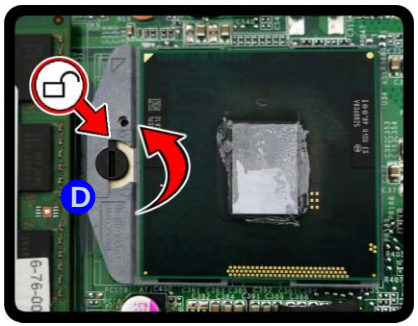
c. Remove the heat sink.
d. Turn the release latch to unlock the CPU.
e. Lift the CPU out of the socket.

5. Turn the release latch D towards the unlock symbol, to release the CPU (***Figure 6d***).
6. Carefully (it may be hot) lift the CPU E up out of the socket (***Figure 6e***).
7. See ***page 2 - 11*** for information on inserting 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.

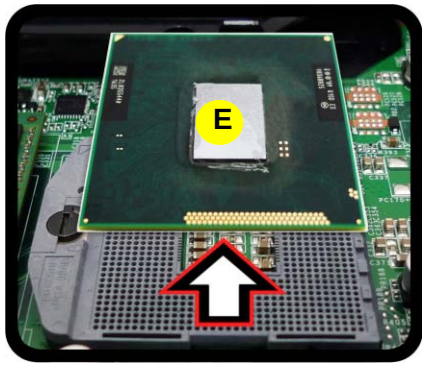


d.



Unlock

e.



B. Heat Sink
E. CPU

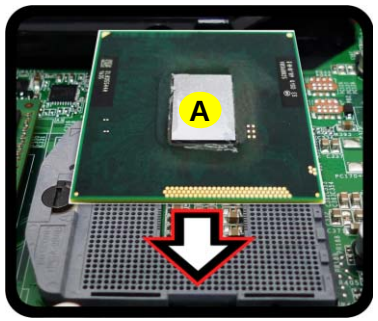
Processor Installation Procedure

1. Insert the CPU A (*Figure 7a*), 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 7b*).
2. **Remove the sticker** C (*Figure 7c*) from the heat sink.
3. Insert the heat sink D as indicated in *Figure 7d*.
4. Tighten the CPU heat sink screws in the order 1, 2, 3, 4, 5, 6 & 7 (the order as indicated on the label and *Figure 7d*) *Note: Make sure that the size of the screwdriver is below 4mm. when removing or tighting screw 6, and its position should be at a 90 degree angle from the mainboard.
5. Replace the component bay cover (don't forget to replace the fan cable) and tighten the screws (*page 2 - 14*).

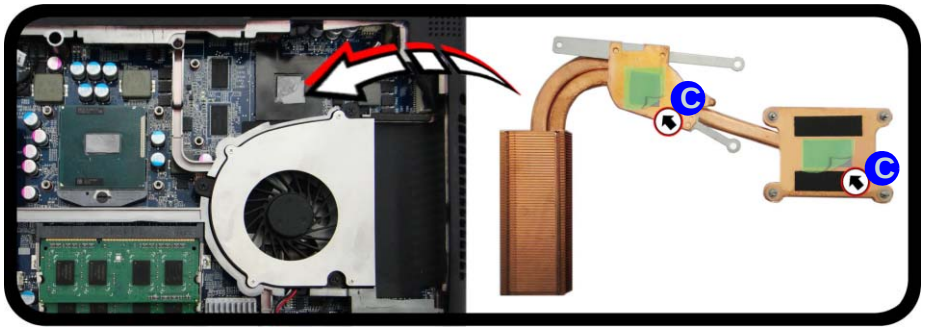
Figure 7
Processor Installation

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.

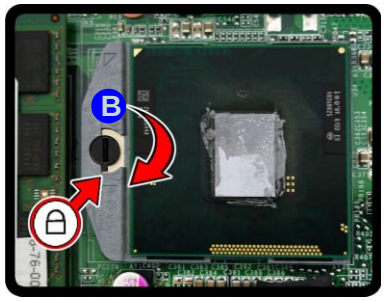
a.



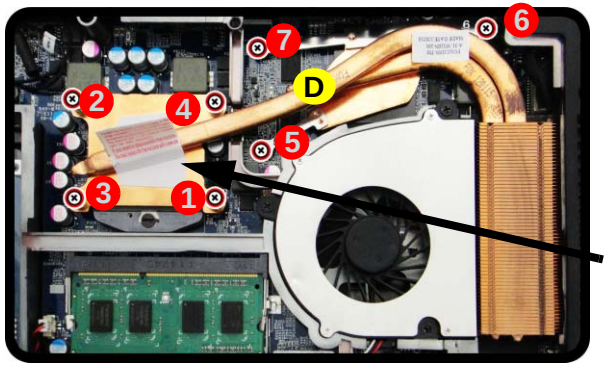
c.



b.



d.



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

A. CPU
D. Heat Sink

- 7 Screws

Figure 8
RAM Module Removal

a. The RAM modules will be visible at point 1 on the mainboard.
b. Pull the release latches.
c. Remove the module.

Removing the System Memory (RAM)

The computer has two memory sockets for 200 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDRIII (DDR3) Up to 1333/1600MHz. 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***) and the component bay cover (***page 2 - 6***).
2. The RAM modules will be visible at point 1 on the mainboard (***Figure 8a***).
3. Gently pull the two release latches (2 & 3) on the sides of the memory socket in the direction indicated by the arrows (***Figure 8b***).
4. The RAM module 4 will pop-up (***Figure 8c***), and you can then remove it.
5. Pull the latches to release the second module if necessary.

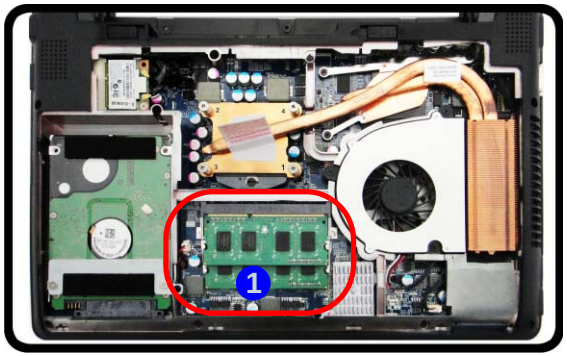
Contact Warning

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

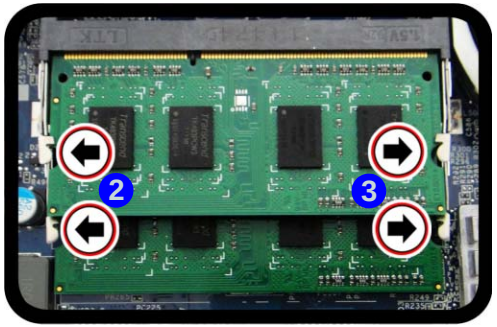
4. RAM Module

- 2 Screws

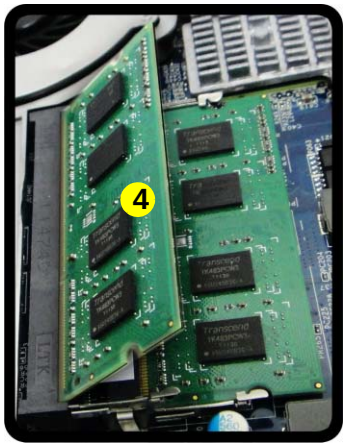
a.



b.



c.



6. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
7. The module will only fit one way as defined by its pin alignment. Make sure the module is seated as far into the slot as it will go. DO NOT FORCE IT; it should fit without much pressure.
8. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
9. Replace the component bay cover (***Figure 9d***) by sliding in the cover in the direction of arrow.
10. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.
11. Pull the latches to release the second module if necessary.

Figure 9
RAM Module Removal (cont'd)

f. Slide in the component bay cover.

d.

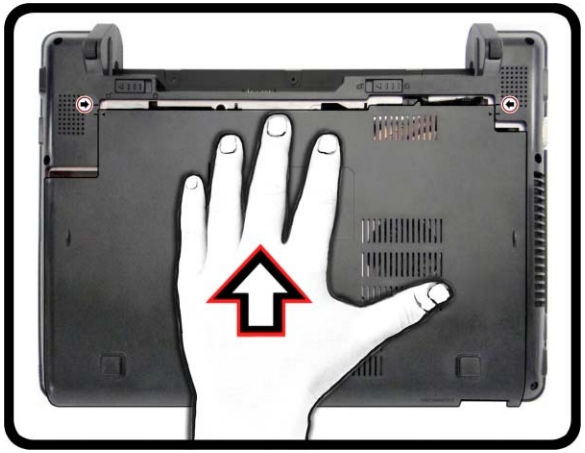


Figure 10
Wireless LAN Module Removal

a. Locate the wireless LAN module.
b. Disconnect the cables and remove the screw.
c. The WLAN module will pop up.
d. Lift the WLAN module out.

Note: Make sure you reconnect the antenna cable to ''1'' + ''2''socket (***Figure b***).

5. WLAN Module.

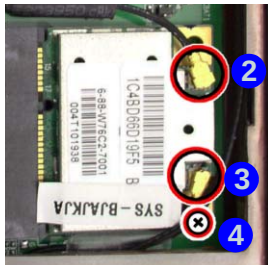
- 1 Screw

Removing the Wireless LAN Module

1. Turn **off** the computer, remove the battery (***page 2 - 5***) and the component bay cover (***page 2 - 6***).
2. The Wireless LAN module will be visible at point 1 (***Figure 10a***) on the mainboard.
3. Carefully disconnect cables 2 & 3, then remove screw 4 from the module socket (***Figure 10b***).
4. The Wireless LAN module 5 (***Figure 10c***) will pop-up.
5. Lift the Wireless LAN module 5 (***Figure 10d***) up and off the computer.

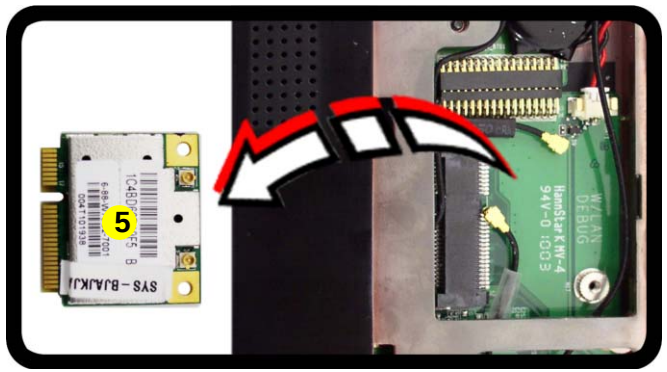
a.

b.



c.

d.



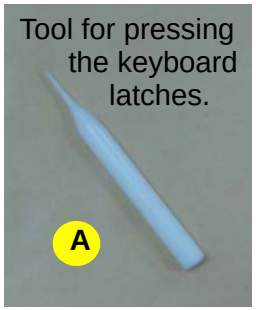
Removing the Keyboard

1. Turn **off** the computer and remove the battery (*page 2 - 5*).
2. Use **only** the small tool A provided (see picture below) to carefully press the **four** keyboard latches 1 - 4 at the top of the keyboard to elevate the keyboard from its normal position (*Figure 11a*).
3. Carefully lift the keyboard 5 up, being careful not to bend the keyboard ribbon cable 6 (*Figure 11b*).
4. Disconnect the keyboard ribbon cable 6 from the locking collar socket 7 (*Figure 11b*)
5. Carefully lift up the keyboard 5 (*Figure 11c*) off the computer.

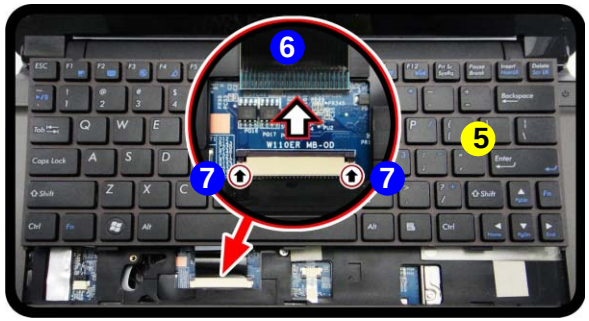
Figure 11
Keyboard Removal

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

a.

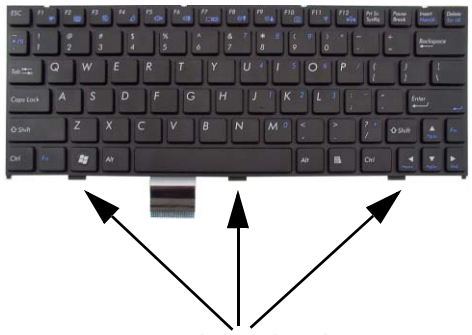


b.



c.

d.



Re-Inserting the Keyboard

When re-inserting the keyboard, align first the **three** keyboard tabs (*Figure 11d*) that are located at the bottom, to the slots in the case.

5. Keyboard

Appendix A:Part Lists

This appendix breaks down the ***W110ER/W110ERF*** 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.

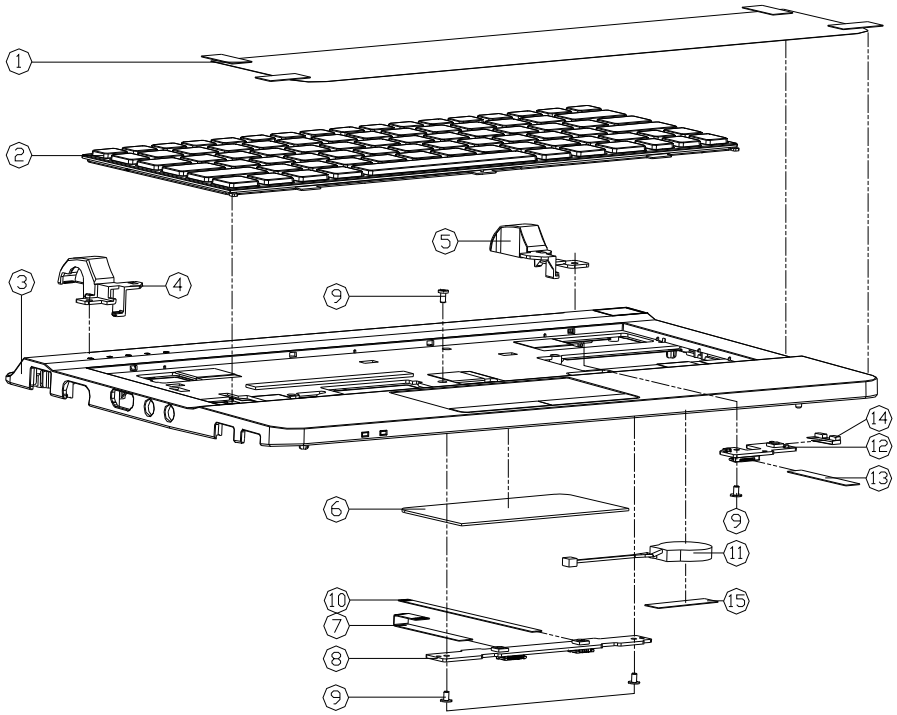
Parts List Illustration Location

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

Table A - 1
Parts List Illustration Location

Parts	
Top	*page A - 3*
Bottom	*page A - 4*
MB	*page A - 5*
LCD	*page A - 6*
HDD	*page A - 7*

Top

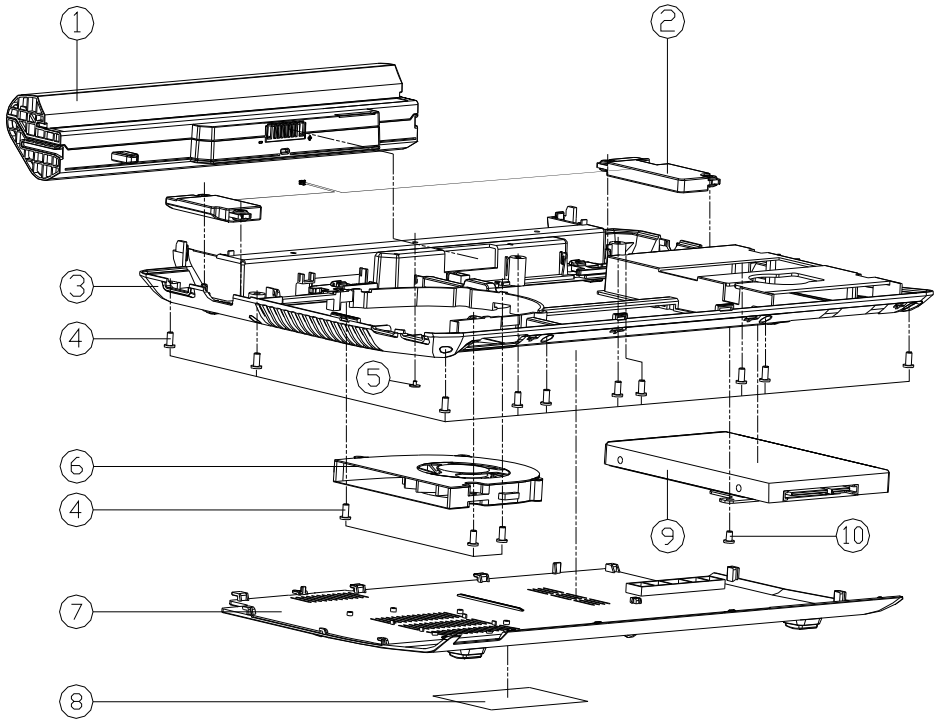


ITEM	PART NAME	PART NO	REMARK
1	TOP CASE MYLAR SH71S 0.1T (287.46*61.88) W110ER	6-40-W1102-020	
2	K/B USA(BLACK)& FRAME(US) MODULE W110ER	6-79-W110ER0K-010	
3	TOP CASE MODULE W110ER	6-39-W1102-012	
4	HINGE COVER L GINAR D231 W110ER	6-42-W1102-0L2	
5	HINGE COVER R MODULE W110ER	6-42-W1102-600	
6	TOUCH PAD SYNAPTICS TM-01146-003 MULTI-GESTURE C4800	6-49-C4802-010	
7	FFC CABLE FOR TOUCH PAD 6PIN C4500	6-43-C4502-010	
8	CLICK BOARD V3.0 W110ER	6-77-W1102-D03	
9	SCREW M2*3L KI NI ICT NY (OD=ø4.5,DT=0.4)	6-35-B1120-3RE	
10	FFC CABLE FOR M/B TO CLICK BOARD C4500	6-43-C4500-022	
11	BAT. 20MM 3V 220MAH W/CABLE 55MM BCR2032W55KMGB	6-23-22015-TC0	
12	POWER SWITCH BOARD V3.0 W110ER	6-77-W110S-D03	
13	FFC POWER 6PIN (38*7) FOR W110ER(HB)	6-43-W1100-010	
14	SPONGE (15.2*2.5*1.65) FOR POWER BOARD	6-47-0019A-157	
15	TAPE MYLAR (A),MYLAR M550J	6-40-M55J2-010	

Figure A - 1
Top

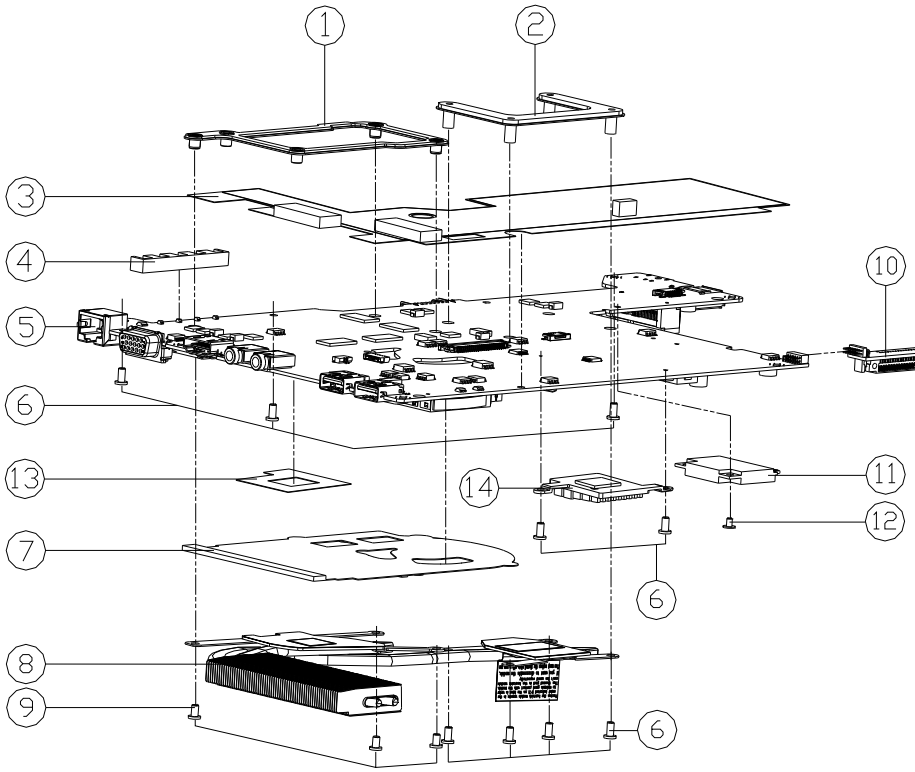
Bottom

Figure A - 1
Bottom



ITEM	PART NAME	PART NO	REMARK
1	BATP S LI 11.1V/5.6AH/62.16WH 3SZP SMP/SDI 98172K3F W110ER	6-87-W110S-4271	(OPTION)
2	SPEAKER+CABLE 235MM 1.5W 4Ω(L+R) W110ER	6-23-5W110-0S2	
3	BOTTOM CASE MODULE W110ER	6-39-W1103-012	
4	SCREW M2.5*5L K1 BK/Z ICT NY	6-35-B6125-5RA	
5	SCREW M2*2L K1 BK/Z ICT NY (Φ6,T=0.5)	6-35-B6120-2RC	
6	FAN MODULE W150HNM	6-23-AW150-100	
7	BOTTOM CASE COVER MODULE W110ER	6-42-W1103-102	
8	PRODUCT LABEL FOR W110ERCTUVUS (LOGO UPDATE)	6-45-W110ER03-011	
8	PRODUCT LABEL FOR W110ERF	6-45-W110ERF3-010	
9	W/O HDD ASS'Y W110ER	6-79-W110ER0J-010	
9	W/ HDD ASS'Y W110ER	6-79-W110ER0J-020	
10	SCREW M2.5*3L K1 BZ ICT NY	6-35-B6125-3R0	

MB



ITEM	PART NAME	PART NO	REMARK
1	VGA SUPPORTER SECC W110ER	6-33-W110S-010	
2	CPU SUPPORTER BRACKET SECC T=1.5 W110ER	6-33-W1103-021	
3	MYLAR AL FOIL FOR MB (194×(174×0.2) W110ER	6-40-W110S-012	
4	SPRING CR4305 (42×6.8 T=5MM) LEDX5 W110ER	6-47-0019A-423	
5	MAIN BOARD V3.0 W110ER	6-77-W1100-D03	
6	SCREW M2.5×5L K1 BK/Z ICT NY	6-35-B6125-5RA	
7	MYLAR FOR M/B FAN W110ER	6-40-W1103-012	
8	CPU/ VGA HEATSINK MODULE (MP) FOR W110ER	6-31-W110N-102	
9	SCREW M2.5×4L K1 BK/□ ICT NY	6-35-B4125-4RA	
10	HDD BOARD V2.0 W110ER	6-77-W110J-D02	
11	[illegible]	6-88-W25H2-9400	(OPTION)
11	[illegible]	6-88-W345F-9400	(OPTION)
11	[illegible]	6-88-W345F-8700	(OPTION)
11	[illegible]	6-88-W25H2-7000	(OPTION)
11	[illegible]	6-88-W25SF-4200	(OPTION)
11	[illegible]	6-88-P17EF-4200	(OPTION)
12	SCREW M2×3L K1 NI ICT NY (DD=Φ4.5,DT=0.4)	6-35-B1120-3RE	
13	VGA CHIP MYLAR (29×36) W110ER	6-40-W110S-021	
14	SOUTH BRIDGE HEATSINK FOR W110ER	6-31-W110N-020	

Figure A - 2
MB

LCD

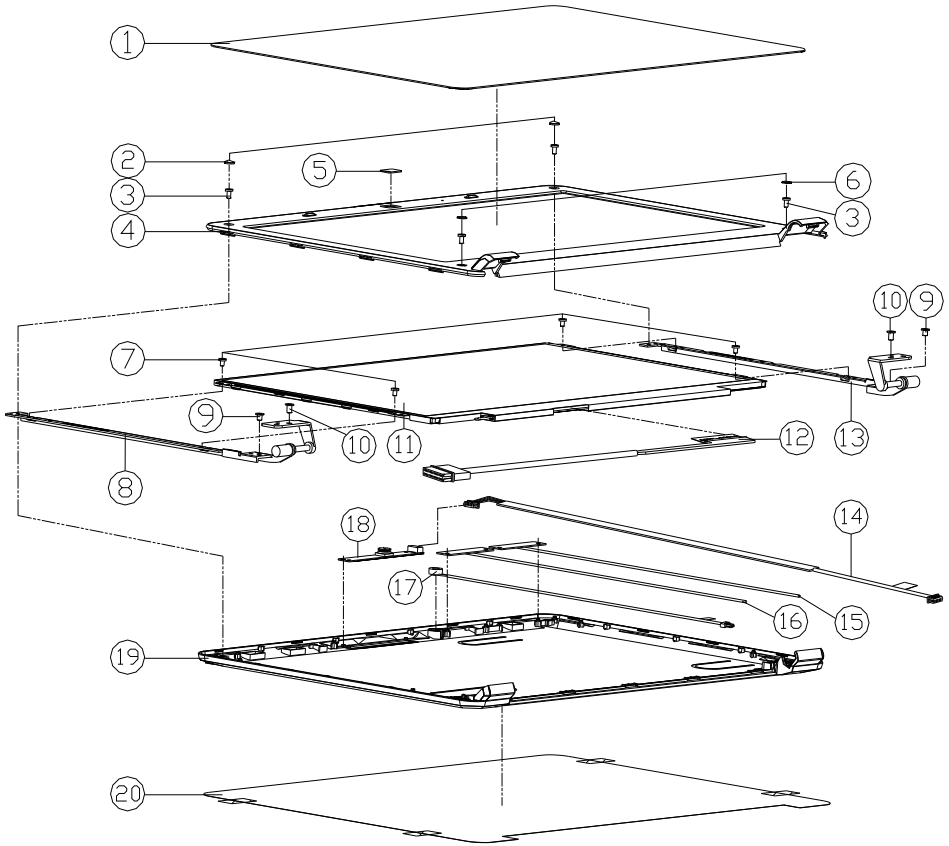
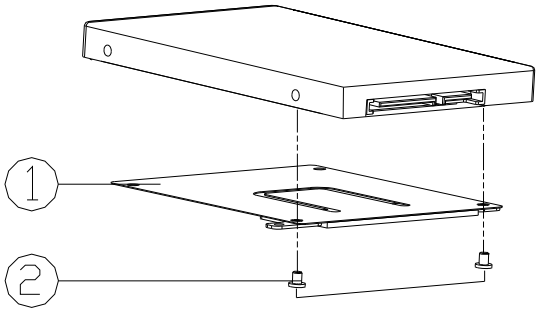
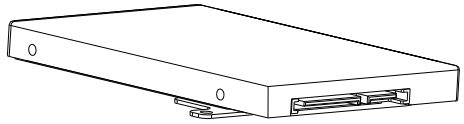


Figure A - 3
LCD

ITEM	PART NAME	PART NO	REMARK
1	LCD PANEL PROTECT (PET MYLAR T=0.05 + TAPE 3M8915) W110ER	6-40-W1108-012	
2	RUBBER FRONT-1 (5.24*2.4T) (SLICON 70) (MP) W110ER	6-47-W1101-022	
3	SCREW M2*4L KI BZ ICT NY	6-35-B6120-4RA	
4	LCD FRONT COVER MODULE (MP) W110ER	6-39-W1101-012	
5	CCD LENS (DVT) W110ER	6-42-W1101-010	W/ CCD
5	W/O CCD LENS PMMA W110ER	6-42-W1101-020	W/O CCD
6	RUBBER FRONT-2 (5.2*0.5*SLICON 70) (MP) W110ER	6-47-W1101-032	
7	SCREW M2*3L KI NI ICT NY (DD=Φ4.5,DT=0.4)	6-35-B1120-3RE	
8	LCD HINGE L (SK7) (PVT) W110ER	6-33-W1101-0L2	
9	SCREW M2.5*4L KI(T=0.5 D=4.5) BK/Z ICT	6-35-B6125-4R0	
10	SCREW M2.5*5L KI BK/Z ICT NY	6-35-B6125-5RA	
11	LCD 11.6" HD IVO M116NWR1 R0 (GLARE TYPE)X3.6MM (LED)	6-50-B8136-B00	
11	LCD 11.6" HD LG LP116WH2-TLN1 (GLARE TYPE)X3.6MM (LED)	6-50-B8136-L00	
12	WIRE CABLE FOR LVDS 30P L=183MM OIL/LC CONN.0.4MM(S-HF) W110ER	6-43-W1101-012-L	
13	LCD HINGE R (SK7) (MP) W110ER	6-33-W1101-0R2	
14	WIRE CABLE FOR CCD 5P L= 305MM(HL) W110ER	6-43-W110T-011-2	
15	ANTENNA WIMAX FVC WM2 PCB 2.4G/3.5GHZ/5G L=68.5MM W345EU	6-23-7W345-020	
16	ANTENNA WIMAX FVC WM1 PCB 2.4G/3.5GHZ/5G WM= 50.0MM W345EU	6-23-7W345-010	
17	MIC 6MMX22 10V-2V 2.2KW/CABLE L=350MM W110ER	6-23-EW110-012	
18	UVC CAMERA CHICONY FIX CNFA149 1.3M HIMAX HM1355 W25B40-C	6-88-W25UC-5100	
19	LCD BACK COVER MODULE (MP) W110ER	6-39-W1101-022	
19	LCD BACK COVER MODULE W/FA+HINGE CAP+SPONGE+AL FOIL ASSY W110ER	6-78-W110ERF1-010	
20	LCD BACK COVER PROTECT MYLAR PET (MP) W110ER	6-40-W1101-022	

HDD





ITEM	PART NAME	PART NO	REMARK
1	HDD BRACKET MODULE W110ER	6-33-W110J-100	
2	SCREW M3*2.5L KI NI ICT NY (19-JAN-2006)	6-35-B1130-2R5	

Figure A - 4
HDD

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the ***W110ER/W110ERF*** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Table B - 1
SCHEMATIC DIAGRAMS

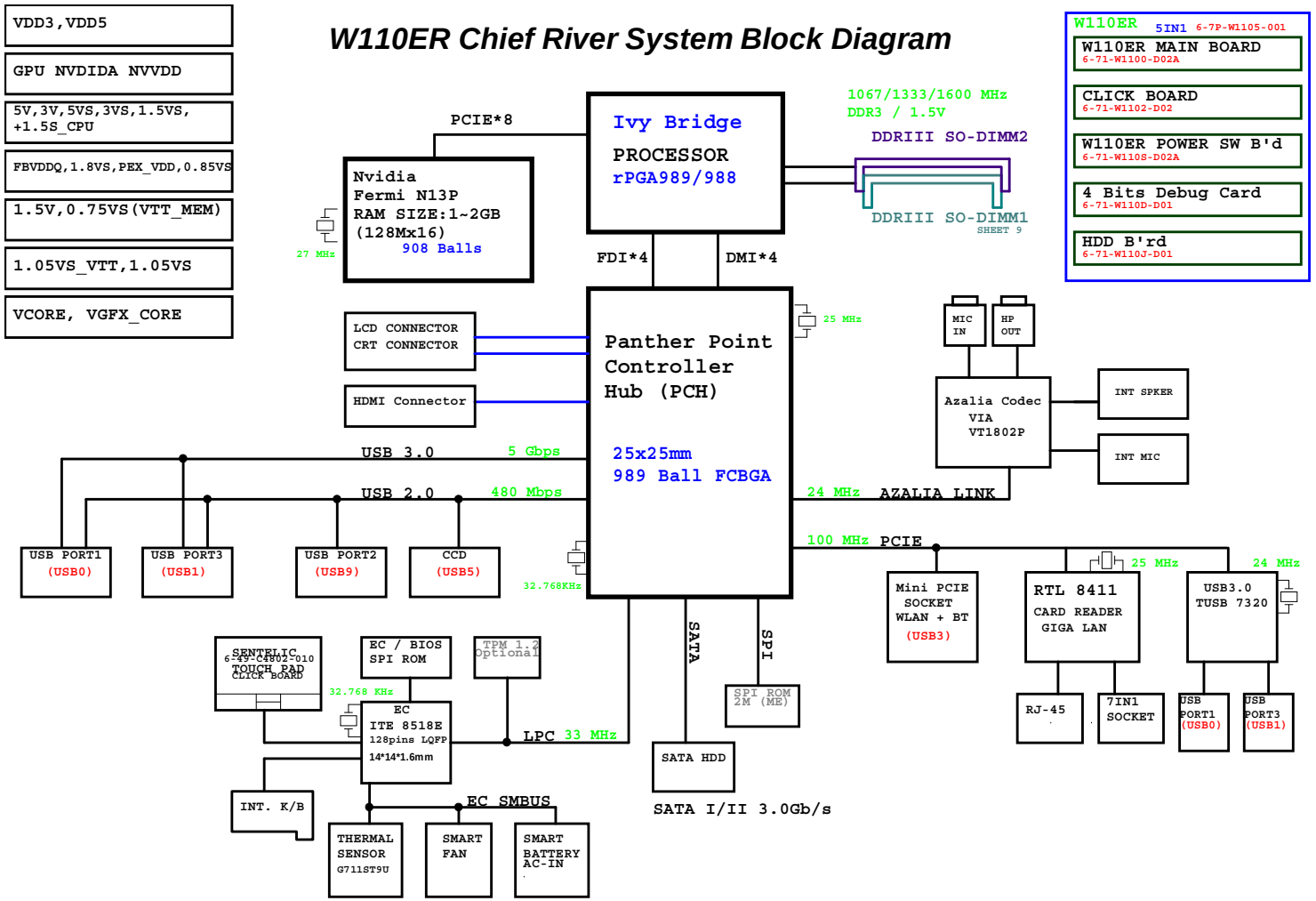
Diagram - Page	Diagram - Page	Diagram - Page
System Block Diagram - Page B - 2	*PCH 1/9 - RTC, HDA, SATA - Page B - 19*	*5VS, 3VS, 3.3VM, 1.5VS CPU - Page B - 36*
Processor 1/7 - DMI, FDI, PEG - Page B - 3	*PCH 2/9 - PCIE, SMBUS, CLK - Page B - 20*	*VDD3, VDD5 - Page B - 37*
Processor 2/7 - CLK, MISC - 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 - Page B - 39*
Processor 4/7 - Power - Page B - 6	*PCH 5/9 - PCI, USB, RSVD - Page B - 23*	*POWER 1.05VS/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 - 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*	*CLICK BOARD - Page B - 45*
PANEL, INVERTER, CRT - Page B - 12	*CCD, TPM, MULTI CON - Page B - 29*	*POWER SW BOARD - Page B - 46*
VGA PCI-E Interface - Page B - 13	*USB3.0 - Page B - 30*	*HDD BOARD - Page B - 47*
VGA Frame Buffer Interface - Page B - 14	*Card Reader, LAN (RTL8411) - Page B - 31*	*Power Diagram - Page B - 48*
VGA Frame Buffer A - Page B - 15	*LED, USB CHARGE - Page B - 32*	*Power On SEQ - Page B - 49*
VGA Frame Buffer C - Page B - 16	*HDMI, RJ45 - Page B - 33*	
VGA I/O - Page B - 17	*AUDIO CODEC VT1802P - Page B - 34*	
VGA NVVDD Cecoupling - Page B - 18	*KBC-ITE IT8518E - Page B - 35*	

Version Note

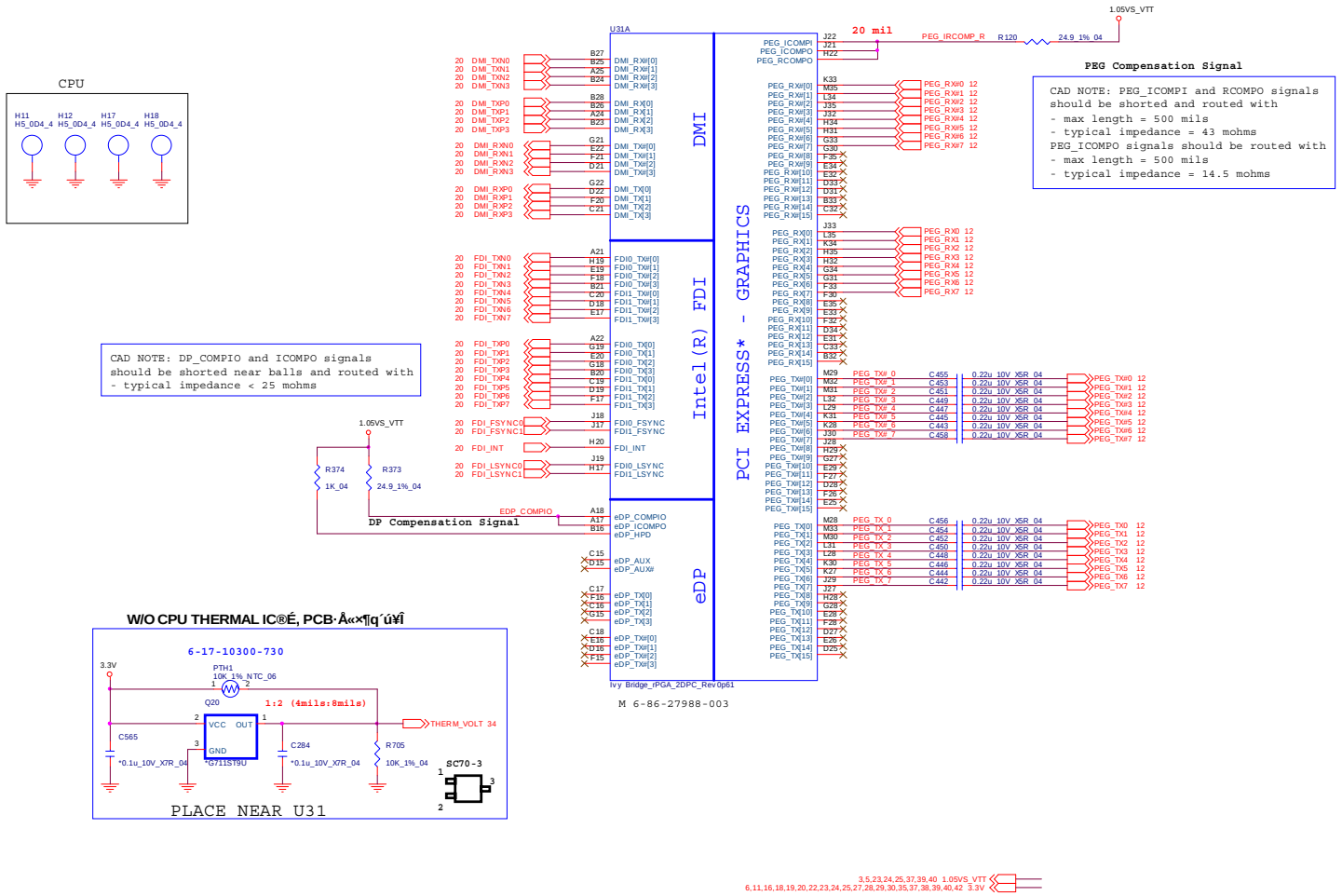
The schematic diagrams in this chapter are based upon version 6-7P-W1104-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram

Sheet 1 of 48
System Block Diagram



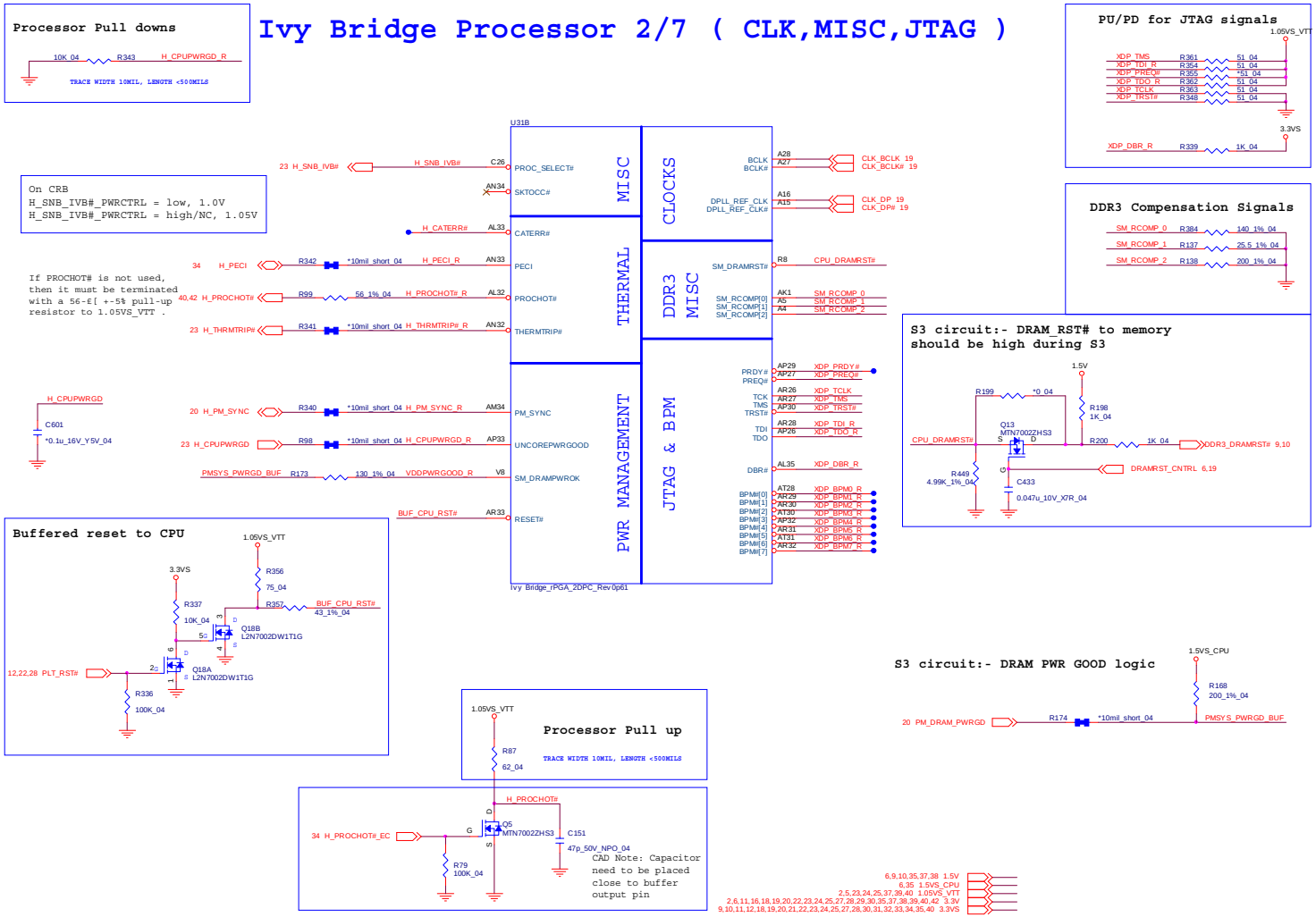
Processor 1/7 - DMI, FDI, PEG



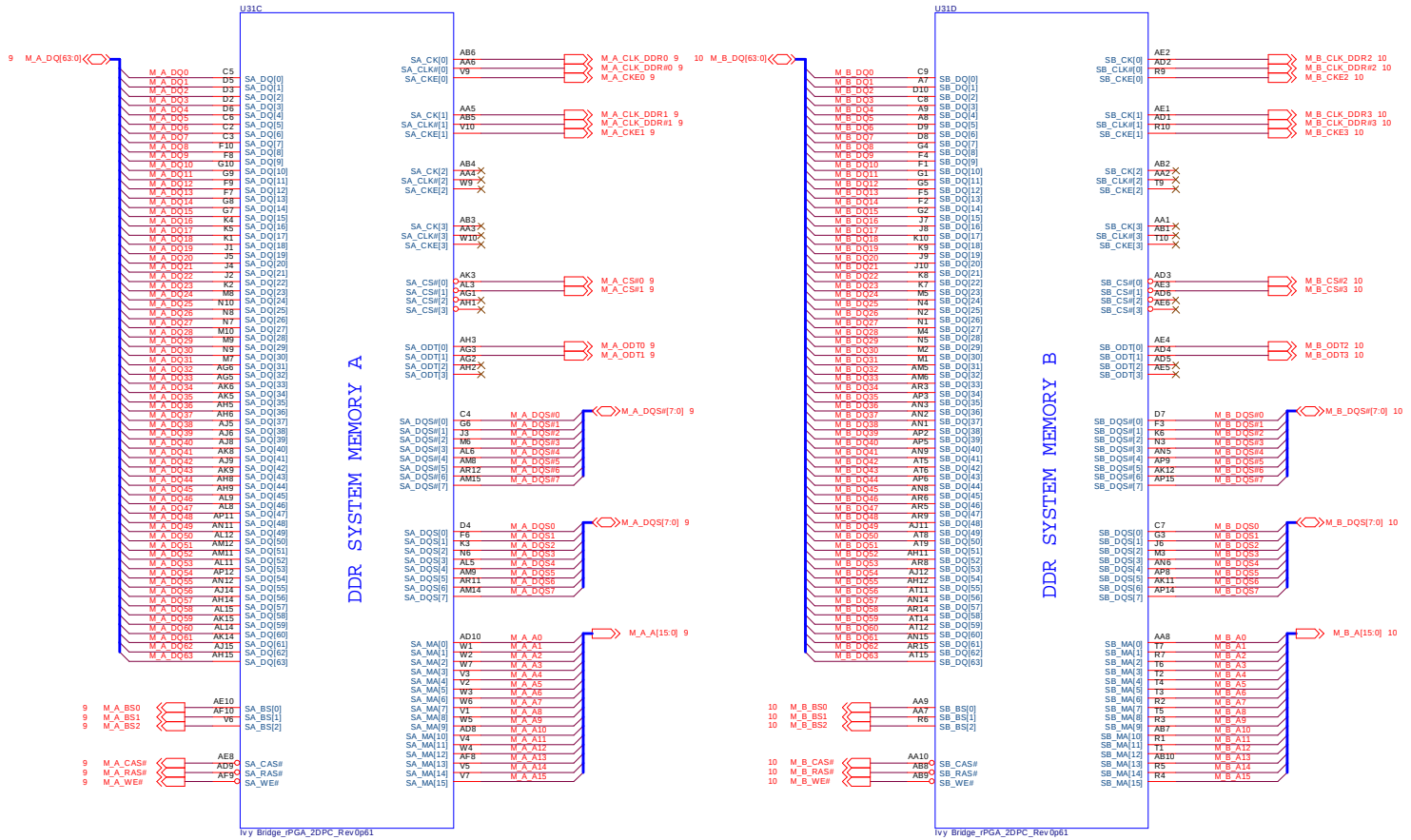
Sheet 2 of 48
Processor 1/7 - DMI, FDI, PEG

Processor 2/7 - CLK, MISC

Sheet 3 of 48
Processor 2/7 - CLK, MISC



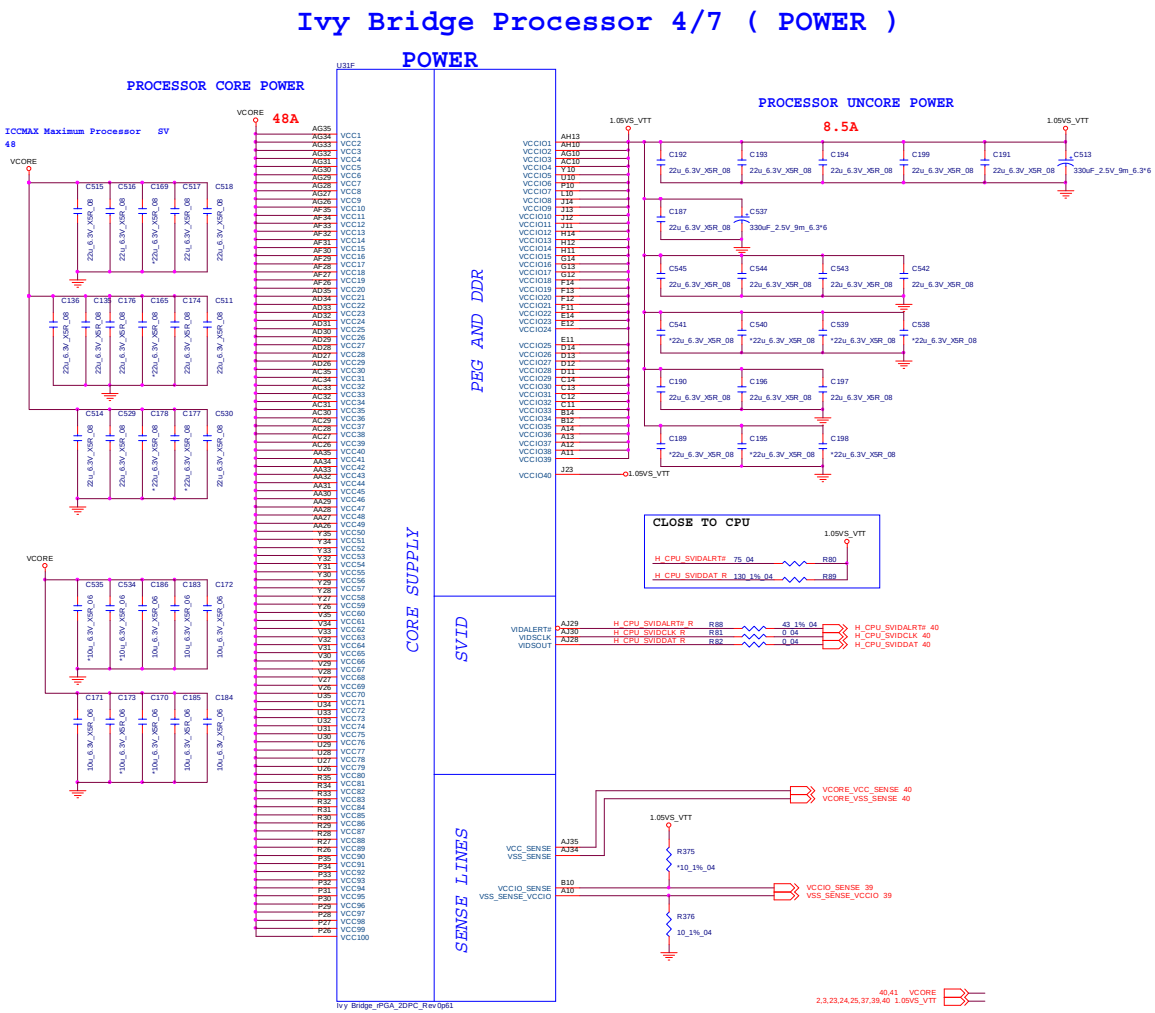
Processor 3/7 - DDR3



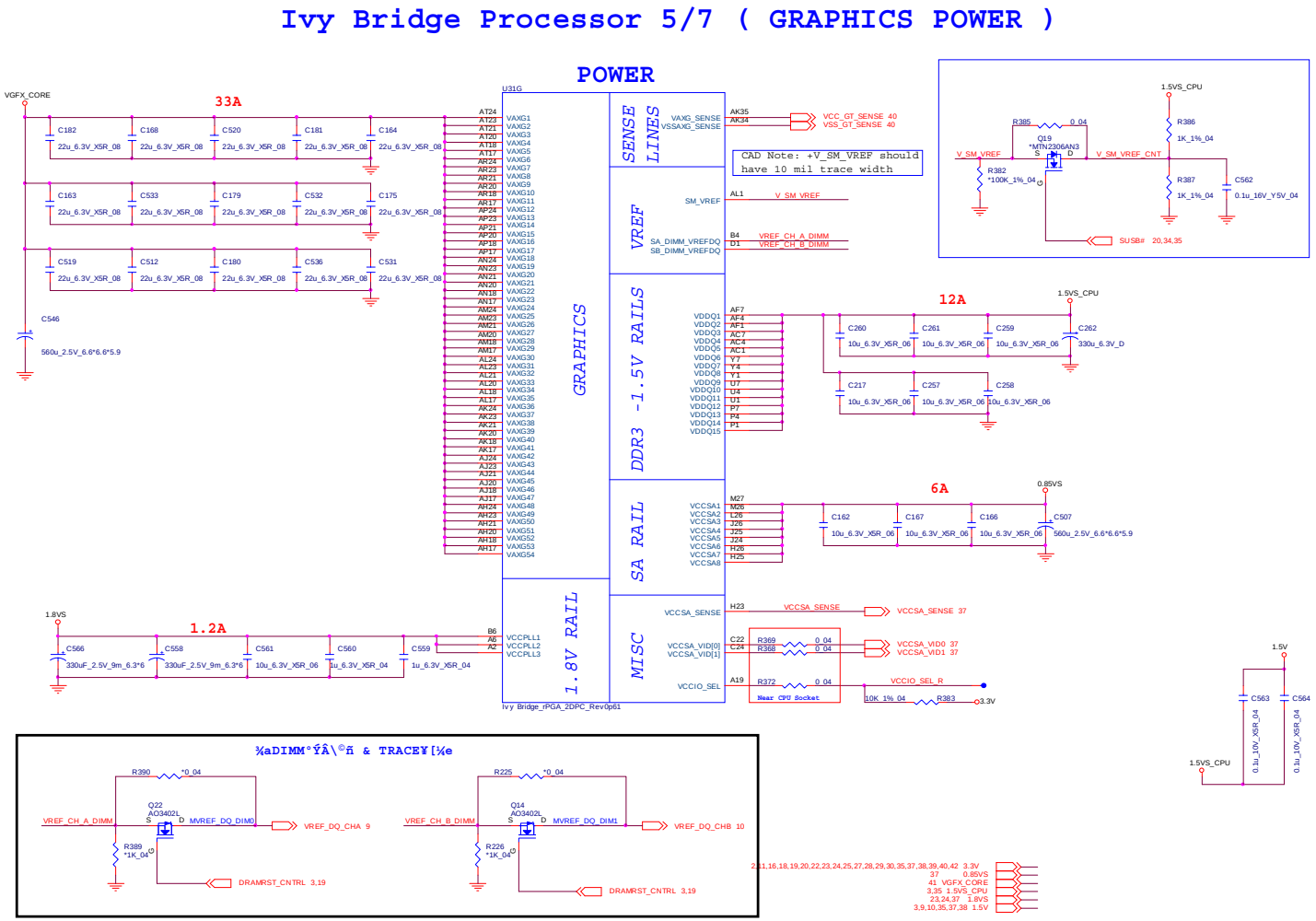
Sheet 4 of 48
Processor 3/7 - DDR3

Processor 4/7 - Power

Sheet 5 of 48
Processor 4/7 - Power



Processor 5/7 - GFX PWR



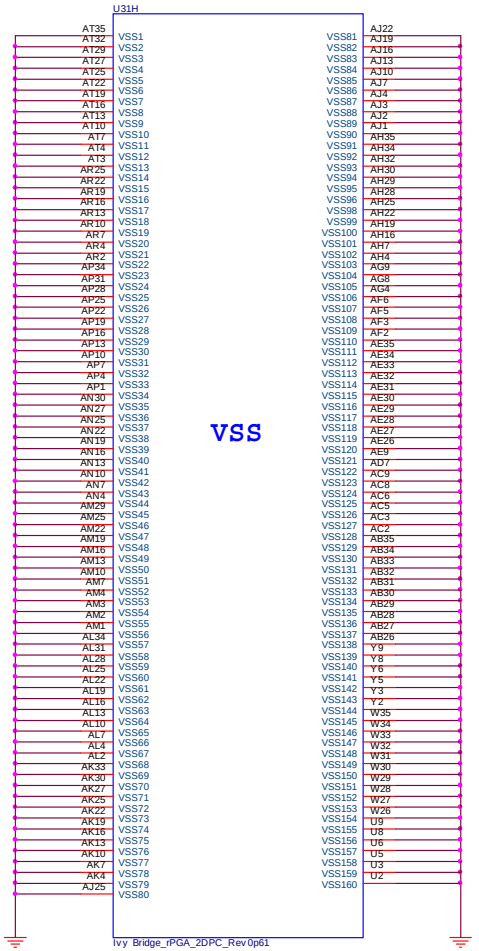
Sheet 6 of 48
Processor 5/7 - GFX PWR

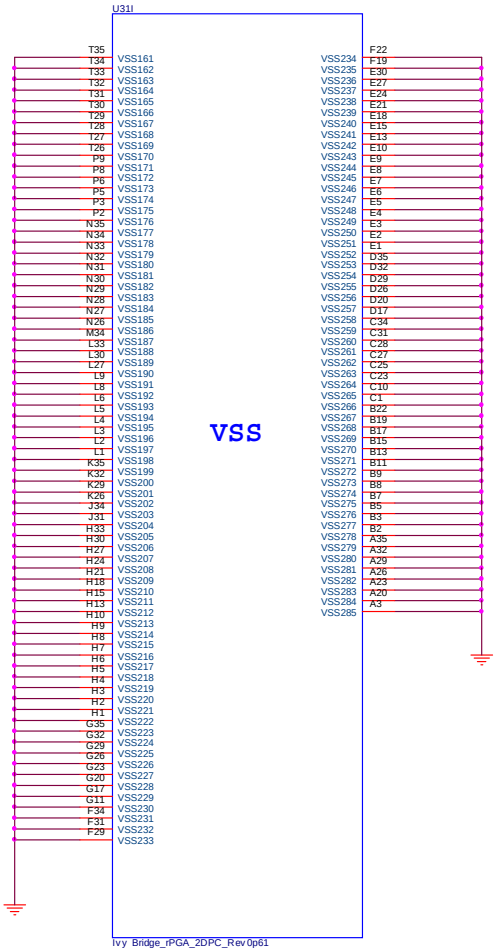
Processor 6/7 - GND

Sheet 7 of 48
Processor 6/7 - GND

Ivy Bridge Processor 6/7 (GND)

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





Processor 7/7 - RSVD

CFG Straps for Processor

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

CFG2 R113 *1K_04

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

CFG4 R111 *1K_04

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

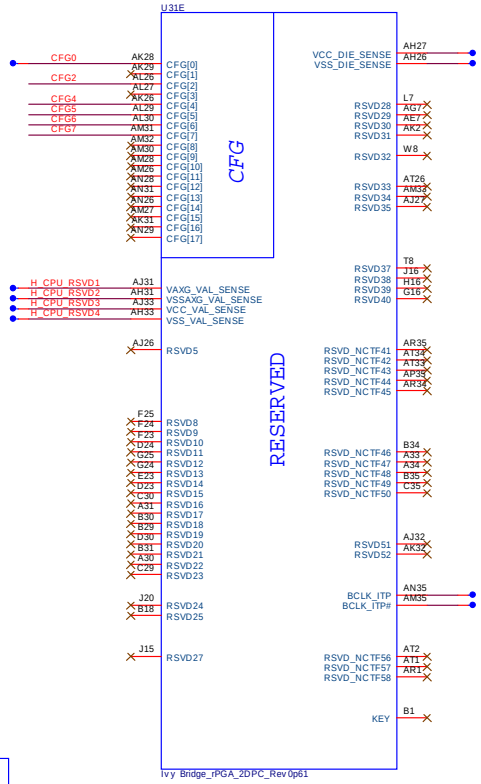
CFG5 R112 *1K_04

CFG6 R106 *1K_04

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

CFG7 R105 *1K_04

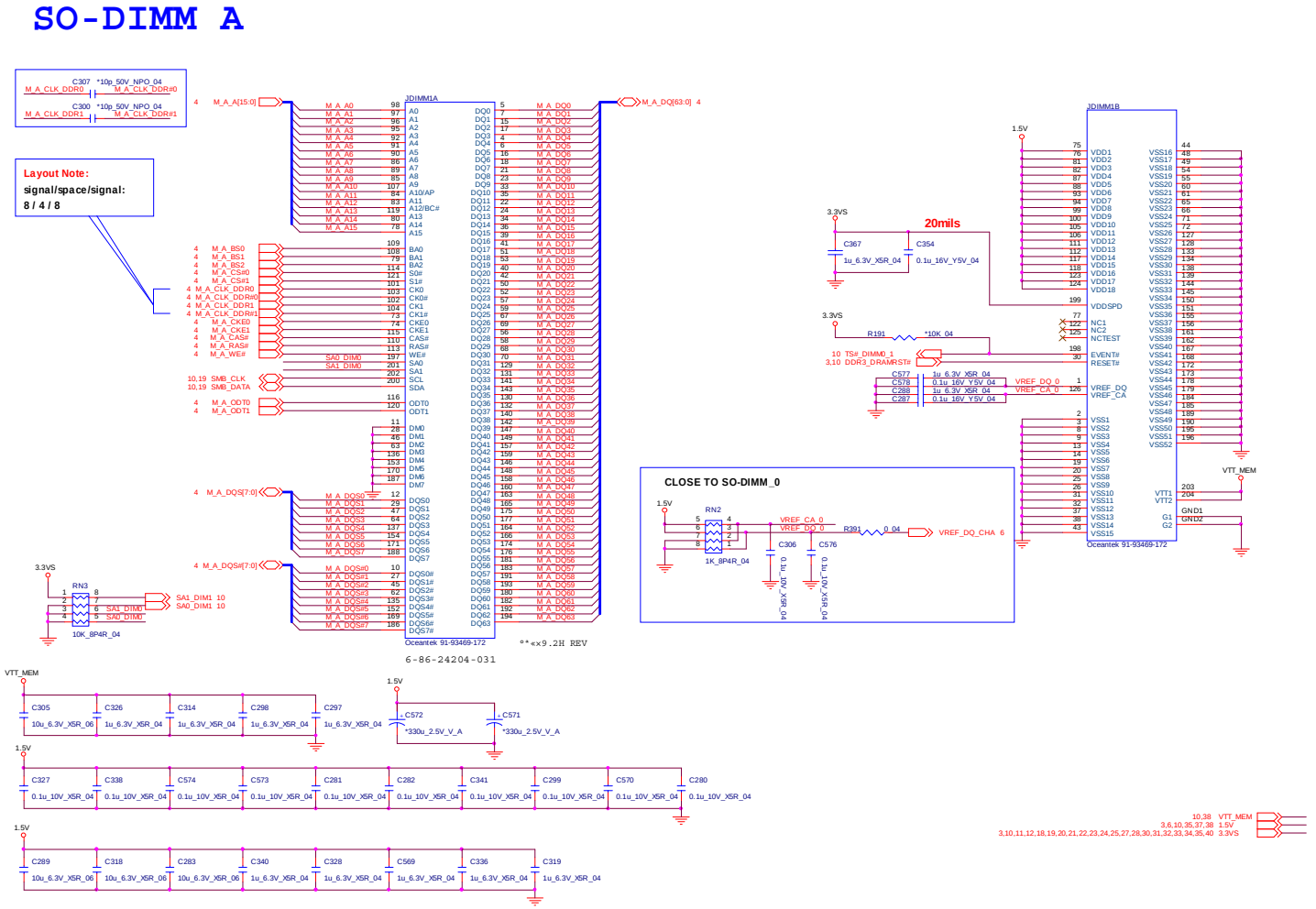
Ivy Bridge Processor 7/7 (RESERVED)



Sheet 8 of 48
Processor 7/7 - RSVD

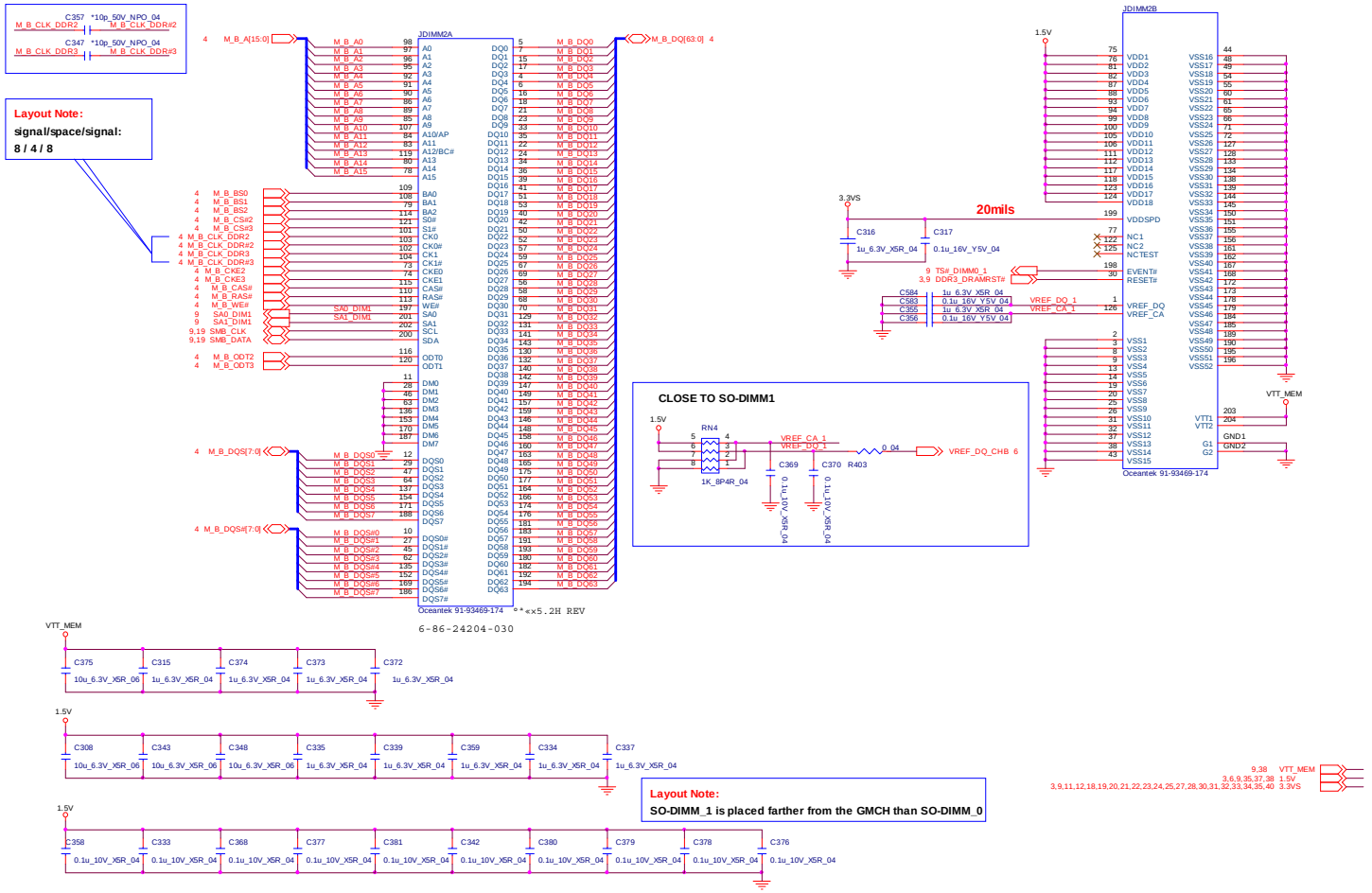
DDR3 SO-DIMM_0

Sheet 9 of 48
DDR3 SO-DIMM_0



DDR3 SO-DIMM_1

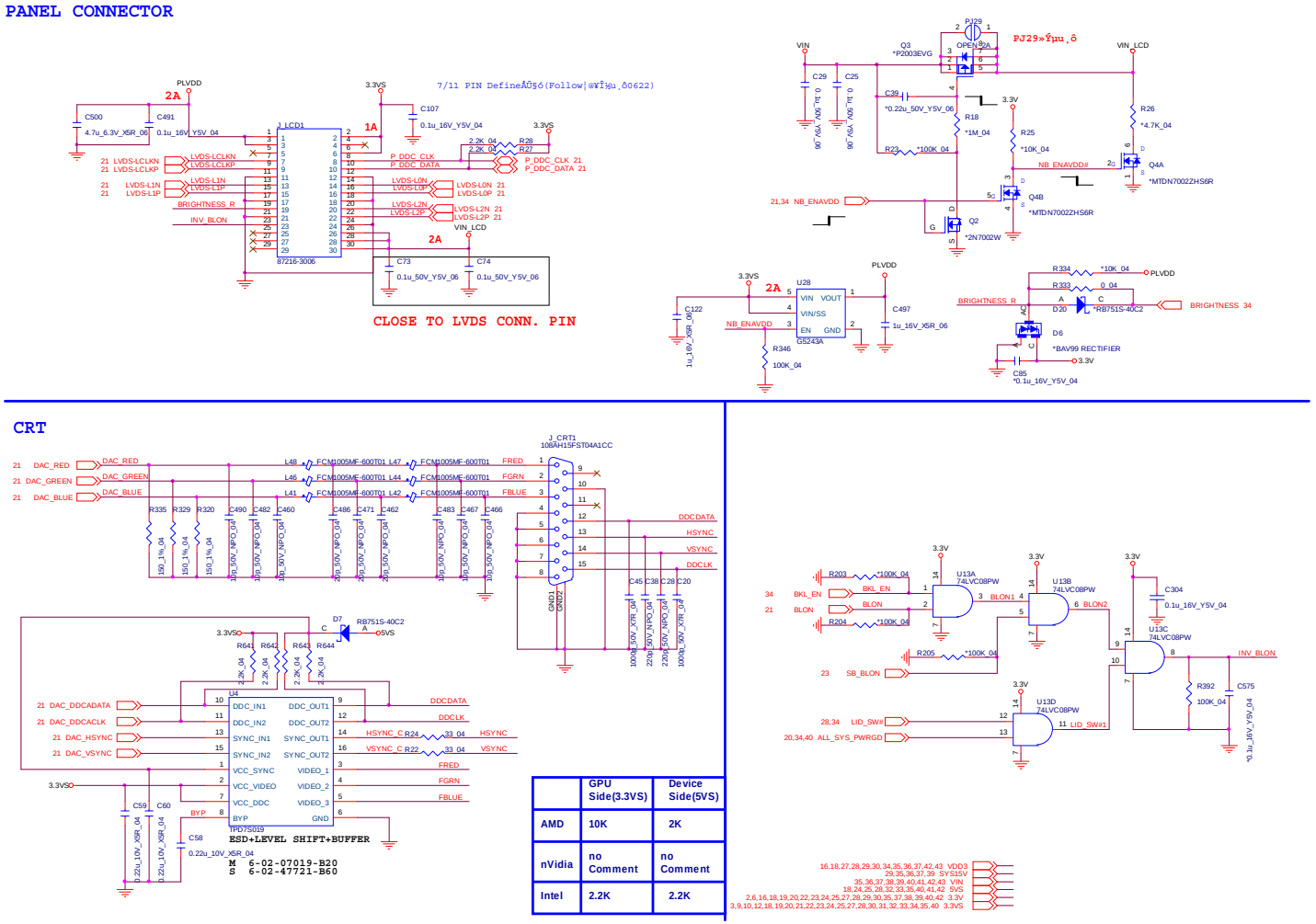
SO-DIMM B



Sheet 10 of 48
DDR3 SO-DIMM_1

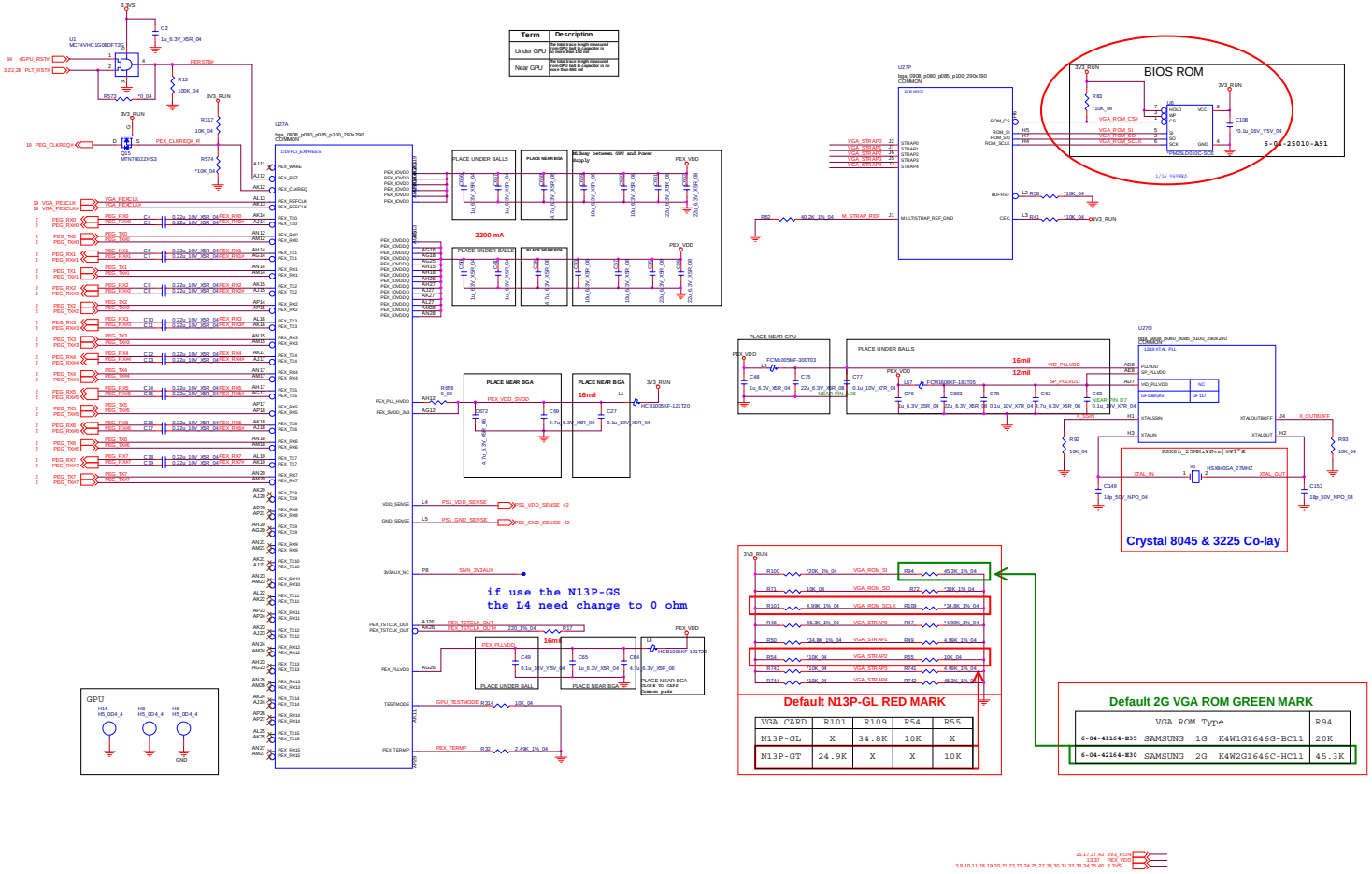
PANEL, INVERTER, CRT

Sheet 11 of 48
PANEL, INVERTER, CRT



	GPU Side(3.3VS)	Device Side(5VS)
AMD	10K	2K
nVidia	no Comment	no Comment
Intel	2.2K	2.2K

VGA PCI-E Interface

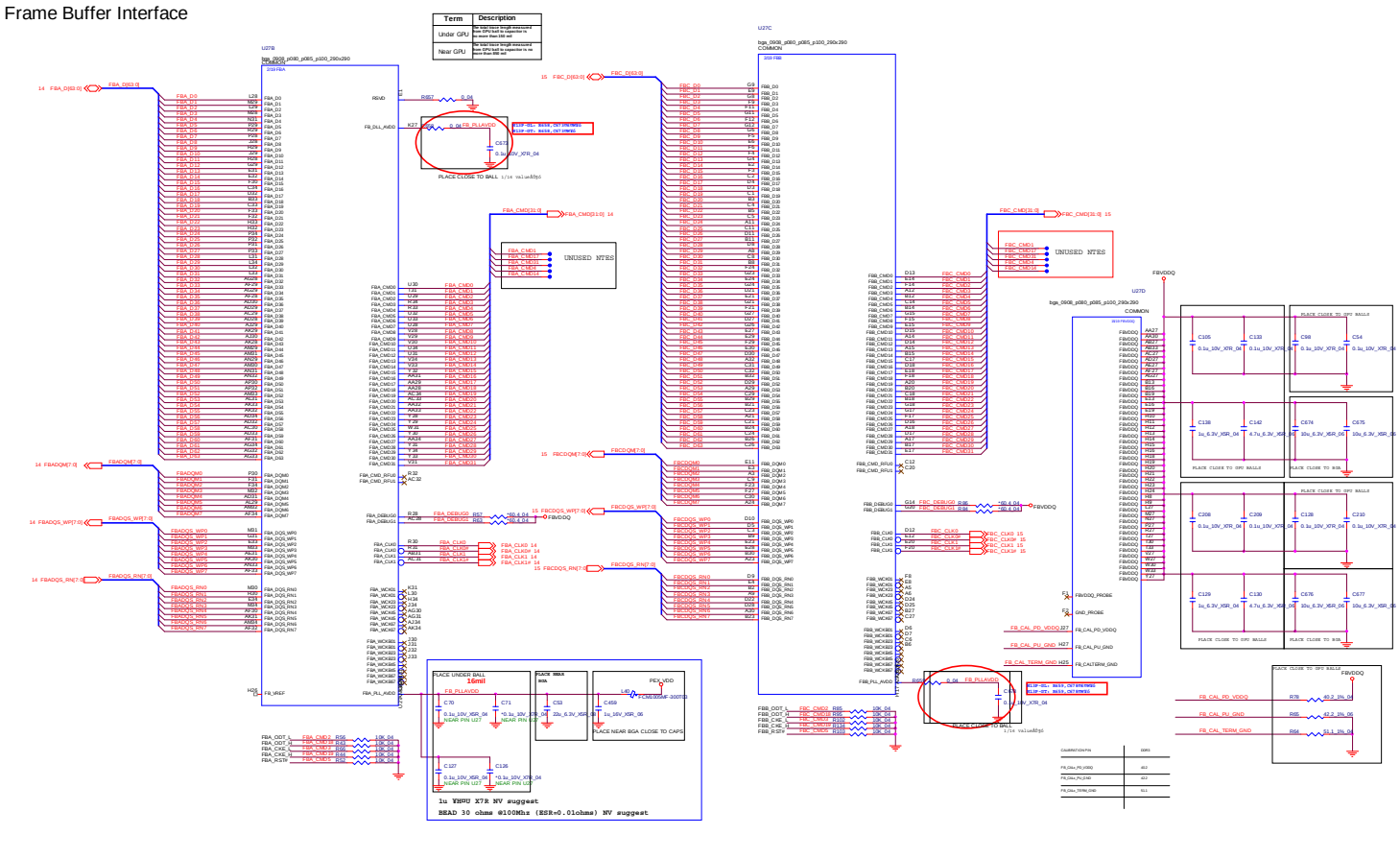


Sheet 12 of 48
VGA PCI-E Interface

B.Schematic Diagrams

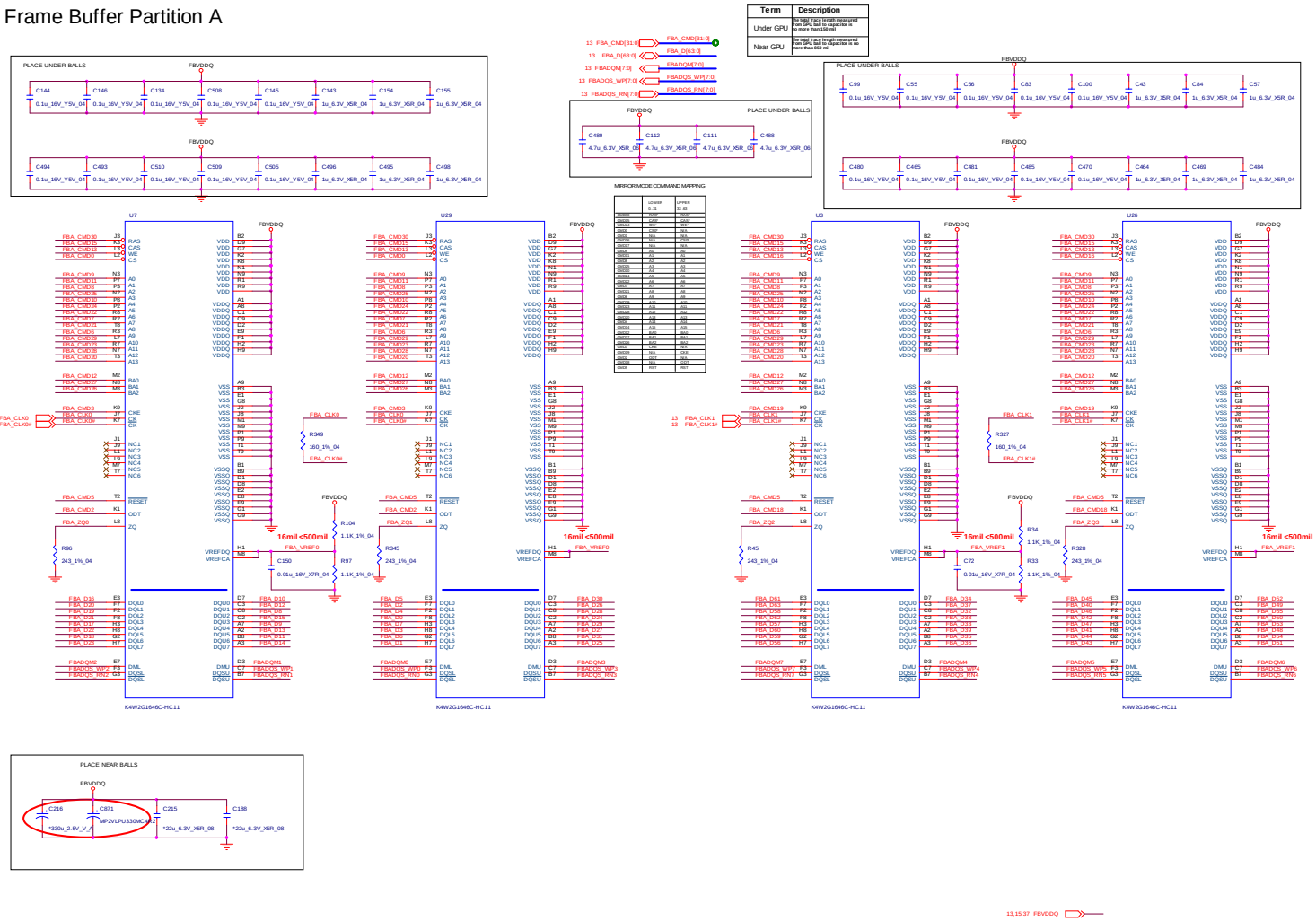
VGA Frame Buffer Interface

Sheet 13 of 48
VGA Frame Buffer Interface



VGA Frame Buffer A

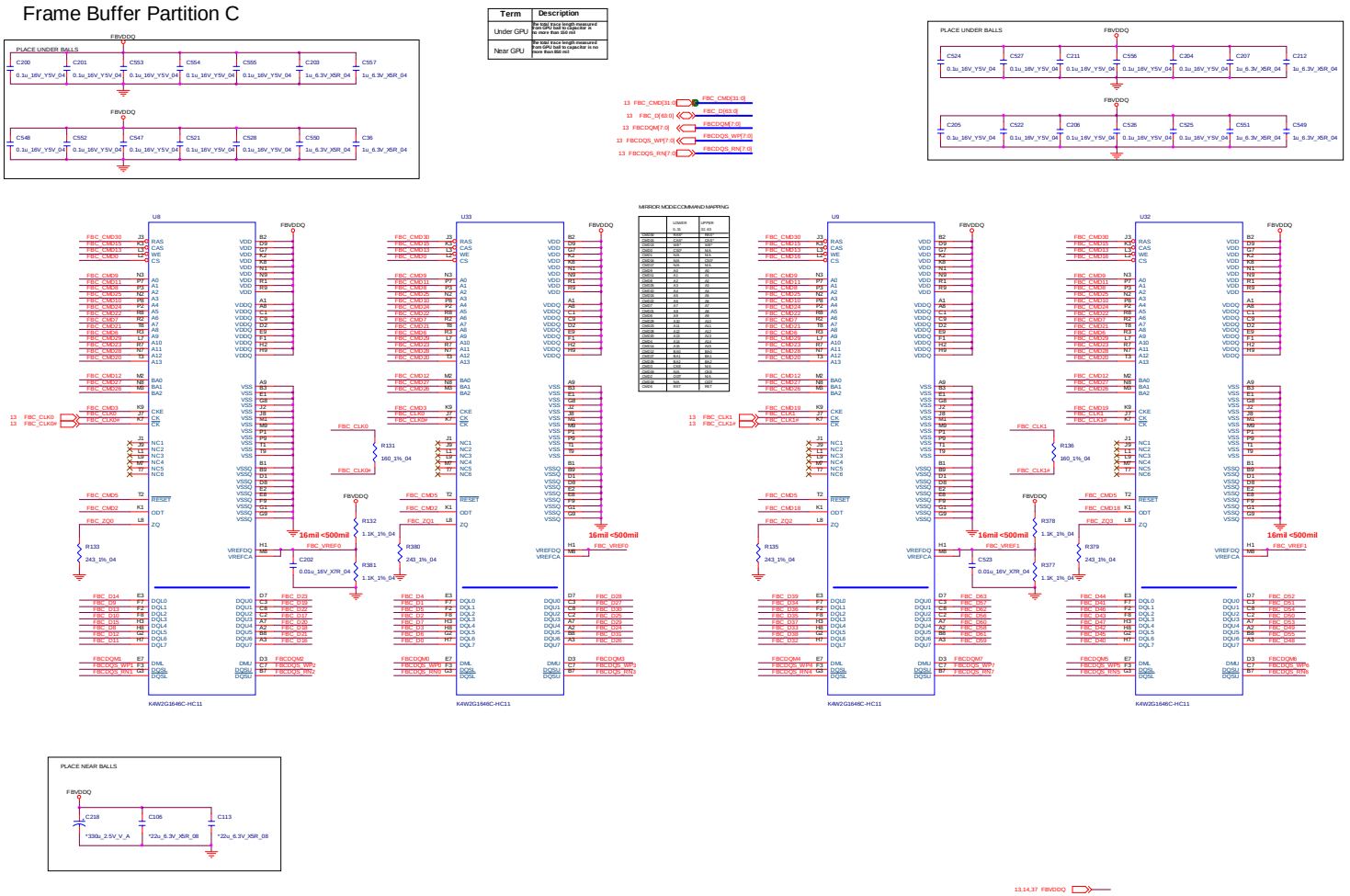
Frame Buffer Partition A



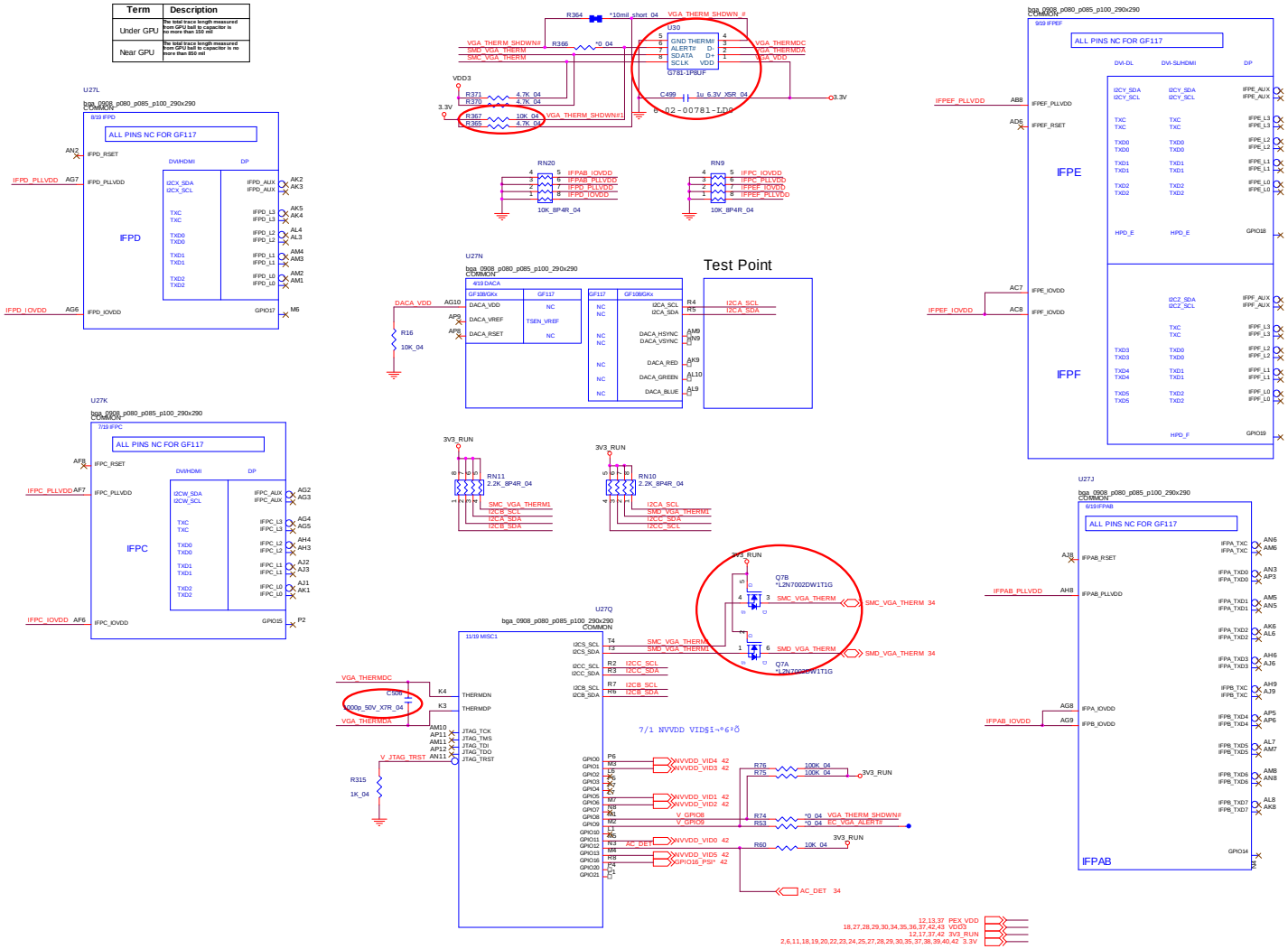
Sheet 14 of 48
VGA Frame Buffer A

VGA Frame Buffer C

Sheet 15 of 48
VGA Frame Buffer C



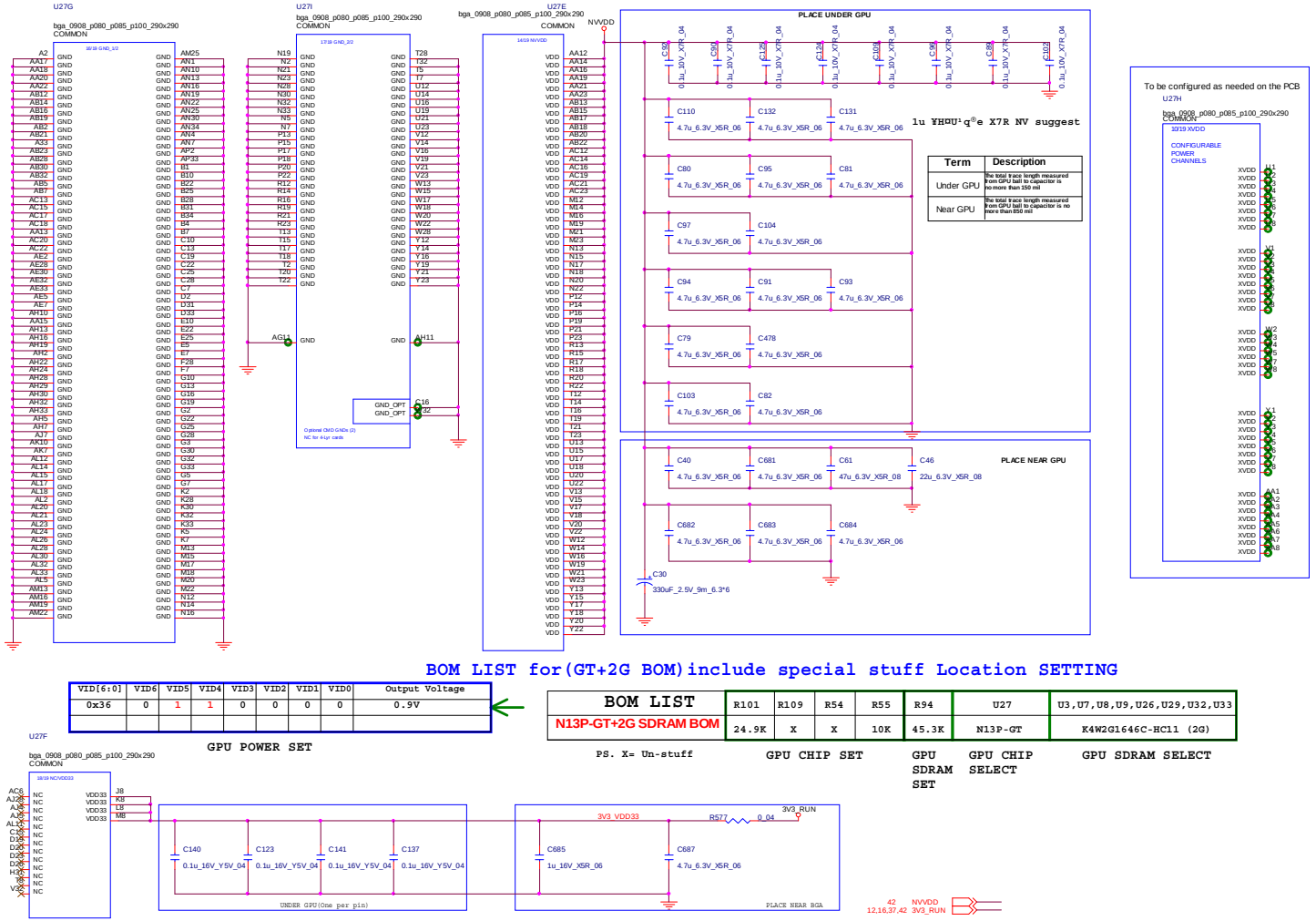
VGA I/O



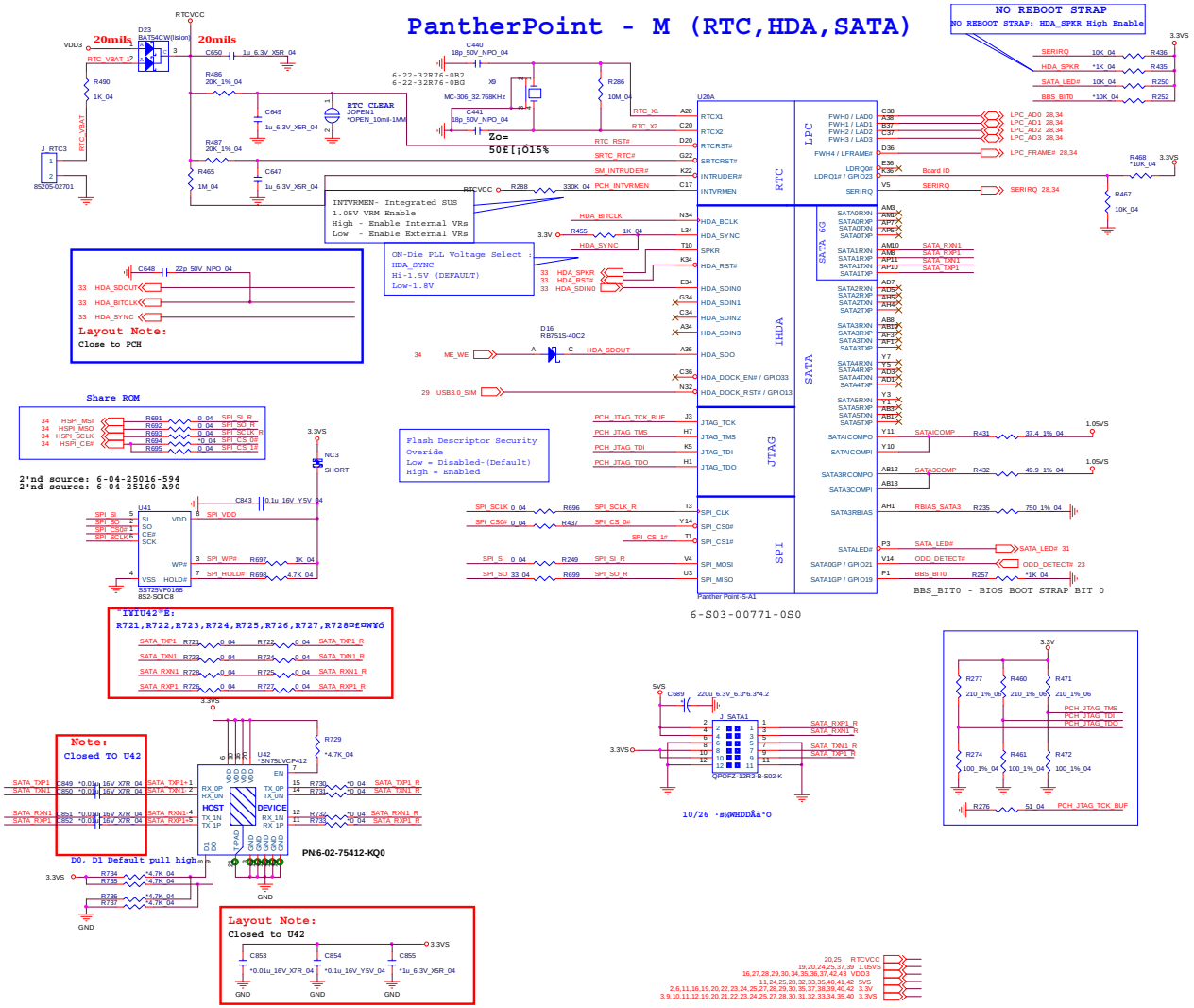
Sheet 16 of 48
VGA I/O

VGA NVVDD Cecoupling

Sheet 17 of 48
VGA NVVDD Cecoupling



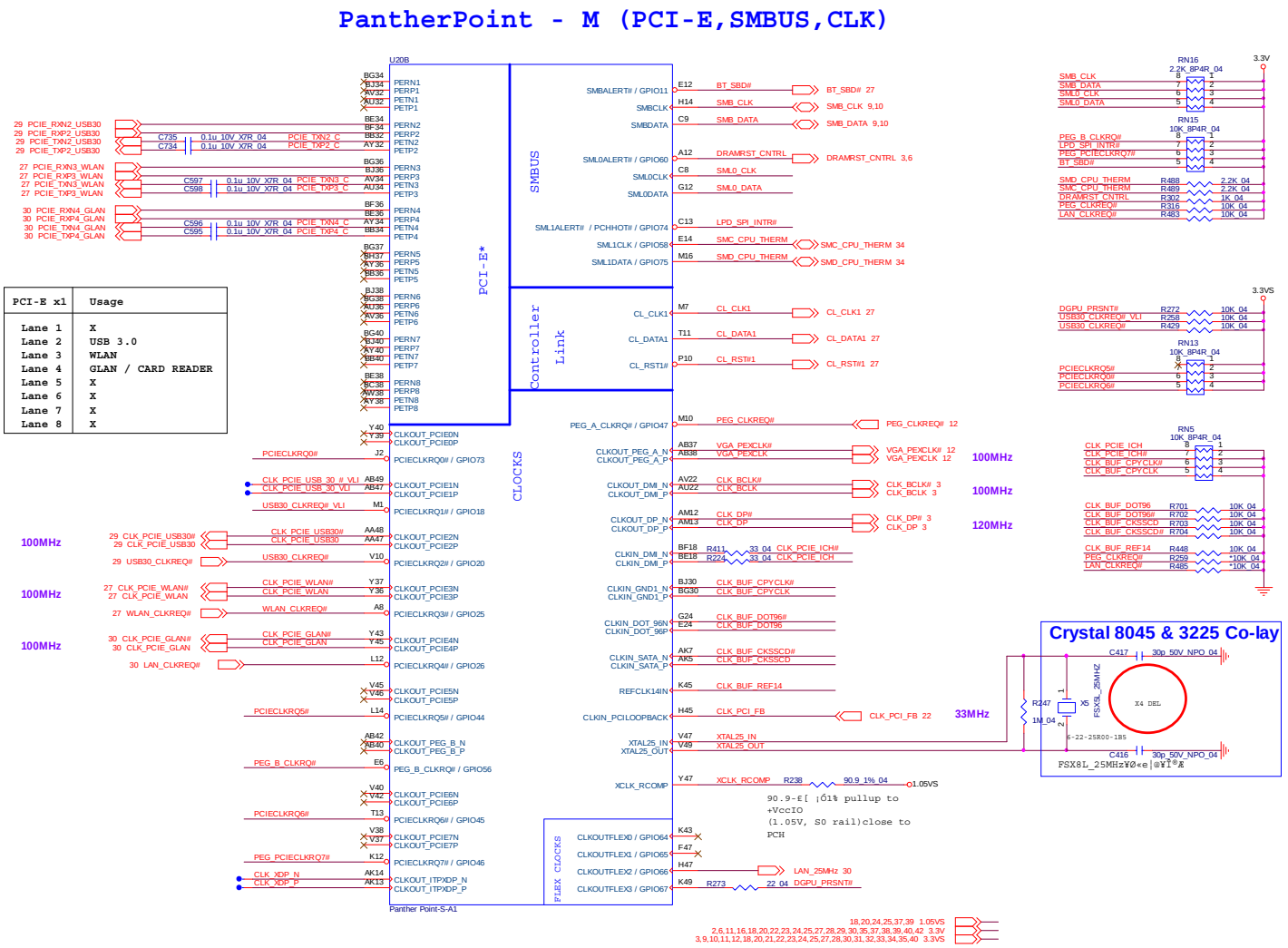
PCH 1/9 - RTC, HDA, SATA



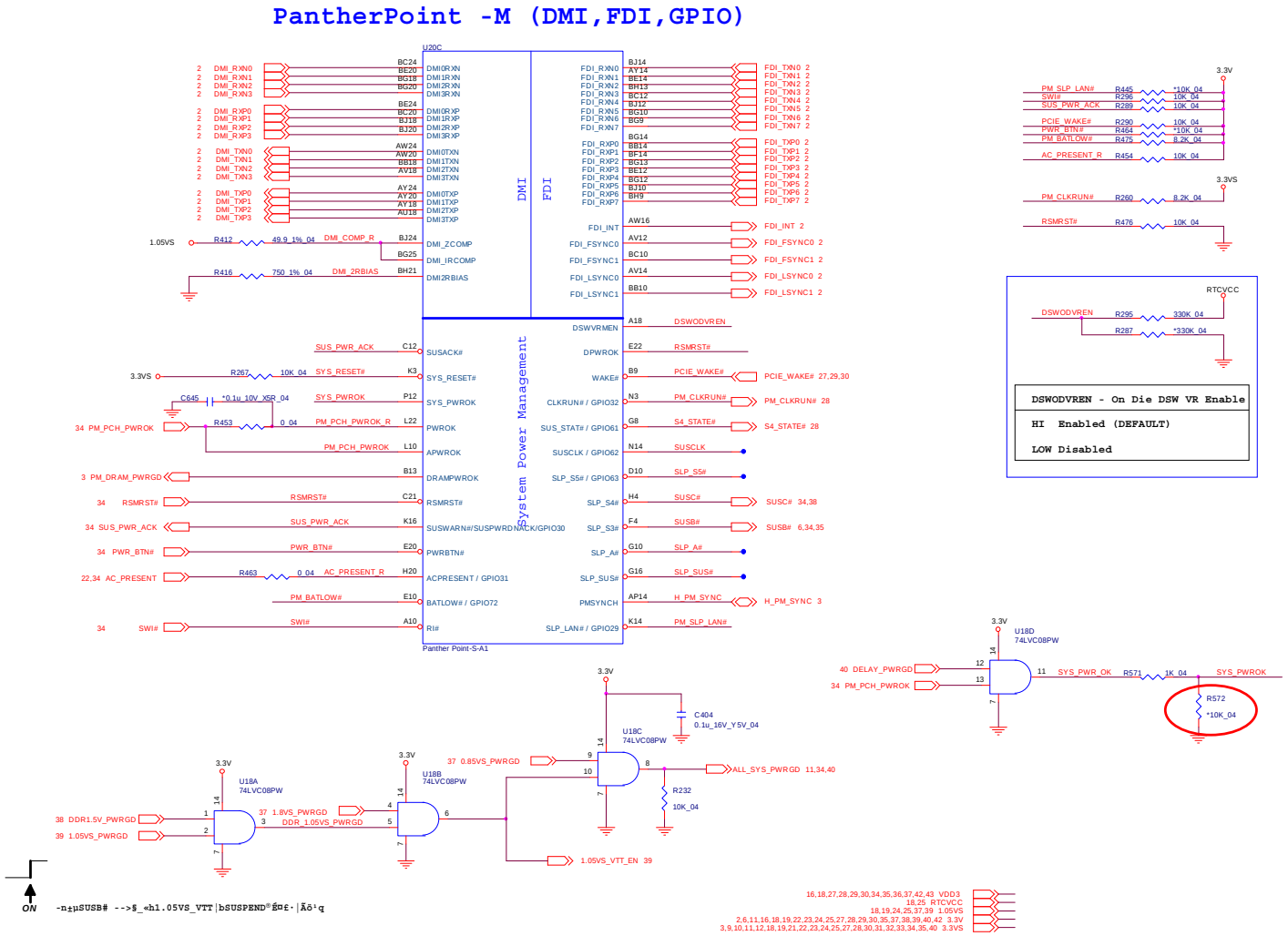
Sheet 18 of 48
PCH 1/9 - RTC, HDA, SATA

PCH 2/9 - PCIE, SMBUS, CLK

Sheet 19 of 48
PCH 2/9 - PCIE, SMBUS, CLK



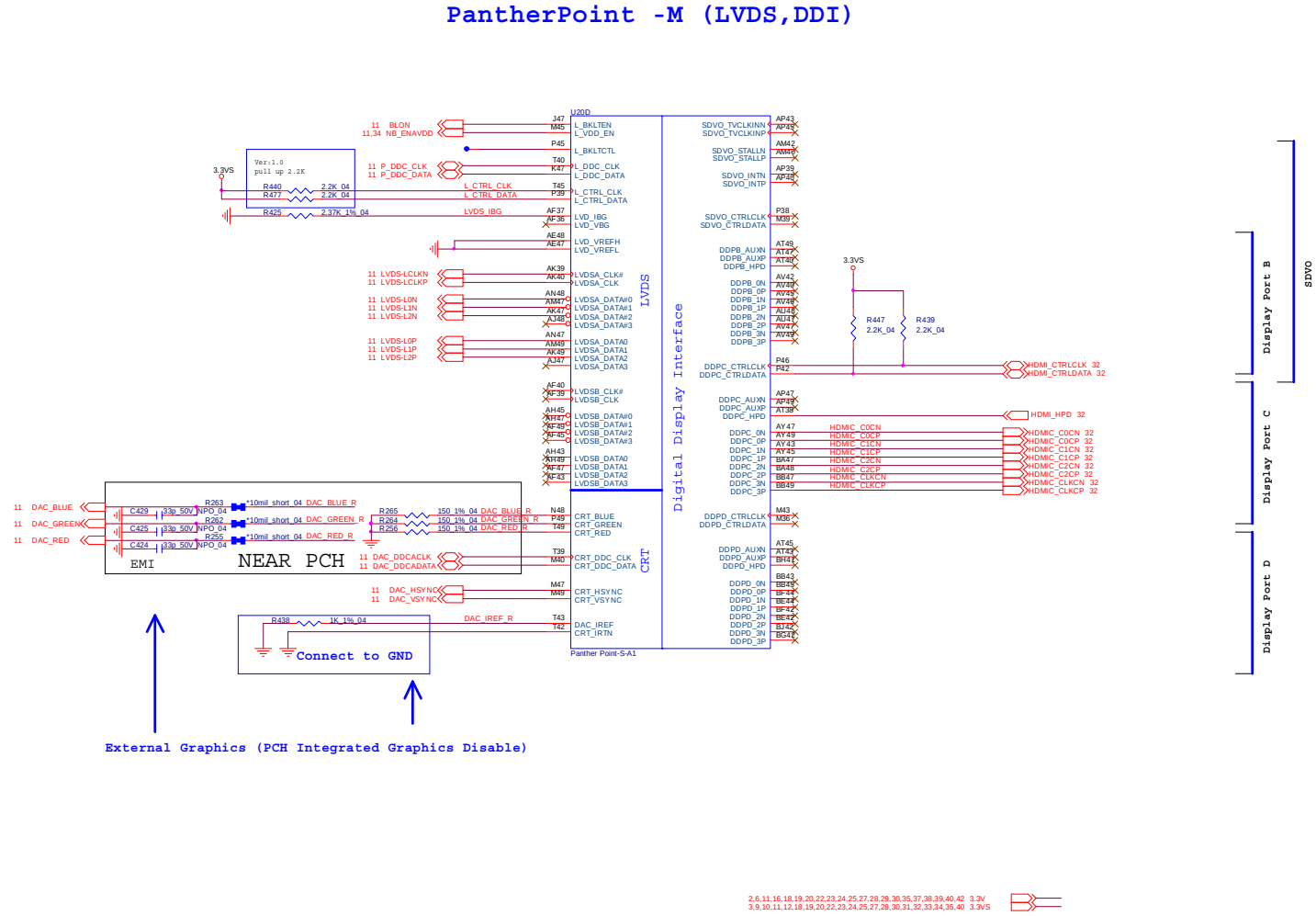
PCH 3/9 - DMI, FDI, PWRGD



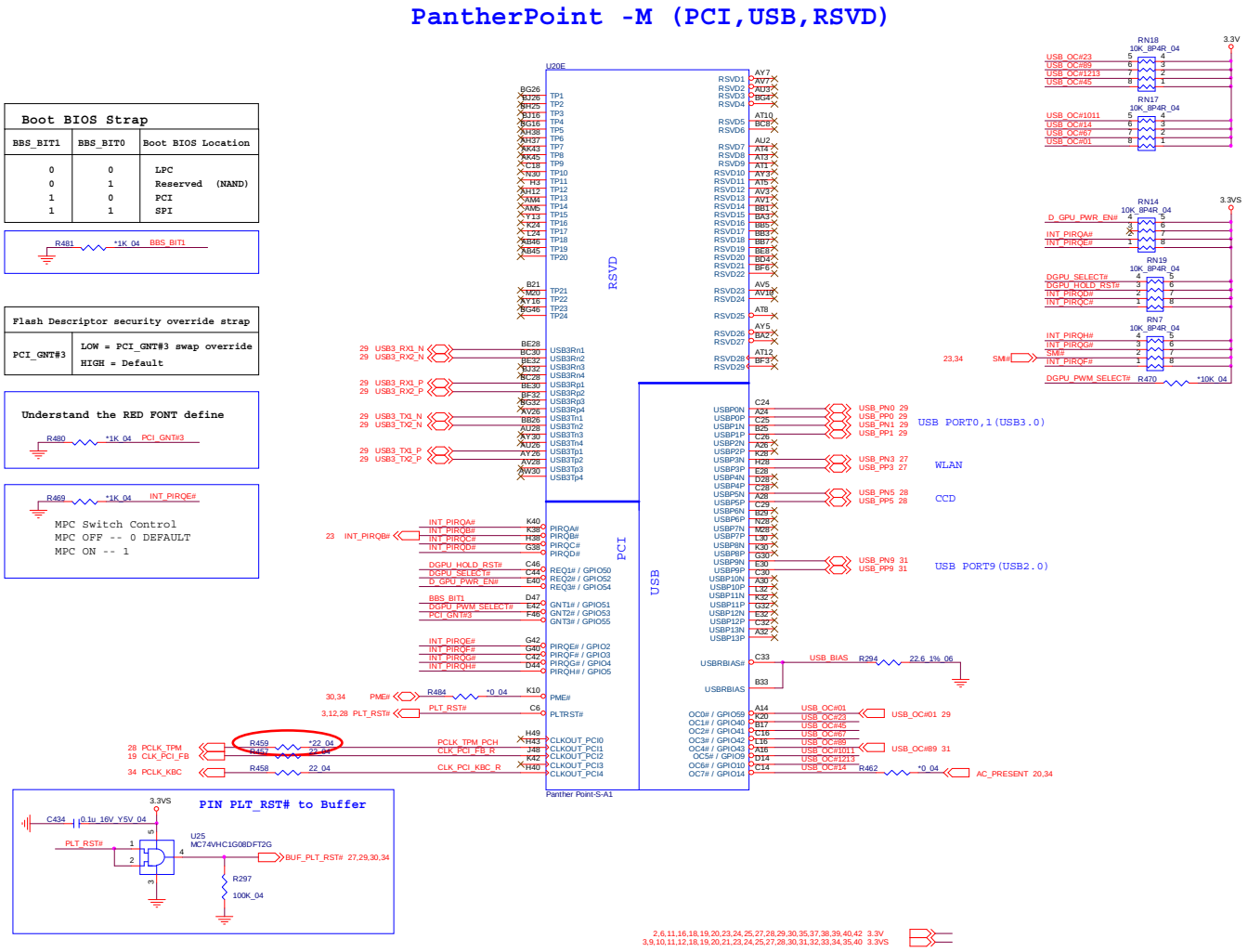
Sheet 20 of 48
PCH 3/9 - DMI, FDI, PWRGD

PCH 4/9 - LVDS, DDI, CRT

Sheet 21 of 48
PCH 4/9 - LVDS, DDI, CRT



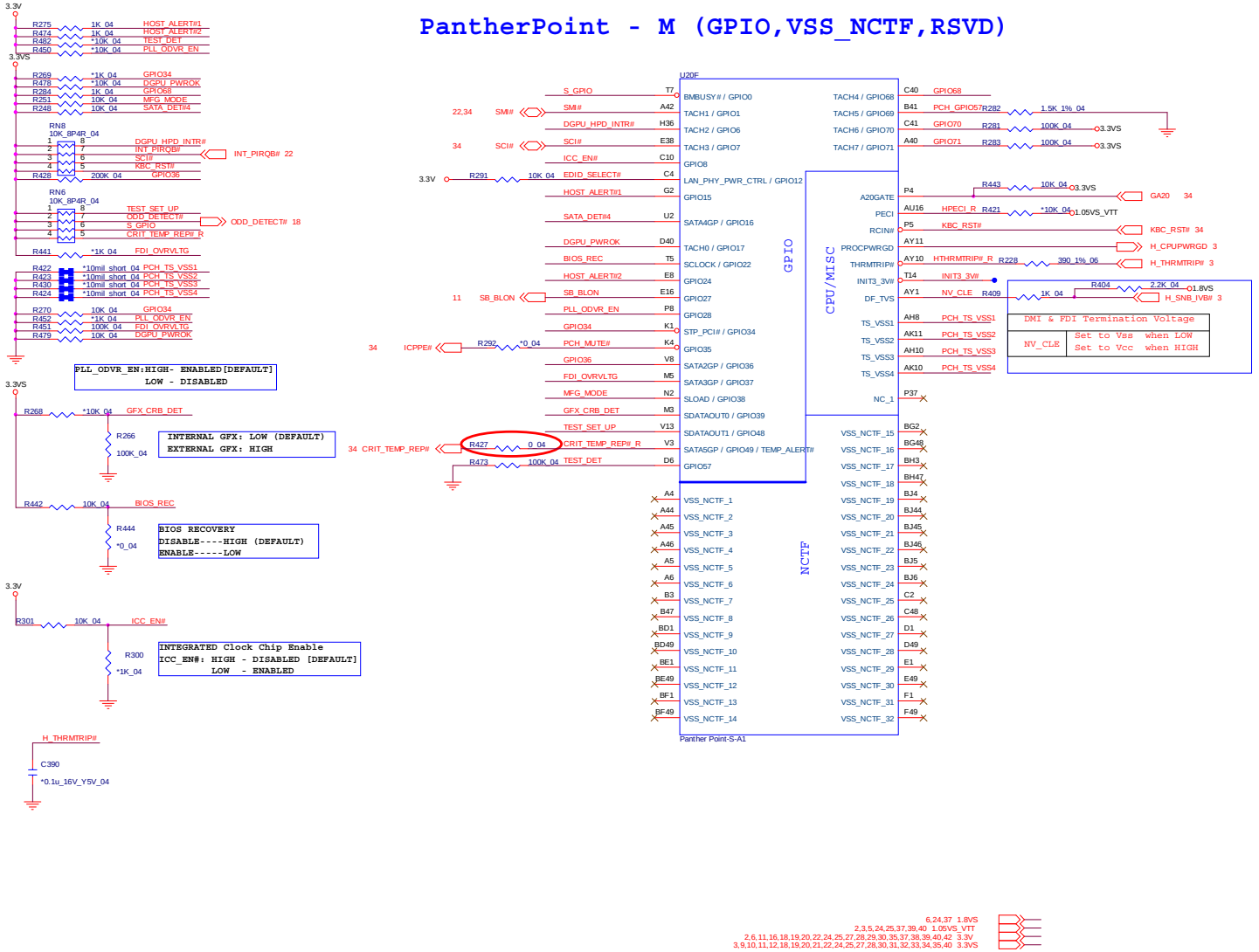
PCH 5/9 - PCI, USB, RSVD



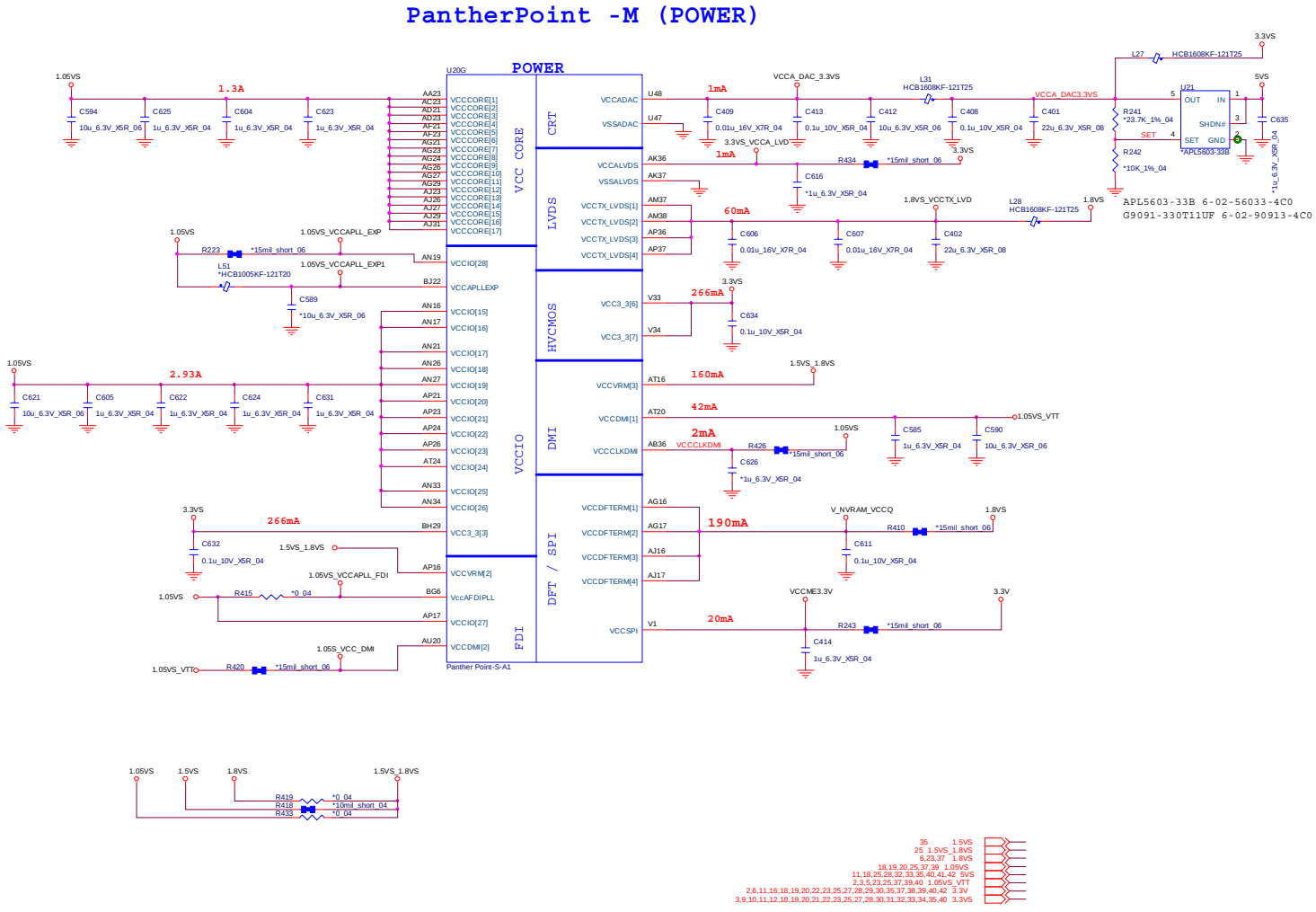
Sheet 22 of 48
PCH 5/9 - PCI, USB, RSVD

PCH 6/9 - GPIO, CPU

Sheet 23 of 48
PCH 6/9 - GPIO, CPU



PCH 7/9 - PWR

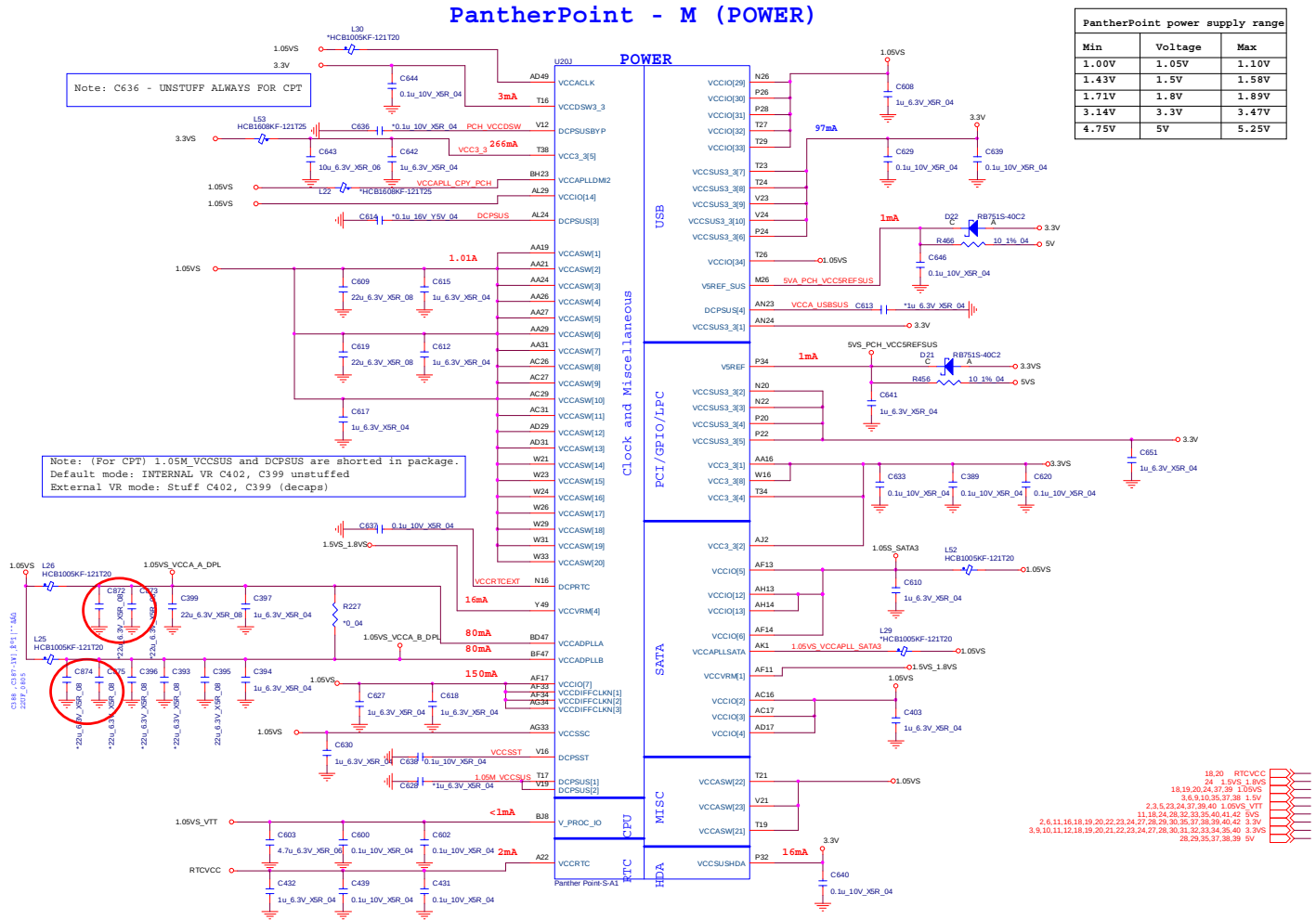


Sheet 24 of 48
PCH 7/9 - PWR

B.Schematic Diagrams

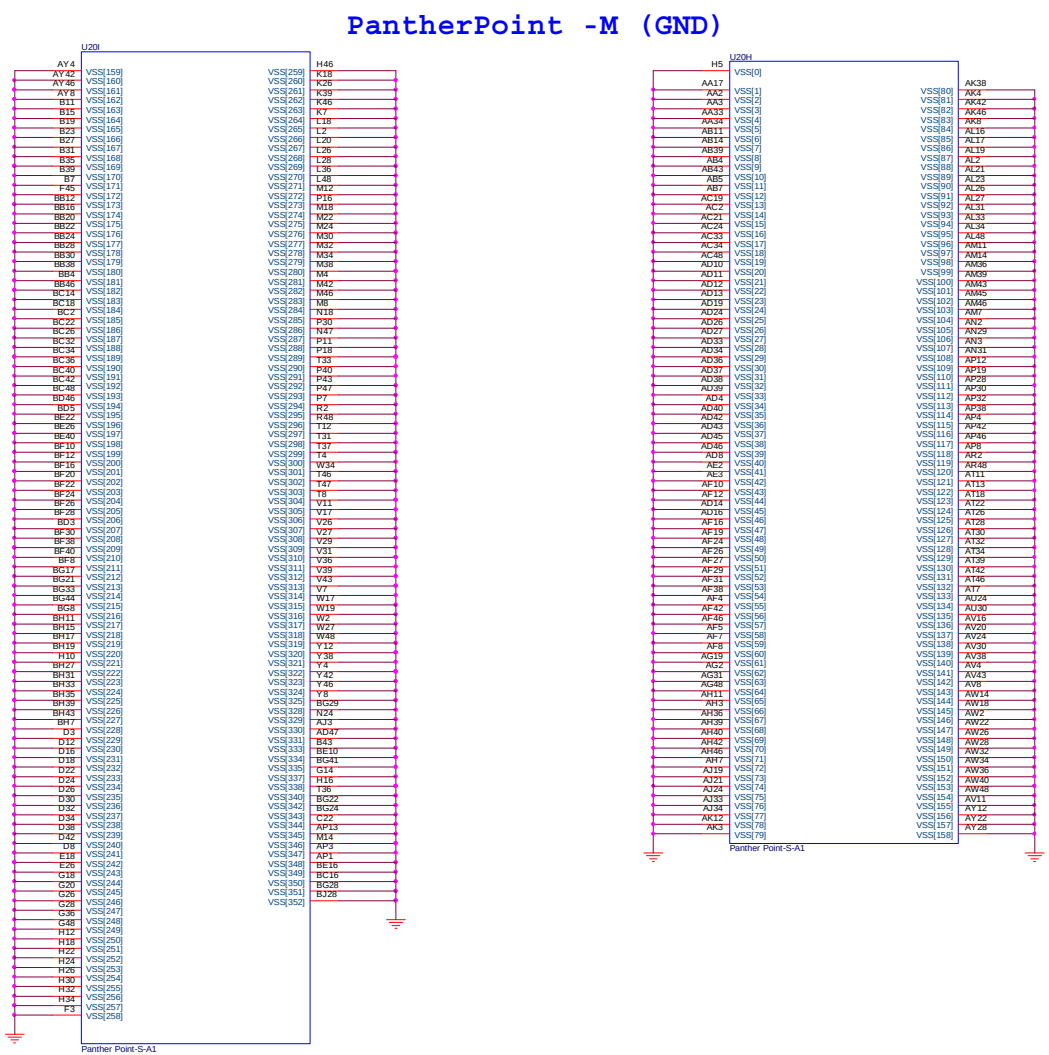
PCH 8/9 - POWER

Sheet 25 of 48
PCH 8/9 - POWER



PantherPoint power supply range		
Min	Voltage	Max
1.00V	1.05V	1.10V
1.43V	1.5V	1.58V
1.71V	1.8V	1.89V
3.14V	3.3V	3.47V
4.75V	5V	5.25V

PCH 9/9 - GND

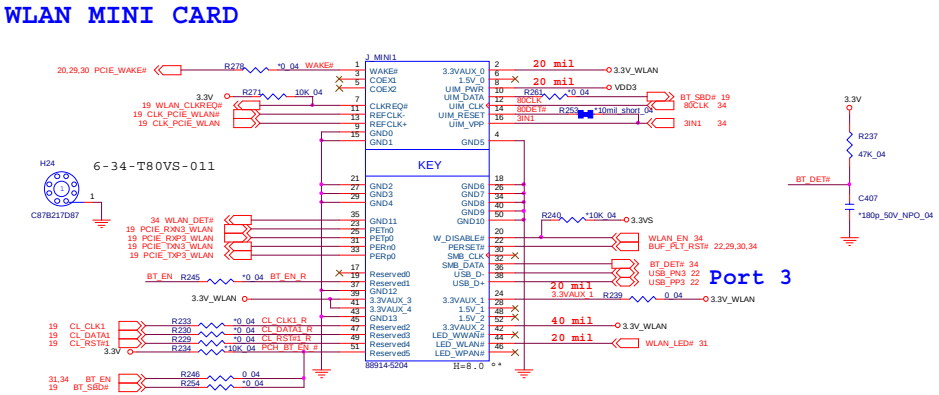


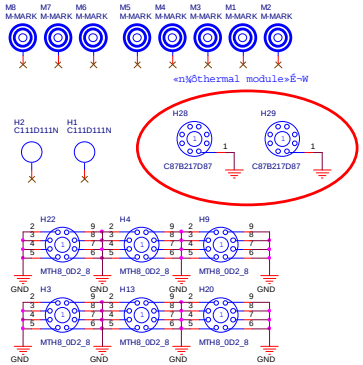
Voltage Rail	Voltage	S0 Iccmax Current (A)
V_CPU_IO	1.05	1 (mA)
V5REF	5	1 (mA)
V5REF_Sus	5	1 (mA)
Vcc3_3	3.3	0.266
VccADAC3	1.05	1 (mA)
VccADPLLA	1.05	0.08
VccADPLLB	1.05	0.08
VccCore	1.05	1.3
VccDMI	1.1	0.042
VccIO	1.05	2.925
VccASW	1.05	1.01
VccSPI	3.3	0.020
VccDSW3_3	3.3	2 (mA)
VccDFTERM	1.8	0.19
VccSus3_3	3.3	0.097
VccSusHDA	3.3	1 (mA)
VccVRM	1.5	0.16
VccClKDMI	1.05	0.02
VccSSC	1.05	0.095
VccDIFFCLKN	1.05	0.055
VccALVDS	3.3	1 (mA)
VccTX_LVDS	1.8	0.06

Sheet 26 of 48
PCH 9/9 - GND

WLAN, 3G, MINI PCIE

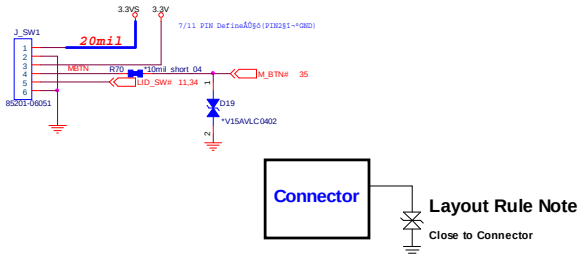
Sheet 27 of 48
WLAN, 3G, MINI PCIE



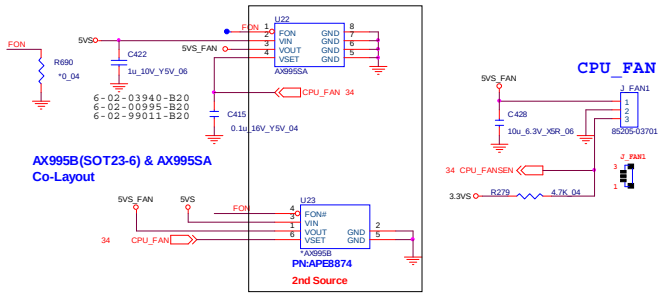


CCD, TPM, MULTI CON

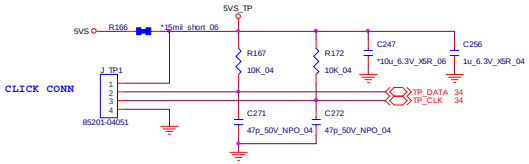
FOR POWER SW BOARD



CPU FAN CONTROL

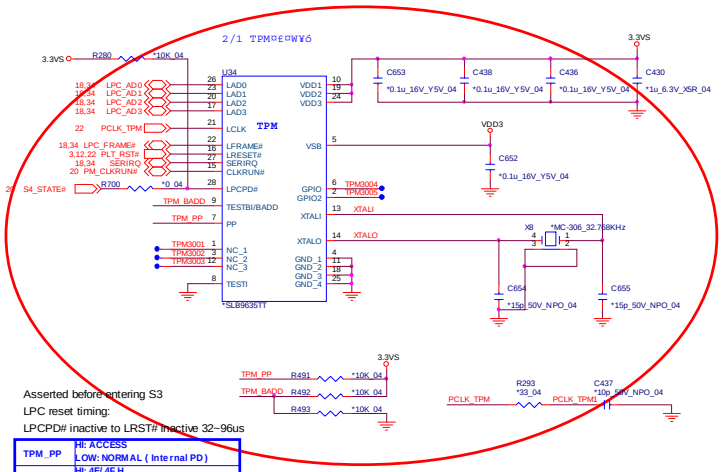


FOR CLICK BOARD



TPM 1.2

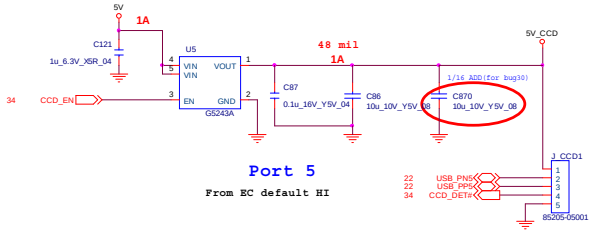
TPM Function ON	=WV6°s¥6:
	R459,U34,R280,C653,C438,C436 C430,C652,C654,C655,X8,R492



Asserted before entering S3
LPC reset timing:
LPCPD# inactive to LRST# inactive 32~96us

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

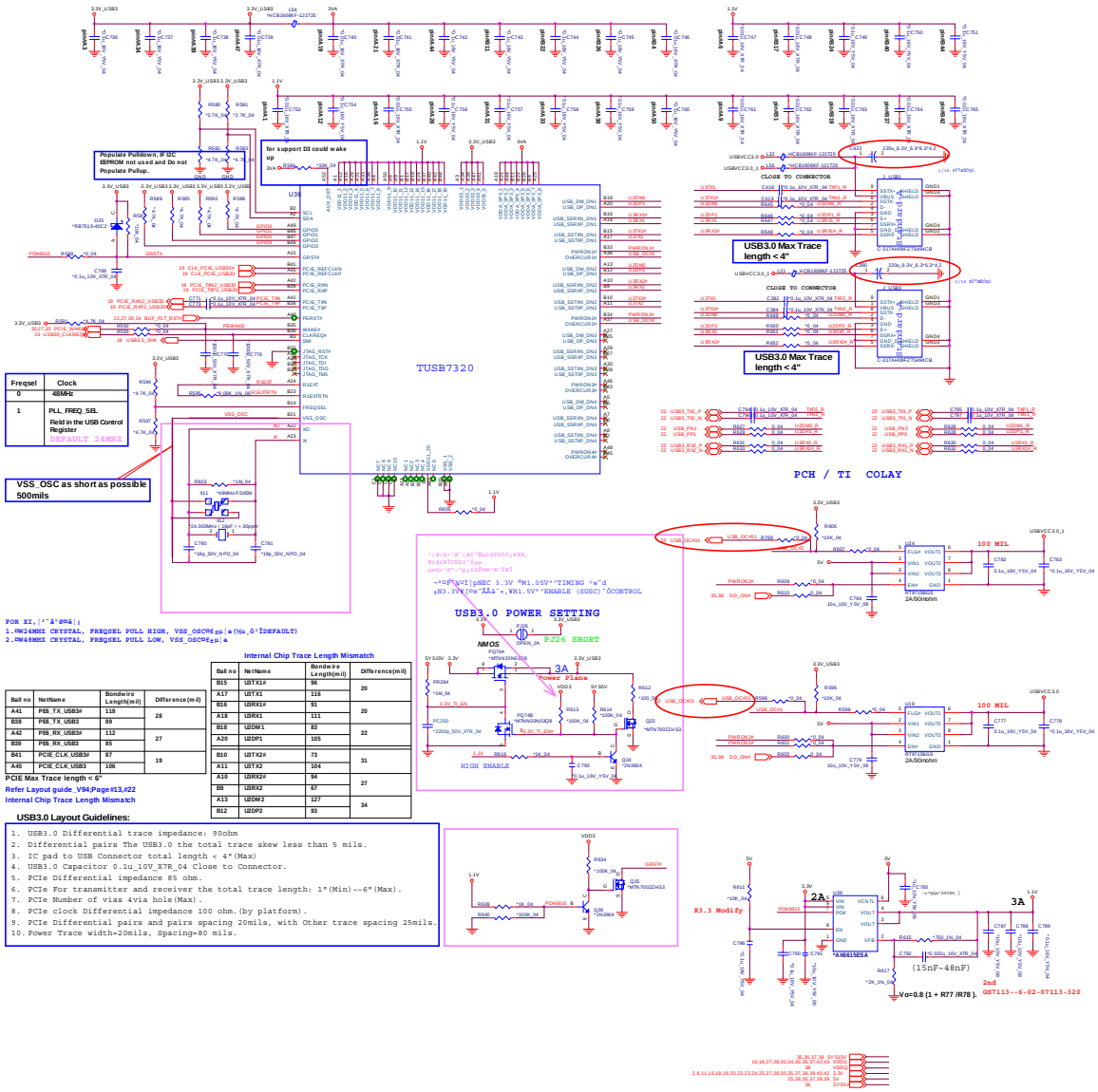
CCD



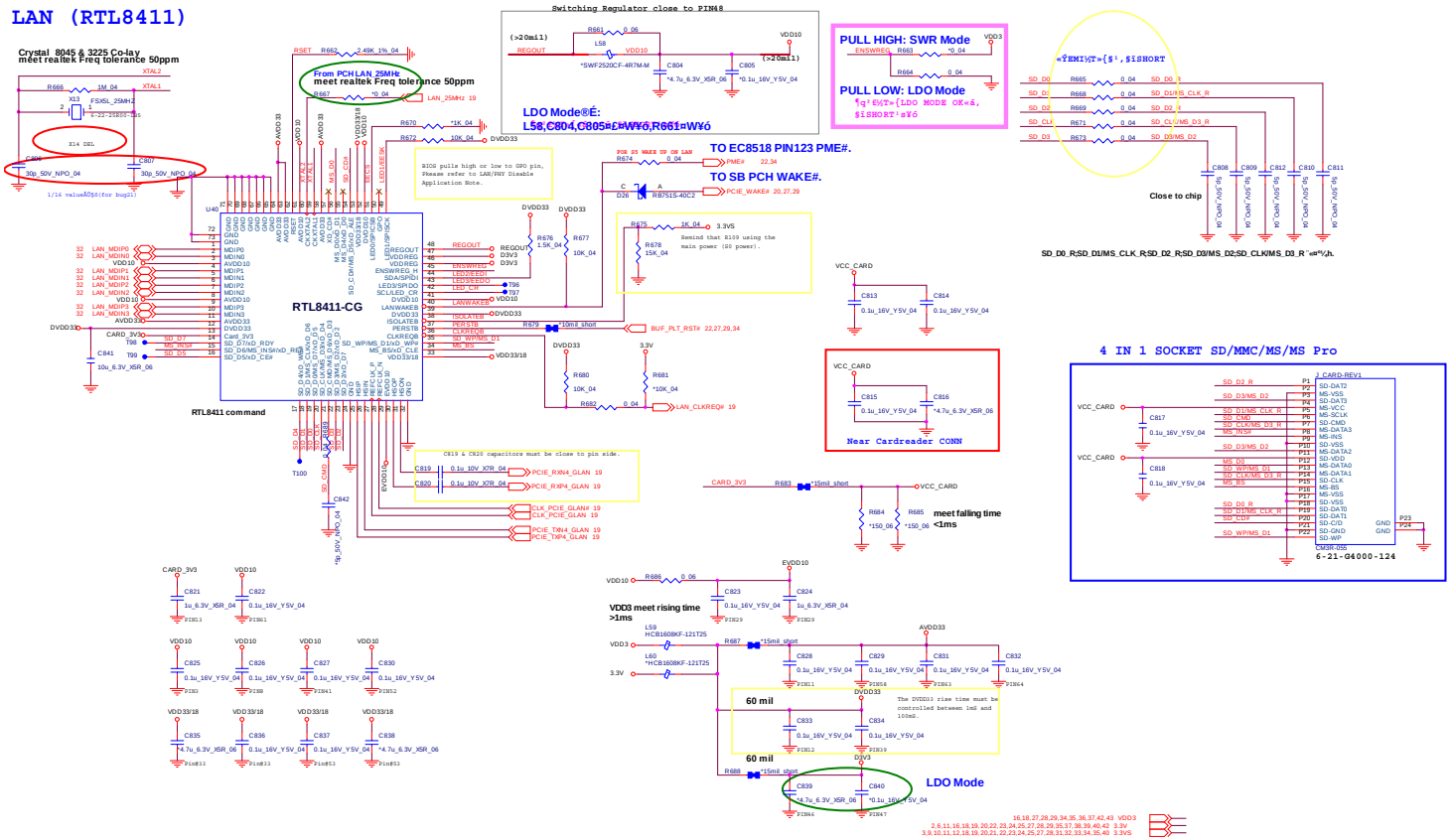
Sheet 28 of 48
CCD, TPM, MULTI CON

USB3.0

Sheet 29 of 48
USB3.0



Card Reader, LAN (RTL8411)

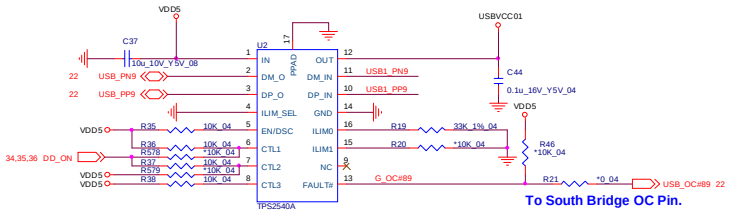


Sheet 30 of 48
Card Reader, LAN (RTL8411)

LED, USB CHARGE

Sheet 31 of 48
LED, USB CHARGE

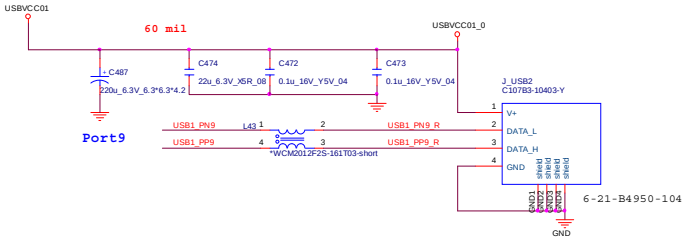
USB Charge Port



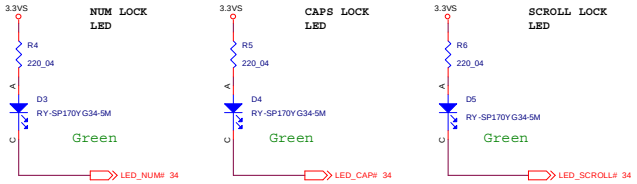
To South Bridge OC Pin.

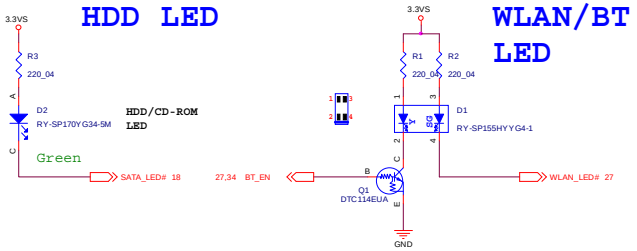
		CTL1	CTL2	CTL3
Mode 1	Power off & Discharge	0	0	0
Mode 2	Power off & Charge	0	1	1
Mode 3	Power off & Charge	1	0	1
Mode 4	Power on & Charge	1	1	1

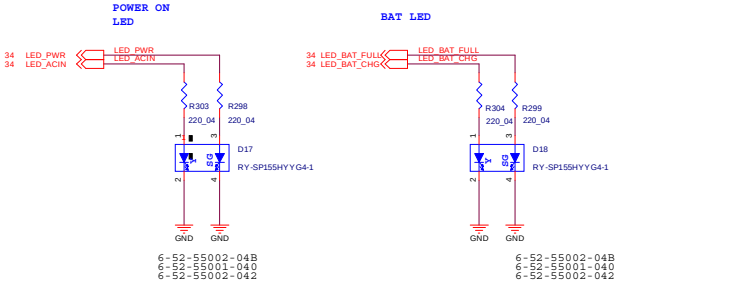
CTL1 CTL2 CTL3: 0 0 0-----> Out discharge, power switch Off
CTL1 CTL2 CTL3: 0 x 1-----> Dedicated charging port, auto-detect
CTL1 CTL2 CTL3: 1 0 1-----> Dedicated charging port, Divider Mode only
CTL1 CTL2 CTL3: 1 1 1-----> Charging downstream port, BC1.2.

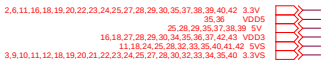


LED

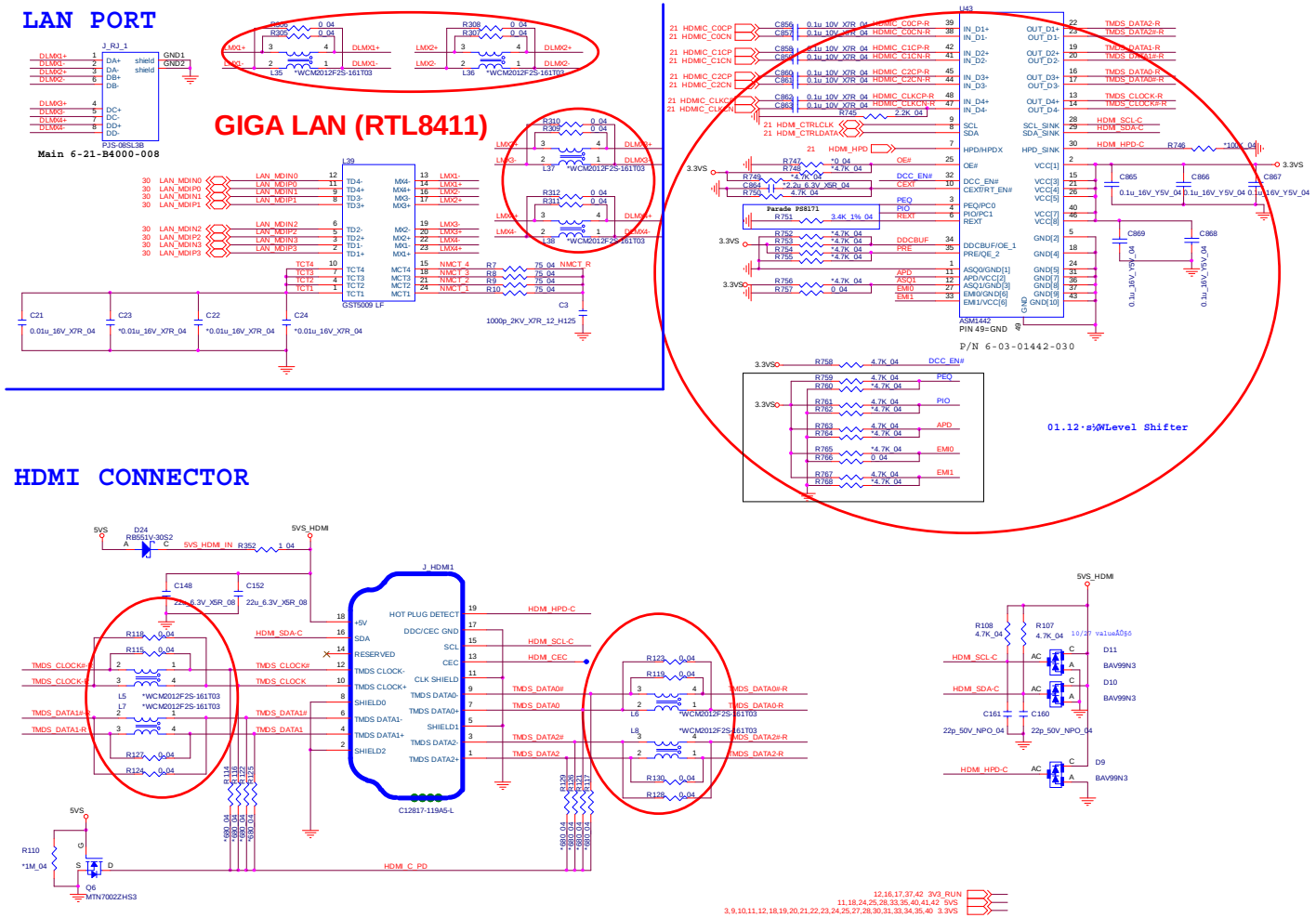








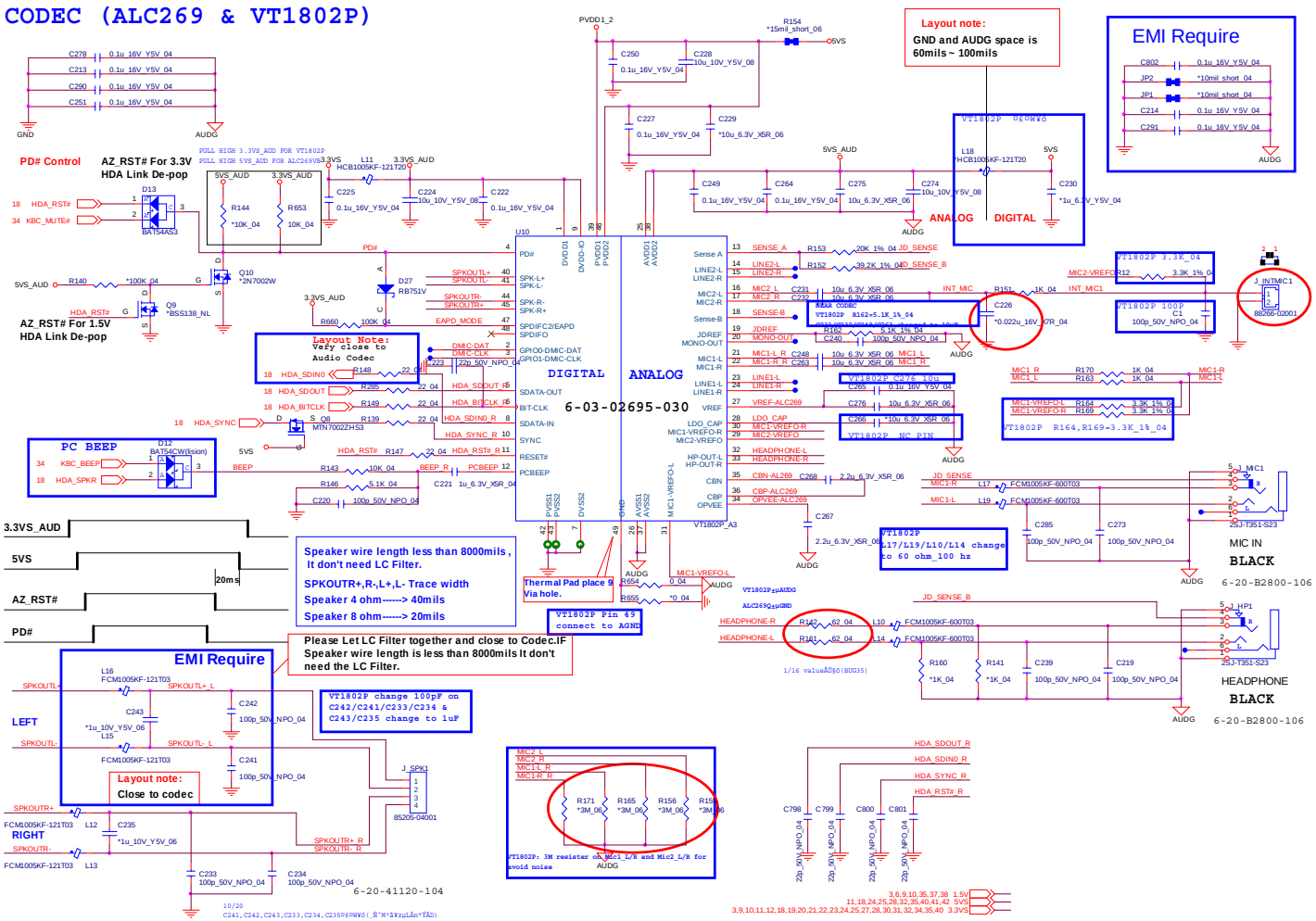
HDMI, RJ45



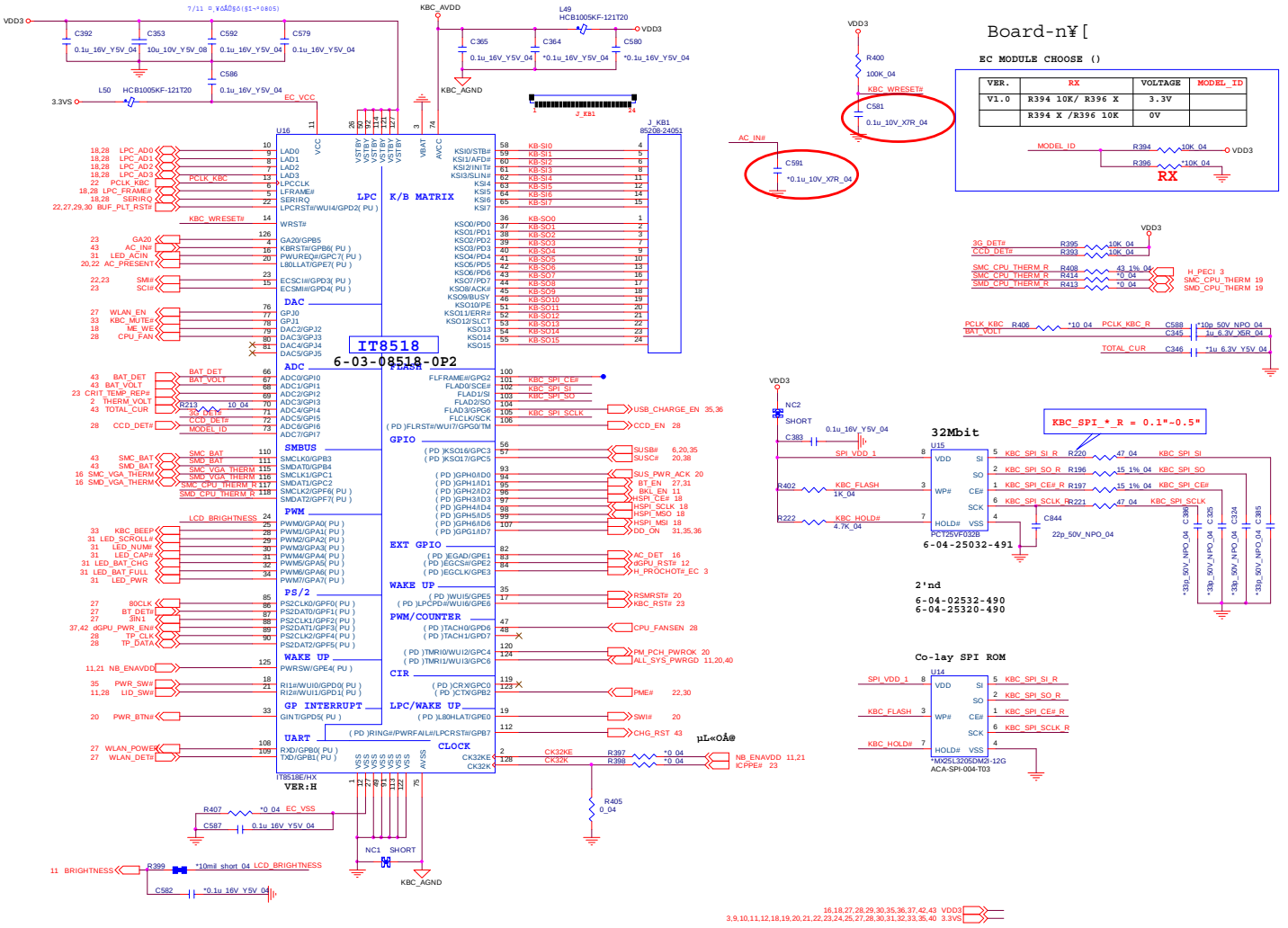
Sheet 32 of 48
HDMI, RJ45

AUDIO CODEC VT1802P

Sheet 33 of 48
AUDIO CODEC
VT1802P



KBC-ITE IT8518E

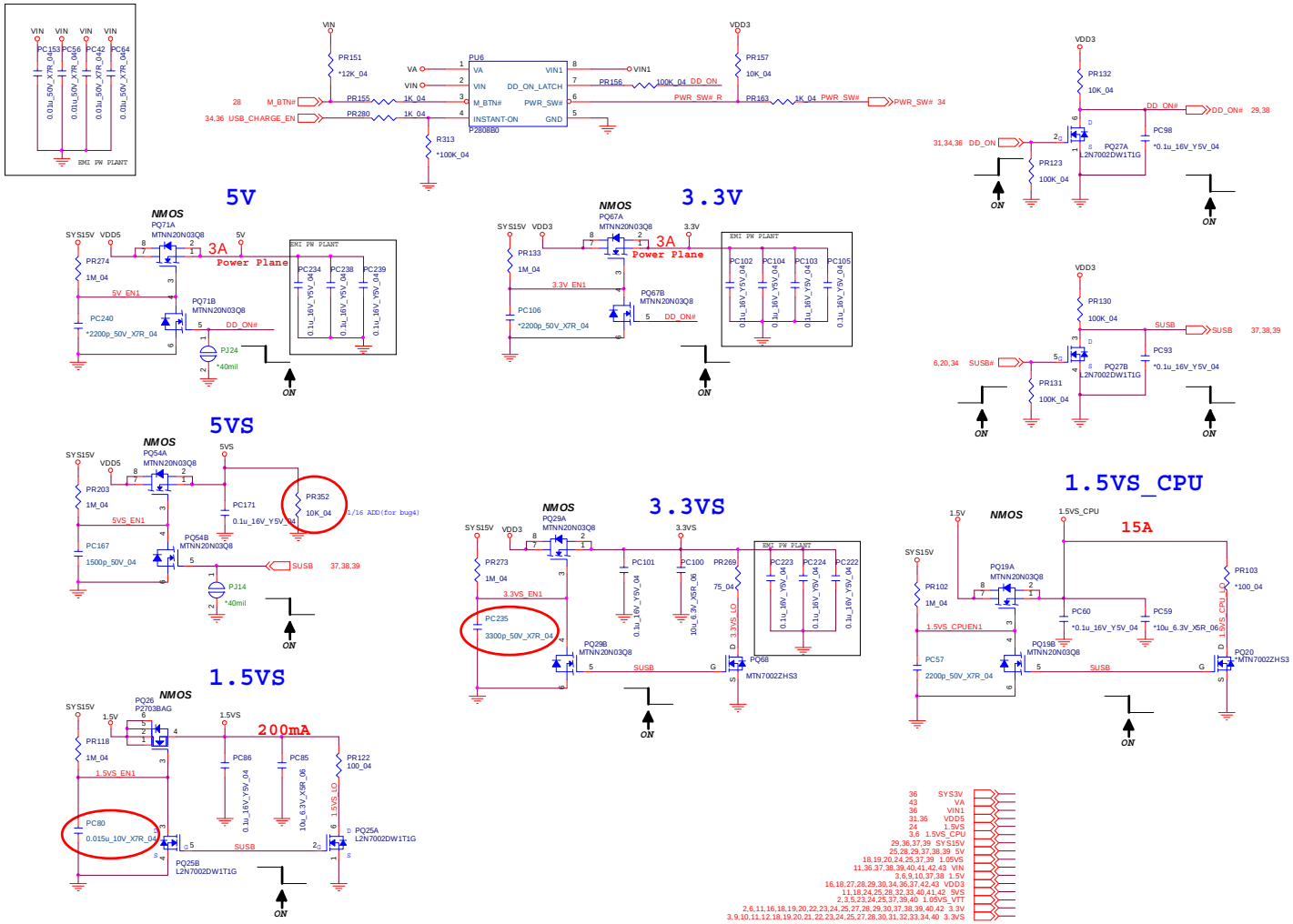


Sheet 34 of 48
KBC-ITE IT8518E

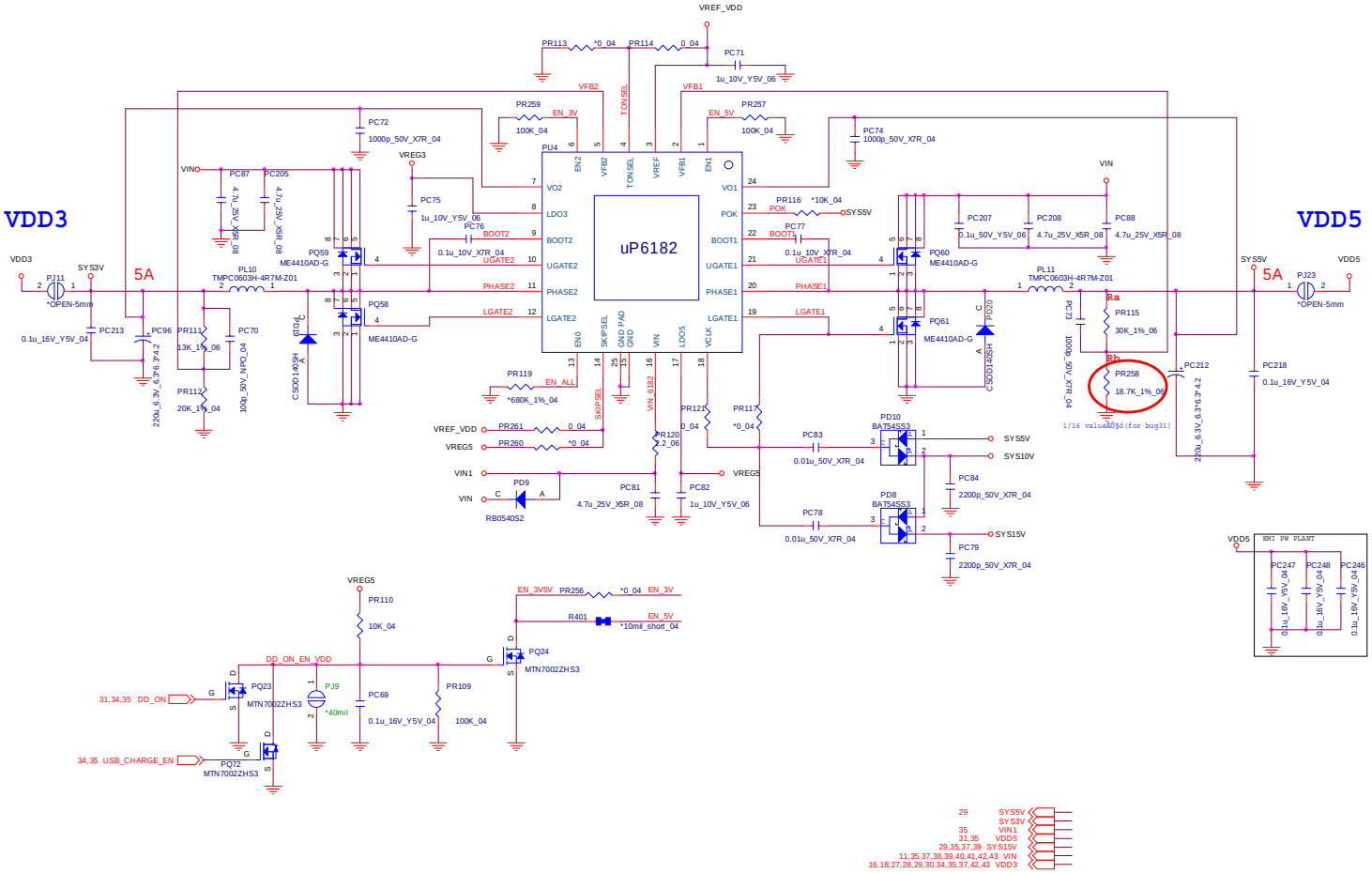
B.Schematic Diagrams

5VS, 3VS, 3.3VM, 1.5VS CPU

Sheet 35 of 48
5VS, 3VS, 3.3VM, 1.5VS CPU



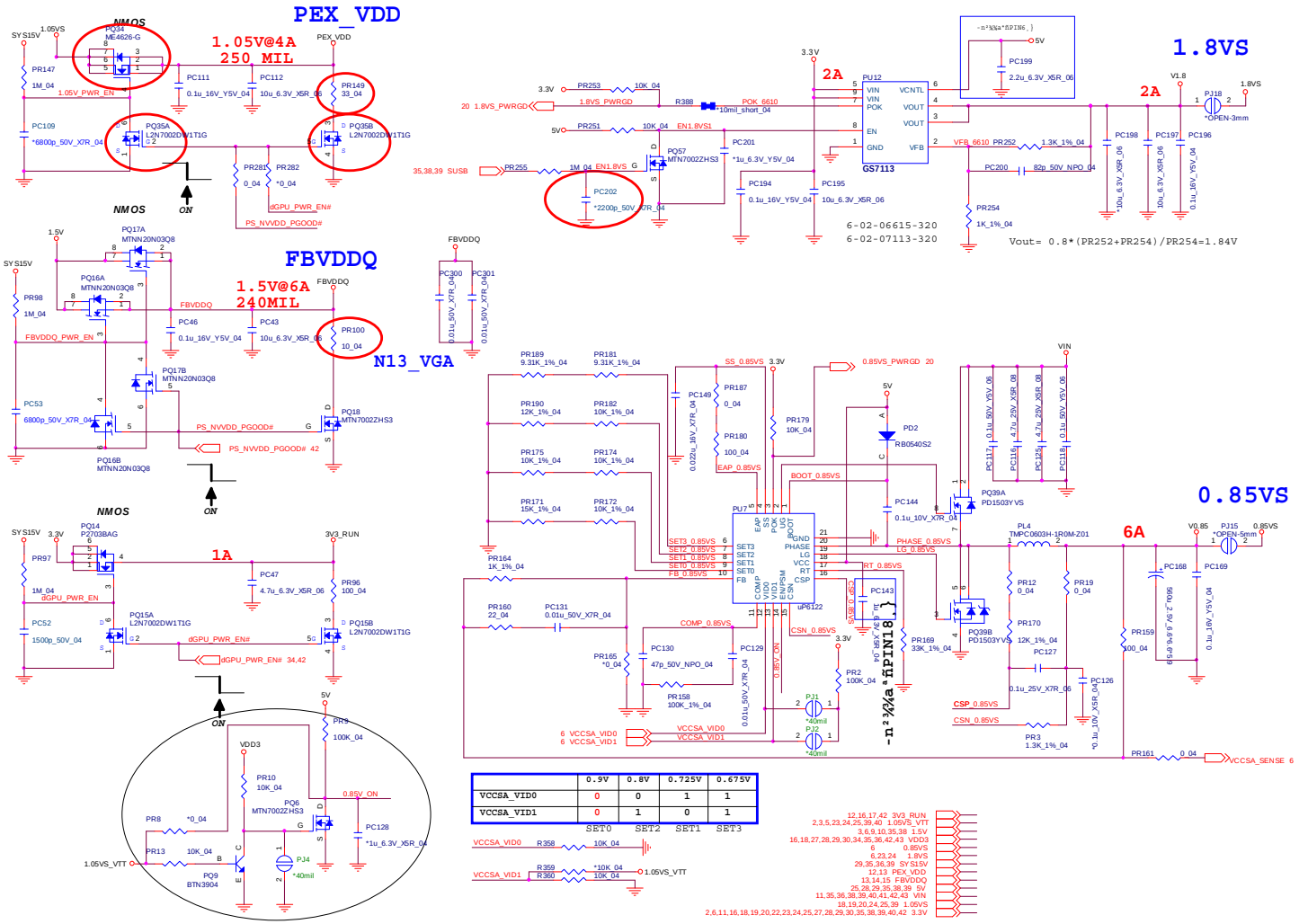
VDD3, VDD5



Sheet 36 of 48
VDD3, VDD5

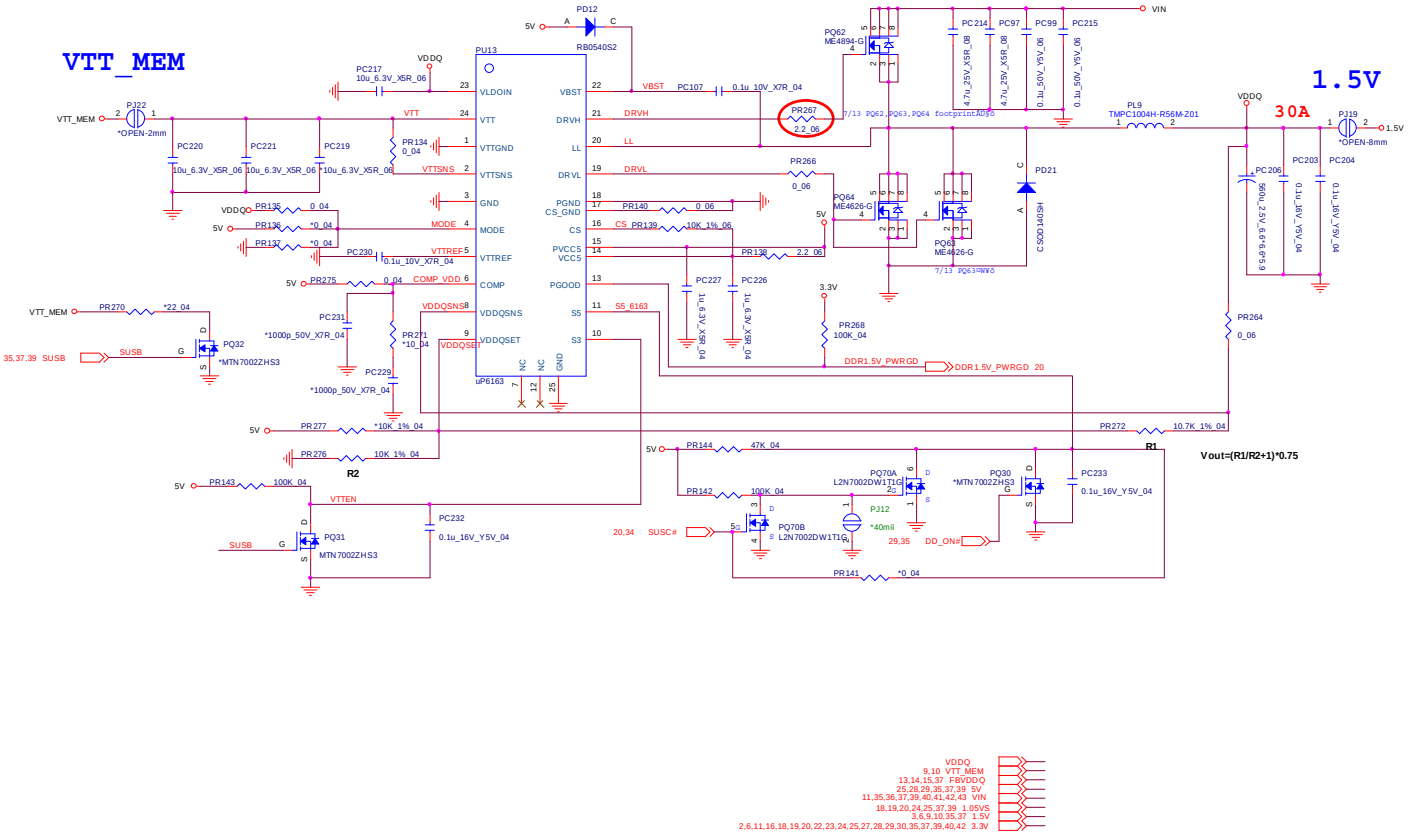
Power 0.85VS, 1.8VS

Sheet 37 of 48
Power 0.85VS, 1.8VS



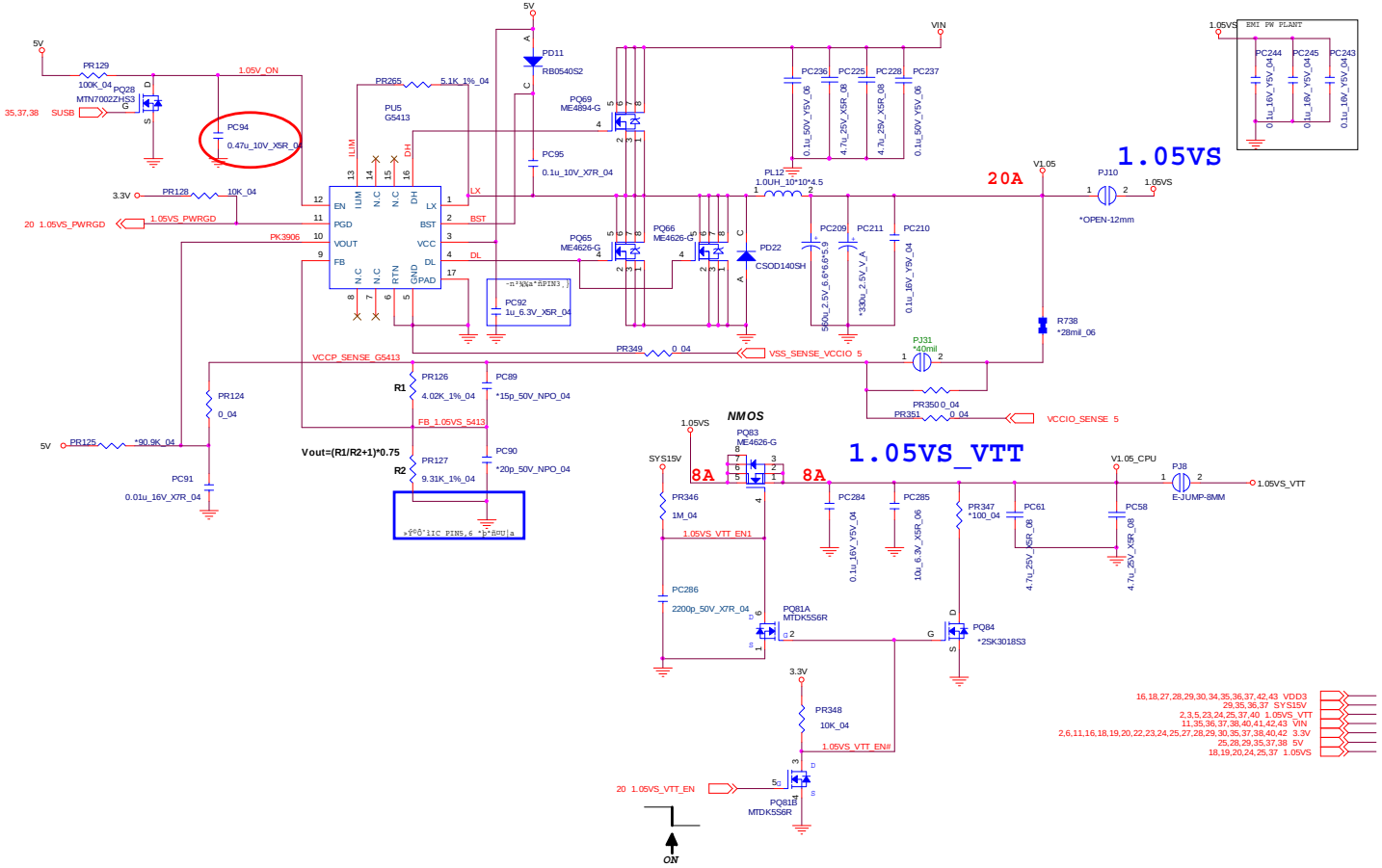
	0.9V	0.8V	0.725V	0.675V
VCCSA_VID0	0	0	1	1
VCCSA_VID1	0	1	0	1
	SET0	SET2	SET1	SET3

POWER 1.5V

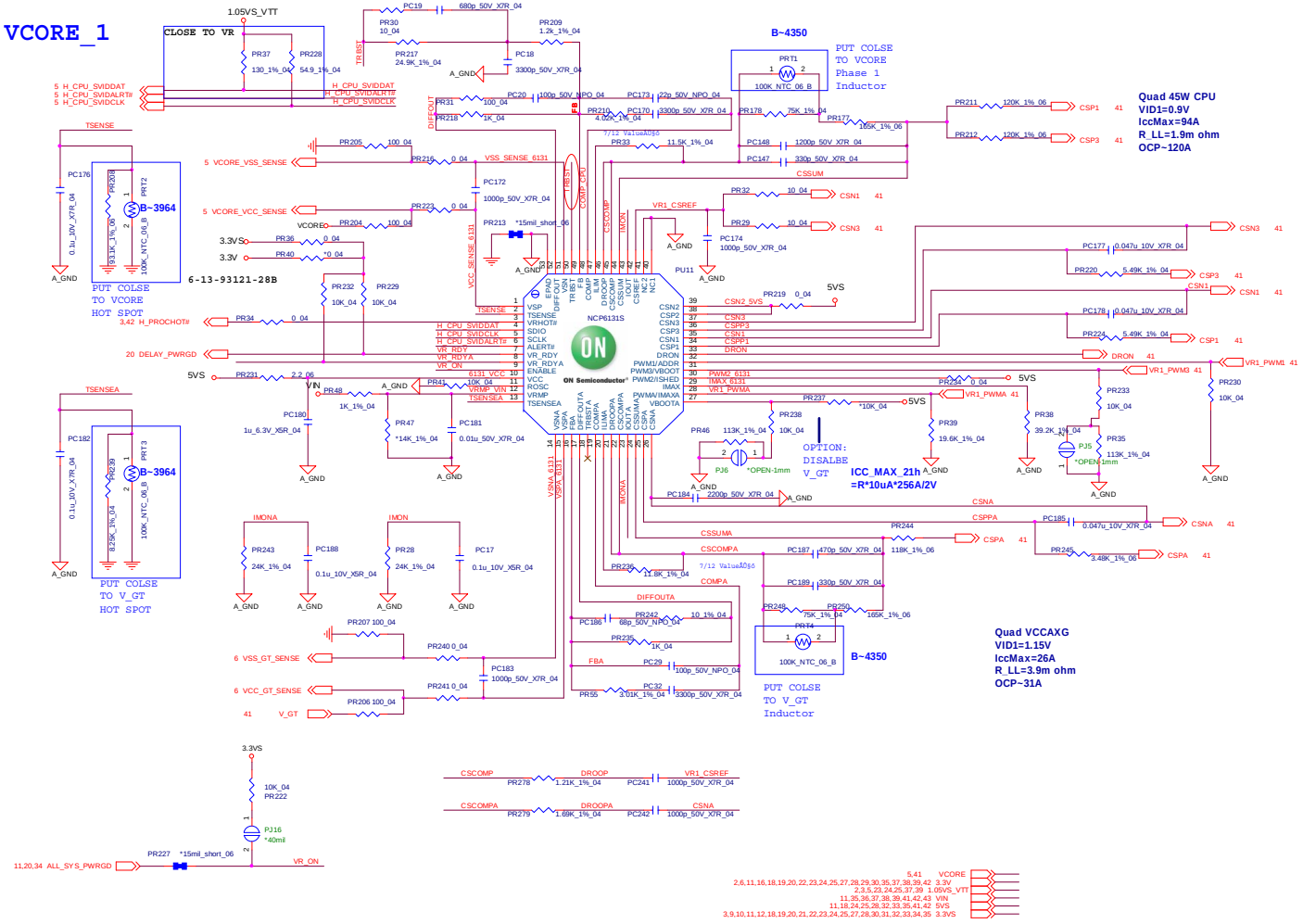

VTT_MEM
1.5V
30A
Vout=(R1/R2+1)*0.75
R1
R2
uP6163
PU13
PQ32
PQ31
PQ62
PQ63
PQ64
PQ70A
PQ70B
PQ30
PD12
PD21
PL9
PJ22
PJ19
PJ12
PR267
PR266
PR264
PR268
PR270
PR271
PR272
PR275
PR276
PR277
PR134
PR135
PR136
PR137
PR138
PR139
PR140
PR142
PR143
PR144
PR141
PC107
PC214
PC97
PC99
PC215
PC217
PC220
PC221
PC219
PC230
PC231
PC229
PC227
PC226
PC232
PC233
PC206
PC203
PC204
VIN
VDDQ
5V
3.3V
VTT
VTTEN
SUSB
SUSC#
DD_ON#
DDR1.5V_PWRGD
VDDQSNS
VDDQSET
COMP_VDD
MODE
VTTSNS
VTTREF
CS_PR139
S5_6163
*OPEN-2mm
*OPEN-8mm
*MTN7002ZHS3
L2N7002DW1T1G
TMPC1004H-R56M-Z01
CSCD040H
ME4626-G
ME4894-G

POWER 1.05VS/1.05VS VTT

Sheet 39 of 48
POWER 1.05VS/
1.05VS VTT



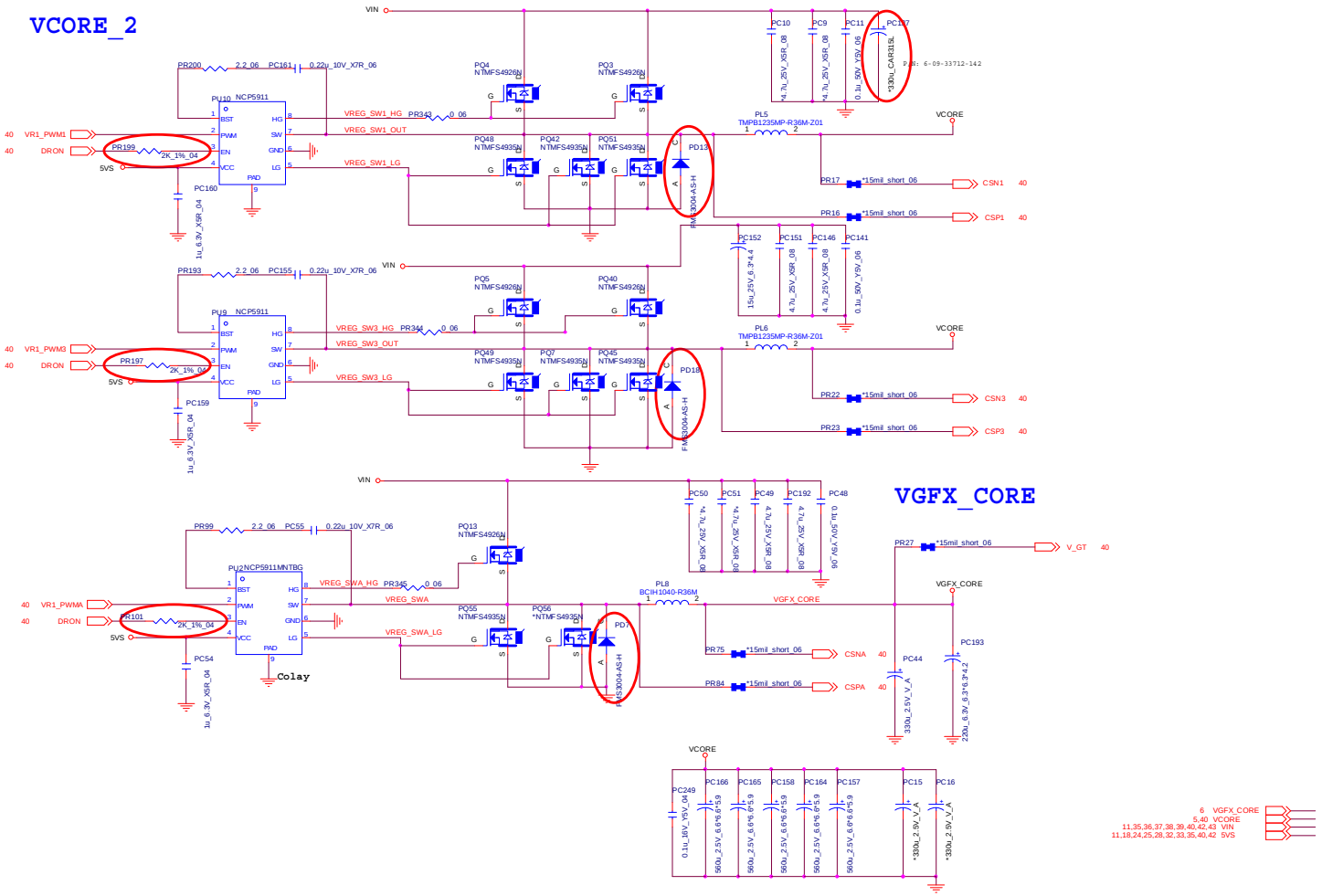
POWER VCORE1



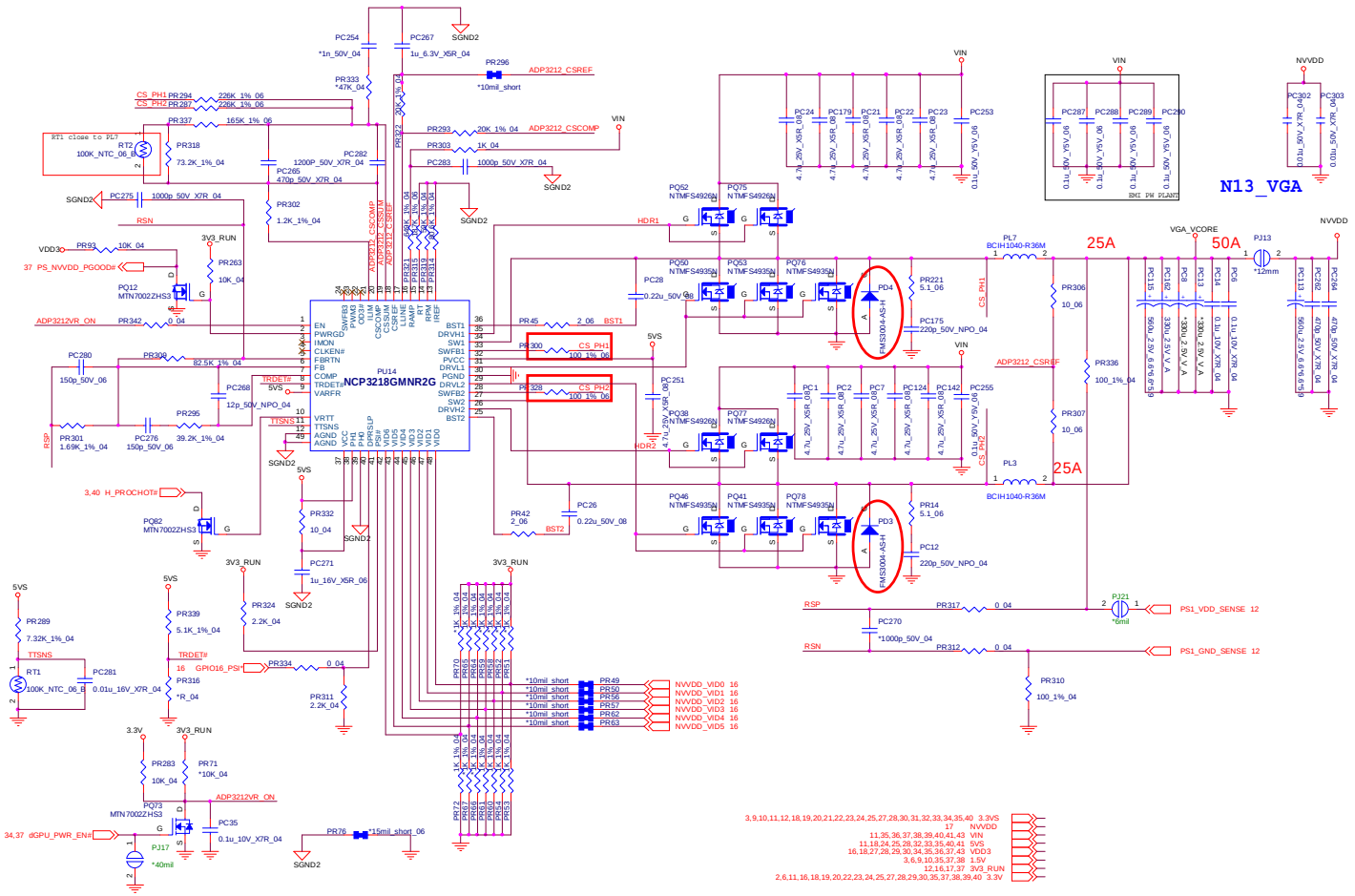
Sheet 40 of 48
POWER VCORE1

POWER VCORE2

Sheet 41 of 48
POWER VCORE2



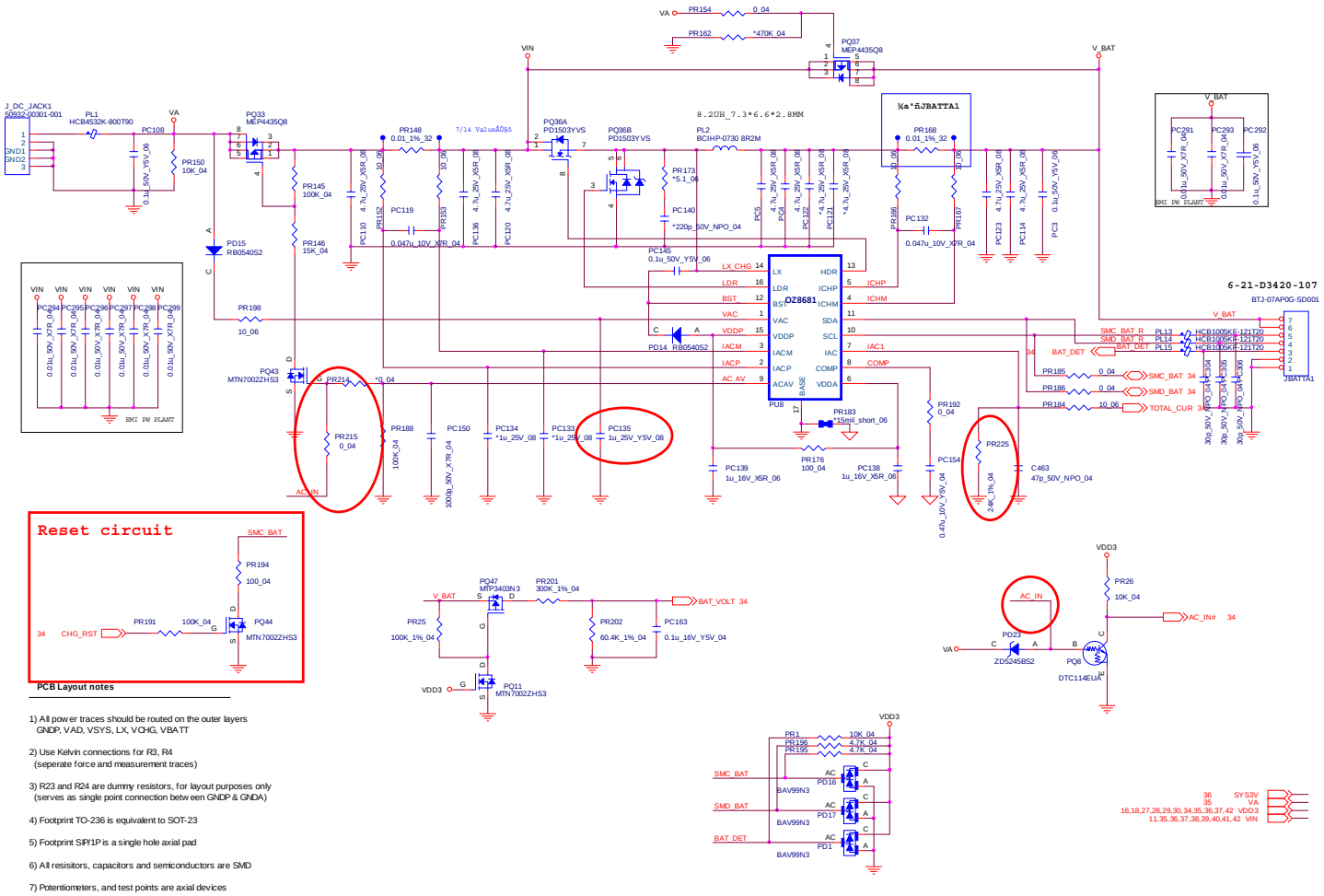
Power VGA NVVDD



Sheet 42 of 48
Power VGA NVVDD

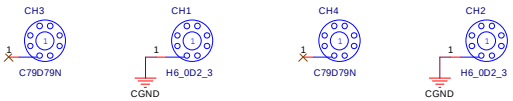
AC IN, CHARGER

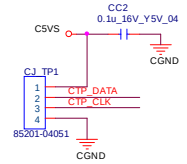
Sheet 43 of 48
AC IN, CHARGER



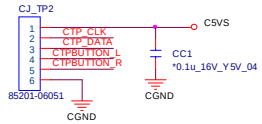
CLICK BOARD

CLICK BOARD

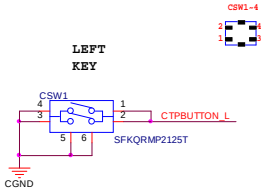




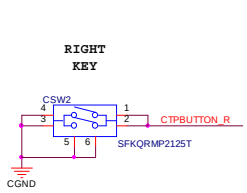
6-20-94A50-104
6-20-94AA0-104
6-20-94A70-104



6-21-91A00-106



6-53-3050B-241

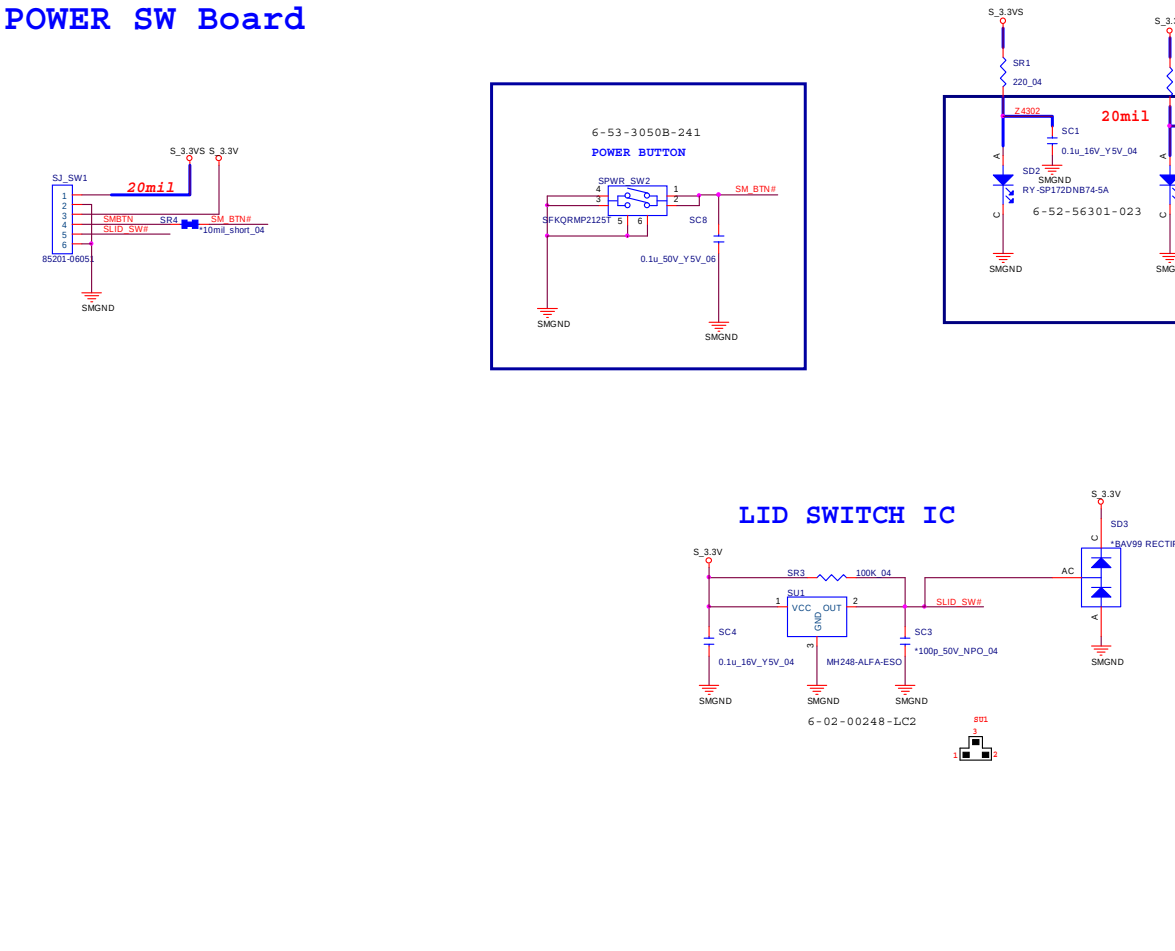


6-53-3050B-241

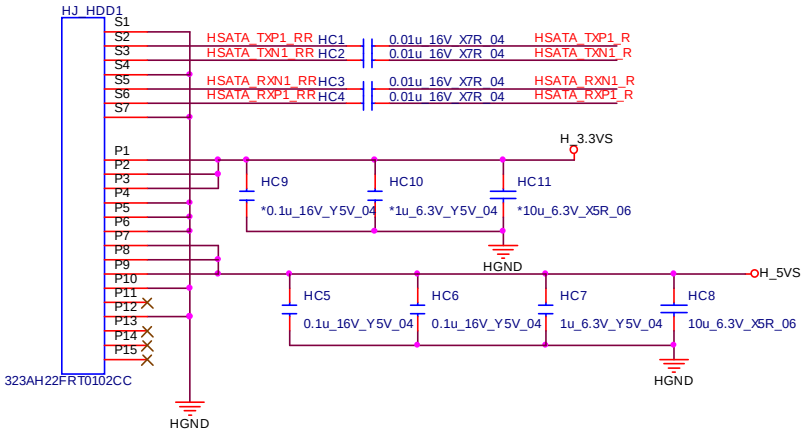
Sheet 44 of 48
CLICK BOARD

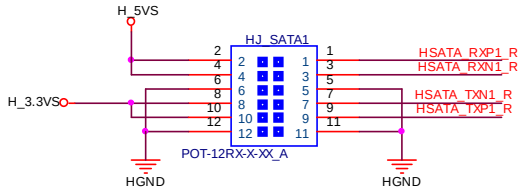
POWER SW BOARD

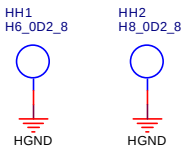
Sheet 45 of 48
POWER SW
BOARD



HDD BOARD



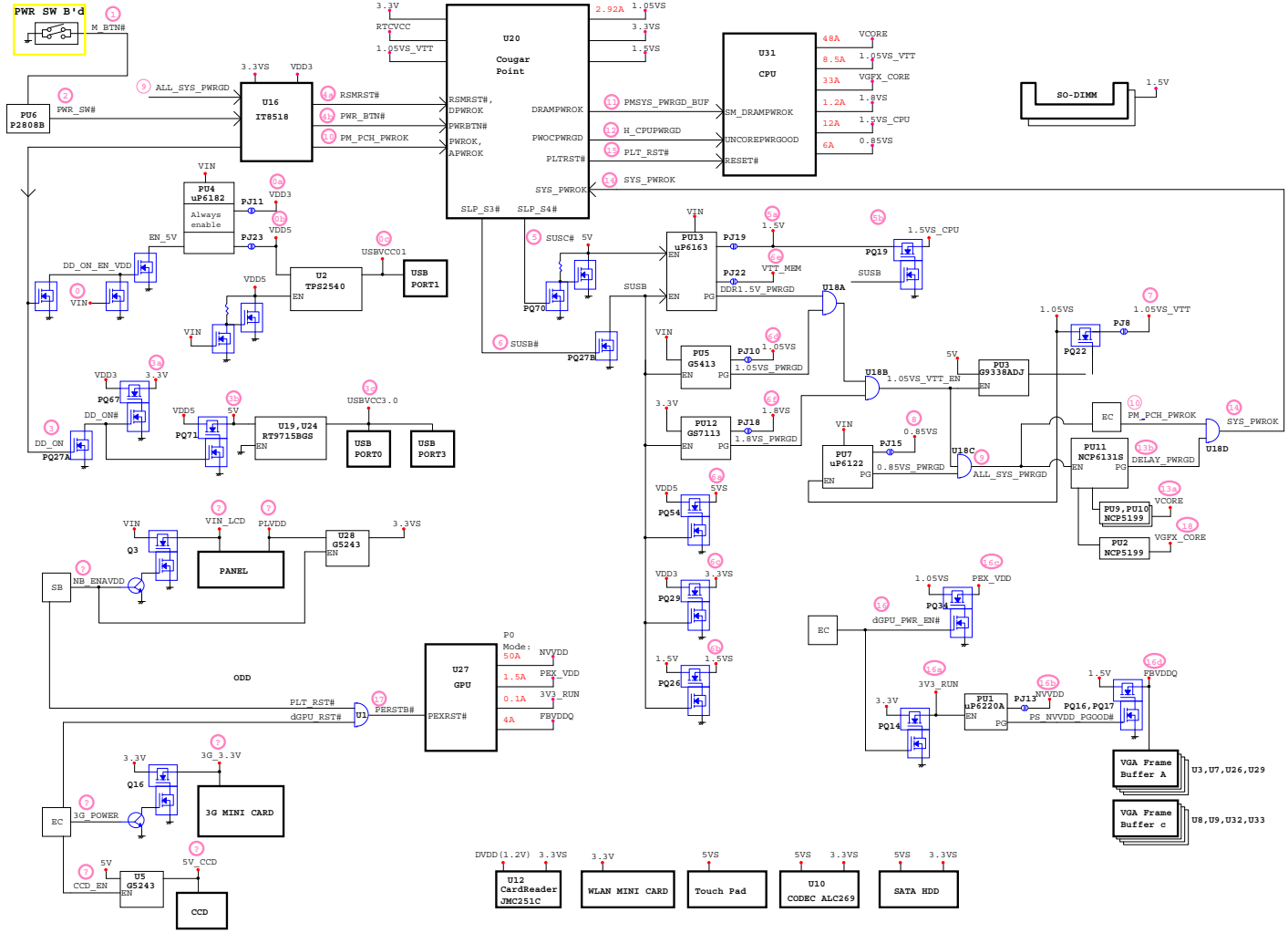




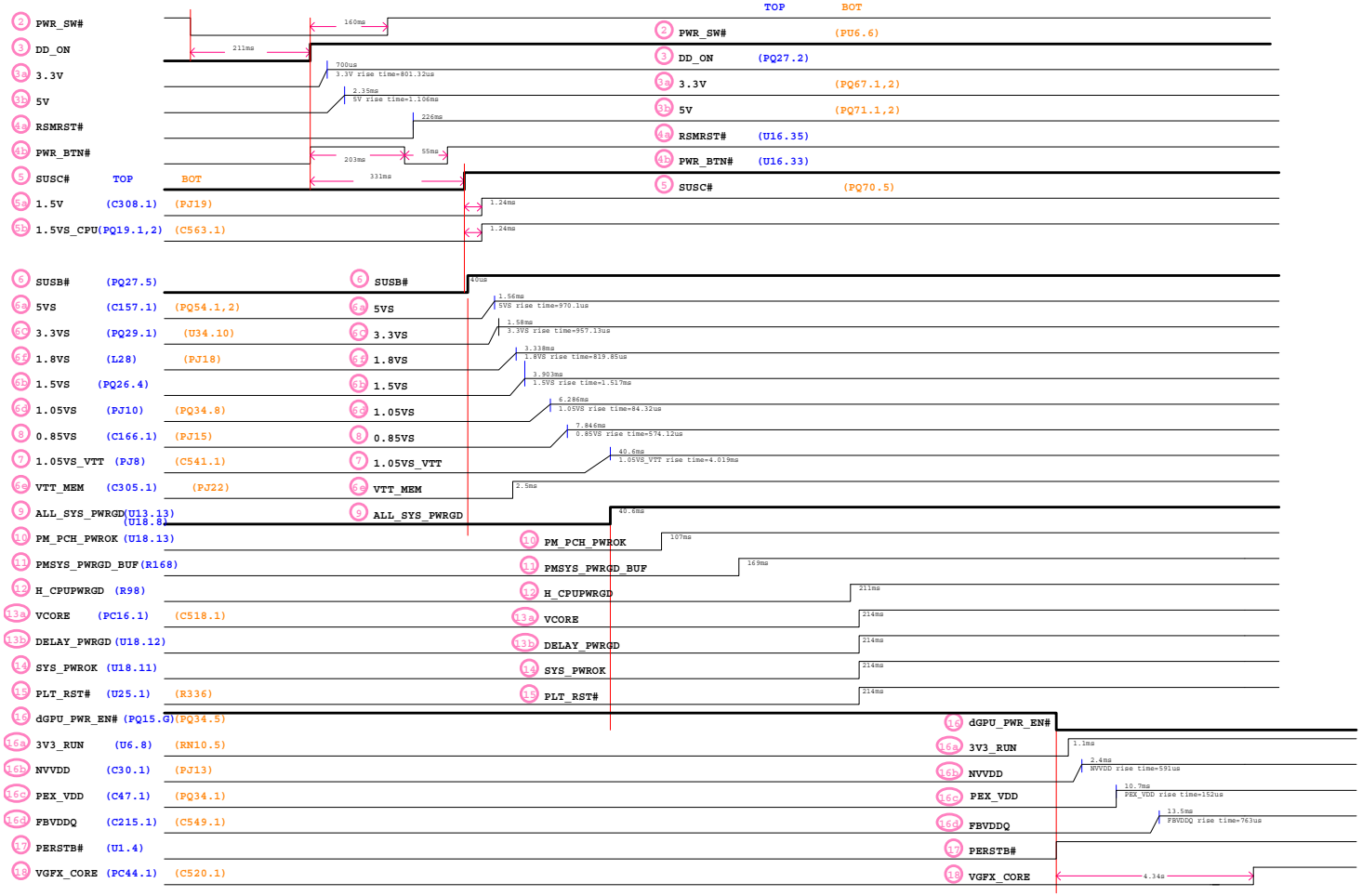
Sheet 46 of 48
HDD BOARD

Power Diagram

Sheet 47 of 48
Power Diagram



Power On SEQ



Sheet 48 of 48
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).

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.