

SERVICE MANUAL

notebook

W515GU



Notebook Computer

W515GU

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 **W515GU** 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, 2.1A (**40 Watts**) minimum AC/DC Adapter.

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.

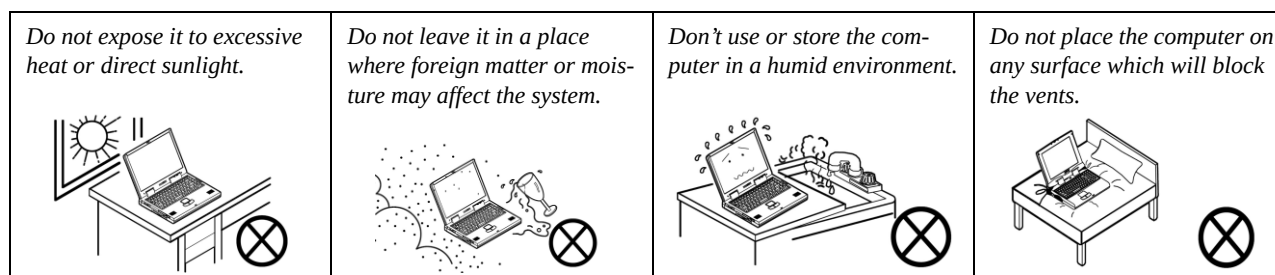
Instructions for Care and Operation

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

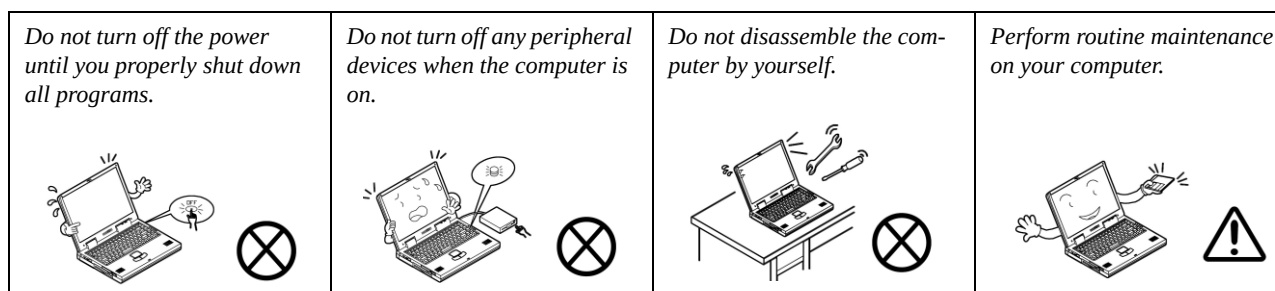
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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.

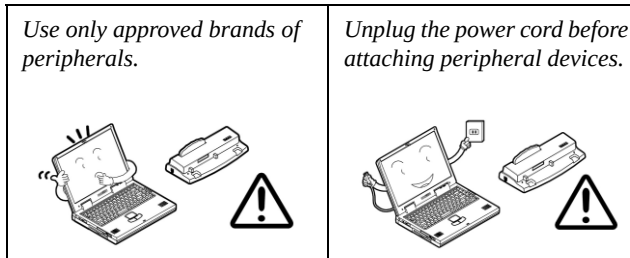


3. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



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 Warning

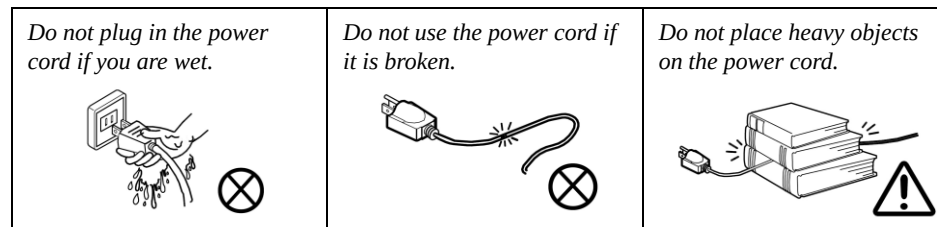
Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord).

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.



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.

Preface

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 right 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".

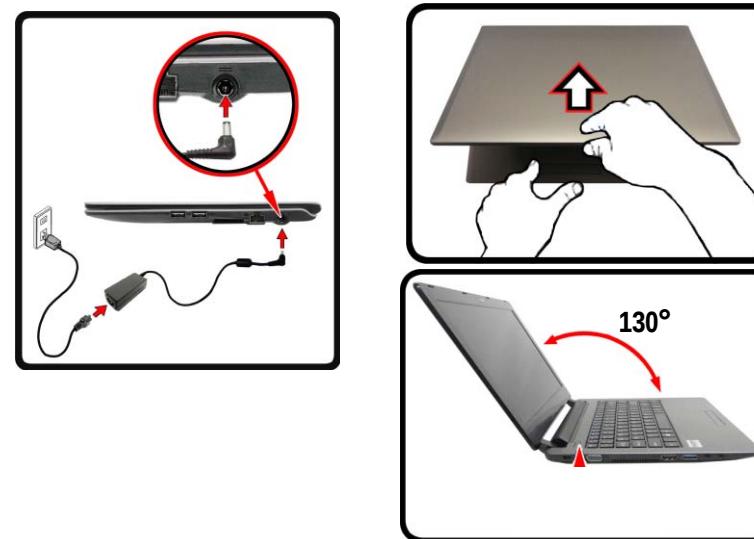


Figure 1
Opening the Lid/LCD/Computer with
AC/DC Adapter Plugged-In

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **W515GU** 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. *Windows 10*, 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 **W515GU** 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 Options

Intel® Pentium® Processor

Silver N5000 (1.10GHz)

4MB Smart Cache, 14nm, DDR4-2400MHz, TDP 6W

Intel® Celeron® Processor

N4100 (1.10GHz), N4000 (1.10GHz)

4MB Smart Cache, 14nm, DDR4-2400MHz, TDP 6W

BIOS

64Mb SPI Flash ROM

Insyde BIOS

LCD

11.6" (29.46cm), 16:9, HD (1366x768) (Thickness: 3.6mm)

Memory

One 260 Pin SO-DIMM Socket Supporting **DDR4 2400 MHz** Memory

Memory Expandable up to 8GB

Compatible with 4GB or 8GB Modules

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

Video Adapter

Intel GPU (CPU integrated)

Intel HD Graphics 605 (Pentium CPU integrated)

Dynamic Frequency

Intel Dynamic Video Memory Technology

Microsoft DirectX®12 Compatible

Intel HD Graphics 600 (Celeron CPU integrated)

Dynamic Frequency

Intel Dynamic Video Memory Technology

Microsoft DirectX®12 Compatible

Storage

One Changeable 2.5" 7mm (h) SATA HDD/SSD

(Factory Option) eMMC 32GB/64GB/128GB

Pointing Device

Built-in Touchpad

Keyboard

"WinKey" keyboard (with embedded numeric keypad)

Audio

High Definition Audio Compliant Interface

2 * Built-In Speakers

Built-In Microphone

Security

Security (Kensington® Type) Lock Slot

BIOS Password

Intel PTT for Systems Without TPM Hardware

Slots

Slot 1 (M.2) for WLAN and Bluetooth Combo Module

(Factory Option) Slot 2 for 4G LTE Module

Interface

Two USB 2.0 Ports

One USB 3.0 (USB 3.1 Gen 1) Port

One HDMI-Out Port

One External Monitor Port

One Microphone-In Jack

One Headphone-Out Jack

One RJ-45 LAN Jack

One DC-in Jack

Communication

Built-In Gigabit Ethernet LAN
1.0M HD PC Camera Module
(Factory Option) 4G LTE M.2 Module

WLAN/ Bluetooth M.2 Modules:

(Factory Option) Intel® Dual Band Wireless-AC 9260 Wireless LAN (802.11ac) + Bluetooth
(Factory Option) Intel® Dual Band Wireless-AC 9560 Wireless LAN (802.11ac) + Bluetooth
(Factory Option) Intel® Dual Band Wireless-AC 9462 Wireless LAN (802.11ac) + Bluetooth

Card Reader

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

Environmental Spec

Temperature

Operating: 5°C - 35°C
Non-Operating: -20°C - 60°C

Relative Humidity

Operating: 20% - 80%
Non-Operating: 10% - 90%

Power

Full Range AC/DC Adapter
AC Input: 100 - 240V, 50 - 60Hz
DC Output: 19V, 2.1A (40W)

Removable 3 Cell Smart Lithium-Ion Battery Pack, 31WH
(Factory Option) Removable 3 Cell Smart Lithium-Ion Battery Pack, 24WH

Dimensions & Weight

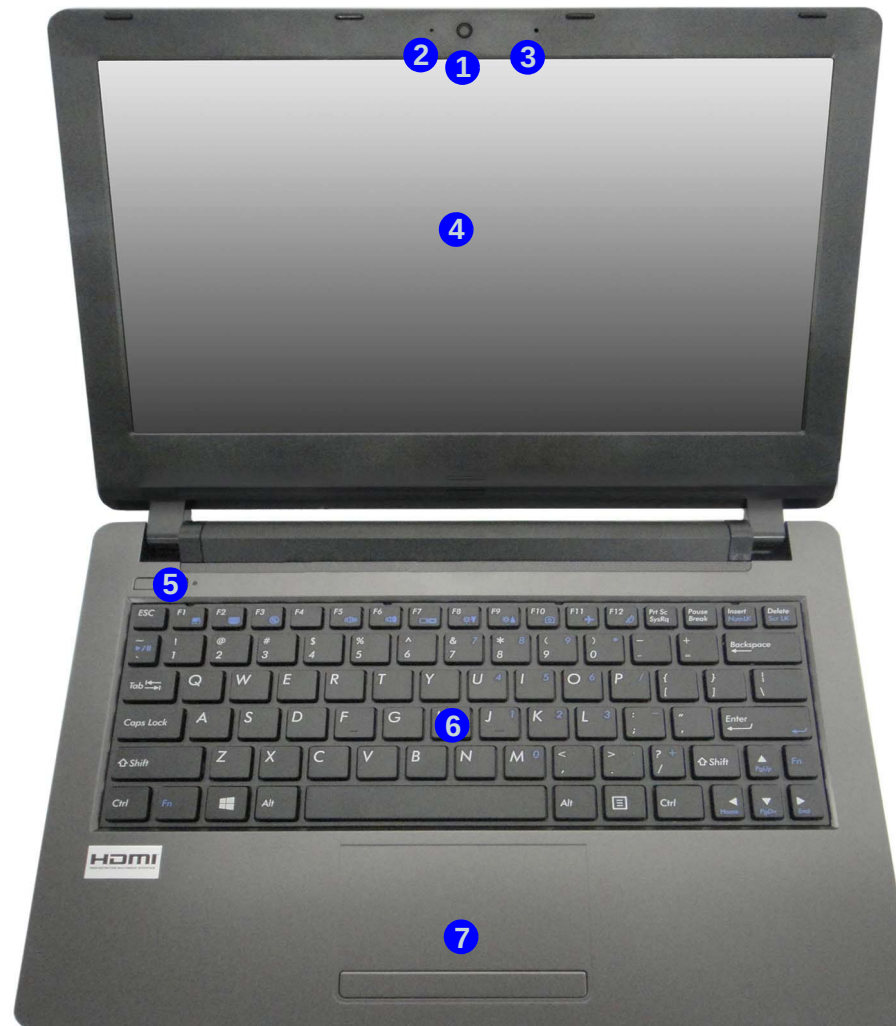
292.4mm (w) * 210.5mm (d) * 22.7mm (h)
(Height Excluding Battery Area)
1.2kg (Barebone with 31WH Battery)

Introduction

Figure 1
Top View

1. PC Camera
2. *PC Camera LED
**When the PC camera is in use, the LED will be illuminated in red*
3. Built-In Microphone
4. LCD
5. Power Button
6. Keyboard
7. Touchpad & Buttons

External Locator - Top View with LCD Panel Open



External Locator - Front & Right Side Views

Figure 2
Front View

1. LED Indicators

FRONT VIEW



RIGHT SIDE VIEW



Figure 3
Right Side View

1. USB 2.0 Ports
2. Multi-in-1 Card Reader
3. RJ-45 LAN Jack
4. DC-In Jack

Introduction

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. Security Lock Slot
2. External Monitor Port
3. Vent
4. HDMI-Out Port
5. USB 3.0/3.1 Port
6. Microphone-In Jack
7. Headphone-Out Jack

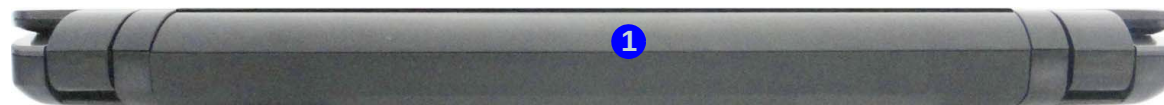
LEFT SIDE VIEW



Figure 5
Rear View

1. Battery

REAR VIEW



External Locator - Bottom View



Figure 6
Bottom View

1. Battery
2. Speakers
3. Fan Intake/Vent



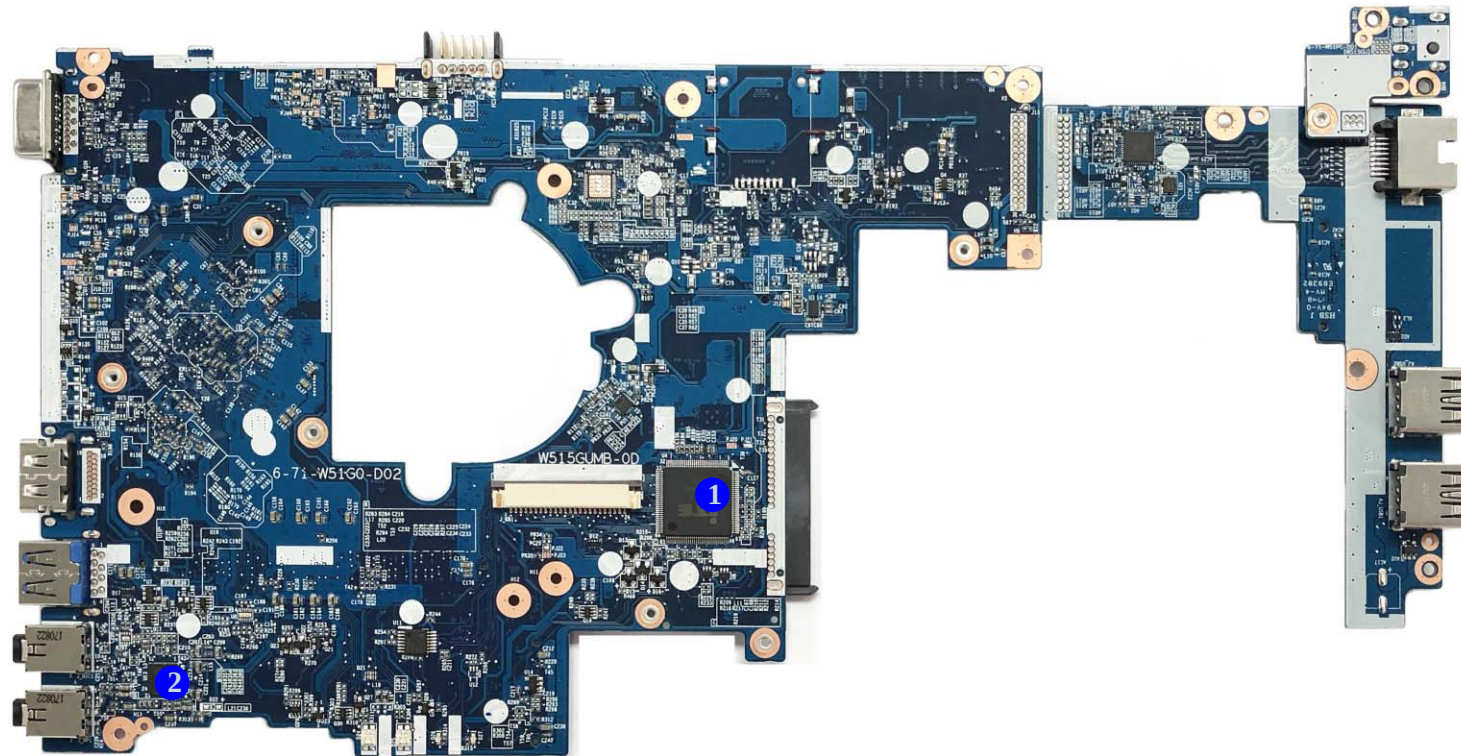
Overheating

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

Figure 7
Mainboard Top
Key Parts

1. KBC ITE IT8987E
2. ALC269

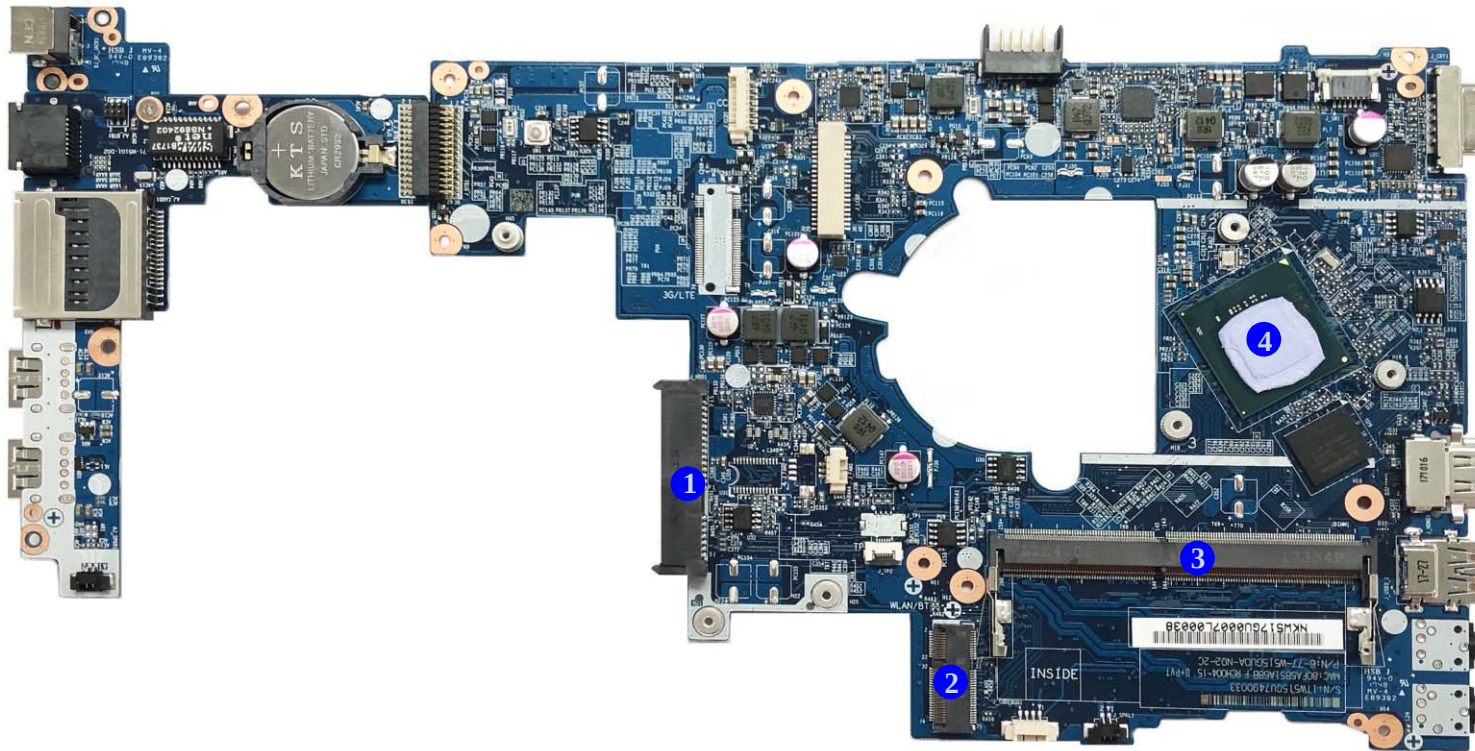
Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

Figure 8
**Mainboard Bottom
Key Parts**

1. HDD Connector
2. M.2 Connector
(WLAN Module)
3. Memory Slot
DDR4 SO-DIMM
4. CPU

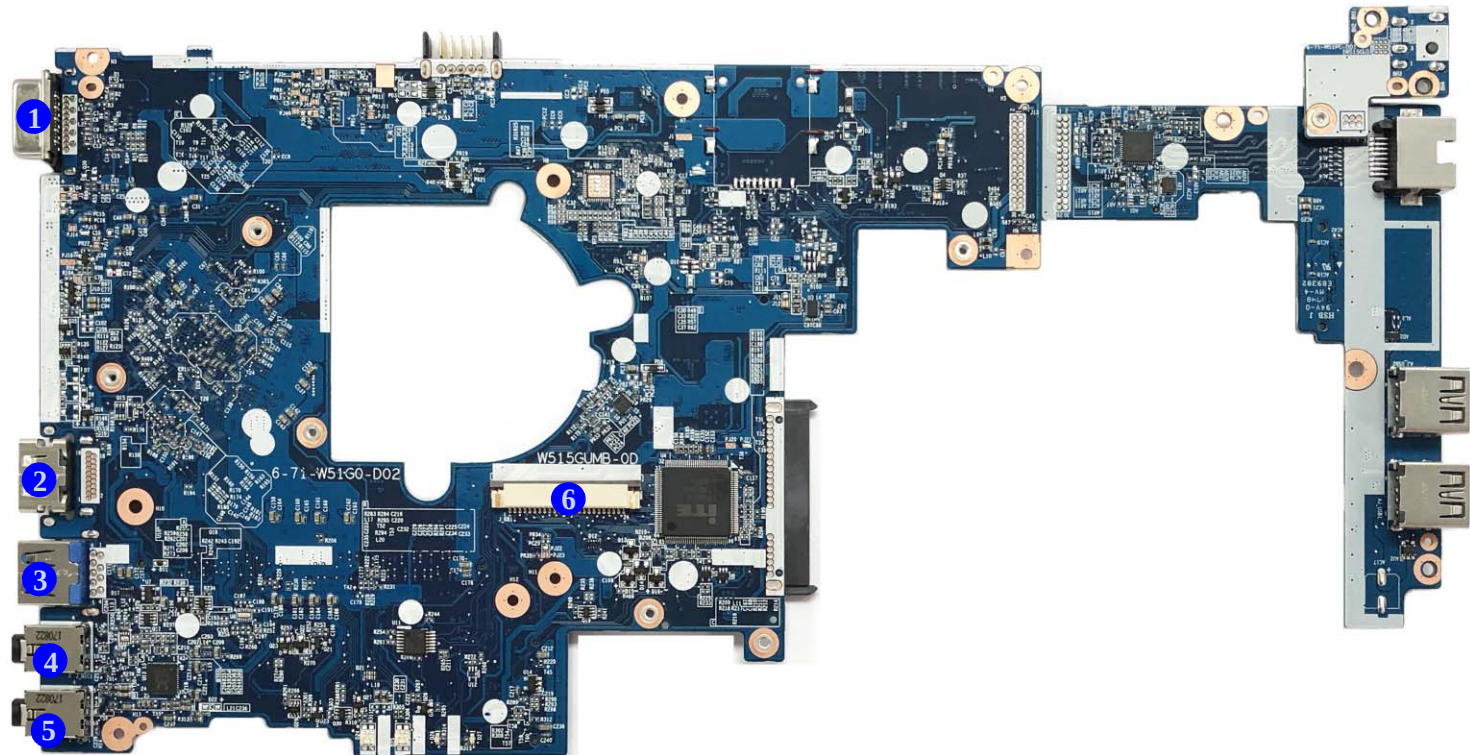


Introduction

Figure 9
**Mainboard Top
Connectors**

1. External Monitor Port
2. HDMI-Out Port
3. USB 3.0 Port
4. Microphone-In Jack
5. Headphone-Out Jack
6. Keyboard Cable Connector

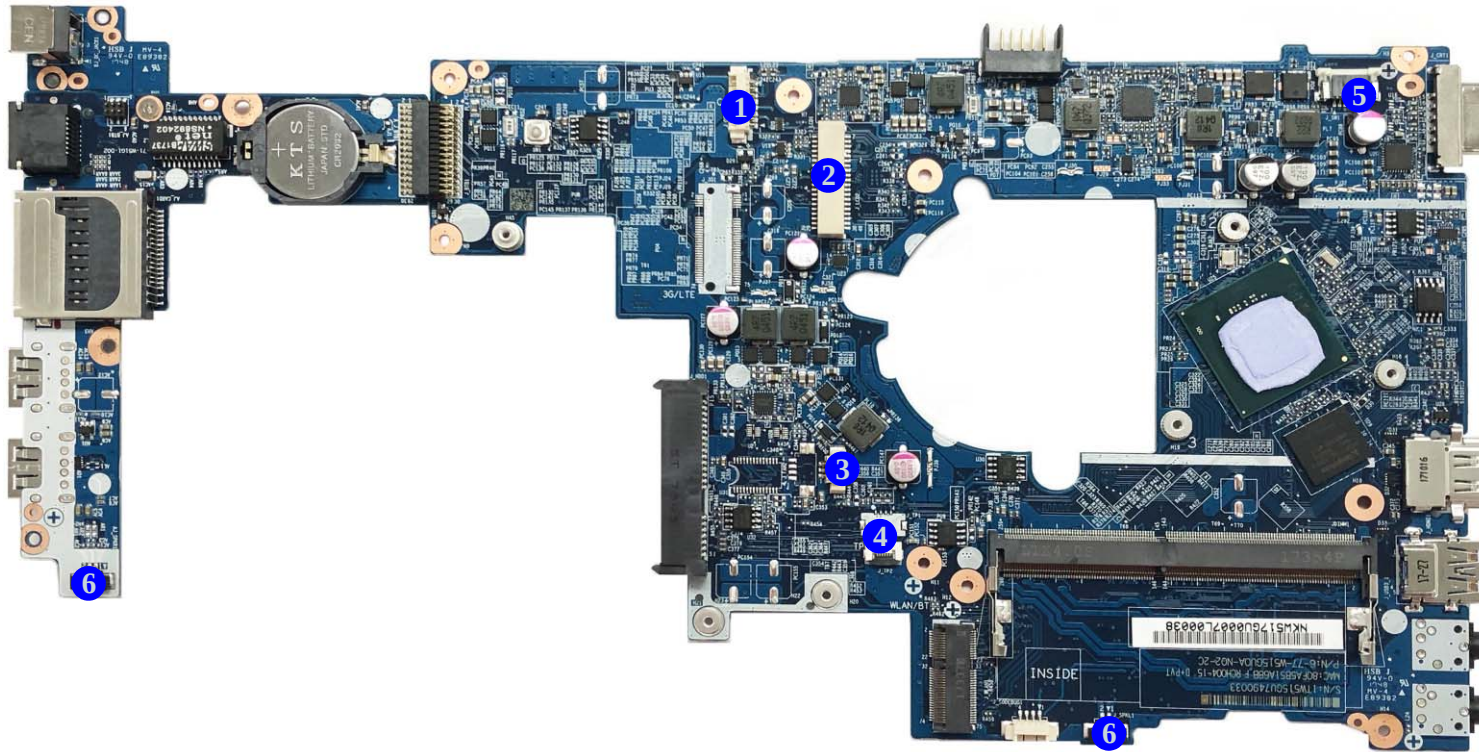
Mainboard Overview - Top (Connectors)



Mainboard Overview - Bottom (Connectors)

Figure 10
**Mainboard Bottom
Connectors**

1. CCD Cable Connector
2. LCD Connector
3. Fan Cable Connector
4. Touchpad Connector
5. Power Switch Connector
6. Speaker Connectors



Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the **W515GU** 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

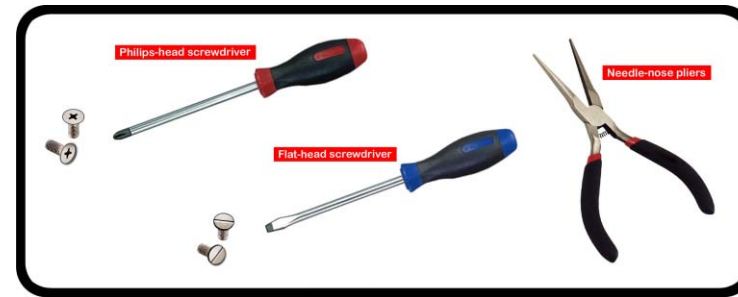
Disassembly

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.

(For Computer Models Supplied with Light Blue Cleaning Cloth) Some computer models in this series come supplied with a light blue cleaning cloth. To clean the computer case with this cloth follow the instructions below.

- Power off the computer and peripherals.
- Disconnect the AC/DC adapter from the computer.
- Use a little water to dampen the cloth slightly.
- Clean the computer case with the cloth.
- Dry the computer with a dry cloth, or allow it time to dry before turning on.
- Reconnect the AC/DC adapter and turn the computer on.



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). 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 Keyboard:

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

To remove the HDD:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 6](#)
3. Remove the HDD [page 2 - 7](#)

To remove the System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 6](#)
3. Remove the HDD [page 2 - 7](#)
4. Remove the system memory [page 2 - 9](#)

To remove the Wireless LAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 6](#)
3. Remove the HDD [page 2 - 7](#)
4. Remove the wireless LAN [page 2 - 11](#)

To remove the 4G Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 6](#)
3. Remove the HDD [page 2 - 7](#)
4. Remove the 4G [page 2 - 13](#)

To remove the Click Board:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 6](#)
3. Remove the HDD [page 2 - 7](#)
4. Remove the wireless LAN [page 2 - 11](#)
5. Remove the click board [page 2 - 14](#)

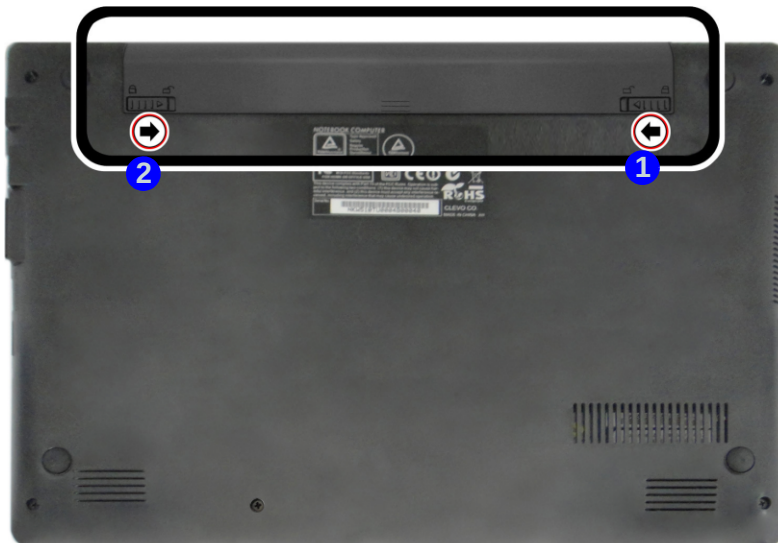
To remove the CCD:

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

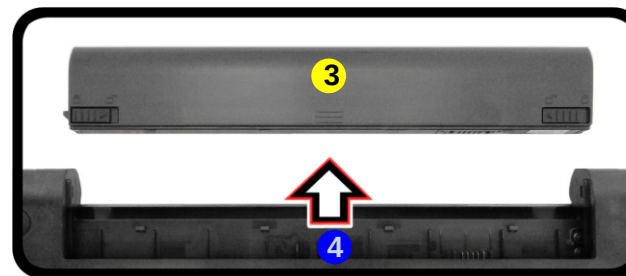


Figure 1
Battery Removal

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



3. Battery

Disassembly

Figure 2
Keyboard Removal

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

Re-Inserting the Keyboard

When re-inserting the keyboard, align first the **three** keyboard tabs (Figure 2e) that are located at the bottom, to the slots in the case.

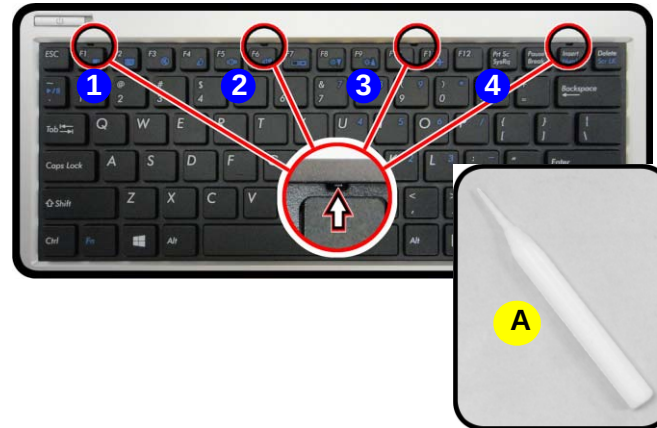
5. Keyboard

- 5 Screws

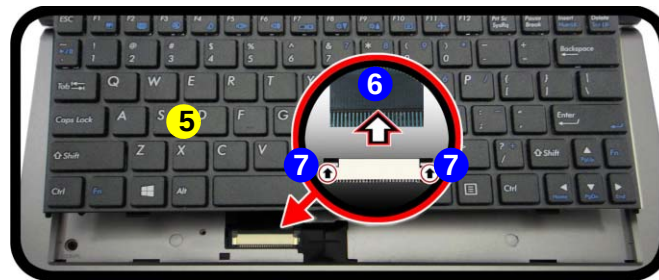
Removing the Keyboard

- Turn **off** the computer and remove the battery (page 2 - 5).
- 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 2a).
- Carefully lift the keyboard **5** up, being careful not to bend the keyboard ribbon cable **6** (Figure 2b).
- Disconnect the keyboard ribbon cable **6** from the locking collar socket **7** (Figure 2b).
- Carefully lift up the keyboard **5** (Figure 2c) off the computer.
- Remove screws **8** - **12** to release the bottom case (Figure 2d).

a.



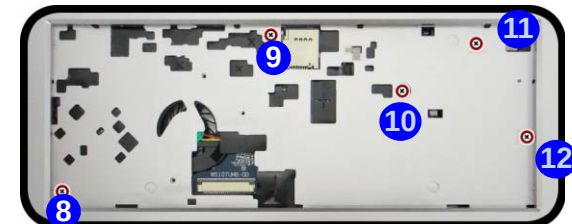
b.



c.



d.



e.



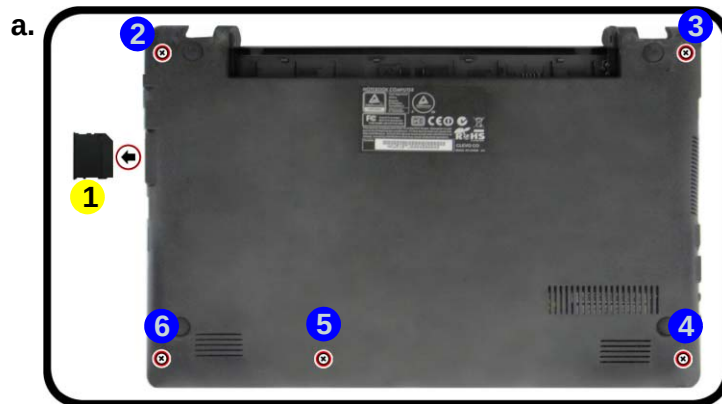
Keyboard Tabs

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 7mm (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 keyboard ([page 2 - 6](#)).
2. Remove the SD card cover **1** and screws **2** - **6** ([Figure 3a](#)).
3. Carefully lift the bottom case **8** up in the direction of the arrow **7** and remove it ([Figure 3b](#)).
4. The hard disk will be visible at point **9** on the computer. ([Figure 3b](#))



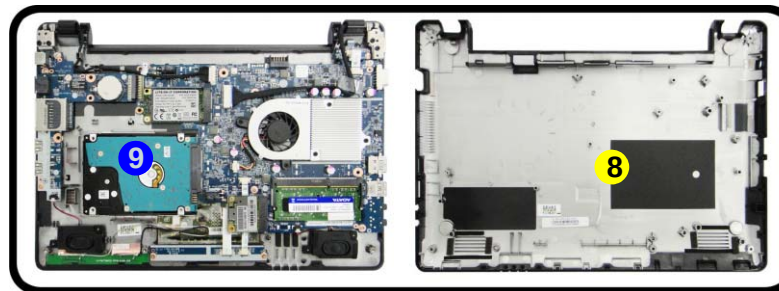
HDD System Warning

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. SD Card Cover
8. Bottom case

- 5 Screws

Figure 3
**HDD Assembly
Removal**

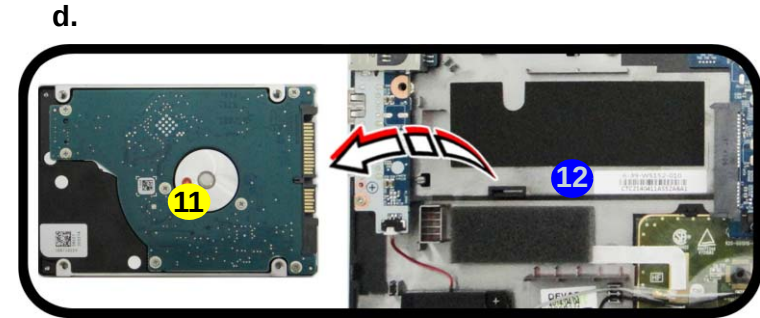
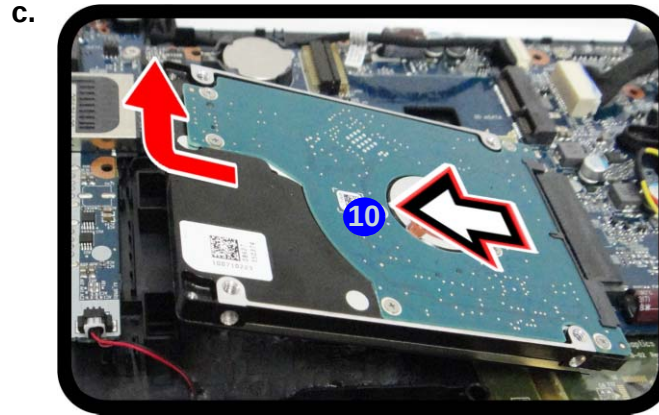
- a. Remove the cover and screws.
- b. Remove the bottom case and locate the hard disk.

Disassembly

Figure 4
**HDD Assembly
Removal (cont'd.)**

- c. Slightly lift and pull the HDD in the direction of the arrow.
d. Lift the HDD assembly out of the bay.

5. Slightly lift and pull the hard disk in the direction of arrow 10 (*Figure 4c*).
6. Lift the hard disk 11 out of the bay 12 (*Figure 4d*).
7. Reverse the process to install a new hard disk (do not forget to replace all the screws and cover).



11. HDD

Removing the System Memory (RAM)

The computer has a memory socket for 260 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR4 Up to 1866/2133/2400MHz. The main memory can be expanded up to 8GB. The total memory size is automatically detected by the POST routine once you turn on your computer.

Memory Upgrade Process

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)), keyboard ([page 2 - 6](#)), and bottom case ([page 2 - 7](#)).
2. The RAM modules will be visible at point **1** on the mainboard ([Figure 5a](#)).
3. Gently pull the two release latches (**2** & **3**) on the sides of the memory socket in the direction indicated by the arrows ([Figure 5b](#)).
4. The RAM module **4** will pop-up ([Figure 5c](#)), and you can then remove it.

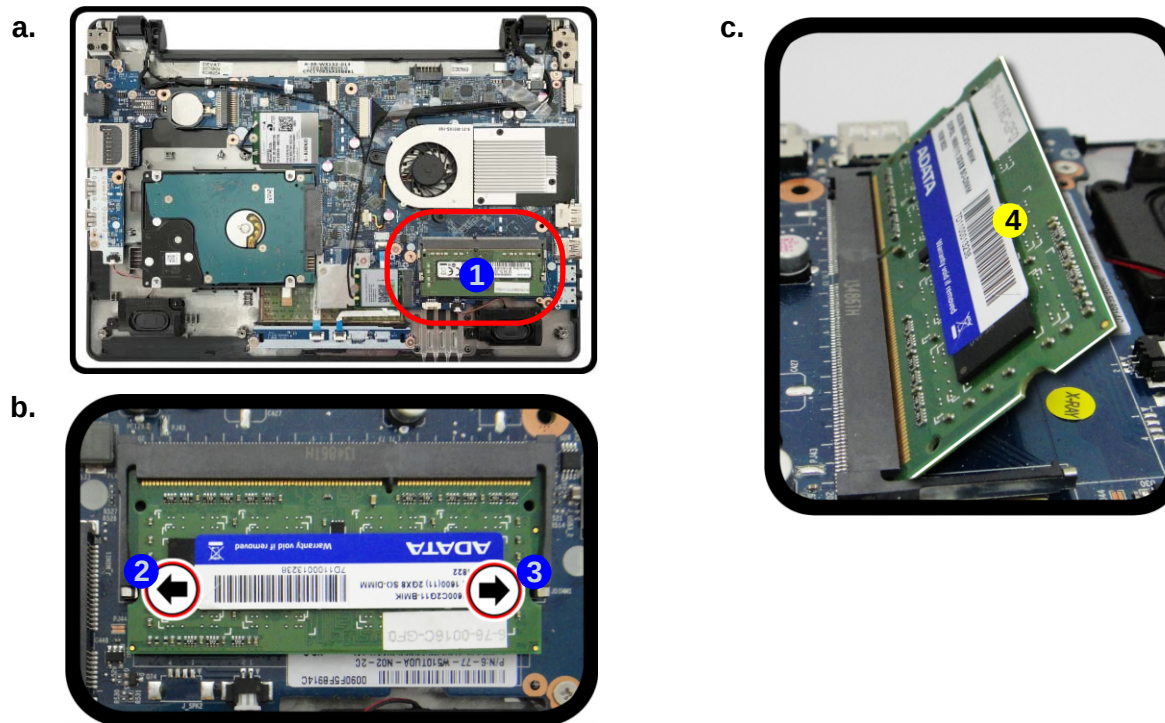


Figure 5
RAM Module Removal

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



Contact Warning

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



4. RAM Module

Disassembly

Figure 6
**RAM Module
Removal (cont'd)**

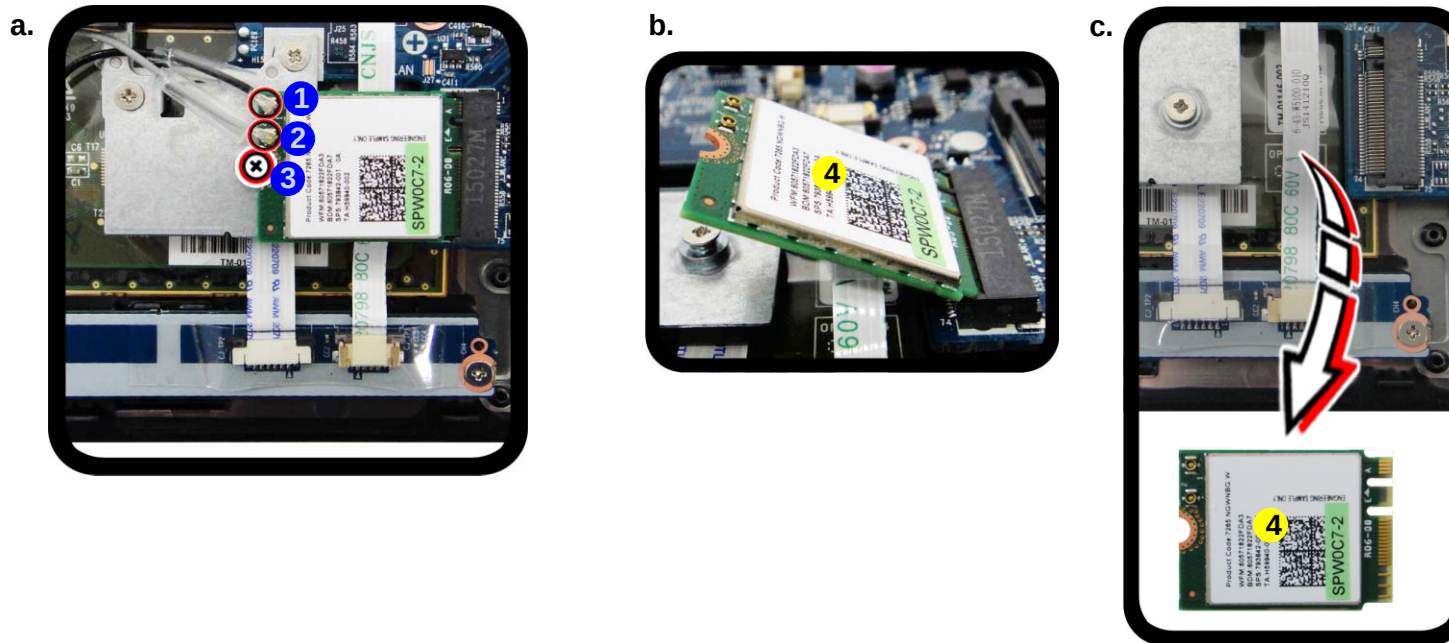
d. Replace the bottom case and tighten the screws.

5. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
6. 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.
7. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
8. Replace the bottom case and tighten the screws and cover (*Figure 6d*).
9. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.



Removing the Wireless LAN Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)), keyboard ([page 2 - 6](#)), and bottom case ([page 2 - 7](#)).
2. Carefully disconnect cables **1** & **2**, then remove screw **3** from the module socket ([Figure 7a](#)).
3. The Wireless LAN module **4** ([Figure 7b](#)) will pop-up.
4. Lift the Wireless LAN module **4** ([Figure 7c](#)) up and off the computer.



- a. Disconnect the cables and remove the screw.
- b. The WLAN module will pop up.
- c. Lift the WLAN module out.

Note: Make sure you re-connect the antenna cable to '1' + '2' socket ([Figure 7a](#)). (See over-leaf)



4. WLAN Module.

- 1 Screw

Disassembly

Wireless LAN, and Combo Module Cables

Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo, and LTE modules are not labelled. The cables/covers (each cable will have either a black or transparent cable cover) are color coded for identification as outlined in the table below.

Module Type	Antenna Type	Cable Color	Cable Cover Type
WLAN/WLAN & Bluetooth Combo	WM 1	Black	Transparent
	WM 2	Black	White
LTE Broadband	LTE 1	Black	Black
	LTE 2	Black	Blue

Cable 1 is usually connected to antenna 1 (Main) on the module, and cable 2 to antenna 2 (Aux).

Removing the 4G Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)), keyboard ([page 2 - 6](#)), and bottom case ([page 2 - 7](#)).
2. Carefully disconnect cables **1** & **2**, then remove screw **3** from the module socket ([Figure 8a](#)).
3. The 4G module **4** ([Figure 8b](#)) will pop-up.
4. Lift the 4G module **4** ([Figure 8c](#)) up and off the computer.

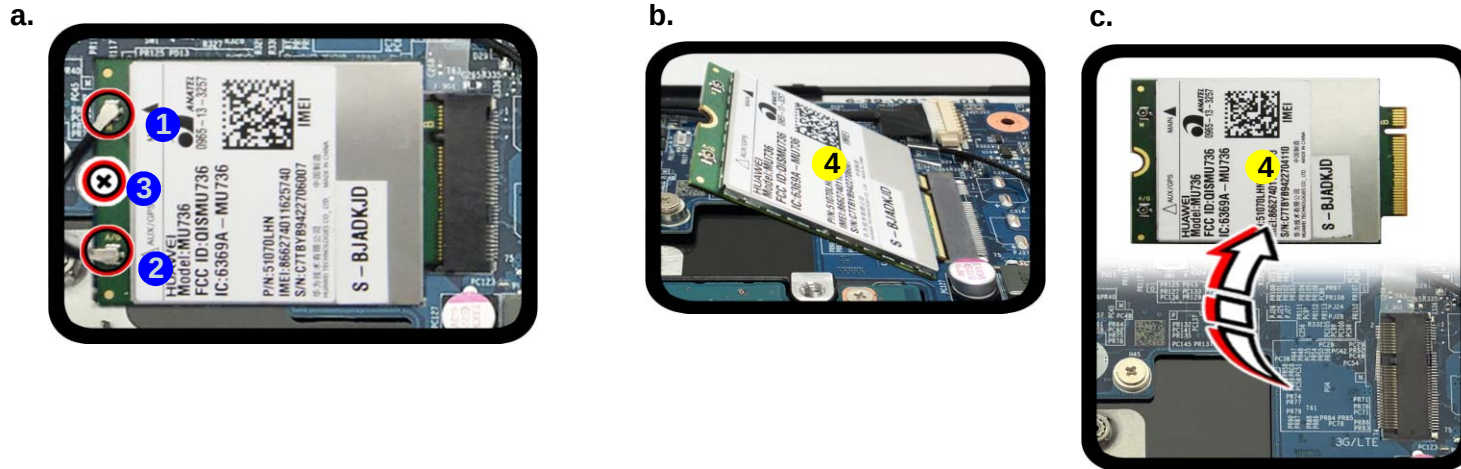


Figure 8
4G Module Removal

- a. Disconnect the cables and remove the screw.
- b. The 4G module will pop up.
- c. Lift the 4G module out.

Note: Make sure you re-connect the antenna cable to '1' + '2' socket ([Figure 8a](#)). (See over-leaf)



4. 4G LTE Module.

- 1 Screw

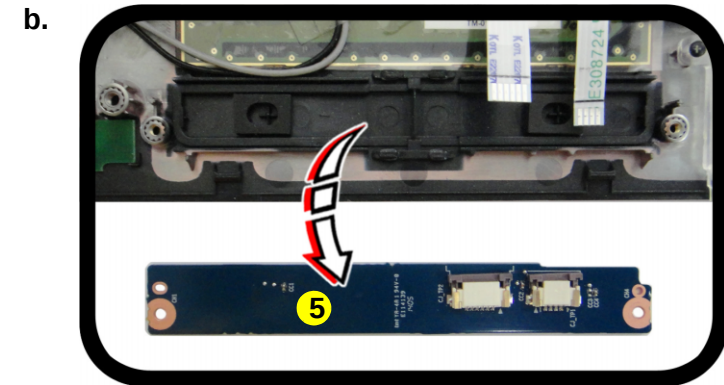
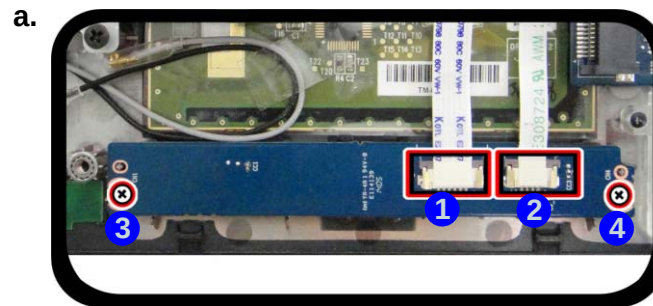
Disassembly

Figure 9
Click Board Module Removal

- a. Disconnect the cables and remove the screw.
- b. Lift the click board out.

Removing the Click Board Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)), keyboard ([page 2 - 6](#)), bottom case ([page 2 - 7](#)), and WLAN ([page 2 - 11](#)).
2. Carefully disconnect cables **1** & **2**, then remove screws **3** & **4** from the module ([Figure 9a](#)).
3. Lift the click board module **5** ([Figure 9b](#)) up and off the computer.



5. Click Board Module

- 2 Screws

Removing the CCD Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)).
2. Turn the computer over, run your fingers around the inner frame of the LCD panel at the points indicated by the arrows ① - ④ ([Figure 10a](#)).
3. Carefully remove the LCD panel cover ⑤ off ([Figure 10b](#)).
4. Disconnect the cable ⑥ ([Figure 10c](#)).
5. Remove the CCD module ⑦ off ([Figure 10d](#)).

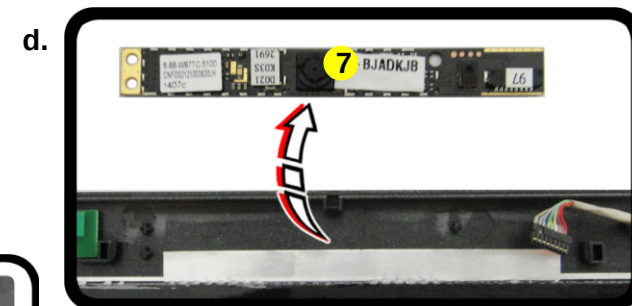
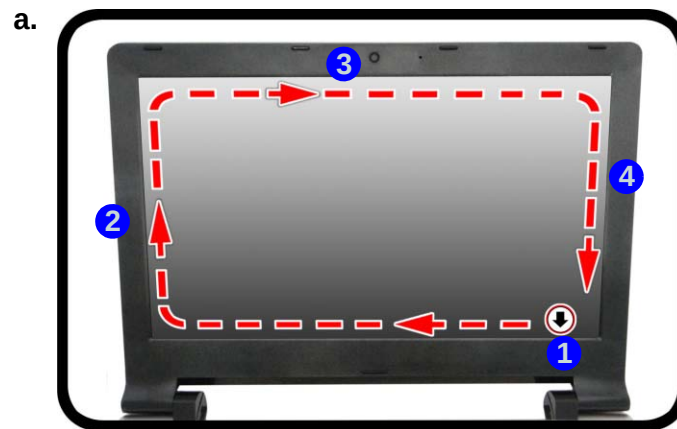


Figure 10
CCD Module Removal

- a. Run your fingers around the inner frame of the LCD panel at the points indicated by the arrows.
- b. Remove the LCD panel cover.
- c. Disconnect the cable.
- d. Remove the CCD module.

2. Disassembly

5. LCD Panel Cover
7. CCD Module

Appendix A:Part Lists

This appendix breaks down the **W515GU** 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 Lists

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	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
MB	<i>page A - 5</i>
LCD	<i>page A - 6</i>

Top

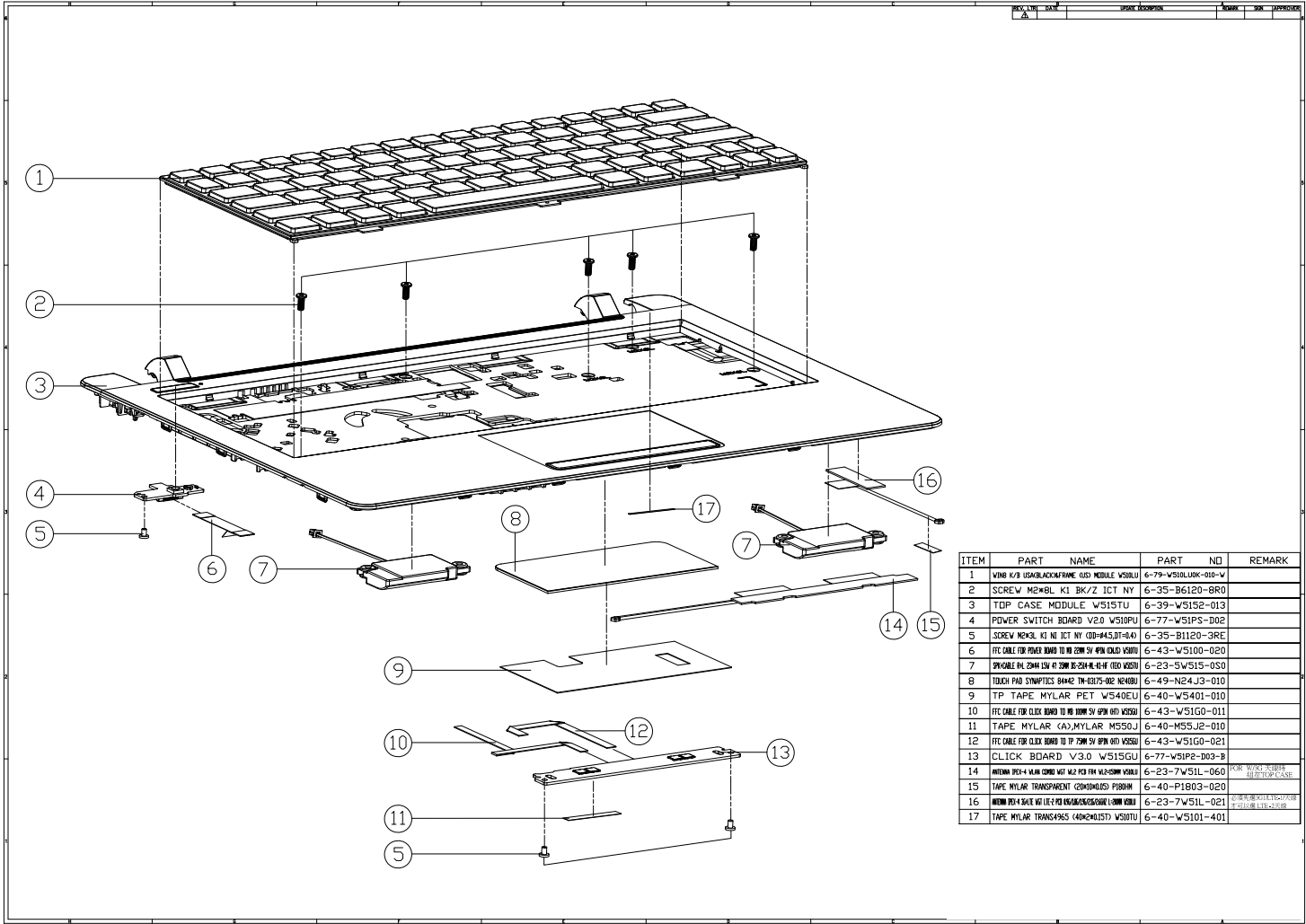


Figure A - 1
Top

A.Part Lists

REV	LTR	DATE	UPDATE DESCRIPTION	REMARK	SIGN	APPROVE

ITEM	PART NAME	PART NO	REMARK
1	BATTERY SLIDE/COVER/DOOR STOP SW/PCB/PRINT/REAR/EXTENDED VSMU	6-87-W510S-4292	
1	BATTERY SLIDE/COVER/DOOR STOP SW/PCB/PRINT/REAR/EXTENDED VSMU	6-87-W510S-42F2	
1	BATTERY SLIDE/COVER/DOOR STOP SW/PCB/PRINT/REAR/EXTENDED VSMU	6-87-W51PS-2UF	
1	BATTERY SLIDE/COVER/DOOR STOP SW/PCB/PRINT/REAR/EXTENDED VSMU	6-87-W51LS-4UF	
1	BATTERY SLIDE/COVER/DOOR STOP SW/PCB/PRINT/REAR/EXTENDED VSMU	6-87-W51PS-2UF1	
1	BATTERY SLIDE/COVER/DOOR STOP SW/PCB/PRINT/REAR/EXTENDED VSMU	6-87-W510S-4UF2	
1	BATTERY SLIDE/COVER/DOOR STOP SW/PCB/PRINT/REAR/EXTENDED VSMU	6-87-W51LS-31D00	
2	SCREW M2*BL K1 BK/Z ICT NY	6-35-B6120-BR0	
3	PRODUCT LABEL FOR W515LU	6-45-W515LU03-010	
3	PRODUCT LABEL FOR W515PU/ELLON NEW CE SAFETY	6-45-W515PU03-011	
3	PRODUCT LABEL FOR W515GU	6-45-W515GU03-010	
4	BOTTOM CASE MODULE (CHANGE RED) W515TU-C	6-39-W5153-013	
4	BOTTOM CASE MODULE (CHANGE RED) W515TU-C	6-39-W5153-013-C	
5	BOTTOM CASE SPONGE (26*44*3*5*5-64000) W515TU	6-47-0019A-523	
6	DUMMY 3000 NON PUSH TYPE PC/ABS (1220P-7000) W515TU	6-42-W9708-030	

MB

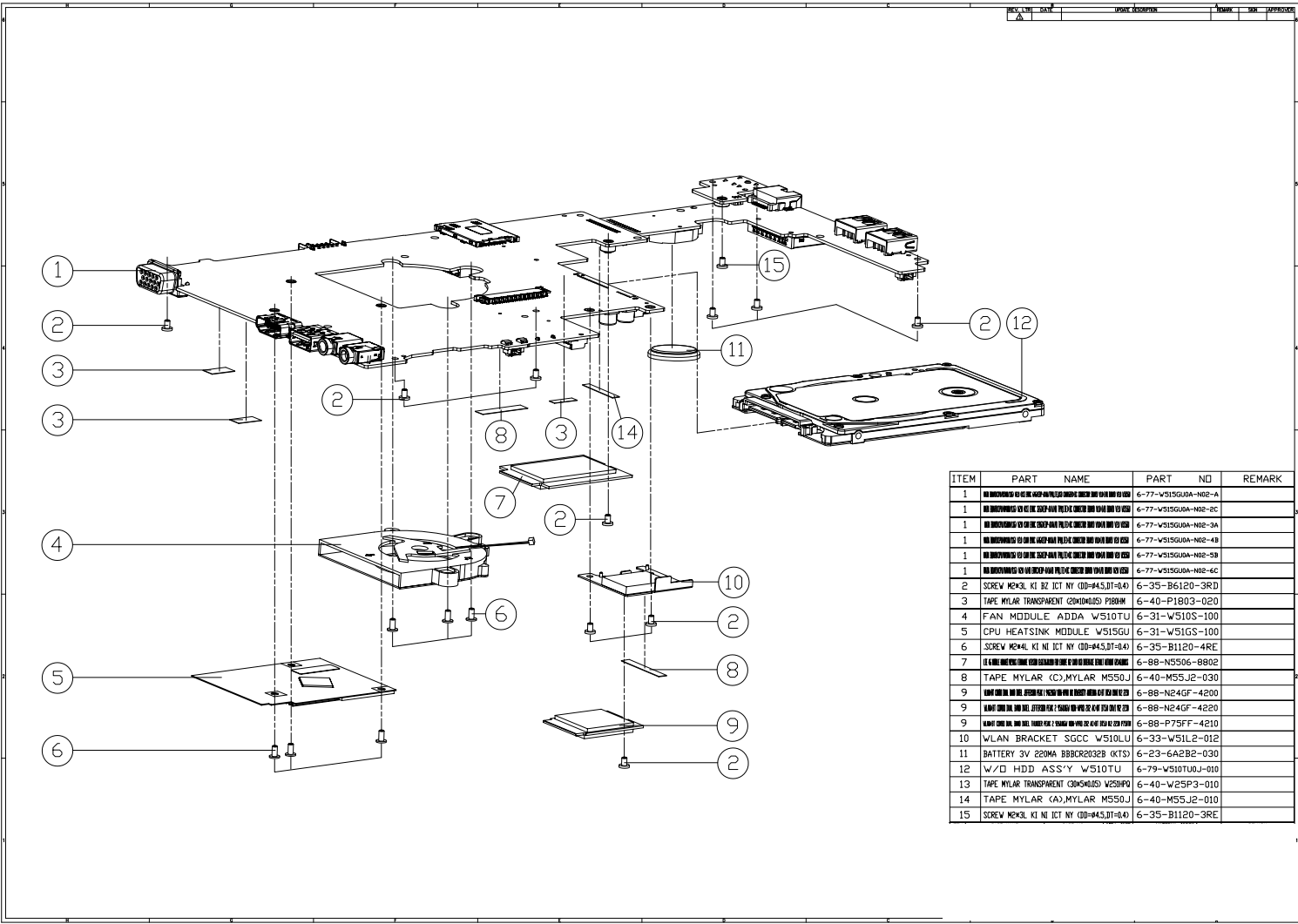


Figure A - 3
MB

A.Part Lists

ITEM	PART NAME	PART NO	REMARK
1	LCD PROTECT MYLAR BOPP W517PU	6-40-W5171-010	
2	CCD LENS (PMMA) W510TUSINT0YD	6-42-W5101-010-1	
3	LCD FRONT COVER MODULE W515TU	6-39-W5151-012	
4	SCREW M2*2.5L K1 BK/Z ICT NY#3.5 T=0.3	6-35-B6120-2RB	
5	LCD 11.6" HD AU M020W05 V1 FTH GLARE TYPD CSMM QLED KE3P	6-50-B8130-V01	
5	LCD 11.6" HD KE3P-A1 DUNLOU HINGE-EAR QLED 30MM	6-50-B8130-V00	
5	LCD 11.6" HD M020W05 V1 FTH GLARE TYPD CSMM QLED 30MM	6-50-B8B30-G000	
6	HINGE L LVDS (SGCC+SK7) SNR W515TU	6-33-W5151-0L1	
7	HINGE R LVDS (SGCC+SK7) SNR W515TU	6-23-7W51L-010	此零件與W510TUS相機 必須此零件才能使用
8	SCREW M2*2L K1 BK/Z ICT NY#0.8 T=0.6	6-35-B6120-2RE	
9	SCREW M2*8L K1 BK/Z ICT NY	6-35-B6120-8R0	
10	WIRE CABLE FOR TOP 27MM 33W 3P FOR TOP COVER CONNECTION ONLY FOR FPC 6-35-B6120-8R0	6-43-W5101-030-1C	
11	HINGE R LVDS (SGCC+SK7) SNR W515TU	6-33-W5151-0R1	
12	WIRE CABLE FOR CCD 500MM 3.3V 3P (HINGE LABEL) 40D W515TU	6-43-W515T-011	
13	WIRE CABLE FOR TOP 27MM 33W 3P FOR TOP COVER CONNECTION ONLY FOR FPC 6-35-B6120-8R0	6-88-W51PC-5100	
13	WIRE CABLE FOR TOP 27MM 33W 3P FOR TOP COVER CONNECTION ONLY FOR FPC 6-35-B6120-8R0	6-88-N650C-4910	
14	LCD BACK COVER MODULE W515TU	6-39-W5151-023	
15	LCD BACK COVER MODULE W515TU-C	6-39-W5151-023-C	
16	ANTENNA PEEX 4.4MM WGT V1.2 PCB AL 2.4G/5G V1.2-30MM PSARRE	6-23-7P640-020	
17	TAPE MYLAR TRANS4X6S (40W*20L5T) W510TU	6-40-W5101-401	
17	ANTENNA PEEX-4.4MM COMBO WGT V1.1 PCB FTH V1.1-30MM V510TU	6-23-7W51L-050	
18	TAPE MYLAR TRANSPARENT (30W*40L5) W25HP0	6-40-W25P3-010	

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the **W515GU** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Table B - 1
**SCHEMATIC
DIAGRAMS**

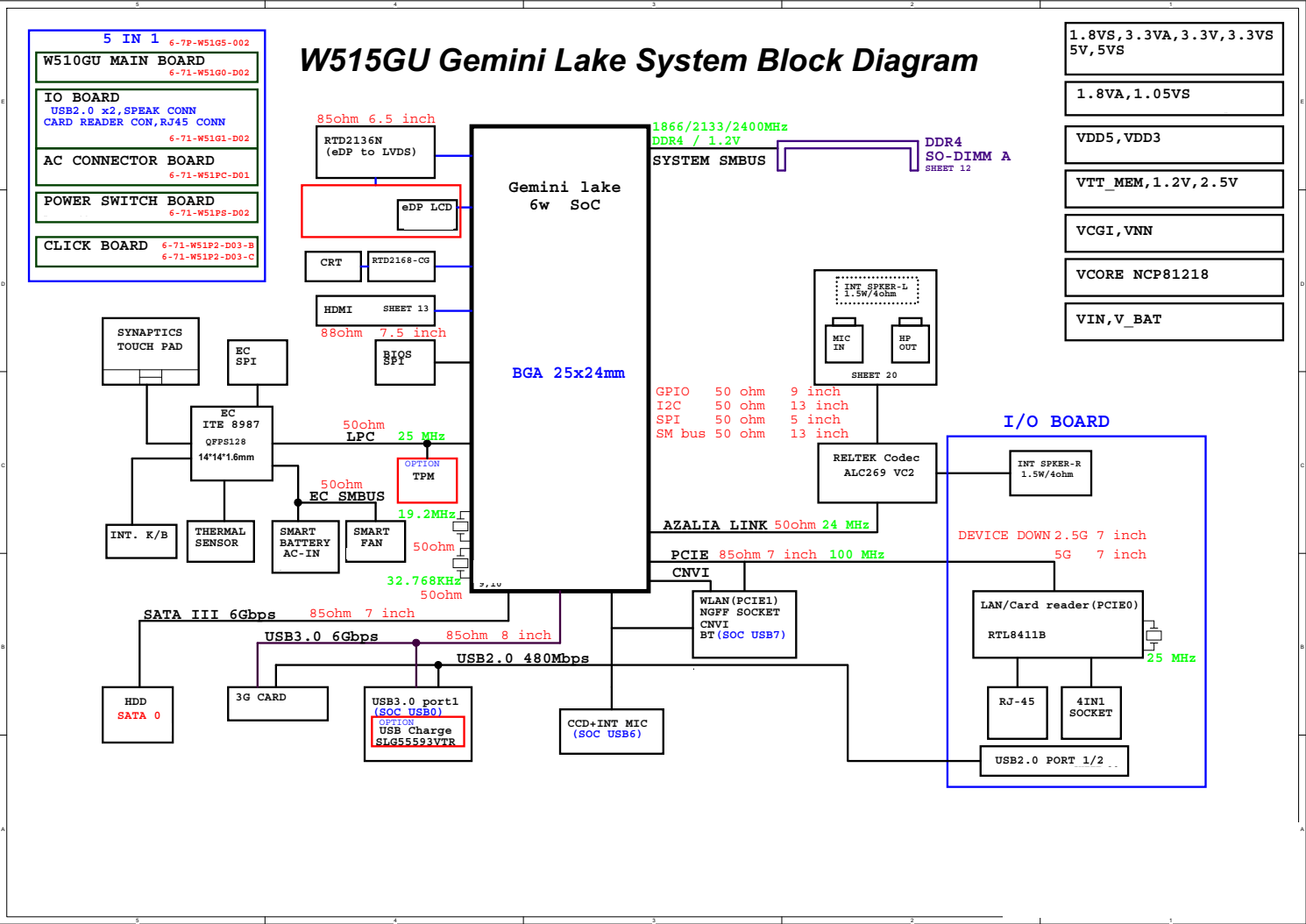
Diagram - Page	Diagram - Page	Diagram - Page
<i>System Block Diagram - Page B - 2</i>	<i>RTD2136 - Page B - 15</i>	<i>VCGI & VNN - Page B - 28</i>
<i>SOC DDR - Page B - 3</i>	<i>Panel Con - Page B - 16</i>	<i>VCORE - Page B - 29</i>
<i>SOC Display Interface - Page B - 4</i>	<i>RTD2168-CG, CRT - Page B - 17</i>	<i>AC-In, Charger - Page B - 30</i>
<i>SOC PCIE/SATA/USB - Page B - 5</i>	<i>TPM/USB - Page B - 18</i>	<i>I/O Board - Page B - 31</i>
<i>GPIO - Page B - 6</i>	<i>WLAN, 3G, MSATA - Page B - 19</i>	<i>RTL8411 - Page B - 32</i>
<i>SMB/CNV - Page B - 7</i>	<i>KBC-ITE IT8987t - Page B - 20</i>	<i>Power SW Board - Page B - 34</i>
<i>RTC/PLU/CLK/SVID - Page B - 8</i>	<i>Audio Codec - Page B - 21</i>	<i>Click Board - Page B - 35</i>
<i>Audio/LPC/SPI/eMMC - Page B - 9</i>	<i>Conn, CCD, Fan, Click - Page B - 22</i>	
<i>SOC Power - Page B - 10</i>	<i>eMMC / LED / Hole / Nut - Page B - 23</i>	
<i>SOC VSS - Page B - 11</i>	<i>System Power - Page B - 24</i>	
<i>Level Shifter - Page B - 12</i>	<i>1.05VS / 1.8VAI - Page B - 25</i>	
<i>DDR4 SO-DIMM_0 - Page B - 13</i>	<i>VDD3, VDD5 - Page B - 26</i>	
<i>HDMI Port - Page B - 14</i>	<i>VTT_MEM / 1.35V - Page B - 27</i>	



Version Note

The schematic diagrams in this chapter are based upon version 6-7P-W51G5-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

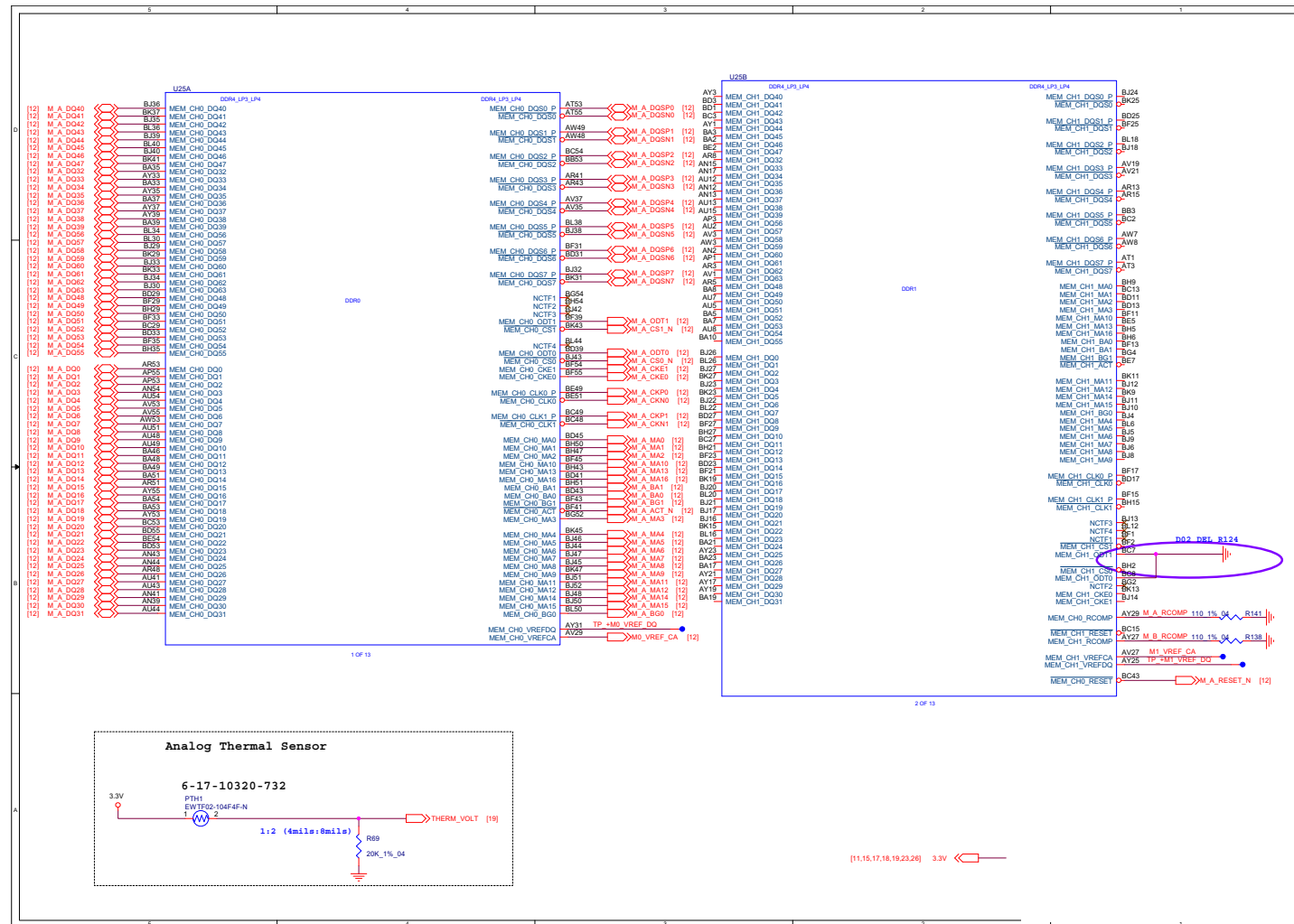
System Block Diagram



Sheet 1 of 31
System Block
Diagram

B.Schematic Diagrams

SOC DDR

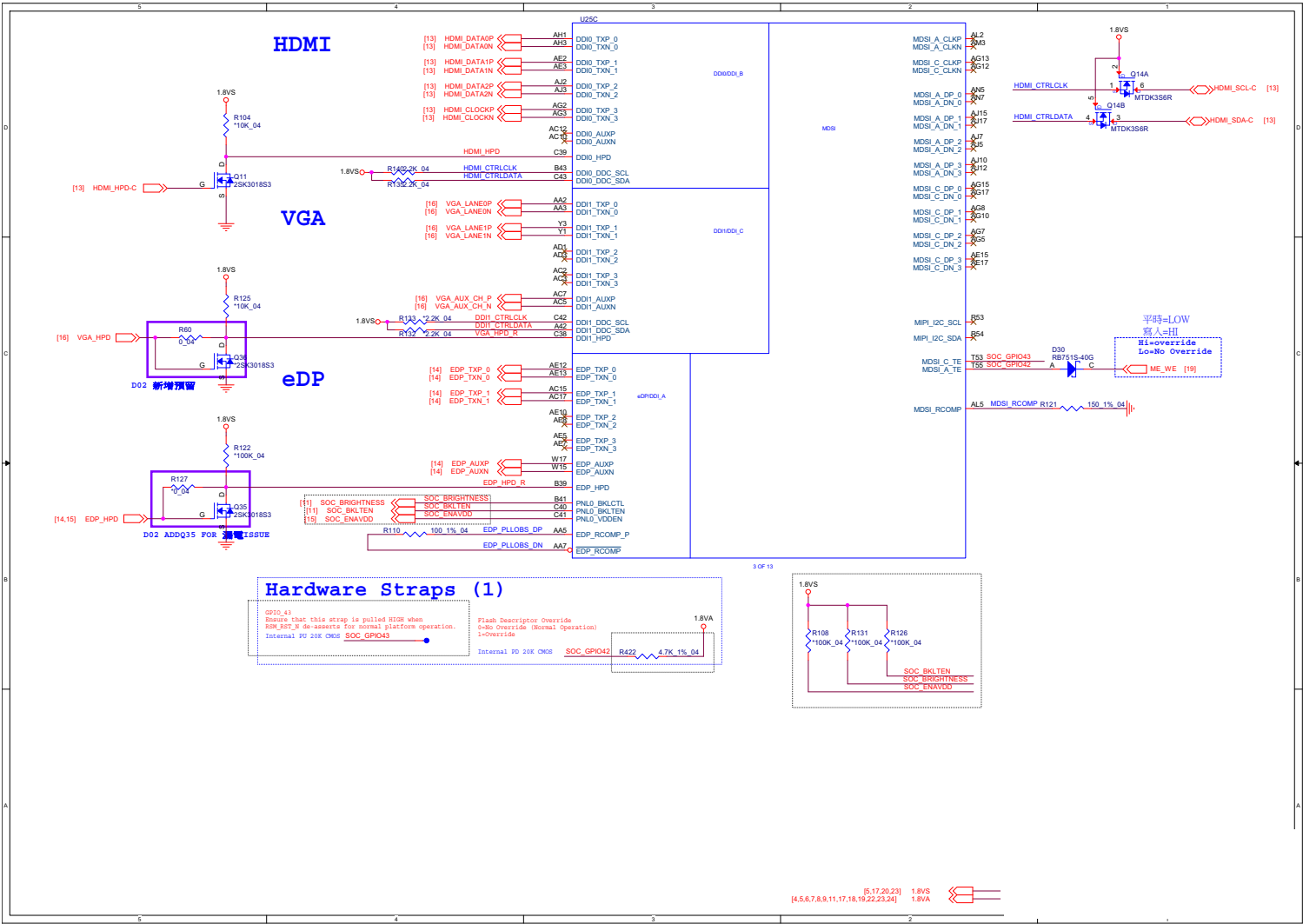


Sheet 2 of 31
SOC DDR

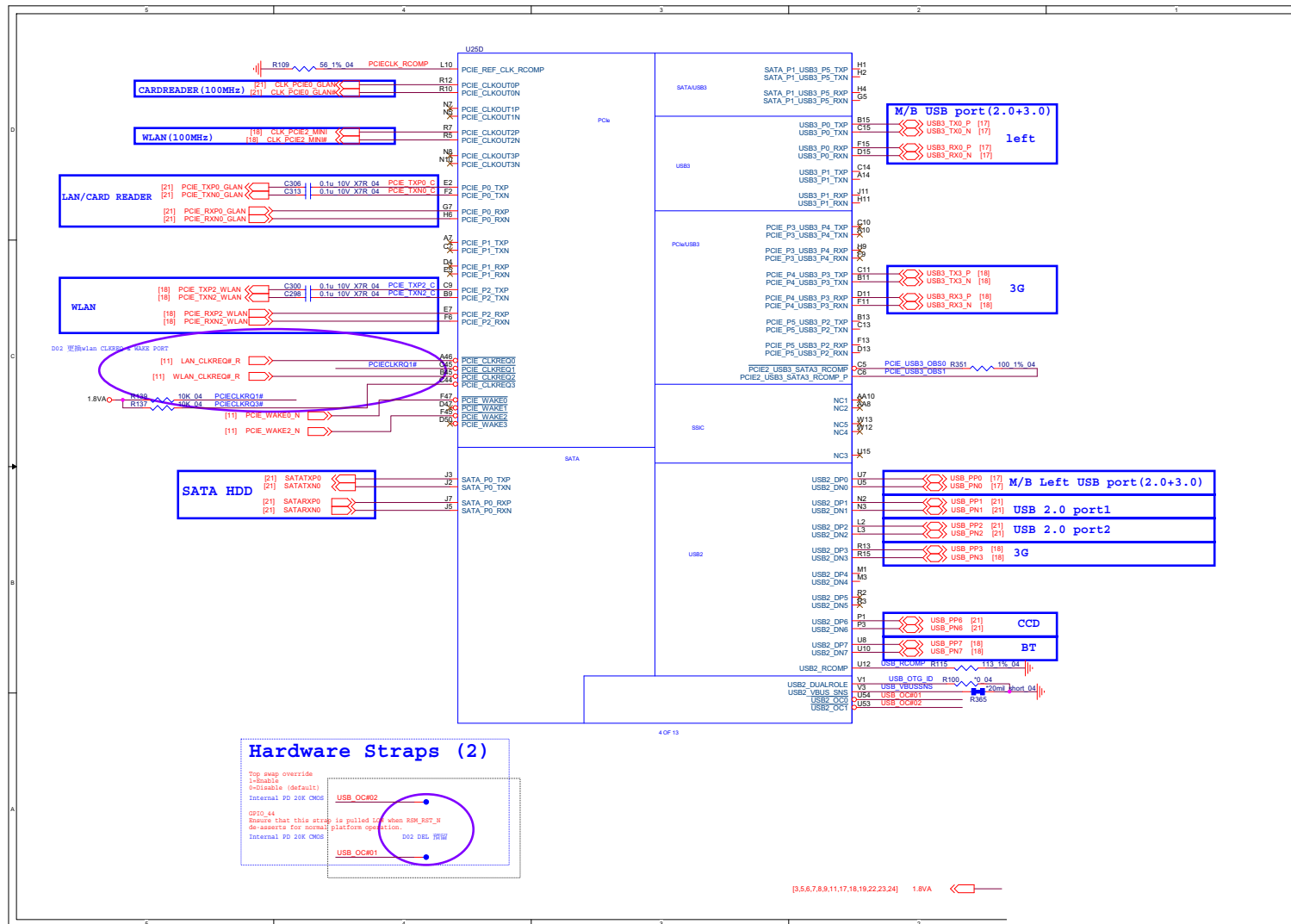
Schematic Diagrams

SOC Display Interface

Sheet 3 of 31
SOC Display Interface



SOC PCIE/SATA/USB

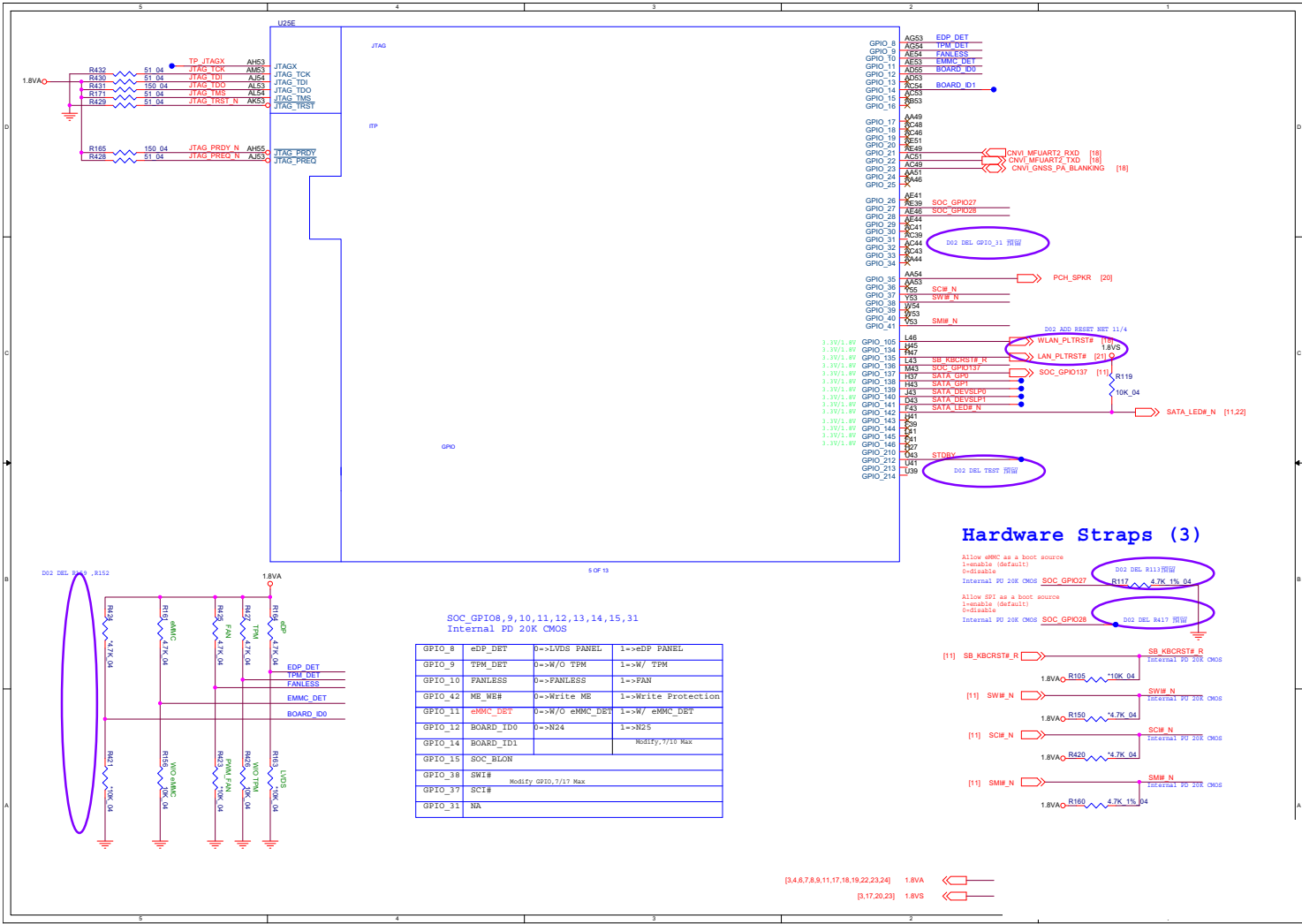


Sheet 4 of 31
SOC PCIE/SATA/
USB

GPIO

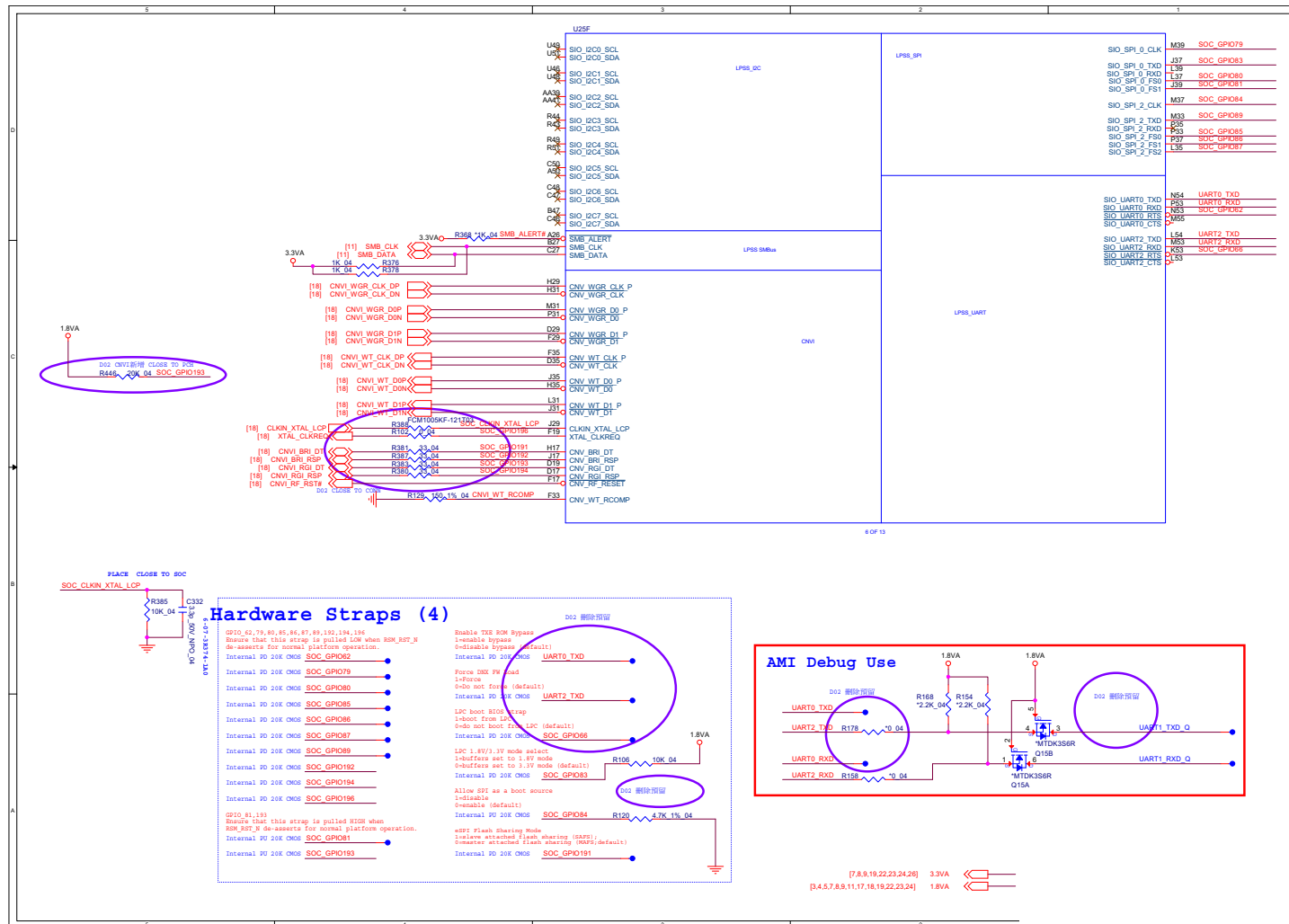
B.Schematic Diagrams

Sheet 5 of 31
GPIO



Schematic Diagrams

SMB/CNV

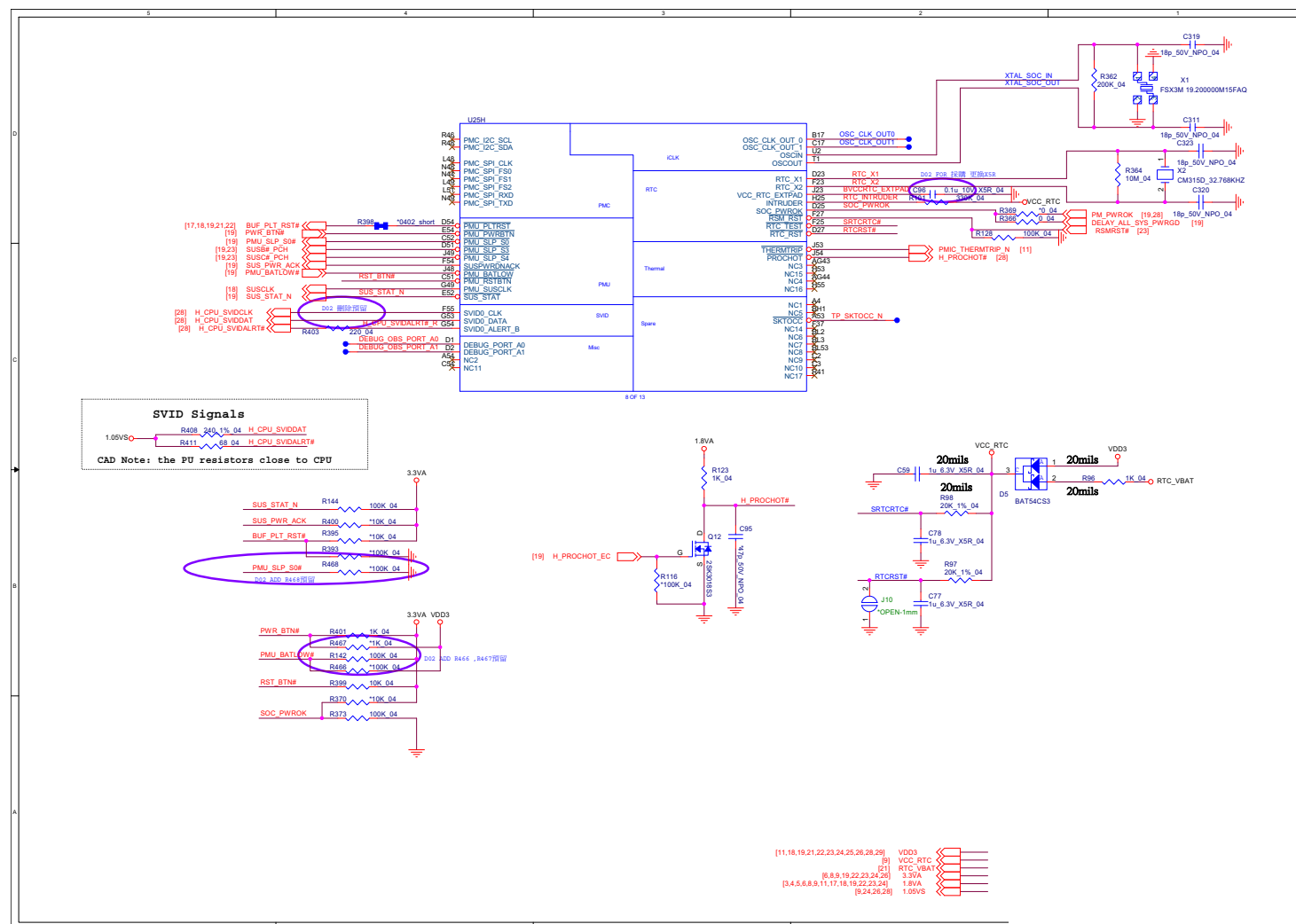


Sheet 6 of 31
SMB/CNV

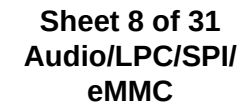
B.Schematic Diagrams

B. Schematic Diagrams

Sheet 7 of 31
RTC/PLU/CLK/SVID

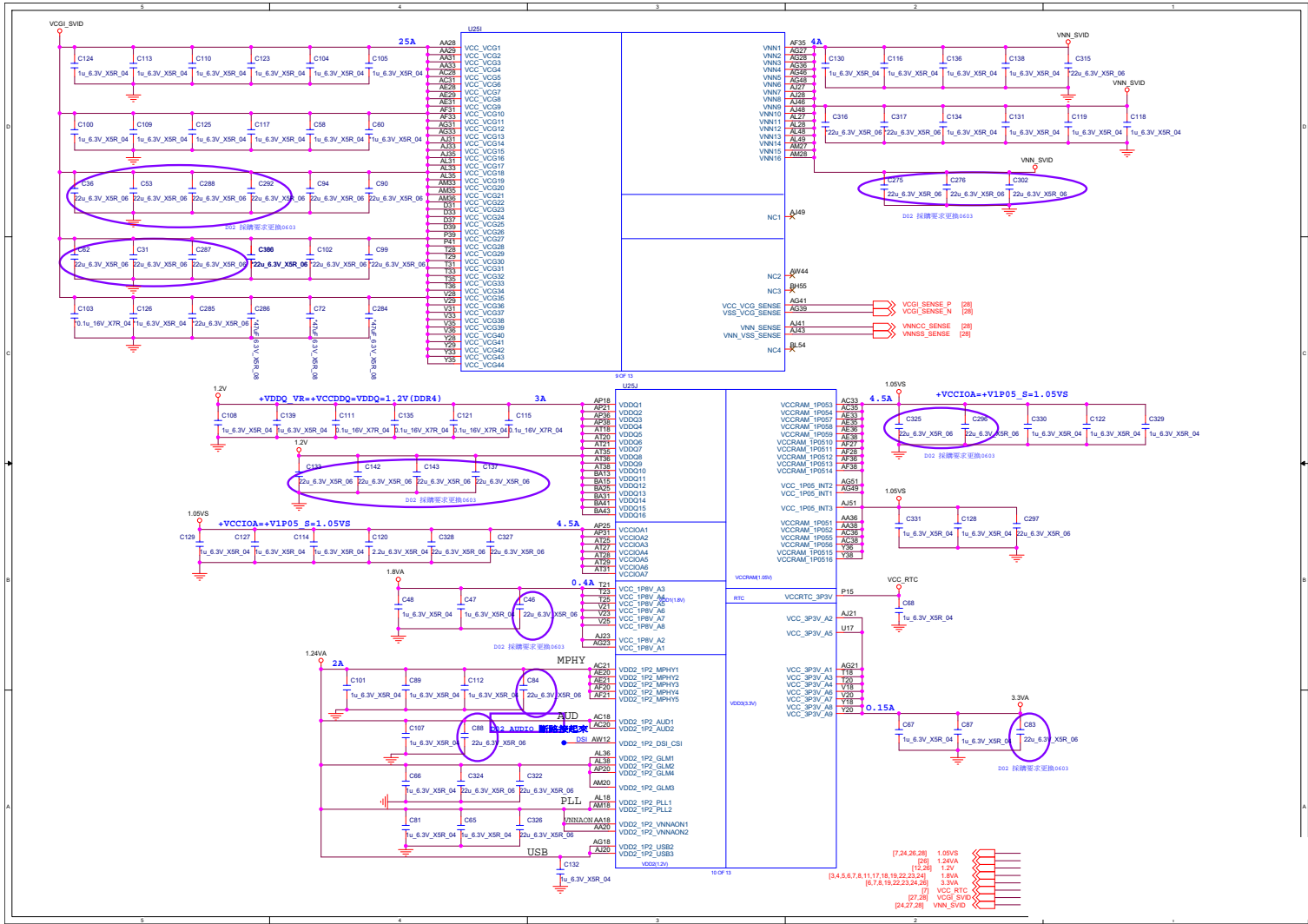


Audio/LPC/SPI/eMMC B - 9

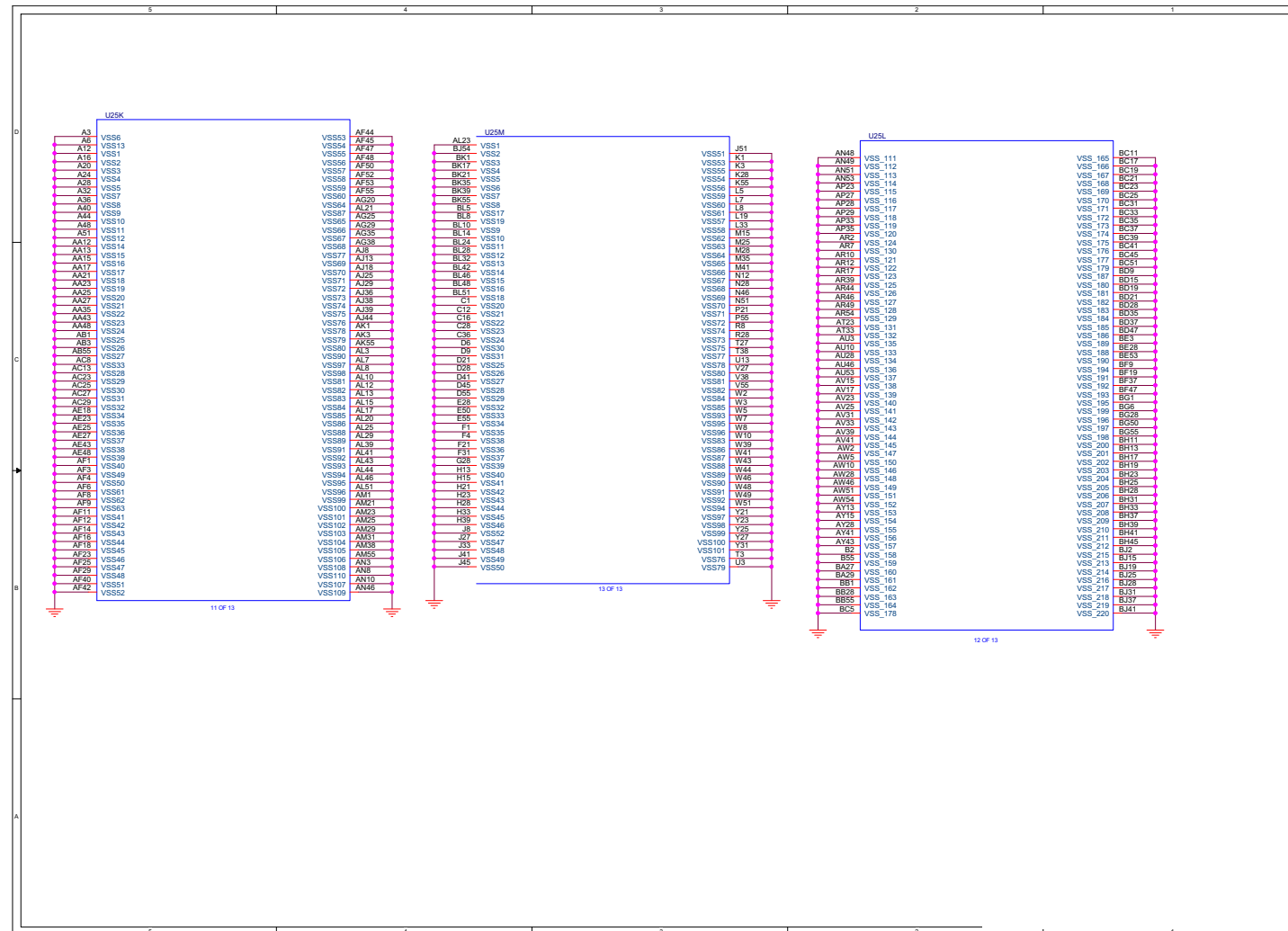


SOC Power

Sheet 9 of 31
SOC Power

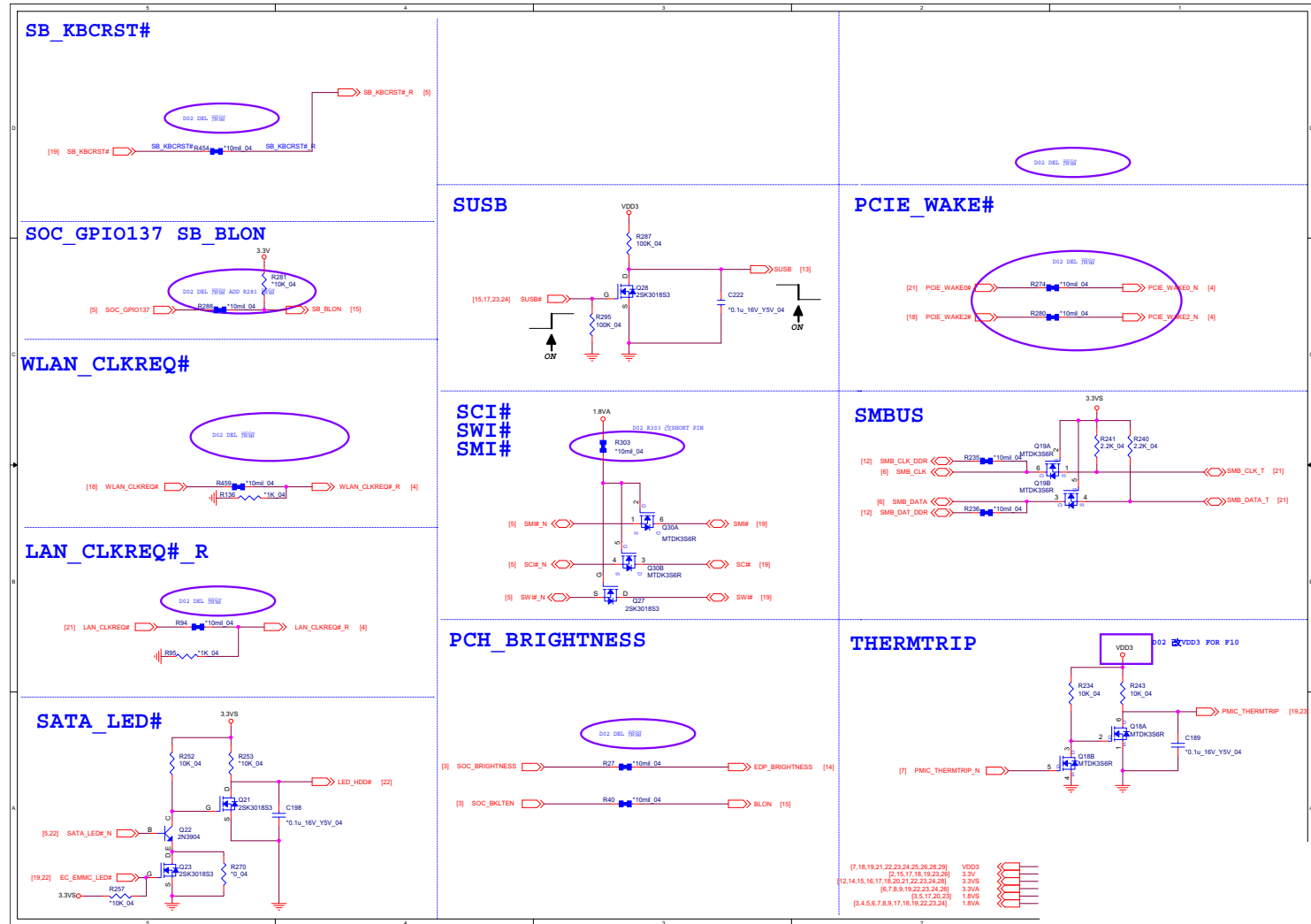


SOC VSS

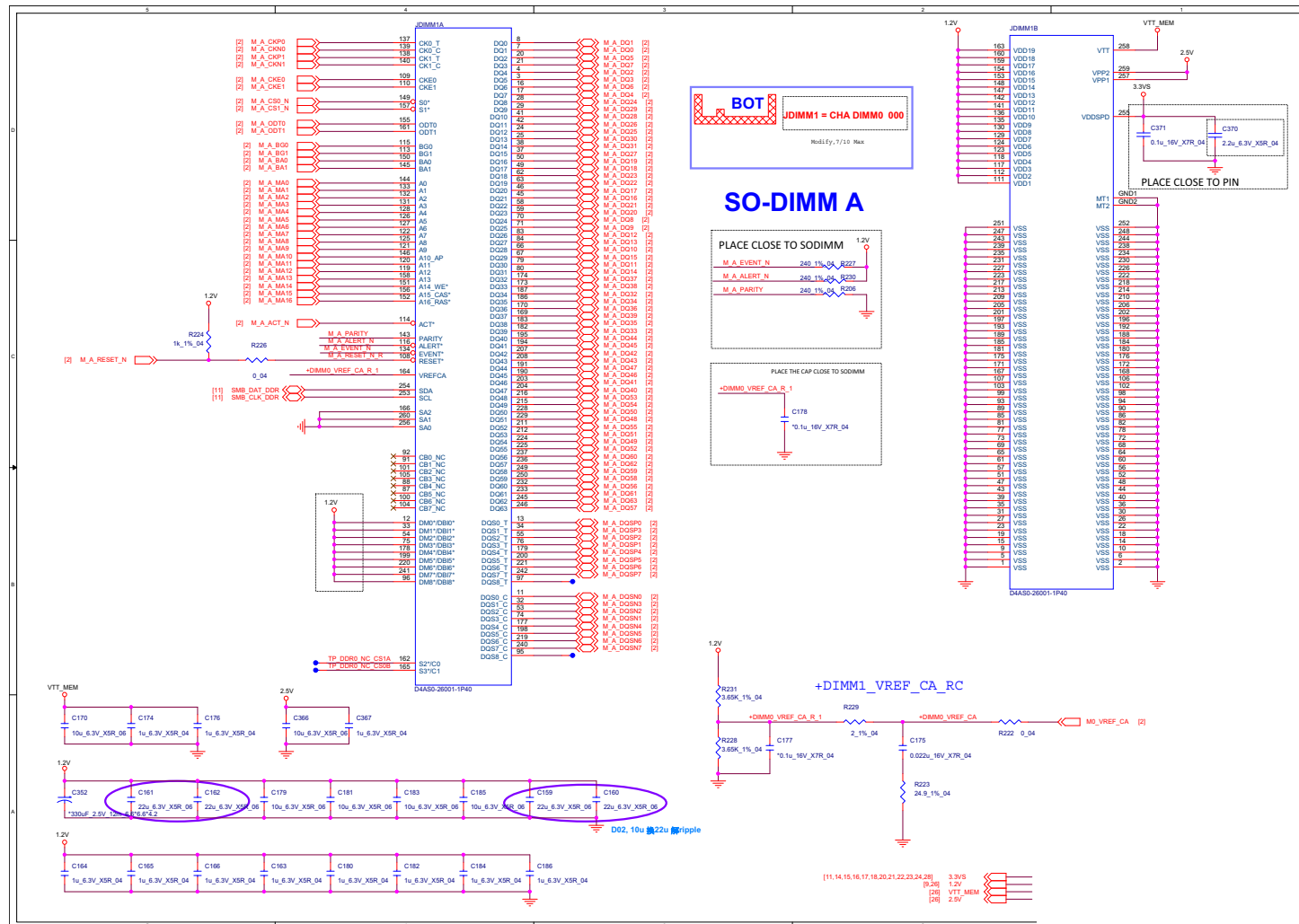


Level Shifter

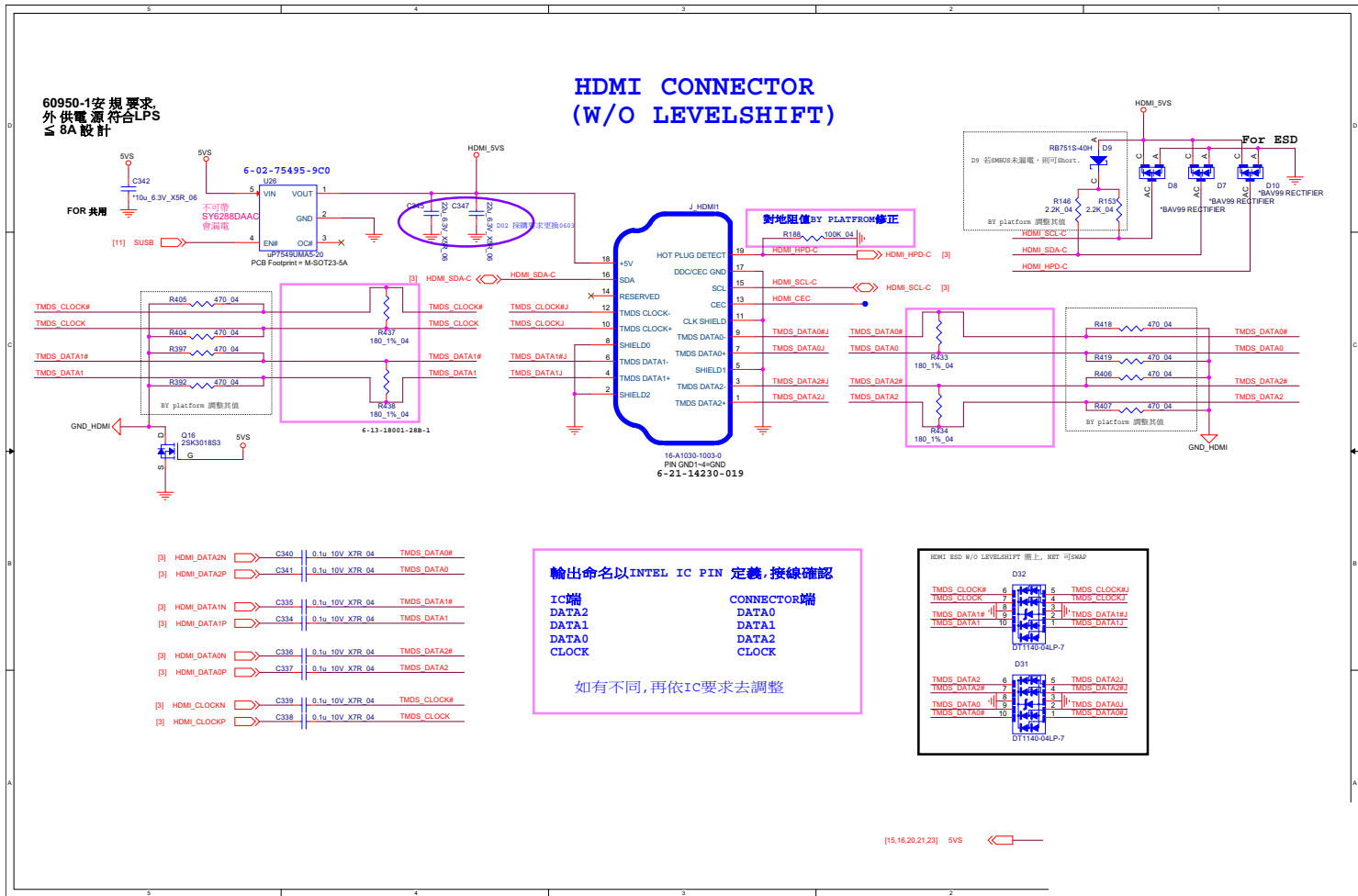
Sheet 11 of 31
Level Shifter



DDR4 SO-DIMM_0 B - 13



HDMI Port

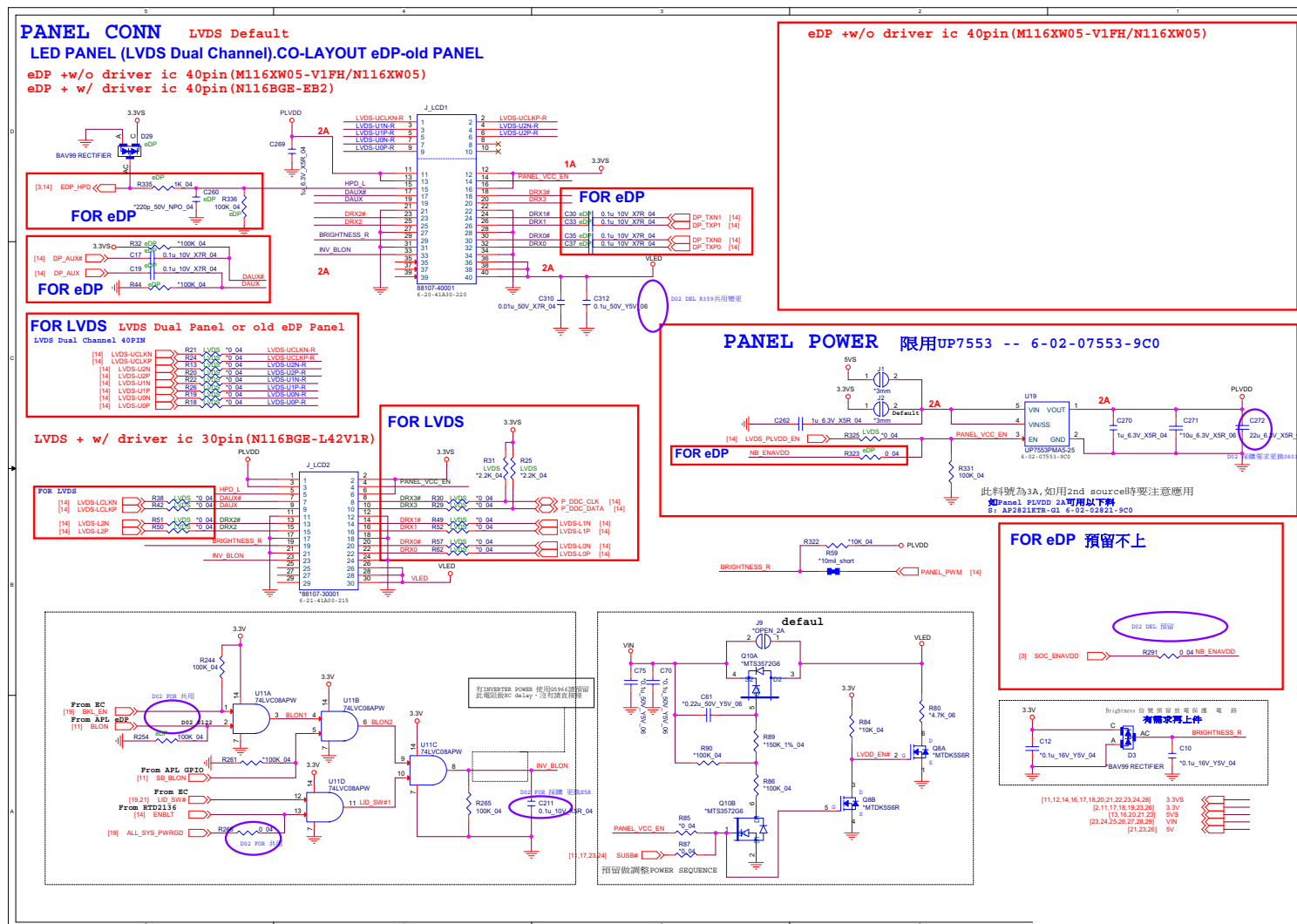


Sheet 14 of 31
RTD2136

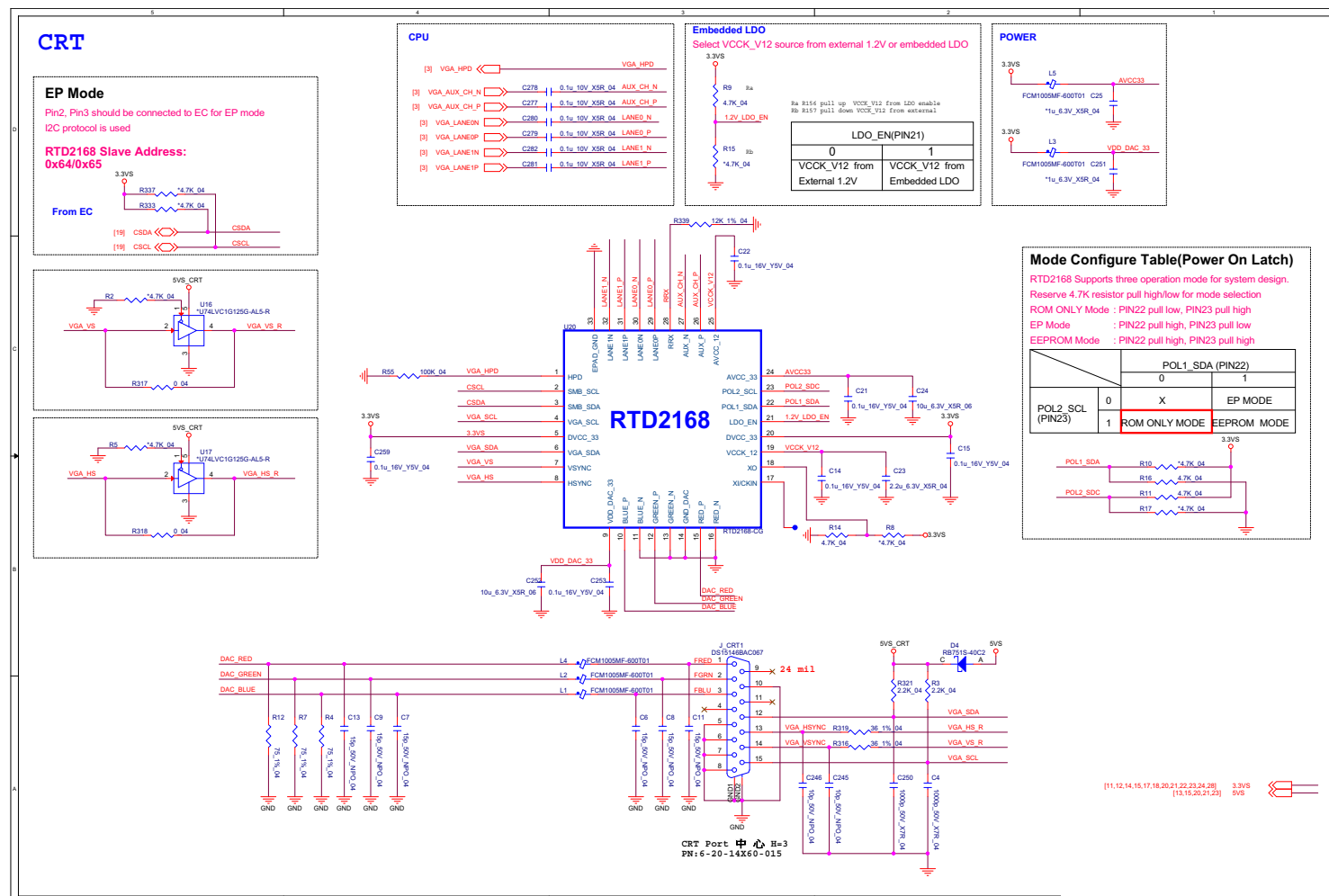


Panel Con

Sheet 15 of 31
Panel Con



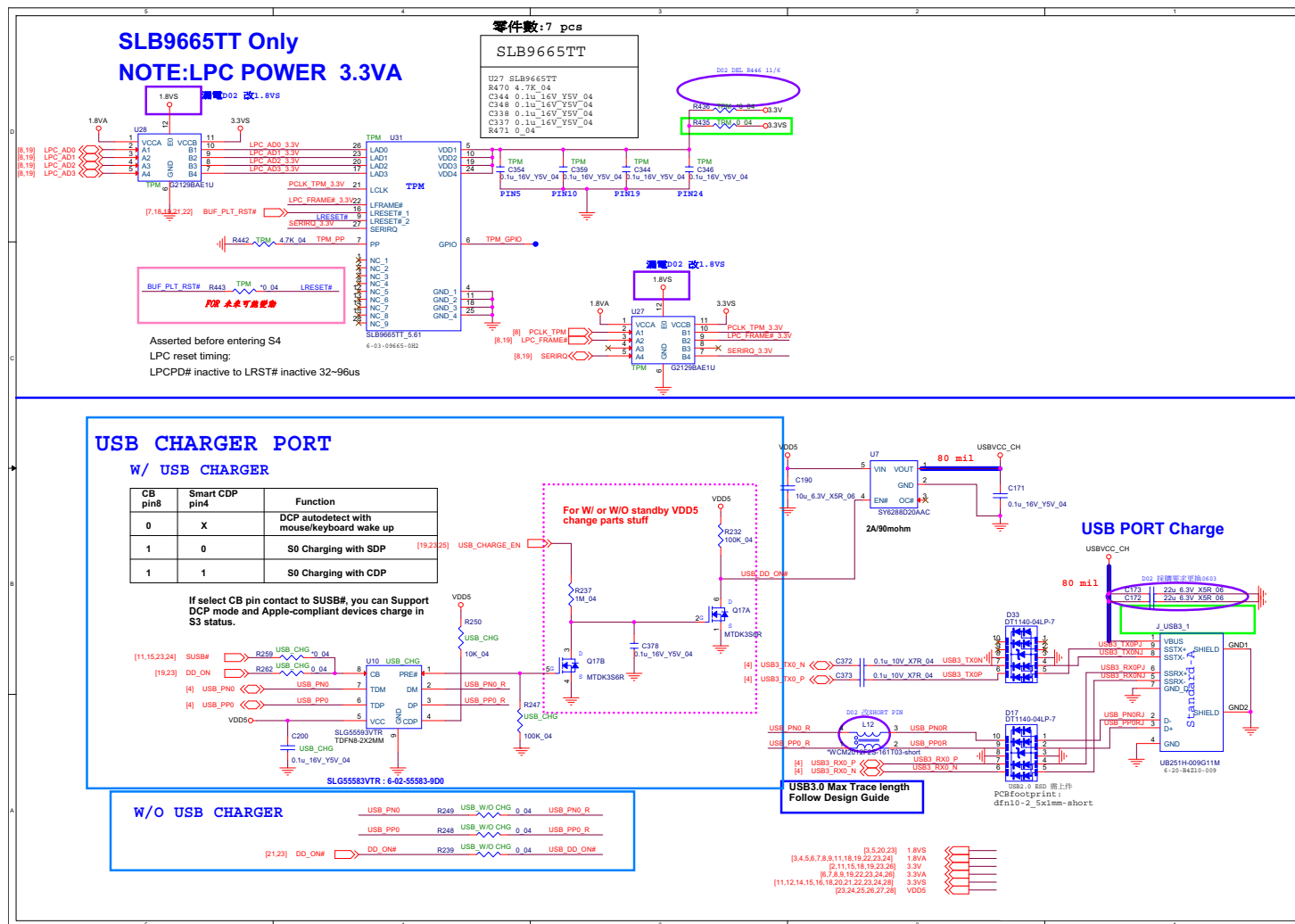
RTD2168-CG, CRT



Sheet 16 of 31
RTD2168-CG, CRT

TPM/USB

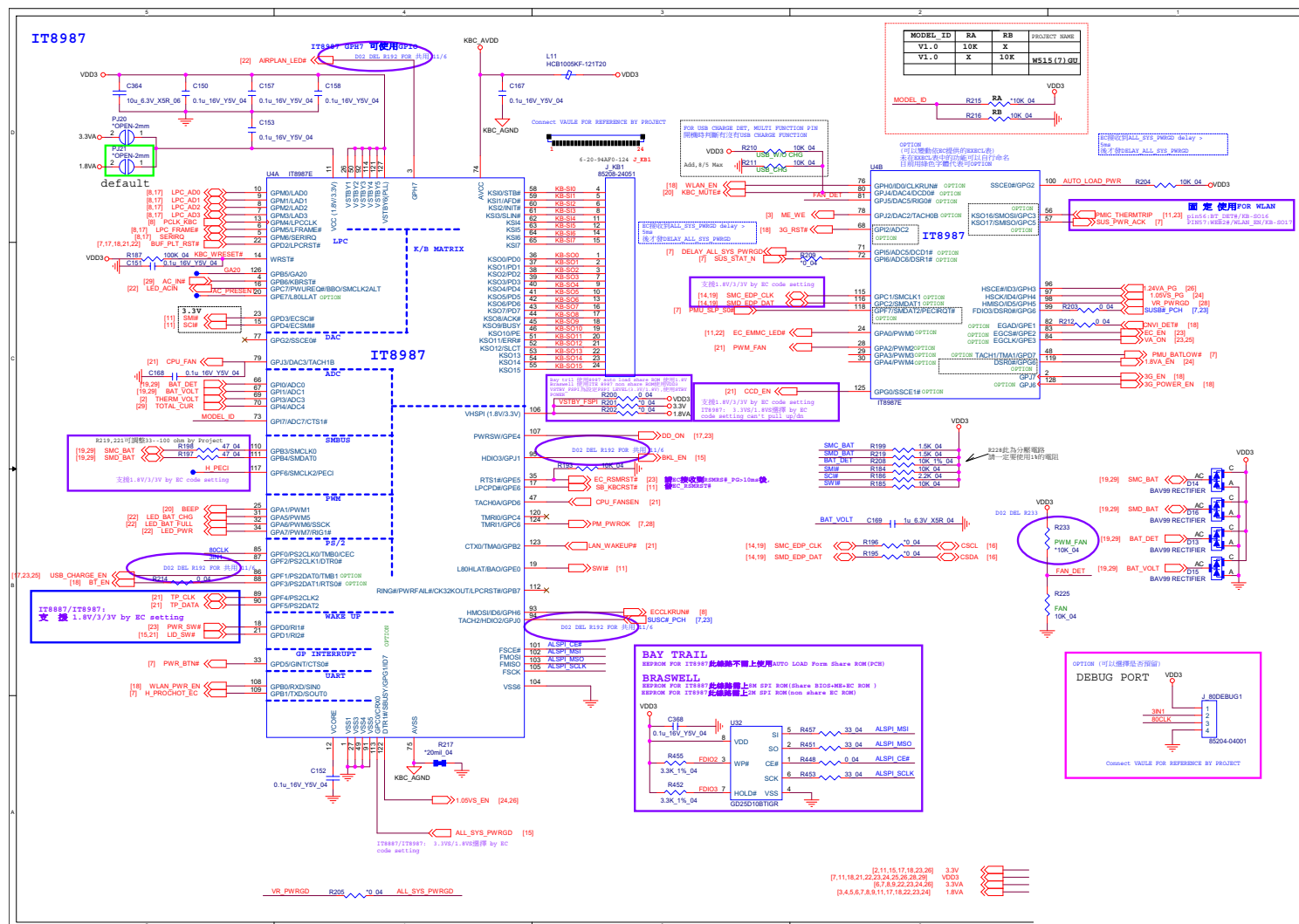
B. Schematic Diagrams



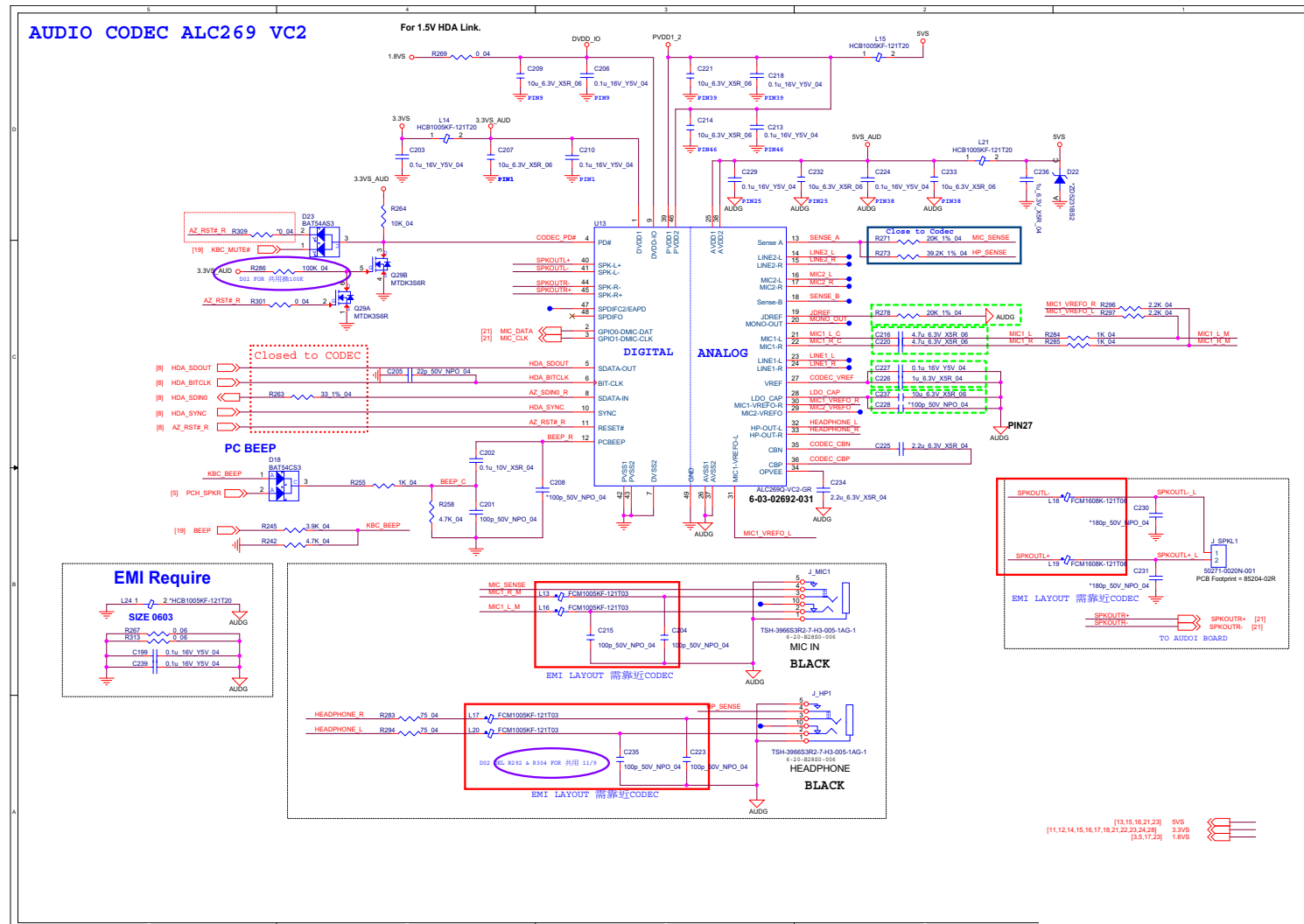
WLAN, 3G, MSATA B - 19

KBC-ITE IT8987t

Sheet 19 of 31
KBC-ITE IT8987

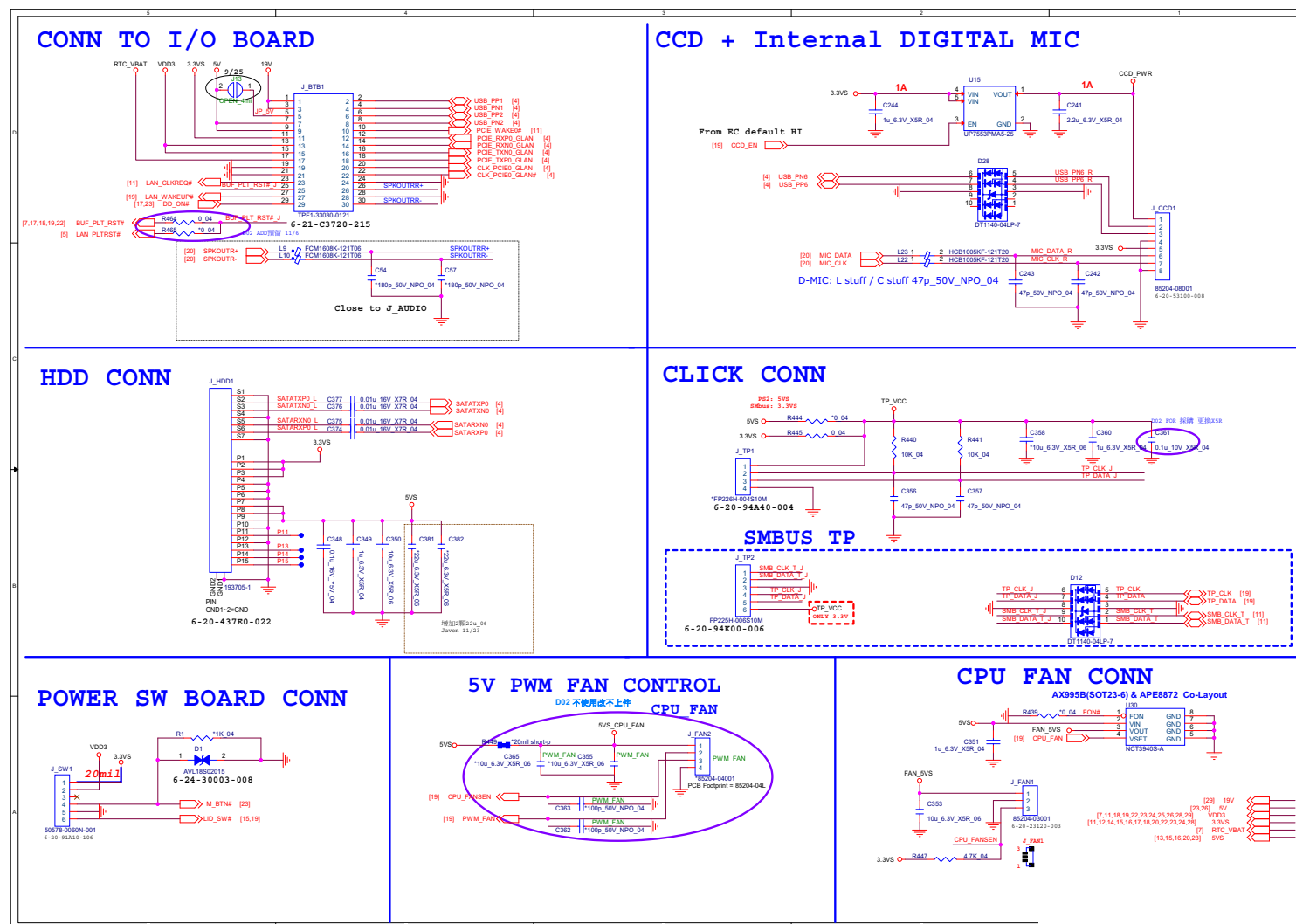


Audio Codec B - 21



Conn, CCD, Fan, Click

Sheet 21 of 31
Conn, CCD, Fan,
Click



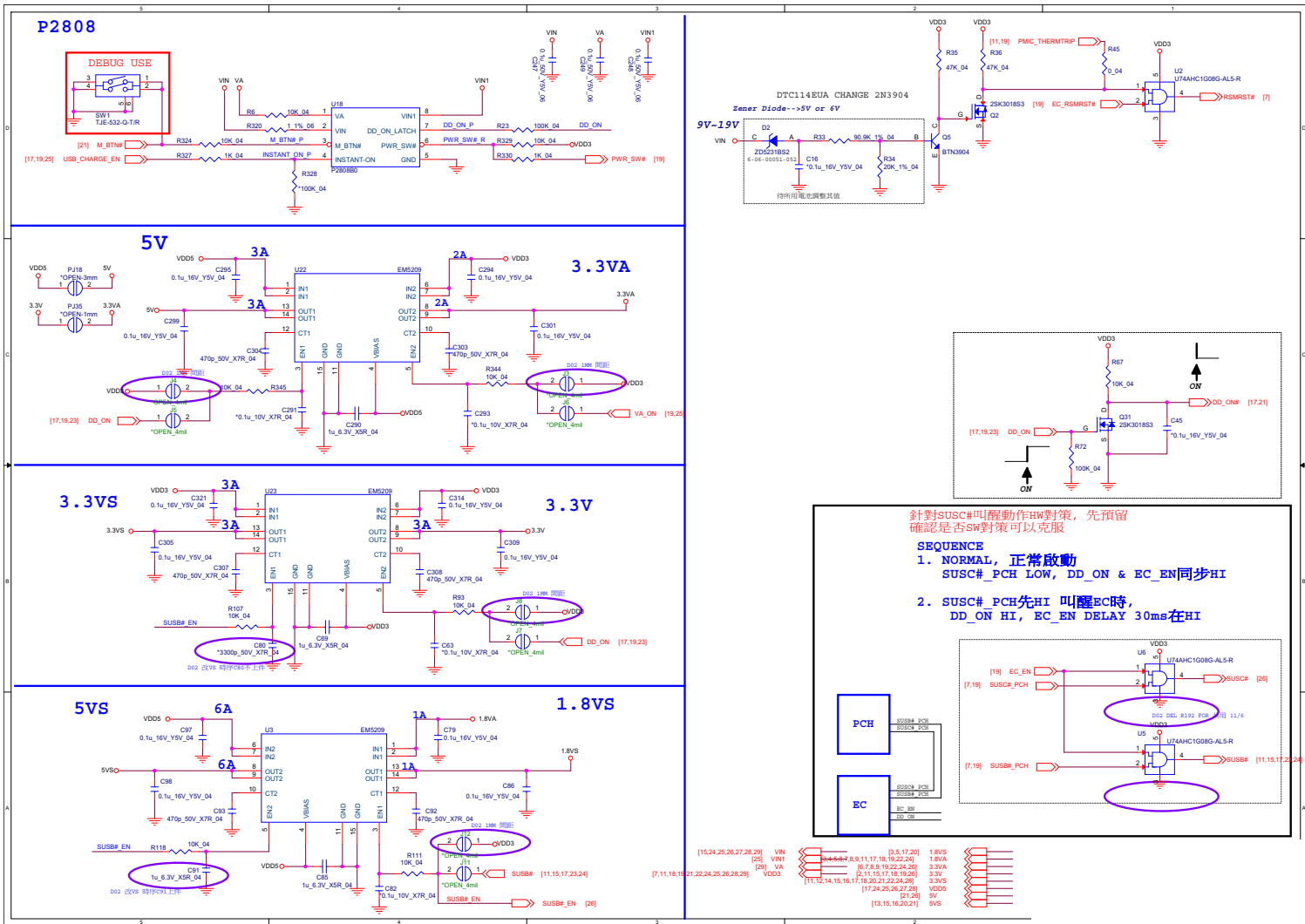
Sheet 22 of 31
eMMC / LED / Hole /
Nut



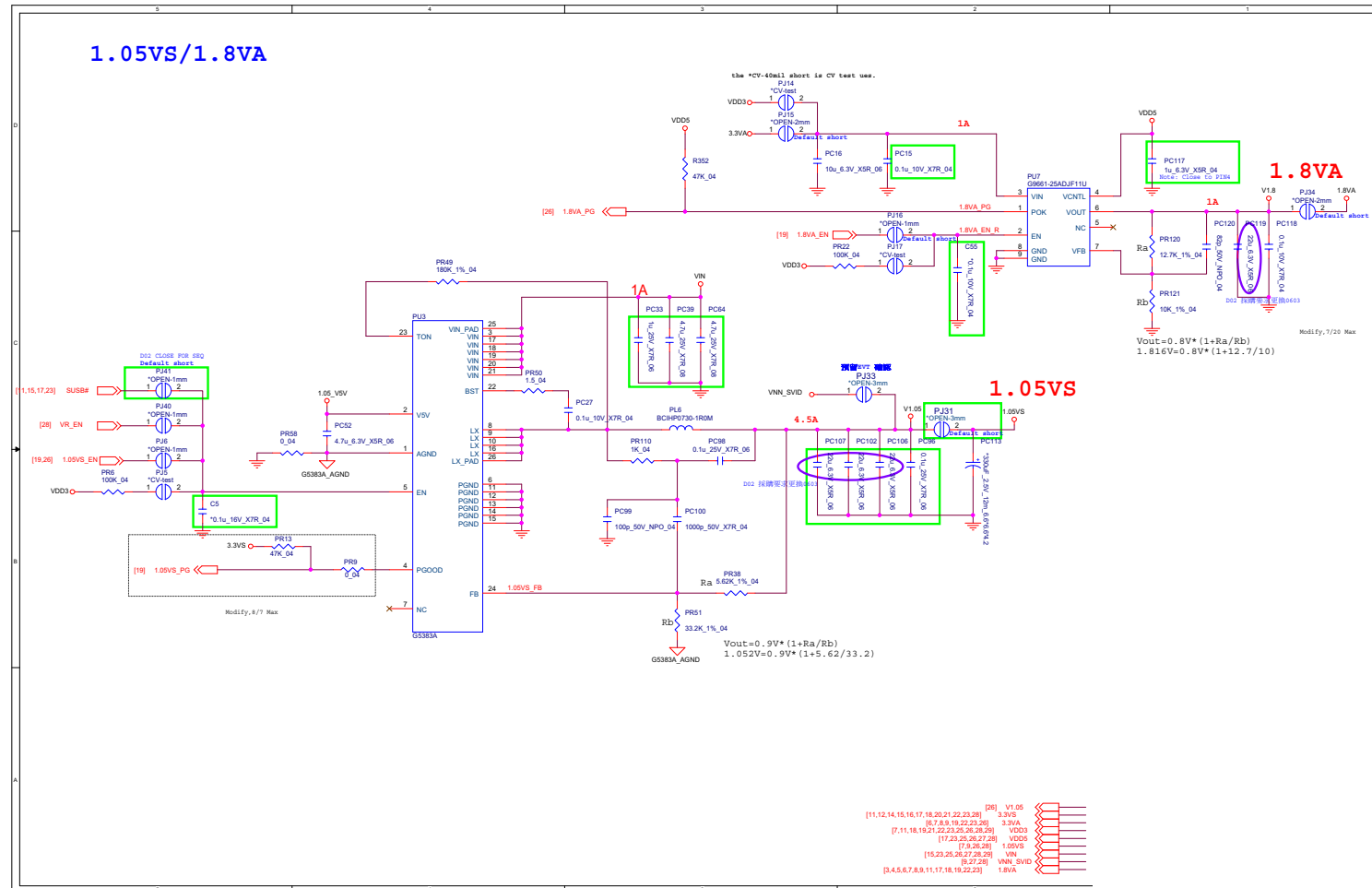
System Power

B.Schematic Diagrams

Sheet 23 of 31
System Power



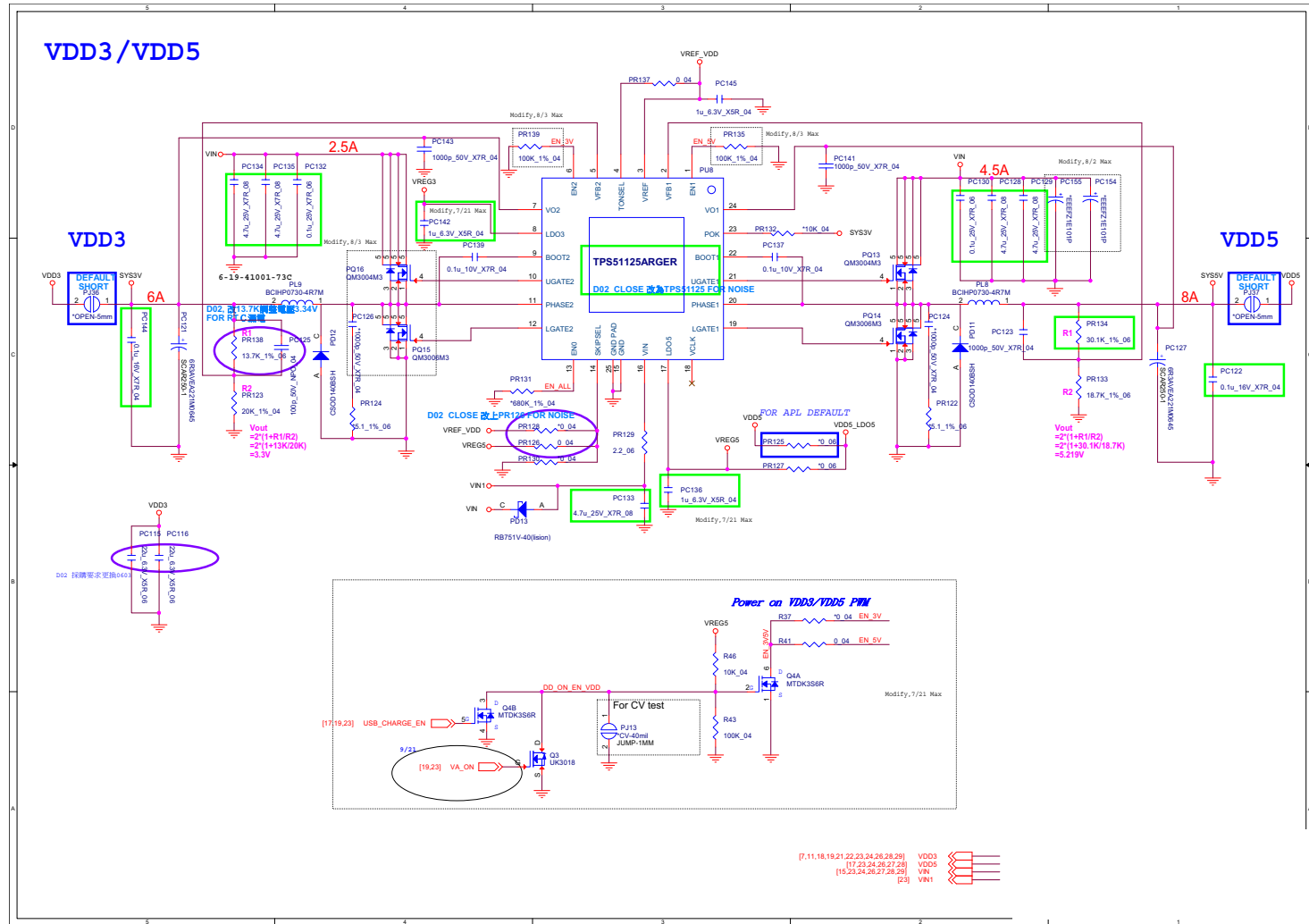
1.05VS / 1.8VAI B - 25



Schematic Diagrams

VDD3, VDD5

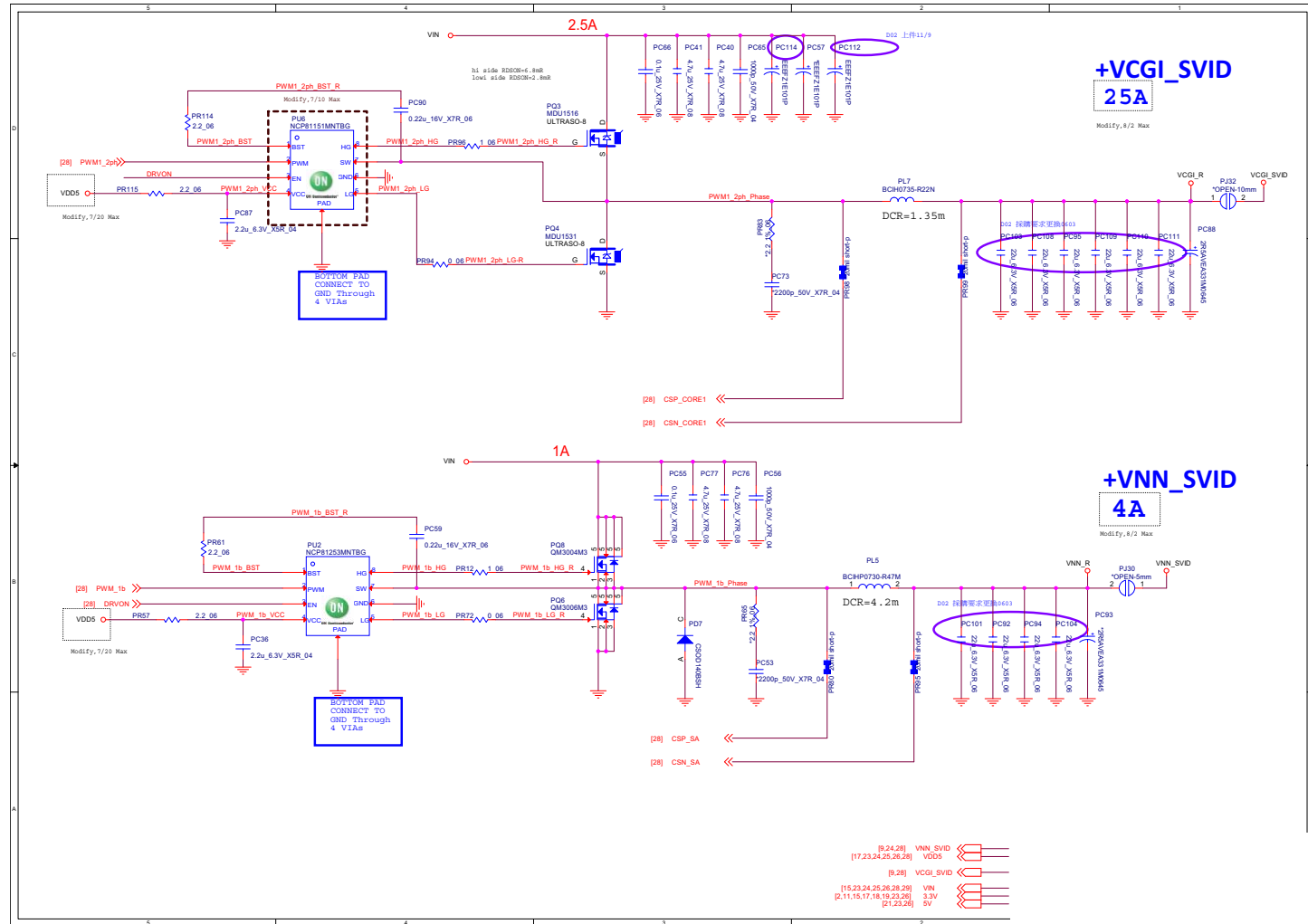
Sheet 25 of 31
VDD3, VDD5



Schematic Diagrams

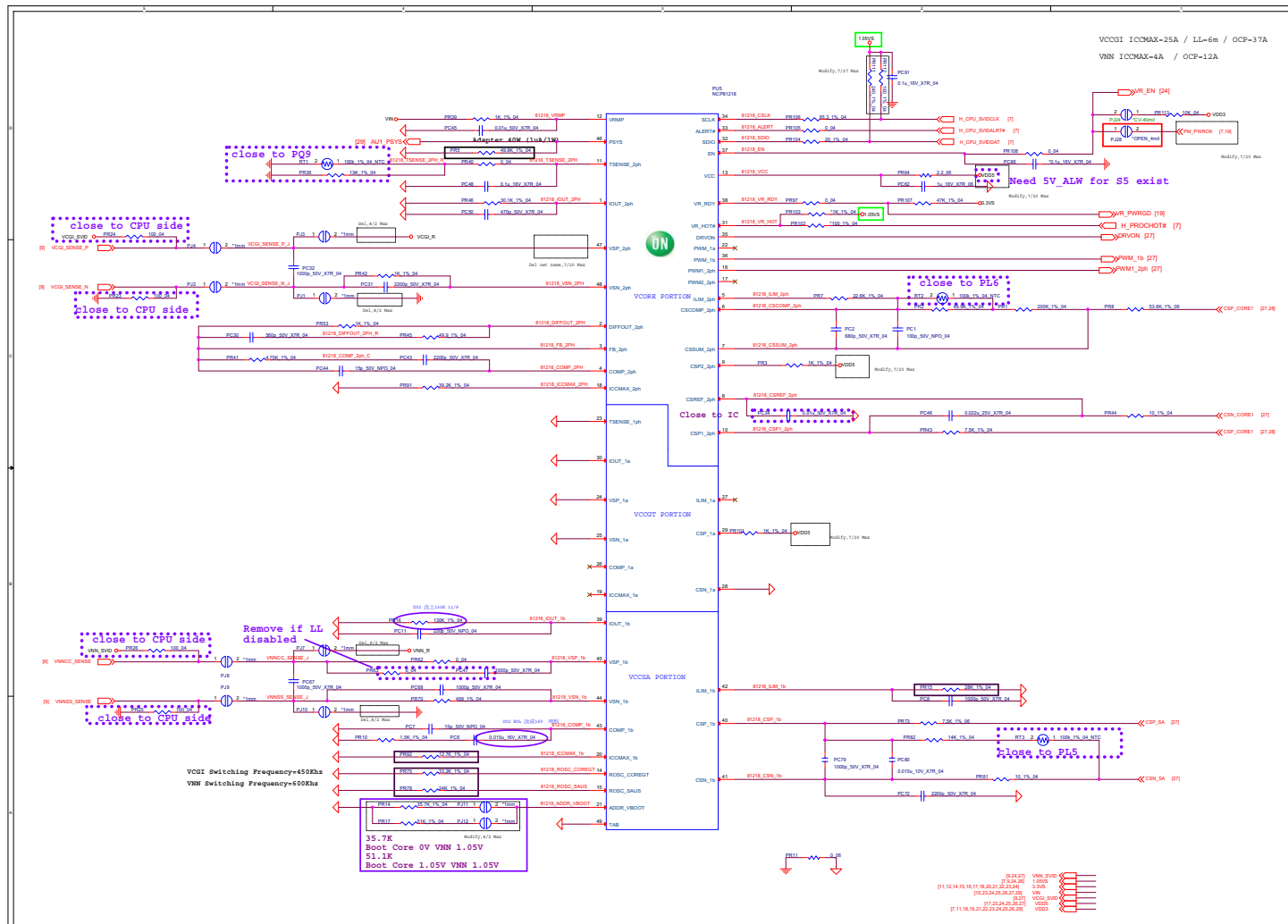
VCGI & VNN

Sheet 27 of 31
VCGI & VNN



Schematic Diagrams

VCore



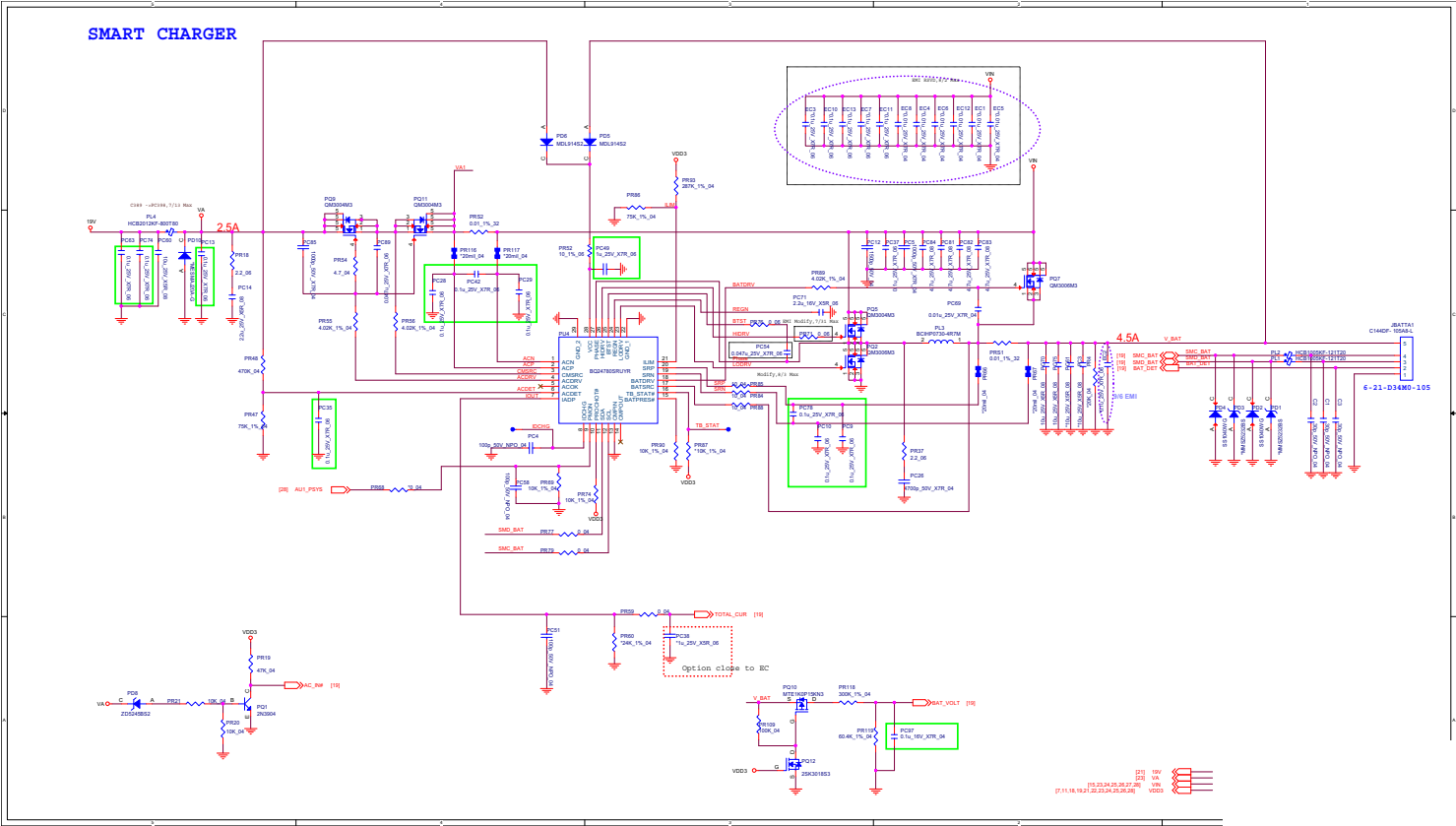
Sheet 28 of 31
VCore

B.Schematic Diagrams

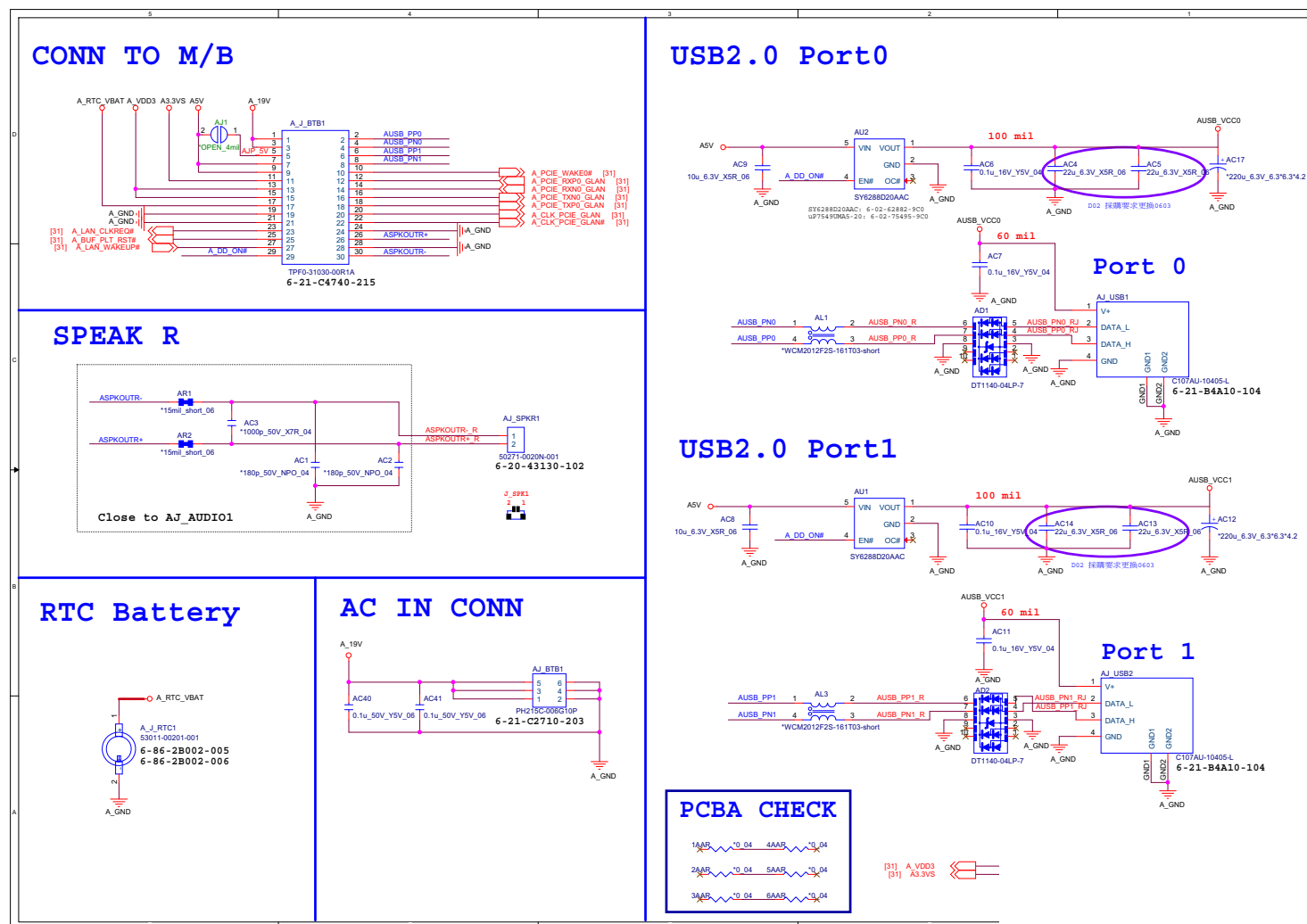
Schematic Diagrams

AC-In, Charger

Sheet 29 of 31
AC-In, Charger

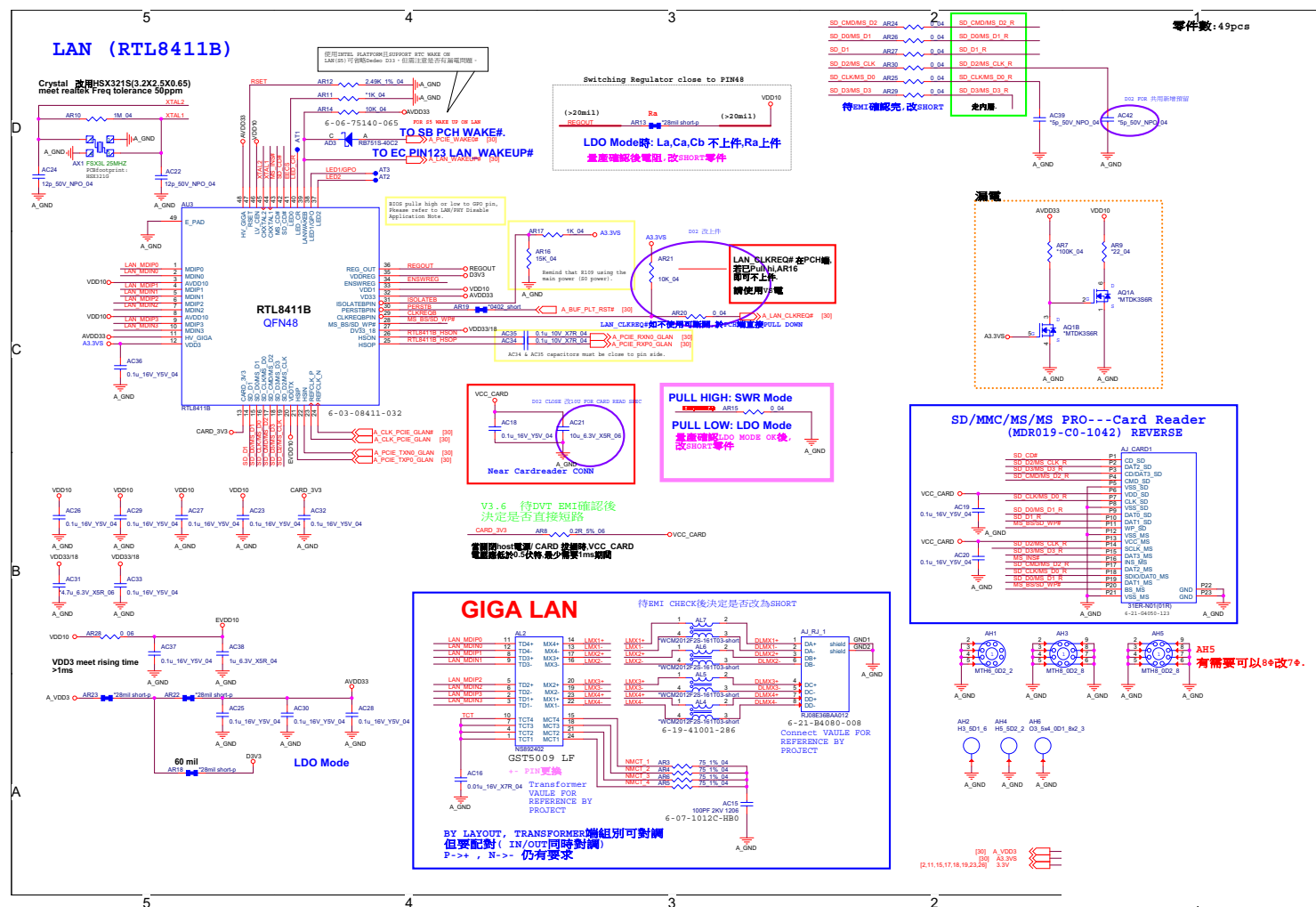


I/O Board

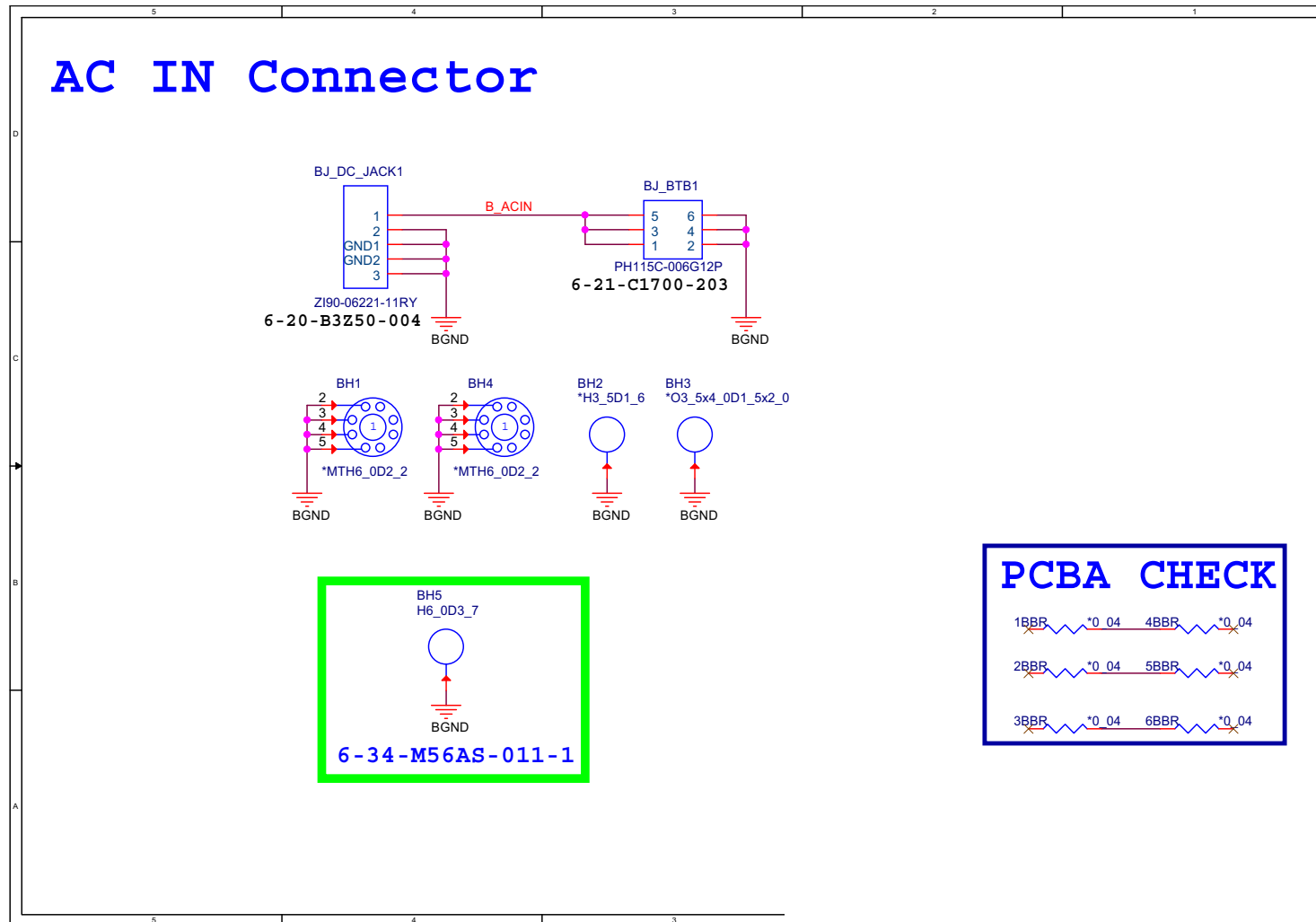


B.Schematic Diagrams

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RTL8411

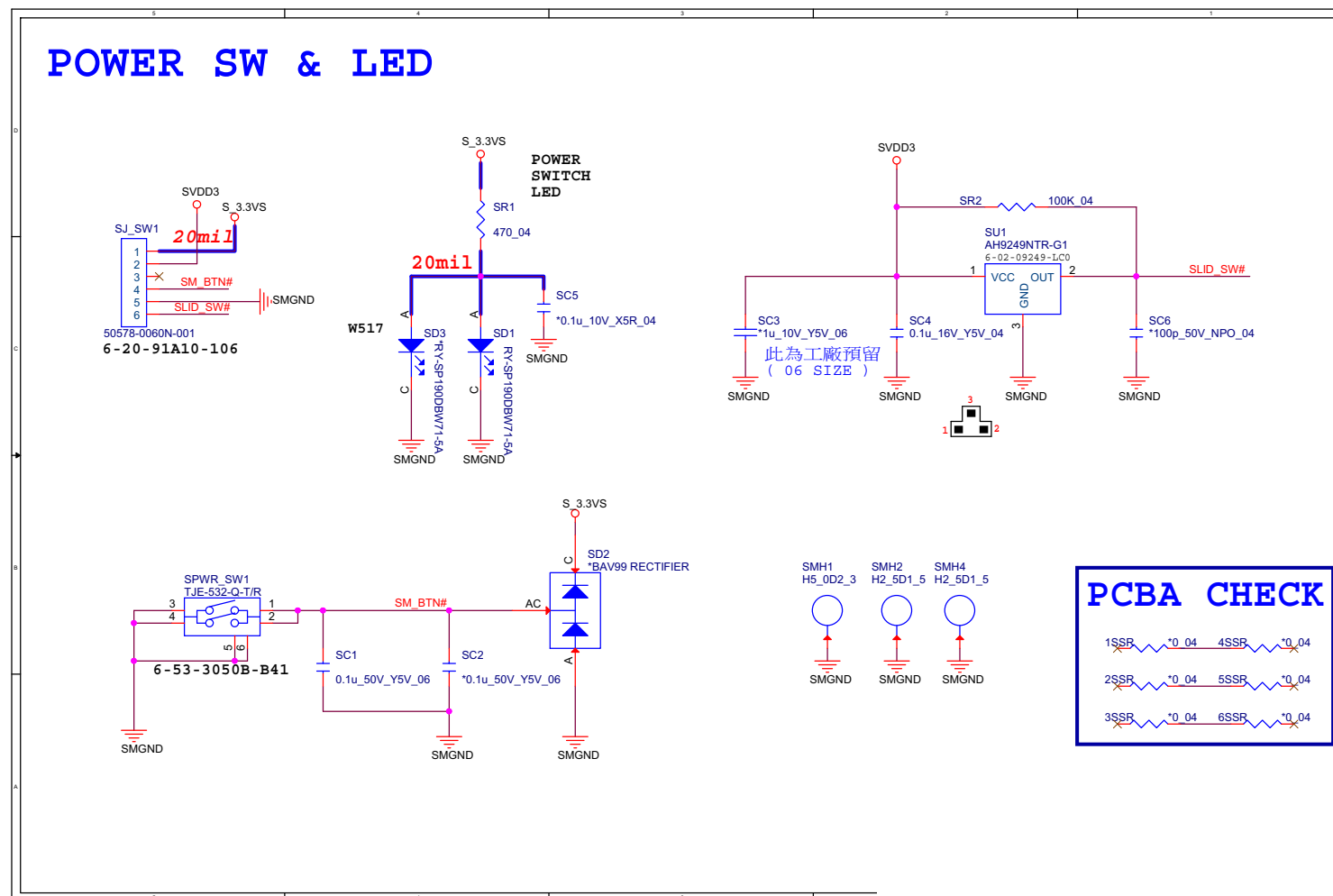


AC-In Conn

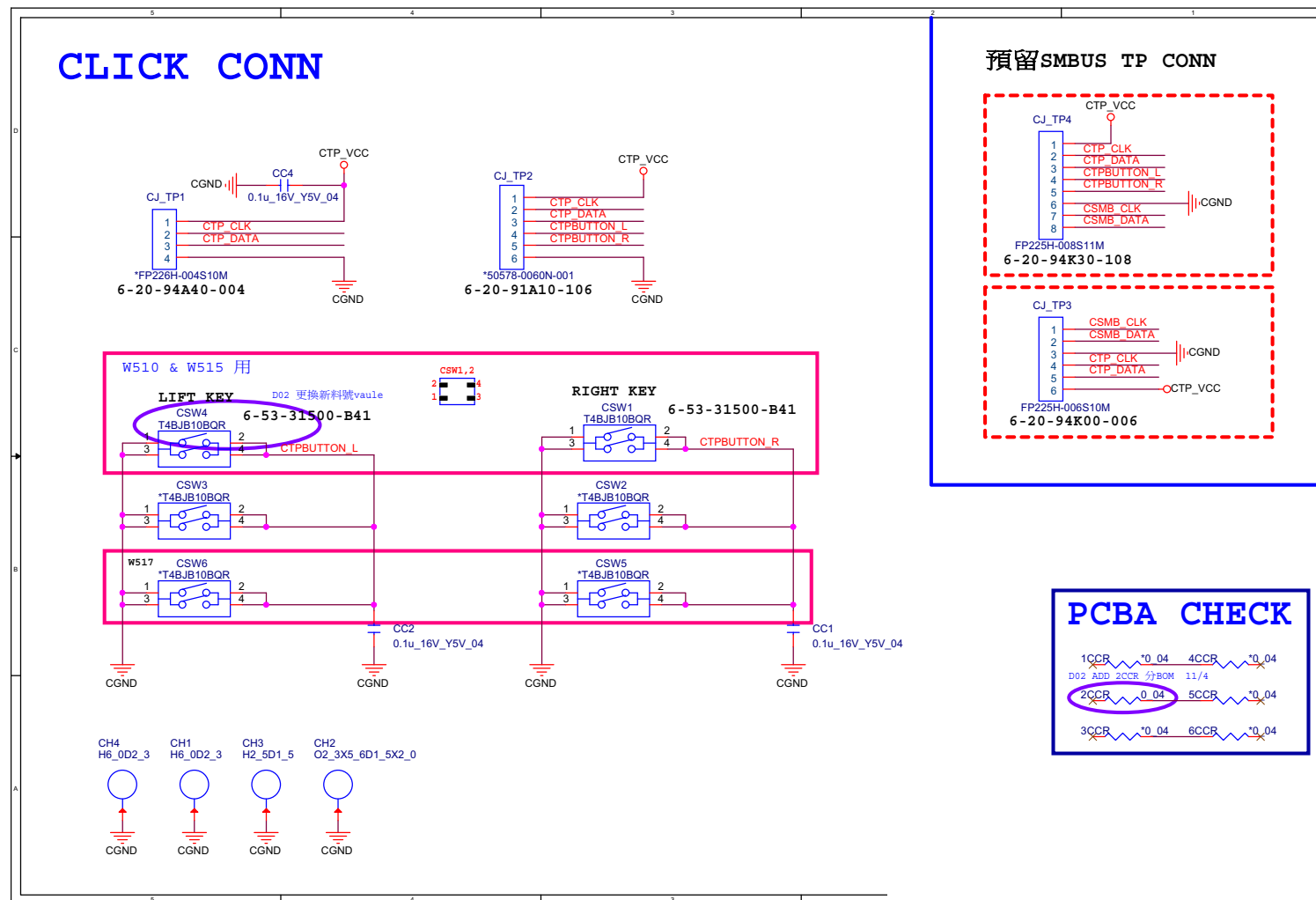


POWER SW & LED

B - 34 Power SW Board



Click Board

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Click Board

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 **F10** 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 V1.0X.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 1.0X.05, you **MAY NOT** then go back and flash the BIOS to ver 1.0X.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 “**EFI Shell**”. You will then be prompted to give “**Y**” or “**N**” responses to the programs being loaded by EFI Shell. Choose “**N**” for any memory management programs.
2. You should now see **DISK fsX:\>** (X is the designated drive number for the CD/DVD drive/USB flash drive).
3. **Type the following command:**

fsX:\> Flash.nsh

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 **F9**) and select “**Yes**” to confirm the selection.
5. Press **F10** 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.