

SERVICE MANUAL

P640RF / P641RF

notebook



Notebook Computer

P640RF / P641RF

Service Manual

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Version 1.0
March 2016

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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 *P640RF* / *P641RF* 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 as follows:
 - AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19.5V, 7.7A (**150** 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:

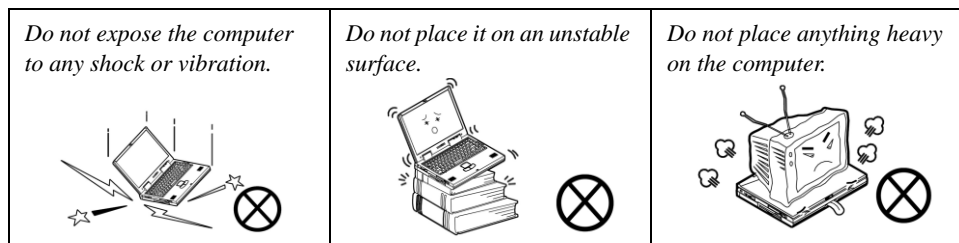
This device may not cause harmful interference.

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

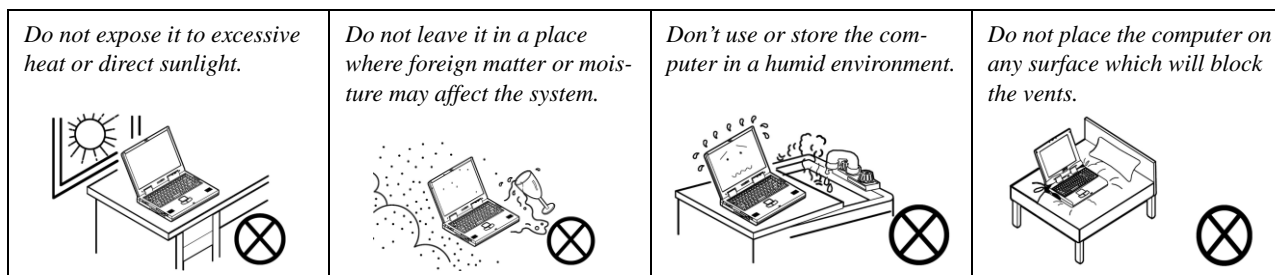
Instructions for Care and Operation

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

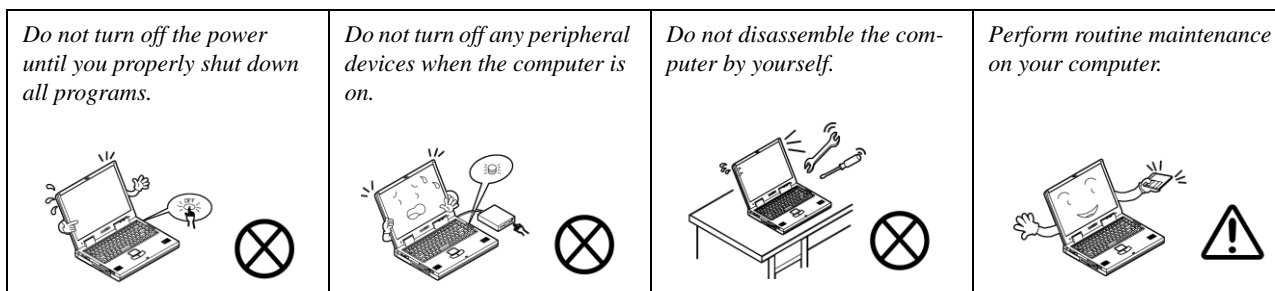
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



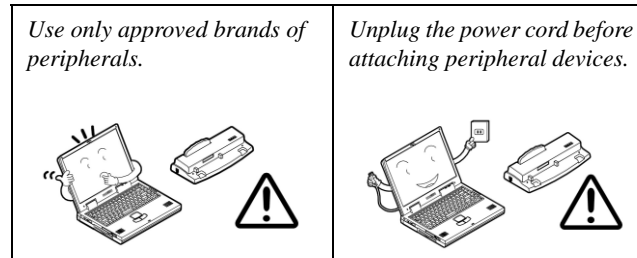
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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.



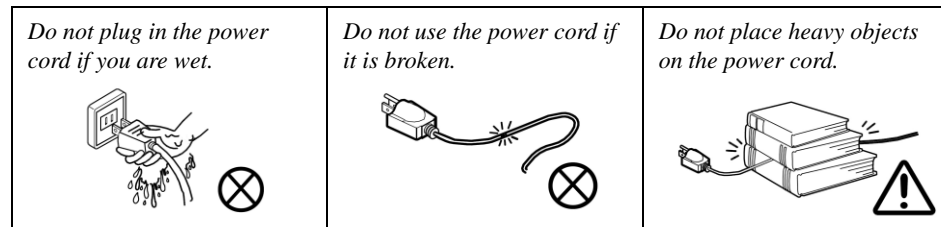
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

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



Power Safety Warning

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

Battery Precautions

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

Battery Guidelines

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

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




Battery Disposal

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

Caution

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

Battery Level

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

Related Documents

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

User's Manual on CD/DVD

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

System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Insert the battery and make sure it is locked in position.
4. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
5. Attach the AC/DC adapter to the DC-In jack at the rear of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 135 degrees); use the other hand (as illustrated in Figure 1) to support the base of the computer (**Note: Never** lift the computer by the lid/LCD).
7. Press the power button to turn the computer "on".

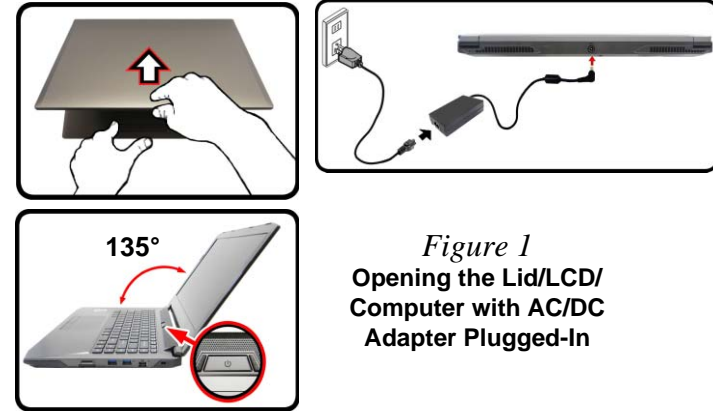


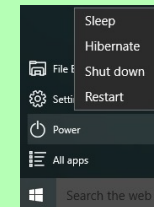


Figure 1
**Opening the Lid/LCD/
Computer with AC/DC
Adapter Plugged-In**

Shut Down

Note that you should always shut your computer down by choosing the **Shut down** command in **Windows** (see below). This will help prevent hard disk or system problems.

1. Click the Start Menu icon .
2. Click the **Power** item .
3. Choose **Shut Down** from the menu.



Contents

Introduction1-1

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

Disassembly2-1

Overview	2-1
Maintenance Tools	2-2
Connections	2-2
Maintenance Precautions	2-3
Disassembly Steps	2-4
Removing the Keyboard	2-5
Removing the Battery	2-6
Removing the Hard Disk Drive	2-8
Removing the System Memory (RAM)	2-10
Removing the M.2 SSD Module	2-11
Removing the Wireless LAN Module	2-12
Wireless LAN, Combo, 3G & LTE Module Cables	2-13
Removing the 3G Module	2-14

Part ListsA-1

Part List Illustration Location	A-2
Top	A-3
Bottom	A-4

Main Board	A-5
HDD	A-6
LCD	A-7

Schematic Diagrams.....B-1

System Block Diagram	B-2
Processor 1/7	B-3
Processor 2/7	B-4
Processor 3/7 - DDR4	B-5
Processor 4/7	B-6
Processor 5/7- Power 1	B-7
Processor 6/7- Power 2	B-8
Processor 7/7	B-9
DDR4 CHA SO-DIMM_0	B-10
DDR4 CHB SO-DIMM_0	B-11
Panel, Inverter, CRT	B-12
Redriver	B-13
Mini DP Port E	B-14
Mini DP Port F	B-15
HDMI Connector	B-16
VGA PCI Express	B-17
VGA Frame Buffer Partition	B-18
Frame Buffer Partition A	B-19
Frame Buffer Partition B	B-20
Frame Buffer Partition A_B	B-21
GPU Frame Buffer Partition	B-22
Frame Buffer Partition C	B-23
Frame Buffer Partition C	B-24
GPU Decoupling	B-25
PCH 1/9	B-26
PCH 2/9	B-27

Preface

PCH 3/9	B-28
PCH 4/9	B-29
PCH 5/9	B-30
PCH 6/9	B-31
PCH 7/9	B-32
PCH 8/9	B-33
PCH 9/9	B-34
DACA Interface and XTAL	B-35
Power	B-36
TPS65982	B-37
USB Charger	B-38
USB 3.0	B-39
LAN RTL8411B	B-40
M.2 3G	B-41
M.2 WLAN+BT, PCIE4X SSD	B-42
Realtek ALC892	B-43
TPA2008D2	B-44
KBC-ITE IT8587	B-45
TPM, CCD, TP	B-46
Fan, LID, KB LED	B-47
DDR 1.35V / 0.75VS	B-48
VDD3, VDD5	B-49
5V, 5VS, 3.3V, 3.3VS, 3.3VA	B-50
Power 1.0V, VCCIO	B-51
AC_In, Charger	B-52
1.0DX_VCCSTG/VCCSFR_OC	B-53
PEX_VDD, 3V3_AON, 3V3_RUN	B-54
NVVDD Phase 1 & 2	B-55
FBVDDQ	B-56
VCC_Core & VCCSA	B-57
VCore Output Stage	B-58
VCCGT	B-59

VCCGT Output Stage	B-60
Power Board	B-61
LED Board	B-62
Click Board	B-63
Audio Board	B-64

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 **P640RF / P641RF** 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 8.1*, etc.) have their own manuals as do application softwares (e.g. word processing and database programs). If you have questions about those programs, you should consult those manuals.

The **P640RF / P641RF** 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

i7-6820HK (2.70GHz)

8MB Smart Cache, 14nm, DDR4-2133MHz, TDP 45W

i7-6700HQ (2.60GHz)

8MB Smart Cache, 14nm, DDR4-2133MHz,

TDP 45W

Support Intel® XTU over-clocking technology on i7-6820HK



CPU Speed & Computer in DC Mode

Note that when the computer is in DC mode (powered by the battery only) the CPU may not run at full speed. This is a design feature implemented in order to protect the battery.

Core Logic

Intel® HM170 Express Chipset

BIOS

AMI BIOS (64Mb SPI Flash-ROM)

LCD Options

14.0" (35.56cm), 16:9, FHD (1920x1080)

Storage

One changeable 2.5" (6cm) **7.0mm (h) SATA** (Serial) Hard Disk Drive/Solid State Drive (SSD)

(Factory Option) One M.2 SATA/PCIe Gen3 x4 Solid State Drive (SSD)

Memory

Two 260 Pin SO-DIMM Sockets Supporting **DDR4 2133MHz** Memory

Memory Expandable from **4GB (minimum)** up to **32GB (maximum)**



SO-DIMM Memory Types

All SO-DIMM memory modules installed in the system should be identical (the same size and brand) in order to prevent unexpected system behavior.

Do not mix SO-DIMM memory module sizes and brands otherwise unexpected system problems may occur.

Video Adapter

Intel® Integrated GPU and NVIDIA® Discrete GPU

Supports Microsoft Hybrid Graphics

Supports up to 4 Active Displays

Intel Integrated GPU

Intel® HD Graphics 530

Dynamic Frequency

Intel Dynamic Video Memory Technology

Microsoft DirectX®12 Compatible

NVIDIA® Discrete GPU

NVIDIA® GeForce GTX 965M

2GB GDDR5 Video RAM on board

Microsoft DirectX® 12 Compatible

Audio

High Definition Audio Compliant Interface
 S/PDIF Digital Output
 Two Speakers
 Sound Blaster Audio
 ANSP™ 3D sound technology on headphone output
 Built-In Array Microphone

Note: External 5.1CH Audio Output Supported by Headphone, Microphone and S/PDIF Out Jacks

Security

Security (Kensington® Type) Lock Slot
 BIOS Password
(Factory Option) TPM 2.0
 Intel PTT for Systems Without TPM Hardware

Keyboard

Illuminated White-LED “WinKey” Keyboard (with embedded numeric keypad)

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

M.2 Slots

Slot 1 for **Combo WLAN and Bluetooth** Module
 Slot 2 for **SATA** or **PCIe Gen3 x4 SSD**
(Factory Option) Slot 3 for **3G/4G** Module

Interface

One HDMI-Out Port
 Two Mini DisplayPorts 1.2*
 One S/PDIF Out Jack
 One Headphone/Speaker-Out Jack
 One Microphone-In Jack
 One RJ-45 LAN Jack
 One DC-In Jack
 Virtual Reality ready (via **Mini DisplayPort 1**)
 Three USB 3.0 (USB 3.1 Gen 1) Ports (Including one AC/DC Powered USB port)
 One USB 3.1 (Gen 2 - Type C) Port

Communication

Built-In Gigabit Ethernet LAN
 2.0M FHD PC Camera Module
(Factory Option) M.2 **3G/4G** Module

WLAN/ Bluetooth M.2 Modules:

(Factory Option) Intel® Wireless-AC 8260 Wireless LAN **(802.11ac)** + Bluetooth **4.1**

(Factory Option) Intel® Wireless-N 7265 Wireless LAN **(802.11b/g/n)** + Bluetooth **4.0**

(Factory Option) Intel® Wireless-AC 3165 Wireless LAN **(802.11ac)** + Bluetooth **4.0**

(Factory Option) Qualcomm® Atheros Killer™ Wireless-AC 1535 Wireless LAN **(802.11ac)** + Bluetooth **4.1**

(Factory Option) Third-Party Wireless LAN **802.11b/g/n** + Bluetooth **4.0**

Environmental Spec**Temperature**

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

Relative Humidity

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

Power

Embedded 3-Cell Polymer Battery Pack, 45WH

Full Range AC/DC Adapter
 AC Input: 100 - 240V, 50 - 60Hz
 DC Output: 19.5V, 7.7A (**150W**)

Dimensions & Weight

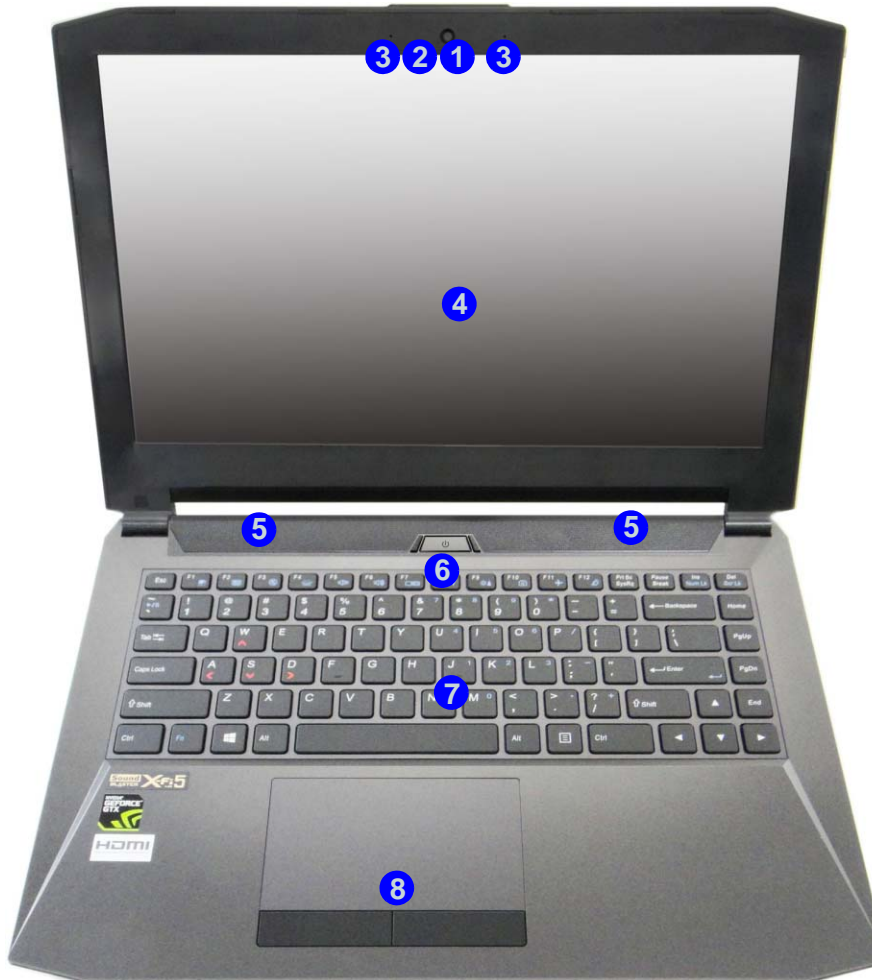
349mm (w) * 247mm (d) * 25.4mm (h)
 2.0kg (Barebone with 45WH Battery)

Introduction

External Locator - Top View with LCD Panel Open

Figure 1
Top View

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



External Locator - Front & Right Side Views

FRONT VIEW



Figure 2
Front View
1. LED Indicator

RIGHT SIDE VIEW



Figure 3
Right Side View
1. USIM Card Reader (for 3G/4G USIM Cards)
2. Multi-in-1 Card Reader
3. USB 3.0 (USB 3.1 Gen 1) Port
4. Powered USB 3.0 (USB 3.1 Gen 1) Port
5. RJ-45 LAN Jack
6. Security Lock Slot

Introduction

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. Mini Display Port 1
2. Mini Display Port 2
3. HDMI-Out Port
4. USB 3.0 (USB 3.1 Gen 1) Port
5. USB 3.1 (Gen 2 - Type C) Port
6. Microphone-In Jack
7. Headphone-Out Jack
8. S/PDIF-Out Jack

LEFT SIDE VIEW



Figure 5
Rear View

1. Vent
2. DC-In Jack

REAR VIEW



External Locator - Bottom View



Figure 6
Bottom View

- 1. Vent


Overheating

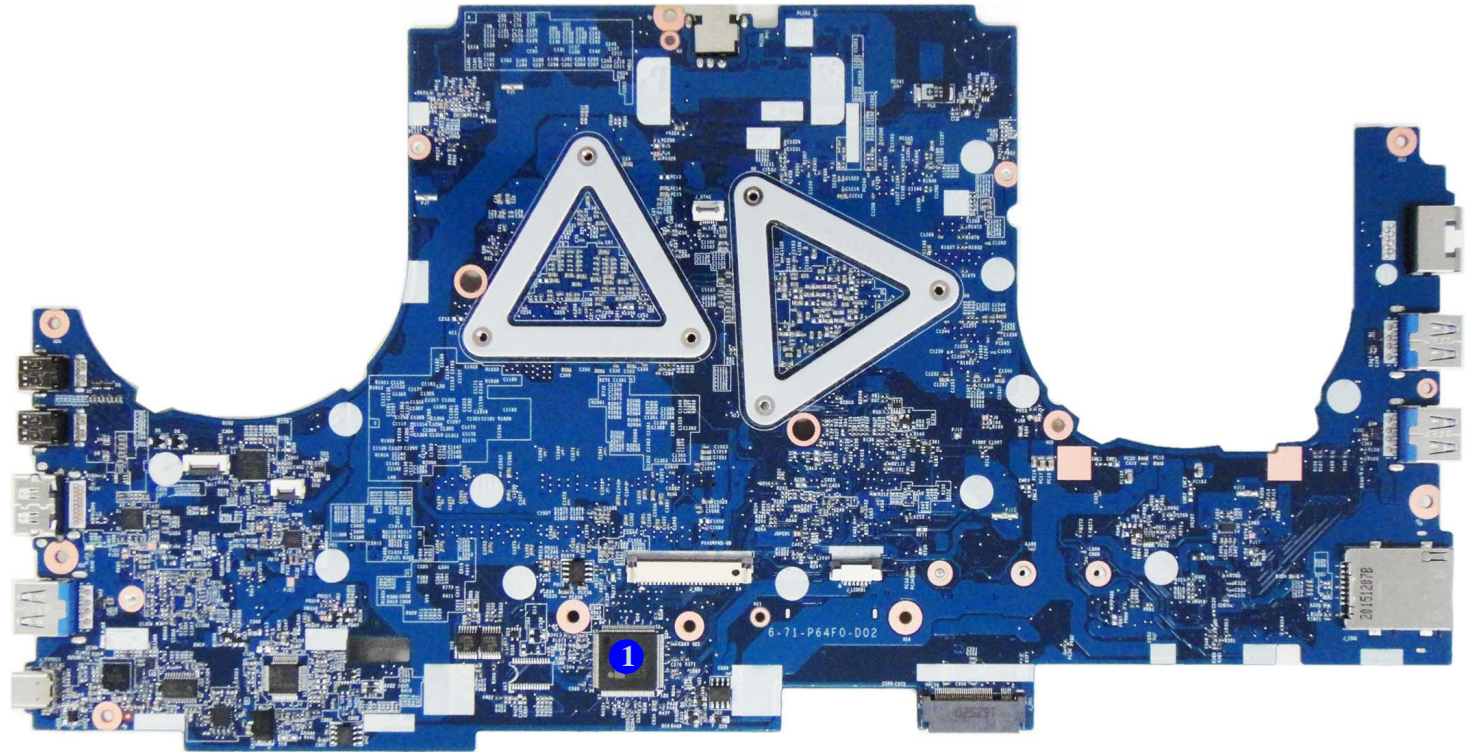
To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

Introduction

Figure 7
Mainboard Top
Key Parts

Mainboard Overview - Top (Key Parts)

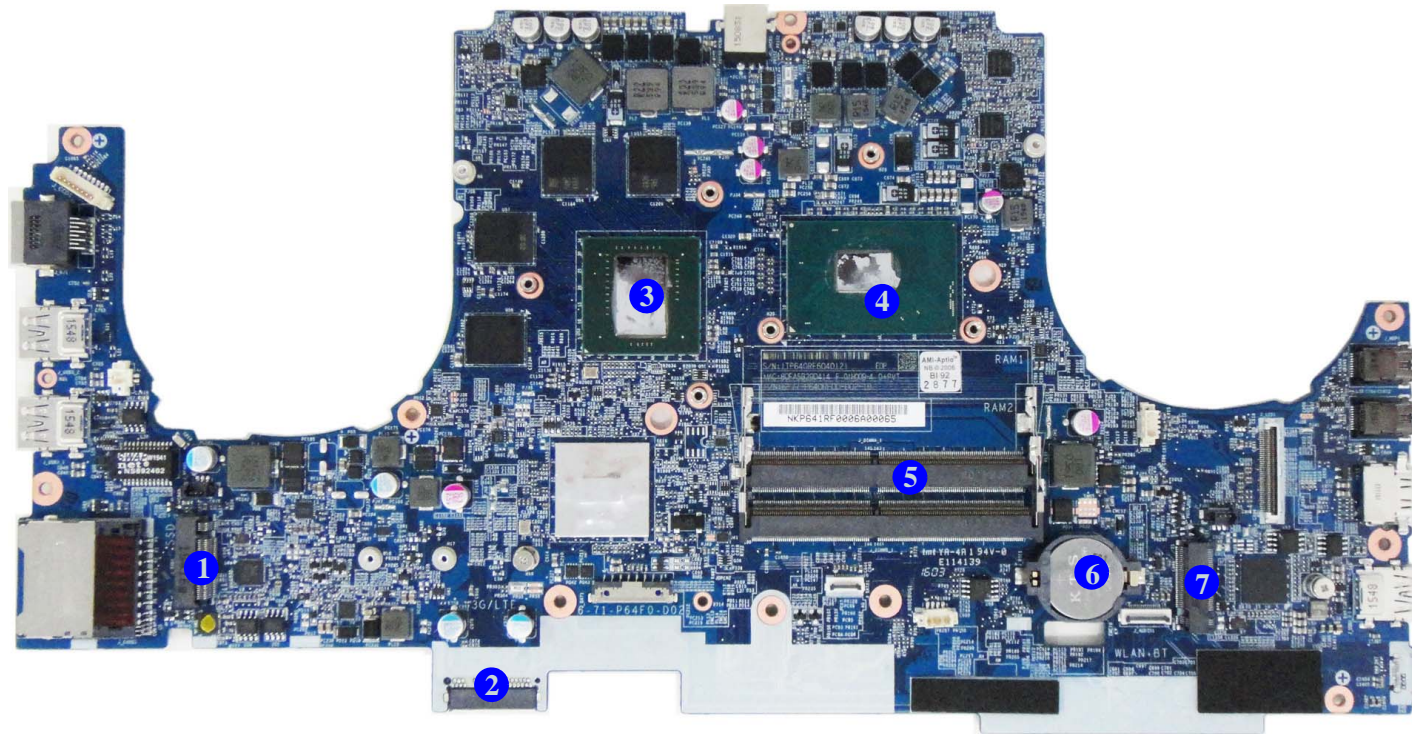
1. KBC-ITE IT8587



Mainboard Overview - Bottom (Key Parts)

Figure 8
Mainboard Bottom
Key Parts

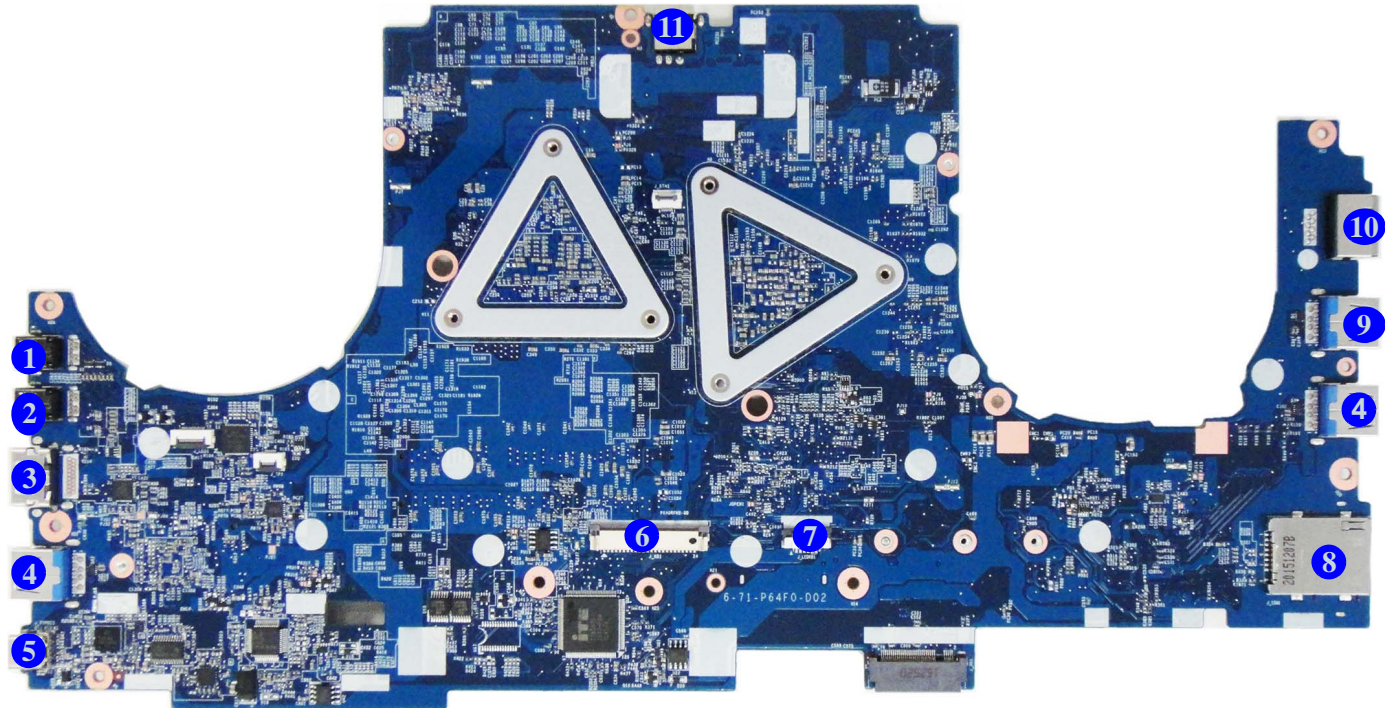
1. Mini-Card Connector (M.2 SSD Module)
2. Mini-Card Connector (M.2 3G/4G Module)
3. CPU
4. GPU-GTX965M
5. Memory Slots DDR3 SO-DIMM
6. CMOS Battery
7. Mini-Card Connector (WLAN Module)



Introduction

Figure 9
**Mainboard Top
Connectors**

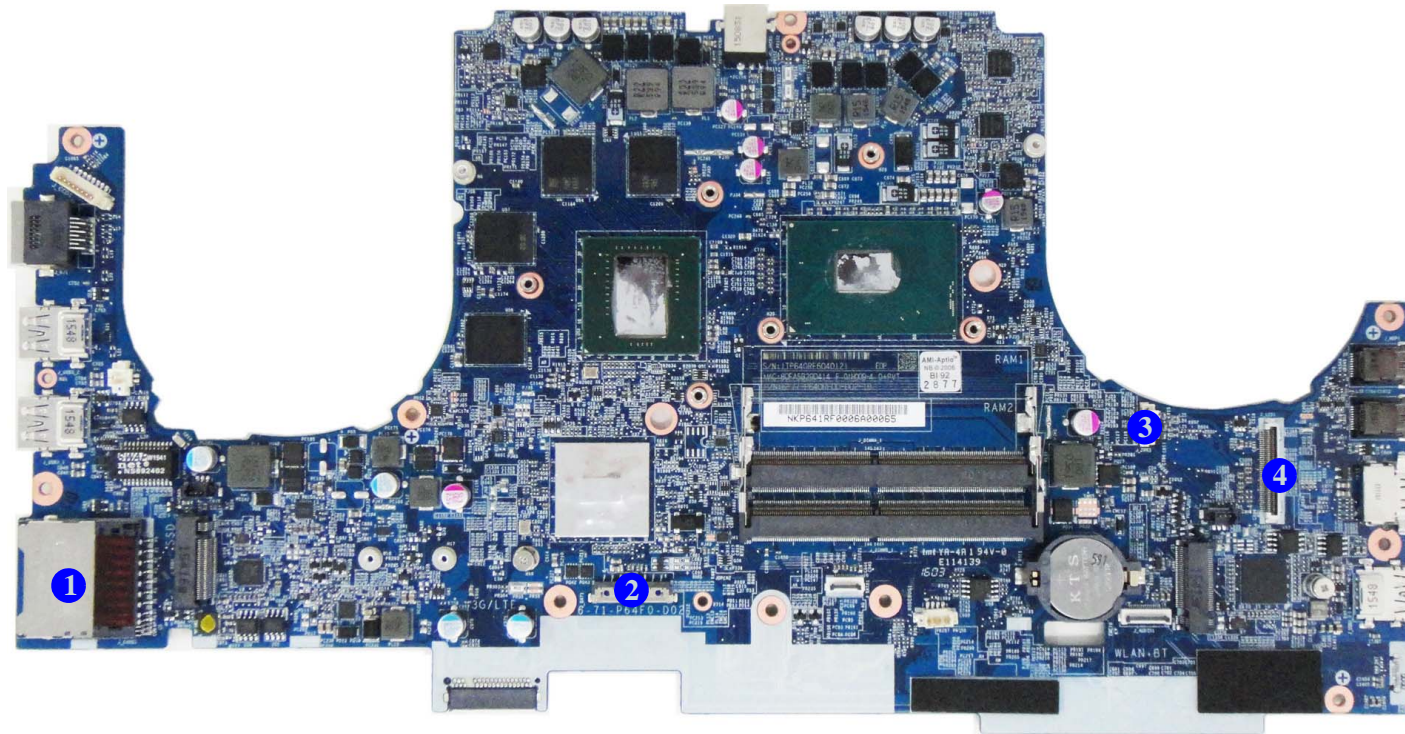
1. Mini Display Port 1
2. Mini Display Port 2
3. HDMI-Out Port
4. USB Port 3.0
(USB 3.1 Gen 1)
Connector
5. USB Port 3.1 (Gen
2 -Type C)
Connector
6. Keyboard Cable
Connector
7. TP Connector
8. USIM Card
Reader
9. Powered USB
Port 3.0 (USB 3.1
Gen 1) Connector
10. RJ-45 LAN Jack
11. DC-In Jack



Mainboard Overview - Bottom (Connectors)

Figure 10
**Mainboard Bottom
Connectors**

1. Multi-in-1 Card Reader
2. Battery Connector
3. Fan Connector
4. LCD Cable Connector




Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the *P640RF / P641RF* series notebook's parts and sub-systems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

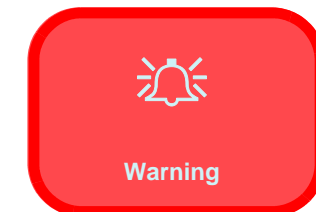
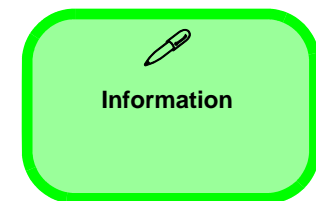
We suggest you completely review any procedure before you take the computer apart.

Procedures such as upgrading/replacing the RAM, 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.



Disassembly

NOTE: All disassembly procedures assume that the system is turned **OFF**, and disconnected from any power supply (the battery is removed too).

Maintenance Tools

The following tools are recommended when working on the notebook PC:

- M3 Philips-head screwdriver
- M2.5 Philips-head screwdriver (magnetized)
- M2 Philips-head screwdriver
- Small flat-head screwdriver
- Pair of needle-nose pliers
- Anti-static wrist-strap

Connections

Connections within the computer are one of four types:

Locking collar sockets for ribbon connectors	To release these connectors, use a small flat-head screwdriver to gently pry the locking collar away from its base. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Pressure sockets for multi-wire connectors	To release this connector type, grasp it at its head and gently rock it from side to side as you pull it out. Do not pull on the wires themselves. When replacing the connection, do not try to force it. The socket only fits one way.
Pressure sockets for ribbon connectors	To release these connectors, use a small pair of needle-nose pliers to gently lift the connector away from its socket. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Board-to-board or multi-pin sockets	To separate the boards, gently rock them from side to side as you pull them apart. If the connection is very tight, use a small flat-head screwdriver - use just enough force to start.

Maintenance Precautions

The following precautions are a reminder. To avoid personal injury or damage to the computer while performing a removal and/or replacement job, take the following precautions:

1. **Don't drop it.** Perform your repairs and/or upgrades on a stable surface. If the computer falls, the case and other components could be damaged.
2. **Don't overheat it.** Note the proximity of any heating elements. Keep the computer out of direct sunlight.
3. **Avoid interference.** Note the proximity of any high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage components and/or data. You should also monitor the position of magnetized tools (i.e. screwdrivers).
4. **Keep it dry.** This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.
5. **Be careful with power.** Avoid accidental shocks, discharges or explosions.
 - Before removing or servicing any part from the computer, turn the computer off and detach any power supplies.
 - When you want to unplug the power cord or any cable/wire, be sure to disconnect it by the plug head. Do not pull on the wire.
6. **Peripherals** – Turn off and detach any peripherals.
7. **Beware of static discharge.** ICs, such as the CPU and main support chips, are vulnerable to static electricity. Before handling any part in the computer, discharge any static electricity inside the computer. When handling a printed circuit board, do not use gloves or other materials which allow static electricity buildup. We suggest that you use an anti-static wrist strap instead.
8. **Beware of corrosion.** As you perform your job, avoid touching any connector leads. Even the cleanest hands produce oils which can attract corrosive elements.
9. **Keep your work environment clean.** Tobacco smoke, dust or other air-borne particulate matter is often attracted to charged surfaces, reducing performance.
10. **Keep track of the components.** When removing or replacing any part, be careful not to leave small parts, such as screws, loose inside the computer.

Cleaning

Do not apply cleaner directly to the computer, use a soft clean cloth.

Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.



Power Safety Warning

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

1. Remove the keyboard *page 2 - 5*

To remove the Battery:

1. Remove the battery *page 2 - 6*

To remove the HDD:

1. Remove the battery *page 2 - 6*
2. Remove the HDD *page 2 - 8*

To remove the System Memory:

1. Remove the battery *page 2 - 6*
2. Remove the system memory *page 2 - 10*

To remove the M.2 SSD:

1. Remove the battery *page 2 - 6*
2. Remove the SSD *page 2 - 11*

To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 6*
2. Remove the WLAN *page 2 - 12*

To remove and install the 3G Module:

1. Remove the battery *page 2 - 6*
2. Remove the 3G *page 2 - 14*

Removing the Keyboard

1. Turn **off** the computer, turn it over.
2. Remove screws **1** - **2** from the bottom of the computer.
3. Open it up with the LCD on a flat surface before pressing at point **3** to release the keyboard module (use the special eject stick **4** to do this) while releasing the keyboard in the direction of the arrow **5** as shown (*Figure 1a*).
4. Carefully lift the keyboard **6** up, being careful not to bend the keyboard ribbon cable **7**. Disconnect the keyboard ribbon cable **7** from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins **8** away from the base (*Figure 1b*).
5. Carefully lift the keyboard **6** off the computer (*Figure 1c*).

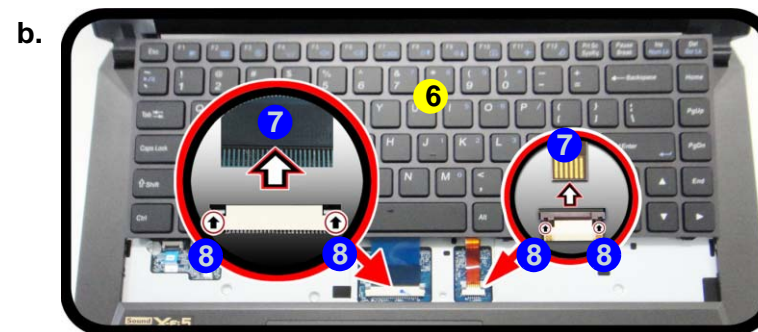
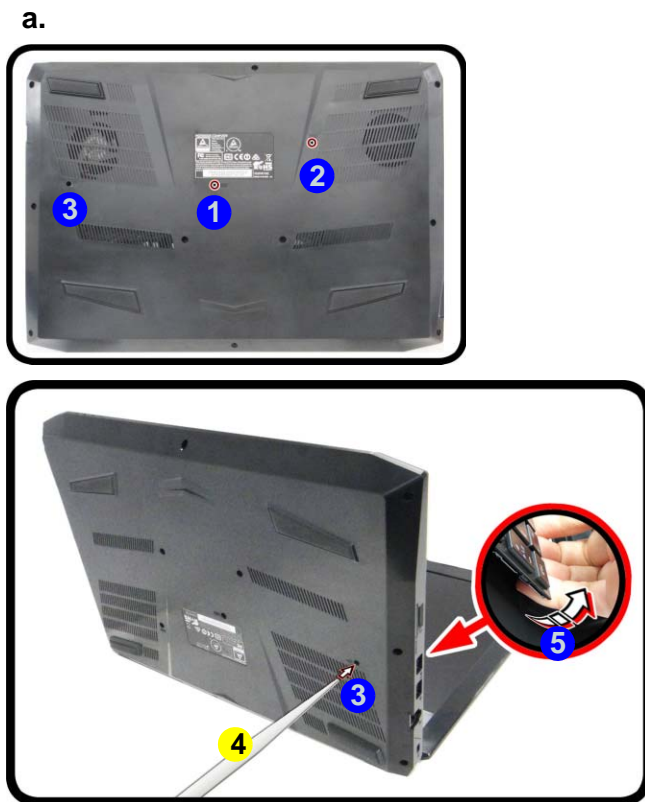


Figure 1
Keyboard Removal

- Remove the screws from the bottom of the computer and then eject the keyboard using a special eject stick to push the keyboard out while releasing the keyboard as shown.
- Lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.
- Remove the keyboard.



Re-inserting the Keyboard

When re-inserting the keyboard firstly, align the keyboard tabs at the bottom of the keyboard with the slots in the case.



- Eject Stick
- Keyboard

- 2 Screws

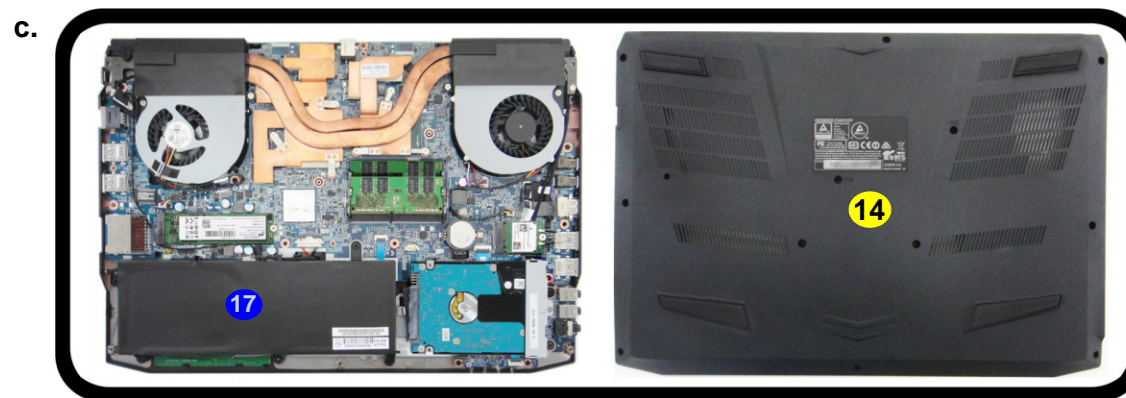
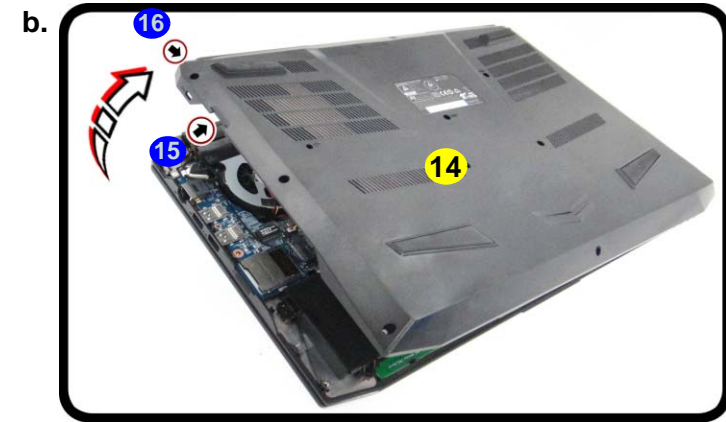
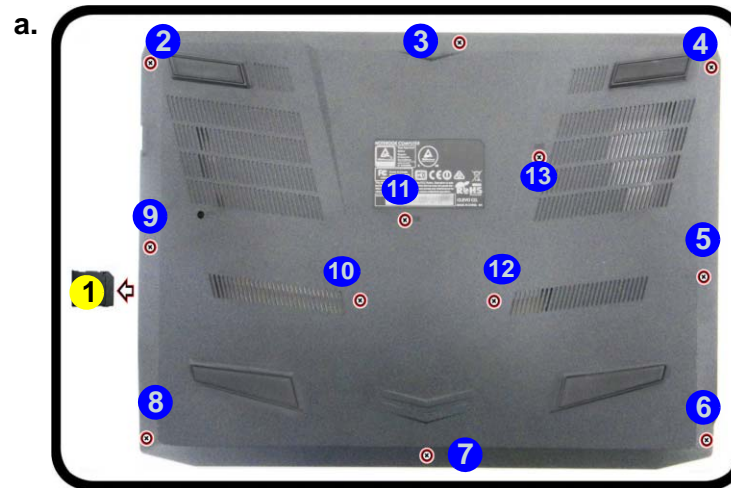
Disassembly

Figure 2
Battery Removal

- Remove the SD card cover and screws.
- Remove the bottom case.
- Locate the battery.

Removing the Battery

- Turn the computer off, and turn it over.
- Remove the SD card cover **1** and screws **2** - **13** (*Figure 2a*).
- Carefully lift the bottom case **14** up in the direction of the arrow at points **15** & **16** and remove it (*Figure 2b*).
- The battery will be visible at point **17** on the computer (*Figure 2c*).



1. SD Card Cover
14. Bottom Case

- 12 Screws

- Carefully disconnect the cable **18**, then remove screws **19** - **22** (*Figure 3b*).
- Lift the battery **23** off the computer (*Figure 3e*).
- Reinsert the bottom case starting from point **24** as shown (*Figure 3f*) to avoid damaging the jack(s). Tighten the screws to secure the bottom case in place.

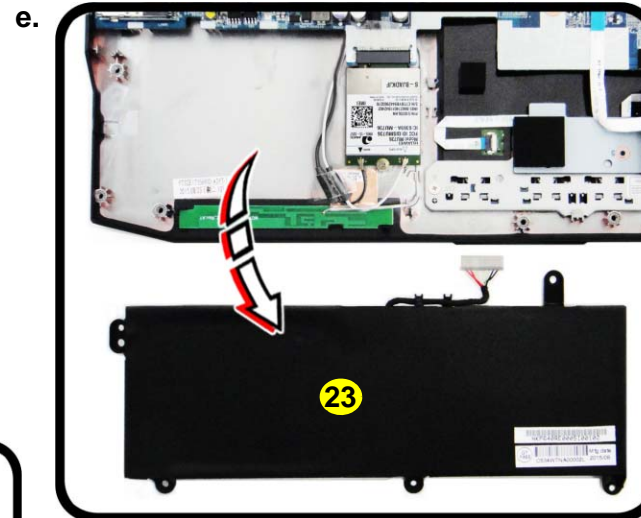
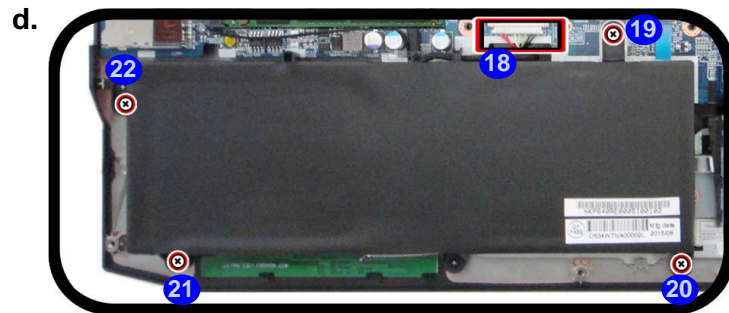


Figure 3
Battery Removal
(cont'd.)

- Disconnect the cable and remove the screws.
- Lift the battery off the computer.
- Reinsert the bottom case and tighten the screws.



23. Battery

- 4 Screws

Disassembly

Figure 4
**HDD Assembly
Removal**

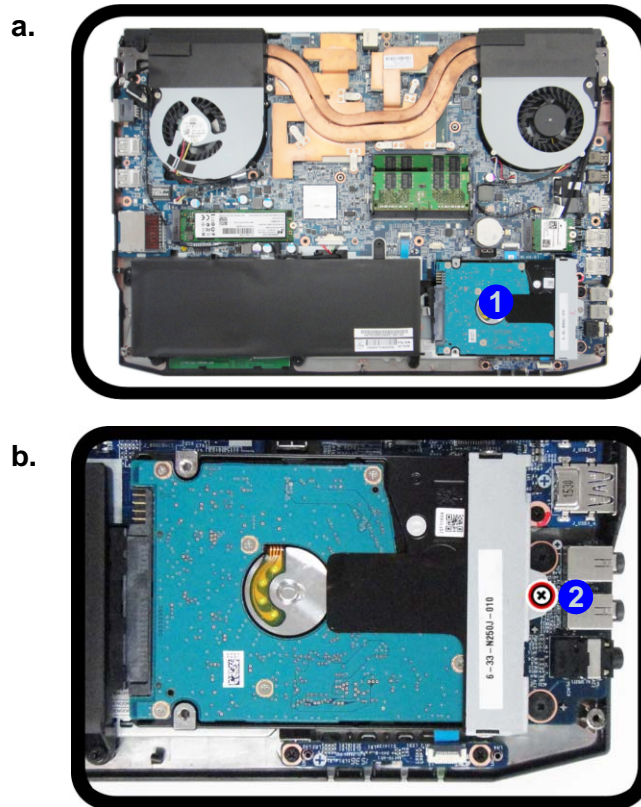
- Locate the HDD.
- Remove the screw.

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 or 7mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up a new hard disk.

Hard Disk Disassembly Process

- Turn **off** the computer, and remove the battery ([page 2 - 6](#)).
- The HDD will be visible at point **1** on the mainboard ([Figure 4a](#)).
- Remove screw **2** from the HDD assembly ([Figure 4b](#)).



- 1 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.

4. Slightly lift and disconnect the hard disk and connector **3** in the direction of arrow **4** (*Figure 5c*).
5. Lift the hard disk assembly **5** out of the bay **6** (*Figure 5d*).
6. Remove screws **7** - **8** and bracket **9** from the hard disk **10** (*Figure 5e*).
7. Reverse the process to install a new hard disk (do not forget to replace the screws).

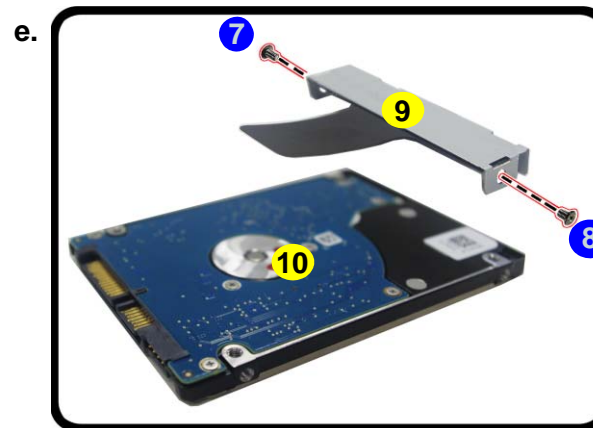
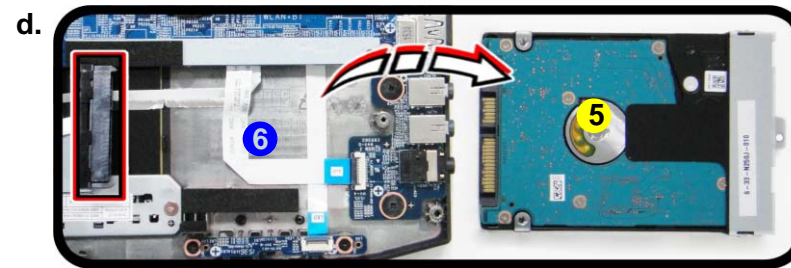
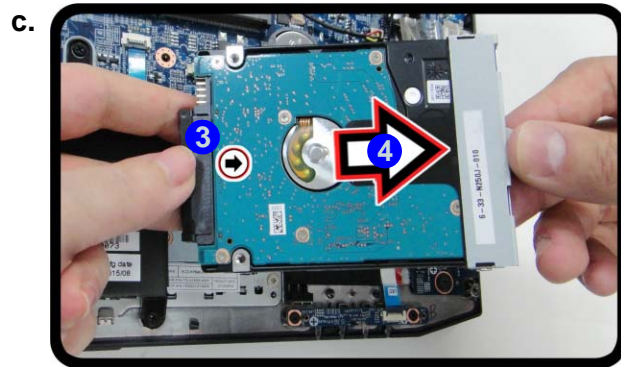


Figure 5
**HDD Assembly
Removal (cont'd.)**

- c. Slightly lift and pull the HDD in the direction of the arrow.
- d. Lift the HDD assembly out of the bay.
- e. Remove the screws and bracket from the HDD.



- 5. HDD Assembly
- 9. HDD Bracket
- 10. HDD
- 2 Screws

Figure 6
RAM Module Removal

- The RAM modules will be visible at point **1** on the mainboard.
- Pull the release latches.
- 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.



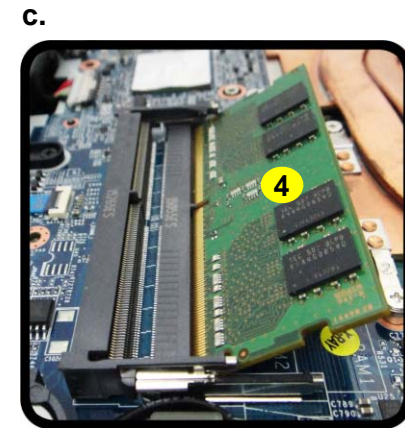
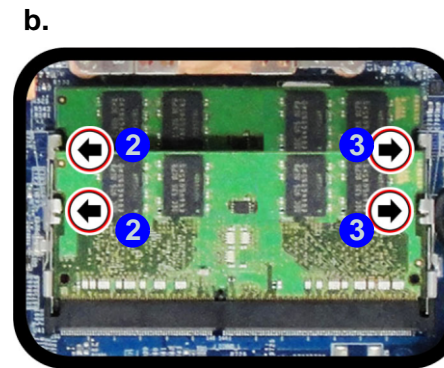
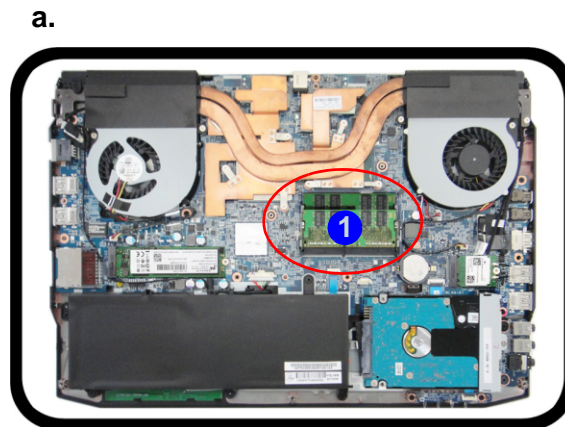
4. RAM Module

Removing the System Memory (RAM)

The computer has two memory sockets for 204 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR4 Up to 2133 MHz. The main memory can be expanded up to 32GB. The total memory size is automatically detected by the POST routine once you turn on your computer.

Memory Upgrade Process

- Turn **off** the computer, turn it over, remove the battery ([page 2 - 6](#)).
- The RAM-2 modules will be visible at point **1** on the mainboard ([Figure 6a](#)).
- Gently pull the two release latches (**2** & **3**) on the sides of the memory socket in the direction indicated by the arrows ([Figure 6b](#)). The RAM module **4** will pop-up ([Figure 6c](#)), and you can then remove it.
- Pull the latches to release the second module if necessary.
- Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
- 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.
- Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
- Replace the bottom cover and the screws (see [page 2 - 6](#)).
- Restart the computer to allow the BIOS to register the new memory configuration as it starts up.



Removing the M.2 SSD Module

1. Turn off the computer, turn it over, remove the battery ([page 2 - 6](#)).
2. The M.2 SSD module will be visible at point **1** on the mainboard ([Figure 7a](#)).
3. Remove the screw **2** ([Figure 7b](#))
4. The M.2 SSD module **3** ([Figure 7c](#)) will pop-up, and you can remove it from the computer.

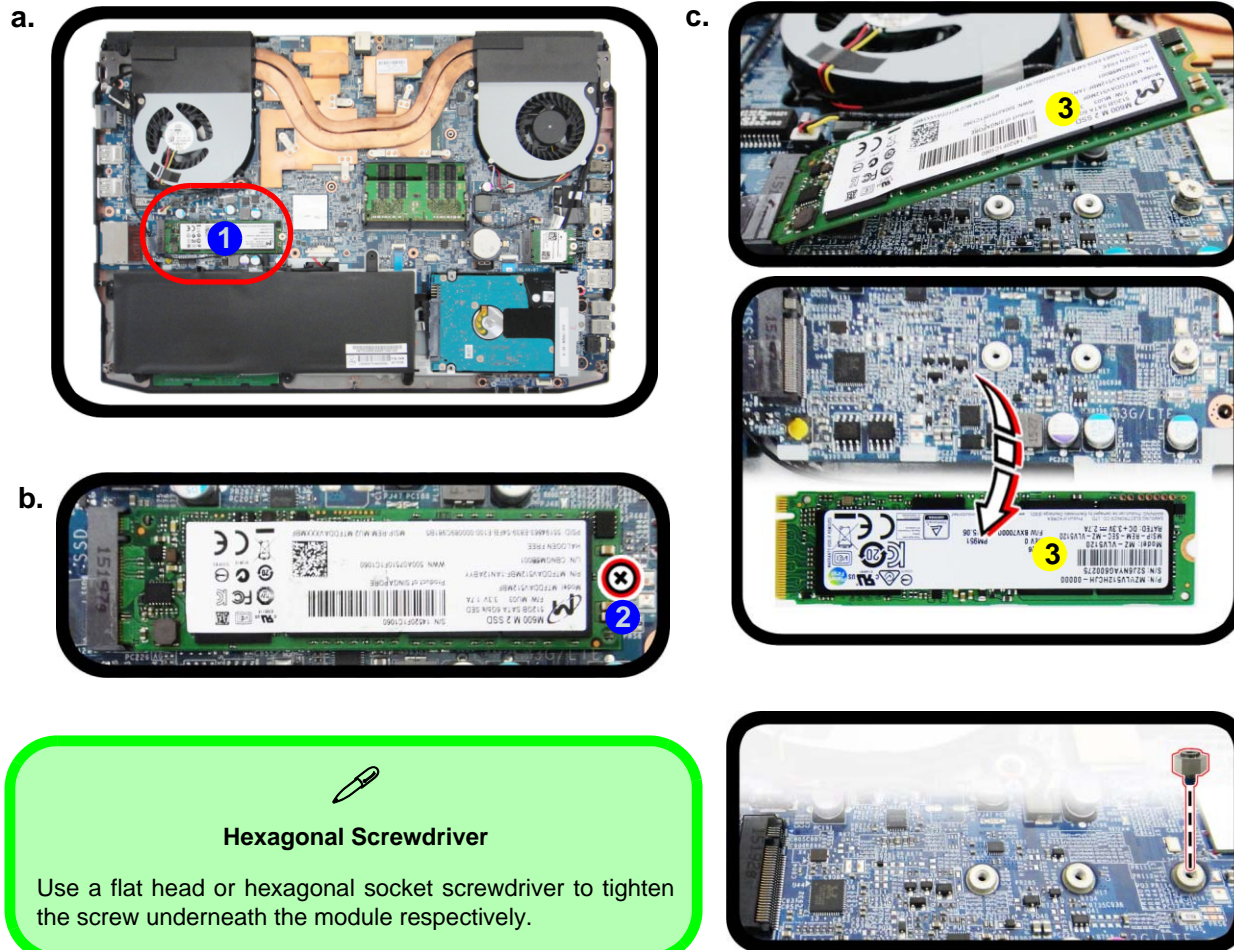



Figure 7
M.2 SSD Module Removal

- a. Locate the M.2 SSD.
- b. Remove the screw.
- c. The M.2 SSD module will pop up.



3.M2 SSD Module

- 1 Screw

Disassembly

Figure 8
**Wireless LAN
 Module Removal**

- Locate the WLAN.
- Disconnect the cables and remove the screw.
- The WLAN module will pop up.

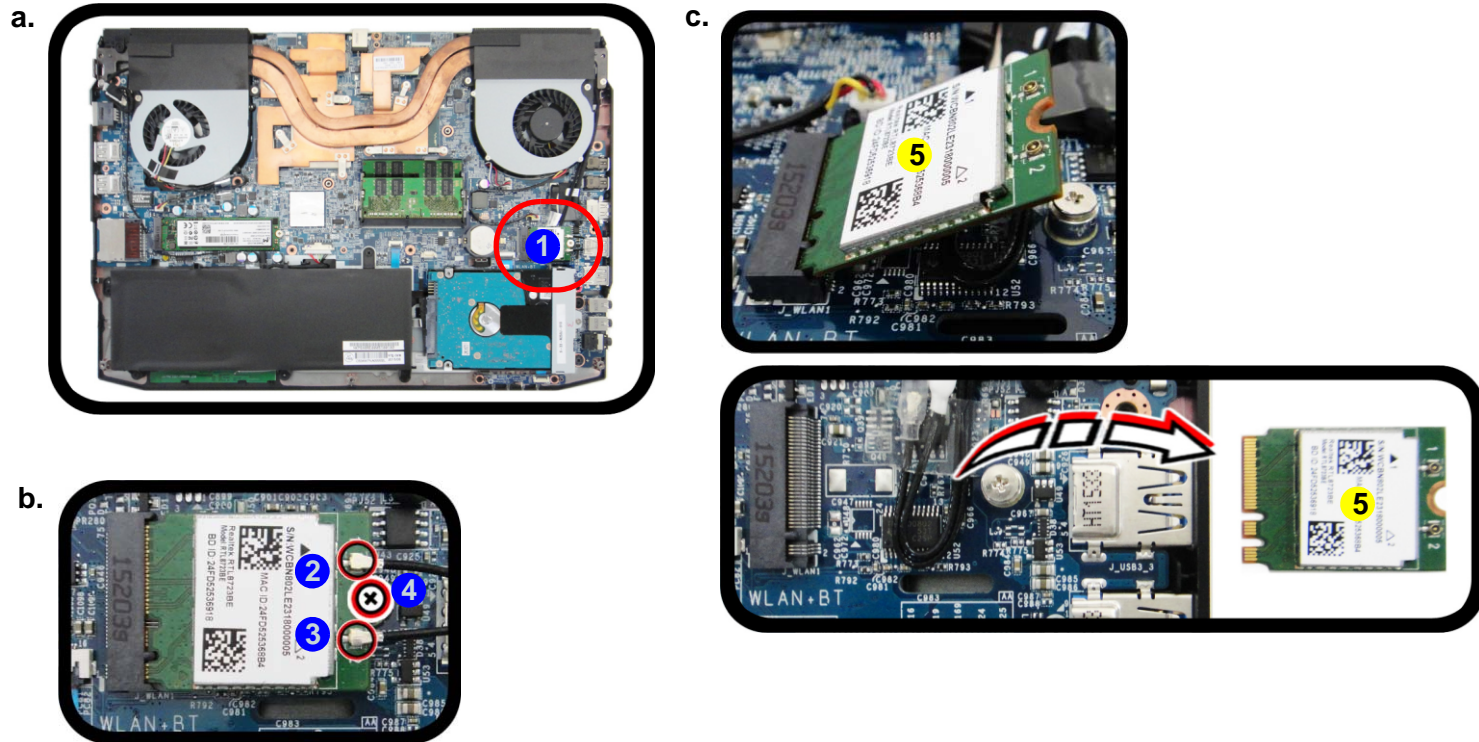
Note: Make sure you reconnect the antenna cable to the “1 + 2” socket (*Figure 8b*).

5. Wireless LAN Module

- 1 Screw

Removing the Wireless LAN Module

- Turn **off** the computer, turn it over, remove the battery (*page 2 - 6*).
- The Wireless LAN module will be visible at point **1** on the mainboard (*Figure 8a*).
- Carefully disconnect the cables **2** & **3**, and then remove the screw **4** (*Figure 8b*).
- The Wireless LAN module **5** (*Figure 8c*) will pop-up, and you can remove it from the computer.



Wireless LAN, Combo, 3G & LTE Module Cables

Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo, 3G 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	Gray	
	WM 3	White	
LTE Broadband	LTE 1	Black	Black
	LTE 2	Gray	
3G Broadband	3G 1	Black	Black
	3G 2	Gray	

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

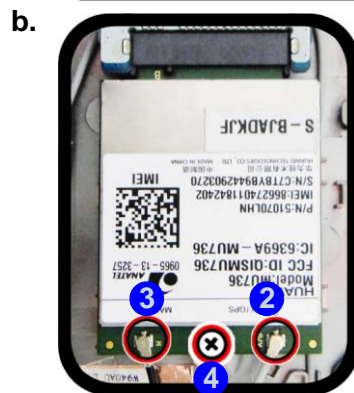
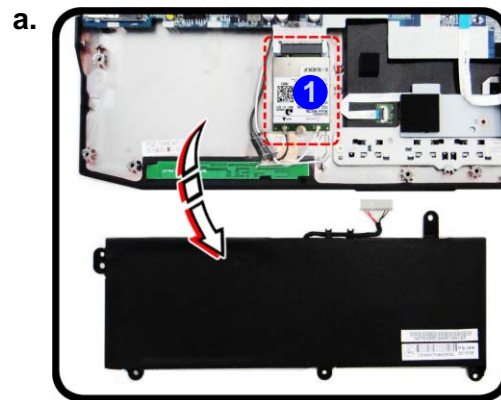
Disassembly

Figure 9
3G Module Removal

Removing the 3G Module

3G Module Removal Procedure

1. Turn off the computer, remove the battery ([page 2 - 6](#)).
 2. Locate the module, it is visible at point **1** ([Figure 9a](#)).
 3. Carefully disconnect the cables **2** & **3**, and then remove the screw **4** from the module ([Figure 9b](#)).
 4. The module **3** will pop-up ([Figure 9c](#)).
 5. Lift the module **5** up and off the computer ([Figure 9d](#)).
- a. Locate the module.
 - b. Disconnect the cables and remove the screw.
 - c. The module will pop-up.
 - d. Lift the module up off the socket.



5. 3G Module

- 1 Screw

Appendix A:Part Lists

This appendix breaks down the *P640RF / P641RF* series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

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

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

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

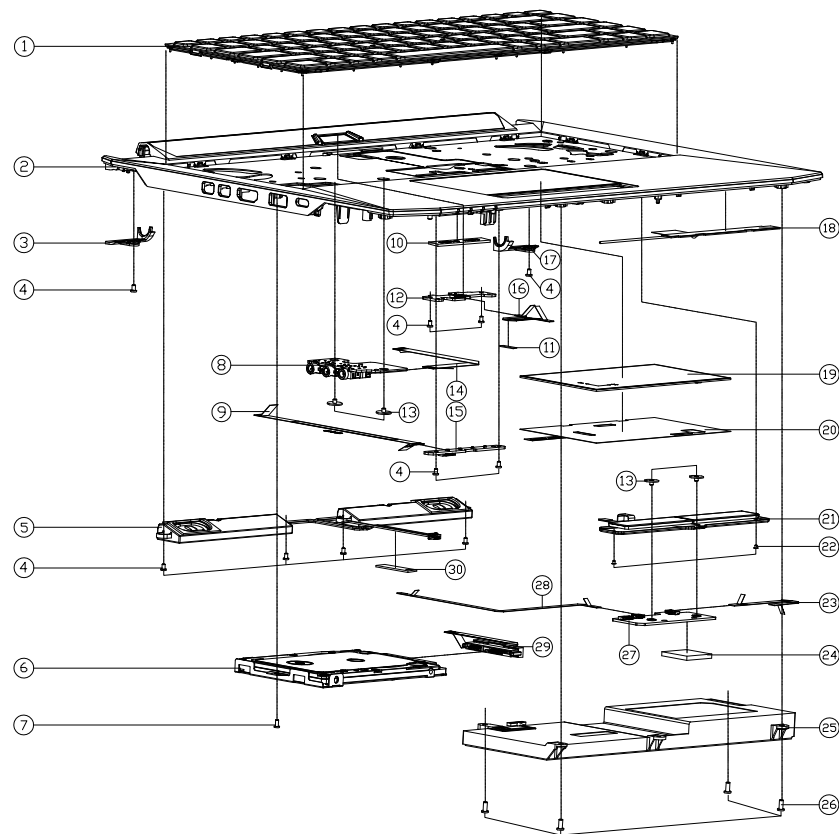
Part List Illustration Location

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

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

Part	
Top	<i>page A - 3</i>
Bottom	<i>page A - 4</i>
Main Board	<i>page A - 5</i>
HDD	<i>page A - 6</i>
LCD	<i>page A - 7</i>

Top



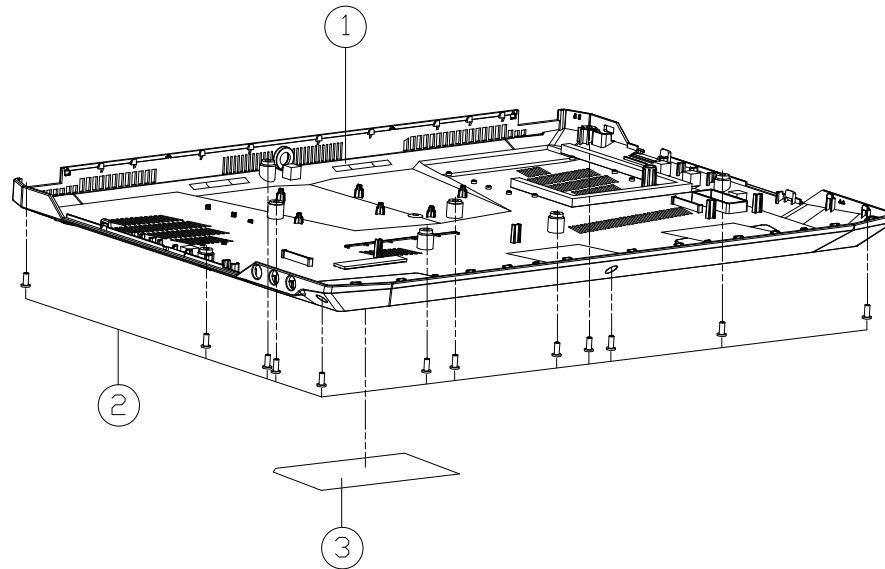
ITEM	PART NAME	PART NO	REMARK
1	WHTE BL TO USA IP1223263400 FRAME BLACK ISOLATION WITH VIBO KEY + KIO FRAME	6-80-P6400-011-1	
2	TOP CASE MODULE P640RF	6-39-P64F2-012	
3	HINGE COVER L (SABIC C7230P-BK1C340) P640RE	6-42-P6402-0L0	
4	SCREW M2x3L KI BZ ICT NY (DD=04.5,DT=0.4)	6-35-B6120-3RD	
5	SPRINGABLE FRONT PAL R 230MM 25MM 2N KT DS-25H-HL-42-HF P640RE	6-23-SP640-0S0	
6	W/O HDD ASS'Y P640RE	6-79-P640RE0J-010	
6	W/HDD ASS'Y P640RE	6-79-P640RE0J-020	
7	SCREW M2x4L KI NI ICT NY (DD=04.5,DT=0.4)	6-35-B1120-4RE	
8	AUDIO BOARD V2.0 P640RF	6-77-P64F8-D02	
9	FFC CABLE FOR LED TO MB 60V 12PIN/20MM PITCH-0.5 P640RE	6-43-P6400-030-1	
10	HDD SPONGE (CRO115+G4000) 38x8x1.15T P640RE	6-47-0019A-40D	
11	TOP CASE MYLAR FR83 25x7x0.05 P180HM	6-40-P1802-030	
12	POWER SW BOARD V1.0 P640RF	6-77-P64FS-D01	
13	SCREW M2x2L KI BK/Z ICT NY(08,T=0.6)	6-35-B6120-2RE	
14	FFC CABLE FOR AUDIO TO MB 06PIN/PITCH0.5 60V 16MM) P640RE	6-43-P6400-011-1	
15	LED BOARD V1.0 P640RF	6-77-P64F4-D01	
16	FFC CABLE FOR POWER BOARD TO MB 6PIN 60V 65MM P640RE	6-43-P6400-020-1	
17	HINGE COVER R (SABIC C7230P-BK1C340) P640RE	6-42-P6402-0R0	
18	ANTINA WITH TAPE AND UTE-2 PCB 05X08X0.55X0.56X0.25X0.50X0.25X0.50MM P640RE	6-23-7P640-030	
19	TOUCH PAD SYNAPTICS TM-03163-001 P7500M (108x65MM)	6-49-P75D3-010	
20	TP INSIDE MYLAR F0IR P640RE	6-40-P6402-031	
21	FUNCTION KEY FOR CLICK BUTTON MODULE W/O FINGER P640RE	6-23-KP640-010	
22	SCREW M2x2L KI NI ICT NY (DD=05,T=0.5)	6-35-B1120-2R0	
23	FFC CABLE FOR TP TO CLICK70MM 5V 8P P7700M	6-43-P77D2-011	
24	RUBBER (20x30x2.5) SILICON(80) F0IR P640RE	6-47-P6402-011	
25	IMP LVL 0.10X0.80X0.50MM P640RE	6-87-P640S-4231A	
26	SCREW M2.5x6L K BZ ICT NY	6-35-82125-6RA	
27	CLICK BOARD V2.0 P640RF	6-77-P64F2-D02	
28	FFC CABLE FOR CLIK TO MB 160MM 5V 6P P7700M	6-43-P77D0-011	
29	HDD CONNECTOR 07H-A4-P640W/CABLE CFC CABLE 08MM P640RE	6-23-FFP640-011	
30	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	

Figure A - 1
Top

A.Part Lists

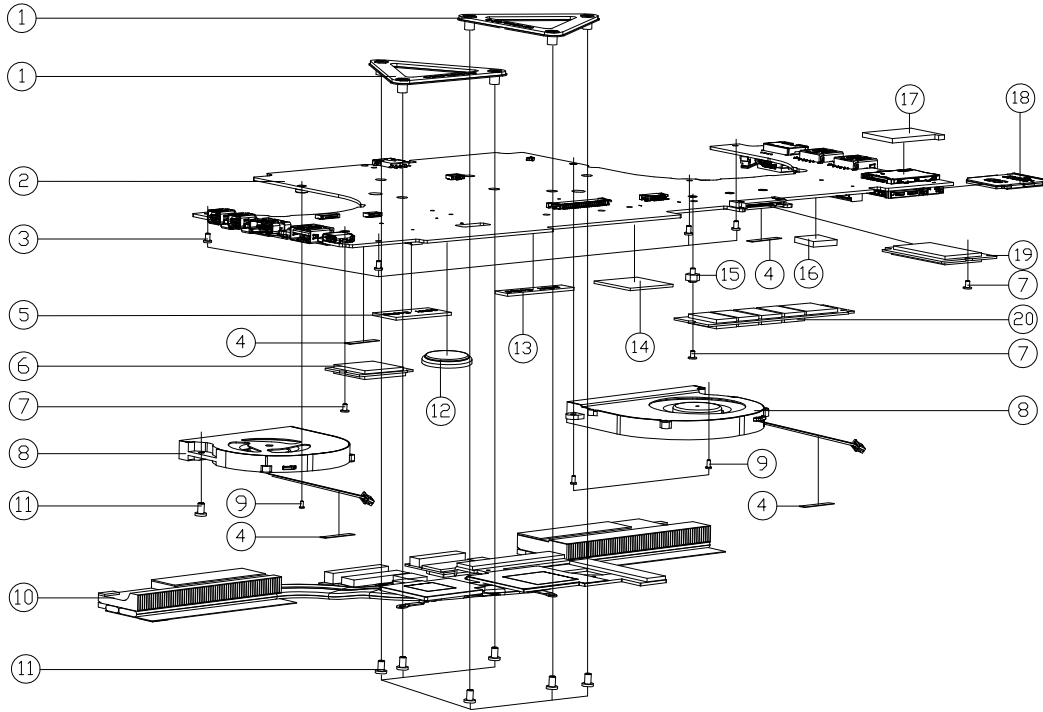
Bottom

Figure A - 2
Bottom



ITEM	PART NAME	PART NO	REMARK
1	BOTTOM CASE MODULE P640RE	6-39-P6403-012	
2	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
3	PRODUCT LABEL FOR P640RE	6-45-P640RE03-010	
3	PRODUCT LABEL FOR P641RE	6-45-P641RE03-010	
3	PRODUCT LABEL FOR P640RF	6-45-P640RF03-010	
3	PRODUCT LABEL FOR P641RF	6-45-P641RF03-010	
3	PRODUCT LABEL(ST-R) FOR P640RF-H	6-45-P640RFH3-010	

Main Board

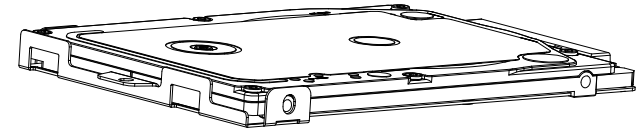
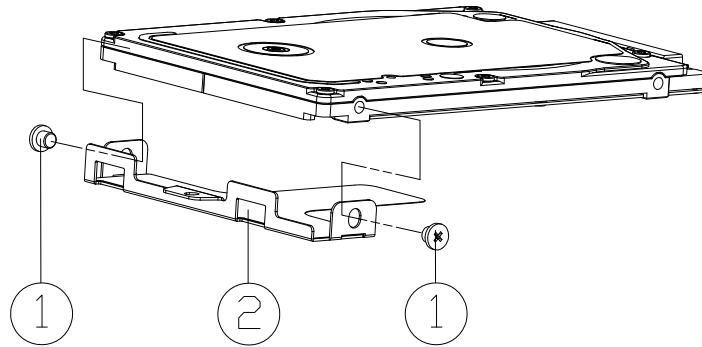


ITEM	PART NAME	PART NO	REMARK
1	CPU SUPPORT SECC P640RE	6-33-P640S-010	
2	MIN BOARD/PUF-620W/23D VIA EXP. W/LE,TPH P640F	6-77-P640RF00-D02-A	
2	MIN BOARD/PUF-620W/23D VIA EXP. W/LE,TPH P640F	6-77-P640RF00-D02-B	
2	MIN BOARD/PUF-620W/23D VIA EXP. W/LE,TPH P640F	6-77-P640RF00-D02-1B	
2	MIN BOARD/PUF-620W/23D VIA EXP. W/LE,TPH P640F	6-77-P640RF00-D02-3B	
2	MIN BOARD/PUF-620W/23D VIA EXP. W/LE,TPH P640F	6-77-P640RF00-D02-1A	
2	MIN BOARD/PUF-620W/23D VIA EXP/PROV/LID P640F	6-77-P640RF00-D02-2A	
2	MIN BOARD/PUF-620W/23D VIA EXP/PROV/LID P640F	6-77-P640RF00-D02-2B	
2	MIN BOARD/PUF-620W/23D VIA EXP. W/LE,TPH P640F	6-77-P640RF00-D02-3A	
3	SCREW NEXCL KI RZ TCT NY (OD=04.5,DT=0.4)	6-35-B6120-3RD	
4	TOP CASE NYLAR FR33 25W740US P1909M	6-40-P1902-030	
5	HDD SPONGE CCR015-64000 384H4L1ST P640RE	6-47-0019A-30N	
6	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-88-P75DF-9601	OPTION
6	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-88-W95LF-4240	OPTION
6	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-88-N240F-4200	OPTION
6	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-88-P67RF-4200	OPTION
6	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-88-S210F-9400	OPTION
6	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-88-N170F-5100	OPTION
6	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-88-P75DF-9600	OPTION
7	SCREW NEXCL KI NI TCT NY (OD=05.7,DT=0.5)	6-35-B1120-2RD	
8	FAN MODULE (A-POWER) N150SD	6-31-N1502-301	
9	SCREW NEXCL KI NI TCT NY (OD=04.5,DT=0.4)	6-35-B1120-4RE	
10	CPU & GPU HEAT SINK MODULE P640RF	6-31-P64FN-101	
11	SCREW M2.5x4L KI NI TCT NY	6-35-21125-4RD	
12	BATTERY 3V 220MA BBBCR2032B (KTS)	6-23-6A2B2-030	
13	HDD SPONGE CCR015-64000 384H4L1ST P640RE	6-47-0019A-40D	
14	AL FILL+THERMAL PAD 23423MM P640RE	6-40-P640S-010	
15	SCREW NEXCL 025 P30 HELL KIT W/ FIBER MAT CARBONAGE MEDIA	6-35-ZA120-2R5	
16	THERMAL PAD MA500 17x17x3MM P640RE	6-48-P640N-010	
17	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-47-P6502-020	
18	BUMBY 50 PUSH PUSH TYPE PC+ABS C7220P-7100D W9709M	6-42-W9708-010	
19	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-88-S210W-8810	OPTION
19	W/O 36 RUBBER P26-2492ZSCLON RUBBER P640RE	6-88-V3306-8841	OPTION
20	SSD M2 2280 36GB INTEL S380X4536G K550 SATA3 MLC	6-85-DS13G-200	OPTION
20	SSD M2 2280 32GB SAMSUNG KMR60E MLC	6-85-DS15B-S01	OPTION
20	SSD M2 2280 32GB SAMSUNG M70E MLC	6-85-DS15B-101	OPTION
20	SSD M2 2280 32GB SAMSUNG M70E MLC	6-85-DS15A-100	OPTION
20	SSD M2 2280 32GB SAMSUNG M70E MLC	6-85-DS190-100	OPTION
20	SSD M2 2280 32GB SAMSUNG M70E MLC	6-85-DS16E-S00	OPTION
20	SSD M2 2280 32GB SAMSUNG M70E MLC	6-85-DS15B-S00	OPTION
20	SSD M2 2280 32GB SAMSUNG M70E MLC	6-85-DS15B-S02	OPTION
20	SSD M2 2280 32GB SAMSUNG M70E MLC	6-85-DS15B-S03	OPTION

Figure A - 3
Main Board

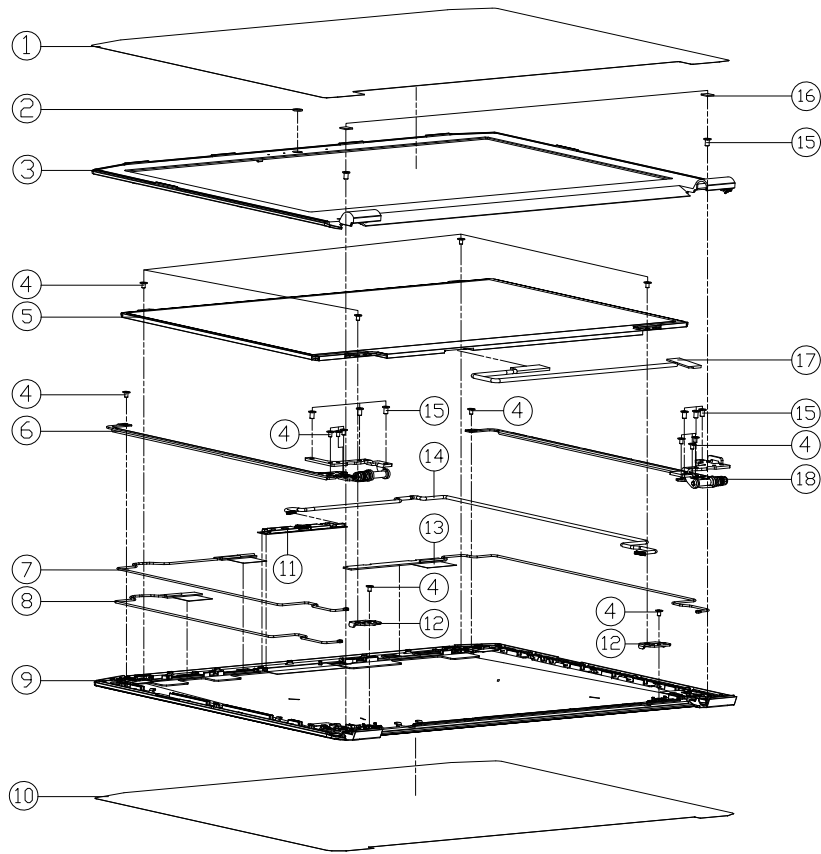
HDD

Figure A - 4
HDD



ITEM	PART NAME	PART NO	REMARK
1	SCREW M3*2.5L KI NI ICT NY	6-35-B1130-2R5	
2	HDD BKT 7MM SECC T=0.5 N250LU	6-33-N250J-011	

LCD



ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT PROTECTIVE MYLAR(PET+3M8915) P640RE	6-40-P6401-010	
2	CCD LENS ØD60(PMMA) N170SD	6-42-N170T-010	
3	FRONT COVER MODULE P640RE	6-39-P6401-012	
4	SCREW M2*3L KI BZ ICT NY (DD=Ø4.5,DT=0.4)	6-35-B6120-3RD	
5	LCD 14.0" FHD IPS (CEIP) LG LP140WF3-SPL1 (N4) (LED) 3.0MM	6-50-JB230-L03	
5	LCD 14.0" FHD IPS (CEIP) LG LP140WF1-SPK1 (N7) (LED) 3.0MM	6-50-JB230-L02	
5	LCD 14.0" FHD IPS (CEIP) IPS LG LP140WF3-SPD1 (N7) (LED) 3.0MM	6-50-JB230-L04	
5	LCD 14.0" FHD IPS (CEIP) LG LP140WF6-SPD1 (N4) (LED) 3.0MM	6-50-JB230-L05	
6	HINGE L (SECC+SK7) P640RE	6-33-P6401-0L1	
7	ANTENNA IPEX4 WLAN WGT VL-2 PCB AL 2.4G/5G VL-2- 550MM P640RE	6-23-7P640-020	
8	ANTENNA IPEX4 WLAN WGT VL-1 PCB AL 2.4G/5G VL-1- 500MM P640RE	6-23-7P640-010	
9	BACK COVER MODULE P640RE	6-39-P6401-023	
9	BACK COVER MODULE P641RE	6-39-P6411-021	
10	LCD BACK PROTECTIVE MYLAR(PET+3M8915)P640RE	6-40-P6401-020	
11	IOC CAMERA PCB FOR 080504H-80 28710 50 080504H-80 28710 PCB AL 2.4G/5G VL-2- 550MM P640RE	6-88-P650C-4900	OPTION
12	LCD STAND BEACKET (SECC) P640RE	6-33-P6401-040	
13	ANTENNA IPEX4 WLAN WGT VL-1 PCB AL 2.4G/5G VL-1- 500MM P640RE	6-23-7N250-010	
14	WIRE CABLE FOR CCD 500MM 3.3V BP (HT) W515TU	6-43-W515T-010	
15	SCREW M2.5*4L KI NI ICT NY	6-35-21125-4R0	
16	RUBBER FRONT COVER SCREW SILICONE W970SUW	6-47-W9701-041	
17	WIRE CABLE FOR CEP 30MM 3.3V W7-HP (HT)LC COM(50000) P640RE	6-43-P6401-010-1L	
18	HINGE R (SECC+SK7) P640RE	6-33-P6401-0R1	

Figure A - 5
LCD



Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *P640RF / P641RF* notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
<i>System Block Diagram - Page B - 2</i>	<i>GPU Decoupling - Page B - 25</i>	<i>DDR 1.35V / 0.75VS - Page B - 48</i>
<i>Processor 1/7 - Page B - 3</i>	<i>PCH 1/9 - Page B - 26</i>	<i>VDD3, VDD5 - Page B - 49</i>
<i>Processor 2/7 - Page B - 4</i>	<i>PCH 2/9 - Page B - 27</i>	<i>5V, 5VS, 3.3V, 3.3VS, 3.3VA - Page B - 50</i>
<i>Processor 3/7 - DDR4 - Page B - 5</i>	<i>PCH 3/9 - Page B - 28</i>	<i>Power 1.0V, VCCIO - Page B - 51</i>
<i>Processor 4/7 - Page B - 6</i>	<i>PCH 4/9 - Page B - 29</i>	<i>AC_In, Charger - Page B - 52</i>
<i>Processor 5/7 - Power 1 - Page B - 7</i>	<i>PCH 5/9 - Page B - 30</i>	<i>I.O.DX_VCCSTG/VCCSFR_OC - Page B - 53</i>
<i>Processor 6/7 - Power 2 - Page B - 8</i>	<i>PCH 6/9 - Page B - 31</i>	<i>PEX_VDD, 3V3_AON, 3V3_RUN - Page B - 54</i>
<i>Processor 7/7 - Page B - 9</i>	<i>PCH 7/9 - Page B - 32</i>	<i>NVVDD Phase 1 & 2 - Page B - 55</i>
<i>DDR4 CHA SO-DIMM_0 - Page B - 10</i>	<i>PCH 8/9 - Page B - 33</i>	<i>FBVDDQ - Page B - 56</i>
<i>DDR4 CHB SO-DIMM_0 - Page B - 11</i>	<i>PCH 9/9 - Page B - 34</i>	<i>VCC_Core & VCCSA - Page B - 57</i>
<i>Panel, Inverter, CRT - Page B - 12</i>	<i>DACA Interface and XTAL - Page B - 35</i>	<i>VCore Output Stage - Page B - 58</i>
<i>Redriver - Page B - 13</i>	<i>Power - Page B - 36</i>	<i>VCCGT - Page B - 59</i>
<i>Mini DP Port E - Page B - 14</i>	<i>TPS65982 - Page B - 37</i>	<i>VCCGT Output Stage - Page B - 60</i>
<i>Mini DP Port F - Page B - 15</i>	<i>USB Charger - Page B - 38</i>	<i>Power Board - Page B - 61</i>
<i>HDMI Connector - Page B - 16</i>	<i>USB 3.0 - Page B - 39</i>	<i>LED Board - Page B - 62</i>
<i>VGA PCI Express - Page B - 17</i>	<i>LAN RTL8411B - Page B - 40</i>	<i>Click Board - Page B - 63</i>
<i>VGA Frame Buffer Partition - Page B - 18</i>	<i>M.2 3G - Page B - 41</i>	<i>Audio Board - Page B - 64</i>
<i>Frame Buffer Partition A - Page B - 19</i>	<i>M.2 WLAN+BT, PCIE4X SSD - Page B - 42</i>	
<i>Frame Buffer Partition B - Page B - 20</i>	<i>Realtek ALC892 - Page B - 43</i>	
<i>Frame Buffer Partition A_B - Page B - 21</i>	<i>TPA2008D2 - Page B - 44</i>	
<i>GPU Frame Buffer Partition - Page B - 22</i>	<i>KBC-ITE IT8587 - Page B - 45</i>	
<i>Frame Buffer Partition C - Page B - 23</i>	<i>TPM, CCD, TP - Page B - 46</i>	
<i>Frame Buffer Partition C - Page B - 24</i>	<i>Fan, LID, KB LED - Page B - 47</i>	

Table B - 1
**SCHEMATIC
DIAGRAMS**

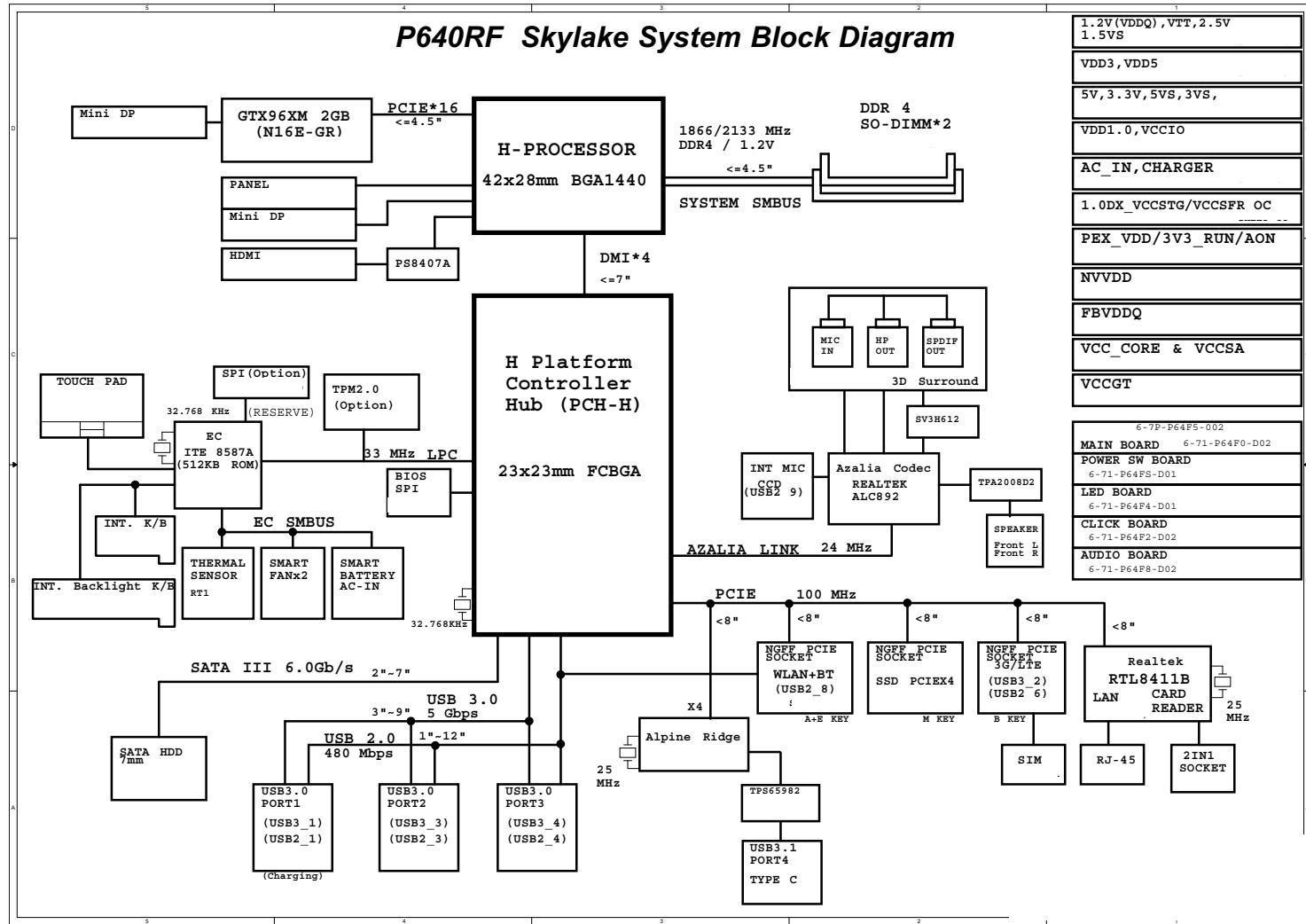


Version Note

The schematic diagrams in this chapter are based upon version 6-7P-P64F5-001. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

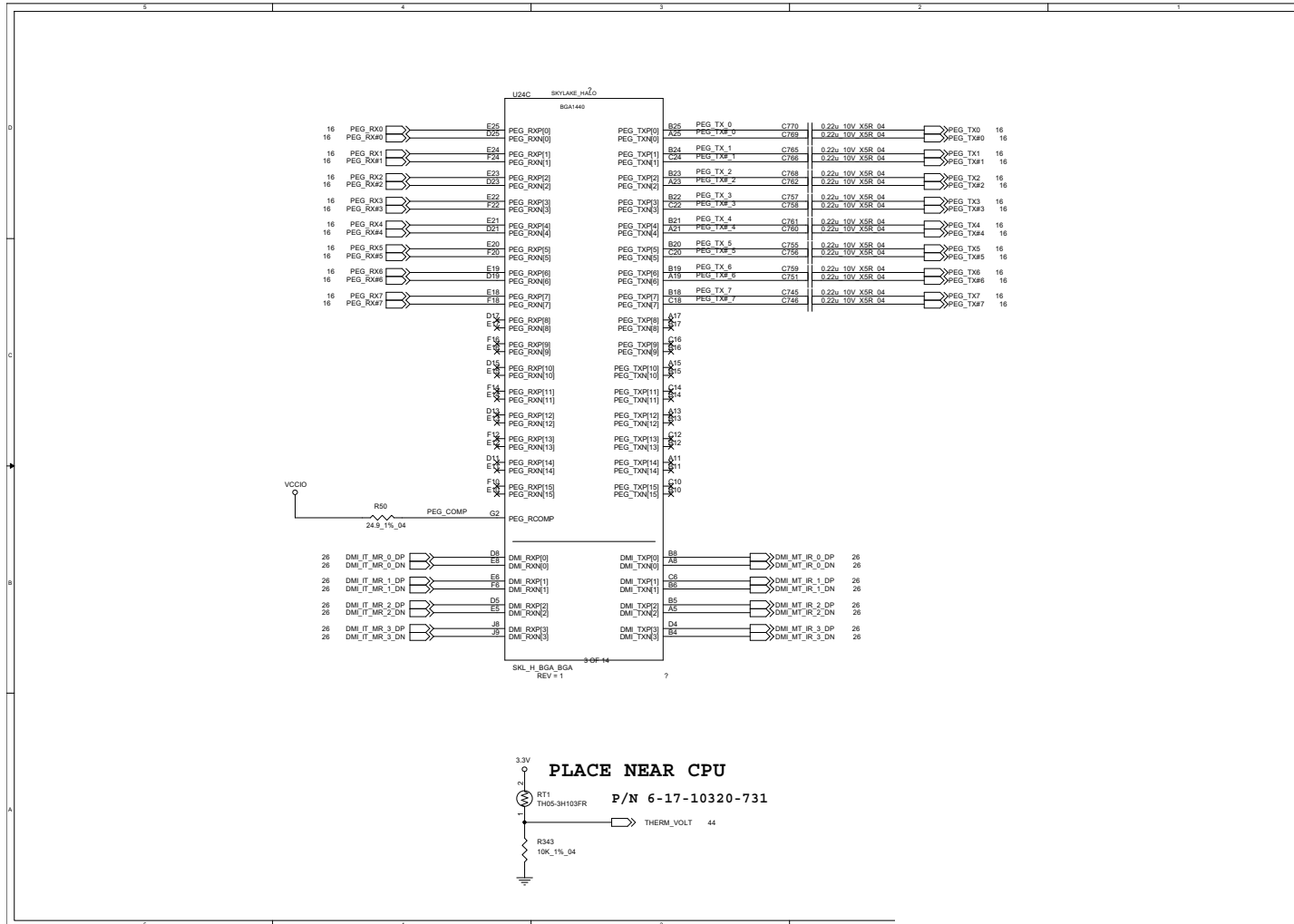
System Block Diagram

Sheet 1 of 63
System Block
Diagram



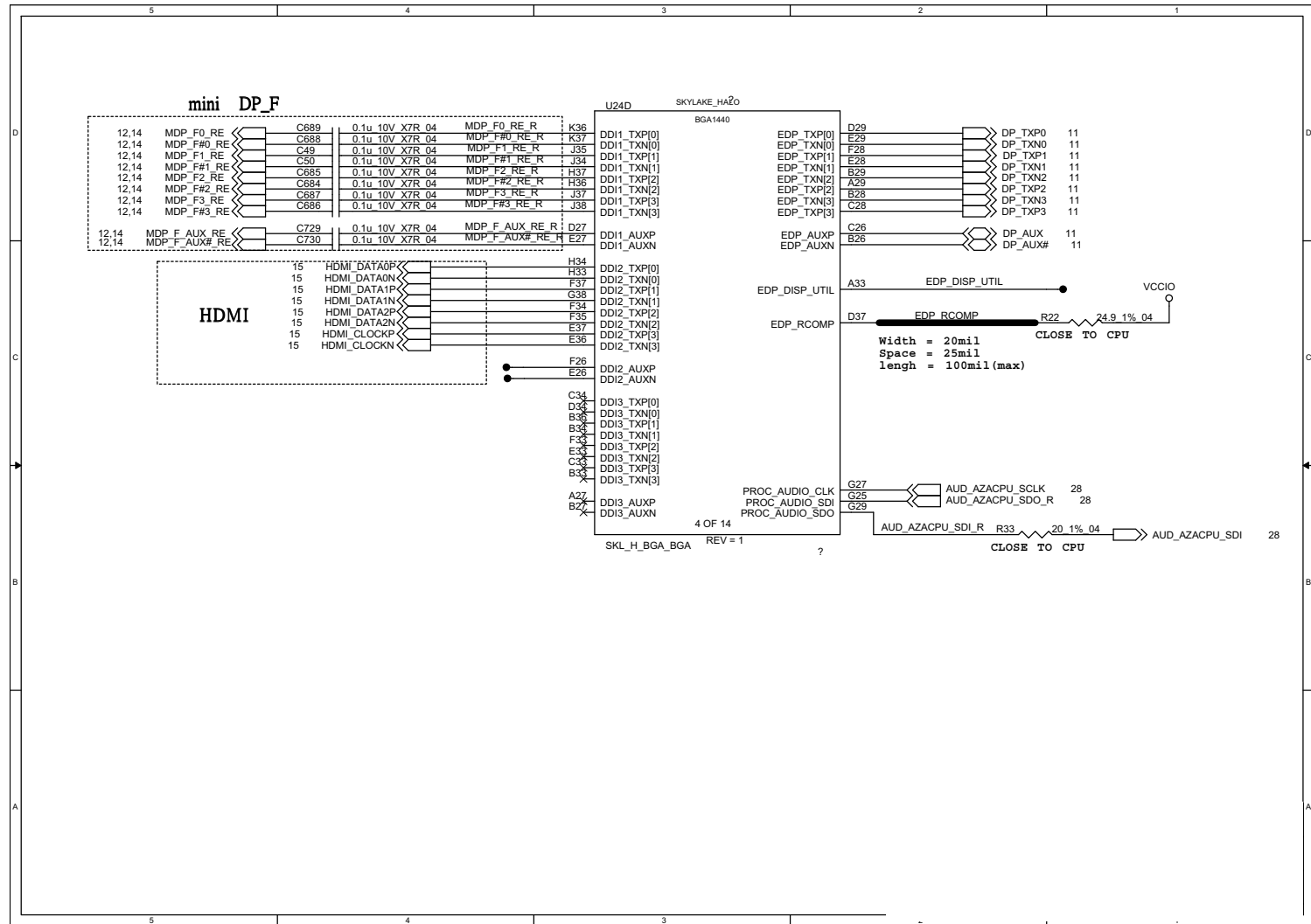
Processor 1/7

Sheet 2 of 63
Processor 1/7



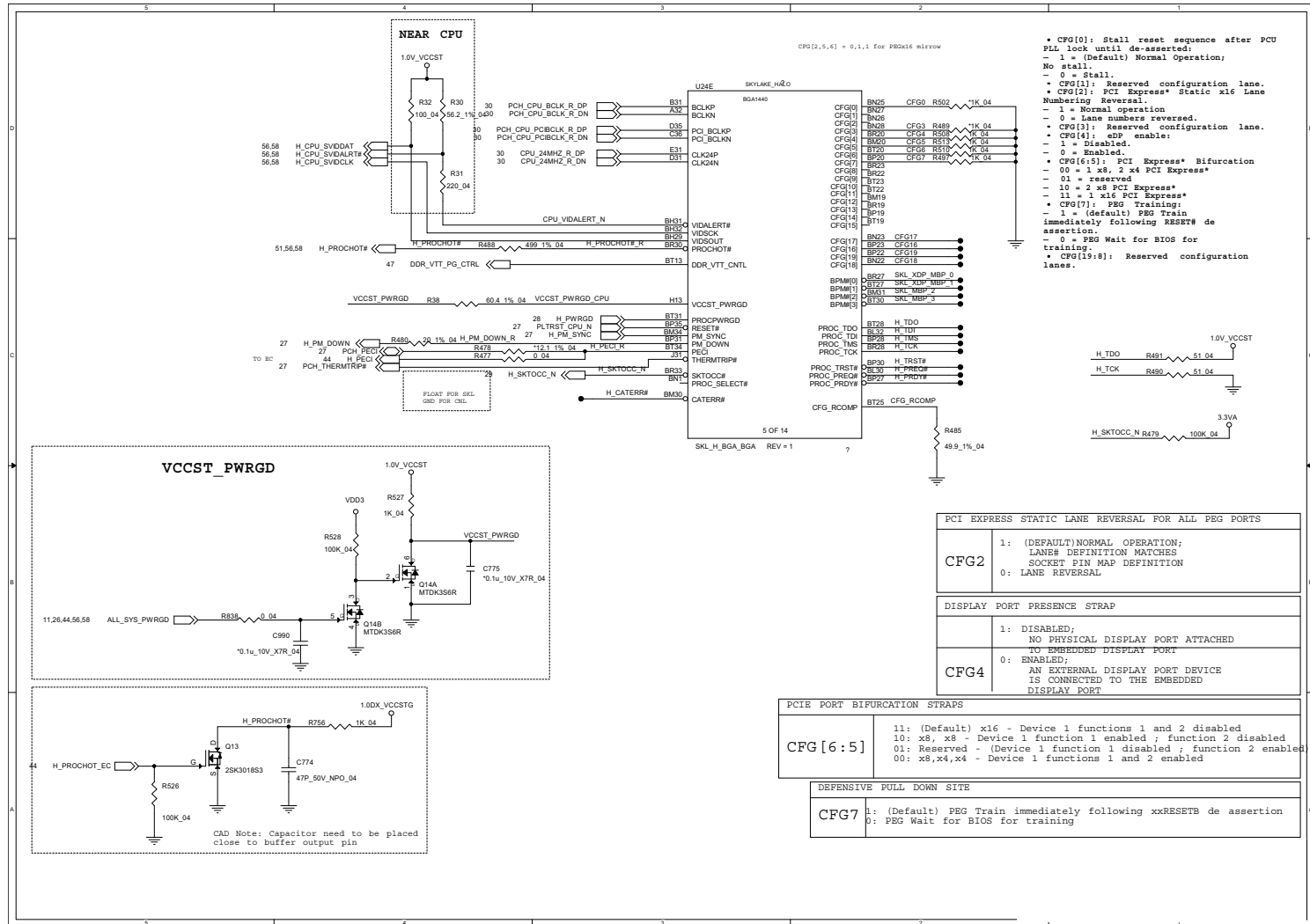
Processor 2/7

Sheet 3 of 63
Processor 2/7

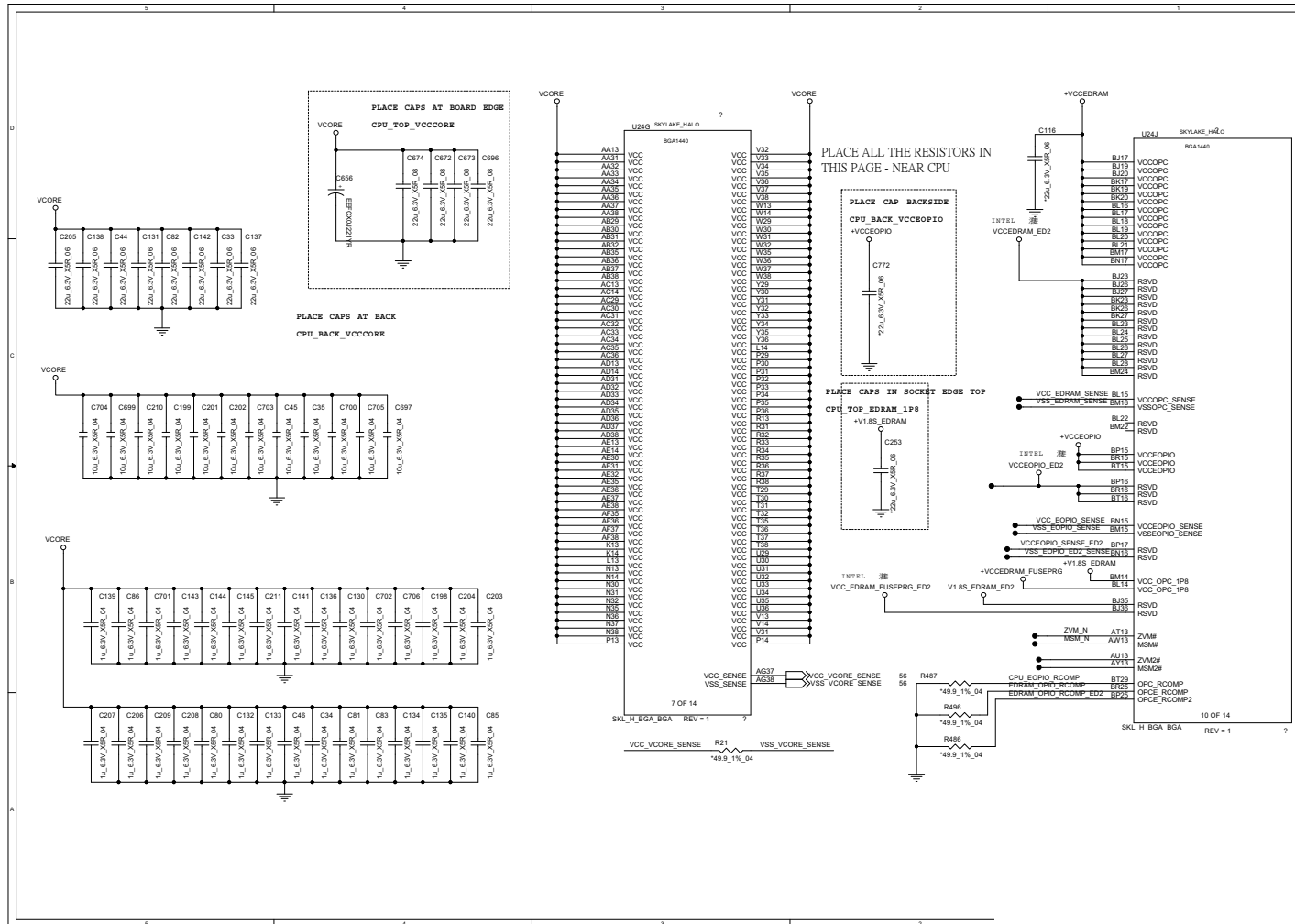


Processor 4/7

Sheet 5 of 63
Processor 4/7



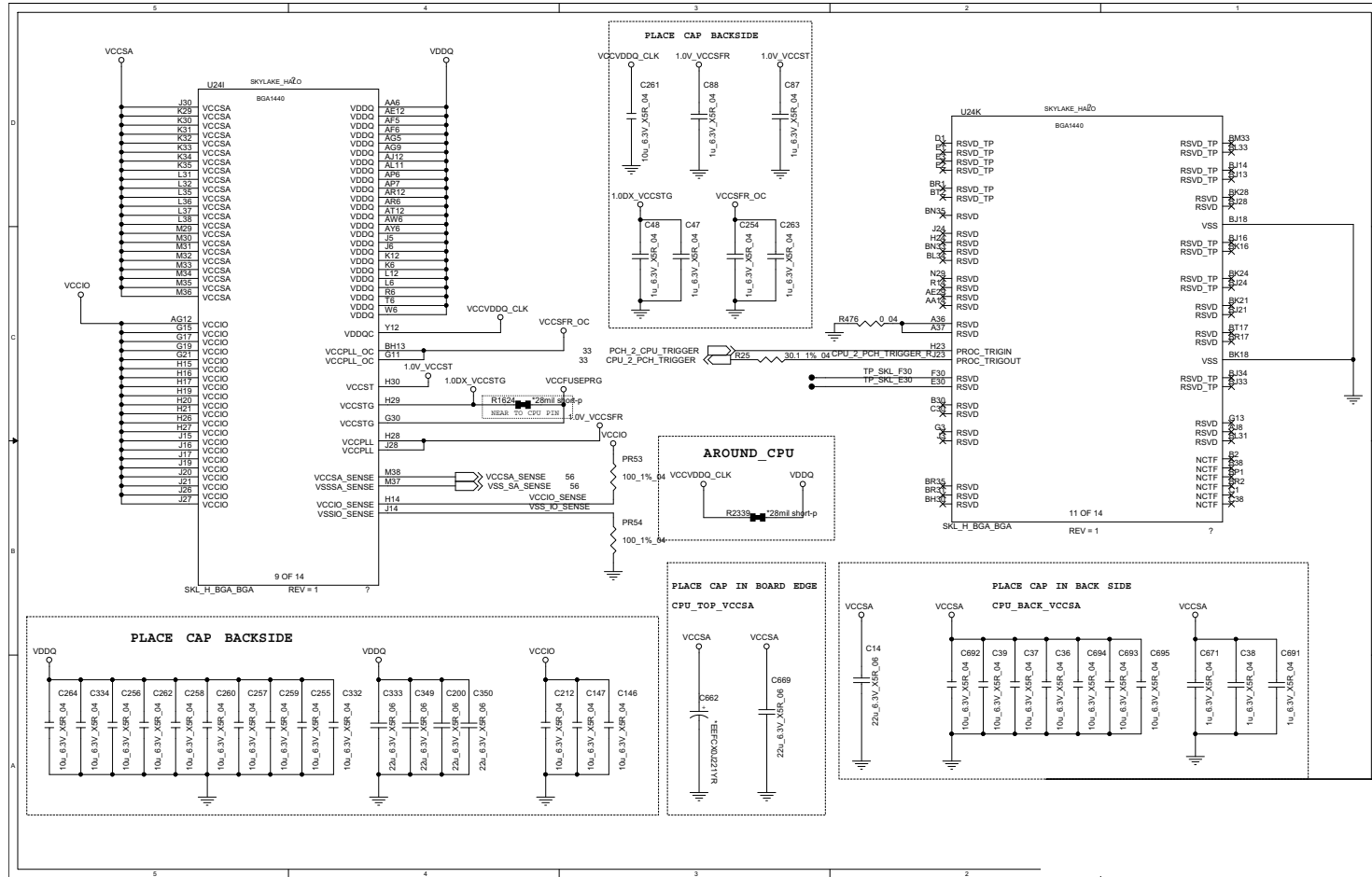
Processor 5/7- Power 1



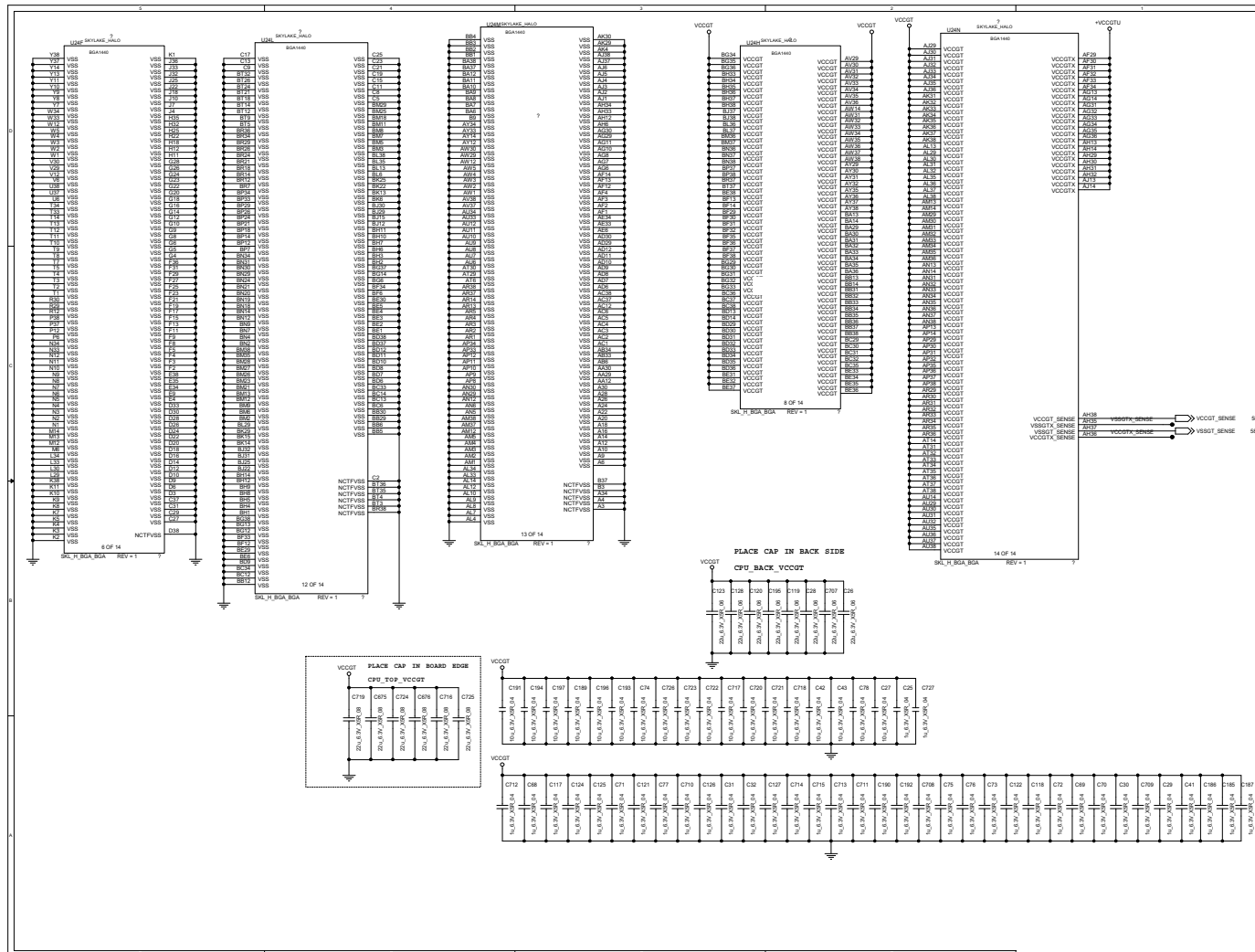
Sheet 6 of 63
Processor 5/7-
Power 1

Processor 6/7- Power 2

Sheet 7 of 63
Processor 6/7 -
Power 2



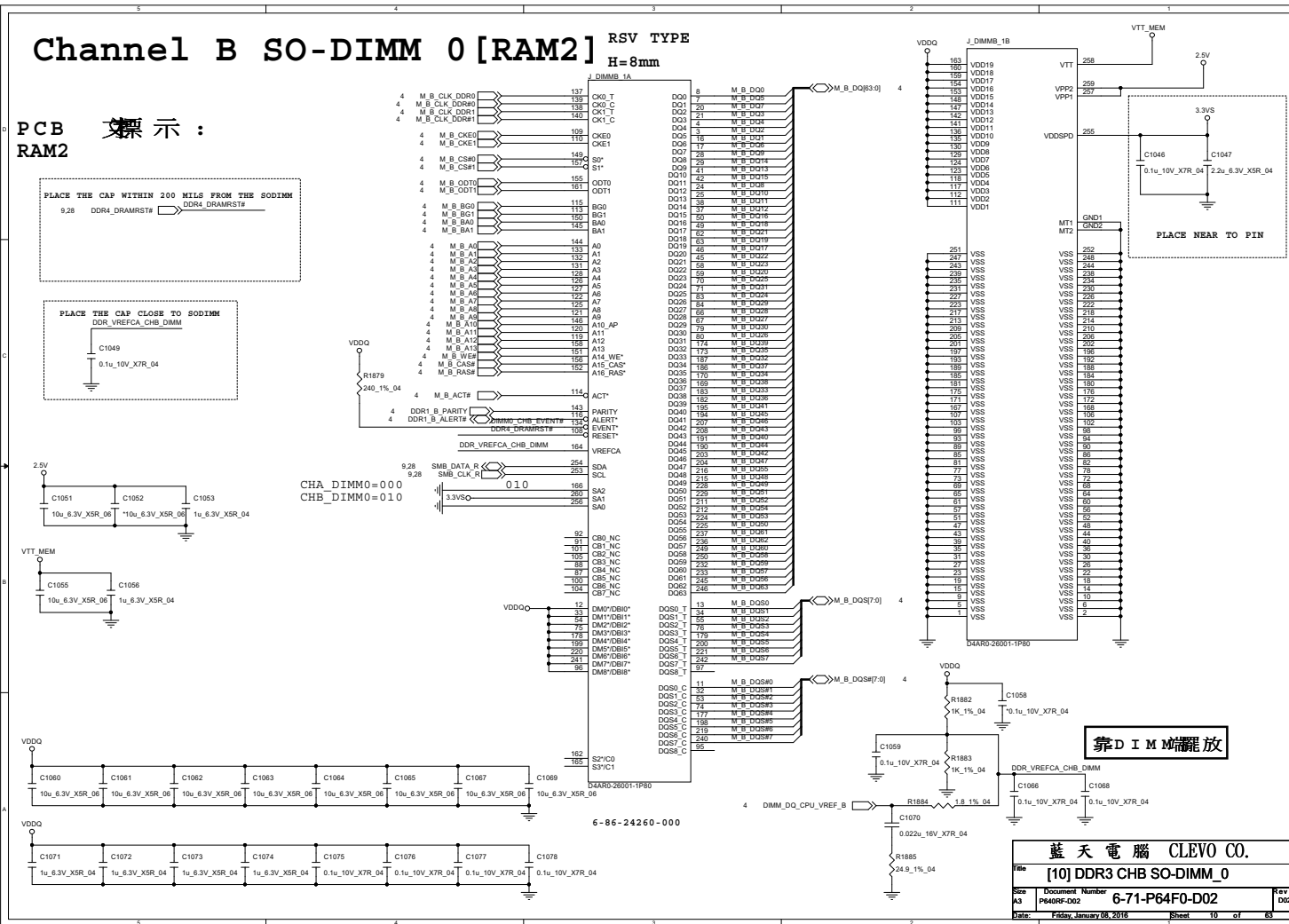
Processor 7/7



Sheet 8 of 63
Processor 7/7

B.Schematic Diagrams

DDR4 CHB SO-DIMM_0



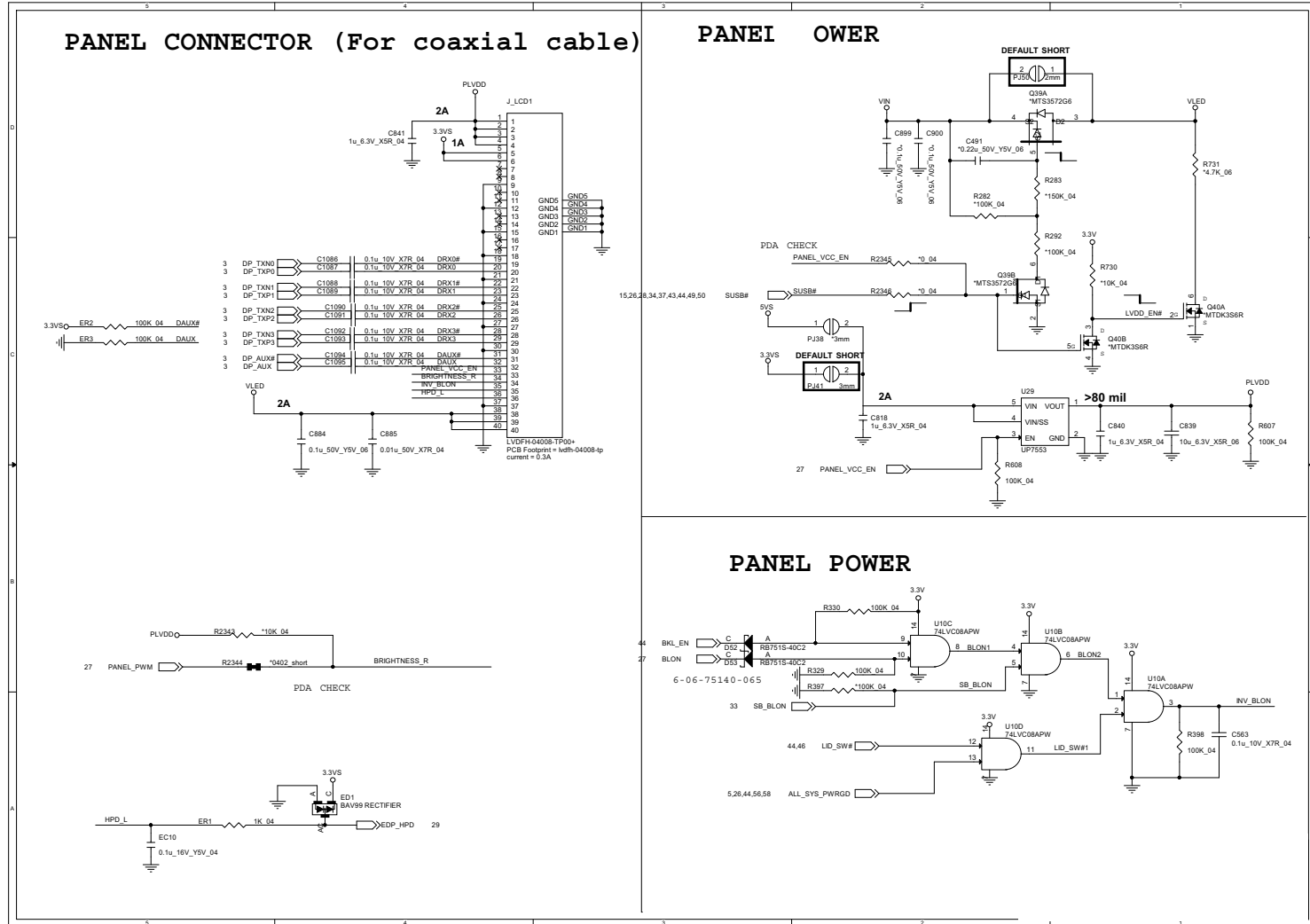
Sheet 10 of 63
DDR4 CHB SO-DIMM_0

B.Schematic Diagrams

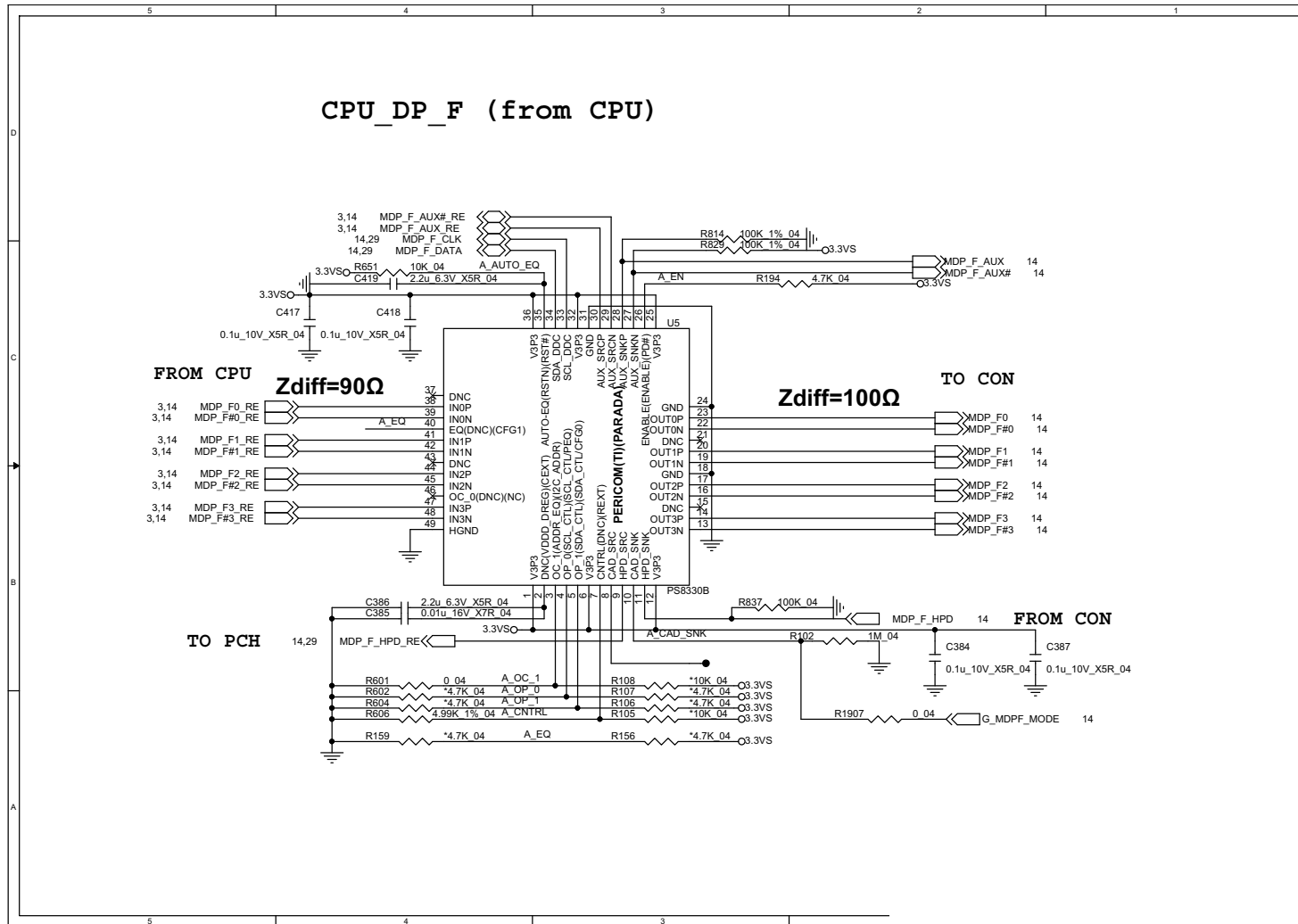
Schematic Diagrams

Panel, Inverter, CRT

Sheet 11 of 63
Panel, Inverter,
CRT



Redriver

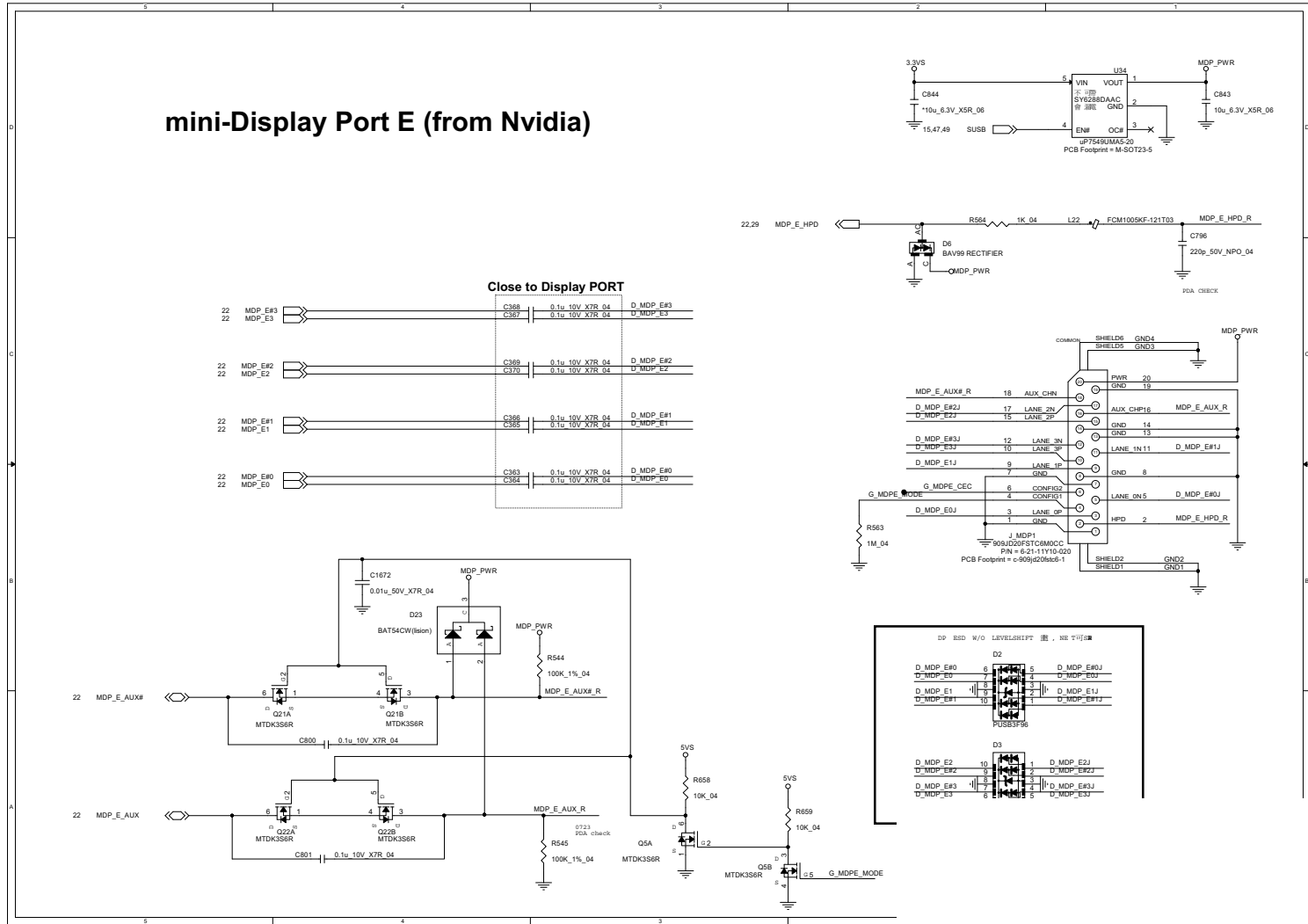


Sheet 12 of 63
Redriver

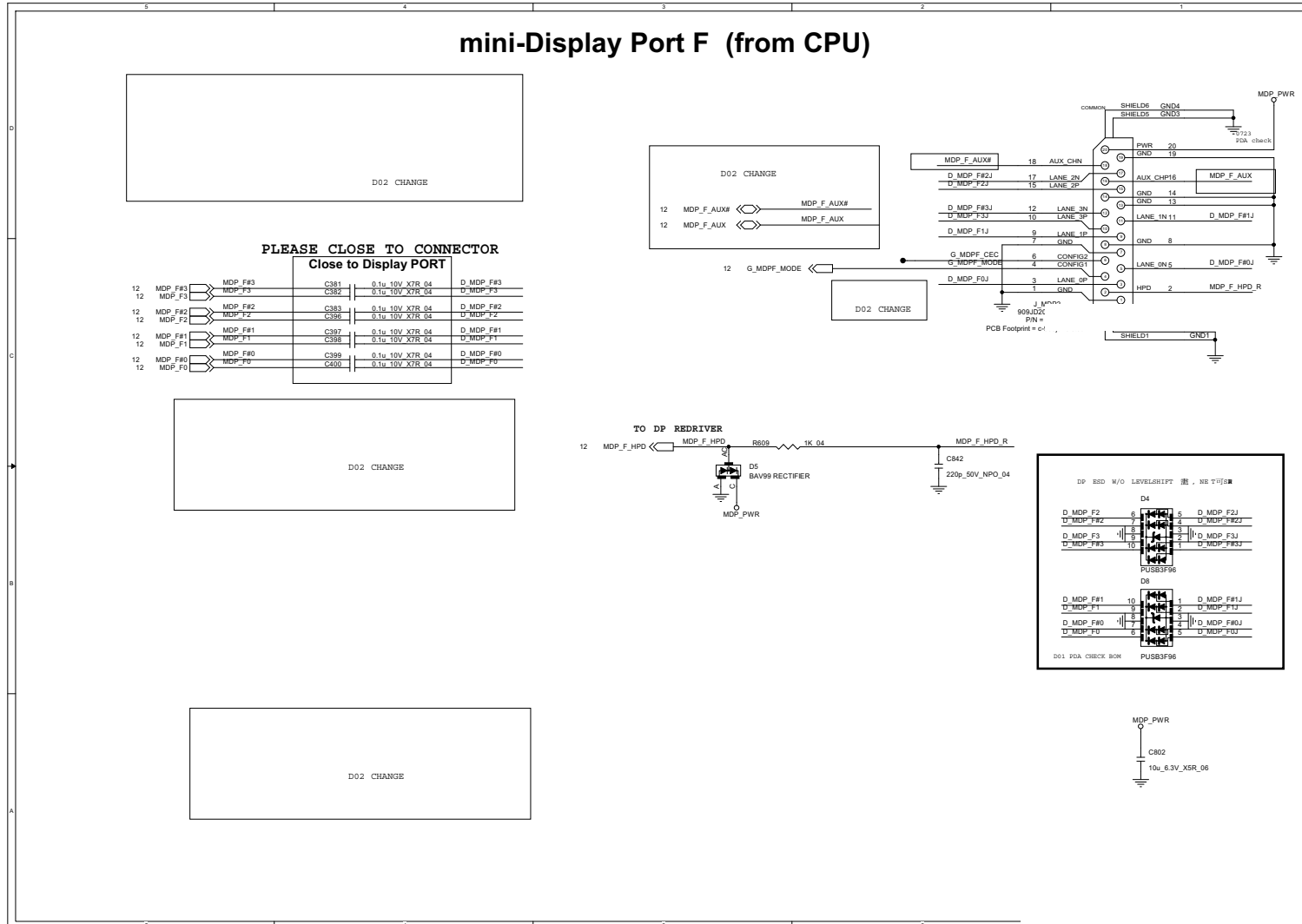
B.Schematic Diagrams

Mini DP Port E

Sheet 13 of 63
Mini DP Port E

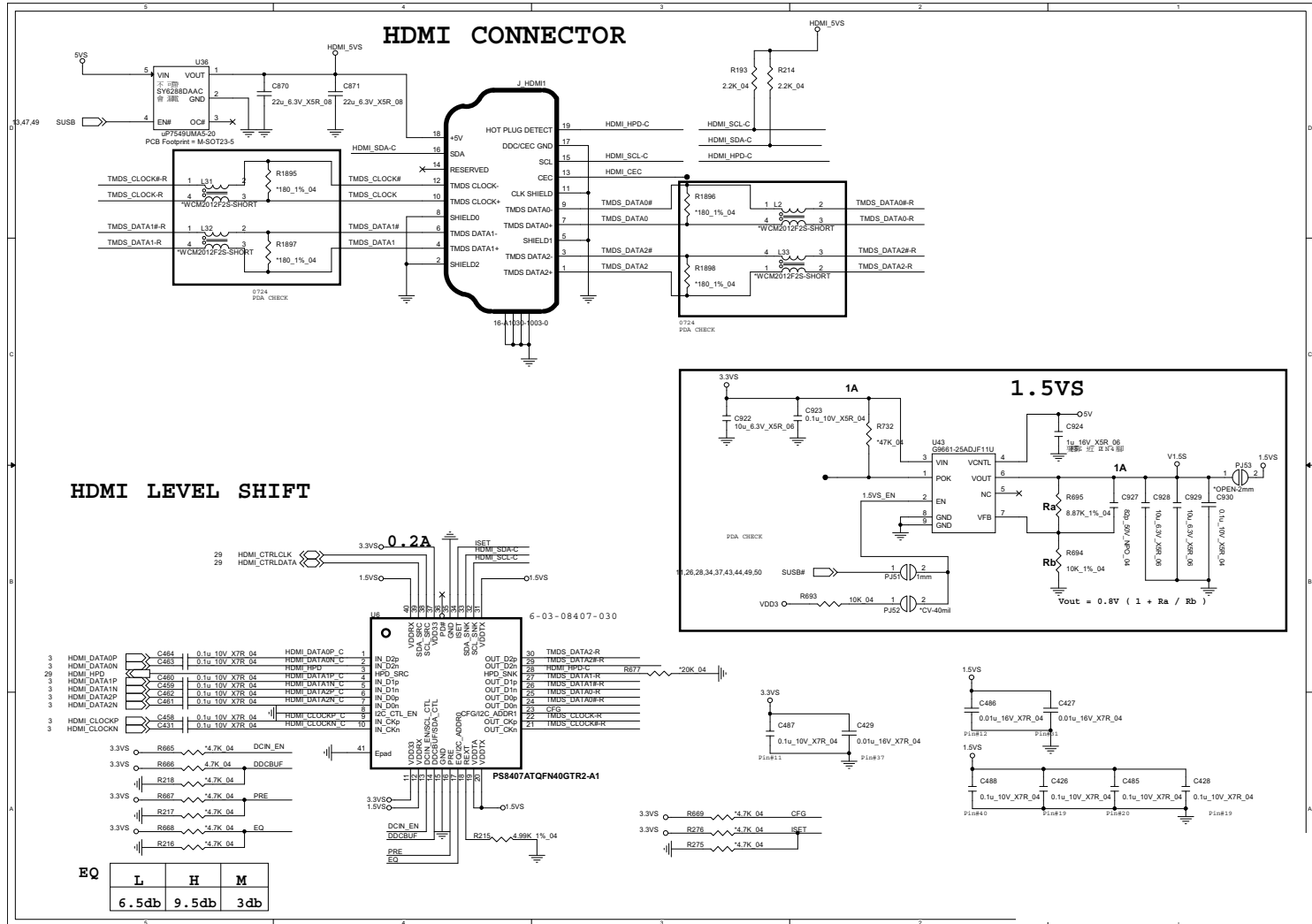


Mini DP Port F



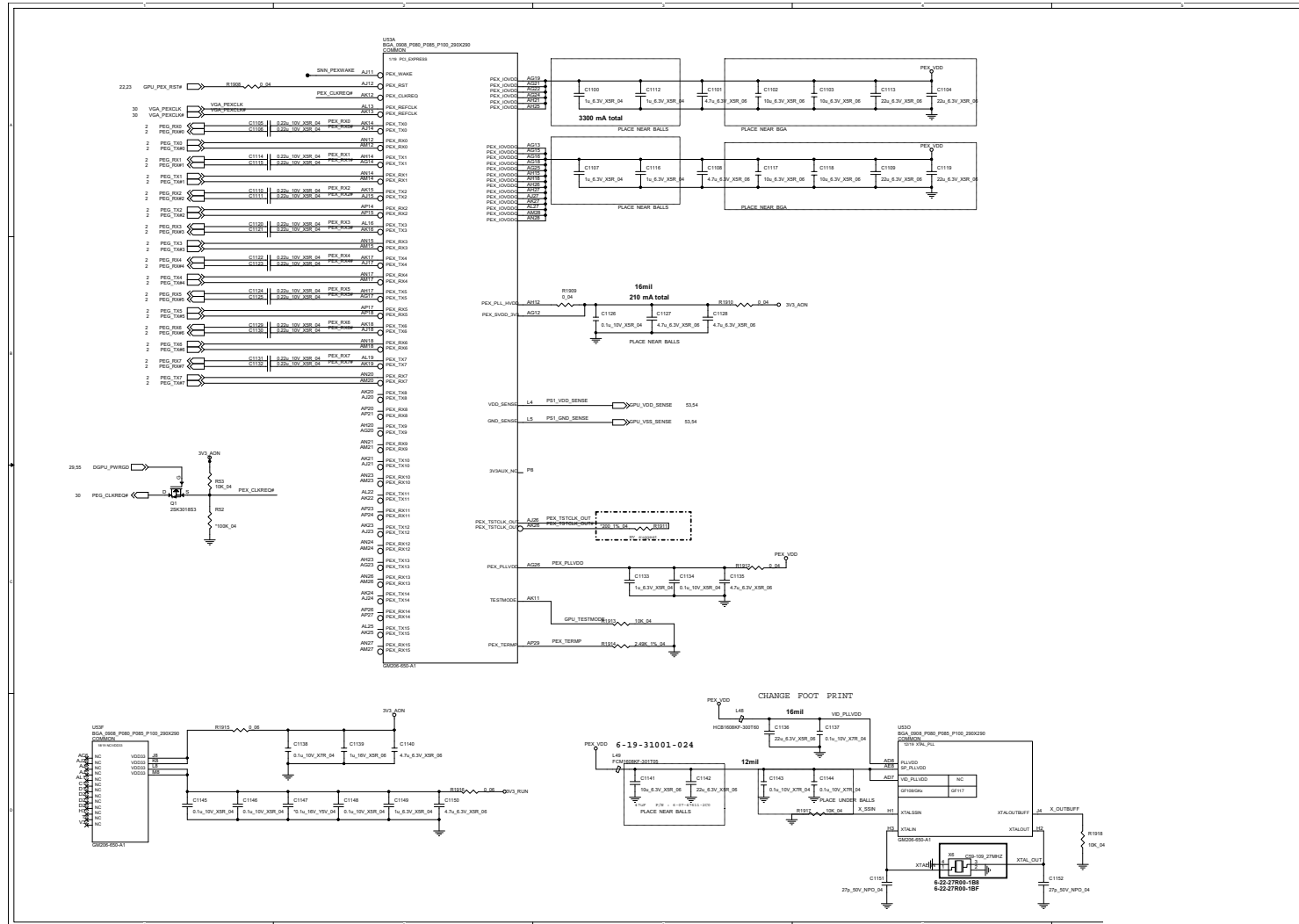
Sheet 14 of 63
Mini DP Port F

HDMI Connector



Sheet 15 of 63
HDMI Connector

VGA PCI Express

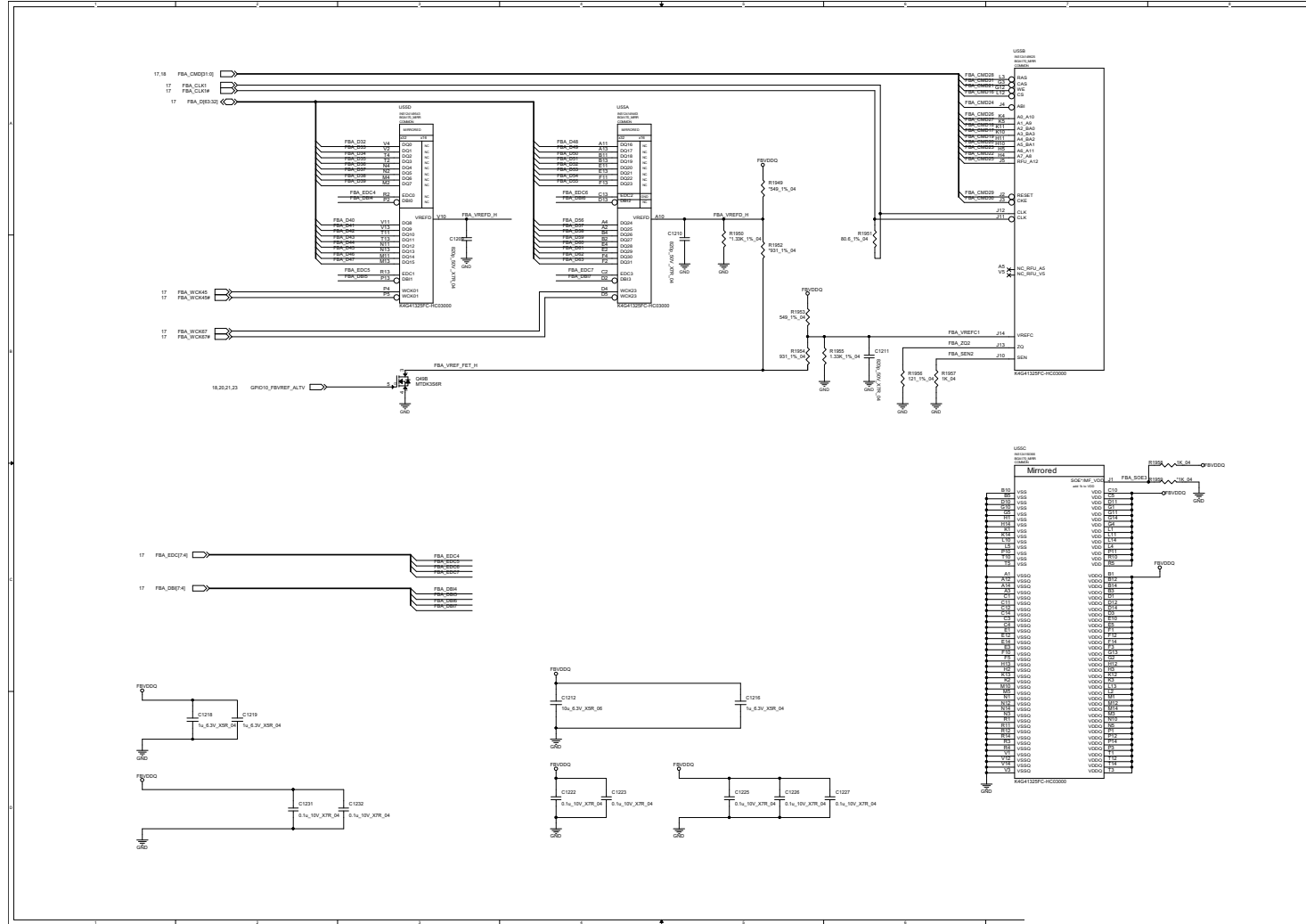


Sheet 16 of 63
VGA PCI Express

B.Schematic Diagrams

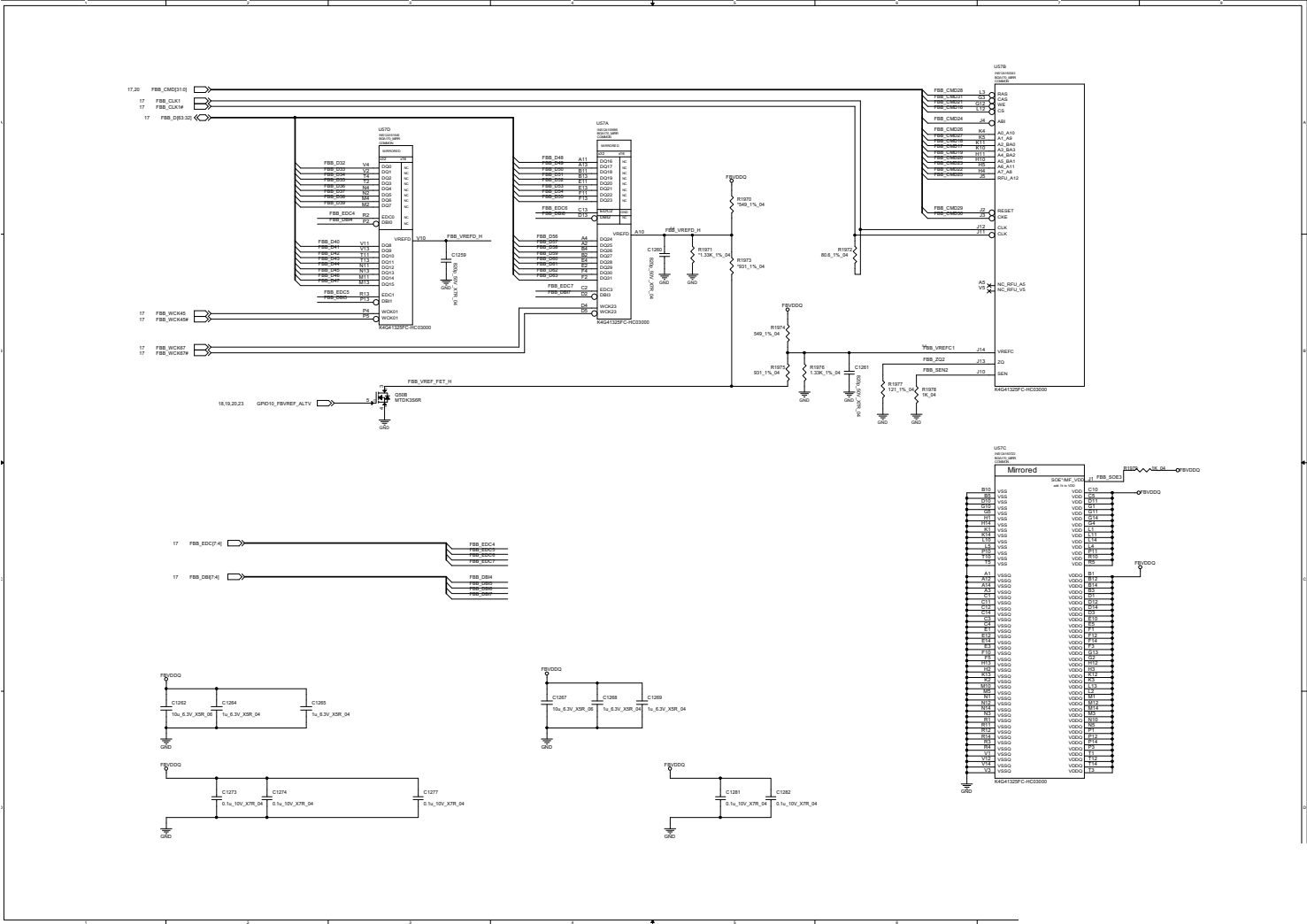
Frame Buffer Partition B

Sheet 19 of 63
Frame Buffer
Partition B

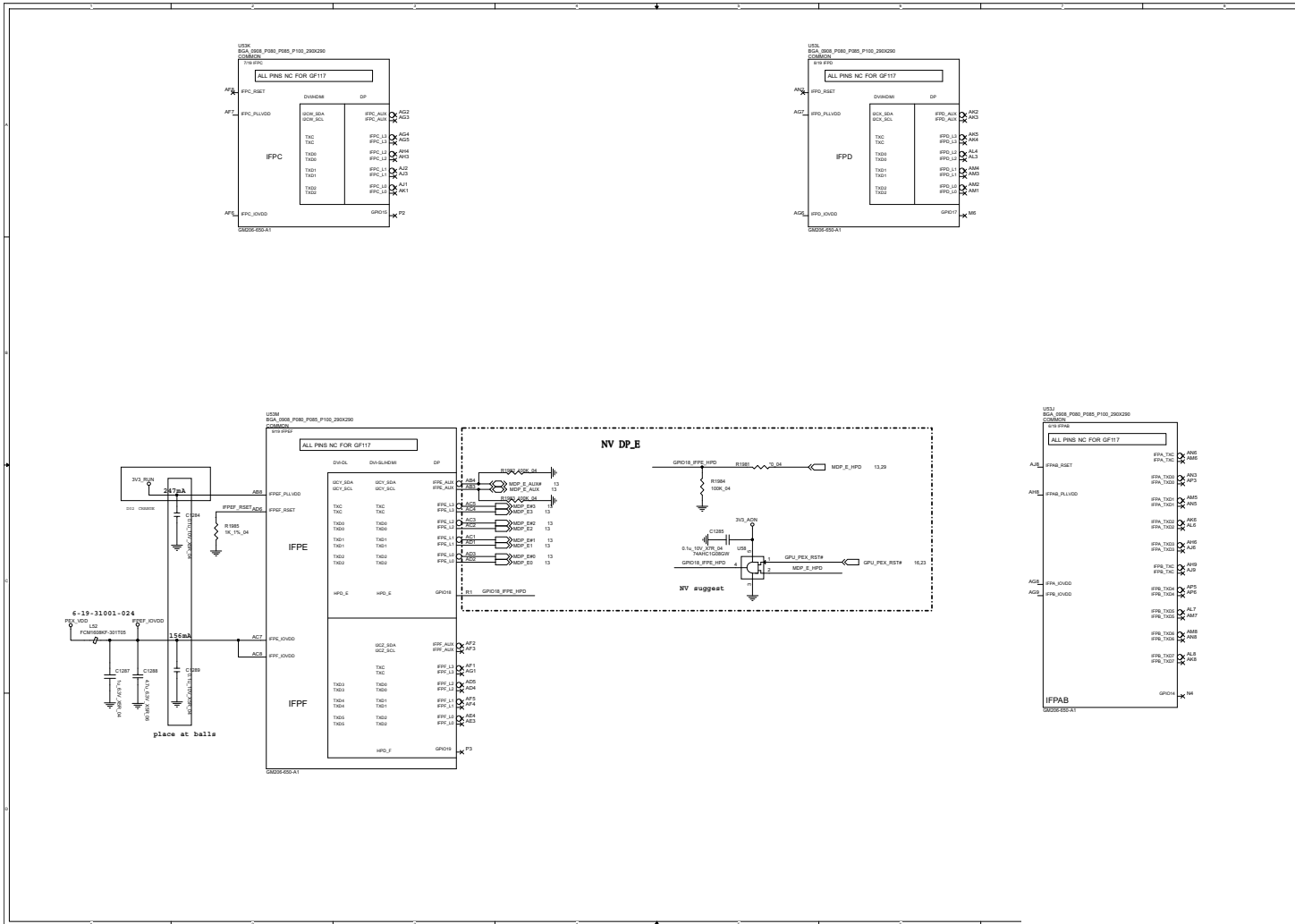


GPU Frame Buffer Partition

Sheet 21 of 63
GPU Frame Buffer Partition

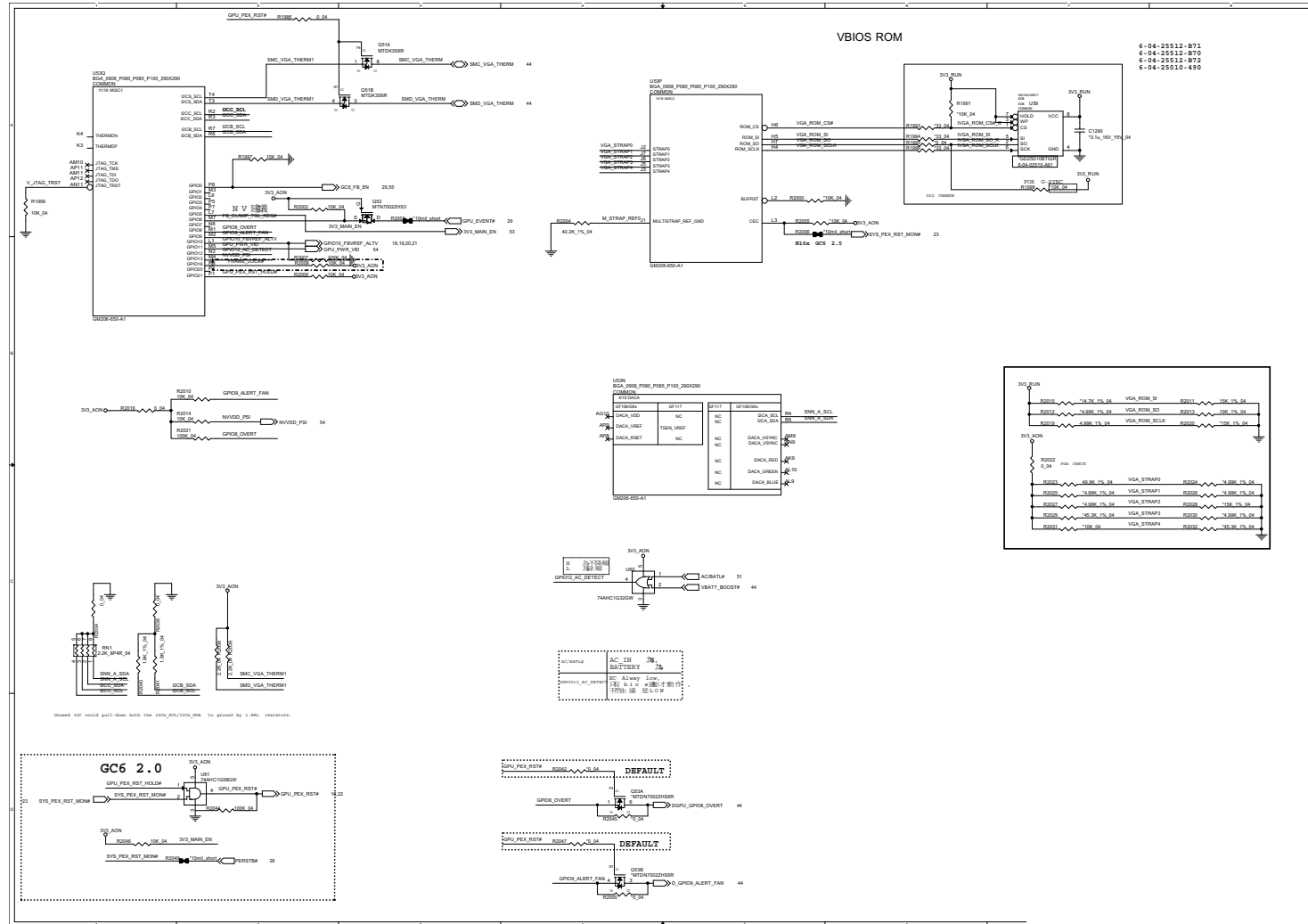


Frame Buffer Partition C



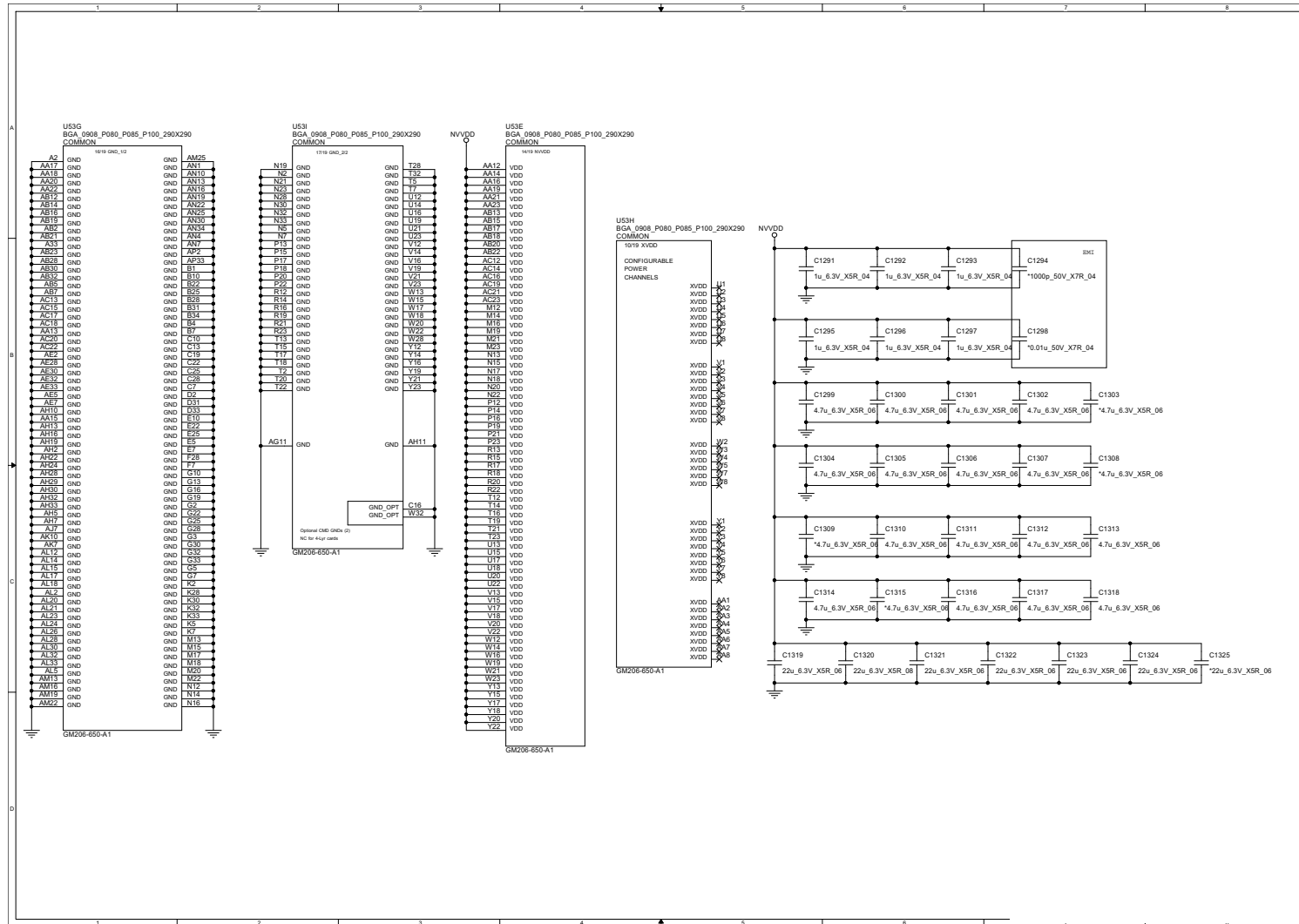
Sheet 22 of 63
Frame Buffer
Partition C

Frame Buffer Partition C



Sheet 23 of 63
Frame Buffer
Partition C

GPU Decoupling

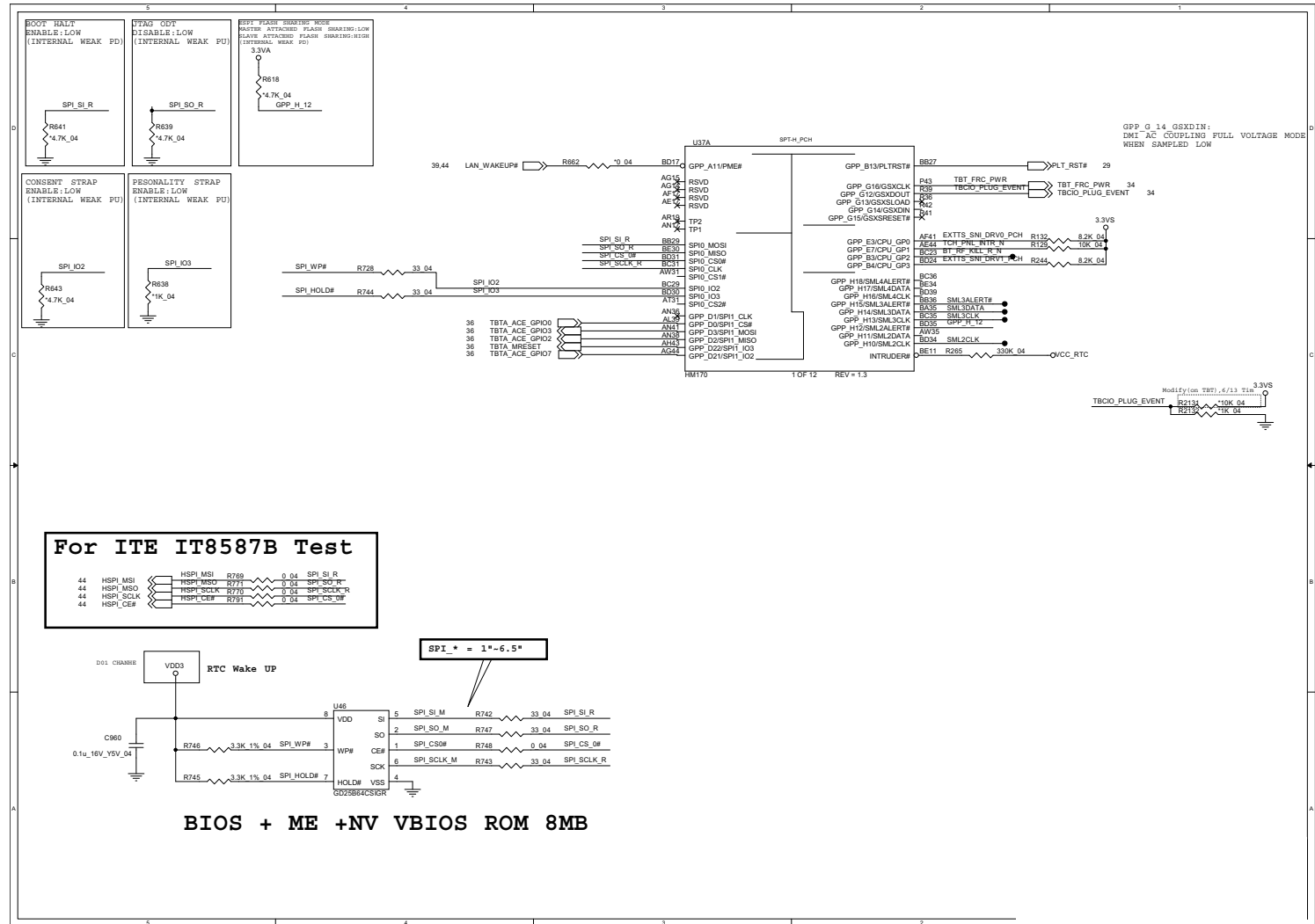


Sheet 24 of 63
GPU Decoupling

B.Schematic Diagrams

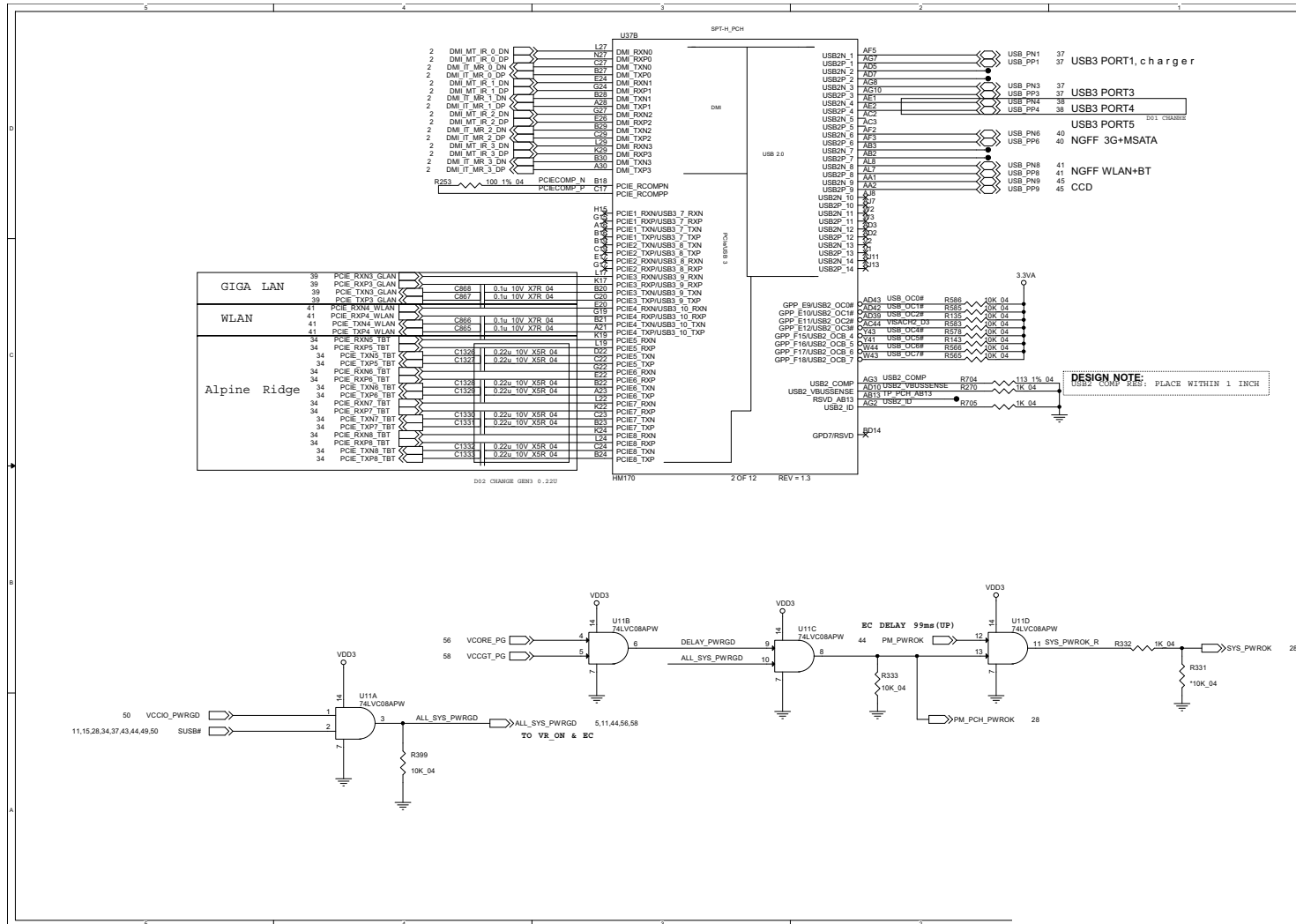
PCH 1/9

Sheet 25 of 63
PCH 1/9



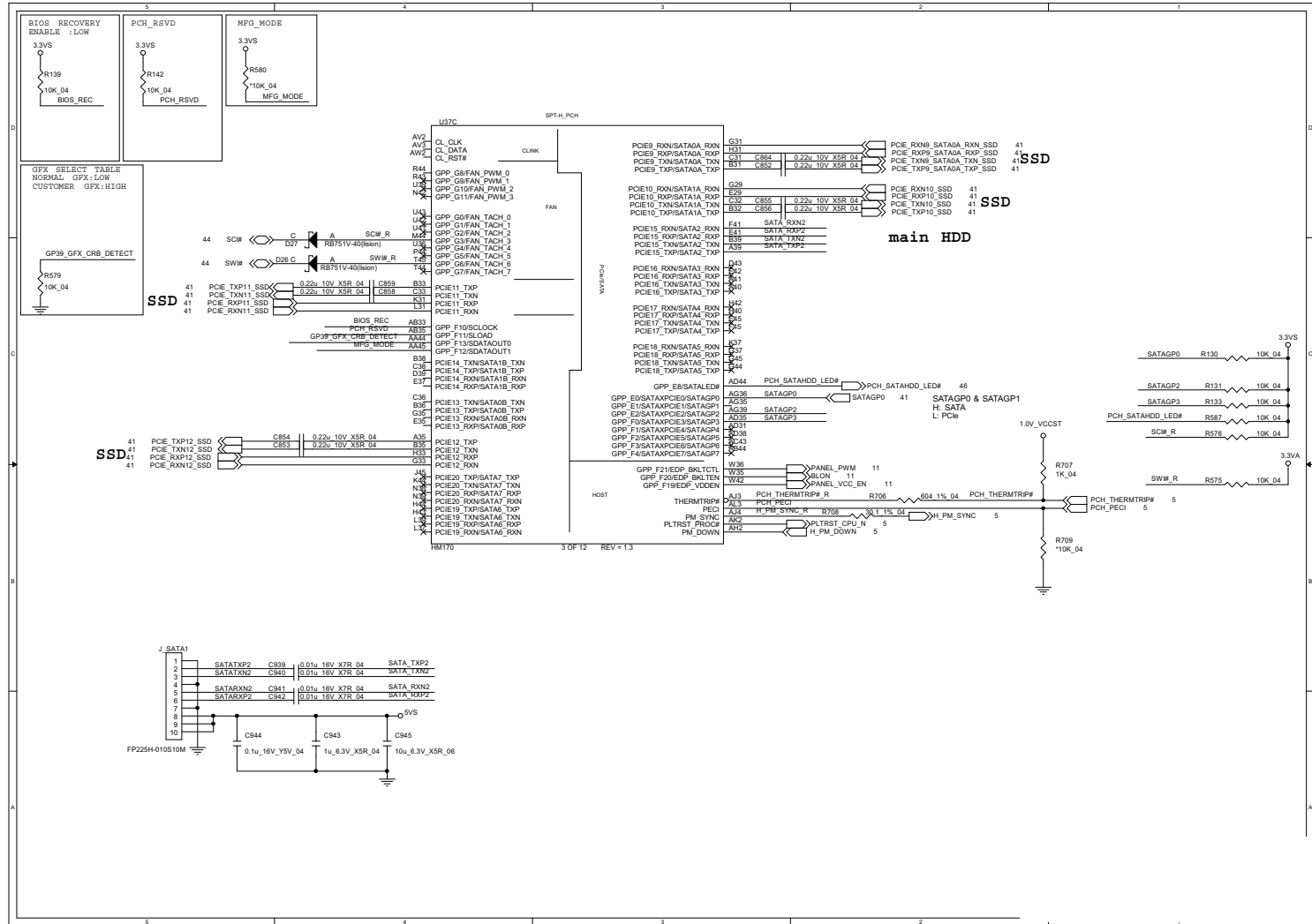
PCH 2/9

Sheet 26 of 63
PCH 2/9

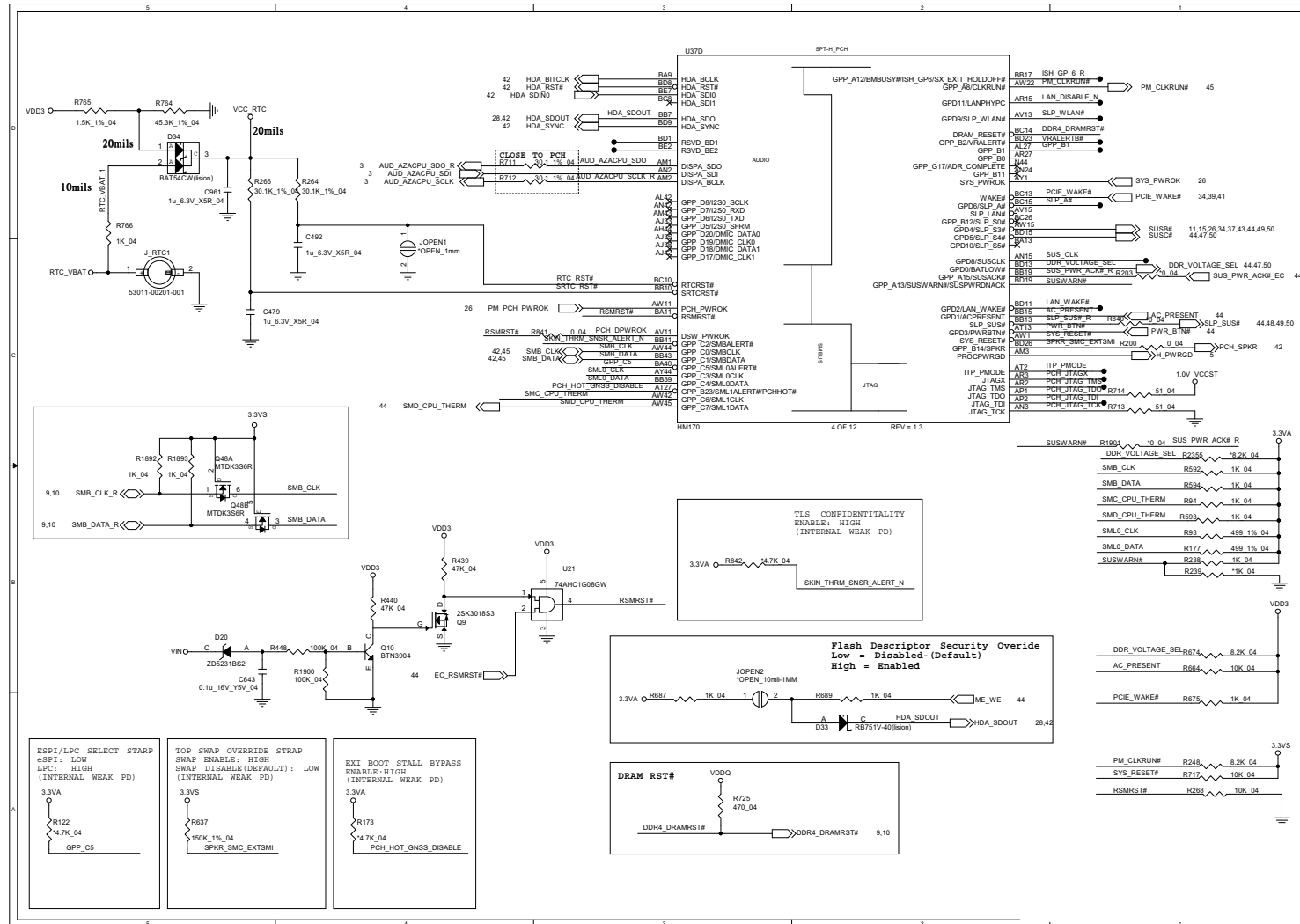


PCH 3/9

Sheet 27 of 63
PCH 3/9



PCH 4/9

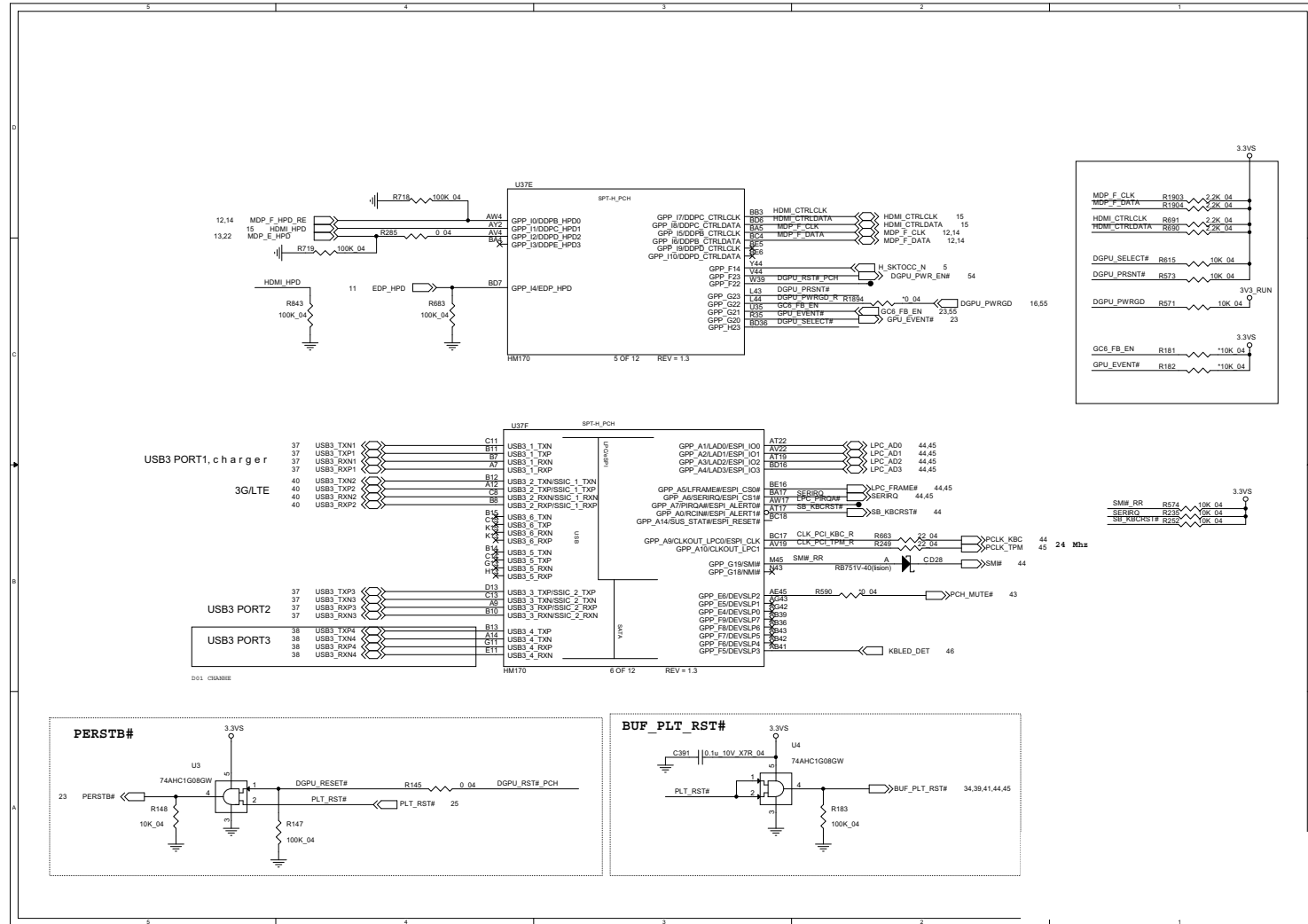


Sheet 28 of 63
PCH 4/9

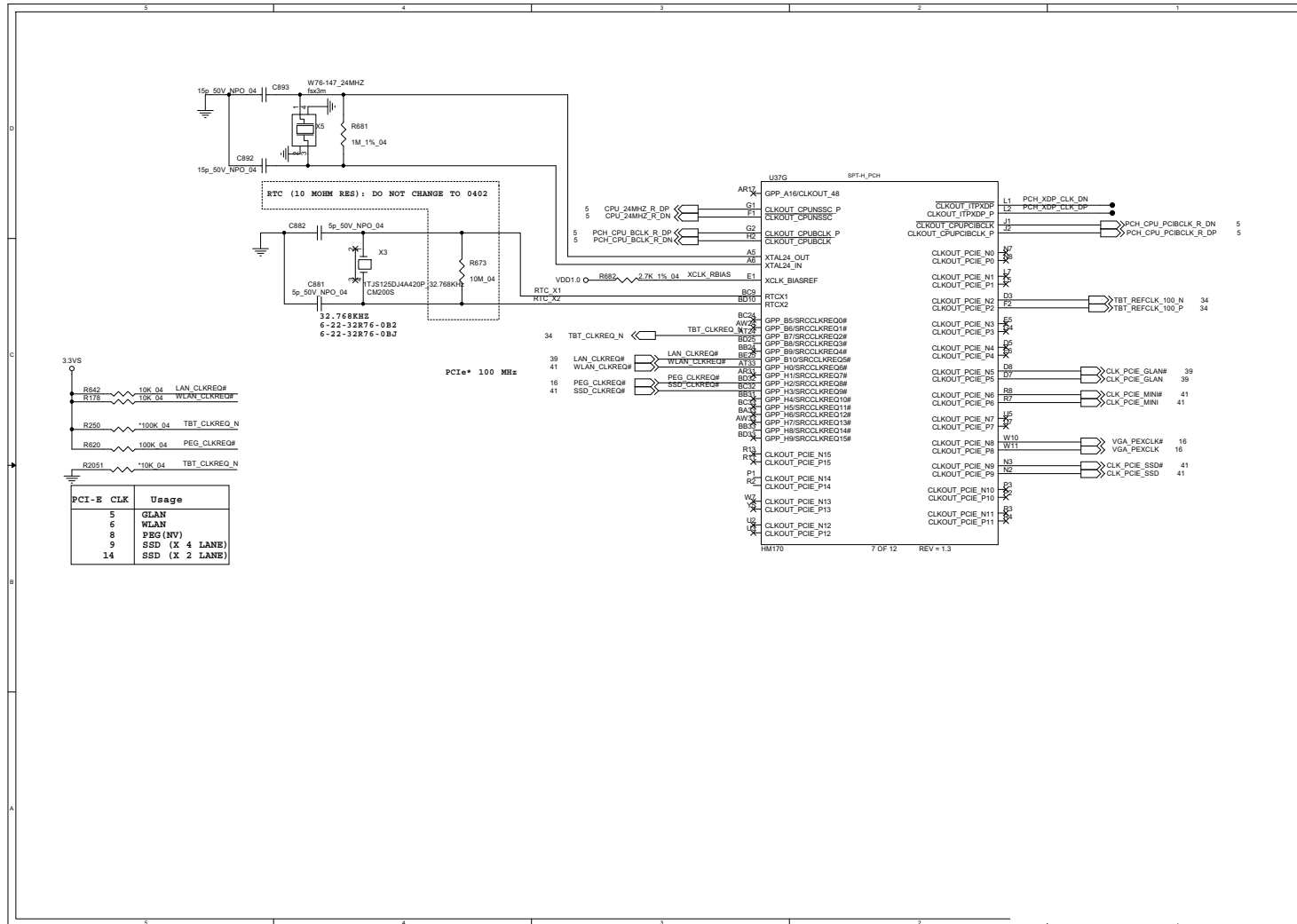
B.Schematic Diagrams

PCH 5/9

Sheet 29 of 63
PCH 5/9



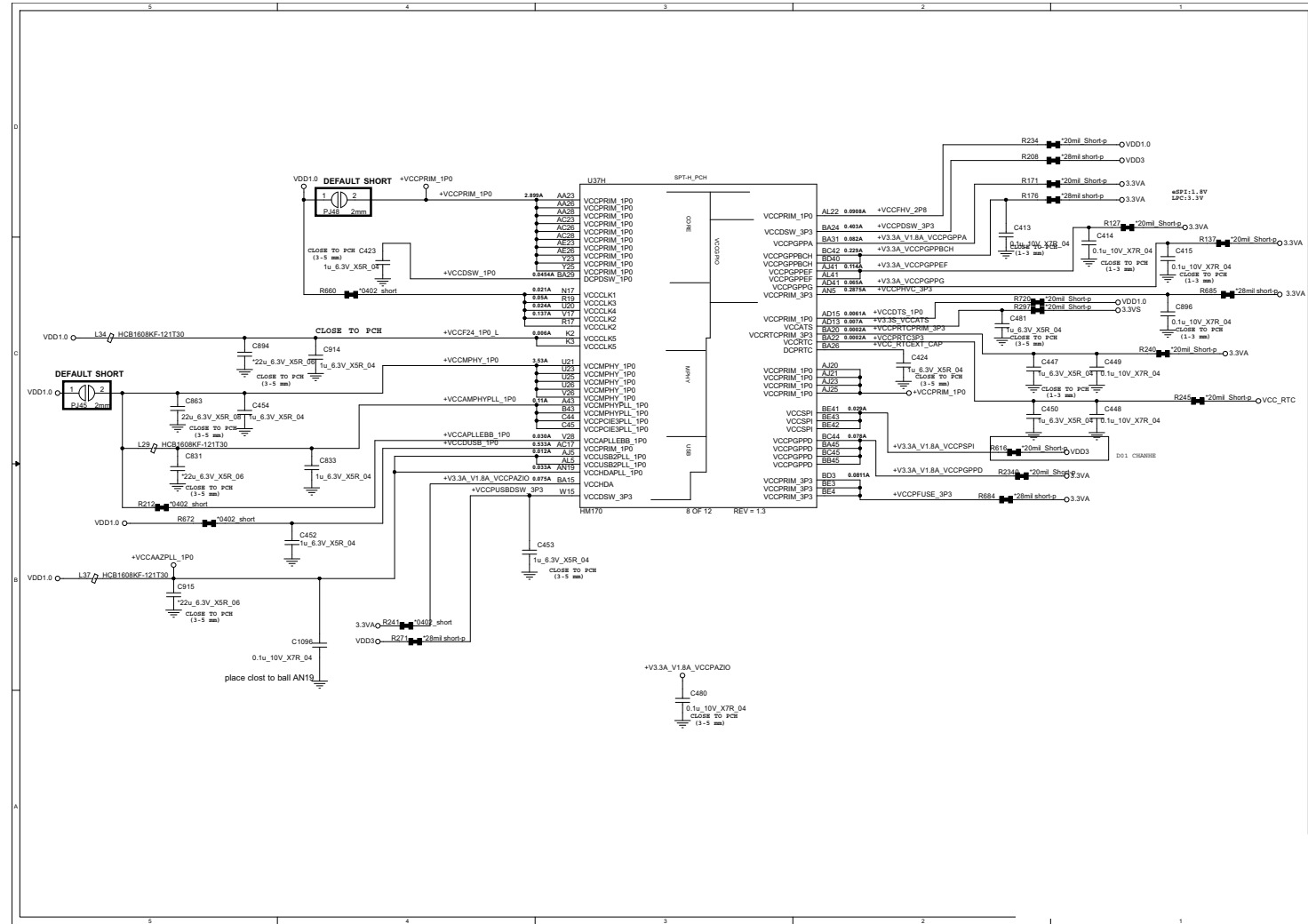
PCH 6/9



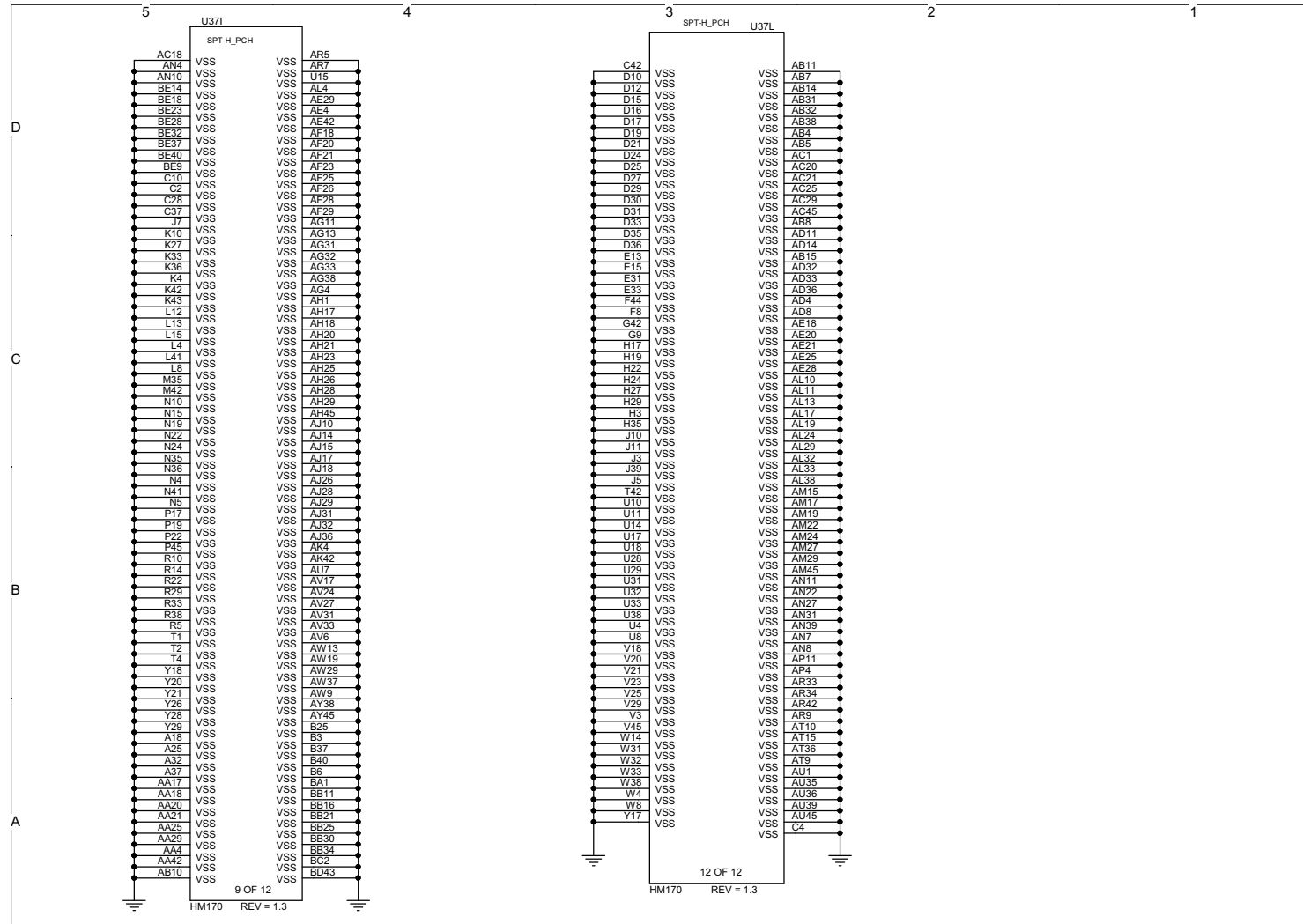
Sheet 30 of 63
PCH 6/9

PCH 7/9

Sheet 31 of 63
PCH 7/9



PCH 8/9

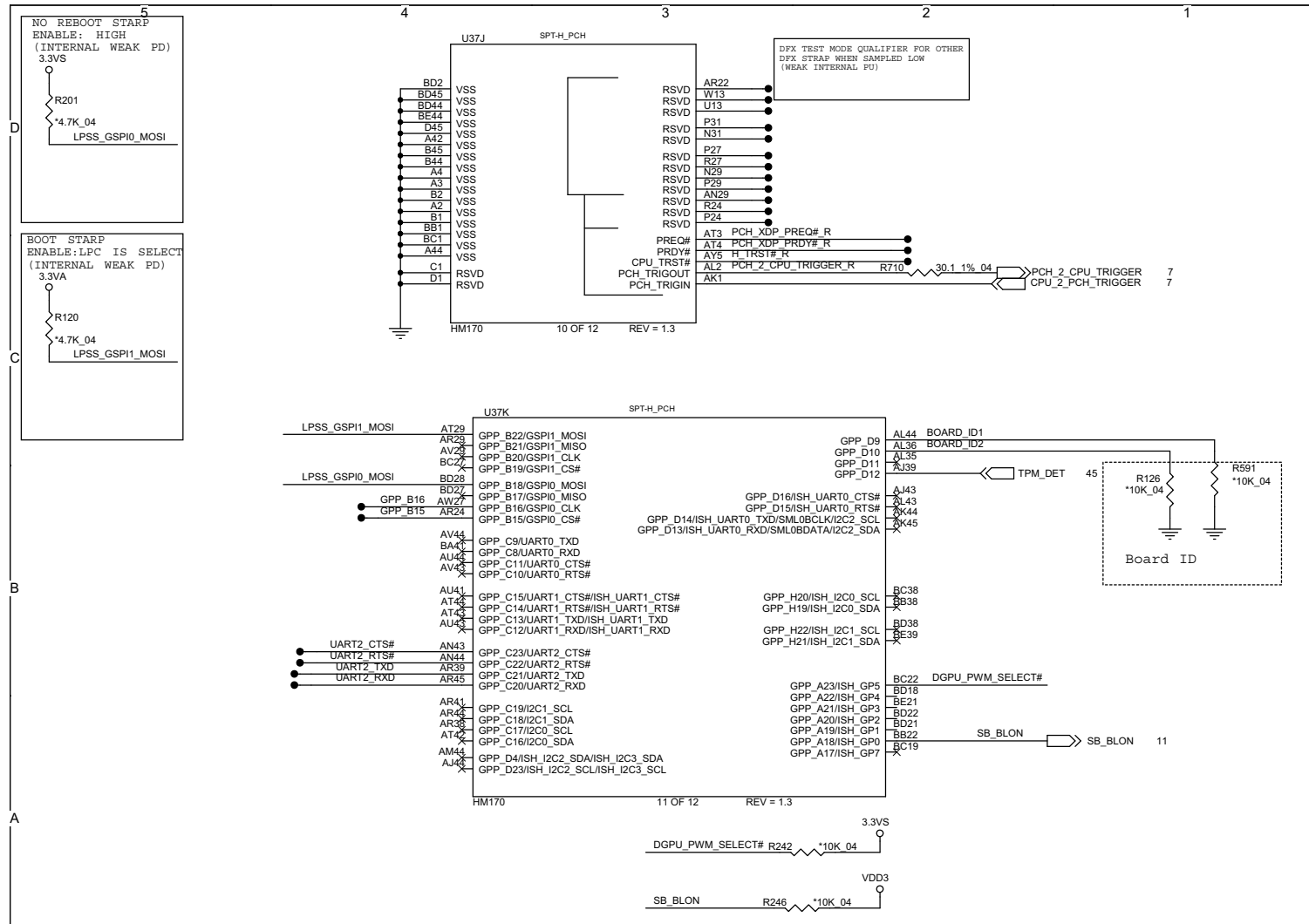


Sheet 32 of 63
PCH 8/9

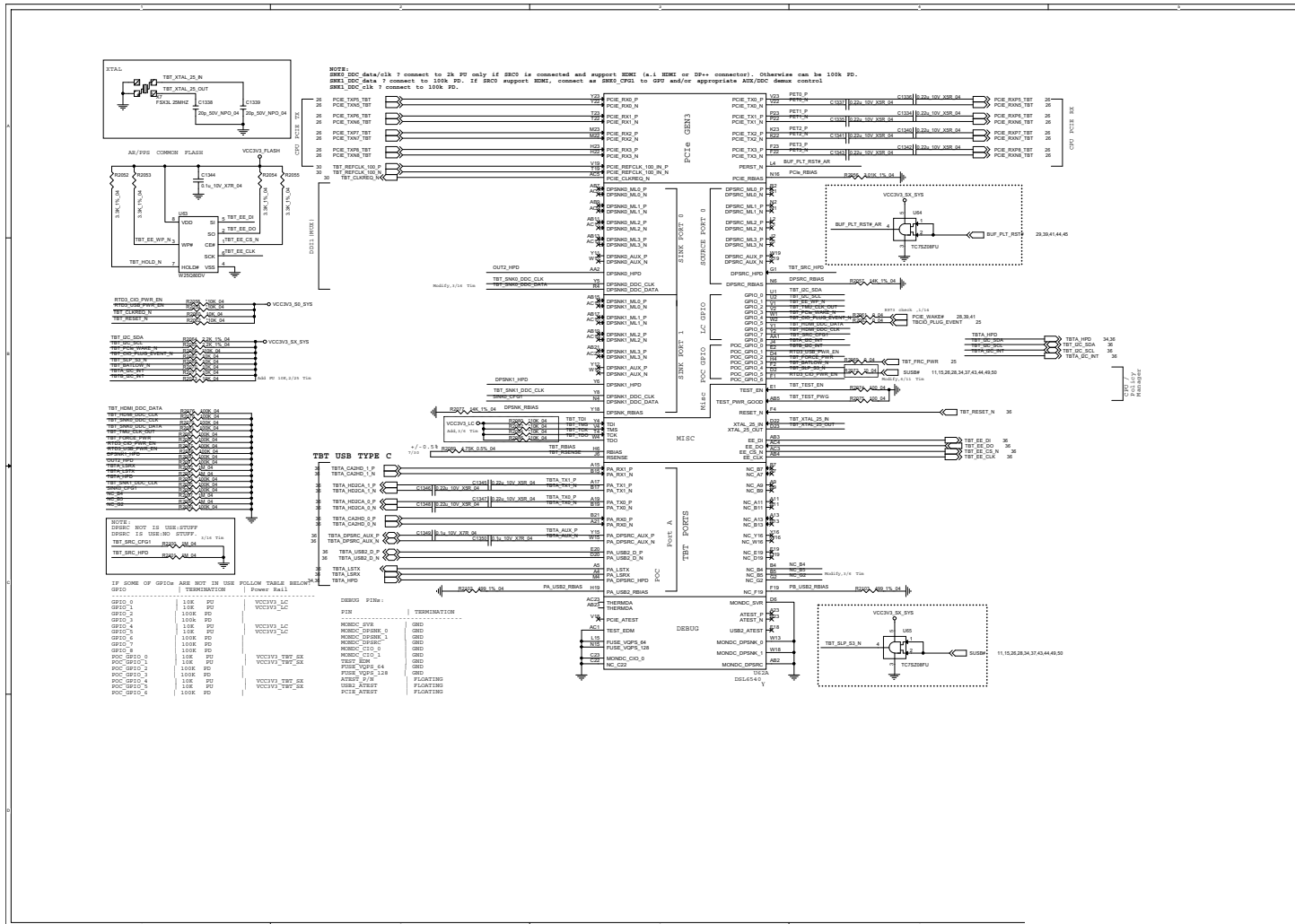
B. Schematic Diagrams

PCH 9/9

Sheet 33 of 63
PCH 9/9



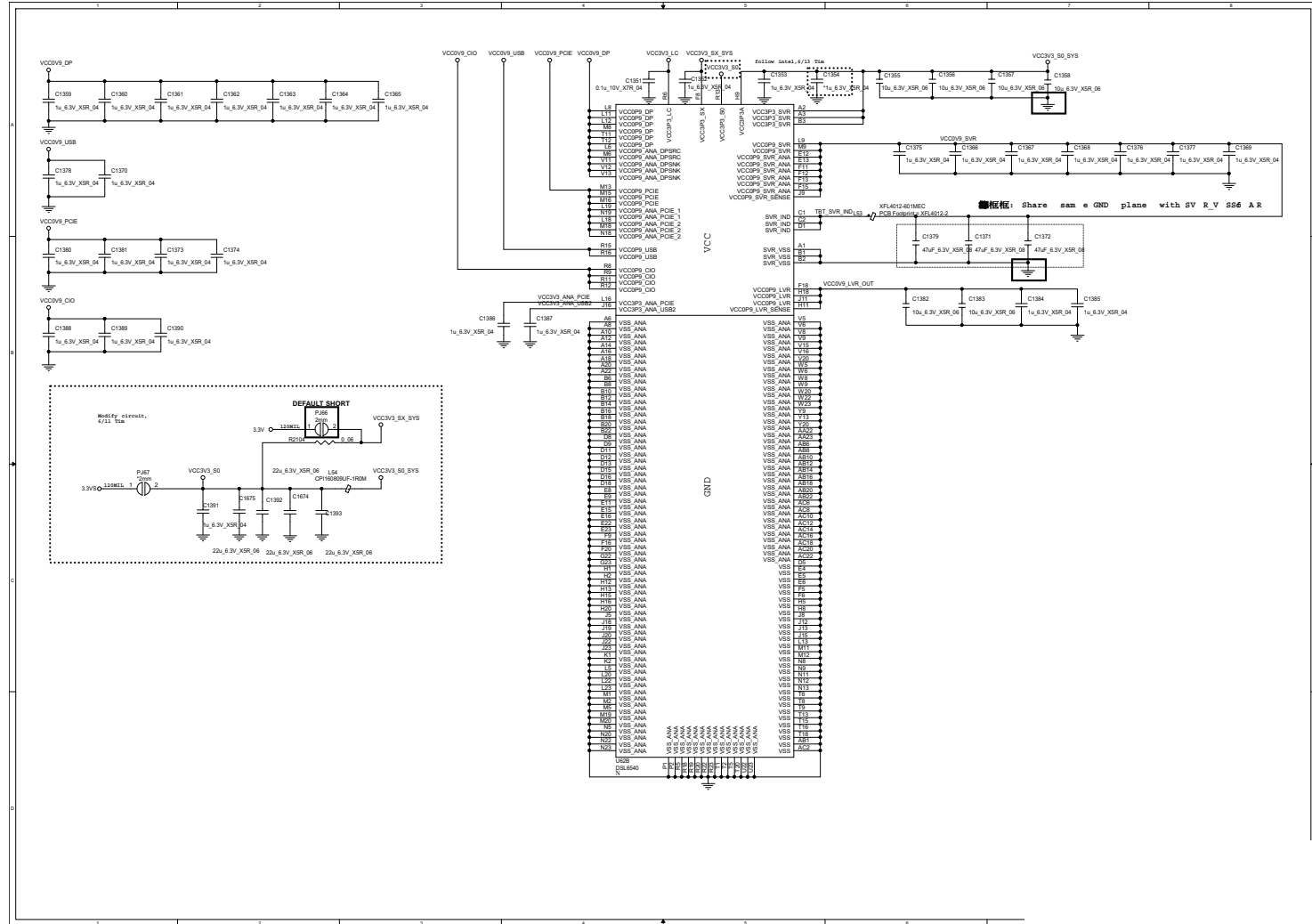
DACA Interface and XTAL



Sheet 34 of 63
DACA Interface and
XTAL

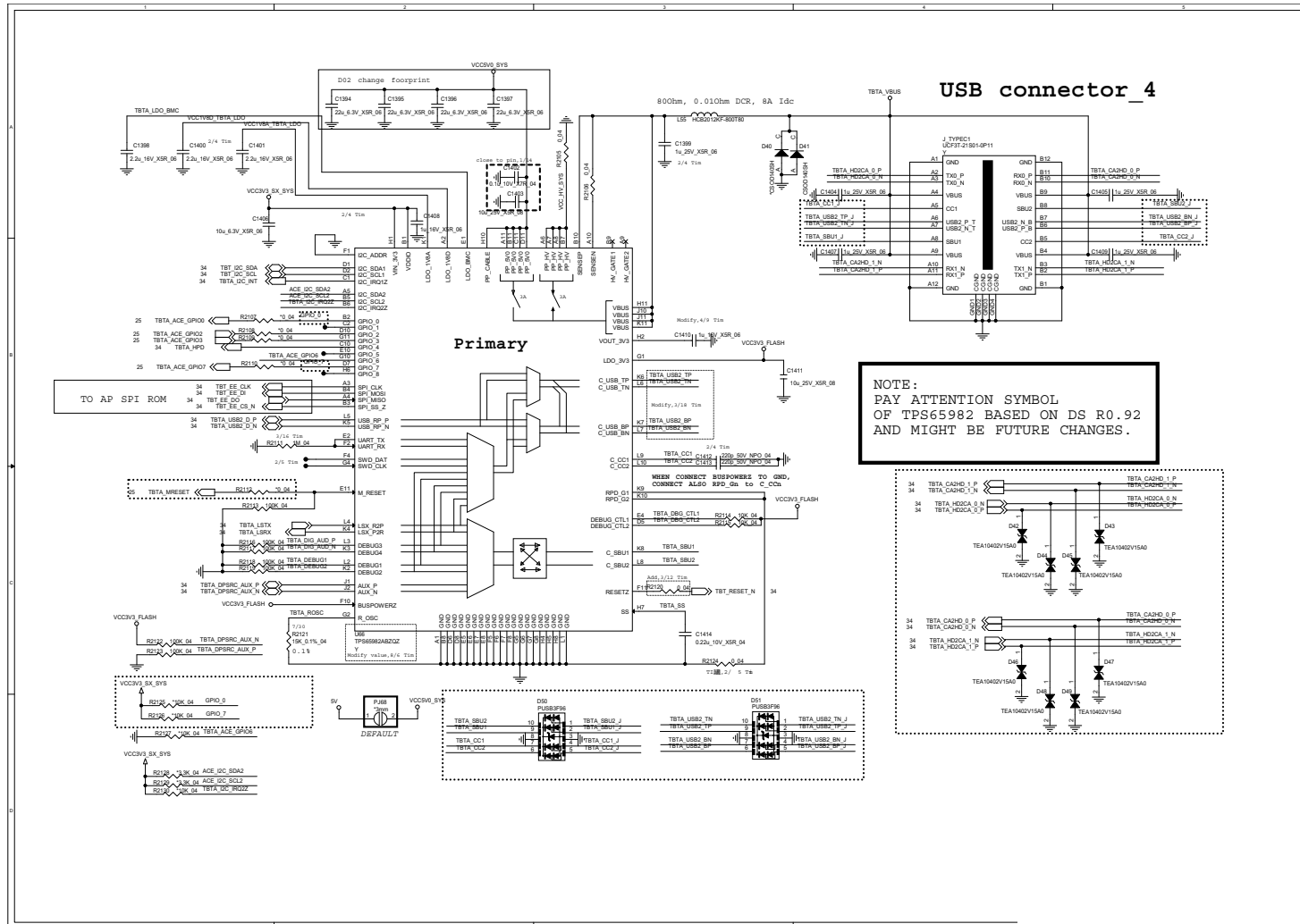
Power

Sheet 35 of 63
Power

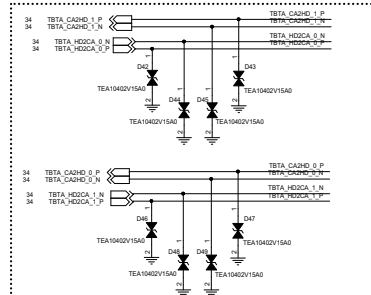


TPS65982

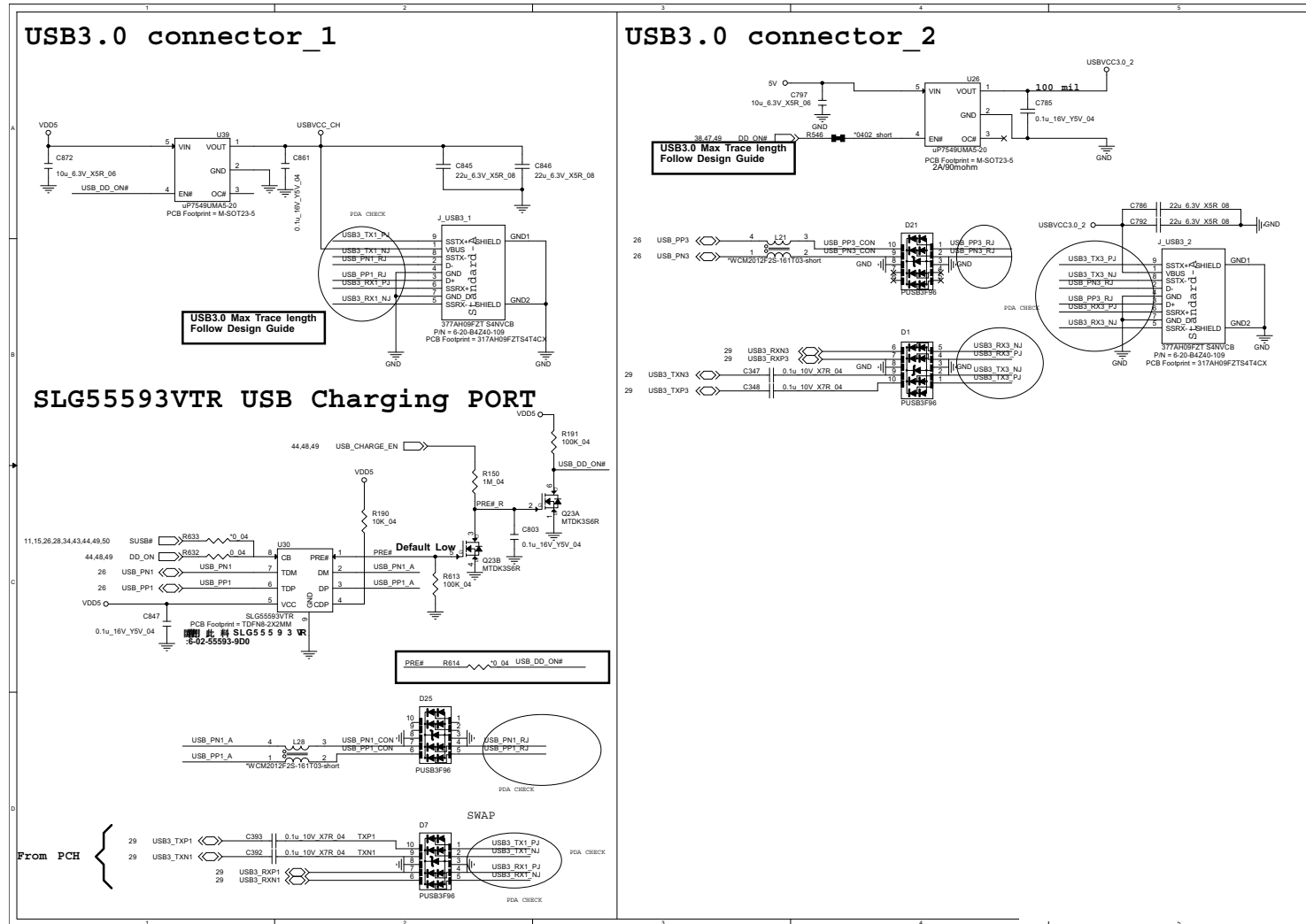
Sheet 36 of 63
TPS65982



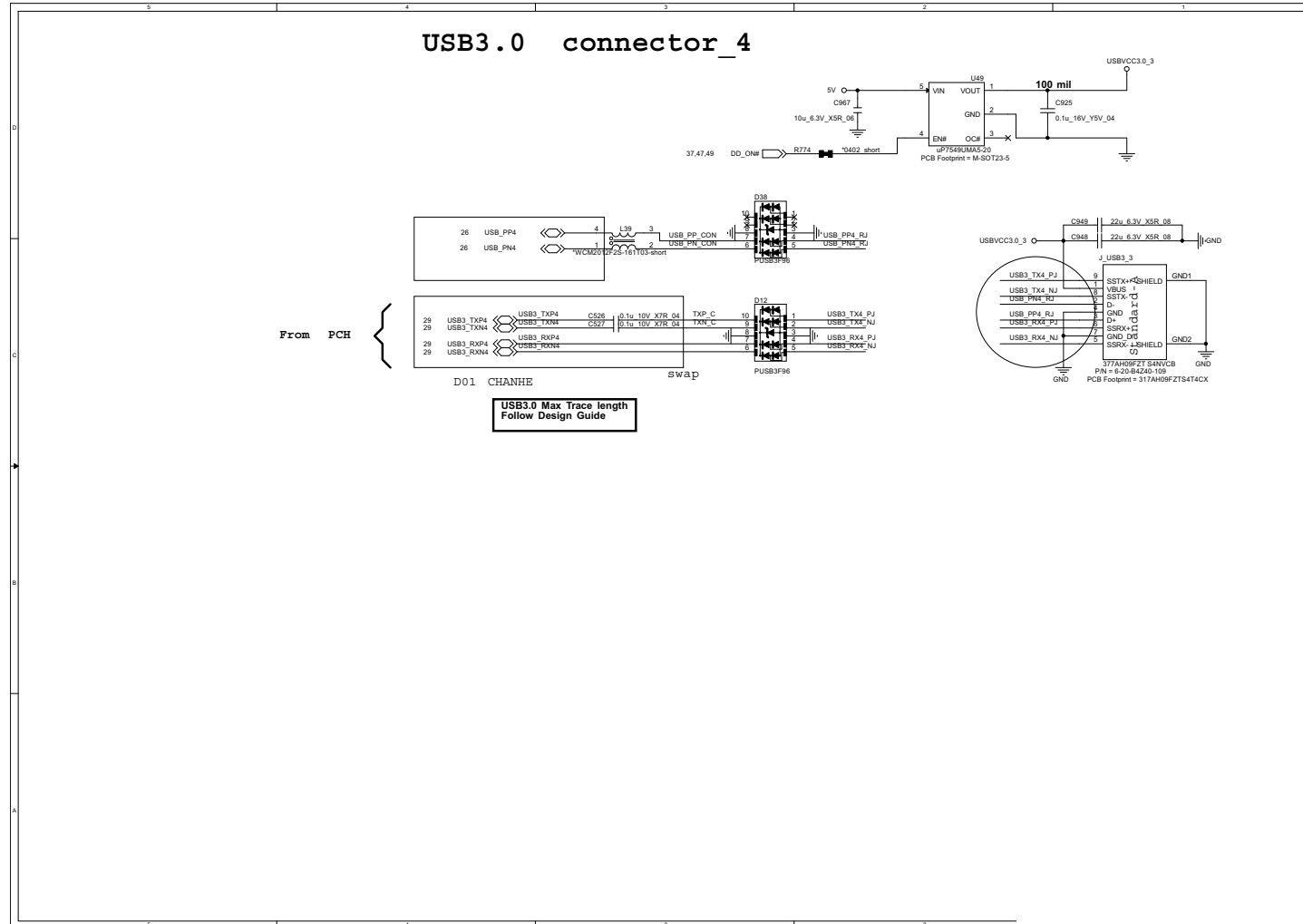
NOTE:
PAY ATTENTION SYMBOL
OF TPS65982 BASED ON DS R0.92
AND MIGHT BE FUTURE CHANGES.



USB Charger



USB 3.0



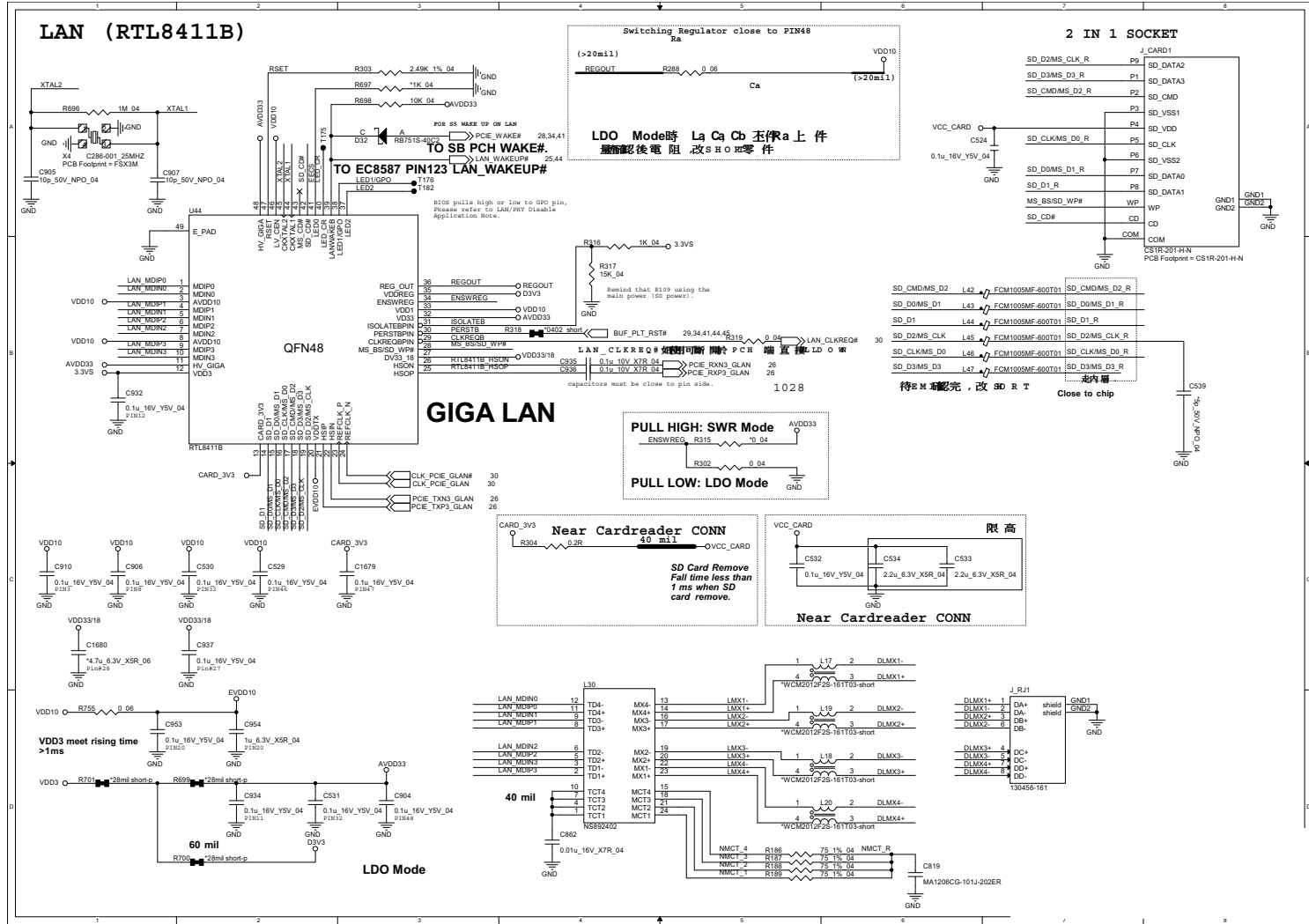
Sheet 38 of 63
USB 3.0

Schematic Diagrams

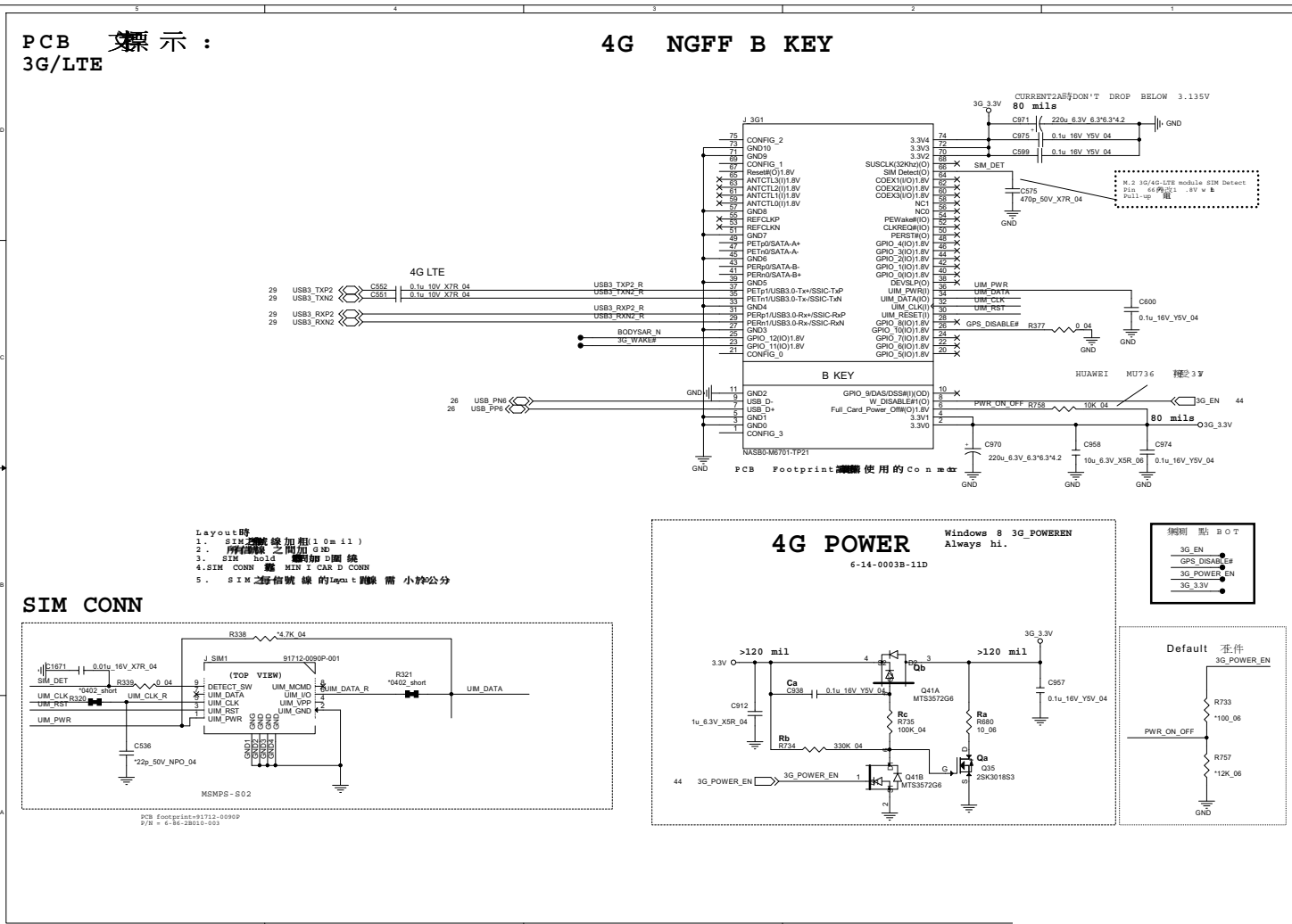
LAN RTL8411B

B.Schematic Diagrams

Sheet 39 of 63
LAN RTL8411B



M.2 3G

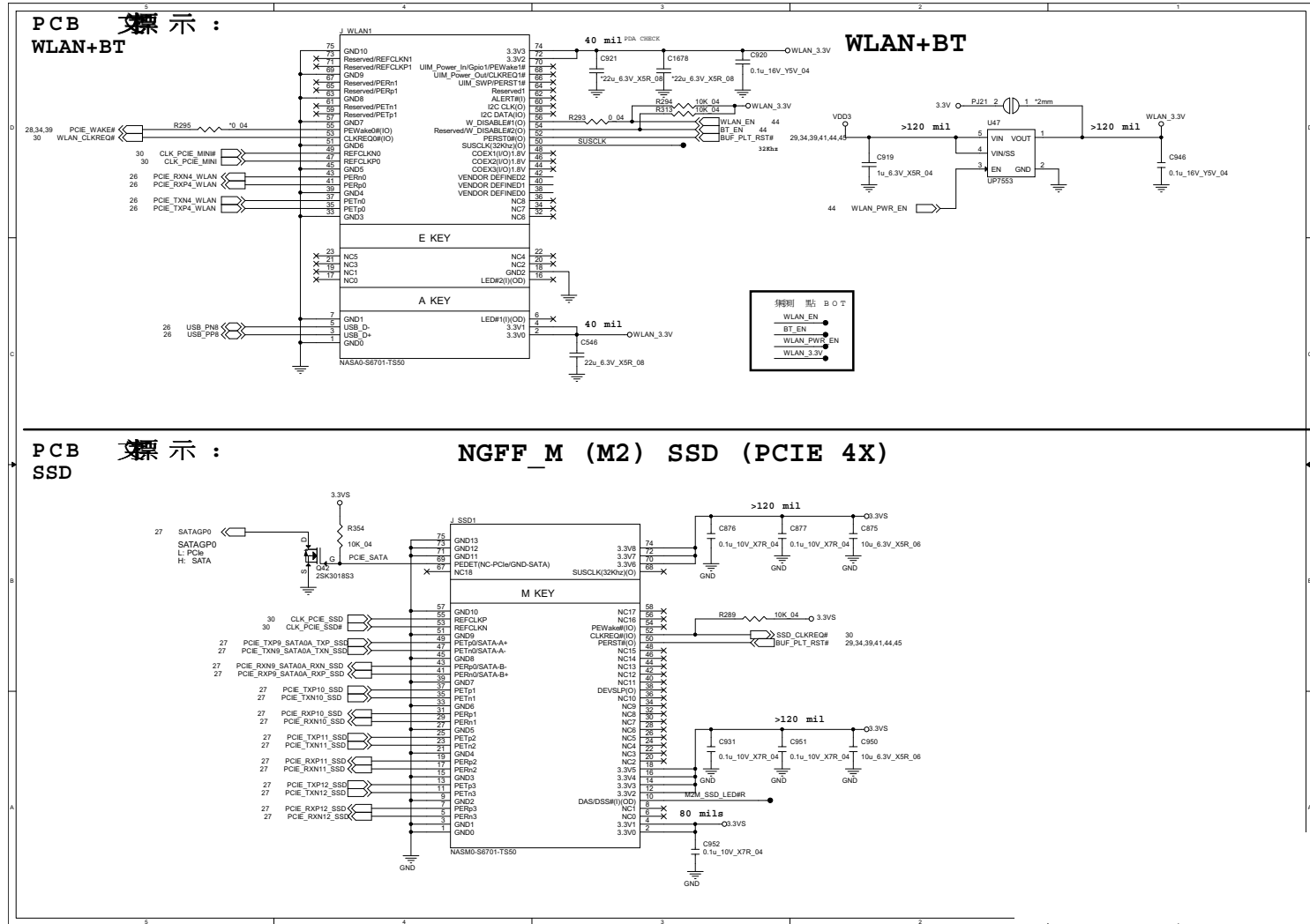


Sheet 40 of 63
M.2 3G

B.Schematic Diagrams

Schematic Diagrams

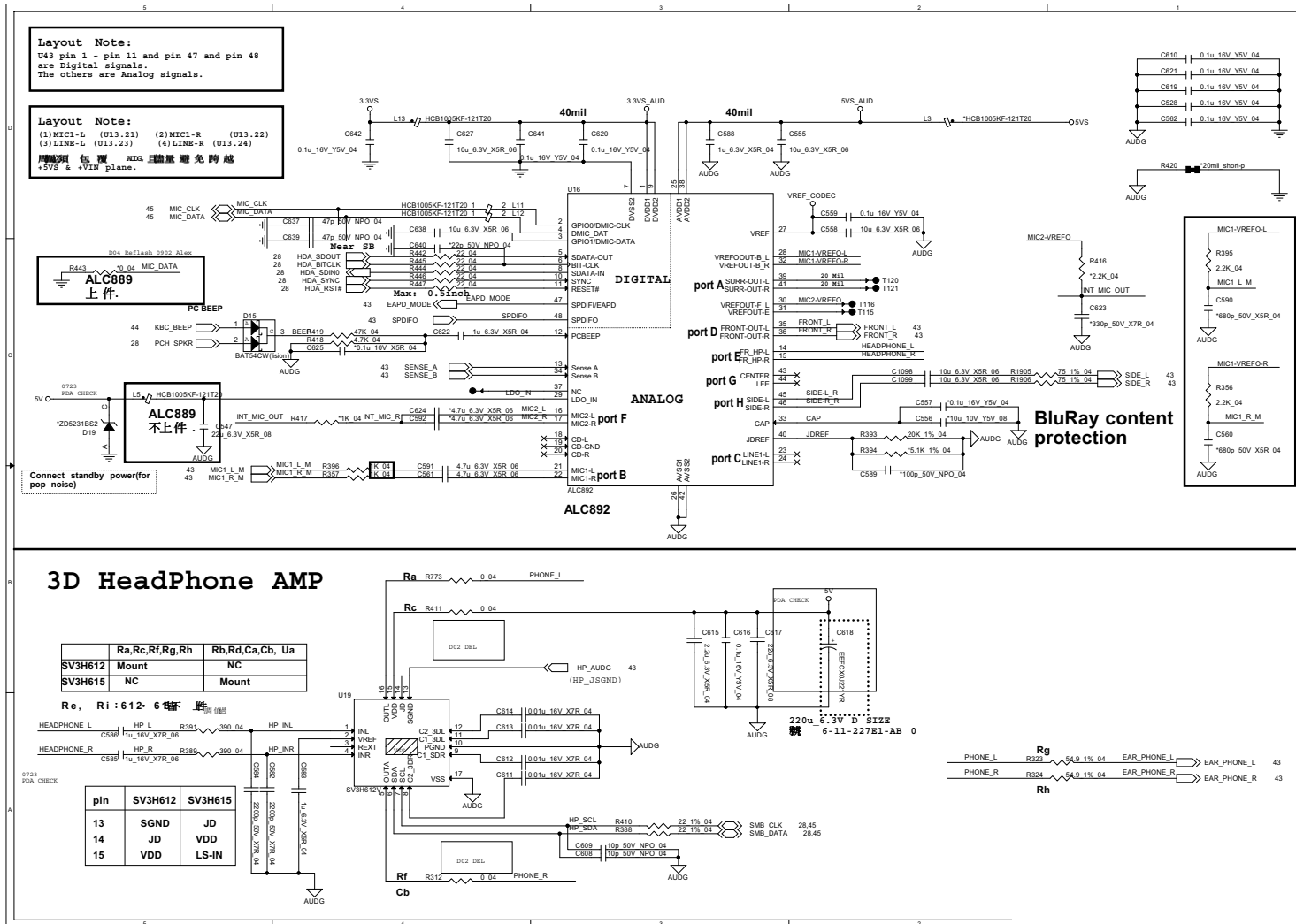
M.2 WLAN+BT, PCIE4X SSD



Sheet 41 of 63
M.2 WLAN+BT,
PCIE4X SSD

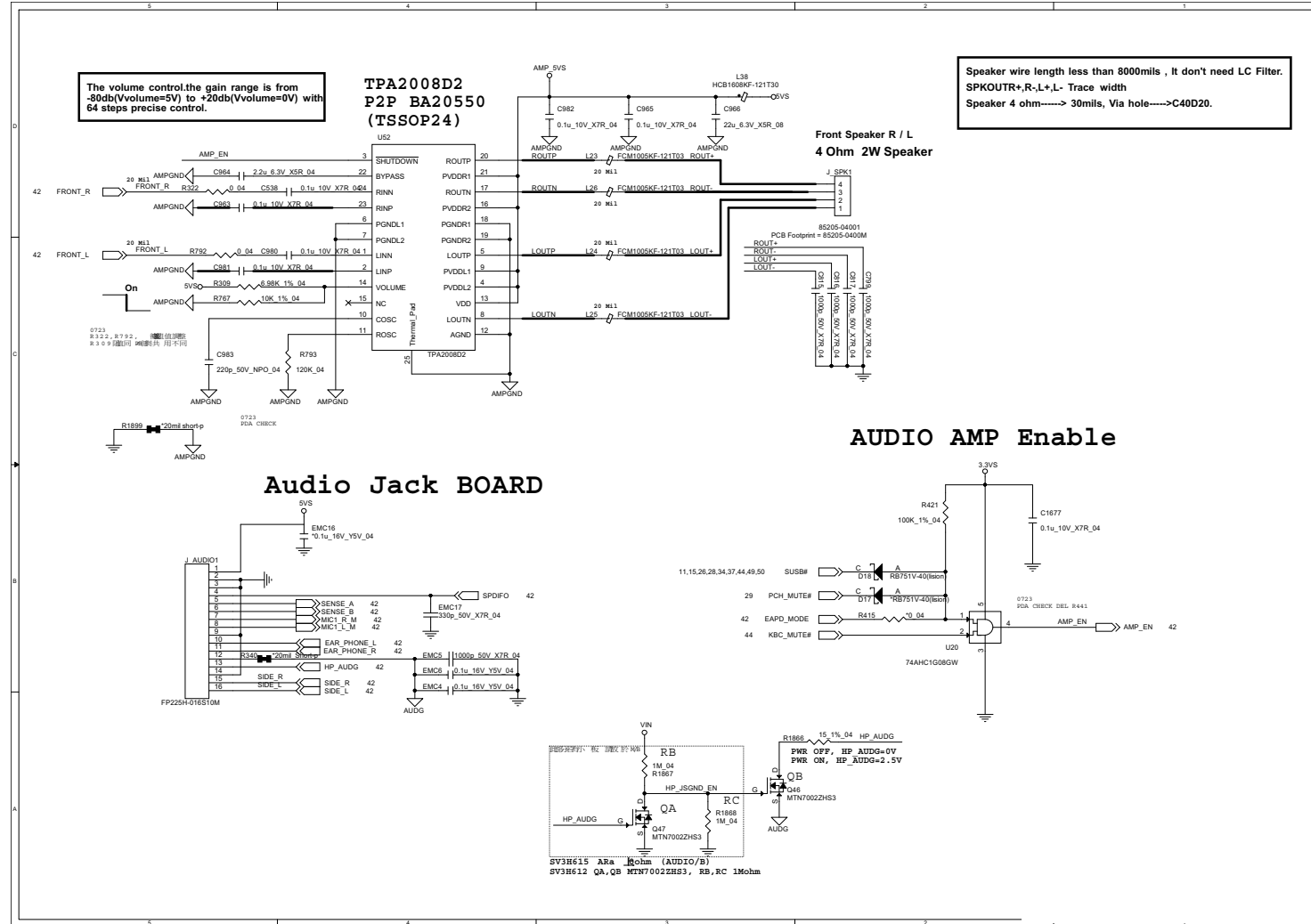
B.Schematic Diagrams

Realtek ALC892



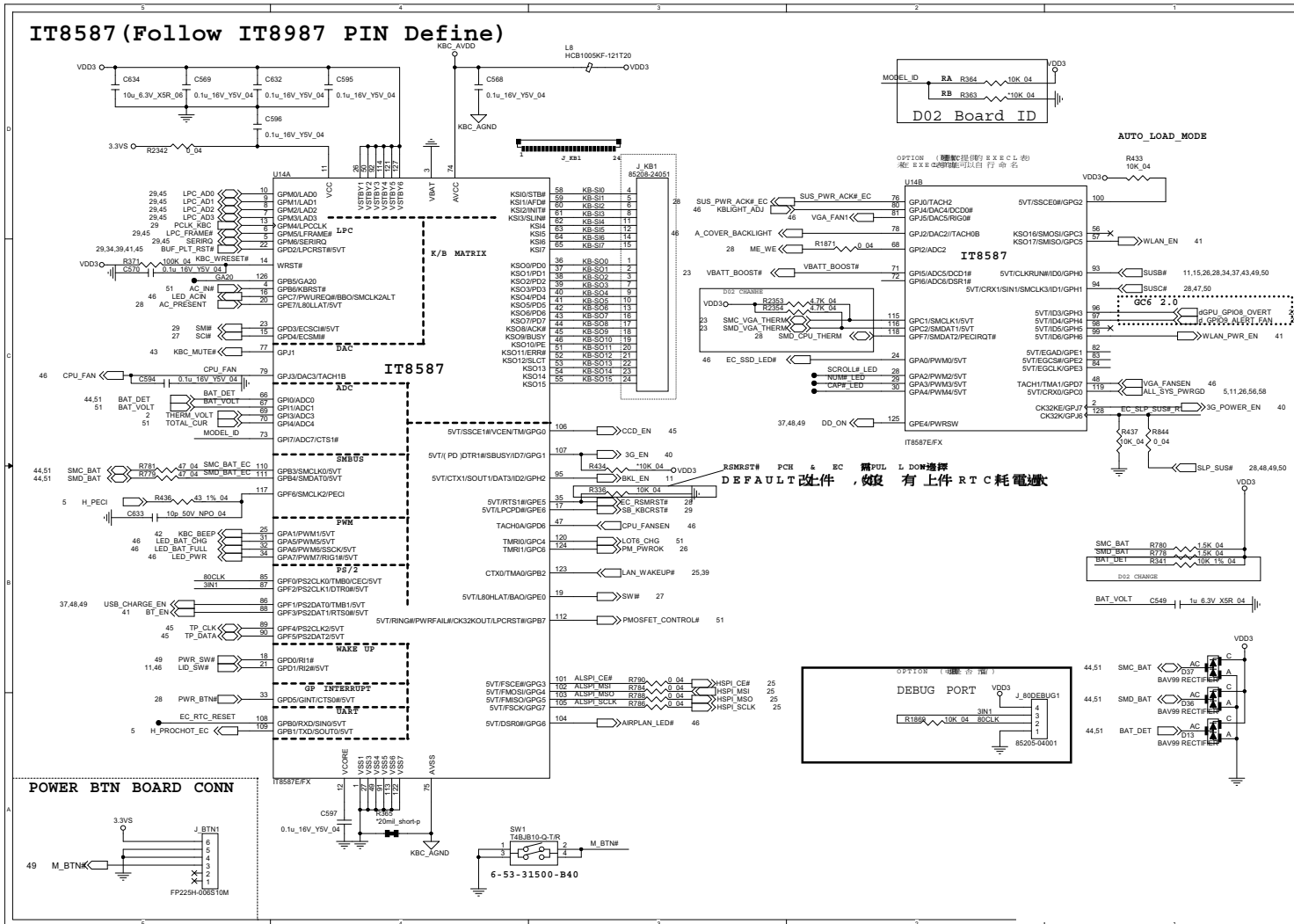
Sheet 42 of 63
Realtek ALC892

TPA2008D2



Sheet 43 of 63
 TPA2008D2

KBC-ITE IT8587



Sheet 44 of 63
KBC-ITE IT8587

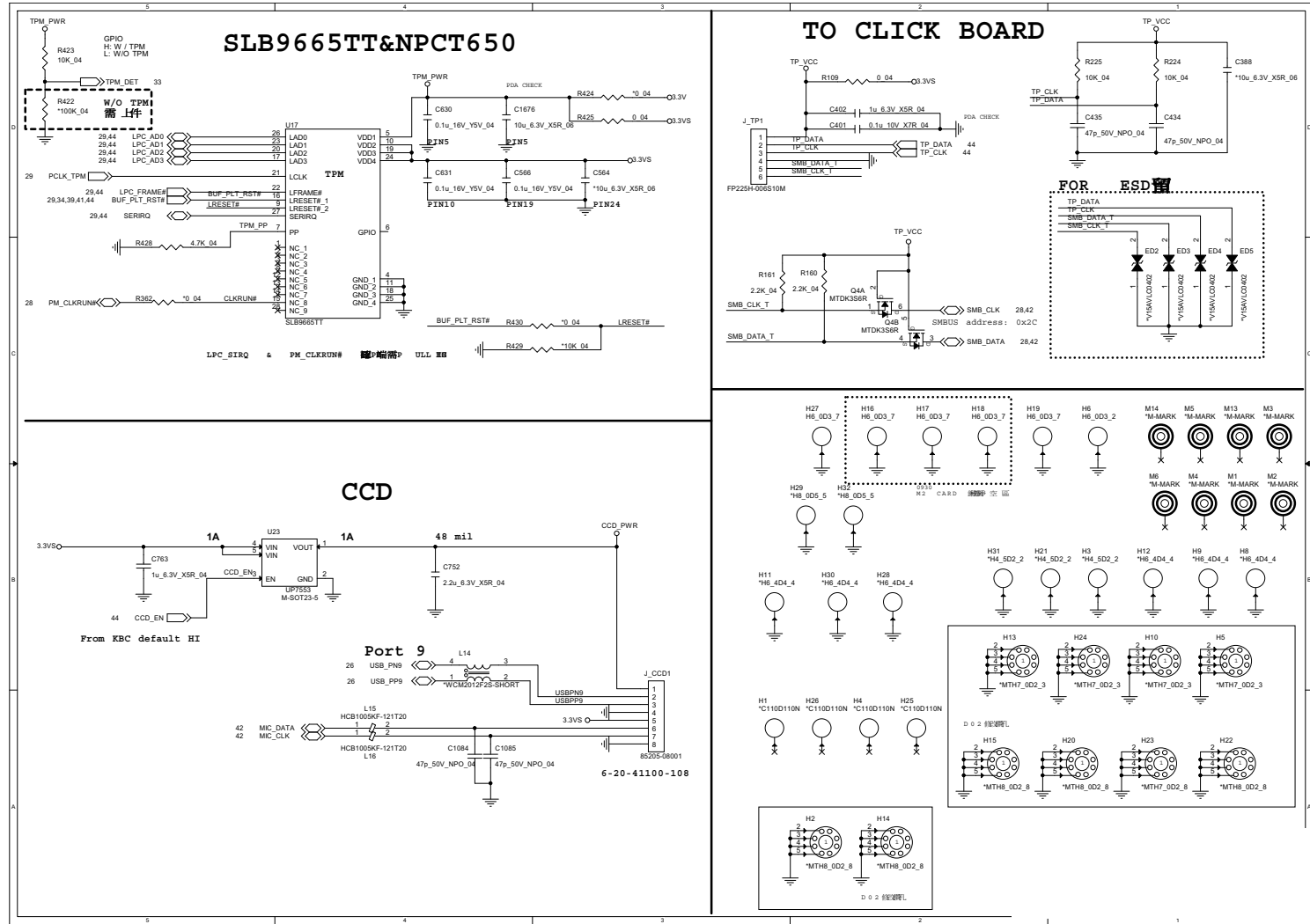
B.Schematic Diagrams

Schematic Diagrams

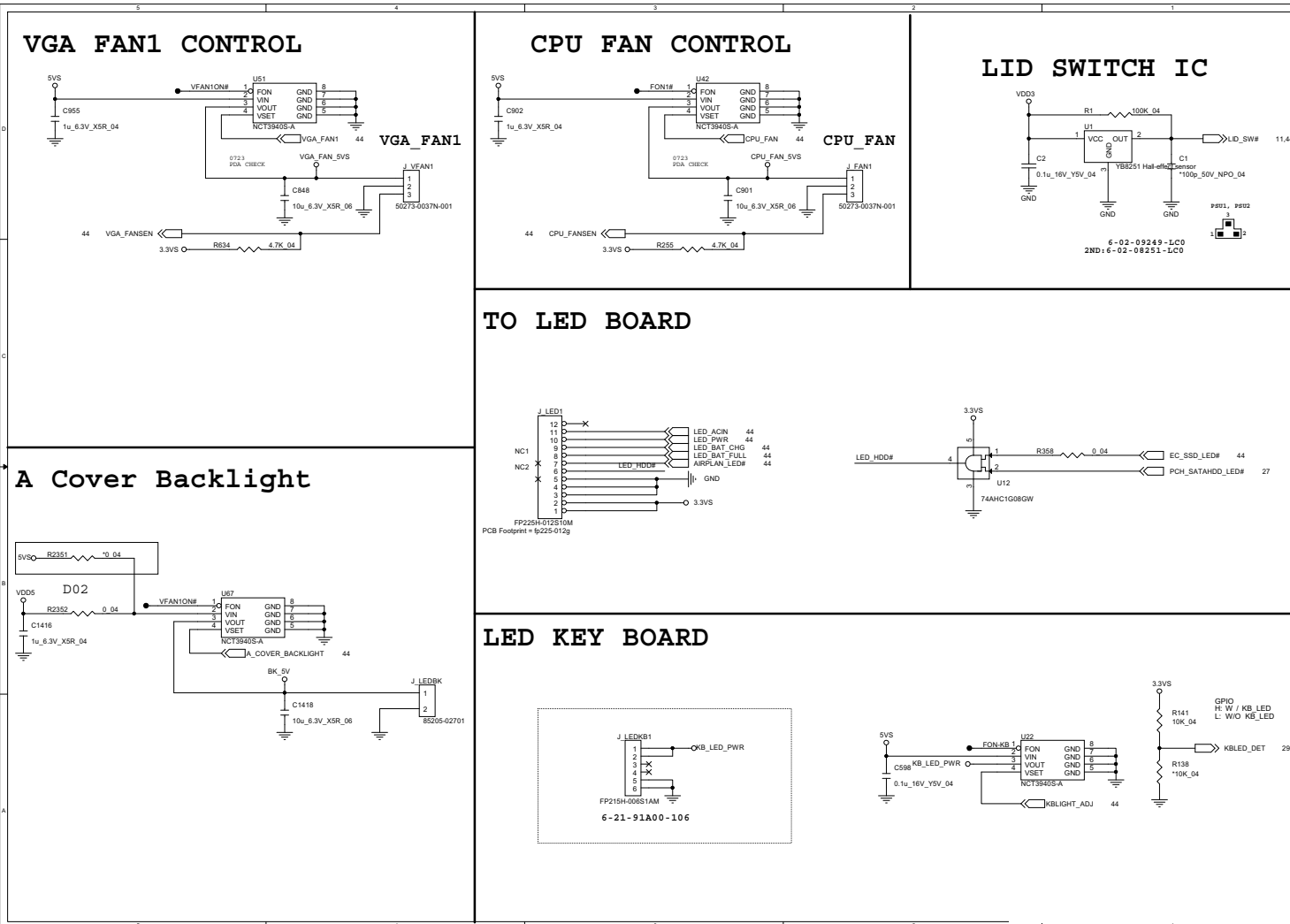
TPM, CCD, TP

B.Schematic Diagrams

Sheet 45 of 63
TPM, CCD, TP

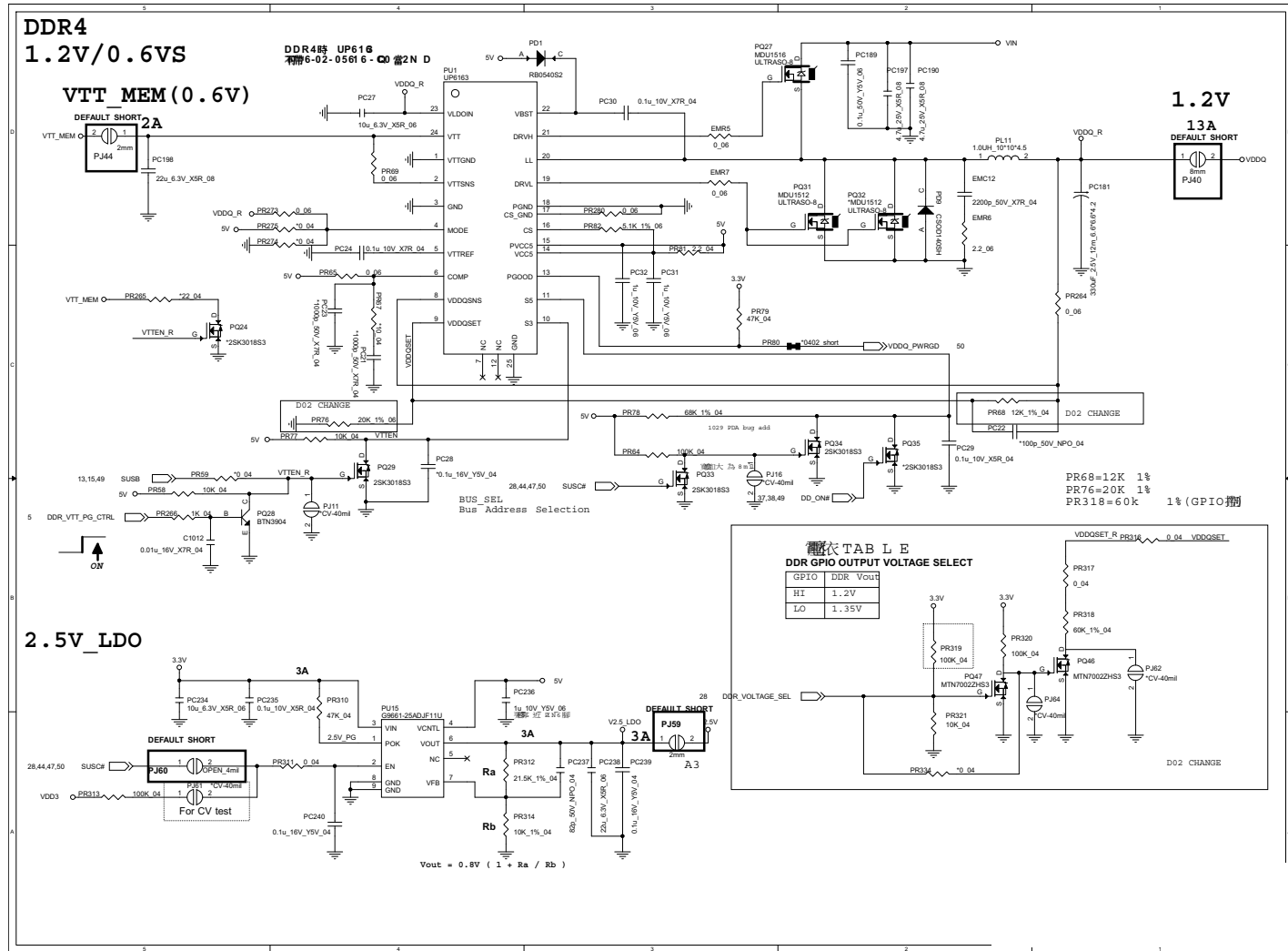


Fan, LID, KB LED



Sheet 46 of 63
Fan, LID, KB LED,

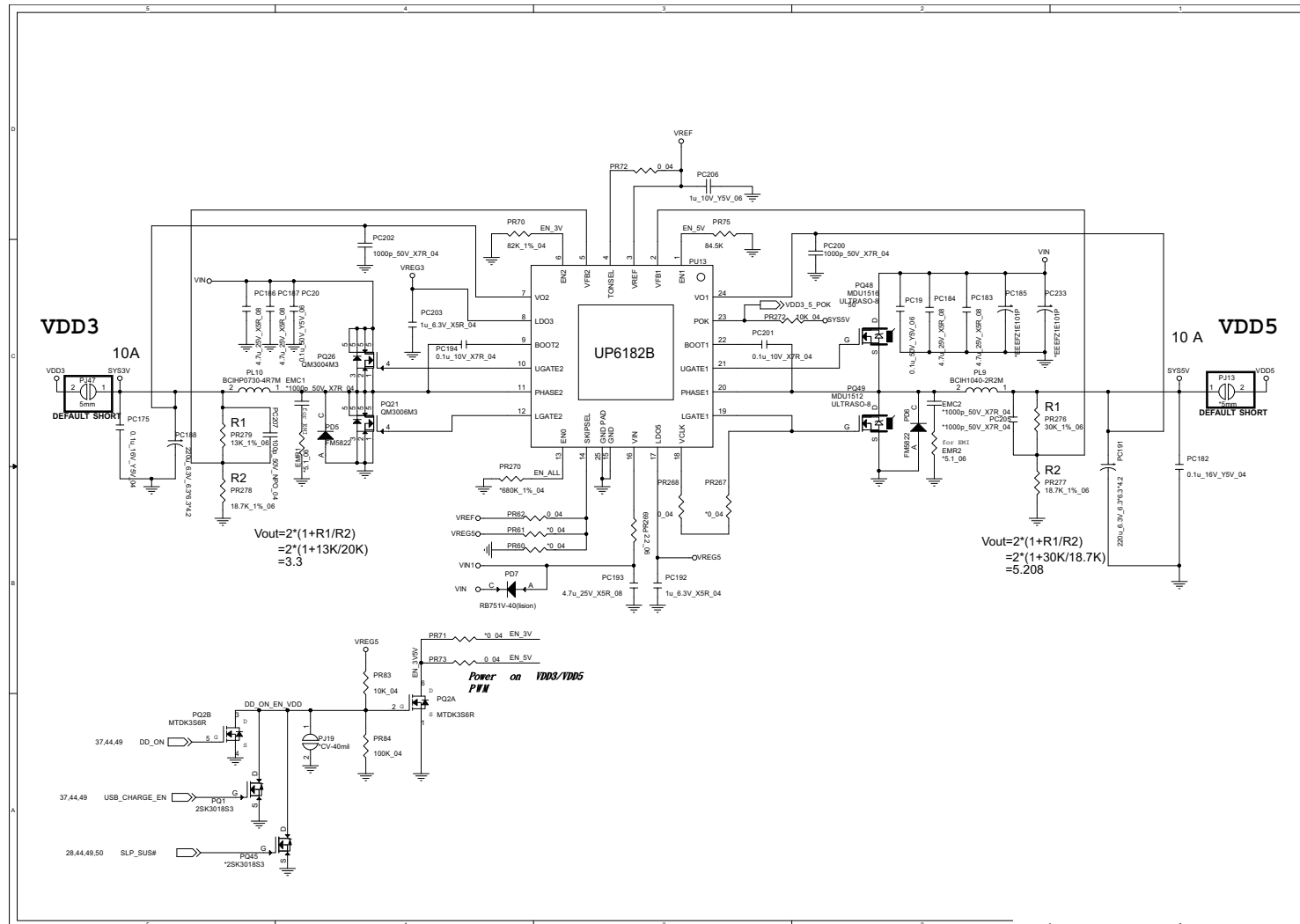
DDR 1.35V / 0.75VS



B.Schematic Diagrams

Sheet 47 of 63
DDR 1.35V / 0.75VS

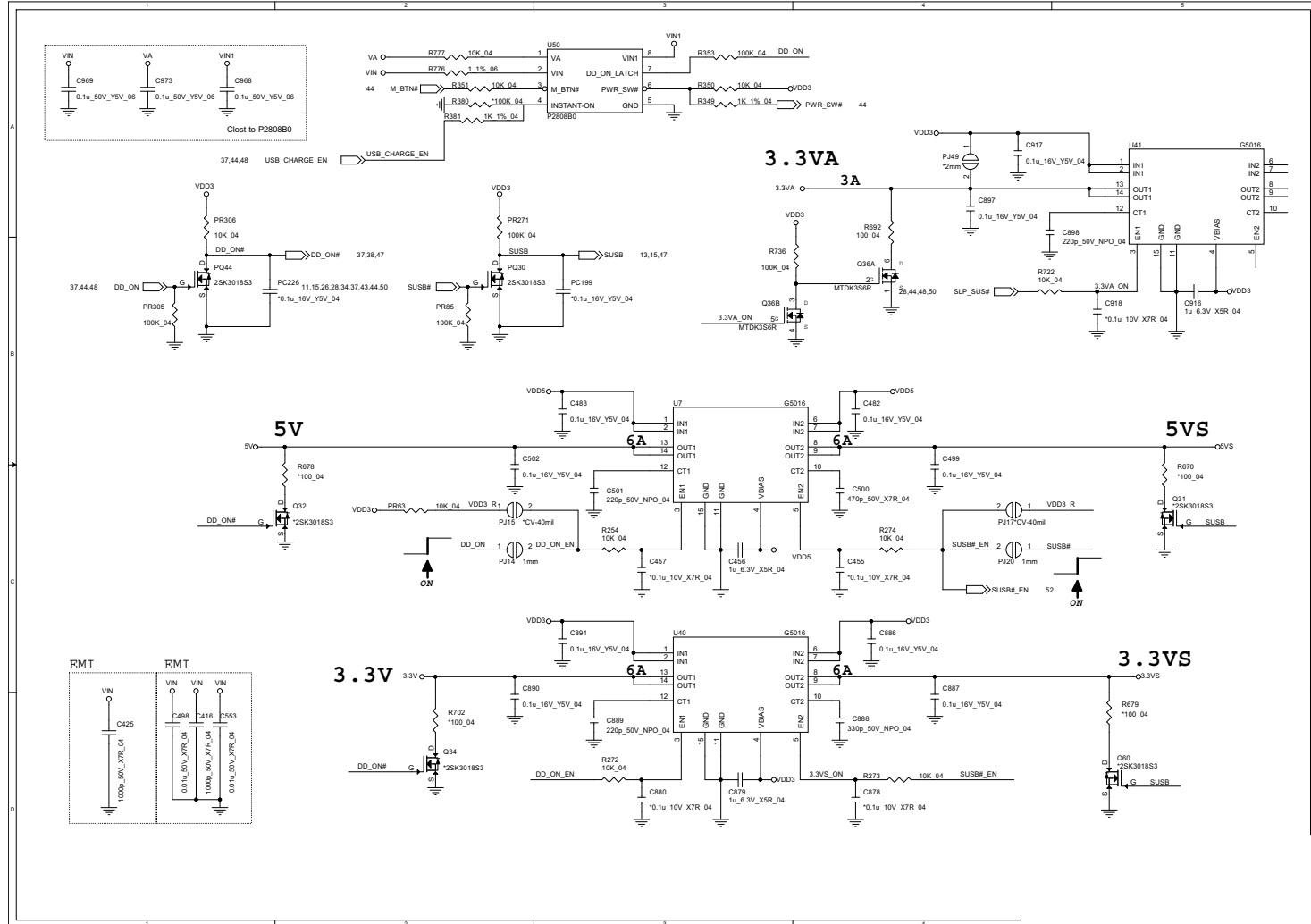
VDD3, VDD5



Sheet 48 of 63
VDD3, VDD5

Schematic Diagrams

5V, 5VS, 3.3V, 3.3VS, 3.3VA

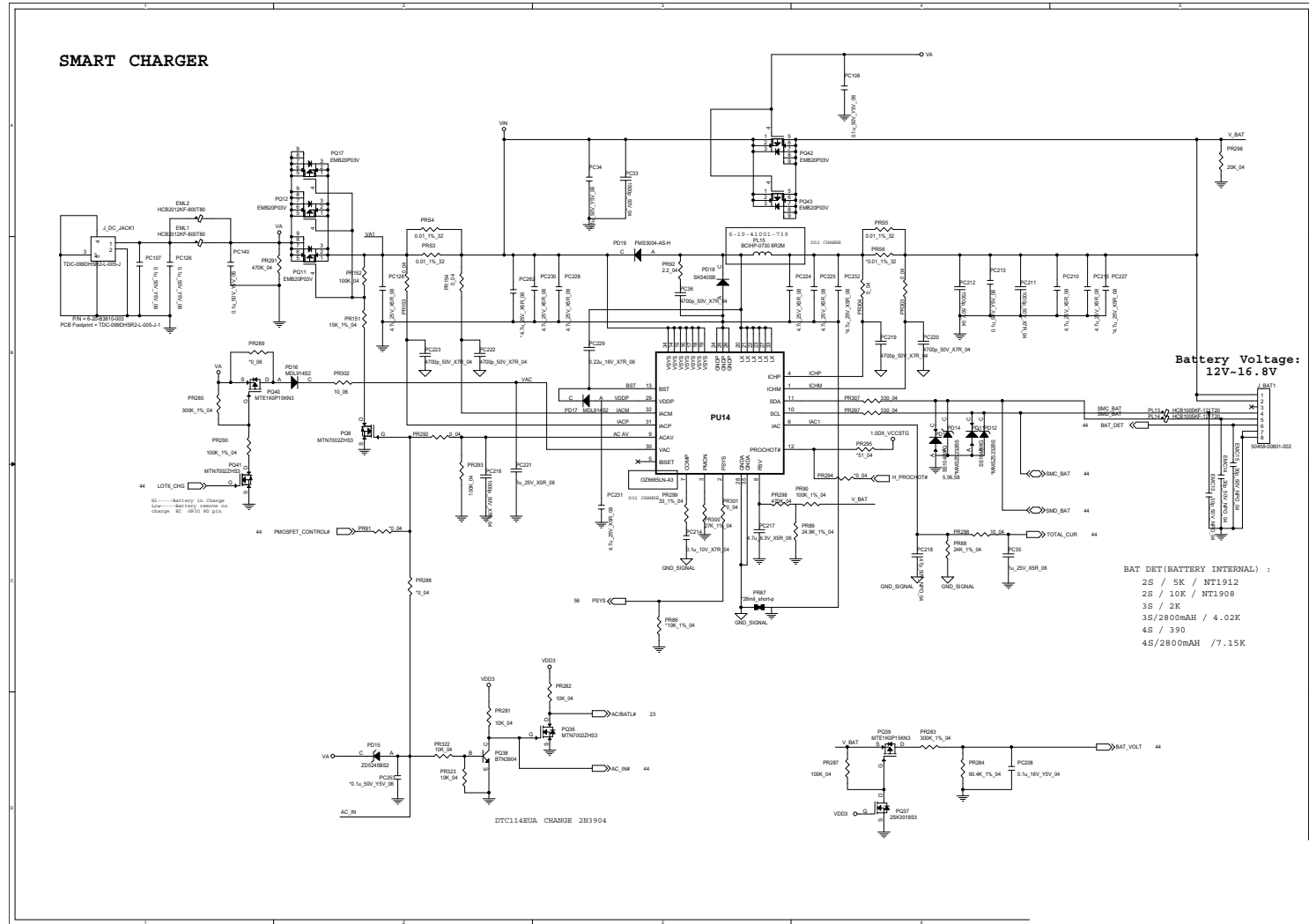


Sheet 49 of 63
5V, 5VS, 3.3V,
3.3VS, 3.3VA

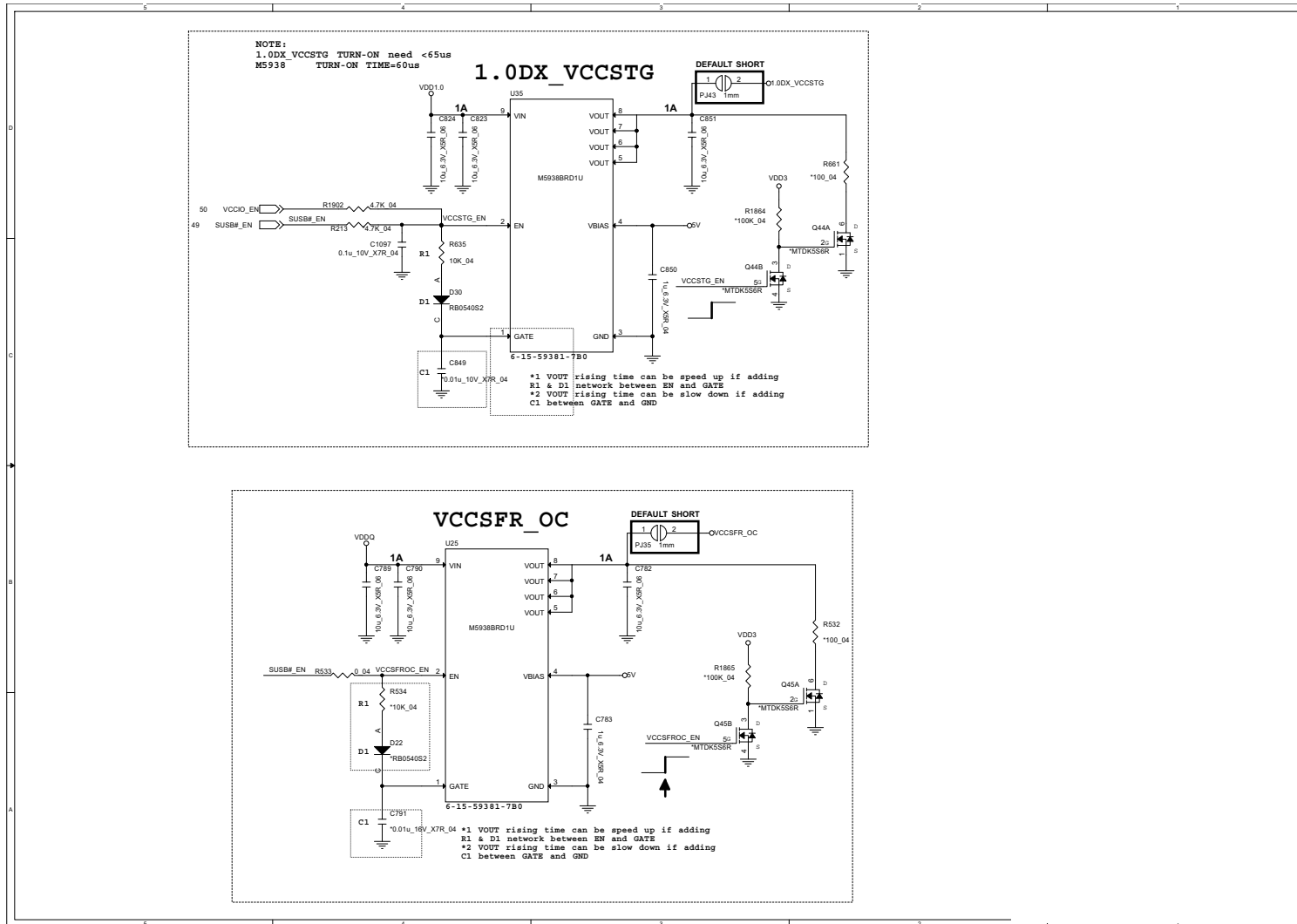
B.Schematic Diagrams

AC_In, Charger

Sheet 51 of 63
AC_In, Charger



1.0DX_VCCSTG/VCCSFR_OC



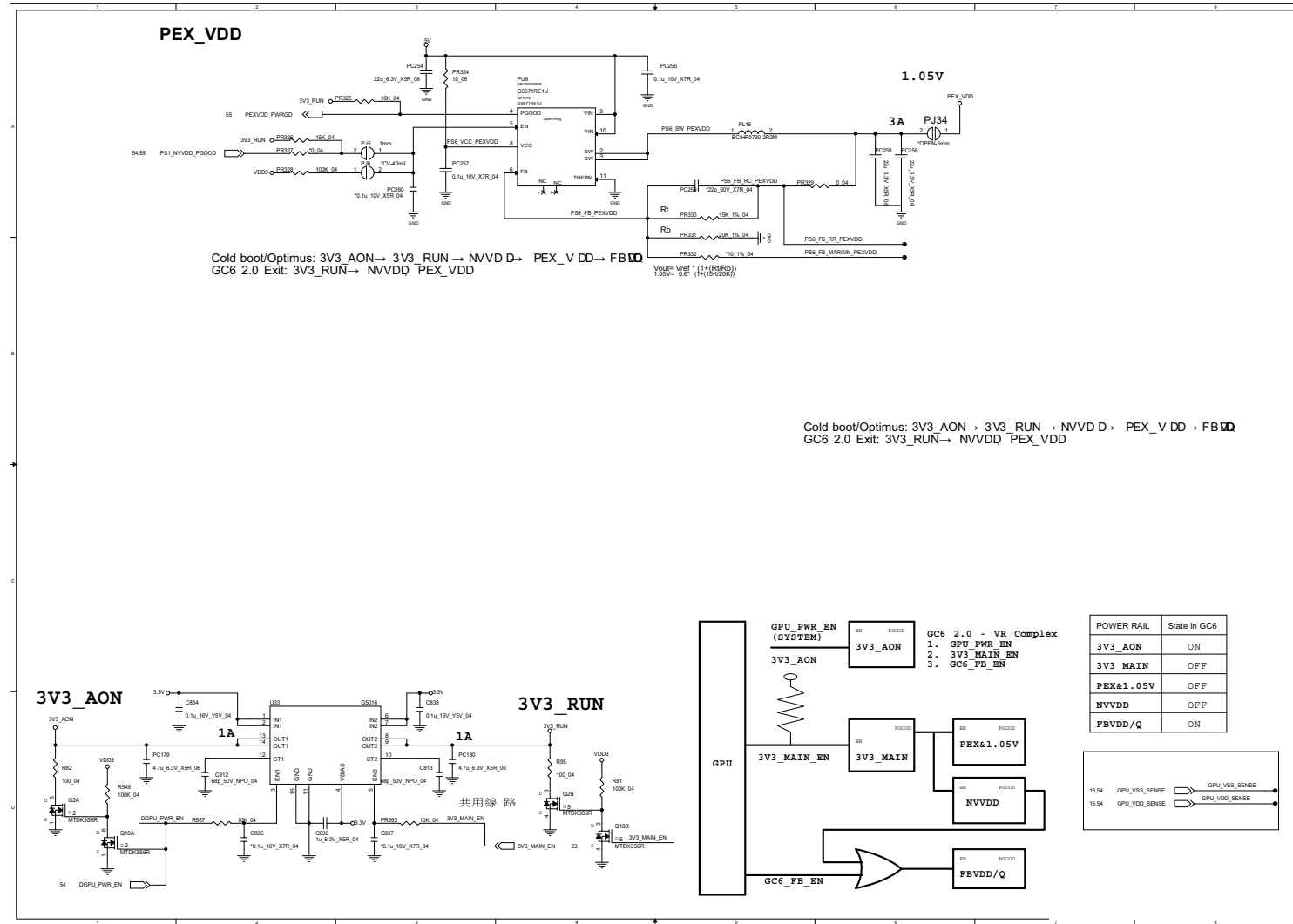
B.Schematic Diagrams

Sheet 52 of 63
1.0DX_VCCSTG/
VCCSFR_OC

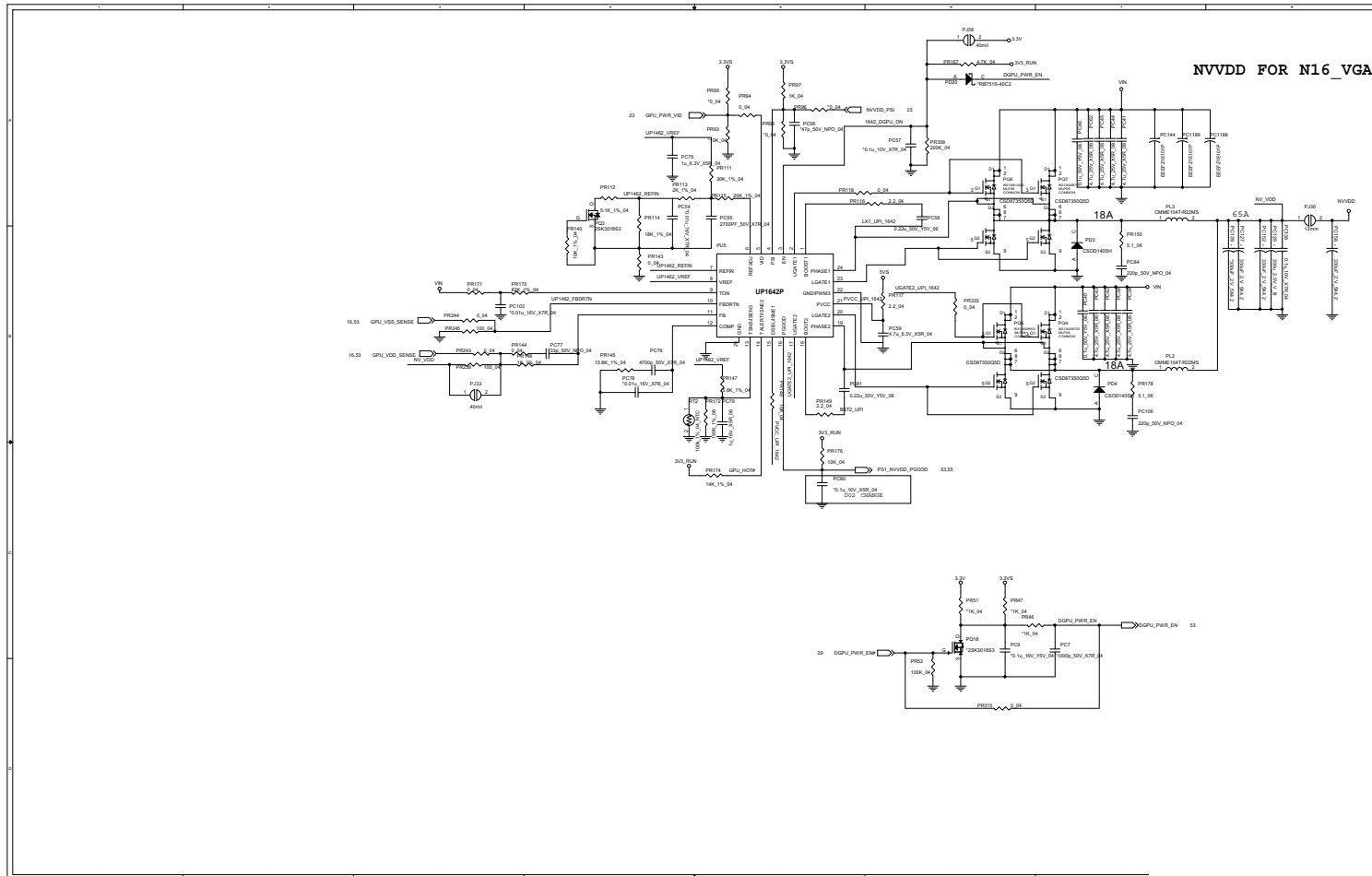
Schematic Diagrams

PEX_VDD, 3V3_AON, 3V3_RUN

Sheet 53 of 63
PEX_VDD,
3V3_AON,
3V3_RUN



NVVDD Phase 1 & 2

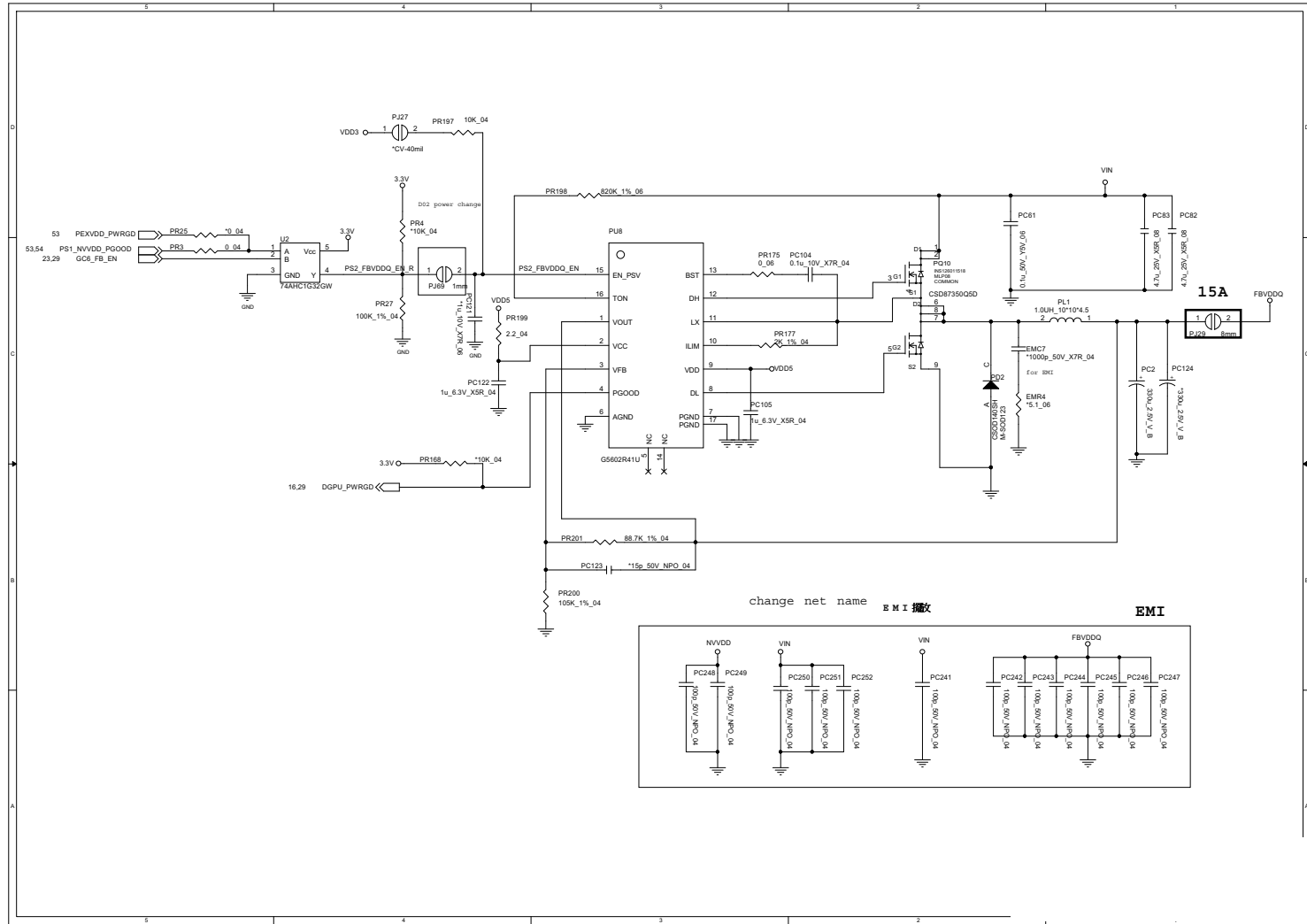


Sheet 54 of 63
NVVDD Phase 1 & 2

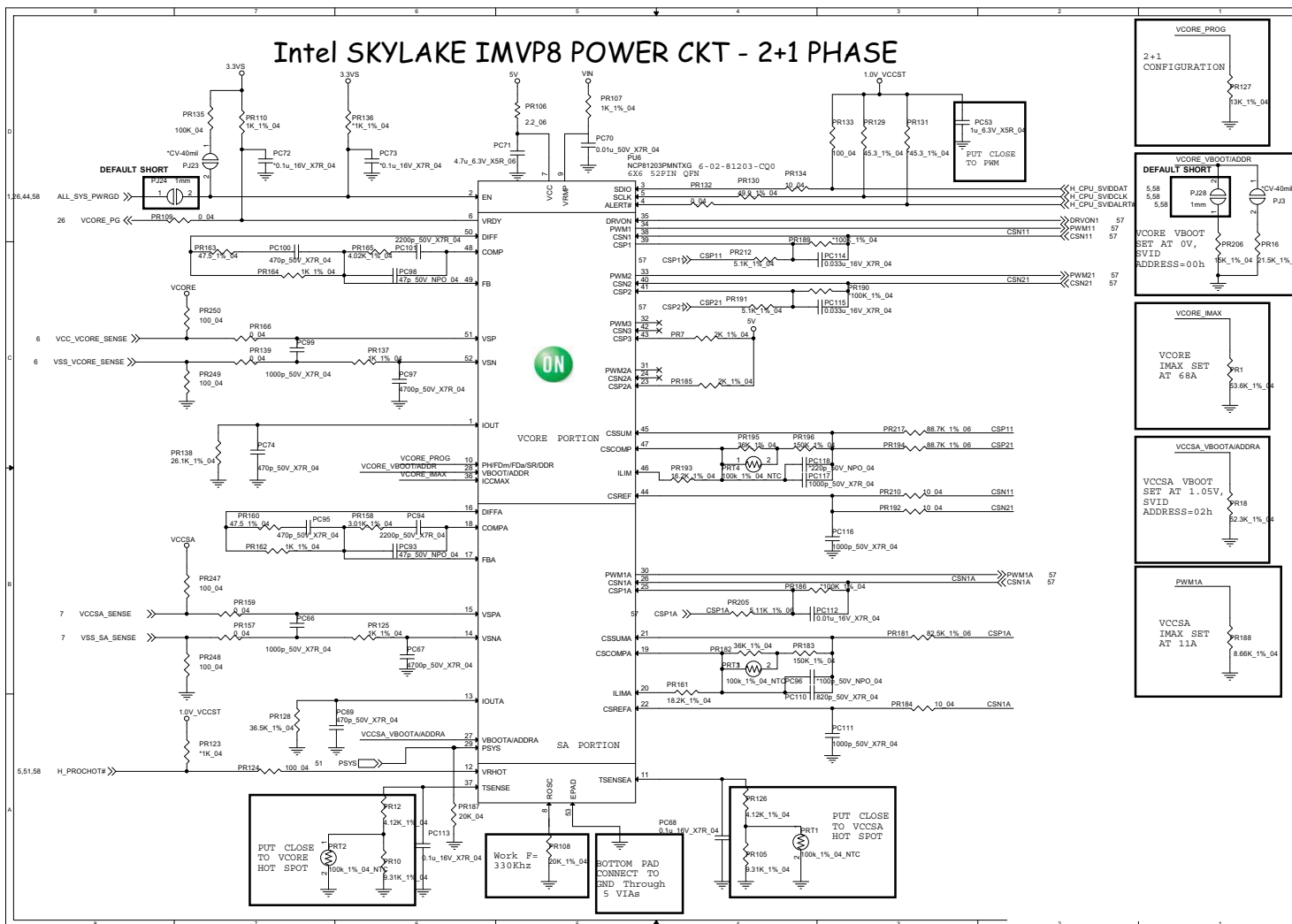
B.Schematic Diagrams

Schematic Diagrams

FBVDDQ



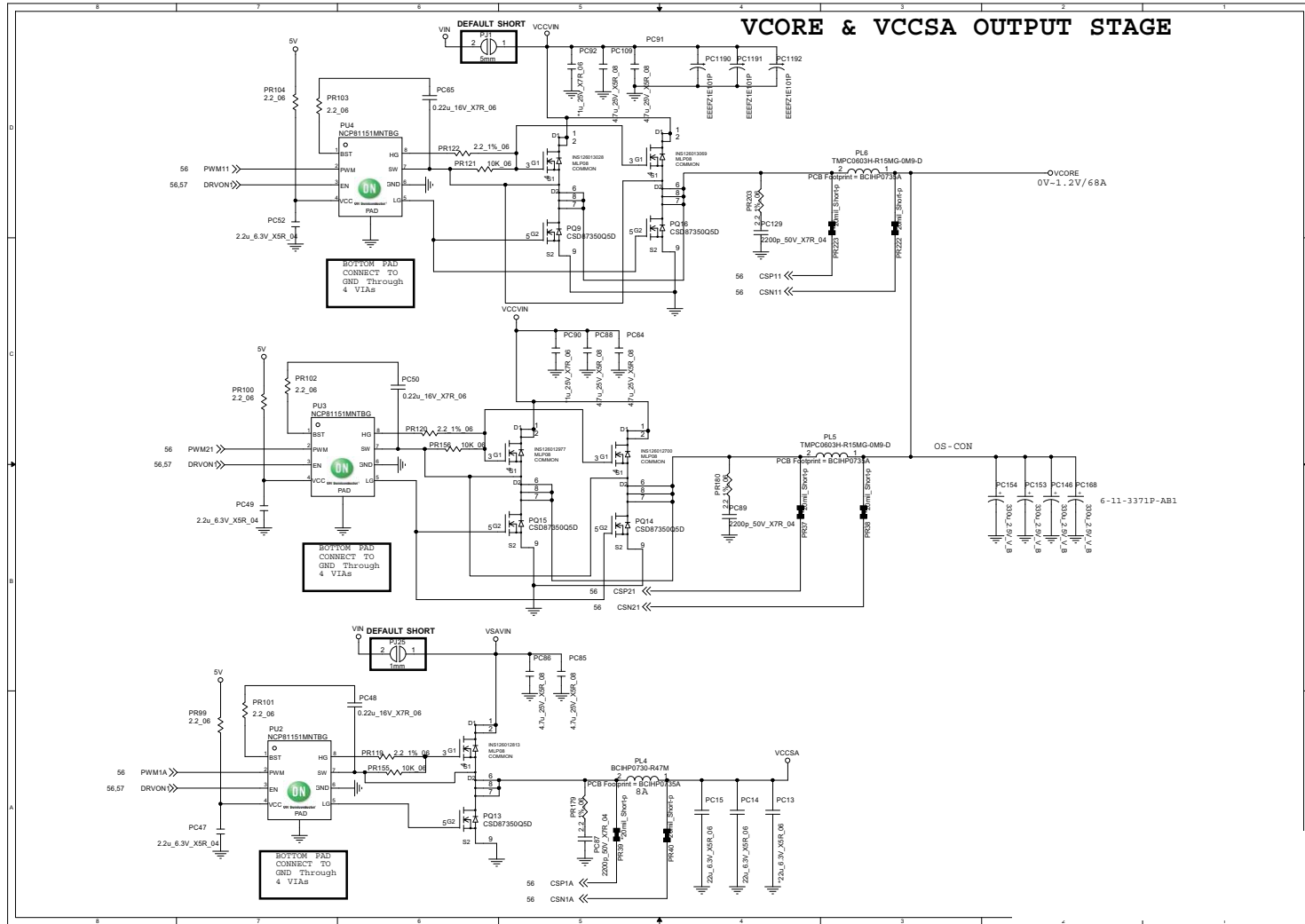
VCC_Core & VCCSA



Sheet 56 of 63
VCC_Core & VCCSA

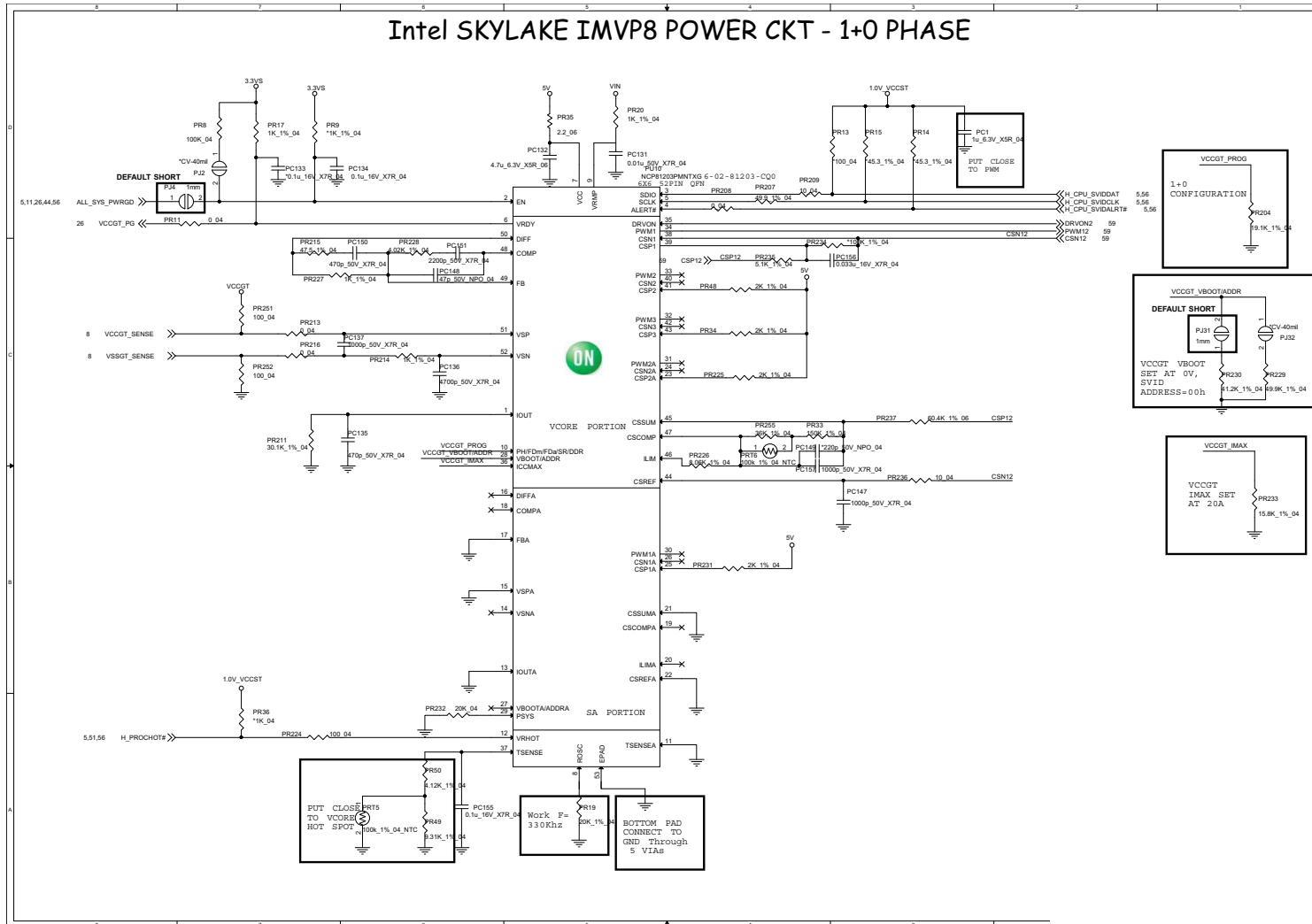
VCore Output Stage

Sheet 57 of 63
VCore Output Stage



VCCGT

Intel SKYLAKE IMVP8 POWER CKT - 1+0 PHASE

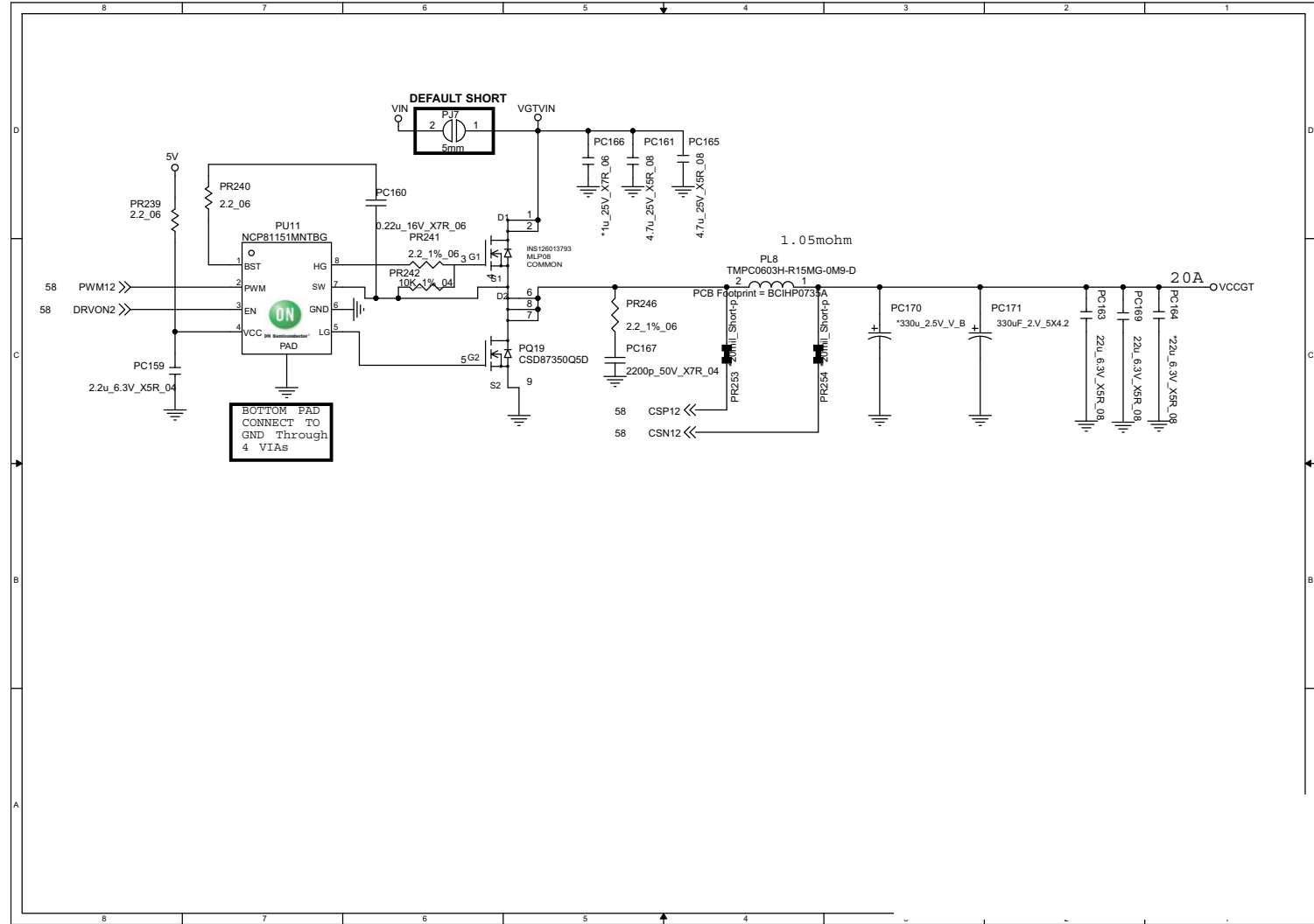


Sheet 58 of 63
VCCGT

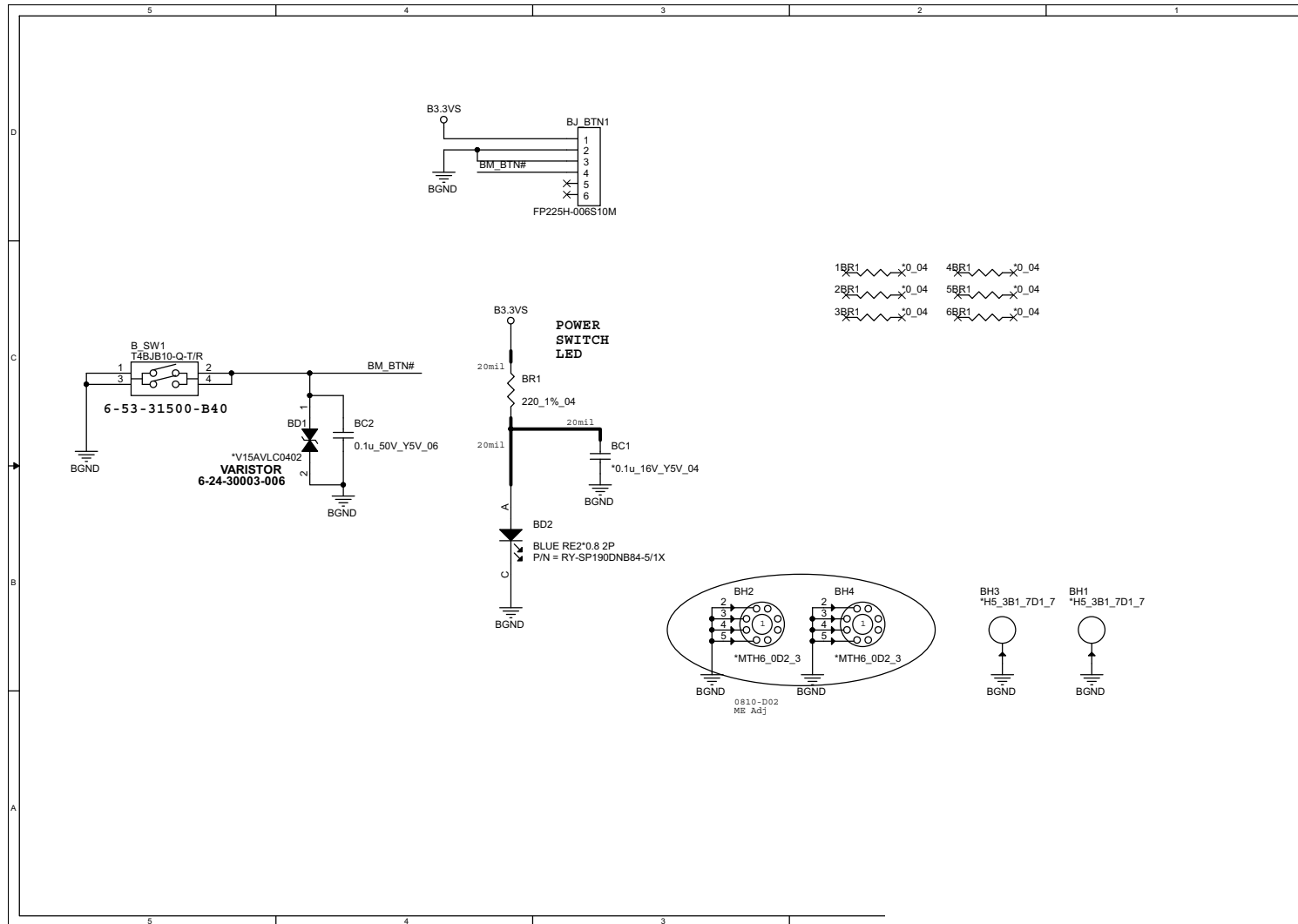
B.Schematic Diagrams

VCCGT Output Stage

Sheet 59 of 63
VCCGT Output Stage

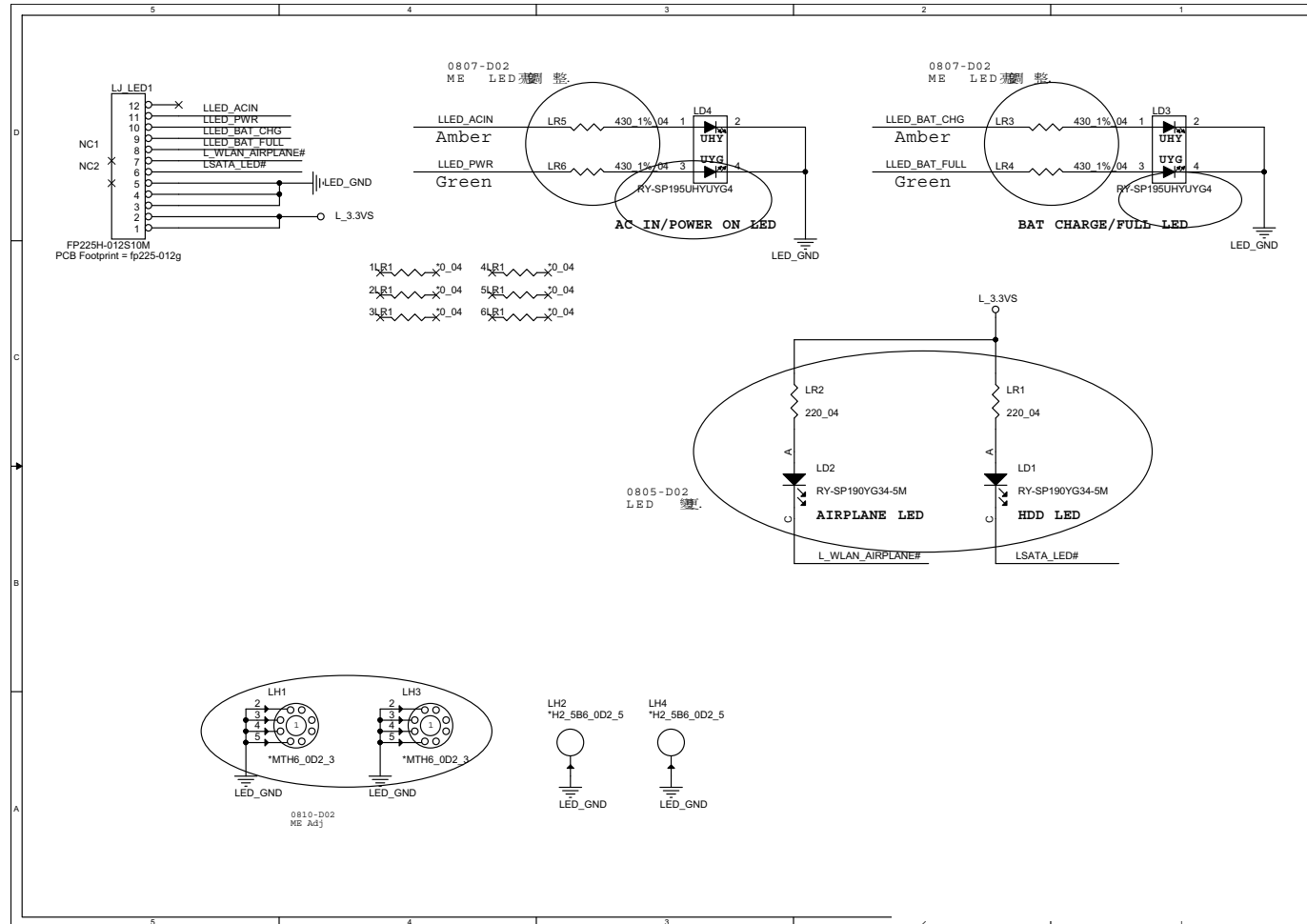


Power Board



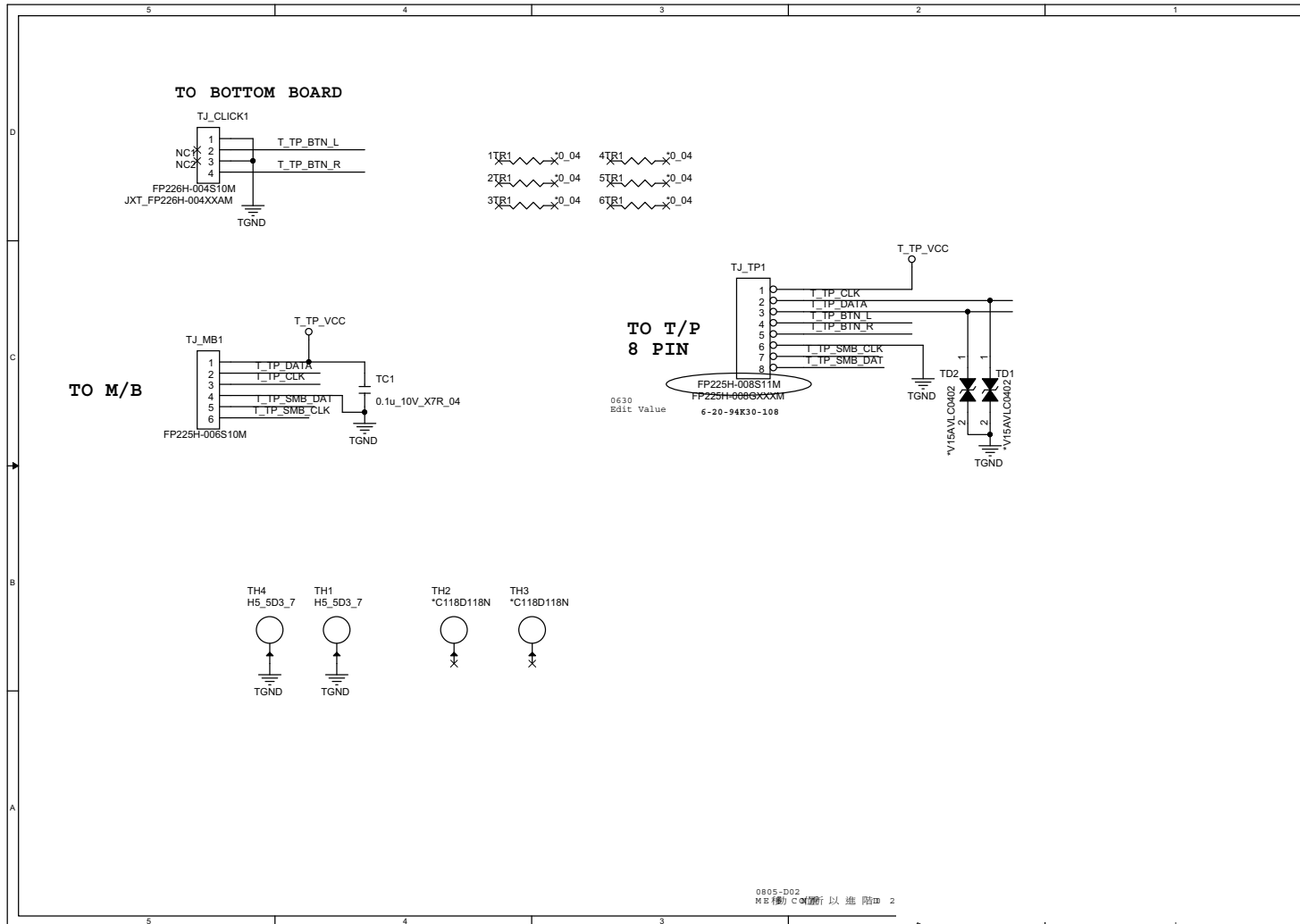
Sheet 60 of 63
Power Board

LED Board



Sheet 61 of 63
LED Board

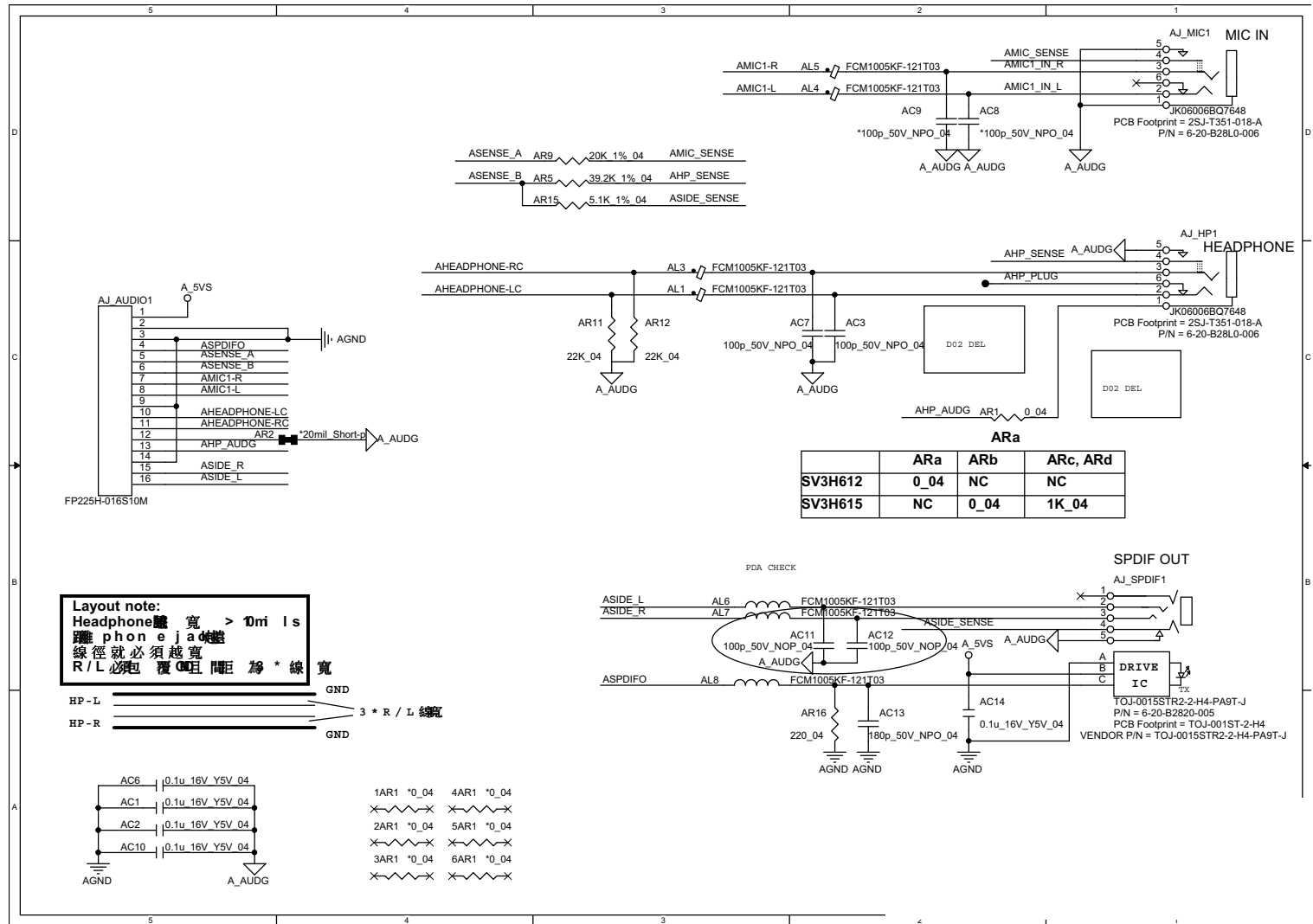
Click Board



Sheet 62 of 63
Click Board

Audio Board

Sheet 63 of 63
Audio 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 **F4** to save any changes you have made and exit the BIOS to restart the computer.



BIOS Version

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

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

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

BIOS Update

Use the flash tools to update the BIOS

1. Make sure you are not loading any memory management programs such as HIMEM by holding the **F8** key as you see the message “**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 **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.