

# ***SERVICE MANUAL***

LV22C / LV22N / LV19C / LV19N

*Multimedia PC*



**LCD Computer**

**LV22C/LV22N/LV19C/LV19N Series**

**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 **LV22C/LV22N/LV19C/LV19N** computer.

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

## Preface

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### Related Documents

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

#### User's Manual on CD

This describes the computer'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 computer.

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# 1: Introduction

## Overview

This manual covers the information you need to service or upgrade the **LV22C/LV22N/LV19C/LV19N** LCD computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in *User's Manual*. That manual is shipped with the computer.

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

The LV22C/LV22N/LV19C/LV19N LCD computer is designed to be upgradeable. See ***“Disassembly” on page 2 - 1*** for a detailed description of the upgrade procedures for each specific component. Please note the warning and safety information indicated by the “” symbol.

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



# System Specifications



### Latest Specification Information

The specifications listed in this Appendix are correct at the time of going to press. Certain items (particularly processor types/speeds and CD/DVD device types) may be changed or updated due to the manufacturer's release schedule. Check with your service center for details.

*Table 1 - 1*  
**System Specifications**

Feature	Specification	
<b>Processor</b>	Intel® Core™ 2 Duo Desktop Processor LGA775 Package (775-pin) E6300/ E6400	65nm (65 Nanometer) Process Technology 2MB On-die L2 Cache & 1066MHz FSB 1.86/ 2.13 GHz
	Intel® Core™ 2 Duo Desktop Processor LGA775 Package (775-pin) E6600/ E6700	65nm (65 Nanometer) Process Technology 4MB On-die L2 Cache & 1066MHz FSB 2.40/ 2.67 GHz
<b>Core Logic</b>	Intel G965 +ICH8-DH Chipset	
<b>Memory</b>	64-bit Wide <b>DDR2</b> Data Channel Two 200 Pin SO-DIMM Sockets Supporting <b>DDR2 533 / 667 MHz</b> Memory Expandable up to <b>4GB</b> (256/ 512/ 1024/ 2048 MB <b>DDR2</b> Modules)	
<b>Security</b>	Security (Kensington® Type) Lock Slot	BIOS Password
<b>BIOS</b>	One 1024KB Flash ROM	Phoenix™ BIOS, Plug and Play
<b>LCD</b>	Model A Computers	Model B Computers
	19" Wide Screen WXGA+ (1440*900) 16:10 Wide Screen Flat Panel TFT	22" Wide Screen WSXGA+ (1680*1050) 16:10 Wide Screen Flat Panel TFT

Feature	Specification	
<b>Video Adapter Options</b>	Integrated Video Option  Intel G965 Integrated Video Shared Memory Architecture of up to <b>376MB</b> of Dynamically Allocated Video Memory Fully Supports DirectX 9.0	Discrete Video Option  NVIDIA GF-GO7600-N-B1 (w/o HDMI) PCI-E MXM II Video Card 256MB DDR2 Video RAM on Board PCI-Express X16 Fully Supports DirectX 9.0 MXM Modular Design
<b>Storage</b>	One Changeable 12.7mm(h) Optical Device (CD/DVD) Type Drive (see "Optional" on page 1 - 4 for drive options)  Two Changeable Bays for 3.5" 26mm (h) <b>Serial-ATA (SATA)</b> Hard Disk Drives Supports <b>RAID 0, RAID 1</b> , HDD Fault Tolerance System in <b>SATA Configuration</b>	
<b>Audio</b>	Supports 7.1 CH Audio Output Via S/PDIF Port Integrated AZALIA Compliant Interface (HDA) 3D Stereo Enhanced Sound System Sound-Blaster PRO™ Compatible	S/PDIF Output 2 * Built-In 3W Speakers Built-In 6W Sub Woofer Built-In Microphone
<b>Keyboard &amp; Pointing Device</b>	RF Winkey Keyboard ( <b>Option</b> ) RF Mouse ( <b>Option</b> )	USB I/F Receiver Dongle ( <b>Option</b> )
<b>ExpressCard Slot</b>	ExpressCard/34/54 Slot	
<b>Interface</b>	Four USB 2.0 Ports One USB 2.0 Port (for RF KB & Mouse) One E-SATA Port One Mini-IEEE1394 Port One Headphone-Out Jack One Microphone-In Jack One Line-In Jack One S/PDIF Output Jack (5.1CH) One S-Video-In Jack One Composite Video-In Jack	Two CATV-In Jacks (for TV Tuner Cards) One RJ-11 Jack for Plug & Play Fax/Modem One RJ-45 Jack for 10Mb/ 100Mb/ 1000Mb Fast Ethernet One DC-in Jack One Brightness Button One Power Switch One A.P. Key (For Media Center) One CIR Port (Optional for TV Tuner)
<b>Card Reader</b>	Embedded 7-in-1 Card Reader (MS/ MS Pro/ SD/ Mini SD/ MMC/ RS MMC/ MS Duo) <b>Note:</b> MS Duo/ Mini SD/ RS MMC Cards Require a PC Adapter	

## Introduction

Feature	Specification	
<b>Communication</b>	AZALIA MDC 56K Plug & Play Fax/Modem v.90/92 Compliant 1GB PCI Fast Ethernet Intel PRO/Wireless 3945ABG PCIe Wireless LAN Module ( <b>Option</b> ) USB 2.0 Bluetooth + EDR (Enhanced Data Rate) Module - Version 2.0 ( <b>Factory Option</b> ) 1.3M PC Camera with USB Interface ( <b>Factory Option</b> ) 11 Hot Keys for Internet & Multimedia via RF KB ( <b>Factory Option</b> )	
<b>Power Management</b>	Supports ACPI 2.0 Power Button as Sleep/Resume Key Supports Hibernate Mode Supports Sleep/Stand by Mode	Supports Resume from Modem Ring Supports Resume from Alarm
<b>Power</b>	Full Range AC/DC Adapter - AC Input 100 - 240V, 50 - 60Hz / DC Output 20V, 9.0A ( <b>180 Watts</b> )	
<b>Environmental Spec</b>	Temperature Operating: 5°C ~ 35°C Non-Operating: -20°C ~ 60°C	Relative Humidity Operating: 20% ~ 80% Non-Operating: 10% ~ 90%
<b>Physical Dimensions &amp; Weight</b>	625.5mm (w) * 396.9mm (d) * 110mm (h) including hinge assembly 11kg Approximately	
<b>Optional</b>	Optical Drive Module Options: DVD/CD-RW Combo Drive Module ( <b>Factory Option</b> ) DVD Super Multi Drive Module ( <b>Factory Option</b> ) USB Floppy Disk Drive Module Intel PRO/Wireless 3945ABG PCIe Wireless LAN Module Hybrid TV Tuner Card Module with Remote Control Unit RF Keyboard & RF Mouse with USB Receiver	1.3M PC Camera with USB Interface ( <b>Factory Option</b> ) USB 2.0 Bluetooth + EDR (Enhanced Data Rate) Module - Version 2.0 ( <b>Factory Option</b> ) 802.11b/g USB (Mini Card) Wireless LAN Module 2nd SATA RAID Hard Disk Drive

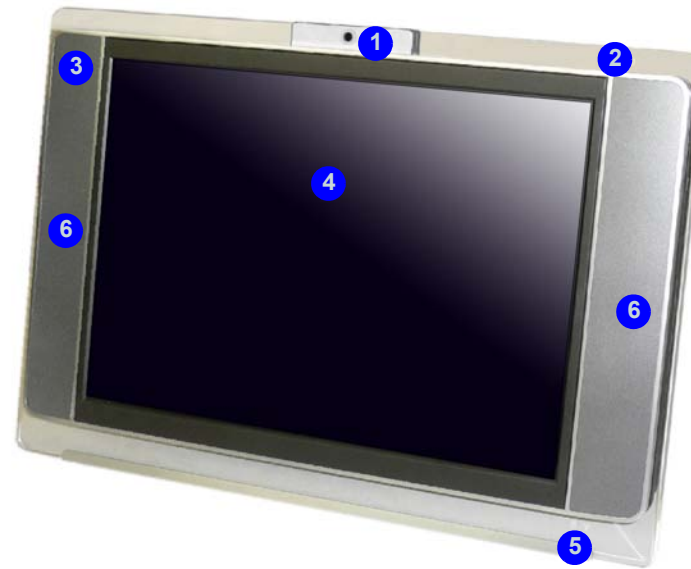
## External Locator - Front View & Top View

Figure 1 - 1  
Front View

1. Optional Built-In PC Camera
2. Power LED
3. Consumer Infrared Transceiver (Communicates with Optional TV Remote)
4. LCD
5. LED Indicators
6. Speakers
7. Power Button
8. Brightness Hot Key Button
9. Application Hot Key Button



LV19C/LV19N



LV22C/LV22N



## Introduction

Figure 1 - 2  
Left & Right Views

## External Location - Left & Right Side Views

1. ExpressCard Slot 54/34
2. 7-in-1 Card Reader
3. 1 \* USB 2.0 Port
4. Mini-IEEE 1394 Port
5. Line-In Jack (Blue)
6. Microphone-In Jack (Pink)
7. Headphone-Out Jack (Green)
8. S/PDIF-Out Jack (Black)
9. Vent/Fan Intake/Outlet
10. Security Lock Slot
11. Optical (CD/DVD) Device
12. CD Emergency Eject



## External Locator - Rear View



Figure 1 - 3  
Rear View

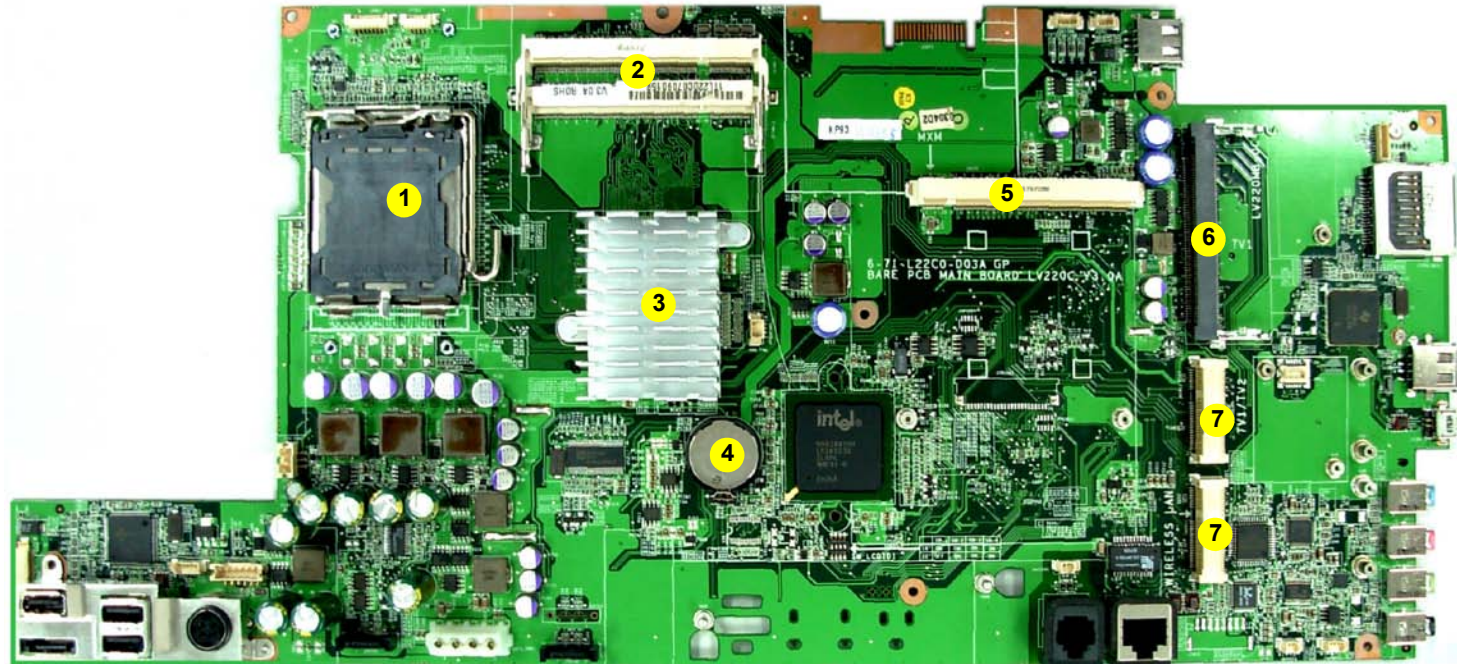
1. Camera Angle Switch
2. USB Port Cover
3. Module Cover
4. Rear Component Cover
5. 3 \* USB 2.0 Ports
6. 1 External SATA Port
7. DC-In Jack
8. S-Video-In Jack
9. Audio-In Jacks
10. Composite Video-In Jack
11. CATV-In Jacks
12. RJ-11 Phone Jack
13. RJ-45 LAN Jack
14. Stand
15. Vent/Fan Intake/Outlet
16. Hard Disk Covers
17. Cable Holders (To Secure Audio/Video/USB Cables etc.)

## Introduction

*Figure 1 - 4*  
**Mainboard Overview - Top  
Key Parts**

1. CPU Socket (no CPU Installed)
2. RAM Sockets
3. Intel 965 (North Bridge)
4. CMOS Battery
5. Video Card Socket
6. Mini PCI Socket for TV
7. Mini PCI Ext. Socket for WLAN and TV

## Mainboard Overview - Top (Key Parts)



## Mainboard Overview - Bottom (Key Parts)

*Figure 1 - 5*  
**Mainboard Overview - Bottom Key Parts**



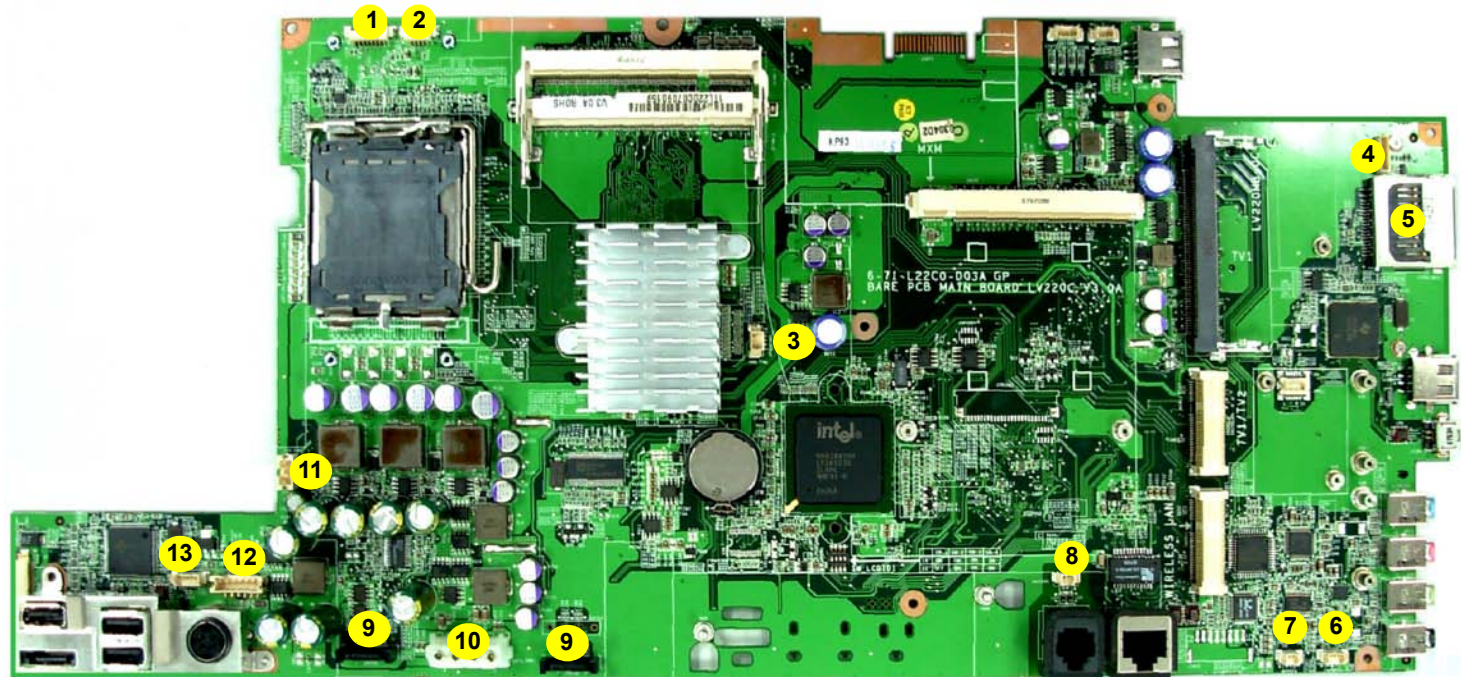


## Introduction

*Figure 1 - 6*  
**Mainboard Top  
Cable Connectors &  
Switches**

1. Power
2. CCD Connector
3. VGA Fan
4. Bluetooth
5. Card Reader
6. Microphone
7. Woofer
8. Modem Module
9. SATA HDD
10. SATA Power
11. CPU Fan
12. Inverter
13. LED

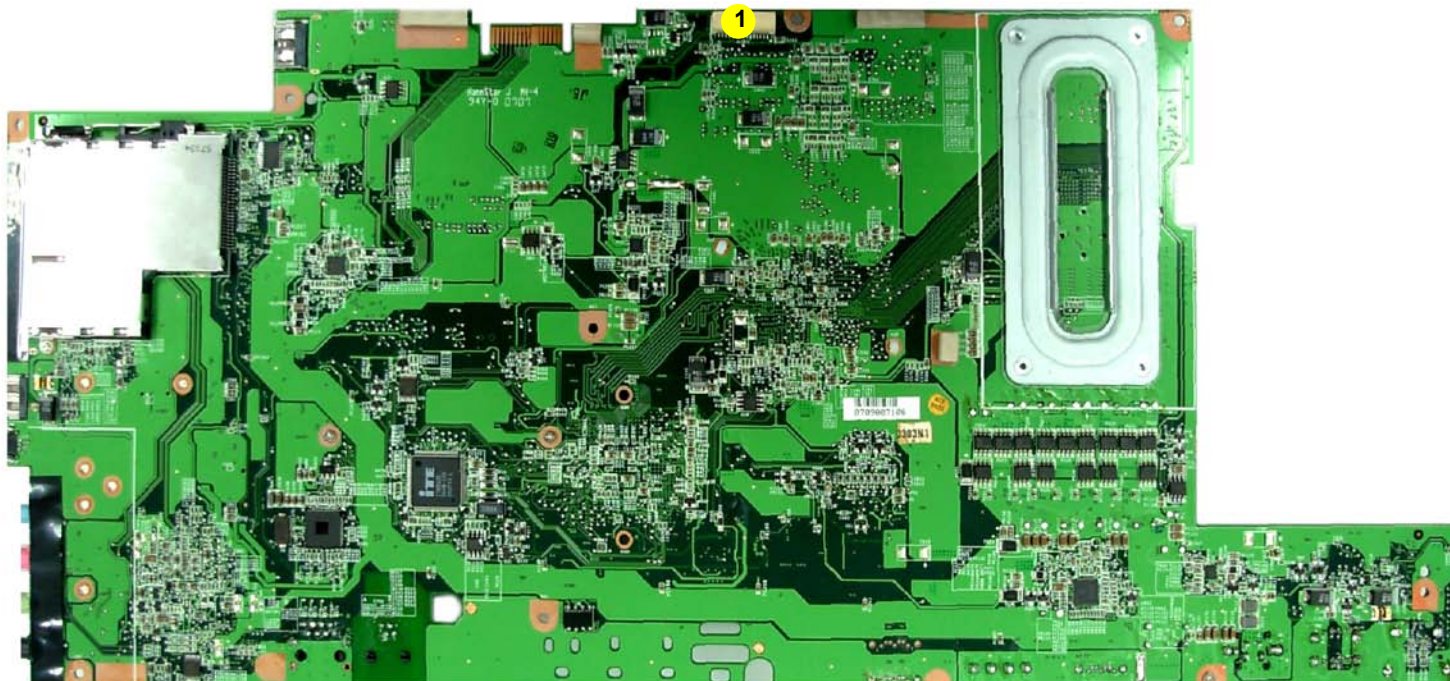
## Mainboard Overview - Top (Cable Connectors & Switches)



## Mainboard Overview - Bottom (Cable Connectors & Switches)

*Figure 1 - 7*  
**Mainboard Bottom  
Cable Connectors &  
Switches**

1. LCD






# 2: Disassembly



## Overview

This chapter provides step-by-step instructions for disassembling parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

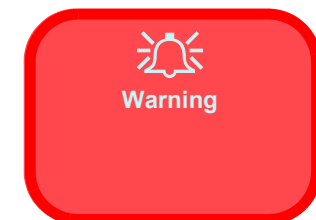
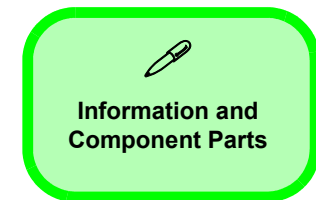
We suggest you completely review any procedure before you take the computer apart.

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

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

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

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



## Disassembly

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**NOTE:** All disassembly procedures assume that the system is turned **OFF**, and disconnected from any power supply, and that all peripheral cables are disconnected (including telephone lines and network cables).

### Maintenance Tools

The following tools are recommended when working on the computer:

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

### Connections

Connections within the computer are one of four types:

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

## Maintenance Precautions

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

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

## Cleaning

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

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



### Power Safety Warning

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

### Disassembly Steps

The following 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 hard disk drive assembly:

1. Remove the hard disk drive assembly *page 2 - 5*

#### To remove the system memory:

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

#### To remove the processor:

1. Remove the system memory *page 2 - 7*
2. Remove the processor *page 2 - 9*

#### To remove the modem:

1. Remove the modem *page 2 - 11*

#### To remove the WLAN module:

1. Remove the modem *page 2 - 11*
2. Remove the WLAN module *page 2 - 12*

#### To remove the TV Tuner module:

1. Remove the modem *page 2 - 11*
2. Remove the TV Tuner module *page 2 - 13*

#### To remove the Bluetooth module:

1. Remove the modem *page 2 - 11*
2. Remove the TV Tuner module *page 2 - 13*
3. Remove the bluetooth module *page 2 - 14*

#### To remove the LCD back cover:

1. Remove the system memory *page 2 - 7*
2. Remove the modem *page 2 - 11*
1. Remove the LCD back cover *page 2 - 15*

#### To remove the Optical Device:

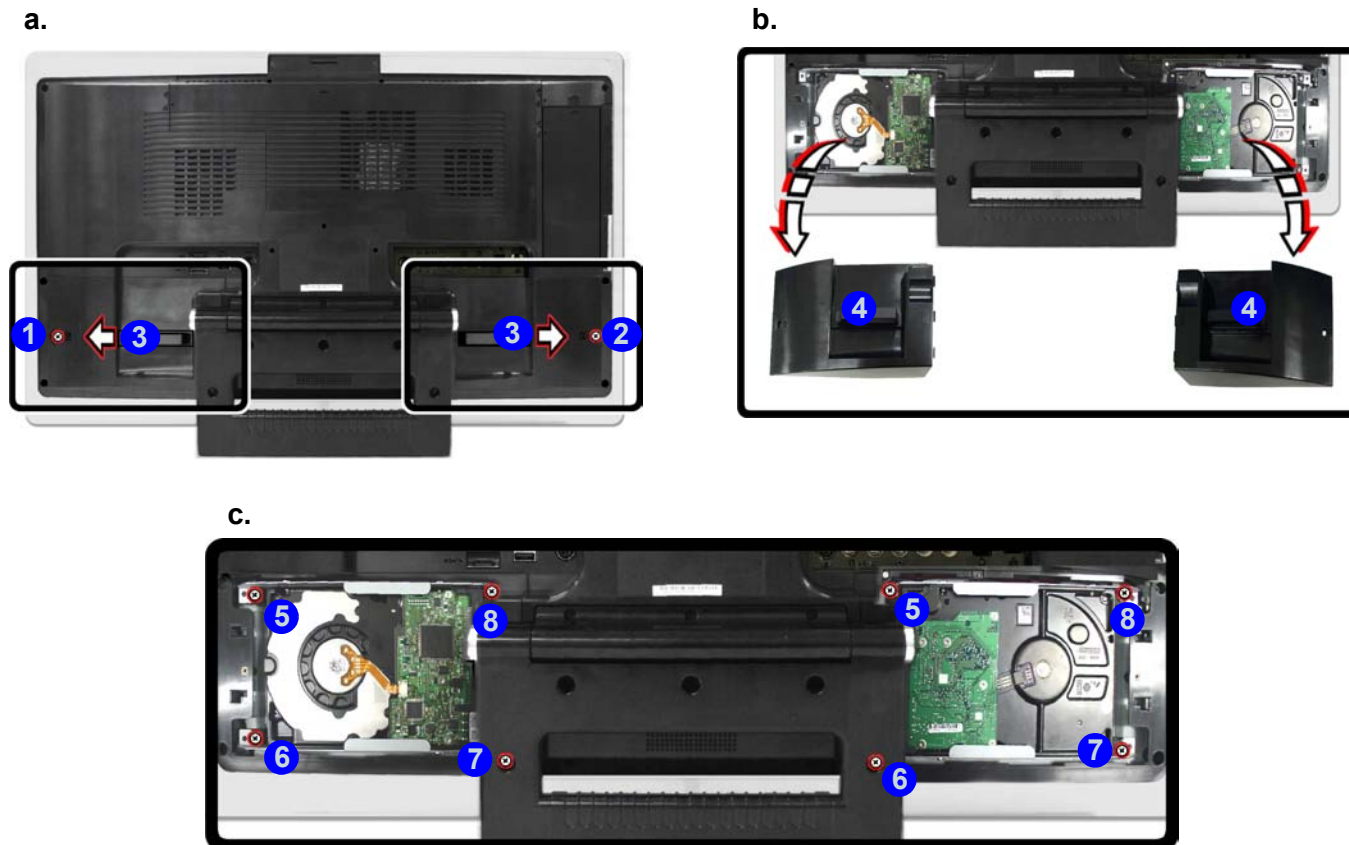
1. Remove the system memory *page 2 - 7*
2. Remove the modem *page 2 - 11*
3. Remove the LCD back cover *page 2 - 15*
4. Remove the optical device *page 2 - 17*

## Removing the Hard Disk Drive Assembly

1. Turn the computer off and disconnect all peripherals and cables (including telephone lines).
2. Place the computer on a flat stable surface, preferably on a protective covering to avoid damage to the LCD screen.
3. Locate the hard disk bay cover and remove screw ①/②, depending on which hard disk you want to replace.
4. Remove the hard disk cover(s) by sliding it(them) in the direction of arrow ③.
5. Remove the hard disk cover(s) ④.
6. Remove the hard disk screws ⑤ - ⑧ from the hard disk(s) you want to replace.

*Figure 2 - 1*  
**Hard Disk Removal Sequence (con'td)**

- a. Remove the screw(s) from the HDD Bay-Cover.
- b. Remove the HDD Cover.
- c. Remove the screws from the HDD.



✎

3. HDD Bay Cover

- 5 Screws

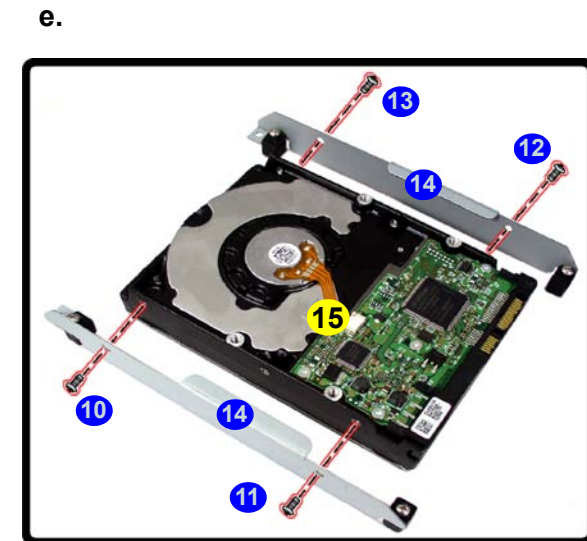
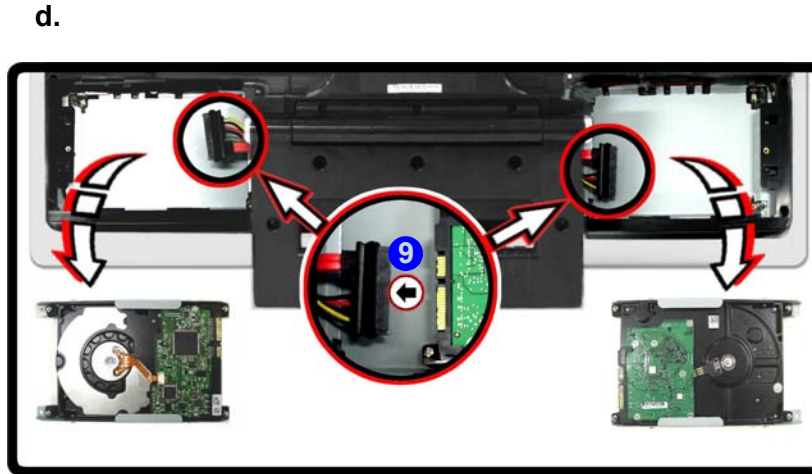


## Disassembly

### Figure 2 - 1 Hard Disk Removal Sequence

- d. Disconnect the cables from the HDD.  
e. Remove the screws and separate the HDD from the bracket.

7. Carefully disconnect the cable(s) 9 from the hard disk(s) you want to replace.  
8. Remove screws 10 - 13, and brackets 14 from the hard disk 15 .  
9. Reverse the removal procedure to install any new hard disk.



14. HDD Bracket  
15. HDD

- 4 Screws

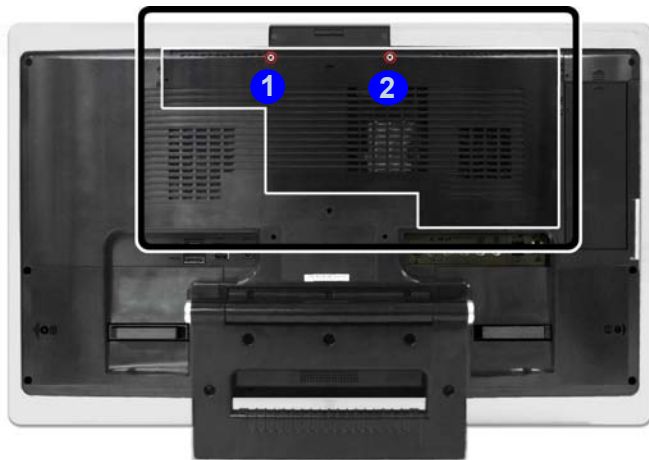
## Removing the System Memory

1. Turn the computer off and disconnect all peripherals and cables (including telephone lines).
2. Place the computer on a flat stable surface, preferably on a protective covering to avoid damage to the LCD screen.
3. Remove screws ① & ② from the rear component cover.
4. Carefully (a fan and cable are attached to the under side of the cover) slide the component cover in the direction of arrow ③, until the arrow ④ aligns with the unlock symbol.
5. Carefully disconnect the fan cable ⑤ from point ⑥ on the mainboard.
6. Remove the rear component cover ⑦ and locate the memory socket ⑧.

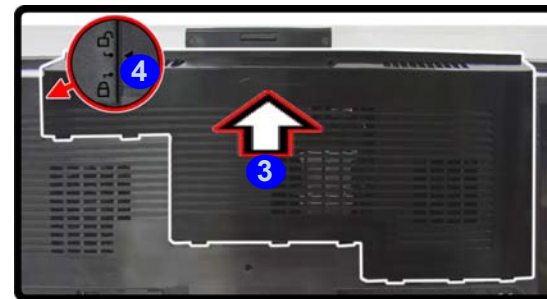
Figure 2 - 2  
Memory Removal  
Sequence (cont'd)

- a. Remove the screws.
- b. Slide the cover as indicated by the arrow.
- c. Disconnect the cable and remove the component cover from the computer.

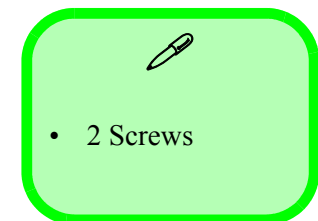
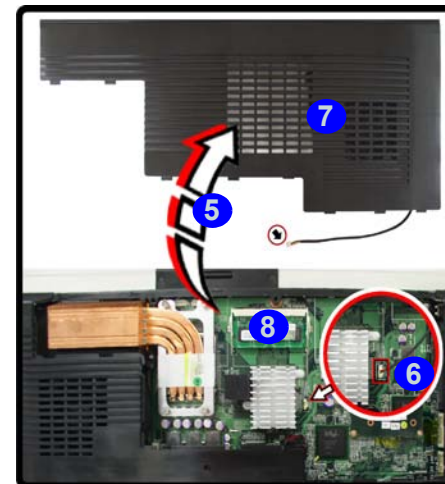
a.



b.



c.



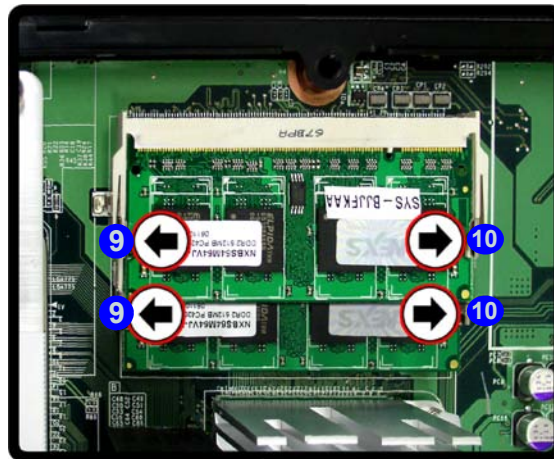
## Disassembly

Figure 2 - 3  
Memory Removal  
Sequence

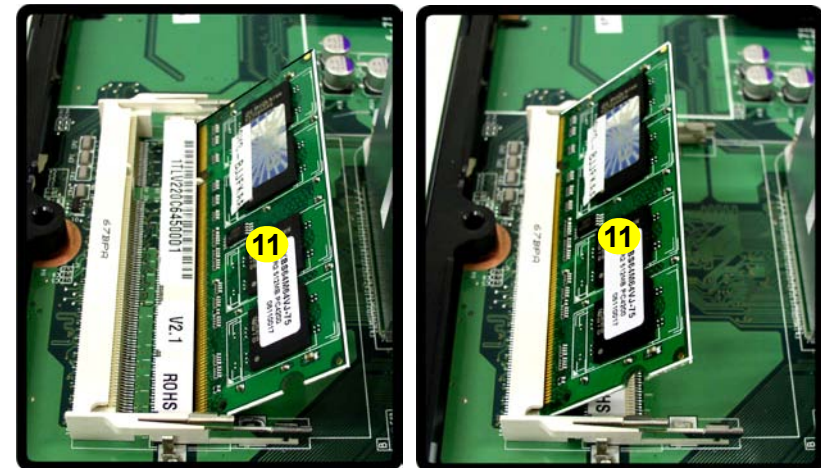
- d. Pull the latch(es) on the memory sockets to release the module(s).
- e. The module will pop-up, and you can remove the module.

7. For each module you want to replace, gently push the latches **9** and **10** toward the sides of the socket to release the module. Push the latches to release the second module if necessary.
8. The module **11** will pop-up, and you can remove it.
9. Insert the new module. The module will only fit one way as defined by the pin alignment.
10. Make sure the module is seated as far into the slot as it will go (DO NOT FORCE IT). The latches will click into place on the sides of the module. Make sure they are secure.
11. Reverse the procedures to put the computer back together (**don't forget to reconnect the fan cable**), and do not forget all the screws. When you restart the computer the new memory configuration should be registered.
12. If the system doesn't properly detect the new memory, **and you are sure they are properly "seated"**, you may need to run the *Setup* utility.

d.



e.



### Contact Warning

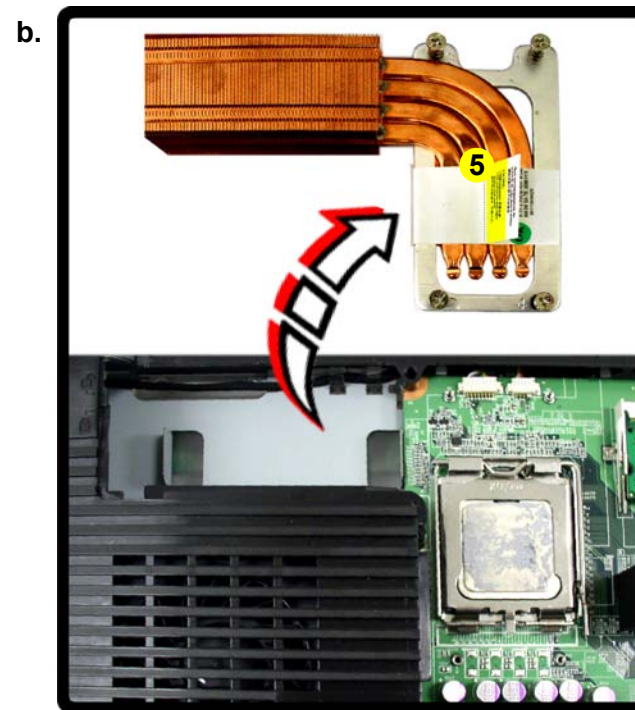
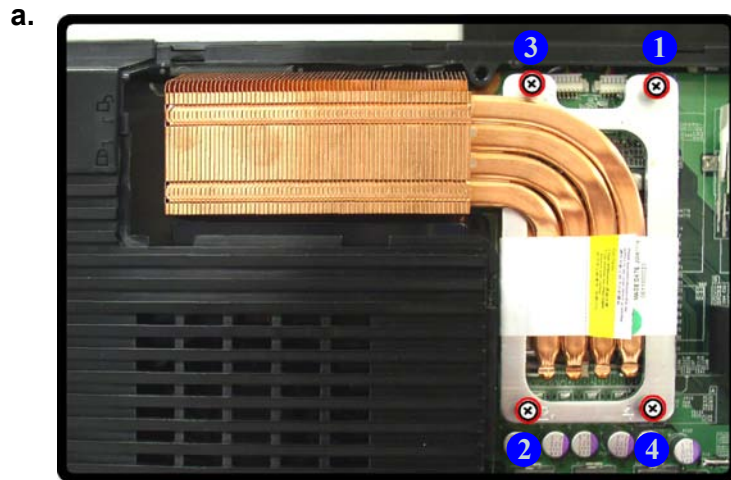
Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.



14. Memory Module(s)

## Removing and Installing the Processor

1. Remove the rear component cover ([page 2 - 7](#)).
2. Remove screws ① - ④ from the CPU heat sink unit (in the order indicated in [Figure 2 - 5a](#)).
3. Lift out the CPU heat sink unit ⑤ from the mainboard.



*Figure 2 - 4*  
**Processor  
Removal  
Sequence**

- a. Remove the screws from the CPU heat sink unit.
- b. Lift the heat sink unit out.



**Caution**

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



5. Heat Sink

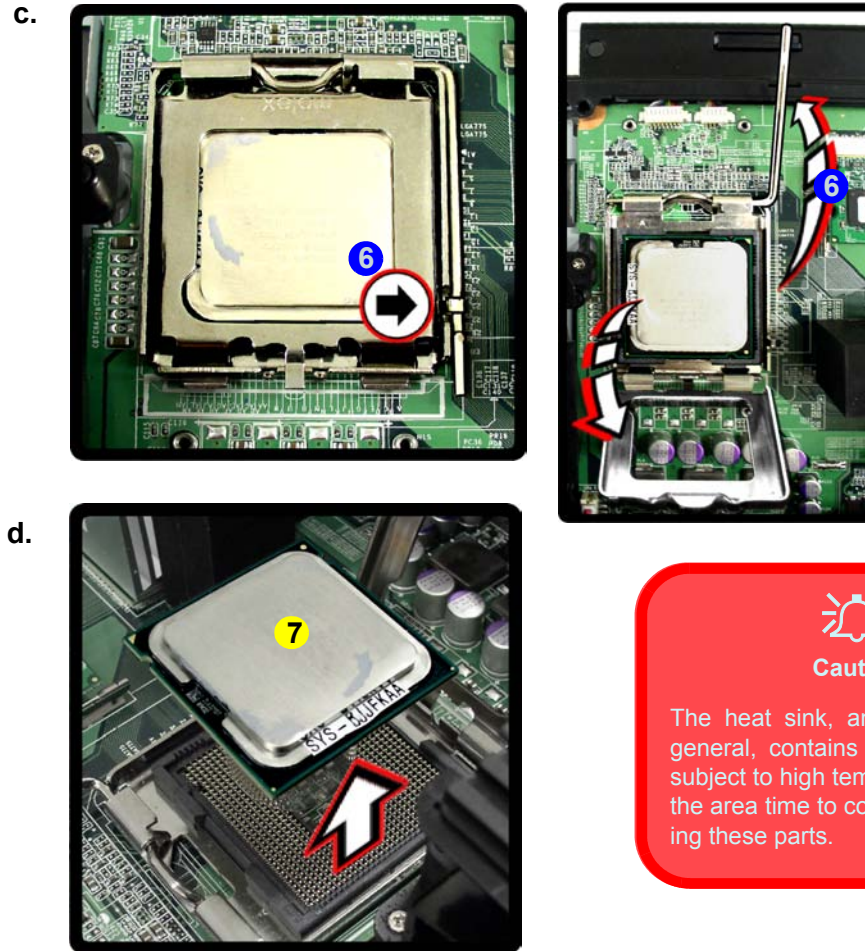
- 4 Screws

## Disassembly

### Figure 2 - 5 Processor Removal Sequence (cont'd)

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

- 4. Lift the release latch **6** to release the CPU (*Figure 2 - 5c*).
- 5. Carefully (it may be hot) lift the CPU **7** up out of the socket (*Figure 2 - 5d*).
- 6. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).



#### Caution

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

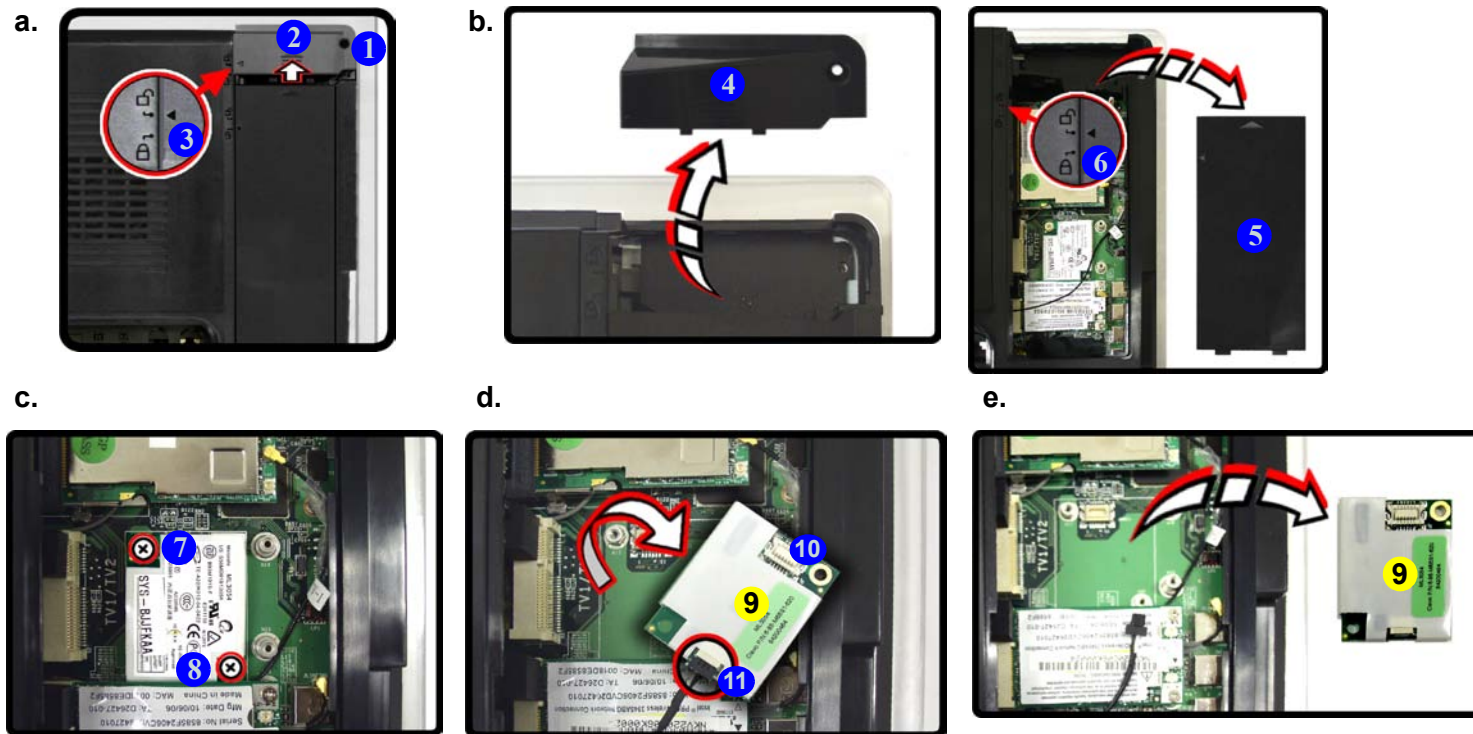
7. CPU

## Removing the Modem

1. Turn the computer off and disconnect all peripherals and cables (including telephone lines).
2. Place the computer on a flat stable surface, preferably on a protective covering to avoid damage to the LCD screen.
3. Remove screw 1 from the USB port component cover and slide the cover in the direction of arrow 2, until the arrow 3 aligns with the unlock symbol.
4. Remove the USB port component cover 4 and then slide the module cover 5 until the arrow 6 aligns with the unlock symbol.
5. Remove the module cover 5.
6. Remove screws 7 and 8 from the modem module.
7. Remove the modem module 9 from the connector socket 10, and disconnect the modem cable at point 11.
8. Lift the modem off the mainboard.

Figure 2 - 6  
Modem Removal  
Sequence

- a. Remove the screw.
- b. Remove the covers.
- c. Remove the screws from the modem module.
- d. Remove the modem from the connector and disconnect the cable.
- e. Lift the modem off the mainboard.



✎

9. Modem module

- 3 Screws

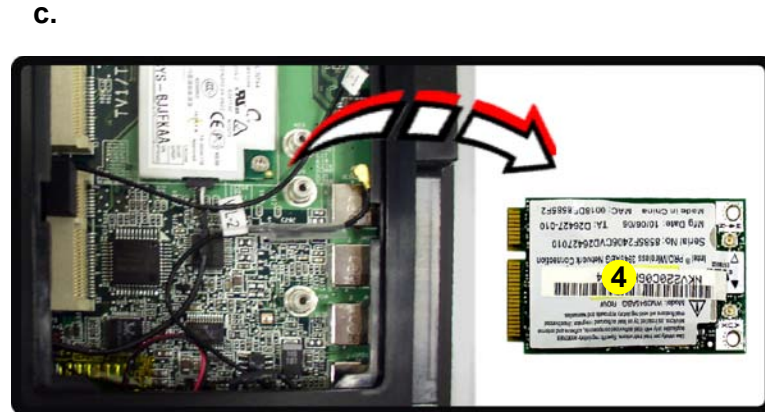
## Disassembly

### Figure 2 - 7 Wireless LAN Module Removal Sequence

- Disconnect the cable and remove the 2 screws.
- The WLAN module will pop-up.
- Remove the WLAN module.

## Removing the Wireless LAN Module

- Remove the modem module ([page 2 - 11](#)).
- Carefully disconnect cable **1**, then remove screws **2** & **3** from the module socket.
- The wireless LAN module **4** will pop-up.
- Lift the wireless LAN module **4** up and off the computer.

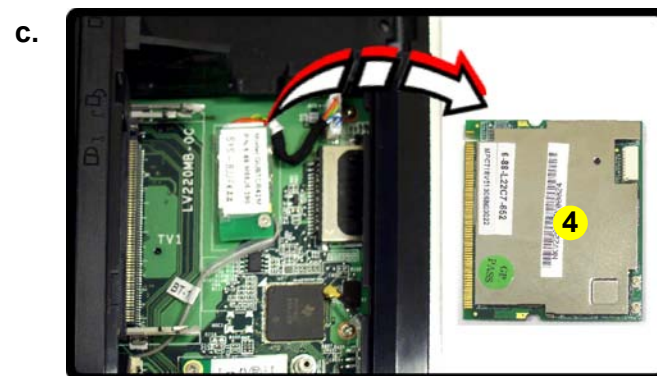
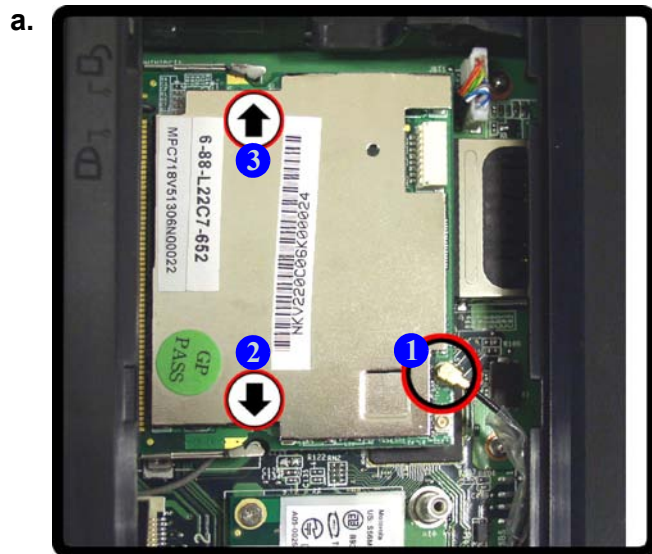


4. WLAN Module

- 2 Screws

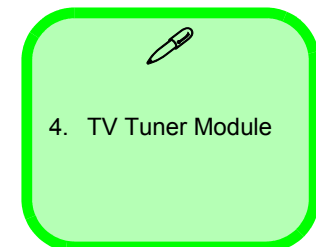
## Removing the TV Tuner Module

1. Remove the USB port & module covers ([page 2 - 11](#)).
2. Carefully disconnect cable **1**, then gently push the latches **2** and **3** toward the sides of the socket to release the module.
3. The TV Tuner module **4** will pop-up.
4. Lift the TV Tuner module **4** up and off the computer.



*Figure 2 - 8*  
**TV Tuner Module  
 Removal  
 Sequence**

- a. Pull the latch(es) on the module socket to release the module.
- b. The module will pop-up.
- c. Lift the module off the mainboard.





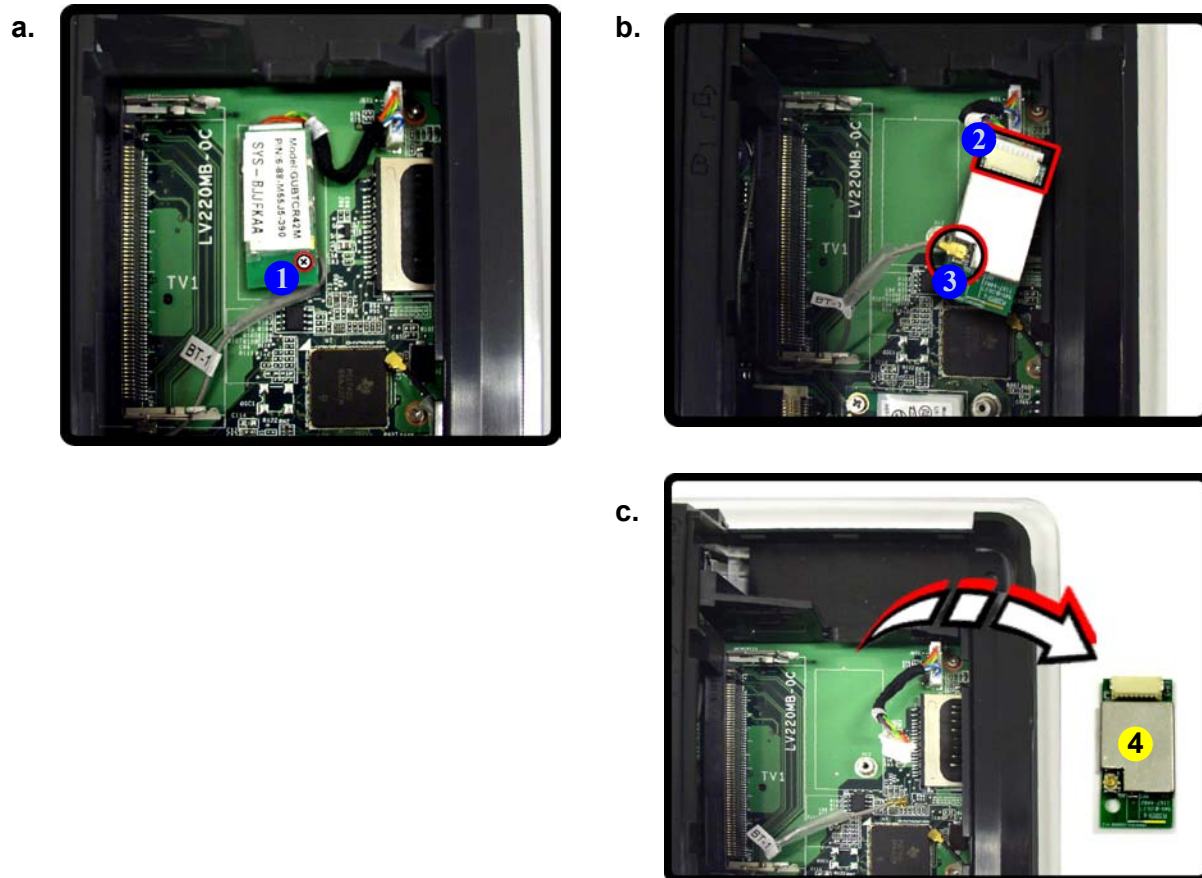
## Disassembly

### Figure 2 - 9 Bluetooth Module Removal Sequence

- Remove the screw.
- Disconnect the cable.
- Lift the Bluetooth module off the mainboard.

## Removing the Bluetooth Module

- Remove the USB port & module covers ([page 2 - 11](#)) and TV Tuner module ([page 2 - 13](#)).
- Remove screw **1** and then carefully disconnect the connector **2** & cable **3** from the module socket.
- Lift the Bluetooth module **4** up and off the computer.

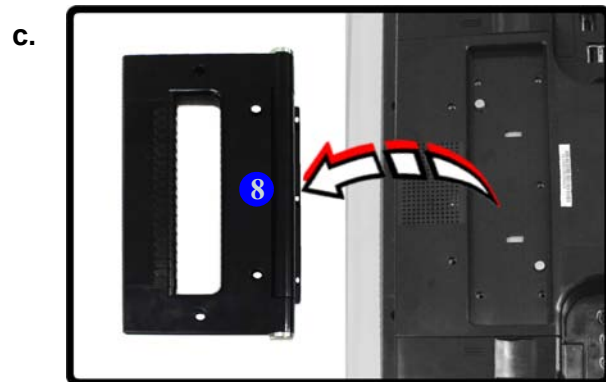
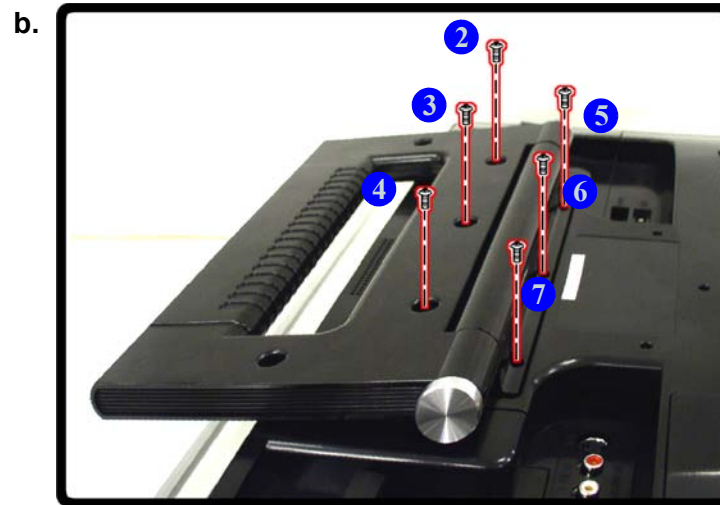
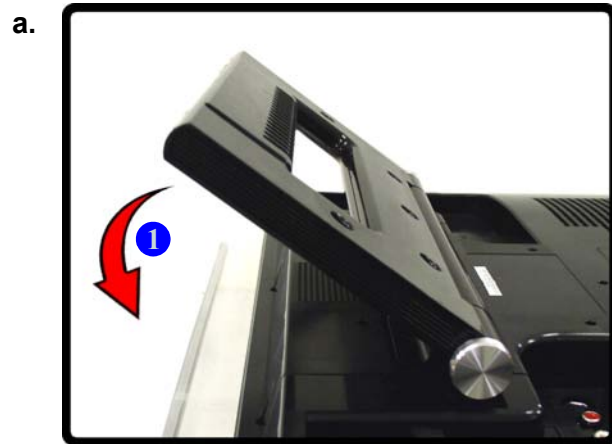


4. Bluetooth Module

- 1 Screw

## Removing the LCD Back Cover

1. Remove the 3 component covers ([page 2 - 7](#) and [page 2 - 11](#)).
2. Set the hinge support to its transport position.
3. Remove screws ② - ⑦ from the hinge support.
4. Lift the hinge support ⑧ from the main unit and set it aside.



*Figure 2 - 10*  
**LCD Back Cover  
Removal  
Sequence**

- a. Set the hinge support to its transport position.
- a. Remove the screws from the hinge support.
- b. Lift the hinge support and set it aside.



8. Hinge

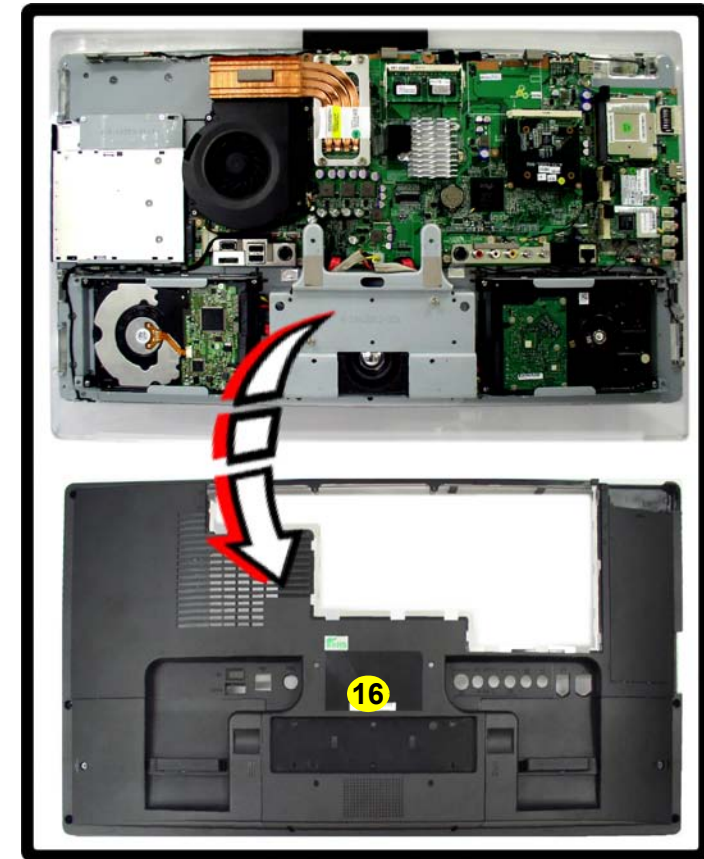
- 6 Screws

## Disassembly

### Figure 2 - 11 LCD Back Cover Removal Sequence (cont'd)

- d. Remove the screws from the LCD back cover.
- e. Lift the cover out and set it aside.

5. Remove screws 8 - 15 from the LCD back cover and slide it up towards the top of the computer.
6. Carefully remove the LCD back cover 16 from the main unit and set it aside.



#### Card Reader/PC Card Slots

Make sure you remove any cards or covers in the 7-in-1 Card Reader and PC Card slot before removing the rear case cover.



16. LCD back cover

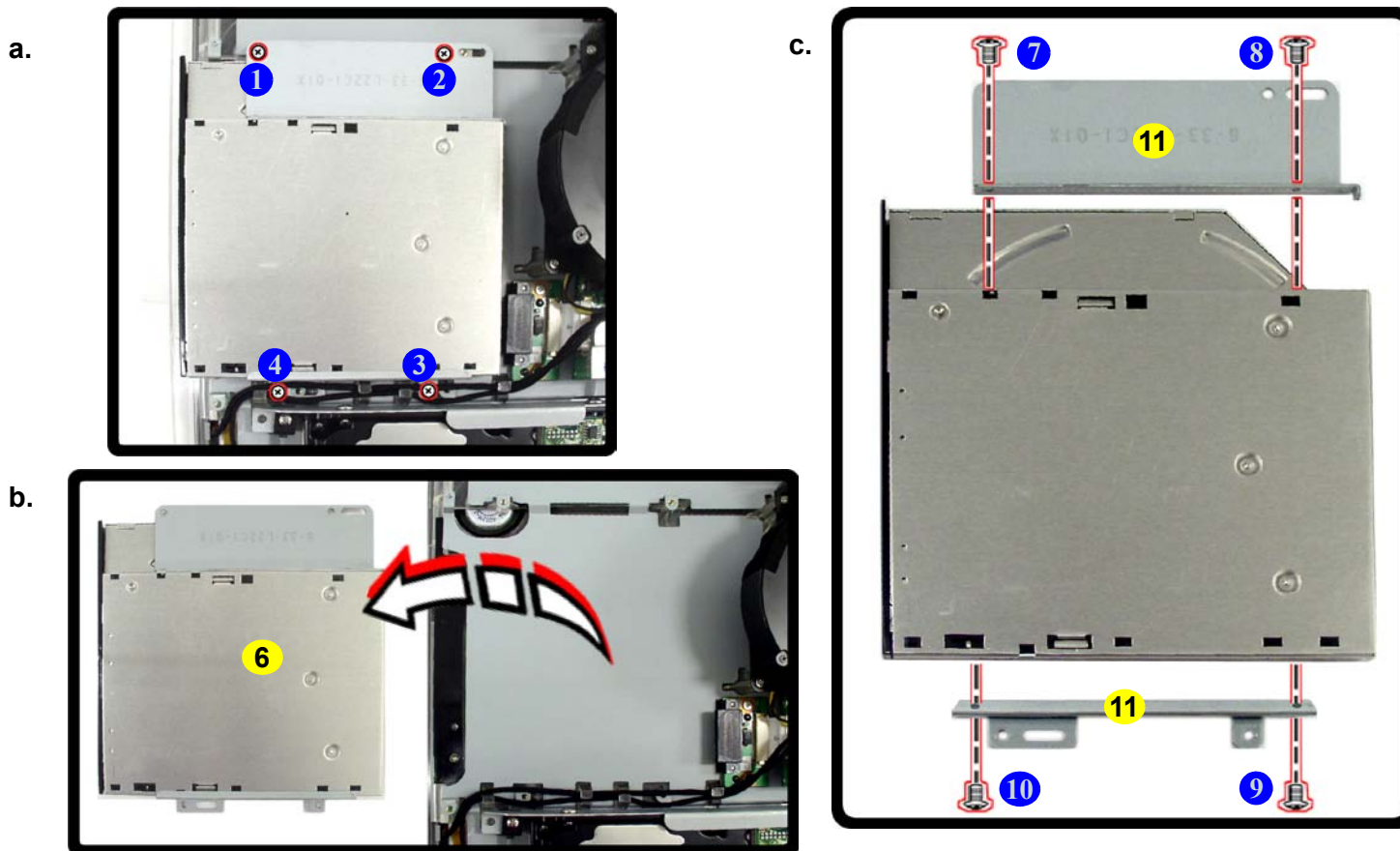
- 8 Screws

## Removing the Optical Device Assembly

1. Remove the rear component cover ([page 2 - 7](#)) USB port and module cover ([page 2 - 11](#)) and LCD back cover ([page 2 - 15](#)).
2. Remove screws ① - ④, and disconnect connector ⑤, from the optical device.
3. Remove the optical device ⑥, and remove the screws (⑦ - ⑩) in order to separate the optical device from the bracket ⑪.
4. Reverse the removal procedures to install the new optical device.

Figure 2 - 12  
Optical Device  
Assembly  
Removal  
Sequence

- a. Remove the screws and disconnect the cable.
- b. Remove the Optical Device.
- c. Remove the screws and separate the bracket from the optical device.





# Appendix A: Part Lists

This appendix breaks down the LV22C/LV22N/LV19C/LV19N computer'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.

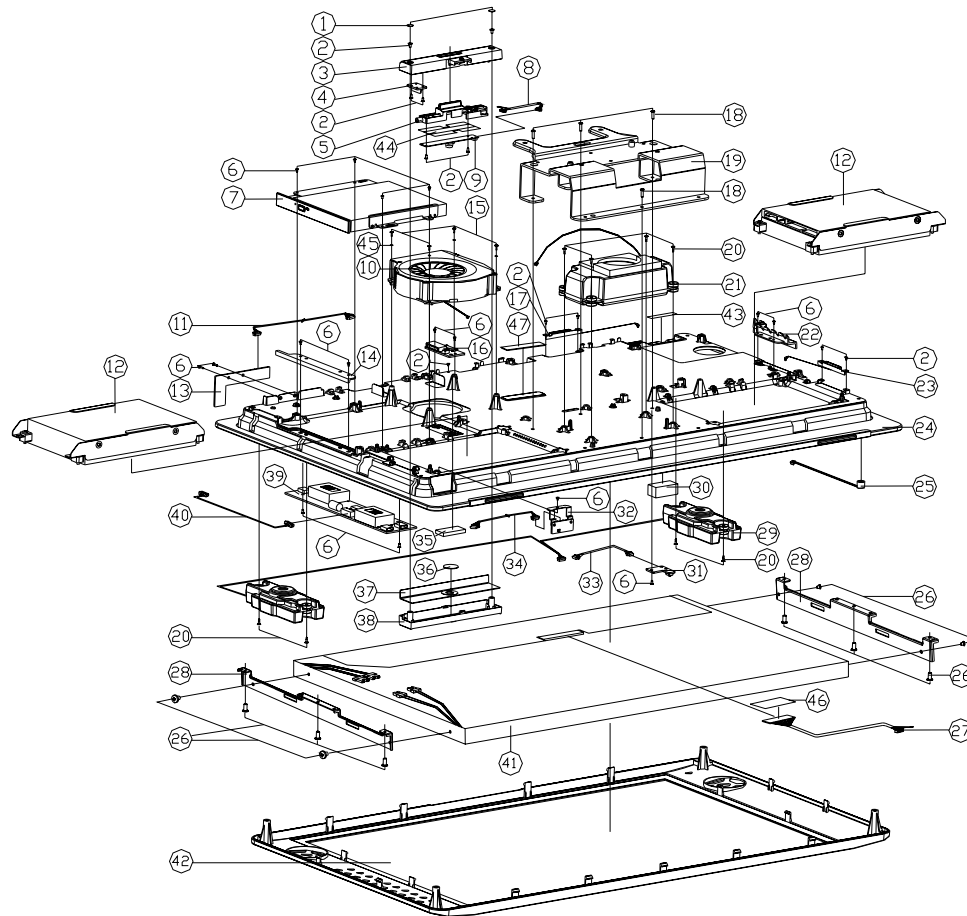
## Part List Illustration Location

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

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

Part	LV22C/LV22N	LV19C/LV19N
Front Cover	<i>page A - 3</i>	<i>page A - 10</i>
Back	<i>page A - 4</i>	<i>page A - 11</i>
Combo	<i>page A - 5</i>	<i>page A - 12</i>
DVD-Dual	<i>page A - 6</i>	<i>page A - 13</i>
HDD	<i>page A - 7</i>	<i>page A - 14</i>
MB (LV22C/LV19C)	<i>page A - 8</i>	<i>page A - 15</i>
MB (LV22N/LV19N)	<i>page A - 9</i>	<i>page A - 16</i>

# LV22C/LV22N - Front Cover



ITEM	PART NAME	PART NO	REMARK
1	CCD BACK COVER NYLARFR700 LV22C	6-40-L22C1-030	
2	SCREW M3X KI NI ICT 01-PADN 0D=4.0D=4.0	6-35-B1120-3RD	
3	CCD BACK COVER.PC+ABS LV22C	6-42-L22CT-021	
4	CCD ROTATE BASE.PC+ABS LV22C	6-42-L22CT-041	
5	CCD HANDLE.PC+ABS LV22C	6-42-L22CT-031	
6	SCREW M2.5XSL KI NI ICT NY	6-35-B1125-5RA	
7	DVD/DUAL RW ASS'Y (OPTIO)	6-79-L22C0-000	
7	COMBO ASS'Y (OPTIO)	6-79-L22C0-010	
8	WIRE CABLE FOR CCD TO M/B SP LV22C	6-43-L22C0-031	
9	CMOS VIDEO CAMERA BGA-DV900-0-50G 1.3M	6-88-M55GC-612	
10	FAN REV 0.3A (CF 1000RPM) LV22C	6-23-AL22C-010	
11	WIRE CABLE FOR POWER SWITCH BOARD TO M/B LV22C	6-43-L22C0-042	
12	W/O HDD ASS'Y LV22C/N	6-79-L22CJ-010	
13	POWER SWITCH BOARD V3.0A LV22C	6-77-L22C5-D03A	
14	DDD HOUSING.PC+ABS LV22C	6-42-L22CZ-012	
15	SCREW M2XSL KI NI ICT NY	6-35-B1120-5R0	
16	CD-ROM TRANSFER BOARD V2.0A LV22C	6-77-L22CN-D02A	
17	MEMO BATTERY JACK P/N 010 NY	6-23-L22C-041	
18	SCREW M3X KI NI ICT NY 0.4X1.5X2 PAD	6-35-B6130-7R0	
19	VESA BRACKET.SEC LV22C	6-33-L22C-022	
20	SCREW M2.5XSL KI NI ICT NY 0.4X1.5X2 PAD	6-35-41125-130	
21	SUBVIFER MODULE LV22C	6-23-5L22C-101	
22	AUDIO HOUSING.PC+ABS LV22C	6-42-L22CI-042	
23	MEMO BATTERY JACK P/N 010 NY	6-23-7L22C-021	
24	LCD HOUSING MODULE LV22C	6-39-L22C-013	
25	RE-ALIGNMENT-BL-DY CABLE 3 PIN LV22C	6-23-EL22C-010	
26	SCREW M3X KI NI ICT NY 0.4X1.5X2 PAD	6-35-B6130-4RB	
27	WIRE CABLE FOR AUDIO/VIDEO V2.0A LV22C	6-43-L22C1-011	
28	LCD BRACKET.SEC LV22C	6-33-L22C1-031	
29	SPEAKER MODULE LV22C	6-23-5L22C-202	
30	REPAIR LCD RUBBER/SILICONE LV22C	6-47-L22C1-040	
31	CIR BOARD V3.0A LV22C	6-77-L22C4-D03A	
32	LED BOARD V2.0A LV22C	6-77-L22C4-D02A	
33	WIRE CABLE FOR CIR BOARD TO M/B SP LV22C	6-43-L22C0-020	
34	WIRE CABLE FOR LED BOARD TO M/B SP LV22C	6-43-L22C0-051	
35	REPAIR LCD RUBBER/SILICONE LV22C	6-47-L22C1-030	
36	CCD PROTECT.PC LV22C	6-40-L22C1-041	
37	CCD PLATE MODULE LV22C	6-33-L22C1-101	
38	CCD FRONT COVER MODULE LV22C	6-42-L22CT-101	
39	INVERTER MODULE MPT 0622 LV22C/N	6-76-L22CR-021	
40	WIRE CABLE FOR SP INVERTER TO M/B SP LV22C	6-43-L22CR-010	
41	LED 1 AN RED/RED V8 32 VESDA-500000000	6-50-SA205-G00	
41	LED 1 AN RED/RED V8 32 VESDA-500000000	6-50-SA217-D00	
42	LED FRONT COVER MODULE LV22C	6-39-L22C1-012	
43	TAPE NYLAR (AS)NYLAR M550J	6-40-M55J2-010	
44	CCD NYLAR T60 LV22C	6-40-L22C1-040	
45	FAN WASHER NYLAR FR700 LV22C	6-40-L22C1-090	
46	REPAIR CABLE FOR LCD CABLE LV22C	6-47-L22C1-0C0	
47	THERMAL PAD T60-1003 (KPS353) LV22C	6-47-L22C1-050	

Figure A - 1  
LV22C/LV22N -  
Front

A.Part Lists



# LV22C/LV22N - Back

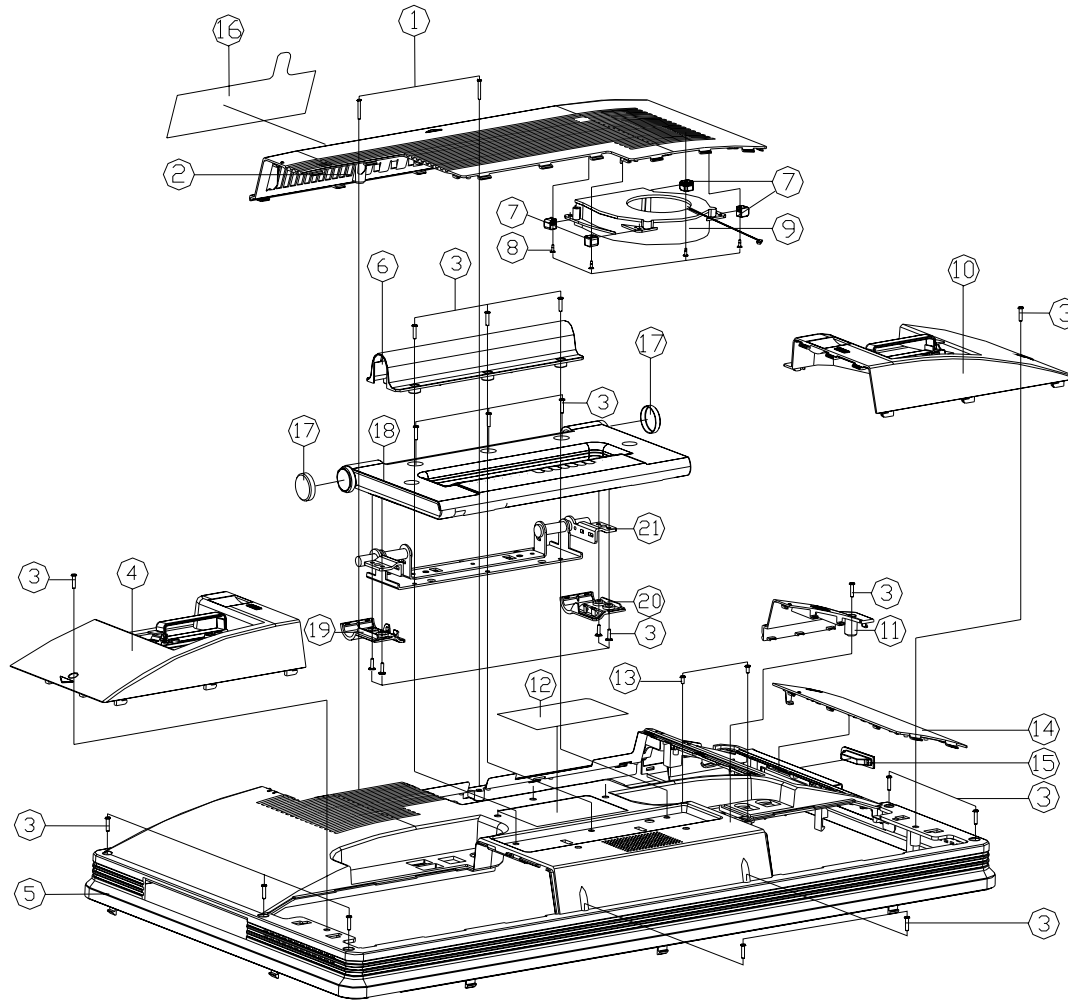


Figure A - 2  
LV22C/LV22N -  
Back

A.Part Lists

ITEM	PART NAME	PART NO	REMARK
1	SOEY RESIN KI BRZ IKT NMD (F-55 1430) (R)	6-35-B6125-190	
2	CPU COVER MODULE LV220C (R)	6-42-L22CS-102	
3	SOEY NMDL KI BRZ IKT NMD (F-6 1430) (R)	6-35-B6130-100	
4	HDD COVER MODULE (L) LV220C (R)	6-42-L22CJ-202	
5	LCD BACK COVER MODULE LV220C (R)	6-39-L22CJ-022	
6	HINGE BASE HOUSING PC+ABS LV220C (R)	6-42-L22CY-031	
7	FAN RUBBER,SILICONE LV220C (R)	6-47-L22C1-020	
8	SOEY RESIN+MPC+AL 3 (F-42) (R) S-RESIN (R)	6-35-41125-130	
9	VIA FIL SYNTHET SY ABS (S-42) (R) LV220C (R)	6-23-41122C-020	
10	HDD COVER MODULE (R) LV220C (R)	6-42-L22C1-102	
11	RF COVER,PC+ABS LV220C (R)	6-42-L22C1-022	
12	PRODUCT LABEL LV220C (R)	6-45-L22C3-010	
12	PRODUCT LABEL LV220N (R)	6-45-L22N3-010	
12	PRODUCT LABEL LV190C (R)	6-45-L19C3-010	
12	PRODUCT LABEL LV190N (R)	6-45-L19N3-010	
13	SOEY NMDL KI N IKT (F-6) (R) (F-42) (R) (R)	6-35-B1120-3R0	
14	OPTION COVER MODULE LV220C (R)	6-42-L22C1-101	
15	CARD READER RUBBER,SILICON M500G (R)	6-47-M55CG-011	
16	CPU COVER PROTECT MILAR PE LV220C (R)	6-40-L22C8-011	
17	HINGE RING,AL LV220C (R)	6-33-L22CY-010	
18	HINGE SUPPORT MODULE LV220C (R)	6-42-L22CY-101	
19	HINGE COVER (R) PC+ABS LV220C (R)	6-42-L22CY-011	
20	HINGE COVER (L) PC+ABS LV220C (R)	6-42-L22CY-021	
21	HINGE MODULE LV220C (R)	6-33-L22CY-102	

# LV22C/LV22N - Combo Drive

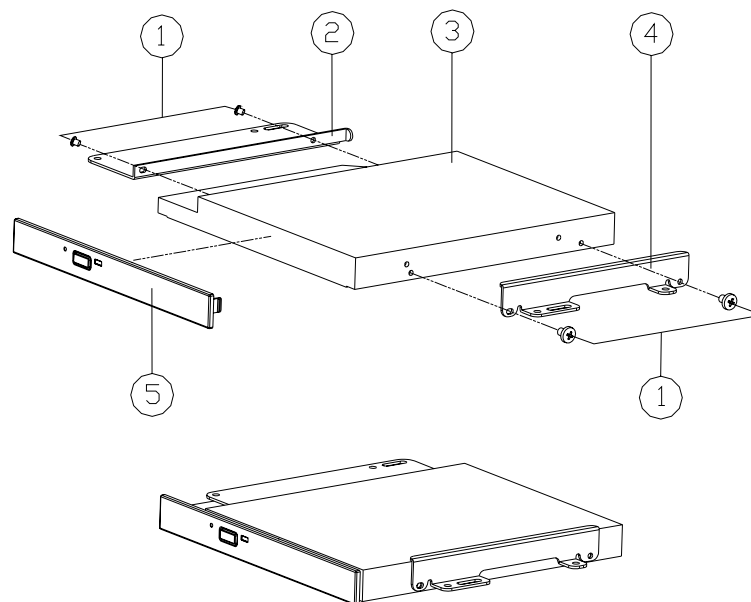


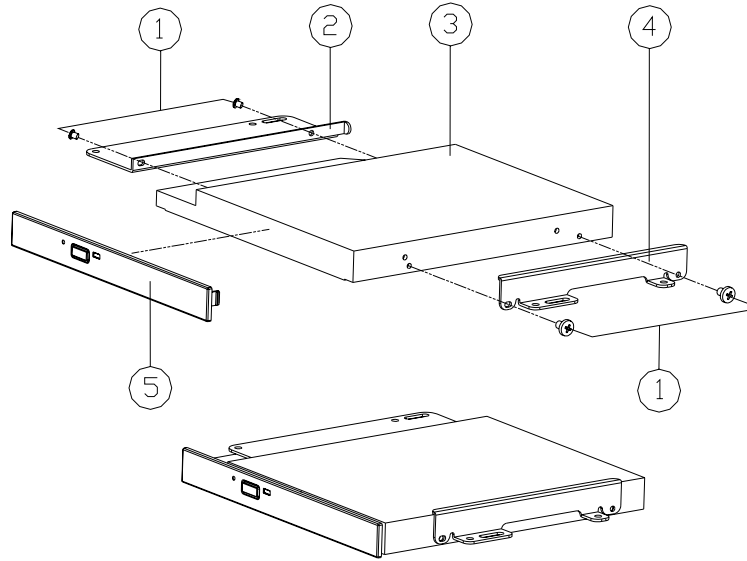
Figure A - 3  
LV22C/LV22N -  
Combo Drive

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2.5L K1 BK/2 ICT NY#35 T+0.3 無鉛	6-35-B6120-2RB	
2	DDD BRACKET (R),SECC LV220C 無鉛	6-33-L22C1-011	
3	COMBO DRIVE (LV22C/LV22N) 無鉛	6-85-907PX-C03	
4	DDD BRACKET (L),SECC LV220C 無鉛	6-33-L22C1-021	
5	COMBO BEZEL MODULE (BK1A382) L295N 無鉛	6-42-L25NX-100	

A.Part Lists

## LV22C/LV22N - DVD-Dual Drive

Figure A - 4  
LV22C/LV22N -  
DVD-Dual Drive



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2x2.5L KI BK/2 ICT NY#3.5 T+0.3	6-35-B6120-2RB	
2	ODD BRACKET (R),SECC LV220C	6-33-L22C1-011	
3	OPTICAL PICK UP ASSEMBLY (R) 20X80MM 1.25X0.5MM 6-85-A078X-C08	6-85-A078X-C08	
3	OPTICAL PICK UP ASSEMBLY (L) 20X80MM 1.25X0.5MM 6-85-A078X-T02	6-85-A078X-T02	
4	ODD BRACKET (L),SECC LV220C	6-33-L22C1-021	
5	TOSHIBA DUAL DVD/VIDEO SUPER MULTIPLE BEZEL MEDIA	6-42-L25NQ-200	

# LV22C/LV22N - HDD

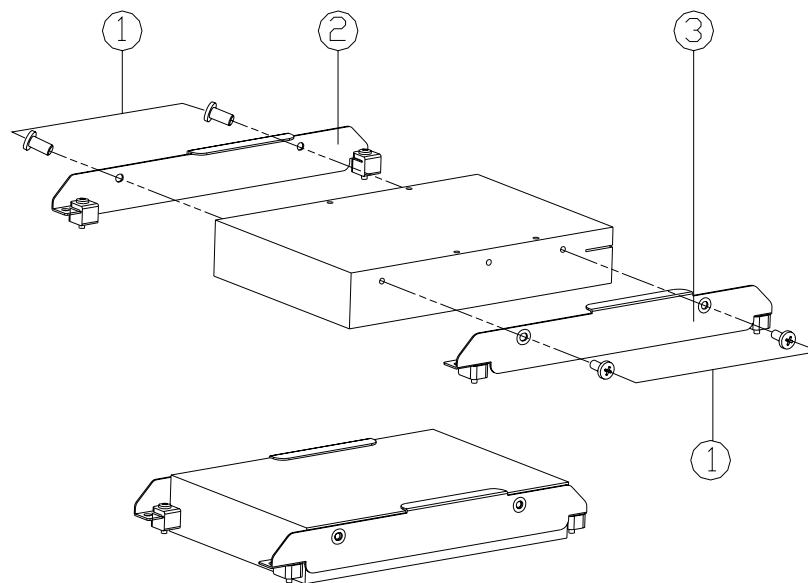


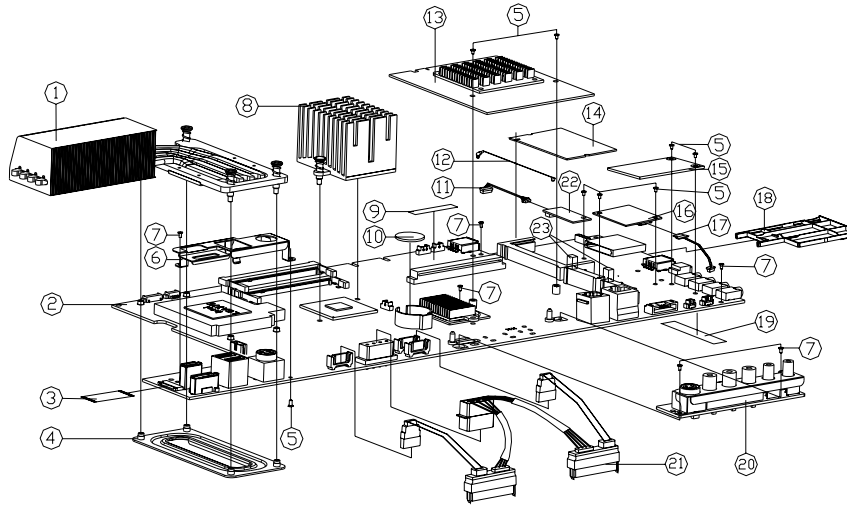
Figure A - 5  
LV22C/LV22N -  
HDD

ITEM	PART	NAME	PART NO	REMARK
1	SCREW	#6-32*5L B NI ACT 無鉛	6-35-41306-5R0	
2	HDD BRACKET MODULE (L)	LV220C 無鉛	6-33-L22CJ-201	
3	HDD BRACKET MODULE (R)	LV220C 無鉛	6-33-L22CJ-101	

A.Part Lists

# LV22C - MB

Figure A - 6  
LV22C - MB



ITEM	PART NAME	PART NO	REMARK
1	CPU THERMAL MODULE LV22C	6-31-L22CS-100	
2	MAIN BOARD V3.0A LV22C	6-77-L22C0-D03A	
3	IFC CABLE CPU BOARD TO MB LV22C	6-43-L22C0-D80	
4	CPU SUPPORT BRACKET LV22C	6-33-L22CS-040	
5	DRIVE BRACKET 2.5" 3.5" 4.0" LV22C	6-35-B1120-3R0	
6	USB BRACKET SPICE LV22C	6-33-L22CS-011	
7	SCREW M2.5x6, K1 NI ZET NY	6-35-B1125-SRA	
8	CPU HEAT BRIDGE HEAT SINK LV22C	6-31-L22CS-020	
9	TAPE W/LEAD GAUTYLAR M500J	6-40-M55J2-010	
10	HEATSPREADER FOR MAIN BOARD LV22C	6-23-62015-607	
11	WIRE CABLE FOR SILENCER TO MB LV22C	6-43-M55G0-071	
12	DRIVE CABLE FOR MB LV22C	6-43-L22C1-010	
13	VGA BOARD II LV22C	6-79-L22CL-001	
13	MAIN-II VGA BOARD V1.0 LV22C	6-77-L22CL-011	
14	MOUSE CABLE FOR MB LV22C	6-88-L22C7-451	
14	KEYBOARD CABLE FOR MB LV22C	6-88-L22C7-452	
15	NEW CARD DUMMY FOR M550N	6-88-M62N2-424	
15	NEW CARD DUMMY FOR M550N	6-88-M7702-701	
16	NEW CARD DUMMY FOR M550N	6-88-M6651-620	
16	KEYBOARD CABLE FOR MB LV22C	6-88-M55S1-531	
17	WIRE CABLE FOR MB TO MAIN LV22C	6-43-L22C0-070	
18	NEW CARD DUMMY FOR M550N	6-42-M55NP-010	
19	PHONE JACK W/LEAD T60 LV22C	6-40-L22CS-010	
20	AVC BOARD V3.0A LV22C	6-77-L22CS-D03A	
21	DATA AND SERIAL CABLE FOR MB LV22C	6-43-L22C0-012	
22	NEW CARD DUMMY FOR M550N	6-88-M66CS-390	
23	NEW CARD DUMMY FOR M550N	6-47-L22CS-021	

# LV22N - MB

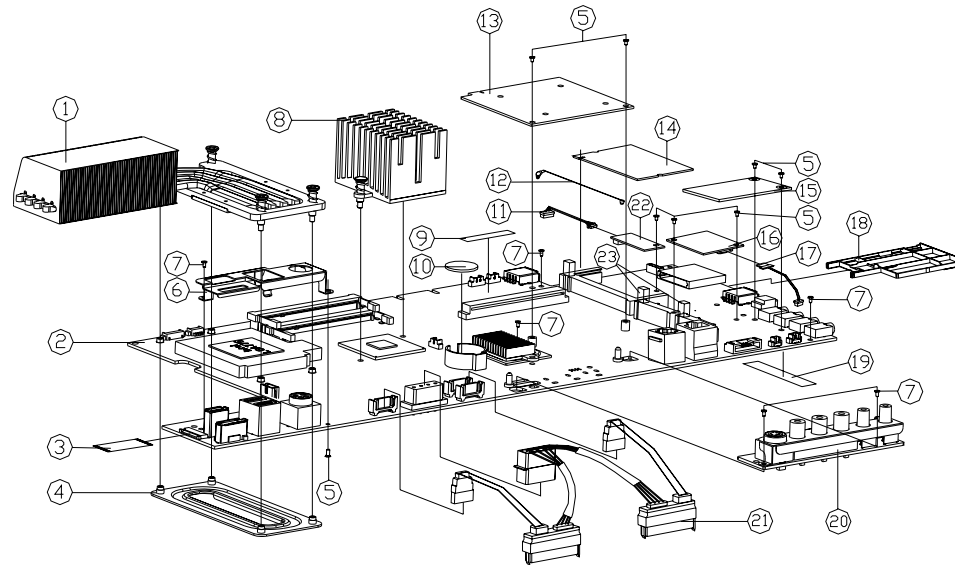


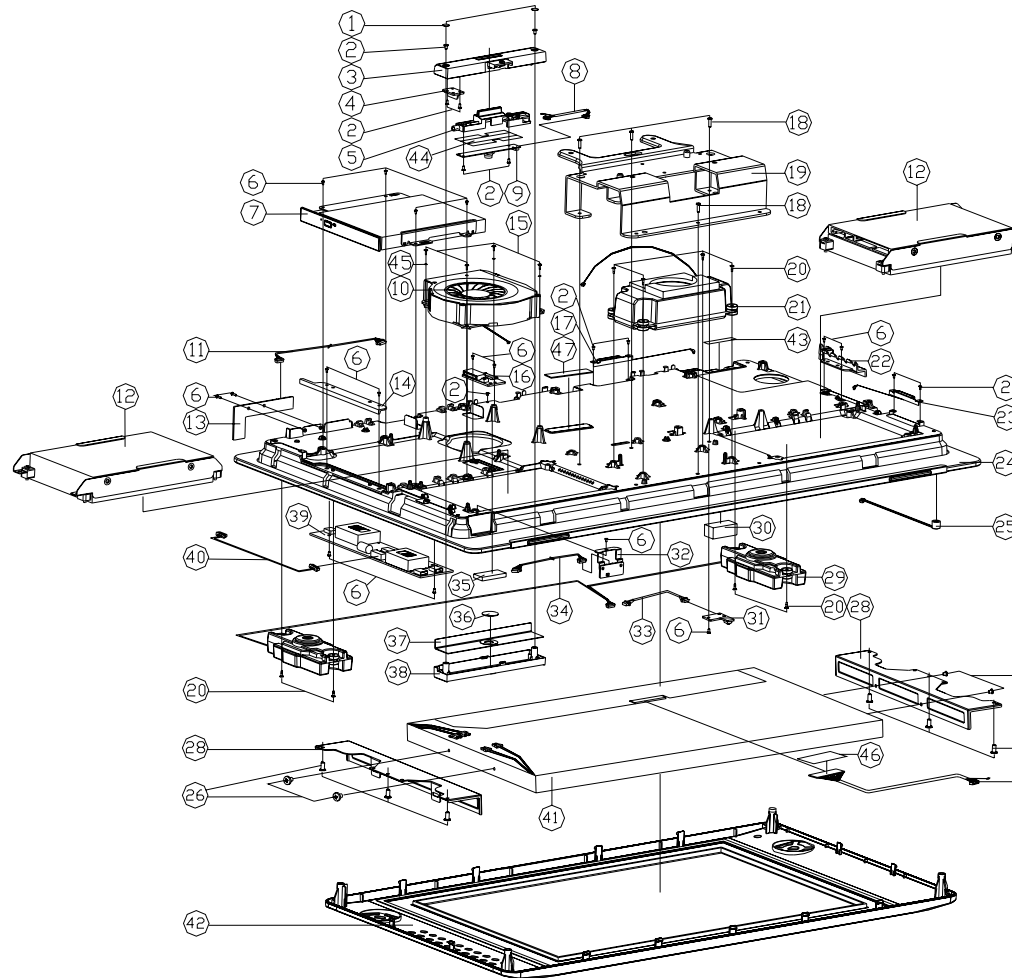
Figure A - 7  
LV22N - MB

ITEM	PART NAME	PART NO	REMARK
1	CPU THERMAL MODULE LV220C	6-31-L22CS-100	
2	MAIN BOARD V3.0A LV220C	6-77-L22CC-D03A	
3	PTC CABLE COIL WEDGE TO MB LV220C	6-43-L22CO-080	
4	CPU SUPPORT BRACKET SECC LV220C	6-33-L22CS-040	
5	STEEL BRK CLW SET GR4000 (8H-44L)40	6-35-B1120-3RD	
6	USER BRACKET SPITE LV220C	6-33-L22CS-011	
7	SCREW M2x4xL X1 NI ICT NY	6-35-B1125-5RA	
8	CROSS NORTH BRIDGE HEAT SINK LV220C	6-31-L22CS-020	
9	TAPE MYLAR (4x)MYLAR M550J	6-40-M55J2-010	
10	BATTERY 3V 200mAh CR2032 (01)S0500	6-23-62015-607	
11	WIRE CABLE FOR BLUE TOOTH TO MB LV220C	6-43-M55G0-071	
12	SHIM CABLE FOR TV AND USB BLUETOOTH	6-43-L22CT-010	
13	SERVO LV220C BOARD V2.0 LV220C	6-77-L22CL-D02	
14	HEAT SINK FOR MB LV220C	6-88-L22C7-451	
14	HEAT SINK FOR MB LV220C	6-88-L22C7-452	
15	HEAT SINK FOR MB LV220C	6-88-M66N2-424	
15	HEAT SINK FOR MB LV220C	6-88-M7702-701	
16	HEAT SINK FOR MB LV220C	6-88-M66S1-620	
16	MOTOROLA SOLUTIONS M3054 ADD TUV	6-88-M55S1-531	
17	WIRE CABLE FOR MB TO MODEN LV220C	6-43-L22CO-070	
18	NEW CARD DUMMY FOR M550N	6-42-M55NP-010	
19	PHONE JACK MYLAR160 LV220C	6-40-L22CS-010	
20	NEW REPAIRED V3.0A LV220C	6-77-L22CC-D03A	
21	DATA AND MASS STORAGE CABLE TO MB LV220C	6-43-L22CO-012	
22	REPAIRING BOARD	6-88-M62C5-390	
23	MINI CARD RUBBERPADDED SILICONE LV220C	6-47-L22CS-021	

A.Part Lists

# LV19C/LV19N - Front Cover

Figure A - 8  
LV19C/LV19N -  
Front Cover



ITEM	PART NAME	PART NO
1	CCD BACK COVER MYLAR FR700 LV220C	6-40-L22C1-03
2	SCREW NYL N I CT (1)-PATCH (0)-M4.0*H4.0	6-35-B1120-3R
3	CCD BACK COVER.PC+ABS LV220C	6-42-L22CT-02
4	CCD ROTATE BASE.PC+ABS LV220C	6-42-L22CT-04
5	CCD HANDLE.PC+ABS LV220C	6-42-L22CT-03
6	SCREW M2.5*SL KI NI ICT NY	6-35-B1125-5R
7	DVD/DUAL RW ASS'Y (OPTION)	6-79-L22CO-00
7	CD/MD ASS'Y (OPTION)	6-79-L22CX-01
8	WIRE CABLE FOR CCD TO M/B SP LV220C	6-43-L22CO-03
9	CMOS VIDEO CAMERA (M2A-DV9650-P-505 1.3M)	6-B8-M55GC-61
10	FAN 12V 0.3A (FOR BROTHER/HP)	6-23-AL22C-01
11	WIRE CABLE FOR POWER SWITCH BOARD TO M/B LV220C	6-43-L22CO-04
12	W/O HDD ASS'Y LV220C/N	6-79-L22CJ-01
13	POWER SWITCH BOARD V3.0A LV220C	6-77-L22CS-D03
14	DDD HOUSING.PC+ABS LV220C	6-42-L22CZ-01
15	SCREW M2*SL KI NI ICT NY	6-35-B1120-5R
16	CD-RM TRANSFER BOARD V2.0A LV220C	6-77-L22CN-D02
17	MYLAR BLACK 246*5 PFA 0.125 0.2mm	6-42-L22C1-02
18	SCREW NYL N KI BZ/2 ICT M4.0*H4.2 1+D	6-35-B6130-7R
19	VESA BRACKET SECC LV220C	6-33-L22C2-02
20	SCREW M2.5*SL KI NI ICT NY	6-35-41125-13
21	SUBVIBRATOR MODULE (0.001) LV220C	6-23-5L22C-10
22	AUDIO HOUSING.PC+ABS LV220C	6-42-L22C1-04
23	MYLAR BLACK 246*5 PFA 0.125 0.2mm	6-23-7L22C-02
24	LCD HOUSING MODULE LV220C	6-39-L22C2-01
25	NYLON BLACK 246*5 PFA 0.125 0.2mm	6-23-EL22C-01
26	SCREW M2*SL KI BZ ICT NY (0)-H 1.0*5.0	6-35-B6130-4R
27	WIRE CABLE FOR AUDIO/VIDEO SIGNAL LV220C	6-43-L22C1-01
28	LCD BRACKET SECC LV190C	6-33-L19C1-01
29	SPEAKER MODULE (0.001) LV220C	6-23-5L22C-20
30	22" AU LCD RUBBER/VAS SILICONE LV220C	6-47-L22C1-04
31	CIR BOARD V3.0A LV220C	6-77-L22CH-D03
32	LED BOARD V2.0A LV220C	6-77-L22C4-D02
33	WIRE CABLE FOR CR BOARD TO M/B SP LV220C	6-43-L22CO-02
34	WIRE CABLE FOR LED BOARD TO M/B SP LV220C	6-43-L22CO-05
35	22" AU LCD RUBBER/VAS SILICONE LV220C	6-47-L22C1-03
36	CCD PROTECT.PC LV220C	6-40-L22C1-04
37	CCD PLATE MODULE.AL LV220C	6-33-L22C1-10
38	CCD FRONT COVER MODULE LV220C	6-42-L22CT-10
39	INVERTER MODULE MPT (0.675) LV220C/N	6-76-L22CR-02
40	WIRE CABLE FOR 22" INVERTER TO M/B SP LV220C	6-43-L22CR-01
41	LCD T AU M90 PWH V3 19" VESA+ 185MM	6-50-Q72J5-G0
42	LCD FRONT COVER MODULE LV190C	6-39-L19C1-01
43	TAPE MYLAR (A) MYLAR M550J	6-40-M55J2-01
44	CCD MYLAR T60 LV220C	6-40-L22C1-0A
45	FAN WASHER MYLAR FR700 LV220C	6-40-L22C1-09
46	NYLON BLACK 246*5 PFA 0.125 0.2mm	6-47-L22C1-0C
47	THERMAL PAD TSL-150F3 (0.05*0.15) LV220C	6-47-L22C1-05

# LV19C/LV19N - Back

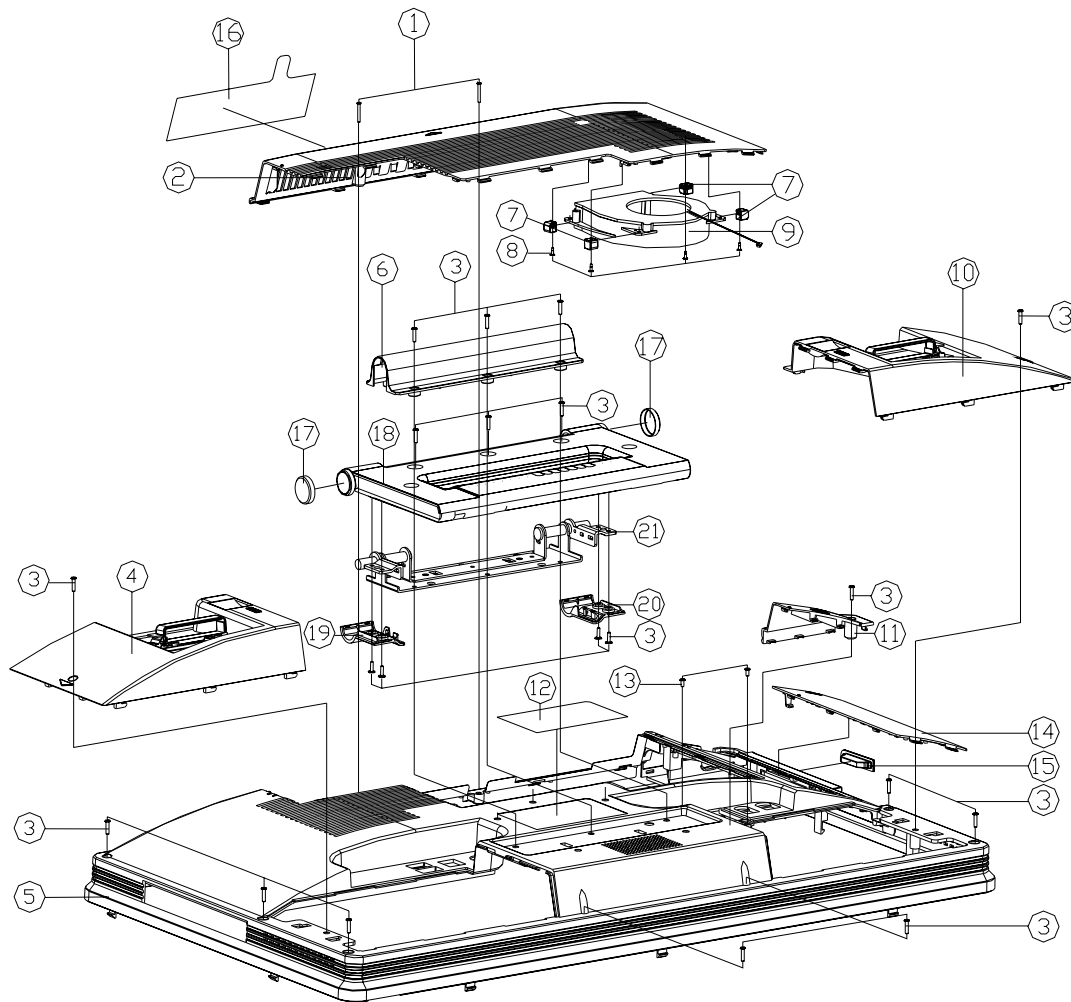


Figure A - 9  
LV19C/LV19N -  
Back

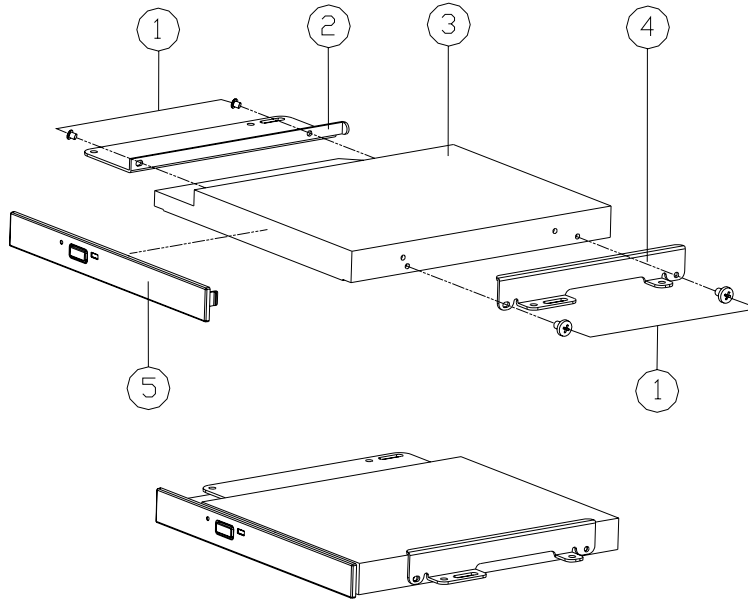
ITEM	PART NAME	PART NO	REMARK
1	SOVEY MESH/PC KI BR/2 ICT WMB 0P55 1x120P(10)	6-35-B6125-190	
2	CPU COVER MODULE LV220C (10)	6-42-L22CS-102	
3	SOVEY MESH/PC KI BR/2 ICT WMB 0P55 1x120P(10)	6-35-B6130-100	
4	HDD COVER MODULE (L) LV220C (10)	6-42-L22CJ-202	
5	LCD BACK COVER MODULE LV220C (10)	6-39-L22C1-022	
6	HINGE BASE HOUSING PC+ABS LV220C (10)	6-42-L22CY-031	
7	FAN RUBBER,SILICONE LV220C (10)	6-47-L22C1-020	
8	SOVEY MESH/PC+ABS 0 (0-4249) SH0500 (10)	6-35-41125-130	
9	MATAL 0.5MM/1.5 BY 1200 0.5MM/1.5 LV220C (10)	6-23-AL22C-020	
10	HDD COVER MODULE (R) LV220C (10)	6-42-L22CJ-102	
11	RF COVER PC+ABS LV220C (10)	6-42-L22C1-022	
12	PRDDUCT LABEL LV220C (10)	6-45-L22C3-010	
12	PRDDUCT LABEL LV220N (10)	6-45-L22N3-010	
12	PRDDUCT LABEL LV190C (10)	6-45-L19C3-010	
12	PRDDUCT LABEL LV190N (10)	6-45-L19N3-010	
13	SOVEY MESH/PC KI N ICT 0P-PA00 0P-PA00-08 (10)	6-35-B1120-3R10	
14	OPTION COVER MODULE LV220C (10)	6-42-L22C1-101	
15	CARD READER RUBBER,SILICON M550G (10)	6-47-M55GE-011	
16	CPU COVER PROTECT MULAR PE LV220C (10)	6-40-L22C8-011	
17	HINGE RING,AL LV220C (10)	6-33-L22CY-010	
18	HINGE SUPPORT MODULE LV220C (10)	6-42-L22CY-101	
19	HINGE COVER (R) PC+ABS LV220C (10)	6-42-L22CY-011	
20	HINGE COVER (L) PC+ABS LV220C (10)	6-42-L22CY-021	
21	HINGE MODULE LV220C (10)	6-33-L22CY-102	

A.Part Lists



## LV19C/LV19N - Combo Drive

Figure A - 10  
LV19C/LV19N -  
Combo Drive



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*2.5L KI BK/Z ICT NY#35 T=0.3	6-35-B6120-2RB	
2	ODD BRACKET (R),SECC LV220C	6-33-L22C1-011	
3	ODD MODULE (R),SECC LV220C	6-85-907PX-C03	
4	ODD BRACKET (L),SECC LV220C	6-33-L22C1-021	
5	COMBO BEZEL MODULE (BK1A382) L295N	6-42-L25NX-100	

# LV19C/LV19N - DVD-Dual Drive

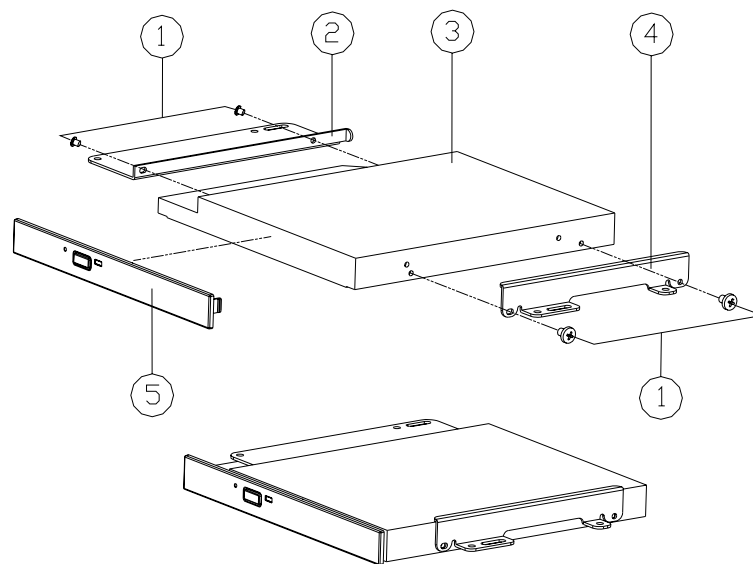


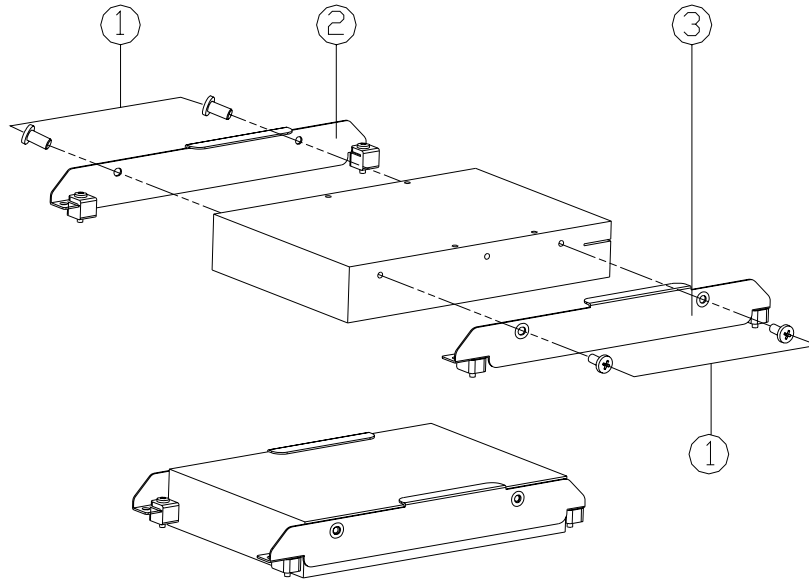
Figure A - 11  
LV19C/LV19N -  
DVD-Dual Drive

ITEM	PART NAME	PART NO	REMARK
1	SCREW M2*2.5L KI BK/Z ICT NY#3.5 T+0.3 無鉛	6-35-B6120-2RB	
2	DDD BRACKET (R),SECC LV220C 無鉛	6-33-L22C1-011	
3	DVD/DUAL DDD COVER (R) (DVD/DUAL DDD COVER) 無鉛	6-85-A078X-C08	
3	DVD/DUAL DDD COVER (L) (DVD/DUAL DDD COVER) 無鉛	6-85-A078X-T02	
4	DDD BRACKET (L),SECC LV220C 無鉛	6-33-L22C1-021	
5	TOSHIBA DUAL DVD/VIDEO SUPER MULTI BEZEL MODULE 無鉛	6-42-L25N0-200	

A.Part Lists

# LV19C/LV19N - HDD

Figure A - 12  
LV19C/LV19N -  
HDD



ITEM	PART NAME	PART NO	REMARK
1	SCREW #6-32*5L B NI ACT 無鉛	6-35-41306-5R0	
2	HDD BRACKET MODULE (L) LV220C 無鉛	6-33-L22CJ-201	
3	HDD BRACKET MODULE (R) LV220C 無鉛	6-33-L22CJ-101	

# LV19C - MB

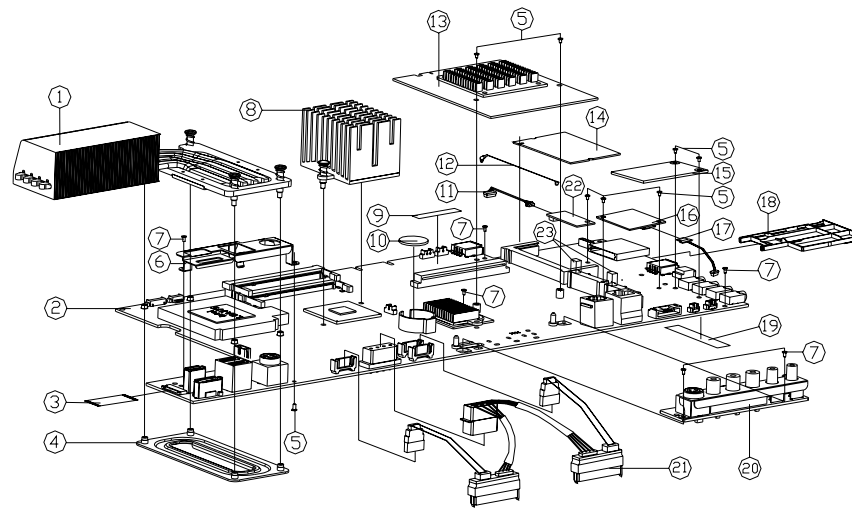


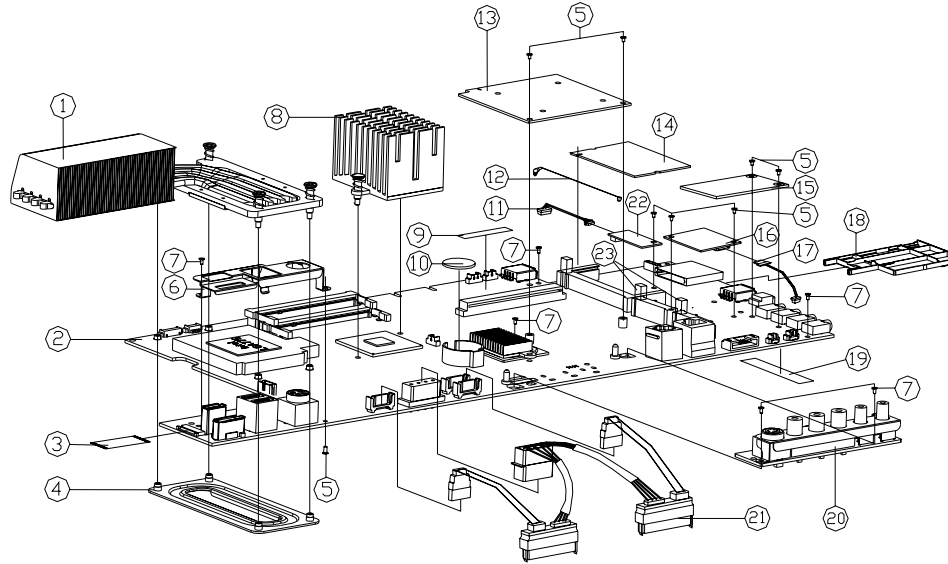
Figure A - 13  
LV19C - MB

ITEM	PART NAME	PART NO	REMARK
1	CPU THERMAL MODUL LV220C	6-31-L22CS-100	
2	MAIN BOARD V30A LV220C	6-77-L22CS-003A	
3	RTC CABLE COB BOARD TO MB LV220C	6-43-L22CC-080	
4	CPU SUPPORT BRACKET LV220C	6-33-L22CS-040	
5	COOL FAN V30C 2000 RPM 40MM DIA	6-35-B1120-5R0	
6	USER BRACKET SPTE LV220C	6-33-L22CS-011	
7	SCREW M2.5X5L KI NI ICT NY	6-35-B1125-5RA	
8	DRAG NORTH BRIDGE HEAT SINK LV220C	6-31-L22CS-020	
9	TAPE NYLON 66 M/L 1.6MM	6-40-M55LJ-010	
10	BATTERY 3V 2000 OHMS	6-23-62015-607	
11	RTC CABLE FOR BATTERY TO MB LV220C	6-43-M55CG-071	
12	DRAG CPU TO CPU THERMAL MODUL LV220C	6-43-L22CT-010	
13	VIA MM 0.8 OF 200-200 H H 1.00T LV220C	6-79-L22CL-001	
13	NON-IT VISA BOARD V10 LV220C	6-77-L22CL-011	
14	DRAG CPU TO CPU THERMAL MODUL LV220C	6-88-L22CT-650	
14	DRAG CPU TO CPU THERMAL MODUL LV220C	6-88-L22CT-652	
15	DRAG CPU TO CPU THERMAL MODUL LV220C	6-88-M66M2-424	
15	DRAG CPU TO CPU THERMAL MODUL LV220C	6-88-M7702-701	
16	DRAG CPU TO CPU THERMAL MODUL LV220C	6-88-M66S1-620	
16	DRAG CPU TO CPU THERMAL MODUL LV220C	6-88-M55S1-531	
17	RTC CABLE FOR MB TO MB LV220C	6-43-L22CC-070	
18	NEW CARD DUMMY FOR M5500	6-42-M55NP-010	
19	PHONE JACK W/LAR.160 LV220C	6-40-L22CS-010	
20	RV BOARD V30A LV220C	6-77-L22CS-003A	
21	DATA AND DRAG-POWER CABLE TO MB LV220C	6-43-L22CC-010	
22	DRAG CPU TO CPU THERMAL MODUL LV220C	6-88-M66S2-390	
23	MB CPU BRACKET(S) SLICING LV220C	6-47-L22CS-021	

A.Part Lists

# LV19N - MB

Figure A - 14  
LV19N - MB



ITEM	PART NAME	PART NO	REMARK
1	CPU THERMAL MODULE LV220C	6-31-L22CS-100	
2	MAIN BOARD V3.0A LV220C	6-77-L22CO-D03A	
3	PTC CABLE COIL WOUND TO MB LV220C	6-43-L22CO-080	
4	CPU SUPPORT BRACKET SECC LV220C	6-33-L22CS-040	
5	SCREEN BRACKET TO W/ AT OPENING (2X-HOLE) 40X40	6-35-B1120-3R0	
6	USER BRACKET SPICE LV220C	6-33-L22CS-011	
7	SCREW M2.5X5L KI NI ICT NY	6-35-B1125-5RA	
8	CORO NORTH BRIDGE HEAT SPREADER LV220C	6-31-L22CS-020	
9	TAPE MYLAR (A)MYLAR M550J	6-40-M55J2-010	
10	BATTERY 3V ZIRCON OXIDE OUTSOURCED	6-23-62015-607	
11	WIRE CABLE FOR ALLIUMIN TO MB W/ WAGO	6-43-M55G0-071	
12	PHONE CABLE FOR TV HEAD (2X) 1.0MM LV220C	6-43-L22CT-010	
13	SECTOR LV220C BOARD V2.0 LV220C	6-77-L22CL-D02	
14	MAIN BOARD V3.0A LV220C	6-77-L22CO-D03A	
14	MAIN BOARD V3.0A LV220C	6-88-L22C7-651	
14	MAIN BOARD V3.0A LV220C	6-88-L22C7-652	
15	W/ WAGO BRIDGE FOR CPU THERMAL MODULE	6-88-M66N2-424	
15	W/ WAGO BRIDGE FOR CPU THERMAL MODULE	6-88-M7702-701	
16	HEAT SINK FOR CPU THERMAL MODULE	6-88-M66S1-620	
16	HEAT SINK FOR CPU THERMAL MODULE	6-88-M55S1-531	
17	WIRE CABLE FOR MB TO MODERN LV220C	6-43-L22CO-070	
18	NEW CARD DUMMY FOR M550N	6-42-M55NP-010	
19	PHONE JACK MYLAR.160 LV220C	6-40-L22CS-010	
20	MAIN BOARD V3.0A LV220C	6-77-L22CO-D03A	
21	DATA W/ WAGO BRIDGE CABLE TO MB LV220C	6-43-L22CO-012	
22	W/ WAGO BRIDGE FOR CPU THERMAL MODULE	6-88-M62P5-390	
23	W/ WAGO BRIDGE FOR CPU THERMAL MODULE	6-47-L22CS-021	

# Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the LV22C/LV22N/LV19C/LV19N computer'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>ICH8 1/3 (PCI, DMI, CPU, IRQ) - Page B - 17</i>	<i>System Power - Page B - 32</i>
<i>Clock Generator - Page B - 3</i>	<i>ICH8 2/3 (LPC, ATA, USB, GPIO) - Page B - 18</i>	<i>3.3V/5V - Page B - 33</i>
<i>CPU - 1 of 3 - Page B - 4</i>	<i>ICH8 3/3 (Power) - Page B - 19</i>	<i>12VS, AC-In - Page B - 34</i>
<i>CPU - 2 of 3 - Page B - 5</i>	<i>JM361 PCI-E TO PATA, eSATA - Page B - 20</i>	<i>1.8V/0.9V - Page B - 35</i>
<i>CPU - 3 of 3 - Page B - 6</i>	<i>CD-ROM, SATA, PC-Beep, LED - Page B - 21</i>	<i>1.5VS,1.05VS - Page B - 36</i>
<i>Intel P965 1/5 CPU Interface - Page B - 7</i>	<i>VGA Fan, CCD, Power OK - Page B - 22</i>	<i>1.2VS/1.25VS - Page B - 37</i>
<i>Intel P965 2/5 PCI-E I/F - Page B - 8</i>	<i>LAN 82566 - Page B - 23</i>	<i>VCORE - Page B - 38</i>
<i>Intel P965 3/5 Memory I/F - Page B - 9</i>	<i>PCI7402 - Page B - 24</i>	<i>LED Board - Page B - 39</i>
<i>Intel P965 4/5 GND - Page B - 10</i>	<i>TV Tuner, CardReader, CIR - Page B - 25</i>	<i>Power Board - Page B - 40</i>
<i>Intel P965 5/5 Power - Page B - 11</i>	<i>ITE IT8512 - Page B - 26</i>	<i>CIR Board - Page B - 41</i>
<i>DDRII SO-DIMM 1/2 - Page B - 12</i>	<i>Mini Card, New Card - Page B - 27</i>	<i>CD-ROM Board - Page B - 42</i>
<i>DDRII SO-DIMM 2/2 - Page B - 13</i>	<i>USB 2.0 - Page B - 28</i>	<i>Video Connector Board - Page B - 43</i>
<i>MXM PCI-E CONN - Page B - 14</i>	<i>AZALIA Codec ALC883/ALC888 - Page B - 29</i>	<i>CRT Connector Board - Page B - 44</i>
<i>BIOS, USB K/B, TPM - Page B - 15</i>	<i>Audio AMP, SRS, Woofer - Page B - 30</i>	
<i>Panel, CPU Fan - Page B - 16</i>	<i>MDC, BT, PWRGD, Inverter Connector - Page B - 31</i>	

*Table B - 1*  
Schematic Diagram



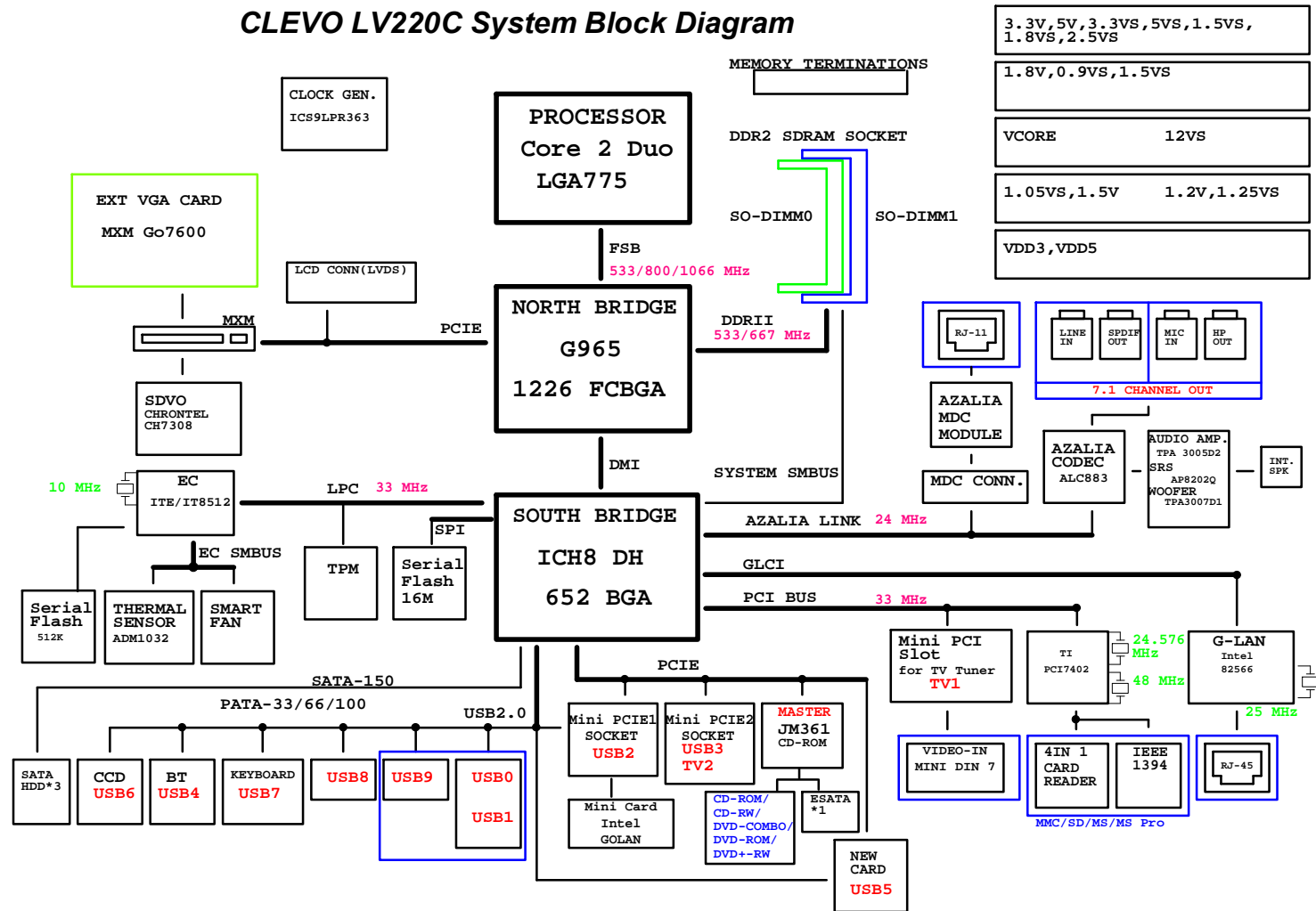
### Version Note

The schematic diagrams in this chapter are based upon version **6-71-LV220C-D03A**. 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 43  
Schematic Diagram

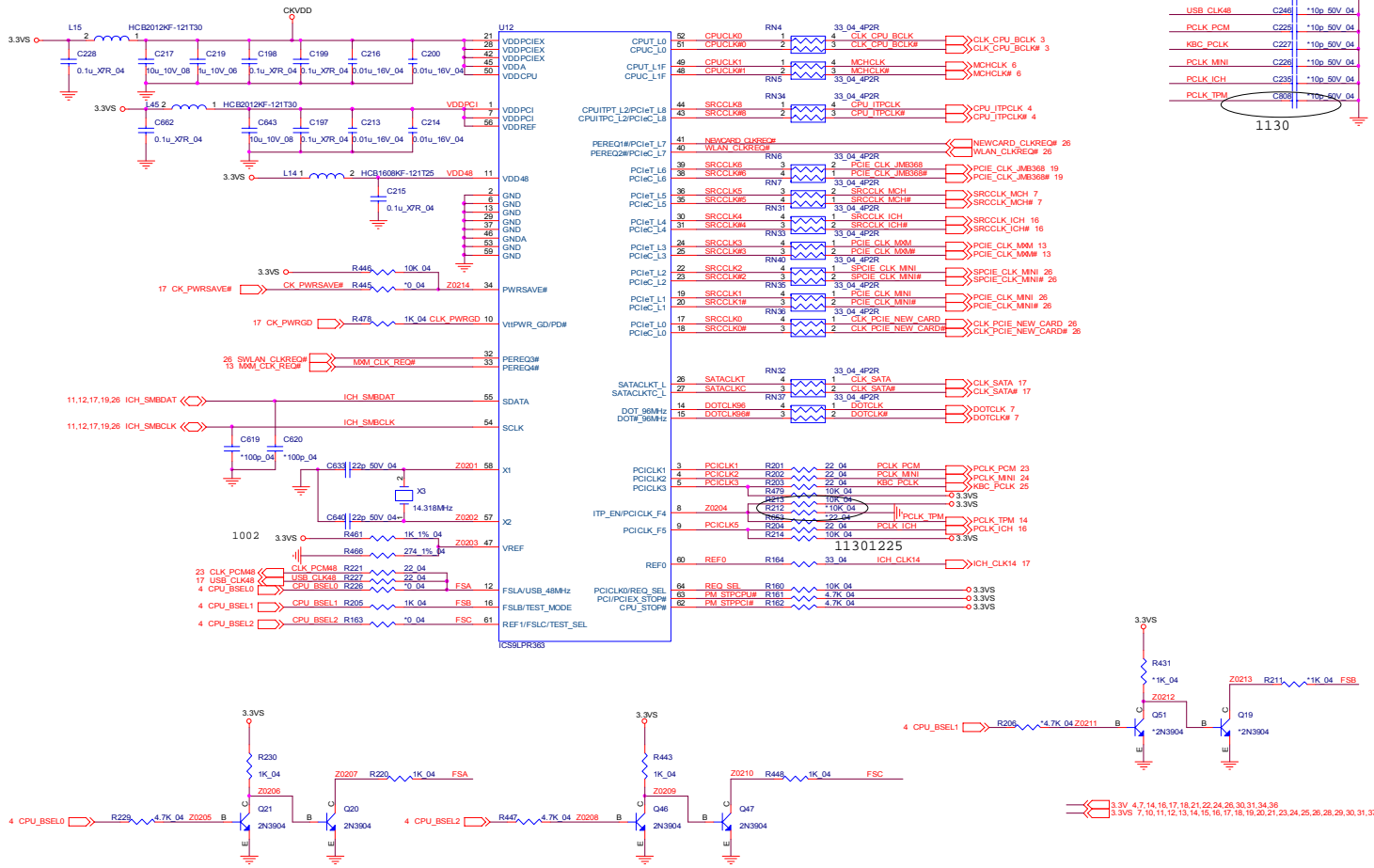
CLEVO LV220C System Block Diagram



B.Schematic Diagrams

# Clock Generator

Sheet 2 of 43  
Clock Generator



B. Schematic Diagrams

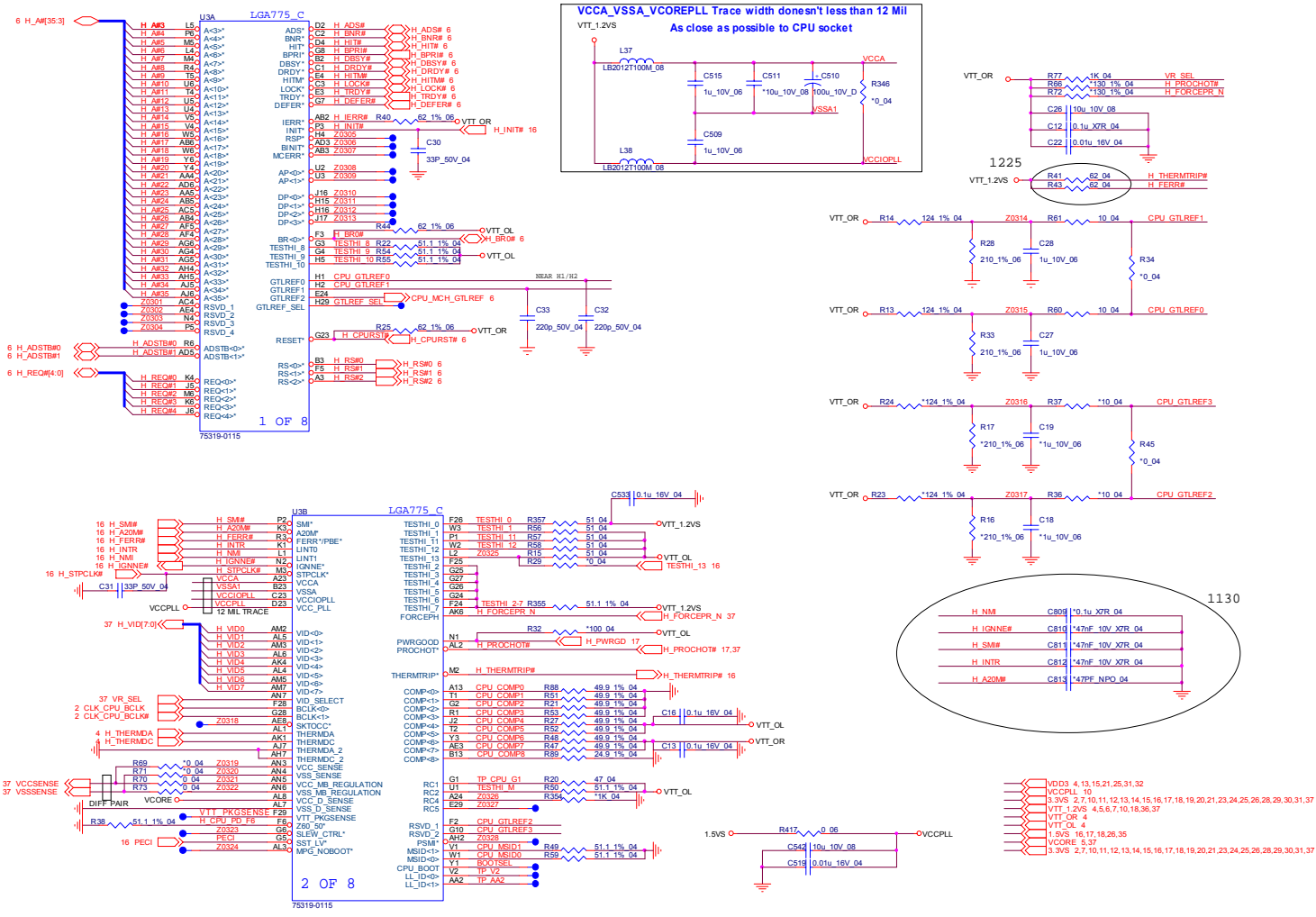


# Schematic Diagrams

## CPU - 1 of 3

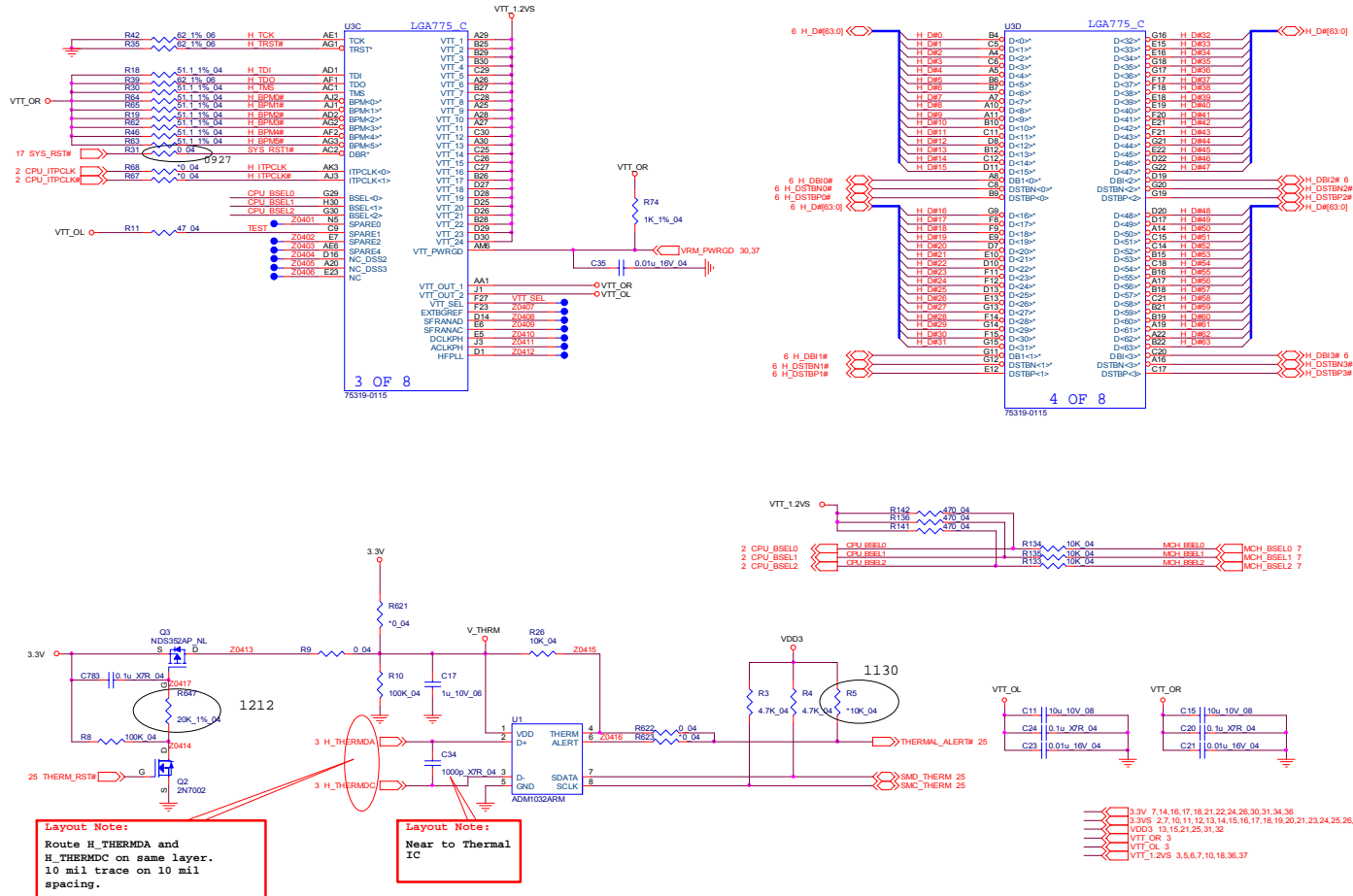
Sheet 3 of 43  
CPU 1 of 3

B.Schematic Diagrams



CPU - 2 of 3

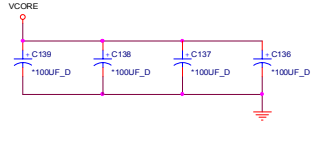
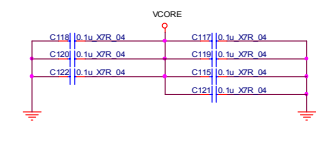
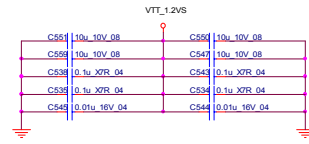
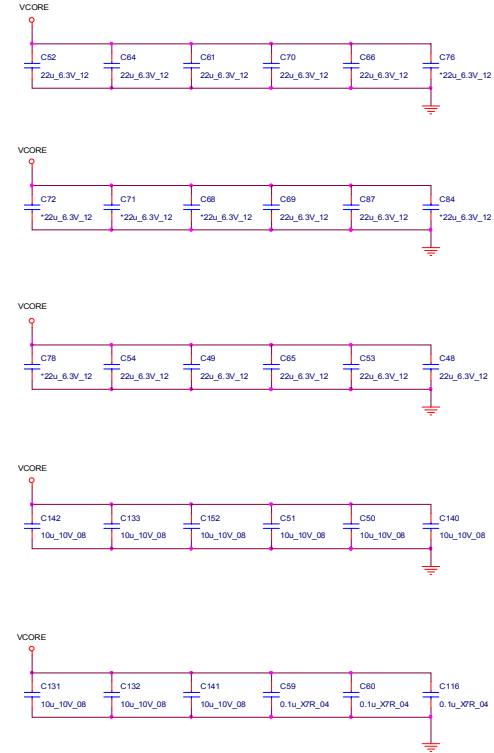
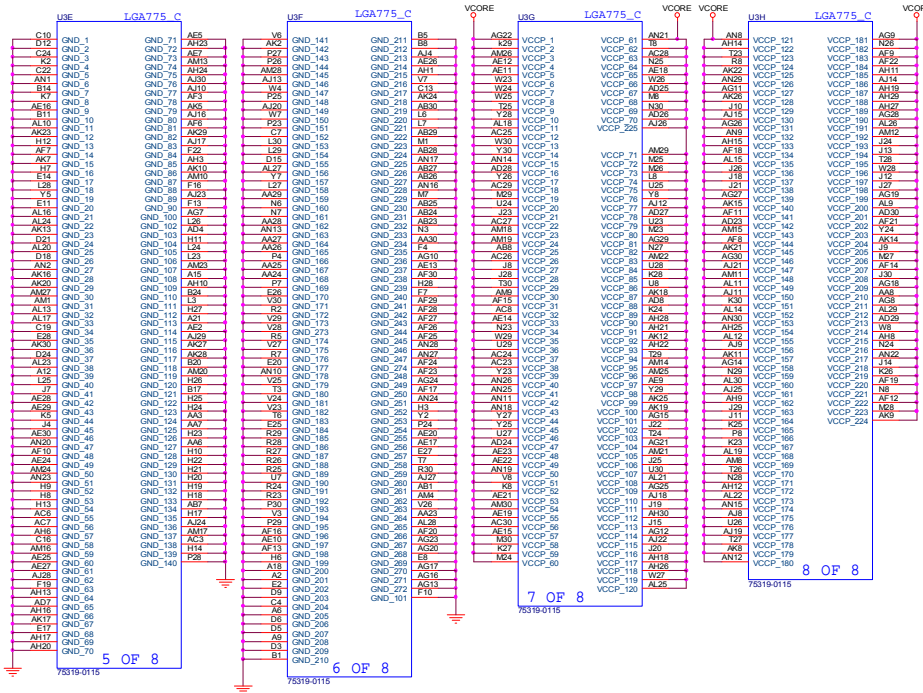
Sheet 4 of 43  
Yonah CPU 2 of 3



# CPU - 3 of 3

Sheet 5 of 43  
Yonah CPU 3 of 3

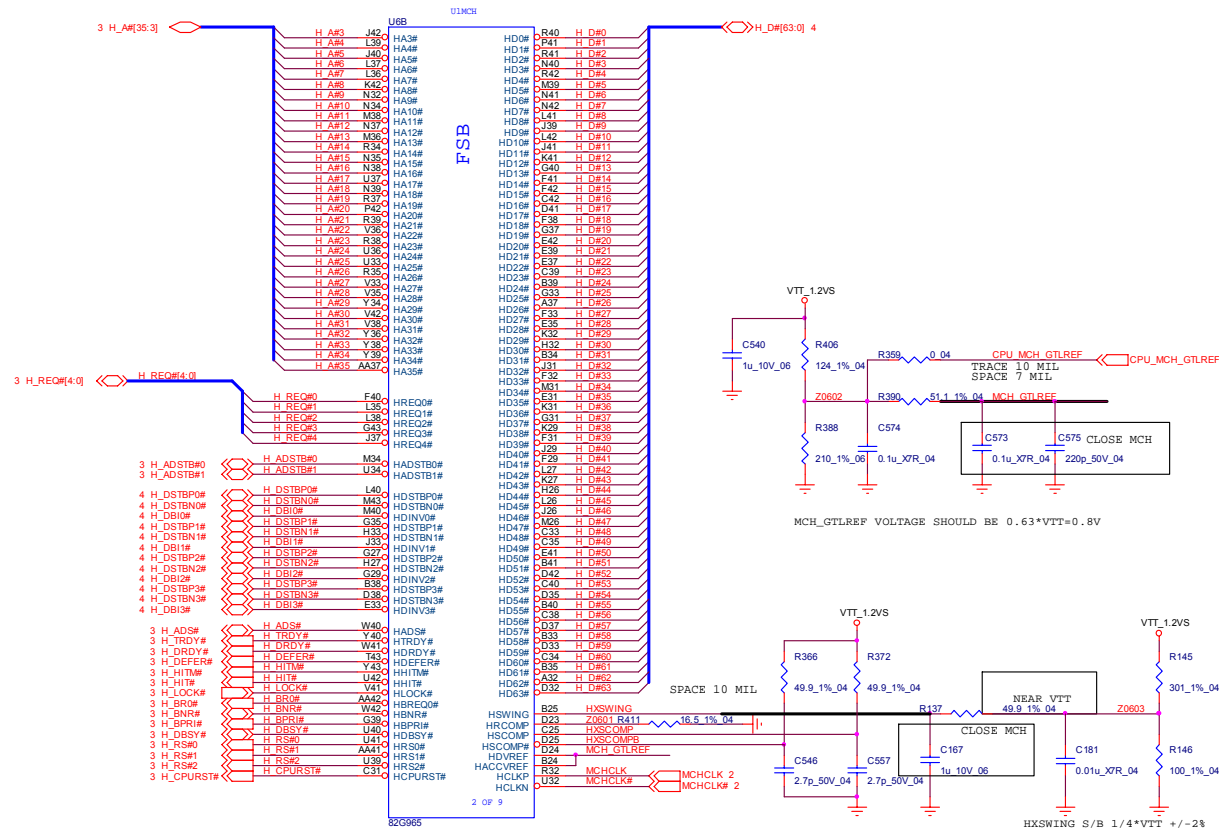
B.Schematic Diagrams



VCCORE 3.37  
VTT\_1,2V5 3.4,6.7,10.18,36,37

# Intel P965 1/5 CPU Interface

Sheet 6 of 43  
Intel P965 1/5  
CPU Interface



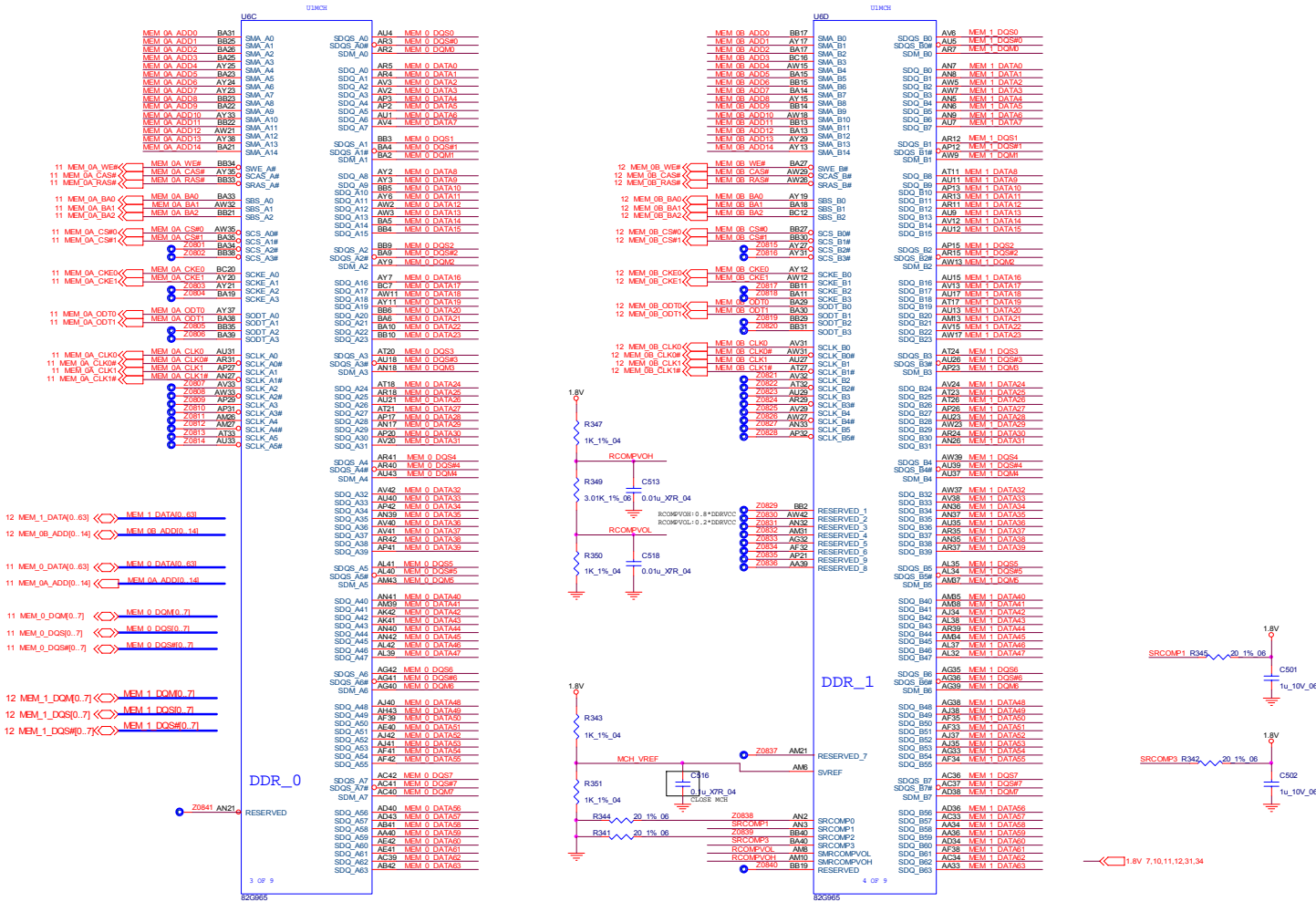
B.Schematic Diagrams



# Intel P965 3/5 Memory I/F

Sheet 8 of 43  
Intel P965 3/5  
Memory I/F

B. Schematic Diagrams

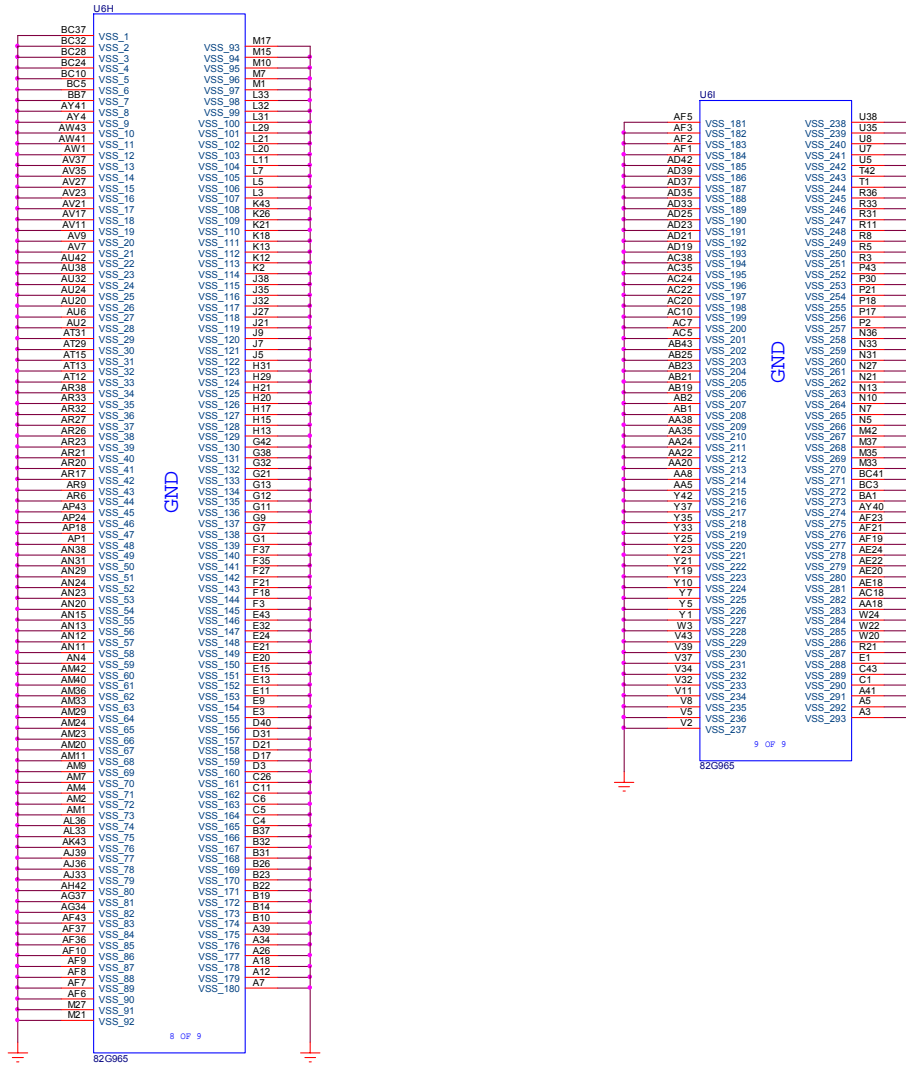


# Schematic Diagrams

## Intel P965 4/5 GND

Sheet 9 of 43  
Intel P965 4/5 GND

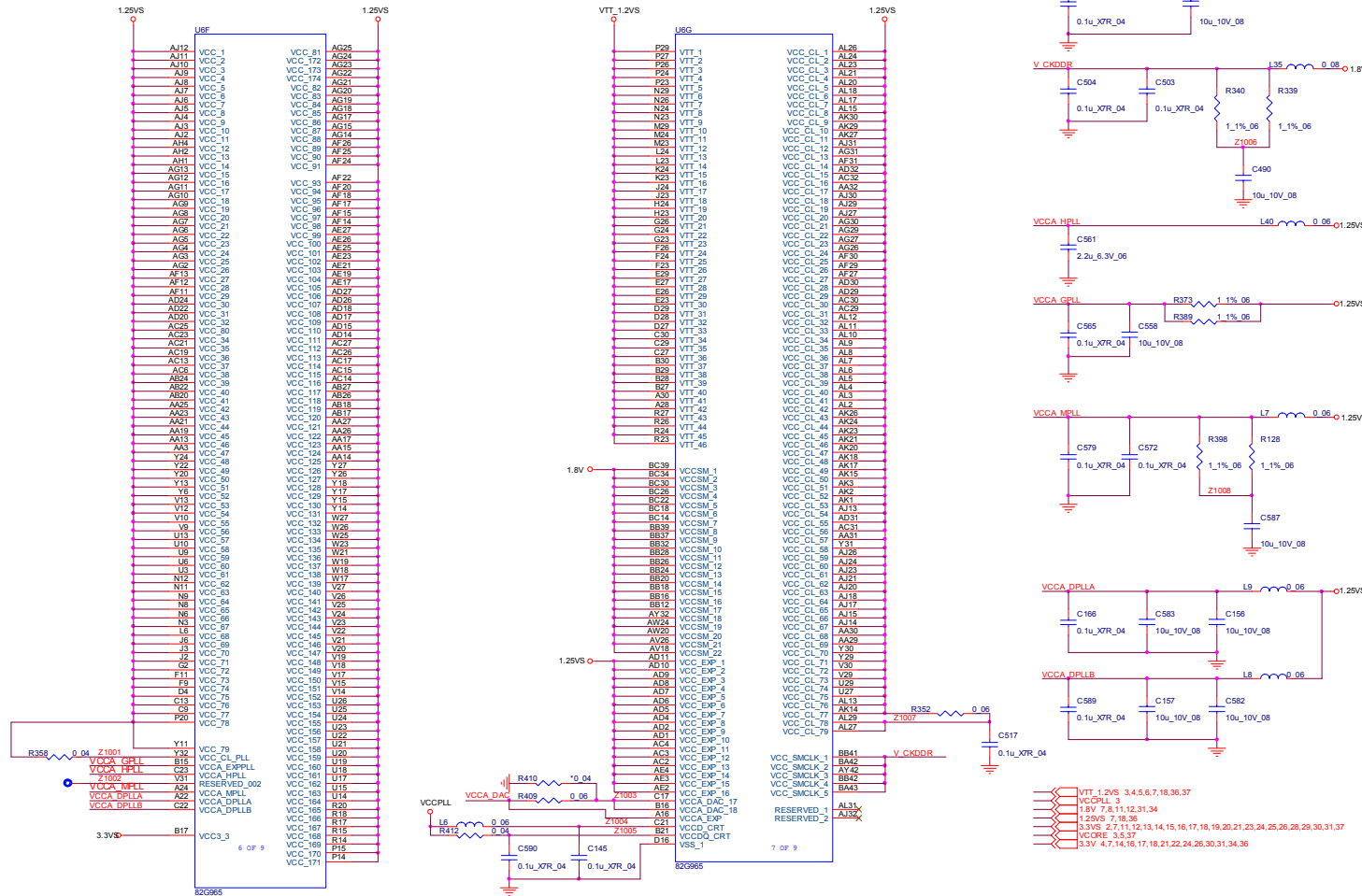
B.Schematic Diagrams



# Intel P965 5/5 Power

Sheet 10 of 43  
Intel P965 5/5 Power

B. Schematic Diagrams





# Schematic Diagrams

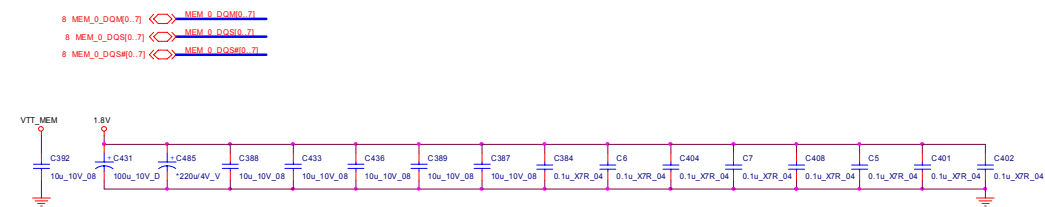
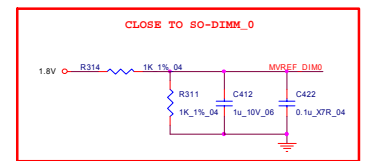
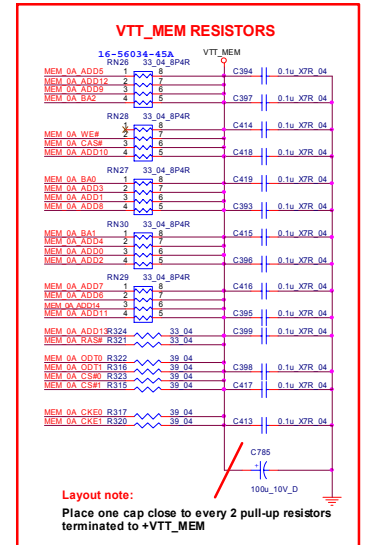
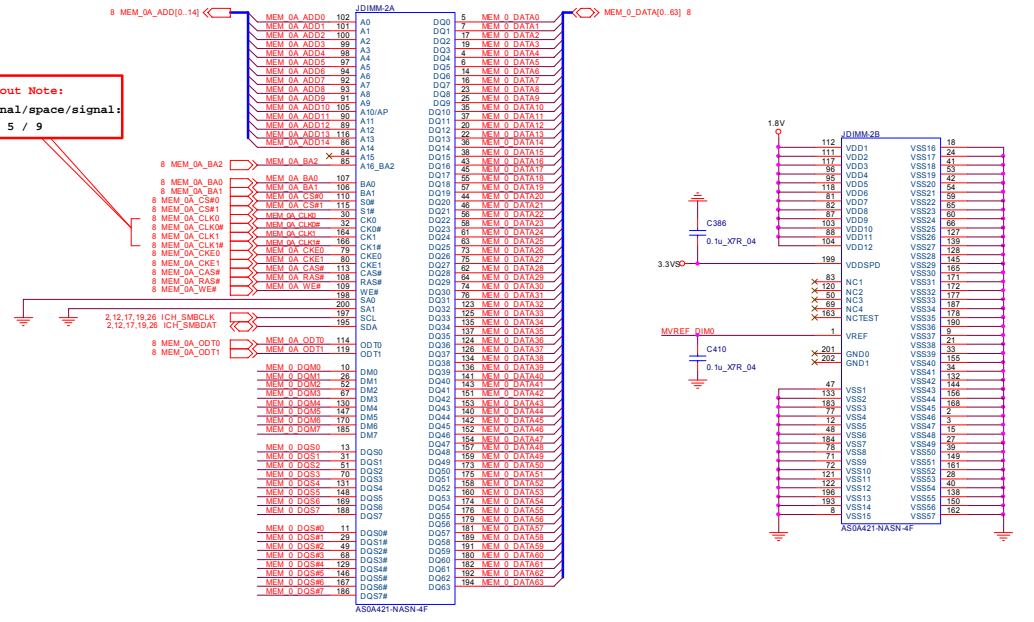
## DDRII SO-DIMM 1/2

Sheet 11 of 43  
DDRII SO-DIMM 1/2

### SO-DIMM 0

B.Schematic Diagrams

**Layout Note:**  
signal/space/signal:  
9 / 5 / 9

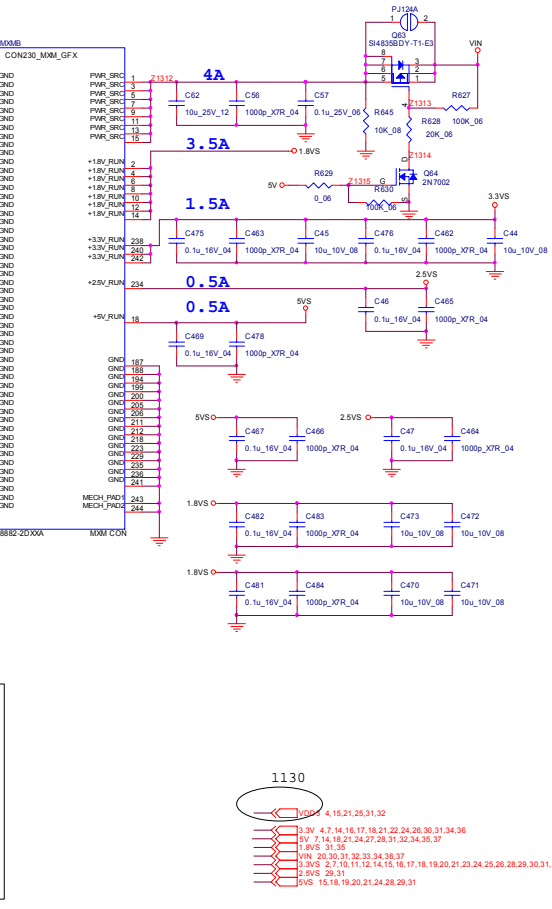
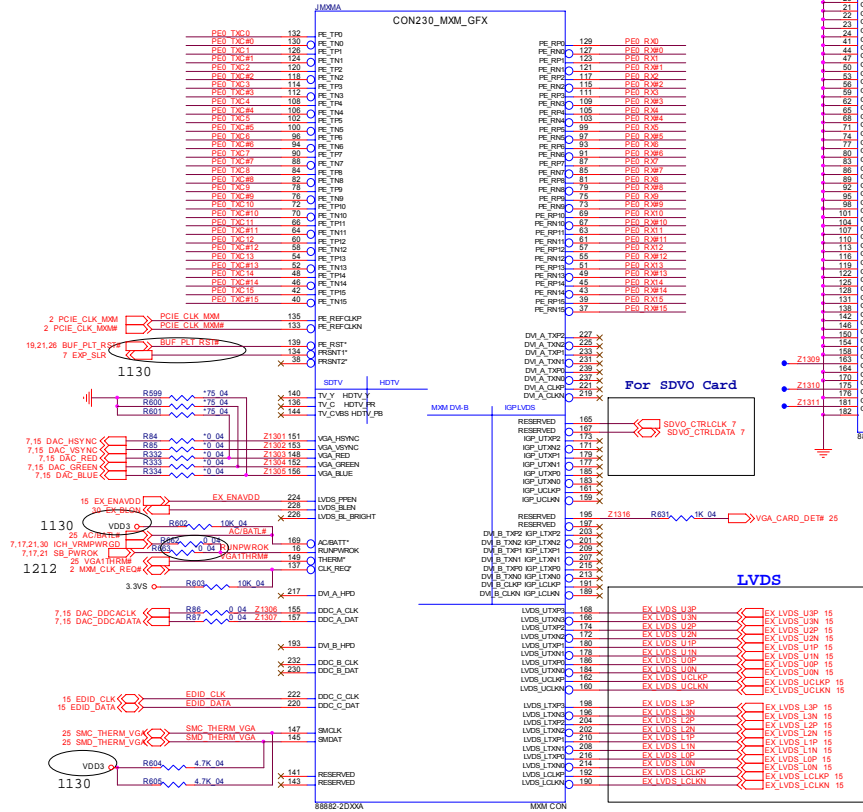


1.8V 7,8,10,12,31,34  
VTT\_MEM 2,7,10,12,14,15,16,17,18,19,20,21,23,34,25,26,28,30,31,37  
VTT\_MEM 12,34



# MXM PCI-E CONN

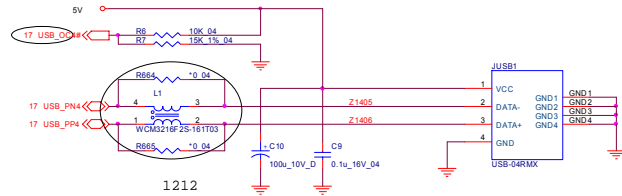
Sheet 13 of 43  
MXM PCI-E CONN



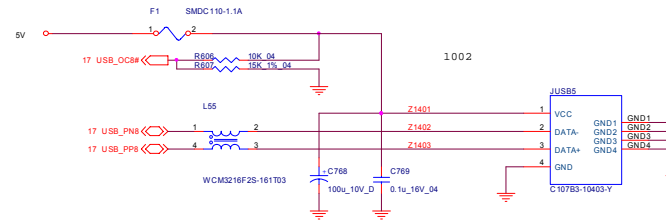
# BIOS, USB K/B, TPM

Sheet 14 of 43  
BIOS, USB K/B, TPM

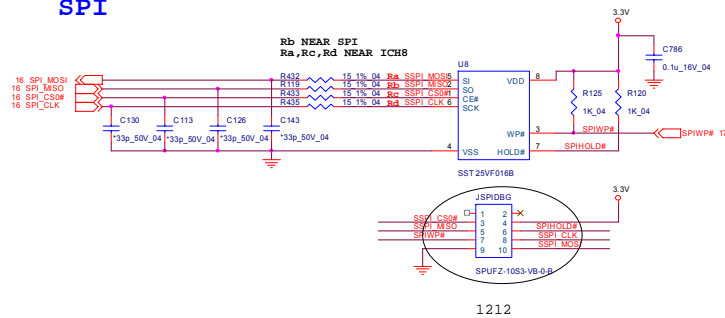
## USB KEYBOARD



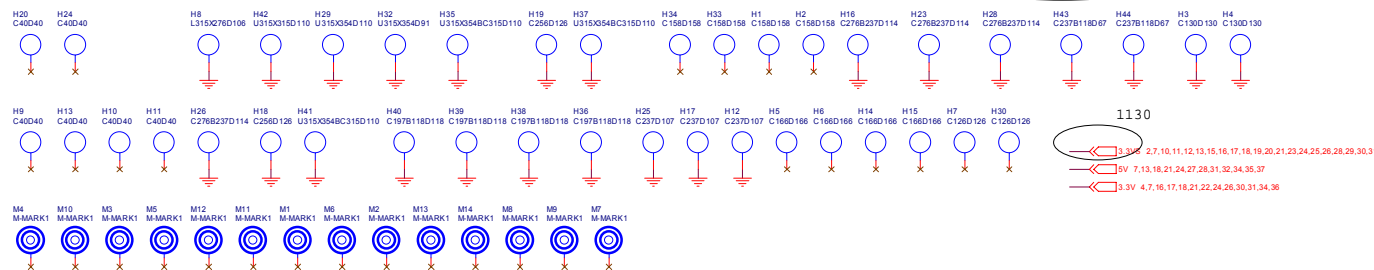
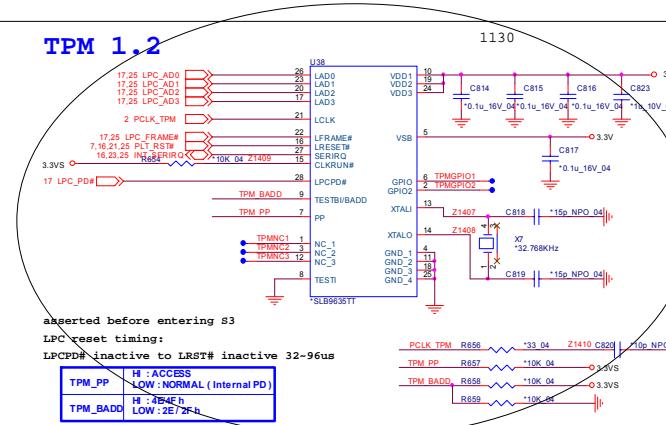
## USB CON.



## SPI



## TPM 1,2

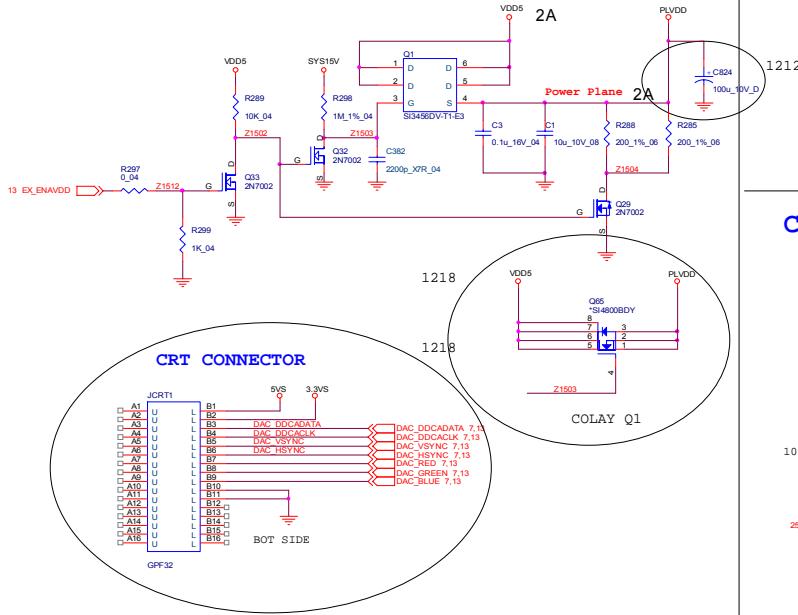


B.Schematic Diagrams

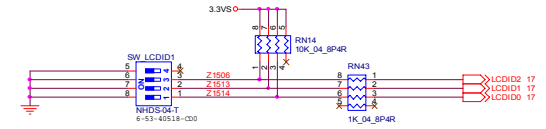
## Panel, CPU Fan

Sheet 15 of 43  
Panel, CPU Fan

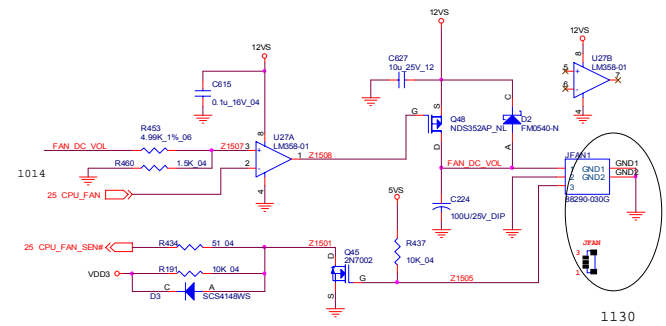
### PANEL



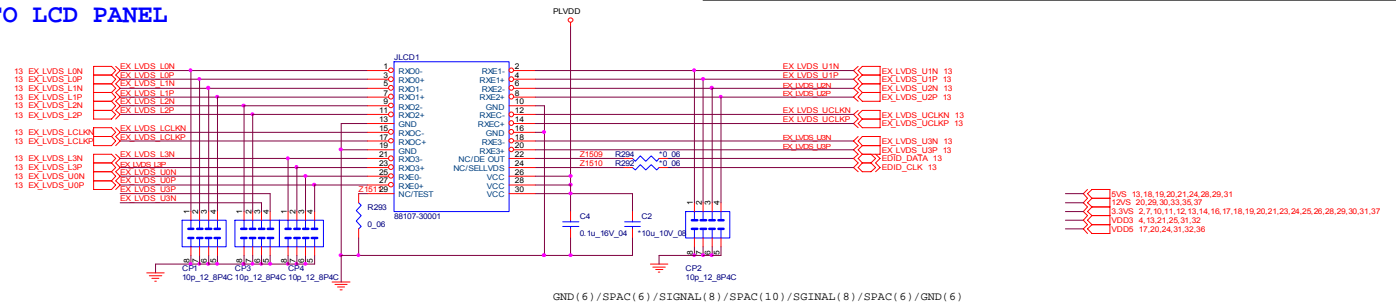
### PANEL ID SELECTOR



### CPU FAN CONTROL



### TO LCD PANEL

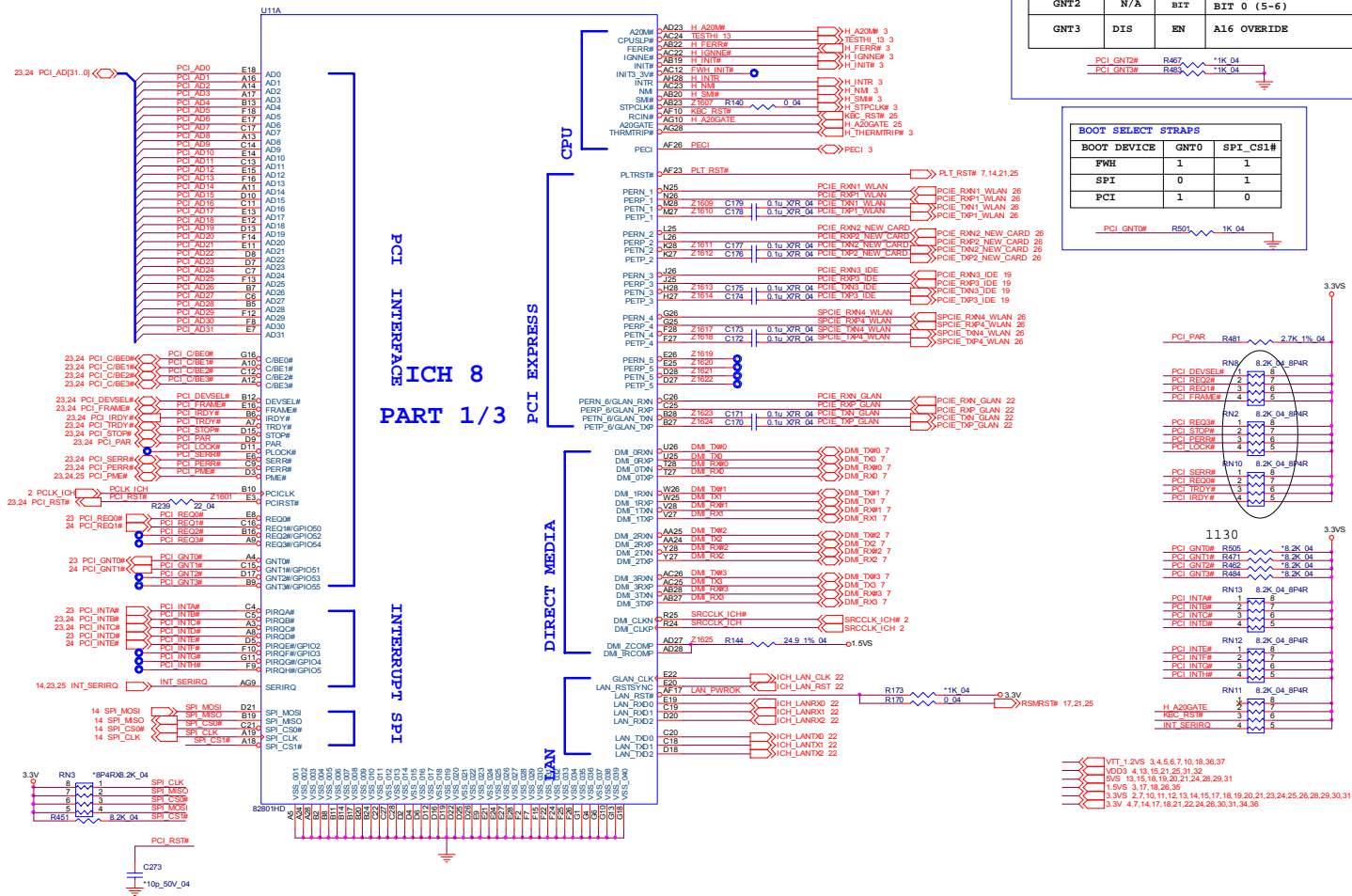


3VS 13,18,19,20,21,24,28,29,31  
 12VS 20,29,30,33,35,37  
 3.3VS 2,7,10,11,12,13,14,16,17,18,19,20,21,23,24,26,28,29,30,31,37  
 VDD3 4,13,21,25,31,32  
 VDD5 17,20,24,31,32,36

# ICH8 1/3 (PCI, DMI, CPU, IRQ)

Sheet 16 of 43  
**ICH8 1/3**  
 (PCI, DMI, CPU, IRQ)

B. Schematic Diagrams



**ICH8 H/W STRAPS**

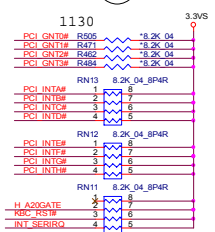
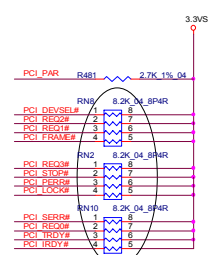
SIGNAL	H	L	DES.
GNT2	N/A	SET BIT	PCIE PORT CONFIG 2 BIT 0 (5-6)
GNT3	DIS	EN	A16 OVERRIDE

PCI\_GNT2# R467 1K 04  
 PCI\_GNT3# R468 1K 04

**BOOT SELECT STRAPS**

BOOT DEVICE	GNT0	SPI_CS1#
FWH	1	1
SPI	0	1
PCI	1	0

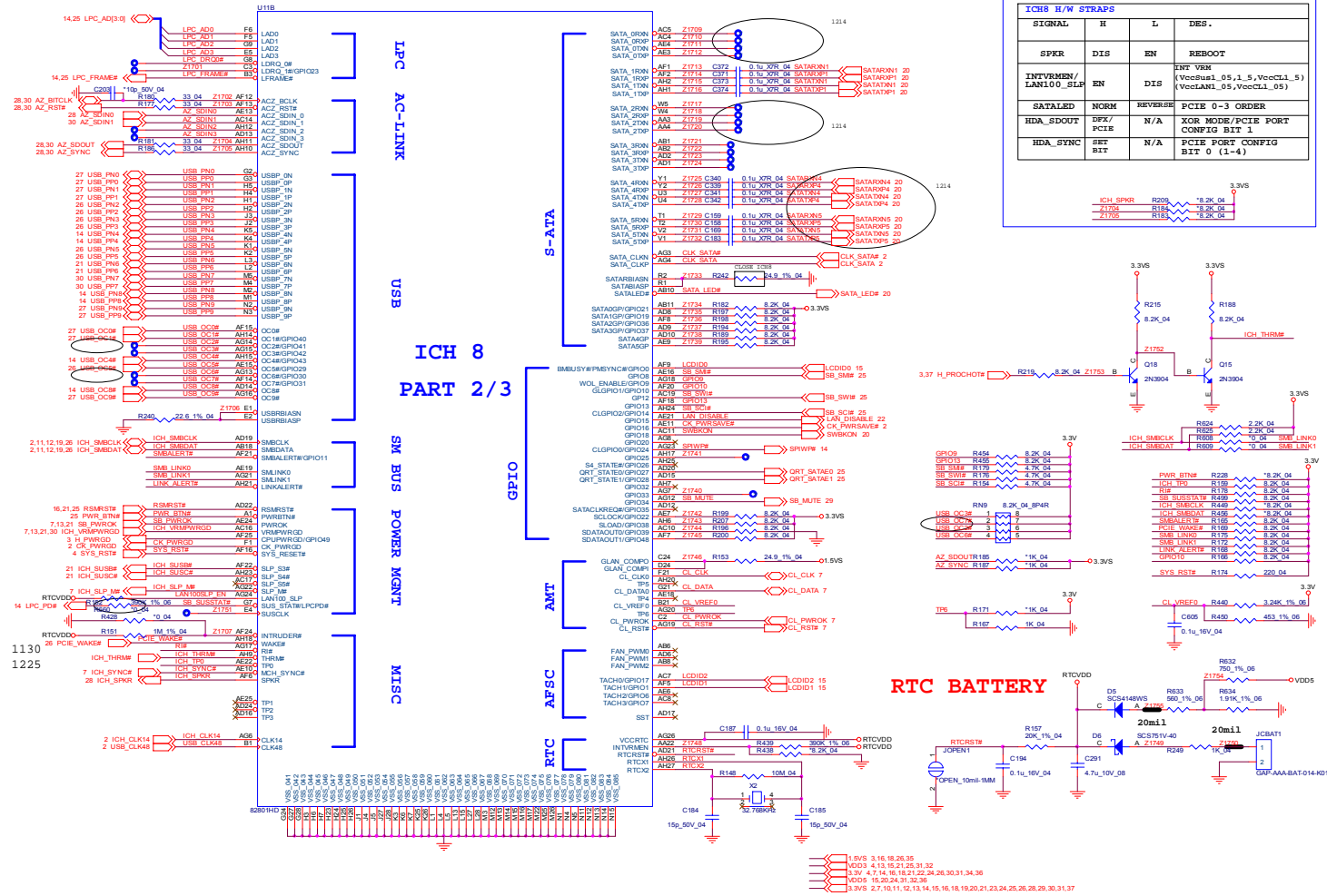
PCI\_GNT0# R501 1K 04



- VTT\_1.2VS 3,4,5,6,7,10,18,36,37
- VDD3 4,15,16,21,26,31,32
- 5VS 15,16,18,20,21,24,26,29,31
- 1VS 3,7,18,26,36
- 3.3VS 5,7,10,11,12,13,14,15,17,18,19,20,21,23,24,25,26,28,29,30,31,37
- 3.3V 4,7,14,17,18,21,22,24,26,30,31,34,36

# ICH8 2/3 (LPC, ATA, USB, GPIO)

Sheet 17 of 43  
ICH8 2/3  
(LPC, ATA, USB,  
GPIO)

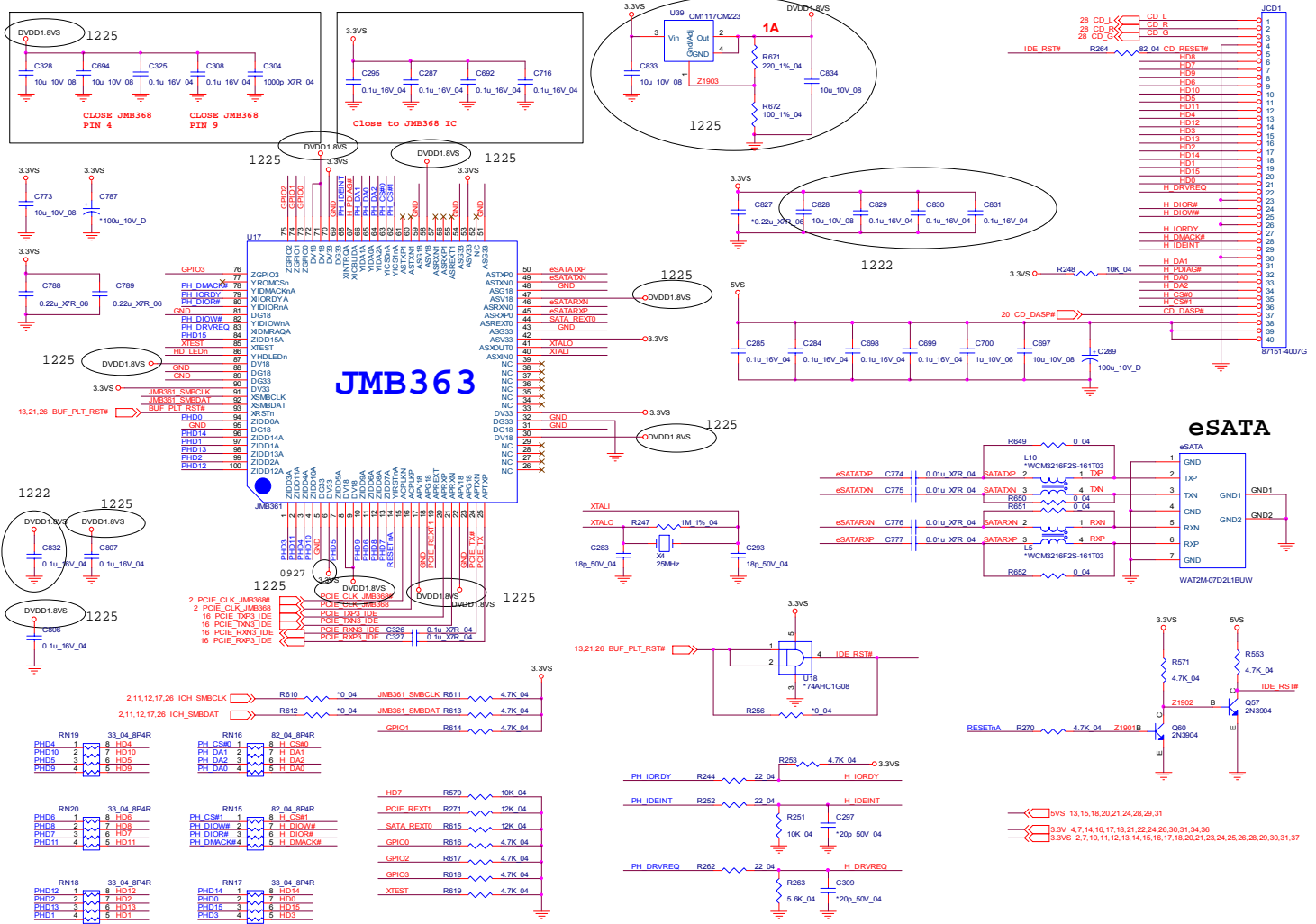






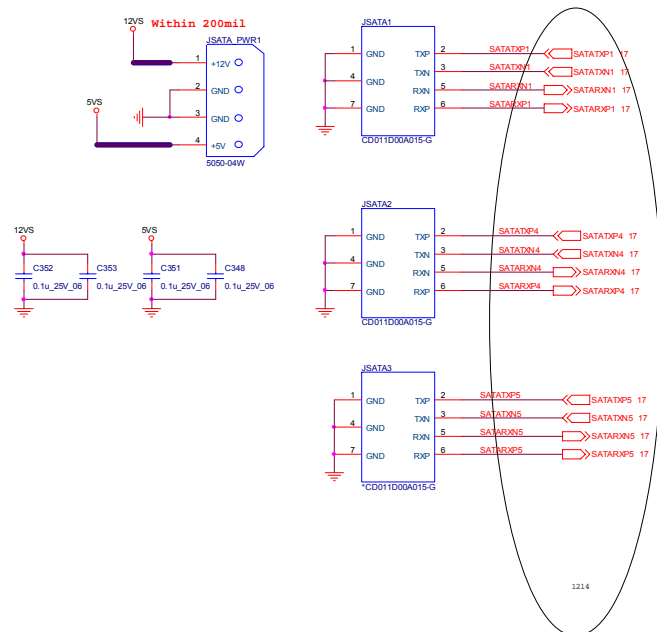
# JM361 PCI-E TO PATA, eSATA

Sheet 19 of 43  
JM361 PCI-E TO  
PATA, eSATA

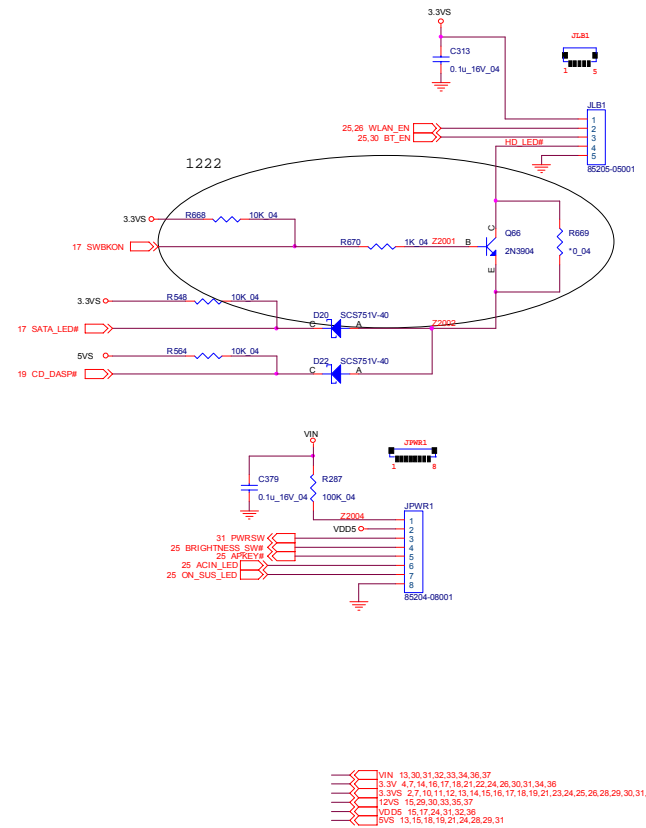


# CD-ROM, SATA, PC-Beep, LED

## SATA HDD



## LED

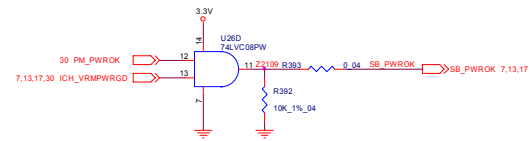
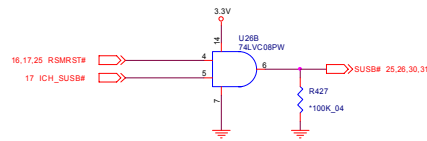
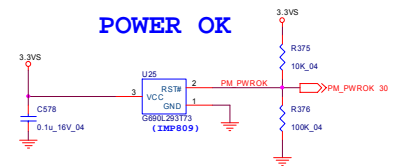
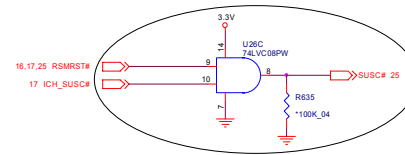
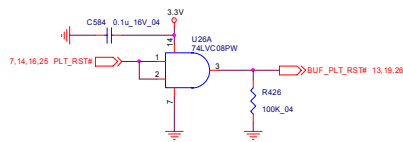
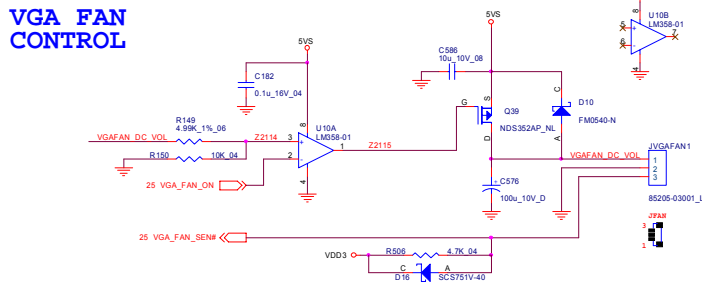
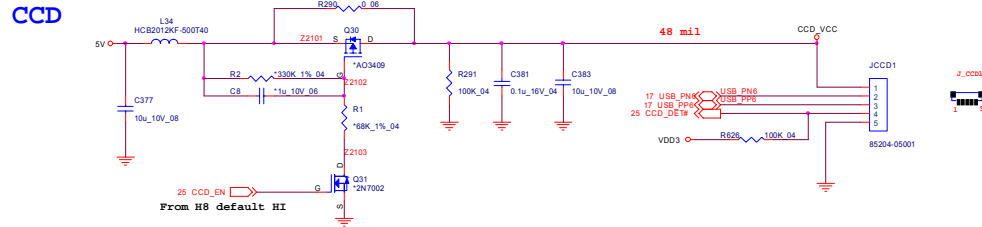


Sheet 20 of 43  
CD-ROM, SATA,  
PC-Beep, LED

B. Schematic Diagrams

# VGA Fan, CCD, Power OK

Sheet 21 of 43  
VGA Fan, CCD,  
Power OK

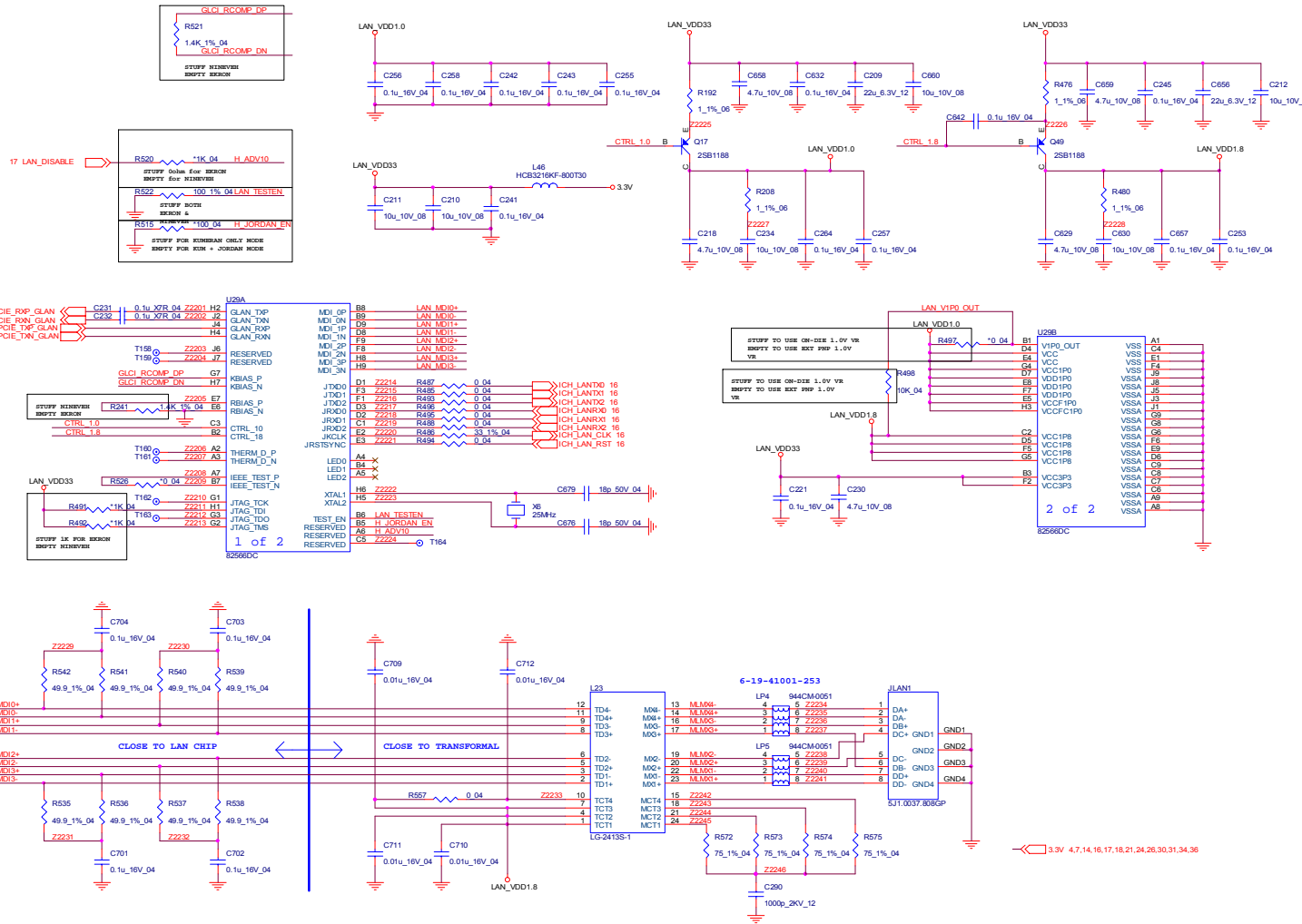


- 5V 7, 13, 14, 18, 24, 27, 28, 31, 32, 34, 35, 37
- 3.3V 4, 7, 14, 16, 17, 18, 22, 24, 26, 30, 31, 34, 36
- VDD5 15, 17, 20, 24, 31, 32, 36
- VDD3 4, 13, 15, 23, 31, 32
- 3.3VS 2, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 28, 29, 30, 31, 37
- 5VS 10, 15, 18, 19, 20, 24, 26, 29, 31

B.Schematic Diagrams

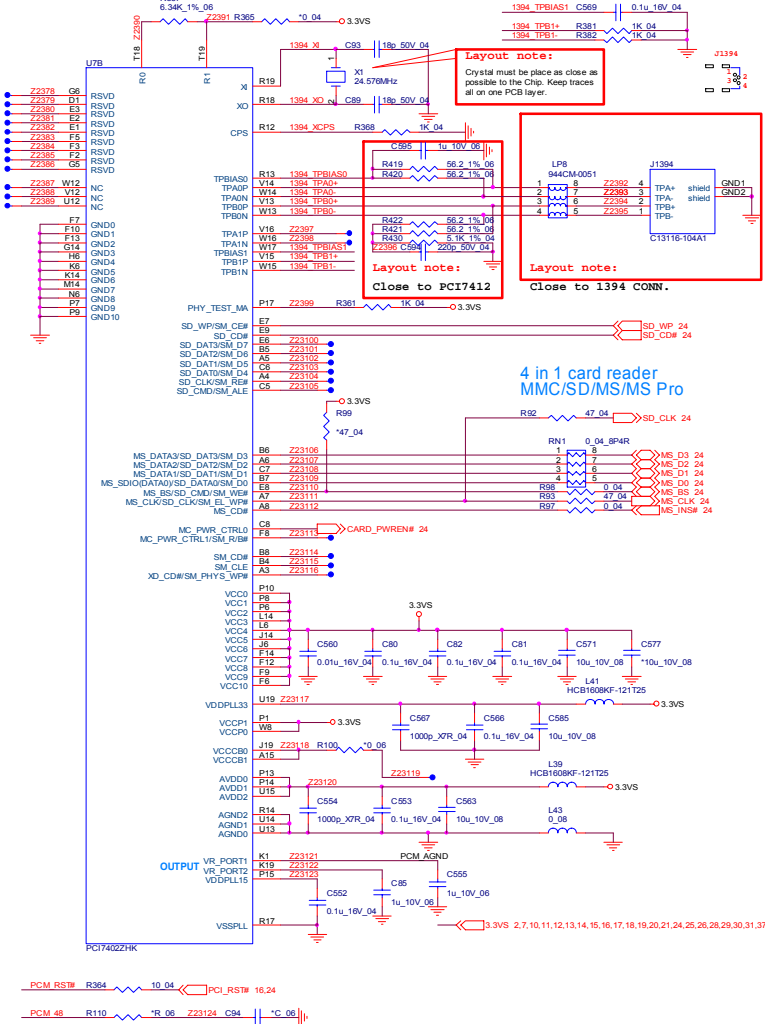
# LAN 82566

Sheet 22 of 43  
LAN 82566



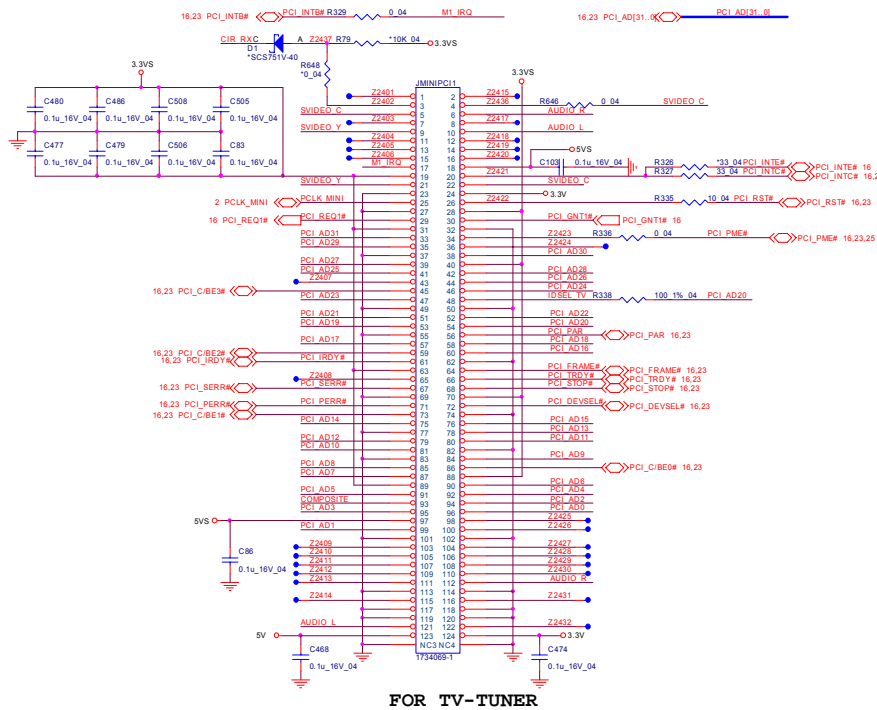
# PCI7402

Sheet 23 of 43  
PCI7402

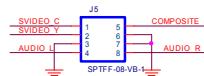


# TV Tuner, CardReader, CIR

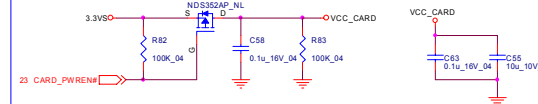
Sheet 24 of 43  
TV Tuner,  
CardReader, CIR



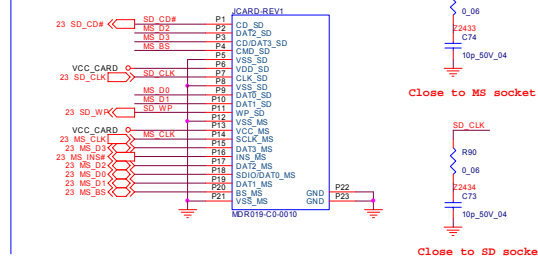
## VIDEO CONNECTOR



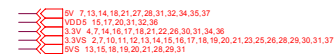
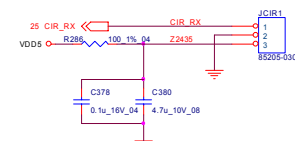
## Card Reader Power



## 4 IN 1 SOCKET SD/MMC/MS/MS Pro



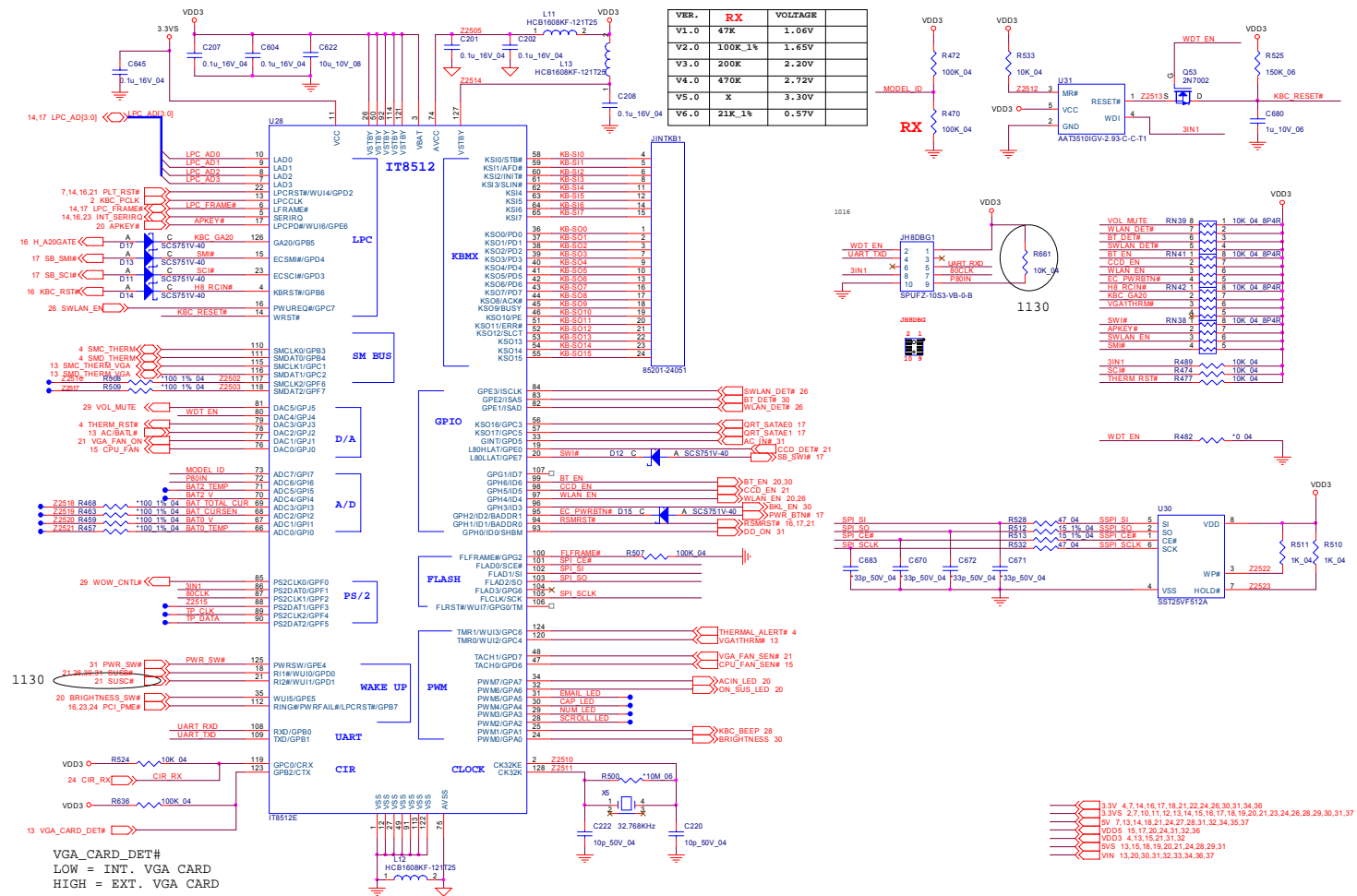
## CIR



B.Schematic Diagrams

# ITE IT8512

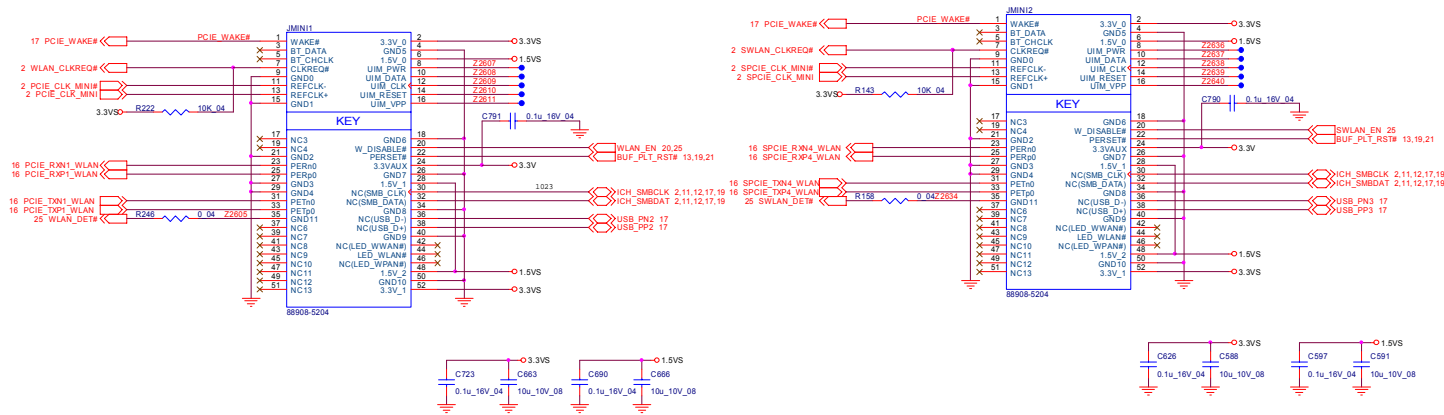
Sheet 25 of 43  
ITE IT8512



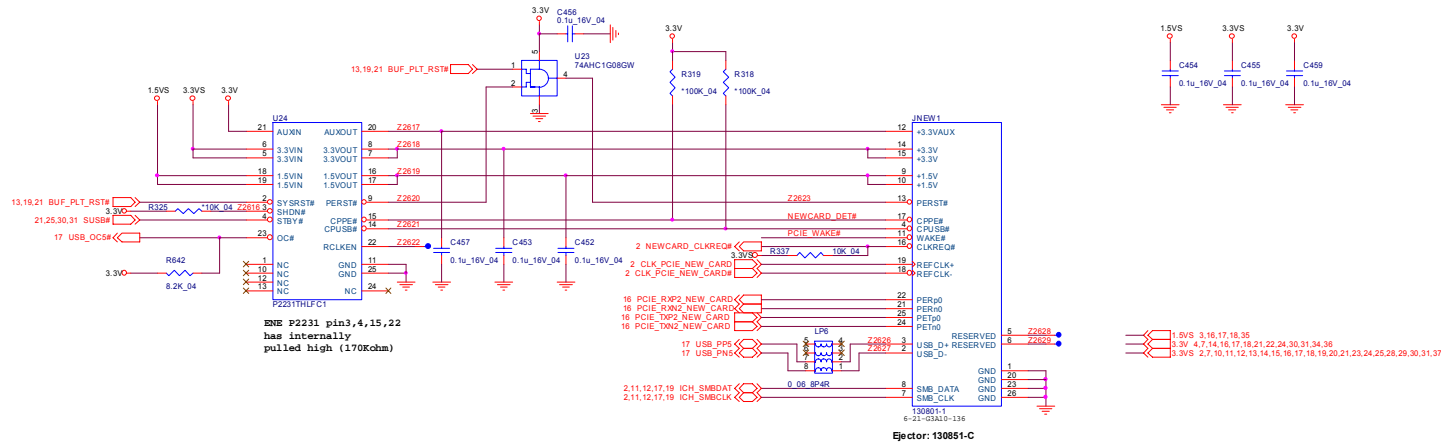
# Mini Card, New Card

Sheet 26 of 43  
Mini Card,  
New Card

## MINI CARD



## NEW CARD



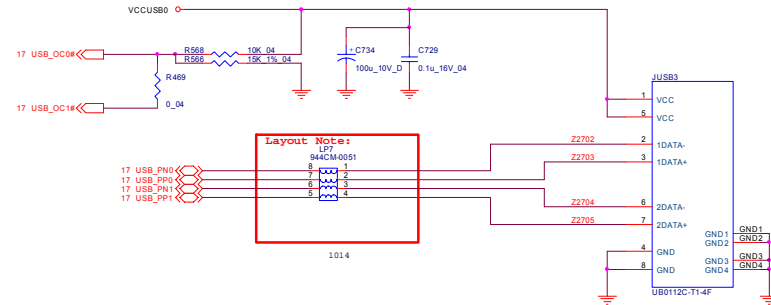
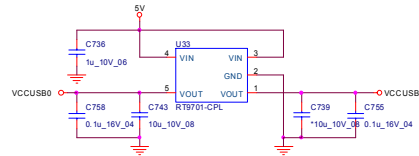
B. Schematic Diagrams



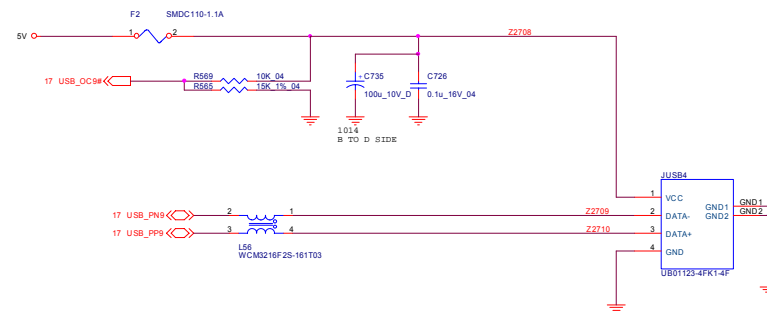
# USB 2.0

Sheet 27 of 43  
USB 2.0

USB 2.0 0,1



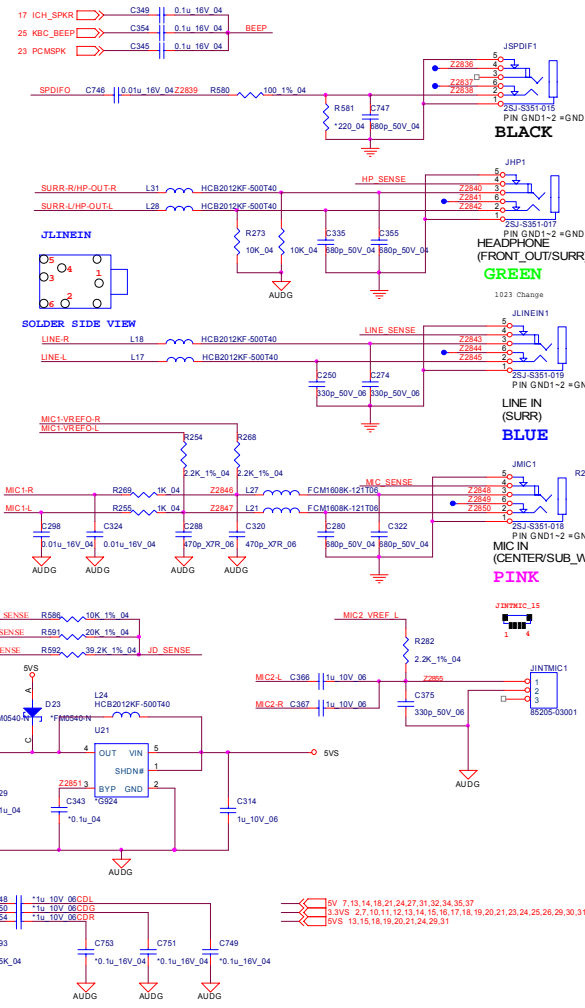
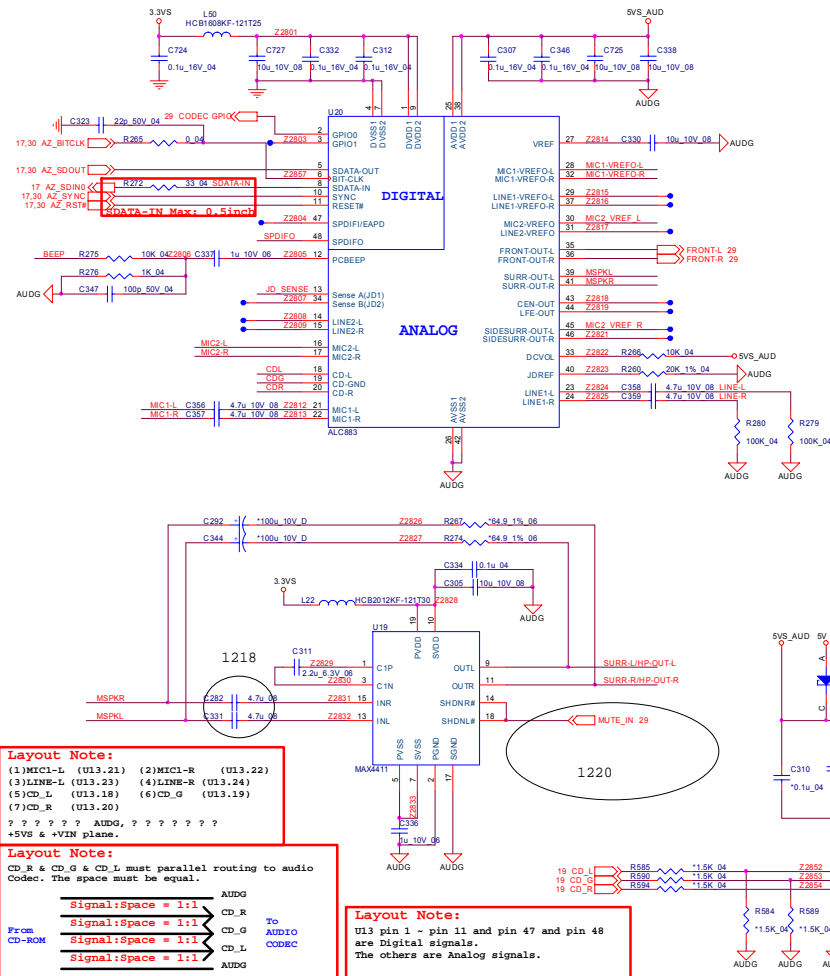
USB 2.0 9



5V 7,13,14,18,21,24,28,31,32,34,35,37

# AZALIA Codec ALC883/ALC888

Sheet 28 of 43  
AZALIA Codec  
ALC883/ALC888

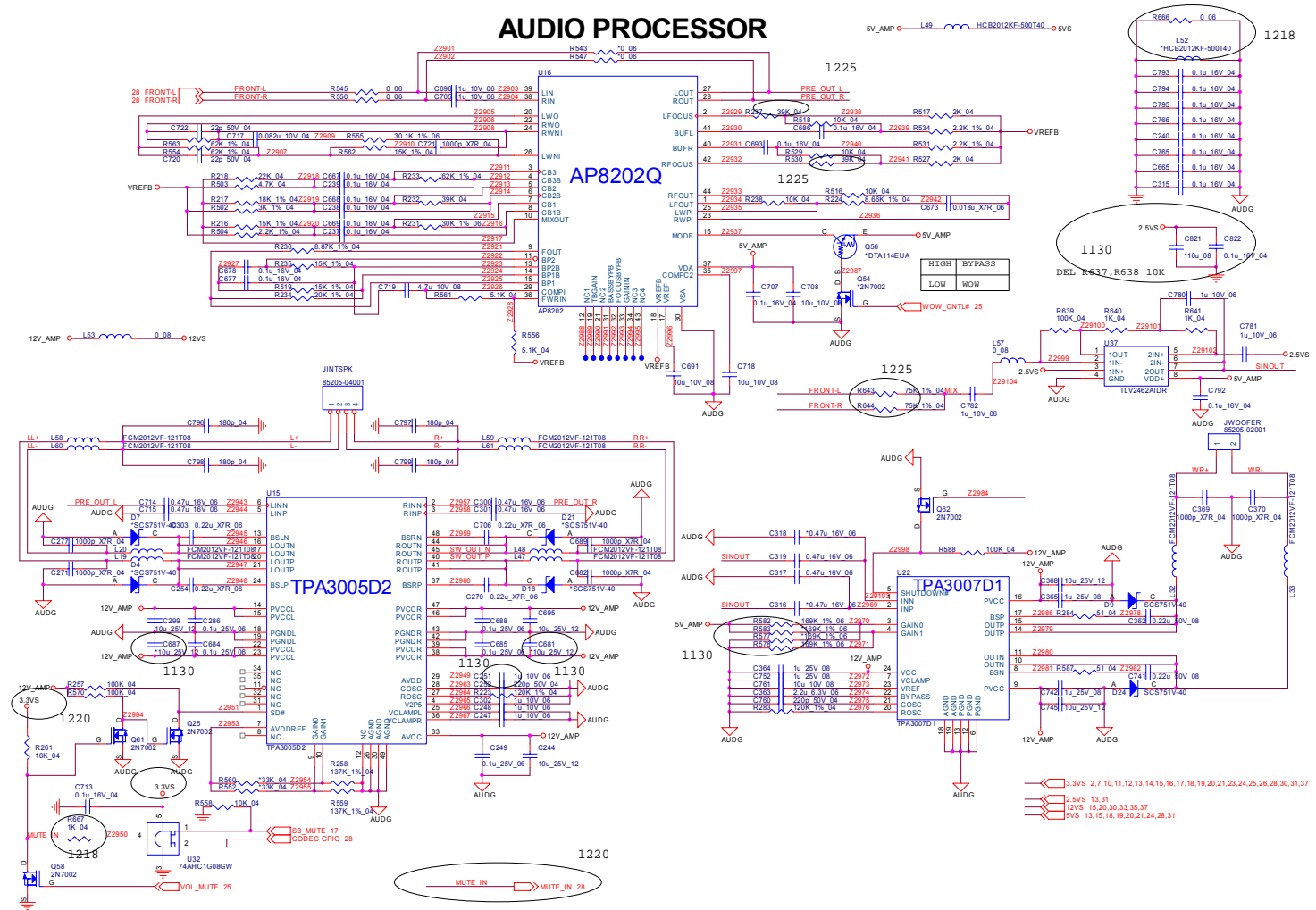


B.Schematic Diagrams

# Audio AMP, SRS, Woofer

Sheet 29 of 43  
Audio AMP, SRS,  
Woofer

B.Schematic Diagrams

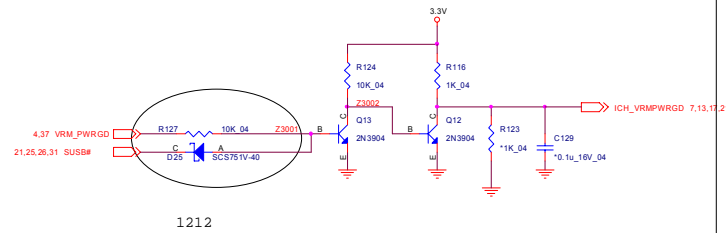


B - 30 Audio AMP, SRS, Woofer

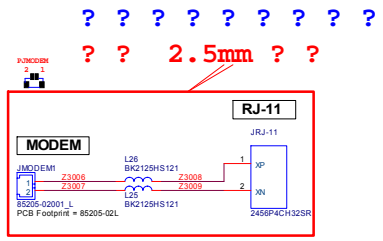
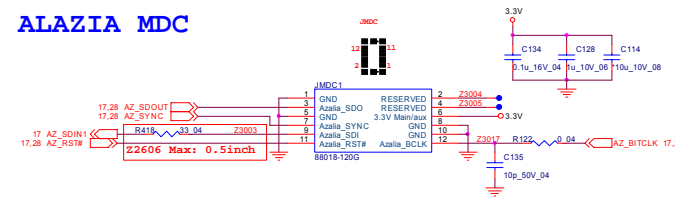
# MDC, BT, PWRGD, Inverter Connector

Sheet 30 of 43  
MDC, BT, PWRGD,  
Inverter Connector

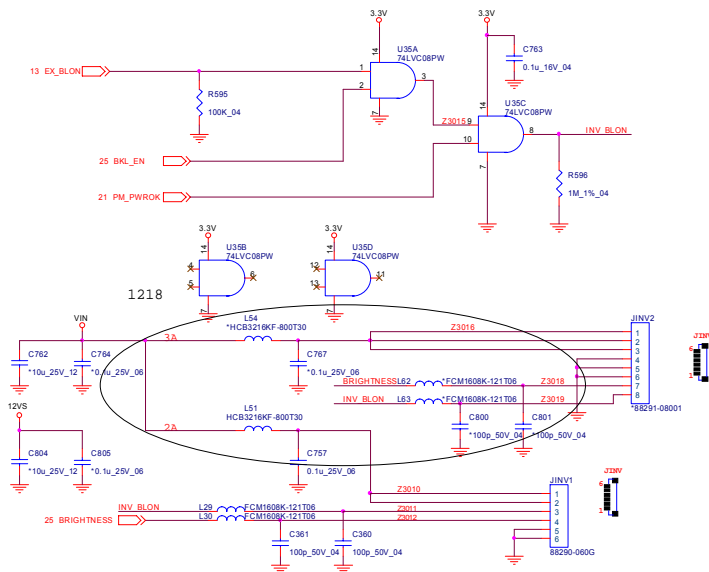
## VCORE PWRGD



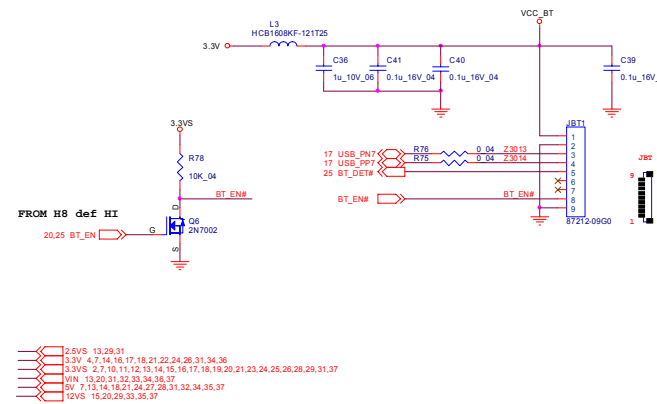
## ALAZIA MDC



## INVERTER CONNECTOR



## USB BLUETOOTH

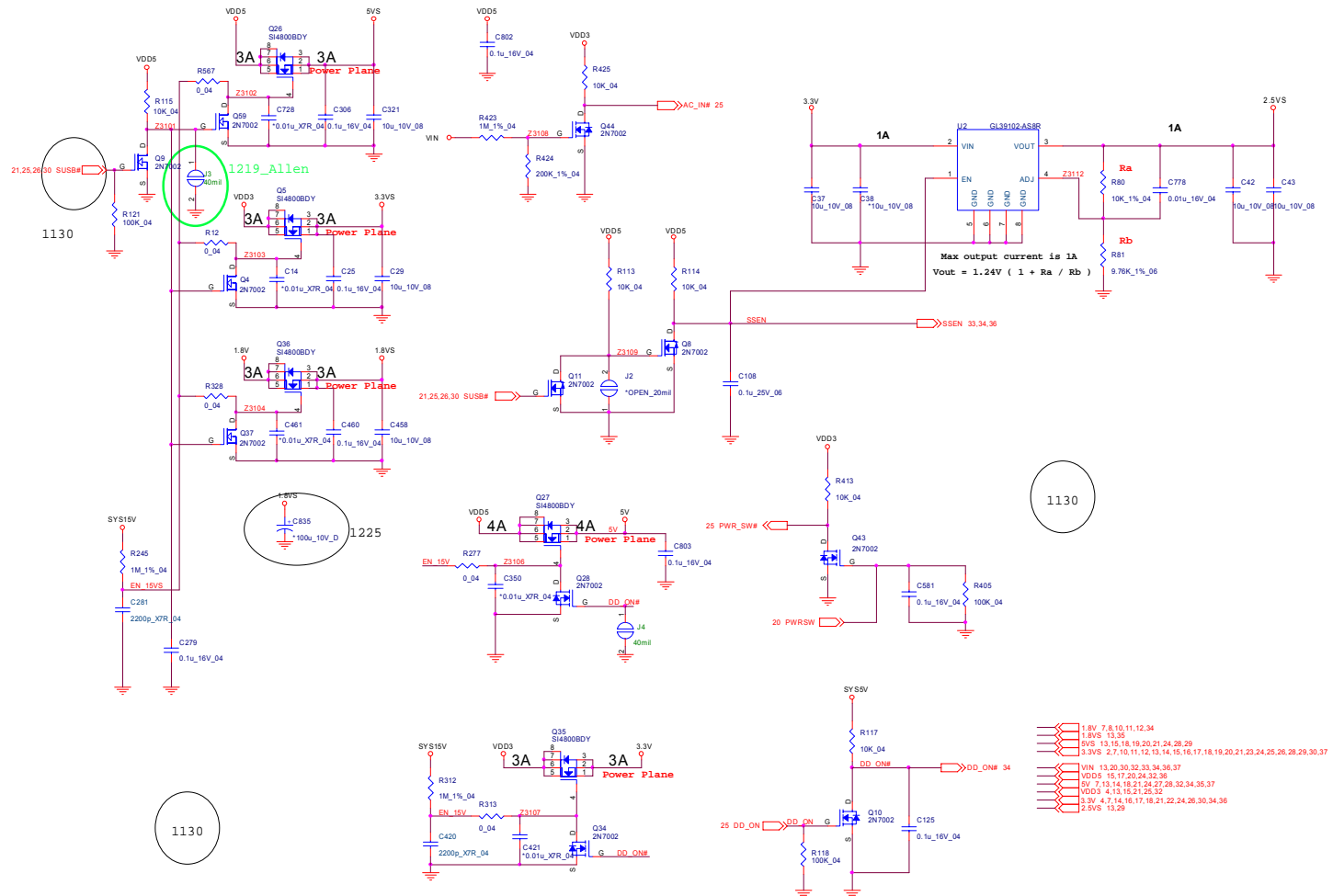


B.Schematic Diagrams

# System Power

Sheet 31 of 43  
System Power

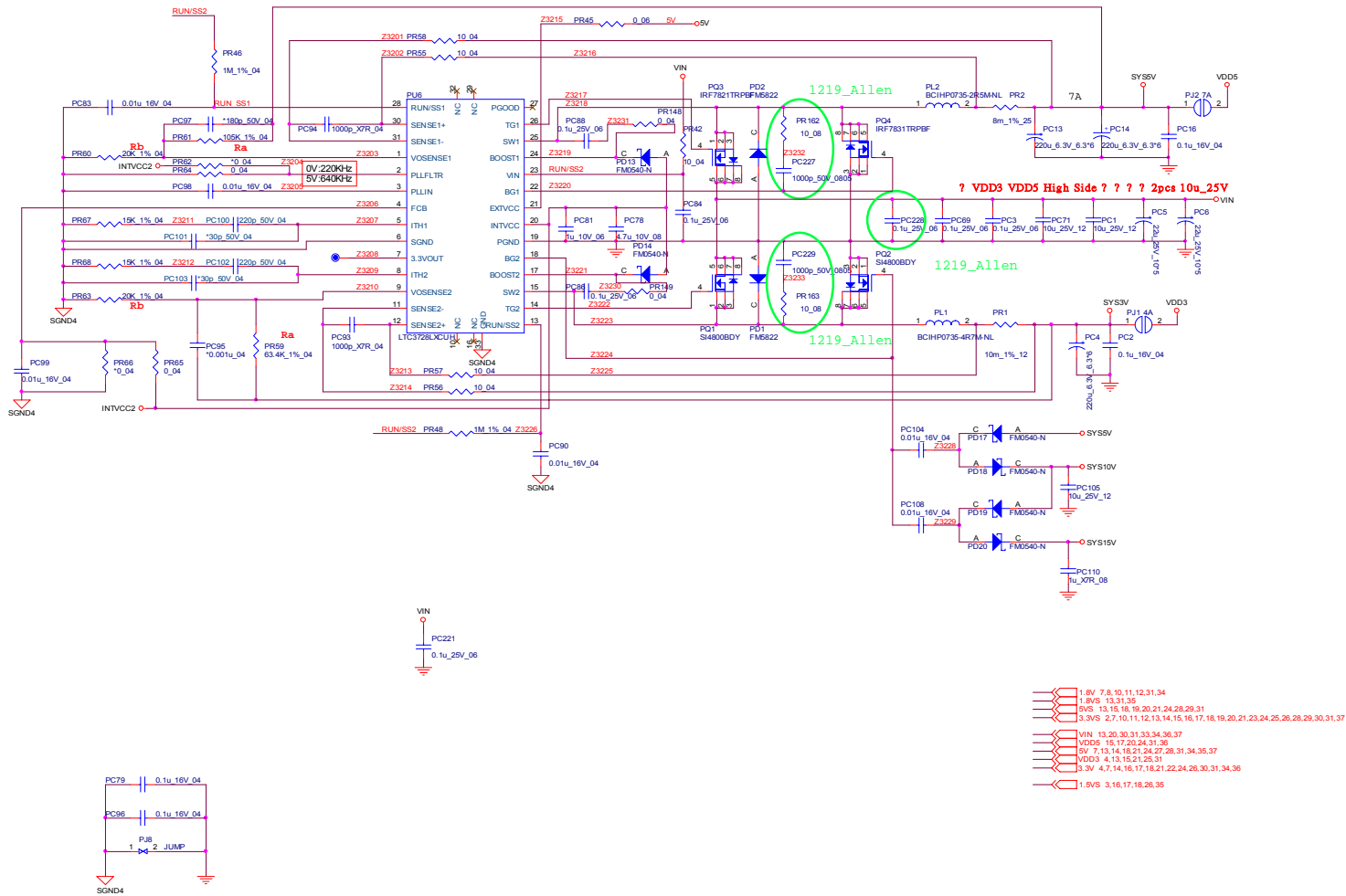
B.Schematic Diagrams



# 3.3V/5V

1130

Sheet 32 of 43  
3.3V/5V

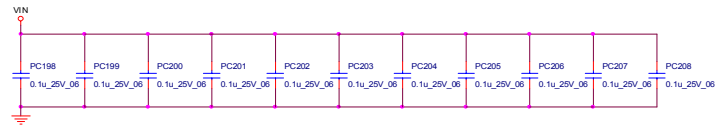
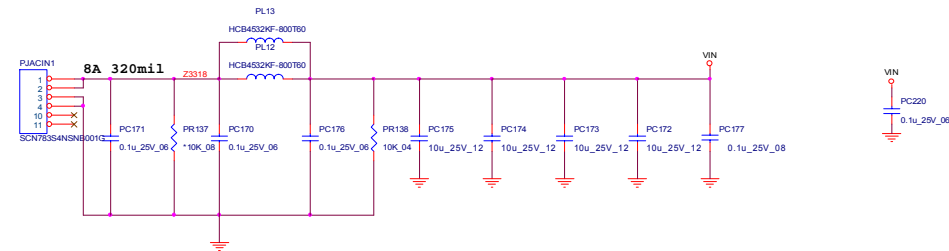
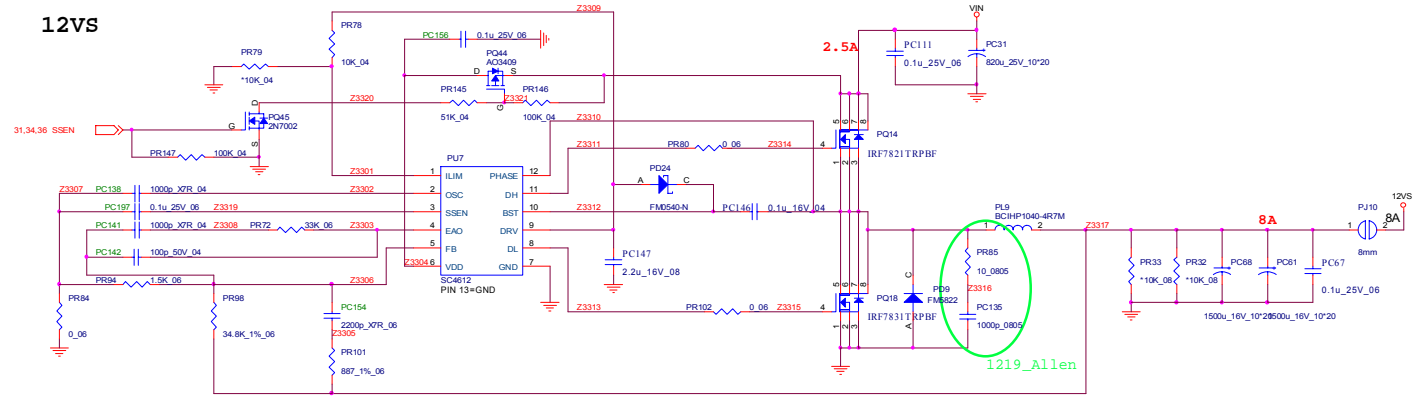


B. Schematic Diagrams

# Schematic Diagrams

## 12VS, AC-In

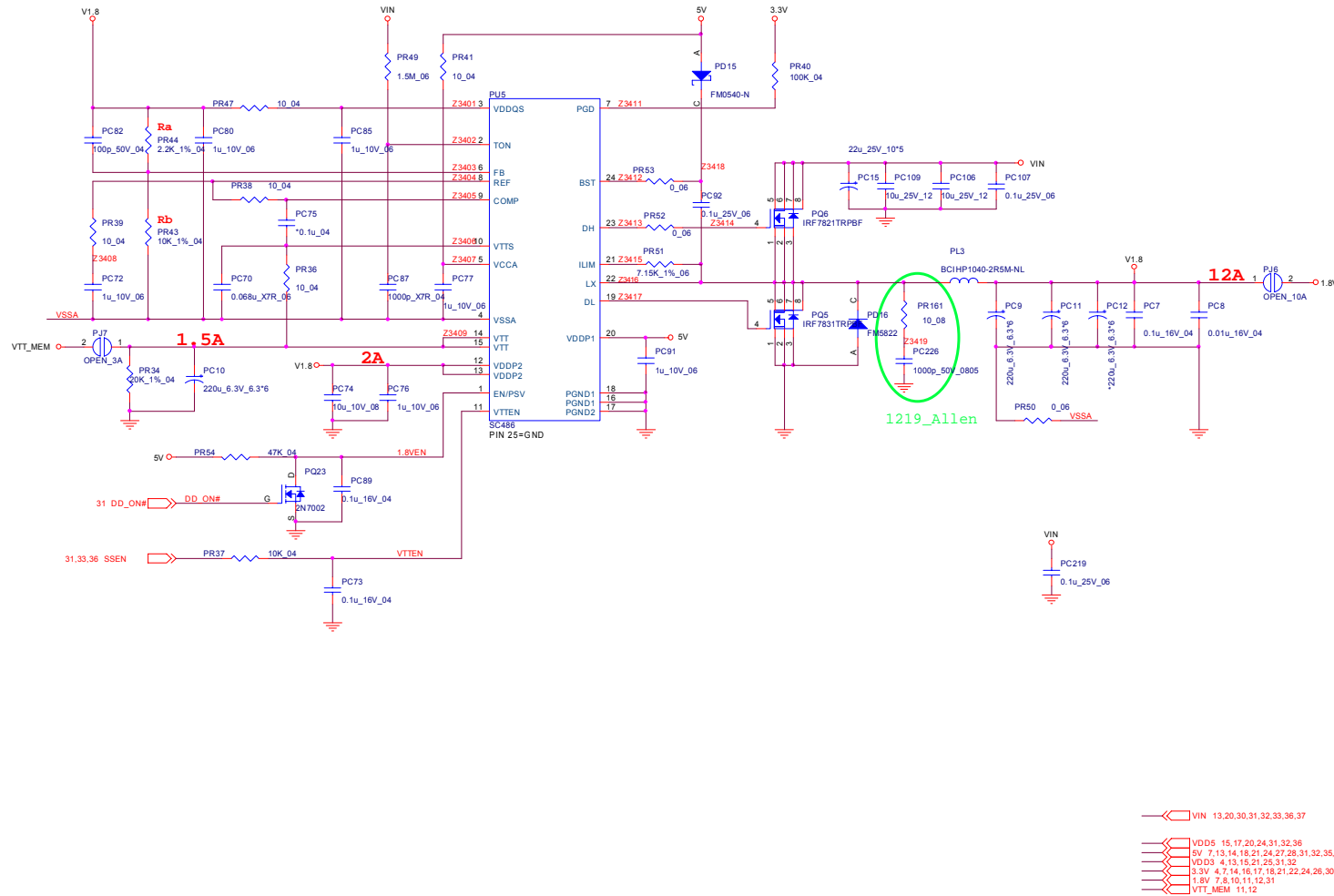
Sheet 33 of 43  
12VS, AC-In



- WIN 13,20,30,31,32,34,36,37
- VDS 15,20,29,30,36,37
- VDD5 15,17,20,24,31,32,36
- VDD3 4,13,15,21,25,31,32

1.8V/0.9V

Sheet 34 of 43  
1.8V/0.9V



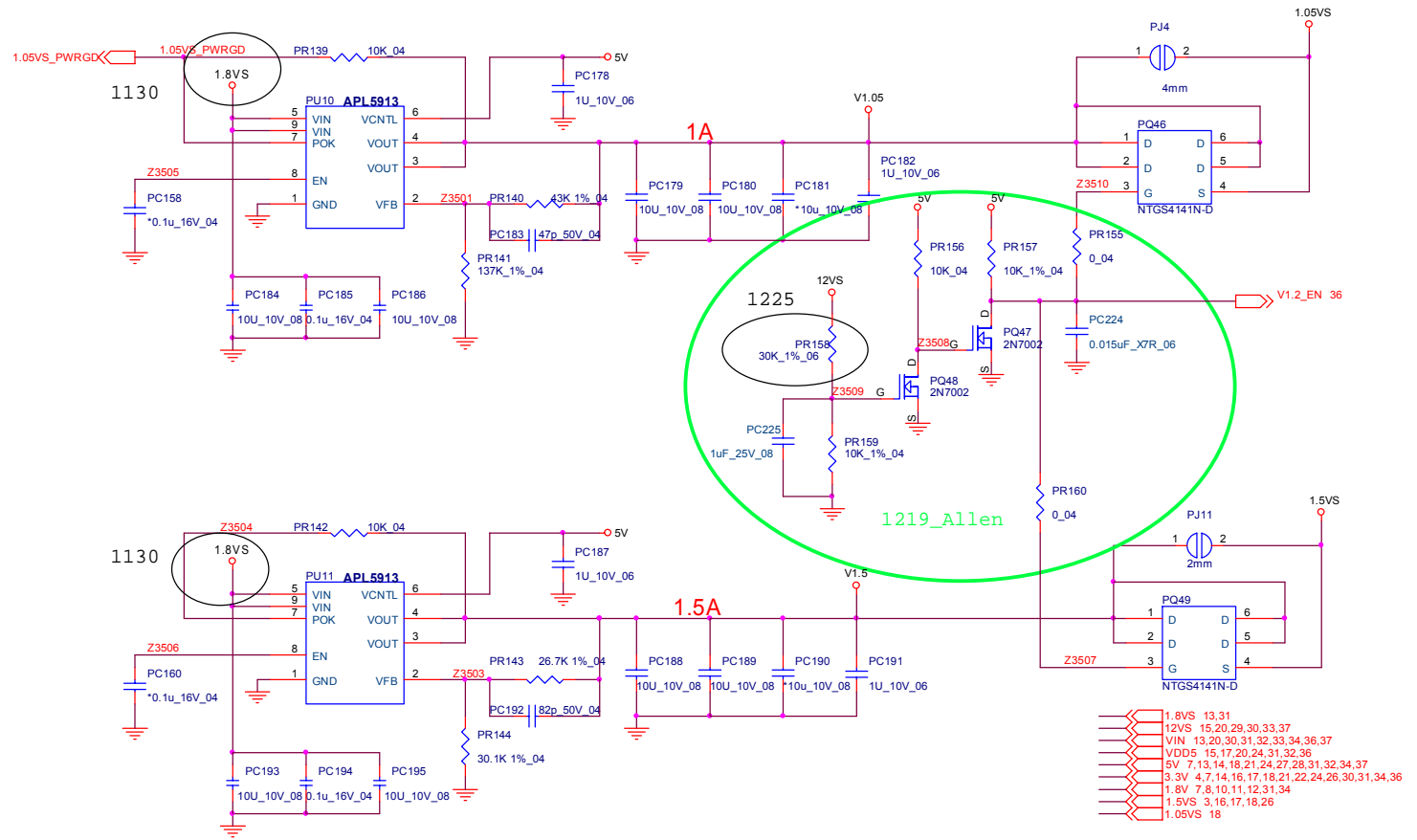


# Schematic Diagrams

## 1.5VS,1.05VS

Sheet 35 of 43  
1.5VS/1.05VS

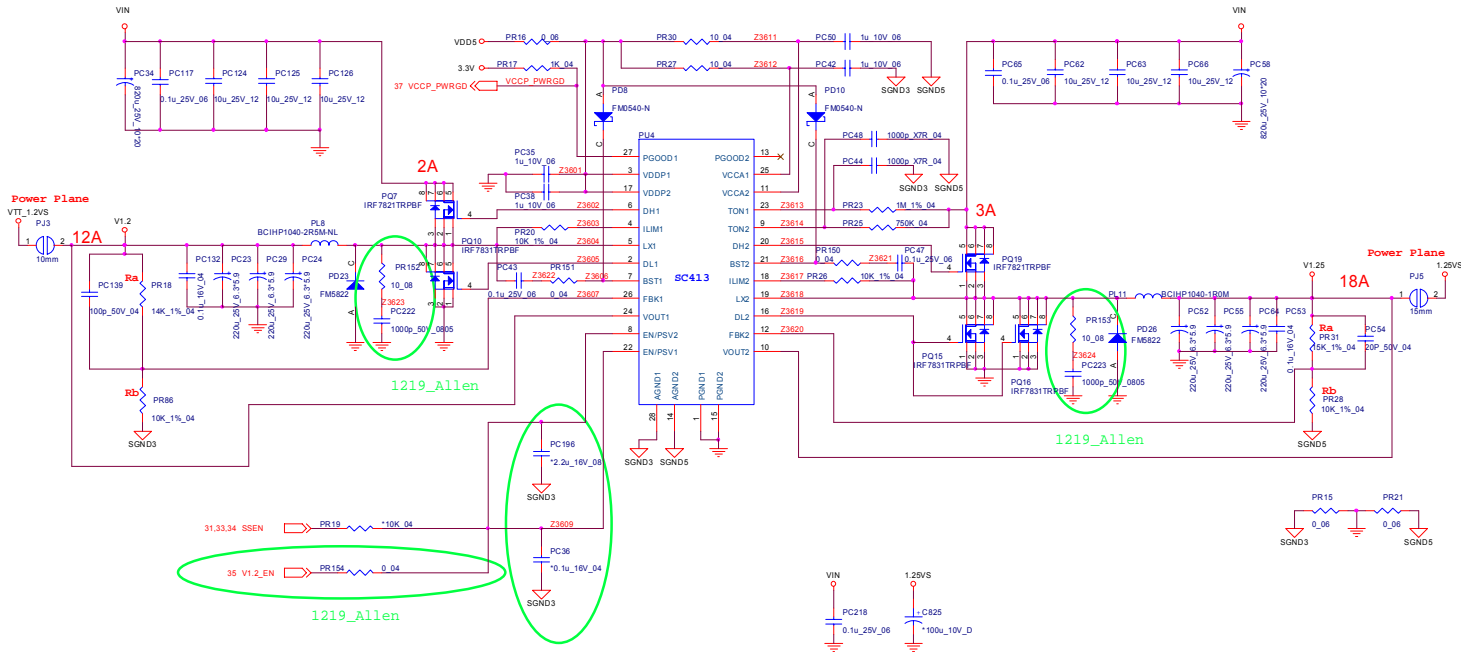
B.Schematic Diagrams



# 1.2VS/1.25VS

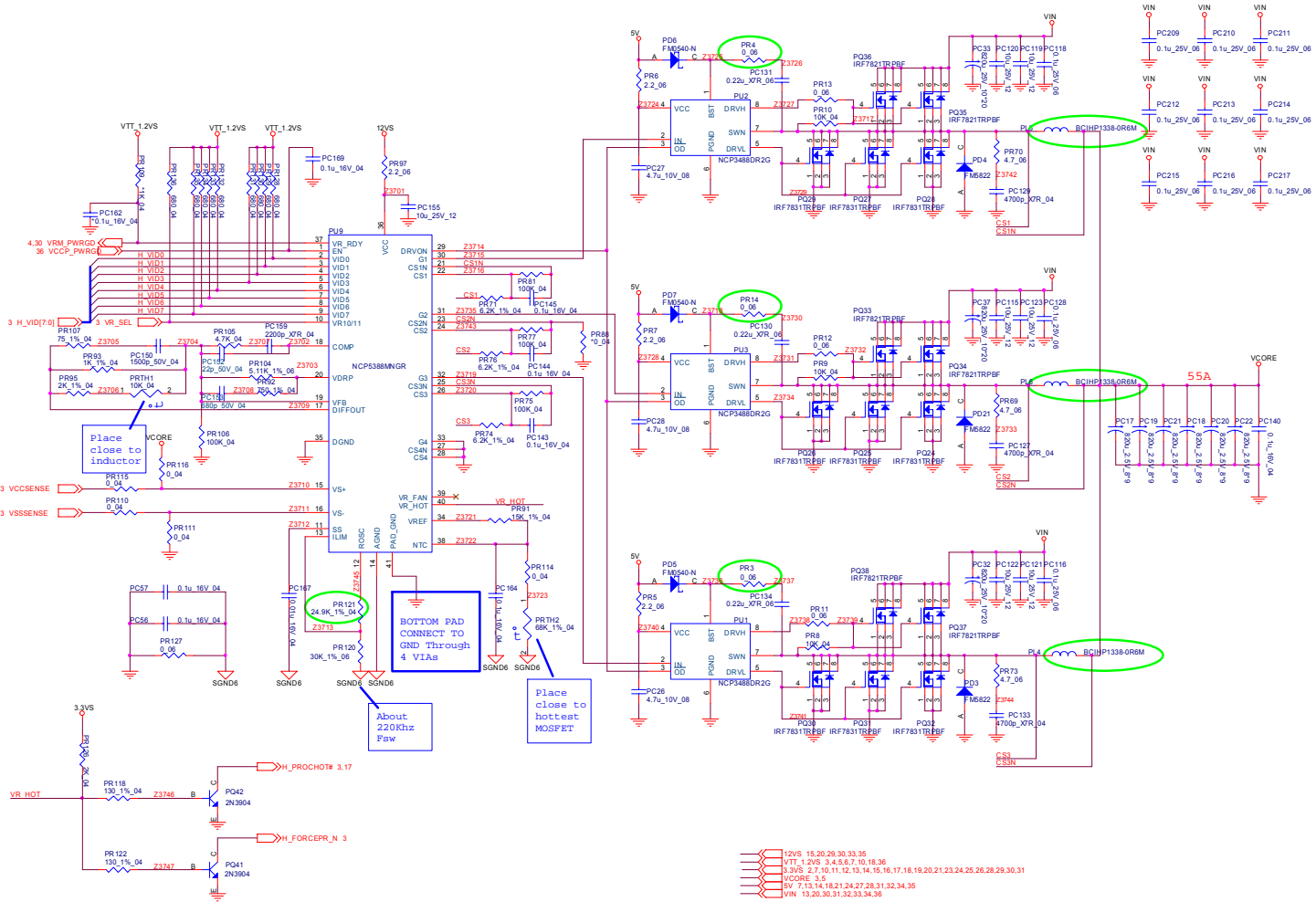
Sheet 36 of 43  
1.2VS/1.25VS

B. Schematic Diagrams



# VCORE

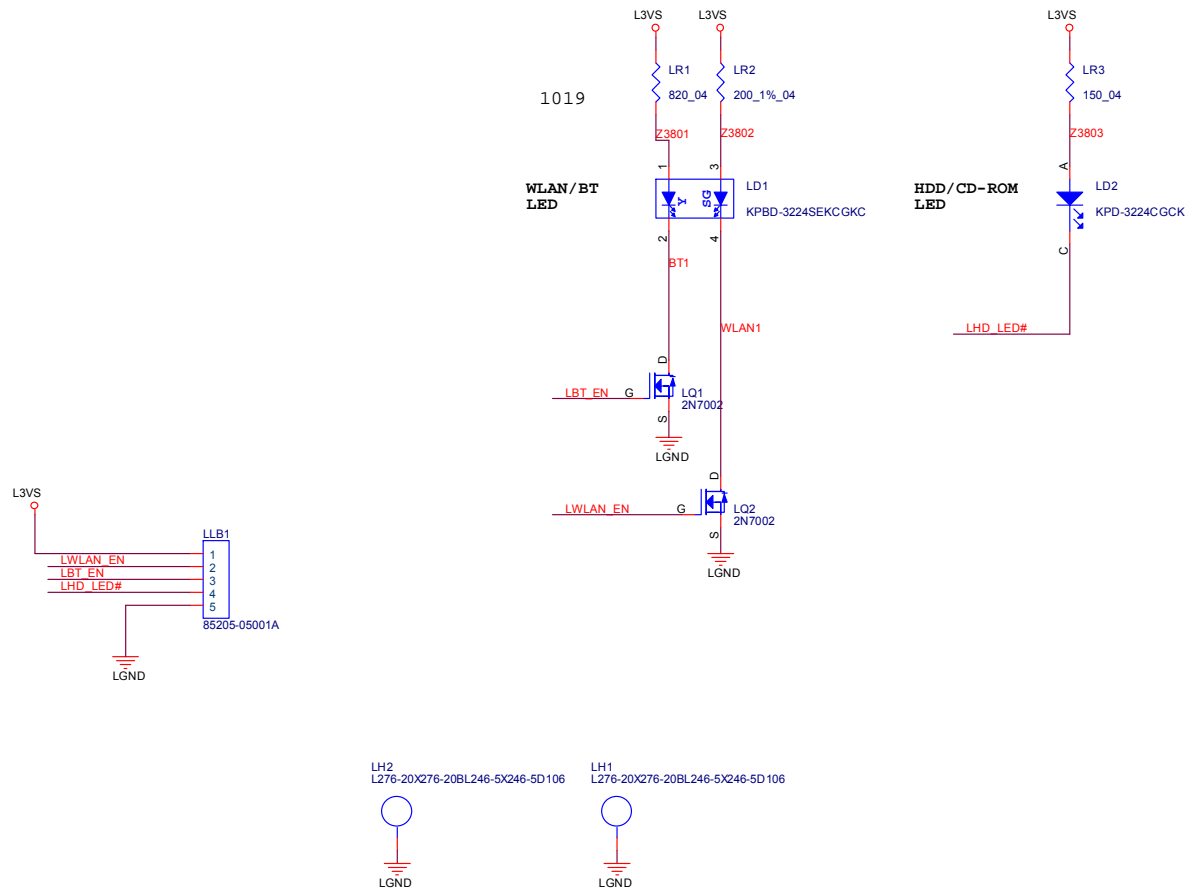
Sheet 37 of 43  
VCORE



# LED Board

## LED BOARD

Sheet 38 of 43  
LED Board

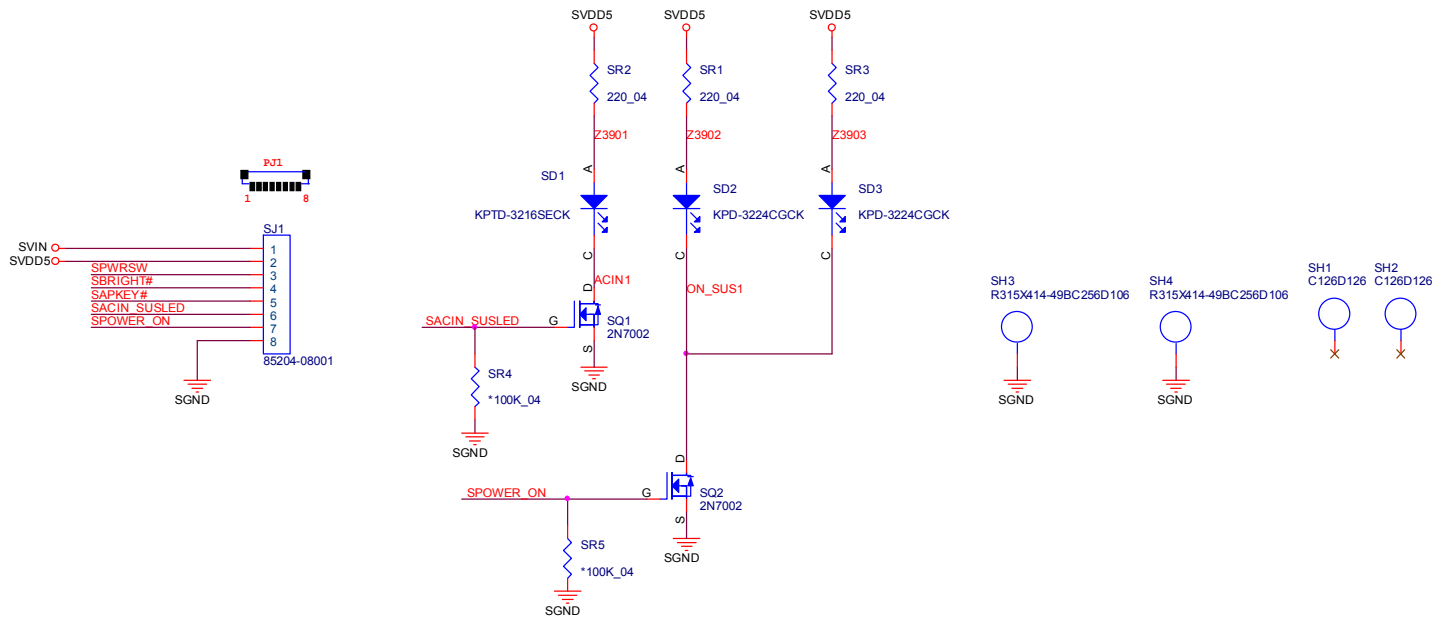
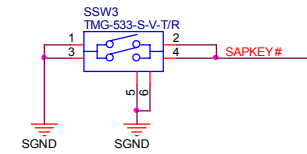
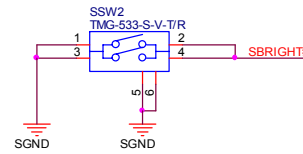
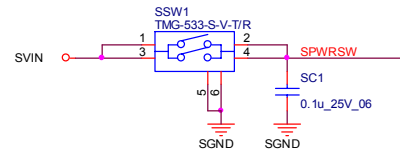


# Schematic Diagrams

## Power Board

Sheet 39 of 43  
Power Board

### POWER BOARD

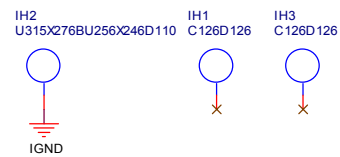
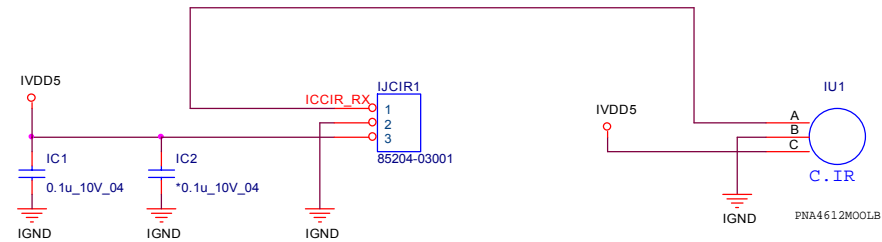


B.Schematic Diagrams

# CIR Board

Sheet 40 of 43  
CIR Board

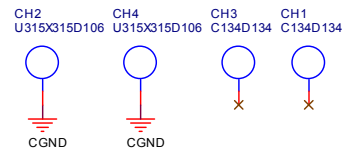
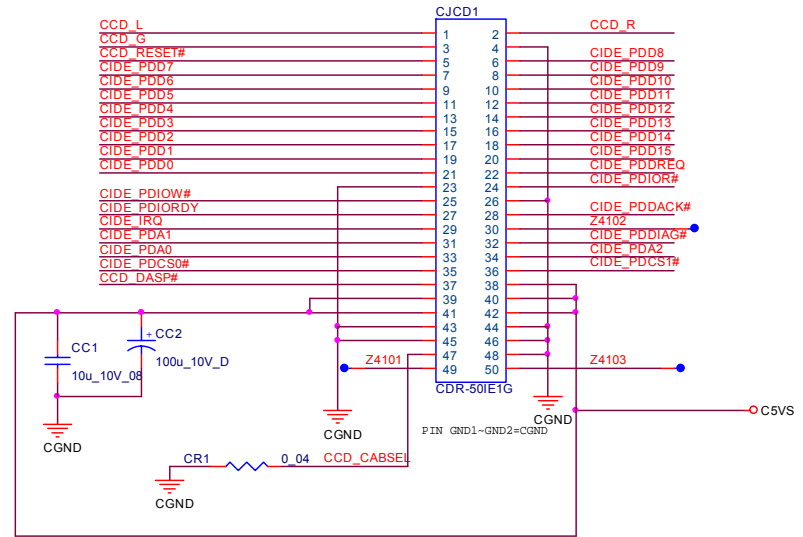
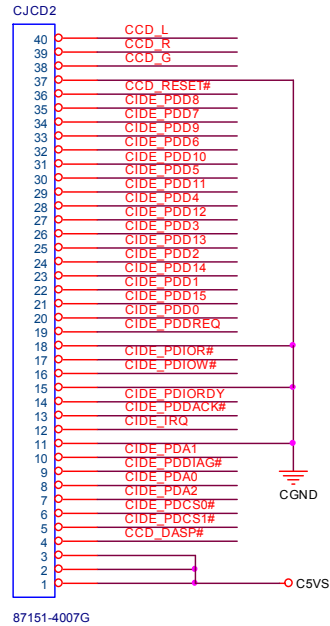
## CIR BOARD



# CD-ROM Board

Sheet 41 of 43  
CD-ROM Board

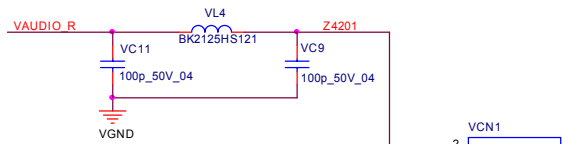
## CDROM BOARD



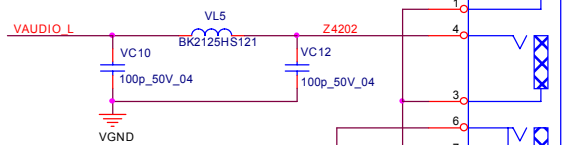
# Video Connector Board

Sheet 42 of 43  
Video Connector Board

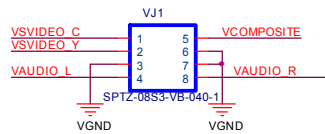
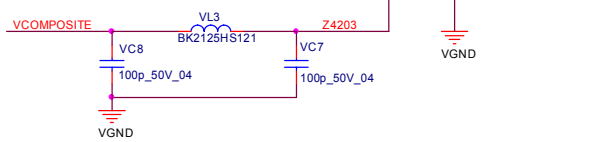
## AUDIO R (RED)



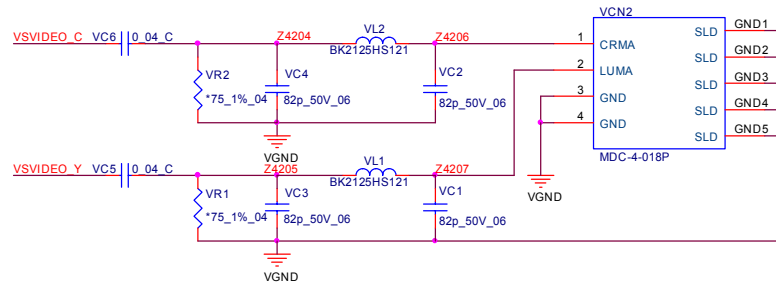
## AUDIO L (WHITE)



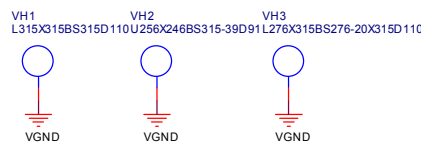
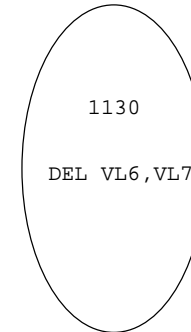
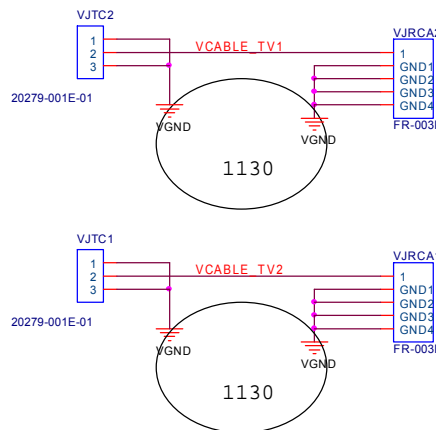
## COMPOSITE (YELLOW)



## VIDEO IN



## TV ANTENNA



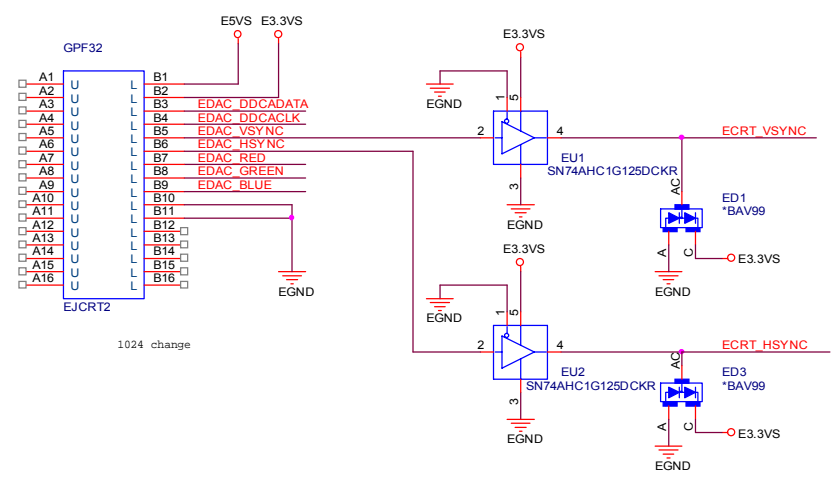
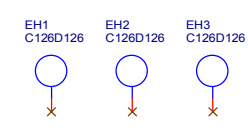
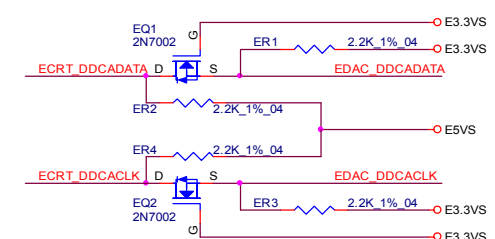
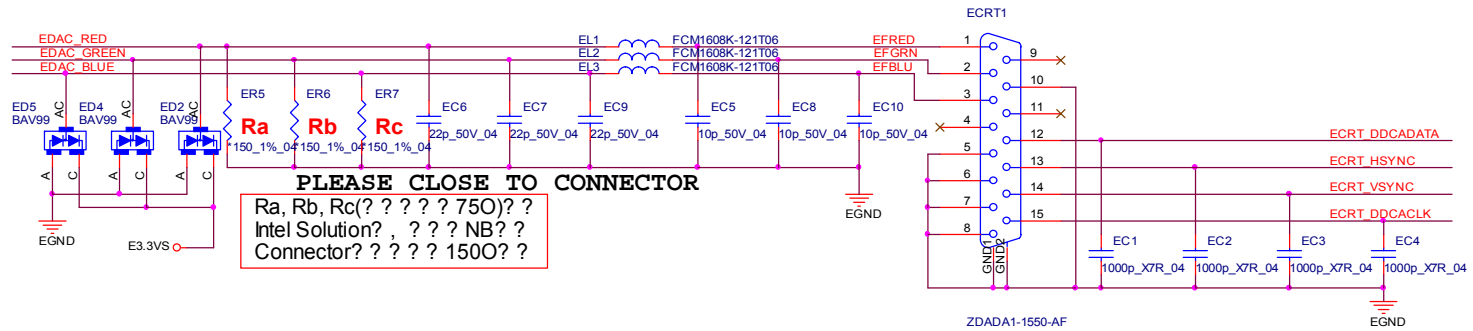
B. Schematic Diagrams



# CRT Connector Board

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CRT Connector  
Board

CRT



B.Schematic Diagrams