

SERVICE MANUAL

TN120T

notebook



Notebook Computer

TN120T

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 *TN120T* 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

IMPORTANT SAFETY INSTRUCTIONS

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

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit with an AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19V, 3.42A or 18.5V, 3.5A (**65 Watts**) minimum AC/DC Adapter.

CAUTION

Always disconnect all telephone lines from the wall outlet before servicing or disassembling this equipment.

**TO REDUCE THE RISK OF FIRE, USE ONLY NO. 26 AWG OR LARGER,
TELECOMMUNICATION LINE CORD**

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

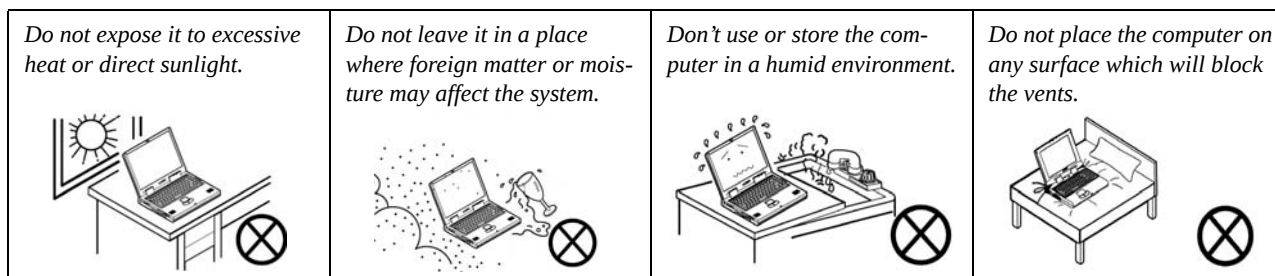
Instructions for Care and Operation

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

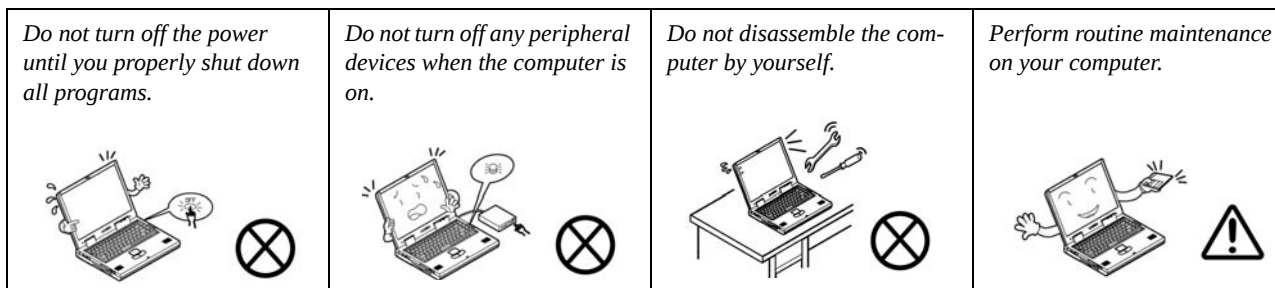
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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

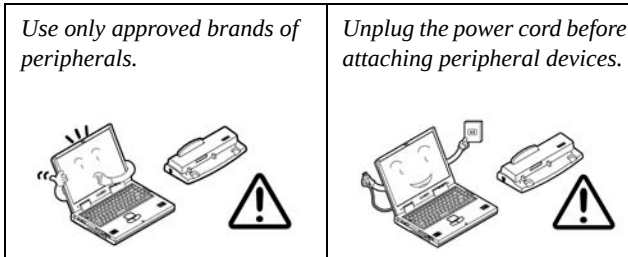


3. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



Preface

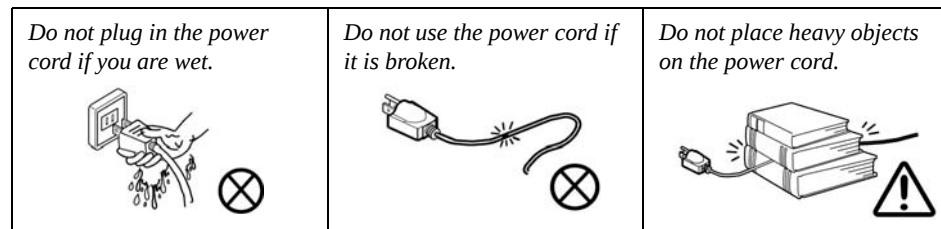
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

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



Power Safety Warning

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

Battery Precautions

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

Battery Guidelines

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

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



Battery Disposal

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

Caution

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

Battery Level

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

Preface

Related Documents

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

User's Manual on CD

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.

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **TN120T** 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 *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 **TN120T** 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 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, delayed or updated due to the manufacturer's release schedule. Check with your service center for details.

Feature	Specification	
Processor	Intel® Core™2 Duo Processor 35W - (478-pin) Micro-FC-PGA Package - Socket-P T9400/ T9600	45nm (45 Nanometer) Process Technology 6MB On-die L2 Cache & 1066MHz FSB 2.53/ 2.8 GHz
	Intel® Core™2 Duo Processor 25W - (478-pin) Micro-FC-PGA Package - Socket-P P9500	45nm (45 Nanometer) Process Technology 6MB On-die L2 Cache & 1066MHz FSB 2.53 GHz
	Intel® Core™2 Duo Processor 25W - (478-pin) Micro-FC-PGA Package - Socket-P P8400/ P8600	45nm (45 Nanometer) Process Technology 3MB On-die L2 Cache & 1066MHz FSB 2.26/ 2.4 GHz
	Intel® Celeron® Processor 35W - (478-pin) Micro-FC-PGA Package - Socket-P T1600/ T1700	65nm (65 Nanometer) Process Technology 1MB On-die L2 Cache & 667MHz FSB 1.66/ 1.86 GHz
	Intel® Celeron® Processor 31W - (478-pin) Micro-FC-PGA Package - Socket-P 575/ 585	65nm (65 Nanometer) Process Technology 1MB On-die L2 Cache & 667MHz FSB 2.0/ 2.16 GHz
Core Logic	Intel® GM45 + ICH9M Chipset	
LCD	12.1" WXGA (1280 * 800) TFT LCD with Touch Panel	

Feature	Specification
Memory	Two 200 Pin SO-DIMM Sockets Supporting DDRII (DDR2) 667/ 800 MHz 64-bit Wide DDRII (DDR2) Data Channel Memory Expandable up to 4GB (512/ 1024/ 2048 MB DDRII Modules) Supports Dual Channel DDRII (DDR2) SDRAM
	2GB OR 4GB Intel® Turbo Memory Module (Option)
Video Adapter	Intel GMA X4500HD Integrated Video Shared Memory Architecture - Supports up to 256MB of Video Memory (dynamically allocated from system memory where needed) Supports DirectX10.0 High Preference 3D/2D Graphics Accelerator
Security	Security (Kensington® Type) Lock Slot Fingerprint ID Reader Module (Factory Option) BIOS Password
BIOS	One 32Mb SPI Flash ROM Phoenix™ BIOS
Storage	One Changeable 12.7mm(h) Optical Device (CD/DVD) Type Drive (see “Optional” on page 1 - 5) Easy Changeable 2.5" 9.5 mm (h) SATA (Serial) HDD
Audio	High Definition Audio Compliant with Microsoft UAA (Universal Audio Architecture) Direct Sound 3D™ Compatible 2 * Built-In Speakers Built-In Microphone
Keyboard & Pointing Device	Winkey Keyboard Stylus Pen for Touch Panel Built-In Touchpad with Scrolling Function 2 Built-In Instant Keys (Menu, Rotation)
Interface	Three USB 2.0 Ports One Headphone-Out Jack One Microphone-In Jack One S/PDIF Out Jack One Internal Microphone One RJ-11 Modem Jack One RJ-45 LAN Jack One DC-in Jack One External Monitor Port One Mini-IEEE 1394a Port
Card Reader	Embedded 7-in-1 Card Reader (MS/ MS Pro/ SD/ Mini SD/ MMC/ RS MMC/ MS Duo) Note: MS Duo/ Mini SD/ RS MMC Cards require a PC adapter

Introduction

Feature	Specification	
Card Slots	One ExpressCard/34(54) Slot One MiniCard Slot Supporting USB and PCIe Interfaces for WLAN Module Second MiniCard Slot Supporting USB and PCIe Interfaces for Intel® Turbo Memory Module OR 3.5G Module	
Communication *Note: The 3.5G and Intel Turbo Memory Modules cannot coexist. If one of these factory options is included in your purchase option, then the other is unavailable .	56K Plug and Play Fax Modem 10M/ 100M/ 1000M Base-TX Ethernet LAN Wireless LAN Module Options: 802.11 b/g Half Mini-Card USB Wireless LAN Module (Option) Intel® WiFi Link 5300 Series (3*3 - 802.11a/g/n) PCIe Wireless LAN Half Mini-Card Module (Option) Intel® WiFi Link 5100 Series (1*2 - 802.11a/g/n) PCIe Wireless LAN Half Mini-Card Module (Option) 1.3M or 2.0M Pixel USB PC Camera Module (Factory Option) Bluetooth V2.1 + EDR (Enhanced Data Rate) Module (Factory Option) *UMTS/HSPDA-based 3.5G Module with MiniCard Interface (Factory Option) Quad-band GSM/GPRS (850 MHz, 900 MHz, 1800 MHz, 1900 MHz) UMTS WCDMA FDD (2100 MHz)	
Power Management	Supports ACPI 3.0 Supports Wake on LAN	Supports Resume from Modem Ring
Power	Full Range AC/DC Adapter AC input 100 - 240V, 50 - 60Hz, DC Output 19V, 3.42A or 18.5V, 3.5A (65 Watts)	
Battery	4 Cell Smart Lithium-Ion Battery Pack, 14.8V/2.4AH 8 Cell Smart Lithium-Ion Battery Pack, 14.8V/4.4AH (Option)	
Environmental Spec	Temperature Operating: 5°C ~ 35°C Non-Operating: -20°C ~ 60°C	Relative Humidity Operating: 20% ~ 80% Non-Operating: 10% ~ 90%
Operating Systems Supported	Windows® Vista 32-bit (with Service Pack 1) Windows® XP (with Service Pack 3)	
Dimensions & Weight	306mm (w) * 224mm (d) * 35 - 37.5mm (h)	2.1 kg With 4 Cell Battery and ODD



UMTS Modes

Note that UMTS modes CAN NOT be used in North America.

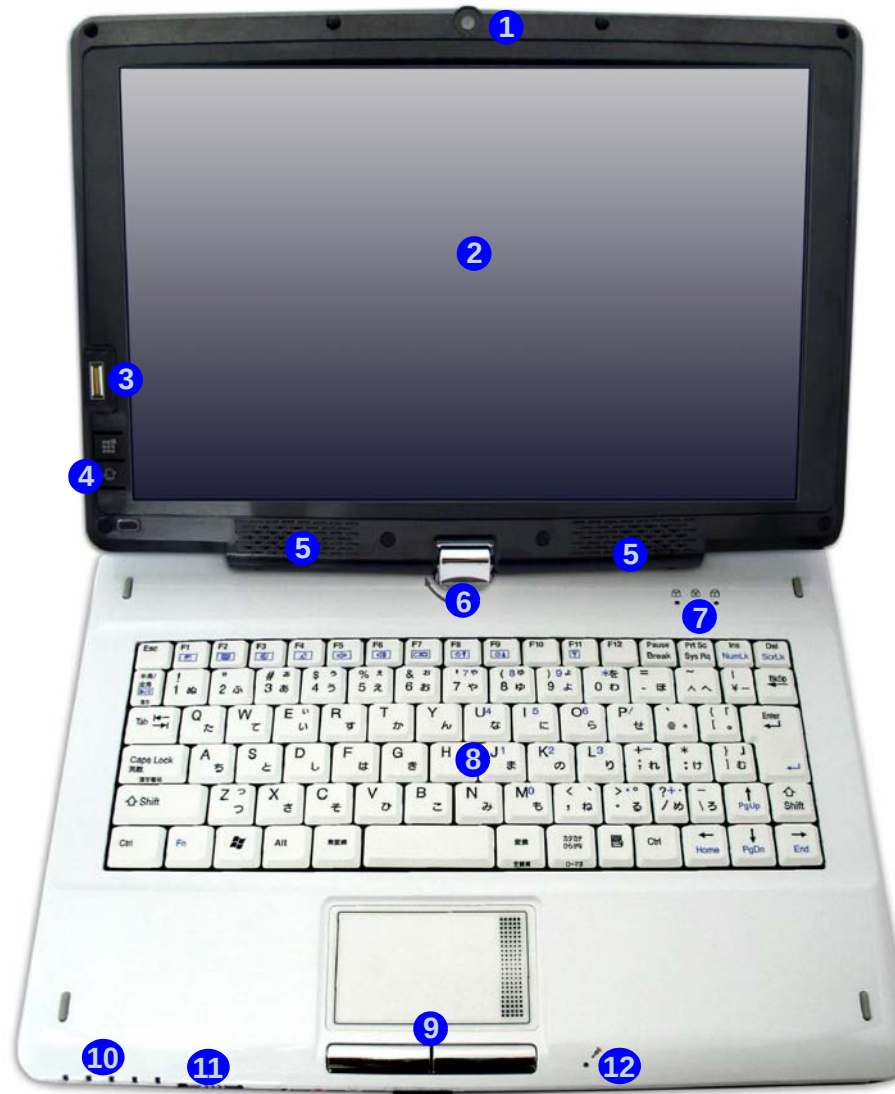
Feature	Specification
Optional * Note: The 3.5G and Intel Turbo Memory Modules cannot coexist. If one of these factory options is included in your purchase option, then the other is unavailable .	<u>Optical Drive Module Options:</u> Super Multi Drive Module Blu-ray Combo Drive Module Blu-ray Writer Drive Module <u>Wireless-LAN Module Options:</u> 802.11 b/g Half Mini-Card USB Wireless LAN Module Intel® WiFi Link 5300 Series (3*3 - 802.11a/g/n) PCie Wireless LAN Half Mini-Card Module Intel® WiFi Link 5100 Series (1*2 - 802.11a/g/n) PCie Wireless LAN Half Mini-Card Module 8 Cell Smart Lithium-Ion Battery Pack 1.3M or 2.0M Pixel USB PC Camera Module (Factory Option) Fingerprint ID Reader Module (Factory Option) Bluetooth V2.1 + EDR (Enhanced Data Rate) Module (Factory Option) *2GB OR 4GB Intel® Intel Turbo Memory (Robson) NAND Flash Memory Card Module OR *UMTS/HSPDA-based 3.5G Module with MiniCard Interface (Factory Option) Quad-band GSM/GPRS (850 MHz, 900 MHz, 1800 MHz, 1900 MHz) UMTS WCDMA FDD (2100 MHz)  UMTS Modes Note that UMTS modes CAN NOT be used in North America.

Introduction

Figure 1
Top View with LCD
Panel Open

1. Built-In PC Camera
(Optional)
2. LCD
3. Fingerprint Reader Module
(Optional)
4. Menu & Screen Rotation Buttons
5. Speakers
6. Screen Hinge
7. LED Status Indicators
8. Keyboard
9. Touchpad & Buttons
10. LED Power & Communication Indicators
11. Power Switch
12. Built-In Microphone

External Locator - Top View with LCD Panel Open



External Locator - Front & Rear Views



Figure 2
Front View

1. LED Power & Communication Indicators
2. Power Switch
3. S/PDIF-Out Jack
4. Microphone-In Jack
5. Headphone-Out Jack
6. 7-in-1 Card Reader
7. Stylus Pen Holder



Figure 3
Rear View

1. Security Lock Slot
2. 2 * USB 2.0 Ports
3. DC-In Jack
4. Battery

Introduction

External Locator - Right & Left Side Views

Figure 4
Right Side View

1. Stylus Pen Holder
2. Optical Device (for DVD Device)
3. Emergency Eject Hole
4. 1 * USB 2.0 Port
5. RJ-11 Phone Jack
6. RJ-45 LAN Jack



Figure 5
Left Side View

1. External Monitor Port
2. Mini-IEEE 1394 Port (supports **SELF Powered** IEEE 1394 devices only)
3. Vent
4. ExpressCard/ 54(34) Slot



External Locator - Bottom View

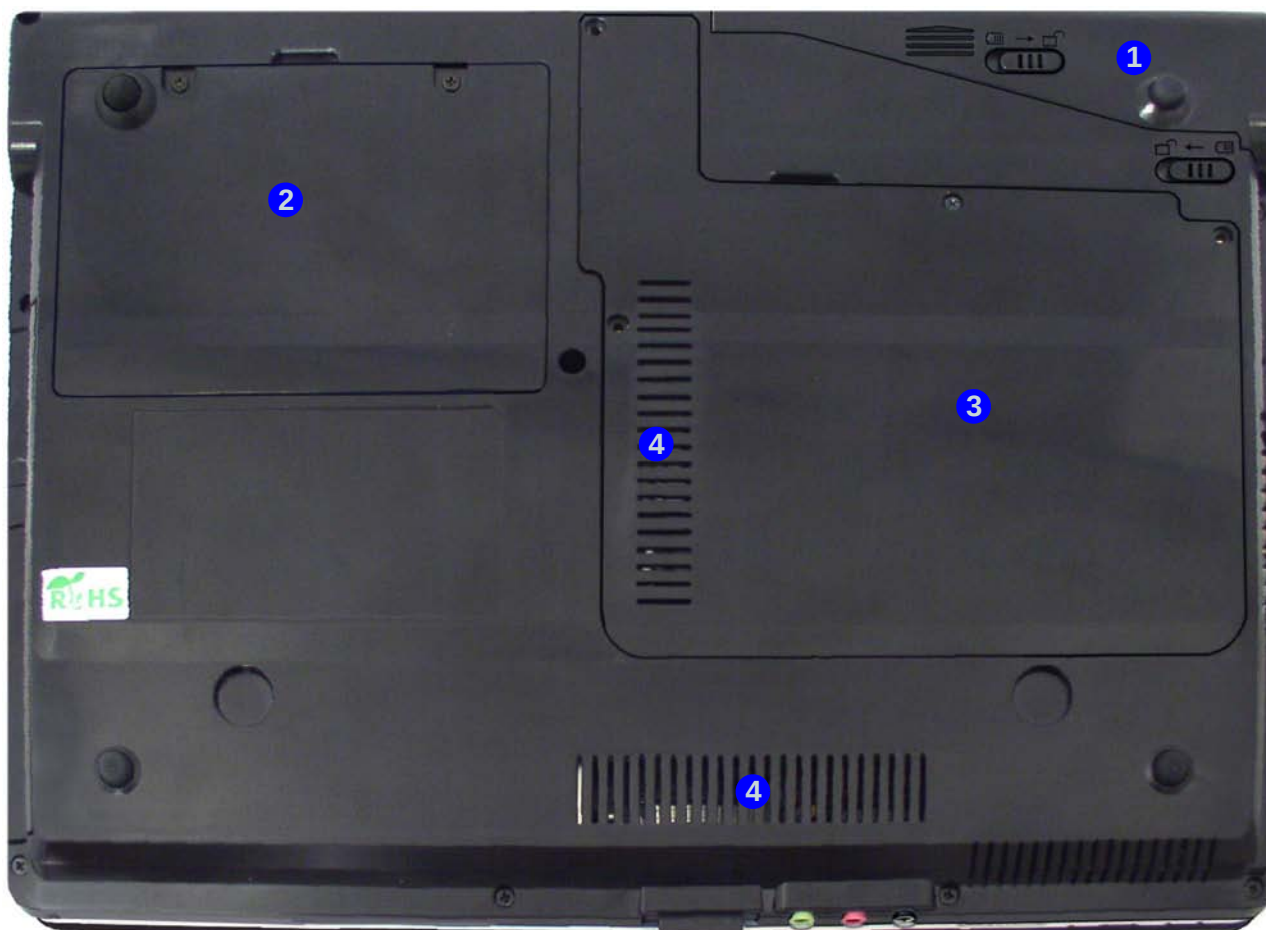


Figure 6
Bottom View

1. Battery
2. Hard Disk Bay Cover
(3.5G Module Location)
3. RAM & CPU Bay Cover
4. Vent



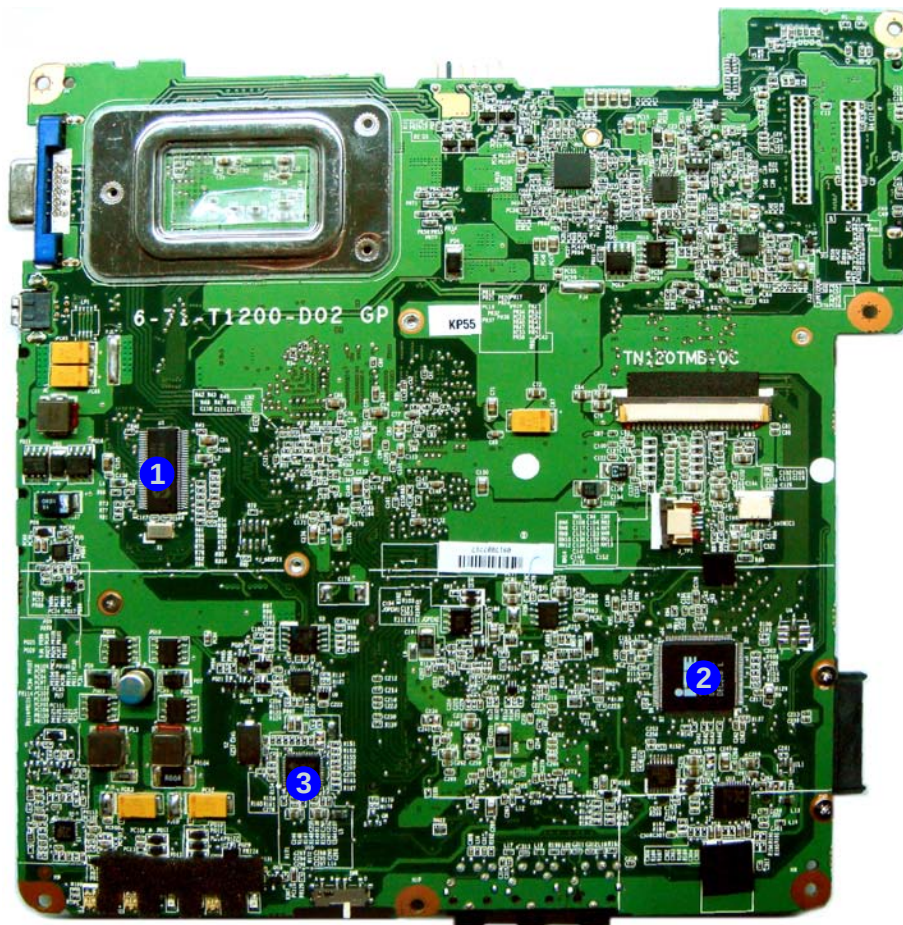
Overheating

To prevent your computer from overheating make sure nothing blocks the vent/fan intakes while the computer is in use.

Figure 7
Mainboard Top
Key Parts

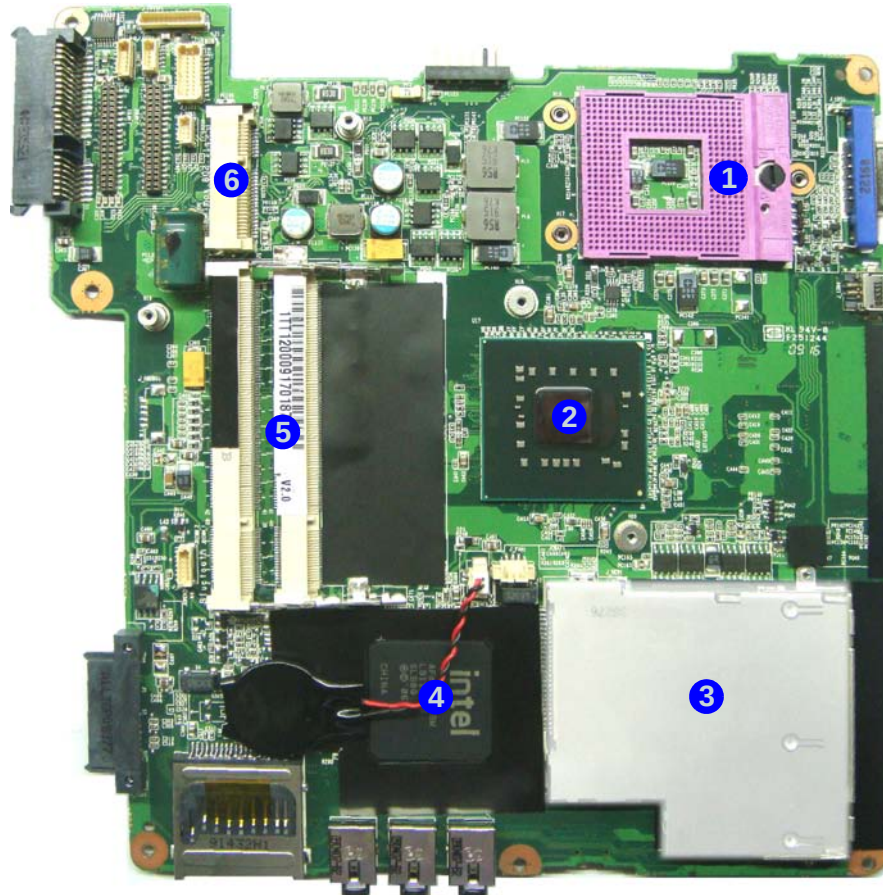
1. Clock Buffer
2. ITE 8512E
3. Card Reader
Controller ENE
MR510

Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

Figure 8
Mainboard Bottom Key Parts



1. CPU Socket (no CPU installed)
2. Northbridge-intel GM965
3. ExpressCard Assembly
4. Southbridge-ICH8-M
5. Memory Slots DDRII So-DIMM
6. WLAN Mini Card Slot

Introduction

Figure 9
**Mainboard Top
Connectors**

1. Keyboard Cable Connector
2. Internal Microphone Cable Connector
3. Touch Pad Cable Connector
Battery Connector

Mainboard Overview - Top (Connectors)

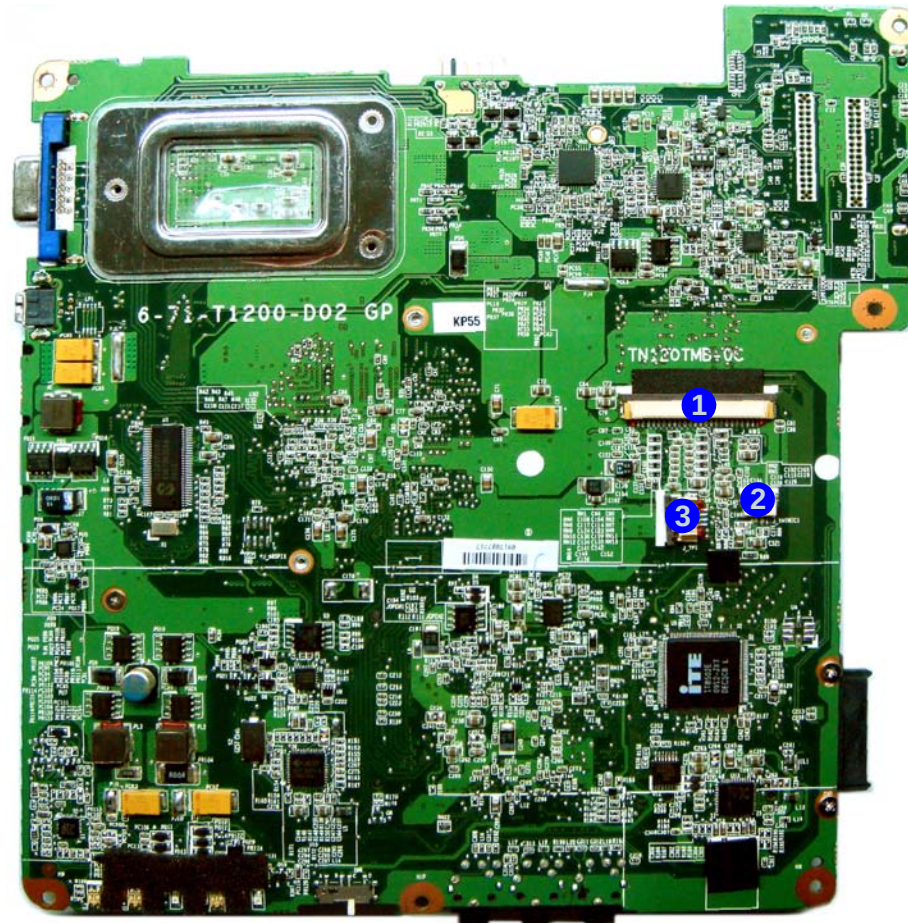
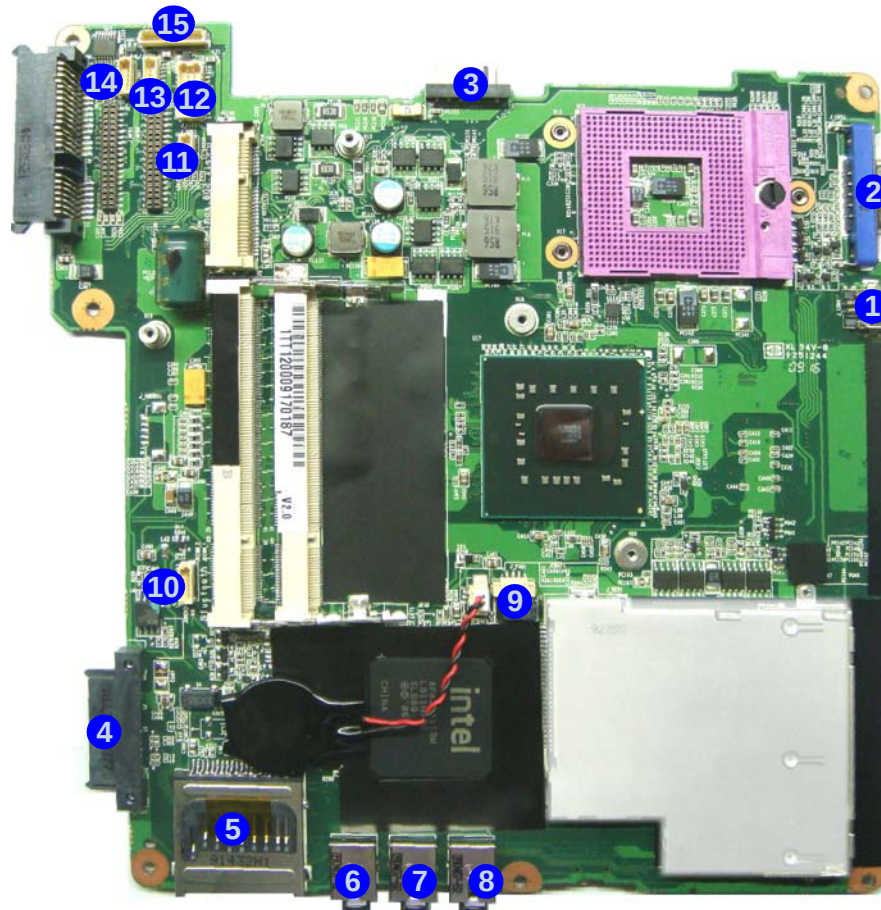


Figure 10
**Mainboard Bottom
Connectors**

1. Mini-IEEE 1394 Port
2. External Monitor Port
3. Battery Connector
4. Optical Device Drive Connector
5. 7-in-1 Card Reader
6. Headphone-Out Jack
7. Microphone-In Jack
8. S/PDIF-Out Jack
9. Fan Cable Connector
10. Bluetooth Cable Connector
11. Speaker Cable Connector
12. LCD Cable Connector
13. DC-In Jack
14. Inverter Cable Connector
15. CCD Cable Connector
16. Finger Cable Connector



Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the *TN120T* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

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

Procedures such as upgrading/replacing the RAM, 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 also provide any possible helpful information. A box with a  contains warnings.

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


Information
Warning

Disassembly

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

Maintenance Tools

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

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

Connections

Connections within the computer are one of four types:

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

Maintenance Precautions

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

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

Cleaning

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

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



Power Safety Warning

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

Disassembly Steps

The following table lists the disassembly steps, and on which page to find the related information. **PLEASE PERFORM THE DISASSEMBLY STEPS IN THE ORDER INDICATED.**

To remove the Battery:

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

To remove the HDD:

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

To remove the Modem :

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the modem [page 2 - 8](#)

To remove the 3G :

1. Remove the battery [page 2 - 5](#)
2. Remove the HDD [page 2 - 6](#)
3. Remove the 3G [page 2 - 9](#)

To remove the System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the system memory [page 2 - 10](#)

To remove the Processor:

1. Remove the battery [page 2 - 5](#)
2. Remove the processor [page 2 - 12](#)

To remove the Wireless LAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the Wireless LAN [page 2 - 15](#)

To remove the Bluetooth:

1. Remove the battery [page 2 - 5](#)
2. Remove the bluetooth [page 2 - 16](#)

To remove the Optical Device:

1. Remove the battery [page 2 - 5](#)
2. Remove the Optical device [page 2 - 17](#)

To remove the Keyboard:

1. Remove the battery [page 2 - 5](#)
2. Remove the keyboard [page 2 - 18](#)

Removing the Battery

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

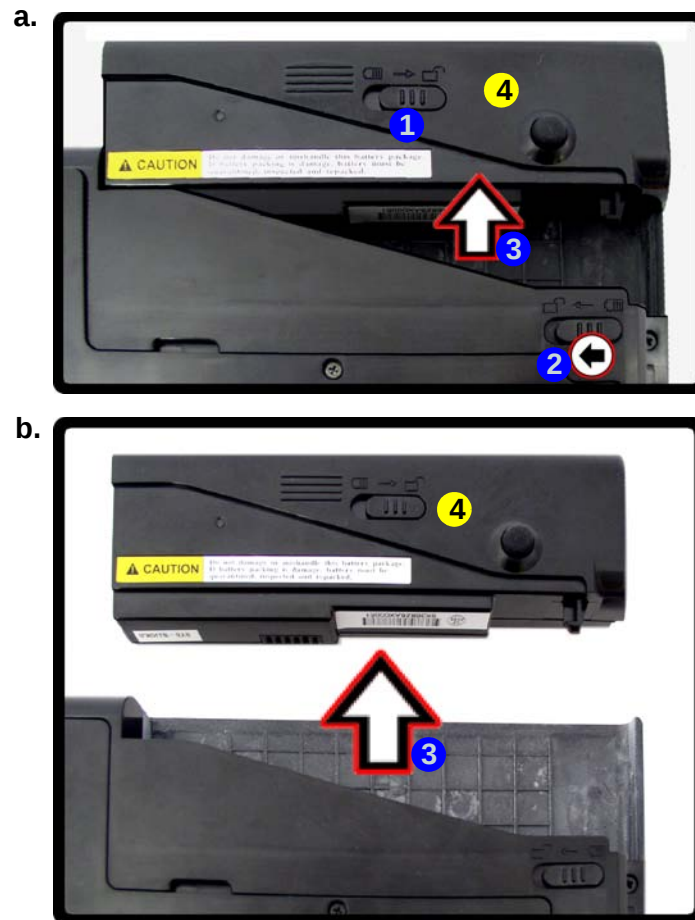


Figure 1
Battery Removal

- a. Slide the 2 latches and hold latch **2** in place.
- b. Slide the battery in the direction of the arrow.



4. Battery

Disassembly

Figure 2
**HDD Assembly
Removal**

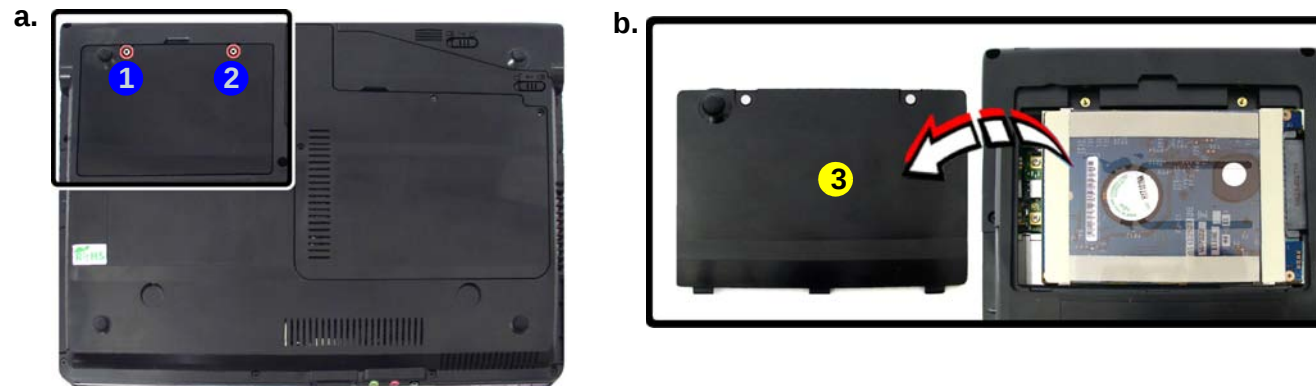
- Locate the HDD bay cover and remove the screws.
- Remove the bay cover.

Removing the Hard Disk Drive

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

Hard Disk Upgrade Process

- Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
- Locate the hard disk bay cover and remove the screws (1 - 2).
- Remove the bay cover (3).



3. HDD Bay Cover

- 2 Screws



HDD System Warning

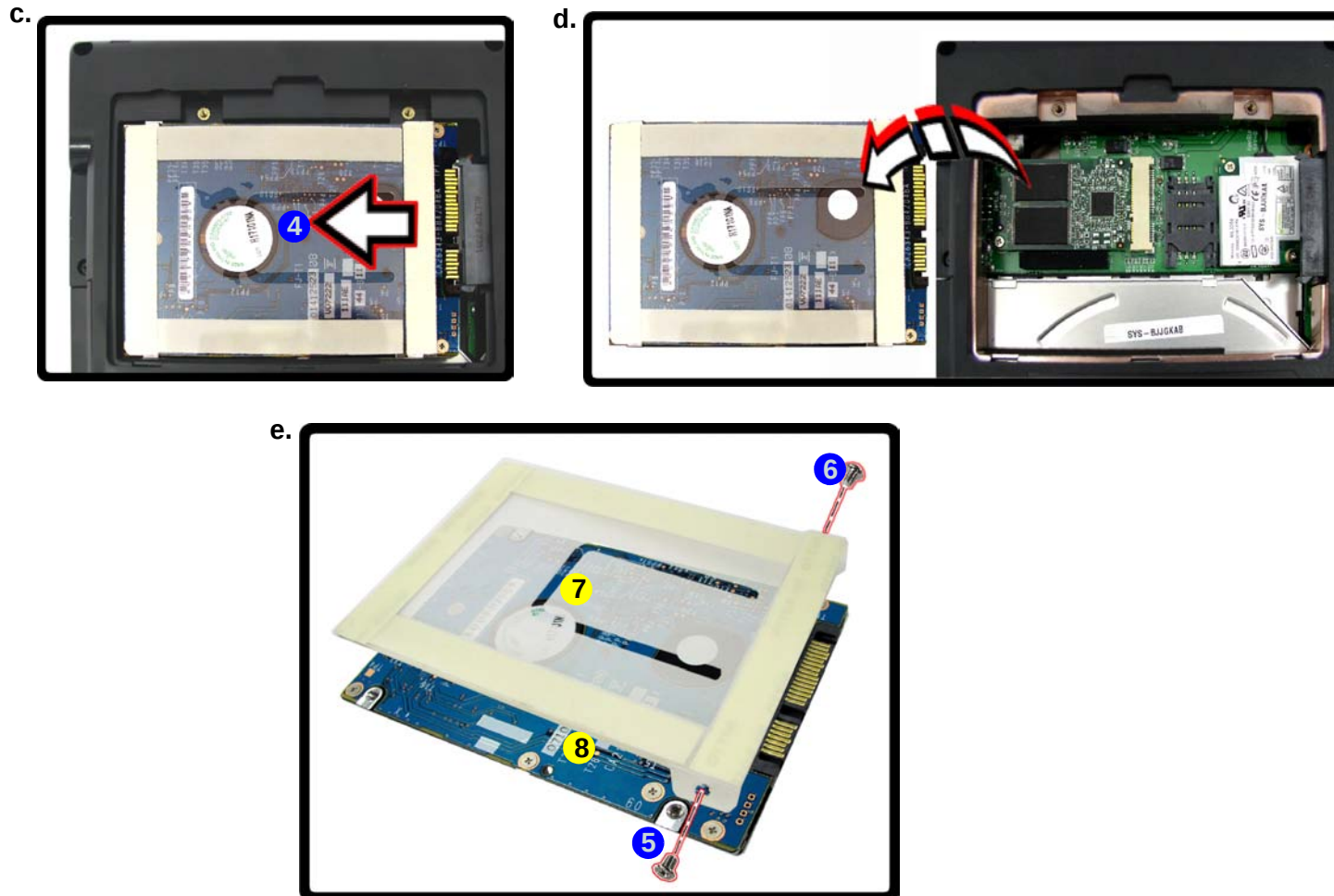
New HDD's are blank. Before you begin make sure:

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

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

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

4. Carefully grip the mylar tab **4** and slide the hard disk in the direction of arrow
5. Lift the hard disk up (**Figure d**) in the direction of arrow.
6. Remove the screws **5** - **6** and separate the mylar cover **7** from the hard disk **8**.
7. Reverse the process to install any new hard disk.



- c. Slide the HDD in the direction of the arrow.
- d. Lift the HDD out of the bay.
- e. Remove the screws and separate the mylar cover from the HDD.

- 7. Mylar Cover
- 8. HDD
- 2 Screws

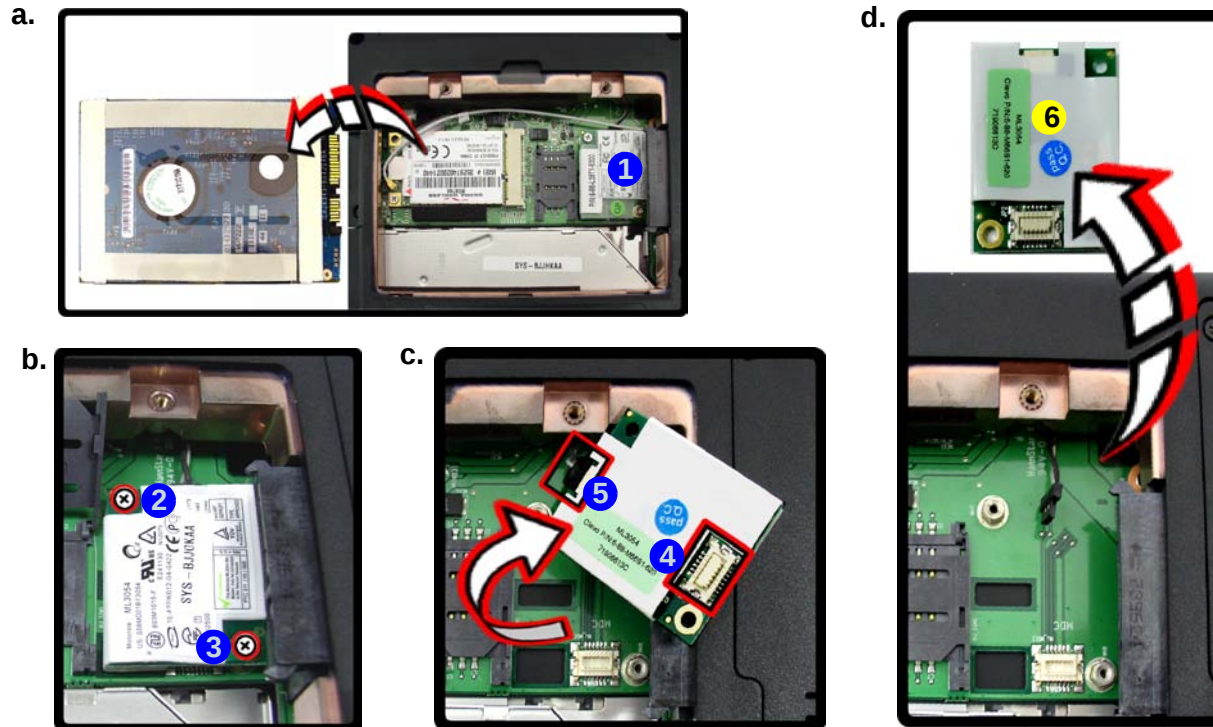
Disassembly

Figure 4
Modem Removal

- a. Remove the hard disk
- b. Remove the screws.
- c. Lift the modem up off the socket and disconnect the connector from the modem.
- d. Remove the modem.

Removing the Modem Module

1. Turn off the computer, remove the battery ([page 2 - 5](#)) and the hard disk ([page 2 - 6](#)).
2. The modem will be visible at point ① under the hard disk.
3. Remove screws ② - ③.
4. Lift the modem up off the socket ④ and disconnect the connector ⑤ from the modem.
5. Lift the modem ⑥ up and off the computer.



6. Modem

- 2 Screws

Removing the 3G Module

1. Turn off the computer, remove the battery ([page 2 - 5](#)) and the hard disk ([page 2 - 6](#)).
2. The 3G module will be visible at point **1** under the hard disk.
3. Carefully disconnect cable **2**, then remove the screw **3** from the module socket.
4. The 3G module **4** will pop-up.
5. Lift the 3G module ([Figure d](#)) up and off the computer.

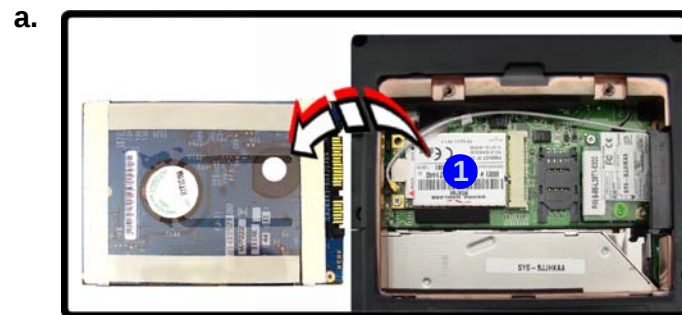


Figure 5
3G Removal

- a. Remove the hard disk
- b. Disconnect the cable and remove the screw.
- c. The 3G module will pop up.
- d. Remove the 3G module.

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



4. 3G Module

- 2 Screws

Disassembly

Figure 6
RAM Module Removal

- Remove the screws.
- Disconnect the fan cable and the cover.
- Locate the RAM 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.



6. CPU/RAM Bay Cover

- 4 Screws

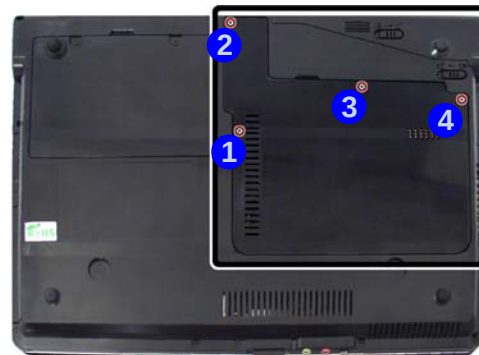
Removing the System Memory (RAM)

The computer has two memory sockets for 200 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting **DDRII** 667/800MHz. The main memory can be expanded up to 4GB. The SO-DIMM modules supported are 256MB, 512MB and 1024MB **DDRII** Modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

Memory Upgrade Process

- Turn **off** the computer, remove the battery ([page 2 - 5](#)).
- Locate the CPU/RAM bay cover, and remove screws ① - ④.
- Carefully (a fan and cable are attached to the under side of the cover) lift up the bay cover.
- Carefully disconnect the fan cable ⑤.
- Remove the bay cover ⑥.
- The RAM will be visible at point ⑦ on the mainboard.

a.



b.



c.

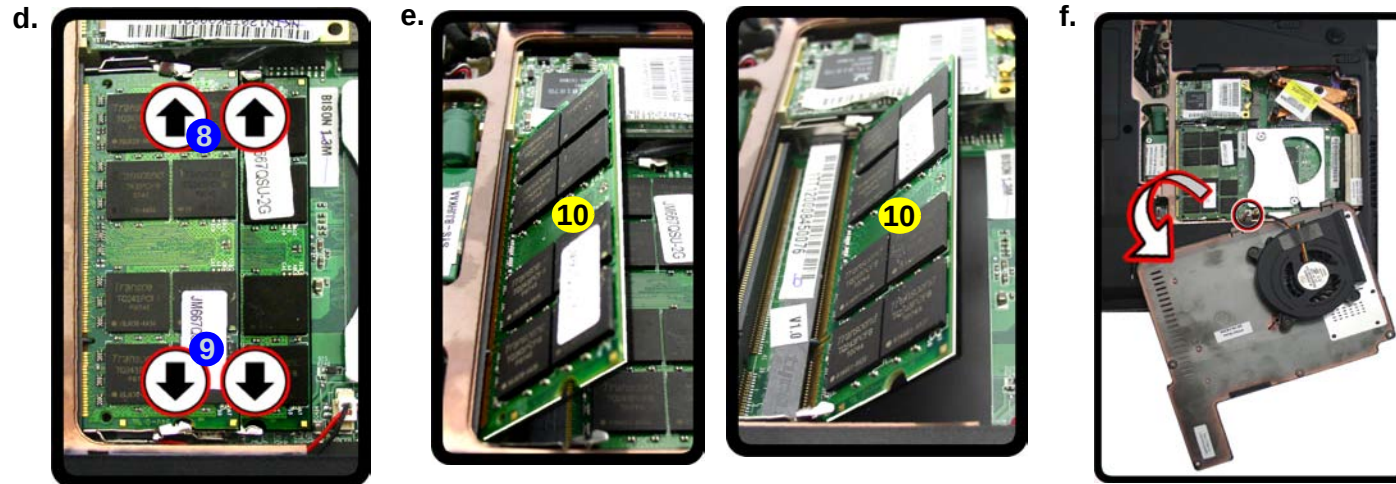


Fan Cable

Make sure you reconnect the fan cable ⑤ before screwing down the bay cover.

Figure 7
Memory Removal Sequence

- d. Push the release latch(es).
- e. Remove the module(s).
- f. Make sure you reconnect the fan cable.



- 9. Push the latches to release the second module if necessary.
- 10. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
- 11. 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.
- 12. Press the module down towards the mainboard until the slot levers click into place to secure the module.
- 13. Replace the bay cover and the screws (**make sure you reconnect the fan cable before screwing down the bay cover - Figure f**).
- 14. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

Single Memory Module Installation

If your computer has a single memory module, then insert the module into the **Channel 0 (JDIMM1)** socket. In this case this is the **lower memory socket** (the socket closest to the mainboard).

10 RAM Module(s)

Disassembly

Figure 8
Processor Removal

- Remove the cover and locate the heat sink.
- Remove the 3 screws in the order indicated.



CPU Heat Sink Screws

In order to prevent damage to the CPU it is very important that the heat sink screws are loosened in the correct order.

There are numbers printed on the heat sink. The order in which the screws should be loosened, depends on whether you are removing the CPU, or installing the CPU.

When **REMOVING** the heat sink unit **loosen the screws in the order 3, 2, 1** (as printed on the heat sink). **Figure b** indicates the correct order to loosen the screws when removing the heat sink unit.



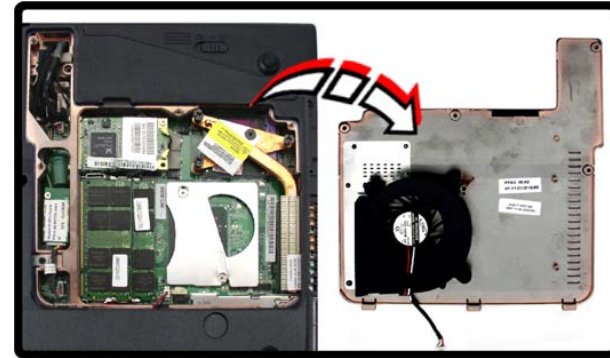
4. Heat Sink

- 3 Screws

Removing the Processor

- Turn **off** the computer, and remove the battery ([page 2 - 5](#)) and the CPU/RAM bay cover ([page 2 - 10](#)).
- Loosen the heat sink screws **3 - 1** (IN THE ORDER 3, 2, 1 AS INDICATED ON THE HEAT SINK - See below).

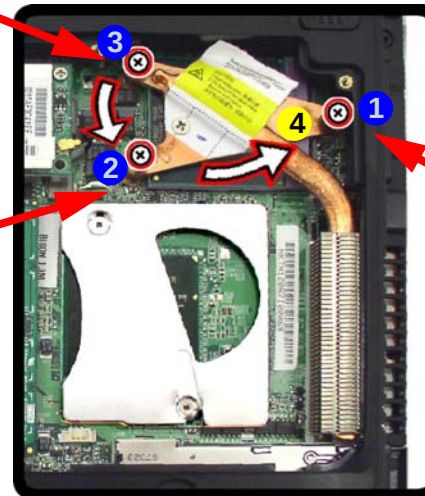
a.



b. HEAT SINK REMOVAL

Loosen screw **3** FIRST.

Loosen screw **2** SECOND.

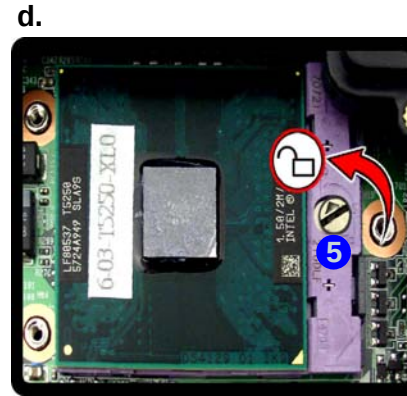


Loosen screw **1** THIRD.

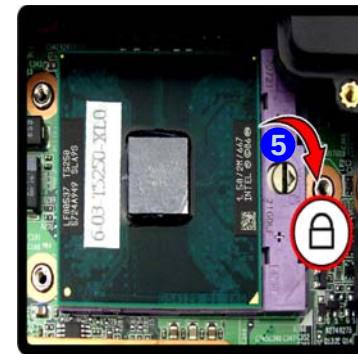
3. When the screws are loosened sufficiently, carefully lift up the heat sink **4** (**Figure c**) off the computer.
4. Turn the release latch **5** towards the unlock symbol , to release the CPU (**Figure d**).
5. Carefully (it may be hot) lift the CPU **6** up out of the socket (**Figure e**).
6. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

Figure 9
Processor Removal Sequence

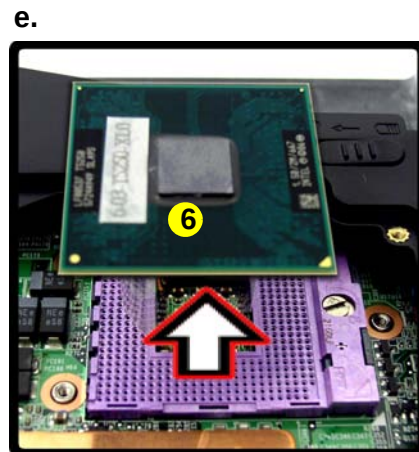
- c. Remove the heat sink.
- d. Turn the release latch to unlock the CPU.
- e. Lift the CPU out of the socket.



Unlock



Lock



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.



4. Heat Sink
6. CPU

Disassembly

Figure 10
**Processor Removal
Sequence**

f. Tighten the 3 screws in the order indicated.

7. Tighten the screws ① - ③ (IN THE ORDER 1, 2, 3 AS INDICATED ON THE HEAT SINK - See below).
8. Replace the CPU/RAM bay cover and screws.

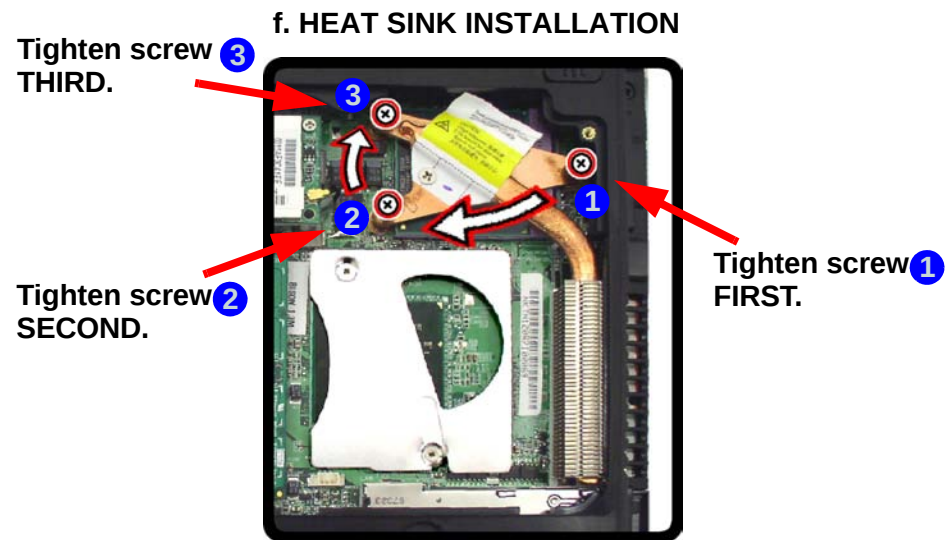


CPU Heat Sink Screws

In order to prevent damage to the CPU it is very important that the heat sink screws are loosened in the correct order.

There are numbers printed on the heat sink. The order in which the screws should be loosened, depends on whether you are removing the CPU, or installing the CPU.

When **INSTALLING** the heat sink unit **tighten the screws in the order 1, 2, 3** (as printed on the heat sink). **Figure f** indicates the correct order to tighten the screws when installing the heat sink unit.



Removing the Wireless LAN Module

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)) and the CPU/RAM bay cover ([page 2 - 10](#)).
2. The Wireless LAN module will be visible at point **1** on the mainboard.
3. Carefully disconnect cable **2**, then remove the screw **3** from the module socket.
4. The Wireless LAN module **4** will pop-up.
5. Lift the Wireless LAN module ([Figure d](#)) up and off the computer.

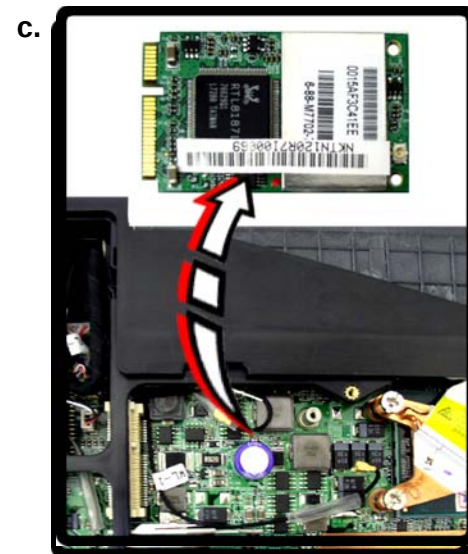
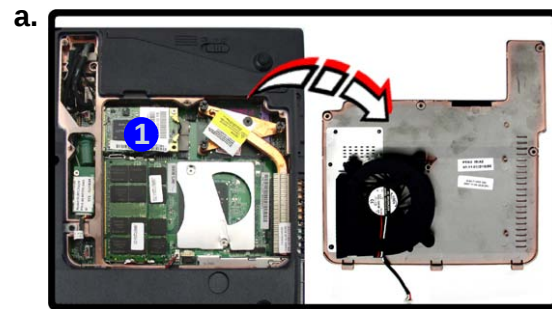


Figure 11
Wireless LAN Module Removal

- a. Remove the cover and locate the heat sink.
- b. Disconnect the cable and remove the screw.
- c. The WLAN module will pop up.
- d. Remove the WLAN module.

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



4. WLAN Module

- 1 Screw

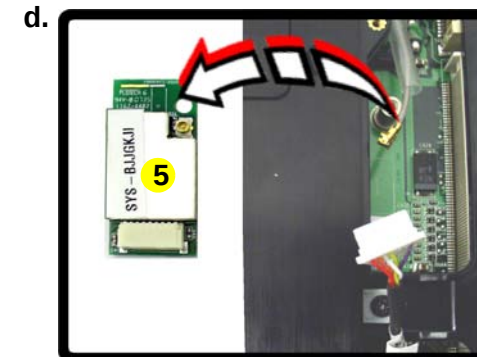
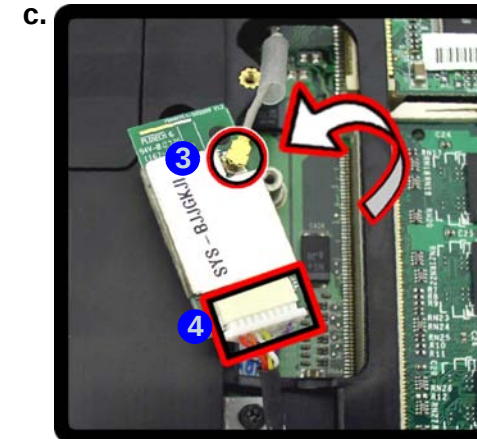
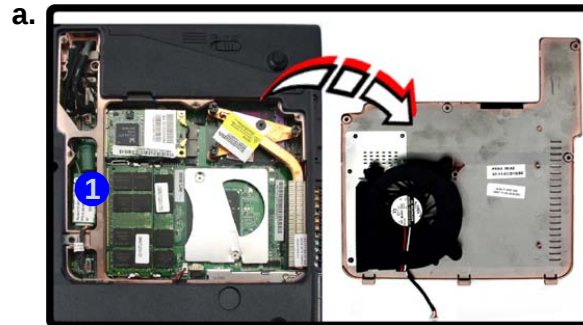
Disassembly

Figure 12
Bluetooth Removal

- Remove the cover and locate the Bluetooth module.
- Remove the screw.
- Disconnect the cable and separate the connector.
- Lift the Bluetooth module out.

Removing the Bluetooth Module

- Turn **off** the computer, remove the battery ([page 2 - 5](#)), and the CPU/RAM bay cover ([page 2 - 10](#)).
- The Bluetooth module will be visible at point **1** on the mainboard.
- Remove screw **2** and turn the bluetooth module over.
- Carefully disconnect the cable **3** and separate the module from the connector **4**.
- Lift the Bluetooth module **5** up and off the computer.



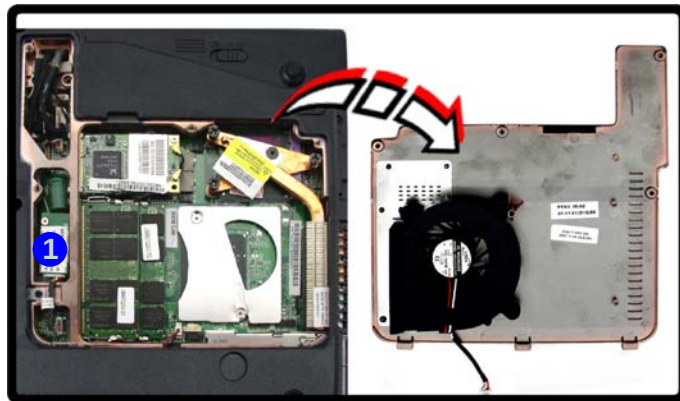
5. Bluetooth Module

- 1 Screw

Removing the Optical (CD/DVD) Device

1. Turn off the computer, remove the battery ([page 2 - 5](#)), and the CPU/RAM bay cover ([page 2 - 10](#)).
2. Remove the screw at point ①, and use a screwdriver to carefully push out the optical device at point ②.
3. Insert the new device and carefully slide it into the computer (the device only fits one way. DO NOT FORCE IT; The screw holes should line up).
4. Insert the new device and replace the optical device screw ①.
5. **Reconnect the fan cable before replacing the bay cover** (⑤ in [Figure 6 on page 2 - 10](#)).
6. Replace the bay cover and screws.
7. Restart the computer to allow it to automatically detect the new device.

a.



b.



Figure 13
Optical Device
Removal

- a. Remove the cover and locate the screw.
- b. Remove the screw and push the optical device out off the computer at point 2 and remove the optical device.



3. Optical Device

- 1 Screw

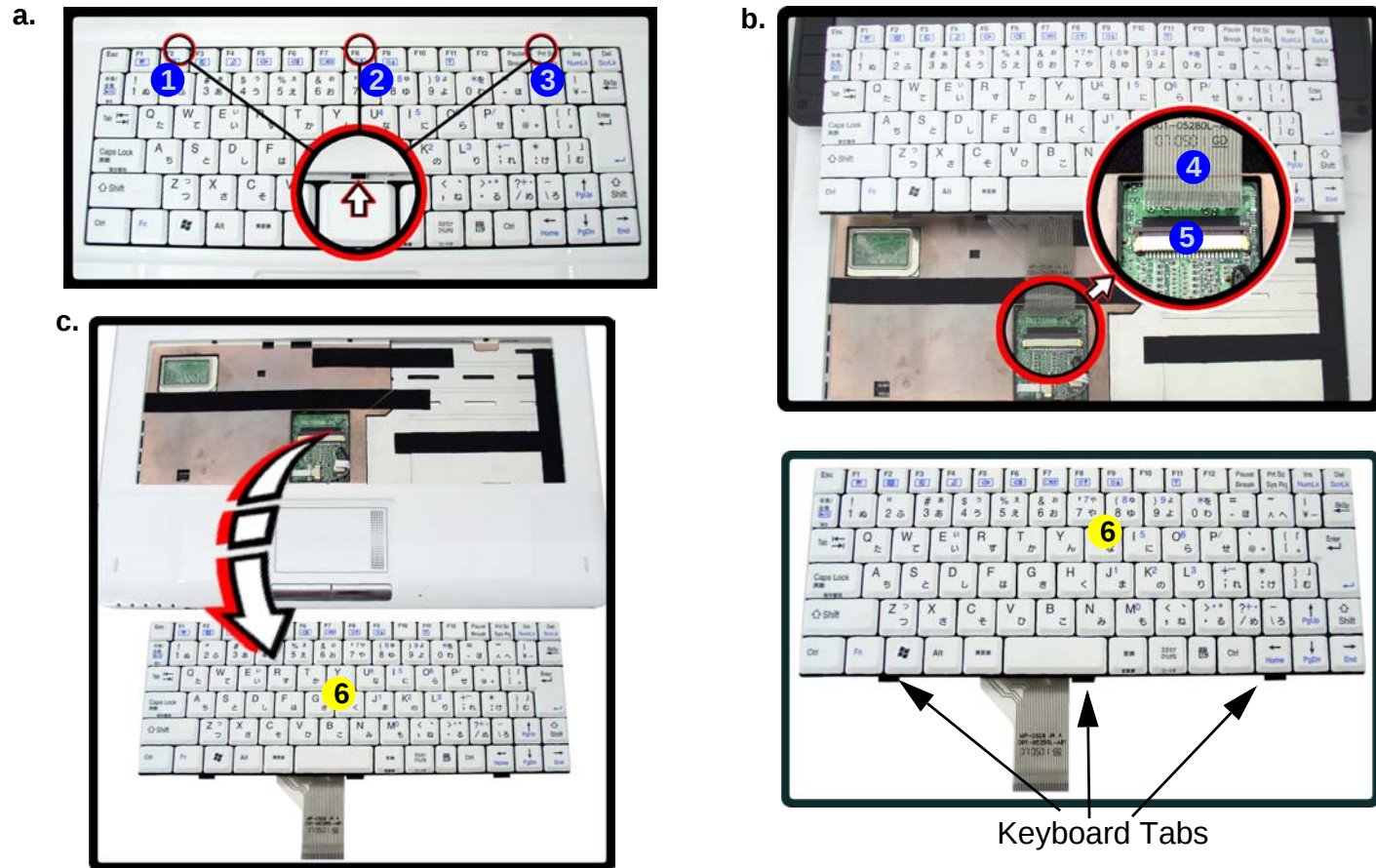
Disassembly

Figure 14
Keyboard Removal

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

Removing the Keyboard

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
2. Press the **three** keyboard latches at the top of the keyboard to elevate the keyboard from its normal position (you may need to use a small screwdriver to do this).
3. Carefully lift the keyboard up, being careful not to bend the keyboard ribbon cable ([Figure b](#)).
4. Disconnect the keyboard ribbon cable **4** from the locking collar socket **5**.
5. Carefully lift up the keyboard **6** ([Figure c](#)) off the computer.



Re-Inserting the Keyboard

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

6. Keyboard Module.

Appendix A:Part Lists

This appendix breaks down the *TN120T* series notebook’s construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

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

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

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

Part Lists

Part List Illustration Location

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

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

Part	Pages#
Top (TN120T)	<i>page A - 3</i>
Bottom - (TN120T)	<i>page A - 4</i>
LCD - (TN120T)	<i>page A - 5</i>
DVD-Super Multi - (TN120T)	<i>page A - 6</i>
HDD - (TN120T)	<i>page A - 7</i>

Top (TN120T)

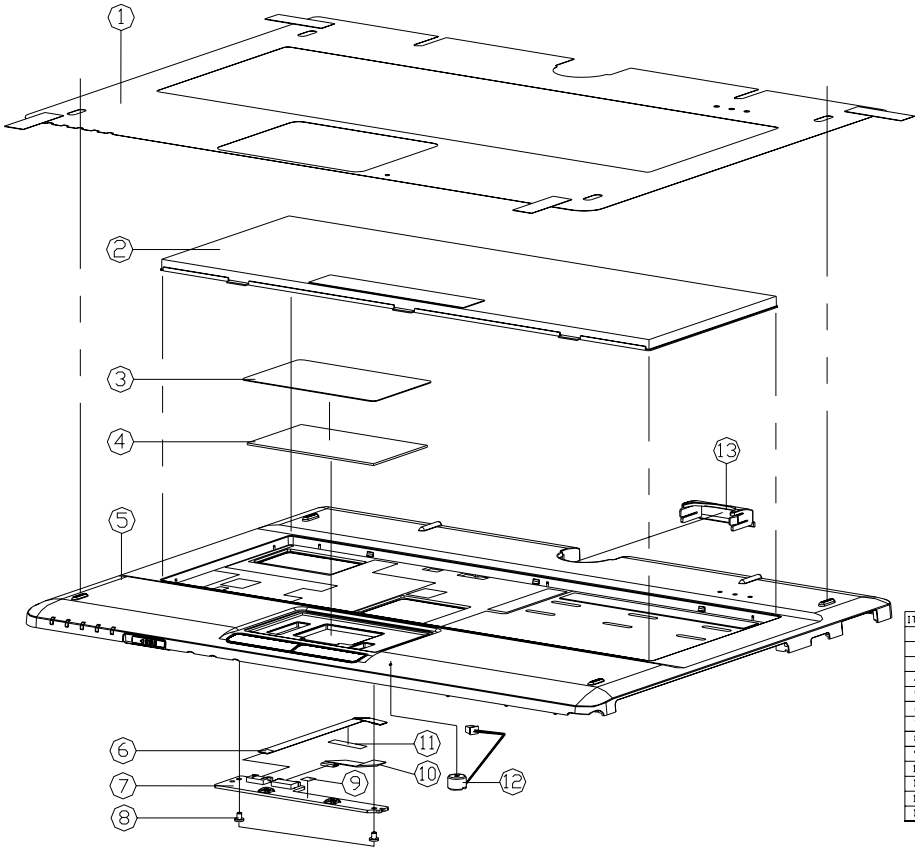
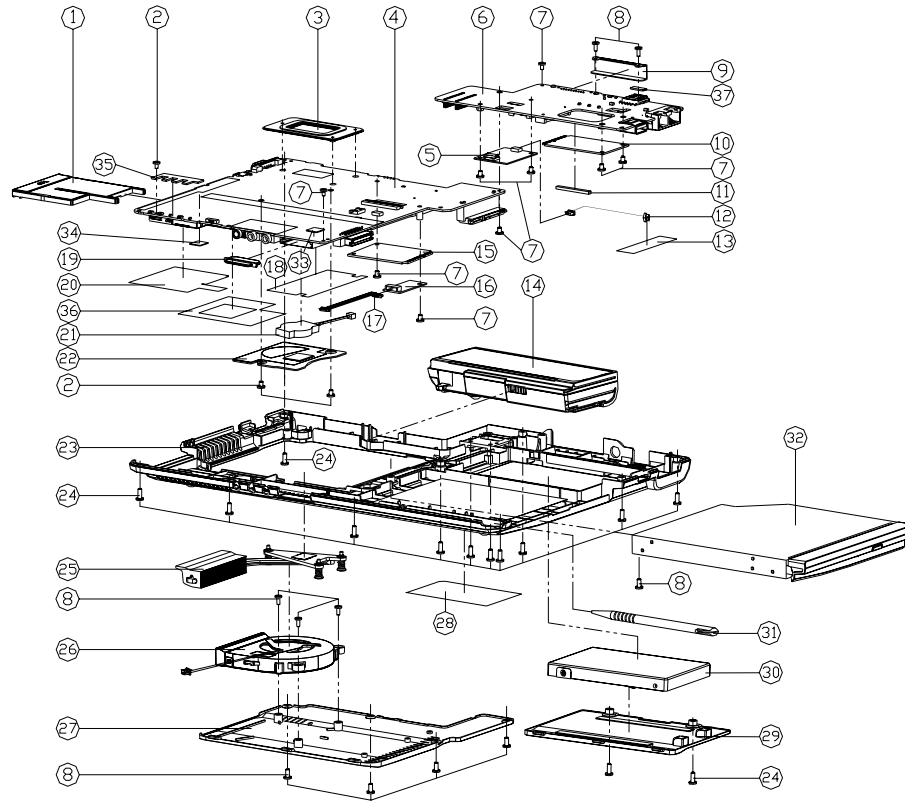


Figure A - 1
Top (TN120T)

ITEM	PART NAME	PART NO	REMARK
1	TOP CASE, PROTECT MYLAR BESS	6-40-T12R2-042	
2	TOUCH PAD, MYLAR BESS	6-80-M7210-011-1	
3	TOUCH PAD, MYLAR BESS	6-40-T12R2-020	
4	TOUCH PAD, MYLAR BESS	6-49-M66E2-010	
5	TOP CASE, MODULE	6-39-T12R2-016	
6	ITC CABLE, FOR CLK TO M9	6-43-T12R2-010	
7	CLICK BOARD, V3.0	6-77-T12R2-003	
8	SCREW, M2X3L, K1, NI, ICT, NY	6-35-B1120-3RA	
9	CLICK BOARD, MYLAR, FREQ	6-40-T12RS-021	
10	ITC CABLE, FOR CLK TO TOUCH PAD	6-43-T12R2-011	
11	TAPE, MYLAR, (C), MYLAR, H550J	6-40-M55J2-030	
12	CLICK BOARD, MYLAR, FREQ	6-23-EM55G-011	
13	TOP CASE, COVER, PCABS	6-42-T12R2-061	

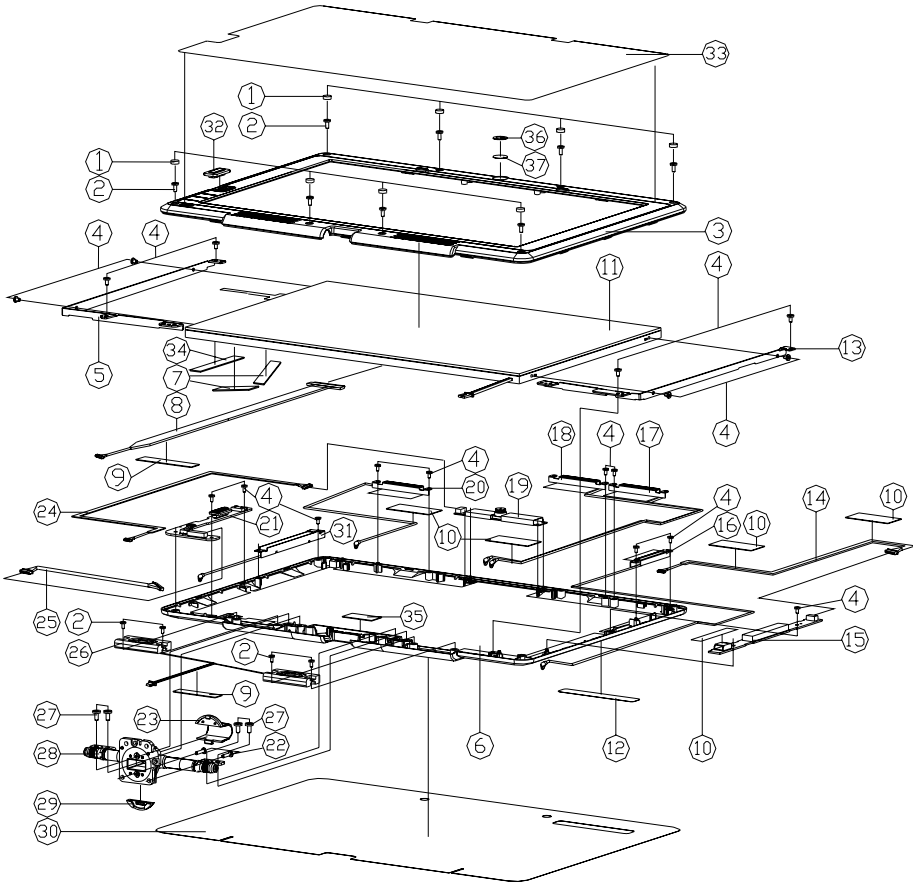
Part Lists

Bottom (TN120T)

Figure A - 2
Bottom (TN120T)

ITEM	PART NAME	PART NO	REMARK
1	DUMMY NEW CARD PC+ABS TN120R	6-42-T12R3-011	
2	SCREW M2X2.5 KI NY ICT NY 0M 4-35	6-35-B1120-2R5	
3	CPU SUPPORT BRACKET SUS 430C/ID M50M	6-33-M55NS-022	
4	MAIN BOARD V1.0 TN120T	6-77-T1200-002	
5	HEAT SINK FOR CPU TN120T	6-88-L3911-5301	
6	MULTI I/O BOARD V1.0 TN120T	6-88-M7651-8111	
7	SCREW M2X2.5 KI NY ICT NY 0M 4-35	6-77-T1201-002	
8	SCREW M2X2.5 KI NY ICT NY 0M 4-35	6-35-B1120-3RA	
9	V/D BRACKET BRACKET SECC TN120R	6-35-B6120-5R0	
10	W/D BRACKET BRACKET SECC TN120R	6-33-T12RS-021	
11	W/D BRACKET BRACKET SECC TN120R	6-88-T120W-8300	
12	W/D BRACKET BRACKET SECC TN120R	6-88-M810W-7900	
13	HDD RUBBER FOR MULTI BOARD SLIDING TN120R	6-47-T12RS-010	(OPTION)
14	WIRE CABLE FOR RJ-45 TO MDC 2P M725S	6-43-M725U-010	
15	TAPE MYLAR (C)MYLAR M550J	6-40-M55J2-030	
16	W/D BRACKET BRACKET SECC TN120R	6-87-T12RS-4UF	
17	W/D BRACKET BRACKET SECC TN120R	6-88-M8102-8700	
18	W/D BRACKET BRACKET SECC TN120R	6-88-M8102-7000	
19	W/D BRACKET BRACKET SECC TN120R	6-88-M72T2-42A0	
20	W/D BRACKET BRACKET SECC TN120R	6-88-M735S-4200	
21	W/D BRACKET BRACKET SECC TN120R	6-88-M5532-7000	
22	W/D BRACKET BRACKET SECC TN120R	6-88-M72T2-4210	
23	W/D BRACKET BRACKET SECC TN120R	6-88-M72T2-42A0	
24	W/D BRACKET BRACKET SECC TN120R	6-88-M735S-3900	
25	WIRE CABLE FOR BLUETOOTH TO W/D M725S	6-43-M725S-010	
26	W/D BRACKET BRACKET SECC TN120R	6-40-M54RS-020	
27	MS200 CARD READER RUBBER	6-47-M520R-010	
28	NEW CARD MYLAR X30 FOR W/D TN120R	6-40-T12RS-010	
29	W/D BRACKET BRACKET SECC TN120R	6-23-22015-P2C	
30	NORTH BRIDGE HEAT SINK AL TN120R	6-31-T12RN-012	
31	BOTTOM CASE MODULE TN120R	6-39-T12R3-012	
32	SCREW M2.5X6 KI BK/Z NY ICT	6-35-B6125-BR0	
33	CPU THERMAL MODULE TN120R	6-31-T12RS-102-1	
34	FANION SHOCKPROM 3V 10A 1000VDC	6-23-AT12R-021	
35	CPU COVER MODULE (80-100) TN120R	6-42-T12RS-102	
36	PRODUCT LABEL FOR TN120T	6-45-T1203-010	
37	HDD COVER MODULE TN120R	6-42-T12R3-101	
	W/D HDD ASS'Y TN120R	6-79-T12R3-010	
	STYLUS PEN PDM TN120R	6-42-T12R3-010	
	SATA DVD SUPER MULTI 24X/8X ASSY	6-79-TN120T00-000	(OPTION)
	TOP MB RUBBER A TN120R	6-47-T12RS-021	
	MB RUBBER FOR HEAT SINK TN120R	6-47-T12RS-031	
	LED LENS SPONGE SH-SS TN120R	6-47-T12R2-080	
	W/D BRACKET BRACKET SECC TN120R	6-40-00150-550	
	SCREW M2X2.5 KI NY ICT NY 0M 4-35	6-47-00190-10E	

LCD (TN120T)



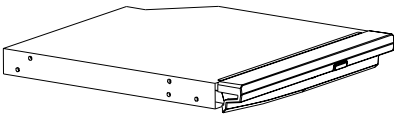
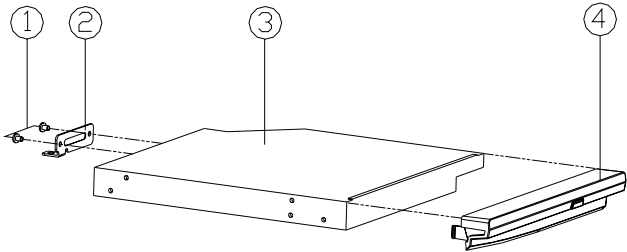
ITEM	PART NAME	PART NO	REMARK
1	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-47-T12R1-031	
2	SCREW NYMSL KIT-48 3-40 BK/2 ICT NY (NY)	6-35-B6120-SR0	
3	LED FRONT COVER MODULE TN120R (NY)	6-39-T12R1-012	
4	SCREW M2x5L KI NI ICT NY (NY)	6-35-B1120-SRA	
5	LED BRACKET L SECC (NY) (NY) (NY) (NY)	6-33-T12R1-023	
6	LED BACK COVER MODULE (NY) (NY) (NY) (NY)	6-39-T12R1-023	
7	LED CABLE SPONGE CR SPONGE TN120R (NY)	6-47-T12R1-050	
8	W/C CABLE FOR LED TO W/D ZPP TEFEL (NY) (NY)	6-43-T12R1-012	
9	W/C CABLE FOR LED TO W/D ZPP TEFEL (NY) (NY)	6-40-00150-540	
10	TAPE MYLAR (C) MYLAR M550J (NY) (NY)	6-40-M55J2-030	
11	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-50-FC255-102-1	
12	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-50-FC255-102-2	
13	MS40G (NY) (LOGO) STYLE (NOT) (NY) (NY)	6-45-MS4G1-020-1	
14	LED BRACKET R SECC (NY) (NY) (NY) (NY)	6-33-T12R1-013	
15	W/C CABLE FOR INVERTER TO W/D ZPP TEFEL (NY) (NY)	6-43-T12RR-012	
16	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-76-M660R-011	
17	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-76-M660R-010	
18	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-23-T12R1-012	
19	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-23-T12R1-052	
20	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-23-T12R1-032	
21	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-88-M5E4C-4921	OPTIONAL
22	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-88-M5E4C-4919	OPTIONAL
23	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-88-M57RC-743	OPTIONAL
24	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-23-T12R1-022	
25	LED BOMB RUBBER (NOT) SLITTING (NY) INTR (NY)	6-77-T12R1-N04	
26	SCREW M2x5L KI BK/2 NY ICT NY (NY)	6-35-B6125-BR0	
27	HINGE FRONT COVER ABS TN120R (NY)	6-42-T12RY-011	
28	W/C CABLE FOR LED TO W/D ZPP TEFEL (NY) (NY)	6-43-T12R1-013	
29	W/C CABLE FOR LED TO W/D ZPP TEFEL (NY) (NY)	6-43-T12R1-022	
30	SPEAKER MODULE (NY) (NY) (NY) (NY)	6-23-S12R1-011	
31	SCREW M2x5L KI NI ICT NY (NY)	6-35-B1125-SRA	
32	LCD HINGE ZN-5 TN120R (NY)	6-33-T12R1-043	
33	HINGE BACK COVER ABS TN120R (NY)	6-42-T12RY-021	
34	LED BACK COVER MODULE (NY) (NY) (NY) (NY)	6-40-T12R1-082	
35	HINGE (NY) (NY) (NY) (NY)	6-23-T12R1-043	
36	W/D FINGERPRINT MODULE TN120R (NY)	6-42-T12R1-100	FOR W/D FINGERPRINT
37	LED FRONT COVER MODULE MYLAR KI INTR (NY)	6-40-T12R1-0X0	
	LED CABLE SPONGE R SPONGE TN120R (NY)	6-47-T12R1-090	
	SPONGE (25x10x10) FOR LED W/SPR (NY) (NY)	6-47-0019A-252	
	W/CCD RING MYLAR PC TN120R (NY)	6-40-T12R1-021	FOR W/CCD
	W/D CCD RING MYLAR PC TN120R (NY)	6-40-T12R1-011	FOR W/D CCD

Figure A - 3
LCD (TN120T)

Part Lists

DVD-Super Multi (TN120T)

Figure A - 4
DVD-Super Multi
(TN120T)



ITEM	PART NAME	PART NO	REMARK
1	SCREW M2x3L K1 NI ICT NY	6-35-B1120-3RA	
2	CD-ROM LOCK BRACKET,SEC	6-33-M55GZ-012	
3	CD-ROM LOCK BRACKET,SEC	6-85-A0724-T03	
4	SUPER MULTI BEZEL MODULE TN120R	6-42-T12RQ-102	

HDD (TN120T)

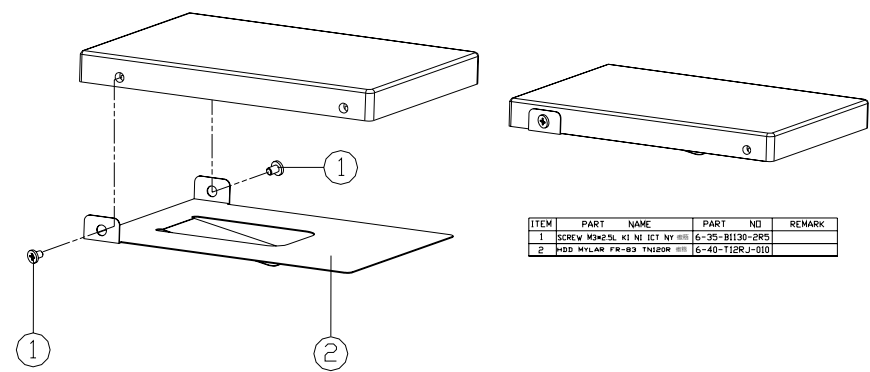


Figure A - 5
HDD (TN120T)

Appendix B:Schematic Diagrams

This appendix has circuit diagrams of the *TN120T* 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>ICH9-M 4/5, Power - Page B - 16</i>	<i>POWER 1.05VS/1.5V/3.3V/5V - Page B - 28</i>
<i>Intel Penryn 1/2 - Page B - 3</i>	<i>ICH9-M 4/5, Power - Page B - 16</i>	<i>POWER 1.8V/0.9VSM - Page B - 29</i>
<i>Intel Penryn 2/2 - Page B - 4</i>	<i>ICH9-M 5/5, GND - Page B - 17</i>	<i>CPU VCORE - Page B - 30</i>
<i>Cantiga 1/6, Host - Page B - 5</i>	<i>Clock Generator - Page B - 18</i>	<i>DC-IN, CHARGER - Page B - 31</i>
<i>Cantiga 2/6, VGA, CRT - Page B - 6</i>	<i>Panel, Inverter, CRT, FTP, TP, CIR - Page B - 19</i>	<i>Multi Board, PCIE LAN RTL8111DL - Page B - 32</i>
<i>Cantiga 3/6, RAM - Page B - 7</i>	<i>New Card, Mini PCIE, TPM - Page B - 20</i>	<i>Multi Board, LED, Docking, USB - Page B - 33</i>
<i>Cantiga 4/6, Power - Page B - 8</i>	<i>ENE MR510, 7-in-1 - Page B - 21</i>	<i>Multi Board, 3G, MDC, RJ11 - Page B - 34</i>
<i>Cantiga 5/6, Power - Page B - 9</i>	<i>Audio Codec ALC662 - Page B - 22</i>	<i>FPT ExBoard FINGERPRINT - Page B - 35</i>
<i>Cantiga 6/6, GND - Page B - 10</i>	<i>KBC-ITE IT8502E - Page B - 23</i>	<i>FPT MBoard FINGERPRINT ET&T - Page B - 36</i>
<i>DDRII SO-DIMM 0 - Page B - 11</i>	<i>ODD, CCD, BT, Multi I/O - Page B - 24</i>	<i>FPT MBoard TP, KEY, CIR ET&T - Page B - 37</i>
<i>DDRII SO-DIMM 1 - Page B - 12</i>	<i>LED, FAN, CLICK, LID, G-Sensor - Page B - 25</i>	<i>Click Board - Page B - 38</i>
<i>ICH9-M 1/5, SATA - Page B - 13</i>	<i>3VS, 5VS, POWER S/W - Page B - 26</i>	
<i>ICH9-M 2/5, PCIE, PCI, USB - Page B - 14</i>	<i>POWER VDD3/VDD5 - Page B - 27</i>	

Table B - 1
**Schematic
Diagrams**



Version Note

The schematic diagrams in this chapter are based upon version 6-7P-T1205-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

Intel Penryn 1/2 B - 3

B.Schematic Diagrams

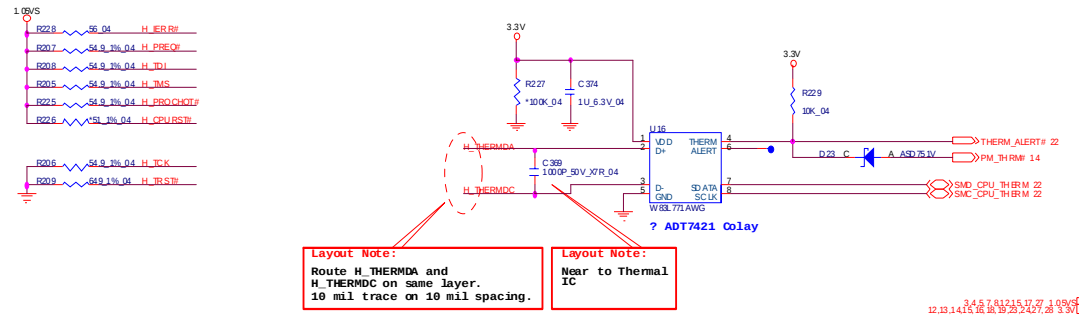
Layout note:
 COMP0, COMP2: 0.5" Max, Zo=27.4 Ohms
 COMP1, COMP3: 0.5" Max, Zo=55 Ohms
 Best estimate is 18 mils wide trace for outer layers and 14 mils wide trace if on internal layers.

COMP0
 COMP1
 COMP2
 COMP3

R23 R21 R213 R214

54.9_3%_04 27.14_04 54.9_3%_04 27.14_3%_04

50 Ohm

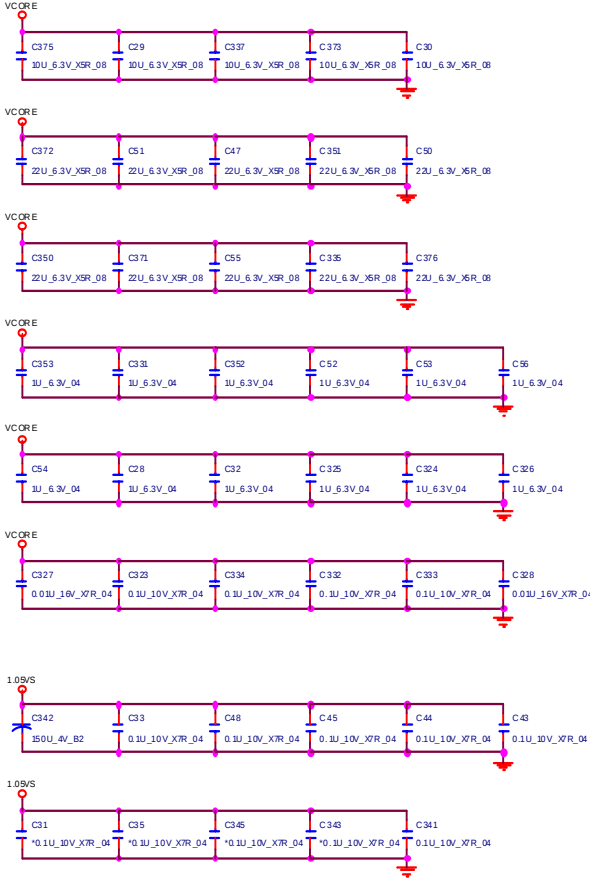
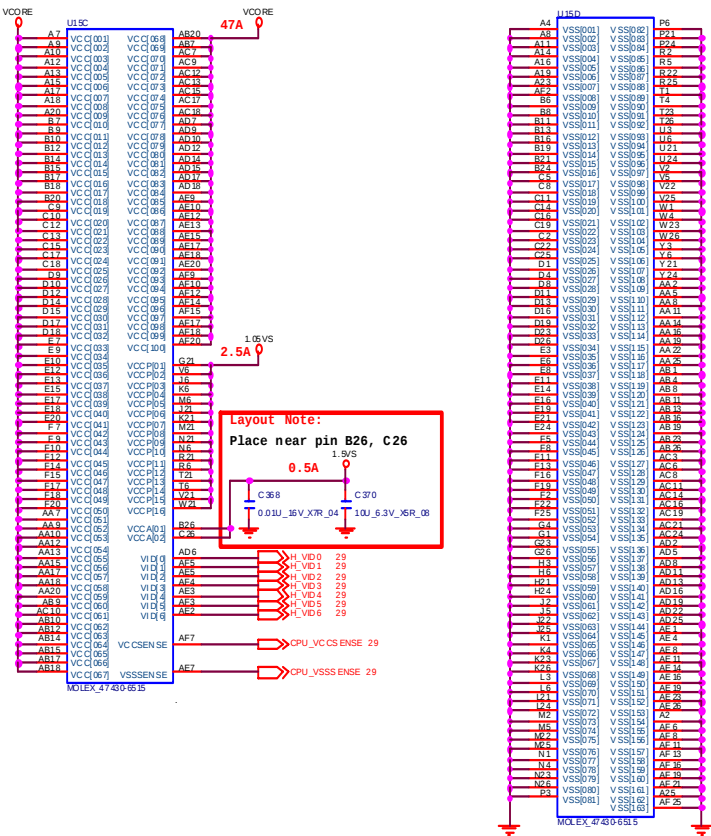


Layout Note:
Near to Thermal IC

Schematic Diagrams

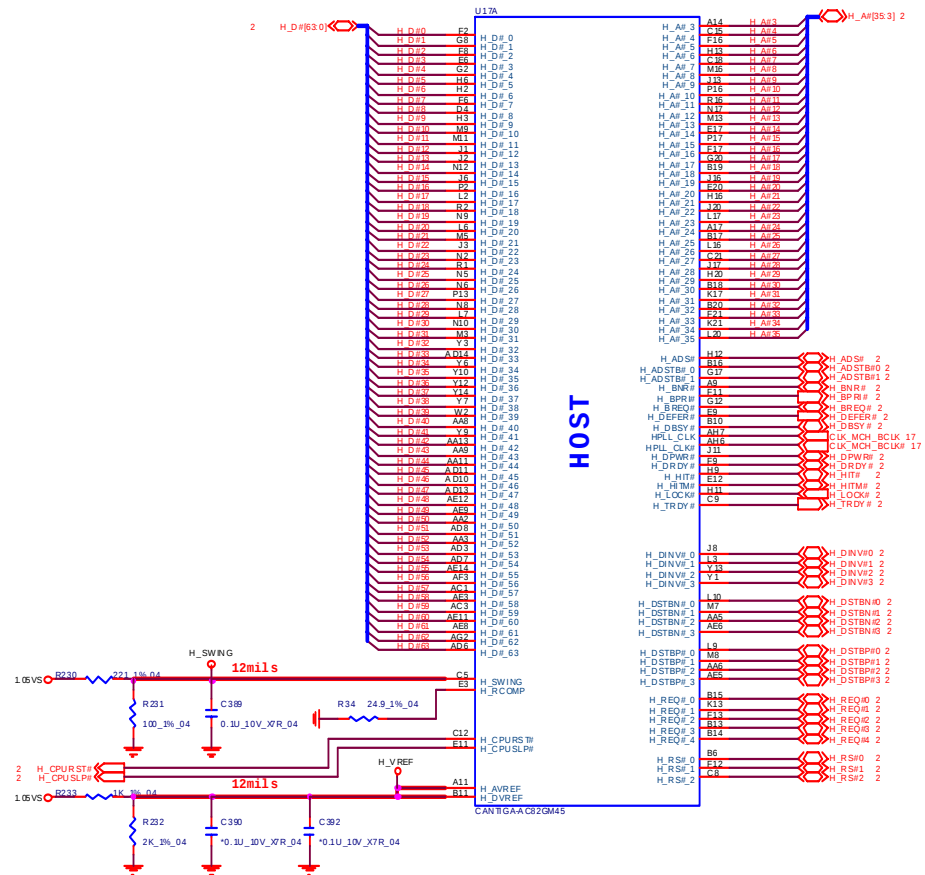
Intel Penryn 2/2

Sheet 3 of 37
Intel Penryn 2/2

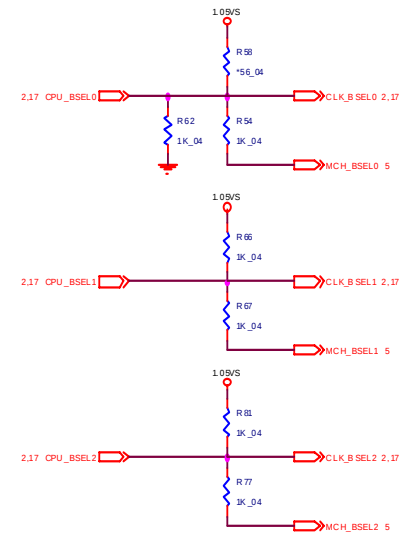


2,4,5,7,8,12,15,17,27 1.0V5
8,12,13,15,19,23,27 1.9V5
29 VCCRE

Cantiga 1/6, Host



CPU_BSEL[2:0] (FSB) DAEFULY SETTING			
	CPU_BSEL2	CPU_BSEL1	CPU_BSEL0
266	L	L	L
200	L	H	L
166	L	H	H

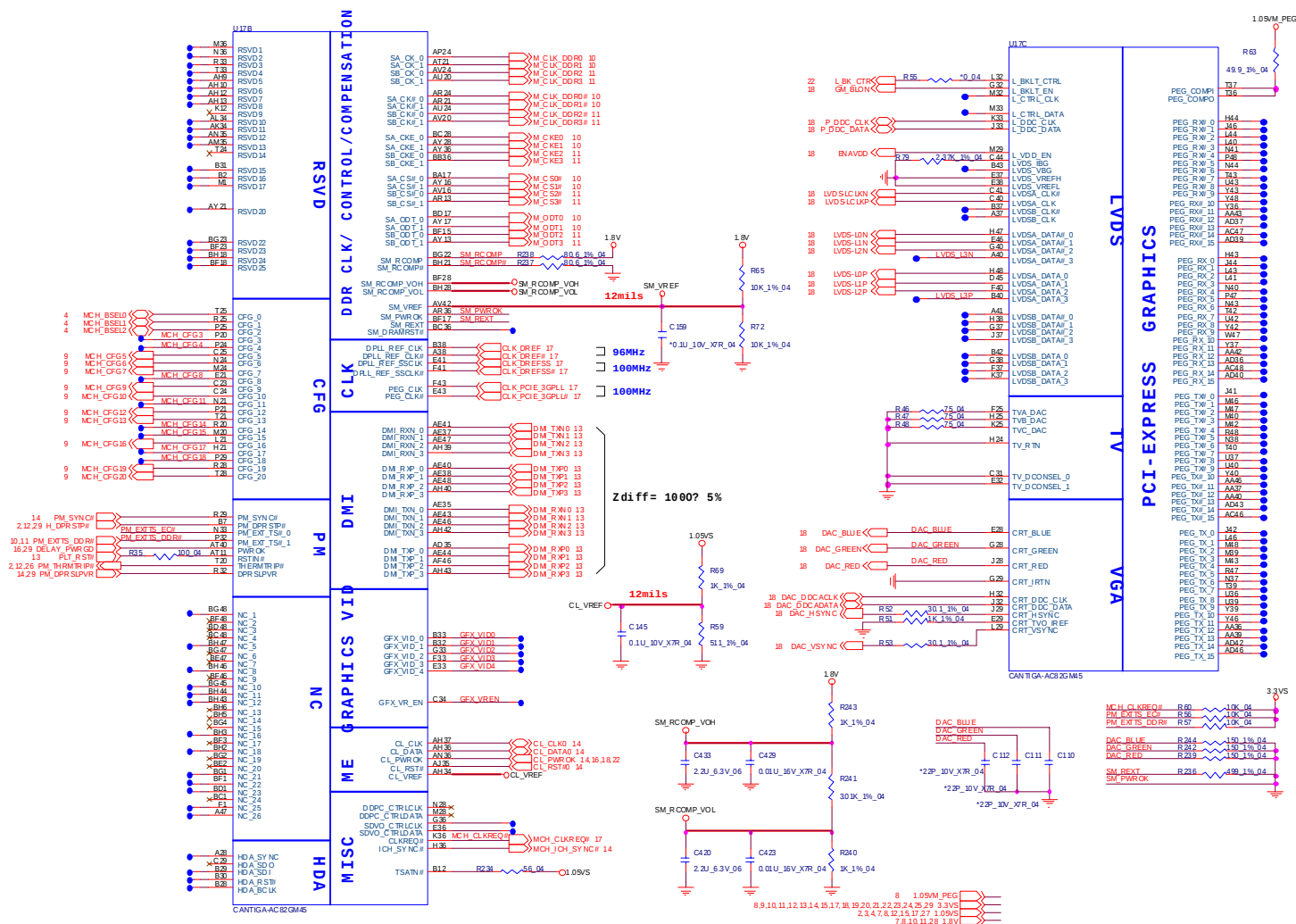


Sheet 4 of 37
Cantiga 1/6, Host

B.Schematic Diagrams

B.Schematic Diagrams

Sheet 5 of 37
Cantiga 2/6,
VGA, CRT



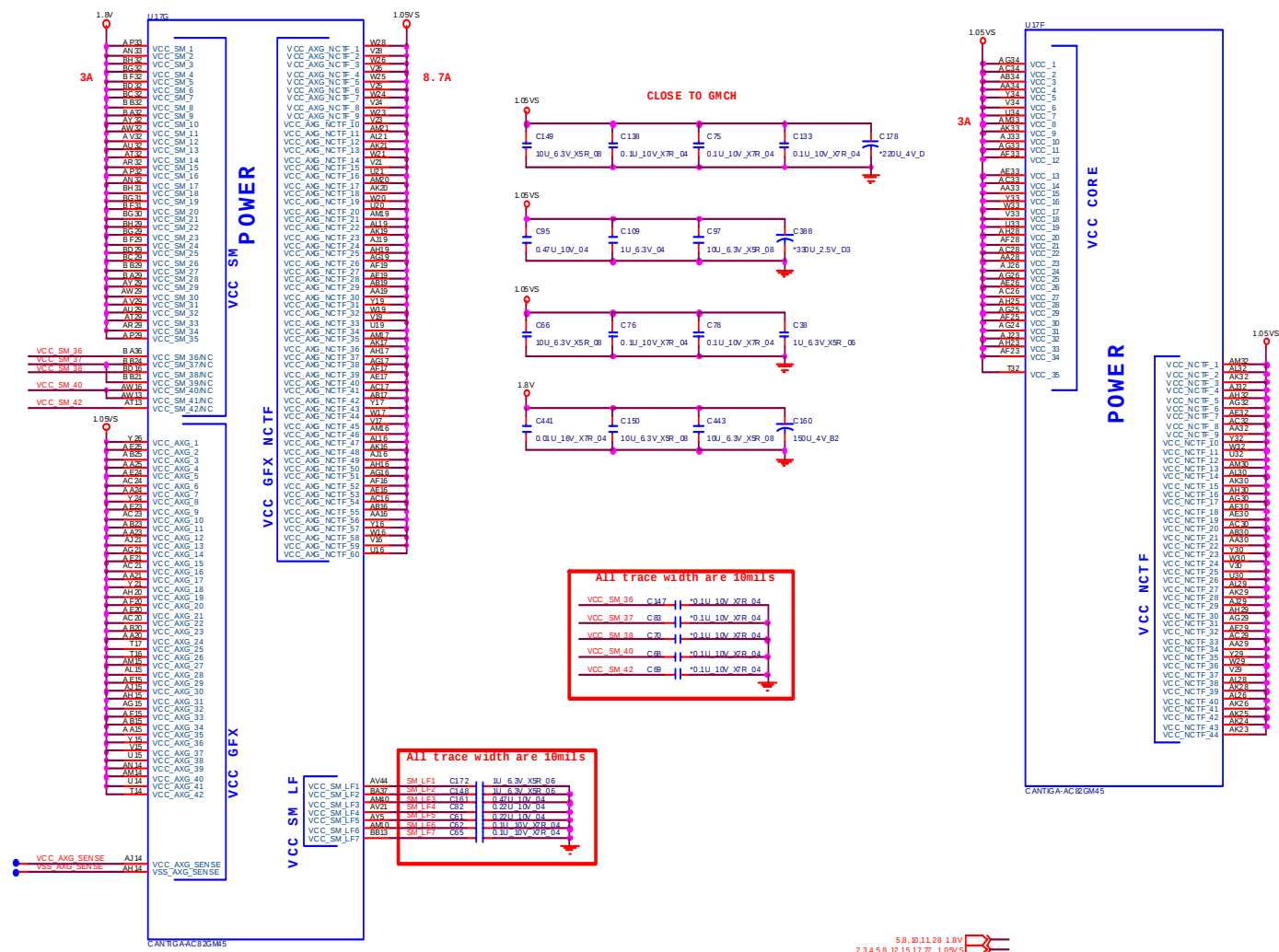
Cantiga 3/6, RAM



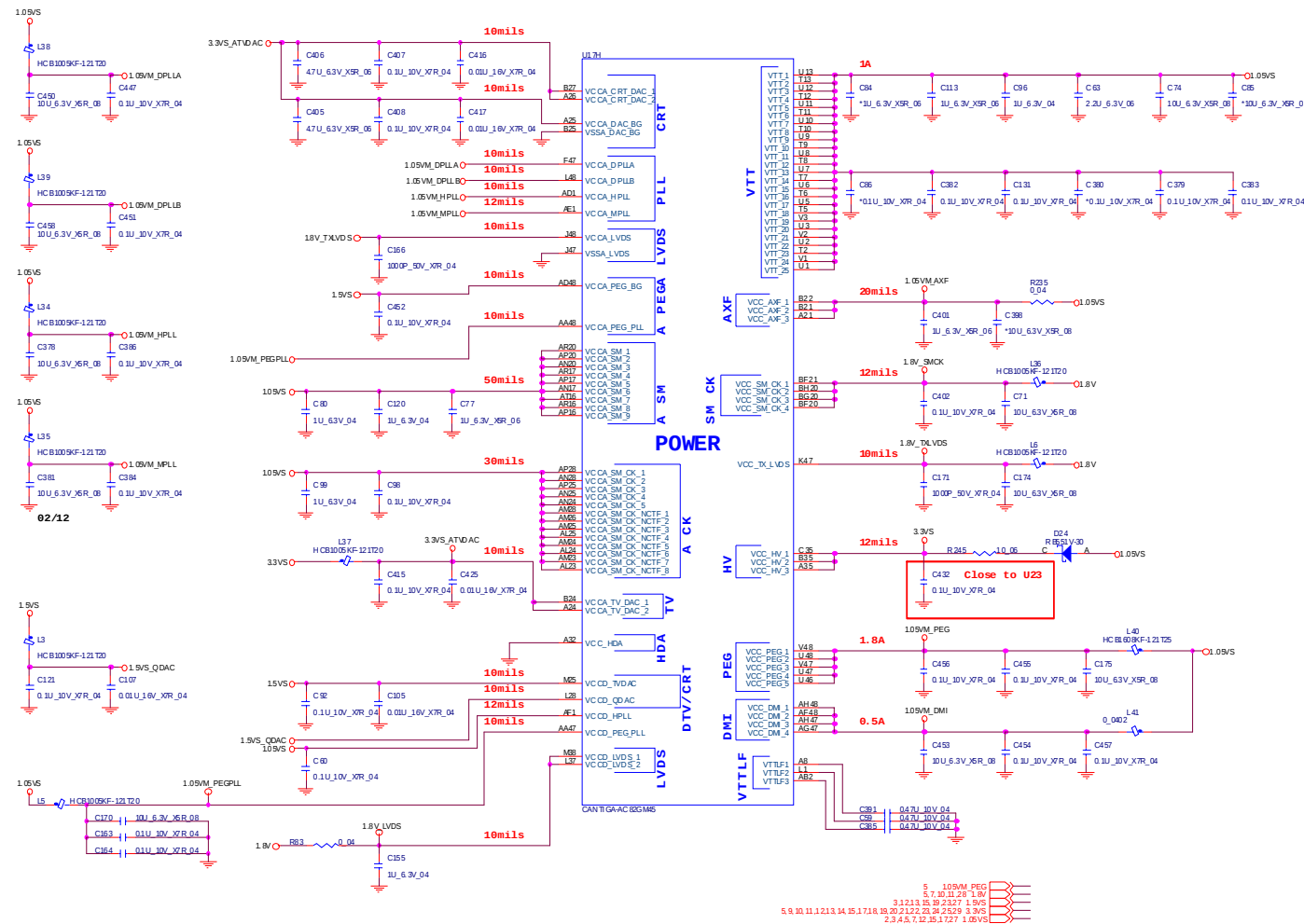
Sheet 6 of 37
Cantiga 3/6, RAM

Cantiga 4/6, Power

Sheet 7 of 37
Cantiga 4/6, Power



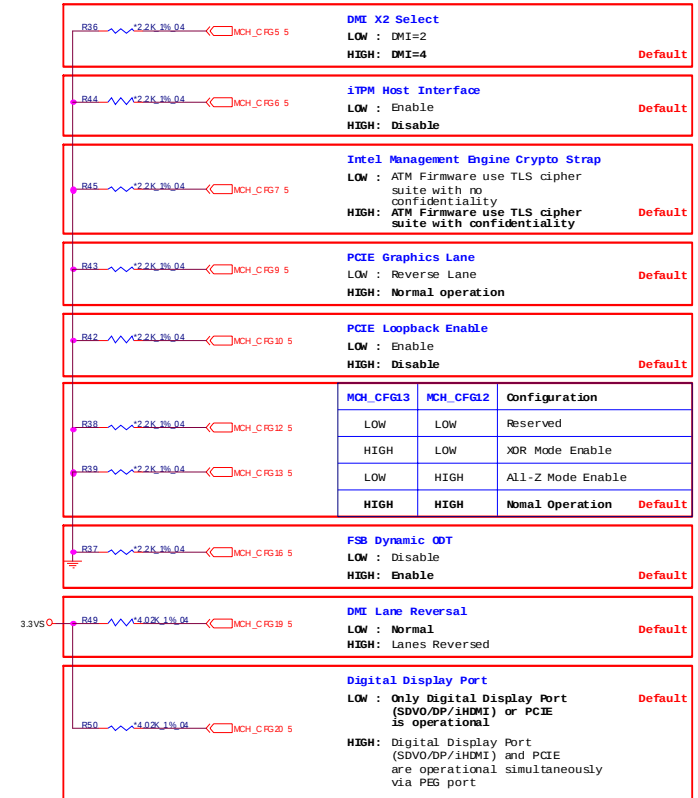
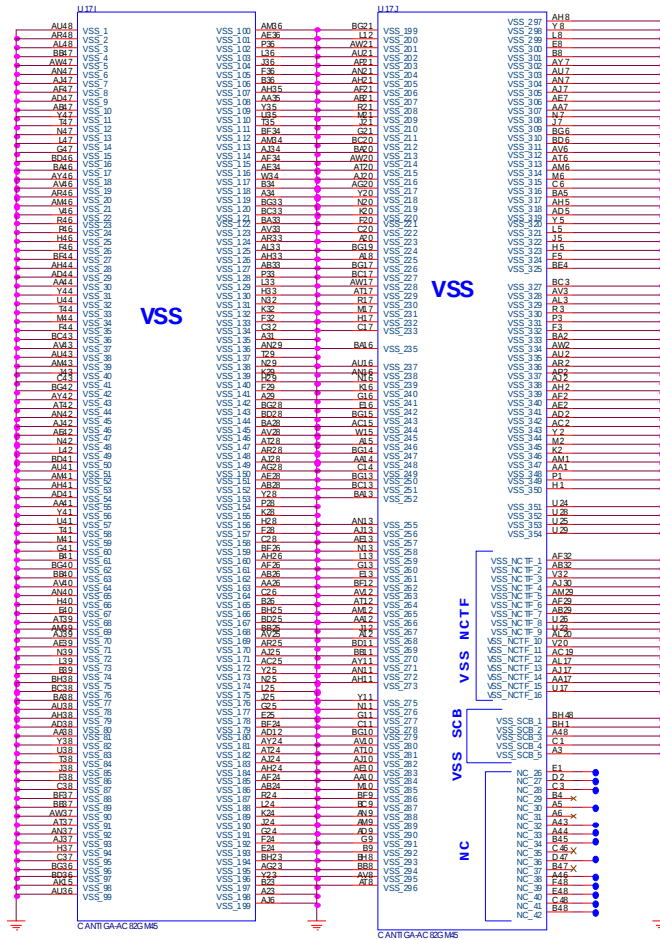
Cantiga 5/6, Power B - 9



Schematic Diagrams

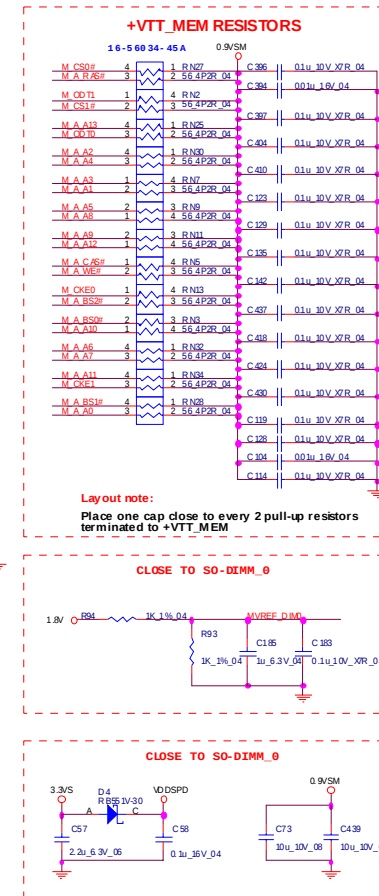
Cantiga 6/6, GND

Sheet 9 of 37
Cantiga 6/6, GND



58,101,11,12,13,14,15,17,18,19,20,21,22,23,24,25,29 3 3/s

SO-DIMM ①



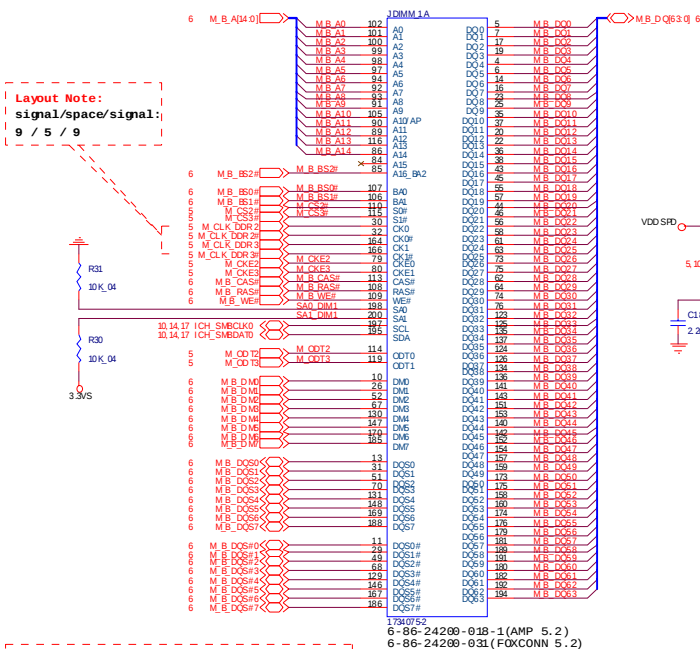
DDRII SO-DIMM 0 B - 11

DDRII SO-DIMM 1

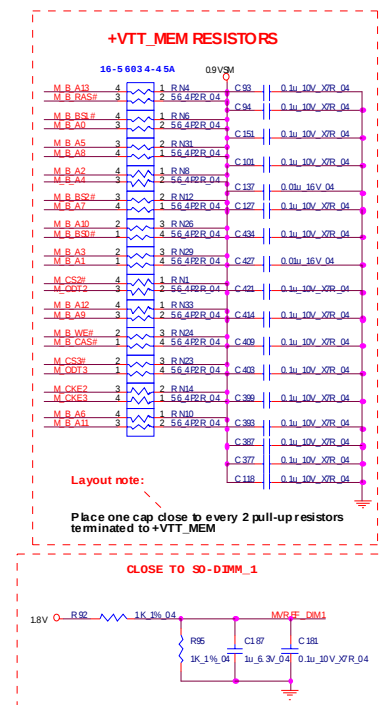
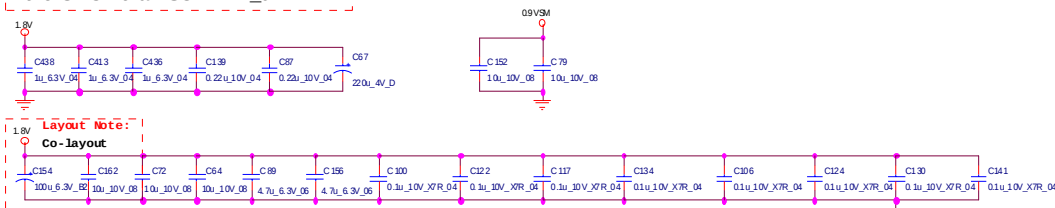
SO-DIMM 1

Layout Note:
signal/space/signal:

Sheet 11 of 37
DDRII SO-DIMM 1

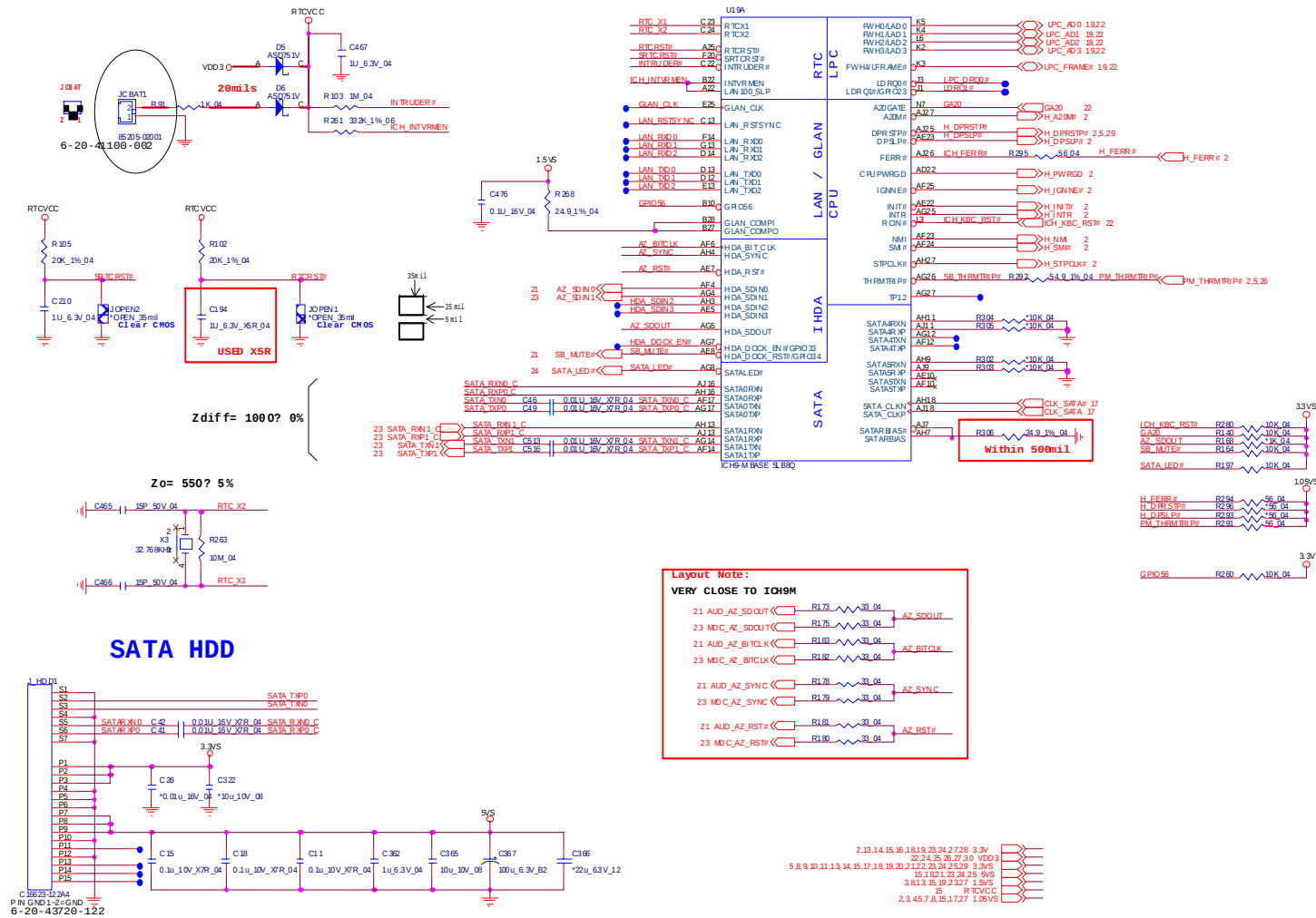


Layout note:
SO-DIMM_1 is placed farther from the GMCH than SO-DIMM 0



10	VDDSPD	
1Q28	0.9VSM	
5, 7, 8, 10, 28	1.8V	
58, 9, 10, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 29	3.3VS	

ICH9-M 1/5, SATA



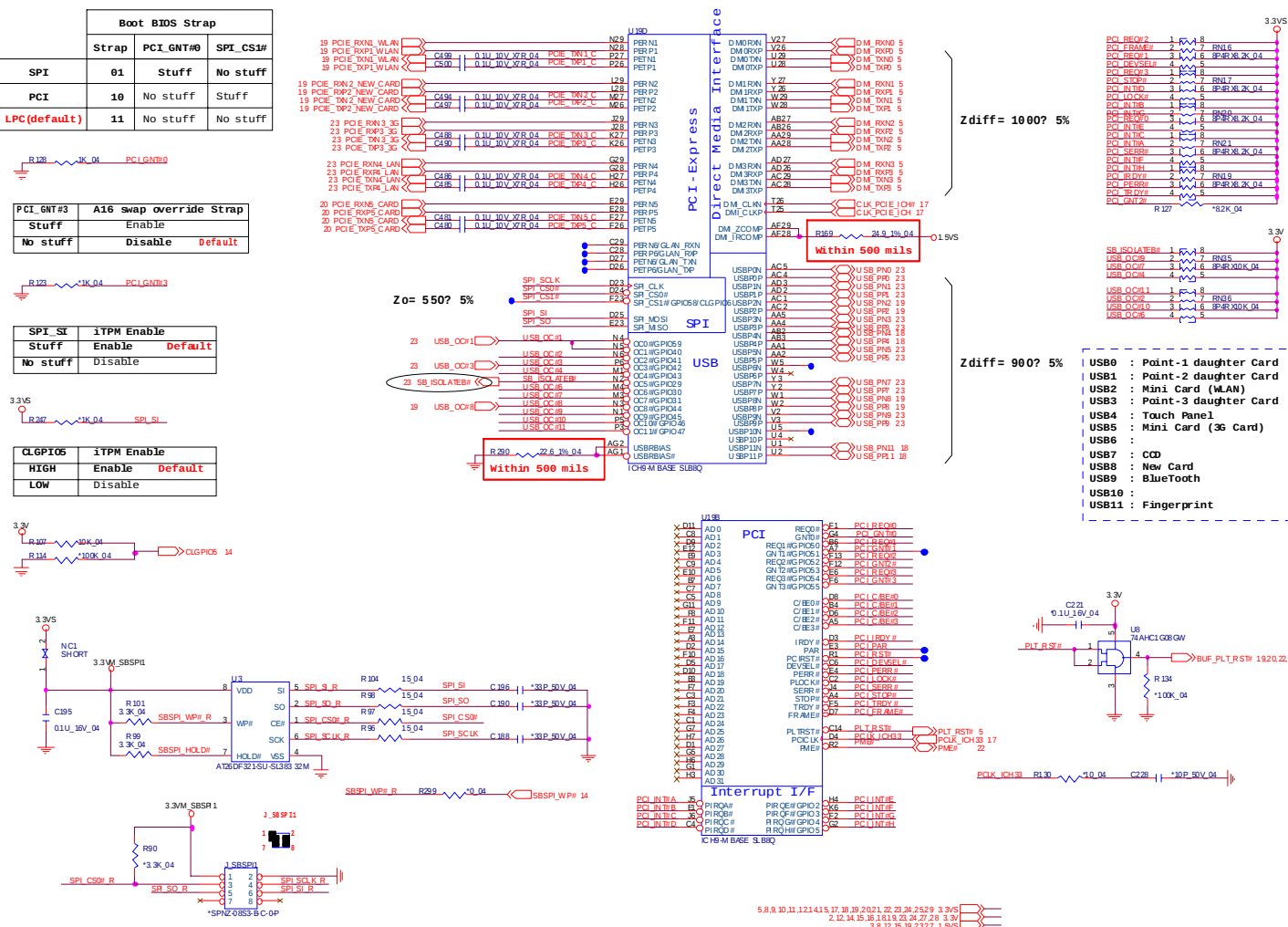
B.Schematic Diagrams

Sheet 13 of 37
ICH9-M 2/5, PCIE,
PCI, USB

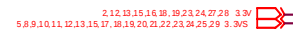
PCI_GNT#3	A16 swap override Strap
Stuff	Enable
No stuff	Disable Default

SPI_SI	iTPM Enable
Stuff	Enable Default
No stuff	Disable

CLGPI05	iTPM Enable
HIGH	Enable Default
LOW	Disable

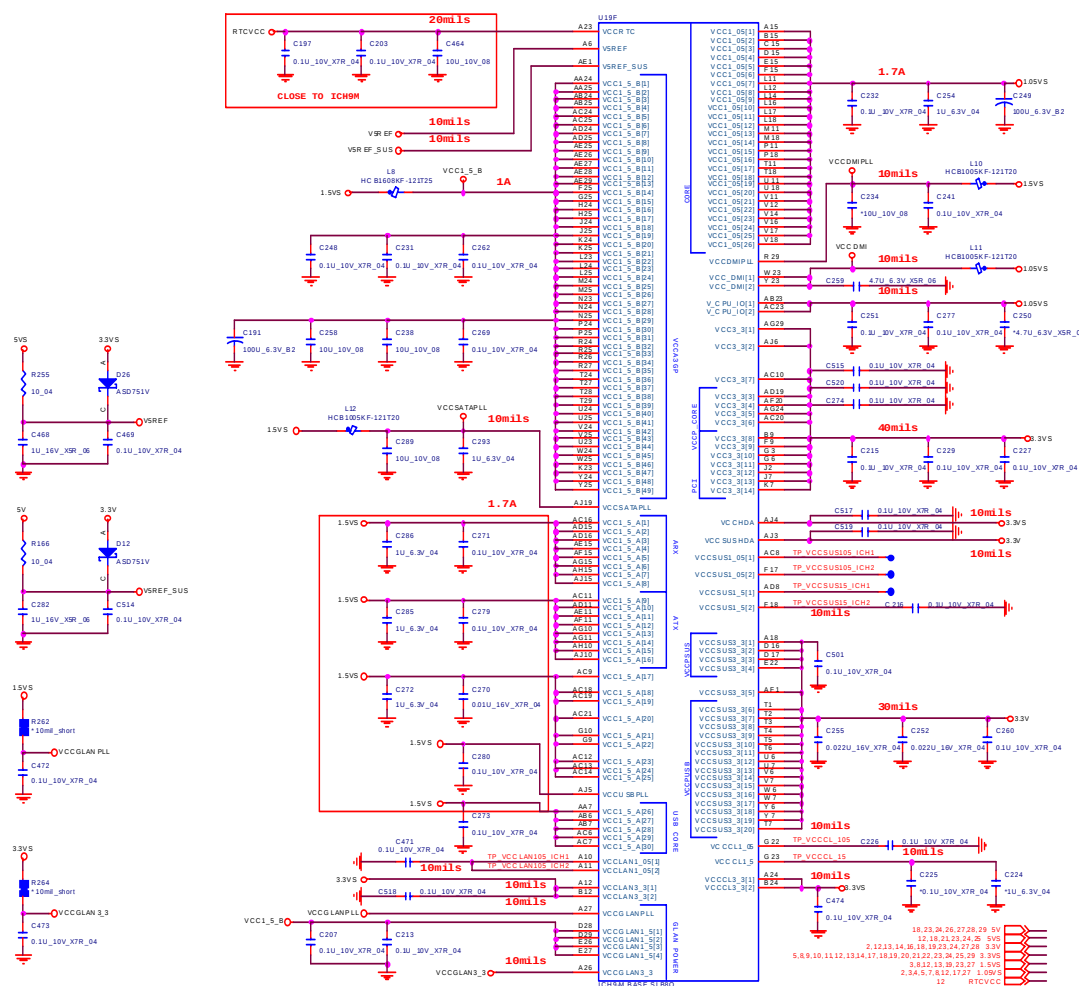


Sheet 14 of 37
ICH9-M 3/5, GPIO,
PWR Management



ICH9-M 4/5, Power

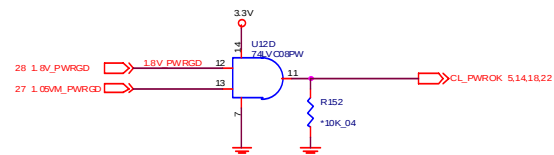
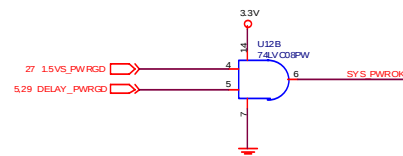
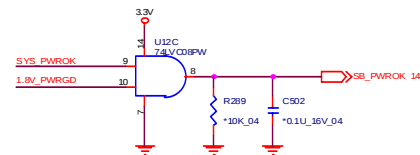
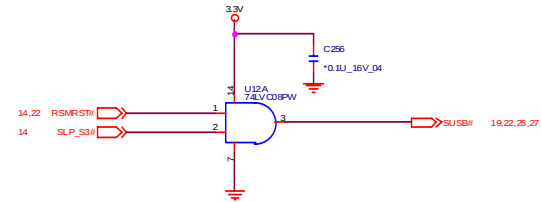
Sheet 15 of 37
ICH9-M 4/5, Power



ICH9-M 5/5, GND

U1 9E			H5		
AA26	VSS(1)	VSS(107)	J23		
AA27	VSS(2)	VSS(108)	J26		
AA3	VSS(3)	VSS(109)	J27		
AA6	VSS(4)	VSS(110)	AC22		
AA8	VSS(5)	VSS(111)	K28		
AB3	VSS(6)	VSS(112)	K29		
AB29	VSS(7)	VSS(113)	L13		
AB4	VSS(8)	VSS(114)	L2		
AB5	VSS(9)	VSS(115)	L5		
AF17	VSS(10)	VSS(116)	L26		
AG6	VSS(11)	VSS(117)	L27		
AC27	VSS(12)	VSS(118)	L5		
AC6	VSS(13)	VSS(119)	L7		
AC1	VSS(14)	VSS(120)	M2		
AD10	VSS(15)	VSS(121)	M3		
AD14	VSS(16)	VSS(122)	M4		
AD13	VSS(17)	VSS(123)	M5		
AD14	VSS(18)	VSS(124)	M6		
AD17	VSS(19)	VSS(125)	M7		
AD18	VSS(20)	VSS(126)	M8		
AD21	VSS(21)	VSS(127)	M9		
AD36	VSS(22)	VSS(128)	M9		
AD36	VSS(23)	VSS(129)	N11		
AD4	VSS(24)	VSS(130)	N12		
AD6	VSS(25)	VSS(131)	N13		
AD6	VSS(26)	VSS(132)	N14		
AD7	VSS(27)	VSS(133)	N15		
AD9	VSS(28)	VSS(134)	N16		
AE12	VSS(29)	VSS(135)	N17		
AE13	VSS(30)	VSS(136)	N18		
AE14	VSS(31)	VSS(137)	N26		
AE16	VSS(32)	VSS(138)	N27		
AE17	VSS(33)	VSS(139)	P12		
AE18	VSS(34)	VSS(140)	P13		
AE20	VSS(35)	VSS(141)	P14		
AE21	VSS(36)	VSS(142)	P15		
AE21	VSS(37)	VSS(143)	P16		
AE4	VSS(38)	VSS(144)	P17		
AE6	VSS(39)	VSS(145)	P2		
AE9	VSS(40)	VSS(146)	P2		
AF13	VSS(41)	VSS(147)	P28		
AF16	VSS(42)	VSS(148)	P29		
AF18	VSS(43)	VSS(149)	P2		
AF22	VSS(44)	VSS(150)	P7		
AF26	VSS(45)	VSS(151)	R11		
AF26	VSS(46)	VSS(152)	R12		
AF27	VSS(47)	VSS(153)	R13		
AF5	VSS(48)	VSS(154)	R14		
AF7	VSS(49)	VSS(155)	R15		
AG3	VSS(50)	VSS(156)	R16		
AG13	VSS(51)	VSS(157)	R17		
AG16	VSS(52)	VSS(158)	R18		
AG16	VSS(53)	VSS(159)	R19		
AG20	VSS(54)	VSS(160)	T2		
AG23	VSS(55)	VSS(161)	T1		
AG2	VSS(56)	VSS(162)	T14		
AG6	VSS(57)	VSS(163)	T15		
AG8	VSS(58)	VSS(164)	T16		
AH12	VSS(59)	VSS(165)	T17		
AH14	VSS(60)	VSS(166)	T23		
AH17	VSS(61)	VSS(167)	U12		
AH19	VSS(62)	VSS(168)	U12		
AH2	VSS(63)	VSS(169)	U14		
AH26	VSS(64)	VSS(170)	U14		
AH26	VSS(65)	VSS(171)	U15		
AH26	VSS(66)	VSS(172)	U16		
AH26	VSS(67)	VSS(173)	U17		
AH4	VSS(68)	VSS(174)	U23		
AH17	VSS(69)	VSS(175)	U26		
AH14	VSS(70)	VSS(176)	U27		
AJ17	VSS(71)	VSS(177)	U3		
AJ3	VSS(72)	VSS(178)	V1		
BJ1	VSS(73)	VSS(179)	V13		
BJ4	VSS(74)	VSS(180)	V15		
BJ7	VSS(75)	VSS(181)	V23		
BJ7	VSS(76)	VSS(182)	V28		
B2	VSS(77)	VSS(183)	V29		
B23	VSS(78)	VSS(184)	V4		
B6	VSS(79)	VSS(185)	V5		
B8	VSS(80)	VSS(186)	W26		
C26	VSS(81)	VSS(187)	W27		
C27	VSS(82)	VSS(188)	W3		
E11	VSS(83)	VSS(189)	Y28		
E14	VSS(84)	VSS(190)	Y29		
E18	VSS(85)	VSS(191)	Y29		
E2	VSS(86)	VSS(192)	Y4		
E21	VSS(87)	VSS(193)	Y5		
E21	VSS(88)	VSS(194)	AC28		
E5	VSS(89)	VSS(195)	AH6		
E9	VSS(90)	VSS(196)	AF2		
F16	VSS(91)	VSS(197)	B25		
F21	VSS(92)	VSS(198)	B1		
F21	VSS(93)	VSS(199)	A1		
G12	VSS(94)	VSS(100)	A2		
G14	VSS(95)	VSS(101)	A28		
G16	VSS(96)	VSS(102)	A29		
G21	VSS(97)	VSS(103)	AH1		
G24	VSS(98)	VSS(104)	AH29		
G26	VSS(99)	VSS(105)	AJ1		
G27	VSS(100)	VSS(106)	AJ2		
H	VSS(101)	VSS(107)	AJ28		
H6	VSS(102)	VSS(108)	AJ29		
H2	VSS(103)	VSS(109)	B1		
H26	VSS(104)	VSS(110)	B29		
H29	VSS(105)	VSS(111)	B29		
H29	VSS(106)	VSS(112)	B29		

ICH9-M BASE SLBQ

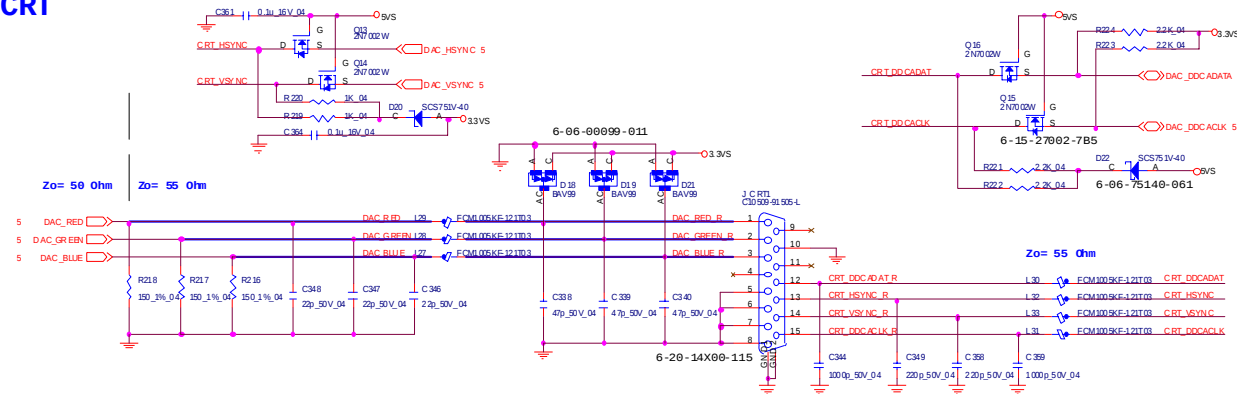


2,12,13,14,15,16,19,23,24,27,28 3.3V

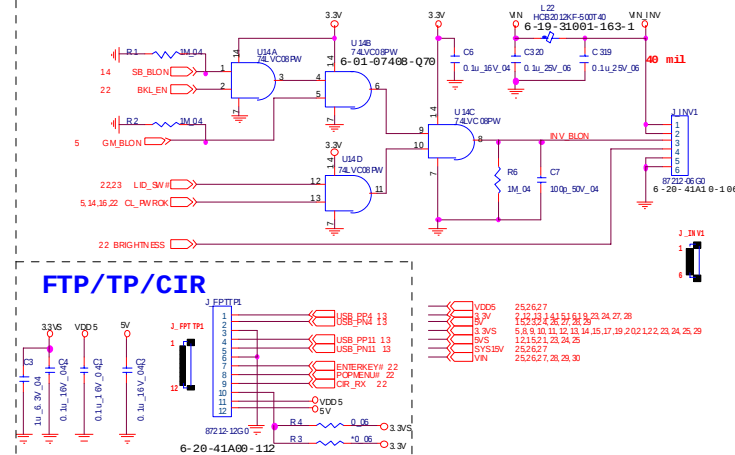
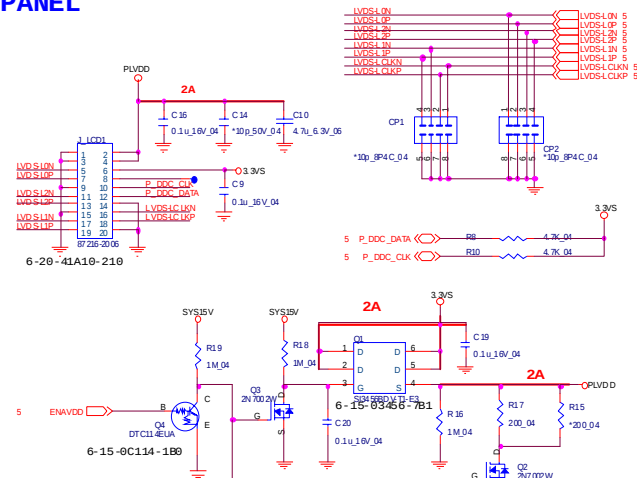
Sheet 16 of 37
ICH9-M 5/5, GND

Sheet 18 of 37
Panel Inverter,
CRT, FTP, TP, CIR

PANEL

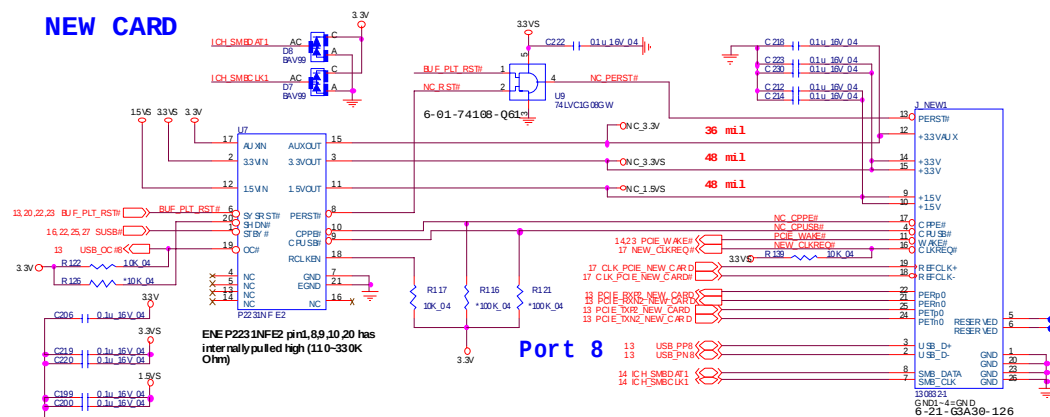


FTP/TP/CIR



B - 20 New Card, Mini PCIE, TPM

NEW CARD



From EC default HI
Power Plane: Suspend
S3: Defined

WLAN_PWR Signal default HI for WLAN
2. USB Setup HI for Intel PCIE WLAN
2. BIOS WLAN BIOS Setup Low for FnH11

6-03-095 35-0-01

[illegible]

asserted before entering S3
LPC reset timing:
LPCPD# inactive to LRST# inactive 32-96us

TPM_PP	HI : ACCESS LOW : NORMAL (internal PD)
TPM_BADD	HI : 4E4Fh LOW : 2E / 2F h

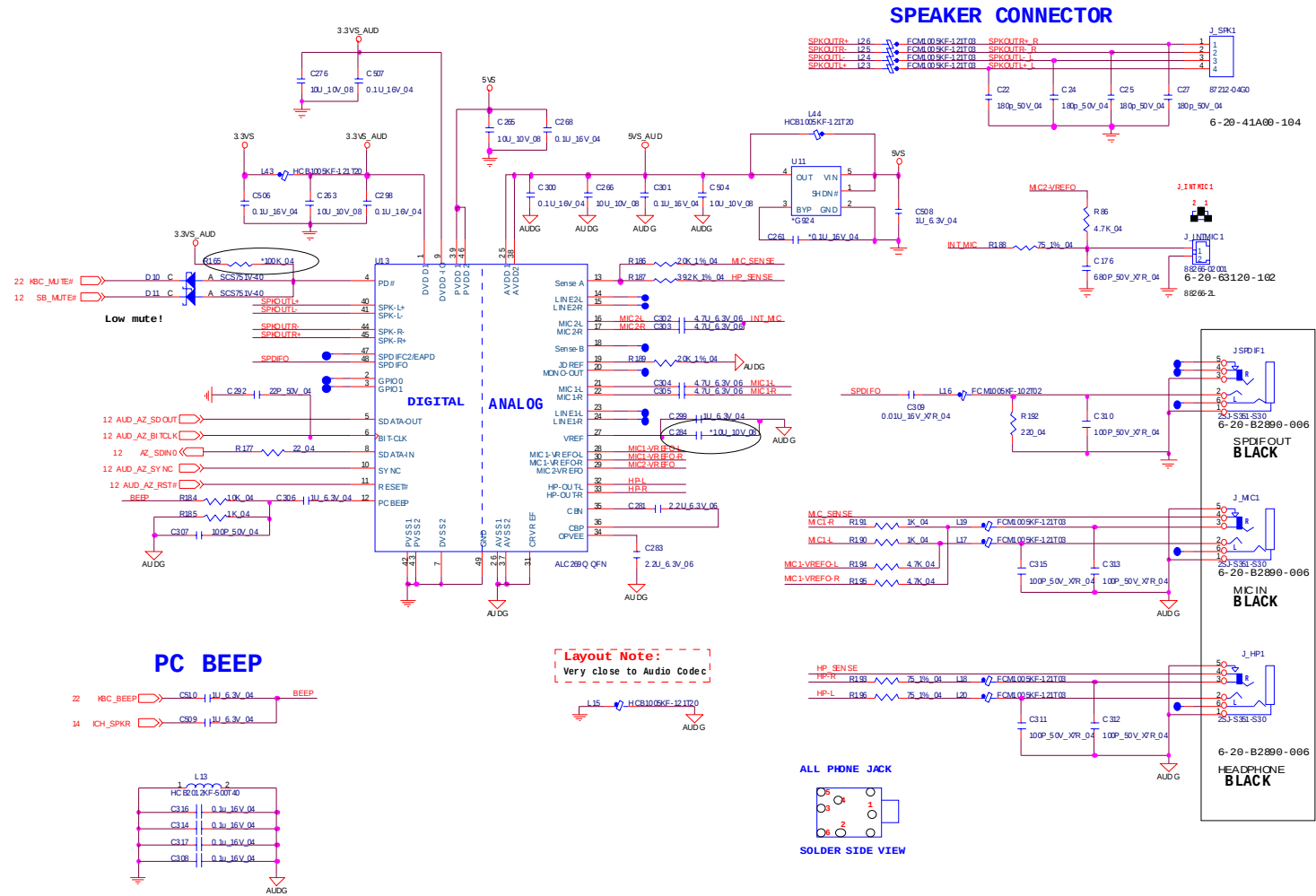
[illegible]

	SD Card	MS Card
MDIO0	SD-DATA0	MS-DATA0
MDIO1	SD-DATA1	MS-DATA1
MDIO2	SD-DATA2	MS-DATA2
MDIO3	SD-DATA3	MS-DATA3
MDIO4	SD-CMD	MS-BS
MDIO5	SD-CLK	MS-SCLK

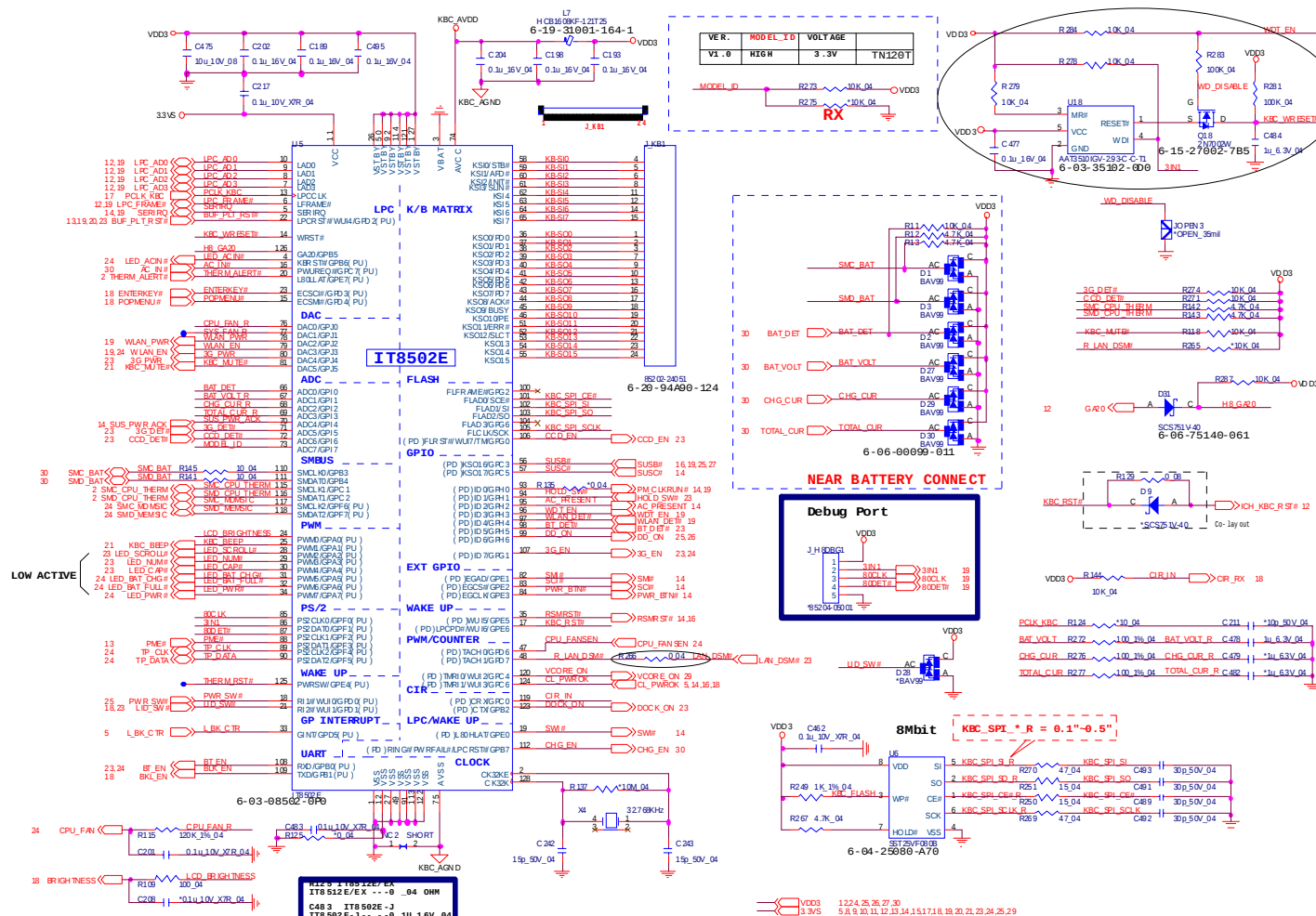
Schematic Diagrams

Audio Codec ALC662

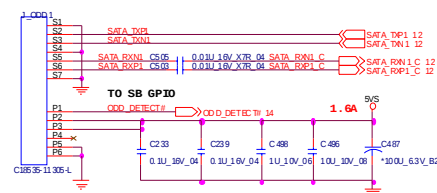
Sheet 21 of 37
Audio Codec
ALC662



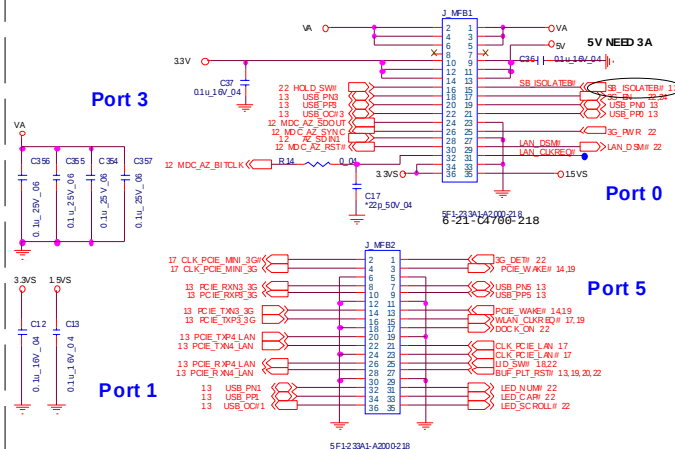
KBC-ITE IT8502E B - 23



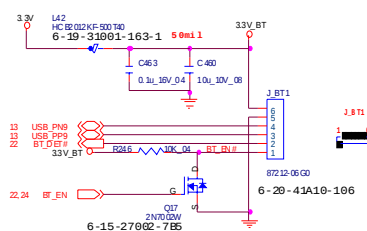
SATA ODD



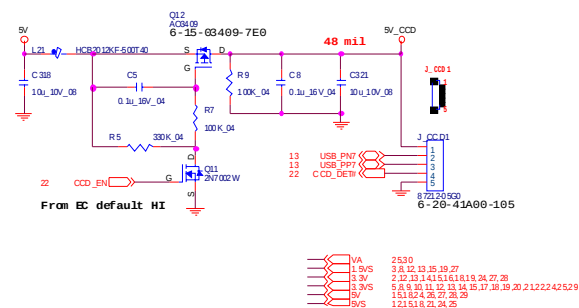
Port 3



Port 9

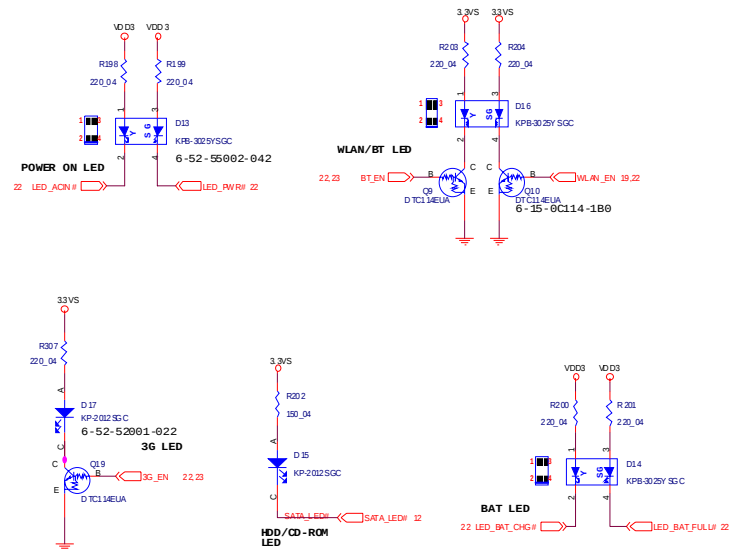


From EC

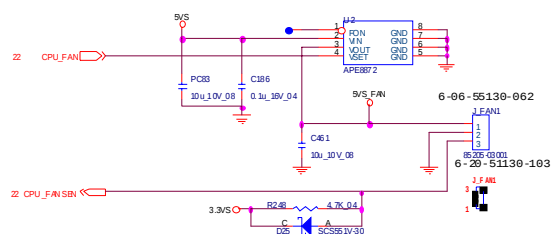


LED, FAN, CLICK, LID, G-Sensor

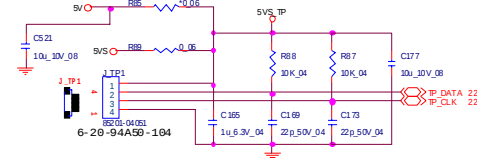
LED



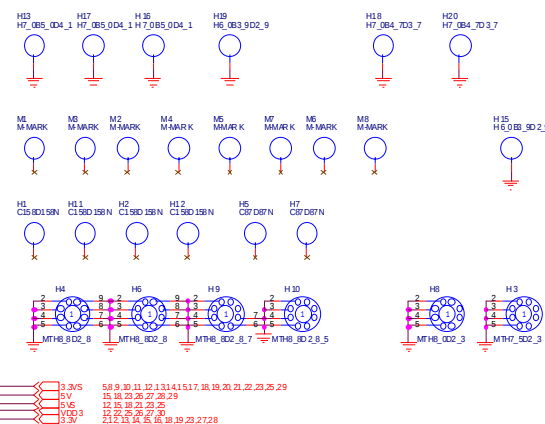
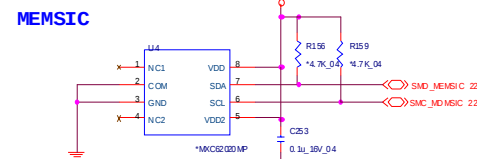
FAN CONTROL



CLICK CONN



G-SENSOR



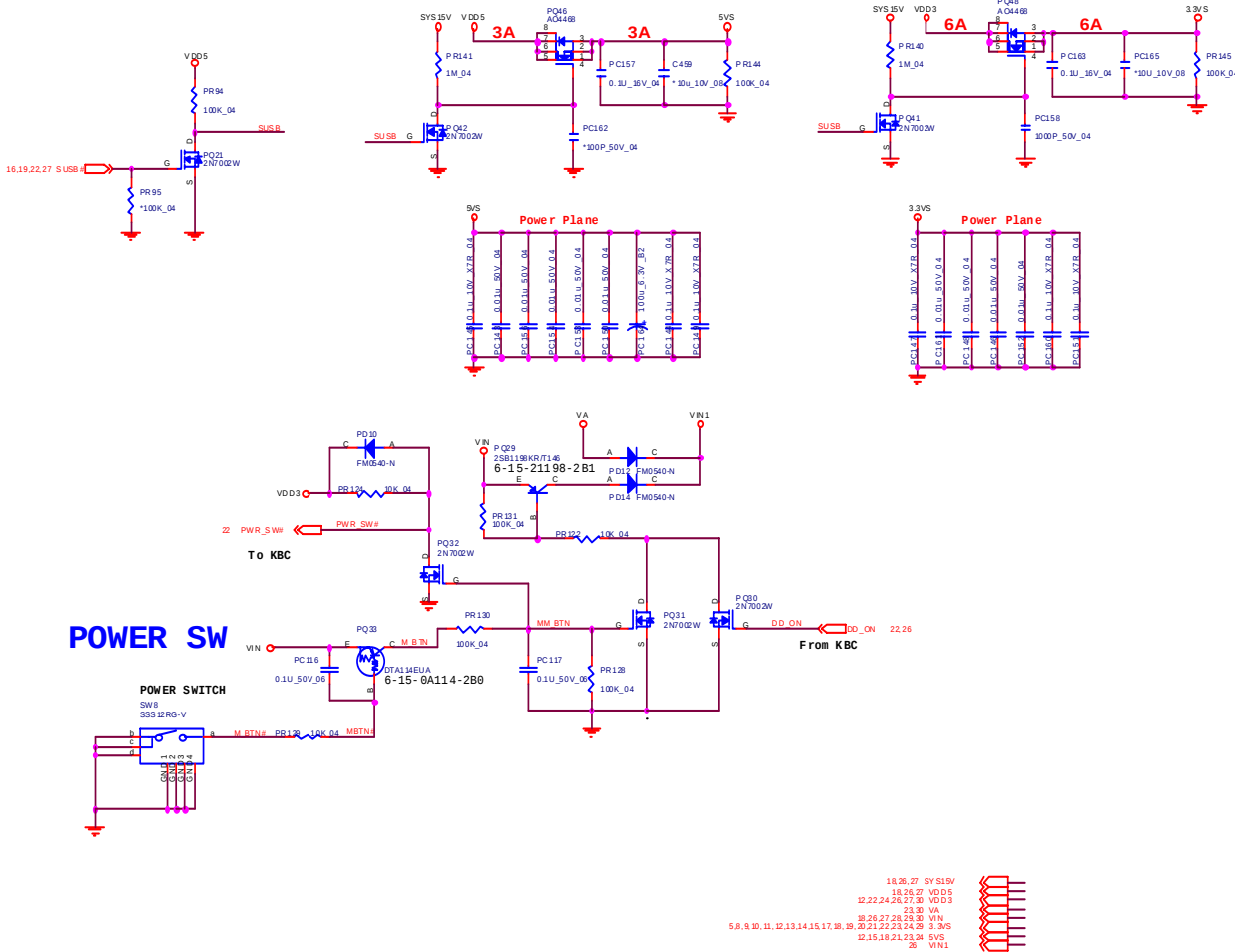
Sheet 24 of 37
LED, FAN, CLICK,
LID, G-Sensor

Schematic Diagrams

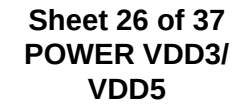
3VS, 5VS, POWER S/W

Sheet 25 of 37
3VS, 5VS, POWER
S/W

5VS, 3.3VS

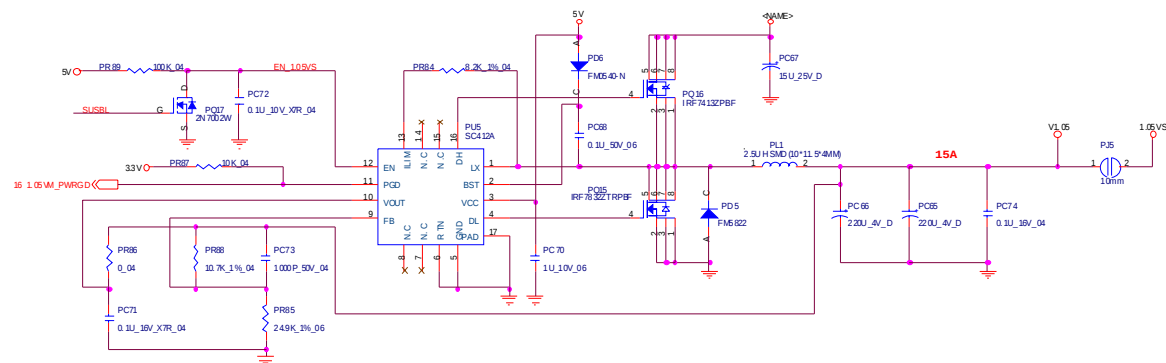


VDD3, VDD5

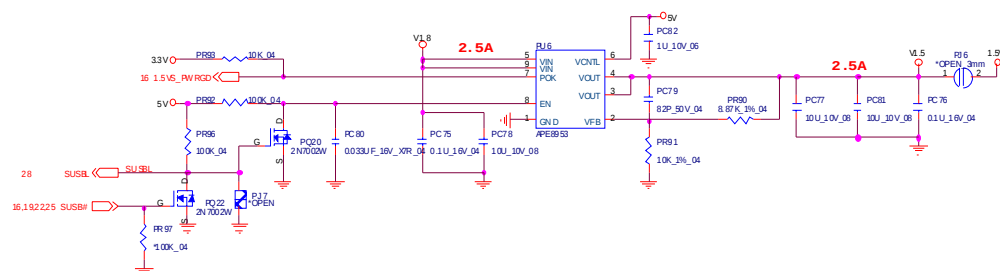


B.Schematic Diagrams

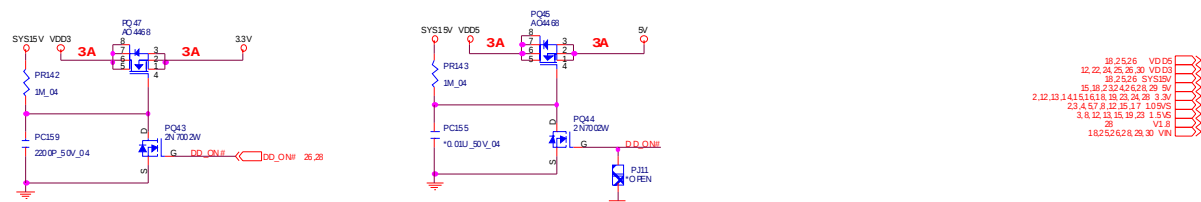
1.05VS



1.5V

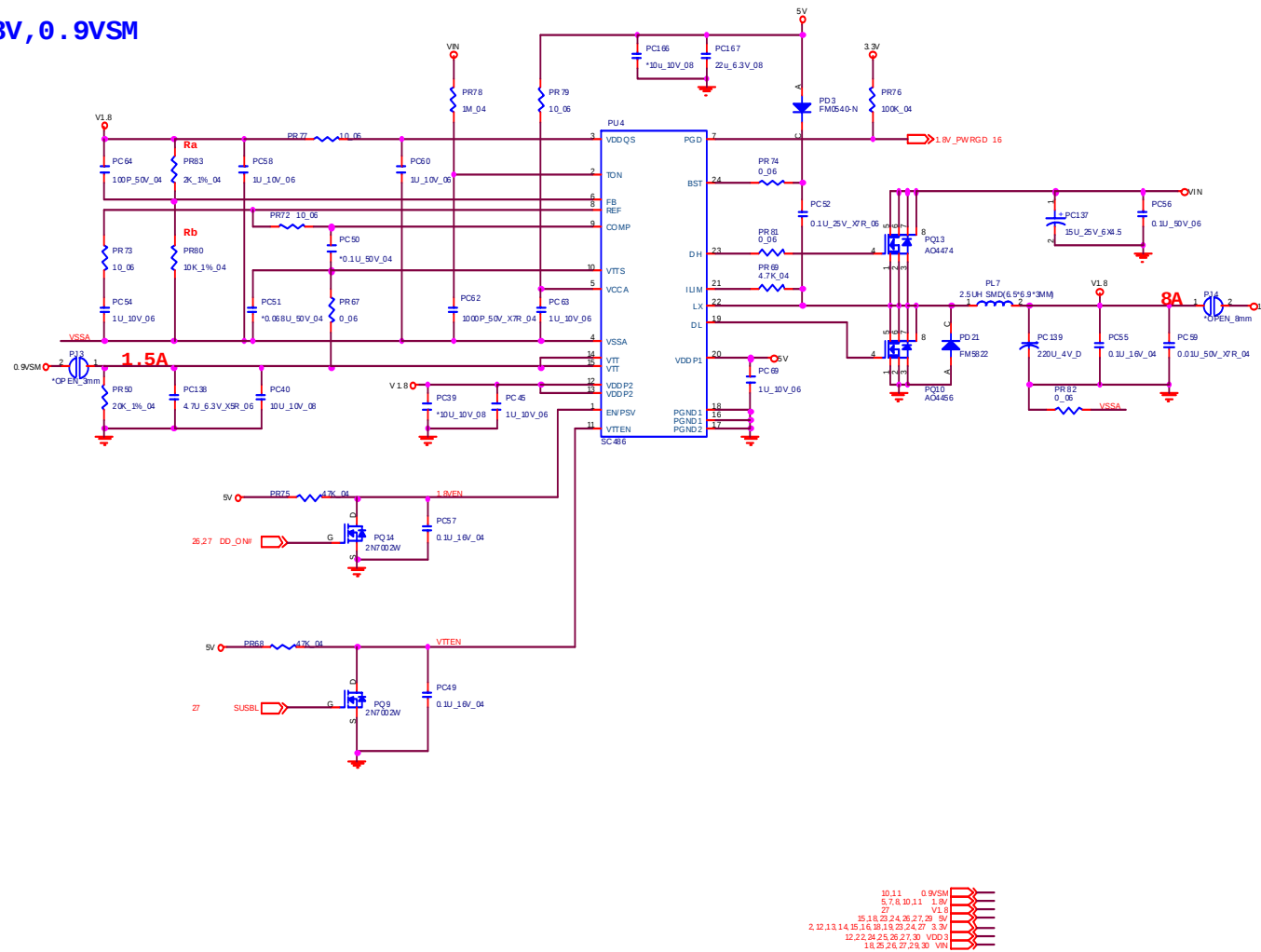


3.3V, 5V



POWER 1.8V/0.9VSM

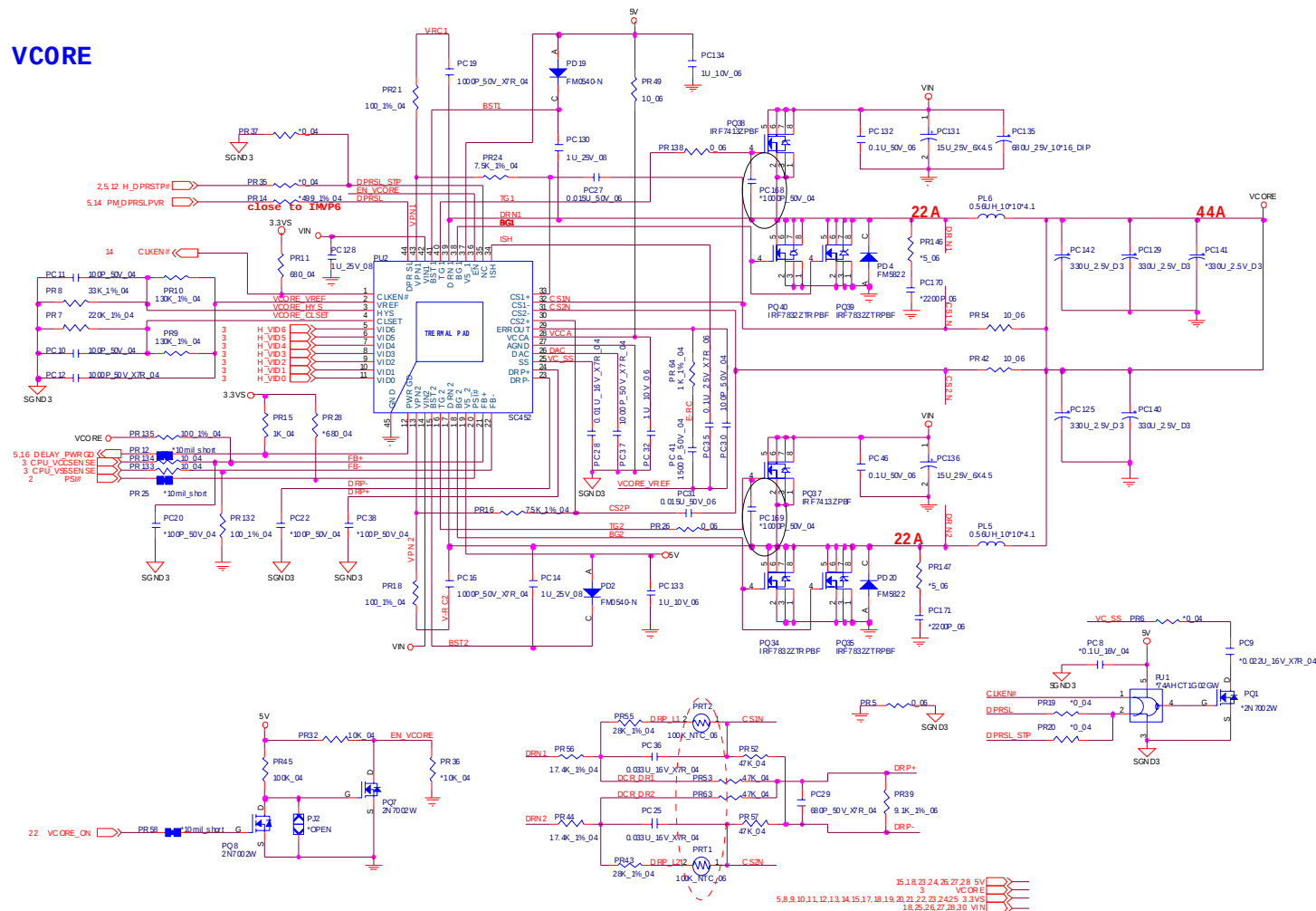
1.8V, 0.9VSM



Sheet 28 of 37
POWER 1.8V/
0.9VSM

CPU VCORE

VCORE



Sheet 29 of 37
CPU VCORE

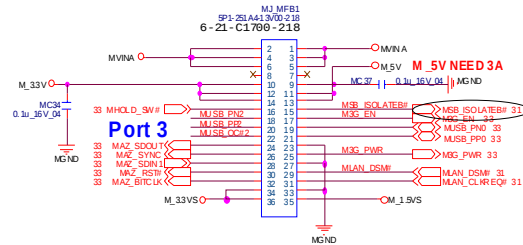
B.Schematic Diagrams

Sheet 31 of 37
Multi Board, PCIE
LAN RTL8111DL

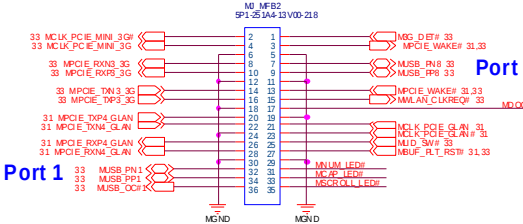


Multi Board, LED, Docking, USB

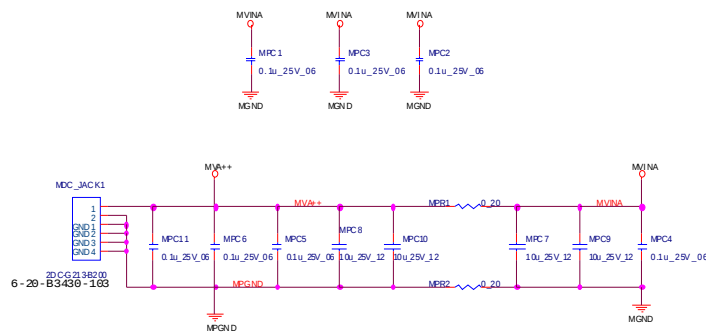
Port 0



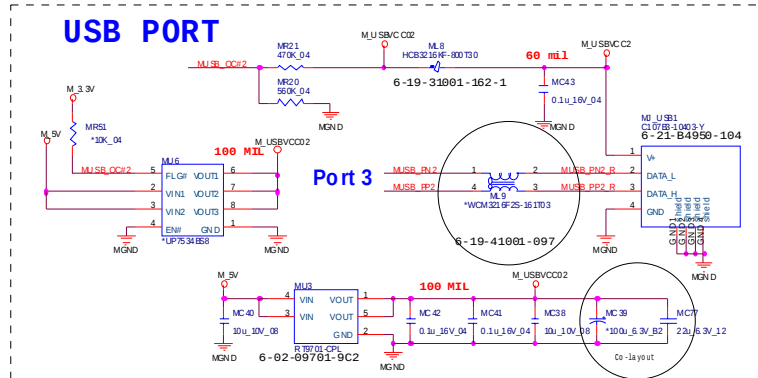
Port 3



Port 1

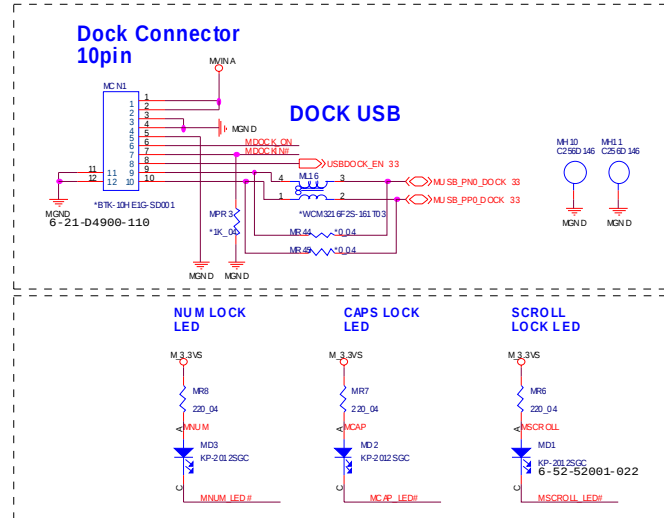


USB PORT



Port 3

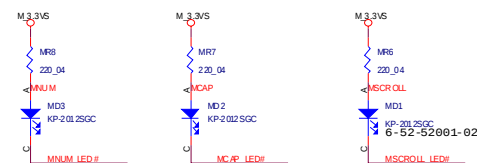
Dock Connector 10pin



NUM LOCK LED

CAPS LOCK LED

SCROLL LOCK LED



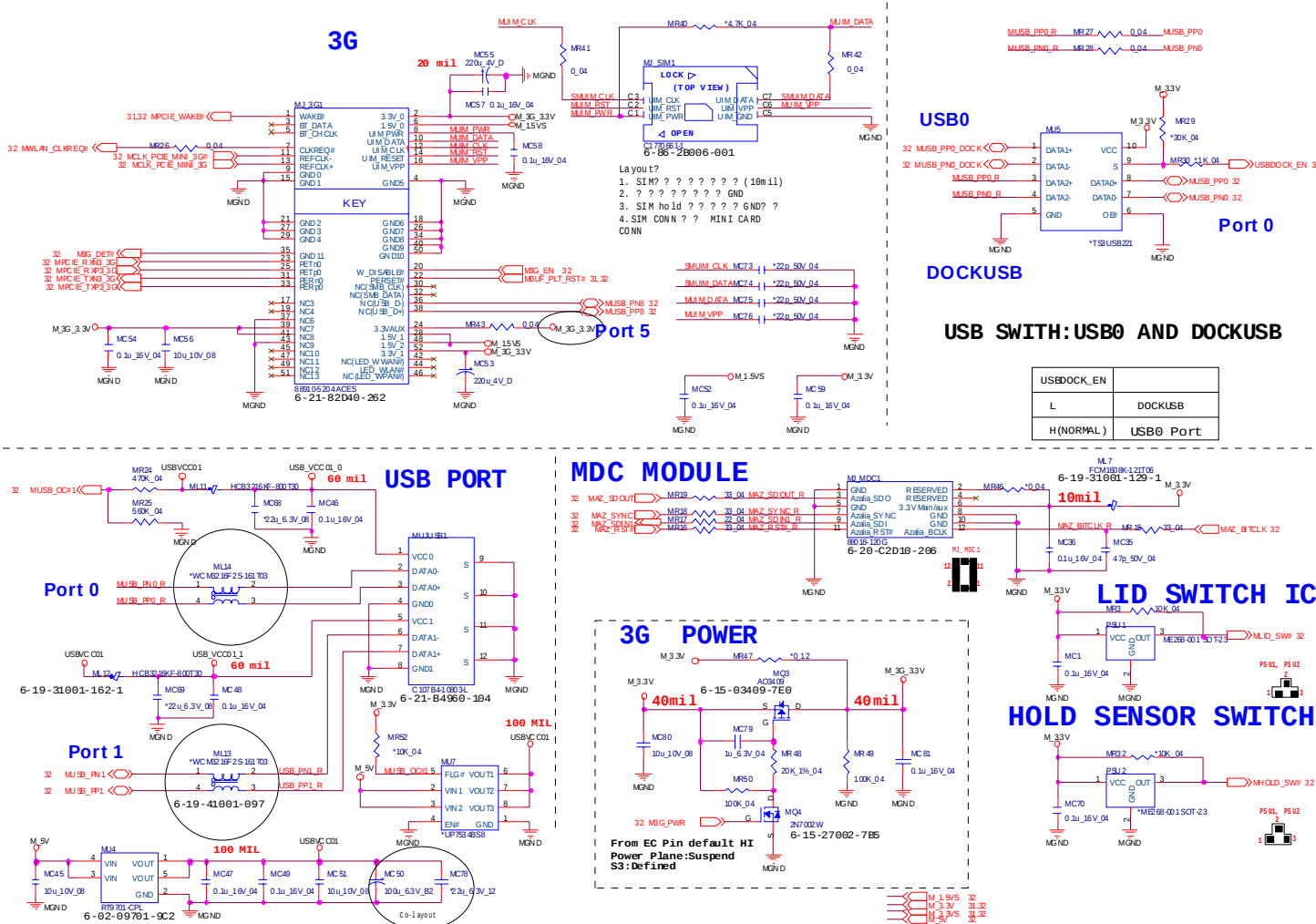
M 1.9V/S 33
M 3.3V/ 3133
M 3.3V/S 31
M 5.5V 33

Sheet 32 of 37
Multi Board, LED,
Docking, USB

Schematic Diagrams

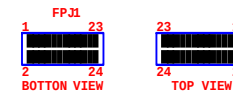
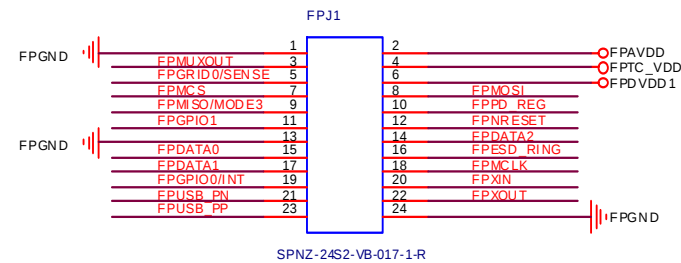
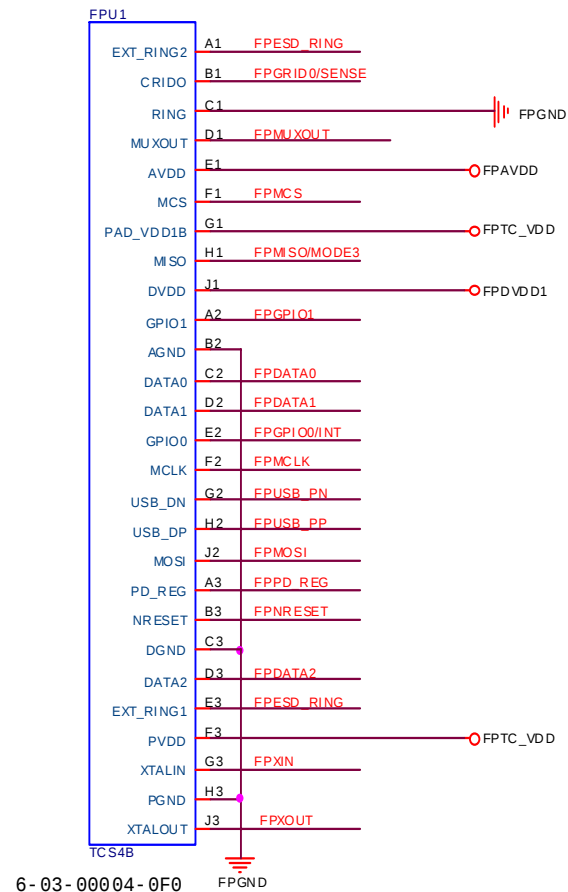
Multi Board, 3G, MDC, RJ11

Sheet 33 of 37
Multi Board, 3G,
MDC, RJ11



FPT ExBoard FINGERPRINT

FPT EXB'D FINGERPRINTER



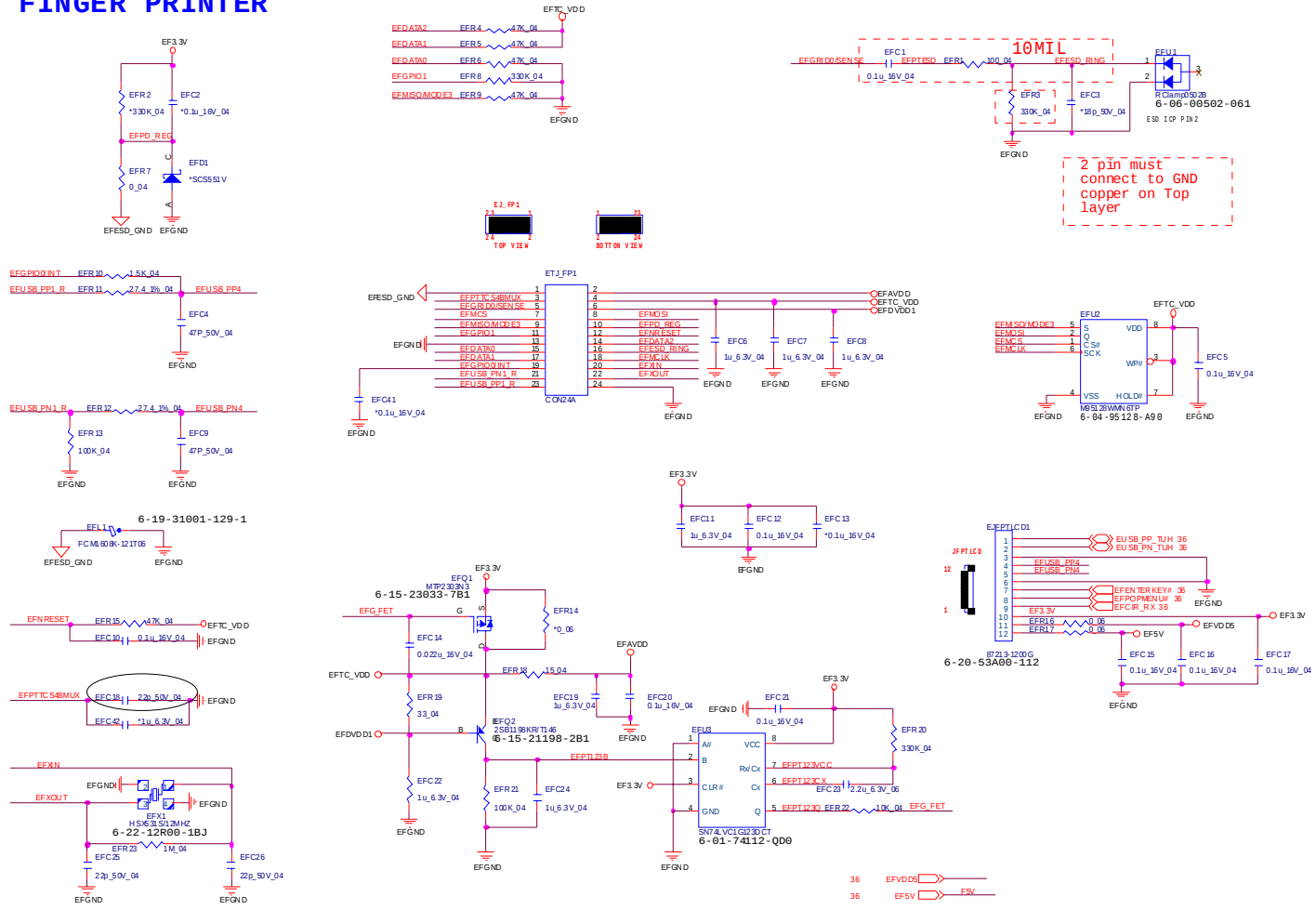
Sheet 34 of 37
FPT ExBoard
FINGERPRINT

Schematic Diagrams

FPT MBoard FINGERPRINT ET&T

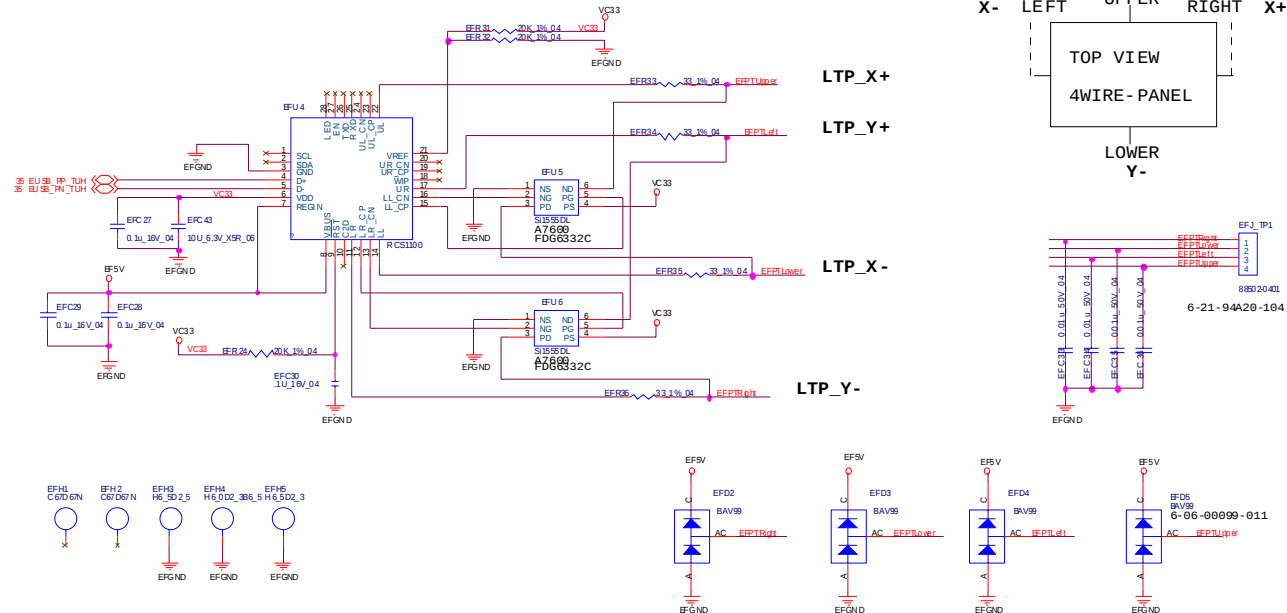
Sheet 35 of 37
FPT MBoard
FINGERPRINT
ET&T

FINGER PRINTER

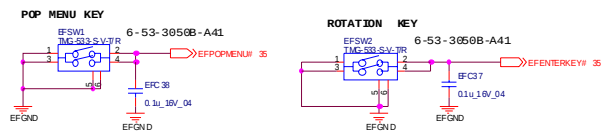


FPT MBoard TP, KEY, CIR ET&T

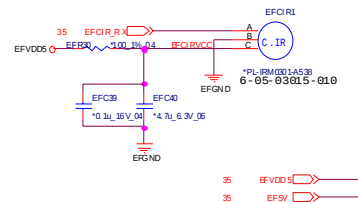
TOUCH PANEL



MENU KEY



CIR



Sheet 36 of 37
FPT MBoard TP,
KEY, CIR ET&T

Click Board

CLICK BOARD

Sheet 37 of 37
Click Board

