SERVICE MANUAL

notebook

Notebook Computer

R130T

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 ***R130T*** 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:

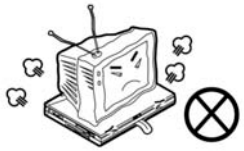
1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. 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 (Full Range AC/DC Adapter – AC Input 100 - 240V, 50 - 60Hz, DC Output 19V, 3.42A or 18.5V, 3.5A).

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.

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

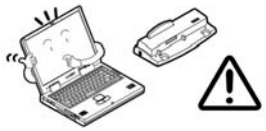
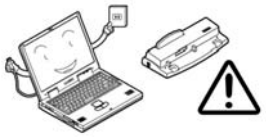
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.

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

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

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

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

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

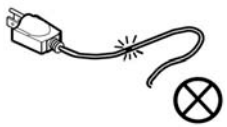
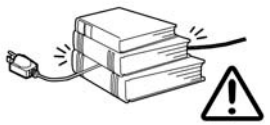
Power Safety

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.

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

Battery Precautions

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

Battery Guidelines

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

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

Battery Disposal

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

Caution

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

Battery Level

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

Related Documents

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

User's Manual on 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.

Contents

Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the ***R130T*** 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 Vista, Windows 7,* 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 ***R130T*** 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

Processor
Intel® Core™2 Duo Processor ULV: SU9300 (1.20GHz) 45nm (45 Nanometer) Process Technology, 3MB L2 Cache & 800MHz FSB - TDP 10W, BGA Socket P Pin-Out, 22 * 22mm CPU On Board **Intel® Celeron® Processor ULV: 723 (1.20GHz)** 45nm (45 Nanometer) Process Technology, 1MB L2 Cache & 800MHz FSB - TDP 10W, BGA Socket P Pin-Out, 22 * 22mm CPU On Board
Core Logic
Intel® GS45 + ICH9M-SFF Chipset
Display
13.3” WXGA (1280 * 800) LED Backlight Panel
Memory
64-bit Wide **DDRII (DDR2)** Data Channel Supporting Dual Channel **DDRII (DDR2)** SDRAM One 200 Pin SO-DIMM Socket Supporting **DDRII (DDR2)** 800MHz Memory Expandable up to **2GB**

Video
Intel® GS45 Integrated Video High Preference 3D/2D Graphic Accelerator Shared Memory Architecture of up to 256M Supports Microsoft DirectX 10
BIOS
One 16Mb SPI Flash ROM Phoenix™ BIOS
Storage
One Changeable 12.7mm(h) Super Multi Optical Device Drive - SATA interface One Changeable 2.5" 9.5 mm (h) HDD OR 2.5" SSD with **SATA** (Serial) Interface
Audio
High Definition Audio Compliant with Microsoft UAA (Universal Audio Architecture) Direct Sound 3D™ Compatible Built-In Microphone 2 * Built-In Speakers
Keyboard & Pointing Device
Full Size WinKey Keyboard Built-in TouchPad (integrated scrolling key functionality)

Interface
Three USB 2.0 Ports One Serial (COM1) Port One External Monitor Port One Headphone-Out Jack One Microphone-In Jack One S/PDIF-Out Jack One RJ-45 LAN Jack for 10/100/1000Mb Fast Ethernet One DC-In Jack
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
Slots
One ExpressCard/34/54 Slot **Two Mini-Card Slots with USB & PCIe interface:** Slot 1 for Half Mini-Card WLAN Module Slot 2 for 3.75G Module (**Factory Option**)

Communication

Built-In 10M/100M/100M Base-TX Ethernet LAN
Bluetooth 2.1 + EDR (Enhanced Data Rate) Module (**Factory Option**)
Intel® WiFi Link 5300 Series (3*3 - 802.11a/g/n) Wireless LAN PCIe interface Half Mini-Card Module (**Option**)
802.11a/g/n Wireless LAN PCIe interface Half Mini-Card Module
2.0M Pixel PC Camera Module with USB interface (**Factory Option**)

3.75G Module:
UMTS/HSPDA-based 3.75G Module with Mini-Card Interface (**Factory Option**)
Quad-band GSM/GPRS (850 MHz, 900 MHz, 1800 MHz, 1900 MHz)
UMTS WCDMA FDD (2100 MHz)
Note that UMTS modes CAN NOT be used in North America

GPS Module without Internal Antenna (**Factory Option**)

Power Management

Supports Wake on LAN
Supports Wake on 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)
4 Cell Smart Lithium-Ion Battery Pack, 2600mAH
8 Cell Smart Lithium-Ion Battery Pack, 5200mAH (**Option**)

Security

Security (Kensington® Type) Lock Slot
Fingerprint ID Reader Module
BIOS Password
Trusted Platform Module V1.2

Operating System

Windows® Vista (with Service Pack 2)
Windows® XP (with Service Pack 3)

Environmental Spec

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

Dimensions & Weight

317mm (w) * 229mm (d) * 35mm (h)
2.0 kg (full system with 1G RAM, 2.5” HDD, ODD and 4 Cell Battery)

Optional

Super Multi Optical Device Drive

Intel® WiFi Link 5300 Series (3*3 - 802.11a/g/n) Wireless LAN PCIe interface Half Mini-Card Module

802.11a/g/n Wireless LAN PCIe interface Half Mini-Card Module
8 Cell Smart Lithium-Ion Battery Pack, 5200mAH

Bluetooth 2.1 + EDR (Enhanced Data Rate) Module (**Factory Option**)

2.0M Pixel PC Camera Module with USB interface (**Factory Option**)

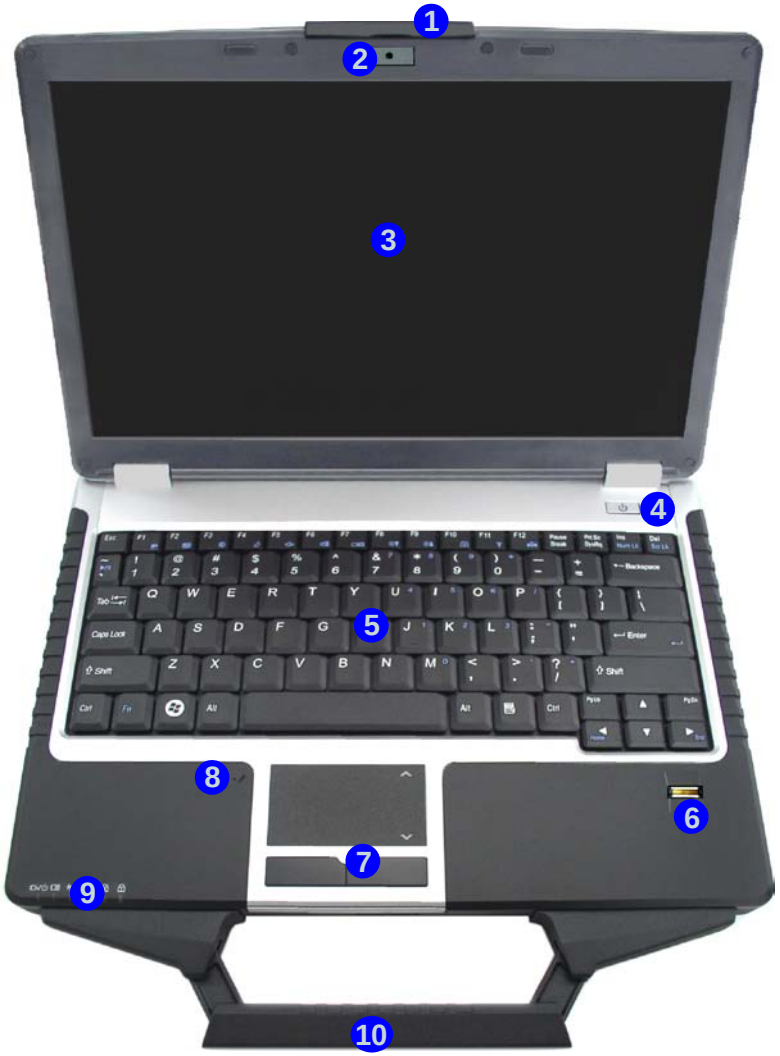
UMTS/HSPDA-based 3.75G Module with Mini-Card Interface (**Factory Option**)

GPS Module without Internal Antenna (**Factory Option**)

External Locator - Top View with LCD Panel Open

Figure 1
Top View

1. LCD Latch
2. Built-In PC Camera (Optional)
3. LCD
4. Power Button
5. Keyboard
6. Fingerprint Reader Module
7. Touchpad & Buttons
8. Built-In Microphone
9. LED Indicators
10. Carrying Handle



External Locator - Front & Right side Views

Figure 2
Front Views

1. LCD Latch
2. Carrying Handle
3. Speakers

Figure 3
Right Side Views

4. Optical Device Drive Bay (for CD/DVD Device)
5. ODD Lock
6. 1 * USB 2.0 Port
7. GPS Antenna Socket (for optional GPS Module)
8. Serial (COM1) Port
9. Security Lock Slot

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. DC-In Jack
2. External Monitor Port
3. S/PDIF-Out Jack
4. Microphone-In Jack
5. Headphone-Out Jack
6. Vent/Fan Intake/ Outlet
7. RJ-45 LAN Jack
8. 2 * USB 2.0 Port
9. ExpressCard Slot
10. 7-in-1 Card Reader

Figure 5
Rear View

11. Battery

External Locator - Bottom View

Figure 6
Bottom View

1. Battery
2. Hard Disk Bay Cover
3. RAM & CPU Bay Cover
4. Vent/Fan Intake/ Outlet
5. Drainage Outlet

Overheating

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

Mainboard Overview - Top (Key Parts)

Figure 7
Mainboard Top Key Parts

1. ExpressCard Connector
2. KBC ITE IT8513E

Mainboard Overview - Bottom (Key Parts)

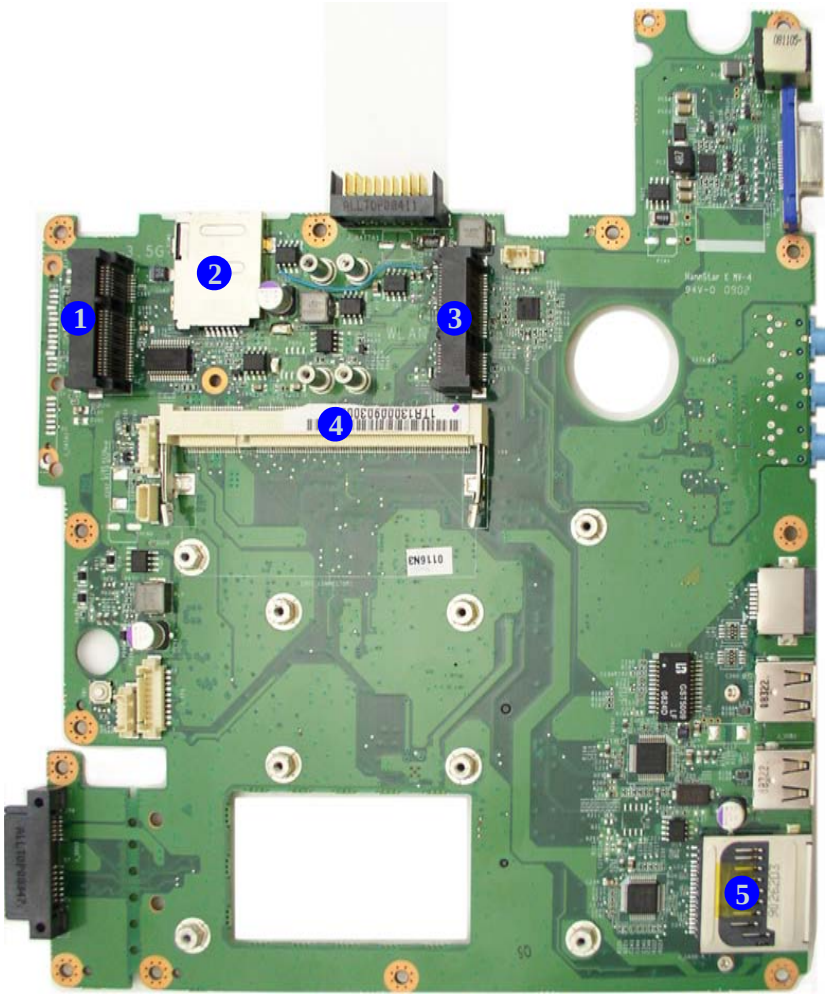


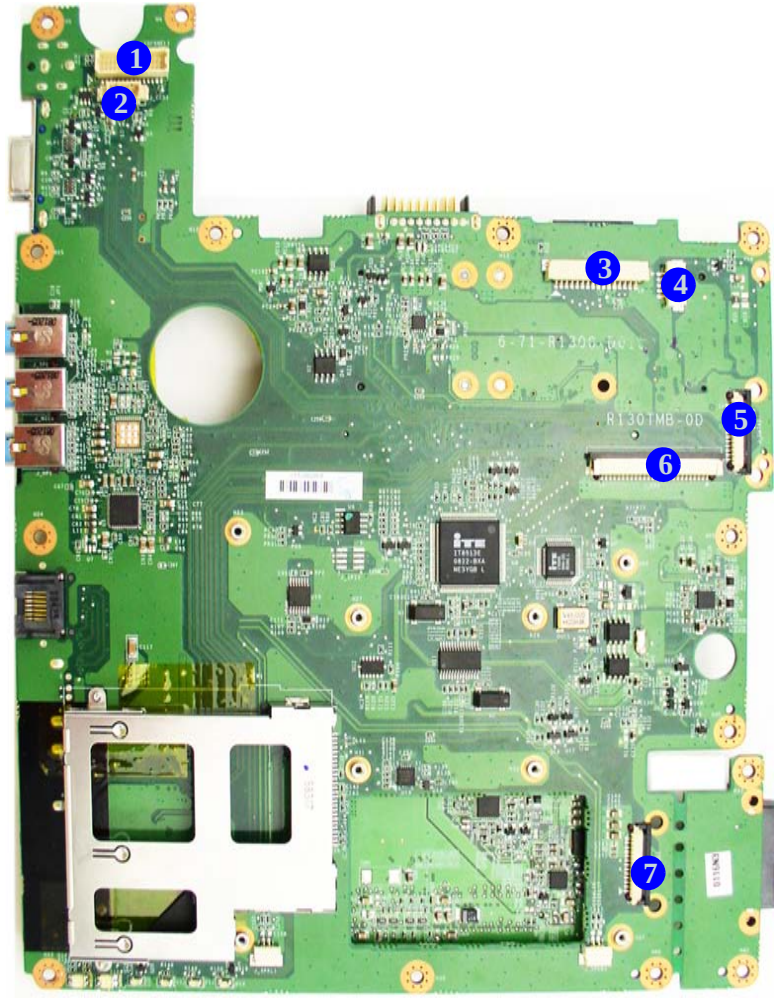
Figure 8
Mainboard Bottom Key Parts

1. Mini-Card Connector (3G Module)
2. SIM Card Socket
3. Mini-Card Connector (WLAN Module)
4. CPU and Memory Card Slot
5. Card Reader Socket

Mainboard Overview - Top (Connectors)

Figure 9
Mainboard Top Connectors

1. LED Connector
2. CCD Connector
3. Comport Connector
4. Power Button Connector
5. SATA HDD Connector
6. Keyboard Cable Connector
7. ODD Connector



Mainboard Overview - Bottom (Connectors)

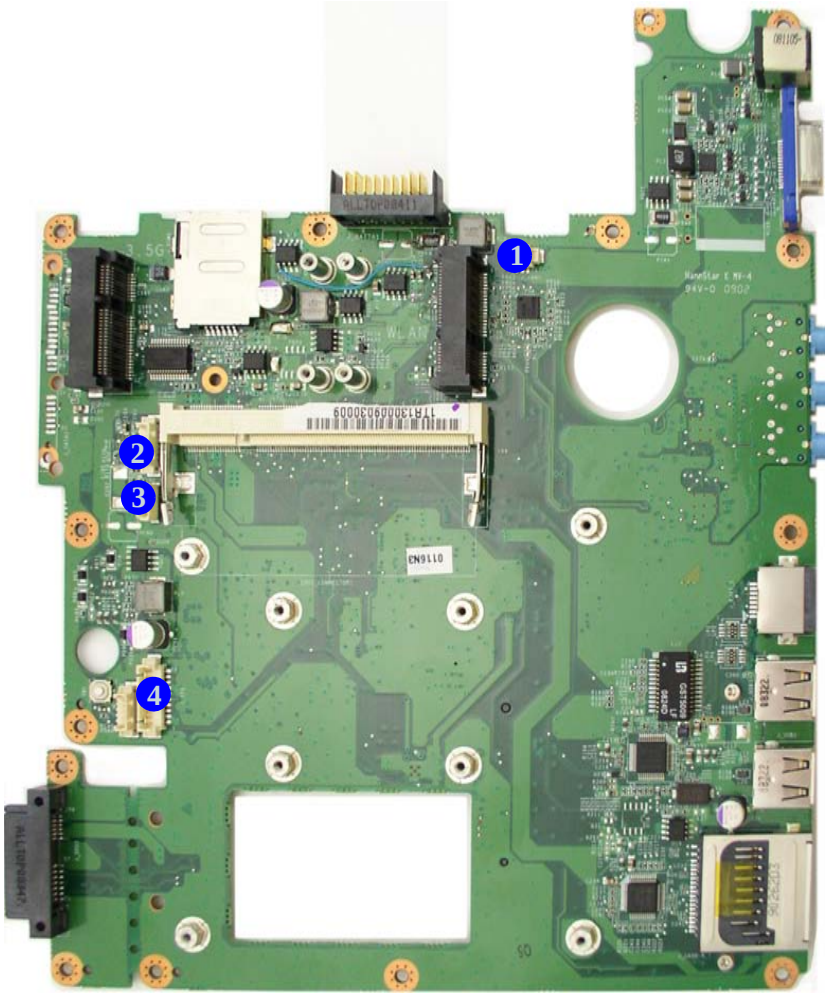


Figure 10
Mainboard Bottom Connectors

1. CPU Fan Cable Connector
2. Bluetooth Module Connector
3. GPS Module Connector
4. Touchpad Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***R130T*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

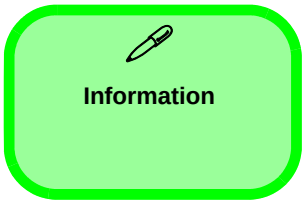
We suggest you completely review any procedure before you take the computer apart.

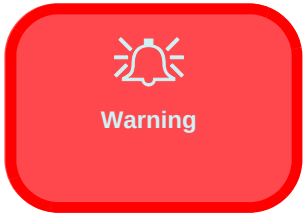
Procedures such as upgrading/replacing the RAM, optical device and hard disk are included in the User's Manual but are repeated here for your convenience.

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

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

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





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

Maintenance Tools

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

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

Connections

Connections within the computer are one of four types:

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

Maintenance Precautions

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

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

Power Safety Warning

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

Cleaning

Do not apply cleaner directly to the computer, use a soft clean cloth.
Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.

Disassembly Steps

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

To remove the Battery:

1. Remove the battery *page 2 - 5*

To remove the HDD:

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

To remove the Optical Device:

1. Remove the battery *page 2 - 5*
2. Remove the Optical device *page 2 - 7*

To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the System Memory *page 2 - 8*

To remove the Processor:

1. Remove the battery *page 2 - 5*
2. Remove the System Memory *page 2 - 8*
3. Remove the Processor *page 2 - 10*

To remove the Wireless LAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the System Memory *page 2 - 8*
3. Remove the Wireless LAN *page 2 - 12*

To remove the Bluetooth Module:

1. Remove the battery *page 2 - 5*
2. Remove the HDD *page 2 - 6*
3. Remove the Bluetooth *page 2 - 13*

To remove the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the Keyboard *page 2 - 14*

Removing the Battery

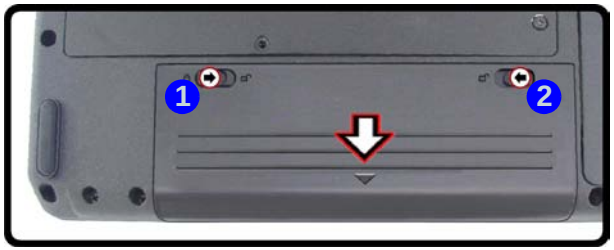
If you are confident in undertaking upgrade procedures yourself, for safety reasons it is best to remove the battery.

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 out in the direction of the arrow 3.
5. Lift the battery 4 (***Figure c***) out of the bay as indicated.

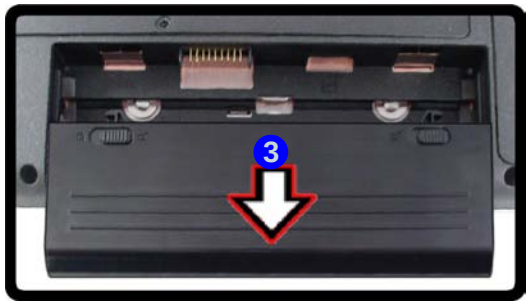
Figure 1
Battery Removal

a. Slide the latch in the direction of the arrow.
b. Slide the battery out in the direction of the arrow.
c. Lift the battery out of the bay as indicated.

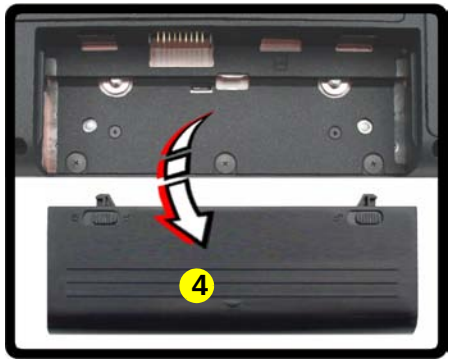
a.



b.



c.



4. Battery

Figure 2
HDD Assembly Removal

a. Remove the screws.
b. Remove the cover
c. Carefully lift the hard disk up.
d. Remove the HDD from the connector.
e. Remove the HDD.
f. Insert a new HDD and replaced all the cover and screws

Removing the Hard Disk Drive

The hard disk drive is mounted in a removable case and can be taken out to accommodate other 2.5" 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

1. Turn off the computer, and turn it over and remove the battery (***page 2 - 5***).
2. Locate the hard disk bay cover and remove screws 1 & 2.
3. Remove the hard disk bay cover 3.
4. Carefully lift the hard disk up at point 4.
5. Grip the tab 5 and slide the hard disk in the direction of arrow 6.
6. Remove the hard disk 7 .
7. Carefully insert the new hard disk and replace all the cover and screws.

3. Hard Disk Bay Cover
7. HDD

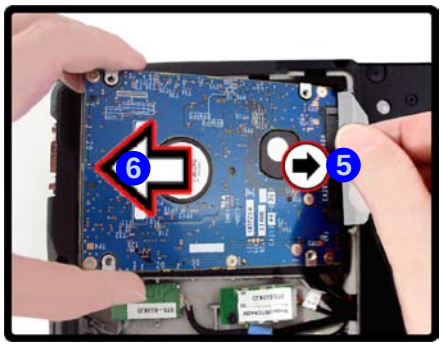
- 2 Screws

a.

b.

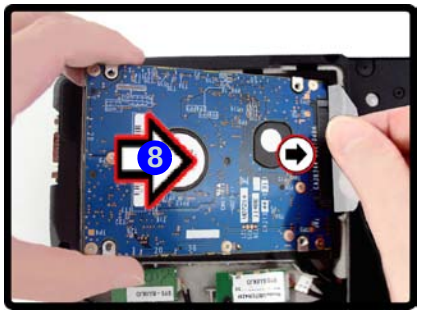
c.

d.



e.

f.



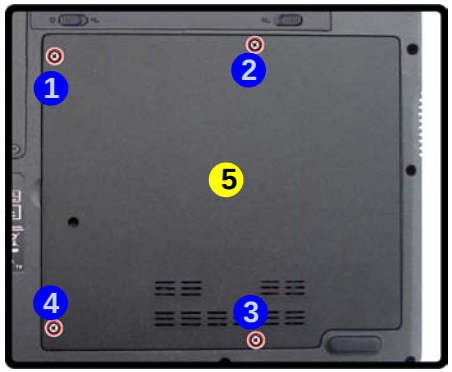
Removing the Optical (CD/DVD) Device

1. Turn off the computer, and turn it over and remove the battery (*page 2 - 5*).
2. Locate the RAM & CPU bay cover and remove screws 1 - 4.
3. Carefully (**a fan and cable are attached to the under side of the cover**) lift up the bay cover 5.
4. Carefully disconnect the fan cable 6, and remove the cover 5.
5. Remove screws 7 - 9 and use a screwdriver to push the optical device 11 out of the computer at point 10.
6. Reverse the process to install the new device.

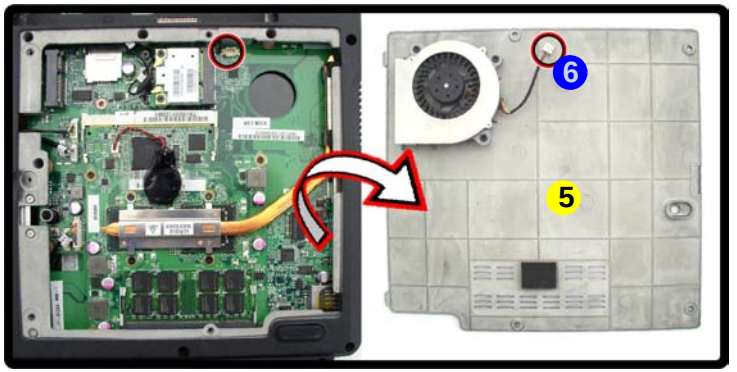
Figure 3
Optical Device Removal

a. Remove the screws.
b. Lift off the bay cover and disconnect the fan cable.
c. Remove the screw and push the optical device out of the computer at point 10.

a.



b.



c.

5. RAM & CPU Bay Cover
11. Optical Device

- 7 Screws

Figure 4
RAM Module Removal

a. Remove the screws.
b. Lift off the bay cover and disconnect the fan cable.

Removing the System Memory (RAM)

The computer has two memory sockets for 200 pin Small Outline Dual In-line Memory Modules (SO-DIMM) DDR II (DDR2) supporting 800 MHz. The main memory can be expanded up to 2GB. The SO-DIMM modules supported are 1024MB and 2048MB **DDR** Modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

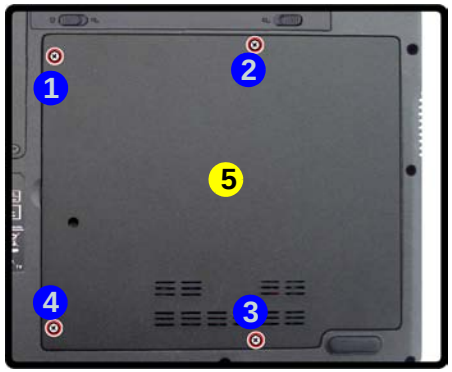
Memory Upgrade Process

1. Turn off the computer, and turn it over and remove the battery (***page 2 - 5***).
2. Locate the RAM & CPU bay cover and remove screws 1 - 4.
3. Carefully (**a fan and cable are attached to the under side of the cover**) lift up the bay cover 5.
4. Carefully disconnect the fan cable 6, and remove the cover 5.

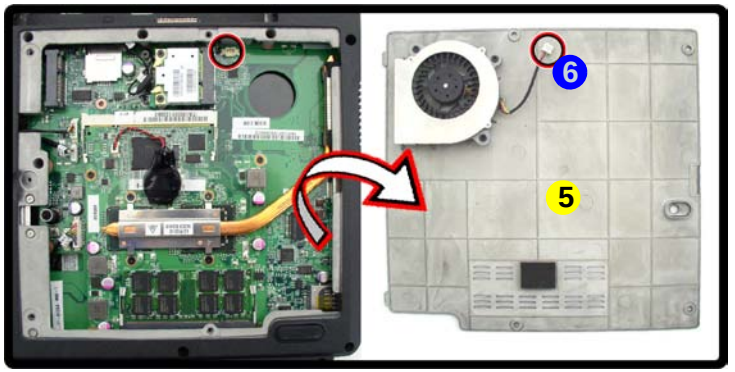
Caution

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.

a.



b.



RAM Module Speeds

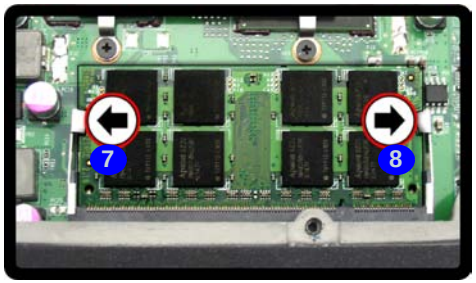
Use either 800MHz DDRII (DDR2) modules of the same brand. Do not mix DRAM speeds/brands in order to prevent unexpected system behavior.

5. RAM & CPU Bay Cover

- 4 Screws

5. Gently pull the two ***release latches 7 & 8 on the sides of the memory socket in the direction indicated by the arrows (Figure c***).
6. The RAM module 9 will pop-up (***Figure d***), and you can then remove it.

c.



d.

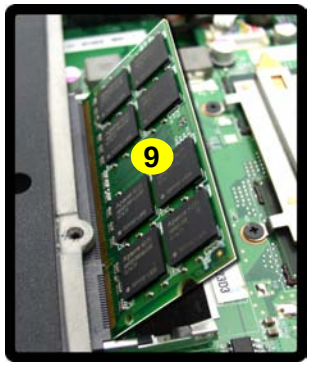


Figure 5
RAM Module Removal (cont'd.)

c. Pull the release latch(es).
d. Remove the module(s).

RAM Module Speeds

Use either 800MHz DDRII (DDR2) modules of the same brand. Do not mix DRAM speeds/brands in order to prevent unexpected system behavior.

7. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
8. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the socket as it will go. DO NOT FORCE the module; it should fit without much pressure.
9. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
10. Replace the heat sink unit, RAM fan, cover and screws.
11. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

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.

9. RAM Module

Figure 6
Processor Removal

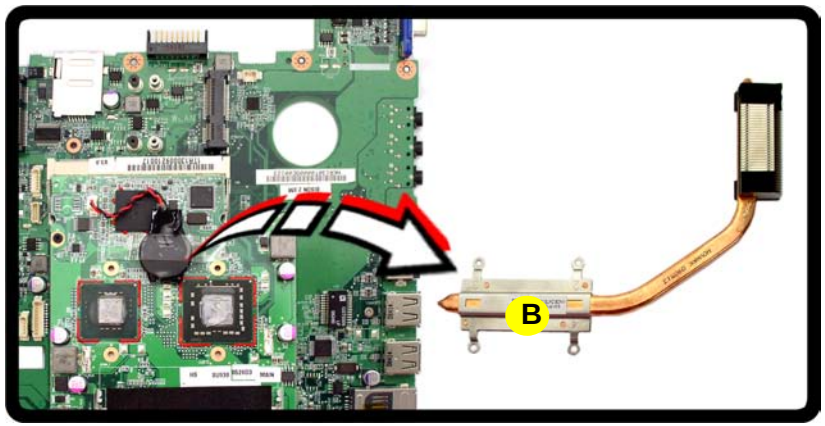
a. Remove the cover and locate the heat sink.
b. Remove the screws in the order indicated.
c. Remove the heat sink.

Removing the Processor

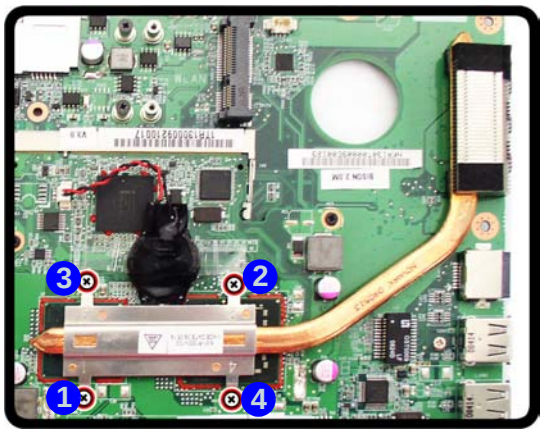
1. Turn off the computer, and turn it over, remove the battery (*page 2 - 5*) and RAM (*page 2 - 8*).
2. The CPU heat sink will be visible at point A on the mainboard.
3. Remove the CPU heat sink screws 1 - 4 in the order indicated on the label.
4. Carefully lift up the heat sink B (*Figure 6c*) off the computer.

a.

c.



b.



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.

B. CPU Heat Sink

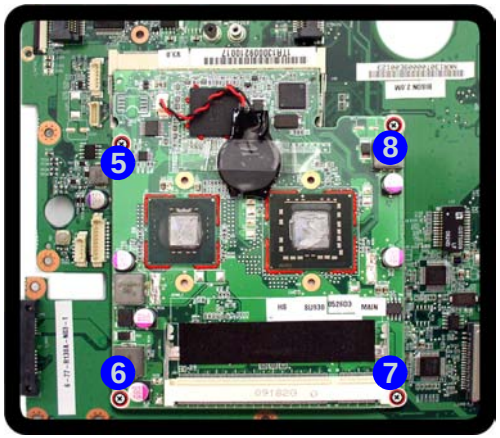
- 4 Screws

5. Remove screws 5 - 8 from the CPU board.
6. The CPU board C will pop-up.
7. Carefully (it may be hot) lift the CPU board C up and off the computer (***Figure e***).
8. Reverse the process to install a new CPU board.
9. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

Figure 7
Processor Removal (cont'd)

d. Remove the screws on the CPU board.
e. Lift the CPU board out.

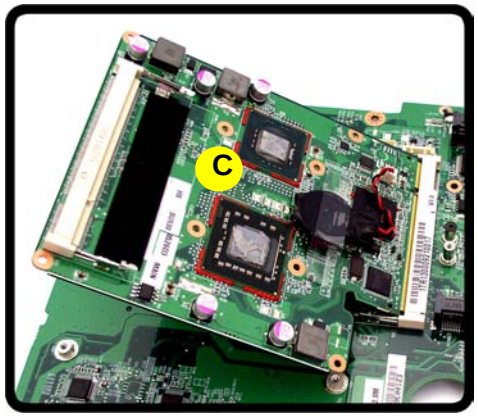
d.

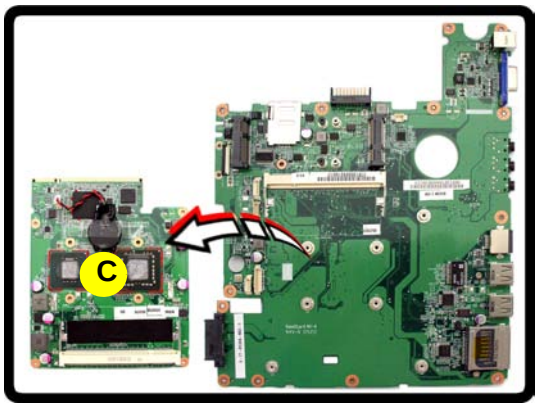


Caution

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.

e.





C. CPU Board

- 4 Screws

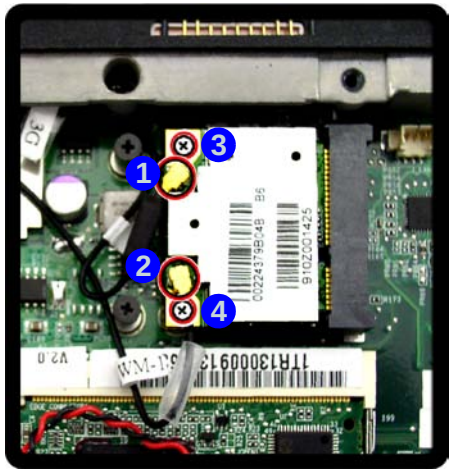
Removing the Wireless LAN Module

1. Turn off the computer, and turn it over, remove the battery (*page 2 - 5*) and RAM (*page 2 - 8*).
2. Carefully disconnect the cables 1 - 2 accordingly and remove screws 3 - 4.
3. The Wireless LAN Module 5 (*Figure c*) will pop-up, and you can remove it.

Figure 8
Wireless LAN Module Removal

a. Disconnect the cables and remove the screws.
b. Remove the WLAN module.

a.



b.

5. Wireless LAN Module

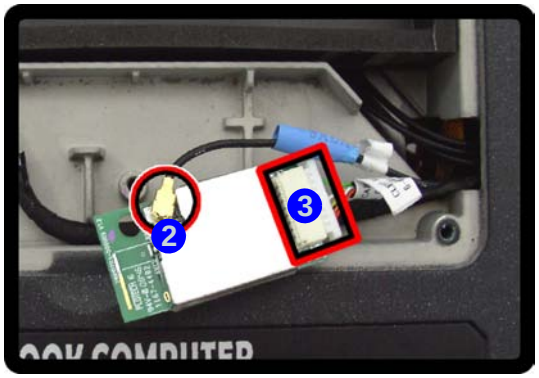
- 2 Screws

Removing the Bluetooth Module

1. Turn off the computer, and turn it over, remove the battery (***page 2 - 5***), and hard disk (***page 2 - 6***).
2. Remove the screw 1.
3. Carefully disconnect cables 2 & 3.
4. Lift the Bluetooth module 4 off the computer.

a.

b.



c.

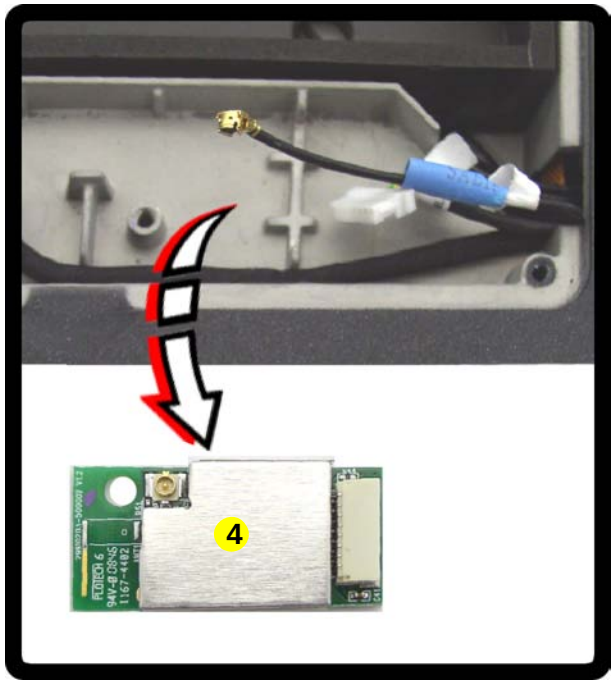


Figure 9
Bluetooth Module Removal

a. Remove the screw.
b. Disconnect the cables.
c. Remove the Bluetooth module.

Note: Make sure you reconnect the antenna cables to the socket (***Figure a***).

4. Bluetooth Module

- 1 Screw

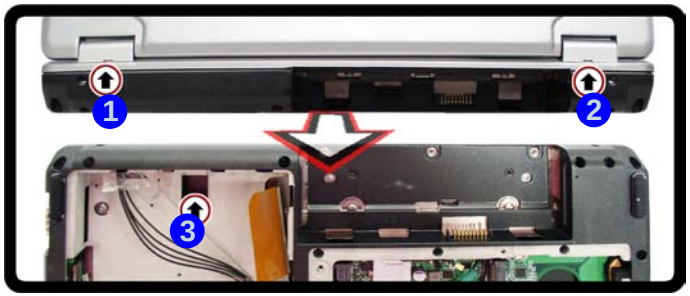
Removing the Keyboard

Figure 10
Keyboard Removal

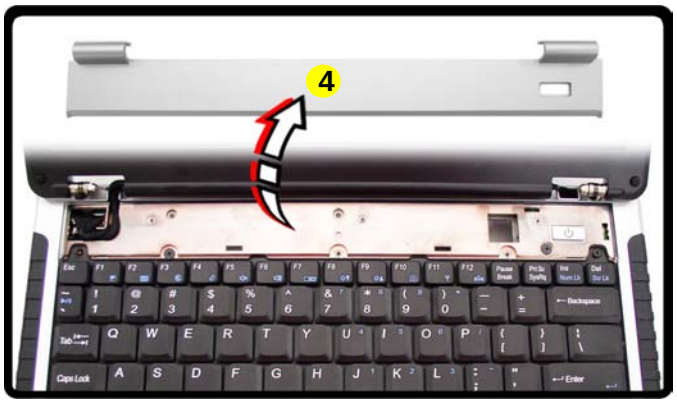
a. Use a screwdriver to lift the hinge cover.
b. Push the hinge cover up.
c. Remove screws from the keyboard.
d. Remove screws from the keyboard plate.

1. Turn off the computer, and turn it over and remove the battery (*page 2 - 5*).
2. Turn to the rear of the computer and lift the hinge cover 1 & 2 to release it (you may need to use a small screw-driver to do this).
3. Turn the computer back around and push at point 3 to release the whole hinge cover.
4. Carefully lift the hinge cover 4 up (*Figure b*).
5. Remove screws 6 - 11 from the keyboard 5.
6. Carefully lift up the keyboard 5 (*Figure d*) and remove screws 12 - 15 from the keyboard plate 16 .

a.

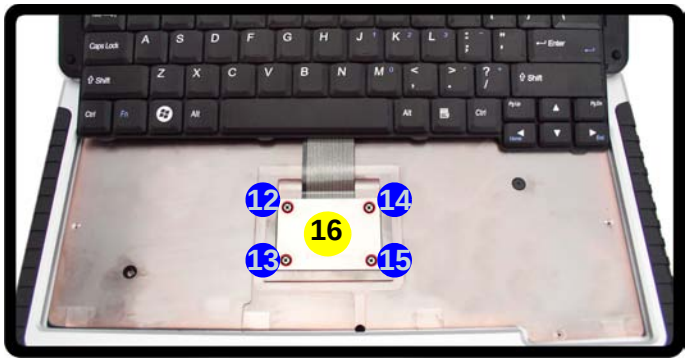


b.



c.

d.



Re-Inserting the Keyboard

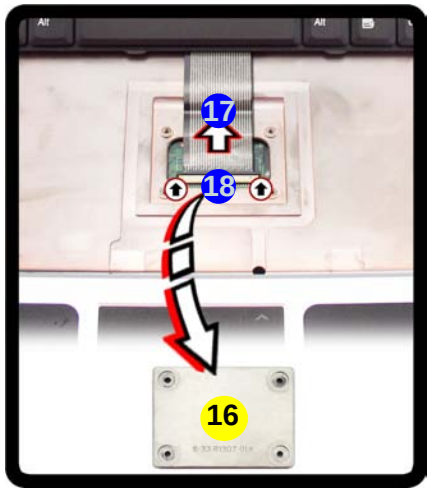
When re-inserting the keyboard firstly align the **four** keyboard tabs at the bottom at the bottom of the keyboard with the slots in the case.

5. Keyboard
16. Keyboard plate

- 10 Screws

7. Remove the keyboard plate 16 (*Figure e*).
8. Disconnect the keyboard ribbon cable 17 from the locking collar socket 18.
9. Carefully lift up the keyboard 5 (*Figure f*) off the computer.

e.



f.

Figure 11
Keyboard Removal (cont'd)

e. Remove the keyboard plate and disconnect the cable from the locking collar.
f. Remove the keyboard.

5. Keyboard
16. Keyboard plate

Appendix A: Part Lists

This appendix breaks down the ***R130T*** series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

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

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

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

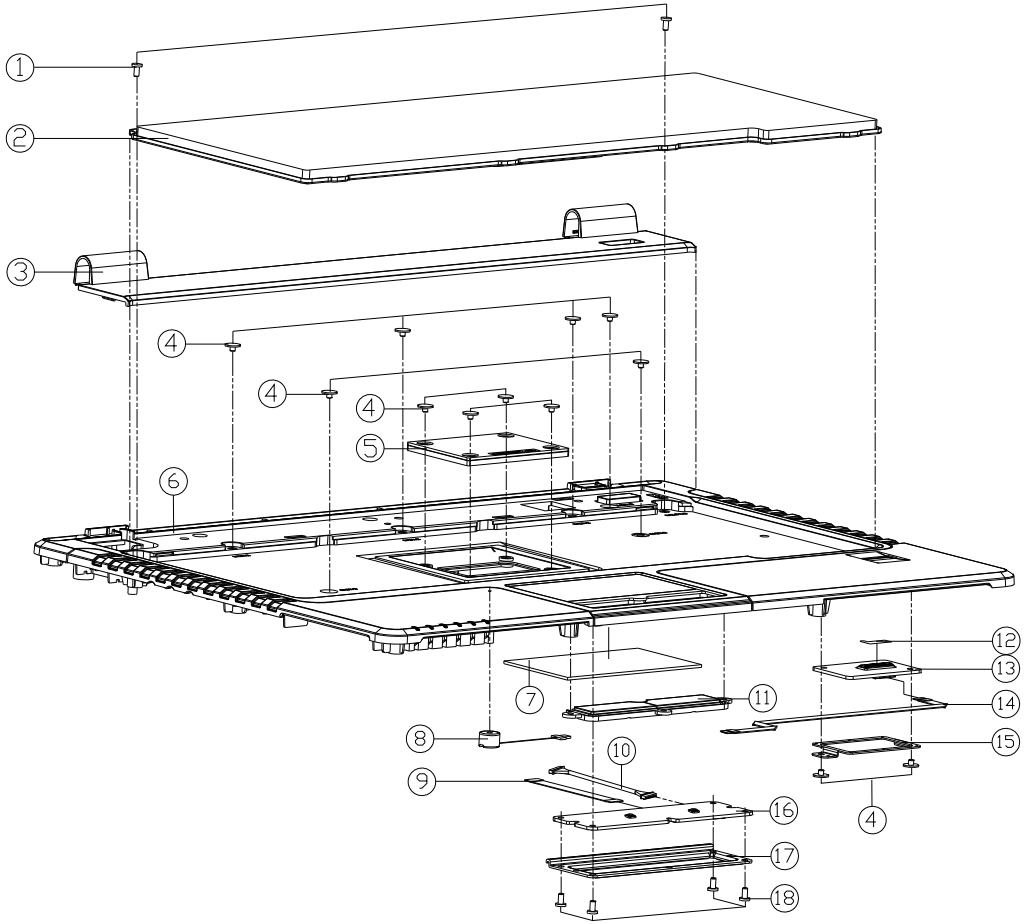
Part List Illustration Location

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

Table A- 1
Part List Illustration Location

Parts	
Top	*page A - 3*
Bottom	*page A - 4*
LCD	*page A - 5*
DVD Super Multi	*page A - 6*

Top

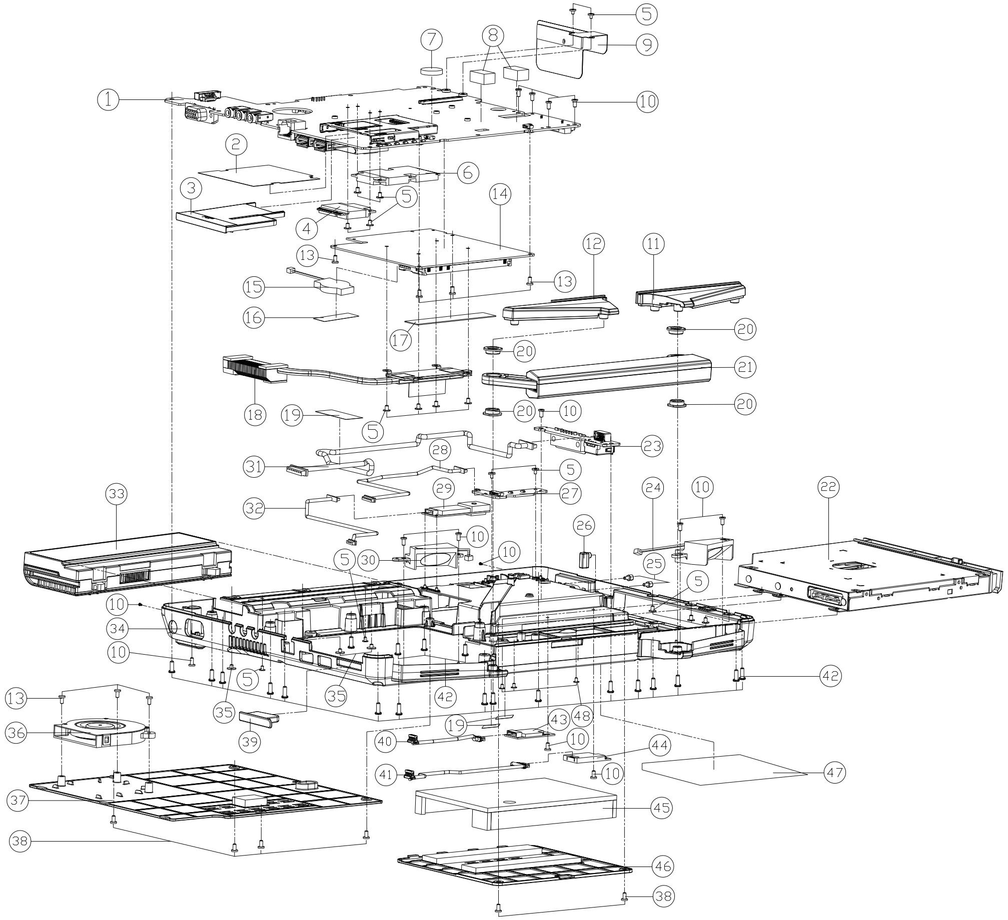


ITEM	PART NAME	PART NO	REMARK
1	SCREW M2.5*3L KI BZ ICT NY-	6-35-B6125-3R0	
2	K/B USA MP-02K36S-436L R130T WITH VISTA KEY	6-80-R1300-011-1	
3	CENTER COVER (ABS+PC) R130T	6-42-R1302-042	
4	SCREW M2*2L KI BK/Z ICT NY (Φ6.T=0.5)	6-35-B6120-2RC	
5	PLATE FOR KEYBOARD AL+CR4305 R130T	6-33-R1307-010	
6	TOP CASE MODULE R130T	6-39-R1302-012	
7	TOUCH PAD SYNAPTICS TM-00398-001 M740S	6-49-M74S2-010	
8	MC [illegible]	6-23-ER130-010	
9	FFC CABLE FOR CLICK BOARD TO TOUCH PAD 5MM 12P+N FOR NONE	6-43-M76S0-041	
10	WIRE CABLE 8P/N CLICK/B TO M/B 6.7MM R130T	6-43-R1300-030	
11	CLICK BUTTON (ABS+PC+SILICON) R130T	6-42-R1302-012	
12	MYLAR(+188M,BLUE) FOR FINGERPRINT NG6USU	6-40-00150-807	
13	FINGERPRINTER BOARD V3.0 R130T	6-77-R130F-D03	
14	FFC CABLE FINGERPRINT TO CLICK/B 11P150MM	6-43-R130F-012-1	
15	PLATE FOR FINGERPRINT SECC R130T	6-33-R130F-010	
16	CLICK BOARD V3.0 R130T	6-77-R1302-D03	
17	CLICK BUTTON PLATE SECC+CR4305 R130T	6-33-R1302-010	
18	SCREW M2*4L KI BZ ICT NY-	6-35-B6120-4RA	

Figure A - 1
Top

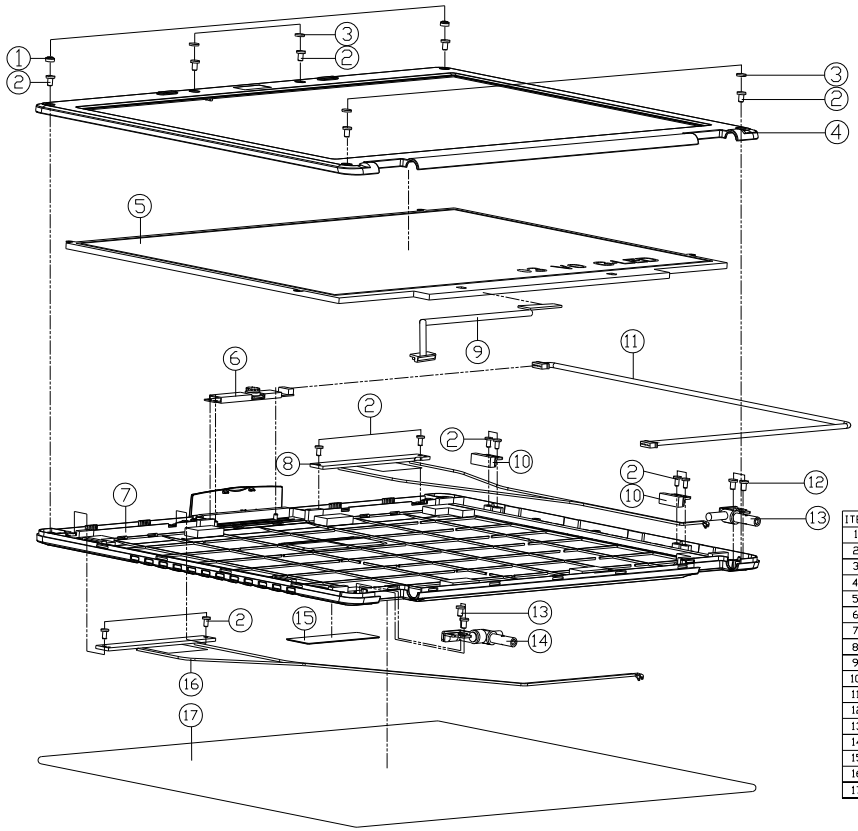
Bottom

Figure A - 2
Bottom



ITEM	PART NAME	PART NO	REMARK
1	MAIN BOARD V3.0(W/3G) R130T 無鉛	6-77-R1300-D03	
1	MAIN BOARD V3.0(W/O 3G) R130T 無鉛	6-77-R1300-D03-1	
2	MYLAR FOR NEW CARD (BLACK PET+TESA 4972W) R130T 無鉛	6-40-R1302-010	
3	DUMMY NEW CARD PC+ABS TN120R 無鉛	6-42-T12R3-011	
4	WLAN 802.11BGN RTL8191SE 海華 AW-NE104H HALF MINI-CARD PCI-E RTL8191SE V760C 無鉛	6-88-W76C2-7000	(OPTION)
4	WLAN 802.11BGN RTL8191SE 展達 XW714E HALF MINI-CARD PCI-E RTL8191SE V760C 無鉛	6-88-W76C2-8700	(OPTION)
4	WLAN 802.11A+G+N INTEL SHIRLEY PEAK (WIFI 無鉛	6-88-M7352-4200	(OPTION)
4	WLAN 802.11BG AW-GE703H 海華 HALF MINI-CARD 無鉛	6-88-M8102-7001	(OPTION)
4	WLAN 802.11BG XW701E 展達 HALF MINI-CARD PCI-E RTL8187SE 無鉛	6-88-M8102-8700	(OPTION)
4	WLAN 802.11A+G+N INTEL SHIRLEY PEAK (WIFI LINK 5100) 512AN_HMW 1X2 MINI-CARD PCI-E (半卡) MOW 無鉛	6-88-M72T2-42A0	(OPTION)
5	SCREW M2*3L KI BZ ICT NY (DD=ø4.5,DT=0.4) 無鉛	6-35-B6120-3RD	
6	WCDMA HSPA EM770 HUAWEI MIN-CARD USB 3.75G 無鉛	6-88-M810W-8800	(OPTION)
6	WCDMA HSPA MC8790 SIERRAWIRELESS MIN-CARD 無鉛	6-88-T120W-8300	(OPTION)
6	WCDMA HSPA H20 QISDA MIN-CARD USB 3.75G 無鉛	6-88-M810W-7900	(OPTION)
7	PORON D14*2.7 (CR4305+SONY G4000) R130T 無鉛	6-47-R1302-050	
8	RUBBER 15*9*6.8 (黑色SILICON+ SONY G4000) R130T 無鉛	6-47-R1302-021	
9	FPC CABLE FOR HDD TO MAIN BD R130T 無鉛	6-43-R130J-012	
10	SCREW M2.5*5L KI BK/Z ICT NY- 無鉛	6-35-B6125-5RA	
11	HANDLE BASE COVER RIGHT AZ91D R130T 無鉛	6-42-R1303-061	
12	HANDLE BASE COVER LEFT AZ91D R130T 無鉛	6-42-R1303-071	
13	SCREW M2*4L KI BZ ICT NY- 無鉛	6-35-B6120-4RA	
14	CPU CARD W/O CPU V3.0 R130T 無鉛	6-77-R1305-D03	
15	BAT. 20MM 3V 220MAH W/CABLE 62MM BCR2032V6.2-51021-0200B 無鉛	6-23-22015-P0D	
16	MYLAR2(15*8.4*0.015) FOR MB (0.075+SONY G4000 0.05) M860TU 無鉛	6-40-M860S-081	
17	PORON 63*14*0.5 (CR4305+SONY G4000) R130T 無鉛	6-47-R1302-030	
18	HEAT SINK MODULE FOR CPU& 北橋 R130T 無鉛	6-31-R130N-100	
19	TAPE MYLAR (C),MYLAR M550J 無鉛	6-40-M55J2-030	
20	HANDLE HOLE PLUG (POM) R130T 無鉛	6-42-R1303-010	
21	HANDLE BAR MODULE R130T 無鉛	6-42-R1303-301	
22	SATA DVD SUPER MULTI ASS'Y (OPTION) R130T 無鉛	6-79-R130T00Q-000	
23	USB BOARD V3.0 R130T 無鉛	6-77-R1303-D03	
24	SPK+CABLE R L25*H29.5*T14 1.5W 4Ω 135MM PB2016VMG04-1 R130T 無鉛	6-23-5R130-020	
25	HEX STUD (SUM22 NI-PL) 11MM GTY-PATCH 無鉛	6-34-07009-012	
26	GPS DUMMY RUBBER SILICONE H=70 度 黑色 R130T 無鉛	6-47-R130G-010	
27	POWER BOTTOM BOARD V2.0 R130T 無鉛	6-77-R130C-D02	
28	WIRE CABLE 5PIN M/B TO POWER/B 170MM R130T (無鉛)	6-43-R1300-010	
29	GPS ANTENNA BOARD V3.0 R130T 無鉛	6-77-R130G-D03	
30	SPK+CABLE L L25*H29.5*T14 1.5W 4Ω 35MM PB2016VMG04-1 R130T 無鉛	6-23-5R130-010	
31	WIRE CABLE M/B TO SERIAL/B 280MM R130T 無鉛	6-43-R1300-020	
32	GPS CABLE TO MB 2P L= 80MM IPAX+MMCX R130T 無鉛	6-43-TN70G-011	
33	BAT.P S LI 14.8V/2.6AH/38.48WH PSE 4S1P SMP/SAMSUNG 980T4780F (CASE 咬花) R130T 無鉛	6-87-R130S-4DF1	
33	BAT.P S LI 14.8V/5.2AH/76.96WH 4S2P SMP/SAMSUNG 98012003F R130T 無鉛	6-87-R130S-4D7	
34	BOTTOM CASE MODULE R130T 無鉛	6-39-R1303-012	
35	SCREW M2*2L KI BK/Z ICT NY(ø8,T=0.6) 無鉛	6-35-B6120-2RE	
36	FAN+CON. 54*54*8MM 5V 0.35A AB0505HX-J03 R 無鉛	6-23-AM810-011	
37	CPU COVER MODULE R130T 無鉛	6-42-R130S-101	(OPTION)
38	SCREW M2.5*3L K1 BZ ICT NY- 無鉛	6-35-B6125-3R0	
39	RUBBER(CARD READER)(SILICON,H-60,60 度,黑色)M760S 無鉛	6-47-M76S8-010	
40	WIRE CABLE M/B TO BLUETOOTH 65MM R130T 無鉛	6-43-R130B-010	
41	WIRE CABLE 6PIN M/B TO GPS (SHORT) 120MM R130T 無鉛	6-43-R130G-010	
42	SCREW M2.5*8L KI BK/Z NY ICT 無鉛	6-35-B6125-8R0	
43	BLUETOOTH V2.1 GUBTCR42M-NS- 藍天7 互億 8 PIN U 無鉛	6-88-M73T5-3900	
44	GPS MODULE W/O ANTENNA SIRF 3 YTEC GB-2002 無鉛	6-88-TN706-8200	
45	HDD CUSHION MODULE PORON(106*75.5*14.5) R130T 無鉛	6-47-R130J-021	
46	HDD COVER MODULE R130T 無鉛	6-42-R130J-101	
47	PRODUCT LABEL R130T 無鉛	6-45-R1303-011	
48	*(非耐落)SCREW M2*3L KI NI ICT GTY-PATCH (DD=ø4.0,DT=0.8) 無鉛	6-35-B1120-3RD	

LCD

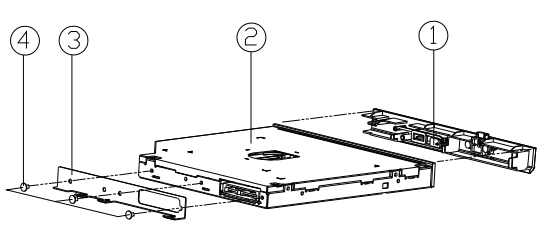


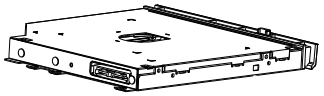
ITEM	PART NAME	PART NO	REMARK
1	RUBBER FOR FRONT COVER (4.5*12) R130T	6-47-R1301-062	
2	SCREW M2*4L K1 BZ ICT NY-	6-35-B6120-4RA	
3	RUBBER FOR FRONT COVER (4.9*10.6) R130T	6-47-R1301-0C0	
4	LCD FRONT COVER MODULE 13.3 R130T	6-39-R1301-012	
5	LCD 13.3" WXGA AU B133EW03 V1 (GLARE TYPE)	6-50-G8230-G00	
6	UVC CAMERA BISON FIX 0M202457-010 2M M740T	6-88-M740C-4913	<OPTION>
7	LCD BACK COVER MODULE 13.3 R130T	6-39-R1301-022	
8	[illegible]	6-23-7R130-010	
9	LVDS CABLE FOR AUO B133EW03 126MM R130T	6-43-R1301-010	
10	LCD BRACKET (R) MODULE R130T	6-33-R1301-101	
11	WIRE CABLE SPIN FOR CCD 207*212.5MM R130T	6-43-R130T-010	
12	SCREW M2.5*4L K1 BK/D ICT NY	6-35-B4125-4RA	
13	LCD HINGE (R) SK7 + PRON 3.0T R130T	6-33-R1301-022	
14	LCD HINGE(L) SK7 + PRON 3.0T R130T	6-33-R1301-032	
15	LOGO ORGANIZED FOR A COVER PLATE R130T	6-45-R1301-010	
16	ANTENNA WCDMA 3G PCB,H=1.6MM, 620MM	6-23-7R130-030	<OPTION> FOR WCDMA BCM
17	[illegible]	6-40-M73T1-041	

Figure A - 3
LCD

DVD Super Multi

Figure A - 4
DVD Super Multi





ITEM	PART NAME	PART NO	REMARK
1	ODD BEZEL MODULE R130T	6-42-R130Z-101	
2	SATA DVD SUPER MULTI 5 1/4" 8X 12.7MM GT10	6-85-A078X-502	
2	[illegible]	6-85-A072A-T03	
3	ODD BRACKET SUS304 T0.5 FOR R130T	6-33-R130Z-011	
4	SCREW M2*3L K1 NI ICT GTY-PATCH	6-35-B1120-3RE	

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the ***R130T*** notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

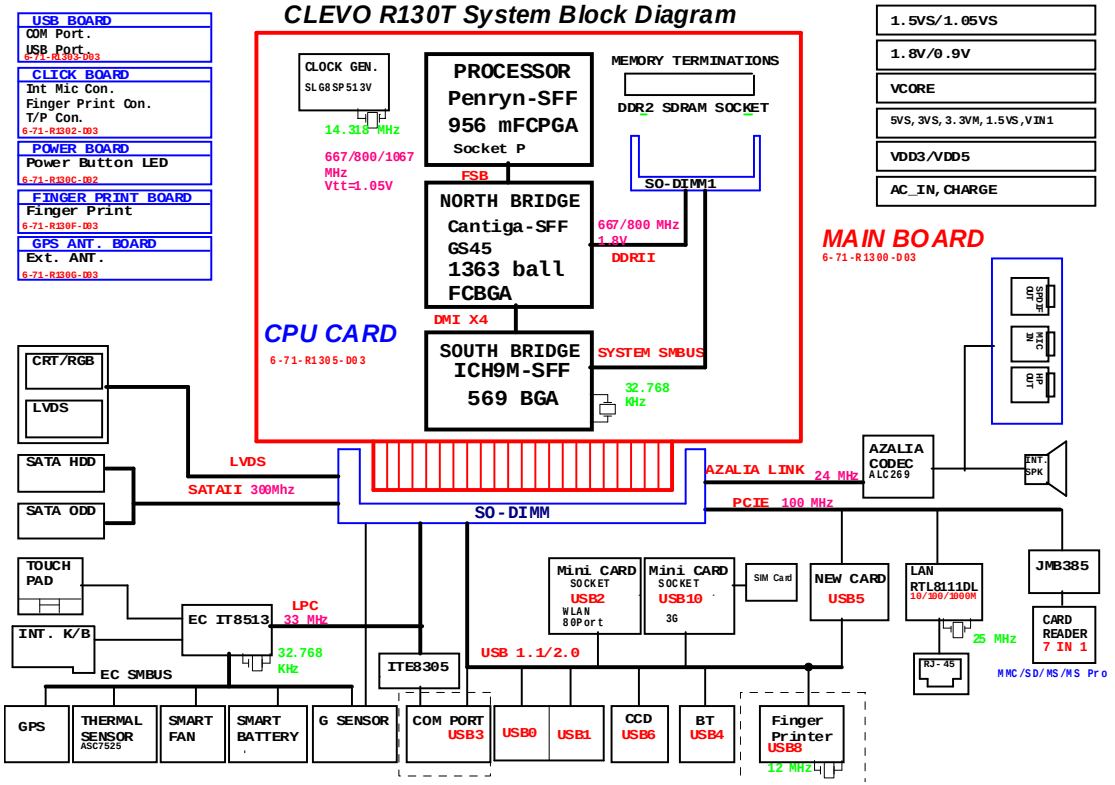
Table B - 1
Schematic Diagrams

Version Note

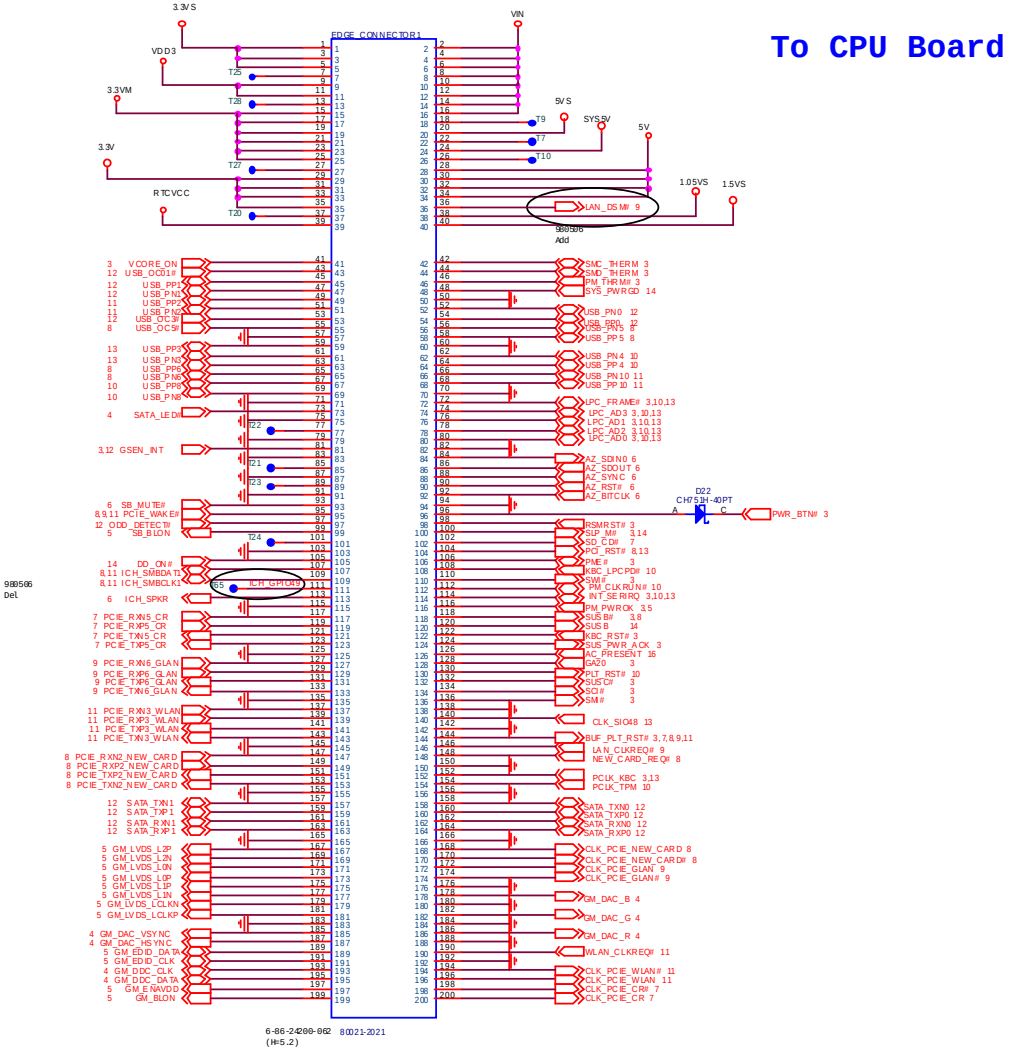
The schematic diagrams in this chapter are based upon version 6-7P-R1306-002. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram

Sheet 1 of 21
System Block Diagram



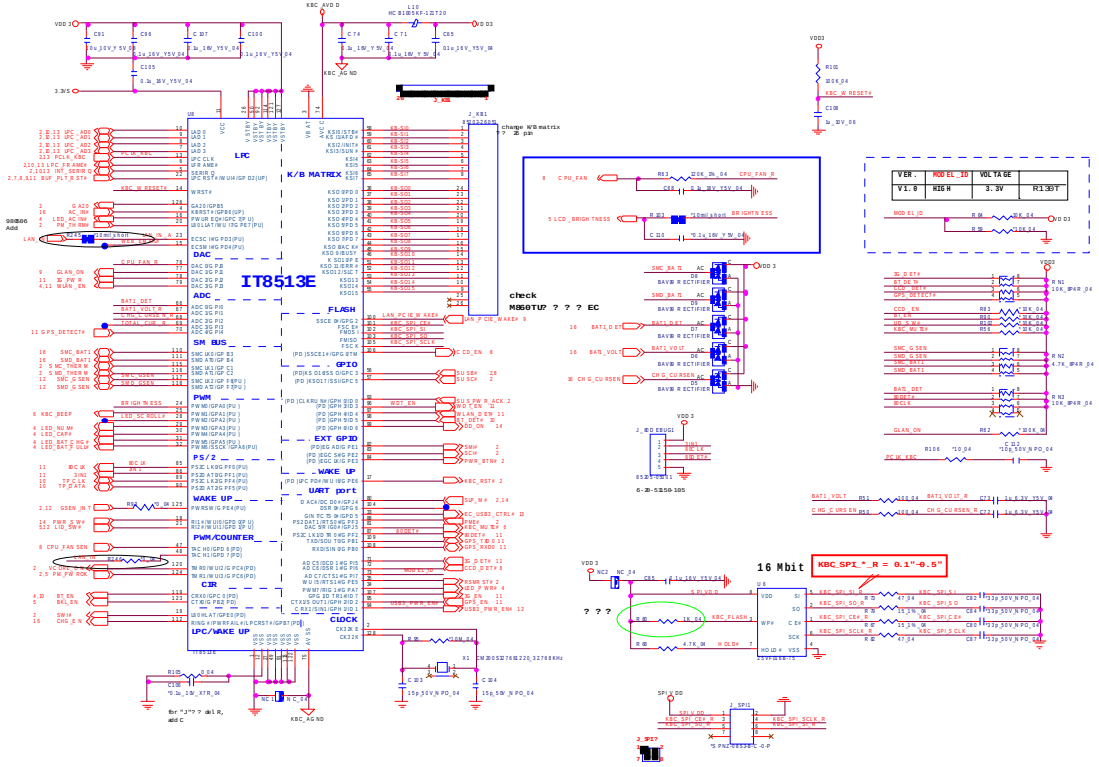
HDI Con



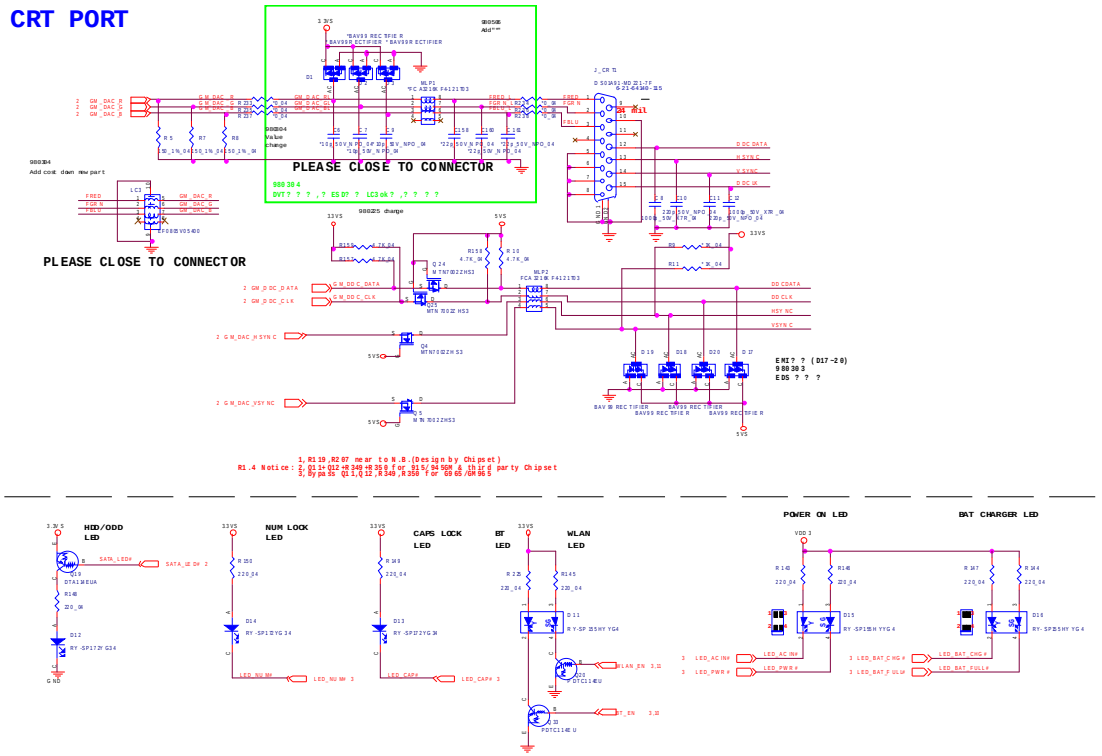
Sheet 2 of 21
HDI Con

KBC-ITE IT8513E

Sheet 3 of 21
KBC-ITE IT8513E



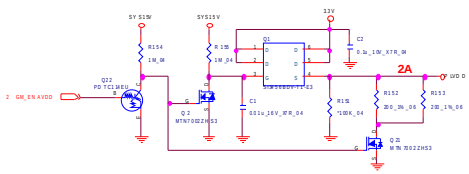
CRT Port, LEDI

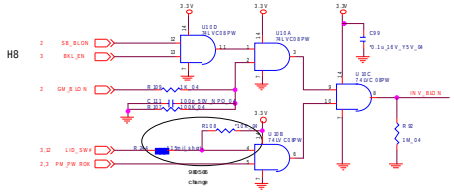


Sheet 4 of 21
CRT Port, LED

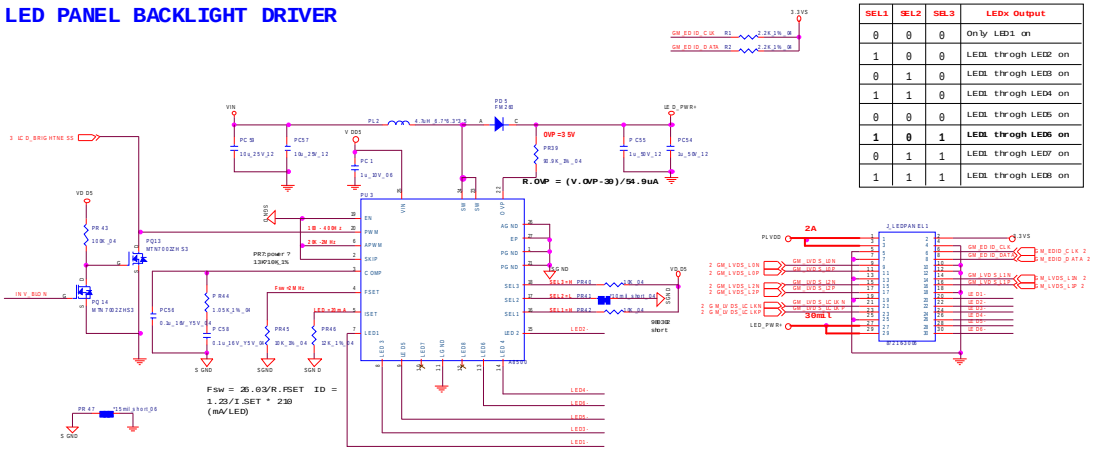
LVDS & LED Panel Driver

Sheet 5 of 21
LVDS & LED Panel Driver



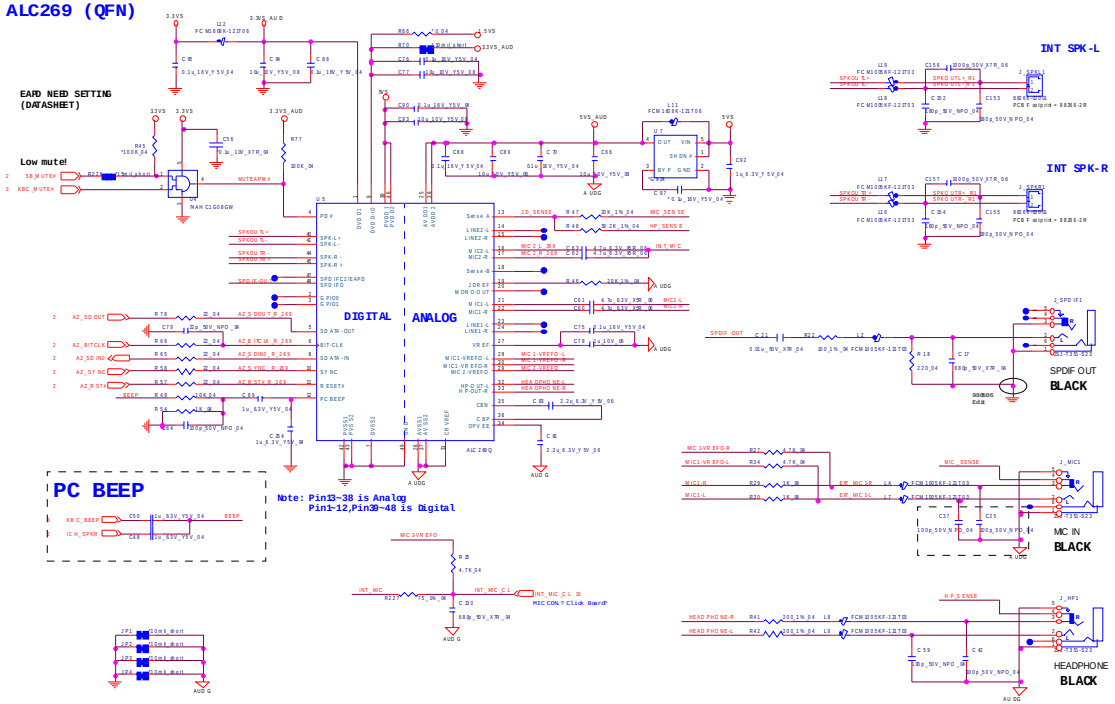


LED PANEL BACKLIGHT DRIVER



SEL1	SEL2	SEL3	LEDx Output
0	0	0	Only LED1 on
1	0	0	LED1 throgh LED2 on
0	1	0	LED1 throgh LED3 on
1	1	0	LED1 throgh LED4 on
0	0	0	LED1 throgh LED5 on
1	0	1	LED1 throgh LED6 on
0	1	1	LED1 throgh LED7 on
1	1	1	LED1 throgh LED8 on

Azalia Codec AMP ALC269QFN

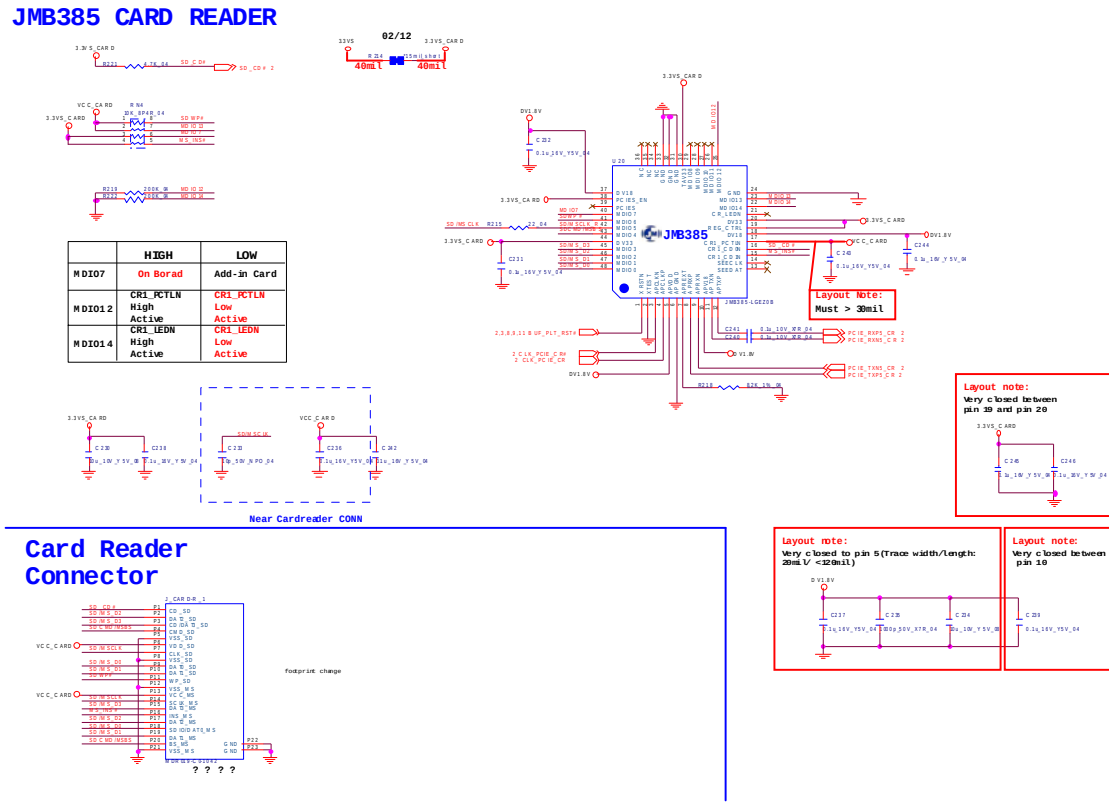


Sheet 6 of 21
Azalia Codec AMP
ALC269QFN

B.Schematic Diagrams

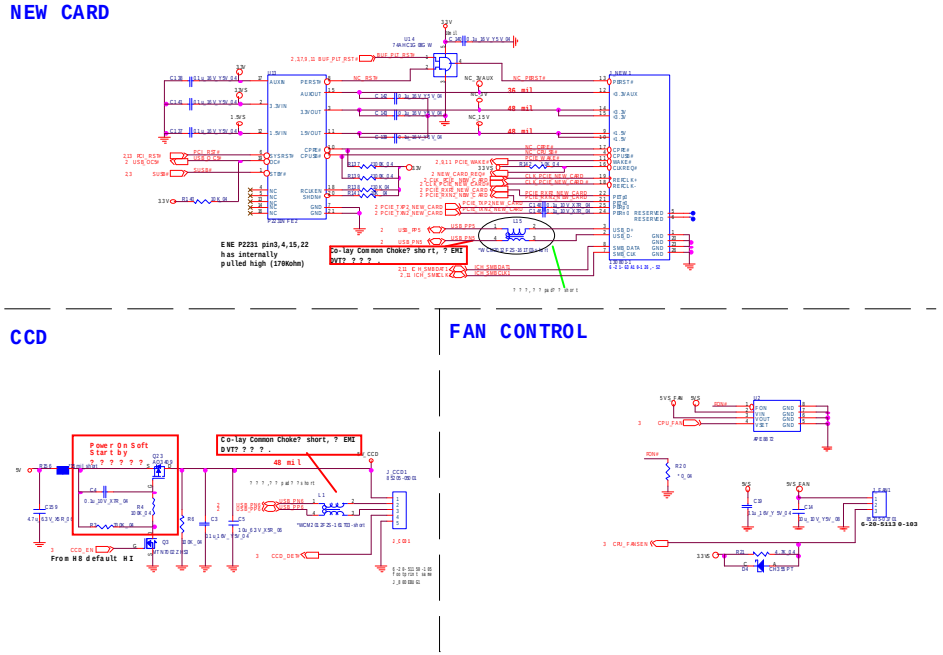
JMB385 Card Reader

Sheet 7 of 21
JMB385 Card Reader



	HIGH	LOW
MDIO7	On Borad	Add-in Card
MDIO12	CR1_PCTLN High Active	CR1_PCTLN Low Active
MDIO14	CR1_LEDN High Active	CR1_LEDN Low Active

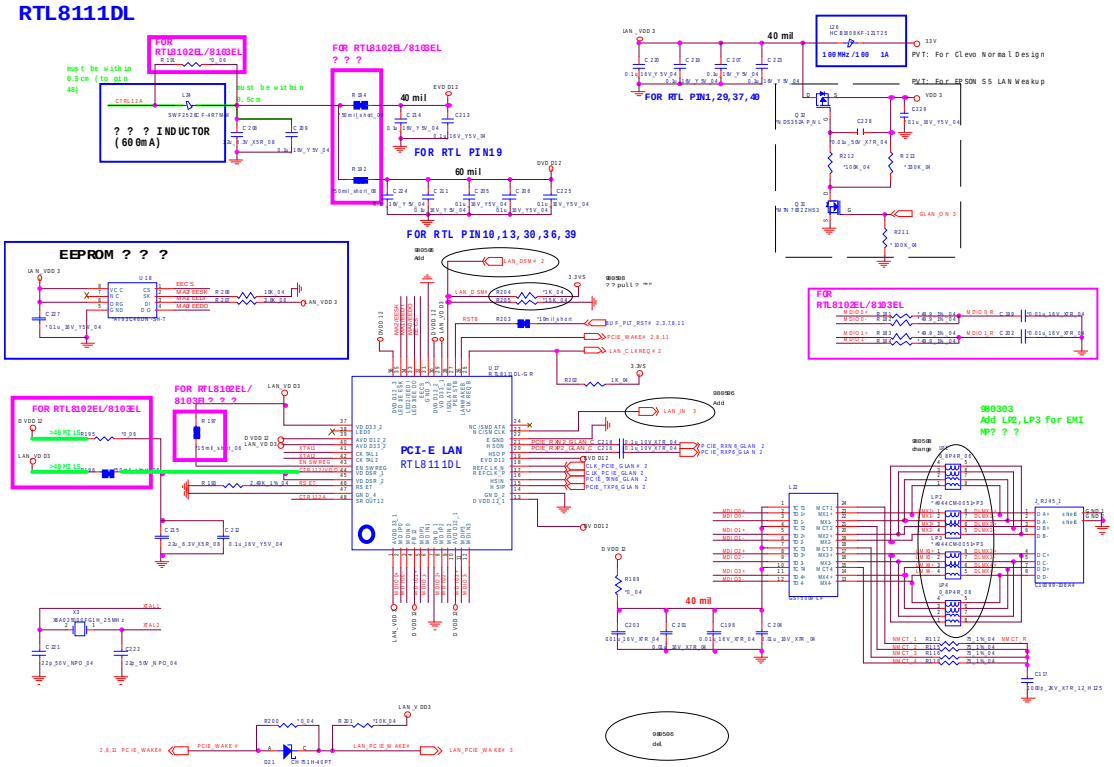
New Card, CCD, Fan



Sheet 8 of 21
New Card, CCD, Fan

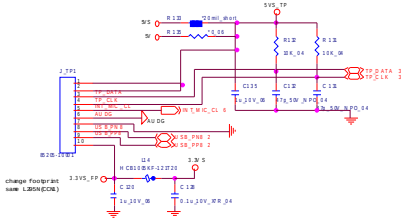
PCIE LAN RTL8111DL, RJ45

Sheet 9 of 21
PCIE LAN
RTL8111DL, RJ45

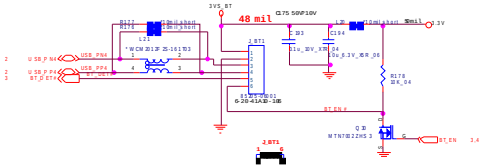


Click, BT Con., TPM

CLICK CONN
(T/P,F/P,MIC)

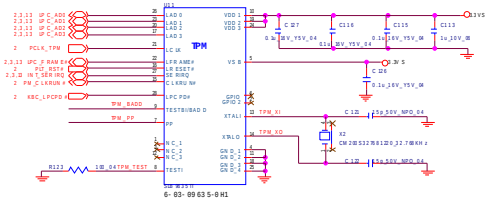


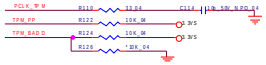
Bluetooth



TPM 1.2

CHECK





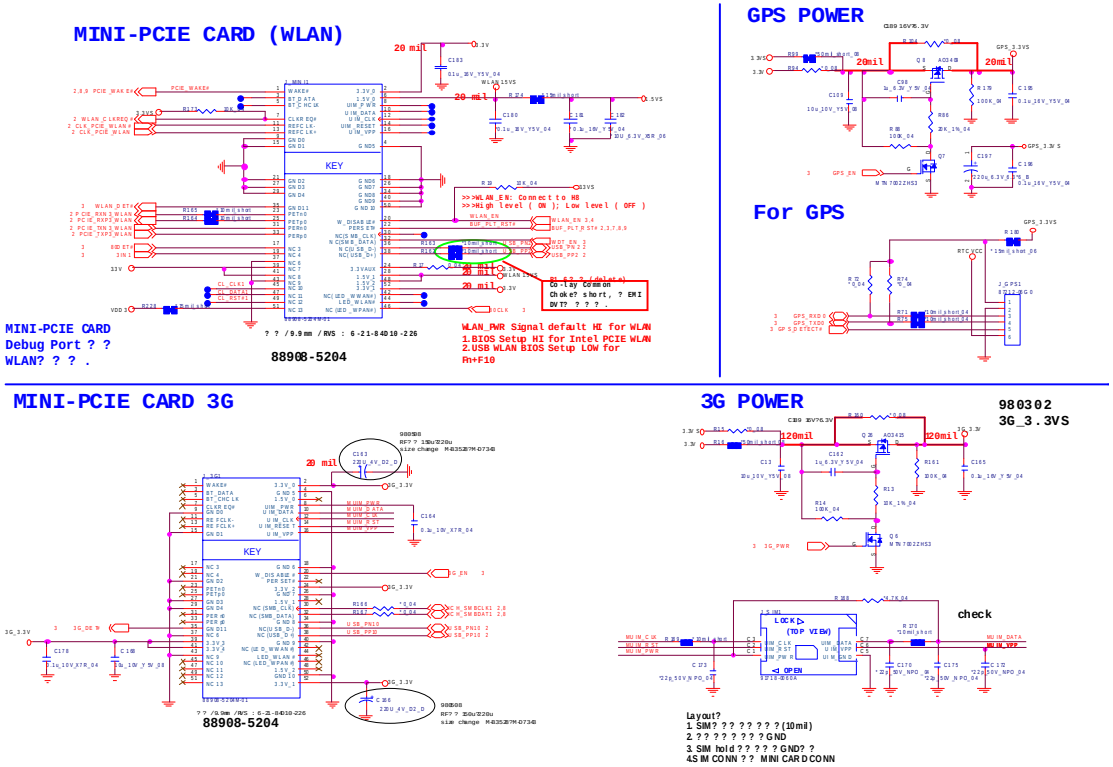
asserted before entering S3
LPC reset timing:
LPCPD# inactive to LRST# inactive 32~96us

TPM_PP	H : ACCESS LOW: NORMAL (Internal PD)
TPM_BADD	H : 4Eh LOW: 2Eh / 2Fh

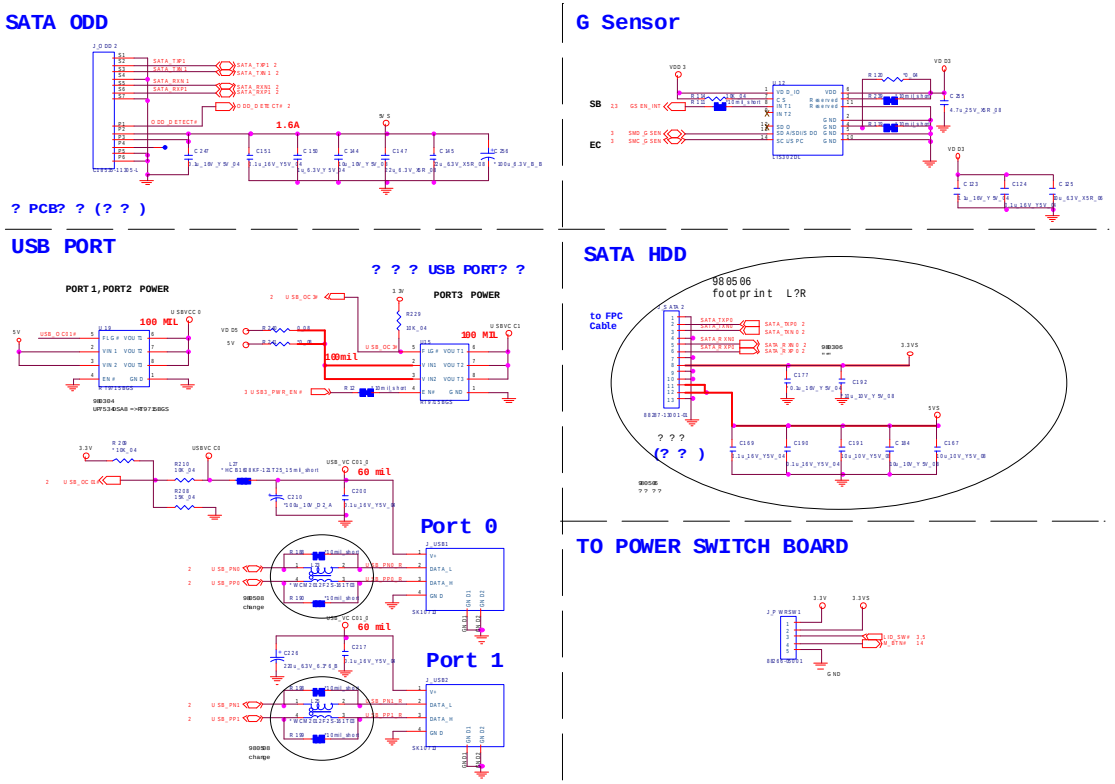
Sheet 10 of 21
Click, BT Con., TPM

WLAN, 3G, GPS

Sheet 11 of 21
WLAN, 3G, GPS



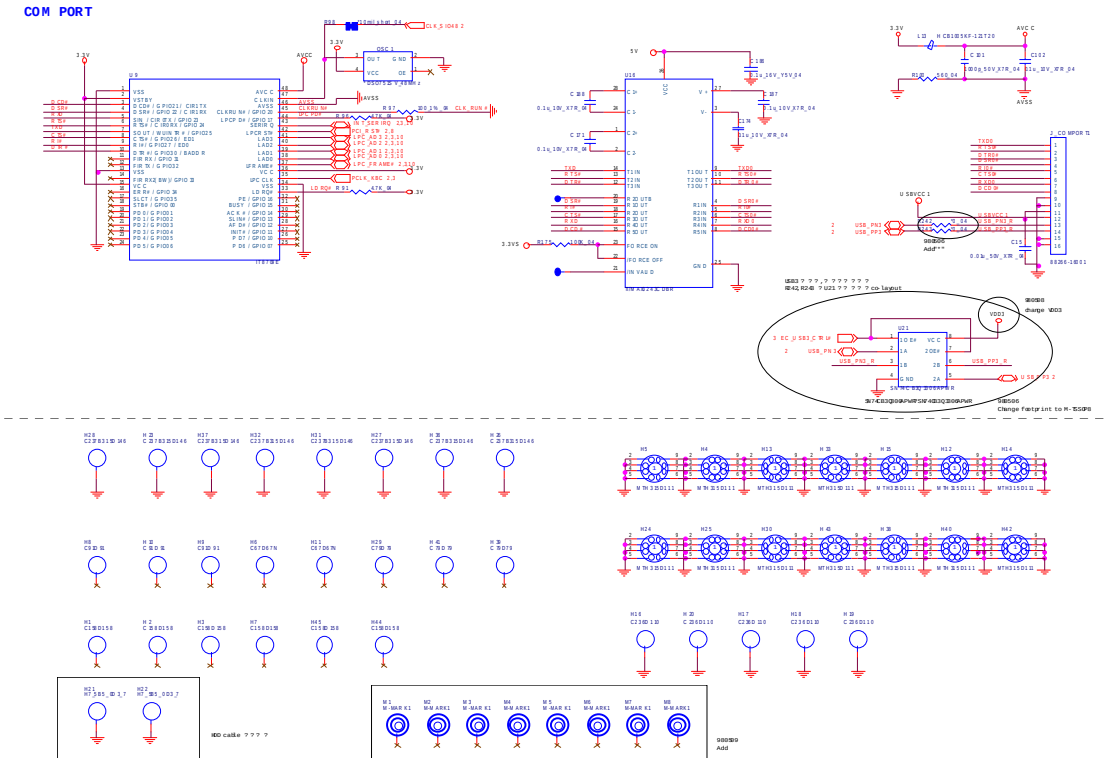
HDD, ODD, USB, G-Sensor



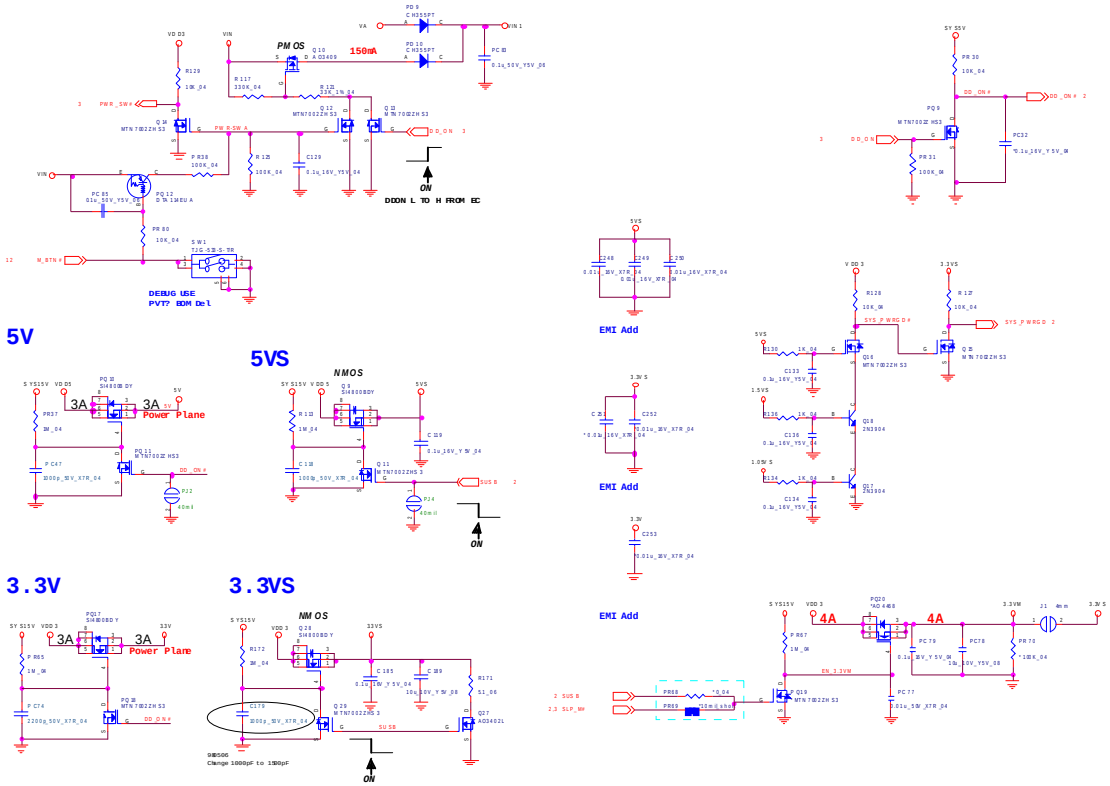
Sheet 12 of 21
HDD, ODD, USB, G-Sensor

COM Port, Ext USB Con.

Sheet 13 of 21
COM Port, Ext USB Con.



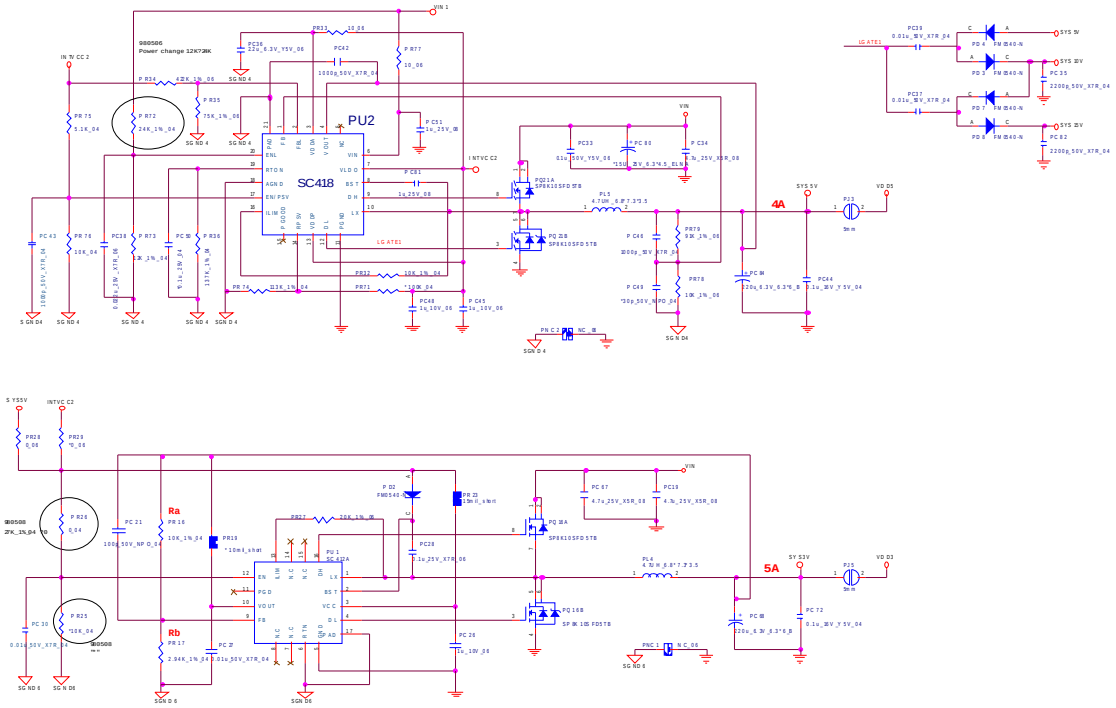
5VS, 3VS, 3.3VM, 1.5VS, VIN1



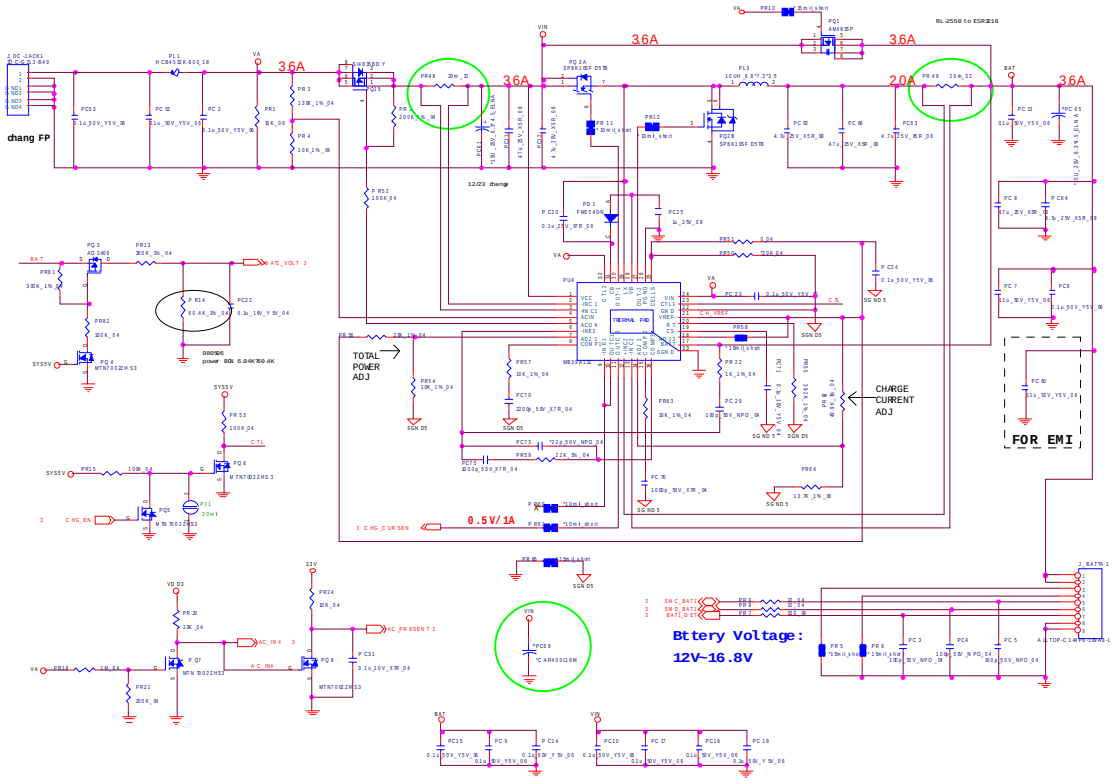
Sheet 14 of 21
5VS, 3VS, 3.3VM, 1.5VS, VIN1

Power VDD3/VDD5

Sheet 15 of 21
Power VDD3/VDD5



AC_In, Charge



Sheet 16 of 21
AC_In, Charge

B.Schematic Diagrams

USB+COM Board

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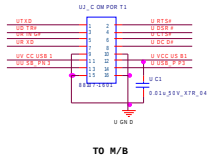
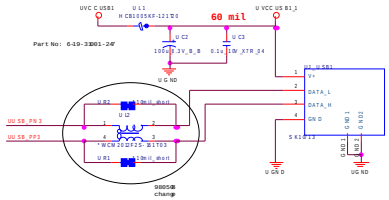
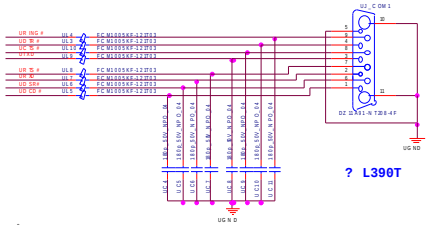
USB+COM Board

USB+COM Port Board





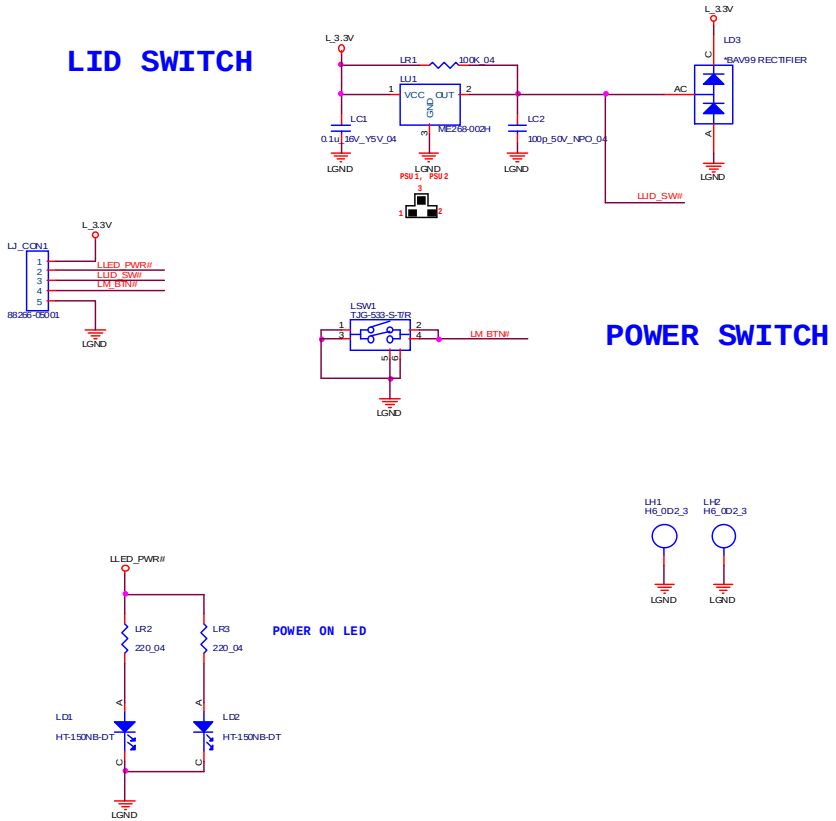
USB PORT3



COM PORT

? L390T

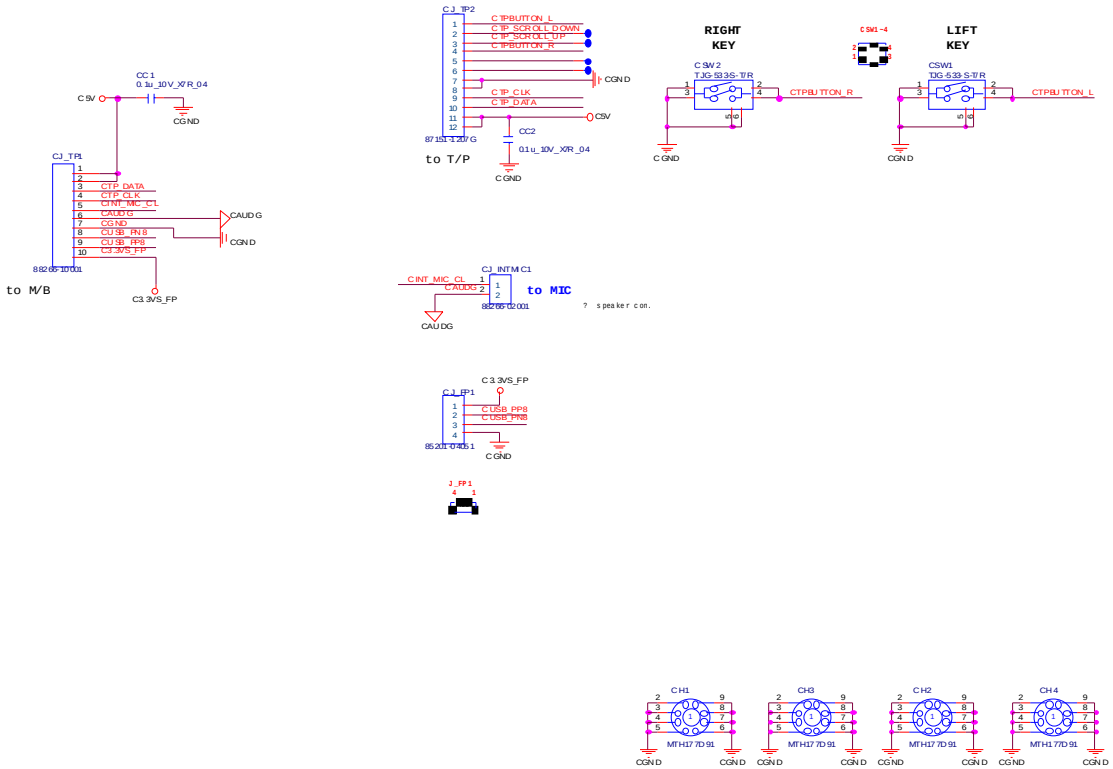
Power Button Board



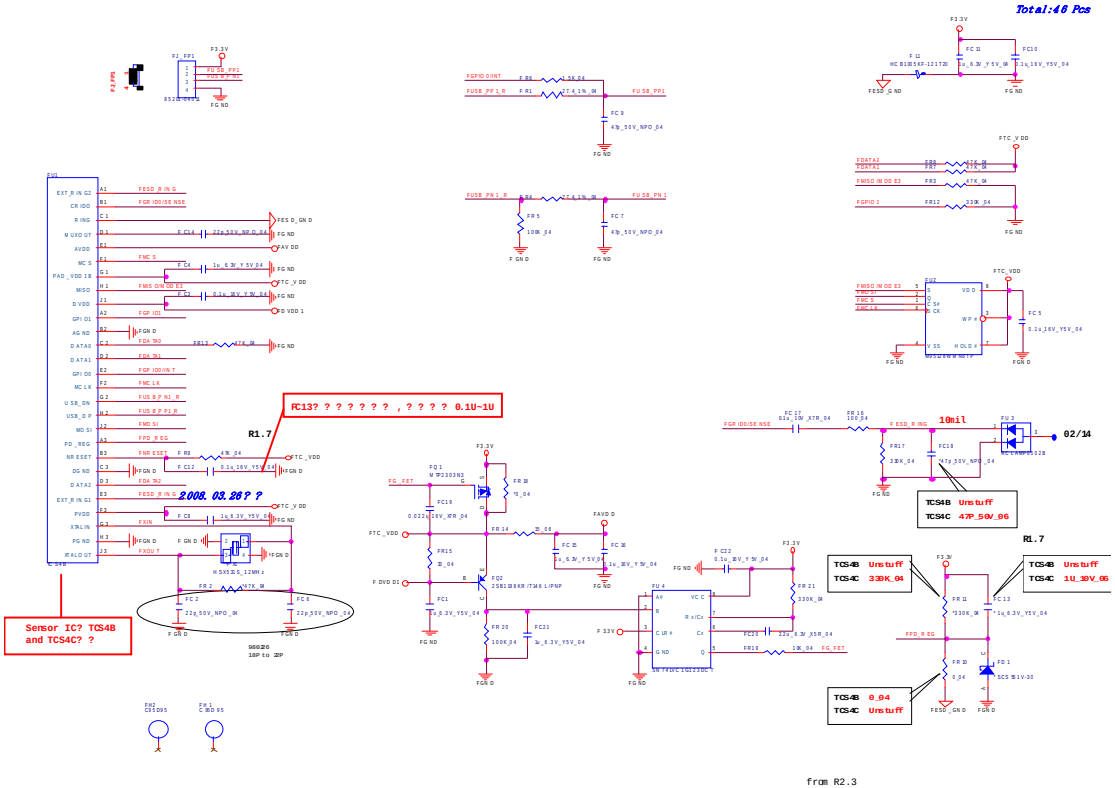
Sheet 18 of 21
Power Button Board

Click Board

Sheet 19 of 21
Click Board



FingerPrint Board



Sheet 20 of 21
FingerPrint Board

GPS Antenna Board

Sheet 21 of 21
GPS Antenna Board