

Chapter

1

Service Overview

Carefully read through this chapter for a look at various components of the notebook and necessary cautions and tools before performing any service and repairs.

To provide the best service and support for the ASUS S62F Series, we have provided the below information for technicians from distributors and resellers to perform the complete notebook disassembly and assembly. But before performing the procedures, please be sure to read through the overview in this chapter for component overview, cautions and tools to avoid any unwarranted damages to the notebook's hardware.

The following chapter includes:

- S62F Overview
- Components
- Precautions
- Appropriate Tools

S62F Series Overview and Components

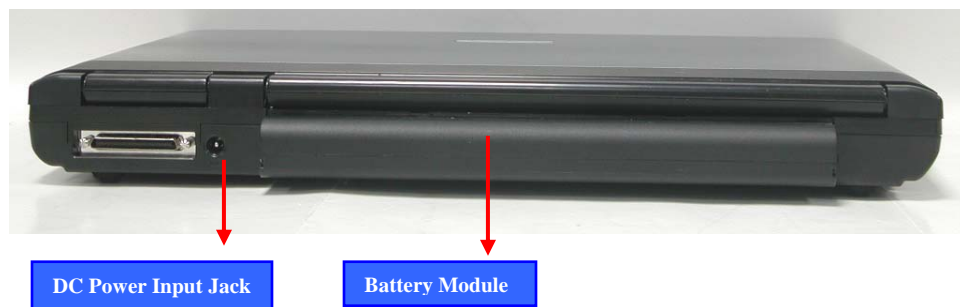
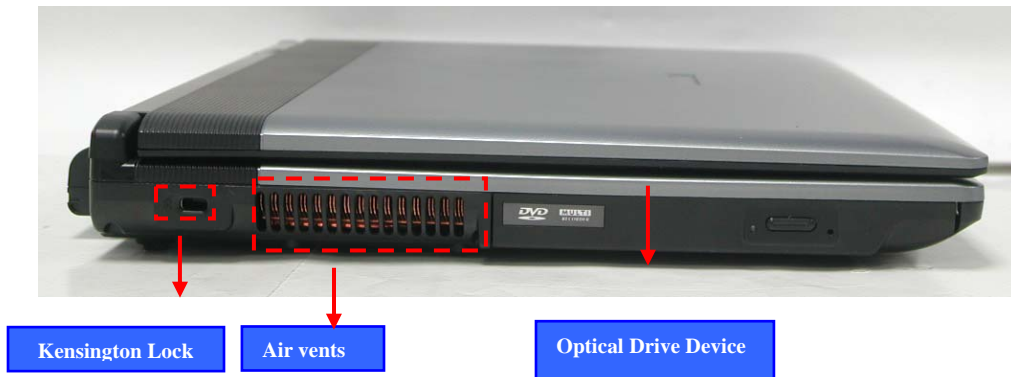
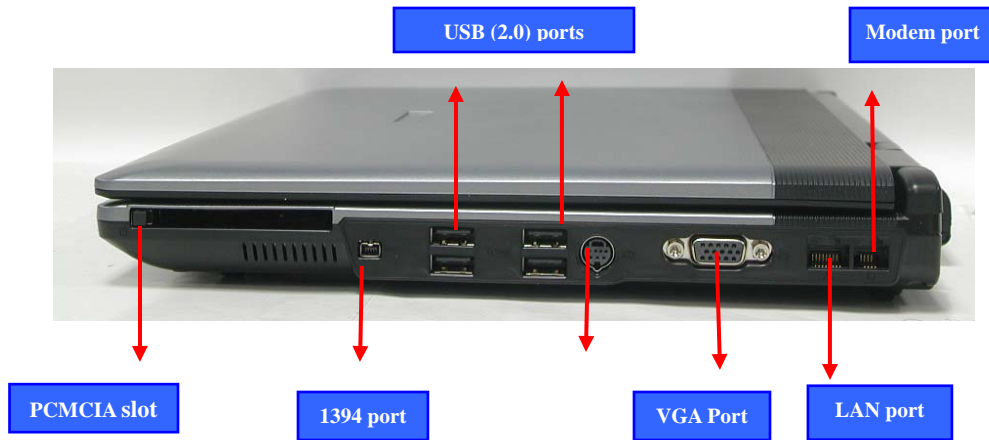
The ASUS S62F Series Notebook is a product combining the power of Intel® Pentium-M CPU. In this section, an overview for the S62F, along with its components, will be presented.

OVERVIEW

S62F Overview

The illustrations below show the notebook's overview from front view, right side view, left side view, and rear side view. Most of the parts will be discussed in this manual.





C O M P O N E N T S

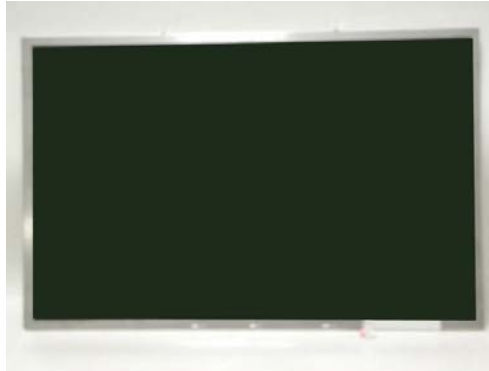
Components

The illustrations below show the components of the S62F Series.

L C D

LCD Panel*

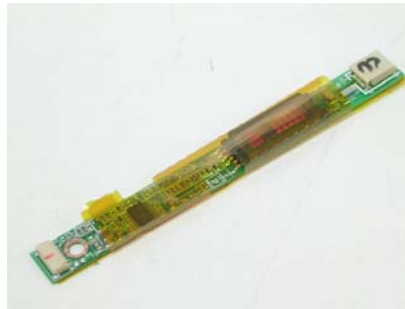
The illustration below shows the LCD display panel. The S62F Series notebook comes with 15.0" TFT LCD Panel.



**I N V E R T E R
B O A R D**

Inverter Board

The illustration below shows the inverter board, which is hidden underneath the lower edge of the LCD front bezel.



L C D
B R A C K E T S

LCD bracket

The illustration below shows the LCD brackets.



H I N G E C O V E R

Hinge Cover

The illustration below shows the Hinge Cover.



L C D C A S E

LCD Case

The illustration below shows the LCD case. Here is the LCD bezel.



KEYBOARD

Keyboard

The illustration below shows the keyboard plate. It can be exchanged with keyboard plates with different language layouts, such as U.S., German, Russian, British, Italian and others.



TOP CASE

Top Case Module

The illustration below shows the top case of the notebook.



BATTERY

Battery Pack

The illustration below shows the battery pack of the notebook. It's located at bottom of the notebook.



OPTICAL
DRIVE
DEVICE

Optical Drive Device

The illustration below shows the Optical Drive Device



HDD

Hard Disk Drive

The illustration below shows the 2.5" industry-standard HDD with 9.5mm height.



HDD BRACKET

HDD Bracket

The illustration below shows the HDD Bracket that is placed over the HDD.



CPU

CPU

The illustration below shows the Intel Pentium-M CPU view.



CPU
THERMAL
MODULE

CPU Thermal Module

The illustration below shows the thermal module for the CPU. It's located on the top of CPU.



MEMORY

Memory Module

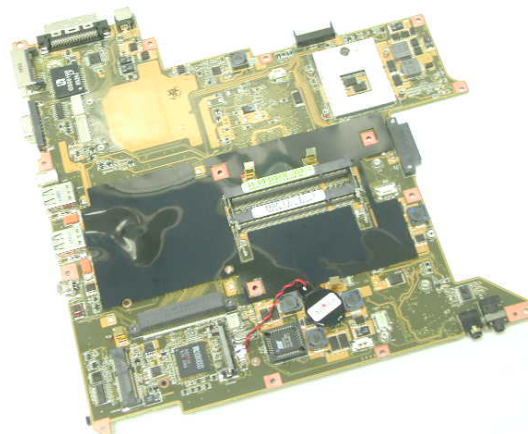
The illustration below shows the industry-standard 200pin SO-DIMM DDR SDRAM module for the notebook.



MOTHERBOARD

Motherboard

The illustration below shows the motherboard of the notebook.



MODEM
MODULE

Modem Module

The illustration below shows the modem module of the notebook.



WALN
MODULE

WALN Module

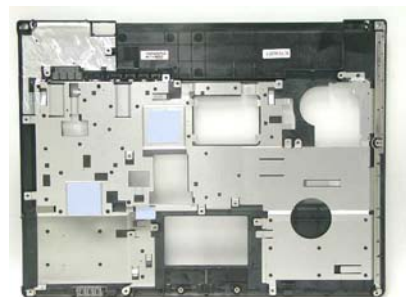
The illustration below shows the WALN module of the notebook.



TOP CASE

Top Case

The illustration below shows the TOP case of the notebook.



Service Overview

Please pay special attention to the cautions below to prevent any damages to the notebook and also please be sure to select the appropriate tools described in this section to perform any services desired.

CAUTIONS

Precautions

Before you perform any service and/or repair on the notebook, please follow the steps below first.

1. Be sure that the notebook is powered down.
2. Disconnect the AC plug from the notebook



3. Turn the notebook over. Unlock and hold the latches, and remove the battery .



3. Remove all rings, watches and any other metal objects from your hands.



4. Always wear a ground strap on your hand to protect the notebook from static discharge.

TOOLS

Appropriate Tools

The illustrations below show the appropriate tools that should be used for the notebook's service and repair.

CROSS
SCREW-
DRIVER

Phillips-head Screwdriver

Use a Phillips-head screwdriver to fasten/remove the K- or B-typed screws.



FLATHEAD
SCREW-
DRIVER

Single-Slotted Screwdriver

Use a single-slotted screwdriver to lock/unlock the flexible cable connector locks



TWEEZERS

Tweezers

Use a pair of tweezers to remove/insert flexible cables.



INSERTION
AND
EXTRACTION
TOOL FOR
FPC
CONNECTOR

Insertion and extraction tool for FPC connector

Use insertion and extraction tool for FPC connector to handle locking and unlocking of FPC connectors.



VACUUM
HANDLING
TOOL

Vacuum Handling Tool

Use Vacuum handling tool to handle CPU.



SPACER
SCREW-
DRIVER

Spacer Screwdriver

Use a spacer screwdriver to fasten/remove spacer screws or hex screws.



Disassembly Procedure

Please follow the information provided in this section to perform the complete disassembly procedure of the notebook. Be sure to use proper tools described before.

ASUS S62F Series Notebook consists of various modules. This chapter describes the procedures for the complete notebook disassembly. In addition, in between procedures, the detailed disassembly procedure of individual modules will be provided for your service needs.

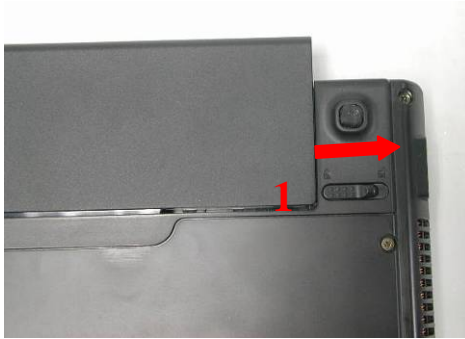
The disassembly procedure consists of the following steps:

- Battery Module
 - HDD Module
 - Wireless Module
 - Memory Module
 - CPU Module
 - ODD Module
 - Keyboard
 - Top Case Module
 - Motherboard
 - Bottom case Module
 - LCD Module
-

Battery Module

The illustration below shows how to remove the battery module.

1. Unlock and hold the latch No (1).



2. Slide the battery lock (No.2) and pull the battery pack out.



3. Pull the battery pack out.



| |
|--------|
| HDD |
| MODULE |

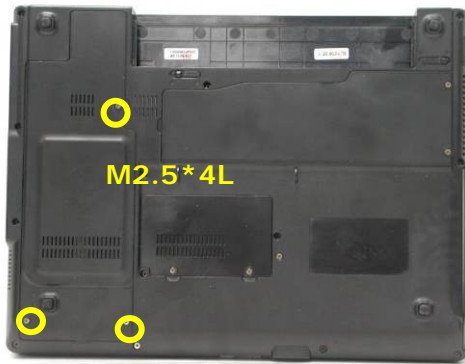
| |
|---------|
| HDD |
| MODULE |
| REMOVAL |

HDD Module

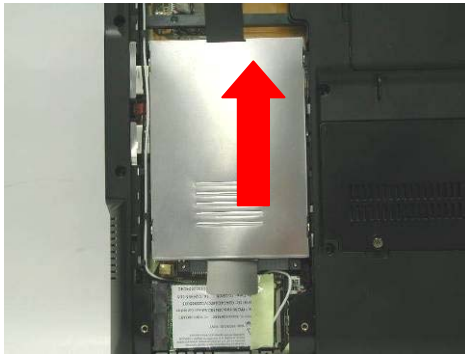
The illustrations below show how to remove the HDD module from the notebook.

Removing HDD Module

1. Remove 3 screws (M2.5*4L (K)), then remove the HDD door.



2. Lift the HDD module and then remove it.



3. Remove 4 screws [M3 * 4(L)] to separate HDD from HDD housing.



WIRELESS
LAN

Wireless LAN Module

The illustration below shows how to remove the Wireless LAN module.

1. Remove 1 piece of tape and disconnect the MAIN & AUX antenna.



2. And open the two latches to pop the MINI PCI MODULE up then pull it out.



MEMORY
MODULE

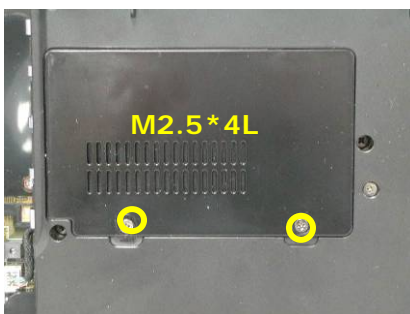
Memory Module

The S62F Series Notebook does not have RAM onboard. There is one SO-DIMM sockets for installing SO-DIMM RAM. It can upgrade the total memory size up to 1GB.

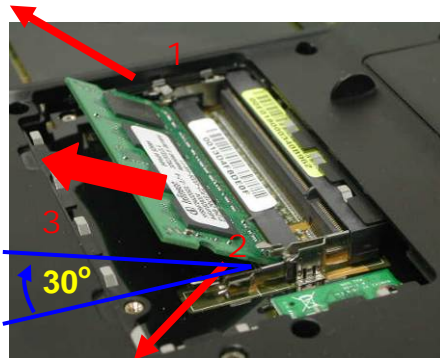
MEMORY
REMOVAL

Removing Memory module

1. Remove 2 screws (M2.5*4L (K)), then remove the DIMM door.



- Open the 2 latches aside (No. 1, 2), which will pop the memory module up to an angle of 30°, then pull out the memory module in that angle (No. 3).



CPU MODULE

CPU Module

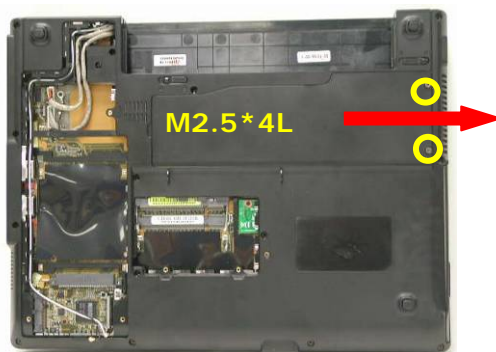
The illustrations below show how to remove the CPU module from the notebook.

CPU

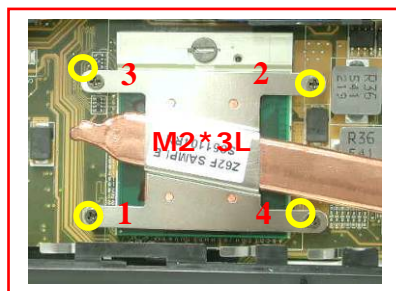
Removing CPU Module

REMOVAL

- Remove 2 screws (M2.5*4L (K)), then remove the CPU door.



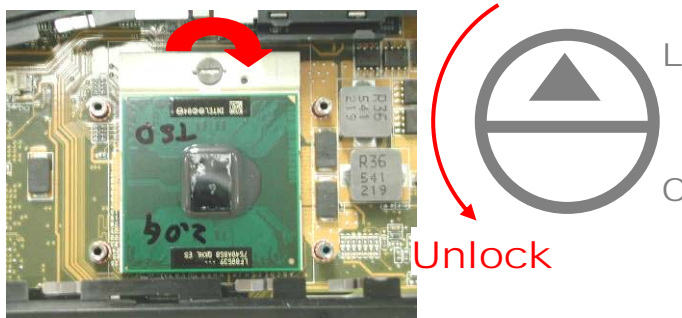
- Remove 4 screws (M2*3L (K)) by order.



3. Disconnect the Fan cable and remove 2 screws (M2.5*4L (K)) then take away the CPU thermal module.



4. Turn the non-removable screw here 180 degrees counter-clockwise to loosen the CPU.



5. Squeeze the vacuum handling pump and use it to lift the CPU away.

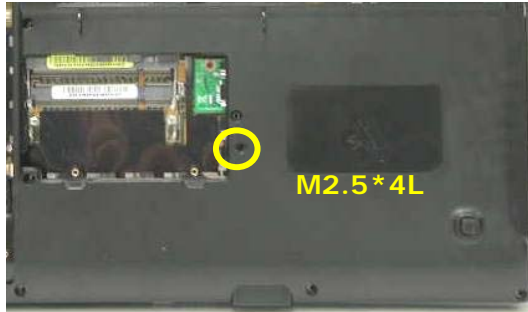


OPTICAL
DRIVE
DEVICE

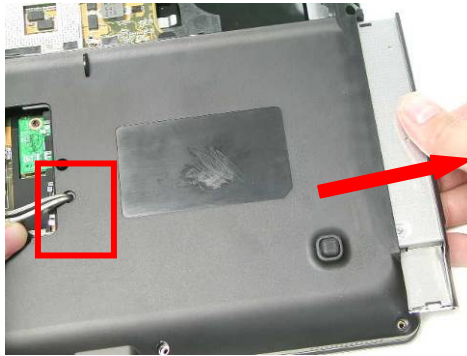
ODD Module

The illustration below shows how to remove the ODD module.

1. Remove 1 screw (M2.5*4L (K)).



2. Push the ODD Module out by a pair of tweezers.



KEYBOARD

Keyboard

The illustration of below shows how to remove the keyboard.

K / B R E M O V A L

Removing Keyboard

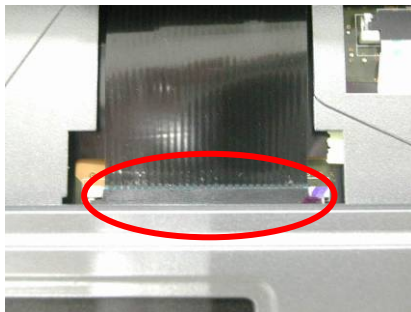
1. Push the 4 latches in (No.1, No.2, No.3, No.4) with a pair of tweezers or a single-slotted screwdriver and lift the keyboard plate up.



2. Lay the keyboard down over the Top case. ***Do not remove the keyboard yet.** The keyboard cable is still attached.



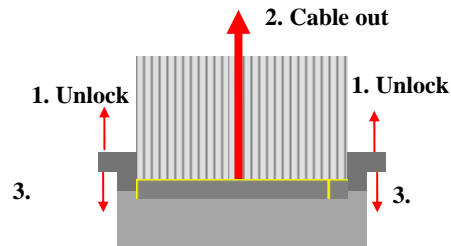
3. Disconnect the FPC connector by a pair of tweezers.



CABLE
REMOVAL

Removing Keyboard Cable

1. Use a flexible connector tool to unlock the cable connector on both ends (no. 1).
2. Carefully pull out the keyboard cable (no. 2) with a pair of tweezers.
3. Lock the connector (no. 3) again to avoid possible breakage.



4. Remove keyboard from the top case.

TOP CASE
MODULE

Top Case Module

The illustrations below show how to disassemble and remove the top case module of the notebook. The module contains the top case itself.

Removing top Case Module

HINGE COVER
REMOVAL

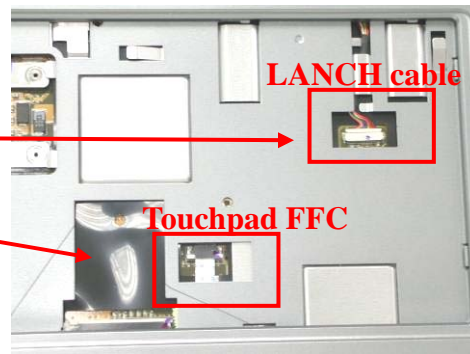
1. Remove the MIDDLE cover.



2. Use a pair of tweezers to remove both hinge Cover.



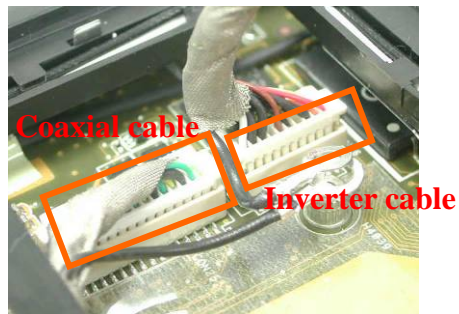
3. Disconnect the LANCH cable and touchpad FFC on the top case.



4. Turn over the NB and remove 1 screws (M2*3L (K)).



5. Disconnect the Coaxial & inverter cable.

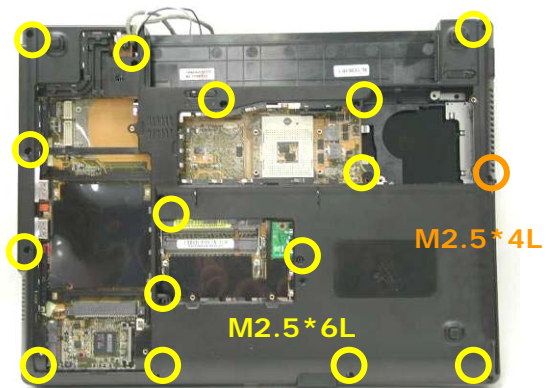


6. Arrange the Coaxial & inverter cable and antenna on the bottom case.



BOTTOM
CASE
REMOVAL

7. Remove 15 screws (M2.5*6L (K)) and 1 screw (M2.5*4L (K)) on the bottom case.



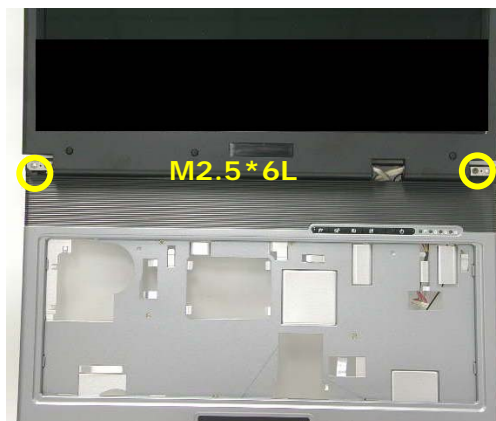
8. Before separate the bottom case, remove a little bit bottom case and let the cable and antennas through out of hole.

Inverter & camera cable**Antenna**

9. Separate the bottom case from the top case.



10. Remove 2 screws (M2.5*6L (K)) on both hinge.

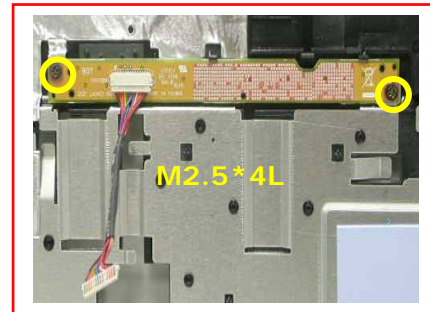
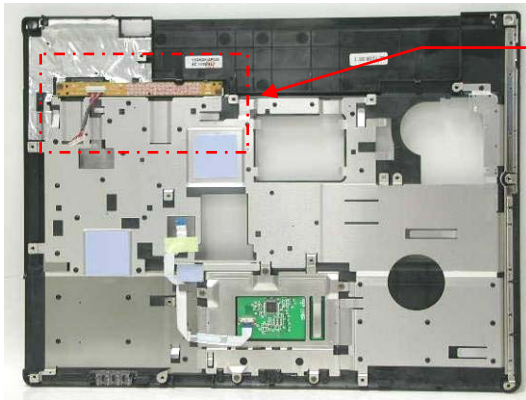


11. Separate the LCD module from the Top Case module

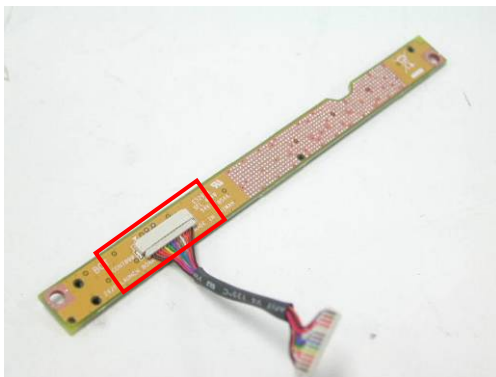


TOP
CASE
REMOVAL

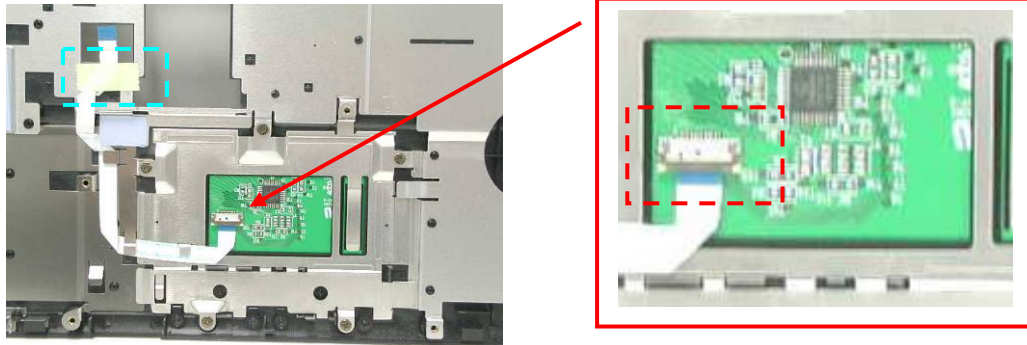
12. Remove 2 screws (M2.5*4L (K)) and take away the LANCH board.



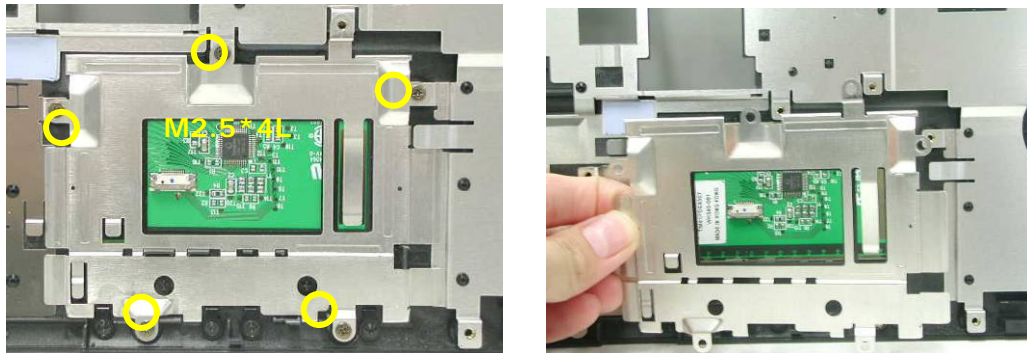
13. Remove the LANCH board cable.



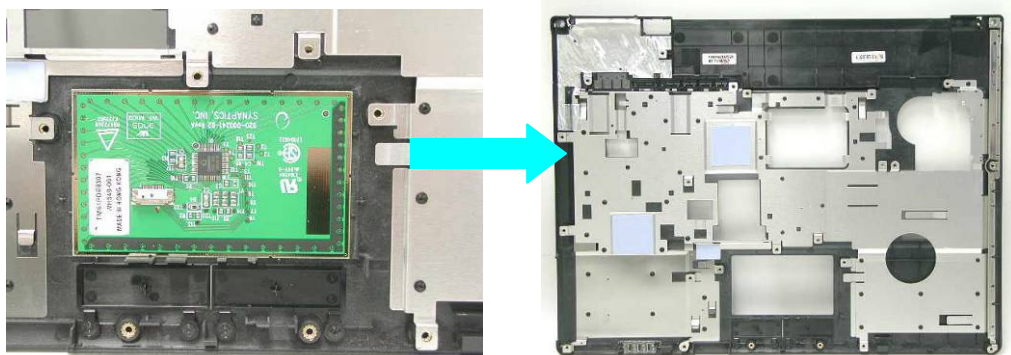
14. Disconnect the touch pad FFC and remove 1 piece of tape then take away the touch pad FFC.



15. Remove 5 screws (M2.5*4L (K)) and take away the touchpad bracket.



16. Take away the touchpad.



MOTHERBOARD

Motherboard

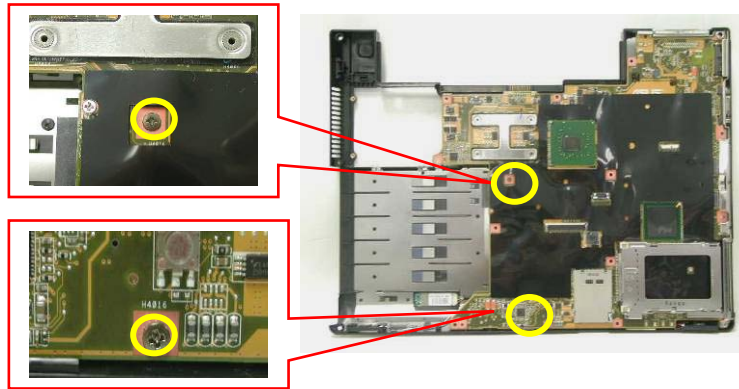
The illustrations below show how to disassemble and remove the Motherboard.

MOTHERBOARD

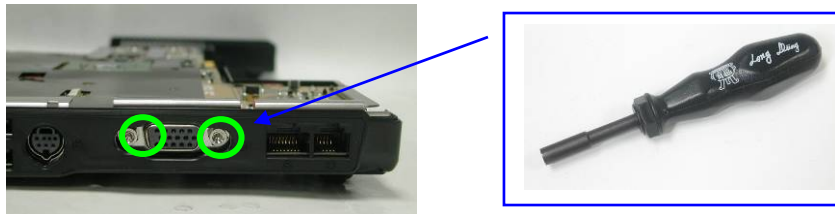
REMOVAL

Removing Motherboard

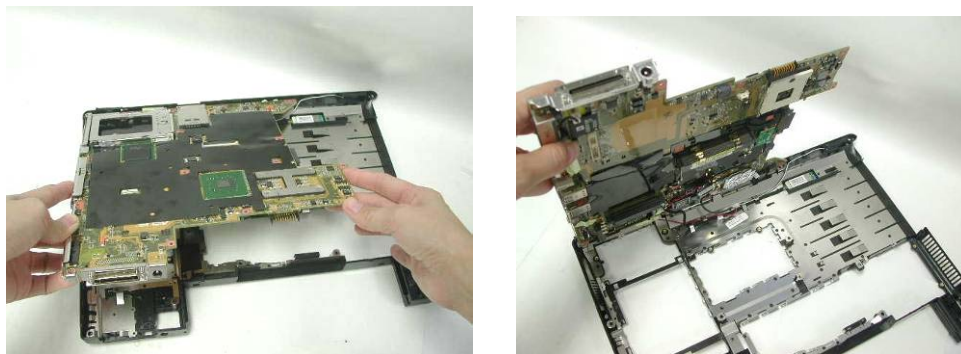
1. Remove 2 screws (M2.5*4L (K)).



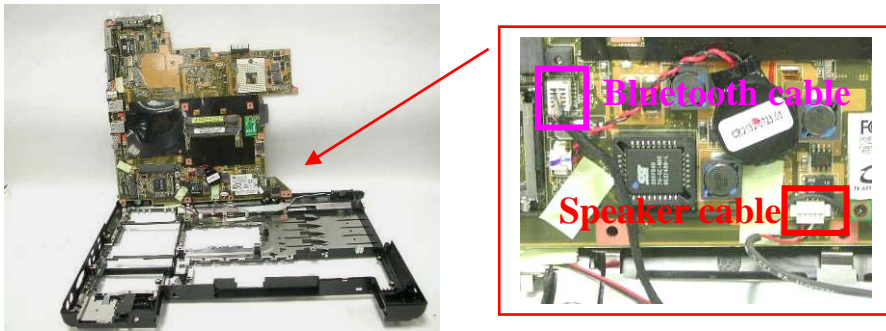
2. Remove 2 screws for CRT on the right side by a spacer screwdriver.



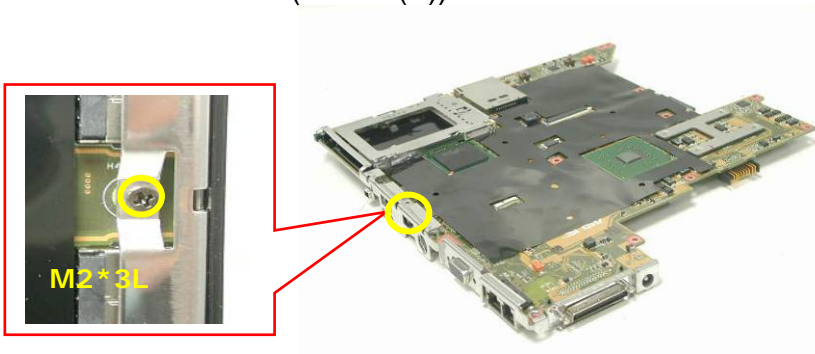
3. Separate the Motherboard from the bottom case. ***Do not remove the Motherboard yet.** The Bluetooth & Speaker cables are still attached.



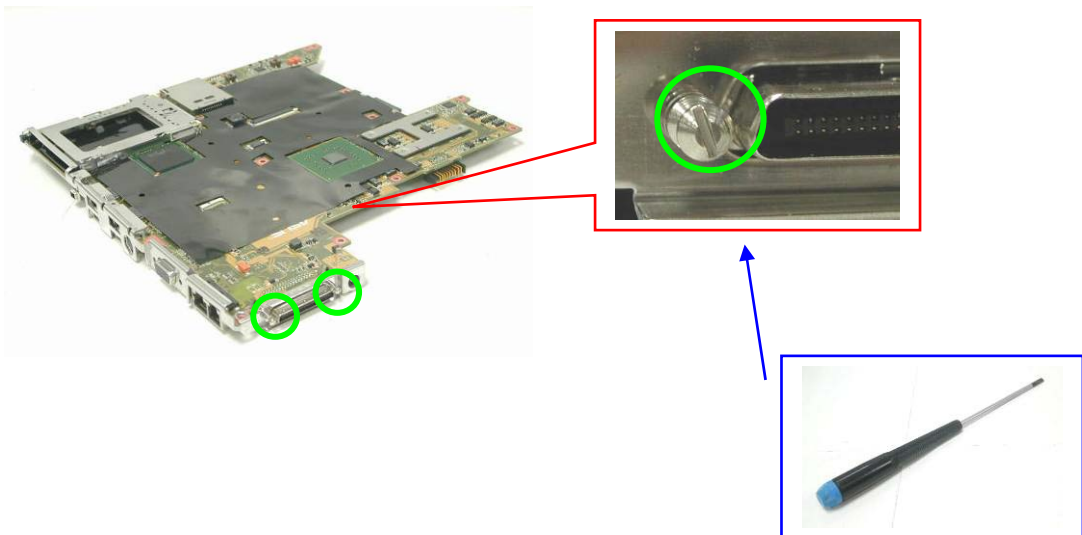
4. Disconnect the Bluetooth & Speaker cables then take away the Motherboard.



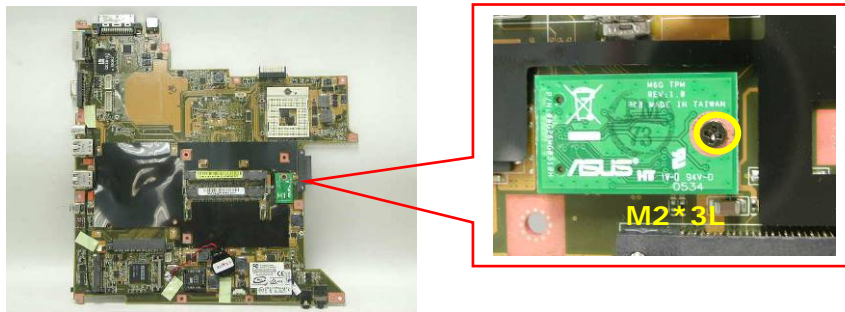
5. Remove 1 screw (M2*3L (K)) on the IO bracket.



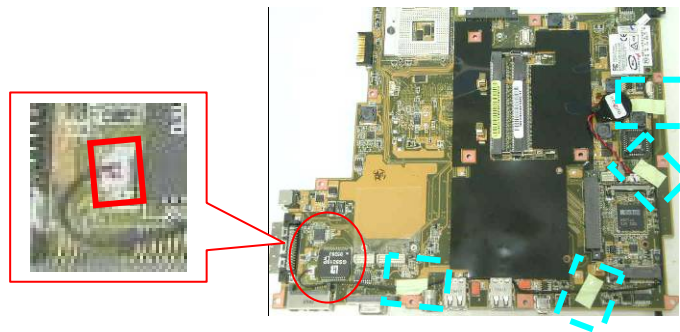
6. Use a single-slotted screwdriver to remove 2 screws HEX 5mm then take away the IO bracket.



7. Remove 1 screw (M2*3L (K)) and take away the TPM board .



8. Remove 4 pieces of tapes and disconnect the modem cable.



9. Remove 2 screws (M2*3L (K)) and take away the modem board.

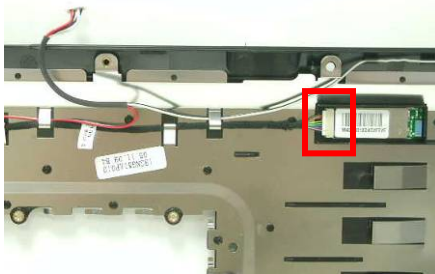


Bottom Case Module

The illustrations below show how to remove and disassemble the Bottom case module. The module contains Bluetooth board, speaker cable.

Disassembling Bottom case Module

1. Disconnect the Bluetooth cable and remove it.



2. Take away the Bluetooth board from the bottom case.



3. Take away the speaker module from the bottom case.



LCD MODULE

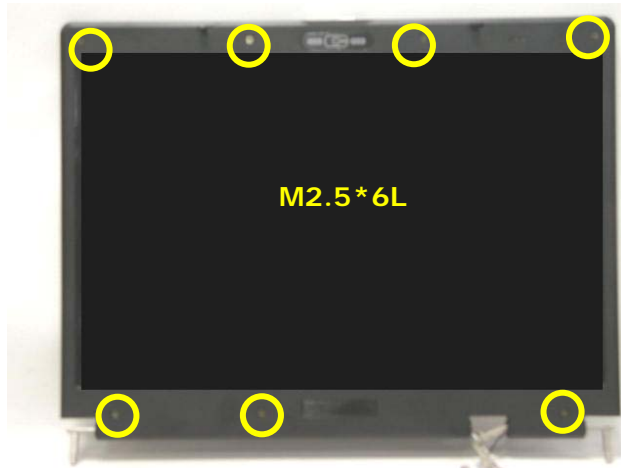
LCD Module

The illustrations below show how to remove and disassemble the LCD module. The module contains LCD panel, Inverter board, LCD bezel, LCD back cover.

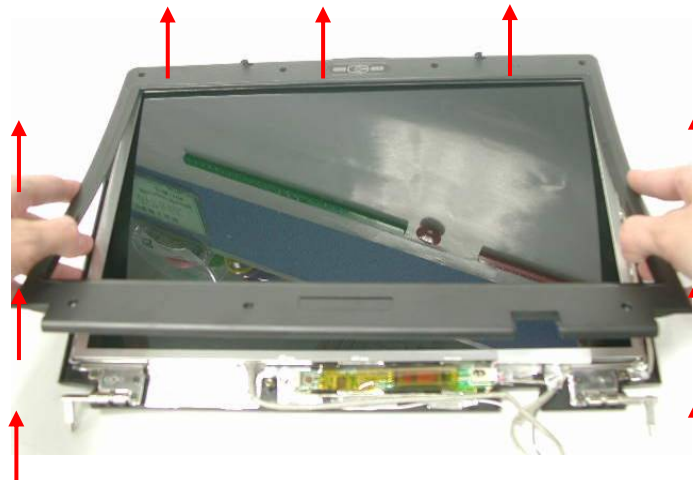
LCD MODULE
DISASSEMBLY

Disassembling LCD Module

4. Remove 7 rubber pads and 7 screws (M2.5 x 6L) from LCD module.



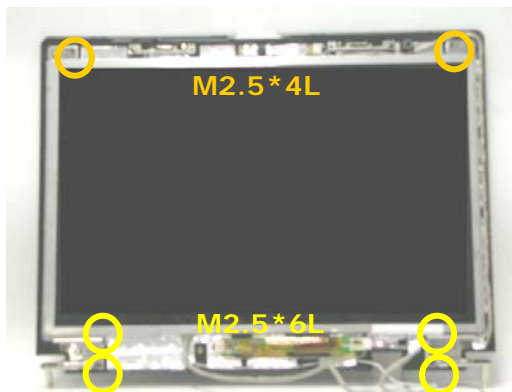
5. Prying the inside edges of the LCD bezel, and then separates it from LCD back cover.



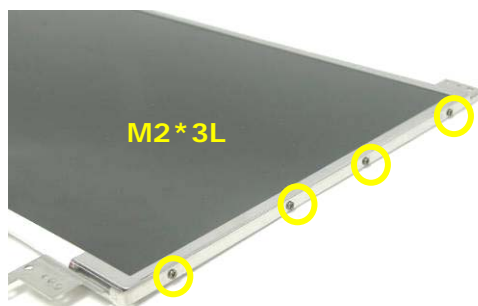
6. Disconnect the LCD cable.



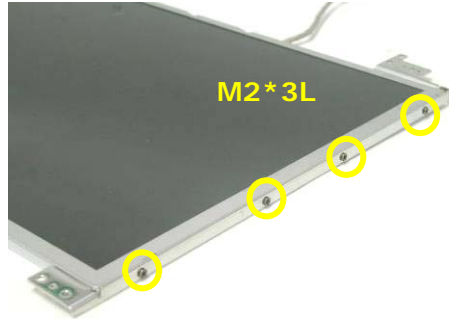
7. Remove 2 screws (M2.5*4L (K)) & 4 screws (M2.5*6L (K)) and take away the LCD panel.



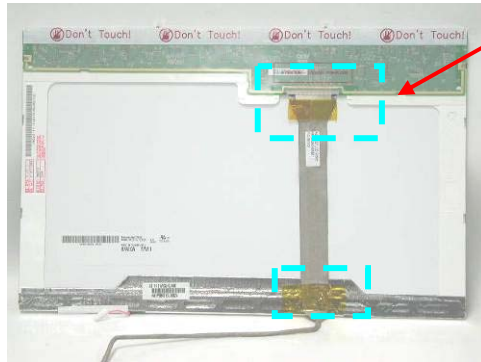
5. Remove 4 screws(M2*3L(K)) on the right LCD bracket to disassemble the LCD bracket.



- Remove 4 screws(M2*3L(K)) on the left LCD bracket to disassemble the other LCD bracket.



- Remove 2 pieces of tapes and disconnect the coaxial cable then take it away.



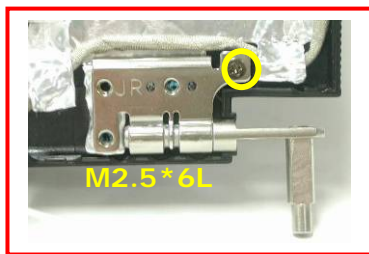
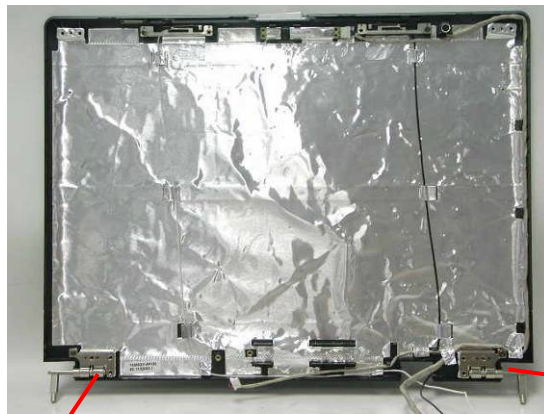
- Remove 1 screw (M2x 4L).



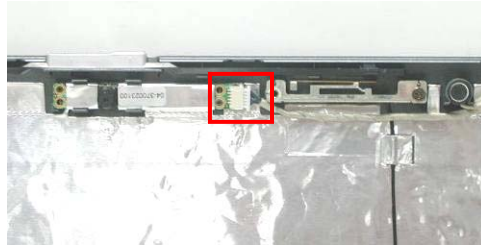
9. Lift a little bit the inverter board and disconnect the inverter cable and then take it away.



6. Remove 2 screws (M2x 6L) on both hinge and take them away.



7. Disconnect the camera cable and remove the microphone.



8. Remove the cable and remove mylar then take away the cable.

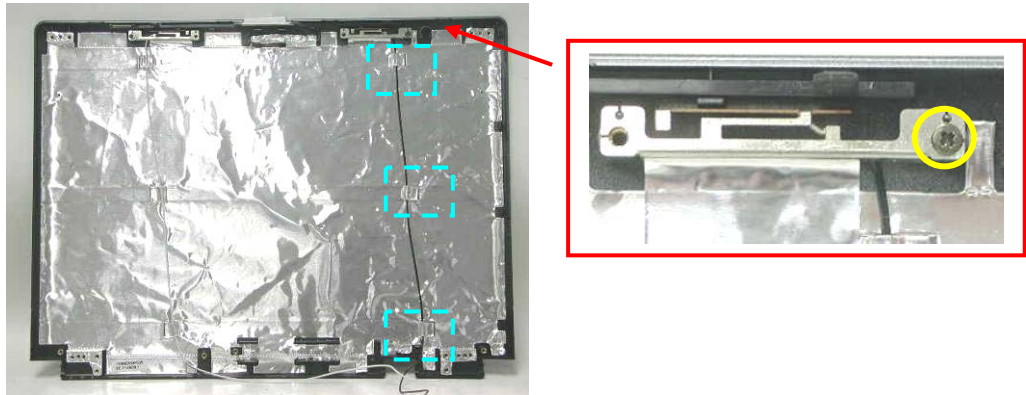


9. Take away the Camera module from the LCD back cover.

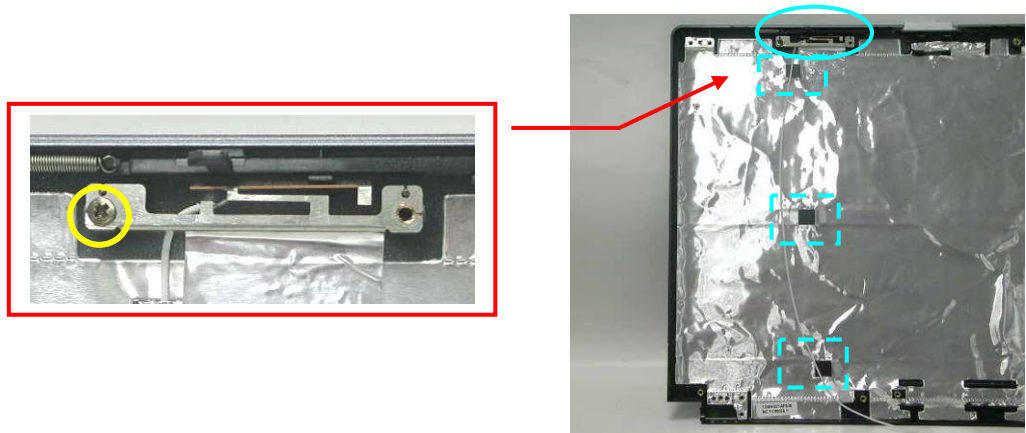


10. Remove 1 screw (M2x 4L) and remove 3 pieces of tapes then take away the wireless black wire.





11. Remove 1 screw (M2x 4L) and remove 3 pieces of tapes then take away the wireless white wire.



Assembly Procedure

Please follow the information provided in this section to perform the complete assembly procedure of the notebook. Be sure to use proper tools described before.

After you have completed the previous chapter of complete disassembly, please follow this chapter to assemble the notebook back together. This chapter describes the procedures of the complete notebook assembly. In addition, in between procedures, the detailed assembly procedure of individual modules will be provided for your service needs.

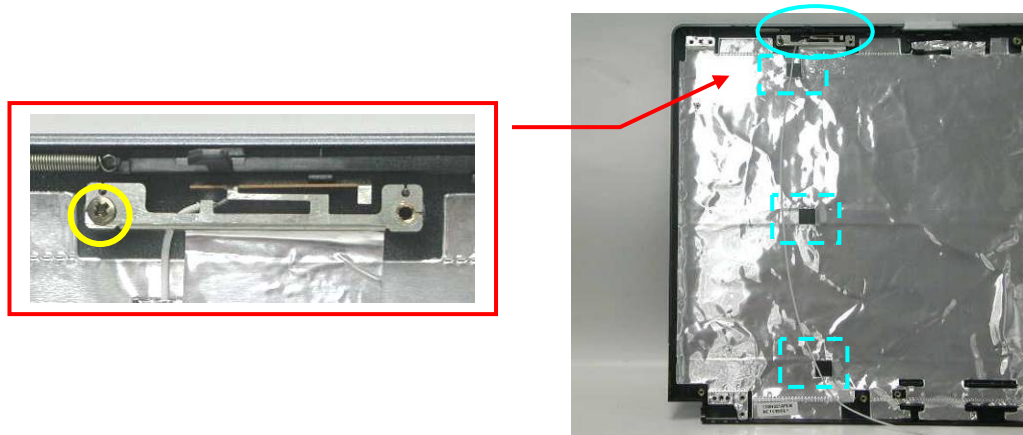
The assembly procedure consists of the following steps:

- LCD Module
- Bottom case Module
- Motherboard
- Top Case Module
- Keyboard
- ODD Module
- CPU Module
- Memory Module
- Wireless Module
- HDD Module
- Battery Module

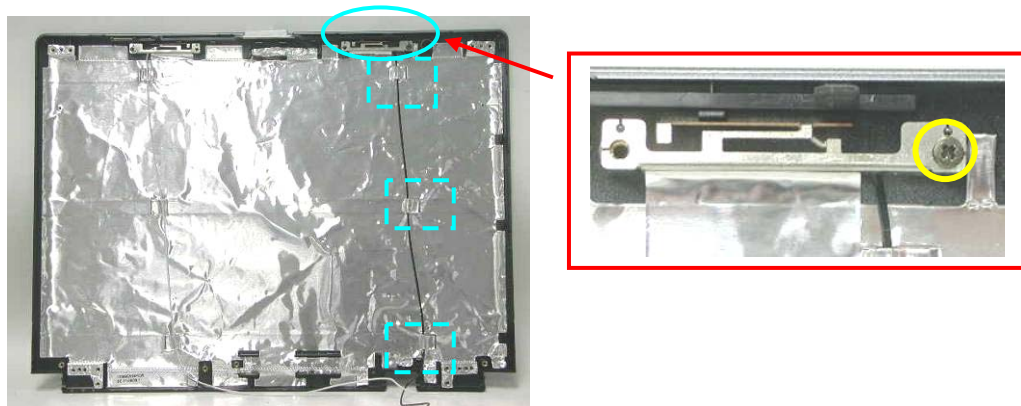
LCD Module

The illustrations below show how to assemble and install the LCD module of the notebook.

1. Install the wireless white wire module and secure 1 screw (M2x 4L) then paste 3 pieces of tapes to secure it.



2. Install the wireless black wire module and secure 1 screw (M2x 4L) then paste 3 pieces of tapes to secure it.



3. Install the Camera module on the LCD back cover.



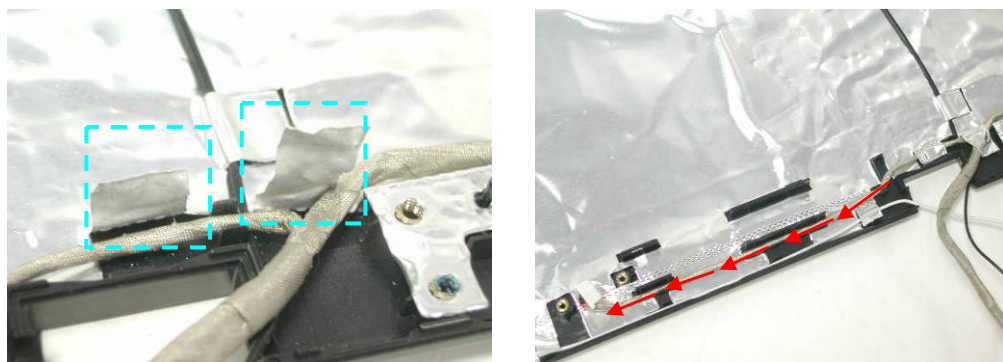
4. Install the microphone on the LCD cover and connect the camera cable.



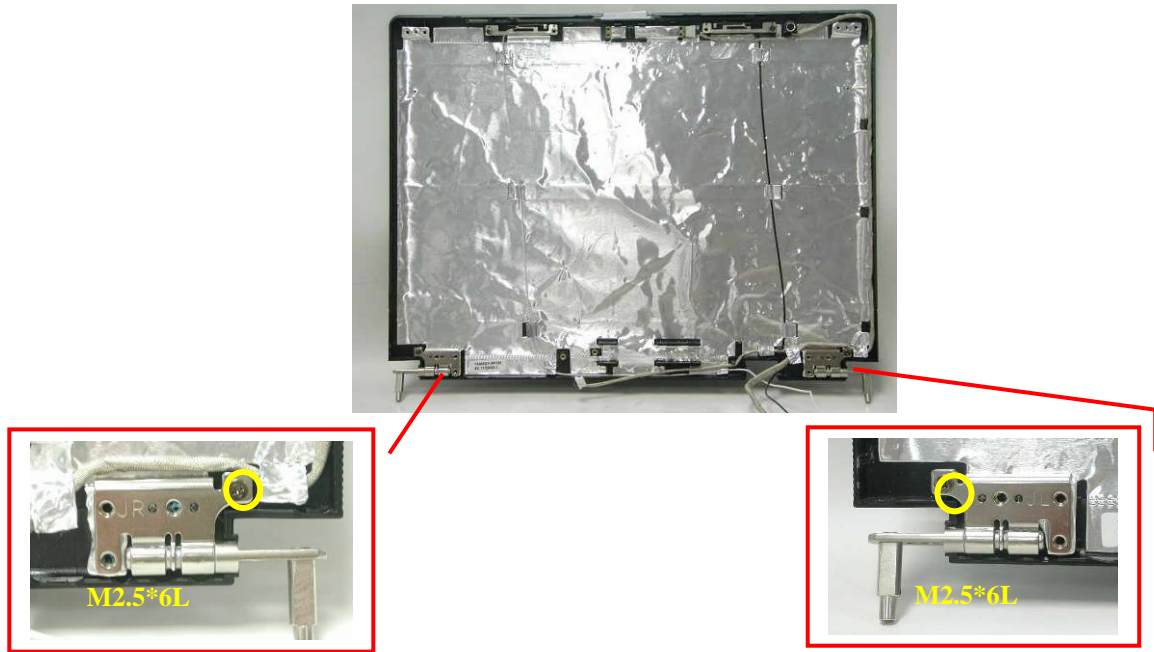
5. Lay the inverter cable through the locking trench on the LCD back cover.



6. Lay the inverter cable through the locking trench on the LCD back cover.



7. Install the both hinge on LCD back cover and secure 2 screws (M2x 6L) to secure them.



8. Install the inverter board on LCD back cover and connect the inverter cable.

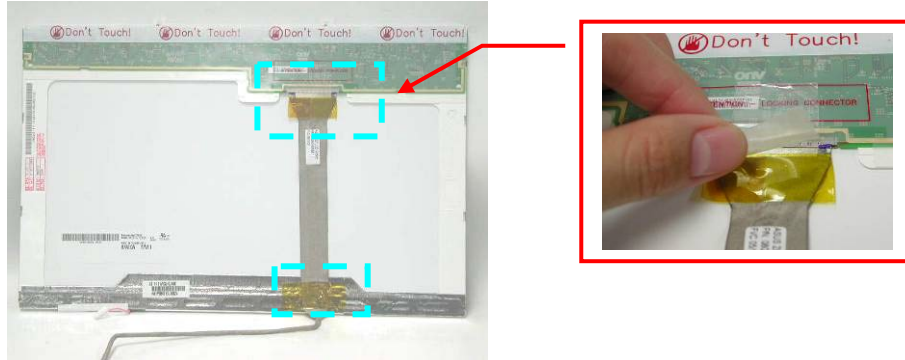


9. Secure 1 screw (M2x 4L) to secure it.

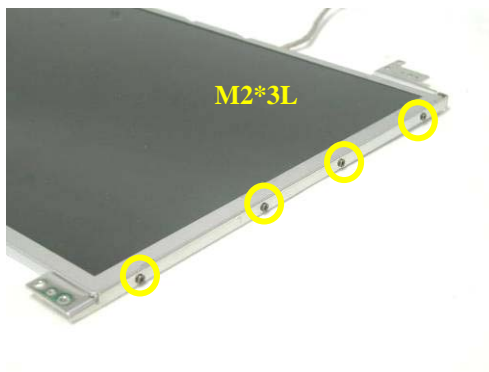


Assembly LCD Module

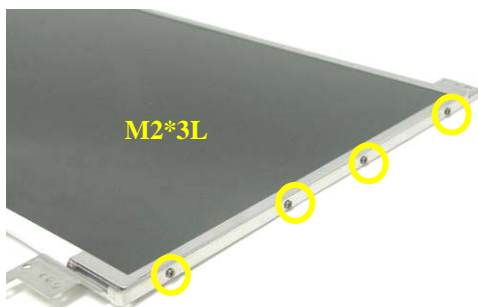
1. Connect the coaxial cable and paste 2 pieces of tapes to secure it.



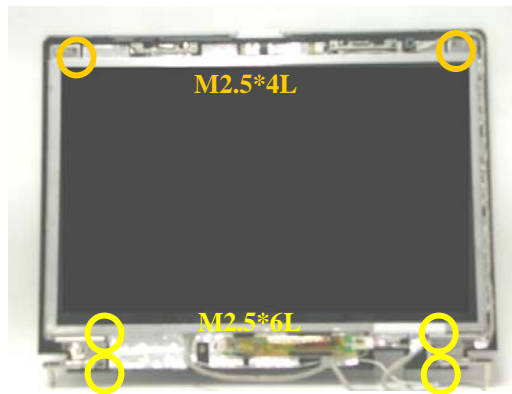
2. Install the left LCD bracket and secure 4 screws (M2*3L (K)) to fix it.



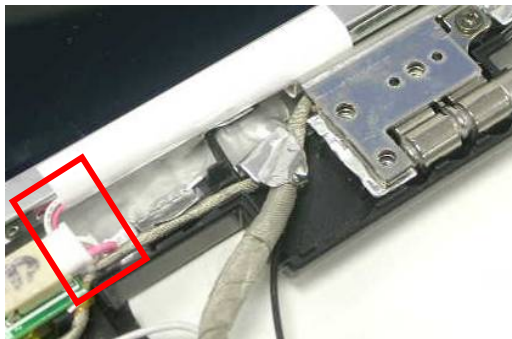
3. Install the right LCD bracket and 4 screws(M2*3L(K)) and secure 4 screws (M2*3L (K)) to fix it.



4. Install the LCD panel and secure 2 screws (M2.5*4L (K)) & 4 screws (M2.5*6L (K)) to secure it.



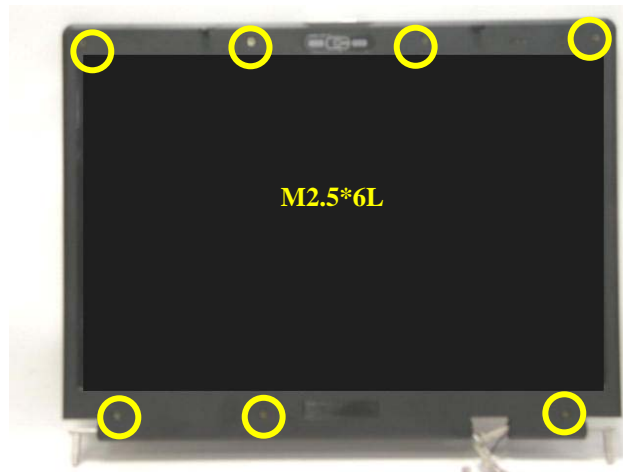
5. Connect the LCD cable.



6. Combine the LCD bezel and LCD Cover properly and press on all four edges until they snap into position.



- Secure 7 screws (M2.5 x 6L) on LCD front bezel then paste 7 rubber pads above.



BOTTOM
CASE
MODULE

Bottom Case Module

The illustrations below show how to assembly the Bottom case module. The module contains Bluetooth board, speaker cable.

BOTTOM

CASE ASSEMBLY

Assembling Bottom case Module

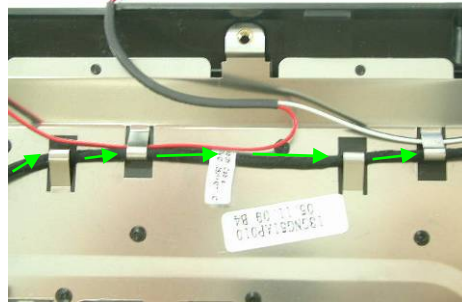
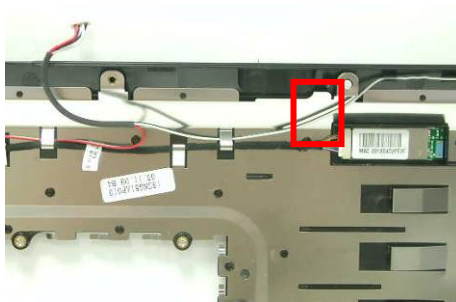
1. Install the speaker module on the bottom case.



2. Install the Bluetooth board on the bottom case.



3. Connect the Bluetooth cable and lay it through the locking trench on bottom case.



Motherboard

The illustrations below show how to assemble and install the motherboard of the notebook.

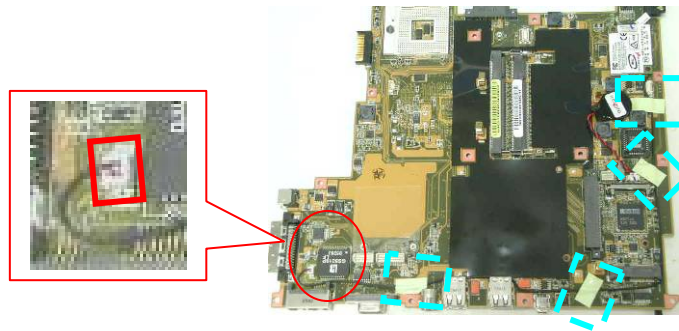
1. Install the modem board and secure 2 screws (M2.5*3L (K)).



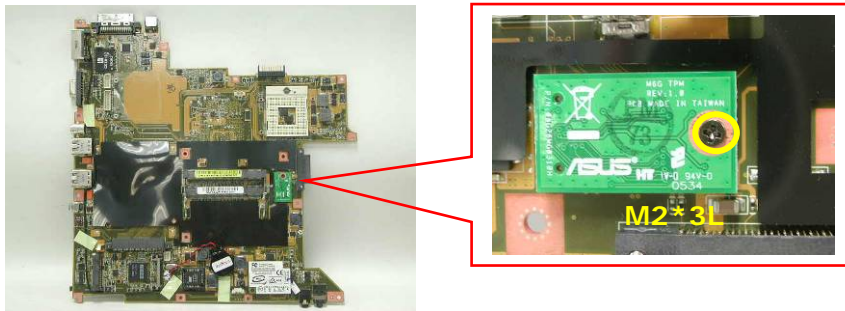
MOTHERBOARD

MOTHERBOARD
ASSEMBLY

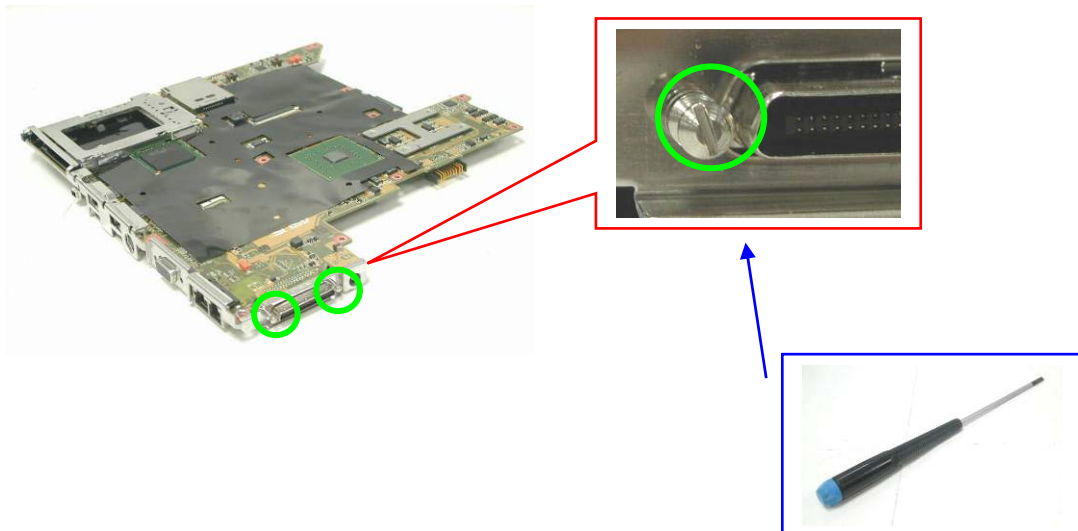
2. Connect the modem cable and paste 4 pieces of tape to fix the cable.



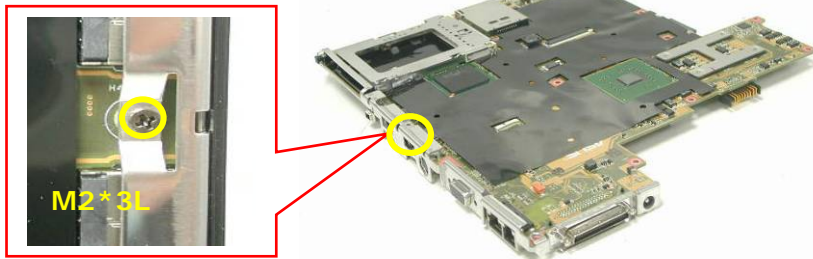
3. Install the TPM board and secure 1 screw (M2*3L (K)) to secure it.



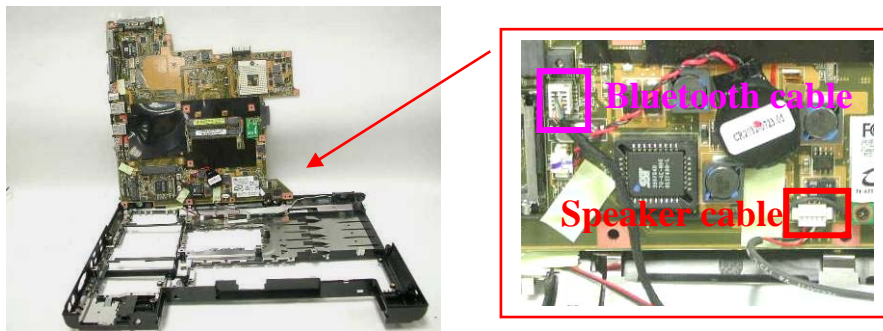
4. Install the IO bracket and use a single-slotted screwdriver to secure 2 screws HEX 5mm.



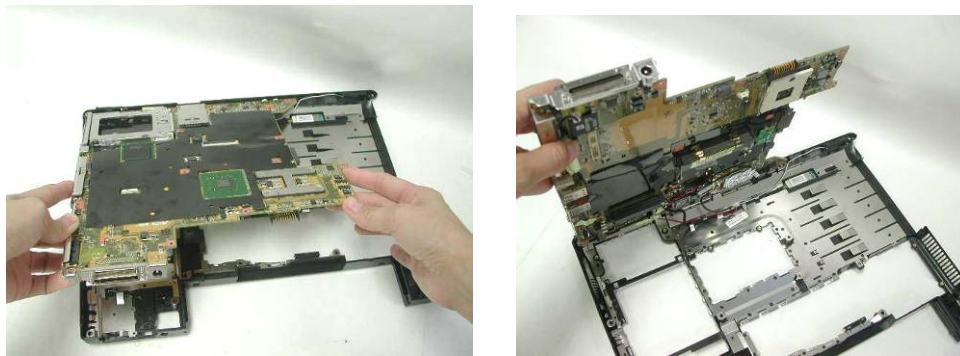
5. Secure 1 screw (M2*3L (K)) on the IO bracket to secure it.



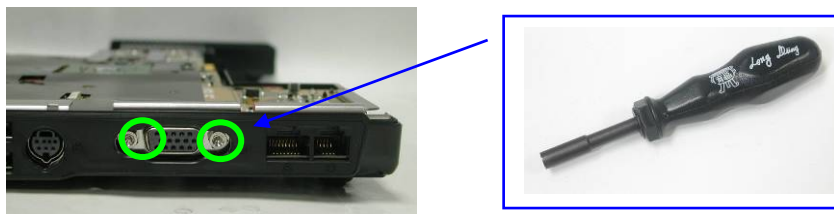
6. Connect the Bluetooth & Speaker cables, before install the Motherboard to the bottom case.



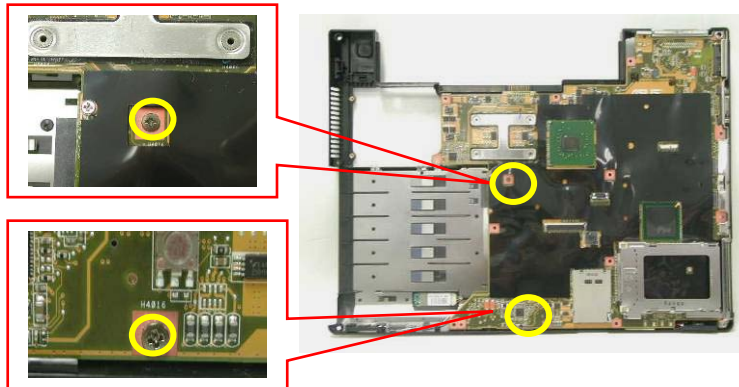
7. Combine the Motherboard and the bottom case.



8. Remove 2 screws for CRT on the right side by a spacer screwdriver.



- Secure 2 screws (M2.5*4L (K)) to secure the motherboard.



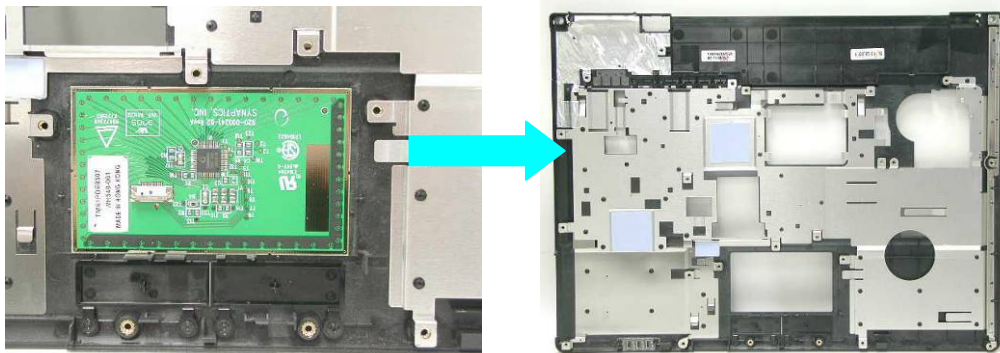
Top Case Module

The illustrations below show how to assemble and install the top case module of the notebook.

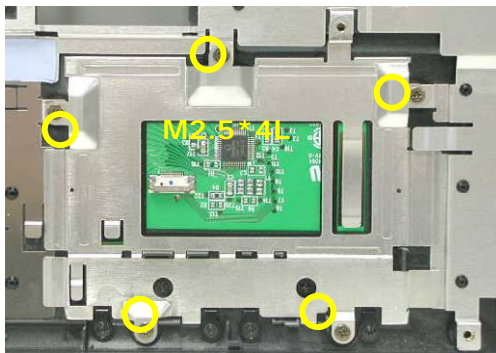
TOP CASE
MODULE

- Install the touchpad on the top case.

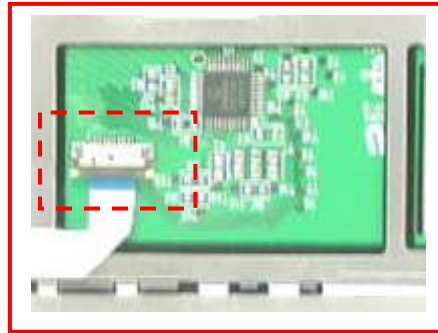
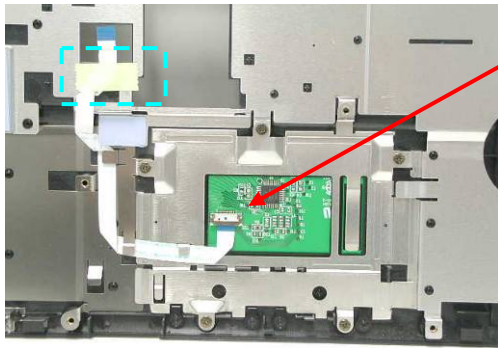
TOP
CASE
ASSEMBLY



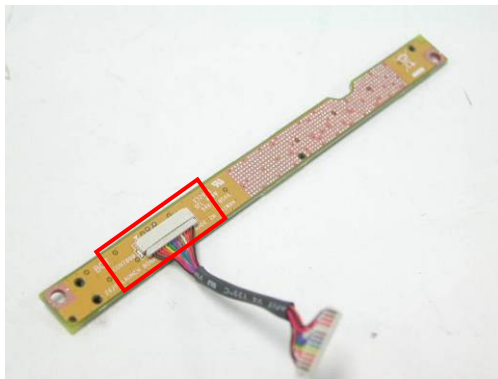
- Install the touchpad bracket and secure 5 screws (M2.5*4L (K)) to secure it.



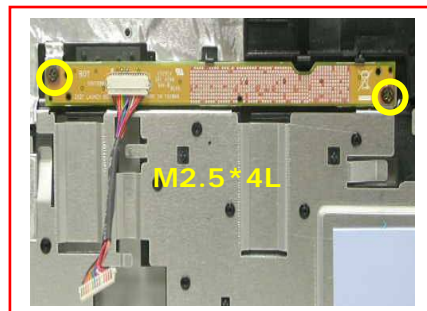
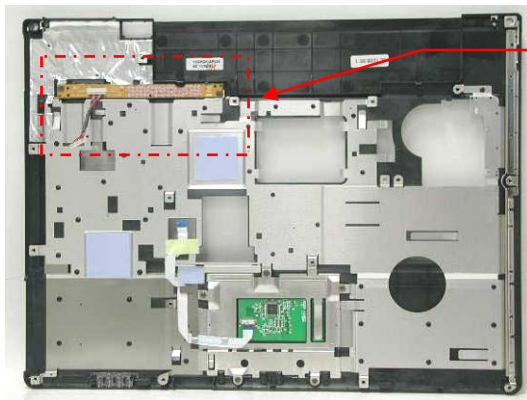
3. Connect the touch pad FFC and paste 1 piece of tape.



4. Connect the LANCH board cable.

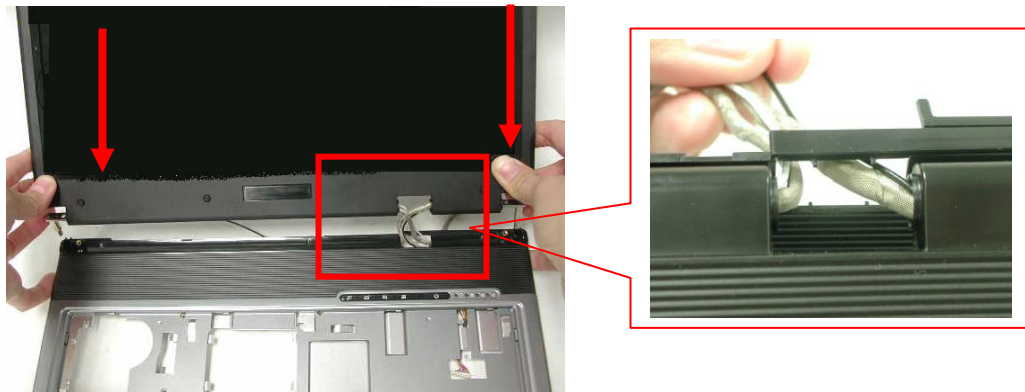


5. Install the LANCH board and secure 2 screws (M2.5*4L (K)).

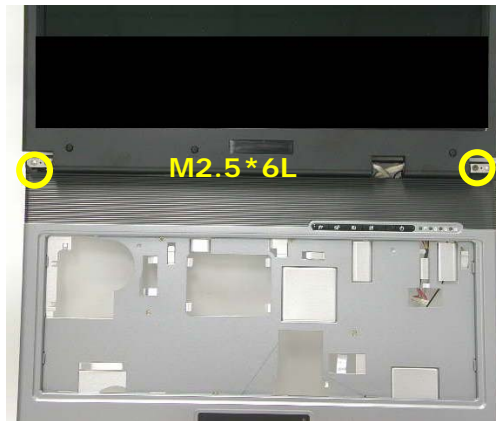


1. Combine the Top case module and LCD module.

TOP CASE
MODULE
ASSEMBLY



2. Secure 2 screws (M2.5*6L (K)) to fix the hinge.



BOTTOM CASE
ASSEMBLY

1. Combine the bottom case from the top case.



2. Before secure the bottom case, let the cable and antennas through in the hole.

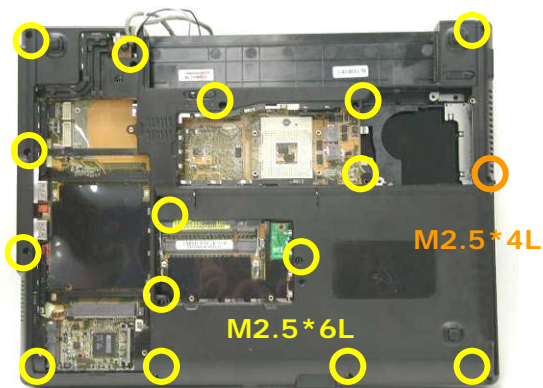
Inverter & camera cable



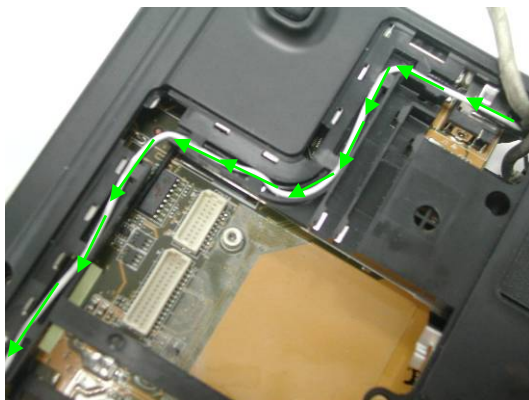
Antenna



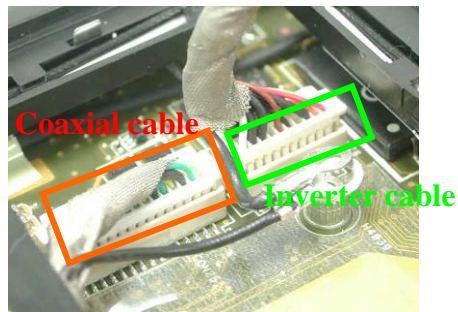
3. Secure 15 screws (M2.5*6L (K)) and 1 screw (M2.5*4L) (K) to secure the bottom case.



4. Lay the antennas through the locking trench on bottom case



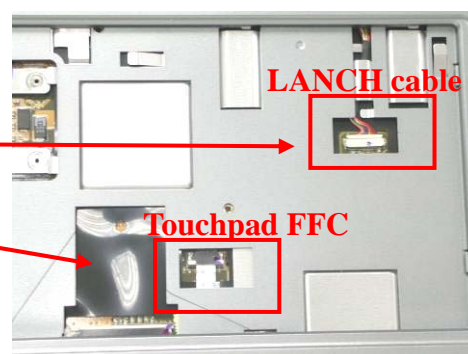
5. Connect the Coaxial & inverter cable and lay the cables through the locking trench on bottom case.



6. Secure 1 screws (M2*3L (K)) to secure cables.



7. Turn over the NB and connect the LANCH cable and touchpad FFC on top case.



HINGE COVER
ASSEMBLY

8. Install the both hinge Cover.



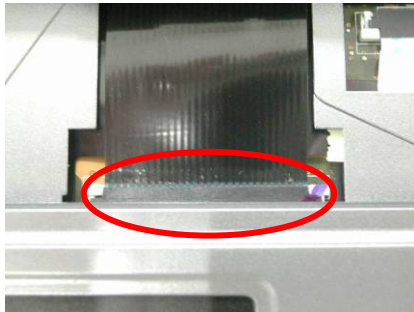
9. Install the MIDDLE cover.



Assembling Keyboard

The illustrations below show how to assemble and install the Keyboard of the notebook.

1. Place the Keyboard module on front side of the top case. Then connect Keyboard FPC Cable with a pair of tweezers.



2. Install Keyboard properly and note the lower side should inset first. Push the 4 latches to fix the keyboard.



ODD MODULE

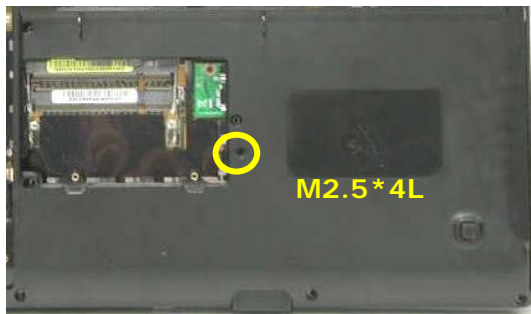
ODD Module

The illustrations below show how to assemble and install the ODD Module of the notebook.

1. Insert the ODD module.



2. Secure 1 screw (M2.5*4L (K)) to secure it.



CPU MODULE

CPU Module Assembly

The illustration below shows how to install CPU and the CPU heat sink of the notebook.

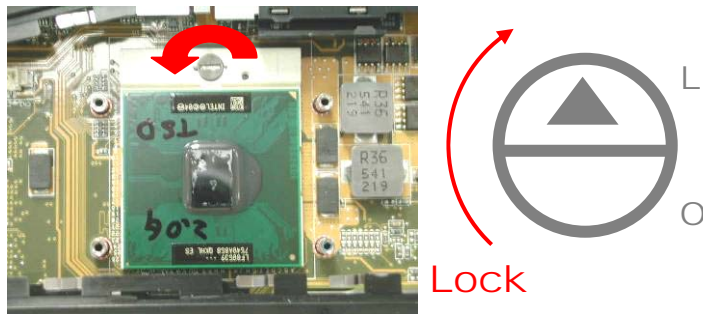
CPU

INSTALLATION

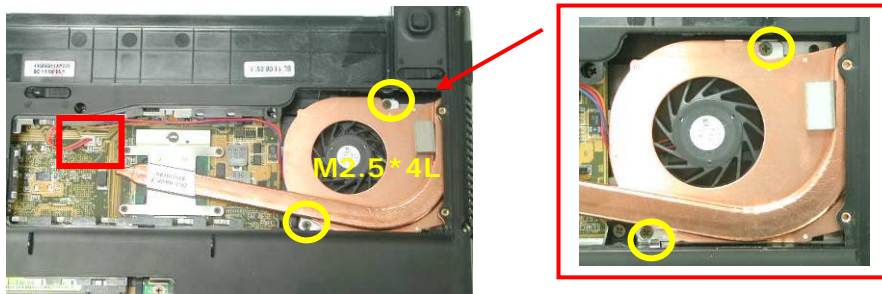
1. Squeeze the vacuum handling pump and use it to install the CPU.



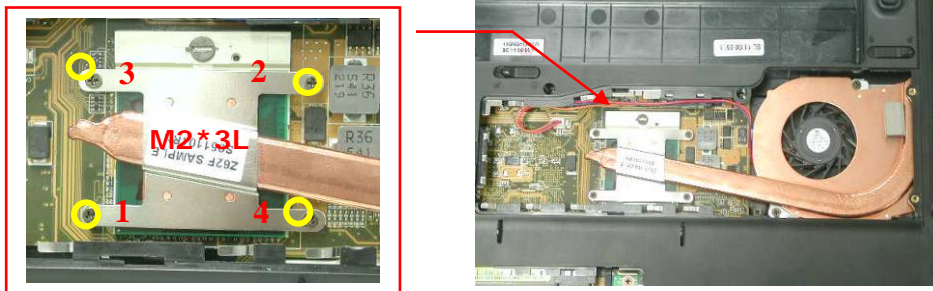
2. Turn the non-removable screw here 180 degrees clockwise to lock the CPU.



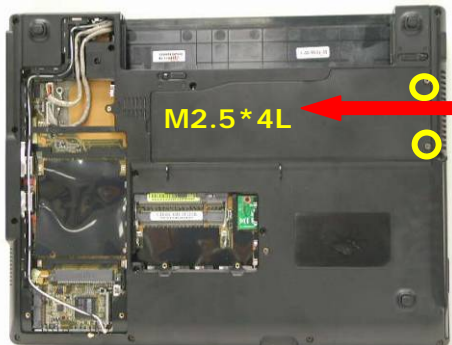
3. Install the CPU thermal module gently and connect the fan cable then secure 2 screws (M2.5*4L (K)) to secure it.



4. Secure 4 screws (M2*3L (K)) by order.



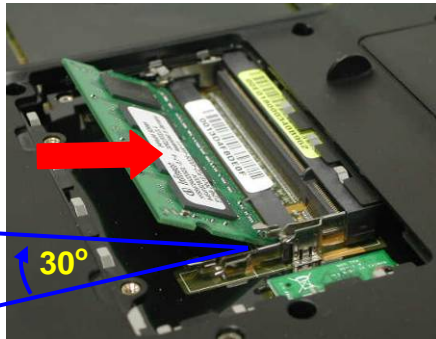
5. Install the CPU door and secure 2 screws (M2.5*4L (K)) to secure it.



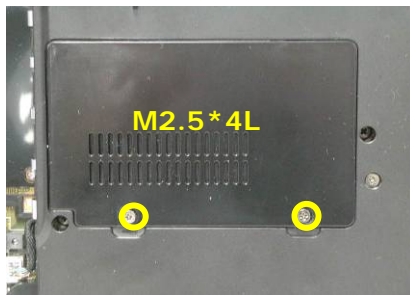
Assembling Memory Module

The illustrations below show how to assemble and install the memory module to the notebook.

1. Insert the Memory module into the memory socket by an angle of 30 degree, and push down to latch the memory module.



2. Install the DIMM door and secure 2 screws (M2.5*4L (K)) to secure it.



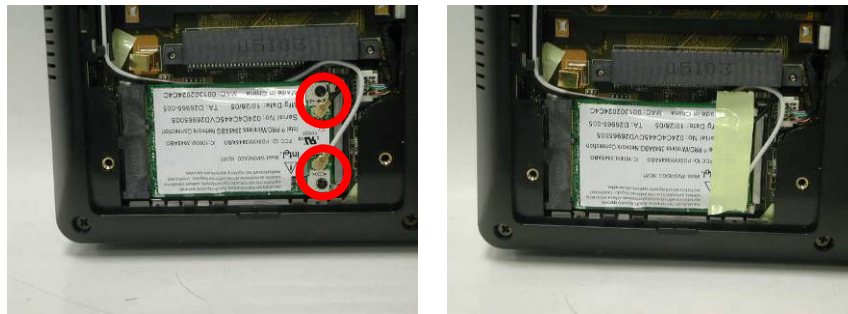
Wireless LAN Module

The illustration below shows how to assemble the Wireless LAN module.

1. Install the MINI PCI module into the socket by an angle of 30 degree, and push down to latch the MINI PCI module.



2. Connect the MAIN & AUX antenna and paste 1 piece of tape to secure antennas.



HDD
MODULE

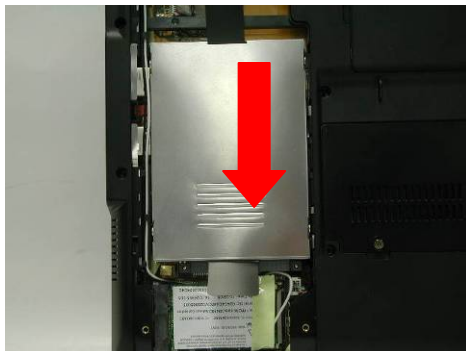
HDD Module

The illustrations below show how to assemble and install the HDD module of the notebook

1. Secure 4 screws [M3 * 4(L)] to fix HDD into HDD housing.

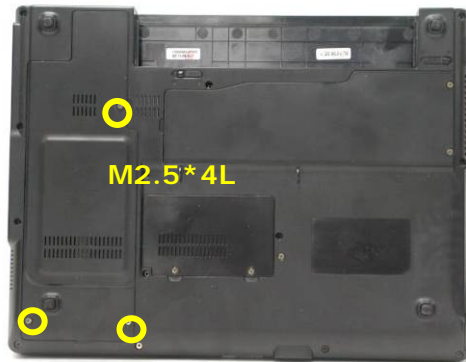


2. Insert the HDD module to connect the FPC connector until it's installed properly.



HDD
INSTALLATION

3. Install the bottom case and secure 3 screws (M2.5*4L(K)) to fix it.



BATTERY
MODULE

Battery Module

The illustrations below show how to install battery module of the notebook.

1. Install the battery module. Slide the battery latch to close the battery lock.



BATTERY
INSTALLATION

Upgrade & Replacement

Follow the individual procedures in this chapter to perform the notebook's upgrade and replacement of various major components.

Asus S62F Series Notebook is a 2 spindles product, which means there are less options for you to upgrade to. The key upgradeable and replaceable items include the CPU module, memory module, HDD module, and ODD module.

In order to avoid redundancy, please refer to chapters 2 and 3 of this manual for repeated and reused disassembly and assembly procedures, such as keyboard & heat sink replacement, which is used by several different procedures in this chapter. ***Be sure to follow the safety instructions described in Chapter 1 to safeguard the notebook against any potential damages.*** For any other components which you need to replace not covered in this chapter, please refer to Chapters 2 and 3 for detailed disassembly and assembly and perform necessary procedures accordingly.

This chapter includes the following items:

- CPU Upgrade
- Memory Upgrade
- HDD Upgrade
- ODD Replacement

CPU Upgrade

The S62F Series Notebook comes standard with a Intel® Micro-FCPGA Socket on the motherboard, which means it can support all Intel Micro-FCPGA CPUs up to 2.13 GHz.

Upgrading CPU

Remove battery module

1. Unlock and hold the latch No (1).



2. Slide the battery lock (No.2) and pull the battery pack out.



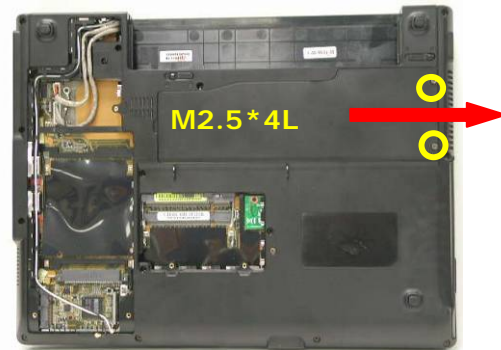
3. Pull the battery pack out.



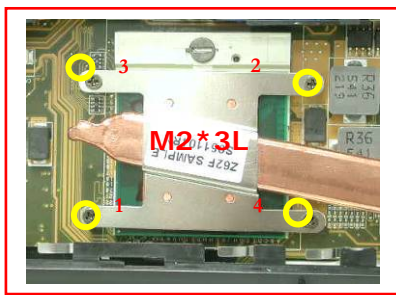
Removing CPU Module

CPU
REMOVAL

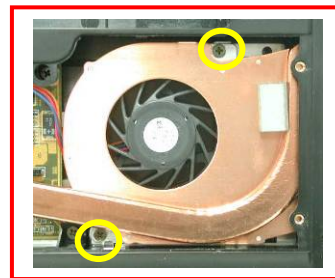
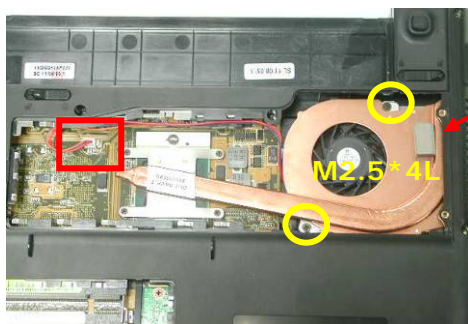
1. Remove 2 screws (M2.5*4L (K)), then remove the CPU door.



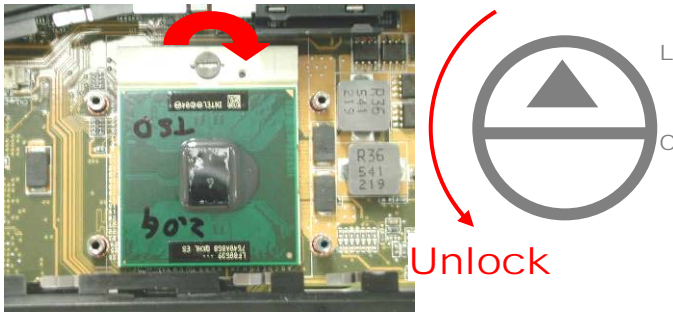
2. Remove 4 screws (M2*3L (K)) by order.



3. Disconnect the Fan cable and remove 2 screws (M2.5*4L (K)) then take away the CPU thermal module.



- Turn the non-removable screw here 180 degrees counter-clockwise to loosen the CPU.



- Squeeze the vacuum handling pump and use it to lift the CPU away.



Installing CPU

The illustration below shows how to install CPU and the heat sink of the notebook.

- Squeeze the vacuum handling pump and use it to install the CPU.



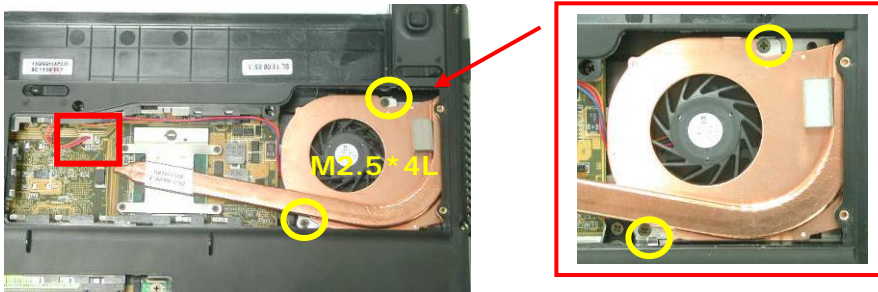
- Turn the non-removable screw here 180 degrees clockwise to lock the CPU.



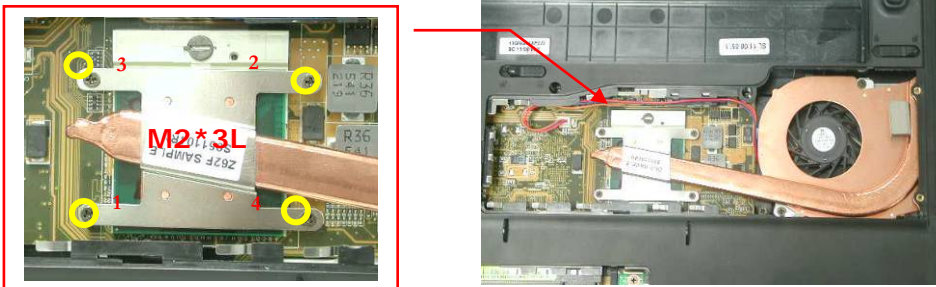
CPU
INSTALLATION

CPU
INSTALLATION

3. Install the CPU thermal module gently and connect the fan cable then secure 2 screws (M2.5*4L (K)) to secure it.



4. Secure 4 screws (M2*3L (K)) by order.



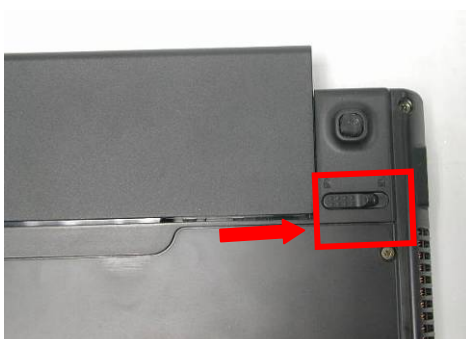
5. Install the CPU door and secure 2 screws (M2.5*4L (K)) to secure it.



Install battery module

1. Install the battery module. Slide the battery latch to close the battery lock.

BATTERY
INSTALLATION



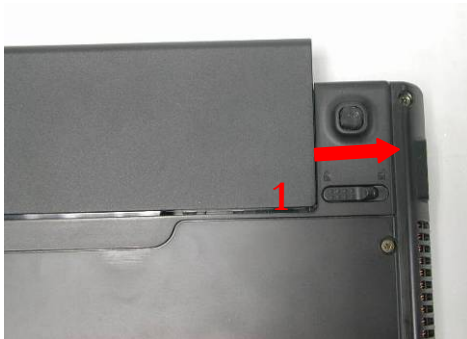
Second Memory Upgrade

The S62F Series Notebook does not have RAM onboard. There are two SO-DIMM sockets for installing SO-DIMM RAM. It can upgrade the total memory size up to 1GB with a 512MB module on each socket.

Upgrading Memory Module

Remove battery module

1. Unlock and hold the latch No (1).



2. Slide the battery lock (No.2) and pull the battery pack out.



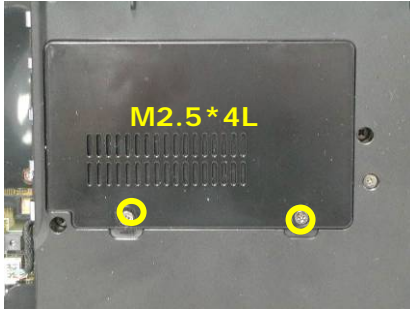
3. Pull the battery pack out.



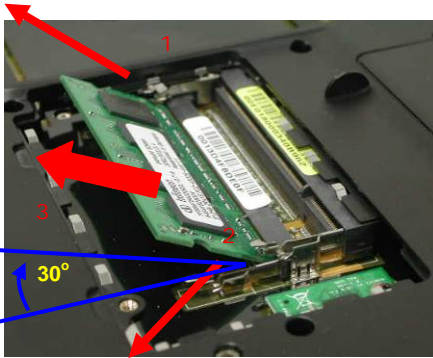
MEMORY
REMOVAL

Removing Memory module

1. Remove 2 screws (M2.5*4L (K)), then remove the DIMM door.

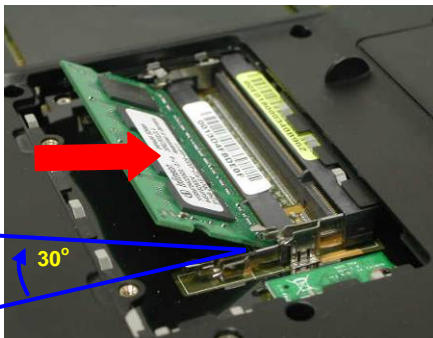


2. Open the 2 latches aside (No. 1, 2), which will pop the memory module up to an angle of 30°, then pull out the memory module in that angle (No. 3).



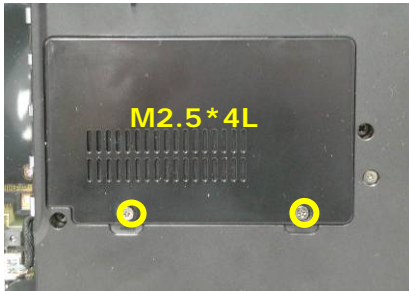
Installing Memory Module

1. Insert the Memory module into the memory socket by an angle of 30 degree, and push down to latch the memory module.



MEMORY
INSTALLATION
MEMORY
INSTALLATION

2. Install the DIMM door and secure 2 screws (M2.5*4L (K)) to secure it.



Install battery module

3. Install the battery module. Slide the battery latch to close the battery lock.

BATTERY

INSTALLATION



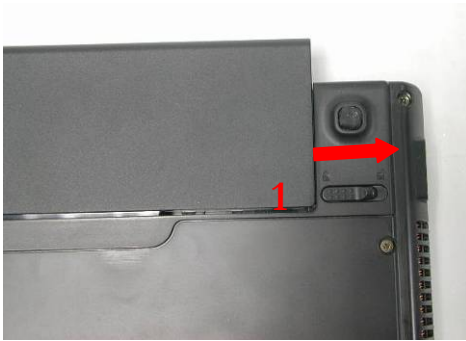
HDD Upgrade

The S62F Series Notebook uses an industry-standard 2½" HDD with IDE interface. You can replace the HDD to any capacity of your choice within our approval and prior test.

Upgrading HDD

Remove battery module

1. Unlock and hold the latch No (1).



2. Slide the battery lock (No.2) and pull the battery pack out.



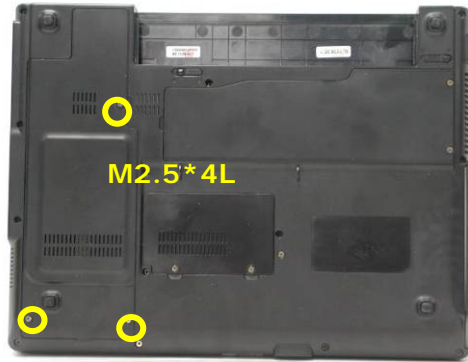
3. Pull the battery pack out.



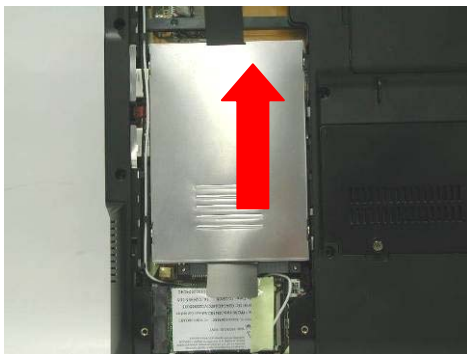
HDD
MODULE
REMOVAL

Removing HDD Module

1. Remove 3 screws (M2.5*4L (K)), then remove the HDD door.



2. Lift the HDD module and then remove it.



3. Remove 4 screws [M3 * 4(L)] to separate HDD from HDD housing.



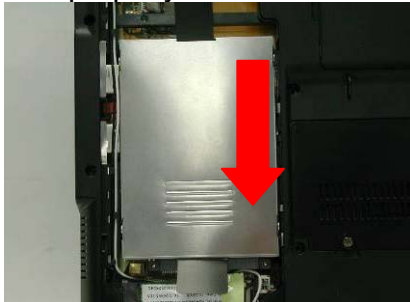
HDD
INSTALLATION

Installing new HDD module

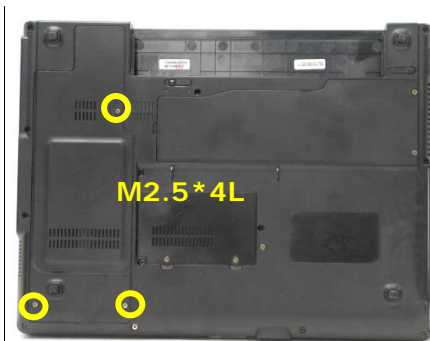
- Secure 4 screws [M3 * 4(L)] to fix HDD into HDD housing.



- Insert the HDD module to connect the FPC connector until it's installed properly.



- Install the bottom case and secure 3 screws (M2.5*4L(K)) to fix it.



Install battery module

- Install the battery module. Slide the battery latch to close the battery lock.

BATTERY
INSTALLATION



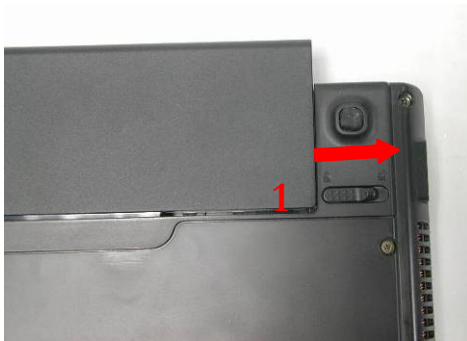
Wireless LAN Module

The illustration below shows how to remove the Wireless LAN module.

Replacing WLAN

Remove battery module

1. Unlock and hold the latch No (1).



2. Slide the battery lock (No.2) and pull the battery pack out.



3. Pull the battery pack out.



Removing WALN Module

ODD
REMOVAL

1. Remove 1 piece of tape and disconnect the MAIN & AUX antenna.



2. And open the two latches to pop the MINI PCI MODULE up then pull it out.



WALN MODULE
INSTALLATION

Installing new WALN module

3. Install the MINI PCI module into the socket by an angle of 30 degree, and push down to latch the MINI PCI module.



4. Connect the MAIN & AUX antenna and paste 1 piece of tape to secure antennas.



Install battery module

1. Install the battery module. Slide the battery latch to close the battery lock.

BATTERY

INSTALLATION



ODD

ODD Replacement

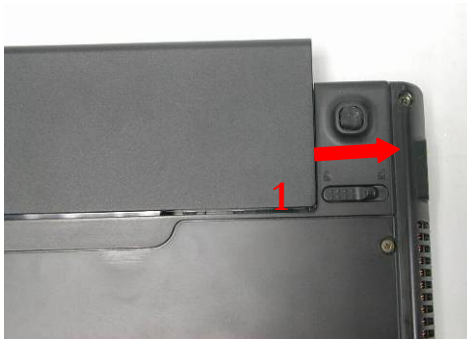
The S62F Series Notebook can support DVD-ROM (8x DVD), COMBO (CD-R 24x/ CD-RW 24x / DVD-ROM 8x/ CD 24x), and DVD-Dual (DVD-R/RW: 4x/2x, DVD+R/RW: 4x/2.4x, CD-R/RW: 24x/ 10x, DVD: 8x, CD: 24x).

Replacing ODD

Remove battery module

ODD
REMOVAL

1. Unlock and hold the latch No (1).



2. Slide the battery lock (No.2) and pull the battery pack out.



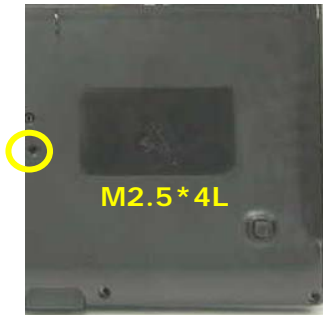
3. Pull the battery pack out.



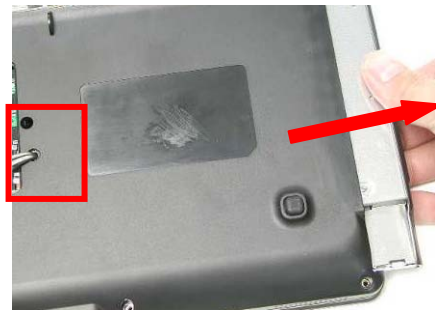
Removing ODD Module

ODD
REMOVAL

1. Remove 1 screw (M2.5*4L (K)).



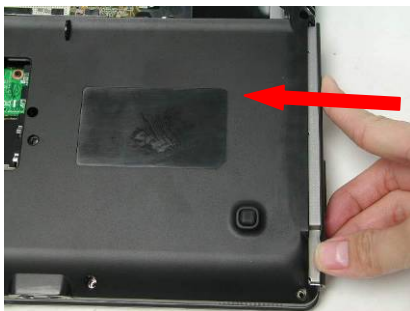
2. Push the ODD Module out by a pair of tweezers.



Installing new ODD module

3. Insert the ODD module.

ODD MODULE
INSTALLATION



- Secure 1 screw (M2.5*4L (K)) to secure it.



Install battery module

- Install the battery module. Slide the battery latch to close the battery lock.



BATTERY

INSTALLATION

Chapter

5

Hardware Specifications

You can enjoy and utilize the S62 series Notebook more effectively with a better comprehension of detailed hardware specifications of the notebook.

This chapter lists the detailed specifications of the notebook's main system and modules. Please refer to this section when you need to find out specific technical data about the notebook.

This chapter contains the following information:

- System Specifications
- Chipset Specifications
- Key Parts List
- System Resource
- Module Specification

1 MARKETING SPEC

| S62F Specification | | (Two-Spindle Design) |
|---------------------------|--------------------------|-----------------------------|
| Product Family | S62F | |
| Dimension | 328 x 288x 27-38mm | |
| Weight | 2.4 | |
| Color | Silver-Gray | |
| CPU Type | Intel Yonah 1M/2M | |
| Speed | 1.66G,1.83G,2.0G,2.16G | |
| Package | Micro-PGA 479M | Socketable |
| L2 Cache | Yes | |
| Size | 2M | On-die cache memory |
| Memory Type | DDR II SDRAM without ECC | |
| Base Memory | None | |
| Expansion Memory | 256/512MB/1GB | SO-DIMM 1.25" x 2 Slot |
| MAX | 2GB | |
| LCD Size | 14.1" | |
| Resolution | WXGA,WXGA+ | |
| Panel Type | TFT | |
| Interface | LVDS | |
| Contrast Control | None | |
| Brightness Control | Hot-key(16 steps) | |
| HDD type | 2.5", 9.5mm | |
| Ultra DMA 100 | Yes | |
| Size | 60/80/100 GB | |
| CD Driver | | |
| CD-ROM | N/A | |
| DVD | N/A | |
| COMBO | 8X/24X/24X/24X COMBO | |
| DVD-RW | Super-Multi | |
| Chip Set | | |

| | | |
|---------------------|------------------------|------------|
| North Bridge | INTEL 945GM | |
| South Bridge | INTEL ICH7M | |
| Super IO | SMSC LPC47N217 | |
| Thermal Sensor | ADT7461ARMZ | |
| Micro-Processor | ITE8510E | |
| KBC | ITE8510E | |
| Flash ROM (ISA) | SST | 4Mb |
| Graphic Accelerator | Intel 950 internal GPU | |
| 3D | Yes | |
| Controller | Intel Internal graphic | |
| AGP Support | No | |
| Dual view/Dual App | Yes | |
| Graphic Memory | Share Memory | |
| TV Out Support | Yes | |
| PCMCIA | | |
| Slot Type | Type II x 1 | |
| Controller | RICOH R5C841 | |
| Card Bus | Yes | |
| ZV port | No | |
| Sound System | | |
| Controller | AD1986A | AC97 CODEC |
| SW wave table | Yes | |
| FM synthesizer | Yes | |
| Speaker | Stereo | |
| I/F | Azalia I/F | |
| PC99 | Yes | |
| S/PDF | Yes | |
| 6 channel output | Yes | |
| Audio Amplifier | TPA0212 | |
| Microphone | Mono | |
| Modem | CONEXANT | RD02-D110 |
| Controller | CONEXANT | |

| | | |
|-------------------------|---------------------------------------|-----------------|
| Spec | 56K | |
| I/F | Azalia MDC | |
| Jack | RJ-11 | RJ-11 port |
| ACPI | Yes | |
| V.90 | Yes | |
| Voice Phone | No | |
| Digital Line Protection | Yes | |
| Wake On Ring | Yes | |
| BT | No | |
| Controller | CSR | BT-183 |
| I/F | USB | |
| ANT | Chip antenna | |
| LAN | | |
| Jack | RJ-45 | RJ-45 port |
| Wake On LAN | YES | |
| Controller | RealTEK RTL8110SB | |
| Internal Keyboard | | |
| Vendor | | |
| Key | 88 Keys (W/ MS-Windows function keys) | |
| Stroke/Pitch | - | |
| Function Key | 12 Function Keys | |
| Hot Key Function | 10 Hot Keys | |
| Suspend (STR or STD) | Fn + F1 | |
| RF enable | Fn + F2 | 802.11b+g |
| Display stretch | No | Not Implement |
| Brightness Up | Fn + F6 | |
| Brightness Down | Fn + F5 | |
| Back light on/off | Fn + F7 | |
| LCD/CRT | Fn + F8 | |
| PC Speaker Volume | Fn + F10 | On/Mute |
| PC Speaker Volume | Fn + F12 | Volume increase |

| | | | |
|-------------------|-----------------------|--|-----------------|
| | PC Speaker Volume | Fn + F11 | Volume decrease |
| | Number Lock | Fn + Ins | |
| | Scroll Lock | Fn + Del | |
| Instant Keys | | | |
| | Power Saving | Power 4 Gear | |
| | E-mail | Direct button | |
| | Internet Browser | Direct button | |
| | Disable TouchPad | Direct button | |
| Status Indication | | 8 LEDs (Machine Base x 8) | |
| | Power Status | Yes (Green on LED when Power on. Blinking when in SUSPEND mode. OFF when power off.) | |
| | Battery Charge Status | Yes (Orange when charging. Blinking when battery low. OFF when fully charged/empty.) | |
| | HDD/CD-ROM LED | Yes (Green while accessing) | |
| | Number Lock LED | Yes (Green) | |
| | Caps Lock LED | Yes (Green) | |
| | Scroll Lock LED | Yes (Green) | |
| | E-mail notification | Yes (Orange) | |
| | W-LAN/BT LED | Yes (Blue) | |
| Pointing Device | | Glide Pad | Synaptics |
| | Glide Pad | Yes | |
| | Right Button | Yes | |
| | Left Button | Yes | |
| | Scroll up button | No | |
| | Scroll down button | No | |
| Function Control | | | |
| | Power On Button | Yes | |
| | LCD Brightness | Yes | Hot Keys |
| | LCD Lid Switch | Yes | |
| | Sound Volume | Yes | Hot Keys |
| | Password Override | Yes (Master Password) | |

| | | | |
|-------------------------|-------------------------|----------------------------|-----------------------|
| | Reset/Force Off | Yes (Force Off switch) | |
| I/O Port | | All ports support hot-plug | |
| | Parallel | NO | |
| | CRT | Yes | 15-pin D-sub |
| | Port Bar port III | Yes | |
| | Mouse/Keyboard | NO | |
| | IrDA Port | NO | |
| | Fax/Modem | Yes | RJ11 |
| | LAN Jack | Yes | RJ45 |
| | Line In | NO | |
| | Mic In Jack | Yes | Mono |
| | Head Phone Jack | Yes | Stereo out |
| | USB port | Yes | 4 Ports |
| | DC-In | Yes | 2-pin type/65W |
| Heat Solution | | | |
| | Heat Pipe | Yes | |
| | Heat Sink | Yes | |
| | FAN Support | Yes | |
| AC Adaptor | | Delta/Liteon | |
| | Input | AC 100-240Volt, 50~60Hz | |
| | Output | DC 19V, 3.42A, 65W | |
| 1 st Battery | | 9 Cells/6 Cells | 11.2Vx4800mAh/2400mAh |
| | Type | Li-ION(2400mAH) | |
| | 1st Battery | Celxpert | |
| 2 nd Battery | | No | |
| | Type | | |
| | 2 nd Battery | | |
| Charging time | | | Li-ION (2400mAH) |
| | Machine ON | TBD. | |
| | Machine OFF | TBD. | |
| Battery Life | | TBD. | |
| | PM Off | TBD. | |

| | | | |
|------------------|-------------------|----------------------|--|
| | PM On | TBD. | |
| Power Management | | AMI BIOS | |
| | LCD Close/Open | Yes | |
| | LCD Back-light | Yes | |
| | Suspend/Resume | Yes | |
| | Hibernation (S2D) | Yes | |
| | Thermal Control | Yes | DTS/Thermal diode |
| | ACPI | Yes | |
| | DMI 2.0 | Yes | Support DMI BIOS 2.1 |
| Security | | | |
| | Password | Yes | Password overridden by Master password |
| | Security Lock | Kensington Lock Hole | |
| | TPM | Infineon TPM 1.2 | Option |
| S/W | | | |
| | Install OS | WinXP | |
| | Option | Win2000 | |
| | Flash BIOS | Yes | |
| Drivers | | | |
| | Chipset Driver | Yes | |
| | VGA Driver | Yes | |
| | AUDIO Driver | Yes | |
| | LAN Driver | Yes | |
| | Glide Pad Driver | Yes | |
| | Modem Driver | Yes | |
| | Blue tooth Driver | Yes | |
| | WLAN Driver | Yes | |
| LOGO | | | |
| | Audio Driver | Yes | |
| USB Port Bar 3 | | Yes | |
| | Parallel Port | Yes | |
| | VGA Port | Yes | |
| | USB Port X 4 | Yes | |



| | | |
|----------|-----|--|
| LAN Port | Yes | |
|----------|-----|--|

2 CHIPSET LIST

Chipset Summary Table

| Function | S62F | HW ACPI/PC99 |
|-----------------|-----------------------------|--------------|
| CPU | Intel Yonah | Not required |
| SRAM (L2 Cache) | 2M | Not required |
| North Bridge | Intel 945GM | YES |
| South Bridge | Intel ICH7M | YES |
| MEMORY | DDR II SDRAM | Not required |
| BIOS ROM | SST 4Mb | Not required |
| VGA | Intel internal graphic | YES |
| SUPER I/O | SMSC LPC47N217 | YES |
| PCMCIA | RICOH R5C841 | YES |
| AUDIO | Azalia CODEC software Audio | YES |
| AUDIO AMPLIFIER | TPA0212 | Not required |
| KB CONTROLLER | ITE8510E | YES |
| PIC (uP) | ITE8510E | YES |
| IrDA | NO | |
| CLOCK Generator | ICS954310BGLFT | YES |
| MODEM | CONEXANT | YES |
| Bluetooth | BT-183 | |
| 1394 | RICOH R5C841 | Yes |
| LAN | RealTEK RTL8110SB | YES |

2.1 CPU

| | |
|----------------------|---|
| Processor Type: | Intel Yonah Processor |
| Processor frequency: | 1.66 /1.83 /2.0/2.16 GHz |
| Construction method: | u-PGA479 with socket |
| Supply voltage: | Code:1.25V(High_Frequency_Mode)~0.725V(lowest_Frequency_Mode) |
| Function feature: | On-die , primary 32-KB instruction cache and 32-KB write-back data cache. On-die , 2MB second level cache with Advanced Transfer Cache Architecture. Data Prefetch. Streaming SIMD extensions 2(SSE2). Enhanced Intel SpeedStep technology 533/667 MHZ FSB support |

2.2 CHIPSET

2.2.1 North Bridge

| | |
|---------------|--|
| Function: | <p>Full support 32bits AGTL+ host bus addressing</p> <p>Supports 400/533/667 DDR2 device</p> <p>Integrates the graphic controller</p> <p>Support Intel Rapid Memory power management</p> <p>DMI x2/x4 Interface connect to ICH</p> |
| Vendor: | Intel |
| Parts Number: | 945GM |
| Package: | 1466-ball micro-FCBGA |

2.2.2 South Bridge

| | |
|---------------|---|
| Function: | <p>DMI x2/x4 interface link with GMCH</p> <p>Integrated PC/AT compatible system (DMA Controller, INT, Timer/Counters)</p> <p>Integrated one channels IDE controller with Ultra DMA/33/66/100 support</p> <p>Integrated USB 1.1 and 2.0 Host Bus controller with 8 USB ports</p> <p>Integrated HD Audio Interface</p> <p>Build-in RTC</p> <p>LPC Interface</p> <p>IRQ Controller</p> |
| Vendor: | Intel |
| Parts Number: | ICH7M |
| Package: | 652-ball BGA |

2.3 DRAM MEMORY

2.3.1 ON-BOARD MEMORY

None

2.3.2 EXPANSION MEMORY

| | |
|----------------------|--|
| Number of sockets: | Two 200 pin SO-DIMM socket |
| Bus: | 64-bit data path |
| Supply voltage: | 1.8V |
| Functional features: | Supports up to 16 simultaneous open pages |
| Hardware features: | Supports DDR2 400/533/667 DDR devices Maximum of 2GB of system memory |

| | |
|-----------------|-------------|
| Parity support: | without ECC |
|-----------------|-------------|

2.4 BIOS ROM

| | |
|-----------------|---------------------------------------|
| ROM Type: | SST Flash Memory |
| Package: | 32-Lead PLCC |
| Supply voltage: | 3.3V |
| Serviceability: | End user upgradeable for the firmware |

2.5 INTERNAL VGA CONTROLLER

| | |
|--------------------|--|
| Function features: | 3D Setup and Render Engine |
| | Integrated 24 bit RAMDAC that can drive a standard progressive scan analog monitor up to 2048 X 1536 CRT resolution at a maximum refresh rate of 75 Hz |
| | Single or dual channel LVDS panel support up to 112MHZ |
| | TV out resolution up to 1024x768 |
| Vendor: | Intel |
| Chipset | 945GM |

2.6 I/O INTERFACE Controller

| | |
|---------------|--|
| Function: | Full ACPI 1.0 and PC98/99 compliant |
| | Support 10 IRQ channel options |
| | Integrated PC/AT Floppy Disk Controller |
| | Support 5.25"/3.5"/2.5" FDD |
| | Support 3-mode FDD |
| | Integrated Serial Port RS-232C Controller |
| | Integrated Infrared Controller |
| | Support IrDA 1.0 |
| | Integrated Parallel Port Controller |
| | Support Standard, bi-directional, ECP, EPP mode |
| | Support 2 general purpose pins for game port control |
| | Support voltage 5V |
| Vendor: | SMSC |
| Parts Number: | LPC47N217 |
| Package: | 64-pin STQFP |

2.7 PCMCIA Controller

| | |
|---------------|--|
| Function: | PC99, ACPI 1.0 and PCI bus power management 1.1 Design compliant Integrated PC Card Controller Support 1995 PC Card (PCMCIA 2.2) Integrated Card Bus Controller PC98/99/2001 compliant Single Chip PCI-CardBus/1394 Bridge Compliant with PCI Specification2.2 1394 PHY 1394 OHCI-LINK Bridge Flash Memory Interface (3 in 1 Media Bay) |
| Vendor: | RICOH |
| Parts Number: | R5C841 |
| Package: | 208 pin CSP |

2.8 KEYBOARD CONTROLLER

| | |
|--------------------|--|
| Function features: | Embedded controller-style host Support hardware speed-up of GateA20 and RC Local 16x8 keyboard switch matrix support Three industry standard serial keyboard interfaces All three ports are bi-directional |
| Vendor: | ITE |
| Parts Number: | 8510E |
| Package: | 176-pin TQFP |

2.9 AUDIO CODEC

| | |
|--------------------|--|
| Function features: | Fully Compliant HD Audio Compliant. 20-bit Stereo Digital to Analog Converters. 18-bit Stereo Analog to Digital Converters. High-quality pseudo-Differential CD input. Meets or exceeds the Microsoft PC99 Audio Performance requirements. S/PDIF digital audio output. 3D Stereo Enhancement. |
| Vendor: | ADI |
| Parts Number: | 1986A |
| Package: | 48-pin LFCSP |

2.10 AUDIO AMPLIFIER

| | |
|--------------------|---|
| Function features: | 2 X 1.8W BTL audio amplifier with 4ohm load. Depop circuitry integrated BTL or SE mode operation Thermal shutdown circuitry integrated |
| Vendor: | TI |
| Parts Number: | TPA0212 |
| Package: | 24-pin TSSOP |

2.11 LAN & MODEM

2.11.1 LAN

| | |
|--------------------|---|
| Function features: | Integrated Fast Ethernet MAC, Physical chip and transceiver in one chip 10Mb/s, 100Mb/s, 1000Mb/s operation Compliant to PCI Revision 2.2 Compliant to PC99/PC2001 standard Support Wake-on-LAN function and remote wake up (Magic Packet, LinkChg and Microsoft wake-up frame) |
|--------------------|---|

Vendor: Realtek
Parts Number: RTL8110SB
Package: 128-Pin LQFP

2.11.2 MODEM

Function features:

- V.90 and K56 flex support
- Integrated PnP functionality
- PC99 compliant
- Support both APM and ACPI power management
- Support Wake-on-ring functionality

Vendor: ASUS
Parts Number: RD02-D110
Package: Azalia MDC

3 KEY PARTS LIST

Key Parts Summary:

| S62F Project Keyparts List | | | | |
|----------------------------|---|-----------|-------------------------------|---------------|
| Priority | | Vendor | Model No. | ASUS Part No. |
| CPU | | | | |
| 1 | | Intel | INT CO667 DC 2.16G T2600 L8VN | |
| 1 | | Intel | INT CO667 DC 2.0G T2500 L8VP | |
| | | Intel | INT CO667 DC 1.83G T2400 L8VQ | |
| | | Intel | INT CO667 DC 1.66G T2300 L8VR | |
| LCD | | | | |
| 14.1" WXGA | | | | |
| 1 | | AUO | B141EW01 V1 | |
| | 2 | AUO | B141EW01 V3(Glare) | |
| | 2 | CMO | N141I1_L02 | |
| | 2 | CMO | N141I1_L03(Glare) | |
| 14.1" WXGA+ | | | | |
| 1 | | AUO | B141PW01 V0 | |
| 1 | | CMO | N141C1-L03 REV C1 | |
| | | CMO | N141C1-L02 REV C1 | |
| ODD | | | | |
| DVD Combo | | | | |
| 1 | | TSST | TS-L462C | 17G112151102 |
| | | KME | UJDA770 | 17G112151201 |
| DVD Super Multi | | | | |
| 1 | | KME | UJ-850BAL-A | 17G141120000 |
| | 2 | KME | UJ-841BAL-A | 17G141113000 |
| | | TSST | TS-L632C | 17G141115001 |
| Touchpad | | | | |
| 1 | | SYNAPTICS | SYNAPTICS FOR A6 | 04G110001710 |

| MDC | | | | |
|---------------------------|---|----------|-------------------------|----------------|
| 1 | | ASUS | MODEM 56K Azalia(Green) | 61-BMM011-01 |
| CMOS Camera Module | | | | |
| 1 | | YA HSIN | N03P1BG_SM9 | 04G370030100 |
| | | CHICONY | CMN5622 | 04G370030000 |
| HDD | | | | |
| 1 | | HGST | HTS421260H9AT00 | 17G013131708 |
| 1 | | HGST | HTS421280H9AT00 | 17G013132708 |
| 1 | | HGST | HTS421210H9AT00 | 17G013134701 |
| 1 | | Fujitsu | MHV2060AT PL | 17G013131119 |
| | 2 | Fujitsu | MHV-2100AT PL | 17G013134114 |
| | 2 | HGST | HTS421212H9AT00 | 17G013133900 |
| | 2 | HGST | HTS541060G9AT00 | 17G013131706 |
| | | HGST | HTS541080G9AT00 | 17G013132707 |
| | | HGST | HTS541010G9AT00 | 17G013134700 |
| | | Fujitsu | MHV2100AH | 17G013134112 |
| Minicard WLAN | | | | |
| 1 | | Intel | INTEL/WM3945AGM1GEN | 04G033051000 |
| 1 | | Intel | INTEL/WM3945AGM2GEN | 04G033052000 |
| | | Intel | INTEL/WM3945AGRWGEN | 04G033052010 |
| | | Intel | INTEL/WM3945AGJPGEN | 04G033052020 |
| Keyboard | | | | |
| 1 | | SUNREX | KEYBOARD S62 (USA) | 04GNG51KUS00 |
| 1 | | SUNREX | KEYBOARD S62 (UKB) | 04GNG51KUK00 |
| 1 | | SUNREX | KEYBOARD S62 (JPN) | 04GNG51KJP00 |
| 1 | | DARFON | KEYBOARD S62F (US) | 04GNG51KUS00-1 |
| | 2 | DARFON | KEYBOARD S62F (UK) | 04GNG51KUK00-1 |
| | 2 | DARFON | KEYBOARD S62F (JPN) | 04GNG51KJP00-1 |
| Battery | | | | |
| 1 | | Celxpert | ICR18650-24E/3S2P 3.7V | 07G016A61865 |
| 1 | | Celxpert | ICR18650-24E/3S3P 3.7V | 07G016B31865 |
| AC Adapter | | | | |
| 1 | | Delta | SADP65KB-ABH REV:01 | 04G266003183 |

| | | | | |
|-----------------------|--|----------|---------------------|--------------|
| 1 | | Delta | SADP65KB-BFJ REV:01 | 04G266003163 |
| SO-DIMM | | | | |
| 512MB DDR2 533 | | | | |
| 1 | | UNIFOSA | GU33512AGHYQ612L3PC | 04G001616673 |
| 1 | | NANYA | NT512T64UH8A1FN-37B | 04G001616619 |
| 1GB DDR2 533 | | | | |
| 1 | | NANYA | NT1GT64U8HA0BN-37B | 04G001617633 |
| 512MB DDR2 667 | | | | |
| | | Infineon | M470T6554CZ3-CE6 | 04G00161662F |
| | | Nanya | NT512T64UH8A1FN-3C | 04G00161661B |
| 1GB DDR2 667 | | | | |
| | | Infineon | M470T2953CZ3-CE6 | 04G001617641 |
| | | Nanya | NT1GT64U8HA0BN-3C | 04G001617634 |

3.1 Display

| | |
|------------------|--|
| WXGA Technology: | Active color (TFT: Thin Film Transistor) |
| Size: | 14.1"W |
| Resolution: | WXGA (1280 X 800) |
| Dimension: | |
| Pixel Pitch: | 0.279mm x 0.279mm |
| Display Colors: | 262,144 |
| Vendor: | AUO/CMO/Hansstar |

| | |
|------------------|--|
| WXGA Technology: | Active color (TFT: Thin Film Transistor) |
| + | |
| Size: | 14.1"W |
| Resolution: | WXGA+ (1440 X 900) |
| Dimension: | |
| Pixel Pitch: | 0.297mm x 0.297mm |
| Display Colors: | 262,144 |
| Vendor: | AUO/CMO/Hansstar |

3.2 Hard Disk Drive

| | |
|----------------------|---|
| Form factor: | 2.5 inch |
| Capacity: | 60/80/100 GB |
| Height: | 9.5 mm |
| Interface: | Enhanced IDE conforming to ATA-5 |
| Functional features: | Power Management APM 1.1 and 1.2 (standby/suspend) LBA-modes |

| | |
|--------------------|--|
| Hardware features: | Standard I/O addresses: 1F0h to 1F7h and 3F6h Support of minimum IRQ 14 Support of at least 3 DMA channels, if DMA is supported Easily removable and exchangeable for user's future upgrade |
| Vendor/Model: | HGST/ HTS421260H9AT00 , HTS421280H9AT00 |

3.3 Combo Drive

| | |
|----------------------|---|
| Form factor: | 5.25 Inch |
| Speed: | 24X/24X/8X/24X |
| Height: | 12.7mm |
| Interface: | IDE (ATAPI) |
| Functional features: | Power Management APM 1.1 and 1.2 (standby/suspend) Standard I/O addresses Support of minimum IRQ |
| Vendor/Model: | Easily removable and exchangeable for user's future upgradability Toshiba/TS-L462C , Panasonic/UJDA770 |

3.4 DVD-Dual Drive

| | |
|----------------------|--|
| Form factor: | 5.25 Inch |
| Speed: | DVD super-multi |
| Height: | 12.7mm |
| Interface: | IDE (ATAPI) |
| Functional features: | Power Management APM 1.1 and 1.2 (standby/suspend) Standard I/O addresses Support of minimum IRQ |
| Vendor/Model: | Easily removable and exchangeable for user's future upgradability Toshiba/TS-L632C, Panasonic/UJ-841BAL-A |

3.5 Touch Pad

| | |
|--------------------------|---|
| Dimensions: | 65 mm(W) x 49 mm(H) x 2.82 mm(T) |
| Sensor effective areas: | 62.5 mm(W) x 46.5 mm(H) |
| Interface: | PS/2 |
| X/Y position resolution: | 40 points / mm (graphics mode) |
| Customizing: | Custom color can be printed on the sensor pad. |
| Functional features: | Accurate positioning Low fatigue pointing action Low power consumption Software configurable Scanner function for signature Low profile, compact size and low weight |
| Vendor/Model | Synaptics : TM61PDE8G307 |

3.6 Keyboard

| | |
|----------------------|---|
| Compatibility: | MS-Windows 2000/XP |
| Functional features: | Standard Notebook-Keyboard MF2-Layout |
| Hardware feature: | Simultaneously use of internal and external keyboard Easily to assemble or disassemble |
| Dimensions: | (H) 300mm x (V) 116.5 mm |
| Type: | Key switch Membrane |
| Total travel: | 3.0 ± 0.3 mm |
| Key top: | ABS material, TANPO printing with UV hardening English, Japanese, Chinese, Korean and European etc., |
| Language versions: | |
| Vendor/ Model | InnovACE/K000962, Chicony/MP-0411 |

3.7 Battery

3.7.1 Main Battery

| | |
|------------|---------------------------|
| Purpose: | Main power supply battery |
| Gas-gauge: | SMBus interface |

| | |
|------------------|--|
| Chemistry: | Li-ion rechargeable battery |
| Voltage: | Nominal 11.1V (= 3.7V cell 3pcs in serial, 2pcs in parallel) |
| Capacity: | 2400mAh/Cell |
| Vendor: | Celxpert |
| Duration: | Minimum 4 hour (w/o PMU) |
| Charge Method: | Fast Charge: 2.5A, 3.0 hour (while System off) |
| Charging Source: | AC Adapter |
| Gas-gauge: | BENCHMARQ bq2060H |

3.7.2 RTC Backup Battery

| | |
|------------|---|
| Purpose: | Backup the RTC/CMOS data While AC adapter off & Main Battery removed |
| Chemistry: | Coin cell 2032 Li-ion battery |
| Voltage: | Nominal 3V |
| Capacity: | 200mAh |
| Vendor: | TOSHIBA, Panasonic, KTS |

3.8 AC/DC Adapter

The notebook can be powered either by an external AC adapter or by an internal battery pack. The AC adapter is used as power source for the DC/DC converter and as constant current source for the battery pack.

| | |
|----------------------|----------------------------|
| Input Requirements: | |
| AC line voltage: | 90V to 264V AC, Full Range |
| AC line current: | 1.5A |
| AC line frequency | 50 Hz to 60 Hz |
| Efficiency | 85% min. |
| Output requirements: | |
| Output-Voltage | +19V DC +/- 3% |
| Output-Current | max.3.42A |
| Ripple voltage | 500mV _{P-P} |
| Power cord: | Plug to the adapter |
| DC Cable length: | 180 mm +/- 50mm |

Regulatory:

EMI: FCC Class B

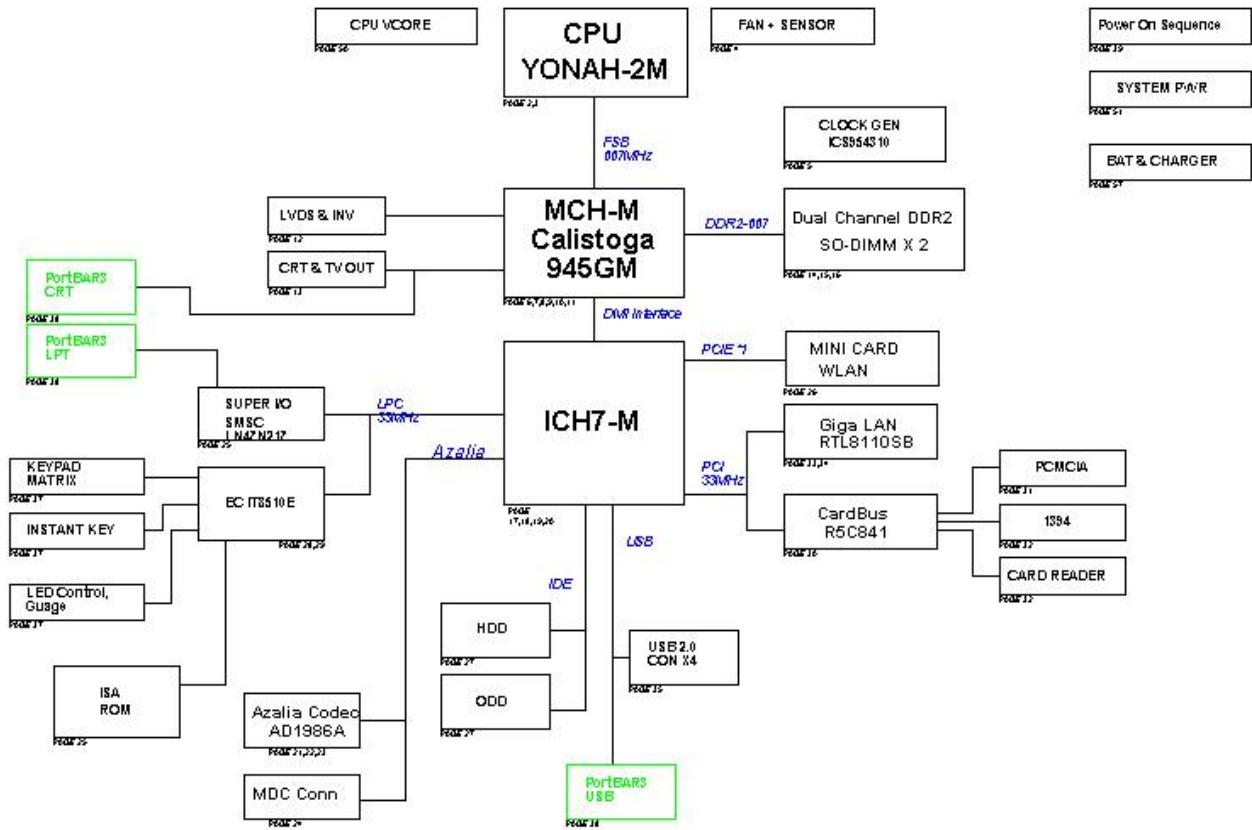
Safety: CISPR 22 Class B

.Dimension: (L) 114.5 x (W) 49.5 x (H) 29 mm

4 SYSTEM

4.1 System diagram

Z62F Block Diagram



4.2 Main components block diagrams



4.3 System resource

4.3.1 IRQ Map

| IRQ# | Description |
|-------|--------------------------|
| IRQ 0 | System Timer |
| IRQ 1 | Keyboard |
| IRQ 2 | [Cascade] |
| IRQ 3 | IrDA |
| IRQ 4 | USB Controller |
| IRQ 5 | VGA / USB Controller |
| IRQ 6 | Available |
| IRQ 7 | Parallel Port |
| IRQ 8 | System CMOS/RTC |
| IRQ 9 | ACPI IRQ Holder |
| IRQ10 | Available |
| IRQ11 | Available |
| IRQ12 | PS/2 Mouse |
| IRQ13 | FPU |
| IRQ14 | Primary IDE Controller |
| IRQ15 | Secondary IDE Controller |

4.3.2 ISA DMA Map

| DMA Channel | Device |
|-------------|----------------|
| DMA 3 | Parallel Port |
| DMA 4 | DMA Controller |

4.3.3 PCI INT Map

| INT | Description |
|------|----------------|
| INTA | Giga LAN Chip |
| INTB | CARDBUS, 1394, |
| INTC | |
| INTD | |

4.3.4 PCI Bus Master Map

| REQ | Description |
|------|---------------|
| REQ0 | CARDBUS, 1394 |
| REQ1 | |
| REQ2 | LAN |
| REQ3 | None |
| REQ4 | None |

4.3.5 IDSEL

| IDSEL | CHIPSET |
|-------|---------------|
| AD23 | LAN |
| AD17 | CARDBUS, 1394 |

5 I/O PORT PIN ASSIGNMENT

| No | FUNCTION | DESCRIPTION |
|----|-------------------------|--------------------------------|
| | .CRT | Display (Analog) |
| | HDD | |
| | ODD | |
| | LCD | |
| | KEYBOARD | |
| | TOUCHPAD&LED | |
| | 1 ST BATTERY | |
| | .DC IN | Adapter Input |
| | .AUDIO | Headphone, Microphone-In |
| | .FAN | |
| | .INVERTER | |
| | .MDC | |
| | .1394 | |
| | .USB | Universal Serial Bus |
| | Port Bar 3 | USB, CRT, Parallel Port, RJ-45 |
| | LAN & Modem | |
| | .Card Reader | |
| | TV OUT | |

5.1 CRT

| Vendor | Part No. | Pin No. |
|--------|-------------------|--------------|
| SUYIN | 070546FR015S215ZU | 15 Pin (DIP) |

| No | Pin Assignment (by: sort) | Description |
|----|---------------------------|--|
| 1 | RED Video (analog) | Red this DAC analog output drives the CRT interface. |
| 2 | GREEN Video (analog) | Green this DAC analog output drives the CRT interface. |

| | | |
|----|-----------------------|---|
| 3 | BLUE Video (analog) | Blue this DAC analog output drives the CRT interface. |
| 4 | MONITOR ID Bit 2 | NC |
| 5 | GROUND | Ground |
| 6 | RED Return (ground) | Ground |
| 7 | GREEN Return (ground) | Ground |
| 8 | BLUE Return (ground) | Ground |
| 9 | KEY | NC |
| 10 | SYNC Return (ground) | Ground |
| 11 | MONITOR ID Bit 0 | NC |
| 12 | MONITOR ID Bit 1 | DDC monitor data |
| 13 | HSYNC | CRT Horizontal Sync this output is The Horizontal sync pulse for the CRT Monitor. |
| 14 | VSYNC | CRT Vertical Sync this output is the Vertical sync pulse for the CRT Monitor. |
| 15 | MONITOR ID Bit 3 | DDC monitor clock |

5.2 Hard disk pin assignment

| Vendor | Part No. | Pin No. |
|--------|----------------|--------------|
| ALLTOP | C17851-144A1-L | 44 Pin (SMT) |

| No. | Signal | Description | Type |
|-----|------------|-----------------------|------|
| 44 | IDERST#_5S | Reset primary disk | O |
| 43 | GND | Ground | P |
| 42 | PDD7 | Primary disk data 7 | I/O |
| 41 | PDD8 | Primary disk data 8 | I/O |
| 40 | PDD6 | Primary disk data 6 | I/O |
| 39 | PDD9 | Primary disk data 9 | I/O |
| 38 | PDD5 | Primary disk data 5 | I/O |
| 37 | PDD10 | Primary disk data 10 | I/O |
| 36 | PDD4 | Primary disk data 4 | I/O |
| 35 | PDD11 | Primary disk data 11 | I/O |
| 34 | PDD3 | Primary disk data 3 | I/O |
| 33 | PDD12 | Primary disk data 12 | I/O |
| 32 | PDD2 | Primary disk data 2 | I/O |
| 31 | PDD13 | Primary disk data 13 | I/O |
| 30 | PDD1 | Primary disk data 1 | I/O |
| 29 | PDD14 | Primary disk data 14 | I/O |
| 28 | PDD0 | Primary disk data 0 | I/O |
| 27 | PDD15 | Primary disk data 15 | I/O |
| 26 | GND | Ground | P |
| 25 | KEY | NC | |
| 24 | PDDRQ_3S | Primary DMA request | I |
| 23 | GND | Ground | P |
| 22 | PDIOW#_3S | Primary disk IO write | O |
| 21 | GND | Ground | P |
| 20 | PDIOR#_3S | Primary disk IO read | O |

| | | | |
|----|------------|--|-----|
| 19 | GND | Ground | P |
| 18 | PIORDY_3S | Primary disk IO channel ready | I |
| 17 | CSEL | Cable select (device configuration) | O |
| 16 | PDDACK#_3S | Primary DMA acknowledge | O |
| 15 | GND | Ground | P |
| 14 | IRQ14_3S | Primary disk interrupt | I |
| 13 | HIOCS16# | Indication to the host | I |
| 12 | PDA1_3S | Primary disk address 1 | O |
| 11 | PDIAG# | Diagnostics status | I/O |
| 10 | PDA0_3S | Primary disk address 0 | O |
| 9 | PDA2_3S | Primary disk address 2 | O |
| 8 | PDCS1#_3S | Primary disk chip select for 100 range | O |
| 7 | PDCS3 #_3S | Primary disk chip select for 300 range | O |
| 6 | PDASP#_5S | Driver active/slave present | I/O |
| 5 | GND | Ground | P |
| 4 | +5Vs | +5V power supply | P |
| 3 | +5Vs | +5V power supply | P |
| 2 | GND | Ground | P |
| 1 | Reserved | NC | |

5.3 ODD pin assignment

| Vendor | Part No. | Pin No. |
|--------|----------------|--------------|
| ALLTOP | C1240Z-250A1-L | 50 Pin (DIP) |

| Pin No. | Pin No. | Remark |
|--------------|---------------|--------|
| 1. CD_L_A | 2. CD_R_A | |
| 3. CD_GND_A | 4. CD_GND_A | |
| 5. IDE_RST# | 6. IDE_PD8 | |
| 7. IDE_PD7 | 8. IDE_PD9 | |
| 9. IDE_PD6 | 10. IDE_PD10 | |
| 11. IDE_PDD5 | 12. IDE_PDD11 | |

| | | |
|----------------|------------------|--|
| 13. IDE_PDD4 | 14. IDE_PDD12 | |
| 15. IDE_PDD3 | 16. IDE_PDD13 | |
| 17. IDE_PDD2 | 18. IDE_PDD14 | |
| 19. IDE_PDD1 | 20. IDE_PDD15 | |
| 21. IDE_PDD0 | 22. IDE_PDDREQ | |
| 23. GND | 24. IDE_PDIOR# | |
| 25. IDE_PDIOW# | 26. GND | |
| 27. IDE_PIORDY | 28. IDE_PDDACK# | |
| 29. INT_IRQ15# | 30. IDE_PIOCS16# | |
| 31. IDE_PDA1 | 32. IDE_PPDIAG# | |
| 33. IDE_PDA0 | 34. IDE_PDA2 | |
| 35. IDE_PDCS1# | 36. IDE_PDCS3# | |
| 37. IDE_PDASP# | 38. +V5S_IDE | |
| 39. +5VS_IDE | 40. +V5S_IDE | |
| 41. +5VS_IDE | 42. +V5S_IDE | |
| 43. GND | 44. GND | |
| 45. GND | 46. GND | |
| 47. ODD_CSEL | 48. GND | |
| 49. NC | 50. NC | |

5.4 LCD pin assignment

| Vendor | Part No. | Pin No. |
|--------|---------------|--------------|
| ENTERY | 3761-Q30C-01R | 30 Pin (SMT) |

| No. | Signal | Description | Type |
|-----|------------|------------------------------|------|
| 1 | LVDS_U1N | Data channel 1- of Channel A | O |
| 2 | LVDS_L0N | Data channel 0+ of Channel B | O |
| 3 | LVDS_U1P | Data channel 1+ of Channel A | O |
| 4 | LVDS_L0P | Data channel 0- of Channel B | O |
| 5 | GND | Ground | P |
| 6 | GND | Ground | P |
| 7 | LVDS_U0N | Data channel 0- of Channel A | O |
| 8 | LVDS_L1N | Data channel 1- of Channel B | O |
| 9 | LVDS_U0P | Data channel 0+ of Channel A | O |
| 10 | LVDS_L1P | Data channel 1+ of Channel B | O |
| 11 | GND | Ground | P |
| 12 | GND | Ground | P |
| 13 | LVDS_U2N | Data channel 2- of Channel A | O |
| 14 | LVDS_L2N | Data channel 2- of Channel B | O |
| 15 | LVDS_U2P | Data channel 2+ of Channel A | O |
| 16 | LVDS_L2P | Data channel 2+ of Channel B | O |
| 17 | GND | Ground | P |
| 18 | GND | Ground | P |
| 19 | LVDS_UCLKN | Clock negative of Channel A | O |
| 20 | LVDS_LCLKN | Clock negative of Channel B | O |
| 21 | LVDS_UCLKP | Clock positive of Channel A | O |
| 22 | LVDS_LCLKP | Clock positive of Channel B | O |
| 23 | GND | Ground | P |
| 24 | GND | Ground | P |
| 25 | PID_1 | Panel ID bit 1 | I |

| | | | |
|----|----------|------------------|---|
| 26 | EDID_CLK | EDID Clock | I |
| 27 | PID_0 | Panel ID bit 0 | I |
| 28 | EDID_DAT | EDID DATA | I |
| 29 | LCD_VCC | +3V power supply | P |
| 30 | LCD_VCC | +3V power supply | P |

5.5 Internal keyboard pin assignment

| Vendor | Part No. | Pin No. |
|--------|---------------|--------------|
| ENTERY | 6905-E28N-00R | 28 Pin (SMT) |

| No | Signal | Description | Type |
|----|--------|--------------------------|------|
| 1 | KSI1 | Keyboard matrix column 1 | I |
| 2 | KSO7 | Keyboard matrix row 7 | O |
| 3 | KSI7 | Keyboard matrix column 7 | I |
| 4 | KSO0 | Keyboard matrix row 0 | O |
| 5 | KSI6 | Keyboard matrix column 6 | I |
| 6 | KSO9 | Keyboard matrix row 9 | O |
| 7 | KSI5 | Keyboard matrix column 5 | I |
| 8 | KSO3 | Keyboard matrix row 3 | O |
| 9 | KSI4 | Keyboard matrix column 4 | I |
| 10 | KSO1 | Keyboard matrix row 1 | O |
| 11 | KSI2 | Keyboard matrix column 2 | I |
| 12 | KSI3 | Keyboard matrix column 3 | I |
| 13 | KSO5 | Keyboard matrix row 5 | O |
| 14 | KSO13 | Keyboard matrix row 13 | O |
| 15 | KSI0 | Keyboard matrix column 0 | I |
| 16 | KSO2 | Keyboard matrix row 2 | O |
| 17 | KSO4 | Keyboard matrix row 4 | O |
| 18 | KSO8 | Keyboard matrix row 8 | O |
| 19 | KSO6 | Keyboard matrix row 6 | O |
| 20 | KSO11 | Keyboard matrix row 11 | O |
| 21 | KSO10 | Keyboard matrix row 10 | O |
| 22 | KSO12 | Keyboard matrix row 12 | O |
| 23 | KSO14 | Keyboard matrix row 14 | O |
| 24 | KSO15 | Keyboard matrix row 15 | O |
| 25 | NC | | |

| | | | |
|----|------------|-------------------|-----|
| 26 | KEYDETECT0 | Keyboard ID bit 0 | I |
| 27 | GND | Ground | GND |
| 28 | KEYDETECT1 | Keyboard ID bit 1 | I |

5.6 Internal Touch Pad Pin assignment

| Vendor | Part No. | Pin No. |
|--------|----------|--------------|
| ENTERY | 6701-20 | 10 Pin (SMT) |

| No | Signal | Description | Type |
|----|--------------|--------------|------|
| 1 | +5VS | Power | P |
| 2 | +5VS | Power | P |
| 3 | TPAD_DAT | PS/2 DATA | I/O |
| 4 | TPAD_DAT | PS/2 DATA | I/O |
| 5 | TPAD_CLK | PS/2 Clock | I/O |
| 6 | TPAD_CLK | PS/2 Clock | I/O |
| 7 | GND | Ground | P |
| 8 | GND | Ground | P |
| 9 | TP_LEFT_SW# | Left Switch | I |
| 10 | NC | | |
| 11 | NC | | |
| 12 | TP_RIGHT_SW# | Right Switch | I |

5.7 1ST Battery pin assignment

| No | Signal | Description | Type |
|----|------------|------------------------------|------|
| 1 | BAT_CON | Battery input/output voltage | P |
| 2 | BAT_CON | Battery input/output voltage | P |
| 3 | BAT1_CNT1# | NVDC control pin 1 | I |
| 4 | BAT1_CNT2# | NVDC control pin 2 | I |
| 5 | SMCLK_BAT | SMB Bus Clock | I/O |
| 6 | SMDATA_BAT | SMB Bus DATA | I/O |
| 7 | TS# | Thermal Pin | O |
| 8 | GND | Ground | P |
| 9 | GND | Ground | P |

5.8 DC in Jack pin assignment

| Vendor | Part No. | Pin No. |
|-----------|--------------|-------------|
| SINGATRON | 2DC-G026B201 | 4 Pin (DIP) |

| No | Signal | Description | Type |
|----|-------------|-----------------------|------|
| 1 | A/D_DOCK_IN | Adapter input voltage | P |
| 2 | GND | Ground | P |
| 3 | GND | Ground | P |
| 4 | GND | Ground | P |

5.9 Audio Jack

5.9.1 Internal Speaker Jack

| Vendor | Part No. | Pin No. |
|--------|-------------|-------------|
| ACES | 85204-04001 | 4 Pin (SMT) |

| No | Signal | Description | Type |
|----|----------|--|------|
| 1 | INTSPKR+ | Internal speaker signal channel positive | O |

| | | | |
|---|----------|--|---|
| 2 | INTSPKR- | Internal speaker left sound negative | O |
| 3 | INTSPKL+ | Internal speaker signal channel positive | O |
| 4 | INTSPKL- | Internal speaker left sound negative | O |

5.9.2 Headphone Jack

| Vendor | Part No. | Pin No. |
|-----------|--------------|--------------|
| SINGATRON | 2SJ-A373-001 | 10 Pin (DIP) |

| No | Signal | Description | Type |
|----|----------|--------------------------------|------|
| 1 | EARR | Headphone right sound | O |
| 4 | EARL | Headphone left sound | O |
| 5 | GND | Ground | P |
| 6 | GND | Ground | P |
| 7 | JACK_IN# | S/PDIF/Headphone be plugged in | I |
| 9 | GND | Ground | P |
| 10 | GND | Ground | P |
| A | GND | Ground | P |
| B | +5VS | +5V power for S/PDIF | P |
| C | SPDIF_O | S/PDIF output | O |

5.9.3 Microphone Jack

| Vendor | Part No. | Pin No. |
|---------|-----------------|-------------|
| FOXCONN | JA6333L-B200-7F | 5 Pin (DIP) |

| No | Signal | Description | Type |
|----|------------|---|------|
| 1 | GND | Ground | P |
| 2 | MIC_CENTER | External microphone input | O |
| 3 | NC | No Connection | |
| 4 | MIC_BIAS | Internal MIC connection/BIAS. | I |
| 5 | NC | No Connection | |
| 6 | EXT_MIC | Internal Microphone switch out connection | O |

5.10 Fan Pin Assignment

| Vendor | Part No. | Pin No. |
|--------|-------------|-------------|
| ACES | 85205-03701 | 3 Pin (SMT) |

| No | Signal | Description | Type |
|----|----------|------------------------|------|
| 1 | +5VS_FAN | 5V Power Supply | P |
| 2 | FANSP1 | FAN speed signal input | I |
| 3 | GND | Ground | P |

5.11 Inverter pin assignment

| Vendor | Part No. | Pin No. |
|--------|----------|--------------|
| E&T | 3753-20 | 20 Pin (SMT) |

| No | Signal | Description | Type |
|----|------------|-----------------------------------|------|
| 1 | NC | No Connection | |
| 2 | AC_BAT_SYS | Ac in voltage | P |
| 3 | +5V_USB35 | USB 5V power | P |
| 4 | AC_BAT_SYS | Ac in voltage | P |
| 5 | +5V_USB35 | USB 5V power | P |
| 6 | GND | Ground | P |
| 7 | GND | Ground | I/O |
| 8 | LID_SW# | LID Switch signal output(Reserve) | O |
| 9 | GND | Ground | I/O |
| 10 | BACK_ADJ | Brightness signal adjustment | O |
| 11 | GND | Ground | P |
| 12 | BACK_OFF# | Turn Off Backlight | O |
| 13 | USB_P3- | USB- signals of CCD Camera | I/O |
| 14 | +3VA | 3.3V power for LID switch | P |
| 15 | USB_P3+ | USB+ signals of CCD Camera | I/O |
| 16 | GND | Ground | P |

| | | | |
|----|--------------|--------------|---|
| 17 | GND | Ground | P |
| 18 | INTMIC_A_GND | Audio Ground | P |
| 19 | GND | Ground | P |
| 20 | INVMIC_A | Internal MIC | I |

5.12 MDC signal

| Vendor | Part No. | Pin No. |
|--------|------------|--------------|
| AMP | 1-179397-2 | 12 Pin (SMT) |

| No | Signal | Description | Type |
|----|--------|--------------|------|
| 1 | GND | Ground | NC |
| 2 | NC | None | NC |
| 3 | SDOUT | DATA OUT | I |
| 4 | NC | None | NC |
| 5 | GND | Ground | NC |
| 6 | +3V | Power +3V | P |
| 7 | SYNC | SYNC | O |
| 8 | GND | Ground | P |
| 9 | SDIN | DATA IN | O |
| 10 | GND | Ground | P |
| 11 | RST# | AC Reset | I |
| 12 | BCLK | Azalia Clock | O |

5.13 1394 pin assignment

| Vendor | Part No. | Pin No. |
|--------|-------------------|-------------|
| SUYIN | 020204FR004S502ZA | 4 Pin (DIP) |

| No | Signal | Description | Type |
|----|--------|-------------------------------|------|
| 1 | LTPB0- | Twisted-pair cable A negative | I/O |
| 2 | LTPB0+ | Twisted-pair cable B positive | I/O |
| 3 | LTPA0- | Twisted-pair cable A negative | I/O |

| | | | |
|---|--------|-------------------------------|-----|
| 4 | LTPA0+ | Twisted-pair cable A positive | I/O |
|---|--------|-------------------------------|-----|

5.14 USB pin assignment

| Vendor | Part No. | Pin No. |
|--------|-------------------|-------------|
| SUYIN | 020122MR008S523ZA | 8 Pin (DIP) |

| No | Signal | Description | Type |
|----|-----------|----------------------------|------|
| 1 | +5V_USB01 | USB 5V power | P |
| 2 | USB_P0- | USB port 0 negative signal | I/O |
| 3 | USB_P0+ | USB port 0 positive signal | I/O |
| 4 | GND | USB 5V ground | P |
| 5 | +5V_USB01 | USB 5V power | P |
| 6 | USB_P1- | USB port 1 negative signal | I/O |
| 7 | USB_P1+ | USB port 1 positive signal | I/O |
| 8 | GND | USB 5V ground | P |

| Vendor | Part No. | Pin No. |
|--------|-------------------|-------------|
| SUYIN | 020122MR008S523ZA | 8 Pin (DIP) |

| No | Signal | Description | Type |
|----|-----------|----------------------------|------|
| 1 | +5V_USB23 | USB 5V power | P |
| 2 | USB_P2- | USB port 2 negative signal | I/O |
| 3 | USB_P2+ | USB port 2 positive signal | I/O |
| 4 | GND | USB 5V ground | P |
| 5 | +5V_USB23 | USB 5V power | P |
| 6 | USB_P3- | USB port 3 negative signal | I/O |
| 7 | USB_P3+ | USB port 3 positive signal | I/O |
| 8 | GND | USB 5V ground | P |

5.15 LAN & Modem pin assignment

| Vendor | Part No. | Pin No. |
|--------|----------|---------|
|--------|----------|---------|

| | | |
|--------|----------------|--------------|
| ALLTOP | C10089-112A4-Y | 12 Pin (DIP) |
|--------|----------------|--------------|

| No | Signal | Description | Type |
|----|-----------|-------------------------------|------|
| 1 | None | None | NC |
| 2 | RJ11_RING | Modem signal | I/O |
| 3 | RJ11_TIP | Modem signal | I/O |
| 4 | None | None | NC |
| 5 | LAN_TXP | Transmit data positive signal | O |
| 6 | LAN_TXN | Transmit data negative signal | O |
| 7 | LAN_RXP | Receive data positive signal | I |
| 8 | LAN_MDI2P | GigaLan MDI2+ | I |
| 9 | LAN_MDI2N | GigaLan MDI2- | I |
| 10 | LAN_RXN | Receive data negative signal | I |
| 11 | LAN_MDI3P | GigaLan MDI3+ | I |
| 12 | LAN_MDI3N | GigaLan MDI3- | I |

5.16 Card Reader pin assignment

| Vendor | Part No. | Pin No. |
|---------|-------------|--------------|
| TAITWUN | R009-030-LR | 21 Pin (SMT) |

| Pin No | Signal | Remark |
|--------|----------|--------|
| 1. | SD_DAT1 | |
| 2. | SD_DAT0 | |
| 3 | SD_GND | |
| 4 | MS_GND | |
| 5 | MS_BS | |
| 6 | SD_CLK | |
| 7 | MS_DATA1 | |
| 8 | MS_DATA0 | |
| 9 | VCC | |
| 10 | MS_DATA2 | |
| 11 | SD_GND | |

| | | |
|----|----------|--|
| 12 | MS_CD | |
| 13 | MS_DATA3 | |
| 14 | SD_CMD | |
| 15 | MS_SCLK | |
| 16 | MS_VCC | |
| 17 | SD_DAT3 | |
| 18 | GND | |
| 19 | SD_DAT2 | |
| 20 | SD_WP | |
| 21 | SD_CD | |

6 POWER MANAGEMENT

6.1 System power plane

| Power Group | Power Control Pin | Controlled Devices |
|-------------|-------------------|--|
| +12V | SUSC# | Control |
| +5V | SUSC# | PCMCIA Slot 5V, USB |
| +3.3V | SUSC# | NB, DDR, PCMCIA Controller, PCMCIA Slot 3.3V, Keyboard Controller |
| +2.5VS | SUSC# | VGA DAC/GLAN power |
| +12VS | SUSB# | Control |
| +5VS | SUSB# | HDD, CD-ROM, Internal Touch Pad, Audio AMP |
| +3.3VS | SUSB# | SB, Audio, Clock Generator, PCI interface, Super I/O, VGA, AC97 CODEC, FWH, Thermal sensor, IR |
| +1.8V | SUSC# | PCMCIA chip power, DDR2 power |
| +1.5VS | SUSB# | NB Core |
| +0.9VS | SUSB# | DDR Termination |
| +1.05VS | SUSB# | CPU, NB AGTL+ Bus power, NB core |
| +VCORE | CPU_VRON | CPU power |
| +5VA | | |
| +3.3VA | | Resume Power, EC,ISA ROM |
| +V_RTC | | ICH7-M(RTC) |

6.2 Power management mode

6.2.1 Full-On mode

All system devices are not power managed and the system can respond to applications with maximum performance.

6.2.2 Doze mode

The CPU clock is slow down but all other devices are full on.

6.2.3 Stand by mode

A suspend state where all motherboard components are still powered-on except for the system clock generator device. The PCI and CPU buses are driven to the inactive idle state. The system memory is powered and refreshed by the memory bridge, and the graphics frame buffer is powered and refreshed by the graphic chip. The system provides a 32KHz clock (SUSCLK) in this suspend mode to support refresh of these memory subsystems. Only an enabled "resume event" can bring the system out of the stand by state. The south bridge also provides a resume timer that allows the system to resume after a programmed time has elapsed.

6.2.4 Suspend to RAM mode (STR)

A suspend state where all motherboard components are powered-off. The CPU and PCI busses are powered off. All devices connected to the CPU and PCI busses must either be powered-off or isolate their bus interfaces. The system memory is powered and refreshed by the memory bridge, and the graphics frame buffer is powered and refreshed by the graphics chip. The system provides a 32 kHz clock (SUSCLK) in this suspend mode to support refresh of these memory subsystems. Only an enabled "resume event" can bring the platform out of the suspend to RAM (STR) state.

6.2.5 Suspend to disk mode (STD)

A suspend state where the context of the entire system is saved to disk, all motherboard components are powered-off, and all clocks are stopped. Any enabled "resume event", such as Power switch or RTC, can bring the platform out of the suspend to disk (STD) state.

6.2.6 Soft off mode (SOFF)

This is the same as suspend to disk except the context of memory is not saved. The system will resume from Soft Off as if a hard reset had occurred.

6.2.7 Mechanical off mode (MOFF)

All power except the RTC has been removed from the system.

6.3 PMU mode transition event

The following table summarizes the entry events and wake-up events of each power management mode.

| Power State | Entry Event | Wake up Event |
|-------------|---------------|---|
| Doze | Doze Time out | Predefined Memory/IO range access Ring Indicator Keystroke Mouse movement |

| | | |
|----------|--|--|
| | | IRQ 1-15 |
| Stand by | Stand by Time out Stand by hot key pressed | Predefined Memory/IO range access Battery Warning Battery Low Ring Indicator Keystroke Mouse movement Schedule Alarm |
| STR | Suspend Time out STR hot key pressed Suspend button Battery Low | Power Button Ring Indicator Keystroke (Int. KB) Schedule Alarm |
| STD | Suspend Time out STD hot key pressed Hibernate Battery Low | Power Button Schedule Alarm |
| Soft Off | Power button Execute Windows shutdown command | Power Button Schedule Alarm |

6.3.1 Lid switch

| Display mode | State | Lid close | Lid open |
|--------------|----------|----------------|-----------|
| LCD | Full on | LCD OFF | No action |
| | Stand by | LCD OFF | No action |
| | STR/STD | LCD OFF | No action |
| CRT | Full on | No action | No action |
| | Stand by | No action | No action |
| | STR/STD | No action | No action |
| SIMUL | Full on | LCD OFF/CRT ON | No action |
| | Stand by | No action | No action |
| | STR/STD | No action | No action |

LCD display will be shut down while closing LCD.

6.3.2 Power button

Power button function depends on the definition in Windows power setting or you can force off by pressing power button for 4 seconds. To reset the system, you need to press the reset button.

6.4 Device Power management

Power state of local devices table

| Power State Component | Doze | Stand By | STR | STD/Soff |
|--------------------------|-------------|--------------|---|--|
| CPU | Quick Start | Stop Clock | Power Off | Power Off |
| North Bridge | ON | Stop Clock | Power Off | Power Off |
| South Bridge | ON | ON | Power Off (except +3.3VA,+1.8VA, RTCVCC) | Power Off (except +3.3VA,+1.8VA, RTCVCC) |
| DDR | ON | Self Refresh | Self Refresh | Power Off |
| CD-ROM (DVD) | ON | Power down | Power Off | Power Off |
| HDD | ON | Power down | Power Off | Power Off |
| FDD | ON | Power Off | Power Off | Power Off |
| KBC | ON | ON | Power down | Power Off |
| VGA | ON | Power down | Power Off | Power Off |
| PCMCIA | ON | Power down | Power down | Power Off |

| | | | | |
|-----------------|----|------------|------------|------------|
| Super I/O | ON | Power down | Power Off | Power Off |
| Audio CODEC | ON | ON | Power Off | Power Off |
| Audio Amplifier | ON | Power down | Power Off | Power Off |
| LCD Backlight | ON | Power Off | Power Off | Power Off |
| LAN | ON | Power down | Power down | Power down |
| Modem | ON | Power down | Power Off | Power Off |

6.4.1 Device PM control during Stand By mode

| Device | Power Controlled by | Description |
|----------------------|---------------------|-----------------------------------|
| CPU | Hardware | Controlled by LDTSTP# |
| PCMCIA Controller | Software | Enter PCI PM D3Hot state |
| Super I/O Chip | Working | |
| Keyboard Controller | Working | M38857 support power down command |
| USB FDD | Working | |
| HDD | Software | HDD support power down command |
| CD-ROM | Software | CD-ROM support power down command |
| Audio AMP | Hardware | Controlled by Jack in detect |
| Internal Modem | Software | Enter PCI PM D3Hot state |
| LAN | Software | Enter PCI PM D3Hot state |
| LCD Panel Back light | Hardware | Controlled by M38857 |
| Clock Synthesizer | Hardware | Controlled by SUSA# |
| EC | Working | |

6.4.2 Device PM control during STR mode

| Device | Power Down Controlled by | Description |
|---------------------|--------------------------|-------------|
| Super I/O | Hardware | Power Down |
| HDD | Hardware | Power Off |
| CD-ROM | Hardware | Power Off |
| Internal Modem | Software | Power Off |
| LAN | Software | Power Down |
| USB FDD | Hardware | Power Down |
| Audio CODEC | Software | Power Off |
| Audio AMP | Hardware | Power Off |
| LCD Panel | Hardware | Power Off |
| LCD Back light | Hardware | Power Off |
| Clock Synthesizer | Hardware | Power Off |
| Keyboard Controller | Software | Power Off |

6.4.3 Device PM control during STD mode

| Device | Power Down Controlled by | Description |
|---------------------|--------------------------|--------------------------------|
| Core Logic | Hardware | Power off (except Resume Well) |
| Super I/O | Hardware | Power off |
| VGA Chip | Hardware | Power off |
| HDD | Hardware | Power off |
| CD-ROM | Hardware | Power off |
| PCMCIA Controller | Hardware | Power off |
| Internal Modem | Hardware | Power off |
| LAN | Hardware | Power off |
| USB FDD | Hardware | Power off |
| Audio Chip | Hardware | Power off |
| Audio AMP | Hardware | Power off |
| LCD Panel | Hardware | Power off |
| Back light | Hardware | Power off |
| Clock Synthesizer | Hardware | Power off |
| Keyboard Controller | EC Software | Power off |

7 MODULE SPECIFICATION

7.1 Overall System

The notebook system consists of the following PCB assembly and modules.

7.1.1 Board assembly

| | |
|------------------|--------------------------------------|
| Processor | Upgradeable CPU (u-PGA 479) |
| Main Board | Main System board |
| Inverter Board | LCD Module Back-light |
| TOUCH PAD | 5 LED Indicators, 2 Touch Pad Button |
| SO-DIMM Module | Memory Expansion |
| Modem Board | MDC |

7.2 Processor

Feature: Intel Yonah processor with on-die L2 cache.
u-PGA 479

[CPU Cooling System]

Function: For cooling the CPU
Cooling of CPU by heat sink and FAN. FAN is controlled by a thermal sensor and BIOS/ACPI OS.

7.3 Main board

7.3.1 Main system module spec

Feature:

- CPU socket, Intel 945GM, Intel ICH7M,
- Clock generator,
- SDRAM & its expansion sockets,
- PC/AT compatible system (RTC, DMA, INT, Timer, ... etc)
- IDE controller with PIO Mode 4 & Ultra-33/66/100,
- PCMCIA /Cardbus controller & their sockets
- I/O peripheral controller (LPT to Port Bar 3 connector)
- Audio CODEC,
- Audio amplifier,
- CPU thermal sensor,
- I/O connectors,
- Power management control circuit,
- Internal Graphic/Display controller,
- Keyboard Controller,
- Audio analog signal,
- Power control, DC/DC,
- Battery power
- Regulated power
- SM bus for Battery
- Indication Charger LED

7.3.2 DC/DC module spec

Controller: MAX1987, TPS5130, LTC3728, TL494

Input voltage: 8-20V

Output voltage/current:

| Voltage | Current | Ripple | Regulation |
|--------------|---------|--------|------------|
| +5V/+5VS | 4.5A | 75mV | +/-3% |
| +3.3V/+3.3VS | 4.5A | 75mV | +/-3% |
| +12V/+12VS | 150mA | 200mV | +/-5% |
| +3VALWAYS | 50mA | 75mV | +/-5% |
| +1.5VALWAYS | 50mA | 75mV | +/-5% |
| +5VSUS | 50mA | 75mV | +/-5% |
| +v1.8/+V1.8S | 1A | 75mV | +/-3% |
| +VCCP | 1A | 75mV | +/-3% |
| +V1.2S | 2A | 75mV | +/-3% |
| VCORE | 22A | 75mV | +/-3% |
| +2.5V | 5A | 75mV | +/-3% |
| +1.25VS | 2A | 75mV | +/-3% |

Support OVP

Support OCP

Frequency: 200~300KHz

7.3.3 Charger

Charger spec

Controller: IE8510E

Input voltage: +3VA

Charger Method: CV.CC

Li-Ion Battery:

Full charger sense I min.: 300mA

Max. charge voltage : 4.20V/cell

Charger Voltage: 12.6V

Charger current:

| | | | |
|-----------------------|-------|------|-----|
| Input: Adapter | | | |
| Contain | Min | Typ. | Max |
| Charge current (3S3P) | | | |
| Charge current (3S2P) | | | |
| Ripple & Noise | 500mV | | |
| Efficiency | 90% | | |

7.4 Inverter Board

Inverter spec

Input voltage: 12~20V

Output current: 6.5mA(max)

Start voltage: 1500Vrms(min)

Efficiency: 80%(min)

Brightness adjusted by input voltage.

Support output short protection

Frequency: 45~60KHz

Output connector for CCFT:

| Pin no | I/O | Description |
|--------|---------------|--------------|
| 1 | Input/ Output | Return |
| 2 | Input/ Output | High voltage |

Brightness control duty: 0-100%

7.5 Adapter spec

7.5.1 Input

Input voltage: 90~240VAC, Full range

Input frequency: 47~63Hz

Input current: 1.5A(max)/100VAC

Inrush current: 60A(max)/100VAC, 120A(max)/240VAC

Efficiency: 80%(min)

7.5.2 Output

65W power output

Output Voltage/Current: 18.05~19.95V/3.42A

Ripple: 500mV

7.5.3 Protection

OVP: 24V(max)

SCP: Yes

OCP: 19V/5A(max)

7.6 Main Battery spec

Battery pack capacity:

| | Vendor | Cells | Voltage | Capacity | Watts |
|--------|---------|-------|---------|----------|--------|
| Li-Ion | Samsung | 8 | 14.8V | 4400mAh | 65.12W |
| Li-Ion | Samsung | 4 | 14.8V | 2200mAh | 32.56W |

Battery warning and low percentage (Li-Ion):

Battery low = 10%

Battery low low= 0%

Gauge controller (BQ2060H) setting:

Charging voltage: 16.8V

Charging efficiency: 90%

Low temperature capacity: 70%

7.7 LAN Spec

Controller: REALTEK RTL8110SB

Interface: PCI

Compliant to PCI 2.2

Support ACPI , PCI power management

Support for Wake-On-LAN during S3,S4

Integrated IEEE 802.3x 10BASE-T and 100 BASE-TX and Giga LAN compatible PHY and transceiver in one chip

Full duplex and half duplex support at both 10, 100M and 1000Mbps

Low power 3.3V device

128-Pin LQFP package

7.8 Modem spec

Part Number: ASUS RD02-D110

Controller: Conexant software modem

Interface: AC-link

Support Caller ID

Support Ring wake up function

ITU-T V.90 Data Mode with auto-fall back to K56flex and V.34

V.80 Video ready

Modem Data speed: 56Kbps

FAX transfer speed: 14.4Kbps

Modem modulation format: V.90 PCM

8 MISCELLANEOUS

8.1 Indicators

Power LED

| | |
|-------------|---|
| Feature: | Show System power status |
| Type: | 5 ϕ LED |
| Color: | Green |
| Indication: | On: System in ON Mode Flash (0.3Hz): System in SUSPEND Mode Off: System in OFF Mode |
| Location: | On board |

Charging LED

| | |
|-------------|--|
| Feature: | Show Battery status |
| Type: | 5 ϕ LED |
| Color: | Orange |
| Indication: | On: Battery in Charging Flash (0.5Hz): Battery Low Off: Battery is fully charged or absent |
| Location: | On board |

Email LED

| | |
|-------------|---|
| Feature: | Show Receive mail status |
| Type: | 5 ϕ LED |
| Color: | Orange |
| Indication: | On: Receive mail Off: No mail status |
| Location: | On board |

WLAN & BT LED

| | |
|----------|--------------------------|
| Feature: | Show Receive mail status |
| Type: | 5 ϕ LED |
| Color: | Blue |

Indication: On: RF on
 Off: No status

Location: On board

Hard Disk Drive LED

Feature: On: While HDD Read/Write access

Type: 5 ϕ LED

Color: Green

Location: LED Board (in top of System)

Caps LOCK LED

Feature: On: While CAP Lock activate

Type: 5 ϕ LED

Color: Green

Location: LED Board (in top of System)

Num LOCK LED

Feature: On: While Num Lock activate

Type: 5 ϕ LED

Color: Green

Location: LED Board (in top of System)

SCROLL LOCK LED

Feature: On: While Num Lock activate

Type: 5 ϕ LED

Color: Green

Location: LED Board (in top of System)

8.2 Power cord list

| Where | Description | Vendor |
|-------|---|-----------|
| US | P-CORD 1.8m 125V 7A UL 2-PIN WS-027-T | Well shin |
| UK | P-CORD 1.8m 250V 2.5A UK 2-PIN WS-027-T | Well shin |
| Japan | P-CORD 1.8m 125V 7A T-MARK 2-PIN WS-027-T | Well shin |

| | | |
|------------|--|-----------|
| Europe | P-CORD 1.8m 250V 2.5A EUR 2-PIN WS-027-T | Well shin |
| Austria | P-CORD 1.8m 250V 2.5A AUS 2-PIN WS-027-T | Well shin |
| South Asia | P-CORD 1.8m 125V 7A WS016+WS027 WS-027-T | Well shin |

8.3 Safety/ EMI Appliance (TBD):

| | | |
|---------------------------|--------------------------------------|--|
| Agency Approval | EMC | CE Mark (Europe) BCIQ (Taiwan) |
| | EMI | FCC Class B Certified (USA & Canada), VCCI (Japan) |
| | Safety | UL, CSA or CUL, NEMKO-CB (Norway), TUV, CE Mark (Europe) |
| | Telecomm. | FCC Part 68 (USA), DOC (Canada), JATE (Japan), AUSTEL (Australia), TELEPERWIT (New Zealand), CTR-21 (EU) |
| Other Requirements | Industry Standards Compliance | SPA Energy Star Compliance Designed for Windows 95/98 and Windows NT Logo (Compliance with Microsoft PC98) |

The End.....

Chapter

6

Software Specifications

Get to know more about the S62F series Notebook with a detailed look at the software specifications.

The information contained in the chapter can be quite useful when you are troubleshooting the system's hardware. Each item has its individual usage for you to understand the software side of the notebook's architecture.

1. General Description

The specification is a guideline for BIOS development on S62F platform. Anyone who needs the information of system BIOS can read it for reference.

The general device specification, SMBUS, PCI Devices IRQ Routing Table, GPIO pins definition and so on are subjected to be depicted in this document. Hotkeys implementation and other BIOS features are also included in.

S62F is an IBM PC/AT compatible notebook PC. The system BIOS of S62F is designed to comply with following specifications:

- . PC2001 System Design Guide
- . ACPI 1.0b/2.0
- . SMBIOS 2.3.3
- . PCI 2.2
- . USB 2.0 EHCI
- . PXE 2.0
- . Intel Geyserville III
- . PnP BIOS 1.0a
- . ATA Specification

2. Summary of Hardware Configuration

2.1 KEY COMPONENTS LIST

The key components used on S62F are listed below.

Table 2-1 Key components

| Item | Vendor | Part's Name | Revision |
|---------------------|----------|----------------------------|----------|
| CPU | Intel | Yonah 1.6G/1.8G/2.0G/2.16G | |
| North Bridge | Intel | Calitoga-945GM | |
| South Bridge | Intel | ICH7-M | |
| VGA | Intel | Calitoga-945GM | |
| Audio | Intel | High Definition Audio | |
| Audio Codec | Realtek | AD1986a | |
| USB | Intel | ICH7-M (USB2.0) | |
| LAN | Realtek | RTL8110 | |
| Modem | Intel | ICH7-M | |
| Modem Codec | Conexant | SmartMC 3S | |
| Cardbus | Ricoh | R5C841 | |
| IEEE1394 | Ricoh | R5C841 | |
| Clock Gen. | ICS | ICS954310 | |
| Thermal | ADI | ADT7461 | |
| KBC | ITE | ITE8510 | |
| Super I/O | SMSC | 47N217 | |
| CMOS CAM | Vimicro | VC0321 | |
| Blue tooth | ASUS | BT-183 | |
| Wireless | INTEL | Wireless 3945ABG | |

2.2 PERIPHERAL DEVICES LIST

Table 2-2 Peripheral Devices

| Device | Description | Note |
|------------------------|--|------|
| HDD | Ultra DMA 33/66/100, 100GB | |
| Keyboard | 87-key keyboard supporting(US,JPN,UK) | |
| Pointing Device | Built-in Touchpad. 2 click buttons Support Pad-Lock Function (Hot Key on/off). | |
| Module Bay | NA | |
| LED Indicators | POWER LED : "ON" at power on, "BLINKING" at suspend. NUMLock LED : "ON" when numlock is pressed CAPLock LED : "ON" when capslock is pressed. SCRLock LED : "ON" When Srclock is pressed HDD LED : "BLINKING" when HDD accessing EMAIL LED : "ON" when new E-mail(s) coming. WIRELESS LED : "ON", when Wireless lan/Bluetooth activity. BATTERY LED : "ON" at charging, "OFF" when a battery is fully charged or there is no battery "BLINKING" Battery capacity is below 5% | |
| Ports | One VGA port/Mini D-sub 15-pin for external display Four USB2.0 ports One TV Out One Cable In One Headphone-out/ SPDIF One Mic-in One RJ45(LAN) One RJ11(Modem) | |

| | | |
|---------------------|--|--|
| | One IEEE 1394 B Type Jack One PCMCIA One Memory card reader(SD/MMC/MS) | |
| Power Supply | AC adapter : Output : 19 VDC, 3.42A, 65W, Input : 100~240V AC, 50/60Hz universal Battery Pack : Main : Li-Ion 6 cells, 14.8V, 4800mAh, 65W battery pack Run-down life 5.5hrs Charging time, 2hrs Quick charge 90% (Power off) / 4hrs (Power on) Battery low will enable the Power Management System under Windows environment. Enters Save-To-Disk mode automatically if less than 5% | |

2.3 PCI DEVICES ALLOCATION

The H/W configuration of PCI Devices includes interrupt routing, device IDSEL allocation, device vendor/device IDs, sub-system/vendor IDs etc.

2.3.1 PCI IDSEL Allocation & IRQs routing

PCI devices allocation and interrupt routing are listed in the table below.

Table 2-3

| Device | Vendor | IDSEL | Bus | Dev. | Fun. | INTA | INTB | INTC | INTD |
|----------------------------------|---------|-------|-----|------|-----------|--------|--------|--------|--------|
| Host Bridge | Intel | | 0 | 0 | 0 | N/A | N/A | N/A | N/A |
| VGA | Intel | | 0 | 2 | 0 | *PIRQA | N/A | N/A | N/A |
| High Definition Audio Controller | Intel | | 0 | 27 | 0 | *PIQRA | N/A | N/A | N/A |
| USB0 | Intel | | 0 | 29 | 0 | *PIQRH | N/a | N/A | N/A |
| USB1 | Intel | | 0 | 29 | 1 | N/A | *PIQRD | N/A | N/A |
| USB2 | Intel | | 0 | 29 | 2 | N/A | N/A | *PIQRC | n/a |
| USB3 | Intel | | 0 | 29 | 3 | N/A | N/A | N/A | *PIQRA |
| USB2.0 | Intel | | 0 | 29 | 7 | *PIQRH | N/A | N/A | N/A |
| PCI2PCI Bridge | Intel | | 0 | 30 | 0 | N/A | N/A | N/A | N/A |
| LPC Bridge | Intel | | 0 | 31 | 0 | N/A | N/A | N/A | N/A |
| IDE Controller | Intel | | 0 | 31 | 1 | *PIRQC | N/A | N/A | N/A |
| SMBus Controller | Intel | | 0 | 31 | 3 | N/A | *PIRQD | N/A | N/A |
| PCIE(802.11) | Intel | | 1 | 1 | 0 | *PIRQB | N/A | N/A | N/A |
| CardBus/1394/SD/MS | Ricoh | AD17 | 1 | 3 | 0/1/2/3/4 | *PIRQB | *PIRQC | *PIRQD | N/A |
| LAN | Realtek | AD23 | 1 | 0 | 0 | *PIRQA | N/A | N/A | N/A |
| WLAN | Intel | | 2 | 0 | 0 | *PIRQB | *PIRQC | *PIRQD | *PIRQA |

* : Device internal routing

1 : Native mode routes to PIRQA

IRQs Available (Legacy) : 2,3,4,6,7,9,10,11,15

IRQs Available (ACPI) : 2,3,4,6,7,10,11,12,15,20,21,22

2.3.2 PCI Devices Vendor/Device IDs and Sub-System/Vendor IDs

As title, we list some IDs below.

Table 2-4 Vendor/Device IDs & Sub-System/Vendor IDs

| Device | Vendor | Bus | Dev. | Fun. | Vendor ID | Device ID | Sub-Vendor ID | Sub-System ID |
|----------------------------------|--------|-----|------|------|-----------|-----------|---------------|---------------|
| Host Bridge | Intel | 0 | 0 | 0 | 8086h | 27A0h | 1043h | 1297h |
| VGA | Intel | 0 | 2 | 0 | 8086h | 27A2h | 1043h | 1252h |
| VGA | Intel | 0 | 2 | 1 | 8086h | 27A6h | 1043h | 1252h |
| High Definition Audio Controller | Intel | 0 | 27 | 0 | 8086h | 27D8h | 1043h | 1213h |
| USB0 | Intel | 0 | 29 | 0 | 8086h | 27C8h | 1043h | 1297h |

| | | | | | | | | |
|---------------------------|---------|---|----|---|-------|-------|-------|-------|
| USB1 | Intel | 0 | 29 | 1 | 8086h | 27C9h | 1043h | 1297h |
| USB2 | Intel | 0 | 29 | 2 | 8086h | 27CAh | 1043h | 1297h |
| USB3 | Intel | 0 | 29 | 3 | 8086h | 27CBh | 1043h | 1297h |
| USB2.0 | Intel | 0 | 29 | 7 | 8086h | 27CCh | 1043h | 1297h |
| PCI2PCI Bridge | Intel | 0 | 30 | 0 | 8086h | 2448h | 1043h | 1297h |
| LPC Bridge | Intel | 0 | 31 | 0 | 8086h | 27B9h | 1043h | 1297h |
| IDE Controller | Intel | 0 | 31 | 1 | 8086h | 27DFh | 1043h | 1297h |
| SMBus Controller | Intel | 0 | 31 | 3 | 8086h | 27Dah | 1043h | 1297h |
| PCIE(802.11) | Intel | 2 | 1 | 0 | 8086h | 4222h | 8086h | 1000h |
| CardBus Controller | Ricoh | 3 | 1 | 0 | 1180h | 0476h | 1043h | 1297h |
| 1394 | Ricoh | 3 | 1 | 1 | 1180h | 0552h | 1043h | 1297h |
| SD | Ricoh | 3 | 1 | 2 | 1180h | 0822h | 1043h | 1297h |
| MS | Ricoh | 3 | 1 | 3 | 1180h | 0592h | 1043h | 1297h |
| LAN | Realtek | 3 | 7 | 0 | 11ABh | 4320h | 1043h | 11E5h |

2.4 PANEL DETECTION AND INITIALIZATION

During POST, the VGA BIOS will automatically detect the LCD panel type through EDID and set proper parameters for the LCD panel.

2.5 GPE EVENT

The GPE enable register and status register are located at offset 0x2C and 0x28 of PMIO range respectively. The GPI0~GPI15 could be set to trigger SCI, SMI, or nothing by setting their corresponding control bits in Dev#0/Func#0/Reg#B8h "GPI Routing Control Register" if being selected as general purpose input.

Table 2-5 GPE event table

| GPE Bit | Source | Event | | Description |
|---------|----------------------------------|---------------|---------------|----------------------------------|
| | | None-ACPI | ACPI | |
| 3 | USB device | Wake Up | Wake Up | USB Controller 1 |
| 4 | USB device | Wake Up | Wake Up | USB Controller 2 |
| 8 | Ring In(PM_RI#) | Wake Up | Wake Up | Modem ring/Cardbus ring |
| 11 | PCI_PME# | Wake Up / SMI | Wake Up / SCI | PME# of PCI device |
| 12 | USB device | Wake Up | Wake Up | USB Controller 3 |
| 13 | ICH7-M internal device on bus #0 | Wake Up / SMI | Wake Up / SCI | PME# of internal device on bus 0 |
| 14 | USB device | Wake Up | Wake Up | USB Controller 4 |
| 24 | EXTSMI# | SMI | SMI | External SMI from KBC ITE8510 |
| 28 | KB_SCI# | N/A | SCI | SCI# from KBC ITE8510 |

3. Summary of BIOS Requirements

| Item | Description |
|--|---|
| BIOS Vendor | AMI |
| Revision | 8.0 |
| Implemented Specification | PCI Express 1.0, ACPI 1.0b/2.0, PCI BIOS 2.0, PnP 1.0a, SMBIOS (DMI) 2.3.3, SMBus BIOS 1.0, PXE 2.0, Quick Boot, BIOS Boot Flag, Enhanced BIOS Services for Disk Drive, Bootable CD-ROM Format, ATAPI Removable Media Device BIOS, PARTIES, Intel's SpeedStep, and so on. |
| Supported Operating System (O.S.) | Windows XP SP2 |
| Boot Block | 32 KB boot block is used for initializing DRAM, checking BIOS integrity, decompressing POST/Run-Time BIOS, and doing crisis recovery of BIOS if necessary. |
| Crisis Recovery | Recover BIOS from a hard disk, a host PC connected to parallel port, or a proprietary debug card of ASUS. |
| BIOS Update | Update BIOS at DOS or Windows, or from a proprietary debug card, or from a host PC via parallel port. |
| CPU | Automatically detect the CPU type and speed; Support CPU host frequency selection. |
| DRAM | Support SPD and automatic memory sizing; always shadow VGA BIOS and system BIOS as well as shadow NIC boot ROM by selection. |
| Cache | Always enable L1 and L2 caches. |
| Security | Unique password protection for system and HDD; dynamic backdoor (master) password verification. |
| Display | Automatically detect and switch among LCD, CRT, and TV display devices when display-switching combination hot key, Fn+F8, pressed. |
| Floppy Drive | 3 mode floppy supported |
| Hard Disk | Support automatic device detection, LBA (28/48 bits) mode for larger capacity HDD, 32-bit PIO transfer, multiple sector transfer, fast PIO mode 1-4, Multiword DMA mode 0-2, Ultra DMA (33/66/100) mode 0-5, SMART function, PARTIES function, and password protection. |
| Multiple Boot | Boot up an operating system from legacy floppy, IDE Hard Disk / CD-ROM, USB ZIP / CDROM / Floppy / LS-120 & 240 / Hard Disk / Flash Memory Device, or a remote server via LAN (PXE/INT18 Network Boot). |
| Plug and Play | Support PnP run time service and conflict-free allocation of resource during POST |
| ACPI | Support C0, C1, C2/C2E, C3, C4/C4E, S0, S3, S4, & S5 power management modes, control method battery, and proprietary on-screen display utility. |
| SpeedStep(Geyserville III) | Support Intel's applet (rev. 3.x) and Windows XP Native Process Performance Control. |
| PXE | Support PXE LAN boot. |
| Battery | Provide control method battery interface for ACPI-enabled O.S., support APM 1.2 "Get Power Status" function, and calibrate capacity when invoked from setup menu. |
| AC Power | Set AC power ON/OFF trigger conditions and report its state to operating system accordingly. |
| Keyboard/Mouse | Support U.S./Japan/U.K. keyboards, USB legacy keyboard, built-in Glide Pad, and function hot keys. |
| PCI / AMC'97 Device | Initialize and allocate required system source including IRQ, DMA channel, I/O port, memory range, and primary / subordinate bus number as well as sub-system and sub-vendor Ids. |
| Power Management | The power management methodology is compliant with ACPI 1.0B/2.0 specifications. The supported power states are: <ul style="list-style-type: none"> ▪ Full On ▪ Stand-by ▪ Suspend to RAM (STR or S3) on ACPI-enabled O.S. only ▪ Suspend to Disk (STD or S4) on ACPI-enabled O.S. only ▪ Soft Off (S5) |

4. BIOS Features

4.1 SYSTEM SECURITY

The functions of all passwords are listed in following table.

Table 4-1 Password Function

| Function | Password | | |
|---------------------------------|----------|------------|-----------|
| | User | Supervisor | Hard Disk |
| Access all setup items | | V | |
| Access only part of setup items | V | | |
| Enter system | | V | |
| Unlock a hard disk | | | V |
| Disable "lock" of a hard disk | | | V |

Here are some other rules should be followed:

If supervisor password is enabled, BIOS allows supervisor setting the authority level of the user password.

The authority levels of user password are listed below.

[No Access]: User can not access setup menu.

[View Only]/[Limited]: User can view setup menu but can not change it.

[Full Access]: User can fully access setup menu.

4.2 SYSTEM MEMORY

The system BIOS automatically detects the amount of memory in the system and configure the DRAM timing based on the SPD data of DIMM module and the CMOS settings during the POST (Power-On-Self-Test) process. The memory detection only supports DDR2 (Double Data Rate 2) SDRAM.

The DRAM clock is routed as follows:

DIMM 1 uses SCK0/SCK0#, SCK1/SCK1#, SCK2/SCK2#, CS0/CS1, CKE0/CKE1.

DIMM 2 uses SCK3/SCK3#, SCK4/SCK4#, SCK5/SCK5#, CS2/CS3, CKE2/CKE3.

4.3 LCD BRIGHTNESS CONTROL

During POST, the LCD brightness will be set by BIOS based on the LEVEL INDEX saved in a designated extended CMOS byte. If the CMOS' checksum is incorrect or the CMOS is loaded with setup default setting, the LEVEL INDEX will be set to 0Fh in the designated CMOS byte for LCD brightness level. Whenever the function hot key Fn+F5 or Fn+F6 is pressed, the brightness level setting should be updated to the designated CMOS byte as well as setting the new brightness level.

In S62F, there are 16 levels for brightness control. The setting values of these 16 levels are different between AC-powering and DC-powering modes. Table 4.3 shows the brightness level for each stage used by BIOS.

Table 4.3 LCD BRIGHTNESS LEVEL TABLE

| LEVEL INDEX | LCD BRIGHTNESS LEVEL | | | | | | | | | | | | | | | |
|-------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 00h | 01h | 02h | 03h | 04h | 05h | 06h | 07h | 08h | 09h | 0Ah | 0Bh | 0Ch | 0Dh | 0Eh | 0Fh |
| AC | 15h | 24h | 33h | 42h | 51h | 60h | 6Fh | 7Fh | 8Fh | 9Fh | AFh | BFh | CFh | DFh | EFh | FFh |
| DC | 0Fh | 1Eh | 2Dh | 3Ch | 4Bh | 5Ah | 69h | 78h | 87h | 96h | A5h | B4h | C3h | D2h | E1h | F0h |

4.4 SUPER I/O

The configuration index/data I/O ports are 2Eh/2Fh. And only Parallel Port function is enabled by BIOS. The Parallel Port Mode can be adjusted in BIOS SETUP MENU during POST. Table 4.4 shows all modes supported by BIOS.

Table 4.4 Parallel Port Mode supported by BIOS

| | Parallel Port Mode |
|---|--------------------|
| 1 | SPP/Bi-Directional |
| 2 | EPP/SPP |
| 3 | ECP |
| 4 | ECP/EPP |

4.5 RESOURCE ALLOCATION

The system resources are allocated as follows at POST.

Table 4-2 System Resource Allocation

| Device | Connect Type | Resources | | | |
|----------------------------------|--------------|-----------------------------------|-------|------|---|
| | | I/O | IRQ | DMA | Memory |
| DMA Controller | Static | 00~0F, 81~8F, C0~DF | - | DMA4 | - |
| Interrupt Controller | Static | 20~21, A0~A1 | - | - | - |
| System Timer | Static | 40~43 | IRQ0 | - | - |
| RTC | Static | 70~71 | IRQ8 | - | - |
| ISA Bus | Static | - | - | - | - |
| System Speaker | Static | 61 | - | - | - |
| System Board | Static | - | - | - | E0000~FFFF FED14000~FE D19FFF |
| PnP Mother Board | Static | 80 | - | - | - |
| Keyboard Controller | Static | 60, 62, 64, 66 | IRQ1 | - | - |
| Math Coprocessor | Static | F0~FF | IRQ13 | - | - |
| Touch Pad | Static | - | IRQ12 | - | - |
| IDE Controller | Static | 1F0~1F7, 3F6 | IRQ14 | - | - |
| USB Host Controller 1 | Dynamic | E880~E89F | IRQ23 | - | - |
| USB Host Controller 2 | Dynamic | E800~E81F | IRQ19 | - | - |
| USB Host Controller 3 | Dynamic | E480~E49F | IRQ18 | - | - |
| USB Host Controller 4 | Dynamic | E400~E41F | IRQ16 | - | - |
| USB 2.0 Host Controller | Dynamic | - | IRQ23 | - | FEB3BC00~ FEB3BFFF |
| High Definition Audio Controller | Dynamic | - | IRQ16 | - | FEB3C000~ FEB3FFFF |
| SMBus | Static | 400~041F | IRQ5 | - | - |
| Video Controller | Static | 3B0~3BB, 3C0~3DF D000-D0FF | IRQ16 | - | D0000000~ D7FFFFFF FEAF0000~ FEAFFFFF 000A0000~ 000BFFFF |
| CardBus Controller | Dynamic | 3E0~3E1 FE00~FEFF FD00~FDFF | IRQ17 | - | FFEFF000~ FFEFFFFF FFEFE000~ FFEFFFFF F9F00000~ FDEFFFFFF DF000~DFFFF |
| 1394 Controller | Dynamic | - | IRQ18 | - | FE8FF800~ FE8FFFFFF |

| | | | | | |
|-----------------------------|---------|-----------|-------|--|-----------------------|
| LAN Controller | Dynamic | D800~D8FF | IRQ16 | | FE8FEC00~ FE8FECFF |
| Wireless (802.11abg) | Static | | IRQ17 | | FDFFF000~ FDFFFFFF |
| Ricoh MS | Dynamic | | IRQ19 | | FE8FF000~ FE8FF0FF |
| Ricoh SD | Dynamic | | IRQ19 | | FE8FF400~ FE8FF4FF |

Note: The resources of dynamic devices will be changed if users change the settings. The IRQ 9 is reserved for SCI of ACPI O.S.

4.6 POWER MANAGEMENT

In addition to C1, C2/C2E, C3 and C4/C4E states at system full on state, the S62F platform must also support suspend states described in next two sections.

4.6.1 ACPI-Enabled Environment

Table 4-5 Power Management in ACPI mode

| Power State | Entry Event Source | Wake Up Event Source |
|-----------------|--|--|
| S3 | <ul style="list-style-type: none"> ● Standby Timer Time out ● Select "Standby" in O.S. ● LID switch ● Power button | <ul style="list-style-type: none"> ● PME (onboard LAN, CardBus card) ● High Definition Audio (modem) ● USB (USB devices) ● RTC Alarm ● Internal keystroke ● Power button |
| S4 | <ul style="list-style-type: none"> ● Standby Timer time out ● Select "Hibernate" in O.S. ● LID switch ● Power button | <ul style="list-style-type: none"> ● PME (onboard LAN, AC Only) ● RTC Alarm ● Power button |
| Soft Off | <ul style="list-style-type: none"> ● Select "Shut Down" in O.S. ● LID switch ● Power button | <ul style="list-style-type: none"> ● RTC Alarm ● Power button ● PME (onboard LAN, AC Only) |

Note : LID won't trigger a wake up.

4.6.2 ACPI 2.0

S62F BIOS is ACPI 2.0 compliance. It supports Windows XP Native Processor Performance Control. In Windows XP, the processor performance control policy is linked to the Power Scheme setting in the standard control panel power options applet. No additional UI is employed to set the policy. Windows XP defines four control policies for processor performance control:

| | |
|-----------------|--|
| Constant | Always runs at lowest performance state |
| Adaptive | Performance state chosen based on CPU demand |
| Degrade | Starts at lowest performance state, then uses linear performance reduction (stop clock throttling) as battery discharges |
| None | Always runs at highest performance state |

The following table shows the relationship between the Power Scheme selected and the control policy used.

Table 4-6 Power Scheme Table

| Power Scheme | AC Power | DC Power |
|--------------------------|----------|----------|
| Home/office Desk | None | Adaptive |
| Portable/Laptop | Adaptive | Adaptive |
| Presentation | Adaptive | Degrade |
| Always On | None | None |
| Minimal Power Management | Adaptive | Adaptive |
| Max Battery | Adaptive | Degrade |

Three control methods that are implemented to support Windows XP Native Processor Performance Control.

- _PCT** Processor performance control object.
- _PSS** The number of supported processor performance states.
- _PPC** Number of performance states currently supported by the platform.

4.6.3 Intel Geyserville iii & Enhanced intel speedstep

Geyserville III Technology allows the CPU performance and power consumption levels to be altered while the computer is functioning. It alters the performance of the CPU by changing the bus to core frequency ratio and CPU voltage. This allows the processor to run at different core frequencies and voltages depending upon the system power source(AC or battery in a mobile computer), CPU thermal state, or OS policy. Note that the external bus frequency(processor system bus) is not altered; only the internal core frequency is changed. In order to run at different speeds, the voltage is altered in step with the bus ratio. This works in accordance with voltage reduction technology that allows a given processor to run at higher frequency when a higher voltage is applied. The side result is that power is increased in a roughly cube-law fashion as the performance is altered in this manner.

A software model utilizing Geyserville III is currently referred to as Enhanced Intel SpeedStep Technology. This technology is a software mechanism that involves the fundamental mechanics of Intel SpeedStep Technology and includes demand-based CPU performance. Demand-based CPU performance uses the OS's knowledge of CPU demand to match the performance of the CPU to the workload of the system. As an example, if the highest performance state provided by the CPU is 1600MHz at 18W and the lowest performance state provided by the CPU is 800MHz at 6W, with performance states available at each 100MHz step in between, and the performance required by the system is effectively 1200MHz, a Geyserville III technology system can provide the required 1200MHz of performance without waste any additional power.

4.6.4 Battery management

S62F supports Lithium-Ion battery pack and a battery calibration menu items in "Power Menu Group" for users to calibrate a battery.

4.7 THERMAL AND FAN CONTROL

The settings of cooling policies are based on the CPU temperature read back from the "Intel Digital Thermal Sensor" which is embedded in CPU and a external thermal sensor ADT7461. All parameters defined in BIOS are showed in Table 4-7.

Table 4-7 FAN Control Mode

| | |
|------------------|-----------|
| FAN Control Mode | EC Linear |
| FAN STEP Number | N/A |

Table 4-8 Parameters for FAN control

| Definition | Parameter | Base Temperature | Thermal Monitor Label |
|---------------------------------------|-----------|------------------|-----------------------|
| EC CPU Shutdown temperature Threshold | 110 | CPU | EC S/D |
| OS Critical Shutdown Threshold (_CRT) | 105 | CPU | OS S/D |
| OS Passive Cooling Threshold (_PSV) | 95 | CPU | OS PSV |

| | | | |
|---------------------------------------|-----|-----|----------|
| THRM Throttle On Threshold | 95 | CPU | THRM_ON |
| THRM Throttle Off Threshold | 90 | CPU | THRM_OFF |
| Fan Failure Temp Point | 65 | CPU | FANERR |
| Fan Stop Threshold | 50 | CPU | FSP |
| STEP Trip Point 1 | 55 | CPU | TS1 |
| STEP Trip Point 2 | 60 | CPU | TS2 |
| STEP Trip Point 3 | 65 | CPU | TS3 |
| STEP Trip Point 4 | 70 | CPU | TS4 |
| STEP Trip Point 5 | 75 | CPU | TS5 |
| STEP Trip Point 6 | 80 | CPU | TS6 |
| STEP Trip Point 7 | 85 | CPU | TS7 |
| STEP Trip Point 8 | 90 | CPU | TS8 |
| Fan Full Run Threshold | 95 | CPU | FFP |
| STEP Trip Pointer 1 Hysteresis Offset | 3 | CPU | HYS1 |
| STEP Trip Pointer 2 Hysteresis Offset | 3 | CPU | HYS2 |
| STEP Trip Pointer 3 Hysteresis Offset | 3 | CPU | HYS3 |
| STEP Trip Pointer 4 Hysteresis Offset | 3 | CPU | HYS4 |
| STEP Trip Pointer 5 Hysteresis Offset | 3 | CPU | HYS5 |
| STEP Trip Pointer 6 Hysteresis Offset | 3 | CPU | HYS6 |
| STEP Trip Pointer 7 Hysteresis Offset | 3 | CPU | HYS7 |
| STEP Trip Pointer 8 Hysteresis Offset | 3 | CPU | HYS8 |
| STEP Trip Pointer 1 Duty | 73 | CPU | DA1 |
| STEP Trip Pointer 2 Duty | 95 | CPU | DA2 |
| STEP Trip Pointer 3 Duty | 117 | CPU | DA3 |
| STEP Trip Pointer 4 Duty | 139 | CPU | DA4 |
| STEP Trip Pointer 5 Duty | 161 | CPU | DA5 |
| STEP Trip Pointer 6 Duty | 183 | CPU | DA6 |
| STEP Trip Pointer 7 Duty | 205 | CPU | DA7 |
| STEP Trip Pointer 8 Duty | 227 | CPU | DA8 |
| Rising Limit Range 1 | 6 | CPU | Addscl1 |
| Rising Limit Range 2 | 12 | CPU | Addscl2 |
| Rising Limit Range 3 | 22 | CPU | Addscl3 |
| Rising Limit Range 4 | 24 | CPU | Addscl4 |
| Rising Limit Value 1 | 1 | CPU | AddDA1 |
| Rising Limit Value 2 | 2 | CPU | AddDA1 |
| Rising Limit Value 3 | 4 | CPU | AddDA1 |
| Rising Limit Value 4 | 6 | CPU | AddDA1 |
| Falling Limit Range 1 | 6 | CPU | Decscl1 |
| Falling Limit Range 2 | 12 | CPU | Decscl2 |
| Falling Limit Range 3 | 22 | CPU | Decscl3 |
| Falling Limit Range 4 | 24 | CPU | Decscl4 |
| Falling Limit Value 1 | 1 | CPU | DecDA1 |
| Falling Limit Value 2 | 2 | CPU | DecDA2 |
| Falling Limit Value 3 | 4 | CPU | DecDA3 |
| Falling Limit Value 4 | 6 | CPU | DecDA4 |

4.8 NUMERIC PAD CONTROL

There is a control switch in setup menu item for enabling or disabling numeric pad lock of an internal keyboard.

4.9 TOUCH PAD CONTROL

In ACPI environment, BIOS will notify ATK0100 to enable/disable Touch Pad when the Touch Pad Enable/Disable instant key is pressed.

4.10 HOTKEY USAGE DURING POST

The hot keys used during POST are:

| | Hotkey | Description |
|---|--------|--|
| 1 | TAB | Switch from "LOGO" screen to "message" screen, i.e. from "silent" mode to "verbose" mode |
| 2 | ESC | Pop up "BOOT SELECTION MENU" |
| 3 | F1 | Load optimum CMOS setting and continue booting process if CMOS checksum is incorrect |
| 4 | F2 | Enter setup menu |

5. GPIO Pin Assignment

The following tables are the definition of GPIO pins. Some of GPIO pins need to be initialized by system BIOS and some of them need the driver to support. Please check the Description column for reference.

Table 5-1. ICH7-M GPIO Definition

| GPIO | Type | Name | Usage | Power | Description |
|------|------|---------------------|-------------|-------|---|
| 0 | I | GPIO00/BM_BUSY# | BM_BUSY# | M | Native Function |
| 1 | I | GPIO01/REQ5# | REQ5# | M | Native Function |
| 2 | I | GPIO02/PIRQE# | PIRQE# | M | Native Function |
| 3 | I | GPIO03/PIRQF# | PIRQF# | M | Native Function |
| 4 | I | GPIO04/PIRQG# | PIRQG# | M | Native Function |
| 5 | I | GPIO05/PIRQH# | PIRQH# | M | Native Function |
| 6 | I/O | GPIO06 | N/A | M | |
| 7 | I | GPIO07 | RF_OFF_SW# | M | N/A |
| 8 | I | GPIO08 | EXTSMI# | R | From KBC, it is to notify system an external SMI occurred. |
| 9 | I | GPIO09 | SATA_DET#0 | R | SATA indicator |
| 10 | I/O | GPIO10 | N/A | R | |
| 11 | I | GPIO11/SMBALERT# | SMBALERT# | R | Native Function |
| 12 | I | GPIO12 | KBDSCI | R | From KBC, runtime and wake up event will be sent to system through this pin. |
| 13 | I | GPIO13 | SIO_SMI# | R | Super I/O SMI event |
| 14 | I/O | GPIO14 | PWRLED_1Hz | R | 1Hz On/Off cycle for Power LED |
| 15 | I/O | GPIO15 | N/A | R | |
| 16 | O | GPIO16/GNT6# | GNT6# | M | Native Function |
| 17 | O | GPIO17/GNT5# | GNT5# | M | Native Function |
| 18 | O | GPIO18/STP_PCI# | STP_PCI# | M | This signal is an output to the external clock generator for it to turn off the PCI clock. Used to support PCI CLKRUN# protocol. |
| 19 | I | GPIO19/SATA1GP | SATA1GP | M | N/A |
| 20 | O | GPIO20/STP_CPU# | STP_CPU# | M | Output to the external clock generator for it to turn off the CPU clock. Used to support the C3 state. |
| 21 | I | GPIO21/SATA0GP | SATA0GP | M | Native Function |
| 22 | I | GPIO22/REQ4# | REQ4# | M | Native Function |
| 23 | I/O | GPIO23/LDRQ1# | LDRQ1# | M | Native Function |
| 24 | O | GPIO24 | 802_LED_EN# | R | Enable Wireless LED |
| 25 | O | GPIO25 | CB_SD# | R | Disable CardBus function. |
| 26 | I/O | GPIO26 | | R | |
| 27 | O | GPIO27/EL_STATE0 | BT_LED_EN# | R | Enable BlueTooth LED |
| 28 | I/O | GPIO28/EL_STATE1 | | R | |
| 29 | I | GPIO29/OC#5 | OC#5 | R | N/A |
| 30 | I | GPIO30/OC#6 | OC#6 | R | N/A |
| 31 | I | GPIO31/OC#7 | OC#7 | R | N/A |
| 32 | O | GPIO32/CLKRUN# | PM_CLKRUN# | M | Used to support PCI clock run protocol. Connects to PCI devices that need to request clock re-start, or prevention of clock stopping. |
| 33 | O | GPIO33/AZ_DOCK_EN# | BT_ON | M | Turn On/Off BlueTooth |
| 34 | O | GPIO34/AZ_DOCK_RST# | WLAN_ON# | | Turn On/Off Wireless LAN |
| 35 | O | GPIO35/SATACLKREQ# | SATACLKREQ# | M | Native Function |
| 36 | I | GPIO36/SATA2GP | SATA2GP | M | Native Function |
| 37 | I | GPIO37/SATA3GP | SATA3GP | M | Native Function |
| 38 | I | GPIO38 | PCB_ID0 | M | 1 st PCB ID pin |
| 39 | I | GPIO39 | PCB_ID1 | M | 2 nd PCB ID pin |
| 40 | N/A | GPIO40 | N/A | N/A | N/A |

| | | | | | |
|----|-----|--------------|---------|-----|--------------------------|
| 41 | N/A | GPIO41 | N/A | N/A | N/A |
| 42 | N/A | GPIO42 | N/A | N/A | N/A |
| 43 | N/A | GPIO43 | N/A | N/A | N/A |
| 44 | N/A | GPIO44 | N/A | N/A | N/A |
| 45 | N/A | GPIO45 | N/A | N/A | N/A |
| 46 | N/A | GPIO46 | N/A | N/A | N/A |
| 47 | N/A | GPIO47 | N/A | N/A | N/A |
| 48 | O | GPIO48/GNT4# | GNT4# | M | Native Function |
| 49 | O | CPUPWRGD | H_PWRGD | M | Processor I/F power well |

1. Power field: M -> main power will, R-> resume power well

2. pins in light gray: used as Native Function pins

3. pins in gray: no function

Table 5-2. KBC GPIO Definition

| Port | I/O Type | Input Pin Pull-up/down | Name | Output Pin Default Value | Description |
|------|----------|------------------------|--------------|--------------------------|--|
| A.0 | O | | BRIGHT_PWM | Low | Used to adjust LCD backlight |
| A.1 | | | NC | | |
| A.2 | O | | BAT1_CNT1# | High | BAT1_CNT1# signal to battery |
| A.3 | | | NC | | |
| A.4 | O | | CHG_LED_UP# | High | When battery is charging, charging LED will be turned on by this pin |
| A.5 | O | | PWR_LED_UP# | High | When system is powered on, power LED will be turned on by this pin |
| A.6 | O | | BATSEL_3S# | Low | BATSEL_3S# signal to battery charging circuit |
| A.7 | O | | LCD_BACKOFF# | Low | For LCD back light control |
| B.0 | O | | NUM_LED | Low | Number Lock Indicator |
| B.1 | O | | CAP_LED | Low | CAP Lock Indicator |
| B.2 | O | | SCRL_LED | Low | Scroll Lock Indicator |
| B.3 | A | | SMCLK_BAT | | SMBUS clock pin (to battery) |
| B.4 | A | | SMDATA_BAT | | SMBUS data pin (to battery) |
| B.5 | O | | A20GATE | Low | A20 is gated by this pin from KBC |
| B.6 | O | | RCIN# | Low | System reset signal from KBC |
| B.7 | O | | THRO_CPU | Low | This pin is used for CPU throttling. To set it high to enable CPU throttling. To set it low to disable CPU throttling. |
| C.0 | | | NC | | |
| C.1 | A | | SMB1_CLK | | SMBUS1 clock pin (to thermal sensor) |
| C.2 | A | | SMB1_DAT | | SMBUS1 data pin (to thermal sensor) |
| C.3 | O | | EMAIL_LED# | High | Email incoming Indicator |
| C.4 | A | | ACIN_OC# | | For AC adapter in/out detection |
| C.5 | O | | OP_SD# | Low | EC MUTE on/off switch pin |
| C.6 | A | | BAT_IN_OC# | | For battery in/out detection |
| C.7 | | | NC | | |
| D.0 | I | | PM_SUSB# | | PM_SUSB signal from ICH7-M |
| D.1 | I | | PM_SUSC# | | PM_SUSC signal from ICH7-M |
| D.2 | A | | PLT_RST# | | Platform reset signal from ICH7-M |
| D.3 | O | | KB_SCI# | HIGH | SCI pin to notify system at runtime or wake up events from KBC |
| D.4 | | | NC | | |
| D.5 | | | NC | | |
| D.6 | A | | FAN0_TACH | | FAN0 tachometer |
| D.7 | | | NC | | |
| E.0 | I | Pull-Up | EMAIL# | | For Email instant key |
| E.1 | I | Pull-Up | INTERNET# | | For Internet instant key |
| E.2 | I | Pull-Up | MARATHON# | | For Marathon instant key |
| E.3 | I | Pull-Up | DISTP# | | For Padlock instant key |
| E.4 | A | | PWRSW#_EC | | For Power Button |
| E.5 | | | NC | | |
| E.6 | I | | LID_EC# | | For LID Event |
| E.7 | | | NC | | |
| F.0 | O | | EXT_PS2_CLK | Low | External PS2 clock pin |
| F.1 | O | | EXT_PS2_DAT | Low | External PS2 data pin |
| F.2 | | | NC | | |
| F.3 | | | NC | | |
| F.4 | A | | TPAD_CLK | | Touch Pad clock pin |
| F.5 | A | | TPAD_DAT | | Touch Pad data pin |
| F.6 | I | Pull-Up | PWRLMT# | | For Power Limit function |
| F.7 | | | NC | | |

| | | | | | |
|-----|---|--|------------|------|--|
| G.0 | A | | FA16 | | To FLASH I/F |
| G.1 | A | | FA17 | | To FLASH I/F |
| G.2 | A | | FA18 | | To FLASH I/F |
| G.3 | | | NC | | |
| G.4 | O | | THRM_CPU# | Low | THRM_CPU# signal from external thermal sensor |
| G.5 | | | NC | | |
| G.6 | I | | PMTHERM# | Low | PMTHERM# signal to ICH7-M |
| G.7 | | | NC | | |
| H.0 | O | | VSUS_ON | Low | VSUS_ON signal to power circuit |
| H.1 | I | | VSUS_GD# | | VSUS_GD# signal from power circuit |
| H.2 | I | | IMVPOK# | | IMVPOK# signal from power circuit |
| H.3 | O | | PM_PWRBTN# | High | PM_PWRBTN# signal to ICH7-M |
| H.4 | O | | SUSC_EC# | Low | SUSC_EC# signal to ICH7-M |
| H.5 | O | | SUSB_EC# | Low | SUSB_EC# signal to ICH7-M |
| H.6 | O | | CPU_VRON | Low | CPU_VRON signal to power circuit |
| H.7 | O | | PM_RSMRST# | Low | At boot, KBCRSM needs to be set low for normal operation |
| I.0 | O | | ICH_PWROK | Low | ICH_PWROK signal to ICH7-M |
| I.1 | O | | VSUS_ON | High | VSUS_ON signal to power circuit |
| I.2 | O | | BAT1_CNT2# | Low | BAT1_CNT1# signal to battery |
| I.3 | O | | CHG_EN# | High | For Battery Charge function |
| I.4 | O | | PRECHG | Low | For Batter PreCharge function |
| I.5 | O | | BAT_LL | Low | When the pin is set as low, it represents that battery is in very low capacity. |
| I.6 | O | | BAT_LEARN | Low | This pin is used for battery learning (refresh). To set it low for battery charging. To set it high for battery discharging. |

1. Name field: NC -> not connected

Table 5-3. Super I/O GPIO Definition

| PIN# | GPIO | I/O Type | Name | Activated Level | Description |
|------|------|----------|---------|-----------------|-------------|
| 23 | 40 | I | NC | NC | N/A |
| 24 | 41 | I | NC | NC | N/A |
| 25 | 42 | I | NC | NC | N/A |
| 27 | 43 | I | NC | NC | N/A |
| 28 | 44 | I | NC | NC | N/A |
| 29 | 45 | I | NC | NC | N/A |
| 30 | 46 | I | NC | NC | N/A |
| 31 | 47 | I | NC | NC | N/A |
| 32 | 10 | I | NC | NC | N/A |
| 33 | 11 | I | N/A | NC | N/A |
| 34 | 12 | O | SIOSMI# | Low | N/A |
| 35 | 13 | I | NC | NC | N/A |
| 36 | 14 | I | NC | NC | N/A |
| 40 | 23 | I | NC | NC | N/A |

* : NC -> Not Connected, SI -> Selection ID.

6. Devices

6.0 CPU

The CPU supported by S62F system is Intel mobile Yonah dual core processor.
The supported frequency is from 1.66GHz to 2.16GHz.

6.1 NORTH BRIDGE (CALISTOGA)

6.1.1 DRB Registers (dram row boundary registers)

The DRAM Row Boundary Register defines the upper boundary address of each pair of DRAM rows with granularity of 128MB. The offset of these registers are 100h~103h. The following is the mapping of the registers.

DRB0(row 0) : 100h
DRB1(row 1) : 101h
DRB2(row 2) : 102h
DRB3(row 3) : 103h

DRB0 = Total memory in row 0 (in 128MB increments)
DRB1 = Total memory in row 0 + row 1 (in 128MB increments)
DRB2 = Total memory in row 0 + row 1 + row 2 (in 128MB increments)
DRB3 = Total memory in row 0 + row 1 + row 2 + row 3 (in 128MB increments)

6.2 SOUTH BRIDGE (ICH7-M)

6.2.1 Hub Interface To PCI Bridge

6.2.1.1 Features

The device allows software to "hide" PCI devices(0~5) in terms of configuration space. Specifically, when PCI devices(0~5) are hidden, the configuration space is not accessible because the PCI IDSEL pin does not assert. The ICH7-M supports the hiding of 7 external devices, which matches the number of PCI request/grant pairs, and the ability to hide the integrated LAN device by masking out the configuration space decode of LAN controller.

6.2.2 LPC Interface Bridge

6.2.2.1 Specific I/O Base Address (PMBASE, GPIOBASE, TCOBASE)

Two specific I/O Base Addresses are defined in this device – PMBase, GPIOBase. PMBase is defined in register 0x40~0x43, also called ACPIBase. The registers offset based on PMBase(ACPIBase) are ACPI2.0 compliance. GPIOBase is defined in register 0x48~0x4B. OS/Utilities can read/write the related I/O registers based on it to control GPIO function, level and interrupt type. Following is the registers setting programmed by BIOS.

PMBase Address : 0800h
GPIOBase Address : 0480h

6.2.2.2 Interrupt

This section contains some interrupts configuration and relative PCI registers.

6.2.2.2.1 SCI Interrupt

SCI IRQ routing is generally set to **IRQ9**. (Power On Default). The relative register is PCI register 0x44. IRQ Selections are described below.

Bit2:0 : 000 -> IRQ9

- 001 -> IRQ10
- 010 -> IRQ11
- 011 -> Reserved
- 100 -> IRQ20(Only available if APIC enabled)
- 101 -> IRQ21(Only available if APIC enabled)
- 110 -> IRQ22(Only available if APIC enabled)
- 111 -> IRQ23(Only available if APIC enabled)

6.2.2.2.2 PIRQ[A,C,D,E,F,G,H] Routing Control

- PIRQA Routing Control Register 0x60
- PIRQB Routing Control Register 0x61
- PIRQC Routing Control Register 0x62
- PIRQD Routing Control Register 0x63
- PIRQE Routing Control Register 0x68
- PIRQF Routing Control Register 0x69
- PIRQG Routing Control Register 0x6A
- PIRQH Routing Control Register 0x6B

The description of bit fields are described below.

- Bit7 : IRQEN Interrupt Routing Enable
 0 -> The corresponding PIRQ is routed to one of the ISA-compatible interrupts specified in bits[3:0]
 1 -> The PIRQ is not routed to the 8259.
- Bit6~4 : Reserved
- Bit3~0 : 0000 = Reserved, 1000 = Reserved
 0001 = Reserved, 1001 = IRQ9
 0010 = Reserved, 1010 = IRQ10
 0011 = IRQ3, 1011 = IRQ11
 0100 = IRQ4, 1100 = IRQ12
 0101 = IRQ5, 1101 = Reserved
 0110 = IRQ6, 1110 = IRQ14
 0111 = IRQ7, 1111 = IRQ15

Currently BIOS setting is described below (Legacy Mode),

Table 6-1 IRQ Configuration Table

| PIN | IRQ | PIN | IRQ |
|-----|-----|-----|----------|
| A | 11 | E | Disabled |
| B | 5 | F | Disabled |
| C | 6 | G | Disabled |
| D | 4 | H | 3 |

6.2.2.3 DMA Configuration

The ICH7-M supports two types of DMA: LPC and PC/PCI. DMA via LPC is similar to ISA DMA. LPC DMA and PC/PCI DMA use the ICH7-M's DMA Controller.

S62F uses LPC DMA I/F for Parallel Port because LPC LN47N217 Super I/O is used to support those functions.

Table 6-3 DMA Resource Allocation

| Channel | Allocation | Channel | Allocation |
|---------|------------|---------|------------|
| 0 | Reserved | 4 | Cascade |
| 1 | Reserved | 5 | Reserved |
| 2 | Reserved | 6 | Reserved |
| 3 | ECP | 7 | Reserved |

6.2.3 IDE Controller

6.2.3.1 Function and Feature

The ICH7-M IDE controller features two sets of interface signals(Primary and Secondary) that can be independently enabled, tri-stated or driven low.

The ICH7-M IDE controller supports both legacy mode and native mode IDE interface. In native mode, the IDE controller is a fully PCI compliant software interface and does not use any legacy I/O or interrupt resources.

The IDE interface of the ICH7-M can support several types of data transfers:

PIO(Programmed I/O) : CPU is in control of the data transfer.

DMA : DMA protocol that resembles the DMA on the ISA bus, although it does not use the 8237 in the ICH7-M. This protocol offloads the CPU from moving data. This allows higher transfer rate of up to 16MB/s.

Ultra DMA/33 : DMA protocol that redefines signals on the IDE cable to allow both host and target throttling of data and transfer rates of up to 33MB/s.

Ultra DMA/66 : DMA protocol that redefines signals on the IDE cable to allow both host and target throttling of data and transfer rates of up to 66 MB/s.

Ultra DMA/100 : DMA protocol that redefines signals on the IDE cable to allow both host and target throttling of data and transfer rates of up to 100 MB/s.

6.2.4 Audio

S62F uses the internal High Definition Audio Host Controller of ICH7-M.

6.2.5 USB 2.0 (EHCI)

6.2.5.1 Overview

The ICH7-M contains an Enhanced Host Controller Interface(EHCI) compliant host controller which supports up to 8 USB 2.0 specification compliant root ports. USB 2.0 allows data transfer rate up to 480Mbps using the same pins as the 8 USB 1.1 ports. The ICH7-M contains port-routing logic that determines whether a USB port is controlled by one of the UHCI controllers or by the EHCI controller. USB2.0 based Debug Port is also implemented in the ICH7-M.

6.2.5.2 – Device Connects operation mode

1. Configure Flag = 0 and an USB 1.1-Only Device is connected.
 - In this case, the USB 1.1 Controller is the owner of the port both before and after the connection occurred. The EHC never sees the connection occurred. The UHCI driver handles the connection and initialization process.
2. Configure Flag = 0 and an USB 2.0-Capable Device is connected.
 - In this case, the USB 1.1 Controller is the owner of the port both before and after the connection occurred. The EHC never sees the connection occurred. The UHCI driver handles the connection and initialization process. Since the USB 1.1 Controller does not perform the high-speed chirp handshake, the device operates in compatible.
3. Configure Flag = 1 and an USB 1.1-only Device is connected.
 - In this case, the USB 2.0 controller is the owner of the port before the connection occurred. The EHCI driver handles the connection and performs the port reset. After the reset process completes, the EHC hardware has cleared(not set) the Port Enable bit in the EHC's PORTSC register. The EHCI driver then writes a 1 to the Port Owner bit in the

same register, causing the USB 1.1 controller to see a connect event and the EHC to see an 'electrical' disconnect event. The UHCI driver and hardware handle the connection and initialization process from that point on. The EHCI driver and hardware handle the perceived disconnect.

4. Configure Flag = 1 and an USB 2.0-capable Device is connected
 - In this case, the USB 2.0 Controller is the owner of the port before, and remains the owner after, the connection occurred. The EHCI driver handles the connection and performs the port reset. After the reset process completes, the EHC hardware has set the Port Enable bit in the EHC's PORTSC register. The port is functional at this point. The USB 1.1 Controller continues to see an unconnected port.

6.2.5.3 – Device Disconnects operation mode

1. Configure Flag = 0 and the device is disconnected
 - In this case, the USB 1.1 Controller is the owner of the port both before and after the disconnection occurred. The EHC never sees a device attached. The UHCI driver handles disconnection process.
2. Configure Flag = 1 and a USB 1.1-capable Device is disconnected.
 - In this case, the USB 1.1 Controller is the owner of the port before the disconnection occurred. The disconnection is reported by the USB 1.1 Controller and serviced by the associated UHCI driver. The port-routing logic in the EHC cluster forces the port owner bit to 0, indicating that the EHC owns the unconnected port.
3. Configure Flag = 1 and an USB 2.0-capable Device is disconnected.
 - In this case, the USB 2.0 Controller is the owner of the port before, and remains the owner after, the disconnection occurs. The EHCI hardware and driver handle the disconnection process. The USB 1.1 Controller never sees a device attached.

6.3 – SMBUS CONTROLLER

6.3.1 – Devices on SMBUS

On S62F platform, totally there are 3 devices connected to ICH7-M SMBUS. They are Clock Generator ICS954310, SODIMM0 and SODIMM1. The slave addresses used by each device are listed in Table 6-5.

Table 6-5 SMBus Devices Slave Address

| SMBus Device | Slave Address |
|--------------------------------------|----------------------|
| Clock Generator – ICS954310 | D2h |
| SODIMM0 – SA2,SA1,SA0 (0,0,0) | A0h |
| SODIMM1 – SA2,SA1,SA0 (0,0,1) | A2h |

7. CMOS Setup Utility

s62F system BIOS allows users to change some system hardware/function settings during POST (power on self test) stage, users may hit F2 key to enter SETUP mode in POST, the setup feature is categorized into 7 menus described as below:

7.1 MAIN MENU

7.1.1 Main menu:

Main menu describes system overall information with some user changeable setting, it contains below items:

| BIOS SETUP UTILITY | |
|--|--|
| Main | Advanced Security Power Boot Exit |
| System Overview <hr/> AMIBIOS Version :205 UGA BIOS Version : 1264.I06201.003 EC BIOS Version : 1000500001 Processor Type :Genuine Intel(R) CPU T2500 @ 2.00GHz Speed :2000MHz System Memory Size :1016MB System Time [13:35:56] System Date [Thu 01/26/2006] | Use [ENTER], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system Time. ↔ Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F9 Load Defaults F10 Save and Exit ESC Exit |
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AMI BIOS:

1. **Version:**[xxxx.xxx] -> Current system BIOS version
2. **VGA BIOS Version:**[xxxx.xxxxxx.xxx] -> Current VGA BIOS version
3. **EC BIOS Version:**[xxxxxxxxxxx] -> Current EC BIOS version

Processor

1. **Type:** Current CPU model name
2. **Speed:** Current CPU speed

System Memory

1. **Size:** The installed memory size

System Time:[HH/MM/SS] -> Current time

System Date:[X MM/DD/YYYY] -> Current date

← --- 带格式的: 项目符号和编号

← --- 带格式的: 项目符号和编号

← --- 带格式的: 项目符号和编号

7.2 ADVANCED MENU:

In advanced menu, users can configure I/O device resource such as I/O base, interrupt vector or DMA(Direct Memory Access) channel, some auxiliary settings may be changed as well. Detailed I/O device settings are described below:

| BIOS SETUP UTILITY | |
|---|------------|
| Main | Advanced |
| Security | Power |
| Boot | Exit |
| Advanced Settings <hr/> WARNING: Setting wrong values in below sections may cause system to malfunction. | |
| Core Multi-Processing | [Enabled] |
| Execute Disable Bit | [Disabled] |
| ▶ IDE Configuration ▶ SuperIO Configuration | |
| Internal Pointing Device | [Enabled] |
| Internal Numeric Pad Lock | [Enabled] |
| ↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F9 Load Defaults F10 Save and Exit ESC Exit | |
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Core Multi-Processing:[Enable] -> enable/disable dual core function

Execute Disable Bit:[Enable] -> enable/disable "Execute Disable" function

IDE configuration: See 7.2.1

Super I/O configuration: See 7.2.2

Internal pointing device:[Enable] -> enable/disable TouchPad function

Internal Numeric Pad Lock[Enable] -> enable/disable "Number Lock" function

7.2.1 IDE Configuration:

7.2.1.1 Primary Master/Slave IDE

| BIOS SETUP UTILITY | | |
|--|------------|--|
| Advanced | | |
| Primary IDE Master | | Select the type of device connected to the system. |
| Device :Hard Disk Vendor :HTS421212H9AT00 Size :120.0GB LBA Mode :Supported Block Mode:16Sectors PIO Mode :4 Async DMA :MultiWord DMA-2 Ultra DMA :Ultra DMA-5 S.M.A.R.T. :Supported | | |
| Type | [Auto] | ↔ Select Screen |
| LBA/Large Mode | [Auto] | ↑↓ Select Item |
| Block (Multi-Sector Transfer) | [Auto] | +− Change Option |
| PIO Mode | [Auto] | F1 General Help |
| DMA Mode | [Auto] | F9 Load Defaults |
| S.M.A.R.T. | [Auto] | F10 Save and Exit |
| 32Bit Data Transfer | [Disabled] | ESC Exit |

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At system boot, the Intel Ultra ATA Storage Driver configures each ATA/ATAPI device to transfer data at particular transfer modes. These transfer modes are defined by ATA standards, and are either Programmed I/O (PIO) or Direct Memory Access (DMA or UltraDMA) type transfers. The Intel Ultra ATA Storage Driver usually configures devices for their fastest capable transfer modes; however, there may be times when a different (perhaps slower) transfer mode is appropriate for a particular device or system configuration.

For hard disks and CD-ROM drives, BIOS can detect them automatically. Users may enter the selected(highlighted) item to get more detailed information. The "Type" field can be set by users to force BIOS to apply different setting on the devices when it detects them. There are four types provided by BIOS for users. Detailed description for each type is described below

- [Not Installed]:** Disabled current device
- [Auto]:** To use BIOS default setting
- [CD/DVD]:** Apply CD/DVD setting on the device
- [ARMD]:** Apply ARMD setting on the device

7.2.2 SuperIO Configuration:

| BIOS SETUP UTILITY | |
|---|----------------------|
| Advanced | |
| Configure SMsC LPC47M217 Super IO Chipset | |
| Parallel Port | [Enabled] |
| Parallel Port Mode | [SPP/Bi-Directional] |
| Allows BIOS to Enable /Disable Parallel Port | |
| ↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F9 Load Defaults F10 Save and Exit ESC Exit | |
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Users can enable/disable Parallel port function and set Parallel Port mode in this page. The Parallel Port modes supported by this system are listed below.

1. SPP/Bi-Directional
2. EPP/SPP
3. ECP
4. ECP/EPP

7.3 SECURITY MENU:

| BIOS SETUP UTILITY | | | | | |
|--|----------|--|-------|------|------|
| Main | Advanced | Security | Power | Boot | Exit |
| Security Settings <hr/> Supervisor Password :Not Installed User Password :Not Installed Change Supervisor Password Change User Password Boot Sector Virus Protection [Disabled] TPM Security [Disable] ▶ I/O Interface Security Hard Disk Security <hr/> Hard Disk Password :Not Installed Primary Master HDD User Password Hard Drive Security [Not Frozen] | | Install or Change the password. ↔ Select Screen ↑↓ Select Item Enter Change F1 General Help F9 Load Defaults F10 Save and Exit ESC Exit | | | |
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BIOS supports two levels of password for security protection:

Supervisor password:

Users may set, change or erase system password, the password data is saved in non-volatile device (CMOS), system password check is done during POST(Power On Self Test). The BIOS will prompt a dialog message to ask user for password check when:

The system has password stored, and "Password on boot" setting in BIOS SETUP is enabled.

If password verification fails for 3 times, the system BIOS will halt the machine to inhibit users from operating.

User Password

If your setting of BIOS have been modified by other, You can setting the function [Enable], and key in your password and confirm, Don't modify BIOS setting if no password.

Hard disk password:

Users may set, change or erase hard disk password, the password data is stored in the drive itself, the BIOS prompts a dialog message for hard disk password verification whenever it finds the hard disk locked in POST.

If hard disk password verification fails for 3 times, the system BIOS will halt the machine to inhibit users from operating.

7.4 POWER MENU:

| BIOS SETUP UTILITY | |
|---|---------------|
| Main | Advanced |
| Security | Power |
| Boot | Exit |
| Power Management Settings | |
| LCD Power Saving | [Enabled] |
| ▶ Start Battery Calibration | |
| Enabled to dim LCD brightness when powered by a battery | |
| ↔ | Select Screen |
| ↑↓ | Select Item |
| + - | Change Option |
| F1 | General Help |
| F9 | Load Defaults |
| F10 | Save and Exit |
| ESC | Exit |
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LCD Power Saving:

LCD exhausts the most part of power while the system is operating. S1A notebook system BIOS support auto backlight saving mode. When the system BIOS detects AC adapter removal, the LCD brightness is tuned down to 80% of its original setting, and back to normal when AC adapter is back inserted.

Battery Calibration:

After long time incomplete charge/discharge cycles, the battery meter becomes less and less accurate (the total power capacity is not significantly affected, however). Battery gauge needs to “learn”, this item helps users to recalibrate the battery gauge. In the learning process, users need to follow system BIOS instruction to insert/remove the AC adapter so that a complete reset and learning cycle may start.

7.5 BOOT MENU:

| BIOS SETUP UTILITY | | | | | |
|--|----------|---|-------|------|------|
| Main | Advanced | Security | Power | Boot | Exit |
| Boot Settings <hr/> ▶ Boot Settings Configuration ▶ Boot Device Priority ▶ Hard Disk Drives ▶ Removable Drives ▶ CD/DVD Drives Onboard LAN Boot ROM [Disabled] | | Configure Settings during System Boot. ↔ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F9 Load Defaults F10 Save and Exit ESC Exit | | | |
| v02.59 (C) Copyright 1985-2005, American Megatrends, Inc. | | | | | |

In this menu users can decide the boot sequence, as long as the device with highest boot priority exists, system BIOS will boot from it, device boot priority is adjusted by pressing “+,”-“ or space key on the selected (highlighted) item. 3 bootable devices for S62F system are listed in this menu (BIOS default boot sequence):

- Removable Device:** ← Legacy floppy/USB disk
- Hard Disk Drives:** ← Hard Disk
- CD/DVD Driver:** ← CD-ROM

7.6 EXIT MENU:

| BIOS SETUP UTILITY | | | | | |
|--|----------|---|-------|------|------|
| Main | Advanced | Security | Power | Boot | Exit |
| Exit Options <hr/> Save Changes and Exit Discard Changes and Exit Discard Changes Load User Defaults Load Manufacture Defaults | | Exit system setup after saving the changes. F10 key can be used for this operation. ↔ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F9 Load Defaults F10 Save and Exit ESC Exit | | | |
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Exit BIOS setup, users may make final decision if they want to save the change just made, or load BIOS default setting, lists are:

- Save changes and Exit
- Discard changes and Exit
- Discard changes
- Load optimal Defaults
- Load manufacture Defaults

8. BIOS Flash Utility

There are two utilities for updating S62F BIOS. One is DOS mode utility and the other is Windows mode utility. The detailed information is in Table 8-1.

Table 8-1: BIOS Flash Utilities

| Utility Name | Supported OS | Revision |
|--------------|--------------|----------------|
| Aflash2 | DOS | 2.10 and later |
| Winflash | Windows | 2.18 and later |

9. Embedded Controller (EC)

9.1 HOTKEYS

S62F supported Fn+Hotkeys are listed in following table.

Table 9-1 Fn+Hotkey Table

| | Fn+ Hotkey | Legacy | ACPI | Description |
|-----------------|------------|--------|------|---|
| Function Hotkey | Fn+F1 | N/A | SCI | Standby In ACPI OS, user needs to set sleep button behavior to "Standby" in property of Power Option. |
| | Fn+F2 | N/A | SCI | Wireless console(WLAN RF status will be kept on next boot.) |
| | Fn+F3 | N/A | N/A | Not used |
| | Fn+F4 | N/A | SCI | Hibernation In ACPI OS, user can set power button behavior to "Hibernation" in property of Power Option. |
| | Fn+F5 | SMI | SCI | Brightness Down (brightness level will be kept on next boot.) |
| | Fn+F6 | SMI | SCI | Brightness Up (brightness level will be kept on next boot.) |
| | Fn+F7 | SMI | SCI | LCD OFF |
| | Fn+F8 | SMI | SCI | LCD/CRT/TV switch |
| | Fn+F9 | N/A | N/A | Not used |
| | Fn+F10 | SMI | SCI | Sound mute |
| | Fn+F11 | SMI | SCI | Volume Down (sound level will be kept on next boot.) |
| | Fn+F12 | SMI | SCI | Volume Up (sound level will be kept on next boot.) |

9.2 INSTANT KEYS

Functions of Instant Keys support are listed below. Instant Keys only work in ACPI OS and the ATK driver has to be installed before using instant keys.

Table 9-2 Instant Key Table

| Instant Key | ACPI | Description |
|----------------|------|------------------------------|
| Power4 Gear | SCI | Power4 Gear Key |
| Internet | SCI | Internet Key |
| Email | SCI | Email Key |
| Touch Pad Lock | SCI | Touch Pad Enable/Disable key |

9.3 HOTKEY/INSTANT KEYS FUNCTIONS

9.3.1 Display-Switching Function Hotkey

When pressing Fn+F8 combination hotkey, it will switch display devices in the following sequence in Windows OS

LCD->CRT->LCD+CRT->TV->LCD+TV->CRT+TV->LCD

9.3.2 Internet Key

When pressing Internet instant key, BIOS will notify ATK to launch Internet browser application.

9.3.3 Email Key

When pressing Email instant key, BIOS will notify ATK to launch email application.

9.3.5 Touch Pad Enable/Disable Key

When pressing Touch Pad Enable/Disable instant key, BIOS will notify ATK to enable/disable Touch Pad.

9.3.4 Power4 Gear Key

When pressing Power4 Gear instant key, BIOS will notify ATK to switch system power scheme.