

SERVICE MANUAL

M590KE

notebook



Notebook Computer

M590KE

Service Manual

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About this Manual

This manual is intended for service personnel who have completed sufficient training to undertake the maintenance and inspection of personal computers.

It is organized to allow you to look up basic information for servicing and/or upgrading components of the *M590K* series notebook PC.

The following information is included:

Chapter 1, Introduction, provides general information about the location of system elements and their specifications.

Chapter 2, Disassembly, provides step-by-step instructions for disassembling parts and subsystems and how to upgrade elements of the system.

Appendix A, Part Lists

Appendix B, Schematic Diagrams

IMPORTANT SAFETY INSTRUCTIONS

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

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit (DC Output 20V, 11A minimum AC/DC Adapter).

CAUTION

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

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

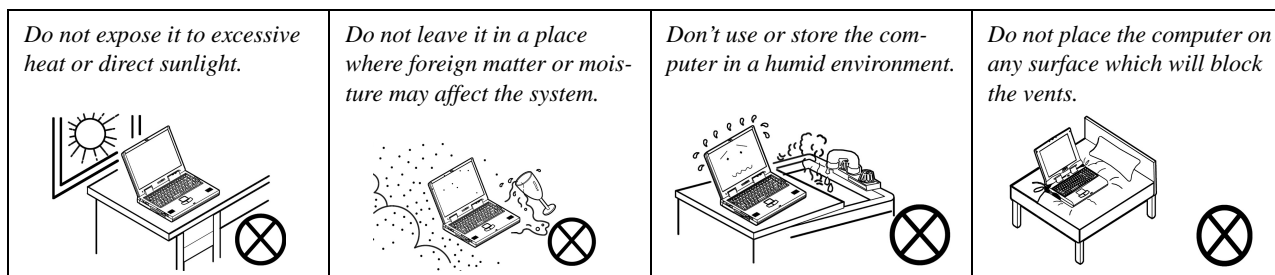
Instructions for Care and Operation

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

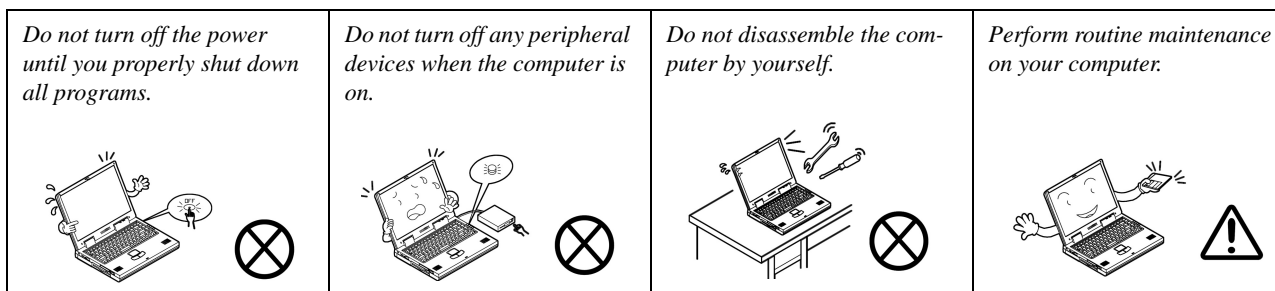
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



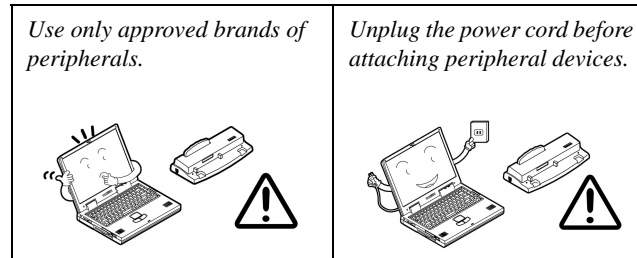
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.



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



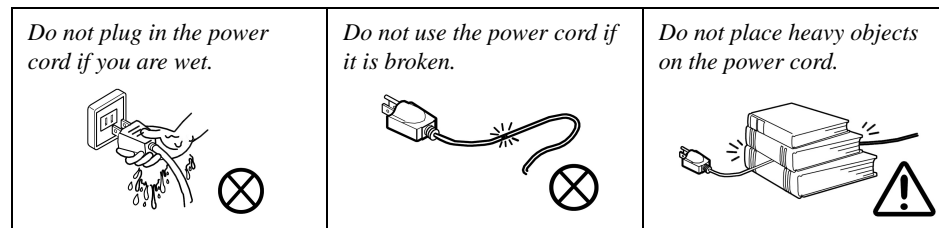
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

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



Power Safety Warning

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

Battery Precautions

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



Battery Disposal

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

Caution

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

Related Documents

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

User's Manual on CD

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

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1: Introduction

Overview

This manual covers the information you need to service or upgrade the *M590KE* series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in *User's Manual*. That manual is shipped with the computer.

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

The *M590KE* series notebook is designed to be upgradeable. See *“Disassembly” on page 2 - 1* for a detailed description of the upgrade procedures for each specific component. Please note the warning and safety information indicated by the “⚠” symbol.

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

System Specifications

Feature	Specification	
Processor Types	AMD Turion™ 64 X2 Mobile Technology Processor (31W) 638-pin Micro-PGA-S1 Package Model TL-50	(μ0.09) 0.09 Micron Silicon-On-Insulator (SOI) Process Technology, 256KB * 2 L2 Cache 1.6GHz
	AMD Turion™ 64 X2 Mobile Technology Processor (31W/ 33W/ 35W) 638-pin Micro-PGA-S1 Package Model TL-52 / TL-56/ TL-60	(μ0.09) 0.09 Micron Silicon-On-Insulator (SOI) Process Technology, 512KB * 2 L2 Cache 1.6GHz/ 1.8GHz/ 2.0GHz
Core Logic	nVIDIA nForce4 SLI Chipset (CK804)	
LCD	19" or 20.1" WSXGA+ (1680 * 1050) TFT LCD	
Security	Security (Kensington® Type) Lock Slot	BIOS Password
Memory	Two 64-bit wide DDRII (DDR2) Data Channels Two 200 Pin DDRII SODIMM Sockets Supporting DDRII (DDR2) 533/667 MHz Expandable up to 2GB Compatible with 1024MB, 512MB, 256MB DDRII (DDR2) 533/667 MHz Modules	
BIOS	One 512KB Flash ROM	Phoenix BIOS
Video Card Options	Dual NVIDIA GeForce Go 7900 GTX (G71M-GTX) High Performance Video Cards 1GB GDDR-III (GDDR3) Video RAM On Board 256 bit Memory Interface PCI Express * 8 by 2 Supports DirectX® 9 Modular Design	Dual NVIDIA GeForce Go 7950 GTX (G71M-UU) High Performance Video Cards 1GB GDDR-III (GDDR3) Video RAM On Board 256 bit Memory Interface PCI Express 8 * 2 Supports DirectX® 9 Modular Design
	Dual NVIDIA Quadro FX2500M (G71GLM-U) High Performance Video Cards 1GB GDDR-III (GDDR3) Video RAM On Board 256 bit Memory Interface PCI Express * 8 by 2 Supports DirectX® 9 Supports OpenGL Modular Design	


Video Card Options

Note that card types, specifications and drivers are subject to continual updates and changes. Check with your service center for the latest details on video cards supported.

Feature	Specification	
Storage Options	Two Changeable Bays for 2.5" 9.5mm (h) Serial-ATA (SATA) Hard Disk Drives RAID 0, RAID 1 , HDD Fault Tolerance System in SATA Configuration One Changeable Optical Device Bay - 12.7 mm (h) for Optical CD/DVD Device Drive Options (see "Optional" on page 1 - 4)	
Card Reader	Embedded 7-in-1 Card Reader (MS/ MS Pro/ SD/ Mini SD/ MMC/ RS MMC/ MS Duo) Note: MS Duo/ Mini SD/ RS MMC Cards Require a PC Adapter	
Audio	AC' 97 2.3 Compliant Interface SRS SRS WOW Surround Sound Technology Inside 3D Enhanced Sound System Sound Blaster PRO™ Compatible	Virtual 4-Channel Sound System S/PDIF Digital Output (5.1 CH) Built-In Microphone 4 * Built-In Speakers Built-In Sub Woofer
Keyboard & Pointing Device	Full Size Winkey Keyboard with Numeric Keypad	Built-In TouchPad (Scroll Functionality Included)
PCMCIA	One Type II PCMCIA 3.3V/5V Socket	
I/O Ports	Five USB 2.0 Ports One Mini-IEEE1394 Port One Serial Port One Infrared Transceiver (IrDA 1.1 / FIR) One DVI-Out Port One Headphone/Speaker-Out Jack One Microphone-In Jack One S/PDIF Out Jack One Line-In Jack for Audio Input	One RJ-11 Modem Jack One RJ-45 LAN (Local Area Network) Jack One DC-In Jack One 7-Pin S-Video-Out Jack for TV & HDTV Output (requires adapter) One Consumer Infrared Transceiver (Functions with Optional TV Tuner Module) One TV Antenna (Analog/Digital) Jack (Functions with Optional TV Tuner Module) One S-Video-In Jack for Video Input (Functions with Optional TV Tuner Module)

Introduction

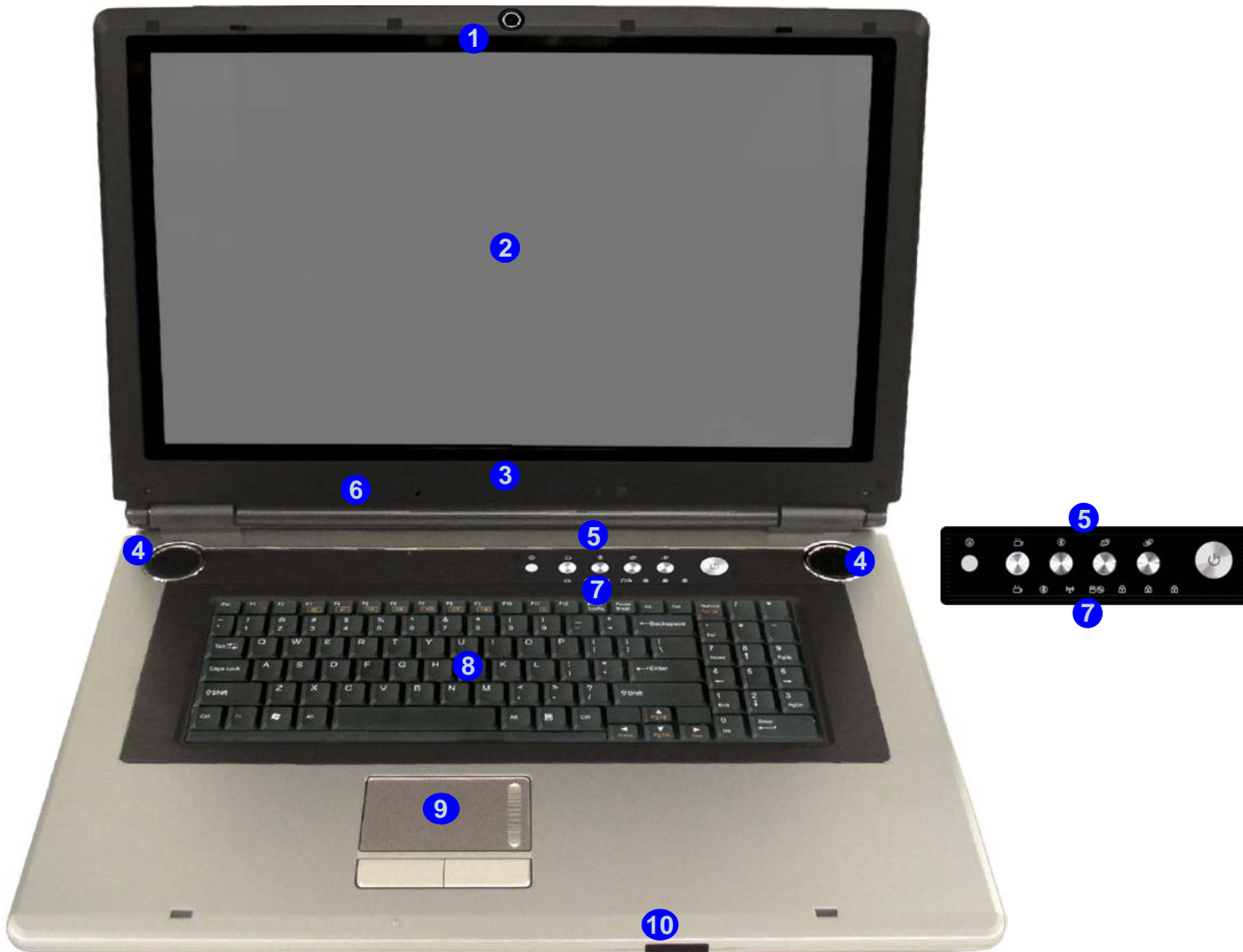
Feature	Specification	
Communication	Infrared Transceiver Infrared Transfer 1cm ~ 1M Operating Distance FIR/ IrDA 1.1 Compliant	802.11 b/g USB Wireless LAN Module (Option)
	10/100/1000 BASE-TX Fast Ethernet LAN (PCIe Interface)	Bluetooth™USB 2.0 Module - Class II (Factory Option)
	56K AC'97 Modem (V.92 Compliant)	1.3M Pixel USB 2.0 PC Camera Module (Factory Option)
Operating Systems Supported	Windows XP Home Edition with Service Pack 2 Windows XP Professional Edition with Service Pack 2 Windows Media Center Edition with Service Pack 2 Windows XP 64-bit Edition	
Power Management	Supports ACPI 2.0	Supports Resume from Modem Ring
Power	Full Range AC/DC Adapter – AC in 100 ~ 240V, 47 ~ 63Hz DC Output 20V, 11 A (220 Watts)	
	Easy Changeable 12-Cell Smart Lithium-Ion 6600mAh / 14.8V Main Battery	
Environmental Spec	Temperature	Relative Humidity
	Operating: 5°C ~ 35°C Non-Operating: -20°C ~ 60°C	Operating: 20% ~ 80% Non-Operating: 10% ~ 90%
Physical Dimensions & Weight	476mm (w) * 343mm (d) * 29.5 ~ 47.8mm (h)	6.9Kg with 12-Cell Battery
Optional	Optical Drive Module Options: DVD/CD-RW Combo Drive Module DVD-Dual Drive Module DVD-Super Multi Drive Module	Mini-PCI TV Tuner (either analog only OR analog/digital OR Windows Media Center Edition options) Module (Factory Option)
	DVD Software Player	1.3M Pixel USB 2.0 PC Camera Module (Factory Option)
	Bluetooth™USB 2.0 Module - Class II (Factory Option)	802.11 b/g USB Wireless LAN Module (Option)

External Locator - Top View with LCD Panel Open

Figure 1
Top View

1. Optional Built-In PC Camera
2. LCD
3. LED Power & Communication Indicators
4. Speakers
5. AP-Key Buttons & Power Button
6. Built-In Microphone
7. LED Status Indicators
8. Keyboard
9. TouchPad and Buttons
10. Consumer Infrared Transceiver*

*Enabled with Optional Mini-PCI TV Tuner Only



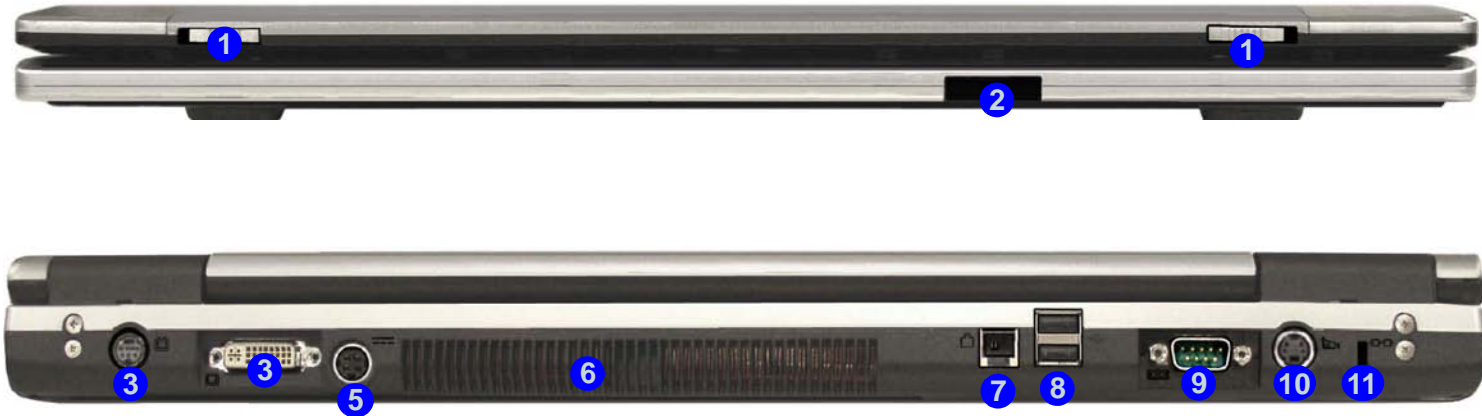
Introduction

Figure 2
Front & Rear Views

1. LCD Latches
2. Consumer Infrared Transceiver*
3. 7-Pin S-Video-Out Jack
4. DVI-Out Port
5. DC-In Jack
6. Vent/Fan Intake
7. RJ-11 Phone Jack
8. 2 * USB 2.0 Ports
9. Serial Port
10. S-Video-In Jack*
11. Security Lock Slot

*Enabled with Optional Mini-PCI TV Tuner Only

External Locator - Front & Rear Views



External Locator - Left & Right Side View



Figure 3
Left Side View

1. S/PDIF-Out Jack
2. Line-In Jack
3. Microphone-In Jack
4. Headphone-Out Jack
5. Optical Device Drive Bay (for CD/DVD Device)
6. PC Card Slot
7. Mini-IEEE 1394a Port
8. 3 * USB 2.0 Ports
9. TV Antenna Jack* (an adapter is provided for CATV connection)
10. 7-in-1 Card Reader
11. Infrared Transceiver
12. RJ-45 LAN Jack

*Enabled with **Optional** Mini-PCI TV Tuner Only

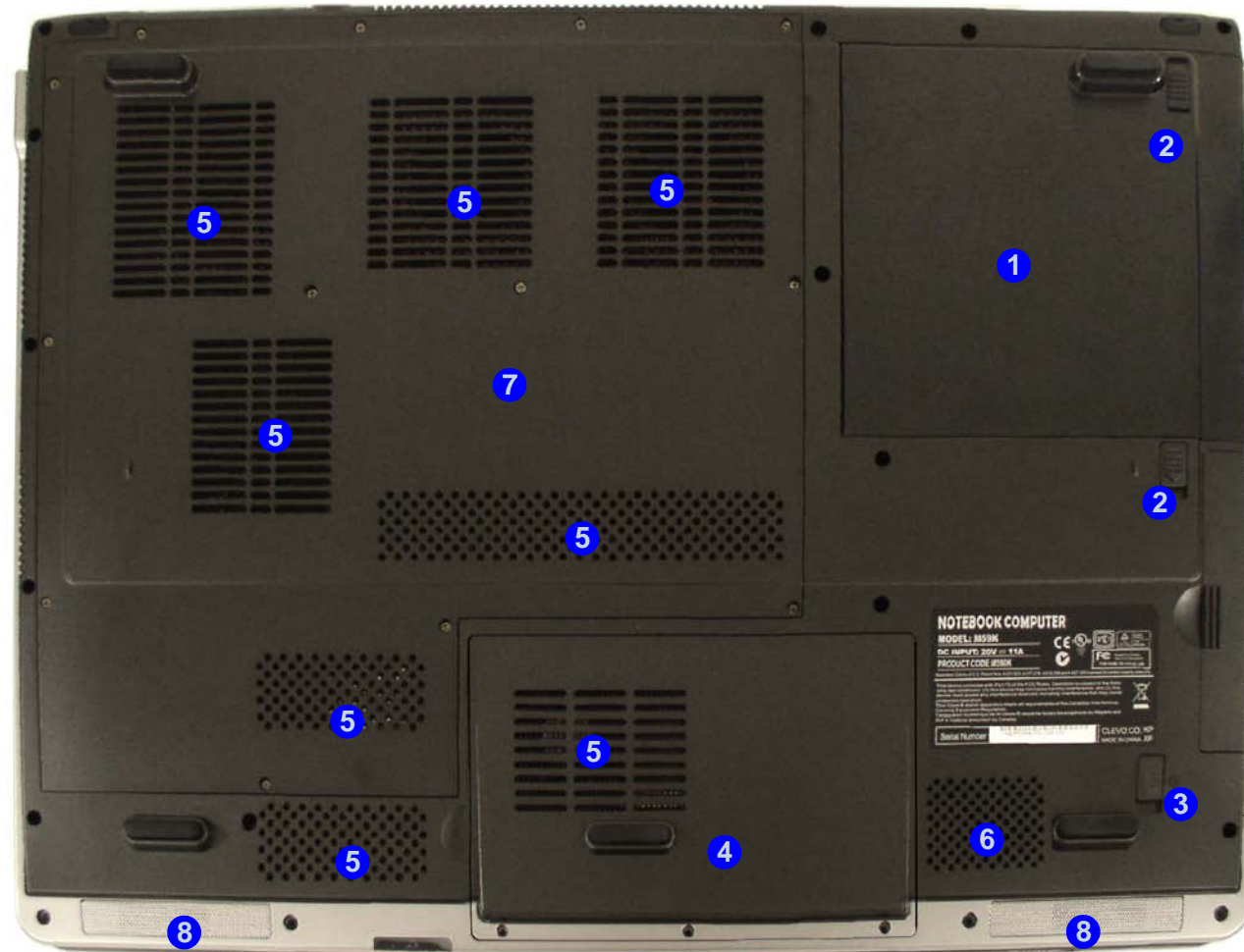
13.

Introduction

Figure 4
Bottom View

1. Battery
2. Battery Release Latch
3. CD/DVD Device Release Latch
4. Hard Disk Bay Cover
5. Vent/Fan Intake
6. Sub Woofer
7. Component Bay Cover
8. Speakers

External Locator - Bottom View



Overheating

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

M590KE Mainboard Overview - Top (Key Parts)

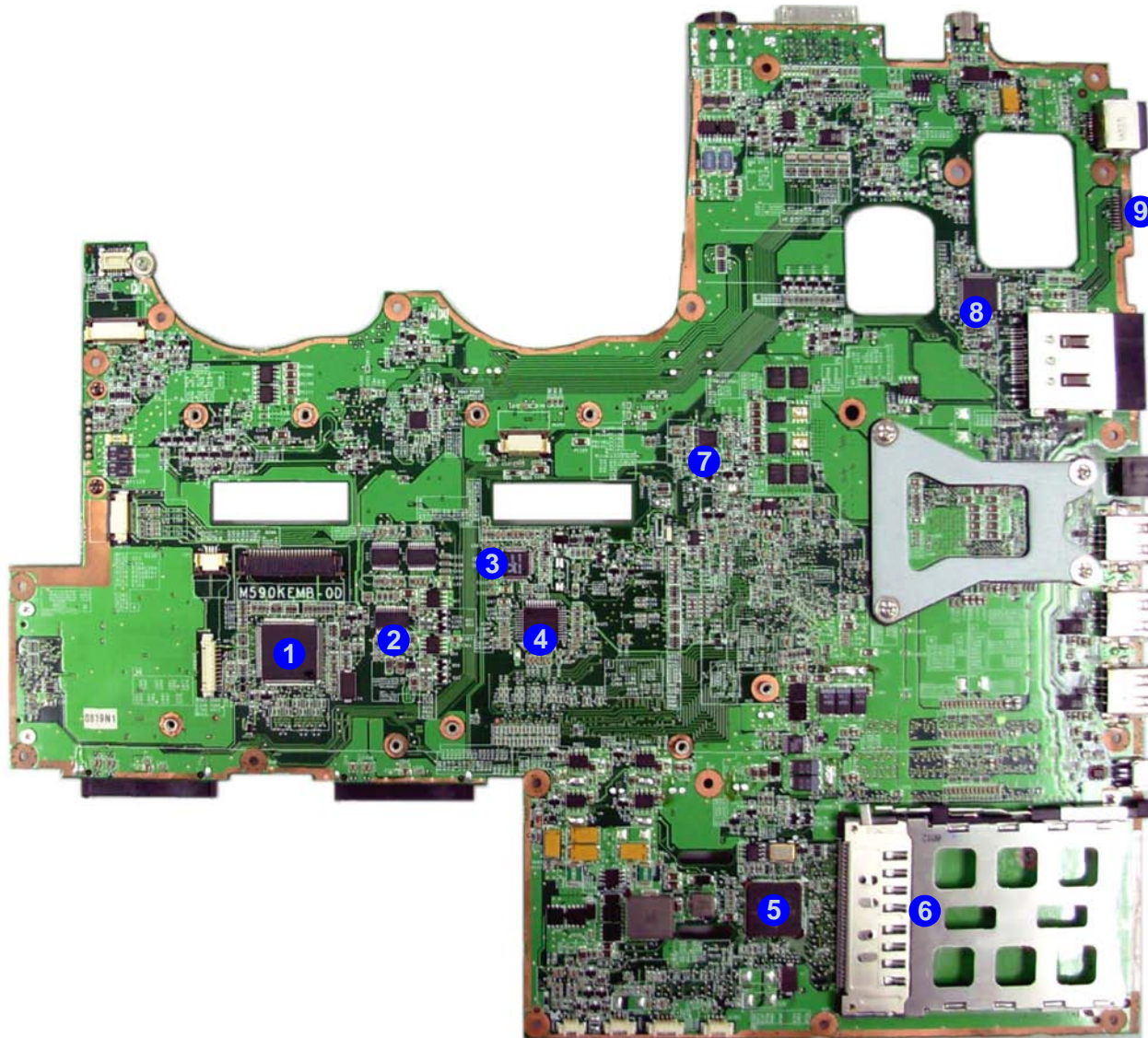


Figure 5
**Mainboard Top
Key Parts**

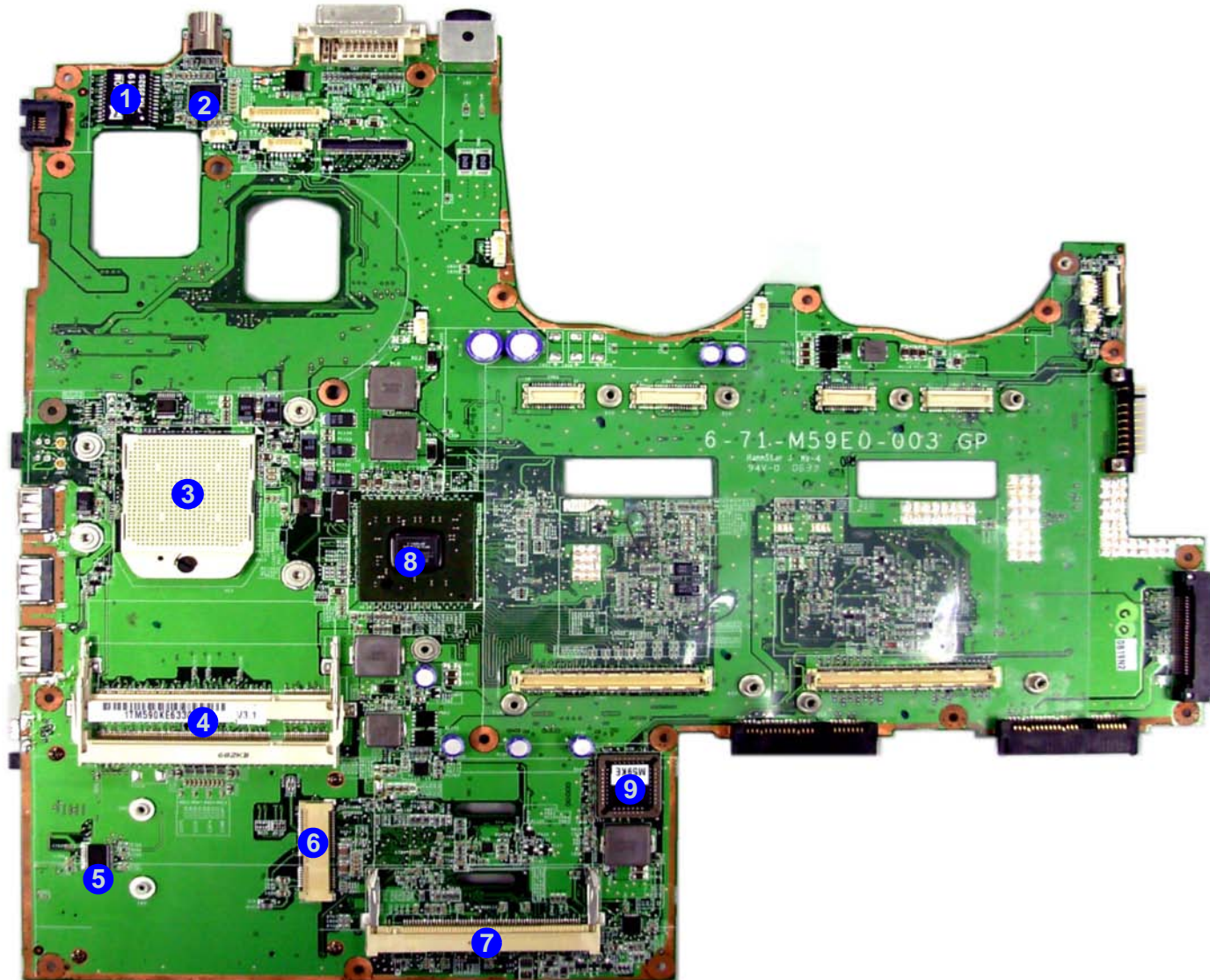
1. KBC H8S/211
2. Sub Woofer
3. Audio ALC655
4. SRS AP8202Q
5. Ultra Media Card Bus PCI-7411
6. PC Card Assembly
7. VCORE
8. Super I/O PC87383
9. Infrared Transceiver

Introduction

Figure 6
**Mainboard Bottom
Key Parts**

1. HS5019
2. PCI-E LAN
Realtech RTL8111B
3. CPU Socket
(no CPU installed)
4. Memory Slots
DDR2 SODIMM
5. TI ENE Card
Controller
6. Mini Card Socket
7. Mini-PCIE Socket
8. NFORCE Crush
K804 740BGA
9. Flash BIOS ROM

M590KE Mainboard Overview - Bottom (Key Parts)



M590KE Mainboard Overview - Top (Connectors)

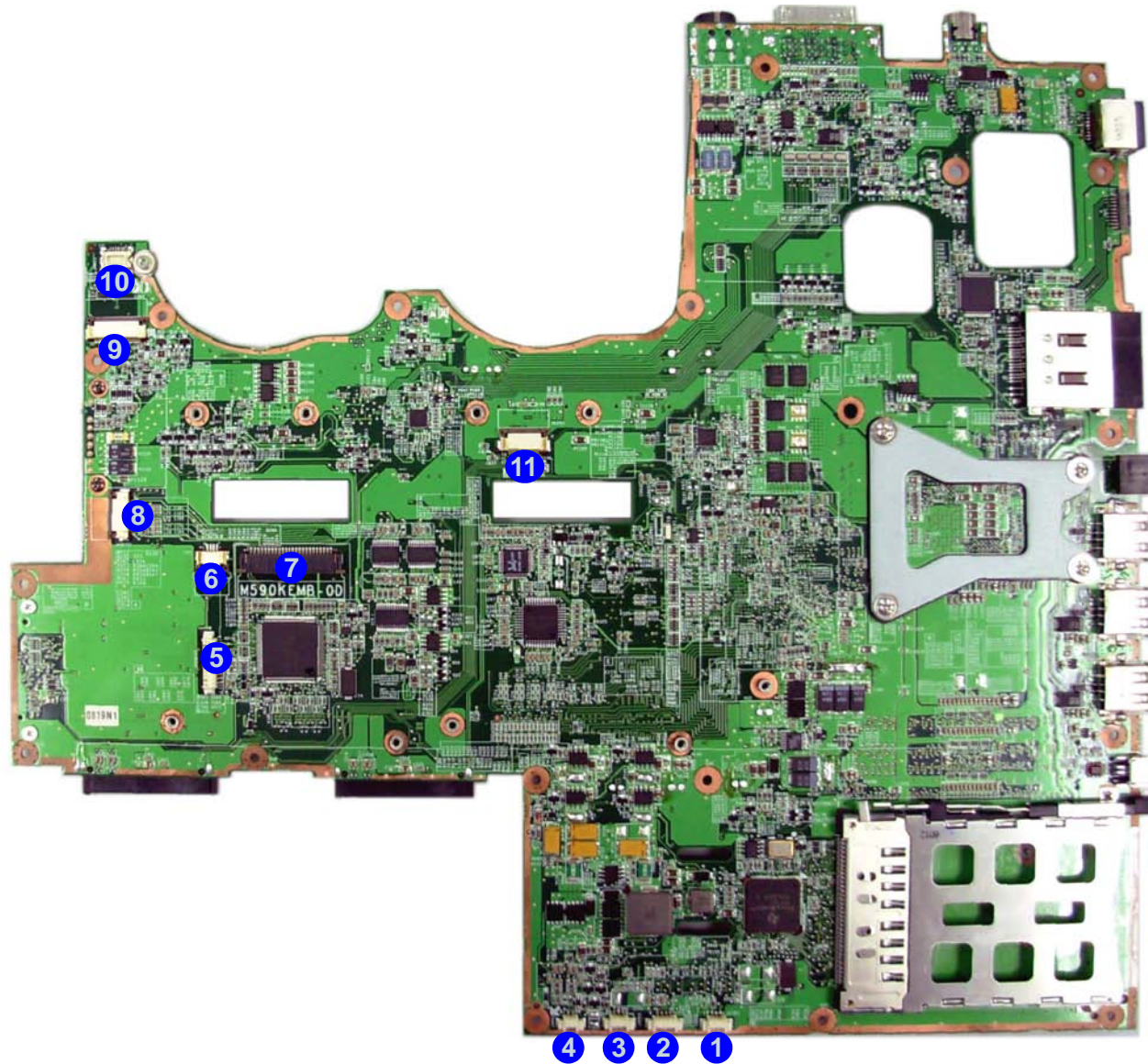


Figure 7
Mainboard Top Connectors

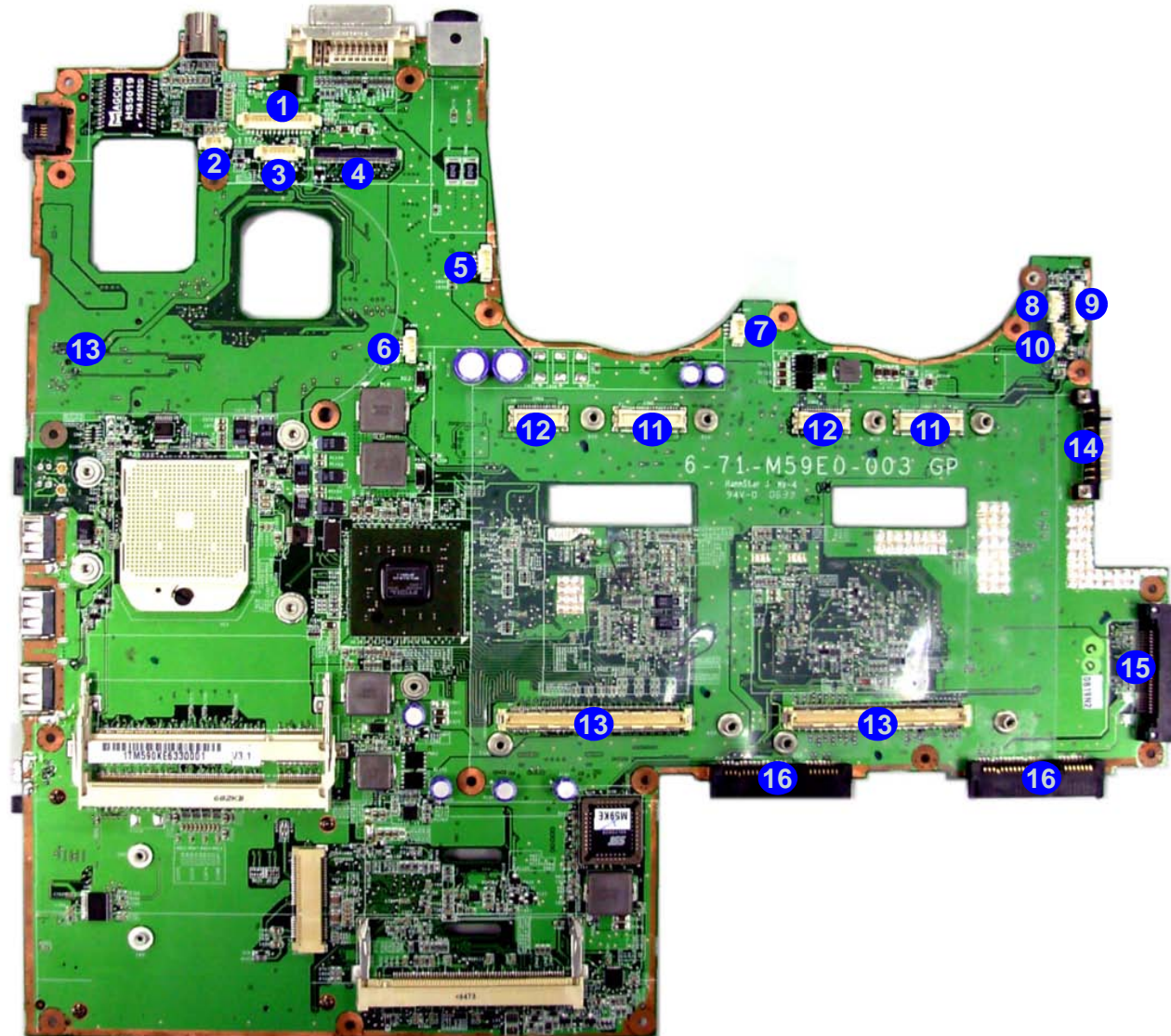
1. Consumer Infrared (JCIR1)
2. Speaker-3 Cable (JSPK3)
3. Fan (JFAN5)
4. Speaker-2 Cable (JSPK2)
5. Debug (JDEBUG2)
6. TouchPad (JTP1)
7. Keyboard Cable (JINTKB1)
8. Audio Cable (JAUDIO1)
9. RJ11 Board
10. Modem Module (JMDC1)
11. LED Cable (JLED1)

Introduction

Figure 8
**Mainboard Bottom
Connectors**

1. Inverter Board (JINV1)
2. CPU Fan (JFAN1)
3. CCD (PC CAM) Cable (JCCD1)
4. LCD Cable (JLCD1)
5. Speaker 1
6. Chipset Fan Cable (JFAN4)
7. VGA Fan Cable (JFAN2)
8. VGA Fan Cable (JFAN3)
9. Bluetooth Cable (J6)
10. Battery (JBAT1)
11. 40-Pin VGA Socket (CON4/CON2)
12. 30-Pin VGA Socket (CON1/CON3)
13. 160-Pin VGA Socket (CON5/CON6)
14. Battery (JBAT1)
15. ODD (JCD1)
16. HDD (JHDD1/JHDD2)

M590KE Mainboard Overview - Bottom (Connectors)




2: Disassembly



Overview

This chapter provides step-by-step instructions for disassembling the *M590KE* series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

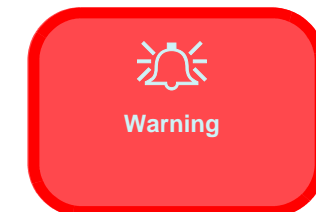
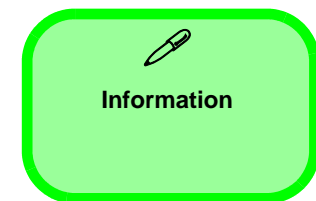
We suggest you completely review any procedure before you take the computer apart.

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

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

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

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



Disassembly

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

Maintenance Tools

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

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

Connections

Connections within the computer are one of four types:

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

Maintenance Precautions

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

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

Cleaning

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

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



Power Safety Warning

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

Disassembly Steps

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

To remove the Battery:

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

To remove the HDD:

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

To remove the Optical Device:

1. Remove the battery [page 2 - 5](#)
2. Remove the Optical device [page 2 - 7](#)

To remove the System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the system memory [page 2 - 8](#)

To remove the Processor:

1. Remove the battery [page 2 - 5](#)
2. Remove the processor [page 2 - 9](#)

To remove the VGA Card:

1. Remove the battery [page 2 - 5](#)
2. Remove the VGA Card(s) [page 2 - 11](#)

To remove the Wireless LAN Module:

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

To remove the TV Tuner Card:

1. Remove the battery [page 2 - 5](#)
2. Remove the TV Tuner Card [page 2 - 13](#)

To remove the Bluetooth Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the Bluetooth Module [page 2 - 14](#)

To remove the Keyboard:

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

To remove the PC Camera Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the PC Camera Module [page 2 - 16](#)

Removing the Battery

1. Turn the computer off, turn it over and remove the battery.
2. Slide latch ① towards the unlock symbol and hold it in place, and slide latch ② in the direction of the arrow.
3. Slide the battery ③ out and lift it up and out of the battery bay.

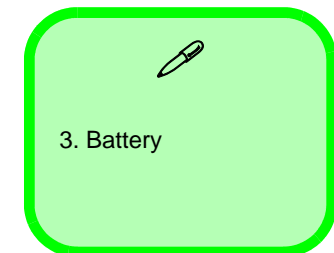
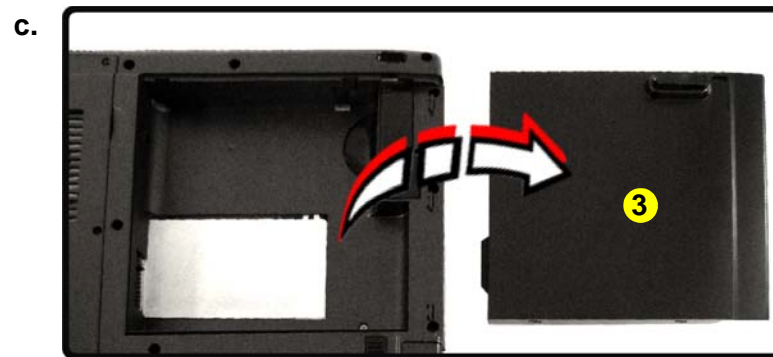
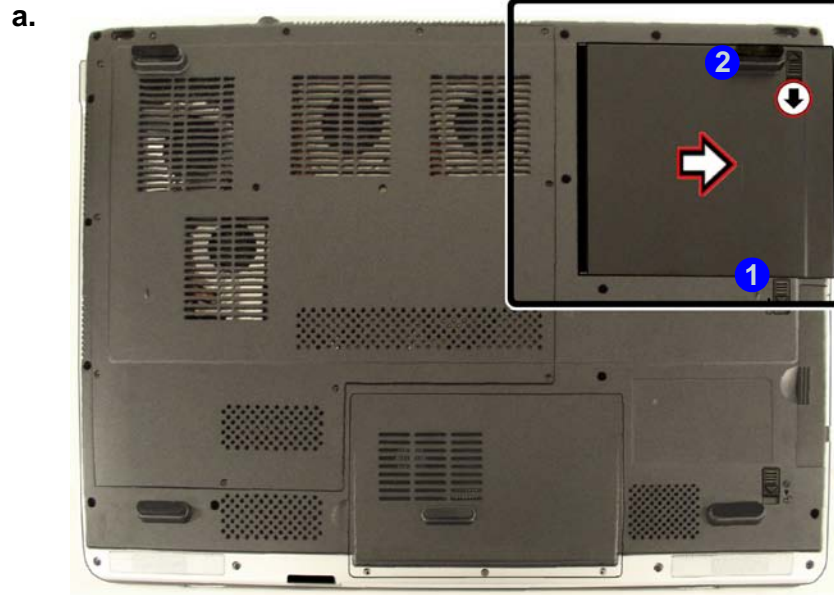


Figure 1
Battery Removal

- a. Slide latch at point 1 towards the unlock symbol and hold it in place, and slide latch at point 2 in the direction of the arrow.
- b. Slide the battery.
- c. Lift the battery out.

Disassembly

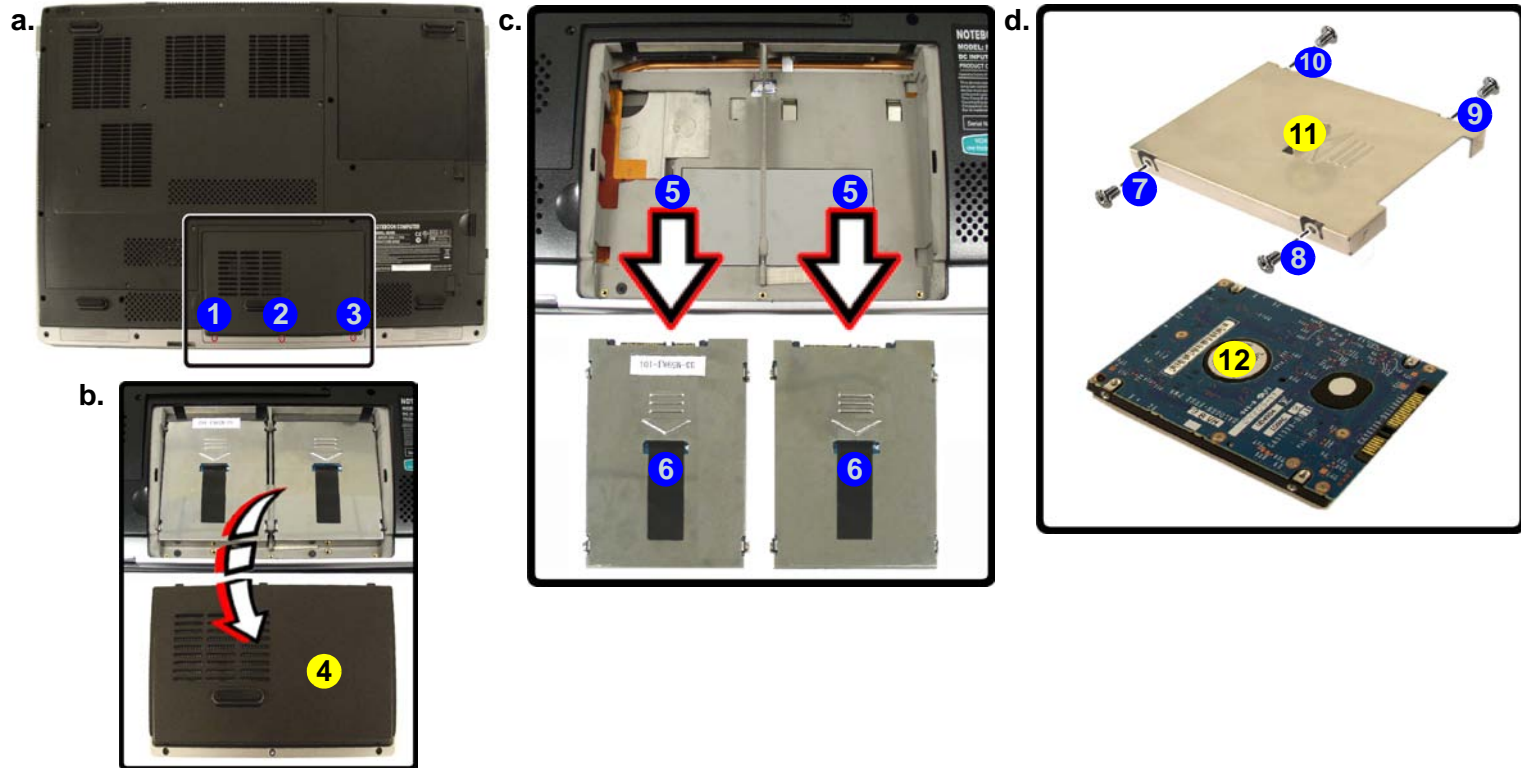
Figure 2
HDD Assembly
Removal

- Remove the screws.
- Remove the cover.
- Remove the HDD assembly by sliding it in the direction of the arrow.
- Remove the screws and separate the bracket from the HDD.

Removing the Hard Disk Drive(s)

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

- Turn **off** the computer, and turn it over and remove the battery ([page 2 - 5](#)).
- Locate the hard disk bay cover and remove screws **1** - **3**.
- Remove the bay cover **4**.
- Slide the hard disk assembly in the direction of the arrow **5**.
- Remove the hard disk assembly **6**.
- Remove screws **7** - **10** and separate the bracket **11** from the hard disk **12**.



4. HDD Bay Cover
11. HDD Bracket
12. HDD

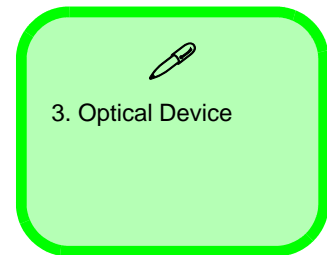
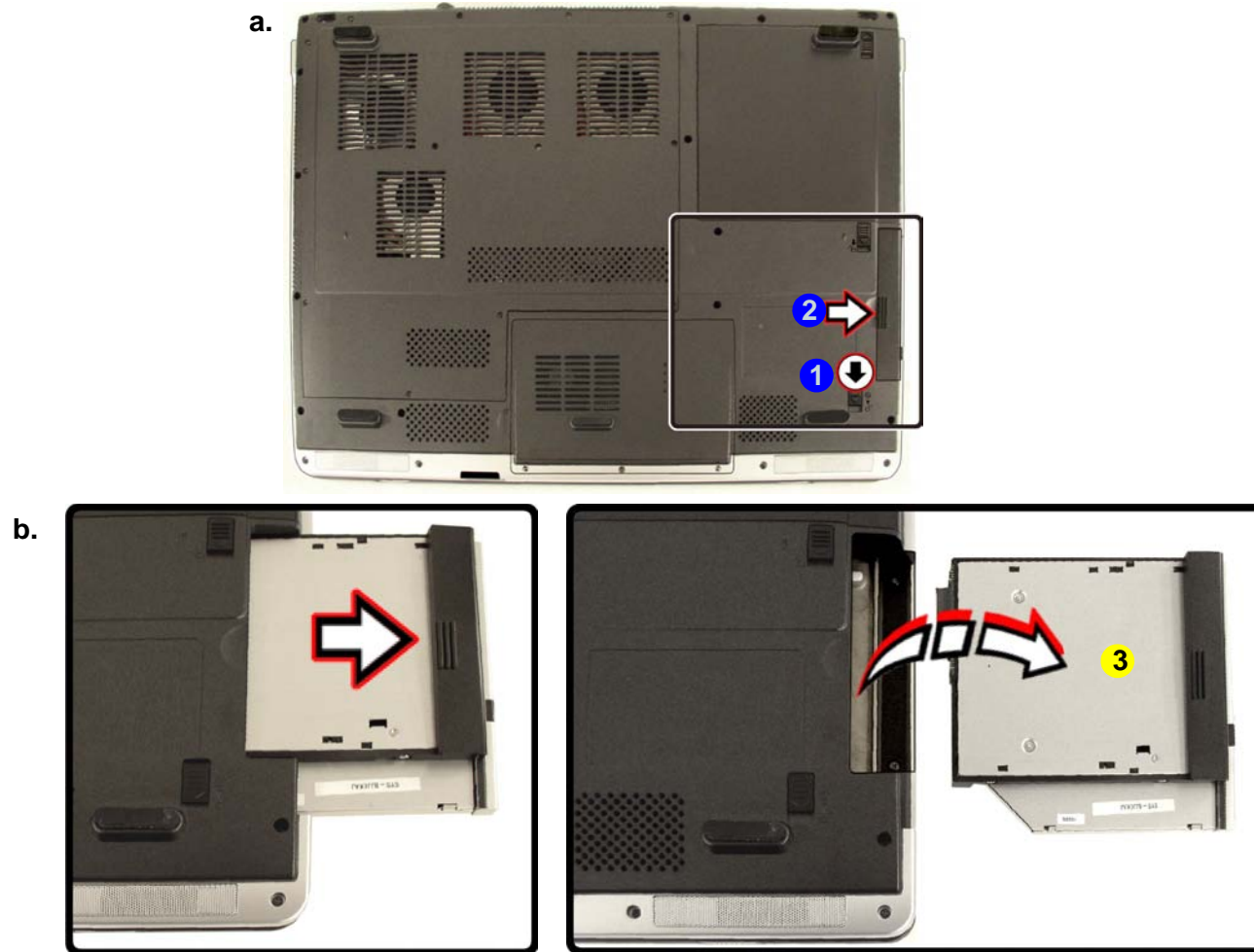
- 7 Screws

Removing the Optical (CD/DVD) Device

1. Turn **off** the computer, and turn it over and remove the battery ([page 2 - 5](#)).
2. Slide latch **1** towards the unlock symbol and hold it in place.
3. Slide the optical device **3** out of the computer at point **2**.
4. Restart the computer to allow it to automatically detect the new device.

Figure 3
Optical Device Removal

- a. Slide latch at point 1 towards the unlock symbol and hold it in place.
- b. Slide the optical device out of the computer at point 2.



Disassembly

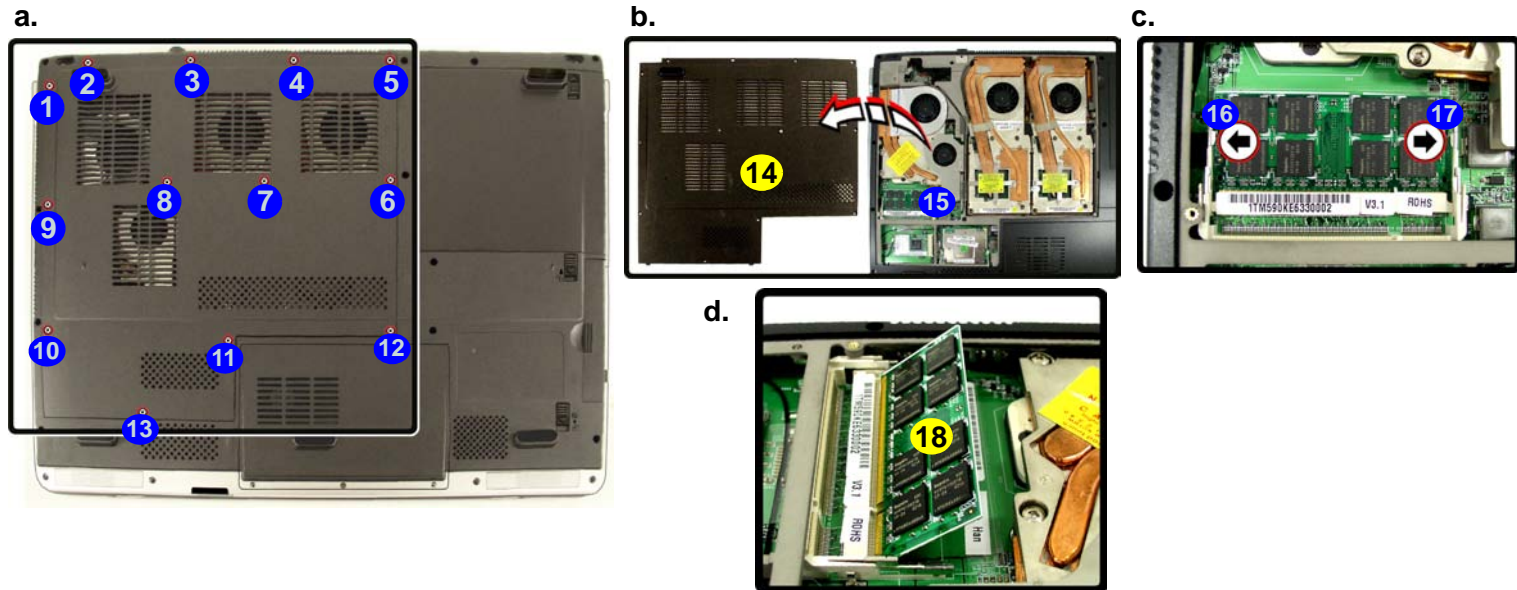
Figure 4
RAM Module
Removal

- Remove the screws.
- Remove the cover.
- Pull the release latch(es).
- Remove the module(s).

Removing the System Memory (RAM)

The computer has **two** memory sockets for 200 pin Small Outline Dual In-line (SO-DIMM) **DDR2 (DDR2)** type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

- Turn **off** the computer, and turn it over and remove the battery ([page 2 - 5](#)).
- Locate the component bay cover and remove screws **1** - **13**.
- Remove the bay cover **14**.
- Gently pull the two release latches(**16** & **17**) on the sides of the memory socket in the direction indicated by the arrows.



Contact Warning

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



14. Component Bay Cover
18. RAM Module

- 13 Screws

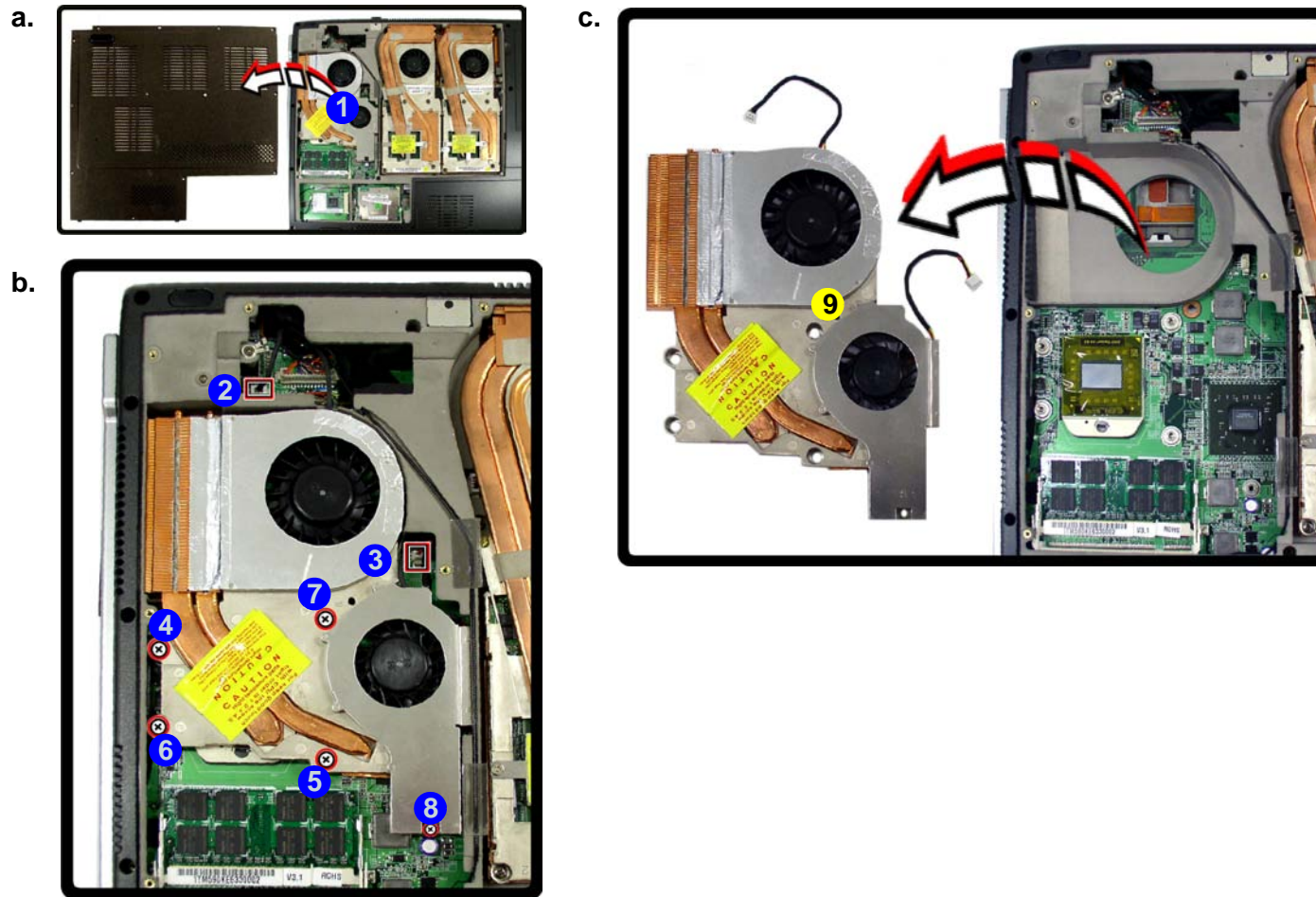
- The RAM module(s) **18** will pop-up, and you can then remove it.
- Pull the latches to release the second module if necessary.
- Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
- The module will only fit one way as defined by its pin alignment. Make sure the module is seated as far into the slot as it will go. **DO NOT FORCE IT**; it should fit without much pressure.
- Press the module down towards the mainboard until the slot levers click into place to secure the module.
- Replace the bay cover and the screws.
- Restart the computer to allow the BIOS to register the new memory configuration as it starts up.


Removing the Processor

1. Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)) and remove the component bay cover ([page 2 - 8](#)).
2. The heat sink will be visible at point **1** on the mainboard.
3. Carefully disconnect cables **2** and **3**, then remove the screws **4** - **8** from the heat sink in the order indicated ([Figure b](#)).
4. Carefully lift the heat sink **9** ([Figure 5c](#)) up off the computer.

Figure 5
Processor Removal

- a. Locate the heat sink.
- b. Disconnect the cables and remove the screws in the order indicated.
- c. Remove the heat sink.






9. Heat Sink

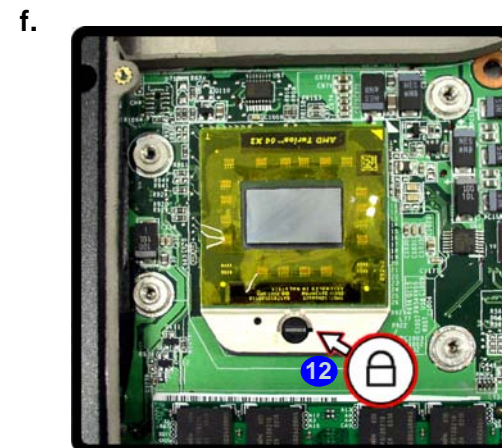
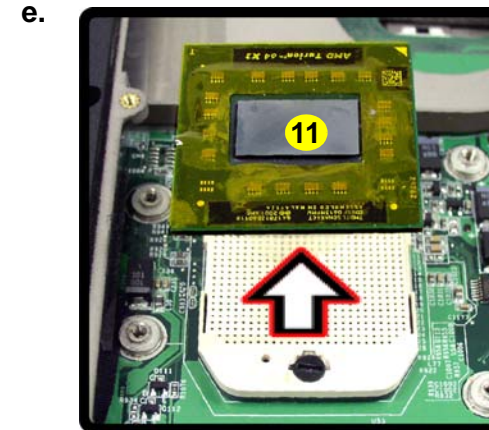
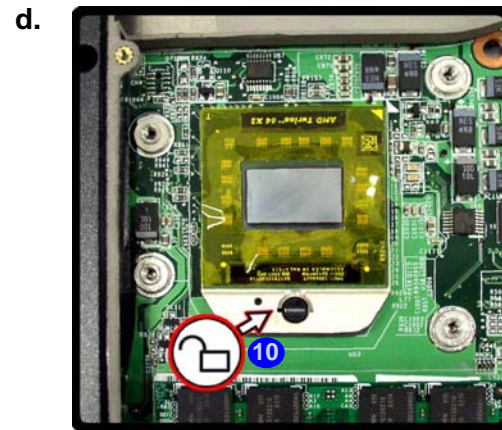
- 5 Screws

Disassembly

Figure 6 Processor Removal (cont'd)

- d. Unlock the release latch.
e. Remove the CPU.
f. Replace the CPU and lock the release latch.

5. Turn the release latch **10** towards the unlock symbol , to release the CPU.
6. Carefully (it may be hot) lift the CPU **11** up out of the socket (Figure e).
7. Reverse the process to install a new CPU (don't forget to lock the CPU down **12**).
8. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).



Caution

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

11. CPU



Removing the VGA Card(s)

1. Turn off the computer, and turn it over, remove the battery ([page 2 - 5](#)) and remove the component bay cover ([page 2 - 8](#)).
2. The VGA Card(s) will be visible at point **1** on the mainboard.
3. Remove screws **2** - **5** ([Figure b](#)).
4. Carefully (a cable is still connected) grip the plastic tag and lift the video card up **10** off the sockets **6** - **8** and disconnect cable **9**.
5. Reverse the process to install the new VGA Card.

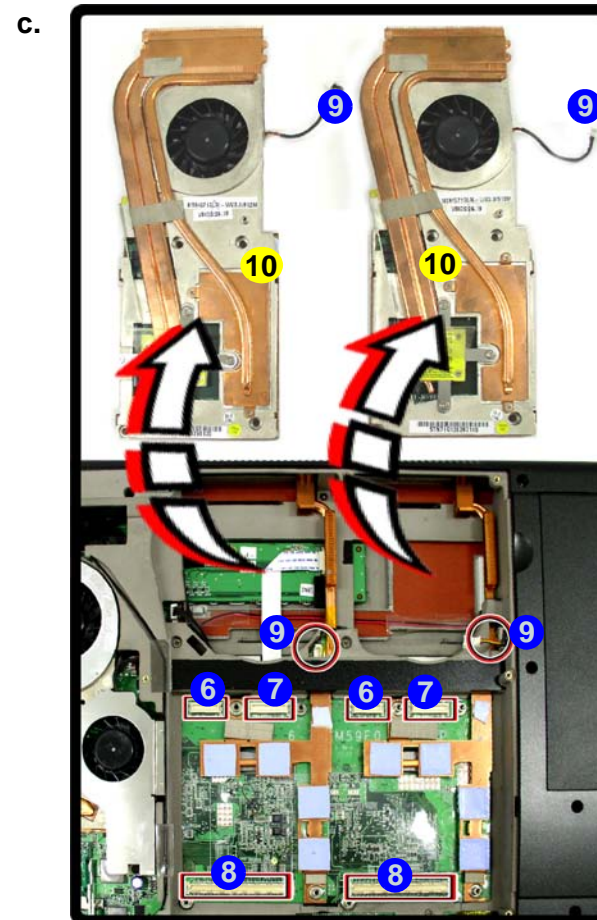
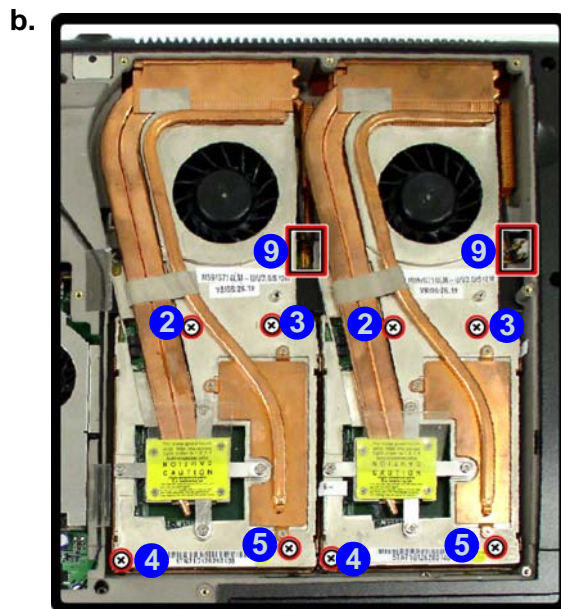
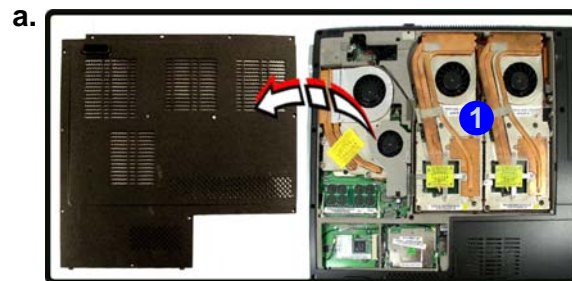
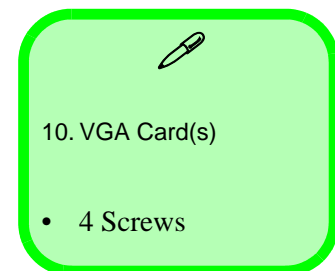


Figure 7
**VGA Card(s)
Removal**

- a. Locate the heat sink.
- b. Remove the screws.
- c. Lift the VGA card up off the sockets and disconnect the cable.



Disassembly

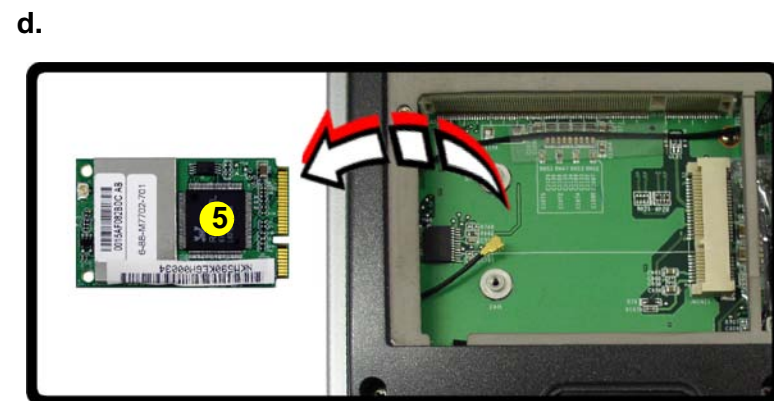
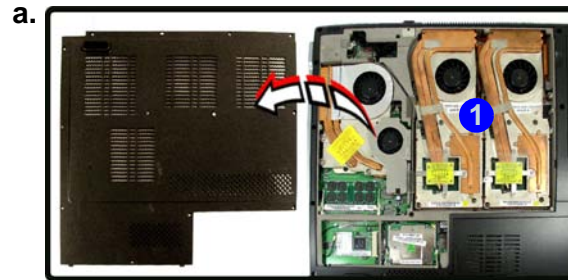
Figure 8
**Wireless LAN
 Module Removal**

- Locate the WLAN.
- Disconnect the cable and pull the release latches.
- The WLAN module will pop up.
- Remove the Wireless LAN module.

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

Removing the Wireless LAN Module

- Turn **off** the computer, and turn it over, remove the battery (*page 2 - 5*) and remove the component bay cover (*page 2 - 5*).
- The wireless LAN module will be visible at point **1** on the mainboard.
- Carefully disconnect cable **2**, then gently pull the two release latches (**3** - **4**) on the sides of the module socket.
- The wireless LAN module **5** (*Figure c*) will pop-up, and you can remove it.



5. Wireless LAN Module

Removing the TV Tuner Card

1. Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)) and remove the component bay cover ([page 2 - 8](#)).
2. The TV Tuner card will be visible at point **1** on the mainboard.
3. Carefully disconnect cable **2**, then gently pull the two release latches (**3** - **4**) on the sides of the module socket.
4. The TV Tuner card **5** ([Figure c](#)) will pop-up, and you can remove it.

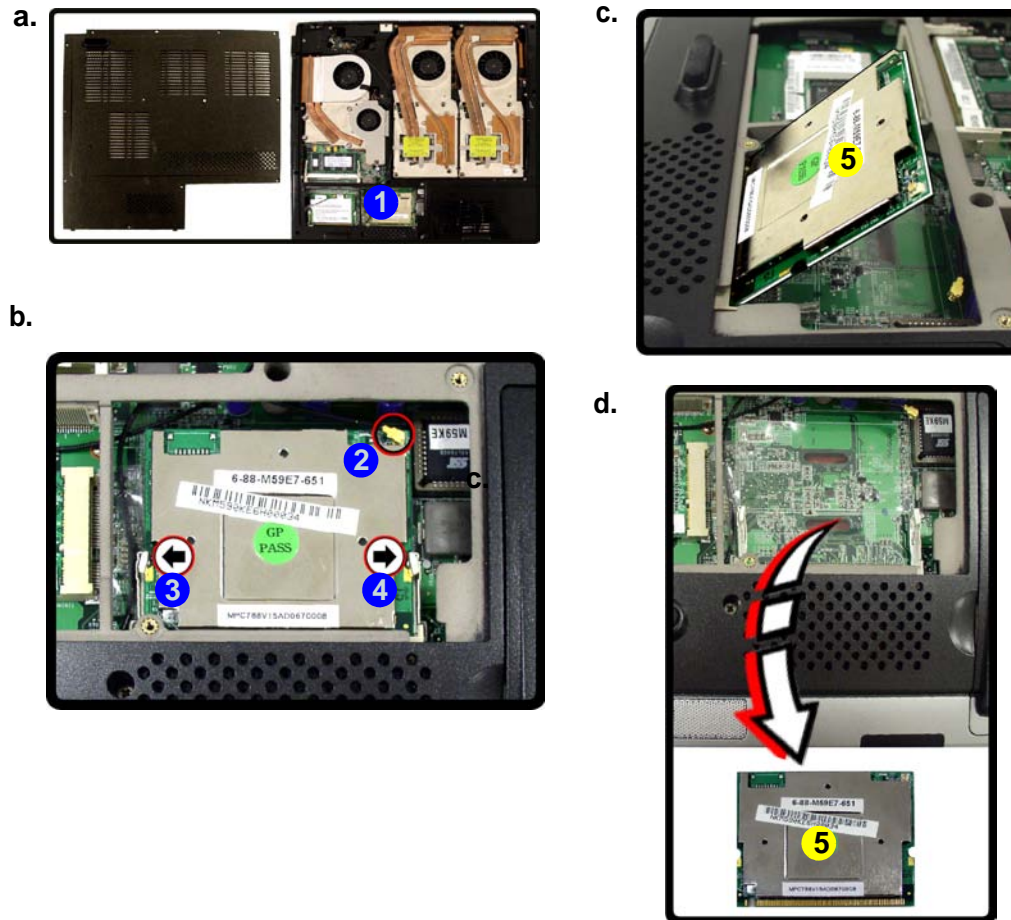
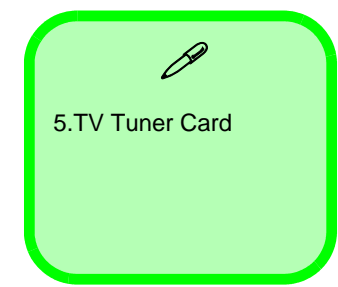


Figure 9
TV Tuner Card Removal

- a. Locate the TV Tuner card.
- b. Disconnect the cable and pull the release latches.
- c. The TV Tuner card will pop up.
- d. Remove the TV Tuner card.



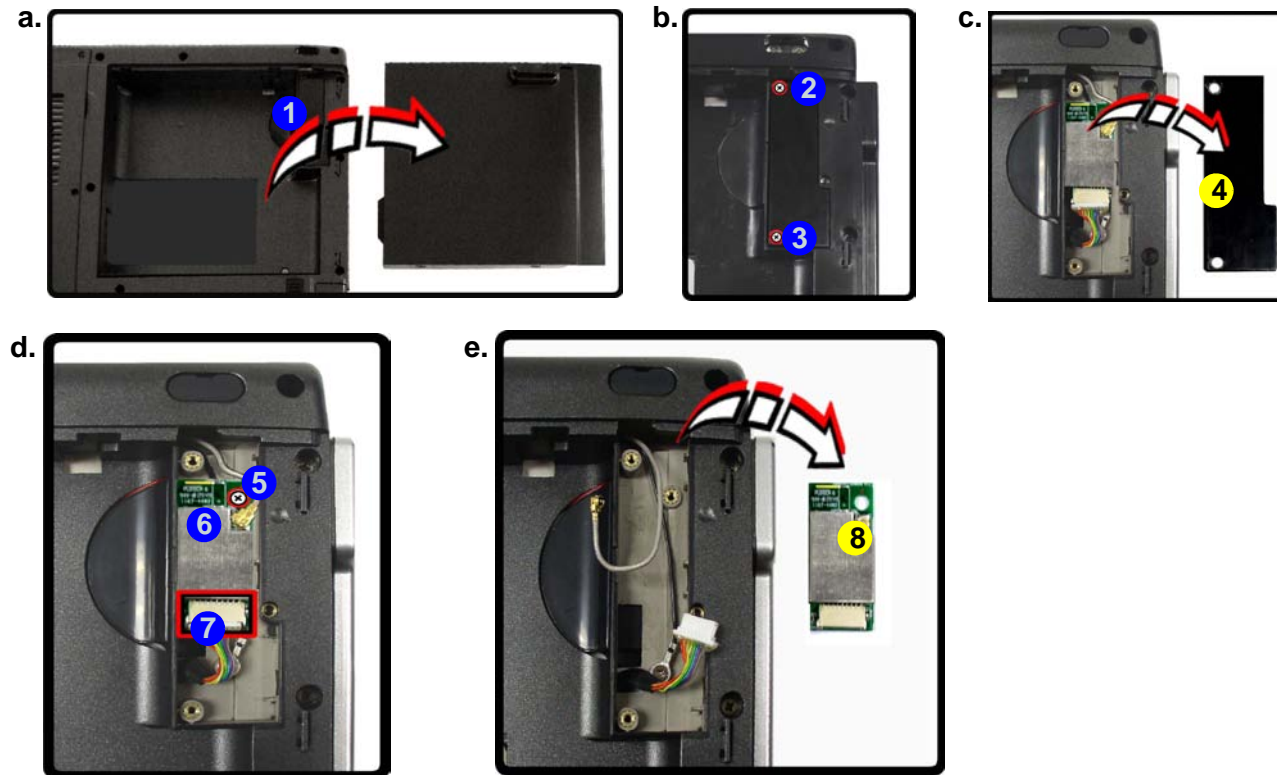
Disassembly

Figure 10 Bluetooth Module Removal

- Remove the battery and locate the Bluetooth module bay cover.
- Remove the screws.
- Remove the cover.
- Disconnect the cable and the connector from the bluetooth module.
- Lift the Bluetooth module out.

Removing the Bluetooth Module

- Turn **off** the computer, and turn it over, remove the battery ([page 2 - 5](#)).
- The Bluetooth module bay cover **1** is located under the battery.
- Remove screws **2** and **3** from the bay cover.
- Remove the bay cover **4**.
- Remove screw **5** then disconnect the cable **6** and carefully separate the Bluetooth module from the connector **7** ([Figure d](#)).
- Lift the Bluetooth module **8** ([Figure e](#)) up and off the computer.



- 4. Bluetooth Module Bay Cover
- 8. Bluetooth Module

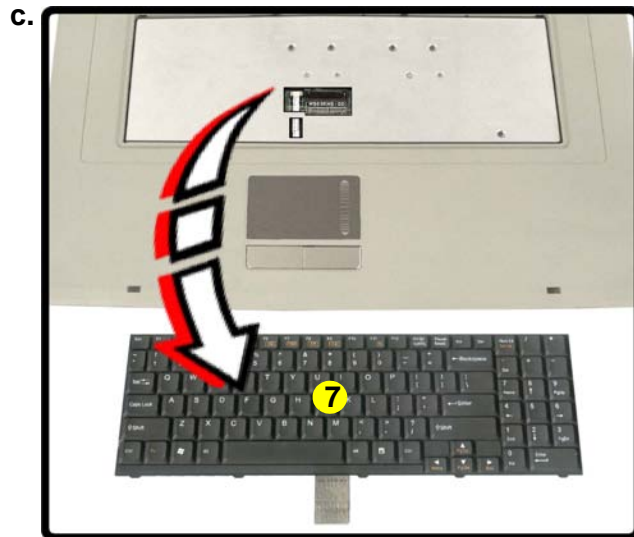
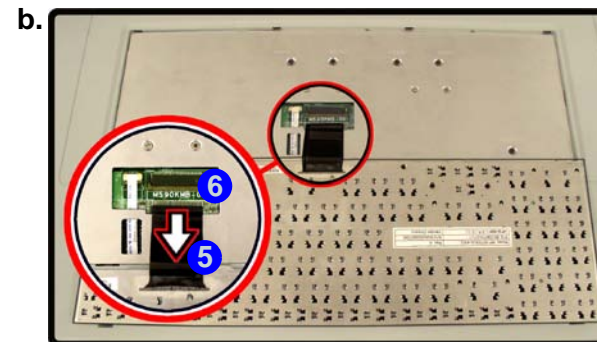
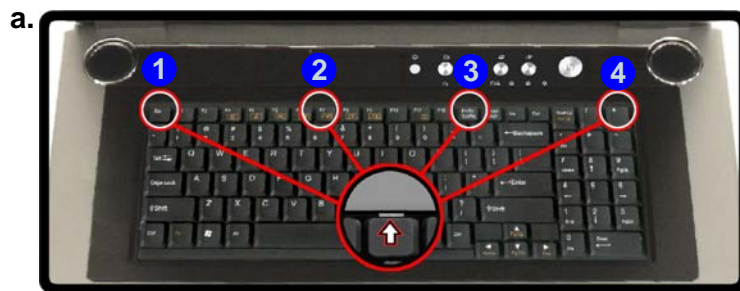
- 3 Screws


Removing the Keyboard

1. Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
2. Press the **four** keyboard latches at the top of the keyboard to elevate the keyboard from its normal position (you may need to use a small screwdriver to do this).
3. Carefully lift the keyboard up, being careful not to bend the keyboard ribbon cable **5** ([Figure b](#)).
4. Disconnect the keyboard ribbon cable **5** from the locking collar socket **6**.
5. Carefully lift up the keyboard **7** ([Figure c](#)) off the computer.

Figure 11
Keyboard Removal


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





Re-Inserting the Keyboard

When re-inserting the keyboard firstly align the **five** keyboard tabs at the bottom ([Figure d](#)) at the bottom of the keyboard with the slots in the case.



7. Keyboard

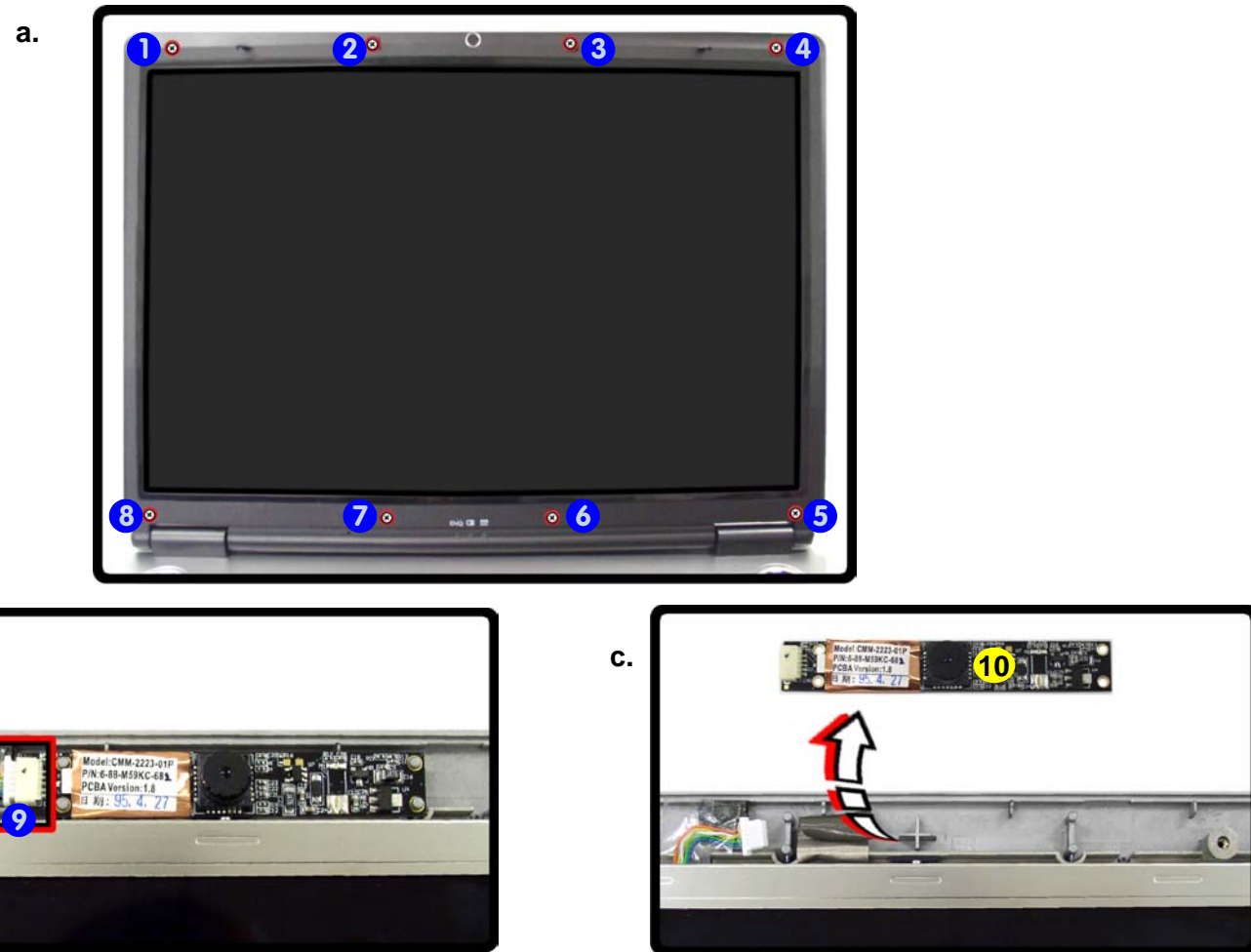
Disassembly

Figure 12
PC Camera Removal

- Remove the screws and ease forward the front panel module.
- Disconnect the cable.
- Remove the module.

Removing the PC Camera Module

- Turn **off** the computer, and remove the battery ([page 2 - 5](#)).
- Remove the rubber covers and screws **1** - **8** from the front of the LCD assembly, then run your finger around the middle of the frame to carefully unsnap (and ease forward) the LCD front panel module from the LCD assembly.
- Disconnect the cable **9** then carefully remove the camera module **10**.



10. PC Camera Module

Appendix A: Part Lists

This appendix breaks down the *M590KE* series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

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

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

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

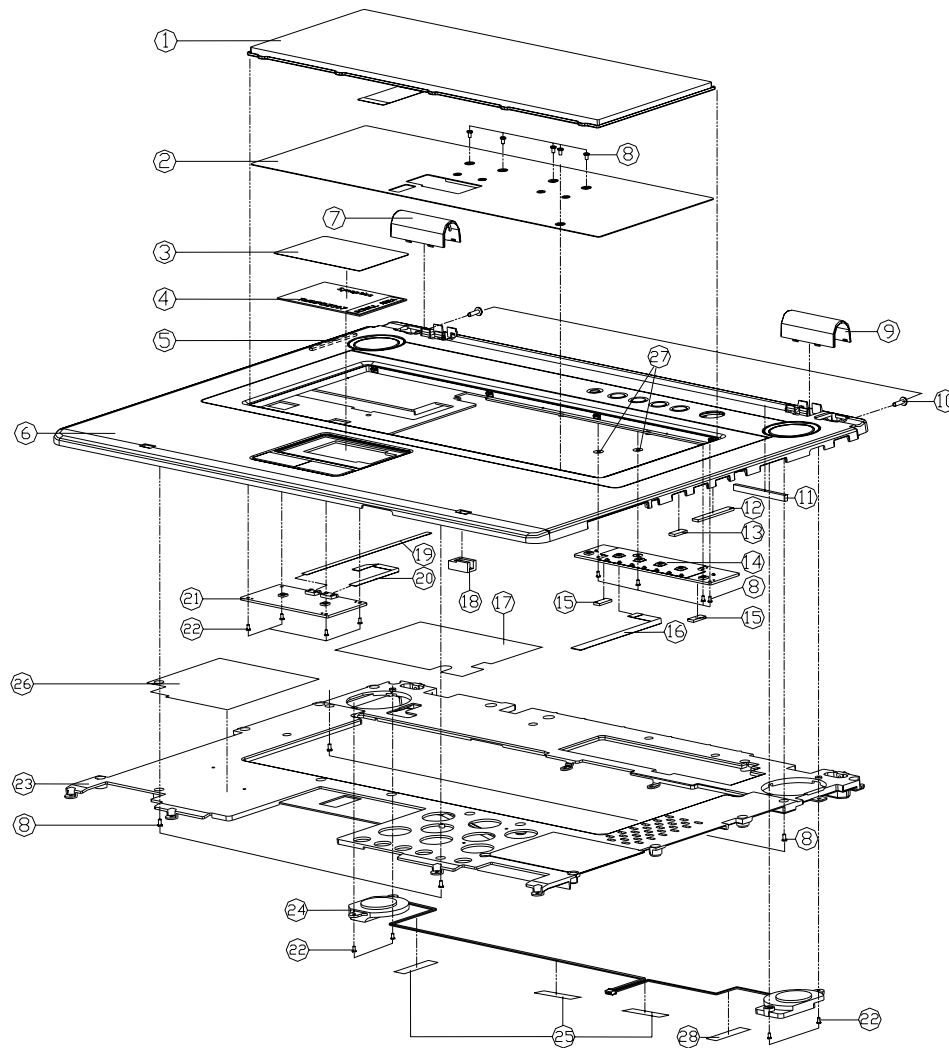
Part List Illustration Location

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

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

Part	Part
Top - (M590KE)	<i>page A - 3</i>
Bottom - (M590KE)	<i>page A - 4</i>
LCD 19" - (M590KE)	<i>page A - 5</i>
LCD 20" - (M590KE)	<i>page A - 5</i>
DVD DUAL - (M590KE)	<i>page A - 6</i>
Combo Drive - (M590KE)	<i>page A - 8</i>
HDD - (M590KE)	<i>page A - 9</i>

Top (M590KE)



ITEM	PART NAME	PART NO	REMARK
1	KEYBOARD	6-80-D90T0-011-1	
2	KB PLATE MODULE M590K 無鉛	6-33-M59K7-102	
3	T/P MYLAR M590K 無鉛	6-40-M59K2-011	FDR M590K
3	T/P MYLAR M590KA1 無鉛	6-40-M59K2-010-A	FDR M590KA
4	TOUCH PAD ELANTECH 810504-2602 M570A 無鉛	6-49-M57A2-020	FDR M590K/M590KA
4	TOUCH PAD SYNAPTICS 1M51PUZIR372 無鉛	6-49-M57U2-010	FDR M590KE
5	GASKET 38x39x340 TOP CASE ON AUDIO AREA 無鉛	6-47-00190-383	
6	TOP CASE MODULE M590K 無鉛	6-39-M59K2-012	FDR M590K/M590KE
6	TOP CASE MODULE M590KA1 無鉛	6-39-M59K2-010-A	FDR M590KA
7	HINGE COVER (L) M590K 無鉛	6-42-M59K2-022	FDR M590K
7	HINGE COVER (L) M590KA1 無鉛	6-42-M59K2-020-A	FDR M590KA
8	SCREW M2.5x4L KI BK/D ICT NY 無鉛	6-35-B4125-4RA	
9	HINGE COVER (R) M590K 無鉛	6-42-M59K2-012	FDR M590K
9	HINGE COVER (R) M590KA1 無鉛	6-42-M59K2-010-A	FDR M590KA
10	SCREW M2.5x10L P BNI ICT NY/D-5.8 無鉛	6-35-09125-10A	
11	GASKET 42x46x300 TOP FRAME ON HING AREA 無鉛	6-47-00190-45C	
12	GASKET 42x46x400 TOP CASE ON USB/A AREA 無鉛	6-47-00190-410	
13	GASKET 42x46x400 TOP CASE ON USB/B AREA 無鉛	6-47-00190-188	
14	HOT KEY BOARD V3.0 M590K 無鉛	6-77-M59KS-003	FDR M590K/M590KA
14	HOT KEY BOARD V5.0 M590K 無鉛	6-77-M59KS-005	FDR M590KE
15	RUBBER FDR HOTKEY BOARD M590K 無鉛	6-47-M59KS-060	
16	FFC CABLE FOR HOT KEY BOARD TOP PITCH=85 無鉛	6-43-M59KS-012	
17	CR TOP FRAME R M590K 無鉛	6-47-M59K2-070	
18	RUBBER TOP CASE HOOK M590K 無鉛	6-47-M59K2-050	
19	FFC CABLE FOR CLICK BOARD 4P PITCH=80 M590K 無鉛	6-43-M59K2-021	
20	FFC CABLE FOR TOUCHPAD 12P PITCH=85 M590K 無鉛	6-43-M59K2-011	
21	CLICK BOARD V3.0 M590K 無鉛	6-77-M59K2-003	FDR M590K/M590KA
21	CLICK BOARD V2.0 M590KE 無鉛	6-77-M59E2-002	FDR M590KE
22	SCREW M2x4L KI NI ICT (DxH=4.0,0.1+0.5) 無鉛	6-35-B1120-4RB	
23	TOP FRAME MODULE M590K 無鉛	6-39-M59K2-022	
24	SPEAKER 0.75W 1.5MM CONDUCTIVE TAPE 4P M590K 無鉛	6-23-5M59K-032	
25	TAPE MYLAR (A) MYLAR M550J 無鉛	6-40-M55J2-010	
26	CR TOP FRAME L M590K 無鉛	6-47-M59K2-060	
27	MYLAR (0.6x3.0x1.4) WASHER FDR FDD CASE 無鉛	6-40-11A5J-020	
28	TAPE MYLAR (C) MYLAR M550J 無鉛	6-40-M55J2-030	

Figure A - 1
Top (M590KE)

A. Part Lists

Bottom (M590KE)

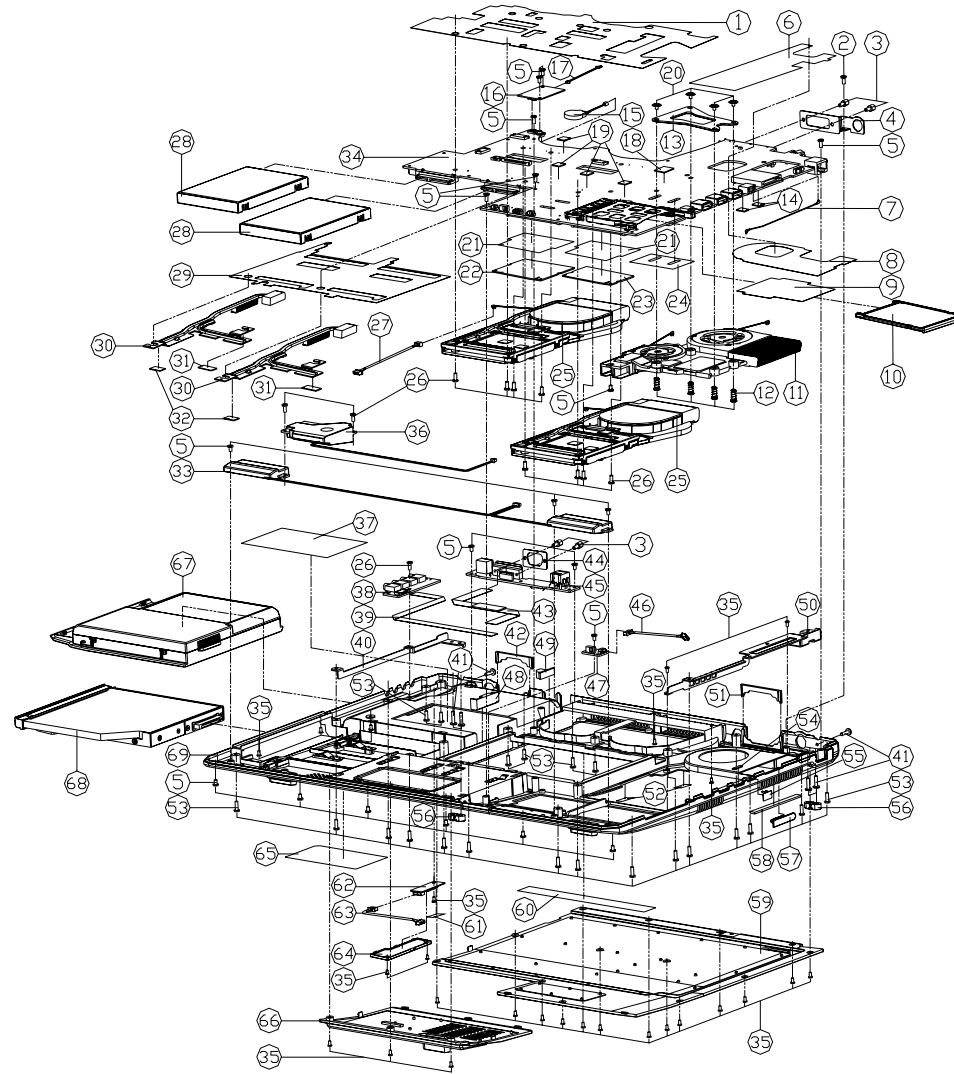
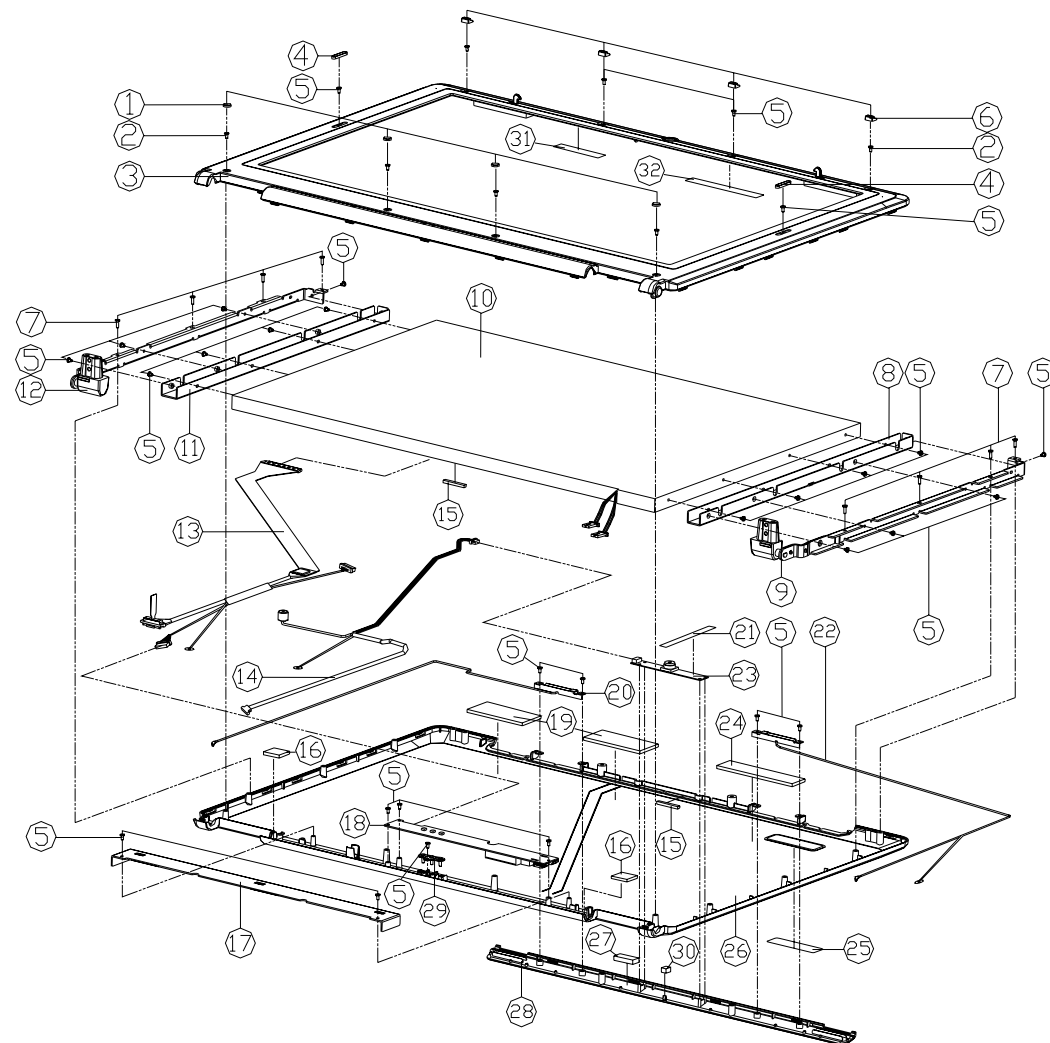


Figure A - 2
Bottom (M590KE)

A.Part Lists

ITEM	PART NAME	PART NO	REMARK
1	MYLAR FOR KB PLATE M590K	6-40-M59K7-01E	
2	SCREW M2X4L 3 BNI ICT NY	6-35-49120-65A	
3	KEY STUD ISM22 M-PLU LOW GH-PACK	6-34-07009-01E	
4	DVI PLATE M590K	6-33-M59K3-05E	
5	SCREW M2X4L KI BK/D ICT NY	6-35-84125-4RA	
6	MYLAR FOR SD CARD M590K	6-40-M59KA-010	
7	CABLE FOR TV	6-43-M59K1-031-1	
8	MYLAR FOR CPU M590K	6-40-M59K3-011	
9	MYLAR FOR PCMCIA M590K	6-40-M59K9-011	
10	MOUSE PCMCIA SLIMP CARD M590K	6-42-M52C3-70E	
11	CPU HEAT SINK M590KE	6-31-M59EN-01E	
12	SCREW M2X4L P BNI ICT NY	6-35-09125-10A	
13	CPU SUPPORTER M590KE	6-33-M59E5-010	
14	RUBBER FOR HOTKEY BOARD M590K	6-47-M59K3-060	
15	BAT 2000 3V 200MH V/CABLE 3MM DICKET	6-23-22015-PEIC	
16	MYLAR FOR VGA AREA M590K	6-40-M59K3-040	
17	CABLE FOR MODEM M590K	6-43-M59KU-010	
18	M/B THERMAL PAD M590K	6-47-M59K3-030	
19	M/B THERMAL PAD 12MMX15 M590K	6-47-M59K3-010	
20	SCREW M2X4L KI BNI ICT NY	6-35-41025-89E-1	
21	MYLAR FOR MINI PCI M590K	6-40-M59K3-041	
22	TV TUNER CARD M590K	6-88-M59E7-650	
23	TV TUNER CARD M590K	6-88-M59E7-650	
24	TV TUNER CARD M590K	6-88-M59E7-650	
25	VGA BOARD 17" M590K	6-77-M59K1-013-A	
26	VGA BOARD 17" M590K	6-77-M59K1-013-A	
27	VGA BOARD 17" M590K	6-77-M59K1-013-A	
28	VGA BOARD 17" M590K	6-77-M59K1-013-A	
29	SCREW M2X4L K BZ ICT NY	6-35-82125-6RA	
30	CABLE FOR VGA EXTENSION M590K	6-43-M59K3-011	
31	W/D HDD ASS'Y M590K	6-79-M59KJ-010	
32	MYLAR FOR VGA LOCAL M590K	6-40-M59K3-030	
33	M/B HEAT SINK M590K	6-40-M59K3-010	
34	SCREW M2X4L KI BNI ICT NY	6-35-89120-4RA	
35	MAIN BOARD V3.0 M590KE	6-77-M59E0-003A	
36	SCREW M2X4L KI BNI ICT NY	6-35-89120-4RA	
37	MYLAR FOR BATTERY M590K	6-40-M59K3-010	
38	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
39	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
40	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
41	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
42	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
43	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
44	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
45	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
46	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
47	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
48	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
49	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
50	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
51	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
52	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
53	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
54	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
55	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
56	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
57	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
58	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
59	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
60	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
61	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
62	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
63	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
64	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
65	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
66	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
67	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
68	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	
69	PHONE JACK BOARD V4.0 M590K	6-77-M59E0-004	

LCD 19" (M590KE)



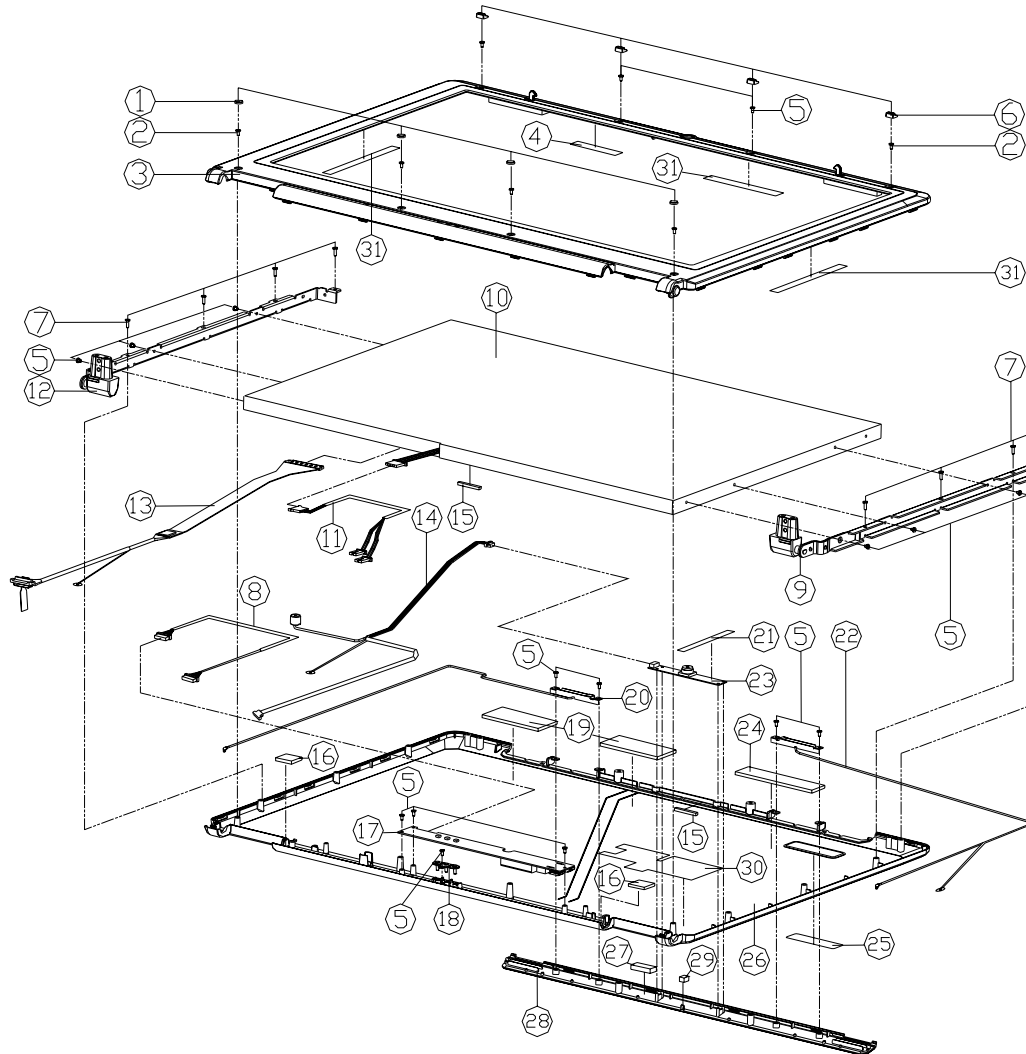
ITEM	PART NAME	PART NO	REMARK
1	LCD BOTTOM RUBBER M590K	6-47-M59K1-021	
2	SCREW M2.5*4L K1 BK/D ICT NY	6-35-B4125-4RA	
3	LCD FRONT COVER MIDDLE FOR 19" M590K	6-39-M59K1-014	
4	LCD SIDE RUBBER M590K	6-47-M59K1-031	
5	SCREW M2*4L K1 BNI ICT NY	6-35-B9120-4RA	
6	LCD TOP RUBBER M590K	6-47-M59K1-011	
7	SCREW M2.5*5L F NI ICT NY 120°	6-35-21125-5RC	
8	LCD BRACKET (R) M590K	6-33-M59K1-031	
9	HINGE (R) (FREEANGLE) M590KA	6-33-M59K1-010-A	
10	LCD 19" TFT SAMSUNG L1N90V1-L01 VSXGA+ 112MM	6-50-0A2B2-M00	
11	LCD BRACKET (L) M590K	6-33-M59K1-041	
12	HINGE (L) (FREEANGLE) M590KA	6-33-M59K1-020-A	
13	COAXIAL CABLE FOR SAMSUNG L1N90V1-L01 M590K	6-43-M59K1-012	
14	CABLE FOR CCD-MIC M590K	6-43-M59K1-011	
15	GASKET (S) (V) (H) LCD FRONT ON HING AREA M5	6-47-00190-15N	
16	GASKET (S) (V) (H) LCD FRONT ON HING AREA M590K	6-47-00190-20G	
17	LCD REINFORCE BRACKET M590K	6-33-M59K1-053	
18	INVERTER MODULE (DDO)R (EPS) M590K	6-76-M59KR-012	
19	INVERTER MODULE (DDO)R (EPS) M590K	6-76-M59KR-013	
20	LCD FRONT RUBBER A (R) (D) (T) (E) (G) M590K	6-47-M59K1-040	
21	ANTENNA DUAL-BAND PIFA BLUE TOOTH WITH GND	6-23-7M59K-021	
22	TAPE MYLAR (C) MYLAR M550J	6-40-M55J2-030	
23	ANTENNA DUAL-BAND PIFA W/AN WITH GND (BLAC)	6-23-7M59K-011	
24	CMOS CAMERA 1.3M CMOS-2223-01P USB2.0 11MM	6-88-M59KC-682	
25	LCD FRONT RUBBER (D) (R) (D) (T) (E) (G) M590K	6-47-M59K1-050	
26	FOR M550G (T) (E) (G) (D) (K) (S) (T) (Y) (L) (E) - (N) (O) (T) (E)	6-45-M55G1-020	
27	LCD BACK COVER (MG-AL) M590K	6-39-M59K1-02C	
28	SPONGE CCD CABLE M590K	6-47-M59K1-030	
29	ANTENNA COVER M590K	6-42-M59K1-061	
30	LENS FOR BACK COVER M590K	6-42-M59K1-031	
31	ANTENNA HOOK RUBBER M590K	6-47-M59K1-060	
32	LCD ADHESIVE TAPE (TESA 6465) (M) (M) (M) (S) M590K	6-40-M59K1-020	
33	LCD ADHESIVE TAPE (TESA 6465) (M) (M) (M) (S) M590K	6-40-M59K1-030	

Figure A - 3
LCD 19" (M590KE)

A. Part Lists

LCD 20" (M590KE)

Figure A - 4
LCD 20" (M590KE)



ITEM	PART NAME	PART NO	REMARK
1	LCD BOTTOM RUBBER M590K	6-47-M59K1-021	
2	SCREW M2.5*4L K1 BK/D ICT NY	6-35-B4125-4RA	
3	LCD FRONT COVER MODULE FOR 20" M590K	6-39-M59E1-010	
4	LCD ADHESIVE TAPE(TESA496501040015) M590K	6-40-M59K1-020	
5	SCREW M2*4L K1 BNT ICT NY	6-35-B9120-4RA	
6	LCD TOP RUBBER M590K	6-47-M59K1-011	
7	SCREW M2.5*5L F NI ICT NY 120°	6-35-21125-5RC	
8	INVERTER CABLE FOR 20" PANEL M590K	6-43-M59ER-010	
9	HINGE (R) (FREE ANGLE) M590KA	6-33-M59K1-010-A	
10	LCD 20" TFT LG LP200E1 VS06H (GLARE TYPE) 11.5MM	6-50-RA2B5-L00	
11	CABLE FOR LG 20" PANEL EXTENSION M590K	6-43-M59E1-010	
12	HINGE (L) (FREE ANGLE) M590KA	6-33-M59K1-020-A	
13	COAXIAL CABLE FOR 20" PANEL M590K	6-43-M59E1-020	
14	CABLE FOR CCD-MIC M590K	6-43-M59KT-011	
15	GAZE(TLSA1944) BOTTOM ON USBC AREA M5	6-47-00190-15N	
16	GAZE(CM429V40) LCD FRONT ON HING AREA M590K	6-47-00190-20G	
17	INVERTER MIDDLE 1000R (EPS) M590K	6-76-M59KR-012	
17	INVERTER MIDDLE 1000R V30 (EPS) M590K	6-76-M59KR-013	
18	LENS FOR BACK COVER M590K	6-42-M59K1-031	
19	LCD FRONT RUBBER A (90*30*12.6) M590K	6-47-M59K1-040	
20	ADHESIVE TAPE FOR LCD FRONT COVER M590K	6-23-7M59E-020	
21	TAPE MYLAR (C) MYLAR M550J	6-40-M55J2-030	
22	ADHESIVE TAPE FOR LCD FRONT COVER M590K	6-23-7M59E-010	
23	CMOS CAMERA 1.3M CMV-2223-01P USBC2 11MM	6-88-M59KC-682	
24	LCD FRONT RUBBER (B) (90*20*12.6) M590K	6-47-M59K1-050	
25	FOR M590G (THE LOGO STYLE-NOTE) M590K	6-45-M55G1-020	
26	LCD BACK COVER-M/L FOR 20" M590K	6-39-M59E1-02A	
27	SPONGE CCD CAMLE M590K	6-47-M59KT-030	
28	ANTENNA COVER M590K	6-42-M59K1-061	
29	ANTENNA HOOK RUBBER M590K	6-47-M59K1-060	
30	MULTI-PIN INVERTER CABLE LOCATION FOR 20" PANEL M590K	6-40-M59E1-010	
31	LCD ADHESIVE TAPE(TESA496501040015) M590K	6-40-M59K1-030	
32	W/O CCD RUBBER M590K	6-47-M59KT-021	

DVD DUAL (M590KE)

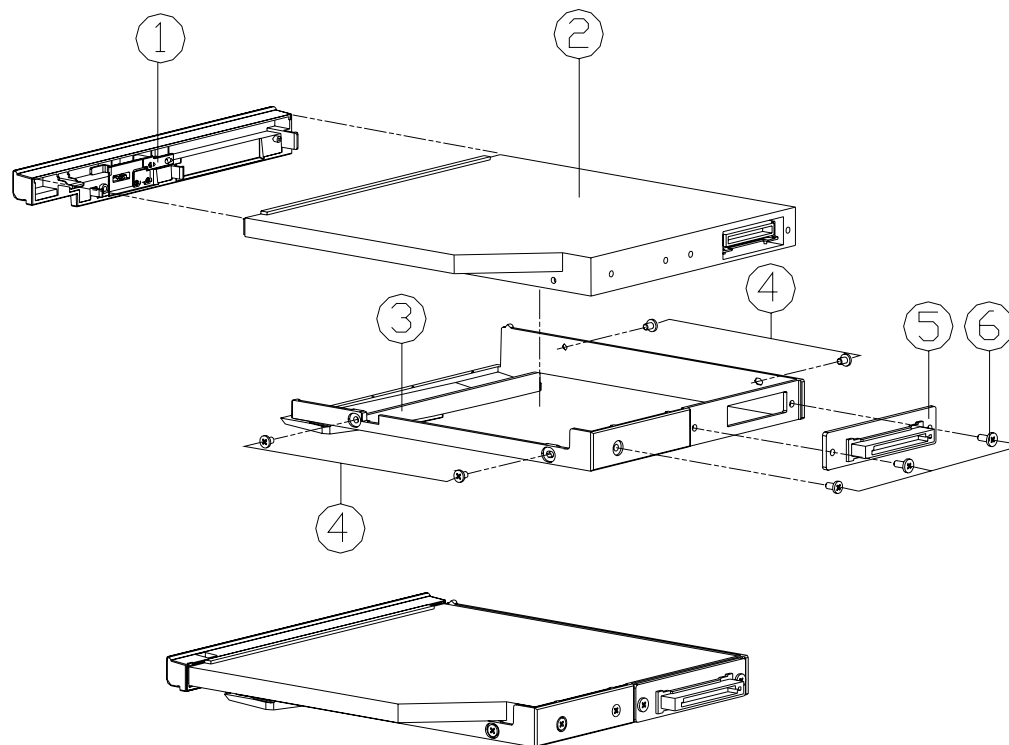


Figure A - 5
DVD DUAL
(M590KE)

ITEM	PART NAME	PART NO	REMARK
1	DVD DUAL BEZEL MODULE M590K 無鉛	6-42-M59KQ-101	
2	DVD/DUAL RW 5 1/4" 8X 12.7MM SDVD8441 PHIL 無鉛	6-85-A078X-C03	
2	DVD/DUAL RW 5 1/4" 8X 12.7MM UJ-B50CBPK2-A 無鉛	6-85-A078X-P04	
2	DVD/DUAL RW 5 1/4" 8X 12.7MM SDVD8820 F/W 無鉛	6-85-A078X-C04	
2	DVD/DUAL RW 5 1/4" 8X 12.7MM DVD-K830SUPER MULTIFANES PIONEER-BASSO 無鉛	6-85-A078X-B04	
3	G BEZEL HOLDER FOR ODD M590K 無鉛	6-42-M59KZ-042	
4	SCREW M2*3L K1 NI ICT NY 無鉛	6-35-B1120-3RA	
5	CD-ROM BOARD V3.0 M590K 無鉛	6-77-M59KZ-003	
6	SCREW M2*5L K1 NI ICT 無鉛	6-35-B1120-5RA	

A.Part Lists

Combo Drive (M590KE)

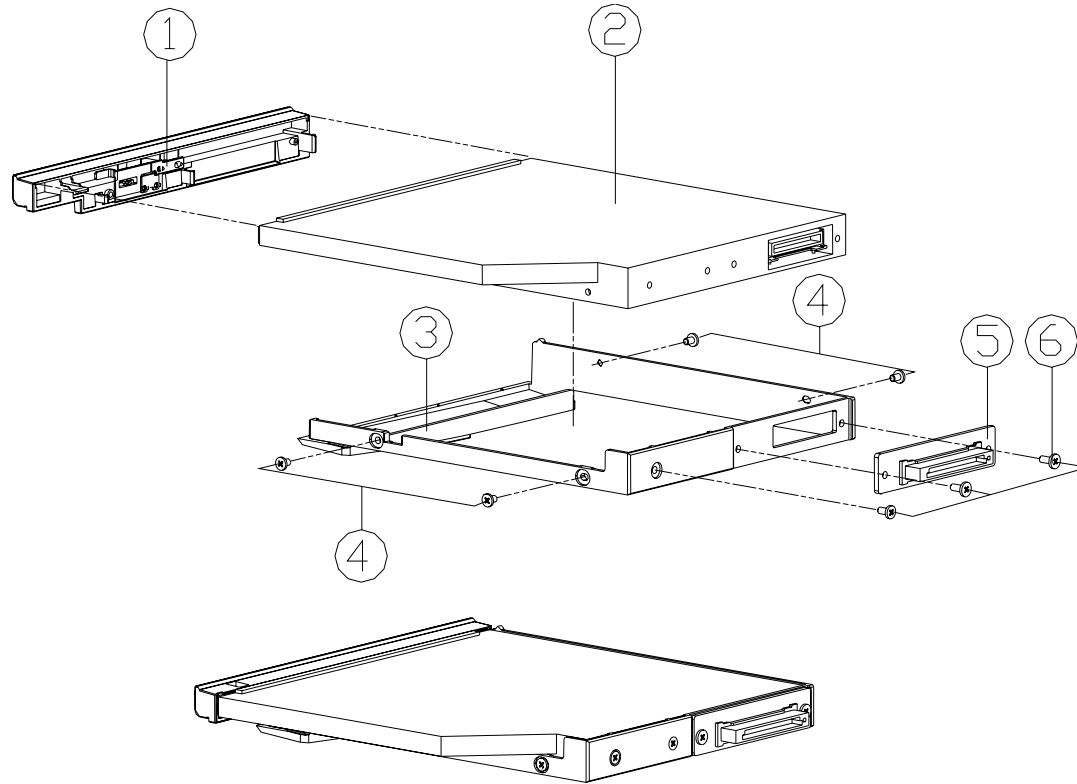


Figure A - 6
Combo Drive
(M590KE)

ITEM	PART NAME	PART NO	REMARK
1	COMBO BEZEL MODULE M590K 無鉛	6-42-M59KX-101	
2	CD-RW/DVD 5 1/4" 24X 12.7MM TS-L462C TOSHIBA	6-85-907PX-T00	
2	CD-RW/DVD 5 1/4" 24X 12.7MM UJDA770CL-A PA 無鉛	6-85-907PX-P00	
3	G BEZEL HOLDER FOR ODD M590K 無鉛	6-42-M59KZ-042	
4	SCREW M2*3L KI NI ICT NY 無鉛	6-35-B1120-3RA	
5	CD-ROM BOARD V3.0 M590K 無鉛	6-77-M59KZ-003	
6	SCREW M2*5L KI NI ICT 無鉛	6-35-B1120-5RA	

HDD (M590KE)

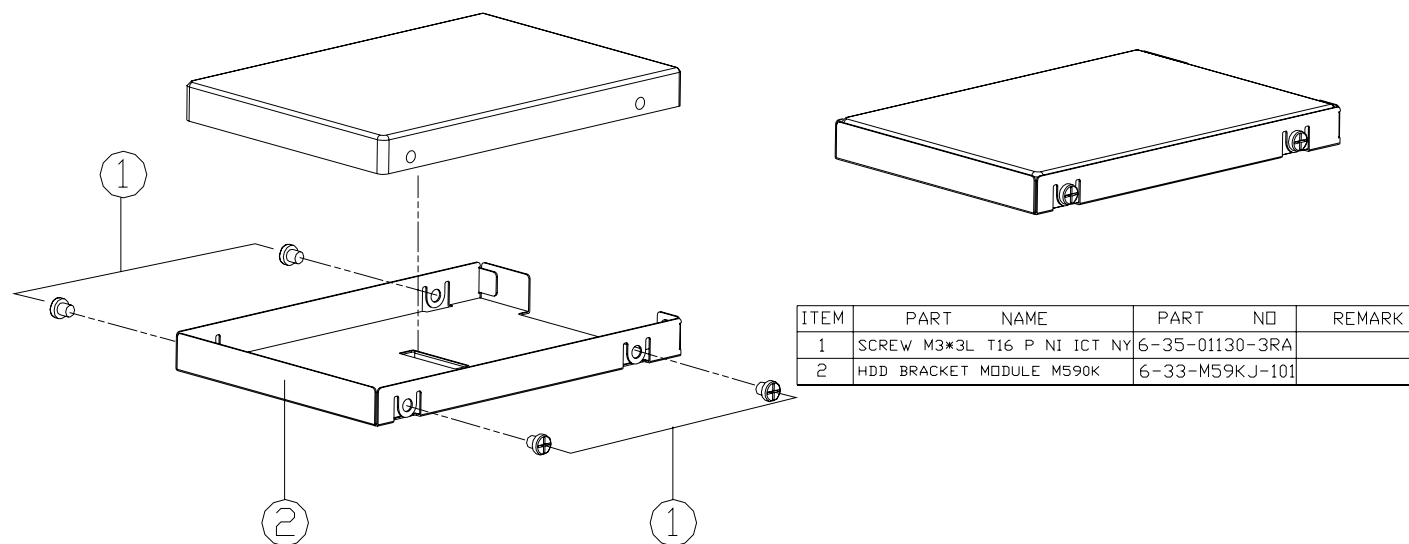


Figure A - 7
HDD (M590KE)

ITEM	PART NAME	PART NO	REMARK
1	SCREW M3*3L T16 P NI ICT NY	6-35-01130-3RA	
2	HDD BRACKET MODULE M590K	6-33-M59KJ-101	

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the *M590KE* notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
<i>SYSTEM BLOCK DIAGRAM - Page B - 2</i>	<i>USB CON * 3, TV-S Out - Page B - 17</i>	<i>VCORE - Page B - 32</i>
<i>NPT 64 (P1) HyperTransport - Page B - 3</i>	<i>INV, WEB, CLICK, S/W CON - Page B - 18</i>	<i>POWER GOOD - Page B - 33</i>
<i>NPT 64 (P2) DDR2_A - Page B - 4</i>	<i>PCI-E LAN (Realtech 8111B) - Page B - 19</i>	<i>+1.5VS - Page B - 34</i>
<i>NPT 64 (P3) DDR2_B - Page B - 5</i>	<i>MINIPCI (Tuner, WLAN, BT) - Page B - 20</i>	<i>SATA HDD & CDROM - Page B - 35</i>
<i>NPT 64 (P4) Misc - Page B - 6</i>	<i>PCI 7411, MCARD CON - Page B - 21</i>	<i>VGA Board Connector - Page B - 36</i>
<i>NPT 64 (P5) Power - Page B - 7</i>	<i>PCMCIA SOCKET - Page B - 22</i>	<i>CLICK BOARD - Page B - 37</i>
<i>DDR SODIMM 1 - Page B - 8</i>	<i>HITACHI H8S/2111 - Page B - 23</i>	<i>HOT KEY BOARD - Page B - 38</i>
<i>DDR SODIMM 2 - Page B - 9</i>	<i>BIOS, CCD CON & FAN CON - Page B - 24</i>	<i>PHONE JACK BOARD - Page B - 39</i>
<i>LCD CON & LCD VCC - Page B - 10</i>	<i>SUPER I/O & FIR - Page B - 25</i>	<i>RJ11 BOARD - Page B - 40</i>
<i>CK804 HT Part A - Page B - 11</i>	<i>AUDIO (ALC655), MDC - Page B - 26</i>	<i>CD-ROM BOARD - Page B - 41</i>
<i>CK804 PCI-E Part B - Page B - 12</i>	<i>SRS AP8202Q - Page B - 27</i>	<i>2nd CD-ROM BOARD - Page B - 42</i>
<i>CK804 PCI Part C - Page B - 13</i>	<i>SUB WOOFER, DVI CON - Page B - 28</i>	<i>CIR BOARD - Page B - 43</i>
<i>CK804 SATA & PATA Part D - Page B - 14</i>	<i>+5VS, +3VS, +5V, +3V - Page B - 29</i>	<i>FLASH BOARD - Page B - 44</i>
<i>CK804 CODEC, USB, IO Part E - Page B - 15</i>	<i>+VDD5, +VDD3, +3V, +5V, +1.25V - Page B - 30</i>	<i>DEBUG BOARD - Page B - 45</i>
<i>CK804 Power & GND Part F - Page B - 16</i>	<i>CHARGER, BAT CON, PWR CON - Page B - 31</i>	

Table B - 1
**Schematic
Diagrams**

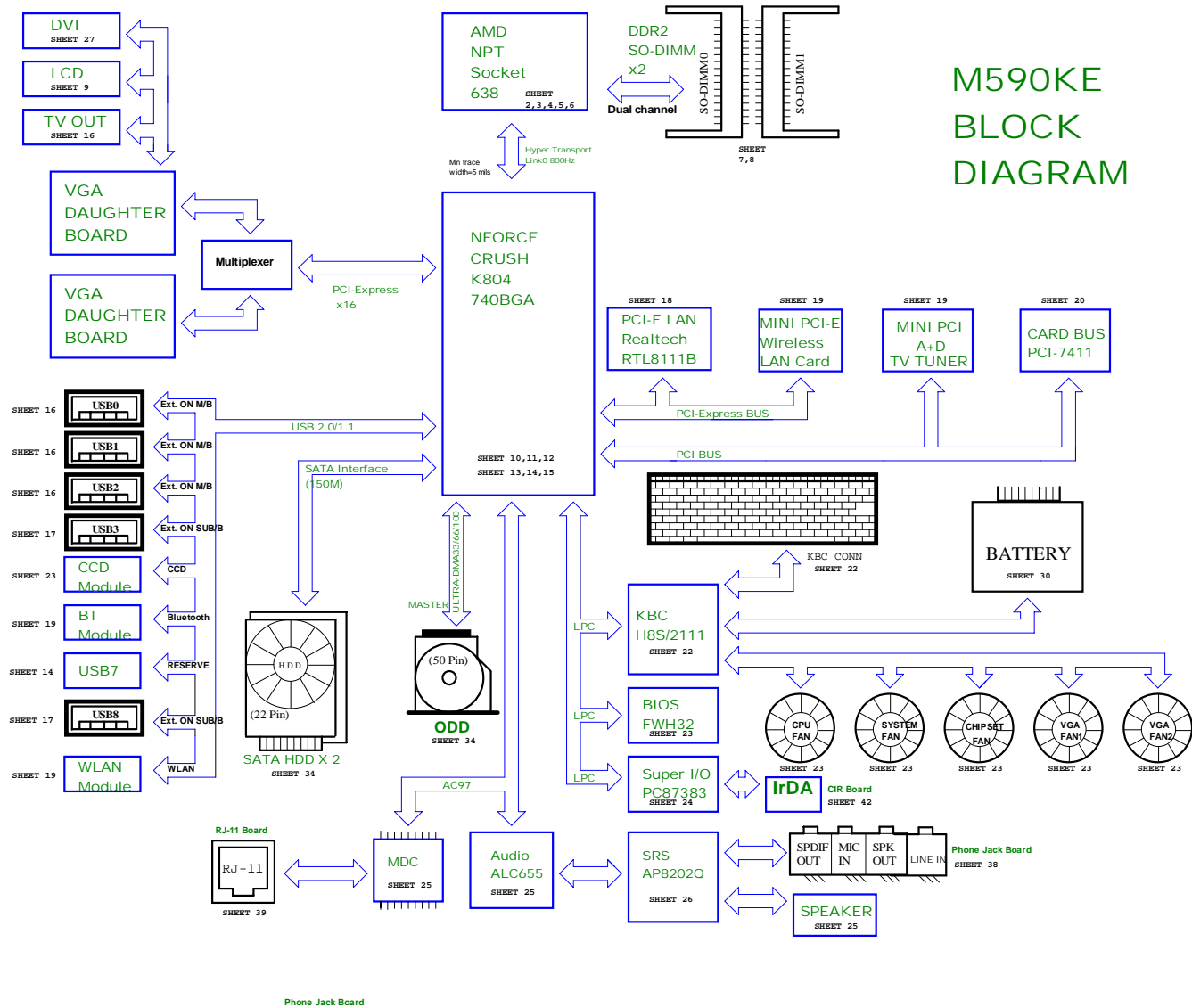


Version Note

The schematic diagrams in this chapter are based upon version **6-71-M59E0-003A**. If your main-board (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

SYSTEM BLOCK DIAGRAM

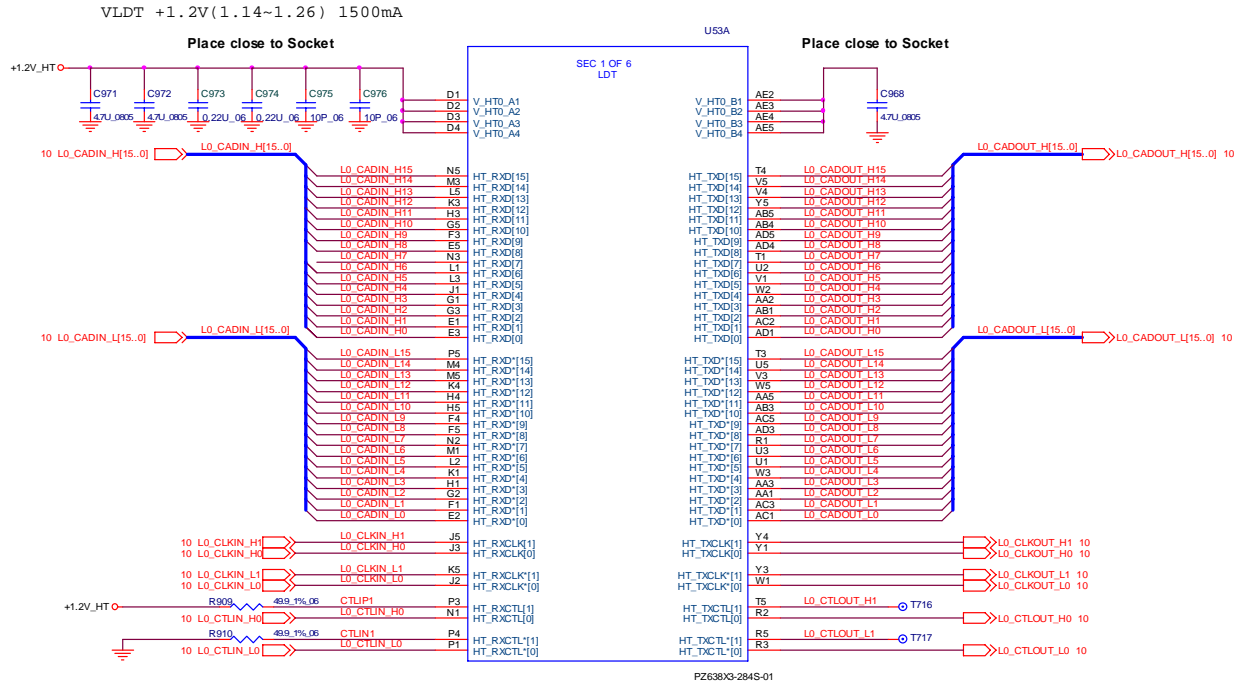
Sheet 1 of 45
SYSTEM BLOCK
DIAGRAM



M590KE
BLOCK
DIAGRAM

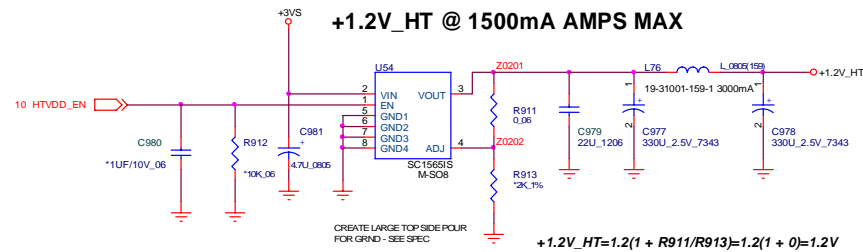
NPT 64 (P1) HyperTransport

+3VS 5,7,8,9,10,11,12,13,14,15,17,18,19,22,23,24,25,27,28,31,32,34,35
+1.2V_HT 5,10,15



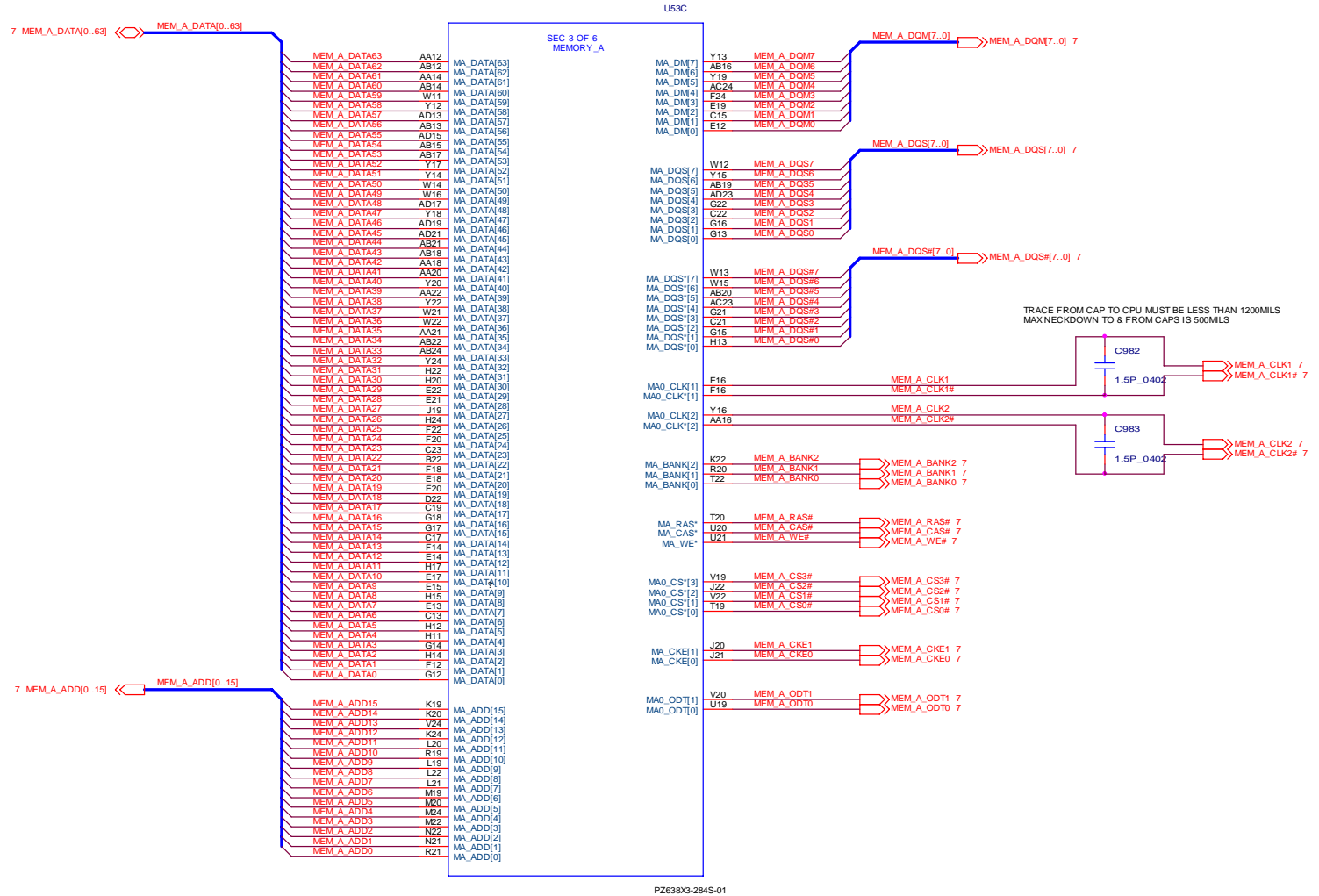
Sheet 2 of 46
NPT 64 (P1)
HyperTransport

B.Schematic Diagrams

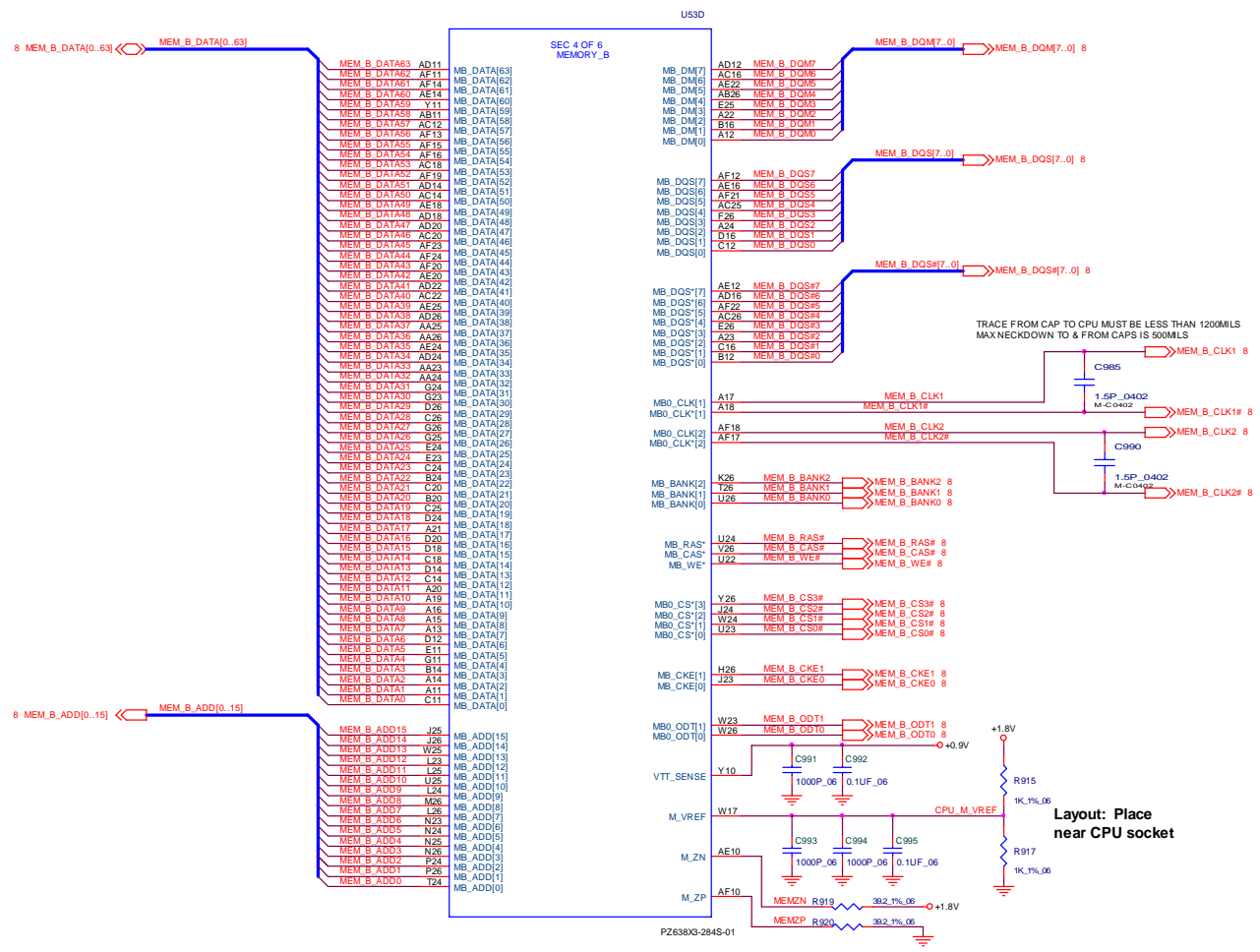


NPT 64 (P2) DDR2_A

Sheet 3 of 46
NPT 64 (P2)
DDR2_A



NPT 64 (P3) DDR2_B



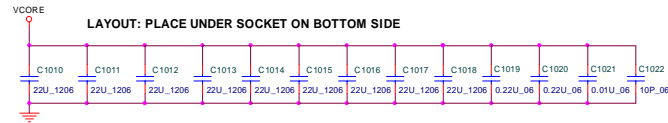
Sheet 4 of 46
NPT 64 (P3)
DDR2_B

B.Schematic Diagrams

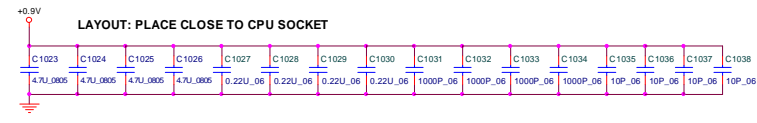
NPT 64 (P5) Power



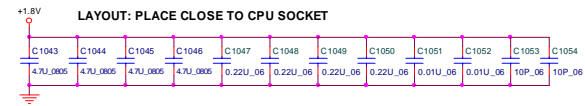
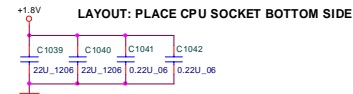
CPU VDD



CPU VTT



CPU VDDIO

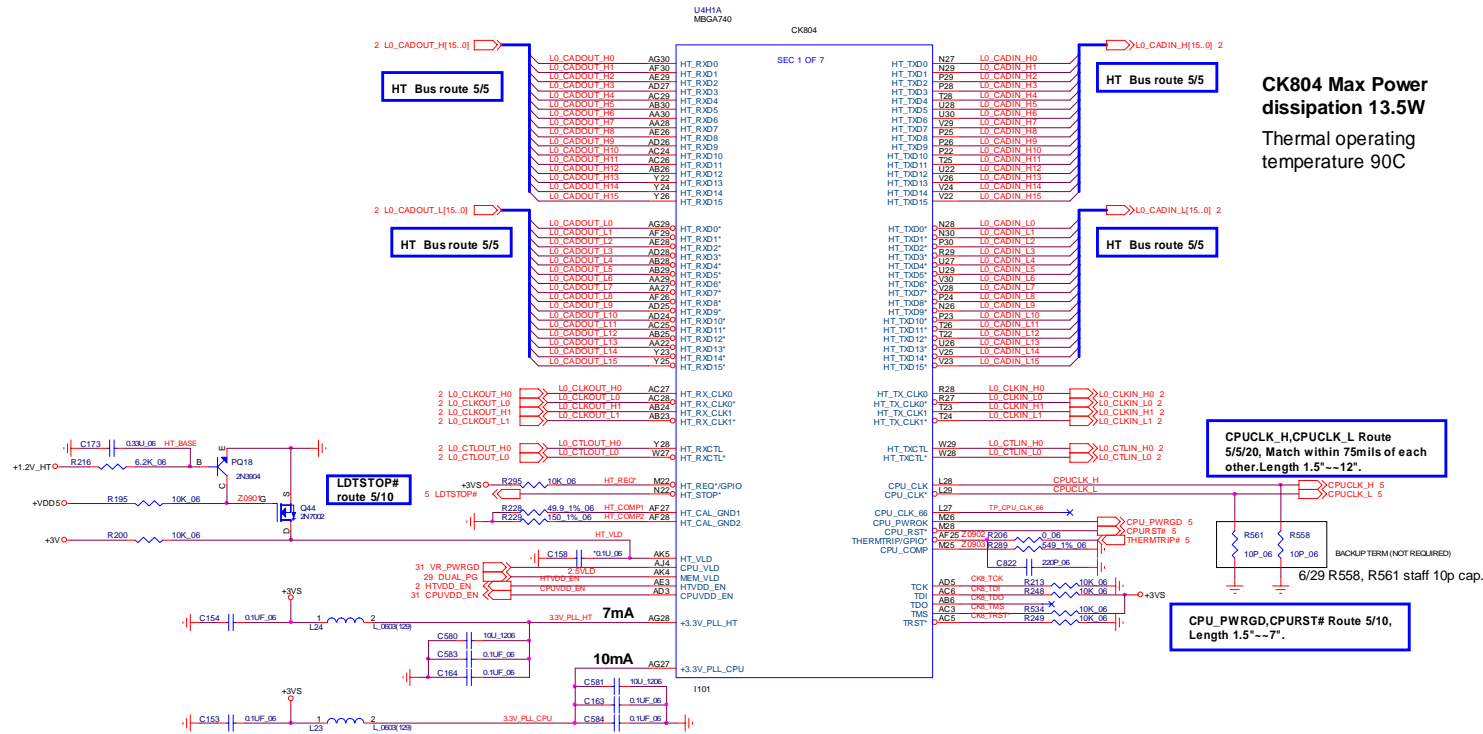


ALL PARTS ARE X7R OR NPO

Sheet 6 of 46
NPT 64 (P5) Power

CK804 HT Part A

- +1.2V_HT 2,5,15
- +3V 5,11,12,14,15,18,19,20,21,22,23,25,28,29,31,32
- +3VS 2,5,7,8,9,11,12,13,14,15,17,18,19,22,23,24,25,27,28,31,32,34,35
- +VDD5 14,17,19,23,25,28,31,33,35



**CK804 Max Power
dissipation 13.5W**
Thermal operating
temperature 90C

Sheet 10 of 46
CK804 HT Part A

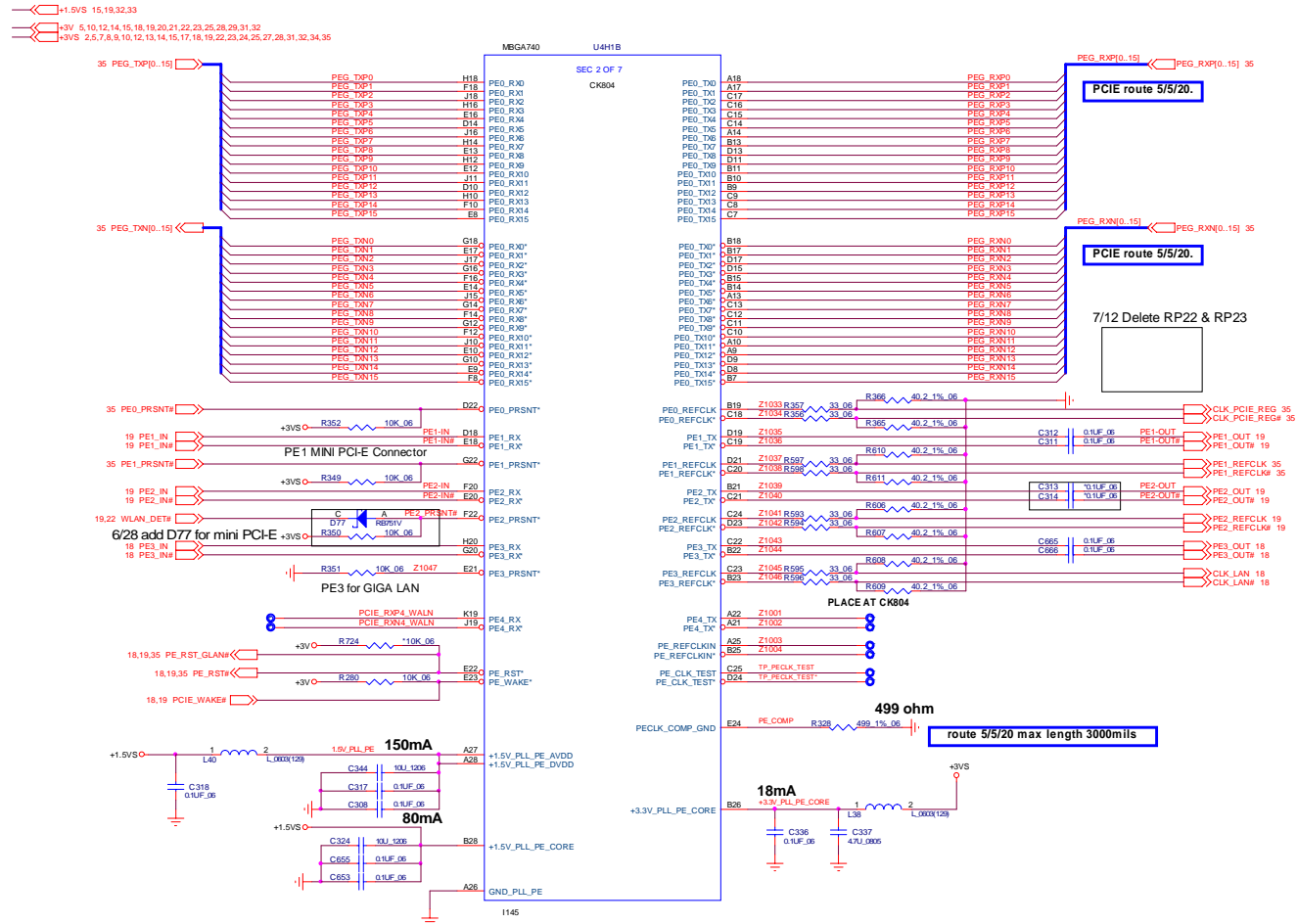
B.Schematic Diagrams

**CPUCLK_H,CPULCK_L Route
5/5/20, Match within 75mils of each
other.Length 1.5"~12".**

**CPU_PWRGD,CPURST# Route 5/10,
Length 1.5"~7".**

6/29 R558, R561 staff 10p cap.

CK804 PCI-E Part B



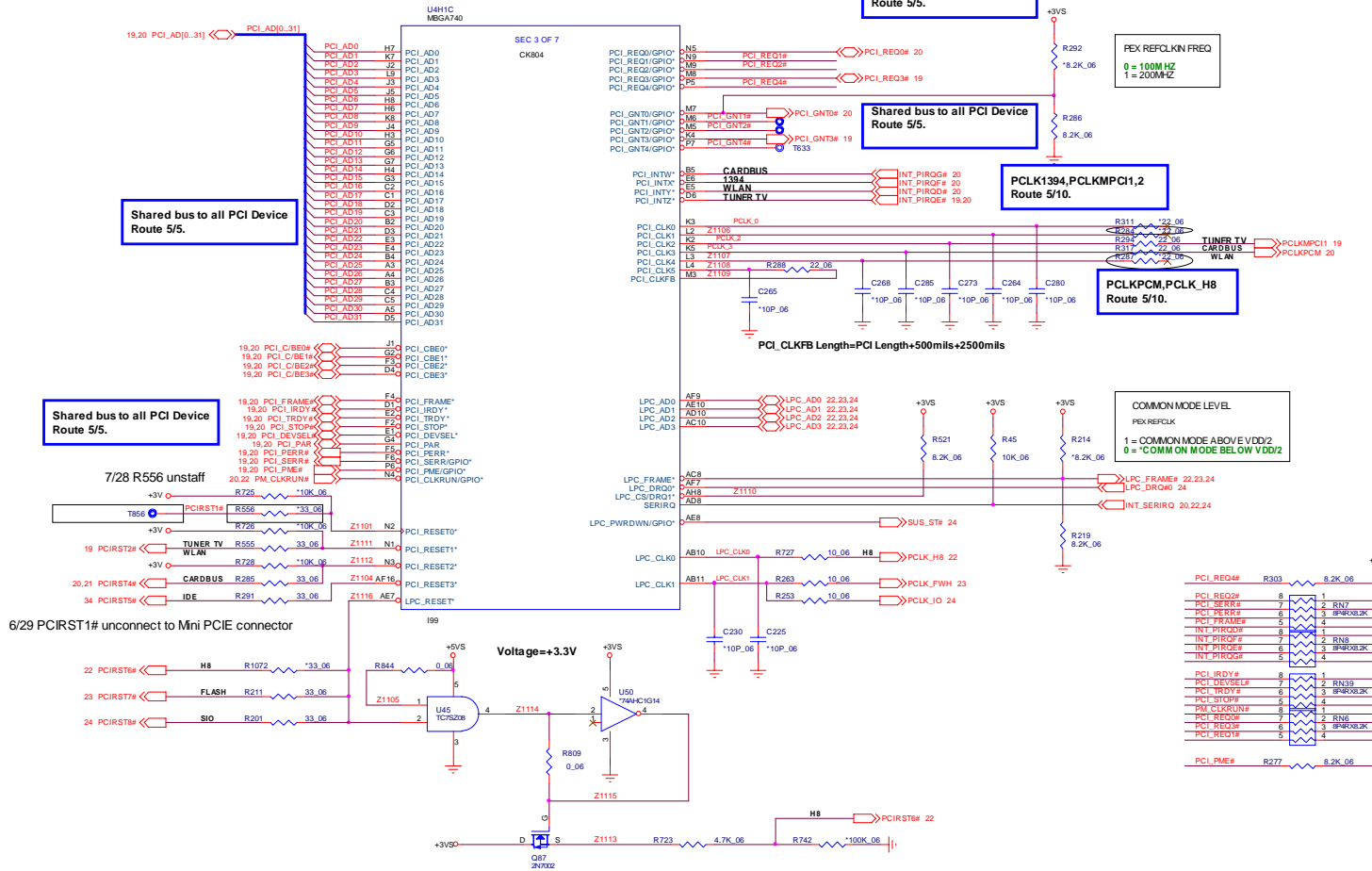
6/29 C313, C314 unstaff

B.Schematic Diagrams

Sheet 11 of 46
CK804 PCI-E Part B

CK804 PCI Part C

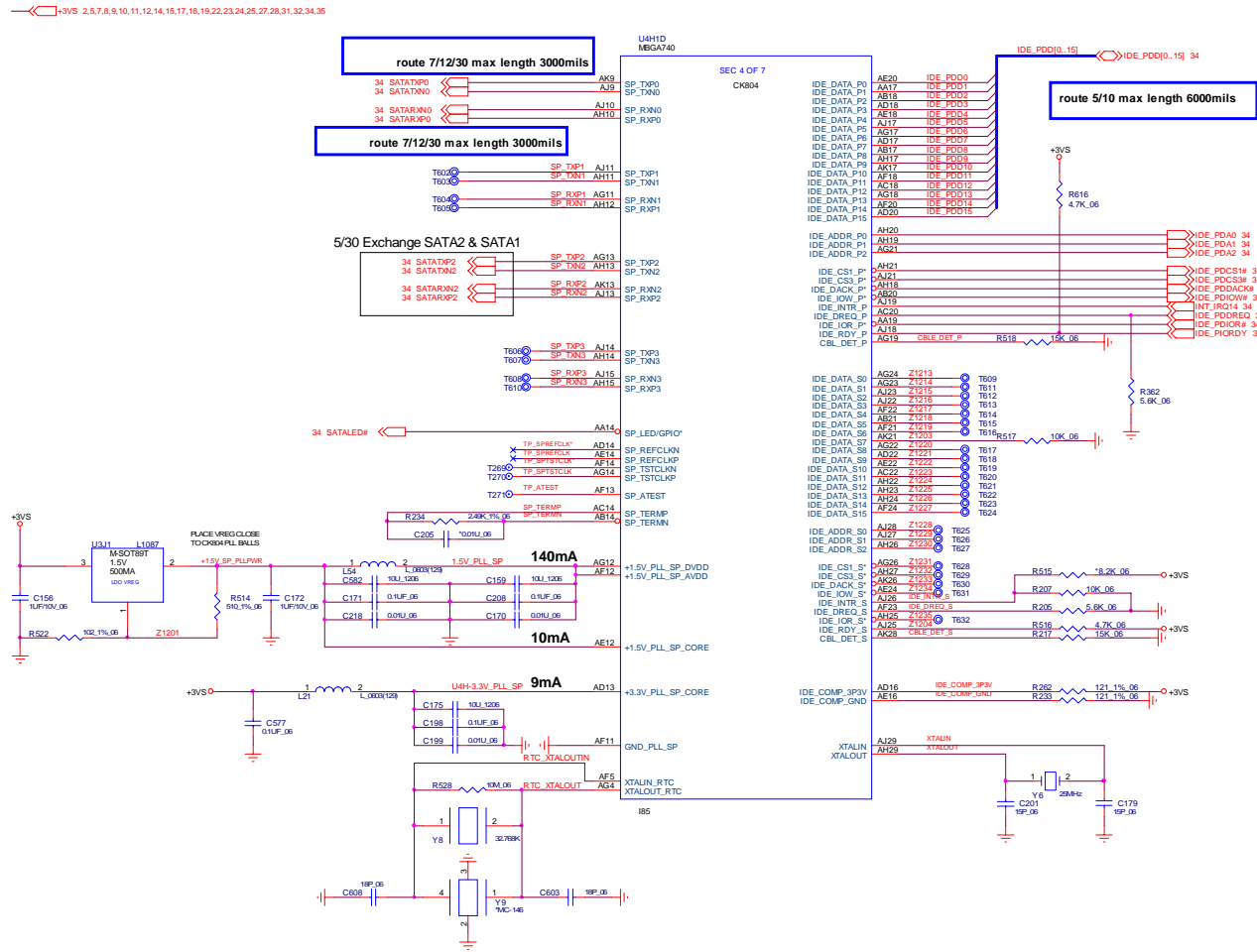
+3VS 2,5,7,8,9,10,11,13,14,15,17,18,19,22,23,24,25,27,28,31,32,34,35
 +3V 5,10,11,14,15,18,19,20,21,22,23,25,28,29,31,32
 +5VS 9,15,17,19,22,23,25,27,28,29,32,33,34,35



Sheet 12 of 46
 CK804 PCI Part C

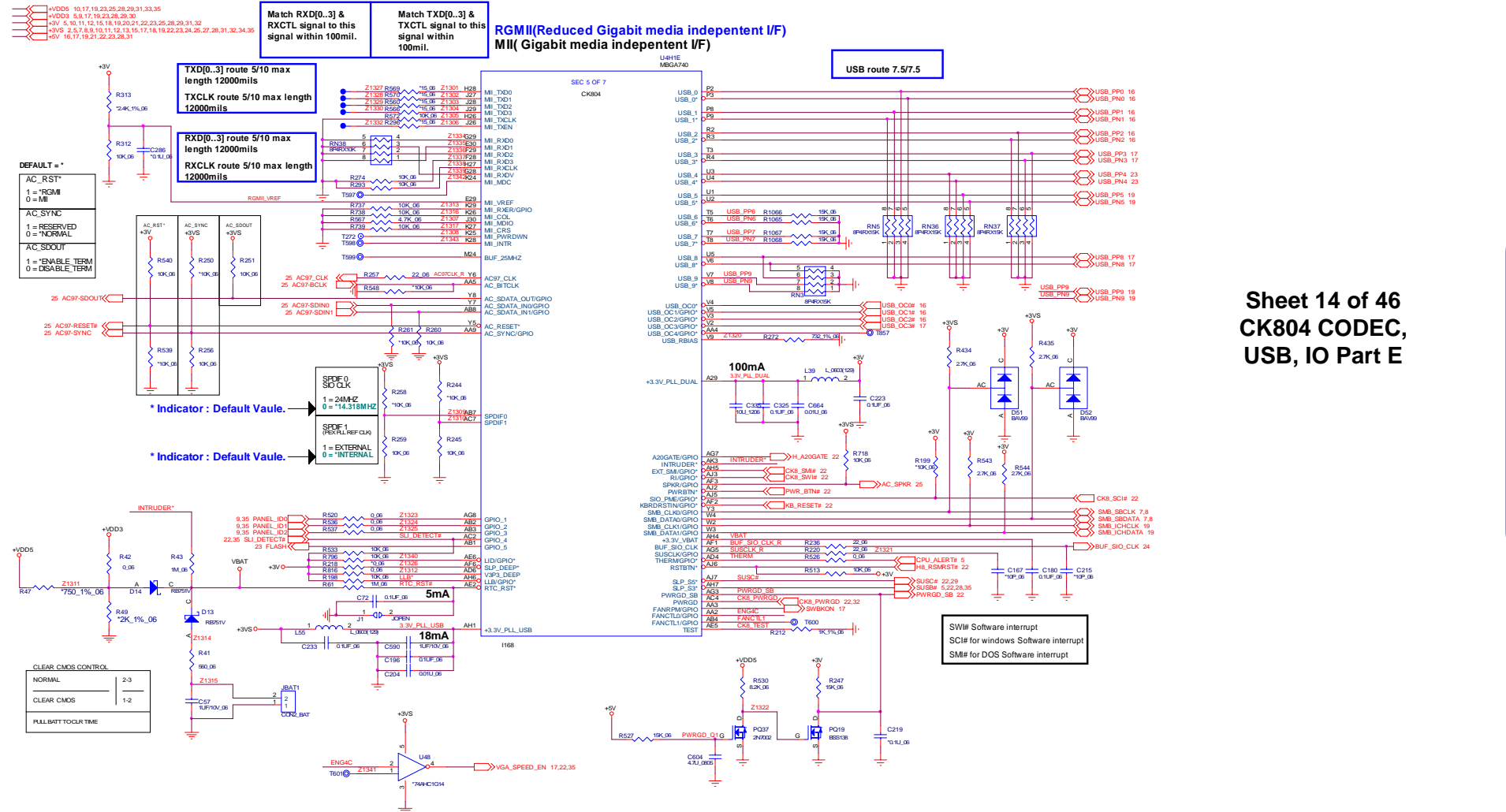
B.Schematic Diagrams

CK804 SATA & PATA Part D



Sheet 13 of 46
CK804 SATA & PATA Part D

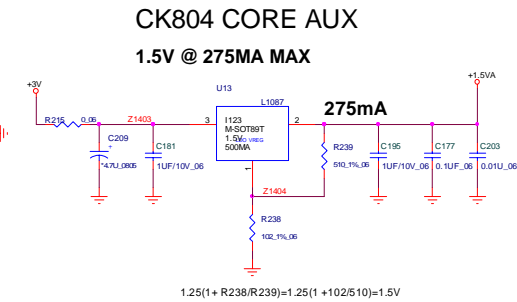
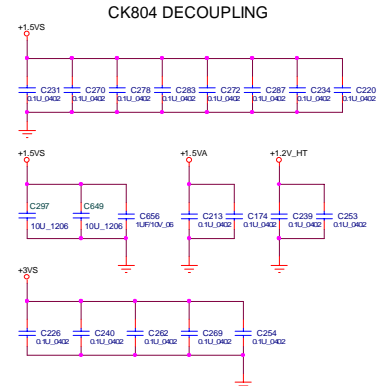
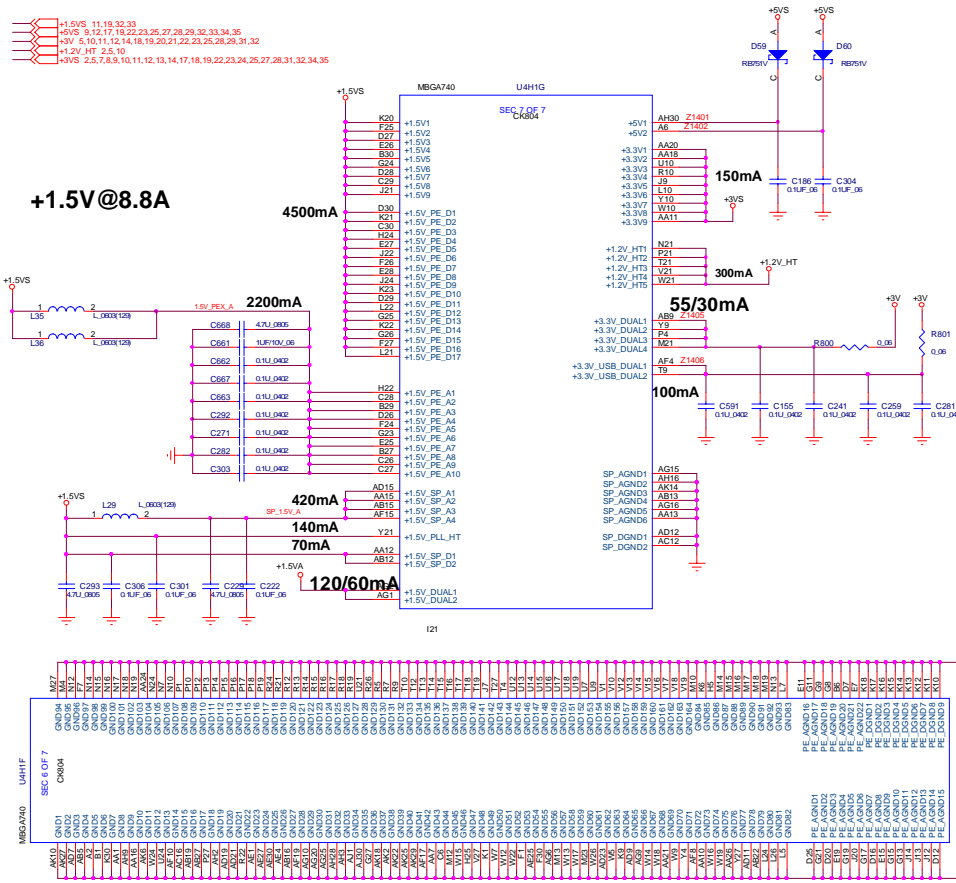
CK804 CODEC, USB, IO Part E



Sheet 14 of 46
CK804 CODEC,
USB, IO Part E

B.Schematic Diagrams

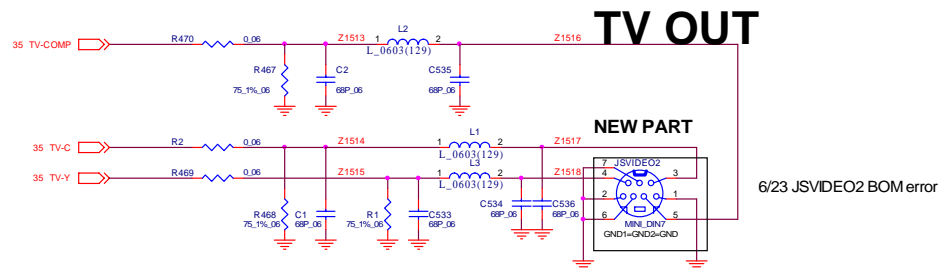
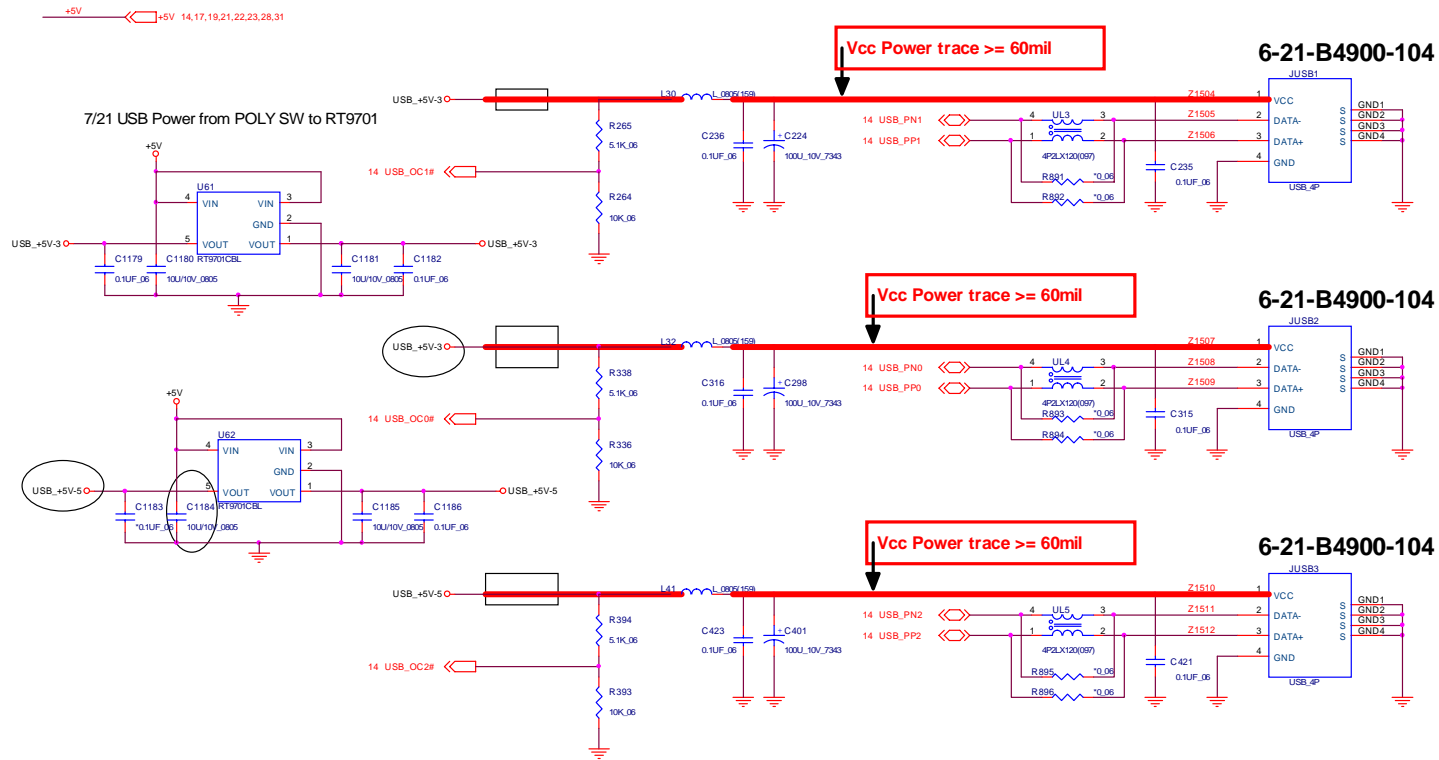
CK804 Power & GND Part F



B.Schematic Diagrams

Sheet 15 of 46
CK804 Power & GND
Part F

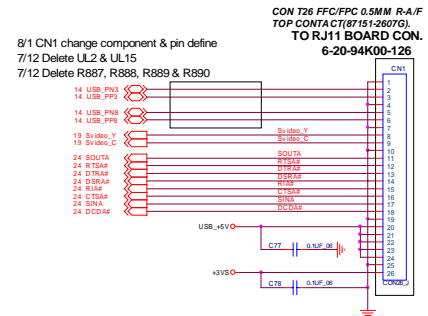
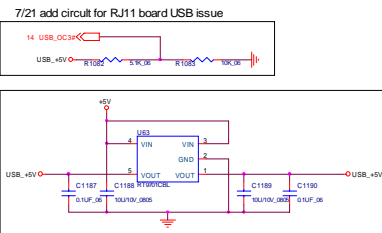
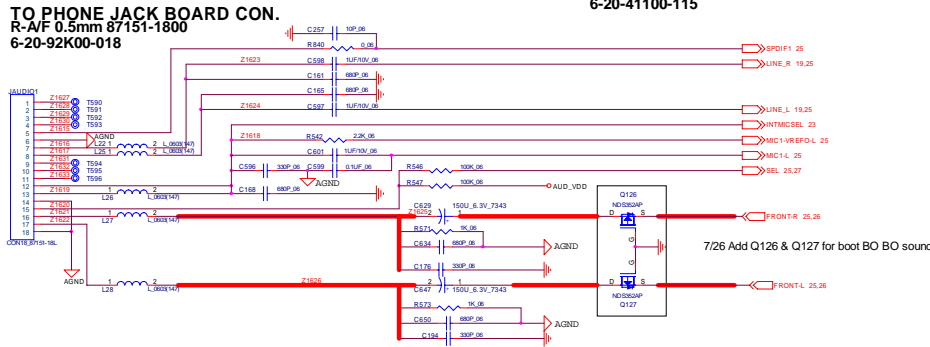
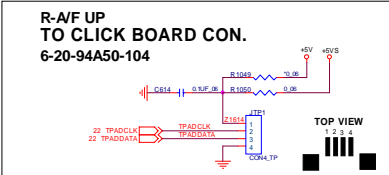
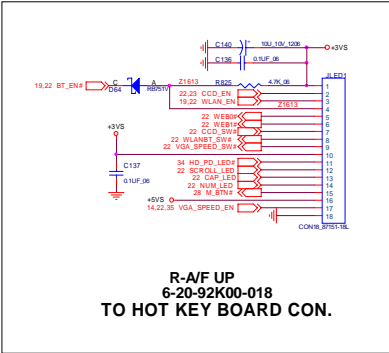
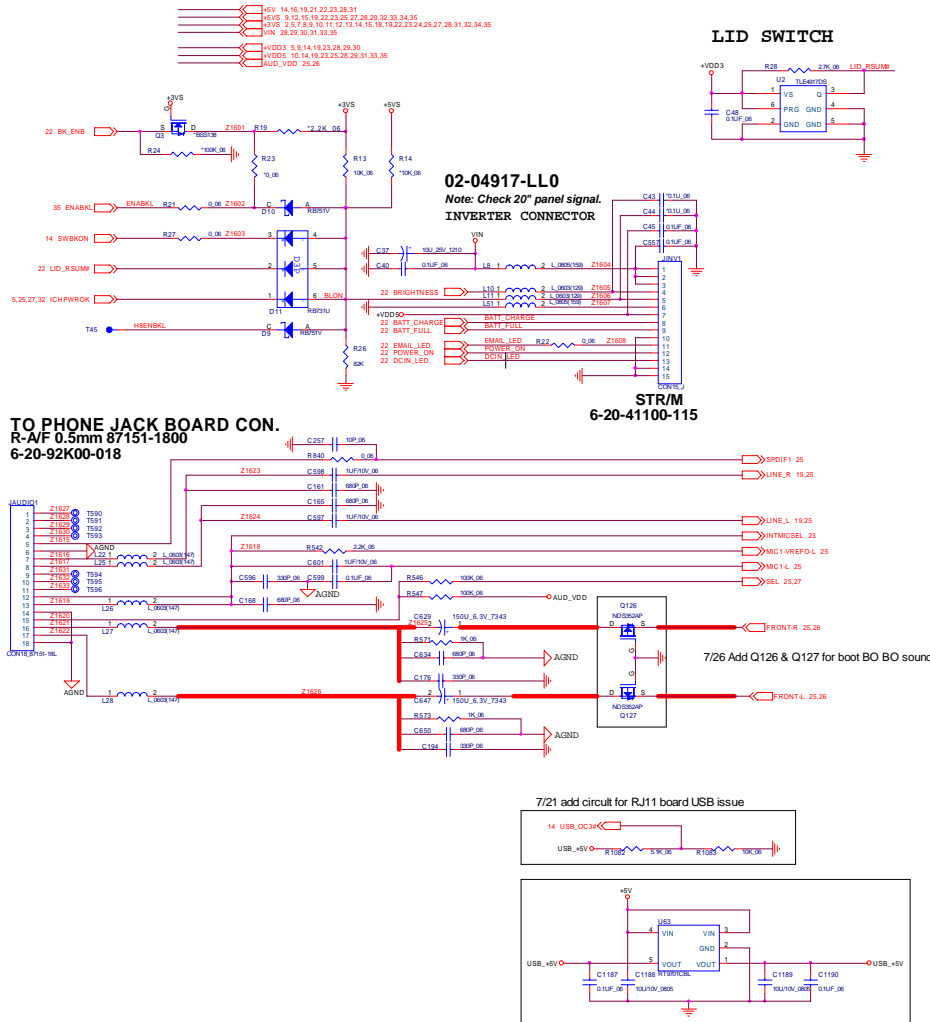
USB CON * 3, TV-S Out



Sheet 16 of 46
USB CON * 3, TV-S
Out

INV, WEB, CLICK, S/W CON

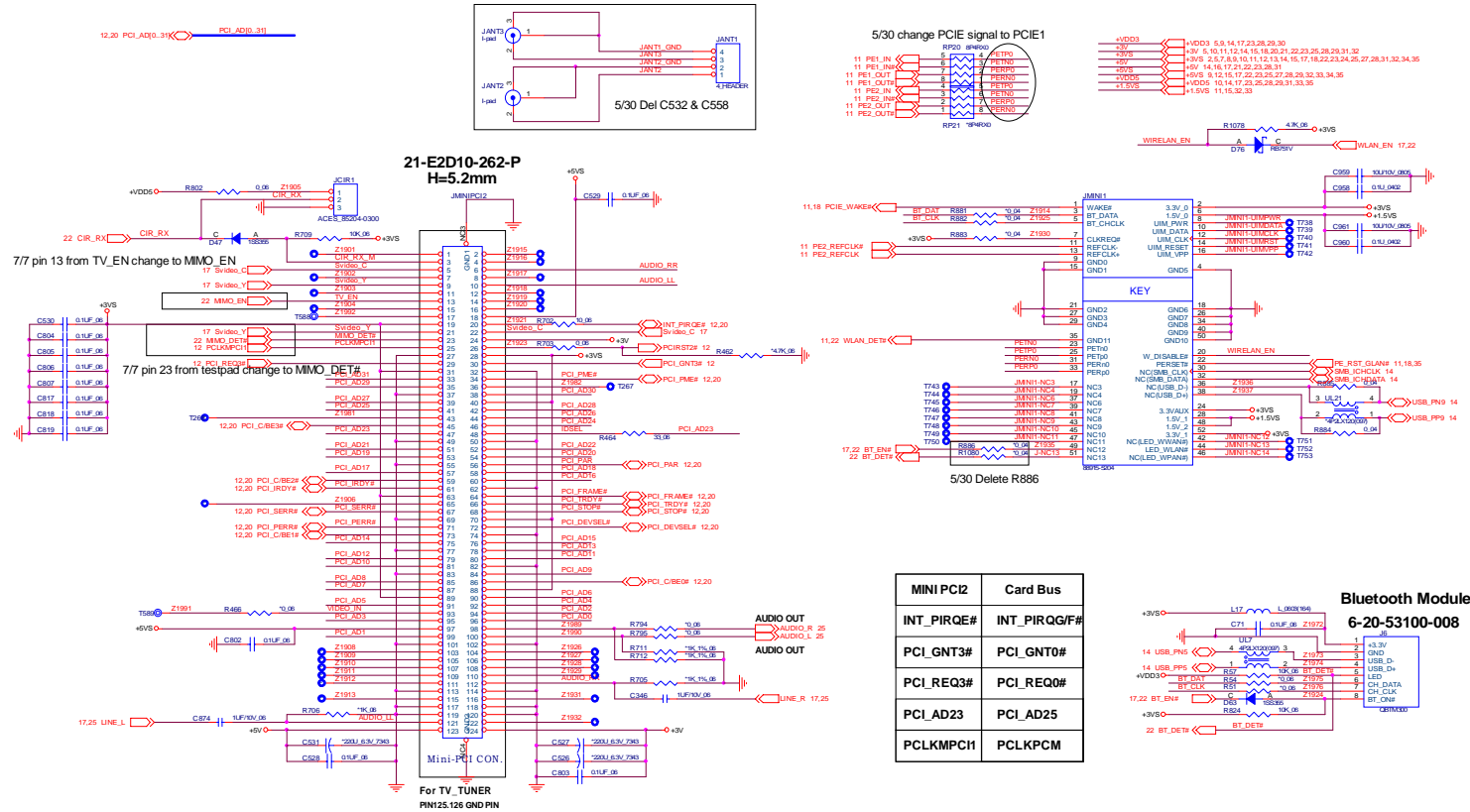
Sheet 17 of 46
INV, WEB, CLICK,
S/W CON



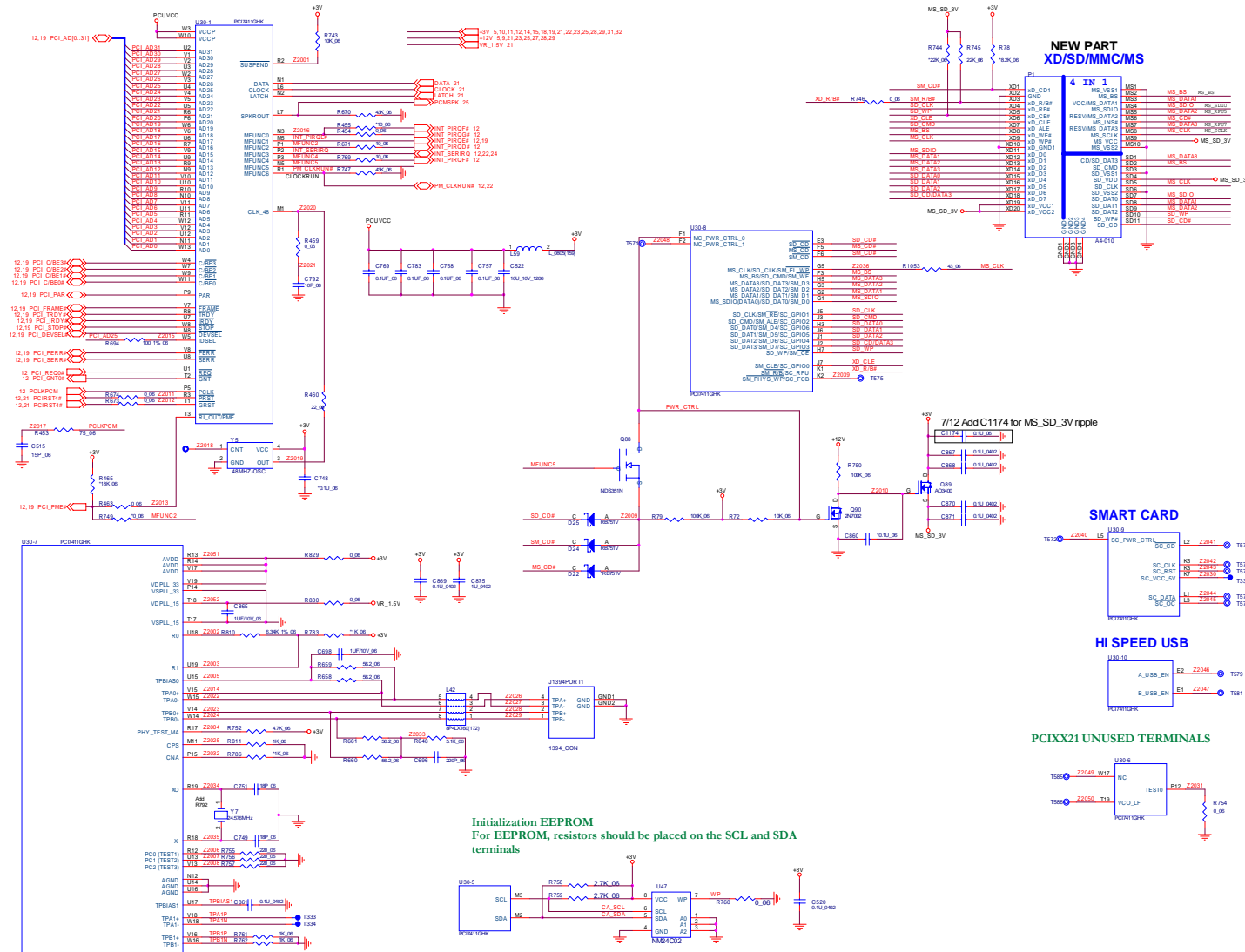
Schematic Diagrams

MINIPCI (Tuner, WLAN, BT)

Sheet 19 of 46
MINIPCI
(Tuner, WLAN, BT)



PCI 7411, MCARD CON

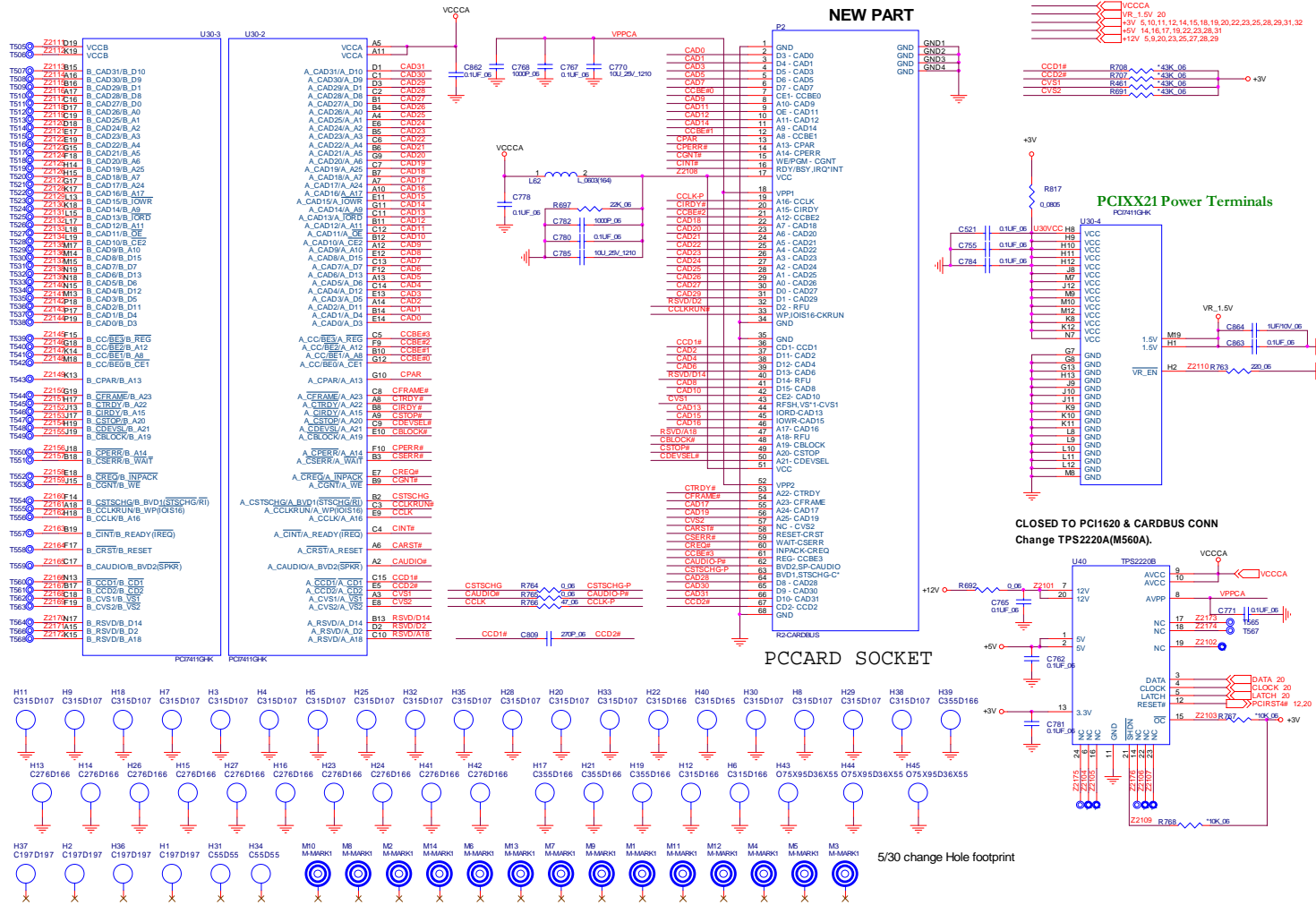


Sheet 20 of 46
PCI 7411, MCARD
CON

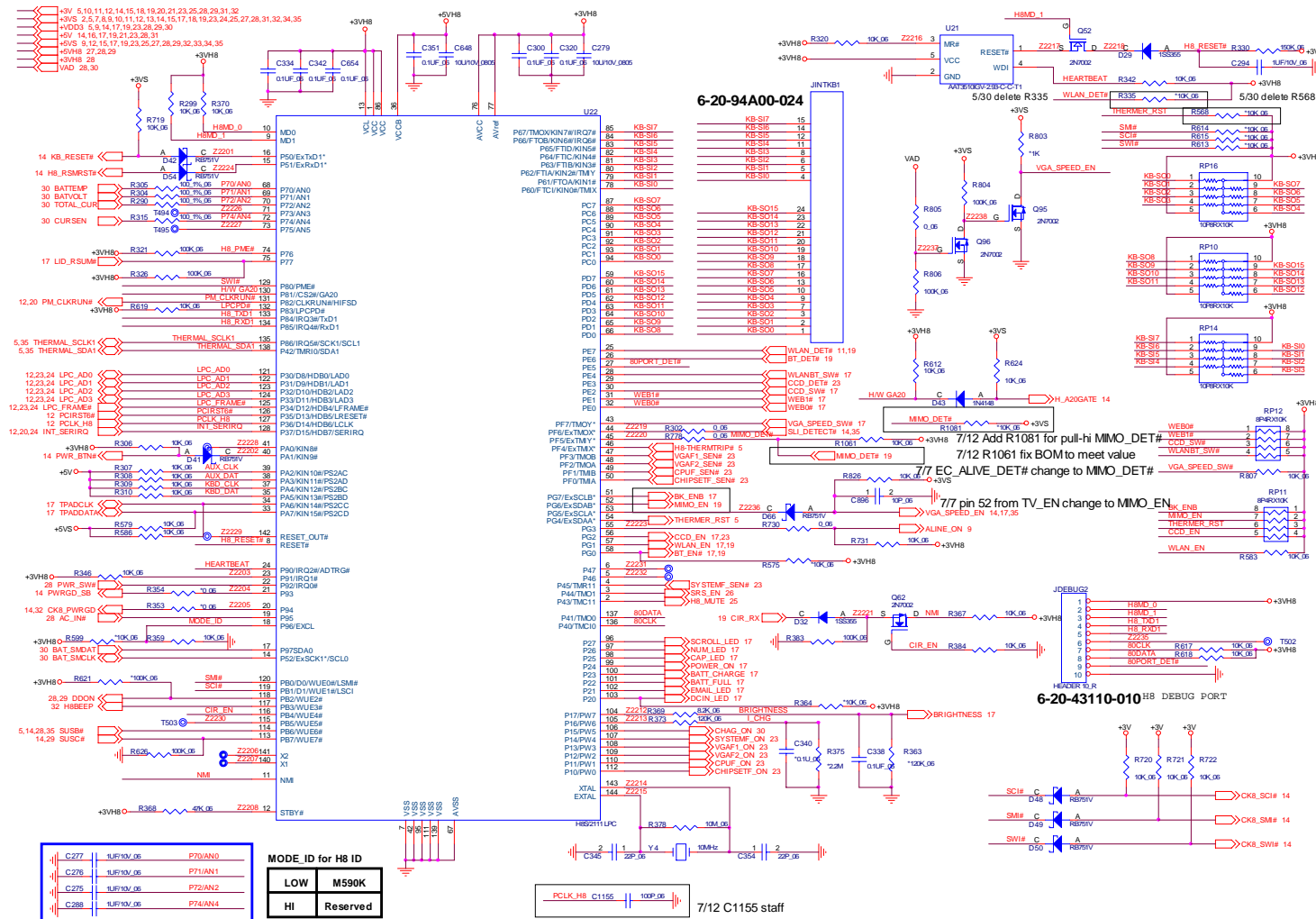
B.Schematic Diagrams

PCMCIA SOCKET

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PCMCIA SOCKET



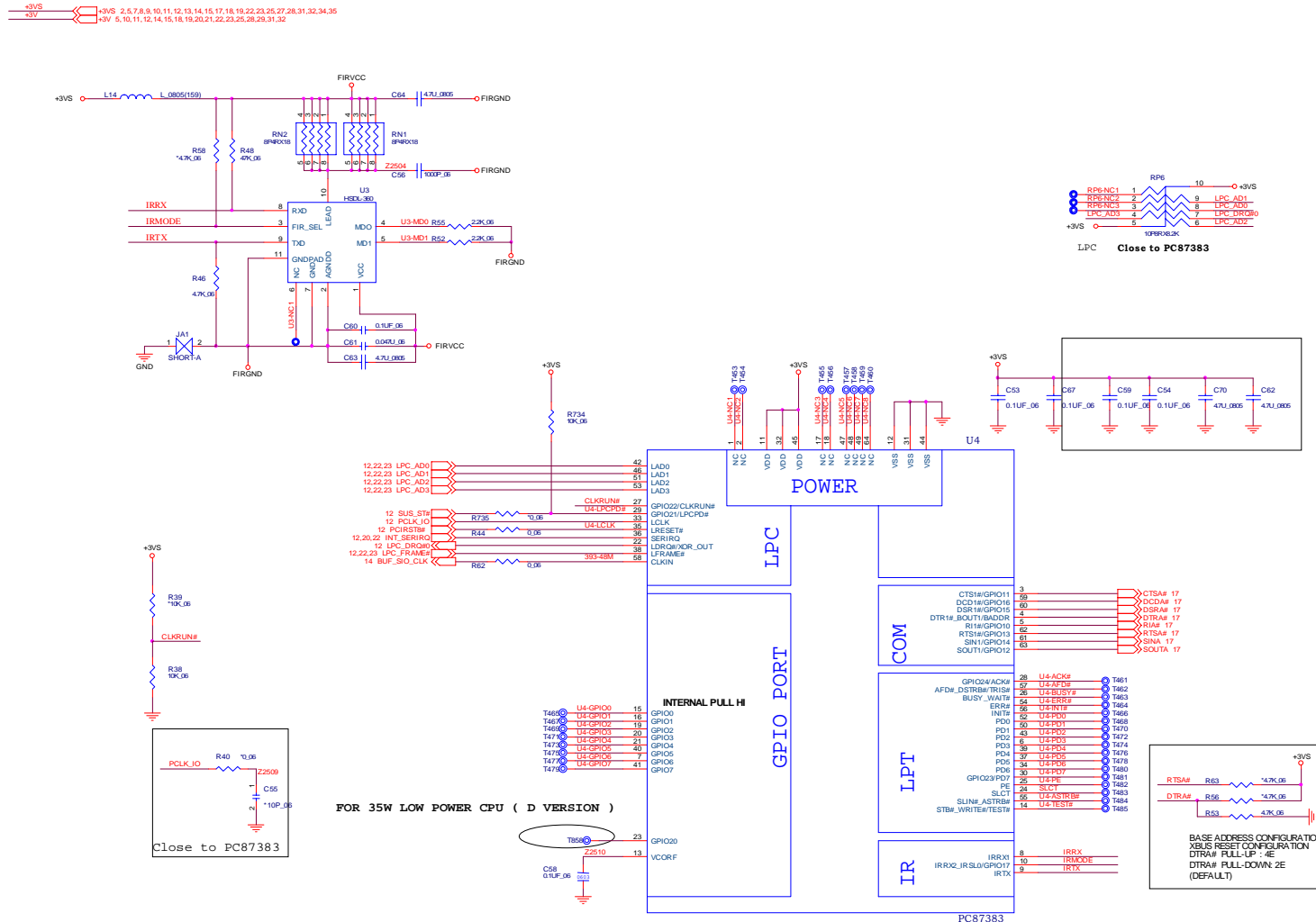
HITACHI H8S/2111



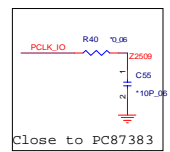
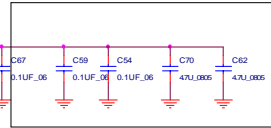
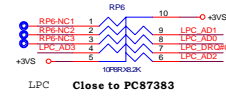
Sheet 23 of 46
HITACHI H8S/2111

B.Schematic Diagrams

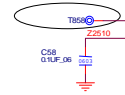
SUPER I/O & FIR



+3V5 2,5,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,27,28,31,32,34,35
 +3V 5,10,11,12,14,15,18,19,20,21,22,23,25,28,29,31,32



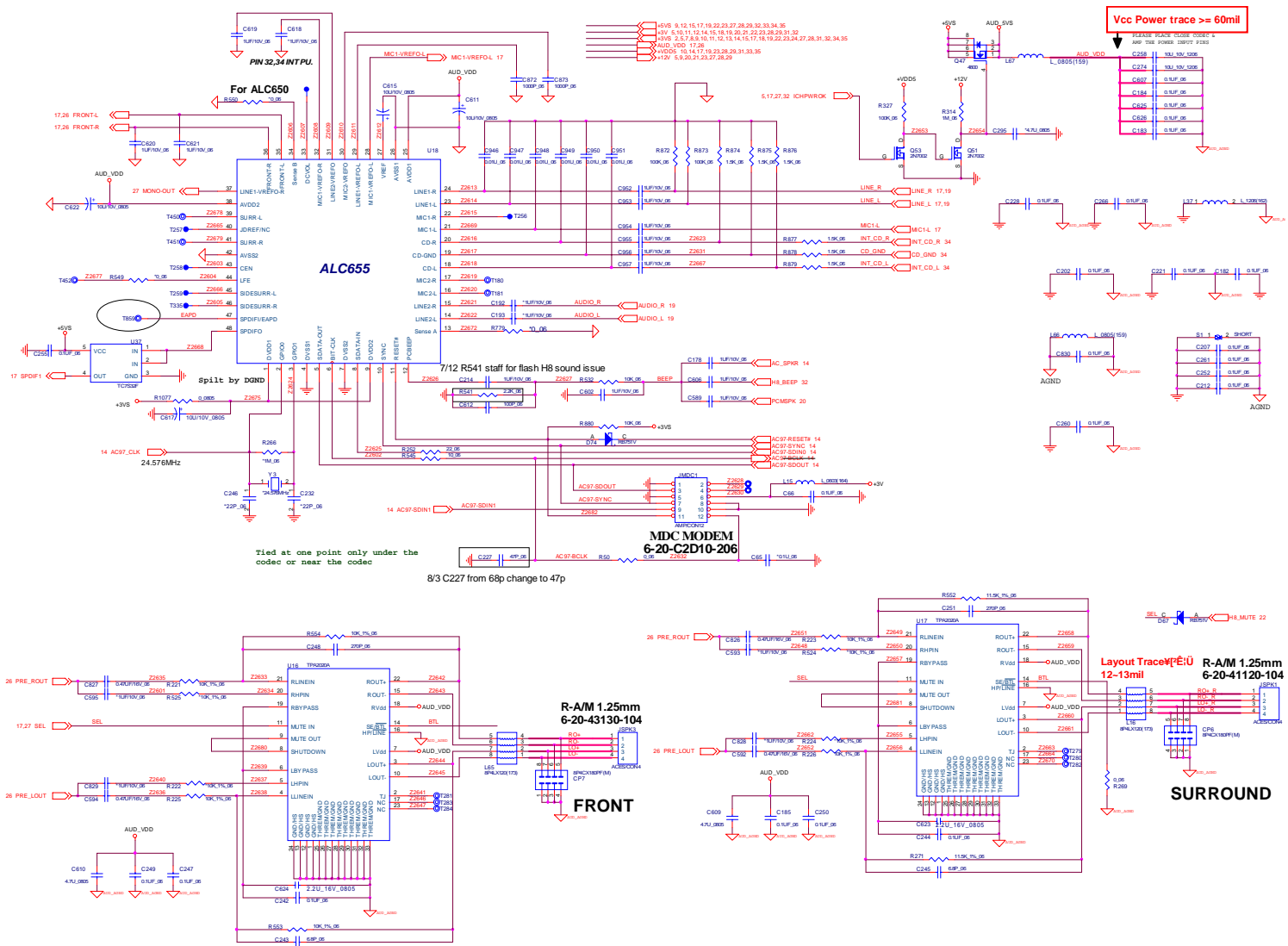
FOR 35W LOW POWER CPU (D VERSION)



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 SUPER I/O & FIR

B.Schematic Diagrams

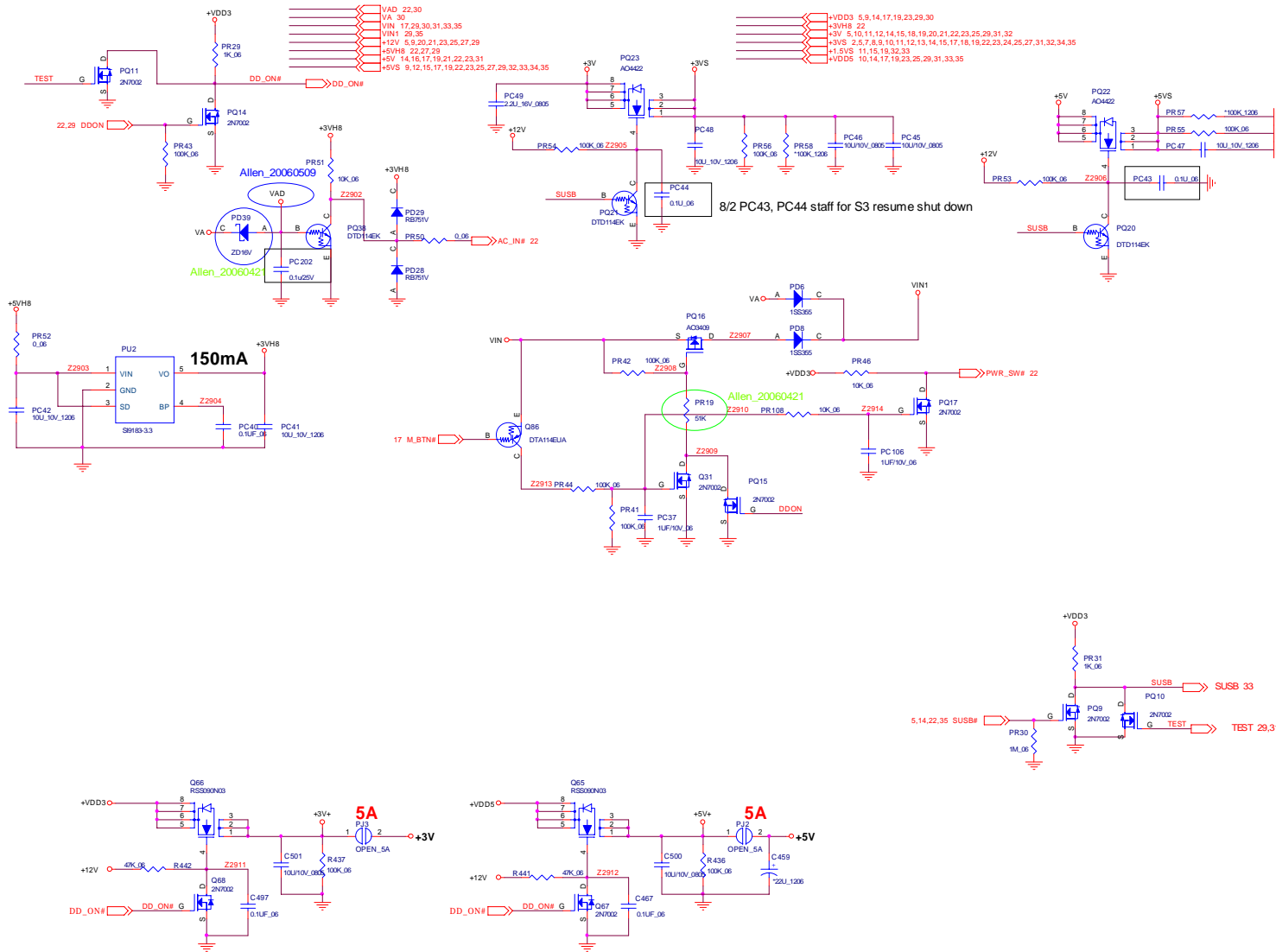
AUDIO (ALC655), MDC



Sheet 26 of 46
AUDIO (ALC655),
MDC

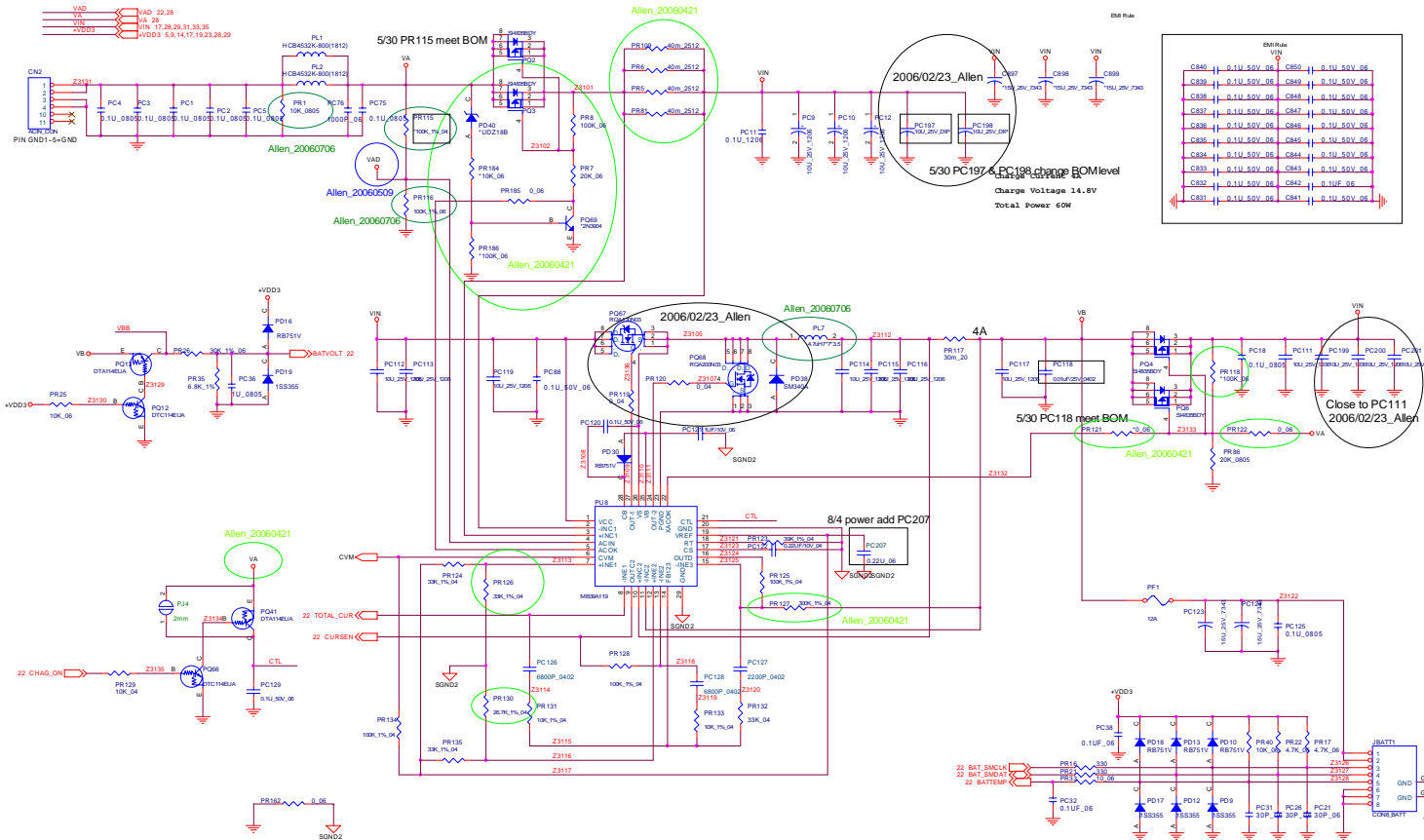
B.Schematic Diagrams

+5VS, +3VS, +5V, +3V



Sheet 30 of 46
 +5VS, +3VS, + 5V,
 +3V

CHARGER, BAT CON, PWR CON

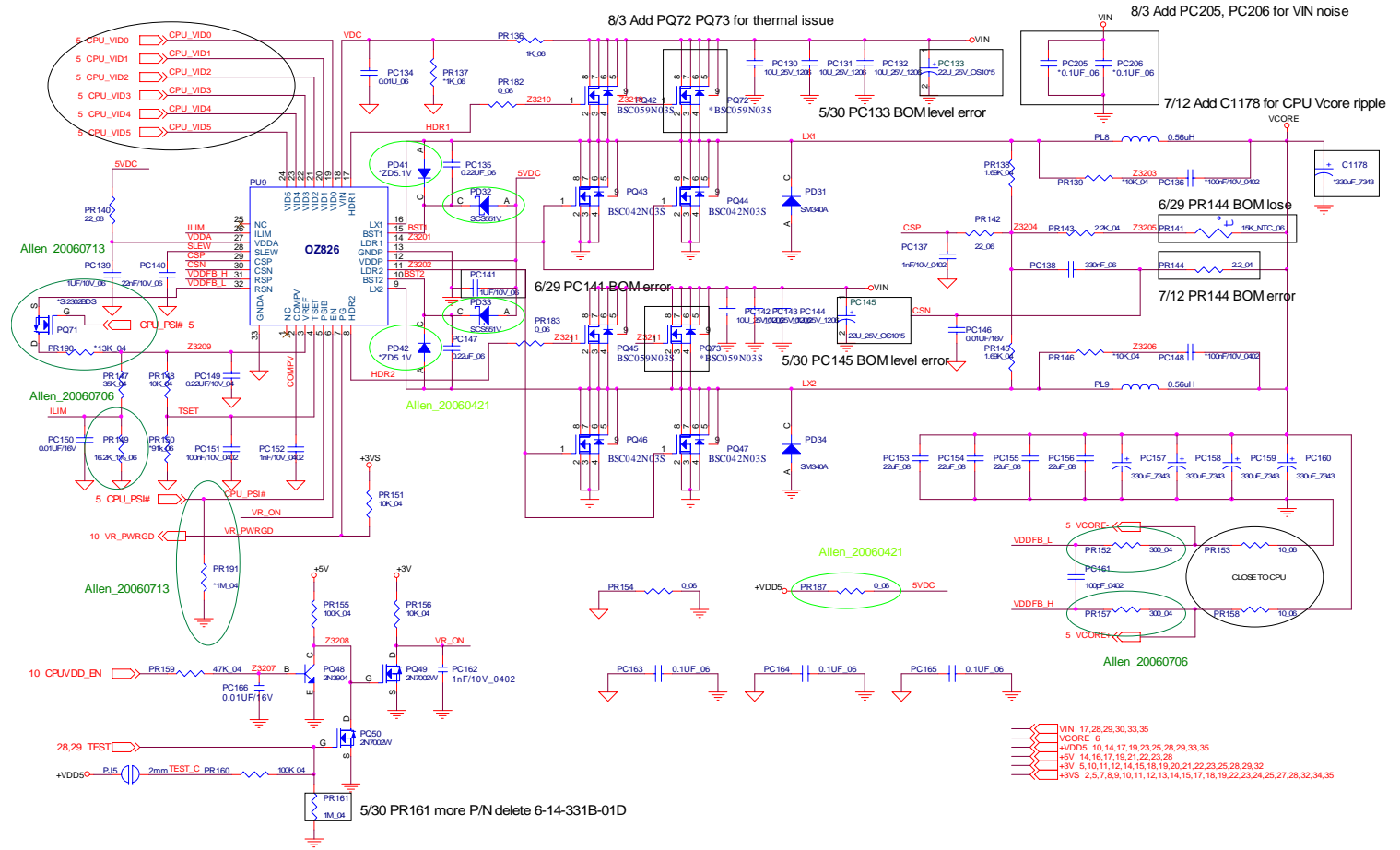


Sheet 32 of 46
CHARGER, BAT
CON, PWR CON

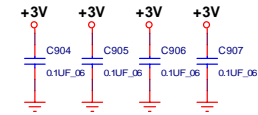
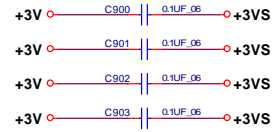
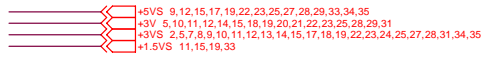
B.Schematic Diagrams

VCORE

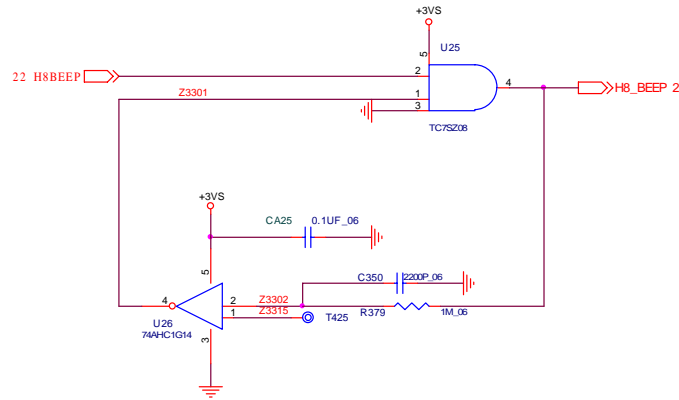
Sheet 33 of 46
VCORE



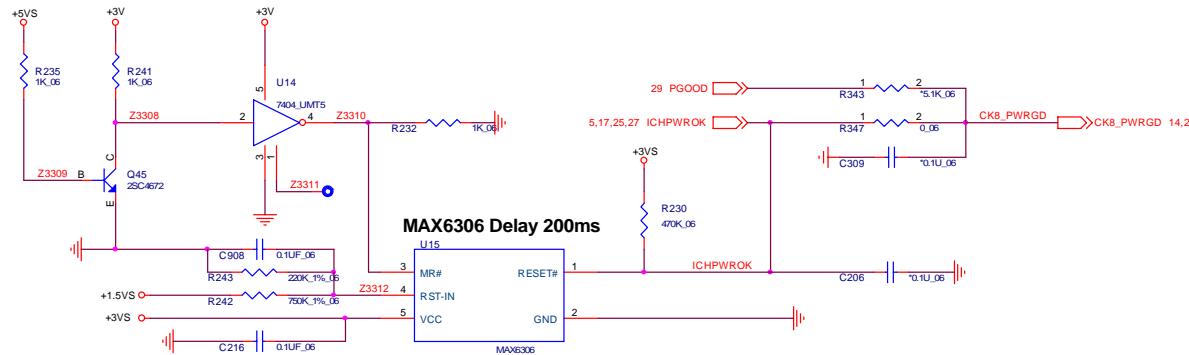
POWER GOOD



NOTE:
POWER SEQUENCING
CK8_PWRGD Faster than PWRGD_SB.

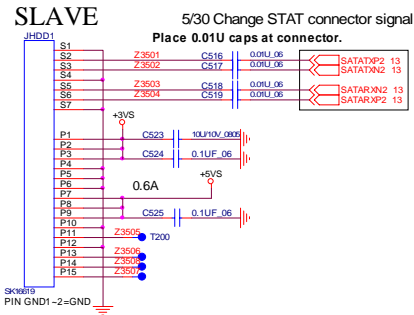


Sheet 34 of 46
POWER GOOD

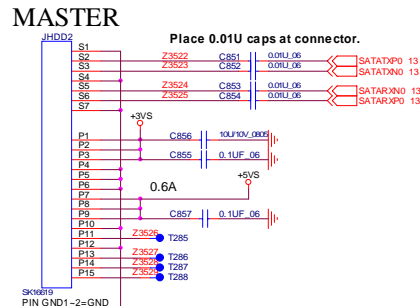


B.Schematic Diagrams

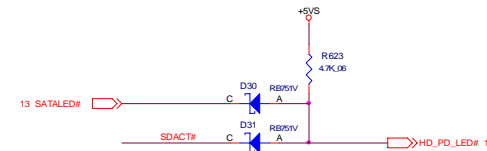
SATA HDD & CDROM



NEW PART
H=0.5mm

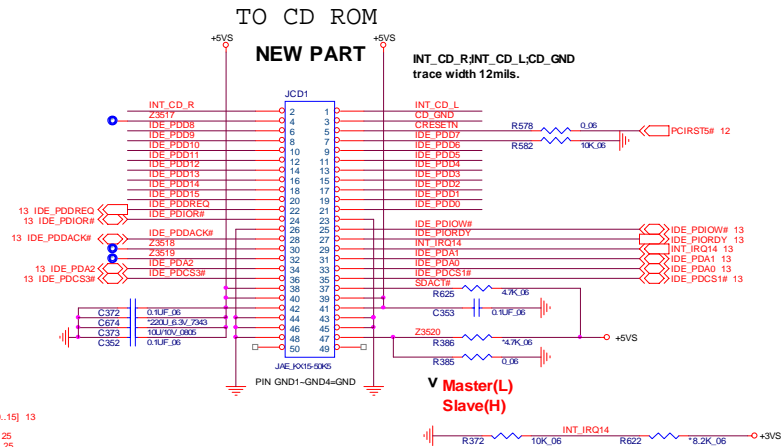
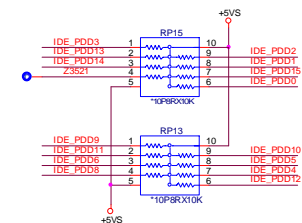


NEW PART
H=0.5mm



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SATA HDD &
CDROM

B.Schematic Diagrams



CLICK BOARD

CLICK BOARD

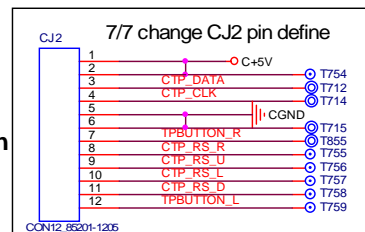


Sheet 38 of 46
CLICK BOARD

B.Schematic Diagrams

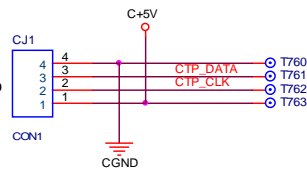
Default

20-94A20-112
R-A/F 0.5mm Down

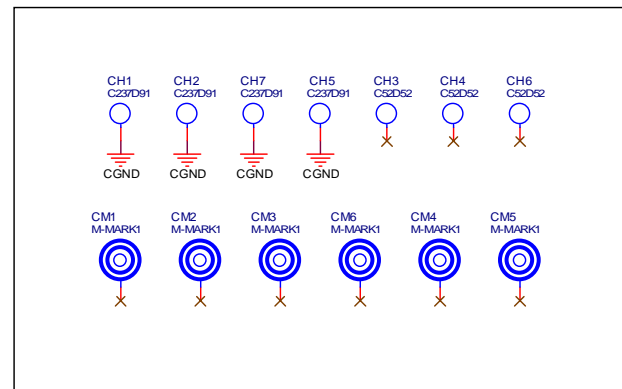


Synaptic Touchpad 12 pin connector
VENDOR PART NUMBER : 800504-2602
CLEVO PART NUMBER : Not apply

20-94A10-104
R-A/F 1.0mm UP

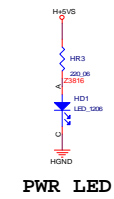
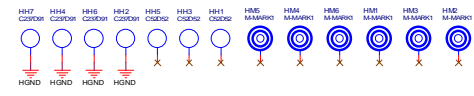
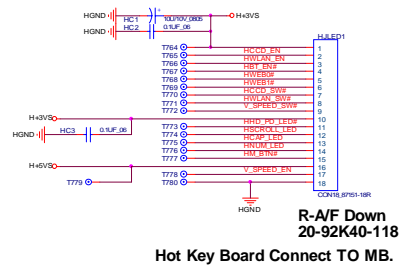
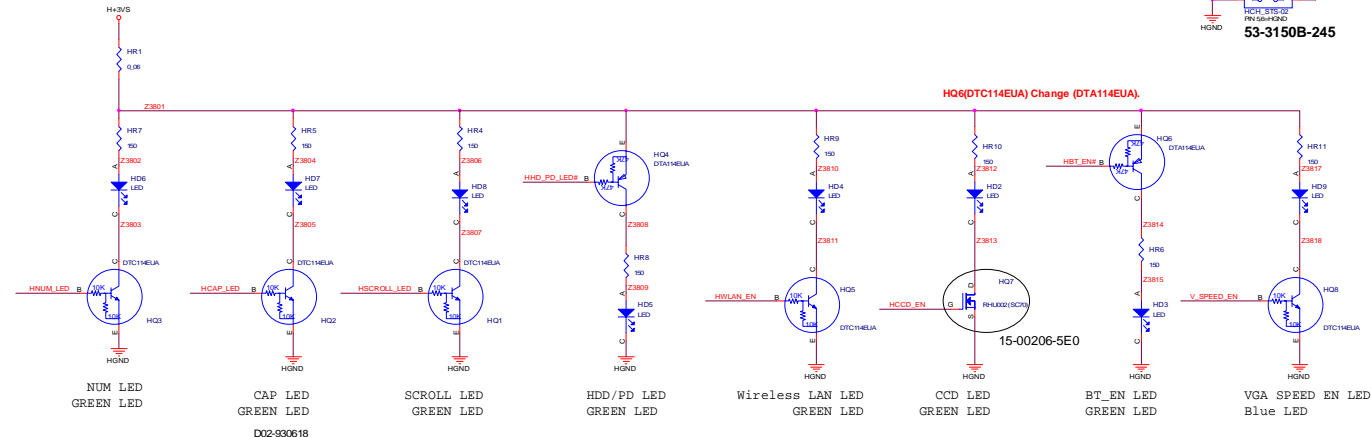
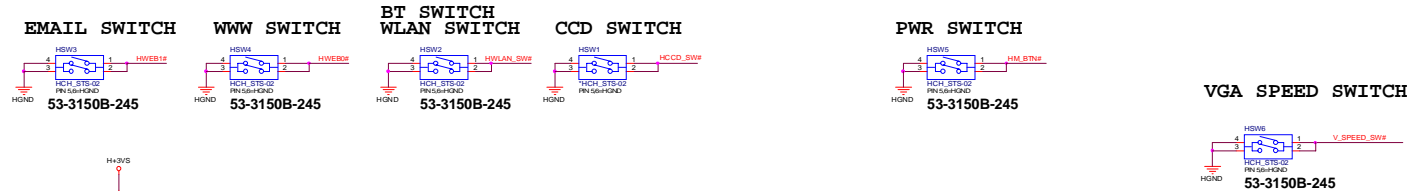


Click Board Connect TO MB.



HOT KEY BOARD

HOT KEY BOARD



B.Schematic Diagrams

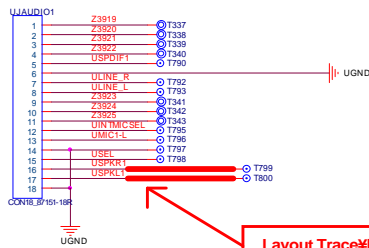
Sheet 39 of 46
 HOT KEY BOARD

PHONE JACK BOARD

PHONE JACK BOARD

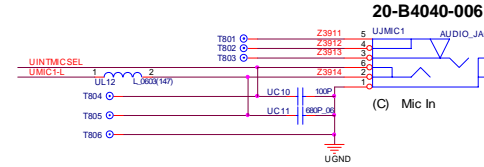
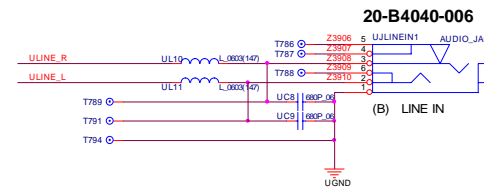
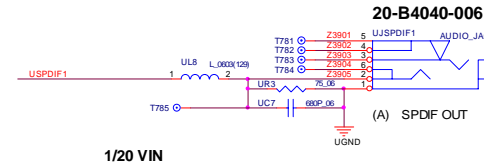
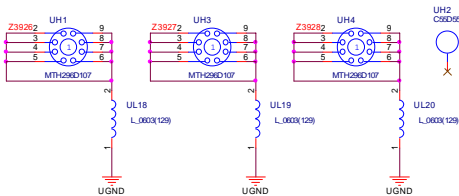
Pin1 Inverter.

CON. T18 FFC STR/F 0.5 ACES 87151-1807.

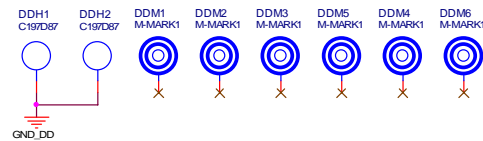
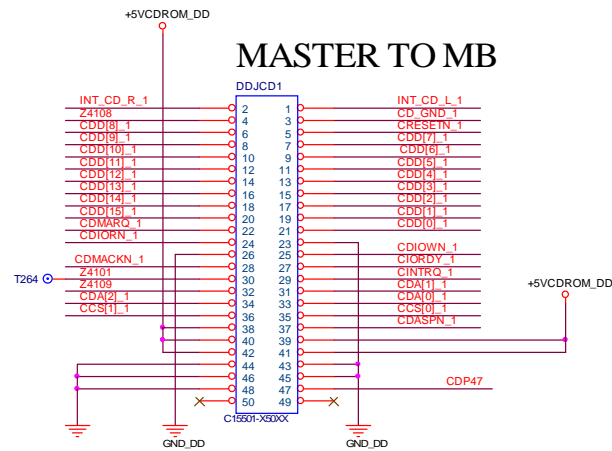
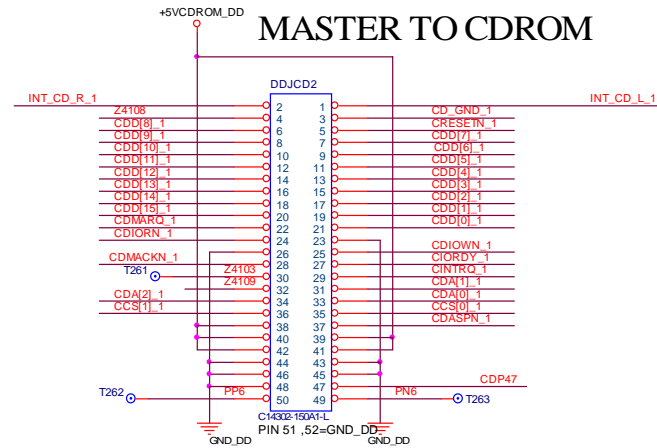
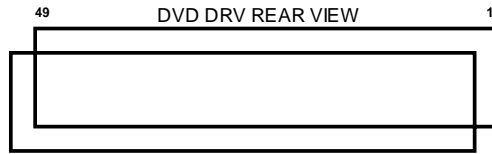


20-92K40-118

Down contact.
Phone Jack Board Connect TO MB.



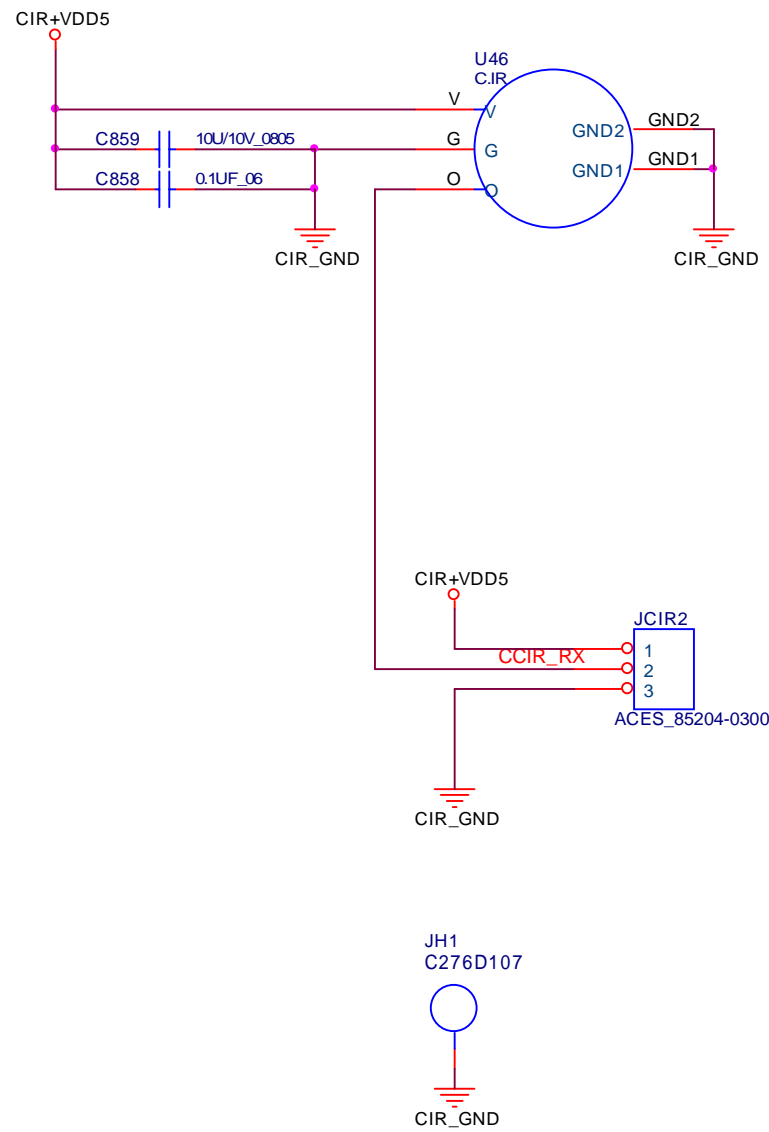
CD-ROM BOARD



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CD-ROM BOARD

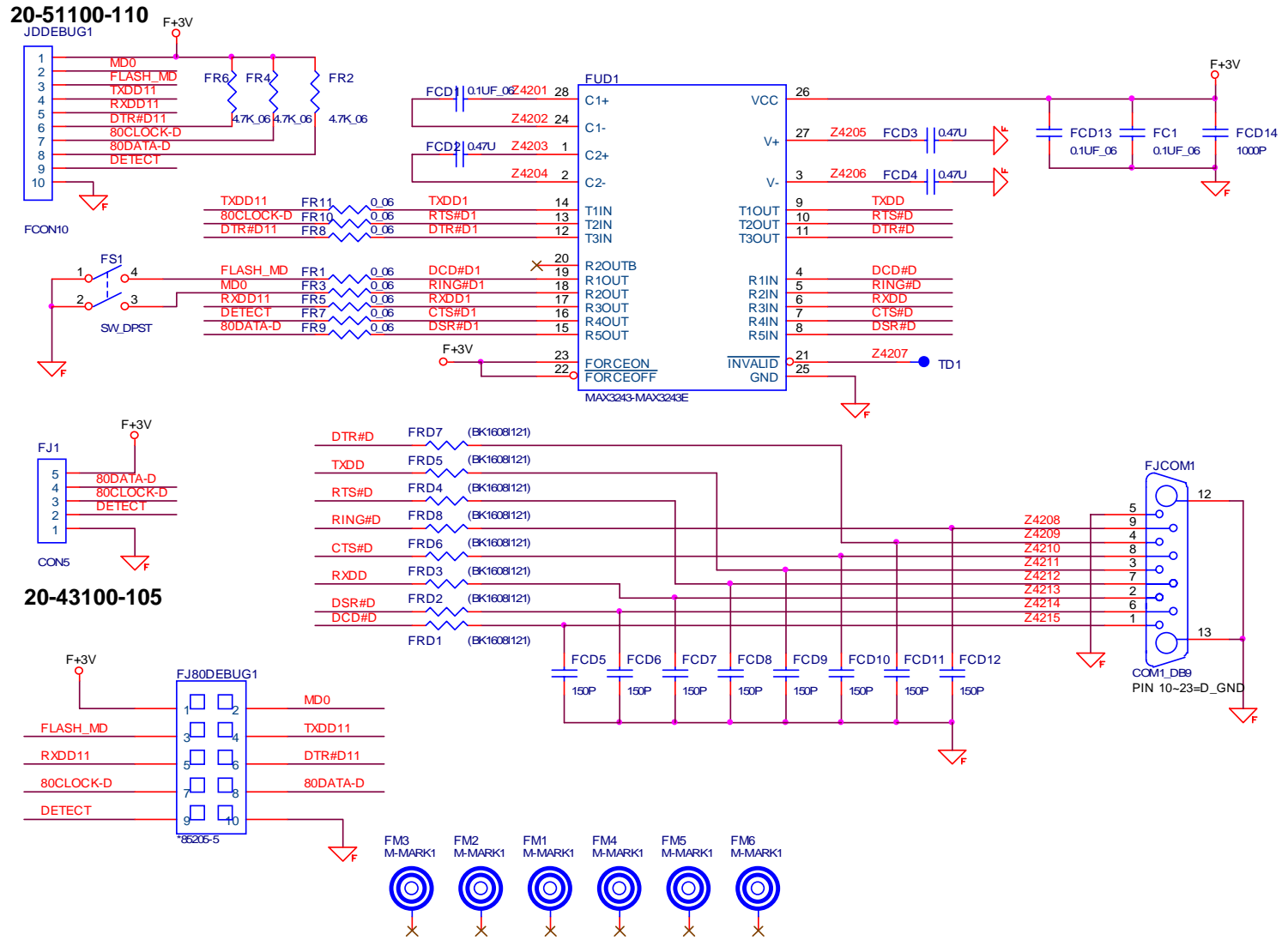
B.Schematic Diagrams

CIR BOARD



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CIR BOARD

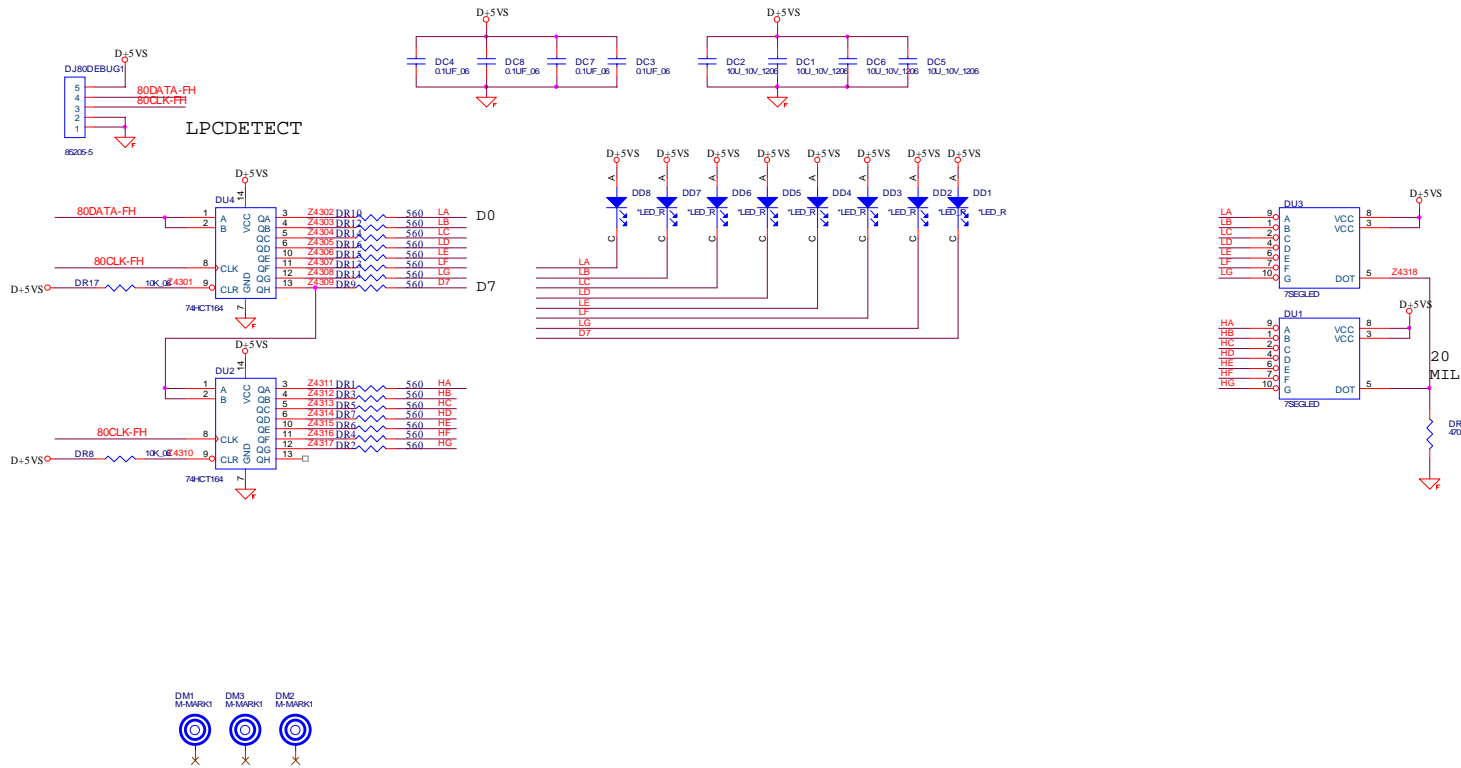
FLASH BOARD



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FLASH BOARD

B.Schematic Diagrams

DEBUG BOARD



Sheet 46 of 46
DEBUG BOARD

Schematic Diagrams