GREEN CHIP

Institute of Advance Technology

Laptop Motherboard

LAPTOP SERVICE TRAINING MODUEL-2
SHORT NOTES

DATE 14-07-10

BEFORE MODULE 2 THE FOLLOWING TOPIC TO BE CLEAR

- ## BASIC ELECTRONICS
- ## DIGITAL ELECTRONICS
- ## ASSEMBLE D-ASSEMBLE DEMO
- ## LAPTOP BASIC

ADAPTER

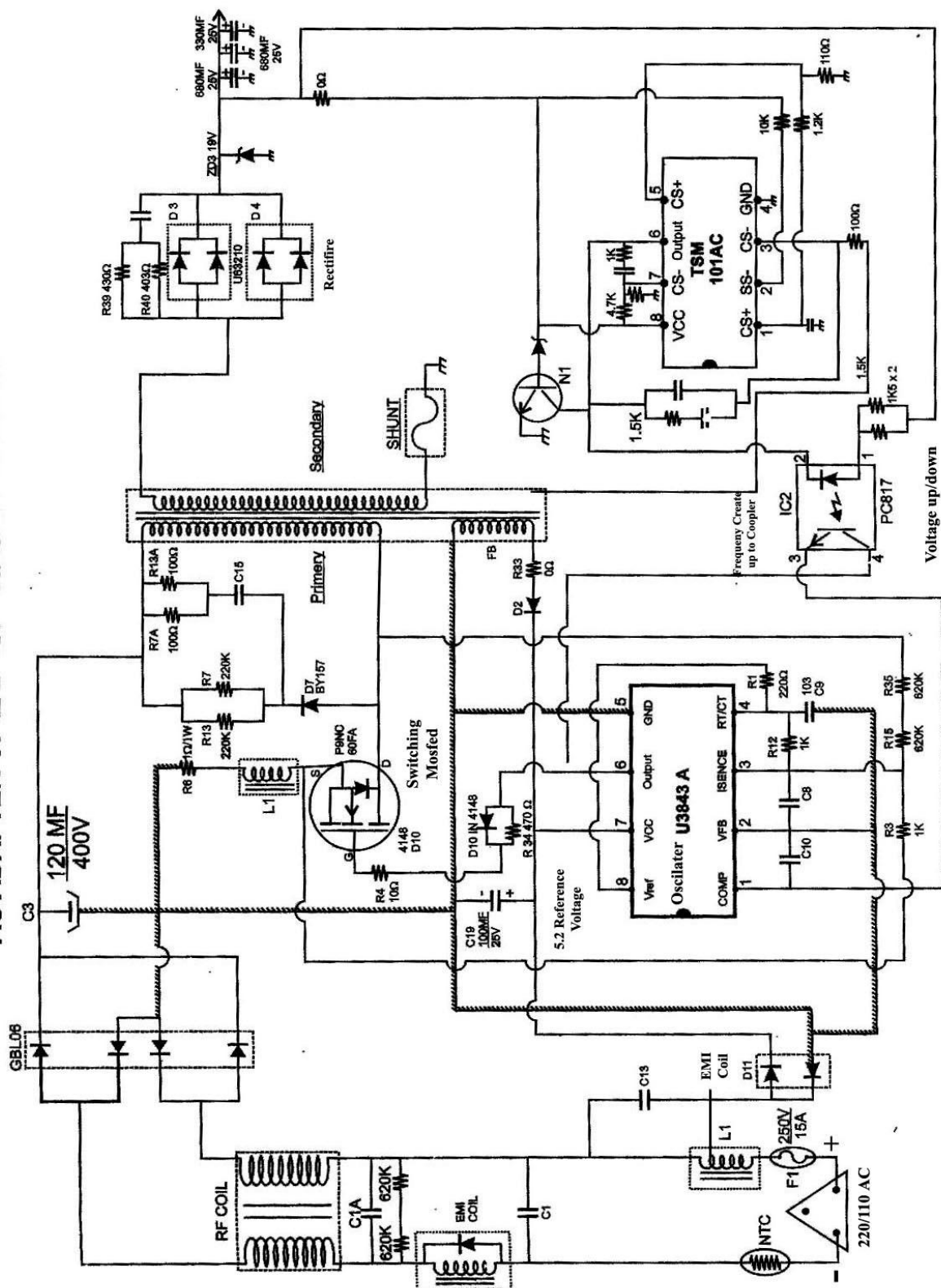| Input	Process	Output
110 to 220 V	AC to DC	DC 12 TO 18V 3-5 Amp

Different Socket for Different Company Laptops

Company branded adapter is the best preference if not then either use ohm or universal.

- Universal adapter contain various socket's of Different Laptops voltage may vary in universal Adapter.
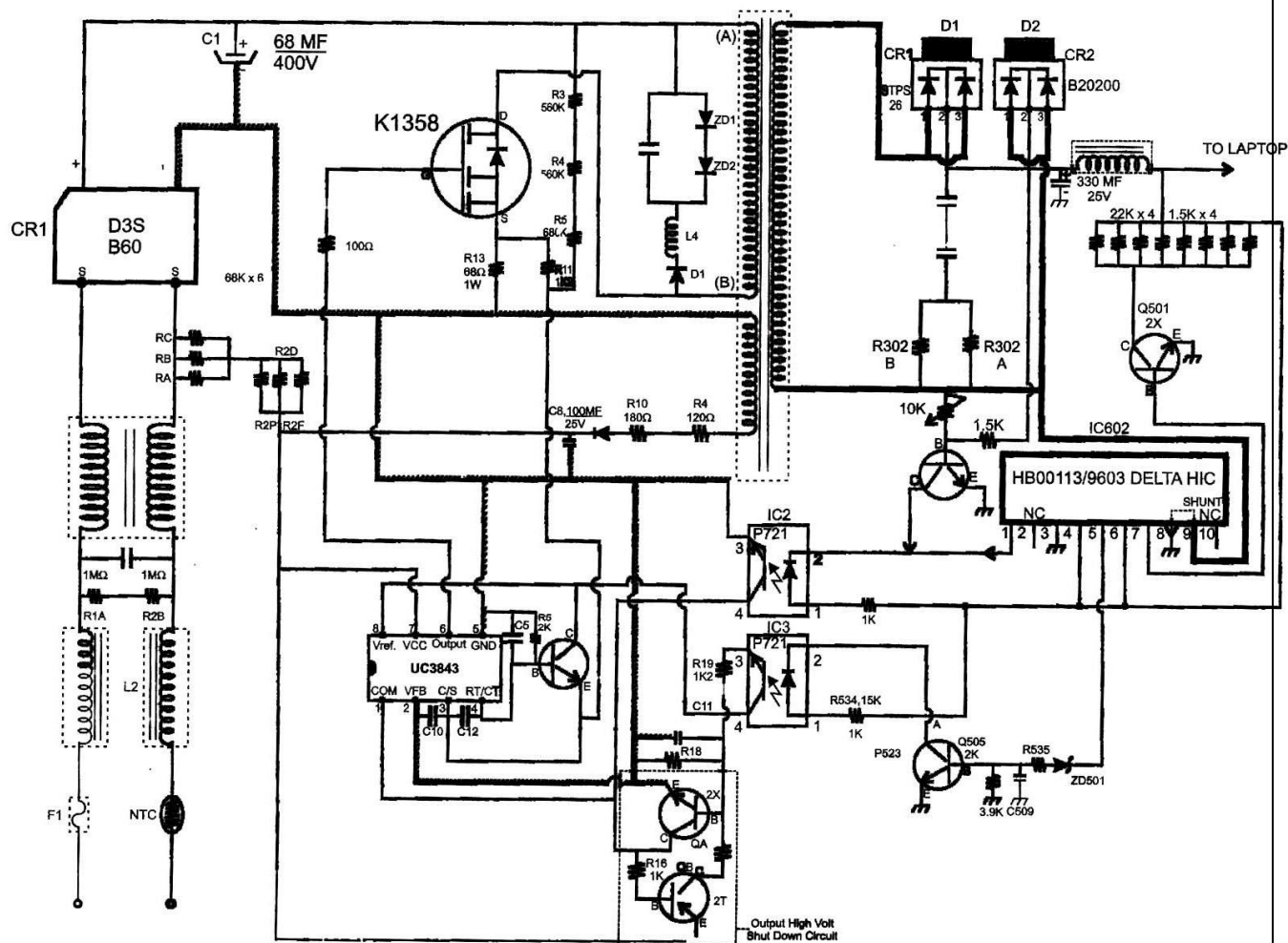
AC ADAPTER OF LAPTOP CIRCUIT DIAGRAM

Problems :- Fuse, Mosfet , Diode, Oscillator IC, In & Out Bypass capacitors.

If there is a Small sound then the zener diode needs to be replaced.

16V, 3.2 AMP. AC ADAPTOR CIRCUIT DIAGRAM

- # **ADAPTER:-** Troubleshooting

  – First check DC volt ± 300v of the nearby capacitor. If there is no voltage then check AC voltage at pin of the bridge
  rectifier if there are no AC volts then check fuse, NTC coil. Whether it is open or ok.

  – If fuse again open then remove fuse& check 220V/100 in series bulb. If bulb glows brightly then bridge rectifier C_1(68□ f/400V) capacitor or mosfet (k1358) may be short.

  – If bulb glows once & stops then remove bulb and put fuse check 300V at bridge rectifier positive & negative point. If supply is there but 0 output then check 1.7V logic on mosfet gate ok. Then check resistor near mosfet source. Resistor also ok then mosfet may open = mosfet change.

  – If no signal on mosfet gate then IC(uc3843). Pin no 7, 12 volt check if not present then check in R2A, R2B, RCC,
  R2P, R2C, R2A,R2F,

  – If resistor heats then IC US3543 maybe short.

  – If VCC is on than ref pin no 8 we will check, if there is no voltage then IC is not working.

  – If 1.7V logic not present then check pin no 1 on IC (shut down transistor) QA (2x) remove from circuit and check voltage and if voltage is present then we will check transistor QA, QB(2x, 2t) for short circuit.

  – If transistor is ok then check output controller for that IC 3 up to copular. Pin no 2 check for high/low if we get low on pin no 2 then Q505, 2D501 check for shorting. If this is high then output voltage is high.
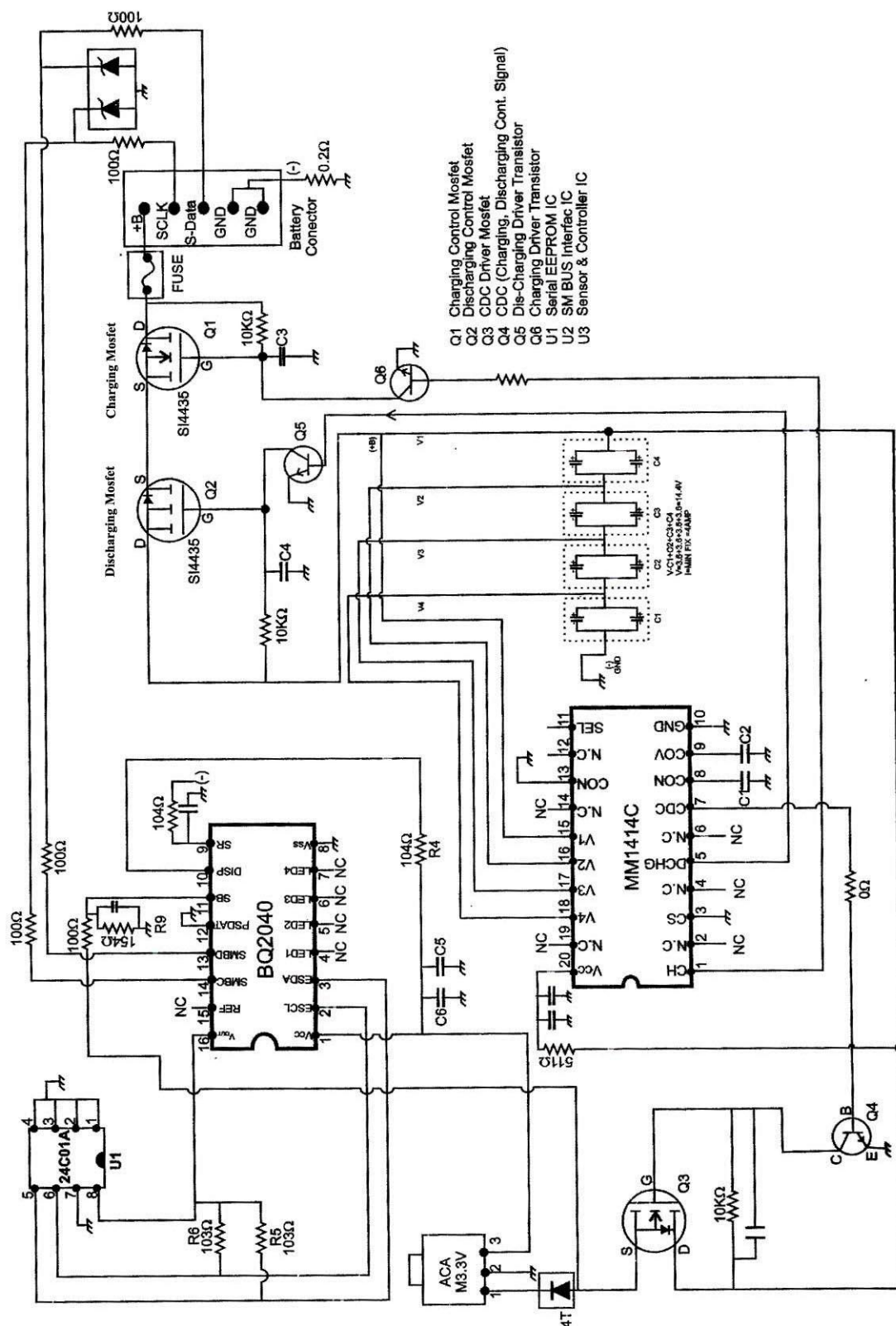
- If out put volt is high------ then (R11, R3, R4, R5) check for open. If it is open then UC3843 IC is not working.
- If out put voltage is less then check source of mosfet and (R13) 68w1w check for high Values .
- If sometime laptop is working on adapter and sometime not working. Then we will change current sensor IC HB 00113/9603 delta HIC on out put section

BATTERY

- Battery contains Different Rechargeable cell's with small circuit for charging & Discharging cell's.
- Some cells connected as series and series are connected as parallels 6 to 12 cells in one battery.
- Different model have Different Battery's as size voltage & ampear Battery can be varied from direct DC 10v current.

• **Fault finding battery steps**

- Check Battery on CMOS setup. If Battery is Not Detected then Change Battery Inside SM BUS Interface IC
- If Battery is Detected even then the Laptop does not Start on Battery then remove the Battery and check as
  below.
- As per circuit make Adapter on put testing probe + on adapter + and – on Battery + If Ampear meter shows 1 Ampear . It means Battery cells are ok problem is in laptop battery charging section.
- If Ampear meter does not show any Ampear then remove battery from box put testing probe on cell positive & negative point. If Ampear shows in Ampear meter then problem is in battery charging Discharging mosfet may be open.
- If Ampear meter does not show any Ampear the cells in Battery are Damaged. Check each cell with multimeter.
- If Battery Heats when charging done then charging mosfet may be short.
- At time of Discharging when Battery Indicates Low then also auto cut not does not work then Discharging
  Mosfet are short.

Q1   Charging Control Mosfet
Q2   Discharging Control Mosfet
Q3   CDC Driver Mosfet
Q4   CDC (Charging, Discharging Cont. Signal)
Q5   Dis-Charging Driver Transistor
Q6   Charging Driver Transistor
U1   Serial EEPROM IC
U2   SM BUS Interfac IC
U3   Sensor & Controller IC

LCD :- Liquid crystal display

Advantage then CRT displays

Large effective viewable area

No image distortion

Lower power reacremants and less heat generated.

No electromagnetic emissions

15'' is equivalent to 19'' or larger CRT

LCD SCHEMATIC DIAGRAM
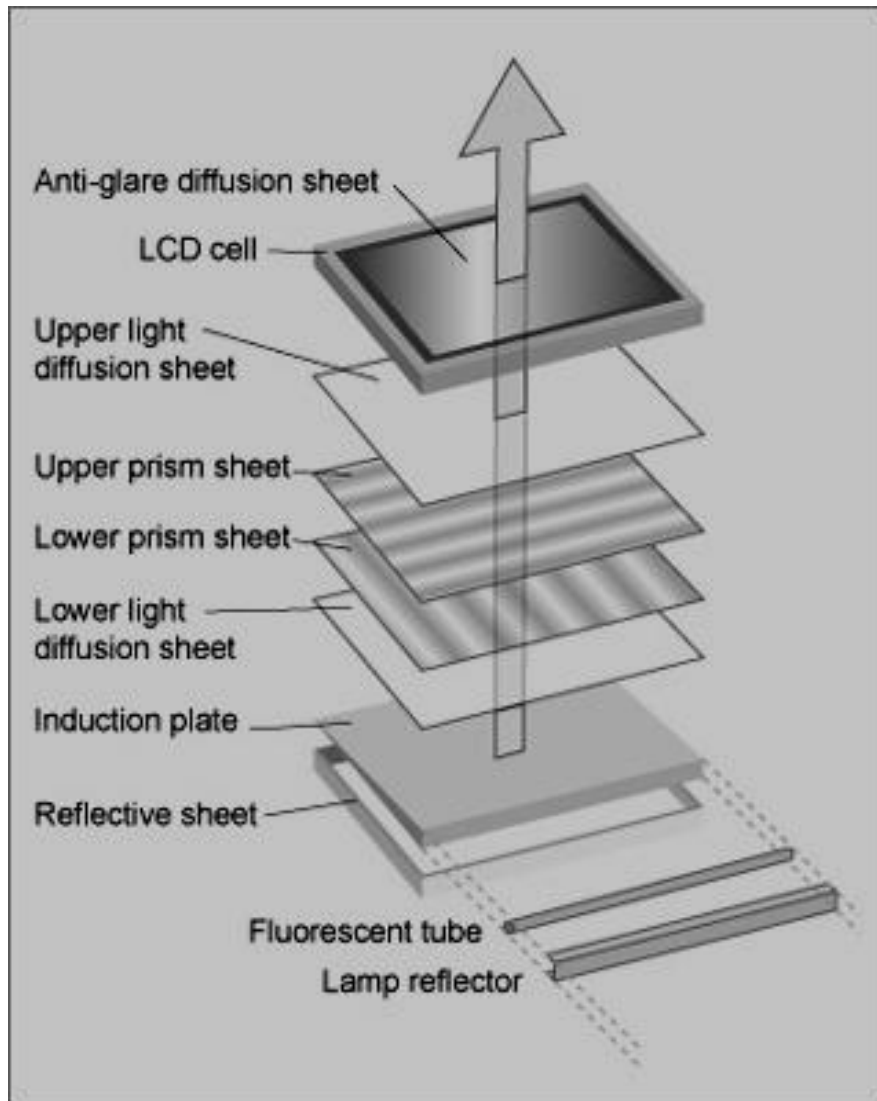
INVERTER CCFL

CIRCUIT DIAGRAM OF CCFL SECTION

- ## CCFL Testing Points
  - − Check CCFL Connecter AC volt if present then change CCFL Tube
  - − If there is no AC supply then check AC supply at transform secondary window. If AC supply gathers Then there is a coupling capacitor problem.

- ## Dead Laptop Trace

On but no Display

GREEN CHIP Institute of Advance Technology
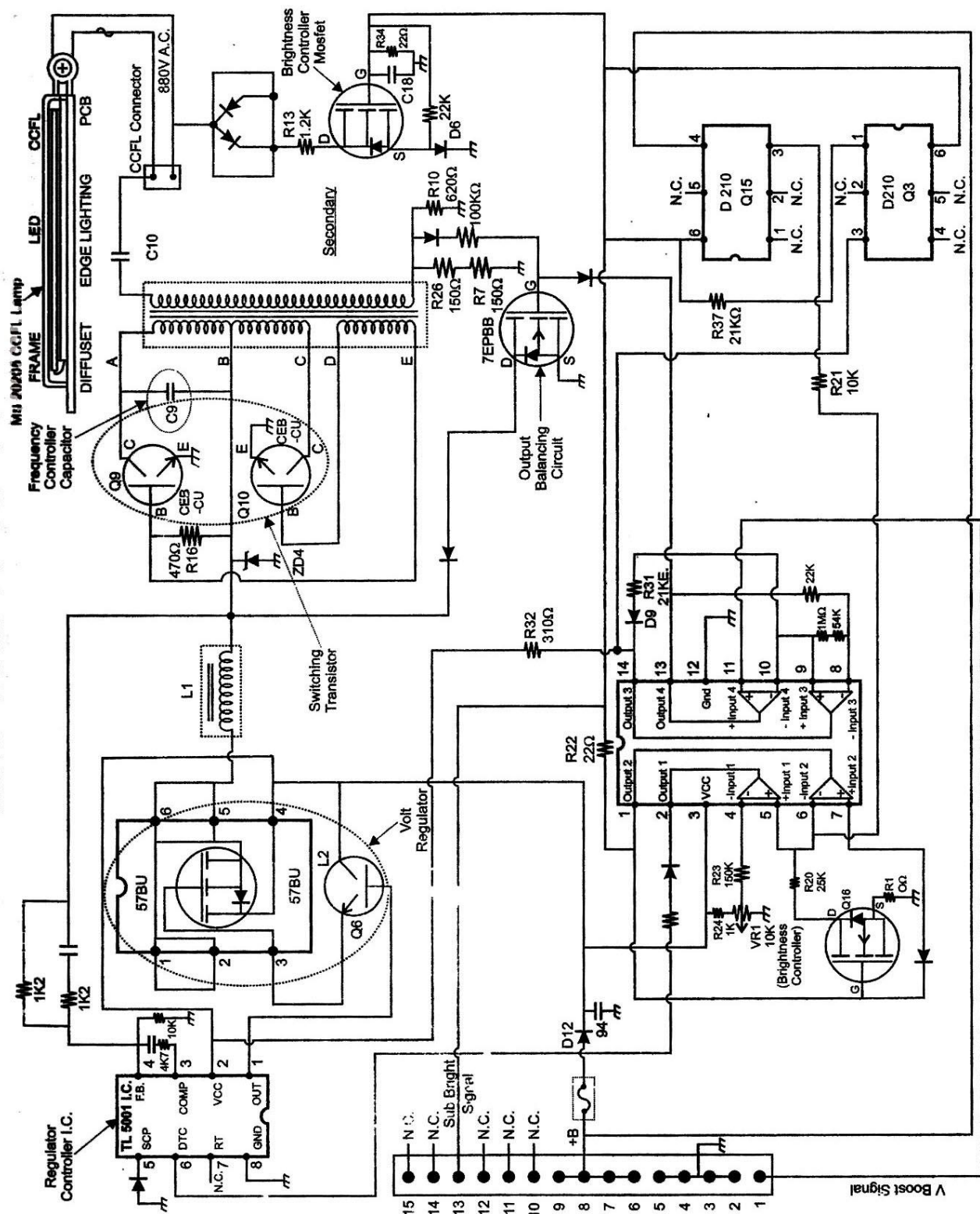
Connect to External Monitor & See Display(If yes then)

See the Light Display on LCD W/O Light(If yes then)

Inverter or Tube

- See the Input of Inverter 15 to 19v
- See the input of 5v for contrast
- See the input of 3 to 5v for brightness
- See the Output 800-1000 AC of Inverter
- If Output ok then Change CCFL & See
- If Inverter Input 15 to 19v is not present then M/B Display Section Problems or Data Cable Problems
- Input 15 to 19v is provided but no output of Inverter check fuse & track of inverter

V 2000 BLOCK DIAGRAM

CT1 BLOCK DIAGRAM
PENTIUM-M / Montara-GM / ICH4-M

PCB STACK UP

| LAYER 1 : TOP |
| LAYER 2 : GND |
| LAYER 3 : IN1 |
| LAYER 4 : IN2 |
| LAYER 5 : VCC |
| LAYER 6 : BOT |

CPU THERMAL SENSOR GMT=781 PAGE: 3

CPU PENTIUM-M 478 Pins (micro FC-PGA) PAGE: 3, 4

CLOCK GEN CY28346/ IC8950810 PAGE: 2

14.318MHz

NCLK_CPU, NCLK_CPU#
NCLK_MCH, NCLK_MCH#
DREFSSCLK
CLK66_MCH

SYSTEM POWER(1.2V/1.05V/1.25V) PAGE: 38

CPU CORE MAX1907 POWER 1.356V PAGE: 33

SYSTEM MAX1999 POWER(3/5V) PAGE: 36
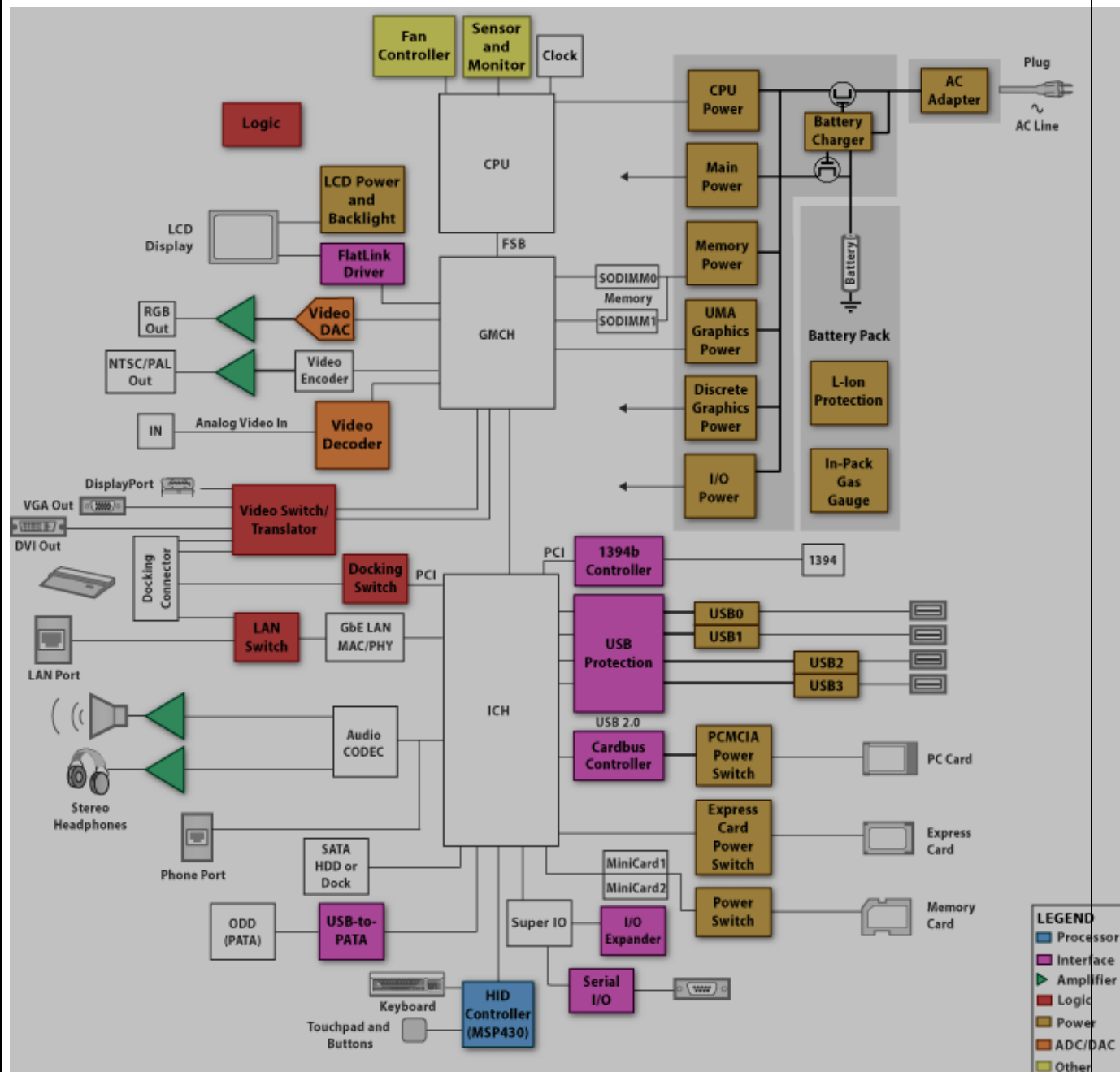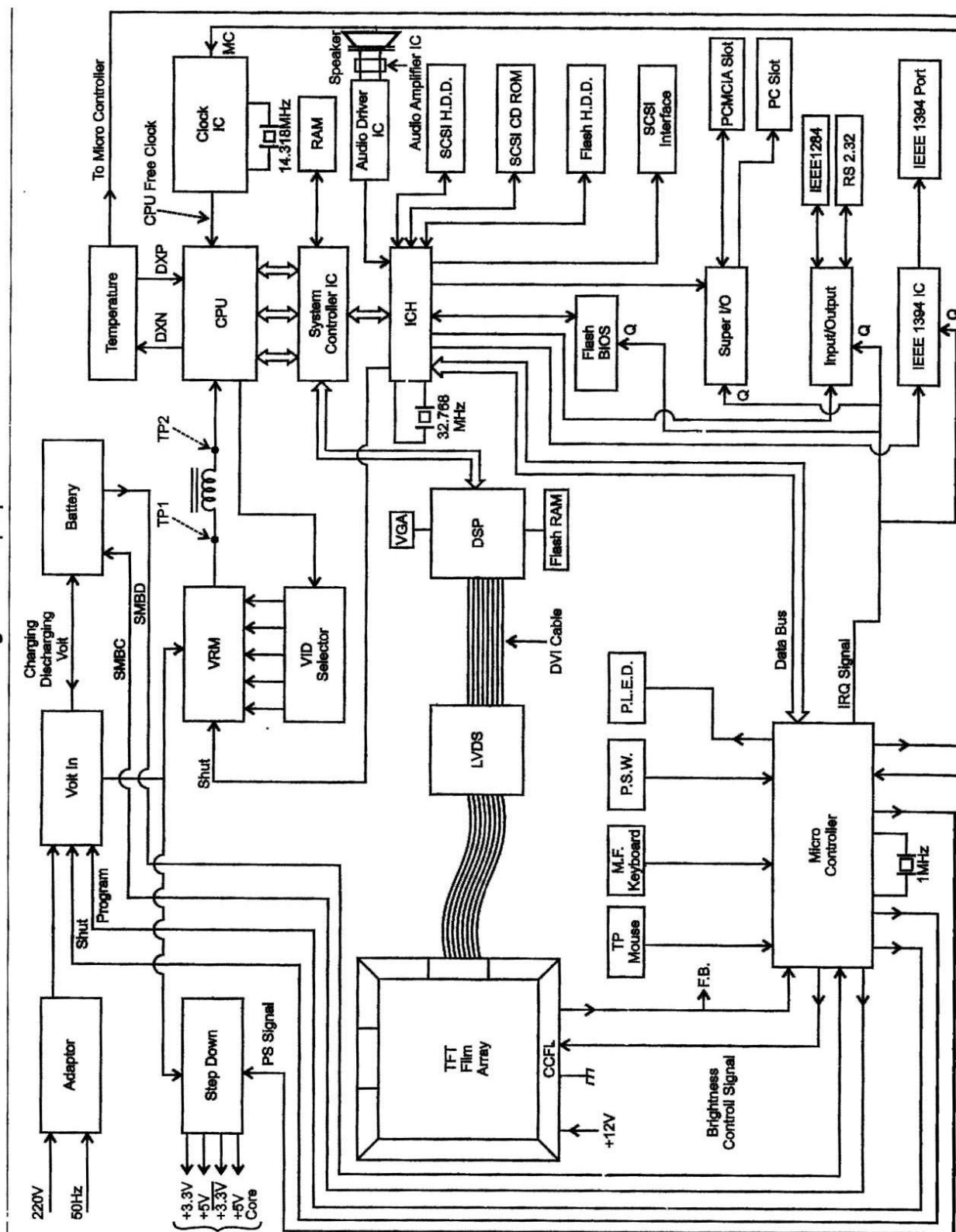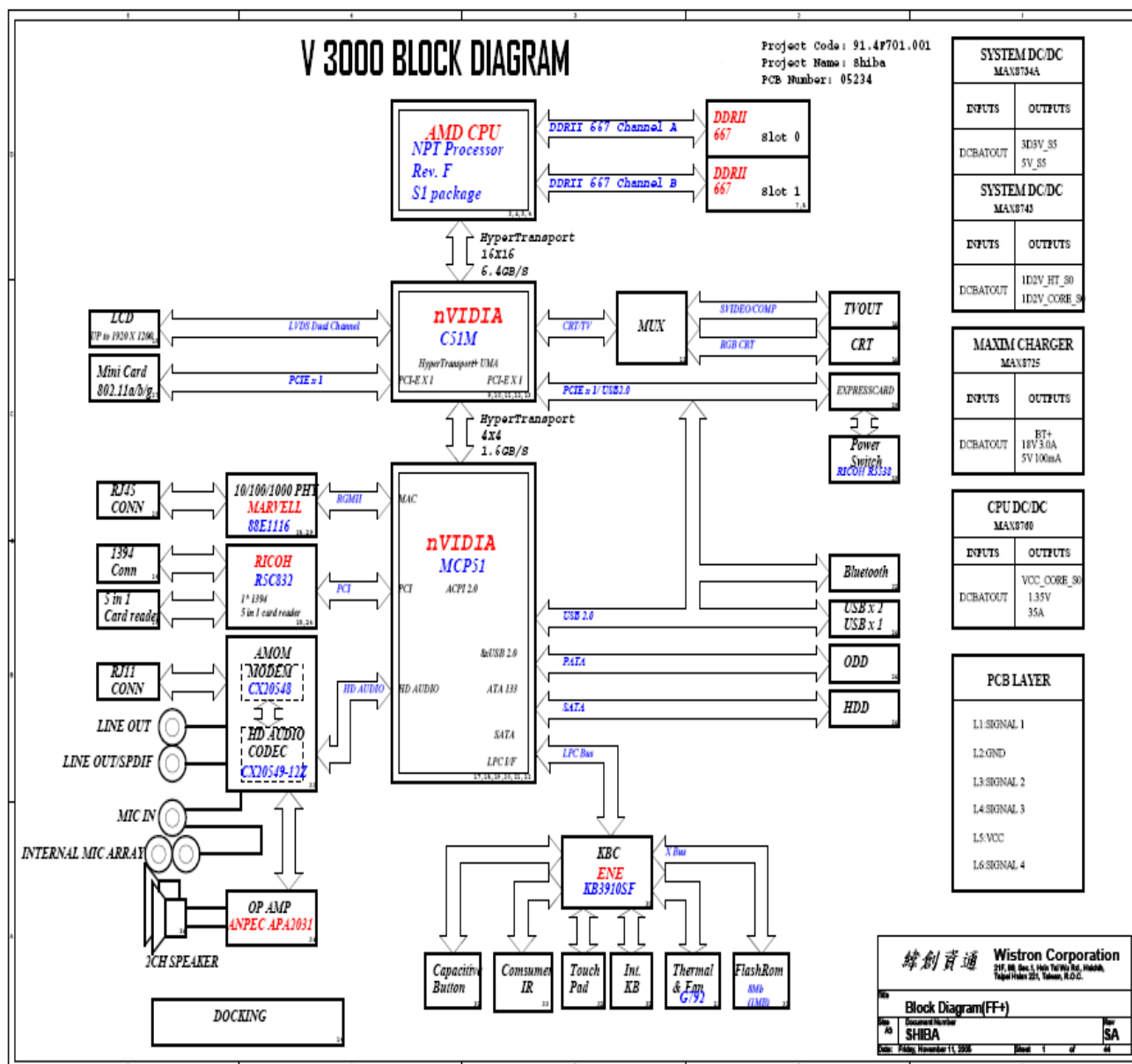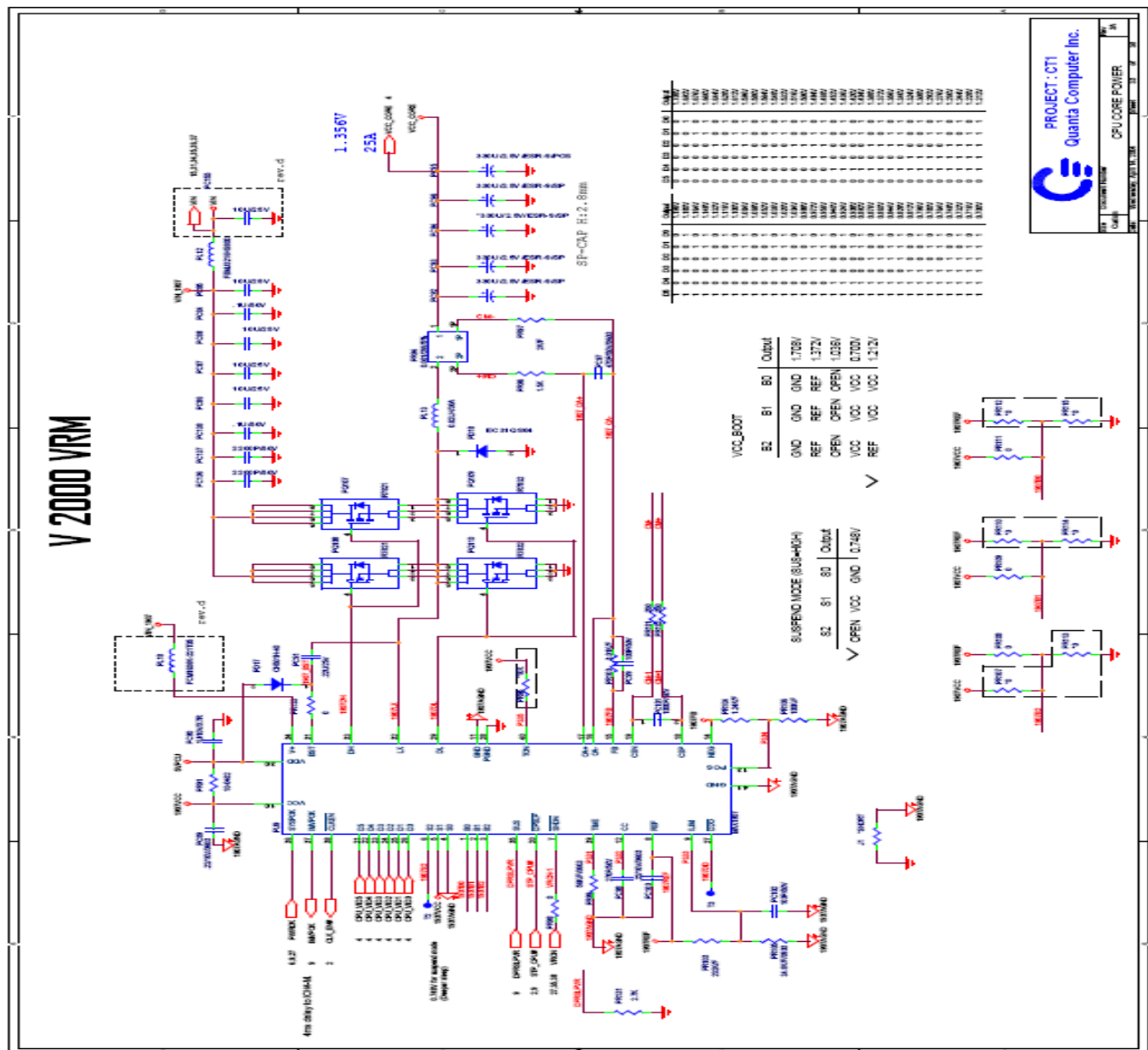
SYSTEM POWER(2.5VSUS/1.5V_S5) PAGE: 37

BATT CHARGER PAGE: 34

DISCHARGE PAGE: 35

FSB 4X100MHZ

NORTH BRIDGE Montara-GM 732 micro-FCBGA INTEGRADED VGA FUNCTION PAGE: 5, 6, 7

DDR I/F 2.5V, 266MHz

DDR-SODIMM1 PAGE: 11, 12
DDR-SODIMM2 PAGE: 11, 12

CRT port PAGE: 30 — R.G.B
LCD Panel PAGE: 15 — LVDS X1
7015 DVOC PAGE: 13

14.318MHz

HUB LINK 66MHZ
32.768KHz

14M_ICH
CLK66_ICH
PCLK_ICH
CLK48_USB

USB PORT 0, 1 PAGE: 19 — USB 2.0
1st IDE - HDD PAGE: 28 — ATA 66/100
2nd IDE - CDROM PAGE: 28 — ATA 66/100

ICH4-M 421 BGA PAGE: 8, 9, 10

33MHZ, 3.3V PCI
AC97

DREFCLK PCLK_LAN PCI_CLK_7411
PCLK_MINI

3.3V LPC, 33MHz
32.768KHz

AC97 CX20468-31 MBAMC20493-010 PAGE: 20 — 24.576MHz
LAN Realtek 8100CL PAGE: 23 — 25MHz
MINI-PCI PAGE: 14 — 24.576MHz
CARDBUS / IEEE 1394 CONTROLLER/CF TI 7411 PAGE: 16, 17, 18, 19 — 40MHz

PWRCLKP PWRCLKN DIR_DATAN DIR_DATAP

CABLE DOCK
Daughter Board TV, USB, BLIN TOOTH
AV BOARD
Power Board

PC97551 TQFP 176 PAGE: 27
PCLK_591

SMARTDAA MODEM, MDC PAGE: 22
AMP TPA0312 PAGE: 21

5 IN 1 CARD READER SD/MMC, SM, MS, XD PAGE: 18
CARDBUS SLOT X1 PAGE: 16
1394 CONN PAGE: 19

REQ0 : PCMCIA
REQ1 : MINI PCI
REQ2 : LAN
REQ3 : X

PIRQA# RTL8100CL
PIRQB# NC
PIRQC# MINI PCI
PIRQD# MINI PCI
PIRQE# 7411
PIRQF# 7411
PIRQG# 7411
PIRQH# Internal USB

FAN PAGE: 30
Touchpad PAGE: 32
Keyboard PAGE: 32
FLASH PAGE: 26

WIRE

RJ11 JACK PAGE: 24
JACK HEADPHONE, 2ND HEADPHONE, MIC PAGE: 21
RJ45 JACK PAGE: 24

PROJECT : CT1
Quanta Computer Inc.

Custom BLOCK DIAGRAM 1A
Date: Wednesday, April 14, 2004 Sheet 1 of 30

LAPTOP MOTHERBORDS

Block Diagram of Laptop

V 3000 BLOCK DIAGRAM

Project Code: 91.4P701.001
Project Name: Shiba
PCB Number: 05234

AMD CPU
NPT Processor
Rev. F
S1 package

DDRII 667 Channel A → DDRII 667 Slot 0
DDRII 667 Channel B → DDRII 667 Slot 1

HyperTransport 16X16 6.4GB/S

nVIDIA C51M
HyperTransport+ UMA

LCD UP to 1920 X 1200 — LVDS Dual Channel
Mini Card 802.11a/b/g — PCIE x 1

PCI-E X 1   PCI-E X 1
CRT/TV → MUX → SVIDEO/COMP → TVOUT / RGB CRT → CRT
PCIE x 1 / USB2.0 → EXPRESSCARD
Power Switch RICOH R5338

HyperTransport 4x4 1.6GB/S

RJ45 CONN — 10/100/1000 PHY MARVELL 88E1116 — RGMII
1394 Conn — RICOH R5C832 1* 1394 5 in 1 card reader — PCI
5 in 1 Card reader
RJ11 CONN — AMOM MODEM CX20548
LINE OUT — HD AUDIO CODEC CX20549-12Z — HD AUDIO
LINE OUT/SPDIF
MIC IN
INTERNAL MIC ARRAY
OP AMP ANPEC APA2031
2CH SPEAKER

nVIDIA MCP51
ACPI 2.0

MAC
PCI
HD AUDIO   ATA 133
4xUSB 2.0
SATA
LPC I/F

USB 2.0 → Bluetooth / USB x 2 USB x 1
PATA → ODD
SATA → HDD
LPC Bus

KBC ENE KB3910SF   X Bus

Capacitive Button | Consumer IR | Touch Pad | Int. KB | Thermal & Fan G/92 | FlashRom 8Mb (1MB)

DOCKING

SYSTEM DC/DC — MAX8734A

INPUTS	OUTPUTS
DCBATOUT	3D3V_S5 5V_S5

SYSTEM DC/DC — MAX8743

INPUTS	OUTPUTS
DCBATOUT	1D2V_HT_S0 1D2V_CORE_S0

MAXIM CHARGER — MAX8725

INPUTS	OUTPUTS
DCBATOUT	BT+ 18V 3.0A 5V 100mA

CPU DC/DC — MAX8760

INPUTS	OUTPUTS
DCBATOUT	VCC_CORE_S0 1.35V 35A

PCB LAYER

L1:SIGNAL 1
L2:GND
L3:SIGNAL 2
L4:SIGNAL 3
L5:VCC
L6:SIGNAL 4

緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd, Hsichih, Taipei Hsien 221, Taiwan, R.O.C.

Block Diagram(FF+)
Document Number: **SHIBA**
Rev: **SA**
Date: Friday, November 11, 2005   Sheet 1 of 44

How to check VRM (Voltage Regulator Module)

1. Remove CPU from the socket.

2. Find ground in mosfet.

3. Find coil conneted with mosfet.

4. Find gate connected with VRM IC.

5. Find mosfet connected with 18 voltage power supply.

6. Check the mosfet for shorting

GREEN CHIP Institute of Advance Technology

BATTERY

There are only five points in battery connections
V+, M Data, M Clock, M Temp, Ground
V = 0.70v
M Data = 3.5v from I/O IC Approx
M Clock = 4.7v from I/O IC Approx
M Temp = 4.7v from I/O IC
Ground = ground
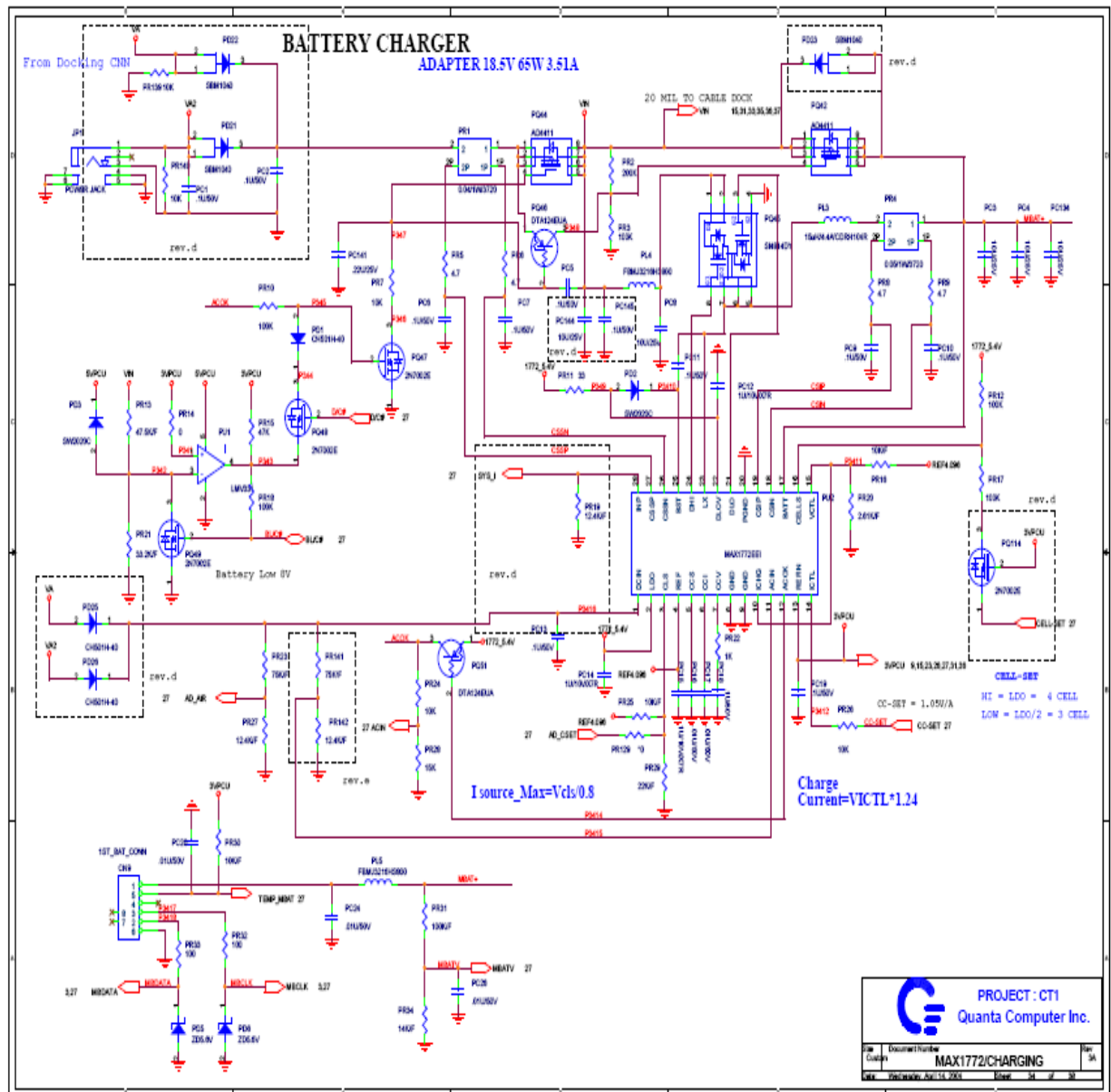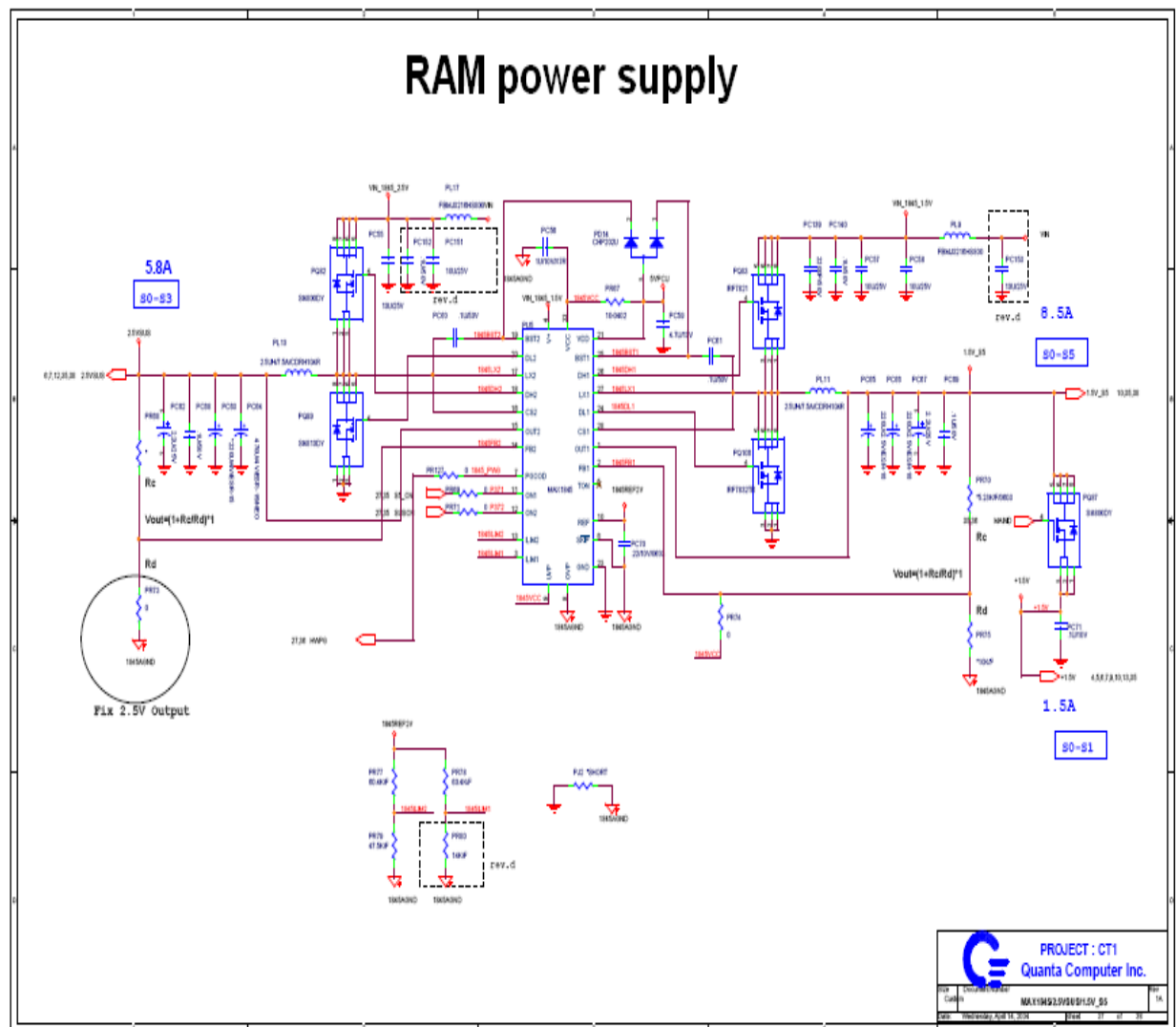
RAM power supply

- Find RAM Mosfet near RAM Socket.

- Find 2.5V on RAM Mosfet (DDR1)

- Reset Voltage 1.8V Pin # 65

- Data Voltage 0.9V Pin # 1, 2, 3

- Main Voltage 3.3V # 199

SYSTEM POWER SUPPLY
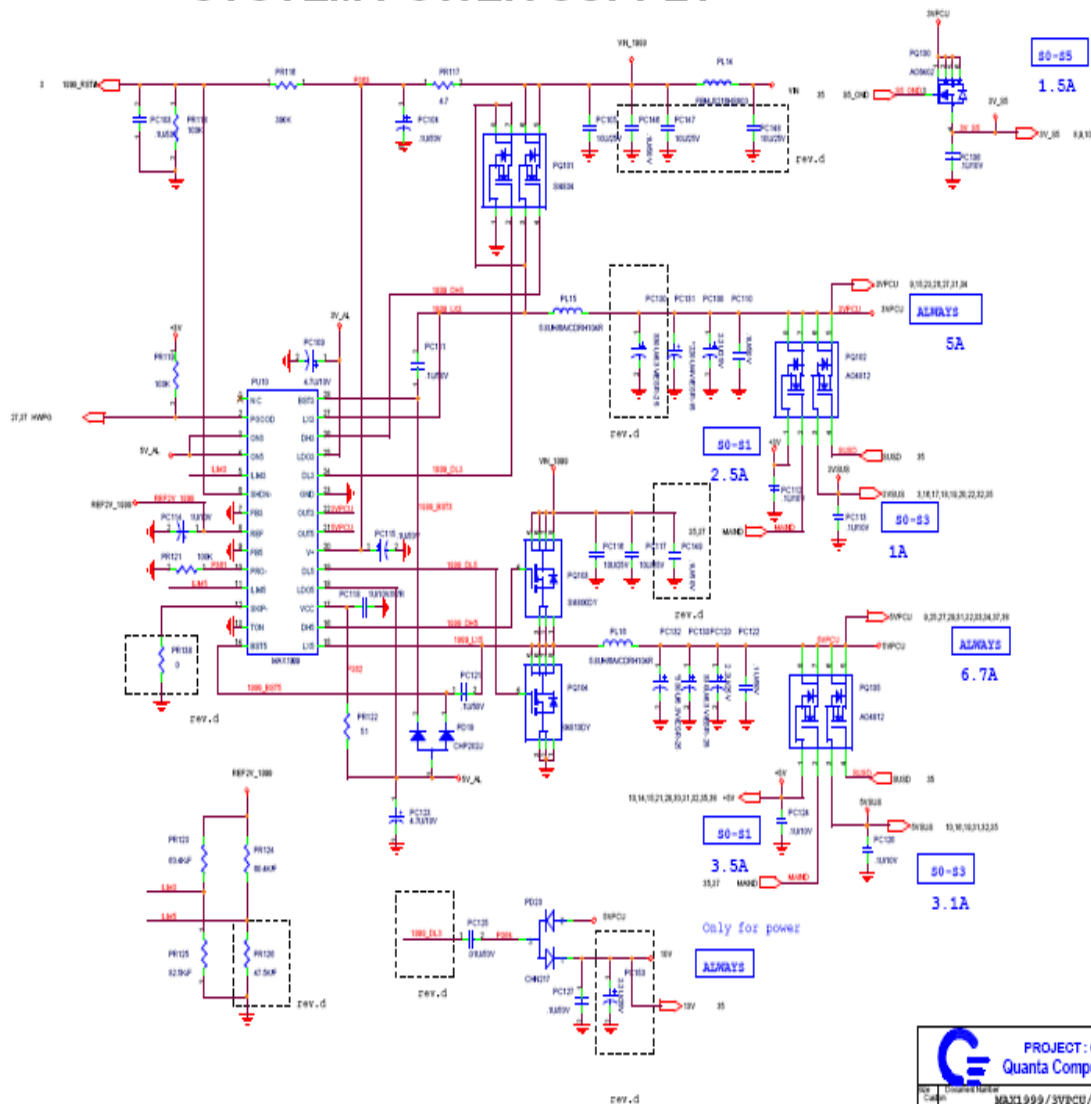
FIRST REMOVE THE PLUG FROM THE LCD MODULE AND MEASURE THE VOLTAGES ACCORDING TO THE PLUG STILL CONNECTED TO THE LAPTOP WHILE THE LAPTOP IS SWITCHED ON, TAKE CARE NOT TO SHORT THE PINS, SWITCH LAPTOP OFF. PULL OUT THE LCD MODULE CABLE FROM THE LAPTOP AND WRITE DOWN THE WIRE COLOUR CODING, PIN NUMBER ON THE PLUG SOCKET AND THE VOLTAGES ACCORDINGLY, THEN VERIFY ACCORDING TO THE DIAGRAM BELOW....NOTE, ASLONG AS THE SUPPLY VOLTAGES AND GROUNDS ARE CONNECTED TO THE CORRECT PLACES NOTHING CAN DAMAGE THE LCD, INO AND Rin0 VOLTAGES ARE NOT CRITICAL, THEY ONLY DO COLOUR AND DATA.....IF IN DOUBT THEN JUST MEASURE THE PINS ON THE 20 PIN SOCKET ACCORDING TO THE METAL CASING ON THE PLUG SOCKET ON THE LCD..........NOTE DO NOT CONNECT ANYTIHING TO NC PIN'S. I HAVE NOT TRIDE THIS ON A HIGH RESOLUTION LCD YET, WILL LET YOU KNOW. THIS WORKS, DONE IT ON MECER, HP, ACER, FUJITSU, DELL, TOSHIBA LCD's. I BURNED THE FIRST Acer LAPTOP VGA CIRCUIT WITH FIRST ATTEMPT, SO, I DO NOT TAKE ANY RESPONSIBILITY IF YOU SCREW THIS UP

30 PIN CONNECTOR LAPTOP LCD MODULE (MECER 755S14 LCD)

Terminal no.	Symbol	Pin value and Supplies		
1	GND	GND		
2	VDD	Power Supply : +3.3V	3.3V	
3	VDD	Power Supply : +3.3V	3.3V	
5	NC	DO NOT CONNECT TO ANYTHING		
8	IN0-	Transmission Data of Pixels 0 (Negative : -)	2.5V	
9	IN0+	Transmission Data of Pixels 0 (Positive : +)	0.25V	
10	GND	Ground		
11	IN1-	Transmission Data of Pixels 1 (Negative : -)	2.5V	
12	IN1+	Transmission Data of Pixels 1 (Positive : +)	0.25V	
13	GND	Ground		
14	IN2-	Transmission Data of Pixels 2 (Negative : -)	2.5V	
15	IN2+	Transmission Data of Pixels 2 (Positive : +)	0.25V	
16	GND	Ground		
17	CLK-	Sample Clock (Negative : -)	1.8V	
18	CLK+	Sample Clock (Positive : +)	1.4V	
19	GND	Ground		
22	GND	Ground		
25	GND	Ground		
28	GND	Ground		

ESTIMATED VALUE, MAY VERY DEPENDING ON THE BIOS COLOUR

20 PIN CONNECTOR LAPTOP LCD MODULE (LQ141X1LH82 LCD)

Terminal no.	Symbol	Pin value and Supplies		
1	VDD	Power Supply : +3.3V	3.3V	
2	VDD	Power Supply : +3.3V	3.3V	
3	GND	Ground		
4	GND	Ground		
5	Rin0+	Transmission Data of Pixels 0 (Positive : +)	2.5V	
6	Rin0-	Transmission Data of Pixels 0 (Negative : -)	0.25V	
7	GND	Ground		
8	Rin1-	Transmission Data of Pixels 1 (Negative : -)	2.5V	
9	Rin1+	Transmission Data of Pixels 1 (Positive : +)	0.25V	
10	GND	Ground		
11	Rin2+	Transmission Data of Pixels 2 (Positive : +)	2.5V	
12	Rin2-	Transmission Data of Pixels 2 (Negative : -)	0.25V	
13	GND	Ground		
14	CLK-	Sample Clock (Negative : - CAN BE POSITIVE)	1.8V	
15	CLK+	Sample Clock (Positive : + CAN BE NEGATIVE)	1.4V	
16	GND	Ground		
17	NC	DO NOT CONNECT TO ANYTHING		
18	NC	DO NOT CONNECT TO ANYTHING		
19	GND	Ground		
20	GND	Ground		

ESTIMATED VALUE, MAY VERY DEPENDING ON THE BIOS COLOUR

SOME 20 PIN MONITORS REQUIRE THE + AND THE - PINS TO BE TURNED AROUND OTHERWISE THE INCORRECT COLOUR IS DISPLAYED, IF COLOUR IS NOT CORRECT, SIMPLY TURN PIN + AND - AROUND, DO NOT MIX Rin0 AND Rin1 OR THE OTHERS, YOU CAN SWITCH THE PAIR's AROUND

DO NOT connect NC pin to anything. Don't connect it to ground nor to any other signal input.

DETAIL OF CPU SOCKET

The CPU in a laptop system can be soldered directly into the motherboard, installed via a mobile module (a circuit board containing the CPU and other components), or plugged in via a socket similar to that of desktop systems. Most modern systems have the processor installed in a socket directly, allowing future replacement and even limited upgrades. Processors earlier than the Pentium III and Athlon were usually soldered in or installed via various mobile module designs, greatly limiting interchangeability. Table 5.4 shows the designations for the various processor sockets/slots used in laptop systems and lists the chips designed to plug into them.

Table 5.4. Mobile CPU Socket Specifications				
Socket	Pins	Pin Layout	Voltage	Supported Processors
MMC-1	280	70x4	5V-21V[*]	Mobile Pentium/Celeron/Pentium II MMC-1
MMC-2	400	40x5	5V-21V[*]	Mobile Celeron/Pentium II/III MMC-2
MC	240	30x8	Auto VRM	Mobile Pentium II MC
Micro-PGA1	615	24x26 mPGA	Auto VRM	Mobile Celeron/Pentium II micro-PGA1
Micro-PGA2	495	21x24 mPGA	Auto VRM	Mobile Celeron/Pentium III micro-PGA2
Socket 478	478	26x26 mPGA	Auto VRM	Desktop Celeron/Pentium 4 FC-PGA2

mPGA479M	479	26x26 mPGA	Auto VRM	Mobile Celeron/Pentium III/4/M micro-FCPGA
Socket A (462)	462	37x37 SPGA	Auto VRM	Mobile/Desktop Duron/Athlon 4/Athlon XP-M
Socket 754	754	29x29 mPGA	Auto VRM	Mobile/Desktop Athlon 64

Auto VRM = Voltage regulator module with automatic voltage selection determined by processor VID pins
FCPGA = Flip-chip pin grid array
PGA = Pin grid array
SPGA = Staggered pin grid array
mPGA = Micro-pin grid array

Mobile

- Socket 479 - Intel Pentium M and Celeron M (Banias and Dothan cores)
- Socket 495 - Also known as PPGA-B495, used for Mobile P3 Coppermine and Celerons [6]
- Socket M - Intel Core Solo, Intel Core Duo and Intel Core 2 Duo
- Micro-FCBGA - Intel Mobile Celeron, Core 2 Duo (mobile), Core Duo, Core Solo, Celeron M, Pentium III (mobile), Mobile Celeron

Socket P - Intel-based; replaces Socket 479 and Socket M. Released May 9th, 2007

PC Cards (PCMCIA)

Although they were originally called PCMCIA Cards, after the second release of the specification in 1991, these cards are more accurately (and officially) called PC Cards instead. Still, to this day many people (including myself) often call them PCMCIA Cards, even though that is no longer technically correct.

Table 8.1. PC Card Bus Types

Feature	PC Card-16	CardBus
Voltage	5V/3.3V	3.3V
Design	ISA	PCI
Interrupts	Non-Shareable	Shareable
Speed	10MHz	33MHz
Data width	8/16-bit	32-bit
Transfer rate	20MBps	133MBps

PC Card Physical Types

The PC Card standard also defines three physical types for PC Cards, which apply to either those using the PC Card-16 or Card Bus interface. The three physical designs are shown in Table 8.2.

Table 8.2. PC Card Physical Types

PC Card Sizes	Length	Width	Thickness	Volume
Type I	54.0mm (2.13in)	85.6mm (3.37in)	3.3mm (0.13in)	15.25cc (0.93ci)
Type II	54.0mm (2.13in)	85.6mm (3.37in)	5.0mm (0.20in)	23.11cc (1.41ci)
Type II	54.0mm (2.13in)	85.6mm (3.37in)	10.5mm (0.41in)	48.54cc (2.96ci)

PC Card Physical Types. One or two Type I or Type II PC Cards (upper center) can be inserted into most notebook computers (center), but only one Type III PC Card (upper right) can be used at a time (lower center).

The pinouts for the PC Card interfaces are shown in Table 8.3.

Table 8.3. PC Card-16 and CardBus Pinouts					
Pin	PC Card-16	CardBus	Pin	PC Card-16	CardBus
1	GND	GND	35	GND	GND
2	D3	CAD0	36	-CD1	-CCD1
3	D4	CAD1	37	D11	CAD2
4	D5	CAD3	38	D12	CAD4
5	D6	CAD5	39	D13	CAD6
6	D7	CAD7	40	D14	RFU
7	-CE1	CC/-BE0	41	D15	CAD8
8	A10	CAD9	42	-CE2	CAD10
9	-OE	CAD11	43	-VS1	CVS1
10	A11	CAD12	44	-IORD/RFU	CAD13
11	A9	CAD14	45	-IOWR/RFU	CAD15
12	A8	CC/-BE1	46	A17	CAD16
13	A13	CPAR	47	A18	RFU
14	A14	-CPERR	48	A19	-CBLOCK
15	-WE	-CGNT	49	A20	-CSTOP
16	READY/-IREQ	-CINT	50	A21	-CDEVSEL
17	Vcc	Vcc	51	Vcc	Vcc
18	Vpp/Vcore	Vpp/Vcore	52	Vpp/Vcore	Vpp/Vcore
19	A16	CCLK	53	A22	-CTRDY
20	A15	-CIRDY	54	A23	-CFRAME
21	A12	CC/-BE2	55	A24	CAD17
22	A7	CAD18	56	A25	CAD19
23	A6	CAD20	57	-VS2	CVS2
24	A5	CAD21	58	RESET	-CRST
25	A4	CAD22	59	-WAIT	-CSERR
26	A3	CAD23	60	-INPACK/RFU	-CREQ
27	A2	CAD24	61	-REG	CC/-BE3
28	A1	CAD25	62	BVD2(-SPKR)	CAUDIO
29	A0	CAD26	63	BVD1(-STSCHG/-RI)	CSTSCHG
30	D0	CAD27	64	D8	CAD28
31	D1	CAD29	65	D9	CAD30

32	D2	RFU	66	D10	CAD31
33	WP(-IOIS16)	-CCLKRUN	67	-CD2	-CCD2
34	GND	GND	68	GND	GND

The later versions of the standard include many features designed to increase the speed and efficiency of the interface, including the following:

- 5V or 3.3V operation— PC Card-16 cards can operate at 3.3V or 5V, depending on the card. Cards that run on the lower voltage use less power and save battery life. All CardBus cards use 3.3V.
- Support for the ACPI (Advanced Configuration and Power Interface) and APM (Advanced Power Management) power-saving protocols— This support allows cards to be moved into various power-conserving states, as well as powered off.
- Plug-and-Play support— PnP allows the operating system to configure the cards, thus eliminating conflicts with other devices.
- The PC Card ATA standard— This standard allows manufacturers to use the AT Attachment protocols to implement PC Card hard disk drives or flash memory–based solid-state drives.
- Support for multiple functions on a single card— This support allows multiple devices to coexist, such as a modem and a network adapter.
- Zoomed Video (ZV)— This is a direct video bus connection between the PC Card adapter and the system's graphics controller. It allows high-speed video displays for videoconferencing applications, TV tuners, and MPEG decoders.

Universal Serial Bus (USB)
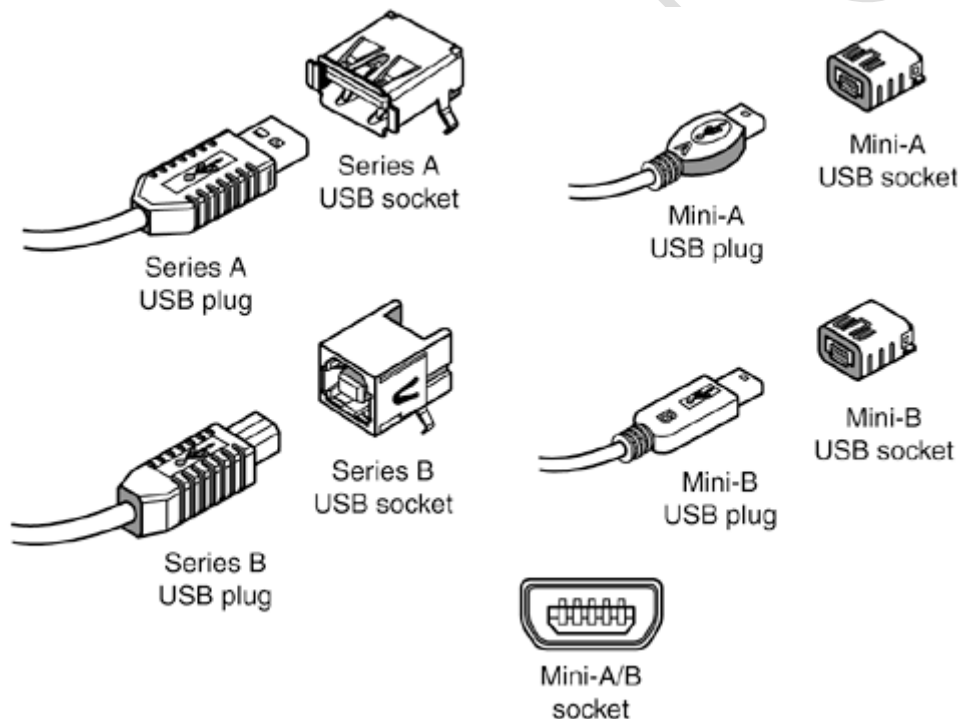
Table 8.5. Color Coding for USB Mini Plugs and Sockets	
Connector	**Color**
Mini-A socket	White
Mini-A plug	White
Mini-B socket	Black

GREEN CHIP Institute of Advance Technology

Mini-B plug	Black
Mini-AB socket	Gray

Tables 8.6 and 8.7 show the pinouts for the USB connectors and cables. Most notebooks with USB connectors feature one or two Series A connectors on the rear or sides of the system.

	Table 8.6. USB Connector Pinouts for Series A/B Connectors		
Pin	**Signal Name**	**Wire Color**	**Comment**
1	Vbus	Red	Bus power
2	- Data	White	Data transfer
3	+ Data	Green	Data transfer

	Table 8.7. USB Connector Pinouts for Mini-A/B Connectors		
Pin	**Signal Name**	**Wire Color**	**Comment**
1	Vbus	Red	Bus power
2	- Data	White	Data transfer
3	+ Data	Green	Data transfer
4	ID	—	A/B identification[*]
5	Ground	Black	Cable ground
Shell	Shield	—	Drain wire
4	Ground	Black	Cable ground
Shell	Shield	—	Drain wire

Memory

Debug Card Coding

0E	1.Initialize the APIC (Multi-Processor BIOS only) 2.Test video RAM (If Monochrome display device found) 3.Show message including: • Award logo, Copyright string, BIOS date code & Part No. • OEM specific sign on messages • Energy Star logo (Green BIOS only) • CPU brand, type & speed
0F	DMA channel 0 test
10	DMA channel 1 test
11	DMA page registers test
12-13	Reserved

C3	1.Test the first 256K DRAM 2.Expand the compressed codes into temporary DRAM area including the compressed system BIOS & Option ROMs
C5	Copy the BIOS from ROM into E000-FFFF shadow RAM so that POST will go faster
01-02	Reserved
03	Initialize EISA registers (EISA BIOS only)
04	Reserved
05	1.Keyboard Controller Self-Test 2.Enable Keyboard Interface
06	Reserved

45	Initialize math coprocessor
46-4D	Reserved
4E	If there is any error detected(such as video,KB....), show all the error messages on the screen & wait for user to press <F1> key
4F	1.If password is needed, ask for password 2.Clear the Energy Star logo (Green BIOS only)
50	Write all the CMOS values currently in the BIOS stack ares back into the CMOS
51	Reserved

52	1.Initialize all ISA ROMs 2.Later PCI initializations(PCI BIOS only) • assign IRQ to PCI devices • initialize all PCI ROMs 3.PnP initializations (PnP BIOS only) • assign IO, Memory, IRQ & DMA to PnP ISA devices • initialize all PnP ISA ROMs 4.Program shadow RAM according to setup settings 5.Program parity according to setup setting 6.Power Management initialization • Enable/Disable global PM • APM interface initializtion

53	1.If it is not a PnP BIOS, initialize serial & parallel ports 2.Initialize time value in BIOS data area by translate the RTC time value into a timer tick value
54-5F	Reserved
60	Setup virus protection (Boot sector protection) functionality according to setup setting
61	1.Try to turn on level 2 cache Note:If L2 cache is already turned on in post 3D, this part will be skipped 2.Set the boot up speed according to setup setting 3.Last chance for chipset initialization 4.Last chance for Power Management initialization (Green BIOS only) 5.Show the system configuration table

62	1.Setup daylight saving according to setup valus 2.Program the NUM lock, typmatic rate & typmatic speed according to setup setting
63	1.If there is any changes in the hardware configuration, update the ESCD information (PnP BIOS only) 2.Clear memory that have been used 3.Boot system via INT 19h
FF	System booting. This means that the BIOS already pass the control right to the operating system

Unexpected Errors:

POST (HEX)	Descriptions
B0	If interrupt occurs in protected mode
B1	Unclaimed NMI occurs

Post (HEX)	Descriptions
31	1.Test base memory from 256K to 640K 2.Test extended memory from 1M to the top of memory
32	1.Display the Award Plug & Play BIOS extension message(PnP BIOS only) 2.Program all onboard super I/O chips(if any) including COM ports, LPT ports, FDD port... according to setup value
33-3B	Reserved
3C	Set flag to allow users to enter CMOS setup utility
3D	1.Initialise keyboard 2.Install PS2 mouse
3E	Try to turn on level 2 cache Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in Post 61h
3F-40	Reserved
BF	1.Program the rest of the chipset's value according to setup(Later setup value program) 2.If auto configuration is enabled, programmed the chipset with pre-defined values in the MODBINable Auto-Table
41	Initialize floppy disk drive controller
42	Initialize hard drive controller
43	If it is a PnP BIOS, initialize serial & parrallel ports
44	Reserved

Post (HEX)	Descriptions
C0	1.Turn off OEM specific cache, shadow..... 2.Initialize all the standard devices with default values Standard devices includes: • DMA controller (8237) • Programmable Interrupt Controller (8259) • Programmable Interval Timer (8254) • RTC chip
C1	Auto detection of onboard DRAM & Cache

Post (HEX)	Descriptions
0B	1.Verify the RTC time is valid or not 2.Detect bad battery 3.Read CMOS data into BIOS stack area 4.PnP initializations including (PnP BIOS only) • Assign CSN to PnP ISA card • Create resource map from ESCD 5.Assign IO & Memory for PCI devices (PCI BIOS only)
0C	Initialization of the BIOS data area (40:0-40:FF)
0D	1.Program some of the chipset's value according to setup.(Early setup value program) 2.Measure CPU speed for display & decide the system clock speed. 3.Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep.
07	Verifies CMOS's basic R/W functionality
BE	Program defaults values into chipset according to the MODBIN able Chipset Default Table
09	1.Program the configuration register of Cyrix CPU according to the MODBIN able Cyrix Register Table 2.OEM specific cache initialization
0A	1.Initialize the first 32 interrupt vectors with corresponding interrupt handlers Initialize INT No. from 33-120 with Dummy(Spurious) interrupt handler 2.Issue CPUID instruction to identify CPU type 3.Early Power Management initialization (OEM specific)
14	Test 8254 timer 0 counter 2
15	Test 8259 interrupt mask bits for channel 1
16	Test 8259 interrupt mask bits for channel 2
17	Reserved
19	Test 8259 functionality
1A-1D	Reserved
1E	If EISA NVM checksum is good, execute EISA initialization(EISA BIOS only)
1F-29	Reserved
30	Get base memory & extended memory size

COMMON LAPTOP NOTEBOOK CHIP INTERSOFT

VERY DIFFICULT TO GET INFORMATION NOT EASY TO FIND

Power chip:

MAX1632, MAX1904, MAX1634,SB3052, SC1402, LTC1628

Toshiba TM87XX, IBM: TB6805F, TB6806F, TB6808F, TB62501F, TMP48U

ADP3160/ADP3167 laptop power supply control IC

ADP3168 Laptop power supply control CHIP IBM

APW7060 board power supply control IC

FAN7601 notebook computer power adapter Controller

IPM6220A notebook computer power management chips

GREEN CHIP Institute of Advance Technology

LTCl628 notebook computer system power supply circuit

LTC3728L notebook computer system power supply control IC

M51995A notebook computer power adapter Controller

MAXl540/MAXl541 laptop power supply control IC

MAX1631 notebook computer main power supply control IC

MAXl644 laptop power supply control IC

MAX1902 notebook computer system power supply control IC

MAX1992/MAXl993 laptop power supply control IC

MAX1999 notebook computer system power supply control IC

MAX785/MAX786 notebook computer system power supply control IC

NCPl205 notebook computer power adapter Controller

NCP1207 controller chip notebook computer power adapters

SC1470 laptop power supply control IC

TPS54672 power supply control chip laptop memory

Power chips with the use of

ADP3203/ADP3415, ADP3410/ADP3421, ADP3410/ADP3422

Linear Regulators blocks:

2951, LP2951, m5236, 2950

NOTEBOOK IO CHIP

PC97338, PC87391, PC87392, pc87393, SMSC Series: FDC7N869, FDC37N958, LPC47N227, LPC47N267

PC87591S (VPCQ01) / PC 87591L (VPC01) / PC 97317IBW/PC 87393 VGJ

2501F/TB62506F/TB6808F/KB910QF/KB910QB4/KB910LQF/KB910LQFA1

KB3910QB0/KB910SFC1/KB3910SF/PC87591E-VLB/IT8510E/PS5130

PC87591E (-VPCI01), (VPCQ01) / PC 97551-VPC/PC 87570-ICC/VPC

PC87391VGJ/TB6807F/W83L950D/LPC47N249-AQQ/PCI4510/PC8394T

PC87392/PC87541L/PC87541V/LPC47N253-AQQ/PC87591E-VLB

LPC47N250-SD/LPC47N252-SG/LPC47N254-AQQ

IT8705F motherboard I / O chip

IT8712F motherboard I / O chips

CPU power supply chips:

ADP3166   Motherboard CPU power supply controller chip

ADP3170   Motherboard CPU power supply controller chip

ADP3180   Motherboard CPU power supply controller chip

ADP3181   CPU powered notebook chip

ADP3203   CPU powered notebook chip

ADP3421   CPU powered notebook chip

AIC1567 Motherboard CPU Power Supply Control IC

CS5322 Motherboard CPU Power Supply Control IC

FAN5056 Motherboard CPU Power Supply Controller

ITC1709 notebook computer CPU power supply control IC

MAX1710/MAX1711/MAXl712 notebook CPU core power supply chips

MAX1714-core notebook CPU, power supply control IC

MAX1715-powered notebook computer CPU chips

MAX1717 notebook computer CPU power supply control IC

MAX1718 notebook computer CPU power supply control IC

MAX1830/MAXl831 notebook computer CPU power supply control IC

MAX1845 notebook CPU core power supply control IC

MAX1897

NCP5314 Motherboard CPU Power Supply Control IC

SC2422 motherboard CPU power supply control IC

Charge discharge control -chip:

MAX745, TC490/591

AAI3680 laptop charge control chips

ADP3806 laptop battery charge / discharge controller chip

DS2770 laptop charge control chips

LTl505G laptop charge control chips

LTC4008 laptop charge control chips

MAXl645B notebook computer battery charge management IC

MAX1736 notebook charge control chips

MAX1772 notebook charge control chips

MAX1773 notebook charge control chips

MAX1873 notebook charge control chips

MAX1908 notebook charge control chips

MAX1909 notebook charge control chips

MAX745 laptop charge controller

MB3878 laptop charge control chips

AAT3680 charge control chips notebook

BQ24702/BQ24703 laptop charge control chips

DS2770 chip, a charge control notebook computer

CPU temperature control chip:

MAX1617, MAX1020A, AD1030A, CM8500 MAX1989

DS1620 digital temperature control chip notebook

Graphics Brand:

GREEN CHIP Institute of Advance Technology

ATI, NVIDIA, S3, NEOMAGIC, TRIDENT, SMI, INTEL, FW82807, and CH7001A

With the use of Ethernet chips:

RTL8100, RTL8139, Intel DA82562, RC82540, 3COM, BCM440

Ethernet isolation:

LF8423, LF-H80P, H-0023, H0024, H0019, ATPL-119

Sound audio   Chip:

SS1921, ESS1980S, STAC9704, AU8810 ,4299-JQ, TPA0202 ,4297-JQ, 8552TS, 8542TS, CS4239-KQ, BA7786, AN12942

AD1885 audio chipset motherboard

ADl888 motherboard sound card chip

ADl981b motherboard sound card chip

ALC200 audio chipset motherboard

ALC201A motherboard sound card chip

ALC655 audio chipset motherboard

APA2020/TPA0202 low-power audio power amplifier chip

CMl9738 motherboard sound card chip

LM4861 low-power audio power amplifier chip,

LM4863 low-power audio power amplifier chip,

Several LM4880 audio power amplifier M4881 low-power chips

LM4911 low-power audio power amplifier chip,

APA2020/TPA0202 low-power audio power amplifier chip

PC Card Chip:

R5C551, R5C552, R5C476, R54472

PC Card power supply chips:

TPS2205, TPS2206, TPS2216, TPS2211, PU2211, M2562A, M2563A, M2564A

COM port chip:

MAX3243, MAX213, ADM213, HIN213, SP3243, MC145583

Keyboard-chip:

H8C/2471, H8/3434, H8/3431, PC87570, PC87591

Keyboard chip: with a power-on function:

H8/3434, H8/3437, H8/2147, H8/2149, H8/2161, H8/2168, PC87570, PC87591, H8S/XXX M38857, M38867, M38869

Battery ic

BQ2040 laptop battery detection chip

BQ2060 laptop battery detection chip

BQ24700 laptop charge control chips

BQ2470l laptop charge control chips

BQ24702/BQ24703 laptop charge control chips

M61040FP laptop battery management controller chip

Memory control chip

CM8501/CM8501A motherboard memory controller chip power supply

CM8562 board memory, power supply control chip

Clock ic

CS950502 Motherboard Clock Chip

CY28404C Motherboard Clock Chip

ICS9248-153 Motherboard Clock Chip

ICS954218 Motherboard Clock Chip

ICS9248-151 Motherboard Clock Chip

ICS9248-39 Motherboard Clock Chip

ICS950202 Motherboard Clock Chip

ICS950208BF Motherboard Clock Chip

ICS950901 Motherboard Clock Chip

ICS950902 Motherboard Clock Chip

ICS950908 Motherboard Clock Chip

ICS952018 Motherboard Clock Chip

ICS952617 Motherboard Clock Chip

ICS952643 Motherboard Clock Chip

ICS954127 Motherboard Clock Chip

lcd back light control

MAXl522/MAXl523/MAXl524 laptop LCD backlight power controller chip

OZ960 laptop LCD screen controller chip high-voltage driver

Ddr memory power supply

MAX8794 Notebook DDR memory power supply controller chip

NCP5201 board DDR2 memory, power supply controller chip

SC1486/SCl486A notebook computer memory-chip power supply

GREEN CHIP Institute of Advance Technology

SC2616 board DDR2 memory, power supply controller chip

TPS51020 powered notebook DDR memory controller chip

SL6520 board DDR memory power supply controller chip

ISL6537 board DDR memory power supply controller chip

CM8501/CM8501A motherboard memory controller chip power supply

ISL6224 power controller chip notebook memory

ISL6225 power controller chip notebook memory

Other Common notebook motherboard chipset

AAT3200 LDO

AAT4280-port limit protection chip

AMS1505 Low-Dropout Regulator

MIC2545-port limit protection chip

MIC5205 Low Dropout Regulator

Laptop power supply control chip ADP3168

AICl567 motherboard CPU power supply controller chip

cM8562 motherboard memory controller chip power supply

CMl9738 motherboard sound card chip

CSS5322 board (2P [J Supply Control IC

DSl620 laptop digital temperature control chip

FAN7601 notebook computer power adapter Controller

IPM6220A notebook computer power management chips

Other chip detail for laptop

ADP3421, ADP3410, ADP3806, ADP3205, ADP3412, ADP3203, ADP3416, ADP3418, ADP3158, ADP3165, ADP3163, ADP3168, ADP3188, ADP3188J, ADP3180, ADP3418 ......

MAX1631, MAX1632, MAX1644, MAX1710, MAX1711, MAX1712, MAX1714, MAX1714A, MAX1715, MAX1717, MAX1717EEG, MAX1718, MAX1772, MAX1845, MAX1858, MAX1904, MAX1904EAI, MAX785, MAX785CAI, MAX786, MAX3243, MAX3243, MAX3243EAI, MAX1645A, ATXP6, MAX1645, MAX1617, MAX1987, MAX1999, MAX1532 ......

LTC1736, LTC1709EG-85, LTC1628, LTC1628CG, LCT1438, LCT1439, LT1505CG, LTC1736, LTC2430, LTC2430CGN, LTC1435CS, LTC1736 ......

PC97338, PC87393, PC87391, PC87392, PC87591E-VBR, PC87364-ICG/VLA, PC87393F-VJG PC87591E-VPCI01, PC87591L-VPCN01, PC87570-ICC/VPC ......

TB6808F, TB62501F, TPC8111, TL594, ALC655, ATMEL24C08, 24RF08CN, 24RF08CT, 93C46, ATTP1, ATTP3, ALIM1671B1, ISL6563, 216CS2BFA22H, 9525DVD, 200A6, 9936, 4532, 4404, 4812, 4925, 4816, 4435, 4410, 6982S, DAP8A, SAA7846HL, FDD6690A, FDD6680A, 60QC03L, M51995AP, M66515F, SC1102CS, SC1175CSW, 5234MTC, SC1486ITS, 3887, VT6301S, RT9248, RTL8100CL ......

GREEN CHIP Institute of Advance Technology

BGA variety of north and south bridge chips: DBM FBM GBM HBM 910GML RG82845MP 945PM VN890 SIS650 M7-CSP32 NF4-4X-A3 X300 X700 ATI9000 M6-C16H NH82801HBM RG82855PM NQ82915PM QG82945PM GF-G07300-B-A2 LE82PM965, etc.

SCR:
BT169D, MCR100-6, MCR100-8, BT131-600, BT134-600D / E, BT136-600D / E, BT137-600E, BT138-600E, BT151-500R, MAC97A6, X0405NF/MF, Z0409MF, BTB04-600SL, BTA06-600C, BTA08-600C, BTA12-600B, BTA16-600B, BTA41-600B

EEPROM:
AT24C02, AT24C04, AT24C08, AT24C16, AT24C32, AT24C64, AT24C128, AT24C256, AT24C512, AT93C46

Power
LM339, LM393, LM324, LM358, JRC4558, AMS1117, MC34063, 78M05, TDA2030A/18W, TEA2025B-12, LM2576-5V, LM2940-5V, UC3842, UC3843, L7805CV, TL431, 2SC3356, 2SC3355, D882, 13002, DH3582

Laptop Power Management:
MAX1631, ADP3806, MAX1845, ADP3205, ADP3415, TB62501, PCI1520GHHK, TPS2214A, ATI7500, AD1981B, AN12942B, ET82562EZ, EC82540EP, AT93C46, MAX1989, ATMEL24RF08CN, SST49LF008A, INTEL82802AC, MAX1632, MAX1999, MAX1901, MAX1902, MAX1904, MAX1999, TPS5130, SC1403, LTC1628, TPS51020, MAX8734 MAX1715, MAX1714, SC1485, SC1486, PS5130, ISL6225CA, MAX1772, M3887, M3878, PC87570, PC97551 87591E / L / V (internal procedures), ADP3421, ADP3410, MAX1711, MAX1718, ADP3203, SC1474 , SC1476, SL6227, ISL6218, MAX1987, MAX1907

North and south bridge chip, graphics chip:
216-0707001,216-0707001,216-0707007,216 BABAVA12FG, 216BCP4ALA12FG, 216BCP4ALA12FG/FK RC410MB, 216BGCKC13FG M66P, 216BLS3AGA21H, 216BPS3BGA21H RS300MD, 216BS2CFB23H, 216C7TZBGA13, 216CBS3AGA21H, 216CCCBKB12FG, 216CLS3BGA21H 9000IGP, 216CP4ALA12FG RC410MD, 216CZJAKA12FAG X1300, 216DCCDBFA22E, 216DCCDBFA22E M6 -C16, 216DCPAVA12FAG, 216DDPAVA12FAG, 216DECHBFA22E, 216DK8AVA12PH, 216DP8AVA12H, 216ECP4ALA13FG, 216GYLAKB25FAG X1600, 216LQA6AVA12FG, 216MEP6CLA13FG RS600ME, 216MGAKC13FG M66-M, 216MJBKA15FG, 216MOSAAGA53, 216MPA4AKA13HKS, 216MPA4AKA21HK, 216MPA4AKA22HK, 216MPA4AKA23HKS, 216MQA6AVA12FG RS690M, 216MS2BFA21H, 216MS2BFA22H, 216P6TZAFA22E (M6 -P), 216P9NZCGA12H, 216PBCGA15F 9700,216 PBCGA15FG, 216PDAGA23F, 216PFAKA13F, 216PFDALA11F X600, 216PKS2BFA22H, 216PQAKA12FG, 216PQAKA13FG, 216PS2BFA22H, 216PWAVA12FG, 216Q7CGBGA13, 216QFGAKA13FH, 216QMAKA11FG M72-M, 216T9NFBGA13FH, 216XCFCGA15FH, 216XJBKA12FG M76 XT-M, 218BAPAGA12FG, 218S2EBNA46 , 218S2RBNA44, 218S4EASA12K, 218S4EASA32HK IXP400, 218S4EASA33HG IXP400, 218S4PASA11K, 218S4PASA12G, 218S6ECLA12FG, 218S6ECLA13FG, 218S6ECLA21FG, 218S7EALA12FG, 218S7EBLA12FG SB700, 88E1111-BAB, 88E1111-CAA, 88E1111-RCJ1, 88E1112-NNC, 88E1121-TFE A1, 88E8001-LKJ1 , 88E8053-NNC, 88E8056-A2-NNC, 88E8056-NNC1, 88E8071-NNC1, 88E8072-NNC1, 88E8310-RES, 88F5281-DO, 88SA8040-TGC, AC82GE45-SLB96, AC82GL40, AC82GM45, AC82GM45-SLB94, AC82PM45 SLB97, AC82PM45-SLB97, AC82Q45-SLB8A, AF82801IBM, AF82801IBM SL8BQ, AF82801IBM SLB8Q, AF82801IBM-SLB8Q,

AF82801JDO-SLG8U, AF82801JIB, AF82801JIR-SLB8S, BCM4401KFB, BCM4401KFBG, BCM4401KQLG, BCM4702KPB, BCM4785PKPBG, BCM5218KTB, BCM5221A4KPB, BCM5705EKFB, BCM5705KFB, BCM5705KFBG, BCM5705MKFB, BCM5751KFBG P31, BCM5751MKFB, BCM5751MKFB P21, BCM5751MKFBG P31, BCM5751PKFB, BCM5751PKFBG, BCM5751TKFB, BCM5787KMLG P12, BCM5788KFB, BCM5788KFBG, BCM5788MKFBG, BCM5789KFB, BCM5789KFBG, FW82546GB, FW82546GB, FW828010E SL3MD, FW82801AA-SL3Z2, FW82801AB-SL3MB, FW82801BA SL5WK, FW82801BA-SL5WK, FW82801CA SL632, FW82801CAM, FW82801CAM-SL5YP, FW82801CA-SL632, FW82801DBM-SL6DN, FW82801DB-SL6DM, FW82801EB-SL73Z, FW82801ER-SL742, FW82801FB, FW82801FB SL7AG, FW82801FB SL7Y5, FW82801FB SL8BZ, FW82801FBM, FW82801FB-SL8BZ, FW82801FR, FW82801FR SL79N, FW82815 SL5NQ, FW82815 SL4DF, FW82815EM SL4MP, FW82815EP, FW82830MG SL62E, FW82830MP, SL5P7FW82830MP SL62F, FW82830MP SL62F, FWE6300ESB SL76G, FWE6300ESB SL76G, FWE6300ESB-SL76G, G80-300-A2, G84-600-A1, G84 -602-A2, G86-603-A2, G86-630-A2, G86-631-A2, G86-635-A2, GB627HF-AW, GD82541PI SL7AT, GD82547GI SLT62, GD82551ER, GD82562EZ-SL662, GEFORCE 6200TC SB NPB A2 , GEFORCE FX GO5100 B1, GEFORCE FX GO5200 NPB B1, GEFORCE2 GO100 B3, GEFORCE4 440 GO 64M, GF4-410GO-16M-A5, GF4-4200GO-A2, GF4-420GO-32M-A5, GF4-440-GO-A5 , GF-6200TC-N-A2, GF-6200TC-N-B2, GF-6600-GT-N-A4, GF-6600-LE-A4, GF-6600-N-A4, GF-FX-

BIOS

What is FLASHROM?

Flashrom is a similar device to USB flash memory.

It keeps stored data when power-off state like USB flash memory and HDD.

Different points are just that it is connected to M/B via special interface that is not USB and it has a special mechanical package.

These special interfaces are Legacy, FWH, LPC, SPI.

And special packages are DIP32,PLCC32, DIP8, SOP8, TSOP32/48.

Legacy interface flashrom was used in many P3 M/B and older M/B.

FWH interface flashrom was used in intel-8xx, 9xx chip-set M/B and many P4 M/B.

LPC interface flashrom was used in some notebook and AMD and NVidia M/B.

SPI interface flashrom was used in core-duo M/B and newer M/B.

NANO BIOS Programmer can read and write a data with FWH, LPC and SPI flashrom.

And NANO BIOS Programmer supports PLCC32, DIP8 package.

* other package needs soldering.

What is NANO Flashrom Programmer?

Flashrom Programmer is special device that can read and write data of flashrom.

And NANO BIOS Programmer supports FWH, LPC and SPI interface flashrom.

(There are many other interfaces in the world, but most M/B use only FWH, LPC and SPI interface flashrom.)

You can overwrite a correct BIOS to flashrom that has wrong data.

Many not working M/B have a BIOS problem.

BIOS can be broken by BIOS update failure and unstable system.

M/B that has broken BIOS can't boot and can't display anything.

(Of course, there are many other reasons for not working M/B. So, NANO BIOS Programmer is not an all-purpose repair tool)

NANO BIOS Programmer can help you, when you fall in BIOS trouble.

And M/B will work after BIOS is fixed, if it had a BIOS problem.

PLCC32 package

DIP8 package

Power stage

Key

SW	Switching Voltage Regulator
x.xV	Linear Voltage Regulator
▱	Switch (Bipolar or MOSFET)
(green)	Powered Continuously
(yellow)	Powered in Suspend and Run
(orange)	Optionally Powered in Suspend and Run
(red)	Powered when Running
(purple)	Optionally Powered when Running

All resistors 1% unless otherwise noted

Tinderbox Channels
OLPC XO Laptop, C2 build
Dec. 20, 2007
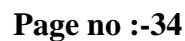
Power reset signals detail

A schematic for what ? Reset and Power-On buttons directly connect to the motherboard chipset in the vast majority of cases.

The diagram is from a Sun system, but the same applies to PC motherboards (and this could be a x86 board anyway). RST is the normal reset (warmboot), while POR is the power-on reset (coldboot) generated from the transition of the power-good signal. The PWR_OK signal from the power supply is being combined with the PGOOD signal from the CPU voltage regulator module to produce the internal PWR_GD signal only if all system voltages are nominal.

I have been able to get motherboard circuit diagrams from different manufacturers in the past (a long time ago), but I don't know how helpful that would be these days. Even knowing that a Southbridge chip is destroyed, I would not be able to replace it.
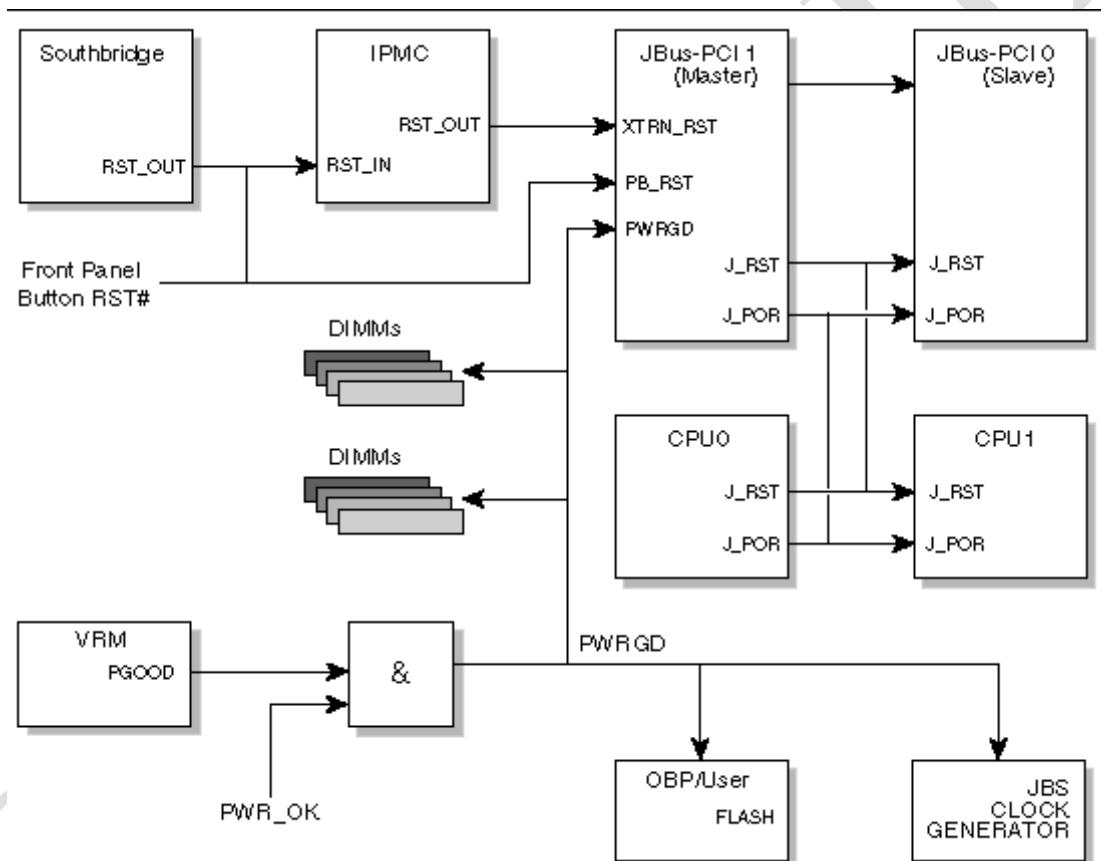
FAULT FINDING

Power but no boot: Bad Input/Output controller **chip**, or bad video **chip**.
Symptoms: The LED light Turns on but the **computer** still doesn't boot.
in this situation what is the solution ?

Shut down/hang when move: Open circuit, loose connection, cold solder
Symptoms: shuts down when you move the **laptop**

GREEN CHIP Institute of Advance Technology

\# Intermittent booting: Bad video **chip**, bad input/output controller **chip**
Symptoms: **Laptop** has power but gets hard to boot. If you press the power button and the central buttons of the keyboard at the same time, **laptop** will boot.

\# No power at all: Bad power **chip**, open circuit, short circuit, or loose connection.
Symptoms: Nothing shows up when you press the power button

\# AC adapter turns off when plugged to the **computer**: Short circuit, short components
Symptoms: The LED light on the AC adapter turns off.

\# Broken power jack: Loose connection, cold solder, broken jack
Symptoms: Need to shake the wire to connect, no power at all, intermittent power up

\# System hangs: Bad video **chip**, bad hard drive controller, bad CPU controller.
Symptoms: System hangs when the windows starting, running **for** 5-10 minutes, or playing DVD

\# No charge: Bad charging **chip**, bad diodes, bad inductor, bad power jack, or open circuit
Symptoms:Works with battery but it doesn't work with AC adapter, no power at all.

\# Graphic Problems: Bad video **chip** on the board or bad LCD
Symptoms: Vertical/horizontal lines, distort color, flickering, intermittent booting

\# Over heat: Bad thermal **chip**, bad fan
Symptoms: Restart unexpectedly, shuts down randomly

\# Doesn't recognize devices: Loose connection, cold solder, bad input/output controller **chip** set
Symptoms: doesn't recognize hard drive, USB ports, Digital card, CD ROM, PCMCIA, wireless card etc.

\# Cannot use the internet: Bad Input/output controller, bad Ethernet **chip** and wireless card, loose connection, cold solder
Symptoms: No Internet signal (the page cannot be displaced)

Laptop Repair examples

1, Failure: two IBM T21 books, a press switch, panel lights flash, another switched on 1 hour later, after shutdown does not automatically trigger .

※Maintenance Methods: this phenomenon with the CPU core power supply control IC ADP 3421 is very much related, laptop replacement for this IC (ADP3421), the books OK. Note: If you find this IC there is a problem to the customer should be renewed three months after repair, it is best to replace with the ADP3410.

2, fault: IBM T22 books, unstable (sometimes boot, sometimes not work)?

※Maintenance Methods: After changing the memory clock OK, to test machine and found that unstable (not shown) inserted card to run 39 diagnostic and other code, suspected Northbridge air welding, welding Northbridge and graphics added, OK.

3, fault: NEC notebook, boot, the light directed normal, (the hard disk light show and then exterminate) but not significantly, external display does not significantly

GREEN CHIP Institute of Advance Technology

※Maintenance Method: began to doubt the graphics card bad, but found hard drives, power supplies and other light were all normal instructions, it is believed the information in question Bios, then brush Bios, OK.

4, fault: IBM laptop, without the boot received (customer explained that sometimes boot, sometimes not boot)?

※Maintenance Methods: First replace ADP3421, can trigger, but do not run CPU, remove the memory after the memory and memory slots rinsed after

5, fault: IBM laptop, and sometimes you can start (and sometimes irregular black screen after boot) sometimes will not turn on?

※Maintenance Methods: First replace ADP3421, about two hours after the boot, but also a black screen appears failure, but also replace Max1714 (Northbridge edge) re-boot, do not run CPU, then replace a CPU, troubleshooting, estimate the internal exposure CPU pins bad.

6, fault: Toshiba notebook, the boot screen after dark?

※repair method: external screen can significantly began to suspect that there are problems of high pressure, open the screen after the amount of several groups of high-voltage section, only 5V so, the amount of motherboards and high-pressure lines Interface Department, Block found that only a 5V power supply, and other groups of no, this time to confirm there is no master of high-voltage power supply, remove the motherboard and found that the insurance cut off high-voltage monoblock Main Power Agency, replace this insurance after the OK.

7, fault: SONY notebook, turn backward system (2000 system) after the power-down (which is entered into the Win2000 the Logo screen, move the scroll), after changing the hard disk, reinstall new system (xp) into the xp cursor just shows that the power outages, suspected bad Northbridge.

※Maintenance Methods: this case was previously part of the basic test of all the hardware can, but into the system, calling the display of the procedures and memory in the system are more occupied by the more serious may result in undesirable Northbridge can not keep up, so first of all suspected to be North Bridge, but it does not rule out the South Bridge and other related equipment can only be gradually excluded. After changing Northbridge OK.

8, fault: two IBM600, after the reported 161,163 boot error?

※Maintenance Methods: After changing CMOS battery OK, one of the mistakes they continued to 8611, is the keyboard Bao Cuo. Note: General reported that 161,163 mistake is the date of

9, fault: Fault 6 PC client pick up two days later and found that shutdown system software can not be closed, according to open the key can not be shutdown, the software shuts down to the last time, there will be half a second a blue screen immediately after the restart.

※Maintenance Methods: First, taking into account the problem may be XP system, re-cloning XP systems, but not into the system, then re-change memory, after an XP re-cloning of all back to normal.

10, fault: IBM and SONY books, the customer said that re-installed hard disk, the machine will not recognize hard drive, and for the hard disk is also the number of failures?

※Maintenance Methods: disassemble a computer hard disk interface is found to IBM customers for a bad hard drive when you plug the two jacks need to disassemble the hard disk and then install a good plug shell. SONY PC interface cable malfunction, replace after the OK.

11, IBM R32 books, into the new system does not recognize drive, but also crashes.

GREEN CHIP Institute of Advance Technology

※Maintenance Methods: The light brush after the same fault Bios. Re-do South Bridge BGA can enter the system, but Huaping, hand press card is not Huaping, redo graphics BGA after OK.

12, T30 books and can not boot, there are standby current.

※Maintenance Methods: Brush after Bios can boot, reported 0188 errors, and then decrypt OK.

13, Toshiba 1900, standby current of 0.04, can boot but does not show?

※Maintenance Methods: Post-trigger current (2.6A-2.7A), after holding down the CPU block can display, CPU Block, their connections and did not show the installed capacity of post-post-change out of memory test machine, you can show that the finalization of a bad memory. After changing the memory OK.

14, a hodge-Book laptop. Crash after a period of time, very laws.

※Maintenance Methods: The look and found two fans after the dust has a population estimated to be cooling properly, causing the OK.

15, BOE laptop screen dark?

※Maintenance Methods: The external display to normal, the estimated high-pressure section of the fault, the latter removed the high-pressure section and found 19V power supply at the insurance off, then a good insurance, and test machine OK.

16, Fujitsu Computer standby current of 0.01A, is triggered only after the current is 0.36A, and the measured inductance with the exception of a 2.5V, other voltages no.

※Maintenance Methods: dragging several major power management IC tin, failure remains the same, hand-touch feeling hot hot south bridge, it is estimated Southbridge local short-circuit, the measured capacitance of the following short-circuit Southbridge, Southbridge concluded that short-circuit, for Southbridge OK .

17, Samsung NV5000 can not find the boot disk?

※Maintenance method: remove the hard disk, the amount of hard disk data cable to normal, suspect air interface, welding, and then drag tin hard disk data line and the motherboard interface Block Office, boot OK.

18, SONY PCG-F360 Boot Windows screen display after the power-down.

※maintenance practices: an estimated Northbridge bad, redo after Northbridge OK.

19, IBM R32 books start to run after the diagnosis of cards 4A?

※Maintenance Methods: The hand-pressed cards, external monitors Huaping, it is estimated graphics space welding, after the redo graphics OK.

20, DELL D800 books, start to run after the diagnosis Card 2E?

※Maintenance Methods: 2E memory to run, never Bios of information is estimated there are problems, (DELL D800, D600 model does not run in memory, most likely caused by poor South Bridge) after BIOS update OK.

21, IBM A21M ten minutes after booting the computer power-down?

※3421 and 3410 did not run after about 30 minutes, power-down, after Kaoji OK.

22, IBM T21 books, not boot?

GREEN CHIP Institute of Advance Technology

※Maintenance Methods: The standby current of 0.01A disassemble the post-test non-3M 5M-voltage measurements MAX1632, 7,28 pin no switching voltage, drag soldering H8 and TB6807AF testing 3M 5M after the normal boot OK.

23, Toshiba N 723 books, standby current of 0.01A, triggered after the power-on to 0.4A immediately after the power-down?

※Maintenance Methods: The suspect that some short circuit caused by the protection, resulting in power-on standby can not be dragging the memory slot of the tin after troubleshooting.

24, Lenovo 8050 computer, boot display (Logo frame) after the crash.

※Maintenance Method: Brush after Bios boot OK.

25, IBM T40 books, not boot? 28, brand-name notebook, comes with screen dark?

※Maintenance Methods: The external display normal (native screen is the screen dark), measured screen, screen OK (this in this department have been sent to other maintenance repairs before, to turn over a high-pressure section) This situation should be a high-pressure section, there are no original high-pressure section , 19V main power supply, 3.3V switching voltage, 5V dimming voltage, and ground, screen display screen immediately after the dark down the suspected problem lamp, the dissolution of the lamp, the lamp was found then the two lines (thickness) reversed, and (then under normal circumstances would not affect anti-) exchange came after the test machine (thick right rough, fine pairs of fine) OK (should be a bright lamp after the current increase, caused by thin load can not afford to protection, so soon as the lamp does not shine).

26, LG screen, model LP133X4, screen line is special, not to collect test screen, be careful burning drive plate.

27, IBM R40 books, external power supply boot time, battery-powered and the adapter will automatically switch.

※Maintenance Methods: disassemble the machine and found a lot of bugs and there are cases where there is mold, cleaning machine about two hours after the start did not find the problem.

28, BENQ books, irregular crashes after boot?

※Maintenance Methods: CPU suspected to be a problem, (if it is the memory failure, will be a failure of 80% should be the Southbridge or I / O issues. Replace the South Bridge, after OK.

29, the elite pick mobile PC memory, sometimes not start because of the memory is not compatible. Memory problems.

30, HP laptop screen dark?

※Maintenance method: open the screen, measuring high-pressure section 19V, 3.3V, 0.9V three sets of power supply is no problem, change after the original high-pressure section OK.

31, SONY PCG-661N books, can not boot after the CMOS settings and can not be entered into the system.

※Maintenance Methods: After the boot after the Qing COMS battery OK.

32, SONY PCG-661N books PCI Interrupt Baocuo after boot?

※Maintenance Methods: Empty ST2402W chip inside information, boot OK.

33, SNOY GRX700 press the power switch, nothing happens.

GREEN CHIP Institute of Advance Technology

※Maintenance Method: Insert adapter, battery charging indicator light and no response, disassemble measurement is the normal DC-DC voltage divider, check the 3V voltage-to-ground voltage of 0V, can determine the Bios protection fault, the need to set aside Bios batteries Under the short-circuit two pins 1-3 seconds, and then install a good battery, start testing, troubleshooting. Such failures in the SONY machine common, in particular, are subject to external voltage when the strong pulse, for example: a sudden hot-swappable battery and power adapter, external cause internal short-circuit and so on.

34, SONY GR100 boot normally, the screen backlight after a period of time appears flashing.

※Maintenance Methods: suspected to be high-pressure board performance, instability, exchange a high-pressure board troubleshooting.

35, Lenovo E200l boot, there icon crash.

※Maintenance Methods: Bios Chip replacement, or B

36, COMPAQ X1000 can not enter the system

※repair method: replace the hard drive OK.

37, SONY 505LS boot, the screen only shows half of the upper and lower half black, LCD screen or bad, change screen.

38, IBM A21 does not charge a single plug adapter does not boot, you can boot with the battery.

※Maintenance Methods: discover the power adapter into mouth Sealing-off, repair welding after troubleshooting.

39, IBM R32 boot no display.

※Maintenance Methods: The power and hard disk light to normal, external display is also normal, and upon inspection a bad LCD screen.

40, IBM R40 appears 0175 Baocuo?

※Maintenance Methods: ⑴Feash with special software to re-brush to write.

41, to find the same model machine Feash chip replacement.

※Maintenance METHODS: A non-3V, 5V Voltage, measured (MAX1631 28-pin voltage is also low, low-voltage of about 1.03V), after replacing TB62501 nor 3V, 5V, replacing MAX1631 after OK, (MAX1631 poor led to 281 pin voltage is too low).

42, IBM R32 boot normally, the move-screen white, and crashes.

※Maintenance Methods: disassemble and found the data lines and the connection socket motherboard Xu Han, repair welding after the OK.

43, COMPA Q1800 turn white screen, external display to normal, the insurance bad LCD screen, such failure common.

44, COMPA Q700 start looking after the subtitle jitter unclear, external display to normal, open the LCD screen found in the data cable loose, inserted after the OK.

45, SONY F430 turn pale after the screen, external display to normal, replace the data cable correctly.

GREEN CHIP Institute of Advance Technology

46, IBM T23 DOS shown under the normal, into the system Huaping, reinstall the system and drive after the normal.

47, ACER 350, after the boot screen flickering, the replacement high-pressure board null and void, from the data line interface lines to high-voltage power supply pin according to normal after the board 3.3V.

48, Toshiba3000 can not boot, H8 chip 25 feet there is no RST, replacement of H8 after OK.

49, Tsinghua Tongfang F3600 battery is not charging.

※Maintenance Methods: The battery can be charged on the other machine, the replacement OK after the charge control chips

50, SONY F430USB interface can not be used, the measured open-circuit 5V insurance, replacement OK.

51, IBM T21 boot into the system, speaker no sound, plug headphones sound, speakers or bad replacement OK.

52, IBM T23 serial port can not be used.

※Maintenance Methods: The System Properties can not find the serial device, change serial port controller chip, MAX3243, after the normal. 68, COMPAQ machine's PC card slot can not be used and can not insert a PC Card, PC Card disassemble found bent pins, replacement OK. 69, Toshiba 2400 Parallel serial floppy drive can not be used, indicating that I / O chip PC87391 chip is damaged, the normal replacement.

53, SONY S125K can not be used to connect the projector, external display interface of the pigtail damaged the replacement OK.

54, Lenovo Zhaoyang S600 few keys can not be used.

※Maintenance Methods: The investigation found that the keyboard conductive silver film painted black, and used to repair heat conductive silver paint dried, fault OK. (Keyboard water, the keyboard at the end of the derivative of silver paint film caused by oxidation of falling can not fill road circuit caused by normal use of the keyboard and play a keyboard and mouse of the control circuit.)

55, Sony FX120 enter the system after the entire keyboard failure Keyboard data line interface found to have cracks, and replaced OK.

56, IBM keyboard, the left mouse button does not work after water, open the machine and found right-and short-circuit edges, after cleaning with alcohol OK.

57, Toshiba 3000 keyboard, or bad, press M key to N bond consecutive folding and found two keys to open the upper and lower film stick together, after the separation of alcohol washing, hot air dried OK.

58, ACER350 can not find the drive, the drive receiving the other machine can be used normally, the CD-ROM interface, re-weld OK.

59, Sony sosce boot after the drive does not read the disk, a bad drive.

60, Compaq EVOM1000V do not read CD-ROM, remove the CD-ROM found that drive the internal circuit boards and laser head component data connection cable off, install a good post-OK.

61, Compaq EVOM8000, began to read the disk normal, could not be read for half an hour after the data is the data-processing chip, good thermal stability.

GREEN CHIP Institute of Advance Technology

62, IBM A21 CD-ROM can sometimes read, sometimes can not read CD-ROM received the other machine on the normal, open the found interface with the motherboard soldering two pins cold solder joint, repair welding after the OK.

63, Sony505 into the new system there is no CD-ROM drive letter in the system properties can not find CD-ROM device.

※Maintenance Methods: CD-ROM at the base of these models do not support hot-swappable, hot-swap would be the base of the main control chip damage, resulting in can not find CD-ROM, if for the same type of chip or internal procedures will be re-brush it can be troubleshooting, or have to change the entire base.

64, Toshiba 7400 CD-ROM hardware device drivers loaded properly, just do not read the disk, no reaction detected spindle motor is damaged, for post-OK.

65, IBM600 reported 192,161,163 wrong.

※Maintenance Methods:: Cha Thinkpad fault code table to find the problem, not only BOIS battery failure caused the system time and date wrong cover inside and outside the machine to find open, remove the BIOS battery will interface to the next weld, and welded to a new battery and do Good insulation will be installed the battery, reset the time, date.

66, Lenovo K60, BIOS time allowed.

※Maintenance Methods: Since the early problems with K60 products, both BIOS battery assembly errors, replace the battery can be properly resolved.

67, Compaq 1700 Huaping.

※Maintenance Methods: Since the screen on and off at different angles of the situation, Huaping phenomenon is not the same, while the 1700-screen line is not a hard-bound, taking into account the broken line may be due to the screen in the screen shaft, there can adjust its elastic screen line where, as a result of switching long line of loose screens, will find screen line screen apart loose, will screen wire plugged later tape-fixed OK.

68, IBM T23 dark screen

※maintenance practices: to create dark screen the reason is usually caused by high-pressure plate, screen line, backlight board or motherboard caused by investigations into the high-voltage input terminal voltage of the motherboard board, received a backlight to the high-voltage on-board a normal class, the problem lies in the screen online, and upon inspection due to screen and board at places where decorative plastic, as a result of a long-term switch-off-screen lines, will screen at Scratch off-line re-weld OK.

69, IBM390 screen surface rupture

※Maintenance Methods: The more you use screen-axis itself is the problem more closely and will ultimately result in shaft fracture of the screen screen shell is damaged, will replace the screen axis, and on-screen shell Department carried out with plastic and metal sheet reinforced OK.

70, Lenovo 6700 boot does not display

※Maintenance Methods: disassemble, the relevant parts of testing and found that all the indicators properly, all devices are properly, remove the BIOS, the update, can boot into the system, but can not re-install a new system OK.

71, Lenovo K71, cat pee in the above result does not display boot

GREEN CHIP Institute of Advance Technology

※Maintenance Methods: We have found the machine L edges due to cat urine sleep switch failure caused by corrosion, clean with alcohol after the OK.

72, Fujitsu notebook speakers do not sound, external sound with sound, open the speaker itself, the measured normal, and normal sound card and found that the interface short circuit caused by sheet metal, machinery that is always in an external state, but not normally audible through the speakers, replacement Interface OK.

73, Compaq X100 installed new system can not find the USB, Controller drives, X1000 as a Centrino machine, USB 2.0 does not recognize some of the old system required to install XPSP1 and install, intel chipsetinf program or USB2.0 driver installed correctly.

74, HP N610C soft boot disk into DOS after u could not find the hard disk, because the HP hard drive by default format is NTFS format, under DOS can not directly read, you can load the 98 boot NTFS, DOS can be resolved.

75, ComPAQ E500 screen dark

※Maintenance Methods: This problem is usually caused by high-voltage line or screen panel screen backlight damage caused by the replacement method with the post-test found that high-pressure board Sealing-off of a coil, be added after welding, OK.

76, SONY machine, does not boot, the models are mostly BIOS battery is dead can not start, replace the BIOS after the OK.

77, DELL machine boot keyboard error (due to water), alcohol, wash with clean water after the keyboard circuit OK.

78, Lenovo R601Q keys difficult to use, open the circuit found that the normal, Q bond energy a little color and dark, there is oxidation, washed with anhydrous alcohol to normal.

79, Legend 900 series

※Maintenance Methods: Since the external power supply port leading to loose, re-soldering the power port and use glue to reinforce, but then he does not start normally after power, after detected due to external forces, some devices Sealing-off, after welding, OK.

80, on a test orchestration, press the switch to a 0.8A current, immediately turn down to 0.4A, this happens note current to CPU, Northbridge graphics card, there may be CPU, Northbridge graphics card power supply problem, the machine removed and found that there is no CPU Shang Hao, Shang Hao after OK.

81, the adapter, press the switch, turn the current up to the 0.7A not enough, this current is a dead current, plug in the diagnosis of the memory card thing to run 28 stalls, brush the BIOS, dragged on even after the files inside the archive of memory, Last hand pressure Northbridge, there good times and bad, to finalize Northbridge air welding.

83, appears on the boot screen then power, the CPU power supply with about 2 IC drag on OK.

84, boot up to the current 0.7 or so, never the general file memory.

85, start 1:00 currents are not, found implementor of that passed through his hands burned with the insurance.

86, turn the screen dark, found a loose plug wire screen.

87, power supply, the clock is reset to normal, or not start, replaced a CPU after OK.

GREEN CHIP Institute of Advance Technology

88, 87591 management IC, if not power-up, the general BIOS, PC87591 bad a lot more. PC87591, crystal after OK, as for crystal still does not work may be a bad PC87591.

87, BIOS does not have kicked a waveform, indicating BIOS data problems.

89, unable to grasp the sound card, the general power clock, patch, power amplifier, South Bridge issues, such as sound cards but did not catch the sound, usually resistance and capacitance issues.

90, NEC board plug adapter, auto-triggering, the boot current of 1.1A or so, check power clock, reset all normal circumstances, and then set CPU AV cable, found that a too large a few hundred Ω open, this provision line to North Bridge, North Bridge air welding finalized.

91, IBMT30 boot normally, the icon displayed automatically after IBM take power, do not restart, open the machine later, CPU measurement is normal.

92, COMPAQN11000V boot normally, then CPU fan power a louder voice to normal after replacement of fans.

93, SONY GR $\times$ 700 boot normally, enter the picture are all power-down, check the DC-DCSV and the 3.3V output is not normal, replace the DC-DC shocks to normal after IC

GREEN CHIP Institute of Advance Technology

 # 10, 9th Main, 13th Cross, Ex-servicemen Colony, Bangalore 560 052
off: 080 2226 2221, Mob: +91 9686 10 4829
E-mail: greenchipinstitute@gmail.com
www.greenchipinstitute.com