

*Green 797*

*Notebook Computer*

*Service Manual*

Version 1.0  
August, 1999



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# Chapter 1

## *Product Specification*

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### General Specification

#### General Description

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This document describes the product specification of G797 notebook. G797 targets desktop equivalent market by incorporating the 12.1" & 14.1" LCD display, Intel Desktop Socket-370 Celeron series 333/366/400/433/500/533MHz CPU and CD-ROM/FDD features. With technology evolution, G797 accommodate Intel mobile Pentium II processor, DVD-ROM total solution to meet diversified demands on power computing and 3D A/V entertainment.

#### CPU (IMM)

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- Intel desktop PGA 370 Celeron series 333/ 366/ 400/ 433/ 466/ 500/ 533MHz CPU, 128KB L2 PBSRAM cache on die, CPU bus clock at 66MHz
- Intel desktop FC-PGA 370 Pentium III series 550/ 600/ 650MHz CPU, 256KB L2 PBSRAM cache on die, CPU bus clock at 100MHz
- 370 pin Socket-370 socket

#### Core Logic (IMM)

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- Intel 440ZXm/440BX chipset
- 2X AGP bus interface
- Supports host bus at 66 MHz (440ZXm), up to 100 MHz (440BX)
- 3.3V PCI version 2.1 compliance
- Supports ACPI and APM
- Two-channel bus master IDE support ATA33, two USB ports

#### Memory

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##### Main Memory

- 0MB on board, expandable up to 256MB
- 32/ 64/ 128 MB memory options
- Two 144 pin SO DIMM type memory slots
- 3.3V TSOP DRAM
- Supports 66(440ZXm) / 100 MHz(440BX) Synchronous DRAM

##### ROM

- 512KB Flash ROM factory optional, 5V erase

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## ROM

- 512KB Flash ROM factory optional, 5V erase
- Boot block protection, factory optional

## Cache Memory

- 512K L2 write-back cache, burst pipeline synchronous SRAM, factory optional

## Mass Storage

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### HDD

- Support Enhanced IDE (PIO mode 4) and bus master (Ultra DMA 33 mode)
- Removable 2.5" 9.5mm/12.7mm HDD

### FDD

- 3.5" 720KB / 1.2MB / 1.44MB FDD supported

### CD-ROM / DVD-ROM (factory option)

- 5.25" standard 12.7mm CD-ROM/DVD-ROM (factory option)
- Fast IDE and ATAPI interface
- G797 incorporates hardware motion compensation assistant and DVD-ROM to perform DVD play-back with TV-Out S connector and auto-sensed 5.1 channel Dolby AC-3 audio SP/DIF out jack

## Graphic and Video

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### Controller and features

- ATI Rage Mobility - M

### Features

- High performance 3D graphics engine (floating triangle setup/rendering)
- Accelerated Graphic Port (AGP) 1.0 interface, ex
- ACPI/PC 98 compliance
- Supports up to 1024x768x64K colors mode on external CRT
- Supports 1024 x 758 x 256K colors XGA TFT LCD
- Flicker reduction TV-out output
- Dual Display support

### Graphic Memory

- Embedded 4 MB SDRAM

### LCD Display

- Supports 14.1" TFT XGA/12.1" TFT SVGA/12.1" DSTN SVGA
- Models
  - 14.1" (TFT) --- SAMSUNG: LT141X5-124  
IBM: ITXG74E  
CPT: CLAA141XB01
  - 12.1" (TFT) --- SAMSUNG: LT121SU-121
  - 12.1" (DSTN) --- Sharp: LM121SS1T53

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## Audio

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### Controller

- Creative EV 1938

### Features

- 64-stream audio processor on PCI
- Hardware wavetable synthesis
- Embedded 18-bit AC97 CODEC
- 3-D positional audio
- Support CDDA, Creative EAX
- AC-3 decode acceleration, supports Line-Out auto-sensed switch to 5.1 channel Dolby AC-3 audio SP/DIF out
- Sound Blaster, Sound Blaster Pro Compatible and Microsoft Sound System for Windows compatible
- AC97 interface for optional MDC modem module support

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## I/O Ports

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### I / O controller

- NS97338 with ACPI/PC98 compliance

### Standard Ports

- One parallel port supported EPP/ECP (25-pin female D-connector)
- One 16550A UART RS-232 serial (9-pin male D-connector)
- One DC input port for External AC adapter (2-pin DC jack)
- One type III or two type II PCMCIA Card Socket
- One video port for external analog VGA monitor (15-pin female D-connector)
- One TV-out port (S-connector)
- One external auto-sensed PS/2 keyboard/mouse connector (6-pin DIN connector), optional Y-connector required for using both devices
- USB port x 1
- 20-pin port replicator connector
- MIC-in, Line-in, Line-out (auto-sensed switch to 5.1 channel Dolby AC-3 audio SP/DIF out)
- IR port, Fast IR

### PCMCIA

- Controller: O2 6833 with ACPI compliance
- Supports 2 PC Card / CardBus slots
- Supports ZV Port to slot A
- PCI local bus specification rev. 2.1 and 1995 PC card standard compliant

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## I/O Devices

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### keyboard

- US / Europe, DOS / V keyboard for Japan, full sized keyboard alike pitch

- 
- 300 mm keyboard with key stroke 3.0 mm
  - Twelve function keys and Windows function keys.
  - Internal keyboard works as standard 101/102 desktop keyboard

#### Pointing Device

- Logitech Touch Pad upgradable to Hand-Writing Touch Pad
- External PS/2 mouse can be used concurrently with internal pointing device
- Supports scrolling feature for Logitech touch pad, with Driver 8.02

### **System Software**

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#### System BIOS

- Phoenix BIOS

#### Video BIOS

- ATI

#### Operating system

- Optional Windows 95 or above version
- Optional Windows 98 or above version
- Optional Windows NT 4.0 or above version
- Optional Windows 2000 or above version

#### Device Drivers and Utilities

- VGA driver, audio driver, CD-ROM/DVD-ROM driver, TouchPad driver, Suspend to Disk Utility and Cardbus driver

### **CMOS Setup**

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#### Normal information

- Displays system information
- Password protection
- Master password supported
- Boot block protection
- Block mode IDE supported

### **Power Management System**

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- PC 98 and ACPI compliance
- Suspend/Resume button
- Timer, Modem Ring trigger resume
- Smart battery system support
- Warning beep on low battery
- Suspend to HDD on critical low battery
- LCD module power management: cover close – turn off LCD back light (with Port Replicator)

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## Power Subsystem

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### AC Adapter:

- External universal type AC adaptor output maximum 60W

### Smart Battery

- 9 x 18650 Lithium-Ion battery pack @56.61 Whrs or 10 x 17670 Ni-MH battery pack @ 48 Whrs
- Both Lithium-Ion and Ni-MH battery are user interchangeable
- Gas gauge indicators in battery pack
- Removable and rechargeable
- Charging time for one battery pack

	System off or in suspend	System On
Ni-MH	2.5 hours to full charge	5 hours up
Li-Ion	4 hours to full charge	4.5 hours

- More than 2.5 hours battery life time under Ziff-Davis Inc. BatteryMark Test with Intel Socket-370 366MHz CPU and 12.1" DSTN LCD installed

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## Dimension

- 310 mm (W) x 250 mm (D) x 45 mm (H)

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## Weight

- 7.0 lbs. with Battery and CD-ROM drive

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## LED

### When LCD module is closed

- |                          |                          |                        |
|--------------------------|--------------------------|------------------------|
| • Power                  | ON - System on           | OFF - System off       |
| • Suspend/Resume         | ON - System suspend      | OFF - System fully on  |
| • Charging Status<br>off | ON - Battery charging on | OFF - Battery charging |

### When LCD module is open

- |                    |                                                                |                                  |
|--------------------|----------------------------------------------------------------|----------------------------------|
| • AC Status        | ON - AC present                                                | OFF - AC absent                  |
| • Battery Status   | ON - Power by battery                                          | OFF - Battery idle               |
| • Charging Status  | Orange - Charging the battery<br>Green - Battery fully charged |                                  |
| • Suspend / Resuem | ON - System suspend                                            | OFF - System operation           |
| • PCMCIA           | ON - Card inserted                                             | OFF - Slot empty                 |
| • FDD              | ON - Active                                                    | OFF - Idle                       |
| • HDD              | ON - Active                                                    | OFF - Idle                       |
| • Num. Lock        | ON - Num. Function lock                                        | OFF - Num. Function<br>unlock    |
| • Cap. Lock        | ON - Capital Function lock                                     | OFF - Capital Function<br>unlock |

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- Scroll Lock                      ON - Scroll Function lock                      OFF - Scroll Function unlock

### Hot keys

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- System On                                              Press Power button once
- System Off                                              Press Power button over 4 seconds
- Suspend/Resume                                      Press Power button once
- Display modes: LCD/CRT/Simultaneously      Fn + F12
- LCD Expanded/Non Expanded mode              Fn + F10
- TV Out Off/On                                              Fn + F9
- Brightness Up                                              Fn + F8
- Brightness Down                                              Fn + F7
- Contrast Up (for DSTN panel only)              Fn + F6
- Contrast Down (for DSTN panel only)              Fn + F5
- Main Volume Mute                                      Fn + F3 + F4
- Volume Up                                              Fn + F4
- Volume Down                                              Fn + F3
- Beeper Mute Disable/Enable                      Fn + F1

### Optional items

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- Spare battery pack
- Modem only MDC card
- Memory Extension card
- Port Replicator

### Accessories

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- User's manual & Driver CD title
- AC adapter
- Power cord
- CD-ROM/DVD-RM diskette
- Carrying bag

### Environment

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#### Temperature

- Operating:                      5°C~35°C
- Non-operating:                      -20°C~60°C

#### Humidity

- Operating:                      30%~90% (non-condensing)
- Non-operating:                      10%~90% (non-condensing)

#### Altitude

- Operating:                      -200~10000ft

- 
- Non-operating: -200~30000ft

#### Shock

- Operating: 10G, 11ms
- Non-operating: 50G, 11ms

#### Vibration

- Operating: 10~27Hz, 0.01"
- Non-operating: 5~62Hz, 0.02"

#### Drop

- 900 mm

#### Noise

- 50dB (max.) at 1 meter
- 45dB (max.) while FDD/HDD/CD-ROM/DVD-ROM access

#### ESD

- Follow IEC 801-2 standard

#### P.L.T.

- 1KV: no any error

### Regulation

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#### Safety

- UL 1950, CSA, TUV, EMC

#### EMI

- DoC, CE, BCIQ

"Designed for Windows NT and Windows 98" logo

#### MTBF

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- 25K hrs , 90% confidence level

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**Note:** Alpha-Top reserves the right to change SPEC. in order to improve performance without notice.

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# Chapter 2

## Power Supply

### Power Supplies

G797 can be powered from the following sources:

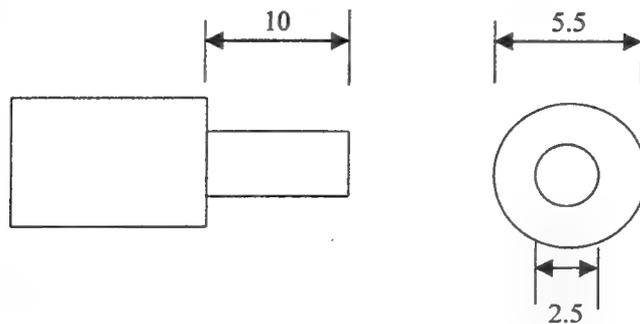
- Internal, removable, rechargeable Ni-MH battery pack, LI-ION Battery pack
- International AC adapter(external)

The external power sources connect via the DC-IN port, which has the following characteristics.

**Table 9: DC-IN Port characteristics**

<b>Current working range</b>	0 ~ 3.1A
<b>Voltage</b>	19.0VDC -0%+5%

The adapter use following connector (all dimensions are in millimetres).



### Battery Packs

With power management enabled, the LI-ION battery pack gives 2 hours typical battery life with a TFT screen. The battery pack has following specification.

**Table: Main battery pack specification**

	Li-Ion	Ni-MH
Capacity	56.6Wh (18650. 9 cell 3S3P)	48Wh (17670. 10 cell 10S)
Weight	450g	610g
Charge/Discharge	300cycles(min.)	300cycles(min.)
Remark	Smart Battery with Gas-gauge	Smart Battery with Gas-gauge

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## AC Adapter

The international adapter has a separate AC cable, so that it can be used in different countries by changing the AC cable. The adapter has the characteristics shown as the following table.

**Table: AC Adapter Characteristics(external)**

AC cable	6 feet (1.8 meters)
DC cable	6 feet (1.8 meters)
Input	100V to 240VAC, 47 to 63 Hz
Output	19.0VDC -0%~+5% 3.16A
Size	
width	60mm
height	28mm
length	105mm
Weight	250g

### DC/DC POWER Description:

High efficiency, low profile DC/DC converter for notebook computer.

This specifications define the battery charger characteristics and DC/DC converter outputs level. All of the DC/DC output power are on the Mother Board system.

#### Input Characteristics:

Input voltage range: 7.0~21.0VDC (From AC/DC Adapter or Battery pack)

From adapter: 2.4A max (include charger)

#### DC/DC Output power description

Item	Signal	Description
1	+5V	+5Vdc provided for system Logic
2	+3V	+3.3Vdc provided for system Logic
3	+12V	+12Vdc provided for PCMCIA Vpp
4	+2.5V	+2.5Vdc provided for CPU I/O Dower (Converter from+3V by LDO Regulator)
5	+2.5V	+2.5Vdc provided for VGA power (Converter from+3V by LDO Regulator)
6	+1.5V	+1.5Vdc provided for CPU VTT power (Converter from +5V by step-down circuit)
7	Mp5V	Provided for Micro-processor power
8	+2.0Vdc	+2.0Vdc provided for CPU CORE VCC power this output is Adjustable depend on Variety speed of socket 370 CPU Requirement

## +5V

### Scope:

- This voltage is the system's +5V main power supply.
- This is a step-down circuit with synchronous technique.

The power supply converts 19.5Vdc from the AC adapter or Main battery pack power source to +5Vdc.

### General characteristics:

Input voltage range	Load/Line regulation	Ripple voltage	Maximum load current	Efficiency
7 to 21Vdc	+5% ~ -5%	50mV	3.0A	90% (min)

- Over current protection (OCP): Shut-down latch.
- Over Voltage Protection (OVP): Shut-down latch.
- Short circuit protection: YES. Shut-down latch
- Turn on time: 100ms.
- Dynamic response: The voltage keeps 5% regulation when the load changing from 10% to 90%
- Operating temperature: 0°C to 40°C.
- Test condition and instruments:
  1. Ripple & Noise: Measuring with by pass capacitors 0.1uf/10uf at output terminal and oscilloscope time-base set at 20MHz. ( Tested by the oscilloscope and refer to figure 1. )
  2. Input voltage set at 12.0V. ( DC Power supply )
  3. Electronic load: Chroma 63030 or Equivalent
  4. Multimeter: FLUKE 87 or Equivalent
  5. All measuring refer to figure 2.

## +3.3V

### Scope:

- This voltage is the system's +3.3V main power supply.
- This is a step-down circuit with synchronous technique.
- The power supply converts 19.5Vdc from the AC adapter or Main battery pack power source to +3.3Vdc.

### General characteristics:

Input voltage range	Load/Line regulation	Ripple voltage	Maximum load current	Efficiency
7 to 21Vdc	+5% ~ -5%	50mV	3.0A	90% (min)

- Over current protection (OCP): Shut-down latch
- Over Voltage protection (OVP): Shut-down latch
- Short circuit protection: YES. Shut-down latch
- Turn on time: 100ms.
- Dynamic response: The voltage keeps 5% regulation when the load changing from 10% to 90%
- Operating temperature: 0°C to 40°C.
- Test condition and instruments:

1. Ripple & Noise: Measuring with by pass capacitors 0.1uf/10uf at output terminal and oscilloscope time-base set at 20MHz. ( Tested by the oscilloscope and refer to figure 1.)
2. Input voltage set at 12.0V. ( DC Power supply )
3. Electronic load: Chroma 63030 or Equivalent
4. Multimeter: FLUKE 87 or Equivalent
5. All measuring refer to figure 2.

## +12V

### Scope:

- This is a voltage source which supply the +12V provides for the PCMCIA interface Vpp voltage requirements.
- This +12VDC coupled from +5VDC converts 19.5V DC from the AC adapter or Main or battery pack.

### General characteristics:

Input voltage range	Load/Line regulation	Ripple voltage	Maximum load current	Efficiency
7 to 21Vdc	+5% ~ -5%	120mV	120mA	

- Operating temperature: 0°C to 40°C.
- Over current/short circuit protection: current limit.
- Test condition and instruments:
  1. Ripple & Noise: Measuring with by-pass capacitors 0.1uf/10uf at output terminal and oscilloscope time-base set at 20MHz. ( Tested by the oscilloscope and refer to figure 1. )
  2. Input voltage set at 12.0V. ( DC Power supply )
  3. Electronic load: Chroma 63030 or Equivalent
  4. Multimeter: FLUKE 87 or Equivalent
  5. All measuring refer to figure 2.

## Mp(5V)

### Scope:

1. This is a small power source for a micro-processor and its interface circuit.
2. It is a key voltage which supply a voltage to the Micro-processor when use the AC adapter/Battery.
3. This part of DC power is on Mother Board system, not on DC/DC converter Module.

---

**General characteristics:**

Input voltage range	Load/Line regulation	Ripple voltage	Maximum load current	Efficiency
7 to 21Vdc	+5%~-5%	100mV	100mA	

**+2.0V****Scope:**

- This voltage is for the CPU CORE VCC power.
- This is a step-down circuit out put voltage is Adjustable depend on vaviety speed of socket 370 CPU Requirement.

The power supply converts 19.5Vdc from the AC adapter or Main battery pack power source to +20Vdc.

**General characteristics:**

Input voltage range	Load/Line regulation	Ripple voltage	Maximum load current	Efficiency
7 to 21Vdc	+100mV ~ -100mV	100mV	15.0A	90% (min)

- Over current protection (OCP): Shut-down latch.
- Over Voltage Protection (OVP): Shut-down latch.
- Short circuit protection: YES. Shut-down latch
- Turn on time: 10ms.
- Dynamic response: The voltage keeps 5% regulation when the load changing from 10% to 90%
- Operating temperature: 0°C to 40°C.
- Test condition and instruments:
  1. Ripple & Noise: Measuring with by pass capacitors 0.1uf/10uf at output terminal and oscilloscope time-base set at 20MHz. ( Tested by the oscilloscope and refer to figure 1. )
  2. Input voltage set at 12.0V. ( DC Power supply )
  3. Electronic load: Chroma 63030 or Equivalent
  4. Multimeter: FLUKE 87 or Equivalent
  5. All measuring refer to figure 2.

**+1.5V****Scope:**

- This voltage is for the CPU VTT power.
- This is a step-down circuit convert +5V to 1.5V.

The power supply converts from +5V to 1.5Vdc.

### General characteristics:

Input voltage range	Load/Line regulation	Ripple voltage	Maximum load current	Efficiency
+5Vdc	+5% ~ -5%	50mV	3.0A	80% (min)

- Over current protection (OCP): current limit.
- Short circuit protection: YES.
- Turn on time: 100ms.
- Dynamic response: The voltage keeps 5% regulation when the load changing from 10% to 90%
- Operating temperature: 0°C to 40°C.
- Test condition and instruments:
  1. Ripple & Noise: Measuring with by pass capacitors 0.1uf/10uf at output terminal and oscilloscope time-base set at 20MHz. ( Tested by the oscilloscope and refer to figure 1. )
  2. Electronic load: Chroma 63030 or Equivalent
  3. Multimeter: FLUKE 87 or Equivalent
  4. All measuring refer to figure 2.

## +2.5V

### Scope:

- This voltage is for the CPU IO power.

The power supply converts from the +3.3V to 2.5V by using LDO Regulator.

### General characteristics:

Input voltage range	Load/Line regulation	Ripple voltage	Maximum load current
+3.3Vdc	+5% ~ -5%	50mV	500mA

- Over current protection (OCP): current limit.

## +2.5Vdc

### Scope:

- This voltage is for the VGA chip power.

The power supply converts from +3.3V to 2.5Vdc by using LDO Regulator.

### General characteristics:

Input voltage range	Load/Line regulation	Ripple voltage	Maximum load current
+3.3Vdc	+5% ~ -5%	50mV	800mA

- Over current protection (OCP): Current Limit.

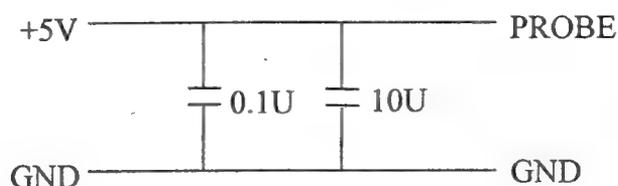


Figure 1.

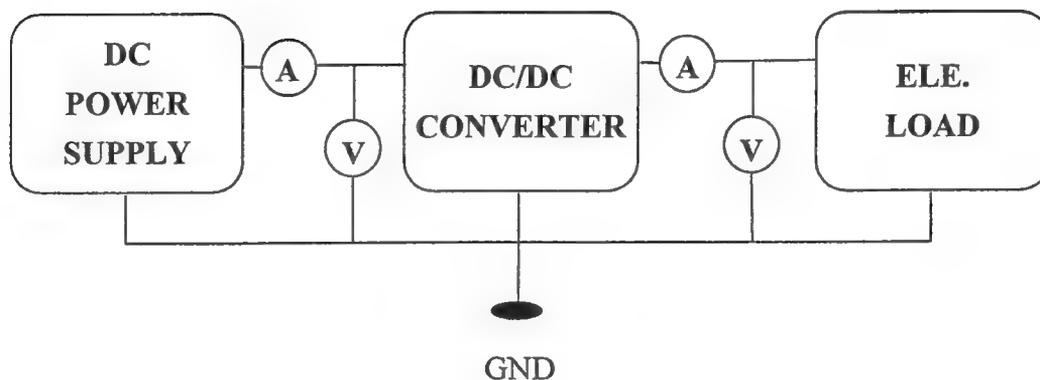


Figure 2.

## Battery Charger

### Scope:

- This is a constant power circuit controlled by using a Micro-processor to implement both Ni-MH and LI-ION Battery charging control.
- Because system provided for each type of battery on the same battery slot, so combined circuit detect function, it is could distinguish the Li-Ion battery or Ni-MH battery, then use suitable charge mode ( CV/CC or CC mode ) for Li-Ion or NI-MH battery pack.

### General characteristics:

System off or in suspend		System on
Ni-MH	2.5 hours to full charge	over 5.0 hours
Li-Ion	4.0 hours to full charge	4.5 hours

### Charging method:

- Constant -voltage mode and constant-power mode or total power for Li-Ion battery
- Constant -power mode for Ni-MH battery

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### Charge cutoff Method for Ni-MH Battery :

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- $\Delta T/\Delta t \rightarrow$  for Ni-MH Battery (system on)
- $\Delta T/\Delta t \ \& \ \Delta V \rightarrow$  for Ni-MH Battery (system off)

### Ni-MH charge protection:

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- Max T: Cut off the charger when the battery temperature exceed 60°C.
- OPT: Operating temperature, that it check the battery temperature at 0°C to 45°C in Charging battery.
- Max V: Cut off the charger current when the battery voltage reach 1.68V/cell for Ni-MH Battery.

### Charger Cut Off Method for Li-ION Battery :

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Current sense: When charge mode at CC/CV, and charging current is sensed below 0.1C/cell, then charger cut off. Li-Ion charge protection:

- Max T: Cut off the charge when the battery temperature exceed 60°C.
- OPT: Operating temperature, check the battery temperature at 0°C to 45°C, then charging the battery.
- Max V: Depend on inside battery pack protection unit spec.

### Environment:

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#### Temperature

The G797 temperature specification:

Operating Temperature	Range	Max. Rate of Change
Operating ( Non-condensing )	0° to 40°C	15°C per hour
Non-operating ( Non-condensing )	-40° to 70°C	20°C per hour

#### Humidity

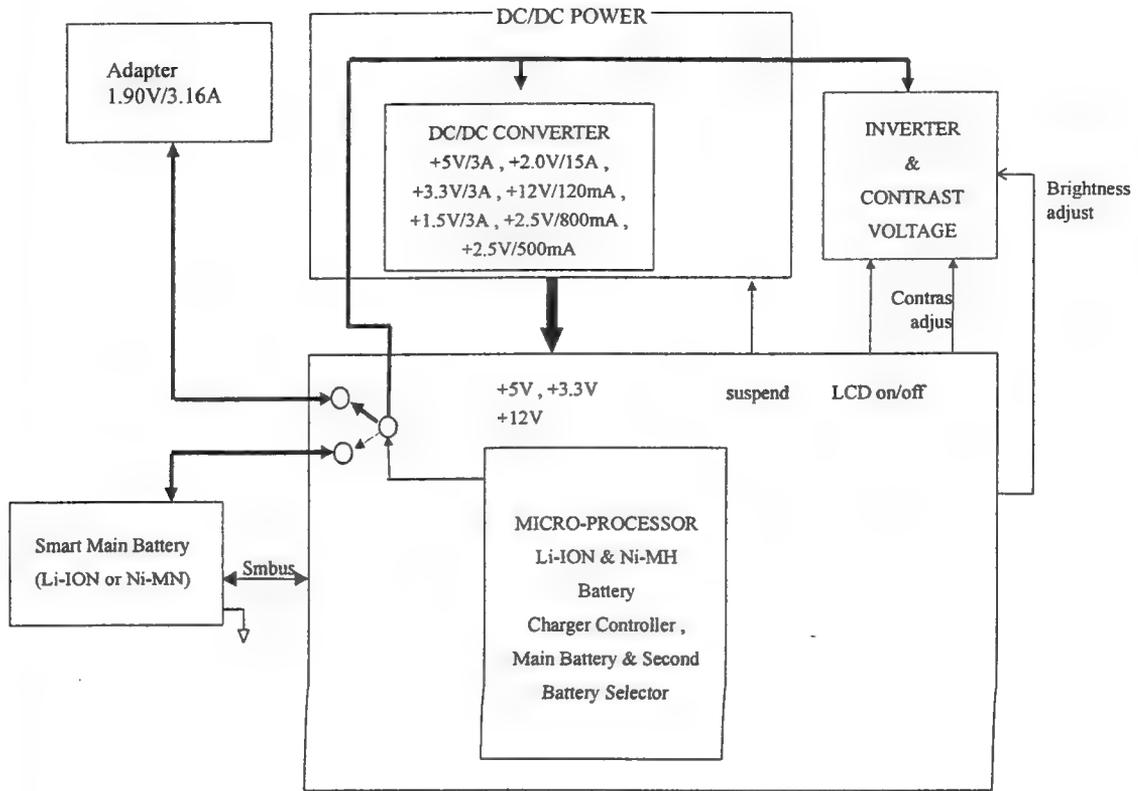
The G797 humidity specification:

Operating Temperature	Range	Max. Rate of Change
Operating ( Non-condensing )	8% ~ 80%RH	10% per hour
Non-operating ( Non-condensing )	5% ~ 95%RH	10% per hour

#### Burn In:

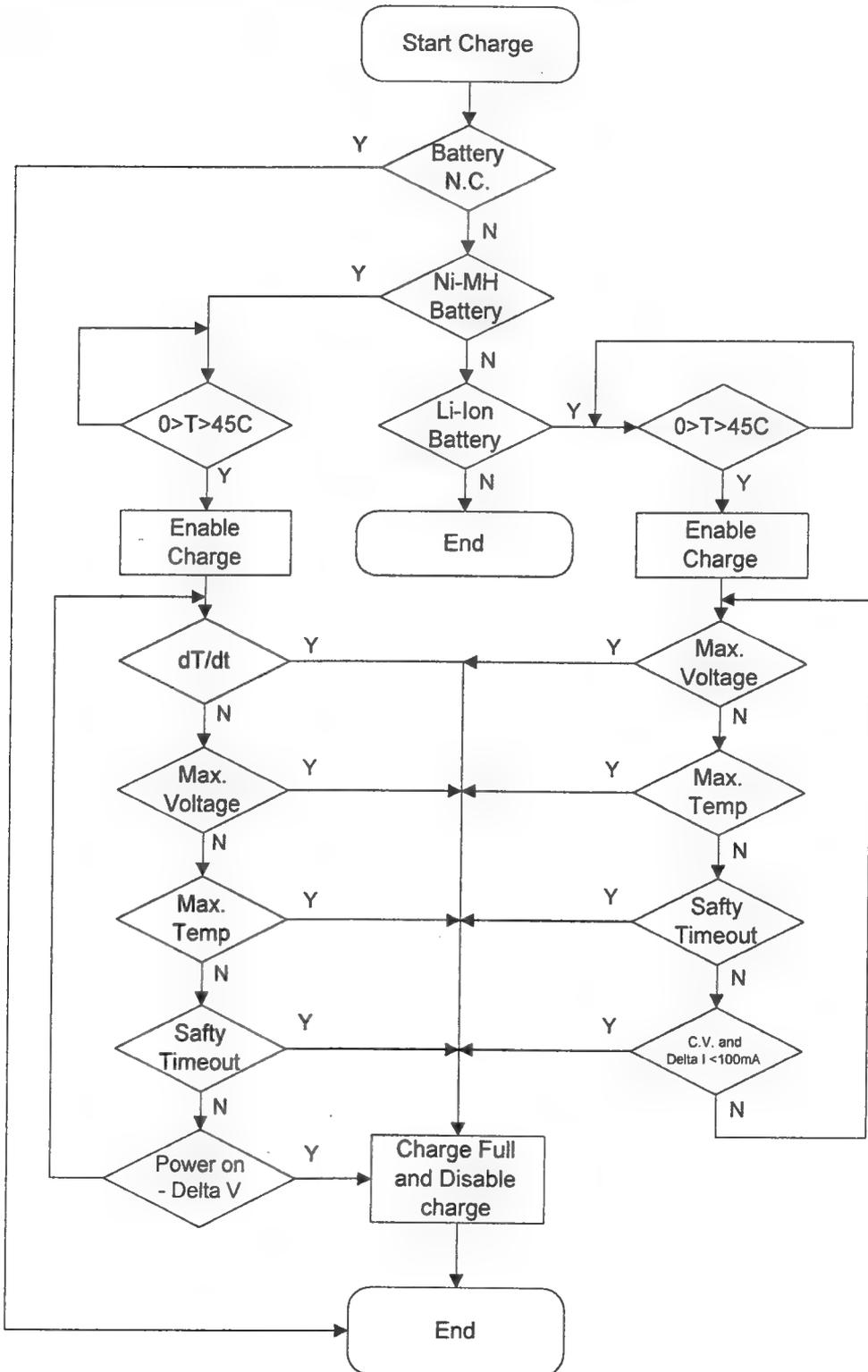
Temperature 40°C, 4 hours full load.

# G797 Power Circuitry block diagram



G797 Power Circuitry Block Diagram

# G797 Charge Flow Chart







# Chapter 3

## *DMA, Timer/Counter*

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### DMA channel

DMA Channel No.	Function
Channel 0	Sound system
Channel 1	ECP
Channel 2	Floppy disk
Channel 3	FIR
Channel 4	[ Cascade ]
Channel 5	Available
Channel 6	Available
Channel 7	Available

### Programmable Timer/Counters

Channel No.	Function
Channel 0	Supports system timer
Channel 1	Supports refresh cycles
Channel 2	Supports the fir audio speaker







# Chapter 4

## *Interrupt*

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<b>Interrupt</b>	<b>Function</b>
IRQ 0	System Timer
IRQ 1	Keyboard
IRQ 2	[ Cascade ]
IRQ 3	COM2 (default set disable to free IRQ3)
IRQ 4	COM1
IRQ 5	Audio / Parallel Printer Port 2
IRQ 6	Floppy Disk
IRQ 7	Parallel Printer Port 1 / Audio
IRQ 8	Clock / Calendar
IRQ 9	PCMCIA/VGA(AGP)
IRQ10	Reserved for PCMCIA
IRQ11	USB
IRQ12	Touch Pad or External Mouse
IRQ13	Coprocessor
IRQ14	P-master, Fixed Disk
IRQ15	S-master, CD-ROM Drive







# Chapter 5

## *Memory Address Mapping*

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### Memory Address Mapping

000000H	640K Base memory
080000H	Phoenix ACPI BIOS codes (15K to 25K)
0A0000H	128KB reserved for graphics display area
0C0000H	64KB for ATI VGA BIOS
0D0000H	Reserved
0E0000H	Reserved
0F0000H	PMU BIOS
100000H	System BIOS
2400000H	Extend memory

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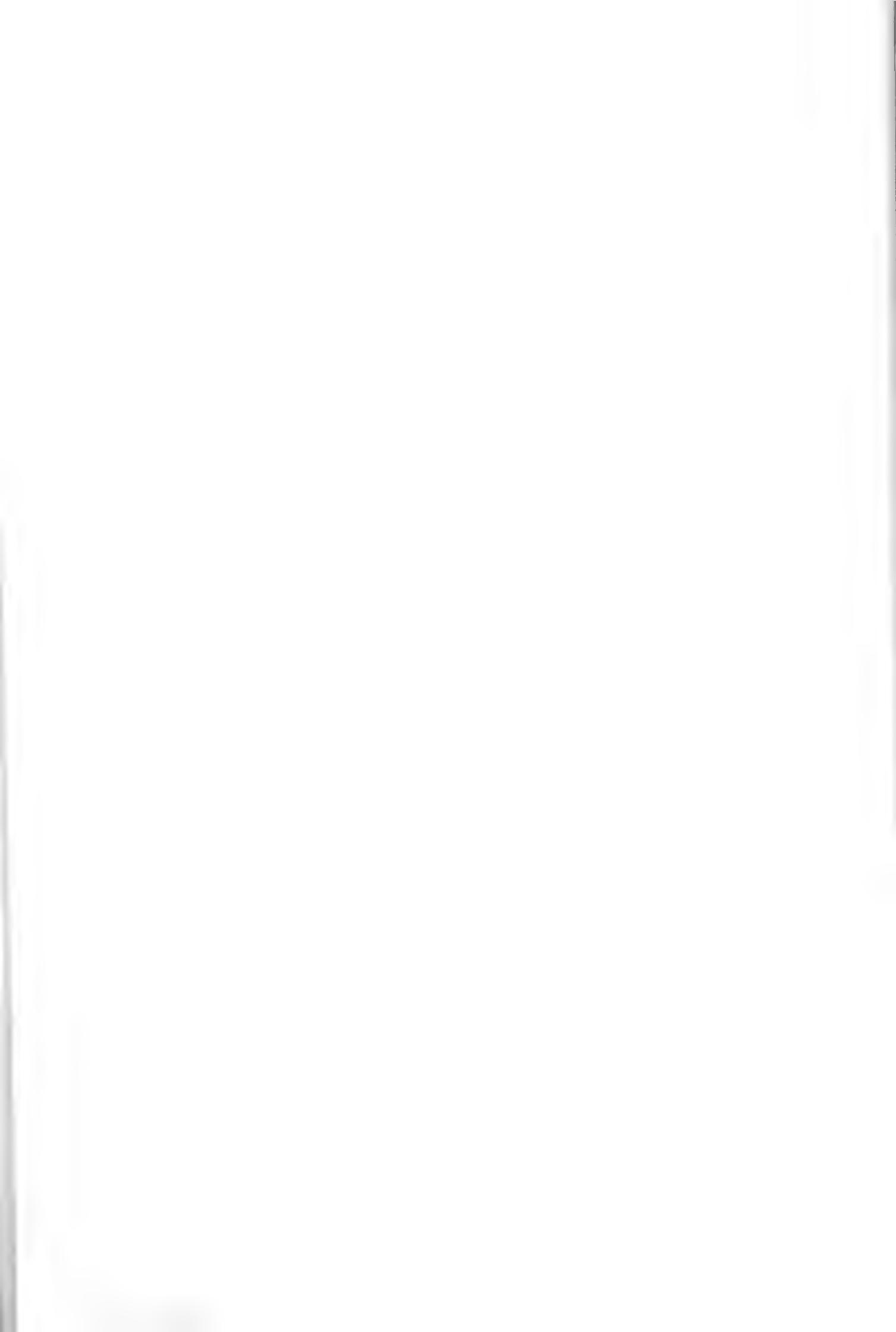
# Chapter 6

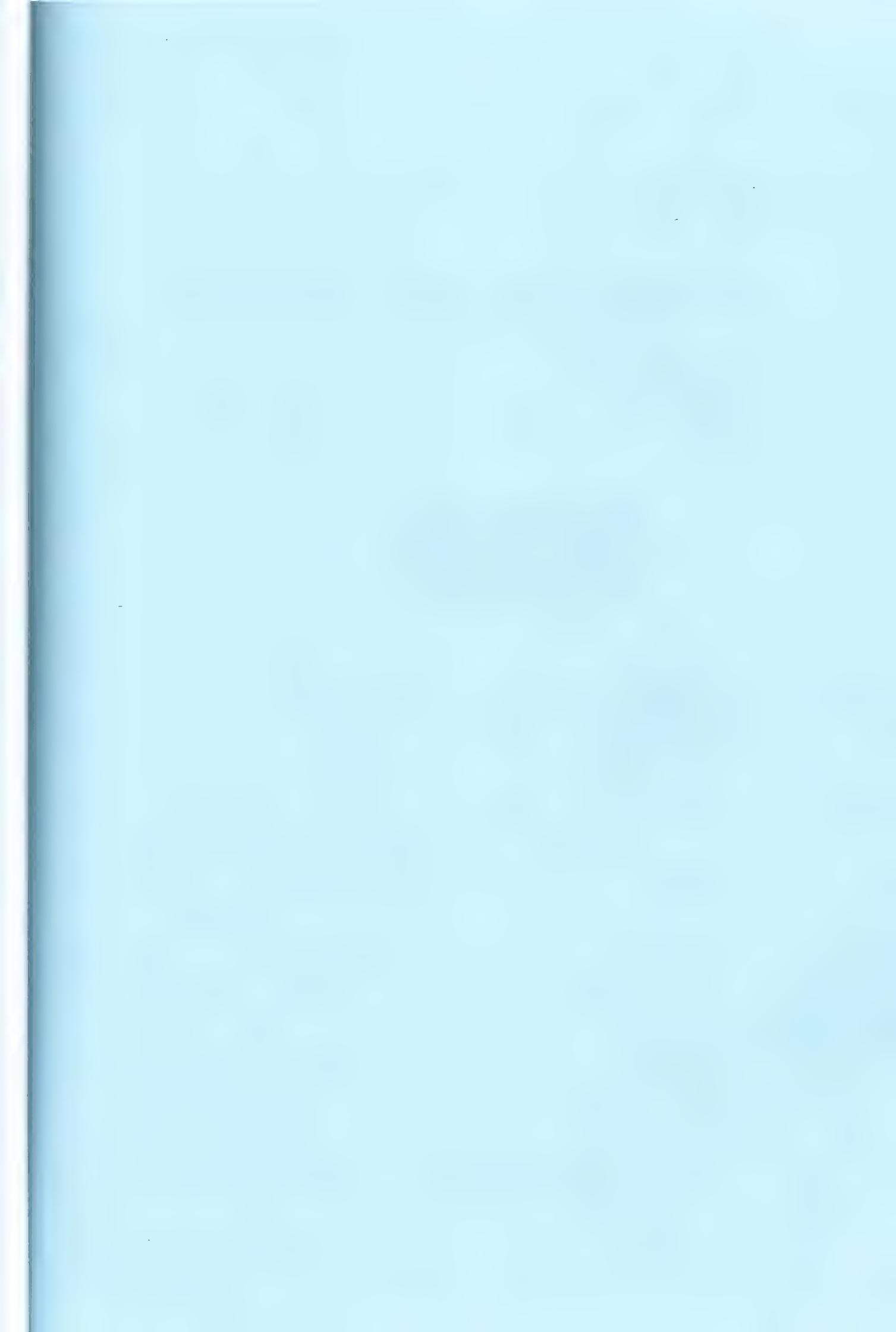
## *I/O Address Mapping*

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Hexadecimal Range	Devices	Usage
000-01F	DMA controller 1	System
020-03F	Interrupt controller 1	System
040-05F	Timer	System
060,06F	Keyboard I/O(062h, 066h for ACPI)	System
070-07F	Real time clock, NMI mask	System
080-09F	DMA page register	System
0A0-0BF	Interrupt controller 2	System
0C0-0DF	DMA Controller 2	System
0F0	Clear math coprocessor busy	System
0F1	Reset math coprocessor	System
0F8-0FF	Math coprocessor	System
1F0-1F8	Fixed disk	I/O
200-207	Game port	I/O
278-27F	Parallel Printer Port 2	I/O
220-22F	Creative sound controller	
2F8-2FF	Serial port2	I/O
300-31F	Prototype card	I/O
360-36F	Reserved	
378-37F	Parallel printer port 1	I/O
380-38F	SDLC, bisynchronous 2	I/O
3A0-3AF	Bisynchronous 1	I/O
3B0-3BF	Mono display printer adapter	I/O
3C0-3CF	Reserved	I/O
3E0-3EF	Color / graphic monitor adapter	I/O
3F8-3FF	Serial port 1	I/O





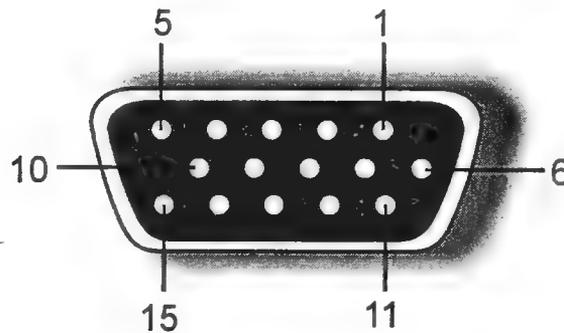


# Chapter 7

## *Connector and Pin Assignment*

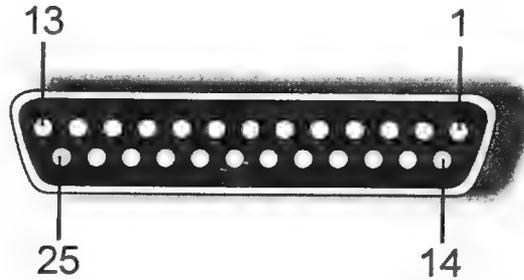
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### The Pin Assignment of Video Port



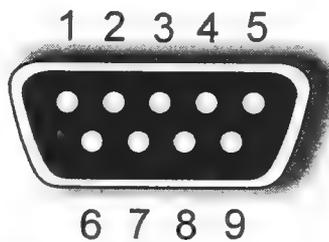
Pin	Signal	Pin	Signal
1	Red	9	V <sub>cc</sub>
2	Green	10	Ground
3	Blue	11	NC
4	NC	12	DDC-2B DATA
5	NC	13	Horizontal Sync
6	Ground	14	Vertical Sync
7	Ground	15	DDC-2B CLK
8	Ground		

## The Pin Assignment of Parallel Port



Pin	Signal	Pin	Signal
1	-STROBE	14	- AUTO FEED
2	D0	15	-ERROR
3	D1	16	-INIT
4	D2	17	-SLCT IN
5	D3	18	GND
6	D4	19	GND
7	D5	20	GND
8	D6	21	GND
9	D7	22	GND
10	-ACK	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT		

## The Pin Assignment of Serial Port

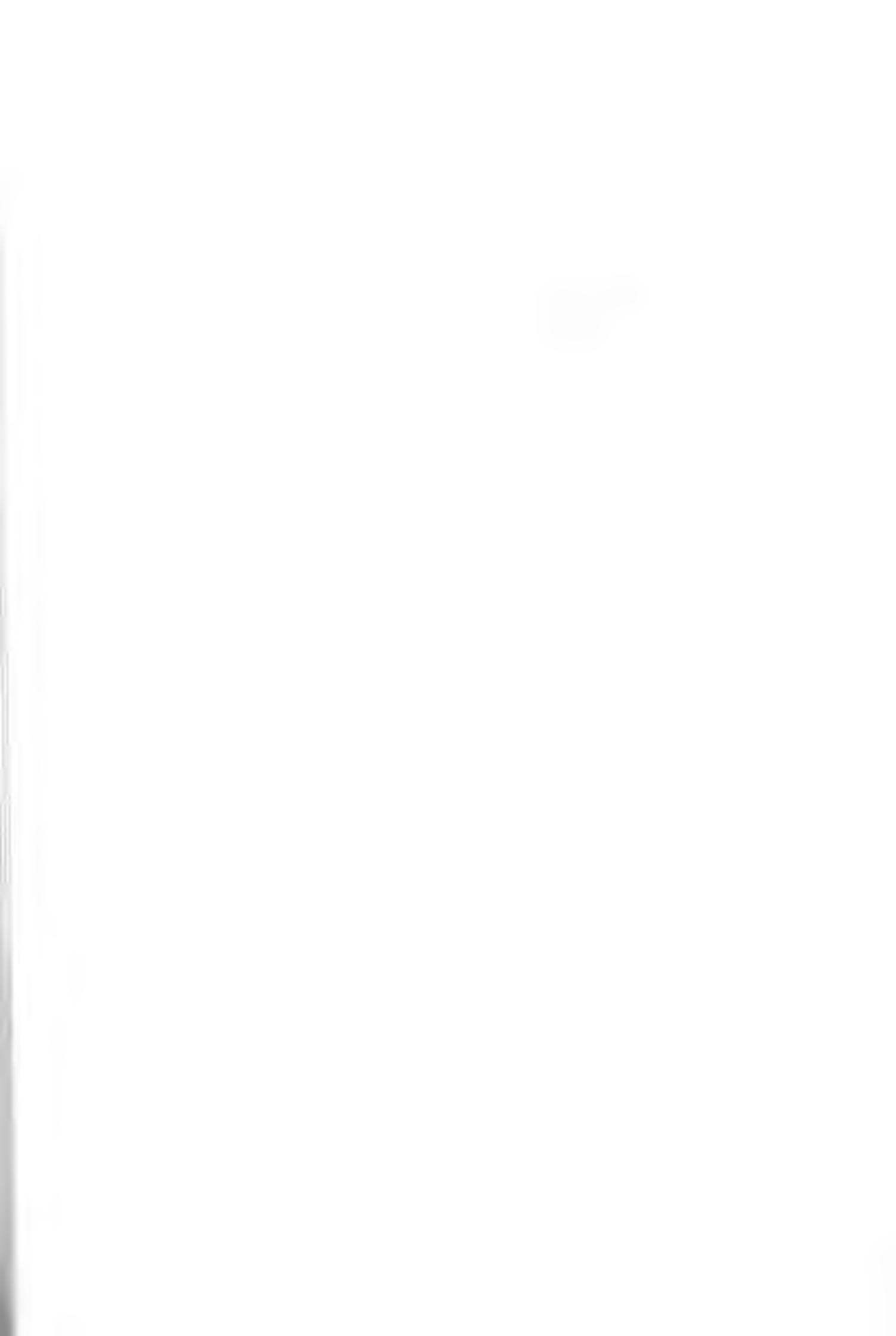


Pin	Signal	Pin	Signal
1	Carrier Detect	6	Data Set Ready
2	Receive Data	7	Request to Send
3	Transmit Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicate
5	Signal Ground		

## The Pin Assignment of Docking Port(1)

### The Pin Assignment of Docking Port(1)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	DCLK	42	AD29	83	PGNT #2	124	PD7	165	VAD
2	AD1	43	AD31	84	SERR #	125	PD6	166	VAD
3	AD0	44	RED	85	INT #C	126	SOUT0	167	NC
4	AD3	45	DDC2BD	86	PERR #	127	DCD0	168	NC
5	AD2	46	GREEN	87	GND	128	CTS0	169	GND
6	AD5	47	DDC2BC	88	GND	129	DSR0	170	GND
7	AD4	48	BLUE	89	LPTSLCT	130	DTR0	171	GND
8	AD7	49	MS#	90	LPTSTB #	131	SIN0	172	DKGND #1
9	AD6	50	EHSYNC	91	LPTBUSY	132	RI0	173	CRMA
10	AD9	51	GND	92	LPTPE	133	RTS0	174	GND
11	AD8	52	EVSYN	93	LPTINIT #	134	NC	175	LUMA
12	AD11	53	GND	94	LPTACK #	135	GND	176	+12V
13	AD10	54	NC	95	LPTAFD #	136	GND	177	DSR1 #
14	AD13	55	DKGND#2	96	LPTSLCTIN #	137	GND	178	+12V
15	AD12	56	INT #D	97	EXKBDATA	138	GND	179	DCD1 #
16	AD15	57	DPCMRI #	98	LPTERROR #	139	WDATA #	180	+12V
17	AD14	58	DPCMSPK	99	EXKBCLK	140	WGATE #	181	RI1 #
18	AD16	59	SUS #B	100	MDATA	141	DRV 1#	182	+12V
19	GND	60	PWRBTN #	101	GND	142	MTR 1#	183	BRI 1
20	AD17	61	CLKRUN #	102	MCLK	143	DSKCHG #	184	NC
21	AD18	62	SERIRQ	103	PCIRSTNS #	144	RDATA#	185	VCC5
22	AD19	63	DUSBP 1+	104	EXTIR	145	STEP #	186	VCC5
23	AD20	64	DUSBP 1-	105	SWC	146	WP #	187	VCC5
24	AD21	65	GND	106	SWA	147	FDIR #	188	VCC5
25	AD22	66	OC #1	107	JDC	148	TRK0 #	189	VCC5
26	SAGND	67	DMIC	108	JDA	149	HDSEL #	190	VCC5
27	SAGND	68	GND	109	JDD	150	INDEX #	191	VCC5
28	LINE-R	69	C/BE#0	110	MSOUT	151	DENSEL	192	VCC5
29	LINE-L	70	C/BE#2	111	SWD	152	EXTDC #	193	GND
30	SAGND	71	C/BE#1	112	JDB	153	DTR1 #	194	NC
31	SAGND	72	C/BE#3	113	MS692	154	CTS1 #	195	VAD
32	VROR	73	DEVSEL #	114	SWB	155	RXD1	196	VAD
33	VROL	74	FRAME #	115	EXTPOK	156	DKSCI #	197	VAD
34	SAGND	75	TRDY #	116	ENEXTDC	157	TXD1	198	VAD
35	AD24	76	IRDY #	117	COMPOSITE	158	DPCM-LED #	199	VAD
36	AD23	77	STOP #	118	PD1	159	RTS1 #	200	VAD
37	AD26	78	PAR	119	PD0	160	DISISPK #	201	NC
38	AD25	79	PLOCK#	120	PD3	161	NC	202	NC
39	AD28	80	INTA#	121	PD2	162	NC	203	GND
40	AD27	81	INTB #	122	PD5	163	VAD	204	GND
41	AD30	82	PREQ #2	123	PD4	164	VAD		







# Chapter 8

## *INT Function*

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The following lists the available interrupt services made through the system BIOS. For detailed information about each function, refer to any one of the many books on interrupts.

<b>INT</b>	<b>Type</b>	<b>Function</b>
02	Logical	Non-maskable Interrupt
05h	Software	Print Screen
08h	Hardware	System Timer
09h	Hardware	Keyboard
0Ah	Hardware	Slave PIC Redirect
0Eh	Hardware	Diskette
10h	Software	Video
		<b>AH Value</b>
		<b>Function</b>
		00h Set video mode
		01h Set cursor type
		02h Set cursor position
		03h Read current cursor position
		04h Not supported
		05h Select new video page
		06h Scroll current page up
		07h Scroll current page down
		08h Read character/Attribute to screen
		09h Write character/attribute from screen
		0Ah Write character only to screen
		0Bh Set color palette
		0Ch Write pixel
		0Dh Read pixel
		0Eh Write teletype to active page
		0Fh Return video status
		10h-12h not supported
		13h Write String
		14h-ffh reserved
11h	Software	Equipment List
12h	Software	Memory Size
13h	Software	Diskette Service (Interrupt 40h)
		<b>AH Value</b>
		<b>Function</b>
		00h Reset diskette system
		01h Read diskette status
		02h Read diskette sectors
		03h Write diskette sectors
		04h Verify diskette sectors
		05h Format diskette track

		06h,07h	Reserved
		08h	Read drive parameters
		09h-14h reserved	
		15h	Read drive type
		16h	Detect media change
		17h	Set diskette type
		18h	Set media type for format
		19h-FFh reserved	
13h	Software	Hard disk services	
		<b>AH Value</b>	<b>Function</b>
		00h	Reset disk system
		01h	Read disk status
		02h	Read disk sectors
		03h	Write disk sectors
		04h	Verify disk sectors
		05h	Format disk cylinder
		06h,07h	Reserved
		08h	Read drive parameters
		09h	Initialize drive parameters
		0Ah	Read long disk sectors
		0Bh	write long disk sectors
		0Ch	Seek to cylinder
		0Dh	Alternate reset fixed disk
		0Eh	Diagnostics 1, read test buffer
		0Fh	Diagnostics 2, write test buffer
		10h	Test for drive ready
		11h	Recalibrate drive
		12h-14h reserved	
		15h	Read disk type
		16h-18h reserved	
		19h, 1Ah	Not supported
		1Bh-FFh	Reserved
14h	Software	Serial Communication	
		<b>AH Value</b>	<b>Function</b>
		00h	Initialize serial communication port
		01h	Send character
		02h	Receive character
		03h	Read serial port status
		04h-FFh reserved	
15h	Software	System Services	
		<b>AH Value</b>	<b>Function</b>
		00h-4Eh reserved	
		4Fh	Keyboard intercept
		50h-7Fh reserved	
		80h	Device open
		81h	Device close
		82h	Program termination
		83h	Set event wait interval
		84h	Joystick support
		85h	System request key
		86h	Wait
		87h	Move block

		88h	Read extended memory size
		89h	Switch processor to protected mode
		8Ah-8Fh	Reserved
		90h	Device busy loop
		91h	Interrupt complete
		92h-BFh	Reserved
		C0h	Return system configuration parameters
		C1h	Return extended BIOS data area segment address
		C2h	Pointing device interface
		C3h-FFh	Reserved
16h	Software	Keyboard	
		<b>AH Value</b>	<b>Function</b>
		00h	Read keyboard input
		01h	Return keyboard status
		02h	Return shift flag status
		03h	Set typematic rate and delay
		04h	Reserved
		05h	Store key data
		06h-0Fh reserved	
		10h	Read extended key input
		11h	Return extended keyboard status
		12h	Return extended shift flags status
		13h-FFh reserved	
17h	Software	Parallel Printer	
		<b>AH Value</b>	<b>Function</b>
		00h	Print character
		01h	Initialize printer
		02h	Read printer status
		03h-FFh reserved	
18h	Software	Load ROM BASIC	
19h	Software	Bootstrap Loader	
1Ah	Software	System Timer and Real-Time Clock	
		<b>AH Value</b>	<b>Function</b>
		00h	Read system timer time counter
		01h	Set system timer time counter
		02h	Read real time clock time
		03h	Set real time clock time
		04h	Read real time clock date
		05h	Set real time clock date
		06h	Reserved
		07h	Set real time clock alarm
		08h	Read day of week from real time clock(SystemSoft only)
		09h	Write day of week to real time clock(SystemSoft only)
		0Ah-FFh	Reserved
1Bh	Software	Keyboard Break	
1Ch	User	User timer tick	
1Dh	BIOS table	Video parameters table	
1Eh	BIOS table	Diskette parameters table	
1Fh	User	Video graphics characters	
40h	Software	diskette BIOS receptor	
41h	BIOS table	Fixed disk parameter table	
46h	BIOS table	Fixed disk parameter table	

---

70h	Hardware	Real time clock
71h	Hardware	Redirect cascade
74h	Hardware	Pointing device(Mouse)
76h	Hardware	fixed disk

Any 80386 and/or coprocessor exception interrupts normally handled by the operating system are vectored by default to the BIOS at system power-on.





# Chapter 9

## *BIOS Setup*

### PhoenixBIOS Setup Utility

Main		Advanced	Security	Power	Boot	Exit
System Time:	[12:49:59]					Item Specific Help  <Tab>, <Shift-Tab>, or <Enter> selects field.
System Date:	[07/01/1999]					
Legacy Diskette A:	[1.44/1/25 MB 3½"]					
▶ Primary Master	[FUJITSU MHD2032AT-(PM)]					
▶ Secondary Master	[UJDA150-(SM)]					
Memory Cache:	[Enabled]					
System Memory:	640 KB					
Extended Memory:	64512 KB					

F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults  
ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

**PhoenixBIOS Setup Utility**

Main		
Primary Slave [None]		Item Specific Help
Type:	[Auto]	User = you enter parameters of hard-disk drive installed at this connection. Auto = autotypes hard-disk drive installed here. 1-39 = you select pre-determined type of hard-disk drive installed here. CD-ROM = a CD-ROM drive is installed here. IDE/ATAPI Removable = removable disk drive is installed here.
Cylinders:	[ 7944]	
Heads:	[ 16]	
Sectors:	[63]	
Maximum Capacity:	3253MB	
Multi-Sector Transfers:	[16 Sectors]	
LBA Mode Control:	[Enabled]	
32 Bit I/O:	[Disabled]	
Transfer Mode:	[Fast PIO 4]	
Ultra DMA Mode:	[Mode 2]	
F1 Help ↑↓ Select Item +/- Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit		

**PhoenixBIOS Setup Utility**

Main		
Secondary Master [TOSHIBA CD-ROM XM-1902B-(SM)]		Item Specific Help
Type:	[Auto]	User = you enter parameters of hard-disk drive installed at this connection. Auto = autotypes hard-disk drive installed here. 1-39 = you select pre-determined type of hard-disk drive installed here. CD-ROM = a CD-ROM drive is installed here. IDE/ATAPI Removable = removable disk drive is installed here.
Multi-Sector Transfers:	[Disabled]	
LBA Mode Control:	[Disabled]	
32 Bit I/O:	[Disabled]	
Transfer Mode:	[Fast PIO 4]	
Ultra DMA Mode:	[Mode 2]	
F1 Help ↑↓ Select Item +/- Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit		

**PhoenixBIOS Setup Utility**

Main	Advanced	Security	Power	Boot	Exit
<p align="center"><b>Setup Warning</b></p> <p>Setting items on this menu to incorrect values may cause your system to malfunction.</p> <p>▶ I/O Device Configuration</p> <p>Installed O/S: [Other]                      Reset Configuration Data: [No]                      Large Disk Access Mode: [DOS]</p>					<p align="center">Item Specific Help</p> <hr/> <p>Peripheral Configuration</p>
<p>F1 Help   Select Item   Change Values   F9 Setup Defaults                      ESC Exit   Select Menu   Enter   Select ▶ Sub-Menu   F10 Save and Exit</p>					

**PhoenixBIOS Setup Utility**

Advanced	
<p align="center"><b>I/O Device Configuration</b></p> <p>Serial port A: [Auto]                      Serial port B: [Auto]                      Mode: [FIR]                      Parallel port: [Auto]                      Mode: [Bi-directional]                      Floppy disk controller: [Enabled]</p>	<p align="center">Item Specific Help</p> <hr/> <p>Set the mode for serial port B.</p>
<p>F1 Help   Select Item   Change Values   F9 Setup Defaults                      ESC Exit   Select Menu   Enter   Select ▶ Sub-Menu   F10 Save and Exit</p>	

PhoenixBIOS Setup Utility

Main		Advanced	Security	Power	Boot	Exit
						Item Specific Help
User Password Is:	Clear					Supervisor Password controls access to the setup utility.
Supervisor Password Is:	Clear					
Set Supervisor Password	[Enter]					
Set User Password	[Enter]					
Password on boot:	[Disabled]					
Fixed disk boot sector:	[Normal]					
Diskette access:	[Supervisor]					
Virus check reminder:	[Disabled]					
System backup reminder:	[Disabled]					

F1 Help ↓ Select Item -/+ Change Values F9 Setup Defaults  
 ESC Exit ← Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

PhoenixBIOS Setup Utility

Main		Advanced	Security	Power	Boot	Exit
						Item Specific Help
PM Control	[Always]					Select 'Always' the Power Management function will operate at all times.  Select 'Battery Powered Only' the Power Management function to operate only when you are using battery power.
Power Savings:	[Disabled]					
Idle Mode:	Off					
Standby Timeout:	Off					
Suspend Timeout:	Off					
Hard Disk Timeout:	[Disabled]					
Suspend Mode:	[Save To DRAM]					
Resume On Modem Ring:	[Off]					
Resume On Time:	[Off]					
Resume Time:	[00:00:00]					

F1 Help ↓ Select Item -/+ Change Values F9 Setup Defaults  
 ESC Exit ← Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

**PhoenixBIOS Setup Utility**

Main		Advanced	Security	Power	<b>Boot</b>	Exit
Summary screen: [Disabled] QuickBoot Mode: [Enabled]					Item Specific Help	
▶ Boot Device Priority					Display system configuration on boot	
F1 Help ↑↓		Select Item -/+		Change Values		F9 Setup Defaults
ESC Exit ←→		Select Menu Enter		Select ▶ Sub-Menu		F10 Save and Exit

**PhoenixBIOS Setup Utility**

		<b>Boot</b>		
Boot Device Priority			Item Specific Help	
1. [Diskette Driver] 2. [Hard Drive] 3. [ATAPI CD-ROM Drive]			Use <↑> or <↓> to select a device, then press <+> to move it up the list, or <-> to move it down the list. Press <Esc> to exit this menu.	
F1 Help ↑↓		Select Item -/+		Change Values
ESC Exit ←→		Select Menu Enter		Select ▶ Sub-Menu
		F9 Setup Defaults		F10 Save and Exit

PhoenixBIOS Setup Utility

<b>Main</b> <b>Advanced</b> <b>Security</b> <b>Power</b> <b>Boot</b> <b>Exit</b>	
Exit Saving Changes Exit Discarding Changes Load Setup Defaults Discard Changes Save Changes	Item Specific Help  Exit System Setup and save your changes to CMOS.

F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults  
ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit





# Chapter 10

## *Post Code & Error Handling*

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### POST Errors

#### Recoverable POST Error

Whenever a recoverable error occurs during POST, *Phoenix BIOS* displays an error message describing the problem.

*Phoenix BIOS* also issues a beep code (one long tone followed by two short tones) during POST if the video configuration fails (no card installed or faulty) or if an external ROM module does not properly checksum to zero.

An external ROM module (e.g. VGA) can also issue audible errors, usually consisting of one long tone followed by a series of short tones.

#### Terminal POST Errors

There are several POST routines that issue a POST Terminal Error and shut down the system if they fail. Before shutting down the system, the terminal-error handler issues a beep code signifying the test point error, writes the error to port 80h, attempts to initialize the video, and writes the error in the upper left corner of the screen (using both mono and color adapters).

The routine derives the beep code from the test point error as follows:

1. The 8-bit error code is broken down to four 2-bit groups.
2. Each group is made one-based ( 1 through 4) by adding 1.
3. Short beeps are generated for the number in each group.

Example:

Testpoint 01Ah = 00 01 10 10 = 1-2-3-3 beeps

If the BIOS detect error 2C, 2E, or 30 (base 512k RAM error), it displays an additional word of information reflecting the bit or address line that failed. For example, if "2C 0002" is displayed, address line I (represented by bit one) has failed. If "2E 1020" is displayed, then data bits 12 and 5 have failed in the upper 16 bits.

BIOS send the same information to the port-80 LED display (See below). The check point code is followed by a delay, the high order byte, another delay, and then the low order byte of the error. This

## Test Points and Beep Codes

At the beginning of each POST routine, the BIOS outputs the test point error code to I/O address 80h. Use this code during trouble shooting to establish at what point the system failed and what routine was being performed.

Some motherboards are equipped with a seven-segment LED display that displays the current value of port 80h. For production boards, which do not contain the LED display, you can purchase a card that performs the same function.

If the BIOS detects a terminal error condition, it halts POST after issuing a terminal error beep code (See above) and attempting to display the error code on upper left corner of the screen and on the port 80h LED display. It attempts repeatedly to write the error to the screen. This may cause "flash" on some CGA display.

If the system hangs before the BIOS can process the error, the value displayed at the port 80h is the last test performed. In this case, the screen does not display the error code.

The following is a list of the checkpoint codes written at the start of each test and the beep codes issued for terminal errors:

Code	Beeps	POST Routine Description
02		Verify Real Mode
04		Get CPU type
06		Initialize system hardware
08		Initialize chipset registers with initial POST values
09		Set in POST flag
0A		Initialize CPU registers
0C		Initialize cache to initial POST values
0E		Initialize I/O
0F		Initialize the local bus IDE
10		Initialize Power Management
11		Load alternate registers with initial POST values
12		Jump to UserPatch0
14		Initialize keyboard controller
16	2-2-3	BIOS ROM checksum
18		Initialize 8254 timer
1A		8237 DMA controller initialization
1C		Reset Programmable Interrupt Controller
20	3-1-1	Test DRAM refresh
22	3-1-3	Test 8742 Keyboard Controller
24		Set ES segment register to 4GB
28		Autosize DRAM
2A		Clear 512K base RAM
2C	3-4-1	Test 512K base address lines
2E	3-4-3	Test 512K base memory
32		Test CPU bus-clock frequency
34		Test CMOS RAM
35		Initialize other hardware devices
37		Reinitialize the chipset (MB only)
38		Shadow system BIOS ROM

39		Reinitialize the cache (MB only)
3A		Autosize cache
3C		Configure advanced chipset register
3D		Load alternate registers with CMOS valuesnew
40		Set Initial CPU speed new
42		Initialize interrupt vectors
44		Initialize BIOS interrupts
46	2-1-2-3	Check ROM copyright notice
47		Initialize manager for PCI Option ROM
48		Check the equipment specified in the CMOS
49		Initialize PCI bus and devices
4A		Initialize all video adapters in system
4C		Shadow video BIOS ROM
4E		Display copyright notice
50		Display CPU type and speed
51		Initialize EISA slots
52		Test keyboard
54		Set key click if enabled
56		Enable keyboard
58	2-2-3-1	Test for unexpected interrupts
5A		Display prompt press F2 to enter SETUP"
5C		Test RAM between 512K and 640K
60		Test extended memory
62		Test extended memory address lines
64		Jump to UserPatch1
66		Configure advanced cache register
68		Enable external and CPU caches
6A		Display external cache size
6C		Display shadow message
6E		Display non-disposable segments
70		Display error messages
72		Check for configuration errors
74		Test real-time clock
76		Check for keyboard errors
7C		Set up hardware interrupt vectors
7E		Test coprocessor if present
80		Disable onboard I/O ports
82		Detect and install external RS232 ports
84		Detect and install external parallel ports
86		Re-initialize onboard I/O ports
88		Initialize BIOS Data Area
8A		Initialize Extended BIOS Data Area
8C		Initialize floppy controller
90		Initialize hard-disk drives
91		Local-bus IDE timing
92		Jump to UserPatch2
93		Build MPTABLE for multi-processor boards
94		Disable A20 address line
96		Clear huge ES segment register

98	Search for option ROMs
9A	Shadow option ROMs
9C	Set up Power Management
9E	Enable hardware interrupts
A0	Set time for day
A2	Check key lock
A4	Initialize typematic rate
A8	Erase F2 prompt
AA	Scan for F2 key stroke
AC	Enter SETUP
AE	Clear in-POST flag
B0	Check for errors
B2	POST done - prepare to boot operating system
B4	One beep
B6	Check password (optional)
B8	Clear global descriptor table
BC	Clear parity checkers
BE	Clear screen (optional)
BF	Check virus and backup reminders
C0	Try to boot with INT 19
D0	Interrupt handler error
D2	Unknown interrupt error
D4	Pending interrupt error
D6	Initialize option ROM error
D8	Shutdown error
DA	Extended Block Move
DC	Shutdown I/O error
	The following are for boot block in Flash ROM
E2	Initialize the chipset
E3	Initialize refresh counter
E4	Check for Forced Flash
E5	Check HW status of ROM
E6	BIOS ROM is OK
E7	Do a complete RAM test
E8	Do OEM initialization
E9	Initialize interrupt controller
EA	Read in the bootstrap code
EB	Initialize all vectors
EC	Boot the Flash program
ED	Initialize the boot device
EE	Boot code was read OK

### PhoenixBIOS Messages

*nnnn* Cache SRAM Passed

Diskette drive A error

Diskette drive B error

Entering SETUP...

---

Extended RAM Failed at offset: *nnnn* \*

Extended RAM Passed

Failing Bits: *nnnn* \*

Fixed Disk 0 Failure

Fixed Disk 1 Failure

Fixed Disk Controller Failure \*

Incorrect Drive A type - run SETUP

Incorrect Drive B type - run SETUP

Invalid NVRAM media type \*

Keyboard controller error \*

Keyboard error

Keyboard locked - Unlocked key switch

Monitor type does not match CMOS - Run SETUP

Operating system not found

Parity Check 1 *nnnn* \*

Parity Check 2 *nnnn* \*

Press <F1> to resume, <F2> to Setup

Press <F2> to enter SETUP

Real time clock error \*

Shadow Ram Failed at offset: *nnnn* \*

*nnnn* Shadow RAM Passed

System battery is dead - Replace and run SETUP

System BIOS shadowed

System cache error - Cache disabled \*

System CMOS checksum bad - run SETUP

System RAM Failed at offset: *nnnn* \*

*nnnn* System RAM Passed

System timer error \*

UMB upper limit segment address: *nnnn*

Video BIOS shadowed

If your system displays this message, write down the message and contact your dealer.

If your system fails after you made changes in the Setup menus, you may be able to correct the problem by entering Setup and restoring the original values.

---

The following is an explanation of each of the messages listed above.

**nnnn Cache SRAM Passed** - Where *nnnn* is the amount of system cache in kilobytes successfully tested.

**Diskette drive A error or**

**Diskette drive B error** - Drive A: or B: is present but fails the BIOS POST diskette test. Check to see that the drive is defined with proper diskette type in Setup and that the diskette drive is attached correctly.

**Entering SETUP... Starting Setup program**

**Extended RAM Failed at offset: nnnn** - Extended memory not working or not configured properly at offset *nnnn*.

**nnnn Extended RAM Passed** - Where *nnnn* is the amount of RAM in kilobytes successfully tested.

**Failing Bits:nnnn** - The hex number *nnnn* is a map of the bits at the RAM address (in System, Extended, or Shadow memory) which failed the memory test. Each 1 (one) in the map indicates a failed bit.

**Fixed Disk 0 Failure or Fixed Disk 1 Failure or**

**Fixed Disk Controller Failure** - Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup, be sure the fixed-disk type is correctly identified.

**Incorrect Drive A type** - run SETUP Type of floppy drive A: not correctly identified in Setup.

**Incorrect Drive B type** - run SETUP Type of floppy drive B: not correctly identified in Setup.

**Invalid NVRAM** - media type Problem with NVRAM (CMOS) access.

**Keyboard controller error** - The keyboard controller failed test. You may have to replace keyboard or controller.

**Keyboard error** - Keyboard not working.

**Keyboard locked** - Unlocked key switch Unlocked the system to proceed.

**Monitor type does not match CMOS - Run SETUP** Monitor type not correctly identified in Setup.

**Operating system not found** - Operating system cannot be located on either drive A: or Drive C:.

Enter Setup and see if fixed disk and drive A: are properly identified.

**Parity Check 1** - Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, It displays ????

**Parity Check 2** - Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????

**Press <F1> to resume, <F2> to Setup** - Display after any recoverable error messages. Press <F1> to start the boot process or <F2> to enter Setup and change any settings.

---

**Press <F2> to enter SETUP** - optional message displayed during POST. Can be turned off in Setup.

**Previous boot incomplete - Default configuration used** Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of wait states, improper Setup setting can also terminate POST and cause this error on the next boot. Run Setup and verify that wait-state configuration is correct. This error is cleared the next time the system is booted.

**Real time clock error** - Real-time clock fails BIOS test. May require board repair.

**Shadow Ram Failed at offset: *nnnn*** - Shadow RAM failed at offset *nnnn* of the 64K block at which the error was detected.

***nnnn* Shadow RAM Passed** - Where *nnnn* is the amount of shadow RAM in kilobytes successfully tested.

**System battery is dead - Replace and run SETUP** - The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

**System BIOS shadowed** - System BIOS copied to shadow RAM.

**System cache error - Cache disabled** RAM cache failed the BIOS test, BIOS disabled the cache.

**System CMOS checksum bad** - run SETUP System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. Run Setup and reconfigure the system either by getting the Default Values and/or making your own selections.

**System RAM Failed at offset: *nnnn*** - System RAM failed at offset *nnnn* of in the 64K block at which the error was detected.

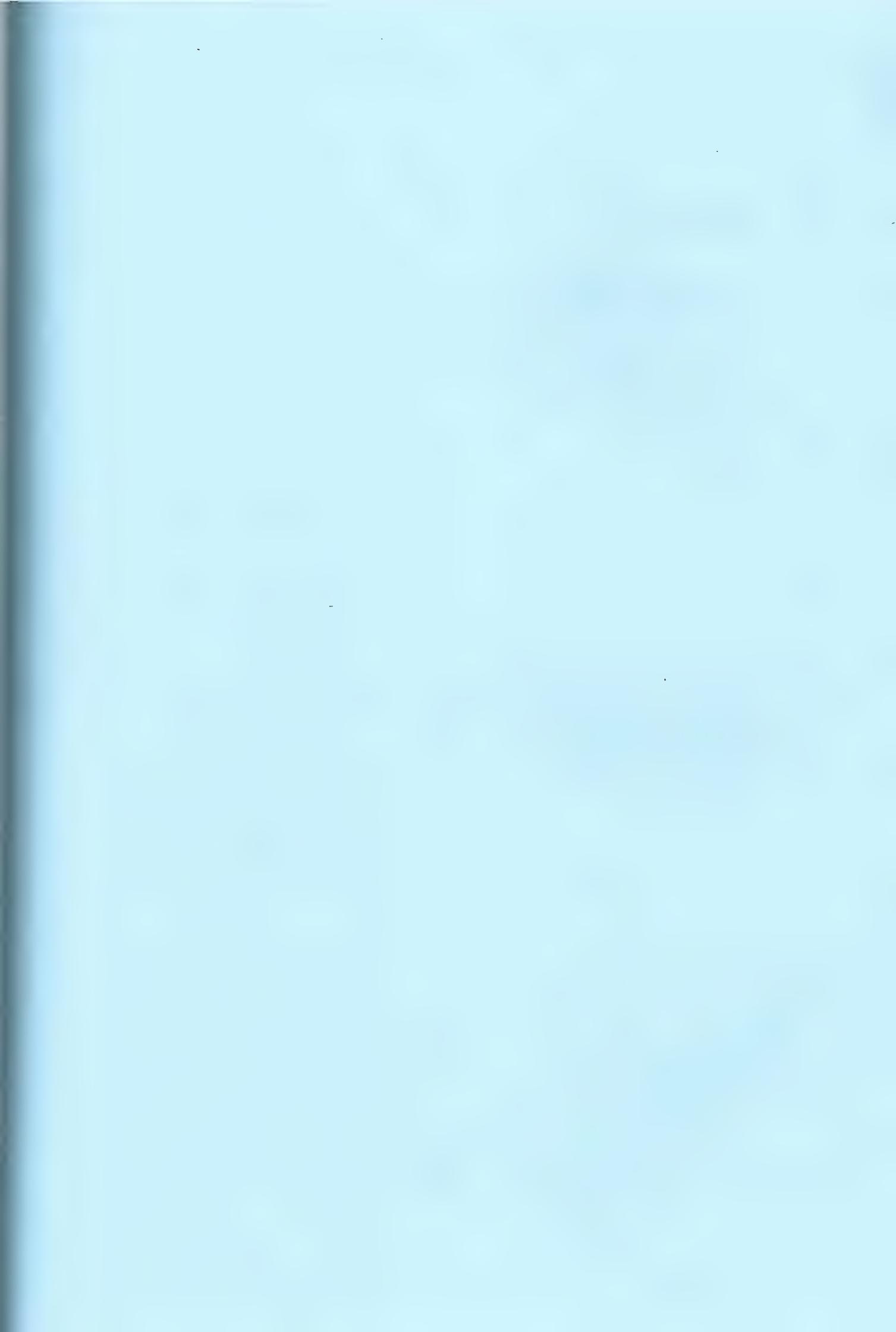
***nnnn* System RAM Passed** - Where *nnnn* is the amount of system RAM in kilobytes successfully tested.

**System timer error** - The timer test failed. Requires repair of system board.

**UMB upper limit segment address** - *nnnn* Displays the address *nnnn* of the upper limit or Upper Memory Blocks, indicating released segments of the BIOS which may be reclaimed by a virtual memory manager.

**Video BIOS shadowed** Video BIOS successfully copied to shadow RAM.







# Chapter 11

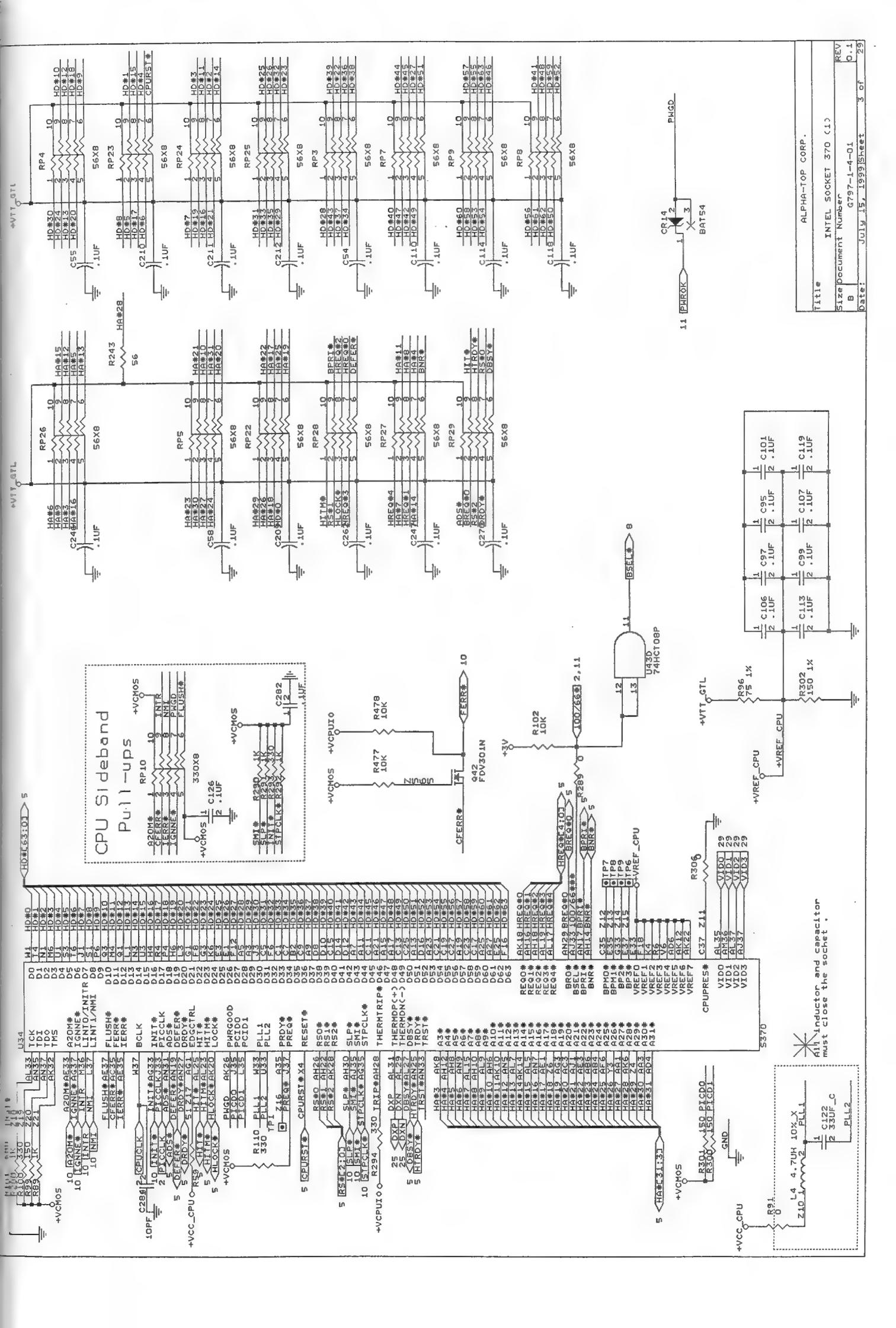
## *Schematics*

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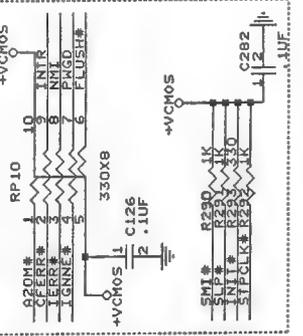








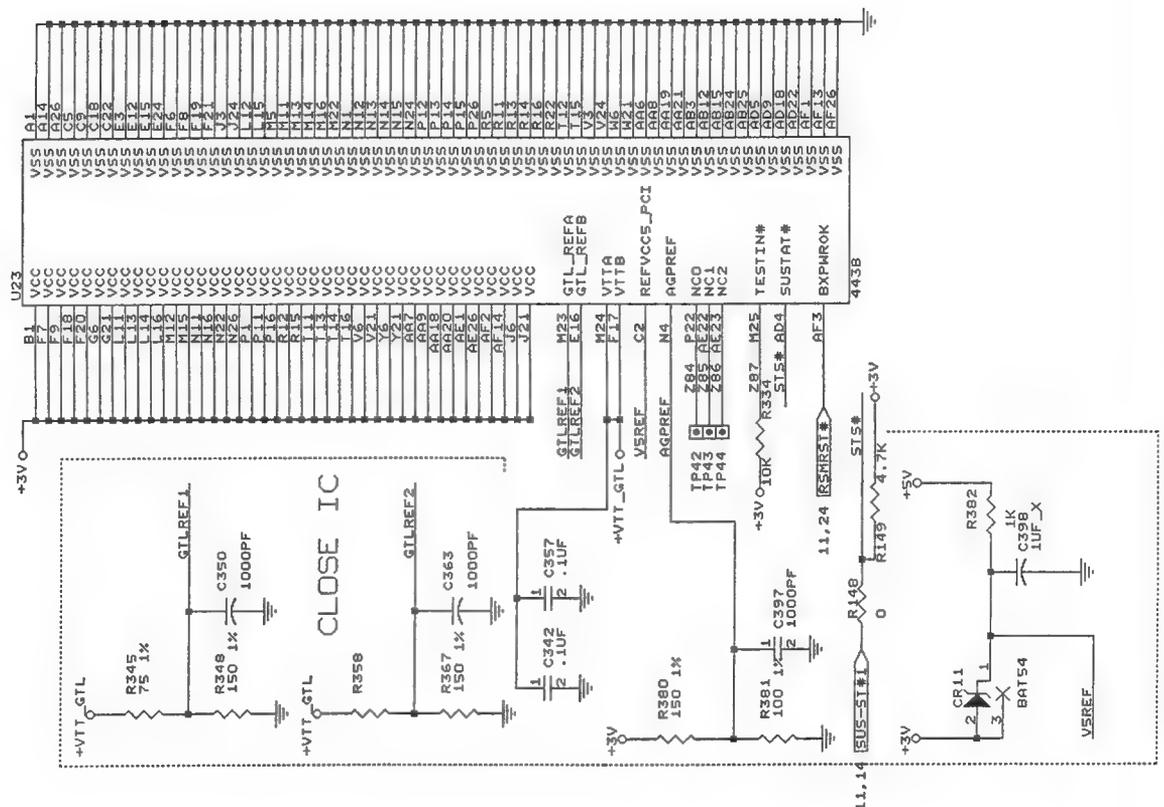
**CPU Sideband**  
**Pull-ups**



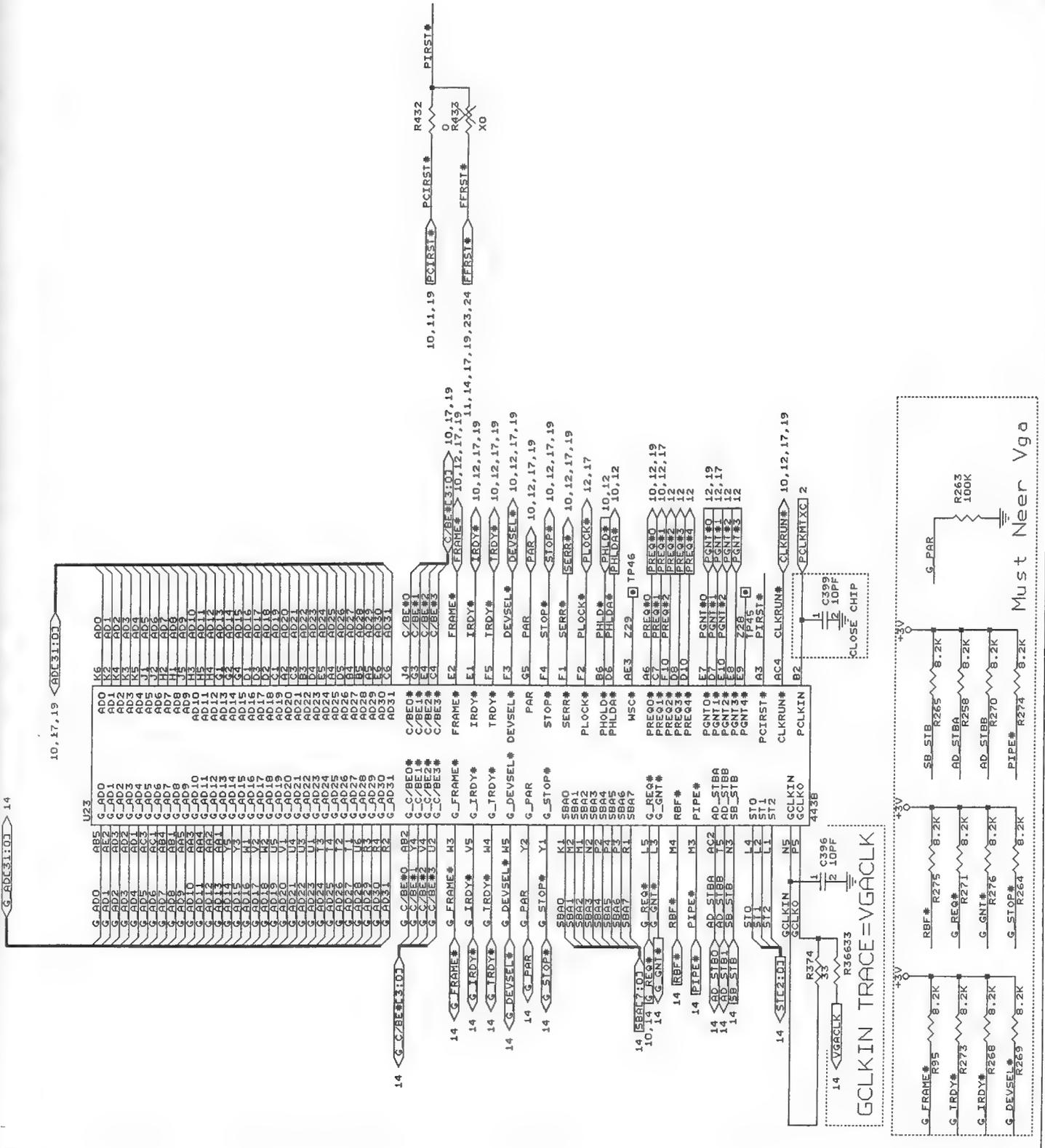
All inductor and capacitor must close the socket.



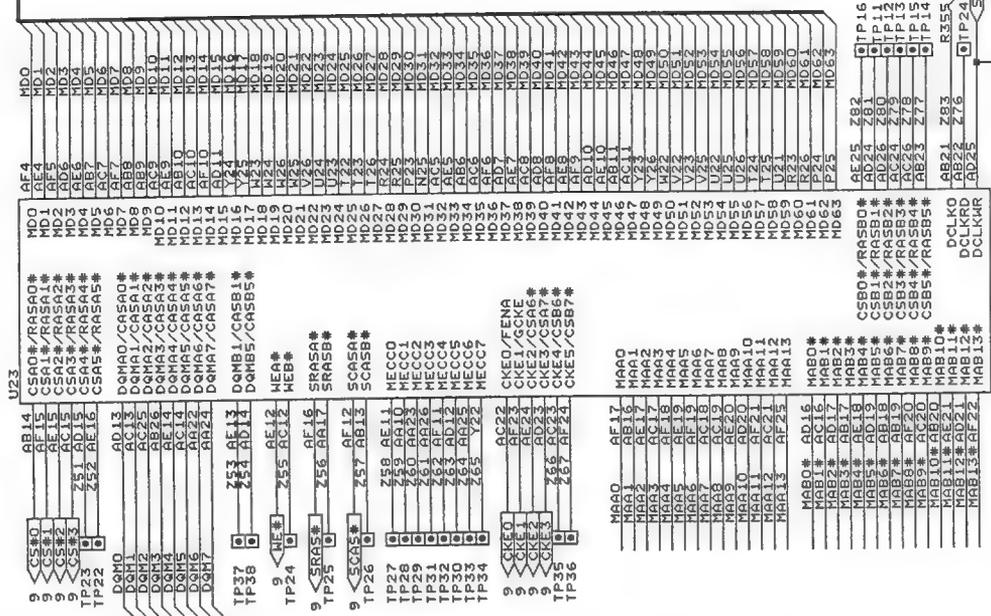




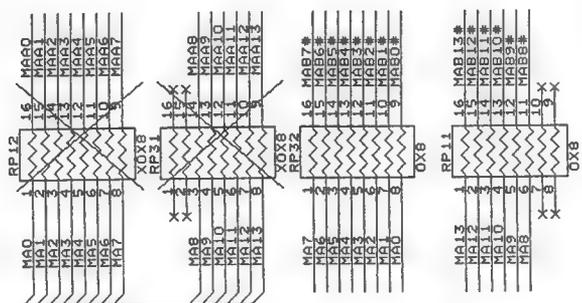
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9 HDL6310J 9



Title  
 ALPHA-TOP CORP.  
 Size# Document Number  
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 REV  
 D-1 6797-1-4-01  
 Date: August 57, 1993 Sheet 8 of 23

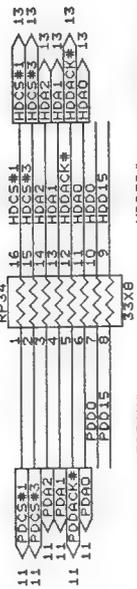




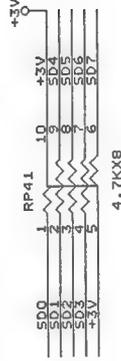
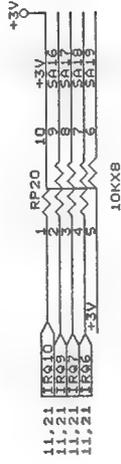
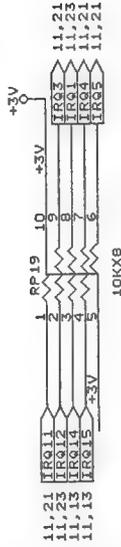
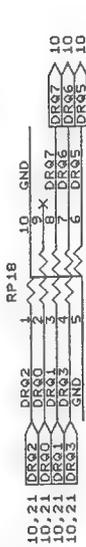
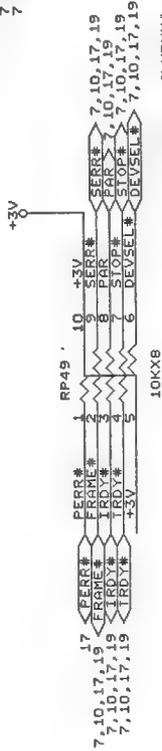
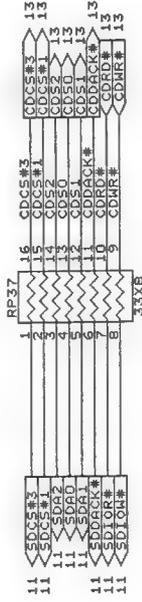
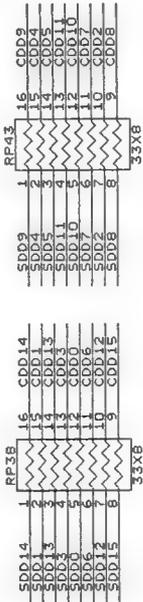




IDE PART

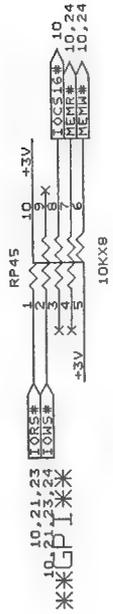
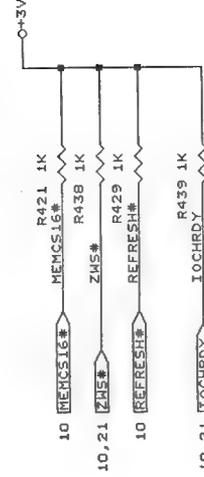
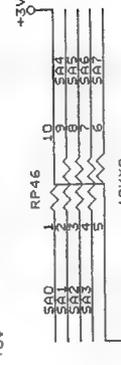
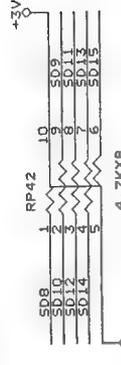
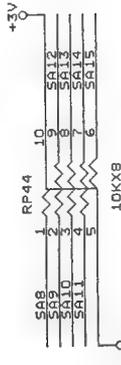
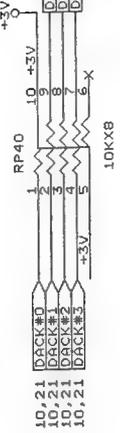
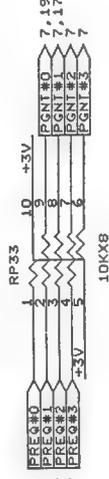


CLOSE PIIX4E



ISA PU UP/DN

PCI







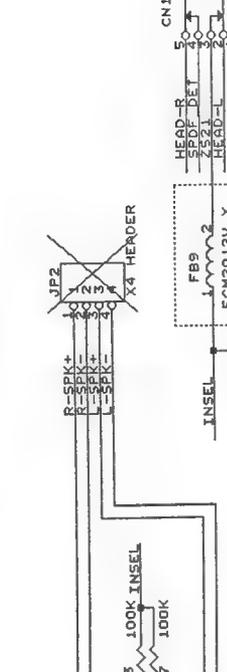
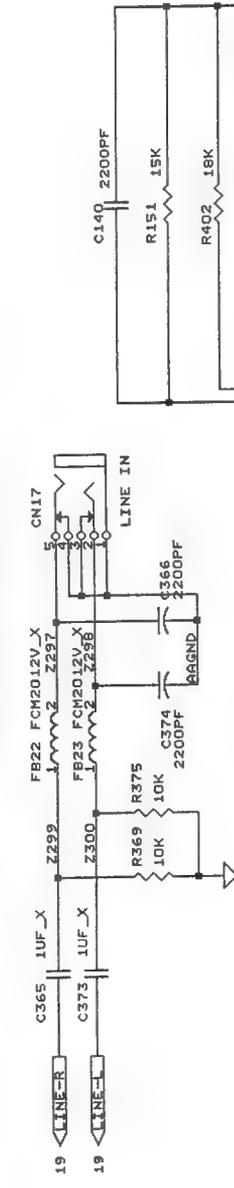
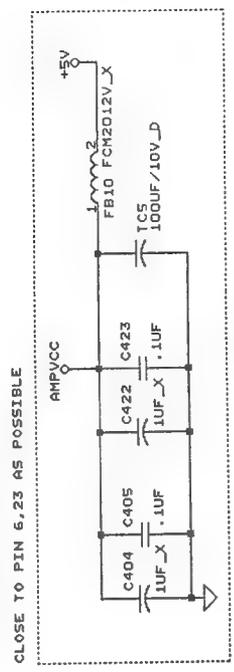
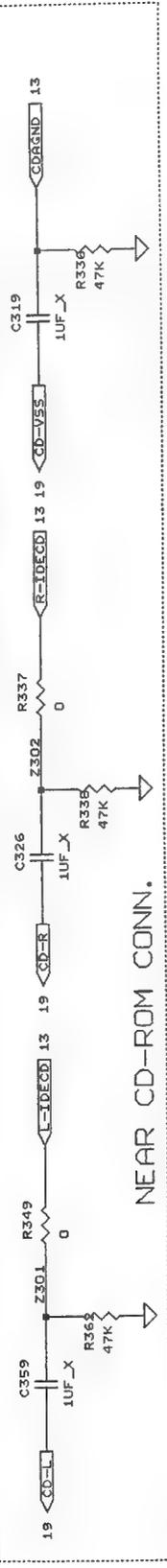




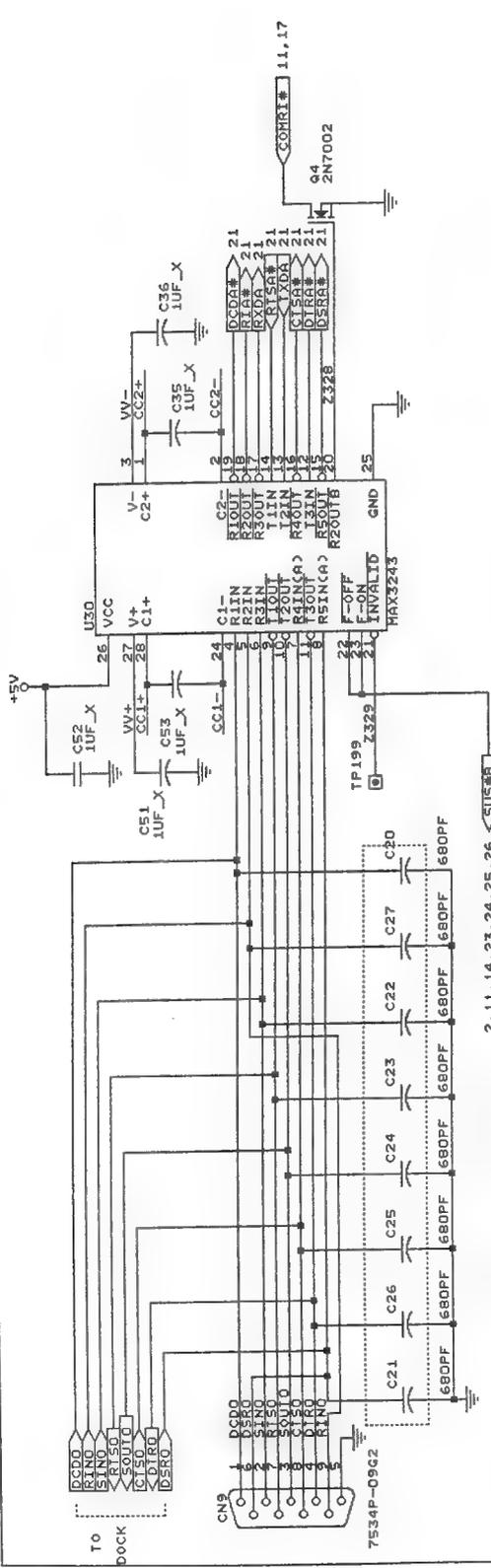






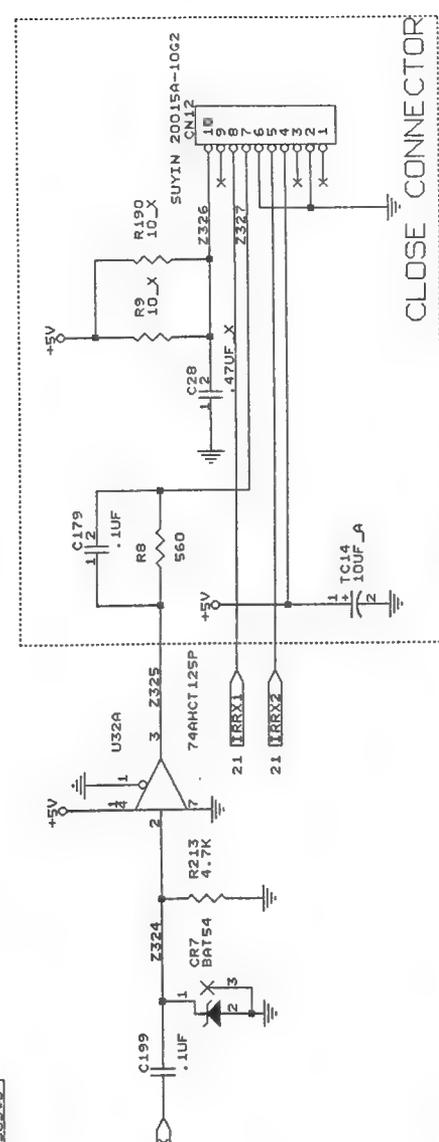




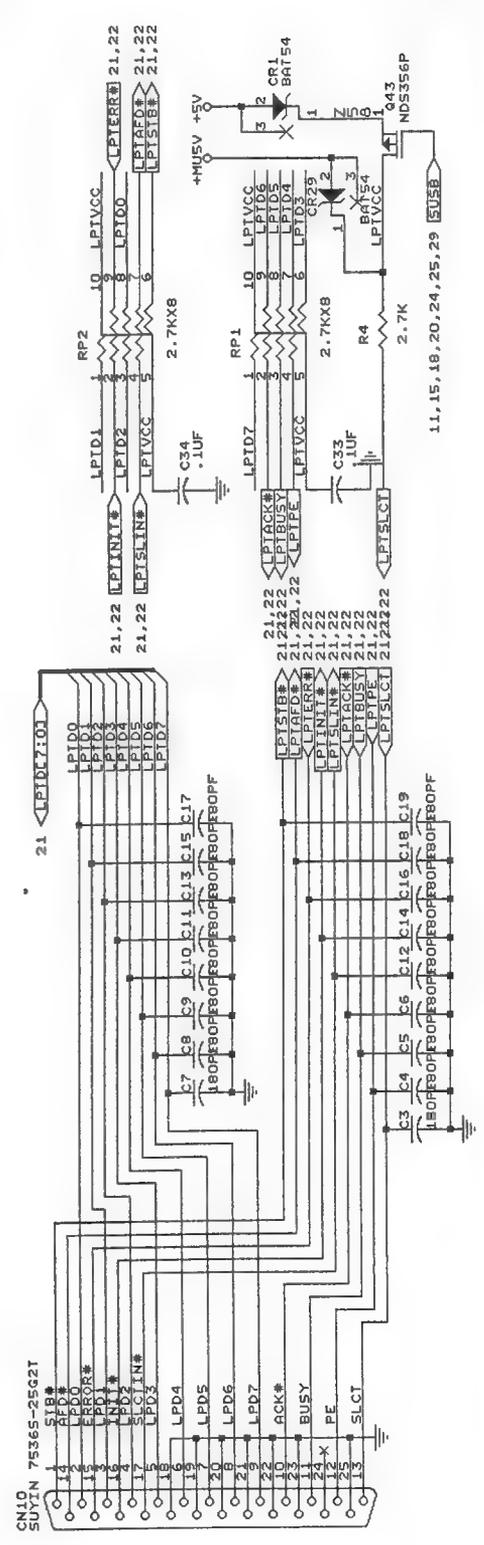


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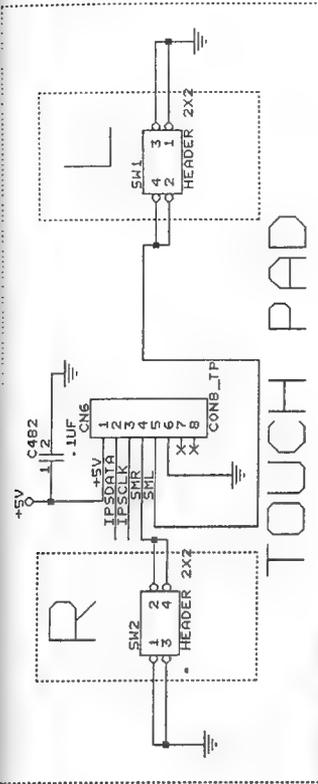
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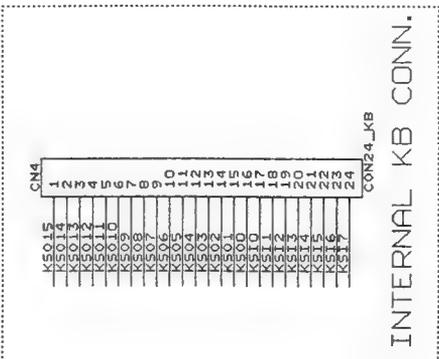
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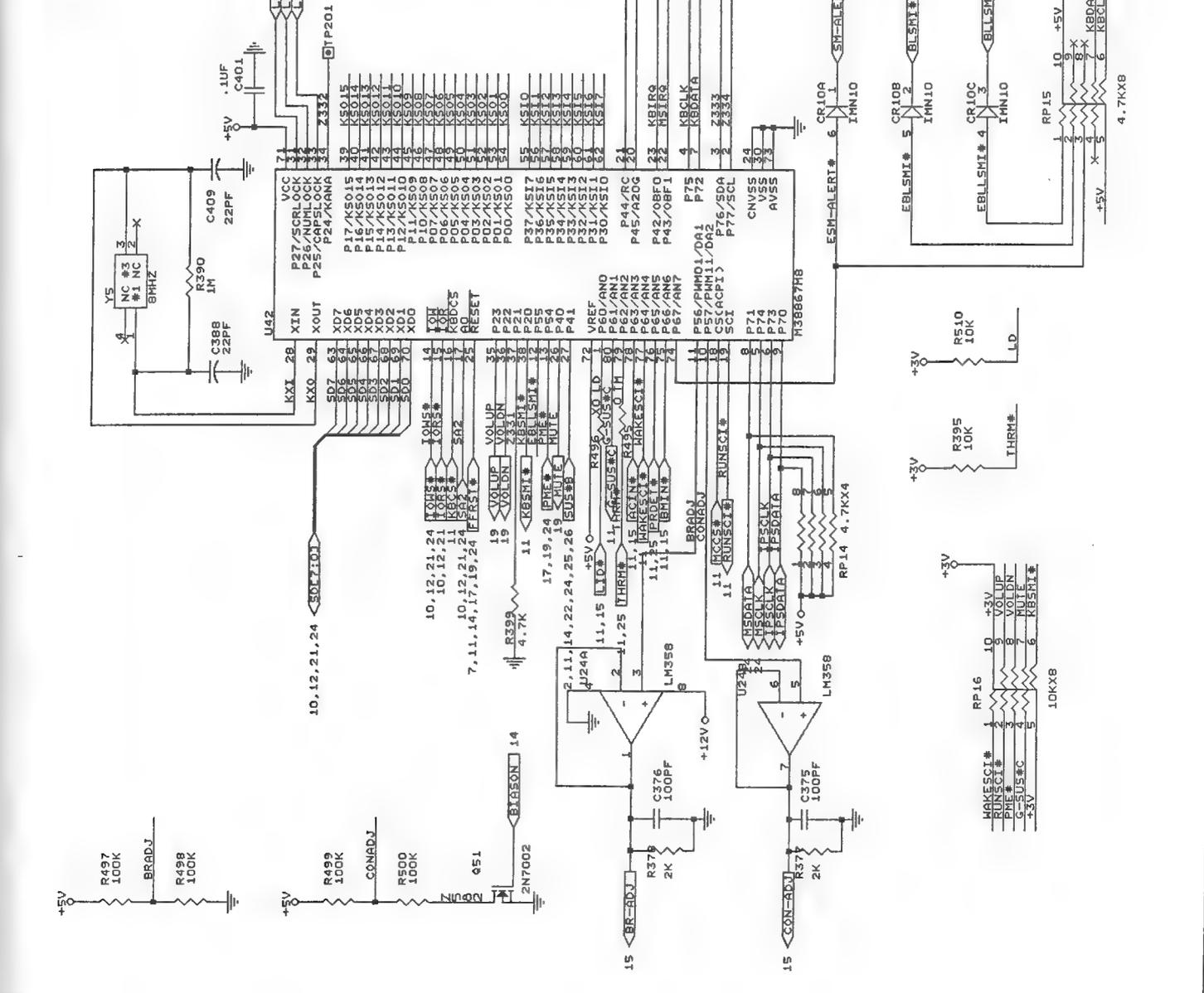
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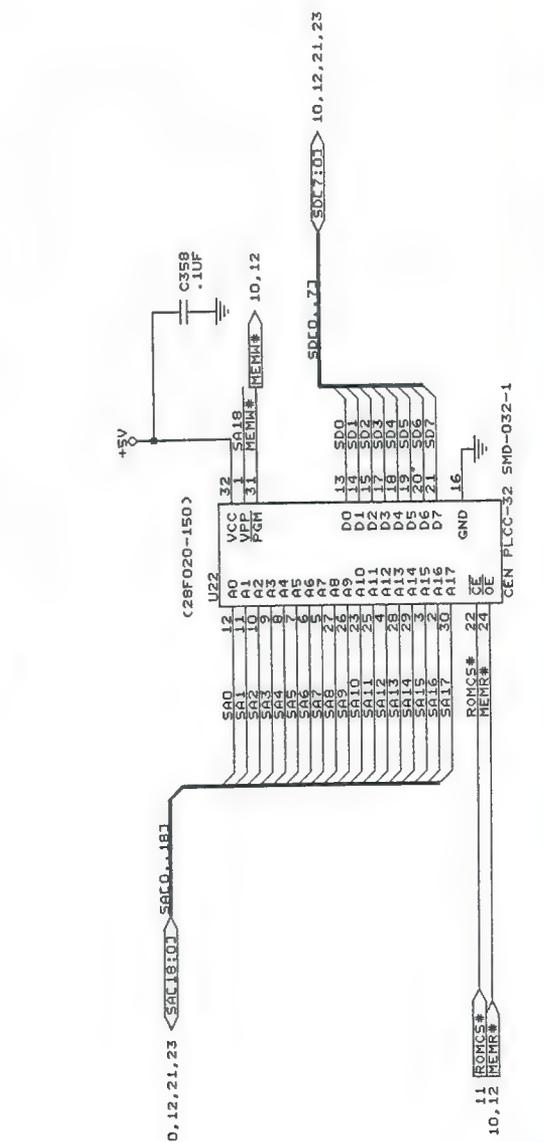
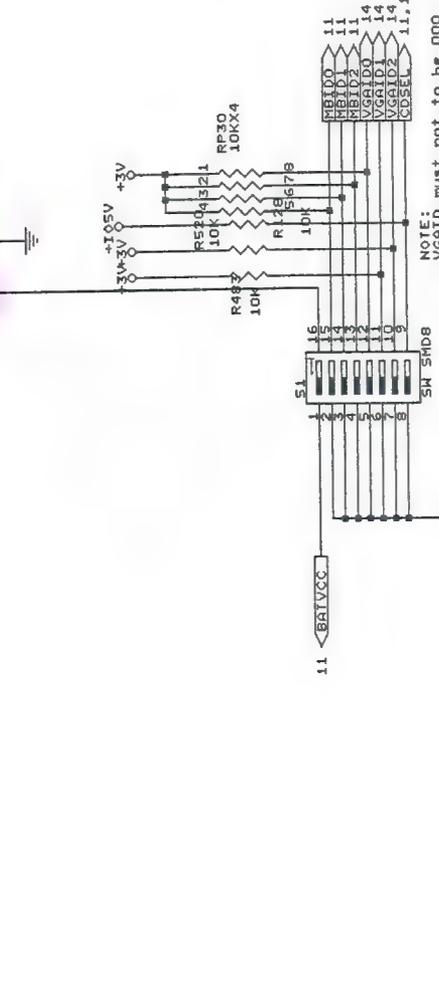
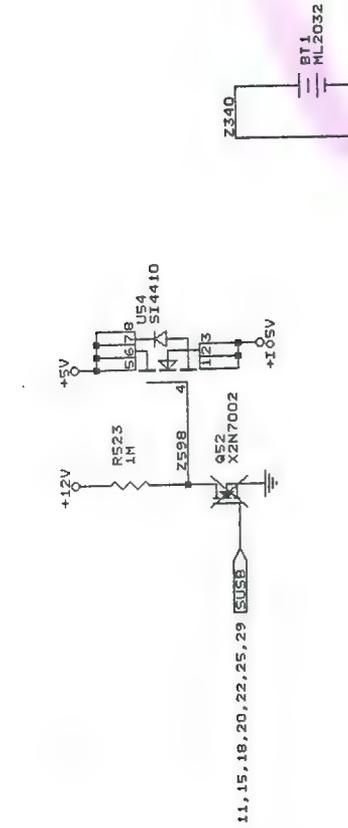
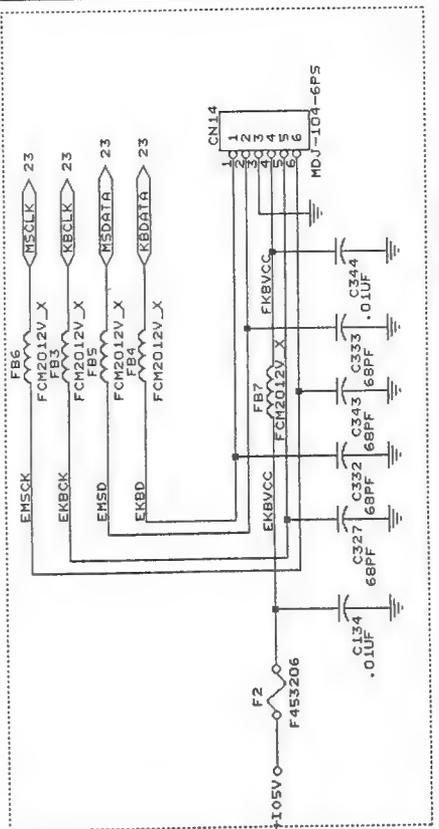
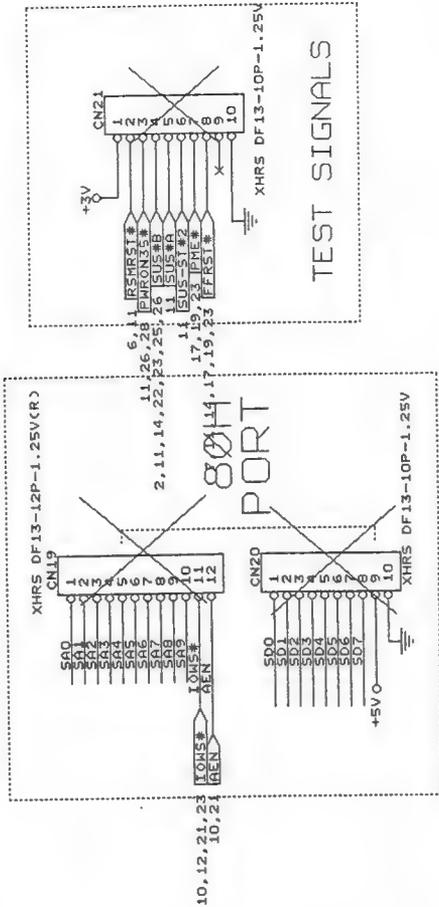
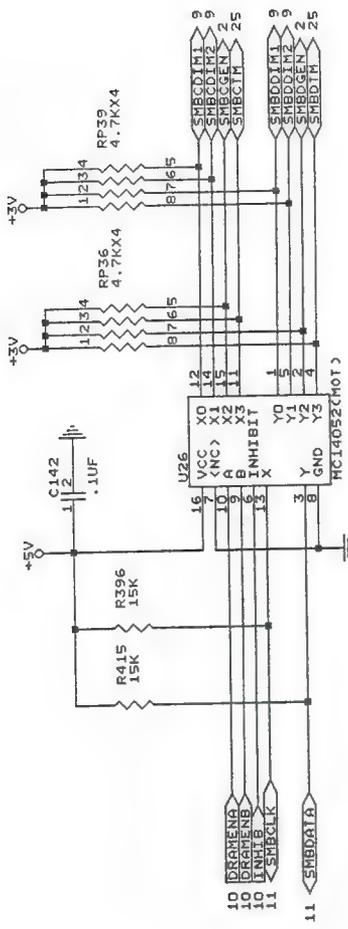


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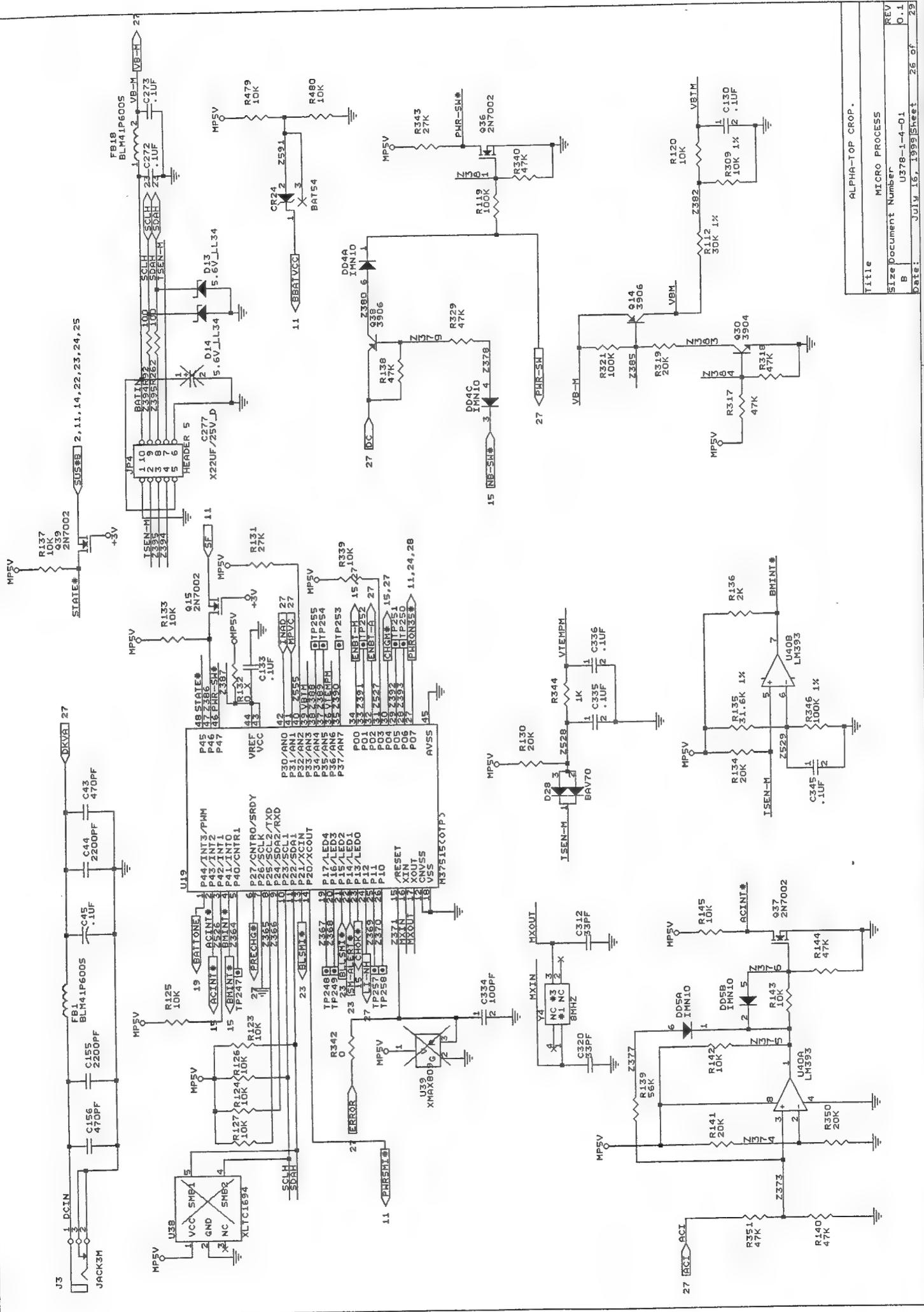


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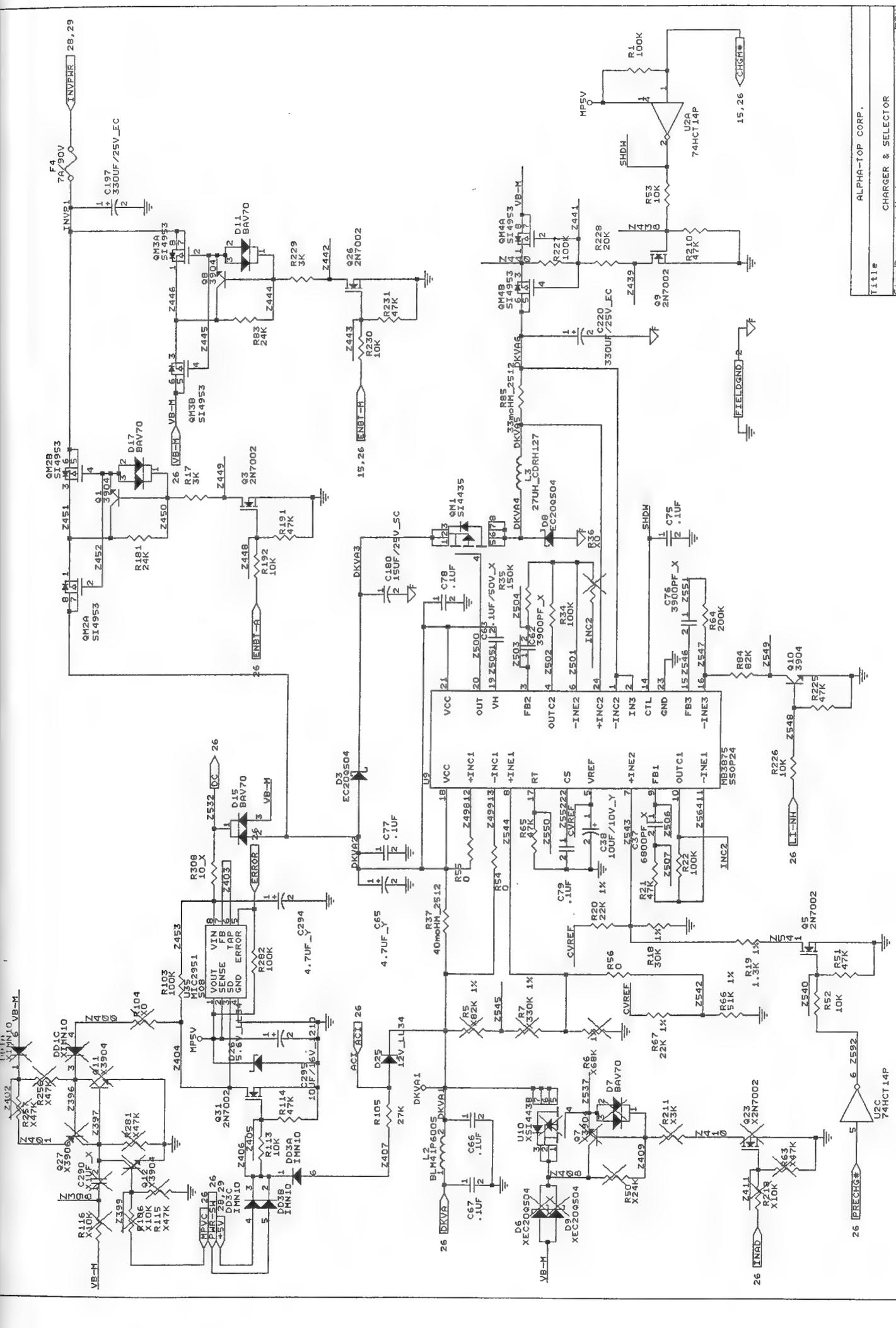








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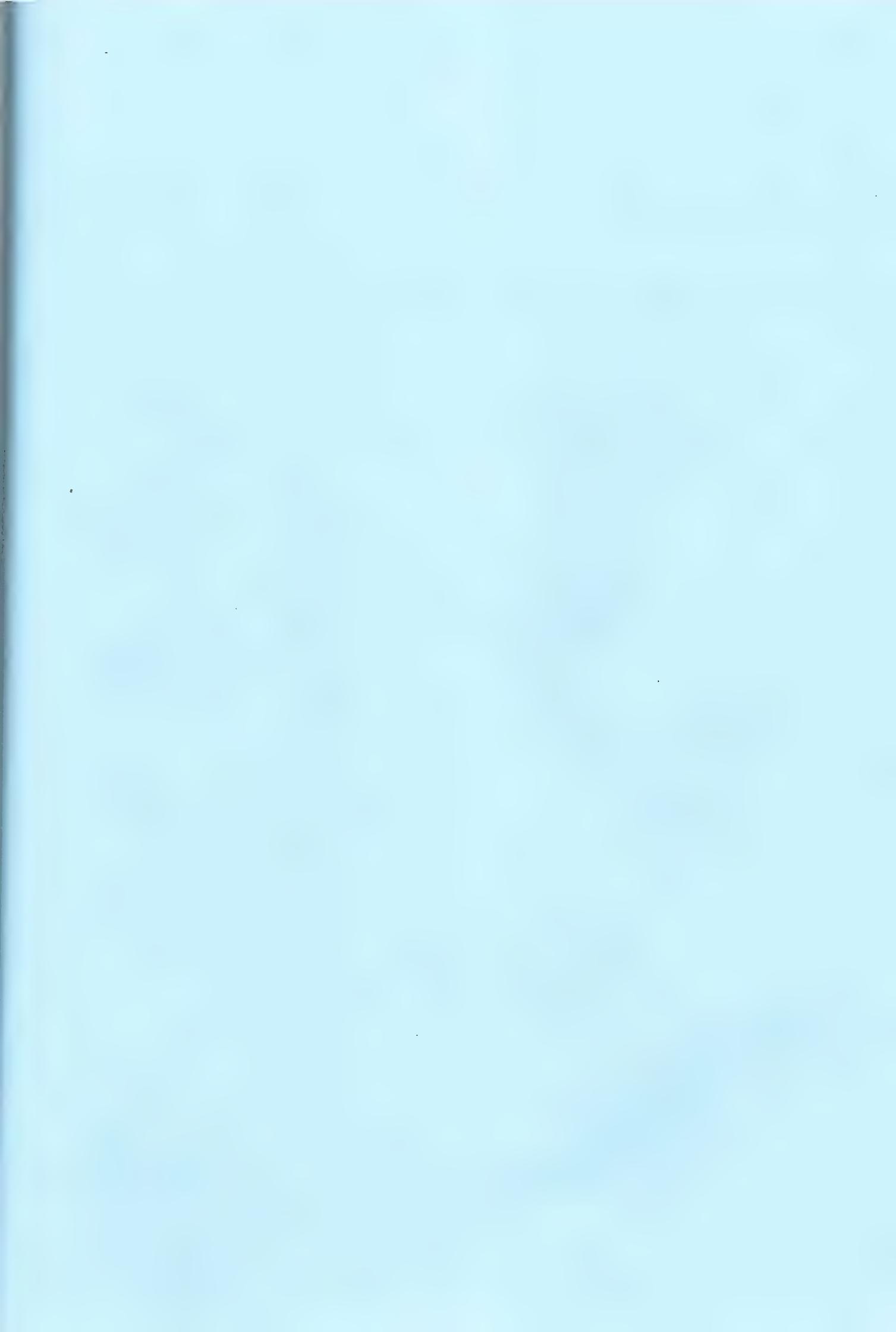


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Size Document Number	CHARGER & SELECTOR
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Date:	July 16, 1999/Sheet 27 of 29











# Chapter 12

## *System Block Diagram*

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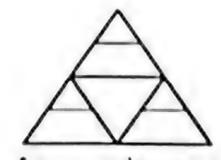
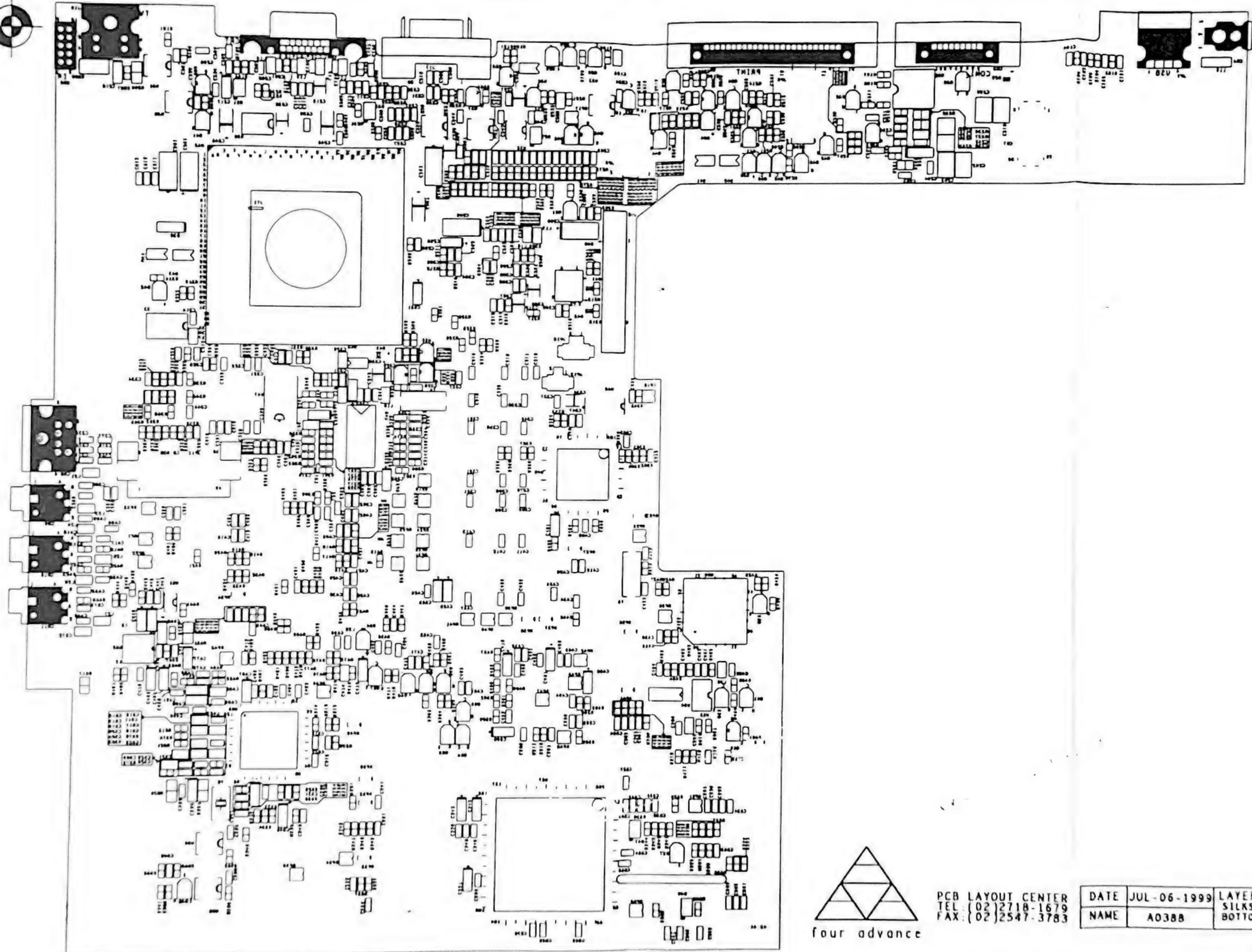
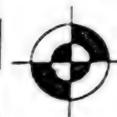


## Chapter 13

# *Main Board Layout Placement*

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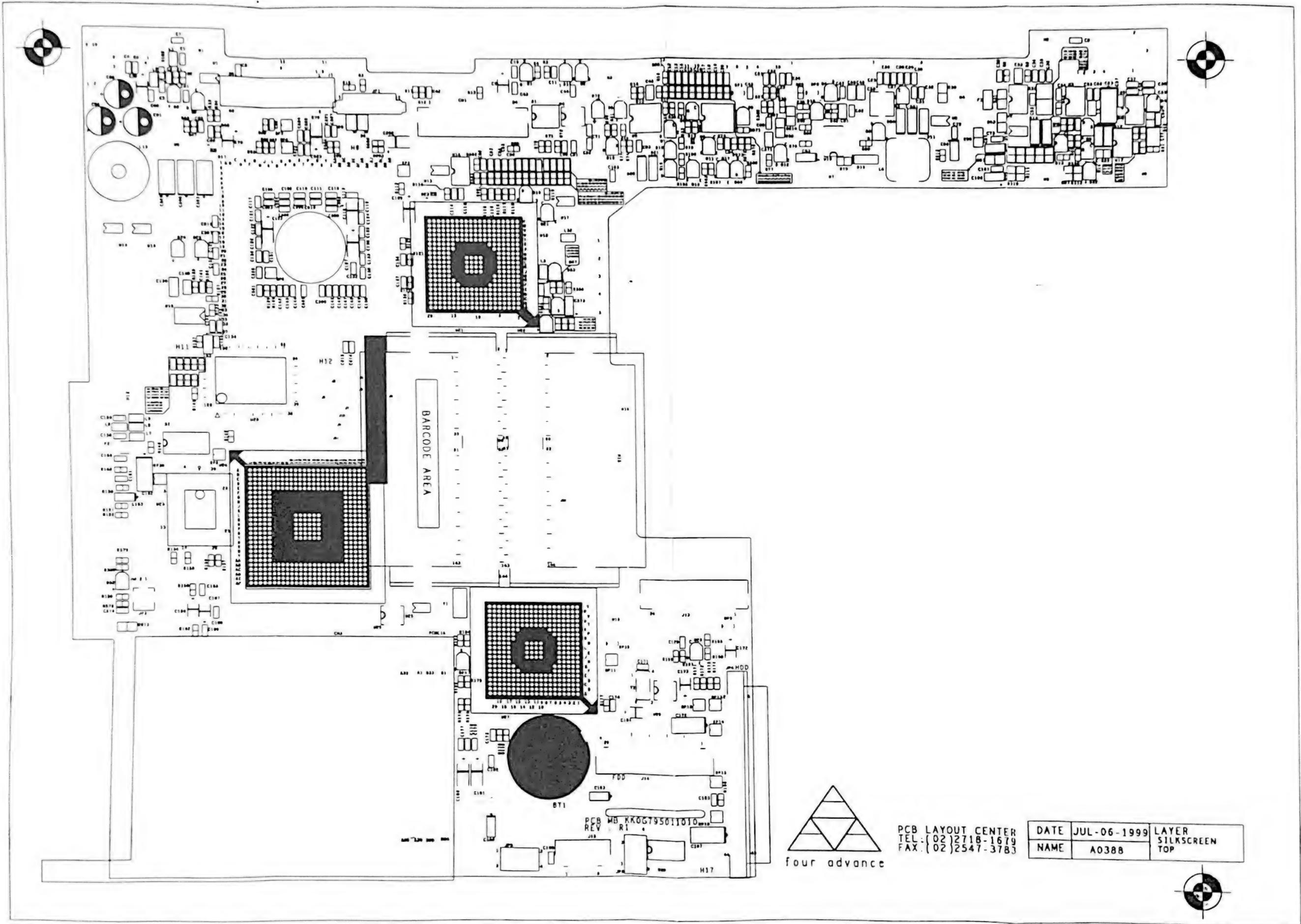




PCB LAYOUT CENTER  
 TEL: (02) 2718-1679  
 FAX: (02) 2547-3783

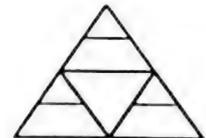
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NAME	A0388	BOTTOM	





BARCODE AREA

PCB MB KK06795011010  
REV R1



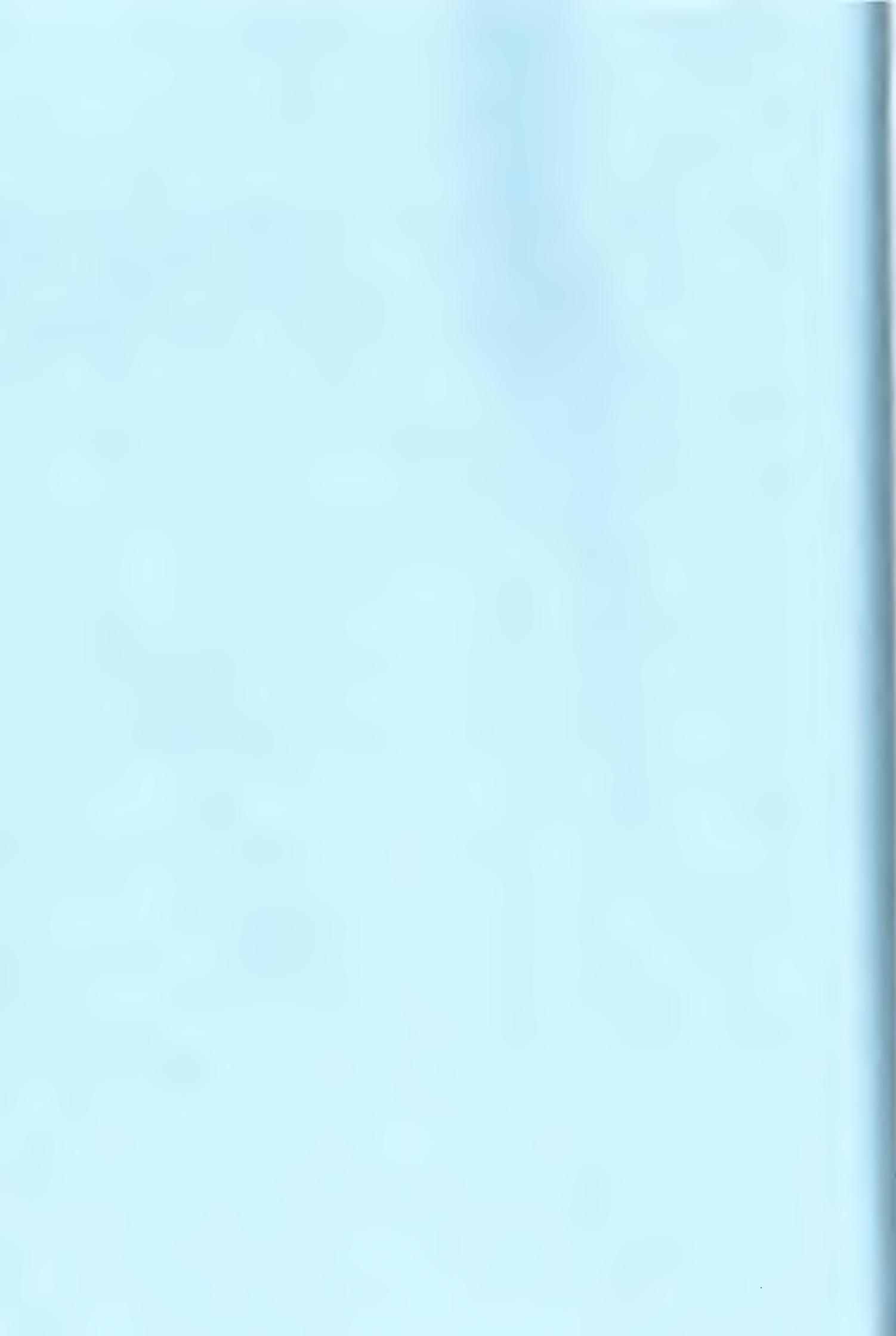
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PCB LAYOUT CENTER  
TEL: (02) 2718-1679  
FAX: (02) 2547-3783

DATE	JUL-06-1999	LAYER	SILKSCREEN
NAME	A0388	TOP	





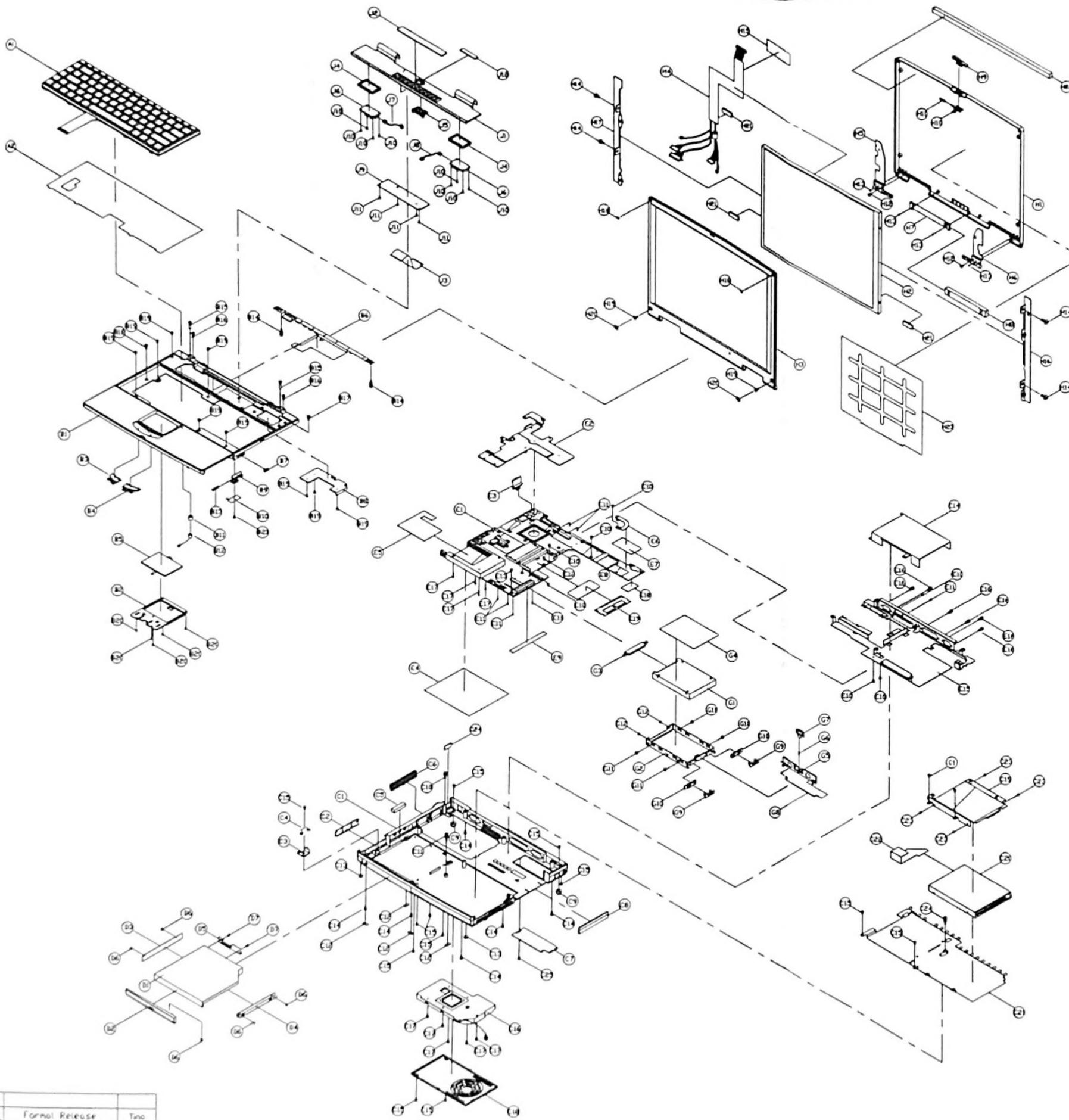


## Chapter 14

# *System & Modular Parts Assembly and Disassembly Diagram*

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ITEM	PART NO	DESCRIPTION	QTY
G1	J000320040010	HDD 3.2G MHD202AT 8.5 FWTSU	1
G2	S0G7950702001	BRACKET HDD G795	1
G3	HK83044313501	NYLAR HDD 105*70*20.5L BLACK G795	1
G4	R3G7952101011	NYLAR HDD 105*70*20.5L BLACK G795	1
G5	R1U3700408000	DOOR HDD U370	1
G6	S0G780002000	SPRING # 1.3*5.3 D0.2 SUS302 G780	1
G7	R1U3700504000	KNOB LOCK(C) HDD/PCMCIA U370	1
G8	R1G7800701000	STICK HDD DOOR G780	1
G9	R1G7800509000	KNOB LATCH DOOR G780	2
G10	R1G7800050001	LATCH HDD G780	2
G11	SA080303R5001	SCREW I M3*0.5*3.3 NI	4
G12	SA080204R0005	SCREW I M2*0.4*4 NI NYLON	2

ITEM	PART NO	DESCRIPTION	QTY
H1	ROG7804020321	COVER LCD 14.1 8H1008 W/O PLATING G780	1
H2	JAD0707050008	LCD XTFT 14.1 INQ74 IBM	1
H3	ROG7803020221	PANEL LCD 14.1 8H1008 W/O PLATING G780	1
H4	HPG7801030000	CABLE LCD T14.1 SAM G780	1
H5	S0U3700601000	HINGE L 14.1 U370	1
H6	S0G7800803000	HINGE R 14.1 G780	1
H7	LEO759001005	INVERTER 13.3 INNSUN G759	1
H8	R3G7802101000	NYLAR INVERTER G780	1
H9	R1U3700503000	KNOB LOCK(B) LCD 13.3 U370	1
H10	R1G7800602000	HOOK(B) LCD 13.3 G780	1
H11	S0G780001000	SPRING LCD KNOB G780	1
H12	SA080305R0005	SCREW I M3*0.5*5 NI NYLON	2
H13	SA010204R0001	SCREW P M2*0.4*4 NI	4
H14	SA010E04R0015	SCREW P M2.5*0.45*4 NI NYLON	10
H15	R3G7800201000	COPPER FOIL T141 SHP G780	1
H16	S0G7800709000	BRACKET LCD R 14.1 SAM G780	7
H17	S0G7800710001	BRACKET LCD L 14.1 G780	4
H18	R3G7806003000	RUBBER LCD T G780	1
H19	SA080306R0205	SCREW I M3*0.5*8 HD.7 NI NYLON	2
H20	R3G7806002000	RUBBER PAD #7 4*4.1 G780	2
H21	R3G7800060000	GASKET 13.7*10 G780	1
H22	R3G7800040001	SPONGE LCD 14.1 V1.0 G780	1
H23	S0G7800814000	PLATE LCD REINFORCED G780	1

ITEM	PART NO	DESCRIPTION	QTY
J1	ROG7974060101	COVER HINGE W/O PLATING G795	1
J2	R1U1068002000	LENS LED U106	1
J3	HM10502401001	FFC 24P 50mm P1.0 LCD BAND	1
J4	R3G7806001000	RUBBER SPEAKER G780	2
J5	R1U3700506000	KNOB POWER U370	1
J6	HD00020010005	SPEAKER 35*20 70MM 1W SPU3520 ALUO	2
J7	HPG7800502000	CABLE SPEAKER 2P 60mm G780	8
J8	SA080F13R0001	SCREW I M2.6*0.45*3 NI (SPECIAL)	4
J9	40U4012511000	PCBA LED R1 U401	1
J10	SA030204R0001	SCREW B M2*0.4*4 NI	8
J11	SA080F13R0001	SCREW I M2.6*0.45*3 NI	4
J12	R3G7800020000	GASKET EMI 10*12*3 G780	1

ITEM	PART NO	DESCRIPTION	QTY
A1	JF00101100001	K/B B&K US K980628E1 JME	1
A2	S0G7950605001	SHIELDING K/B G795	1

ITEM	PART NO	DESCRIPTION	QTY
B1	ROG7951010101	TOP CASE W/O PLATING G795	1
B2	R1G7800101000	HOLDER T/P G780	1
B3	R1U3700501000	KNOB T/P(L) U370	1
B4	R1U3700502000	KNOB T/P(R) U370	1
B5	JM20020071000	TOUCH PAD SYN TM41 PUG B4-2	1
B6	S0G7950801001	SHIELDING TOP CASE G795	1
B7	R1U3700508000	KNOB BATTERY LOCK U370	1
B8	S0G7800707000	BRACKET HINGE-R G780	1
B9	S0G7950701000	BRACKET BATTERY LOCK ZN U375	1
B10	R1G78000603010	HOOK BATTERY LOCK ZN G780	1
B11	R3G7956002000	RUBBER CAP MICROPHONE G755	1
B12	HE00010030000	MIC PANASONIC MM-85A103	1
B13	S0G780001000	SPRING LCD KNOB G780	1
B14	SA084304R5040	HEX IN M2.6*1.0 Z/OUT M3*4.5	2
B15	SA08030150005	SCREW I M3*0.5*15 NI NYLON	2
B16	SA080307R0005	SCREW I M3*0.5*7 NI NYLON	2
B17	SA030F08R0003	SCREW B M2.6*0.45*8 NI	1
B18	SA030F08R0003	SCREW B M2.6*0.45*8 NI	1
B19	SA080F04R0002	SCREW I M2.6*0.45*4 BLACK	9
B20	S8030204R0001	SCREW B T2*4 NI	6
B21	SA010206R0002	SCREW P M2*0.4*6 BLACK	1
B22	HM10800801001	FFC BP 80mm P1.0 T/P	1
B23	HPG7800503000	CABLE MIC 2P 200mm G780	1
B24	R3G7800010000	GASKET EMI 9.5*9.5*2.3 G760	1

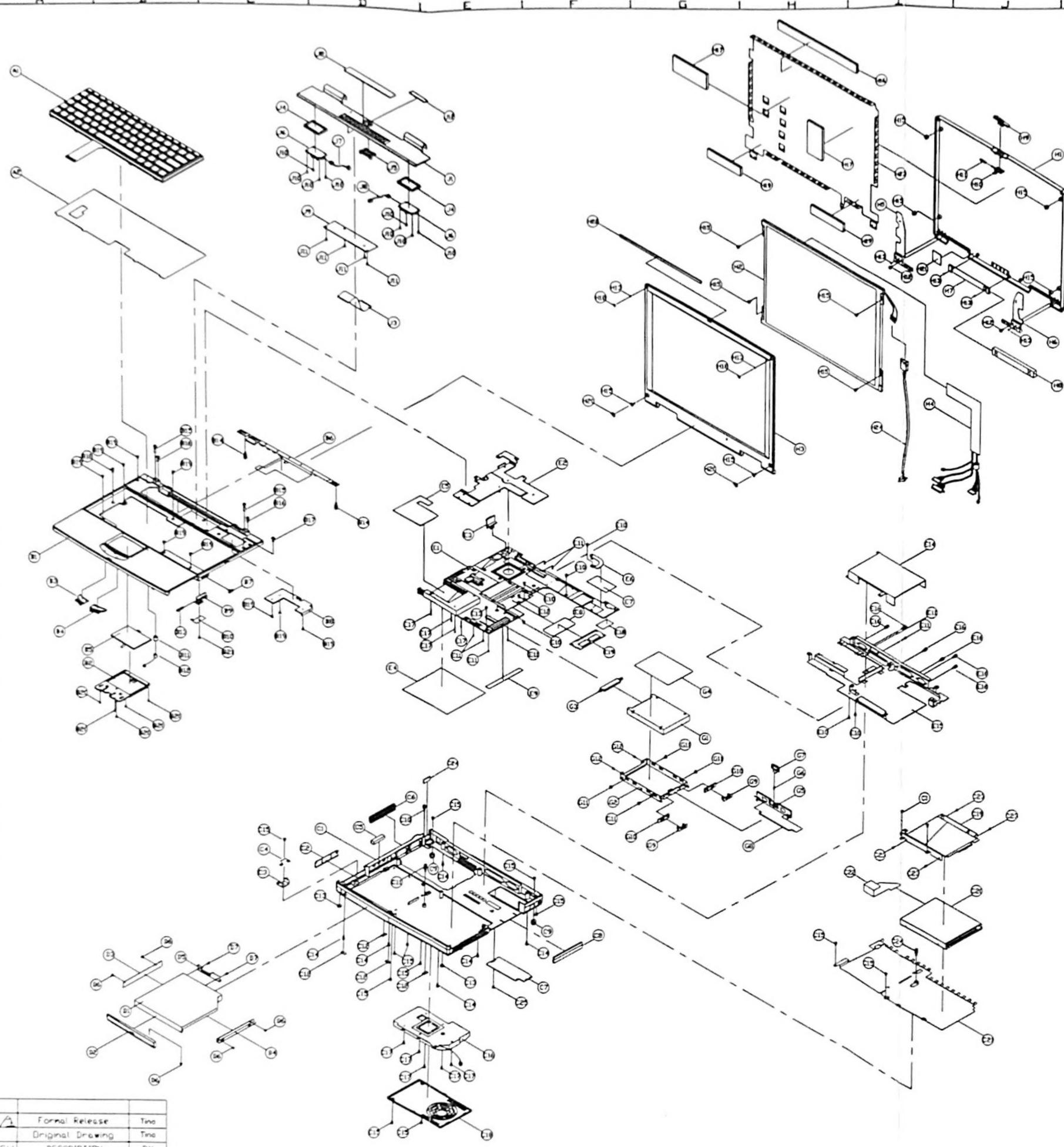
ITEM	PART NO	DESCRIPTION	QTY
C1	ROG7952010101	BOTTOM CASE G795	1
C2	R1U3770401001	DOOR PCMCIA U377	1
C3	R1U3779901001	SUPPORT PCMCIA DOOR SPRING U377	1
C4	S0U377A003001	SPRING PCMCIA DOOR U377	1
C5	R3G7950001001	GASKET 30*10*10 G795	1
C6	S0G7959901001	MESH FAN G795	1
C7	ROG7954990201	COVER MODEM W/O PLATING G795	1
C8	R1U3700401002	DOOR BATTERY (L) R2 U370	1
C9	R3G7956001001	RUBBER FOOT #8.5*8.5 #/NUT M2.6 G795	1
C10	SA084206R0040	HEX IN M2.6*1.0 G/OUT M2*6	1
C11	SA084304R5040	HEX IN M2.6*1.0 Z/OUT M3*4.5	2
C12	R3G7956002001	RUBBER PAD 15*7*1 OR G795	2
C13	R3G7806006001	RUBBER FOOT #9.2*14.4 PU G780	7
C14	SA030F06R0003	SCREW B M2.6*0.45*6 ZN	3
C15	S0G780001000	SPRING I M2.6*0.45*4 BLACK	14
C16	R3G7950101001	HEAT SINK G795	1
C17	SA080F05R0002	SCREW I M2.6*0.45*5 BLACK	5
C18	ROG7954990101	COVER CPU G795	1
C19	JC10101090003	FDD 1.44M 3.5"0.35"3MITSUMI	4
C20	S0U1068001000	SHIELD EMI LCD 12.1SAM U106	1
C21	S0G7950802001	SHIELDING BOTTOM CASE G795	1
C22	HM11122601003	FFC 26P 112mm P1.0 SUMITOMI	1
C23	R1U3700405000	DOOR PCMCIA U370	1
C24	R3G7808002000	LENS PIR G780	1
C25	SA080204R0002	SCREW I M2*0.4*4 BLACK	1

ITEM	PART NO	DESCRIPTION	QTY
D1	JE1100080007	CD-ROM 24X CR-175-DPK-3 MKE	1
D2	R1U3780204001	BEZEL CD-ROM MKE CR-175-B U378	1
D3	S0G7950708001	BRACKET CDROM L G795	1
D4	S0G7950705001	BRACKET CDROM R G795	1
D5	S0G7950709001	BRACKET CDROM GLIDE PHN G795	1
D6	SA080202R0005	SCREW I M2*0.4*2 NI (NYLON)	6
D7	S8030004R5002	SCREW B T1.7*4.5 BLACK	1

ITEM	PART NO	DESCRIPTION	QTY
E1	KK0G797011001	PCB M/B 296.6*234 G797	1
E2	S0G7950701001	BRACKET N/B G795	1
E3	40U4011811000	PCBA IR R1 U401	1
E4	R3G7952102001	NYLAR CDROM PROTECT 132*110*0.8 G795	1
E5	R3U3772101001	NYLAR PCMCIA U377	1
E6	S0G7950710001	BRACKET MODEM G795	1
E7	R3G7952105011	NYLAR 52*28*0.15L BLACK G795	1
E8	R3G7802005000	PLATE PVC RAM PROTECT G780	1
E9	R3G7952104001	NYLAR HDD COVR G795	1
E10	SA080F04R0002	SCREW I M2.6*0.45*4 BLACK	4
E11	SA080204R0005	SCREW I M2*0.4*4 NI NYLON	8
E12	SA080F06R0003	SCREW I M2.6*0.45*6 BLACK	2
E13	SA080F13R0001	SCREW I M2.6*0.45*3 NI (SPECIAL)	1
E14	S0G7950704001	BRACKET BATT G795	1
E15	S0G7950707001	BRACKET I/O G795	1
E16	SA07041000001	HEX 5-5*6*4-40 NI	8
E17	SA08020130001	SCREW I M2*0.4*1.3 NI	4
E18	T100001001700	BIOS LABEL FENTUMI-HACPI PHOENIX	1
E19	47U1050292000	PCBA DIMM SDRAM 64MB	1

14.1 EXPLODE DRAWING	
ITEM	PART NO. DESCRIPTION
ALPHA-TOP CORPORATION	
MODEL	G797
NAME	14.1 EXPLODE DRAWING
DATE	99/08/02
SCALE	1/1
UNIT	MM
MATERIAL	
FINISH	
THE 3RD PRELIMINARY	DATE
100%	99/08/02

REV.	DESCRIPTION	BY
1	Formal Release	Tno
2	Original Drawing	Tno



ITEM	PART NO.	DESCRIPTION	QTY
G1	J000320040010	HDD 3.20 MHD2032AT 9.0 FUJITSU	1
G2	S0G7950702001	BRACKET HDD G795	1
G3	HR82044313001	MYLAR HDD 105*70*0.5L BLACK G795	1
G4	R3G7952101011	MYLAR HDD 105*70*0.5L BLACK G795	1
G5	R1U3700408000	DOOR HDD U370	1
G6	S0G7950702000	SPRING # 1.3*8.5 D0.2 S/U3302 G760	1
G7	R1U3700504000	KNOB LOCK(C) HDD&PCMCIA U370	1
G8	R1G7800701000	STICK HDD DOOR G760	1
G9	R1G7800509000	KNOB LATCH HDD G760	2
G10	R1G7800805000	LATCH HDD G760	2
G11	SA080303R3001	SCREW I M3*0.5*3.5 NI	4
G12	SA080204R0005	SCREW I M2*0.4*4 NI NYLON	2

ITEM	PART NO.	DESCRIPTION	QTY
H1	ROU1064020100	COVER LCD 12.1 SAM U106	1
H2	JAO0504130005	LCD STFT 12.1 LT121SU-121 SAMSUNG	1
H3	ROU1063020110	PANEL LCD 12.1 SAM BR1008 W/O PLATING U106	1
H4	HPU3760101000	CABLE LCD T12.1 SAM U376	1
H5	S0G7800602000	HINGE L 13.3 G760	1
H6	S0G7800601000	HINGE R 13.3 G760	1
H7	LEOU108001005	INVERTER 12.1 FUJ INVSUM 24125-01 U106	1
H8	R3G7802101000	MYLAR INVERTER G760	1
H9	R1U3700503000	KNOB LOCK(B) LCD 13.3 U370	1
H10	R1G7800602000	HOCK(B) LCD 13.3 G760	1
H11	S0G7800401000	SPRING LCD KNOB G760	1
H12	SA080305R0005	SCREW I M3*0.5*5 NI NYLON	2
H13	SA010204R0001	SCREW P M2*0.4*4 NI	7
H14	SA010E04R0015	SCREW P M2.5*0.45*4 NI NYLON	6
H15	R1U4020501001	CAP BOSS SPACER 00 #E1744R003.0#2.0) U402	4
H16	R3U375A001001	SPONGE 150*10*2.5L U375	1
H17	R3U370A001000	SPONGE 70*30*2 OR UL U370	2
H18	R3G7596001000	RUBBER PAD #5.5*3.3 SPECIAL G759	2
H19	R3U376A001001	SPONGE 60*10*3L UL U376	2
H20	R3G7800602000	RUBBER PAD #7.4*4.1 G760-	2
H21	R3U1066001000	GASKET 15*10*3L SUJ U106	1
H22	R3G7562105000	MYLAR LCD PANEL G756	1
H23	SOU1060801000	SHIELDING EMI LCD 12.1 SAM U106	1
H24	HPU3760201000	CABLE INVERTER T12.1 SAM U376	1

ITEM	PART NO.	DESCRIPTION	QTY
J1	ROG7974060101	COVER HINGE W/O PLATING G795	1
J2	R3U1068002000	LENS LED U106	1
J3	HM1050240100	FFC 24P 50mm P1.0 LCDI BAND	1
J4	R3G7806001000	RUBBER SPEAKER G760	2
J5	R1U3700506000	KNOB POWER U370	1
J6	H000C0010005	SPEAKER 35*20 70MM 1W SPL3520 AUDIO	2
J7	HPG795020000	CABLE SPEAKER 2P 60mm G760	8
J8	SA080F13R0001	SCREW I M2.6*0.45*3 NI (SPECIAL)	4
J9	40U4012511000	PCBA LED R1 U401	1
J10	SA030204R0001	SCREW B M2*0.4*4 NI	8
J11	SA080F13R0001	SCREW I M2.6*0.45*3 NI	4
J12	R3G780C002000	GASKET EMI 10*1*23 G760	1

ITEM	PART NO.	DESCRIPTION	QTY
A1	JFO0101100001	K/B BK US K980828E1 JME	1
A2	S0G7950805001	SHIELDING K/B G795	1

ITEM	PART NO.	DESCRIPTION	QTY
B1	ROG795101010	TOP CASE W/O PLATING G795	1
B2	R1G7800101000	HOLDER I/P G780	1
B3	R1U3700501000	KNOB T/P(L) U370	1
B4	R1U3700502000	KNOB T/P(R) U370	1
B5	JM20020071000	TOUCH PAD SYN TM41 PUG B4-2	1
B6	S0G7950801001	SHIELDING TOP CASE G795	1
B7	R1U3700508000	KNOB BATTERY LOCK U370	1
B8	S0G7800707000	BRACKET HINGE-R G780	1
B9	S0G7350701000	BRACKET BATTERY LOCK ZN U375	1
B10	R1G7800803010	HOOK BATTERY LOCK ZN G780	1
B11	R3G7558002000	RUBBER CAP MICROPHONE G755	1
B12	HE00010030000	MIC PANASONIC MM-65A103	1
B13	S0G7800401000	SPRING LCD KNOB G780	1
B14	SA084304R5040	HEX IN M2.6*10.2/OUT M3*4.5	2
B15	SA08030150005	SCREW I M3*0.5*15 NI NYLON	2
B16	SA080307R0005	SCREW I M3*0.5*7 NI NYLON	2
B17	SA030F08R0003	SCREW B M2.6*0.45*6 ZN	1
B18	SA030F08R0003	SCREW B M2.6*0.45*8 NI	1
B19	SA080F04R0002	SCREW I M2.6*0.45*4 BLACK	9
B20	S8030204R0001	SCREW B T2*4 NI	6
B21	SA010206R0002	SCREW P M2*0.4*6 BLACK	1
B22	HM1080080100	FFC BP 80mm P1.0 T/P	1
B23	HPG7800503000	CABLE MIC 2P 200mm G780	1
B24	R3G780C001000	GASKET EMI 9.5*9.5*23 G760	1

ITEM	PART NO.	DESCRIPTION	QTY
C1	ROG7952010101	BOTTOM CASE G795	1
C2	R1U3770401001	DOOR PCMCIA U377	1
C3	R1U3779901001	SUPPORT PCMCIA DOOR SPRING U377	1
C4	S0U377A003001	SPRING PCMCIA DOOR U377	1
C5	R3G795C001001	GASKET 30*10*10 G795	1
C6	S0G7959901001	MESH FAN G795	1
C7	ROG7954990201	COVER MODEM W/O PLATING G795	1
C8	R1U3700401002	DOOR BATTERY (L) R2 U370	1
C9	R3G7956001001	RUBBER FOOT #9.5*8.5 W/OUT M2.6 G795	1
C10	SA084206R0040	HEX IN M2.6*4.9/OUT M2*6	1
C11	SA084304R5040	HEX IN M2.6*10.2/OUT M3*4.5	2
C12	R3G7956002001	RUBBER PAD 15*7*1 OR G795	2
C13	R3G7806006001	RUBBER FOOT #9.2*4.4 PU G760	7
C14	SA030F08R0003	SCREW B M2.6*0.45*6 ZN	3
C15	S0G7800401000	SCREW I M2.6*0.45*4 BLACK	14
C16	R3G7950101001	HEAT SINK G795	1
C17	SA080F05R0002	SCREW I M2.6*0.45*5 BLACK	5
C18	ROG7954990101	COVER CPU G795	1
C19	JC10101090000	FDD 1.44M 3.5"35F3M5UMI	4
C20	SOU1060801000	SHIELD EMI LCD 12.1SAM U106	1
C21	S0G7950802001	SHIELDING BOTTOM CASE G795	1
C22	HM1122601003	FFC 26P 112mm P1.0 SUMITOMI	1
C23	R1U3700405000	DOOR PCMCIA U370	1
C24	R3G7808002000	LENS PIR G760	1
C25	SA080204R0002	SCREW I M2*0.4*4 BLACK	1

ITEM	PART NO.	DESCRIPTION	QTY
D1	JE1100080007	CD-ROM 24X CR-175-DPK-3 MKE	1
D2	R1U3780204001	BEZEL CD-ROM MKE CR-175-B U378	1
D3	S0G795078001	BRACKET CDROM L G795	1
D4	S0G7950705001	BRACKET CDROM R G795	1
D5	S0G7950709001	BRACKET CDROM GUIDE PIN G795	1
D6	SA080202R0005	SCREW I M2*0.4*2 NI (NYLON)	6
D7	S8030C04R5002	SCREW B T1 7*4.5 BLACK	1

ITEM	PART NO.	DESCRIPTION	QTY
E1	KK0G797011001	PCB M/B 296.6*234 G797	1
E2	S0G7950701001	BRACKET K/B G795	1
E3	40U4011811000	PCBA IR R1 U401	1
E4	R3G7952102001	MYLAR CDROM PROTECT 132*110*0.3H G795	1
E5	R3U3772101001	MYLAR PCMCIA U377	1
E6	S0G7950710001	BRACKET MODEM G795	1
E7	R3G7952105011	MYLAR 52*28*0.15H BLACK G795	1
E8	R3G7802005000	PLATE PVC RAM PROTECT G760	1
E9	R3G7952104001	MYLAR HDD COBBI G795	1
E10	SA080F04R0002	SCREW I M2.6*0.45*4 BLACK	4
E11	SA080204R0005	SCREW I M2*0.4*4 NI NYLON	8
E12	SA080F08R0003	SCREW B M2.6*0.45*6 BLACK	2
E13	SA080F13R0001	SCREW I M2.6*0.45*3 NI (SPECIAL)	1
E14	S0G7950704001	BRACKET BATT G795	1
E15	S0G7950707001	BRACKET I/O G795	1
E16	SA07041000001	HEX 5-5*5/4-40 NI	6
E17	SA08020130001	SCREW I M2*0.4*13 NI	4
E18	T100001001700	BIOS LABEL FENTUM+ACPI PHOENIX	1
E19	47U1050292000	PCBA DIMM SDRAM 64MB	1

REV	DESCRIPTION	BY
A	Formal Release	Tina
B	Original Drawing	Tina

ITEM	PART NO.	DESCRIPTION	REMARK
1		12 EXPLODE DRAWING	

**ALPHA-TOP CORPORATION**

TOLERANCE TABLE		MODEL	
ANGLE	R1/4"	NAME	12.1 EXPLODE DRAWING
DIM	TOL #	MATERIAL	UNIT
0-10	0.05	FINISH	SCALE
10-50	0.10		1/1
50-100	0.15		
100+	0.20		

DATE: 95/08/02  
DRAWN: Tina Huang  
CHECK: J.T. 1/1



