

SERVICE MANUAL FOR

8640



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8640 N/B Maintenance

Contents

1. Hardware Engineering Specification	3
1.1 Introduction	3
1.2 System Overview	4
1.3 System Hardware	8
1.4 Electrical Characteristic	32
2. System View & Disassembly	42
2.1 System View	42
2.2 System Disassembly	45
3. Definition & Location of Connectors / Switches Setting	66
4. Definition & Location of Major Component	69
5. Pin Description of Major Component	72
5.1 Pentium4 (Willamette/Northwood) processor	72
5.2 Sis650 North Bridge	78
5.3 Sis962 South Bridge	83
6. System Block Diagram	89
7. Maintenance Diagnostics	90
7.1 Introduction	90
7.2 Debug Card	91
7.3 Error code	92

8640 N/B Maintenance

Contents

8. Trouble Shooting	94
8.1 No Power	95
8.2 Battery Can not Be Charged	98
8.3 No Display	100
8.4 LCD No Display or Picture Abnormal	105
8.5 TV No Display or Color Abnormal	109
8.6 Monitor No display	111
8.7 Key Board&Touch Pad Test error	114
8.8 Hard Drive Test Error	116
8.9 CD-ROM driver Test Error	118
8.10 USB Port Test Error	120
8.11 PIO Port Test Error	123
8.12 PC-Card Socket Failure	125
8.13 Mini-PCI Socket Failure	127
8.14 IEEE1394 Test Failure	129
8.15 Audio Test Failure	131
8.16 LAN Test Error	134
8.17 Smart Media&Secure Digital Test Error	136
9. Spare Parts List	138
10. Exploded	170
11. Circuit Diagram	177
12. Reference Material	214

8640 N/B Maintenance

1. Engineer hardware Specification

1.1 Introduce

The 8640 motherboard would support the Intel D/T or Mobile Pentium 4 (Willamette) / Northwood & Celeron in mFC-PGA2 packaged, which will supports the different speed up to 1.9G/ 2G/2.2G/2.3G./3.2G above.

This system is based on PCI architecture, which have standard hardware peripheral interface. The power management complies with Advanced Configuration and Power Interface (ACPI) 1.0b. It also provides easy configuration through CMOS setup, which is built in system BIOS software and can be pop-up by pressing F2 at system start up or warm reset. System also provides icon LEDs to display system status, such as Power indicator, Battery, HDD, CD-ROM,USBFDD,NUM LOCK, CAP LOCK, SCROLL LOCK status. It also equipped 4 USB ports.

The memory subsystem supports 1024MB DDR SDRAM ,and two JEDEC-standard 200-pin, small-outline, dual in-line memory module (SODIMM) , support PC2100.

SiS651 IGUI Host Memory Controller integrates a high performance host interface for Intel Pentium 4 processor, a high performance 2D/3D Graphic Engine, a high performance memory controller, an AGP 4X interface, and SiS MuTIOL® Technology connecting w/ SiS962 MuTIOL® Media IO.

The SiS962 MuTIOL® Media I/O integrates the Audio Controller with AC 97 Interface, the Ethernet MAC, the Dual Universal Serial Bus Host Controllers, the IDE Master/Slave controllers, and the MuTIOL® Connect to PCI bridge. The PCI to LPC bridge, I/O Advanced Programmable Interrupt Controller, legacy system I/O, I/O Advanced Programmable Interrupt Controller and legacy power management functionalities are also integrated. The SiS962 also incorporates a universal interface supporting the asynchronous inputs/outputs of the X86 compatible microprocessors like P4.

8640 N/B Maintenance

1.2 System Overview

TABLE 1 . 8640-Silver(8640I) Hardware Specification

CPU	-mPGA 478-pin socket.Support Intel D/T Pentium 4 (Willamette) / Northwood & Celeron in mFC-PGA2 package -Support FSB 400/533MHz	
Video	-Dual independent displays (LCD/CRT,LCD/TV,CRT/TV) -Support Motion Compensation and iDCT -Support Simultaneous display -Share System Memory,Up to 64MB.	
Memory	Two 200Pin 200MHz/266MHz/333MHz DDR SO-DIMM,Without any On-Board Memory.	
PCMCIA	-Support one slot of Type II or Type I -Non support Zoom Video/Audio Function	
IDE	Support 2 IDE channel,Up to Ultra DMA 100	
LCD Display	-Support dual 85MHz LVDS interface, -Support up to QXGA (2048*1536) Resolution	
Button	4 Easy Start Buttons (functions defined by user),1 MPM Button,1 Power Button	
LAN	Support to 10/100 Based T	
Modem	56Kbps V.90 MDC Modem	
Pointing	Glide PAD with 2 buttons.	
Keyboard	Internal Key Matrix Keyboard	
Mini-PCI	One Type III A	
BIOS	256KB Flash EEPROM (Include System BIOS & VGA BIOS)	
Audio	- AC'97 Interface Codec.Sound Blaster Pro Compatible. - Built-In 2 2W/4ohm speakers and 1 Mono-Microphone.	
I/O Port	-Bi-Directional Parallel Port (EPP/ECP) -4 USB 2.0 Port -RJ-11 (4 Pin) port for modem -RJ-45 Port for LAN -DC Input Jack -(7 Pins) S-Video Output Port (NTSC/PAL) -PS/2 Port	-External VGA Port (D-SUB 15Pins) -SPIDF(w/z Line-Out) Jack -Microphone In Jack -VR for Audio Volume Control -Mini IEEE1394 Port -Battery Connector -FIR
Suspend Mode	POS (S1) , Suspend to RAM (S3) , Suspend to Disk (S4), NO SUPPORT WAKE UP ON TIME	
Indicator	Wireless LAN Indicator,HDD,FDD,CD-ROM,Num Lock,Caps Lock,Scroll Lock LEDs.MPM Indicator.	

8640 N/B Maintenance

TABLE 2 . 8640-Gold(8640D) HARDWARE SPECIFICATION

CPU	-mPGA 478-pin socket.Support Intel D/T Pentium 4 (Willamette) / Northwood & Celeron in mFC-PGA2 package -Support FSB 400/533MHz	
Video	-Dual independent displays (LCD/CRT,LCD/TV,CRT/TV) -Support Motion Compensation and iDCT -Support Simultaneous display. -Embedded 32MB DDR VRAM	
Memory	Two 200Pin 200MHz/266MHz/333MHz DDR SO-DIMM,Without any On-Board Memory.	
PCMCIA	-Support one slot of Type II or Type I -Non support Zoom Video/Audio Function	
IDE	Support 2 IDE channel,Up to Ultra DMA 100	
LCD Display	-Support dual 85MHz LVDS interface, -Support up to QXGA (2048*1536) Resolution	
Button	4 Easy Start Buttons (functions defined by user),1 MPM Button,1 Power Button	
LAN	Support to 10/100 Based T	
Modem	56Kbps V.90 MDC Modem	
Pointing	Glide PAD with 2 buttons.	
Keyboard	Internal Key Matrix Keyboard	
Mini-PCI	One Type III A,Support 8cm Mini-Pci Card (Standard is 5cm)	
Card Reader	Support 4 in 2 Card Reader (MMC/SD/SM/MS)	
BIOS	256KB Flash EEPROM (Include System BIOS & VGA BIOS)	
Audio	- AC'97 Interface Codec.Sound Blaster Pro Compatible. - Built-In 2 2W/4ohm speakers and 1 Mono-Microphone.	
I/O Port	-Bi-Directional Parallel Port (EPP/ECP) -4 USB 2.0 Port -RJ-11 (4 Pin) port for modem -RJ-45 Port for LAN -DC Input Jack -(7 Pins) S-Video Output Port (NTSC/PAL) -PS/2 Port	-External VGA Port (D-SUB 15Pins) -SPIDF(w/z Line-Out) Jack -Microphone In Jack -VR for Audio Volume Control -Mini IEEE1394 Port -Battery Connector -FIR
Suspend Mode	POS (S1) , Suspend to RAM (S3) , Suspend to Disk (S4), NO SUPPORT WAKE UP ON TIME	
Indicator	Wireless LAN Indicator,HDD,FDD,CD-ROM,Num Lock,Caps Lock,Scroll Lock LEDs.MPM Indicator.	

8640 N/B Maintenance

TABLE 3 . 8640-Platinum(8640M) HARDWARE SPECIFICATION

CPU	-mPGA 478-pin socket.Support Intel Mobile Pentium 4 (Northwood) & Mobile Celeron in mFC-PGA package -Support FSB 400/533MHz	
Video	-Dual independent displays (LCD/CRT,LCD/TV,CRT/TV) -Support Motion Compensation and iDCT -Support Simultaneous display. -Embedded 32MB DDR VRAM	
Memory	Two 200Pin 200MHz/266MHz/333MHz DDR SO-DIMM,Without any On-Board Memory.	
PCMCIA	-Support one slot of Type II or Type I -Non support Zoom Video/Audio Function	
IDE	Support 2 IDE channel,Up to Ultra DMA 100	
LCD Display	-Support dual 85MHz LVDS interface, -Support up to QXGA (2048*1536) Resolution	
Button	4 Easy Start Buttons (functions defined by user),1 MPM Button,1 Power Button	
LAN	Support to 10/100 Based T	
Modem	56Kbps V.90 MDC Modem	
Pointing	Glide PAD with 2 buttons.	
Keyboard	Internal Key Matrix Keyboard	
Mini-PCI	One Type III A,Support 60mm*80mm Mini-Pci Card (Standard is 60mm*50mm)	
Card Reader	Support 4 in 2 Card Reader (MMC/SD/SM/MS)	
BIOS	256KB Flash EEPROM (Include System BIOS & VGA BIOS)	
Audio	- AC'97 Interface Codec.Sound Blaster Pro Compatible. - Built-In 2 2W/4ohm speakers and 1 Mono-Microphone.	
I/O Port	-Bi-Directional Parallel Port (EPP/ECP) -4 USB 2.0 Port -RJ-11 (4 Pin) port for modem -RJ-45 Port for LAN -DC Input Jack -(7 Pins) S-Video Output Port (NTSC/PAL) -PS/2 Port	-External VGA Port (D-SUB 15Pins) -SPIDF(w/z Line-Out) Jack -Microphone In Jack -VR for Audio Volume Control -Mini IEEE1394 Port -Battery Connector -FIR
Suspend Mode	POS (S1) , Suspend to RAM (S3) , Suspend to Disk (S4), NO SUPPORT WAKE UP ON TIME	
Indicator	Wireless LAN Indicator,HDD,FDD,CD-ROM,Num Lock,Caps Lock,Scroll Lock LEDs.MPM Indicator.	

8640 N/B Maintenance

TABLE 4 . 8640N (CAIMAN) HARDWARE SPECIFICATION

CPU	-mPGA 478-pin socket.Support Intel D/T Pentium 4 (Willamette) / Northwood & Celeron in mFC-PGA2 package -Support FSB 400/533MHz	
Video	-Dual independent displays (LCD/CRT,LCD/TV,CRT/TV) -Support Motion Compensation and iDCT -Support Simultaneous display. -Embedded 32MB DDR VRAM	
Memory	Two 200Pin 200MHz/266MHz/333MHz DDR SO-DIMM,Without any On-Board Memory.	
PCMCIA	-Support one slot of Type II or Type I -Non support Zoom Video/Audio Function	
IDE	Support 2 IDE channel,Up to Ultra DMA 100	
LCD Display	-Support dual 85MHz LVDS interface, -Support up to QXGA (2048*1536) Resolution	
Button	4 Easy Start Buttons (functions defined by user),1 MPM Button,1 Power Button	
LAN	Support to 10/100 Based T	
Modem	56Kbps V.90 MDC Modem	
Pointing	Glide PAD with 2 buttons.	
Keyboard	Internal Key Matrix Keyboard	
Mini-PCI	One Type III A,Support 8cm Mini-Pci Card (Standard is 5cm)	
Card Reader	Without Support 4 in 2 Card Reader (MMC/SD/SM/MS)	
BIOS	256KB Flash EEPROM (Include System BIOS & VGA BIOS)	
Audio	- AC'97 Interface Codec.Sound Blaster Pro Compatible. - Built-In 2 2W/4ohm speakers and 1 Mono-Microphone.	
I/O Port	-Bi-Directional Parallel Port (EPP/ECP) -4 USB 2.0 Port -RJ-11 (4 Pin) port for modem -RJ-45 Port for LAN -DC Input Jack -(7 Pins) S-Video Output Port (NTSC/PAL) -PS/2 Port	-External VGA Port (D-SUB 15Pins) -SPIDF(w/z Line-Out) Jack -Microphone In Jack -VR for Audio Volume Control -Mini IEEE1394 Port -Battery Connector -FIR
Suspend Mode	POS (S1) , Suspend to RAM (S3) , Suspend to Disk (S4), NO SUPPORT WAKE UP ON TIME	
Indicator	Wireless LAN Indicator,HDD,FDD,CD-ROM,Num Lock,Caps Lock,Scroll Lock LEDs.MPM Indicator.	

8640 N/B Maintenance

1.3 System Hardware

1.3.1 CPU Module

The Intel® SFF Desktop Pentium® 4 processor And processors is Intel's most advanced, most powerful processor, is based on the new Intel® NetBurst™ micro-architecture. The Pentium 4 processor is designed to deliver performance across applications and usages where end users can truly appreciate and experience the performance. These applications include Internet audio and streaming video, image processing, video content creation, speech, 3D, CAD, games, multi-media, and multi-tasking user environments. The Intel SFF Desktop Pentium 4 processor delivers this world-class performance for consumer enthusiast and business professional desktop users as well as for entry-level workstation users.

Highlights of the SFF Desktop Pentium 4 processor:

Available at speeds ranging from 1.8/2GHz/2.2GHz/2.3GHz/2.4GHz

Featuring the new Intel NetBurst micro-architecture

Fully compatible with existing Intel Architecture-based software

Internet Streaming SIMD Extensions 2

Intel® MMX™ media enhancement technology

Memory cacheability up to 4 GB of addressable memory space and system memory scalability up to 64GB of physical memory

8640 N/B Maintenance

Support for uni-processor designs

Based upon Intel's 0.18 micron manufacturing process

Intel Pentium 4 Processor Product Feature:

The Intel NetBurst micro-architecture delivers a number of new and innovative features including Hyper Pipelined Technology, 400 MHz System Bus, Execution Trace Cache, and Rapid Execution Engine as well as a number of enhanced features Advanced Transfer Cache, Advanced Dynamic Execution, Enhanced Floating-point and Multi-media Unit, and Streaming SIMD Extensions 2. Many of these new innovations and advances were made possible with improvements in processor technology, process technology, and circuit design that could not previously be implemented in high-volume, manufacturability solutions. The features and resulting benefits of the new micro-architecture are defined below.

Hyper Pipelined Technology

The hyper-pipelined technology of the NetBurst micro-architecture doubles the pipeline depth compared to the P6 micro-architecture used on today's Pentium III processors. One of the key pipelines, the branch prediction / recovery pipeline, is implemented in 20 stages in the NetBurst micro-architecture, compared to 10 stages in the P6 micro-architecture. This technology significantly increases the performance, frequency, and scalability of the processor.

8640 N/B Maintenance

400 MHz System Bus:

The SFF Desktop Pentium 4 processor supports Intel's highest performance desktop system bus by delivering 3.2GB of data per second into and out of the processor. This is accomplished through a physical signaling scheme of quad pumping the data transfers over a 100-MHz clocked system bus and a buffering scheme allowing for sustained 400-MHz data transfers. This compares to 1.06 GB/s delivered on the Pentium III processor's 133-MHz system bus.

Level 1 Execution Trace Cache:

In addition to the 8KB data cache, the Pentium 4 processor includes an Execution Trace Cache that stores up to 12K decoded micro-ops in the order of program execution. This increases performance by removing the decoder from the main execution loop and makes more efficient usage of the cache storage space since instructions that are branched around are not stored. The result is a means to deliver a high volume of instructions to the processor's execution units and a reduction in the overall time required to recover from branches that have been mis-predicted.

Rapid Execution Engine:

Two Arithmetic Logic Units (ALUs) on the Pentium 4 processor are clocked at twice the core processor frequency. This allows basic integer instructions such as Add, Subtract, Logical AND, Logical OR, etc. to execute in half a clock cycle. For example, the Rapid Execution Engine on a 1.50 GHz Pentium 4 processor runs at 3 GHz.

8640 N/B Maintenance

512KB, Level 2 Advanced Transfer Cache:

The Level 2 Advanced Transfer Cache (ATC) is 512KB in size and delivers a much higher data throughput channel between the Level 2 cache and the processor core. The Advanced Transfer Cache consists of a 256-bit (32-byte) interface that transfers data on each core clock.

As a result, the SFF Desktop Pentium 4 processor 1.6 GHz can deliver a data transfer rate of 4.8 GB/s. This compares to a transfer rate of 16 GB/s on the Pentium III processor at 1 GHz. Features of the ATC include:

- Non-Blocking, full speed, on-die Level 2 cache
- 256-bit data bus to the level 2 cache
- Data clocked into and out of the cache every clock cycle

Advanced Dynamic Execution:

The Advanced Dynamic Execution engine is a very deep, out-of-order speculative execution engine that keeps the execution units executing instructions. The Pentium 4 processor can also view 126 instructions in flight and handle up to 48 loads and 24 stores in the pipeline. It also includes an enhanced branch prediction algorithm that has the net effect of reducing the number of branch mis-predictions by about 33% over the P6 generation processor's branch prediction capability. It does this by implementing a 4KB branch target buffer that stores more detail on the history of past branches, as well as by implementing a more advanced branch prediction algorithm.

8640 N/B Maintenance

Enhanced Floating-Point and Multimedia Unit:

The Pentium 4 processor expands the floating-point registers to a full 128-bit and adds an additional register for data movement which improves performance on both floating-point and multimedia applications.

Internet Streaming SIMD Extensions 2 (SSE2):

With the introduction of SSE2, the Net Burst micro-architecture now extends the SIMD capabilities that MMX technology and SSE technology delivered by adding 144 new instructions. These instructions include 128-bit SIMD integer arithmetic and 128-bit SIMD double-precision floating-point operations. These new instructions reduce the overall number of instructions required to execute a particular program task and as a result can contribute to an overall performance increase. They accelerate a broad range of applications, including video, speech, and image, photo processing, encryption, financial, engineering and scientific applications.

Features Used for Test and Performance / Thermal Monitoring:

Built-in Self Test (BIST) provides single stuck-at fault coverage of the microcode and large logic arrays, as well as testing of the instruction cache, data cache, Translation Lookaside Buffers (TLBs), and ROMs.

IEEE 1149.1 Standard Test Access Port and Boundary Scan mechanism enables testing of the Pentium 4 processor and system connections through a standard interface.

Internal performance counters can be used for performance monitoring and event counting. Includes a new Thermal Monitor feature that allows motherboards to be cost effectively designed to expected application power usages rather than theoretical maximums.

8640 N/B Maintenance

1.3.2 SiS650 IGUI Host/Memory Controller with Integrated 2D/3D Graphic/DDR266/AGP4X North Bridge

❖ SiS650 IGUI Host Memory Controller

SiS650 IGUI Host Memory Controller integrates a high performance host interface for Intel Pentium 4 processor, a high performance 2D/3D Graphic Engine, a high performance memory controller, an AGP 4X interface, and SiS MuTIOL® Technology connecting w/ SiS962 MuTIOL® Media IO.

SiS650 Host Interface features the AGTL & AGTL+ compliant bus driver technology with integrated on-die termination to support Intel Pentium 4 processors. SiS650 provides a 12-level In-Order-Queue to support maximum outstanding transactions up to 12. It integrated a high performance 2D/3D Graphic Engine, Video Accelerator and Advanced Hardware Acceleration MPEGI/MPEGII Video Decoder for the Intel Pentium 4 series based PC systems. It also integrates a high performance 2.1GB/s DDR266 Memory controller to sustain the bandwidth demand from the integrated GUI or external AGP master, host processor, as well as the multi I/O masters. In addition to integrated GUI, SiS650 also can support external AGP slot with AGP 1X/2X/4X capability and Fast Write Transactions. A high bandwidth and mature SiS MuTIOL® technology is incorporated to connect SiS650 and SiS962 MuTIOL® Media I/O together. SiS MuTIOL® technology is developed into three layers, the Multi-threaded I/O Link Layer delivering 1.2GB bandwidth to connect embedded DMA Master devices and external PCI masters to interface to Multi-threaded I/O Link layer, the Multi-threaded I/O Link Encoder/Decoder in SiS961 to transfer data w/ 533 MB/s bandwidth from/to Multi-threaded I/O Link layer to/from SiS650, and the Multi-threaded I/O Link Encoder/Decoder in SiS650 to transfer data w/ 533 MB/s from/to Multi-threaded I/O Link layer to/from SiS961.

8640 N/B Maintenance

❖ SiS962 MuTIOL® Media I/O overview

An Unified Memory Controller supporting PC133 or DDR266 DRAM is incorporated, delivering a high performance data transfer to/from memory subsystem from/to the Host processor, the integrated graphic engine or external AGP master, or the I/O bus masters. The memory controller also supports the Suspend to RAM function by retaining the CKE# pins asserted in ACPI S3 state in which only AUX source deliver power. The SiS650 adopts the Shared Memory Architecture, eliminating the need and thus the cost of the frame buffer memory by organizing the frame buffer in the system memory. The frame buffer size can be allocated from 8MB to 64MB.

The SiS962 MuTIOL® Media I/O integrates the Audio Controller with AC 97 Interface the Ethernet MAC, the Dual Universal Serial Bus Host Controllers, the IDE Master/Slave controllers, and the MuTIOL® Connect to PCI bridge. The PCI to LPC bridge, I/O Advanced Programmable Interrupt Controller, legacy system I/O, I/O Advanced Programmable Interrupt Controller and legacy power management functionalities are also integrated. The SiS962 also incorporates an universal interface supporting the asynchronous inputs/outputs of the X86 compatible microprocessors like PIII, K7, and P4.

The integrated Audio Controller features a 6 channels of AC 97 v2.2 compliance audio to present 5.1-channel Dolby digital material or to generate stereo audio with simultaneous V.90 HSP modem operation. Besides, 4 separate SDATAIN pins are provided to support multiple audio Codecs + one modem Codec maximally, effectuating the realization of 5.1 channel Dolby digital material in theater quality sound. Both traditional consumer digital audio channel as well as the AC 97 v2.2 compliant consumer digital audio slot are supported. VRA mode is also associated with both the AC 97 audio link and the traditional consumer digital audio channel.

8640 N/B Maintenance

The integrated Fast Ethernet MAC features an IEEE 802.3 and IEEE 802.3x compliant MAC supporting full duplex 10 Base-T, 100 Base-T Ethernet, or 1Mb/s & 10Mb/s Home networking. 5 wake-up Frames, Magic Packet and link status change wake-up functions in G1/G2 states are supported. Besides, the integrated MAC provides a scheme to store the MAC address without the need of an external EEPROM. The 25 MHz oscillating circuit is integrated so as only an external low cost 25 MHz crystal is needed for the clocking system.

The integrated Universal Serial Bus Host Controllers features Dual Independent OHCI Compliant Host controllers with six USB ports delivering 2 x 12 Mb/s bandwidth and rich connectivity. Besides, each port can be optionally configured as the wake-up source. Legacy USB devices as well as over current detection are also implemented. The integrated IDE Master/Slave controllers features Dual Independent IDE channels supporting PIO mode 0,1,2,3,4, and Ultra DMA 33/66/100. It provides two separate data paths for the dual IDE channels that sustain the high data transfer rate in the multitasking environment. The MuTIOL® Connect to PCI bridge supporting 6 PCI master is compliant to PCI 2.2 specification. The SiS961 also incorporates the legacy system I/O like: two 8237A compatible DMA controllers, three 8254 compatible programmable 16-bit counters, hardwired keyboard controller and PS2 mouse interface, Real Time clock with 256B CMOS SRAM and two 8259A compatible Interrupt controllers. Besides, the I/O APIC managing up to 24 interrupts with both Serial and FSB interrupt delivery modes is supported.

The integrated power management module incorporates The ACPI 1.0b compliance functions, the APM 1.2 compliance functions, and the PCI bus power management interface spec. v1.1. Numerous power-up events and power down events are also supported. 21 general purposed I/O pins are provided to give an easy to use logic for specific application. In addition, the SiS961 supports Intel Speed Step technology and Deeper Sleep power state for Intel Mobile processor. For AMD processor, the SiS961 use the CPUSTP# signal to reduce processor voltage during C3 and S1 state.

8640 N/B Maintenance

1.3.4 Memory

Support unbuffer DDR 200/266/333MHz SO-DIMM expandable to 1024MB (2 DDR-SODIMM slots)

Table 4 . Memory Expansion Capacity

Slot1	Slot2	Total
64MB	0	64MB
64MB	64MB	128MB
64MB	128MB	192MB
64MB	256MB	320MB
64MB	512MB	576MB
128MB	0	128MB
128MB	128MB	256MB
128MB	256MB	384MB
128MB	512MB	640MB
256MB	0	256MB
256MB	256MB	512MB
256MB	512MB	768MB
512MB	0	512MB
512MB	512MB	1024MB

8640 N/B Maintenance

1.3.5 I/O PORTS

❖ CRT Port

Standard VGA compatible port
DDC1 and DDC2B complian

Table 5 . CRT Connector

PIN	SIGNAL	DESCRIPTION
1	RED	Red analog video output
2	GREEN	Green analog video output
3	BLUE	Blue analog video output
4	Monitor Sense	Monitor Sense
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	VCC	+5VDC
10	GND	Ground
11	Monitor Sense	Monitor Sense
12	CRT DATA	Data from DDC monitor
13	HSYNC	Horizontal Sync control
14	VSNC	Vertical Sync control
15	CRT CLK	Clock to DDC monitor

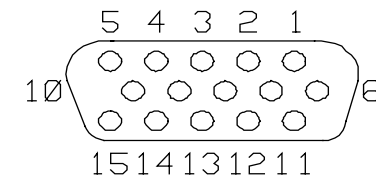


Figure 1 . CRT Connector

8640 N/B Maintenance

Table 6. CRT Support Mod

Resolution	DCLK	Page Size	Band Width	DRAM Size
1024x768x8@60NI	65Mhz	0.768MB	65MB/s	1MB
1024x768x16@60NI	65Mhz	1.536MB	130MB/s	2MB
1024x768x32@60NI	65Mhz	3.072MB	260MB/s	4MB
1024x768x8@75NI	78.75Mhz	0.768MB	78.75MB/s	1MB
1024x768x16@75NI	78.75Mhz	1.536MB	157.5MB/s	2MB
1024x768x32@75NI	78.75Mhz	3.072MB	315MB/s	4MB
1024x768x8@85NI	94.5Mhz	0.768MB	94.5MB/s	1MB
1024x768x16@85NI	94.5Mhz	1.536MB	189MB/s	2MB
1024x768x32@85NI	94.5Mhz	3.072MB	398MB/s	4MB
1280x1024x8@60NI	108Mhz	1.28MB	108MB/s	2MB
1280x1024x16@60NI	108Mhz	2.56MB	216MB/s	4MB
1280x1024x32@60NI	108Mhz	5.12MB	432MB/s	6MB
1280x1024x8@75NI	135Mhz	1.28MB	135MB/s	2MB
1280x1024x16@75NI	135Mhz	2.56MB	270MB/s	4MB
1280x1024x32@75NI	135Mhz	5.12MB	540MB/s	6MB
1280x1024x8@85NI	157.5Mhz	1.28MB	157.5MB/s	2MB
1280x1024x16@85NI	157.5Mhz	2.56MB	315MB/s	4MB
1280x1024x32@85NI	157.5Mhz	5.12MB	630MB/s	6MB
1600x1200x8@60NI	162Mhz	1.875MB	162MB/s	4MB
1600x1200x16@60NI	162Mhz	3.75MB	324MB/s	4MB
1600x1200x32@60NI	162Mhz	7.5MB	648MB/s	8MB
1600x1200x8@75NI	202.5Mhz	1.875MB	202.5MB/s	4MB
1600x1200x16@75NI	202.5Mhz	3.75MB	405MB/s	4MB
1600x1200x32@75NI	202.5Mhz	7.5MB	910MB/s	8MB
1600x1200x8@85NI	230Mhz	1.875MB	230MB/s	4MB
1600x1200x16@85NI	230Mhz	3.75MB	460MB/s	4MB
1600x1200x32@85NI	230Mhz	7.5MB	920MB/s	8MB
1920x1440x8@85NI	330Mhz	1.875MB	230MB/s	4MB
1920x1440x16@85NI	330Mhz	3.75MB	460MB/s	4MB
1920x1440x32@85NI	330Mhz	7.5MB	920MB/s	8MB
2048x1536x8@75NI	333Mhz	3MB	255MB/s	8MB
2048x1536x16@75NI	333Mhz	6MB	510MB/s	8MB
2048x1536x32@75NI	333Mhz	12MB	1.2GB/s	16MB
2048x1536x8@75NI	333Mhz	3MB	255MB/s	8MB
2048x1536x16@75NI	333Mhz	6MB	510MB/s	8MB
2048x1536x32@75NI	333Mhz	12MB	1.2GB/s	16MB

8640 N/B Maintenance

1.3.6 Pins S-VIDEO port for TV-Out

Table 7 . S-video Port

PIN	SIGNAL NAME	DIRECTION
1	GND	-
2	NC	-
3	COMP	O
4	GND	-
5	CRMA	O
6	NC	-
7	LUMA	O

- Support up 1024*768 resolution
- Support PAL and NTSC system
- Support Composite Output by a transfer cable

Table 8. TV Out Support Modes

System	Input(Active) Resolution	Active TV lines	Over/Under scan
NTSC	320x200	480 ~ 400	+
NTSC	640x480	480 ~ 400	+
NTSC	720x480	480 ~ 400	+
NTSC	720x400	480 ~ 400	+
NTSC	800x600	480 ~ 420	+
NTSC	1024x768	480	Over
System	Input(Active) Resolution	Active TV lines	Over/Under scan
PAL	320x200	540 ~ 500	+
PAL	640x480	540 ~ 500	+
PAL	720x400	540 ~ 500	+
PAL	720x576	576 ~ 510	+
PAL	800x600	600 ~ 510	+
PAL	1024x768	520	Under

8640 N/B Maintenance

1.3.7 IEEE 1394a Port

- The bus transfer rate of 100,200,400 Mbits/s is supported
- The Asynchronous and Isochronous data transfers are supported.
- One IEEE1394a port supported

Table.9 IEEE1394 Port

PIN	SIGNAL NAME	DIRECTION
1	TPB-	I/O
2	TPB+	I/O
3	TPA-	I/O
4	TPA+	I/O

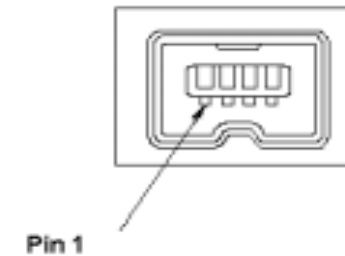


Figure 2 . IEEE1394 Connector

1.3.8Audio Ports

- SPDIF
- Microphone In
Built In 2 high quality internal speaker (2W/4ohm w/ Box)
Built in 1 mono microphone
- AC97 V2.2 compliance

8640 N/B Maintenance

Table.10 Audio Port

	Internal Speaker	Internal Microphone	LED Of SPDIF
Plug Ear-Phone In	Mute	Active	Off
Plug SPDIF Device In	Mute	Active	On
Plug External Microphone	Active	Mute	Off

1.3.9 RJ-11

Connection to Modem Daughter Board Connector or Mini-PCI Modem Card.Support 56Kbps/V.92

Table 11 . Modem Port

Pin	Signal Name	Direction	Description
1	NC	-	No Connect
2	LINE +	I/O	Phone Line Positive
3	LINE -	I/O	Phone Line Negative
4	NC	-	No Connect

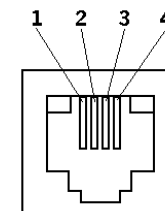


Figure 3 . Modem C

8640 N/B Maintenance

1.3.10 RJ-45

The Fast Ethernet MAC Controller features an IEEE802.3 and IEEE802.3x compliant MAC with external LAN physical layer chip (ICS1893AF) supporting full duplex 10 Base-T,100 Base-T Ethernet.

Support Wake-On-LAN function in System enter to S1,S3.

Table 12. LAN Port

Pin	Signal Name	Direction	Description
1	TX+	Out	Transmit Data Ring
2	TX-	Out	Transmit Data Tip
3	RX+	IN	Receive Data Ring
4	TERM 1	-	Internal termination resistor
5	TERM 2	-	Internal termination resistor
6	RX	IN	Receive Data Tip.
7	TERM 3	-	Internal termination resistor
8	TERM 4	-	Internal termination resistor

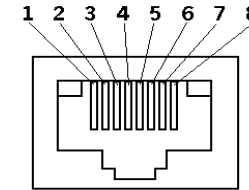


Figure 4 . LAN Connector

1.3.11 Infrared interface supporting IrDA format

FIR IrDA 1.1 compliant.

HP-SIR supported.

8640 N/B Maintenance

1.3.12 USB Ports

Four industry standard USB 2.0 ports (Backward compatible to USB 1.1)

Support maximum transfer rate up to 480Mbps/s

Table 13 . USB Port

	Signal Name	Direction	Description
1	VCC	Power	USB Device Power (+5VDC)
2	DATA-	I/O	Balanced Data Negative
3	DATA+	I/O	Balanced Data Positive
4	GND	Power	Ground

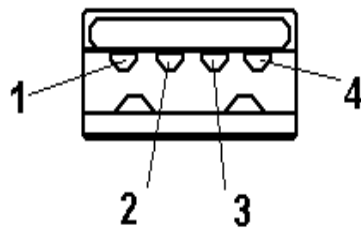


Figure 5 . USB CONNECTOR

8640 N/B Maintenance

1.3.13 PS/2 Port

Support Mouse and Keyboard via a Y-Type cable

1.3.14 Parallel Port

- Configurable as logical ports LPT1 , LPT2 or LPT3
- EPP rev 1.7 & 1.9 compatible
- ECP (IEEE 1284) compatible
- Industry standard 25 Pins connector
- IEEE1284 Compliant.

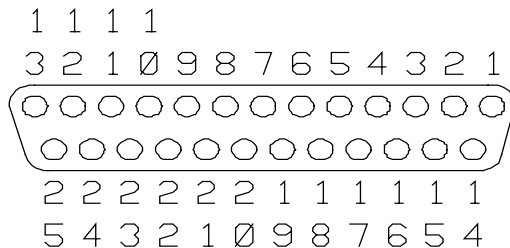


Figure6 . Parallel Port Connector

Table14. Parallel Port

Pin	Signal Name	Direction	Description
1	STROBE#	O	Data Strobe
2	PD0	I/O	PP Data bit 0
3	PD1	I/O	PP Data bit 1
4	PD2	I/O	PP Data bit 2
5	PD3	I/O	PP Data bit 3
6	PD4	I/O	PP Data bit 4
7	PD5	I/O	PP Data bit 5
8	PD6	I/O	PP Data bit 6
9	PD7	I/O	PP Data bit 7
10	ACK#	I	Printer Acknowledge
11	BUSY	I	Printer Busy
12	PE	I	Paper Out
13	SLCT	I	Print Select Acknowledge
14	AUTOFDXT#	O	Auto Line Feed
15	ERROR#	I	Printer Error
16	INIT#	O	Reset Printer
17	SLCTIN#	I	Select In
18	GND	-	Ground
19	GND	-	Ground
20	GND	-	Ground
21	GND	-	Ground
22	GND	-	Ground
23	GND	-	Ground
24	GND	-	Ground
25	GND	-	Ground
Case	GND	-	Ground

8640 N/B Maintenance

Silver(8640I)

SiS M650 Embedded Graphical Controller + SiS301LV/SiS302LV Video Bridge.AGP 4X Interface.Use Share Memory Architecture,The frame buffer can use 16/32/64MB.

Gold/Platinum(8640D/8640M)

NVidia Gforce 4 GO (MAP17) graphical controller embedded 32MB DDR VRAM AGP 4X Interface

DSIPLAY

Silver(8640I)

Internal LCD Display is 15.1”/14.1” TFT ISP XGA/SXGA+ color

Dual View of LCD+CRT / LCD+TV independent display.

External Video refresh rate of up to 100Hz supported

Vertical refresh frequencies to meet VESA requirements

Simultaneous video in specified video modes – switchable with hot key

Gold / Platinum(8640D/8640M)

Internal LCD Display is 15.1”/14.1” TFT ISP XGA/SXGA+/UXGA color

Dual View of LCD+CRT / LCD+TV independent display.

internal Video refresh rate of up to 100Hz supported

8640 N/B Maintenance

Vertical refresh frequencies to meet VESA requirements

Simultaneous video in specified video modes – switchable with hot key

1.3.15 PC CARD SLOT

- One Type II/I slot supporting the 1997 PC Card standard, and including full R2 (16-bit) and 32-bit Cardbus data transfer
- ENE CB1410 (PCMCIA Controller) & ENE CP2211 (Power Switch)
- Ability to wake-up from D3-Hot and D3-Cold 0
- Mixed-and-match 5V/3.3V 16 bits PC CARDS and 3.3V Cardbus Card

1.3.16 IDE Interface

- Support Dual Independent IDE Channels, One is Hard-Disk. The other one is Optical.Device
- Supports PIO mode 0,1,2,3,4 and Ultra DMA 33/66/100

8640 N/B Maintenance

1.3.17 Read Only Memory (Bios Flash)

- Fully compatible with industry standard software including Windows 2000 & Windows XP
- Fully supports APM V1.2 and latest ACPI specification
- 2Mb Flash BIOS
- Inside BIOS core

1.3.18 Power Management Features

- Local standby mode (Individual devices such as HDD, graphics controller,LCD etc..)
- CPU Idle mode (Including ACPI modes C1 and C2)
- Suspend mode (Including S1 and S3 ACPI modes)
- Fully APM V1.2 compliant
- Fully ACPI V1.1 compliant
- Hibernate for Windows 2000 and Windows XP
- Thermal management
- Fully US EPA Energy Star compliant

8640 N/B Maintenance

1.3.19 KEYBOARD CONTROLLER

- Hitachi H8-3437S

1.3.20 SUPER I/O

- NS PC87393F LPC interface Ultra I/O

1.3.21 LEDs INDIACTOR

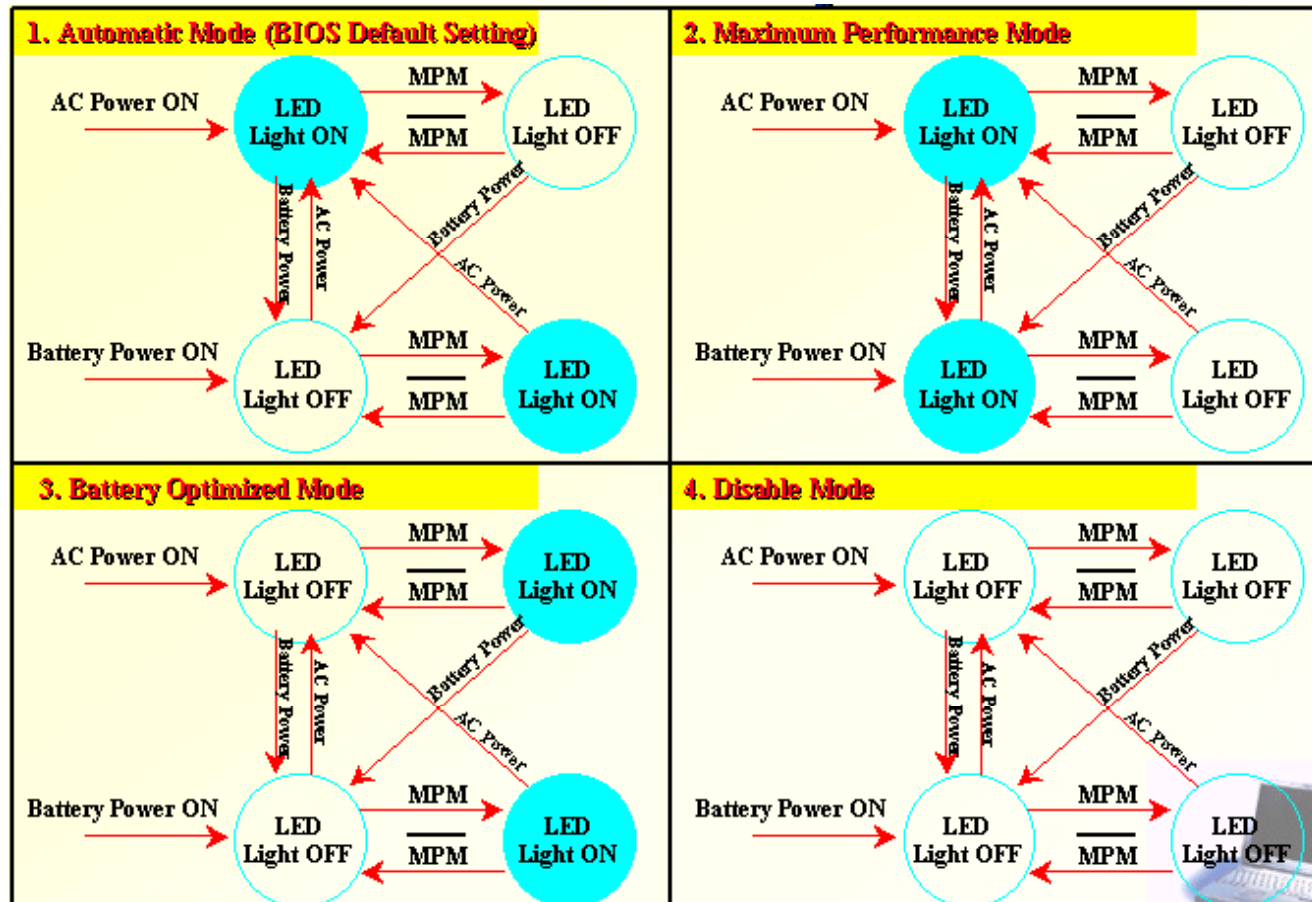
- CDROM & HDD & NUM & CAP & SCROLL & Wireless Indicator

1.3.22 BUTTONs

- Four piece EASY START BTNs
- One MPM Button w/z Blue LED

8640 N/B Maintenance

Table.15 power LED



8640 N/B Maintenance

1.3.23 TOUCH PAD MODULE

Synaptics TM41PU-311 with two Buttons

1.3.24 Modem (MDC Option)

Table 16 . MODEM DAUGHTR BOARD CONNECTOR





PIN	SIGNAL NAME	PIN	SIGNAL NAME
1	MONO_OUT	2	NC
3	GND	4	MODEM_SPK
5	NC	6	NC
7	NC	8	GND
9	NC	10	+5V
11	NC	12	NC
13	NC	14	NC
15	GND	16	Pull Up to +3V
17	+3V	18	+5V
19	GND	20	GND
21	+3V	22	ACSYNC
23	ACSDOUT	24	MSDIN
25	-ACRST	26	MSDIN
27	GND	28	GND
29	GND	30	ACBITCLK

8640 N/B Maintenance

1.3.25 Card Reader(only 8640D/8640M)

- Support Smart-Media, SD , Memory Stick , Multi Media Card
- Support 2 card simultaneous.(Smart Media + Memory Stick or Smart Media+Multi Media Card or Smart Media+ SD Memory Card)
- Support Boot function.

Table17 Memory card

Type	Memory Stick	SmartMedia	MultiMediaCard	SD memory card
Picture				
Size(mm.)	21.5x50x2.8	37x45x0.76	24x32x1.4	24x32x2.1
Weight (g)	4	2	1.5	2
Volume(mm ³)	3,010	1,265	1,075	1,612
Developer	Sony Corp.('98)	TOSHIBA Corp.('95)	Siemens AG. SanDisk Corp. ('97)	Matsushita Electronic Industrial CO., Ltd. TOSHIBA Corp. SanDisk Corp. ('00)
No. of pins	10	22	7	9
Storage capacity (MB)	8, 16, 32, 64 and 128 (due for release in '01)	4 - 64	4 - 64	8 - 64
Data transfer rate	1.8MB/s Max.(W) 2.45MB/s Max.(R)	-	-	-
Copyright protection	Adherence to SDMI (MagicGate)	ID	ID	Adherence to SDMI

8640 N/B Maintenance

1.4 Electrical Characteristic

1.4.1 Power On Sequence

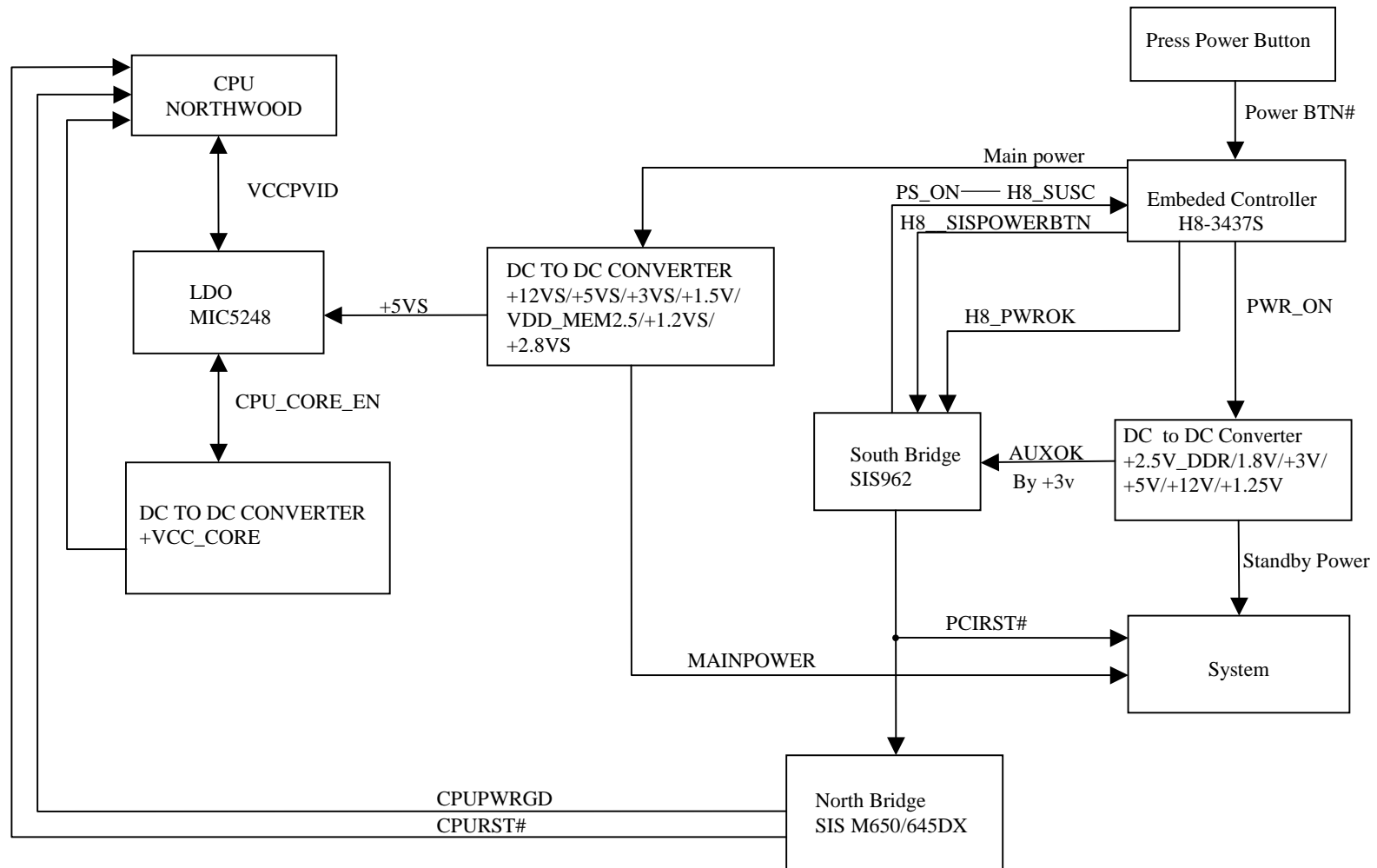


Table.18 Power on Sequence

8640 N/B Maintenance

1.4.2 Suspend To RAM Sequence

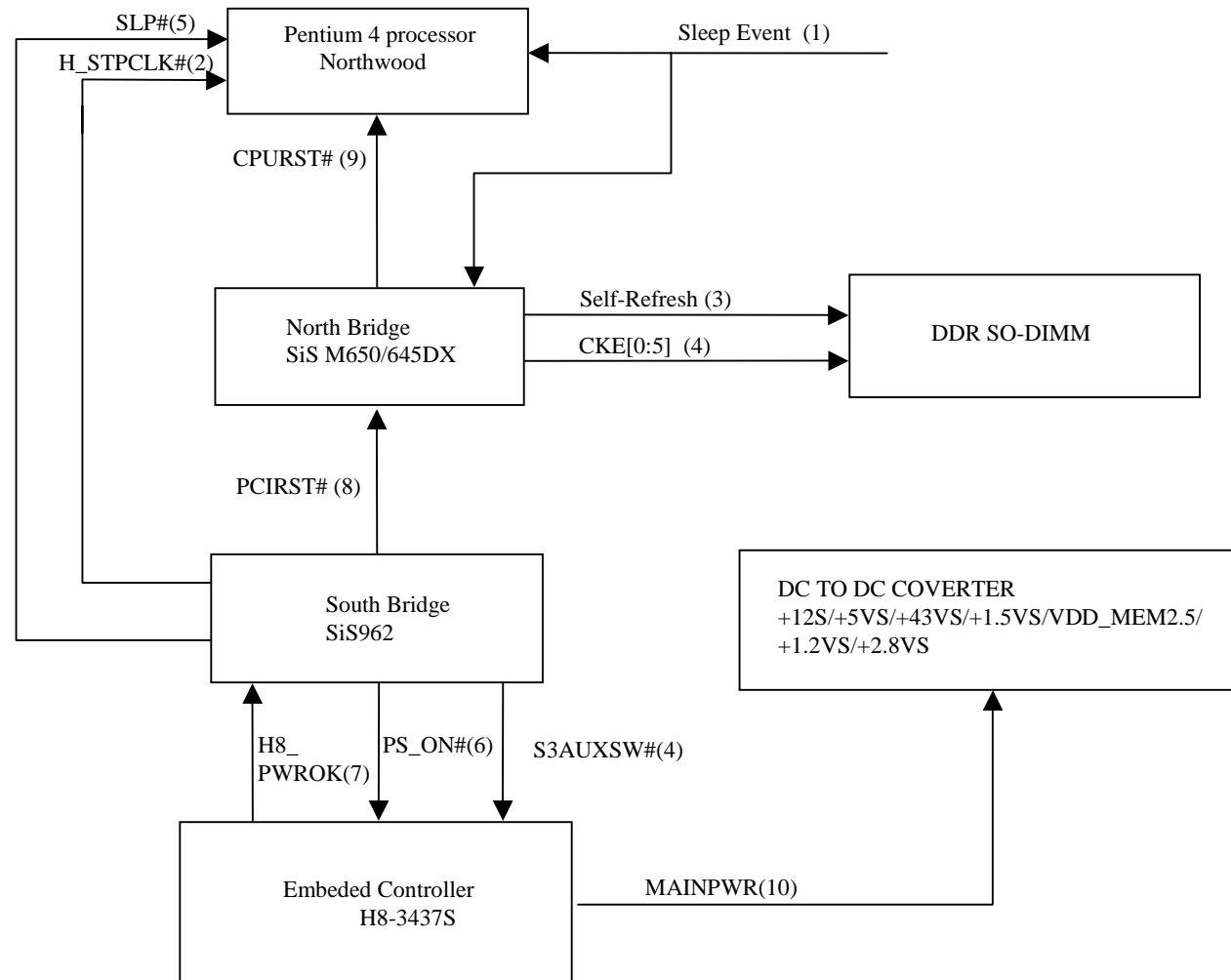


Table.19 RAM Sequence

8640 N/B Maintenance

1.4.3 Resume from Suspend To RAM Sequence

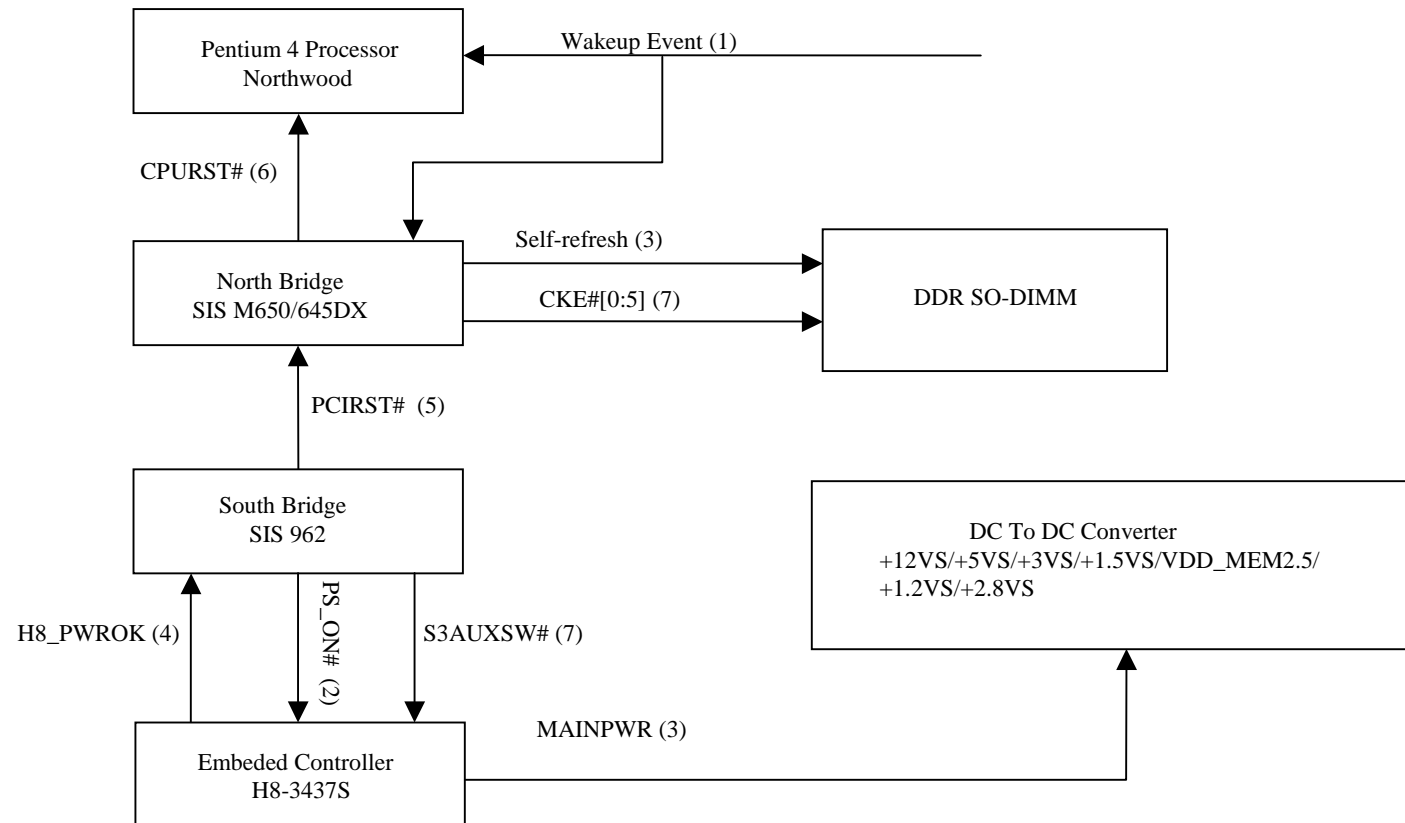


Table.20 Resume From Suspend to RAM Sequence

8640 N/B Maintenance

1.4.4 SiS962 GPI/O Pin Define

SiS962 GPIO Define

Pin Name	Mux Function	GPIO Function	Signal Name	Type Define	Power Plane
GPIO0	SPDIF	GPIO	SPDIFOUT	O	MAIN
GPIO1	LDRQ1#	GPIO	NC		MAIN
GPIO2	THERM#	GPIO	SB_THRM#	I	MAIN
GPIO3	EXTSMI#	GPIO	EXTSMI#	I	MAIN
GPIO4	CLKRUN# (NB only)	GPIO	CLKRUN#	I	MAIN
GPIO5	PREQ5#	GPIO	MPCI_PD	I	MAIN
GPIO6	PGNT5#	GPIO	NC	I	MAIN
GPIO7	GPWAK#	GPIO	SPK_OFF	O	AUX
GPIO8	RING	GPIO	WAKE_UP#	I	AUX
GPIO9	AC_SDIN2	GPIO	SCI#	I	AUX
GPIO10	AC_SDIN3	GPIO	CRT_IN#	I	AUX
GPIO11	STP_PCI# (NB only) / CLK25M	GPIO	STP_PCI#	O	AUX
GPIO12	CPUSTP# (NB only)	GPIO	CPU_STP#	O	AUX
GPIO13	DPRSLPVR (NB only)	GPIO	DPRSLPVR	O	AUX
GPIO14	AGPSTOP# (NB only)	GPIO	MPCIACT#	I	AUX
GPIO15	KBDAT / VR_HILO# (NB only)	GPIO	GMUXSEL	O	AUX
GPIO16	KBCLK / LOHI# (NB only)	GPO	CPUPERF#	O	AUX
GPIO17	PMDAT / VGATEM (NB only)	GPO	GATEM#	O	AUX
GPIO18	PMCLK / RTC32KHz (NB only)	GPO	NC		AUX
GPIO19	Reserved for CLK	GPIO	SMBCLK	I/O	AUX
GPIO20	Reserved for DAT	GPIO	SMBDATA	I/O	AUX
GPIO21	EESK	GPI	EESK	O	AUX
GPIO22	EEDI	GPI	EEDI	O	AUX
GPIO23	EEDO	GPI	EEDO	I	AUX
GPIO24	EECS	GPI	EECS	O	AUX
APCID0	THERM2#		Pull Down		MAIN (GTL LEVEL)
APCID1	GPIOFF#		Pull Down		MAIN (GTL LEVEL)
APICCLK	Reserved		Pull Up		MAIN
OC2	GPI	GPI	OC#2	I	AUX
OC5	GPI	GPI	Pull Up		AUX

Table21 Pin Define

8640 N/B Maintenance

1.4.5 Keyboard Controller Pin Define

pin	port	Signal Name	Type	Description
31	PA2	NC	NC	X
47	PA1	BATT_DEAD#	I	Indicated the battery capacity is not enough to power on system
48	PA0	RI#	I	If system on suspend mode, then received this signal & system have to wake up
57	PB7	T_DATA	I/O	Connect to touch Pad DATA
58	PB6	M_DATA	OD	PS/2 Mouse Data
68	PB5	KM_DATA	OD	PS/2 Keyboard Data
69	PB4	CHARGING	O	Indicated charge circuitry to work
80	PB3	FAN1_SPD	I	Return FAN1 (CPU FAN) Speed.
81	PB2	FAN0_SPD	I	Return FAN0 (CPU Core D/D FAN) Speed.
90	PB1	LED_DATA	O	(Bit 0-7:-SCROLL,-NUM,-CAP,-AC POWER,-BATT POWER,BATT R,-BATT_G)
91	PB0	LED_CLK	O	For LED indicate
5	MD1	H8_MODE1	I	H8 Mode select
6	MD0	H8_MODE0	I	H8 Mode select
16	P97	BAT_DATA	I/O	SM_BUS DATA For Smart Battery.
17	P96	NC	NC	X
18	P95	H8_SISPWRBTN#	O	Button to SiS962
19	P94	SW_+5VA	O	To switch +5V/+5VA power source
22	P93	H8_THRM#	O	TO SiS962,REGUSTANG THE SYSTEM TOENTER POWER MANGMENT MODE,Clock Throttling.
23	P92	POWERBTN#	I	System power button
24	P91	LID#	I	Cover switch,Logic Low means LCD Cover Closed.
25	P90	H8_SUSC	I	System inter S4~S5,High:STD or Power Off,Low:Normal Operation.

Table22 Keyboard Controller Pin Define

8640 N/B Maintenance

Pin	Port	Signal Name	Type	Description
79~72	P10~P17	KO[0..7]	O	Keyboard Matrix
67~60	P20~P27	KO[8..15]	O	Keyboard Matrix
82~89	P30~P37	SD[0..7]	I/O	ISA Data Bus
49	P40	NC	NC	X
50	P41	H8_WAKE_UP#	O	Connect to chipset SiS962 to wake up system
51	P42	H8_SMI#	O	Connect to chipset SiS962 to system management interrupt(Non-ACPI mode)
52	P43	H8_SCI	O	Connect to chipset SiS962 to system configuration interrupt(ACPI mode)
53	P44	IRQ1	O	IRQ For Keyboard
54	P45	IRQ12	O	IRQ For Mouse
55	P46	FAN0#	O	Control CPU Core D/D FAN (Second FAN) ON & Turn ON/OFF Duty
56	P47	FAN1#	O	Control CPU FAN ON & Turn ON/OFF Duty
14	P50	PWR_ON	O	Control System Power ON/OFF
13	P51	NC	NC	X
12	P52	LEARNING#	O	Control Charger Circuitry for Battery Learning
26~29	P60~P67	KI[0..7]	I	Keyboard Matrix
1	RESET	H8_RESET#	I	Reset H8-3437S
7	NMI#	H8_SUSB	I	STR Indicator,High:STR,Low:Normal Operation.
8	STBY	H8_STBY#	I	No USE
10	PA7	T_CLK	I/O	Connect to Touch Pad clock
11	PA6	M_CLK	OD	PS/2 Mouse Clock
20	PA5	KM_CLK	OD	PS/2 Keyboard Clock
21	PA4	H8_PWROK	O	System Power Ready.
30	PA3	ADEN#	I	ADAPTOR IN
99	P86	BAT_CLK	I/O	SM_BUS Clock For Smart Battery.
98	P85	H8_MCCS#	I	Port 60h/64h Chip Select.

Table22 Keyboard Controller Pin Define Continue

8640 N/B Maintenance

pin	port	signal	type	description
97	P84	IOW#	I	INPUT/OUTPUT WRITE
96	P83	IOR#	I	INPUT/OUTPUT READ
95	P82	H8_KBCS#	I	Port 62h/66h Chip Select.
94	P81	NC	NC	X
93	P80	SA2	I	ISA ADDRESS
45	P77	BLADJ	O	Back / Light Adjust Control
44	P76	CHG_I	O	
43	P75	POWER THRM	I	Monitor Thermal of D/D for CPU Core.
42	P74	+5VS	I	+5VS Monitor.
41	P73	+1.8VS	I	+1.8VS Monitor.
40	P72	I_LIMIT	I	FOR BATTERY CHARGE
39	P71	BAT_VOLT	I	Report Battery Voltage
38	P70	BAT_TEMP	I	Report Battery Thermal

Table22 Keyboard Controller Pin Define Continue

8640 N/B Maintenance

1.4.6 Power Consumption Of Suspend Mode

- Suspend To RAM < 40mA
- Suspend To Disk / Soft-Off /Mechanical Off < 1mA

1.4.7 Clock Harmonic List

	12M	12.288M	14.318M	16M	24M	24.576M	25M	27M	32.768K	33M	48M	65M	66M	100M	133M
1	12MHz	12.288MHz	14.318MHz	16MHz	24MHz	24.576MHz	25MHz	27M	32.768KHz	33MHz	48MHz	65MHz	66MHz	100MHz	133MHz
2	24MHz	24.576MHz	28.636MHz	32MHz	48MHz	49.152MHz	50MHz	54M	65.536KHz	66MHz	96MHz	130MHz	132MHz	200MHz	266MHz
3	36MHz	36.864MHz	42.954MHz	48MHz	72MHz	73.728MHz	75MHz	81M	98.304KHz	99MHz	144MHz	195MHz	198MHz	300MHz	399MHz
4	48MHz	49.152MHz	57.272MHz	64MHz	96MHz	98.304MHz	100MHz	108M	131.072KHz	132MHz	192MHz	260MHz	264MHz	400MHz	532MHz
5	60MHz	61.44MHz	71.59MHz	80MHz	120MHz	122.88MHz	125MHz	135M	163.84KHz	165MHz	240MHz	325MHz	330Mhz	500MHz	665MHz
6	72MHz	73.728MHz	85.908MHz	96MHz	144MHz	147.456MHz	150MHz	162M	196.608KHz	198MHz	288MHz	390MHz	396Mhz	600MHz	798MHz
7	84MHz	86.016MHz	100.226MHz	112MHz	168MHz	172.032MHz	175MHz	189M	229.376KHz	231MHz	336MHz	455MHz	462Mhz	700MHz	931MHz
8	96MHz	98.304MHz	114.544MHz	128MHz	192MHz	196.608MHz	200MHz	216M	262.144KHz	264MHz	384MHz	520MHz	528Mhz	800Mhz	1.064GHz
9	108MHz	110.592MHz	128.862MHz	144MHz	216MHz	221.184MHz	225MHz	243M	294.912KHz	297MHz	432MHz	585MHz	594MHz	900Mhz	1.197GHz
10	120MHz	122.88MHz	143.18MHz	160MHz	240MHz	245.76MHz	250MHz	270M	327.68KHz	330MHz	480MHz	650MHz	660MHz	1GHz	1.330GHz
11	132MHz	135.168MHz	157.498MHz	176MHz	264MHz	270.336MHz	275MHz	297M	360.448KHz	363MHz	528MHz	715MHz	726MHz	1.100GHz	1.463GHz
12	144MHz	147.456MHz	171.816MHz	192MHz	288MHz	294.912MHz	300MHz	324M	393.216KHz	396MHz	576MHz	780MHz	792MHz	1.200GHz	1.596GHz
13	156MHz	159.744MHz	186.134MHz	208MHz	312MHz	319.488MHz	325MHz	351M	425.984KHz	429MHz	624MHz	845MHz	858MHz	1.300GHz	1.729GHz
14	168MHz	172.032MHz	200.452MHz	224MHz	336MHz	344.064MHz	350MHz	378M	458.752KHz	462MHz	672MHz	910MHz	924MHz	1.400GHz	1.862GHz
15	180MHz	184.32MHz	214.77MHz	240Mhz	360MHz	368.64MHz	375MHz	405M	491.52KHz	495MHz	720Mhz	975MHz	990MHz	1.500GHz	1.995GHz
16	192MHz	196.608MHz	229.088MHz	256MHz	384MHz	393.216MHz	400MHz	432M	524.288KHz	528MHz	768MHz	1.040GHz	1.056GHz	1.600GHz	2.128GHz

Table23 clock harmonic list

8640 N/B Maintenance

17	204MHz	208.896MHz	243.406MHz	272MHz	408MHz	417.792MHz	425MHz	459M	557.056KHz	561MHz	816MHz	1.105GHz	1.122GHz	1.700GHz	2.261GHz
18	216MHz	221.184MHz	257.724MHz	288MHz	432MHz	442.368MHz	450MHz	486M	589.824KHz	594MHz	864MHz	1.170GHz	1.188GHz	1.800GHz	2.394GHz
19	228MHz	233.472MHz	272.042MHz	304MHz	456MHz	466.944MHz	475MHz	513M	622.592KHz	627MHz	912MHz	1.235GHz	1.254GHz	1.900GHz	2.527GHz
20	240MHz	245.76MHz	286.36MHz	320MHz	480MHz	491.52MHz	500MHz	540M	655.36KHz	660MHz	960MHz	1.300GHz	1.320GHz	2.000GHz	2.660GHz
21	252MHz	258.048MHz	300.678MHz	336MHz	504MHz	516.096MHz	525MHz	567M	688.128KHz	693MHz	1.008GHz	1.365GHz	1.386GHz	2.100GHz	2.793GHz
22	264MHz	270.336MHz	314.996MHz	352MHz	528MHz	540.672MHz	550MHz	594M	720.896KHz	726MHz	1.056GHz	1.430GHz	1.452GHz	2.200GHz	2.926GHz
23	276MHz	282.624MHz	329.314MHz	368MHz	552MHz	565.248MHz	575MHz	621M	753.664KHz	759MHz	1.104GHz	1.495GHz	1.518GHz	2.300GHz	3.059GHz
24	288MHz	294.912MHz	343.632MHz	384MHz	576MHz	589.824MHz	600MHz	648M	786.432KHz	792MHz	1.152GHz	1.560GHz	1.584GHz	2.400GHz	3.192GHz
25	300MHz	307.2MHz	357.95MHz	400MHz	600MHz	614.4MHz	625MHz	675M	819.2KHz	825MHz	1.200GHz	1.625GHz	1.650GHz	2.500GHz	3.325GHz
26	312MHz	319.488MHz	372.268MHz	416MHz	624MHz	638.976MHz	650MHz	702M	851.968KHz	858MHz	1.248GHz	1.690GHz	1.716GHz	2.600GHz	3.458GHz
27	324MHz	331.776MHz	386.586MHz	432MHz	648MHz	663.552MHz	675MHz	729M	884.736KHz	891MHz	1.296GHz	1.755GHz	1.782GHz	2.700GHz	3.591GHz
28	336MHz	344.064MHz	400.904MHz	448MHz	672MHz	688.128MHz	700MHz	756M	917.504KHz	924MHz	1.344GHz	1.820GHz	1.848GHz	2.800GHz	3.724GHz
29	348MHz	356.352MHz	415.222MHz	464MHz	696MHz	712.704MHz	725MHz	783M	950.272KHz	957MHz	1.392GHz	1.885GHz	1.914GHz	2.900GHz	3.857GHz
30	360MHz	368.64MHz	429.54MHz	480MHz	720MHz	737.28MHz	750MHz	810M	983.04KHz	990MHz	1.440GHz	1.950GHz	1.980GHz	3.000GHz	3.990GHz
31	372MHz	380.928MHz	443.858MHz	496MHz	744MHz	761.856MHz	775MHz	837M	1.015MHz	1.023GHz	1.488GHz	2.015GHz	2.046GHz	3.100GHz	4.123GHz
32	384MHz	393.216MHz	458.176MHz	512MHz	768MHz	786.432MHz	800MHz	864M	1.048MHz	1.056GHz	1.536GHz	2.080GHz	2.112GHz	3.200GHz	4.256GHz
33	396MHz	405.504MHz	472.494MHz	528MHz	792MHz	811.008MHz	825MHz	891M	1.081MHz	1.089GHz	1.584GHz	2.145GHz	2.178GHz	3.300GHz	4.389GHz
34	408MHz	417.792MHz	486.812MHz	544MHz	816MHz	835.584MHz	850MHz	918M	1.114MHz	1.122GHz	1.632GHz	2.210GHz	2.244GHz	3.400GHz	4.522GHz
35	420MHz	430.08MHz	501.13MHz	560MHz	840MHz	860.16MHz	875MHz	945M	1.146MHz	1.155GHz	1.680GHz	2.275GHz	2.310GHz	3.500GHz	4.655GHz
36	432MHz	442.368MHz	515.448MHz	576MHz	864MHz	884.736MHz	900MHz	972M	1.179MHz	1.188GHz	1.728GHz	2.340GHz	2.376GHz	3.600GHz	4.788GHz
37	444MHz	456.656MHz	529.766MHz	592MHz	888MHz	909.312MHz	925MHz	999M	1.212MHz	1.221GHz	1.776GHz	2.405GHz	2.442GHz	3.700GHz	4.921GHz
38	456MHz	466.944MHz	544.084MHz	608MHz	912MHz	933.888MHz	950MHz	1026M	1.245MHz	1.254GHz	1.824GHz	2.470GHz	2.508GHz	3.800GHz	5.054GHz
39	468MHz	479.232MHz	558.402MHz	624MHz	936MHz	958.464MHz	975MHz	1053M	1.277MHz	1.287GHz	1.872GHz	2.535GHz	2.574GHz	3.900GHz	5.187GHz
40	480MHz	491.52MHz	572.72MHz	640MHz	960MHz	983.04MHz	1GHz	1080M	1.310MHz	1.320GHz	1.920GHz	2.600GHz	2.640GHz	4.000GHz	5.320GHz

Table23 clock harmonic list

8640 N/B Maintenance

1.4.8 Audio Performance

8640 meet all the following items

Test Items	Mobile System
Full Scale Output Voltage	$\geq 0.7V_{rms}$ (3.3V audio)
Sample Frequency Accuracy	$\leq 0.1\%$
Frequency Response (44.1ks/sec)	20Hz~15kHz
Frequency Response (48ks/sec)	20Hz~15kHz
Dynamic Range (SNR)	$\geq 70dBFS$
THD+N	$\leq -55dBFS$
Cross-talk	$\geq 50dB$

Table24 Digital Playback (PC-D-A) for Line Output

Test Items	Mobile System
Frequency Response	100Hz~12kHz
Dynamic Range (SNR)	$\geq 60dBFS$
THD+N	$\leq -50dBFS$

Table25. Analog Pass-through(A-A) for Microphone Input to Line Output

Test Items	Mobile System
Full Scale Input Voltage	$\geq 100mV_{rms}$
Sample Frequency Accuracy	$\leq 0.1\%$
Frequency Response(22.05ks/sec)	100Hz~8.8kHz
Dynamic Range (SNR)	$\geq 60dBFS$
THD+N	$\leq -50dBFS$

Table26. Digital Recording(A-D-PC) for Microphone Input

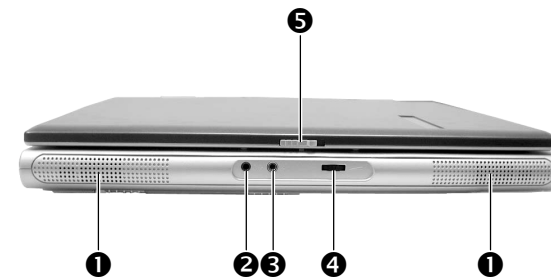
8640 N/B Maintenance

2. System View and Disassembly

2.1 System View

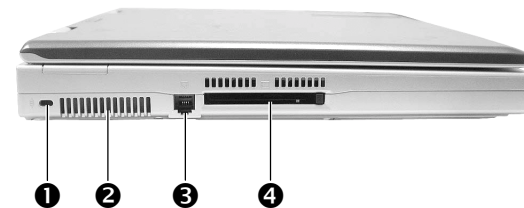
2.1.1 Front View

- ❶ Stereo Speaker Set
- ❷ Line Out Phone Jack
- ❸ External Microphone Jack
- ❹ Volume Control
- ❺ Top Cover Latch



2.1.2 Left-side View

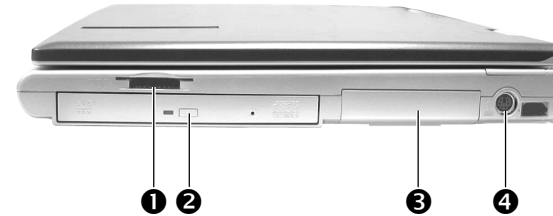
- ❶ Kensington Lock
- ❷ Ventilation Openings
- ❸ RJ-11 Connector
- ❹ PC Card Slot



8640 N/B Maintenance

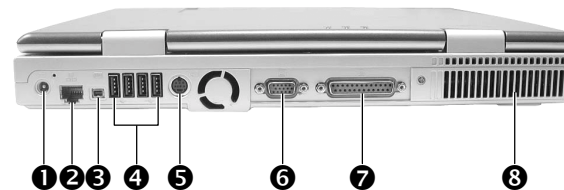
2.1.3 Right-side View

- ❶ Read card socket
- ❷ CD-ROM/DVD-ROM Drive
- ❸ Hard Disk Drive
- ❹ PS/2 Connector



2.1.4 Rear View

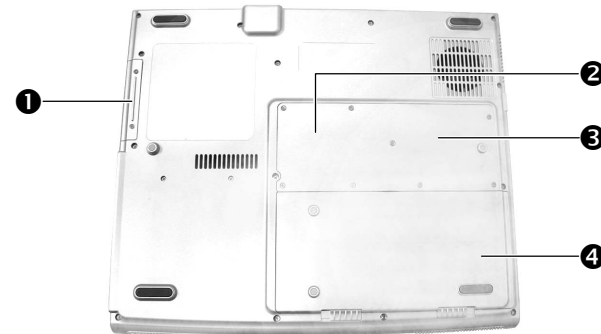
- ❶ Power Connector
- ❷ RJ-45 Connector
- ❸ Mini IEEE1394 Connector
- ❹ USB Ports
- ❺ S-Video Output Connector
- ❻ VGA Port
- ❼ Parallel Port
- ❽ Ventilation Openings



8640 N/B Maintenance

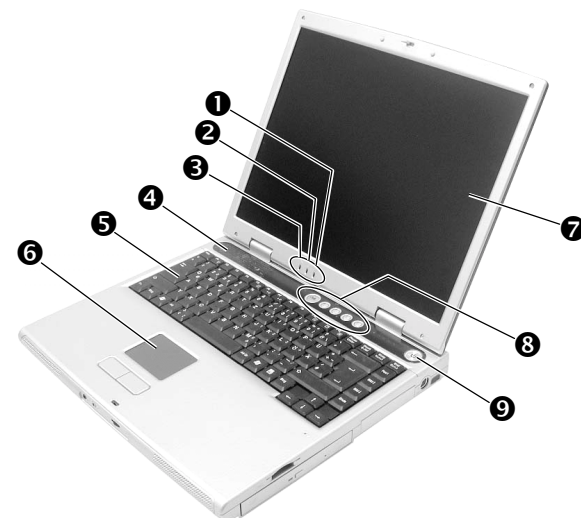
2.1.5 Bottom View

- ❶ Hard Disk Drive
- ❷ Extend SO-DIMM and Wireless Card
- ❸ Battery Park



2.1.6 Top-open View

- ❶ Battery Charge Indicator
- ❷ Battery Power Indicator
- ❸ AC Power Indicator
- ❹ Microphone
- ❺ Keyboard
- ❻ Touch Pad
- ❼ LCD Screen
- ❽ Easy Start Buttons
- ❾ Power Button

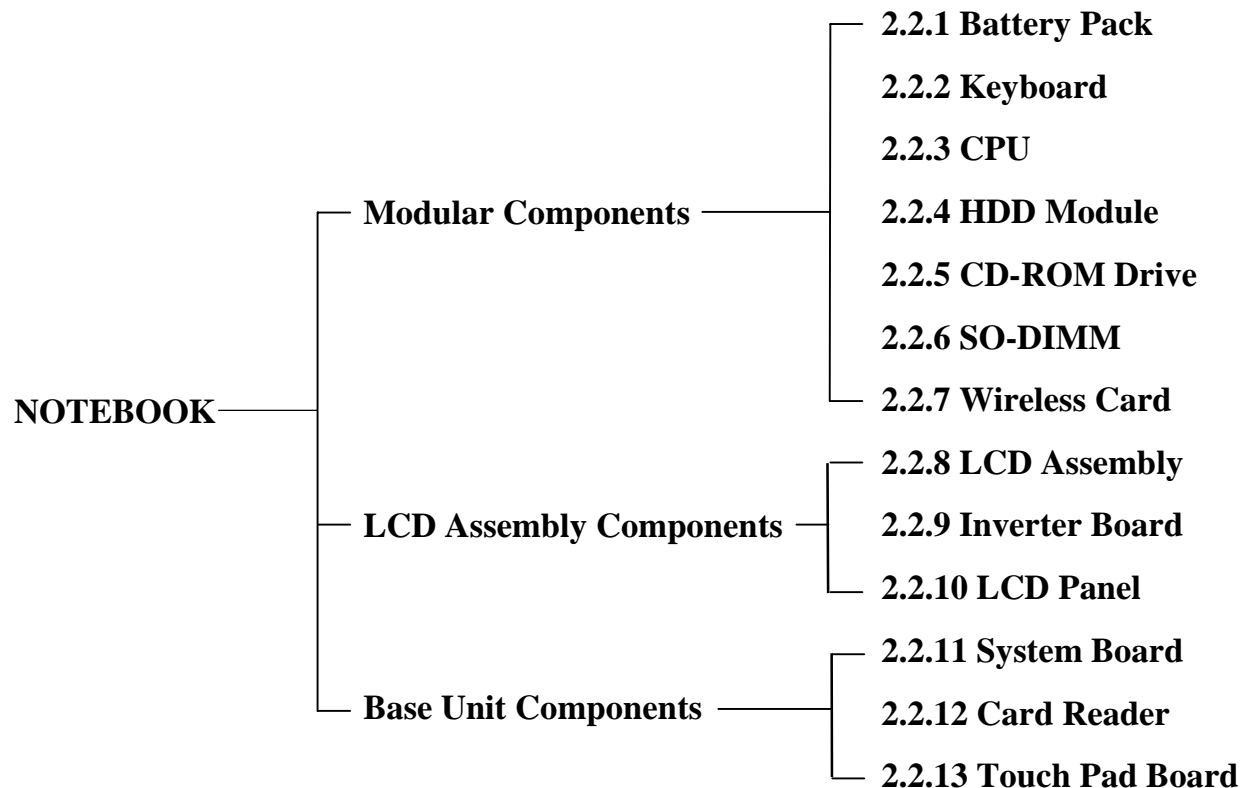


8640 N/B Maintenance

2.2 System Disassembly

The section discusses at length each major component for disassembly/reassembly and show corresponding illustrations. Use the chart below to determine the disassembly sequence for removing components from the notebook.

NOTE: Before you start to install/replace these modules, disconnect all peripheral devices and make sure the notebook is not turned on or connected to AC power.



8640 N/B Maintenance

2.2.1 Battery Pack

Disassembly

1. Carefully put the notebook upside down.
2. Slide the two release lever to the “unlock” (☐) position (❶), then sliding and holding the release lever outwards while take the battery pack out of the compartment (❷). (Figure 2-1)

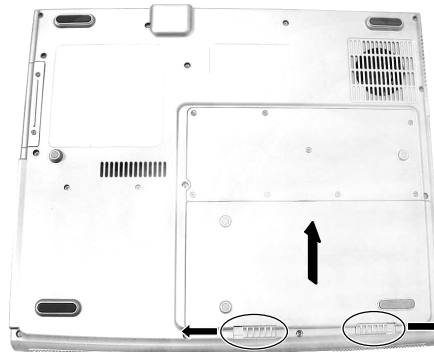


Figure 2-1 Remove the battery pack

Reassembly

1. Replace the battery pack into the compartment. The battery pack should be correctly connected when you hear a clicking sound.
2. Slide the release lever to the “lock” (☒) position.

8640 N/B Maintenance

2.2.2 Keyboard

Disassembly

1. Remove the battery pack. (See section 2.2.1 Disassembly)
2. Open the top cover.
3. Insert a small rod, such as a straightened paper clip, into the eject hole near the power connector of the notebook. (Figure 2-2)

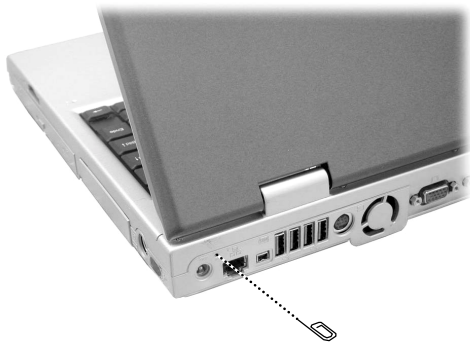


Figure 2-2 Insert a rod easy to remove

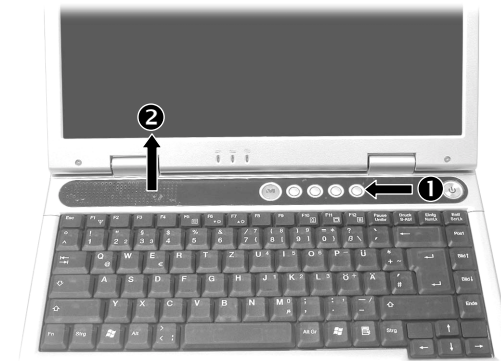


Figure 2-3 Remove easy start buttons cover

4. Push the rod firmly and slide the easy start buttons cover to the left (❶). Then lift the easy start buttons cover up from the left side (❷). (Figure 2-3)

8640 N/B Maintenance

5. Remove three screws fastening keyboard on the base unit cover. (Figure 2-4)
6. Slightly lift up the keyboard and disconnect the cable from the system board to detach the keyboard. (Figure 2-5)

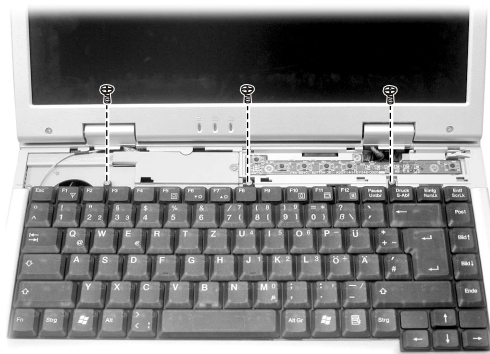


Figure 2-4 Remove three screws

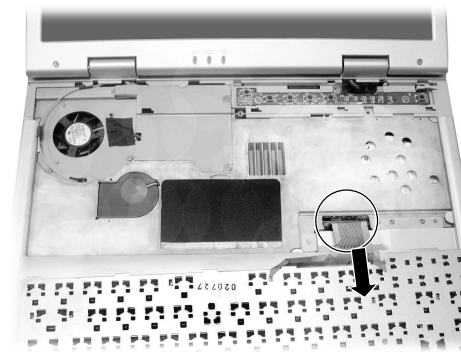


Figure 2-5 Remove keyboard

Reassembly

1. Reconnect the keyboard cable and fit the keyboard back into place with three screws.
2. Replace the easy start buttons cover.

8640 N/B Maintenance

2.2.3 CPU

Disassembly

1. Remove the battery pack. (See section 2.2.1 Disassembly)
2. Remove the keyboard to access the CPU compartment. (See section 2.2.2 Disassembly)
3. Remove five screws fastening the plate Assy. (Figure 2-6)

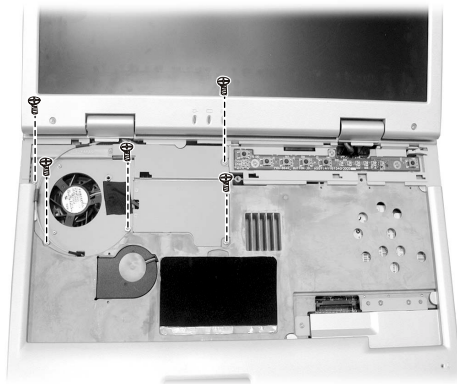


Figure 2-6 Remove five screws

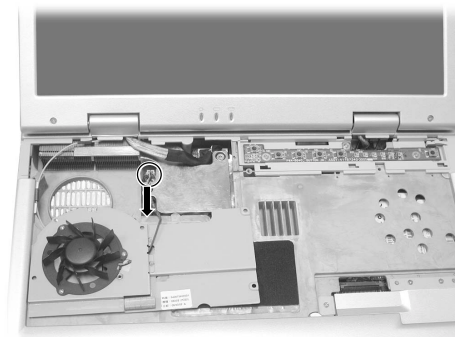


Figure 2-7 Disconnect the cable

4. Disconnect the fan's power cord from system board. Then remove the plate Assy. (Figure 2-7)

8640 N/B Maintenance

4. Remove three screws fastening the heatsink. (Figure 2-8)
5. To remove the existing CPU, lift the socket arm up to the vertical position. (Figure 2-9)

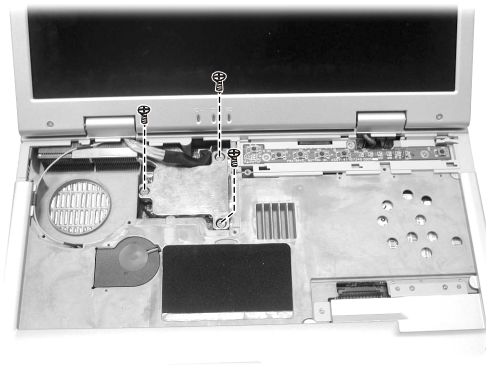


Figure 2-8 Remove the fan's power cord

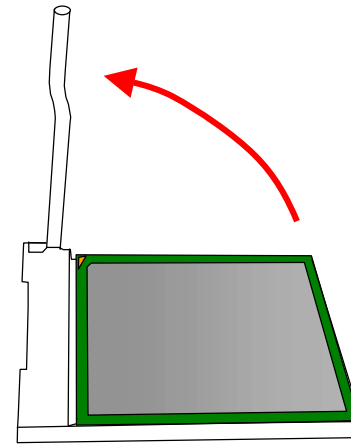


Figure 2-9 Remove the CPU

Reassembly

1. Carefully, align the arrowhead corner of the CPU with the beveled corner of the socket, then insert CPU pins into the holes. Place the lever back to the horizontal position and push the lever to the left .
2. Connect the fan's power cord to the system board, fit the heatsink onto the top of the CPU and secure with four screws.
3. Replace the keyboard .Then replace easy start buttons cover.

8640 N/B Maintenance

2.2.4 HDD Module

Disassembly

1. Carefully put the notebook upside down.
2. Remove two screw and slide the HDD module out of the compartment. (Figure 2-10)
3. Remove six screws to separate the hard disk drive from the metal shield. (Figure 2-11)

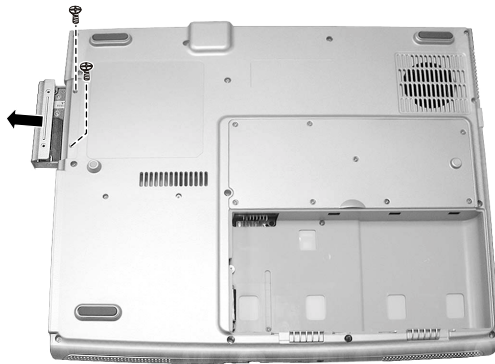


Figure 2-10 Remove HDD module

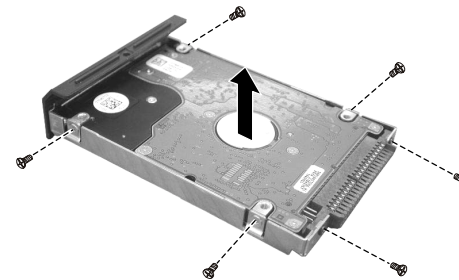


Figure 2-11 Disassemble the hard disk

Reassembly

1. To install the hard disk drive, place it in the bracket and secure with six screws.
2. Slide the HDD module into the compartment and secure with one screw.

8640 N/B Maintenance

2.2.5 CD/DVD-ROM Drive

Disassembly

1. Carefully put the notebook upside down. Remove the battery pack. (See section 2.2.1 Disassembly)
2. Remove Three screw fastening the CD/DVD-ROM drive. (Figure 2-12)
3. Insert a small rod, such as a straightened paper clip, into CD/DVD-ROM drive's manual eject hole and push firmly to release the tray. Then gently pull out the CD/DVD-ROM drive by holding the tray that pops out. (Figure 2-13)

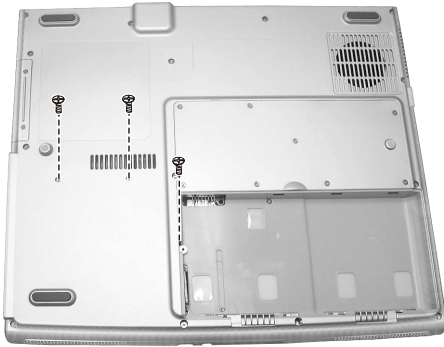


Figure 2-12 Remove three screw

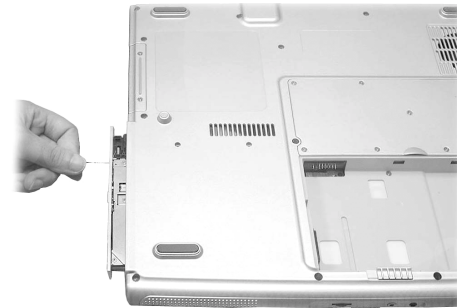


Figure 2-13 Remove the CD/DVD-ROM drive

Reassembly

1. Push the CD/DVD-ROM drive into the compartment and secure with three screws..
2. Replace the battery pack. (See section 2.2.1 Reassembly)

8640 N/B Maintenance

2.2.6 SO-DIMM

Disassembly

1. Carefully put the notebook upside down. Remove the battery pack. (See section 2.2.1 Disassembly)
2. Remove the keyboard cover and keyboard. (See section 2.2.2 Disassembly)
3. Full the retaining clips outwards (❶) and remove the SO-DIMM (❷). (Figure 2-15)

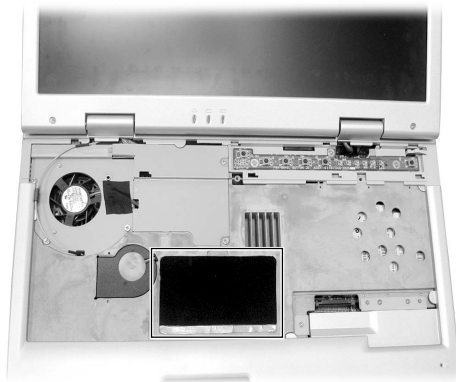


Figure 2-14 Remove the SO-DIMM cover

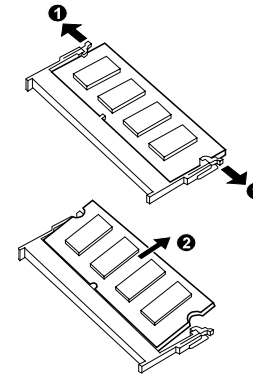


Figure 2-15 Remove the SO-DIMM

Reassembly

1. To install the SO-DIMM, match the SO-DIMM's notched part with the socket's projected part and firmly insert the OS-DIMM into the socket at 20-degree angle. Then push down until the retaining clips lock the SO-DIMM into cover.
2. Replace the SO-DIMM cover.
3. Replace the keyboard, battery pack. (See section 2.2.2 and 2.2.1 Reassembly).

8640 N/B Maintenance

2.2.7 Wireless Card

Disassembly

Complete the steps in [Section 2.2](#) to prepare the system for disassembly.

1. Remove the battery pack. (See section 2.2.1 Disassembly)
2. Remove eight screws fastening the mini PCI cover. (Figure 2-16)
3. Remove the antenna and disconnect the one cable connecting the wireless card. (Figure 2-17)

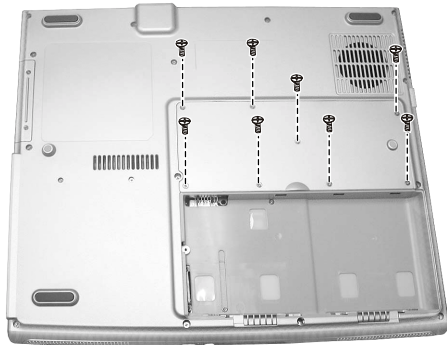


Figure 2-16 Disconnect the cable

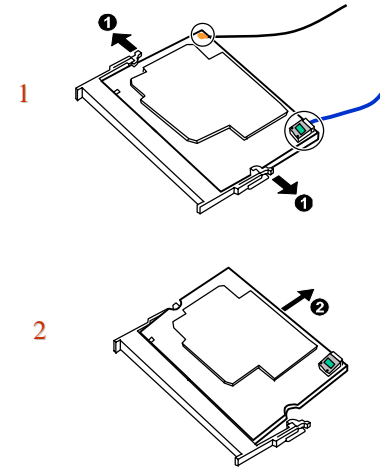


Figure 2-17 Remove the antenna

4. Pull the retaining clips outwards (❶) and remove the wireless card (❷). (Figure 2-17)

8640 N/B Maintenance

Reassembly

1. To install the wireless card, match the wireless card's notched part with the socket's projected part and firmly insert the card into the socket. Then push down until the retaining clips lock the card into the socket.
2. Attach the antenna and reconnect the cable to the wireless card.
3. Replace the cover and secure with eight screws.
4. Replace the battery pack. (See section 2.2.1 Reassembly)

8640 N/B Maintenance

2.2.8 LCD ASSY

Disassembly

1. Remove the battery pack, keyboard and heatsink. (See section 2.2.1 to 2.2.3 Disassembly)
2. Remove the two hinge covers. (Figure 2-18)
3. Disconnect the LCD cables from the system board, and remove four screws of the hinges (❶). Now Pull out the antenna from the compartment (❷). (Figure 2-19)

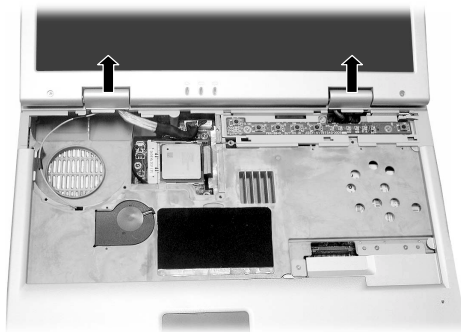


Figure 2-18 Remove the antenna

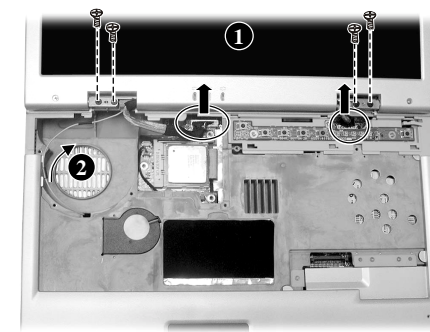


Figure 2-19 Remove the LCD Assy

8640 N/B Maintenance

Reassembly

1. Attach the LCD assembly to the base unit and secure with four screws on the hinges.
2. Reconnect the two cables to the system board.
3. Replace the antenna to the wireless card socket.
4. Replace two hinge cover.
5. Replace the heatsink, keyboard and battery pack. (See section 2.2.3 to 2.2.1Reassembly)

8640 N/B Maintenance

2.2.9 Inverter Board

Disassembly

1. Remove the LCD assembly. (See section 2.2.8 Disassembly)
2. Detach the LCD cover.
3. To remove the inverter board on the lower part of the LCD housing , remove the two screws and disconnect two cables. (figure 2-22)

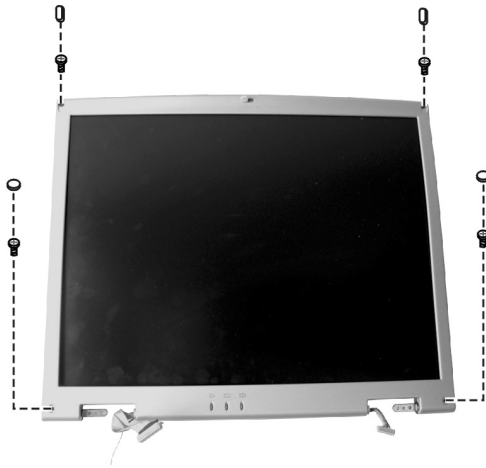


Figure 2-20 Remove LCD cover

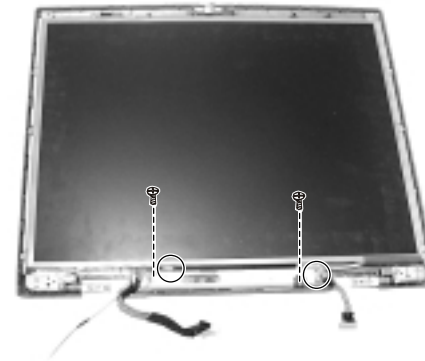


Figure 2-21 Remove the inverter board

Reassembly

1. Reconnect the cables. Fit the inverter board back into place and secure with two screw.
2. Replace the LCD cover.
3. Replace the LCD assembly. (See section 2.2.9 Reassembly)

8640 N/B Maintenance

2.2.10 LCD Panel

Disassembly

1. Remove the battery pack, keyboard, heatsink and LCD assembly. (See section 2.2.1 to 2.2.3 and 2.2.8 Disassembly)
2. Remove the four rubber pads and four screws on the lower part of the panel. (figure 2-20)
3. Insert a flat screwdriver to the lower part of the LCD cover and gently pry the cover out. Repeat the process until the cover is completely separated from the housing.
4. Remove the six screws on two sides and four screws on the lower part of the LCD panel.



Figure 2-22 Remove LCD panel

5. Remove the inverter board. (See section 2.2.9 Disassembly)

8640 N/B Maintenance

Reassembly

1. Fit the LCD panel back into place and secure with ten screws, and reconnect the cables to the inverter board, and replace two screws .
2. Fit the LCD cover back into the housing and replace the four screws and four rubber pads.
3. Replace the LCD assembly, heatsink, keyboard, battery pack. (See section 2.2.8 and 2.2.3 to 2.2.1 Reassembly)

8640 N/B Maintenance

2.2.11 System Board

Disassembly

1. Remove the battery pack, keyboard, CPU, HDD module, CD/DVD-ROM drive and LCD assembly. (See section 2.2.1 to 2.2.5 and 2.2.8 Disassembly)
2. Remove thirteen screws on the bottom of the notebook. (Figure 2-23)
3. Remove eleven screws fastening the top cover and the easy start / LED board. Then detach the top cover. (Figure 2-24)

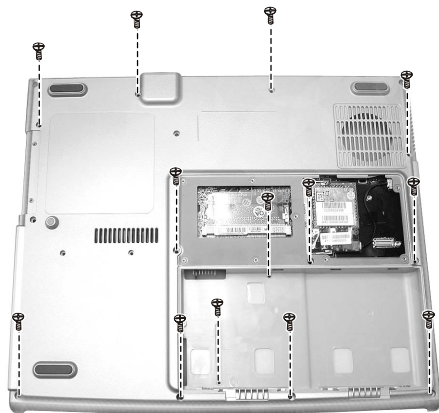


Figure 2-23 Remove the bottom

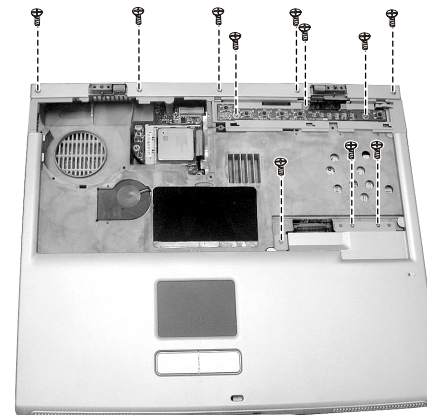


Figure 2-24 Remove nine screws

8640 N/B Maintenance

4. Turn the four hex nuts and one screw to left to unscrew it completely. (figure 2-25)
5. Carefully put the notebook upside down.

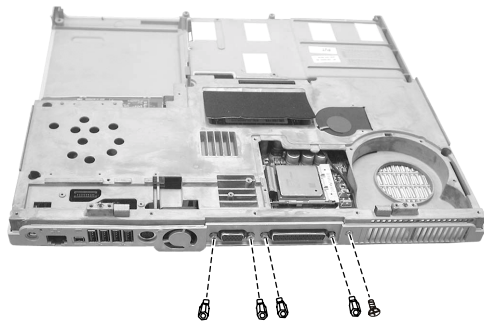


Figure 2-25 Remove the base unit cover



Figure 2-26 Remove the metal shield

6. Remove three screws on the bottom of the notebook. Then lift the housing up. (Figure 2-26)

8640 N/B Maintenance

7. Remove four screws fastening the system board on the top shielding . Now you can remove the system board.
(Figure 2-27)

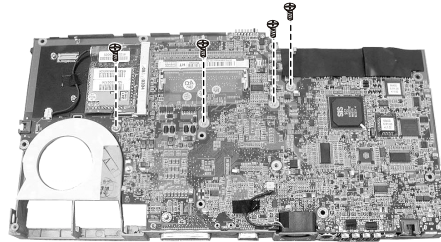


Figure 2-27 Remove the system board

Reassembly

1. Replace the system board on the top shielding and secure with four screws.
2. Replace the housing and secure three screws on the bottom of the notebook.
3. Fasten the housing by four hex nuts and one screw on the rear of the notebook.
4. Replace the top cover and secure with thirteen screws on the bottom of the notebook.
5. Turn over the notebook. and turn the eleven screws to the right to tighten the top cover.
6. Replace the LCD Assy, CD/DVD-ROM, HDD, keyboard and battery pack. (See section 2.2.8, 2.2.5, 2.2.4, 2.2.2, 2.2.1Reassembly)

8640 N/B Maintenance

2.2.12 Card Reader

Disassembly

1. Remove the battery pack, keyboard, HDD, CD/DVD-ROM, LCD Assy. (See section 2.2.1, 2.2.2, 2.2.4, 2.2.5, 2.2.8 disassembly)
2. Remove the top cover. (See steps 1-3 in section 2.2.11 Disassembly.)
3. Disconnect the cable from the top mother board. (Figure 2-28)
4. Remove the four screws to lift up the card reader. (Figure 2-28)

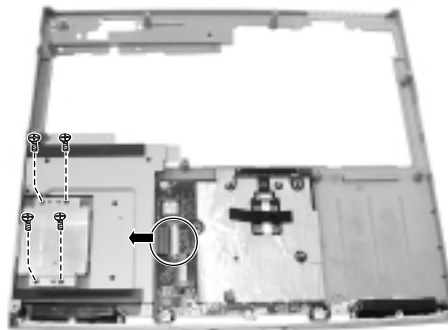


Figure 2-28 Remove the card reader

Reassembly

1. Replace the card reader and reconnect the cable to the top mother board.
2. Fasten the card reader by four screws.
3. Assemble the top cover. (See section 2.2.11 Reassembly)
4. Replace the LCD Assy, CD/DVD-ROM, HDD, keyboard and battery. (See section 2.2.8, 2.2.5, 2.2.4, 2.2.2, 2.2.1 Reassembly)

8640 N/B Maintenance

2.2.13 Touch Pad Board

Disassembly

1. Remove the battery pack, keyboard, HDD, CD/DVD-ROM, LCD Assy. (See section 2.2.1, 2.2.2, 2.2.4, 2.2.5, 2.2.8 disassembly)
2. Remove the top cover. (See steps 1-3 in section 2.2.11 Disassembly)
3. Disconnect the three cables from the top mother board. (Figure 2-29)
4. Remove the six screws to lift up the top mother board and touch pad panel. (Figure 2-29)

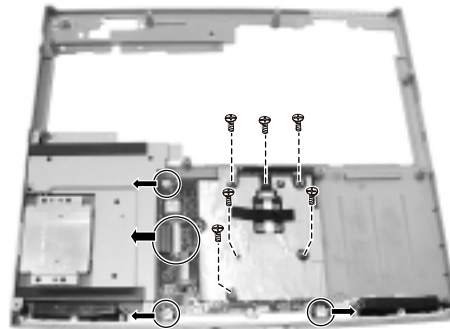


Figure 2-29 Remove the top mother board

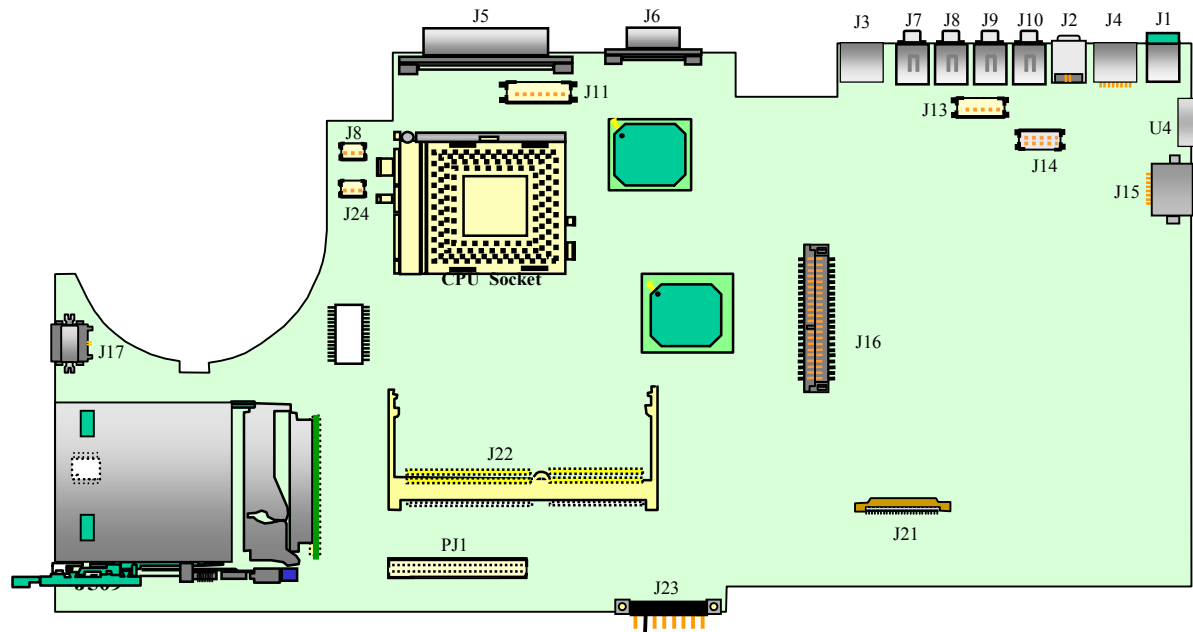
Reassembly

1. Replace the top mother board and touch-pad panel, and secure with six screws.
2. Reconnect the three cables to the board.
3. Assemble the top cover. (See section 2.2.11 Reassembly)
4. Replace the LCD Assy, CD/DVD-ROM, HDD, keyboard and battery. (See section 2.2.8, 2.2.5, 2.2.4, 2.2.2, 2.2.1 Reassembly)

8640 N/B Maintenance

3. Definition&Location Of Connectors/Switches Setting

3.1 Main Board (Side A)

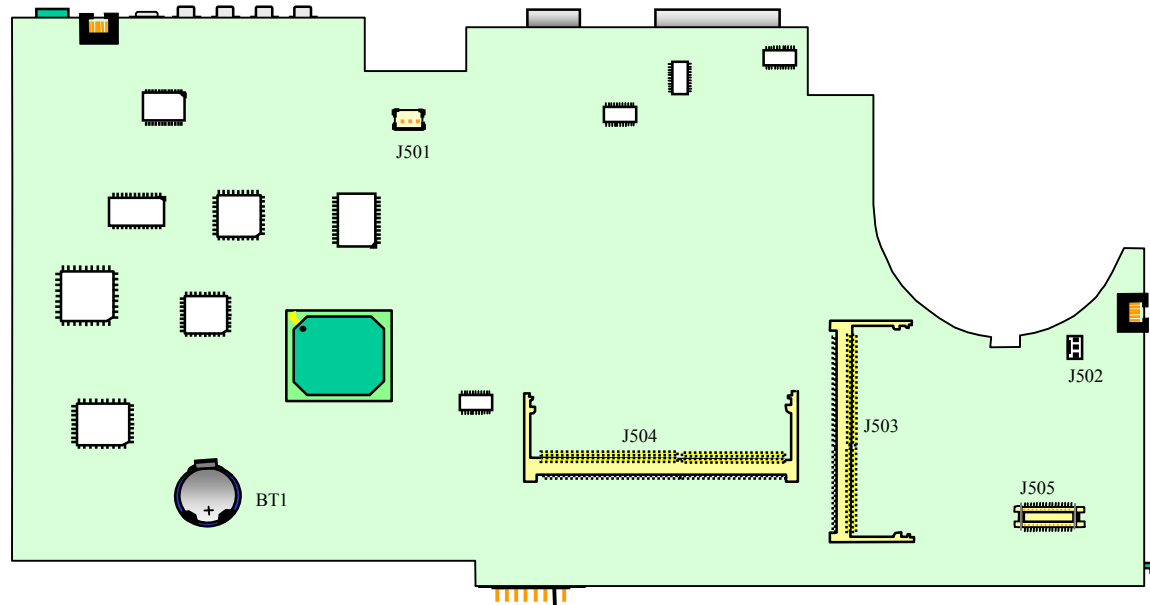


- | | | | |
|-----------------------|---------------------------|------------------------------|-------------------------|
| ■ J1 Power Jack | ■ J6 VGA Connector | ■ J16 HDD Connector | ■ J23 Battery Connector |
| ■ J2 1394 connector | ■ J7,8,9,10 USB Connector | ■ J17 Modem Connector | ■ U8 Pentium4 Socket |
| ■ J3 TV Out Connector | ■ J11, 13 LCD Connector | ■ J18, J24 fan Connector | |
| ■ J4 LAN Connector | ■ J14 Button B'D Connect | ■ J21 Internal K/B Connector | |
| ■ J5 Parallel Port | ■ J15 PS2 Connector | ■ J22 memory Connector | |

8640 N/B Maintenance

3. Definition&Location Of Connectors/Switches Setting

3.1 Main Board (Side B)



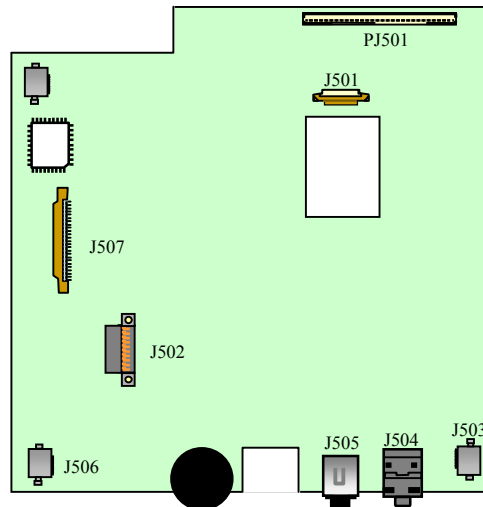
- | | |
|-------------------------------------|--|
| ■ J501 System Fan connector | ■ J504 Extend Memory Socket |
| ■ J502 Wireless Card link Connector | ■ J505 AC-link MDC Jump Wire Connector |
| ■ J503 Mini-PCI connector | |

8640 N/B Maintenance

3. Definition&Location Of Connectors/Switches Setting

3.2 Touch Pad Board (Side A)

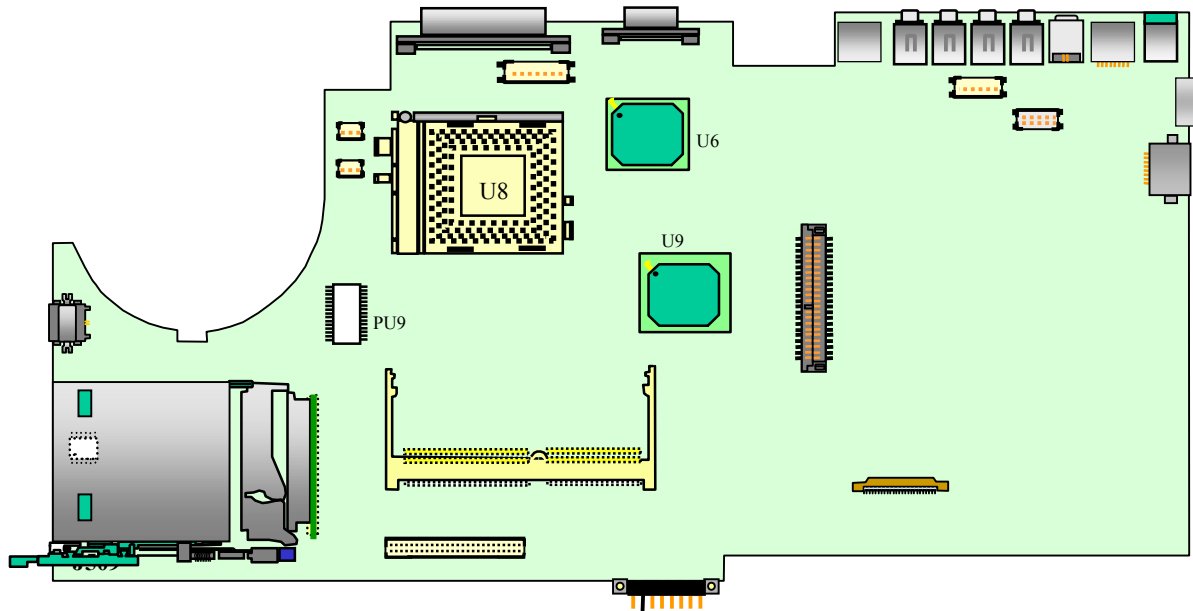
- J501 Touch Pad Connector
- J502 CD-ROM Connector
- J503 Left Internal Speaker Connector
- J504 Line Out /SPDIF Phone Jack
- J505 External Micro Phone Jack
- J506 Right internal Speaker Connector
- J507 Card Reader connector
- PJ501 BTB Connector



8640 N/B Maintenance

4. Definition & Location of Major Components

4.1 Main Board (Side A)



■ U6 SIS 651 North bridge control

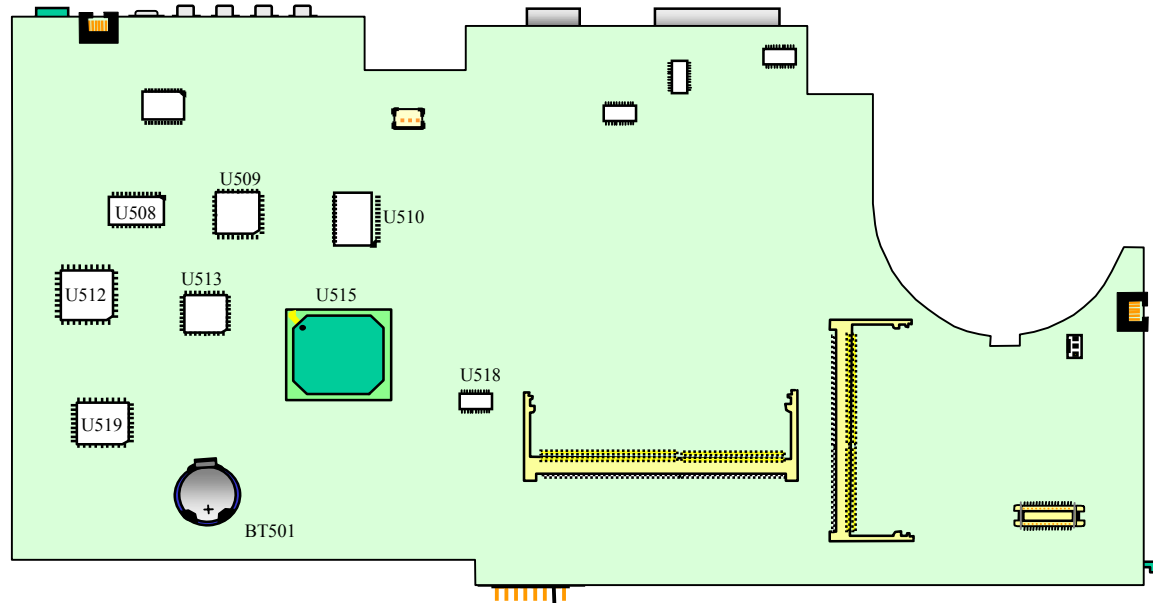
■ PU9 LTC3716 CPU Power Control

■ U9 nVidia Graphics Control

8640 N/B Maintenance

4. Definition & Location of Major Components

4.2 Main Board (Side B)



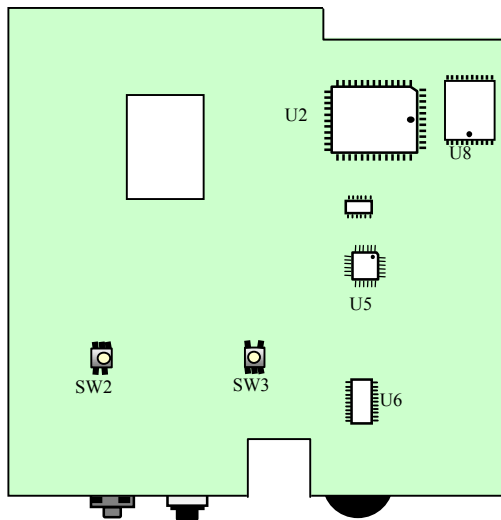
■ U508 LAN Control	■ U512 LPC Super I/O	■ U518 Memory Clock Control
■ U509 IEEE1394 Control	■ U513 System BIOS	■ U519 K/B Bios control
■ U510 System Clock Control	■ U515 SIS962 South bridge	■ BT501 CMOS Battery

8640 N/B Maintenance

4. Definition & Location of Major Components

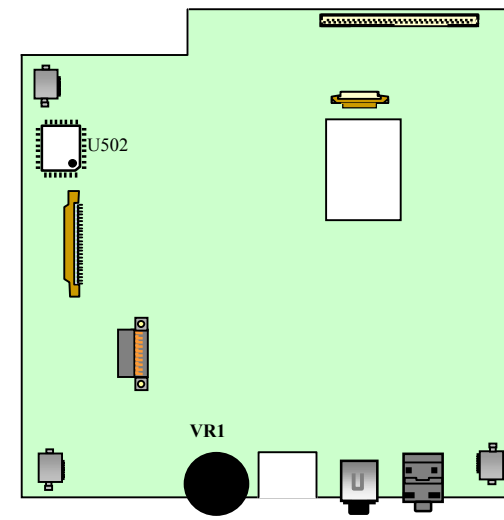
4.3 Touch Pad Board (Side A,B)

Side A



- U2 Card Reader Control
- U5 Audio Control

Side B



- U6 Audio Amplifier
- U8 Card Reader BIOS
- U502 Card Reader BIOS
- VR1 Volume Control

8640 N/B Maintenance

5. Pin Descriptions of Major Components

5.1 Pentium 4(Willamette/Northwood) mFC-PGA2 478 pins

Name	Type	Description						
A[35:3]#	Input/ Output	A[35:3]# (Address) define a 2 36-byte physical memory address space. In sub-phase 1 of the address phase, these pins transmit the address of a transaction. In sub-phase 2, these pins transmit transaction type information. These signals must connect the appropriate pins of all agents on the Pentium 4 processor in the 478-pin package system bus. A[35:3]# are protected by parity signals AP[1:0]#. A[35:3]# are source synchronous signals and are latched into the receiving buffers by ADSTB[1:0]#. On the active-to-inactive transition of RESET#, the processor samples a subset of the A[35:3]# pins to determine power-on configuration. See Section 7.1 for more details.						
A20M#	Input	If A20M# (Address-20 Mask) is asserted, the processor masks physical address bit 20 (A20#) before looking up a line in any internal cache and before driving a read/write transaction on the bus. Asserting A20M# emulates the 8086 processor's address wrap-around at the 1-Mbyte boundary. Assertion of A20M# is only supported in real mode. A20M# is an asynchronous signal. However, to ensure recognition of this signal following an Input/Output write instruction, it must be valid along with the TRDY# assertion of the corresponding Input/Output Write bus transaction.						
ADS#	Input/ Output	ADS# (Address Strobe) is asserted to indicate the validity of the transaction address on the A[35:3]# and REQ[4:0]# pins. All bus agents observe the ADS# activation to begin parity checking, protocol checking, address decode, internal snoop, or deferred reply ID match operations associated with the new transaction.						
ADSTB[1:0]#	Input/ Output	Address strobes are used to latch A[35:3]# and REQ[4:0]# on their rising and falling edges. Strokes are associated with signals as shown below. <table><tr><th>Signals</th><th>Associated Strobe</th></tr><tr><td>REQ[4:0]#, A[16:3]#</td><td>ADSTB0#</td></tr><tr><td>A[35:17]#</td><td>ADSTB1#</td></tr></table>	Signals	Associated Strobe	REQ[4:0]#, A[16:3]#	ADSTB0#	A[35:17]#	ADSTB1#
Signals	Associated Strobe							
REQ[4:0]#, A[16:3]#	ADSTB0#							
A[35:17]#	ADSTB1#							

Name	Type	Description												
AP[1:0]#	Input/ Output	AP[1:0]# (Address Parity) are driven by the request initiator along with ADS#, A[35:3]#, and the transaction type on the REQ[4:0]#. A correct parity signal is high if an even number of covered signals are low and low if an odd number of covered signals are low. This allows parity to be high when all the covered signals are high. AP[1:0]# should connect the appropriate pins of all Pentium 4 processor in the 478-pin package system bus agents. The following table defines <table border="1"> <thead> <tr> <th>Request Signals</th><th>subphase 1</th><th>subphase 2</th></tr> </thead> <tbody> <tr> <td>A[35:24]#</td><td>AP0#</td><td>AP1#</td></tr> <tr> <td>A[23:3]#</td><td>AP1#</td><td>AP0#</td></tr> <tr> <td>REQ[4:0]#</td><td>AP1#</td><td>AP0#</td></tr> </tbody> </table>	Request Signals	subphase 1	subphase 2	A[35:24]#	AP0#	AP1#	A[23:3]#	AP1#	AP0#	REQ[4:0]#	AP1#	AP0#
Request Signals	subphase 1	subphase 2												
A[35:24]#	AP0#	AP1#												
A[23:3]#	AP1#	AP0#												
REQ[4:0]#	AP1#	AP0#												
BCLK[1:0]	Input	The differential pair BCLK (Bus Clock) determines the system bus frequency. All processor system bus agents must receive these signals to drive their outputs and latch their inputs. All external timing parameters are specified with respect to the rising edge of BCLK0 crossing V CROSS.												
BINIT#	Input/ Output	BINIT# (Bus Initialization) may be observed and driven by all processor system bus agents and if used, must connect the appropriate pins of all such agents. If the BINIT# driver is enabled during power-on configuration, BINIT# is asserted to signal any bus condition that prevents reliable future operation. If BINIT# observation is enabled during power-on configuration, and BINIT# is sampled asserted, symmetric agents reset their bus LOCK# activity and bus request arbitration state machines. The bus agents do not reset their IOQ and transaction tracking state machines upon observation of BINIT# activation. Once the BINIT# assertion has been observed, the bus agents will re-arbitrate for the system bus and attempt completion of their bus queue and IOQ entries. If BINIT# observation is disabled during power-on configuration, a central agent may handle an assertion of BINIT# as appropriate to the error handling architecture of the system.												
BNR#	Input/ Output	BNR# (Block Next Request) is used to assert a bus stall by any bus agent who is unable to accept new bus transactions. During a bus stall, the current bus owner cannot issue any new transactions.												

8640 N/B Maintenance

5.1 Pentium 4(Willamette/Northwood) mFC-PGA2 478 pins

Name	Type	Description
BPM[5:0]#	Input/ Output	<p>BPM[5:0]# (Breakpoint Monitor) are breakpoint and performance monitor signals. They are outputs from the processor which indicate the status of breakpoints and programmable counters used for monitoring processor performance. BPM[5:0]# should connect the appropriate pins of all Pentium 4 processor in the 478-pin package system bus agents.</p> <p>BPM4# provides PRDY# (Probe Ready) functionality for the TAP port. PRDY# is a processor output used by debug tools to determine processor debug readiness.</p> <p>BPM5# provides PREQ# (Probe Request) functionality for the TAP port. PREQ# is used by debug tools to request debug operation of the processor. Please refer to the <i>Intel® Pentium® 4 Processor in the 478-pin Package and Intel® 850 Chipset Platform Design Guide</i> for more detailed information.</p> <p>These signals do not have on-die termination. Refer to Section 2.5, the Intel® Pentium® 4 Processor in the 478-pin Package and Intel® 850 Chipset Platform Design Guide for termination requirements.</p>
BPRI#	Input	<p>BPRI# (Bus Priority Request) is used to arbitrate for ownership of the processor system bus. It must connect the appropriate pins of all processor system bus agents. Observing BPRI# active (as asserted by the priority agent) causes all other agents to stop issuing new requests, unless such requests are part of an ongoing locked operation. The priority agent keeps BPRI# asserted until all of its requests are completed, then releases the bus by deasserting BPRI#.</p>
BR0#	Input/ Output	<p>BR0# drives the BREQ0# signal in the system and is used by the processor to request the bus. During power-on configuration this pin is sampled to determine the agent ID = 0.</p> <p>This signal does not have on-die termination and must be terminated.</p>
BSEL[1:0]	Output	<p>The BCLK[1:0] frequency select signals BSEL[1:0] are used to select the processor input clock frequency. Table 4 defines the possible combinations of the signals and the frequency associated with each combination. The required frequency is determined by the processor, chipset and clock synthesizer. All agents must operate at the same frequency. The Pentium 4 processor in the 478-pin package operates currently at a 400 MHz system bus frequency (100 MHz BCLK[1:0] frequency). For more information about these pins, including termination recommendations refer to Section 2.9 and the appropriate platformdesign guidelines.</p>
COMP[1:0]	Analog	<p>COMP[1:0] must be terminated on the system board using precision resistors. Refer to the <i>Intel® Pentium® 4 Processor in the 478-pin Package and Intel® 850 Chipset Platform Design Guide</i> for details on implementation.</p>

Name	Type	Description															
D[63:0]#	Input/ Output	<p>D[63:0]# (Data) are the data signals. These signals provide a 64-bit data path between the processor system bus agents, and must connect the appropriate pins on all such agents. The data driver asserts DRDY# to indicate a valid data transfer.</p> <p>D[63:0]# are quad-pumped signals and will thus be driven four times in a common clock period. D[63:0]# are latched off the falling edge of both DSTBP[3:0]# and DSTBN[3:0]#. Each group of 16 data signals correspond to a pair of one DSTBP# and one DSTBN#. The following table shows the grouping of data signals to data strobes and DBI#.</p> <p>Quad-Pumped Signal Groups</p> <table><tr><th>Data Group</th><th>DSTBN#/ DSTBP#</th><th>DBI#</th></tr><tr><td>D[15:0]#</td><td>0</td><td>0</td></tr><tr><td>D[31:16]#</td><td>1</td><td>1</td></tr><tr><td>D[47:32]#</td><td>2</td><td>2</td></tr><tr><td>D[63:48]#</td><td>3</td><td>3</td></tr></table> <p>Furthermore, the DBI# pins determine the polarity of the data signals. Each group of 16 data signals corresponds to one DBI# signal. When the DBI# signal is active, the corresponding data group is inverted and therefore sampled active high.</p>	Data Group	DSTBN#/ DSTBP#	DBI#	D[15:0]#	0	0	D[31:16]#	1	1	D[47:32]#	2	2	D[63:48]#	3	3
Data Group	DSTBN#/ DSTBP#	DBI#															
D[15:0]#	0	0															
D[31:16]#	1	1															
D[47:32]#	2	2															
D[63:48]#	3	3															
DBI[3:0]#	Input/ Output	<p>DBI[3:0]# are source synchronous and indicate the polarity of the D[63:0]# signals. The DBI[3:0]# signals are activated when the data on the data bus is inverted. The bus agent will invert the data bus signals if more than half the bits, within the covered group, would change level in the next cycle.</p> <p>DBI[3:0] Assignment To Data Bus</p> <table><tr><th>Bus Signal</th><th>Data Bus Signals</th></tr><tr><td>DBI3#</td><td>D[63:48]#</td></tr><tr><td>DBI2#</td><td>D[47:32]#</td></tr><tr><td>DBI1#</td><td>D[31:16]#</td></tr><tr><td>DBI0#</td><td>D[15:0]#</td></tr></table>	Bus Signal	Data Bus Signals	DBI3#	D[63:48]#	DBI2#	D[47:32]#	DBI1#	D[31:16]#	DBI0#	D[15:0]#					
Bus Signal	Data Bus Signals																
DBI3#	D[63:48]#																
DBI2#	D[47:32]#																
DBI1#	D[31:16]#																
DBI0#	D[15:0]#																
DBR#	Output	<p>DBR# is used only in processor systems where no debug port is implemented on the system board. DBR# is used by a debug port interposer so that an in-target probe can drive system reset. If a debug port is implemented in the system, DBR# is a no connect in the system. DBR# is not a processor signal.</p>															

8640 N/B Maintenance

5.1 Pentium 4(Willamette/Northwood) mFC-PGA2 478 pins

Name	Type	Description										
DBSY#	Input/ Output	DBSY# (Data Bus Busy) is asserted by the agent responsible for driving data on the processor system bus to indicate that the data bus is in use. The data bus is released after DBSY# is deasserted. This signal must connect the appropriate pins on all processor system bus agents.										
DEFER#	Input	DEFER# is asserted by an agent to indicate that a transaction cannot be guaranteed in-order completion. Assertion of DEFER# is normally the responsibility of the addressed memory or Input/Output agent. This signal must connect the appropriate pins of all processor system bus agents.										
DP[3:0]#	Input/ Output	DP[3:0]# (Data parity) provide parity protection for the D[63:0]# signals. They are driven by the agent responsible for driving D[63:0]#, and must connect the appropriate pins of all Pentium 4 processor in the 478-pin package system bus agents.										
DSTBN[3:0]#	Input/ Output	Data strobe used to latch in D[63:0]#. <table><tr><th>Signals</th><th>Associated Strobe</th></tr><tr><td>D[15:0]#, DBI0#</td><td>DSTBN0#</td></tr><tr><td>D[31:16]#, DBI1#</td><td>DSTBN1#</td></tr><tr><td>D[47:32]#, DBI2#</td><td>DSTBN2#</td></tr><tr><td>D[63:48]#, DBI3#</td><td>DSTBN3#</td></tr></table>	Signals	Associated Strobe	D[15:0]#, DBI0#	DSTBN0#	D[31:16]#, DBI1#	DSTBN1#	D[47:32]#, DBI2#	DSTBN2#	D[63:48]#, DBI3#	DSTBN3#
Signals	Associated Strobe											
D[15:0]#, DBI0#	DSTBN0#											
D[31:16]#, DBI1#	DSTBN1#											
D[47:32]#, DBI2#	DSTBN2#											
D[63:48]#, DBI3#	DSTBN3#											
DSTBP[3:0]#	Input/ Output	Data strobe used to latch in D[63:0]#. <table><tr><th>Signals</th><th>Associated Strobe</th></tr><tr><td>D[15:0]#, DBI0#</td><td>DSTBP0#</td></tr><tr><td>D[31:16]#, DBI1#</td><td>DSTBP1#</td></tr><tr><td>D[47:32]#, DBI2#</td><td>DSTBP2#</td></tr><tr><td>D[63:48]#, DBI3#</td><td>DSTBP3#</td></tr></table>	Signals	Associated Strobe	D[15:0]#, DBI0#	DSTBP0#	D[31:16]#, DBI1#	DSTBP1#	D[47:32]#, DBI2#	DSTBP2#	D[63:48]#, DBI3#	DSTBP3#
Signals	Associated Strobe											
D[15:0]#, DBI0#	DSTBP0#											
D[31:16]#, DBI1#	DSTBP1#											
D[47:32]#, DBI2#	DSTBP2#											
D[63:48]#, DBI3#	DSTBP3#											
FERR#	Output	FERR# (Floating-point Error) is asserted when the processor detects an unmasked floating-point error. FERR# is similar to the ERROR# signal on the Intel 387 coprocessor, and is included for compatibility with systems using MSDOS*-type floating-point error reporting.										
GTLREF	Input	GTLREF determines the signal reference level for AGTL+ input pins. GTLREF should be set at 2/3 Vcc. GTLREF is used by the AGTL+ receivers to determine if a signal is a logical 0 or logical 1. Refer to the <i>Intel® Pentium® 4 Processor in the 478-pin Package and Intel® 850 Chipset Platform Design Guide</i> for more information.										

Name	Type	Description
HIT#	Input/ Output	HIT# (Snoop Hit) and HITM# (Hit Modified) convey transaction snoop operation results. Any system bus agent may assert both HIT# and HITM# together to indicate that it requires a snoop stall, which can be continued by reasserting HIT# and HITM# together.
HITM#	Input/ Output	
IERR#	Output	IERR# (Internal Error) is asserted by a processor as the result of an internal error. Assertion of IERR# is usually accompanied by a SHUTDOWN transaction on the processor system bus. This transaction may optionally be converted to an external error signal (e.g., NMI) by system core logic. The processor will keep IERR# asserted until the assertion of RESET#, BINIT#, or INIT#. This signals does not have on-die termination. Refer to Section 2.5 for termination requirements.
IGNNE#	Input	IGNNE# (Ignore Numeric Error) is asserted to force the processor to ignore a numeric error and continue to execute noncontrol floating-point instructions. If IGNNE# is deasserted, the processor generates an exception on a noncontrol floating-point instruction if a previous floating-point instruction caused an error. IGNNE# has no effect when the NE bit in control register 0 (CR0) is set. IGNNE# is an asynchronous signal. However, to ensure recognition of this signal following an Input/Output write instruction, it must be valid along with the TRDY# assertion of the corresponding Input/Output Write bus transaction.
INIT#	Input	INIT# (Initialization), when asserted, resets integer registers inside the processor without affecting its internal caches or floating-point registers. The processor then begins execution at the power-on Reset vector configured during power-on configuration. The processor continues to handle snoop requests during INIT# assertion. INIT# is an asynchronous signal and must connect the appropriate pins of all processor system bus agents. If INIT# is sampled active on the active to inactive transition of RESET#, then the processor executes its Built-in Self-Test (BIST).
ITPCLKOUT[1:0]	Output	The ITPCLKOUT[1:0] pins do not provide any output for the Pentium® 4 processor in the 478-pin package. Refer to Section 2.5 for additional details and termination requirements.
ITP_CLK[1:0]	Input	ITP_CLK[1:0] are copies of BCLK that are used only in processor systems where no debug port is implemented on the system board. ITP_CLK[1:0] are used as BCLK[1:0] references for a debug port implemented on an interposer. If a debug port is implemented in the system, ITP_CLK[1:0] are no connects in the system. These are not processor signals.

8640 N/B Maintenance

5.1 Pentium 4(Willamette/Northwood) mFC-PGA2 478 pins

Name	Type	Description
LINT[1:0]	Input	LINT[1:0] (Local APIC Interrupt) must connect the appropriate pins of all APIC Bus agents. When the APIC is disabled, the LINT0 signal becomes INTR, a maskable interrupt request signal, and LINT1 becomes NMI, a nonmaskable interrupt. INTR and NMI are backward compatible with the signals of those names on the Pentium processor. Both signals are asynchronous. Both of these signals must be software configured via BIOS programming of the APIC register space to be used either as NMI/INTR or LINT[1:0]. Because the APIC is enabled by default after Reset, operation of these pins as LINT[1:0] is the default configuration.
LOCK#	Input/ Output	LOCK# indicates to the system that a transaction must occur atomically. This signal must connect the appropriate pins of all processor system bus agents. For a locked sequence of transactions, LOCK# is asserted from the beginning of the first transaction to the end of the last transaction. When the priority agent asserts BPRI# to arbitrate for ownership of the processor system bus, it will wait until it observes LOCK# deasserted. This enables symmetric agents to retain ownership of the processor system bus throughout the bus locked operation and ensure the atomicity of lock.
MCERR#	Input/ Output	MCERR# (Machine Check Error) is asserted to indicate an unrecoverable error without a bus protocol violation. It may be driven by all processor system bus agents. MCERR# assertion conditions are configurable at a system level. Assertion options are defined by the following options: Enabled or disabled. Asserted, if configured, for internal errors along with IERR#. Asserted, if configured, by the request initiator of a bus transaction after it observes an error. Asserted by any bus agent when it observes an error in a bus transaction. For more details regarding machine check architecture, please refer to the <i>IA-32 Software Developer's Manual, Volume 3: System Programming Guide</i> .
PROCHOT#	Output	PROCHOT# will go active when the processor temperature monitoring sensor detects that the processor has reached its maximum safe operating temperature. This indicates that the processor Thermal Control Circuit has been activated, if enabled. See Section 7.3 for more details.

Name	Type	Description
PWRGOOD	Input	PWRGOOD (Power Good) is a processor input. The processor requires this signal to be a clean indication that the clocks and power supplies are stable and within their specifications. 'Clean' implies that the signal will remain low (capable of sinking leakage current), without glitches, from the time that the power supplies are turned on until they come within specification. The signal must then transition monotonically to a high state. Figure 11 illustrates the relationship of PWRGOOD to the RESET# signal. PWRGOOD can be driven inactive at any time, but clocks and power must again be stable before a subsequent rising edge of PWRGOOD. It must also meet the minimum pulse width specification in Table 16 , and be followed by a 1 to 10 ms RESET# pulse. The PWRGOOD signal must be supplied to the processor; it is used to protect internal circuits against voltage sequencing issues. It should be driven high throughout boundary scan operation.
RESET#	Input	Asserting the RESET# signal resets the processor to a known state and invalidates its internal caches without writing back any of their contents. For a power-on Reset, RESET# must stay active for at least one millisecond after VCC and BCLK have reached their proper specifications. On observing active RESET#, all system bus agents will deassert their outputs within two clocks. RESET# must not be kept asserted for more than 10 ms while PWRGOOD is asserted. A number of bus signals are sampled at the active-to-inactive transition of RESET# for power-on configuration. These configuration options are described in the Section 7.1 . This signal does not have on-die termination and must be terminated on the system board.
RS[2:0]#	Input	RS[2:0]# (Response Status) are driven by the response agent (the agent responsible for completion of the current transaction), and must connect the appropriate pins of all processor system bus agents.
RSP#	Input	RSP# (Response Parity) is driven by the response agent (the agent responsible for completion of the current transaction) during assertion of RS[2:0]#, the signals for which RSP# provides parity protection. It must connect to the appropriate pins of all processor system bus agents. A correct parity signal is high if an even number of covered signals are low and low if an odd number of covered signals are low. While RS[2:0]# = 000, RSP# is also high, since this indicates it is not being driven by any agent guaranteeing correct parity.

8640 N/B Maintenance

5.1 Pentium 4(Willamette/Northwood) mFC-PGA2 478 pins

Name	Type	Description
REQ[4:0]#	Input/ Output	REQ[4:0]# (Request Command) must connect the appropriate pins of all processor system bus agents. They are asserted by the current bus owner to define the currently active transaction type. These signals are source synchronous to ADSTB0#. Refer to the AP[1:0]# signal description for a details on parity checking of these signals.
SKTOCC#	Output	SKTOCC# (Socket Occupied) will be pulled to ground by the processor. System board designers may use this pin to determine if the processor is present.
SLP#	Input	SLP# (Sleep), when asserted in Stop-Grant state, causes the processor to enter the Sleep state. During Sleep state, the processor stops providing internal clock signals to all units, leaving only the Phase-Locked Loop (PLL) still operating. Processors in this state will not recognize snoops or interrupts. The processor will recognize only assertion of the RESET# signal, deassertion of SLP#, and removal of the BCLK input while in Sleep state. If SLP# is deasserted, the processor exits Sleep state and returns to Stop-Grant state, restarting its internal clock signals to the bus and processor core units. If the BCLK input is stopped while in the Sleep state the processor will exit the Sleep state and transition to the Deep Sleep state.
SMI#	Input	SMI# (System Management Interrupt) is asserted asynchronously by system logic. On accepting a System Management Interrupt, the processor saves the current state and enter System Management Mode (SMM). An SMI Acknowledge transaction is issued, and the processor begins program execution from the SMM handler. If SMI# is asserted during the deassertion of RESET# the processor will tristate its outputs.
STPCLK#	Input	STPCLK# (Stop Clock), when asserted, causes the processor to enter a low power Stop-Grant state. The processor issues a Stop-Grant Acknowledge transaction, and stops providing internal clock signals to all processor core units except the system bus and APIC units. The processor continues to snoop bus transactions and service interrupts while in Stop-Grant state. When STPCLK# is deasserted, the processor restarts its internal clock to all units and resumes execution. The assertion of STPCLK# has no effect on the bus clock; STPCLK# is an asynchronous input.
TCK	Input	TCK (Test Clock) provides the clock input for the processor Test Bus (also known as the Test Access Port).

Name	Type	Description
TDI	Input	TDI (Test Data In) transfers serial test data into the processor. TDI provides the serial input needed for JTAG specification support.
TDO	Output	TDO (Test Data Out) transfers serial test data out of the processor. TDO provides the serial output needed for JTAG specification support.
TESTHI[12:8] TESTHI[5:0]	Input	TESTHI[12:8] and TESTHI[5:0] must be connected to a VCC power source through a resistor for proper processor operation. See Section 2.5 for more details.
THERMDA	Other	Thermal Diode Anode. See Section 7.3.1 .
THERMDC	Other	Thermal Diode Cathode. See Section 7.3.1 .
THERMTRIP#	Output	Assertion of THERMTRIP# (Thermal Trip) indicates the processor junction temperature has reached a level beyond which permanent silicon damage may occur. Measurement of the temperature is accomplished through an internal thermal sensor which is configured to trip at approximately 135°C. Upon assertion of THERMTRIP#, the processor will shut off its internal clocks (thus halting program execution) in an attempt to reduce the processor junction temperature. To protect the processor, its core voltage (VCC) must be removed following the assertion of THERMTRIP#. See Figure 12 and Table 16 for the appropriate power down sequence and timing requirements. Once activated, THERMTRIP# remains latched until RESET# is asserted. While the assertion of the RESET# signal will de-assert THERMTRIP#, if the processor's junction temperature remains at or above the trip level, THERMTRIP# will again be asserted after RESET# is de-asserted.
TMS	Input	TMS (Test Mode Select) is a JTAG specification support signal used by debug tools.
TRDY#	Input	TRDY# (Target Ready) is asserted by the target to indicate that it is ready to receive a write or implicit writeback data transfer. TRDY# must connect the appropriate pins of all system bus agents.
TRST#	Input	TRST# (Test Reset) resets the Test Access Port (TAP) logic. TRST# must be driven low during power on Reset. This can be done with a 680 Ω pull-down resistor.
VCCA	Input	VCCA provides isolated power for the internal processor core PLLs. Refer to the <i>Intel® Pentium® 4 Processor in the 478-pin Package and Intel® 850 Chipset Platform Design Guide</i> for complete implementation details.

8640 N/B Maintenance

5.1 Pentium 4(Willamette/Northwood) mFC-PGA2 478 pins

Name	Type	Description
VCCIOPLL	Input	VCCIOPLL provides isolated power for internal processor system bus PLLs. Follow the guidelines for VCCA, and refer to the <i>Intel® Pentium® 4 Processor in the 478-pin Package and Intel® 850 Chipset Platform Design Guide</i> for complete implementation details.
VCCSENSE	Output	VCCSENSE is an isolated low impedance connection to processor core power(VCC). It can be used to sense or measure power near the silicon with little noise.
VCCVID	Input	There is no input voltage requirement for VCCVID for designs intended to support only the Pentium 4 processor in the 478-pin package. Refer to the <i>Intel® Pentium® 4 Processor in the 478-pin Package and Intel® 850 Chipset Platform Design Guide</i> for more information.
VID[4:0]	Output	VID[4:0] (Voltage ID) pins can be used to support automatic selection of power supply voltages (Vcc). These pins are not signals, but are either an open circuit or a short circuit to VSS on the processor. The combination of opens and shorts defines the voltage required by the processor. The VID pins are needed to cleanly support processor voltage specification variations. See Table 2 for definitions of these pins. The power supply must supply the voltage that is requested by these pins, or disable itself.
VSSA	Input	VSSA is the isolated ground for internal PLLs.
VSSSENSE	Output	VSSSENSE is an isolated low impedance connection to processor core Vss. It can be used to sense or measure ground near the silicon with little noise.
TMS	Input	TMS (Test Mode Select) is a JTAG specification support signal used by debug tools.
TRDY#	Input	TRDY# (Target Ready) is asserted by the target to indicate that it is ready to receive a write or implicit writeback data transfer. TRDY# must connect the appropriate pins of all system bus agents.
TRST#	Input	TRST# (Test Reset) resets the Test Access Port (TAP) logic. TRST# must be driven low during power on Reset. This can be done with a 680 Ω pull-down resistor.
VCCA	Input	VCCA provides isolated power for the internal processor core PLLs. Refer to the <i>Intel® Pentium® 4 Processor in the 478-pin Package and Intel® 850 Chipset Platform Design Guide</i> for complete implementation details.

8640 N/B Maintenance

5.2 SIS650 (IGUI Host Memory Controller)

Host BUS Interface

Name	Pin Attr	Signal Description
RS[2:0]#	O 1.2~1.85V – M	Response Status: RS[2:0]# are driven by the response agent to indicate the transaction response type. The following shows the response type. <div> <div>RS[2:0]</div> <div>Response</div> </div> <div>000</div> <div>Idle State</div> <div>001</div> <div>Retry</div> <div>010</div> <div>Defer</div> <div>011</div> <div>Reserved</div> <div>100</div> <div>Reserved</div> <div>101</div> <div>No data</div> <div>110</div> <div>Implicit Write-back</div> <div>111</div> <div>Normal Data</div>
HTRDY#	O 1.2~1.85V – M	Target Ready: During write cycles, response agent will drive TRDY# to indicate it is ready to accept data.
DRDY#	I/O 1.2~1.85V – M	Data Ready: DRDY# is driven by the bus owner whenever the data is valid on the bus.
DBSY#	I/O 1.2~1.85V – M	Data Bus Busy: Whenever the data is not valid on the bus with DRDY# is deserted, DBSY# deasserted to hold the bus.
HD[63:0]#	I/O 1.2~1.85V – M	Data Bus Busy: Whenever the data is not valid on the bus with DRDY# is deserted, DBSY# deasserted to hold the bus.
DBI[3:0]#	I/O 1.2~1.85V – M	Dynamic Bus Inversion: An active DBI# will invert it's corresponding data group signals. DBI0# is referenced by HD[15:0], DBI1# is referenced by HD[31:16] DBI2# is referenced by HD[47:32] DBI3# is referenced by HD[63:48]
HDSTBP[3:0]#	I/O 1.2~1.85V – M	Source synchronous data strobe used to latch data at falling edge HD[15:0], DBI0# are latched by HDSTBP0# HD[31:16], DBI1# are latched by HDSTBP1# HD[47:32], DBI2# are latched by HDSTBP2# HD[63:48], DBI3# are latched by HDSTBP3#
HDSTBN[3:0]#	I/O 1.2~1.85V – M	Source synchronous data strobe used to latch data at falling edge HD[15:0], DBI0# are latched by HDSTBN0# HD[31:16], DBI1# are latched by HDSTBN1# HD[47:32], DBI2# are latched by HDSTBN2# HD[63:48], DBI3# are latched by HDSTBN3#
HNCOMP	I M	GTL N-MOS Compensation Input

Host BUS Interface Continue

Name	Pin Attr	Signal Description
CPUCLK	I 0.71V – M	Host differential clock input.
CPURST#	O 1.2~1.85V – M	Host Bus Reset: CPURST# is used to keep all the bus agents in the same initial state before valid cycles issued.
CPUPWRGD#	O 1.2~1.85V – M	CPUPWRGD# is used to inform CPU that main power is stable
ADS#	I/O 1.2~1.85V – M	Address Strobe : Address Strobe is driven by CPU or SiS650 to indicate the start of a CPU bus cycle.
HADSTB[1:0]#	I/O 1.2~1.85V – M	Source synchronous address strobe used to latch HREQ[4:0]# & HA[31:3]# at both falling and rising edge. HREQ[4:0]# & HA[16:3]# are latched by HASTB0# HA[31:17] are latched by HASTB1#
HREQ[4:0]#	I/O 1.2~1.85V – M	Request Command: HREQ[4:0]# are used to define each transaction type during the clock when ADS# is asserted and the clock after ADS# is asserted.
HA[31:3]#	I/O 1.2~1.85V – M	Host Address Bus
BREQ0#	O 1.2~1.85V – M	Symmetric Agent Bus Request: BREQ0# is driven by the symmetric agent to request for the bus.
BPRI#	O 1.2~1.85V – M	Priority Agent Bus Request: BPRI# is driven by the priority agent that wants to request the bus. BPRI# has higher priority than BREQ0# to access a bus.
BNR#	I/O 1.2~1.85V – M	Block Next Request: This signal can be driven asserted by any bus agent to block further requests being pipelined.
HLOCK#	I 1.2~1.85V – M	Host Lock : CPU asserts HLOCK# to indicate the current bus cycle is locked.
HIT#	I/O 1.2~1.85V – M	Keeping a Non-Modified Cache Line
HITM#	I/O 1.2~1.85V – M	Hits a Modified Cache Line: Hit Modified indicates the snoop cycle hits a modified line in the L1/L2 cache of CPU.
DEFER#	O 1.2~1.85V – M	Defer Transaction Completion: Defer response to host bus.

8640 N/B Maintenance

5.2 SIS650 (IGUI Host Memory Controller)

Host BUS Interface Continue

Name	Pin Attr	Signal Description
HPCOMP	I M	GT'L P-MOS Compensation Input
HVREF[4:0] HNCOMPVREF	I M	AGT'L+ I/O reference voltage

DRAM Controller

Name	Pin Attr	Signal Description
SDCLK	I 3.3V - M	SDRAM Clock Input
SDRCLKI	I 2.5V/3.3V - M	SDRAM Read Clock Input
FWDSCLKO	O 2.5V/3.3V - M	SDRAM Forward Clock Output
MA[14:0]	O 2.5V/3.3V - M	System Memory Address Bus
SRAS#	O 2.5V/3.3V - M	SDRAM Row Address Strobe
SCAS#	O 2.5V/3.3V - M	SDRAM Column Address Strobe
SWE#	O 2.5V/3.3V - M	SDRAM Write Enable
CS[5:0]# CSB[5:0]#	O 2.5V/3.3V - M	SDRAM Chip Select CSB[5:0] multiplexed with DQS[5:0]
DQM[7:0]#	O 2.5V/3.3V - M	SDRAM Input/Output Data Mask
DQS[7:0]	I/O 2.5V/3.3V - M	DDR Data Strobe
MD[63:0]	I/O 2.5V/3.3V - M	System Memory Data Bus
CKE[5:0]	O (open-drain) 2.5V/3.3V - AUX	SDRAM Clock Enable
S3AUXSW# (CKE6)	O (open-drain) 2.5V/3.3V - AUX	Aux power switch for ACPI-S3 state, low active.
DDRVREF[A:B]	I M	DDR I/O Reference Voltage

Power and Ground Signals

Name	Tolerance	Power Plane	Type Attribute
C4XAVDD	3.3V	MAIN	Analog
C4XAVSS	0V	GROUND	Analog
DACAVDD1	1.8V	MAIN	Analog
DACAVDD2	1.8V	MAIN	Analog
DACAVSS1	0V	GROUND	Analog
DACAVSS2	0V	GROUND	Digital
DCLKAVDD	3.3V	MAIN	Digital
DCLKAVSS	0V	GROUND	Analog
DDRAVDD	3.3V	MAIN	Analog
DDRAVSS	0V	GROUND	Analog
ECLKAVDD	3.3	MAIN	Analog
ECLKAVSS	0V	GROUND	Analog
IVDD	1.8V	MAIN	Digital
OVDD	3.3V	MAIN	Digital
PVDD	3.3V	MAIN	Digital
PVDDM	3.3V	AUX	Digital
PVDDP	1.8V	MAIN	Digital
PVDDZ	1.8V	MAIN	Digital
SDAVDD	3.3V	MAIN	Analog
SDAVSS	0V	GROUND	Analog
VDDM	2.5/3.3V	MAIN(AUX)	Digital
VDDQ	1.5/1.8/3.3V	MAIN	Digitalv
VDDZ	1.8V	MAIN	Digital
VDDMCMP	1.8V	MAIN	Analog
VTT	1.2~1.85V	MAIN	Digital
Z1XAVDD	3.3V	MAIN	Analog
Z1XAVSS	0V	GROUND	Analog
Z4XAVDD	3.3V	MAIN	Analog
Z4XAVSS	0V	GROUND	Analog

8640 N/B Maintenance

5.2 SIS650 (IGUI Host Memory Controller)

Power and Ground Signals Continue

Name	Tolerance	Power Plane	Type Attribute
A1XAVDD	3.3V	MAIN	Analog
A1XAVSS	0V	GROUND	Analog
A4XAVDD	3.3V	MAIN	Analog
A4XAVSS	0V	GROUND	Analog
AGPVSSREF	0V	GROUND	Analog
AUX1.8	1.8V	AUX	Digital
AUX3.3	3.3V	AUX	Digital
C1XAVDD	3.3V	MAIN	Analog
C1XAVSS	0V	GROUND	Analog

VGA Interface

Name	Pin Attr	Signal Description
VOSCI	I 3.3V - M	14.318 Reference Clock Input
HSYNC	O 3.3V - M	Horizontal Sync
VSYNC	O 3.3V - M	Vertical Sync
INTA#	O 3.3V - M	Internal VGA Interrupt Pin
VGPI0[1:0]	I/O 3.3V - M	Internal VGA GPIO pins
VCOMP	AI Analog - M	Compensation Pin
VRSET	AI Analog - M	Reference Resistor
VVBWN	AI Analog - M	Voltage Reference
ROUT	AO Analog - M	Red Signal Output
GOUT	AO Analog - M	Green Signal Output
BOUT	AO Analog - M	Blue Signal Output

SiS MuTIOL Interface

Signal Name	Pin Attr	Signal Description
ZCLK	I 3.3V-M	SiS MuTIOL Connect
ZUREQ/ZQREQ	I/O 1.8-M	SiS MuTIOL Connect Control pins
ZSTB[1:0]	I/O 1.8-M	SiS MuTIOL Connect Strobe
ZSTB[1:0]#	I/O 1.8-M	Strobe Compliment
ZAD[15:0]	I/O 1.8-M	I/O 1.8V - M
ZVREF	I M	SiS MuTIOL Connect Reference Voltage
ZCMP_N	I M	N-MOS Compensation Input
ZCMP_P	I M	P-MOS Compensation Input
AGPCLK	I 3.3V - M	AGP Clock
AFRAME#	I/O 1.5V/3.3V - M	AGP Frame#
AIRDY#	I/O 1.5V/3.3V - M	AGP Initiator Ready
ATRDY#	I/O 1.5V/3.3V - M	AGP Target Ready
ASTOP#	I/O 1.5V/3.3V - M	AGP Stop#
ADEVSEL#	I/O 1.5V/3.3V - M	AGP Device Select
ASERR#	I/O 1.5V/3.3V - M	AGP System Error
AREQ#	I/O 1.5V/3.3V - M	AGP Bus Request
AGNT#	I/O 1.5V/3.3V - M	AGP Bus Grant
AAD[31:0]	I/O 1.5V/3.3V - M	AGP Address/Data Bus
AC/BE[3:0]	I/O 1.5V/3.3V - M	AGP Command/Byte Enable
APAR	I/O 1.5V/3.3V - M	AGP Parity
ST[2:0]	O 1.5V/3.3V - M	AGP Status Bus

8640 N/B Maintenance

5.2 SIS650 (IGUI Host Memory Controller)

VB Interface

Name	Pin Attr	Signal Description
VBCLK	I 1.8V/3.3V - M	Channel B/A Clock Input VBCLK multiplexed with SBA0
VBHCLK	O 1.8V/3.3V - M	VB Programming Interface Clock VBHCLK multiplexed with RBF#
VBCAD	I/O 1.8V/3.3V - M	VB Programming Interface Data VBCAD multiplexed with AREQ#
VBCTL[1:0]	O 1.8V/3.3V - M	VB Data Control VBCTL[1:0] multiplexed with AAD[29:28]
VGPIO[3:2]	I/O 3.3V - M	VB GPIO pins VGPIO[3:2] multiplexed with PIPE#/WBF#
VBHSYNC	I/O 1.8V/3.3V - M	Channel B H-Sync VBHSYNC multiplexed with AAD30
VBVSYNC	I/O 1.8V/3.3V - M	Channel B V-Sync VBVSYNC multiplexed with AAD31
VBDE	I/O 1.8V/3.3V - M	Channel B Data Valid VBDE multiplexed with AAD27
VBGCLK	I/O 1.8V/3.3V - M	Channel B Clock Output. This clock is used to trigger dual edge data transfer. Perfect duty cycle is required. VBGCLK multiplexed with AD_STB1
VBD[11:0]	I/O 1.8V/3.3V - M	Channel B Data VBD[11:0] multiplexed with AAD
VAHSYNC	I/O 1.8V/3.3V - M	Channel A H-Sync VAHSYNC multiplexed with AAD18
VAVSYNC	I/O 1.8V/3.3V - M	Channel A V-Sync VAVSYNC multiplexed with AAD17
VADE	I/O 1.8V/3.3V - M	Channel A Data Valid VADE multiplexed with AAD16
VAGCLK	I/O 1.8V/3.3V - M	Channel A Clock Output. This clock is used to trigger dual edge data transfer. Perfect duty cycle is required. VAGCLK multiplexed with AD_STB0
VAGCLK#	I/O 1.8V/3.3V - M	Channel A Differential Clock Output. (To support Chronitel). VAGCLK# multiplexed with AD_STB0#
VAD[11:0]	I/O 1.8V/3.3V - M	Channel A Data VAD[11:0] multiplexed with AAD

VGA Interface

Name	Pin Attr	Signal Description
VOSCI	I 3.3V - M	14.318 Reference Clock Input
HSYNC	O 3.3V - M	Horizontal Sync
VSYSN	O 3.3V - M	Vertical Sync
INTA#	O 3.3V - M	Internal VGA Interrupt Pin
VGPIO[1:0]	I/O 3.3V - M	Internal VGA GPIO pins
VCOMP	AI Analog - M	Compensation Pin
VRSET	AI Analog - M	Reference Resistor
VVBWN	AI Analog - M	Voltage Reference
ROUT	AO Analog - M	Red Signal Output
GOUT	AO Analog - M	Green Signal Output
BOUT	AO Analog - M	Blue Signal Output

Stereo Glasses Interface

Name	Pin Attr	Signal Description
CSYNC	O 3.3V - M	Stereo Clock
RSYNC	O 3.3V - M	Stereo Right
LSYNC	O 3.3V - M	Stereo Left

8640 N/B Maintenance

5.2 SIS650 (IGUI Host Memory Controller)

Test Mode/Hardware Trap/Power Management

Name	Pin Attr	Signal Description
DLEN#	I/O 3.3V/5V - M	Hardware Trap pin (refer to section 5)
DRAM_SEL	I 3.3V/5V - AUX	Hardware Trap pin (refer to section 5)
TRAP[1:0]	I 3.3V/5V - M	Hardware Trap pins (refer to section 5)
ENTEST	I 3.3V/5V - M	Test Mode enable pin
TESTMODE[2:0]	I 3.3V/5V - M	Test Mode select pin Nand Tree Test: 100
AUXOK	I 3.3V - AUXI	Auxiliary Power OK : This signal is supplied from the power source of resume well. It is also used to reset the logic in resume power well. If there is no auxiliary power source on the system, this pin should be tied together with PWROK.
PCIRST#	I 3.3V - AUXI	PCI Bus Reset : PCIRST# is supplied from SiS MuTIOL Media IO SiS961.
PWROK	I 3.3V - AUXI	Main Power OK : A high-level input to this signal indicates the power being supplied to the system is in stable operating state. During the period of PWROK being low, CPURST and PCIRST# will all be asserted until after PWROK goes high for 24 ms.

SiS MuTIOL Interface

Name	Pin Attr	Signal Description
PIPE#	I 1.5V/3.3V - M	AGP Pipeline Request
SBA[7:0]	I/O 1.5V/3.3V - M	Side Band Address
RBF#	I 1.5V/3.3V - M	Read Buffer Full
WBF#	I 1.5V/3.3V - M	Write Buffer Full
AD_STB[1:0]	I/O 1.5V/3.3V - M	AD Bus Strobe
AD_STB[1:0]#	I/O 1.5V/3.3V - M	AD Bus Strobe Compliment
SB_STB	I 1.5V/3.3V - M	Side Band Strobe
SB_STB#	I 1.5V/3.3V - M	Side Band Strobe Compliment

8640 N/B Maintenance

5.3 SIS 962(MuTIOL® Media I/O South Bridge)

MuTIOL Connect Interface

Name	Pin Attr	Signal Description
ZCLK	I 3.3V - M	Megaband I/O Connect Clock
ZUREQ	I/O 1.8V - M	Megaband I/O Connect Controll pins
ZDREQ	I/O 1.8V - M	Megaband I/O Connect Controll pins
ZSTB[1:0]	I/O 1.8V - M	Megaband I/O Connect Strobe
ZSTB[1:0]#	I/O 1.8V - M	Strobe Compliment
ZAD[15:0]	I/O 1.8V - M	Address/Data pins
ZVRE	I-M	Megaband I/O Connect I/O reference voltage
ZCMP_N	I-M	N-MOS Compensation Input
ZCMP_P	I-M	P-MOS Compensation input

General Purpose I/O

Signal Name	Pin Attr	Signal Description
GPIO[6:0]	I/O 3.3V/5V -M	GPIO: Can be a general purpose input or output.
GPIO14,[12:7]	I/O 3.3V/5V -AUX	GPIO : Can be a general purpose input or output.
GPIO13	O 3.3V/5V - AUX	GPO: Can be a general purpose output.
GPIO[18:15]	O 3.3V/5V - AUX	GPO: Can be a general purpose output.
GPIO[20:19]	I/O 3.3V/5V - AUX	GPIO: Can be a general purpose input or output.

Host Bus Interface

Name	Pin Attr	Signal Description
FERR#	I 1.1V/2.65V -M	Floating Point Error: CPU will assert this signal upon a floating point error occurring.
IGNNE#	OD 1.1V/2.65V -M	Ignore Numeric Error: IGNNE# is asserted to inform CPU to ignore a numeric error.
NMI	OD 1.1V/2.65V -M	Non-Maskable Interrupt: A rising edge on NMI will trigger a non-maskable interrupt to CPU.
INTR	OD 1.1V/2.65V -M	Interrupt Request: High-level voltage of this signal conveys to CPU that there is outstanding interrupt(s) needed to be serviced.
APICD[1:0]	I/OD 1.1V/2.65V -M	APIC Data: These two signals are used to send and receive APIC data.
CPUSLP#/ CPUSTP#	OD 1.1V/2.65V -M	CPU Sleep: The CPUSLP# can be used to force CPU enter the Sleep state. CPU Clock STOP: For Intel Mobile processor, this signal can be used to stop the clock to the processor. If the processor is in Quick Start state and the processor clock is stopped, the processor will enter the Deep Sleep state. For AMD processor, this signal can be to reduce processor voltage during C3/S1 state.
STPCLK#	OD 1.1V/2.65V -M	Stop Clock: STPCLK# will be asserted to inhibit or throttle CPU activities upon a pre-defined power management event occurs
INIT#	OD 1.1V/2.65V -M	Initialization: INIT is used to re-start the CPU without flushing its internal caches and registers. In Pentium III platform it is active high. This signal requires an external pull-up resistor tied to 3.3V.
APICCK	I 2.5V - M	APIC Clock: This signal is used to determine when valid data is being sent over the APIC bus.
A20M#	OD 1.1V/2.65V- M	Address 20 Mask: When A20M# is asserted, the CPU A20 signal will be forced to "0"

8640 N/B Maintenance

5.3 SIS 962(MuTIOL® Media I/O South Bridge)

PCI Interface

Name	Pin Attr	Signal Description
AD[31:0]	I/O 3.3V/5V -M	PCI Address /Data Bus: In address phase: 1.When the SiS961 is a PCI bus master, AD[31:0] are output signals. 2.When the SiS961 is a PCI target, AD[31:0] are input signals. In data phase: 1.When the SiS961 is a target of a memory read/write cycle, AD[31:0] are floating. 2.When the SiS961 is a target of a configuration or an I/O cycle, AD[31:0] are output signals in a read cycle, and input signals in a write cycle.
PAR	I/O 3.3V/5V -M	Parity: SiS961 drives out Even Parity covering AD[31:0] and C/BE[3:0]#. It does not check the input parity signal.
FRAME#	I/O 3.3V/5V -M	Frame#: FRAME# is an output when the SiS961 is a PCI bus master. The SiS961 drives FRAME# to indicate the beginning and duration of an access. When the SiS961 is a PCI slave device, FRAME# is an input signal.
IRDY#	I/O 3.3V/5V -M	Initiator Ready: IRDY# is an output when the SiS961 is a PCI bus master. The assertion of IRDY# indicates the current PCI bus master's ability to complete the current data phase of the transaction. For a read cycle, IRDY# indicates that the PCI bus master is prepared to accept the read data on the following rising edge of the PCI clock. For a write cycle, IRDY# indicates that the bus master has driven valid data on the PCI bus. When the SiS961 is a PCI slave, IRDY# is an input pin.
TRDY#	I/O 3.3V/5V -M	Target Ready: TRDY# is an output when the SiS961 is a PCI slave. The assertion of TRDY# indicates the target agent's ability to complete the current data phase of the transaction. For a read cycle, TRDY# indicates that the target has driven valid data onto the PCI bus. For a write cycle, TRDY# indicates that the target is prepared to accept data from the PCI bus. When the SiS961 is a PCI master, it is an input pin.
STOP#	I/O 3.3V/5V -M	Stop#: STOP# indicates that the bus master must start terminating its current PCI bus cycle at the next clock edge and release control of the PCI bus. STOP# is used for disconnection, retry, and target-abortion sequences on the PCI bus.

PCI Interface Continue

Name	Pin Attr	Signal Description
DEVSEL#	I/O 3.3V/5V -M	Device Select: As a PCI target, SiS961 asserts DEVSEL# by doing positive or subtractive decoding. SiS961 positively asserts DEVSEL# when the DRAM address is being accessed by a PCI master, PCI configuration registers or embedded controllers' registers are being addressed, or the BIOS memory space is being accessed. The low 16K I/O space and low 16M memory space are responded subtractively. The DEVSEL# is an input pin when SiS961 is acting as a PCI master. It is asserted by the addressed agent to claim the current transaction.
PREQ[4:0]#	I 3.3V/5V -M	PCI Bus Request: PCI Bus Master Request Signals
PGNT[4:0]#	O 3.3V -M	PCI Bus Grant: PCI Bus Master Grant Signals
PREQ5# / GPIO5	I I/O 3.3V/5V- M	PCI Bus Request: PCI Bus Master Request Signal
PGNT5# / GPIO6	O I/O 3.3V- M	PCI Bus Grant: PCI Bus Master Grant Signal
INT[A:D]#	I 3.3V/5V -M	PCI interrupt A,B,C,D: The PCI interrupts will be connected to the inputs of the internal Interrupt controller through the rerouting logic associated with each PCI interrupt.
PCIRST#	O 3.3V -M	PCI Bus Reset: PCIRST# will be asserted during the period when PWROK is low, and will be kept on asserting until about 24ms after PWROK goes high.
SERR#	I 3.3V/5V -M	System Error: When sampled active low, a non-maskable interrupt (NMI) can be generated to CPU if enabled.

8640 N/B Maintenance

5.3 SIS 962(MuTIOL® Media I/O South Bridge)

IED Interface

Name	Pin Attr	Signal Description
IDA[15:0]	I/O 3.3V/5V -M	Primary Channel Data Bus
IDB[15:0]	I/O 3.3V/5V -M	Secondary Channel Data Bus
IDECSA[1:0]#	O 3.3V -M	Primary Channel CS[1:0]
IDECSB[1:0]#	O 3.3V -M	Secondary Channel CS[1:0]
IIOR[A:B]#	O 3.3V -M	Primary/Secondary Channel IOR# Signals
IIOW[A:B]#	O 3.3V -M	Primary/Secondary Channel IOW# Signals
ICHRDY[A:B]	I 3.3V/5V -M	Primary/Secondary Channel ICHRDY# Signals
IDREQ[A:B]	I 3.3V/5V -M	Primary/Secondary Channel DMA Request Signals
IDACK[A:B]#	O 3.3V -M	Primary/Secondary Channel DMACK# Signals
IIRQ[A:B]	I 3.3V/5V -M	Primary/Secondary Channel Interrupt Signals
IDSAA[2:0]	O 3.3V -M	Primary Channel Address [2:0]
IDSAB[2:0]	O 3.3V -M	Secondary Channel Address [2:0]
CBLID[A:B]	I 3.3V/5V -M	Primary/Secondary Ultra-66 Cable ID

Legacy I/O and Miscellaneous Signals

Signal Name	Pin Attr	Signal Description
SPK	O 3.3V -M	Speaker output: The SPK is connected to the system speaker.
ENTEST	I 3.3V/5V -M	SiS961 Test Mode Enable Pin
OSCI	I 3.3V -M	SiS961 Test Mode Enable Pin

Power Management Interface

Name	Pin Attr	Signal Description
ACPILED	OD <=5V -AUX	ACPILED : ACPILED can be used to control the blinking of an LED at the frequency of 1Hz to indicate the system is at power saving mode.
EXTSMI# / GPIO3	I I/O 3.3V/5V -M	External SMI#: EXTSMI# can be used to generate wakeup event, sleep event, or SCI/SMI# event to the ACPI compatible power management unit.
PME#	I 3.3V/5V -AUX	PME# : When the system is in power-down mode, an active low event on PME# will cause the PSON# to go low and hence turn on the power supply. When the system is in suspend mode, an active PME# event will cause the system wakeup and generate an SCI/SMI#.
PSON#	OD <=5V -AUX	ATX Power ON/OFF control: PSON# is used to control the on/off state of the ATX power supply. When the ATX power supply is in the OFF state, an activated power-on event will force the power supply to ON state.
AUXOK	I 3.3V -AUX	Auxiliary Power OK: This signal is supplied from the AUX power source. It is also used to reset the logic in AUX power well. If there is no auxiliary power source on the system, this pin should be tied together with PWROK.
PWRBTN#	I 3.3V/5V -AUX	Power Button: This signal is from the power button switch and will be monitored by the ACPI-compatible power management unit to switch the system between working and sleeping states.
RING / GPIO8	I I/O 3.3V/5V -AUX	Ring Indication: An active RING pulse and lasting for more than 4ms will cause a wakeup event for system to wake from S1~S5.
BCLK_STP# GPIO12	O I/O 3.3V/5V -AUX	Stop CPU clock: Output to the external clock generator for it to turn off the CPU clock during C3/Sx.
DPRSLPVR GPIO13	O O 3.3V/5V -AUX	Deeper Sleep: DPRSLP# can be used to lower the Intel processor voltage during C3/S1 state.

8640 N/B Maintenance

5.3 SIS 962(MuTIOL® Media I/O South Bridge)

AC'97 Interface

Name	Pin Attr	Signal Description
AC_BIT_CLK	I 3.3V/5V -M	AC'97 Bit Clock: This signal is a 12.288MHz serial data clock, which is generated by primary Codec.
AC_RESET#	O 3.3V -AUX	AC'97 Reset: Hardware reset signal for external Codecs.
AC_SDIN0	I 3.3V/5V -AUX	AC'97 Serial Data Input : Serial data input from primary Codec.
AC_SDIN1	I 3.3V/5V -AUX	AC'97 Serial Data Input: Serial data input from secondary Codec. When Modem Codec is used, this pin dedicate to Modem Serial data input.
AC_SDIN[3:2]/ GPIO[10:9]	I I/O 3.3V/5V -AUX	AC'97 Serial Data Input: Serial data input from third and forth Audio Codec.
AC_SDOUT	O 3.3V -M	AC'97 Serial Data Output: Serial data output to Codecs.
AC_SYNC	O 3.3V -M	AC'97 Synchronization: This is a 48KHz signal, which is used to synchronize the Codecs

USB Interface

Name	Pin Attr	Signal Description
USBCLK48M	I 3.3V/5V -M	USB 48 MHz clock input: This signal provides the fundamental clock for the USB Controller.
OC[0:5]#	I/O 3.3V/5V - AUX	USB Port 0-5 Overcurrent Detection: OC[0:5]# are used to detect the overcurrent condition of USB Ports 0-5.
UV[2:0]+, UV[2:0]-	I/O 3.3V - AUX	USB Port [2:0] Differential: These differential pairs are used to transmit Data/Address /Command signals for ports 0-2. (USB controller 1)
UV[5:3]+, UV[5:3]-	I/O 3.3V - AUX	USB Port [5:3] Differential: These differential pairs are used to transmit Data/Address/ Command signals for ports 3-5. (USB controller 2)

LPC Interface

Name	Pin Attr	Signal Description
LAD[3:0]	I/O 3.3V/5V-M	LPC Address/Data Bus: LPC controller drives these four pins to transmit LPC command, address, and data to LPC device.
LDRQ#	I 3.3V/5V-M	LPC DMA Request 0: This pin is used by LPC device to request DMA cycle.
LDRQ1# / GPIO1	I I/O 3.3V/5V-M	LPC DMA Request 1: This pin is used by LPC device to request DMA cycle.
LFRAME#	O 3.3V -M	LPC Frame: This pin is used to notify LPC device that a start or a abort LPC cycle will occur.
SIRQ	I/O 3.3V/5V -M	I/O 3.3V/5V -M

TRC Interface

Name	Pin Attr	Signal Description
BATOK	I 3.3V -RTC	Battery Power OK: When the internal RTC is enabled, this signal is used to indicate that the power of RTC well is stable. It is also used to reset the logic in RTC well. If the internal RTC is disabled, this pin should be tied low.
OSC32KHI	I 3.3V-RTC	RTC 32.768 KHz Input: When internal RTC is enabled, this pin provides the 32.768 KHz clock signal from external crystal or oscillator.
OSC32KHO	O <3.3V -RTC	RTC 32.768 KHz Output: When internal RTC is enabled, this pin should be connected with the other end of the 32.768 KHz crystal or left unconnected if an external oscillator is used.
PWROK	I 3.3V-RTC	Main Power OK: A high-level input to this signal indicates the power being supplied to the system is in stable operating state. During the period of PWROK being low, PCIRST# will all be asserted until after PWROK goes high for 12 ms.

8640 N/B Maintenance

5.3 SIS 962(MuTIOL® Media I/O south bridge)

Keyboard Control Interface

Name	Pin Attr	Signal Description
KBDAT / GPIO15	I/OD O/OD 3.3V/5V -AUX	Keyboard Dada: When the internal keyboard controller is enabled, this pin is used as the keyboard data signal.
KBCLK / GPIO16	I/OD O/OD 3.3V/5V -AUX	Keyboard Clock: When the internal keyboard controller is enabled, this pin is used as the keyboard clock signal.
PMDAT / GPIO17	I/OD O/OD 3.3V/5V -AUX	PS2 Mouse Data: When the internal keyboard and PS2 mouse controllers are enabled, this pin is used as PS2 mouse data signal.
PMCLK / GPIO18	I/OD O/OD 3.3V/5V -AUX	PS2 Mouse Clock: When the internal keyboard and PS2 mouse controllers are enabled, this pin is used as the PS2 mouse clock signal.

MAC Interface

Name	Pin Attr	Signal Description
RXER	I 3.3V/5V -AUX	RX Packet Error This event is signaled after the last received descriptor in a failed packet reception that has been updated with valid status.
MIICLK25M	I 3.3V/5V -AUX	PHY 25MHz Clock Input: This pin provides the 25MHz clock signal input to the built-in oscillator.
MDC	O 3.3V -AUX	Management Data Clock: Clock signal with a maximum rate of 2.5MHz used to transfer management data for the external physical unit on the MIIMDIO pin.
TXD[0:3]	I 3.3V/5V -AUX	Receive Data: This is a group of 4 data signals aligned on nibble boundaries which are driven synchronous to the RXCLK by the external physical unit.
TXEN	O 3.3V -AUX	Transmit Data: This is a group of 4 data signals which are driven synchronous to the TXCLK for transmission to the external physical unit.
RXD[0:3]	I 3.3V/5V -AUX	Receive Data: This is a group of 4 data signals aligned on nibble boundaries which are driven synchronous to the RXCLK by the external physical unit.

MAC Interface Continue

Name	Pin Attr	Signal Description
TXEN	O 3.3V -AUX	Transmit Enable: When set to a 1, and the transmit state machine is idle, then the transmit state machine becomes active. This bit will read back as a 1 whenever the transmit state machine is active. After initial power-up, software must insure that the transmitter has completely reset before setting this bit
MDIO	I/O 3.3V/5V -AUX	Management Data I/O: Bi-direction signal used to transfer management information for the external physical unit. Requires external pull-up resistor.
RXDV	I 3.3V/5V -AUX	Receive Data Valid. This indicates that the external physical unit is presenting recovered and decoded nibbles on the RXD[3:0] and that RXCLK is synchronous to the recovered data. This signal will encompass the frame, starting with the Start-Of-Frame delimiter and excluding the End-Of-Frame delimiter.
COL	I 3.3V/5V -AUX	Collision Detect: This signal is asserted high asynchronous by the external physical unit upon detection of a collision on the medium. It'll remain asserted as long as the collision condition persists.
CRS	I 3.3V/5V -AUX	Carrier Sense: This signal is asserted high asynchronously by the physical unit upon detection of a non-idle medium.
RXCLK	I 3.3V/5V -AUX	Receive Clock A continuous clock that is recovered from the incoming data. During 100Mb/s operation RXCLK is 25MHz and during 10Mb/s this is 2.5MHz.
TXCLK	I 3.3V/5V -AUX	Transmit Clock A continuous clock that is sourced by the physical unit. During 100Mb/s operation RXCLK is 25MHz and during 10Mb/s this is 2.5MHz.

8640 N/B Maintenance

5.3 SIS 962(MuTIOL® Media I/O south bridge)

Power and Ground Signals

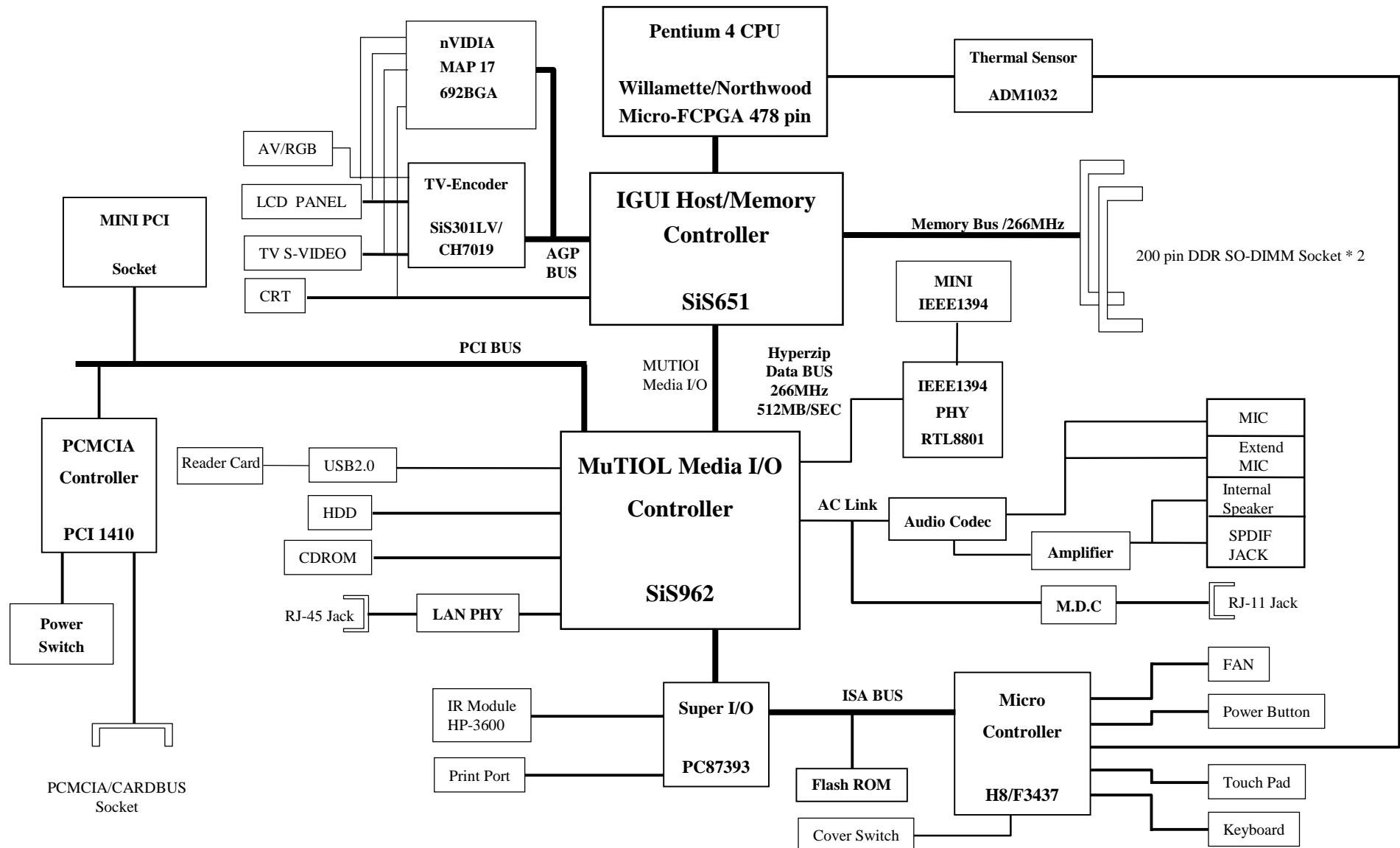
Name	Tolerance	Power Plane	Type Attribute
VSS	0V	GROUND	Digital
VSSZ	0V	GROUND	Digital
IVDD	1.8V	MAIN	Digital
PVDDZ	1.8V	MAIN	Digital
VDDZ	1.8V	MAIN	Digital
VDDZCMP	1.8V	MAIN	Analog
VSSZCMP	0V	GROUND	Analog
ZVSSREF	0V	GROUND	Analog
PVDD	3.3V	MAIN	Digital
OVDD	3.3V	MAIN	Digital
VTT	1.1V-2.65V	MAIN	Digital
IVDD_AUX	1.8V	AUX	Digital
PVDD_AUX	3.3V	AUX	Digital
OVDD_AUX	3.3V	AUX	Digital
MIIAVDD	3.3V	AUX	Analog
MIIAVSS	0V	GROUND	Analog
USBVDD	3.3V	AUX	Analog
USBVSS	0V	GROUND	Analog
RTCVDD	3.3V	RTC	Analog
RTCVSS	0V	GROUND	Analog
Z1XAVDD	3.3V	MAIN	Analog
Z1XAVSS	0V	GROUND	Analog
Z4XAVDD	3.3V	MAIN	Analog
Z4XAVSS	0V	GROUND	Analog
IDEAVDD	1.8V	MAIN	Analog
IDEAVSS	0V	GROUND	Analog

General Purpose I/O

Signal Name	Pin Attr	Signal Description
GPIO[6:0]	I/O 3.3V/5V -M	GPIO: Can be a general purpose input or output.
GPIO14,[12:7]	I/O 3.3V/5V -AUX	GPIO : Can be a general purpose input or output.
GPIO13	O 3.3V/5V - AUX	GPO: Can be a general purpose output.
GPIO[18:15]	O 3.3V/5V - AUX	GPO: Can be a general purpose output.
GPIO[20:19]	I/O 3.3V/5V - AUX	GPIO: Can be a general purpose input or output.

8640 N/B Maintenance

6. System Block Diagram



8640 N/B Maintenance

7. Maintenance Diagnostics

7.1 Introduction

Each time the computer is turned on, the system BIOS runs a series of internal checks on the hardware. This power-on self test (POST) allows the computer to detect problems as early as the power-on stage. Error messages of post can alert you to the problems of your computer.

If an error is detected during these tests, you will see an error message displayed on the screen. If the error occurs before the display is initialized, then the screen cannot display the error message. Error codes or system beeps are used to identify a post error that occurs when the screen is not available.

The value for the diagnostic port (378H) is written at the beginning of the test. Therefore, if the test failed, the user can determine where the problem occurred by reading the last value written to port 378H by the eight LEDs on board.

8640 N/B Maintenance

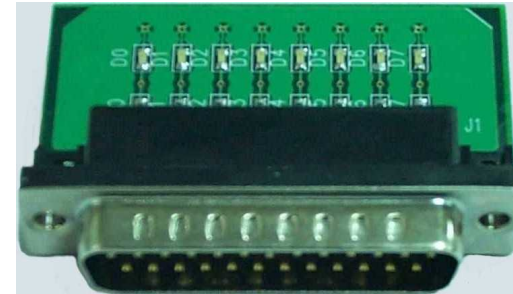
7.2 Debug Card

7.2.1 Diagnostic Tools :

■ LED * 8

■ PIO CONNECTOR * 1

OR

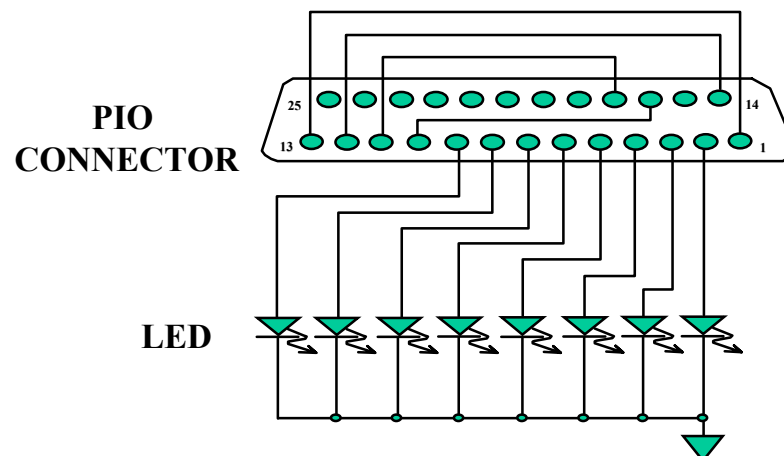


P/N:411904800001

DESCRIPTION :PWA;PWA-378PORT DEBUG BD

Note:Order it from MIC/TSSC

7.2.2 CIRCUIT:



PIN1 : STROBE ↔ PIN 13 : SLCT

PIN10: ACK# ↔ PIN 16 : INT#

PIN11: BUSY ↔ PIN 17 : SELIN#

PIN12: PTERR ↔ PIN 14 : AUTOFD#

PIN{9:2}: PD{7:0}

8640 N/B Maintenance

7.3 Error Codes : Following is a list of error codes in sequent display on the PIO debug board

System Soft BIOS:

Code	Description
0	Boot started
01	Disable A20 through A20
02	Initialize Chipset
03	Test RAM
04	Move BL into the RAM
05	Execution in RAM
06	User Flash Check
07	Shadow system BIOS
08	Checksum System BIOS ROM
09	Proceed with Normal Boot
0A	Proceed with Crisis Boot
0B	Initialize Clock Sythesizer
0F	Fatal Error
10	Some Type of Long Reset
11	Turn Off Fasta20 for Post
12	Signal Power On Reset
13	Initialize the Chipset
14	Search For ISA Bus VGA Adapter
15	Reset Counter/Timer 1
16	User Register Config Through CMOS
17	Size Memory
18	Dispatch to RAM Test
19	Checksum the ROM
1A	Reset PIC's

Code	Description
1B	Initialize Video Adapter
1C	Initialize Video(6845 Regs)
1D	Initialize Color Adapter
1E	Initialize Monochrome Adapter
1F	Test 8237A Page Registers
20	Test Keyboard
21	Test Keyboard Controller
2	Check If CMOS Ram Valid
23	Test Battery Fail & CMOS X-SUM
24	Test DMA Controller
25	Initialize 8237A Controller
26	Initialize Int Vectors
27	RAM Quick Sizing
28	Protected mode entered safely
29	RAM Test Completed
2A	Protected mode exit successful
2B	Setup Shadow
2C	Going to Initialize Video
2D	Search For Monochrome Adapter
2E	Search For Color Adapter
2F	Signal Messages Displayed
30	Special Into of Keyboard Controller
31	Test If Keyboard Present
32	Test Keyboard Interrupt

8640 N/B Maintenance

7.3 Error Codes : Following is a list of error codes in sequent display on the PIO debug board

System Soft BIOS:

Code	Description
33	Test Keyboard Command Byte
34	TEST, Blank and Count All RAM
35	Protected mode entered safely
36	RAM Test Complete
37	Protected mode exit successful
38	Update Output Port
39	Setup Cache Controller
3A	Test If 18.2Hz Periodic Working
3B	Test for RTC ticking
3C	Initialize the Hardware Vectors
3D	Search and Init the Mouse
3E	Update NumLock Status
3F	Special init of COMM and LPT ports
40	Configure the COMM and LPT ports
41	Initialize the floppies
42	Initialize the Hard Disk
43	Initialize option ROMs
44	OEM's init of power management
45	Update NumLock Status
46	Test For Coprocessor Installed
47	OEM Function Before Boot
48	Dispatch To Op.Sys.Boot
49	Jump Into Bootstrap Code
99	Resume SMRAM not Found

8640 N/B Maintenance

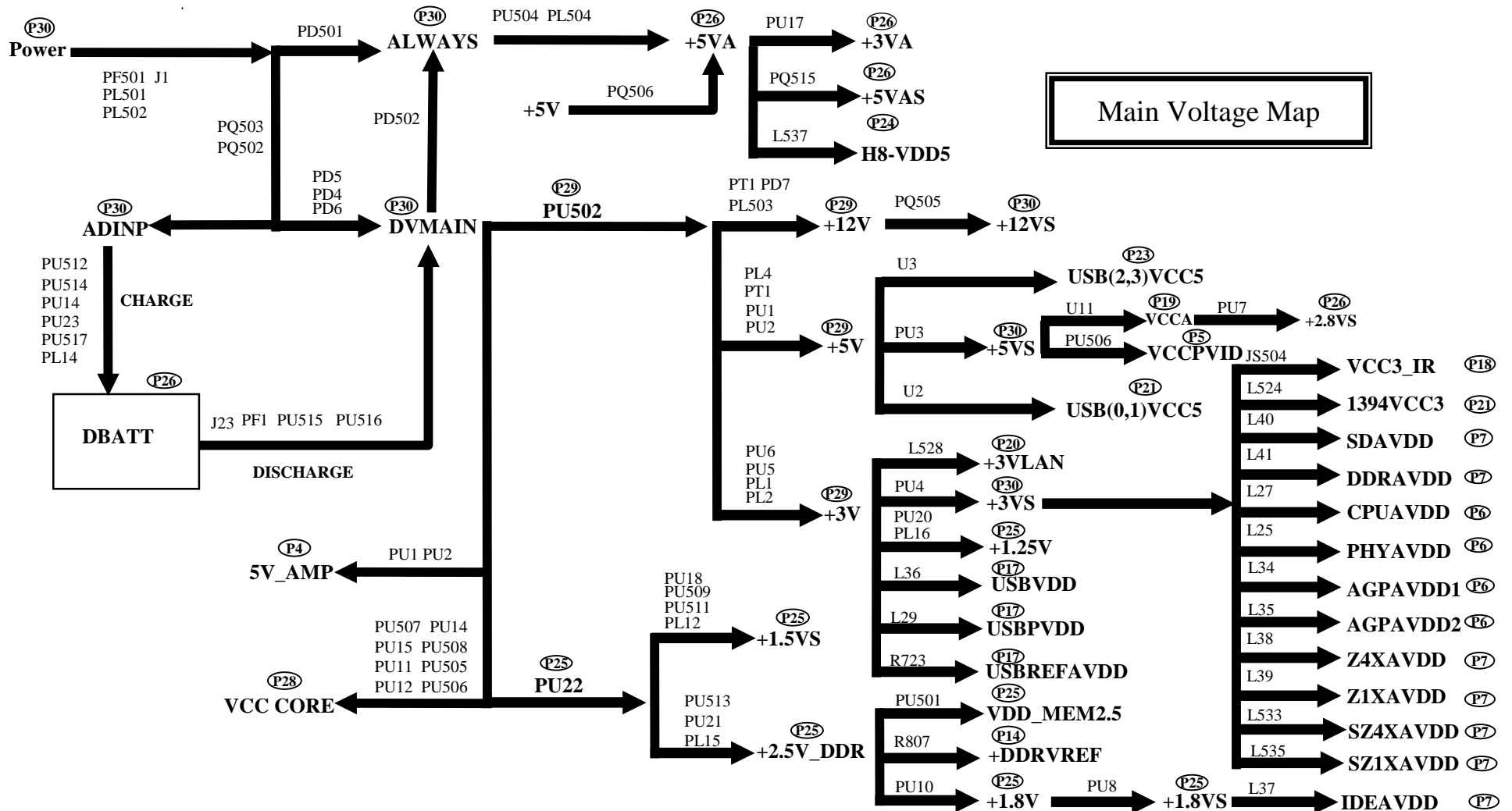
8.Trouble shooting

- ☐ **8.1 No Power**
- ☐ **8.2 Battery Can not Be Charged**
- ☐ **8.3 No Display**
- ☐ **8.4 VGA Controller Failure LCD No Display**
- ☐ **8.5 VGA Controller Failure TV No Display**
- ☐ **8.6 VGA Controller Failure Monitor No Display**
- ☐ **8.7 Keyboard(K/B) and Touch Pad(T/P) Test Error**
- ☐ **8.8 Hard Disk Drive Test Error**
- ☐ **8.9 CD-ROM Driver Test Error**
- ☐ **8.10 USB Port Test Error**
- ☐ **8.11 PIO Port Test Error**
- ☐ **8.12 PC Card Socket Test Error**
- ☐ **8.13 MINI-PCI Socket Failure**
- ☐ **8.14 IEEE 1394 Failure**
- ☐ **8.15 Audio Driver Failure**
- ☐ **8.16 LAN Test Error**
- ☐ **8.17 Smart Media&Secure Digital Card Controller Test Error**

8640 N/B Maintenance

8.1 No Power

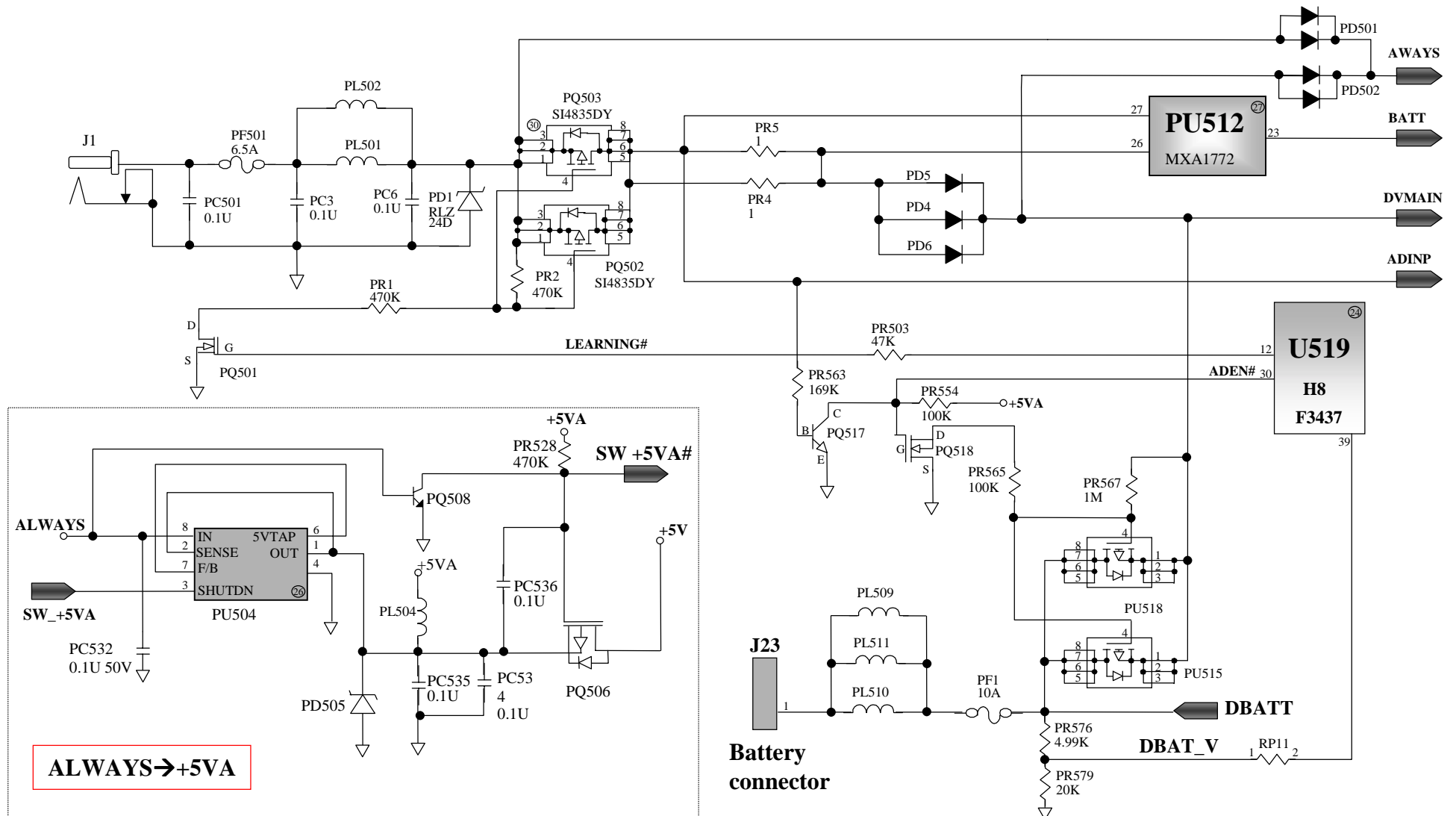
When power button is pressed ,Nothing happing ,Power indicator does not light up.



8640 N/B Maintenance

8.1 No Power

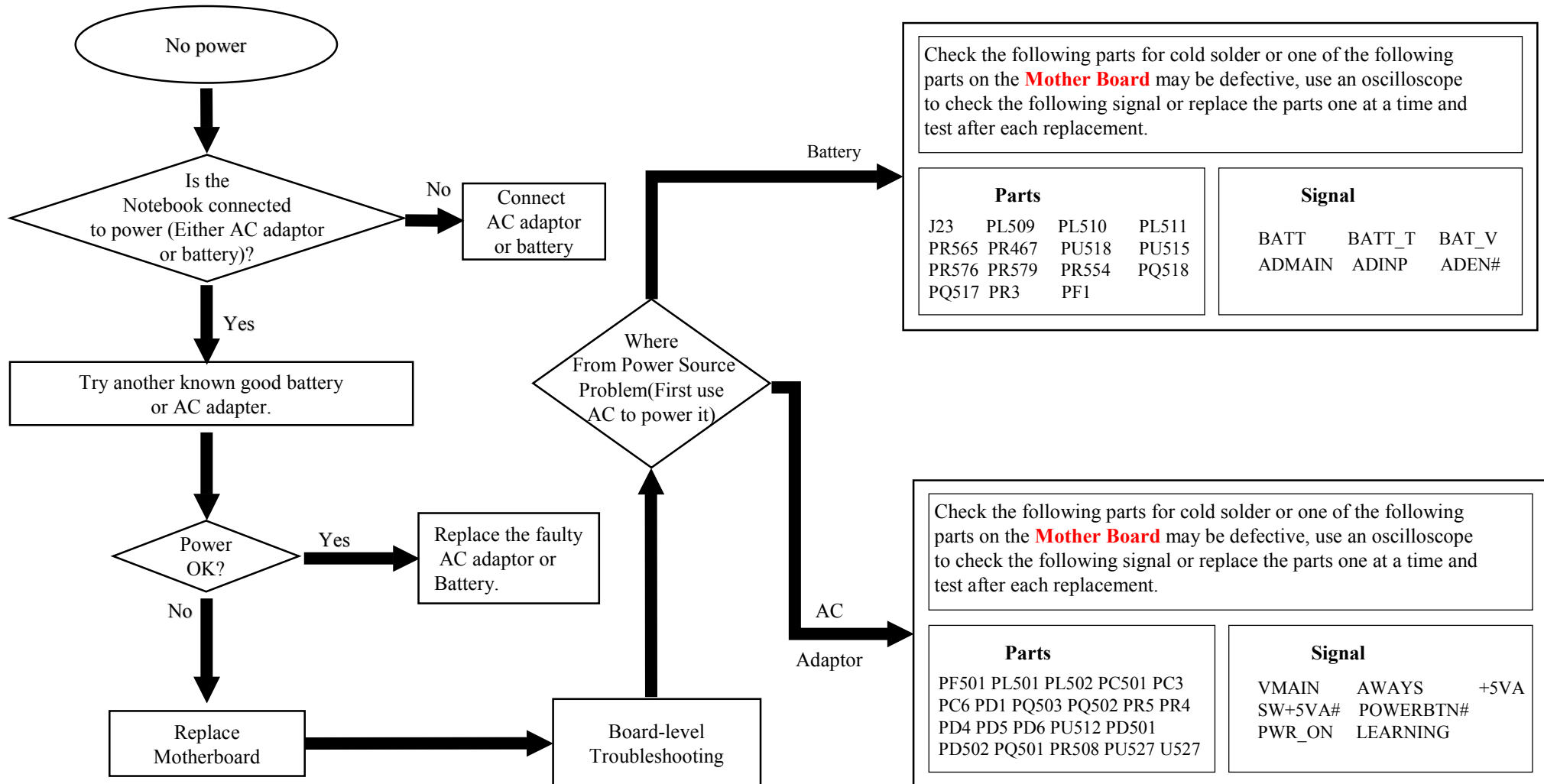
When power button is pressed ,Nothing happing ,Power indicator does not light up.



8640 N/B Maintenance

8.1 No Power

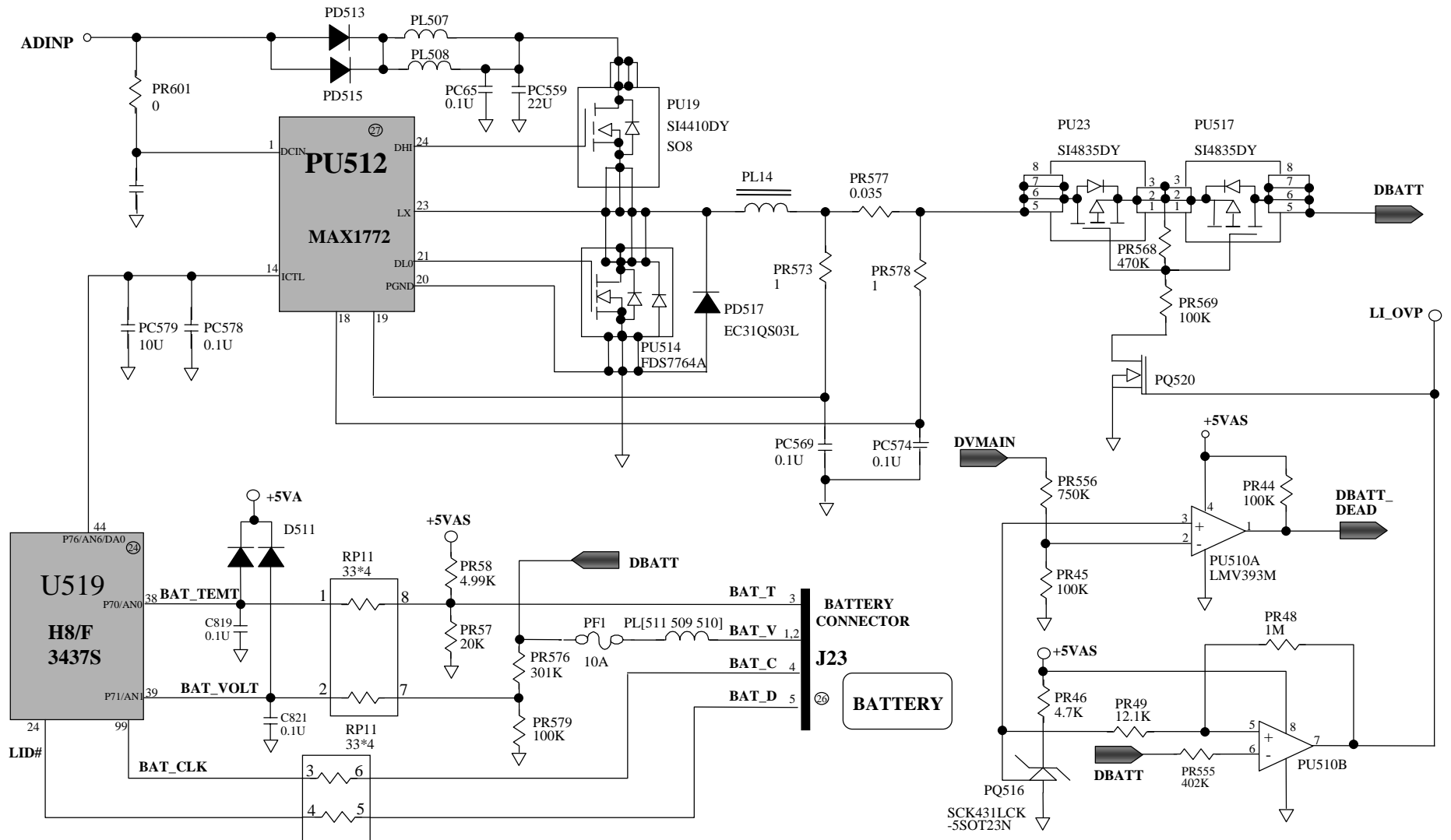
When power button is pressed ,Nothing happing ,Power indicator does not light up.



8640 N/B Maintenance

8.2 Battery Can not Be Charged

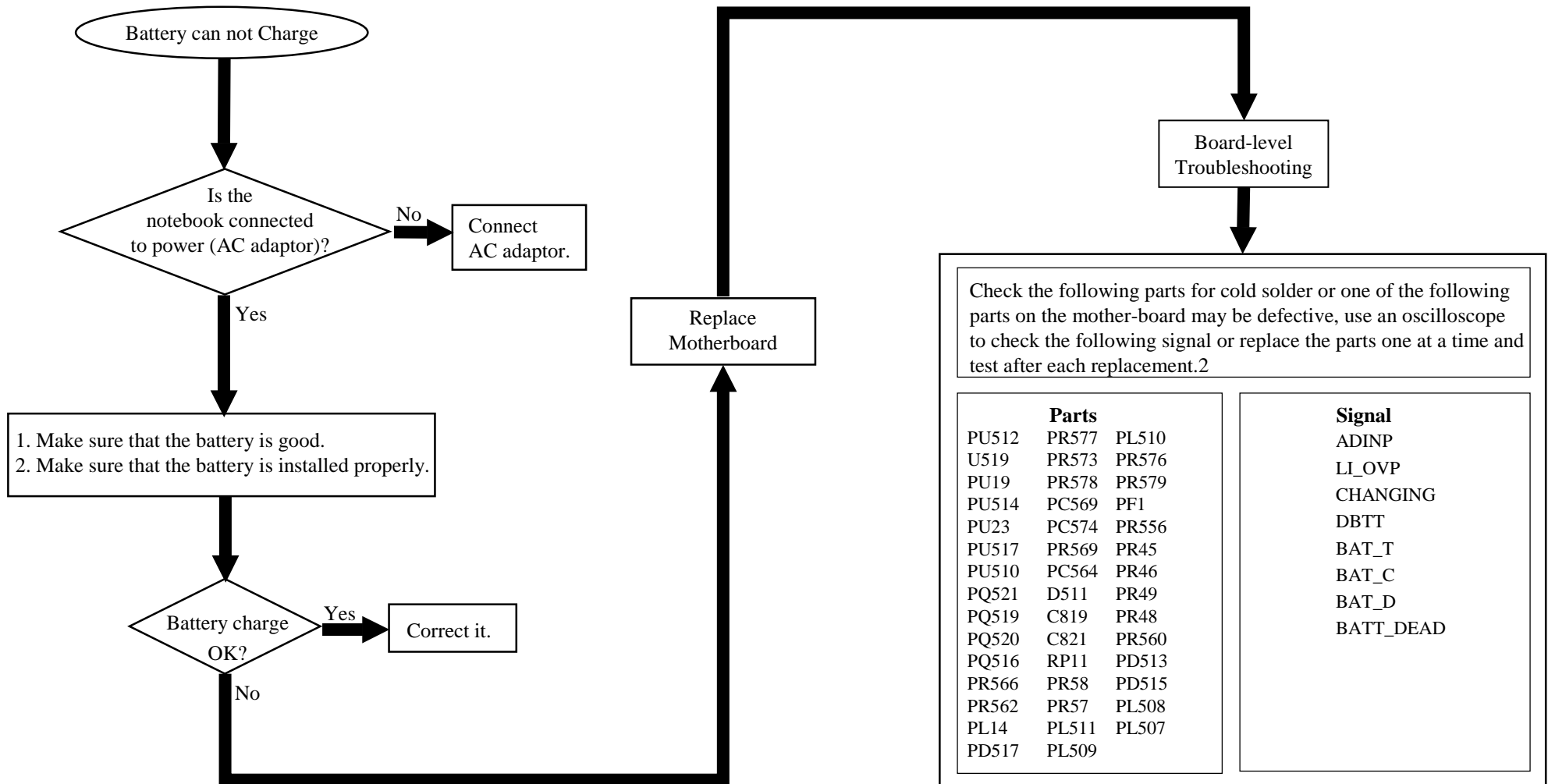
When the battery is installed but the battery status indicate LED display abnormal.



8640 N/B Maintenance

8.2 Battery Can not Be Charged

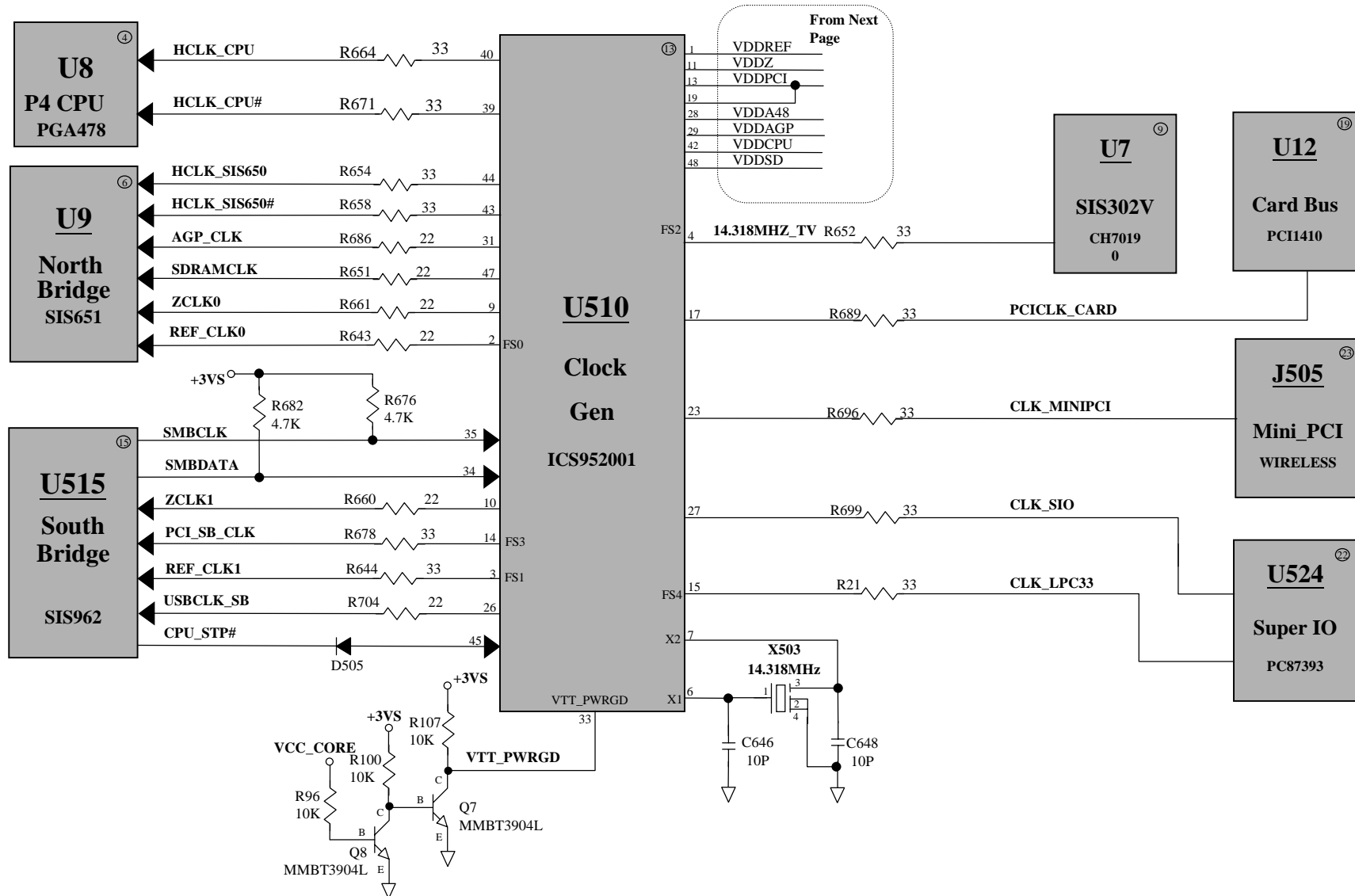
When the battery is installed but the battery status indicate LED display abnormal.



8640 N/B Maintenance

8.3 No Display

System Clock Check 1

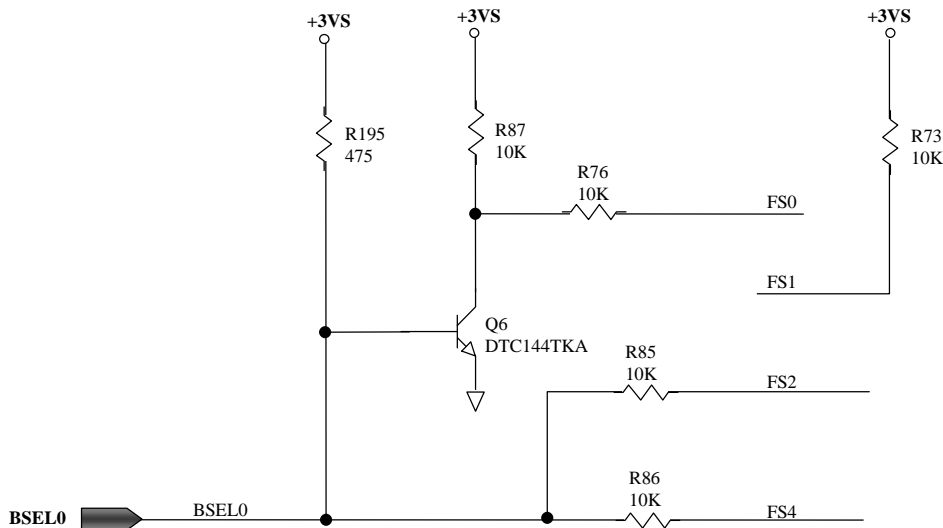


8640 N/B Maintenance

8.3 No Display

System Clock Check 2

FSB 400/533 SELECT(DDR DEFAULT 266)



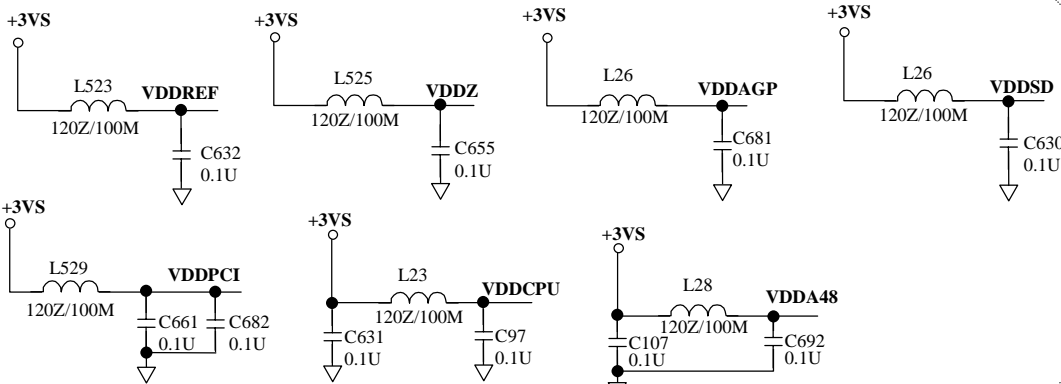
Bit2	Bit7	Bit6	Bit5	Bit4				
FS4	FS3	FS2	FS1	FS0	CPU	SDRA	ZCLK	AGP
0	0	0	0	0	66.7	66.7	66.7	67
0	0	0	0	1	100	100	66.7	67
0	0	0	1	0	100	200	66.7	67
0	0	0	1	1	100	133	66.7	67
0	0	1	0	0	100	150	60	60
0	0	1	0	1	100	125	62.5	63
0	0	1	1	0	100	160	66.67	67
0	0	1	1	1	100	133.3	80	67
0	1	0	0	0	100	200	66.67	67
0	1	0	0	1	100	167	62.5	63
0	1	0	1	0	100	166.7	71.43	83
0	1	0	1	1	80	133.3	66.67	67
0	1	1	0	0	80	133.3	66.67	67
0	1	1	0	1	95	95	63.33	63
0	1	1	1	0	95	126.7	63.33	63
0	1	1	1	1	66.67	66.67	50	50
1	0	0	0	0	105	140	70	70
1	0	0	0	1	100.9	101	67.3	67
1	0	0	1	0	108	144	72	72
1	0	0	1	1	100.9	135	67.3	67
1	0	1	0	0	112	149	74.7	75
1	0	1	0	1	133.3	100	66.7	67
1	0	1	1	0	133.3	133	66.7	67
1	0	1	1	1	133.3	167	66.7	67
1	1	0	0	0	100	133	80	67
1	1	0	0	1	100	100	80	67
1	1	0	1	0	100	167	83.3	63
1	1	0	1	1	133.3	160	80	67
1	1	1	0	0	100	133	100	67
1	1	1	0	1	100	100	100	67

FSB400/DDR266

FSB400/DDR333

FSB400/DDR266

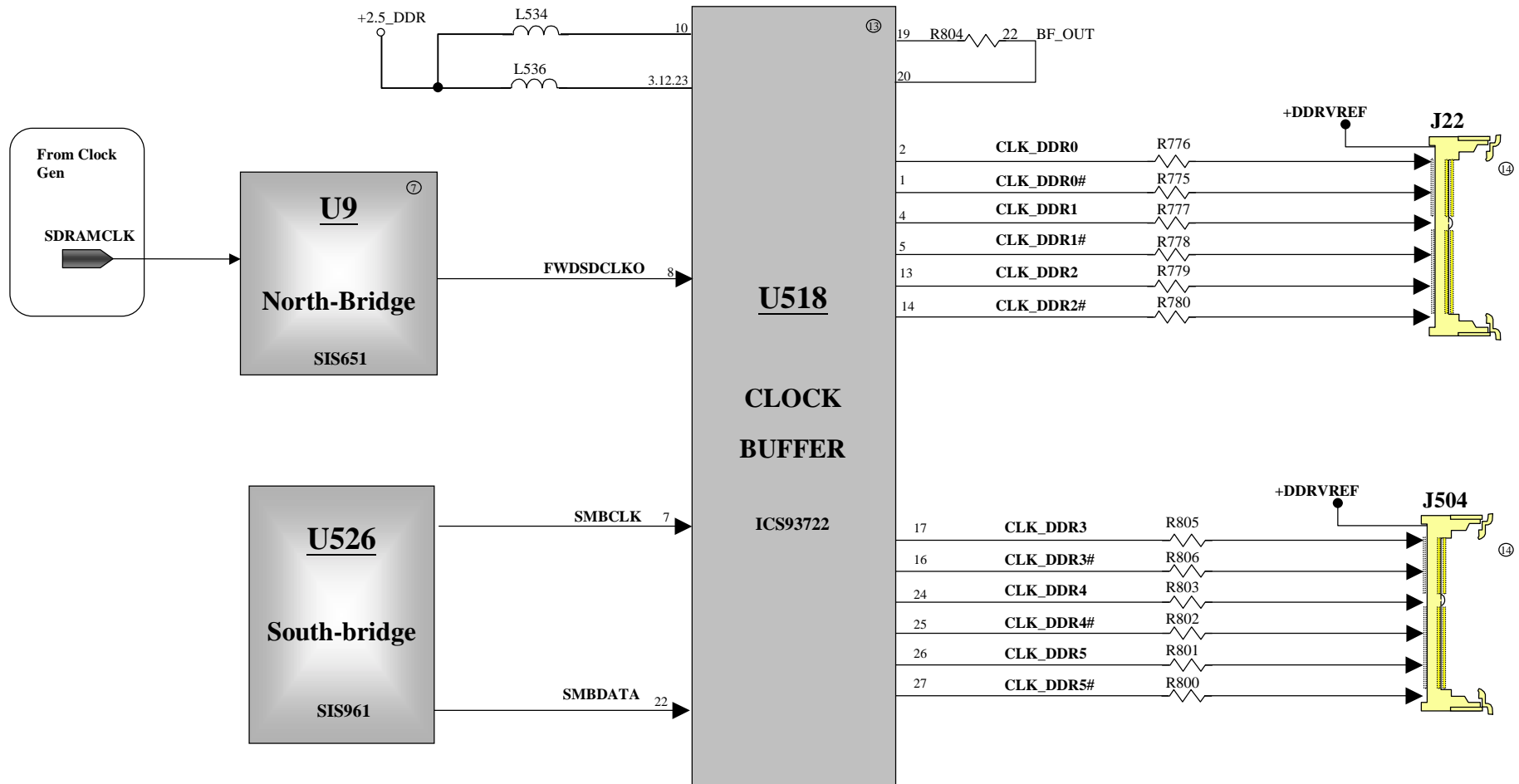
FSB533/DDR333



8640 N/B Maintenance

8.3 No Display

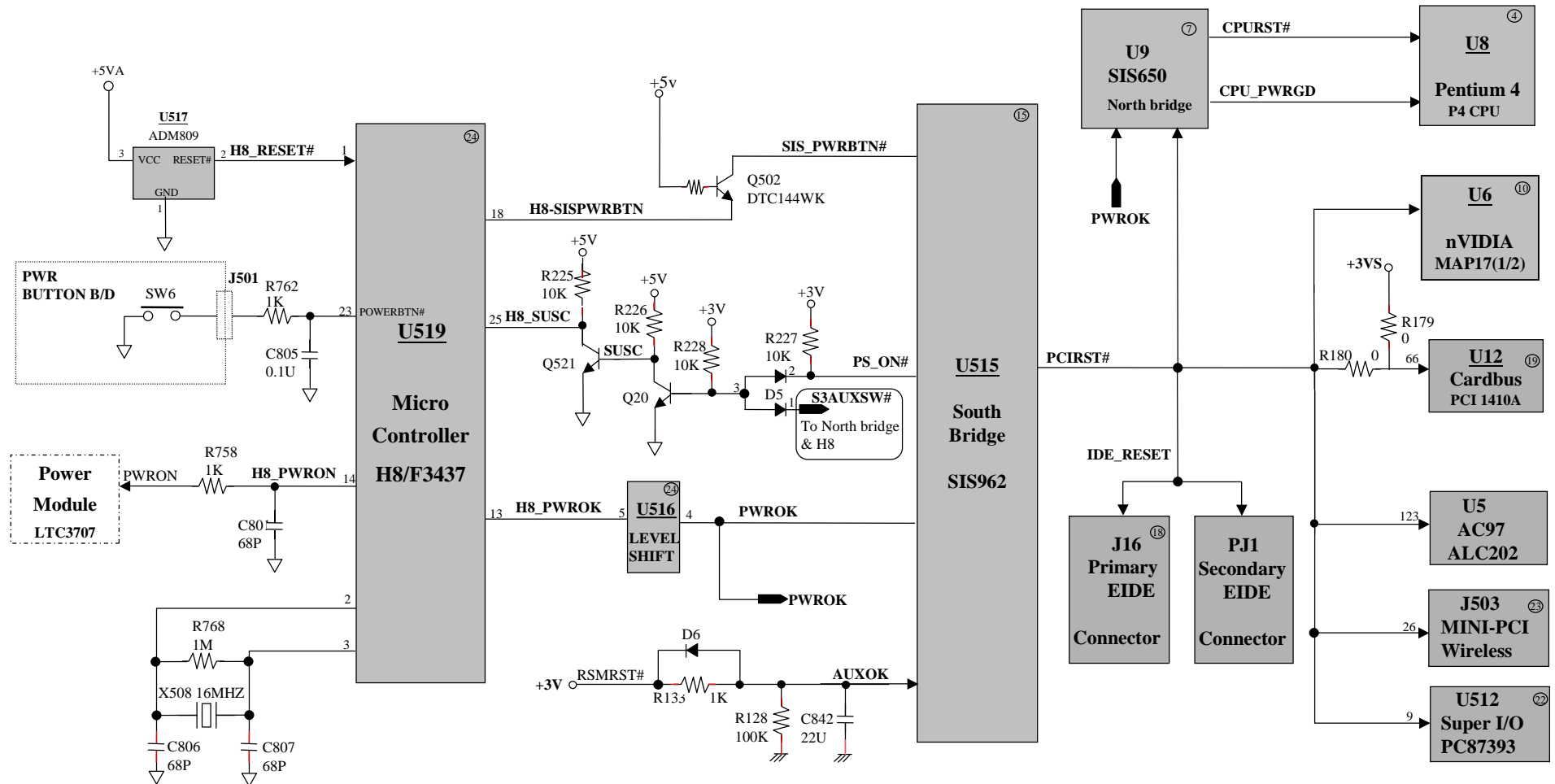
DDR SDRAM Clock Check 3



8640 N/B Maintenance

8.3 No Display

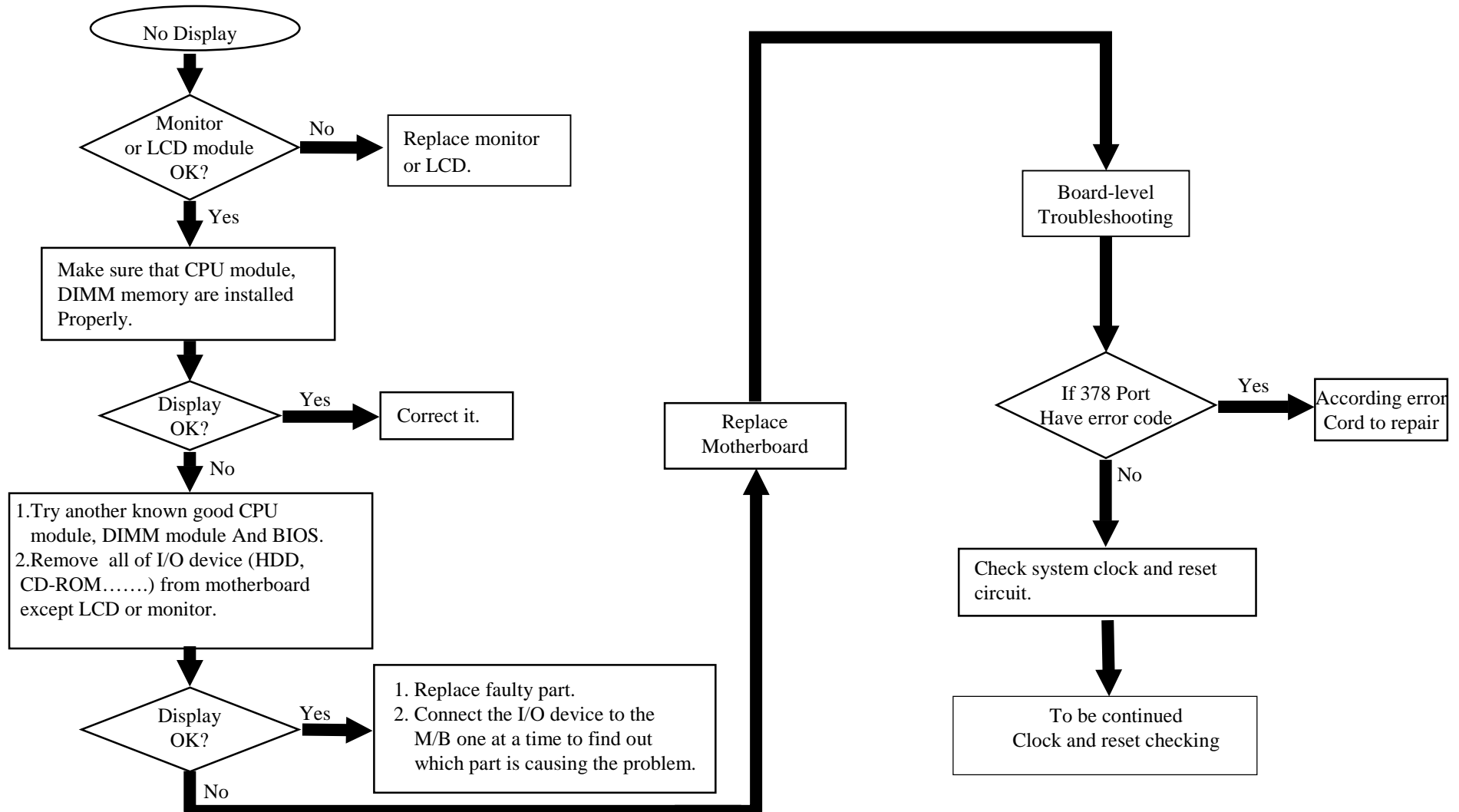
System Reset Check



8640 N/B Maintenance

8.3 No Display

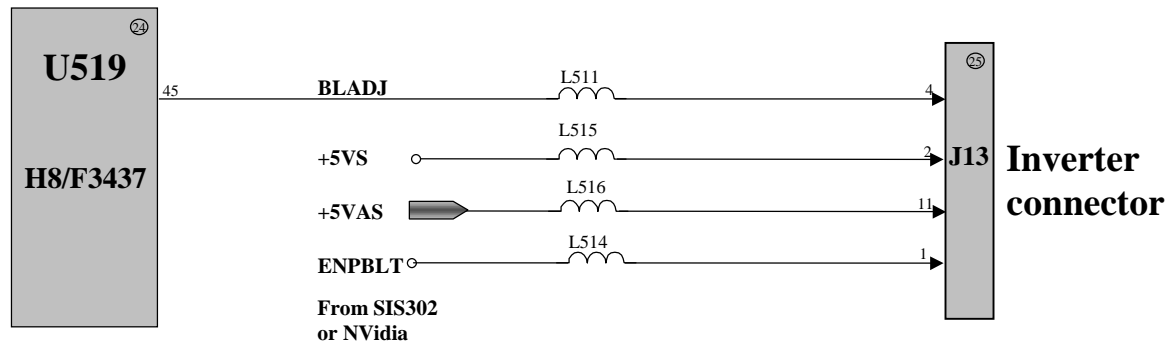
There is no display on both LCD and VGA monitor after power on although the LCD and monitor is known-good.



8640 N/B Maintenance

8.4 VGA Controller Failure LCD No Display

When LCD without back light or LCD Change dark



FN+F6 THE LCD CHANGE DARK

FN+F7 THE LCD CHANGE BRIGHT

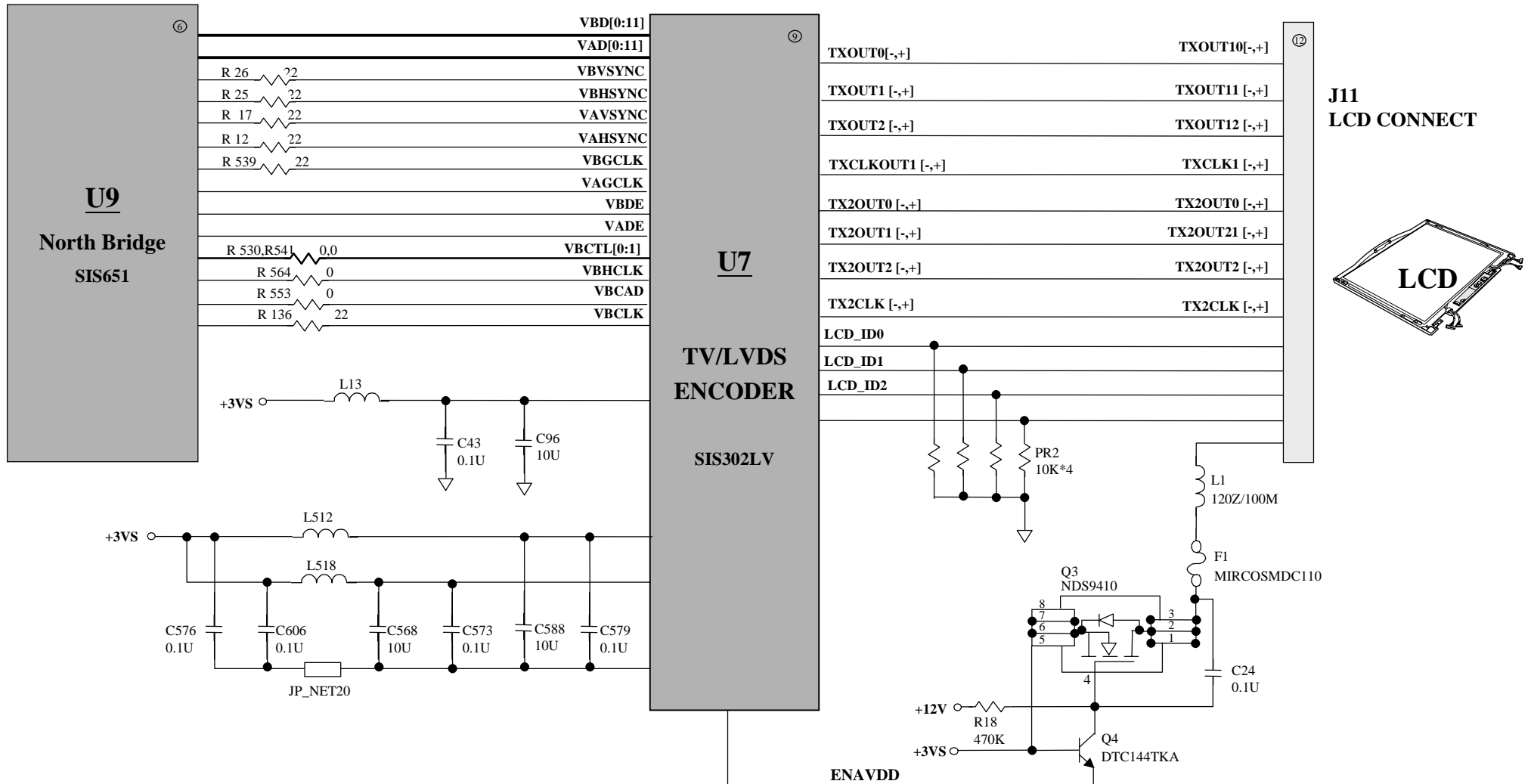
FN+F5 SELECT USE LCD OR MONITOR

FN+F8 CONTROL LCD BRIGHT MODEL

8640 N/B Maintenance

8.4 8640S(Silver)VGA Controller Failure LCD No Display

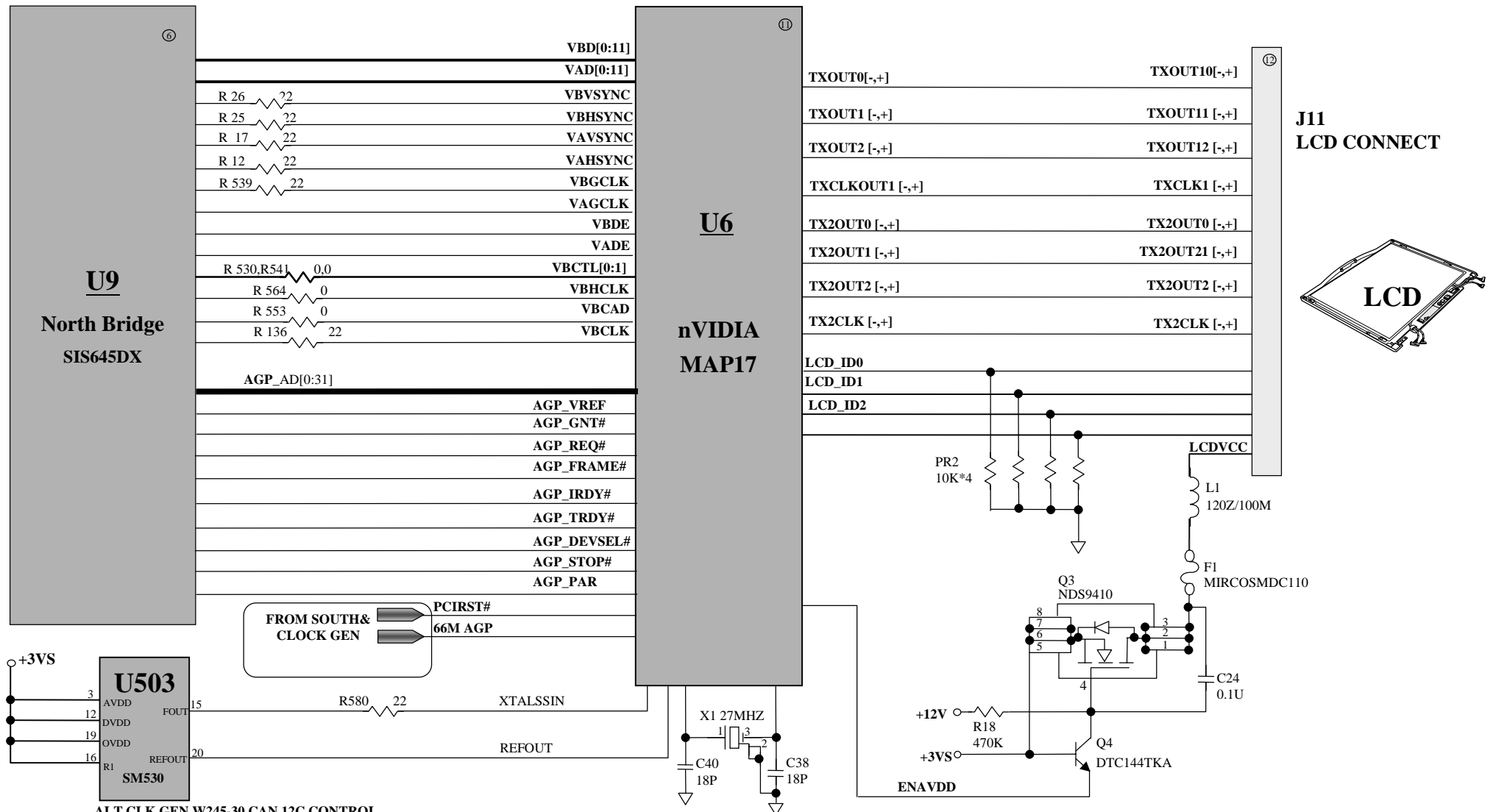
There is no display or picture abnormal on LCD or monitor.



8640 N/B Maintenance

8.4 8640G(Gold)VGA Controller Failure LCD No Display

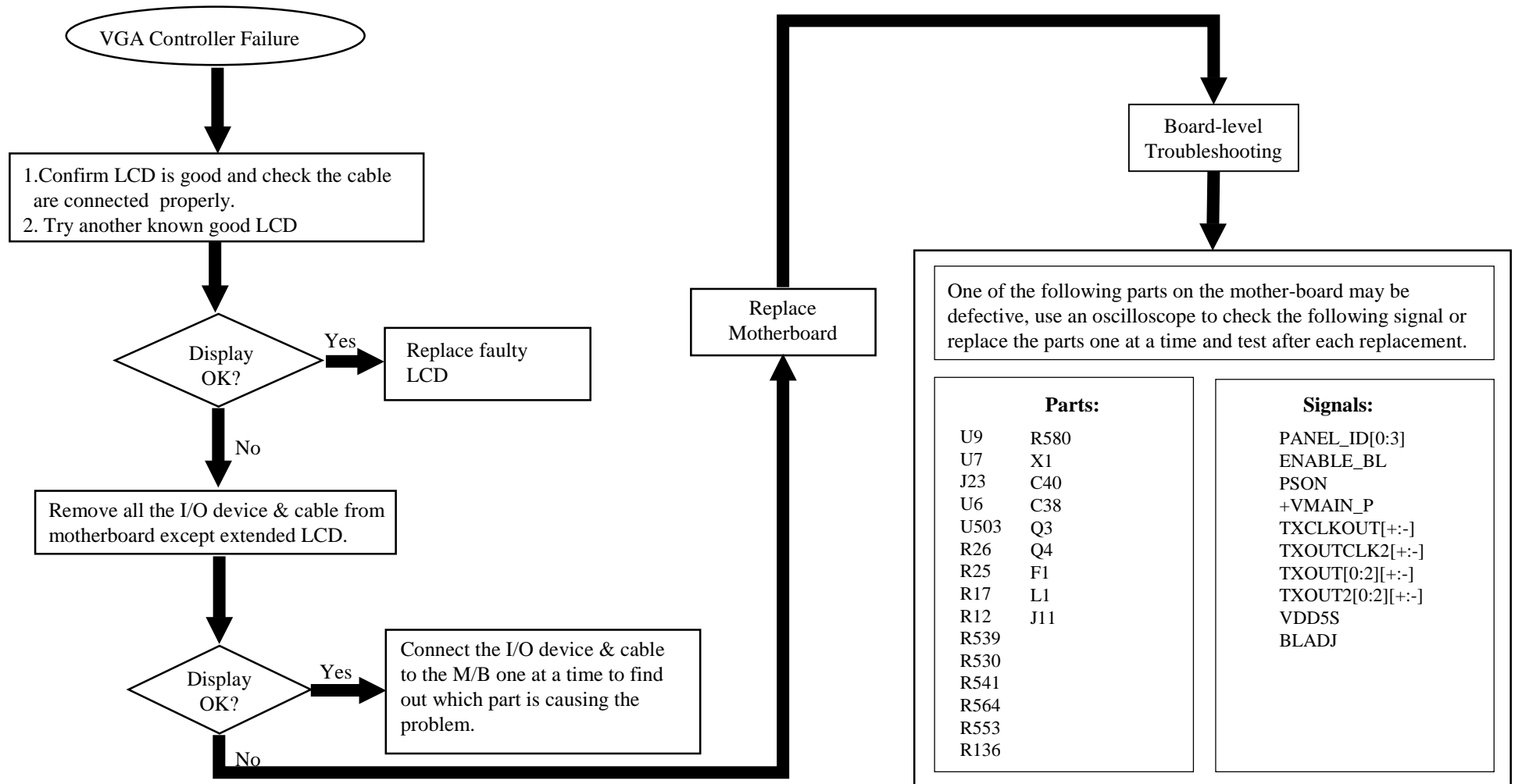
There is no display or picture abnormal on LCD or monitor.



8640 N/B Maintenance

8.4 VGA Controller Failure LCD No Display

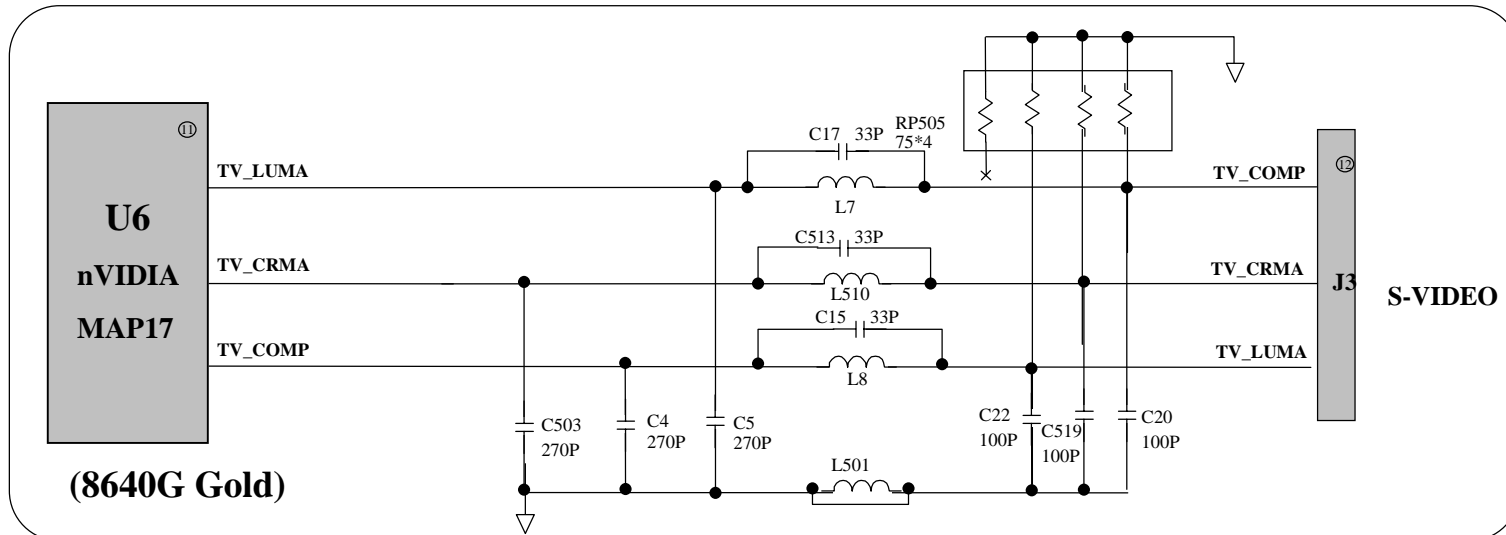
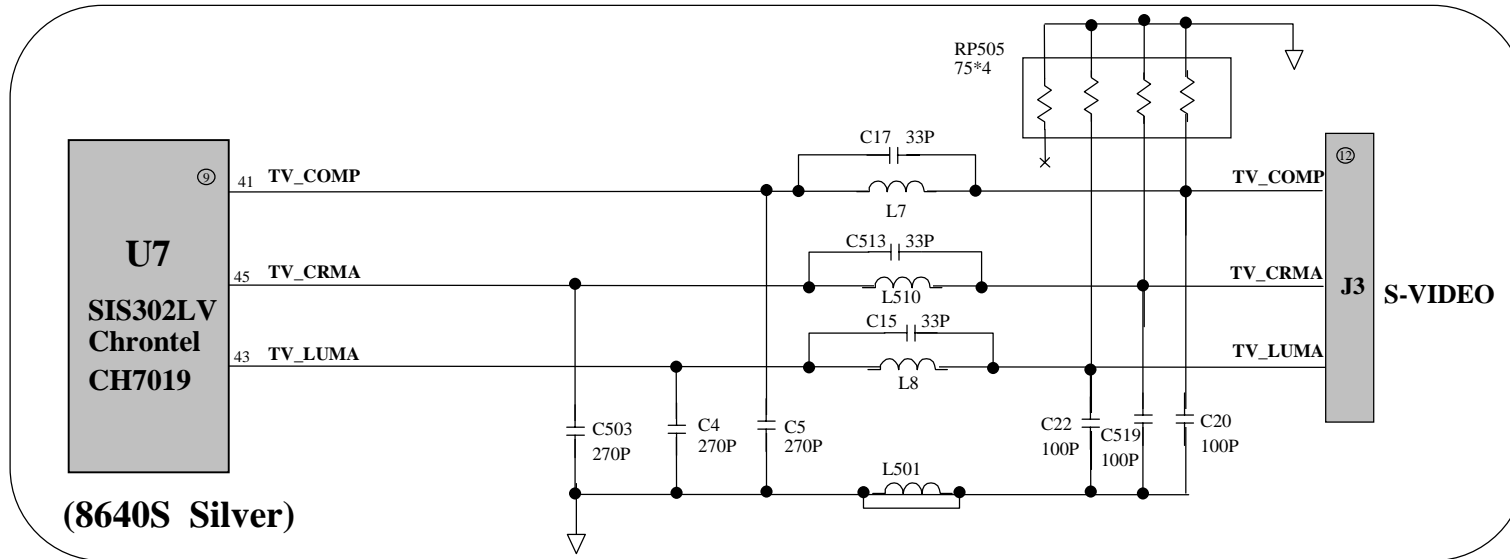
There is no display or picture abnormal on LCD or monitor.



8640 N/B Maintenance

8.5 8640S(Silver)&8640G(Gold)VGA Controller Failure TV No Display

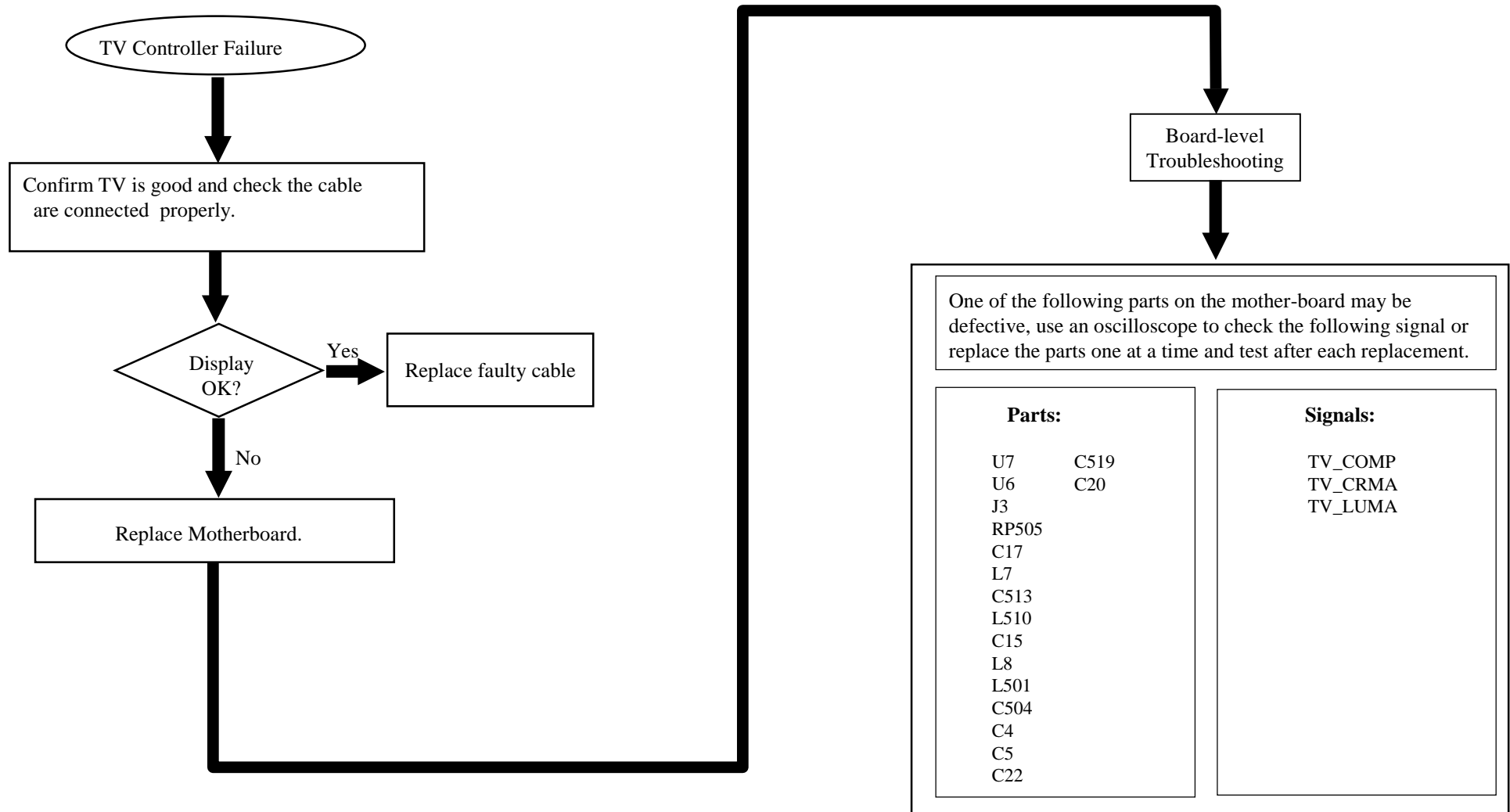
There is no display or picture abnormal on TV.



8640 N/B Maintenance

8.5 VGA Controller Failure TV No Display

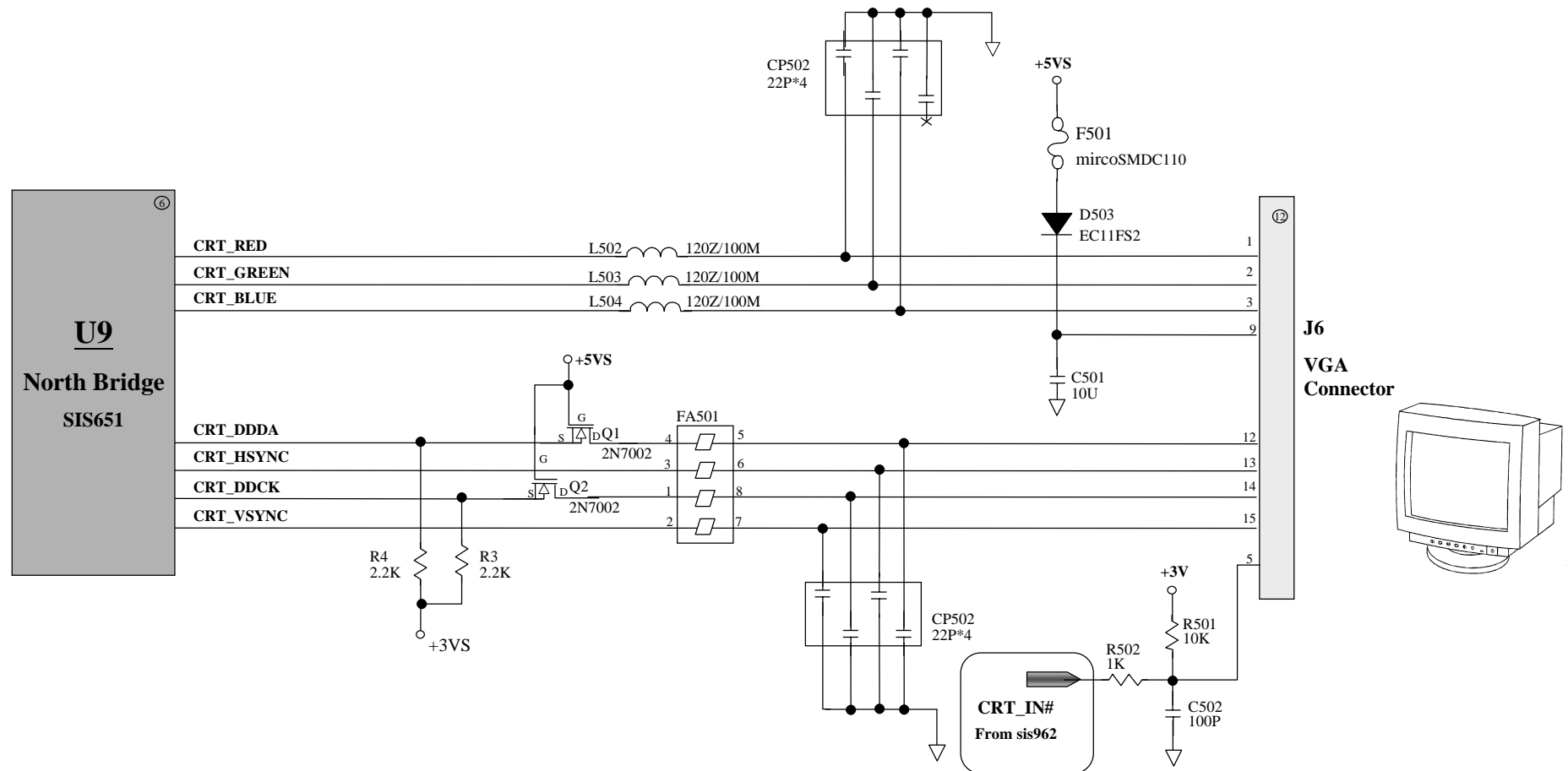
There is no display or picture abnormal on TV.



8640 N/B Maintenance

8.6 8640S(Silver)VGA Controller Failure Monitor No Display

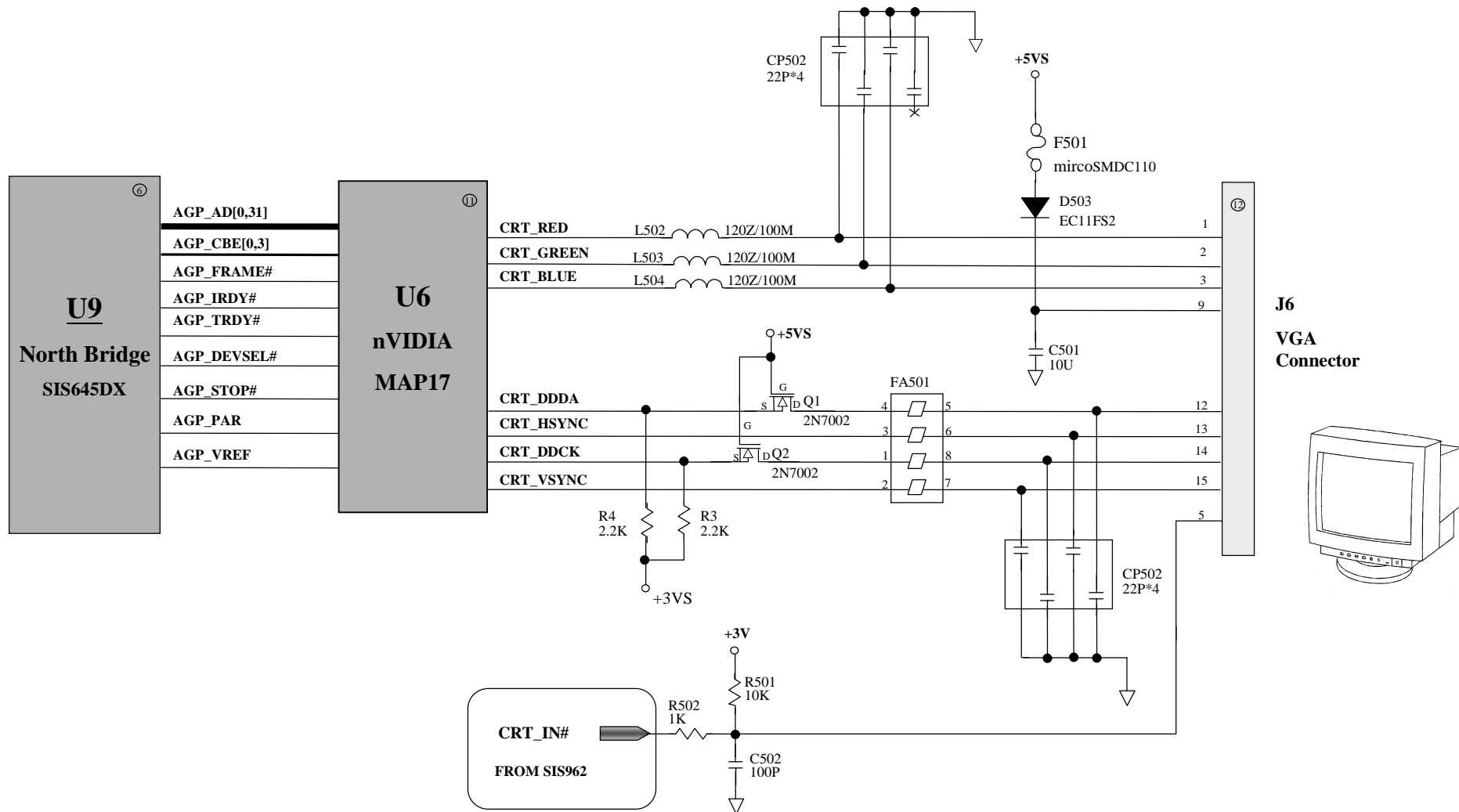
There is no display or picture abnormal on monitor.



8640 N/B Maintenance

8.6 8640G(Gold)VGA Controller Failure Monitor No Display

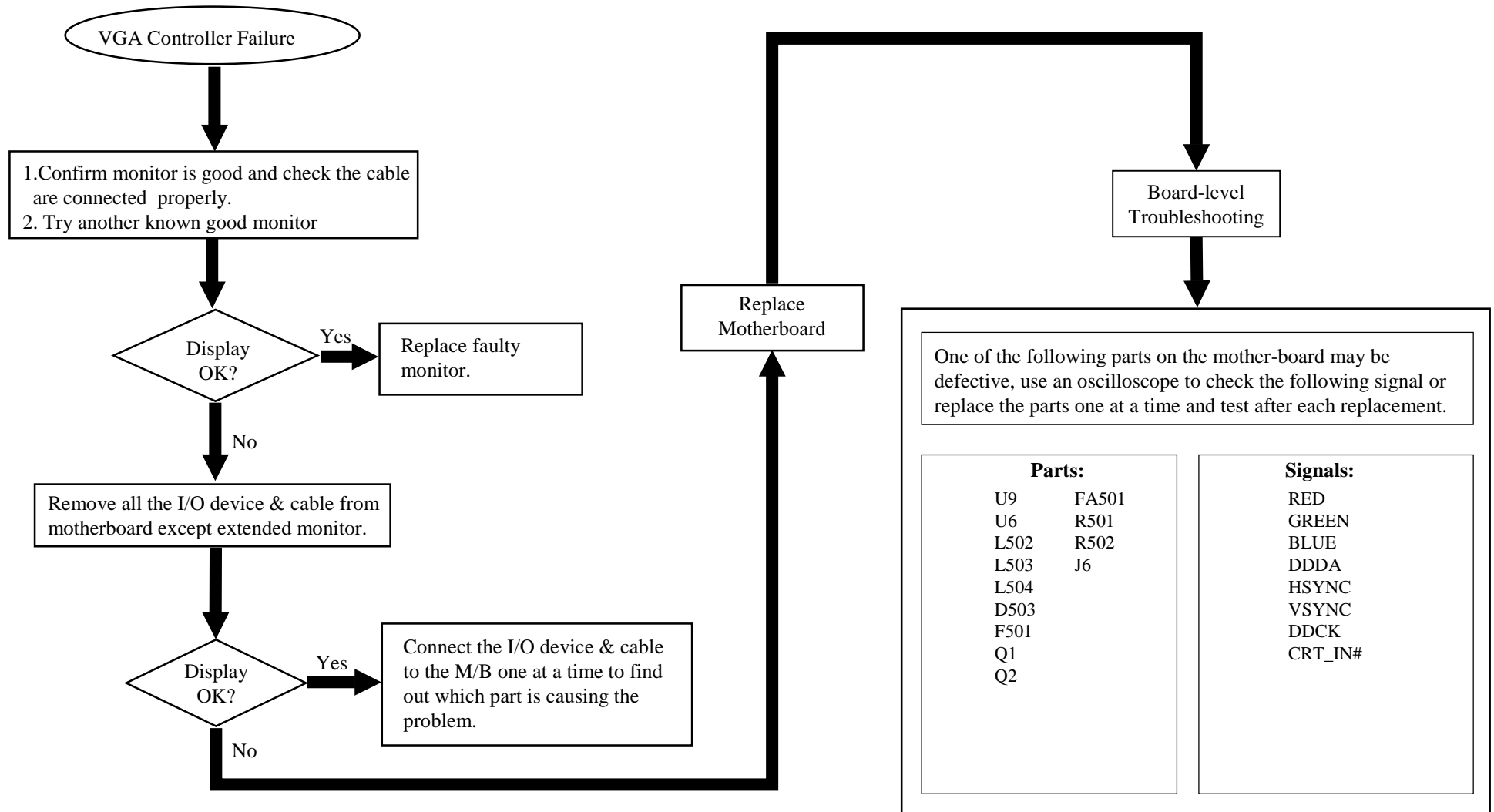
There is no display or picture abnormal on monitor.



8640 N/B Maintenance

8.6 VGA Controller Failure Monitor No Display

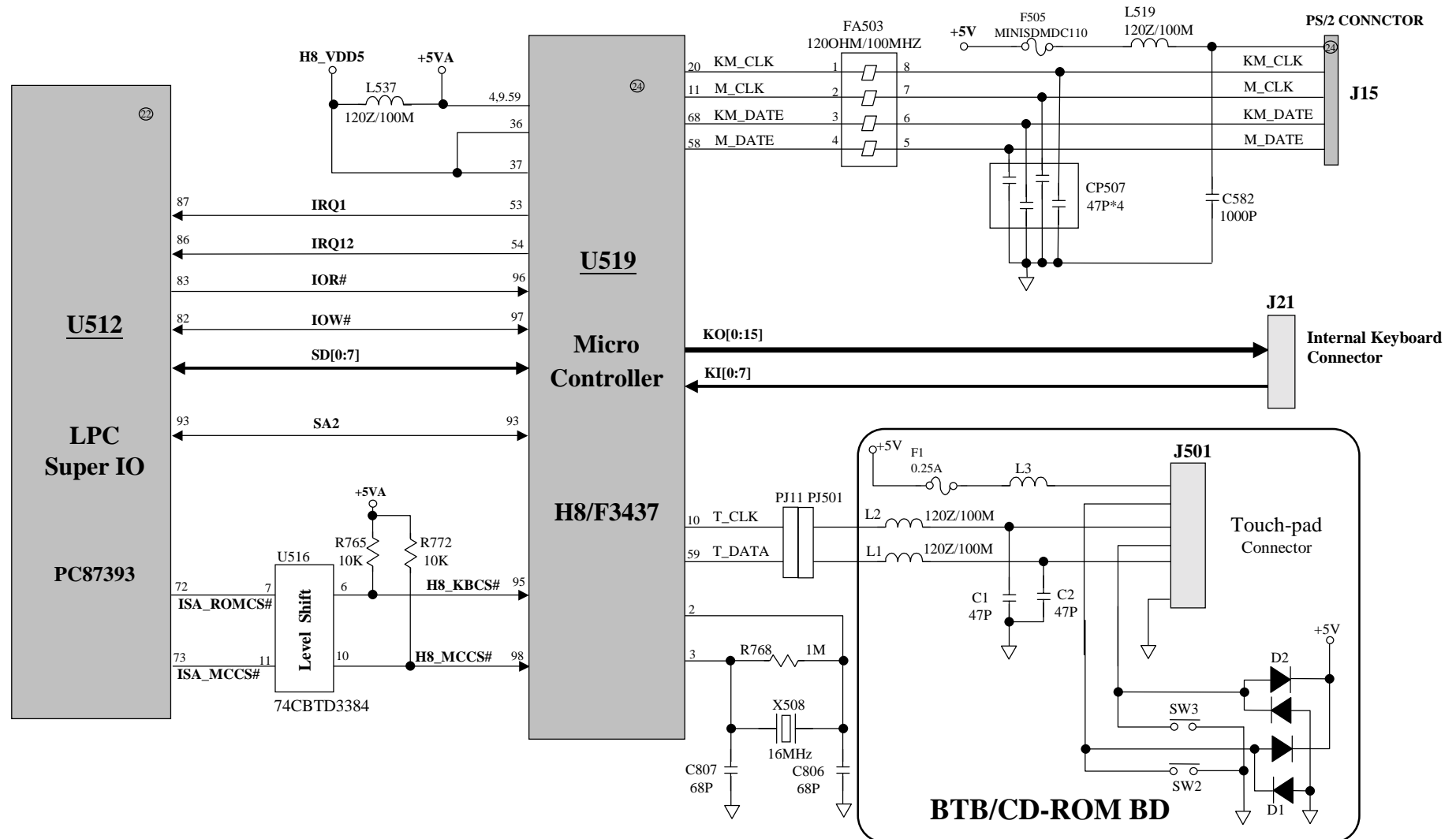
There is no display or picture abnormal on monitor.



8640 N/B Maintenance

8.7 Keyboard (K/B) Touch-Pad (T/P) Test Error

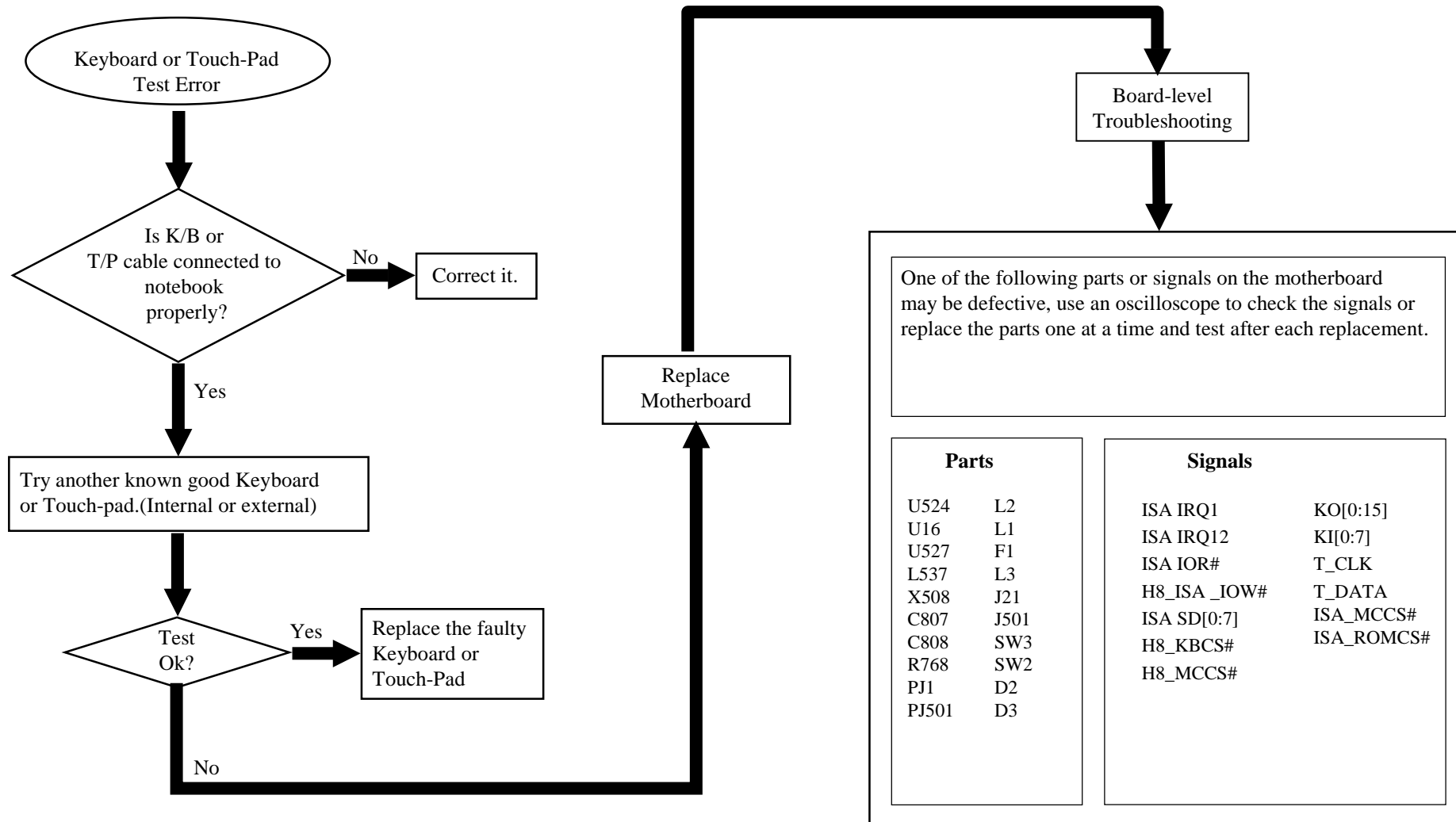
Error message of keyboard or touch-pad failure is shown or any key does not work.



8640 N/B Maintenance

8.7 Keyboard (K/B) Touch-Pad (T/P) Test Error20

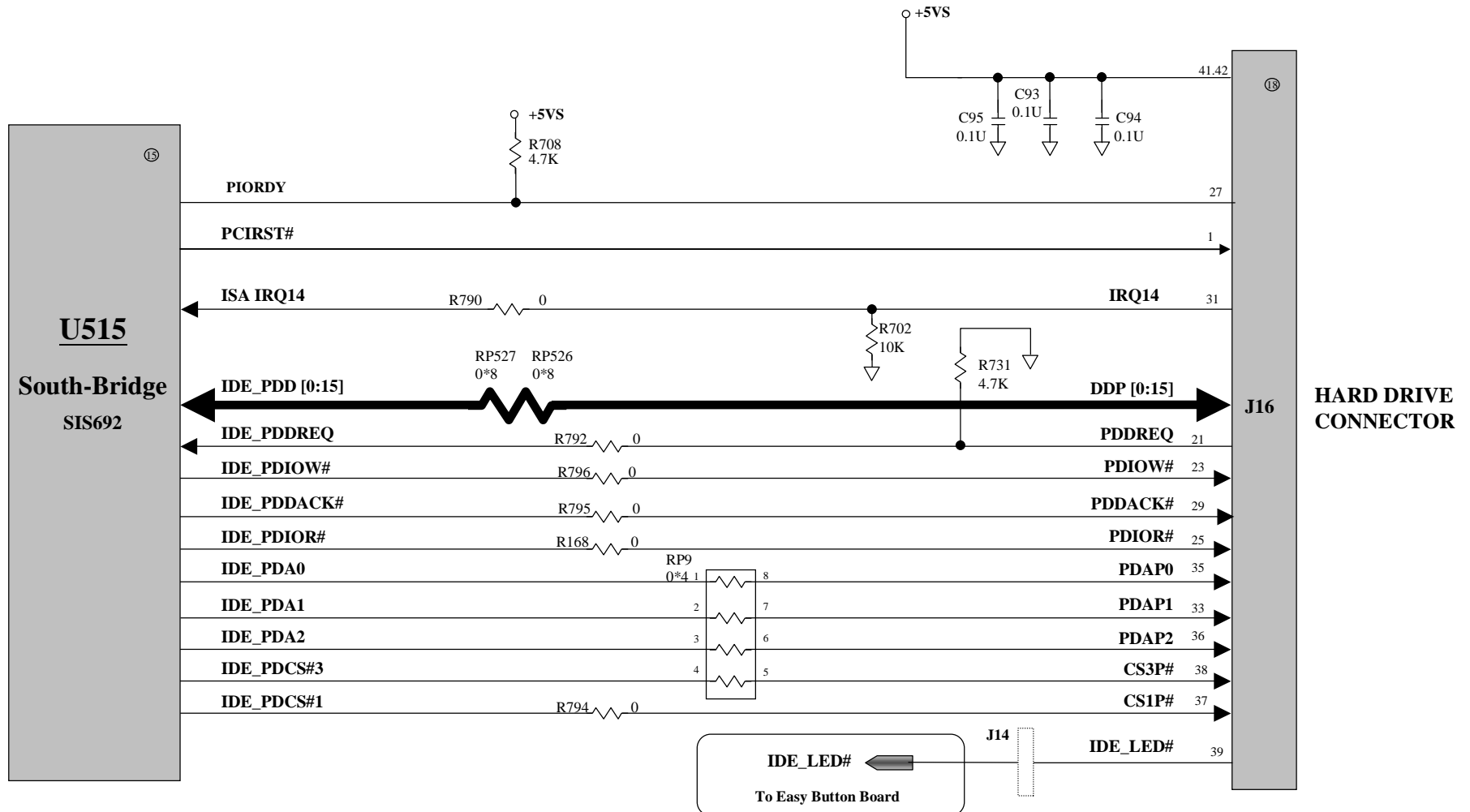
Error message of keyboard or touch-pad failure is shown or any key does not work.



8640 N/B Maintenance

8.8 Hard Drive Test Error

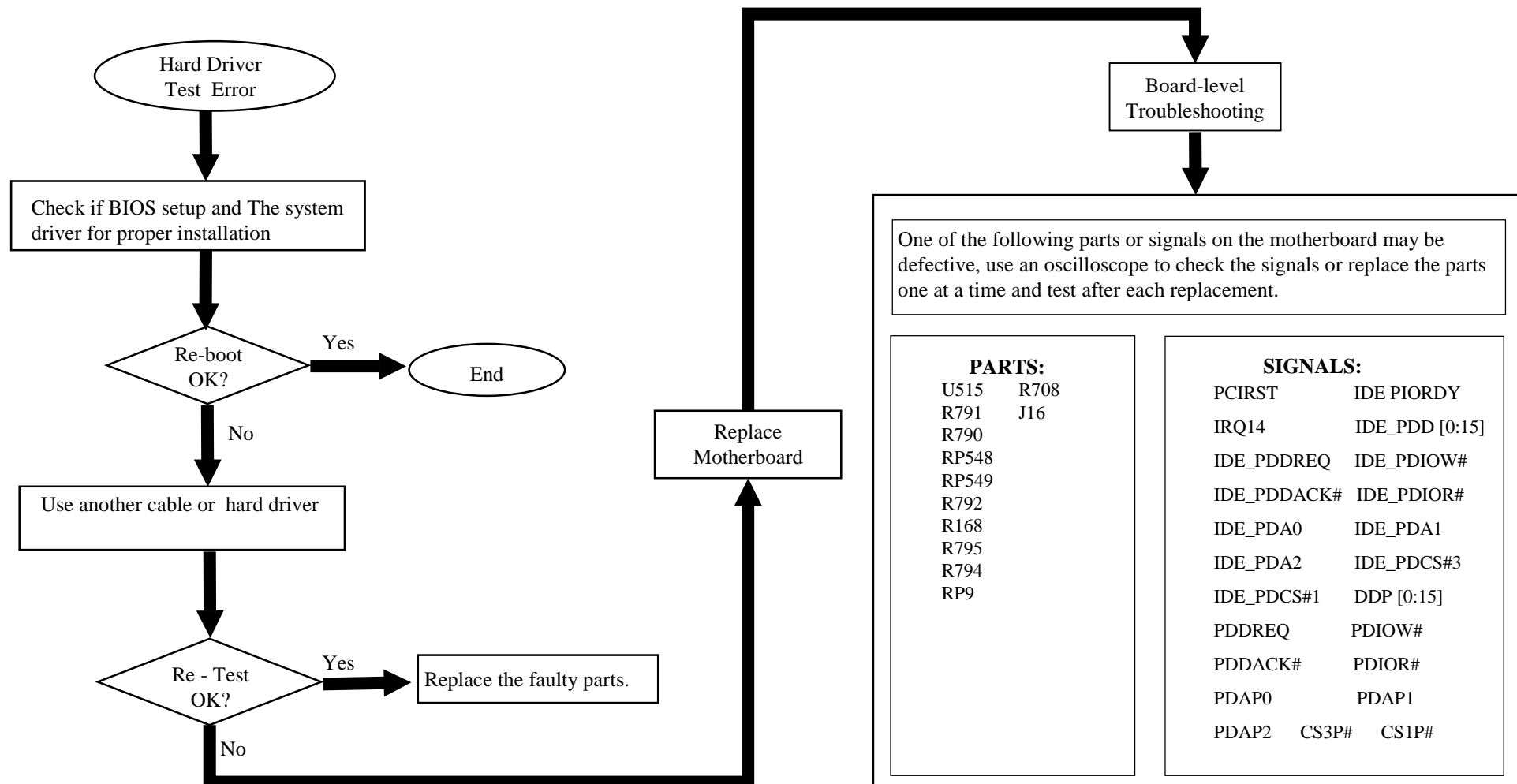
Either an error message is shown, or the driver motor continues spinning, while reading data is from or writing data is to hard drive.



8640 N/B Maintenance

8.8 Hard Drive Test Error

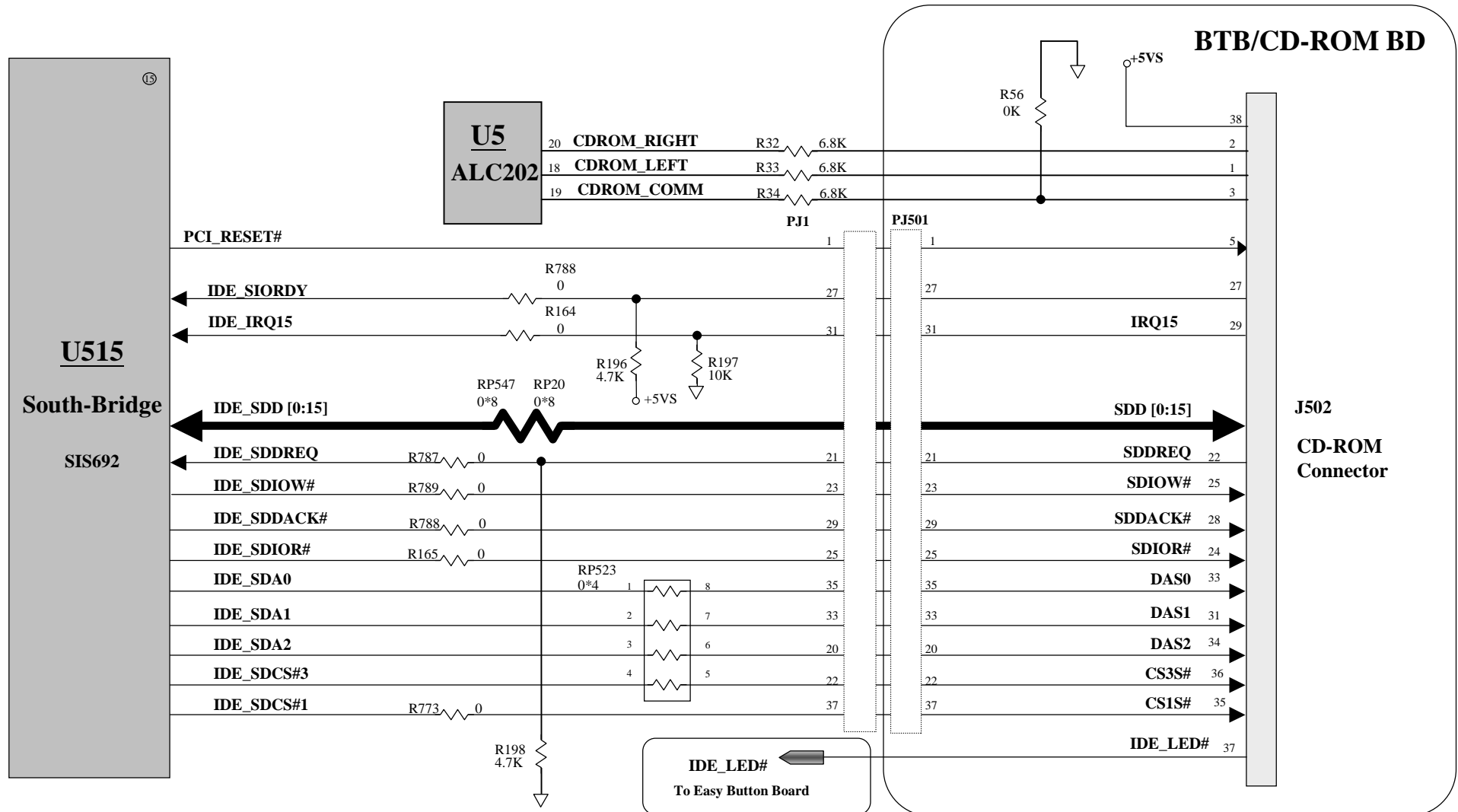
Either an error message is shown, or the driver motor continues spinning, while reading data is from or writing data is to hard drive.



8640 N/B Maintenance

8.9 CD-ROM Drive Test Error

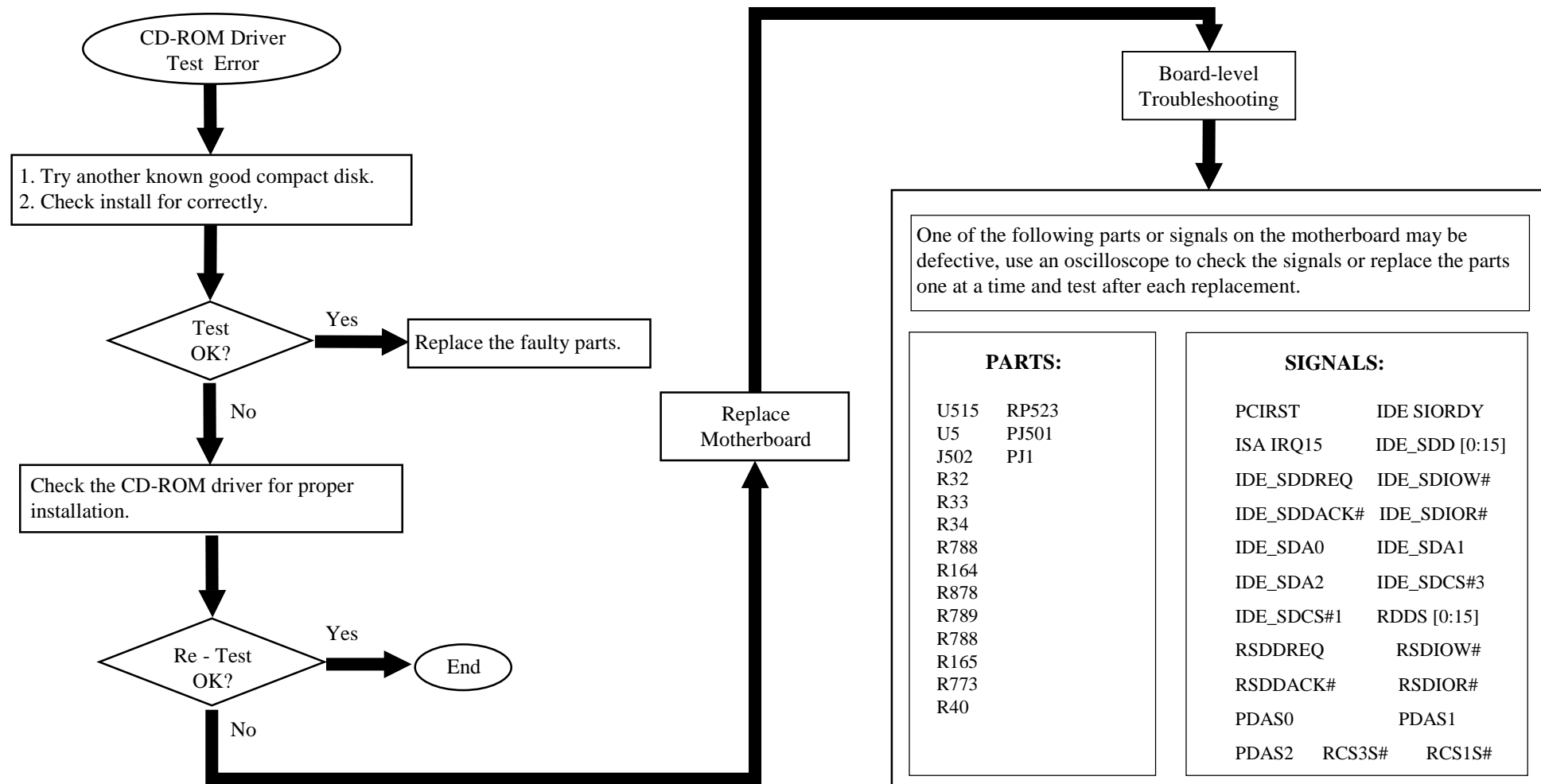
An error message is shown when reading data from CD-ROM drive.



8640 N/B Maintenance

8.9 CD-ROM Drive Test Error

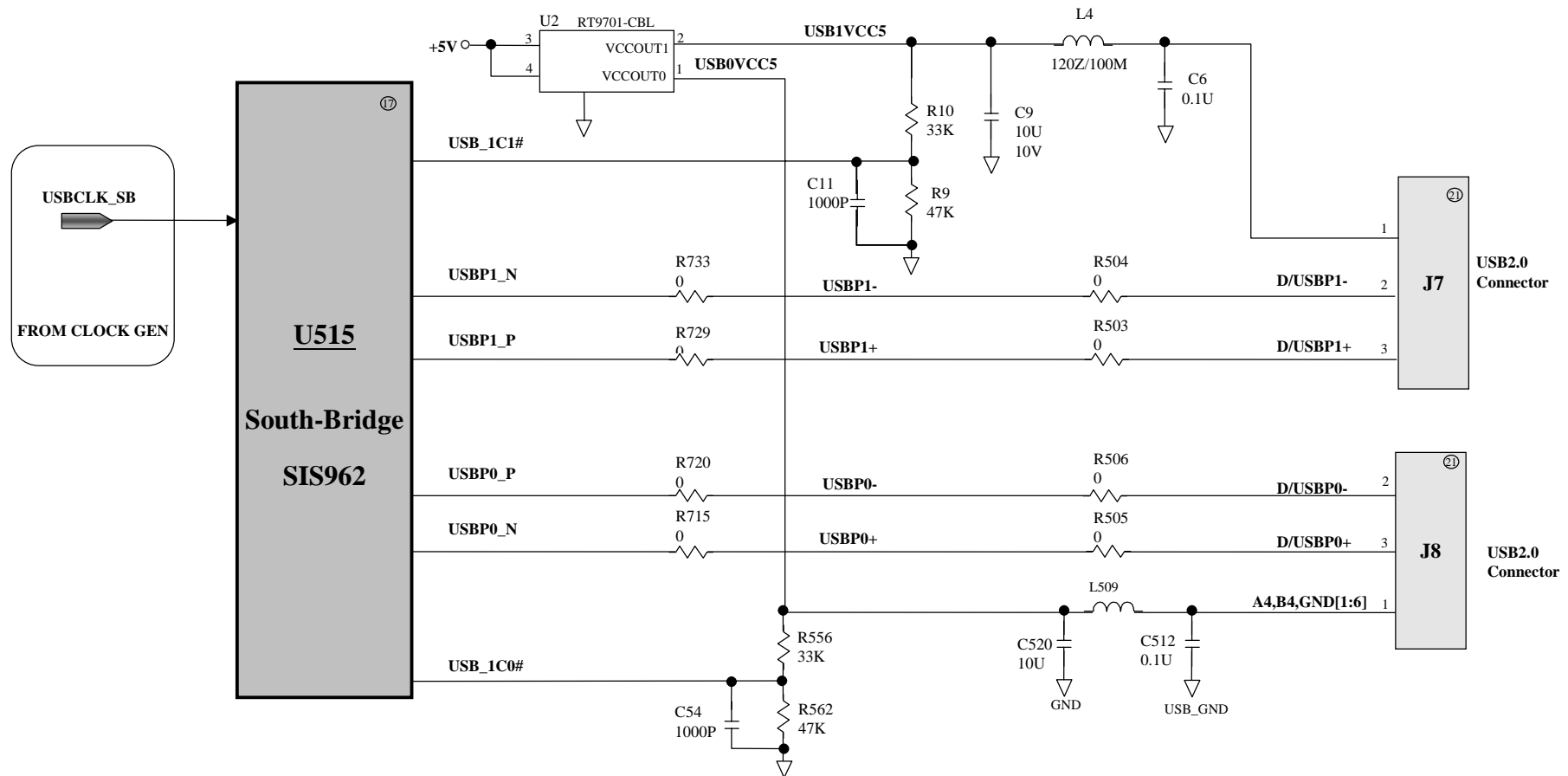
An error message is shown when reading data from CD-ROM drive.



8640 N/B Maintenance

8.10 USB Port Test Error-1

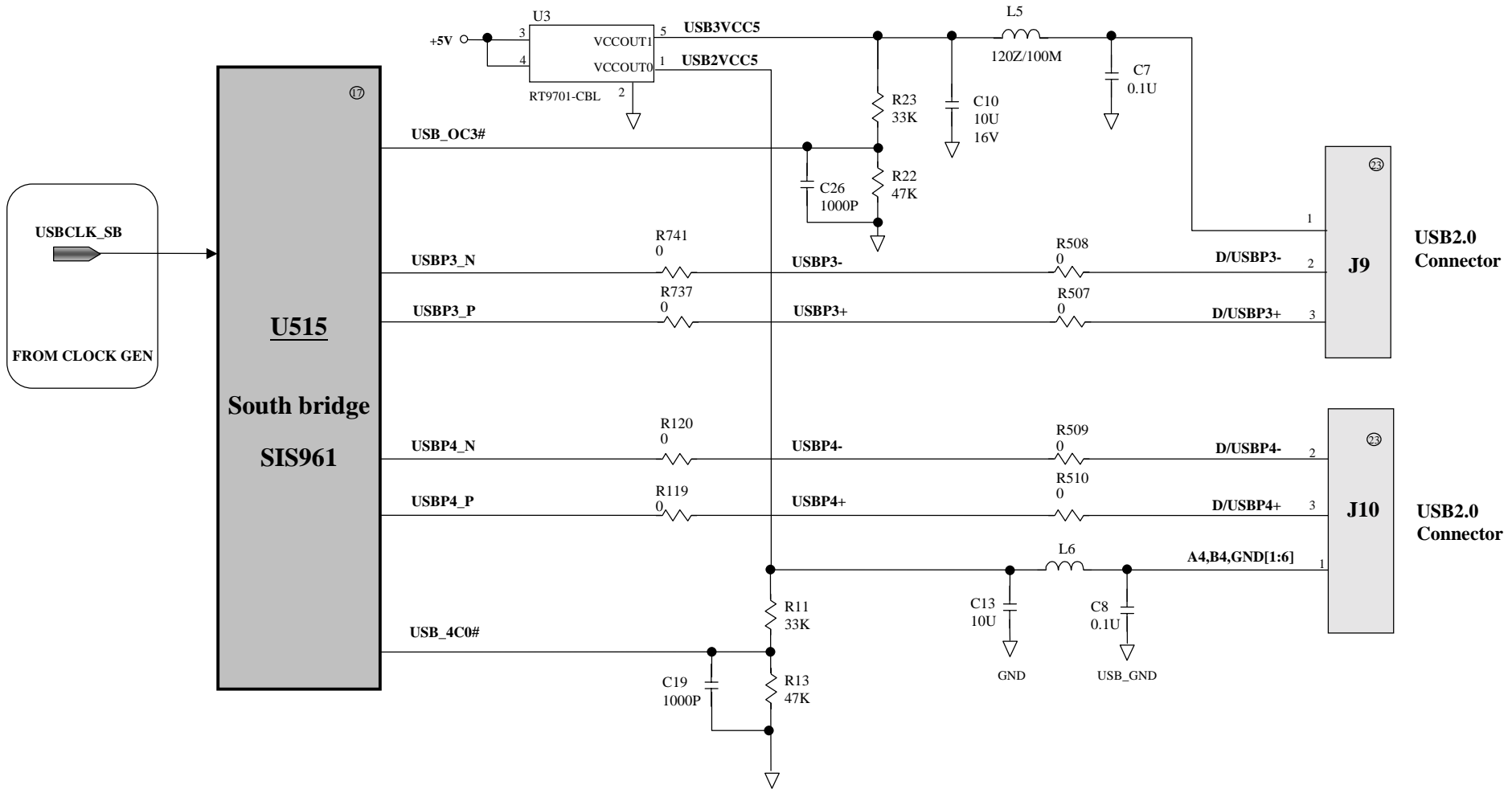
An error occurs when a USB I/O device is installed.



8640 N/B Maintenance

8.10 USB Port Test Error-2

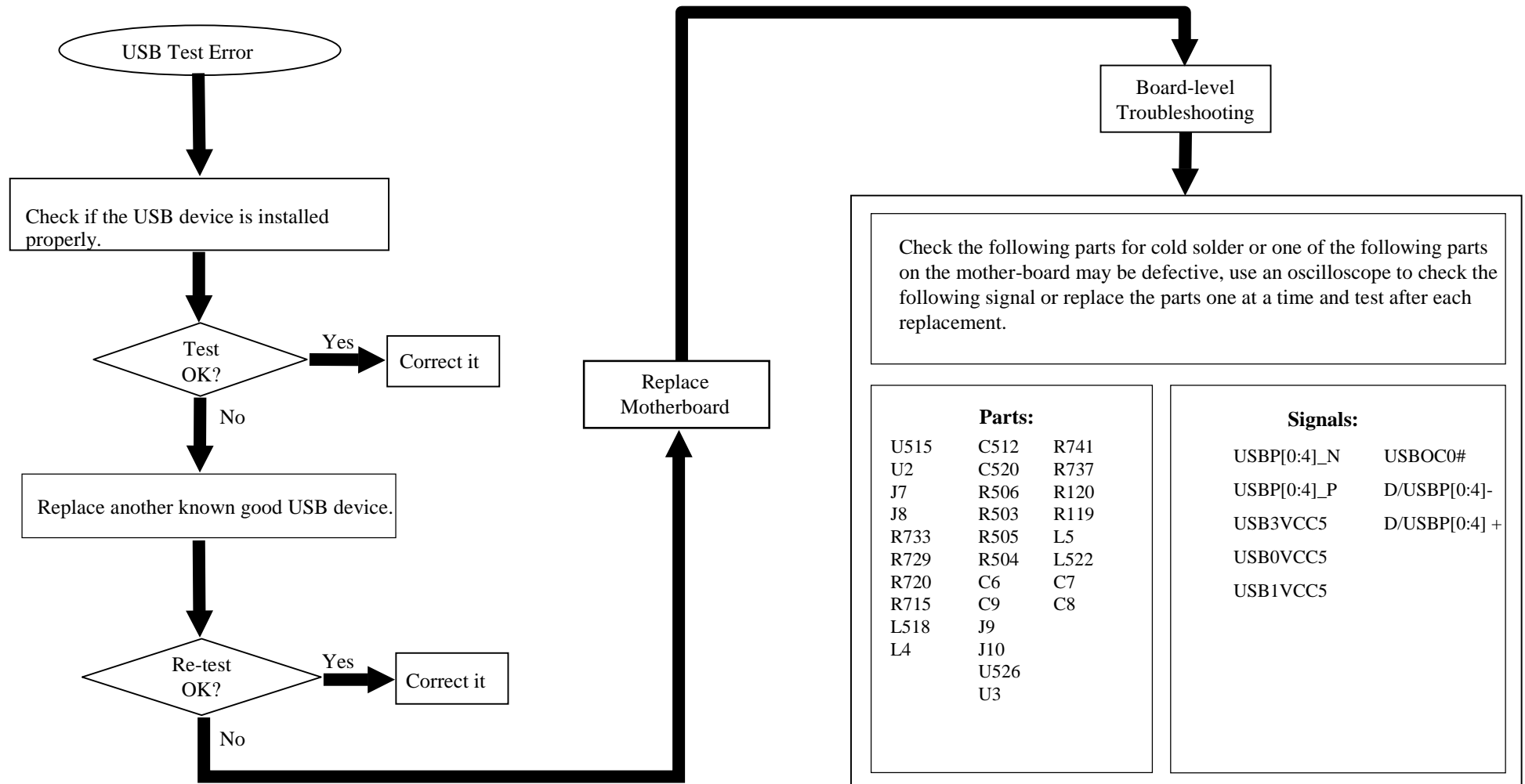
An error occurs when a USB I/O device is installed.



8640 N/B Maintenance

8.10 USB Port Test Error

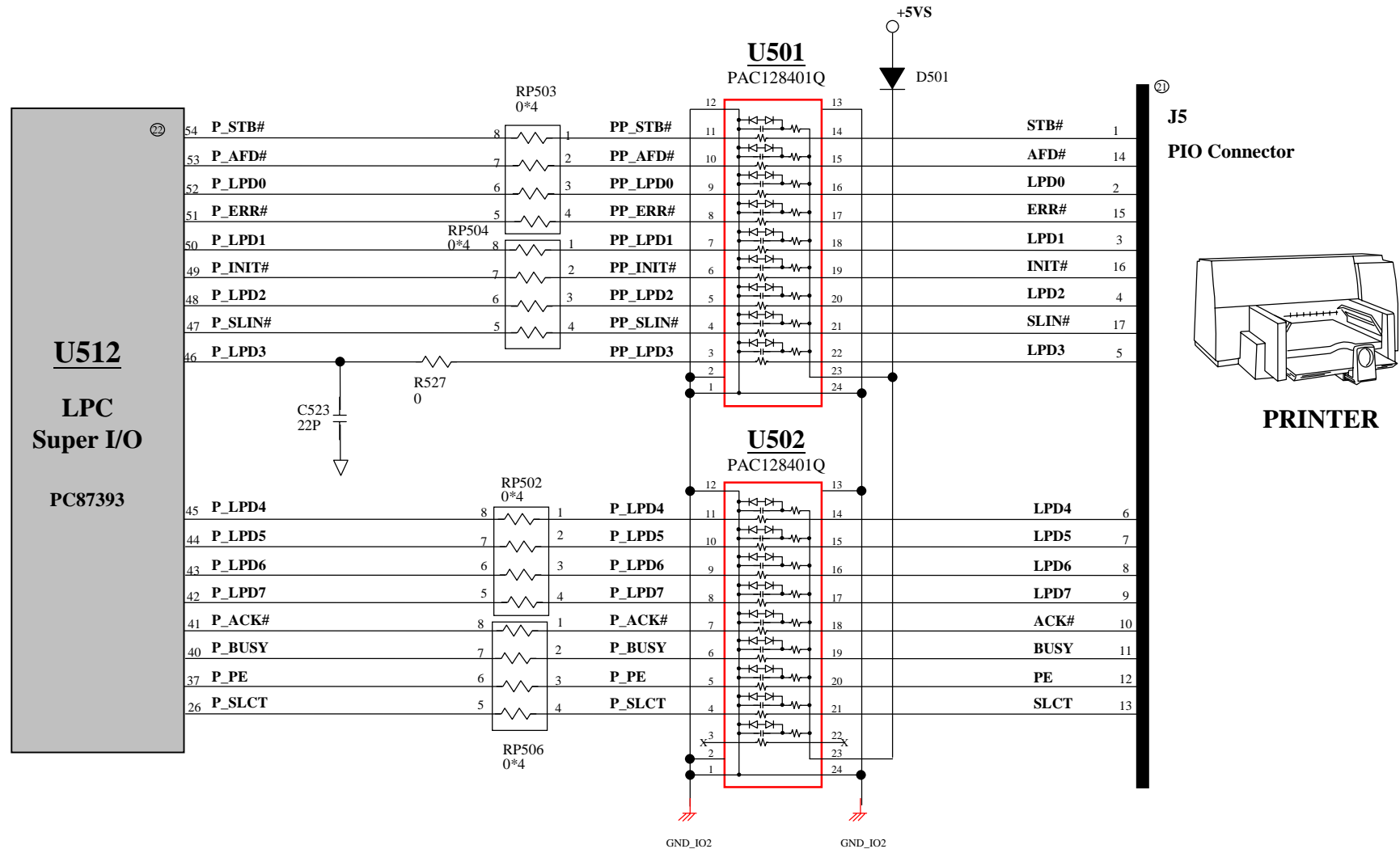
An error occurs when a USB I/O device is installed.



8640 N/B Maintenance

8.11 PIO Port Test Error

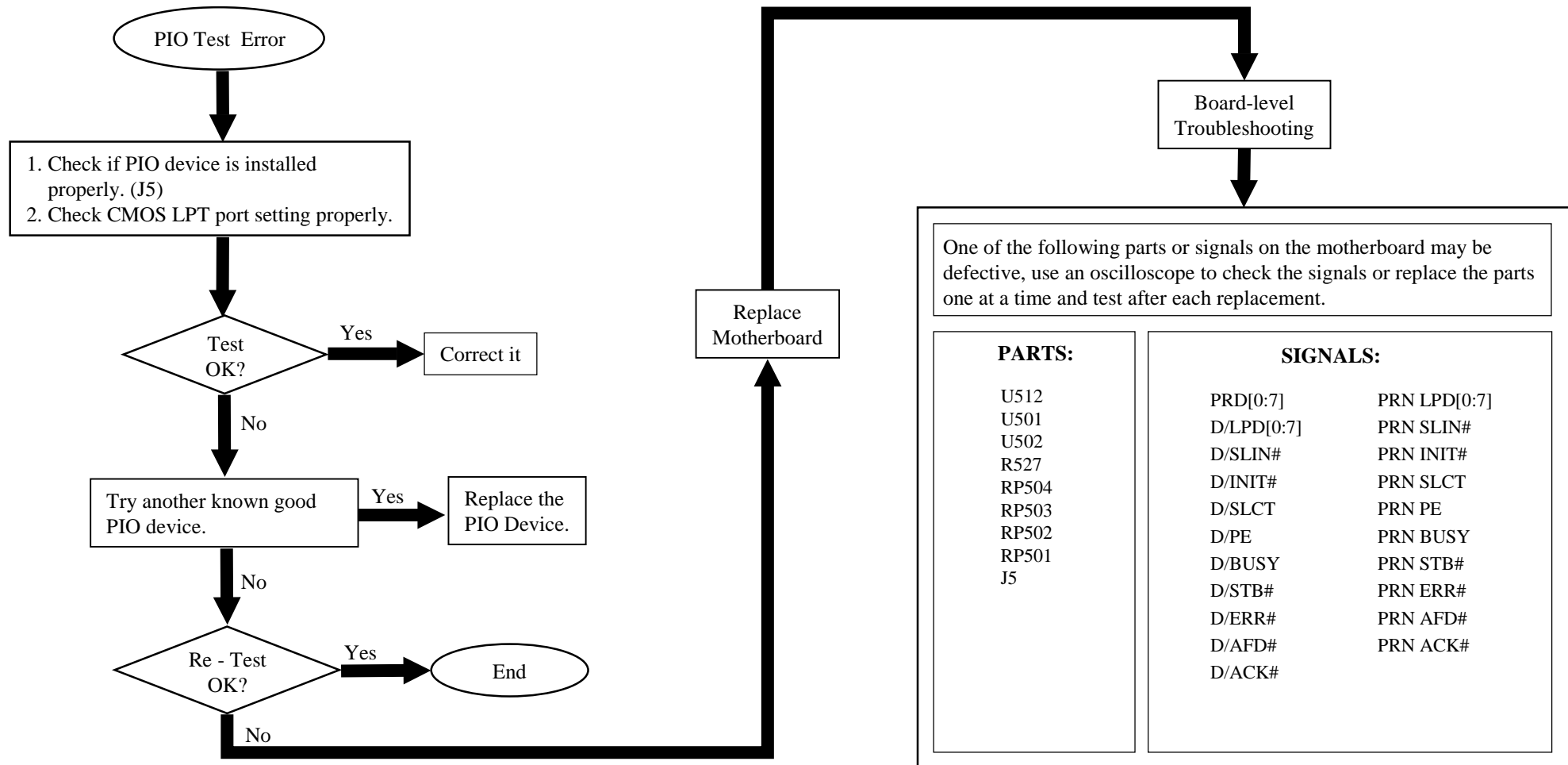
When a print command is issued, printer prints nothing or garbage.



8640 N/B Maintenance

8.11 PIO Port Test Error

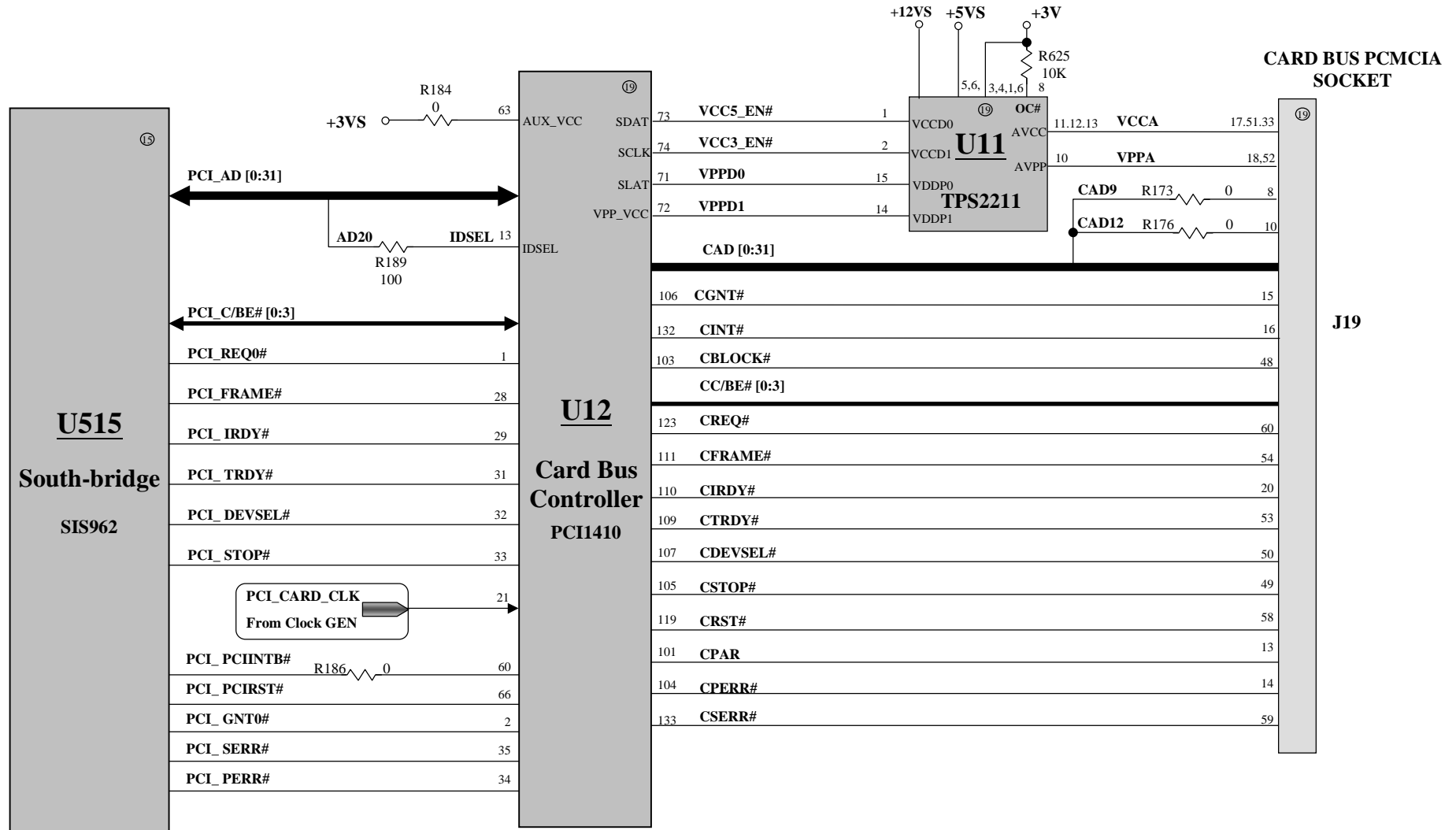
When a print command is issued, printer prints nothing or garbage.



8640 N/B Maintenance

8.12 PC-Card Socket Failure

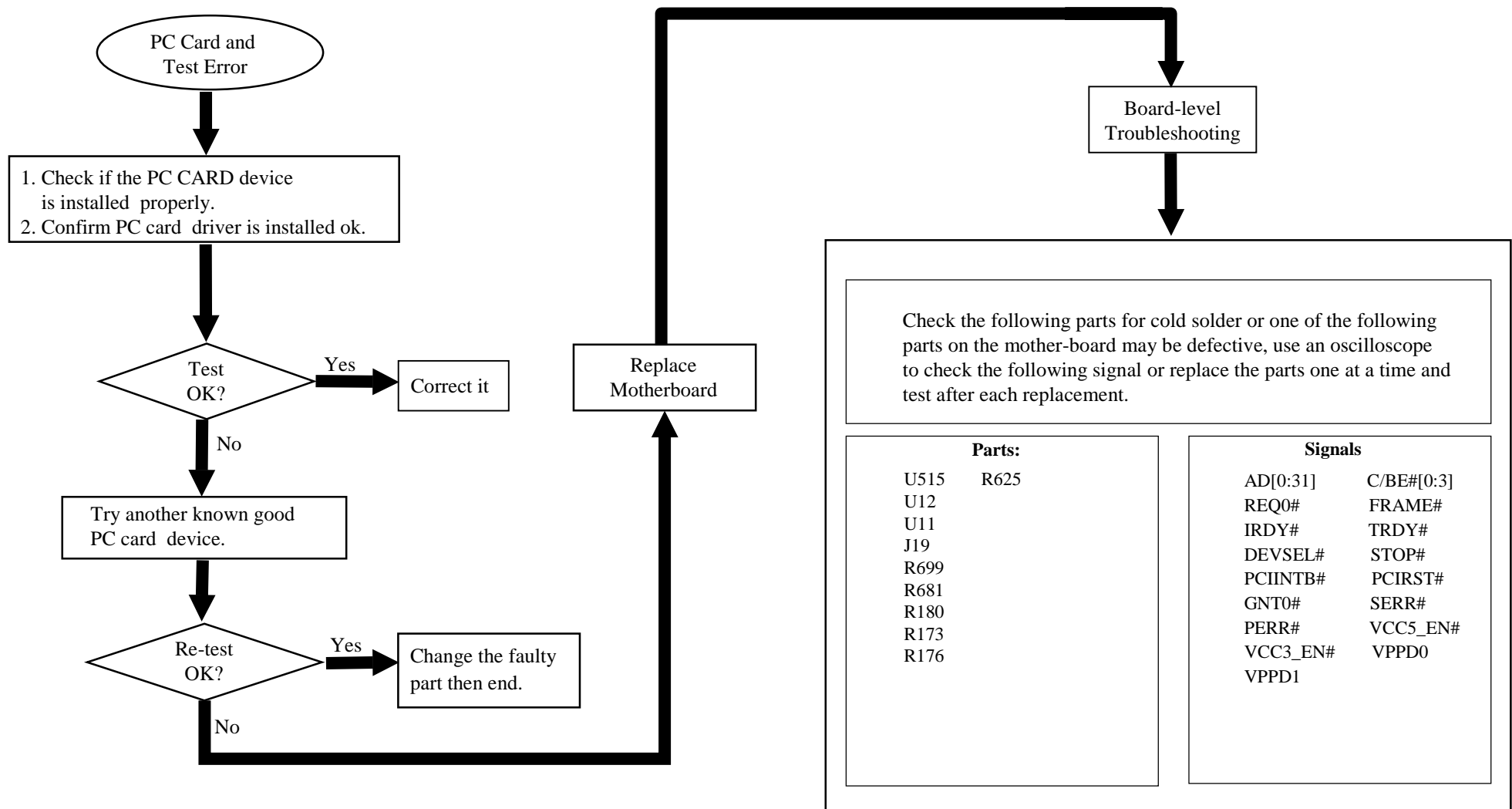
An error occurs when a PC card device is installed.



8640 N/B Maintenance

8.12 PC-Card Socket Failure

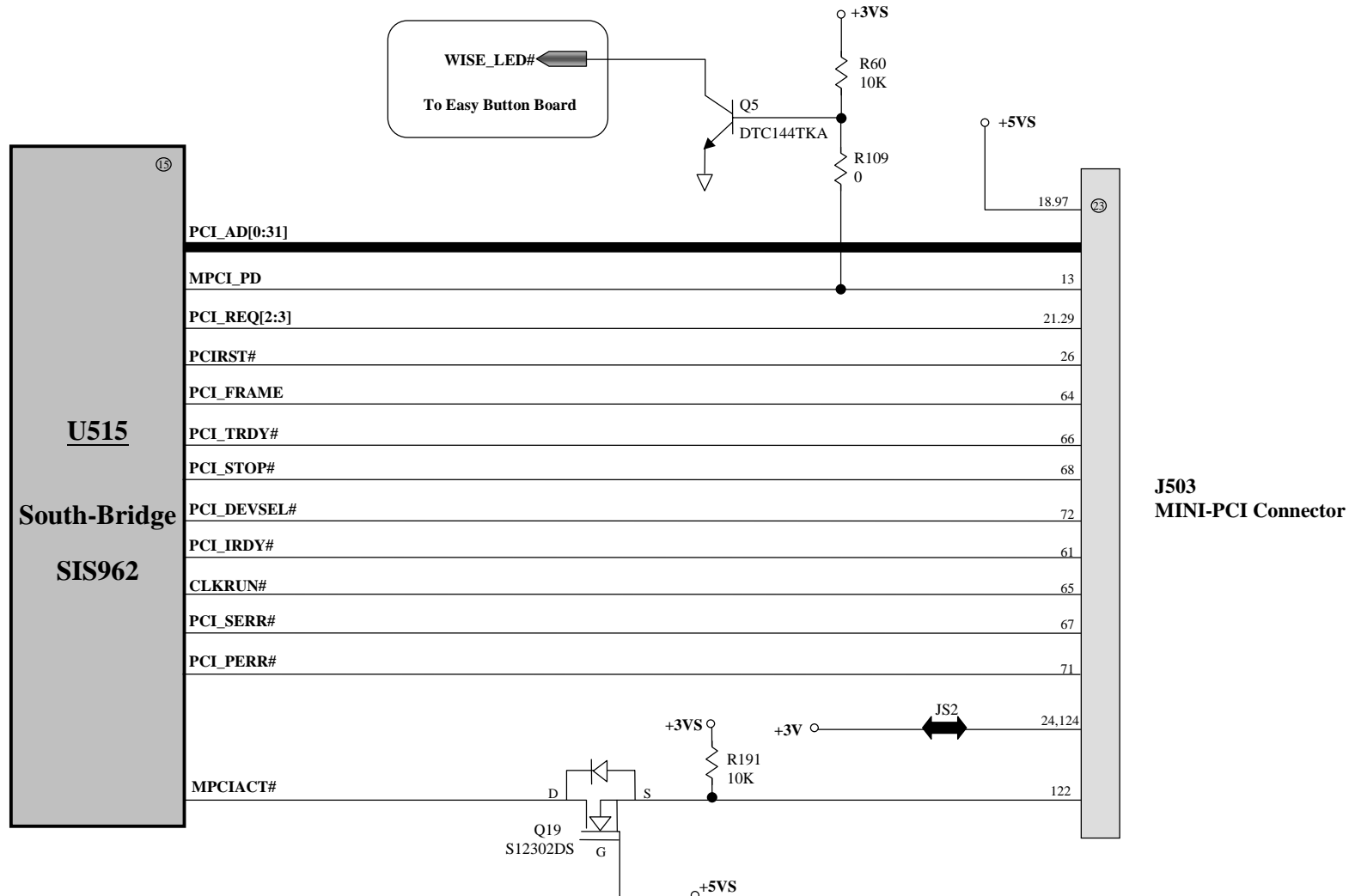
An error occurs when a PC card device is installed.



8640 N/B Maintenance

8.13 MINI-PCI Socket Failure

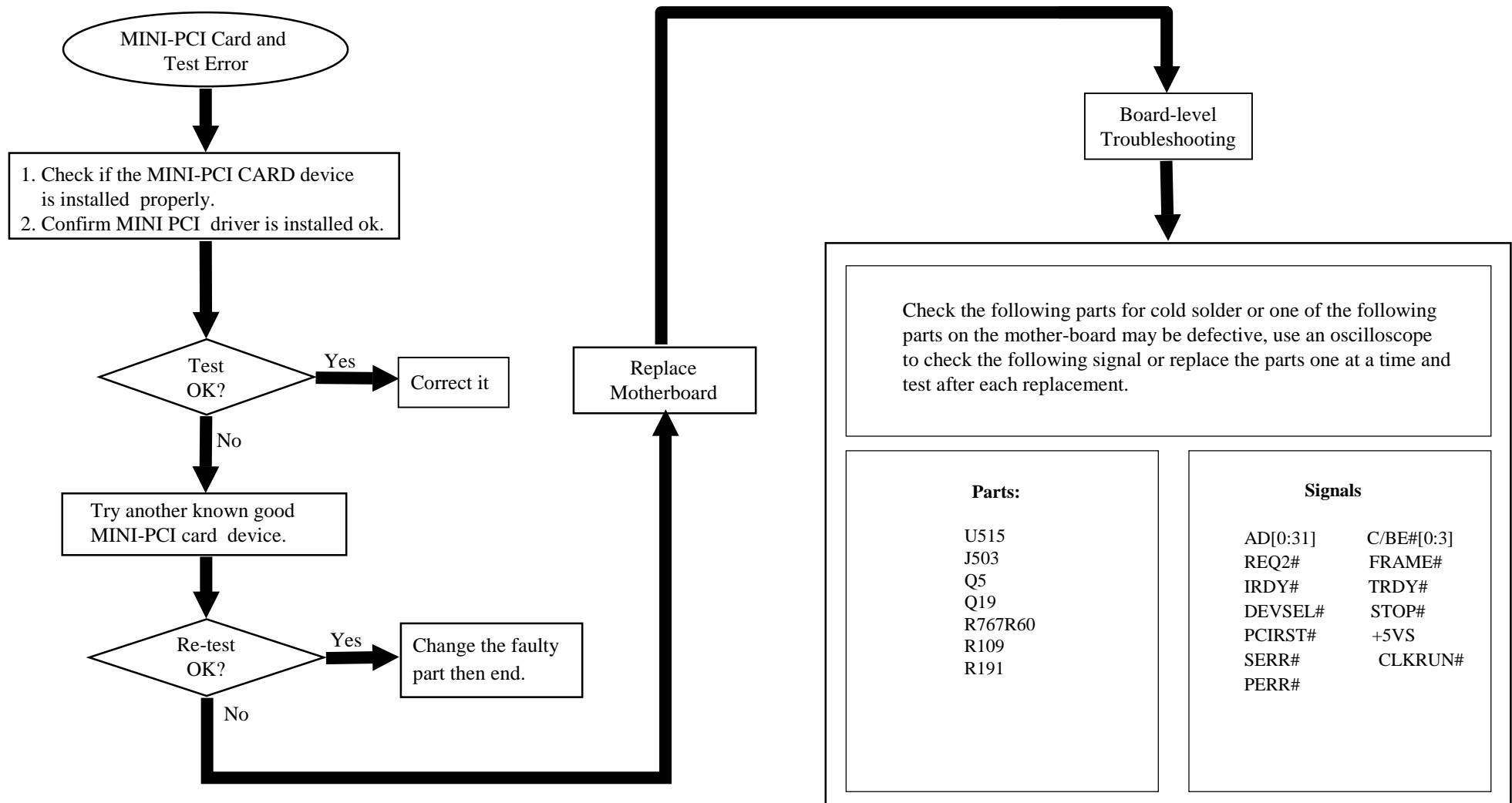
An error occurs when a MINI-PCI device is installed.



8640 N/B Maintenance

8.13 MINI-PCI Socket Failure

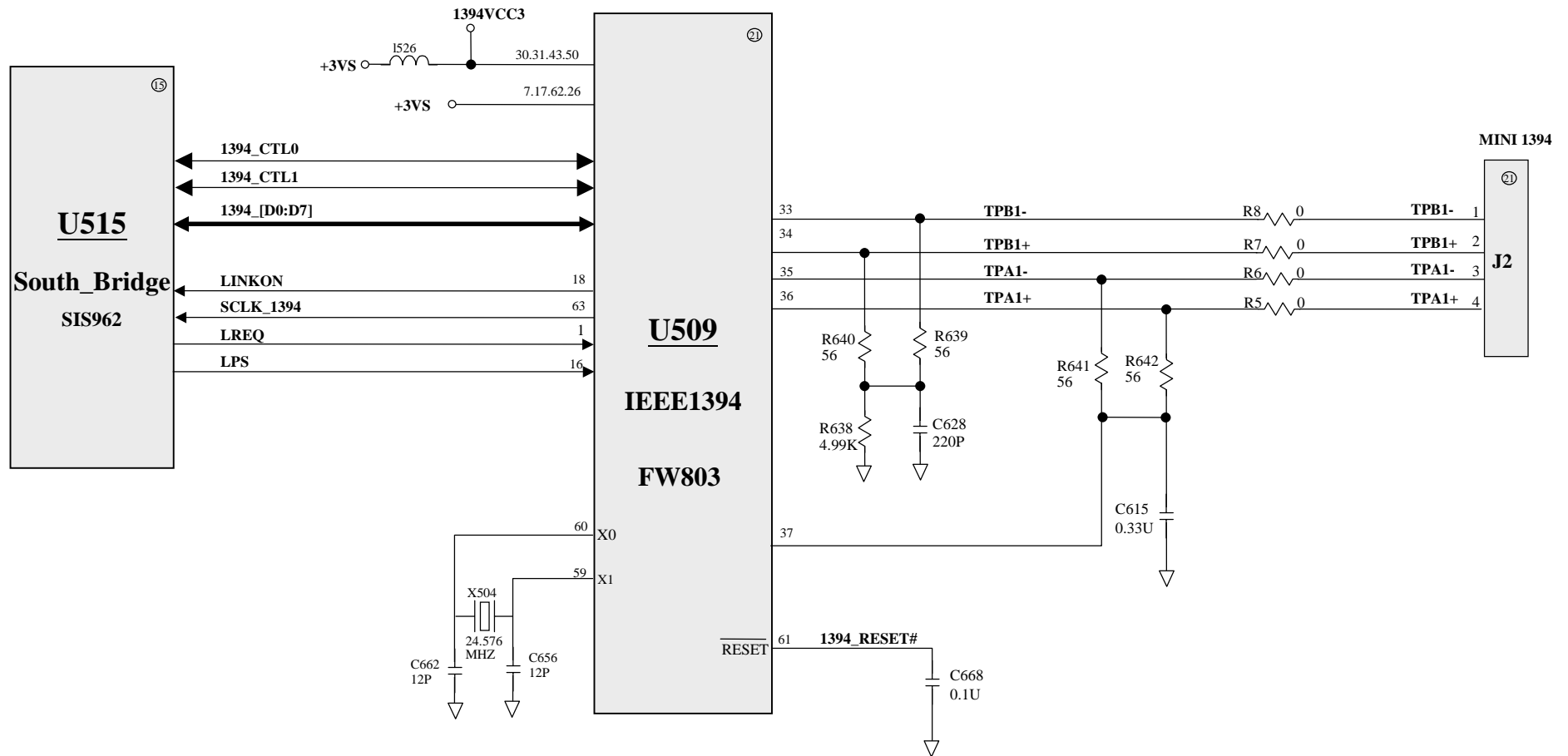
An error occurs when a PC card device is installed.



8640 N/B Maintenance

8.14 IEEE1394 Failure

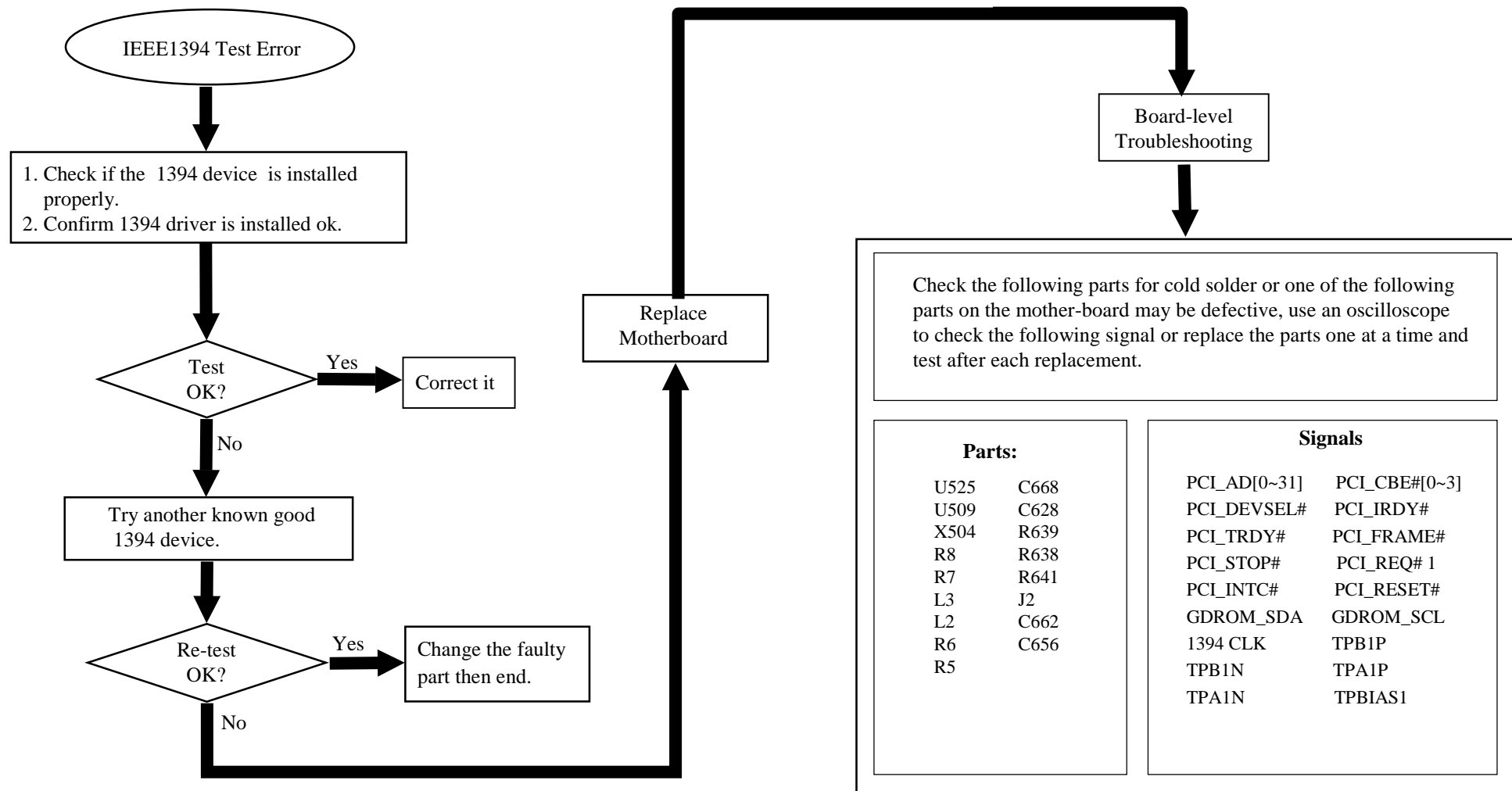
An error occurs when 1394 device is installed.



8640 N/B Maintenance

8.14 IEEE1394 Failure

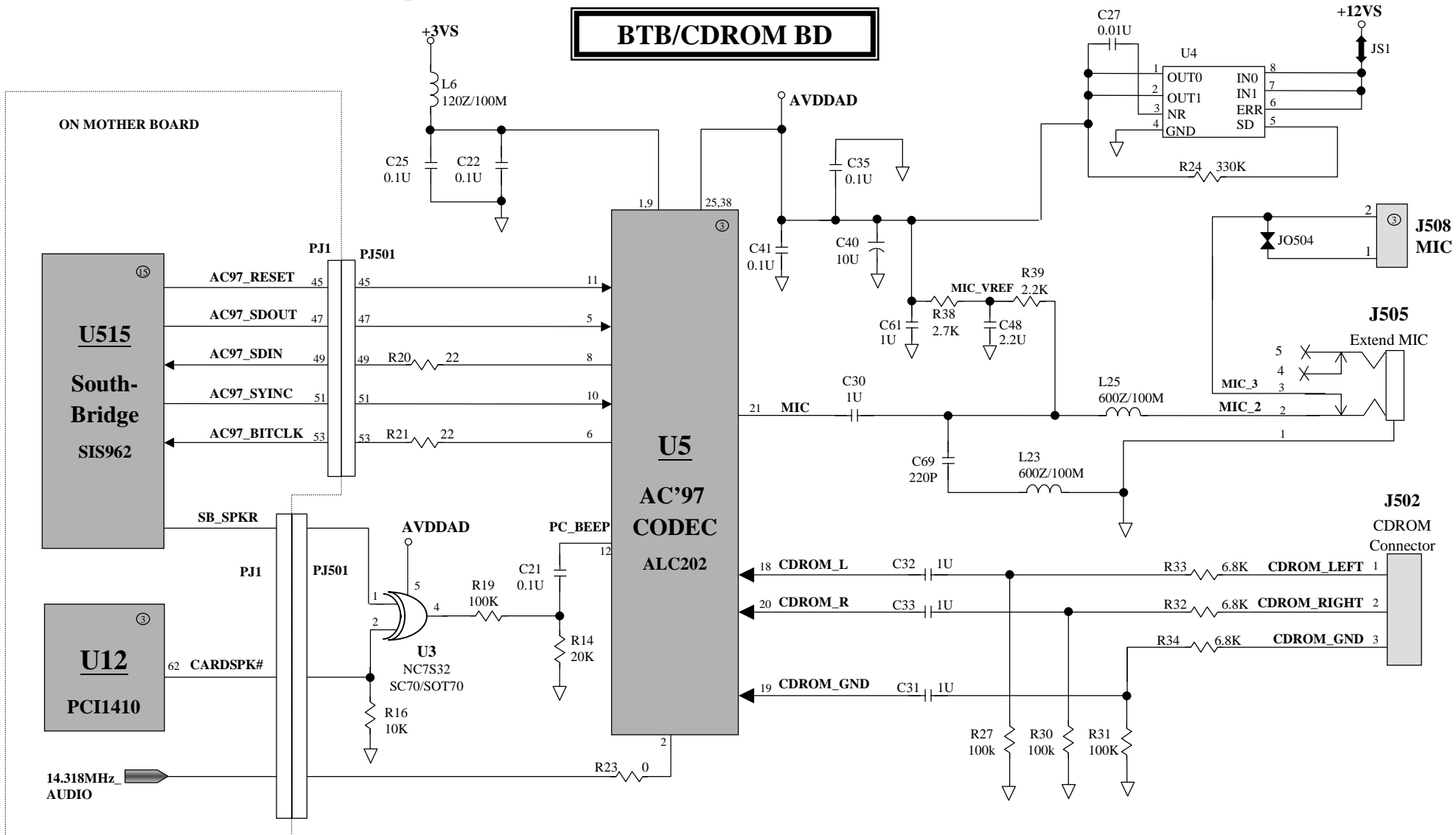
An error occurs when 1394 device is installed.



8640 N/B Maintenance

8.15 Audio Failure

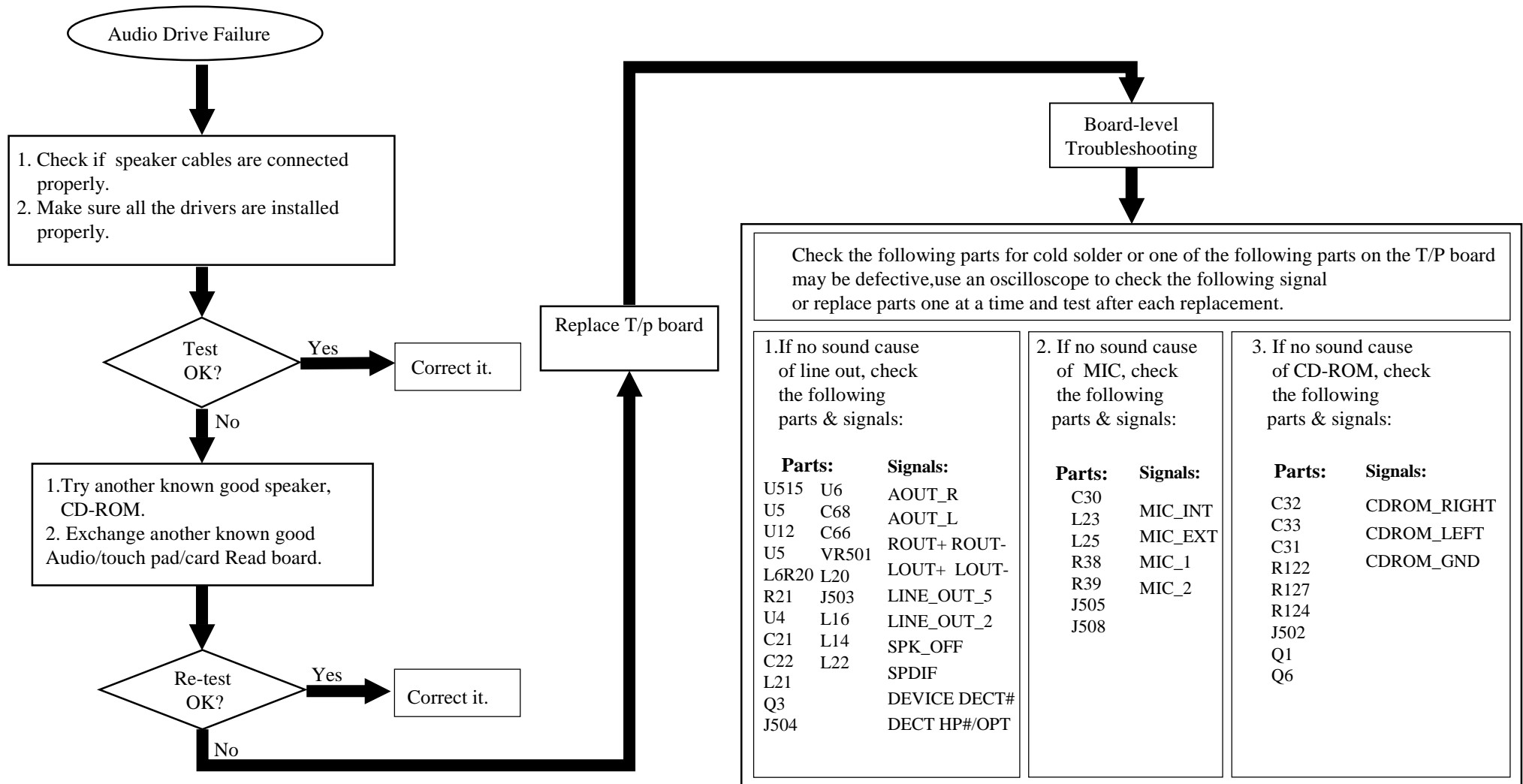
No sound from speaker after audio driver is installed.



8640 N/B Maintenance

8.15 Audio Failure

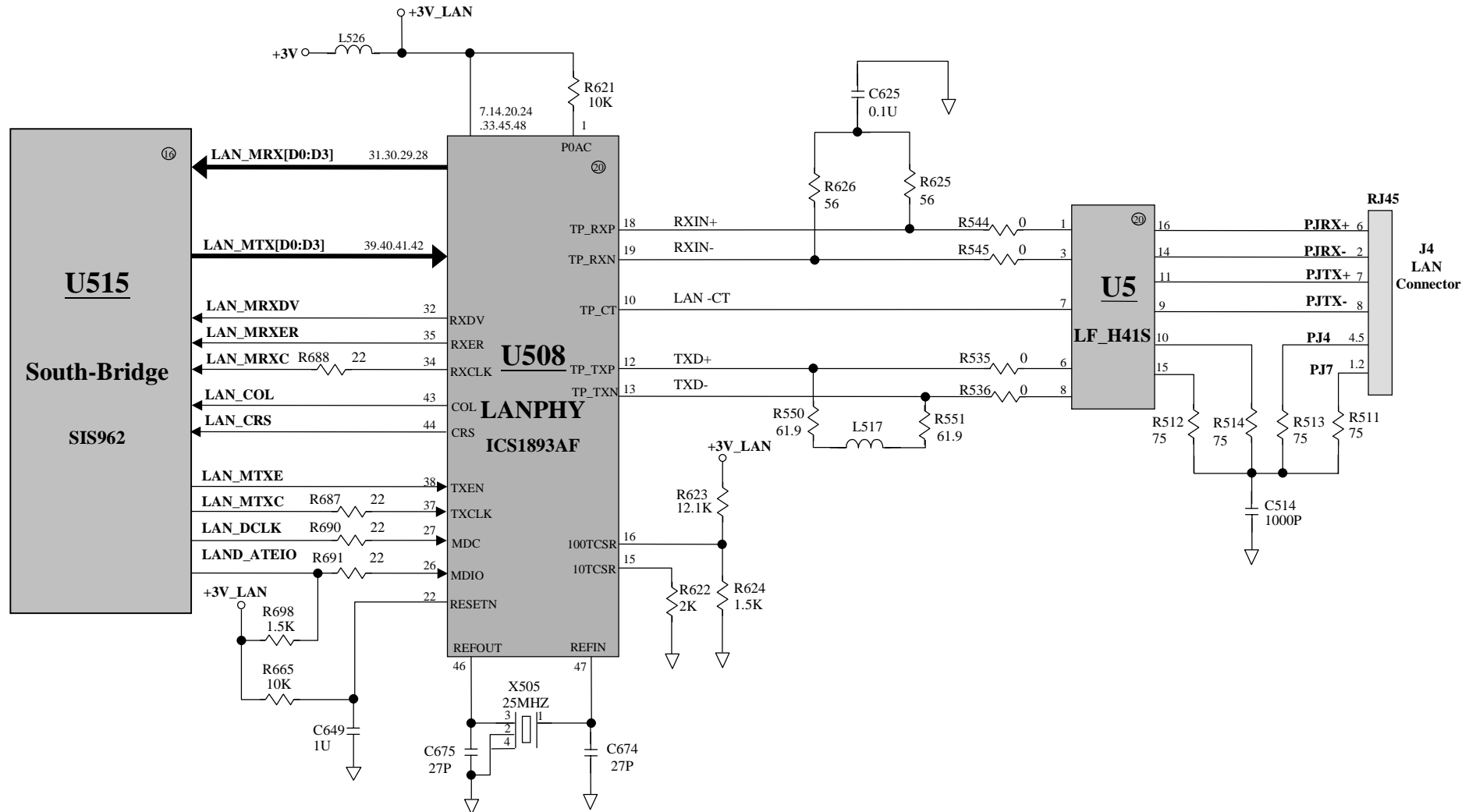
No sound from speaker after audio driver is installed.



8640 N/B Maintenance

8.16 LAN Test Error

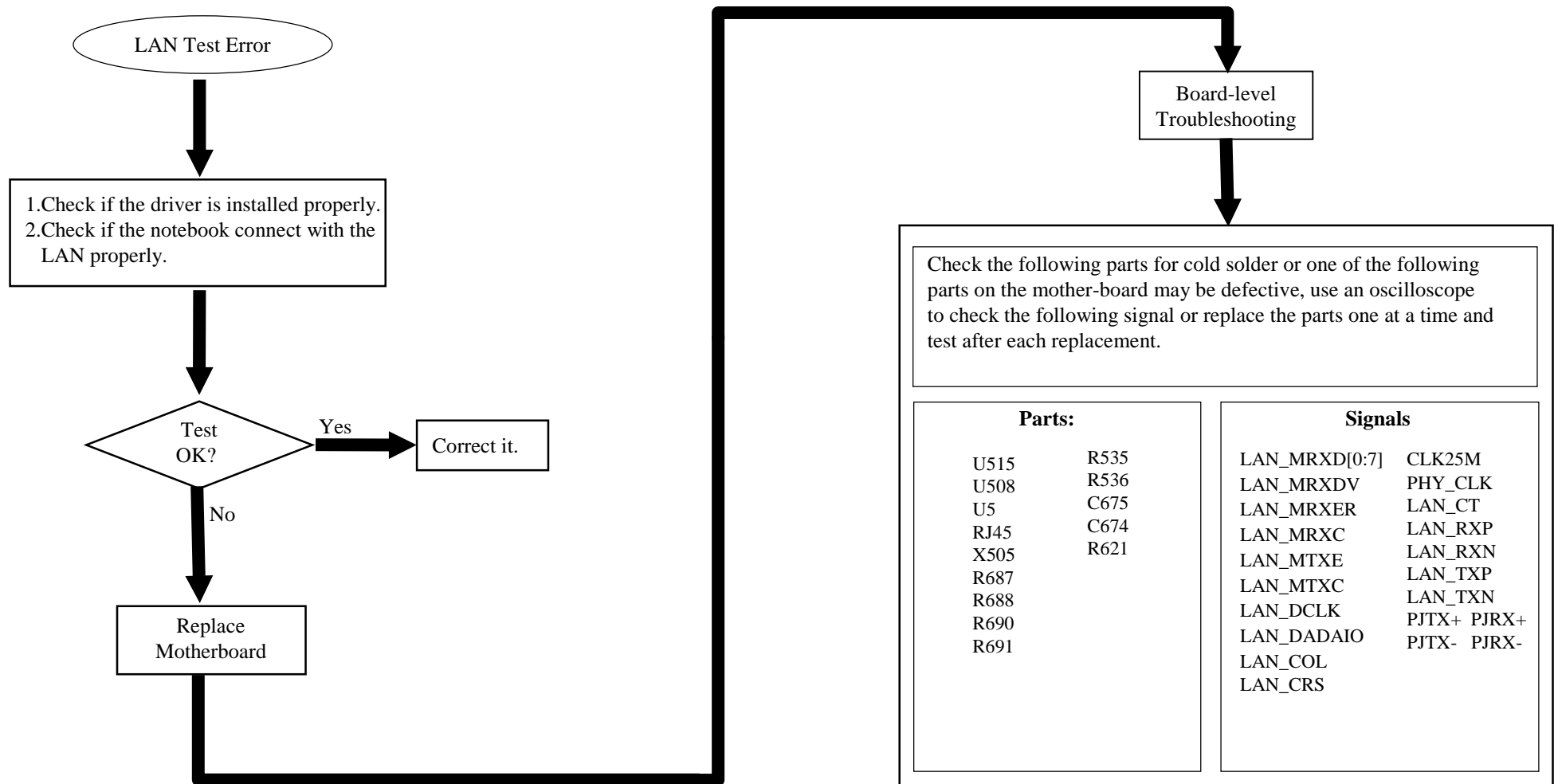
An error occurs when a LAN device is installed.



8640 N/B Maintenance

8.16 LAN Test Error

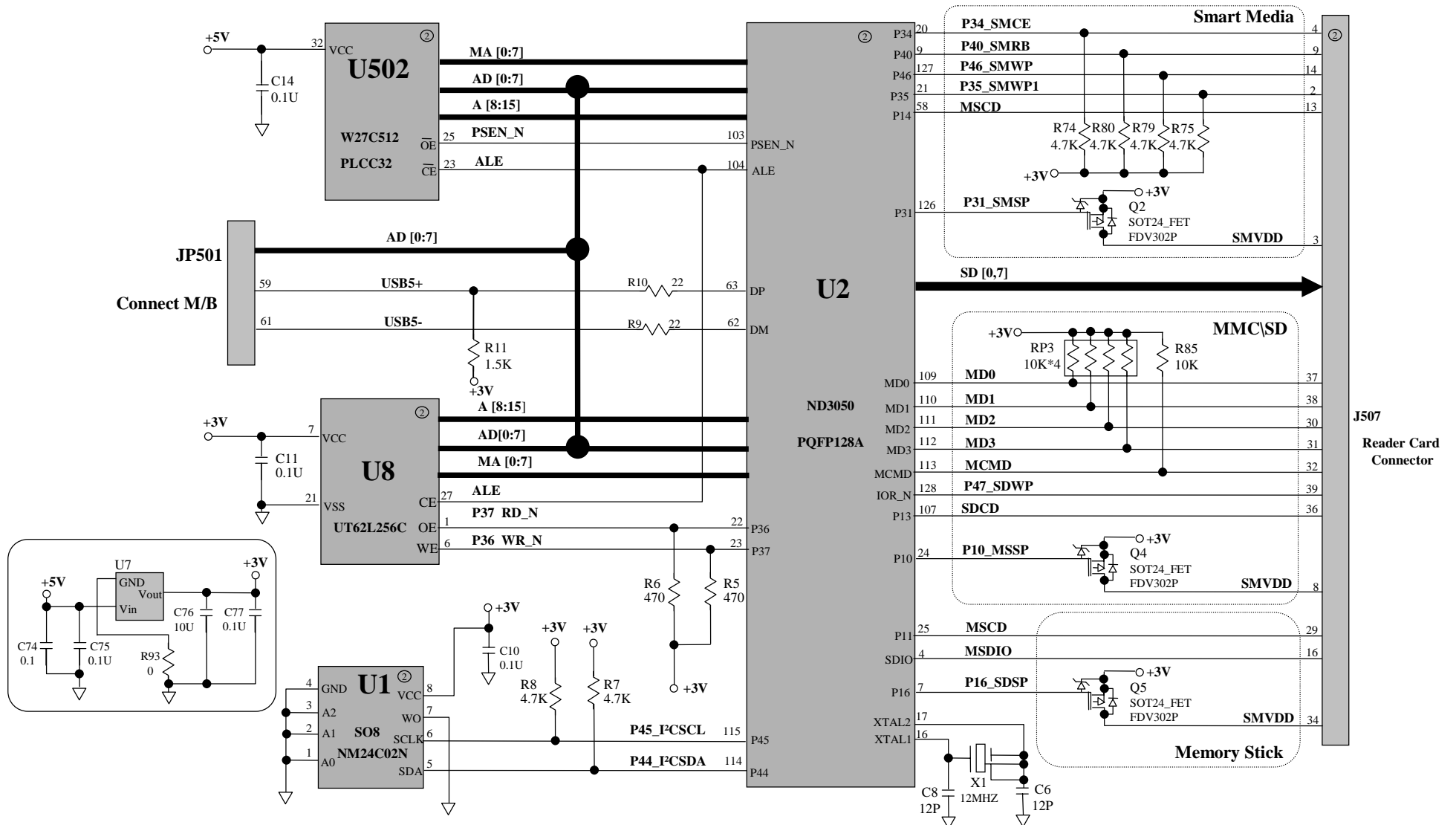
An error occurs when a LAN device is installed.



8640 N/B Maintenance

8.17 Smart Media&Secure Digital Controller Test Error

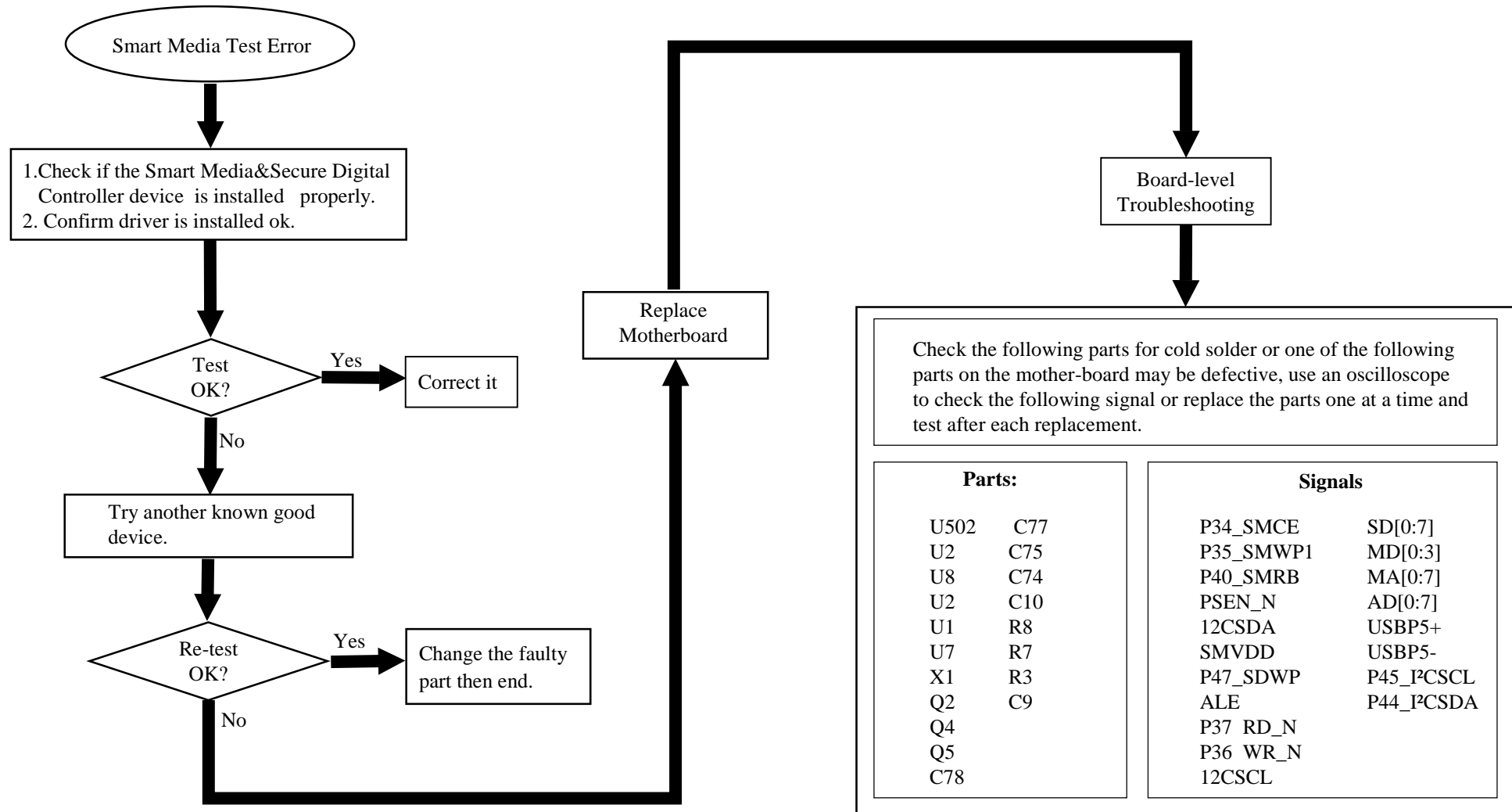
An error occurs when a Smart Media&Secure Digital Controller device is installed.



8640 N/B Maintenance

8.17 Smart Media&Secure Digital Controller Test Error

An error occurs when a Smart Media&Secure Digital Controller device is installed.



8640 N/B Maintenance

9. Spare Part List-1 8640D Spare Part List

Part Number	Description	Location(S)
541667341007	AK;04-EU,BOX,8640G/P	
541667343005	AK;05-EU,BAG,8640D/M	
541667341022	AK;19-UN,BOX,8640G/P	
541667340034	AK;31-PR,BOX,8640L TONGFANG	
541667340002	AK;EN,8640S,UTILITY ONLY	
441999900069	BATT ASSY OPTION;LI,12-CELL,8640	
442673400004	BATT,ASSY;14.8V/6AH,MOLICEL,MSL,	
441673400028	BATT,ASSY;LI-ION,12CELLS/6.0AH,M	
340673440019	BEZEL ASSY;DVD-ROM,QSI,8640M	
340673400021	BEZEL ASSY;DVD-ROM,QSI,8640S	
340673420004	BRACKET ASSY;T/P,8640P	
342673400009	BRACKET;L,LCD,15",8640S	
342673400008	BRACKET;R,LCD,15",8640S	
220673400002	CARRY BAG;N-B,8640	
221673412002	CARTON;5 IN 1,8640G	
431673450001	CASE KIT;W/O C/R,8640L	
431673410001	CASE KIT;W/Z C/R,8640G	
431673440001	CASE KIT;W/Z C/R,8640M	
431673420002	CASE KIT;W/Z C/R,8640P GERICOM	
344673400001	CASE;HDD,8640S	
413000020348	CFM-GERICOM;LCD,HSD150PX11-B,TFT	
291000012025	CON;HDR,MA,10P*2,1.27MM,H=11.5,S	J14
331810006008	CON;MODULAR JACK,FM,6P4C,R/A,FR	
340673410001	COVER ASSY;8640G	
340673450001	COVER ASSY;8640L	

Part Number	Description	Location(S)
340673440002	COVER ASSY;8640M	
340673420005	COVER ASSY;8640P	
340673400003	COVER ASSY;K/B,8640S	
340673450002	COVER ASSY;LCD 14",8640L-TONGFAN	
340673400002	COVER ASSY;LCD 14",8640S	
340673440007	COVER ASSY;LCD,15",8640M	
340673400016	COVER ASSY;LCD,15",8640S	
340673400008	COVER ASSY;MINI PCI,8640S	
344673400016	COVER;L,HINGE,8640S	
344673400025	COVER;R,HINGE,8640S	
344673400009	COVER;SPEAKER,8640S	
288100054001	DIODE;BAT 54,30V,200mA,SOT-23	PD508,PD509,PD510
288100551001	DIODE;RB551V-30,SCHOTTKY,.36V,UM	D507
523499991012	DVD ASSY OPTION;8X,8640	
523499999067	DVD ASSY OPTION;8X,8640D/M	
523467340006	DVD ASSY;QUANTA,8640S/GP	
523467343006	DVD ASSY;SDR083,QUANTA,8640D/M	
523430061904	DVD DRIVE; 8X,SDR-083,QUANTA	
227673420003	END CAP;5 IN 1,LOWER,8640P	
227673410001	END CAP;5 IN 1,UPPER,8640G	
227673420001	END CAP;8640P	
481673450004	F/W ASSY;KBD CTRL,8640L	U519
481673440002	F/W ASSY;KBD CTRL,8640M	U519
481673450003	F/W ASSY;SYS/VGA BIOS,8640L	U513
481673440001	F/W ASSY;SYS/VGA BIOS,8640M	U513

8640 N/B Maintenance

9. Spare Part List-2

Part Number	Description	Location(S)
481673420001	F/W ASSY;SYS/VGA BIOS,8640P GERI	U513
345673400010	GASKET,HANNSTAR,LCD 15",BOTTOM,I	
345673400009	GASKET,HANNSTAR,LCD 15",TOP,15*1	
345673450001	GASKET;M/B,8*5*20,8640L	
451673400051	HDD ME KIT;8640S/GP	
340671600019	HINGE;L,15",8175	
340671600017	HINGE;R,15",8175	
340673440013	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673400030	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673410003	HOUSING ASSY,QDI,LCD 14";8640G	
340673400004	HOUSING ASSY;8640S	
340673400027	HOUSING ASSY;BATTERY,8640S	
451673410001	HOUSING KIT;8640G	
451673450001	HOUSING KIT;8640L	
451673440001	HOUSING KIT;8640M	
451673420001	HOUSING KIT;8640P	
283450083001	IC;FLASH,256K*8-70,PLCC32,ST39SF	
286303716001	IC;LTC3716,PWM,QSOP,36P	PU9
284500302001	IC;SIS302LV,T V ENCODER/LVDS,128P	U7
284500650003	IC;SISM650,N.B.,BGA702	U9
286362003001	IC;TPS62003,LOW POWER,MSOP,10P	U520
273000135101	INDUCTOR;10UH,10%,1608,SMT	L539
346673400005	INSULATOR;M/B,8640S	
531020237486	KBD;88,FR,K010718V1,8640,DARK BL	
531020237566	KBD;88,UI,K010718Q1,8640,BLACK	

Part Number	Description	Location(S)
531020237484	KBD;88,UI,K010718U1,8640,DARK BL	
451673450004	LABEL KIT;8640L TONGFANG	
451673410033	LABEL KIT;N-B,8640G	
451673440002	LABEL KIT;N-B,8640M	
451673420033	LABEL KIT;N-B,8640P	
242673410001	LABEL;AGENCY-GLOBAL,MSL,8640G	
242673440001	LABEL;AGENCY-GLOBAL,MSL,8640M	
242673420001	LABEL;AGENCY-GLOBAL,MSL,8640P	
242671720009	LABEL;AGENCY-GLOBAL,TONGFANG,ID4	
242673400004	LABEL;BATT 14.8V/6AH,LI,MOLICE,M	
441673430005	LCD ASSY;HANNSTAR,XGA,15",8640D/	
441673410003	LCD ASSY;HANNSTAR,XGA,15",8640G/	
441673450001	LCD ASSY;QDI,XGA,14.1",8640L TON	
441673400001	LCD ASSY;QDI,XGA,14.1",8640S/GP	
451673430003	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673420002	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673450031	LCD ME KIT;QDI,XGA,14.1",8640L T	
451673400002	LCD ME KIT;QDI,XGA,14.1",8640S/G	
413000020317	LCD;HSD150PX11-B,TFT,15",LVDS,XG	
294011200126	LED;BLUE,H=0.8,0603,19-21UBC/C43	D2,D3
416267341901	LT PF OPTION;XGA,14.1",8640G	
416267344902	LT PF OPTION;XGA,15",8640M	
416267344005	LT PF;HANNSTAR,XGA,15",8640M	
416267342010	LT PF;HANNSTAR,XGA,15",8640P GER	
416267341002	LT PF;QDI,XGA,14.1",8640G	

8640 N/B Maintenance

9. Spare Part List-3

Part Number	Description	Location(S)
416267345009	LT PF;QDI,XGA,14.1",8640L TONGFA	
526267341025	LTXXN;8640G/T4XX/XXC/3UI1/L1D3A/	
526267345011	LTXXN;8640L/4QXX/XXC/7UIX/L1D4B/	
526267344014	LTXXN;8640M/T5XX/XXA/3XX9/L1C3B/	
526267342017	LTXXN;8640P/5RXX/XXA/3FR9/L1I3A/	
561567340001	MANUAL KIT;EN,8640G/P,N-B	
561567340015	MANUAL KIT;EU,8640D/M/L,N-B	
561567340002	MANUAL KIT;EU,8640G/P,N-B	
561567340007	MANUAL;USER'S,EN,8640G/P,N-B	
561567340027	MANUAL;USER'S,EU,8640D/M/L,N-B	
561567340008	MANUAL;USER'S,EU,8640G/P,N-B	
441673400051	MODEM ASSY,MDC,ASKEY,8640	
242671730008	NAMEPLATE;TONGFANG,ID4,8575	
461673400009	PACKING KIT;8640,12CELLS,MOLI,ME	
461673440005	PACKING KIT;N-B,5 IN 1,8640M	
461673440002	PACKING KIT;N-B,8640M	
461673440003	PACKING KIT;N-B,BAG,8640M	
221673415003	PARTITION;CARRYING BAG,8640G	
221673415004	PARTITION;IN BAG,8640G	
222668820004	PE BUBBLE BAG;190X190MM,ANTI-STA	
411673400005	PWA;PWA-8640,ESB/LED BD	
441673400044	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400045	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400046	PWA;PWA-8640/BATT PROTECTION BD	
411673450001	PWA;PWA-8640L,MOTHER BD	

Part Number	Description	Location(S)
411673450003	PWA;PWA-8640L,MOTHER BD,SMT	
411673450002	PWA;PWA-8640L,MOTHER BD,T/U	
411673450008	PWA;PWA-8640L,T/P BD W/O C/R,SMT	
411673450007	PWA;PWA-8640L,T/P BD W/O C/R,T/U	
411673440001	PWA;PWA-8640M,MOTHER BD	
411673440003	PWA;PWA-8640M,MOTHER BD,SMT	
411673440002	PWA;PWA-8640M,MOTHER BD,T/U	
411673420004	PWA;PWA-8640P,MOTHER BD GERICOM	
411673420006	PWA;PWA-8640P,MOTHER BD,SMT GERI	
411673420005	PWA;PWA-8640P,MOTHER BD,T/U GERI	
411673400014	PWA;PWA-8640P,T/P BD,T/U	
411673400004	PWA;PWA-8640P/M,T/P BD	
332810000034	PWR CORD;250V/2.5A,2P,BLK,EU,175	
332810000102	PWR CORD;250V10A,2P,BLK,CHINA,15	
271071131101	RES;130 ,1/16W,1% ,0603,SMT	R714
271071237311	RES;237K ,1/16W,1% ,0603,SMT	PR13
271071267211	RES;26.7K,1/16W,1% ,0603,SMT	PR14
271071442311	RES;442K,1/16W,1% ,0603,SMT	PR15
271071563101	RES;56K ,1/16W,1% ,0603,SMT	PR536
271071604111	RES;6.04K,1/16W,1% ,0603,SMT	R80
565167340003	S/W;CD ROM,SYSTEM DRIVER,8640S	
340673420002	THERMAL ASSY;8640P	
345673400007	THERMAL PAD;302LV,8640S	
373101713502	T-SCREW;B.M1.7L3.5,HD04t0.25,0,B	
421673420005	WIRE ASSY;LCD,HANN,15",XGA,8640P	P/N:526267343019

8640 N/B Maintenance

9. Spare Part List-4 8640G Spare Part List

Part Number	Description	Location(S)
541667341007	AK;04-EU,BOX,8640G/P	
541667343005	AK;05-EU,BAG,8640D/M	
541667343009	AK;10-UK,BOX,8640D/M	
541667340034	AK;31-PR,BOX,8640L TONGFANG	
541667340002	AK;EN,8640S,UTILITY ONLY	
441999900071	BATT ASSY OPTION;LI,12-CELL,8640	
442673400016	BATT,ASSY;14.8V/6AH,LI-MOLICEL,M	
441673400027	BATT,ASSY;LI-ION,12CELLS/6.0AH,M	
340673440009	BEZEL ASSY; QUANTA,COMBO,8640M	
340673440019	BEZEL ASSY;DVD-ROM,QSI,8640M	
340673420004	BRACKET ASSY;T/P,8640P	
342673400009	BRACKET;L,LCD,15",8640S	
342673400008	BRACKET;R,LCD,15",8640S	
220673400002	CARRY BAG;N-B,8640	
221673412002	CARTON;5 IN 1,8640G	
431673450001	CASE KIT;W/O C/R,8640L	
431673430001	CASE KIT;W/Z C/R,8640D	
431673440001	CASE KIT;W/Z C/R,8640M	
431673420002	CASE KIT;W/Z C/R,8640P GERICOM	
344673440010	CASE;HDD,8640M	
413000020348	CFM-GERICOM;LCD,HSD150PX11-B,TFT	
291000012025	CON;HDR,MA,10P*2,1.27MM,H=11.5,S	J14
331810006008	CON;MODULAR JACK,FM,6P4C,R/A,FR	
331810006014	CON;MODULAR JACK,FM,6P4C,R/A,UK	
340673430001	COVER ASSY;8640D	

Part Number	Description	Location(S)
340673450001	COVER ASSY;8640L	
340673440002	COVER ASSY;8640M	
340673420005	COVER ASSY;8640P	
340673440005	COVER ASSY;KB ,8640M	
340673450002	COVER ASSY;LCD 14",8640L-TONGFAN	
340673440006	COVER ASSY;LCD 14",8640M	
340673440007	COVER ASSY;LCD,15",8640M	
340673400016	COVER ASSY;LCD,15",8640S	
340673440004	COVER ASSY;MINI PCI,8640M	
344673440008	COVER;L,HINGE,8640M	
344673440026	COVER;R,HINGE,8640M	
344673440003	COVER;SPEAKER,8640M	
288100054001	DIODE;BAT 54,30V,200mA,SOT-23	PD508,PD509,PD510
288100551001	DIODE;RB551V-30,SCHOTTKY,,36V,UM	D507
523499999067	DVD ASSY OPTION;8X,8640D/M	
523467343006	DVD ASSY;SDR083,QUANTA,8640D/M	
523499999069	DVD COMBO ASSY OPTION;16X10X8X24	
523467343010	DVD COMBO ASSY;SBW161,QSI,8640D/	
523430061906	DVD COMBO DRIVE;16X8X8X24,SBW-16	
227673420003	END CAP;5 IN 1,LOWER,8640P	
227673410001	END CAP;5 IN 1,UPPER,8640G	
227673420001	END CAP;8640P	
481673450004	F/W ASSY;KBD CTRL,8640L	U519
481673440002	F/W ASSY;KBD CTRL,8640M	U519
481673450003	F/W ASSY;SYS/VGA BIOS,8640L	U513

8640 N/B Maintenance

9. Spare Part List-5

Part Number	Description	Location(S)
481673440001	F/W ASSY;SYS/VGA BIOS,8640M	U513
481673420001	F/W ASSY;SYS/VGA BIOS,8640P GERI	U513
345673400010	GASKET,HANNSTAR,LCD 15",BOTTOM,1	
345673400009	GASKET,HANNSTAR,LCD 15",TOP,15*1	
345673450001	GASKET;M/B,8*5*20,8640L	
451673430006	HDD ME KIT;8640D/M	
340671600019	HINGE;L,15",8175	
340671600017	HINGE;R,15",8175	
340673400030	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673440013	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673440016	HOUSING ASSY,QDI,LCD 14";8640M	
340673440001	HOUSING ASSY;8640M	
340673440012	HOUSING ASSY;BATTERY,8640M	
451673430001	HOUSING KIT;8640D	
451673450001	HOUSING KIT;8640L	
451673440001	HOUSING KIT;8640M	
451673420001	HOUSING KIT;8640P	
283450083001	IC;FLASH,256K*8-70,PLCC32,ST39SF	
286303716001	IC;LTC3716,PWM,QSOP,36P	PU9
284500302001	IC;SIS302LV,T V ENCODER/LVDS,128P	U7
284500650003	IC;SISM650,N.B.,BGA702	U9
286362003001	IC;TPS62003,LOW POWER,MSOP,10P	U520
273000135101	INDUCTOR;10UH,10%,1608,SMT	L539
346673400005	INSULATOR;M/B,8640S	
531020237486	KBD;88,FR,K010718V1,8640,DARK BL	

Part Number	Description	Location(S)
531020237566	KBD;88,UI,K010718Q1,8640,BLACK	
531020237577	KBD;88,UK,K010718R1,8640,BLACK	
451673450004	LABEL KIT;8640L TONGFANG	
451673430032	LABEL KIT;N-B,8640D	
451673440002	LABEL KIT;N-B,8640M	
451673420033	LABEL KIT;N-B,8640P	
242673430001	LABEL;AGENCY-GLOBAL,MSL,8640D	
242673440001	LABEL;AGENCY-GLOBAL,MSL,8640M	
242673420001	LABEL;AGENCY-GLOBAL,MSL,8640P	
242671720009	LABEL;AGENCY-GLOBAL,TONGFANG,ID4	
242673400015	LABEL;BATT,14.8V/6AH,LI,MOLICE,M	
441673430005	LCD ASSY;HANNSTAR,XGA,15",8640D/	
441673410003	LCD ASSY;HANNSTAR,XGA,15",8640G/	
441673430001	LCD ASSY;QDI,XGA,14.1",8640D/M	
441673450001	LCD ASSY;QDI,XGA,14.1",8640L TON	
451673420002	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673430003	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673430002	LCD ME KIT;QDI,XGA,14.1",8640D/M	
451673450031	LCD ME KIT;QDI,XGA,14.1",8640L T	
413000020317	LCD;HSD150PX11-B,TFT,15",LVDS,XG	
416267343901	LT PF OPTION;XGA,14.1",8640D	
416267344902	LT PF OPTION;XGA,15",8640M	
416267344005	LT PF;HANNSTAR,XGA,15",8640M	
416267342010	LT PF;HANNSTAR,XGA,15",8640P GER	
416267343001	LT PF;QDI,XGA,14.1",8640D	

8640 N/B Maintenance

9. Spare Part List-6

Part Number	Description	Location(S)
416267345009	LT PF;QDI,XGA,14.1",8640L TONGFA	
526267343019	LTXXN;8640D/T4XX/XXJ/4UK1/L1D3B/	
526267345011	LTXXN;8640L/4QXX/XXC/7UIX/L1D4B/	
526267344014	LTXXN;8640M/T5XX/XXA/3XX9/L1C3B/	
526267342017	LTXXN;8640P/5RXX/XXA/3FR9/L1I3A/	
561567340013	MANUAL KIT;EN,8640D/M/L,N-B	
561567340015	MANUAL KIT;EU,8640D/M/L,N-B	
561567340002	MANUAL KIT;EU,8640G/P,N-B	
561567340025	MANUAL;USER'S,EN,8640D/M/L,N-B	
561567340027	MANUAL;USER'S,EU,8640D/M/L,N-B	
561567340008	MANUAL;USER'S,EU,8640G/P,N-B	
242671730008	NAMEPLATE;TONGFANG,ID4,8575	
461673400008	PACKING KIT;8640,12CELLS,MOLI,DI	
461673440005	PACKING KIT;N-B,5 IN 1,8640M	
461673440002	PACKING KIT;N-B,8640M	
461673440003	PACKING KIT;N-B,BAG,8640M	
221673415003	PARTITION;CARRYING BAG,8640G	
221673415004	PARTITION;IN BAG,8640G	
222668820004	PE BUBBLE BAG;190X190MM,ANTI-ST A	
441673400041	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400042	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400043	PWA;PWA-8640/BATT PROTECTION BD	
411673430004	PWA;PWA-8640D/M/L,ESB/LED BD	
411673450001	PWA;PWA-8640L,MOTHER BD	
411673450003	PWA;PWA-8640L,MOTHER BD,SMT	

Part Number	Description	Location(S)
411673450002	PWA;PWA-8640L,MOTHER BD,T/U	
411673450008	PWA;PWA-8640L,T/P BD W/O C/R,SMT	
411673450007	PWA;PWA-8640L,T/P BD W/O C/R,T/U	
411673440001	PWA;PWA-8640M,MOTHER BD	
411673440003	PWA;PWA-8640M,MOTHER BD,SMT	
411673440002	PWA;PWA-8640M,MOTHER BD,T/U	
411673420004	PWA;PWA-8640P,MOTHER BD GERICOM	
411673420006	PWA;PWA-8640P,MOTHER BD,SMT GERI	
411673420005	PWA;PWA-8640P,MOTHER BD,T/U GERI	
411673400014	PWA;PWA-8640P,T/P BD,T/U	
411673400004	PWA;PWA-8640P/M,T/P BD	
332810000043	PWR CORD;250V/3A,2P,BLACK,UK	
332810000102	PWR CORD;250V10A,2P,BLK,CHINA,15	
271071131101	RES;130 ,1/16W,1% ,0603,SMT	R714
271071237311	RES;237K ,1/16W,1% ,0603,SMT	PR13
271071267211	RES;26.7K,1/16W,1% ,0603,SMT	PR14
271071442311	RES;442K,1/16W,1% ,0603,SMT	PR15
271071563101	RES;56K ,1/16W,1% ,0603,SMT	PR536
271071604111	RES;6.04K,1/16W,1% ,0603,SMT	R80
565167340003	S/W;CD ROM,SYSTEM DRIVER,8640S	
565167000013	S/W;CD-ROM,B'S RECORDER GOLD2.0	
340673420003	SHIELDING ASSY;TOP,8640P	
340673420002	THERMAL ASSY;8640P	
345673400007	THERMAL PAD;302LV,8640S	
373101712351	T-SCREW;B,M1.7,L2.35,K-HD,2,NIB	

8640 N/B Maintenance

9. Spare Part List-7

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8640 N/B Maintenance

9. Spare Part List-8

8640L Spare Part List

Part Number	Description	Location(S)
541667341007	AK;04-EU,BOX,8640G/P	
541667343005	AK;05-EU,BAG,8640D/M	
541667343009	AK;10-UK,BOX,8640D/M	
541667341022	AK;19-UN,BOX,8640G/P	
541667341002	AK;EN,8640G/P,UTILITY ONLY	
541667341002	AK;EN,8640G/P,UTILITY ONLY	
441999900069	BATT ASSY OPTION;LI,12-CELL,8640	
442673400004	BATT,ASSY;14.8V/6AH,MOLICEL,MSL,	
441673400028	BATT,ASSY;LI-ION,12CELLS/6.0AH,M	
340673440009	BEZEL ASSY; QUANTA,COMBO,8640M	
340673400021	BEZEL ASSY;DVD-ROM,QSI,8640S	
340673400013	BRACKET ASSY;T/P,8640S	
342673410001	BRACKET;CARD-READER,8640G	
342673400009	BRACKET;L,LCD,15",8640S	
342673400008	BRACKET;R,LCD,15",8640S	
272073180401	CAP;18P ,CR,25V ,10%,0603,NPO,S	C38,C40
272075472701	CAP;4700P,50V ,+ -20%,0603,X7R,S	C36,C522,C526,C533,C536,C537,C
220673400002	CARRY BAG;N-B,8640	
221673412002	CARTON;5 IN 1,8640G	
431673430001	CASE KIT;W/Z C/R,8640D	
431673410001	CASE KIT;W/Z C/R,8640G	
431673440001	CASE KIT;W/Z C/R,8640M	
431673420002	CASE KIT;W/Z C/R,8640P GERICOM	
344673400001	CASE;HDD,8640S	
413000020348	CFM-GERICOM;LCD,HSD150PX11-B,TFT	

Part Number	Description	Location(S)
291000154006	CON;FPC/FFC,40P,0.5MM,R/A,ZIF,SM	J507
291000012028	CON;HDR,MA,10P*2,1.27MM,H=16MM,S	J14
331810006008	CON;MODULAR JACK,FM,6P4C,R/A,FR	
331810006014	CON;MODULAR JACK,FM,6P4C,R/A,UK	
225668300002	CONDUCTIVE TAPE;DIMM COVER,HOP	
340673430001	COVER ASSY;8640D	
340673410001	COVER ASSY;8640G	
340673440002	COVER ASSY;8640M	
340673420005	COVER ASSY;8640P	
340673400003	COVER ASSY;K/B,8640S	
340673440006	COVER ASSY;LCD 14",8640M	
340673400002	COVER ASSY;LCD 14",8640S	
340673440007	COVER ASSY;LCD,15",8640M	
340673400016	COVER ASSY;LCD,15",8640S	
340673400008	COVER ASSY;MINI PCI,8640S	
344673400016	COVER;L,HINGE,8640S	
344673400025	COVER;R,HINGE,8640S	
344673400009	COVER;SPEAKER,8640S	
523499991012	DVD ASSY OPTION;8X,8640	
523467340006	DVD ASSY;QUANTA,8640S/G/P	
523499999069	DVD COMBO ASSY OPTION;16X10X8X24	
523467343010	DVD COMBO ASSY;SBW161,QSI,8640D/	
523430061906	DVD COMBO DRIVE;16X8X8X24,SBW-16	
227673420003	END CAP;5 IN 1,LOWER,8640P	
227673410001	END CAP;5 IN 1,UPPER,8640G	

8640 N/B Maintenance

9. Spare Part List-9

Part Number	Description	Location(S)
227673400001	END CAP;8640S	
481673400007	F/W ASSY;CARD READER,8640	U502
481673430002	F/W ASSY;KBD CTRL,8640D	U519
481673440002	F/W ASSY;KBD CTRL,8640M	U519
481673430001	F/W ASSY;SYS/VGA BIOS,8640D	U513
481673440001	F/W ASSY;SYS/VGA BIOS,8640M	U513
481673420001	F/W ASSY;SYS/VGA BIOS,8640P GERI	U513
340673400024	FAN ASSY;SUNON,8640S	
421673410003	FPC ASSY;CARD-READER,8640G	
421673410003	FPC ASSY;CARD-READER,8640G	
345673400010	GASKET,HANNSTAR,LCD 15",BOTTOM,1	
345673400009	GASKET,HANNSTAR,LCD 15",TOP,15*1	
451673400051	HDD ME KIT;8640S/GP	
340671600019	HINGE;L,15",8175	
340671600017	HINGE;R,15",8175	
340673400030	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673440013	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673410003	HOUSING ASSY,QDI,LCD 14";8640G	
340673400004	HOUSING ASSY;8640S	
340673400027	HOUSING ASSY;BATTERY,8640S	
451673430001	HOUSING KIT;8640D	
451673410001	HOUSING KIT;8640G	
451673440001	HOUSING KIT;8640M	
451673420001	HOUSING KIT;8640P	
286308801006	IC;AME8801CEEV,VOL REG.,SOT23-5,	PU7

Part Number	Description	Location(S)
286301117031	IC;APL1117,1A,LDO,3.3V,SOT223,3P	U7
283460000003	IC;FLASH,512K*8-70,PLCC32,EN29F0	
283467340002	IC;FLASH,64K*8-70,PLCC32,W27C512	
286317099001	IC;LTC1709-9,PWM,QSOP,36P	PU9
286305248002	IC;MIC 5248-1.2BM5,LV12,LDO REG,	U506
284500017004	IC;MOBILITY,MAP17,BGA692	U6
284503050002	IC;ND3050,6 IN1 FLASH DEVICE CON	U2
284503050002	IC;ND3050,6 IN1 FLASH DEVICE CON	U2
284500645002	IC;SIS645DX,N.B.,BGA702	U9
284500530002	IC;SM530, SPREAD CLOCK,TSSOP20	U503
286361256001	IC;UT61L256C-12,SRAM 32K*8,T SOP,	U8
346673410001	INSULATOR;M/B,8640G	
531020237486	KBD;88,FR,K010718V1,8640,DARK BL	
531020237484	KBD;88,UI,K010718U1,8640,DARK BL	
531020237577	KBD;88,UK,K010718R1,8640,BLACK	
451673430032	LABEL KIT;N-B,8640D	
451673410033	LABEL KIT;N-B,8640G	
451673440002	LABEL KIT;N-B,8640M	
451673420033	LABEL KIT;N-B,8640P	
242673430001	LABEL;AGENCY-GLOBAL,MSL,8640D	
242673410001	LABEL;AGENCY-GLOBAL,MSL,8640G	
242673440001	LABEL;AGENCY-GLOBAL,MSL,8640M	
242673420001	LABEL;AGENCY-GLOBAL,MSL,8640P	
242673400004	LABEL;BATT 14.8V/6AH,LI,MOLICE,M	

8640 N/B Maintenance

9. Spare Part List-10

Part Number	Description	Location(S)
242674600010	LABEL;NVIDIA;CAIMAN	
441673430005	LCD ASSY;HANNSTAR,XGA,15",8640D/	
441673410003	LCD ASSY;HANNSTAR,XGA,15",8640G/	
441673430001	LCD ASSY;QDI,XGA,14.1",8640D/M	
441673400001	LCD ASSY;QDI,XGA,14.1",8640S/GP	
451673420002	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673430003	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673430002	LCD ME KIT;QDI,XGA,14.1",8640D/M	
451673400002	LCD ME KIT;QDI,XGA,14.1",8640S/G	
413000020317	LCD;HSD150PX11-B,TFT,15",LVDS,XG	
294011200126	LED;BLUE,H=0.8,0603,19-21UBC/C43	D2,D3
416267343901	LT PF OPTION;XGA,14.1",8640D	
416267341901	LT PF OPTION;XGA,14.1",8640G	
416267344902	LT PF OPTION;XGA,15",8640M	
416267344005	LT PF;HANNSTAR,XGA,15",8640M	
416267342010	LT PF;HANNSTAR,XGA,15",8640P GER	
416267343001	LT PF;QDI,XGA,14.1",8640D	
416267341002	LT PF;QDI,XGA,14.1",8640G	
526267343019	LTXNX;8640D/T4XX/XXJ/4UK1/L1D3B/	
526267341025	LTXNX;8640G/T4XX/XXC/3UI1/L1D3A/	
526267344014	LTXNX;8640M/T5XX/XXA/3XX9/L1C3B/	
526267342017	LTXNX;8640P/5RXX/XXA/3FR9/L1I3A/	
561567340013	MANUAL KIT;EN,8640D/M/L,N-B	
561567340001	MANUAL KIT;EN,8640G/P,N-B	
561567340015	MANUAL KIT;EU,8640D/M/L,N-B	

Part Number	Description	Location(S)
561567340002	MANUAL KIT;EU,8640G/P,N-B	
561567340025	MANUAL;USER'S,EN,8640D/M/L,N-B	
561567340007	MANUAL;USER'S,EN,8640G/P,N-B	
561567340027	MANUAL;USER'S,EU,8640D/M/L,N-B	
561567340008	MANUAL;USER'S,EU,8640G/P,N-B	
441673400051	MODEM ASSY,MDC,ASKEY,8640	
461673400009	PACKING KIT;8640,12CELLS,MOLI,ME	
461673440005	PACKING KIT;N-B,5 IN 1,8640M	
461673430001	PACKING KIT;N-B,8640D	
461673440003	PACKING KIT;N-B,BAG,8640M	
221673415003	PARTITION;CARRYING BAG,8640G	
221673415004	PARTITION;IN BAG,8640G	
222668820004	PE BUBBLE BAG;190X190MM,ANTI-STA	
411673400005	PWA;PWA-8640,ESB/LED BD	
441673400044	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400045	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400046	PWA;PWA-8640/BATT PROTECTION BD	
411673430001	PWA;PWA-8640D,MOTHER BD	
411673430003	PWA;PWA-8640D,MOTHER BD,SMT	
411673430002	PWA;PWA-8640D,MOTHER BD,T/U	
411673410005	PWA;PWA-8640G/D,T/P BD W/Z C/R,S	
411673410004	PWA;PWA-8640G/D,T/P BD W/Z C/R,T	
411673440001	PWA;PWA-8640M,MOTHER BD	
411673440003	PWA;PWA-8640M,MOTHER BD,SMT	
411673440002	PWA;PWA-8640M,MOTHER BD,T/U	

8640 N/B Maintenance

9. Spare Part List-11

Part Number	Description	Location(S)
411673420004	PWA;PWA-8640P,MOTHER BD GERICOM	
411673420006	PWA;PWA-8640P,MOTHER BD,SMT GERI	
411673420005	PWA;PWA-8640P,MOTHER BD,T/U GERI	
411673400014	PWA;PWA-8640P,T/P BD,T/U	
411673400004	PWA;PWA-8640P/M,T/P BD	
332810000034	PWR CORD;250V/2.5A,2P,BLK,EU,175	
332810000043	PWR CORD;250V/3A,2P,BLACK,UK	
271071122102	RES;1.2K ,1/16W,1% ,0603,SMT	PR525
271071152302	RES;1.5K ,1/16W,5% ,0603,SMT	R11
271071113001	RES;113 ,1/16W,1% ,0603,SMT	R587
271071222302	RES;2.2K ,1/16W,5% ,0603,SMT	R649,R701,R900,R901
271071224301	RES;220K ,1/16W,5% ,0603,SMT	R14,R20
271071499211	RES;49.9K,1/16W,1% ,0603,SMT	PR536
271071631101	RES;63.4,1/16W,1% ,0603,SMT	R84
271621824301	RP;820K*4,8P,1/32W,5%,1206,SMT	RP1,RP2
565167340001	S/W;CD ROM,SYSTEM DRIVER,8640G/P	
565167000013	S/W;CD-ROM,B'S RECORDER GOLD2.0	
340673400012	SHIELDING ASSY;TOP,8640S	
561860000022	SINGLE PAGE;GN,NOTE FOR BATTERY&	
297004010001	SW;PUSH BUTTOM,5P,SPST ,12VDC,50m	SW2,SW3
340673400010	THERMAL ASSY;8640S	
345673400005	THERMAL PAD;MOS,CHOKE,8640S	
345673400004	THERMAL PAD;MOS,POWER,8640S	
288200302001	TRANS;FDV302P,P-CHANNEL,SOT23	Q2,Q4,Q5
328202003001	TRANS;MTD20N03HDL,N-MOSFET,2A,30	PU503

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8640 N/B Maintenance

9. Spare Part List-12

8640M Spare Part List

Part Number	Description	Location(S)
541667341007	AK;04-EU,BOX,8640G/P	
541667343009	AK;10-UK,BOX,8640D/M	
541667341022	AK;19-UN,BOX,8640G/P	
541667340034	AK;31-PR,BOX,8640L TONGFANG	
541667340002	AK;EN,8640S,UTILITY ONLY	
441999900069	BATT ASSY OPTION;LI,12-CELL,8640	
442673400004	BATT,ASSY;14.8V/6AH,MOLICEL,MSL,	
441673400028	BATT,ASSY;LI-ION,12CELLS/6.0AH,M	
340673440009	BEZEL ASSY; QUANTA,COMBO,8640M	
340673440019	BEZEL ASSY;DVD-ROM,QSI,8640M	
340673400021	BEZEL ASSY;DVD-ROM,QSI,8640S	
221671640001	BOX;AK,8175	
340673400013	BRACKET ASSY;T/P,8640S	
342673400006	BRACKET;L,LCD,14",8640S	
342673400005	BRACKET;R,LCD,14",8640S	
221673412002	CARTON;5 IN 1,8640G	
431673450001	CASE KIT;W/O C/R,8640L	
431673430001	CASE KIT;W/Z C/R,8640D	
431673410001	CASE KIT;W/Z C/R,8640G	
431673420002	CASE KIT;W/Z C/R,8640P GERICOM	
344673400001	CASE;HDD,8640S	
413000020348	CFM-GERICOM;LCD,HSD150PX11-B,TFT	
291000012028	CON;HDR,MA,10P*2,1.27MM,H=16MM,S	J14
331810006008	CON;MODULAR JACK,FM,6P4C,R/A,FR	
331810006014	CON;MODULAR JACK,FM,6P4C,R/A,UK	

Part Number	Description	Location(S)
225668300002	CONDUCTIVE TAPE;DIMM COVER,HOPE	
340673430001	COVER ASSY;8640D	
340673410001	COVER ASSY;8640G	
340673450001	COVER ASSY;8640L	
340673420005	COVER ASSY;8640P	
340673400003	COVER ASSY;K/B,8640S	
340673450002	COVER ASSY;LCD 14",8640L-TONGFAN	
340673440006	COVER ASSY;LCD 14",8640M	
340673400002	COVER ASSY;LCD 14",8640S	
340673400016	COVER ASSY;LCD,15",8640S	
340673400008	COVER ASSY;MINI PCI,8640S	
344673400016	COVER;L,HINGE,8640S	
344673400025	COVER;R,HINGE,8640S	
344673400009	COVER;SPEAKER,8640S	
523499991012	DVD ASSY OPTION;8X,8640	
523499999067	DVD ASSY OPTION;8X,8640D/M	
523467340006	DVD ASSY;QUANTA,8640S/G/P	
523467343006	DVD ASSY;SDR083,QUANTA,8640D/M	
523499999069	DVD COMBO ASSY OPTION;16X10X8X24	
523467343010	DVD COMBO ASSY;SBW161,QSI,8640D/	
523430061906	DVD COMBO DRIVE;16X8X8X24,SBW-16	
523430061904	DVD DRIVE; 8X,SDR-083,QUANTA	
227673420003	END CAP;5 IN 1,LOWER,8640P	
227673410001	END CAP;5 IN 1,UPPER,8640G	
227673400001	END CAP;8640S	

8640 N/B Maintenance

9. Spare Part List-13

Part Number	Description	Location(S)
227671600008	END CAP;BATTERY,AK BOX,8175	
227671600009	END CAP;FDD,AK BOX,8175	
481673430002	F/W ASSY;KBD CTRL,8640D	U519
481673450004	F/W ASSY;KBD CTRL,8640L	U519
481673430001	F/W ASSY;SYS/VGA BIOS,8640D	U513
481673450003	F/W ASSY;SYS/VGA BIOS,8640L	U513
481673420001	F/W ASSY;SYS/VGA BIOS,8640P GERI	U513
340673400024	FAN ASSY;SUNON,8640S	
345673410015	GASKET,QDI,LCD 14",PANEL BOTTOM,	
345673450001	GASKET;M/B,8*5*20,8640L	
451673400051	HDD ME KIT;8640S/G/P	
340671600020	HINGE;L,14",8175	
340671600018	HINGE;R,14",8175	
340673400030	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673410003	HOUSING ASSY,QDI,LCD 14";8640G	
340673440016	HOUSING ASSY,QDI,LCD 14";8640M	
340673400004	HOUSING ASSY;8640S	
340673400027	HOUSING ASSY;BATTERY,8640S	
451673430001	HOUSING KIT;8640D	
451673410001	HOUSING KIT;8640G	
451673450001	HOUSING KIT;8640L	
451673420001	HOUSING KIT;8640P	
283450083001	IC;FLASH,256K*8-70,PLCC32,ST39SF	
286317099001	IC;LTC1709-9,PWM,QSOP,36P	PU9
286305248002	IC;MIC 5248-1.2BM5,LV12,LDO REG,	U506

Part Number	Description	Location(S)
284500302001	IC;SIS302LV,TV ENCODER/LVDS,128P	U7
284500650003	IC;SISM650,N.B.,BGA702	U9
346673400005	INSULATOR;M/B,8640S	
531020237486	KBD;88,FR,K010718V1,8640,DARK BL	
531020237566	KBD;88,UI,K010718Q1,8640,BLACK	
531020237484	KBD;88,UI,K010718U1,8640,DARK BL	
531020237577	KBD;88,UK,K010718R1,8640,BLACK	
451673450004	LABEL KIT;8640L TONGFANG	
451673430032	LABEL KIT;N-B,8640D	
451673410033	LABEL KIT;N-B,8640G	
451673420033	LABEL KIT;N-B,8640P	
242673430001	LABEL;AGENCY-GLOBAL,MSL,8640D	
242673410001	LABEL;AGENCY-GLOBAL,MSL,8640G	
242673420001	LABEL;AGENCY-GLOBAL,MSL,8640P	
242671720009	LABEL;AGENCY-GLOBAL,TONGFANG,ID4	
242673400004	LABEL;BATT 14.8V/6AH,LI,MOLICE,M	
242669900009	LABEL;BLANK,60*80MM,7170	
441673410003	LCD ASSY;HANNSTAR,XGA,15",8640G/	
441673430001	LCD ASSY;QDI,XGA,14.1",8640D/M	
441673450001	LCD ASSY;QDI,XGA,14.1",8640L TON	
441673400001	LCD ASSY;QDI,XGA,14.1",8640S/G/P	
451673420002	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673430002	LCD ME KIT;QDI,XGA,14.1",8640D/M	
451673450031	LCD ME KIT;QDI,XGA,14.1",8640L T	
451673400002	LCD ME KIT;QDI,XGA,14.1",8640S/G	

8640 N/B Maintenance

9. Spare Part List-14

Part Number	Description	Location(S)
413000021002	LCD;QD141X1LH03-MP01 Rev.B,TFT,I	
294011200126	LED;BLUE,H=0.8,0603,19-21UBC/C43	D2,D3
416267343901	LT PF OPTION;XGA,14.1",8640D	
416267341901	LT PF OPTION;XGA,14.1",8640G	
416267342010	LT PF;HANNSTAR,XGA,15",8640P GER	
416267343001	LT PF;QDI,XGA,14.1",8640D	
416267341002	LT PF;QDI,XGA,14.1",8640G	
416267345009	LT PF;QDI,XGA,14.1",8640L TONGFA	
526267343019	LTXNX;8640D/T4XX/XXJ/4UK1/L1D3B/	
526267341025	LTXNX;8640G/T4XX/XXC/3UI1/L1D3A/	
526267345011	LTXNX;8640L/4QXX/XXC/7UIX/L1D4B/	
526267342017	LTXNX;8640P/5RXX/XXA/3FR9/L1I3A/	
561567340013	MANUAL KIT;EN,8640D/M/L,N-B	
561567340001	MANUAL KIT;EN,8640G/P,N-B	
561567340002	MANUAL KIT;EU,8640G/P,N-B	
561567340007	MANUAL;USER'S,EN,8640G/P,N-B	
561567340008	MANUAL;USER'S,EU,8640G/P,N-B	
441673400051	MODEM ASSY,MDC,ASKEY,8640	
242671730008	NAMEPLATE;TONGFANG,ID4,8575	
461673400009	PACKING KIT;8640,12CELLS,MOLI,ME	
461673440005	PACKING KIT;N-B,5 IN 1,8640M	
461673430001	PACKING KIT;N-B,8640D	
461673440002	PACKING KIT;N-B,8640M	
221671650014	PARTITION;AK BOX,8175	
221671650004	PARTITION;FDD,AK BOX,8175	

Part Number	Description	Location(S)
222668820001	PE BAG;ANTI-STATIC,170x270MM,ORC	
411673400005	PWA;PWA-8640,ESB/LED BD	
441673400044	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400045	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400046	PWA;PWA-8640/BATT PROTECTION BD	
411673430001	PWA;PWA-8640D,MOTHER BD	
411673430003	PWA;PWA-8640D,MOTHER BD,SMT	
411673430002	PWA;PWA-8640D,MOTHER BD,T/U	
411673410005	PWA;PWA-8640G/D,T/P BD W/Z C/R,S	
411673410004	PWA;PWA-8640G/D,T/P BD W/Z C/R,T	
411673450001	PWA;PWA-8640L,MOTHER BD	
411673450003	PWA;PWA-8640L,MOTHER BD,SMT	
411673450002	PWA;PWA-8640L,MOTHER BD,T/U	
411673450008	PWA;PWA-8640L,T/P BD W/O C/R,SMT	
411673450007	PWA;PWA-8640L,T/P BD W/O C/R,T/U	
411673420004	PWA;PWA-8640P,MOTHER BD GERICOM	
411673420006	PWA;PWA-8640P,MOTHER BD,SMT GERI	
411673420005	PWA;PWA-8640P,MOTHER BD,T/U GERI	
332810000043	PWR CORD;250V/3A,2P,BLACK,UK	
332810000102	PWR CORD;250V10A,2P,BLK,CHINA,15	
271071131101	RES;130 ,1/16W,1% ,0603,SMT	R714
271071499211	RES;49.9K,1/16W,1% ,0603,SMT	PR536
271071604111	RES;6.04K,1/16W,1% ,0603,SMT	R80
565167340003	S/W;CD ROM,SYSTEM DRIVER,8640S	
565180626001	S/W;CD*1,DVD,WIN-DVD,INTERVIDEO	

8640 N/B Maintenance

9. Spare Part List-15

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8640 N/B Maintenance

9. Spare Part List-16 8640P Spare Part List

Part Number	Description	Location(S)
541667343005	AK;05-EU,BAG,8640D/M	
541667343009	AK;10-UK,BOX,8640D/M	
541667341022	AK;19-UN,BOX,8640GP	
541667340034	AK;31-PR,BOX,8640L TONGFANG	
541667340002	AK;EN,8640S,UTILITY ONLY	
441999900071	BATT ASSY OPTION;LI,12-CELL,8640	
442673400016	BATT,ASSY;14.8V/6AH,LI-MOLICEL,M	
441673400027	BATT,ASSY;LI-ION,12CELLS/6.0AH,M	
340673440009	BEZEL ASSY; QUANTA,COMBO,8640M	
340673440019	BEZEL ASSY;DVD-ROM,QSI,8640M	
340673400021	BEZEL ASSY;DVD-ROM,QSI,8640S	
340673400013	BRACKET ASSY;T/P,8640S	
342673400006	BRACKET;L,LCD,14",8640S	
342673400005	BRACKET;R,LCD,14",8640S	
221673450002	CARD BOARD;FRAME,PALLET,8640S	
221673450001	CARD BOARD;TOP/BTM,PALLET,8640S	
220673400002	CARRY BAG;N-B,8640	
221673400002	CARTON;NON-BRAND,8640S	
431673450001	CASE KIT;W/O C/R,8640L	
431673430001	CASE KIT;W/Z C/R,8640D	
431673410001	CASE KIT;W/Z C/R,8640G	
431673440001	CASE KIT;W/Z C/R,8640M	
344673440010	CASE;HDD,8640M	
291000012028	CON;HDR,MA,10P*2,1.27MM,H=16MM,S	J14
331810006014	CON;MODULAR JACK,FM,6P4C,R/A,UK	

Part Number	Description	Location(S)
225668300002	CONDUCTIVE TAPE;DIMM COVER,HOPE	
340673430001	COVER ASSY;8640D	
340673410001	COVER ASSY;8640G	
340673450001	COVER ASSY;8640L	
340673440002	COVER ASSY;8640M	
340673440005	COVER ASSY;KB ,8640M	
340673450002	COVER ASSY;LCD 14",8640L-TONGFAN	
340673440006	COVER ASSY;LCD 14",8640M	
340673400002	COVER ASSY;LCD 14",8640S	
340673440007	COVER ASSY;LCD,15",8640M	
340673440004	COVER ASSY;MINI PCI,8640M	
344673440008	COVER;L,HINGE,8640M	
344673440026	COVER;R,HINGE,8640M	
344673440003	COVER;SPEAKER,8640M	
523499991012	DVD ASSY OPTION;8X,8640	
523499999067	DVD ASSY OPTION;8X,8640D/M	
523467340006	DVD ASSY;QUANTA,8640S/GP	
523467343006	DVD ASSY;SDR083,QUANTA,8640D/M	
523499999069	DVD COMBO ASSY OPTION;16X10X8X24	
523467343010	DVD COMBO ASSY;SBW161,QSI,8640D/	
523430061906	DVD COMBO DRIVE;16X8X8X24,SBW-16	
523430061904	DVD DRIVE; 8X,SDR-083,QUANTA	
227673420001	END CAP;8640P	
227673400001	END CAP;8640S	
481673430002	F/W ASSY;KBD CTRL,8640D	U519

8640 N/B Maintenance

9. Spare Part List-17

Part Number	Description	Location(S)
481673450004	F/W ASSY;KBD CTRL,8640L	U519
481673430001	F/W ASSY;SYS/VGA BIOS,8640D	U513
481673450003	F/W ASSY;SYS/VGA BIOS,8640L	U513
481673440001	F/W ASSY;SYS/VGA BIOS,8640M	U513
340673400024	FAN ASSY;SUNON,8640S	
345673410015	GASKET,QDI,LCD 14",PANEL BOTTOM,	
345673450001	GASKET;M/B,8*5*20,8640L	
451673430006	HDD ME KIT;8640D/M	
340671600020	HINGE;L,14",8175	
340671600018	HINGE;R,14",8175	
340673440013	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673410003	HOUSING ASSY,QDI,LCD 14";8640G	
340673440016	HOUSING ASSY,QDI,LCD 14";8640M	
340673440001	HOUSING ASSY;8640M	
340673440012	HOUSING ASSY;BATTERY,8640M	
451673430001	HOUSING KIT;8640D	
451673410001	HOUSING KIT;8640G	
451673450001	HOUSING KIT;8640L	
451673440001	HOUSING KIT;8640M	
283450083001	IC;FLASH,256K*8-70,PLCC32,ST39SF	
286317099001	IC;LTC1709-9,PWM,QSOP,36P	PU9
286305248002	IC;MIC 5248-1.2BM5,LV12,LDO REG,	U506
284500302001	IC;SIS302LV,TV ENCODER/LVDS,128P	U7
284500650003	IC;SISM650,N.B.,BGA702	U9
346673400017	INSULATOR;102*21*0.15,8640S	

Part Number	Description	Location(S)
346673400018	INSULATOR;55*35*0.15,8640S	
346673400005	INSULATOR;M/B,8640S	
531020237566	KBD;88,UI,K010718Q1,8640,BLACK	
531020237484	KBD;88,UI,K010718U1,8640,DARK BL	
531020237577	KBD;88,UK,K010718R1,8640,BLACK	
451673450004	LABEL KIT;8640L TONGFANG	
451673430032	LABEL KIT;N-B,8640D	
451673410033	LABEL KIT;N-B,8640G	
451673440002	LABEL KIT;N-B,8640M	
242673430001	LABEL;AGENCY-GLOBAL,MSL,8640D	
242673410001	LABEL;AGENCY-GLOBAL,MSL,8640G	
242673440001	LABEL;AGENCY-GLOBAL,MSL,8640M	
242671720009	LABEL;AGENCY-GLOBAL,TONGFANG,ID4	
242600000157	LABEL;BAR CODE,125*65,COMMON	
242673400015	LABEL;BATT,14.8V/6AH,LI,MOLICE,M	
441673430005	LCD ASSY;HANNSTAR,XGA,15",8640D/	
441673430001	LCD ASSY;QDI,XGA,14.1",8640D/M	
441673450001	LCD ASSY;QDI,XGA,14.1",8640L TON	
441673400001	LCD ASSY;QDI,XGA,14.1",8640S/GP	
451673430003	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673430002	LCD ME KIT;QDI,XGA,14.1",8640D/M	
451673450031	LCD ME KIT;QDI,XGA,14.1",8640L T	
451673400002	LCD ME KIT;QDI,XGA,14.1",8640S/G	
413000020317	LCD;HSD150PX11-B,TFT,15",LVDS,XG	
413000021002	LCD;QD141X11LH03-MP01 Rev.B,TFT,1	

8640 N/B Maintenance

9. Spare Part List-18

Part Number	Description	Location(S)
413000021002	LCD;QD141X1LH03-MP01 Rev.B,TFT,I	
416267343901	LT PF OPTION;XGA,14.1",8640D	
416267341901	LT PF OPTION;XGA,14.1",8640G	
416267344902	LT PF OPTION;XGA,15",8640M	
416267344005	LT PF;HANNSTAR,XGA,15",8640M	
416267343001	LT PF;QDI,XGA,14.1",8640D	
416267341002	LT PF;QDI,XGA,14.1",8640G	
416267345009	LT PF;QDI,XGA,14.1",8640L TONGFA	
526267343019	LTXXN;8640D/T4XX/XXJ/4UK1/L1D3B/	
526267341025	LTXXN;8640G/T4XX/XXC/3UI1/L1D3A/	
526267345011	LTXXN;8640L/4QXX/XXC/7UIX/L1D4B/	
526267344014	LTXXN;8640M/T5XX/XXA/3XX9/L1C3B/	
561567340013	MANUAL KIT;EN,8640D/M/L,N-B	
561567340001	MANUAL KIT;EN,8640G/P,N-B	
561567340015	MANUAL KIT;EU,8640D/M/L,N-B	
561567340025	MANUAL;USER'S,EN,8640D/M/L,N-B	
561567340027	MANUAL;USER'S,EU,8640D/M/L,N-B	
242671730008	NAMEPLATE;TONGFANG,ID4,8575	
461673400008	PACKING KIT;8640,12CELLS,MOLI,DI	
461673430001	PACKING KIT;N-B,8640D	
461673440002	PACKING KIT;N-B,8640M	
461673440003	PACKING KIT;N-B,BAG,8640M	
227673400002	PAD;LCD/KB,335*252*1mm,ANIT-STAT	
224670830002	PALLET;1250*1080*130,7521N	
221673415003	PARTITION;CARRYING BAG,8640G	

Part Number	Description	Location(S)
221673415004	PARTITION;IN BAG,8640G	
221673450003	PARTITION;PALLET,8640S	
222668820004	PE BUBBLE BAG;190X190MM,ANTI-STA	
441673400041	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400042	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400043	PWA;PWA-8640/BATT PROTECTION BD	
411673430001	PWA;PWA-8640D,MOTHER BD	
411673430003	PWA;PWA-8640D,MOTHER BD,SMT	
411673430002	PWA;PWA-8640D,MOTHER BD,T/U	
411673430004	PWA;PWA-8640D/M/L,ESB/LED BD	
411673410005	PWA;PWA-8640G/D,T/P BD W/Z C/R,S	
411673410004	PWA;PWA-8640G/D,T/P BD W/Z C/R,T	
411673450001	PWA;PWA-8640L,MOTHER BD	
411673450003	PWA;PWA-8640L,MOTHER BD,SMT	
411673450002	PWA;PWA-8640L,MOTHER BD,T/U	
411673450008	PWA;PWA-8640L,T/P BD W/O C/R,SMT	
411673450007	PWA;PWA-8640L,T/P BD W/O C/R,T/U	
411673440001	PWA;PWA-8640M,MOTHER BD	
411673440003	PWA;PWA-8640M,MOTHER BD,SMT	
411673440002	PWA;PWA-8640M,MOTHER BD,T/U	
332810000043	PWR CORD;250V/3A,2P,BLACK,UK	
332810000102	PWR CORD;250V10A,2P,BLK,CHINA,15	
271071131101	RES;130 ,1/16W,1% ,0603,SMT	R714
271071499211	RES;49.9K,1/16W,1% ,0603,SMT	PR536
271071604111	RES;6.04K,1/16W,1% ,0603,SMT	R80

8640 N/B Maintenance

9. Spare Part List-19

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8640 N/B Maintenance

9. Spare Part List-20

8640D-G-L-M-P Common Spare Part List

Part Number	Description	Location(S)
441999900070	AC ADPT ASSY OPTION;8640	
442671200004	AC ADPT ASSY;19V/4.74A,DELTA,817	
361400003030	ADHESIVE;ABS+PC PACK,G485,CEMIDA	
361400003005	ADHESIVE;HEAT,TRANSFER,HTA-48(W)	
541667341007	AK;04-EU,BOX,8640GP	
541667343005	AK;05-EU,BAG,8640D/M	
541667343009	AK;10-UK,BOX,8640D/M	
541667341022	AK;19-UN,BOX,8640GP	
541667340034	AK;31-PR,BOX,8640L TONGFANG	
541667341002	AK;EN,8640GP,UTILITY ONLY	
541667340002	AK;EN,8640S,UTILITY ONLY	
441999900069	BATT ASSY OPTION;LI,12-CELL,8640	
441999900071	BATT ASSY OPTION;LI,12-CELL,8640	
442673400016	BATT,ASSY;14.8V/6AH,LI-MOLICEL,M	
442673400004	BATT,ASSY;14.8V/6AH,MOLICEL,MSL,	
441673400028	BATT,ASSY;LI-ION,12CELLS/6.0AH,M	
441673400027	BATT,ASSY;LI-ION,12CELLS/6.0AH,M	
298000000008	BATTERY HOLDER;CR2025,SMT	BT501
338530010025	BATTERY; LI,3V/160MAH,CR-2025	BT501
338536010010	BATTERY;LI,3.6V/2.0AH,18650,MOLI	
340673440009	BEZEL ASSY; QUANTA,COMBO,8640M	
340673440019	BEZEL ASSY;DVD-ROM,QSI,8640M	
340673400021	BEZEL ASSY;DVD-ROM,QSI,8640S	
242670800113	BFM-WORLD MARK;WINXP,7521N	
221671640001	BOX;AK,8175	

Part Number	Description	Location(S)
340673410004	BRACKET ASSY;SUPPORT,CD-ROM,8640	
340673420004	BRACKET ASSY;T/P,8640P	
340673400013	BRACKET ASSY;T/P,8640S	
342673410001	BRACKET;CARD-READER,8640G	
342673400003	BRACKET;CD-ROM,8640S	
342673400006	BRACKET;L,LCD,14",8640S	
342673400009	BRACKET;L,LCD,15",8640S	
342673400005	BRACKET;R,LCD,14",8640S	
342673400008	BRACKET;R,LCD,15",8640S	
421673440001	CABLE ASSY;MDC,8640M	
421015560001	CABLE ASSY;PHONE LINE,6P2C,W/Z C	
421673400005	CABLE ASSY;TV-OUT,8640S	
272075103403	CAP;.01U ,50V,10%,0603,X7R,SMT	C3,C16
272073223401	CAP;.022U,CR,25V,10%,0603,X7R,S	C23,C28,C516,C518,C528,C529,C
272073104703	CAP;.1U ,25V,+80-20%,0603,X7R,S	C1,C4,C8
272072104402	CAP;.1U ,CR,16V,10%,0603,X7R,SM	C542,C580,C581,C593,C596,C597
272003104701	CAP;.1U ,CR,25V ,+80-20%,0805,Y	PC62,PC73,PC76,PC77
272002474401	CAP;.47U ,CR,16V ,10%,0805,X7R,S	C12,C13
272030102405	CAP;1000P,CR,3KV,10%,1808,X7R,TU	C167,C514,C907
272075101701	CAP;100P ,50V ,+ -10%,0603,NPO,S	C72,C73
272075101401	CAP;100P ,50V,10%,0603,COG,SMT	C20,C22,C502,C519
272011106703	CAP;10U ,10V,+80-20%,1206,Y5V,I	C10,C114,C120,C124,C125,C13,C
272011106701	CAP;10U ,10V,+80-20%,1206,Y5V,S	C40,C45,C75,C76
272022106701	CAP;10U ,16V,+80-20%,1210,Y5V,S	PC508,PC53
272013106701	CAP;10U ,25V ,+80-20%,1206,Y5U,	PC83

8640 N/B Maintenance

9. Spare Part List-21

Part Number	Description	Location(S)
272023106501	CAP;10U ,25V ,20%,1210,Y5U,SMT	PC501
272011106404	CAP;10U,6.3V,10%,1206,X7R,SMT	C100,C101,C106,C139,C143,C154
272073152401	CAP;1500P,CR,25V ,10%,0603,X7R,S	PC1
272431227503	CAP;150U ,POLY,6.3V,20%,7243,SMT	PC11,PC13,PC14,PC7,PC8
272433156502	CAP;15U ,TQC,25V,20%,H=1.9 ,7343	PC40,PC41,PC42,PC46
272073180401	CAP;18P ,CR,25V ,10%,0603,NPO,S	C38,C40
272001105403	CAP;1U ,10%,10V ,0805,X7R,SMT	C640,C644
272002105403	CAP;1U ,CR,16V,10%,0805,X7R,SM	C6
272001225401	CAP;2.2U ,CR,10V ,10%,0805,X5R,S	C5
272012225702	CAP;2.2U ,CR,16V ,+80-20%,1206,Y	C185
272075200302	CAP;20P ,CR,50V ,5% ,0603,SMT	C523,C719,C725
272075221302	CAP;220P ,50V ,5% ,0603,NPO,SMT	C602,C604,C628,C650,C651,PC58
272075221401	CAP;220P ,CR,50V ,10%,0603,X7R,S	C69
272431227001	CAP;220U ,2.5V,TPE, 7343,18MR	C51,PC25,PC26,PC54,PC540,PC5
272421225501	CAP;220U,TPE,4V,20%,7343,SMT	PC566,PC71
272021226701	CAP;22U ,10V,+80-20%,1210,Y5V,S	C818,C834
272043226501	CAP;22U ,25V ,+20%,1812,Y5U,SMT	PC509,PC525,PC527,PC559,PC57
272075271401	CAP;270P ,50V,+10%,0603,X7R,SMT	C191,C234,C4,C5,C503
272075270302	CAP;27P ,50V ,5%,0603,COG,SMT	C674,C675
272075209001	CAP;2P ,CR,50V ,+0.25PF,0603,	C13
272431337506	CAP;330U,4V,20%,7343,SMT	PC82
272075330302	CAP;33P ,50V,5% ,0603,NPO,SMT	C15,C17,C513
272421336501	CAP;33U,TT,8V,20%,3528,SMT	C693,C696
272002475701	CAP;4.7U ,CR,10V ,+80-20%,0805,S	C33,C47,C48,C515,C525,C531,C5
272012475502	CAP;4.7U ,CR,16V,20%,1206,Y5U,SM	C14

Part Number	Description	Location(S)
272075472701	CAP;4700P,50V ,+ -20%,0603,X7R,S	C36,C522,C526,C533,C536,C537,
272072471301	CAP;470P ,CR,16V ,5% ,0603,NPO,P	C12
272075561701	CAP;560P ,CR,50V ,+80-20%,0603,S	C23
272030680402	CAP;68P ,3KV,10%,1808,NPO,SMT ,P	C15
272075680302	CAP;68P ,50V ,5% ,0603,NPO,SMT	C801,C806,C807
221673450002	CARD BOARD;FRAME,PALLET,8640S	
221673450001	CARD BOARD;TOP/BTM,PALLET,8640S	
220673400002	CARRY BAG;N-B,8640	
221600020128	CARTON;380MM*320MM*320MM,BC FLUT	
221673412002	CARTON;5 IN 1,8640G	
221504220001	CARTON;BATTERY,8640	
221673400002	CARTON;NON-BRAND,8640S	
431673450001	CASE KIT;W/O C/R,8640L	
431673430001	CASE KIT;W/Z C/R,8640D	
431673410001	CASE KIT;W/Z C/R,8640G	
431673440001	CASE KIT;W/Z C/R,8640M	
431673420002	CASE KIT;W/Z C/R,8640P GERICOM	
344673440010	CASE;HDD,8640M	
344673400001	CASE;HDD,8640S	
451673400071	CD ROM ME KIT;8640S/G/P	
335152000044	CFM-BAT;FUSE THERMAL 98°C	
413000020348	CFM-GERICOM;LCD,HSD150PX11-B,TFT	
273000500052	CHOKE COIL;0.7UH,1.6mOHM,25%,20A	PL7,PL8
273000500053	CHOKE COIL;10UH,21.6mOHM,5.4A	PL14,PL2
273000500015	CHOKE COIL;50UH(REF),D.4*2,5.5T,	L42

8640 N/B Maintenance

9. Spare Part List-22

Part Number	Description	Location(S)
331000008038	CON;BAT,8P,2.5MM,SUYIN	J23
291000000406	CON;BATTERY,4P,2.0MM,R/A,21040S-	
331000007019	CON;BATTERY,7P,2.5MM,25032A-07GI	
331030050014	CON;CD-ROM,50P,0.8MM,H=11.9,R/A,	J502
331720015006	CON;D,FM,15P,2.29,R/A,3ROW	J6
331720025005	CON;D,FM,25P,2.775,R/A	J5
291000151201	CON;FPC/FFC,12P,0.5MM,R/A,SMT	J501
291000153006	CON;FPC/FFC,15P*2,.8MM,BD/BD,ST,	J505
291000142404	CON;FPC/FFC,24P,1MM,H8.2,ST,ACES	J21
291000154006	CON;FPC/FFC,40P,0.5MM,R/A,ZIF,SM	J507
291000144004	CON;HDR,20P*2,1.0MM,H=4.6,ST,SMT	J11
291000012027	CON;HDR,FM,10P*2,1.27MM,H=4.5,ST	J501
331030044013	CON;HDR,FM,22*2,2MM,ST,C16805	
291000017006	CON;HDR,FM,35P*2,1.27MM,H=4.5,ST	PJ501
291000012025	CON;HDR,MA,10P*2,1.27MM,H=11.5,S	J14
291000012028	CON;HDR,MA,10P*2,1.27MM,H=16MM,S	J14
291000021101	CON;HDR,MA,11P*1,1.25,R/A,DF13-1	J1
291000011209	CON;HDR,MA,12P*1,1.25,ST,SMT	J13
291000014412	CON;HDR,MA,22P*2,2MM,ST,SMT,ALLT	J16
291000020202	CON;HDR,MA,2P*1,1.25,R/A,SMT,HIR	J503,J506,J508
291000020204	CON;HDR,MA,2P*1,3.5MM,R/A,SMT,SM	J2
291000017007	CON;HDR,MA,35P*2,1.27MM,H=13,ST,	PJ1
291000020408	CON;HDR,MA,4P,1.25MM,H3.5MM,R/A,	J502
291000256823	CON;IC CARD PART;68P,0.635,H5,SM	J19
331000004018	CON;IEEE1394,MA,4P,.8MM,R/A,LINK	J2

Part Number	Description	Location(S)
331870006013	CON;MINI DIN,6P,R/A,W/GROUND,731	J15
331000007018	CON;MINI DIN,7P,R/A,W/GROUND,ALL	J3
331810006008	CON;MODULAR JACK,FM,6P4C,R/A,FR	
331810006014	CON;MODULAR JACK,FM,6P4C,R/A,UK	
291000810604	CON;PHONE JACK,6P,H=11.5,RJ11,SM	J17
291000810806	CON;PHONE JACK,8P8C,SMD,RJ45	J4
331910003039	CON;POWER JACK,3P,D=2.0,SINGATRO	J1
331840010008	CON;STEREO JACK,10P,W/SPDIF,R/A,	J504
331840005013	CON;STEREO JACK,5P,R/A,28MF60-07	J505
331000004029	CON;USB,MA,R/A,4P*1,2551A-04G5T-	J10,J7,J8,J9
291000410301	CON;WFR,MA,3P,1.25,ST,SMT/MB	J18
291067340002	CON;WFR,MA,3P,DF-13A-1.25H,R/A,W	J501
225668300002	CONDUCTIVE TAPE;DIMM COVER,HOPE	
342668200003	CONTACT PLATE;2,W4L20T0.15	
342503100001	CONTACT PLATE;FOR 4 CELLS,2/4,75	
342504300005	CONTACT PLATE;W5L102T0.13,8500	
342503400004	CONTACT PLATE;W5L45T0.13,7170LI,	
342503400006	CONTACT PLATE;W5L45T0.13,7170LI,	
342503400002	CONTACT PLATE;W5L9T0.13,7170LI,P	
342503400003	CONTACT PLATE;W7L7T0.13,7170LI,P	
340673430001	COVER ASSY;8640D	
340673410001	COVER ASSY;8640G	
340673450001	COVER ASSY;8640L	
340673440002	COVER ASSY;8640M	
340673420005	COVER ASSY;8640P	

8640 N/B Maintenance

9. Spare Part List-23

Part Number	Description	Location(S)
340673400003	COVER ASSY;K/B,8640S	
340673440005	COVER ASSY;KB ,8640M	
340673450002	COVER ASSY;LCD 14" ,8640L-TONGFAN	
340673440006	COVER ASSY;LCD 14" ,8640M	
340673400002	COVER ASSY;LCD 14" ,8640S	
340673440007	COVER ASSY;LCD,15" ,8640M	
340673400016	COVER ASSY;LCD,15" ,8640S	
340673440004	COVER ASSY;MINI PCI,8640M	
340673400008	COVER ASSY;MINI PCI,8640S	
344673400022	COVER;BATTERY,8640S	
344673440008	COVER;L,HINGE,8640M	
344673400016	COVER;L,HINGE,8640S	
344673440026	COVER;R,HINGE,8640M	
344673400025	COVER;R,HINGE,8640S	
344673440003	COVER;SPEAKER,8640M	
344673400009	COVER;SPEAKER,8640S	
272625220401	CP;22P*4 ,8P,50V ,10%,1206,NPO,S	CP501,CP502,CP503,CP504,CP505
272625470401	CP;47P*4 ,8P,50V ,10%,1206,NPO,S	CP507
291000612004	DIMM SOCKET;DDR,200P,0.6MM,H4,SM	J504
291000612003	DIMM SOCKET;DDR,200P,0.6MM,H9.2,	J22
288100032013	DIODE;BAS32L, VRRM75V,MELF,SOD-80	D501,PD514
288100054001	DIODE;BAT 54,30V,200mA,SOT-23	PD508,PD509,PD510
288100701002	DIODE;BAV70LT1,70V,225MW,SOT-23	D511,PD501,PD502
288101003001	DIODE;EC10QS03L,30V,1A,SMT	PD2,PD3,PD504
288100112003	DIODE;EC11FS2-TE12L,SCHOTTKY,200	D503,PD507

Part Number	Description	Location(S)
288103103001	DIODE;EC31QS03L,30V,3A,SMT	PD4,PD5,PD511,PD512,PD513,P
288100551001	DIODE;RB551V-30,SCHOTTKY,.36V,UM	D507
288100751001	DIODE;RB751V-40,40V,200mA,SOD-32	D515
288104148001	DIODE;RLS4148,200MA,500MW,MELF,S	D3,D505,D506,D514,D516,D517,
288100024002	DIODE;RLZ24D,ZENER,23.63V,5%,SMT	PD1
288100018003	DIODE;UDZS18B,ZENER,18V,SOD-323,	ZD4,ZD5
344672300025	DUMMY CARD;PCMCIA,MANGUSTA	
523499991012	DVD ASSY OPTION;8X,8640	
523499999067	DVD ASSY OPTION;8X,8640D/M	
523467340006	DVD ASSY;QUANTA,8640S/GP	
523467343006	DVD ASSY;SDR083,QUANTA,8640D/M	
523499999069	DVD COMBO ASSY OPTION;16X10X8X24	
523467343010	DVD COMBO ASSY;SBW161,QSI,8640D/	
523430061906	DVD COMBO DRIVE;16X8X8X24,SBW-16	
523430061904	DVD DRIVE; 8X,SDR-083,QUANTA	
272601107506	EC;100U ,6.3V,M,9.3*3.6,-55~105'	C501,C502
312271006358	EC;100U,25V,RA,M,D6.3*7,SGX,SANY	PC37,PC38
312001207351	EC;1200U,2.5V,+20%,10X10mm	PC27,PC28,PC29
227673420003	END CAP;5 IN 1,LOWER,8640P	
227673410001	END CAP;5 IN 1,UPPER,8640G	
227673420001	END CAP;8640P	
227673400001	END CAP;8640S	
227671600008	END CAP;BATTERY,AK BOX,8175	
227671600009	END CAP;FDD,AK BOX,8175	
481673400007	F/W ASSY;CARD READER,8640	U502

8640 N/B Maintenance

9. Spare Part List-24

Part Number	Description	Location(S)
481673430002	F/W ASSY;KBD CTRL,8640D	U519
481673450004	F/W ASSY;KBD CTRL,8640L	U519
481673440002	F/W ASSY;KBD CTRL,8640M	U519
481673430001	F/W ASSY;SYS/VGA BIOS,8640D	U513
481673450003	F/W ASSY;SYS/VGA BIOS,8640L	U513
481673440001	F/W ASSY;SYS/VGA BIOS,8640M	U513
481673420001	F/W ASSY;SYS/VGA BIOS,8640P GERI	U513
340671200020	FAN ASSY;8170	
340673400024	FAN ASSY;SUNON,8640S	
273000610019	FERRITE ARRAY;130OHM/100MHZ,3216	FA501,FA502,FA503
273000130001	FERRITE CHIP;120OHM/100MHZ,1608,	L50,L51
273000150001	FERRITE CHIP;220OHM/100MHZ,2012,	L501
273000130038	FERRITE CHIP;600OHM/100MHZ,1608,	L16,L21,L22,L23,L25
422666200001	FFC ASSY;TOUCH PAD,CASE KIT,NV	
342672400007	FINGER;EMI GROUNDING SMD FINGER	E504,E505,E506,E507,E508,E509
342600001203	FINGER;EMI GROUNDING SMD FINGER,	E512,E516
288003602001	FIR;HSDL-3602-007,FRONT VIEW,10P	U4
245600010016	FLOW CARD;SPS,GRAY	
245600010030	FLOW CARD;SPS,PINK,100MM*30MM,PR	
421673410003	FPC ASSY;CARD-READER,8640G	
295000010057	FUSE;228R,139C,5A/250V,SMT,PRC	
295000010116	FUSE;FAST, 10A, 86VDC, 6125,SMT	PF1
295000010126	FUSE;FAST,2A,63VDC,1206,SMT,PRC	F1
335152000062	FUSE;LR4-730,POLY SWITCH,PRC	
295000010016	FUSE;NORMAL,6.5A/32VDC,3216,SMT	PF501

Part Number	Description	Location(S)
345673400010	GASKET,HANNSTAR,LCD 15",BOTTOM,1	
345673400009	GASKET,HANNSTAR,LCD 15",TOP,15*1	
345673410015	GASKET,QDI,LCD 14",PANEL BOTTOM,	
345673410002	GASKET;HEAT SINK,M/B,8640G	
345672300031	GASKET;LCD HOUSING,9*9*0.5,MANGU	
345673450001	GASKET;M/B,8*5*20,8640L	
345673410007	GASKET;RJ,M/B,8640G	
345673410005	GASKET;T/P PCB,COVER,8640G	
345673410006	GASKET;T/P PCB,HOUSING,8640GNO	
345669900038	GASKET;TOP SHIELDING,60*3.0*1.0,	
230000010004	GLUE;9001B,BLACK,PRC	
230000010003	GULE;9001A,BLACK,PRC	
451673430006	HDD ME KIT;8640D/M	
451673400051	HDD ME KIT;8640S/G/P	
340671600020	HINGE;L,14",8175	
340671600019	HINGE;L,15",8175	
340671600018	HINGE;R,14",8175	
340671600017	HINGE;R,15",8175	
340673400030	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673440013	HOUSING ASSY,HANNSTAR,LCD 15";86	
340673410003	HOUSING ASSY,QDI,LCD 14";8640G	
340673440016	HOUSING ASSY,QDI,LCD 14";8640M	
340673440001	HOUSING ASSY;8640M	
340673400004	HOUSING ASSY;8640S	
340673440012	HOUSING ASSY;BATTERY,8640M	

8640 N/B Maintenance

9. Spare Part List-25

Part Number	Description	Location(S)
340673400027	HOUSING ASSY;BATTERY,8640S	
451673430001	HOUSING KIT;8640D	
451673410001	HOUSING KIT;8640G	
451673450001	HOUSING KIT;8640L	
451673440001	HOUSING KIT;8640M	
451673420001	HOUSING KIT;8640P	
344600000824	IC CARD CON PART;68P,IC11SA-BD-P	
291000614795	IC SOCKET;BGA-mPGA478B,478P,AMP	U8
282574373004	IC;74AHC373,OCT D-TRAN,TSSOP,20P	U521
282074338402	IC;74CBTD3384,10 BIT BUS SW,T SOP	U516
282574164002	IC;74VHC164,SIPO REGISTER,TSSOP,	U511
284501032001	IC;ADM1032,TEMPERATURE MTR,SO8	U504
286300809003	IC;ADM809M,RESET CIRCUIT,4.38V,S	U517
284500202003	IC;ALC202,AUDIO CODEC,TQFP,48P	U5
286308800006	IC;AME8800AEEV,VOL REG,,SOT23-5,	PU17
286308801006	IC;AME8801CEEV,VOL REG,,SOT23-5,	PU7
284504835002	IC;APA4835RI-TR,2W,AUDIO AMP,TSS	U6
286301117031	IC;APL1117,1A,LDO,3.3V,SOT223,3P	U7
286002040001	IC;BQ2040,GAS GAUGE,SO,16P,SMT	U502
286301410001	IC;CB1410,PCI/CARDBUS,LQFP,144P,	U12
284508500002	IC;CM8500,3A BUS TERMINATOR,PTSS	PU20
286302211002	IC;CP2211,POWER DISTRI SW,,SSOP16	U11
283466570001	IC;EEPROM,9346,64*16 BITS,SO8,SM	U514
286305234001	IC;FAN5234,PWM,QSOP,16P	PU1
283450083001	IC;FLASH,256K*8-70,PLCC32,ST39SF	

Part Number	Description	Location(S)
283460000003	IC;FLASH,512K*8-70,PLCC32,EN29F0	
283467340002	IC;FLASH,64K*8-70,PLCC32,W27C512	
284500802003	IC;FW802A,IEEE1394 PHY,LQFP64P,2	U509
284583437003	IC;H8/F3437S,KBD CTRL,TQFP,100P,	
284501893002	IC;ICS1893AF,LAN PHY,SMT,SSOP48	U508
284593722001	IC;ICS93722,DDR ZERO DELAY CLOCK	U518
284595200101	IC;ICS952001,TIMING CTL HUB FOR	U510
286100393004	IC;LMV393,DUAL COMPARTOR,SSOP,8P	PU510
286302951015	IC;LP2951ACM,VOLTAGE REGULATOR,S	PU504
286317099001	IC;LTC1709-9,PWM,QSOP,36P	PU9
286303707001	IC;LTC3707,PWM SWITCH REG,SOOP,2	PU22
286303716001	IC;LTC3716,PWM,QSOP,36P	PU9
286301632002	IC;MAX1632CAI,PWM CTRL,SSOP,28P	PU502
286301772001	IC;MAX1772,PWM,QSOP,28P	PU512
286305248002	IC;MIC 5248-1.2BM5,LV12,LDO REG,	U506
286301414001	IC;MM1414,PROTECTION,T SOP-20A,PR	U5
284500017004	IC;MOBILITY,MAP17,BGA692	U6
281300732001	IC;NC7S32,SINGLE OR GATE,SC70-5	U3
284503050002	IC;ND3050,6 IN1 FLASH DEVICE CON	U2
286300965001	IC;OZ965R,CCFL CTRL,TSSOP16,O2	U1
284501284001	IC;PAC1284-01Q,TERMIN. NETWK,QSO	U501,U502
284587393002	IC;PC87393F,TQFP,100P	U512
286309701001	IC;RT9701,POWER DISTRI SW,SOT23-	U2,U3
286300812002	IC;S812C,DECECTOR,SOT-89,PRC	U3
286300431014	IC;SC431LCSK-.5,%.5,ADJ REG,SOT2	PQ2,PQ507,PQ516

8640 N/B Maintenance

9. Spare Part List-26

Part Number	Description	Location(S)
284500302001	IC;SIS302LV,TV ENCODER/LVDS,128P	U7
284500645002	IC;SIS645DX,N.B.,BGA702	U9
284509622001	IC;SIS962 A2 HM-I/O,S.B.,BGA371	U515
284500650003	IC;SISM650,N.B.,BGA702	U9
284500530002	IC;SM530, SPREAD CLOCK,TSSOP20	U503
286362003001	IC;TPS62003,LOW POWER,MSOP,10P	U520
286361256001	IC;UT61L256C-12,SRAM 32K*8,T SOP,	U8
273000135101	INDUCTOR;10UH,10%,1608,SMT	L539
273000990031	INDUCTOR;10UH,CDRH127B,SUMIDA,SM	PT1
273000990116	INDUCTOR;10UH,SPC-10038-100,SMT	PL501
273000990115	INDUCTOR;3.3uH,3A,CSS054D,SMT	PL16
273000150106	INDUCTOR;4.7UH,10%,2012,SMT	L527,L528
273000990117	INDUCTOR;4.7UH,CDRH127,MULTI,SMT	PL12,PL15
346673400017	INSULATOR;102*21*0.15,8640S	
346503100005	INSULATOR;5,BATTERY ASSY,7521Li	
346673400018	INSULATOR;55*35*0.15,8640S	
346504200001	INSULATOR;BATT ASSY,10CELLS,8640	
346000000001	INSULATOR;BATT ASSY,6CELLS,8640	
346503400502	INSULATOR;BATT ASSY,L22R9.2,8175	
346503200202	INSULATOR;BATT ASSY,ONE ROUND,BL	
346503200101	INSULATOR;BATT ASSY,POLY,W30L64,	
346503400503	INSULATOR;BATT ASSY,W7L13,8175	
346673400013	INSULATOR;BATT ASSY,W8L170T1.0	
346673400011	INSULATOR;CARBUS,M/B,8640S	
346673410003	INSULATOR;CD-ROM_CONN,T/P,8640G	

Part Number	Description	Location(S)
346668300024	INSULATOR;DIMM P/N MB TOP,HOPE	
346503200002	INSULATOR;FOR 4 CELLS,GRAMPUS	
346669900004	INSULATOR;INVERTER,7170	
346673410001	INSULATOR;M/B,8640G	
346673400005	INSULATOR;M/B,8640S	
346673440001	INSULATOR;MINIPCI,MB,8640M	
346503400203	INSULATOR;ONE ROUND,STINGRAY	
346504200002	INSULATOR;PCB ASSY,W16L41,8640	
346673400004	INSULATOR;RTC,M/B,8640S	
346673410002	INSULATOR;T/P PCB,8640G	
541150340202	INVERTER BD;STINGRAY (FOR 8640)	
531020237486	KBD;88,FR,K010718V1,8640,DARK BL	
531020237566	KBD;88,UI,K010718Q1,8640,BLACK	
531020237484	KBD;88,UI,K010718U1,8640,DARK BL	
531020237577	KBD;88,UK,K010718R1,8640,BLACK	
451673450004	LABEL KIT;8640L TONGFANG	
451673430032	LABEL KIT;N-B,8640D	
451673410033	LABEL KIT;N-B,8640G	
451673440002	LABEL KIT;N-B,8640M	
451673420033	LABEL KIT;N-B,8640P	
242600000439	LABEL;25*6,HI-TEMP,COMMON	
242673430001	LABEL;AGENCY-GLOBAL,MSL,8640D	
242673410001	LABEL;AGENCY-GLOBAL,MSL,8640G	
242673440001	LABEL;AGENCY-GLOBAL,MSL,8640M	
242673420001	LABEL;AGENCY-GLOBAL,MSL,8640P	

8640 N/B Maintenance

9. Spare Part List-27

Part Number	Description	Location(S)
242671720009	LABEL;AGENCY-GLOBAL,TONGFANG,ID4	
242600000088	LABEL;BAR CODE,125*65,COMMON	
242600000157	LABEL;BAR CODE,125*65,COMMON	
242673400004	LABEL;BATT 14.8V/6AH,LI,MOLICE,M	
242673400015	LABEL;BATT,14.8V/6AH,LI,MOLICE,M	
242669900009	LABEL;BLANK,60*80MM,7170	
242664800013	LABEL;CAUTION,INVERT BD,PITCHING	
242669600005	LABEL;LOT NUMBER,RACE	
242674600010	LABEL;NVIDIA;CAIMAN	
441673430005	LCD ASSY;HANNSTAR,XGA,15",8640D/	
441673410003	LCD ASSY;HANNSTAR,XGA,15",8640G/	
441673430001	LCD ASSY;QDI,XGA,14.1",8640D/M	
441673450001	LCD ASSY;QDI,XGA,14.1",8640L TON	
441673400001	LCD ASSY;QDI,XGA,14.1",8640S/GP	
451673420002	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673430003	LCD ME KIT;HANNSTAR,XGA,15",8640	
451673430002	LCD ME KIT;QDI,XGA,14.1",8640D/M	
451673450031	LCD ME KIT;QDI,XGA,14.1",8640L T	
451673400002	LCD ME KIT;QDI,XGA,14.1",8640S/G	
413000020317	LCD;HSD150PX11-B,TFT,15",LVDS,XG	
294011200126	LED;BLUE,H=0.8,0603,19-21UBC/C43	D2,D3
294011200069	LED;GREEN,19-21VGC/TR8,LED_CL190	LED1,2,3,4
294011200016	LED;GREEN,H0.8,0603,CL-190G,SMT	D10,D5,D6,D7,D8,D9
294011200070	LED;RED/GREEN,19-22SRVGC/TR8,LED	LED5,6
416267343901	LT PF OPTION;XGA,14.1",8640D	

Part Number	Description	Location(S)
416267341901	LT PF OPTION;XGA,14.1",8640G	
416267344902	LT PF OPTION;XGA,15",8640M	
416267344005	LT PF;HANNSTAR,XGA,15",8640M	
416267342010	LT PF;HANNSTAR,XGA,15",8640P GER	
416267343001	LT PF;QDI,XGA,14.1",8640D	
416267341002	LT PF;QDI,XGA,14.1",8640G	
416267345009	LT PF;QDI,XGA,14.1",8640L TONGFA	
526267343019	LTXXN;8640D/T4XX/XXJ/4UK1/L1D3B/	
526267341025	LTXXN;8640G/T4XX/XXC/3UI1/L1D3A/	
526267345011	LTXXN;8640L/4QXX/XXC/7UIX/L1D4B/	
526267344014	LTXXN;8640M/T5XX/XXA/3XX9/L1C3B/	
526267342017	LTXXN;8640P/5RXX/XXA/3FR9/L1I3A/	
561567340013	MANUAL KIT;EN,8640D/M/L,N-B	
561567340001	MANUAL KIT;EN,8640G/P,N-B	
561567340015	MANUAL KIT;EU,8640D/M/L,N-B	
561567340002	MANUAL KIT;EU,8640G/P,N-B	
561567340025	MANUAL;USER'S,EN,8640D/M/L,N-B	
561567340007	MANUAL;USER'S,EN,8640G/P,N-B	
561567340027	MANUAL;USER'S,EU,8640D/M/L,N-B	
561567340008	MANUAL;USER'S,EU,8640G/P,N-B	
421673400003	MICROPHONE ASSY;8640S	
291000611245	MINIPCI SOCKET;124P,0.8MM,H=4,S	J503
441673400051	MODEM ASSY,MDC,ASKEY,8640	
346673410004	MYLAR;T/P PCB,8640G	
242671730008	NAMEPLATE;TONGFANG,ID4,8575	

8640 N/B Maintenance

9. Spare Part List-28

Part Number	Description	Location(S)
375102030010	NUT-HEX;M2,2,NIW	
461673400008	PACKING KIT;8640,12CELLS,MOLI,DI	
461673400009	PACKING KIT;8640,12CELLS,MOLI,ME	
461673440005	PACKING KIT;N-B,5 IN 1,8640M	
461673430001	PACKING KIT;N-B,8640D	
461673440002	PACKING KIT;N-B,8640M	
461673440003	PACKING KIT;N-B,BAG,8640M	
227673400002	PAD;LCD/KB,335*252*1mm,ANIT-STAT	
224670830002	PALLET;1250*1080*130,7521N	
221671650014	PARTITION;AK BOX,8175	
221504250001	PARTITION;BATTERY,MARLIN,8640	
221673415003	PARTITION;CARRYING BAG,8640G	
221671650004	PARTITION;FDD,AK BOX,8175	
221600050113	PARTITION;FLAT,320MM*290MM,BC FL	
221671250005	PARTITION;HDD CASE,8170	
221673415004	PARTITION;IN BAG,8640G	
221673450003	PARTITION;PALLET,8640S	
221504250002	PARTITION;TOP/BTM,BATTERY,MARLIN	
412155600047	PCB ASSY;MDM,56K,UNIV,F-PACK,WO/	
316504200001	PCB;PWA-8640/BATT GAUG BD,PROTEC	
316504200002	PCB;PWA-8640/BATT GAUGE BD	
316673400003	PCB;PWA-8640/ESB-LED BD	R01
316673400001	PCB;PWA-8640/MOTHER BD	R02
316673400002	PCB;PWA-8640/Touch Pad BD	R01
316000000019	PCB;PWA-STINGRAY/INVERTER BD (FO	

Part Number	Description	Location(S)
222671330004	PE BAG;120x170MM,W/SEAL,STINGRAY	
222600020049	PE BAG;50*70MM,W/SEAL,COMMON	
222600020310	PE BAG;70X100MM,W/SEAL,COMMON	
222668820001	PE BAG;ANTI-STATIC,170x270MM,ORC	
222667220003	PE BAG;L560XW345,CERES	
222668820004	PE BUBBLE BAG;190X190MM,ANTI-ST A	
222670000001	PE BUBBLE BAG;BATTERY,7521	
222503220001	PE BUBBLE BAG;BATTERY,GRAMPUS	
340673400001	PLATE ASSY;K/B,8640S	
411673400005	PWA;PWA-8640,ESB/LED BD	
441673400044	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400045	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400041	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400042	PWA;PWA-8640/BATT GAUGE BD,12S,	
441673400046	PWA;PWA-8640/BATT PROTECTION BD	
441673400043	PWA;PWA-8640/BATT PROTECTION BD	
411673430001	PWA;PWA-8640D,MOTHER BD	
411673430003	PWA;PWA-8640D,MOTHER BD,SMT	
411673430002	PWA;PWA-8640D,MOTHER BD,T/U	
411673430004	PWA;PWA-8640D/M/L,ESB/LED BD	
411673410005	PWA;PWA-8640G/D,T/P BD W/Z C/R,S	
411673410004	PWA;PWA-8640G/D,T/P BD W/Z C/R,T	
411673450001	PWA;PWA-8640L,MOTHER BD	
411673450003	PWA;PWA-8640L,MOTHER BD,SMT	
411673450002	PWA;PWA-8640L,MOTHER BD,T/U	

8640 N/B Maintenance

9. Spare Part List-29

Part Number	Description	Location(S)
411673450008	PWA;PWA-8640L,T/P BD W/O C/R,SMT	
411673450007	PWA;PWA-8640L,T/P BD W/O C/R,T/U	
411673440001	PWA;PWA-8640M,MOTHER BD	
411673440003	PWA;PWA-8640M,MOTHER BD,SMT	
411673440002	PWA;PWA-8640M,MOTHER BD,T/U	
411673420004	PWA;PWA-8640P,MOTHER BD GERICOM	
411673420006	PWA;PWA-8640P,MOTHER BD,SMT GERI	
411673420005	PWA;PWA-8640P,MOTHER BD,T/U GERI	
411673400014	PWA;PWA-8640P,T/P BD,T/U	
411673400004	PWA;PWA-8640P/M,T/P BD	
411503400205	PWA;PWA-STINGRAY/INVERTER BD,MSL	
411503400206	PWA;PWA-STINGRAY/INVERTER BD,SMT	
332810000034	PWR CORD;250V/2.5A,2P,BLK,EU,175	
332810000043	PWR CORD;250V/3A,2P,BLACK,UK	
332810000102	PWR CORD;250V10A,2P,BLK,CHINA,15	
297212000003	RELAY;REED,200V,.5A,NORMAL OPEN,	SW5
271045047101	RES;.004,1W,1%,2512,SMT	PR543,PR544,PR545,PR546
271045087101	RES;.008,1W,1%,2512,SMT	PR572
271045107101	RES;.01,1W,1%,2512,SMT	PR559
271045127102	RES;.012,1W,1%,2512,SMT	PR3
271045157101	RES;.015,1W,1%,2512,SMT	PR6
271045357101	RES;.035,1W,1%,2512,SMT	PR577
271046507101	RES;.05,2W,1%,2512,SMT,PRC	R,11,R12,R13,R14
271045108101	RES;.1,1W,1%,2512,SMT	PR4,PR5
271002000301	RES;0,1/10W,5%,0805,SMT	PL2,PL3

Part Number	Description	Location(S)
271071010301	RES;1,1/16W,5%,0603,SMT	PR573,PR578
271071122102	RES;1.2K,1/16W,1%,0603,SMT	PR525
271071152302	RES;1.5K,1/16W,5%,0603,SMT	R11
271071102211	RES;10.2K,1/16W,1%,0603,SMT	R5
271071106301	RES;10M,1/16W,5%,0603,SMT	R732
271071111101	RES;110,1/16W,1%,0603,SMT	R93
271071113001	RES;113,1/16W,1%,0603,SMT	R587
271071113101	RES;11K,1/16W,1%,0603,SMT	PR585
271071121211	RES;12.1K,1/16W,1%,0603,SMT	PR49,PR50,R623
271071131101	RES;130,1/16W,1%,0603,SMT	R714
271071154101	RES;150K,1/16W,1%,0603,SMT	R1
271071169311	RES;169K,1/16W,1%,0603,SMT	PR563
271071105301	RES;1M,1/16W,5%,0603,SMT	R36,R43
271071222302	RES;2.2K,1/16W,5%,0603,SMT	R649,R701,R900,R901
271071225301	RES;2.2M,1/16W,5%,0603,SMT	R29,R31
271071249111	RES;2.49K,1/16W,1%,0603,SMT	R659
271034278301	RES;2.7,1/2W,5%,2010,SMT	R515
271071272101	RES;2.7K,1/16W,1%,0603,SMT	PR533,PR55
271071272301	RES;2.7K,1/16W,5%,0603,SMT	R38,R39
271071200101	RES;20,1/16W,1%,0603,SMT	R92
271071201103	RES;200,1/16W,1%,0603,SMT	R548,R549,R558,R560,R586,R604
271071204101	RES;200K,1/16W,1%,0603,SMT	PR41
271071203302	RES;20K,1/16W,5%,0603,SMT	R14,R45,R46,R49,R50,R52,R53
271071215211	RES;21.5K,1/16W,1%,0603,SMT	PR571
271071221301	RES;220,1/16W,5%,0603,SMT	R693

8640 N/B Maintenance

9. Spare Part List-30

Part Number	Description	Location(S)
271071224301	RES;220K ,1/16W,5% ,0603,SMT	R14,R20
271071237311	RES;237K ,1/16W,1% ,0603,SMT	PR13
271071267211	RES;26.7K,1/16W,1% ,0603,SMT	PR14
271071270301	RES;27 ,1/16W,5% ,0603,SMT	R603
271071274301	RES;270K ,1/16W,5% ,0603,SMT	R37
271071294311	RES;294K ,1/16W,1% ,0603,SMT	R813
271071205101	RES;2M ,1/16W,1% ,0603,SMT	R11
271071301211	RES;30.1K,1/16W,1% ,0603,SMT	PR47
271071301011	RES;301 ,1/16W,1% ,0603,SMT	R88
271071301311	RES;301K ,1/16W,1% ,0603,SMT	PR576
271071330302	RES;33 ,1/16W,5% ,0603,SMT	PR52,R111,R21,R644,R652,R654,
271071333101	RES;33K ,1/16W,1% ,0603,SMT	R10,R11,R23,R556
271071374211	RES;37.4K,1/16W,1% ,0603,SMT	PR510
271071390302	RES;39 ,1/16W,5% ,0603,SMT	R610
271002472301	RES;4.7K ,1/10W,5% ,0805,SMT	PR513,PR514
271071472101	RES;4.7K ,1/16W,1% ,0603,SMT	PR16,PR46,R116,R162,R196,R198
271071472302	RES;4.7K ,1/16W,5% ,0603,SMT	R4,R64,R66,R7,R74,R75,R77,R79,
271071499111	RES;4.99K,1/16W,1% ,0603,SMT	PR58,R638
271071402311	RES;402K ,1/16W,1% ,0603,SMT	PR555
271071411102	RES;412,1/16W,1% ,0603,SMT	R135
271071442311	RES;442K,1/16W,1% ,0603,SMT	PR15
271071471101	RES;470 ,1/16W,1% ,0603,SMT	R21,23,27
271071474301	RES;470K ,1/16W,5% ,0603,SMT	PR1,PR2,PR523,PR528,PR547,PR
271071475011	RES;475 ,1/16W,1% ,0603,SMT	R195,R677,R725
271071473101	RES;47K ,1/16W,1% ,0603,SMT	PR501

Part Number	Description	Location(S)
271071473301	RES;47K ,1/16W,5% ,0603,SMT	PR503,PR560,R13,R187,R22,R562
271071487211	RES;48.7K,1/16W,1% ,0603,SMT	R7
271071499211	RES;49.9K,1/16W,1% ,0603,SMT	PR536
271071518301	RES;5.1 ,1/16W,5% ,0603,SMT	PR51
271002515302	RES;5.1M ,1/8W ,5% ,0805,SMT,PRC	R10
271071562301	RES;5.6K ,1/16W,5% ,0603,SMT	R28
271071510101	RES;51 ,1/16W,1% ,0603,SMT	R108,R59,R611,R619,R645,R648,
271071560301	RES;56 ,1/16W,5% ,0603,SMT	R140,R142,R625,R626,R639,R640
271071563101	RES;56K ,1/16W,1% ,0603,SMT	PR536
271071563302	RES;56K ,1/16W,5% ,0603,SMT	PR1,R201
271071604111	RES;6.04K,1/16W,1% ,0603,SMT	R80
271071604811	RES;60.4 ,1/16W,1% ,0603,SMT	R156
271071620102	RES;62,1/16W,1% ,0603,SMT	R550,R551,R557,R559,R576,R668
271071631101	RES;63.4,1/16W,1% ,0603,SMT	R84
271071681101	RES;680 ,1/16W,1% ,0603,SMT	R606
271071683101	RES;68K ,1/16W,1% ,0603,SMT	R12
271071698311	RES;698K ,1/16W,1% ,0603,SMT	R509
271071750101	RES;75 ,1/16W,1% ,0603,SMT	R511,R512,R513,R514,R585,R695
271071750311	RES;750K,1/16W,1% ,0603,SMT	PR10,PR556
271071887211	RES;88.7K,1/16W,1% ,0603,SMT	R6
271071909101	RES;9.09K,1/16W,1% ,0603,SMT	PR18,PR553
271071909011	RES;909 ,1/16W,1% ,0603,SMT	R14
271611000301	RP;0*4 ,8P ,1/16W,5% ,0612,SMT	RP502,RP503,RP504,RP506,RP52
271571000301	RP;0*8 ,16P ,1/16W,5% ,1606,SM	RP17,RP18,RP19,RP524,RP525,R
271571100301	RP;10*8 ,16P ,1/16W,5% ,1606,SM	RP12,RP13,RP14,RP15,RP16,RP2

8640 N/B Maintenance

9. Spare Part List-31

Part Number	Description	Location(S)
271611102301	RP;1K*4 ,8P ,1/16W,5% ,0612,SMT	RP1,RP529
271621102302	RP;1K*8 ,10P,1/32W,5% ,1206,SMT	RP4
271611330301	RP;33*4 ,8P ,1/16W,5% ,0612,SMT	RP11
271571330301	RP;33*8 ,16P ,1/16W,5% ,1606,SM	RP530,RP531,RP532,RP533,RP534
271611472301	RP;4.7K*4,8P ,1/16W,5% ,0612,SMT	RP528
271621472303	RP;4.7K*8,10P,1/16W,5% ,1206,SMT	RP26
271621471301	RP;470*4,8P,1/16W,5%,1206,SMT	RP8
271621473301	RP;47K*8 ,10P,1/16W,5% ,1206,SMT	RP10,RP521,RP522
271611750301	RP;75*4 ,8P ,1/16W,5% ,0612,SMT	RP501,RP505
271611822301	RP;8.2K*4,8P ,1/16W,5% ,0612,SMT	RP519
271621822302	RP;8.2K*8,10P,1/32W,5% ,1206,SMT	RP511,RP512,RP520
271621824301	RP;820K*4,8P,1/32W,5%,1206,SMT	RP1,RP2
345503400501	RUBBER;3MM,ROUND,8175	
345673400003	RUBBER;DOWN,LCD,8640S	
345672300001	RUBBER;LCD,UP,MANGUSTA	
565167340001	S/W;CD ROM,SYSTEM DRIVER,8640G/P	
565167340003	S/W;CD ROM,SYSTEM DRIVER,8640S	
565167000013	S/W;CD-ROM,B'S RECORDER GOLD2.0	
340673400009	SCREW ASSY;CPU,8640S	
371102011502	SCREW;M2L15,FLT(+),NIW/NLK	
340673420003	SHIELDING ASSY;TOP,8640P	
340673400012	SHIELDING ASSY;TOP,8640S	
333020000002	SHRINK TUBE;600V,105°C,D0.8*11.5	
333050000107	SHRINK TUBE;UL,600V,105°C,ID2.5*	
561860000022	SINGLE PAGE;GN,NOTE FOR BATTERY&	

Part Number	Description	Location(S)
361400003021	SOLDER CREAM;NOCLEAN,P4020870980	
600100010010	SOLDER WIRE;63/37,0.5,CM,N/C,PRC	
370102610302	SPC-SCREW;M2.6L3,NIB,K-HD,NYLOK	
370102610405	SPC-SCREW;M2.6L4,NIW,K-HD,t=0.8,	
370102630601	SPC-SCREW;M2.6L6,HDt0.5,NIWNLK	
370102610805	SPC-SCREW;M2.6L8,K-HD,NIW/NLK	
370102010205	SPC-SCREW;M2L2(t0.3),N/W/WLK	
370102010256	SPC-SCREW;M2L2.5,K-HD(t0.5) NLK,	
370102030301	SPC-SCREW;M2L3,K-HD,1,NIB/NLK	
370102010303	SPC-SCREW;M2L3,NIW,K-HD(+),NYLOK	
370102030302	SPC-SCREW;M2L9,NIB,K-HD,NYLOK	
370103010405	SPC-SCREW;M3L4,NIW,K-HD,T0.3	
370103010604	SPC-SCREW;M3L6,NIB,K-HD,t0.8,NYL	
340673400006	SPEAKER ASSY;BOX ,8640S	
345673410022	SPONGE;2ND-FAN,25*10*4.15,8640G	
341672400005	SPRING;HDD,SCORPIO	
377244010002	ST ANDOFF;#4-40DP3.5H5L5.5,NIW	
341668300008	ST ANDOFF;MDC MODEM,NLK,HOPE	
297004010001	SW;PUSH BUTTOM,5P,SPST,12VDC,50m	SW2,SW3
225600000061	T APE;ADHENSIVE,DOUBLE-FACE,W20,U	
225600000054	T APE;INSULATING,POLYESTER FILM,1	
340673420002	THERMAL ASSY;8640P	
340673400010	THERMAL ASSY;8640S	
345673400007	THERMAL PAD;302LV,8640S	
345673400005	THERMAL PAD;MOS,CHOKE,8640S	

8640 N/B Maintenance

9. Spare Part List-32

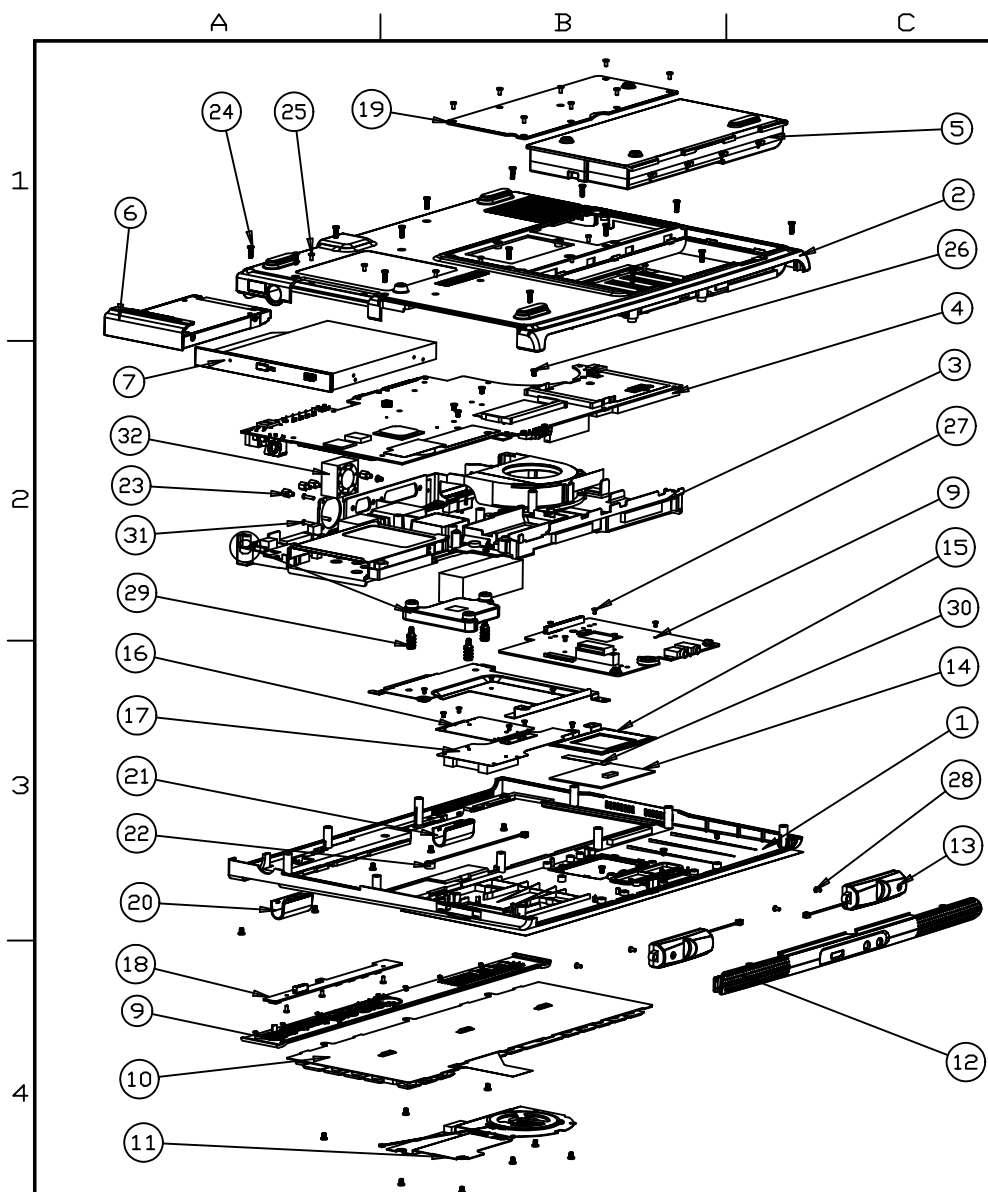
Part Number	Description	Location(S)
345673400004	THERMAL PAD;MOS,POWER,8640S	
345673400008	THERMAL PAD;VGA,8640S	
310111103012	THERMISTOR;10K,1%,RA,0603,1P	RT1
310111103017	THERMISTOR;10K,1%,RA,DISK,103AT-	
442110500012	TOUCH PAD MODULE;TM41PUG311-2	
288227002001	TRANS;2N7002LT1,N-CHANNEL FET	PQ1,PQ501,PQ504,PQ509,PQ510
628820014401	TRANS;DTA144EKA,PNP,100MA,50V,SO	Q4,Q5
288200144001	TRANS;DTC144WK,NPN,SOT-23,SMT	PQ508,PQ517,Q518
288204835002	TRANS;FDS4835,PMOS,8.8A/30V,20MO	PQ502,PQ503,PU23,PU515,PU51
288206680003	TRANS;FDS6680S,N-MOSFET,.017OHM,	PU21,PU511
288207764001	TRANS;FDS7764A,N-MOS,.0075OHM,SO	PU2,PU514
288200302001	TRANS;FDV302P,P-CHANNEL,SOT23	Q2,Q4,Q5
288203904010	TRANS;MMBT3904L,NPN,Tr35NS,TO236	Q508,Q7,Q8
288203906002	TRANS;MMBT3906L,40V,200mA,SOT23,	Q1
288203906018	TRANS;MMBT3906L,PNP,Tr35NS,TO236	Q507
328202003001	TRANS;MTD20N03HDL,N-MOSFET,2A,30	PU503
288202302001	TRANS;SI2302DS,N-MOSFET,SOT-23	Q19
288202303001	TRANS;SI2303DS,P-MOSFET,SOT-23	PQ505
288104362001	TRANS;SI4362DY,N-MOSFET,S08	PU12,PU15,PU506,PU508
288204410001	TRANS;SI4410DY,N-MOSFET,.02OHM,S	PU19
288204532001	TRANS;SI4532DY,N&P-MOSFET,S08,PR	U2
288204800001	TRANS;SI4800DY,N-MOS,.0185OHM,SO	PU10,PU3,PU4,PU501,PU509,PU
288204816001	TRANS;SI4816DY,2 N-MOSFET,30V,SO	PU2
288204832001	TRANS;SI4832DY,N-MOSFET,.028OHM,	PU5
288204892001	TRANS;SI4892DY,N-MOSFET,S08	PU1,PU11,PU14,PU18,PU505,PU

Part Number	Description	Location(S)
288209410001	TRANS;SI9410DY,N-MOSFET,.04OHM,S	Q3
288208107001	TRANS;TPC8107,13A/30V,P-MOSFET,S	Q2,Q2A,Q2B,Q3,Q3A,Q3B
273001050028	TRANSFORMER;10/100 BASE,LF-H41S,	U5
373101712351	T-SCREW;B,M1.7,L2.35,K-HD,2,NIB	
373102010601	T-SCREW;B,M2,L6,K-HD,NIB	
373101713502	T-SCREW;B,M1.7L3.5,HD04t0.25,0,B	
270140000003	VARISTOR;280V,5.6X3.8MM,TVB280-0	SI
311821002101	VR;10K,CF,.02W,30%,RVR16H-013-B1	VR501
345673410023	WASHER;2ND-FAN,5*2.5,0.35,8640G	
441673410002	WIRE ASSY;ANTENNA,8640G/P/M	
421671600010	WIRE ASSY;INVERT,8175	
421673410002	WIRE ASSY;L,ANTENNA,8640G	
421673420005	WIRE ASSY;LCD,HANN,15",XGA,8640P	
421673400001	WIRE ASSY;LCD,QDI,14",8640S	
332110020076	WIRE; #20,UL1007,200MM,RED,PRC	
332110020075	WIRE; #20,UL1007,75MM,RED,SO,LID	
332110020077	WIRE;#20,UL1007,124MM,RED,PRC	
332110020079	WIRE;#20,UL1007,57MM,BROWN,SO,LI	
332110020070	WIRE;#20,UL1007,74MM,BLACK,PRC	
332110028113	WIRE;#28,UL1061,114MM,YELLOW,PRC	
332110028112	WIRE;#28,UL1061,155MM,ORANGE,PRC	
332110028114	WIRE;#28,UL1061,58MM,BLUE,PRC	
332110028108	WIRE;#28,UL1061,86MM,BLACK,PRC	
273001050062	XSFORMER;CI8.5,SIT16260,16/2600T	T1
274011431408	XTAL;14.318M,50PPM,32PF,7*5,4P,S	X503

8640 N/B Maintenance

9. Spare Part List-33

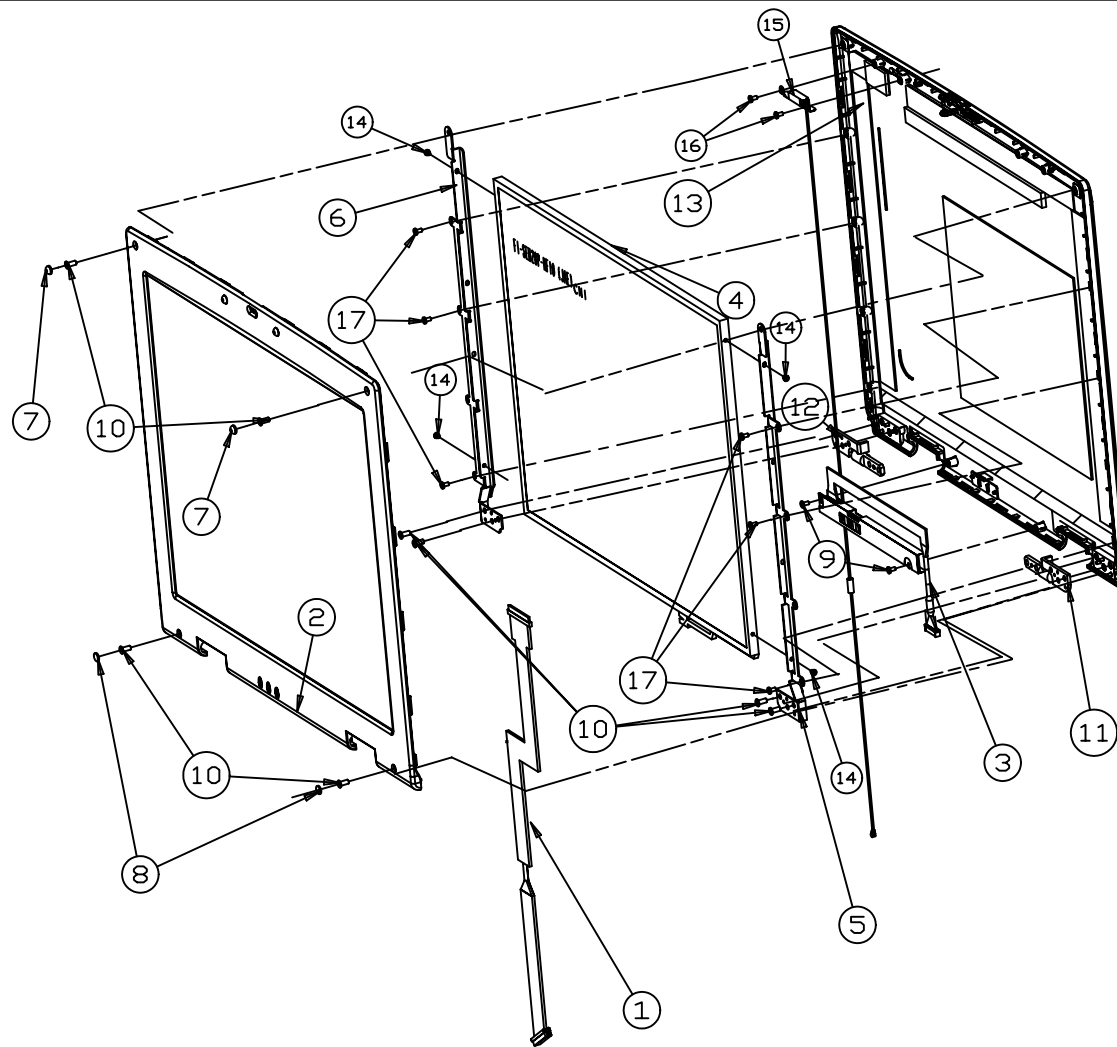
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ITEM	PART NO	DESCRIPTION	Q'TY	TYPE	REMARK
1	340673410001	COVER ASSY;8640G	1	ASSEMBLY	
2	340673400004	HOUSING ASSY;8640S	1	ASSEMBLY	
3	340673400012	SHIELDING ASSY;TOP,8640S	1	ASSEMBLY	
4	411673430001	PWA;PWA-8640D,MOTHER BD	1	ASSEMBLY	
5	441999900069	BATT ASSY OPTION;LI,12-CELL,8640G/P	1	ASSEMBLY	
6	523467341001	HDD ASSY;DK23DA-40,HITACHI,8640G	1	ASSEMBLY	
7	523467340007	DVD COMBO ASSY;MATSUSHITA,8640	1	ASSEMBLY	
8	340673400010	THERMAL ASSY;8640S	1	ASSEMBLY	
9	340673400003	COVER ASSY;KB,8640S	1	ASSEMBLY	
10	531020237483	KBD;88,GR,K010718V1,8640,DARK BLUE	1	PART	
11	340673400001	PLATE ASSY;K/B,8640S	1	ASSEMBLY	
12	344673400009	COVER;SPEAKER,8640S	1	PART	
13	340673400006	SPEAKER ASSY;BOX,8640S	1	ASSEMBLY	
14	442110500012	TOUCH PAD MODULE;TM41PUG311-2	1	PART	
15	340673400013	BRACKET ASSY;T/P,8640S	1	ASSEMBLY	
16	342673410001	BRACKET;CARD-READER,8640G	1	PART	
17	421673410003	FPC ASSY;CARD-READER,8640G	1	ASSEMBLY	
18	411673400005	PWA;PWA-8640,ESB/LED BD	1	ASSEMBLY	
19	340673400008	COVER ASSY;MINI PCI,8640S	1	ASSEMBLY	
20	344673400025	COVER;HINGE R,8640S	1	PART	
21	344673400016	COVER;HINGE L,8640S	1	PART	
22	421673400003	MICROPHONE ASSY;8640S	1	ASSEMBLY	
23	377244010002	STANDOFF;#4-40DP3.5H5L5.5,NIW	4	PART	
24	370102610805	SPC-SCREW;M2.6L8,K-HD,NIW/NLK	15	PART	
25	370102010405	SPC-SCREW;M2L4,NIW,K-HD(+),NYLOK	19	PART	
26	370102610405	SPC-SCREW;M2.6L4,NIW,K-HD,t=0.8,NLK	22	PART	
27	370102010308	SPC-SCREW;M2L3,NIB,K-HD,HDt0.5,NLK	16	PART	
28	373102010601	T-SCREW;B,M2,L6,K-HD,NIB	4	PART	
29	340673400009	SCREW ASSY;CPU,8640S	3	ASSEMBLY	
30	422666200001	FFC ASSY;TOUCH PAD,CASE KIT,NV	1	PART	
31	371102011502	SCREW;M2L15,FLT(+),NIW/NLK	3	PART	
32	340671200020	FAN ASSY;8170	1	ASSEMBLY	

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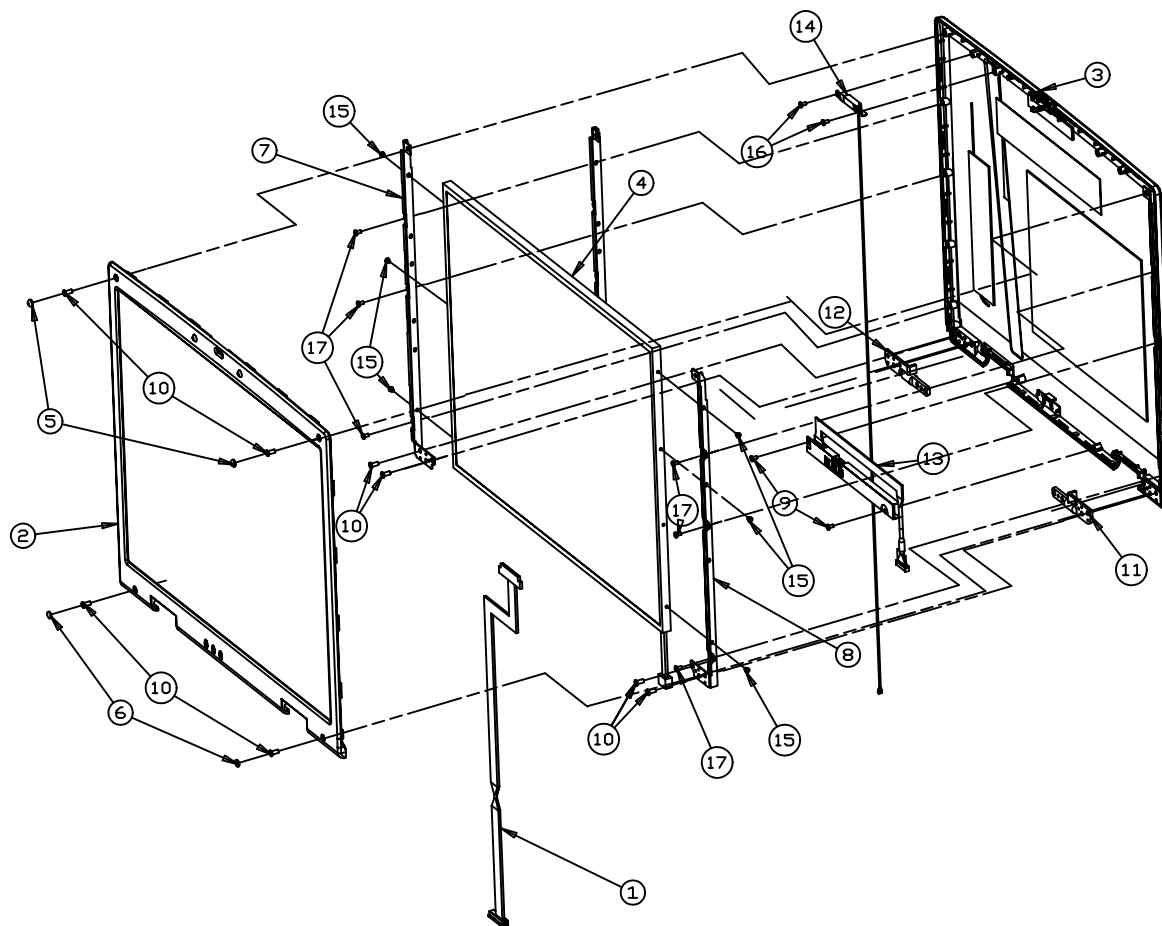


SCALE 0.300

ITEM	PART NO	DESCRIPTION	Q'TY	TYPE	REMARK
1	421673400001	WIRE ASSY;LCD,QDI,14",8640S	1	ASSEMBLY	
2	340673400002	COVER ASSY;LCD,14",8640S	1	ASSEMBLY	
3	421671600010	WIRE ASSY;INVERT,8175	1	ASSEMBLY	
4	413000020322	LCD;QDI;41X14.1H03,TFT,14",LCDS,XGA,QDI-MP01	1	PART	
5	342673400005	BRACKET;R,LCD,14",8640S	1	PART	
6	342673400006	BRACKET;L,LCD,14",8640S	1	PART	
7	345672300001	RUBBER;LCD,UP,MANGUSTA	2	PART	
8	345673400003	RUBBER;DOWN,LCD,8640S	2	PART	
9	370102010405	SPC-SCREW;M2L4,NIW,K-HD(+),NYLOK	2	PART	
10	370102630601	SPC-SCREW;M2.6L6,HD+0.5,NIWNLK	8	PART	
11	340671600018	HINGE;R,14",8175	1	PART	
12	340671600020	HINGE;L,14",8175	1	PART	
13	340673410003	HOUSING ASSY;QDI,LCD 14",8640G	1	ASSEMBLY	
14	370102010256	SPC-SCREW;M2L2.5,K-HD(+0.5)NLK,NIW	4	PART	
15	421673410002	WIRE ASSY;ANTENNA,8640G/P/M	1	PART	OPTION
16	370102010405	SPC-SCREW;M2L4,NIW,K-HD(+),NYLOK	2	PART	OPTION
17	370102010308	SPC-SCREW;M2L3,NIB,K-HD,HD+0.5,NLK	6	PART	

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MITAC International Corp.

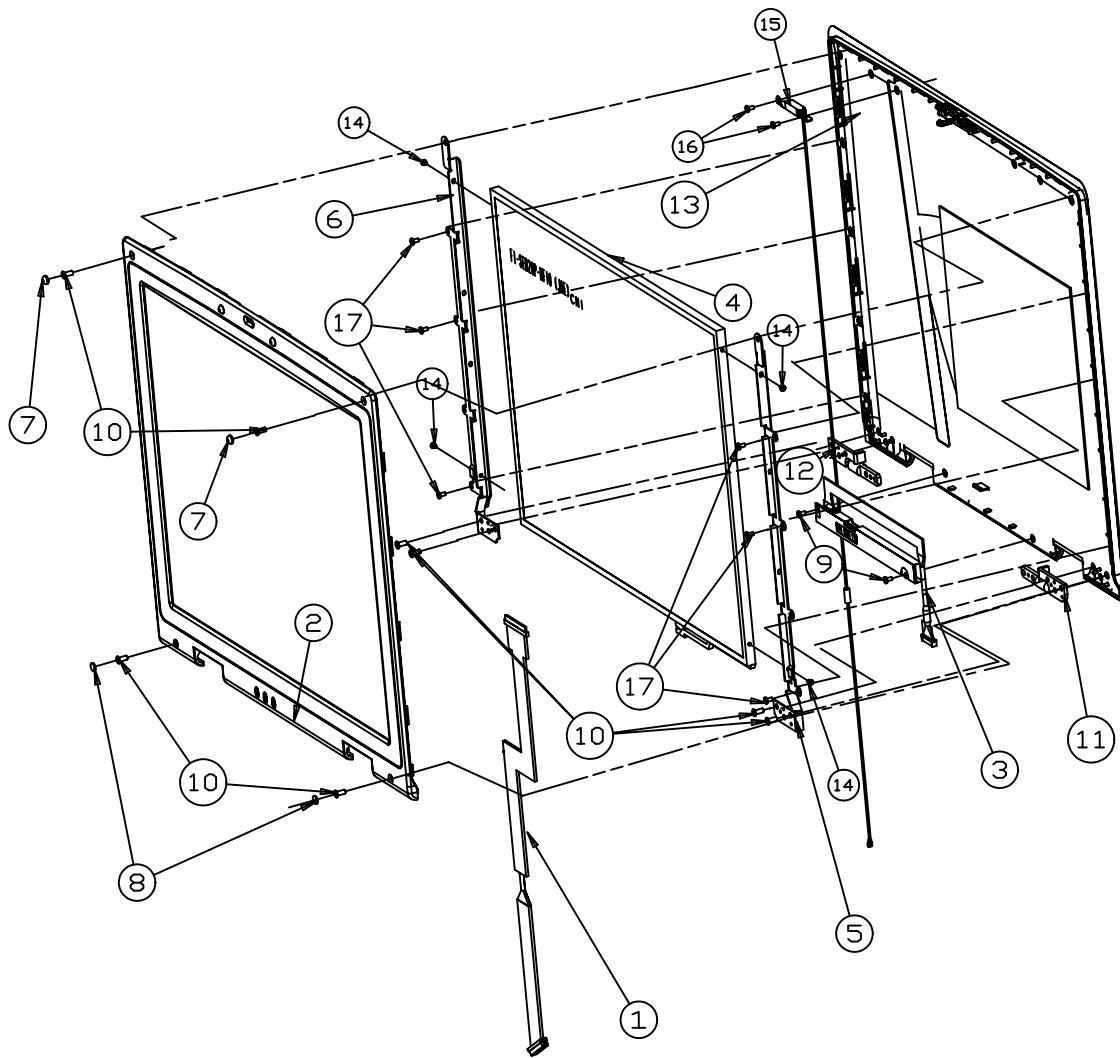


SCALE 0.250

ITEM	PART NO	DESCRIPTION	Q'TY	TYPE	REMARK
1	421673420005	WIRE ASSY;LCD,HANN,15",XGA,8640P	1	ASSEMBLY	
2	340673400016	COVER ASSY;LCD,15",8640S	1	ASSEMBLY	
3	340673400030	HOUSING ASSY;HANNSTAR;LCD 15",8640S	1	ASSEMBLY	
4	413000020307	HSD150PX11-B	1	ASSEMBLY	
5	345672300001	RUBBER;LCD,UP,MANGUSTA	2	PART	
6	345673400003	RUBBER;DOWN,LCD,8640S	2	PART	
7	342673400009	BRACKET;LCD,L,15",8640	1	PART	
8	342673400008	BRACKET;LCD,R,15",8640	1	PART	
9	370102010405	SPC-SCREW;M2.4,NIV,K-HDK(+),NYLOK	2	PART	
10	370102630601	SPC-SCREW;M2.6,L6,HD±0.5,NIVNLK	8	PART	
11	340671600017	HINGE;R,15",8175	1	PART	
12	340671600019	HINGE;L,15",8175	1	PART	
13	421671600010	WIRE ASSY;INVERT,8175	1	ASSEMBLY	
14	441673410002	WIRE ASSY;ANTENNA,8640G/P/M	1	ASSEMBLY	OPTION
15	370102010256	SPC-SCREW;M2.5,K-HDK±0.5,NLK,NIV	6	PART	
16	370102010405	SPC-SCREW;M2.4,NIV,K-HDK(+),NYLOK	2	PART	OPTION
17	370102010308	SPC-SCREW;M2.3,NIB,K-HD,HD±0.5,NLK	6	PART	

					//	TOL± RANGE										DATE	03-Jul-02	MATERIAL	SEE NOTES	TREATMENT		REMARK	
					//		M1	M2	S1	S2	P1	P2	C	B	UNIT	MM	SCALE	0.067	DRAWING NAME	LCD ASSY;HANNSTAR,XGA,15",8640			
					//	0~6	.05	0.1	.15	0.2	.05	0.1	0.5	.15	DRAWN	DESIGNED	CHECKED	APPROVED	MATERIAL NO.	AD	441673400012	R00A	
					//	6~30	0.1	0.2	.15	.25	0.1	.15	1	.15									
					//	30~80	.15	.25	0.2	0.3	0.2	0.4	2	.25									
					//	80~180	.15	0.3	.25	.45	0.4	0.8	3	.25									
					//	180~315	0.2	0.5	0.4	0.6	0.6	1.2	3	0.3									
ITEM	CONTENTS OF CHANGE	RVS	CHK	APV	M/D/Y	315~800	0.3	0.8	0.7	1.1	0.8	1.5	4	0.5					MITAC International Corp.				

MITAC International Corp.

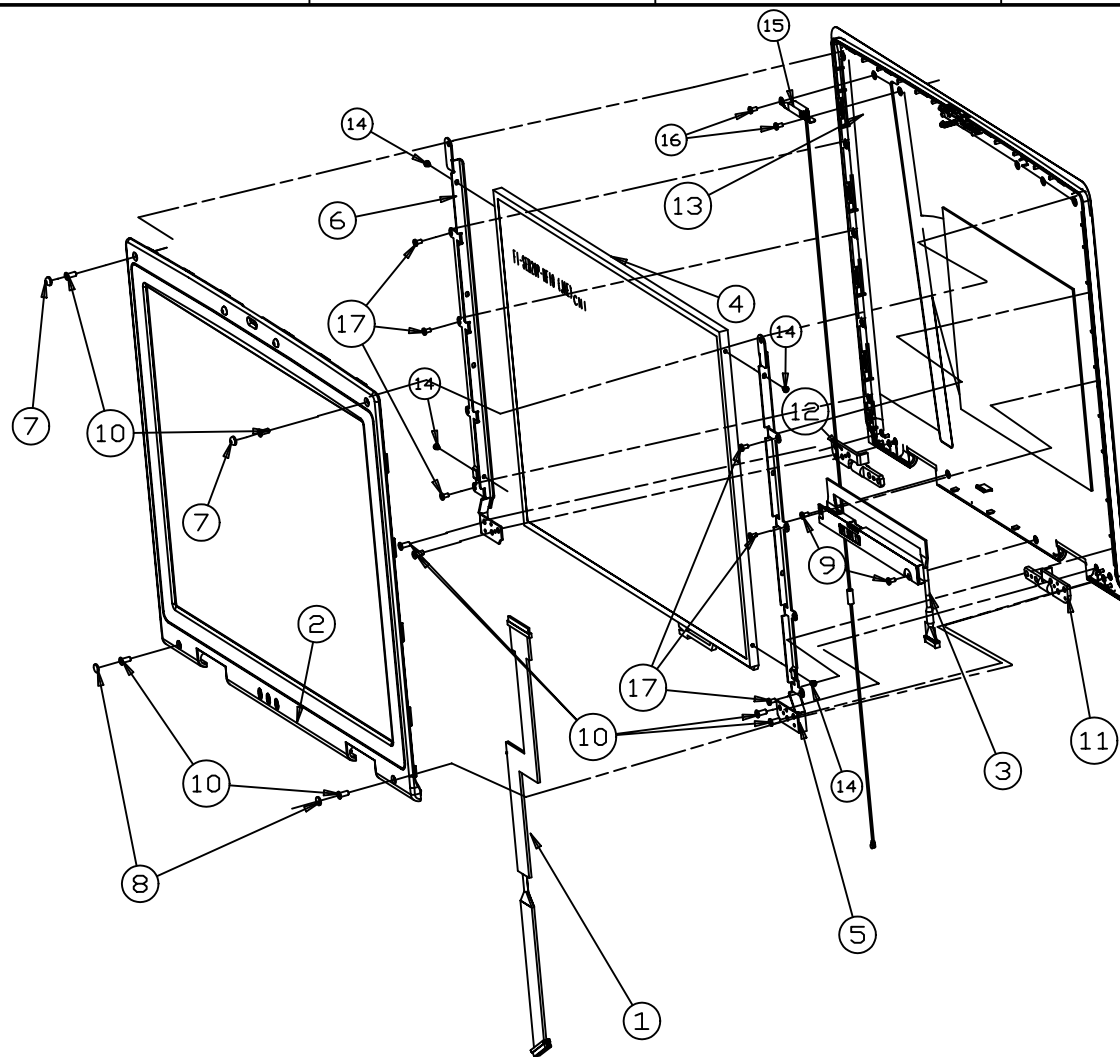


SCALE 0.300

ITEM	PART NO	DESCRIPTION	Q'TY	TYPE	REMARK
1	421673400001	WIRE ASSY;LCD,QDI,14",8640S	1	ASSEMBLY	
2	340673440006	COVER ASSY;LCD,14",8640M	1	ASSEMBLY	
3	421671600010	WIRE ASSY;INVERT,8175	1	ASSEMBLY	
4	413000020322	LCD;QDI141X1LH03,TFT,14",LCDS,XGA,QDI-MP01	1	PART	
5	342673400005	BRACKET;R,LCD,14",8640S	1	PART	
6	342673400006	BRACKET;L,LCD,14",8640S	1	PART	
7	345672300001	RUBBER;LCD,UP,MANGUSTA	2	PART	
8	345673400003	RUBBER;DOWN,LCD,8640S	2	PART	
9	370102010405	SPC-SCREW;M2L4,NIW,K-HD(+),NYLOK	2	PART	
10	370102630601	SPC-SCREW;M2.6L6,HD+0.5,NIWNLK	8	PART	
11	340671600018	HINGE;R,14",8175	1	PART	
12	340671600020	HINGE;L,14",8175	1	PART	
13	340673440016	HOUSING ASSY;QDI,LCD 14",8640M	1	ASSEMBLY	
14	370102010256	SPC-SCREW;M2L2.5,K-HD(+0.5)NLK,NIW	4	PART	
15	421673410002	WIRE ASSY;ANTENNA,8640G/P/M	1	PART	OPTION
16	370102010405	SPC-SCREW;M2L4,NIW,K-HD(+),NYLOK	2	PART	OPTION
17	370102010308	SPC-SCREW;M2L3,NIB,K-HD,HD+0.5,NLK	6	PART	

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MITAC International Corp.



SCALE 0.300

ITEM	PART NO	DESCRIPTION	Q'TY	TYPE	REMARK
1	421673400001	WIRE ASSY;LCD,QDI,14",8640S	1	ASSEMBLY	
2	340674600006	COVER ASSY;LCD,14",CAIMAN	1	ASSEMBLY	
3	421671600010	WIRE ASSY;INVERT,8175	1	ASSEMBLY	
4	413000020322	LCD;QDI141X1LH03,TFT,14",LCDS,XGA,QDI-MP01	1	PART	
5	342673400005	BRACKET;R,LCD,14",8640S	1	PART	
6	342673400006	BRACKET;L,LCD,14",8640S	1	PART	
7	345672300001	RUBBER;LCD,UP,MANGUSTA	2	PART	
8	345673400003	RUBBER;DOWN,LCD,8640S	2	PART	
9	370102010405	SPC-SCREW;M2L4,NIW,K-HD(+),NYLOK	2	PART	
10	370102630601	SPC-SCREW;M2.6L6,HD+0.5,NIWNLK	8	PART	
11	340671600018	HINGE;R,14",8175	1	PART	
12	340671600020	HINGE;L,14",8175	1	PART	
13	340674600025	HOUSING ASSY;QDI,LCD 14",CAIMAN	1	ASSEMBLY	
14	370102010256	SPC-SCREW;M2L2.5,K-HD(+0.5)NLK,NIW	4	PART	
15	421673410002	WIRE ASSY;ANTENNA,8640G/P/M	1	PART	OPTION
16	370102010405	SPC-SCREW;M2L4,NIW,K-HD(+),NYLOK	2	PART	OPTION
17	370102010308	SPC-SCREW;M2L3,NIB,K-HD+0.5,NLK	6	PART	

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MITAC International Corp.

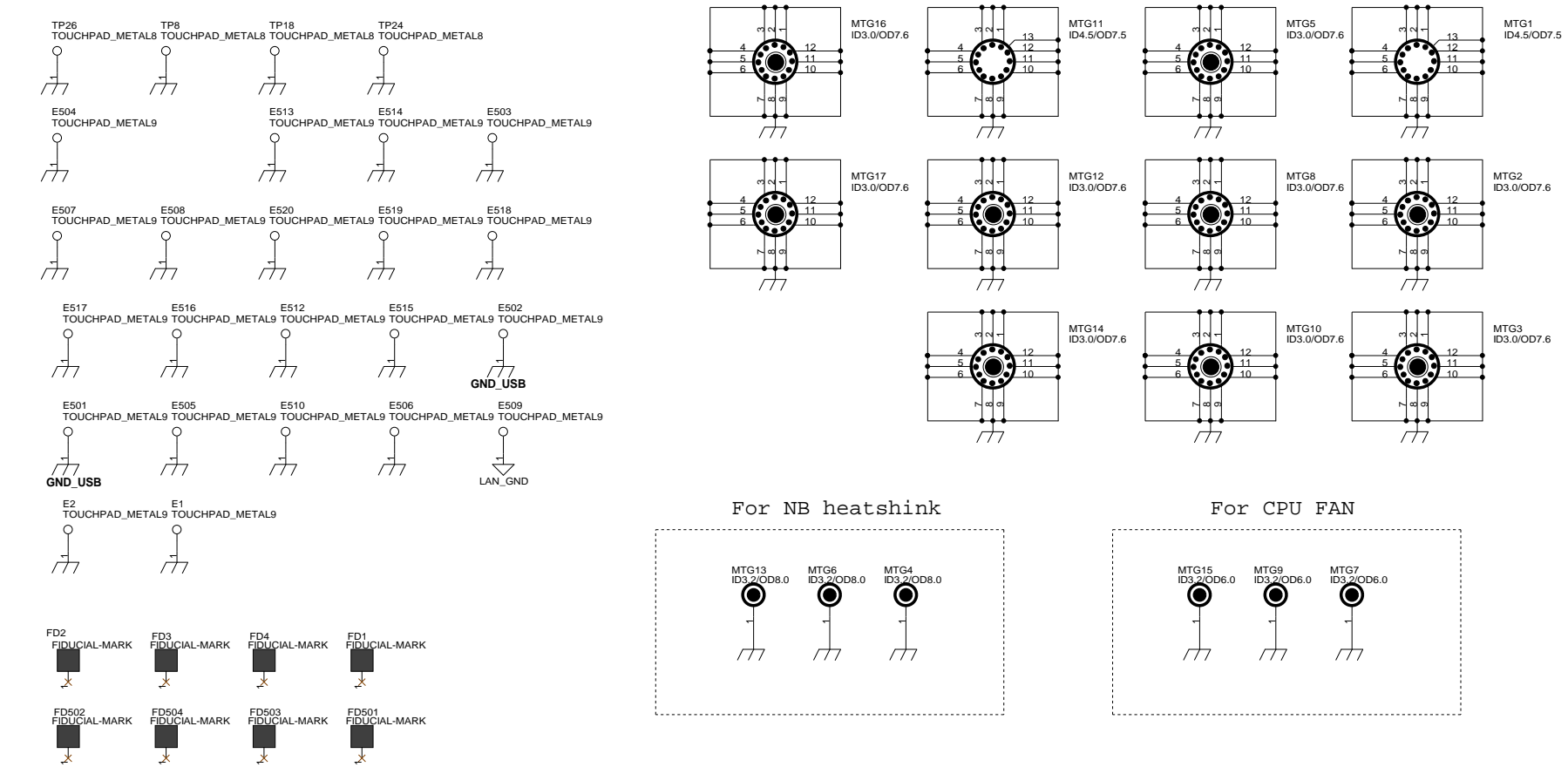
MODEL : 8640

Contexts

Revision 02

Title	Page
COVER SHEET & SCREW HOLE	1
System Block Diagram	2
Power Block Diagram	3
P4-CPU (1/2)	4
P4-CPU (2/2)	5
SIS M650(1/3)	6
SIS M650(2/3)	7
SIS M650(3/3)	8
TV/LVDS ENCODER(SiS301LV/CH7019)	9
nVidia MAP17/31(1/2)	10
nVidia MAP17/31(1/2)	11
LCD & CRT Interface	12
Clock Generator/Buffer	13
DDR SO-DIMM	14
SIS962(1/3)	15
SIS962(2/3)	16
SIS962(3/3)	17
IDE Interface	18
Card Bus	19
PHY Of LAN & MDC	20
IEEE1394a/USB 2.0/Parallel Port	21
Super I/O & Flash ROM	22
MiNi-PCI & USB 2.0	23
Embeded Controller	24
Invter Conn. and +1.8VS/+1.5VS/+2.5V_DDR/VDD_MEM2.5	25
Battery Conn. & +5VA/+1.2VS/+3VA	26
Charger	27
CPU Core	28
+3V/+5V	29
DC Jack & +12VS/+5VS/+3VS	30
History	31

DRAW	DESIGN	CHECK	ISSUED



POWER STATES

STATE	VOTAGE	FULL ON	STR	STD	MEC-OFF	REMARK
SIGNAL						
-SUSB	-	HIGH	LOW	LOW	LOW	
-SUSC	-	HIGH	HIGH	LOW	LOW	
ADP	+19V	0	0	0	0	
BATTERY	+12V	0	0	0	0	
+VCC_RTC	+3.3V	0	0	0	0	
+VCC_CORE	+1.75V	0	0	X	X	
+1.8VS	+1.8V	0	X	X	X	
+1.8V	+1.8V	0	0	X	X	
+1.8VA	+1.8V	0	0	0	0	
+2.5V_DDR	+2.5V	0	0	X	X	
+3VS	+3.3V	0	X	X	X	
+3V	+3.3V	0	0	X	X	
+3VA	+3.3V	0	0	0	0	
+5VS	+5V	0	X	X	X	
+5V	+5V	0	0	X	X	
+5VA	+5V	0	0	0	0	
+12VS	+12V	0	X	X	X	
+12V	+12V	0	0	X	X	

IDSEL

IDSEL	CHIP
AD20	TI1410
AD21	MINI PCI
AD22	MINI PCI

BUS MASTER

REQ/GNT	CHIP
-REQ0/-GNT0	TI1410
-REQ2/-GNT2	MINI PCI
-REQ3/-GNT3	MINI PCI

PCIINT

PCIINT	CHIP
INTA#	SIS 650 / MAP17
INTB#	PCMCIA (TI1410)
INTC#	MINI PCI
INTD#	MINI PCI

Board Stackup-up

4.33 mil	PP 2116	COMP	1.79 mil
		GND	0.54 mil
4.92 mil	FR4	IN-1	0.54 mil
8.07 mil	PP 7628	IN-2	0.54 mil
4.72 mil	FR4	POWER	0.54 mil
8.07 mil	PP 7628	IN-3	0.54 mil
4.92 mil	FR4	GND	0.54 mil
4.33 mil	PP 2116	SOLDER	1.79 mil

Title

COVER SHEET & SCREW HOLD

Size

Document Number

8640

Rev

01

Date:

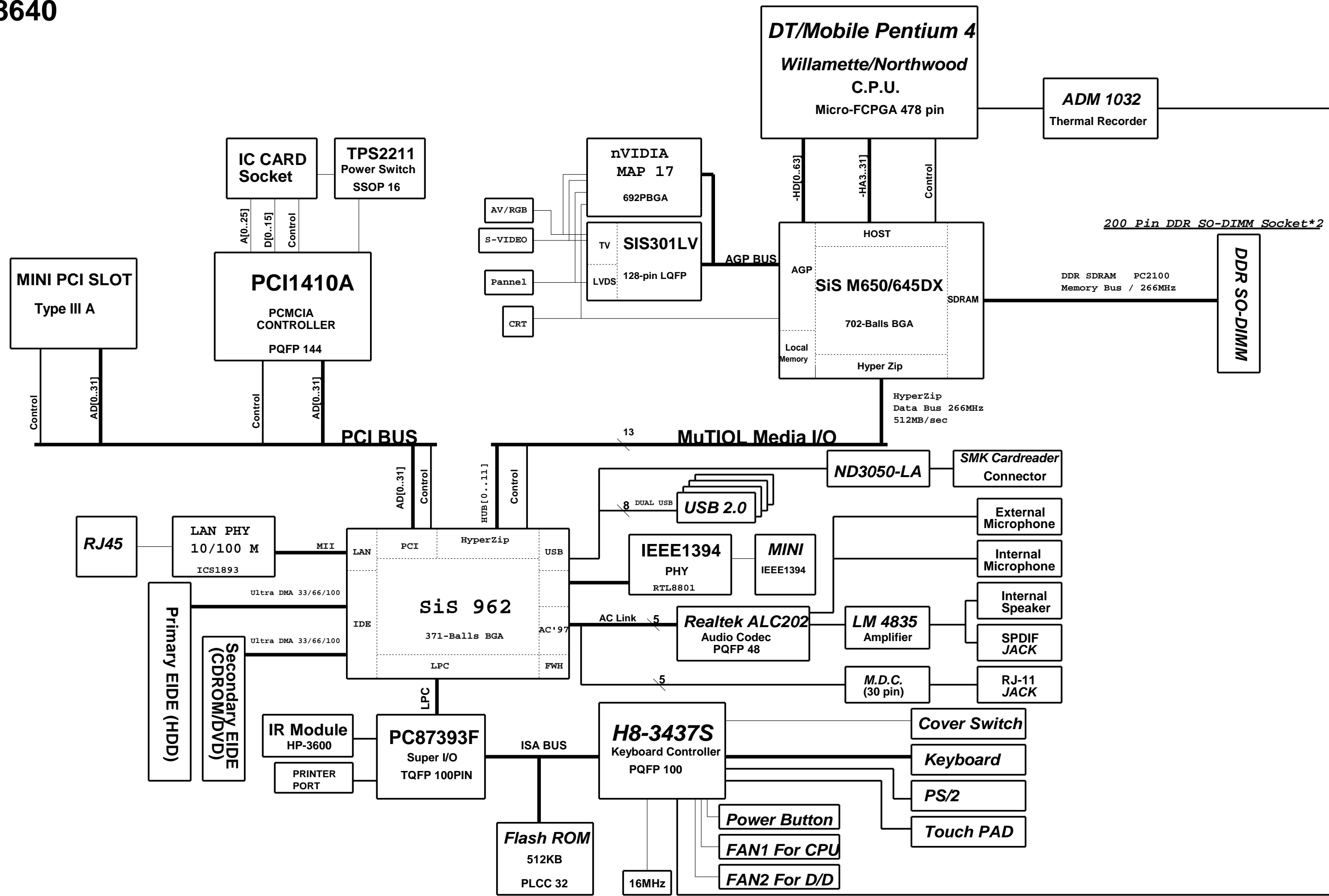
Wednesday, August 28, 2002

Sheet

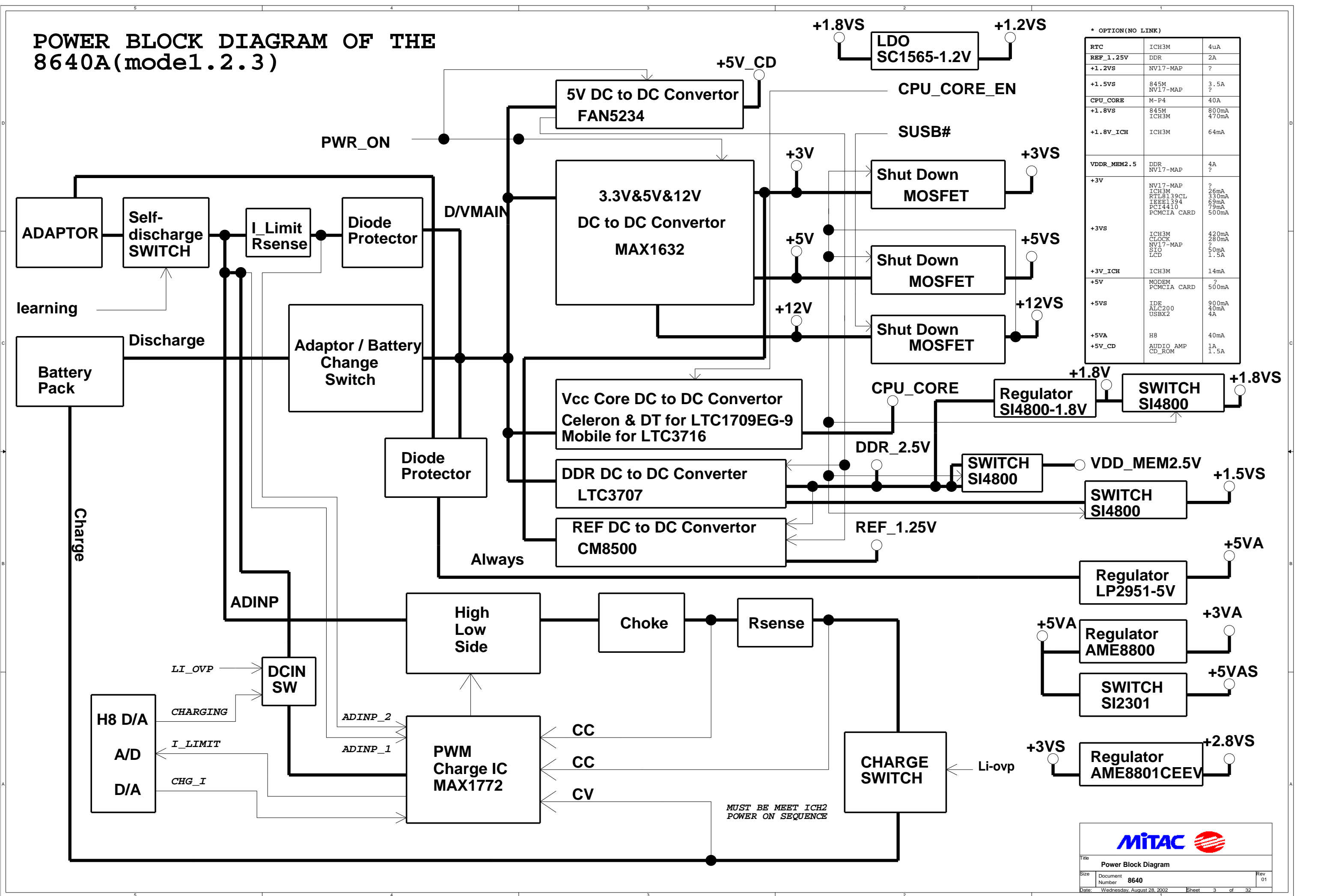
1

of

32



POWER BLOCK DIAGRAM OF THE 8640A(mode1.2.3)



* OPTION(NO LINK)

RTC	ICH3M	4uA
REF_1.25V	DDR	2A
+1.2VS	NV17-MAP	?
+1.5VS	845M NV17-MAP	3.5A
CPU_CORE	M-P4	40A
+1.8VS	845M ICH3M	800mA
+1.8V_ICH	ICH3M	64mA
VDDR_MEM2.5	DDR NV17-MAP	4A
+3V	NV17-MAP ICH3M FTLB139CL IEEB1394 PCI4410 PCMCIA CARD	? 26mA 330mA 69mA 79mA 500mA
+3VS	ICH3M CLOCK NV17-MAP SIO LCD	420mA 280mA 2 50mA 1.5A
+3V_ICH	ICH3M	14mA
+5V	MODEM PCMCIA CARD	? 500mA
+5VS	IDE ALC200 USBX2	900mA 40mA 4A
+5VA	H8	40mA
+5V_CD	AUDIO AMP CD_ROM	1A 1.5A

3



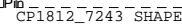
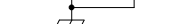
6

1[illegible]

A

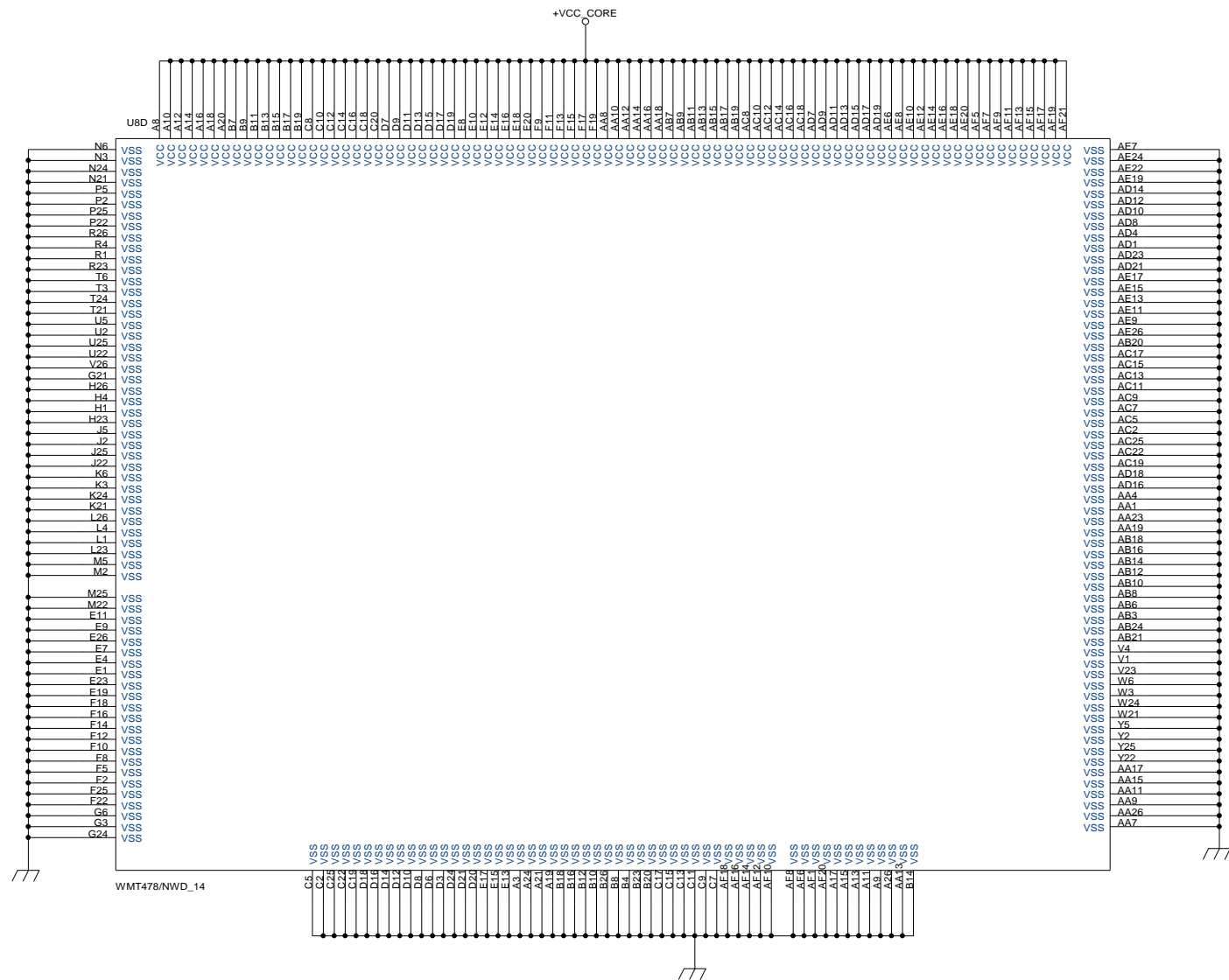


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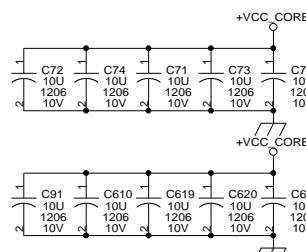

$$\begin{array}{c} 2 \\ | \\ \vdots \\ 2 \end{array}$$


A

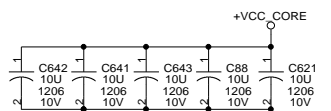
CPU (2/2)



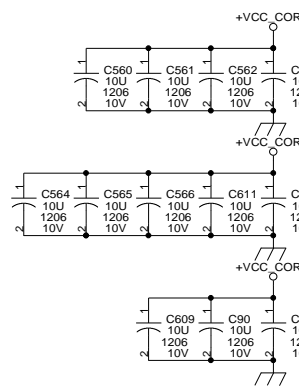
Place these caps at CPU solder side



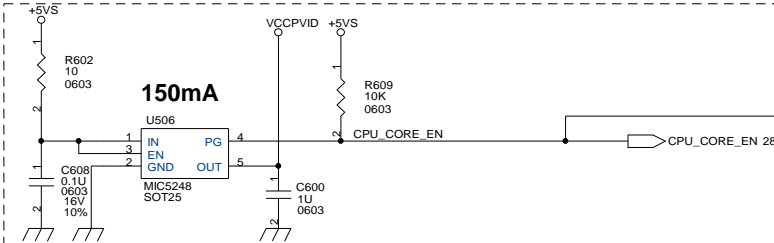
Place these caps at CPU north side



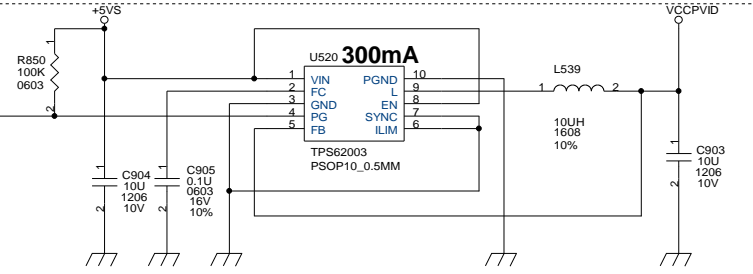
Place these caps at CPU south side



FOR D/T CPU VID



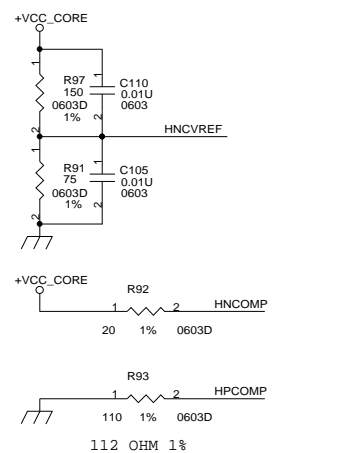
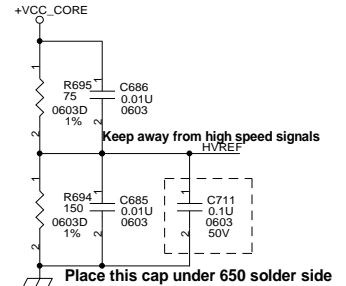
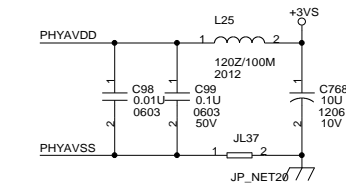
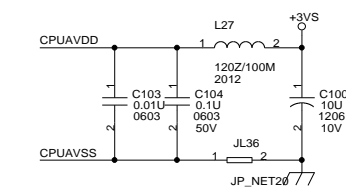
FOR Mobile CPU VID



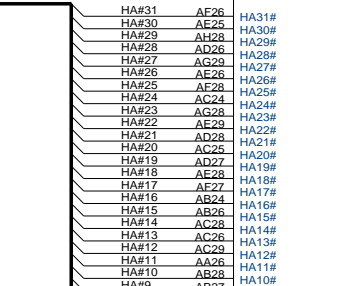
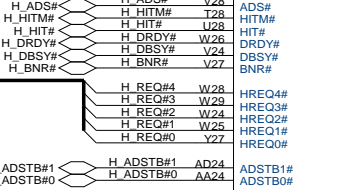
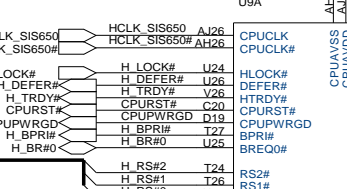
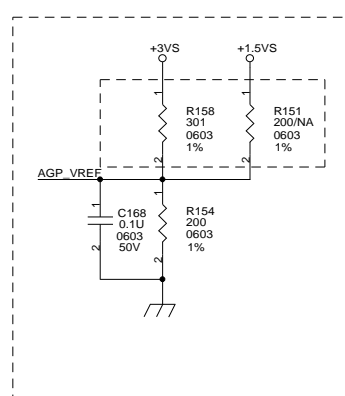
Title			
PENTIUM4 (2/2)			
Size	Document	Number	Rev
		8640	01
Date:	Wednesday, August 28, 2002	Sheet	5 of 32

SIS M651/645DX(1/3)

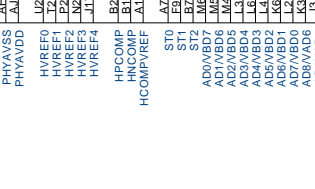
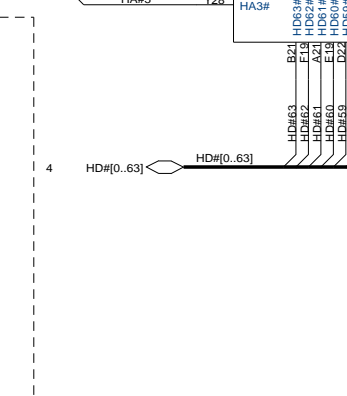
SiS651/646



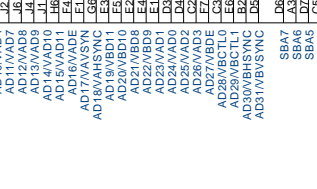
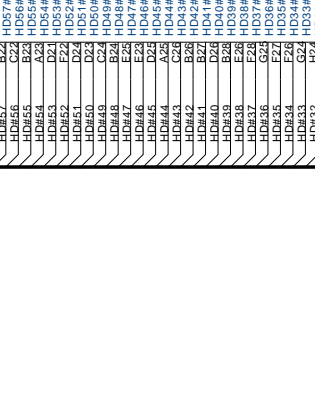
FOR M650 ONLY
M650 2X AGP mode VREF set from
0.39*VDDQ to 4.41VDDQ.



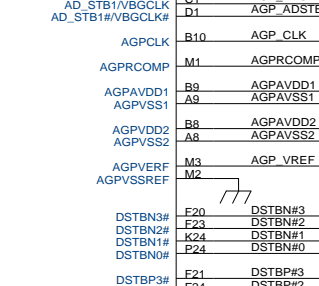
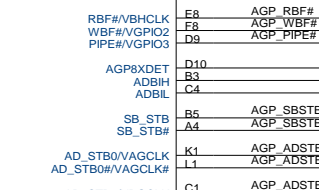
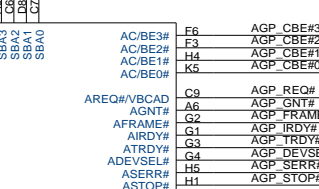
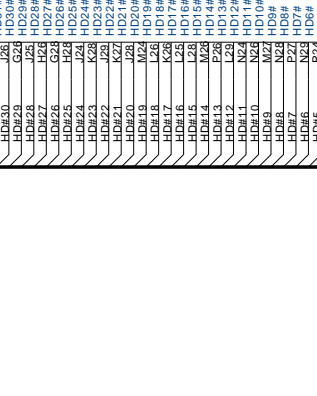
FOR M650 ONLY
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0.39*VDDQ to 4.41VDDQ.



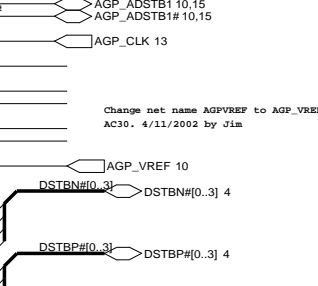
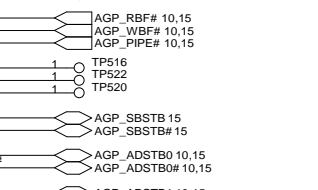
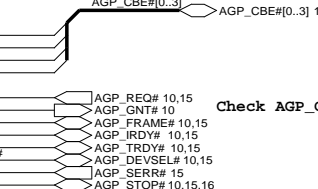
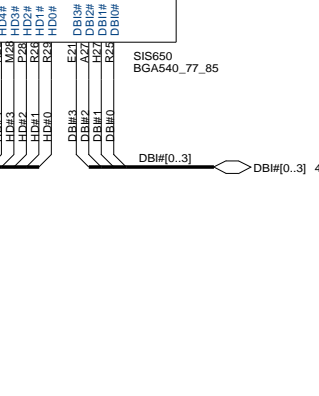
FOR M650 ONLY
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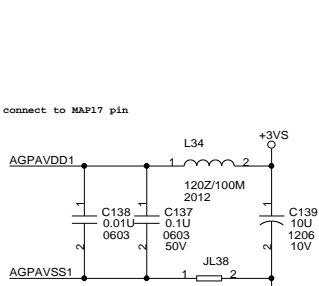
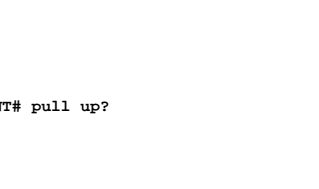
FOR M650 ONLY
M650 2X AGP mode VREF set from
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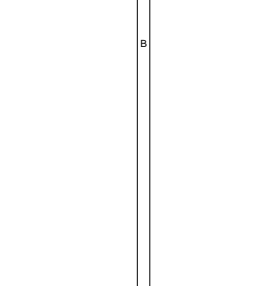
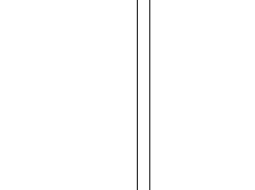
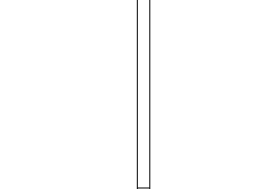
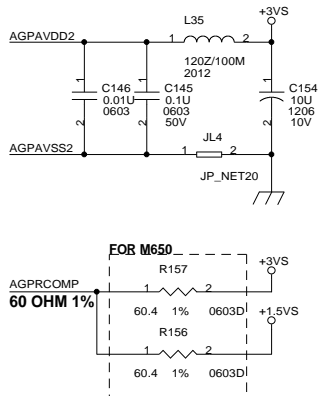
FOR M650 ONLY
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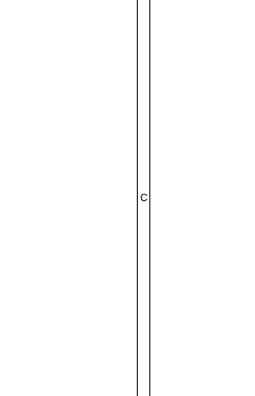
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M650 2X AGP mode VREF set from
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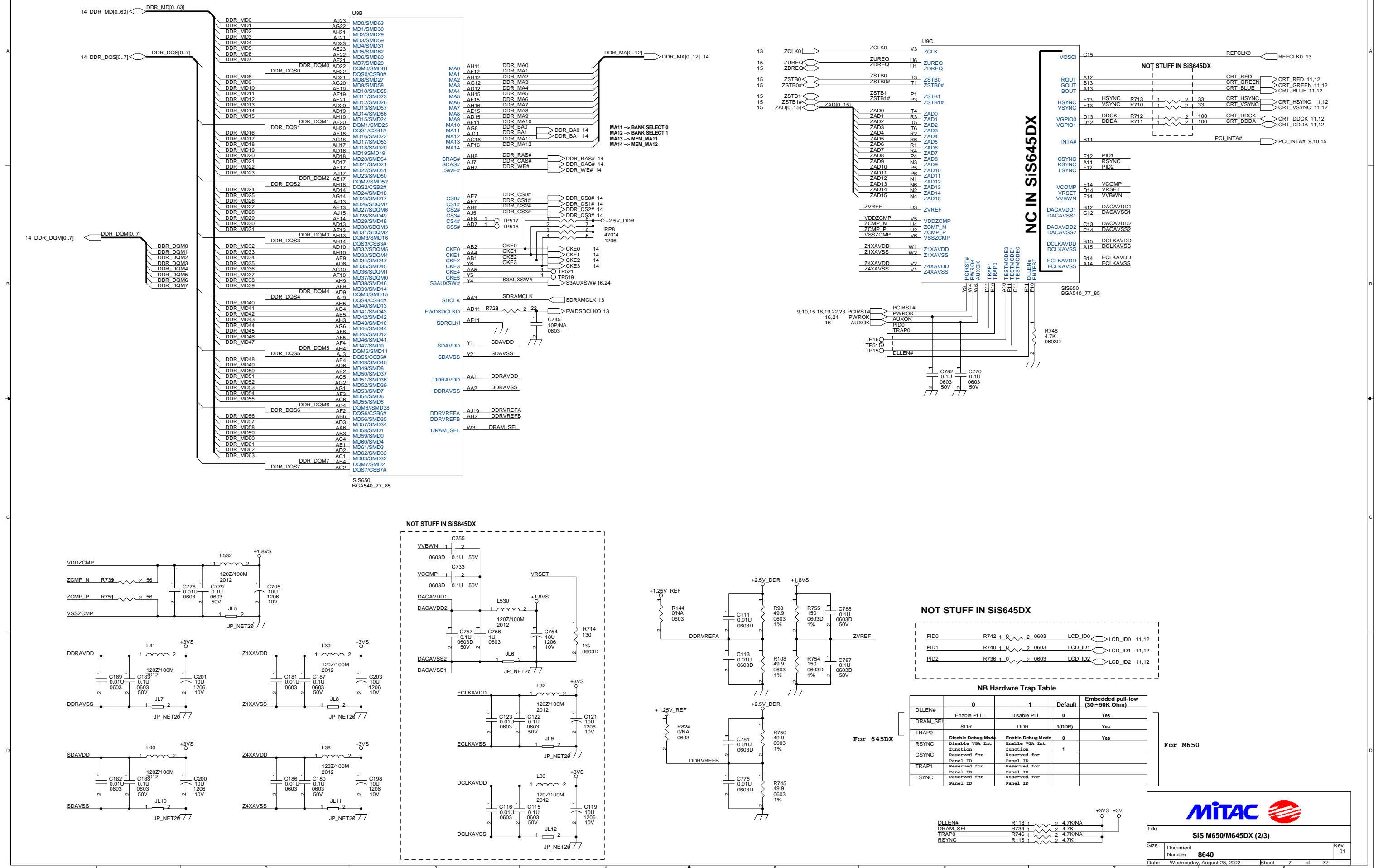
FOR M650 ONLY
M650 2X AGP mode VREF set from
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FOR M650 ONLY
M650 2X AGP mode VREF set from
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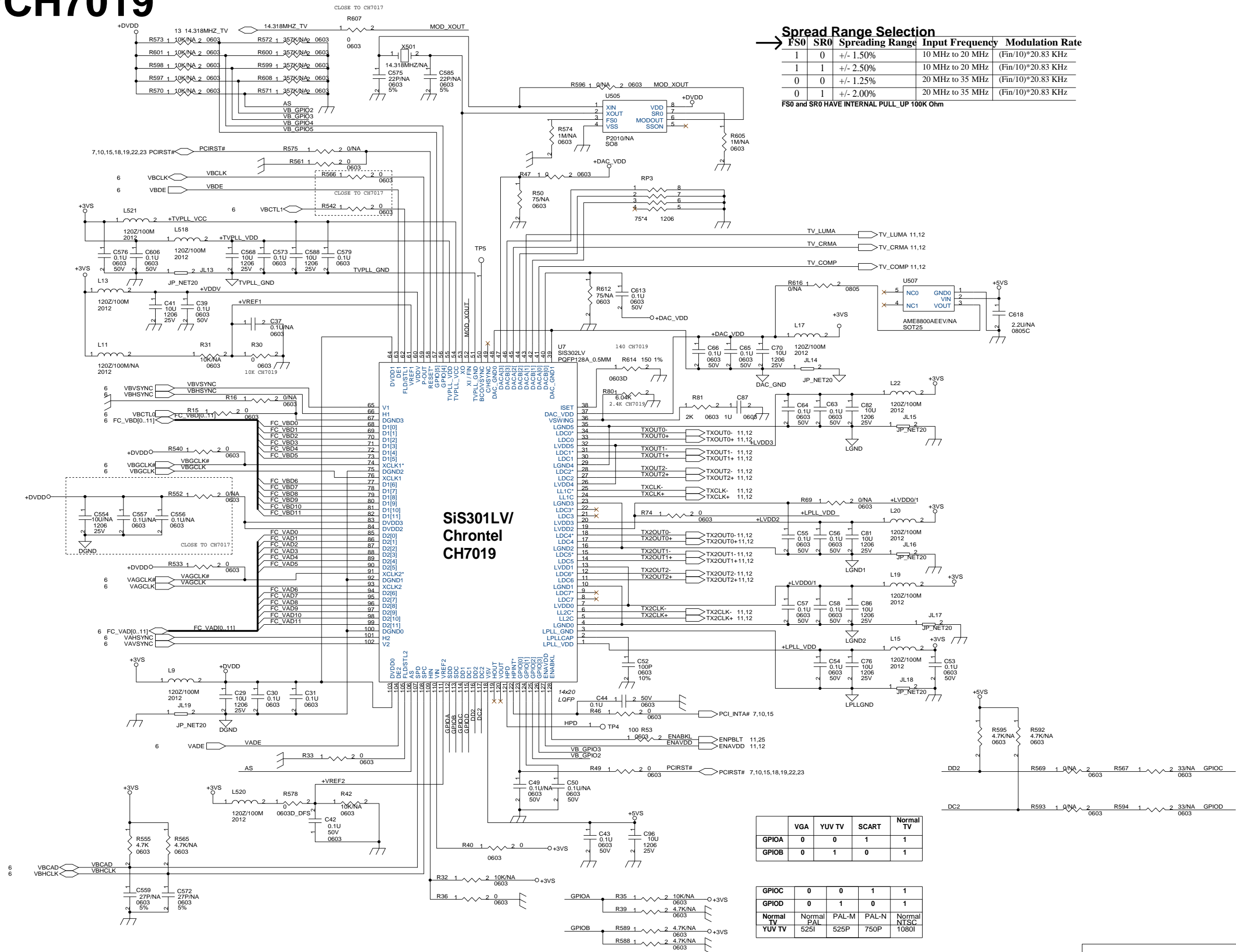
SIS M650/645DX(2/3)



SiS M650/645DX



SiS302LV/CH7019



Title: SIS 302LV
Size: Document 8640
Date: Wednesday, August 28, 2002
Sheet: 9 of 32
Rev: 01

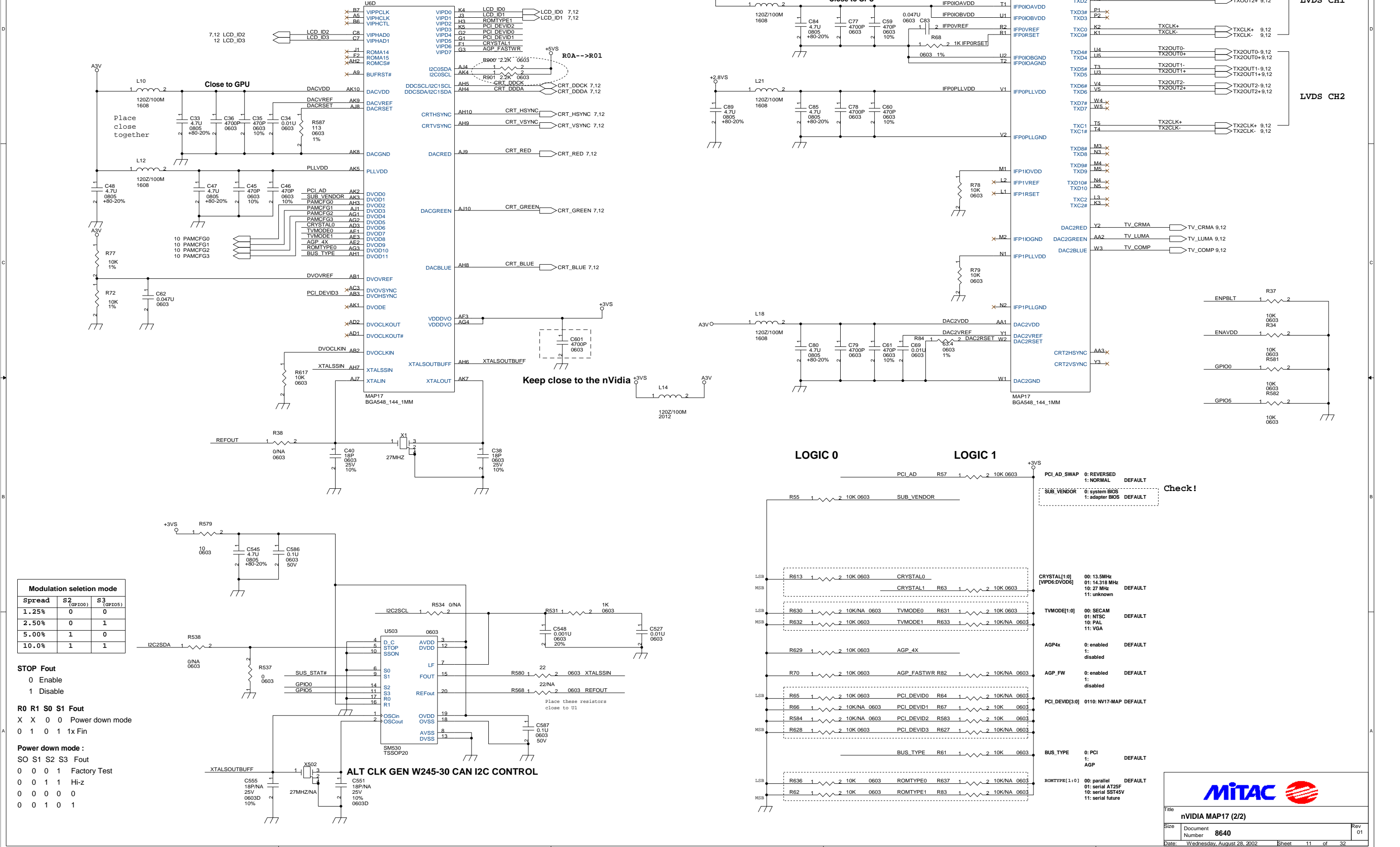
PDF created with FinePrint pdfFactory trial version <http://www.fineprint.com>



nVIDIA MAP17(2/2)

Check!

GPI00:General purpose I/O
GPI01:General purpose I/O
GPI02:Provide backlight enable.
GPI03:Provide panel power enable.
GPI04:Panel power good signal to GPU.
GPI05:Provide spread spectrum support.
GPI06:Provide hardware suspend signal for mobile system.Active low.
GPI07:Dynamic core voltage power control.
(0:VDD=1.1V, 1:VDD=1.5V)



Modulation selection mode			
spread	S2 (GPI00)	S3 (GPI05)	
1.25%	0	0	
2.50%	0	1	
5.00%	1	0	
10.0%	1	1	

STOP Fout

0 Enable
1 Disable

R0 R1 S0 S1 Fout

X X 0 0 Power down mode
0 1 0 1 1x Fin

Power down mode :

SO S1 S2 S3 Fout
0 0 0 1 Factory Test
0 0 1 1 Hi-z
0 0 0 0
0 0 1 0 1

Check!

Title
nVIDIA MAP17 (2/2)

Size
Document Number
8640

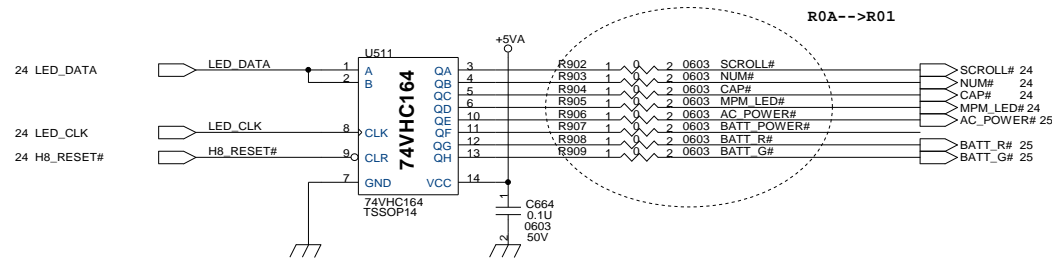
Date:
Wednesday, August 28, 2002

Sheet
11 of 32

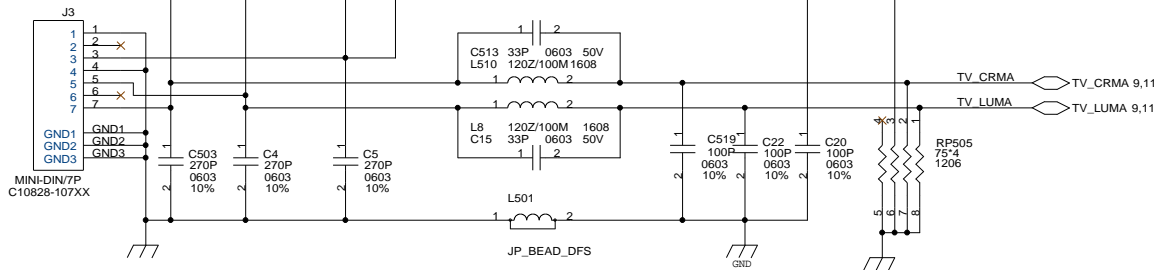
Rev
01

LCD & CRT INTERFACE

D

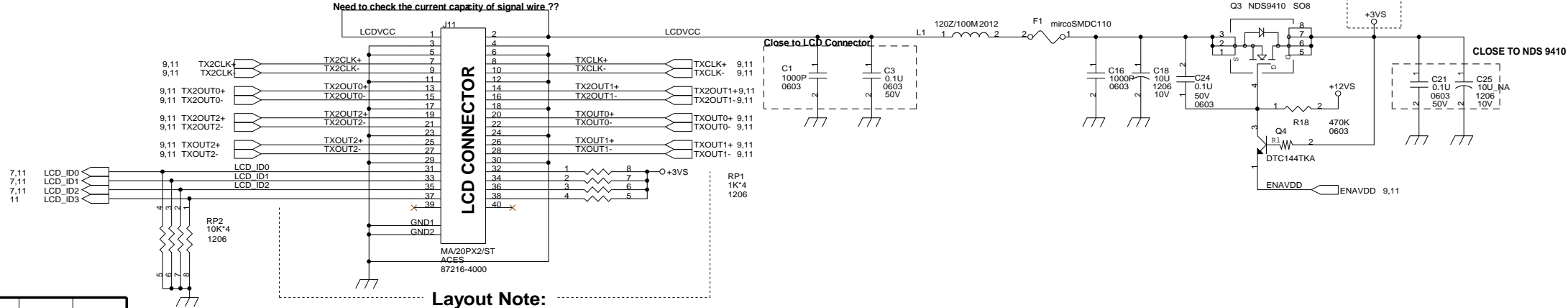


S-VIDEO



LCD 14" 330mA,15"800mA

C



Layout Note:

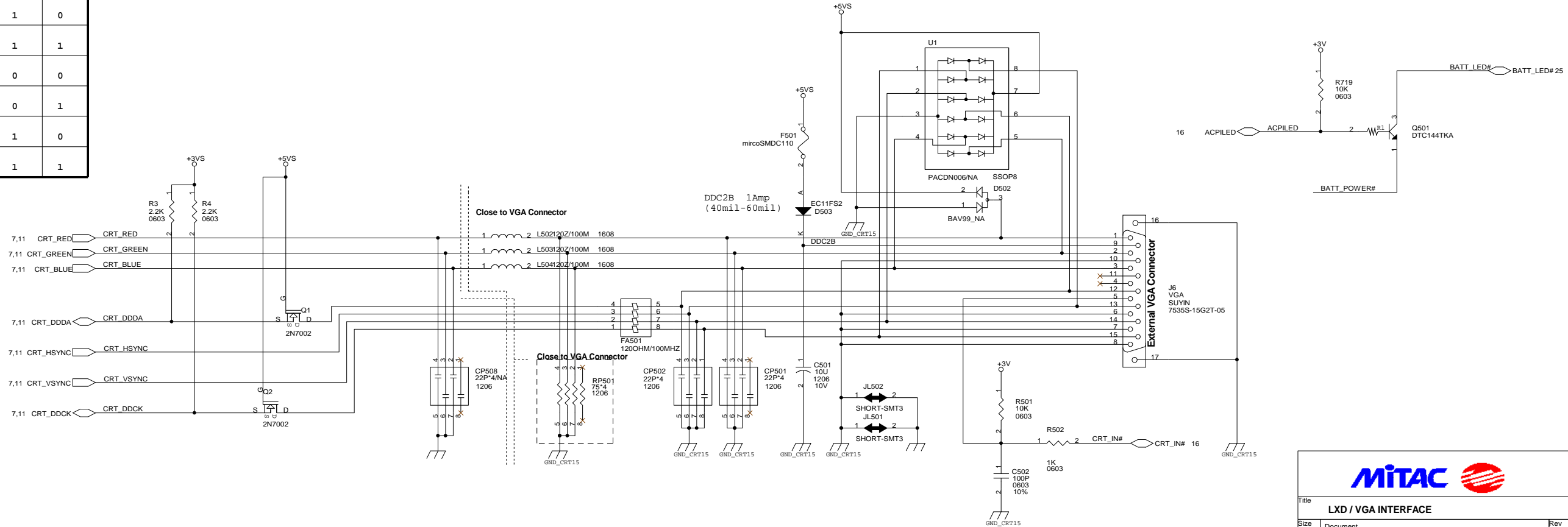
S/W/W/S=12/6/6/12 mils
as short as possible
四組各自平行走線等長

B

Display	LCD_ID3	LCD_ID2	LCD_ID1	LCD_ID0
QDI 14.1" XGA TFT: QD141X1LH03-MP01/03	0	0	0	0
AU 14.1" XGA TFT: B141XN04-2 (UB141X03)	0	0	0	1
CMO 14.1" XGA TFT: N141X6	0	0	1	0
Sumsung 15" XGA TFT: LT150X3-124	0	0	1	1
Sumsung 15" SXGA+ TFT: LTN150P1-L04	0	1	0	0
HannStar 15" XGA TFT: HSD151PX11-B	0	1	0	1
AU 15" XGA TFT: (TBD)	0	1	1	0
AU 15" SXGA+ TFT: B150PN01	0	1	1	1

A

W/S=16/12/12/12/16 mils



Title

LXD / VGA INTERFACE

Size

Document

Number

8640

Rev

01

Date

Wednesday, August 28, 2002

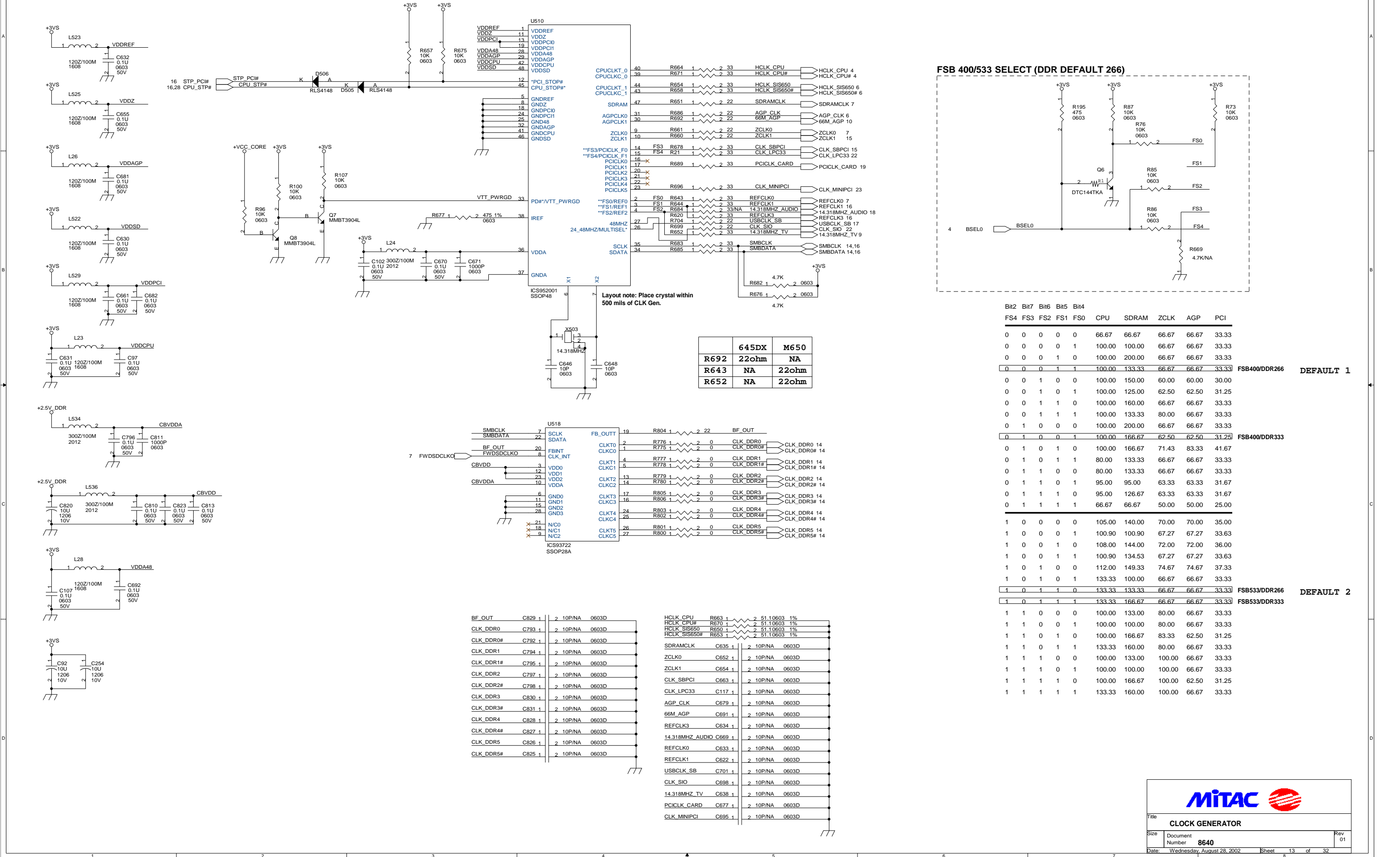
Sheet

12

of

32

CLOCK GEN/BUFFER



FSB 400/533 SELECT (DDR DEFAULT 266)

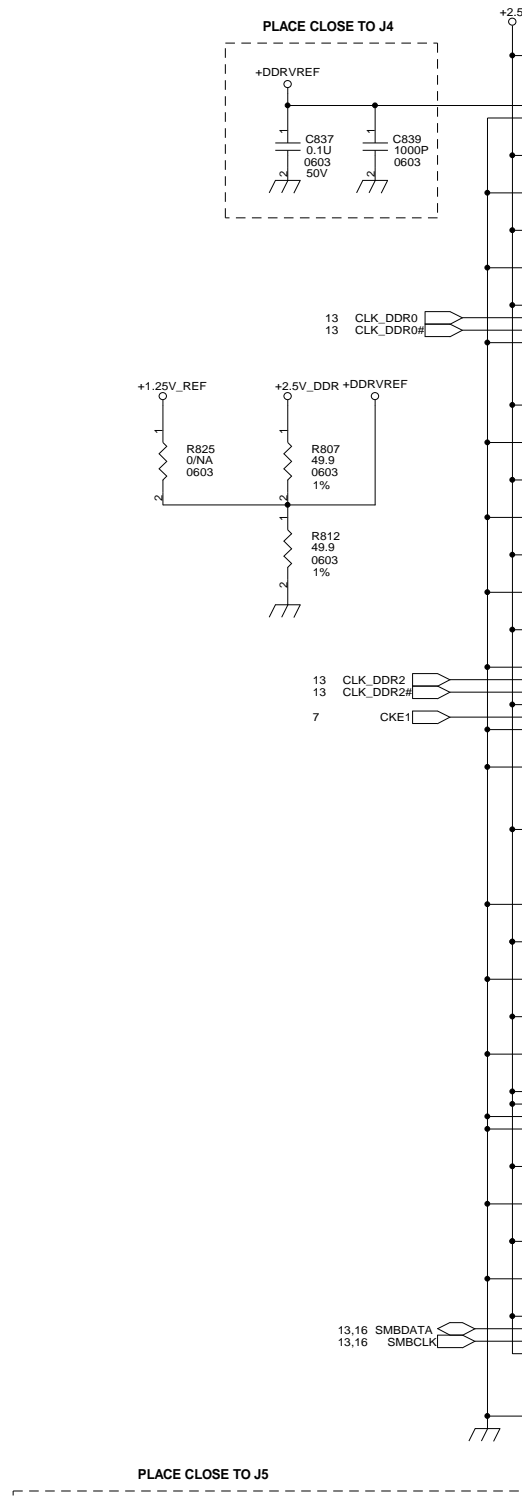
Bit2	Bit7	Bit6	Bit5	Bit4	FS4	FS3	FS2	FS1	FS0	CPU	SDRAM	ZCLK	AGP	PCI
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0	0	0	0	1	0	0	0	0	1	100.00	100.00	66.67	66.67	33.33
0	0	0	1	0	0	0	0	1	0	100.00	200.00	66.67	66.67	33.33
0	0	0	1	1	0	0	0	1	1	100.00	133.33	66.67	66.67	33.33
0	0	1	0	0	0	0	0	0	0	100.00	150.00	60.00	60.00	30.00
0	0	1	0	1	0	0	0	1	0	100.00	125.00	62.50	62.50	31.25
0	0	1	1	0	0	0	0	1	1	100.00	160.00	66.67	66.67	33.33
0	0	1	1	1	0	0	0	1	1	100.00	133.33	80.00	66.67	33.33
0	1	0	0	0	0	0	0	0	0	100.00	200.00	66.67	66.67	33.33
0	1	0	0	1	0	0	0	1	1	100.00	166.67	62.50	62.50	31.25
0	1	0	1	0	0	0	0	1	0	100.00	166.67	71.43	83.33	41.67
0	1	0	1	1	0	0	0	1	1	80.00	133.33	66.67	66.67	33.33
0	1	1	0	0	0	0	0	1	0	80.00	133.33	66.67	66.67	33.33
0	1	1	0	1	0	0	0	1	1	95.00	95.00	63.33	63.33	31.67
0	1	1	1	0	0	0	0	1	0	95.00	126.67	63.33	63.33	31.67
0	1	1	1	1	0	0	0	1	1	66.67	66.67	50.00	50.00	25.00
1	0	0	0	0	0	0	0	0	0	105.00	140.00	70.00	70.00	35.00
1	0	0	0	1	0	0	0	1	0	100.90	100.90	67.27	67.27	33.63
1	0	0	1	0	0	0	0	1	0	108.00	144.00	72.00	72.00	36.00
1	0	0	1	1	0	0	0	1	1	100.90	134.53	67.27	67.27	33.63
1	0	1	0	0	0	0	0	1	0	112.00	149.33	74.67	74.67	37.33
1	0	1	0	1	0	0	0	1	1	133.33	100.00	66.67	66.67	33.33
1	0	1	1	0	0	0	0	1	1	133.33	133.33	66.67	66.67	33.33
1	0	1	1	1	0	0	0	1	1	133.33	166.67	66.67	66.67	33.33
1	1	0	0	0	0	0	0	0	0	100.00	133.00	80.00	66.67	33.33
1	1	0	0	1	0	0	0	1	0	100.00	100.00	80.00	66.67	33.33
1	1	0	1	0	0	0	0	1	0	100.00	166.67	83.33	62.50	31.25
1	1	0	1	1	0	0	0	1	1	133.33	160.00	80.00	66.67	33.33
1	1	1	0	0	0	0	0	1	0	100.00	133.00	100.00	66.67	33.33
1	1	1	1	0	0	0	0	1	1	100.00	100.00	100.00	66.67	33.33
1	1	1	1	1	0	0	0	1	1	100.00	166.67	100.00	62.50	31.25
1	1	1	1	1	1	0	0	1	1	133.33	160.00	100.00	66.67	33.33



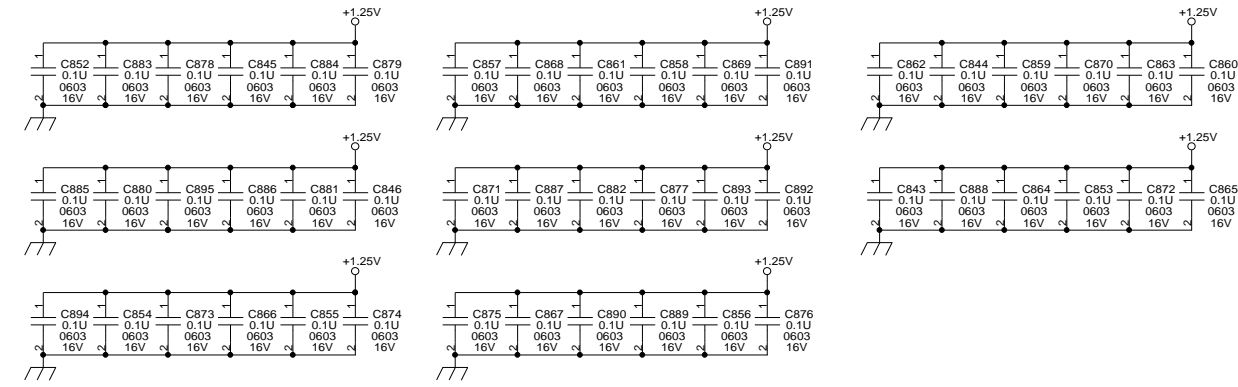
Title			CLOCK GENERATOR		
Size	Document	Number	8640	Rev	01
Date:	Wednesday, August 26, 2002	Sheet	13	of	32


DDR SODIMM

7	DDR_CS0#	DDR_CS0#	RP19	1	0	8	16	RPX8	CS0#
7	DDR_CS1#	DDR_CS1#	2	1	5	13	15	RPX8	CS1#
7	DDR_CS2#	DDR_CS2#	3	1	4	12	14	RPX8	CS2#
7	DDR_CS3#	DDR_CS3#	4	1	3	11	13	RPX8	CS3#
7	DDR_WE#	DDR_WE#	5	1	2	10	12	RPX8	WE#
7	DDR_BA0	DDR_BA0	6	1	1	9	11	RPX8	BA0
7	DDR_MA7	DDR_MA7	RP17	1	0	8	16	RPX8	MA7
7	DDR_MA5	DDR_MA5	2	1	5	13	15	RPX8	MA5
7	DDR_MA4	DDR_MA4	3	1	4	12	14	RPX8	MA4
7	DDR_MA6	DDR_MA6	4	1	3	11	13	RPX8	MA6
7	DDR_MA12	DDR_MA12	5	1	2	10	12	RPX8	MA12
7	DDR_MA9	DDR_MA9	6	1	1	9	11	RPX8	MA9
7	DDR_MA8	DDR_MA8	7	1	0	8	10	RPX8	MA8
7	DDR_MA11	DDR_MA11	8	1	0	9	11	RPX8	MA11
7	DDR_CAS#	DDR_CAS#	RP18	1	0	8	16	RPX8	CAS#
7	DDR_RAS#	DDR_RAS#	2	1	5	13	15	RPX8	RAS#
7	DDR_BA1	DDR_BA1	3	1	4	12	14	RPX8	BA1
7	DDR_MA10	DDR_MA10	4	1	3	11	13	RPX8	MA10
7	DDR_MA0	DDR_MA0	5	1	2	10	12	RPX8	MA0
7	DDR_MA3	DDR_MA3	6	1	1	9	11	RPX8	MA3
7	DDR_MA1	DDR_MA1	7	1	0	8	10	RPX8	MA1
7	DDR_MA2	DDR_MA2	8	1	0	9	11	RPX8	MA2
7	DDR_DQS0	DDR_DQS0	RP12	1	0	8	16	RPX8	DQS0
7	DDR_MD2	DDR_MD2	2	1	5	13	15	RPX8	MD2
7	DDR_MD0	DDR_MD0	3	1	4	12	14	RPX8	MD0
7	DDR_MD1	DDR_MD1	4	1	3	11	13	RPX8	MD1
7	DDR_MD5	DDR_MD5	5	1	2	10	12	RPX8	MD5
7	DDR_MD4	DDR_MD4	6	1	1	9	11	RPX8	MD4
7	DDR_MD10	DDR_MD10	RP13	1	0	8	16	RPX8	MD10
7	DDR_DQS1	DDR_DQS1	2	1	5	13	15	RPX8	DQS1
7	DDR_MD13	DDR_MD13	3	1	4	12	14	RPX8	MD13
7	DDR_MD12	DDR_MD12	4	1	3	11	13	RPX8	MD12
7	DDR_MD9	DDR_MD9	5	1	2	10	12	RPX8	MD9
7	DDR_MD8	DDR_MD8	6	1	1	9	11	RPX8	MD8
7	DDR_MD7	DDR_MD7	7	1	0	8	10	RPX8	MD7
7	DDR_MD3	DDR_MD3	8	1	0	9	11	RPX8	MD3
7	DDR_MD29	DDR_MD29	RP15	1	0	8	16	RPX8	MD29
7	DDR_MD28	DDR_MD28	2	1	5	13	15	RPX8	MD28
7	DDR_MD19	DDR_MD19	3	1	4	12	14	RPX8	MD19
7	DDR_MD18	DDR_MD18	4	1	3	11	13	RPX8	MD18
7	DDR_MD23	DDR_MD23	5	1	2	10	12	RPX8	MD23
7	DDR_MD18	DDR_MD18	6	1	1	9	11	RPX8	MD18
7	DDR_DQS2	DDR_DQS2	7	1	0	8	10	RPX8	DQS2
7	DDR_DQS2	DDR_DQS2	8	1	0	9	11	RPX8	DQS2
7	DDR_MD31	DDR_MD31	RP16	1	0	8	16	RPX8	MD31
7	DDR_MD27	DDR_MD27	2	1	5	13	15	RPX8	MD27
7	DDR_DQS3	DDR_DQS3	3	1	4	12	14	RPX8	DQS3
7	DDR_DQS3	DDR_DQS3	4	1	3	11	13	RPX8	DQS3
7	DDR_MD30	DDR_MD30	5	1	2	10	12	RPX8	MD30
7	DDR_DQM3	DDR_DQM3	6	1	1	9	11	RPX8	DQM3
7	DDR_DQM3	DDR_DQM3	7	1	0	8	10	RPX8	DQM3
7	DDR_MD24	DDR_MD24	8	1	0	9	11	RPX8	MD24
7	DDR_MD25	DDR_MD25	9	1	0	10	12	RPX8	MD25
7	DDR_MD46	DDR_MD46	RP21	1	0	8	16	RPX8	MD46
7	DDR_DQM5	DDR_DQM5	2	1	5	13	15	RPX8	DQM5
7	DDR_MD40	DDR_MD40	3	1	4	12	14	RPX8	MD40
7	DDR_MD41	DDR_MD41	4	1	3	11	13	RPX8	MD41
7	DDR_MD45	DDR_MD45	5	1	2	10	12	RPX8	MD45
7	DDR_MD44	DDR_MD44	6	1	1	9	11	RPX8	MD44
7	DDR_MD39	DDR_MD39	7	1	0	8	10	RPX8	MD39
7	DDR_MD35	DDR_MD35	8	1	0	9	11	RPX8	MD35
7	DDR_MD48	DDR_MD48	RP22	1	0	8	16	RPX8	MD48
7	DDR_MD49	DDR_MD49	2	1	5	13	15	RPX8	MD49
7	DDR_MD53	DDR_MD53	3	1	4	12	14	RPX8	MD53
7	DDR_MD52	DDR_MD52	4	1	3	11	13	RPX8	MD52
7	DDR_MD47	DDR_MD47	5	1	2	10	12	RPX8	MD47
7	DDR_MD43	DDR_MD43	6	1	1	9	11	RPX8	MD43
7	DDR_DQS5	DDR_DQS5	7	1	0	8	10	RPX8	DQS5
7	DDR_DQS5	DDR_DQS5	8	1	0	9	11	RPX8	DQS5
7	DDR_MD61	DDR_MD61	RP23	1	0	8	16	RPX8	MD61
7	DDR_MD60	DDR_MD60	2	1	5	13	15	RPX8	MD60
7	DDR_MD55	DDR_MD55	3	1	4	12	14	RPX8	MD55
7	DDR_MD51	DDR_MD51	4	1	3	11	13	RPX8	MD51
7	DDR_DQS6	DDR_DQS6	5	1	2	10	12	RPX8	DQS6
7	DDR_DQS6	DDR_DQS6	6	1	1	9	11	RPX8	DQS6
7	DDR_MD54	DDR_MD54	7	1	0	8	10	RPX8	MD54
7	DDR_MD54	DDR_MD54	8	1	0	9	11	RPX8	MD54
7	DDR_DQM6	DDR_DQM6	9	1	0	10	12	RPX8	DQM6
7	DDR_MD59	DDR_MD59	RP24	1	0	8	16	RPX8	MD59
7	DDR_MD63	DDR_MD63	2	1	5	13	15	RPX8	MD63
7	DDR_MD58	DDR_MD58	3	1	4	12	14	RPX8	MD58
7	DDR_DQS7	DDR_DQS7	4	1	3	11	13	RPX8	DQS7
7	DDR_DQS7	DDR_DQS7	5	1	2	10	12	RPX8	DQS7
7	DDR_MD62	DDR_MD62	6	1	1	9	11	RPX8	MD62
7	DDR_DQM7	DDR_DQM7	7	1	0	8	10	RPX8	DQM7
7	DDR_MD56	DDR_MD56	8	1	0	9	11	RPX8	MD56
7	DDR_MD57	DDR_MD57	9	1	0	10	12	RPX8	MD57
7	DDR_DQS4	DDR_DQS4	RP20	1	0	8	16	RPX8	DQS4
7	DDR_MD34	DDR_MD34	2	1	5	13	15	RPX8	MD34
7	DDR_MD38	DDR_MD38	3	1	4	12	14	RPX8	MD38
7	DDR_DQM4	DDR_DQM4	4	1	3	11	13	RPX8	DQM4
7	DDR_MD32	DDR_MD32	5	1	2	10	12	RPX8	MD32
7	DDR_MD33	DDR_MD33	6	1	1	9	11	RPX8	MD33
7	DDR_MD37	DDR_MD37	7	1	0	8	10	RPX8	MD37
7	DDR_MD36	DDR_MD36	8	1	0	9	11	RPX8	MD36
7	DDR_MD17	DDR_MD17	RP14	1	0	8	16	RPX8	MD17
7	DDR_MD16	DDR_MD16	2	1	5	13	15	RPX8	MD16
7	DDR_MD20	DDR_MD20	3	1	4	12	14	RPX8	MD20
7	DDR_MD21	DDR_MD21	4	1	3	11	13	RPX8	MD21
7	DDR_MD15	DDR_MD15	5	1	2	10	12	RPX8	MD15
7	DDR_MD14	DDR_MD14	6	1	1	9	11	RPX8	MD14
7	DDR_MD11	DDR_MD11	7	1	0	8	10	RPX8	MD11
7	DDR_DQM1	DDR_DQM1	8	1	0	9	11	RPX8	DQM1



THESE DECOUPLING CAPACITOR SHOULD BE PLACE WITHIN 150 MILS OF +1.25V THERMINATION R-PACKS





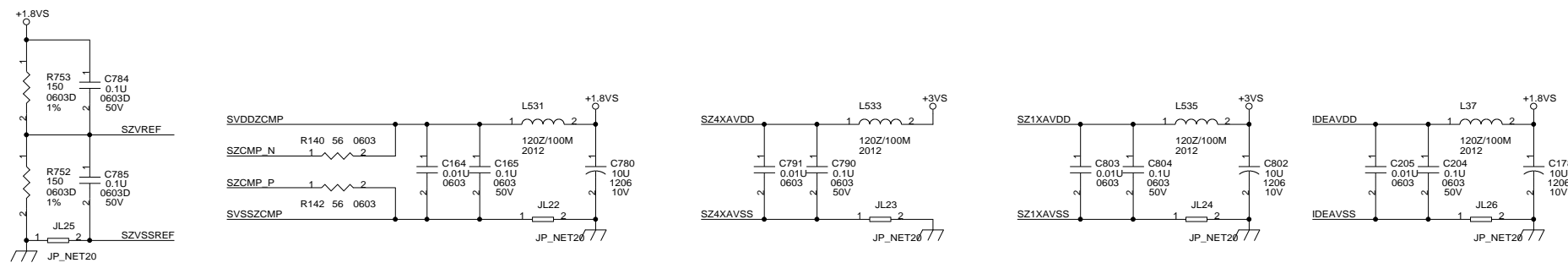
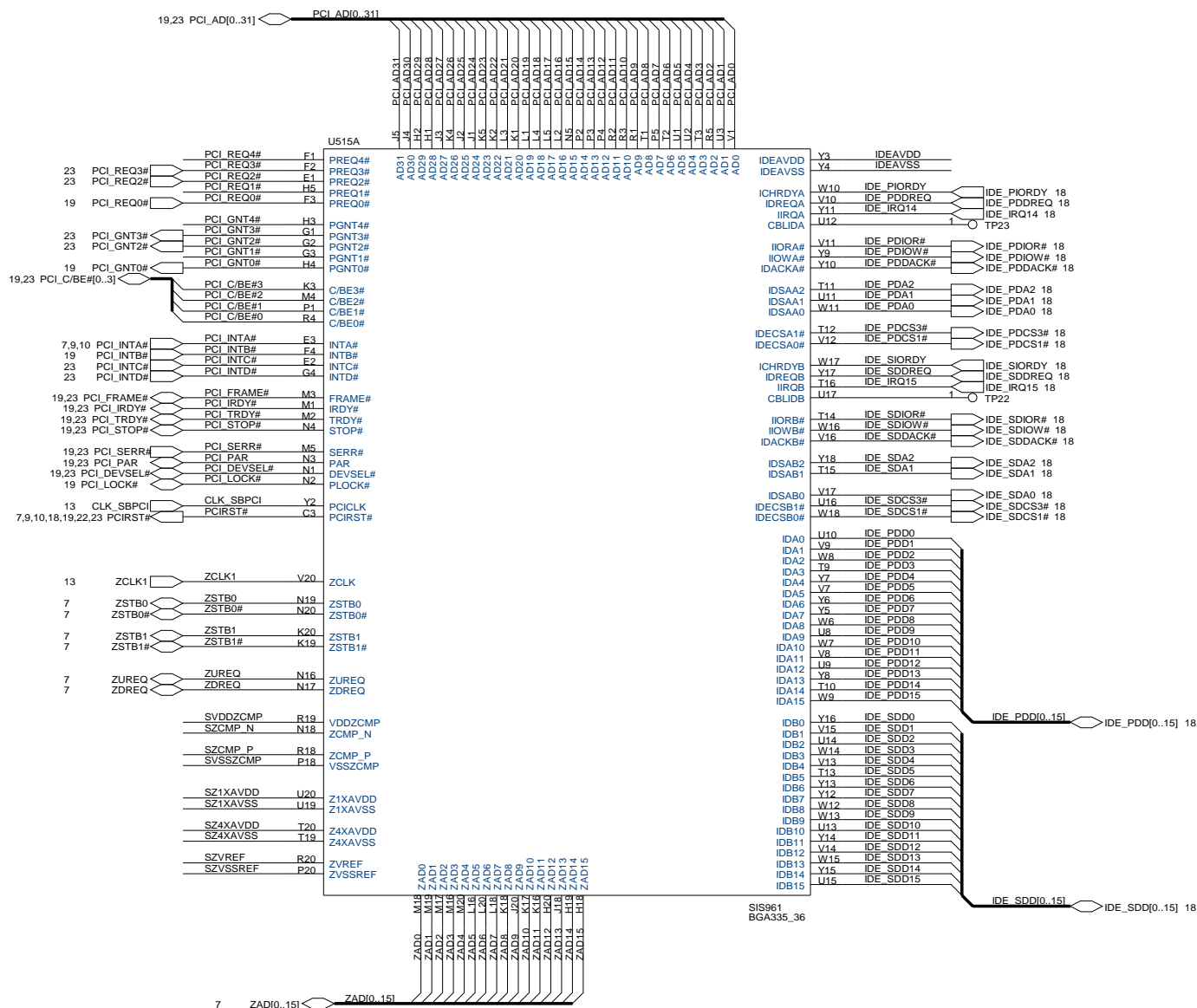
MITAC

Title: **DDR SO-DIMMS**

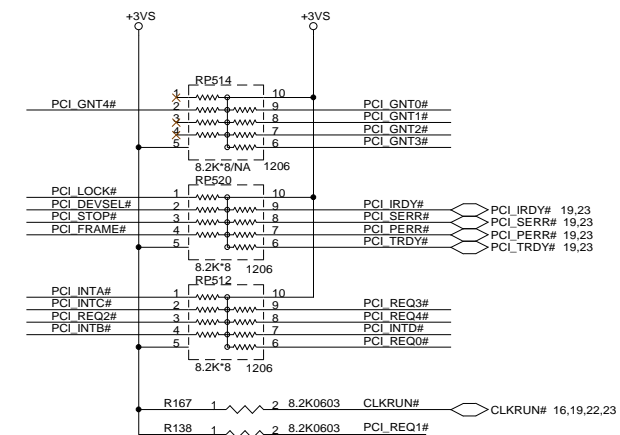
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Date: Wednesday, August 28, 2002 Sheet 14 of 32

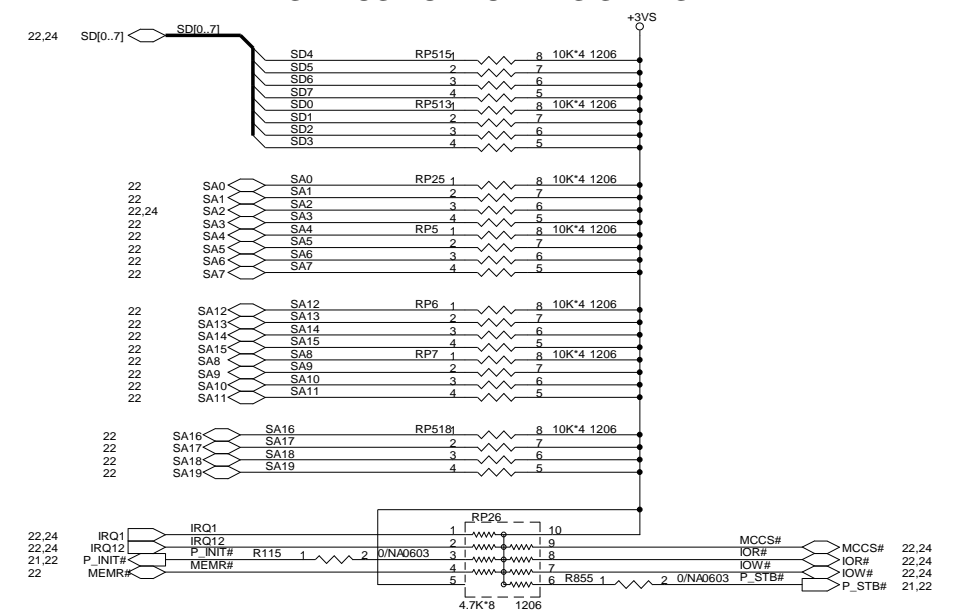
SIS962(1/3)



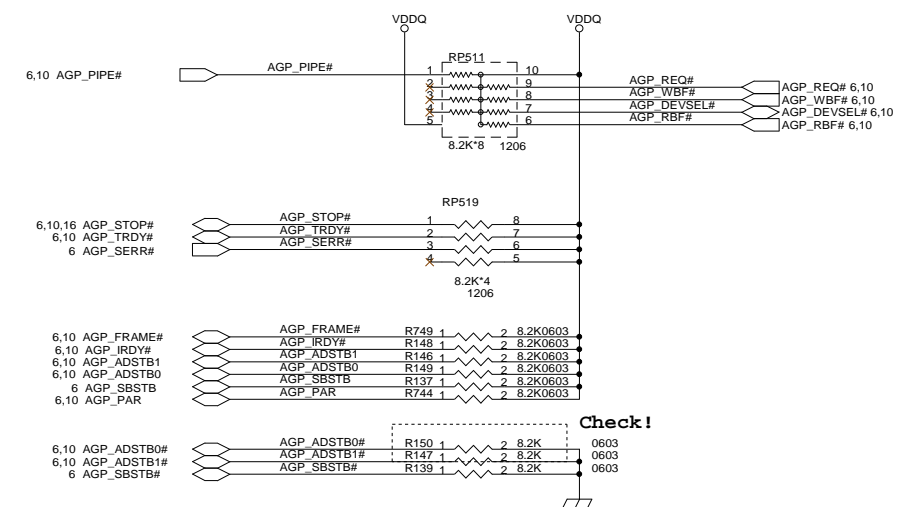
PCI BUS PULL UP RESISTERS



ISA BUS PULL UP RESISTERS

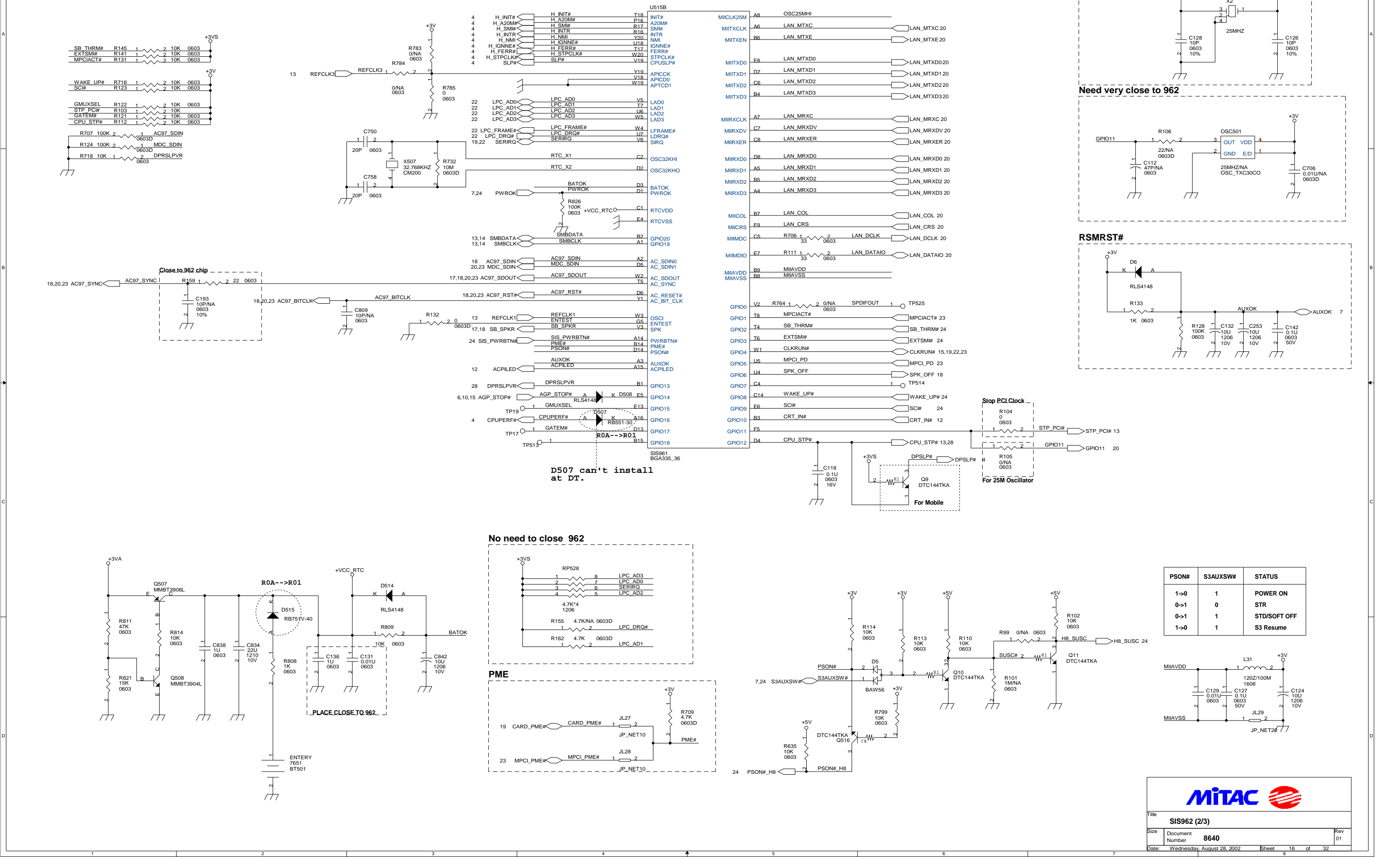


AGP BUS PULL UP/DOWN RESISTORS



Title			
SIS962 (1/3)			
Size	Document Number	Rev	
	8640	01	
Date:	Wednesday, August 28, 2002	Sheet	15 of 32

SIS962(2/3)



Need very close to 962


Need very close to 962

RSMRST#

No need to close 962

PME

PSON#	S3AUXSW#	STATUS
1->0	1	POWER ON
0->1	0	STR
0->1	1	STD/STOFF
1->0	1	S3 Resume



Title

SIS962 (2/3)

Size

Document

Number

8640

Date

Wednesday, August 26, 2002

Sheet

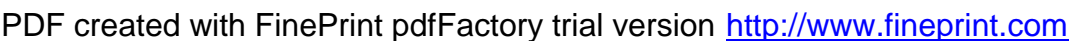
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of

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Rev

01

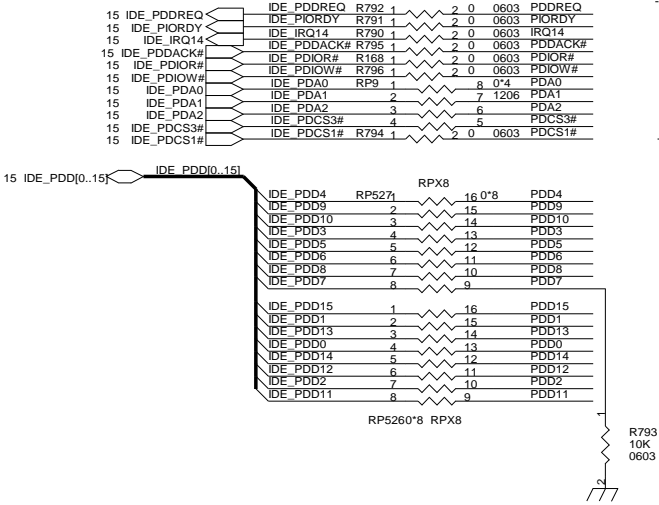


Date: Wednesday, August 28, 2002		Sheet 17 of 32	
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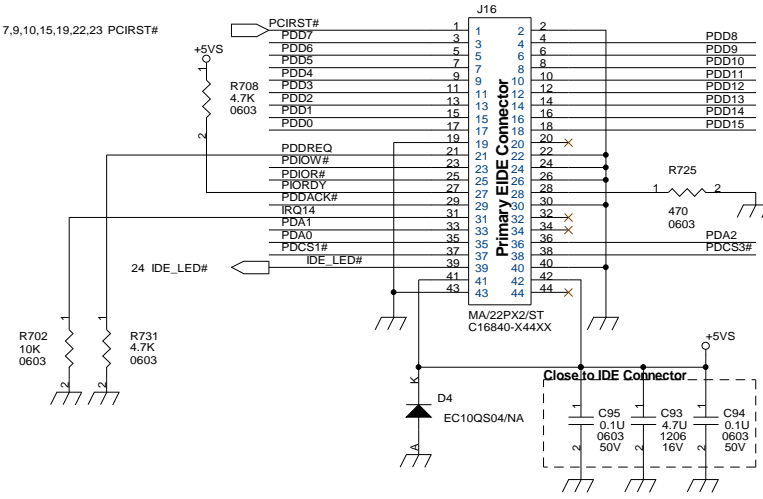
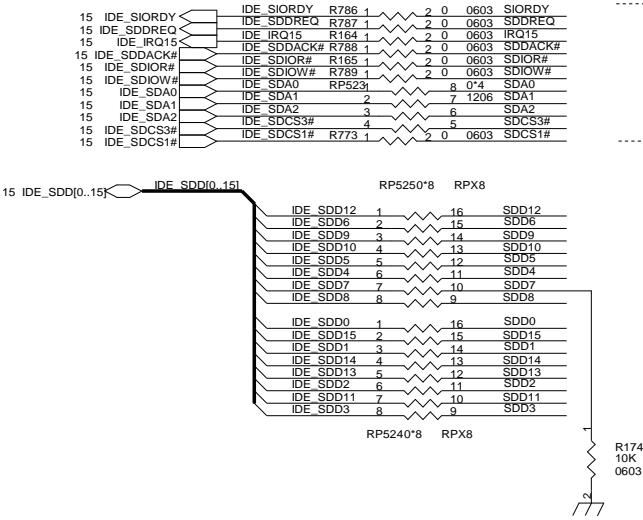
IDE INTERFACE

CHANGE TO 0 ohm

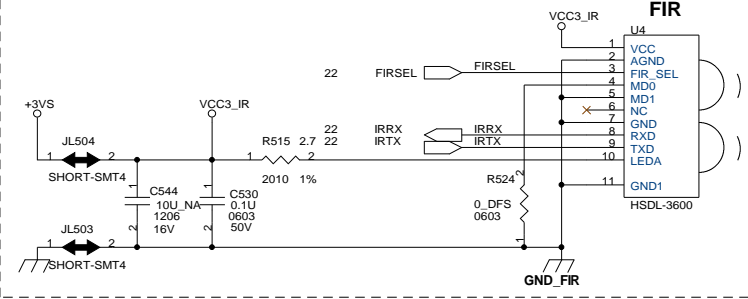
Terminating resistors should be place close to South Bridge



Trminating resistors should be place close to South Bridge



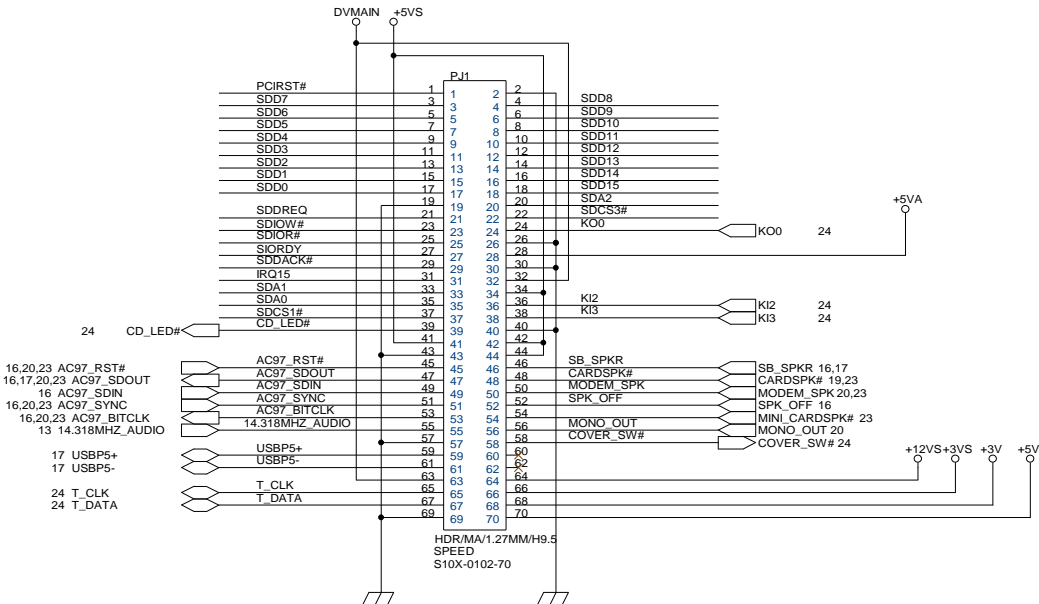
FIR Module



IR Mode Select

IRMODE0	IRMODE1	FIRSEL	RX Function	TX Function
HI	LOW	X	Shutdown	Shutdown
LOW	LOW	LOW	SIR	Full Distance Power
LOW	HI	LOW	SIR	2/3 Distance Power
HI	HI	LOW	SIR	1/3 Distance Power
LOW	LOW	HI	MIR/FIR	Full Distance Power
LOW	HI	HI	MIR/FIR	2/3 Distance Power
HI	HI	HI	MIR/FIR	1/3 Distance Power

BTB CONNECTOR



PCMCIA CONTROLLER & CARDBUS SCOKET

PCI1410A

AD20
PCI_INTB#
REQ0#/GNT0#

7,9,10,15,18,22,23 PCIRST#

15,23 PCI_AD[0..31]

15,23 PCI_C/BE#3

15,23 PCI_C/BE#2

15,23 PCI_C/BE#1

15,23 PCI_C/BE#0

15,23 PCI_IRDY#

15,23 PCI_TRDY#

15,23 PCI_STOP#

15,23 PCI_PAR

15,23 PCI_PERR#

15,23 PCI_SERR#

15,23 PCI_REQ0#

15,23 PCI_GNT0#

15,23 PCIRST#

15,23 CLKRUN#

15,23 PCI_LOCK#

15,23 SERIRQ

15,23 PCI_INTB#

15,23 CARD_PME#

15,23 CARDSPK#

15,23 R1#

15,23 R2#

15,23 R3#

15,23 R4#

15,23 R5#

15,23 R6#

15,23 R7#

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15,23 R9#

15,23 R10#

15,23 R11#

15,23 R12#

15,23 R13#

15,23 R14#

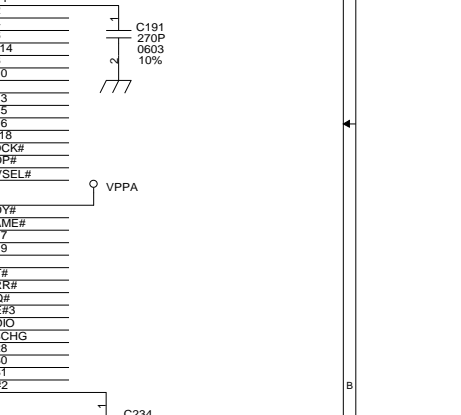
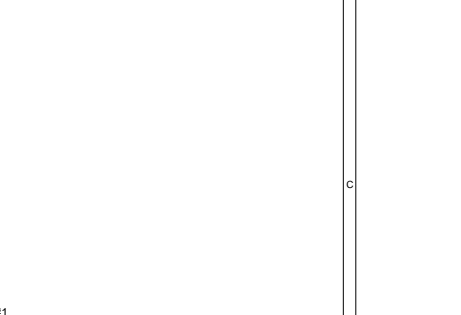
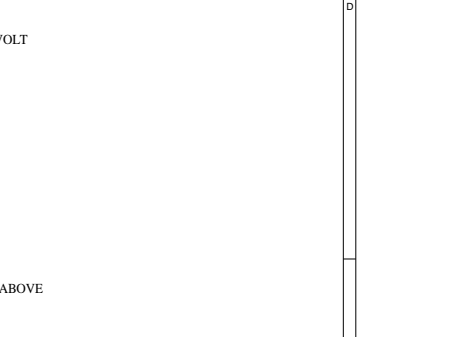
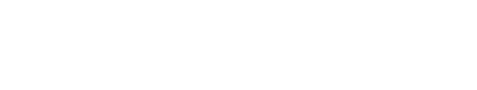
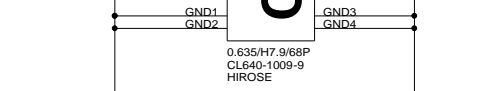
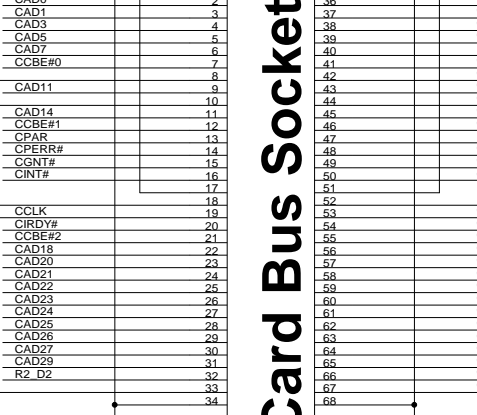
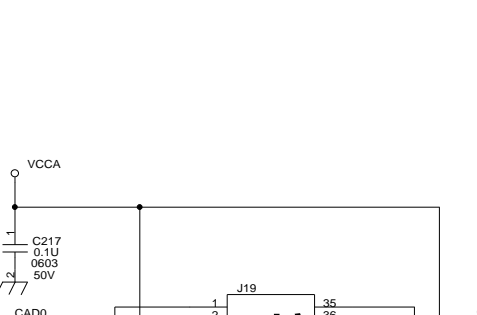
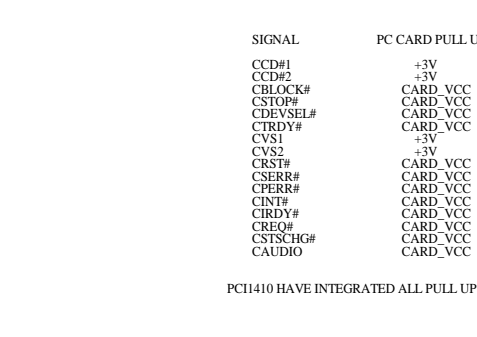
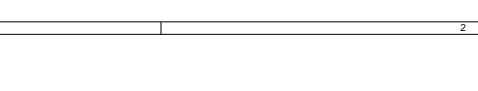
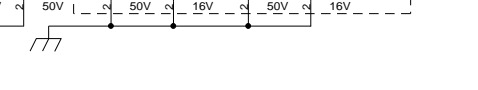
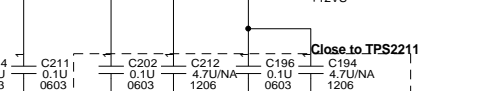
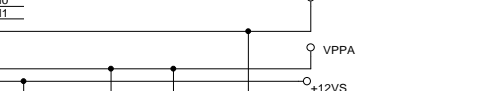
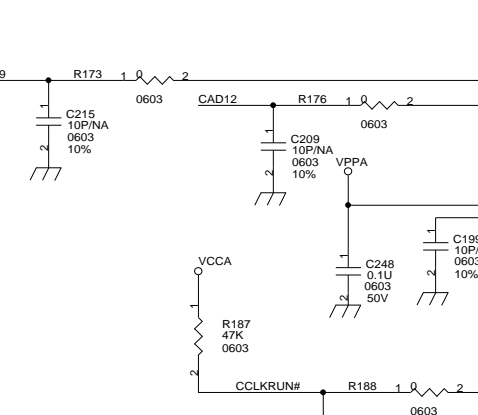
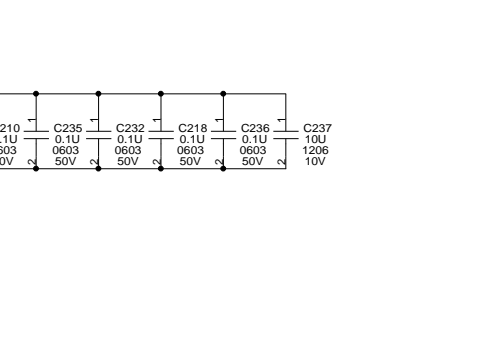
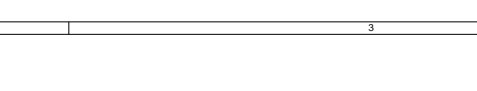
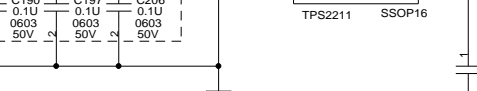
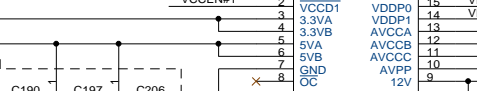
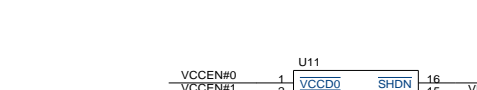
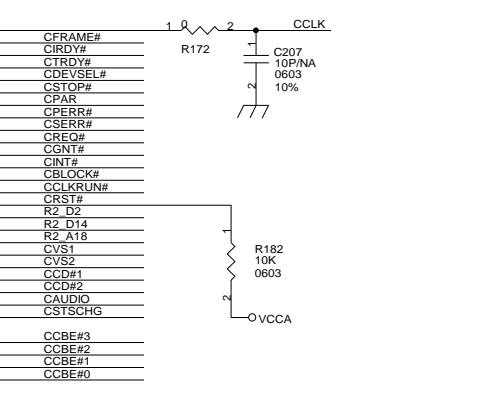
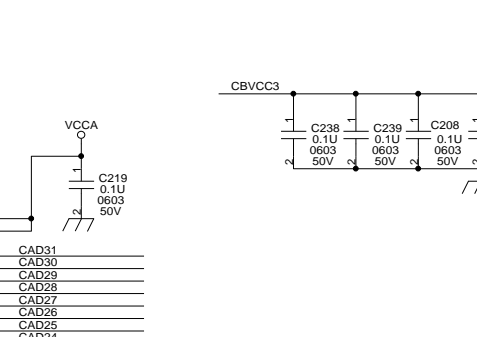
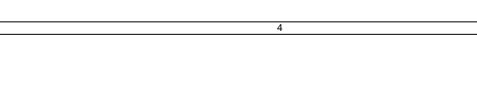
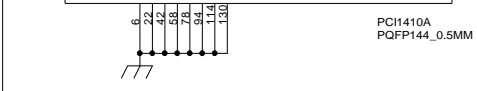
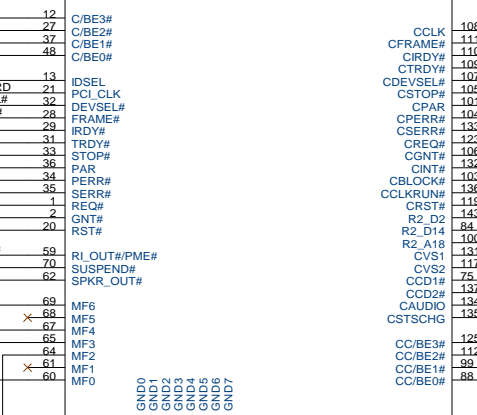
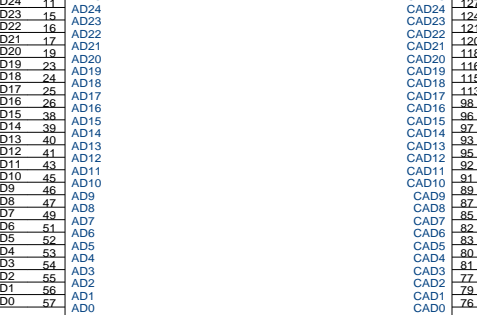
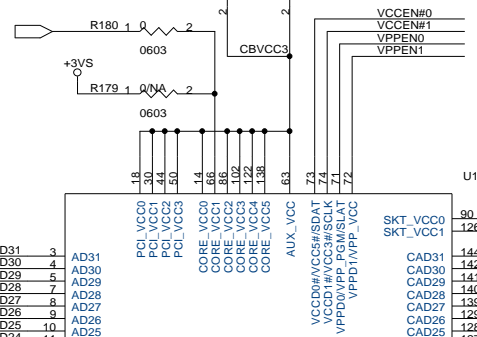
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15,23 R16#

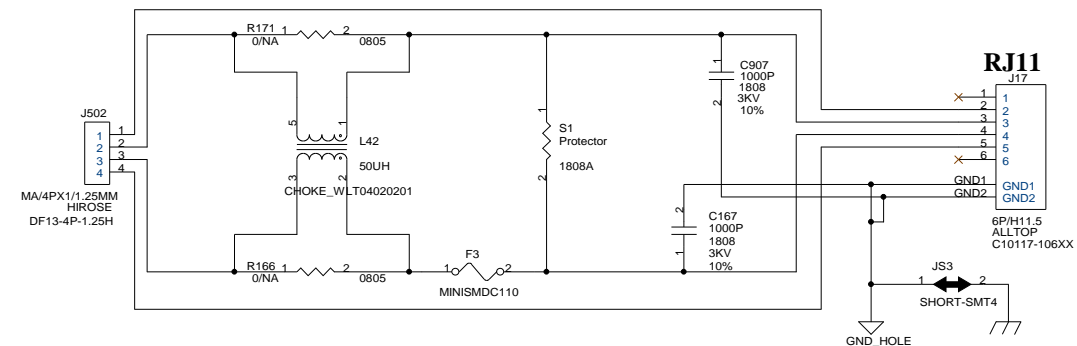
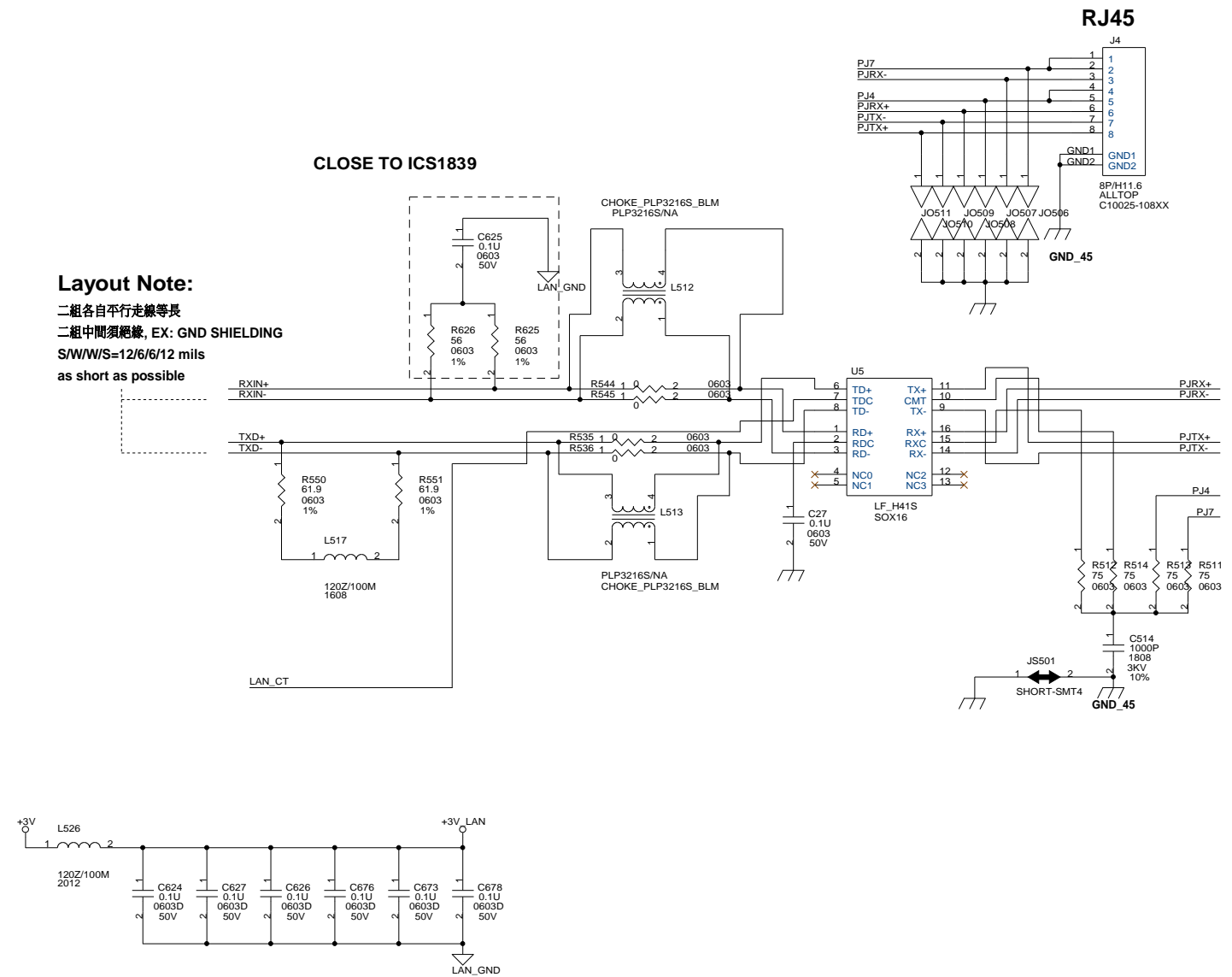
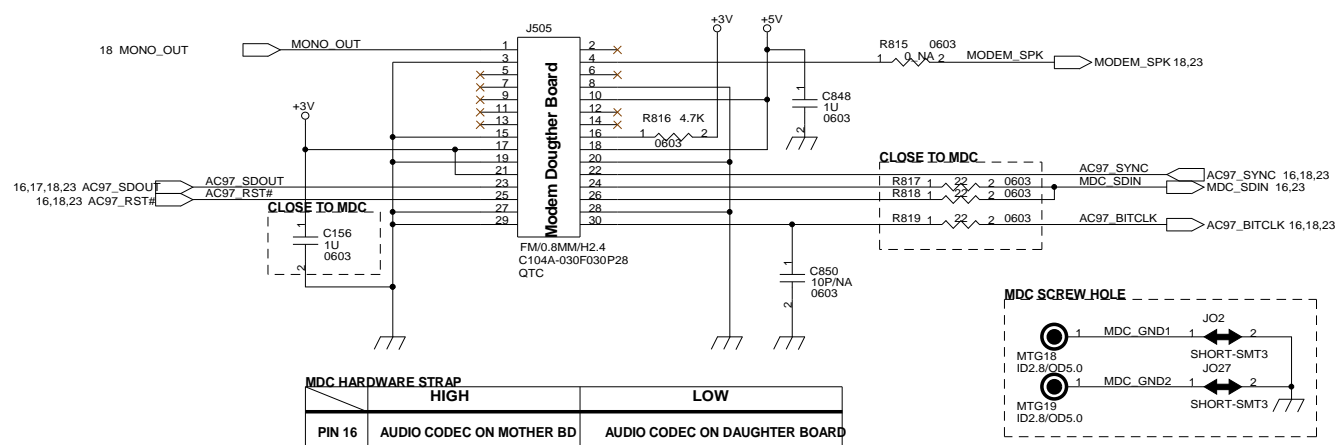
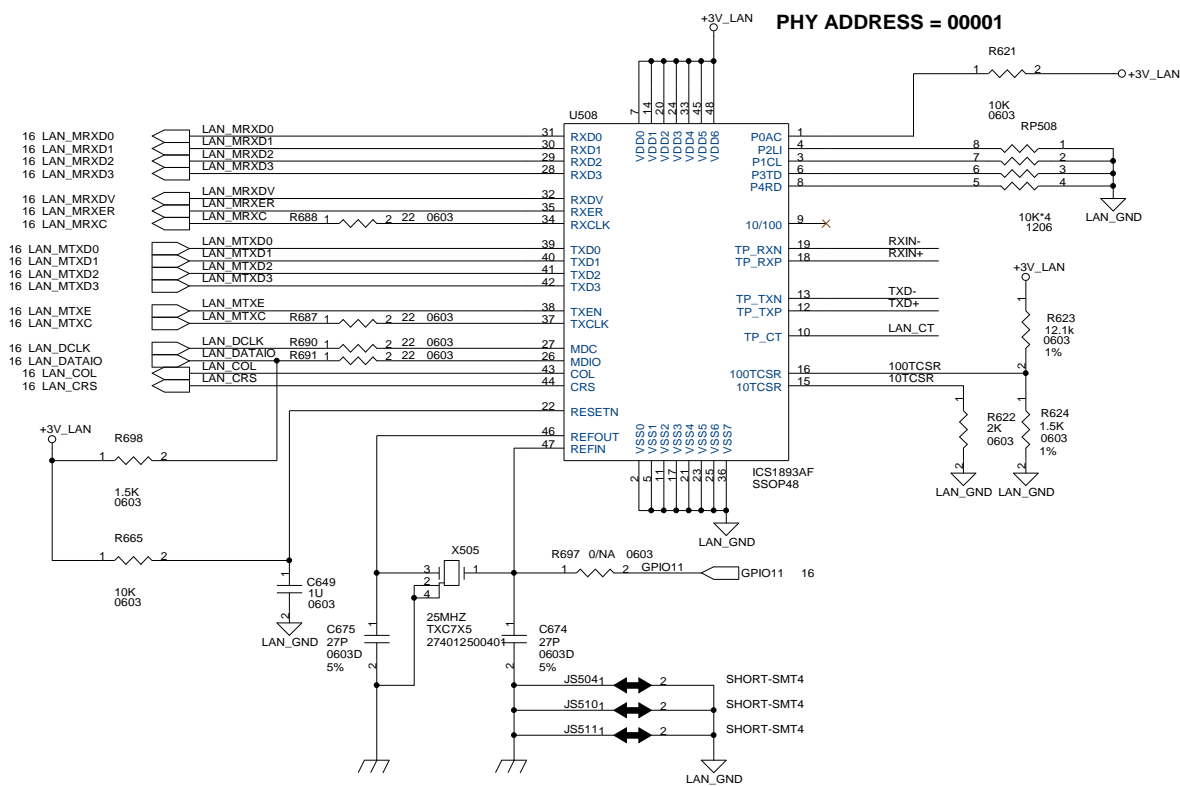
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15,23 R18#

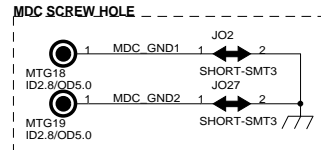
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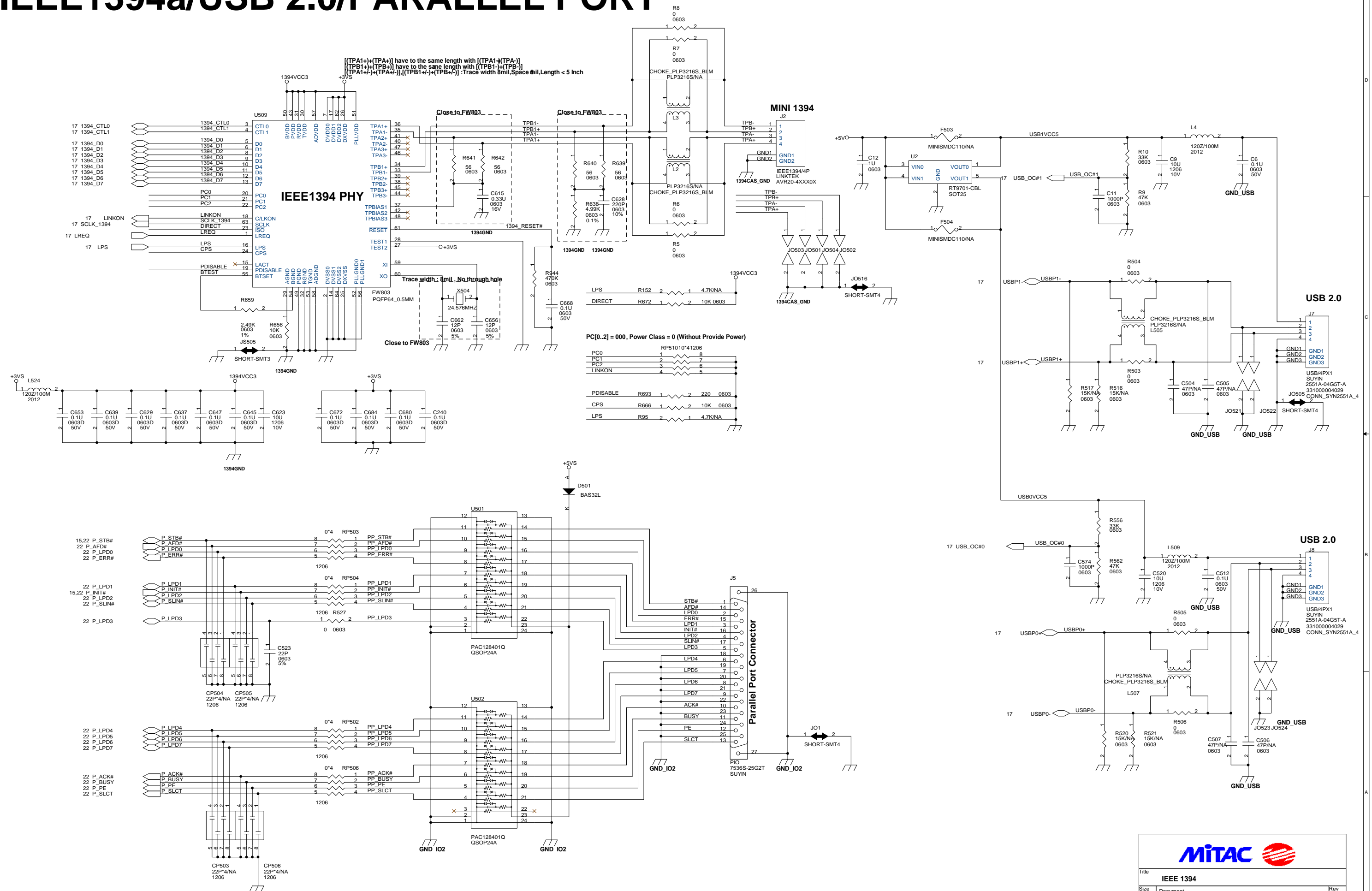
LAN AND MDC



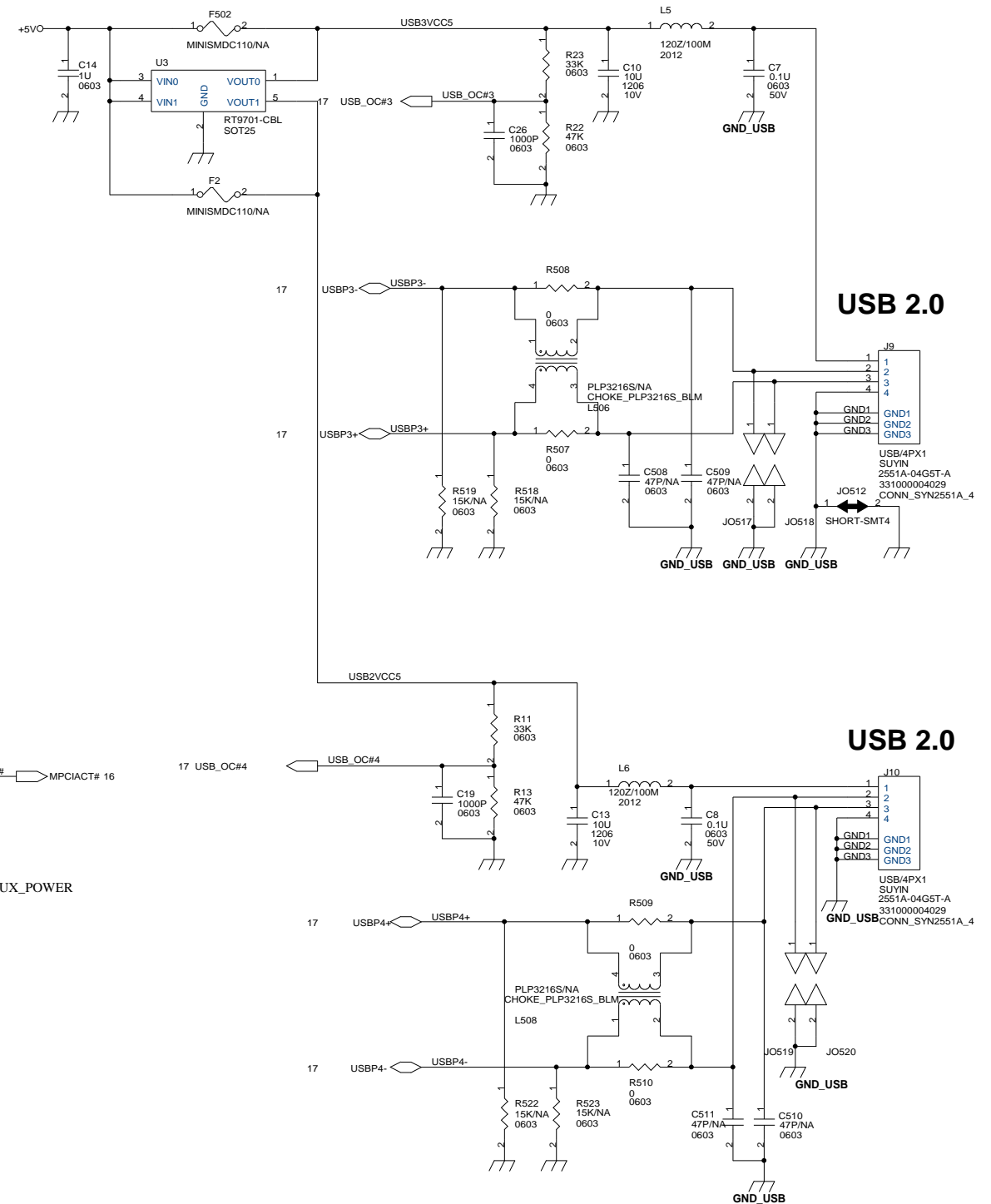
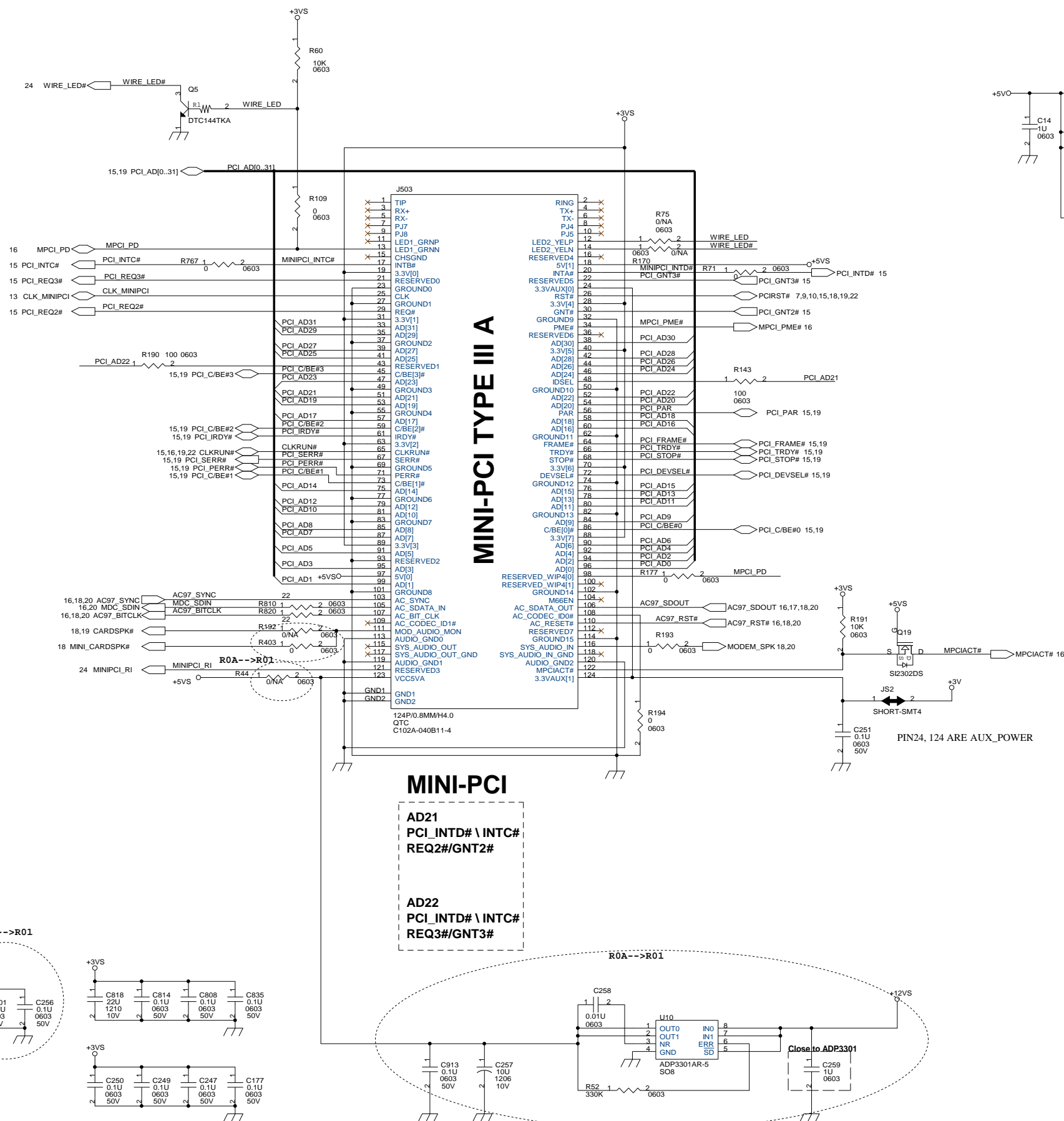
MDC HARDWARE STRAP		
	HIGH	LOW
PIN 16	AUDIO CODEC ON MOTHER BD	AUDIO CODEC ON DAUGHTER BOARD



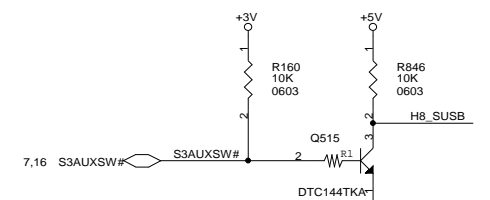
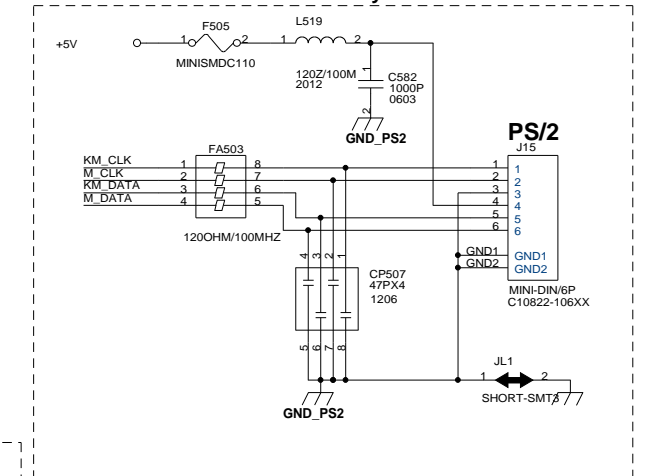
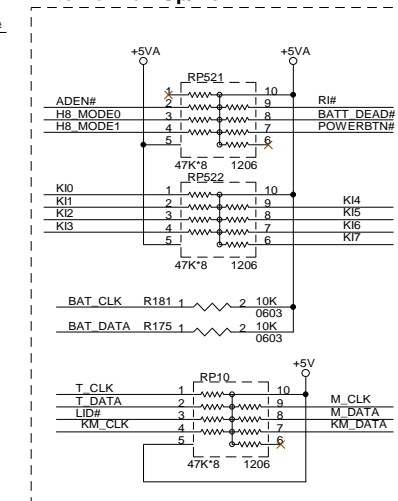
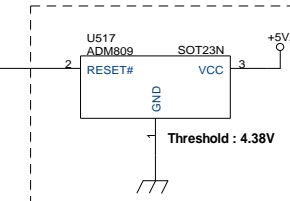
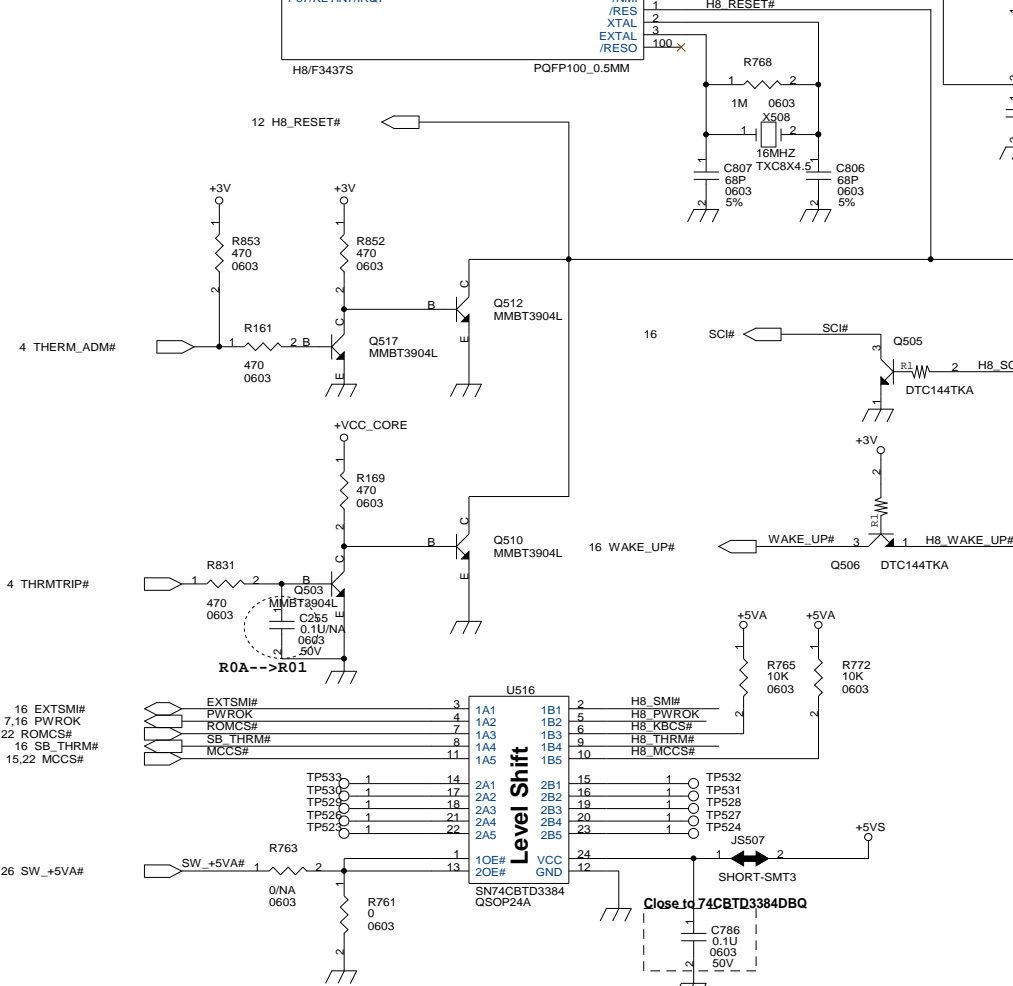
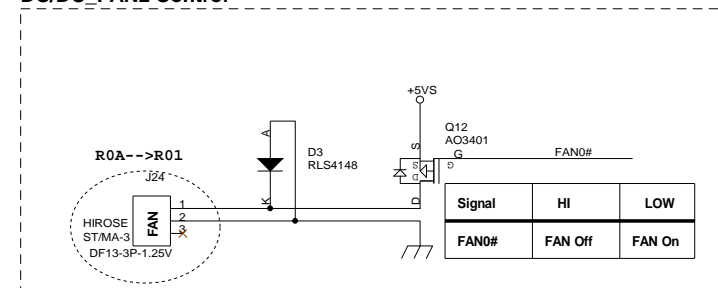
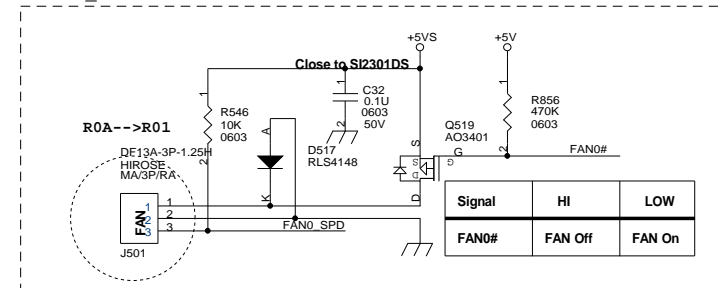
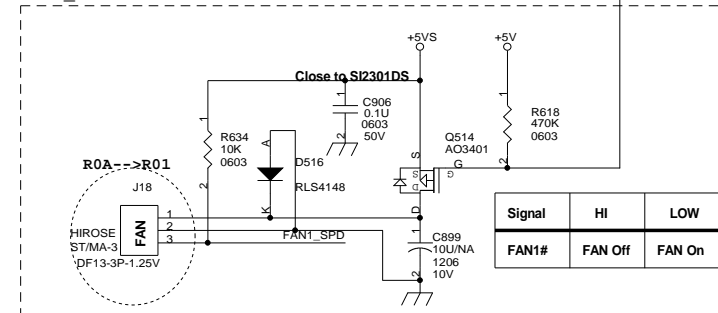
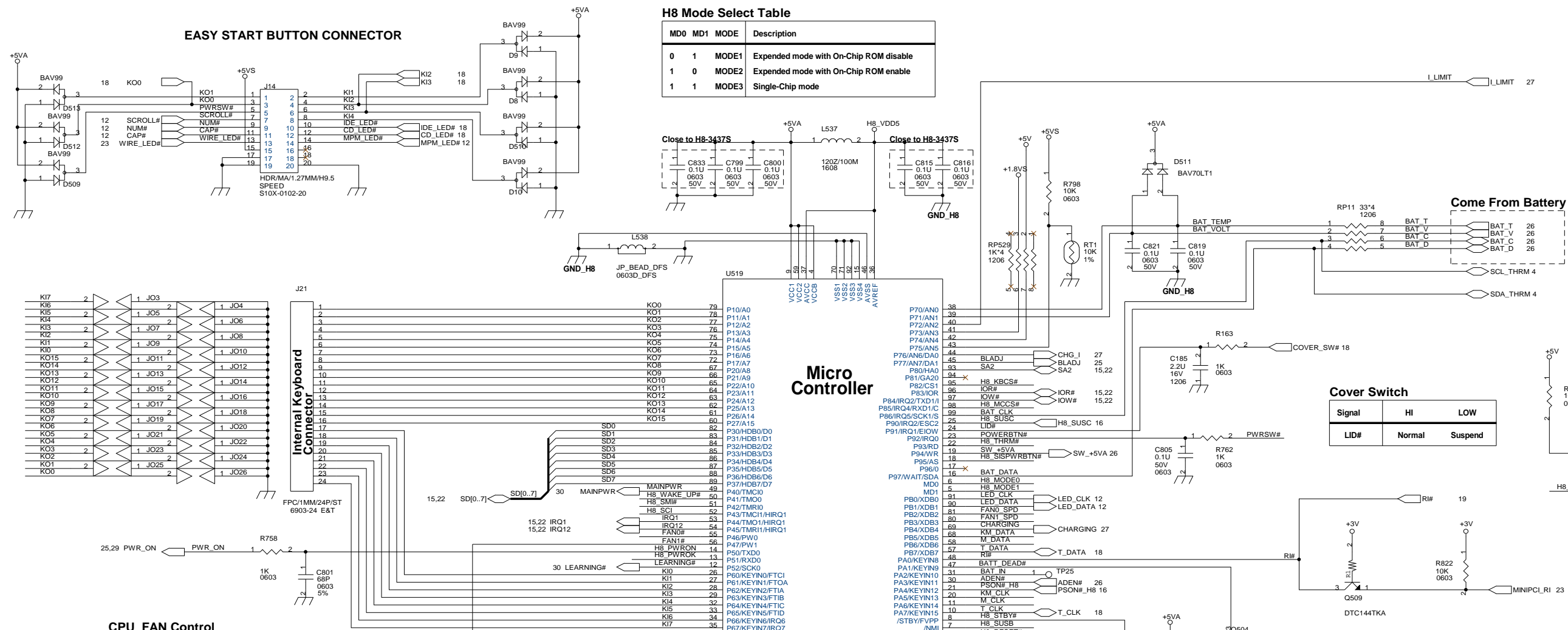
IEEE1394a/USB 2.0/PARALLEL PORT

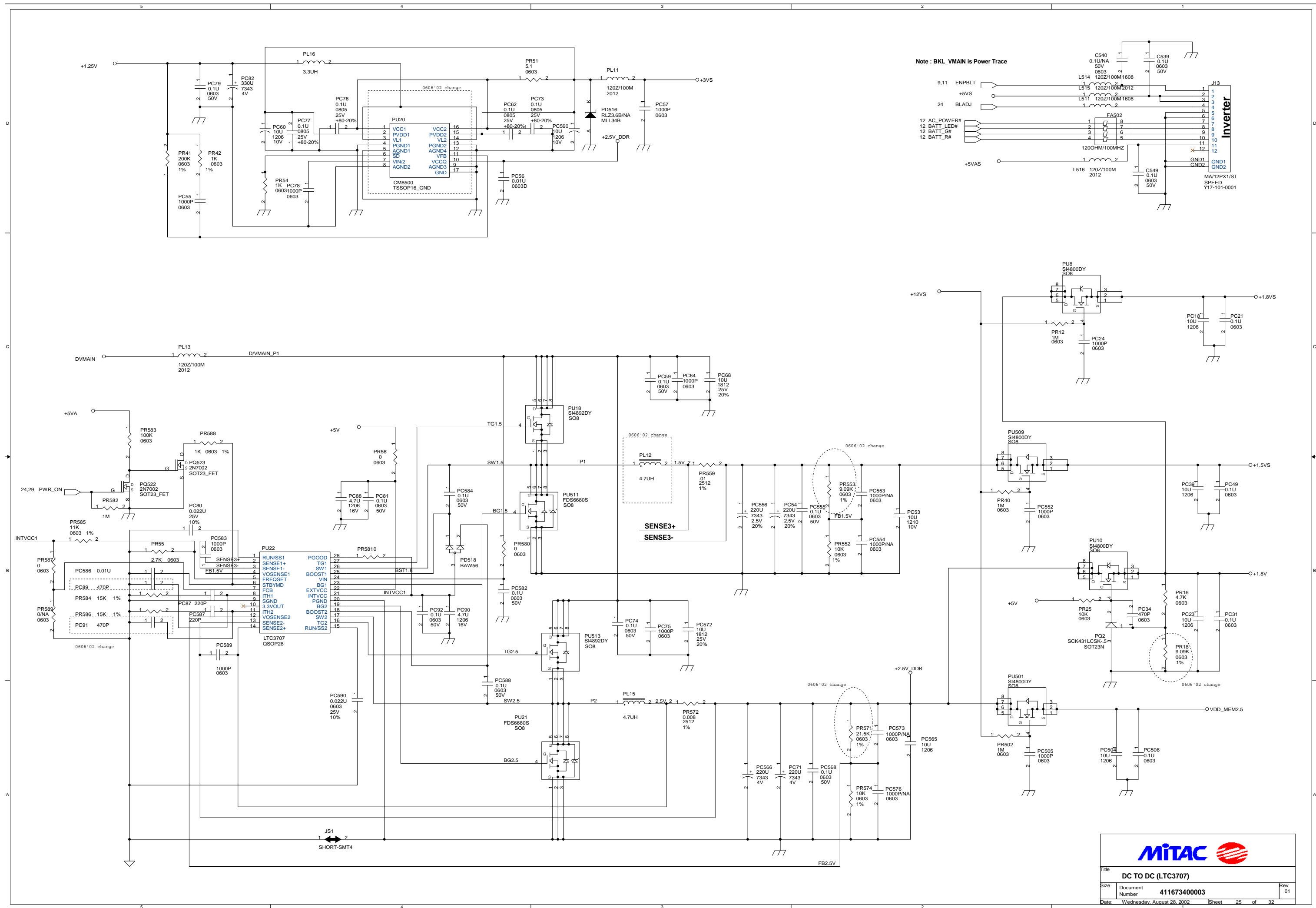


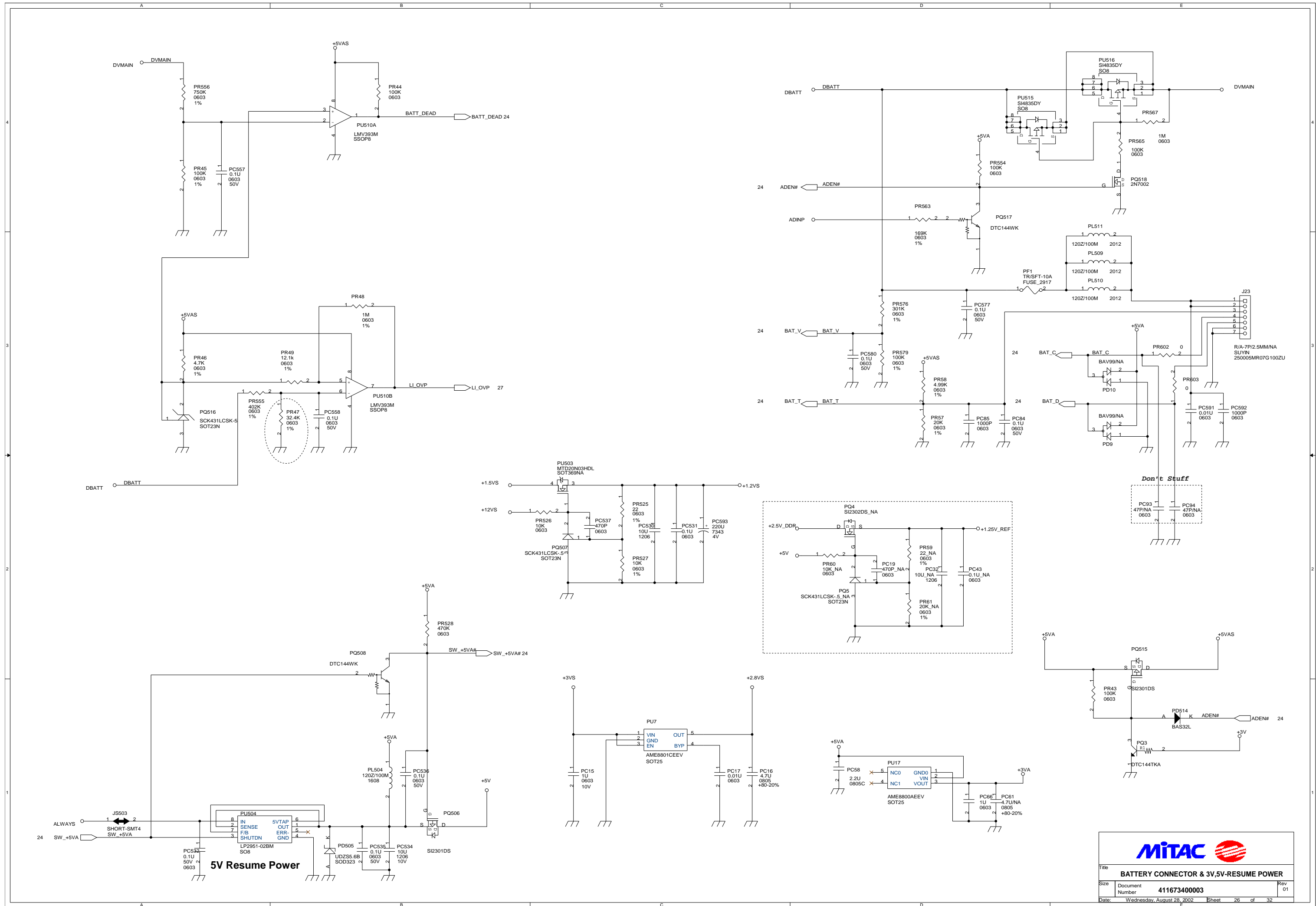
MINI-PCI



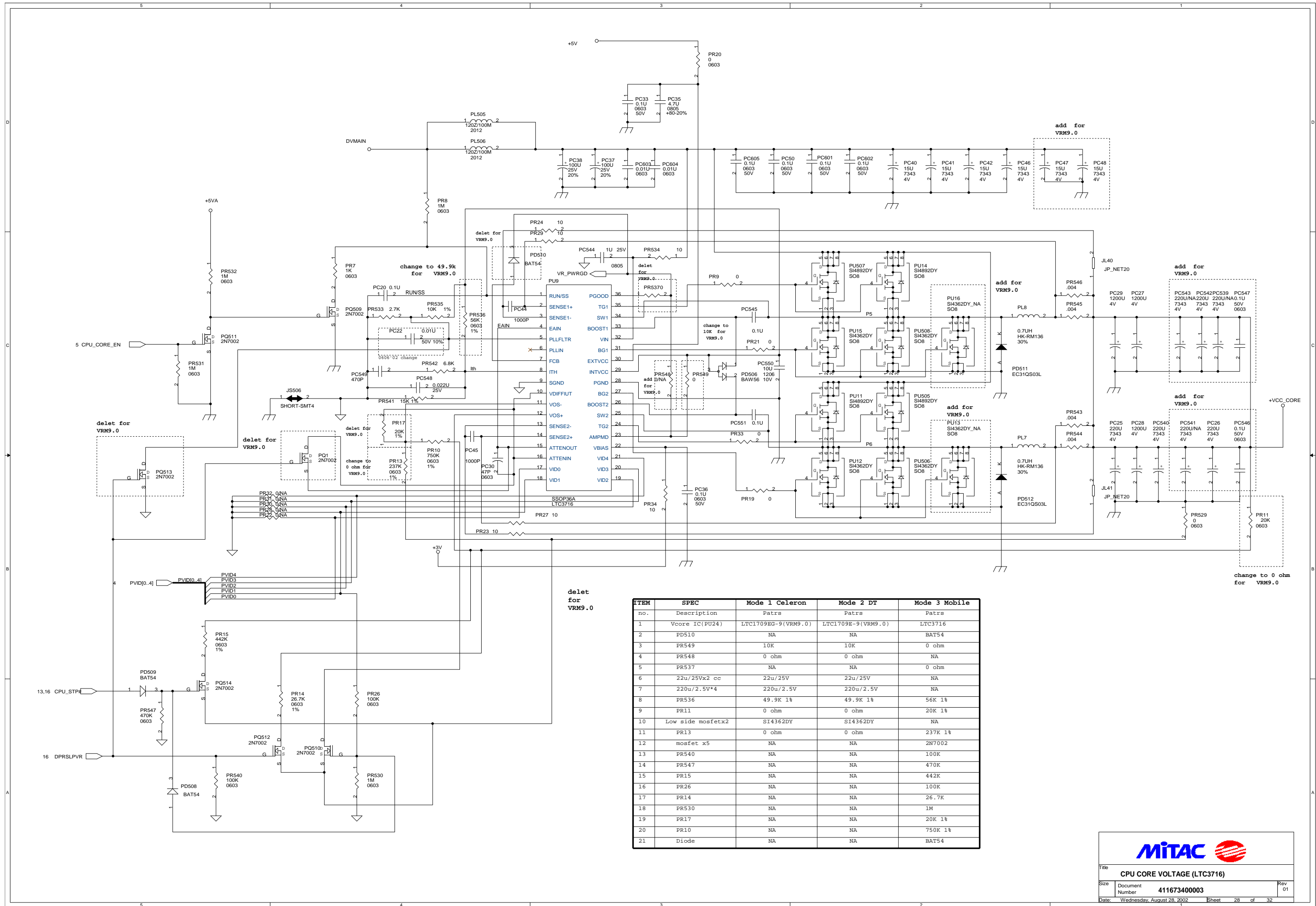
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MINIPCI			
Size	Document Number	8640	Rev 01
Date:	Wednesday, August 28, 2002	Sheet 23 of 32	



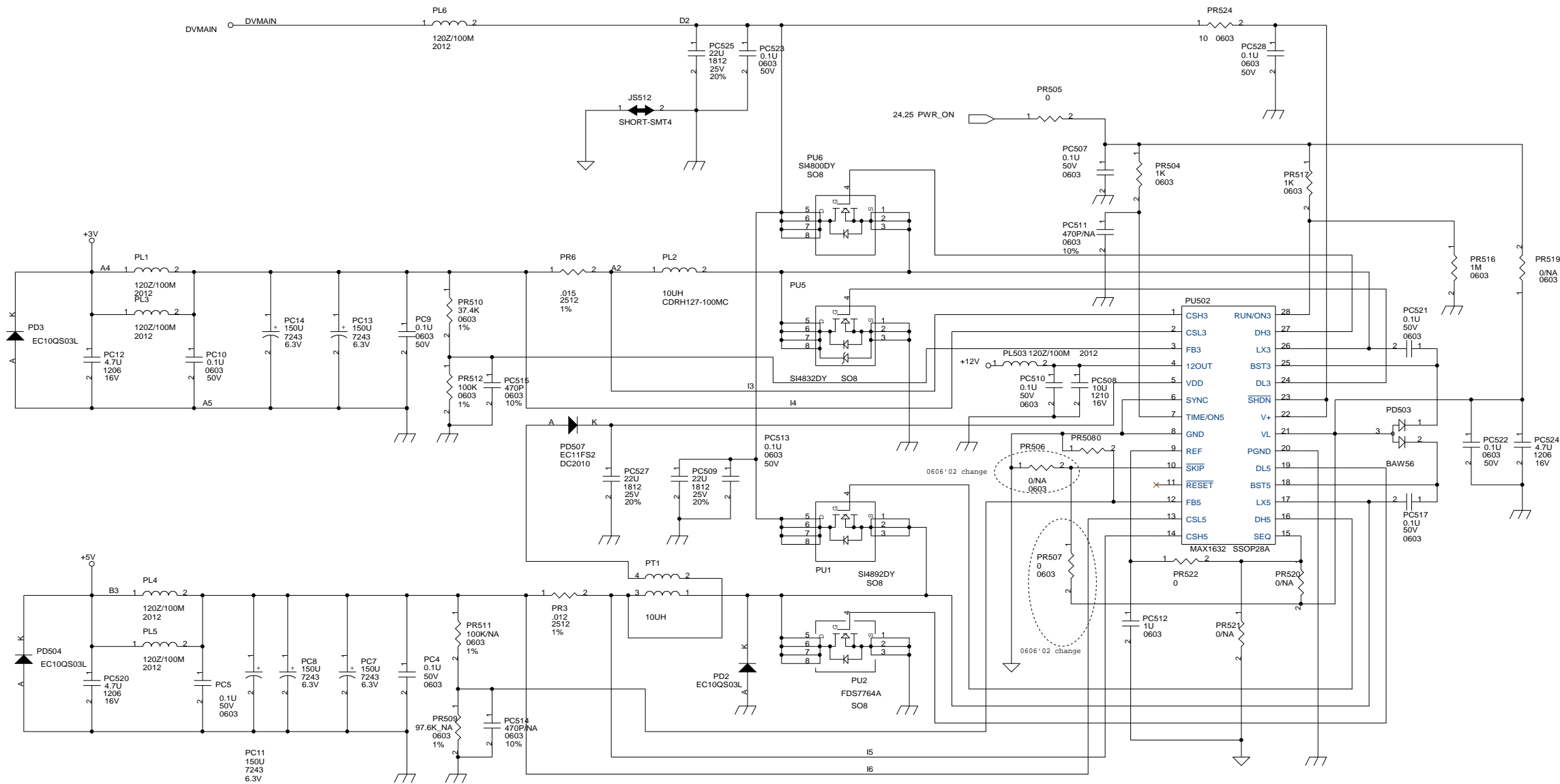


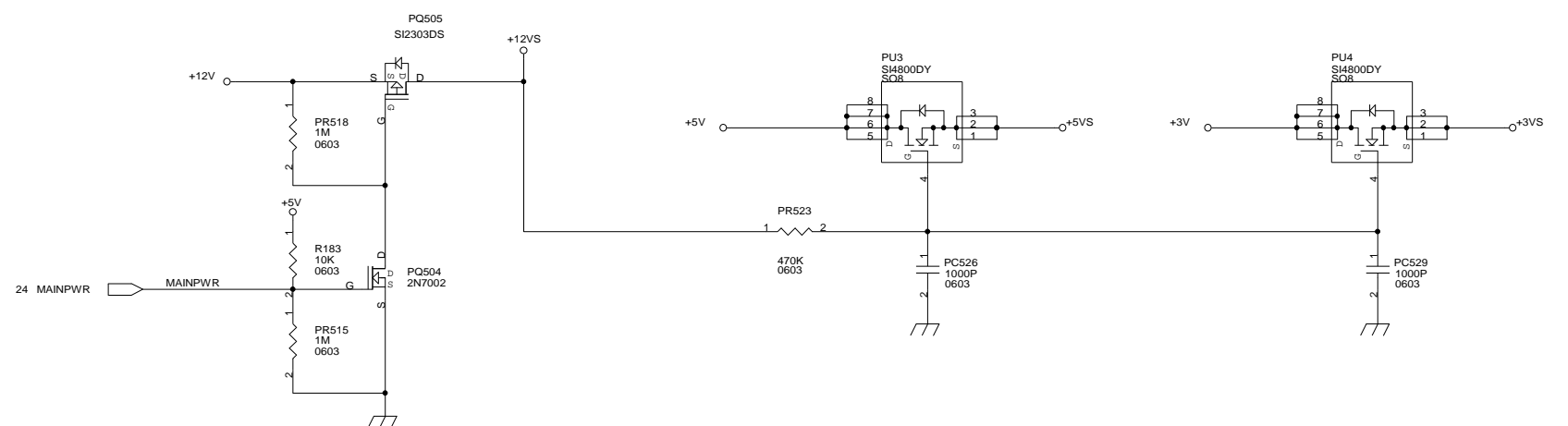
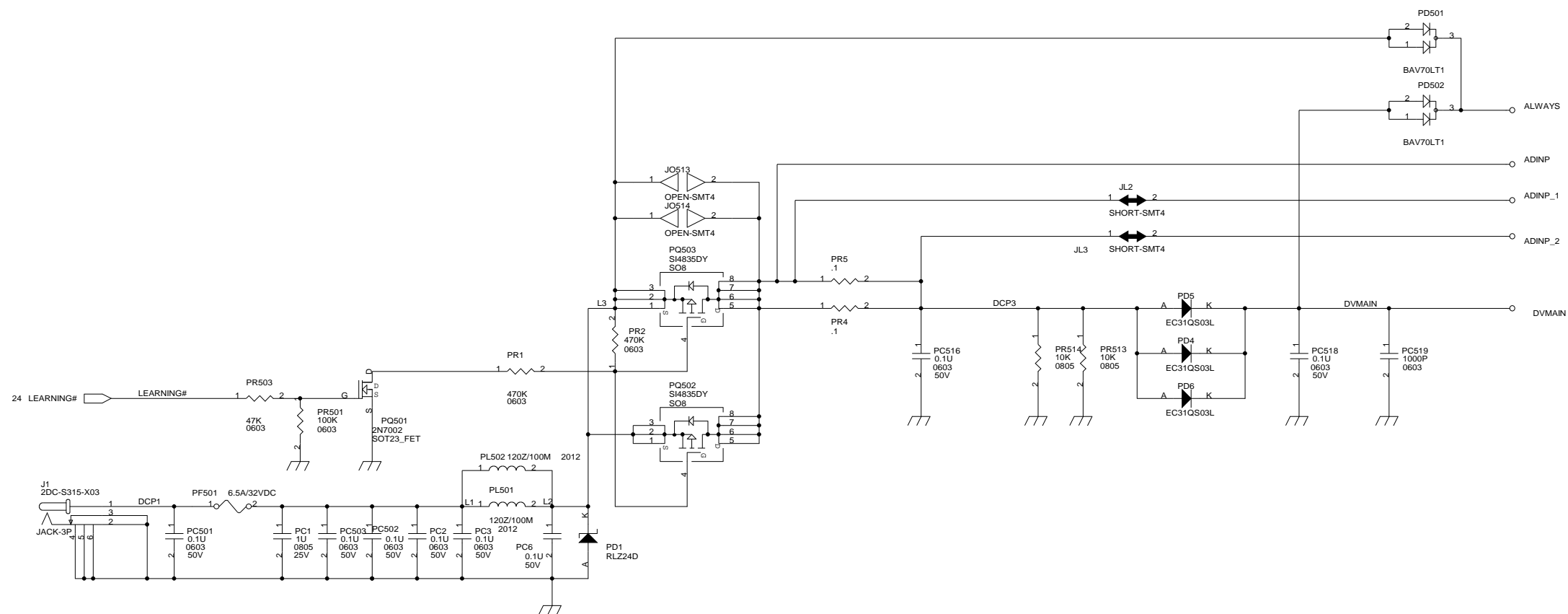






SYSTEM POWER (5V 3V 12V)





History:

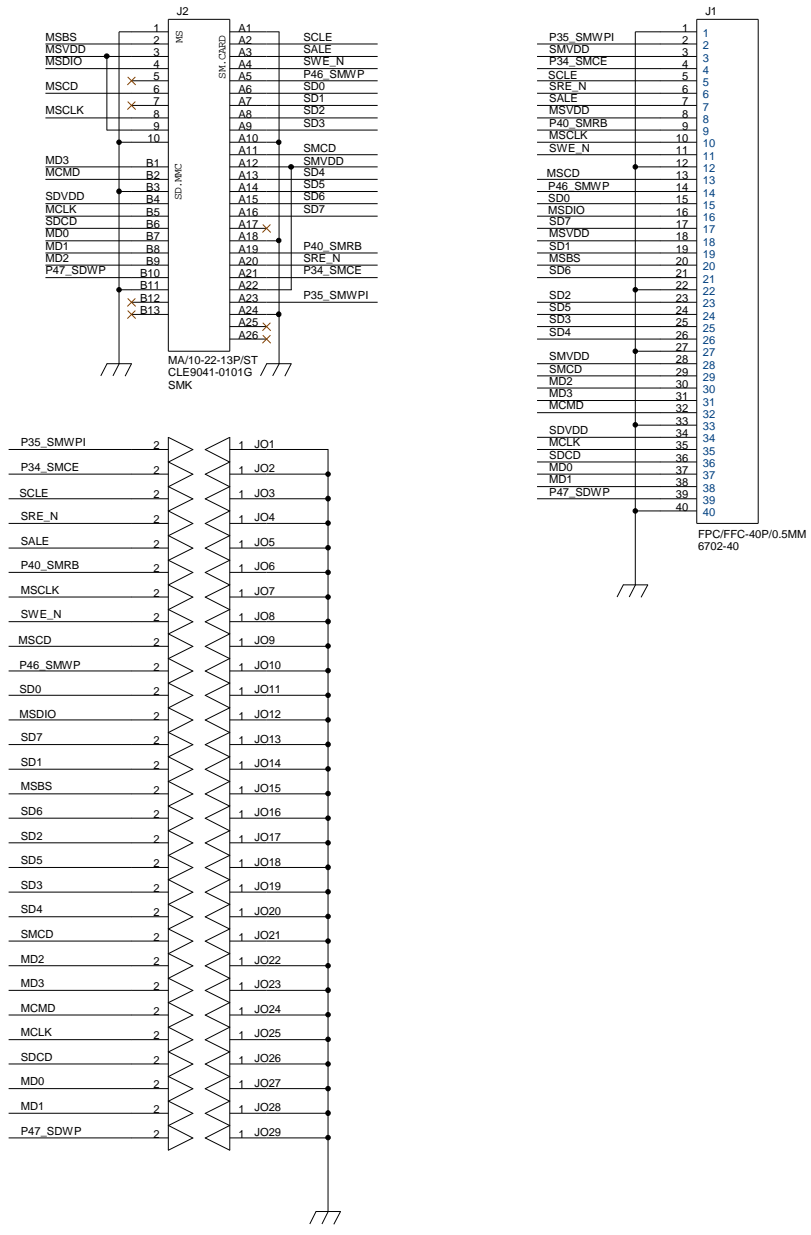
- REV. Layout
- 1.Changed FootPrint from 0603B to 0603D for easy layout.(all parts) 4/4/2002
 - 2.Change DDR socket from stand to rev at location J5 for easy layout. 4/4/2002
 - 3.Mirror 8P4C capacitors at location CP1,CP2,CP3,CP4,CP5,CP6 for easy layout. 4/4/2002
 - 4.Mirror array bead at location FA1,FA2,FA3,FA4,FA5,FA6 for easy layout. 4/9/2002
 - 5.Creat display ID for auto detect panel. 4/10/2002
 - 6.Change CPURST# pullup from 51ohm/NA to 51ohm at location R28 that the signal don't have on-die termination and must be terminated on the system board. 4/10/2002
 - 7.Change R44 value from 200 ohm to NA. 4/11/2002
 - 8.Change net name AGPVREF to AGP_VREF connect to MAP17 pin AC30 for AGP 4X mode. 4/11/2002 by Jim
 - 9.Change R43 from 200ohm to 301ohm and chang R45 from 301ohm to 200ohm for 0.4*VDDQ at AGP 2X mode. 4/11/2002
 - 10.Change R200 and R203 from 10K to NA tor set default NTSC (MAP17)in TVMODE. 4/12/2002
 - 11.Change R220 and R222 from 10K to NA for MAP17 default parallel ROM type. 4/12/2002
 - 12.Change R209 from 10K to NA to enable AGP faster write.4/12/2002
 - 13.Change R212,R213,R215,R218 from 10K to NA to enable the default device of MAP17.4/12/2002
 - 14.Mirror 8P4R resistors at location RP58 for easy layout. 4/12/2002
 - 15.Update Hardware Trap table for SIS692 in page 17. 4/12/2002
 - 16.Change net from +3VCC to VDDQ at locotation C161,C162,C163,C164,C165 for add VDDQ bypass.4/12/2002
 - 17.Change net of DDR damping resistors at location RP11,RP13,RP15,RP17,RP19,RP21,RP23,RP25,RP27,RP29,RP31,RP33,RP35 for easy layout.4/12/2002
 - 18.Change net of AGP pull up resistors at locotation RP48 foreasy layout .4/12/2002
 - 19.Add AGP pull up resistors at locotation R520~R528 and delete RP49 for easy layout .4/12/2002
 - 20.Update Hardware Trap table for SIS645DX/650 in page 7. 4/15/2002
 - 21.Change net of DDR thermination resistors at location RP12,RP14,RP16,RP18,RP20,RP22,RP24,RP26,RP28,RP30,RP32,RP34,RP36 for easy layout.4/15/2002
 - 22.Change resistors value from 10K to NA for MAP17 default 2M X 32 DDR SDRAM support at locotation R187,R191,R192,R194. 4/12/2002
 - 23.Change resistors value from 1K 5% to 1K 1% at locotation R172. 4/15/2002
 - 24.Correct the LVDS signals of channel 2 (page 11) . 4/15/2002
 - 25.Change LAN PHY from ICS1839 to ICS 1839AF. 4/16/2002
 - 26.Change net H8_PWROK from H8 pin A4 to P51 for Jimmy request . 4/16/2002
 - 27.Update B TO B connector from 50 pin to 70 pin at location PJ1. 4/16/2002
 - 28.Update Quick Key board connector from 10 pin to 20 pin at location J22. 4/16/2002
 - 29.Add THERM_ADM# net from ADM1032 to H8(add R533,R532,Q29) . 4/16/2002
 - 30.Add NET of WIRE_LED# from MINI PCI to J22. 4/16/2002
 - 31.Change CRT_DDA,CRT_DDCK pull up voltage from +5VS to +3VS . 4/16/2002
 - 32.Change capacitors value from 100P to 22P at location C483,C486,C487,C494,C503 for USB. 4/16/2002
 - 33.Disconnect USB_OC#5 to R359 pull up to +3V and delete unuse parts of R361,R362 for USB5 pair pull low 15K . 4/16/2002
 - 35.Correct the signals name from AD[0..31] to PCI_AD[0..31] . 4/16/2002
 - 36.Delete unuse parts of Q18,R482 . 4/16/2002
 - 37.Add AC-Link signals in Mini-PCI (For MDC) . 4/16/2002
 - 38.Connector MINI PCI pin 21 to PCI_REQ3# ,pin22 to PCI_GNT3#, pin43 to IDSEL AD22 and pin121 to RI for costumer request. 4/16/2002
 - 39.Mirror chock at location L57,L58 for easy layout. 4/16/2002
 - 40.Correct the PCI_DEVID3 from MAP17 pin AC3 to pin AB3 . 4/17/2002
 - 41.Change MD_PD pull up voltage from +3V to +3VS at location R229 . 4/17/2002
 - 42.Change DIRECT pull up voltage from +3VS to 1394VCC3 at location R455 . 4/17/2002
 - 43.Add by pass 10U capicator for 1394VCC3 at location C661 . 4/17/2002
 - 44.Change PCI1410 CORE and PCI voltage from +3VS to CBVCC3. 4/17/2002
 - 45.Add by pass 10U capicator for PCI1410 CBVCC3 at location C662 . 4/17/2002
 - 46.Change MAP17 VDDAGP netname from +1.5VS to VDDQ at pin AG14,AK14,AG17,AK17,AG20,AK20,AK23,AK26,AK29,AF30. 4/17/2002
 - 47.Remove Side Band bus from NB and MAP17.4/17/2002
 - 48.Add THRMTRIP# pull up resistor to VCCPVID at location R539 . 4/17/2002
 - 49.Change X2 value from NA to 27MHZ and change X3,C311,C312 to NA. 4/17/2002
 - 50.Remove unuse resistor at location R148.4/17/2002
 - 51.Add net COVER_SW# to B to B connector . 4/17/2002
 - 50.Remove dumping resistors of LAN MII TX signals at location R299,R301,R303,R307.4/18/2002
 - 52.Change turn on main power net from SUSB# to MAINPWR(H8 P40 pin49) and delete unuse part of Q26. 4/18/2002
 - 53.Update Hardware Trap table for M650 Panel ID in page 17. 4/17/2002
 - 54.Add pull up resistor for MAINPWR at location R540 . 4/17/2002
 - 55.Rename USB0VCC5 to USB2VCC5 at USB2 pair voltage net name . 4/17/2002
 - 56.Add by pass 10U capicator for AGP VDDQ at location C663 . 4/17/2002
 - 57.Delete R147 and connect VDDFBIO to VDD_MEM2.5 . 4/22/2002
 - 58.Change AGP bus pull up voltage from +1.5VS to VDDQ at location RP48,RP50,525~R528 . 4/22/2002
 - 59.Creat TV_COMP net to support AV output.(Add C554,C665,C666,D29,L83 and delete R113) . 4/22/2002
 - 60.Connect AGP VDDQ net to +1.5VS for easy layout. 4/22/2002
 - 61.Change R533 pull up voltage from +5V to +3V.4/22/2002
 - 62.Delete duplicate capicator of CARS_RI# signa at location C555 . 4/22/2002
 - 63.Connect +12VS,+3VS,+3v,+5V,DVMAIN to PJ1 BTB connector. 4/22/2002
 - 64.Remove unuse net USB_OC#5 at BTB connector . 4/22/2002
 - 65.Add +5VS connect to BTB connector (pin44) . 4/23/2002
 - 66.Change ISA pull up resistors from 4.7K to 10K at location RP40~RP46.4/23/2002
 - 67.Delete R470,R474 and connect CLKRUN# to PC83793 pin6.4/23/2002
 - 67.Delete R473 and disconnect SUS_STAT# to PC87393.4/23/2002
 - 68.Add pull up 10K resistor for ROMCS# signal at location R451. 4/23/2002
 - 69.Connect +5VS to PJ1 pin34. 4/24/2002
 - 70.Connect DVMAIN to PJ1 pin32. 4/24/2002
 - 71.Mirror L69,L71,L73,L75 for easy layout. 4/24/2002
 - 72.Change CRT_IN# pull up voltage from +3VS to +3V at location R233.4/24/2002
 - 73.Add 10U capacitors for +2.5V_DDR at location C667~C671. 4/24/2002
 - 74.Change PCI_REQ1# pull up resistor from RP37 to R542. 4/24/2002
 - 75.Change R334 from 4.7K to NA. 4/24/2002
 - 76.Delete R326 and change the connect pin of MPCIACT# from SIS962 pine E5 to T8.4/24/2002
 - 77.Delete R325 and change the connect pin of SPK_OFF from SIS962 pine C4 to U4.4/24/2002
 - 78.Change AGP_STOP# and AGP_BUSY# vpull up voltage from +3VS to +1.5VS .4/25/2002
 - 79.Add MIC connector in M/B at location J30 . 4/25/2002

- 80.Connect the net of AGP_STOP# to SIS962 pin E5 through series diode at location D30.4/24/2002
 - 81.Change the net of CPUPERF# through series diode at location D31 to SIS962 pin A16.4/24/2002
 - 82.Add reserve resistor R544 to connect SUSC# and H8_SUSU for debug only. 4/24/2002
 - 83.Change R359 value from 10K to NA .4/24/2002
 - 84.Update Hardware strap table in sheet 17 to change USB_OC#5(South bridge debug mode) disable status from Hi to Low .4/28/2002
 - 85.Add pull up resistor for the net of ROMCS# at location R541. 4/24/2002
 - 86.Delete the unuse parts at location R475 and TP48. 4/24/2002
 - 87.Delete R473 and disconnect the net of SUS_STAT# to SIO pin 7. 4/24/2002
 - 88.Delete R474 and connect CLKRUN# to SIO pin6. 4/24/2002
 - 89.Change the connection of MINI PCI RI from WAKE_UP# to H8 RI(pin48) . 4/24/2002
 - 90.Add pull up resistor for USB_OC#5 at location R577. 4/28/2002
 - 91.Change R261 value from 33 ohm to NA .4/28/2002
 - 91.Change pull up voltage of MPCIACT# from +3V to +3VS.4/28/2002
 - 92.Change the connection of C567 from LAN_GND to GND for easy layout.4/28/2002
 - 93.Connect the net of GPIO11 to X8 through series resistor at location R543.4/24/2002
 - 94.Change the net name of J11(1394 Connector) GND from 1394GND to 1394CAS_GND for easy layout.4/28/2002
 - 95.Add pull up resistor for the net of LPS at location R558. 4/28/2002
 - 96.Delete unuse bypass capacitors at location C13,C14,C15,C16,C44,C59,C41,C58,C63,C57,C56,C55,C54,C53,C51,C221,C359,C358,C259,C262,C253,C274,C228,C237,C236,C247,C266,C130. 4/24/2002
 - 97.Change R328 value from 0 ohm to NA .4/29/2002
 - 98.Change R296 value from 0 ohm to NA and R305 from NA to 0 ohm .4/29/2002
 - 99.Change R367 value from NA to 432 1% ohm .4/29/2002
 - 100.Change R395 value from 0 ohm to NA and R394 from NA to 0 ohm .4/29/2002
 - 101.Delete Q3 and connect WIR_LED# to MINI PCI pin 13 through a series resistor R559.4/29/2002
 - 102.Add Q32,Q33 to switch SMBUS and spreath SB (SMBUS signals) at S3 status.4/29/2002
 - 103.Change G gate voltage from +3VS to +5VS at location Q19 .4/29/2002
 - 104.Add J037~J040 at 1394 output signals for ESD.4/29/2002
 - 105.Add J041 at MIC signals for ESD.4/29/2002
 - 106.Change the connection of C638 from H8 RI#(pin 48) to PCI1410 MF2(pin 64) .4/29/2002
 - 107.Correct the Foot Print of RJ45 connector .4/29/2002
 - 108.Correct the Foot Print of PS2 connector .4/29/2002
 - 109.Change AGP_DEVSEL# pull up from RP48 pin 3 to pin 7 for easy layout.4/29/2002
 - 110.Change AGP_RBF# pull up from RP48 pin 2 to pin 6 for easy layout.4/29/2002
 - 111.Add Q34,R560,R561 to shift level and connect the new net of PSON#_H8 to H8 pin21 .4/29/2002
- Rename reference. 4/30/2002**
- 112.Change Resistors value from 51ohm 5% to 49.9 ohm 1% at location R89,R611,R667,R673,R674,R679,R680,R681.5/2/2002
 - 113.Change R106,C112,OSC501,C706 value to N/A.5/2/2002
 - 114.Change C128,c126 from NA to 10P.5/2/2002
 - 115.Change X2 value to NA.5/2/2002
 - 116.Change L11,C554,C557,C556 value to NA.5/2/2002
 - 117.Change F501value from NA to SMDCL10 ,D503 from NA to EC11FS2 and C501 from NA to 10U.5/2/2002
 - 118.Change R614 from 147 ohm 5% to 150 ohm 1%.5/3/2002
 - 119.Change R731 from 5.6K ohm to 4.7K ohm.5/3/2002
 - 120.Change R639~R642 from 56.2 ohm to 56 ohm.5/3/2002
 - 121.Correct Footprint from 0603D_DFS to 0603D at location R761,R736,R740,R742 .5/3/2002
 - 122.Change C853~C872 value from 1000P to 0.1U 5/6/2002
 - 123.Change C877,C891~C893 value from 0.015U to 0.1U 5/6/2002
 - 124.Change the value from 49.9 ohm 1% to 51 ohm 1% at location R611,R645,R648,R650,R653,R663,R667,R670,R673,R674,R679,R680,R681,R89. 5/6/2002
 - 125.Change the value from NA to 27P at location C674,C675. 5/6/2002
 - 126.Change the value from NA to 25MHZ at location X505. 5/6/2002
 - 127.Change the value from 0 ohm to NA at location R697. 5/8/2002
 - 128.Change the value from 10K ohm to NA at location RP507. 5/9/2002
 - 129.Change the value from NA to 10K ohm at location R170. 5/9/2002
 - 130.Change the value from 8.2K to NA at location R150, R147. 5/9/2002
 - 131.Change the value from 10K 5% to 10K 1% at location R77,R72. 5/9/2002
 - 132.Change the value from NA to 10K at location R174. 5/9/2002
 - 132.Change the value from NA to 0 at location R184. 5/9/2002
 - 132.Change the value from 0 to NA at location R185. 5/9/2002
 - 132.Change the value from 22P to NA at location CP503,CP504,CP505,CP506. 5/9/2002

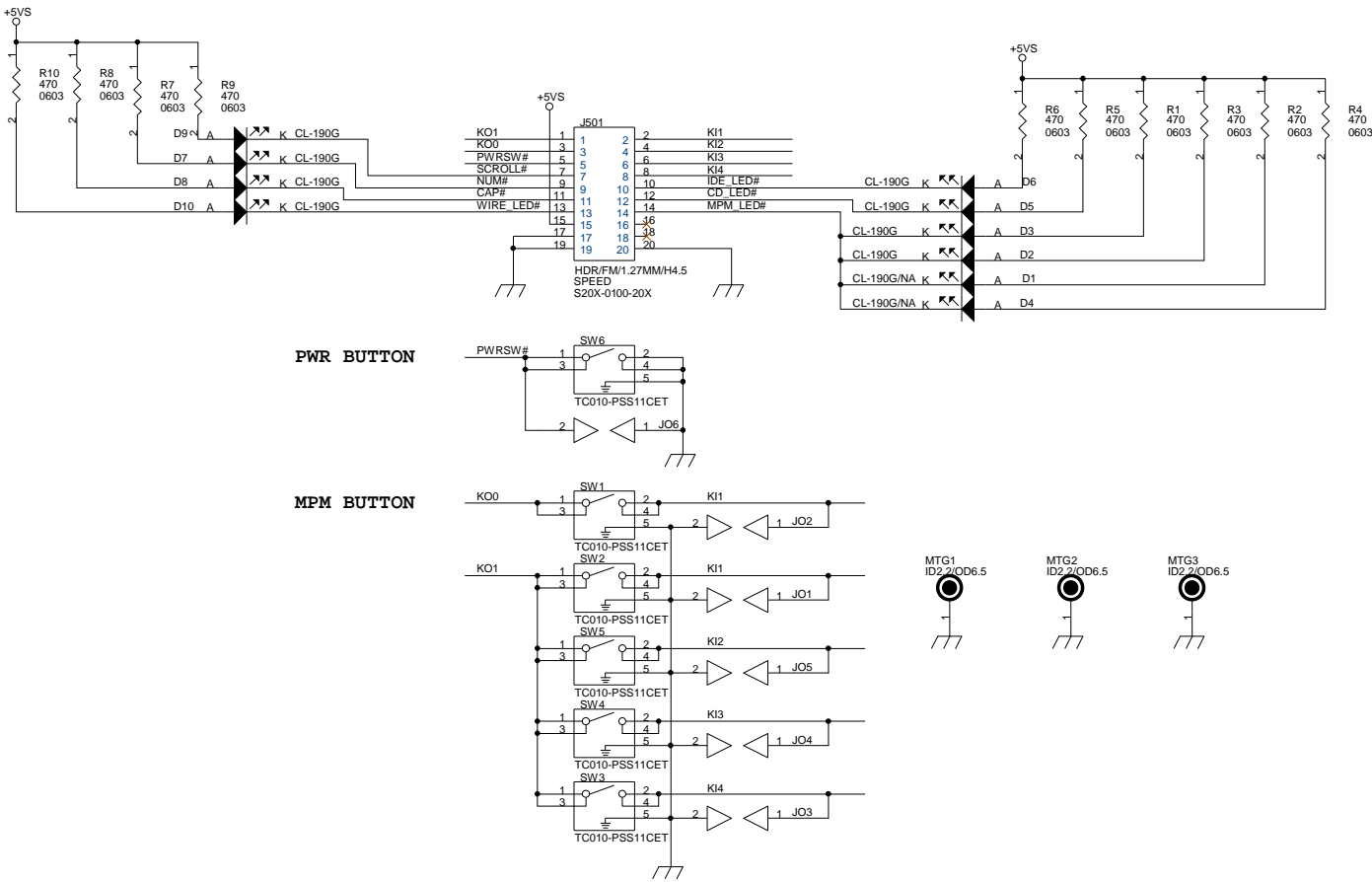


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Date:	Wednesday, August 28, 2002		

8640 FPC R01



8640 EASY BUTTON BOARD

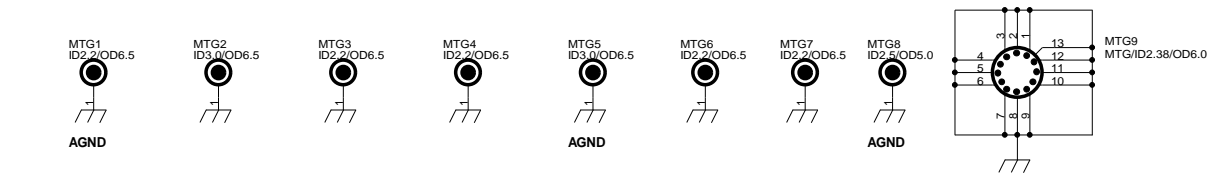


MODEL : 8640 Card Reader/Audio/Touch Pad Board Revision 00

Contexts

Title	Page
COVER SHEET & HISTORY	1
BTB/CD-ROM CONNECTOR	2
AUDIO CODEC	3
AUDIO AMP	4

1. Correct SM/MS pull up voltage to +3V.
2. Correct W27C512 VCC from +5VS to +5V.
3. Change the connection of 24C02 pin8 from +3V to GND to disable write protect.
4. Change the pin assignment of J1 for ESD solution.
5. Delete SW1 and SW4.
6. Change the TOUCH PAD connect from 6 pin to 12 pin at location J501.
7. Add damping resistors for Card Reader signals at location R513~R516.
8. Add Audio Code clock select function at location R70,R71.
9. Add 10K/NA resistor connect to GND of 14.318MHZ_AUDIO net at location R517 for EMI request.
10. Delete capacitors for ALC2002 at location C36,C39,C55.
11. Change resistance from 200K to 200K/NA at location R54,R55 to disable BEEP function.
12. Change bead to DFS type at location L501~L504.
13. Change the connection of Q2 pin2 from Q504 pin3 to +3VS
14. Delete R57.
15. Add 0 ohm resistor at location R72.
16. Change the part of VR501.



5 mil	<div></div>	COMP
4 mil	<div></div>	AGND
20 mil	<div></div>	IN1
5 mil	<div></div>	IN2
4 mil	<div></div>	DGND
	<div></div>	SOLDER

DRAW	DESIGN	CHECK	ISSUED



Title

COVER SHEET & HISTORY

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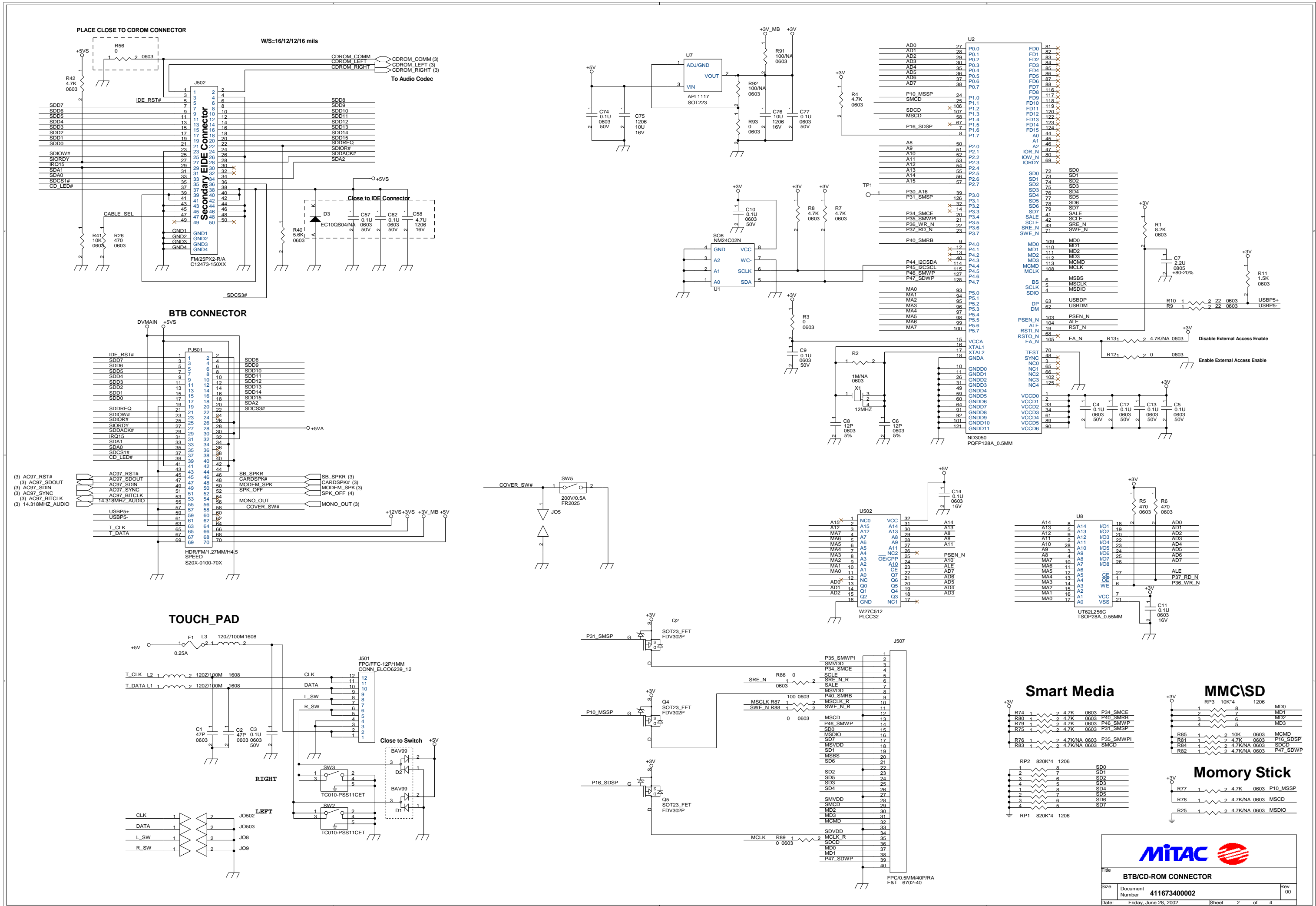
Friday, June 28, 2002

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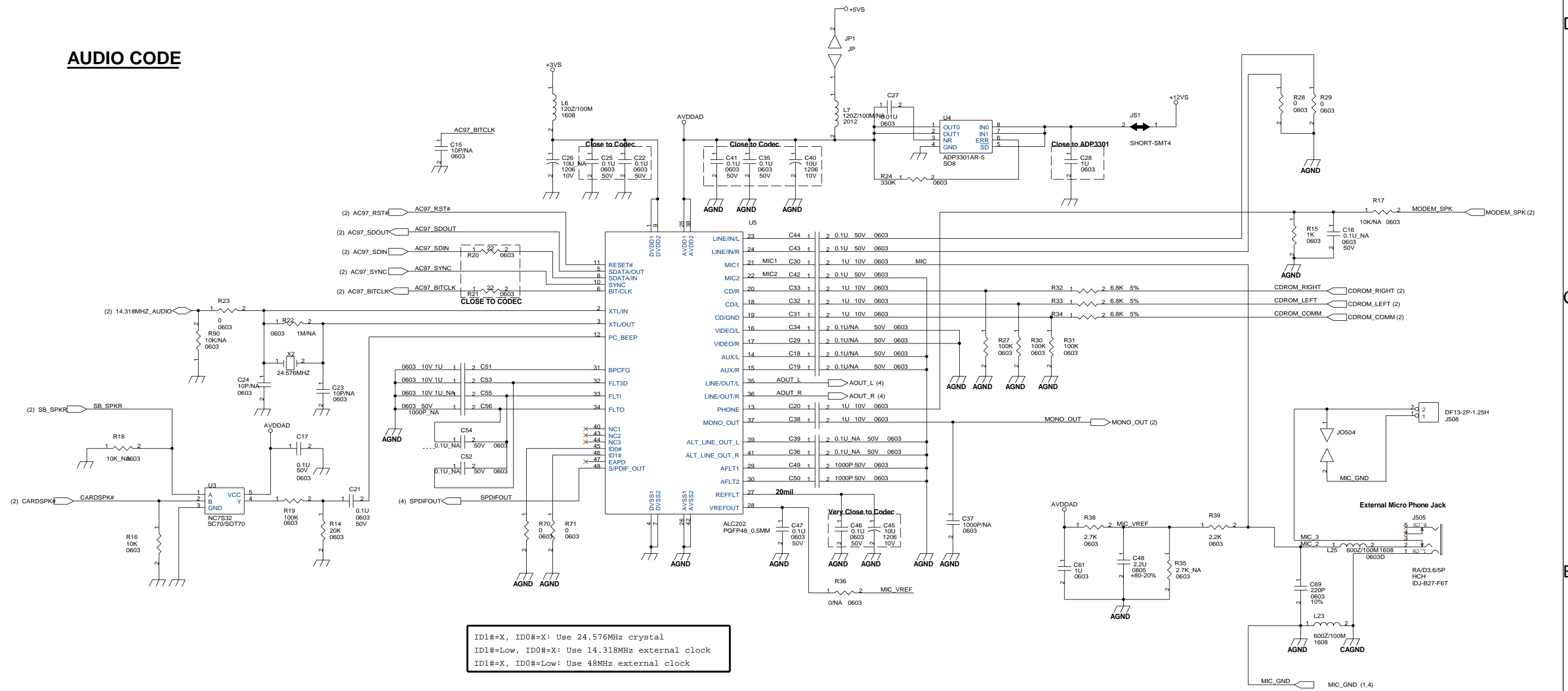
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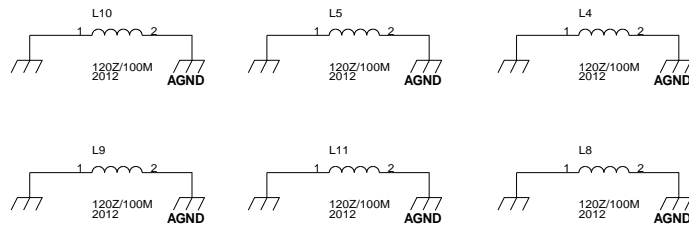
4



AUDIO CODEC



ID1#=X, ID0#=X: Use 24.576MHz crystal
 ID1#=Low, ID0#=X: Use 14.318MHz external clock
 ID1#=X, ID0#=Low: Use 48MHz external clock



Title		
AUDIO CODEC		
Size	Document	Rev
Custom	Number	00
Date: Friday, June 28, 2002		Sheet 3 of 4

REFERENCE MATERIAL

Intel Pentium4 x4 Processor/Northwood Processor

Intel, INC.

“SIS650/645DX North Bridge”

SIS, INC.

“SIS962 South Bridge”

SIS, INC.

H8(3437S) Universal Keyboard Controller

Hitachi, Ltd.

ENE CB1410 PC Card Interface Controller

TI, INC

Nvidia Gforce4 map17 graphics

Nvidia, Inc.

caiman Hardware Specification

Technology Corp / MiTAC

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