

Service Manual

ViewSonic Q19wb-3

Model No. VS11578

19" Color TFT LCD Display

(Q19wb-3_SM Rev. 1a Oct. 2006)

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Revision History

Revision	SM Editing Date	ECR Number	Description of Changes	Editor
1a	10/31/2006		Initial Release	Jamie Chang

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1. Precautions and Safety Notices

1. Precaution & Safety Notice

1. Caution :

No modification of any circuit should be attempted . Service work should only be performed after you are thoroughly familiar with all of the following safety checks and servicing guide line

2. Safety Check :

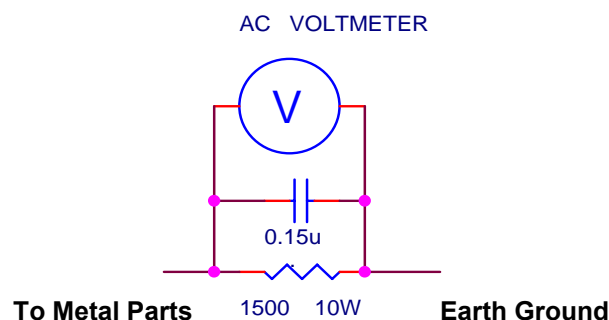
Care should be taken while servicing this LCD display. Because of the high voltage used in the inverter circuit. These voltage are exposed in such areas as the associated transformer circuits .

3. POWER SUPPLY REQUIREMENTS



The external power converter for this display utilizes AC and DC cords , AC cord is detachable , but DC cord is permanently attached . Any attempt to replace another adapter could result in serious problem on the display .



4. LEAKAGE CURRENT HOT CHECK



- 4-1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.
- 4-2 Connect a 1500 ohm , 10 watt resistor , paralleled by a 0.15uF capacitor between each metallic part and a good earth ground
- 4-3 Use an AC voltmeter with 1000 ohm / volt or more sensitivity and measure the AC voltage across the combination 1500 ohm resistor and 0.15uF capacitor.
- 4-4 Move the resistor connection to each exposed metallic part and measure the voltage.
- 4-5 Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.
- 4-6 Voltage measured must not exceed 1.5 volt RMS, from any exposed metallic part to the ground. A leakage current tester may be used in the above hot check, in which case any circuit measured must not exceed 1.0 milliamp. In the case of a measurement exceeding the 1.0 milliamp value, a rework is required to eliminate the chance of a shock hazard .







Q19wb-3 series handling Notice

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

2. Specification

1. GENERAL REQUIREMENTS

General Specification

Test Resolution & Frequency	1440x900 @ 60Hz
Test Image Size	Full Size
Contrast and Brightness Controls	Factory Default: Contrast = 80%, Brightness = 100%

2. SIGNAL INTERFACE

Video Interface

Input Connector (refer the appendix A)	D-Sub = DB-15 (Analog)
Default Input Connector	D-Sub
Video Cable Strain Relief	Equal to twice the weight of the monitor for five minutes
Video Cable Connector DB-15 Pin out	Compliant DDC1/2B
Video Signals	Video RGB (Analog) Separate Sync / SOG / Composite
Video Impedance	75 Ohms (Analog)
Maximum PC Video Signal	950 mV with no damage to monitor
Maximum Mac Video Signal	1250 mV with no damage to monitor
Sync Signals	TTL
DDC/CI	N/A
Sync Compatibility	Separate Sync / Composite Sync / SOG
Video Compatibility	Shall be compatible with all PC type computers, Macintosh computers, and after market video cards
Resolution Compatibility	640 x 350, 640 x 400, 640 x 480, 720 x 400, 800 x 600, 832 x 624, 1024 x 768, 1152 x 864, 1152 x 870, 1280 x 1024, 1440 x 900,
Exclusions	Not compatible with interlaced video

3. Power

Internal Power Supply	Delta EADP-45AF BF
Input Voltage Range	90 to 264 VAC
Input Frequency Range	47.5 to 63 Hertz
Short Circuit Protection	Output can be shorted without damage
Over Current Protection	5.0 A typical at 12.0 VDC
Leakage Current	0.75mA (Max) at 264VAC / 50Hz
Efficiency	75 % (min.)
Fuse	Internal and not user replaceable
Power Dissipation	45 Watts (typ)
Max Input AC Current	1.2 Arms @ 90VAC, 0.7 Arms @264VAC
Inrush Current (Cold Start)	60 A (max) @ 115VAC 90A(Max)264VAC
Power Supply Cold Start	Shall start and function properly when under full load, with all combinations of input voltage, input frequency, and operating temperature.
Power Supply Transient Immunity	Shall be able to withstand an ANSI/IEEE C62.41-1980 6000V 200 ampere ring wave transient test with no damage.
Power Supply Line Surge Immunity	Shall be able to withstand 1.5 times nominal line voltage for one cycle with no damage.
Power Supply Missing Cycle Immunity	Shall be able to function properly, without reset or visible screen artifacts, when ½ cycle of AC power is randomly missing at nominal input.
Power Supply Acoustics	The power supply shall not produce audible noise that would be detectable by the user. Audible shall defined to be in compliance with ISO 7779 (DIN EN27779:1991) Noise measurements of machines acoustics. Power Switch noise shall not be considered.
Power Saving Operation(Method)	VESA DPMS Signaling
Power Consumption	On Mode < 40 W (Typ) / 36 W (max) Active Off < 1 W
Recovery Time	On Mode = N/A, Active Off < 5 sec

4. ELECTRICAL REQUIREMENTS

Horizontal /Vertical Frequency

Horizontal Frequency	31 – 81 kHz
Vertical Refresh Rate	50 – 75 Hz.
Maximum Pixel Clock	140 MHz
Sync Polarity	Independent of sync polarity.

Timing Table

Item	Timing	Analog			Digital - TMDS	Remark
		Separated	Composite	SOG		
1	640 x 350 @ 70 Hz, 31.5 KHz					
2	640 x 400 @ 70 Hz, 31.5 KHz					For Separated Sync, Switch 640x400@70Hz and 720x400@70Hz by [AUTO]+[MENU] short cut key (primary = 720x400@70Hz)

3	640 x 480 @ 60 Hz, 31.5 KHz					
4	640 x 480 @ 67 Hz, 35 KHz					
5	640 x 480 @ 72 Hz, 37.9 KHz					
6	640 x 480 @ 75 Hz, 37.5 KHz					
7	720 x 400 @ 70 Hz, 31.5 KHz					
8	800 x 600 @ 56 Hz, 35.1 KHz					
9	800 x 600 @ 60 Hz, 37.9 KHz					
10	800 x 600 @ 72 Hz, 48.1 KHz					
11	800 x 600 @ 75 Hz, 49.6 KHz					
12	832 x 624 @ 75 Hz, 49.7 KHz					
13	1024 x 768 @ 60 Hz, 48.4 KHz					
14	1024 x 768 @ 70 Hz, 56.5 KHz					
15	1024 x 768 @ 72 Hz, 58.1 KHz					
16	1024 x 768 @ 75 Hz, 60 KHz					
17	1152 x 864 @ 75 Hz, 67.5 KHz					
18	1152 x 870 @ 75 Hz, 68.7 KHz					
19	1280 x 1024 @ 60 Hz, 64 KHz					
20	1280 x 1024 @ 75 Hz, 80 KHz					
21	1280 x 960 @ 60 Hz 59.7 KHz					
22	1440 x 900 @ 60 Hz, 55.9 KHz					
23	1440 x 900 @ 75 Hz, 70 KHz					

Changing Modes

- Maximum Mode Change Blank Time for image stability : 3 seconds (Max), excluding “Auto Adjust” time
- Under DOS mode (640 x 350, 720 x 400 & 640 x 400), it should recall factory setting when execute “Auto Adjust”
- The monitor needs to do “Auto Adjust” the first time a new mode is detected
(see section “0-Touch™ Function Actions”)
- While running Change Mode, Auto Adjust or Memory Recall, the image shall blank

5. LCD Panel

1st Source Panel

Model number	Hannstar HSD190MGW1-A00
Type	Active Matrix TFT
Active Size	19.1"w
Pixel Arrangement	RGB Vertical Stripe
Pixel Pitch	0.2835mm x 0.2835mm
Glass Treatment	Anti-Glare
# of Backlights	4 CCFL
Backlight Life	50000 Hrs (Min) @ 6.5mA
Luminance (Center) – CT = 6500K, Contrast/ Brightness = Max	300 cd/m2 (Typ after 30 minute warm up) 240 cd/m2 (Min after 30 minute warm up)
Brightness Uniformity	75% (min)
Contrast Ratio	700 :1 (Typ) 450 : 1 (Min)
Color Depth	16.2 million colors (6-bit+FRC panel)
Horizontal Viewing Angle	150 degrees (Typ) @ CR>10 130 degrees (Min) @ CR>10
Vertical Viewing Angle	140 degrees (Typ) @ CR>10 120 degrees (Min) @ CR>10
Response Time 10%-90% @ Ta=25°C	On/Off Typical = 5 ms (Tr = 1.5 ms; Tf = 3.5 ms) Maximun = 10 ms (Tr = 3ms; Tf = 7ms)
Mercury	3.5 mg per lamp
Panel Defects	Please see Panel Quality Specifications.

2nd Source Panel

Model number	Hannstar HSD190MGW1-A02
Type	Active Matrix TFT
Active Size	19.1"w
Pixel Arrangement	RGB Vertical Stripe
Pixel Pitch	0.2835mm x 0.2835mm
Glass Treatment	Anti-Glare
# of Backlights	4 CCFL
Backlight Life	50000 Hrs (Min)@6.5mA
Luminance (Center) – CT = 6500K, Contrast/ Brightness = Max	300 cd/m2 (Typ after 30 minute warm up) 240 cd/m2 (Min after 30 minute warm up)
Brightness Uniformity	75% (min)
Contrast Ratio	700 :1 (Typ) 450 : 1 (Min)
Color Depth	16.2 million colors (6-bit+FRC panel)
Horizontal Viewing Angle	150 degrees (Typ) @ CR>10 130 degrees (Min) @ CR>10
Vertical Viewing Angle	140 degrees (Typ) @ CR>10 120 degrees (Min) @ CR>10
Response Time 10%-90% @ Ta=25°C	On/Off Typical = 5 ms (Tr = 1.5 ms; Tf = 3.5 ms) Maximun = 10 ms (Tr = 3ms; Tf = 7ms)
Mercury	3.5 mg per lamp
Panel Defects	Please see Panel Quality Specifications.

6. MECHANICAL.

Dimension (Desktop)

Width	446mm (17.6")
Height (Height adjust to the bottom)	364mm (14.3")
Depth	213.6mm (8.4")
Monitor Weight	4.4Kg (9.7 lbs)

*Refer to Figure 1

Dimension (Head Only / Wall Mount)

Width	446mm (17.6")
Height	292mm (11.5")
Depth	66.6mm (2.6")
Monitor Weight	4.0 Kg (8.8 lbs)

*Refer to Figure 1

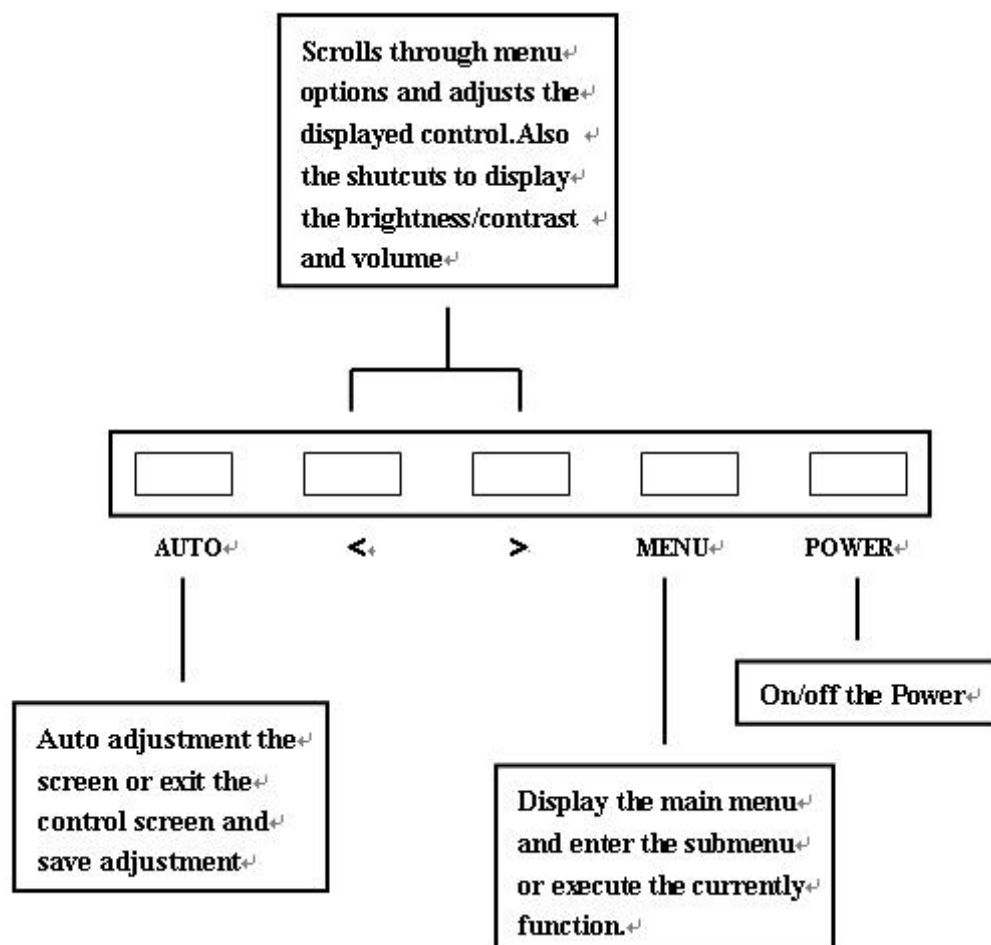
Ergonomics

Tilt Up	$\geq 20^{\circ}$
Tilt Down	From 0° down to $-3^{\circ} \sim -5^{\circ}$

7. ENVIRONMENTAL

- Operating Temperature : 0°C to $+40^{\circ}\text{C}$
- Storage Temperature : -20°C to $+60^{\circ}\text{C}$
- Operating Relative Humidity : 20% to 90% RH Non-Condensing
- Storage Relative Humidity : 5% to 90% RH Non-Condensing
- Operating Altitude : 0 to +3,000 meters
- Storage Altitude : 0 to +12,000 meters

3. Front Panel Function Control Description



Main Menu Controls

Adjust the menu items shown below by using the left and right buttons.

- A. **Brightness adjusts** the lamps current to control the screen brightness.
- B. **Contrast adjusts** the difference between the image background (black level) and the foreground (white level).
- C. **Image adjust** controls are explained below:
 - Auto Adjustment** automatically sizes, centers, clock ,phase and fine tunes the video signal to eliminate waviness and distortion. Press the [menu] button to obtain a sharper image.
 - H./V. Position adjusts** horizontal and vertical position of the screen image. You can toggle between Horizontal and Vertical by pressing button [menu]. Horizontal moves the screen image to the left or to the right. Vertical moves the screen image up and down.
 - Clock adjust** Sets up the internal clock. Larger values make the displayed image appear wider; smaller values make it appear compressed.
 - Phase adjust** Adjusts the internal clock's time lag in order to optimize the screen image.
 - Sharpness adjust** the clarity and focus of the screen image.
- D. **Color Adjust** provides several color options: preset color temperatures and Custom User Color which allows you to adjust red (R), green (G), and blue (B). The factory setting for this product is 6500K (6500° Kelvin).
 - 9300K — Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting).
 - 5400K — Adds red to the screen image for warmer white and richer red.
 - Custom User Color — Individual adjustments for red, green, and blue.
 - 1 To select color (R, G or B) press button [menu].
 - 2 To adjust selected color, press [<] or [>] .
 - 3 When you are finished making all color adjustments, press button [Auto] twice.
- E. **OSD CONTROL** controls are explained below:
 - H/V.OSD Position** allows you to move the on-screen display menus and control screens.
 - OSD Timeout** sets the length of time an on-screen display screen is displayed. For example, with a "15 second" setting, if a control is not pushed within 15 seconds, the display OSD disappears.
- F. **Other Adjust** controls are explained below:
 - Language allows** you to choose the language used in the menus and control screens.
 - Speaker volume** allows you to increase or decrease the volume.
 - Information** there is an optional OSD window that displays the newly adjusted screen resolution settings.
- G. **Reset** returns adjustments to the original factory settings if the display is operating in a factory Preset Timing Mode listed in this user guide.
- H. **Exit** allows you exit the OSD menu, press button [Menu].

4. Circuit Description

1. Outline

1.1 Auto button, left arrow button, right arrow button, Menu button, Power button on the front panel.

1.2 D-sub 15pin connector, audio line-in receptacle, and AC-IN are located on the back side of the cabinet.

1.3 OSD menu includes the following function;

(1) **Brightness& Contrast adjusts**

(2) **Image Adjust**

(3) **Color Adjust**

(4) **OSD Control**

(5) **Other Adjust**

(6) **Reset**

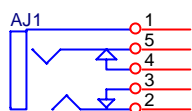
(7) **Exit**

1.4 Speaker Volume & the control bar is adjustable by [<], [>] button. Mute or Speaker [MENU] key when speaker volume OSD appear Audio volume can be controlled with right arrow button when Audio Adjust menu is active.

2. CONNECTORS

2.1 AC inlet : CEE7-7 typed connector

2.2 Audio : Line-in,

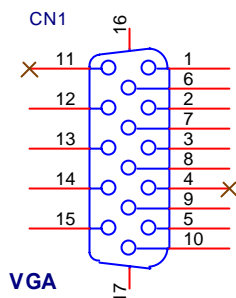


PHONE JACK 5P (ZD005D100)

Line-in receptacle

(Line-in receptacle is green)

2.3 Video signal connector for analog input: 15P Mini D-Sub



PIN	MNEMONI	SIGNAL
1	RV	Red Video
2	GV	Green Video
3	BV	Blue Video
4	NC	None
5	GND	Ground(DDC return)
6	RG	Red GND
7	GG	Green GND
8	BG	Blue GND
9	+5V	+5V (for DDC)
10	SG	Sync GND
11	NC	None
12	SDA	DDC Data
13	HS	Horizontal Sync
14	VS	Vertical Sync
15	SCL	DDC Clock

3. ELECTRICAL SPECIFICATIONS

3.1 Standard Testing conditions

Display Area	408.24(H) x 255.15(V) mm
Video Signal	0.7Vpp
Contrast	Default
Brightness	Default
Ambient	25 +/- 5 °C
Input	AC230V+/-10%@50HZ
Warming up	> 30 min
Display	1400 x 900@60HZ

3.2 POWER

3.2.1 Power supply

Input voltage	90~264Vac
Power frequency	47~63Hz
Input current	<1.2Arms@90Vac <0.7 Arms @264Vac
Inrush current	90A(Max) @ 264Vac(cold start)
Power consumption	40W(MAX)

3.2.2 Power Management

State	Power	Indicator
On	<40Watts	Green
Standby	< 1Watts	Amber
off	<1Watts	Dark

3.3 Acceptable timing

If the timing is within following specification, this LCD display can automatically function with a certain position.

Horizontal: Sync frequency: 31~81 KHz (Analog: 165MHz)

Vertical: Sync frequency: 50~75Hz

3.4 Signal level and input impedance

3.4.1 Video Signal level: 0.7Vp-p Video signal.

3.4.2 Sync Signal level

H/V Separate: TTL level

3.4.3 Input impedance

Analog video input: 75 ohm

Sync input: > 1 k ohm

Audio input: 10K ohm

4. SIGNAL CABLE: Signal cable with Mini D-Sub 15P connectors at both ends. Length: 1.8 meter.

5. EDID data

5.1. Analog EDID: Analog EDID is stored in U6

HSD panel:

VIEWSONIC CORPORATION

EDID Version # 1, Revision # 3

DDCTest For: ViewSonic Q19wb-3

EDID Block 0, Bytes 0-127

128 BYTES OF EDID CODE:

	0	1	2	3	4	5	6	7	8	9
0		00	FF	FF	FF	FF	FF	FF	00	5A 63
10		1F	3E	01	01	01	01	01	10	01 03
20		08	29	1A	78	2E	9B	B6	A4	53 4B
30		9D	24	14	4F	54	BF	EF	80	95 00
40		95	0F	81	80	81	40	71	4F	01 01
50		01	01	01	01	9A	29	A0	D0	51 84
60		22	30	50	98	36	00	98	FF	10 00
70		00	1C	00	00	00	FF	00	51	48 5A
80		30	36	30	31	30	30	30	30	31 0A
90		00	00	00	FD	00	38	4B	1F	50 0E
100		00	0A	20	20	20	20	20	20	00 00
110		00	FC	00	51	31	39	77	62	2D 33
120		0A	20	20	20	20	00	98		

(08-09)	ID Manufacturer Name	_____	=	VSC
(11-10)	Product ID Code	_____	=	3E1F
(12-15)	Last 5 Digits of Serial Number	_____	=	Not Used
(16)	Week of Manufacture	_____	=	01
(17)	Year of Manufacture	_____	=	2006
(10-17)	Complete Serial Number	_____	=	See Descriptor Block
(18)	EDID Version Number	_____	=	1
(19)	EDID Revision Number	_____	=	3
(20)	VIDEO INPUT DEFINITION:			
	Analog Signal			
	0.700, 0.300 (1.000 Vp-p)			
	Separate Syncs			
(21)	Maximum Horizontal Image Size	_____	=	410 mm
(22)	Maximum Vertical Image Size	_____	=	260 mm
(23)	Display Gamma	_____	=	2.20
(24)	Power Management and Supported Feature(s):			

Active Off/Very Low Power, Standard Default Color Space,
Preferred Timing Mode
Display Type = R/G/B Color

(25-34) CHROMA INFO:

Red X - 0.643 Green X - 0.295 Blue X - 0.143 White X - 0.310
Red Y - 0.325 Green Y - 0.616 Blue Y - 0.081 White Y - 0.330

(35) ESTABLISHED TIMING I:

720 X 400 @ 70Hz (IBM,VGA)
640 X 480 @ 60Hz (IBM,VGA)
640 X 480 @ 67Hz (Apple,Mac II)
640 X 480 @ 72Hz (VESA)
640 X 480 @ 75Hz (VESA)
800 X 600 @ 56Hz (VESA)
800 X 600 @ 60Hz (VESA)

(36) ESTABLISHED TIMING II:

800 X 600 @ 72Hz (VESA)
800 X 600 @ 75Hz (VESA)
832 X 624 @ 75Hz (Apple,Mac II)
1024 X 768 @ 60Hz (VESA)
1024 X 768 @ 70Hz (VESA)
1024 X 768 @ 75Hz (VESA)
1280 X 1024 @ 75Hz (VESA)

(37) Manufacturer's Reserved Timing:

1152 X 870 @ 75Hz (Apple,Mac II)

(38-53) Standard Timing Identification:

1440 X 900 @60Hz
1440 X 900 @75Hz
1280 X 1024 @60Hz
1280 X 960 @60Hz
1152 X 864 @75Hz
Not Used
Not Used
Not Used

(54-71) Detailed Timing / Descriptor Block 1:

1440x900 Pixel Clock: 106.50 MHz

Horizontal Image Size: 408 mm	Vertical Image Size: 255 mm
Refreshed Mode: Non-Interlaced	Normal Display - No Stereo

Horizontal:

Active Time: 1440 pixels Blanking Time: 464 pixels

Sync Offset: 80 pixels

Sync Pulse Width: 152 pixels

Border: 0 pixels

Frequency: 55.93 KHz

Vertical:

Active Time: 900 lines

Blanking Time: 34 lines

Sync Offset: 3 lines

Sync Pulse Width: 6 lines

Border: 0 lines

Frequency: 59.89 Hz

Digital Separate, Horizontal Polarity (-) Vertical Polarity (+)

(72-89) Detailed Timing / Descriptor Block 2:

Monitor Serial Number:

QHZ060100001

(90-107) Detailed Timing / Descriptor Block 3:

Monitor Range Limits:

Min Vertical Freq - 56 Hz

Max Vertical Freq - 75 Hz

Min Horiz. Freq - 31 KHz

Max Horiz. Freq - 80 KHz

Pixel Clock - 140 MHz

Secondary GTF - Not Supported

(108-125) Detailed Timing / Descriptor Block 4:

Monitor Name:

Q19wb-3

(126) No Extension EDID Block(s)

(127) CheckSum OK

6. THEORY OF OPERATION

This section describes the function of the LCD monitor per functional block. 19" monitor includes MB board (including audio board function inside), inverter board, (including adapter function inside) and button board.

6.1 MB BOARD

The MB board is a two-layer, single-landed design with ground and ground planes provided.

The VGA cable is a signal cable that contains video signal, sync signal and DDC signal from PC VGA adapter

This system board consists of 3 functional areas : flat panel controller, Micro controller and audio controller.

6.1.1 Flat panel controller..... TSUM16AK-LF-1 (U4)

The heart of the system board is Mstar TSUM16AK-LF-1. The TSUM16AK-LF-1 is a graphics processing IC for LCD monitor. It provides all key IC control functions required for LCD panel. On-chip functions include a high-speed triple-ADC , PLL, high sampling engine Micro processor and OSD controller ,manages other devices in the system such as the keypad, the backlight, LED and audio general purpose input/output pins.

Pin number	Pin name	Pin function
23	GPIO_P00/SAR1	Key-Menu
24	GPIO_P01/SAR2	Key-Sel/Auto
25	GPIO_P02/SAR3	Key-Power on/off
26	GPIO_P03	Key-Right
27	GPIO_P06	Key-Left
28	GPIO_P07	Key-Down(NC)
29	PWM0/GPIO_P26	Key-Up(NC)
30	GPIO_P13	LED-Green
31	GPIO_P14	LED-Orange
35	GPIO_P16/PWM2	Audio-MUTE(NC)
69	GPIO_P15/PWM0	Audio-Stby-Power
78	PWM2/GPIO_P24	Audio-Volume
21	PWM1/GPIO_P25	Backlight-adi
36	DDCD_SDA	SDA-VGA (Debug)
37	DDCD_SCL	SCL-VGA (Debug)
65	DDCA_SDA/RS232_TX	SDA(Debug)
66	DDCA_SCL/RS232_RX	SDA(Debug)

a) Clock Generation :

Crystal Input Clock (XTALI and XTAL). This is the input pair to an internal crystal oscillator and corresponding logic. A 14.318 MHz crystal is recommended.

b) Hardware Reset (Pin 19)

Hardware Reset signal is generated by TSUM16AK-LF-1 (U4/Pin 19).It assert a reset signal at least 1 ms.

c) Analog to Digital Converter

The TSUM16AK-LF-1 chip has three ADC's (analog-to-digital converters), one for each color (red, green and blue) . The analog RGB signals are connected to TSUM16AK-LF-1 as described below

Pin Name	Pin Number
Red +	59
Red -	58
Green +	56
Green -	55
Blue +	54
Blue -	53

d) OSD :

The TSUM16AK-LF-1 has a fully programmable, high-quality OSD controller. The on-chip static RAM(256 different fonts at size of 12X18) stores the cell map and the cell definitions.

e) Panel Power Sequencing (VDDCTRL_2, on_BACKLIGHT) (Pin 74~20)

The TSUM16AK-LF-1 has two dedicated outputs VDDCTRL_2 and on_backlight(Pin74 and Pin20) to control LCD power sequencing once data and control signals are stable.

f) Inverter Brightness control (PWM1) (Pin 21)

The TSUM16AK-LF-1 has one PWM output PWM1 (Pin21) to control Inverter Brightness Range.

g) Panel LVDS interface (Pin105~114, Pin118~127)

The TSUM16AK-LF-1 driver interface is highly programmable. It supports LVDS port for panel.

6.1.2 Audio controller TDA7496L (AU1)

The TDA7496L is a 2 channel audio power amplifier capable of delivering 2W of continuous average power to an 8 ohms with less than 3% (THD) from a 12 V power supply. TDA7496L can directly drive 8 ohms speaker , Features of the TDA7496L include linear volume(pin6), Stand-by(pin11) and mute(pin12) functions.

Audio line-in are feed into pin 4,9 of the TDA7496L. The output power is controlled by the DC voltage of AQ1.

6.2 Power Module

6.3

The power module includes a Inverter and Power regulator. The electrical specification described as followings:

Input	Operation Input Voltage Range	90~260 Vac,47~63Hz
	Rated Input Voltage	100~240 Vac,50/60Hz
	Max Input AC Current	< 2A
	Brightness Voltage(Vadj)	0.3Vdc(Max) ~ 3.0Vdc(Min)
	On/Off Voltage	High(3.3Vdc)/Low(0Vdc)
Output	Static Output Characteristics	12V/2.1A Output : 11.4Vdc ~ 15.1Vdc 5V/3.0A Output : 4.94Vdc ~ 5.46Vdc

6.2.2 Inverter output characteristics.

OUTPUT	Rated Output Strike-on Voltage	1800~2000Vrms
	Rated Output Voltage	680Vrms @ 6.5mArms
	Rated Output Frequency	40~80KHz
	Rated Output Current	6~7mArms

6.2.4 Power module of connector definition ;

CN101 ; Pin 1 & 2 ----> Vdc Output (12V +/- 5%)

Pin 3 & 4 -----> GND

Pin 5 & 6 -----> Vdc Output (5V +/- 5%)

Pin 7 -----> Brightness Control Voltage

Pin 8 -----> On /Off ("High" set Lamp on)

CN202 ~ CN205 ; Pin 1 -----> HV (High Voltage for CCFL)

Pin 2 -----> Return (Low Voltage for CCFL)

5. Adjustment Procedure

1. Function test

(1) Test equipment

Color video signal and pattern generator (or PC with SXGV resolution)

(2) Test condition

Before function testing and alignment, the unit must warm up for at least 30 minutes under the following conditions:

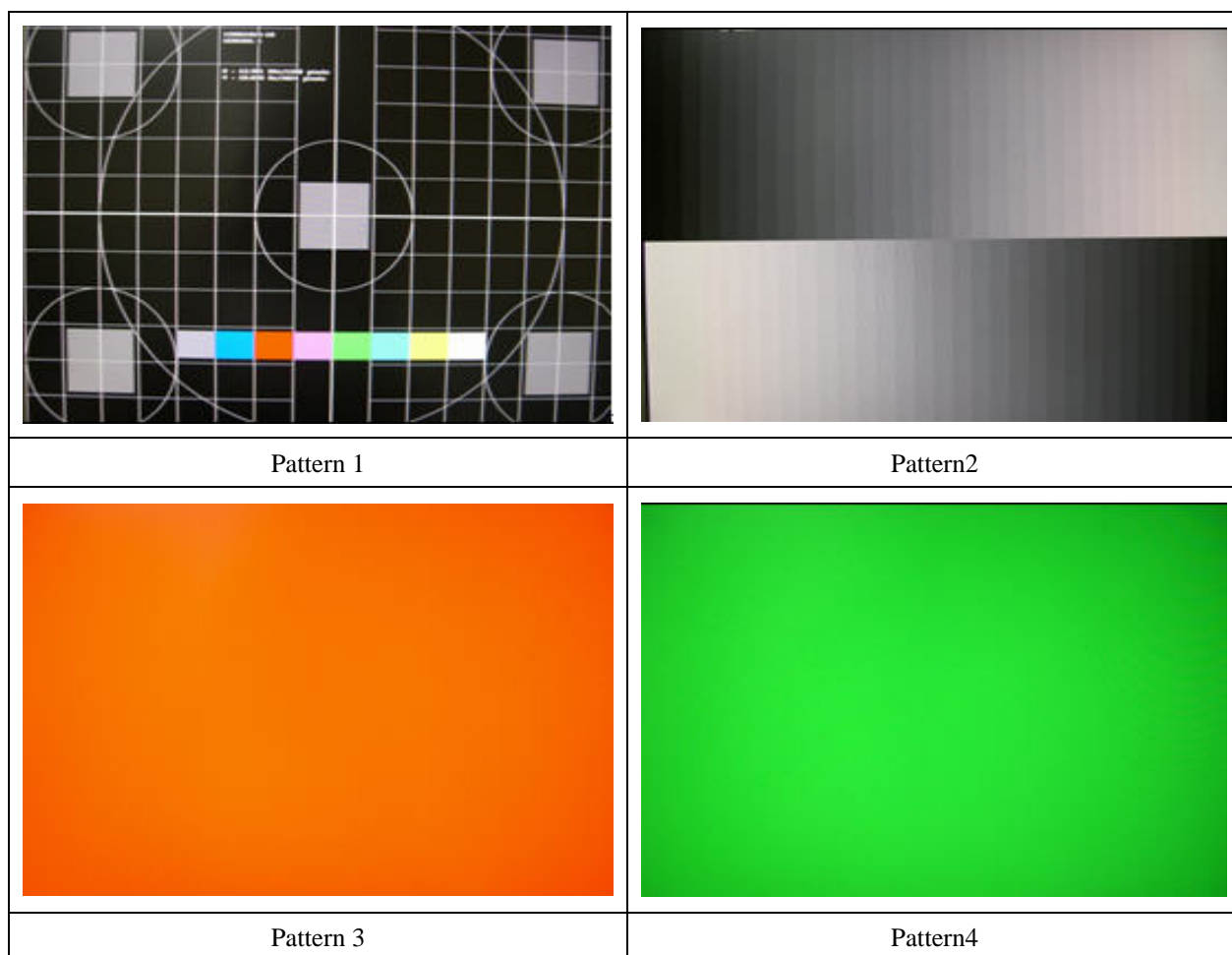
1. Room temperature
2. With full-white screen , RGB , black pattern
3. with cycled display modes.

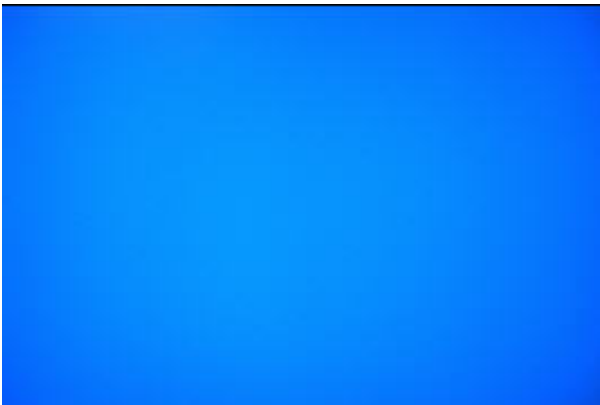
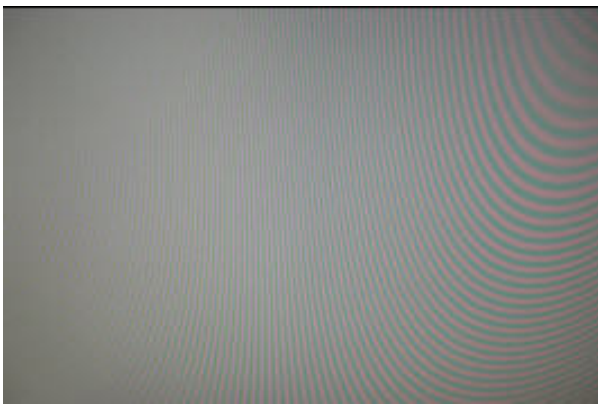
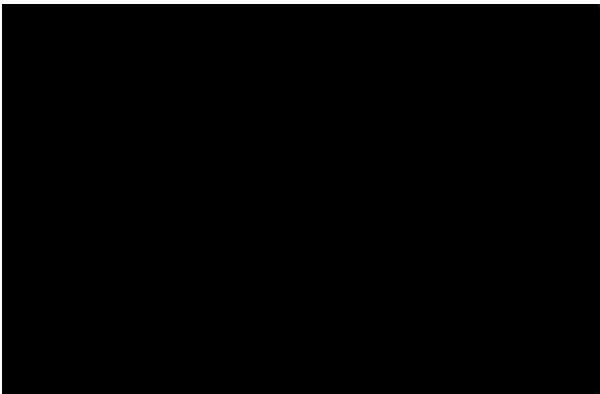
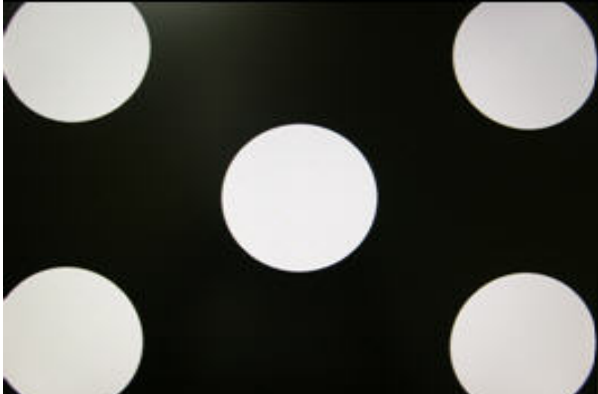


2. Test display modes

Item	Timing	Analog	Digital
1	640 x 350 @ 70Hz, 31.5kHz	Yes	No
2	640 x 400 @ 70Hz, 31.5kHz	Yes	No
3	640 x 480 @ 60Hz, 31.5kHz	Yes	No
4	640 x 480 @ 67Hz, 35.0kHz	Yes	No
5	640 x 480 @ 72Hz, 37.9kHz	Yes	No
6	640 x 480 @ 75Hz, 37.5kHz	Yes	No
7	720 x 400 @ 70Hz, 31.5kHz	Yes	No
8	800 x 600 @ 56Hz, 35.1kHz	Yes	No
9	800 x 600 @ 60Hz, 37.9kHz	Yes	No
10	800 x 600 @ 75Hz, 46.9kHz	Yes	No
11	800 x 600 @ 72Hz, 48.1kHz	Yes	No
12	832 x 624 @ 75Hz, 49.7kHz	Yes	No
13	1024 x 768 @ 60Hz, 48.4kHz	Yes	No
14	1024 x 768 @ 70Hz, 56.5kHz	Yes	No
15	1024 x 768 @ 72Hz, 58.1kHz	Yes	No
16	1024 x 768 @ 75Hz, 60.0kHz	Yes	No
17	1152 x 864 @ 75Hz, 67.5kHz	Yes	No
18	1152 x 870 @ 75Hz, 68.7kHz	Yes	No
19	1280 x 1024 @ 60Hz, 63.4kHz	Yes	No
20	1280x 1024 @ 75Hz, 79.97kHz	Yes	No
21	1440x 900 @ 60Hz, 59.9kHz	Yes	No
22	1440x 900 @ 75Hz, 75kHz	Yes	No

3. Test pattern

Item	Test condition	Pattern	Specification	Remark
1	Frequency & performance	Cross-hatch pattern	No noise is allowed, all colors must be clear	Pattern 1
2	Monitor saturation	16-gray scale pattern	3 to 4 levels must be saturated when brightness and contrast are set to 100%	Pattern 2
3	RGB color performance	RGB color	Check the color temperature of RGB signal color	Pattern 3, 4, 5
4	Sub-pixel defect	RGB color	Check the sub-pixel defect	Pattern 3, 4, 5
5	Full white	Full white	Check the brightness and contrast ratio, and check for bright pixel defects	Pattern 6
6	Full black	Full black		Pattern 7
7.	5-cycle pattern	5-cycle pattern	Check the BU	Pattern 8
8.	1-dot pattern	1-dot pattern	Check the flicker	Pattern 9



	
Pattern 5	Pattern6
	
Pattern 7	Pattern 8
	
Pattern 9	

OSD Function Menu

A. When in Analog Input Mode

1. Main Menu

Press the **[Menu]** button to enter the Main Menu:

Press the **[<]** button to immediately activate Brightness/Contrast menu. It should be change to Contrast OSD by push button **[<]** or **[>]**.

Press the **[>]** button to immediately activate Speaker Volume & the control bar is adjustable by **[<]**, **[>]** button. Mute or Speaker volume can be switched by press **[Menu]** key when speaker volume OSD appear

Press the **[AUTO]** button to exit the Main Menu.

(1) Brightness /Contrast Page:

Press the **[Menu]** button to enter the Brightness/contrast adjustment page.

Press the **[AUTO]** button to exit the page.

Press the **[<]** button to highlight the previous item or the **[>]** button to highlight the next item.

1) Brightness Item

Press the **[Menu]** button to enter the brightness adjustment page.

Press the **[>]** button to increase the brightness.

Press the **[<]** button to decrease the brightness.

Press the **[AUTO]** button to exit the page.

2) Contrast Item

Press the **[Menu]** button to enter the Contrast adjustment page.

Press the **[>]** button to increase the contrast.

Press the **[<]** button to decrease the contrast.

Press the **[AUTO]** button to exit the page.

(2) Image Control Page:

Press the **[Menu]** button to enter the Image Control Page.

Press the **[AUTO]** button to exit the page.

Press the **[<]** button to highlight the previous item or the **[>]** button to highlight the next item.

1) Auto Adjustment Item

Press the **[Menu]** button to execute the auto adjustment function.

Press the **[AUTO]** button to exit the page.

2) H. Position Item

Press the **[Menu]** button to enter the horizontal position adjustment page.

Press the **[>]** button to shift the image to the right.

Press the **[<]** button to shift the image to the left.

Press the **[AUTO]** button to exit the page.

3) V. Position Item

Press the **[Menu]** button to enter the vertical position adjustment page.

Press the **[>]** button to shift the image to the upward.

Press the **[<]** button to shift the image to the downward.

Press the **[AUTO]** button to exit the page.

4) Clock Item

Press the **[Menu]** button to enter the clock adjustment page.

Press **[>]** & **[<]** Button to adjust the internal clock. Larger values make the displayed image appear wider; smaller values make it appear compressed.

Press the **[AUTO]** button to exit the page.

5) Phase Item

Press the **[Menu]** button to enter the phase adjustment page.

Press **[>]** & **[<]** Button to Adjusts the internal clock's time lag in order to optimize the screen image.

Press the **[AUTO]** button to exit the page.

6) Sharpness Item

Press the **[Menu]** button to enter the sharpness adjustment page.

Press **[>]** Button to increase image sharpness.

Press **[<]** Button to decrease image sharpness.

Press the **[AUTO]** button to exit the page.

(3) Color Page:

Press the **[Menu]** button to enter the color adjustment page.

Press the **[AUTO]** button to exit the page.

Press the **[<]** button to highlight the previous item or the **[>]** button to highlight the next item.

1) 9300k Item

2) 6500K Item

3) 5400K Item

4) SRGB Item

Press the **[Menu]** button to select the currently highlighted item.

Press the **[AUTO]** button to exit the currently highlighted item.

5) User Color Item

Press the **[Menu]** button to enter the user color page.

Press the **[AUTO]** button to exit the page.

Red, Green, Blue Options:

Press the **[Menu]** button to enter the RGB adjustment page

Press the **[AUTO]** button to exit the page.

Press the **[>]** button to increase the selected color level.

Press the **[<]** button to decrease the selected color level.

(4) OSD Control Page:

Press the **[Menu]** button to enter the OSD control page.

Press the **[AUTO]** button to exit the page.

Press the **[<]** button to highlight the previous item or the **[>]** button to highlight the next item.

1) H.OSD Position Item

Press the **[Menu]** button to enter the H.OSD Position adjustment page.

Press **[>]** Button to shift the OSD to the right.

Press **[<]** Button to shift the OSD to the left.

Press the **[AUTO]** button to exit the page.

2) V.OSD Position Item

Press the **[Menu]** button to enter the V.OSD Position adjustment page.

Press **[>]** Button to shift the image to the upward.

Press **[<]** Button to shift the image to the downward.

Press the **[AUTO]** button to exit the page.

3) OSD Time Out Item

Press the **[Menu]** button to enter the OSD time out adjustment page.

Press the **[>]** button to increase the OSD time out.

Press the **[<]** button to decrease the OSD time out.

Press the **[AUTO]** button to exit the page.

(5) Other Page:

Press the **[Menu]** button to enter the OSD control page.

Press the **[AUTO]** button to exit the page.

Press the **[<]** button to highlight the previous item or the **[>]** button to highlight the next item.

1) Language Item

Press the **[Menu]** button to enter the language selection page.

Press the **[AUTO]** button to exit the page.

Press the **[<]** button to highlight the previous item or the **[>]** button to highlight the next item.

English, French... Option

Press the **[Menu]** button to select the language.

2) Speaker Volume Item

Press the **[Menu]** button to enter the speaker volume adjustment page.

Press **[>]** Button to increase the volume.

Press **[<]** Button to decrease the volume.

Press the **[AUTO]** button to exit the page.

3) Information Item

Press the **[Menu]** button to enter the Information page.

Press the **[AUTO]** button to exit the page.

Press the **[<]** button to highlight the previous item or the **[>]** button to highlight the next item.

ON,OFF select

Press the **[Menu]** button to select the ON/OFF.

(6) Reset Page:

Press the **[Menu]** button to enter the reset page.

Press the **[AUTO]** button to exit the page.

Press the **[<]** button to highlight the previous item or the **[>]** button to highlight the next item.

YES,NO select

Press the **[Menu]** button to select the YES/NO.

(7) Exit Page:

Press the **[Menu]/ [AUTO]** button to exit the OSD Menu.

2. Other Menu:

This “shortcut” menu is directly accessible without bringing up the OSD.

(1) Brightness /Contrast Dialog

Press the **[<]** button to enter the Brightness /Contrast Dialog.

Press the **[AUTO]** button to exit the Brightness /Contrast Dialog.

Press the **[<]** button to highlight the previous item or the **[>]** button to highlight the next item.

Press the **[Menu]** button to enter the brightness/contrast adjustment page.

Press the **[>]** button to increase the brightness/contrast.

Press the **[<]** button to decrease the brightness/contrast.

(2) Speaker volume/Mute Dialog

Press the **[>]** button to enter the Speaker volume/Mute Dialog.

Press the **[AUTO]** button to exit the Speaker volume/Mute Dialog.

Press the **[Menu]** button to switch the Speaker volume and Mute page.

Press the [**>**] button to increase the volume.

Press the [**<**] button to decrease the volume.

B. Other Information

When the “No Signal” or “Out of Range” messages appear:

If no input signal is detected, the “No Signal” message will appear in the center of the screen.

If the V-Sync signal rate is greater than 85Hz or its resolution is greater than SXGA, the “Out of Range” message will appear in the center of the screen.

Activating Factory Mode and Burn Mode:

While the device is in standby, press the [AUTO] button, then press the power button to enter Factory Mode. While Factory Mode is active, an additional menu page titled “F1”&”F2” will be accessible. Press the [Menu] button to enter the Factory Menu page, then press the [Menu] button to enter Burn Mode.

When Installing a New Main Board

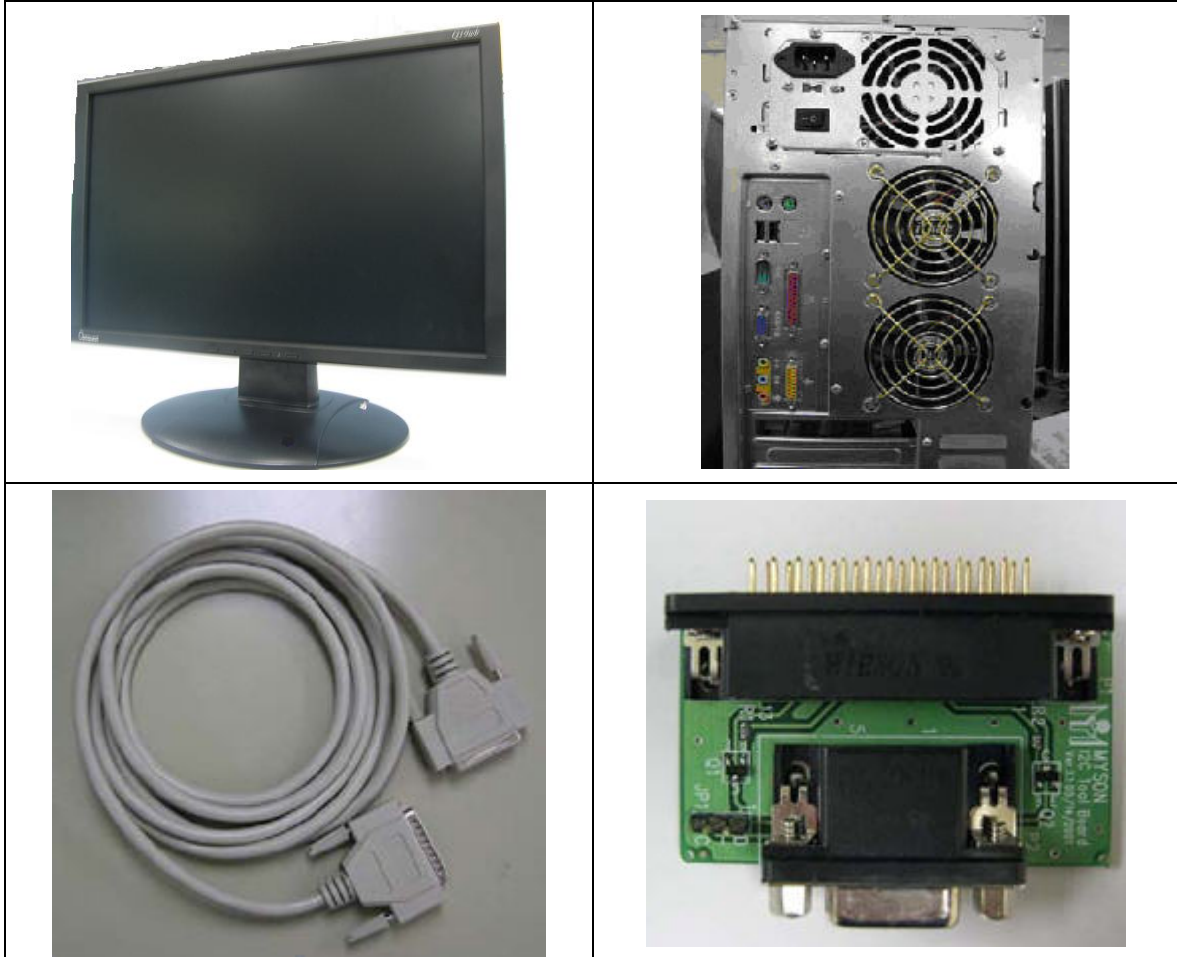
1. Enter Factory Mode.
2. Use a PC or chrom to send a 32-tone gray scale signal to the monitor.
3. Select “Auto Color”

Firmware update procedure :

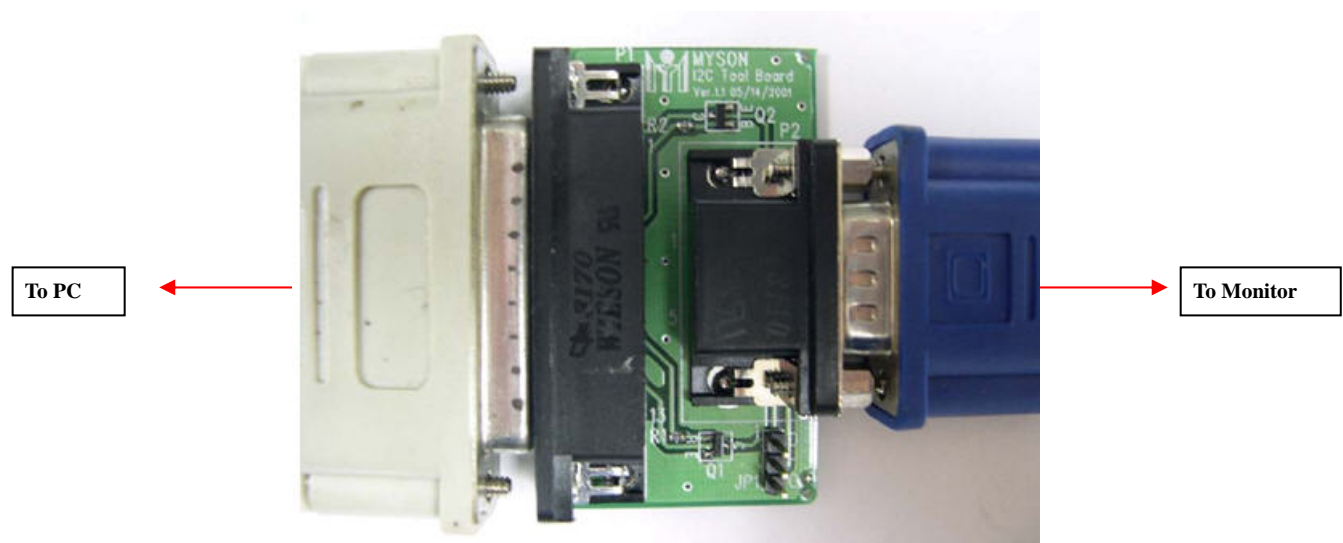
When you received a received monitor , please check whether the firmware version. If not , please following procedure to upgrade to the latest version .

1. Equipment needed :

- W9V-Q2
- PC (Personal computer)
- LPT cable
- Fixture (LM5ISP)
- Firmware upgrade program



2. Connection :



Appendix A : How to install the software for ISP :

0. To setup ISP environment :

Hardware: PC or notebook, parallel(printer) cable, ISP tooling.

Software: If OS was Win2000 or WinXP , please install “PORT95NT.exe”

In order to ensure can execute ISP program, please set BIOS in PC or Notebook as Fig 0.0

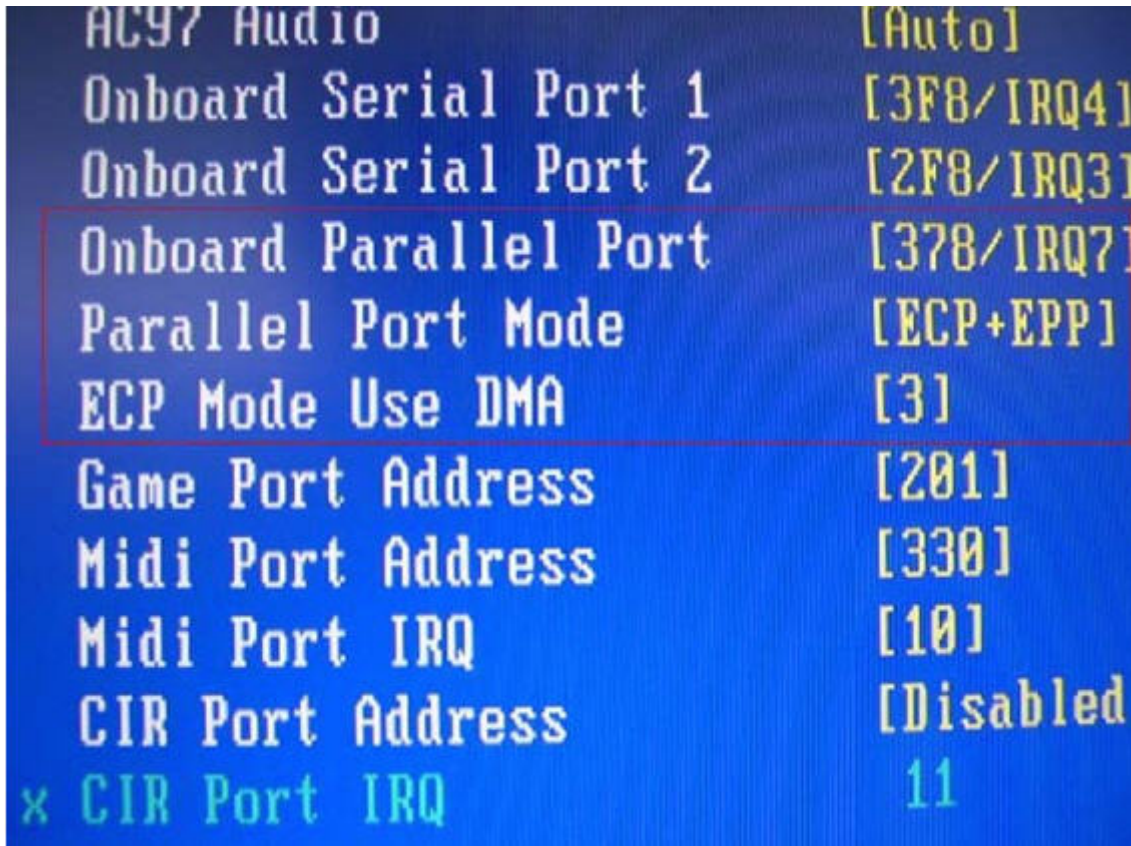


Fig 0.0

0.1 Double-click the “PORT95NT.exe” in Windows & install the program. , see Fig 0.1

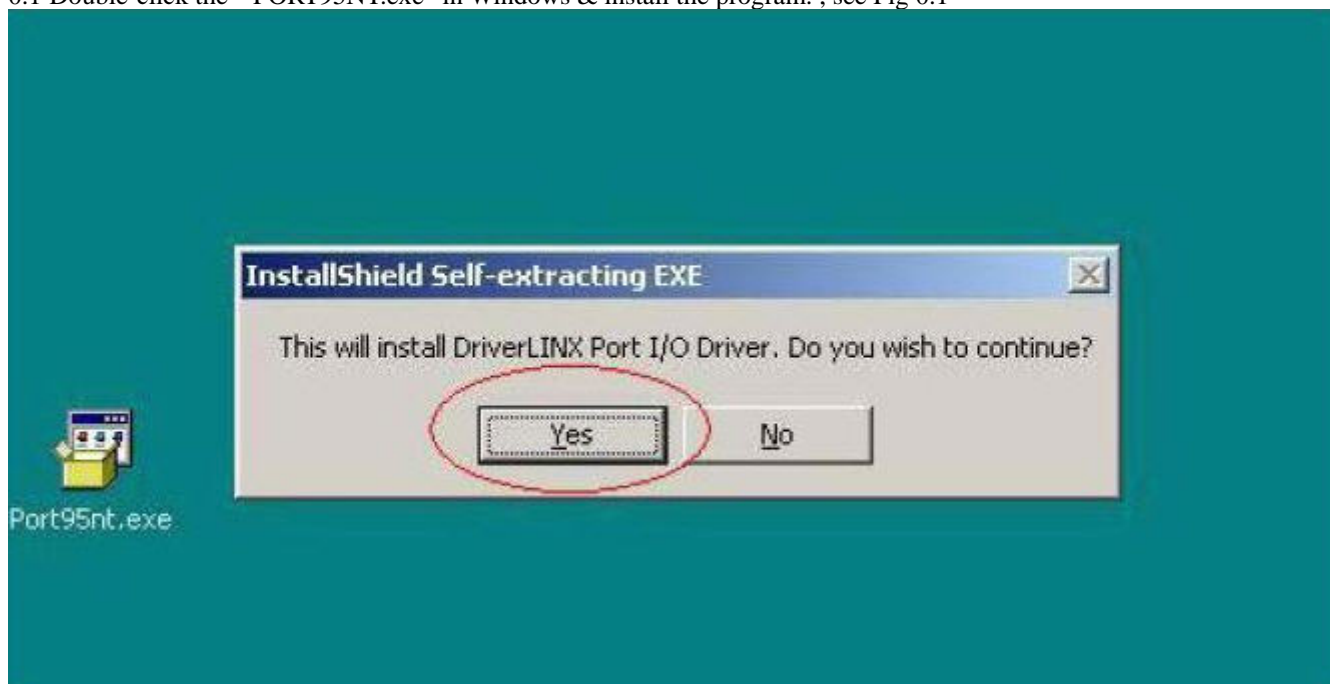


Fig 0.1

0.2 Keep on press “ Next “ 4 times to go through the installation processes, see Fig. 0.2

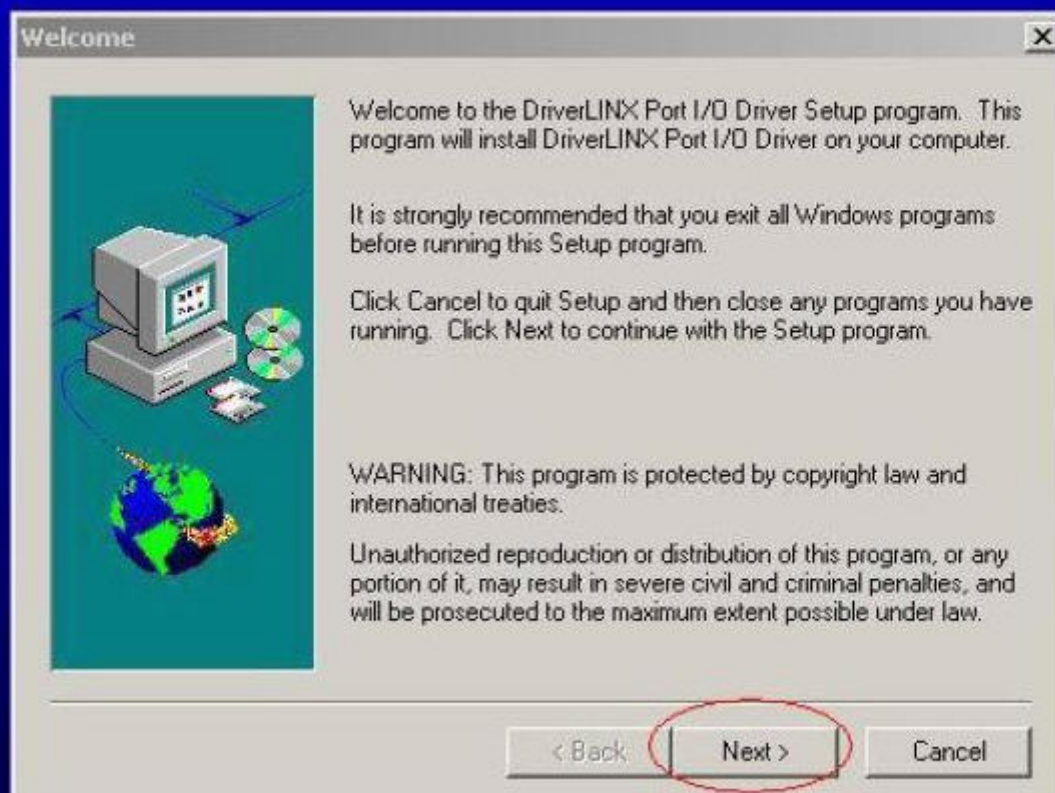


Fig. 0.2

0.3 Choose “ Typical “ then press “ Next “ , see Fig. 0.3

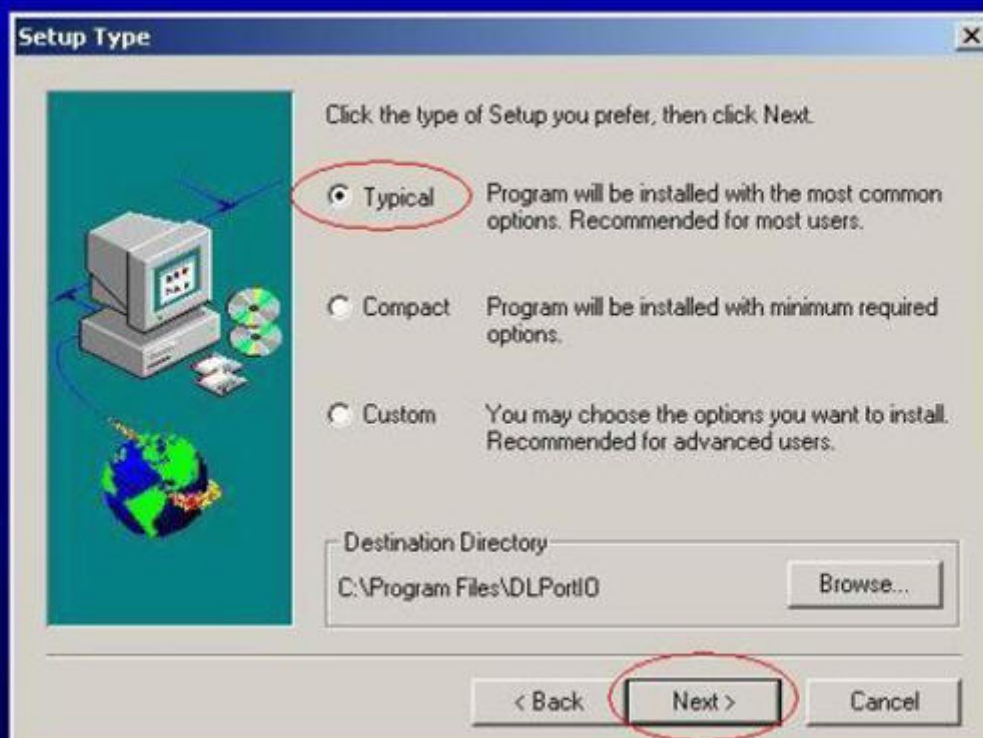


Fig. 0.3

0.4 Keep on press “ Next “ 4 times to go through the installation processes, see Fig. 0.4

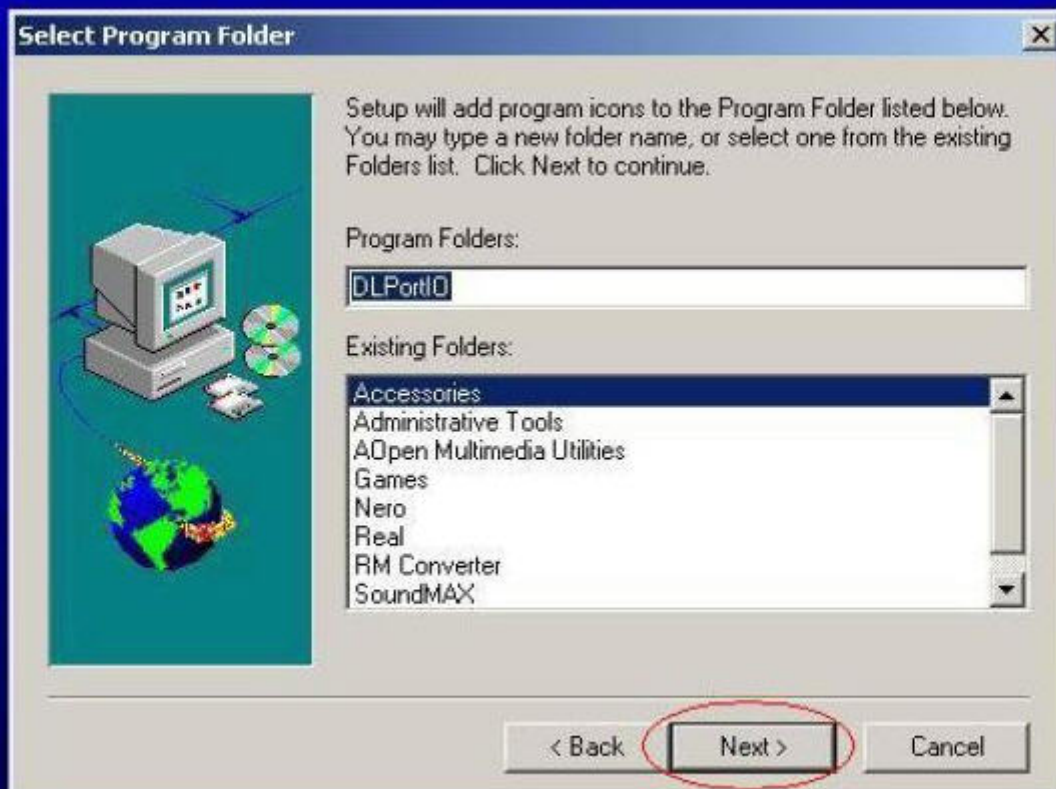


Fig. 0.4

0.5 Install completed , restart the PC or notebook. See Fig 0.5

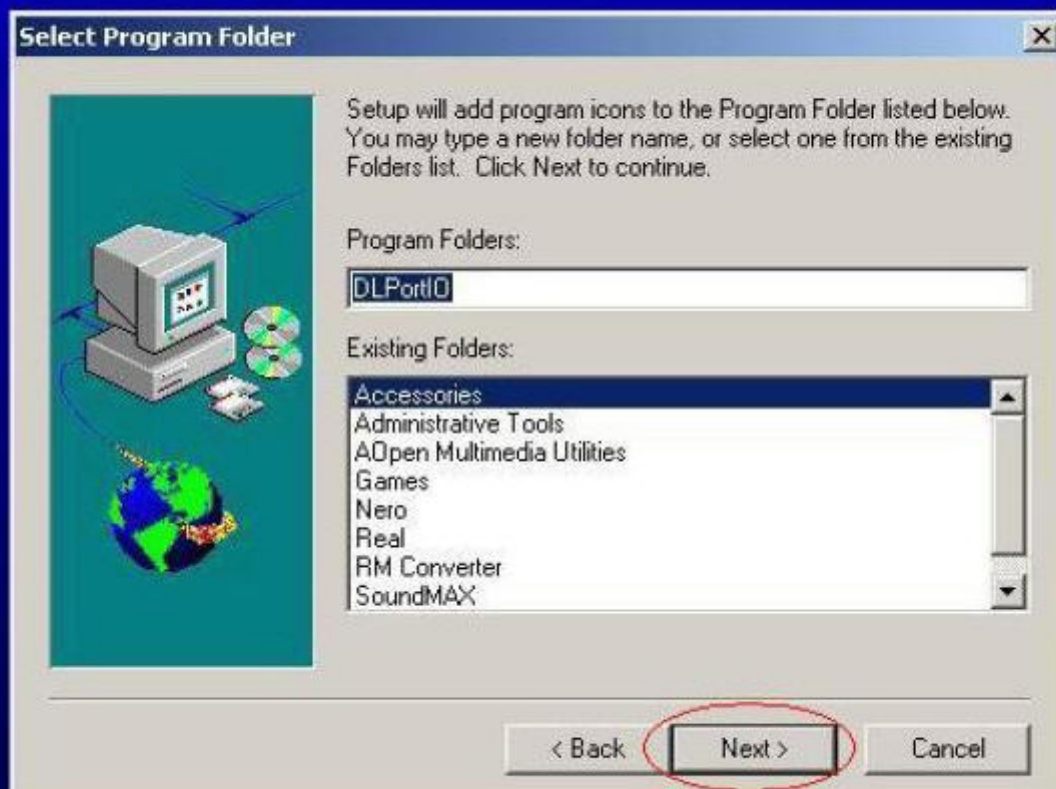


Fig. 0.5

Appendix B : How to use software to upgrade the BIOS :

1.1 Double-click the “ISP_TOOL.exe” in Windows, see Fig 1.1

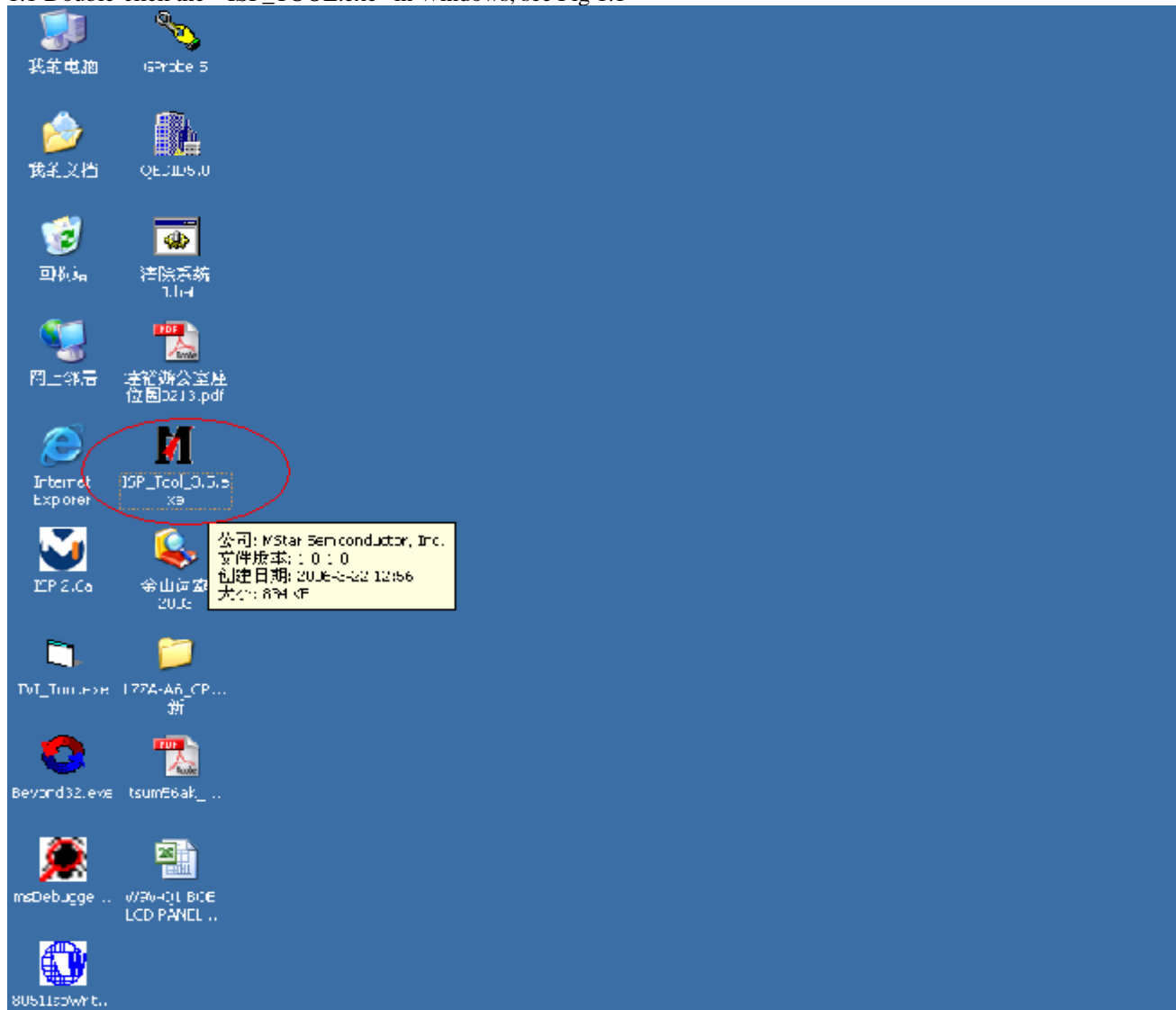


Fig. 1.1

1.2 It is the main menu of ISP_TOOL , see Fig 1.2

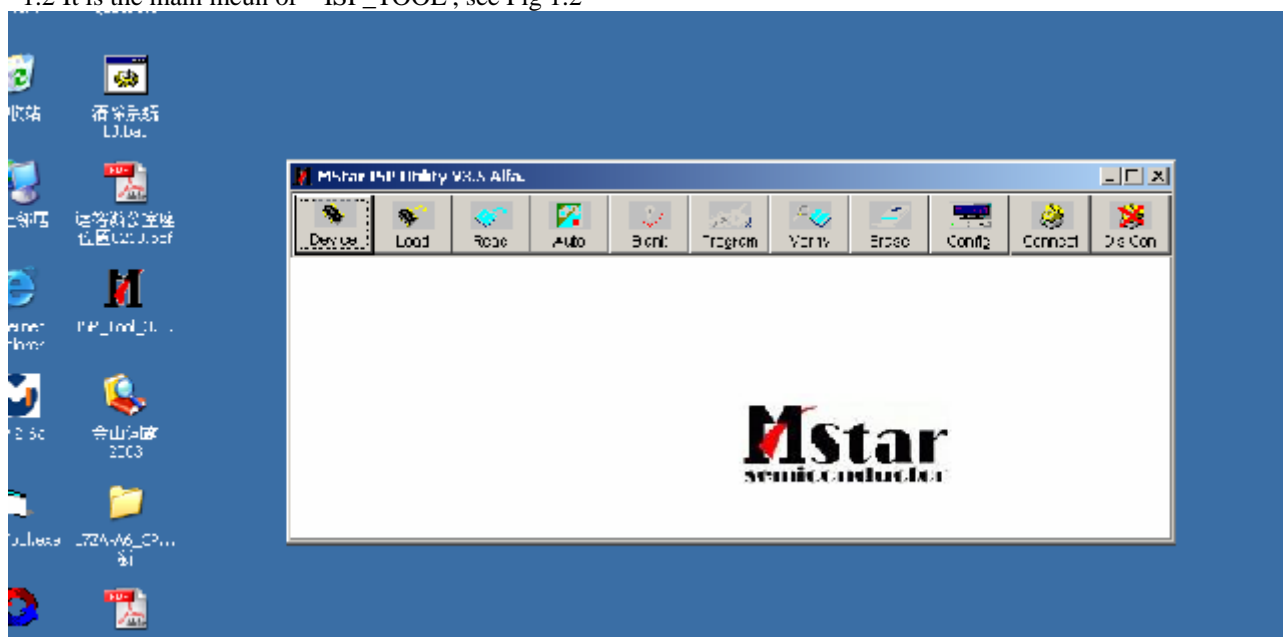


Fig. 1.2

1.3 Single-click the “**Connect**” button to connect with MCU. The dialog of “O.K.” will appear in window, when the computer has finished to connect with MCU, see Fig 1.3

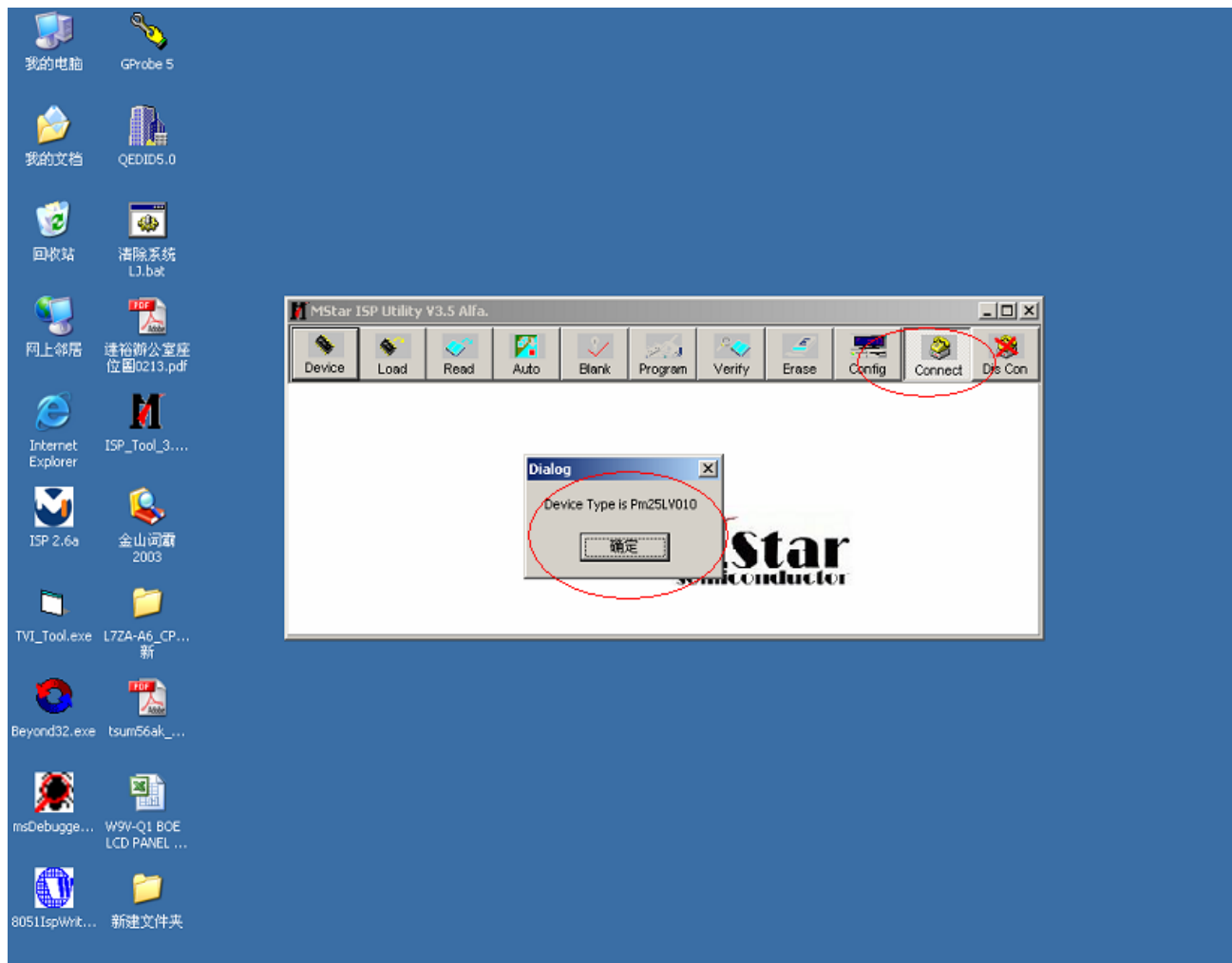


Fig. 1.3

1.4 Single-click the “**Read**” button, you can select the file of BIOS. see Fig 1.4& Fig1.5

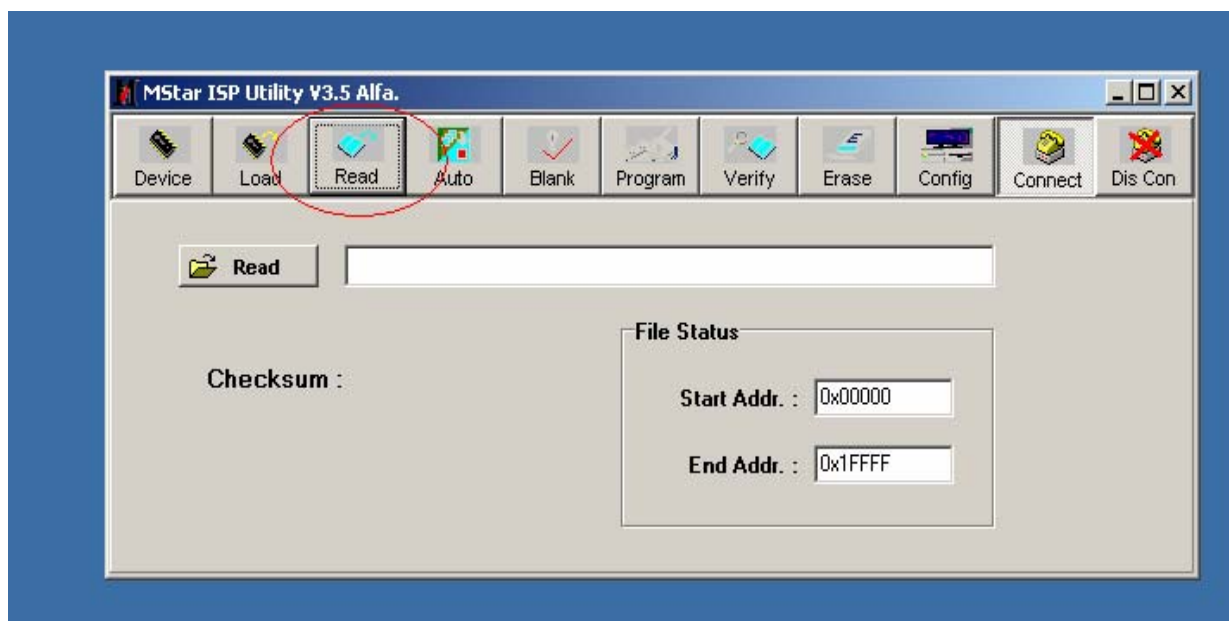


Fig. 1.4

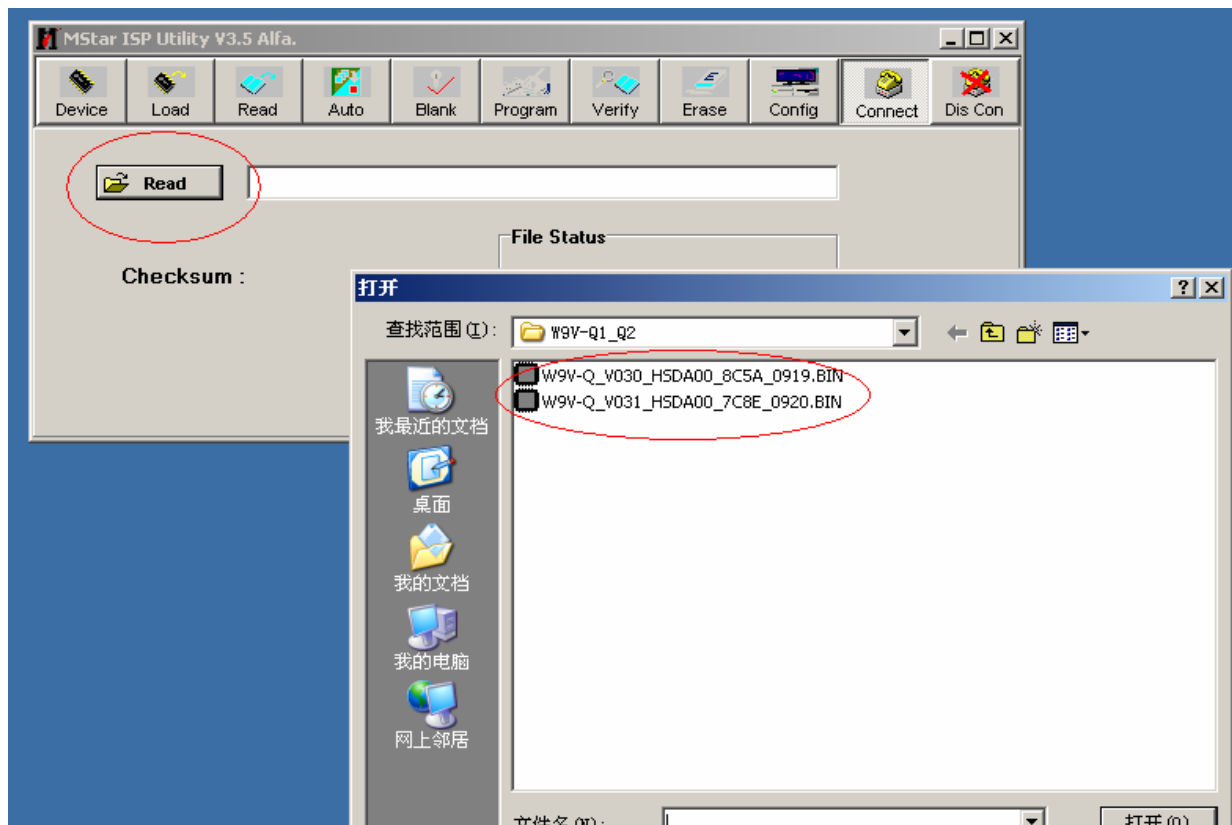


Fig. 1.5

1.5 When the file of BIOS has been selected ,you will see the dialog,see Fig1.6

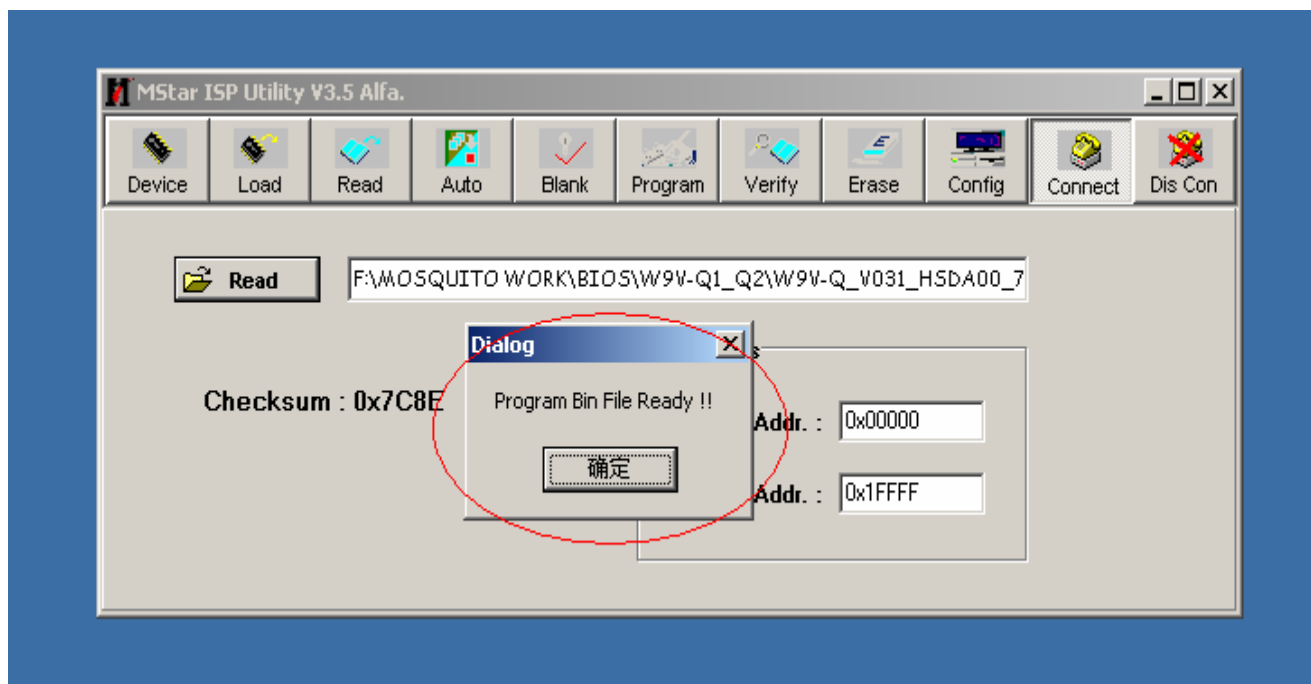


Fig. 1.6

Appendix C : Use ISP to program MCU

2.1 Single-click the “Run” button,you can program the MCU. .see Fig2.1

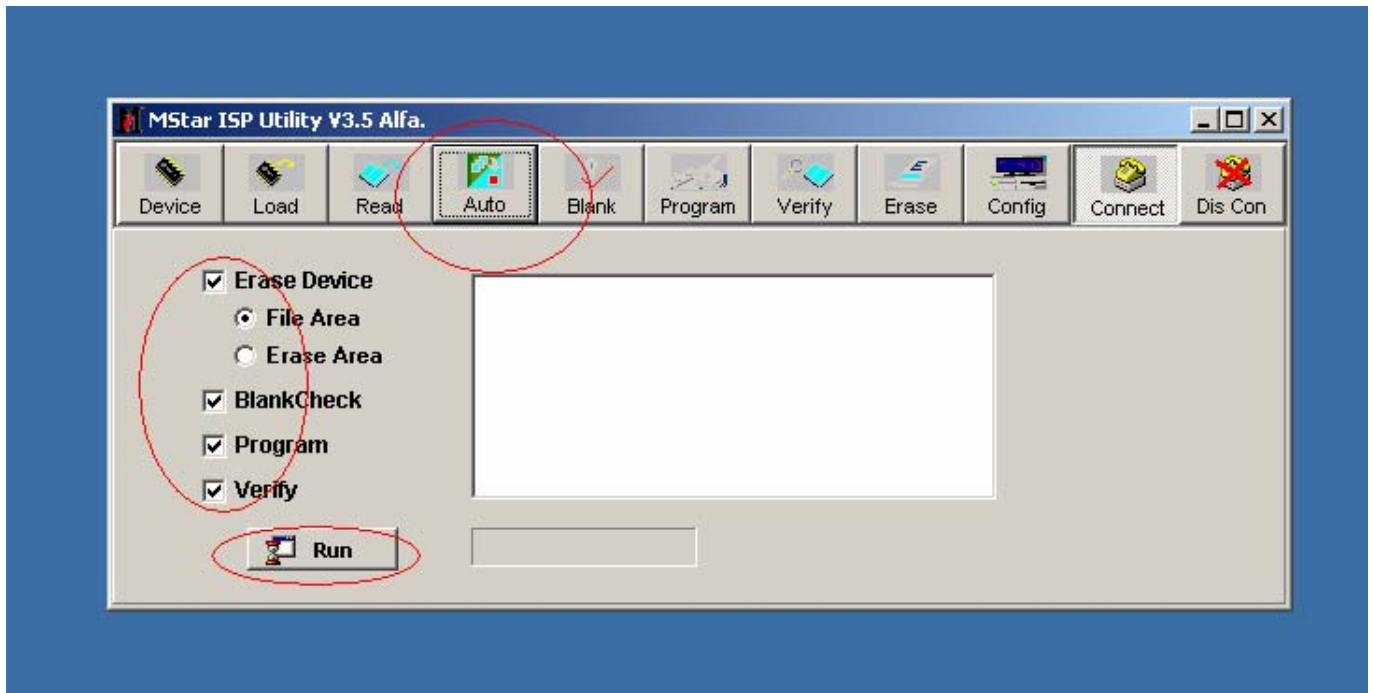


Fig. 2.1

2.2 If the program has been done,you will seen fig3.2. Now you must Single-click the “Dis Con” to disconnect with MCU.

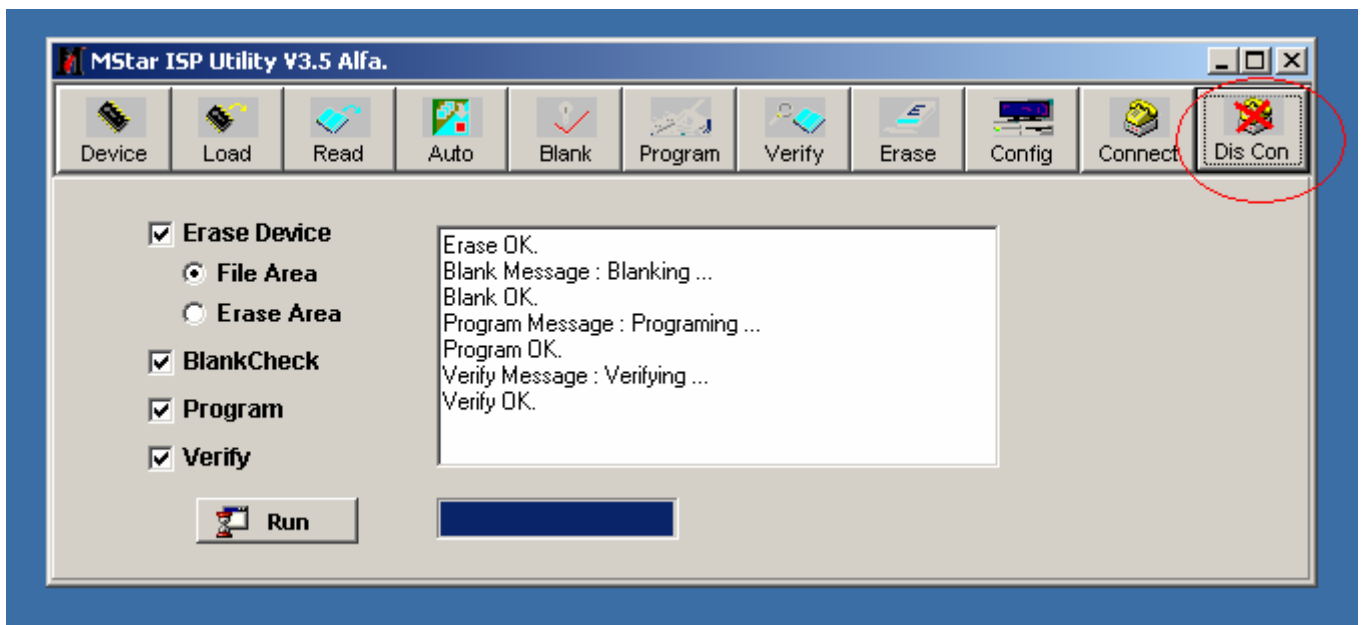


Fig2.2.

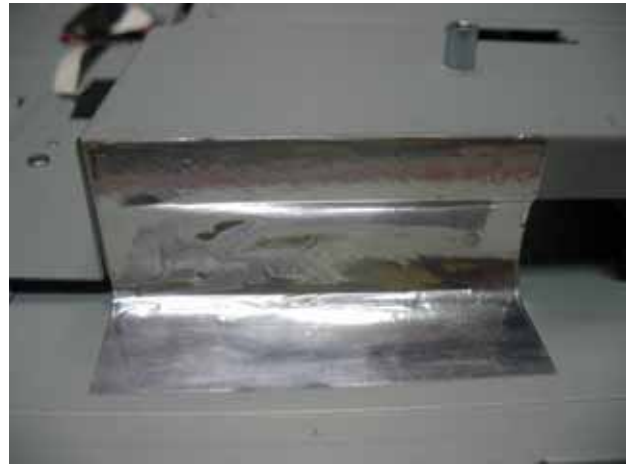
Q19wb-3 series de-assembling procedure

1. Move the monitor our from carton	2. Put the monitor on desk & face down
	
3. Loose the screws &Remove the HINGE COVER	4. Loose the screws & remove the stand
	
5. Loose the screws &Separate the BACK COVER	6. Remove the black tape & AL-Foil
	

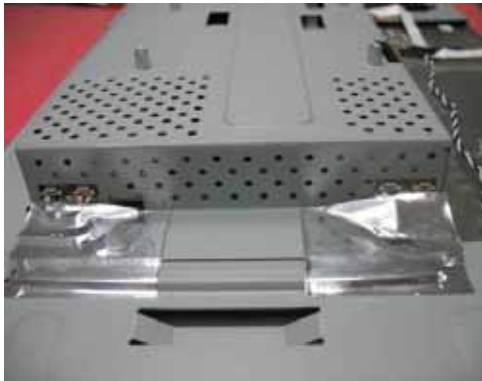
7. Pull out the cables & Loose the screws &Separate the speaker



8. Remove the AL-Foil



9.Remove the AL-Foil



10. Pull out the cables



11. Loose the screw



12.Tear off the yellow tape& Pull out the LVD cables



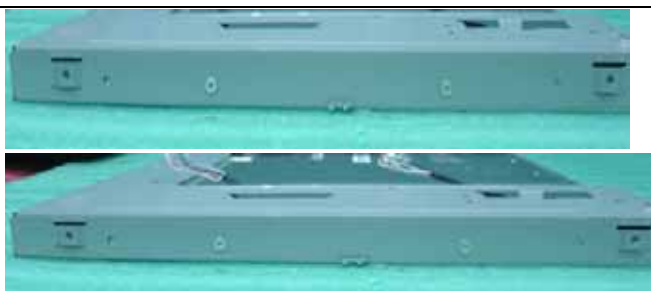
13. Loose the bezel screw



14. Remove the bezel



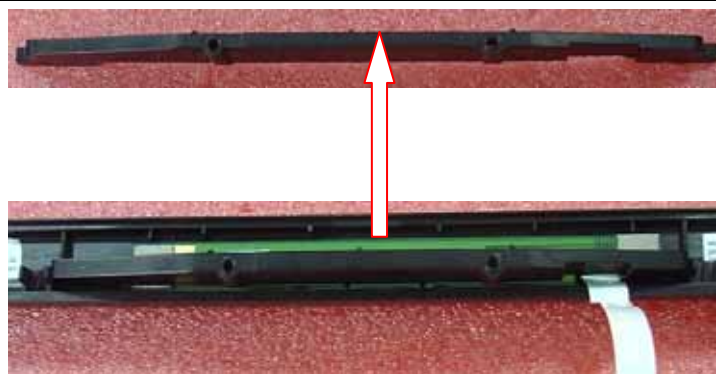
15. Loose the BKT screw L/R



16. Move the BKT screw L/R




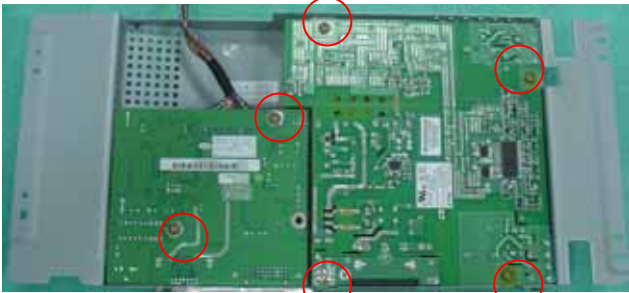




17. Remove the BEZEL BKT





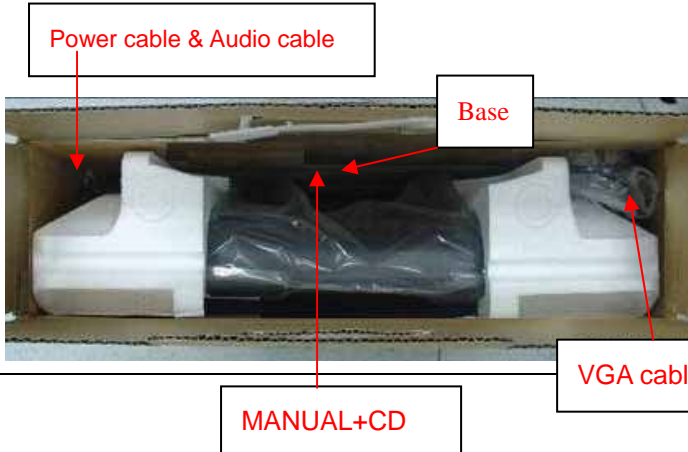



18. Remove the GASKET



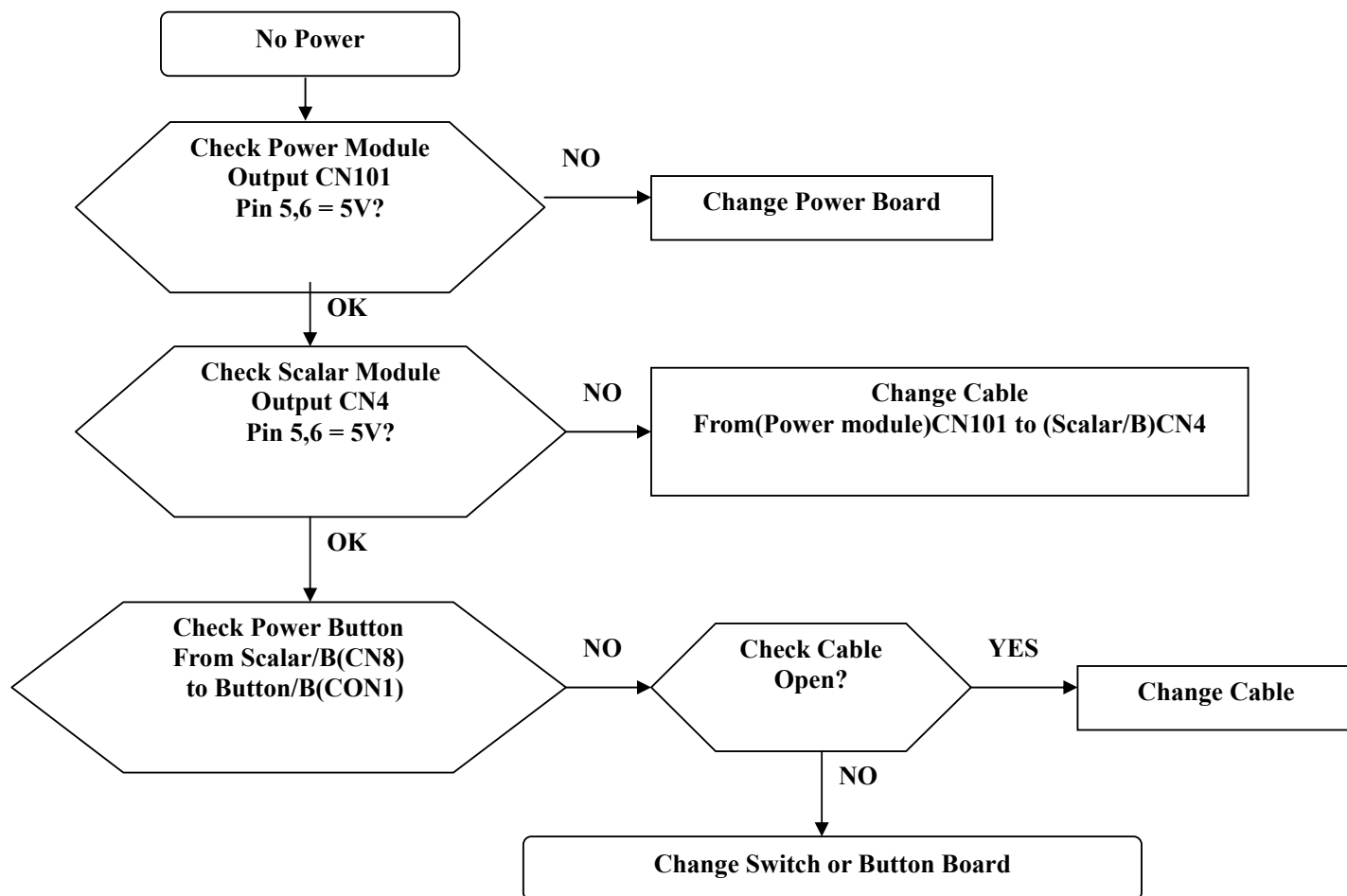
<p>19. Loose the BUTTON/B screw& Remove the BUTTON/B</p> 	<p>20. Loose the IO NUT</p> 
<p>21. Remove the POWER/B MYLAR</p> 	<p>22. Loose the screw</p> 
<p>23. Separate the M/B&P/B& GND PLATE</p> 	<p>24. Separate the M/B&LVDS CABLE</p> 

Q19wb-3 series packing method

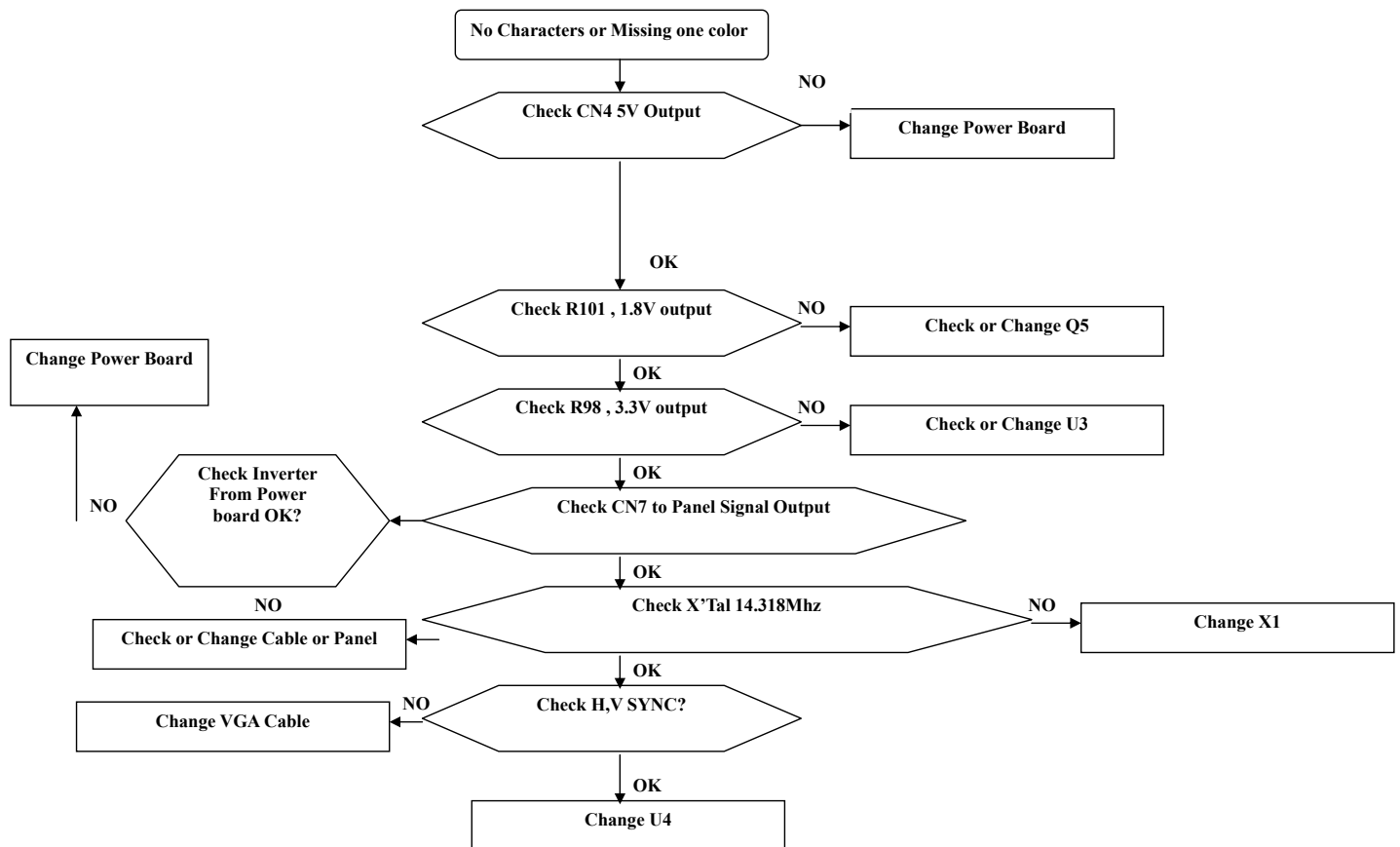
1. Sticker on LCD protection film	2. Put the monitor into the PE or EPE bags
	
3. Put on the end-cap left / right	4. Put the monitor into carton
	
5. Put all accessories into carton	6. Seal the monitor
	

6. Troubleshooting Flow Chart

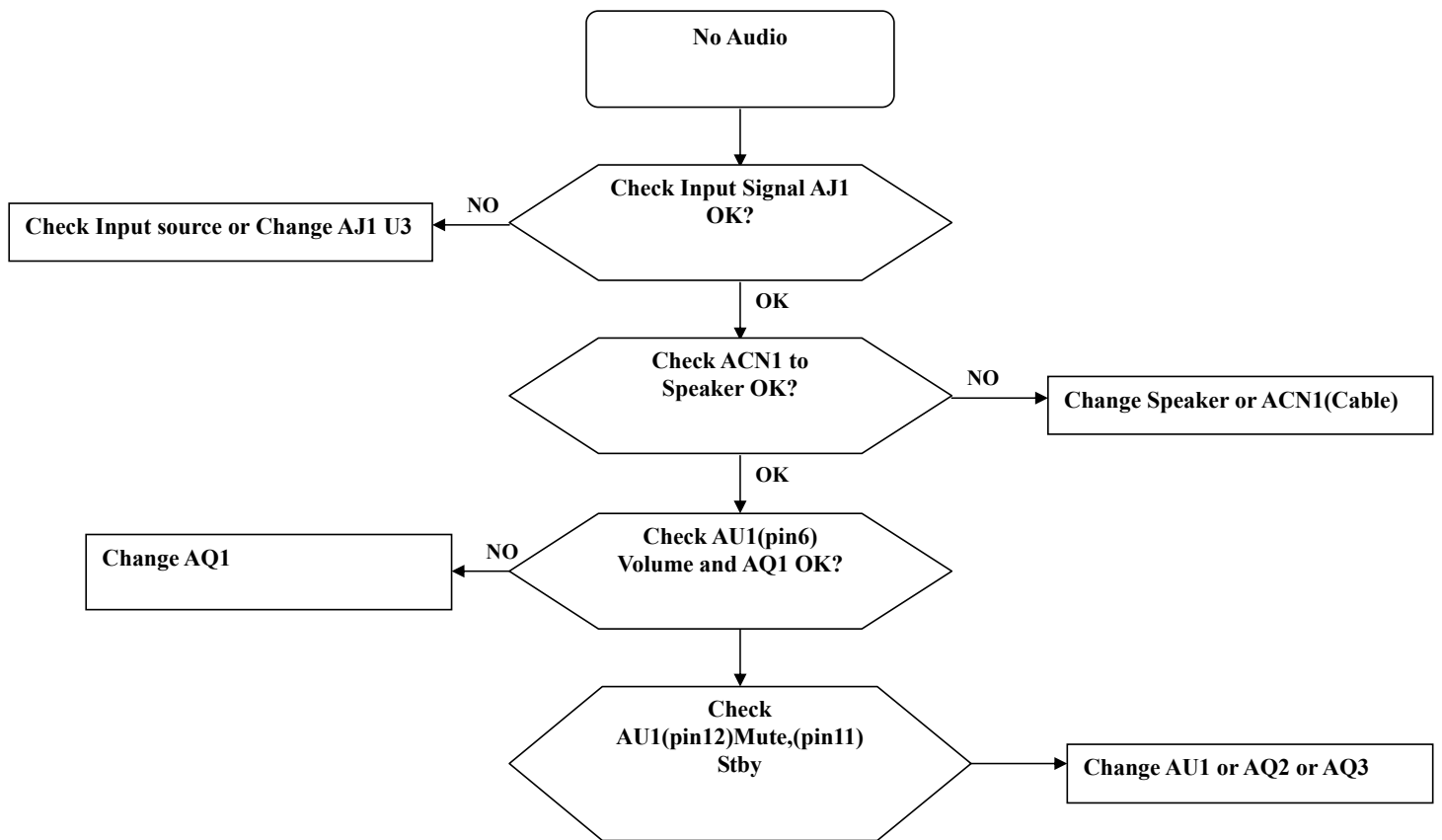
1.No power



2.No Characters , Missing one color



3.No Audio



7. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (Q19wb-3)

ViewSonic Model Number: VS11578

Serial No. Prefix: QHZ

Rev: 1a

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal number#
1	Accessories:					
	Power Cord - B 1.8M SP-035/10A		A-PC-0106-0224	DM333181G97		
2	PC Board					
	Power Supply Board - EADP-45AF 90~240V		B-00008124	AS05B520037		
3	Assembly:					
	Main Board - L9F-A2 (W9ZA-L2 M16AK-LF-1)		B-00008125	21L9F0MB0D3		
4						
	Control Board (Button Board L0ZJ-A1)		B-00008126	23L0ZJB050		
5	Cabinets:					
	Hinge Cover - W9E-A1		C-00008150	EBW9E002010		
6						
	Front Panel - W9V-Q2		C-00008151	34W9V0LB018		
7						
	Cover - W9C-B1		C-00008152	25W9C0LC012		
8						
	Base Assembly - L7C-A3		C-00008153	38L7C0BS003		
9	Cables:					
	Audio Cable - (ST,1.8M)		CB-00004149	DD0L0TPC007		
10						
	VGA Cable (15/15P,1.8M)		CB-00008044	DD0L7WPC001		
11						
	MB-LCD Cable LVDS(30P,140MM,LINKTEC)		CB-00008048	DDM0TWLC001		
12	Documentation:					
	User's Guide		DC-00008140	HGW9V002010		
13	Electronic					
	LCD Panel 19" HSD190MGW-A02 5ms		E-00008051	AA90MGW1024		
14	Components:				AUO	
	LCD Panel 19" HSD190MGW-A00 5ms		E-00008072	AA90MGW1059		
15						
	Speaker L9F(X05015N-002) 1.5Wx2		E-00008097	DN005015S08		
16	Hardware:					
	Bracket - Left -HSD W9ZA-A1		HW-00008026	FBW9ZA11013		
17						
	Bracket - Right -HSD W9ZA-A1		HW-00008027	FBW9ZA10017		
18						
	Screw - F3.0*6.0-T(MC)		HW-00008028	MF30060TJB2		
19						
	Screw - M 4.0* 10-T(MC)		HW-00008029	MS40100T138		
20	Miscellaneous:					
	LCD Film W9V		M-00008032	JXW9V001010		
21	Packing Material:					
	Generic Foam Set		P-00001347	30833		
22						
	Generic Box		P-00002515	20653		
23						
	PE Bag		P-00004159	HAL0T002019		
24						
	Craft Box		P-00008150	HFW9V002019		
25						
	Craft Foam - Right		P-00008151	HBW9ZA04017		
26						
	Craft Foam - Left		P-00008152	HBW9ZA03011		
27	Plastics:					
	Stand - W9C-A1		PL-00008035	26W9ZCSA006		

Remark 1: Above listed items are examples, supplier can expand the rows to add more necessary items.

Remark 2: All revised RSPLs with newly added items or any change made should be highlighted and correlated with the ECN/ECR approved by ViewSonic Corporation. This is to eliminate repeated cross checks of each item between this version and prior versions.

BOM LIST (Q19wb-3)

ViewSonic Model Number: VS11578

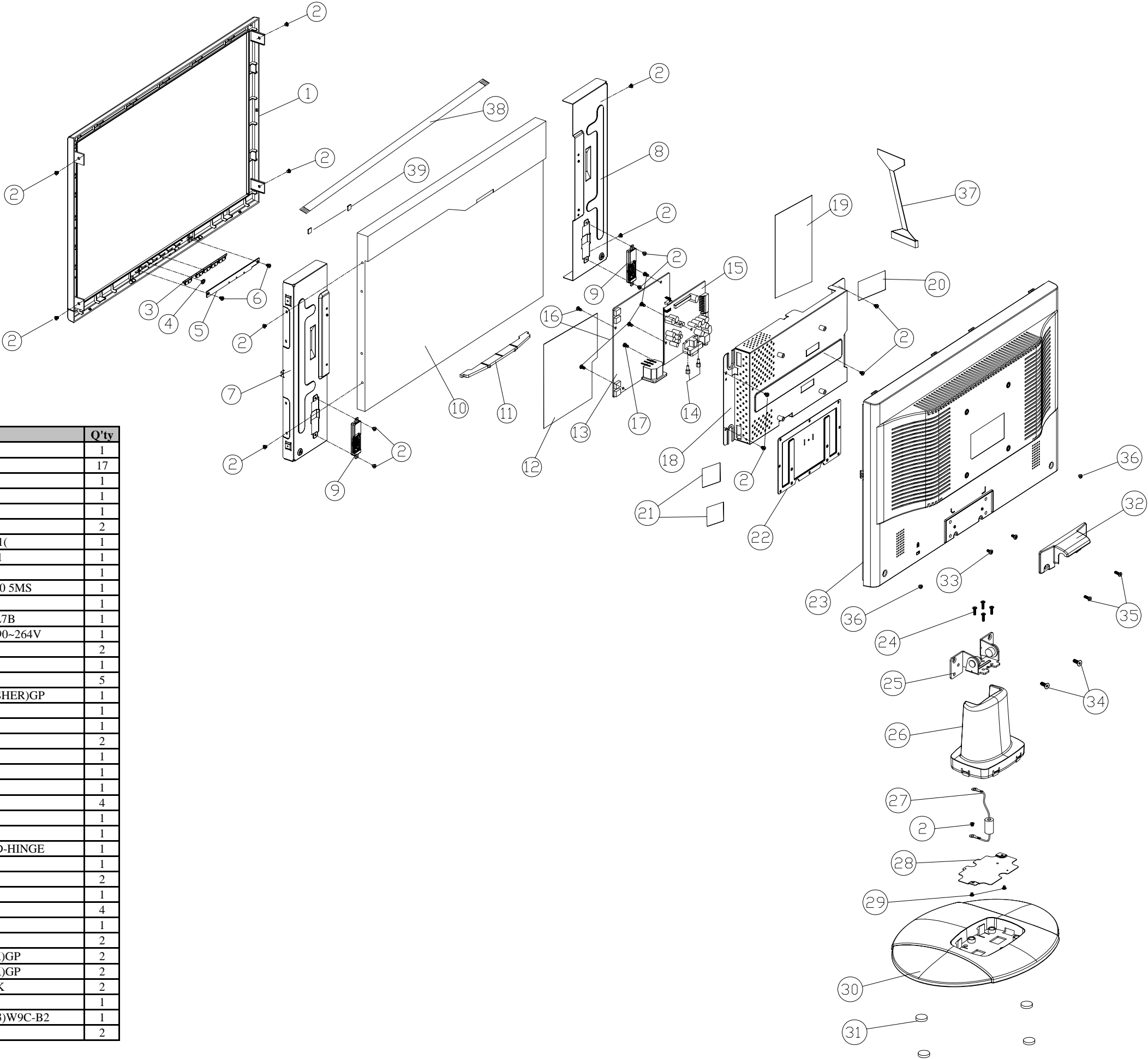
Rev: 1a

Serial No. Prefix: QHZ

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	N/A	1W9V2QVS046	W9V-Q2 LCD MONITOR(Q19WB-3,USA)GP			
2	B-00008125	21L9F0MB0D3	L9F-A2 M/B ASSY(W9ZA-L2,M16AK-LF-1) GP			1
3	N/A	31L9F0SS0C1	L9F-A2 M/B S/S ASSY(W9ZA-L2,M16AK-1)GP			1
4	N/A	CC547X6MD03	CAP EC 4.7U50V(+20%105C.5*11,5K)CXN GP	C40		1
5	N/A	CC610X6MD01	CAP EC 10U 50V(+20%.105C.5*11,5K)CXN GP	C32,C34,C45,C49,C53,C54,C58,C97		8
6	N/A	CC710X4MD02	CAP EC100U25V(+20%105C,6.3*11,5K)CXN GP	C15		1
7	N/A	CC733L3MD17	CAP EC DIP 330U16V(+20%,105C,8*11)LXNGP	AC3,AC5,AC9,AC11,C30,C31,C76		7
8	N/A	DFTJ05FR037	CONN DIP PHONE JACK 5P FR(J303-1-A-G+)GP	AJ1		1
9	N/A	DFDS15FR041	CONN D-SUB 15P 3R FR(P1.15,H12.55) GP	CN1		1
10	N/A	DFDS15FR076	CONN D-SUB 15P 3R FR(P1.15,H12.55) GP	CN1		1
11	N/A	DFHD08FR102	CONN DIP HEADER 8P 2R FR(P2.54,H5.0) GP	CN4		1
12	N/A	DFHD30MR267	CONN DIP HEADER 30P 2R MR(P2.0,H4.0) GP	CN7		1
13	N/A	DFHD04MR132	CONN DIP HEADER 4P 1R MR(P2.0,H4.1) GP	ACN1		1
14	N/A	BG614318081	XTALDIP14.318MHZ(+30PPM,70.C 49/S) GP	X1		1
15	N/A	AL007496D02	IC(20P) TDA7496L(DIP) GP	AU1		1
16	N/A	AL007496D29	IC(20P) UTC TDA7496LK(DIP) GP	AU1		1
17	N/A	DFHD08FR021	CONN DIP HEADER 8P 1R FR(P1.0,H3.0)GP	CN8		1
18	B-00008126	23L0ZJBB050	L0ZJ-A1 BUTTON/B ASSY(FOR W9C-B1)GP			1
19	N/A	DAL0ZJTB129	PCB(BUTTON) L0ZJ-A1(2L,126*9.REVB)ID3 GP			1
20	N/A	BEYG0004ZA1	LED(SMD) Y/G(KPTB-1612NSGC) GP	LED1		1
21	N/A	DEFC2879003	CABLE FFC(8P,287MM,ID3)W9C-B2 GP	CON1		1
22	N/A	FCL0ZJ01010	METAL DOME SWITCH L0ZJ-A1(FCL0ZJ01,3A)GP			1
23	B-00008124	AS05B520037	ADP/INV EADP-45AF BF, 90~264V GP			1
24	C-00008151	24W9V0LB018	W9V-Q2 LCD BEZEL ASSY GP			1
25	N/A	34W9V0LB018	W9V-Q2 LCD BEZEL SUB ASSY GP			1
26	N/A	36W9C0PS003	W9C-B1 PCB SHIELD ASSY(N/DVI)NEW GP			1
27	N/A	FCL7B001018	POWER BOARD MYLAR L7B(FCL7B001,REV3A)GP			1
28	N/A	FCL7G001016	AL FOIL L7G(FCL7G001,REV3A)HAN GP			1
29	N/A	FCM7T004014	AL FOIL M7T(FCM7T004,REV3A) GP			2
30	M-SCW-0824-0726	MF30080BBJ5	SCREW F3.0*8L,B,NI GP			2
31	N/A	MF30060TJB2	SCREW F3.0*6.0-T(MC)GP			5
32	M-SCW-0824-6799	MM35080BBW2	SCREW M3.5*8-B (NI,WASHER)GP			1
33	N/A	EBW9E003016	BEZEL BKT W9E-A1(EBW9E003,REV3A) GP			1
34	N/A	MM30050B241	SCREW M3.0*5.0-B BLACK (NYLOK)GP			2
35	M-SCW-0824-6761	MM30030IBJ4	SCREW M3*3-I-NI GP			16
36	N/A	MF20025IBJ8	SCREW F2*2.5-I(NI) GP			2
37	M-MS-0808-8986	MBL1I004018	IO NUT LI1(MBL1I004,REV3A)GP			2
38	N/A	GBL9C003019	GASKET 7*7*0.6T L9C-B1(GBL9C003,R3A)GP			1
39	N/A	GBL9C002012	GASKET 15*8*0.6T L9C-B1(GBL9C002,R3A)GP			1
40	N/A	FBW9TB02013	GND PLATE-VGA-PANEL W9TB(FBW9TB02,R3A)GP			1
41	C-00008152	25W9C0LC012	W9C-B1 LCD COVER ASSY GP			1
42	N/A	EAW9C002011	LCD COVER W9C-B1(EAW9C002,REV3A) GP			1
43	N/A	FBW9ZA03011	HINGE BKT W9ZA(FBW9ZA03,REV3A)GP			1
44	PL-00008035	26W9ZCSA006	W9ZC-A1 STAND ASSY GP			1
45	N/A	EAL7C004019	STAND L7C-A1(EAL7C004,REV3C)GP			1
46	N/A	FBW9E003016	HINGE ASSY W9E-A1(FBW9E003,REV3A) GP			1
47	N/A	DDL70LTH103	CABLE ASSY L70L STAND-HINGE(1P, REV1A)GP			1
48	HW-00008029	MS40100T138	SCREW M4.0*10-T(MC)GP			4
49	M-SCW-0824-0727	MF30080IBJ0	SCREW F3.0*8-I(NI)GP			2
50	M-SCW-0824-6761	MM30030IBJ4	SCREW M3*3-I-NI GP			1
51	N/A	FBL7C006012	GND PLATE L7C-A1(FBL7C006,REV3A)GP			1
52	N/A	27W9C0CS003	W9C-B1 CHASSIS ASSY GP			1
53	C-00008150	EBW9E002010	HINGE COVER W9E-A1(EBW9E002,REV3A) GP			1
54	CB-00008048	DDM07WLC001	CABLE MB-LCD(30P,100MM,LG,AU)M0TW GP			1
55	N/A	DDM07WLC010	CABLE LVDS(30P,100MM,LINKTEC,LG)M0TW GP			1
56	E-00008097	DN005015S08	SPEAK ASSY L9F(X05015N-002)1.5W*2 GP			1
57	N/A	MM40130P000	SCREW M4.0*13-P(BLACK)GP			2
58	N/A	MM40120FJB8	SCREW M4.0*12-F(BLACK)GP			2
59	N/A	2AW9V0PTU08	W9V-Q1 PANEL DEPENDENT KIT ASSY(HSD) GP			1
60	E-00008051	AA90MGW1024	LCD 19"HSD190MGW1-A02 5MS FOR VSC CON GP			1
61	N/A	AZW9V0BU008	W9V-Q1 BIOS(HSD190MGW1-A02)TUM16AL 5MS			1
62	HW-00008026	FBW9ZA11013	LCD BKT-L-HSD W9ZA-A1(FBW9ZA11,REV3A)GP			1
63	N/A	FBW9ZA10017	LCD BKT-R-HSD W9ZA-A1(FBW9ZA10,REV3A)GP			1
64	N/A	2AW9V0PTU16	W9V-Q2 PANEL DEPENDENT KIT ASSY(HSD) GP			1
65	N/A	AA90MGW1041	LCD 19" HSD190MGW1-A00K(5MS)FOR VSC GP			1
66	N/A	AZW9V0BU105	W9V-Q2 BIOS HSD(A00K)TSUM16AK-LF-1 5MS			1
67	HW-00008026	FBW9ZA11013	LCD BKT-L-HSD W9ZA-A1(FBW9ZA11,REV3A)GP			1
68	N/A	FBW9ZA10017	LCD BKT-R-HSD W9ZA-A1(FBW9ZA10,REV3A)GP			1
69	N/A	2AW9V0PTU24	W9V-Q2 PANEL DEPENDENT KIT ASSY(HSD-K)GP			1
70	E-00008072	AA90MGW1059	LCD 19"HSD190MGW1-A00 5MS FOR VSC GP			1
71	N/A	AZW9V0BU024	W9V-Q2 BIOS HSD(A00)TSUM16AK-LF-1 5MS			1
72	HW-00008026	FBW9ZA11013	LCD BKT-L-HSD W9ZA-A1(FBW9ZA11,REV3A)GP			1
73	N/A	FBW9ZA10017	LCD BKT-R-HSD W9ZA-A1(FBW9ZA10,REV3A)GP			1
74	N/A	28W9V0PK011	W9V-Q2 PACKING ASSY GP			1
75	C-00008153	38L7C0BS003	L7C-A3 BASE SUB ASSY(BLACK)GP			1
76	CB-00008044	DD0L7WPC001	CABLE MB-VGA(15P,1.8M)L7E BLACK 5.5 GP			1
77	CB-00004149	DD0L0TPC007	CABLE AUDIO(ST,1.8M)BLACK L0T GP			1
78	P-00004159	HAL0T002019	PE BAG L0T(HAL0T002,REV3A)GP			1

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
79	P-00008151	HBW9ZA04017	END CAP-R W9ZA-A1(HBW9ZA04,REV3A) GP			1
80	P-00008152	HBW9ZA03011	END CAP-L W9ZA-A1(HBW9ZA03,REV3A) GP			1
81	M-LB-0813-0747	HCL7V004013	CORE LABEL(HCL7V004,REV3A)GP			1
82	M-LB-0813-0745	HCL7V002011	SERIAL LEBAL L7V(HCL7V002,REV3A) GP			1
83	M-LB-0813-1042	HCL7V019011	CARTON LABEL L7VC(HCL7V019,REV3B) GP			1
84	M-LB-0813-1043	HCL70021011	HI-POT LABEL L70L(HCL70021,REV3A)GP			1
85	N/A	HCW9V001010	ID LABEL W9V-Q1(HCW9V001,R3A) GP			1
86	DC-00008140	HGW9V002010	MANUAL+CD W9V-Q2(HGW9V002,R3A) GP			1
87	P-00008150	HFW9V002019	CARTON W9V-Q2(HFW9V001,R3A) GP			1
88	N/A	JXW9C001017	HANDLE UPPER W9C-B1(JXW9C001,REV3A)GP			1
89	N/A	JXW9C002013	HANDLE DOWN W9C-B1(JXW9C002,REV3A)GP			1
90	N/A	HFW9C004019	SPACE PLATE W9C-B(HFW9C004,R3A) GP			0.036
91	N/A	HFW9C003012	SPACE PLATE W9C-A(HFW9C003,R3A) GP			0.025
92	A-PC-0106-0224	DM333181G97	PWR CORD B 1.8M SP-305/10A USA GP			1
93	M-00008032	JXW9V001010	LCD FILM W9V(JXW9V001,R3A)440*285 GP			1

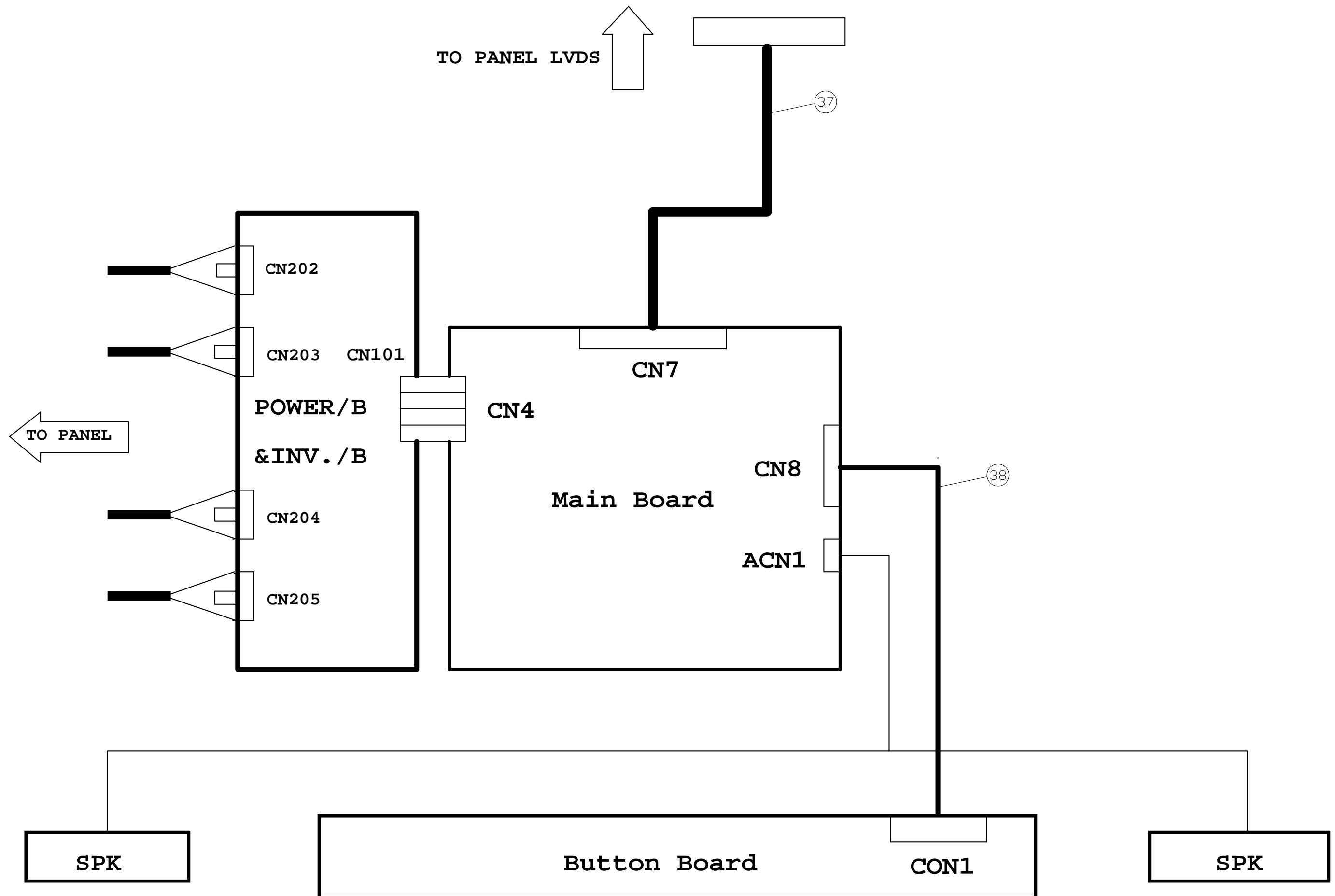
8. Exploded Diagram and Exploded Parts List

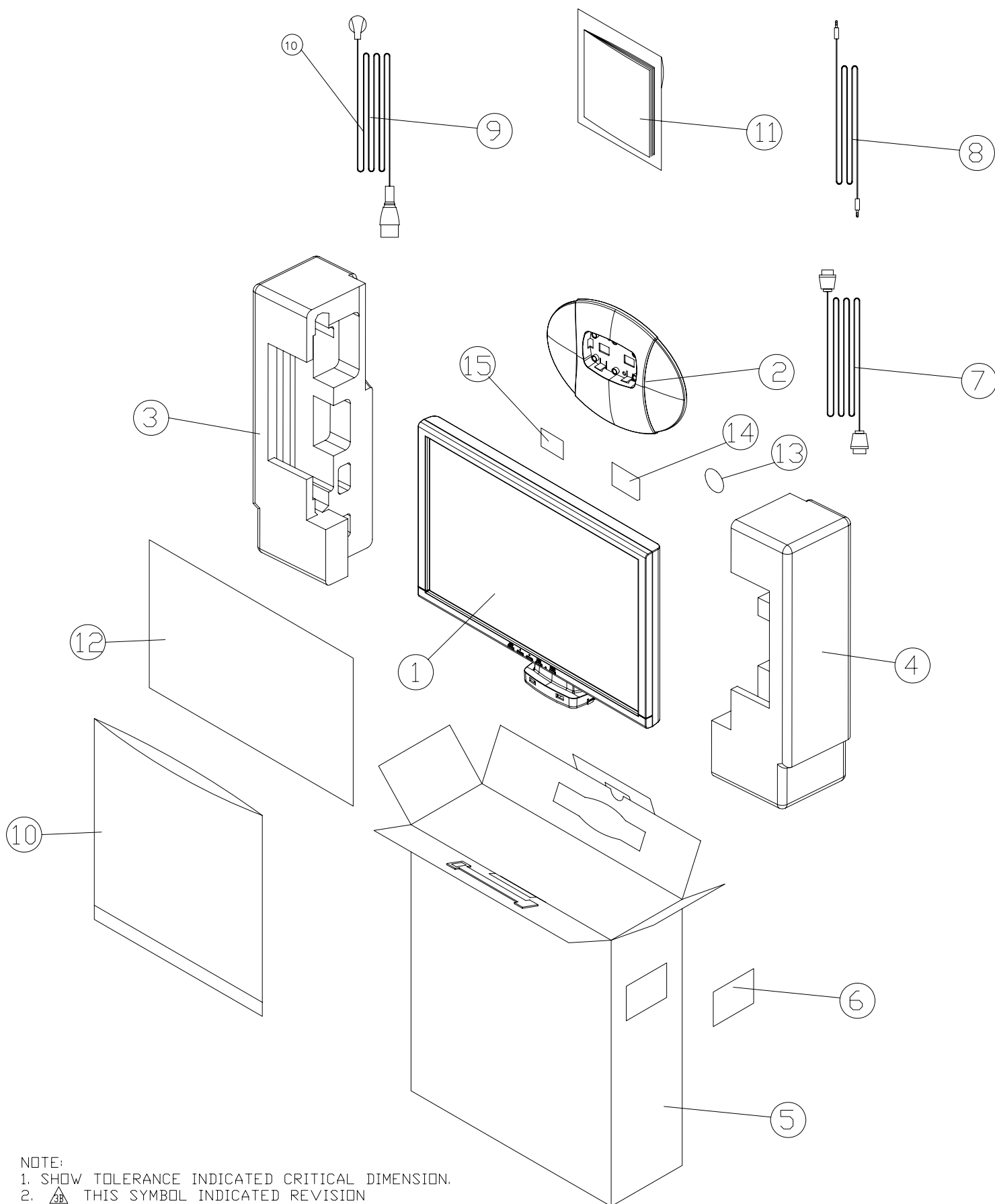


EXPLODED PARTS LIST (Q19wb-3)

ViewSonic Model Number: VS11578
Rev: 1a
Serial No. Prefix: QHZ

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	N/A	EAW9V002014	LCD BEZEL W9V-Q2	1
2	M-SCW-0824-6761	MM30030IBJ4	SCREW M3*3-I-NI	17
3	N/A	EBW9V002015	BUTTON W9V-Q2	1
4	N/A	EBW9C002012	LED LENS W9C-B1	1
5	N/A	23L0ZJBB050	L0ZJ-A1 BUTTON/B ASSY	1
6	N/A	MF20025IBJ8	SCREW F2*2.5-I(NI) GP	2
7	N/A	FBW9ZA10017	LCD BKT-R-HSD W9ZA-A1(1
8	HW-00008026	FBW9ZA11013	LCD BKT-L-HSD W9ZA-A1	1
9	E-00008097	DN005015S08	SPEAK ASSY L9F)1.5W*2	1
10	E-00008072	AA90MGW1059	LCD 19"HSD190MGW1-A00 5MS	1
11	N/A	EBW9E003016	BEZEL BKT W9E-A1	1
12	N/A	FCL7B001018	POWER BOARD MYLAR L7B	1
13	B-00008124	AS05B520037	ADP/INV EADP-45AF BF, 90~264V	1
14	M-MS-0808-8986	MBL11004018	IO NUT LI1	2
15	N/A	21L9F0MB0D3	L9F-A2 M/B ASSY	1
16	N/A	MF30060TJB2	SCREW F3.0*6.0-T(MC)GP	5
17	M-SCW-0824-6799	MM35080BBW2	SCREW M3.5*8-B (NI,WASHER)GP	1
18	N/A	FAW9C001015	PCB SHIELD W9C-B1	1
19	N/A	FCL7TA01018	SHIELDING MYLAR	1
20	N/A	FCL7G001016	AL FOIL M7G	2
21	N/A	FCM7T004014	AL FOIL M7T	1
22	N/A	FBW9ZA03011	HINGE BKT	1
23	N/A	EAW9C002011	LCD COVER W9C-B1	1
24	HW-00008029	MS40100T138	SCREW M4.0*10-T	4
25	N/A	FBW9E003016	HINGE ASSY W9E-A1	1
26	N/A	EAL7C004019	STAND L7C-A1	1
27	HW-00008029	MS40100T138	CABLE ASSY L70L STAND-HINGE	1
28	N/A	FBL7C006012	GND PLATE L7C-A1	1
29	M-SCW-0824-0727	MF30080IBJ0	SCREW F3.0*8-I(NI)GP	2
30	N/A	EAL7C005015	BASE L7C-A1	1
31	M-MS-0808-9251	GAL5V002013	RUBBER FOOT L5VC	4
32	C-00008150	EBW9E002010	HINGE COVER W9E-A1	1
33	M-SCW-0824-0726	MF30080BBJ5	SCREW F3.0*8L,B,NI GP	2
34	N/A	MM40120FJB8	SCREW M4.0*12-F(BLACK)GP	2
35	N/A	MM40130P000	SCREW M4.0*13-P(BLACK)GP	2
36	N/A	MM30050B241	SCREW M3.0*5.0-B BLACK	2
37	CB-00008048	DDM0TWLC001	CABLE MB-LCD	1
38	N/A	DEFC3309006	CABLE FFC(8P,287MM,ID3)W9C-B2	1
39	N/A	GBL9C003019	GASKET 7*7*0.6T L9C-B1	2





NOTE:

1. SHOW TOLERANCE INDICATED CRITICAL DIMENSION.
2.  THIS SYMBOL INDICATED REVISION
3.  THIS SYMBOL INDICATED SPECIAL SPEC

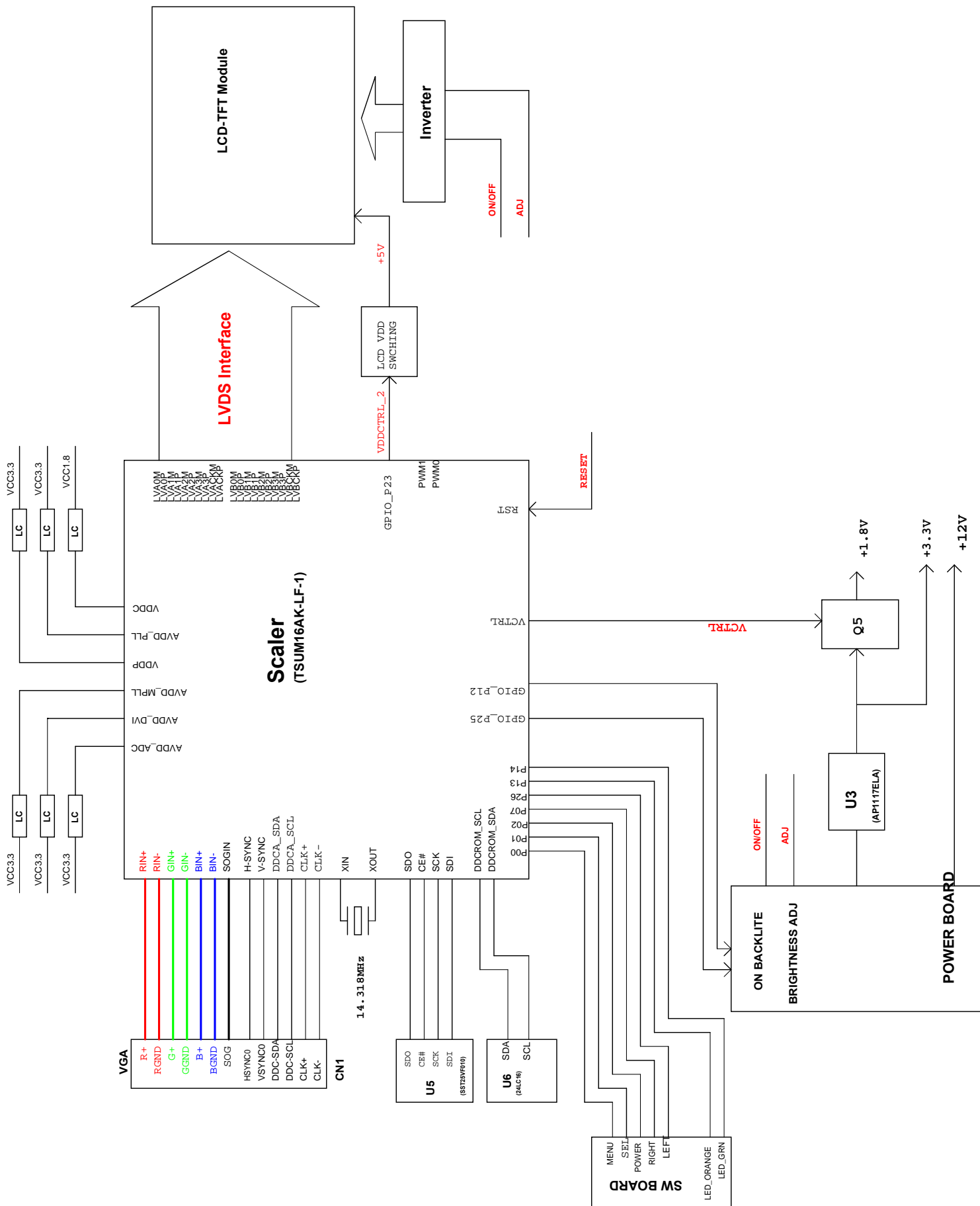
PACKING PART LIST (Q19wb-3)

ViewSonic Model Number: VS11578

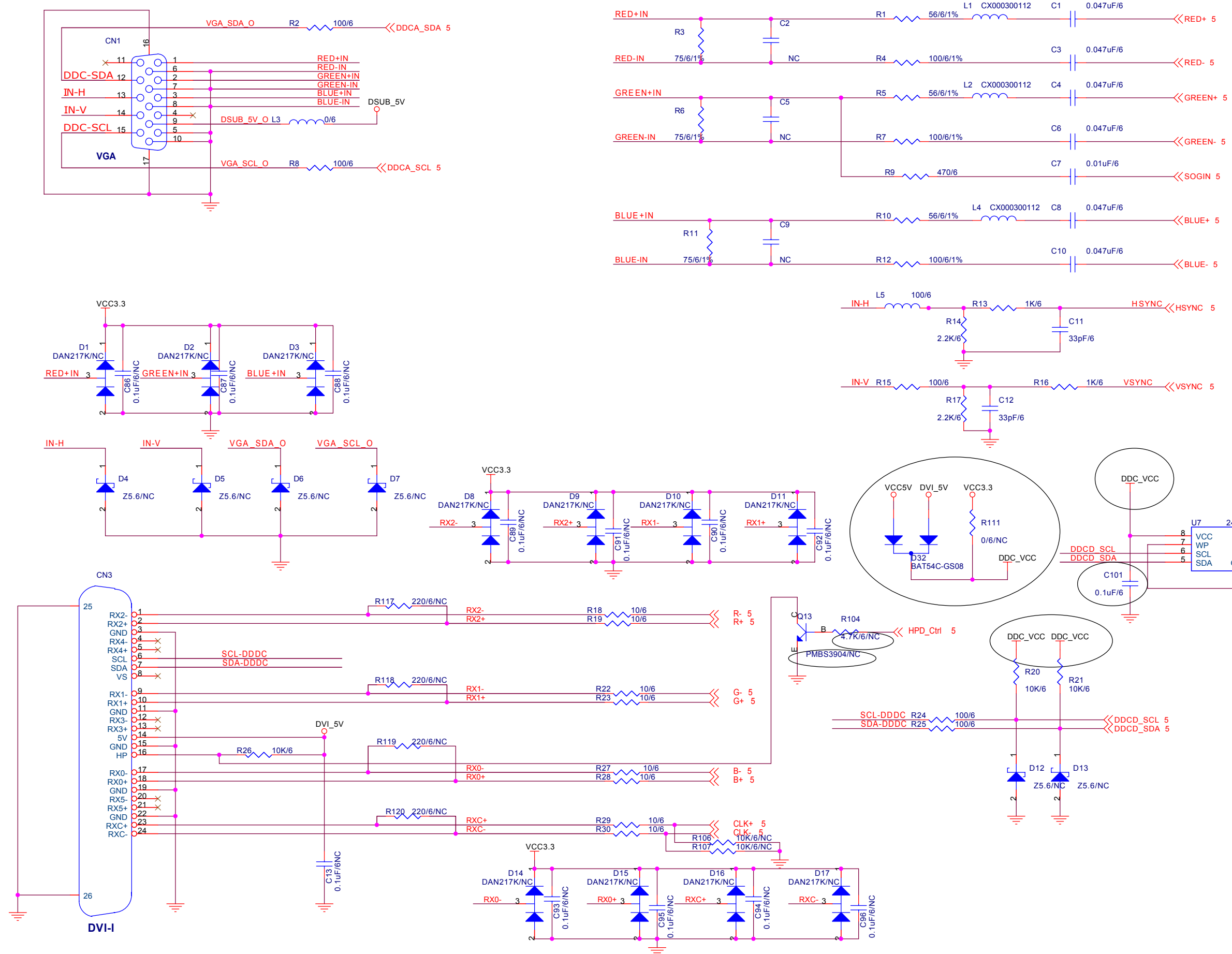
Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Location	Q'ty
1	N/A	1W9VZQVS046	W9V-Q2 LCD MONITOR(Q19WB-3,USA)GP	1
2	C-00008153	38L7C0BS003	L7C-A3 BASE SUB ASSY(BLACK)GP	1
3	P-00008152	HBW9ZA03011	END CAP-L W9ZA-A1	1
4	P-00008151	HBW9ZA04017	END CAP-R W9ZA-A1	1
5	P-00008150	HFW9V002019	CARTON W9V-Q2	1
6	M-LB-0813-1042	HCL7V019011	CARTON LABEL L7VC	1
7	CB-00008044	DD0L7WPC001	CABLE MB-VGA(15P,1.8M)L7E BLACK 5.5	1
8	CB-00004149	DD0L0TPC007	CABLE AUDIO(ST,1.8M)BLACK L0T GP	1
9	A-PC-0106-0224	DM333181G97	POWER CORD SP-30+IS-14 3P 1.8M(USA)B	1
10	P-00004159	HAL0T002019	PE BAG L0T	1
11	N/A	HGW9V001013	MANUAL+CD W9V-Q1	1
12	M-00008032	JXW9V001010	LCD FILM W9V	1
13	M-LB-0813-1043	HCL70021011	HI-POT LABEL L70L	1
14	N/A	HCW9V001010	ID LABEL W9V-Q1	1
15	M-LB-0813-0745	HCL7V002011	SERIAL LEBAL L7V	1

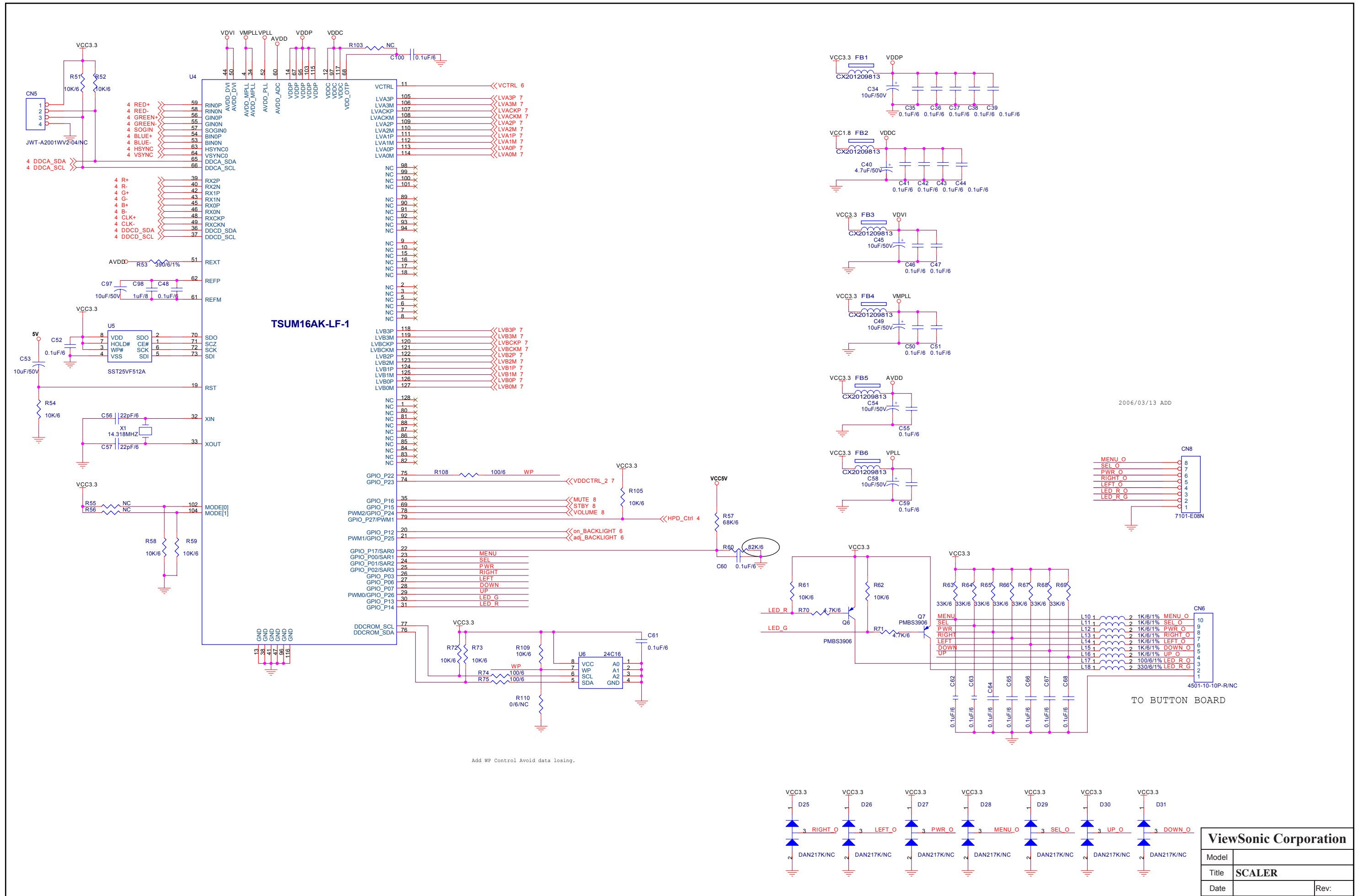
System Block Diagram

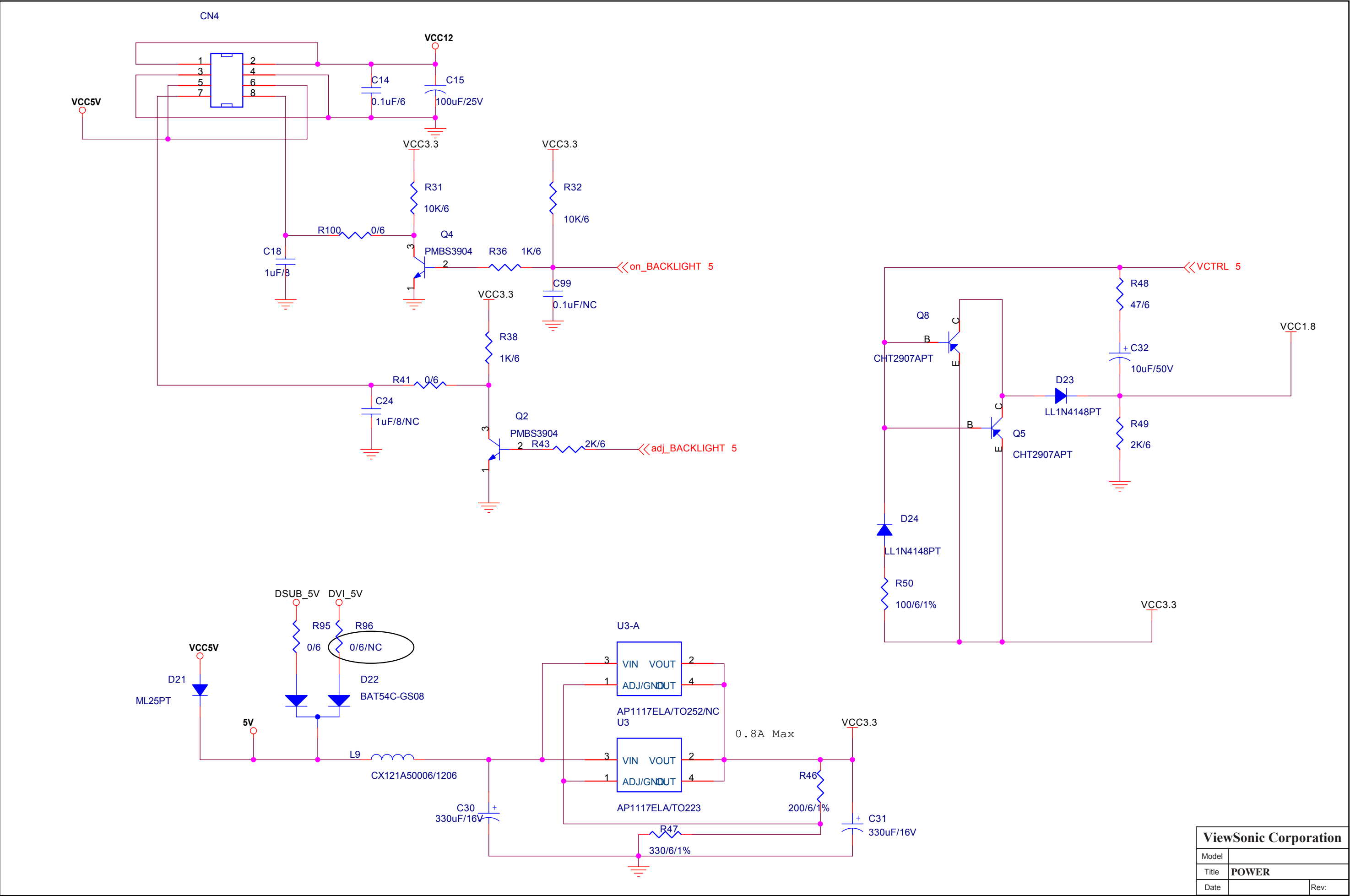


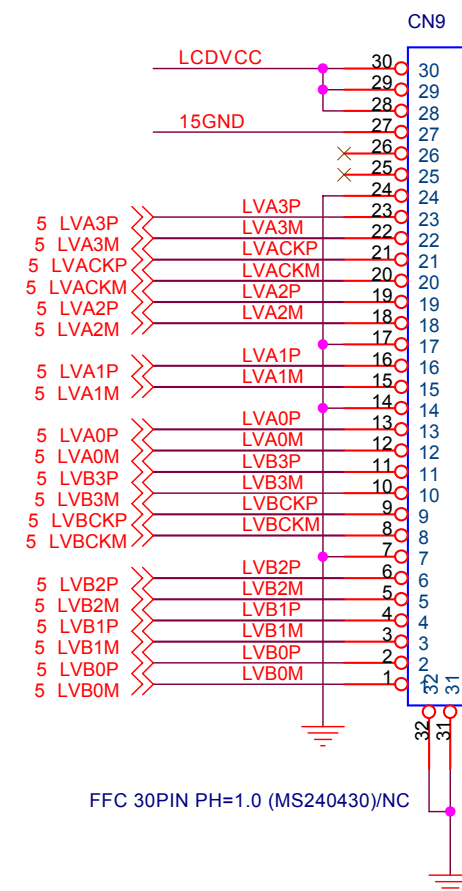
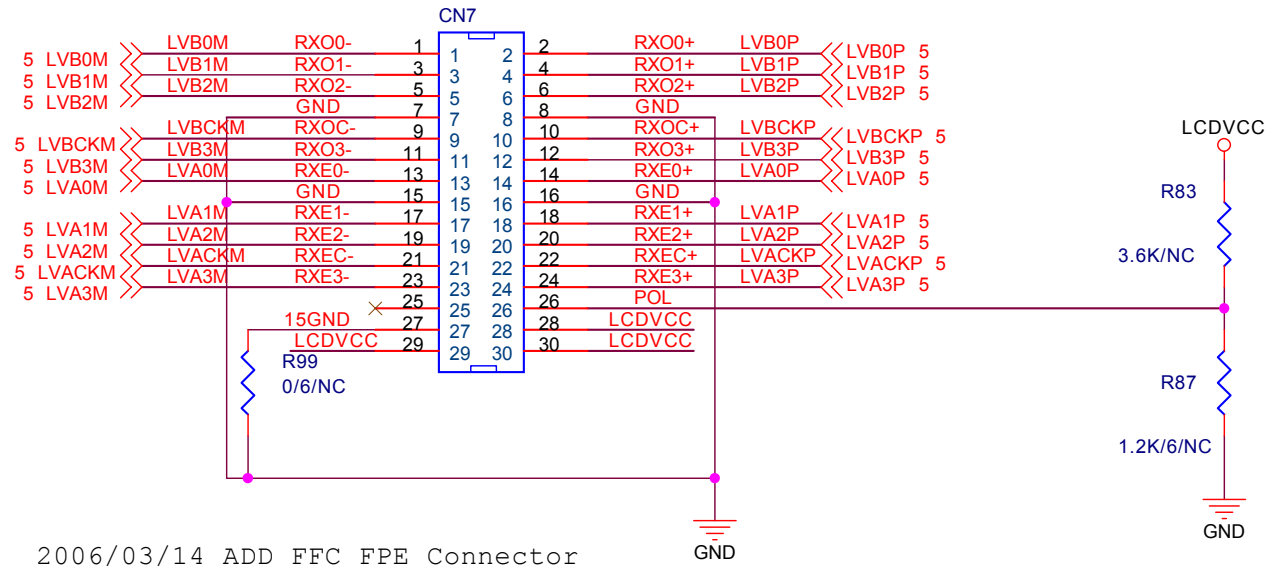
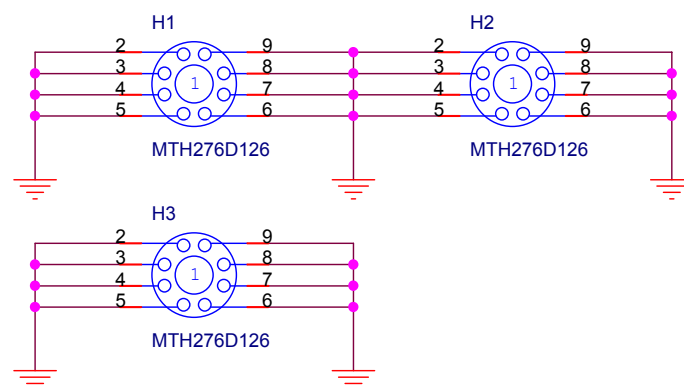
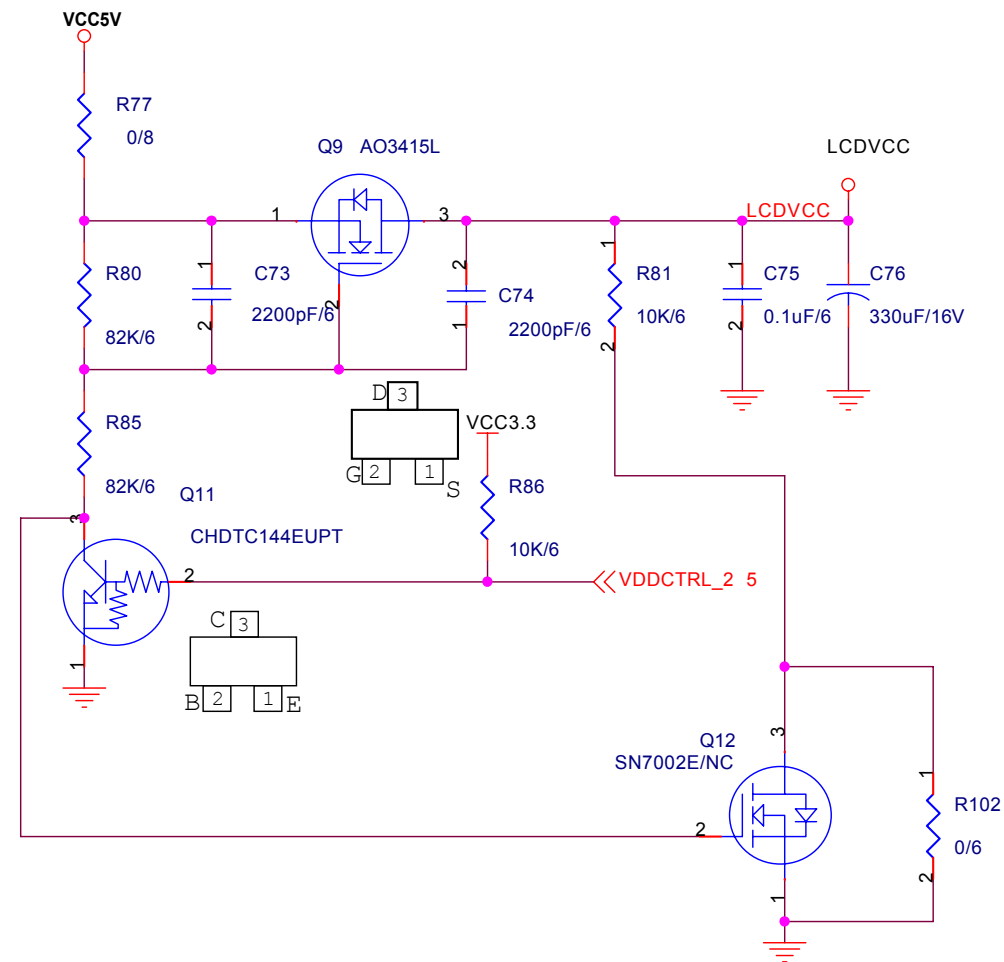
10. Schematic Diagrams



ViewSonic Corporation		
Model		
Title	VGA & DVI Input	
Date		Rev:

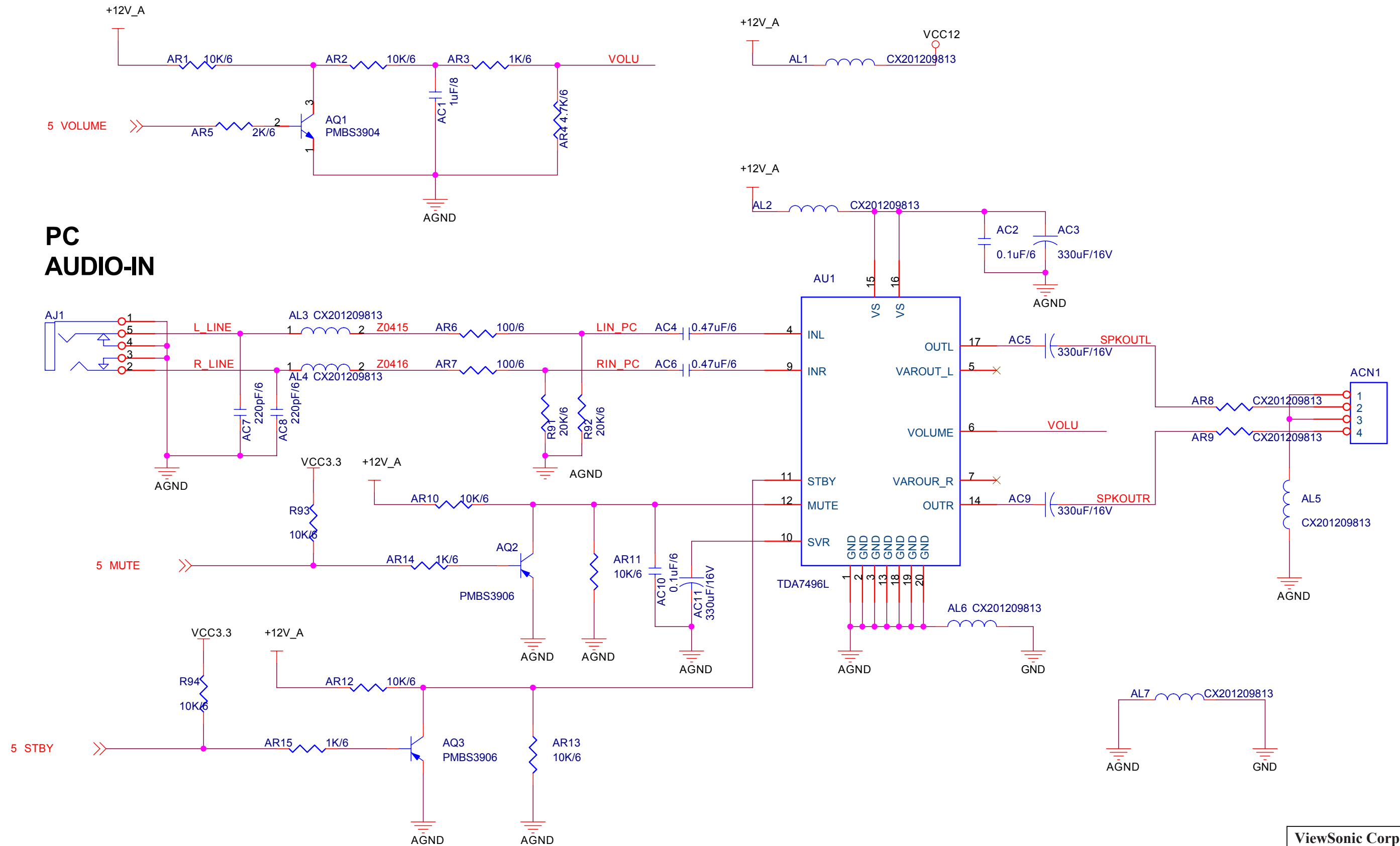




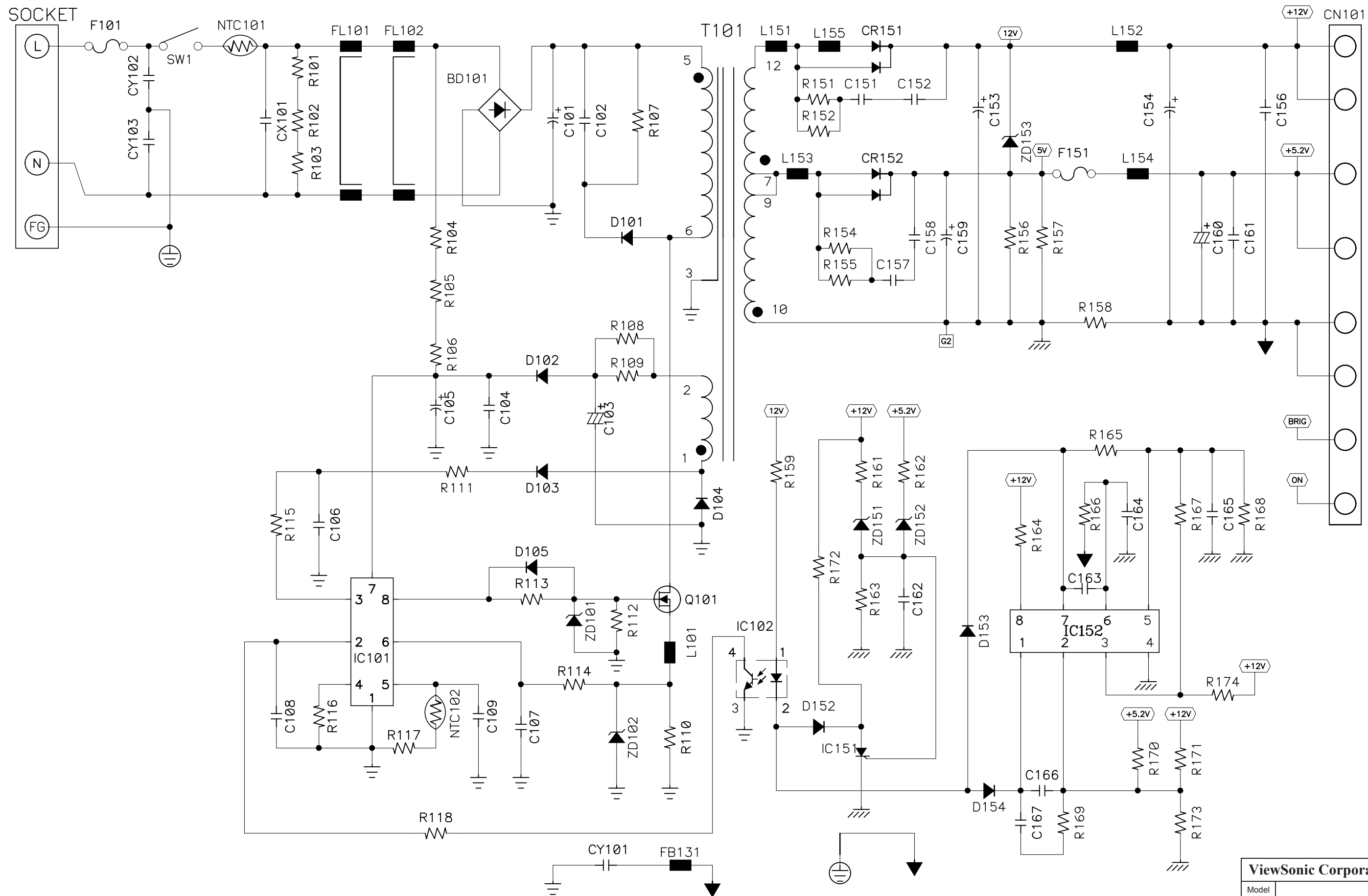


ViewSonic Corporation		
Model		
Title	PANEL	
Date		Rev:

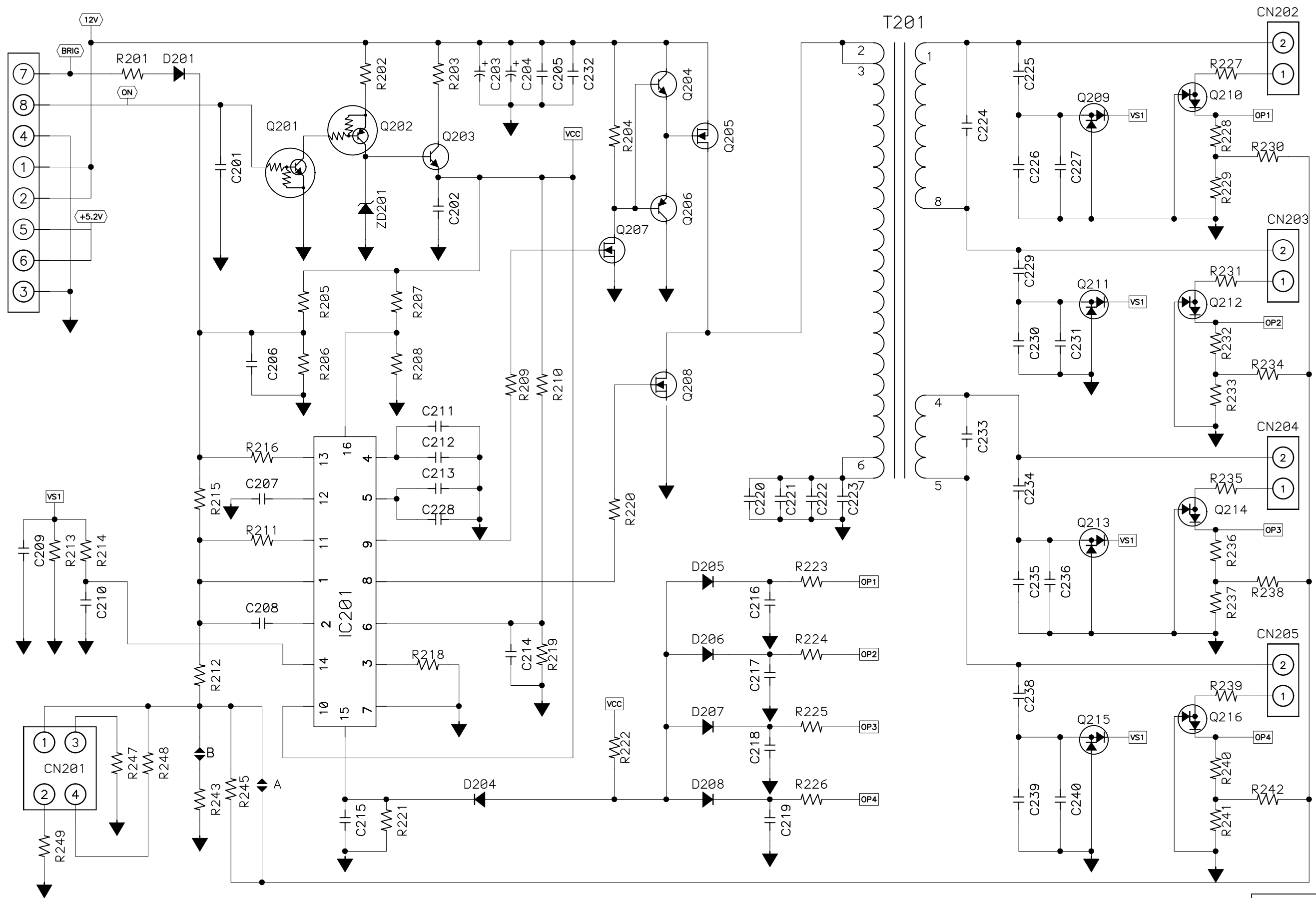
PC AUDIO-IN



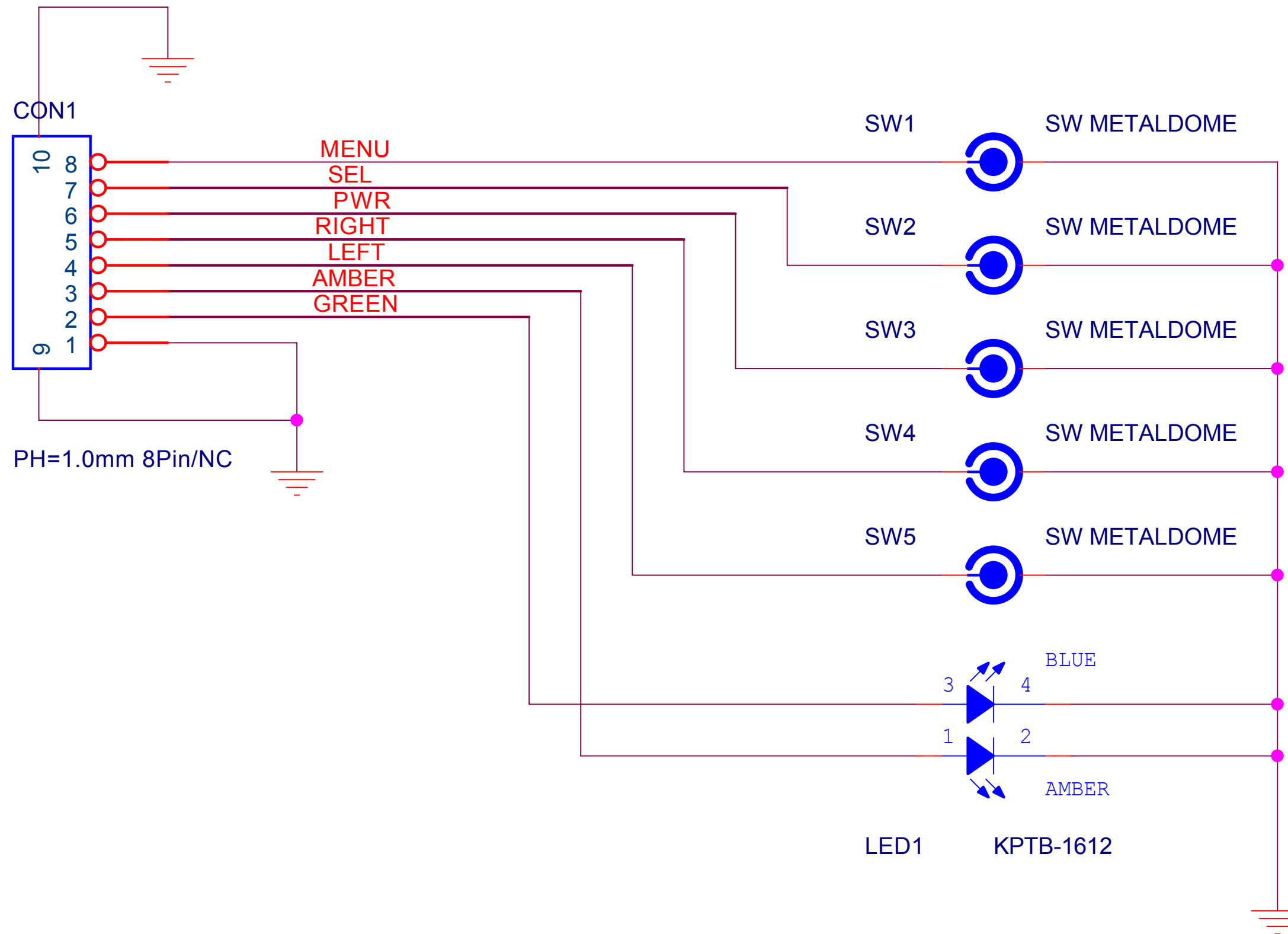
ViewSonic Corporation		
Model		
Title	AUDIO	
Date		Rev:



ViewSonic Corporation		
Model		
Title	AC to DC ADAPTOR	
Date		Rev:

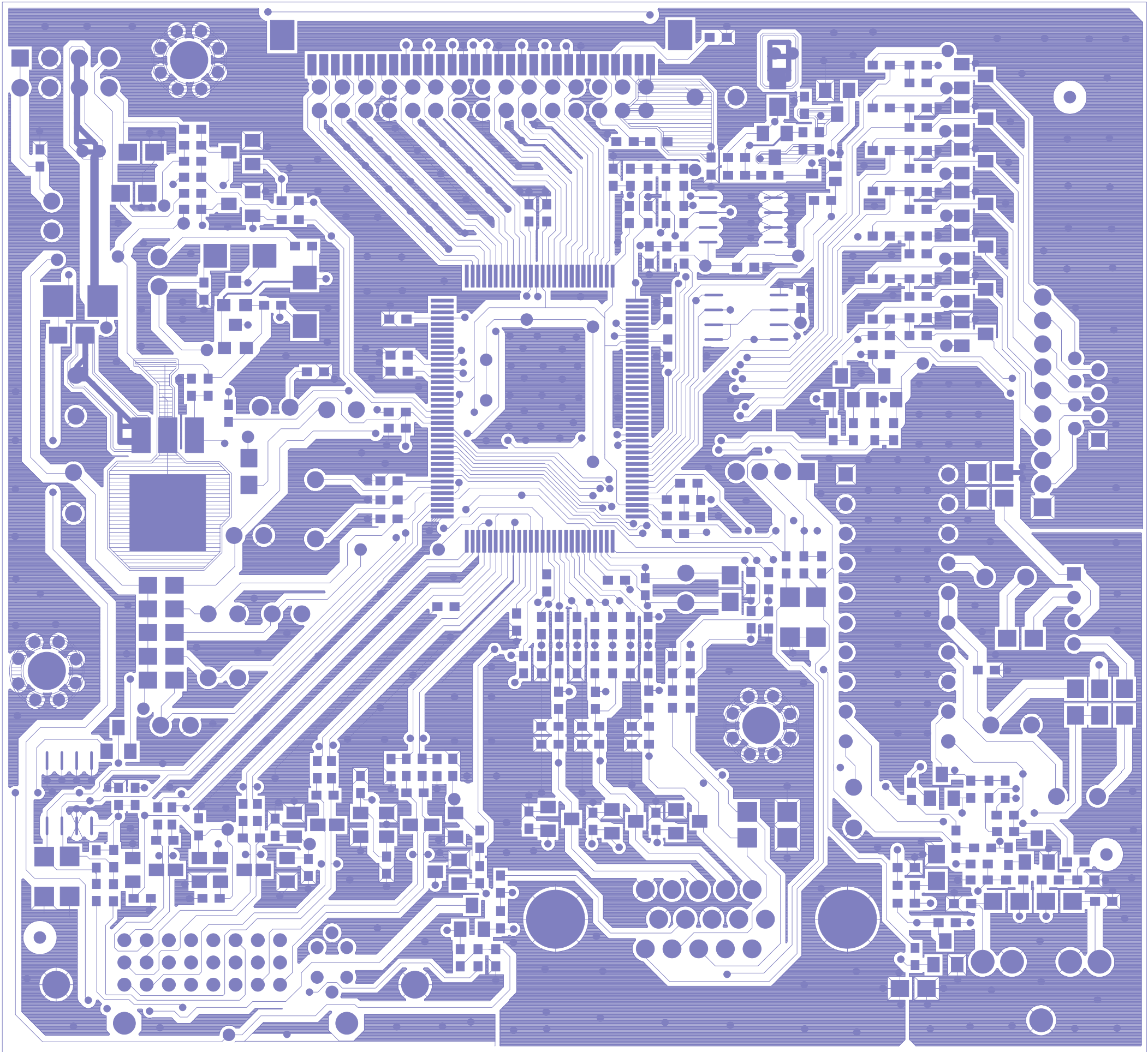


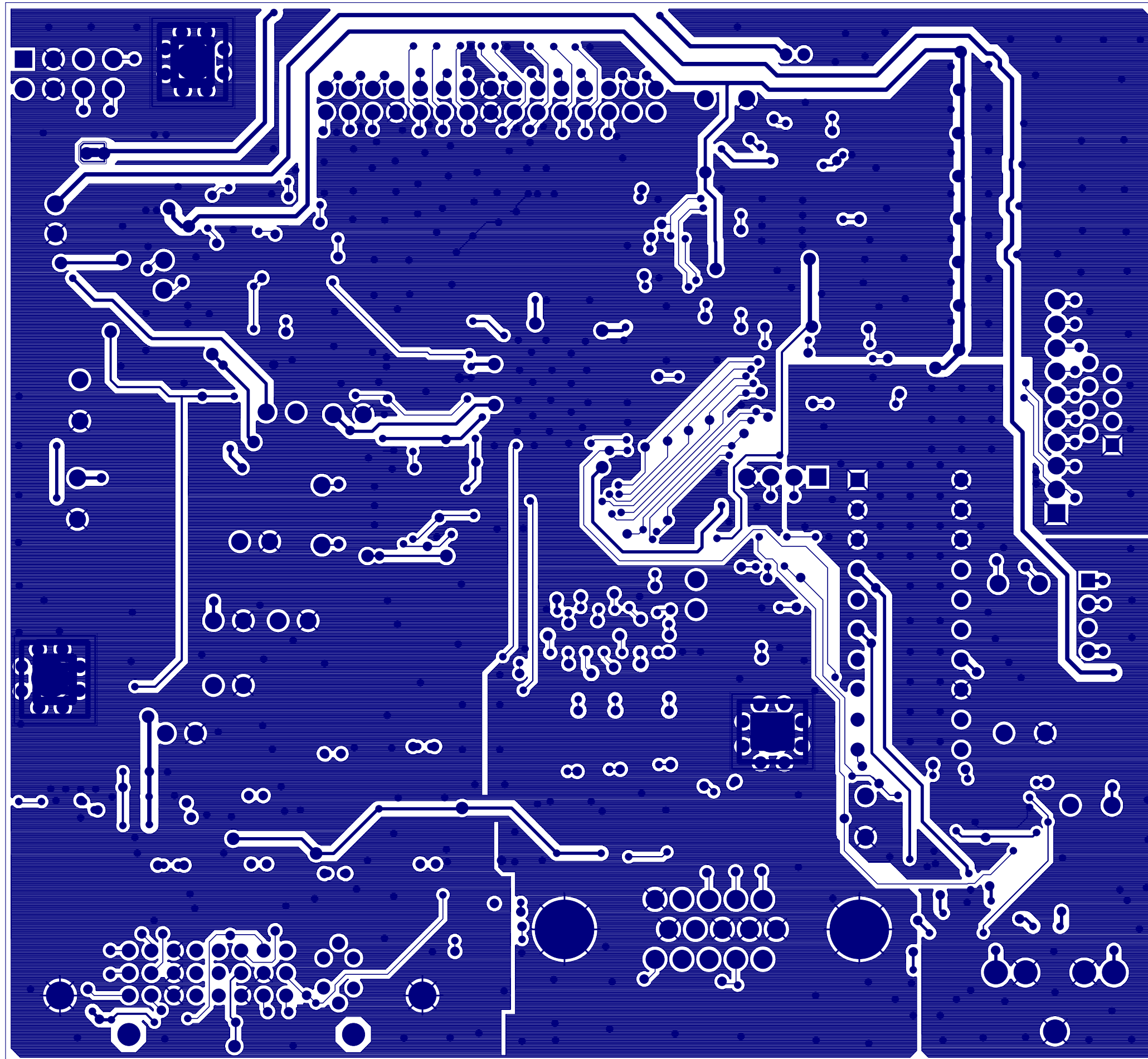
ViewSonic Corporation		
Model		
Title	AC to DC ADAPTOR	
Date		Rev:

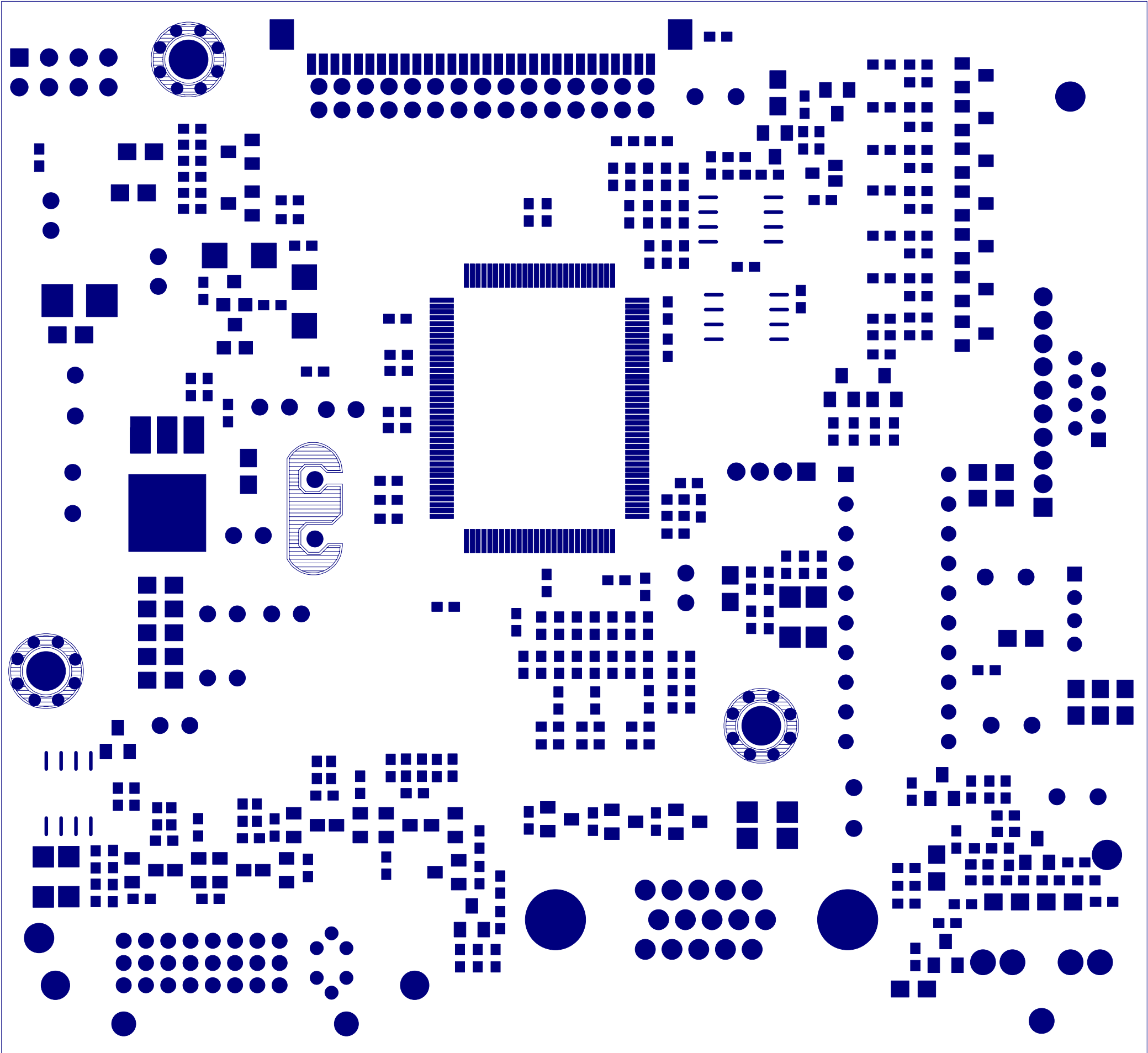


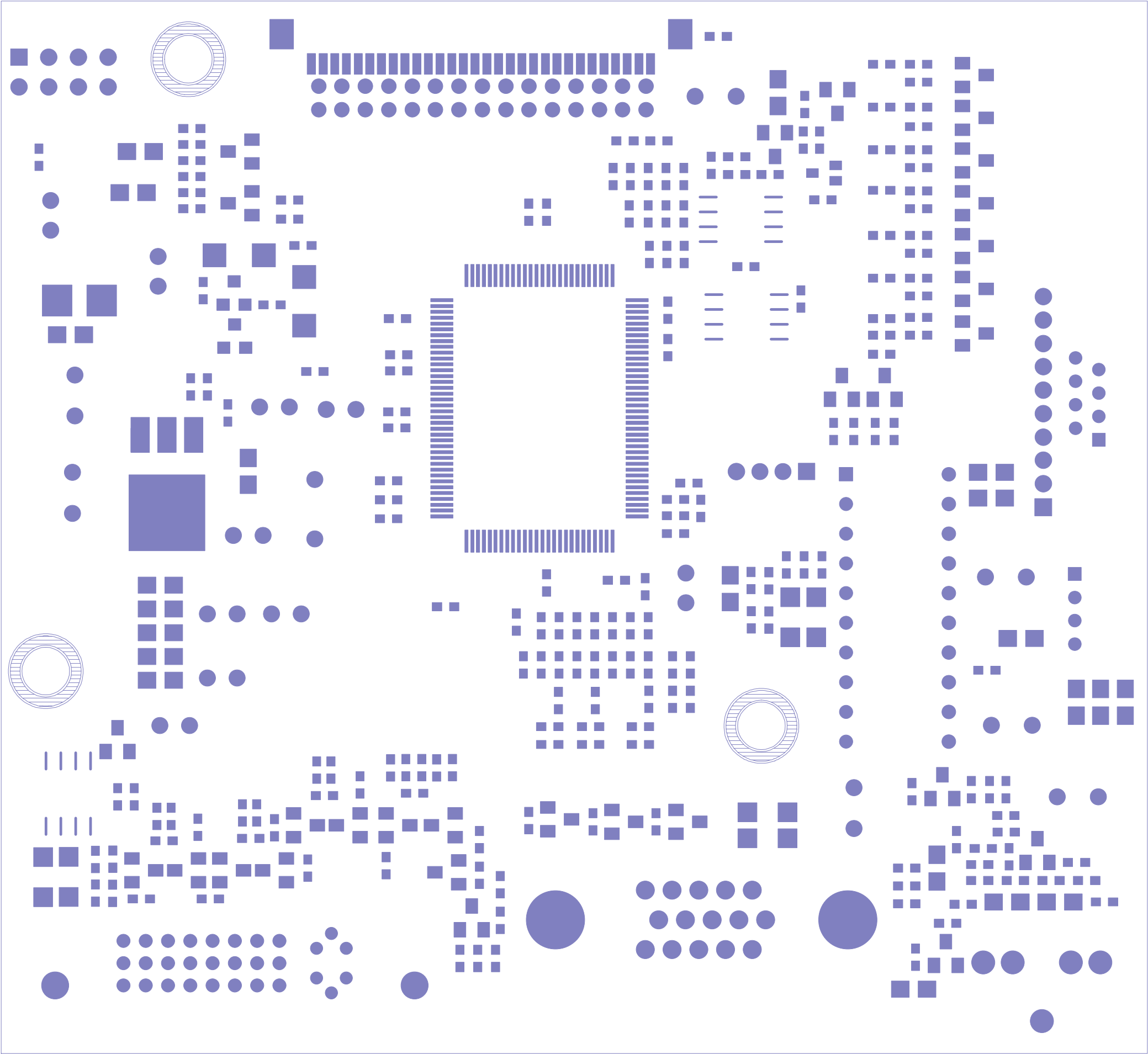
Orange / Blue : KPTB-1612SEKPBAC
 Orange / Green : KPTB-1612NSGC

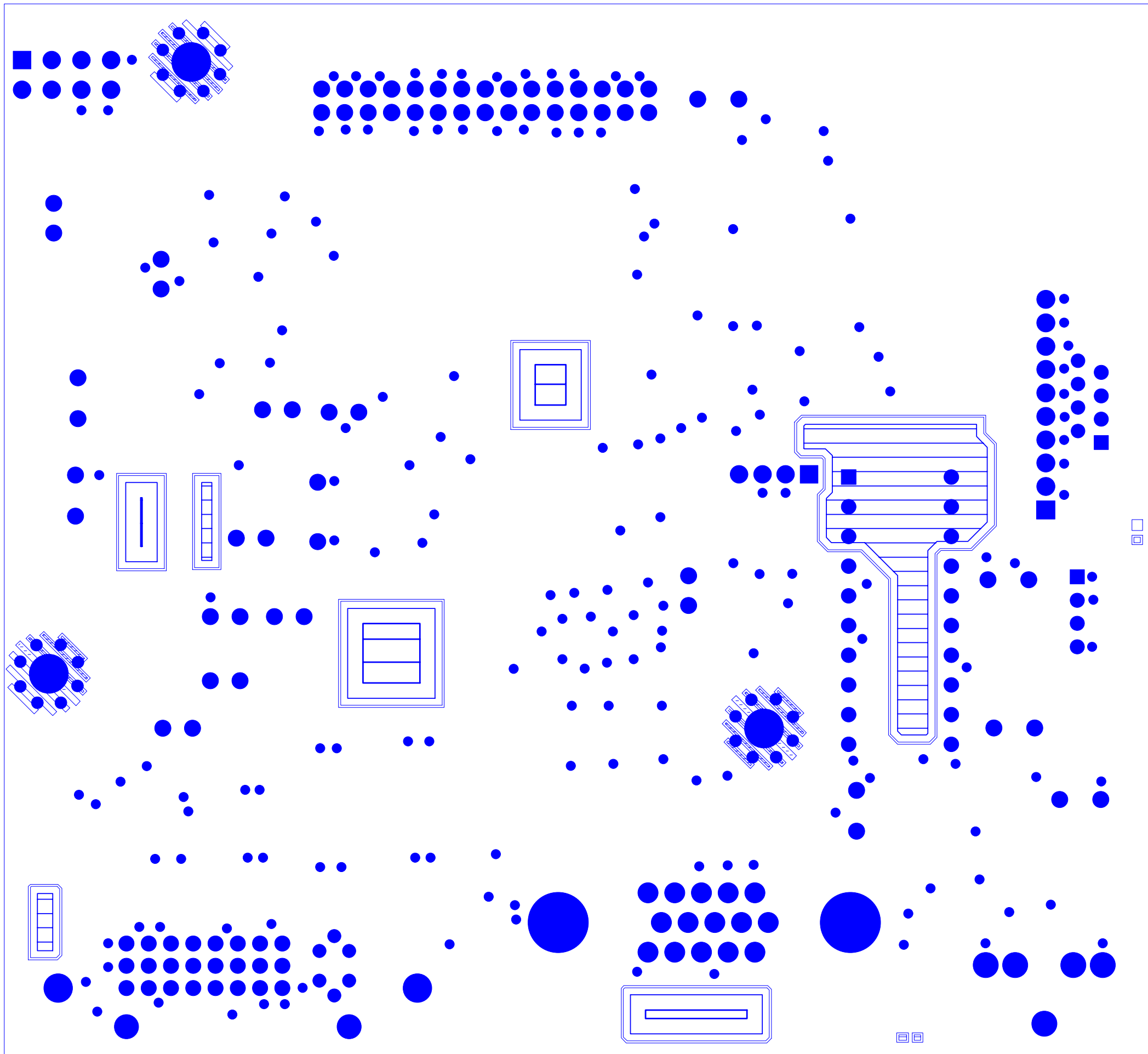
ViewSonic Corporation		
Model		
Title	Metal Dome Button Board	
Date		Rev:

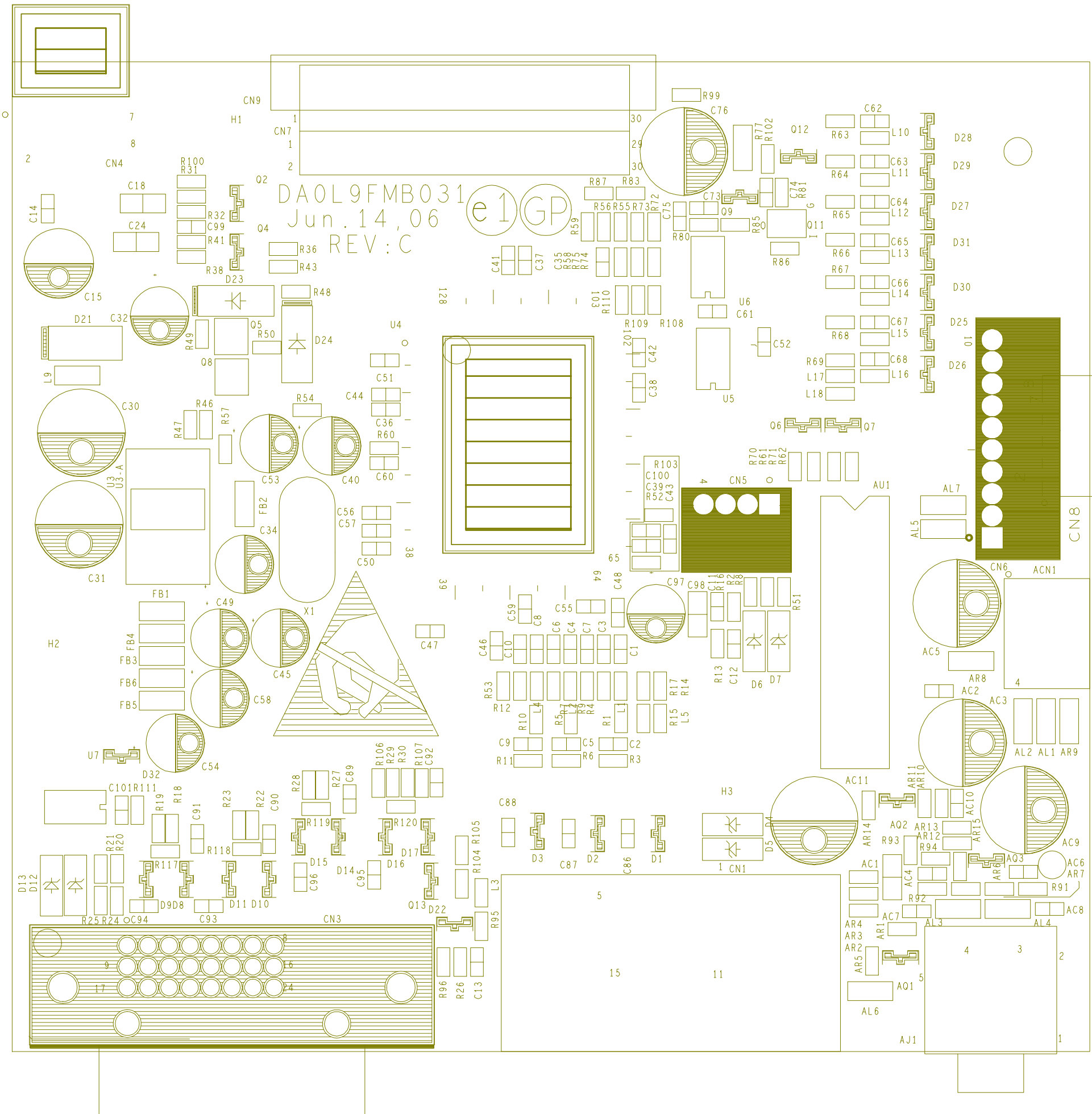












*** Reader's Response***

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Thank you in advance for your feedback on our Service Manual, which allows continuous improvement of our products. We would appreciate your completion of the Assessment Matrix below, for return to ViewSonic Corporation.

Assessment

A. What do you think about the content of this Service Manual?

<i>Unit</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Bad</i>
1. Precautions and Safety Notices				
2. Specification				
3. Front Panel Function Control Description				
4. Circuit Description				
5. Adjustment Procedure				
6. Troubleshooting Flow Chart				
7. Recommended Spare Parts List				
8. Exploded Diagram and Exploded Parts List				
9. Block Diagrams				
10. Schematic Diagrams				
11. PCB Layout Diagrams				

B. Are you satisfied with this Service Manual?

<i>Item</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Bad</i>
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinions or suggestions regarding this service manual?

Reader's basic data:

Name:		Title:	
Company:			
Add:			
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After completing this form, please return it to ViewSonic Quality Assurance in the USA at facsimile 1-909-839-7943. You may also e-mail any suggestions to the Director, Quality Systems & Processes (marc.maupin@viewsonic.com)