Service Manual

ViewSonic VG2230wm-3

Model No. VS11422

22” Color TFT LCD Display

(VG2230wm-3_SM Rev. 1a May. 2009)

ViewSonic 381 Brea Canyon Road, Walnut, California 91789 USA - (800) 888-8583

Product disposal at end of product life

The lamp in this product contains mercury. Please dispose of in accordance with local, state or federal laws.

Revision History

Revision	SM Editing Date	Description of Changes	TPV Model	Editor
1a	05/20/2009	Initial Release	TC9MRLDBDWVSDN TC9MRLDKDWVSDN	Eric

TABLE OF CONTENTS

1. Precautions and Safety Notices

1.1 Safety Precautions

This monitor is manufactured and tested on a ground principle that a user's safety comes first. However, improper use or installation may cause damage to the monitor as well as the user. Carefully go over the following WARNINGS before installing and keep this guide handy.

WARNINGS

· This monitor should be operated only at the correct power sources indicated on the label on the rear end of the monitor. If you're unsure of the power supply in your residence, consult you local dealer or power company.

· Use only the special power adapter that comes with this monitor for power input.

· Do not try to repair the monitor your self as it contains no user-serviceable parts. This monitor should only be repaired by a qualified technician.

· Do not remove the monitor cabinet. There is high-voltage parts inside that may cause electric shock to human bodies, even when the power cord is unplugged.

· Stop using the monitor if the cabinet is damaged. Have it checked by a service technician.

· Put your monitor only in a clean, dry environment. If it gets wet, unplug the power cable immediately and consult your service technician.

· Always unplug the monitor before cleaning it .Clean the cabinet with a clean, dry cloth. Apply non-ammonia based cleaner onto the cloth, not directly onto the glass screen.

· Keep the monitor away from magnetic objects, motors, TV sets, and transformer.

· Do not place heavy objects on the monitor or power cord.

1.2 Product Safety Notice

Many electrical and mechanical parts in this chassis have special safety visual inspections and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltages, wattage, etc. Before replacing any of these components read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

1.3 Service Notes

1. When replacing parts or circuit boards, clamp the lead wires around terminals before soldering.
2. When replacing a high wattage resistor (more than 1W of metal oxide film resistor) in circuit board, keep the resistor about 5mm away from circuit board.
3. Keep wires away from high voltage, high temperature components and sharp edges.
4. Keep wires in their original position so as to reduce interference.
5. Usage of this product please refer to also user's manual.

1.4 Handing and Placing Methods

Correct methods :	Incorrect Methods :
Only touch the metal-frame of the panel or the front cover of the monitor. Do not touch the surface of the polarizer .	Surface of the panel is pressed by fingers & this may cause “ MURA “
	
	
Take out the monitor with cushion	Take out the monitor by grasping the LCD panel. That may cause “ MURA“.
	
Place the monitor on a clean & soft foam pad .	Place the monitor on foreign objects . That could scratch the surface of panel
	

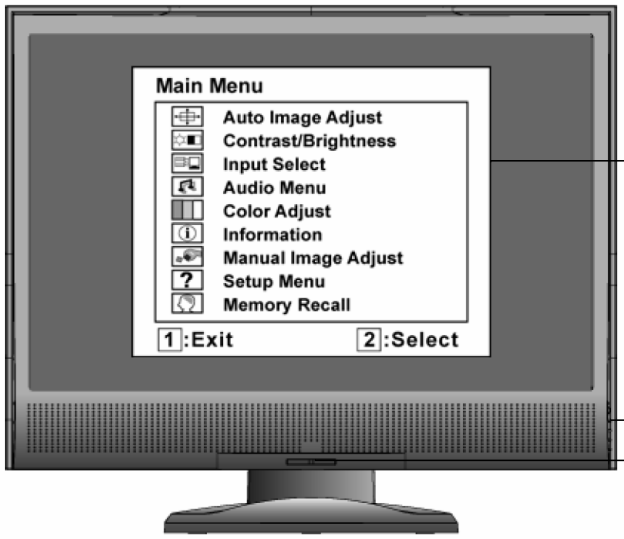
2. Specification

LCD	Type	22” (full 22" viewable diagonal area), TFT (Thin Film Transistor), Active Matrix WSXGA+ LCD, 0.282 mm pixel pitch
	Color Filter	RGB vertical stripe
	Glass Surface	Anti-Glare
Input Signal	Video	RGB analog (0.7/1.0 Vp-p, 75 ohms) / TMDS Digital (100ohms)
	Sync	Separate Sync, f_h:30-82 kHz, f_v:50-75 Hz
Compatibility	PC	Up to 1680 x 1050 Non-interlaced
	Macintosh[1]	Power Macintosh up to 1680 x 1050
Resolution	Recommended and supported	1680 x 1050 @ 60 Hz 1600 x 1200 @ 60 Hz 1400 x 1050 @ 60, 75 Hz 1280 x 1024 @ 60, 70, 72 Hz 1024 x 768 @ 60, 70, 75 Hz 800 x 600 @ 56, 60, 72, 75 Hz 640 x 480 @ 60, 75 Hz 720 x 400 @ 70 Hz
Power	Voltage	100-240 VAC, 50-60 Hz (auto switch)
Display area	Full Scan	474 mm (H) x 296 mm (V) 18.7" (H) x 11.7" (V)
Operating conditions	Temperature	41° F to + 95° F (5° C to + 35° C)
	Humidity	20% to 80% (non-condensing)
	Altitude	To 10,000 feet
Storage conditions	Temperature	-4° F to + 131° F (-20° C to + 55° C)
	Humidity	20% to 85% (non-condensing)
	Altitude	To 40,000 feet
Dimensions	Physical	519 mm (W) x 446 mm (H) x 250 mm (D) 20.4" (W) x 17.6" (H) x 9.8" (D)
Weight	Physical	14.3 lb (6.5 kg)
Regulations		BSMI, CCC, PSB, C-Tick, MIC, CE, GS, Ergo, SASO, Gost-R/Hygienic, Ukraine, TCO'03, UL/cUL, FCC-B, ICES-B, TUV-S/UL-AR S Mark, NOM, ENERGY STAR®
Power saving modes	On	38W (Typical) (blue LED)
	Off	<1W
Preset Timing Mode (pre-adjusted to VESA® 1680 x 1050 @ 60 Hz) **Warning:** Do not set the graphics card in your computer to exceed these refresh rates; doing so may result in permanent damage to the LCD display.		

[1] Macintosh computers older than G3 require a ViewSonic® Macintosh adapter. To order an adapter, contact ViewSonic.

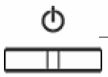
3. Front Panel Function Control Description

Use the buttons on the front control panel to display and adjust the OSD controls which display on the screen. The OSD controls are explained at the top of the next page and are defined in “Main Menu Controls”.



Main Menu
with OSD controls

Front Control Panel
shown below in detail



Standby Power On/Off
Power light
Blue = ON
Orange = Power Saving

Audio Mute button turns the sound off

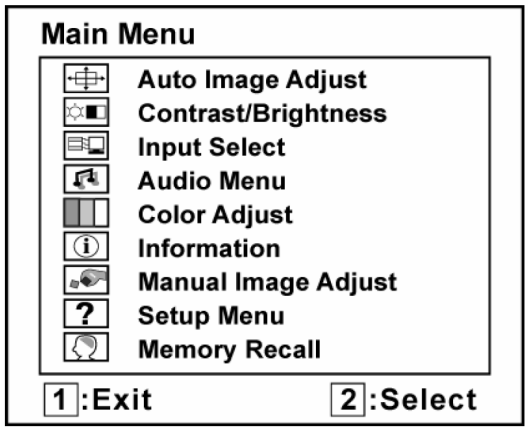
1 — Displays the Main Menu or exits the control screen and saves adjustments.

△ ▽ — Scrolls through menu options and adjusts the displayed control.
Also a shortcut to display the Contrast adjustment control screen.

2 — Displays the control screen for the highlighted control.
Also toggles between two controls on some screens.

Do the following to adjust the display setting:

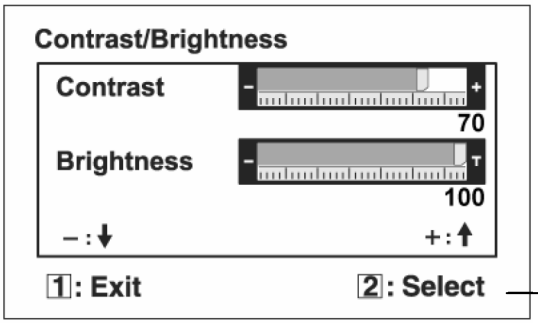
1. To display the Main Menu, press button [1].



NOTE: All OSD menus and adjustment screens disappear automatically after about 15 seconds. This is adjustable through the OSD timeout setting in the setup menu.

2. To select a control to adjust, press ▲ or ▼ to scroll up or down in the Main Menu.

3. After the desired control is selected, press button [2]. A control screen like the one shown below appears.



The command line at the bottom of the control screen tells what to do next from this screen. You can toggle between control

4. To adjust the control, press the up ▲ or down ▼ buttons.

5. To save the adjustments and exit the menu, press button [1] twice.

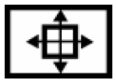
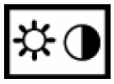
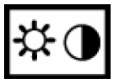
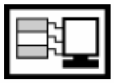
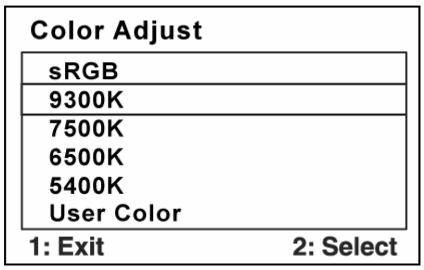
The following tips may help you optimize your display:

• Adjust the computer's graphics card so that it outputs a 1680 x 1050 @ 60Hz video signal to the LCD display. (Look for instructions on “changing the refresh rate” in the graphics card's user guide.)

• If necessary, make small adjustments using H. POSITION and V. POSITION until the screen image is completely visible. (The black border around the edge of the screen should barely touch the illuminated “active area” of the LCD display.)

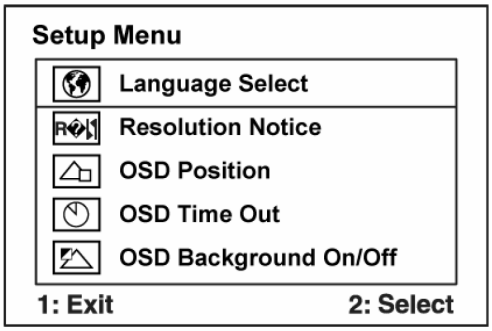
Main Menu Controls

Adjust the menu items shown below by using the up ▲ and down ▼ buttons.

Control	Explanation
	**Auto Image Adjust** automatically sizes, centers, and fine tunes the video signal to eliminate waviness and distortion. Press the [2] button to obtain a sharper image. **NOTE:** Auto Image Adjust works with most common video cards. If this function does not work on your LCD display, then lower the video refresh rate to 60 Hz and set the resolution to its pre-set value.
	**Contrast** adjusts the difference between the image background (black level) and the foreground (white level).
	**Brightness** adjusts background black level of the screen image.
	**Input Select** toggles between inputs if you have more than one computer connected to the LCD Display.
	**Audio Adjust** **Volume** increases the volume, decreases the volume, and mutes the audio. **Mute** temporarily silences audio output.
	**Color Adjust** provides several color adjustment modes, including preset color temperatures and a User Color mode which allows independent adjustment of red (R), green (G), and blue (B). The factory setting for this product is 6500K (6500 Kelvin).  **sRGB-**This is quickly becoming the industry standard for color management, with support being included in many of the latest applications. Enabling this setting allows the LCD display to more accurately display colors the way they were originally intended. Enabling the sRGB setting will cause the Contrast and Brightness adjustments to be disabled. **9300K-**Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting). **7500K-**Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting). **6500K**-Adds red to the screen image for warmer white and richer red. **5400K**-Adds green to the screen image for a darker color. **User Color** Individual adjustments for red (R), green (G), and blue (B). **1.** To select color (R, G or B) press button [2]. **2.** To adjust selected color, press ▲ and ▼. **Important:** If you select RECALL from the Main Menu when the product is set to a Preset Timing

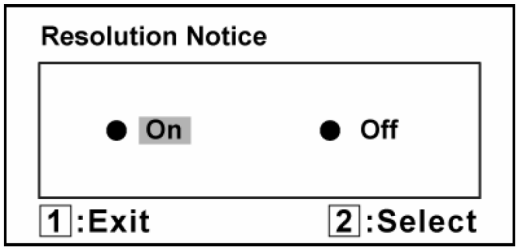
	Mode, colors return to the 6500K factory preset.
	**Information** displays the timing mode (video signal input) coming from the graphics card in the computer, the LCD model number, the serial number, and the ViewSonic® website URL. See your graphics card's user guide for instructions on changing the resolution and refresh rate (vertical frequency). **NOTE:** VESA 1920 x 1080 @ 60Hz (recommended) means that the resolution is 1920 x 1080 and the refresh rate is 60 Hertz. **Information** H. Frequency: XX kHz V. Frequency: XX Hz Resolution: XXX Pixel Clock: XXXXXXXXX MHz Serial Number: XXXXXXXXXXX Model Number: XXXXXXXXXXX www.ViewSonic.com 1: Exit
	**Manual Image Adjust** displays the Manual Image Adjust menu. **Manual Image Adjust** H. Size H./V. Position Fine Tune Sharpness Aspect Ratio ECO Mode 1:Exit 2:Select **H./V. Position (Horizontal/Vertical Position)** moves the screen image left or right and up or down. **H. Size (Horizontal Size)** adjusts the width of the screen image. **Fine Tune** sharpens the focus by aligning text and/or graphics with pixel boundaries. **NOTE:** Try Auto Image Adjust first. **Sharpness** adjusts the clarity and focus of the screen image. **Aspect ratio** Selects the image size for 4:3 and full screen. **ECO Mode** provides the lower power consumption by reducing the brightness. **ECO Mode** Standard Optimize Conserve 1: Exit 2: Select **Standard:** The default brightness setting. **Optimize:** Decreases the brightness by 25 %. **Conserve:** Decreases the brightness by 50 %. **NOTE:** When the ECO Mode is set to "Optimize" or "Conserve", the Brightness, Contrast, and Dynamic Contrast cannot be adjusted.

Setup Menu displays the menu shown below:

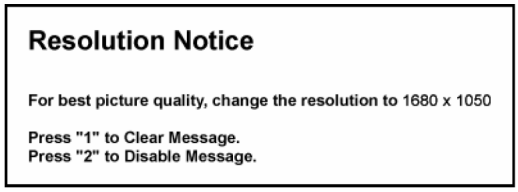


Language Select allows the user to choose the language used in the menus and control screens.

Resolution Notice advises the optimal resolution to use.



If you enable the Resolution Notice shown above and your computer is set at a resolution other than 1680 x 1050, the following screen appears.



OSD Position allows the user to move the OSD menus and control screens.

OSD Timeout sets the length of time the OSD screen is displayed. For example, with a “15 second” setting, if a control is not pushed within 15 seconds, the display screen disappears.

OSD Background allows the user to turn the OSD background On or Off.

Memory Recall returns the adjustments back to factory settings if the display is operating in a factory Preset Timing Mode listed in the Specifications of this manual.

4. Circuit Description

4.1 Main Board

General
■ Embedded dual DDC with DDC1/2B/CI
■ Zoom scaling up and down
■ No external memory required.
■Require only one crystal to generate all timing.
■ Programmable 3.3V/5V detection reset output.
■Embedded crystal output to micro-controller.
■ 3 channels 8 bits PWM output, and wide range selectable PWM frequency.

Analog RGB Input Interface
■ Integrated 8-bit triple-channel 210/165 (optional) MHz ADC/PLL
■ Embedded programmable Schmitt trigger of HSYNC
■ Support Sync On Green (SOG) and various kinds of composite sync modes
■ On-chip high-performance hybrid PLLs
■ High resolution true 64 phase ADC PLL
■ Y/Pb/Pr support up to HDTV 1080i resolution
■ Support 1 Analog input

Digital Video Input Interface
■ Built-in YUV to RGB color space converter & de-interlace

DVI Compliant Digital Input Interface (optional)
■ Single link on-chip TMDS receiver
■ Support to 165Mhz with long cable
■ Adaptive algorithm for TMDS capability
■ Data enable only mode support
■ High-Bandwidth Digital Content Protection (HDCP 1.1) (optional only in H version)
■ Enhanced protection of HDCP secret key (optional only in H version)

Auto Detection /Auto Calibration
■ Input format detection
■ Compatibility with standard VESA mode and support user-defined mode
■ Smart engine for Phase/Image position/Color calibration

Scaling
■ Fully programmable zoom ratios
■ Independent horizontal/vertical scaling
■ Advanced zoom algorithm provides high image quality
■ Sharpness/Smooth filter enhancement
■ Support non-linear scaling from 4:3 to 16:9 or 16:9 to 4:3

Vivid Color™
■ Dynamic Contrast Control (DCC)
■ Independent Color Management (ICM)

Scalar--- RTD2554VH-GR (U6)
■ True 10 bits color processing engine
■ sRGB compliance
■ Advanced Dithering logic for 18-bit panel color depth enhancement
■ Dynamic overshoot-smear canceling engine
■ Brightness and contrast control
■ Programmable 10-bit gamma support

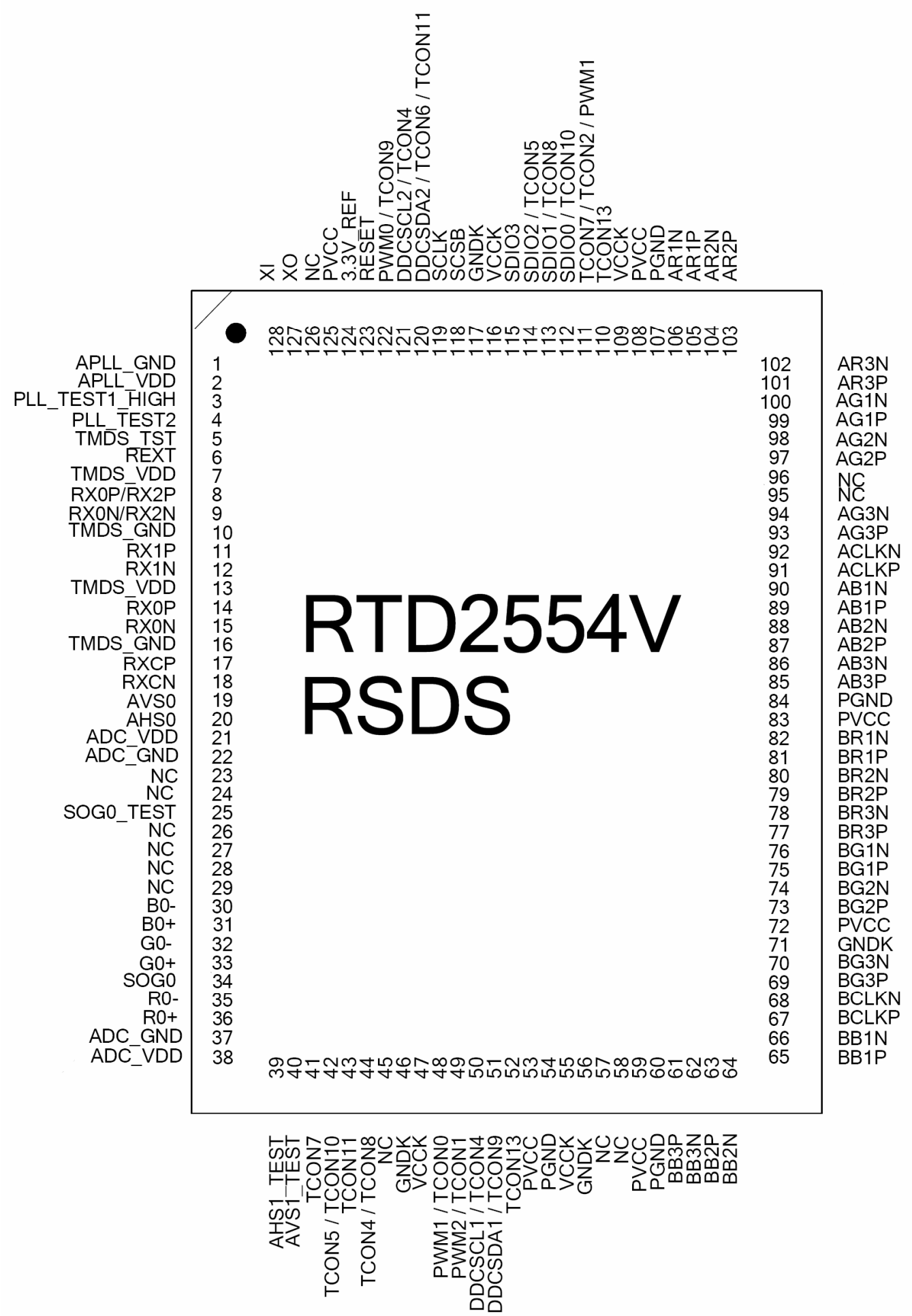
Output Interface
■ Fully programmable display timing generator
■ Flexible data pair swapping for easier system design.
■ Programmable TCON function support
■ RSDS-output interface on single PCB
■ Spread-Spectrum DPLL to reduce EMI
■ Fixed Last Line output for perfect panel capability

Host Interface
■ Support MCU serial/parallel bus interface.
■ Support MCU dual edge data latch.

Embedded OSD
■ Embedded 12K SRAM dynamically stores OSD command and fonts
■ Support multi-color RAM font, 1, 2 and 4-bit per pixel
■ 16 color palette with 24bit true color selection
■ Maximum 8 window with alpha-blending/ gradient/dynamic fade-in/fade-out, bordering/ shadow/3D window type
■ Rotary 90,180,270 degree
■ Independent row shadowing/bordering
■ Programmable blinking effects for each character
■ OSD-made internal pattern generator for factory mode
■ Support 12x18~4x18 proportional font
■ Decompress OSD font

Power & Technology
■ 3.3V power supplier
■ 0.18um CMOS process, 128-pin QFP package

Block Diagram



Pin Description

Input Port

Name	I/O	No	Description	Note
AVS0	I	19	1st ADC vertical sync input Power from PIN 13	no power 5V tolerance
AHS0	I	20	1st ADC horizontal sync input Adjustable Schmidt trigger Power from PIN 13	no power 5V tolerance
ADC_VDD	AP	21	ADC Power	(1.8V)
ADC_GND	AG	22	ADC Ground	
B0-	AI/I	30	Negative BLUE Analog input (Pb-)	3.3 tolerance
B0+	AI/I	31	Positive BLUE Analog input (Pb+)	3.3 tolerance
G0-	AI/I	32	Negative GREEN analog input (Y-)	3.3 tolerance
G0+	AI/I	33	Positive GREEN analog input (Y+)	3.3 tolerance
SOG0	AI/I	34	Sync on Green	3.3 tolerance
R0-	AI/I	35	Negative RED analog input (Pr-)	3.3 tolerance
R0+	AI/I	36	Positive RED analog input (Pr+)	3.3 tolerance
ADC_GND	AG	37	ADC Ground	
ADC_VDD	AP	38	ADC Power	(1.8V)

PLL

Name	I/O	Pin No	Description	Note
APLL_GND	AG	1	Ground for multi-phase PLL	
APLL_VDD	AP	2	Power for multi-phase PLL	3.3V
PLL_TEST1_HIGH	I/O	3	Test Pin 1 Power-on-latch for MCU crystal location	
PLL_TEST2	I/O	4	Test Pin 2	M2PLL
XO	AO	127	Crystal OSC output	
XI	AI	128	Reference clock input from external crystal or from single-ended CMOS/TTL OSC	3.3V tolerance

Host interface

Name	I/O	Pin No	Description	Note
SDIO[0]	I/O	112	Parallel port data [0] (Open drain)LSB	5V tolerance
SDIO[1]	I/O	113	Parallel port data [1] (Open drain)	5V tolerance
SDIO[2]	I/O	114	Parallel port data [2] (Open drain)	5V tolerance
SDIO[3]	I/O	115	Serial control I/F data in or Parallel port data [3] (Open drain) MSB	5V tolerance
SCSB	I	118	Serial control I/F chip select	5V tolerance
SCLK	I	119	Serial control I/F clock	5V tolerance

TMDS (optional)

Name	I/O	Pin No	Description	Note
TMDS_TST	AIO	5	TMDS_TEST Pin Power-on-latch for host interface type	
REXT	AI	6	Impedance Match Reference.	
TMDS_VDD	AP	7	TMDS power	(3.3V)
RX2P	AI	8	Differential Data Input	
RX2N	AI	9	Differential Data Input	
TMDS_GND	AG	10	TMDS ground	
RX1P	AI	11	Differential Data Input	
RX1N	AI	12	Differential Data Input	
TMDS_VDD	AP	13	TMDS power	(3.3V)
RX0P	AI	14	Differential Data Input	
RX0N	AI	15	Differential Data Input	
TMDS_GND	AG	16	TMDS ground	
RXCP	AI	17	Differential Data Input	
RXCN	AI	18	Differential Data Input	

Pad/Digital Power & Ground

Name	I/O	Pin No	Description
PVCC	P	59/83/108	Pad 3.3V Power
PGND	G	60/84/107	Pad 3.3V Ground
VCCK	P	47/116	Digital 1.8V Power
GNDK	G	46/117	Digital 1.8V Ground

6-bit RSDS Display Interface

Name	I/O	No	Description
BB3P	O	61	
BB3N	O	62	
BB2P	O	63	
BB2N	O	64	
BB1P	O	65	
BB1N	O	66	
BCLKP	O	67	
BCLKN	O	68	
BG3P	O	69	
BG3N	O	70	
BG2P	O	73	
BG2N	O	74	
BG1P	O	75	
BG1N	O	76	

BR3P	O	77	
BR3N	O	78	
BR2P	O	79	
BR2N	O	80	
BR1P	O	81	
BR1N	O	82	
AB3P	O	85	
AB3N	O	86	
AB2P	O	87	
AB2N	O	88	
AB1P	O	89	
AB1N	O	90	
ACLKP	O	91	
ACLKN	O	92	
AG3P	O	93	
AG3N	O	94	
AG2P	O	97	
AG2N	O	98	
AG1P	O	99	
AG1N	O	100	
AR3P	O	101	
AR3N	O	102	
AR2P	O	103	
AR2N	O	104	
AR1P	O	105	
AR1N	O	106	

Timing Controller

Name	I/O	No	Description
TCON0	O	48	Refer to Pin share part.
TCON1	O	49	
TCON2	O	111	
TCON4	O	44/50/121	
TCON5	O	42/114	
TCON6	O	120	
TCON7	O	41/111	
TCON8	O	44/113	
TCON9	O	51/122	
TCON10	O	42/112	
TCON11	O	43/120	
TCON13	O	52/110	

DDC Channel

Name	I/O	No	Description
DDCSCL1(ADC)	I	50	Open drain, no power 5V tolerance
DDCSDA1(ADC)	I/O	51	Open drain, no power 5V tolerance
DDCSCL2(DVI)	I	121	Open drain, no power 5V tolerance
(optional)			
DDCSDA2(DVI)	I/O	120	Open drain, no power 5V tolerance
(optional)			

PWM

Name	I/O	No	Description
PWM0	O	122	
PWM1	O	48/111	
PWM2	O	49	

MISC

Name	I/O	No	Description
RESET	O	123	Reset out Open drain (Internal 75KOhm high), 5V tolerance
3.3V_REF	I	124	Reference 3.3V for Reset Out

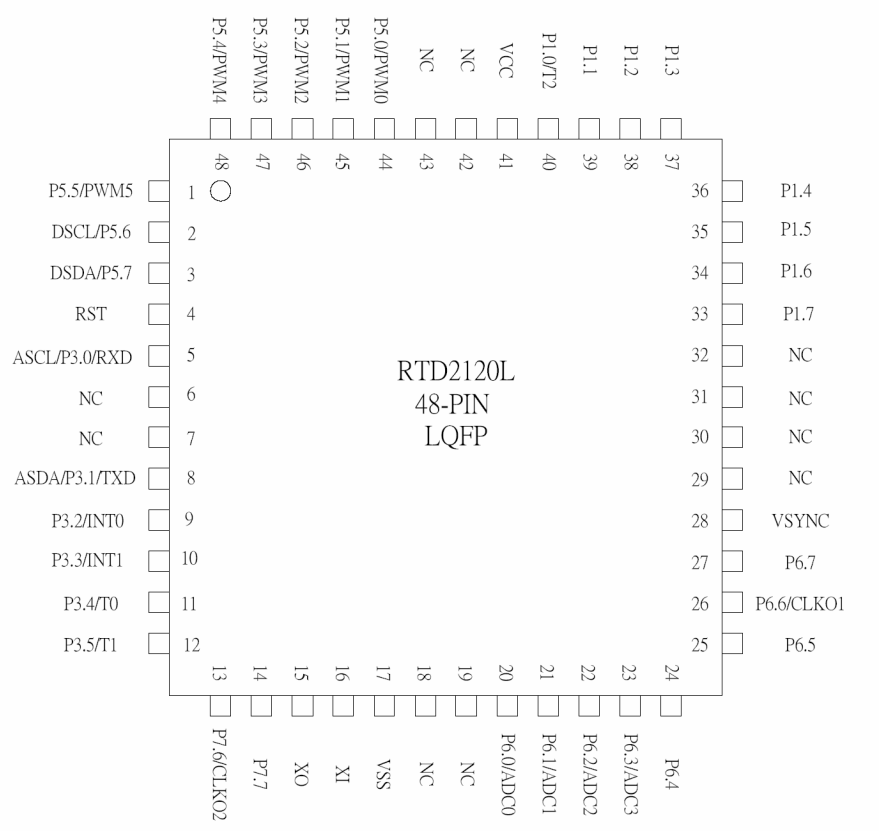
MCU--- RTD2120L-LF (U3)

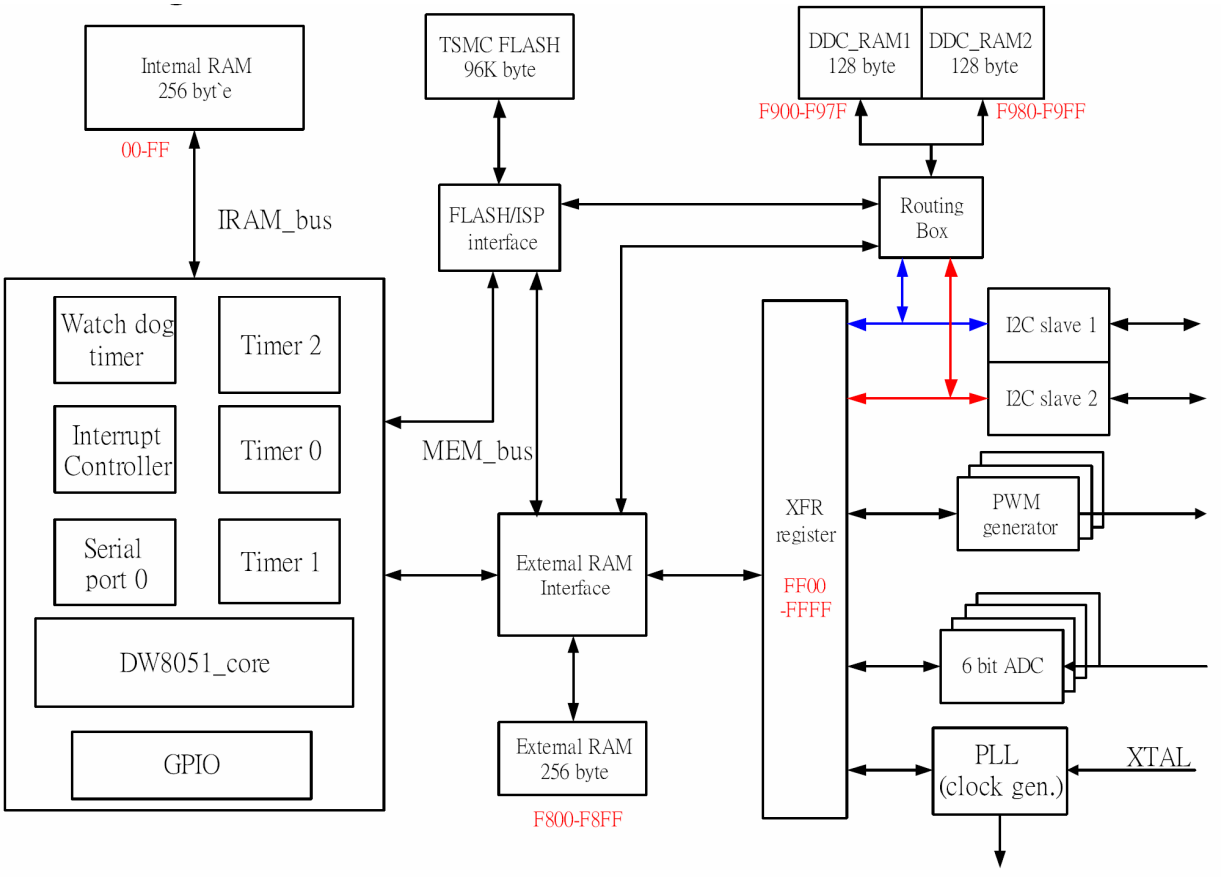
Overview

This chip is the micro-processor of LCD monitor. It uses the design ware DW8051 of Synopsys as the 8051 core of this chip and is compatible with other industry 8051 series. Also, 96Kbyte FLASH with 8 bit bus is embedded in this chip which is licensed from TSMC 0.18um e-FLASH process. Here we use the package of PLCC44/LQFP48 if we would like to have a discrete MCU controller or we make a multi-chip package with our LCD monitor controller to form one chip package to save the cost of package and PCB material.

Features

• Operating voltage range : 3.0V to 3.6V
• 8051 core, CPU operating frequency up to 50MHz
• 4 clocks per machine cycle
• 256-byte internal RAM
• 512-byte external data RAM, including 256-byte DDC RAM(128-byte x 2) and 256-byte general purpose RAM
• 96K-byte flash memory, 64k for program and 32k for saving parameter
• Two DDC ports Compliant with VESA DDC1/2B/2Bi/CI
• Three channels of PWM DAC with programable frequency from 100K to 100Hz
• Watchdog timer with programmable interval
• Three 16-bit counters/timers (T0, T1, and T2)
• One PLL to provide programmable operating frequency and clock output, 2 clock output ports
• One full-duplex serial port
• Six interrupt sources with 2 external interrupts
• Four channels of 6-bit ADC
• Hardware In System Programming(ISP) capability, no boot code required
• Built-in Low voltage reset circuit
• Embedded 1.8V regulator
• Code protection
• Available in 44-pin PLCC or 48-pin LQFP package





Application Block Diagram

Pin Description

Pin No.		Name	I/O	Internal Pull Up/Down	Default output value	Pin Type	Description
PLCC	LQFP						
2	44	P5.0/PWM0	I/O	--	1(P5.0)	Open Drain	General purpose I/O / PWM0 output
3	45	P5.1/PWM1	I/O	--	1(P5.1)	Open Drain	General purpose I/O / PWM1 output
4	46	P5.2/PWM2	I/O	--	1(P5.2)	Open Drain	General purpose I/O / PWM2 output
5	47	P5.3/PWM3	I/O	--	1(P5.3)	Open Drain	General purpose I/O / PWM3 output
6	48	P5.4/PWM4	I/O	--	1(P5.4)	Open Drain	General purpose I/O / PWM4 output
7	1	P5.5/PWM5	I/O	--	1(P5.5)	Open Drain	General purpose I/O / PWM5 output
8	2	P5.6/DSCL	I/O	--	1(P5.6)	Open Drain	General purpose I/O / DVI DDC SCL
9	3	P5.7/DSDA	I/O	--	1(P5.7)	Open Drain	General purpose I/O / DVI DDC SDA
10	4	RST	I	Down	0	Input	High active RESET
11	5	ASCL/P3.0/RXD	I/O	--	1(ASCL)	Open Drain	ADC DDC SCL / General purpose I/O / RXD
13	8	ASDA/P3.1/TXD	I/O	--	1(ASDA)	Open Drain	ADC DDC SDA / General purpose I/O / TXD
14	9	P3.2/INT0	I/O	--	1(P3.2)	Standard 8051	General purpose I/O / External interrupt 0

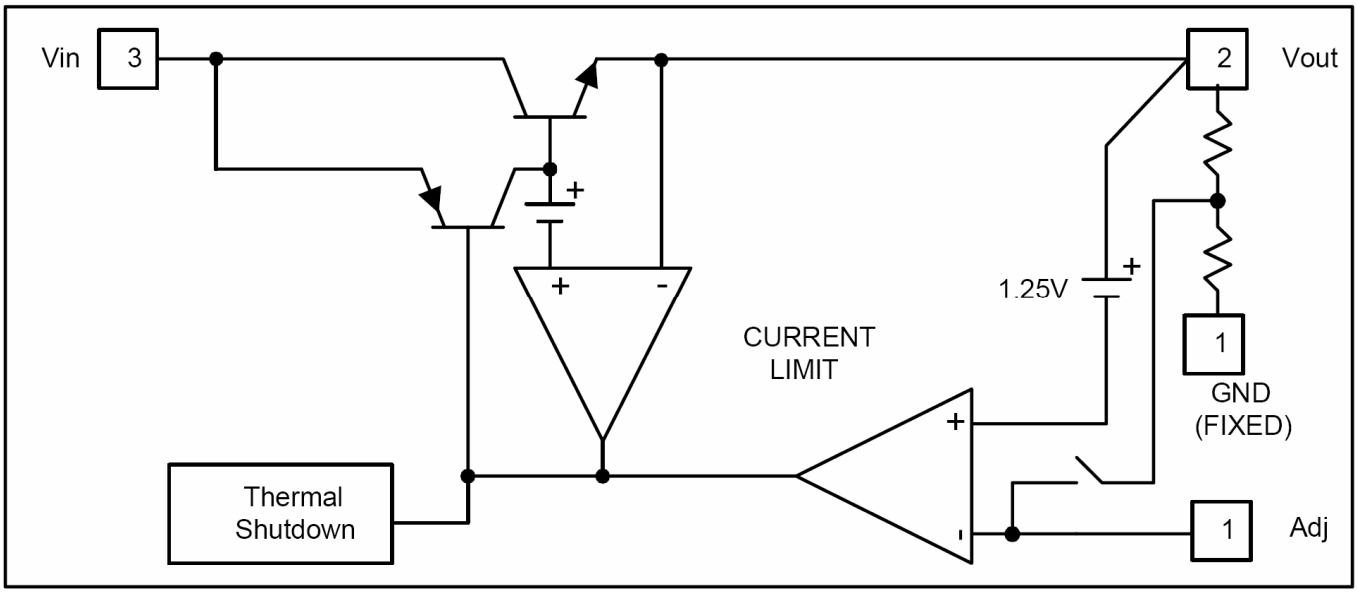
15	10	P3.3/INT1	I/O	--	1(P3.3)	Standard 8051	General purpose I/O / External interrupt 1
16	11	P3.4/T0	I/O	--	1(P3.4)	Standard 8051	General purpose I/O / Timer 0
17	12	P3.5/T1	I/O	--	1(P3.5)	Standard 8051	General purpose I/O / Timer 1
18	13	P7.6/CLKO2	I/O	Up	1	Push-Pull	General purpose I/O / Clock out 2
19	14	P7.7	I/O	Up	1	Push-Pull	General purpose I/O
20	15	XO	O	--	--	--	Crystal out
21	16	XI	I	--	--	--	Crystal in
22	17	VSS	--	--	--	--	Ground

Pin No.		**Name**	**I/O**	**Internal Pull Up/Down**	**Default output value**	**Pin Type**	**Description**
PLCC	**LQFP**						
24	20	P6.0/ADC0	I/O	Up	1(P6.0)	Push-Pull	General purpose I/O / ADC 0 input
25	21	P6.1/ADC1	I/O	Up	1(P6.1)	Push-Pull	General purpose I/O / ADC 1 input
26	22	P6.2/ADC2	I/O	Up	1(P6.2)	Push-Pull	General purpose I/O / ADC 2 input
27	23	P6.3/ADC3	I/O	Up	1(P6.3)	Push-Pull	General purpose I/O / ADC 3 input
28	24	P6.4	I/O	Up	1	Push-Pull	General purpose I/O
29	25	P6.5	I/O	Up	1	Push-Pull	General purpose I/O
30	26	P6.6/CLKO1	I/O	Up	1(P6.6)	Push-Pull	General purpose I/O / Clock out 1
31	27	P6.7	I/O	Up	1	Push-Pull	General purpose I/O
32	28	VSYNC	I	Down	0	Input	VSYNC input

36	33	P1.7	I/O	--	1	Standard 8051/ Push-Pull	General purpose I/O
37	34	P1.6	I/O	--	1	Standard 8051/ Push-Pull	General purpose I/O
38	35	P1.5	I/O	--	1	Standard 8051/ Push-Pull	General purpose I/O
39	36	P1.4	I/O	--	1	Standard 8051/ Push-Pull	General purpose I/O
40	37	P1.3	I/O	--	1	Standard 8051/ Push-Pull	General purpose I/O
41	38	P1.2	I/O	--	1	Standard 8051/ Push-Pull	General purpose I/O
42	39	P1.1	I/O	--	1	Standard 8051/ Push-Pull	General purpose I/O
43	40	P1.0/ET2	I/O	--	1(P1.0)	Standard 8051/ Push-Pull	General purpose I/O / External Timer 2
44	41	VCC	--	--	--	--	Power

DC to DC--- AP1117D33L (U8/U10)

AP1117 is a low dropout positive adjustable or fixed-mode regulator with 1A output current capability. The product is specifically designed to provide well-regulated supply for low voltage IC applications such as high-speed bus termination and low current 3.3V logic supply. AP1117 is also well suited for other applications such as VGA cards. AP1117 is guaranteed to have lower than 1.4V dropout at full load current making it ideal to provide well-regulated outputs of 1.25 to 5.0 with 6.4V to 18V input supply.



Pin Descriptions

Name	I/O	Pin #	Function
Adj (GND)	I	1	A resistor divider from this pin to the Vout pin and ground sets the output voltage. (Ground only for Fixed-Mode)
Vout	O	2	The output of the regulator. A minimum of 10uF capacitor (0.15Ω ≤ESR ≤20Ω) must be connected from this pin to ground to insure stability.
Vin	I	3	The input pin of regulator. Typically a large storage capacitor (0.15Ω ≤ESR ≤20Ω) is connected from this pin to ground to insure that the input voltage does not sag below the minimum dropout voltage during the load transient response. This pin must always be 1.3V higher than Vout in order for the device to regulate properly.

5. Adjustment Procedure

Setting the Timing Mode

Setting the timing mode is important for maximizing the quality of the screen image and minimizing eye strain. The **timing mode** consists of the **resolution** (example 1680 x 1050) and **refresh rate** (or vertical frequency; example 60 Hz). After setting the timing mode, use the OSD (On-screen Display) controls to adjust the screen image.

For the best picture quality set your LCD display timing mode to:

VESA 1680 x 1050 @ 60Hz.

To set the Timing Mode:

1. Set the resolution: Right-click on the Windows desktop > Properties > Settings > set the resolution.

2. Set the refresh rate: See your graphic card's user guide for instructions.

WARNING: Do not set the graphics card in your computer to exceed the maximum refresh rate of 75Hz; doing so may result in permanent damage to your LCD display.

OSD and Power Lock Settings

• **OSD Lock:** Press and hold [1] and the up arrow ▲ for 10 seconds. If any buttons are pressed the message *OSD Locked* will display for 3 seconds.

• **OSD Unlock:** Press and hold [1] and the up arrow ▲ again for 10 seconds.

• **Power Button Lock:** Press and hold [1] and the down arrow ▼ for 10 seconds. If the power button is pressed the message *Power Button Locked* will display for 3 seconds. With or without this setting, after a power failure, your LCD display's power will automatically turn ON when power is restored.

• **Power Button Unlock:** Press and hold [1] and the down arrow ▼ again for 10 seconds.

Dynamic Contrast

• **DCR On/Off:** Press □ for 3 seconds to turn DCR On or Off.

5.1 White balance, Luminance adjustment

Approximately 2 Hours should be allowed for warm up before proceeding White-Balance adjustment.

Before started adjust white balance, please setting the Chroma-C7120 **MEM. Channel 0 to9300K** colors, **MEM. Channel 1 to 7500K** colors, **MEM. Channel 2 to 6500K MEM. Channel 3 to 5400K MEM. Channel 4 to sRGB** (our 9300K parameter is x=283±12, y=297±12; 7500K parameter is x=299±12, y=315±12; 6500 parameter is x =313±12, y=329±12; and 5400K parameter is x = 335 ±12, y =350±12; sRGB parameter is x=313±12, y=329±12)

How to setting MEM.channel you can reference to Minolta-CA210 user guide or simple use " **SC"** key and " **NEXT"** key to modify x, y, Y value and use **"ID"** key to modify the TEXT description Following is the procedure to do white-balance adjust

Enter into Burn/in mode:

AC ON the monitor with no signal ,and press "power" button to DC OFF the monitor, then press"1" and "power" button at the same time to enter **Burn/in mode**;

Enter into the factory mode:

AC ON the monitor **with signal connected,** and press "power" button to DC OFF the monitor, then press"1" and "power" button at the same time to enter **factory mode**;

Gain adjustment:

Move cursor to “Factory” and press “2” key.

Move cursor to “ Auto Level” and press “2” key to adjust Gain and Offset automatically;

(notice：this monitor do auto level must in T144(1280X1024@60Hz) P48(32 Grays))

a. Adjust 9300K color-temperature

1. Switch the Chroma-C7120 to **RGB-mode** (with press “MODE” button)
2. Switch the MEM.channel to Channel 0 (with up or down arrow on Chroma-C7120)
3. The LCD-indicator on Minolta-CA210 will show x = 283 ±12, y = 297±12

b. Adjust 7500K color-temperature

4. Switch the Chroma-C7120 to **RGB-mode** (with press “MODE” button)
5. Switch the MEM.channel to Channel 1 (with up or down arrow on Chroma-C7120)
6. The LCD-indicator on Minolta-CA210 will show x = 299 ±12, y = 315 ±12

c. Adjust 6500K color-temperature

7. Switch the Chroma-C7120 to **RGB-mode** (with press “MODE” button)
8. Switch the MEM.channel to Channel 2 (with up or down arrow on Chroma-C7120)
9. The LCD-indicator on Minolta-CA210 will show x = 313 ±12, y = 329 ±12

d. Adjust 5400K color-temperature

1. Switch the Chroma-C71200 to **RGB-mode** (with press “MODE” button)
2. Switch the MEM.channel to Channel 3 (with up or down arrow on Chroma-C7120)
3. The LCD-indicator on Minolta-CA210 will show x = 335 ±12, y =350±12

e. Adjust sRGB color-temperature

1. Switch the Chroma-C7120 to **RGB-mode** (with press “MODE” button)
2. Switch the MEM.channel to Channel 4 (with up or down arrow on Chroma-C7120)
3. The LCD-indicator on Minolta-CA210 will show x = 313 ±12, y = 329 ±12

10. press “1” key to save adjust value and exit .

Turn the POWER-button off to on to quit from factory mode, and reset the monitor.

Max Brightness measurement: >250 cd/m^2

Test conditions:

a. Switch to the full white pattern, in user mode main menu:

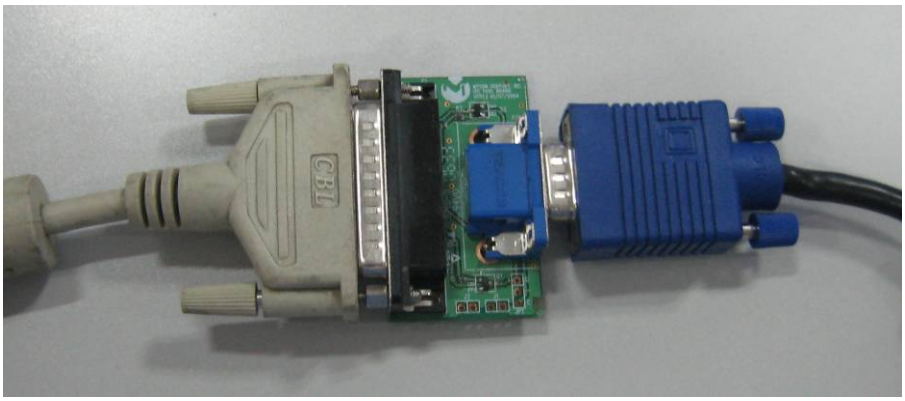
1. Set <Color Settings> Red, Green, and Blue to the max.
2. Set <Brightness> Brightness, Contrast to the max.

5.2 Firmware Upgrade Procedure

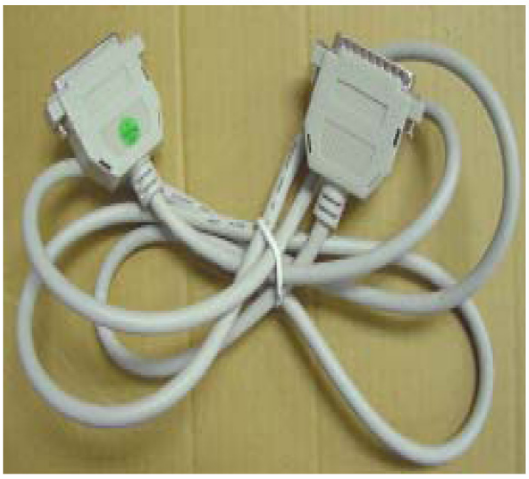
5.2.1 Equipment needed:

- VG2230wm-3
- PC (Personal computer)
- LPT cable
- Firmware upgrade program

ISP Board



Part No.: 715GT039-A



LPT Cable

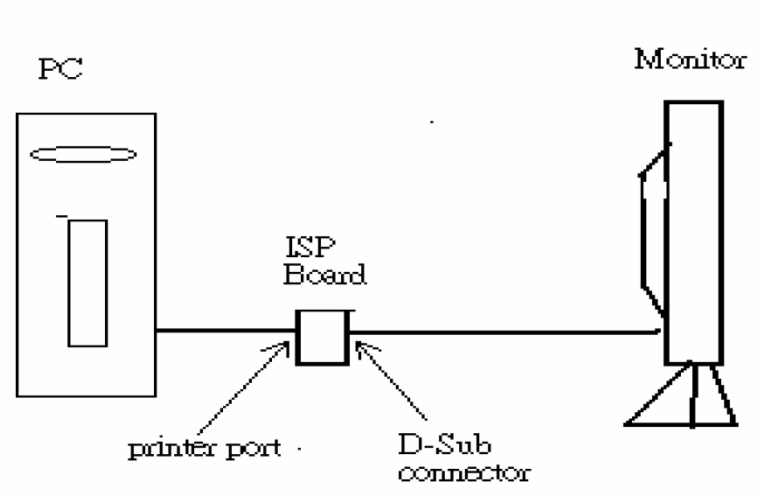
VGA Cable

Hardware Connect status

a Connect ISP_Tool with PC by LPT Cable.

b Connect Power Cord to Monitor.

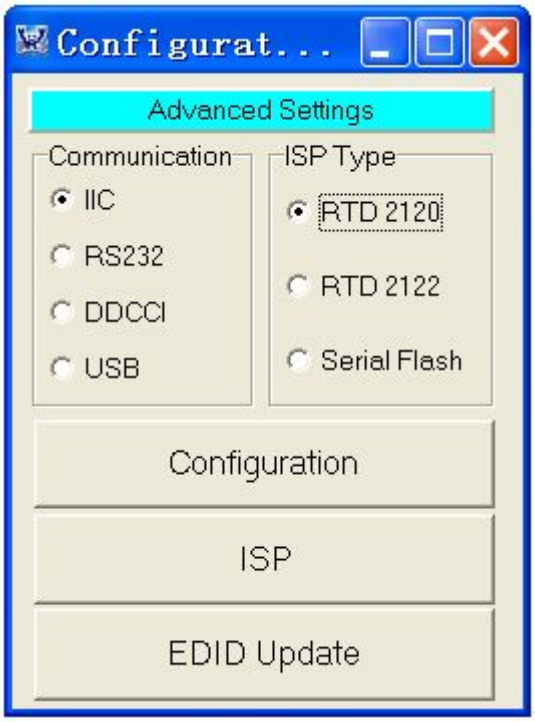
c Connect monitor to the ISP_Tool by VGA cable.



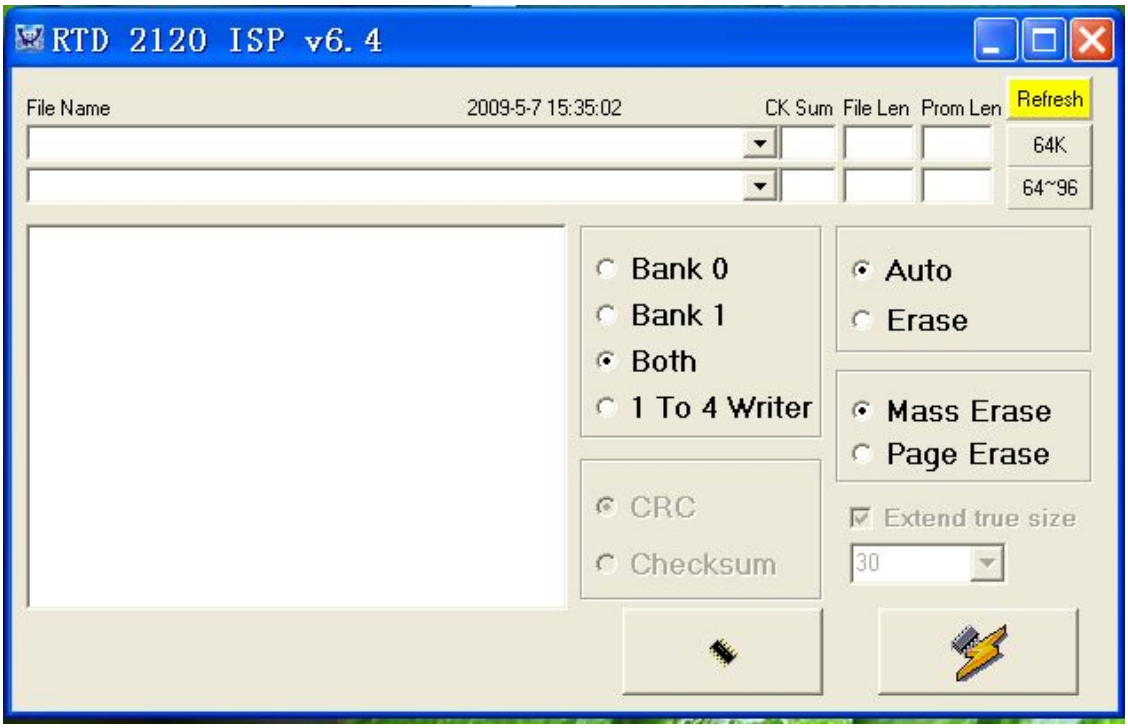
The process of ISP write is as follows.

a. Double-click 

，running the program as follows:

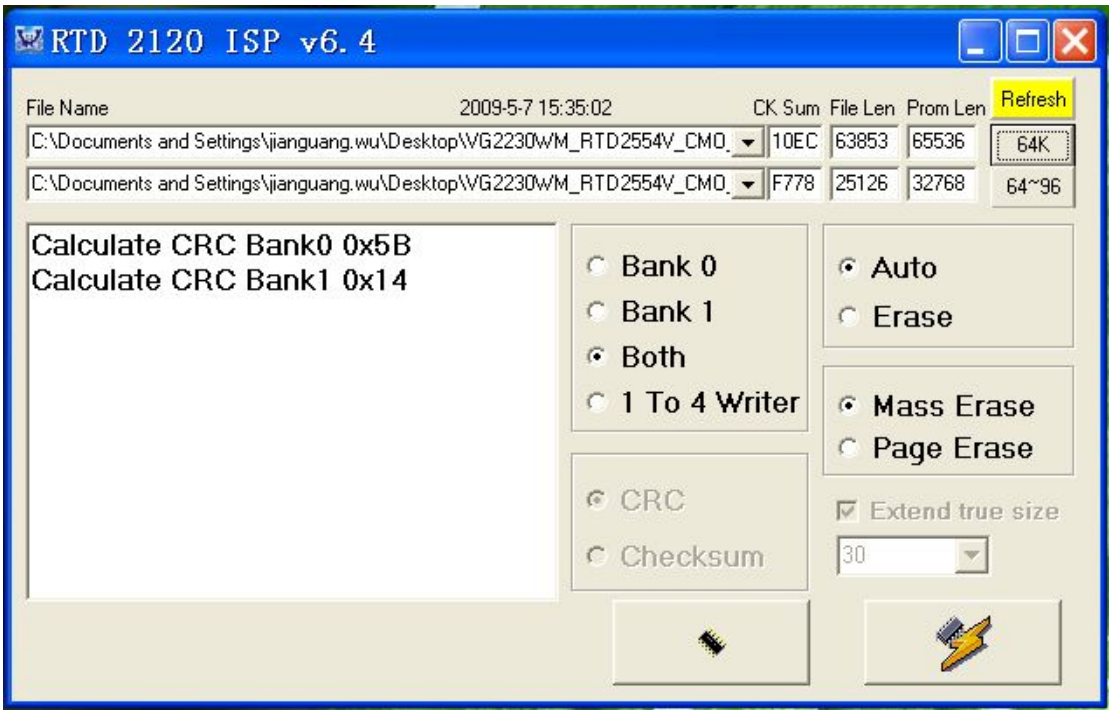


b. Choose RTD 2120 , click ISP, running the program as follows:

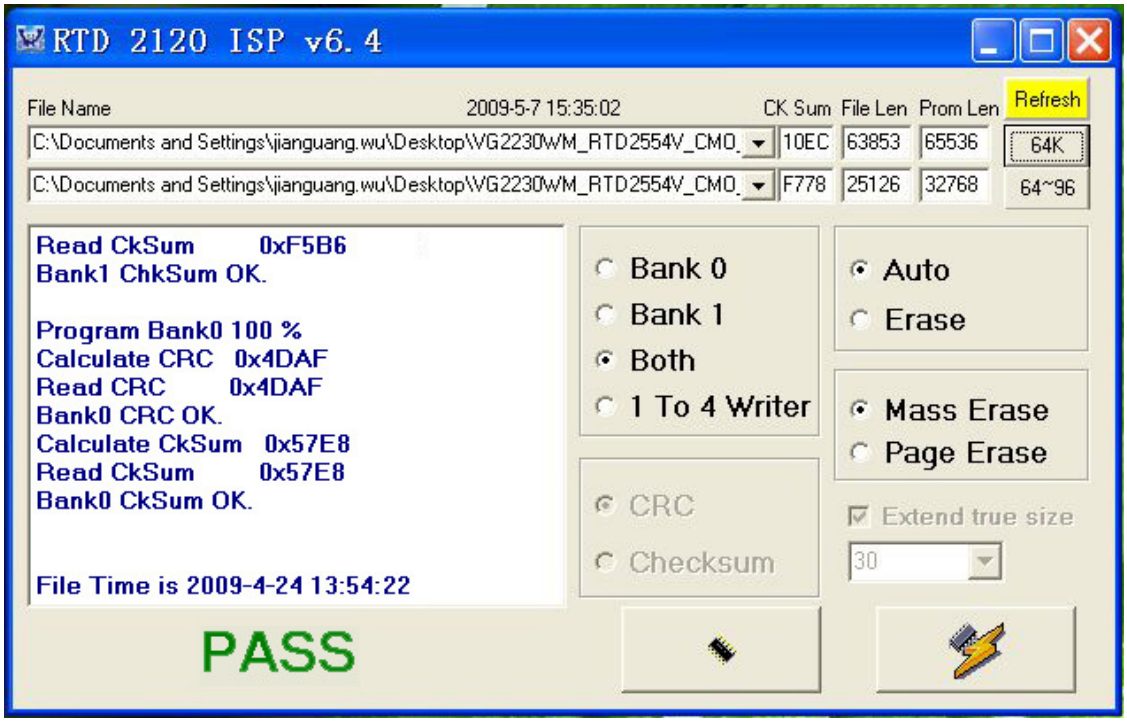


c. Click 64K icon, search the program" VG2230WM_RTD2554V_CMO_RSDS_DUAL_V011_081111_b.hex", and click **open:**

d. Click 64~96 icon, search the program" VG2230WM_RTD2554V_CMO_RSDS_DUAL_EXTEND_V011_081111.hex", and click **open:**



f. Click  icon, until appear the follow Fig, writer completed.



5.3 DDC Key in Procedure

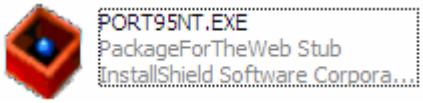
Note:

1. Every time after replacing the main board, you have to do the DDC key in.
2. If you find the DDC does not conform to the LCD TV, you have to do the DDC key in.

5.3.1 Equipment Needed

- VG2230wm-3
- PC (Personal computer)
- LPT cable
- 12V DC
- Firmware upgrade program
- DDC Card

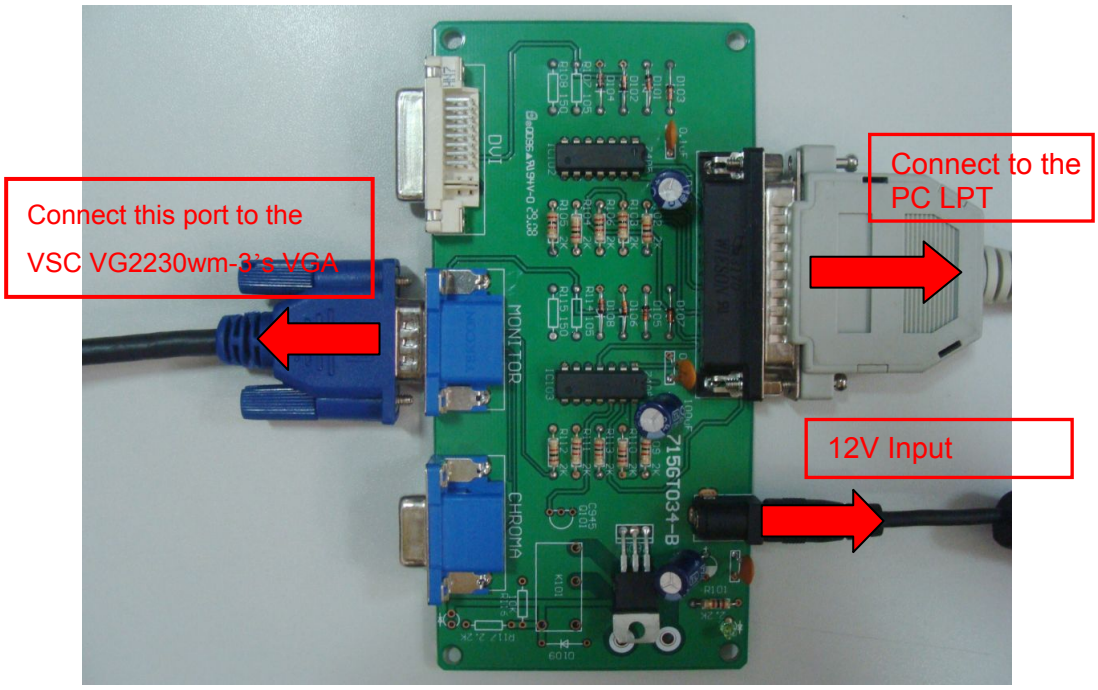
5.3.2 Install software

You must install the 

at the first.

Note: After installation, you must restart the PC to take the setup to effect.

5.3.3 Connect the DDC board as follow:

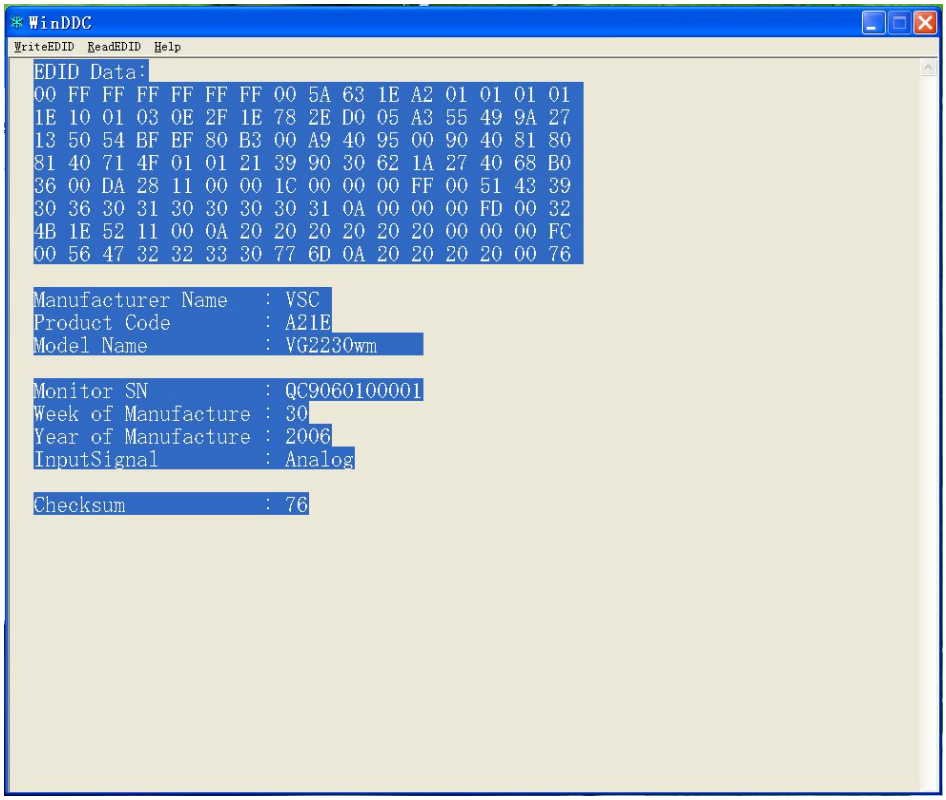


Part No.：715GT034-B

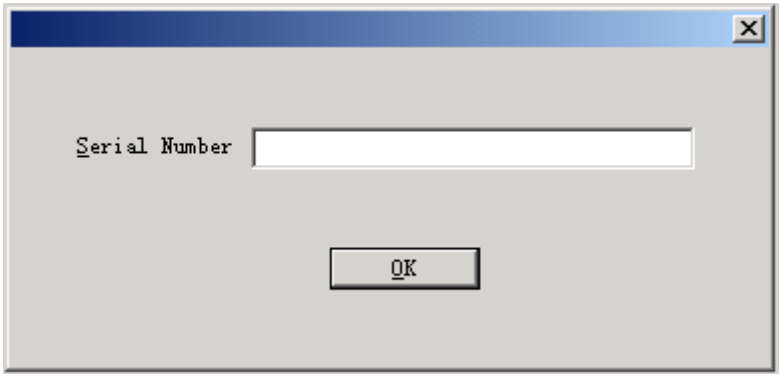
Note: If you can't update the EDID firmware, please cut off the 5th Pin of the VGA cable that connects the monitor side. Picture as below:

For analog

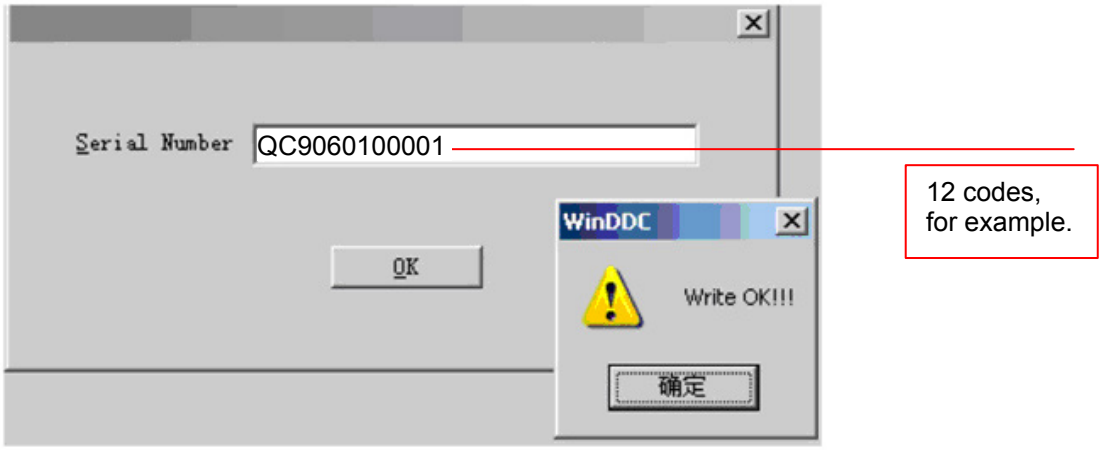
a. Double-click WinDDC.exe，appear as follow Figs：



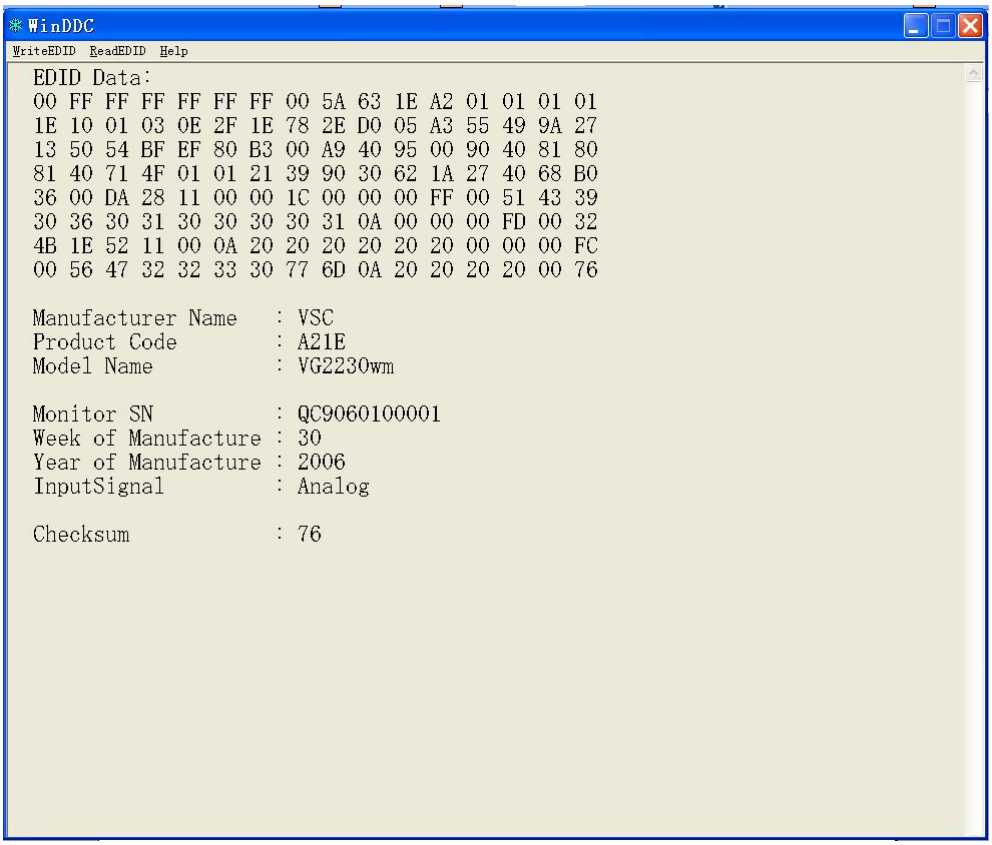
b. Click WriteEDID.



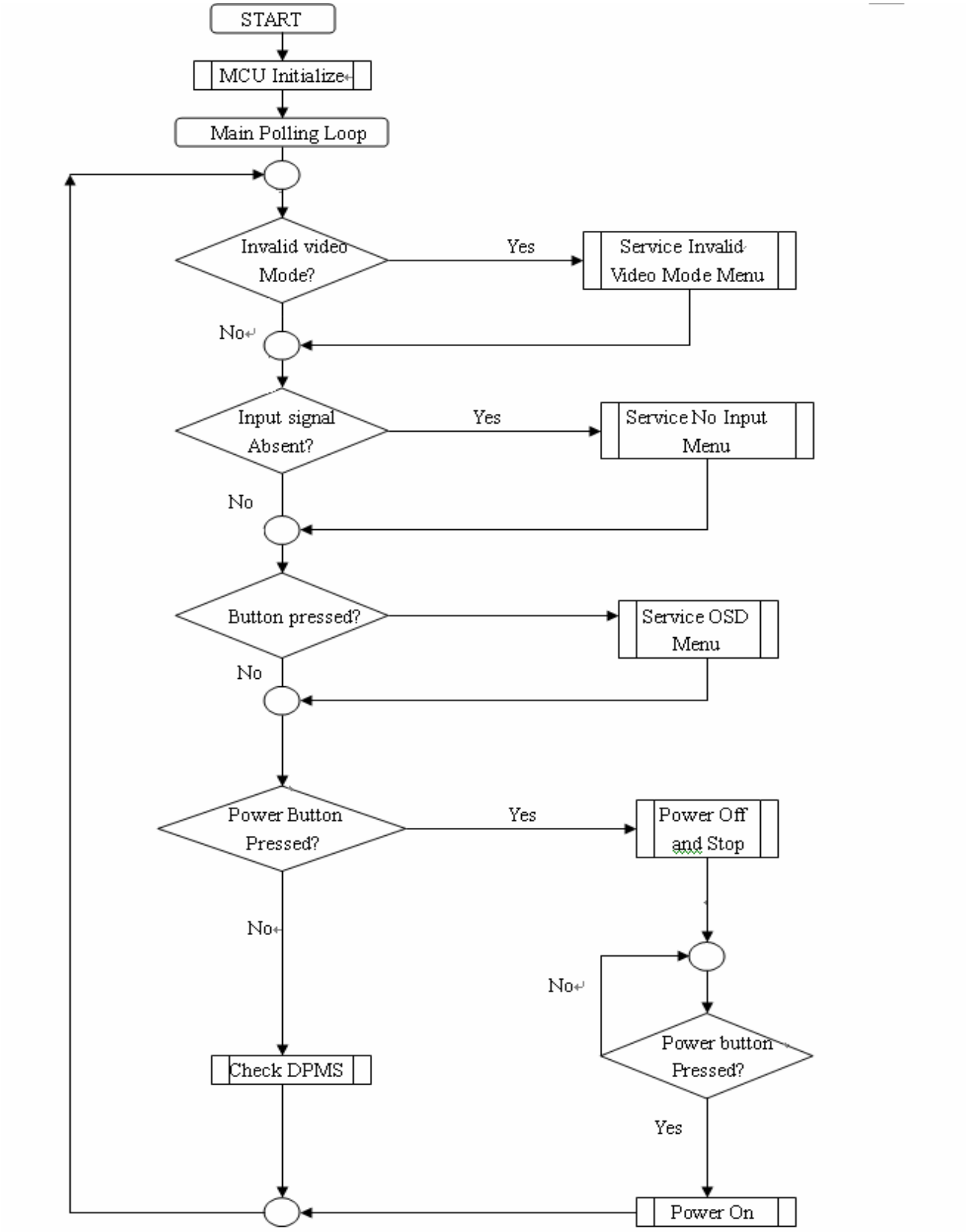
c. Key in the Serial Number printed on the barcode label, then click “OK”



d. Unit appears the following Fig, writer completed.

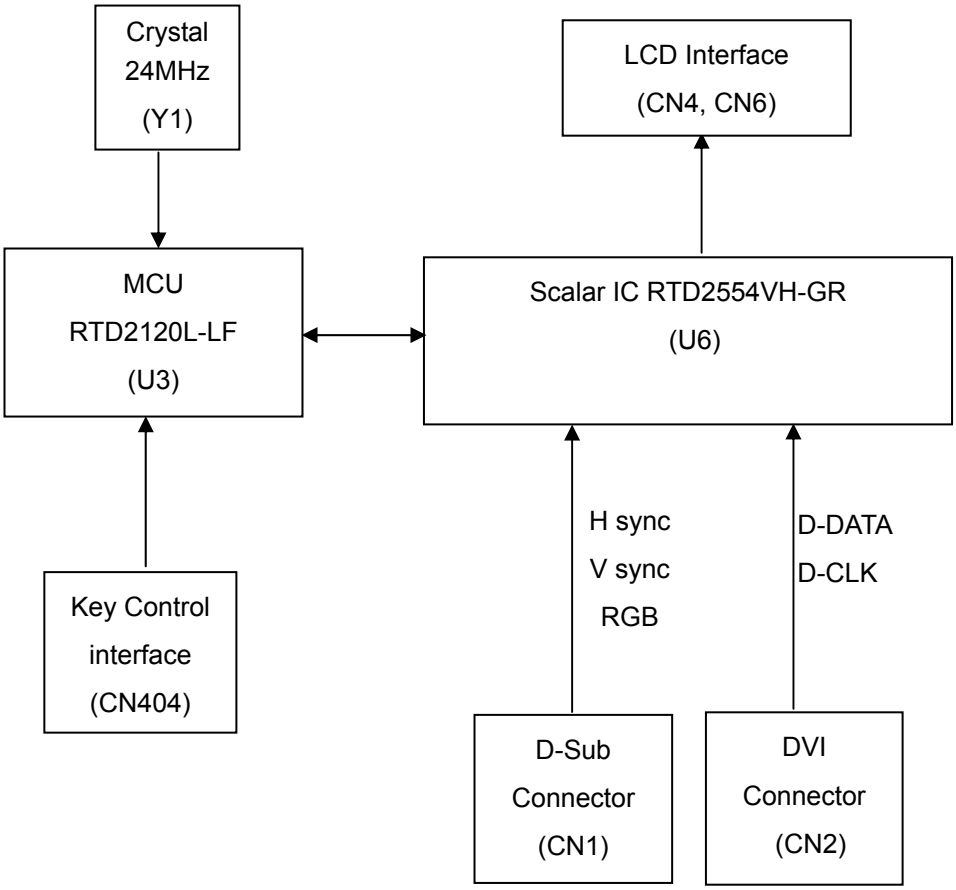


6. Troubleshooting Flow Chart

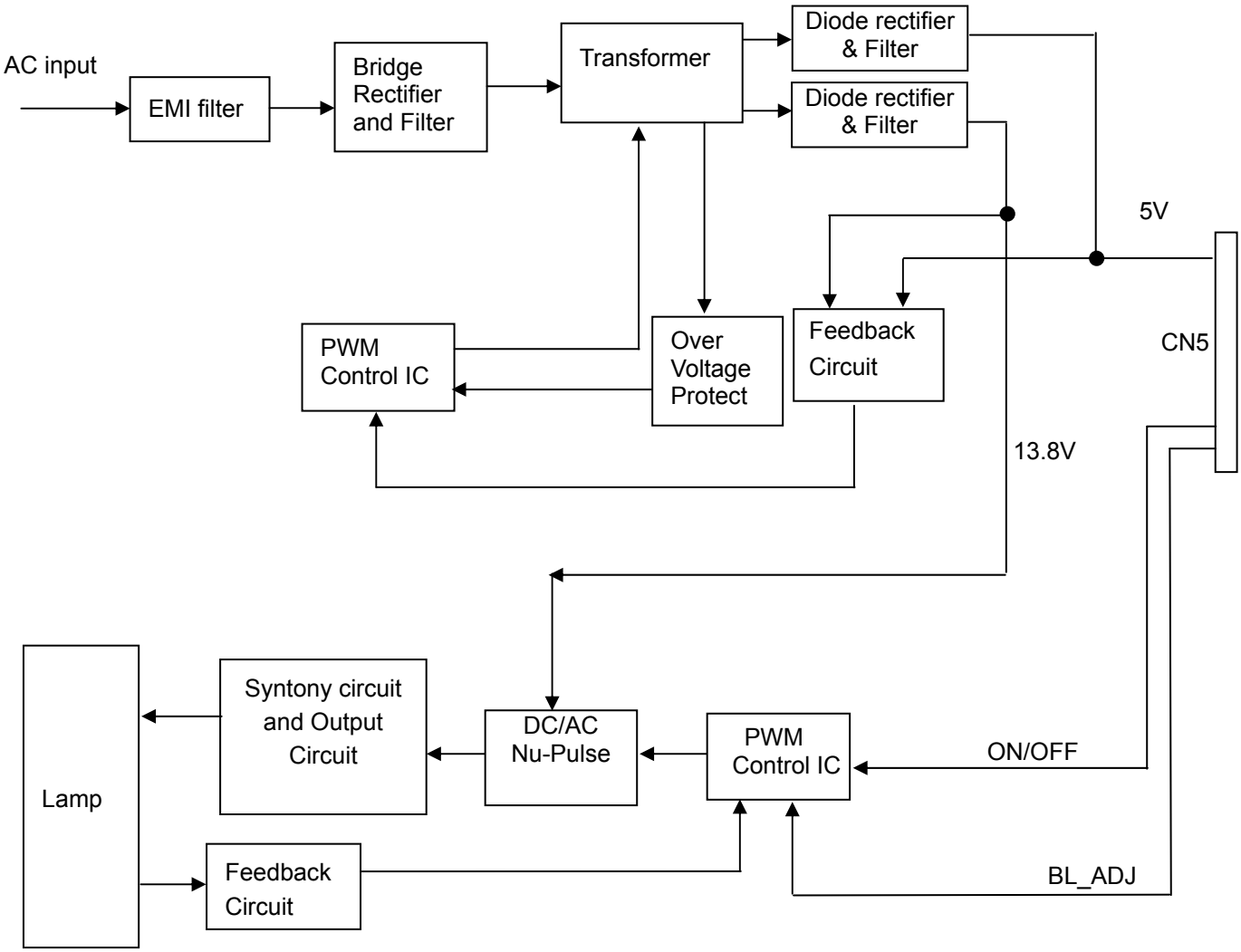


7. Block Diagrams

7.1 Main Board

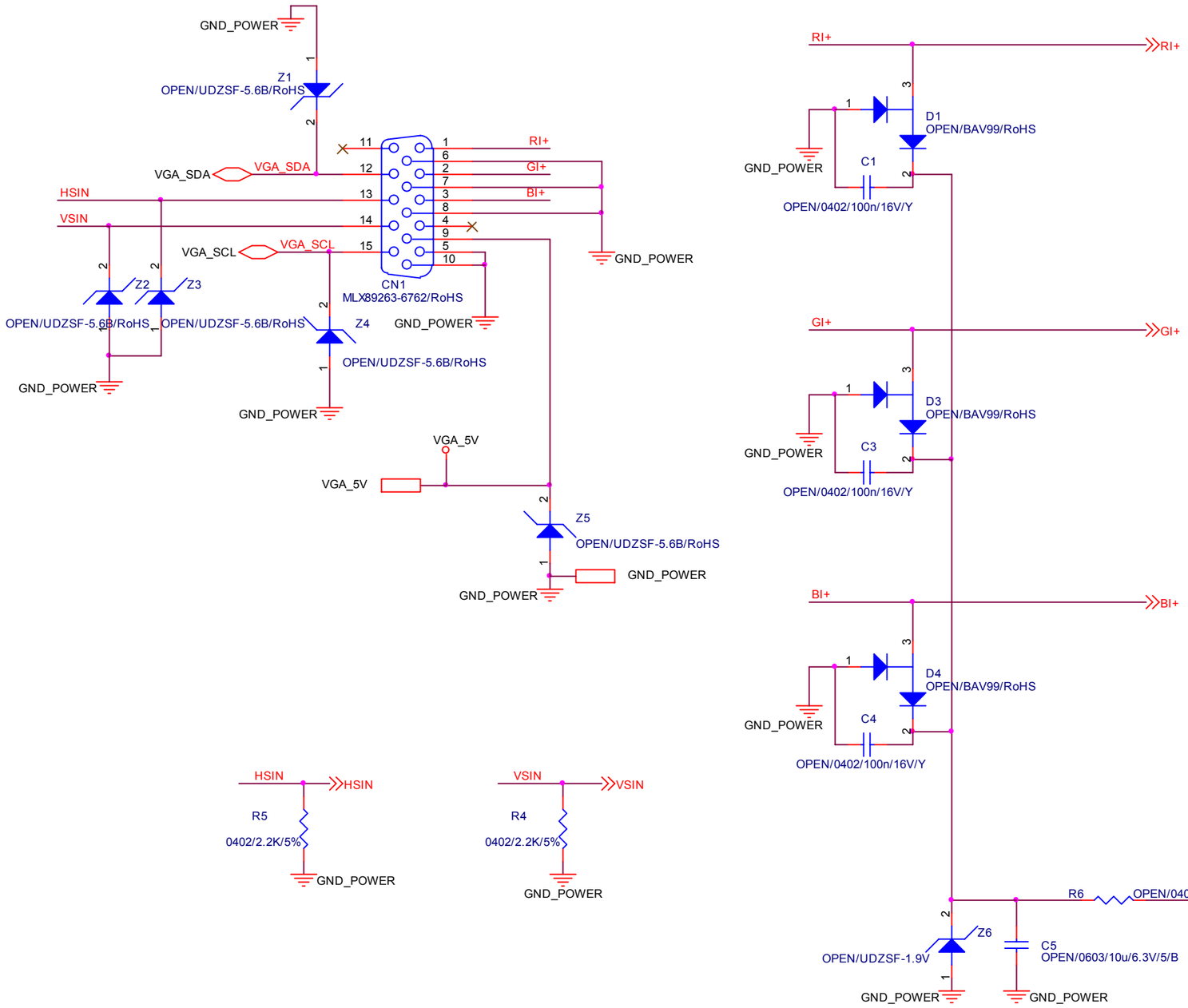


7.2 Power Board

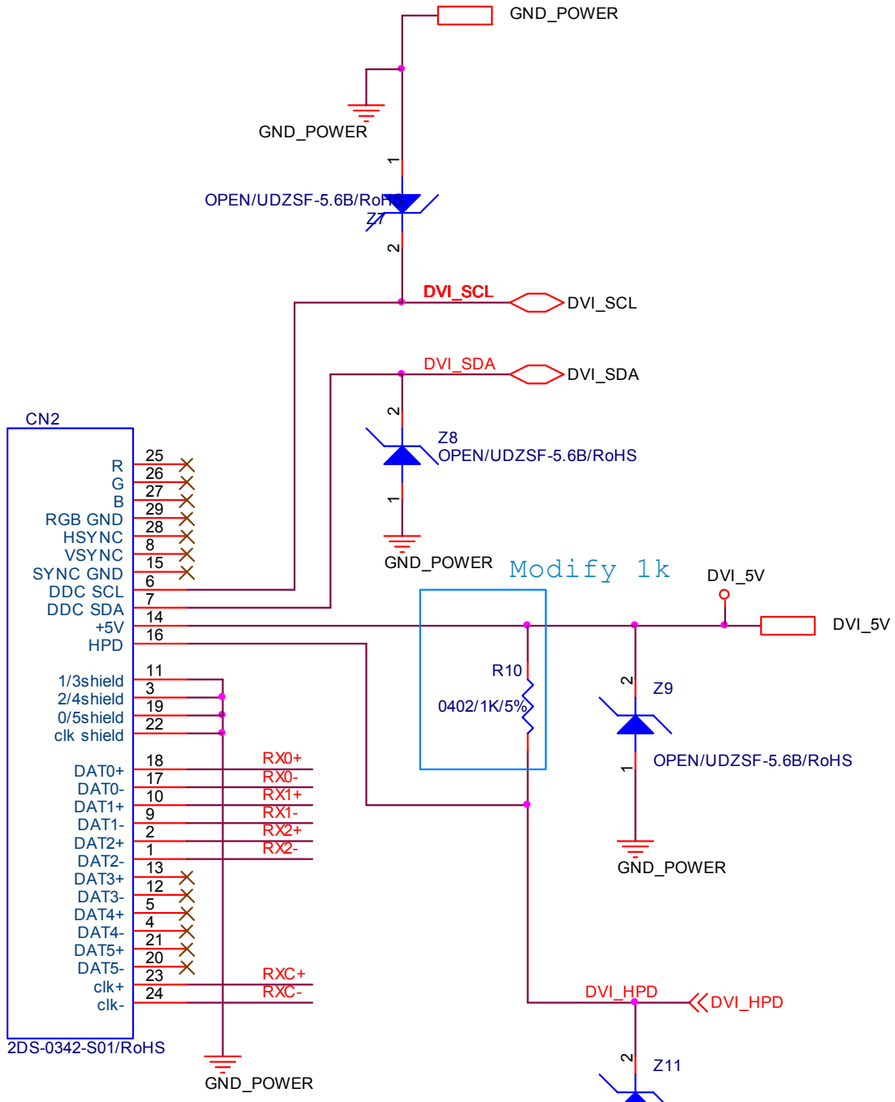


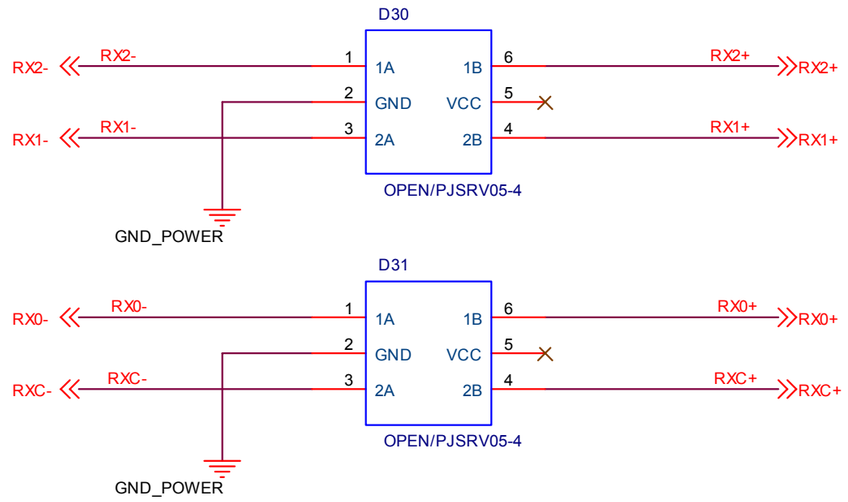
8. Schematic Diagrams

8.1 Main Board

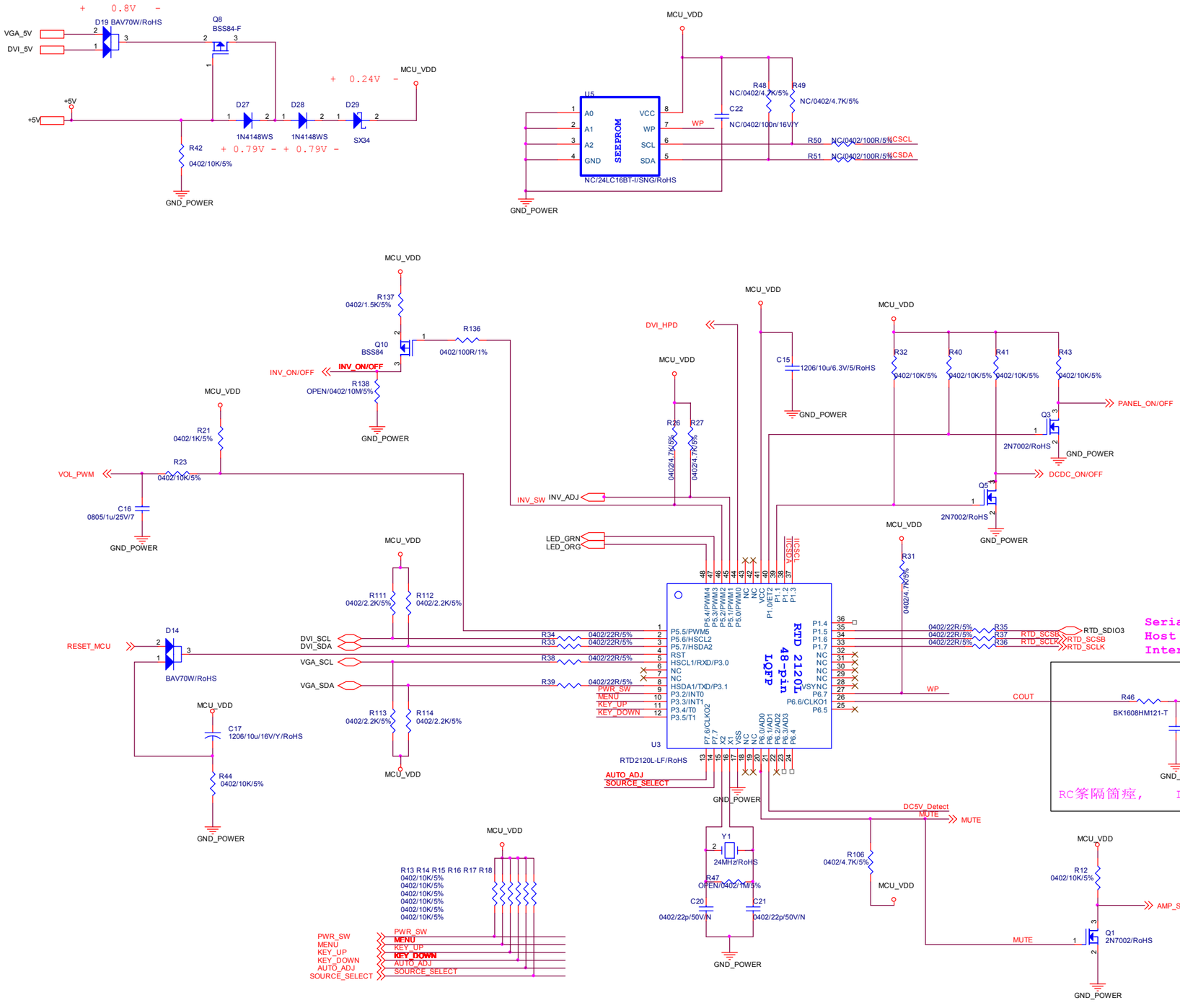


T P V （Top Victory Electronics Co.， Ltd.）		OEM MODEL		Size	Custom
結隔瓜細腹		TPV MODEL		Rev	A
Key Component	01.VGA	PCB NAME		称爹	<称爹>
Date	Wednesday，June 18, 2008	Sheet	2 of 7		

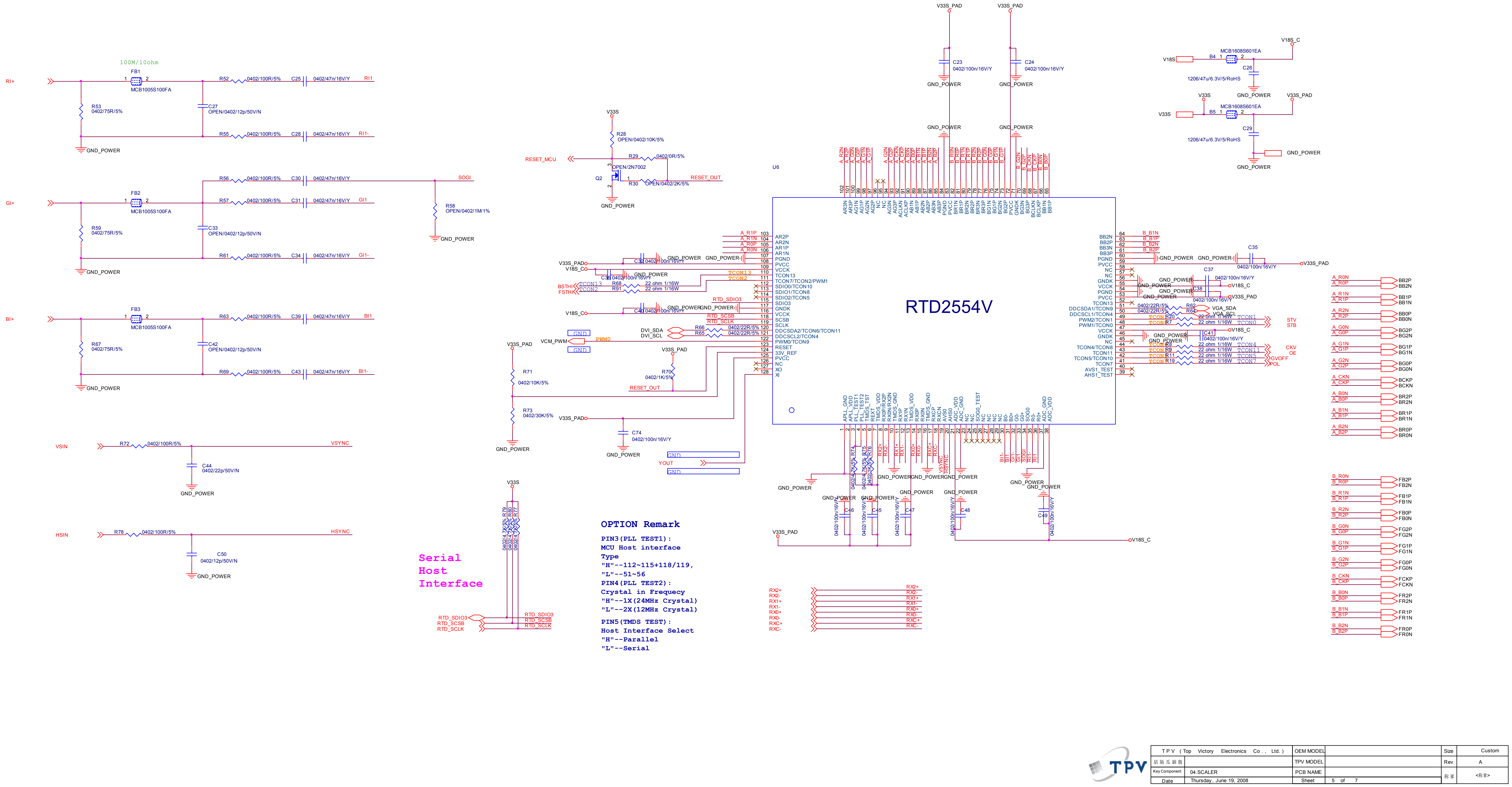


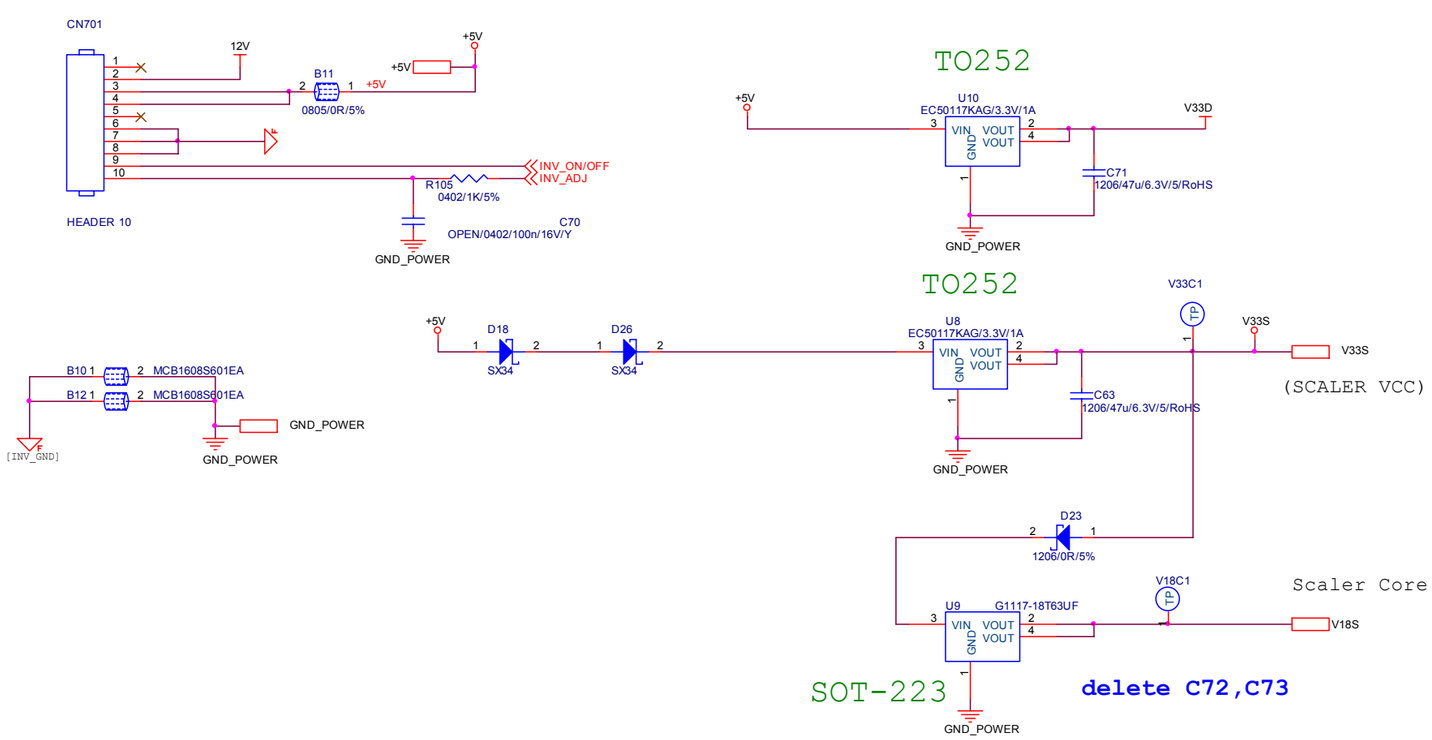


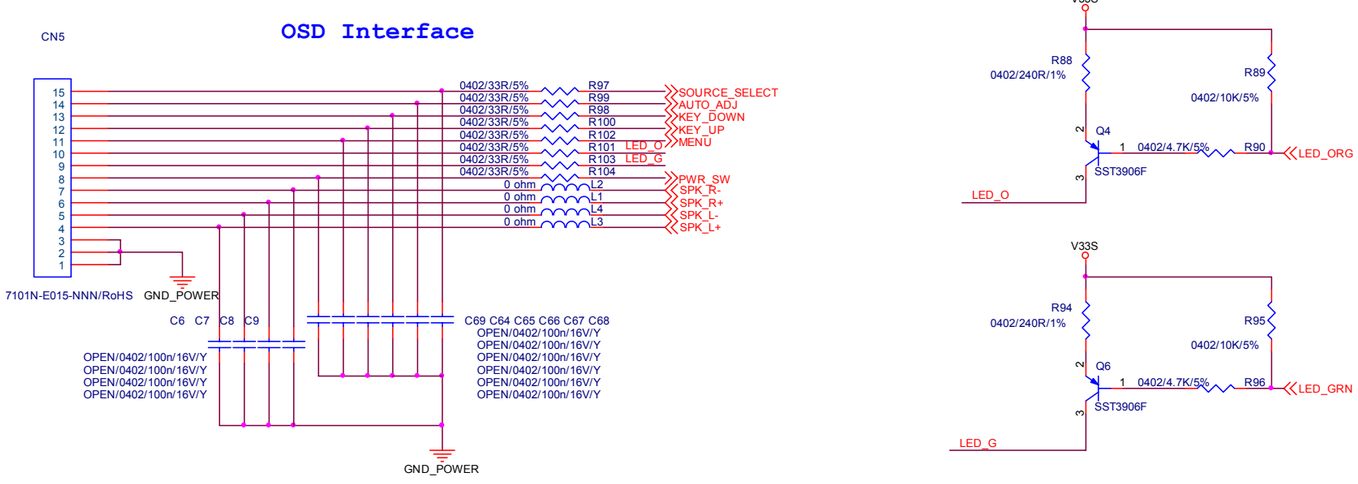
T P V （Top Victory Electronics Co.， Ltd.）		OEM MODEL		Size	Custom
結 隔 瓜 網 腹		TPV MODEL		Rev	A
Key Component	02.DVI	PCB NAME		称 爹	<称爹>
Date	Wednesday, June 18, 2008	Sheet	3 of 7		



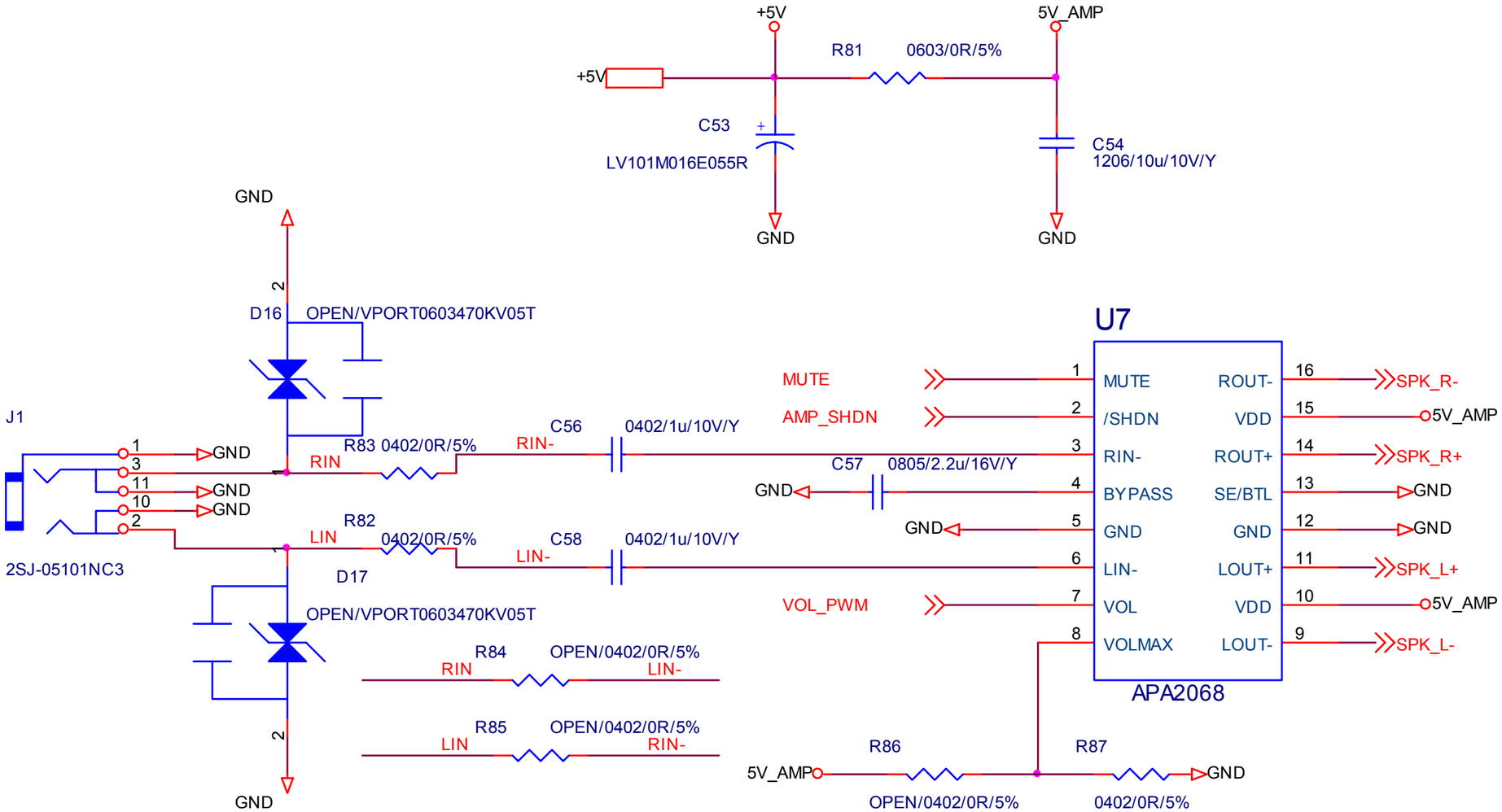
T P V (Top Victory Electronics Co . , Ltd.)		OEM MODEL		Size	Custom
結 隔 瓜 腸 股		TPV MODEL		Rev	A
Key Component	03.MCU	PCB NAME		称 爹	<称爹>
Date	Thursday, June 19, 2008	Sheet	4 of 7		


RTD2554V
U6
Serial
Host
Interface
OPTION Remark
PIN3(PLL TEST1):
MCU Host interface
Type
"H"--112~115+118/119,
"L"--51~56
PIN4(PLL TEST2):
Crystal in Frequecy
"H"--1X(24MHz Crystal)
"L"--2X(12MHz Crystal)
PIN5(TMDS TEST):
Host Interface Select
"H"--Parallel
"L"--Serial
TPV
04.SCALER
Thursday, June 19, 2008



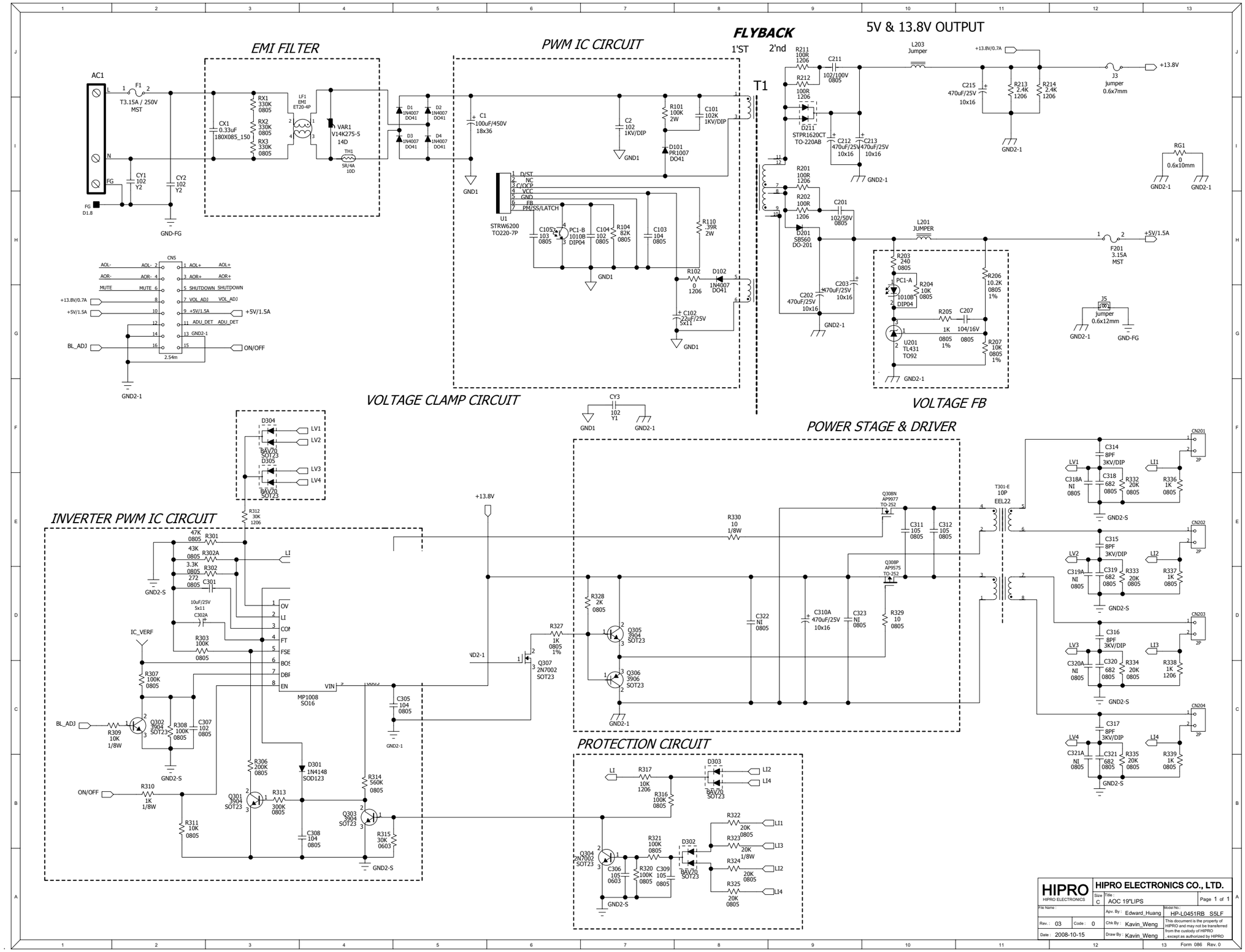


TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL		Size	Custom
結陽瓜網腹		TPV MODEL		Rev	A
Key Component	05.INTERFACE	PCB NAME		称爹	<称爹>
Date	Wednesday, June 18, 2008	Sheet	6 of 7		

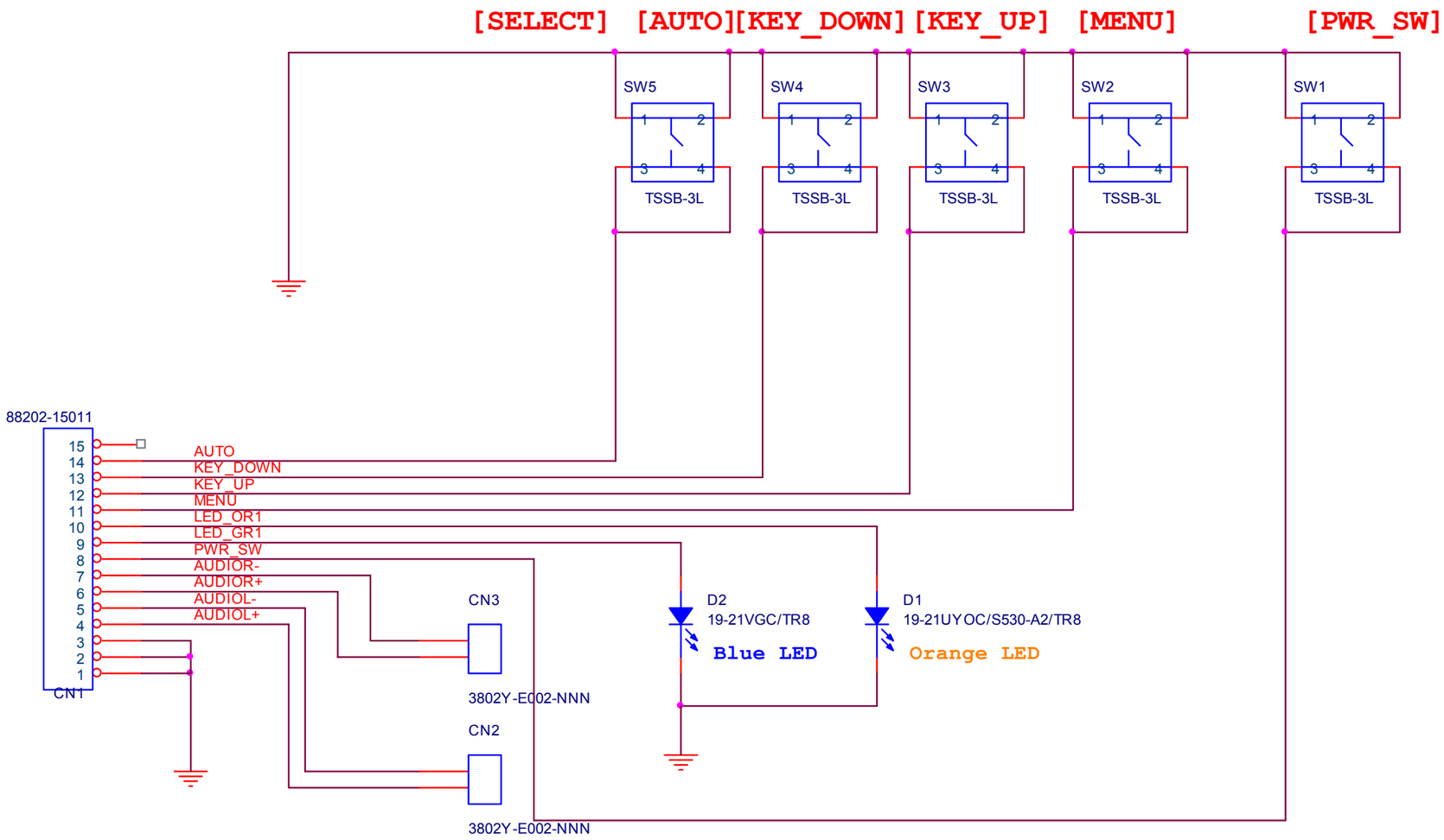


T P V （Top Victory Electronics Co . , Ltd. ）		OEM MODEL		Size	A
紝 隔 瓜 綑 腹		TPV MODEL		Rev	A
Key Component	06.audio	PCB NAME		称 爹	<称爹>
Date	Wednesday , June 18, 2008	Sheet	7 of 7		

8.2 Power Board

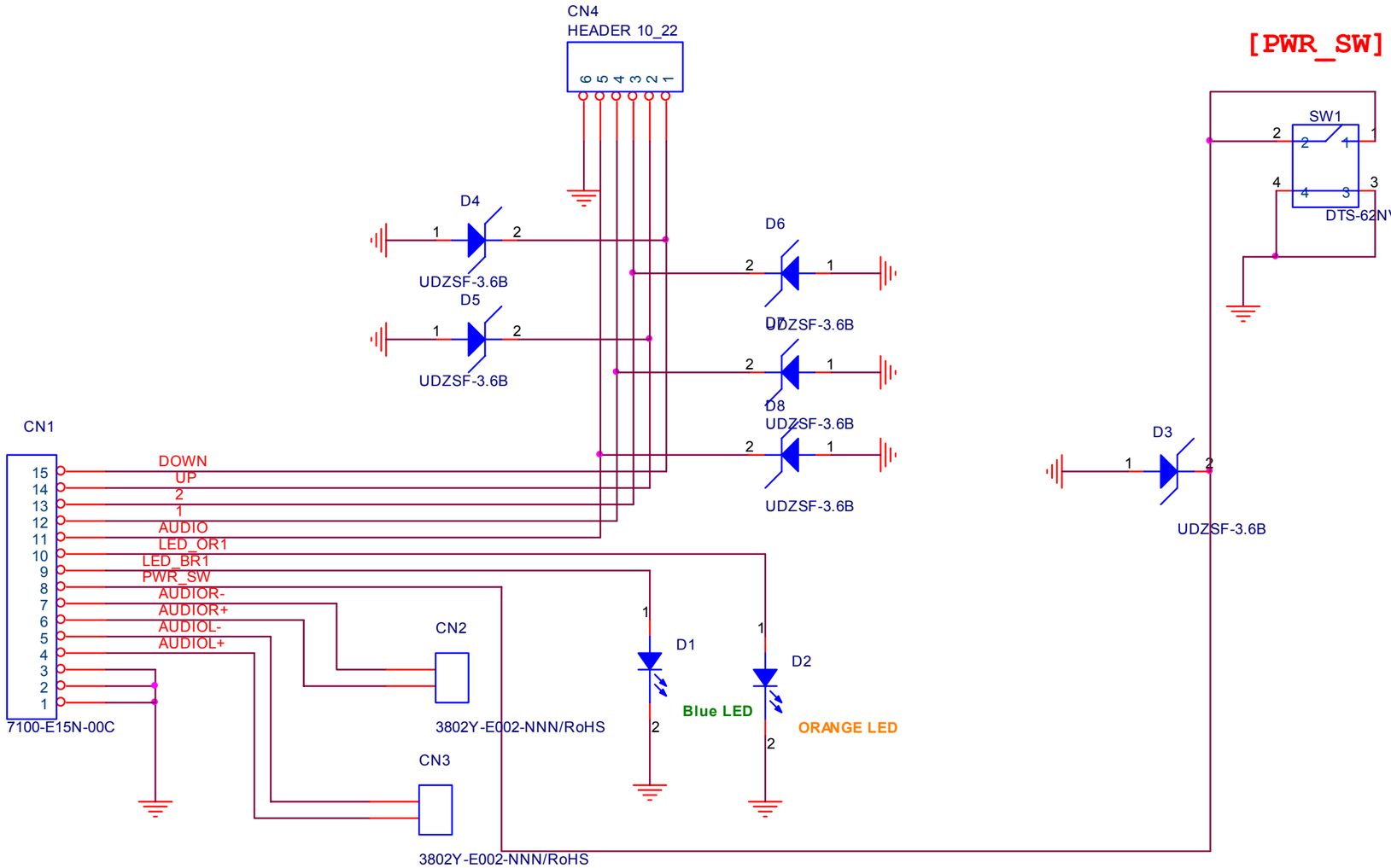


8.3 Key Board



<Variant Name>

CHI MEI OPTOELECTRONICS	簗	T	そ		
Title: OSD KEY PAD					
DWG NO			DATE: 2006/3/27		
APPROVED	CHECKED	DESIGNER	DRAWER	REV	SHEET
artey	纏 秈	ㄆ紈	ㄆ紈	02	1/1

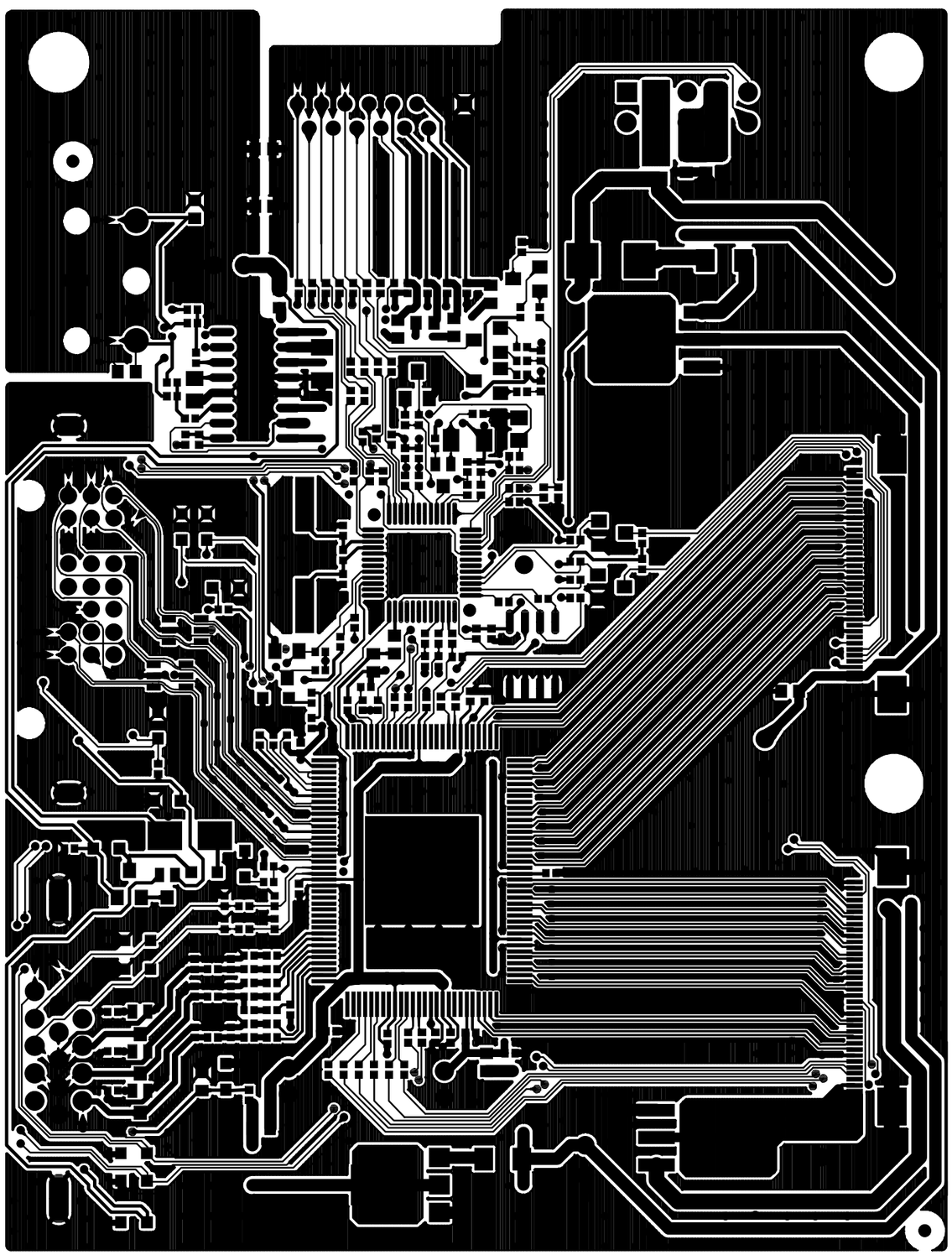


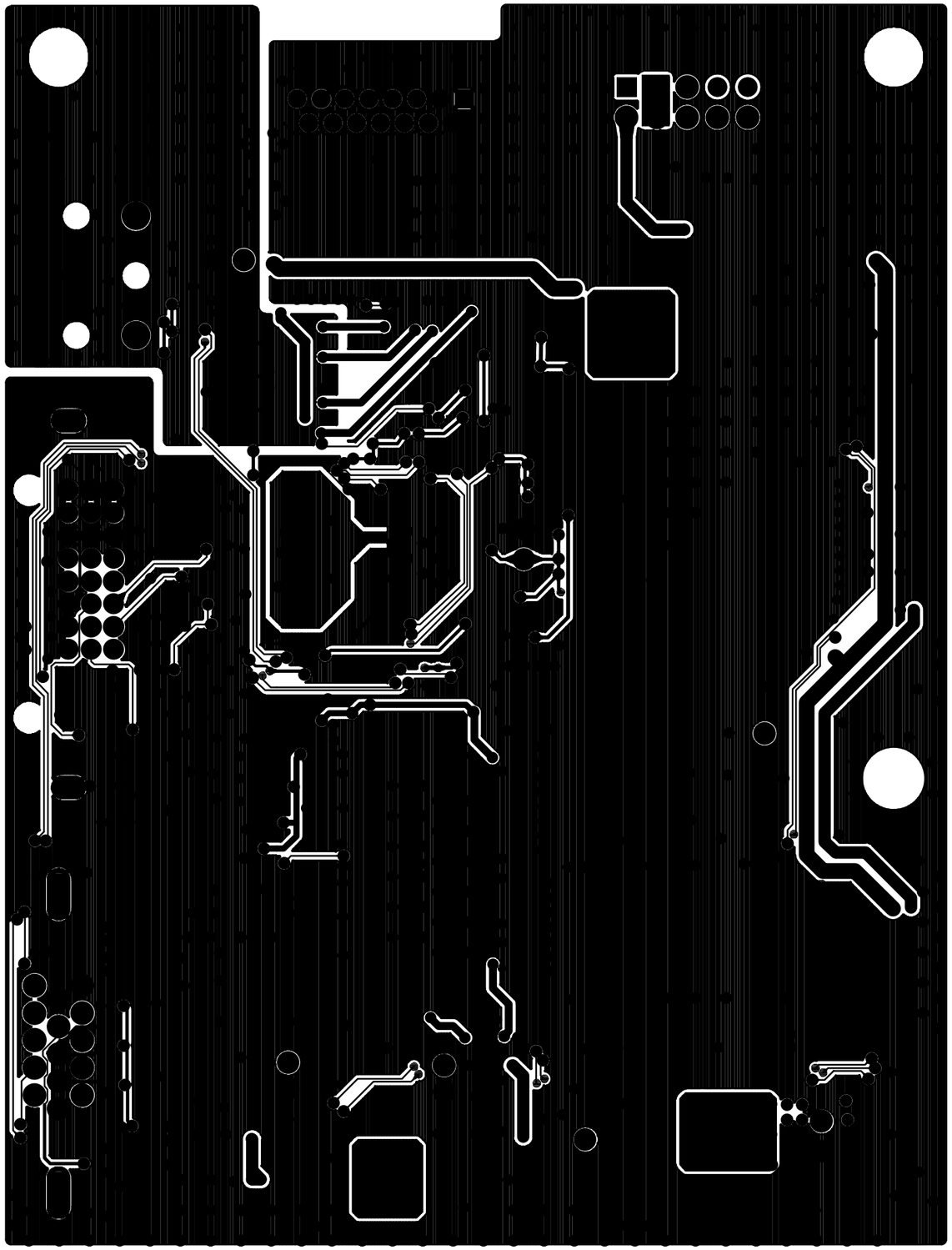
<Variant Name>

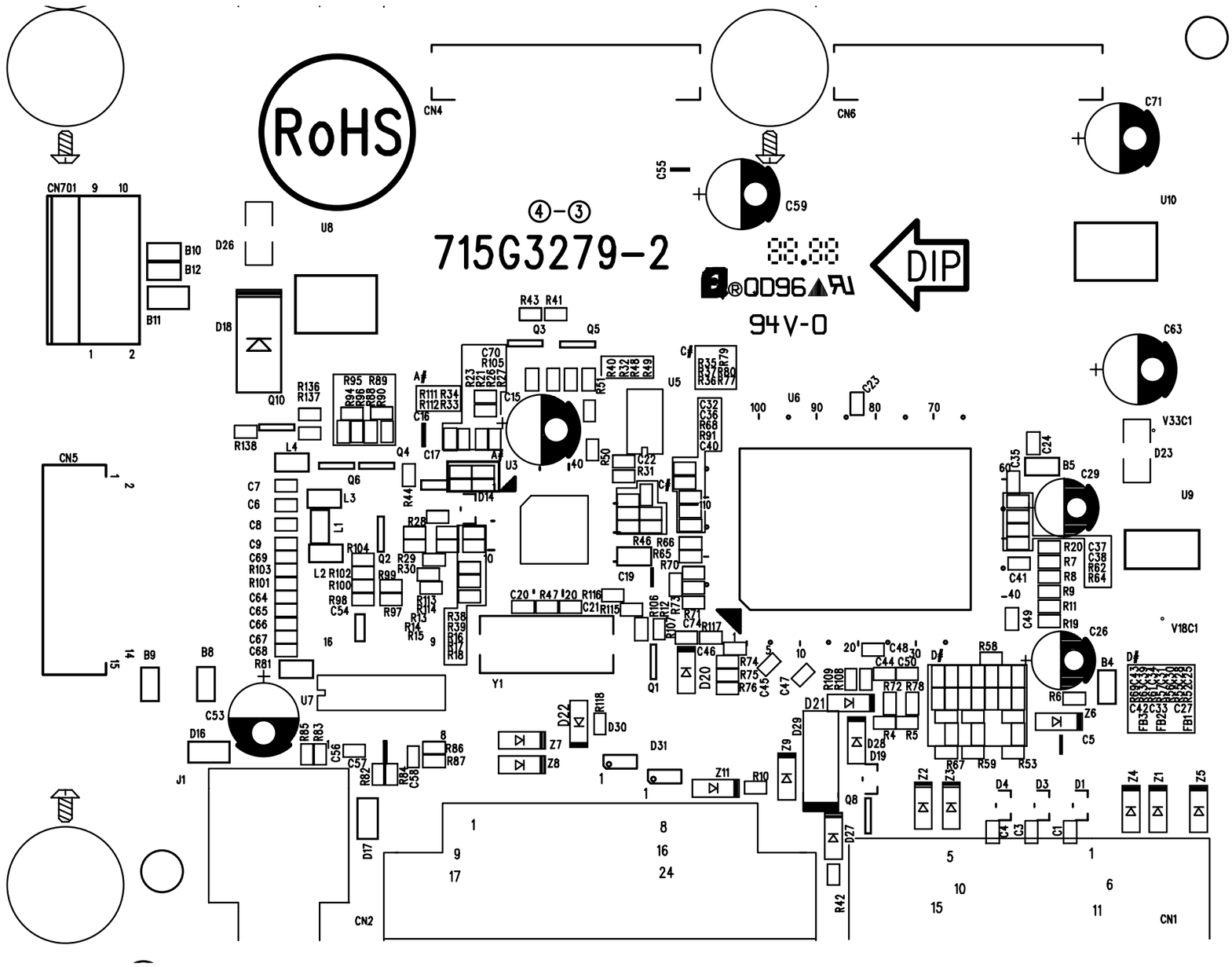
CHI MEI OPTOELECTRONICS	簗	T	そ		
Title: OSD KEY PAD					
DWG NO			DATE		
APPROVED	CHECKED	DESIGNER	DRAWER	REV	SHEET
artey	Eric	tony	tony		1/1

9. PCB Layout Diagrams

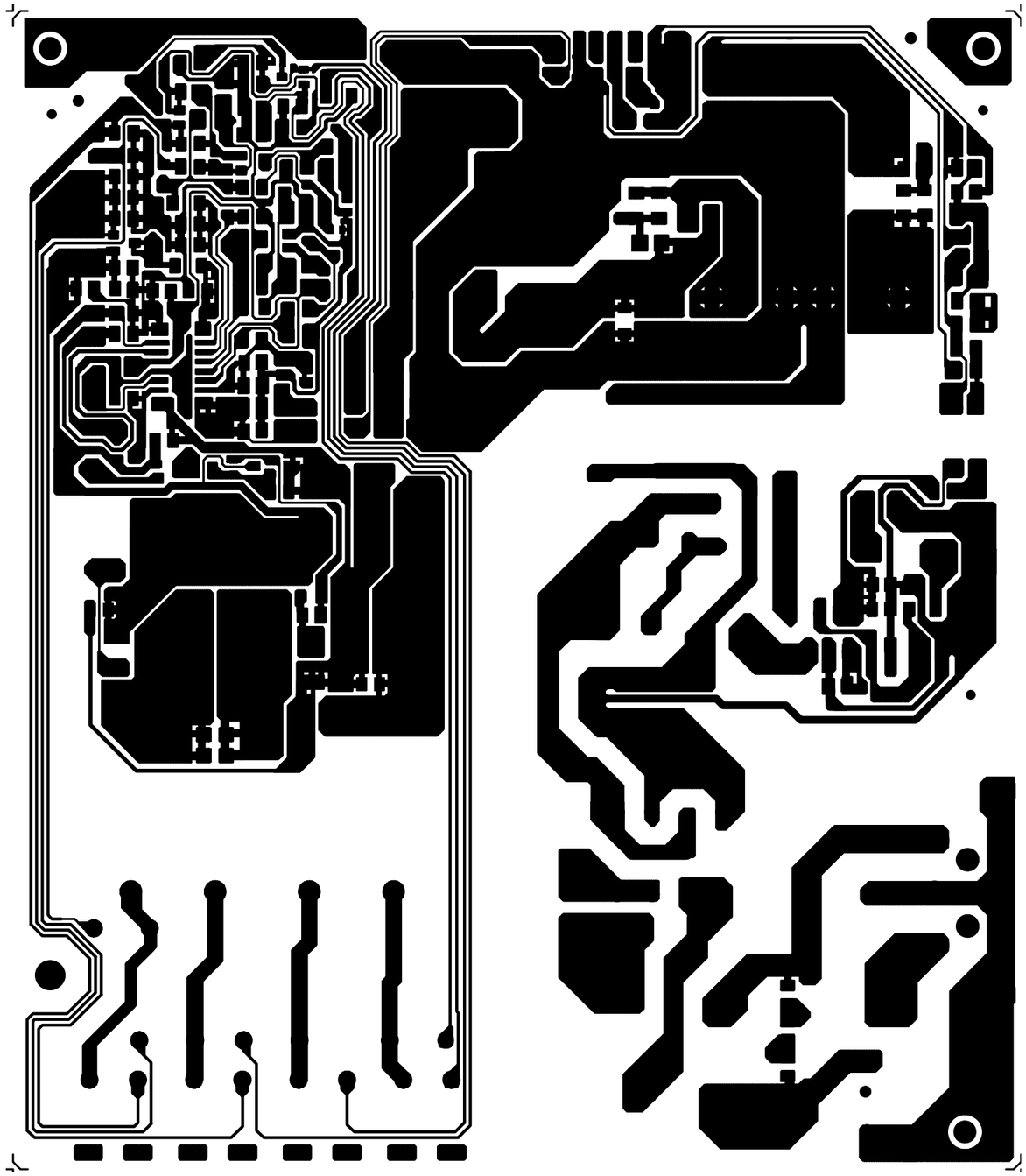
9.1 Main Board

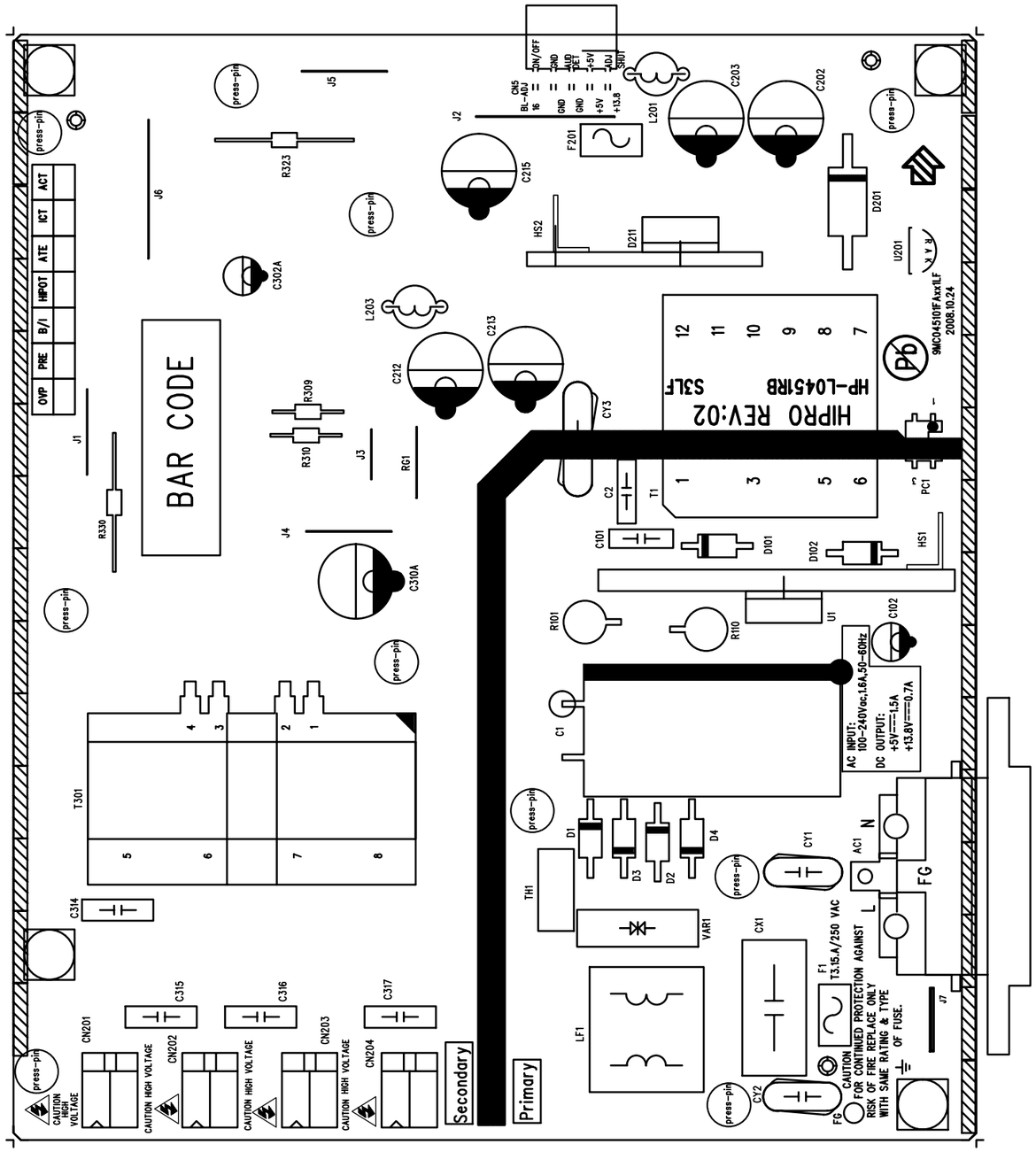


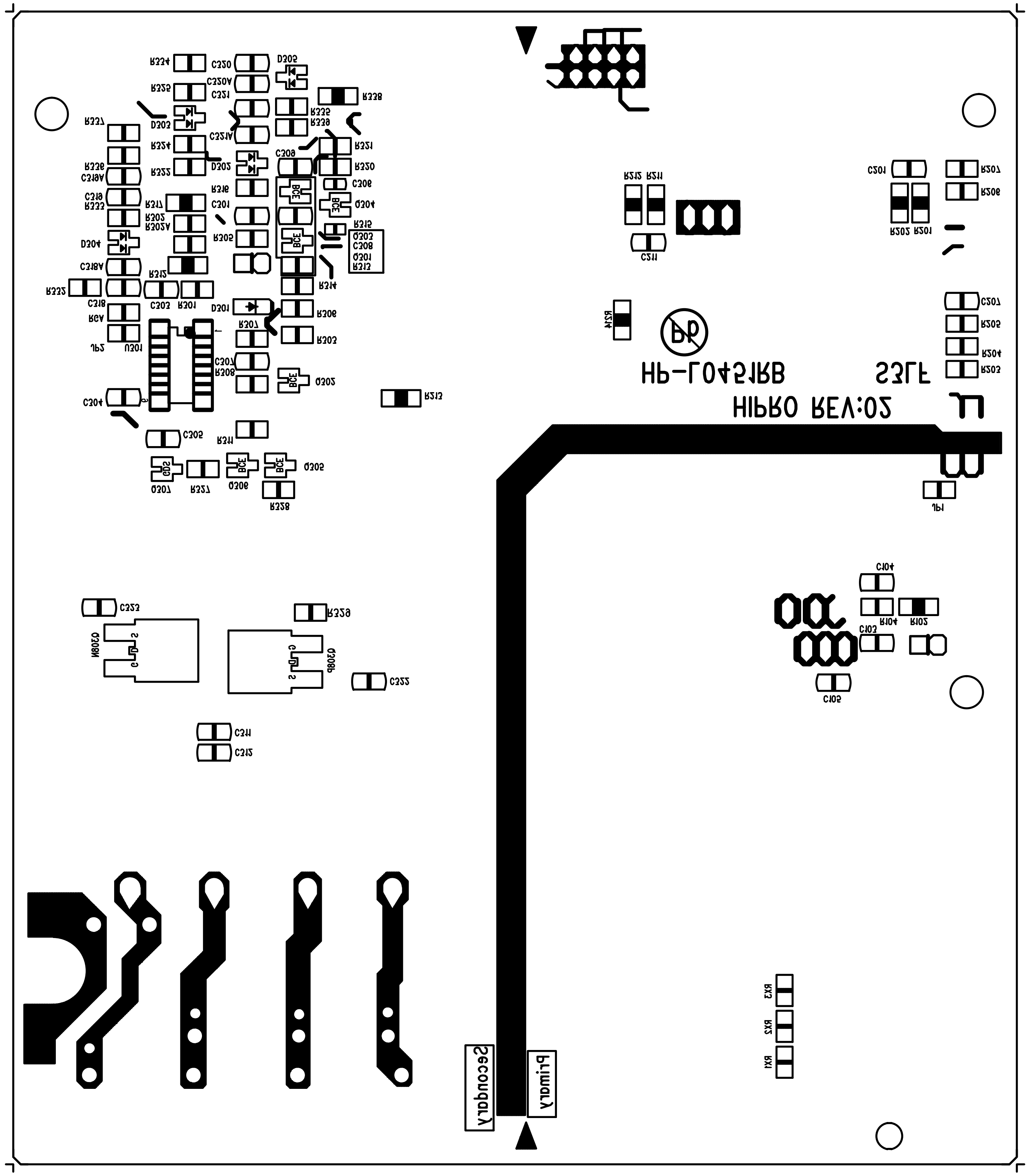


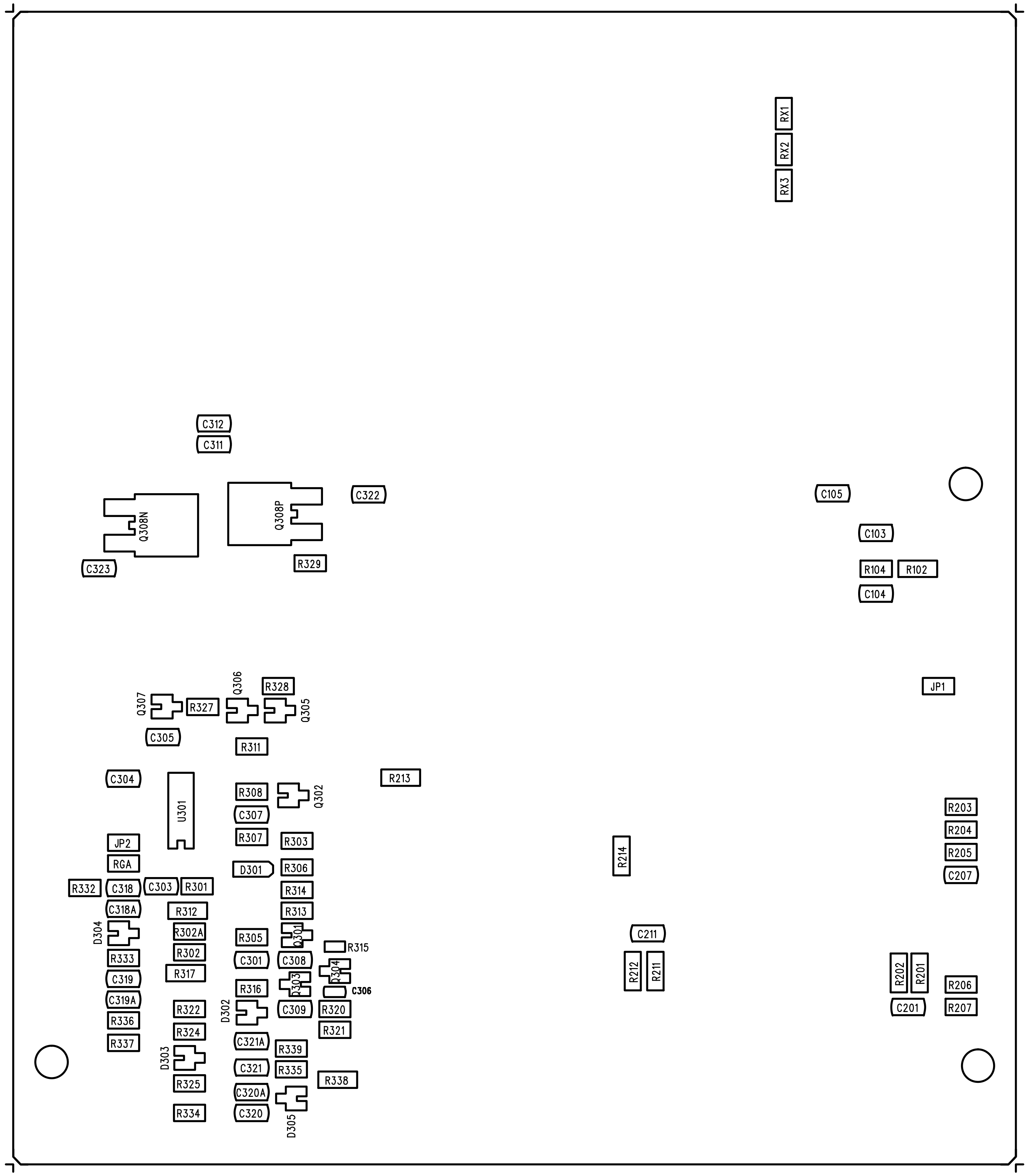

RoHS
CN4
CN6
CN701
9
10
B10
B12
B11
1
2
U8
D26
④-③
715G3279-2
C55
C59
C71
U10
08.08
QD96
94V-0
DIP
D18
Q10
R136
R137
R95
R89
R94
R96
R88
R90
R43
R41
Q3
Q5
C70
R105
R23
R21
R22
R27
R40
R32
R48
R49
R51
U5
C15
C16
C17
R111
R34
R112
R33
U3
D14
R50
C22
R31
C32
C36
C68
R91
C40
U6
100
90
80
70
C23
C63
V33C1
D23
CN5
L4
Q4
Q6
L3
L1
L2
R138
C7
C6
C8
C9
C69
R103
R101
C64
C65
C66
C67
C68
R44
R28
R104
Q2
R29
R30
R102
R100
R99
R98
C54
R97
C33
C34
R13
R14
R15
R38
R39
R36
R37
C18
C19
R46
R66
R65
R70
C20
R47
R20
R116
C21
R115
R106
R12
R73
R107
R71
C74
R117
C46
R74
R75
R76
C45
C47
Y1
Q1
D20
R109
R108
C48
C44
C50
R72
R78
D21
D29
D28
D19
R4
R5
R58
R59
R53
R67
D2
D4
D3
D1
C4
C3
C1
Z4
Z1
Z5
C24
C35
B5
C29
U9
R20
R7
R8
R9
R11
R19
C37
C38
R62
R64
C41
C49
V18C1
C26
B4
R6
Z6
C5
C42
C2
FB3
FB2
FB1
R81
U7
C53
D16
R85
R83
C56
C57
R82
R84
C58
R86
R87
J1
D22
R118
D30
D31
Z7
Z8
Z9
Z11
R10
Z2
Z3
Q8
D27
R42
D17
CN2
CN1
B9
B8
14
15

9.2 Power Board

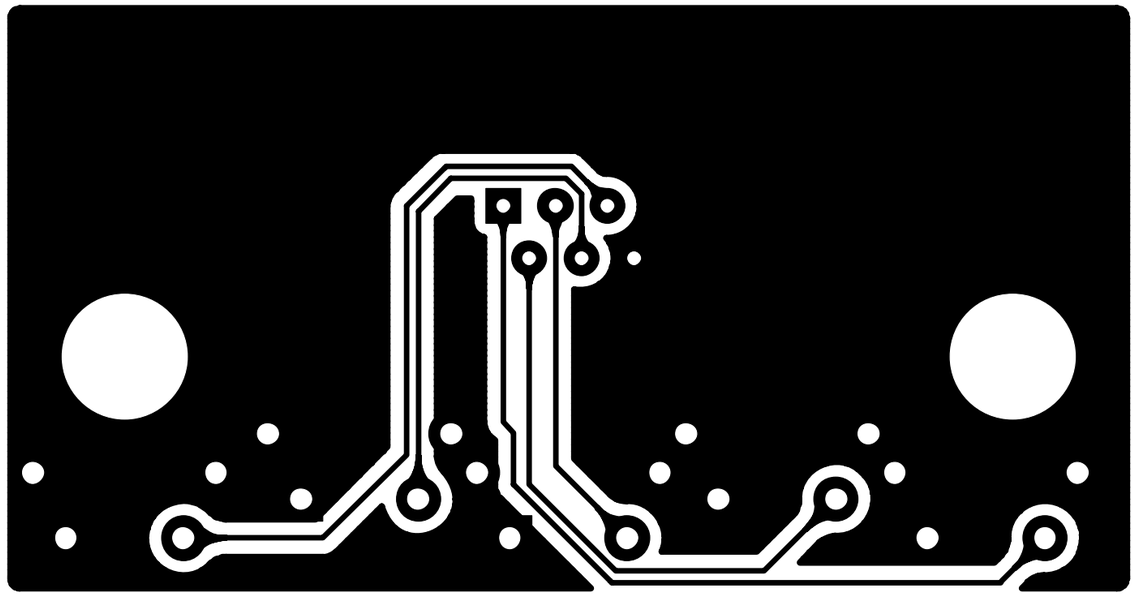


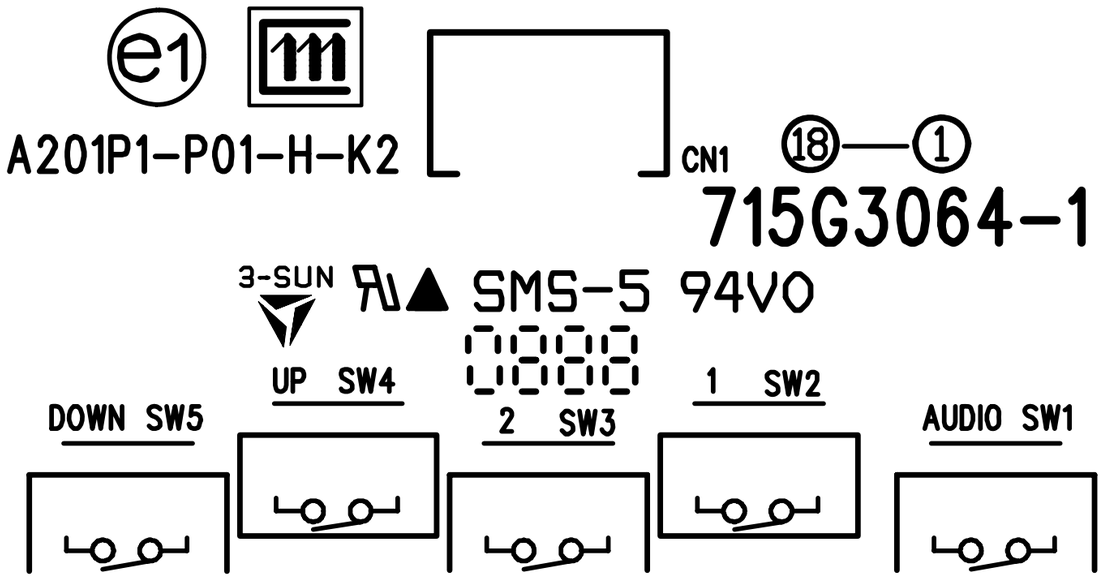


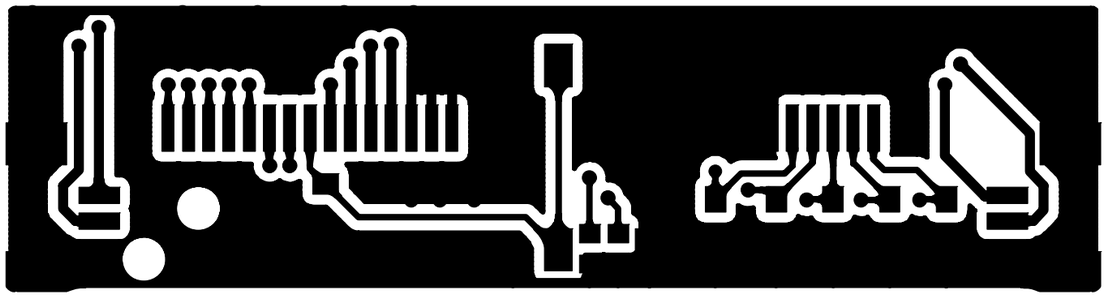

HIPRO REV:02
HP-L0451RB
S3LF
Primary
Secondary

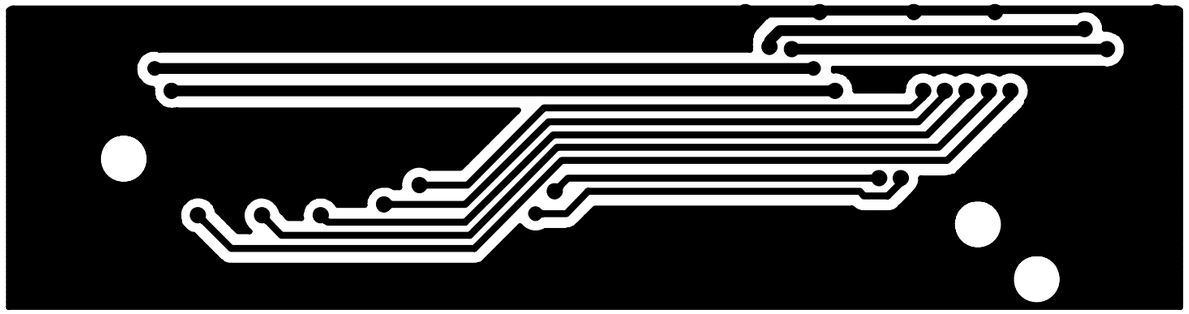

RX1
RX2
RX3
C312
C311
C322
Q308N
Q308P
C323
R329
C105
C103
R104
R102
C104
JP1
Q307
R327
Q306
R328
Q305
C305
R311
C304
U301
R308
Q302
R213
C307
R307
R303
JP2
RGA
D301
R306
R332
C318
C303
R301
R314
C318A
R312
R313
D304
R302A
R305
Q301
R315
R302
C301
C308
R333
R317
Q304
C319
Q303
R316
C306
C319A
D302
C309
R320
R322
R336
R324
R321
R337
C321A
R339
D303
C321
R335
R325
R338
C320A
R334
C320
D305
R214
C211
R212
R211
R203
R204
R205
C207
R202
R201
R206
C201
R207

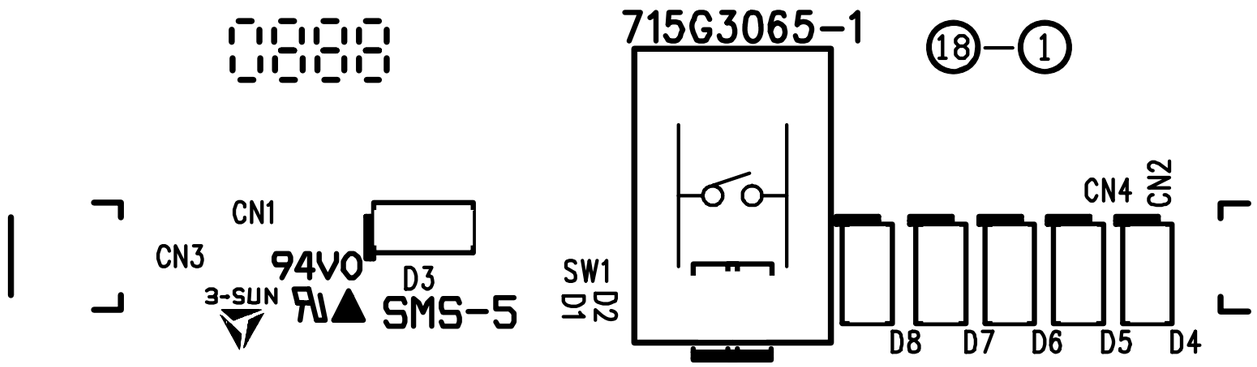
9.3 Key Board




A201P1-P01-H-K2
CN1
18—1
715G3064-1
3-SUN
SMS-5 94V0
DOWN SW5
UP SW4
2 SW3
1 SW2
AUDIO SW1

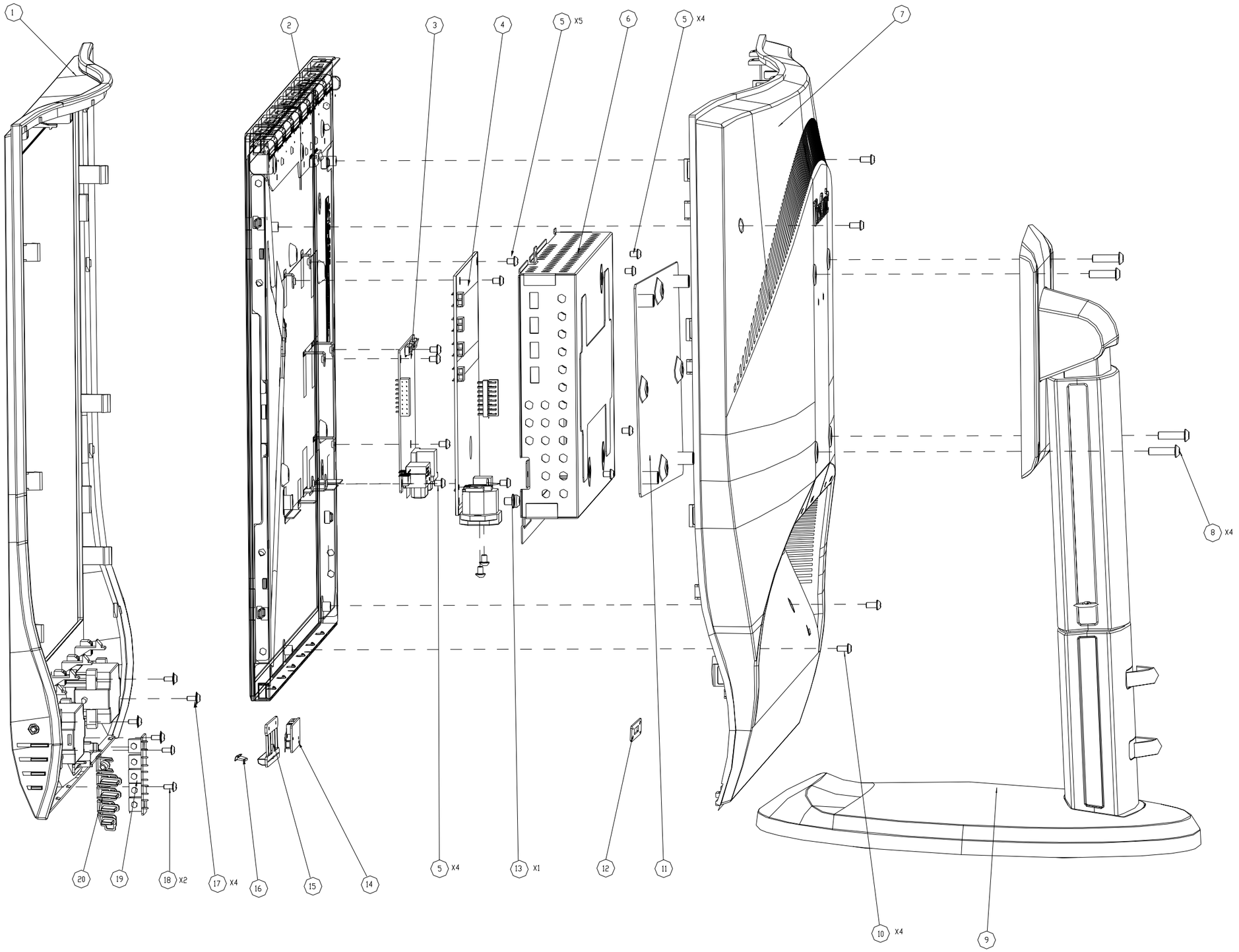





715G3065-1
18—1
CN1
CN3
94V0
3-SUN
SMS-5
D3
SW1
D1
D2
CN4
CN2
D8
D7
D6
D5
D4

10. Exploded Diagram and Spare Parts List

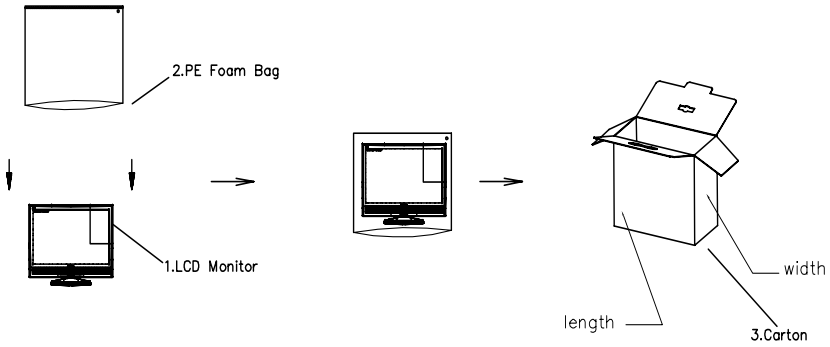
10.1 EPL

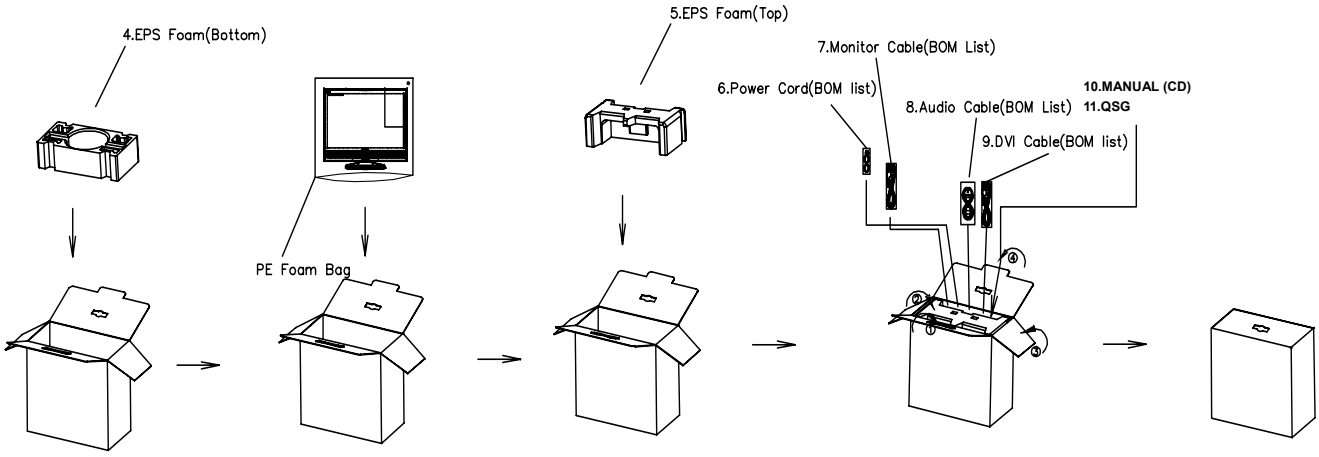


Exploded Parts List

Item	Description	Part Number	Q'ty
1	BEZEL	NA	1
2	PANEL	NA	1
3	MAIN BOARD- CBPC9RLVSQN	NA	1
4	POWER BOARD	NA	1
5	SCREW	0M1G 330 4120	13
6	COVER AD	NA	1
7	REAR COVER	NA	1
8	SCREW	0M1G1740 15 47 CR3	4
9	HINGE ASS'Y	NA	1
10	SCREW	0M1G 330 6 47 CR3	4
11	VESA-SUPPORT-PLATE	NA	1
12	PLATE LOCK	NA	1
13	SCREW	0M1G1740 8120	1
14	POWER KEY BOARD	NA	1
15	KEY PAD POWER	NA	1
16	LENS	NA	1
17	SCREW	0Q1G1030 10120	4
18	SCREW	0Q1G 330 5120	2
19	KEY BOARD	NA	1
20	KEY PAD	NA	1

PPL





Item	Description	Part Number	Q'ty
1	LCD MONITOR	NA	1
2	PE BAG	NA	1
3	22 LCD CARTON	NA	1
4	EPS(BOTTOM)	NA	1
5	EPS(TOP)	NA	1
6	POWER CORD	NA	1
7	D-SUB CABLE	NA	1
8	AUDIO CABLE	NA	1
9	SIGNAL CABLE DVI GREATLAND	NA	1
10	MANUAL	NA	1
11	QSG	NA	1

10.2 Spare Parts List

TC9MRLDBDWVSDN

Location	Part Number	Description	Remark
	019G6014 1	TIE FOR STRAP	
	023G3178709 4A	VSC17-LCD FRONT LOGO	
	023G3178709 6A	BIRD LOGO	
	040G 581 26704	SHIPPING LABEL	
	041G 68508 A	CONTROL CARD	
	044G9003 5	CORNER PAPER	
	044G9003 90	CORNER PAPER	
	050G 600 1 W	WHITE STRAP	
	050G 600 2	HANDLE1	
	050G 600 3	HANDLE2	
	052G 1185 24	VSC TAPE	
	052G 1186	SMALL TAPE	
	052G 1205 A	ALUMINIUM TAPE	
	052G 1211 B	CONDUCTIVE TAPE 85MM *40MM *0.09MM	
	052G 2191 A	PAPER TAPE	
	070GHDCP500HDC	HDCP CODE	
	080G L19 6HIB	OWER BOARD	
E08902	089G 728GAA DB	D-SUB CABLE	
E08902	089G 728HAA DB	D-SUB CABLE	2nd Source
	089G 76W 15N00	FFC CABLE 15P 235MM(REFRESH)	
E08903	089G1748GAA AC	SIGNAL CABLE DVI GREATLAND	
E08903	089G1748HAA AC	DVI CABLE	2nd Source
E08907	089G176C 36 1	FFC CABLE 36P 125MM/D008479	2nd Source
E08907	089G176J 36 1	FFC CABLE	
	089G404A18N IS	POWER CORD	
	0M1G 330 4120	SCREW 42A9930008	
	0M1G 330 6 47 CR3	SCREW 42-D005390	
	0M1G1740 8120	SCREW FOR STD/MF 42-D020715/42-D000649	
	0M1G1740 15 47 CR3	SCREW 42-D001756	
	705GQ934098	22" BEZEL ASS'Y	
	078G 517N00 D	SPK 4OHM 2.5W 80*29*20	
E08908	089G176C 6 1	FFC CABLE 6P 240MM 32-D013272	2nd Source
	0Q1G 330 5120	SCREW 42-D003574	
	0Q1G1030 10120	SCREW 42-D001524	
	N34G0056 KSA1B0130	BEZEL 40-D013276	
E08908	089G176J 6 1	FFC CABLE	

	KEPC9QE7	KEY BOARD	
CN1	033G8019 6T H	FPC CONN. 1.0MM 6P	
SW4	077G 602 2 DT CMO	TACT SWITCH DTSA-62NV	
SW5	077G 602 2 DT CMO	TACT SWITCH DTSA-62NV	
SW1	077G 602 2 DT CMO	TACT SWITCH DTSA-62NV	
SW2	077G 602 2 DT CMO	TACT SWITCH DTSA-62NV	
SW3	077G 602 2 DT CMO	TACT SWITCH DTSA-62NV	
	715G3064 1	KEY BOARD PCB	
E750	750GLMC0KZ142C000Q	PANEL A220Z1-H04 VSC CMO SM0Z121D01	2nd Source
E750	750GLMC0KZ152C000Q	PANEL A220Z1 VSC CMO SM0Z101D01	
	756GQ9CB VV002	MAIN BOARD-CBPC9RLVSQN	
SMTC9-U3	100GVRMC001N11	MCU ASS'Y-056G1125701 X	
CN5	033G801915T H	CONNECTOR	
CN701	033G8022 10 H CMO	HEADER FEMALE 10P 2.5PITCH	
	040G 45762412B	CBPC LABEL	
C26	067G305V100 3	105℃ 10UF +-20% 16V	
C29	067G305V100 3	105℃ 10UF +-20% 16V	
C15	067G305V101 4P	CAP 105C 100UF M 25V 6.3*11	
C63	067G305V101 4P	CAP 105C 100UF M 25V 6.3*11	
C59	067G305V101 4P	CAP 105C 100UF M 25V 6.3*11	
C53	067G305V101 4P	CAP 105C 100UF M 25V 6.3*11	
C71	067G305V101 4P	CAP 105C 100UF M 25V 6.3*11	
J1	088G 30214KD1C	PHONE JACK 5PIN	
CN1	088G 35315F XH	D-SUB 15PIN VERTICAL CONN WITH SCREW	
CN2	088G 35424F DL	DVI 24PIN CONN F WITH SCREW	
U7	N12G6900001 BT	HEAT SINK	
	Q85G 583603	GASKET_ALUMINIUM FOIL	
	Q85G 583605	GASKET_ALUMINIUM FOIL	
CN4	033G801936Y H HC	0.5 PITCH 36P SMT FPC CONN	
CN6	033G801936Y H HC	0.5 PITCH 36P SMT FPC CONN	
U6	056G 562578CMO	IC,SCALER,RTD2554VH-GR,QFP-128	
U10	056G 563 52	IC AP1117D33L-13 TO252-3L DIODES	
U8	056G 563 52	IC AP1117D33L-13 TO252-3L DIODES	
U9	056G 563113	IC G1117-18T63UF 1A/1.8V SOT-223	
U7	056G 616 45	IC APA2068KAI-TRL 2.6W*2 SOP-16-P	
U3	056G1125701 X	IC MCU RTD2120L-LF REALTEK	
Q6	057G 417517	TRA LMBT3906LT1G -200MA/-40V SOT-23 LRC	
Q4	057G 417517	TRA LMBT3906LT1G -200MA/-40V SOT-23 LRC	
Q1	057G 759 2A	TANSISTOR 2N7002 SOT-23	
Q3	057G 759 2A	TANSISTOR 2N7002 SOT-23	

Q5	057G 759 2A	TANSISTOR 2N7002 SOT-23	
Q10	057G 763 59	FET BSS84 −0.13A/−50V SOT-23	
Q8	057G 763 59	FET BSS84 −0.13A/−50V SOT-23	
R29	061G0402000	RST CHIP MAX 0R05 1/16W	
R82	061G0402000	RST CHIP MAX 0R05 1/16W	
R83	061G0402000	RST CHIP MAX 0R05 1/16W	
R87	061G0402000	RST CHIP MAX 0R05 1/16W	
R136	061G0402100 0F	RST CHIPR 100 OHM +-1% 1/16W	
R78	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R72	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R69	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R63	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R61	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R57	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R56	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R55	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R52	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R39	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R38	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R34	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R33	061G0402101	RST CHIPR 100 OHM +-5% 1/16W	
R10	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W	
R105	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W	
R21	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W	
R70	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W	
R76	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W	
R88	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W	
R94	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W	
R95	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R89	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R71	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R44	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R43	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R42	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R41	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R40	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R32	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R12	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R13	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R14	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	

R15	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R16	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R17	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R18	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R23	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W	
R137	061G0402152	RST CHIP 1K5 1/16W 5%	
R65	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R66	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R68	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R7	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R8	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R9	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R91	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R64	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R62	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R37	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R36	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R35	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R20	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R19	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R11	061G0402220	RST CHIPR 22 OHM +-5% 1/16W	
R111	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W	
R112	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W	
R113	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W	
R114	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W	
R4	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W	
R5	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W	
R115	061G0402240 1F	RST CHIPR 0402 2.4K OHM +-1% 1/16W	
R73	061G0402303	RST CHIPR 30 KOHM +-5% 1/16W	
R100	061G0402330	RST CHIPR 33 OHM +-5% 1/16W	
R101	061G0402330	RST CHIPR 33 OHM +-5% 1/16W	
R102	061G0402330	RST CHIPR 33 OHM +-5% 1/16W	
R103	061G0402330	RST CHIPR 33 OHM +-5% 1/16W	
R104	061G0402330	RST CHIPR 33 OHM +-5% 1/16W	
R97	061G0402330	RST CHIPR 33 OHM +-5% 1/16W	
R98	061G0402330	RST CHIPR 33 OHM +-5% 1/16W	
R99	061G0402330	RST CHIPR 33 OHM +-5% 1/16W	
R116	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R96	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R90	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	

R80	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R79	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R77	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R75	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R74	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R31	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R27	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R26	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W	
R53	061G0402750	RST CHIPR 75 OHM +-5% 1/16W	
R59	061G0402750	RST CHIPR 75 OHM +-5% 1/16W	
R67	061G0402750	RST CHIPR 75 OHM +-5% 1/16W	
B9	061G0603000	RST CHIP MAX 0R05 1/10W	
R81	061G0603000	RST CHIP MAX 0R05 1/10W	
B11	061G0805000	RST CHIP MAX 0R05 1/8W	
D23	061G1206000	RST CHIP MAX 0R05 1/4W	
D26	061G1206000	RST CHIP MAX 0R05 1/4W	
C70	065G0402104 12	CAP CHIP 0402 0.1UF 16V X7R	
C38	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C37	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C36	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C35	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C32	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C24	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C23	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C40	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C74	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C69	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C68	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C67	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C66	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C65	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C64	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C49	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C48	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C47	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C46	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C45	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C41	065G0402104 17	CAP CHIP 0402 100NF Z 16V Y5V	
C56	065G0402105 A7	CAP CHIP 0402 1UF Z 10V Y5V	
C58	065G0402105 A7	CAP CHIP 0402 1UF Z 10V Y5V	

C50	065G0402120 31	CAP CHIP 0402 12P 50V NPO	
C44	065G0402220 31	CHIP 22PF 50V NPO	
C21	065G0402220 31	CHIP 22PF 50V NPO	
C20	065G0402220 31	CHIP 22PF 50V NPO	
C43	065G0402473 17	CAP CHIP 0402 47NF K 16V Y5V	
C39	065G0402473 17	CAP CHIP 0402 47NF K 16V Y5V	
C34	065G0402473 17	CAP CHIP 0402 47NF K 16V Y5V	
C31	065G0402473 17	CAP CHIP 0402 47NF K 16V Y5V	
C30	065G0402473 17	CAP CHIP 0402 47NF K 16V Y5V	
C28	065G0402473 17	CAP CHIP 0402 47NF K 16V Y5V	
C25	065G0402473 17	CAP CHIP 0402 47NF K 16V Y5V	
C19	065G0603330 31	CER1 0603 NP0 50V 33P PM	
C16	065G0805105 22	CAP CHIP 0805 1UF K 25V X7R	
C57	065G0805225 17	CHIP 2.2UF 16V Y5V	
C17	065G1206106 17	MLCC 10 UF Z 16V Y5V	
C54	065G1206106 17	MLCC 10 UF Z 16V Y5V	
FB3	071G 42U100 TS	CHIP BEAD 0402 10OHM+-25% 0.5A	
FB2	071G 42U100 TS	CHIP BEAD 0402 10OHM+-25% 0.5A	
FB1	071G 42U100 TS	CHIP BEAD 0402 10OHM+-25% 0.5A	
R46	071G 59M121 Y	CHIP BEAD 0603 120OHM+-25% 0.35A	
B8	071G 59M252 M	CHIP BEAD 0603 2500OHM+-25% 0.2A	
L1	071G 59S221 M	CHIP BEAD 0603 220OHM+-25% 2A	
L2	071G 59S221 M	CHIP BEAD 0603 220OHM+-25% 2A	
L3	071G 59S221 M	CHIP BEAD 0603 220OHM+-25% 2A	
L4	071G 59S221 M	CHIP BEAD 0603 220OHM+-25% 2A	
B5	071G 59U601 TS	CHIP BEAD 0603 600OHM+-25% 0.2A	
B4	071G 59U601 TS	CHIP BEAD 0603 600OHM+-25% 0.2A	
B12	071G 59U601 TS	CHIP BEAD 0603 600OHM+-25% 0.2A	
B10	071G 59U601 TS	CHIP BEAD 0603 600OHM+-25% 0.2A	
Y1	093G 22S509CMO	CRYSTAL SMD-49,24MHZ,30PF H=4.1 MM CMO	
D19	093G 64S503CMO	BAV70W,SOT-323(SC-70),PAN JIT CMO	
D14	093G 64S503CMO	BAV70W,SOT-323(SC-70),PAN JIT CMO	
D28	093G 64S523SEM	DIODE 1N4148WS SEMTECH	
D27	093G 64S523SEM	DIODE 1N4148WS SEMTECH	
D29	093G3004 3	SM340A	
D18	093G3004 3	SM340A	
	715G3279 2C	MAIN BOARD PCB	
	KEPC9QE6	POWER KEY BOARD	
CN1	033G8019 2CMO	CONN.25-D000187	
CN4	033G8019 7CMO	CONN.25-D006242	

CN1	033G8019 2JCMO	CONNECTOR 1.0PITCH SMT 15P	
CN3	033G8032 2C	CONNECTOR	
CN2	033G8032 2C	CONNECTOR	
SW1	077G 606 7 DT CMO	TACT SWITCH DTSA-62NV	
D2	081G 63O 1 GP	LED GPTS0603OC3-PB	
D1	081G0603 B GP	LED GPTS06033BC1 GP	
D8	093G 39S 94 T	DIODE UDZSNP3.6B 200MW/3.6V SC-76	
D7	093G 39S 94 T	DIODE UDZSNP3.6B 200MW/3.6V SC-76	
D3	093G 39S 94 T	DIODE UDZSNP3.6B 200MW/3.6V SC-76	
D5	093G 39S 94 T	DIODE UDZSNP3.6B 200MW/3.6V SC-76	
D4	093G 39S 94 T	DIODE UDZSNP3.6B 200MW/3.6V SC-76	
D6	093G 39S 94 T	DIODE UDZSNP3.6B 200MW/3.6V SC-76	
	715G3065 1	POWER KEY PCB	
	N15G0004 1	PLATE LOCK 40A1599954	
	N15G0006 1	VESA-SUPPORT-PLATE 41-D010954	
	N33G0025 X2 1L0100	KEY PAD 40-D013277	
	N33G0026 X2 1L0100	KEY PAD POWER 40-D013278	
	N33G0027 1 1P0100	LENS 40-D013270	
	N34G0057BEB 1B0130	REAR 40-D013269	
	N40G000296810A	LABEL HI-POT-PASS 77-D005237	
	N45G 52001	PE SHEET	
	N45G 88607001	PE BEG FOR 22 MONITOR 78-D016339	
	N52G 2191 01	TAPE /7345911004	
	N52G6020001 HB	PANEL PROTECTOR FILM	
M085	N85G0001 9	COVER AD	
	Q07G 1 5V 28 X	WOODEN PALLET	
	Q37G0145011	HINGE ASS'Y	
	Q40G 22N709 5A	RATING LABEL	
	Q40G0001624 4A	PALLET LABEL	
	Q40G000270927A	EPA LABEL	
	Q44G6002114 92	PAPER BOARD	
	Q44G9003160	CORNER PAPER	
	Q44GC111101	EPS	
	Q44GC111201	EPS	
	Q44GC111709 1A	22 LCD CARTON	
	Q45G 77 5	PE PACKING	
	Q50G 4 10	TIE	
	Q52G 1210500	AL TAPE	
M085	SN85G00019	MAIN FRAME	
E08904	089G 17356C553	AUDIO CABLE 1800MM	

E08904	089G 17356G553	AUDIO CABLE 1800MM	2nd Source
E08904	089G 17356H553	AUDIO CABLE 1800MM	2nd Source
	Q41G780070973A	VG2230WM QSG	
	Q41G780070974A	VISTA INSERT	
	Q45G2007M0101A	PE BAG	
	Q70G2201709 3A	VG2230WM CD	
	040G 58162435A	P/N LABEL FOR MANUAL PE BAG	
	N40G0001968 2A	S/N LABEL 7741513161	
	N40G000196855A	CARTON LABEL	
	N40G000196867A	S/N LABEL FOR VIEWSONIC	
E750	750GLM220KZ1J2M0VS	PANEL A220Z1-002 SM0Z12AD01 NB CMO	2nd Source

11. Recommended Spare Parts List

NA

12. Different Parts List

Diversity of TC9MRLDKDWVSDN compared with TC9MRLDBDWVSDN			
Location	**Part Number**	**Description**	**Remark**
E08901	089G402A18N CX	POWER CORD	2nd source
E08901	089G402A18N IS	POWER CORD/32-D022438	2nd source
E08901	089G402A18N YH	POWER CORD(32-D022438)	
	Q41G780070961A	CAUTION CARD	
	Q41G780070975A	WALL MOUNT INSERT PAGE	
	Q41G780070976A	MEXICO LIMITED WARRANTY FOR USA	

* 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?

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

B. Are you satisfied with this Service Manual?

Item	*Excellent*	*Good*	*Fair*	*Bad*
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?

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