SAMSUNG

TFT-LCD MONITOR

Chassis	Model
GS19ES	913V

SERVICE Manual

TFT-LCD MONITOR

CONTENTS

1 Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1 Safety Precautions

1-1-1 Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC power jack before servicing.

1-1-2 Servicing the LCD Monitor

1. When servicing the LCD Monitor, Disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

1-1-3 Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1):

   WARNING:

   Do not use an isolation transformer during this test.

   Use a leakage current tester or a metering system that complies with American National Standards Institute (*ANSI C101.1, Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).

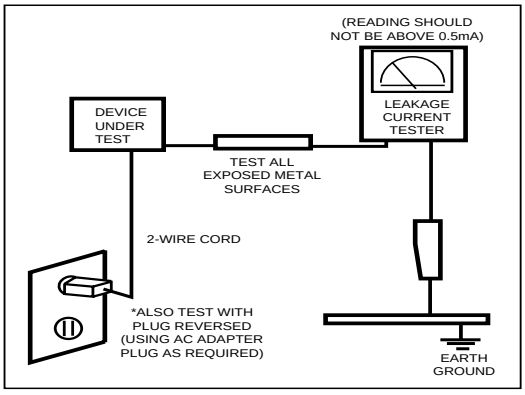


Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

1-1-4 Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

WARNING: An electrolytic capacitor installed with the wrong polarity might explode.

Caution: Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.

Note: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:
   (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3 Electrostatically Sensitive Devices (ESD) Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

2 Product Specifications

2-1 Specifications

Item	Description
LCD Panel	TFT-LCD panel, RGB vertical stripe, normally black transmissive, 19-Inch viewable, 0.264 (H) x 0.264 (V) mm pixel pitch
Scanning Frequency	Horizontal : 30 kHz ~ 81 kHz (Automatic) Vertical : 56 Hz ~ 75 Hz
Display Colors	16.2 Million colors
Maximum Resolution	Horizontal : 1280 Pixels Vertical : 1024 Pixels
Input Video Signal	Analog, 0.714 Vp-p ± 5% positive at 75 Ω, internally terminated
Input Sync Signal	Type : Separate H/V sync, Composite H/V Level : TTL level (V high ≥ 2.0 V, V low ≤ 0.8 V), Sync-on-Green (≤ –0.25 V)
Maximum Pixel Clock rate	135 MHz
Active Display Horizontal/Vertical	 338 ± 3 mm / 270 ± 3 mm
AC power voltage & Frequency	AC 90 ~ 264 Volts, 60/50 Hz ± 3 Hz
Power Consumption	34W (normal)
Dimensions Set (W x D x H) Package	 16.9 x 2.4 x 14.0 Inches (Without Stand) 16.9 x 7.7 x 16.9 Inches (With basic Stand) 18.2 x 5.6 x 17.8 Inches
Weight (Set)	5.55 kg
Environmental Considerations	Operating Temperature : 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity : 10 % ~ 80 % Storage Temperature : -13°F ~ 113°F (-25°C ~ 45°C) Storage Humidity : 5 % ~ 95 %
• Designs and specifications are subject to change without prior notice.	

2-2 Pin Assignments

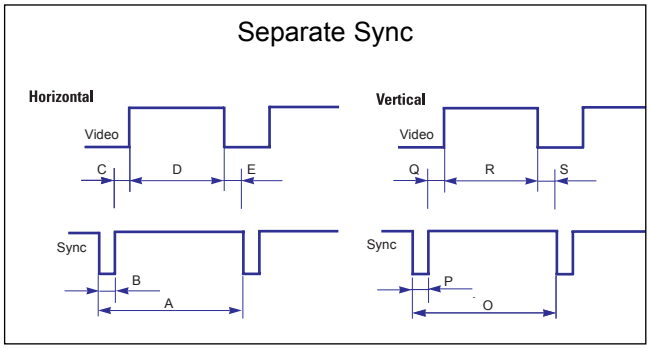
Sync Type / Pin No.	15-Pin D-Sub Signal Cable Connector		
	Separate	Composite	Sync-on-green
1	Red	Red	Red
2	Green	Green	Green + H/V Sync.
3	Blue	Blue	Blue
4	GND	GND	GND
5	DDC Return (GND)	DDC Return (GND)	DDC Return (GND)
6	GND-R	GND-R	GND-R
7	GND-G	GND-G	GND-G
8	GND-B	GND-B	GND-B
9	DDC Power Input (+5V)	DDC Power Input (+5V)	DDC Power Input (+5V)
10	Self Raster	Self Raster	Self Raster
11	GND	GND	GND
12	Bi-Dr Data (SDA)	Bi-Dr Data (SDA)	Bi-Dr Data (SDA)
13	H-Sync.	H/V-Sync.	Not Used
14	V-Sync.	Not Used	Not Used
15	DDC Clock (SCL)	DDC Clock (SCL)	DDC Clock (SCL)

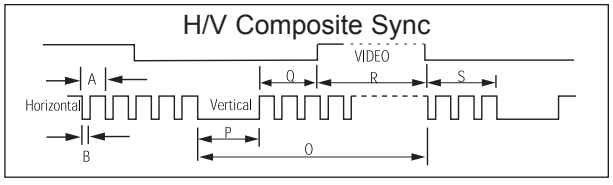
2-3 Timing Chart

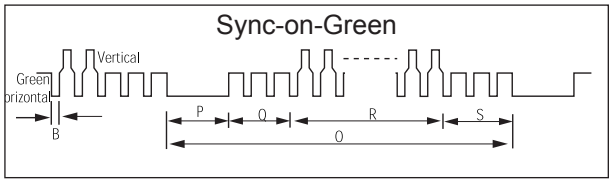
This section of the service manual describes the timing that the computer industry recognizes as standard for computer-generated video signals.

Table 2-1 Timing Chart

Mode / Timing	IBM		VESA					VESA	
	VGA2/ 70 Hz 720 x 400	VGA3/ 60 Hz 640 x 480	640/75 Hz 640 x 480	800/60 Hz 800 x 600	800/75 Hz 800 x 600	1024/60 Hz 1024 x 768	1024/75 Hz 1024 x 768	1280/60 Hz 1280 x 1024	1280/75 Hz 1280 x 1024
fH (kHz)	31.469	31.469	37.500	37.879	46.875	48.363	60.023	63.981	79.975
A µsec	31.777	31.778	26.667	26.400	21.333	20.677	16.660	11.852	12.504
B µsec	3.813	3.813	2.032	3.200	1.616	2.092	1.219	1.037	1.067
C µsec	1.589	1.589	3.810	2.200	3.232	2.462	2.235	2.296	1.837
D µsec	26.058	26.058	20.317	20.000	16.162	15.754	13.003	9.259	9.481
E µsec	0.318	0.318	0.508	0.000	0.323	0.369	0.203	0.000	0.119
fV (Hz)	70.087	59.940	75.000	60.317	75.000	60.004	75.029	60.020	75.025
O msec	14.268	16.683	13.333	16.579	13.333	16.666	13.328	16.005	13.329
P msec	0.064	0.064	0.080	0.106	0.064	0.124	0.050	0.047	0.038
Q msec	0.858	0.794	0.427	0.607	0.448	0.600	0.466	0.594	0.475
R msec	13.155	15.761	12.800	15.840	12.800	15.880	12.795	15.630	12.804
S msec	0.191	0.064	0.027	0.0261	0.021	0.062	0.017	0.016	0.013
Clock Freq. (MHz)	28.322	26.175	31.500	40.000	49.500	75.000	78.750	108.000	135.000
Polarity H.Sync	Negative	Negative	Negative	Positive	Positive	Negative	Positive	Positive	Positive
V.Sync	Positive	Negative	Negative	Positive	Positive	Negative	Positive	Positive	Positive
Remark	Separate	Separate	Separate	Separate	Separate	Separate	Separate	Separate	Separate







A : Line time total	B : Horizontal sync width	O : Frame time total	P : Vertical sync width
C : Back porch	D : Active time	Q : Back porch	R : Active time
E : Front porch		S : Front porch	

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3 Disassembly and Reassembly

This section of the service manual describes the disassembly and reassembly procedures for the GS19ET TFT-LCD monitors.

WARNING: This monitor contains electrostatically sensitive devices. Use caution when handling these components.

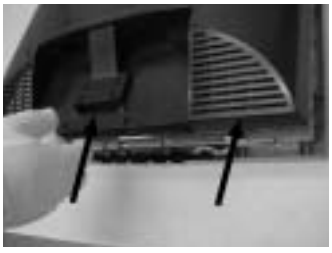
3-1 Disassembly

Cautions: 1. Disconnect the monitor from the power source before disassembly.

2. Follow these directions carefully; never use any metal instrument except provided jig to separate the cabinet.
3. R/Cover opening jig : BH81-00001A


1. Place monitor face down on cushioned table. Remove 4 screws from grip on the stand and remove the stand.


2. Remove 2 screws from the rear cover and insert the opening jig into the grooves at each side and press until it clicks.




3. Lift the rear cover and remove 1 screws from the shield.


4. Lift up the panel shield and remove 4 screws from the panel shield. (Right / Left)


5. Lift up the panel shield and carefully remove the silicon glue on the cables with a Nipper.
⚠ Caution : Lamp wire may be easily damaged. Please use caution when removing the silicon.

6. Remove 7 screws, 2 hexa screws from the boards and lift up the boards.
   ⚠ **Caution : When repairing panel only, disconnect just LVDS cable, Panel-Lamp / Wire marked in circle in the picture without removing the screws on board in order to lift the board up.**

7. This picture is panel.

3-2 Reassembly

Reassembly procedures are in the reverse order of disassembly procedures.

4 Alignments and Adjustments

This section of the service manual explains how to use the RS232 JIG.
This function is needed for AD board change and program memory (IC110) change.

4-1 Required Equipment

The following equipment is necessary for adjusting the monitor:

- Computer with Windows 95, Windows 98, or Windows NT.
- MTI-2031 DDC MANAGER JIG

4-2 Automatic Color Adjustment

To input video, use 16 gray or any pattern using black and white.

1. Select english for OSD language.
2. Press the " ↵(Enter/Auto key)" key for 5 seconds.

4-3 DDC EDID Data Input

1. Input DDC EDID data when replacing AD PCB.
2. Receive/Download the proper DDC file for the model from HQ quality control department.
   Install the below jig (Figure 1) and enter the data.

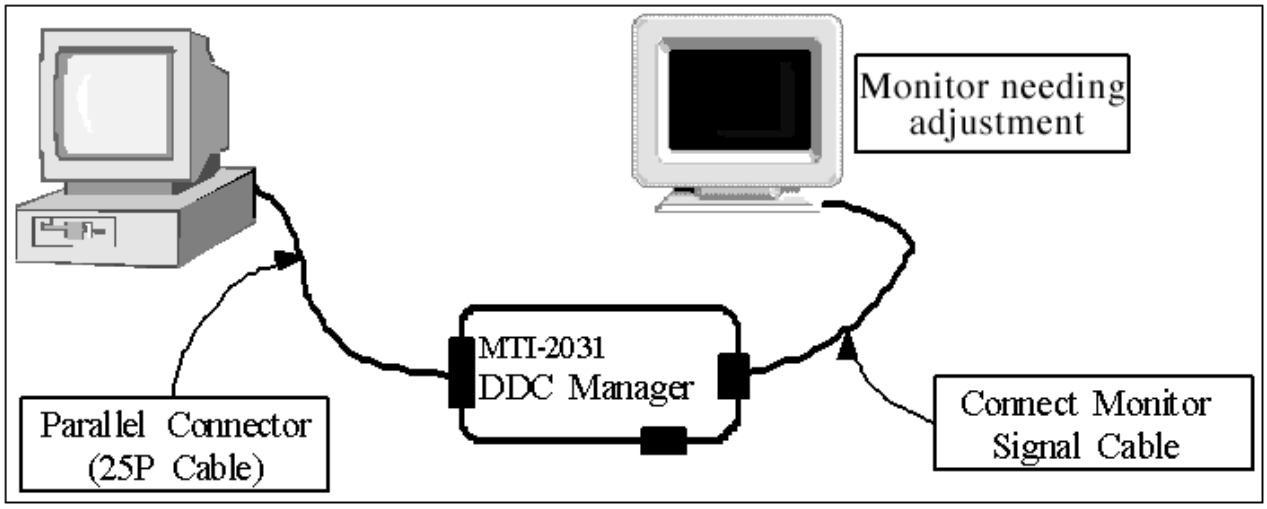


Figure 1.

4-4 OSD Adjustment When Replacing Panel

1. Adjust brightness and contrast to 0. Then, press the (↵ Enter/Auto key) for 5 second.
   Service function OSD will appear on screen.
2. Press the + key to place the cursor on the panel. Press the menu key for 5 seconds.

4-5 OSD Adjustment When Replacing Lamp Only

1. Adjust brightness and contrast to 0. Then, press the (Enter/Auto key) for 5 seconds.
   Service function OSD will appear on the screen.
2. Press the + key. Select upper lamp and press the menu key for 5 seconds.
   Then, select lower lamp and press the menu key for 5 seconds.

• ***Note :*** *Please be sure to read the following instructions for details on service function.*

4-6 Service Function Spec.

4-6-1 How to Display Service Function OSD

1. The value for brightness and contrast should be changed to zero.
2. Within 5 seconds, press the (↵ Enter/Auto) key.
3. Service function OSD will be displayed.

•If you want to disable the service function OSD, you will have to power off.

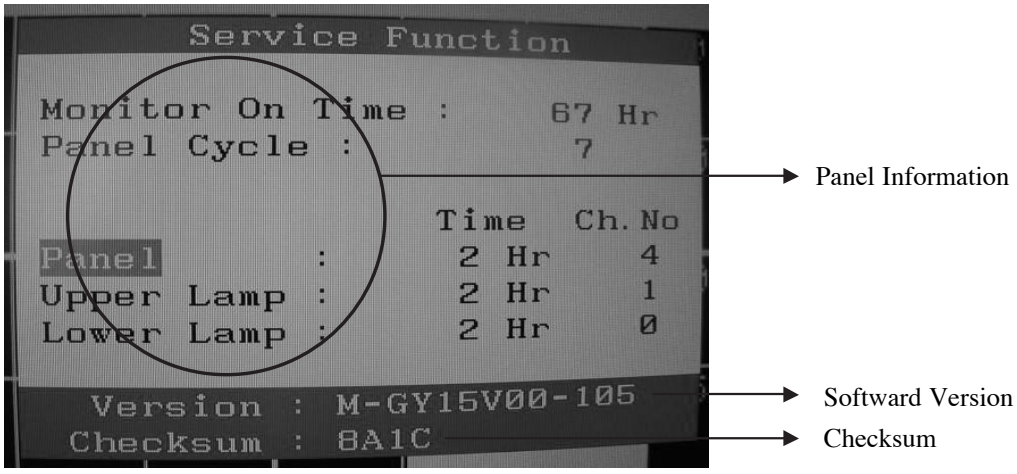


Figure 2. The example of service function OSD

The service function OSD is based on a grid of 29 rows x 12 columns.
The service function OSD consists of panel information, software version and MICOM checksum.

4-6-2 How to Control Service Function OSD

1. With the panel selected on OSD, whenever you press the right key, the base color will change to blue from “Panel” to “Upper Lamp”, “Lower Lamp”.

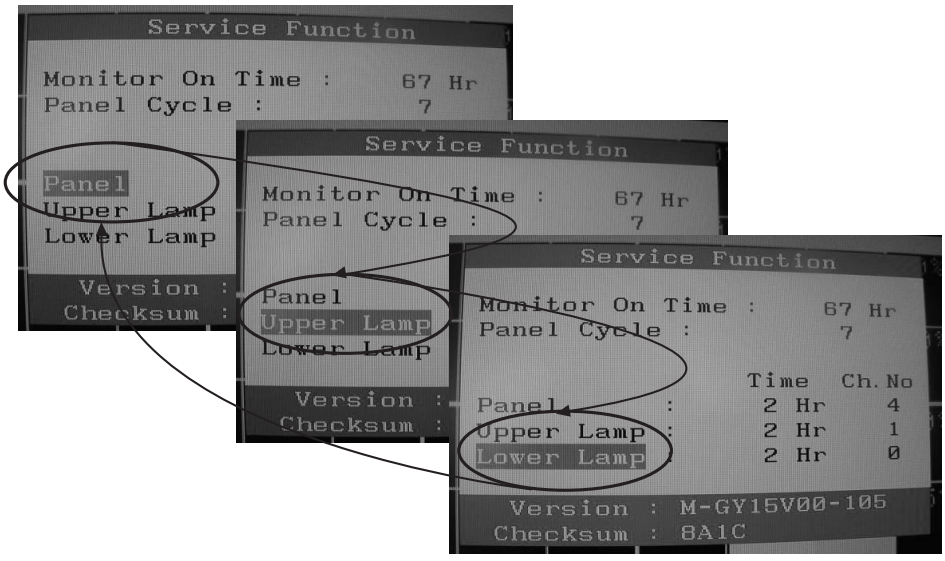


Figure 3.

4-6-3 How to Control Service Function OSD

•After change the panel or lamp, you must reset service function OSD.

•The case of panel change

After changeing the panel, press the menu key within 5 seconds,.
Then, panel Ch. No increases one step and the panel time information is reset to zero.
Simultaneously, other information is reset to zero (Upper/Lower lamp, Panel cycle).

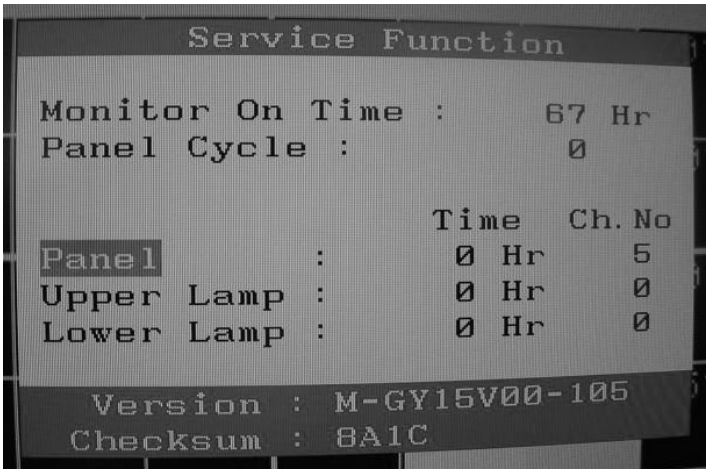


Figure 4.

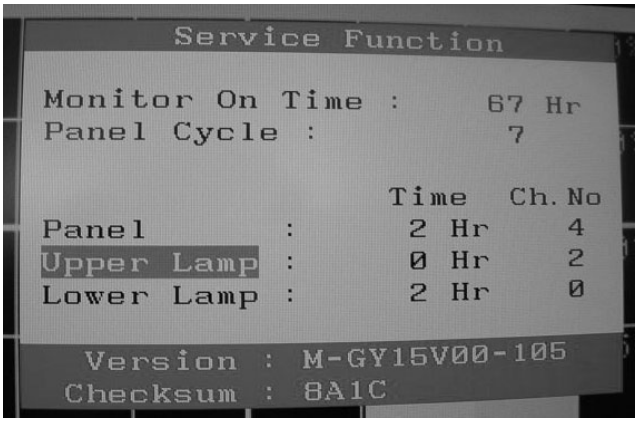
4-6-4 How to Control Service Function OSD

•In the case of Upper Lamp or Lower Lamp change

After changeing the Upper Lamp or Lower Lamp,

1. Select the Upper Lamp or Lower Lamp
2. Press the Menu key within an 5 seconds.

Then, Ch. No and time will be reset to zero (selected item only).



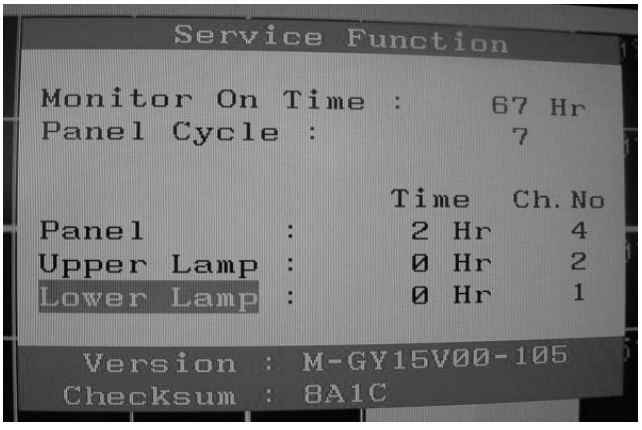


Figure 5, 6.

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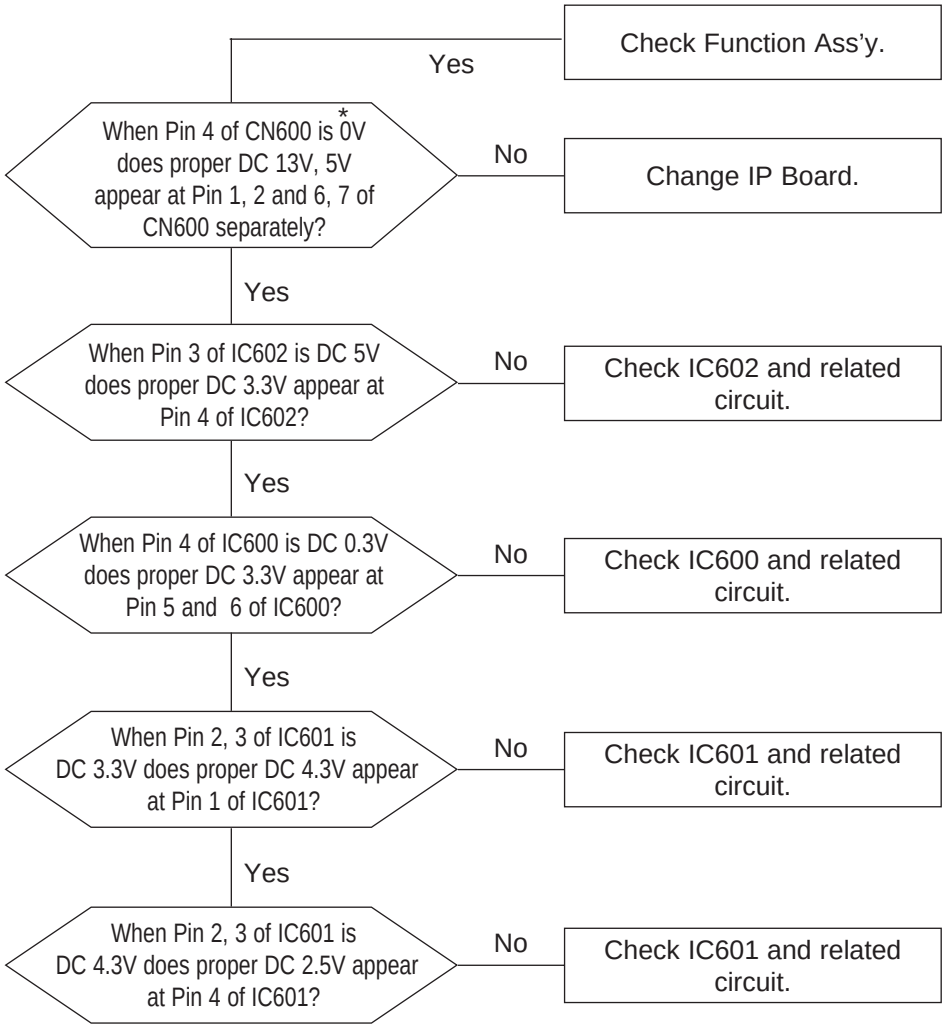
5 Troubleshooting

Notes: 1. Before troubleshooting, setup the PC's display as below.
- Resolution: 1280 x 768
- H-frequency: 61 kHz
- V-frequency: 75 Hz

2. If no picture appears, make sure the power cord is correctly connected.
3. Check the following circuits.
- No raster appears: Function PBA, Main PBA, I/D PBA
- 5V develop but no screen: Main PBA
- 5V does not develop: I/D PBA

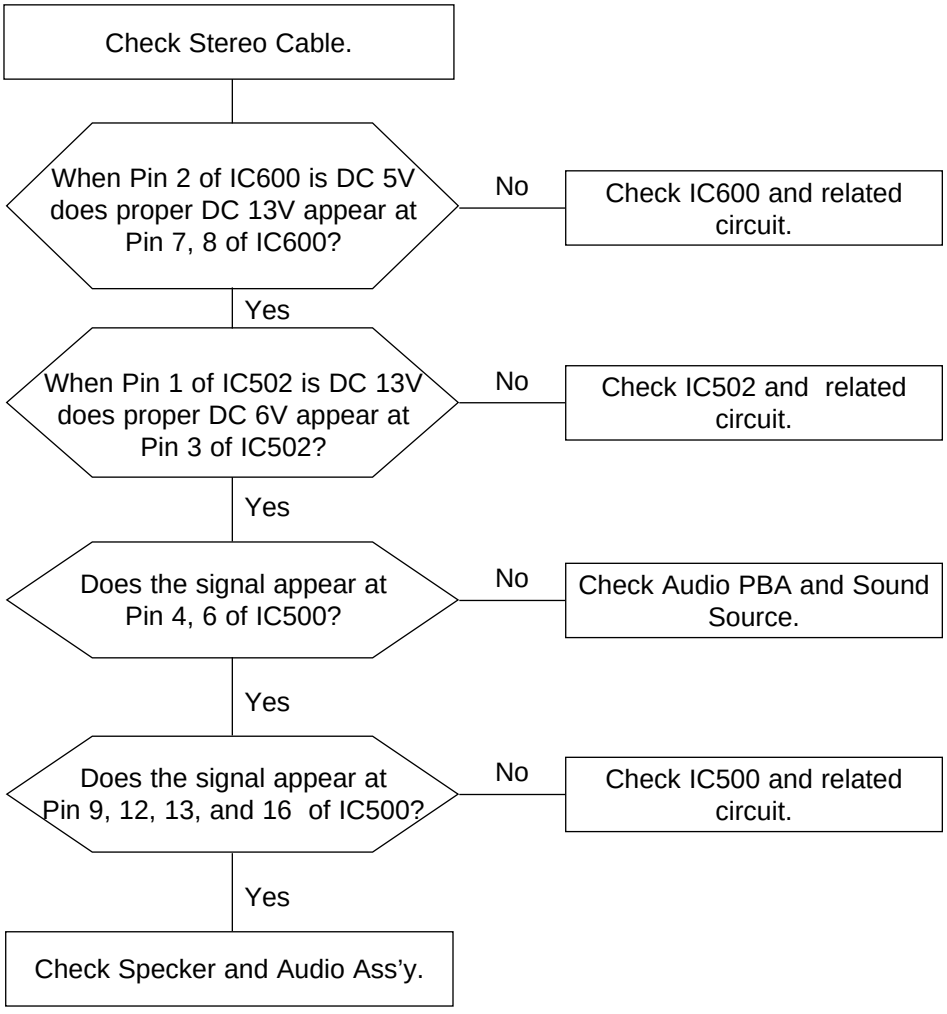
4. If you push and hold the "↵ (Enter/Auto)" button for more than 5 seconds, the monitor automatically returns to the factory preset.

5-1-1 No Power

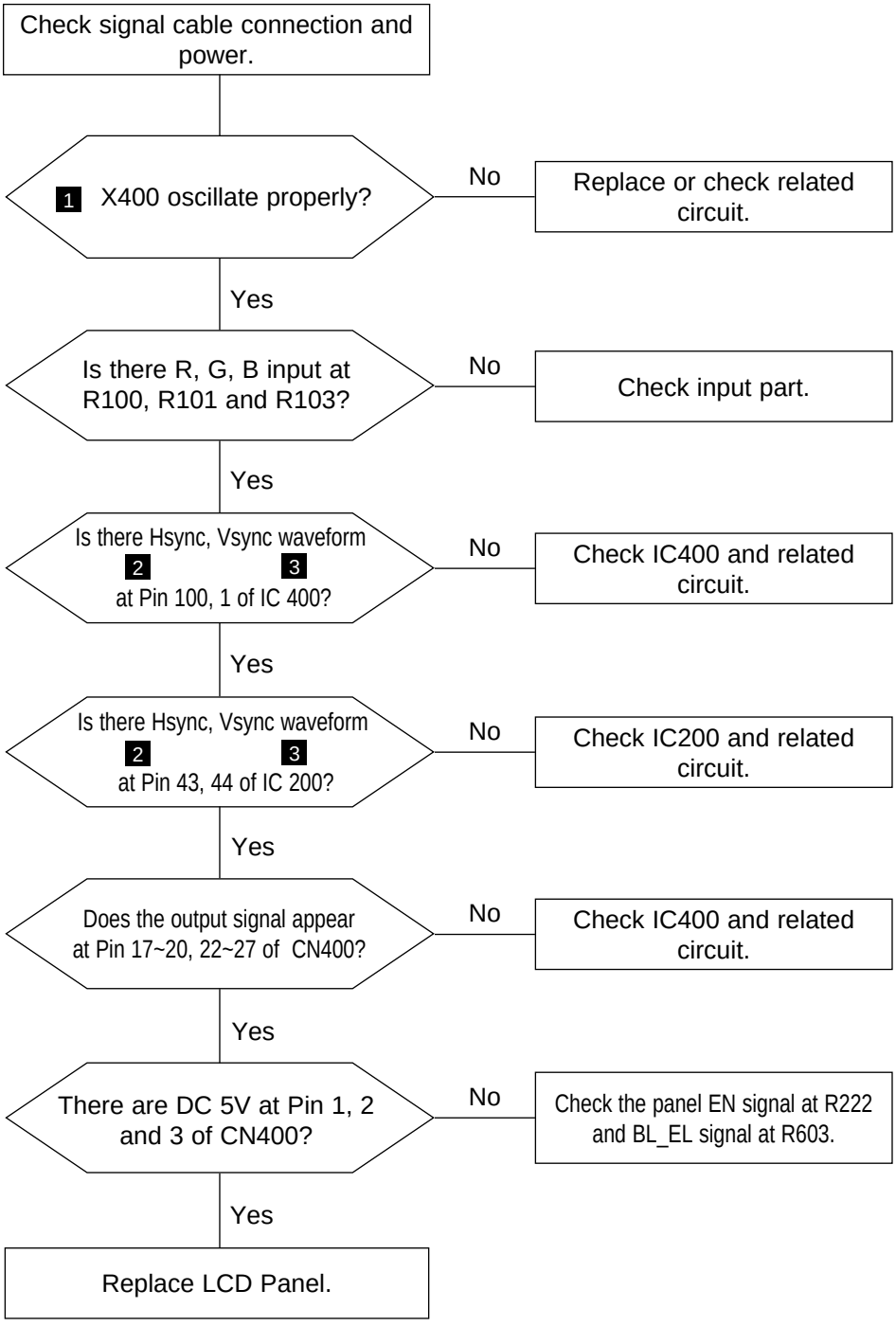


* 0V means power on state.
When the monitor work well except DPMS and power switch off, 0V should be applied to number 4 of CN600.

5-2 No Audio

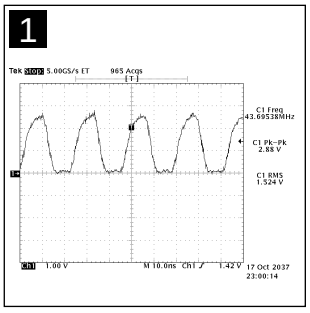

Check Stereo Cable.
When Pin 2 of IC600 is DC 5V does proper DC 13V appear at Pin 7, 8 of IC600?
No
Check IC600 and related circuit.
Yes
When Pin 1 of IC502 is DC 13V does proper DC 6V appear at Pin 3 of IC502?
No
Check IC502 and related circuit.
Yes
Does the signal appear at Pin 4, 6 of IC500?
No
Check Audio PBA and Sound Source.
Yes
Does the signal appear at Pin 9, 12, 13, and 16 of IC500?
No
Check IC500 and related circuit.
Yes
Check Specker and Audio Ass'y.

5-3 No Video



WAVEFORMS

1



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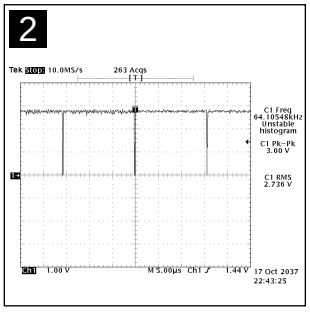
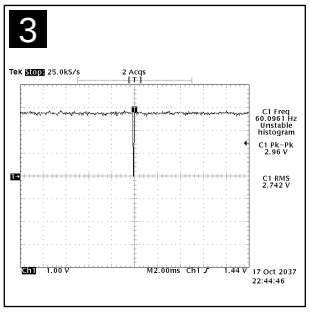


3



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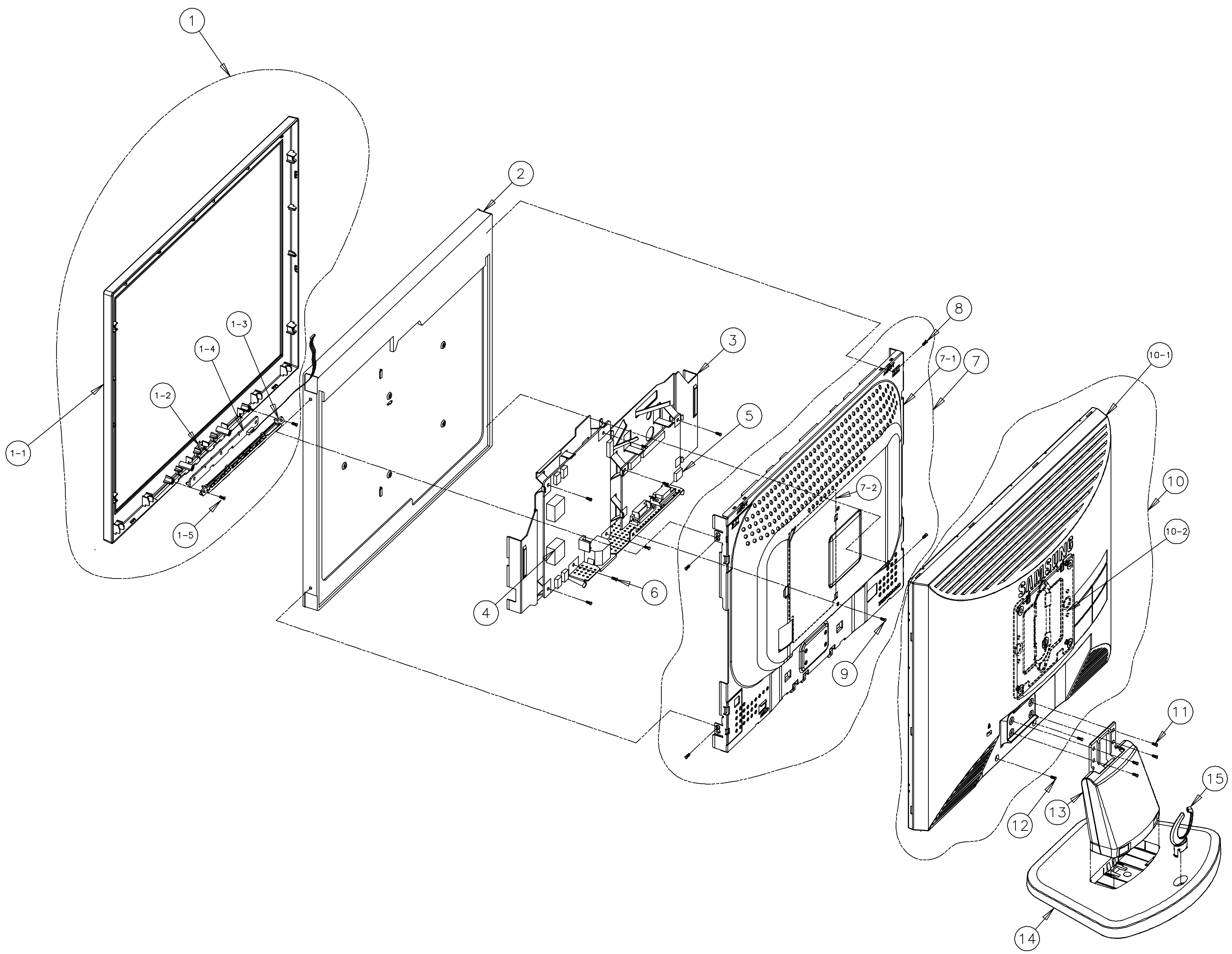
6 Exploded View and Parts List

* You can search for updated part codes through ITSELF web site.
  URL : http://itself. sec. samsung.co.kr



No.	DESCRIPTION	CODE No.	SPECIFICATION	Q'ty	REMARK
1	ASSY,COVER-FRONT	BN96-01072A	ABS HB,GR70,SILVER	1	SA
1-1	COVER-FRONT	BN63-00595H	ABS HB GR70 SILVER	1	SNA
1-2	LENS-LED	BN67-00076A	ACRYL,CLEAR	1	SNA
1-3	KNOB-FUNCTION	BN64-00139B	ABS+PC,GR70 SILVER	1	SNA
1-4	ASS'Y FUNCTION-PCB	BN96-01112A	-	1	SNA
1-5	SCREW TAPTITE	6003-000276	BH,+,B,M3,L10,ZPC(YEL),SWCH10	2	SA
2	PANEL	BN07-00128B	LTM190E1-L02,Goya,16.1M,404.2*330*20,16.2M,63,0.294*0.294,0~50,5V,PVa	1	SA
3	BRKT-PCB	BN61-01103A	SECC T1.0,ANALOG TYPE	1	SNA
4	IP-BOARD	BN44-00106A	-	1	SA
5	MAIN-BOARD	BN94-00516T	-	1	SA
6	SCREW TAPTITE	6003-000117	BH,+,B,M3,L6,ZPC(YEL),SWRC	7	SA
7	ASSY,SHIELD-COVER	BN96-01060B	SECC T1.0	1	SNA
7-1	SHIELD-COVER	BN63-01217A	SECC T1.0	1	SNA
7-2	COVER-INSULATOR	BN63-01313A	PC SHEET V2,T0.35,106*144	1	SNA
8	SCREW-MACHINE	6001-000364	FH,+,M3,L8,ZPC(YEL)	4	SA
9	SCREW-TAPTITE	6003-000117	BH,+,B,M3,L6,ZPC(YEL),SWRC	1	SA
10	ASSY,COVER-REAR	BN96-01073A	ABS HB,BK07	1	SA
10-1	COVER-REAR	BN63-01264A	ABS HB,BK07	1	SNA
10-2	BRKT-VESA	BN61-00377A	GY17LS,SECC,T1.0,100*100	1	SNA
11	SCREW-TAPTITE	6003-000337	BH,+,S,M4,L10,ZPC(BLK),SWRCH18	4	SA
12	SCREW-TAPTITE	6003-001086	BH,+,B,M3,L12,ZPC(BLK),SWRCH18	2	SA
13	ASSY,STAND	BN96-01064A	ABS HB,BK07	1	SA
14	STAND-BASE	BN61-01060A	ABS HB,BK07	1	SNA
15	STAND-HOLDER	BN61-00821A	ABS HB,BK07	1	SNA

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7 Electrical Parts List

-You can search for updated part codes through ITSELF web site.
URL : http://itself.sec.samsung.co.kr/

7-1 Main PCB Parts

Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
0		GS19ESSS/EDC	913V,GS19E,19,LCD-MO,NETHERLANDS	0	SA
..2	M0014	BN94-00689E	ASSY PCB MAIN-NTZ;GS19ES	1	SA
...3	T0245	0202-001366	SOLDER-WIRE FLUX;-,RS60S,D1.2,63Sn/37Pb,	0.01	SNA
...3	CN101	3701-001219	CONNECTOR-DSUB;15P,3R,FEMALE,ANGLE,AUF	1	SA
...3	CN906	3711-004712	CONNECTOR-HEADER;BOX,9P,1R,2mm,STRAIGHT,	1	SA
...3	M0081	6003-000117	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(YEL),SWRC	5	SNA
...3	M0081	6003-000117	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(YEL),SWRC	2	SNA
...3	T0174	BN97-00512U	ASSY SMD;GS19ET/ES	1	SNA
....4	CIS5	0202-001375	SOLDER-CREAM;RMA-20-21L,S63,-,Sn63/Pb36.	0.31	SNA
....4	D101	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
....4	D103	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
....4	D105	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
....4	D600	0402-001614	DIODE-RECTIFIER;S1G,400V,1.0A,DO-214AC,T	1	SA
....4	D100	0403-001411	DIODE-ZENER;-,5.49-5.73V,200MW,SOD-323,T	1	SA
....4	ZD100	0403-001411	DIODE-ZENER;-,5.49-5.73V,200MW,SOD-323,T	1	SA
....4	ZD101	0403-001411	DIODE-ZENER;-,5.49-5.73V,200MW,SOD-323,T	1	SA
....4	ZD102	0403-001411	DIODE-ZENER;-,5.49-5.73V,200MW,SOD-323,T	1	SA
....4	ZD103	0403-001411	DIODE-ZENER;-,5.49-5.73V,200MW,SOD-323,T	1	SA
....4	ZD104	0403-001411	DIODE-ZENER;-,5.49-5.73V,200MW,SOD-323,T	1	SA
....4	ZD200	0403-001411	DIODE-ZENER;-,5.49-5.73V,200MW,SOD-323,T	1	SA
....4	IC106	0406-001061	DIODE-TVS;MMQA5V6T3,5.32/5.6/5.88V,24W,S	1	SA
....4	Q601	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	SA
....4	Q409	0505-001772	FET-SILICON;FDS9933A,P,-20V,-3.8A,0.075O	1	SA
....4	IC109	1003-001674	IC-LCD CONTROLLER;SE7889,PQFP,100P,23.45	1	SA
....4	IC112	1103-001023	IC-EEPROM;24C08,1Kx8,SOP,8P,5x4mm,2.5/5.	1	SA
....4	IC062	1203-003209	IC-MULTI REG.;APL5522,SOP,8P,4.9x3.9mm,P	1	SA
....4	R200	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
....4	R227	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
....4	R502	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
....4	R503	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
....4	R223	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R224	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R225	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R226	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R228	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R229	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R230	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R231	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R232	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R234	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R235	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R236	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R237	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R239	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R240	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R242	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R247	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
....4	R221	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	1	SA
....4	R243	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	1	SA
....4	R124	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA
....4	R241	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA
....4	R402	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA
....4	R233	2007-000083	R-CHIP;3Kohm,5%,1/10W,TP,1608	1	SA
....4	R122	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R204	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R205	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R206	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R207	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA

Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
....4	R208	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R209	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R210	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R211	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R212	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R216	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R217	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R219	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R238	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R603	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R123	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R202	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R203	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R214	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R222	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R244	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R400	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R401	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R600	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R604	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
....4	R602	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA
....4	R134	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
....4	R135	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
....4	R136	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
....4	R137	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
....4	R138	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
....4	R139	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
....4	R106	2007-000821	R-CHIP;390ohm,1%,1/10W,TP,1608	1	SA
....4	R403	2007-000821	R-CHIP;390ohm,1%,1/10W,TP,1608	1	SA
....4	R107	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA
....4	R108	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA
....4	R109	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA
....4	R118	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA
....4	R120	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA
....4	C224	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,TP,1608	1	SA
....4	C116	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA
....4	C106	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
....4	C221	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
....4	C222	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
....4	C417	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
....4	C204	2203-000426	C-CER,CHIP;0.018NF,5%,50V,C0G,TP,1608	1	SA
....4	C416	2203-000426	C-CER,CHIP;0.018NF,5%,50V,C0G,TP,1608	1	SA
....4	C418	2203-000426	C-CER,CHIP;0.018NF,5%,50V,C0G,TP,1608	1	SA
....4	C117	2203-000998	C-CER,CHIP;0.047NF,5%,50V,C0G,TP,1608	1	SA
....4	C100	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C101	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C102	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C103	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C104	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C105	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C110	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C112	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C114	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C200	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C203	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C220	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C400	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C402	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C403	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C404	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C405	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C406	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C407	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C408	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C409	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C410	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C411	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA

Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
....4	C412	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C413	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C414	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C415	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C419	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C420	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C421	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C423	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C424	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C604	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C605	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C608	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C610	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA
....4	C206	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA
....4	C603	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA
....4	C606	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA
....4	C201	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,TP,32	1	SA
....4	C205	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,TP,32	1	SA
....4	C422	2402-000108	C-AL,SMD;10uF,20%,16V,WT,TP,4.3x4.3x5.4	1	SA
....4	C401	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.4	1	SA
....4	C607	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.4	1	SA
....4	C609	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.4	1	SA
....4	C611	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.4	1	SA
....4	C612	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.4	1	SA
....4	T0052	2703-001334	INDUCTOR-SMD;1.5uH,10%,2012	1	SA
....4	T0052	2703-001334	INDUCTOR-SMD;1.5uH,10%,2012	1	SA
....4	T0052	2703-001334	INDUCTOR-SMD;1.5uH,10%,2012	1	SA
....4	X400	2801-003773	CRYSTAL-SMD;12MHZ,30PPM,28-AAN,20PF,50OH	1	SA
....4	T0568	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,4	1	SNA
....4	T0568	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,4	1	SNA
....4	T0568	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,4	1	SNA
....4	T0568	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,4	1	SNA
....4	T0568	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,4	1	SNA
....4	T0568	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,4	1	SNA
....4	T0568	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,4	1	SNA
....4	T0568	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,4	1	SNA
....4	T0568	3301-001145	BEAD-SMD;60OHM,4516,6000,TP,70OHM/45MHZ,	1	SNA
....4	CN906	3711-005470	CONNECTOR-HEADER;BOX,30P,1R,1.25mm,SMD-A	1	SA
....4	CN906	3711-005543	CONNECTOR-HEADER;BOX,6P,1R,1.25mm,SMD-A,	1	SA
....4	T0077	BN41-00412E	PCB MAIN;MATISSE/GOYA2,STH,2L,MP1.4,1.6T	1	SNA
....4	M0018	BN97-00489W	ASSY MICOM;GS19ES/ET,W/W,KOR	1	SA
.....5	IC520	0903-001347	IC-MICROCONTROLLER;NT68F63GL,8Bit,PLCC,4	1	SNA

7-2 Others

Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
1	M0216	BN90-00486H	ASSY STAND;MJ19BS/AS	1	SNA
..2	M0216	BN96-01064A	ASSY STAND P-SIMPLE;MJ19AS/BS,ABS HB,BK0	1	SA
...3	M0081	6003-000269	SCREW-TAPTITE;BH,+,S,M3,L6,ZPC(YEL),SWRC	4	SNA
...3	M0081	6003-001086	SCREW-TAPTITE;BH,+,B,M3,L12,ZPC(BLK),SWR	6	SNA
...3	T0063	BN61-01061A	STAND-FRONT;GS19VS,ABS HB,BK07	1	SNA
...3	T0081	BN61-01062A	STAND-REAR;GS19VS,ABS HB,BK07	1	SNA
...3	STD	BN61-01067A	STAND-BRKT HINGE;GS19VS,SECC,T1.6,NAT	1	SNA
...3	M0122	BN96-01062A	ASSY MISC P-HINGE;MJ19AS/BS,ZNDC2	1	SNA
1	M0002	BN90-00630T	ASSY COVER REAR;GS19VS,EDC	1	SNA
..2	M0081	6003-000337	SCREW-TAPTITE;BH,+,S,M4,L10,ZPC(BLK),SWR	4	SA
..2	M0013	BN96-01073A	ASSY COVER P-REAR;GS19VS,ABS HB,BK07	1	SA
...3	M0113	BN61-00377A	BRACKET-VESA;GOYA19"(193V),SECC,T1.0	1	SNA
...3	M0006	BN63-01264A	COVER-REAR;GS19VS,ABS HB,BK07	1	SNA
1	M0001	BN90-00733A	ASSY COVER FRONT;GS19ESSS/EDC	1	SNA
..2	M0081	6003-001086	SCREW-TAPTITE;BH,+,B,M3,L12,ZPC(BLK),SWR	2	SNA
..2	T0003	BN96-01072N	ASSY COVER P-FRONT;GS19ES(S/M 913V),ABS	1	SA
...3	M0081	6003-000276	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(YEL),SWC	2	SNA
...3	M0112	BN63-00595H	COVER-FRONT;GY19VS,ABS HB GR70,SILVER	1	SNA
...3	M0106	BN64-00139B	KNOB POWER-FUNCTION;GY15VS,ABS+ PC 5V,BK	1	SA
...3	M0105	BN67-00076A	LENS-LED;SYNCMASTER193V,ACRYL,CLEAR	1	SA
...3	M0145	BN96-01112A	ASSY BOARD P-FUNCTION;GOYA2_SYNC,FUNCTIO	1	SA
....4	OP1	0601-001313	LED;SMD,GRN,2X1.8MM,565NM,3.16X1.6X1.1MM	1	SA
....4	R5	2007-000081	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	1	SA
....4	R1	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	1	SA
....4	R2	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	1	SA
....4	R3	2007-000123	R-CHIP;1.5Kohm,5%,1/10W,TP,1608	1	SA
....4	R4	2007-000123	R-CHIP;1.5Kohm,5%,1/10W,TP,1608	1	SA
....4	SW1	3404-001209	SWITCH-TACT;12VDC,50MA,250GF,4.5X4.5X1.5	1	SA
....4	SW2	3404-001209	SWITCH-TACT;12VDC,50MA,250GF,4.5X4.5X1.5	1	SA
....4	SW3	3404-001209	SWITCH-TACT;12VDC,50MA,250GF,4.5X4.5X1.5	1	SA
....4	SW4	3404-001209	SWITCH-TACT;12VDC,50MA,250GF,4.5X4.5X1.5	1	SA
....4	SW5	3404-001209	SWITCH-TACT;12VDC,50MA,250GF,4.5X4.5X1.5	1	SA
....4	CN906	3711-004934	CONNECTOR-HEADER;BOX,5P,1R,1.25MM,SMD-A,	1	SA
....4	M0119	BN41-00436A	PCB CONTROL;GOYA2_SYNC,SILVER THROGH,2,1	1	SNA
1	M0112	BN91-00837Z	ASSY SHIELD;GS19ESSS/EDC	1	SNA
..2	CCM1	6001-000364	SCREW-MACHINE;FH,+,M3,L8,ZPC(YEL),SWRCH1	4	SNA
..2	M0081	6003-000117	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(YEL),SWRC	1	SNA
..2	M0114	BN39-00244A	CBF SIGNAL;BU15AO(T541A),15P/15P,20276-N	1	SA
..2	M2893	BN39-00513A	LEAD CONNECTOR;MJ17AS(BS),UL1571#30,UL/C	1	SA
..2	M2893	BN39-00523A	LEAD CONNECTOR;GS(MJ)15/17/19*,UL1061#28	1	SA
..2	T0081	BN61-01234A	HOLDER-INVERTER;MATISSE,ABS V0,BK07	2	SNA
..2	T0376	BN96-01060E	ASSY MISC P-SHIELD COVER;GS19ES/ET,SECC	1	SNA
...3	M0107	BN63-01217D	SHIELD-COVER;GS19ES/ET,SECC,T1.0	1	SNA
...3	M0412	BN63-01313A	COVER-INSULATOR;MJ17,19AS/BS,PET,T0.35	1	SNA
1		BN91-00841M	ASSY LCD-NTZ;GS19ESSS/EDC	1	SNA
..2	M0215	BN07-00210A	LCD-PANEL;HSD190ME12,Goya,6bit FRC,404.2	1	SA
1	M0017	BN91-00858K	ASSY CHASSIS-NTZ;GS19ESSS/EDC	1	SA
..2	M0174	BN44-00113A	IP BOARD;MATISSE,1.5mA~3.0mA,6.1mA~7.3mA	1	SA
..2	M0107	BN61-01103D	BRACKET-PCB;GS19ES/ET,SECC,T1.0	1	SNA
1	M0019	BN92-00329Y	ASSY LABEL;MJ/GS,W/W	1	SNA
1	M0113	BN92-00982D	ASSY P/MATERIAL;GS19VS,EDC	1	SNA
..2	T0376	6902-000379	BAG AIR;LDPE,T0.2,W1000,L1800,TRP,-,--	0.034	SNA
..2	M0081	6902-000609	BAG ROLL;LDPE,T0.05,W2400,L1000,TRP,-,-	0.1	SNA
..2	P/M	6902-000604	BAG WRAPPING;LDPE,T0.02,W500,L10000,TRP,	3	SNA
..2	T0524	6902-000520	BAG PE;HDPE/NITRON(DOUBLE),T0.015/T0.5(D	1	SNA

Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
1	M0003	BN92-01338W	ASSY BOX;GS19ESSS/EDC	1	SNA
..2	M0120	BH75-10529A	UNIT-HANDLE PACKING;LXA410TLMU,PE,-,WHIT	1	SNA
...3	M0103	BN72-60001A	LEVER-TOP;LSD210TL,PE-LD,WHITE,TFT_LCD	1	SNA
...3	M0102	BN72-60002A	LEVER-BOTTOM;LSD210TL,PE-LD,WHITE,TFT-LC	1	SNA
..2	BOX	BN69-01051A	BOX-00;S/M913V(GS19ES),CB-SW4,YEL,A-1,W5	1.02	SNA
1	M0045	BN92-01371E	ASSY ACCESSORY;GS19ESSS/EDC	1	SNA
..2	M0013	BN96-01109A	ASSY STAND P-BASE;MJ19AS/BS,ABS HB,BK07	1	SA
...3	M0081	6003-000283	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL),SWRC	4	SNA
...3	HC+CW	6009-001442	SCREW-SPECIAL;CH,-,-,M4,L10(5),ZPC(YEL),	1	SA
...3	T0524	6902-000110	BAG PE;LDPE,T0.05,L356,W240,TRP,28,2,PE	1	SNA
...3	STAND/BASE	6902-000336	BAG ZIPPER;LDPE,T0.05,L80,W70,TRP,,,PE M	1	SNA
...3	M0142	BN61-00048A	FOOT-RUBBER;GH15LS,PORON,DIA 13.5MM,BLAC	4	SNA
...3	M0126	BN61-00821A	STAND-HOLDER;GS17VS,ABS HB,BK07	1	SNA
...3	M0412	BN61-01060A	STAND-BASE;GS19VS,ABS HB,BK07	1	SNA
...3	STAND/BASE	BN61-01235A	SUPPORT-BRKT BASE;MJ19AS/BS,SECC,T1.6	1	SNA
...3	CIS3	BN68-00473P	MANUAL INSTALL;Goya2 Stand Guide,SyncMas	1	SNA
..2	M0045	BN96-02001S	ASSY ACCESSORY;BI19BSSBV/EDC	1	SA
...3	T0268	3903-000042	CBF-POWER CORD;DT,EU,FP3/YES,IEC320 C13/	1	SA
...3	T0524	6902-000110	BAG PE;LDPE,T0.05,L356,W240,TRP,28,2,PE	1	SNA
...3	ACCESSORY	BH68-70438A	CARD-11,BLOC WARRANTY;TFT LCD,BASIC,EU,M	1	SNA
...3	ACCESSORY	BH68-70448A	CARD-01;TFT LCD,SRC,RUSSIA,S/W,120,W210*	1	SNA
...3	M0215	BN96-01165L	ASSY MANUAL P-IB+QSG;GS19ES, 913V,SyncMa	1	SNA
....4	QUICK SETU	BH68-00376L	MANUAL-04;LCDQUICK SETUP GUIDE,SYNCMASTE	1	SNA
....4	IB	BN59-00423L	S/W DRIVER-01,IB;GS19ES 913V,W/W,SYNCMAS	1	SNA
....4	MAGICTUNE	BN68-00847B	MANUAL-02,QSG;MagicTune paper,SyncMaster	1	SNA
...3	T0059	BN68-00907A	MANUAL-CARD;WEEE,SAMSUNG,18 Lang,Europe,	1	SNA

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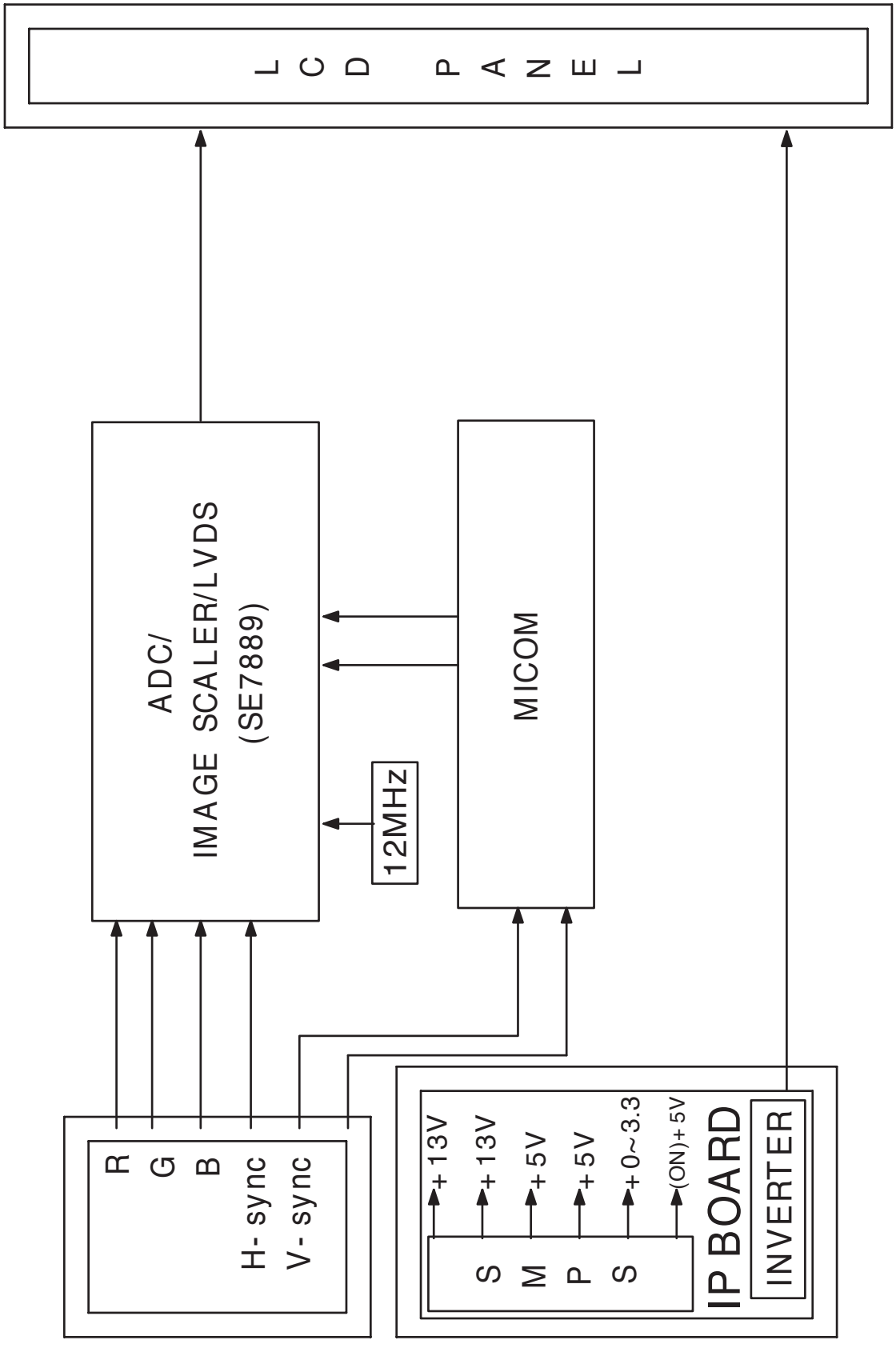
8 Block Diagram

8-1 ANALOG Blcok Diagram



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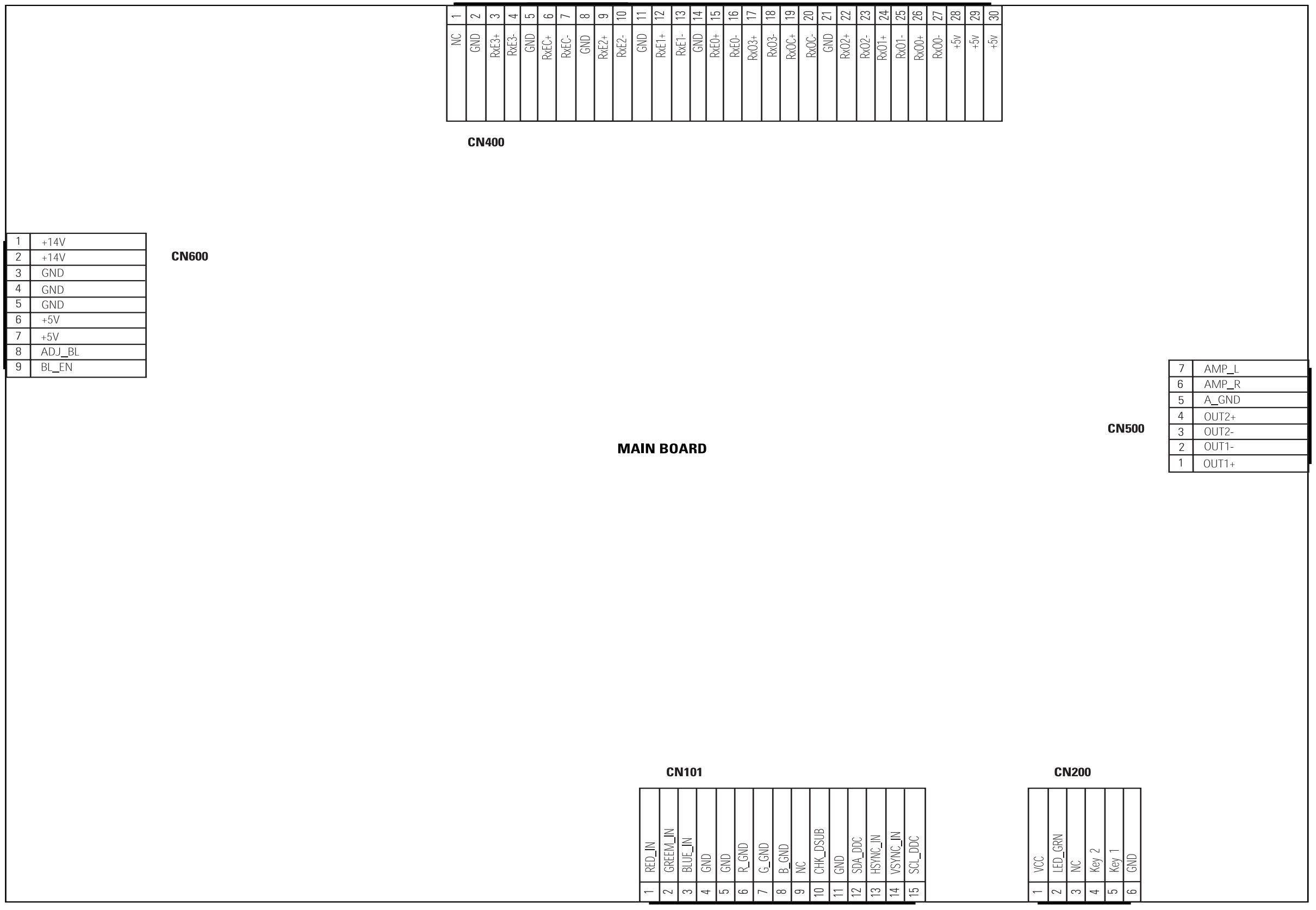
9 Wiring Diagram



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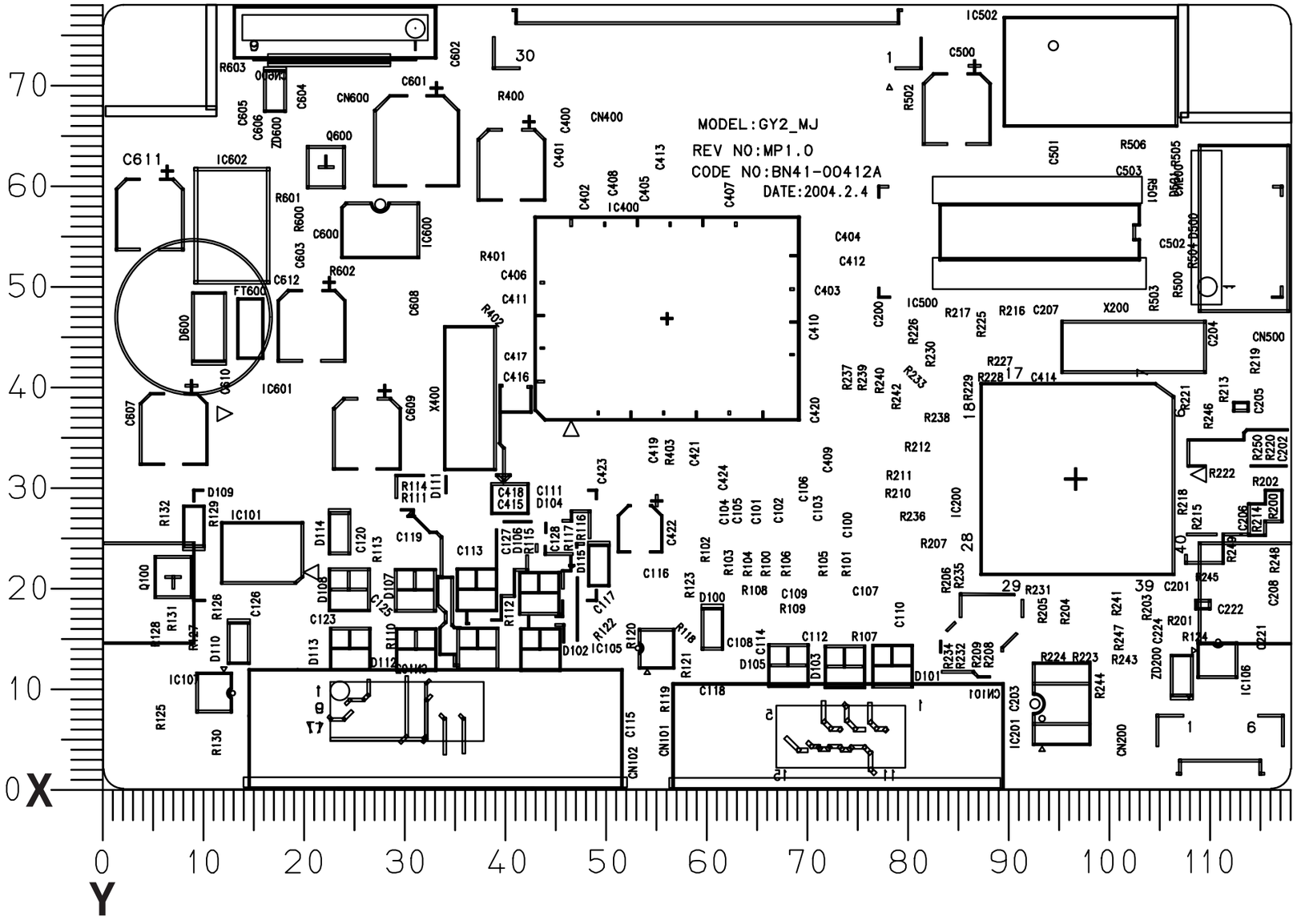
10 PCB Layout

10-1 ANALOG PCB



Loc. No.	Description	X	Y
DIODE			
D100	DIODE-ZENER	60.5	16.0
D101	DIODE-SWITCHING	78.3	12.3
D103	DIODE-SWITCHING	73.6	12.2
D105	DIODE-SWITCHING	68.0	12.4
D600	DIODE-RECTIFIER	10.5	46.1
ZD200	DIODE-ZENER	107.1	11.3
ZD600	DIODE-ZENER	17.1	69.6
IC			
IC105	DIODE-TVS	55.0	14.0
IC106	DIODE-TVS	110.7	12.9
IC200	IC-MICROCONTROLLER	96.6	30.9
IC201	IC-EEPROM	95.2	8.5
IC400	IC-LCD CONTROLLER	56.0	46.9
IC600	FET-SILICON	27.5	55.8
IC601	IC-DUAL VOLTAGE REGULATOR	17.4	35.5

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11 Schematic Diagrams

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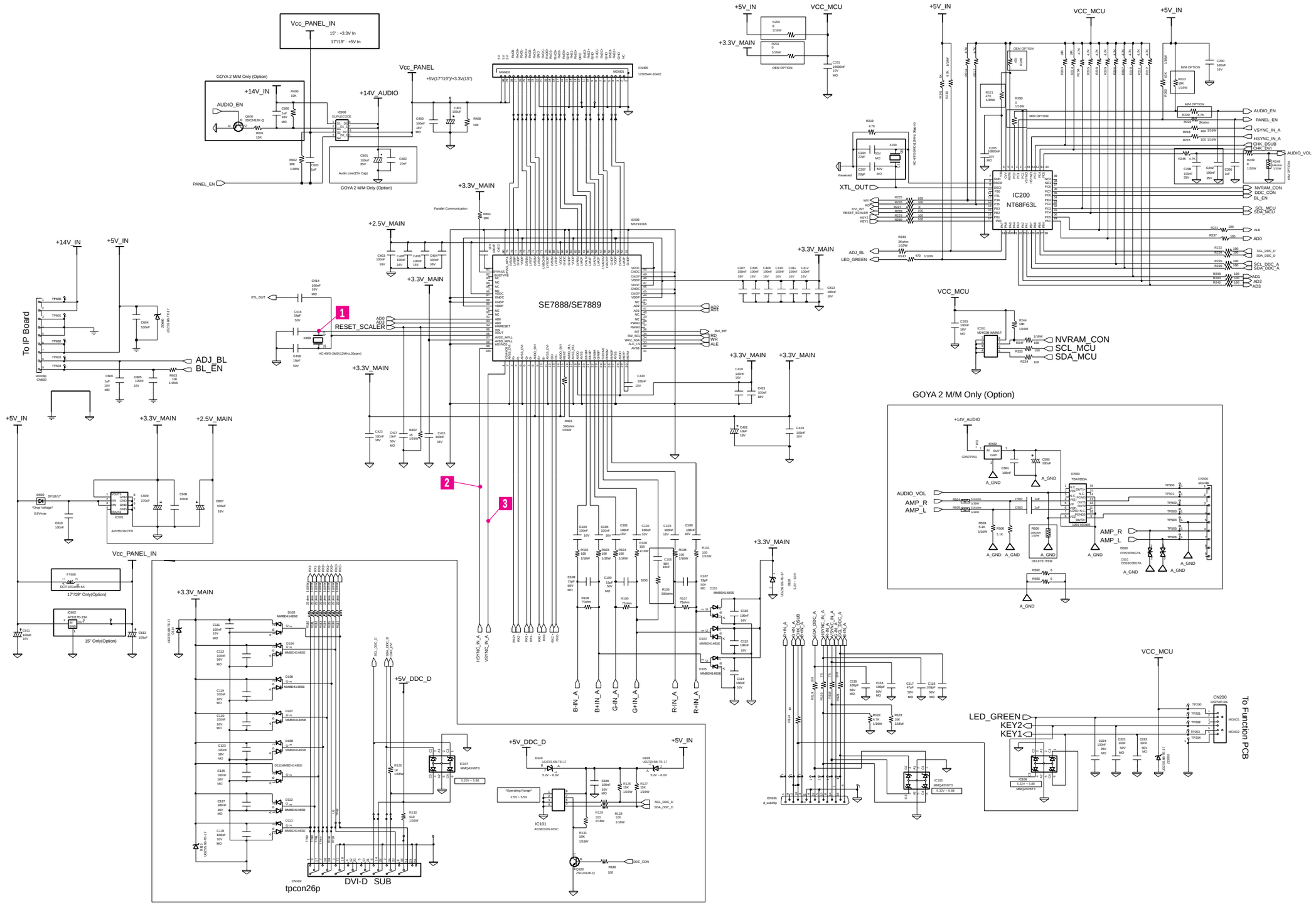
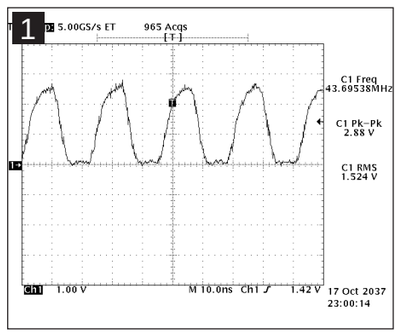
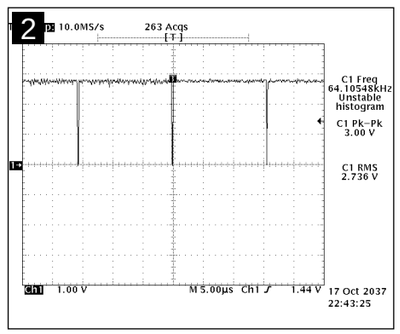
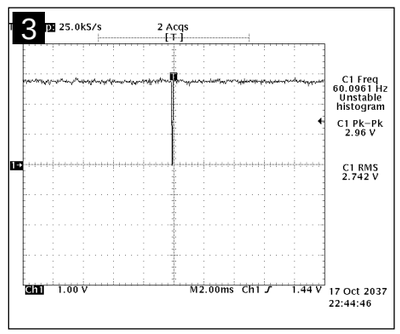


11 Schematic Diagrams







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