

PHILIPS

39" LCD TV chassis PL12.7

Service Manual


Contents

39PFL1507/F8 PHILIPS (Serial No.: XA1)

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IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all P&F Equipment. The service procedures recommended by P&F and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. P&F could not possibly know, evaluate and advice the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, P&F has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by P&F must first use all precautions thoroughly so that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

<p>The LCD panel is manufactured to provide many years of useful life. Occasionally a few non active pixels may appear as a tiny spec of color. This is not to be considered a defect in the LCD screen.</p>

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SPECIFICATIONS

< TUNER / NTSC >

ANT. Input ----- 75 Ω Unbal., F type

Description	Condition	Unit	Nominal	Limit
1. AFT Pull-In Range	---	MHz	± 2.3	± 2.1
2. Synchronizing Sens.	TV.ch.4	dB μ V	18	20
	CA.ch.31	dB μ V	18	20
	CA.ch.87	dB μ V	18	23

< TUNER / ATSC >

Description	Condition	Unit	Nominal	Limit
1. Received Freq. Range (-28dBm)	---	kHz	---	± 100
2. ATSC Dynamic Range (min / max)	ch.4	dBm	---	-76/0
	ch.10	dBm	---	-76/0
	ch.41	dBm	---	-76/+4

< LCD PANEL >

Description	Condition	Unit	Nominal	Limit
1. Native Pixel Resolution	Horizontal	pixels	1920	---
	Vertical	pixels	1080	---
2. Brightness (w / filter)	---	cd/m ²	350	---
3. Viewing Angle	Horizontal	°	-88 to 88	---
	Vertical	°	-88 to 88	---

< VIDEO >

Description	Condition	Unit	Nominal	Limit
1. Over Scan	Horizontal	%	5	5 \pm 5
	Vertical	%	5	5 \pm 5
2. Color Temperature	---	°K	9300	---
	x		0.272	$\pm 3\%$
	y		0.278	$\pm 3\%$
	<Measurement condition> Input signal: HDMI1 Raster (40/70IRE) 1080i@60 Measurement point: Screen center Measuring instrument: Made of KONICA MINOLTA Luminance meter CA-310 Aging time: 60min. (Retail MODE / 100IRE Raster HDMI 1080i@60) MODE setting of TV: Shipment setting / Retail MODE Ambient temperature: 25°C \pm 5°C			
3. Resolution (composite video)	Horizontal	line	400	---
	Vertical	line	350	---

< AUDIO >

All items are measured across 8 Ω load at speaker output terminal with L.P.F.

Description	Condition	Unit	Nominal	Limit
1. Audio MAX Output (ATSC 0dBfs)	Lch/Rch	W	10.0/10.0	9.0/9.0
2. Audio Distortion (NTSC)	500mW: Lch/Rch	%	0.5/0.5	2.0/2.0

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, our products are strictly inspected for recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

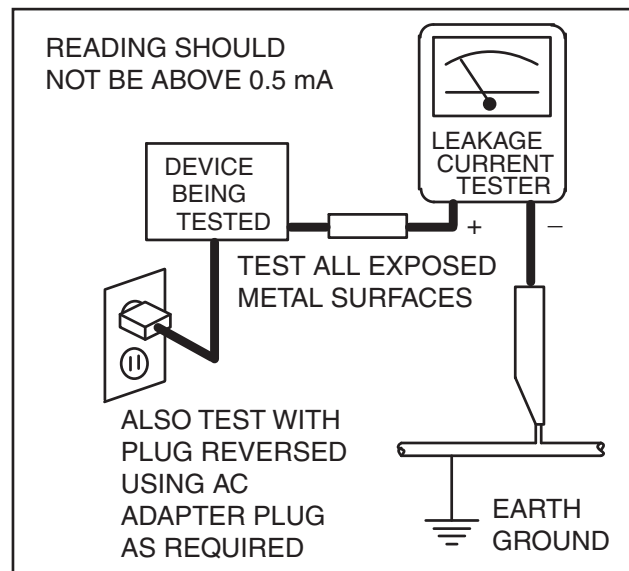
Safety Precautions for LCD TV Circuit

1. **Before returning an instrument to the customer**, always make a safety check of the entire instrument, including, but not limited to, the following items:

- a. Be sure that no built-in protective devices are defective and have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**
- b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) spacing between the Liquid Crystal Panel and the cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.


- c. **Antenna Cold Check** - With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohm or greater than 5.2 megohm, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.

- d. **Leakage Current Hot Check** - With the instrument completely reassembled, plug the AC line cord directly into a 120 V AC outlet. (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) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milli-ampere. Reverse the instrument power cord plug in the outlet and repeat the test.



ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the Liquid Crystal Panel.

3. **Design Alteration Warning** - Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions, including, but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions will void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.
4. **Hot Chassis Warning** -
 - a. Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and maybe safety-serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. To confirm that the AC power plug is inserted correctly, with an AC voltmeter, measure between the chassis and a known earth ground. If a voltage reading in excess of 1.0 V is obtained, remove and reinsert the AC power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground.
 - b. Some TV receiver chassis normally have 85V AC(RMS) between chassis and earth ground regardless of the AC plug polarity. This chassis can be safety-serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection.
 - c. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulation material that must not be defeated or altered.
5. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts-be sure that leads and components do not touch thermally hot parts, c. the AC supply, d. high voltage, and, e. antenna wiring. Always inspect in all areas for pinched, out of place, or frayed wiring. Check AC power cord for damage.
6. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.
7. **Product Safety Notice** - Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a  on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The product's safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are strictly inspected to confirm they comply with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

- A.** Parts identified by the **▲** symbol are critical for safety.
Replace only with part number specified.
- B.** In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.
- C.** Use specified internal wiring. Note especially:
 - 1) Wires covered with PVC tubing
 - 2) Double insulated wires
 - 3) High voltage leads
- D.** Use specified insulating materials for hazardous live parts. Note especially:
 - 1) Insulation Tape
 - 2) PVC tubing
 - 3) Spacers
 - 4) Insulators for transistors.
- E.** When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.
- F.** Observe that the wires do not contact heat producing parts (heat sinks, oxide metal film resistors, fusible resistors, etc.)
- G.** Check that replaced wires do not contact sharp edged or pointed parts.
- H.** When a power cord has been replaced, check that 11~13 lb (5~6 kg) of force in any direction will not loosen it.
- I.** Also check areas surrounding repaired locations.
- J.** Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.
- K.** When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC supply outlet.
- L.** When installing parts or assembling the cabinet parts, be sure to use the proper screws and tighten certainly.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1: Ratings for selected area

AC Line Voltage	Region	Clearance Distance (d), (d')
110 to 130 V	U.S.A. or Canada	≥ 3.2 mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

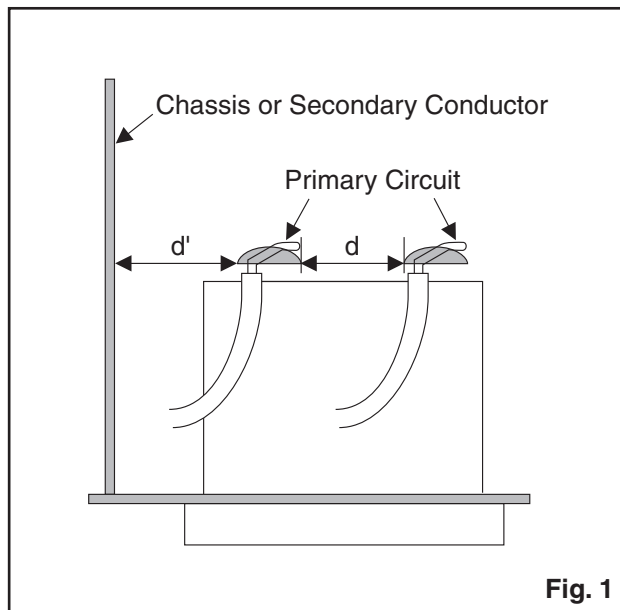


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method: (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See Fig. 2 and following table.

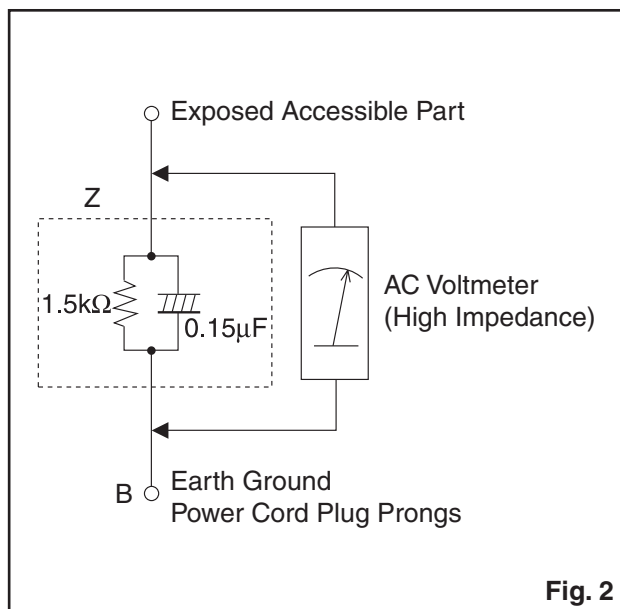


Fig. 2

Table 2: Leakage current ratings for selected areas

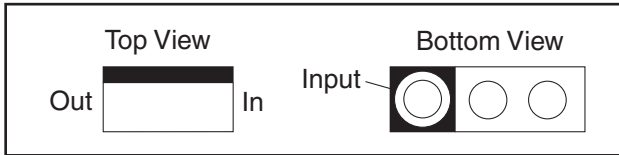
AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	U.S.A. or Canada	0.15 μ F CAP. & 1.5 k Ω RES. Connected in parallel	$i \leq 0.5$ mA rms	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

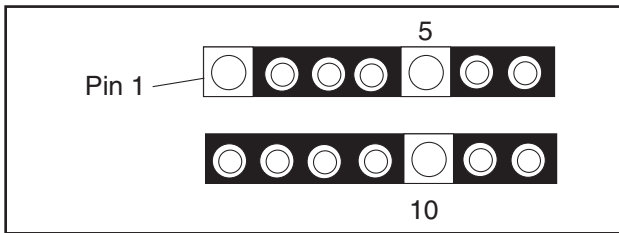
STANDARD NOTES FOR SERVICING

Circuit Board Indications

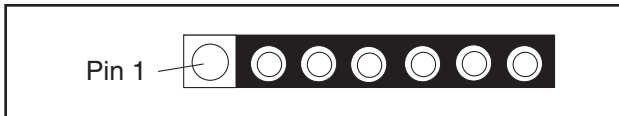
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



2. For other ICs, pin 1 and every fifth pin are indicated as shown.

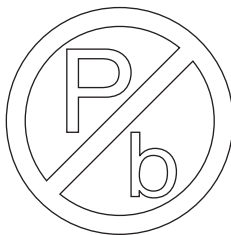


3. The 1st pin of every male connector is indicated as shown.



Pb (Lead) Free Solder

Pb free mark will be found on PCBs which use Pb free solder. (Refer to figure.) For PCBs with Pb free mark, be sure to use Pb free solder. For PCBs without Pb free mark, use standard solder.



Pb free mark

How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

1. Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

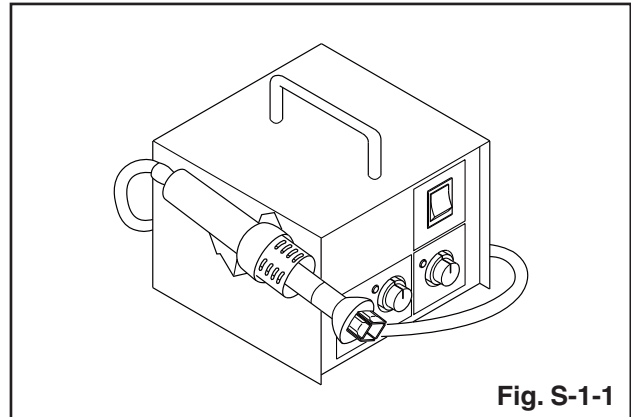


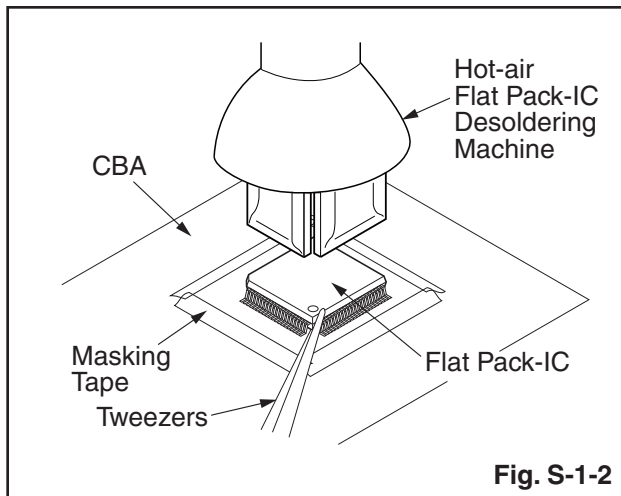
Fig. S-1-1

2. Remove the flat pack-IC with tweezers while applying the hot air.
3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

CAUTION:

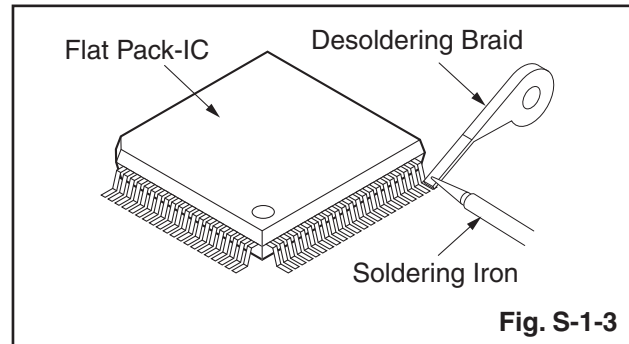
1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)

3. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

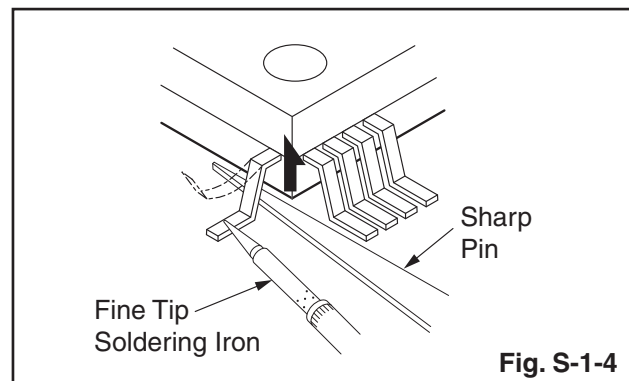


With Soldering Iron:

1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)



2. Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

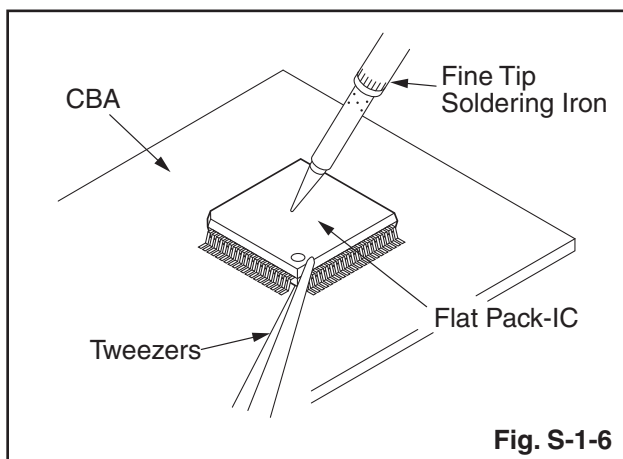
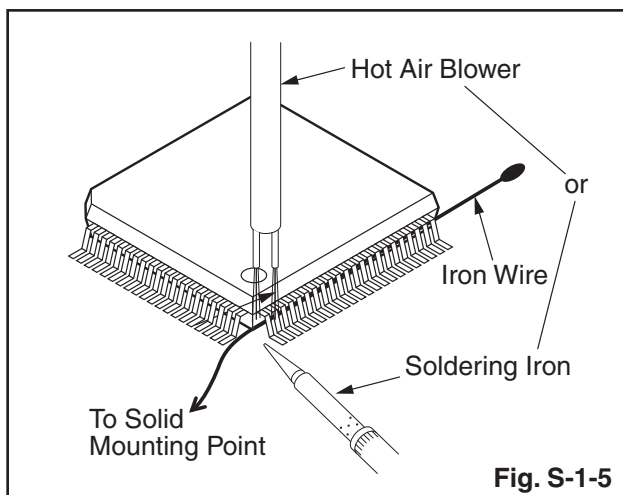


3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

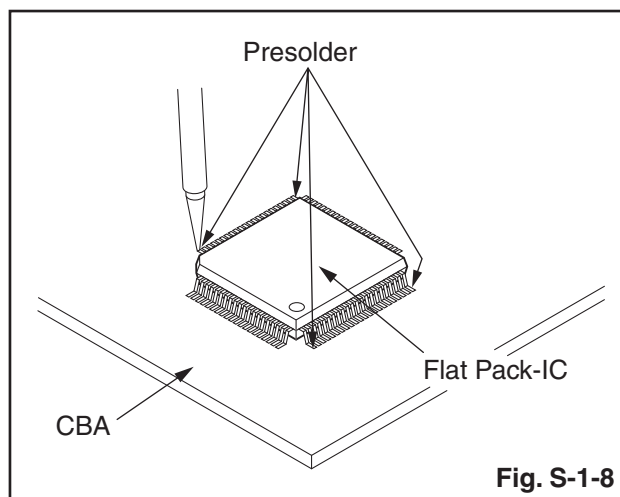
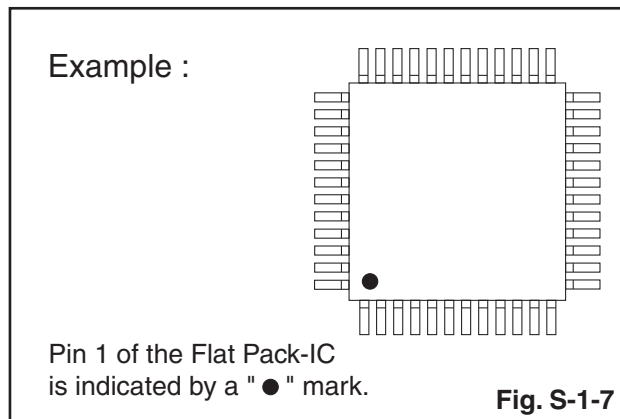
1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
2. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
3. While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.
4. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
5. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note: When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.



2. Installation

1. Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.
2. The "●" mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the pin 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)
3. Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.



Instructions for Handling Semi-conductors

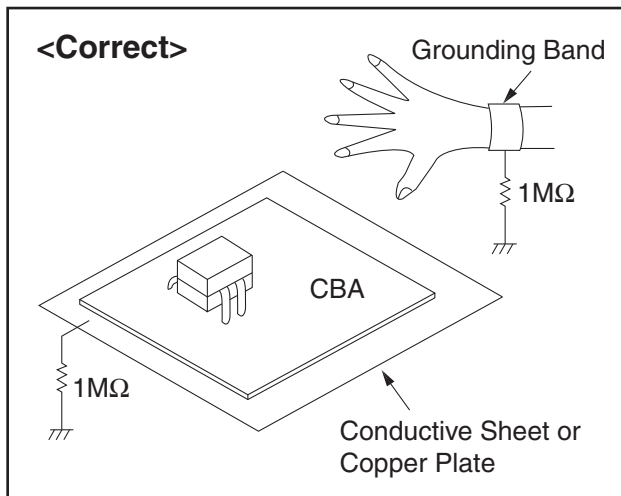
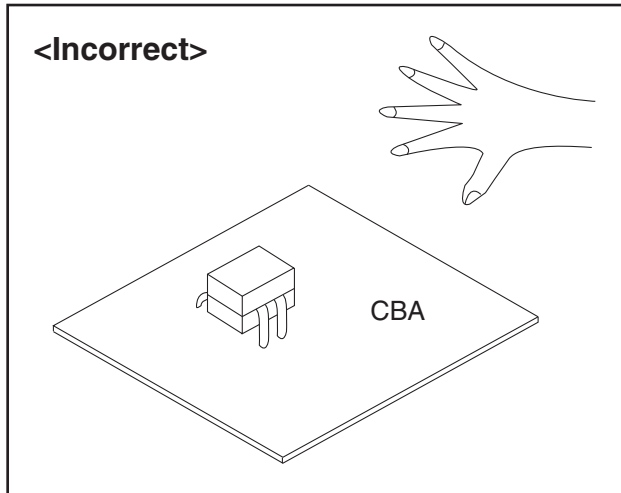
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1. Ground for Human Body

Be sure to wear a grounding band ($1\text{ M}\Omega$) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

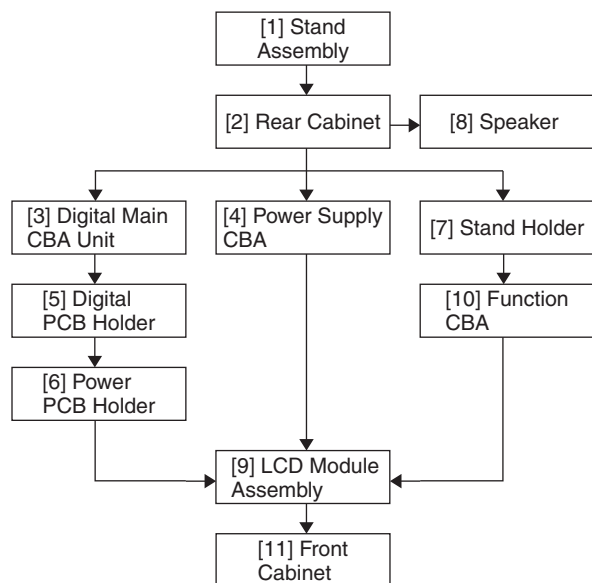
Be sure to place a conductive sheet or copper plate with proper grounding ($1\text{ M}\Omega$) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.



CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps for the cabinet parts and the CBA in order to gain access to items to be serviced. When reassembling, follow the steps in reverse order. Bend, route and dress the cables as they were.



2. Disassembly Method

Step/ Loc. No.	Part	Fig. No.	Removal	Note
[1]	Stand Assembly	D1	3(S-1)	---
[2]	Rear Cabinet	D1	15(S-2), 3(S-3)	---
[3]	Digital Main CBA Unit	D2 D5	4(S-4), CN3013, CN3101, CN3702, CN3801, Jack Holder	---
[4]	Power Supply CBA	D2 D5	6(S-5), CN601, CN1001	---
[5]	Digital PCB Holder	D3	4(S-6)	---
[6]	Power PCB Holder	D3	4(S-7)	---
[7]	Stand Holder	D3	2(S-8)	---
[8]	Speaker	D4	4(S-9), Speaker Holder	---
[9]	LCD Module Assembly	D4	-----	---

Step/ Loc. No.	Part	Fig. No.	Removal	Note
[10]	Function CBA	D4 D5	2(S-10), Sensor Holder, Sensor Lens	---
[11]	Front Cabinet	D4	-----	---
↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)

Note:

- (1) Order of steps in procedure. When reassembling, follow the steps in reverse order. These numbers are also used as the Identification (location) No. of parts in figures.
- (2) Parts to be removed or installed.
- (3) Fig. No. showing procedure of part location
- (4) Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P = Spring, L = Locking Tab, S = Screw,
H = Hex Screw, CN = Connector
e.g. 2(S-2) = two Screws of (S-2),
2(L-2) = two Locking Tabs of (L-2)
- (5) Refer to the following "Reference Notes in the Table."

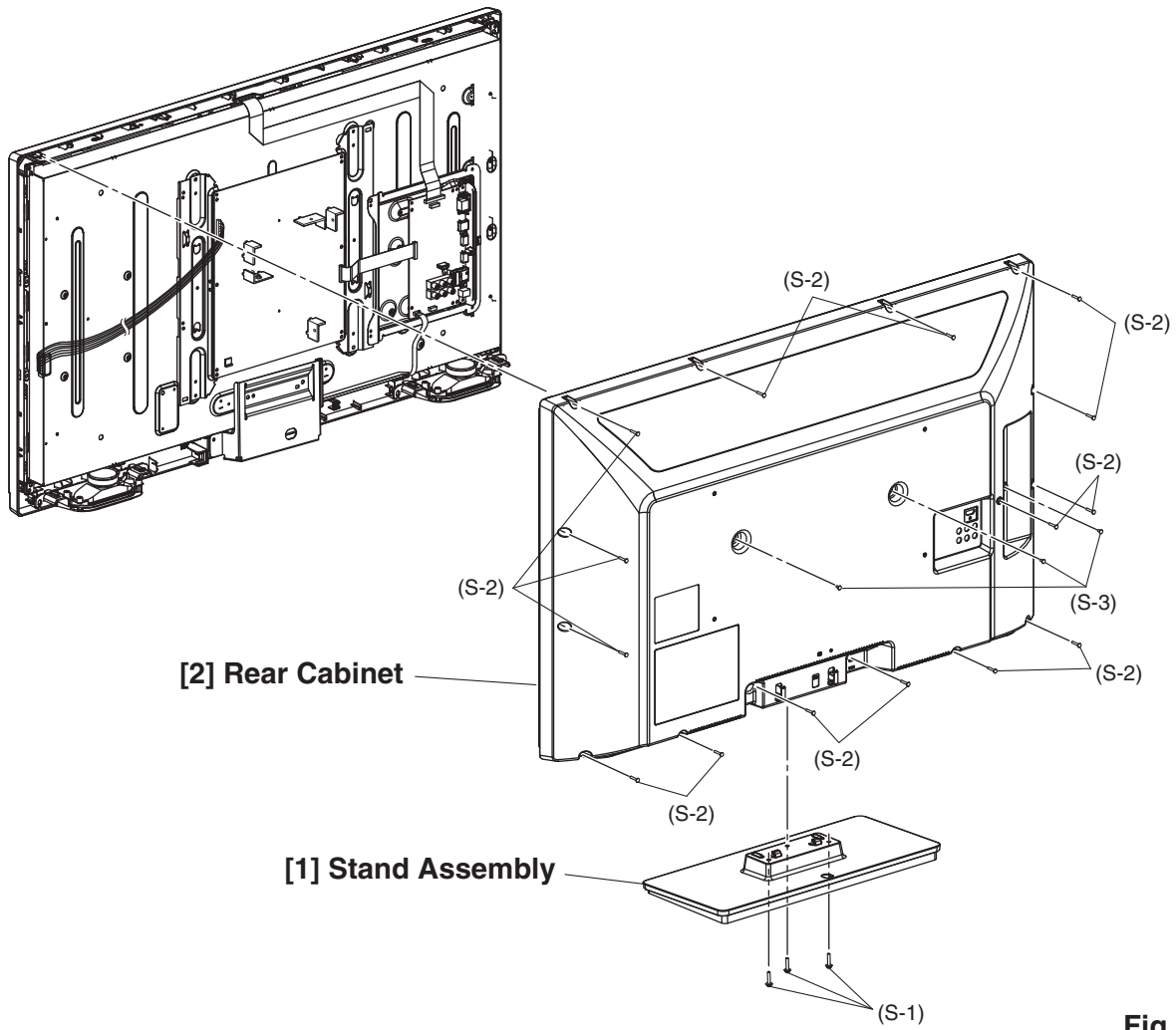
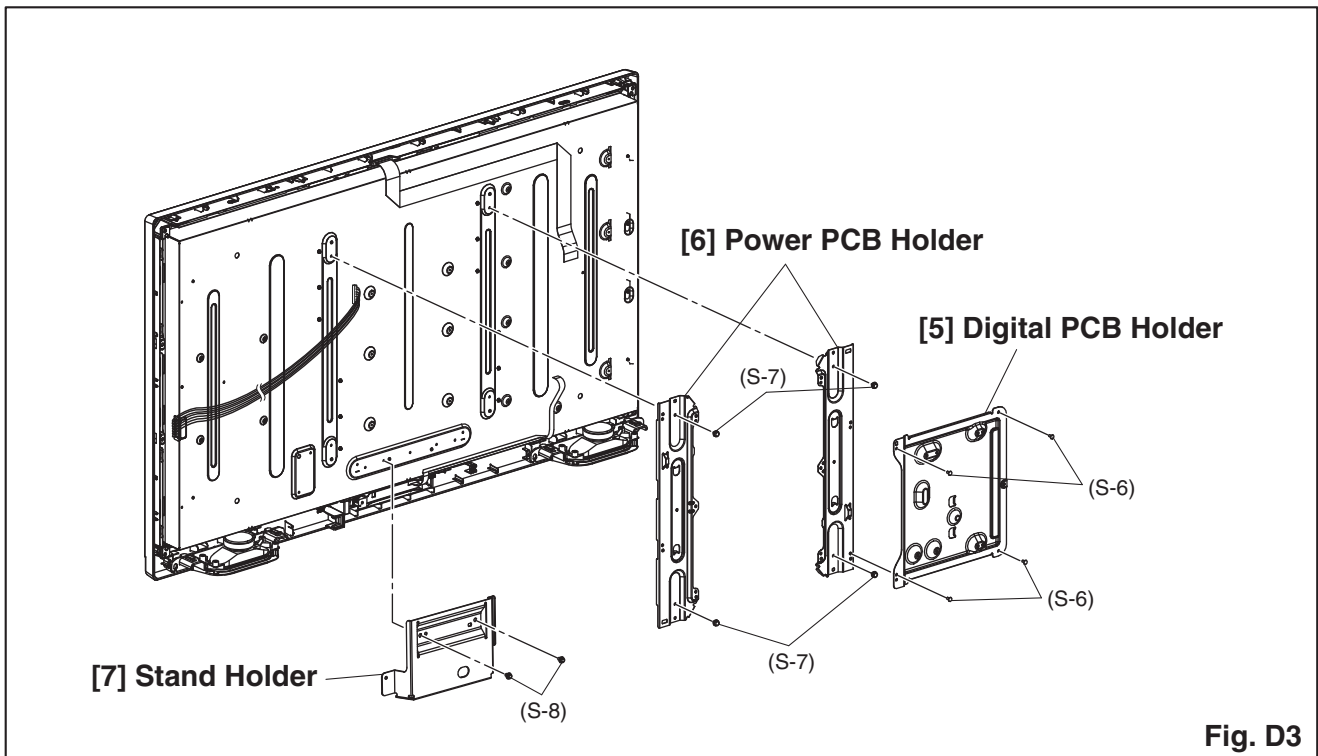
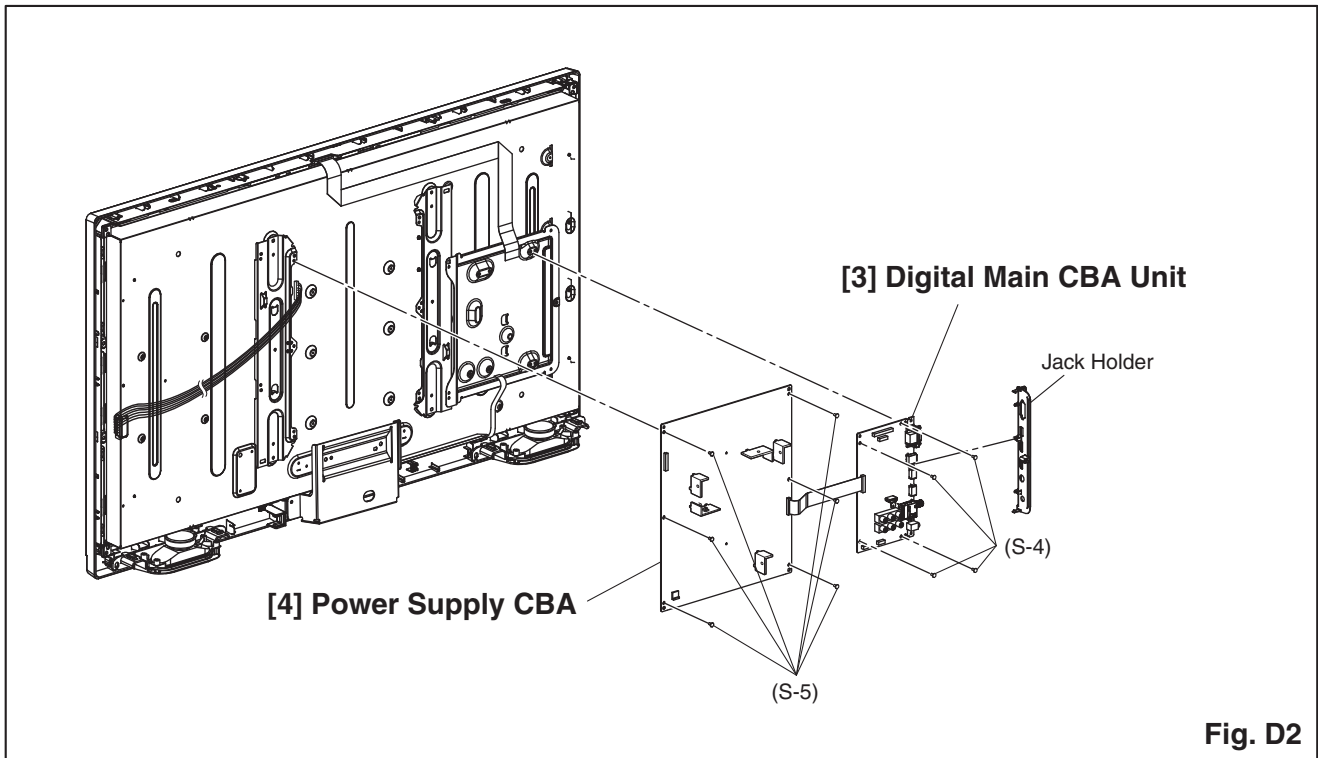


Fig. D1



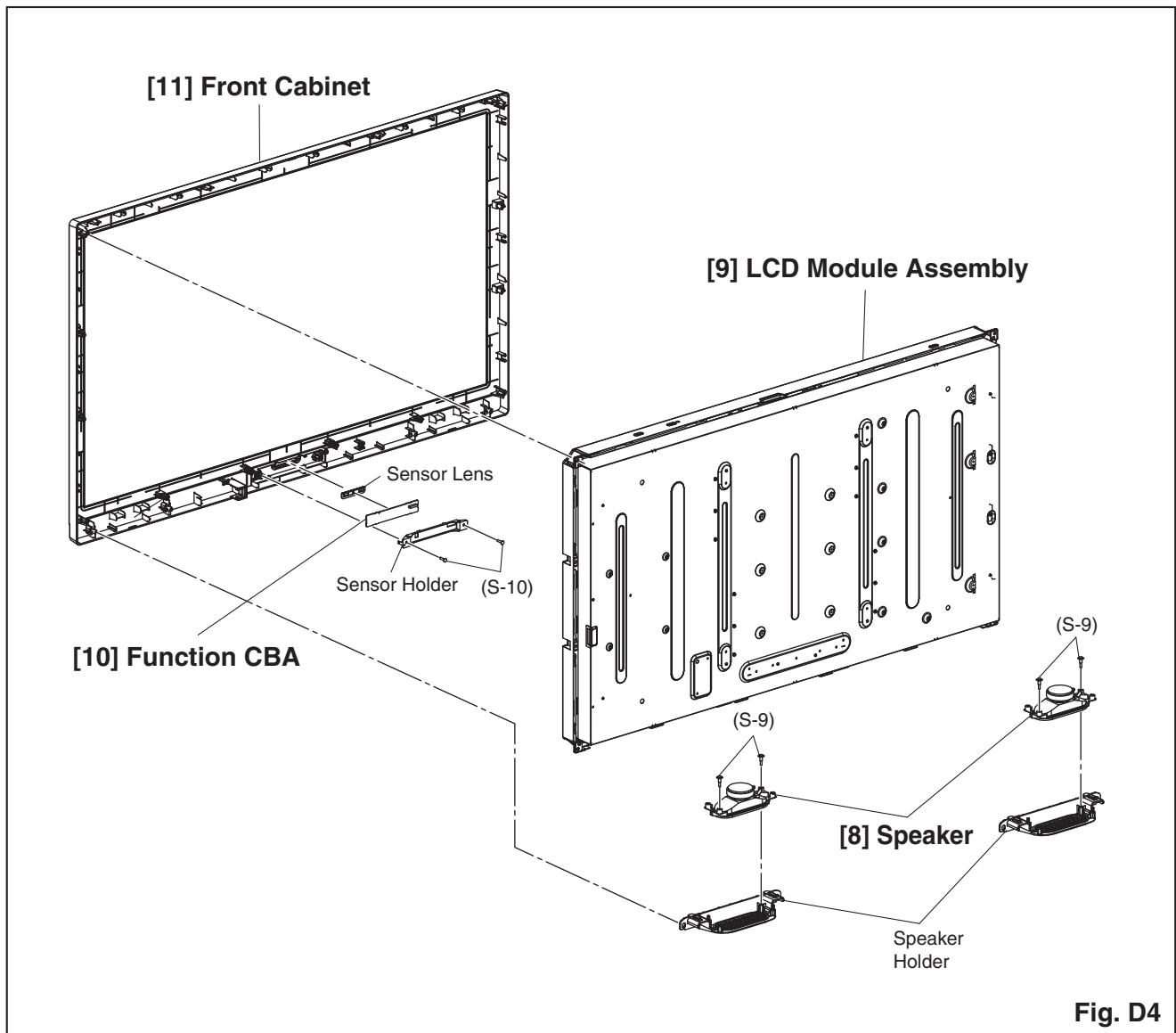
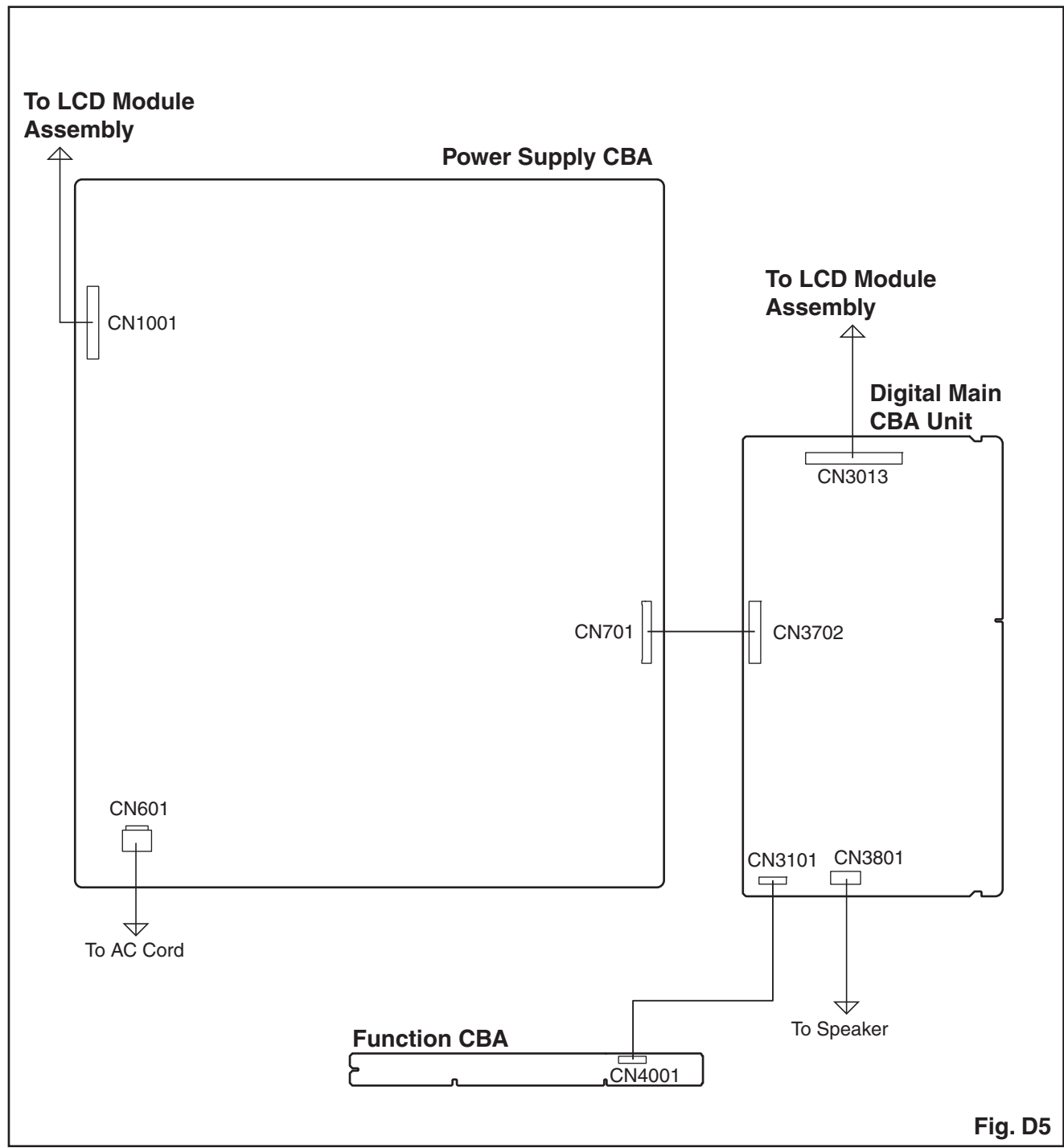


Fig. D4

TV Cable Wiring Diagram



ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: “CBA” is abbreviation for “Circuit Board Assembly.”

Note: Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

1. Remote control unit
2. Color Analyzer,
CA-310 (KONICA MINOLTA Luminance meter) or
measuring instrument as good as CA-310.

How to set up the service mode:

Service mode:

1. Turn the power on.
2. Press [MENU] button to display Setup menu.
3. Select “Features”.
4. Select “Software Upgrade”.
5. Select “Current Software Info”.
6. Press [0], [6], [2], [5], [9], [6] and [INFO] buttons on the remote control unit in this order. The following screen appears.

“*” differs depending on the models.

```
Code:          *****_**_**_****_**
Pic code:      **_***_**_*****_***
Panel-Option code: **_***_***_****_***
MIPS:          **
```

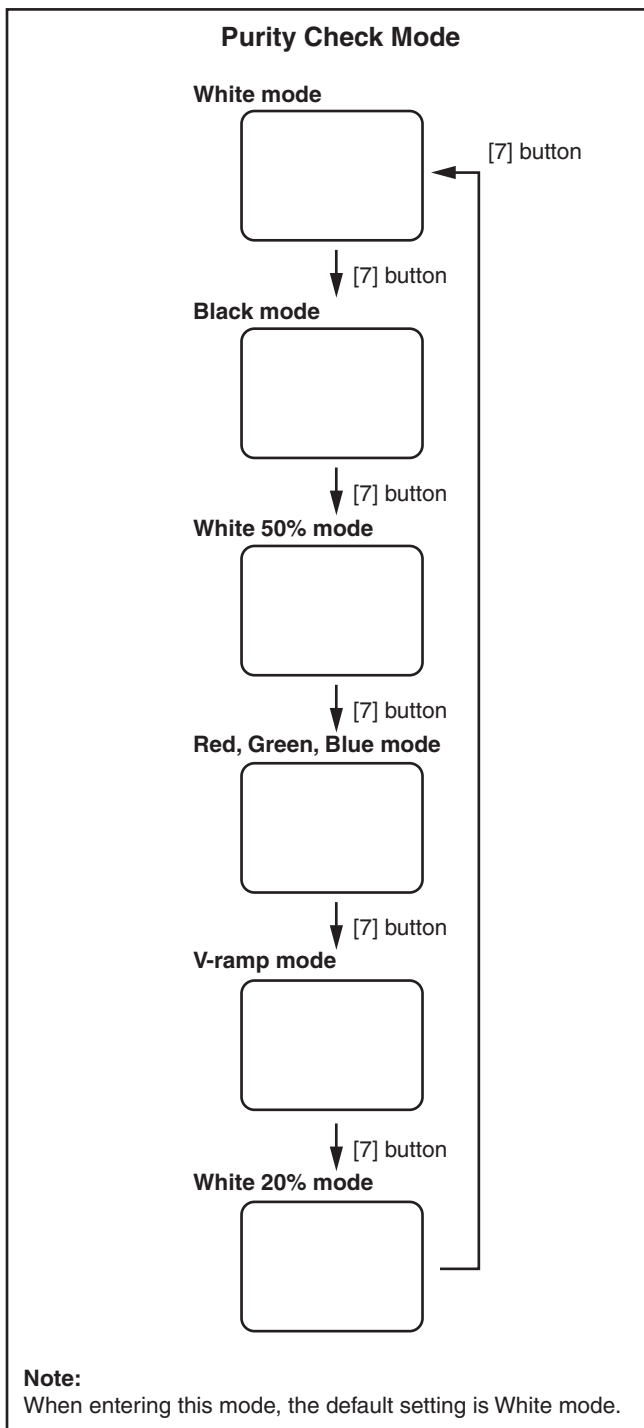
Press "POWER" key to exit.

```
Safety:          Safety_Non
HDMI EDID:       **
HDMI UART:       OFF          Total Watch Time: *****
Touch Sensor Ver: -.- / ---    Lightsensor:      **
```

1. Purity Check Mode

This mode cycles through full-screen displays of red, green, blue, and white to check for non-active pixels.

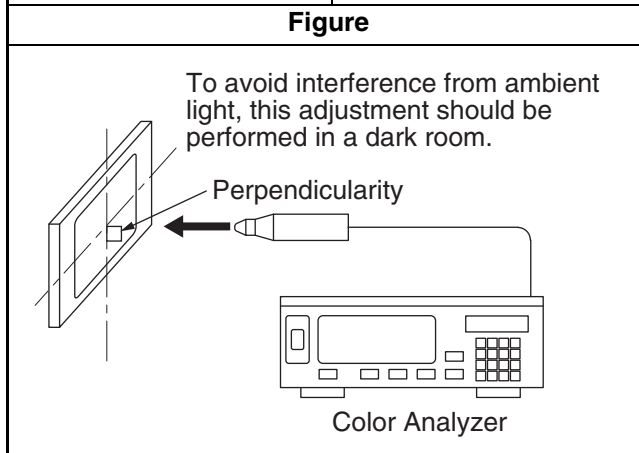
1. Enter the service mode.
2. Each time the [7] button on the remote control unit is pressed, the display changes as follows.



3. To cancel or to exit from the Purity Check Mode, press [CH RETURN] or [PREV CH] button.

2. VCOM Adjustment

Test Point	Adj. Point
Screen	[CHANNEL UP/DOWN] buttons
M. EQ.	Spec.
Color analyzer	See below



1. Operate the unit for more than 60 minutes.
2. Set the color analyzer at the zero point calibration and bring the optical receptor pointing at the center of the LCD-Panel.
Note: The optical receptor must be set perpendicularly to the LCD Panel surface.
3. Enter the Service mode.
4. Press [3] button on the remote control unit.
5. Press [CHANNEL UP/DOWN] buttons on the remote control unit so that the color analyzer value becomes minimum.
6. To cancel or to exit from the VCOM Adjustment, press [CH RETURN] or [PREV CH] button.

The White Balance Adjustment should be performed when replacing the LCD Panel or Digital Main CBA.

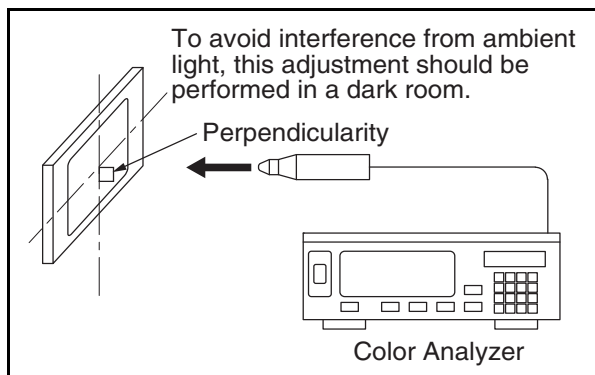
3. White Balance Adjustment

Purpose: To mix red and blue beams correctly for pure white.

Symptom of Misadjustment: White becomes bluish or reddish.

ITEM	SPECIFICATION
Color temperature	$x = 0.272 \pm 0.002$ $y = 0.278 \pm 0.002$
Input Signal	Internal pattern (40/80% raster)
Measurement point	Screen center
M. EQ.	CA-310 (KONICA MINOLTA Luminance meter) or measuring instrument as good as CA-310.
Aging time	60min. (Retail MODE/100IRE Raster HDMI 1080i@60)
MODE setting of TV	Shipment setting/ Retail MODE
Ambient temperature	$25^{\circ}\text{C} \pm 5^{\circ}\text{C}$

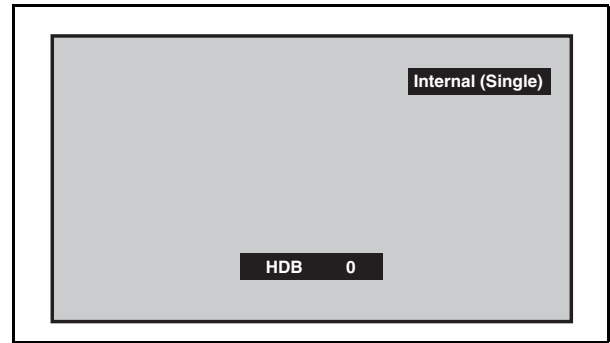
1. Operate the unit for more than 60 minutes.
2. Enter the service mode.
3. Press [VOLUME DOWN] button three times on the remote control unit to select "Drive setting" mode. "Drive" appears in the screen.
4. Set the color analyzer at the CHROMA mode and zero point calibration. Bring the optical receptor pointing at the center of the LCD-Panel.



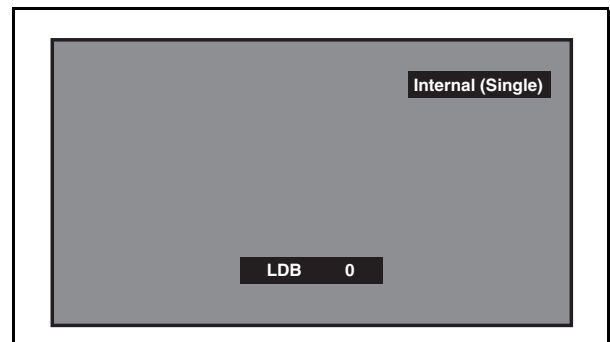
Note: The optical receptor must be set perpendicularly to the LCD Panel surface.

5. Press [3] button to select the "HDB" for High Drive Blue adjustment. ("HDB" appears in the screen.)

6. Press [MENU] button. The internal Raster signal appears in the screen. ("Internal (Single)" appears in the upper right of the screen as shown below.)



7. Press [CHANNEL UP/DOWN] buttons to adjust the color temperature becomes 12000°K ($x = 0.272 / y = 0.278 \pm 0.002$).
8. Press [1] button to select the "HDR" for High Drive Red adjustment ("HDR" appears in the screen.) and press [CHANNEL UP/DOWN] buttons to adjust the color temperature.
9. If necessary, adjust the "HDB" or "HDR" again.
10. Press [6] button to select the "LDB" for Low Drive Blue adjustment ("LDB" appears in the screen.) and press [CHANNEL UP/DOWN] buttons to adjust the color temperature.



11. Press [4] button to select the "LDR" for Low Drive Red adjustment ("LDR" appears in the screen.) and press [CHANNEL UP/DOWN] buttons to adjust the color temperature.
12. If necessary, adjust the "LDB" or "LDR" again.
13. Press [VOLUME DOWN] button to shift to the "Debugging Message" mode. If there is no message under "[WB]" section, this adjustment completes. If "Drive settings are NG. Retry." is displayed, repeat above steps from 5. to 12. Then check "Debugging Message" again. If "Drive settings are NG. Retry." is displayed, replace the LCD Panel or Digital Main CBA.
14. To cancel or to exit from the White Balance Adjustment, press [CH RETURN] or [PREV CH] button.

HOW TO INITIALIZE THE LCD TV

The purpose of initialization is to place the set in a new out of box condition. The customer will be prompted to select a language and program channels after the set has been initialized.

To put the program back at the factory-default, initialize the LCD TV using the following procedure.

NOTE: Disconnect any device from the USB Port before you conduct on this procedure.

1. Turn the power on.
2. Enter the service mode.
 - To cancel the service mode, press [POWER] button on the remote control unit.
3. Press [BACK] button to enter the Panel Key Confirmation Menu.
4. Press any button on the touch sensor panel.
5. Press [INFO] button to proceed with the self check mode.
6. Make sure to confirm the "INITIALIZED FINISH" appears in the green screen.
7. Unplug the AC Cord and plug it back on again.

FIRMWARE RENEWAL MODE

Equipment Required

- a. USB storage device
- b. Remote Control Unit

Firmware Update Procedure

User Upgrade (Filename example: TVNB012_00_UF_XX91_AA.ecc)

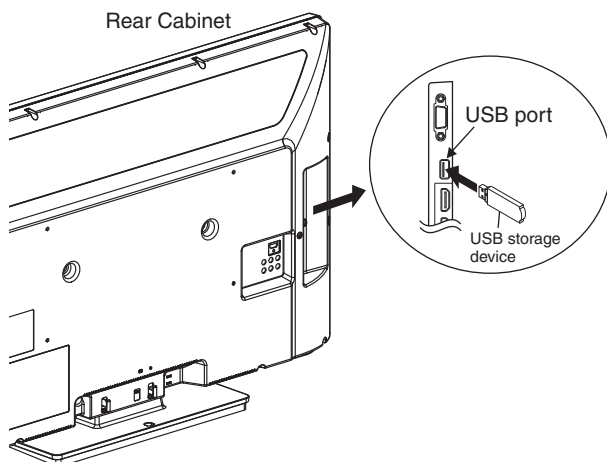
Upgrade the firmware only. The setting values will not be initialized.

The User Upgrade and the Firmware Upgrade (Factory Upgrade) will be done by the same file. If you want to upgrade the firmware and initialize the setting values also, add "FACT_" at the beginning of the filename.

If you want to upgrade the firmware only and leave the setting values as they are, eliminate the "FACT_" from the filename.

Update procedure

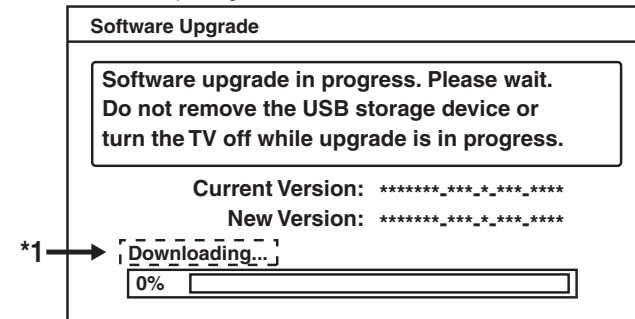
1. Turn the power on.
2. Press [MENU] button to display Menu.
3. Select "Features".
4. Select "Software Upgrade".
5. Select "Upgrade" to display Upgrade screen.
6. Press [OK] button to display Software Upgrade screen.
7. Select "USB" and press [OK] button.
8. Insert the USB storage device to the USB port as shown below.



9. Select "Check" and press [OK] button.
10. Select "Upgrade" and press [OK] button to start software upgrade.

11. The update will start and the following will appear in the screen.

"*" differs depending on the models.

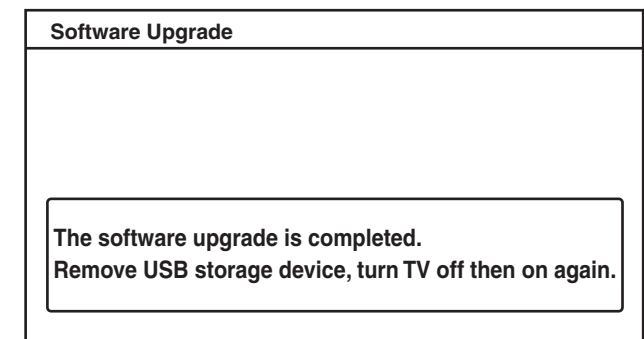


Note: If the above screen isn't displayed, repeat from step 1.

The appearance shown in *1 is described as follows.

Appearance	State
Downloading...	Downloading the firmware from the USB storage device.
Writing...	Writing the downloaded firmware in flash memory.
Checking...	Checking the new firmware.

12. When the firmware update is completed, the following will appear in the screen.



Remove the USB storage device from the USB port.
Turn the power off and turn the power on again.

Factory Upgrade (Firmware Upgrade/Flash Upgrade)

Firmware Upgrade (Filename example: FACT_TVNB012_00_UF_XX91_AA.ecc)

Upgrade the firmware and initialize the setting values.

The User Upgrade and the Firmware Upgrade (Factory Upgrade) will be done by the same file. If you want to upgrade the firmware and initialize the setting values also, add "FACT_" at the beginning of the filename.

If you want to upgrade the firmware only and leave the setting values as they are, eliminate the "FACT_" from the filename.

Flash Upgrade (Filename example: ALL_TVNB012_00_UF_XX91_AA.ecc)

Upgrade the firmware and initialize the setting values along with the factory default such as White Balance, etc.

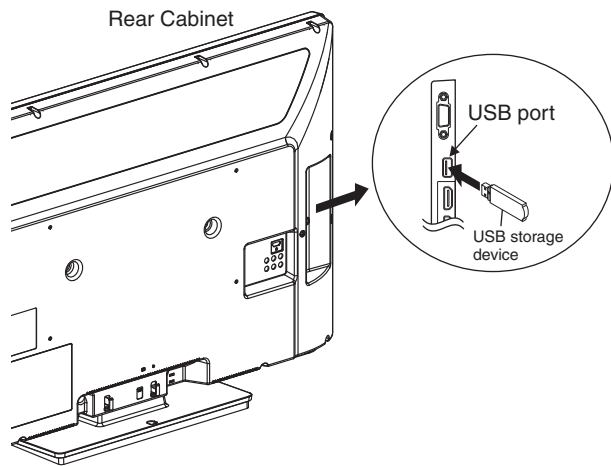
Before the upgrade, you will need to make a note of all the factory default so you will be able to set it back on the TV after the initialization.

The Flash Upgrade will be done by it's unique file.

The User Upgrade/Firmware Upgrade (Factory Upgrade) file cannot be used for this upgrade.

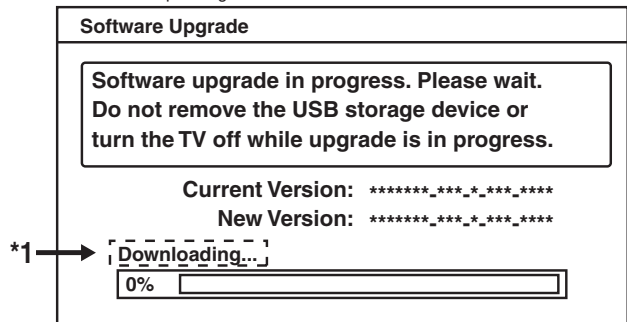
Update procedure

1. Turn the power off.
2. Insert the USB storage device to the USB port as shown below.



3. Turn the power on.
4. The update will start and the following will appear in the screen.

"*" differs depending on the models.

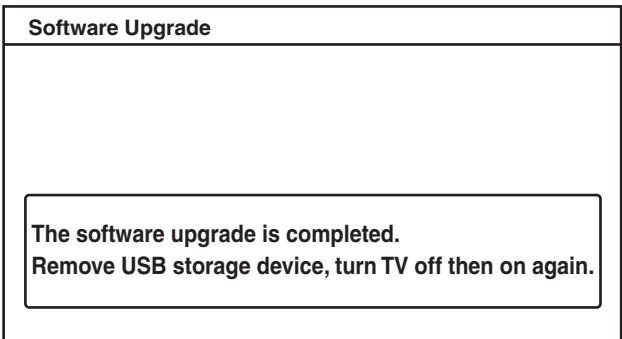


Note: If the above screen isn't displayed, repeat from step 1.

The appearance shown in *1 is described as follows.

Appearance	State
Downloading...	Downloading the firmware from the USB storage device.
Writing...	Writing the downloaded firmware in flash memory.
Checking...	Checking the new firmware.

5. When the firmware update is completed, the following will appear in the screen.



Remove the USB storage device from the USB port.

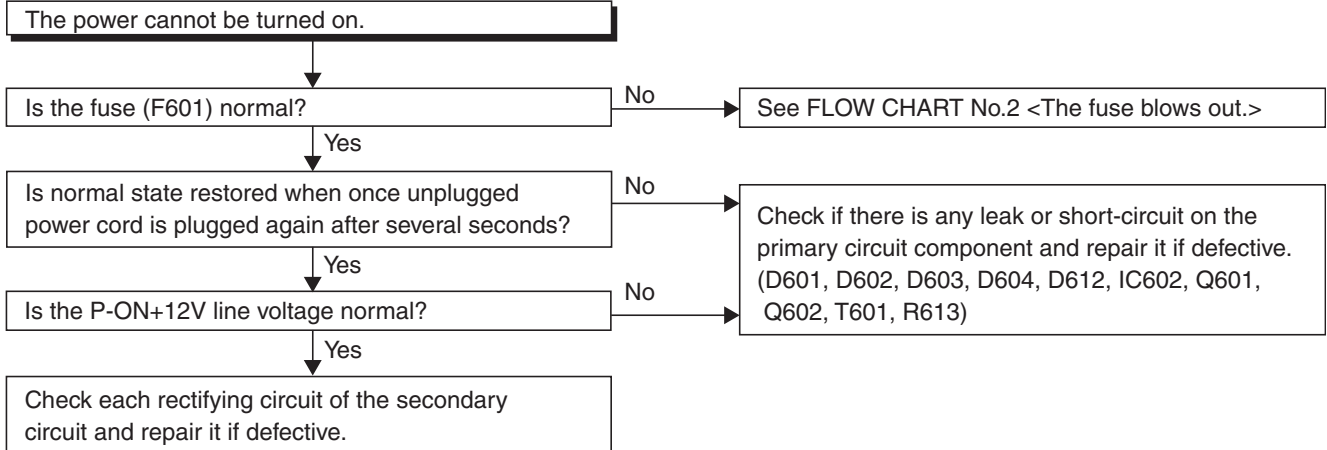
Turn the power off and turn the power on again.

Service mode initial screen with a word "INITIALIZED" will appear in the screen. The color of the word "INITIALIZED" will change from red to green when initialization is completed.

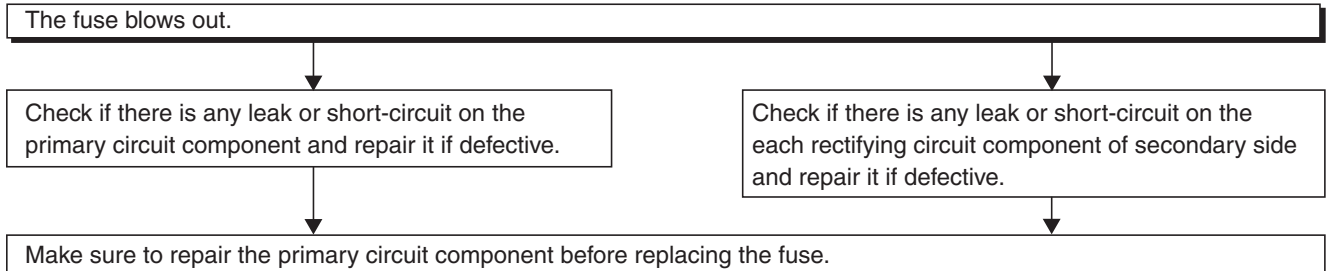
TROUBLESHOOTING

[Power Supply Section]

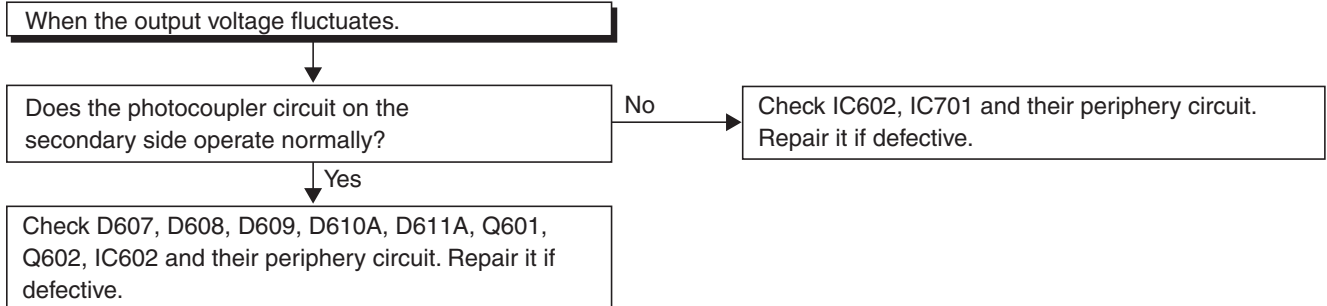
FLOW CHART NO.1



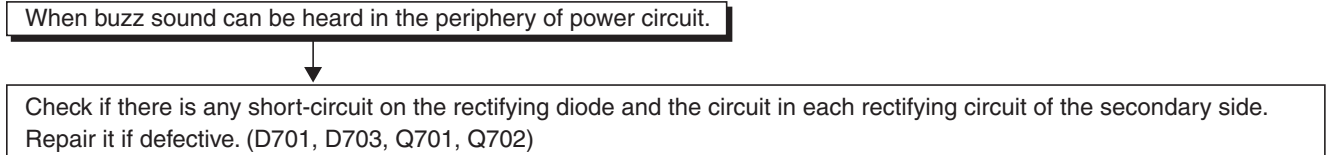
FLOW CHART NO.2



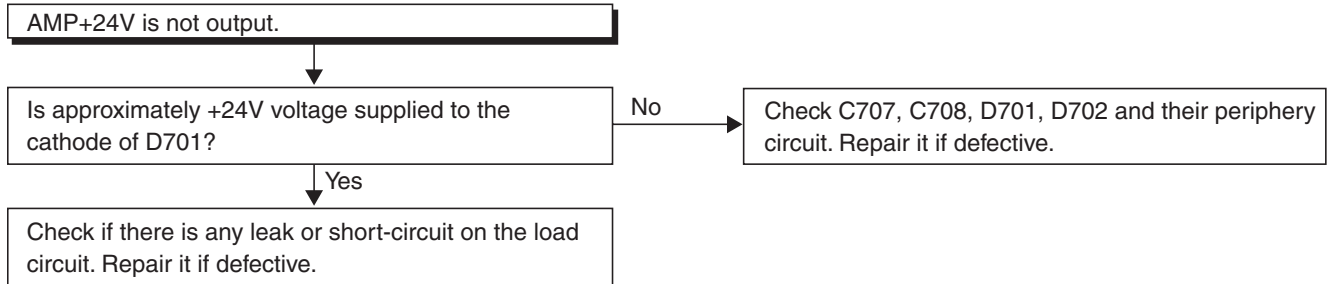
FLOW CHART NO.3



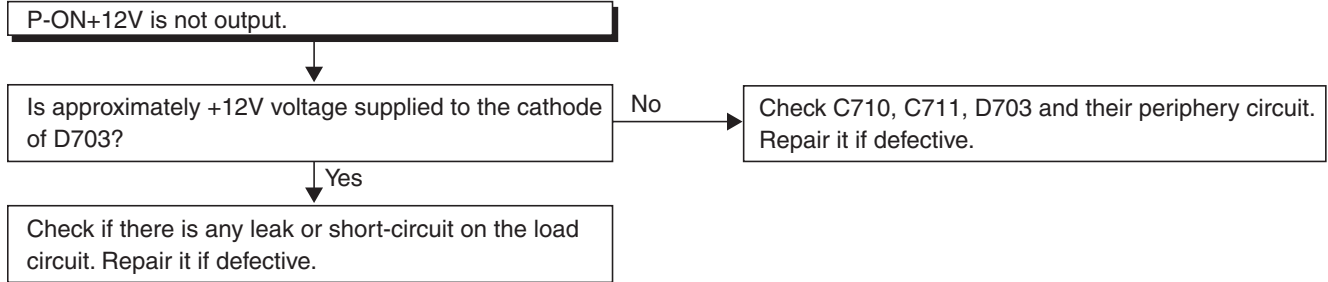
FLOW CHART NO.4



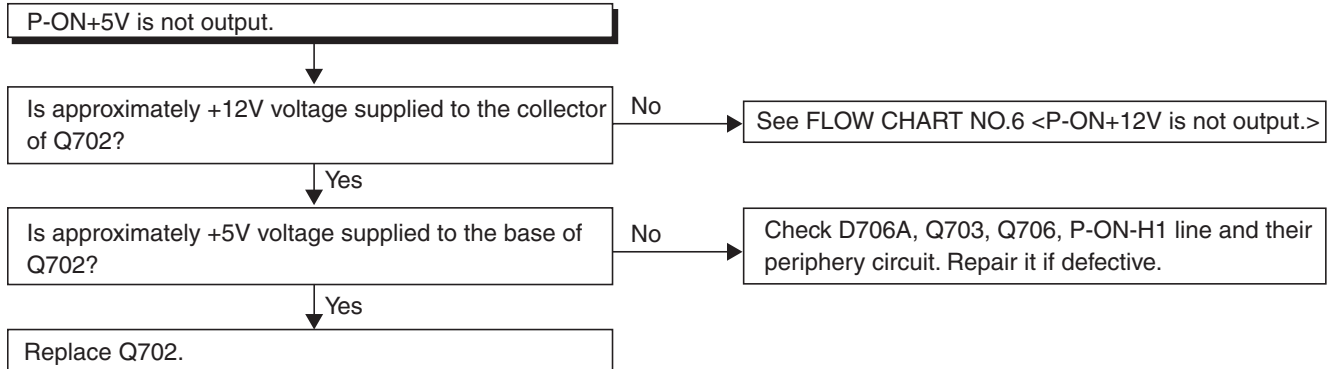
FLOW CHART NO.5



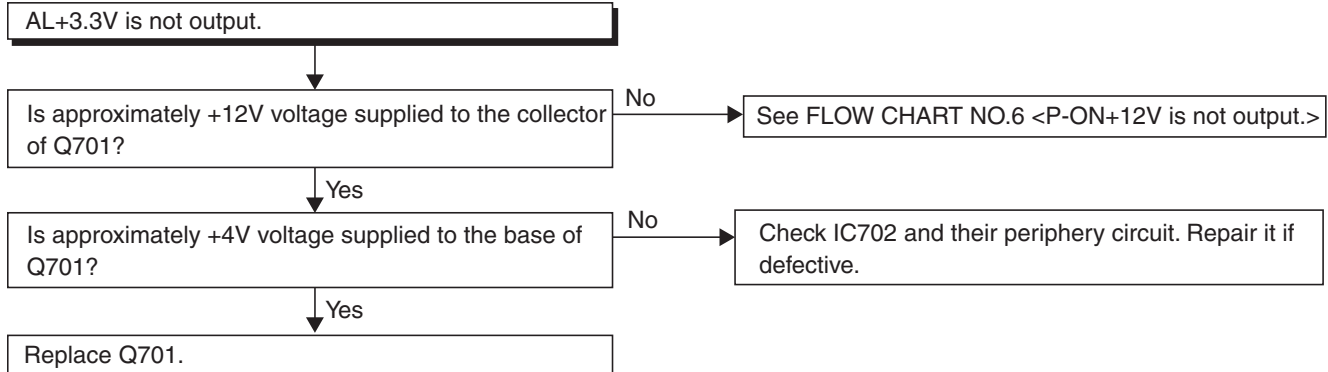
FLOW CHART NO.6



FLOW CHART NO.7

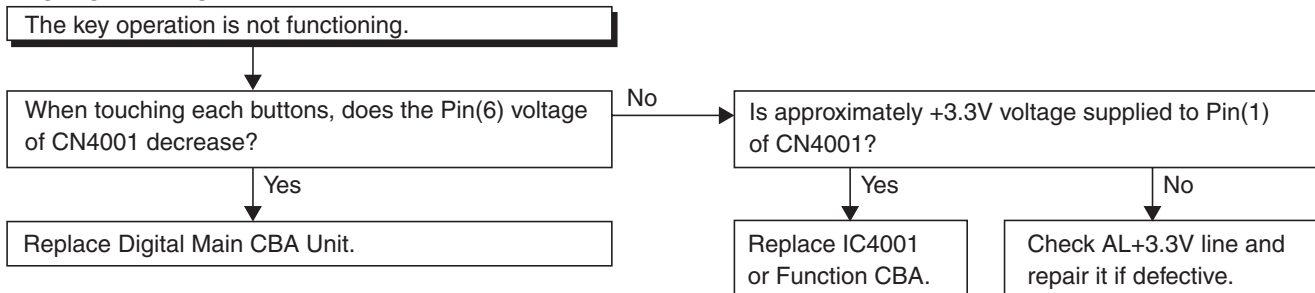


FLOW CHART NO.8

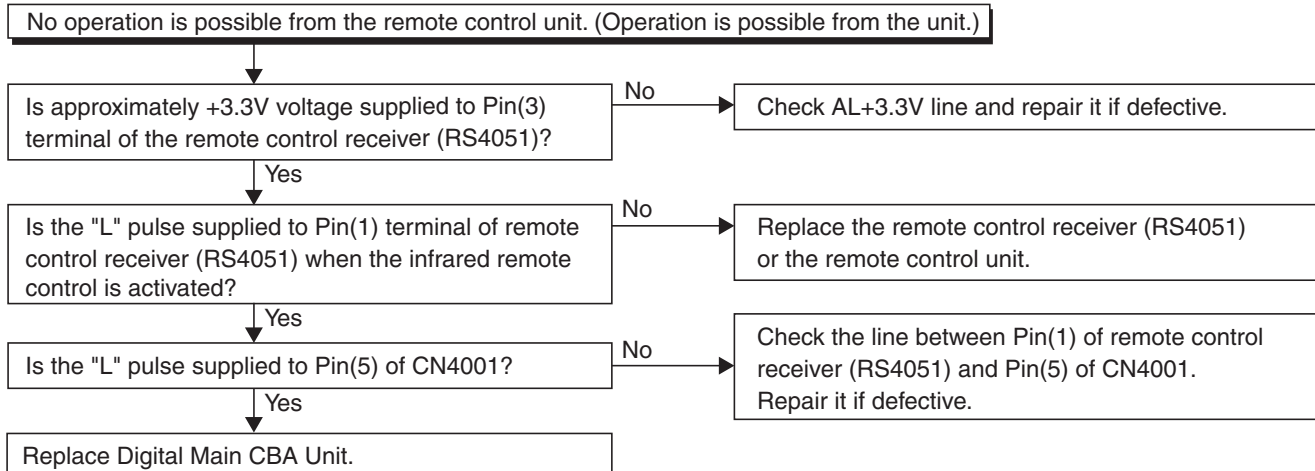


[Video Signal Section]

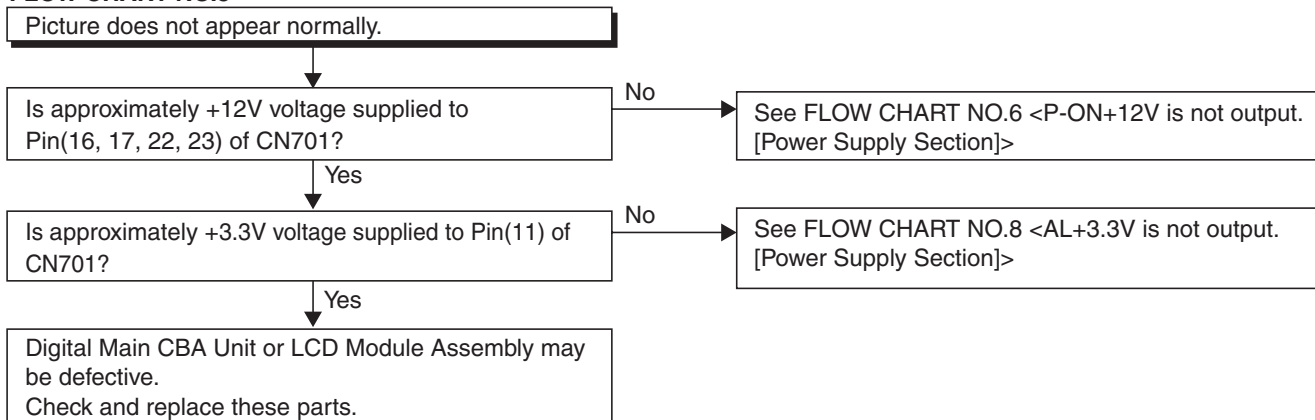
FLOW CHART NO.1



FLOW CHART NO.2

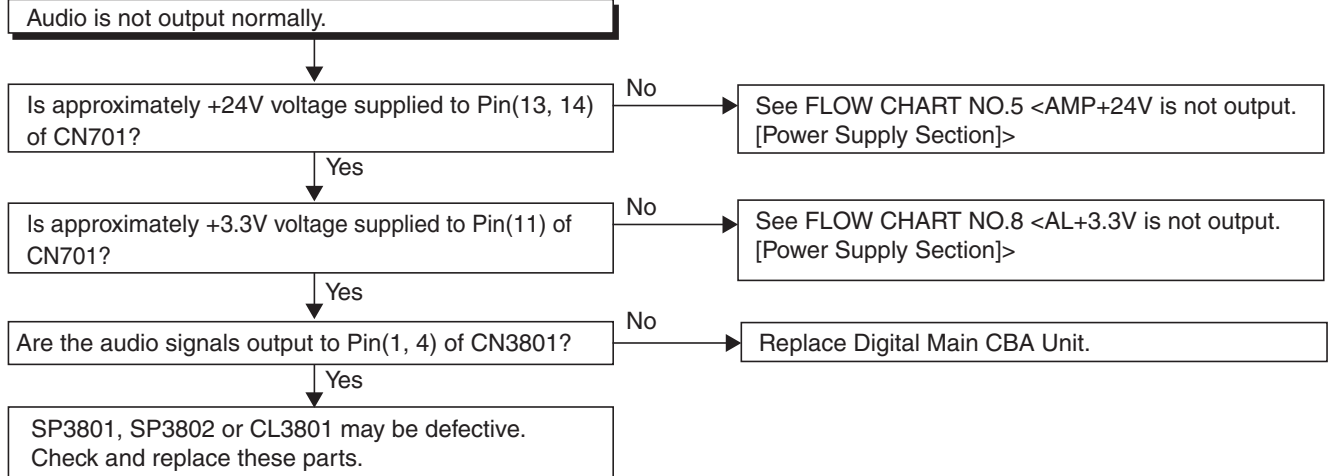


FLOW CHART NO.3



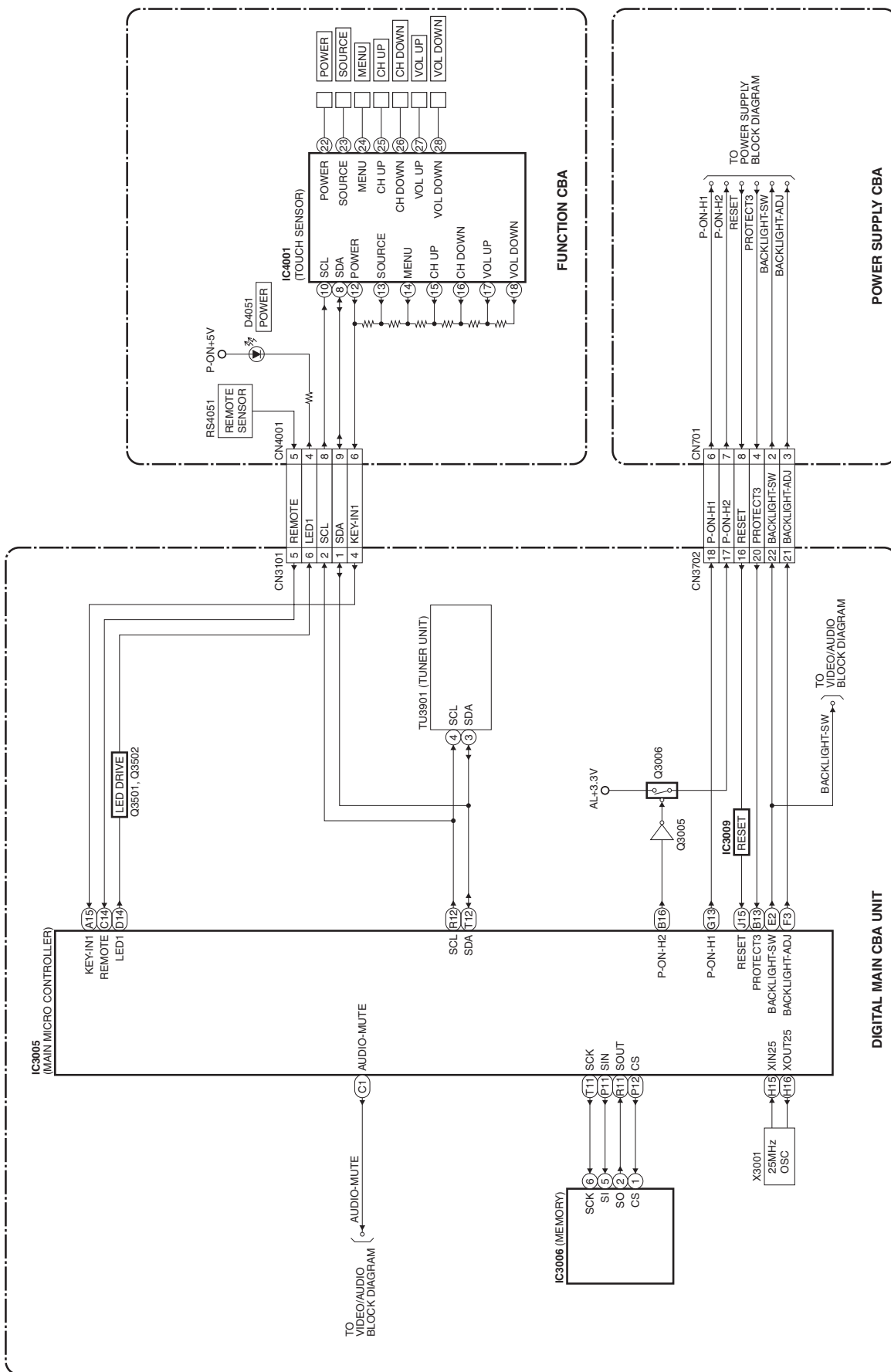
[Audio Signal Section]

FLOW CHART NO.1

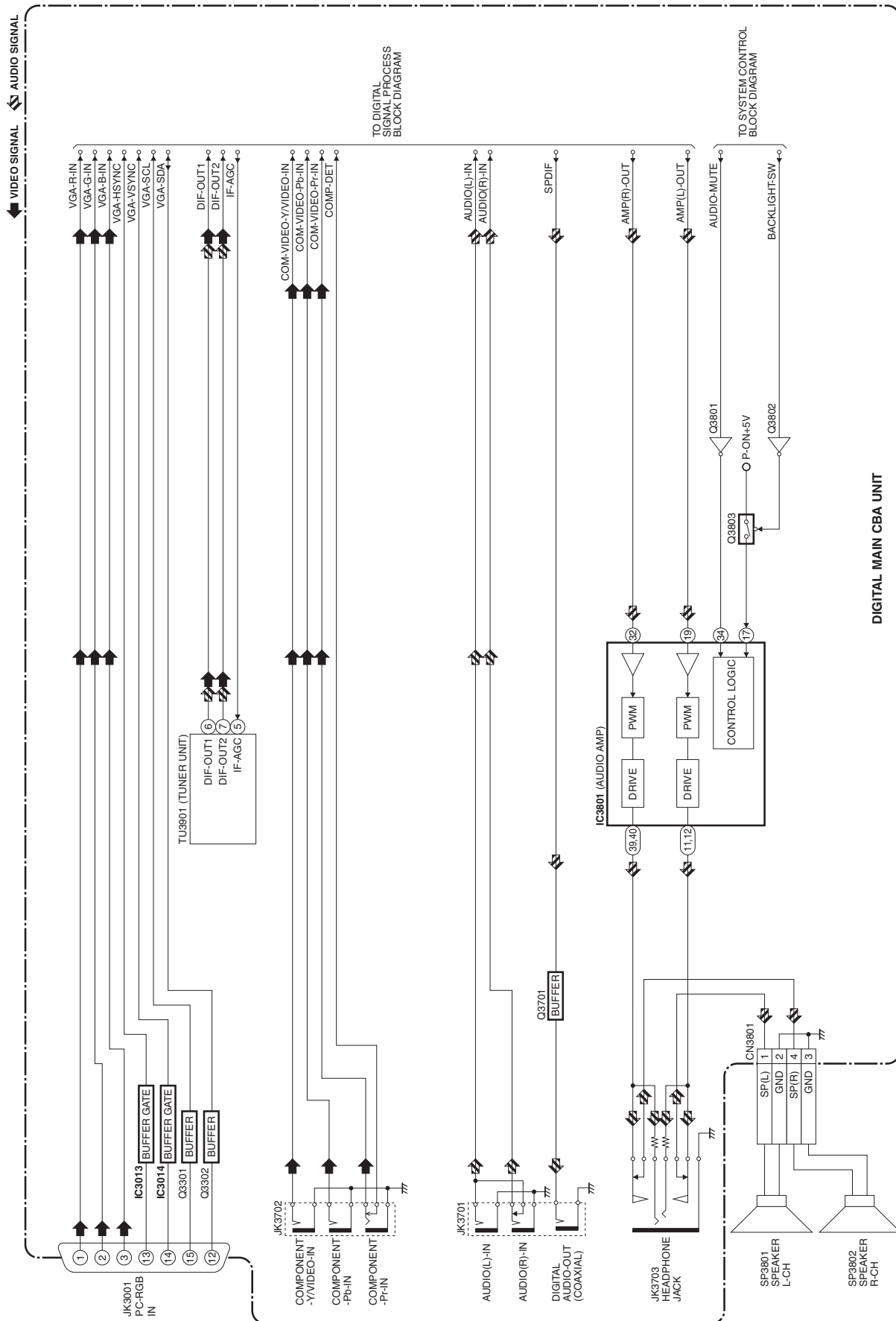


BLOCK DIAGRAMS

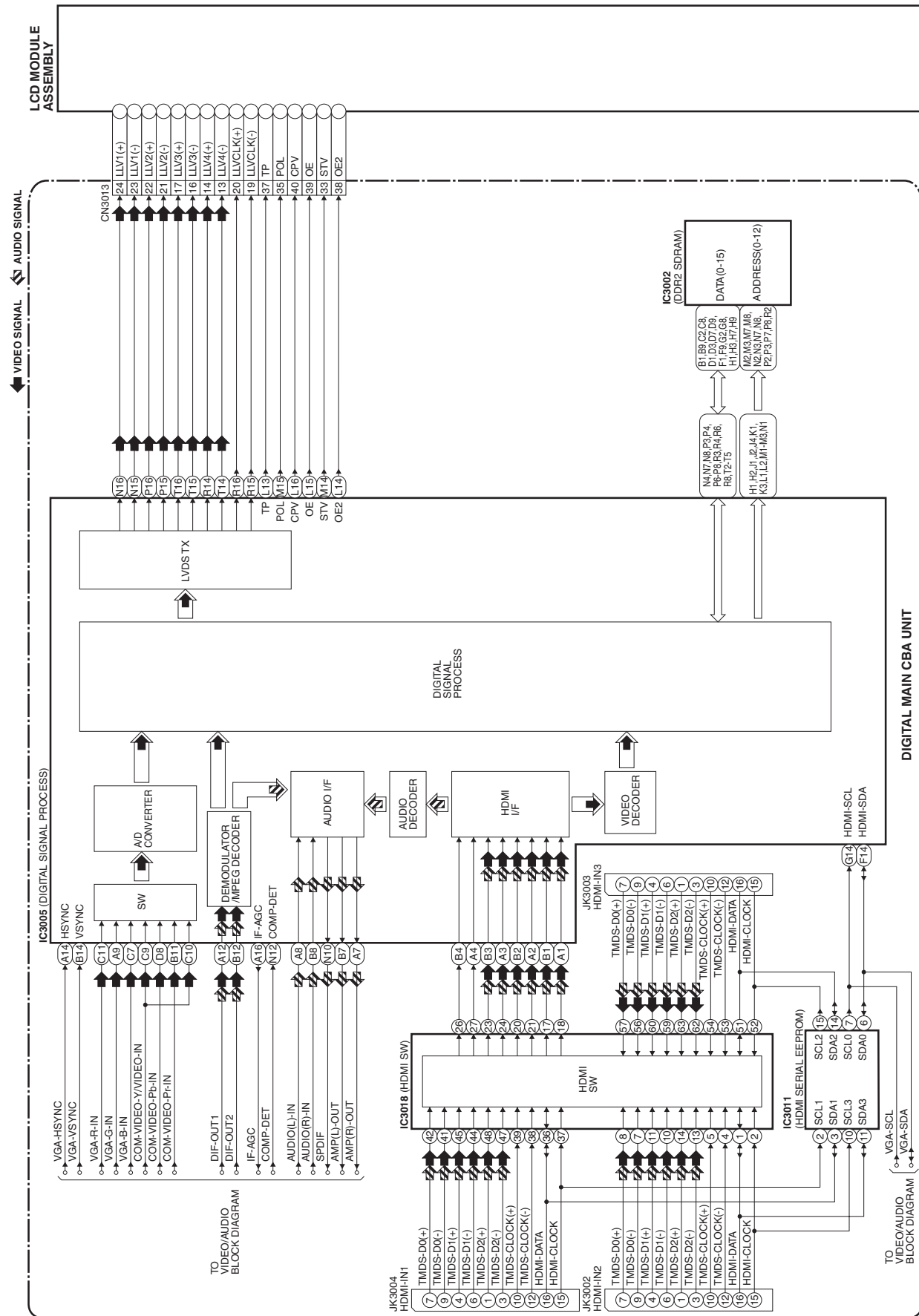
1. System Control Block Diagram



2. Video/Audio Block Diagram



3. Digital Signal Process Block Diagram



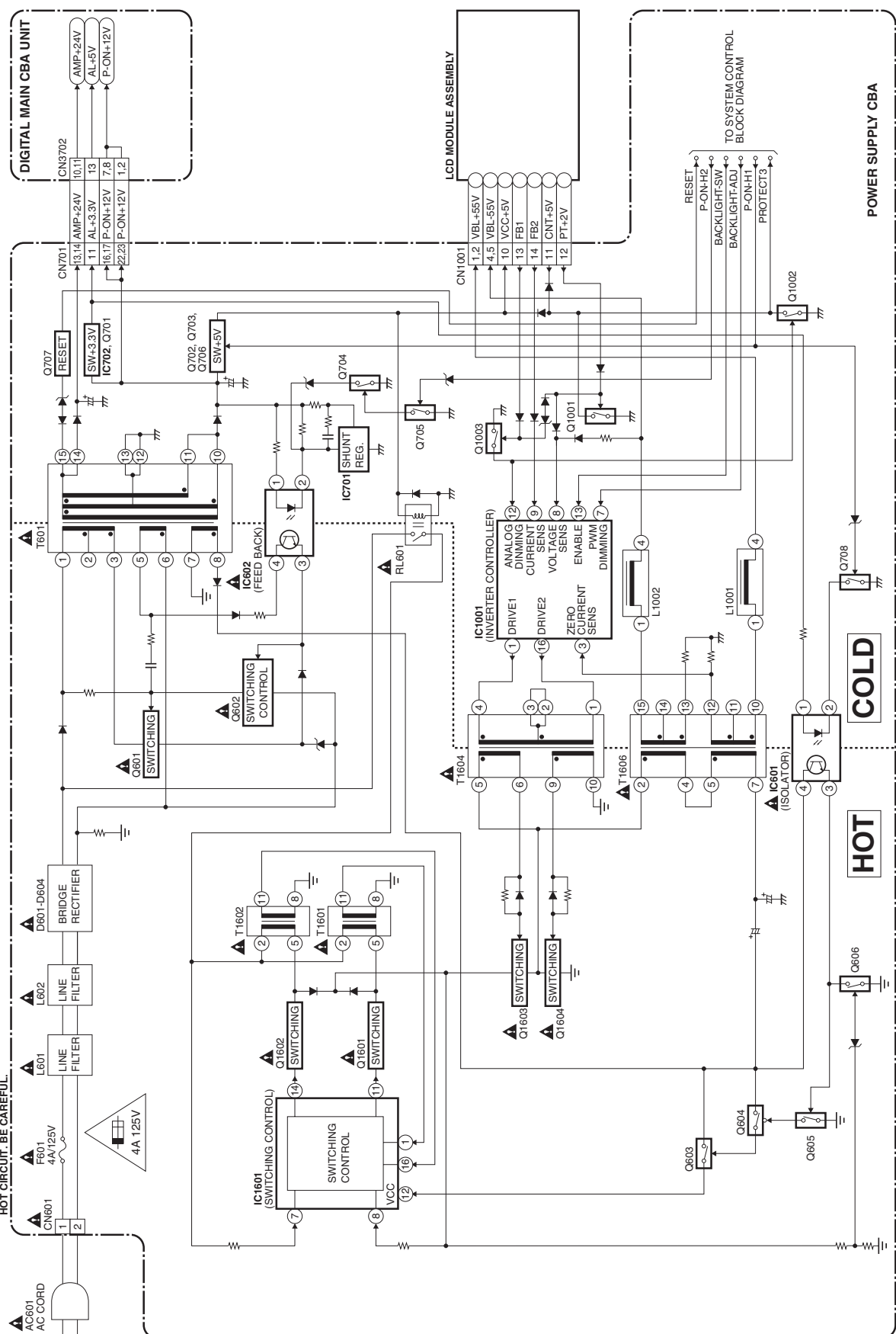
CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION !: For continued protection against risk of fire, replace only with same type 4A, 125V fuse.

ATTENTION : Utiliser un fusible de rechange de même type.

NOTE:
The volt
hot GND



SCHEMATIC DIAGRAMS / CBA AND TEST POINTS

Standard Notes

WARNING

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark “▲” in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Notes:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K = 10^3$, $M = 10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in μF ($P = 10^{-6} \mu F$).
5. All voltages are DC voltages unless otherwise specified.
6. This schematic diagrams are masterized version that should cover the entire PL12.7 chassis models. Thus some parts in detail illustrated on this schematic diagrams may vary depend on the model within the PL12.7 chassis. Please refer to the parts lists for each models.
7. The Circuit Board layout illustrated on this service manual is the latest version for this chassis at the moment of making this service manual. Depend on the mass production date of each model, the actual layout of each Board may differ slightly from this version.

LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. CAUTION:

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE_A,_V FUSE.

ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE_A,_V.

2. CAUTION:

Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.

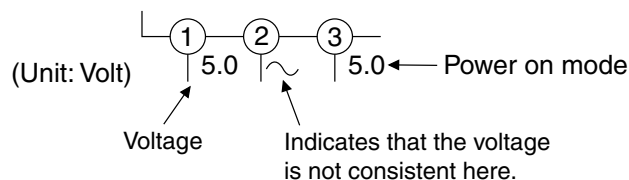
If Main Fuse (F601) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. Note:

1. Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
2. To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Voltage indications on the schematics are as shown below:

Plug the TV power cord into a standard AC outlet.:

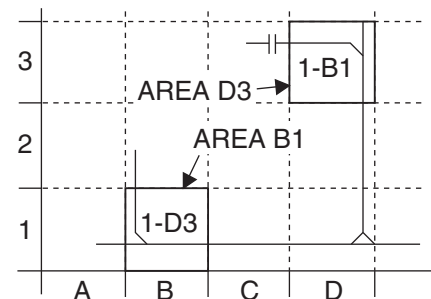


5. How to read converged lines

1-D3
 ↑ Distinction Area
 Line Number
 (1 to 3 digits)

Examples:

1. "1-D3" means that line number "1" goes to the line number "1" of the area "D3".
2. "1-B1" means that line number "1" goes to the line number "1" of the area "B1".



6. Test Point Information

⊙ : Indicates a test point with a jumper wire across a hole in the PCB.

□→ : Used to indicate a test point with a component lead on foil side.

⊗ : Used to indicate a test point with no test pin.

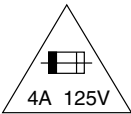
● : Used to indicate a test point with a test pin.

The reference number of parts on Schematic Diagrams/CBA can be retrieved by application search function.

Power Supply 1 Schematic Diagram

CAUTION !

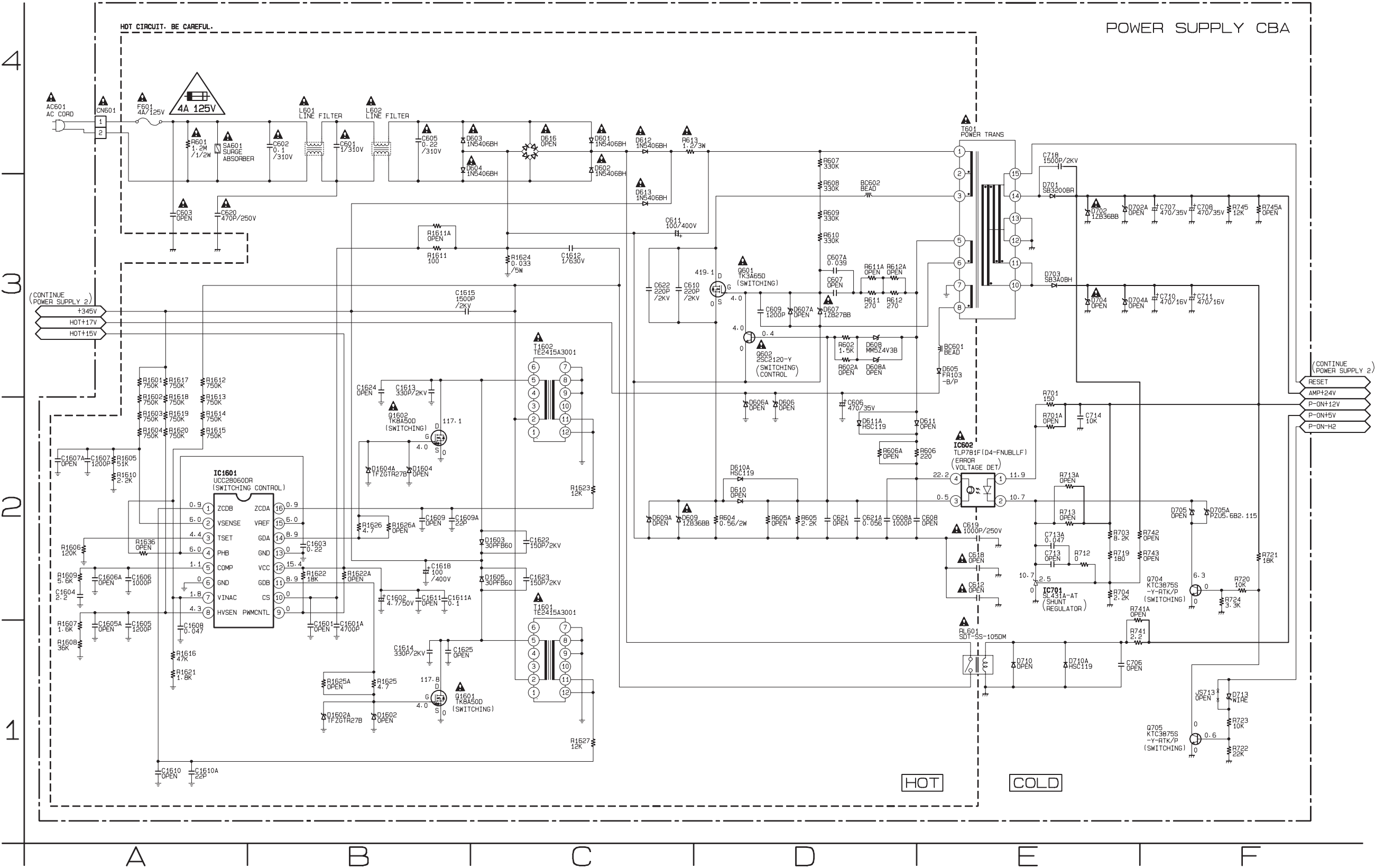
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



CAUTION ! : For continued protection against risk of fire,
replace only with same type 4A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

NOTE:

The voltage for parts in hot circuit is measured using
hot GND as a common terminal.

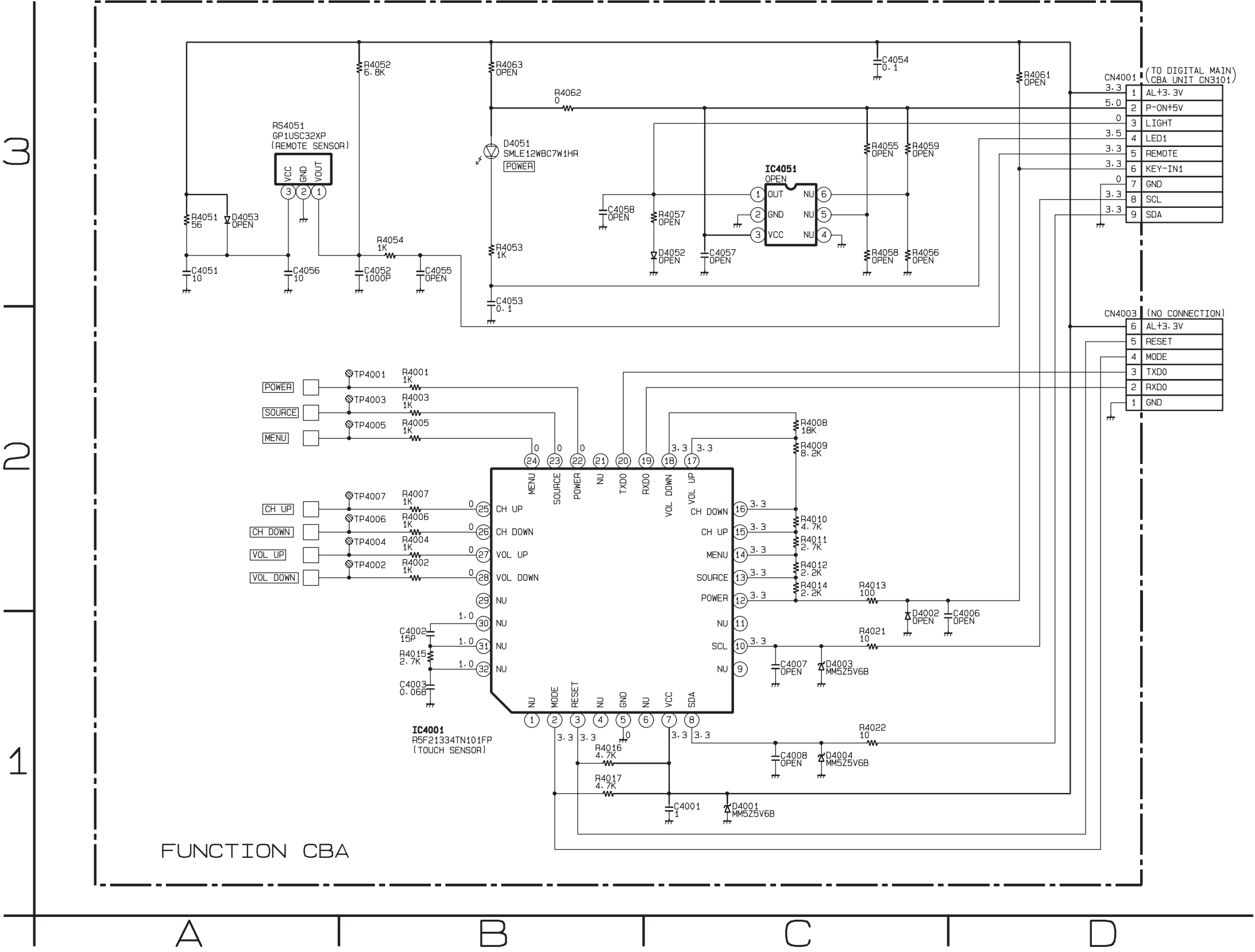


4
—
3
—
2
—
1

The voltage for parts in hot circuit is measured using hot GND as a common terminal.



Function Schematic Diagram

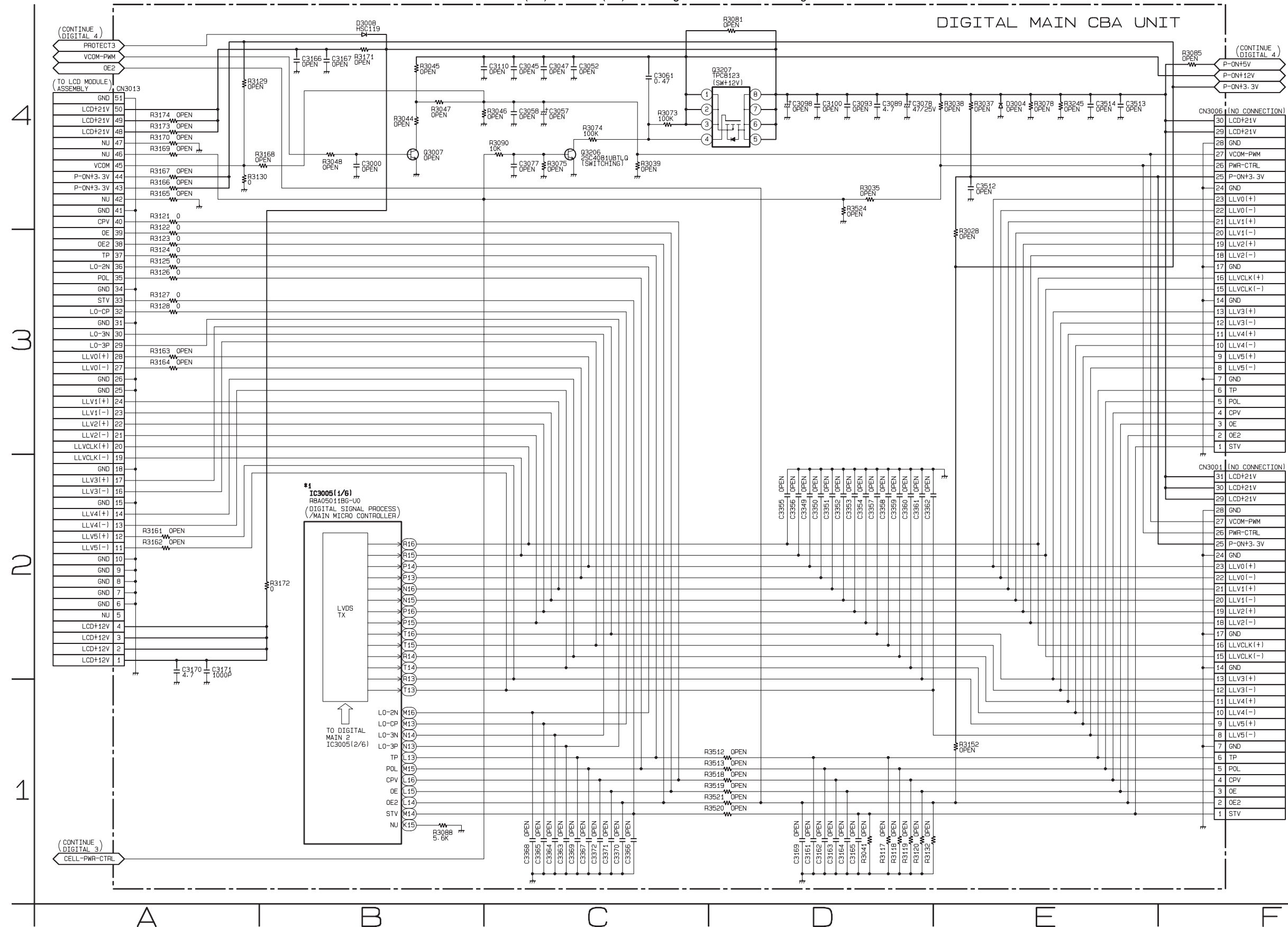


Digital Main 1 Schematic Diagram

***1 NOTE:**

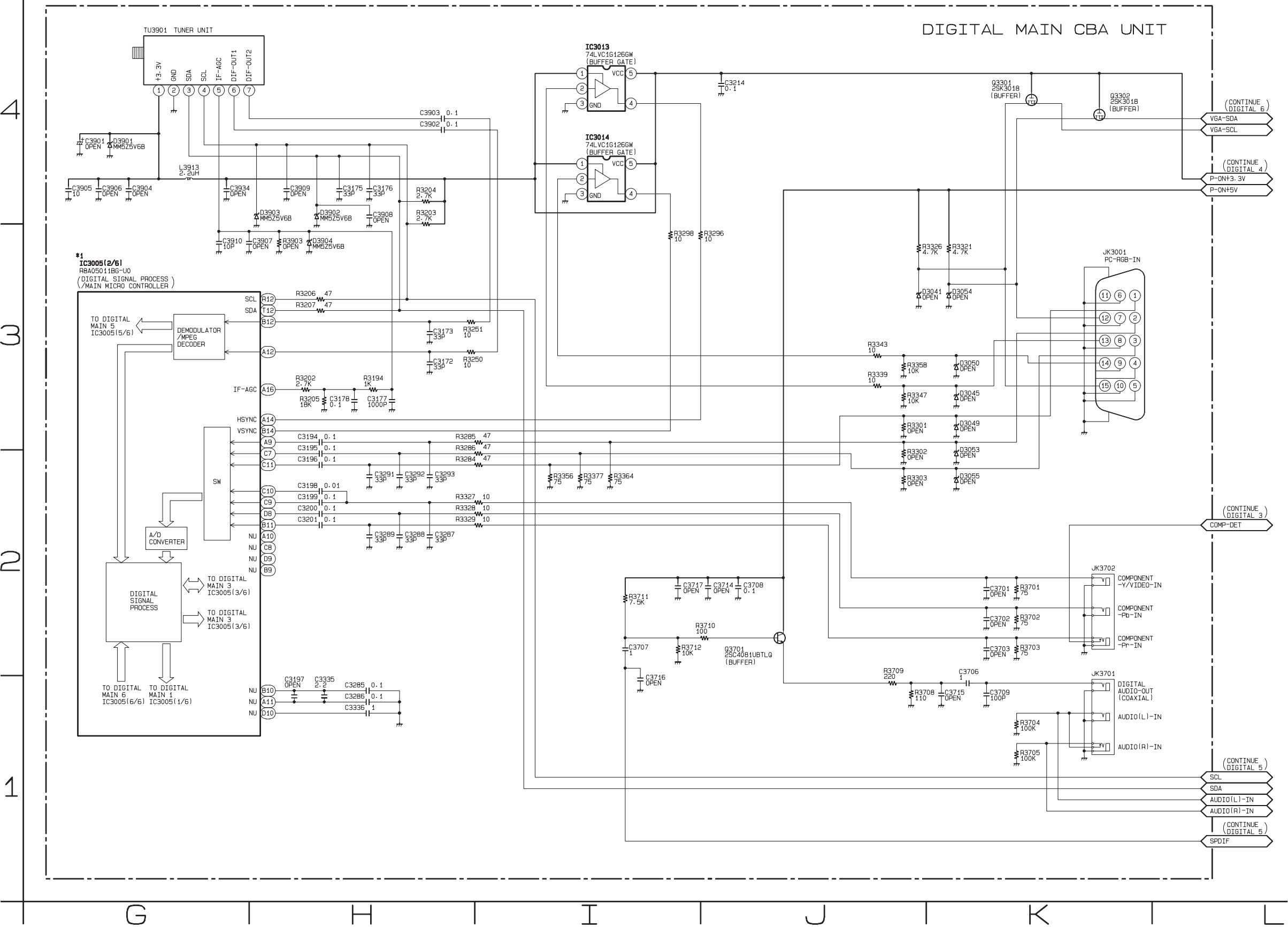
The order of pins shown in this diagram is different from that of actual IC3005.

IC3005 is divided into six and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



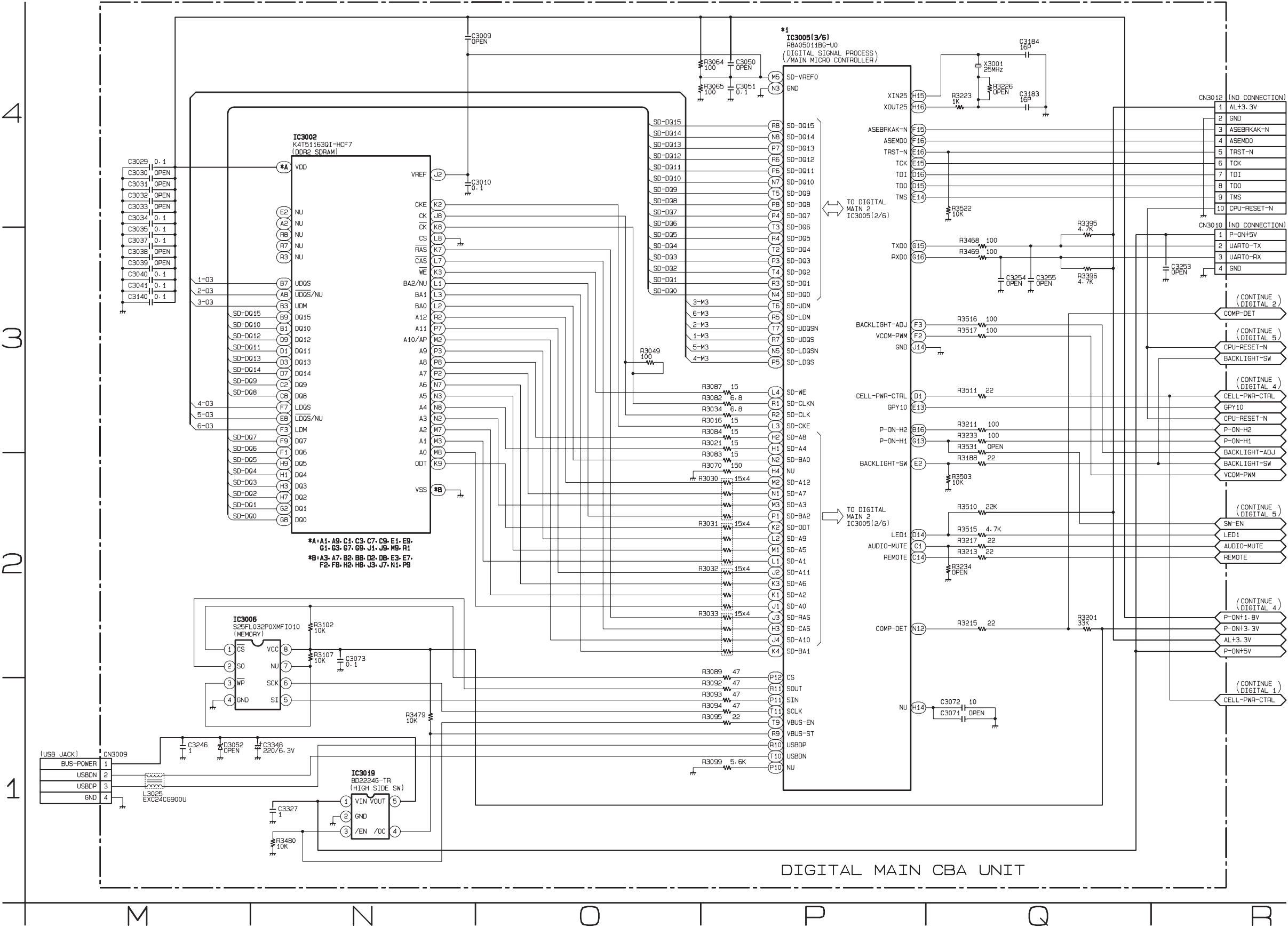
Digital Main 2 Schematic Diagram

***1 NOTE:**
The order of pins shown in this diagram is different from that of actual IC3005.
IC3005 is divided into six and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



Digital Main 3 Schematic Diagram

*1 NOTE:
The order of pins shown in this diagram is different from that of actual IC3005.
IC3005 is divided into six and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



4

3



S

1

T

U

$$\underline{V}$$

W

X

1

IC3005 is divided into six and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



4

(2)

2

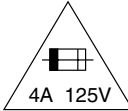
1



Power Supply CBA Top View

CAUTION !

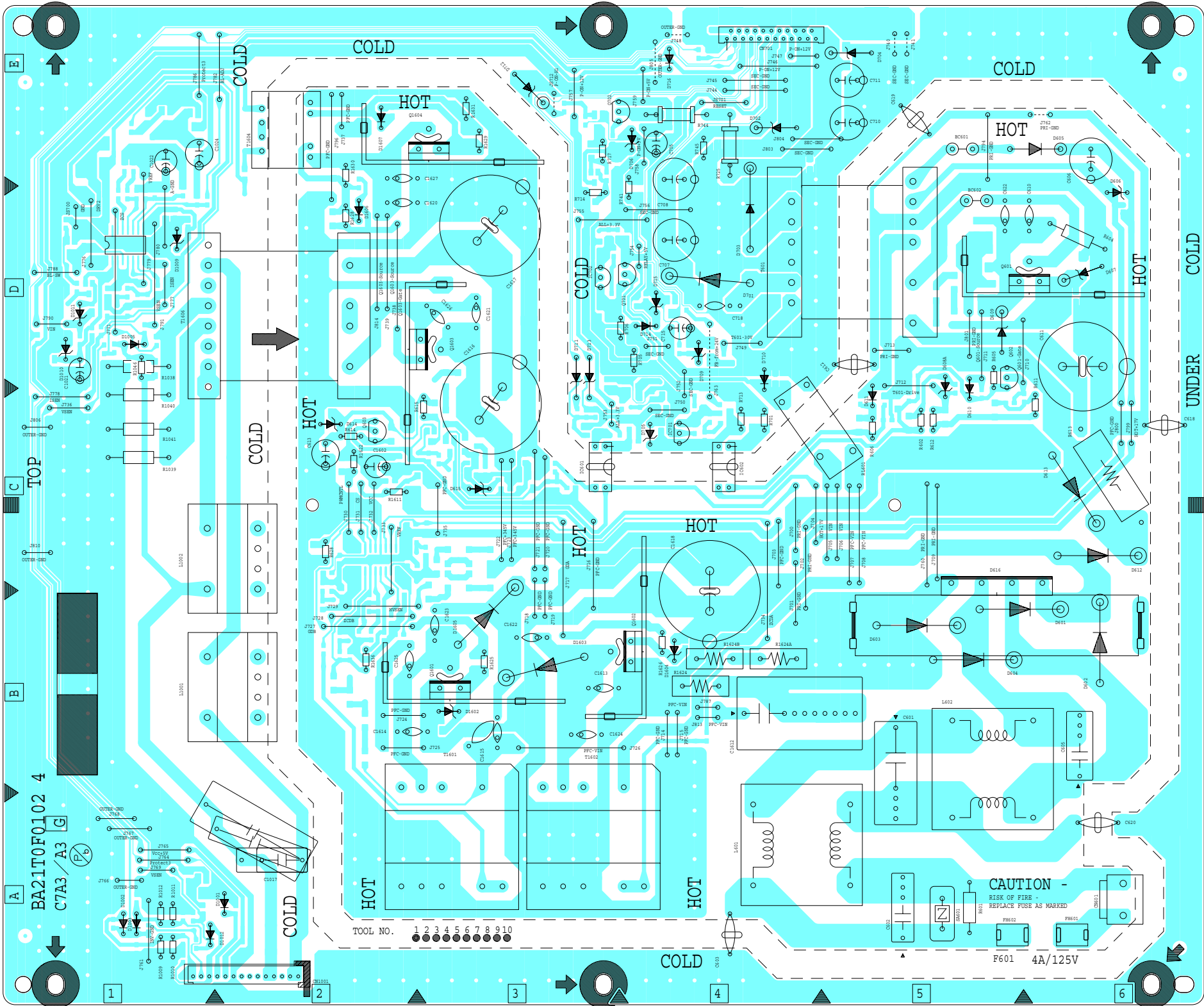
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



CAUTION ! : For continued protection against risk of fire,
replace only with same type 4A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing.
Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.

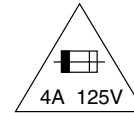
NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



Power Supply CBA Bottom View

CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.



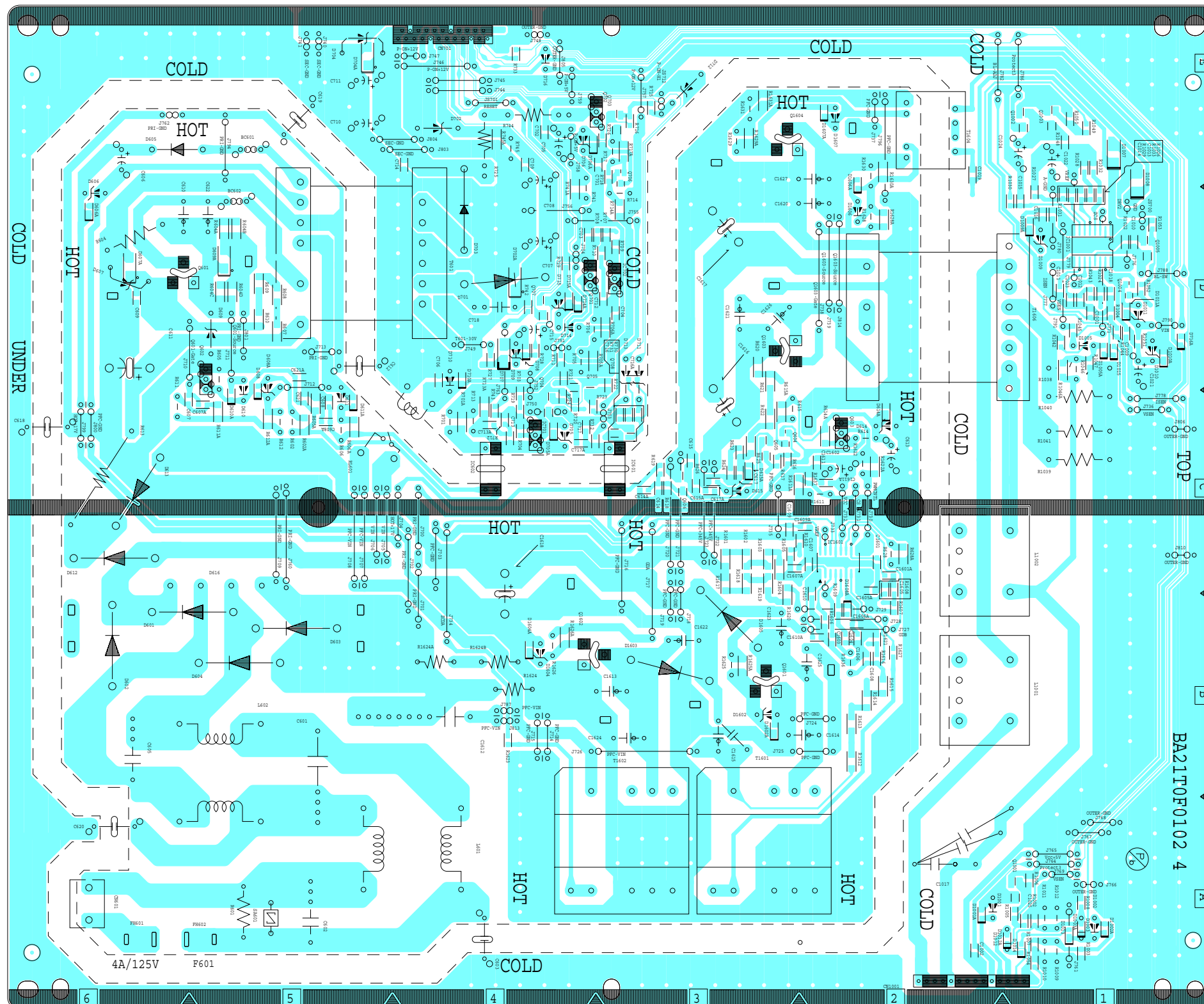
CAUTION ! : For continued protection against risk of fire, replace only with same type 4A, 125V fuse.

ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

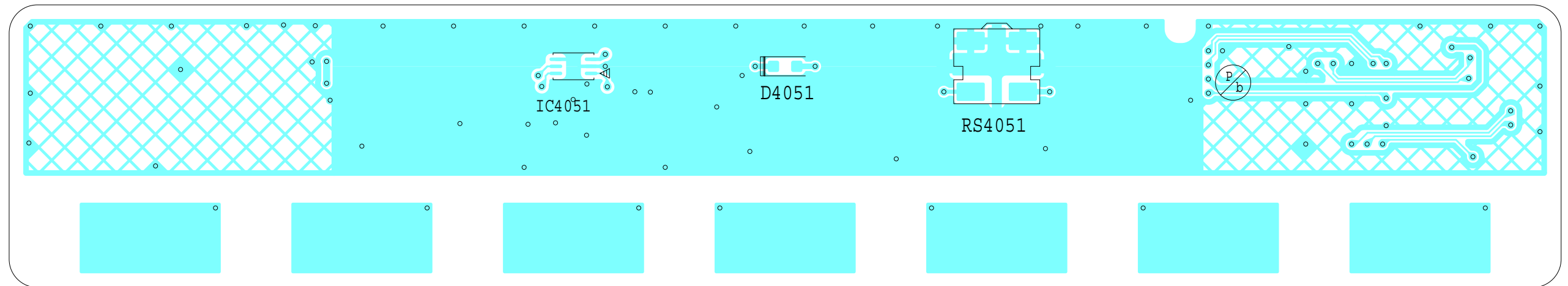
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing. Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.

NOTE:

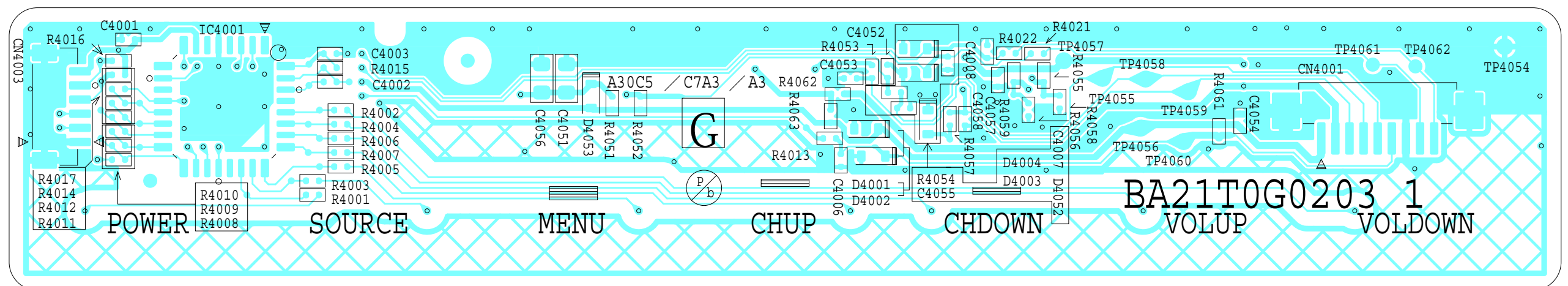
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



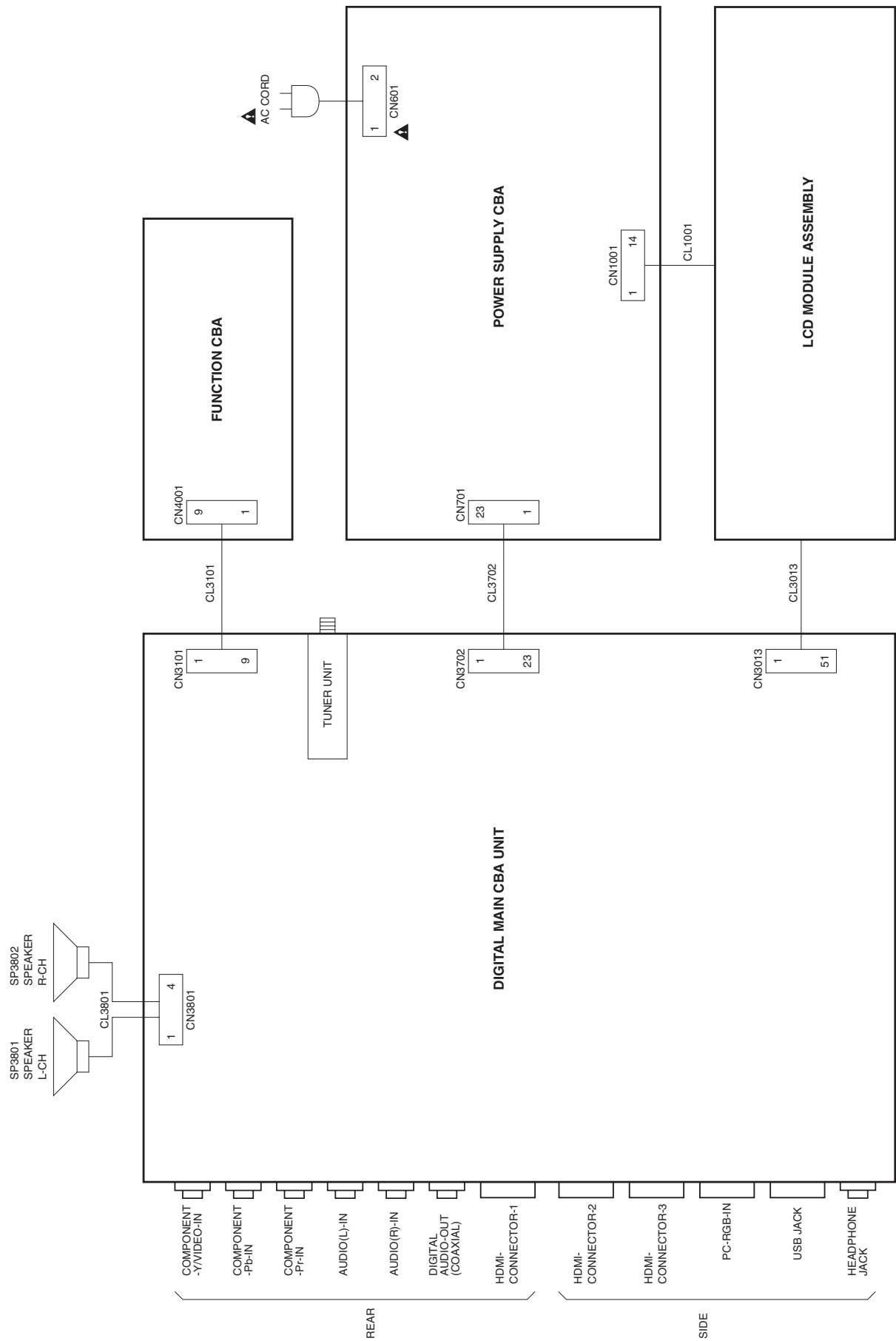
Function CBA Top View



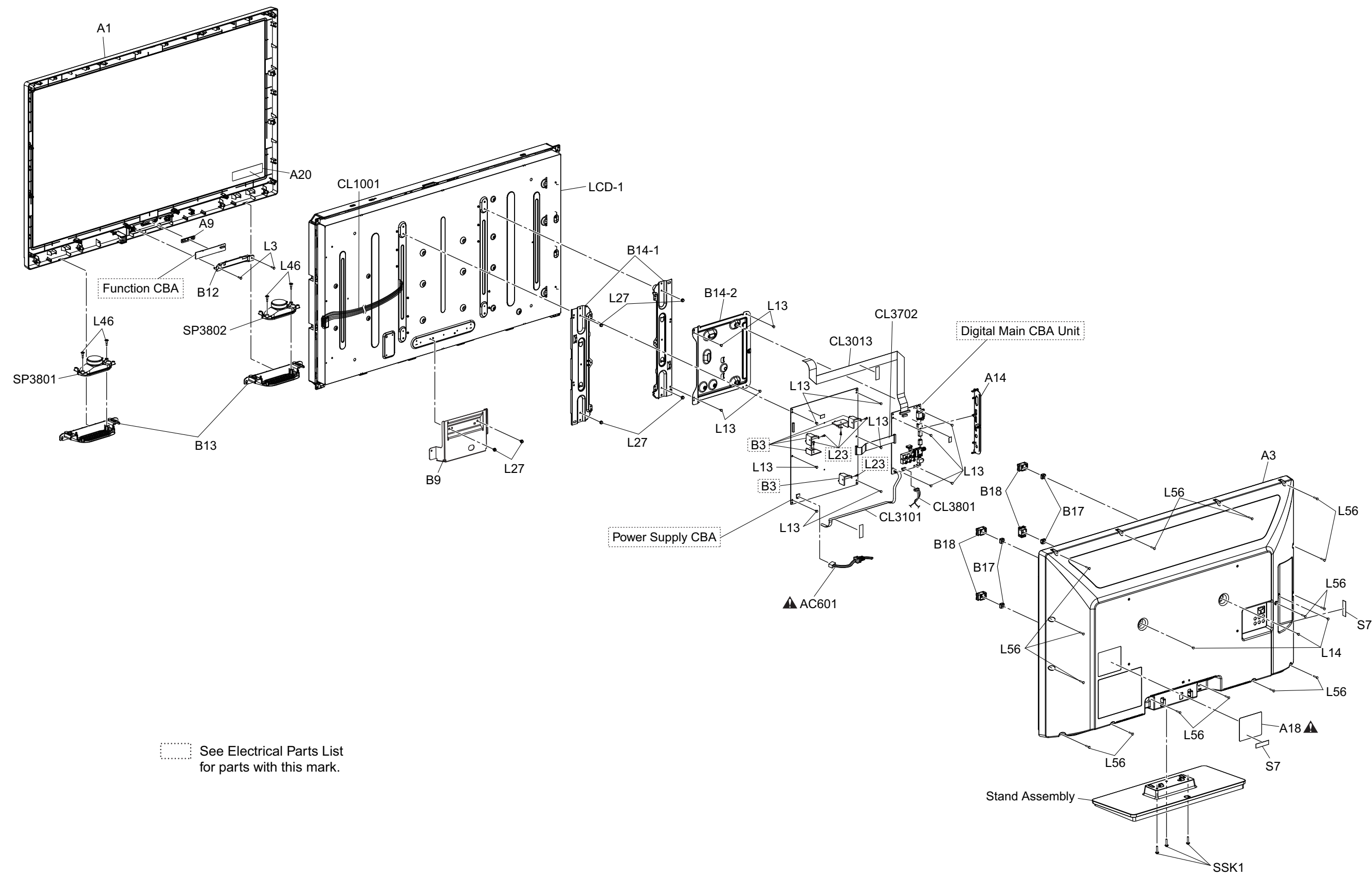
Function CBA Bottom View



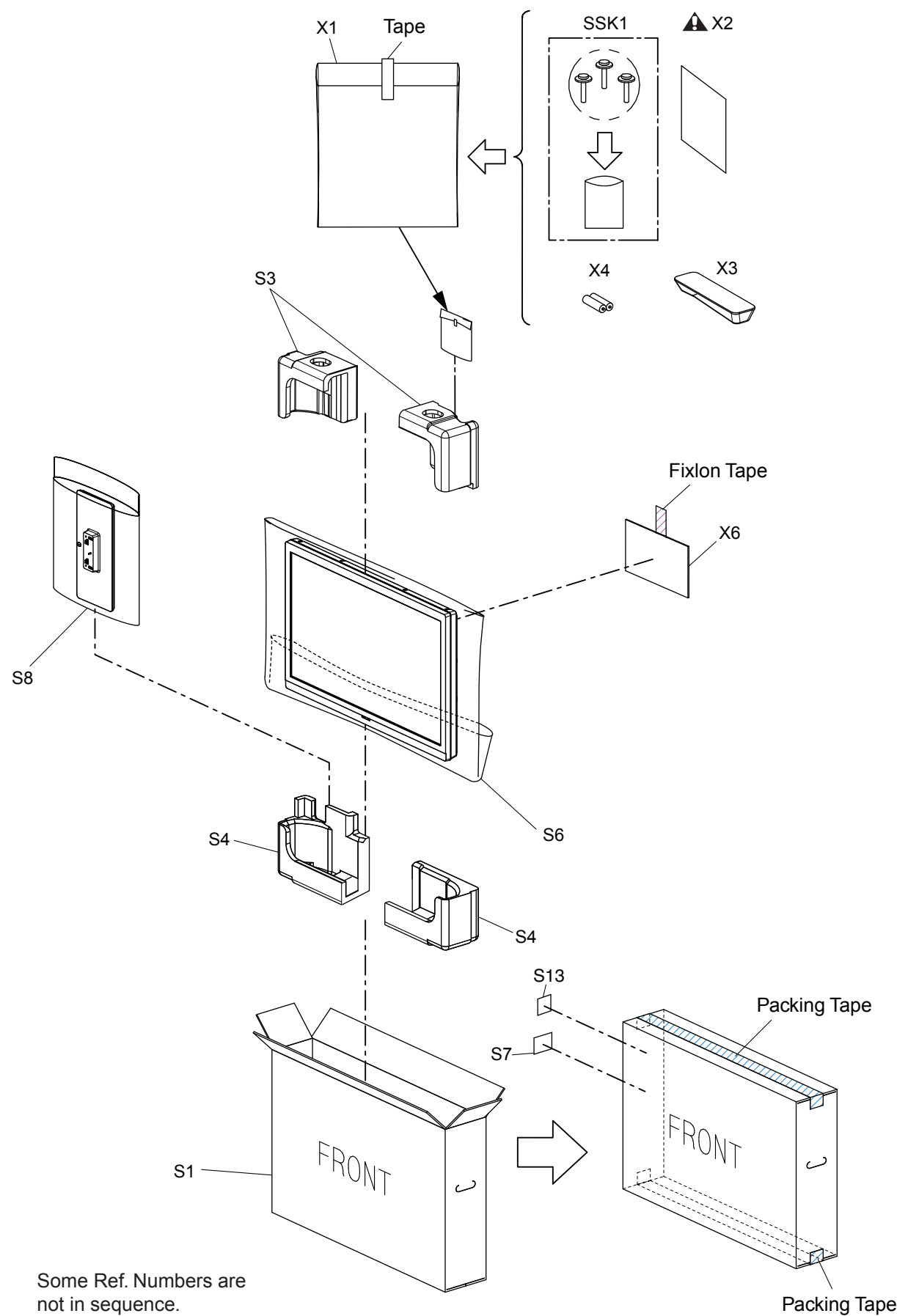
WIRING DIAGRAM



EXPLODED VIEWS




Packing





PARTS LIST [39PFL1507/F8 (Serial No.: XA1)]

Mechanical Parts

PRODUCT SAFETY NOTE: Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (-----) are not available.

Ref. No.	Description	Part No.
ACCESSORIES		
X1	POLYETHYLENE BAG HDPE 180X340XT0.03	1EM435579
X2 	OWNERS MANUAL A21T7ZA	1EMN29921
X3	REMOTE CONTROL TRANSMITTER YKF259-001	URMT34JHG001
X4	BATTERY R03-B500/01S	XB0M451CZB01
X6	QUICK START GUIDE A21T7ZA	1EMN29925

Ref. No.	Description	Part No.
A1	FRONT CABINET A21T7ZA	1EM127573
A3	REAR CABINET A21T0UH	1EM029046B
A9	SENSOR LENS A2170UT	1EM332157
A14	JACK HOLDER A21F0UH	1EM226823
A18 	RATING LABEL A21T7ZA	-----
A20	LOGO LABEL A21T7ZA	-----
AC601 	AC CORD W/O A GND WIRE UL/CSA/1825/NO/BLACK	WAC1820LW001
B9	STAND HOLDER A21T0UH	1EM126954
B12	SENSOR HOLDER A2170UT	1EM332138
B13	SPEAKER HOLDER A21T0UH	1EM126914
B14-1	POWER PCB HOLDER A21T0UH	1EM126955
B14-2	DIGITAL PCB HOLDER A21T0UH	1EM126956
B17	WALL MOUNT BRACKET A11N0UH	1EM434637
B18	WALL MOUNT COVER A2170UT	1EM332137
CL1001	WIRE ASSEMBLY 14PIN 12PIN&14PIN/380MM	WX1A21T0-322
CL3013	FFC WIRE ASSEMBLY 51PIN(W/SHIELD) 51PIN/FFC/SHIELD/573	WX1A21T0-431
CL3101	FFC WIRE ASSEMBLY 9PIN 9PIN/WHITE/401MM	WX1A21T0-122
CL3702	FFC WIRE ASSEMBLY 23PIN 23PIN/WHITE/170MM	WX1A21T0-121
CL3801	WIRE ASSEMBLY 4PIN 4PIN/690MM & 175MM	WX1A21T0-321
L3	SCREW P-TIGHT 3X10 BIND HEAD+	GBHP3100
L13	SCREW S-TIGHT M3X6 BIND HEAD+	GBJS3060
L14	S-TIGHT SCREW M3X6 BIND HEAD+BLACK	GBHS3060
L27	DOUBLE SEMS SCREW M4X6	FPJ34060
L46	SHOULDER SCREW A01Q0UF	1EM328277
L56	SCREW P-TIGHT M3X16BIND HEAD+BLACK	GBHP3160
SA1	STAND ASSEMBLY A21T0UH	1ESA31425
SSK1	STAND SCREW KIT A21T0UH (DOUBLE SEMS SCREW M4X20 + BLK)	1ESA31427
LCD-1	TFT-LCD MODULE 39W V390HJ1-L01	UDULCDCME011
SP3801	SPEAKER MAGNETIC S0412F34	DS08120XQ004
SP3802	SPEAKER MAGNETIC S0412F34	DS08120XQ004
PACKING		
S1	CARTON A21T7ZA	1EM439197
S3	STYROFOAM TOP A21T0UH	1EM029425
S4	STYROFOAM BOTTOM A21T0UH	1EM029426
S6	SET BAG A17P5UH	1EM331778
S7	SERIAL NO. LABEL A01PBUH	-----
S8	STAND BAG A17G0UH	1EM436162
S13	CARTON LABEL A21T7ZA	-----

Electrical Parts

PRODUCT SAFETY NOTE: Products marked with a **▲** have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

- Parts that are not assigned part numbers (-----) are not available.
- Tolerance of Capacitors and Resistors are noted with the following symbols.

C.....±0.25% D.....±0.5% F.....±1%
 G.....±2% J.....±5% K.....±10%
 M.....±20% N.....±30% Z.....+80/-20%

DIGITAL MAIN CBA UNIT

Ref. No.	Description	Part No.
	DIGITAL MAIN CBA UNIT	A21T7MMA-002
ICS		
IC3001	IC DCDC CONVERTER MP2305SDS-LF-Z/ SOIC8	NSCA0T09M010
IC3002	IC DDR2-SDRAM K4T51163QH-HCF7	NSCA0R0SM022
IC3003	IC DCDC CONVERTER MP2305SDS-LF-Z/ SOIC8	NSCA0T09M010
IC3004	IC LDO REGULATOR BD00IC0WEFJ/HTSOP-J8	QSCA0T0RM397
IC3005	IC DTV-C7V R8A05011BG-U0/256FHP	QSAA0R0HT057
IC3006	32MBIT C-MOS SERIAL FLASH S25FL032P0XMF010 /S	QSCA0R0FJ008
IC3007	IC LDO REGULATOR BD00IC0WEFJ/HTSOP-J8	QSCA0T0RM397
IC3008	IC DCDC CONVERTER MP2305SDS-LF-Z/ SOIC8	NSCA0T09M010
IC3009	IC RESET PST8429URA/SC-82ABA/	QSCB0T0MM075
IC3011	IC EEPROM BU9883FV-WE2	QSCA0T0RM105
IC3013	IC SINGLE BUS BUFFER 74LVC1G126GW	NSCA0TNPX004
IC3014	IC SINGLE BUS BUFFER 74LVC1G126GW	NSCA0TNPX004
IC3018	IC HDMI SW BU16029KV-E2	QSCA0T0RM223
IC3019	HIGH-SIDE SWITCH IC BD2224G-TR/SSOP5/5P	QSCA0T0RM011
IC3801	IC D-CLASS POWER AMPLIFIER R2A15122FP-W00R/HQFP	QSCA0T0HT005
TUNER		
TU3901	TUNER UNIT U9001UH	U9001UH

POWER SUPPLY CBA

Ref. No.	Description	Part No.
	POWER SUPPLY CBA Consists of the following	A21T0MPW-002
CAPACITORS		
C601▲	CAP METALLIZED FILM 1.0μF/310V /K/LE-MX	CTA1050DC001
C602▲	CAP METALLIZED FILM 0.1μF/310V /K/LE-MX	CTA1040DC001
C605▲	CAP METALLIZED FILM 0.22μF/310V /K/LE-MX	CTA2240DC001
C606	CAP ELE 470μF/35V/M/85	CEE4710V8006
C607A	CHIP CERAMIC CAP. B K 0.039μF/50V	CHD1JK30B393
C608A	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102

C609	CHIP CERAMIC CAP. B K 1200pF/50V	CHD1JK30B122
C610	CERAMIC CAP. RB 220pF/2kV	CA3D221TE006
C611	CAP ELECTROLYTIC 100μF/400V/M/22/25	CA2H101DYG17
C613	ELECTROLYTIC CAP. 47μF/25V M	CE1EMASDL470
C614A	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C615A	CHIP CERAMIC CAP.(1608) B K 0.022μF/50V	CHD1JK30B223
C617A	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C619▲	SAFTY CAP. 1000pF/250V KX	CA2E102MR101
C620▲	CAP CERAMIC 470pF/250V KX	CA2E471MR100
C621A	CHIP CERAMIC CAP. B K 0.056μF/50V	CHD1JK30B563
C622	CERAMIC CAP. RB 220pF/2kV	CA3D221TE006
C702	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C707	CAP ELE 470μF/35V/M/85	CEE4710V8006
C708	CAP ELE 470μF/35V/M/85	CEE4710V8006
C710	ELECTROLYTIC CAP. 470μF/16V M	CE1CMASDL471
C711	ELECTROLYTIC CAP. 470μF/16V M	CE1CMASDL471
C712	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C713A	CHIP CERAMIC CAP.(1608) B K 0.047μF/50V	CHD1JK30B473
C714	RES CHIP 1608 1/10W J 10k Ω	RRXA103HH013
C715	ELECTROLYTIC CAP. 1μF/50V M	CE1JMASDL1R0
C716A	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C717A	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C718	CERAMIC CAP RB 1500pF/2kV	CA3D152TE006
C1001	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
C1009	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1010	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1011	CHIP CERAMIC CAP.(1608) B K 0.047μF/50V	CHD1JK30B473
C1012	CHIP CERAMIC CAP.(1608) B K 2.2μF/10V	CHD1AK30B225
C1013	CHIP CERAMIC CAP. CH J 330pF/50V	CHD1JJ3CH331
C1014	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C1015	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C1016	CHIP CERAMIC CAP.(1608) B K 4700pF/50V	CHD1JK30B472
C1017	CAP METALLIZED FILM 0.033μF/630V/J	CTA333PKR004
C1018	CHIP CERAMIC CAP.(1608) B K 2.2μF/10V	CHD1AK30B225
C1019	CHIP CERAMIC CAP. B K 1μF/10V	CHE1AK30B105
C1022	ELECTROLYTIC CAP. 47μF/25V M	CE1EMASDL470
C1023	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C1024	ELECTROLYTIC CAP. 47μF/50V M	CE1JMASDL470
C1025	CHIP CERAMIC CAP.(1608) B K 1μF/25V	CHD1EK30B105
C1601A	CHIP CERAMIC CAP.(1608) B K 4700pF/50V	CHD1JK30B472
C1602	ELECTROLYTIC CAP. 4.7μF/50V M	CE1JMASDL4R7
C1603	CHIP CERAMIC CAP.(1608) B K 0.22μF/25V	CHD1EK30B224
C1604	CHIP CERAMIC CAP.(1608) B K 2.2μF/10V	CHD1AK30B225
C1605A	CHIP CERAMIC CAP. B K 1200pF/50V	CHD1JK30B122
C1606A	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C1607A	CHIP CERAMIC CAP. B K 1200pF/50V	CHD1JK30B122
C1608	CHIP CERAMIC CAP.(1608) B K 0.047μF/50V	CHD1JK30B473
C1609A	CHIP CERAMIC CAP.(1608) CH J 22pF/50V	CHD1JJ3CH220
C1610A	CHIP CERAMIC CAP.(1608) CH J 22pF/50V	CHD1JJ3CH220
C1611A	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1612	CAP METALLIZED FILM 1.0μF/630V/J	CTA105PKR004
C1613	CERAMIC CAP. RB 330pF/2kV	CA3D331TE006
C1614	CERAMIC CAP. RB 330pF/2kV	CA3D331TE006
C1615	CERAMIC CAP RB 1500pF/2kV	CA3D152TE006
C1616	CAP ELECTROLYTIC 100μF/400V/M/22/25	CA2H101DYG17
C1617	CAP ELECTROLYTIC 100μF/400V/M/22/25	CA2H101DYG17
C1618	CAP ELECTROLYTIC 100μF/400V/M/22/25	CA2H101DYG17
C1620	CERAMIC CAP. RB 680pF/2kV	CA3D681TE006
C1621	CERAMIC CAP. RB 680pF/2kV	CA3D681TE006

Ref. No.	Description	Part No.
C1622	CERAMIC CAP. RB 150pF/2kV	CA3D151TE006
C1623	CERAMIC CAP. RB 150pF/2kV	CA3D151TE006
CN601▲	CONNECTOR B2P3-VH(LF)(SN)	J3VH020JG001
CN701	FFC CONNECTOR IMSA-9615S-23A-PP-A	JC96J23ER007
CN1001	CONNECTOR PRINT OSU B14B-PH-K-S(LF)(SN)	J3PHC14JG029
DIODES		
D601▲	DIODE 1N5406BH	NDL1001N5406
D602▲	DIODE 1N5406BH	NDL1001N5406
D603▲	DIODE 1N5406BH	NDL1001N5406
D604▲	DIODE 1N5406BH	NDL1001N5406
D605	DIODE FAST RECOVERY FR103-B/P	NDWZ0FR103BP
D607▲	DIODE ZENER 1ZB27BB	NDWZ0001ZB27
D608	ZENER DIODE MM5Z4V3B	ND1BMM5Z4V3B
D609▲	DIODE ZENER 1ZB36BB	NDWZ0001ZB36
D610A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D611A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D612▲	DIODE 1N5406BH	NDL1001N5406
D613▲	DIODE 1N5406BH	NDL1001N5406
D614A	ZENER DIODE SMD TFZGTR16B	QD1B000TFZ16
D615A	ZENER DIODE SMD TFZGTR24B	QD1B000TFZ24
D701	DIODE SHOTTKY SB3200BR	NDWZ3200D027
D702▲	DIODE ZENER 1ZB36BB	NDWZ0001ZB36
D703	DIODE SCHOTTKY SB3A0BH	NDWZ000SB3A0
D705A	DIODE ZENER SMD PZU5.6B2.115	ND1200PZU5R6
D706A	DIODE ZENER SMD PZU5.6B2.115	ND1200PZU5R6
D707	DIODE FAST RECOVERY RS1BJTB	ND1Z0RS1BJTB
D708	ZENER DIODE MM5Z5V6B	ND1BMM5Z5V6B
D710A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D711	WIRE CP STP-S-0.50	XZ40FOREN001
D713	WIRE CP STP-S-0.50	XZ40FOREN001
D714A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D715A	ZENER DIODE SMD TFZGTR4.3B	QD1B00TFZ4R3
D716A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D1001A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D1002A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D1003A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D1005A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D1007	DIODE SK16-T/R	ND1Z0000SK16
D1008	DIODE SK16-T/R	ND1Z0000SK16
D1011A	ZENER DIODE SMD TFZGTR5.6B	QD1B00TFZ5R6
D1012A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D1013	ZENER DIODE SMD TFZGTR10B	QD1B000TFZ10
D1014	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D1015	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D1602A	ZENER DIODE SMD TFZGTR27B	QD1B000TFZ27
D1603	DIODE FAST RECOVERY 30PFB60	QDWZ030PFB60
D1604A	ZENER DIODE SMD TFZGTR27B	QD1B000TFZ27
D1605	DIODE FAST RECOVERY 30PFB60	QDWZ030PFB60
D1606A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
D1607A	DIODE SWITCHING HSC119 TRF -E	QD1Z00HSC119
ICS		
IC601▲	IC PHOTOCOUPLER TLP781F(D4-FUNBLL F)	QPEL781FBLLF
IC602▲	IC PHOTOCOUPLER TLP781F(D4-FUNBLL F)	QPEL781FBLLF
IC701	IC SHUNT REGULATOR SL431A-AT	NSZBA0TAUK01
IC702	IC SHUNT REGULATOR SL431A-AT	NSZBA0TAUK01
IC1001	IC INVERTER CONTROLLER OZ9976GN-C-0-TR/16P	NSCA0TTMC004
IC1601	IC DUAL-PHASE PFC CONTROLLER UCC28060DR	NSCA0T0TY005
COILS		
L601▲	LINE FILTER JLB28131/19MH	LLEG0Z0XB018

Ref. No.	Description	Part No.
L602▲	LINE FILTER JLB28131/19MH	LLEG0Z0XB018
L1001	COIL EF TE2520A0801	LLEE0ZMEK003
L1002	COIL EF TE2520A0801	LLEE0ZMEK003
TRANSISTORS		
Q601▲	FET MOS TK3A65D(FND Q)	QEWZTK3A65DQ
Q602▲	TRANSISTOR 2SC2120-Y(Te2 F T)	QQSY2SC2120F
Q603	TRANSISTOR 2SC2120-Y(Te2 F T)	QQSY2SC2120F
Q604	PNP TRANSISTOR SMD 2SA1576UBTLQ	QQ1Q2SA1576U
Q605	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q606	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q701	TRANSISTOR 2SC2120-Y(Te2 F T)	QQSY2SC2120F
Q702	TRANSISTOR 2SC2120-Y(Te2 F T)	QQSY2SC2120F
Q703	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q704	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q705	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q706	PNP TRANSISTOR SMD 2SA1576UBTLQ	QQ1Q2SA1576U
Q707	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q708	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q1001	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q1002	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q1003	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q1004	PNP TRANSISTOR SMD 2SA1576UBTLQ	QQ1Q2SA1576U
Q1005	CHIP TRANSISTOR KTC3875S-Y-RTK/P	NQ1YKTC3875S
Q1601▲	MOS FET TK8A50D	QFWZTK8A50DQ
Q1602▲	MOS FET TK8A50D	QFWZTK8A50DQ
Q1603▲	FET MOS TK5A50D(FUNAI	QEWZTK5A50DQ
Q1604▲	FET MOS TK5A50D(FUNAI	QEWZTK5A50DQ
RESISTORS		
R601▲	RES. CARBON FILM J 1/2W J 1.2M Ω	RCX2125T1003
R602	RES CARBON FILM T 1/4W J 1.5k Ω	RCX4152T1001
R604	METAL RESISTER. 2W J 0.56 Ω	RN02R56ZU001
R605	RES CARBON FILM T 1/4W J 2.2k Ω	RCX4222T1001
R606	RES CARBON FILM T 1/4W J 220 Ω	RCX4221T1001
R607	RES CHIP 3216 1/4W J 330k Ω	RRXA4334HH034
R608	RES CHIP 3216 1/4W J 330k Ω	RRXA4334HH034
R609	RES CHIP 3216 1/4W J 330k Ω	RRXA4334HH034
R610	RES CHIP 3216 1/4W J 330k Ω	RRXA4334HH034
R611	RES CARBON FILM T 1/4W J 270 Ω	RCX4271T1001
R612	RES CARBON FILM T 1/4W J 270 Ω	RCX4271T1001
R613▲	RES CEMENT 3W/J1.20Ω/FORMING	RWJ1R2PAK009
R614	RES CARBON FILM T 1/4W J 47 Ω	RCX4470T1001
R615	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R616	RES CHIP 1608 1/10W J 10k Ω	RRXA103HH013
R617	RES CHIP 1608 1/10W J 18k Ω	RRXA183HH013
R618	RES CHIP 1608 1/10W J 4.7k Ω	RRXA472HH013
R619	RES CHIP 1608 1/10W J 39k Ω	RRXA393HH013
R620	RES CHIP 3216 1/4W F 100k Ω	RTC1003YF004
R621	RES CHIP 3216 1/4W F 100k Ω	RTC1003YF004
R622	RES CHIP 3216 1/4W F 100k Ω	RTC1003YF004
R623	RES CHIP 1608 1/10W F 24.0k Ω	RTW2402HH008
R624	RES CHIP 1608 1/10W F 2.70k Ω	RTW2701HH008
R625	RES CHIP 3216 1/4W F 100k Ω	RTC1003YF004
R626	RES CHIP 1608 1/10W J 220k Ω	RRXA224HH013
R628	RES CARBON FILM T 1/4W J 2.7k Ω	RCX4272T1001
R701	RES CARBON FILM T 1/4W J 150 Ω	RCX4151T1001
R703	RES CHIP 1608 1/10W F 8.20k Ω	RTW8201HH008
R704	RES CHIP 1608 1/10W F 2.20k Ω	RTW2201HH008
R705	RES CARBON FILM T 1/4W J 1.0k Ω	RCX4102T1001
R706	RES CARBON FILM T 1/4W J 1.0k Ω	RCX4102T1001
R707	RES CHIP 1608 1/10W F 100 Ω	RTW1000HH008
R708	RES CHIP 1608 1/10W F 3.30k Ω	RTW3301HH008
R709	RES CHIP 1608 1/10W F 10.0k Ω	RTW1002HH008

Ref. No.	Description	Part No.
R710	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R711	RES CHIP 1608 1/10W J 5.6 Ω	RRXA5R6HH013
R712	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R714	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R715	RES CHIP 1608 1/10W J 6.8k Ω	RRXA682HH013
R716	RES CHIP 1608 1/10W J 47k Ω	RRXA473HH013
R717	RES CARBON FILM T 1/4W J 4.7k Ω	RCX4472T1001
R718	RES CHIP 1608 1/10W J 4.7k Ω	RRXA472HH013
R719	RES CHIP 1608 1/10W F 180 Ω	RTW1800HH008
R720	RES CHIP 1608 1/10W J 10k Ω	RRXA103HH013
R721	RES CHIP 1608 1/10W J 18k Ω	RRXA183HH013
R722	RES CHIP 1608 1/10W J 22k Ω	RRXA223HH013
R723	RES CHIP 1608 1/10W J 10k Ω	RRXA103HH013
R724	RES CHIP 1608 1/10W J 3.3k Ω	RRXA332HH013
R725	METAL OXIDE FILM RES. 1W J 22 Ω	RN01220ZU001
R726	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R727	RES CHIP 1608 1/10W J 1.0 Ω	RRXA1R0HH013
R728	RES CHIP 1608 1/10W F 30.0k Ω	RTW3002HH008
R729	RES CHIP 1608 1/10W F 22.0k Ω	RTW2202HH008
R730	RES CHIP 1608 1/10W J 6.8k Ω	RRXA682HH013
R731	RES CHIP 1608 1/10W J 47k Ω	RRXA473HH013
R732	RES CHIP 1608 1/10W J 220 Ω	RRXA221HH013
R733	RES CHIP 1608 1/10W J 1.0k Ω	RRXA102HH013
R741	RES CARBON FILM T 1/4W J 2.2 Ω	RCX42R2T1001
R744	METAL OXIDE FILM RES. 1W J 22 Ω	RN01220ZU001
R745	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R1002	RES CHIP 1608 1/10W F 390 Ω	RTW3900HH008
R1003	RES CHIP 1608 1/10W F 390 Ω	RTW3900HH008
R1004	RES CHIP 1608 1/10W F 1.00k Ω	RTW1001HH008
R1005	RES CHIP 1608 1/10W J 15k Ω	RRXA153HH013
R1006	RES CHIP 1608 1/10W J 33k Ω	RRXA333HH013
R1024	RES CHIP 1608 1/10W J 680k Ω	RRXA684HH013
R1026	RES CHIP 1608 1/10W J 150k Ω	RRXA154HH013
R1027	RES CHIP 1608 1/10W J 300k Ω	RRXA304HH013
R1028	RES CHIP 1608 1/10W J 68k Ω	RRXA683HH013
R1029	RES CHIP 1608 1/10W J 75k Ω	RRXA753HH013
R1030	RES CHIP 1608 1/10W J 1.0k Ω	RRXA102HH013
R1031	RES CHIP 1608 1/10W F 33.0k Ω	RTW3302HH008
R1032	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R1033	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R1038	METAL OXIDE FILM RES. 2W J 0.33 Ω	RN02R33ZU001
R1039	METAL OXIDE FILM RES. 2W J 0.33 Ω	RN02R33ZU001
R1040	METAL OXIDE FILM RES. 2W J 0.33 Ω	RN02R33ZU001
R1041	METAL OXIDE FILM RES. 2W J 0.33 Ω	RN02R33ZU001
R1042	RES CHIP 1608 1/10W J 100 Ω	RRXA101HH013
R1043	RES CHIP 1608 1/10W J 620k Ω	RRXA624HH013
R1044	RES CHIP 1608 1/10W F 2.20k Ω	RTW2201HH008
R1045	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R1046	RES CARBON FILM T 1/4W J 22k Ω	RCX4223T1001
R1047	RES CHIP 1608 1/10W F 1.00k Ω	RTW1001HH008
R1048	RES CHIP 1608 1/10W J 120k Ω	RRXA124HH013
R1049	RES CHIP 1608 1/10W J 47k Ω	RRXA473HH013
R1050	RES CHIP 1608 1/10W J 100k Ω	RRXA104HH013
R1051	RES CHIP 1608 1/10W J 12 Ω	RRXA120HH013
R1052	RES CHIP 1608 1/10W J 1.0k Ω	RRXA102HH013
R1053	RES CHIP 1608 1/10W J 47k Ω	RRXA473HH013
R1054	RES CHIP 1608 1/10W J 6.8k Ω	RRXA682HH013
R1601	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1602	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1603	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1604	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1605	RES CHIP 1608 1/10W F 51.0k Ω	RTW5102HH008
R1606	RES CHIP 1608 1/10W J 120k Ω	RRXA124HH013

R1607	RES CHIP 1608 1/10W F 1.60k Ω	RTW1601HH008
R1608	RES CHIP 1608 1/10W F 36.0k Ω	RTW3602HH008
R1609	RES CHIP 1608 1/10W J 5.6k Ω	RRXA562HH013
R1610	RES CHIP 1608 1/10W F 2.20k Ω	RTW2201HH008
R1611	RES CARBON FILM T 1/4W J 100 Ω	RCX4101T1001
R1612	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1613	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1614	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1615	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1616	RES CHIP 1608 1/10W F 47.0k Ω	RTW4702HH008
R1617	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1618	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1619	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1620	RES CHIP 3216 1/4W F 750k Ω	RTC7503YF004
R1621	RES CHIP 1608 1/10W F 1.80k Ω	RTW1801HH008
R1622	RES CARBON FILM T 1/4W J 18k Ω	RCX4183T1001
R1623	RES CHIP 1608 1/10W J 12k Ω	RRXA123HH013
R1624	RES CEMENT 5W J 0.033 Ω	RWJL33PAK002
R1625	RES CARBON FILM T 1/4W J 4.7 Ω	RCX44R7T1001
R1626	RES CARBON FILM T 1/4W J 4.7 Ω	RCX44R7T1001
R1627	RES CHIP 1608 1/10W J 12k Ω	RRXA123HH013
R1628	RES CARBON FILM T 1/4W J 100 Ω	RCX4101T1001
R1629	RES CARBON FILM T 1/4W J 100 Ω	RCX4101T1001
R1630	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R1631	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
MISCELLANEOUS		
B3	POW HEAT SINK A7120UH	1EM423993
BC601	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC602	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
F601▲	FUSE STC4A125V U/CT	PAGE20CW3402
FH601	FUSE HOLDER MSF-015-RS-SN (B110)	XH001ZOLY001
FH602	FUSE HOLDER MSF-015-RS-SN (B110)	XH001ZOLY001
JS700	WIRE CP STP-S-0.50	XZ40FOREN001
JS701	WIRE CP STP-S-0.50	XZ40FOREN001
JS712	WIRE CP STP-S-0.50	XZ40FOREN001
L23	SCREW B-TIGHT D3X8 BIND HEAD+	GBJB3080
RL601▲	RELAY SDT-SS-105DM	MRLEC05QN001
SA601▲	SURGE ABSORBER 470V+-10PER	NVQZ10D471KB
T601▲	TRANS POWER BCK-28EM	LTT2PCMEK043
T1601▲	COIL EF TE2415A3001	LLEE0ZMEK002
T1602▲	COIL EF TE2415A3001	LLEE0ZMEK002
T1604▲	TRANS POWER BCK-1666	LTT1PCMEK003
T1606▲	TRANS POWER BCK-35CA	LTT3PCMEK019

FUNCTION CBA

	FUNCTION CBA Consists of the following	A21T7MSW-002
C4001	CHIP CERAMIC CAP.(1005) B K 1μF/6.3V	CHB0KK30B105
C4002	CAP CHIP 1005 CH/J/15pF/50V	CA1J150TU038
C4003	CHIP CERAMIC CAP.(1005) B K 0.068μF/10V	CHB1AK30B683
C4051	CHIP CERAMIC CAP.(2125) B K 10μF/6.3V	CHE0KK30B106
C4052	CHIP CERAMIC CAP.(1005) B K 1000pF/50V	CHB1JK30B102
C4053	CHIP CERAMIC CAP.(1005) F Z 0.1μF/16V	CHB1CZ30F104
C4054	CHIP CERAMIC CAP.(1005) F Z 0.1μF/16V	CHB1CZ30F104
C4056	CHIP CERAMIC CAP.(2125) B K 10μF/6.3V	CHE0KK30B106
CN4001	FFC CONNECTOR 9P 9611S-09Y916	JC96D09ER014
D4001	ZENER DIODE MM5Z5V6B	ND1BMM5Z5V6B
D4003	ZENER DIODE MM5Z5V6B	ND1BMM5Z5V6B

D4004	ZENER DIODE MM5Z5V6B	ND1BMM5Z5V6B
D4051	LED WHITE SMD SMLE12WBC7W1HR	QP1HWBC7W1HR
IC4001	IC TOUCH SENSOR MICON R5F21334TN101FP/QFP	QSCA0T0HT028
R4001	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4002	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4003	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4004	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4005	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4006	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4007	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4008	RES CHIP 1005 1/16W J 18k Ω	RRXG183HH004
R4009	CHIP RES.(1005) 1/16W J 8.2k Ω	RRXG822HH004
R4010	CHIP RES. 1/16W J 4.7k Ω	RRXG472HH004
R4011	CHIP RES.(1005) 1/16W J 2.7k Ω	RRXG272HH004
R4012	CHIP RES.(1005) 1/16W J 2.2k Ω	RRXG222HH004
R4013	CHIP RES.(1005) 1/16W J 100 Ω	RRXG101HH004
R4014	CHIP RES.(1005) 1/16W J 2.2k Ω	RRXG222HH004
R4015	CHIP RES.(1005) 1/16W J 2.7k Ω	RRXG272HH004
R4016	CHIP RES. 1/16W J 4.7k Ω	RRXG472HH004
R4017	CHIP RES. 1/16W J 4.7k Ω	RRXG472HH004
R4021	CHIP RES. 1/16W J 10 Ω	RRXG100HH004
R4022	CHIP RES. 1/16W J 10 Ω	RRXG100HH004
R4051	CHIP RES. 1/16W J 56 Ω	RRXG560HH004
R4052	RES CHIP 1005 1/16W J 6.8k Ω	RRXG682HH004
R4053	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4054	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4062	CHIP RES.(1005) 1/16W 0 Ω	RRXG000HH005
RS4051	SENSOR REMOTE RECEIVER GP1USC32XP	USEJRS0SH004

REVISION HISTORY

Chassis PL12.7

- 2012/08/27 39PFL1507/F8 (Serial No.: XA1) added

COMPARISON LIST OF MODEL NAMES

Chassis PL12.7

39PFL1507/F8 (XA1) A21T7ZA