

# PHILIPS

## LCD TV chassis PL10.9

# Service Manual


### Contents

**19" 19PFL4505D/F7**

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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><b>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.</b></p>
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# SPECIFICATIONS

## < TUNER / NTSC >

ANT. Input ----- 75  $\Omega$  Unbal., F type

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

## < TUNER / ATSC >

Description	Condition	Unit	Nominal	Limit
1. Received Freq. Range (-28dBm)	---	kHz	---	$\pm 100$
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	1366	---
	Vertical	pixels	768	---
2. Brightness (w / filter)	---	cd/m <sup>2</sup>	180	---
3. Viewing Angle (CR=10)	Horizontal	°	-85 to 85	---
	Vertical	°	-80 to 80	---

## < VIDEO >

Description	Condition	Unit	Nominal	Limit
1. Over Scan	Horizontal	%	5	5 $\pm$ 5
	Vertical	%	5	5 $\pm$ 5
2. Color Temperature	---	°K	11500	---
	x	---	0.276	$\pm 3\%$
	y	---	0.277	$\pm 3\%$
3. Resolution (composite video)	Horizontal	line	400	---
	Vertical	line	350	---

## < AUDIO >

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

Description	Condition	Unit	Nominal	Limit
1. Audio Output Vol. Max (ATSC 0 dBfs)	Lch/Rch	W	3.0/3.0	2.8/2.8
2. Audio Distortion (NTSC)	500mW: Lch/Rch	%	0.5/0.5	2.0/2.0
3. Audio Freq. Response (NTSC)	-6dB: Lch	Hz	70 to 10 k	---
	-6dB: Rch	Hz	70 to 10 k	---

# 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.

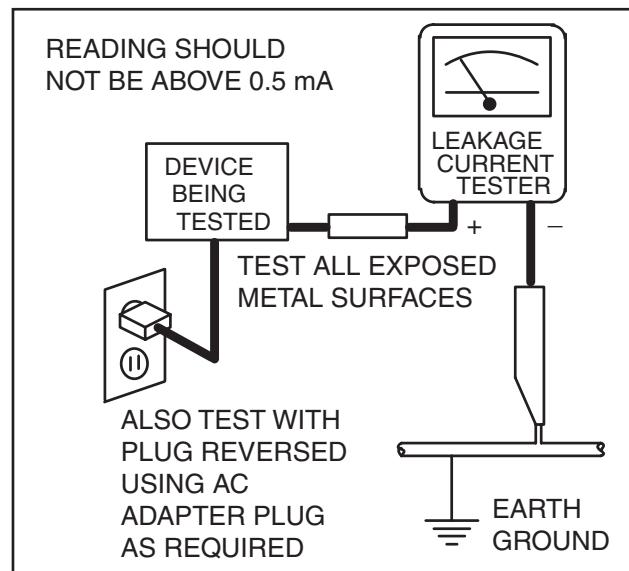
## Safety Precautions for LCD TV Circuit

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 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.

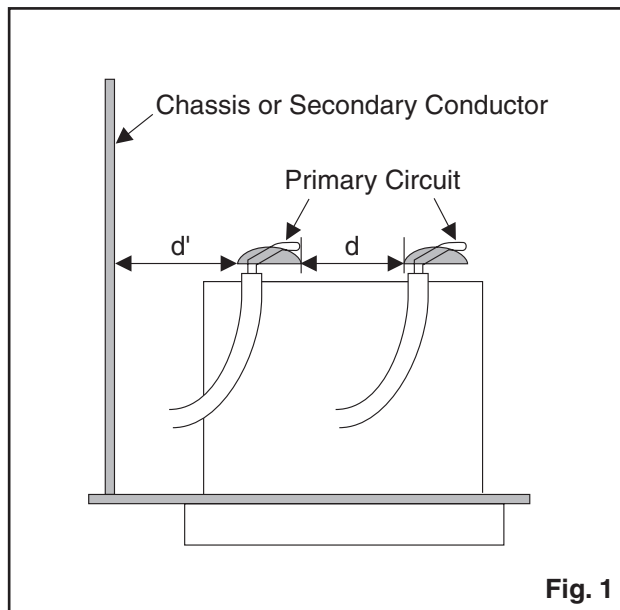
### 1. Clearance Distance

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	$\geq 3.2$ mm (0.126 inches)

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



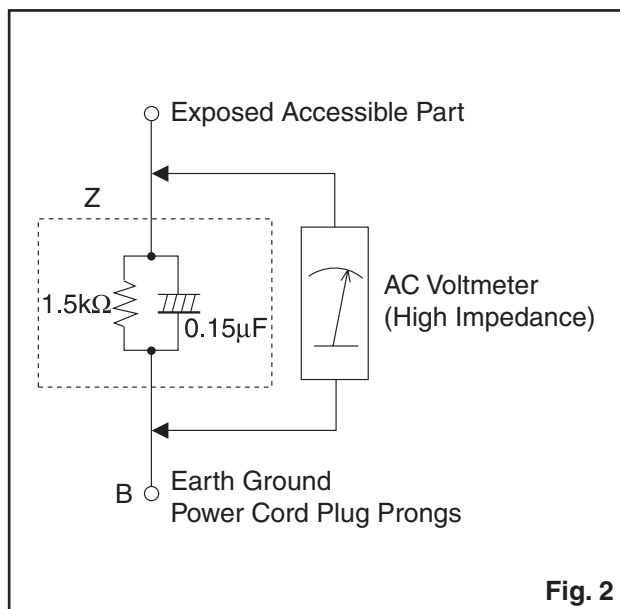
**Fig. 1**

### 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**

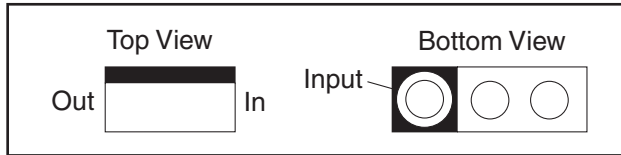
AC Line Voltage	Region	Load $Z$	Leakage Current ( $i$ )	Earth Ground (B) to:
110 to 130 V	U.S.A. or Canada	$0.15 \mu F$ CAP. & $1.5 k\Omega$ RES. Connected in parallel	$i \leq 0.5$ mA rms	Exposed accessible parts

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

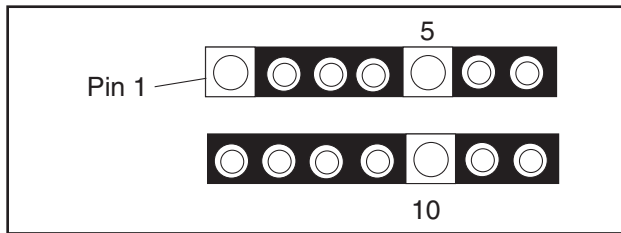
# STANDARD NOTES FOR SERVICING

## Circuit Board Indications

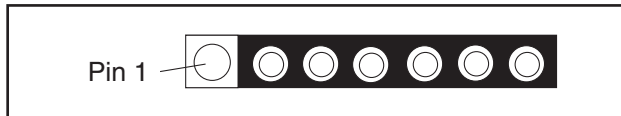
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



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

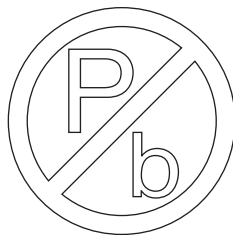


3. The 1st pin of every male connector is indicated as shown.



## 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)

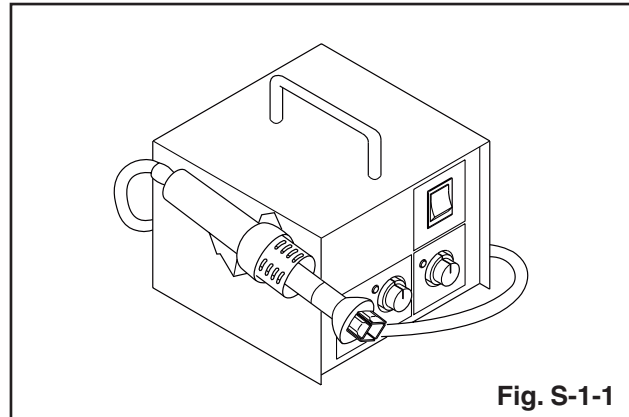


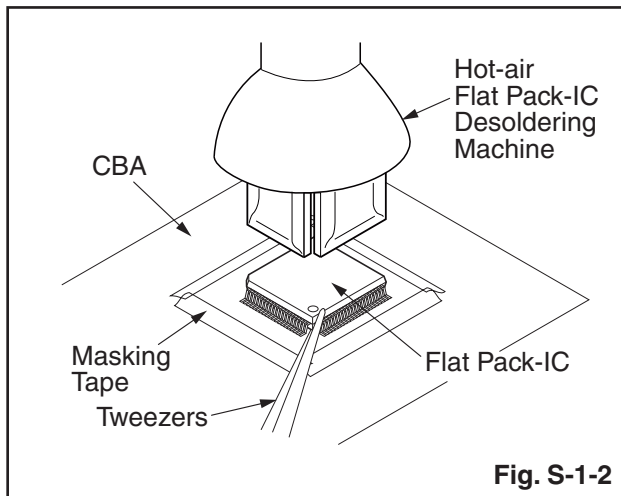
Fig. S-1-1

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:

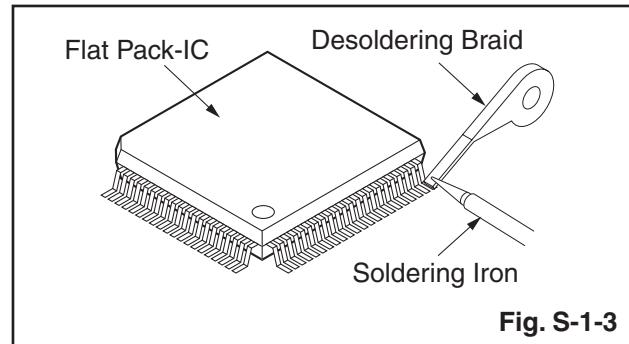
1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape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

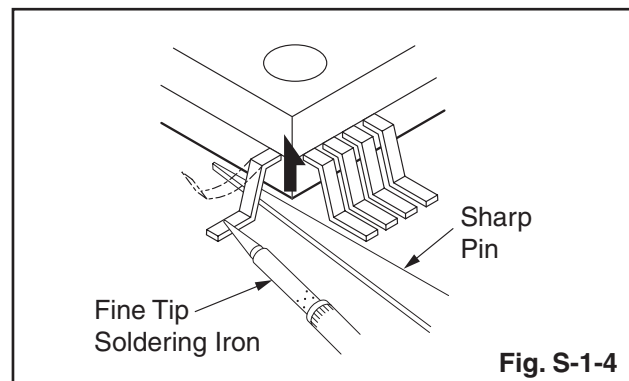


#### With Soldering Iron:

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)

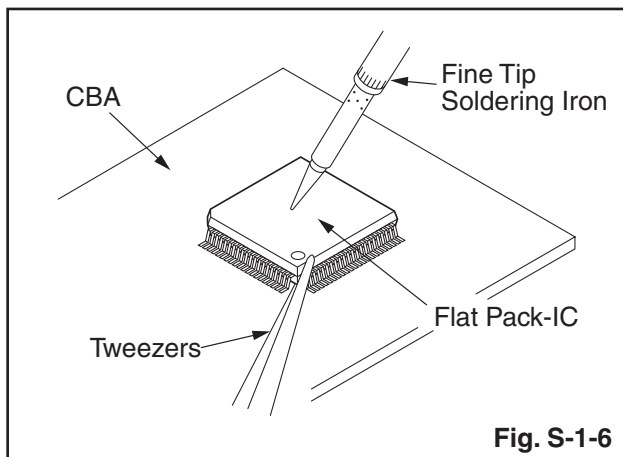
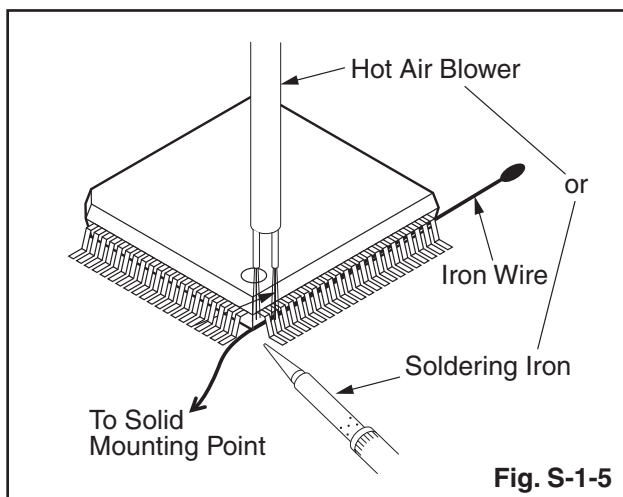


3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

### With Iron Wire:

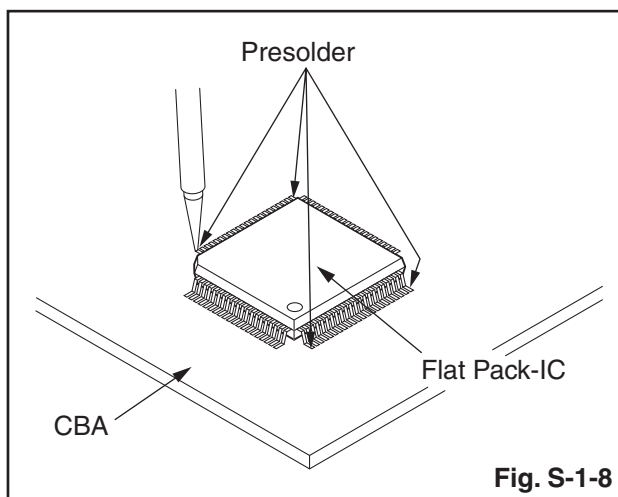
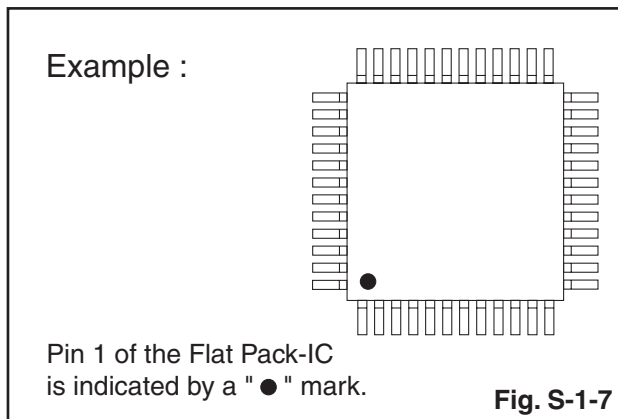
1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
2. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
3. While heating the pins 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

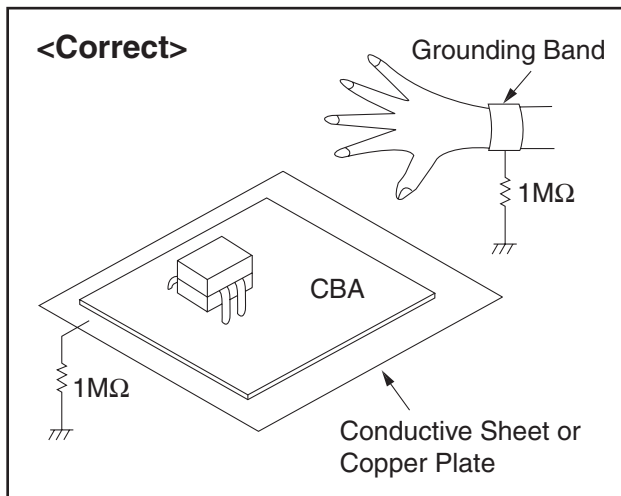
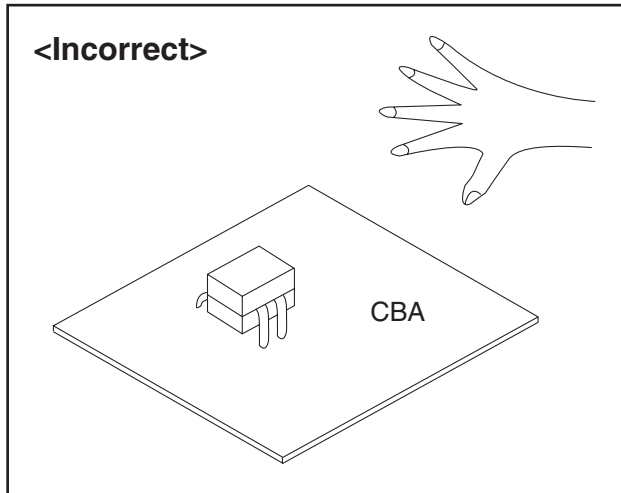
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

## 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

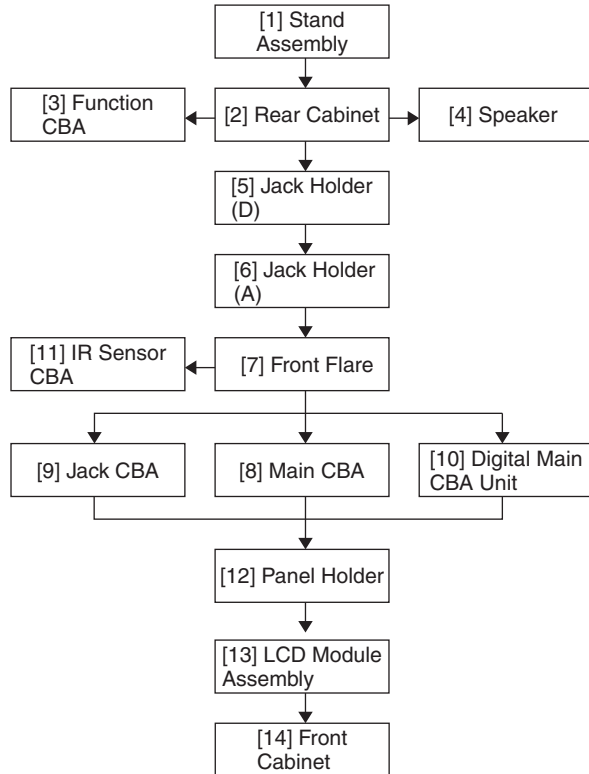
Be sure to place a conductive sheet or copper plate with proper grounding ( $1\text{ M}\Omega$ ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting 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 item(s) 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	Removal		
		Fig. No.	Remove/*Unhook/ Unlock/Release/ Unplug/Unclamp/ Desolder	Note
[1]	Stand Assembly	D1	2(S-1)	---
[2]	Rear Cabinet	D1	2(S-2), 6(S-3), 3(S-4)	---
[3]	Function CBA	D2 D3	2(S-5), *CN101, Function Knob, Knob Frame	---
[4]	Speaker	D2 D3	*CN872, *CN2861	---
[5]	Jack Holder(D)	D2	(S-6)	---
[6]	Jack Holder(A)	D2	-----	---

Step/ Loc. No.	Part	Removal		
		Fig. No.	Remove/*Unhook/ Unlock/Release/ Unplug/Unclamp/ Desolder	Note
[7]	Front Flare	D2	Boss(S)	---
[8]	Main CBA	D2 D3	6(S-7), 2(S-8), *CN102, *CN301, *CN302, *CN601, *CN702, *CN873, AC Holder	---
[9]	Jack CBA	D2 D3	3(S-9)	---
[10]	Digital Main CBA Unit	D2 D3	4(S-10), 4(S-11), 2(H-1), *CN3904, Shield Box	---
[11]	IR Sensor CBA	D2 D3	Sensor LED Lens	---
[12]	Panel Holder	D2	2(S-12), Separation Sheet	---
[13]	LCD Module Assembly	D2	-----	---
[14]	Front Cabinet	D2	-----	---
		↓	↓	↓
		(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  
\* = Unhook, Unlock, Release, Unplug, or Desolder  
e.g. 2(S-2) = two Screws (S-2),  
2(L-2) = two Locking Tabs (L-2)
- (5) Refer to the following "Reference Notes in the Table."

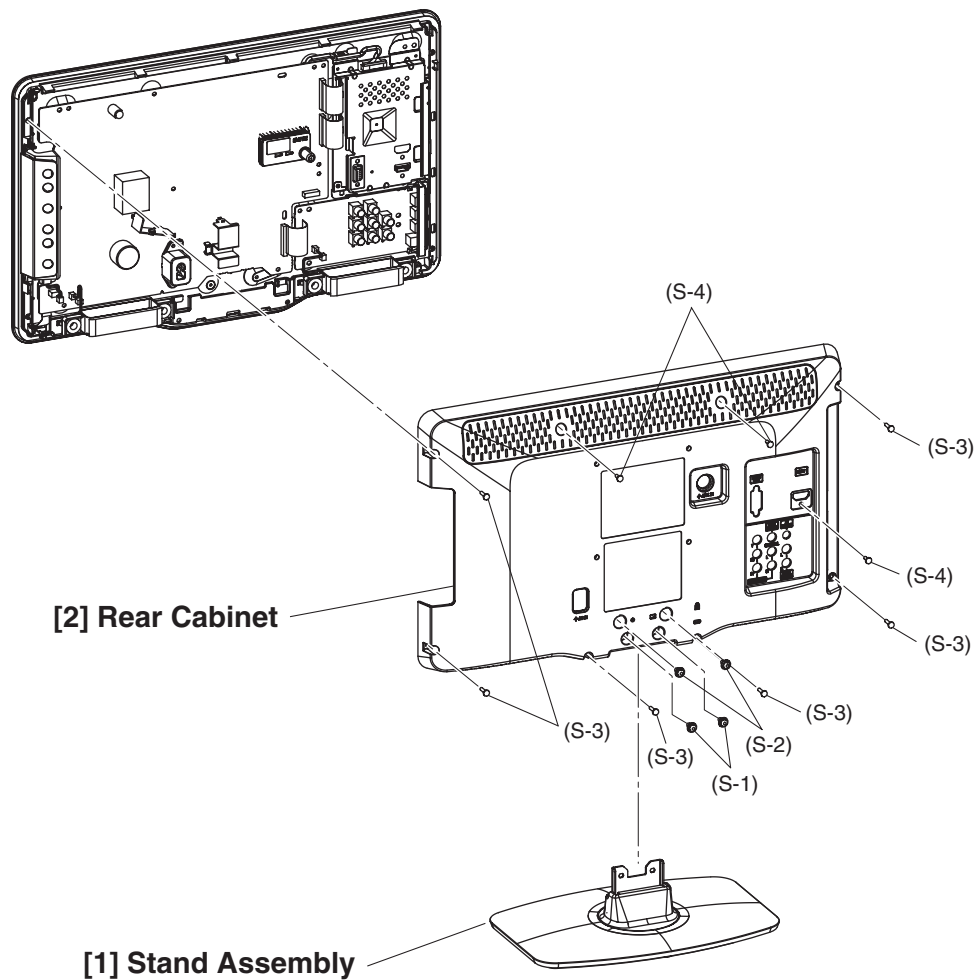


Fig. D1

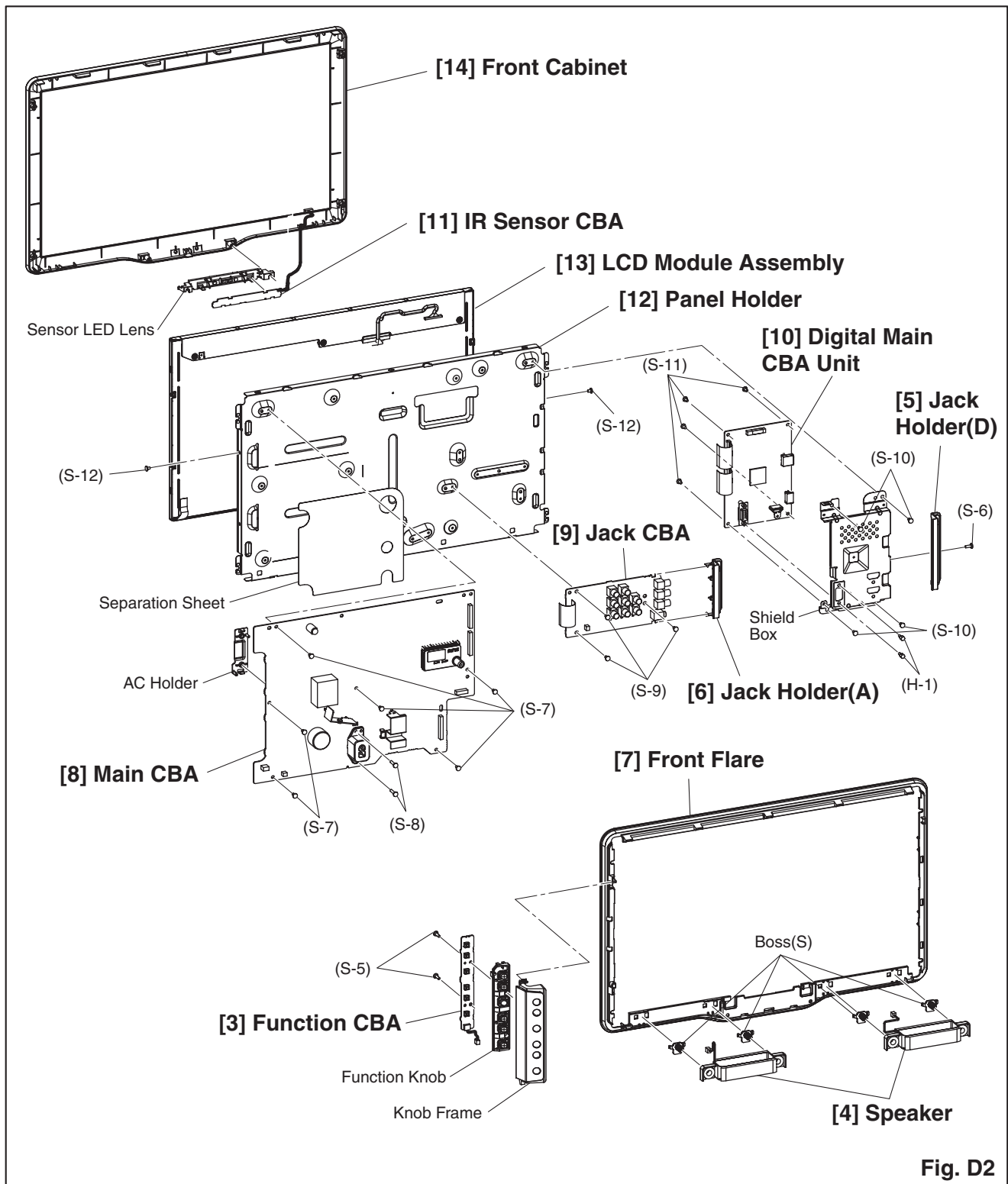


Fig. D2

## TV Cable Wiring Diagram

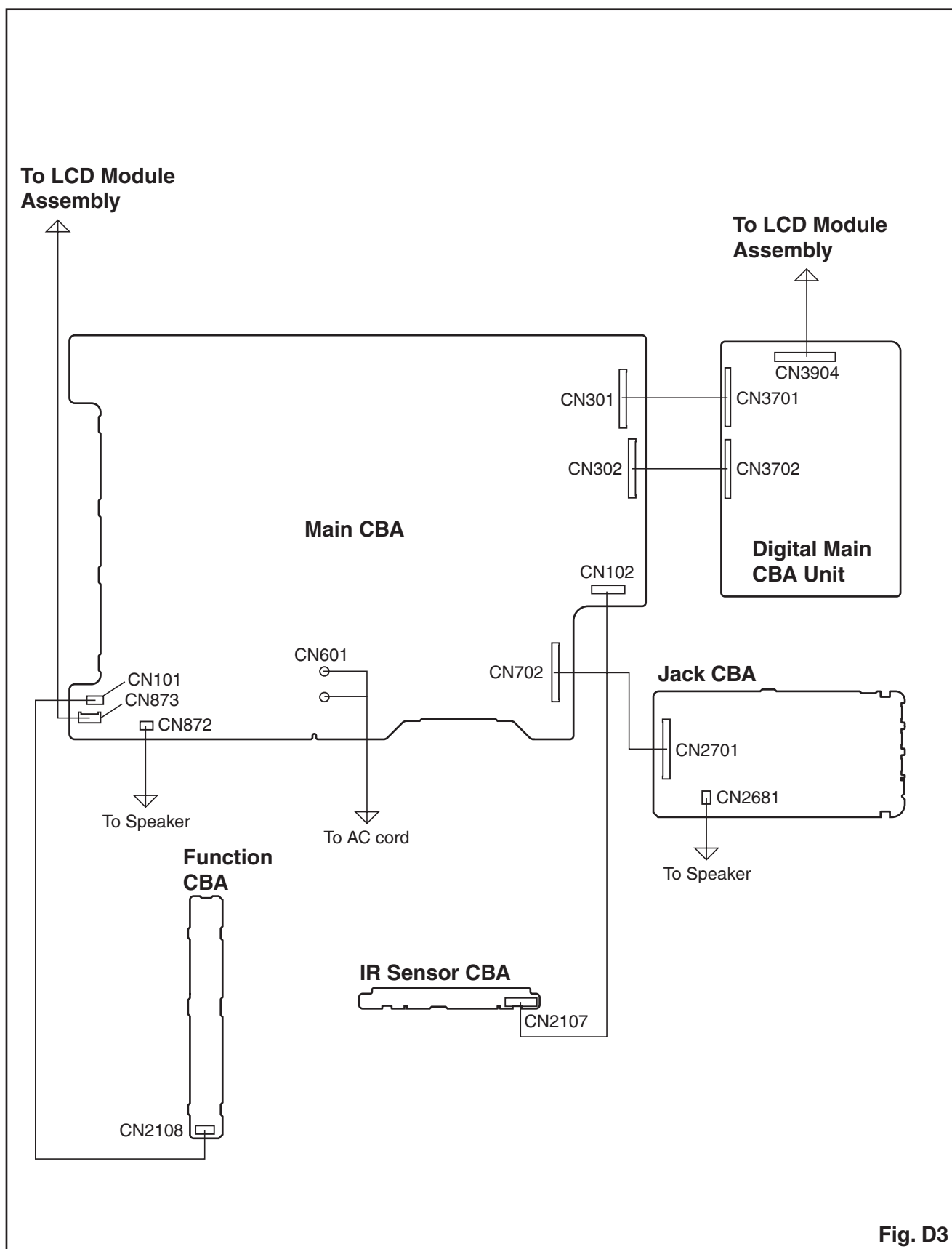


Fig. D3

# 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

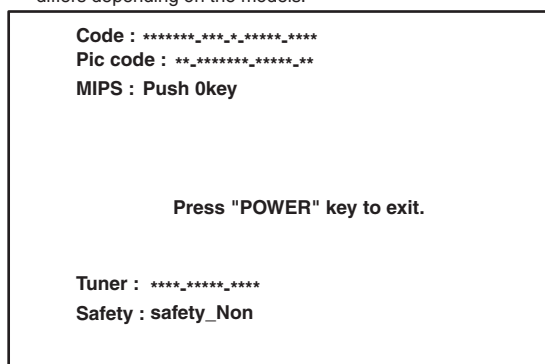
1. NTSC Pattern Generator (Color Bar W/White Window, Red Color, Dot Pattern, Gray Scale, Monoscope, Multi-Burst)
2. Remote control unit
3. Color Analyzer

## 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 “Current Software Info”.
5. Press [0], [6], [2], [5], [9], [6] and [Info] buttons on the remote control unit in this order. The following screen appears.

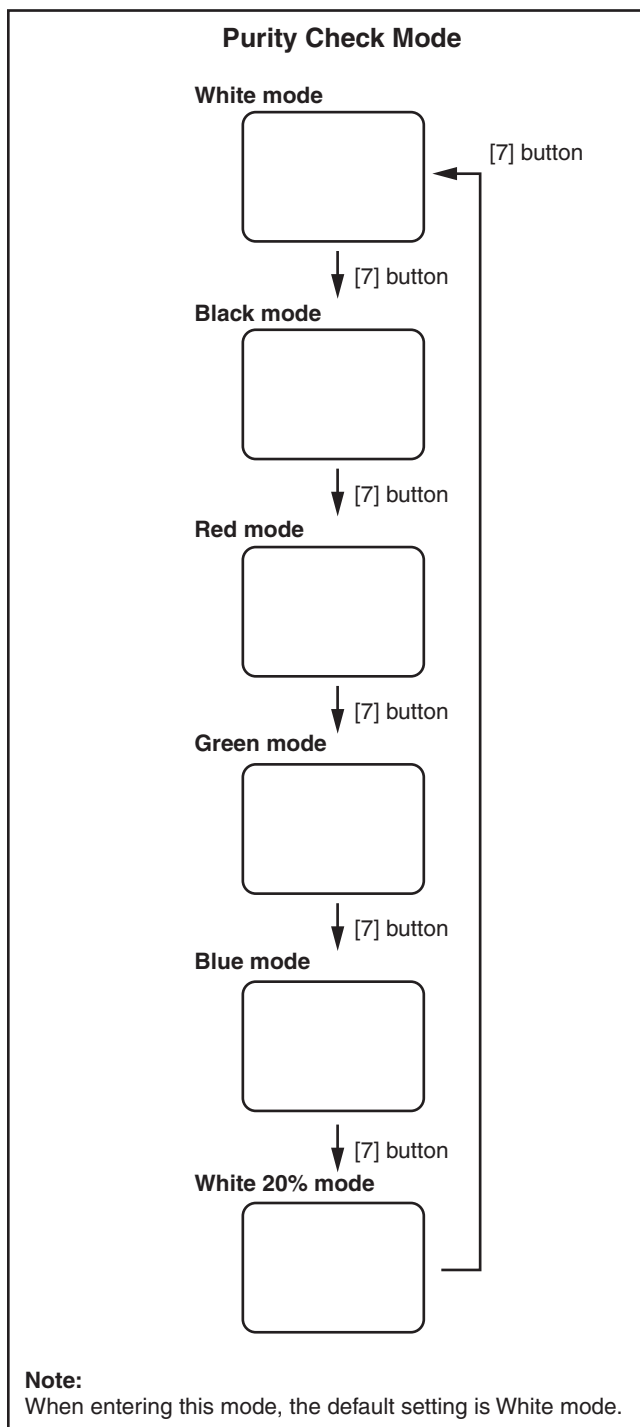
"\*" differs depending on the models.



## 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 pressing [7] button on the remote control unit, the display changes as follows.



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

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

## 2. White Balance Adjustment

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

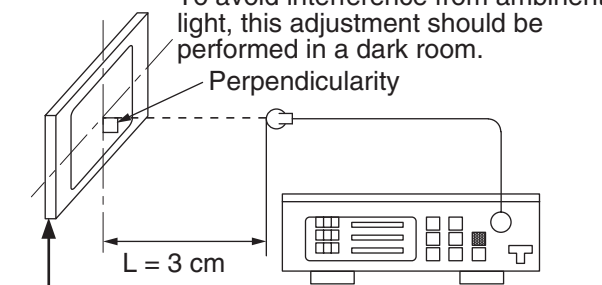
**Symptom of Misadjustment:** White becomes bluish or reddish.

Test Point	Adj. Point	Mode	Input
Screen	[VOLUME DOWN] button	[VIDEO1] C/D	White Raster (APL 70%) or (APL 40%)
M. EQ.		Spec.	
Pattern Generator, Color analyzer		$x = 0.276 \pm 0.005$ $y = 0.277 \pm 0.005$	

**Figure**

To avoid interference from ambient light, this adjustment should be performed in a dark room.

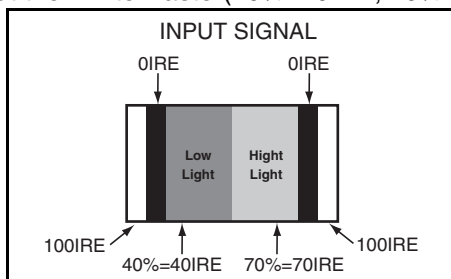
Perpendicularity



L = 3 cm

INPUT: WHITE 70%, 40% Color Analyzer

1. Operate the unit for more than 60 minutes.
2. Input the White Raster(70%=70IRE, 40%=40IRE).



3. Set the color analyzer to the CHROMA mode and bring the optical receptor to the center on the LCD-Panel surface after zero point calibration as shown above.

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

4. Enter the Service mode. Press [VOLUME DOWN] button on the remote control unit and select "C/D" mode.

### 5. [CUTOFF]

Press [1] button to select "COR" for Red Cutoff adjustment. Press [3] button to select "COB" for Blue Cutoff adjustment.

### [DRIVE]

Press [4] button to select "DR" for Red Drive adjustment. Press [6] button to select "DB" for Blue Drive adjustment.

6. In each color mode, press [CHANNEL UP/DOWN] buttons to adjust the values of color.
7. Adjust Cutoff and Drive so that the color temperature becomes 11500°K ( $x = 0.276 / y = 0.277 \pm 0.005$ ).
8. To cancel or to exit from the White Balance Adjustment, press [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.

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 [INFO] button on the remote control unit to initialize the LCD television.
4. "INITIALIZED" will appear in the upper right of the screen. "INITIALIZED" color will change to green from red when initializing is completed.

# FIRMWARE RENEWAL MODE

## Equipment Required

- USB storage device
- Remote Control Unit

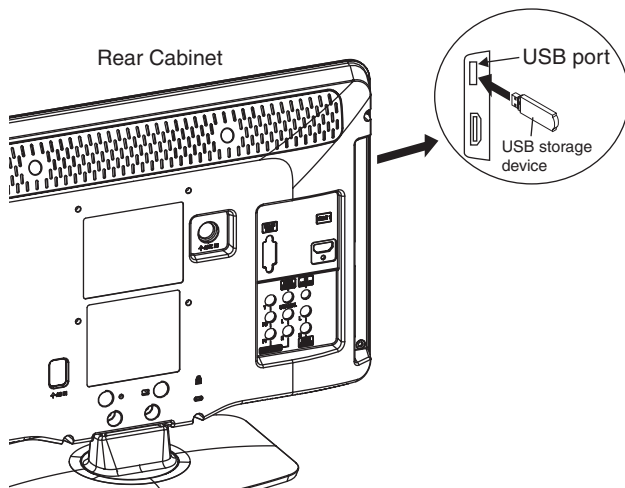
## Firmware Update Procedure

**Note:** There are two states (the User Upgrade and the Factory Upgrade) in firmware update.

User Upgrade	Upgrade the firmware only. The setting values are not initialized.
Factory upgrade	Upgrade the firmware and initialize the setting values.

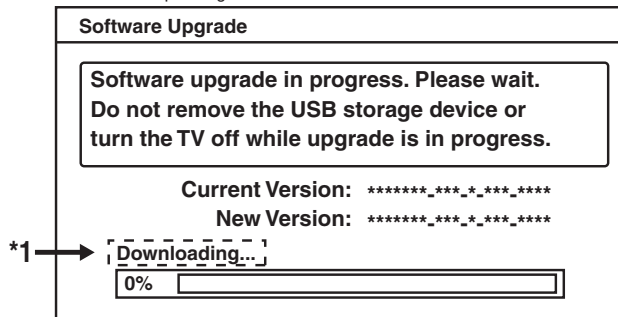
The identification of User Upgrade and Factory Upgrade are done by the filename.

- Turn the power off and unplug the AC Cord.
- Insert the USB storage device to the USB port as shown below.



- Plug the AC cord in the wall outlet and turn the power on.
- The update will start and the following will appear on the screen.

"\*" differs depending on the models.

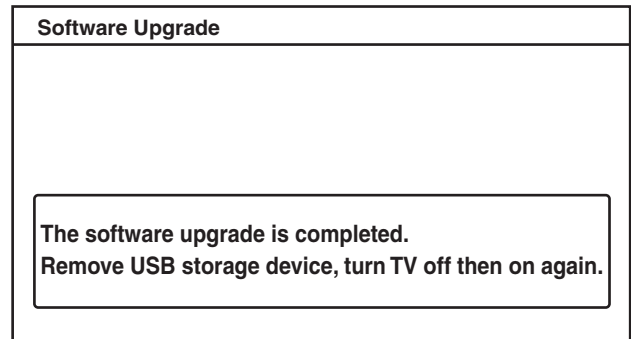


**Note:** If the above screen isn't displayed, repeat from step 1.

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.

- When the firmware update is completed, the following will appear on the screen.



Remove the USB storage device from the USB port.

Turn the power off and turn the power on again.

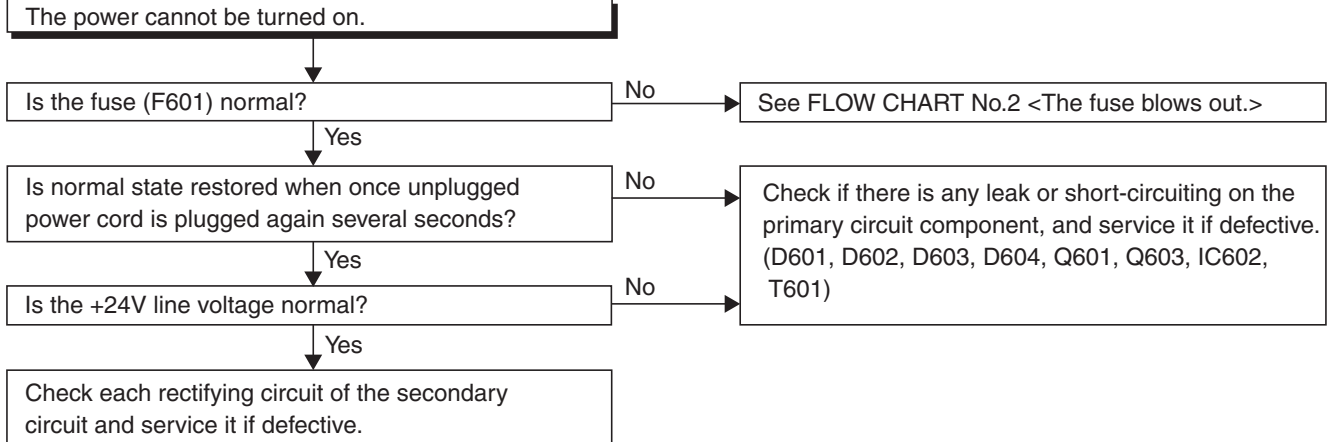
### Note:

When the Factory Upgrade is used, after restarting TV, shift to initial screen menu in service mode. "INITIALIZED" will appear on the upper right of the screen. "INITIALIZED" color will change to green from red when initializing is completed.

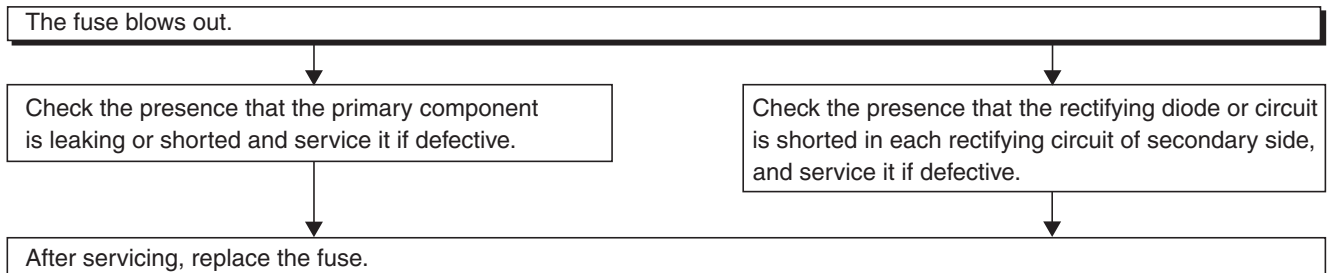
# TROUBLESHOOTING

## [ Power Supply Section ]

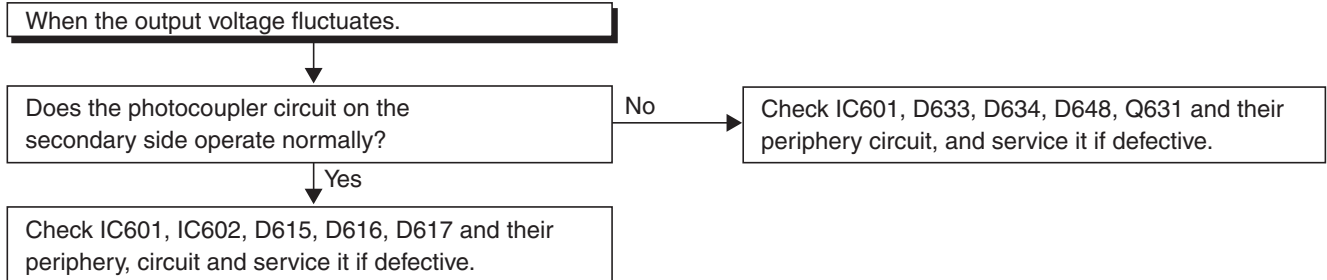
### FLOW CHART NO.1



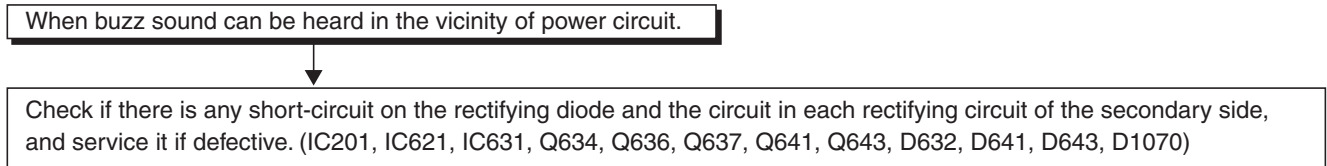
### FLOW CHART NO.2



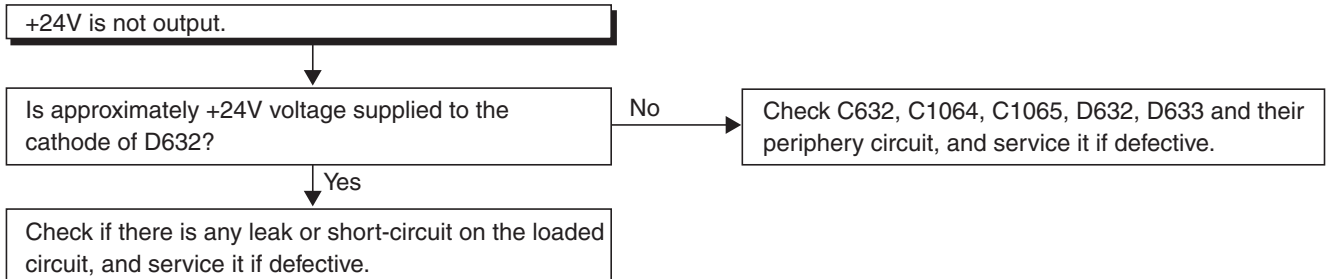
### FLOW CHART NO.3



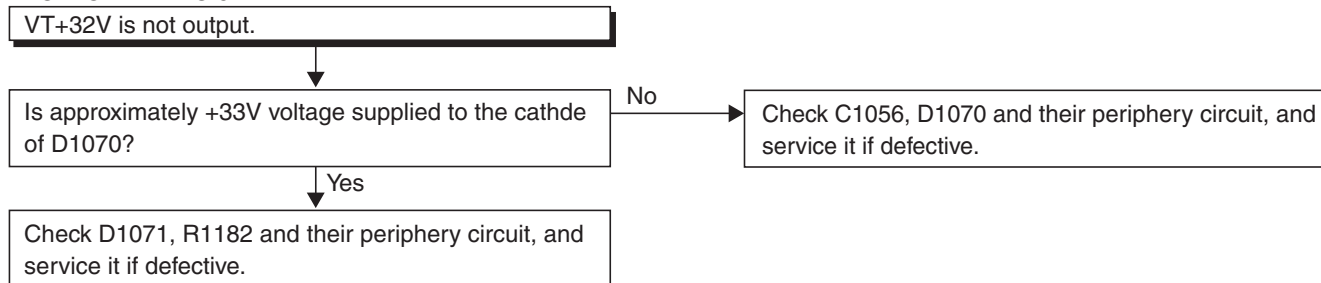
### FLOW CHART NO.4



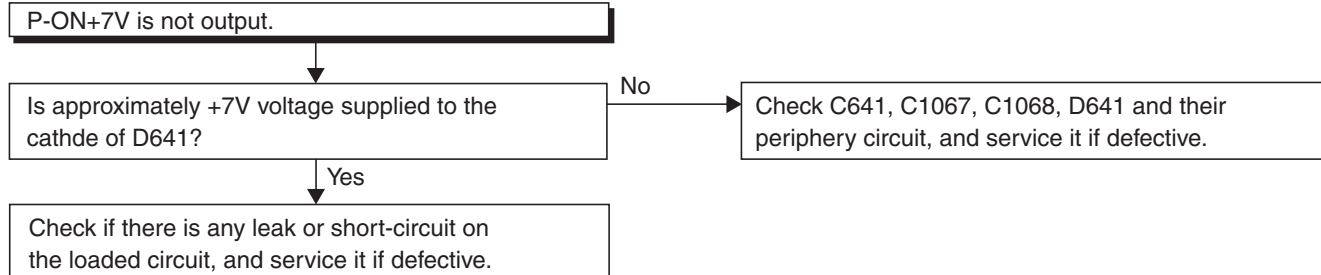
### FLOW CHART NO.5



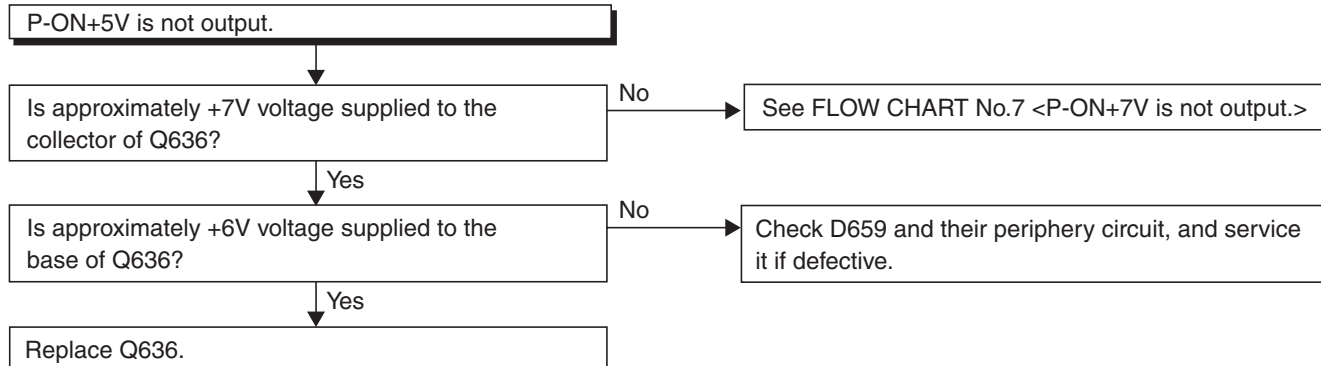
#### FLOW CHART NO.6



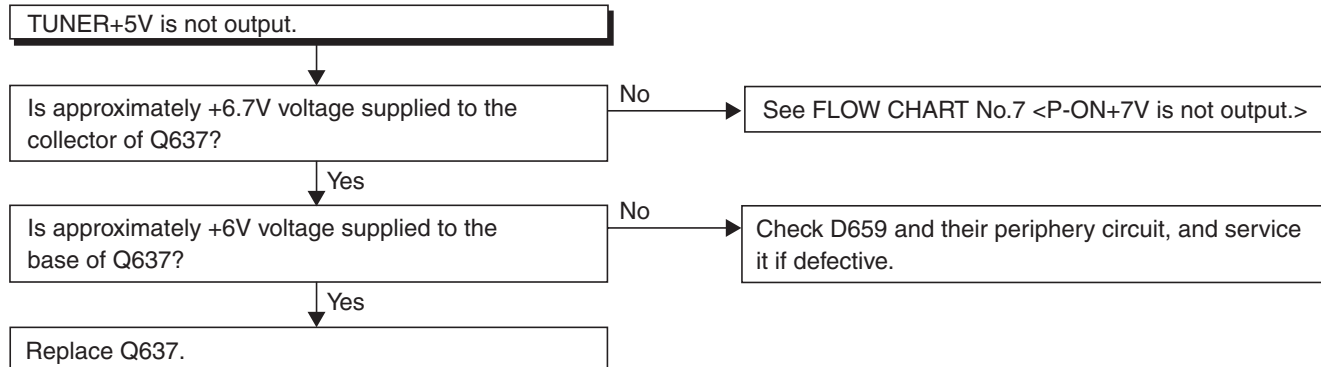
#### FLOW CHART NO.7

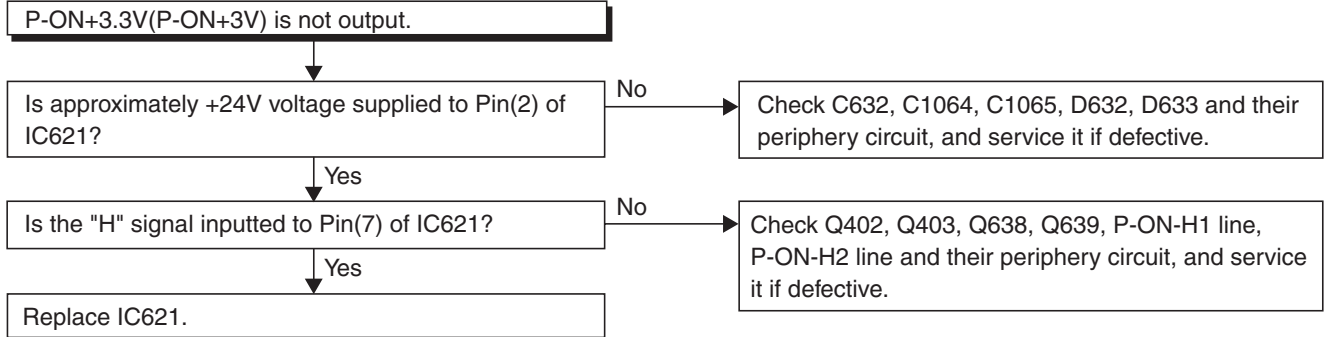
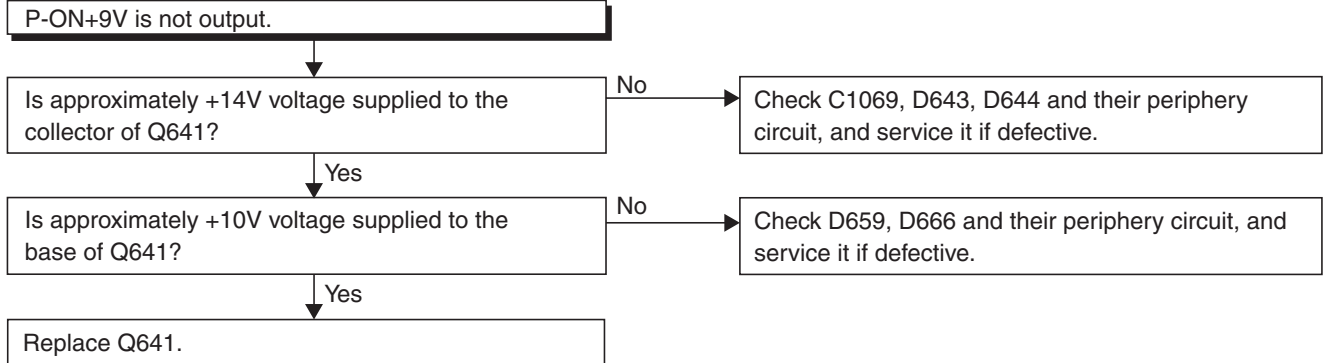
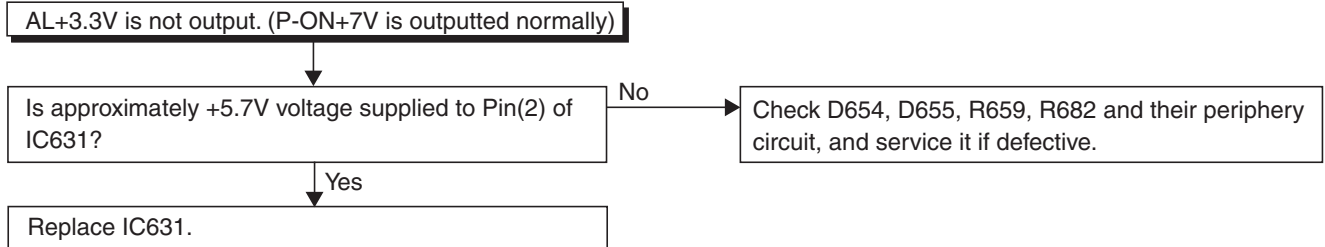
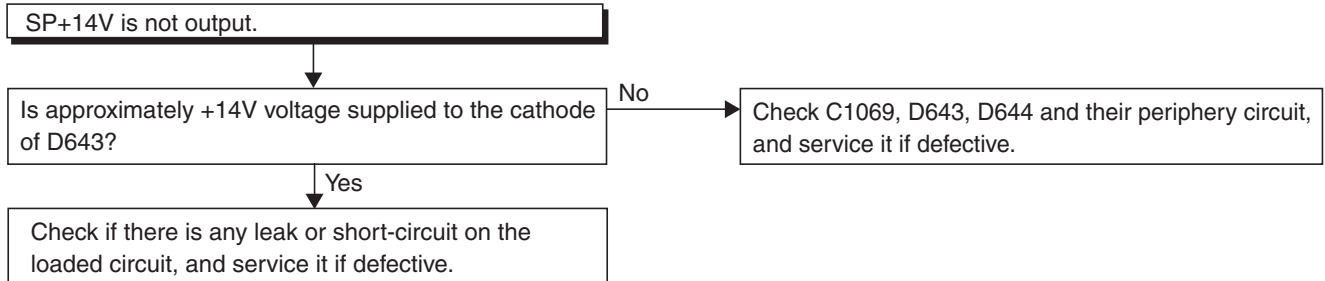
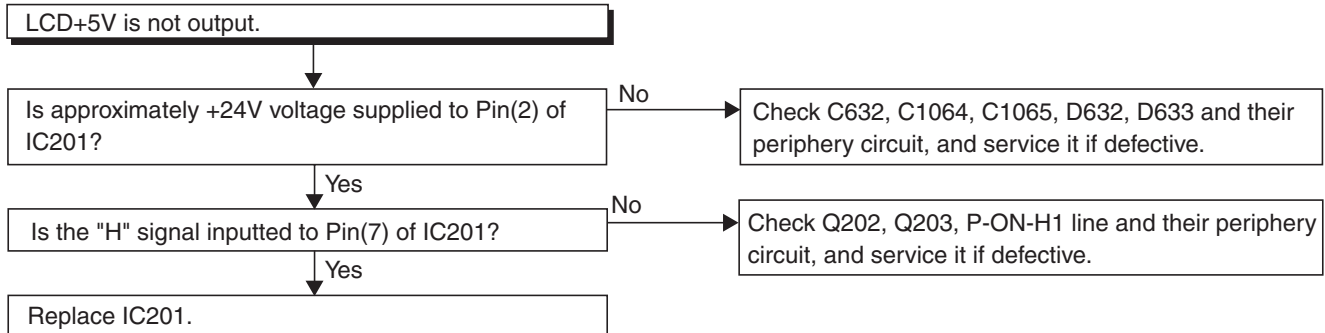


#### FLOW CHART NO.8



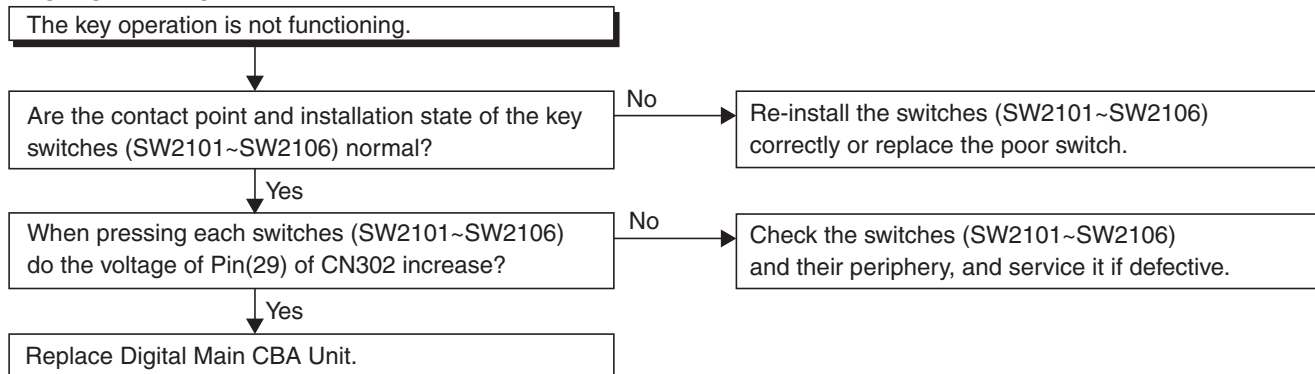
#### FLOW CHART NO.9



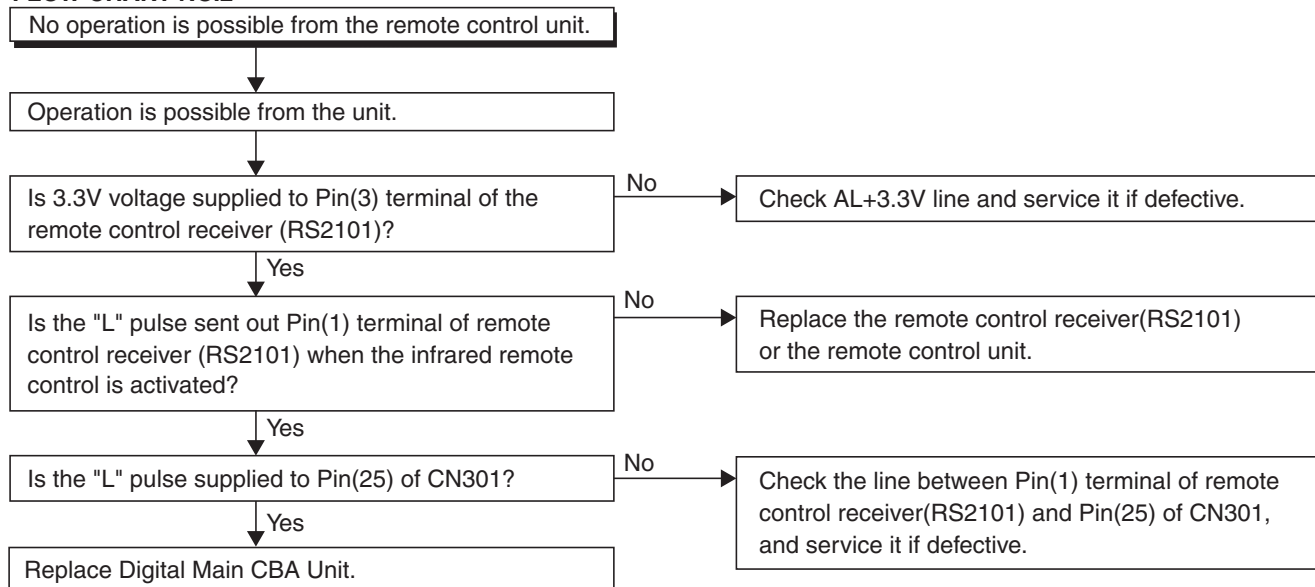
**FLOW CHART NO.10****FLOW CHART NO.11****FLOW CHART NO.12****FLOW CHART NO.13****FLOW CHART NO.14**

## [ Video Signal Section ]

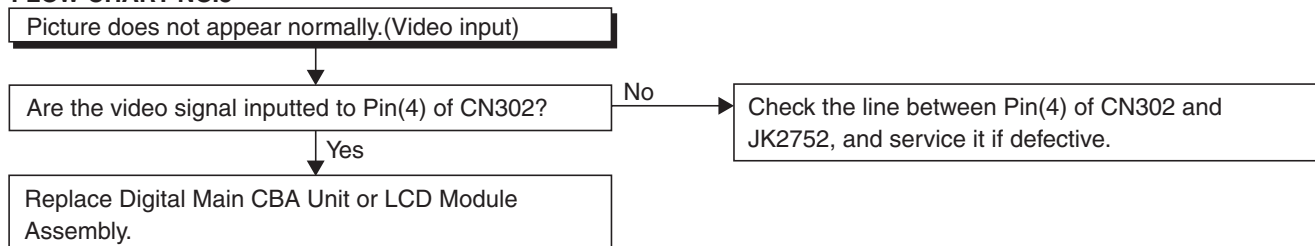
### FLOW CHART NO.1



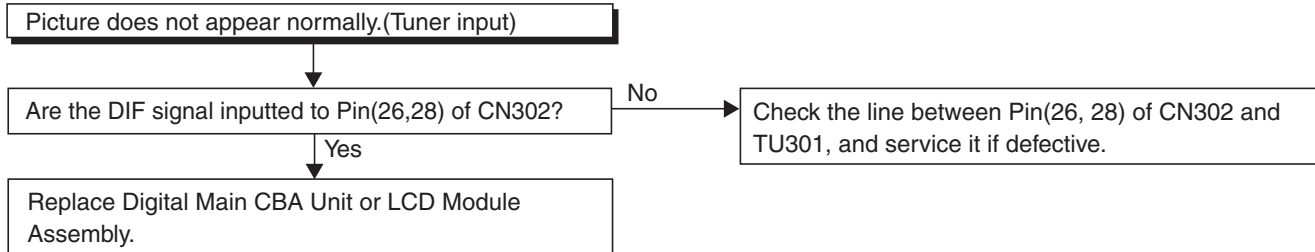
### FLOW CHART NO.2



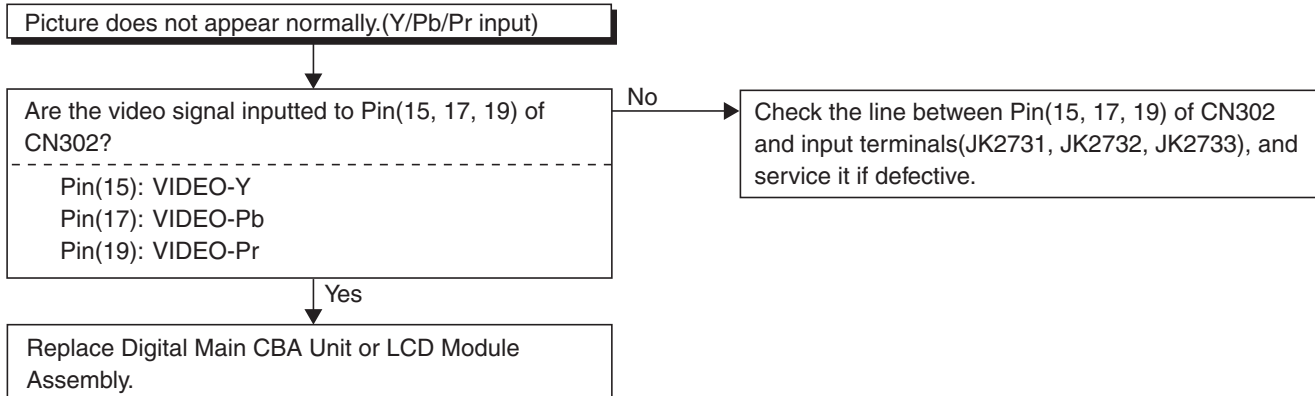
### FLOW CHART NO.3



#### FLOW CHART NO.4



#### FLOW CHART NO.5



## [ Audio Signal Section ]

### FLOW CHART NO.1

Audio is not outputted normally.(Audio input)

Are the audio(L/R) signals inputted to Pin(2, 15) of IC2771?

No

Check the line between Pin(2, 15) of IC2771 and input terminal(JK2753, JK2754), and service it if defective.

Yes

Are the audio(L/R) signals inputted to Pin(6, 8) of CN301?

No

Replace Digital Main CBA Unit.

Yes

Are the audio(L/R) signals inputted to Pin(1, 9) of IC801?

No

Check the line between Pin(6, 8) of CN301 and Pin(1, 9) of IC801, and service it if defective.

Yes

Are the audio(L/R) signals outputted to Pin(4, 6) of IC801?

No

Check IC801 and their periphery circuit, and service it if defective.

Yes

Check JK2851, SP801, SP802 and their periphery circuit, and service it if defective.

### FLOW CHART NO.2

Audio is not outputted normally.(Component Audio input)

Are the audio(L/R) signals inputted to Pin(4, 11) of IC2771?

No

Check the line between Pin(4, 11) of IC2771 and input terminal(JK2741, JK2742), and service it if defective.

Yes

Are the audio(L/R) signals inputted to Pin(6, 8) of CN301?

No

Replace Digital Main CBA Unit.

Yes

Are the audio(L/R) signals inputted to Pin(1, 9) of IC801?

No

Check the line between Pin(6, 8) of CN301 and Pin(1, 9) of IC801, and service it if defective.

Yes

Are the audio(L/R) signals outputted to Pin(4, 6) of IC801?

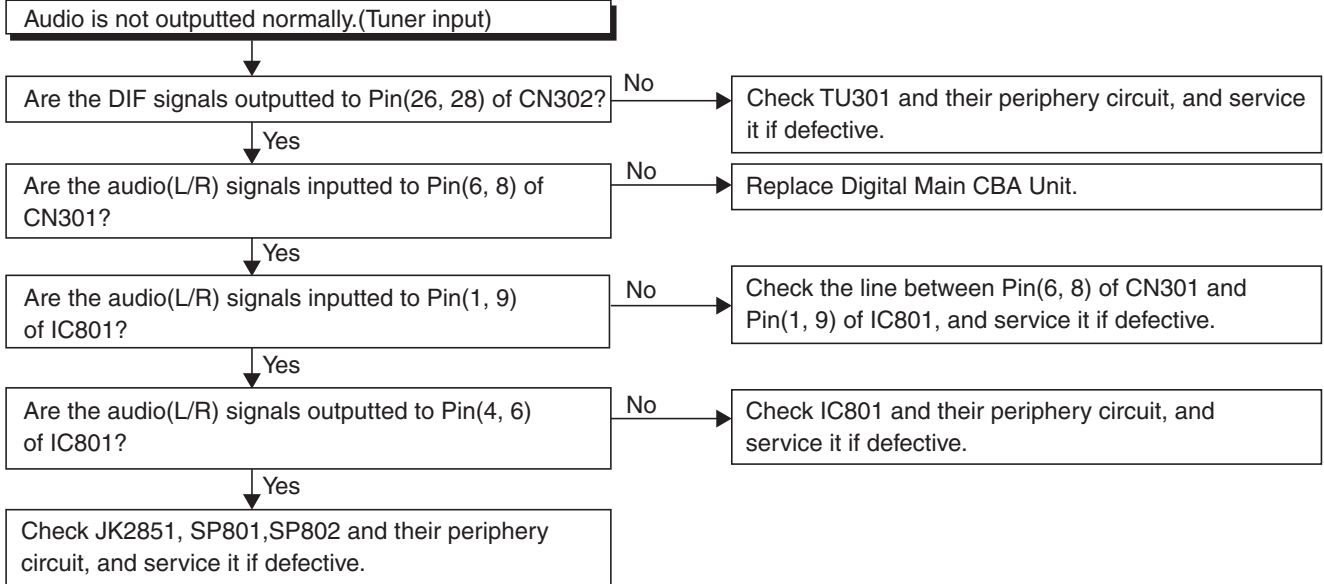
No

Check IC801 and their periphery circuit, and service it if defective.

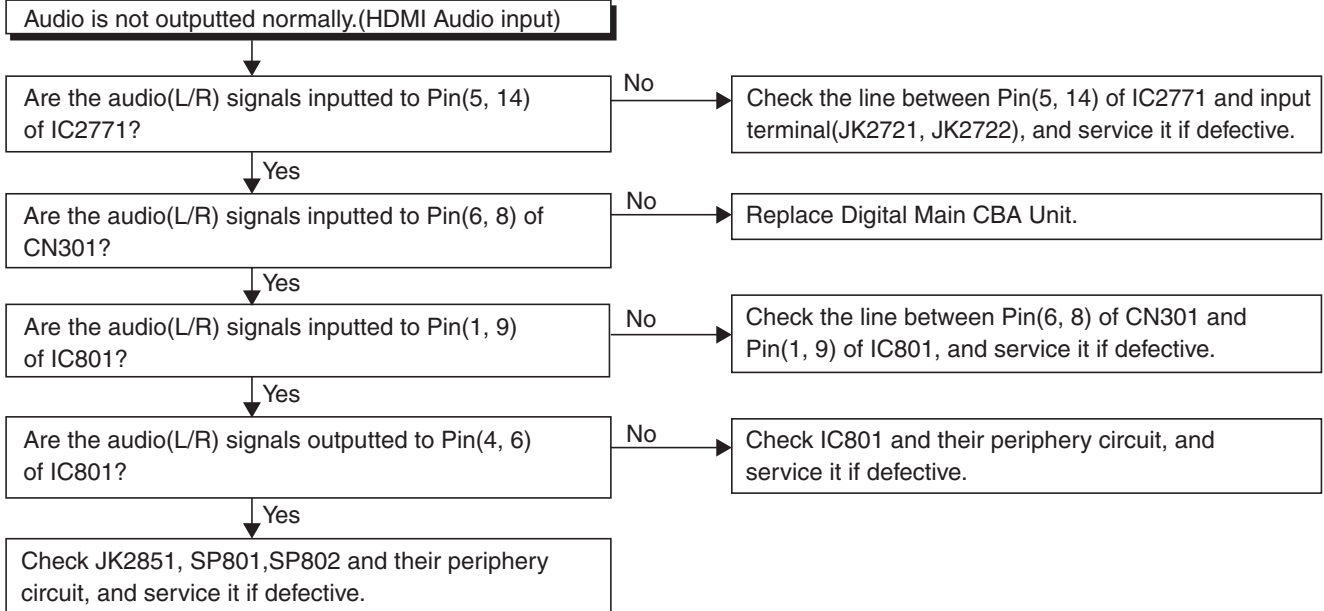
Yes

Check JK2851, SP801, SP802 and their periphery circuit, and service it if defective.

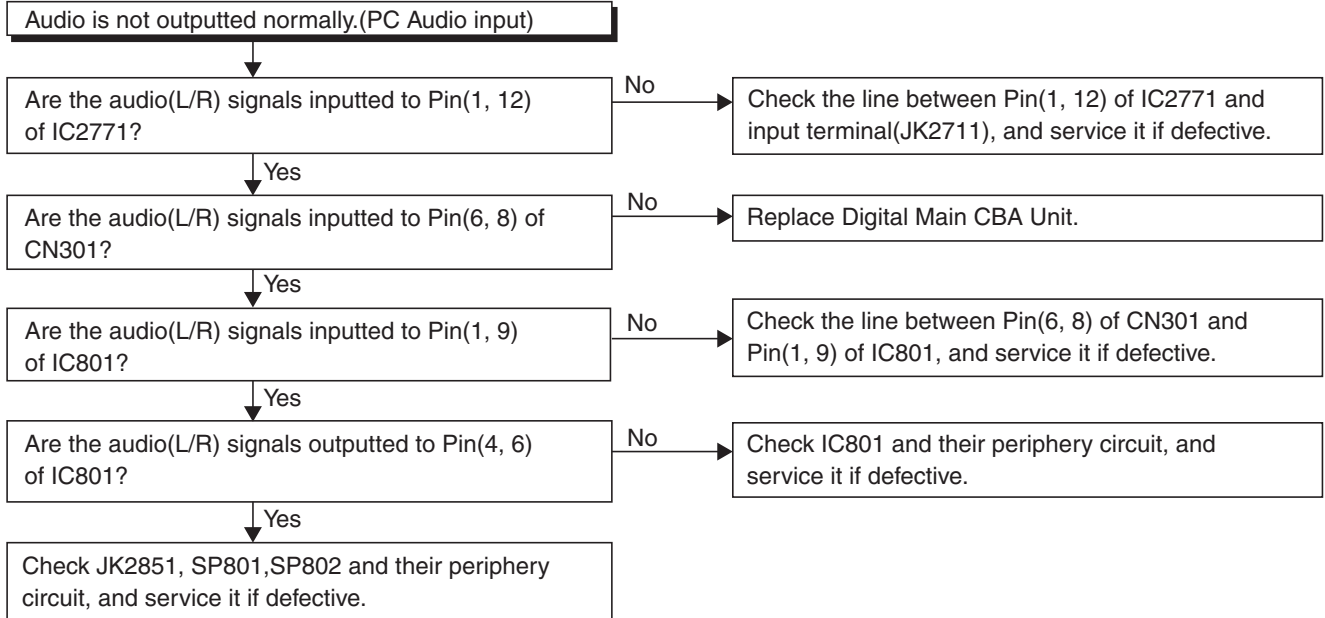
### FLOW CHART NO.3



### FLOW CHART NO.4

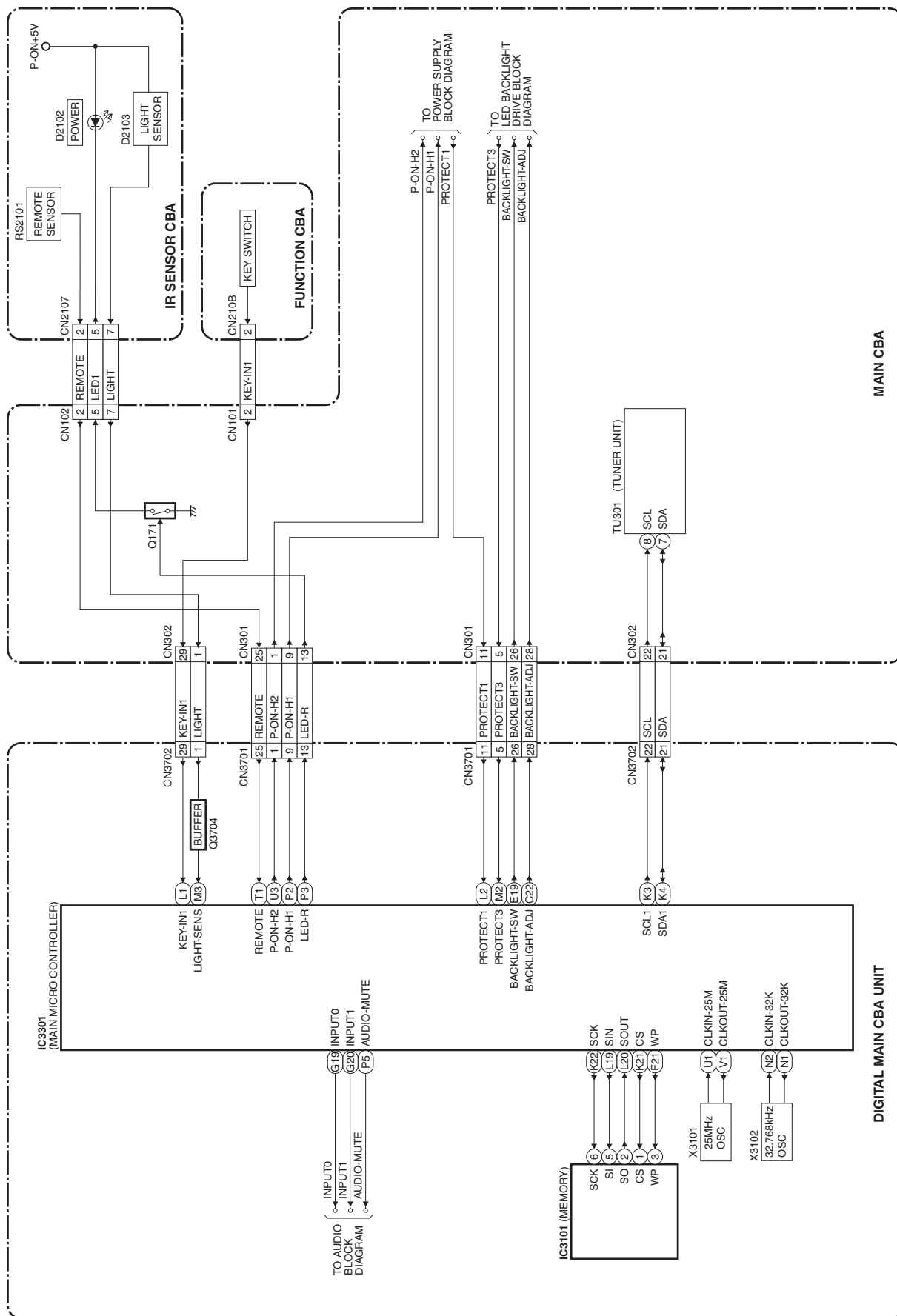


#### FLOW CHART NO.5

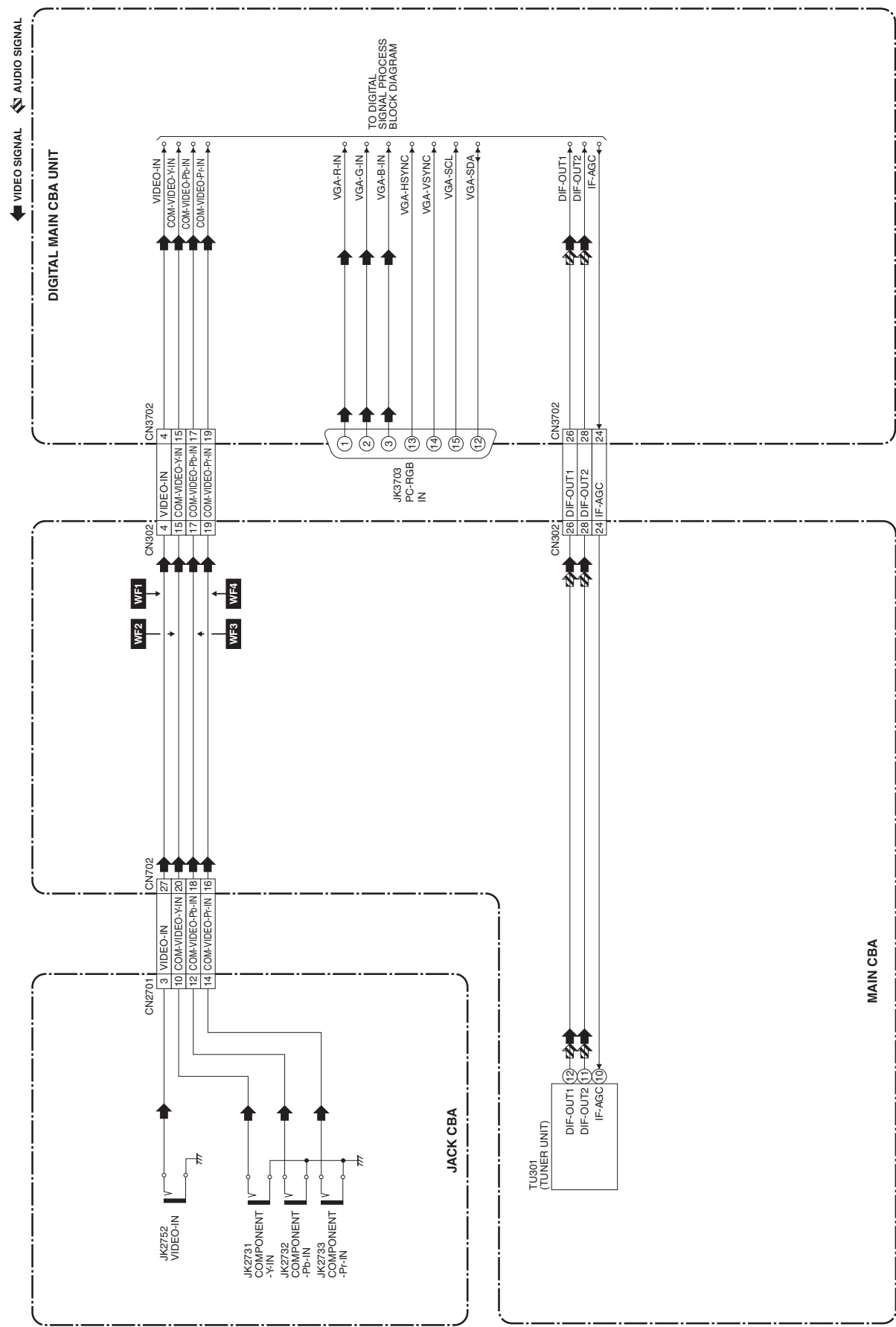


# BLOCK DIAGRAMS

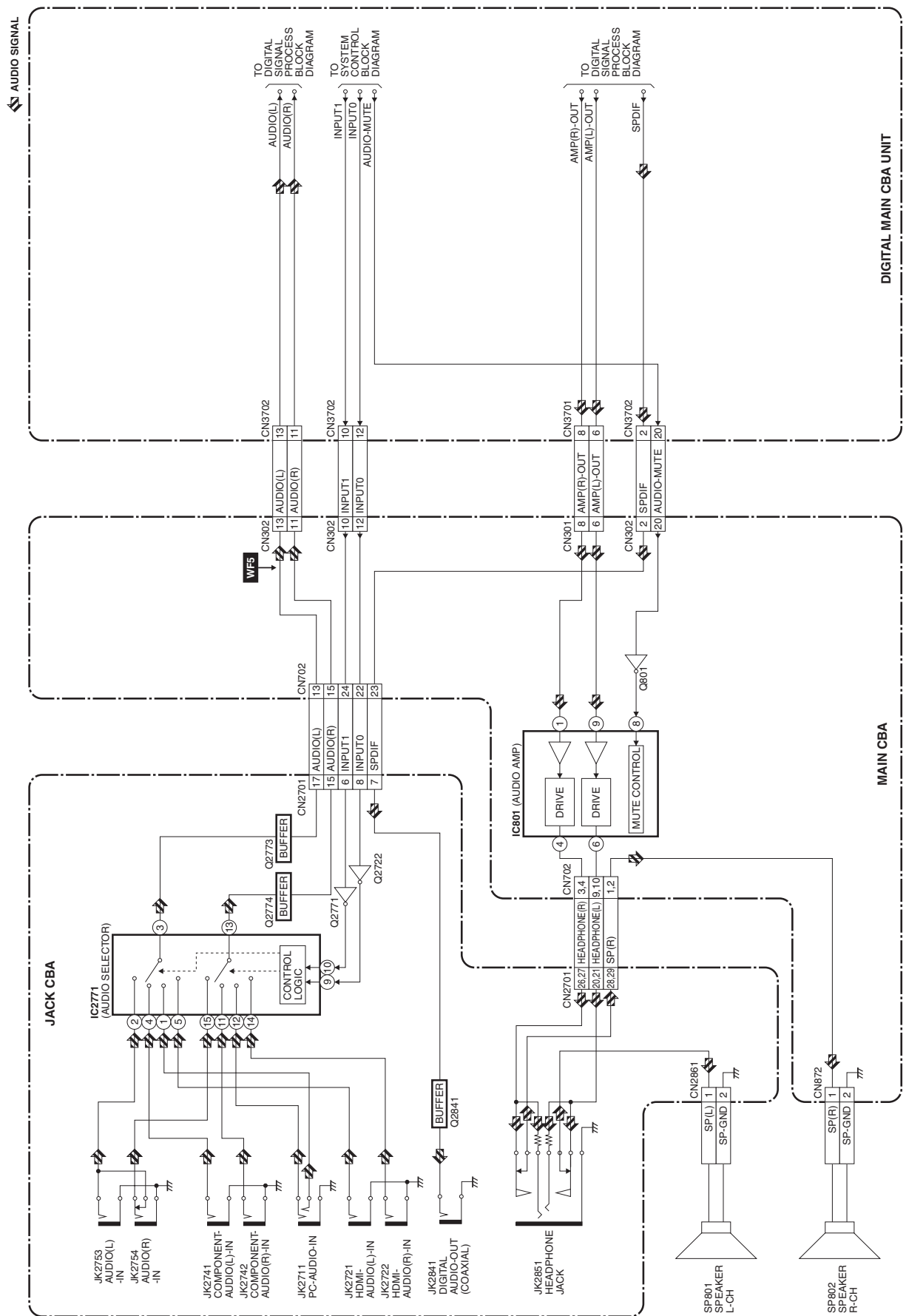
## System Control Block Diagram



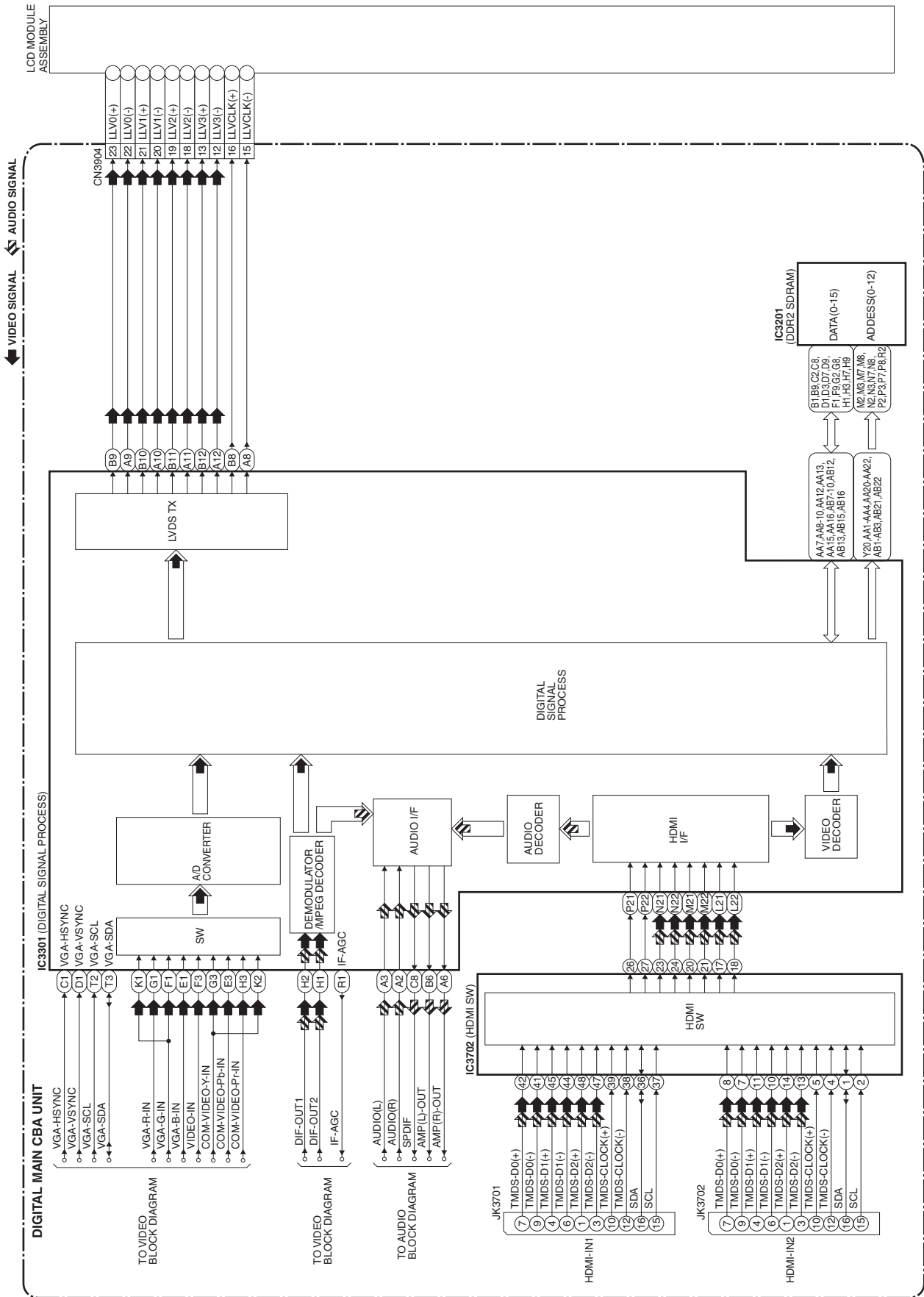
Video Block Diagram



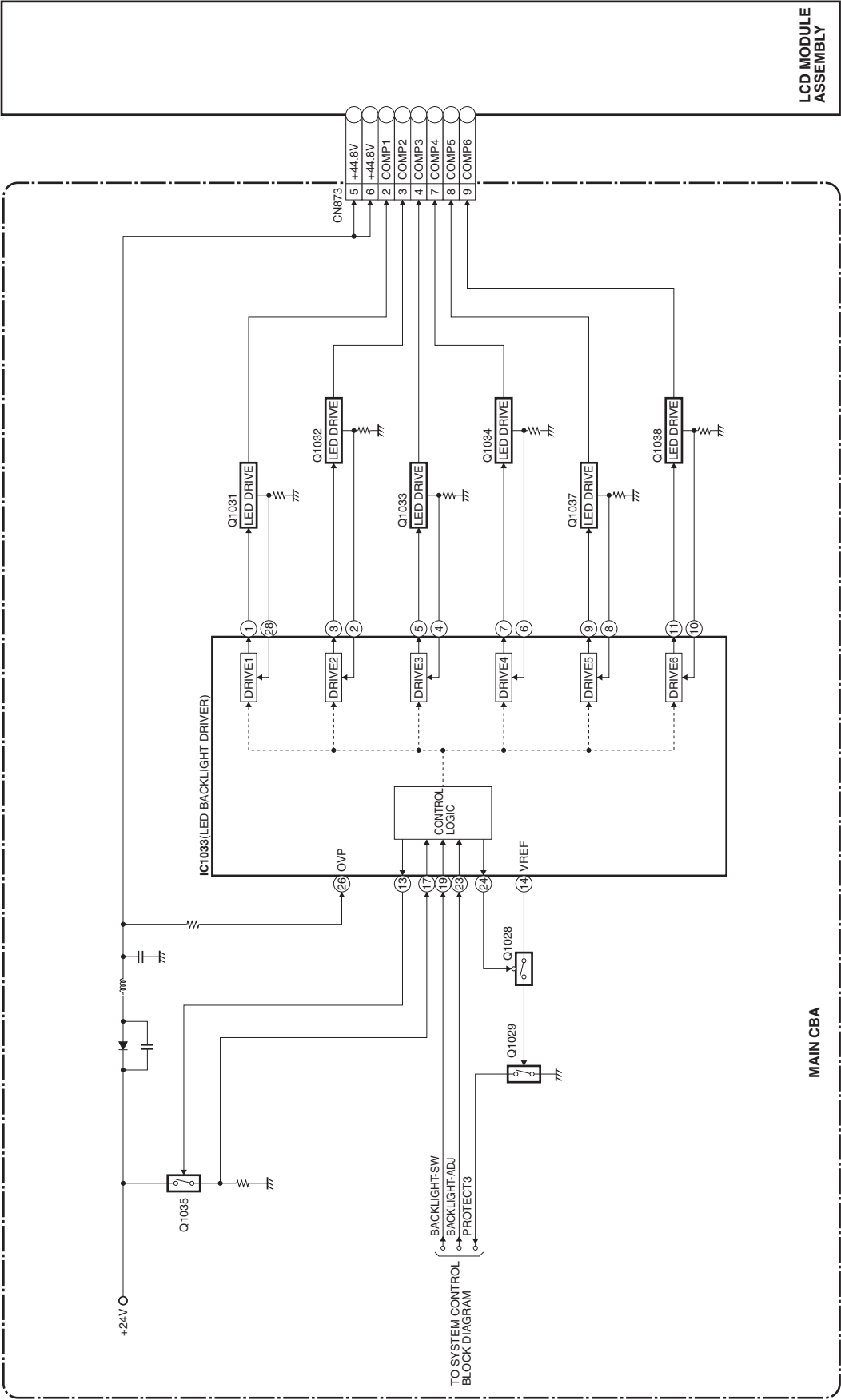
# Audio Block Diagram



# Digital Signal Process Block Diagram



LED Backlight Drive Block Diagram



# Power Supply 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,

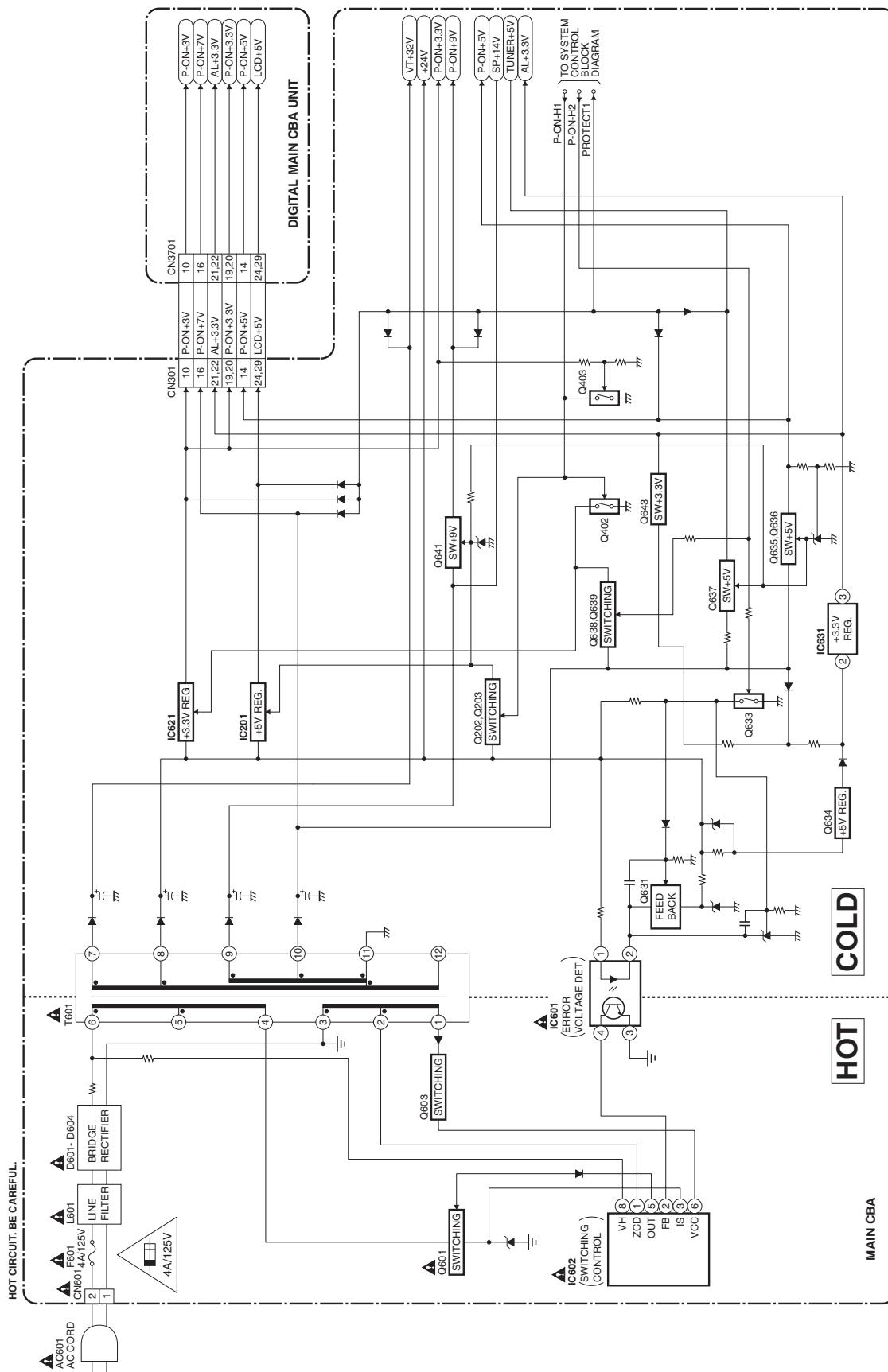
replace only with same type 4 A, 125V fuse.

## 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.



# 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  $\mu F$  ( $P = 10^{-6} \mu F$ ).
5. All voltages are DC voltages unless otherwise specified.
6. This schematic diagrams are masterized version that should cover the entire PL10.9 chassis models. Thus some parts in detail illustrated on this schematic diagrams may vary depend on the model within the PL10.9 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.

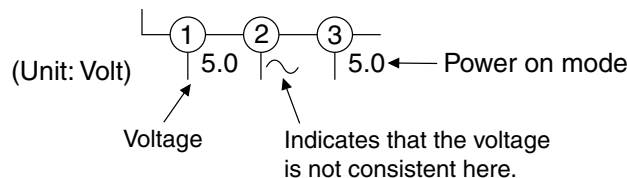
If Main Fuse (F601) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

### 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.:

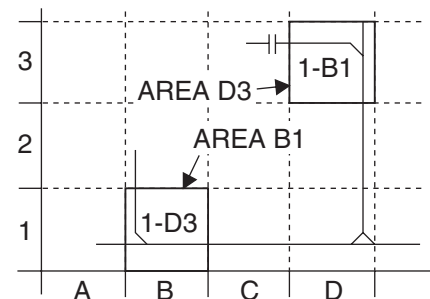


### 5. How to read converged lines

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.

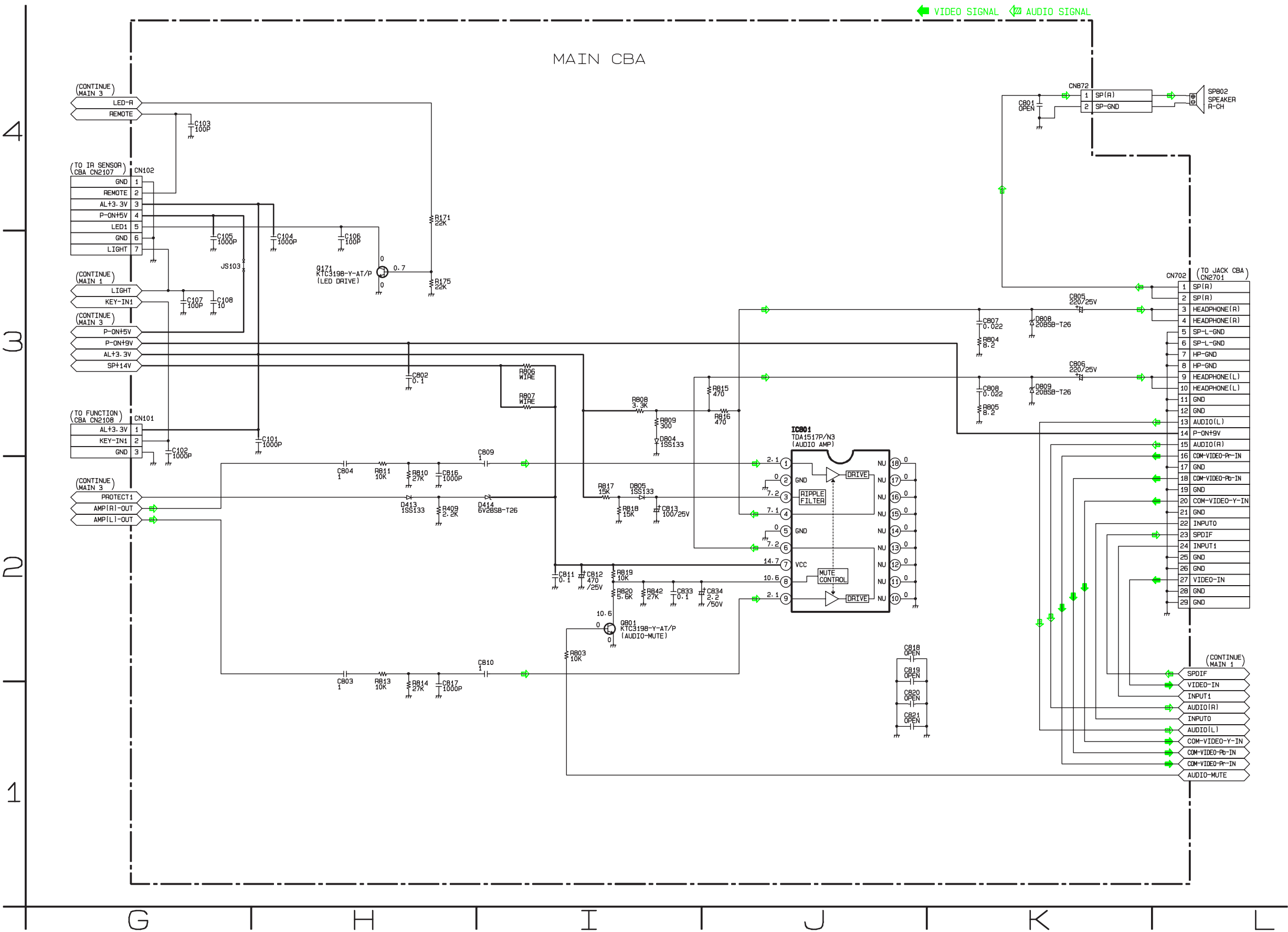
⊗ : Used to indicate a test point with no test pin.

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

4  
—  
3  
—  
2  
—  
1  
—



Main 2 Schematic Diagram

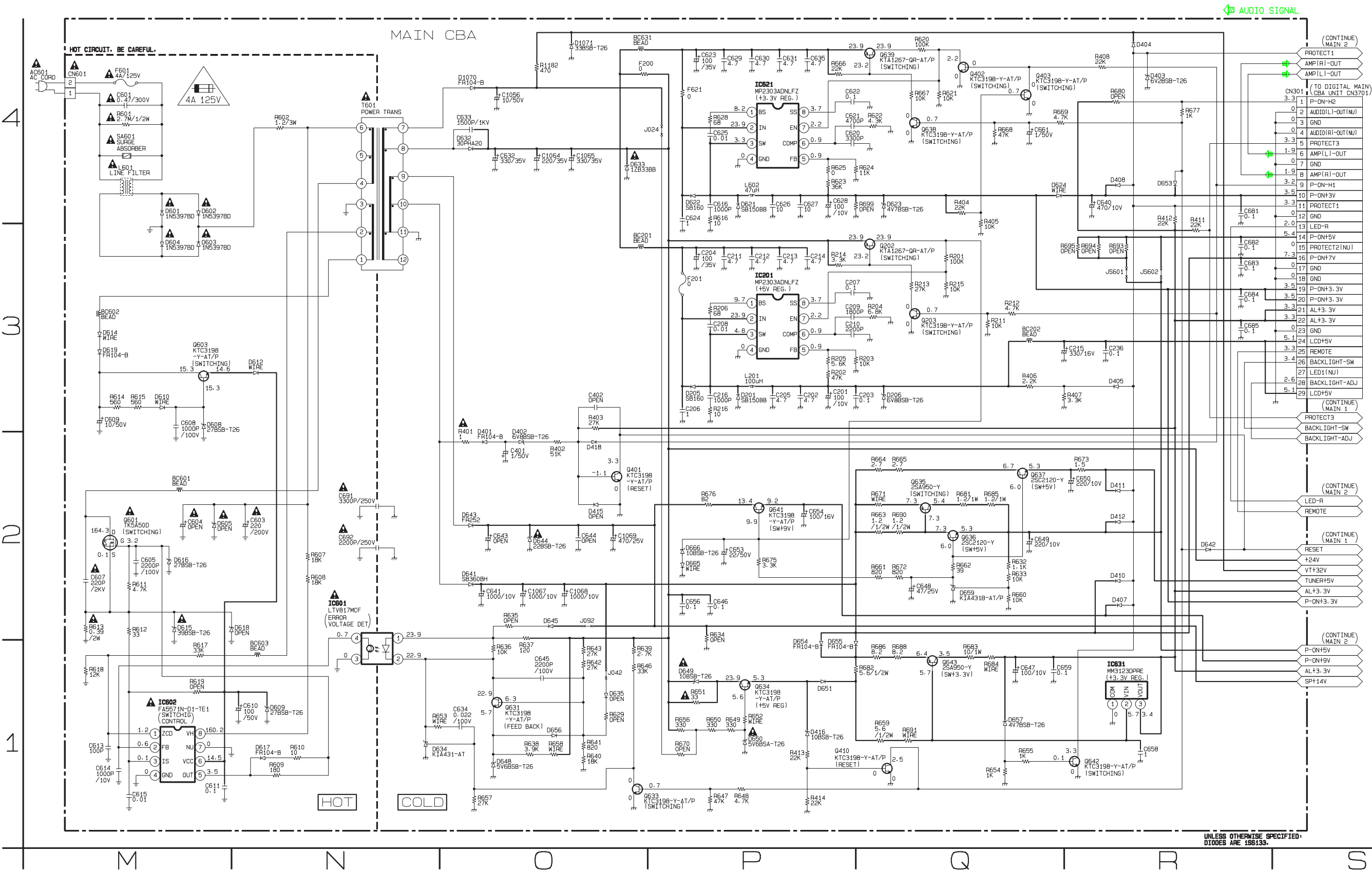


Main 3 Schematic Diagram

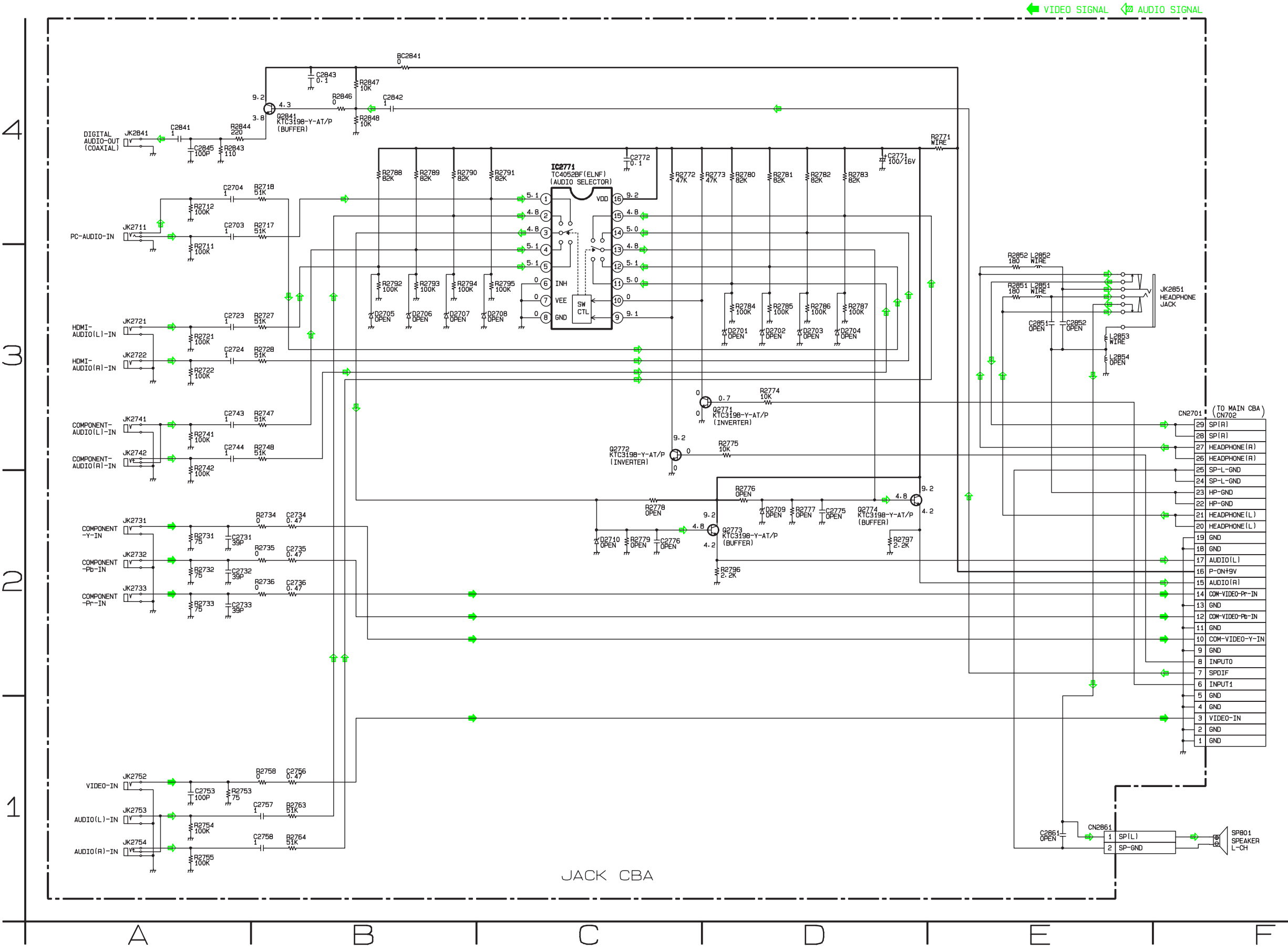
**CAUTION !**  
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.  
If Main Fuse (F601) is blown , check to see that all components in the power supply  
circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some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

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

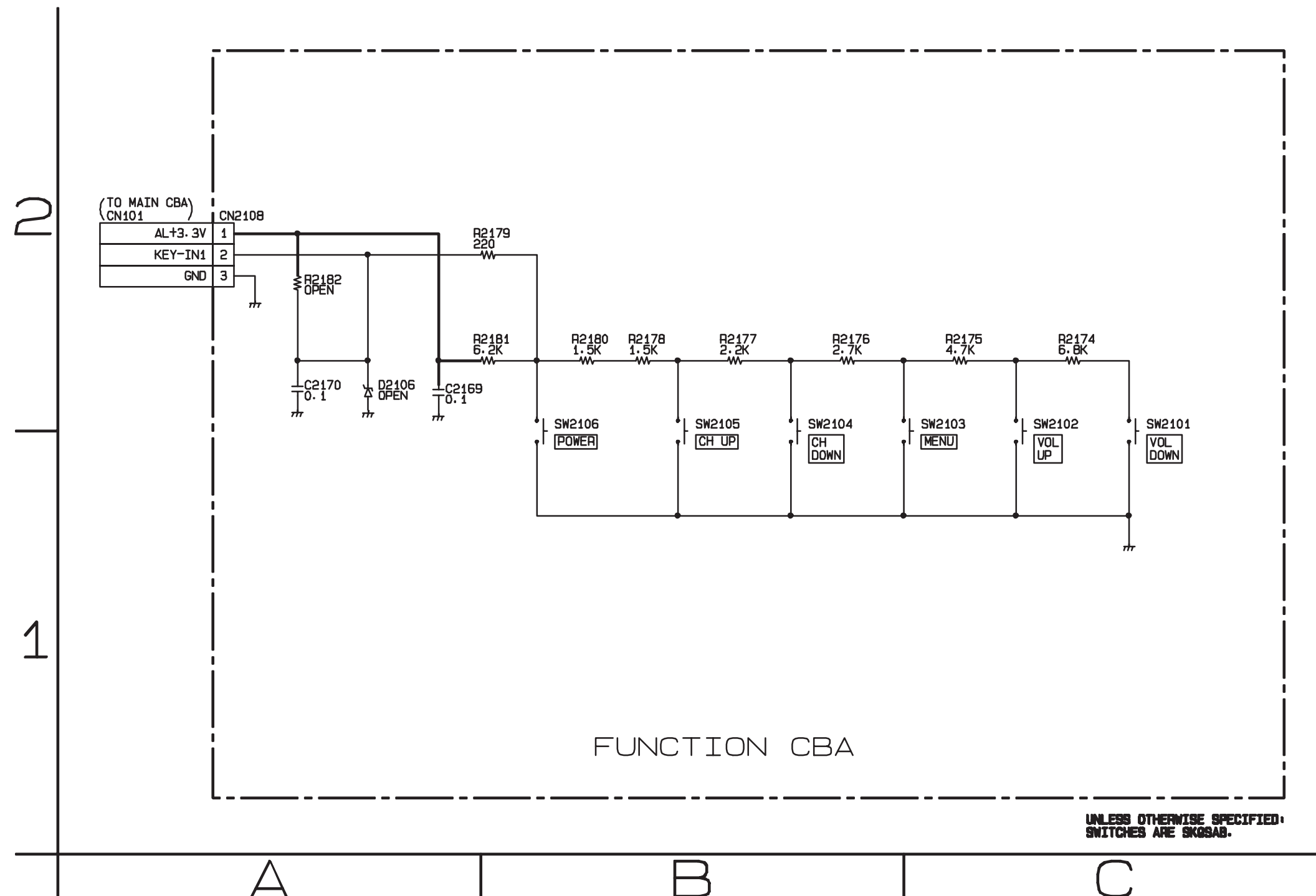
**NOTE:**  
The voltage for parts in hot circuit is measured using  
hot GND as a common terminal.



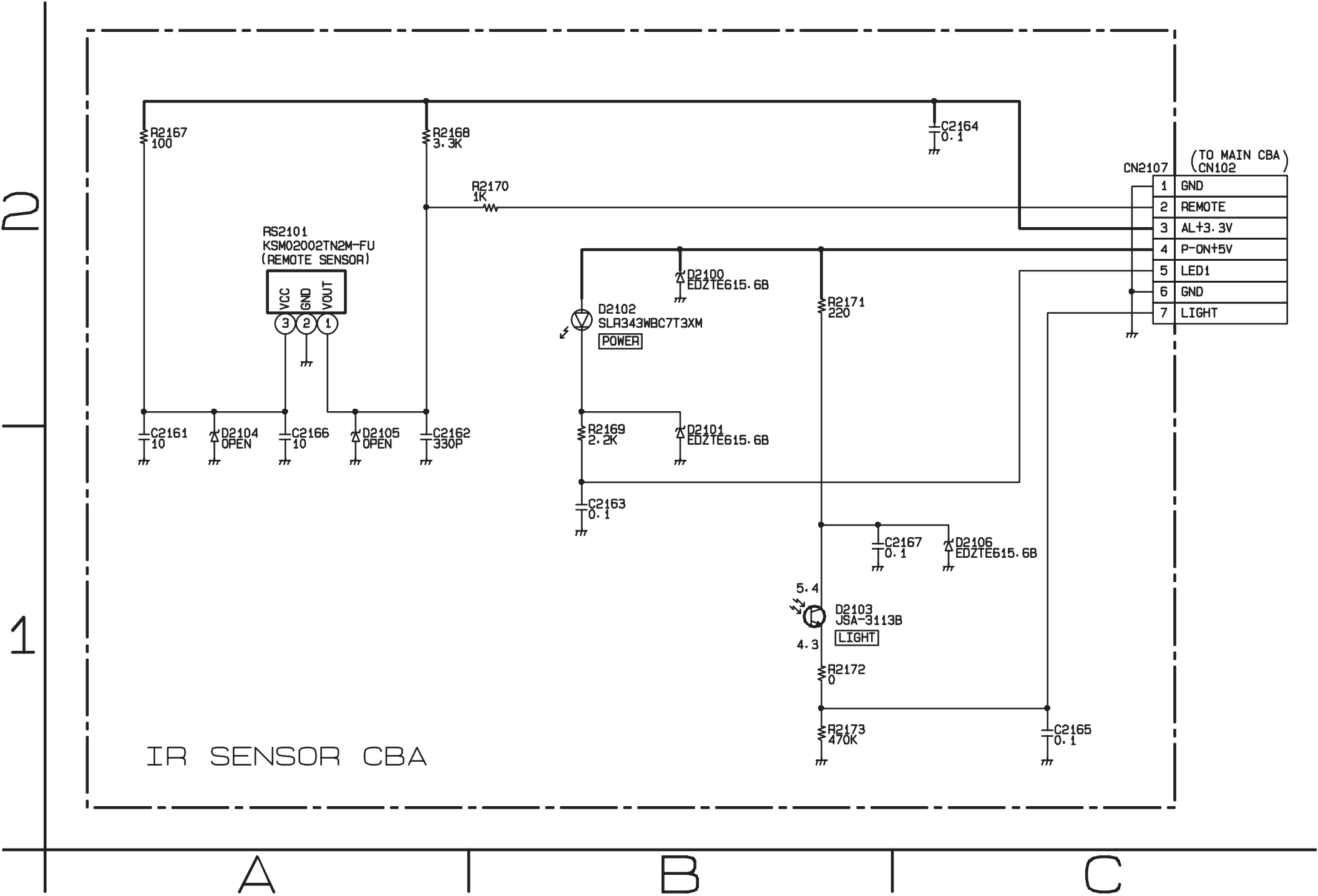
Jack Schematic Diagram



### Function Schematic Diagram



IR Sensor Schematic Diagram

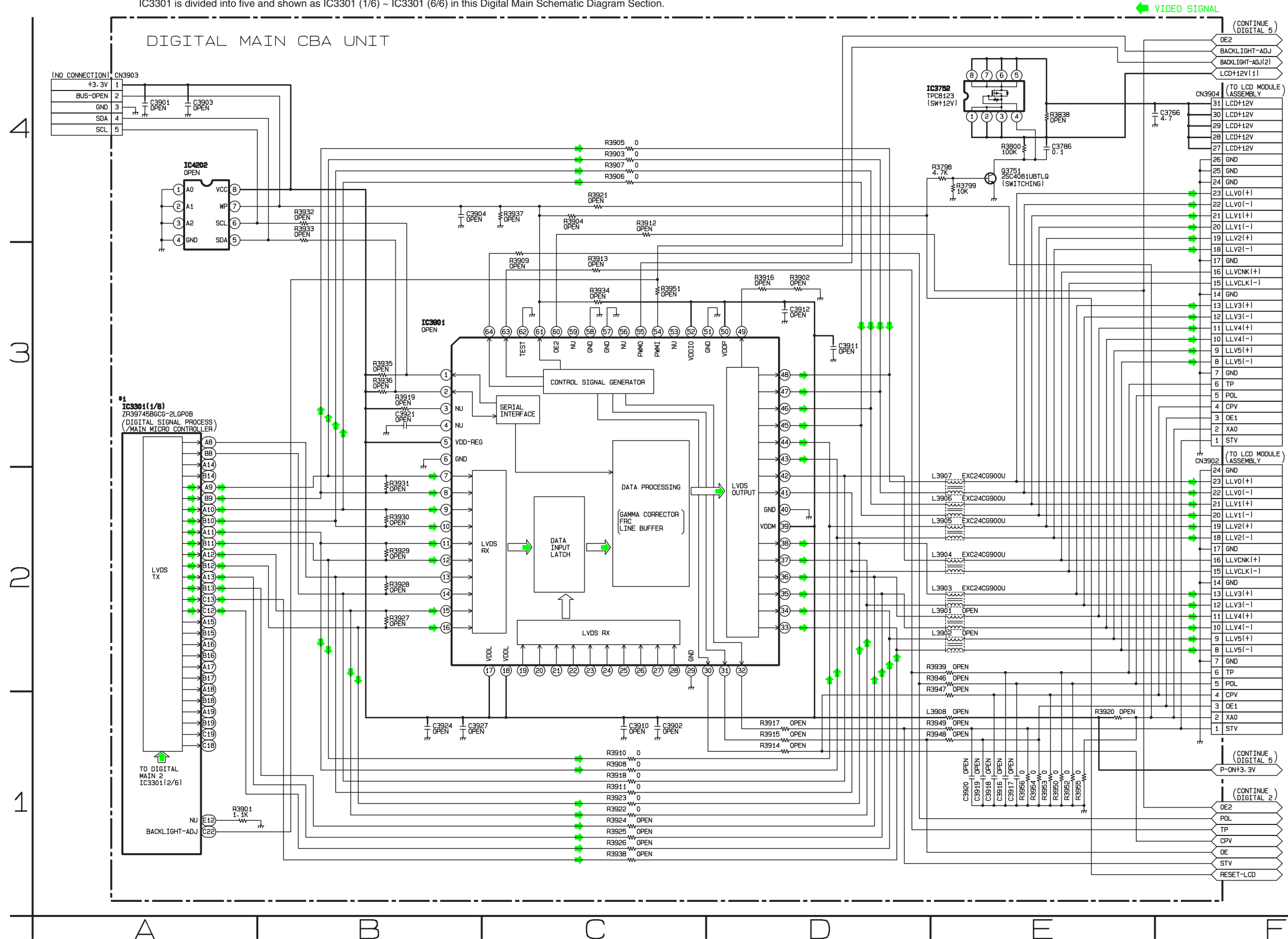


## Digital Main 1 Schematic Diagram

**\*1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3301.

IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.

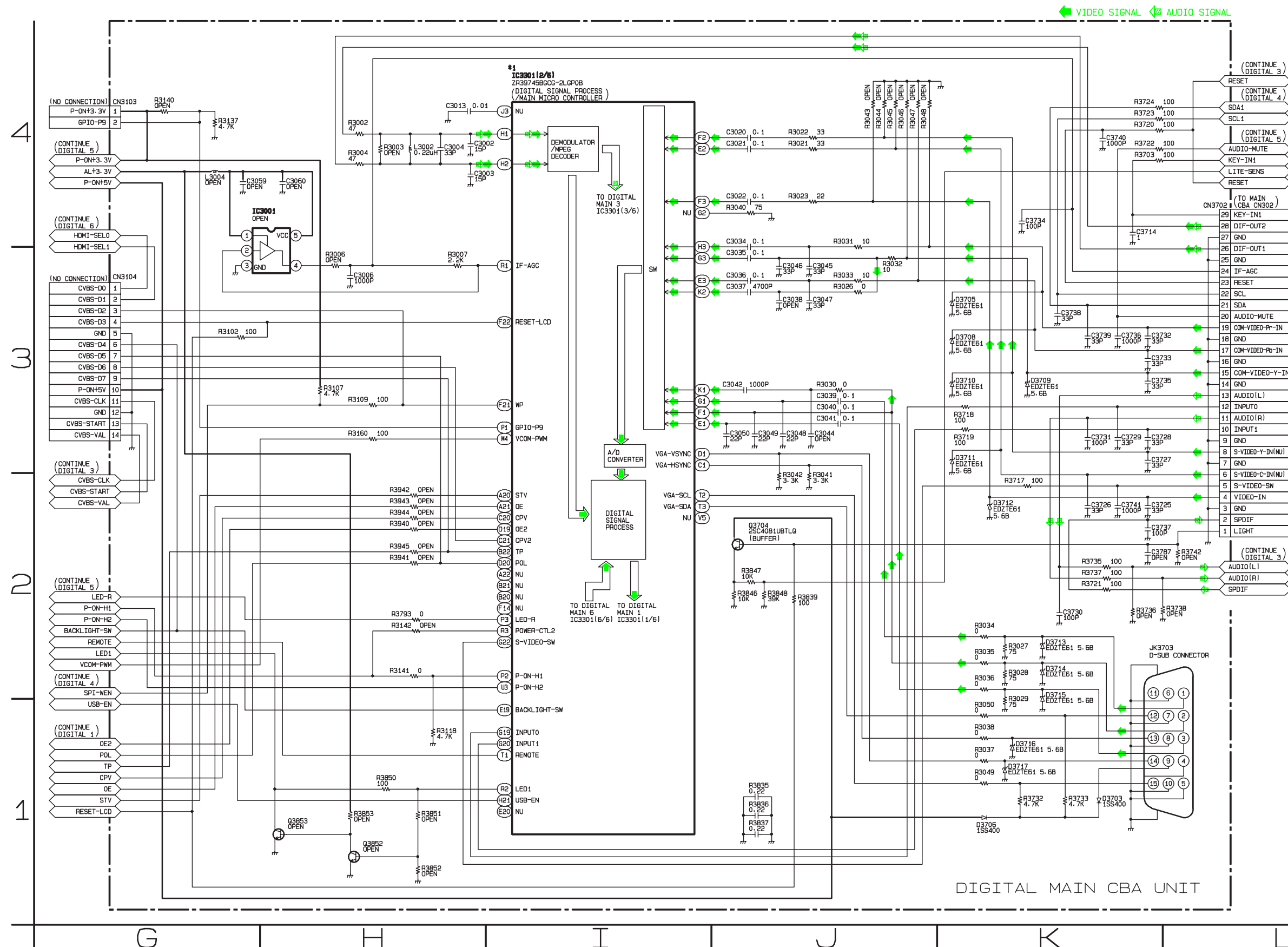


## Digital Main 2 Schematic Diagram

**\*1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3301.

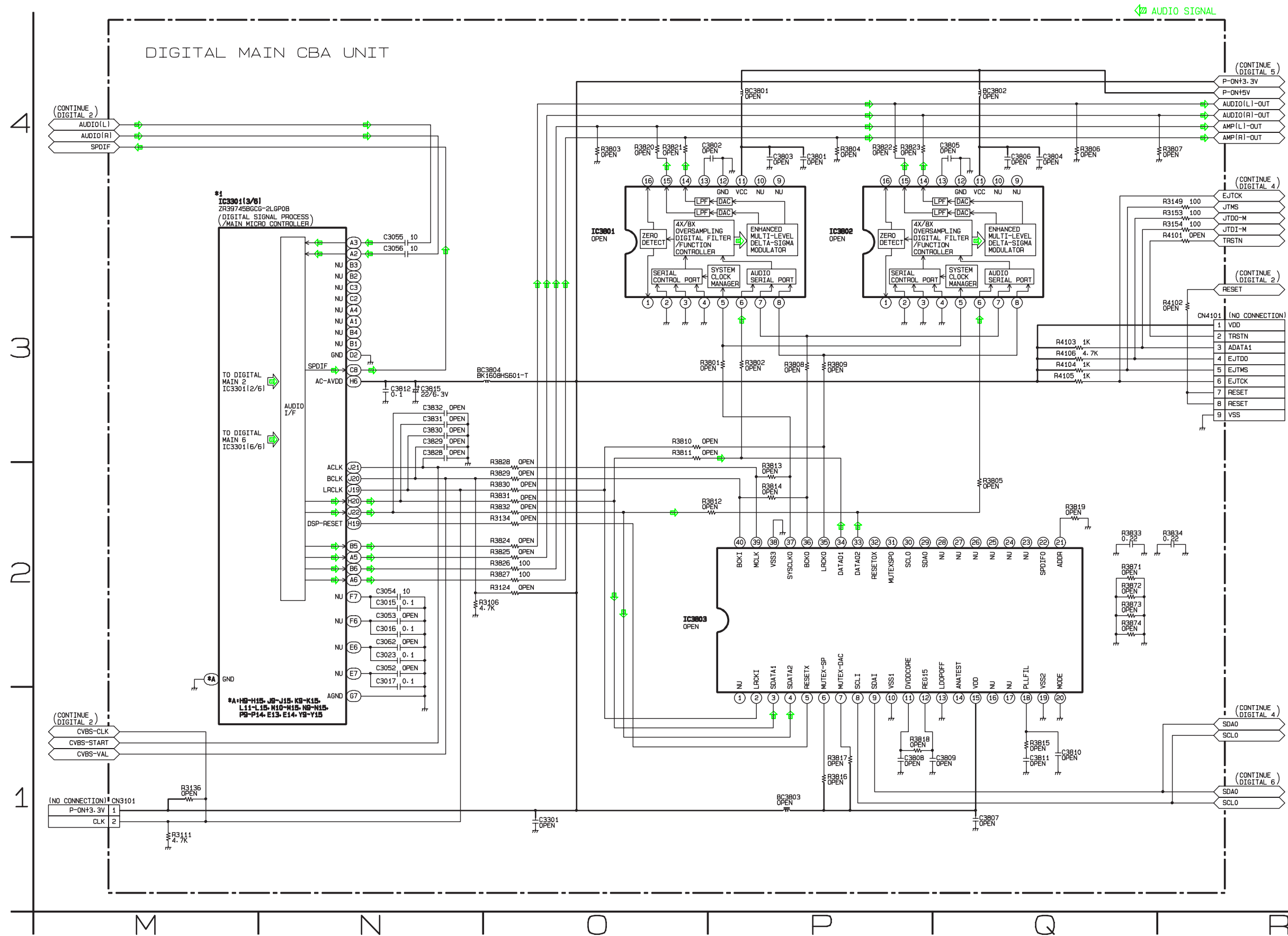
IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.



## Digital Main 3 Schematic Diagram

**\*1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3301.  
IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.



## 4

3



1

---

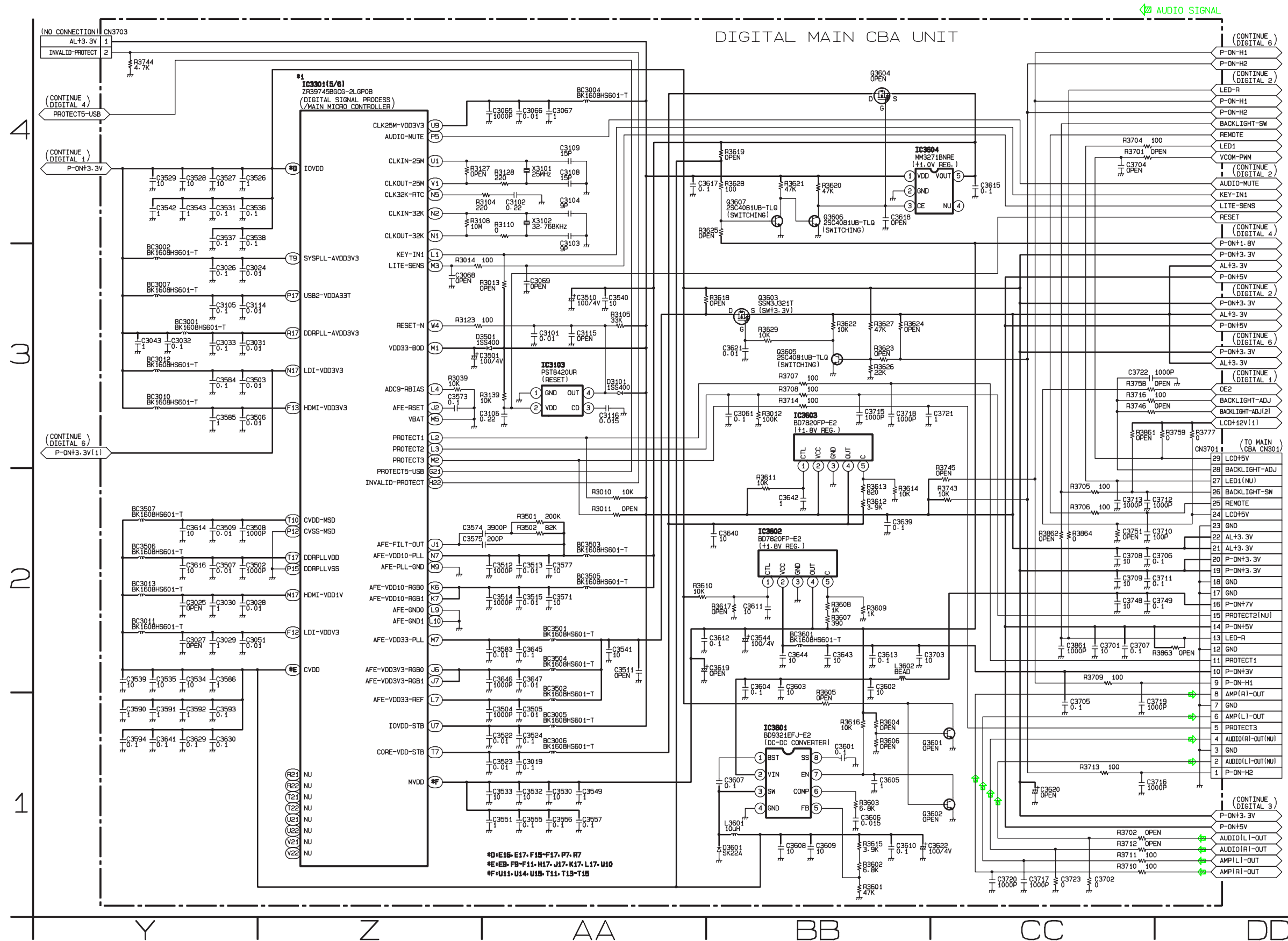
W

## Digital Main 5 Schematic Diagram

**\*1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3301.

IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.

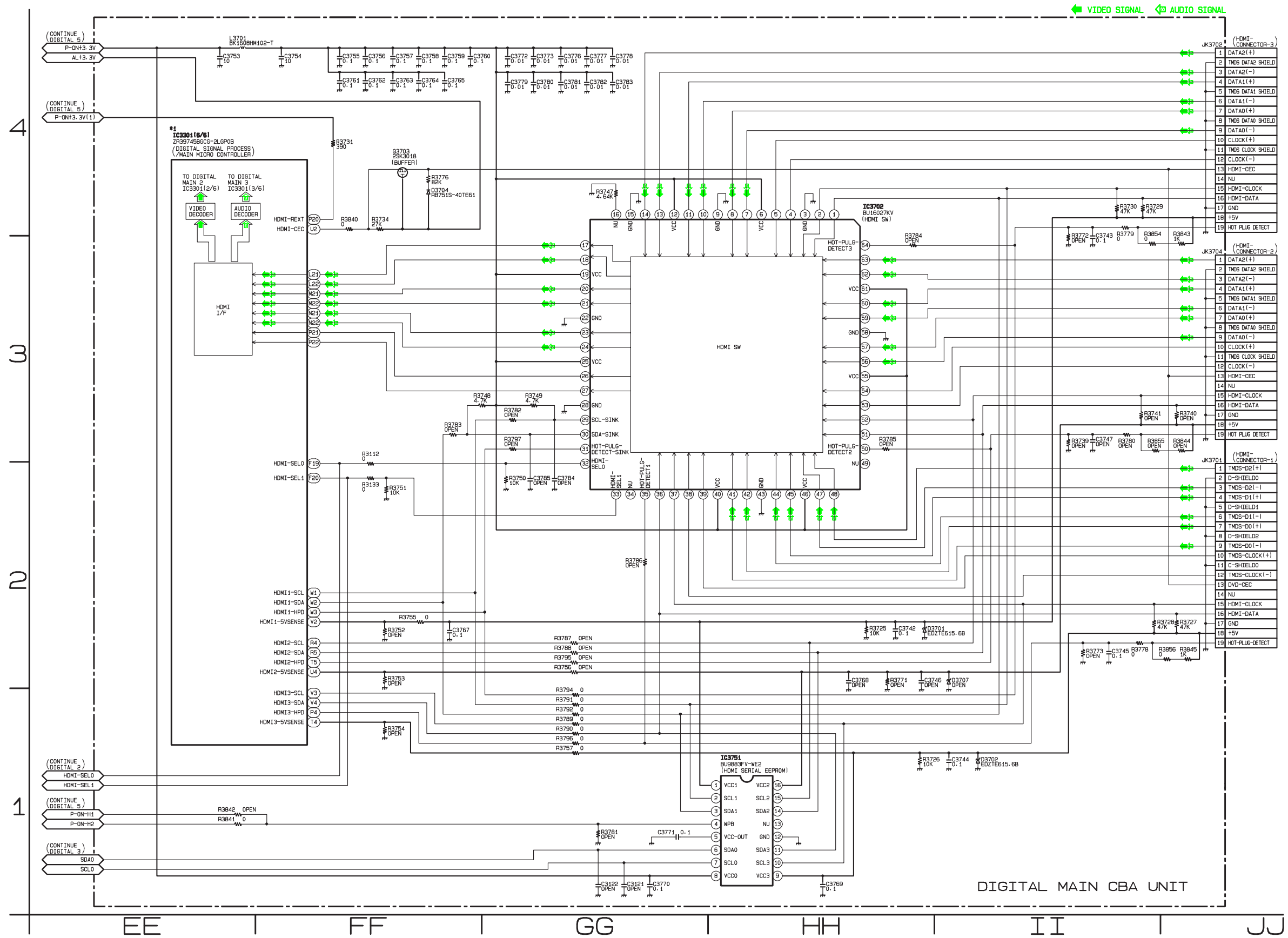


## Digital Main 6 Schematic Diagram

**\*1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3301.

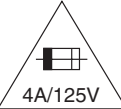
IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.



Main CBA Top View

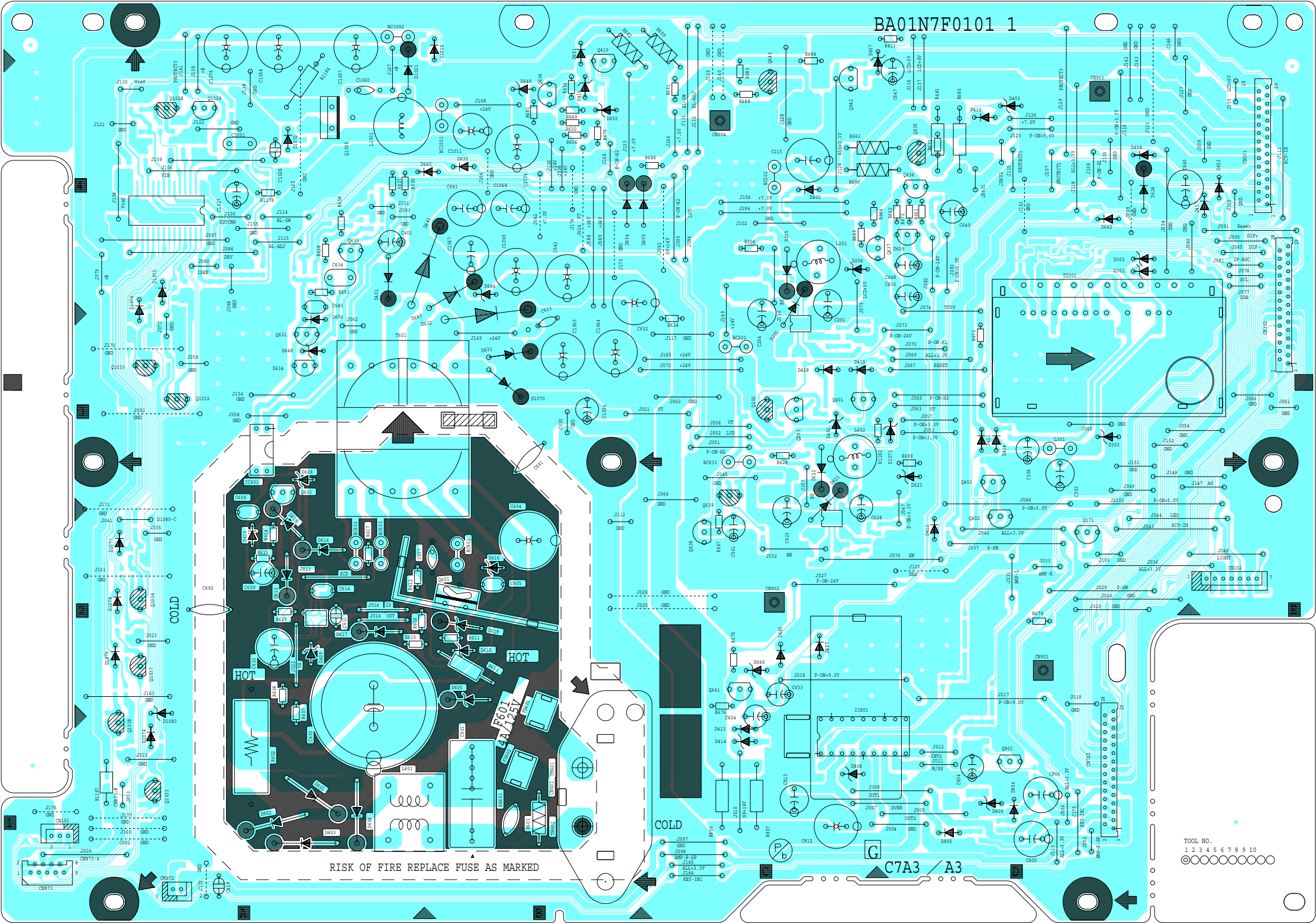
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing. Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.

**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.



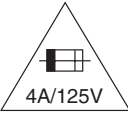
**CAUTION ! :** For continued protection against risk of fire, replace only with same type 4 A, 125V fuse.  
**ATTENTION :** Utiliser un fusible de rechange de même type de 4A, 125V.

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



# Main CBA Bottom View

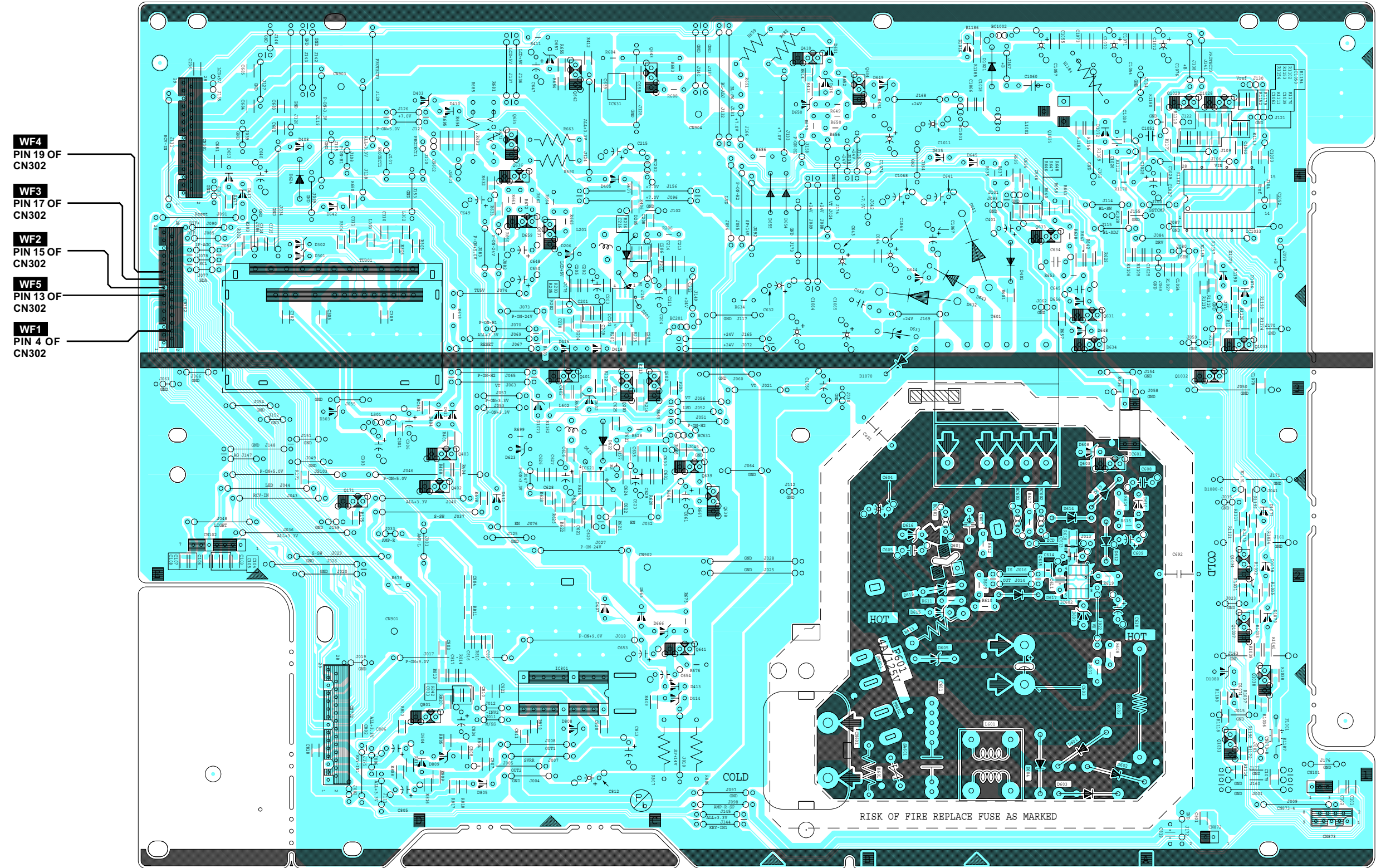
**CAUTION !**  
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.  
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some components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



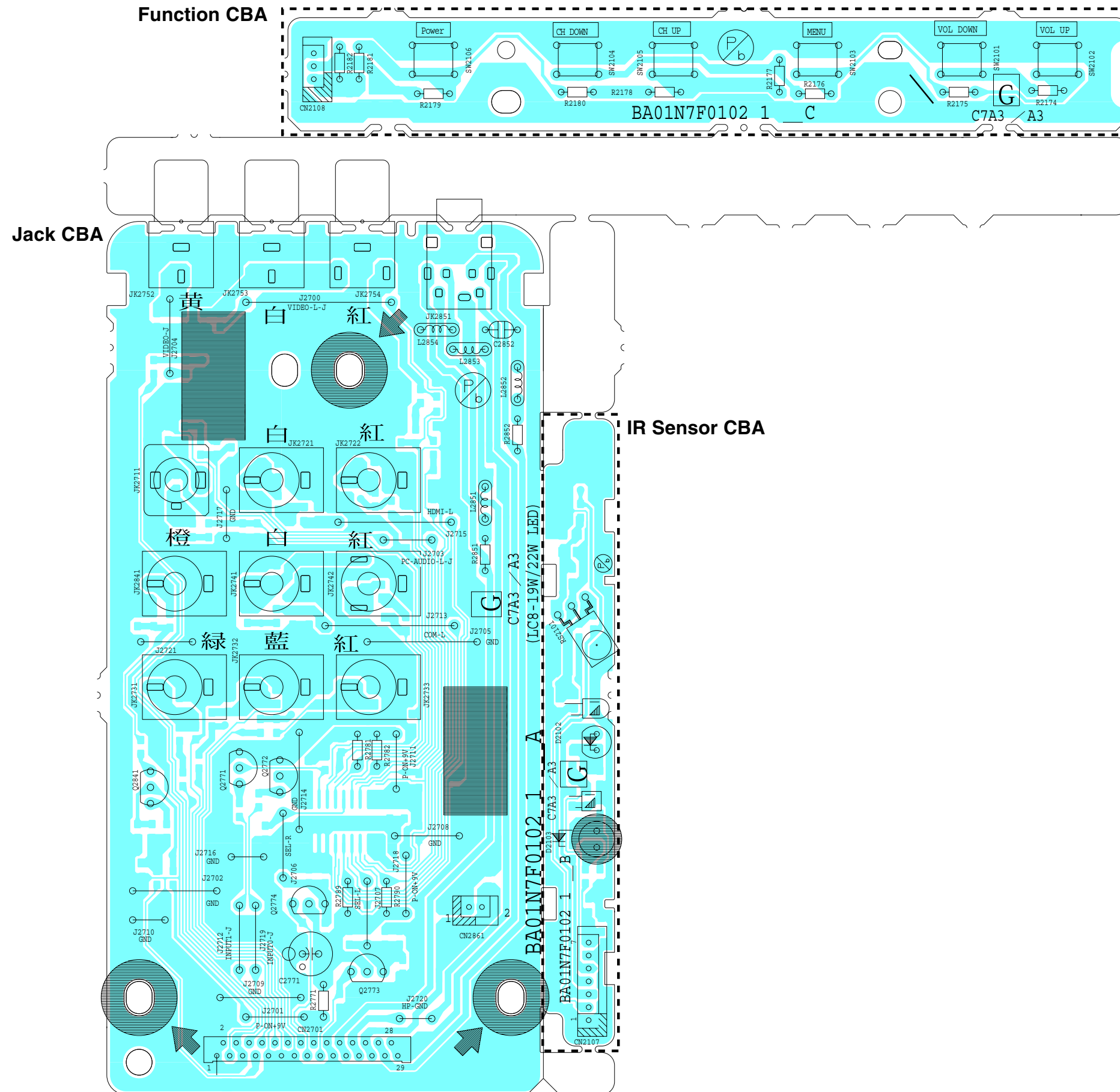
**CAUTION ! :** For continued protection against risk of fire,  
replace only with same type 4 A, 125V fuse.  
**ATTENTION :** Utiliser un fusible de rechange de même type de 4A, 125V.

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

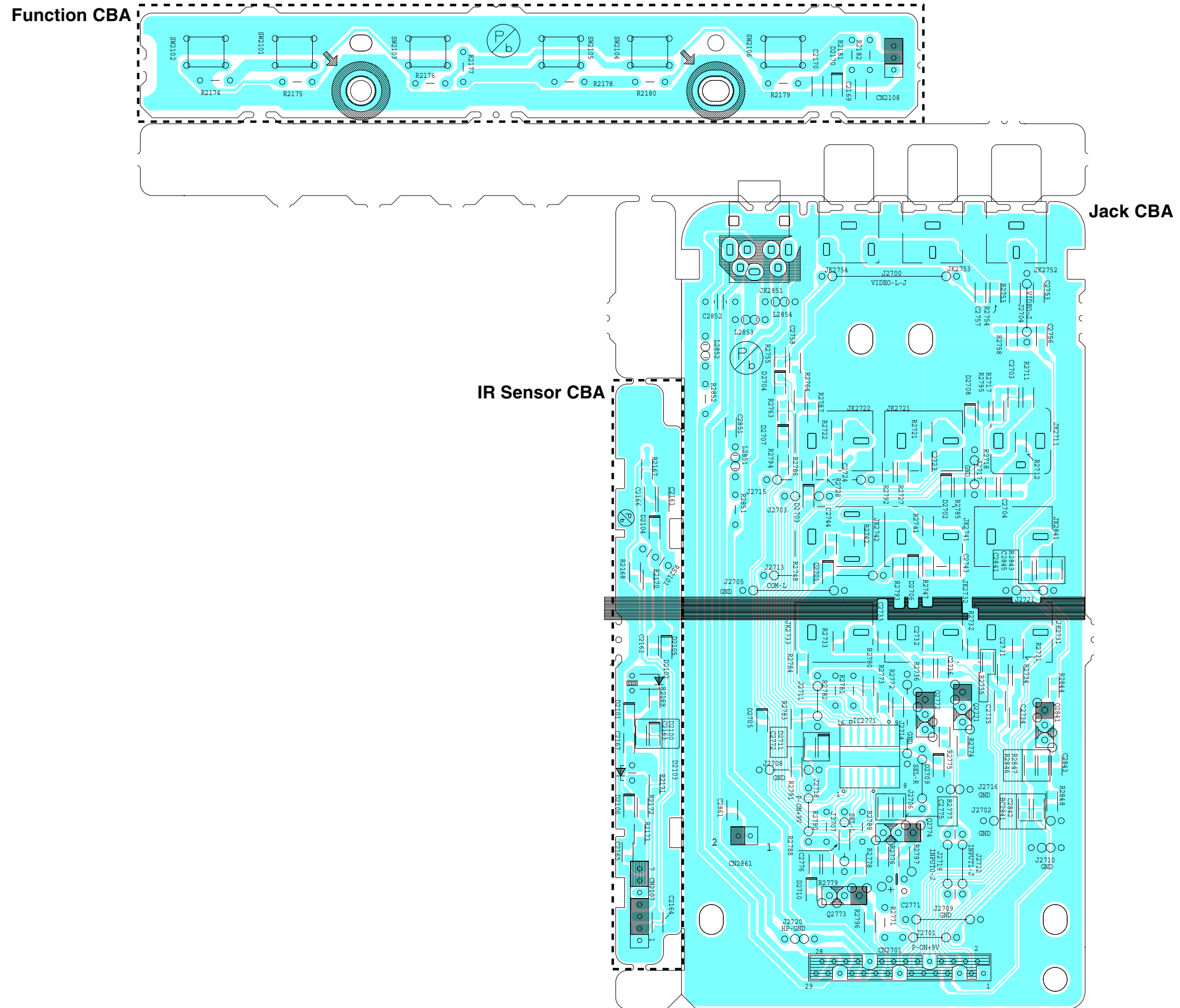
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing.  
Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.



### Jack CBA, Function CBA & IR Sensor CBA Top View



### Jack CBA, Function CBA & IR Sensor CBA Bottom View

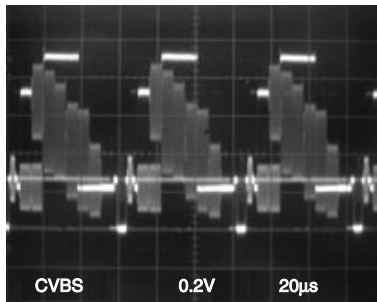


# WAVEFORMS

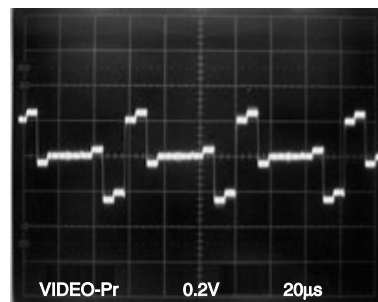
**WF1 ~ WF5 =** Waveforms to be observed at  
Waveform check points.  
(Shown in Schematic Diagram.)

**Input:** NTSC Color Bar Signal (with 1kHz Audio Signal)

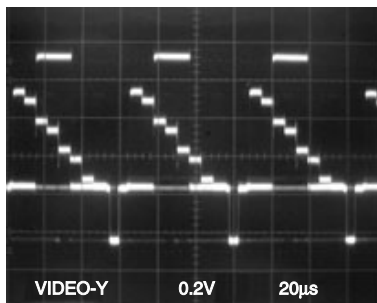
**WF1** Pin 4 of CN302



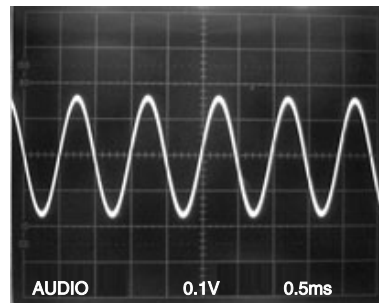
**WF4** Pin 19 of CN302



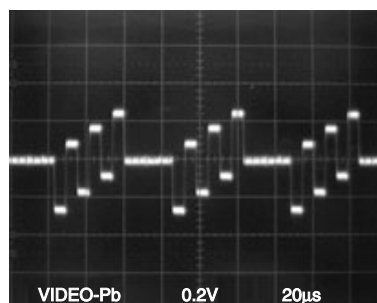
**WF2** Pin 15 of CN302



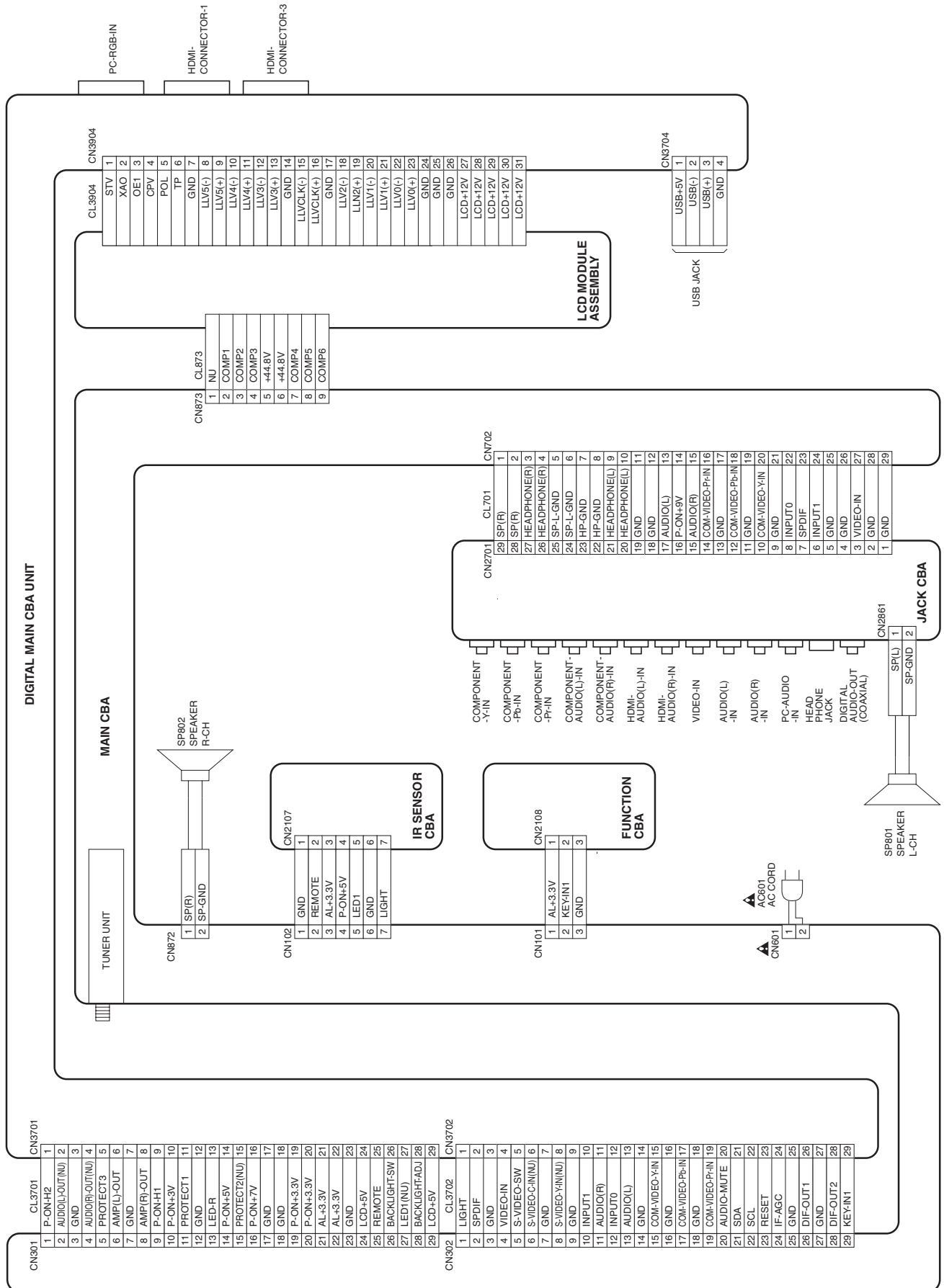
**WF5** Pin 13 of CN302



**WF3** Pin 17 of CN302

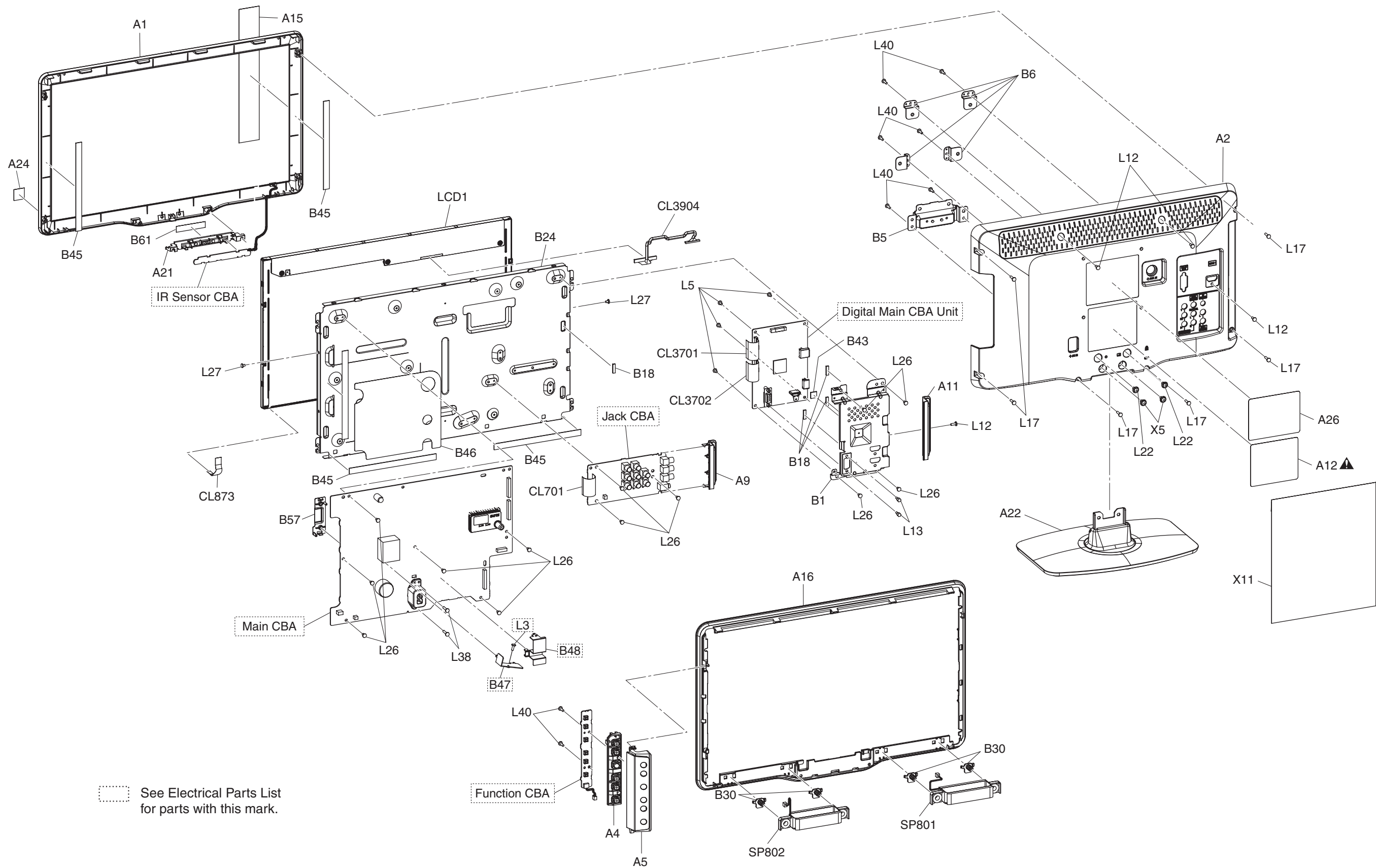


# WIRING DIAGRAM

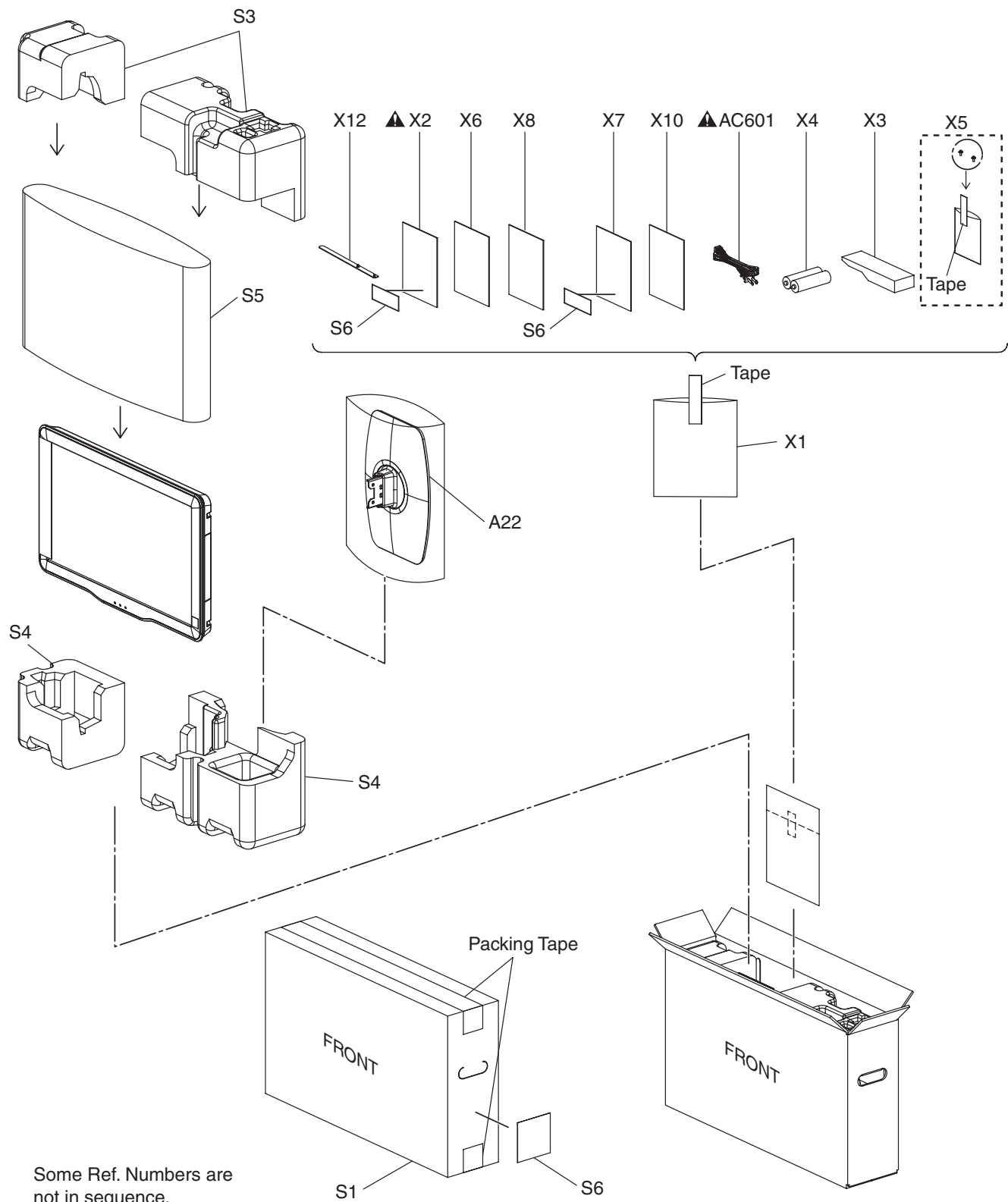


EXPLODED VIEWS

Cabinet




Packing






# PARTS LIST [19PFL4505D/F7]

## 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.
A1	FRONT CABINET A01N7UH	1EM025565
A2	REAR CABINET A01N7UH	1EM025567
A4	FUNCTION KNOB A01N7UH	1EM224363
A5	KNOB FRAME A01N7UH	1EM224383
A9	JACK HOLDER(A) A01N7UH	1EM224364
A11	JACK HOLDER(D) A01N7UH	1EM224365
A12 	RATING LABEL A01N7UH	-----
A15	POP LABEL A01N7UH	-----
A16	FRONT FLARE A01N7UH	1EM025566
A21	SENSOR LED LENS A01N7UH	1EM224366
A22	STAND ASSEMBLY A01N7UH	1EMN26279
A24	ENERGY STAR LABEL A91F2UH	-----
A26	CAUTION LABEL A01F2UH	-----
B1	SHIELD BOX A01N7UH	1EM124834
B5	STAND BRACKET A01N7UH	1EM224423
B6	WALL MOUNT BRACKET A84N0UH	1EM323797
B18	GASKET A84F0UH	1EM425861
B24	PANEL HOLDER A01N7UH	1EM025586
B30	BOSS(S) A01N7UH	1EM327957
B43	THERMOSTAR TMS-L-2(12*12HC)	XK10000X4003
B45	CLOTH 10X150XT1.0	1EM421092
B46	SEPARATION SHEET A01N7UH	1EM328297
B57	AC HOLDER A01N7UH	1EM328537
B61	GRAND TAPE A01N7UH	1EM432717
CL701	WIRE ASSEMBLY 29PIN FFC 29PIN 50MM	WX1A94F0-101
CL873	PCB A01N7 011 FPC A01N7 011 FPC	BA01N7Z01011
CL3701	WIRE ASSEMBLY 29PIN FFC 29PIN 50MM	WX1A94F0-101
CL3702	WIRE ASSEMBLY 29PIN FFC 29PIN 50MM	WX1A94F0-101
CL3904	WIRE ASSEMBLYS LVDS 31PIN 31PIN/160MM	WX1A01N7-301
L5	ASSEMBLED SCREW ( D9 M3X6 ) A71F0UH	1EM424392B
L12	SCREW S-TIGHT M3X8 BIND HEAD+	GBHS3080
L13	HEX SCREW #4-40 7MM	1EM430139
L17	SCREW P-TIGHT 3X12 BIND HEAD+ BLK	GBHP3120
L22	DOUBLE SEMS SCREW M4X10 + BLK	FPH34100
L26	SCREW S-TIGHT M3X6 BIND HEAD+	GBJS3060
L27	SCREW S-TIGHT M3X4 BIND HEAD+BLK	GBHS3040
L38	SCREW S-TIGHT M3X14 BIND HEAD+	GBJS3140
L40	SCREW P-TIGHT M3X10 BIND HEAD+	GBJP3100
LCD1	LCD MODULE 18.5W M185XW01 V6	UDULCD07A002
SP801	SPEAKER MAGNETIC L11923A-002	DS0811NSL002
SP802	SPEAKER MAGNETIC L11923A-002	DS0811NSL002
<b>PACKING</b>		
S1	CARTON A01N7UH	1EM431838
S3	STYROFOAM TOP A01N7UH	1EM025805
S4	STYROFOAM BOTTOM A01N7UH	1EM025806

Ref. No.	Description	Part No.
S5	SET BAG A81N0UH	1EM322872A
S6	SERIAL NO. LABEL A01P0UH	-----
<b>ACCESSORIES</b>		
AC601 	CORD W/O A GND WIRE UL/CSA/ 162/NO/ BLACK	WAV0162LW001
X1	BAG POLYETHYLENE 235X365XT0.03	0EM408420A
X2 	OWNERS MANUAL A01N7UH	1EMN26339
X3	REMOTE CONTROL TRANSMITTER YKF259-001	URMT34JHG001
X4	BATTERY R03-B500/01S	XB0M451CZB01
X5	STAND SCREW KIT A01N7UH	1ESA24705
X6	QUICK START GUIDE A01N7UH	1EMN26340
X7	REGISTRATION CARD(PHILIPS) A01F2UH	1EMN25799B
X8	CHILD SAFETY SHEET A91H2UH	1EMN24526
X10	WALL MOUNT INSTRUCTION A01N7UH	1EMN26499
X11	CONNECTION GUIDE A01N7UH	1EM328298
X12	CABLE MANAGEMENT TIE(BLACK) A01F2UH	1EM431197

# 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.

## NOTES:

- 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	A01N7MMA-001

## MAIN CBA

Ref. No.	Description	Part No.
	MAIN CBA Consists of the following:	A01N7MPW-001
<b>CAPACITORS</b>		
C101	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C102	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C103	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C104	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C105	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C106	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C107	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C108	CHIP CERAMIC CAP.(1608) F Z 10µF/10V	CHE1AJZ30F106
C201	ELECTROLYTIC CAP. 100µF/25V M	CE1EMASDL101
C202	CHIP CERAMIC CAP.(2125) B K 4.7µF/25V	CA1E475MR084
C203	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C204	ELECTROLYTIC CAP. 100µF/35V M	CE1GMASDL101
C205	CHIP CERAMIC CAP.(2125) B K 4.7µF/25V	CA1E475MR084
C206	CHIP CERAMIC CAP.(2125) F Z 1µF/50V	CHE1JZ30F105
C207	CHIP CERAMIC CAP.(1608) B K 0.1µF/50V	CHD1JK30B104
C208	CHIP CERAMIC CAP.(1608) B K 0.01µF/50V	CHD1JK30B103
C209	CHIP CERAMIC CAP. B K 1800pF/50V	CHD1JK30B182
C210	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
C211	CAP CHIP 3216 4.7µF/50V 3216	CA1J475MR104
C212	CAP CHIP 3216 4.7µF/50V 3216	CA1J475MR104
C213	CAP CHIP 3216 4.7µF/50V 3216	CA1J475MR104
C214	CAP CHIP 3216 4.7µF/50V 3216	CA1J475MR104
C215	ELECTROLYTIC CAP. 330µF/16V M	CE1CMASDL331
C216	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C236	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C301	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C302	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C303	ELECTROLYTIC CAP. 330µF/10V M	CE1AMASDL331
C305	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C306	ELECTROLYTIC CAP. 22µF/50V M	CE1JMASDL220
C309	CHIP CERAMIC CAP.(1608) B K 0.1µF/50V	CHD1JK30B104

Ref. No.	Description	Part No.
C310	CHIP CERAMIC CAP.(1608) CH J 47pF/50V	CHD1JJ3CH470
C311	CHIP CERAMIC CAP.(1608) CH J 47pF/50V	CHD1JJ3CH470
C314	CHIP CERAMIC CAP.(1608) CH J 33pF/50V	CHD1JJ3CH330
C315	CHIP CERAMIC CAP.(1608) CH J 33pF/50V	CHD1JJ3CH330
C401	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL1R0
C601▲	CAP METALIZED FILM 0.47µF/300V K 3.5MM	CT2F474DC004
C603▲	CAP ELE 105 220µF/200V/M/105	CEC2210NC018
C605	POLYESTER FILM CAP. (PB FREE) 0.0022µF/100V J	CA2A222DT018
C607▲	CERAMIC CAP. 220pF/2KV	CA3D221PAN04
C608	POLYESTER FILM CAP. (PB FREE) 0.001µF/100V J	CA2A102DT018
C609	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C610	ELECTROLYTIC CAP. 100µF/50V M	CE1JMASDL101
C611	CAP CERAMIC (AX) 0.1µF/50V/B/K	CA1J104TU061
C613	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C614	POLYESTER FILM CAP. (PB FREE) 0.001µF/100V J	CA2A102DT018
C615	CHIP CERAMIC CAP.(1608) B K 0.01µF/50V	CHD1JK30B103
C616	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C620	CHIP CERAMIC CAP.(1608) B K 3300pF/50V	CHD1JK30B332
C621	CHIP CERAMIC CAP.(1608) B K 4700pF/50V	CHD1JK30B472
C622	CHIP CERAMIC CAP.(1608) B K 0.1µF/50V	CHD1JK30B104
C623	ELECTROLYTIC CAP. 100µF/35V M	CE1GMASDL101
C624	CHIP CERAMIC CAP.(2125) F Z 1µF/50V	CHE1JZ30F105
C625	CHIP CERAMIC CAP.(1608) B K 0.01µF/50V	CHD1JK30B103
C626	CHIP CERAMIC CAP.(2125) F Z 10µF/10V	CHE1AJZ30F106
C627	CHIP CERAMIC CAP.(2125) F Z 10µF/10V	CHE1AJZ30F106
C628	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C629	CAP CHIP 3216 4.7µF/50V 3216	CA1J475MR104
C630	CAP CHIP 3216 4.7µF/50V 3216	CA1J475MR104
C631	CAP CHIP 3216 4.7µF/50V 3216	CA1J475MR104
C632	ELECTROLYTIC CAP. 330µF/35V M	CE1GMASDL331
C633	CERAMIC CAP. B K 1500pF/1KV	CCD3AKN0B152
C634	POLYESTER FILM CAP. (PB FREE) 0.022µF/100V J	CA2A223DT018
C635	CAP CHIP 3216 4.7µF/50V 3216	CA1J475MR104
C640	ELECTROLYTIC CAP. 470µF/10V M	CE1AMASDL471
C641	ELECTROLYTIC CAP. 1000µF/10V M	CE1AMASDL102
C645	POLYESTER FILM CAP. (PB FREE) 0.0022µF/100V J	CA2A222DT018
C646	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C647	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C648	ELECTROLYTIC CAP. 47µF/25V M	CE1EMASDL470
C649	ELECTROLYTIC CAP. 220µF/10V M	CE1AMASDL221
C650	ELECTROLYTIC CAP. 220µF/10V M	CE1AMASDL221
C653	ELECTROLYTIC CAP. 22µF/50V M	CE1JMASDL220
C654	ELECTROLYTIC CAP. 100µF/16V M	CE1CMASDL101
C656	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C658	CHIP CERAMIC CAP.(1608) B K 1µF/25V	CHD1EK30B105
C659	CHIP CERAMIC CAP.(1608) B K 0.1µF/50V	CHD1JK30B104
C661	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL1R0
C681	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C682	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C683	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C684	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C685	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C691▲	SAFTY CAP. 3300pF/250V	CCN2EMA0E332
C692▲	SAFTY CAP. 2200pF/250V KX	CA2E222MR101
C802	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C803	CHIP CERAMIC CAP. (1608) B K 1µF/16V	CHD1CK30B105

Ref. No.	Description	Part No.
C804	CHIP CERAMIC CAP. (1608) B K 1 $\mu$ F/16V	CHD1CK30B105
C805	ELECTROLYTIC CAP. 220 $\mu$ F/25V M	CE1EMASDL221
C806	ELECTROLYTIC CAP. 220 $\mu$ F/25V M	CE1EMASDL221
C807	CHIP CERAMIC CAP.(1608) B K 0.022 $\mu$ F/25V	CHD1EK30B223
C808	CHIP CERAMIC CAP.(1608) B K 0.022 $\mu$ F/25V	CHD1EK30B223
C809	CHIP CERAMIC CAP. (1608) B K 1 $\mu$ F/16V	CHD1CK30B105
C810	CHIP CERAMIC CAP. (1608) B K 1 $\mu$ F/16V	CHD1CK30B105
C811	CHIP CERAMIC CAP.(1608) F Z 0.1 $\mu$ F/50V	CHD1JZ30F104
C812	ELECTROLYTIC CAP. 470 $\mu$ F/25V M	CE1EMASDL471
C813	ELECTROLYTIC CAP. 100 $\mu$ F/25V M	CE1EMASDL101
C816	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C817	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C833	CHIP CERAMIC CAP.(1608) F Z 0.1 $\mu$ F/50V	CHD1JZ30F104
C834	ELECTROLYTIC CAP. 2.2 $\mu$ F/50V M	CE1JMASDL2R2
C1011	ELECTROLYTIC CAP. 220 $\mu$ F/35V M	CE1GMASDL221
C1018	CHIP CERAMIC CAP.(2125) F Z 1 $\mu$ F/50V	CHE1JZ30F105
C1024	CHIP CERAMIC CAP.(1608) F Z 0.1 $\mu$ F/50V	CHD1JZ30F104
C1025	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C1026	CAP CERAMIC (AX) 0.1 $\mu$ F/50V/B/K	CA1J104TU061
C1027	ELECTROLYTIC CAP. 1 $\mu$ F/50V M	CE1JMASDL1R0
C1028	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C1038	CHIP CAP C2012JB1E474KT	CHE1EK30B474
C1039	CHIP CERAMIC CAP.(1608) B K 0.1 $\mu$ F/50V	CHD1JK30B104
C1050	CHIP CERAMIC CAP.(1608) B K 4700pF/50V	CHD1JK30B472
C1052	CHIP CERAMIC CAP.(1608) B K 2.2 $\mu$ F/10V	CHD1AK30B225
C1053	CHIP CERAMIC CAP. CH J 220pF/50V	CHD1JJ3CH221
C1054	ELECTROLYTIC CAP. 47 $\mu$ F/100V M	CE2AMASDL470
C1055	CHIP CERAMIC CAP.(3216) X7R K 1.0 $\mu$ F/100V	CA2A105MR080
C1056	ELECTROLYTIC CAP. 10 $\mu$ F/50V M	CE1JMASDL100
C1057	ELECTROLYTIC CAP. 47 $\mu$ F/100V M	CE2AMASDL470
C1060	CERAMIC CAP. 680pF/1KV RB	CA3A681TE006
C1061	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C1062	CHIP CERAMIC CAP.(1608) B K 0.1 $\mu$ F/50V	CHD1JK30B104
C1064	ELECTROLYTIC CAP. 220 $\mu$ F/35V M	CE1GMASDL221
C1065	ELECTROLYTIC CAP. 330 $\mu$ F/35V M	CE1GMASDL331
C1066	CHIP CERAMIC CAP.(2125) F Z 1 $\mu$ F/50V	CHE1JZ30F105
C1067	ELECTROLYTIC CAP. 1000 $\mu$ F/10V M	CE1AMASDL102
C1068	ELECTROLYTIC CAP. 1000 $\mu$ F/10V M	CE1AMASDL102
C1069	ELECTROLYTIC CAP. 470 $\mu$ F/25V M	CE1EMASDL471
C1070	CHIP CERAMIC CAP.(3216) X7R K 1.0 $\mu$ F/100V	CA2A105MR080
C1071	CHIP CERAMIC CAP.(3216) X7R K 1.0 $\mu$ F/100V	CA2A105MR080
C1072	CHIP CERAMIC CAP.(3216) X7R K 1.0 $\mu$ F/100V	CA2A105MR080
C1073	CHIP CERAMIC CAP.(3216) X7R K 1.0 $\mu$ F/100V	CA2A105MR080
C1076	ELECTROLYTIC CAP. 47 $\mu$ F/100V M	CE2AMASDL470
<b>CONNECTORS</b>		
CN101	CONNECTOR PRINT OSU C S 440054-3	J344C03AP001
CN102	CONNECTOR PRINT OSU C S 440054-7	J344C07AP001
CN301	FFC CONNECTOR IMSA-9615S-29A-PP-A	JC96J29ER007
CN302	FFC CONNECTOR IMSA-9615S-29A-PP-A	JC96J29ER007
CN601▲	AC INLET 0/P/ST58-ABAN-0000	JTDC0PLST001
CN702	FFC CONNECTOR IMSA-9615S-29A-PP-A	JC96J29ER007
CN872	CONNECTOR PRINT OSU TOP 2P 440054-2	J344C02AP001
CN873	FFC CONNECTOR 9P IMSA-9615S-09C-PP-A	JC96J09ER009
<b>DIODES</b>		
D201	DIODE SCHOTTKY SB150BB	NDWZ000SB150
D205	SCHOTTKY BARRIER DIODE SB160	NDWZ000SB160
D206	DIODE ZENER 6V8BSB-T26	NDTB6R8BST26
D401	DIODE FR104-B	NDLZ000FR104
D402	DIODE ZENER 6V8BSB-T26	NDTB6R8BST26
D403	DIODE ZENER 6V2BSB-T26	NDTB6R2BST26
D404	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D405	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133

Ref. No.	Description	Part No.
D407	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D408	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D410	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D411	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D412	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D413	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D414	DIODE ZENER 6V2BSB-T26	NDTB6R2BST26
D416	DIODE ZENER 10BSB-T26	NDTB010BST26
D417	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D418	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D601▲	DIODE 1N5397BD	NDL1001N5397
D602▲	DIODE 1N5397BD	NDL1001N5397
D603▲	DIODE 1N5397BD	NDL1001N5397
D604▲	DIODE 1N5397BD	NDL1001N5397
D608	DIODE ZENER 27BSB-T26	NDTB027BST26
D609	DIODE ZENER 27BSB-T26	NDTB027BST26
D610	WIRE CP STP-S-0.50	XZ40FOREN001
D612	WIRE CP STP-S-0.50	XZ40FOREN001
D614	WIRE CP STP-S-0.50	XZ40FOREN001
D615▲	DIODE ZENER 39BSB-T26	NDTB039BST26
D616	DIODE ZENER 27BSB-T26	NDTB027BST26
D617	DIODE FR104-B	NDLZ000FR104
D619	DIODE FR104-B	NDLZ000FR104
D621	DIODE SCHOTTKY SB150BB	NDWZ000SB150
D622	SCHOTTKY BARRIER DIODE SB160	NDWZ000SB160
D623	DIODE ZENER 4V7BSB-T26	NDTB4R7BST26
D624	WIRE CP STP-S-0.50	XZ40FOREN001
D632	DIODE SCHOTTKY 30PHA20	QDLZ030PHA20
D633▲	DIODE ZENER 1ZB33BB	NDWZ0001ZB33
D634	IC SHUNT REGULATOR KIA431-AT/P	NSZBA0TJY036
D641	DIODE SCHOTTKY SB360BH	NDWZ000SB360
D642	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D643	FAST RECOVERY DIODE FR252	NDWZ000FR252
D644▲	DIODE ZENER 22BSB-T26	NDTB022BST26
D648	DIODE ZENER 5V6BSB-T26	NDTB5R6BST26
D649▲	DIODE ZENER 10BSB-T26	NDTB010BST26
D650▲	DIODE ZENER 5V6BSA-T26	NDTA5R6BST26
D651	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D654	DIODE FR104-B	NDLZ000FR104
D655	DIODE FR104-B	NDLZ000FR104
D656	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D657	DIODE ZENER 4V7BSB-T26	NDTB4R7BST26
D659	SHUNT REGULATOR KIA431B-AT/P	NSZBA0TJY038
D665	WIRE CP STP-S-0.50	XZ40FOREN001
D666	DIODE ZENER 10BSB-T26	NDTB010BST26
D804	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D805	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D808	DIODE ZENER 20BSB-T26	NDTB020BST26
D809	DIODE ZENER 20BSB-T26	NDTB020BST26
D1021	DIODE SCHOTTKY SB1A0BB	NDWZ000SB1A0
D1070	DIODE FR104-B	NDLZ000FR104
D1071	DIODE ZENER 33BSB-T26	NDTB033BST26
D1074	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1075	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1076	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1077	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1078	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1079	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1080	DIODE ZENER 30BSB-T26	NDTB030BST26
<b>ICS</b>		
IC201	IC DCDC CONVERTER MP2303ADNLFZ/ SOIC8N	NSCA0T09M004
IC601▲	PHOTO COUPLER LTV817MCF	NPECLTV817MF

Ref. No.	Description	Part No.
IC602▲	IC SWITING FA5571N-D1-TE1/SOP-8	QSCA0T0FD003
IC621	IC CDC CONVERTER MP2303ADNLFZ/ SOIC8N	NSCA0T09M004
IC631	IC REGULATOR MM3123DPRE	QSCA0T0MM108
IC801	AUDIO AMP IC TDA1517P/N3 112	NSCA0SNXP003
IC1033	IC LED CONTROLLER OZ9967GN-B0-TR	NSCA0TTMC002
<b>COILS</b>		
L201	COIL POWER INDUCTORS DIP RCR1010NP-101M/100μH	LLF1010SF012
L301	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
L302	CHIP INDUCTOR LK1608R22K-T	LLACKB3TUR22
L303	CHIP INDUCTOR LK1608R22K-T	LLACKB3TUR22
L601▲	LINE FILTER 27H-9014/5MH	LLEG0ZDEL003
L602	COIL POWER INDUCTORS DIP RCR1010NP-470M/47μH	LLF4700SF012
L1001	COIL POWER INDUCTORS DIP RP1315BNP-220M/22μH	LLF2200SF013
<b>TRANSISTORS</b>		
Q171	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q202	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q203	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q401	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q402	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q403	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q410	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q601▲	MOS FET TK5A50D(LS1FND.Q)/Z	QEEZTK5A50DQ
Q603	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q631	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q633	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q634	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q635	TRANSISTOR 2SA950-Y(Te2 F T)	QQSY02SA950F
Q636	TRANSISTOR 2SC2120-Y(Te2 F T)	QQSY2SC2120F
Q637	TRANSISTOR 2SC2120-Y(Te2 F T)	QQSY2SC2120F
Q638	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q639	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q641	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q642	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q643	TRANSISTOR 2SA950-Y(Te2 F T)	QQSY02SA950F
Q801	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q1028	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q1029	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q1031	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q1032	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q1033	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q1034	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q1035	FET MOS TK25A10K3	QFWZK25A10K3
Q1037	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q1038	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
<b>RESISTORS</b>		
R171	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R175	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R201	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R202	CHIP RES. 1/10W F 47.0 k Ω	RRXAFR5H4702
R203	CHIP RES. 1/10W F 10k Ω	RRXAFR5H1002
R204	CHIP RES.(1608) 1/10W F 6.8k Ω	RRXAFR5H0682
R205	CHIP RES. 1/10W F 5.6k Ω	RRXAFR5H0562
R206	RES CARBON FILM T 1/4W J 68 Ω	RCX4680T1001
R211	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R212	CHIP RES. 1/10W J 4.7k Ω	RRXAJR5Z0472
R213	CHIP RES. 1/10W J 27k Ω	RRXAJR5Z0273
R214	CHIP RES. 1/10W J 3.3k Ω	RRXAJR5Z0332
R215	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R216	CHIP RES. 1/10W J 10 Ω	RRXAJR5Z0100
R302	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000

Ref. No.	Description	Part No.
R303	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R304	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R305	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R306	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R401▲	CHIP RES. 1/10W J 1 Ω	RRXAJR5Z01R0
R402	CHIP RES. 1/10W F 51.0 k Ω	RRXAFR5H5102
R403	CHIP RES. 1/10W F 27k Ω	RRXAFR5H2702
R404	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R405	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R406	CHIP RES. 1/10W J 2.2k Ω	RRXAJR5Z0222
R407	CHIP RES. 1/10W J 3.3k Ω	RRXAJR5Z0332
R408	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R409	CHIP RES. 1/10W J 2.2k Ω	RRXAJR5Z0222
R411	RES CARBON FILM T 1/4W J 22k Ω	RCX4223T1001
R412	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R413	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R414	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R601▲	GLASS GLAZE RES. 1/2W J 2.7M Ω	RXX2JZLZ0275
R602	RES CEMENT 3W J 1.2 Ω	RWJ1R2PAK004
R607	RES CARBON FILM T 1/4W J 18k Ω	RCX4183T1001
R608	RES CARBON FILM T 1/4W J 18k Ω	RCX4183T1001
R609	RES CARBON FILM T 1/4W J 180 Ω	RCX4181T1001
R610	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R611	RES CARBON FILM T 1/4W J 4.7k Ω	RCX4472T1001
R612	RES CARBON FILM T 1/4W J 33 Ω	RCX4330T1001
R613▲	METAL OXIDE FILM RES. 2W J 0.39 Ω	RN02R39ZU001
R614	RES CARBON FILM T 1/4W J 560 Ω	RCX4561T1001
R615	RES CARBON FILM T 1/4W J 560 Ω	RCX4561T1001
R616	CHIP RES. 1/10W J 10 Ω	RRXAJR5Z0100
R617	RES CARBON FILM T 1/4W J 33k Ω	RCX4333T1001
R618	CHIP RES. 1/10W J 12k Ω	RRXAJR5Z0123
R620	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R621	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R622	CHIP RES. 1/10W F 4.3k Ω	RRXAFR5H4301
R623	CHIP RES. 1/10W F 36k Ω	RRXAFR5H3602
R624	CHIP RES. 1/10W F 11k Ω	RRXAFR5H1102
R625	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R628	RES CARBON FILM T 1/4W J 68 Ω	RCX4680T1001
R632	RES CHIP.(1608) 1/10W D 1.1k Ω	RRXADR5H1101
R633	RES CHIP.(1608) 1/10W D 10k Ω	RRXADR5H1002
R636	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R637	RES CARBON FILM T 1/4W J 120 Ω	RCX4121T1001
R638	RES CARBON FILM T 1/4W J 3.9k Ω	RCX4392T1001
R639	CHIP RES. 1/10W F 2.7k Ω	RRXAFR5H2701
R640	CHIP RES. 1/10W F 18k Ω	RRXAFR5H1802
R641	CHIP RES. 1/10W F 820 Ω	RRXAFR5H8200
R642	CHIP RES. 1/10W F 27k Ω	RRXAFR5H2702
R643	CHIP RES. 1/10W F 27k Ω	RRXAFR5H2702
R646	CHIP RES. 1/10W F 33.0k Ω	RRXAFR5H3302
R647	CHIP RES. 1/10W J 47k Ω	RRXAJR5Z0473
R648	CHIP RES. 1/10W J 4.7k Ω	RRXAJR5Z0472
R649	RES CARBON FILM T 1/4W J 330 Ω	RCX4331T1001
R650	RES CARBON FILM T 1/4W J 330 Ω	RCX4331T1001
R651▲	RES CARBON FILM T 1/4W J 33 Ω	RCX4330T1001
R652	WIRE CP STP-S-0.50	XZ40F0REN001
R653	WIRE CP STP-S-0.50	XZ40F0REN001
R654	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R655	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R656	RES CARBON FILM T 1/4W J 330 Ω	RCX4331T1001
R657	CHIP RES. 1/10W F 27k Ω	RRXAFR5H2702
R658	WIRE CP STP-S-0.50	XZ40F0REN001
R659	RES. CARBON FILM J 1/2W J 5.6 Ω	RCX25R6T1003
R660	RES CHIP.(1608) 1/10W D 10k Ω	RRXADR5H1002

Ref. No.	Description	Part No.
R661	RES CARBON FILM T 1/4W J 820 Ω	RCX4821T1001
R662	RES CARBON FILM T 1/4W J 39 Ω	RCX4390T1001
R663	RES. CARBON FILM J 1/2W J 1.2 Ω	RCX21R2T1003
R664	RES CARBON FILM T 1/4W J 2.7 Ω	RCX42R7T1001
R665	RES CARBON FILM T 1/4W J 2.7 Ω	RCX42R7T1001
R666	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R667	RES CARBON FILM T 1/4W J 10k Ω	RCX4103T1001
R668	CHIP RES. 1/10W J 47k Ω	RRXAJR5Z0473
R669	CHIP RES. 1/10W J 4.7k Ω	RRXAJR5Z0472
R671	WIRE CP STP-S-0.50	XZ40FOREN001
R672	RES CARBON FILM T 1/4W J 820 Ω	RCX4821T1001
R673	RES CARBON FILM T 1/4W J 1.5 Ω	RCX41R5T1001
R675	RES CARBON FILM T 1/4W J 3.3k Ω	RCX4332T1001
R676	RES CARBON FILM T 1/4W J 82 Ω	RCX4820T1001
R677	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R678	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R679	RES CARBON FILM T 1/4W J 10k Ω	RCX4103T1001
R681	METAL OXIDE FILM RES. 1W J 1.2 Ω	RN011R2ZU001
R682	RES. CARBON FILM J 1/2W J 5.6 Ω	RCX25R6T1003
R683	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R684	WIRE CP STP-S-0.50	XZ40FOREN001
R685	METAL OXIDE FILM RES. 1W J 1.2 Ω	RN011R2ZU001
R686	RES CARBON FILM T 1/4W J 8.2 Ω	RCX48R2T1001
R688	RES CARBON FILM T 1/4W J 8.2 Ω	RCX48R2T1001
R690	RES. CARBON FILM J 1/2W J 1.2 Ω	RCX21R2T1003
R691	WIRE CP STP-S-0.50	XZ40FOREN001
R803	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R804	CHIP RES. 1/10W J 8.2 Ω	RRXAJR5Z08R2
R805	CHIP RES. 1/10W J 8.2 Ω	RRXAJR5Z08R2
R806	WIRE CP STP-S-0.50	XZ40FOREN001
R807	WIRE CP STP-S-0.50	XZ40FOREN001
R808	CHIP RES. 1/10W F 3.3k Ω	RRXAFR5H3301
R809	CHIP RES. 1/10W F 300 Ω	RRXAFR5H3000
R810	CHIP RES. 1/10W J 27k Ω	RRXAJR5Z0273
R811	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R813	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R814	CHIP RES. 1/10W J 27k Ω	RRXAJR5Z0273
R815	CHIP RES. 1/10W J 470 Ω	RRXAJR5Z0471
R816	CHIP RES. 1/10W J 470 Ω	RRXAJR5Z0471
R817	CHIP RES. 1/10W F 15k Ω	RRXAFR5H1502
R818	CHIP RES. 1/10W F 15k Ω	RRXAFR5H1502
R819	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R820	CHIP RES. 1/10W J 5.6k Ω	RRXAJR5Z0562
R842	CHIP RES. 1/10W J 27k Ω	RRXAJR5Z0273
R1027	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R1028	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1031	CHIP RES.(1608) 1/10W F 13.0 Ω	RRXAFR5H13R0
R1033	CHIP RES. 1/10W J 5.1k Ω	RRXAJR5Z0512
R1034	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1035	CHIP RES. 1/10W J 5.6k Ω	RRXAJR5Z0562
R1036	CHIP RES.(1608) 1/10W F 13.0 Ω	RRXAFR5H13R0
R1038	CHIP RES. 1/10W J 5.1k Ω	RRXAJR5Z0512
R1039	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1040	CHIP RES. 1/10W J 5.6k Ω	RRXAJR5Z0562
R1102	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1105	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R1106	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1110	CHIP RES.(1608) 1/10W F 560k Ω	RRXAFR5Z5603
R1111	CHIP RES. 1/10W F 47.0 k Ω	RRXAFR5H4702
R1112	CHIP RES.(1608) 1/10W F 1k Ω	RRXAFR5H0102
R1113	CHIP RES. 1/10W F 20k Ω	RRXAFR5H2002
R1114	CHIP RES.(1608) 1/10W F 13.0 Ω	RRXAFR5H13R0
R1115	CHIP RES.(1608) 1/10W F 13.0 Ω	RRXAFR5H13R0

Ref. No.	Description	Part No.
R1116	CHIP RES.(1608) 1/10W F 13.0 Ω	RRXAFR5H13R0
R1121	CHIP RES.(1608) 1/10W F 13.0 Ω	RRXAFR5H13R0
R1152	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1153	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1154	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1156	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1169	CHIP RES. 1/10W F 100k Ω	RRXAFR5H1003
R1170	CHIP RES. 1/10W F 8.2k Ω	RRXAFR5H8201
R1171	CHIP RES. 1/10W F 430 k Ω	RRXAFR5H4303
R1172	CHIP RES. 1/10W J 5.1k Ω	RRXAJR5Z0512
R1173	CHIP RES. 1/10W J 5.1k Ω	RRXAJR5Z0512
R1174	CHIP RES. 1/10W J 5.1k Ω	RRXAJR5Z0512
R1175	CHIP RES. 1/10W J 5.1k Ω	RRXAJR5Z0512
R1178	RES CARBON FILM T 1/4W J 470 Ω	RCX4471T1001
R1179	CHIP RES. 1/10W J 1M Ω	RRXAJR5Z0105
R1180	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1182	RES CARBON FILM T 1/4W J 470 Ω	RCX4471T1001
R1184	METAL OXIDE RES. 1W J 0.18 Ω	RN01R18ZU001
R1187	WIRE CP STP-S-0.50	XZ40FOREN001
R1188	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1189	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1190	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1191	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1194	CHIP RES. 1/10W J 330k Ω	RRXAJR5Z0334
R1196	CHIP RES. 1/10W J 5.6k Ω	RRXAJR5Z0562
R1197	CHIP RES. 1/10W J 5.6k Ω	RRXAJR5Z0562
R1198	CHIP RES. 1/10W J 5.6k Ω	RRXAJR5Z0562
R1199	CHIP RES. 1/10W J 5.6k Ω	RRXAJR5Z0562
<b>MISCELLANEOUS</b>		
B47	HEAT SINK PNF A01N7UH	1EM431698
B48	HEAT SINK PMU A8A70UH	1EM324377
BC201	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC202	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC301	CHIP INDUCTOR BK1608HS601-T	LLC601NTU017
BC601	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC602	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC603	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC631	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC1001	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC1002	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
F200	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
F201	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
F601▲	FUSE STC4A125V U/CT	PAGE20CW3402
F621	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
FH601	FUSE HOLDER MSF-015 LF (B110)	XH01Z00LY002
FH602	FUSE HOLDER MSF-015 LF (B110)	XH01Z00LY002
JS103	WIRE CP STP-S-0.50	XZ40FOREN001
JS602	WIRE CP STP-S-0.50	XZ40FOREN001
L3	SCREW B-TIGHT D3X8 BIND HEAD+	GBJB3080
SA601▲	SURGE ABSORBER 470V+-10PER	NVQZ10D471KB
T601▲	TRANS POWER 27H-9018	LTT2PCDEL001
TM601	EYELET TYPE D-1	OVM406868
TM602	EYELET TYPE D-1	OVM406868
TU301	TUNER UNIT ATSC/NTSC/QAM TDYU4-D02A	UTNATS0AL001

## JACK ASSEMBLY

Ref. No.	Description	Part No.
	JACK ASSEMBLY Consists of the following:	A01N7MJC-001
	JACK CBA (MJC-A)	A01N7MJC-001-JK
	IR SENSOR CBA(MJC-B) FUNCTION CBA(MJC-C)	A01N7MJC-001-IRFN

## JACK CBA

Ref. No.	Description	Part No.
	JACK CBA (MJC-A) Consists of the following:	-----
<b>CAPACITORS</b>		
C2703	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2704	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2723	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2724	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2731	CHIP CERAMIC CAP. CH J 39pF/50V	CHD1JJ3CH390
C2732	CHIP CERAMIC CAP. CH J 39pF/50V	CHD1JJ3CH390
C2733	CHIP CERAMIC CAP. CH J 39pF/50V	CHD1JJ3CH390
C2734	CHIP CERAMIC CAP. F Z 0.47 $\mu$ F/16V	CHD1CZ30F474
C2735	CHIP CERAMIC CAP. F Z 0.47 $\mu$ F/16V	CHD1CZ30F474
C2736	CHIP CERAMIC CAP. F Z 0.47 $\mu$ F/16V	CHD1CZ30F474
C2743	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2744	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2753	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C2756	CHIP CERAMIC CAP. F Z 0.47 $\mu$ F/16V	CHD1CZ30F474
C2757	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2758	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2771	ELECTROLYTIC CAP. 100 $\mu$ F/16V M H7	CE1CMAVSL101
C2772	CHIP CERAMIC CAP.(1608) F Z 0.1 $\mu$ F/50V	CHD1JZ30F104
C2841	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2842	CHIP CERAMIC CAP. F Z 1 $\mu$ F/10V	CHD1AZ30F105
C2843	CHIP CERAMIC CAP.(1608) F Z 0.1 $\mu$ F/50V	CHD1JZ30F104
C2845	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
<b>CONNECTORS</b>		
CN2701	FFC CONNECTOR IMSA-9615S-29A-PP-A	JC96J29ER007
CN2861	CONNECTOR PRINT OSU TOP 2P 440054-2	J344C02AP001
<b>IC</b>		
IC2771	IC SWITCHING TC4052BF(ELNF)	QSZBA0TTS162
<b>COILS</b>		
L2851	WIRE CP STP-S-0.50	XZ40FOREN001
L2852	WIRE CP STP-S-0.50	XZ40FOREN001
L2853	WIRE CP STP-S-0.50	XZ40FOREN001
<b>TRANSISTORS</b>		
Q2771	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q2772	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q2773	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q2774	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
Q2841	TRANSISTOR KTC3198-Y-AT/P	NQSYKTC3198P
<b>RESISTORS</b>		
R2711	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2712	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2717	CHIP RES. 1/10W J 51k $\Omega$	RRXAJR5Z0513
R2718	CHIP RES. 1/10W J 51k $\Omega$	RRXAJR5Z0513
R2721	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2722	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2727	CHIP RES. 1/10W J 51k $\Omega$	RRXAJR5Z0513
R2728	CHIP RES. 1/10W J 51k $\Omega$	RRXAJR5Z0513
R2731	CHIP RES.(1608) 1/10W F 75 $\Omega$	RRXAFR5H75R0
R2732	CHIP RES.(1608) 1/10W F 75 $\Omega$	RRXAFR5H75R0
R2733	CHIP RES.(1608) 1/10W F 75 $\Omega$	RRXAFR5H75R0

Ref. No.	Description	Part No.
R2734	CHIP RES.(1608) 1/10W 0 $\Omega$	RRXAZR5Z0000
R2735	CHIP RES.(1608) 1/10W 0 $\Omega$	RRXAZR5Z0000
R2736	CHIP RES.(1608) 1/10W 0 $\Omega$	RRXAZR5Z0000
R2741	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2742	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2747	CHIP RES. 1/10W J 51k $\Omega$	RRXAJR5Z0513
R2748	CHIP RES. 1/10W J 51k $\Omega$	RRXAJR5Z0513
R2753	CHIP RES. 1/10W J 75 $\Omega$	RRXAJR5Z0750
R2754	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2755	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2758	CHIP RES.(1608) 1/10W 0 $\Omega$	RRXAZR5Z0000
R2763	CHIP RES. 1/10W J 51k $\Omega$	RRXAJR5Z0513
R2764	CHIP RES. 1/10W J 51k $\Omega$	RRXAJR5Z0513
R2771	WIRE CP STP-S-0.50	XZ40FOREN001
R2772	CHIP RES. 1/10W J 47k $\Omega$	RRXAJR5Z0473
R2773	CHIP RES. 1/10W J 47k $\Omega$	RRXAJR5Z0473
R2774	CHIP RES. 1/10W J 10k $\Omega$	RRXAJR5Z0103
R2775	CHIP RES. 1/10W J 10k $\Omega$	RRXAJR5Z0103
R2780	CHIP RES. 1/10W J 82k $\Omega$	RRXAJR5Z0823
R2781	RES CARBON FILM T 1/4W J 82k $\Omega$	RCX4823T1001
R2782	RES CARBON FILM T 1/4W J 82k $\Omega$	RCX4823T1001
R2783	CHIP RES. 1/10W J 82k $\Omega$	RRXAJR5Z0823
R2784	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2785	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2786	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2787	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2788	CHIP RES. 1/10W J 82k $\Omega$	RRXAJR5Z0823
R2789	RES CARBON FILM T 1/4W J 82k $\Omega$	RCX4823T1001
R2790	RES CARBON FILM T 1/4W J 82k $\Omega$	RCX4823T1001
R2791	CHIP RES. 1/10W J 82k $\Omega$	RRXAJR5Z0823
R2792	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2793	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2794	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2795	CHIP RES. 1/10W J 100k $\Omega$	RRXAJR5Z0104
R2796	CHIP RES. 1/10W J 2.2k $\Omega$	RRXAJR5Z0222
R2797	CHIP RES. 1/10W J 2.2k $\Omega$	RRXAJR5Z0222
R2843	CHIP RES. 1/10W J 110 $\Omega$	RRXAJR5Z0111
R2844	CHIP RES. 1/10W J 220 $\Omega$	RRXAJR5Z0221
R2846	CHIP RES.(1608) 1/10W 0 $\Omega$	RRXAZR5Z0000
R2847	CHIP RES. 1/10W J 10k $\Omega$	RRXAJR5Z0103
R2848	CHIP RES. 1/10W J 10k $\Omega$	RRXAJR5Z0103
R2851	RES CARBON FILM T 1/4W J 180 $\Omega$	RCX4181T1001
R2852	RES CARBON FILM T 1/4W J 180 $\Omega$	RCX4181T1001
<b>MISCELLANEOUS</b>		
BC2841	CHIP RES.(1608) 1/10W 0 $\Omega$	RRXAZR5Z0000
JK2711	JACK HPEP SML PCB S PJ-358H	JXSJ020YUQ01
JK2721	JACK RCA PCB S WHITE 01/RCA-101H(WH)	JXRJ010YUQ02
JK2722	JACK RCA PCB S RED 01/RCA-101H(RD)	JXRJ010YUQ01
JK2731	JACK RCA PCB S GREEN 01/RCA-101H(GN)	JXRJ010YUQ03
JK2732	JACK RCA PCB S BLUE 01/RCA-101H(BL)	JXRJ010YUQ04
JK2733	JACK RCA PCB S RED 01/RCA-101H(RD)	JXRJ010YUQ01
JK2741	JACK RCA PCB S WHITE 01/RCA-101H(WH)	JXRJ010YUQ02
JK2742	JACK SW RCA PCB S RED RCA-102H(RD)	JXRJ010YUQ03
JK2752	JACK RCA PCB L RCA-101S(1)-03	JXRL010YUQ12
JK2753	JACK RCA PCB L RCA-101S(1)-04	JXRL010YUQ13
JK2754	JACK SW RCA PCB L RCA-102F(RD)	JYRL010YUQ05
JK2841	JACK RCA PCB S ORANGE 01/RCA-101H(OR)	JXRJ010YUQ06
JK2851	JACK SW HPEP SML PCB L PJ-350	JYSL010YUQ03

## IR SENSOR CBA

Ref. No.	Description	Part No.
	IR SENSOR CBA(MJC-B) Consists of the following:	-----
<b>CAPACITORS</b>		
C2161	CHIP CERAMIC CAP.(2125) F Z 10 $\mu$ F/10V	CHE1AZ30F106
C2162	CHIP CERAMIC CAP. CH J 330pF/50V	CHD1JJ3CH331
C2163	CHIP CERAMIC CAP.(1608) B K 0.1 $\mu$ F/16V	CHD1CK30B104
C2164	CHIP CERAMIC CAP.(1608) B K 0.1 $\mu$ F/16V	CHD1CK30B104
C2165	CHIP CERAMIC CAP.(1608) B K 0.1 $\mu$ F/16V	CHD1CK30B104
C2166	CHIP CERAMIC CAP.(2125) F Z 10 $\mu$ F/10V	CHE1AZ30F106
C2167	CHIP CERAMIC CAP.(1608) B K 0.1 $\mu$ F/16V	CHD1CK30B104
<b>CONNECTOR</b>		
CN2107	WIRE ASSEMBLY 7PIN 7PIN/155MM/AWG28	WX1A01N7-201
<b>DIODES</b>		
D2100	ZENER DIODE EDZTE61 5.6B	QD1B00EDZ5R6
D2101	ZENER DIODE EDZTE61 5.6B	QD1B00EDZ5R6
D2102	LED (WHITE) SLR343WBC7T3XM	QPWM343WBC7T
D2103	O-E DEVICE PHOTO TRANSISTOR JSA-3113B	NPWZJSA3113B
D2106	ZENER DIODE EDZTE61 5.6B	QD1B00EDZ5R6
<b>RESISTORS</b>		
R2167	CHIP RES. 1/10W J 100 $\Omega$	RRXAJR5Z0101
R2168	CHIP RES. 1/10W J 3.3k $\Omega$	RRXAJR5Z0332
R2169	CHIP RES. 1/10W J 2.2k $\Omega$	RRXAJR5Z0222
R2170	CHIP RES. 1/10W J 1k $\Omega$	RRXAJR5Z0102
R2171	CHIP RES. 1/10W J 220 $\Omega$	RRXAJR5Z0221
R2172	CHIP RES.(1608) 1/10W 0 $\Omega$	RRXAZR5Z0000
R2173	CHIP RES. 1/10W J 470k $\Omega$	RRXAJR5Z0474
<b>MISCELLANEOUS</b>		
RS2101	SENSOR REMOTE RECEIVER KSM-2002TN2M-FU	USEJRS0KK009

## FUNCTION CBA

Ref. No.	Description	Part No.
	FUNCTION CBA (MJC-C) Consists of the following:	-----
<b>CAPACITORS</b>		
C2169	CHIP CERAMIC CAP.(1608) F Z 0.1 $\mu$ F/50V	CHD1JZ30F104
C2170	CHIP CERAMIC CAP.(1608) F Z 0.1 $\mu$ F/50V	CHD1JZ30F104
<b>CONNECTOR</b>		
CN2108	WIRE ASSEMBLY 3PIN 3PIN/40MM/AWG28	WX1A01N7-202
<b>RESISTORS</b>		
R2174	RES CARBON FILM T 1/4W G 6.8k $\Omega$	RCX4682T1002
R2175	RES CARBON FILM T 1/4W G 4.7k $\Omega$	RCX4472T1002
R2176	RES CARBON FILM T 1/4W G 2.7k $\Omega$	RCX4272T1002
R2177	RES CARBON FILM T 1/4W G 2.2k $\Omega$	RCX4222T1002
R2178	RES CARBON FILM T 1/4W G 1.5k $\Omega$	RCX4152T1002
R2179	RES CARBON FILM T 1/4W G 220 $\Omega$	RCX4221T1002
R2180	RES CARBON FILM T 1/4W G 1.5k $\Omega$	RCX4152T1002
R2181	RES CARBON FILM T 1/4W G 6.2k $\Omega$	RCX4622T1002
<b>SWITCHES</b>		
SW2101	TACT SWITCH SKQSAB	SST0101AL038
SW2102	TACT SWITCH SKQSAB	SST0101AL038
SW2103	TACT SWITCH SKQSAB	SST0101AL038
SW2104	TACT SWITCH SKQSAB	SST0101AL038
SW2105	TACT SWITCH SKQSAB	SST0101AL038
SW2106	TACT SWITCH SKQSAB	SST0101AL038

# REVISION HISTORY

## Chassis PL10.9

- 2010-05-20 19PFL4505D/F7 added