

PHILIPS

40" LCD TV chassis PL12.3

Service Manual

Contents

TYPE A

40PFL4707/F7	PHILIPS	(Serial No.: DS1)
40PFL4707/F8	PHILIPS	(Serial No.: XA1)

TYPE B

40PFL4907/F7	PHILIPS	(Serial No.: DS1)
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This service manual contains information of different types of models.
Make sure to refer to the section describing your model.

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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.

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.

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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	18	20
	CA.ch.31	dB μ	18	20
	CA.ch.87	dB μ	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	320	---
3. Viewing Angle	Horizontal	°	-89 to 89	---
	Vertical	°	-89 to 89	---

< VIDEO >

Description	Condition	Unit	Nominal	Limit
1. Over Scan	Horizontal	%	5	5 $\pm$ 5
	Vertical	%	5	5 $\pm$ 5
2. Color Temperature	---	°K	12000	---
	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.

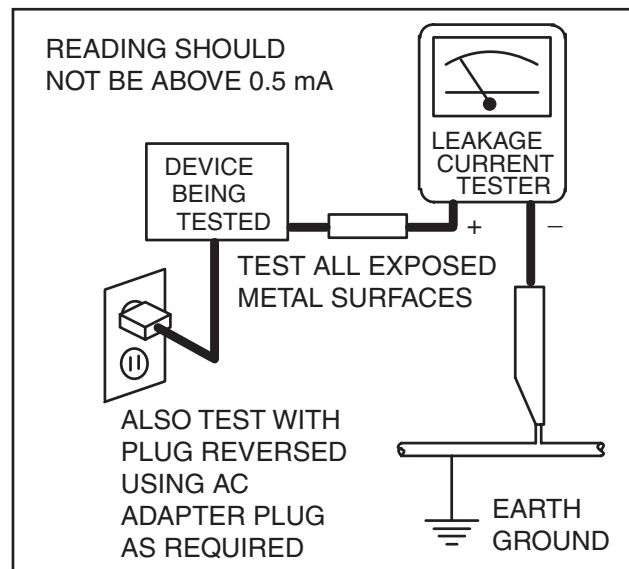
Safety Precautions for LCD TV Circuit

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.

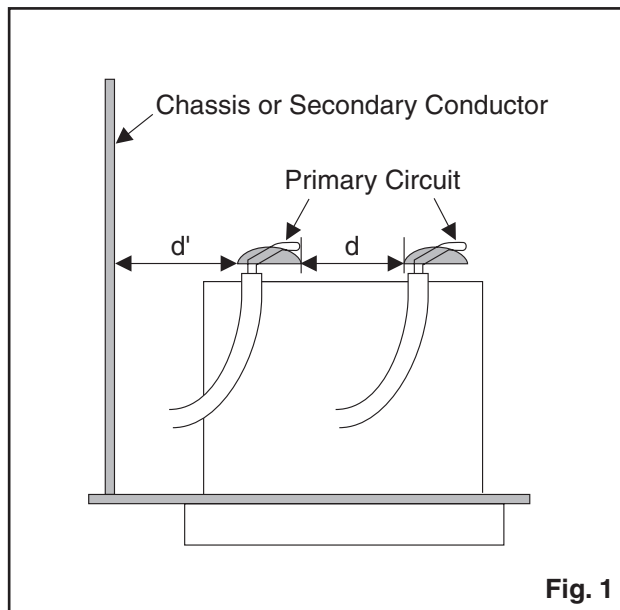


Fig. 1

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.

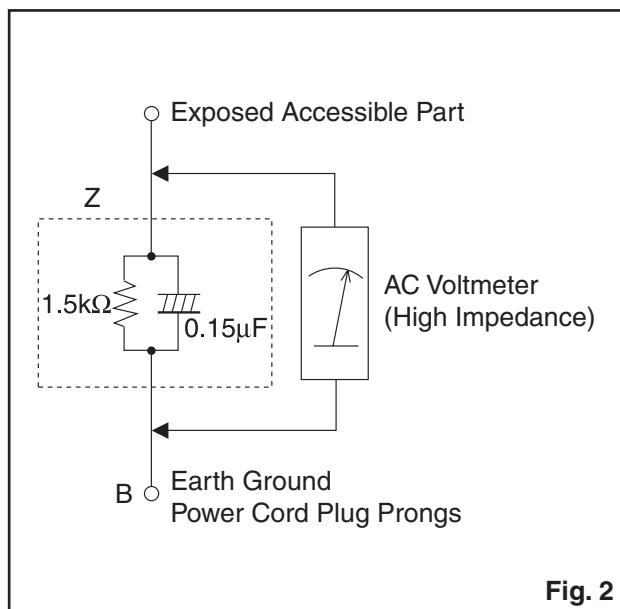


Fig. 2

Table 2: Leakage current ratings for selected areas

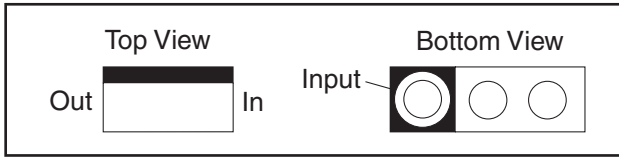
AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	U.S.A. or Canada	0.15 μ F CAP. & 1.5 kΩ RES. Connected in parallel	$i \leq 0.5$ mA rms	Exposed accessible parts

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

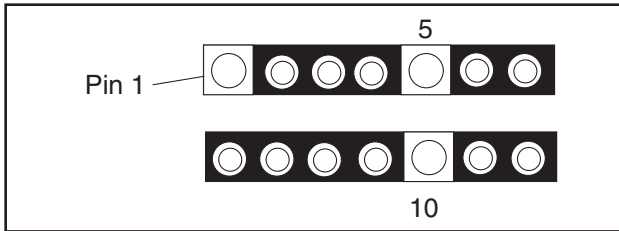
STANDARD NOTES FOR SERVICING

Circuit Board Indications

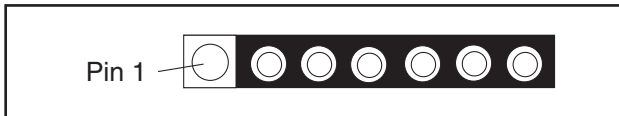
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



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

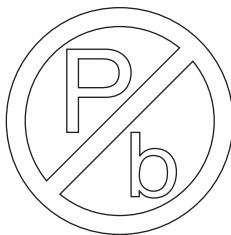


3. The 1st pin of every male connector is indicated as shown.



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)

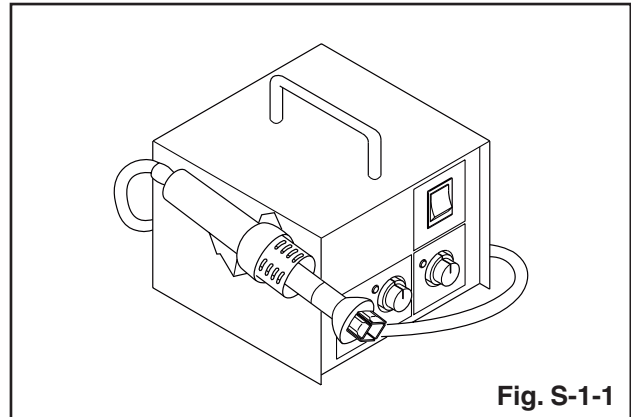


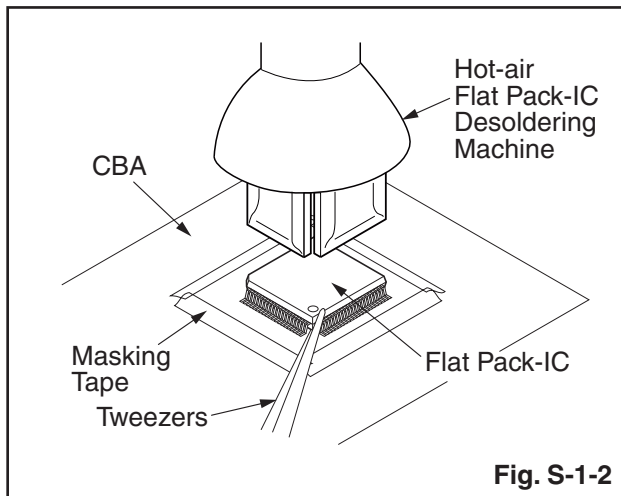
Fig. S-1-1

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:

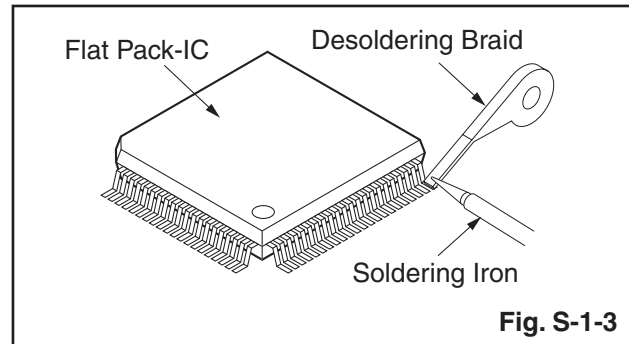
1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape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

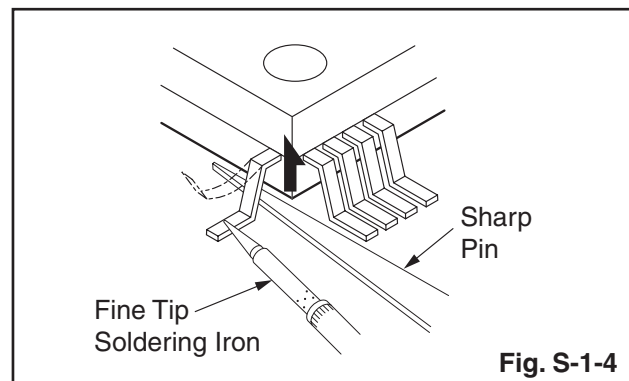


With Soldering Iron:

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)

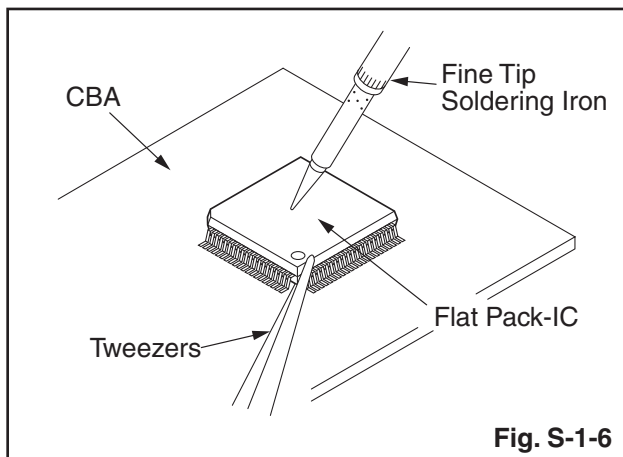
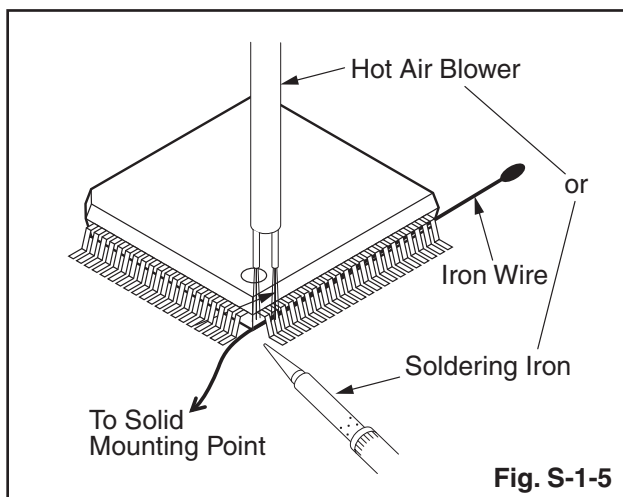


3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

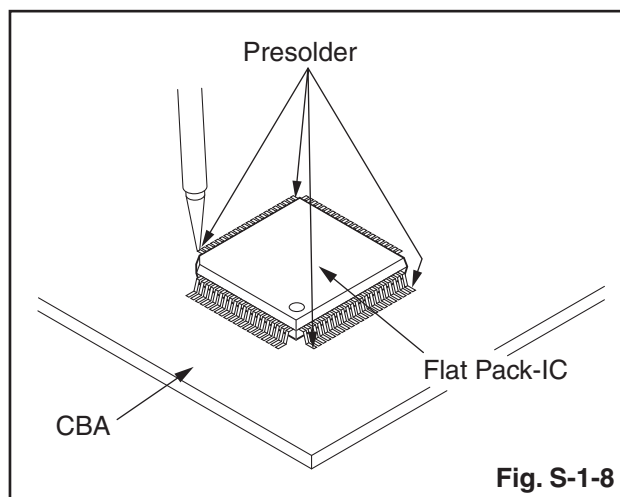
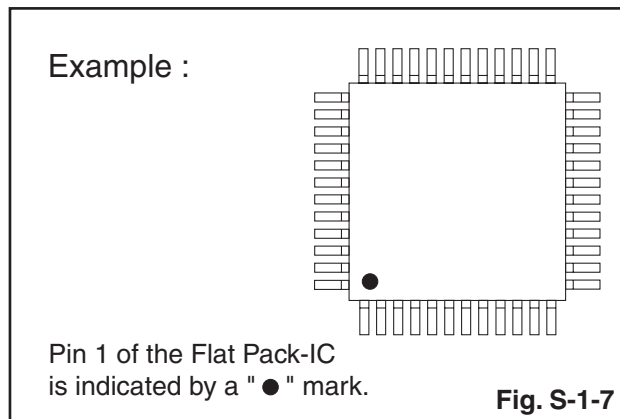
1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
2. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
3. While heating the pins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

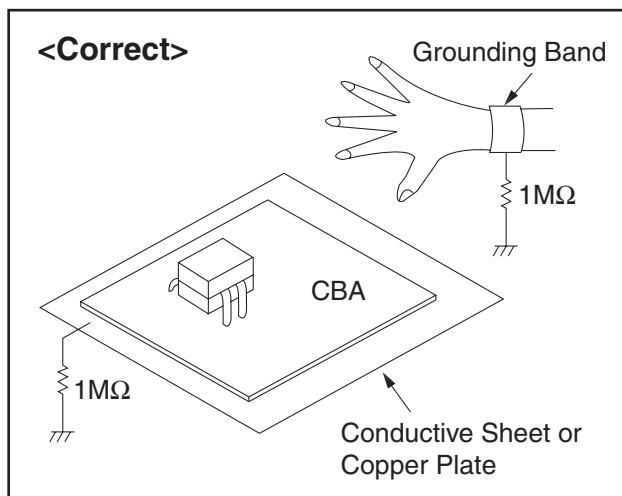
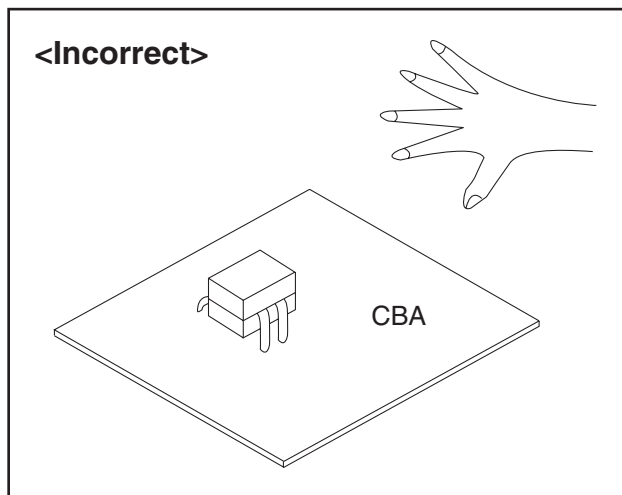
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

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

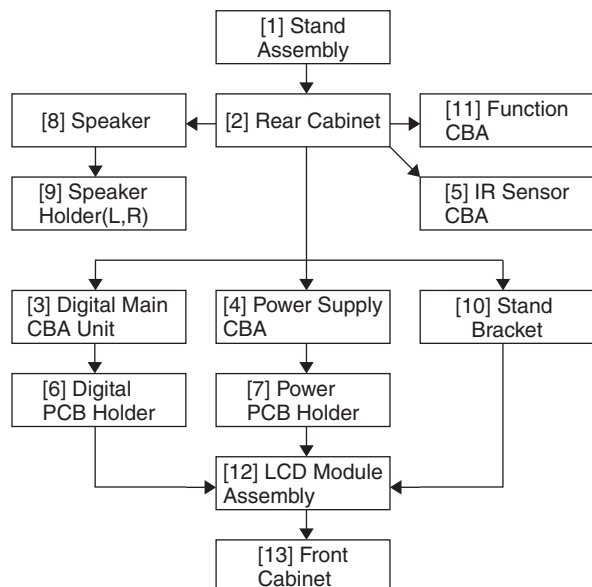
Be sure to place a conductive sheet or copper plate with proper grounding ($1\text{ M}\Omega$) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting 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	4(S-1)	---
[2]	Rear Cabinet	D1	12(S-2), 4(S-3), (S-4), (S-5), 10(L-1)	---
[3]	Digital Main CBA Unit	D2 D5	4(S-6), CN3013* ¹ , CN3101* ¹ , CN3701* ¹ , CN3601* ² , CN3105* ² , CN3906* ² , Wireless Lan Adaptor* ² , CN3801, Jack Holder	---
[4]	Power Supply CBA	D2 D5	6(S-7), CN401, CN600, CL600	---
[5]	IR Sensor CBA	D3 D5	CN4051, Shield Plate	---
[6]	Digital PCB Holder	D3	4(S-8)	---
[7]	Power PCB Holder	D3	6(S-9), Wire Holder	---
[8]	Speaker	D3	-----	---

Step/ Loc. No.	Part	Fig. No.	Removal	Note
[9]	Speaker Holder(L,R)	D3	2(S-10)	---
[10]	Stand Bracket	D3	4(S-11), (S-12), CL600	---
[11]	Function CBA	D4 D5	Knob Frame, Function Button	---
[12]	LCD Module Assembly	D4	8(S-13), Panel Holder(L,R,T)	---
[13]	Front Cabinet	D4	Corner Block	---

↓ (1) ↓ (2) ↓ (3) ↓ (4) ↓ (5)

***1: TYPE A**

***2: TYPE B**

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."

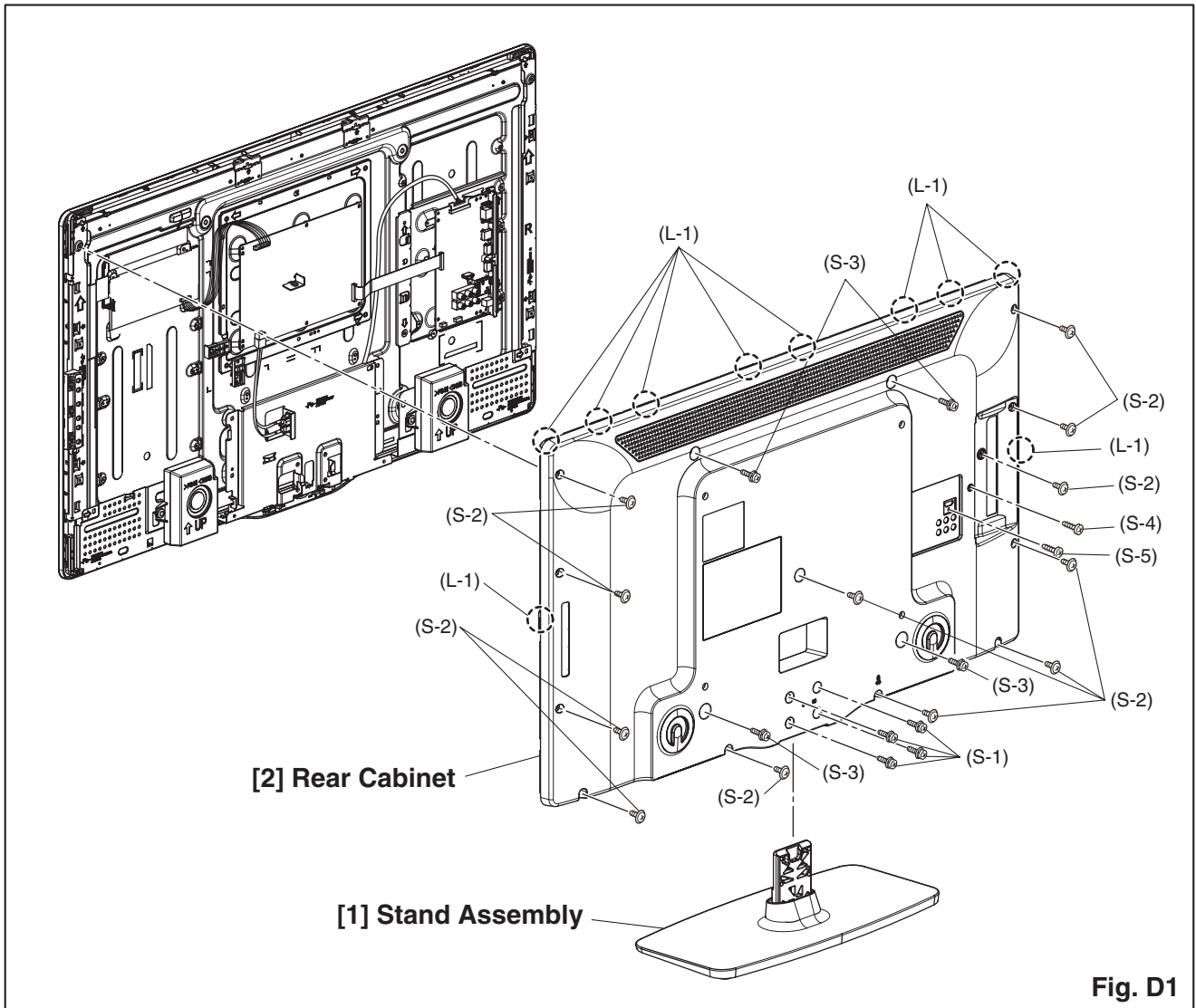
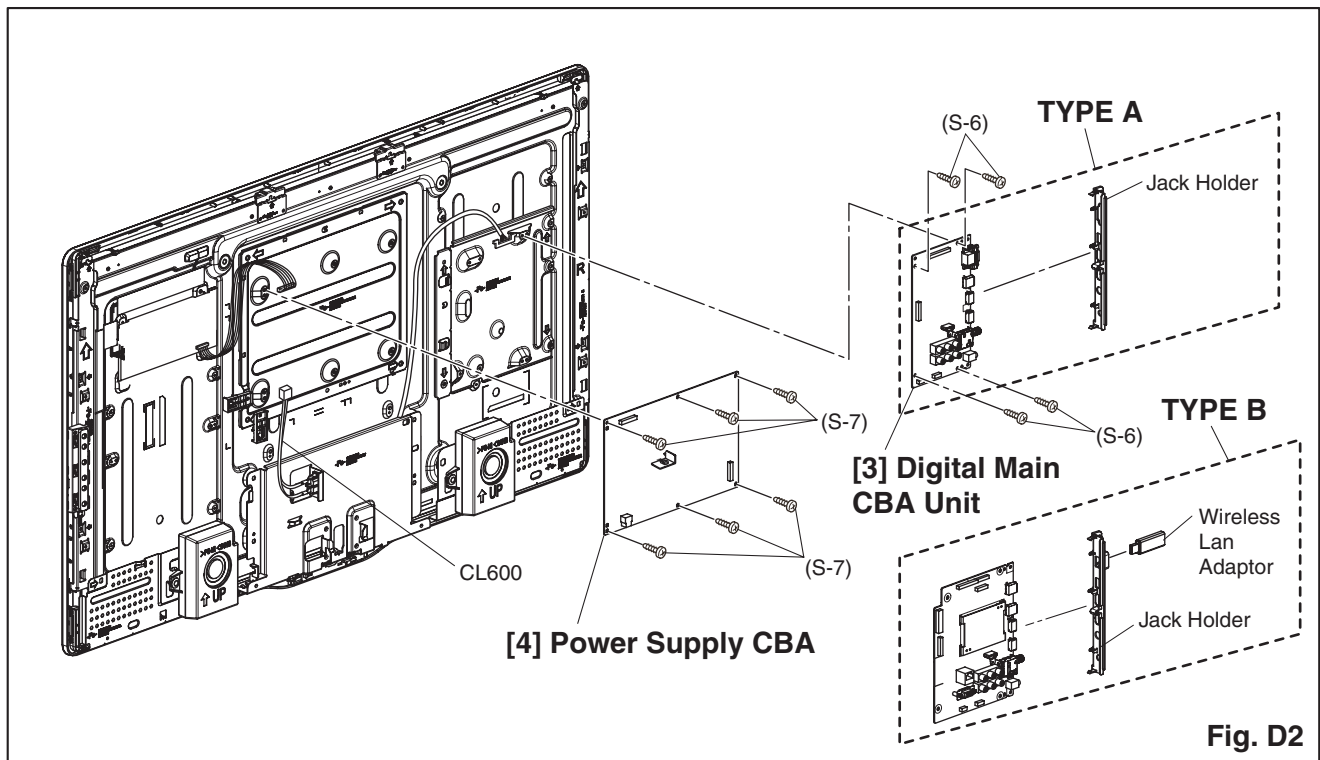


Fig. D1



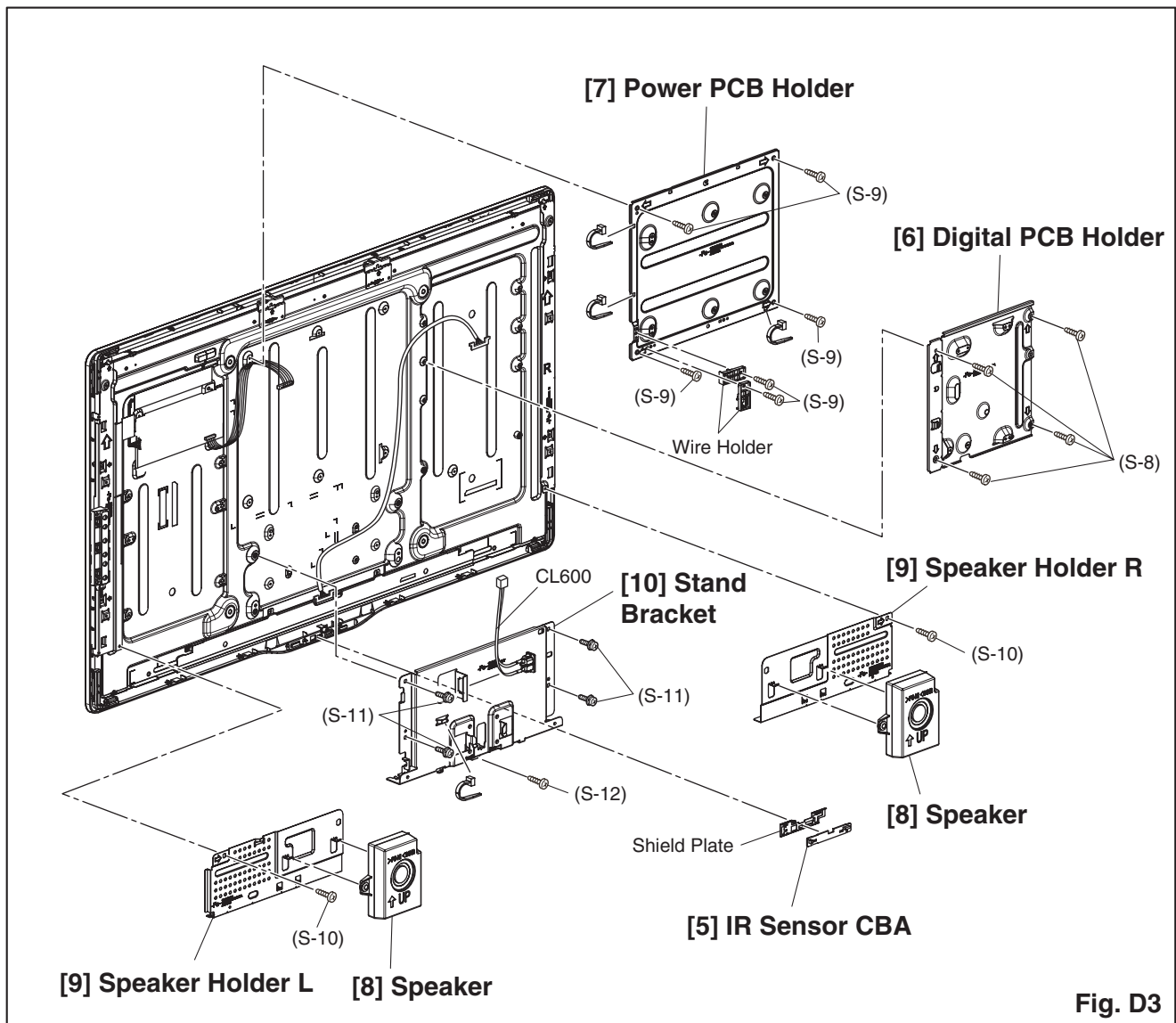


Fig. D3

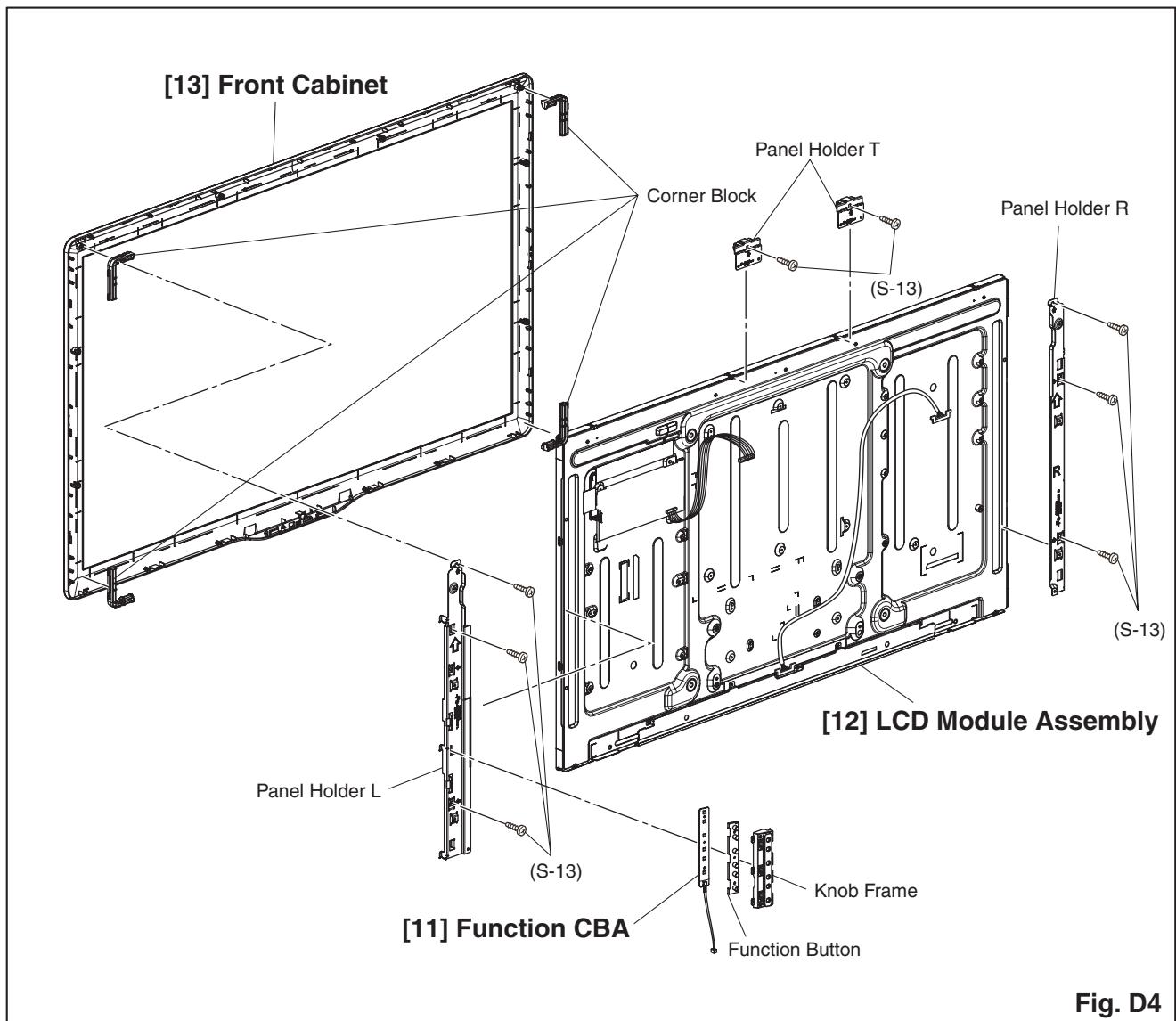
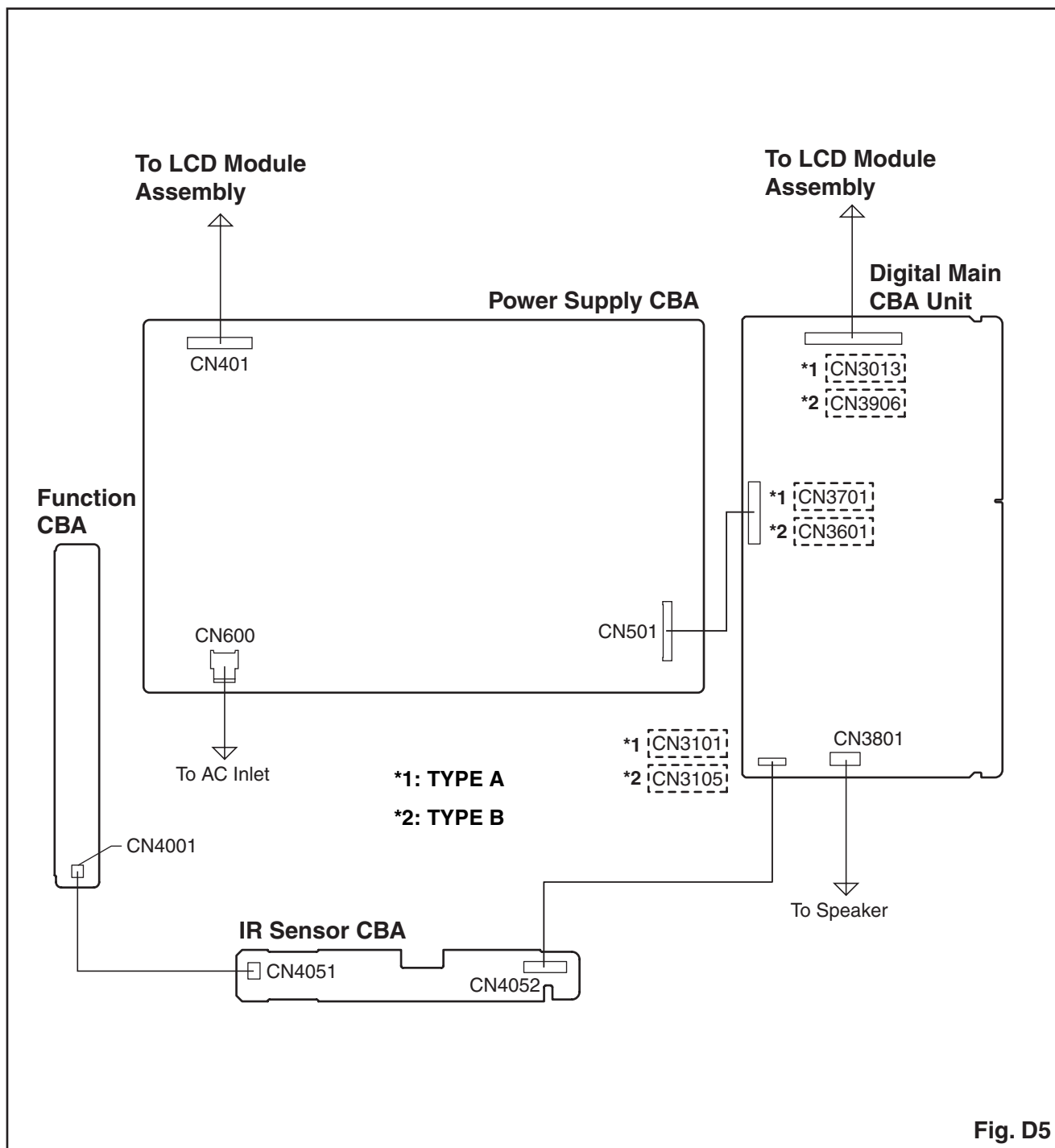


Fig. D4

TV Cable Wiring Diagram



ELECTRICAL ADJUSTMENT INSTRUCTIONS

[TYPE A]

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.

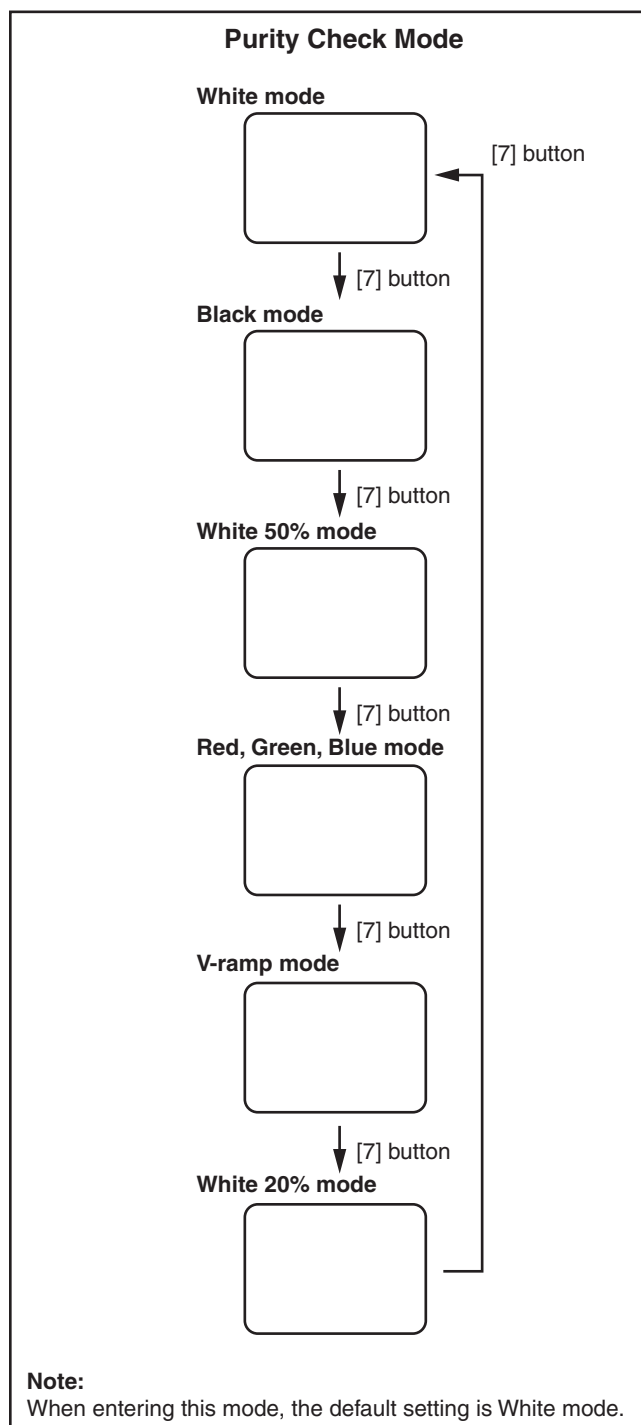
“*” differs depending on the models.

Code:	*****_**_**_**_**_**	
Pic code:	***_*****_**_**_**_**_**	
Panel-Option code:	**_***_**_**_**_**_**	
MIPS:	Push 0 key	
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.

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

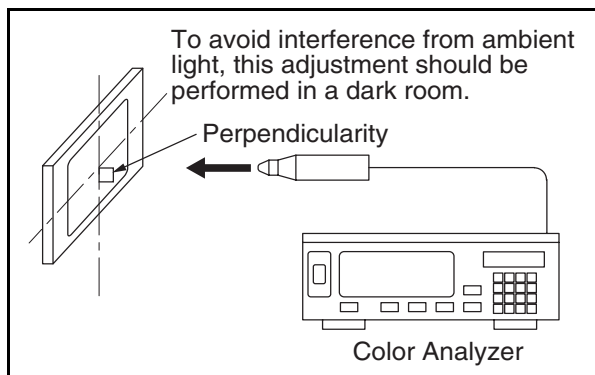
2. White Balance Adjustment

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	$25^{\circ}\text{C} \pm 5^{\circ}\text{C}$

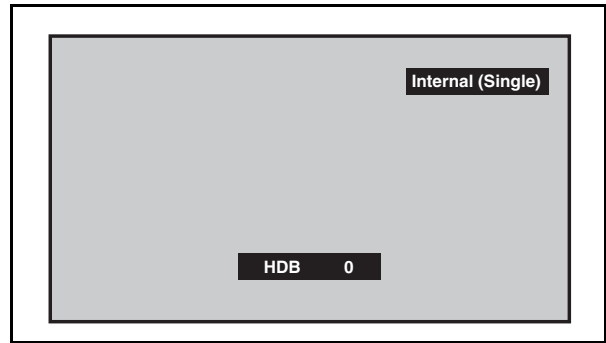
1. Operate the unit for more than 60 minutes.
2. Enter the service mode.
3. Press [VOLUME DOWN] button three times on the remote control unit to select "Drive setting" mode. "Drive" appears in the screen.
4. Set the color analyzer at the CHROMA mode and zero point calibration. Bring the optical receptor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



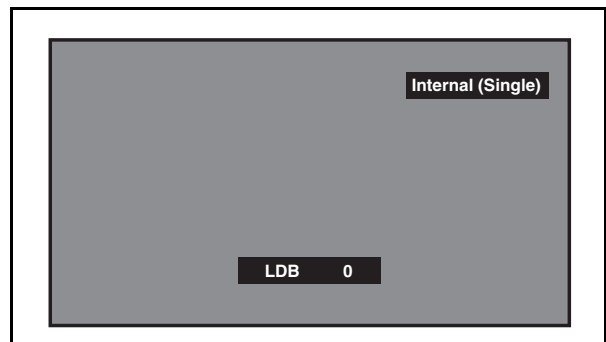
Note: The optical receptor must be set perpendicularly to the LCD Panel surface.

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.

[TYPE B]

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 [0], [6], [2], [5], [9], [6], and [INFO] buttons on the remote control unit in this order. The following screen appears.

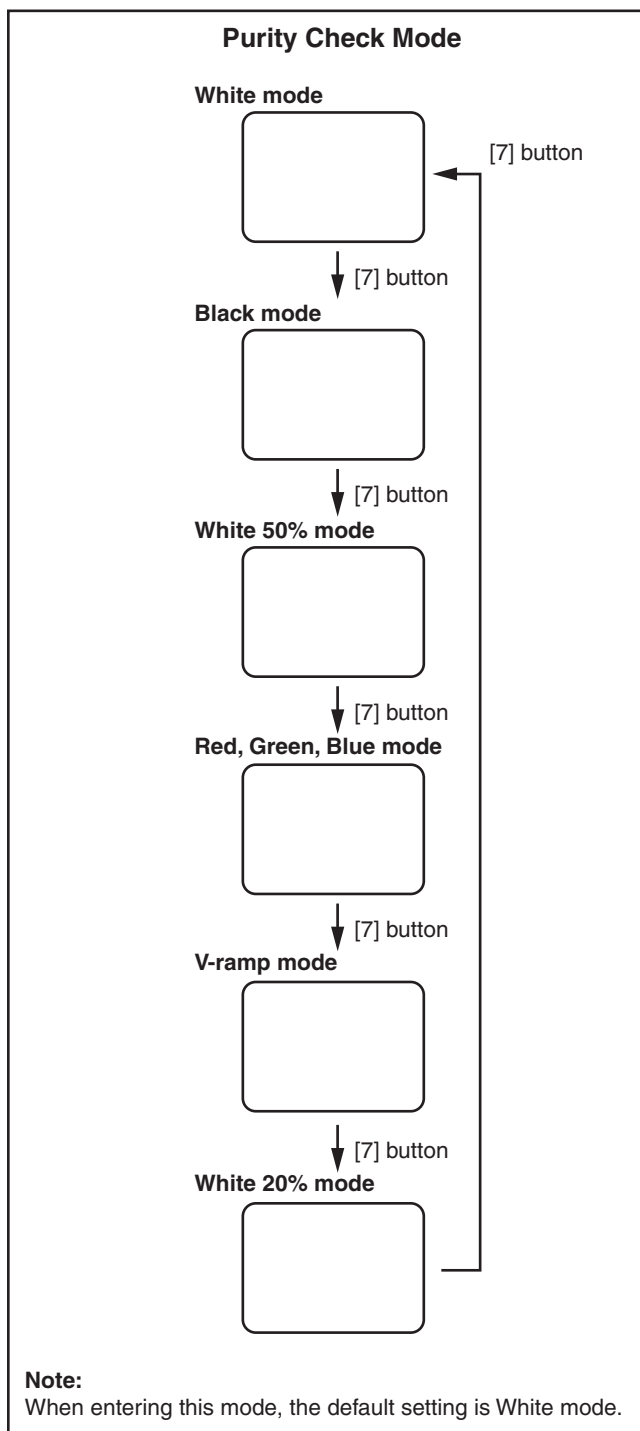
"*" differs depending on the models.

[current]					
File code:	***_****_**_*				
Total checksum:	Push "0" key				
Panel-Option code:	***_***_***_***_***				
Press "POWER" key to exit.					
MAC address:		**-**-**-**-**-**			
ESN:		*****			
Tuner:	****				
HDMI UART:	OFF	TotalWatchTime:	*****		
Touch Sensor Ver:	--- / ---	SystemTime:	**_**		
EDID:	Push "0" key	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.

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

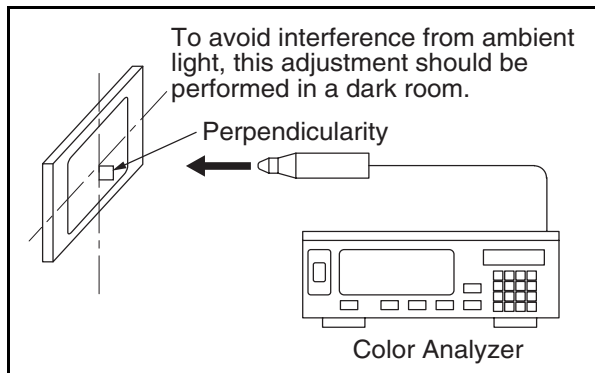
2. White Balance Adjustment

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

Symptom of Misadjustment: White becomes bluish or reddish.

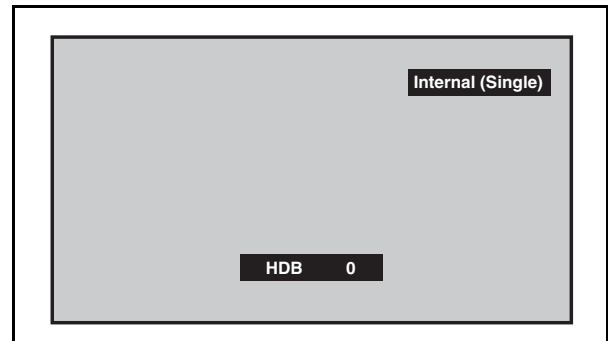
ITEM	SPECIFICATION
Color temperature	$x = 0.272 \pm 0.002$ $y = 0.278 \pm 0.002$
Input Signal	Internal pattern (30/50/80% raster)
Measurement point	Screen center
M. EQ.	CA-310 (KONICA MINOLTA Luminance meter) or measuring instrument as good as CA-310.
Aging time	60min. (Retail MODE/100IRE Raster HDMI 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.

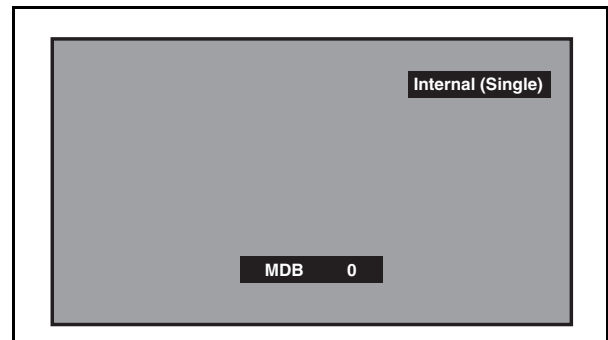


Note: The optical receptor must be set perpendicularly to the LCD Panel surface.

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.)

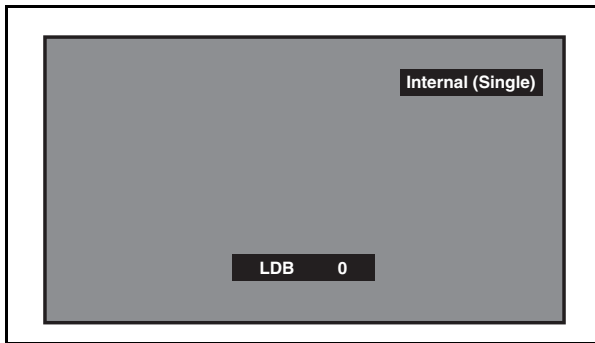


7. Press [CHANNEL UP/DOWN] buttons to adjust the color temperature becomes 12000°K ($x = 0.272 / y = 0.278 \pm 0.002$).
8. Press [1] button to select the "HDR" for High Drive Red adjustment ("HDR" appears in the screen.) and press [CHANNEL UP/DOWN] buttons to adjust the color temperature.
9. If necessary,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



11. Press [4] button to select the "MDR" for Middle Drive Red adjustment ("MDR" appears in the screen.) and press [CHANNEL UP/DOWN] buttons to adjust the color temperature.
12. If necessary, adjust the "MDB" or "MDR" again.

13. Press [9] 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.



14. Press [7] 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.
15. If necessary, adjust the “LDB” or “LDR” again.
16. Press [CH RETURN] or [PREV CH] to shift to the initial screen in the service mode.
If [White Balance] message with a green color is displayed on the upper right of the screen, this adjustment completes.
If [White Balance] message with a red color is displayed, repeat above steps from 5. to 15. Then check the initial screen in the service mode again.
If [White Balance] message with a red color is displayed, replace the LCD Panel or Digital Main CBA.
17. 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.

[TYPE A]

1. Turn the power on.
2. Enter the service mode.
 - To cancel the service mode, press [⏻] button on the remote control unit.
3. Press [FREEZE] 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 initialization is completed.

[TYPE B]

1. Turn the power on.
2. Enter the service mode.
 - To cancel the service mode, press [⏻] button on the remote control unit.
3. Press [COLOR(red)] button on the remote control unit to initialize the LCD television.
4. "INITIALIZE" will appear in the upper right of the screen. The whole screen color will change to green and "INITIALIZE FINISH" will appear in the center of the screen when initialization is completed.

FIRMWARE RENEWAL MODE

[TYPE A]

Equipment Required

- USB storage device
- Remote Control Unit

Firmware Update Procedure

User Upgrade (Filename example: TVNB012_00_UF_XX91_AA.ecc)

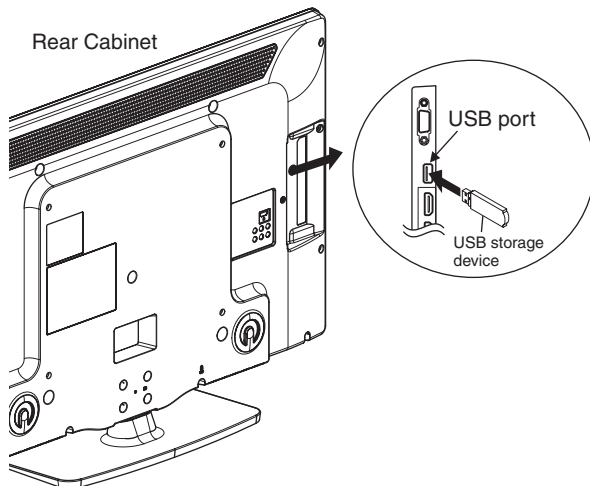
Upgrade the firmware only. The setting values will not be initialized.

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

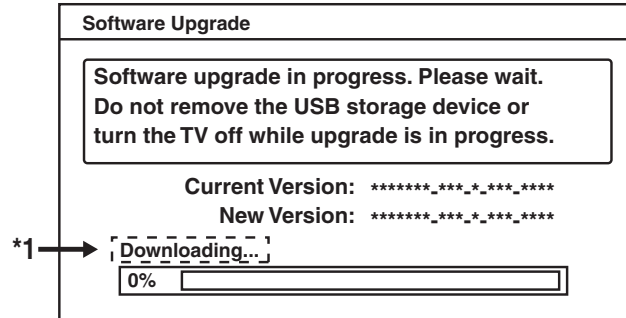
- Turn the power on.
- Press [MENU] button to display Menu.
- Select "Features".
- Select "Software Upgrade".
- Select "Upgrade" to display Upgrade screen.
- Press [OK] button to display Software Upgrade screen.
- Select "USB" and press [OK] button.
- Insert the USB storage device to the USB port as shown below.



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

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

"*" differs depending on the models.

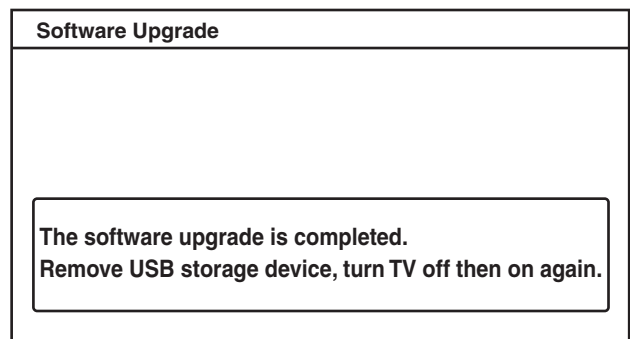


Note: If the above screen isn't displayed, repeat from step 1.

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.

- 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.

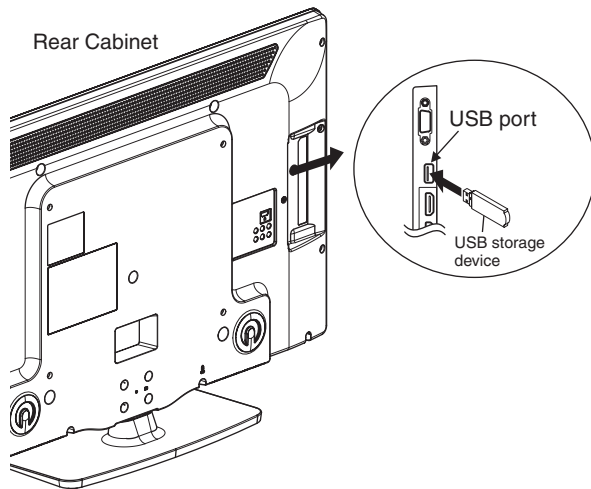
Before the upgrade, you will need to make a note of all the factory default so you will be able to set it back on the TV after the initialization.

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.

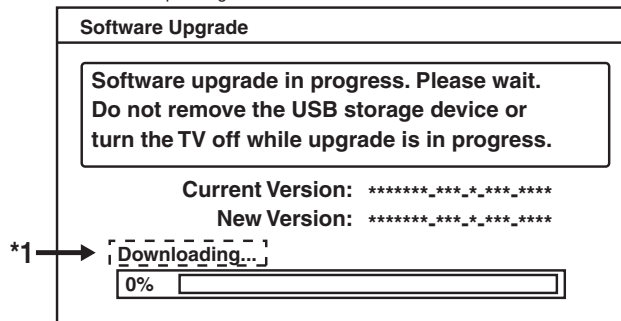
Update procedure

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.

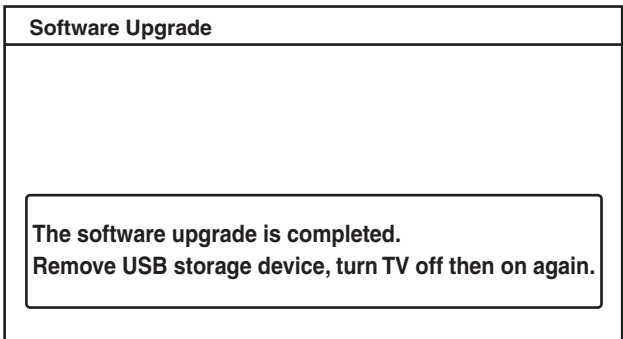


Note: If the above screen isn't displayed, repeat from step 1.

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.

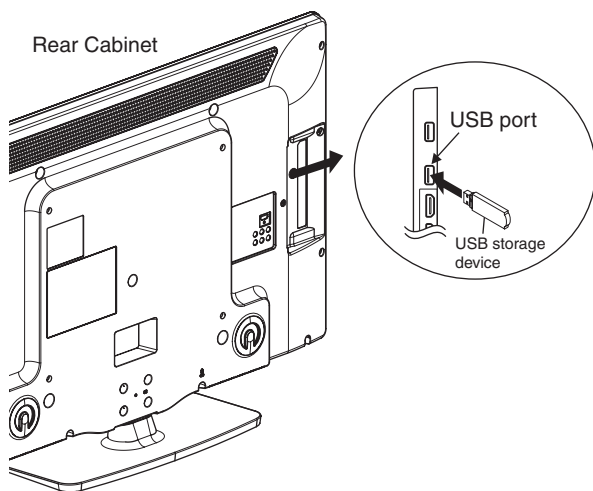
[TYPE B]

Equipment Required

1. USB storage device
2. Remote Control Unit

Firmware Update Procedure

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



3. Plug the AC Cord and turn the power on.
4. After few seconds, the menu mode will appear in the screen.

Note:

After 30 seconds without an operation, the menu mode will disappear automatically.
To display the menu mode again, press the [MENU] button on the remote control unit.

5. Select "Setup" and press the [OK] button to display the setup menu.
6. Select "Software".
7. Select "Software update".
8. Select "USB".
9. Press the [OK] button on the remote control unit to enter the update mode.
Update file selection screen appears as follows.

(Files included in the USB storage device are displayed.)

"*" differs depending on the models.

Select an upgrade file	****_****.upg	
	****_****.upg	
	****_****.upg	
Cancel		1 2 3

Note:

To cancel the update mode, select "Cancel" and press the [OK] button.

10. Select the file and press [OK] button.
11. The update will start and the following will appear in the screen.

"*" differs depending on the models.

Current Version: ***_***_***_* New Version: ***_***_***_* Are you sure you want to update? No Yes

Note:

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

12. Select "Yes" and press the [OK] button to update.

Note:

Do not remove the USB storage device or turn the TV off while update is in progress.

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

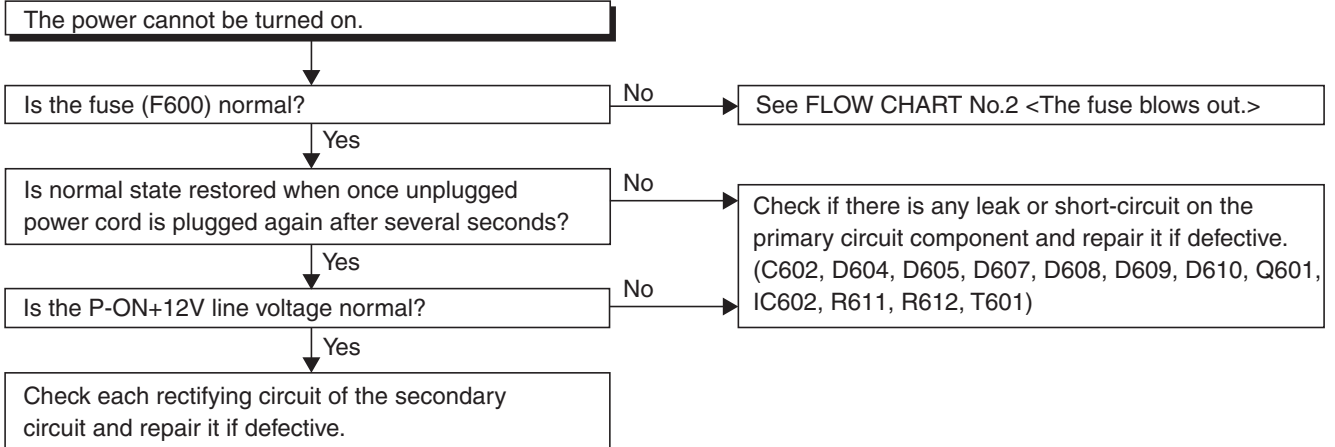
Update your TV with new software: Done Software update is successful. Please remove the USB storage device and restart the TV set.

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

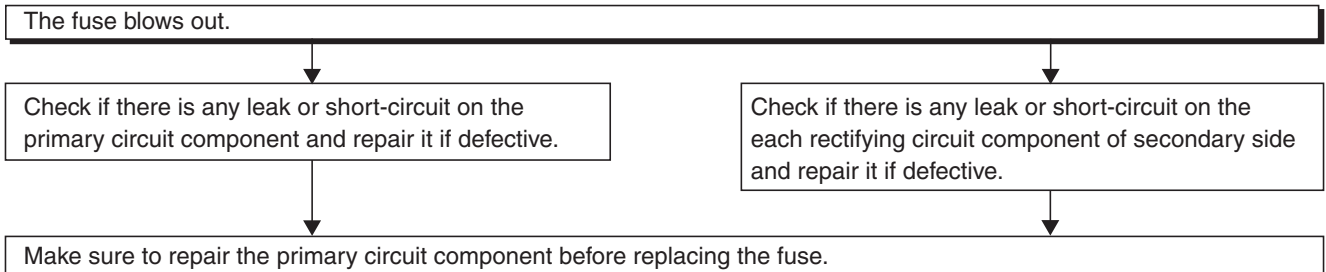
TROUBLESHOOTING

[Power Supply Section]

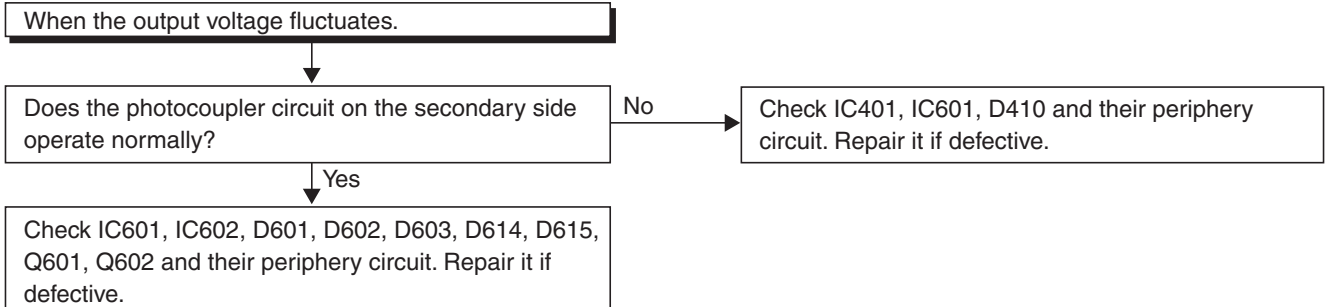
FLOW CHART NO.1



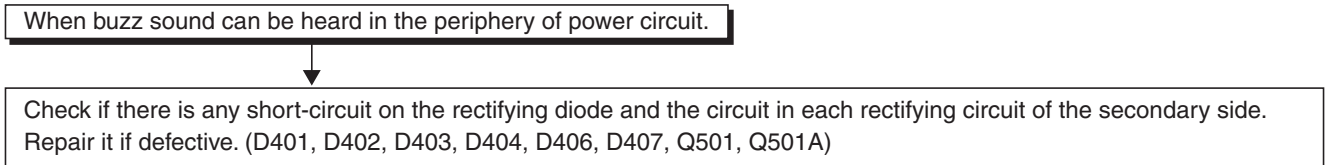
FLOW CHART NO.2



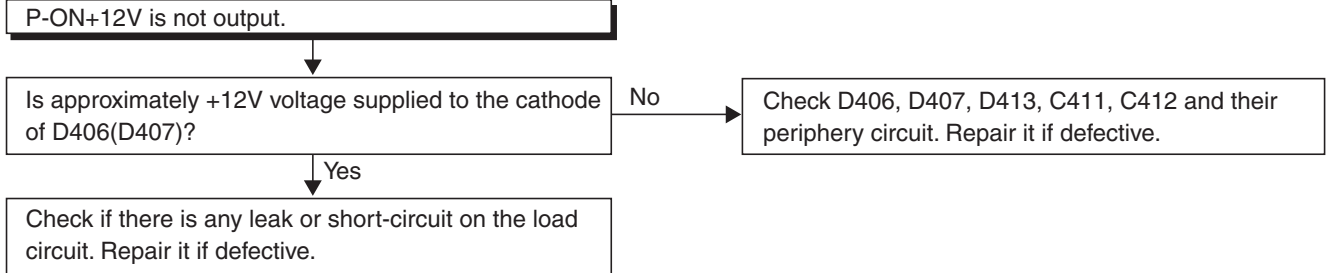
FLOW CHART NO.3



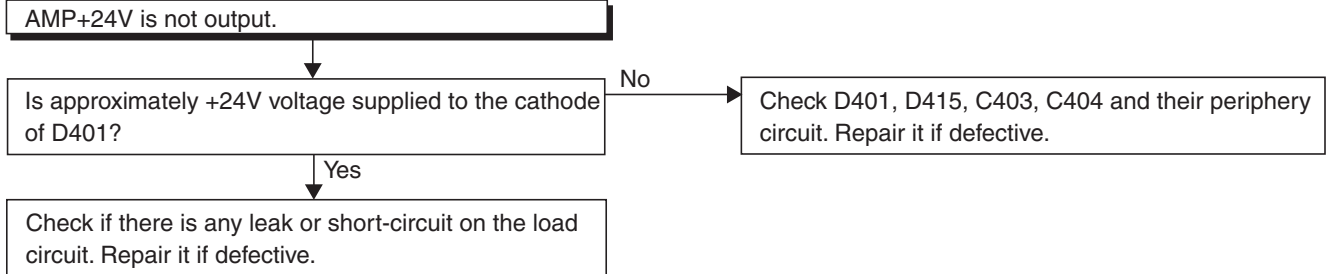
FLOW CHART NO.4



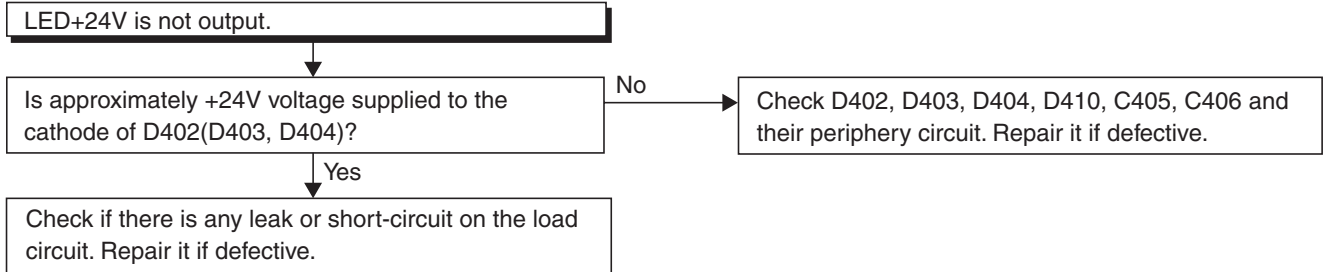
FLOW CHART NO.5



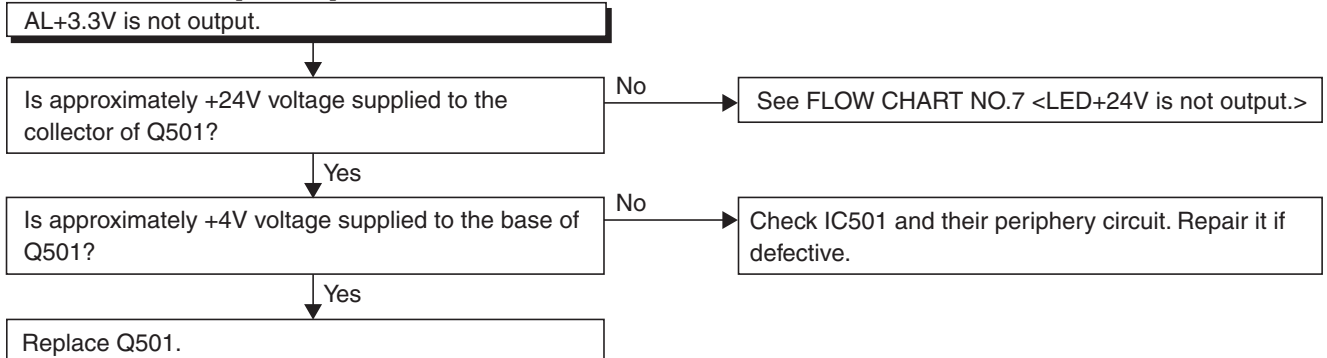
FLOW CHART NO.6



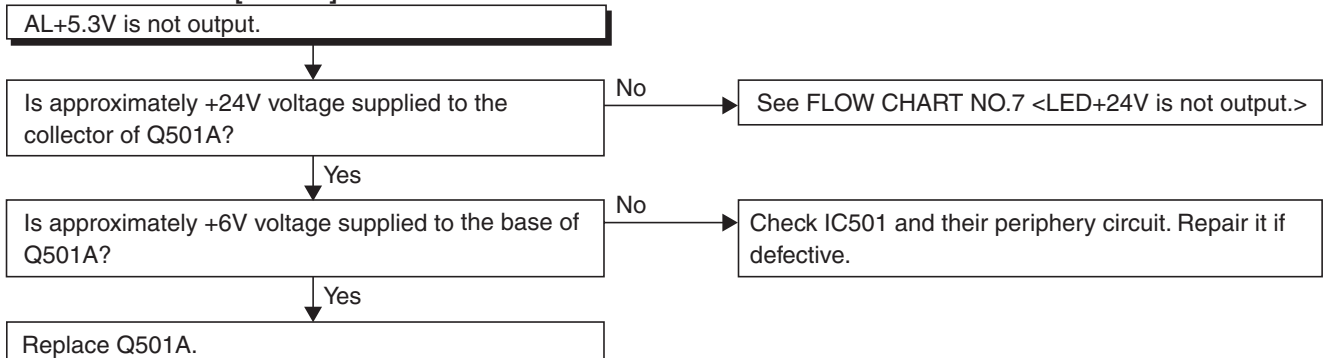
FLOW CHART NO.7



FLOW CHART NO.8 [TYPE A]

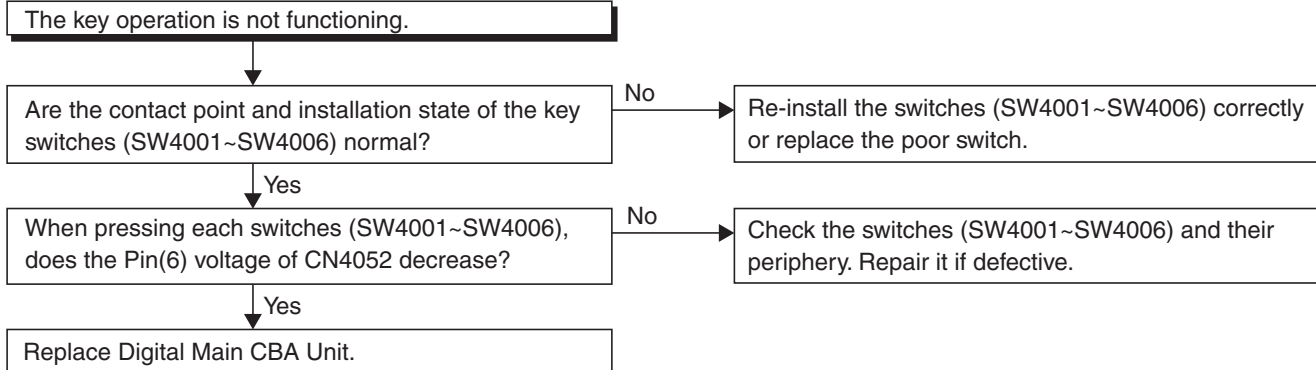


FLOW CHART NO.8 [TYPE B]

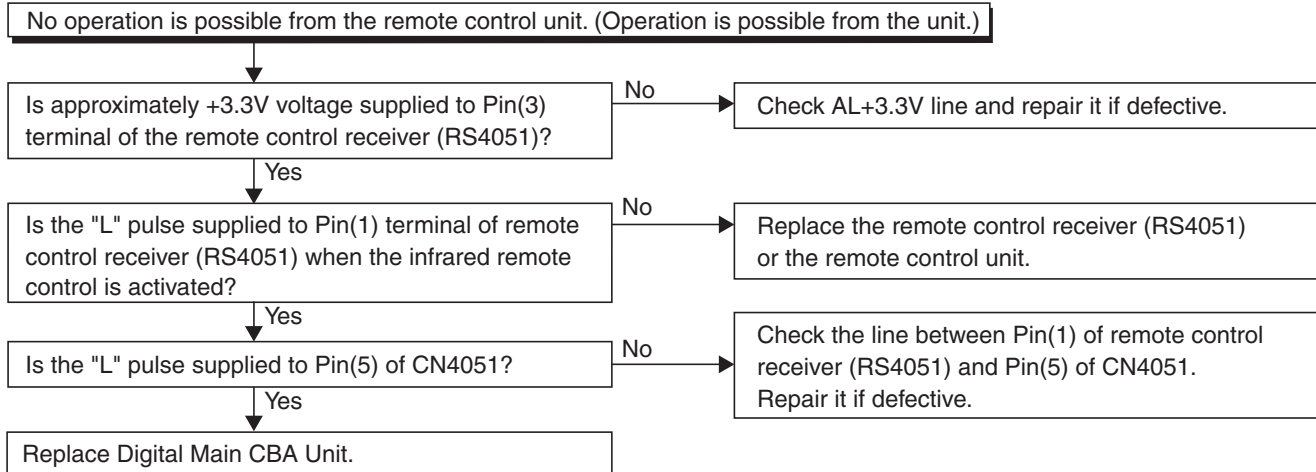


[Video Signal Section]

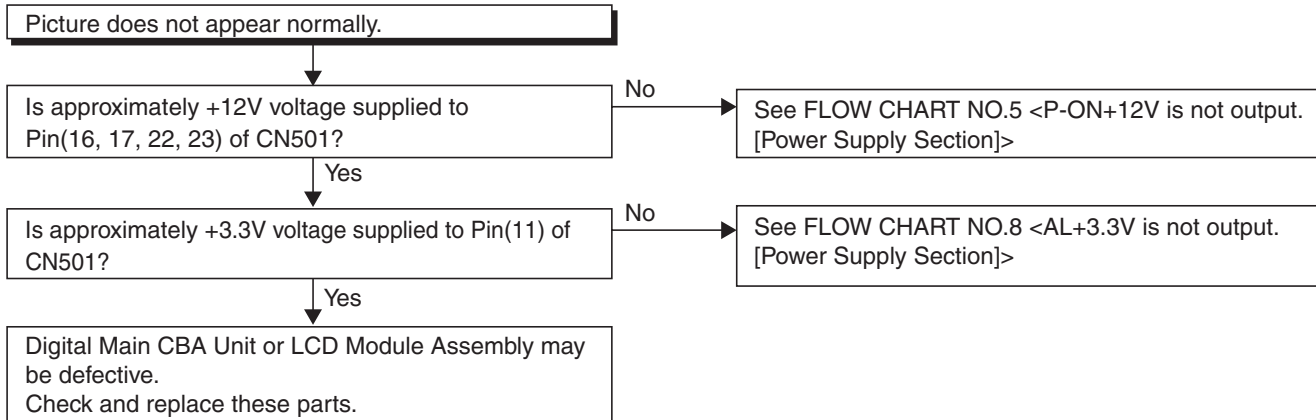
FLOW CHART NO.1



FLOW CHART NO.2

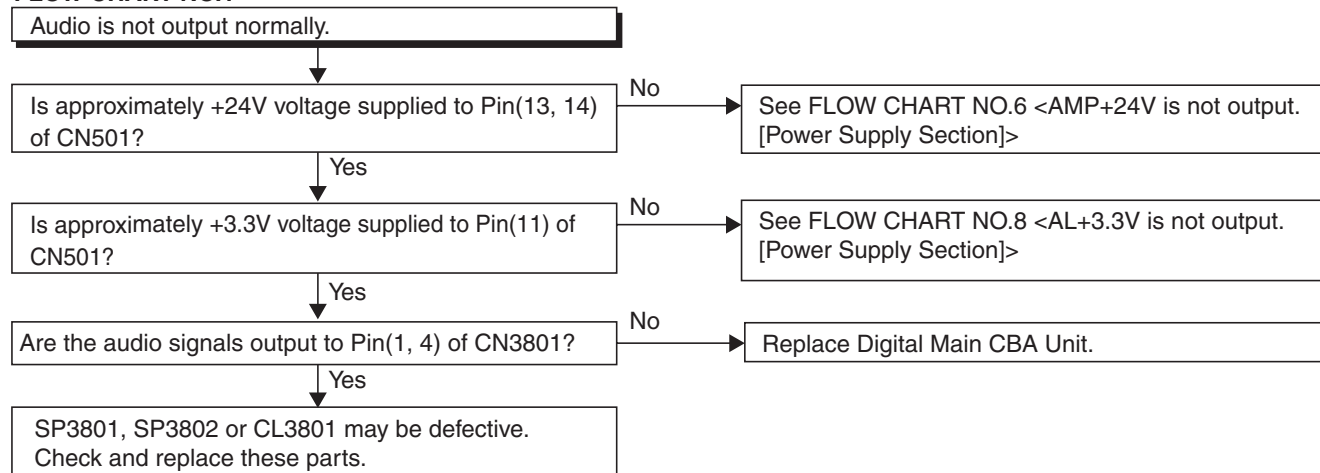


FLOW CHART NO.3



[Audio Signal Section]

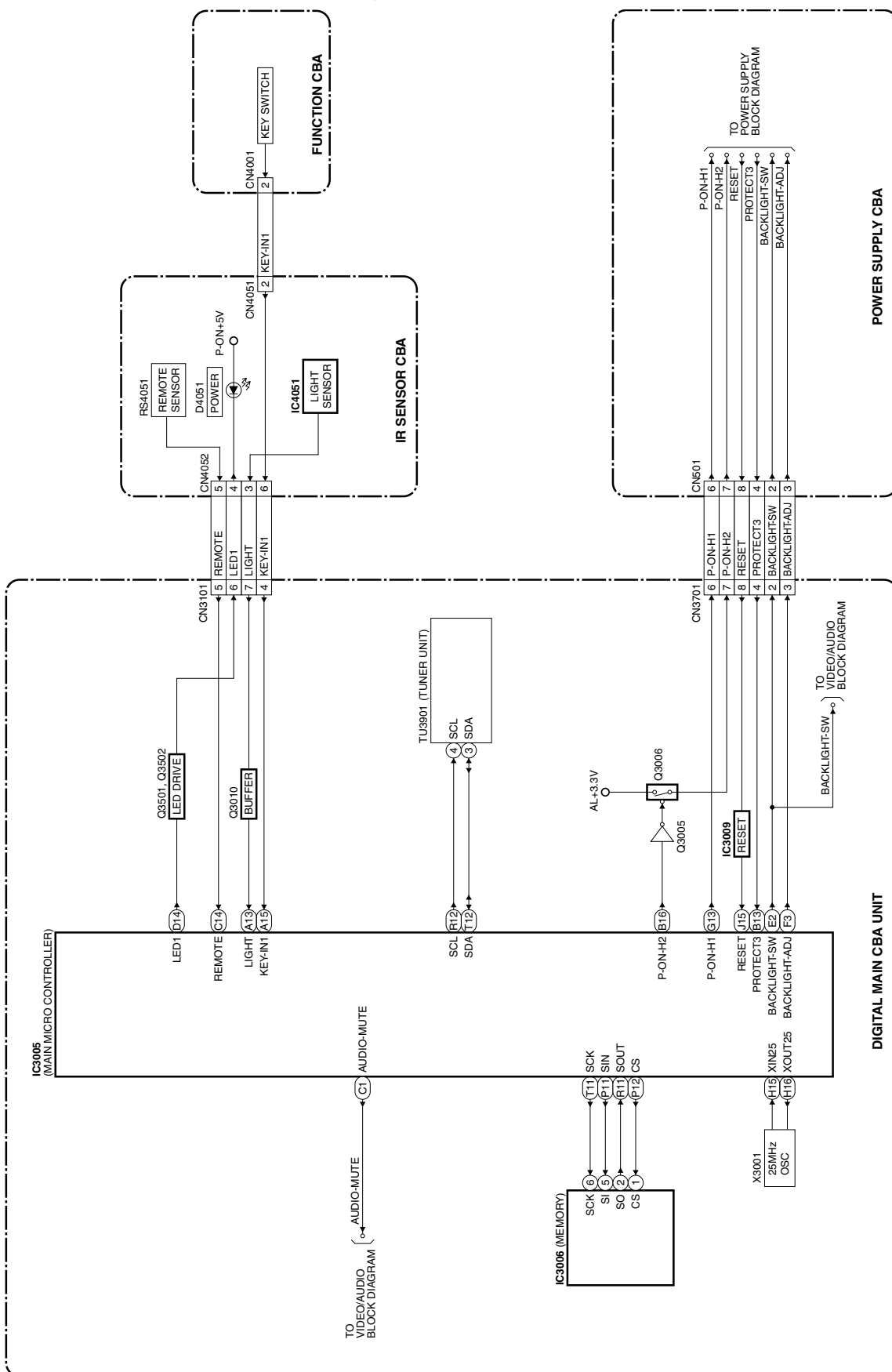
FLOW CHART NO.1



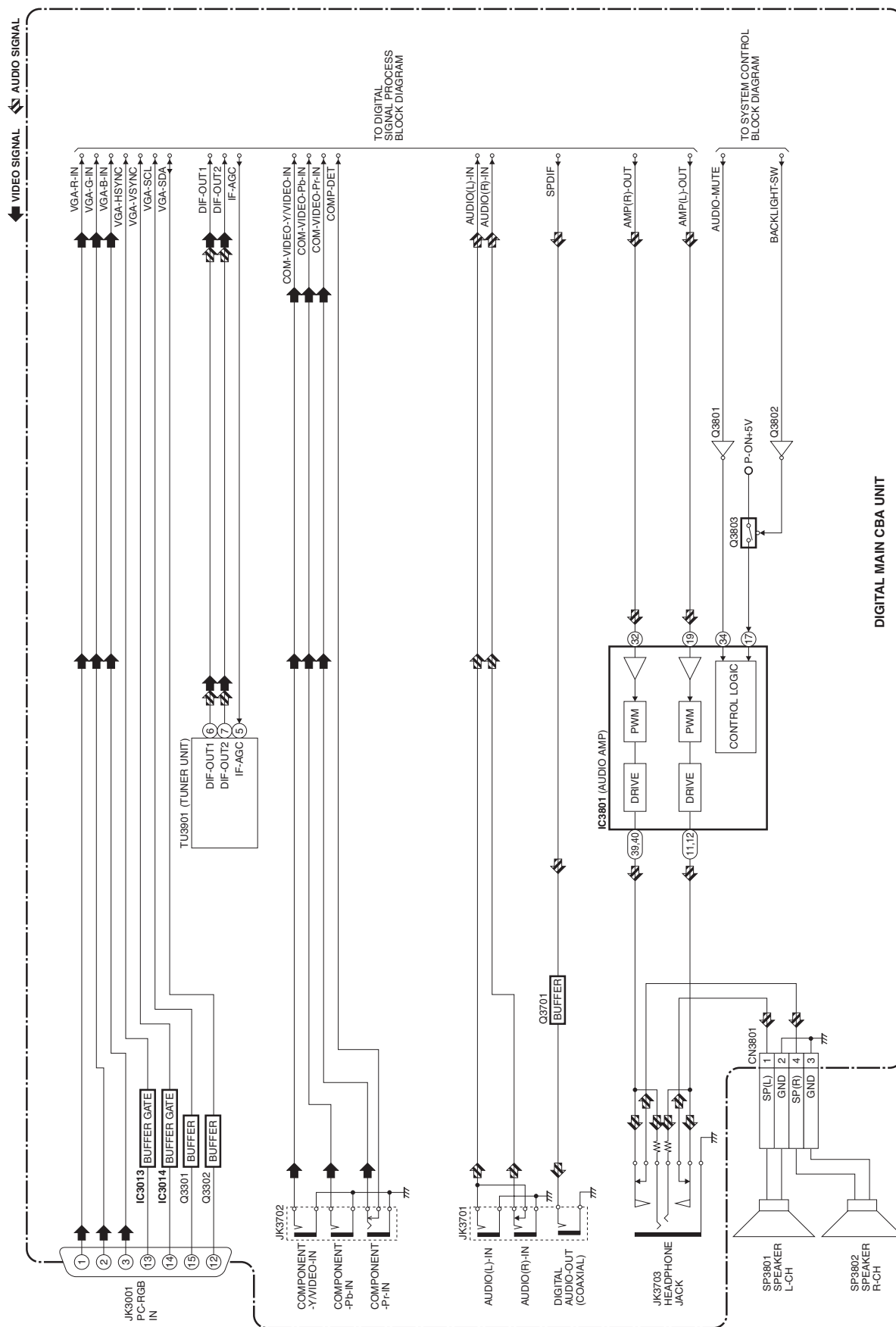
BLOCK DIAGRAMS

[TYPE A]

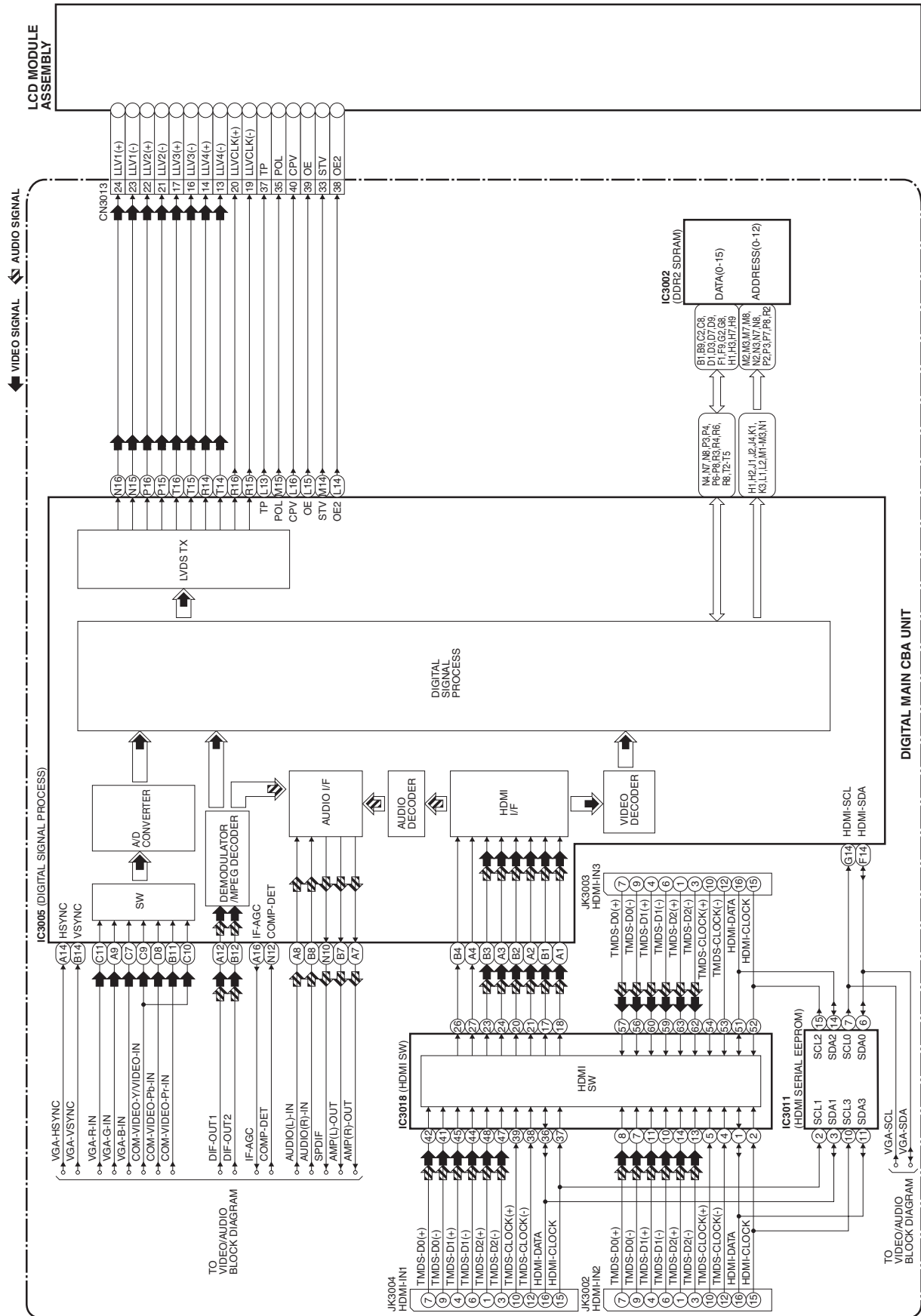
1. System Control Block Diagram



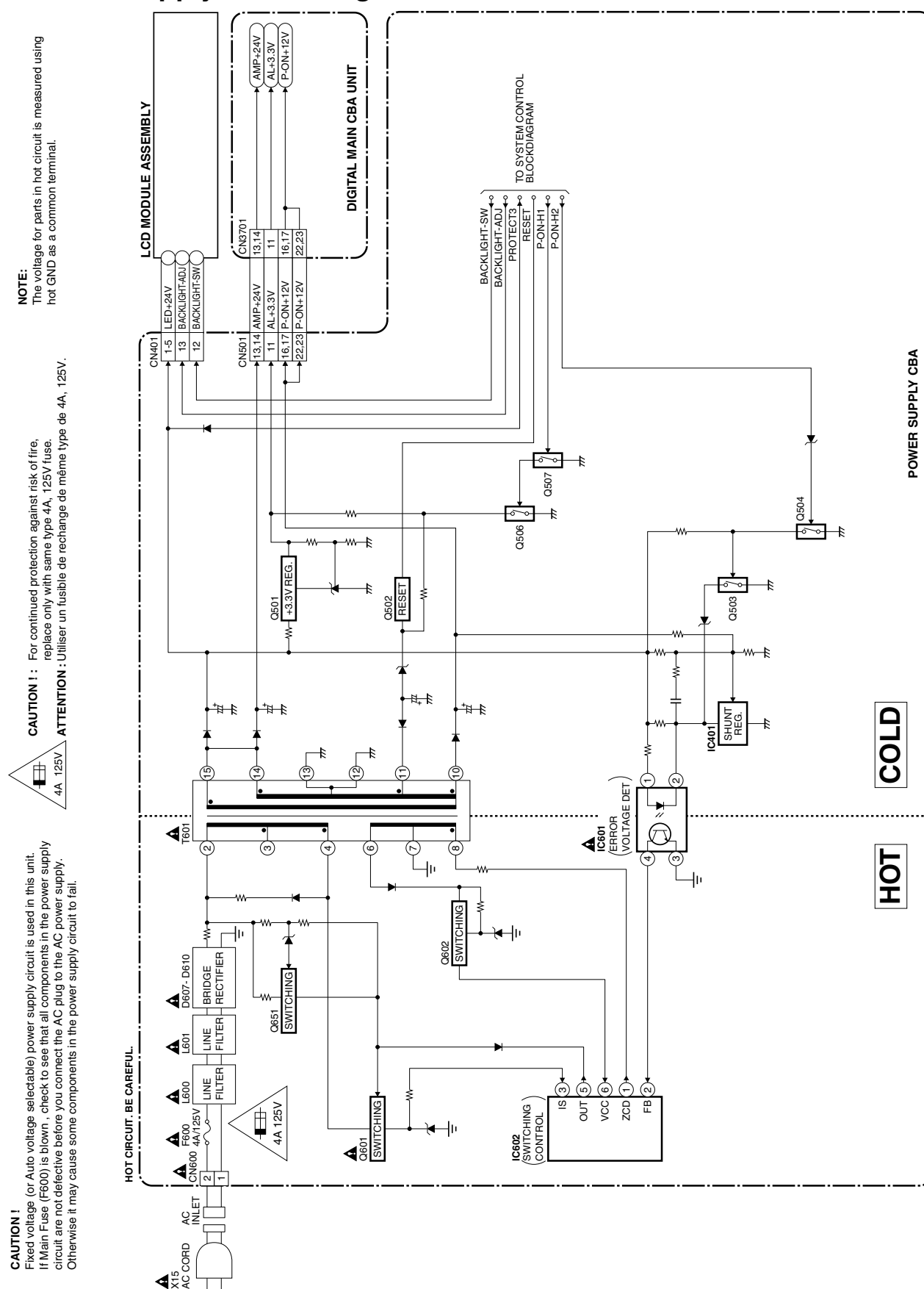
2. Video/Audio Block Diagram



3. Digital Signal Process Block Diagram

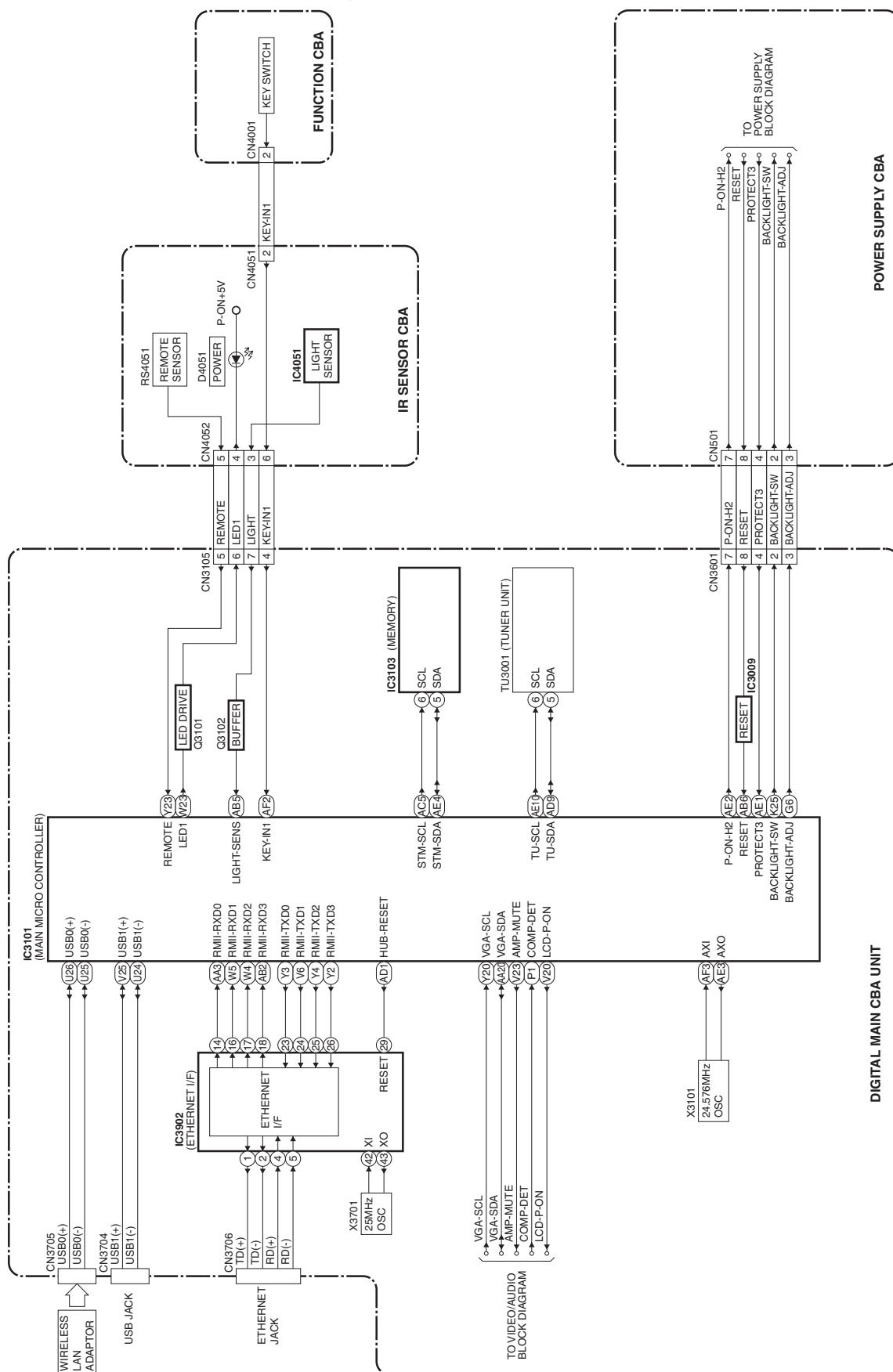


4. Power Supply Block Diagram

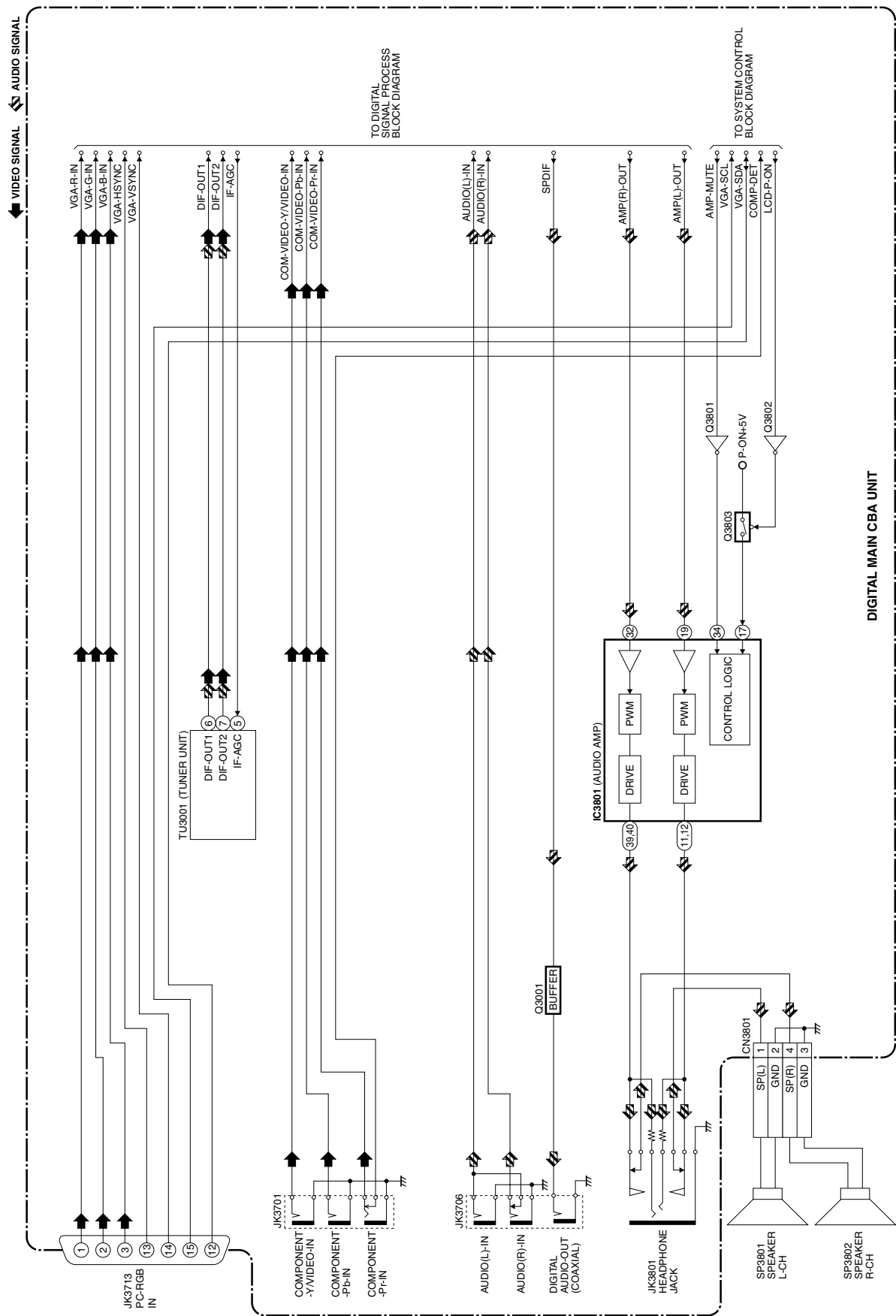


[TYPE B]

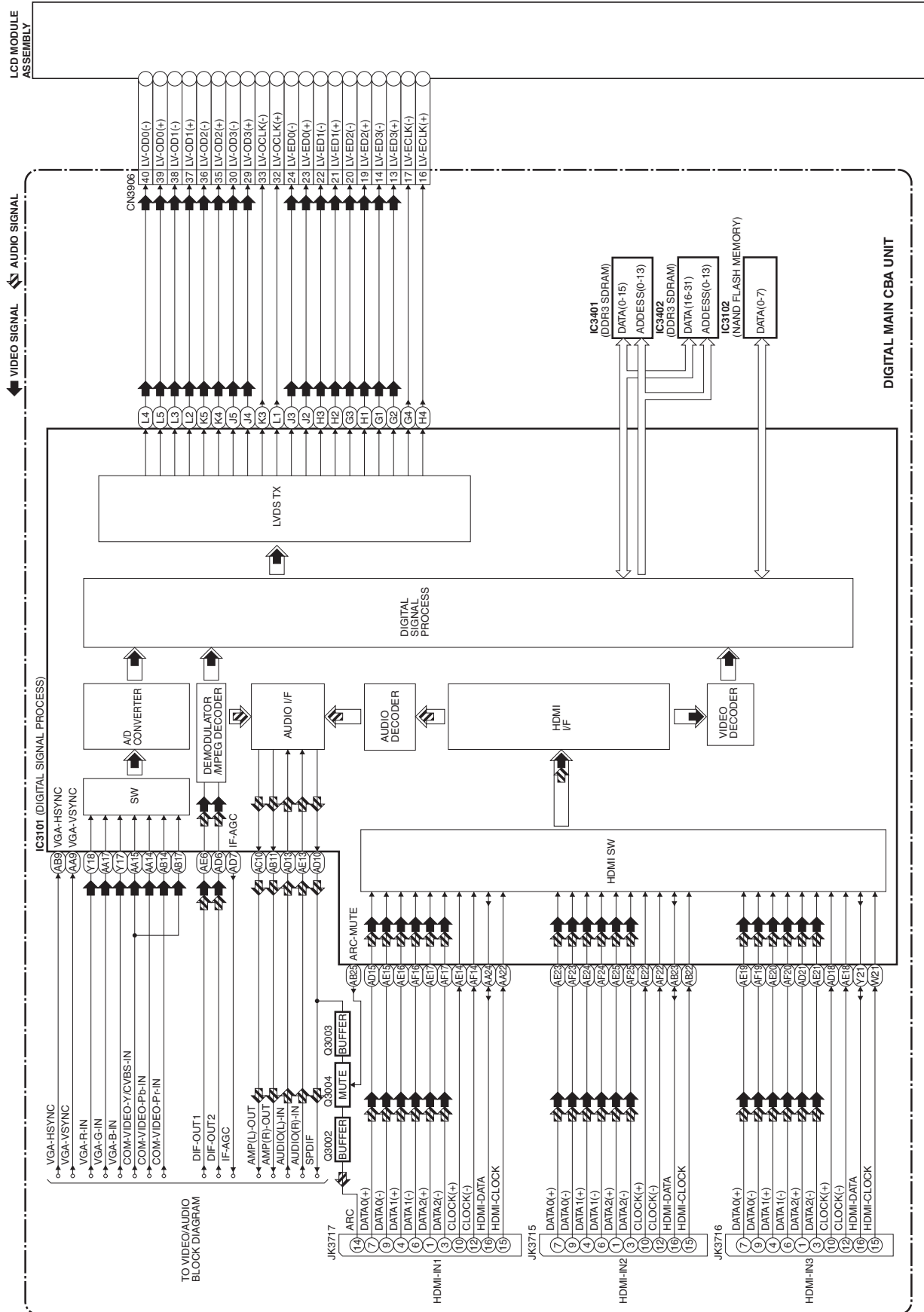
1. System Control Block Diagram



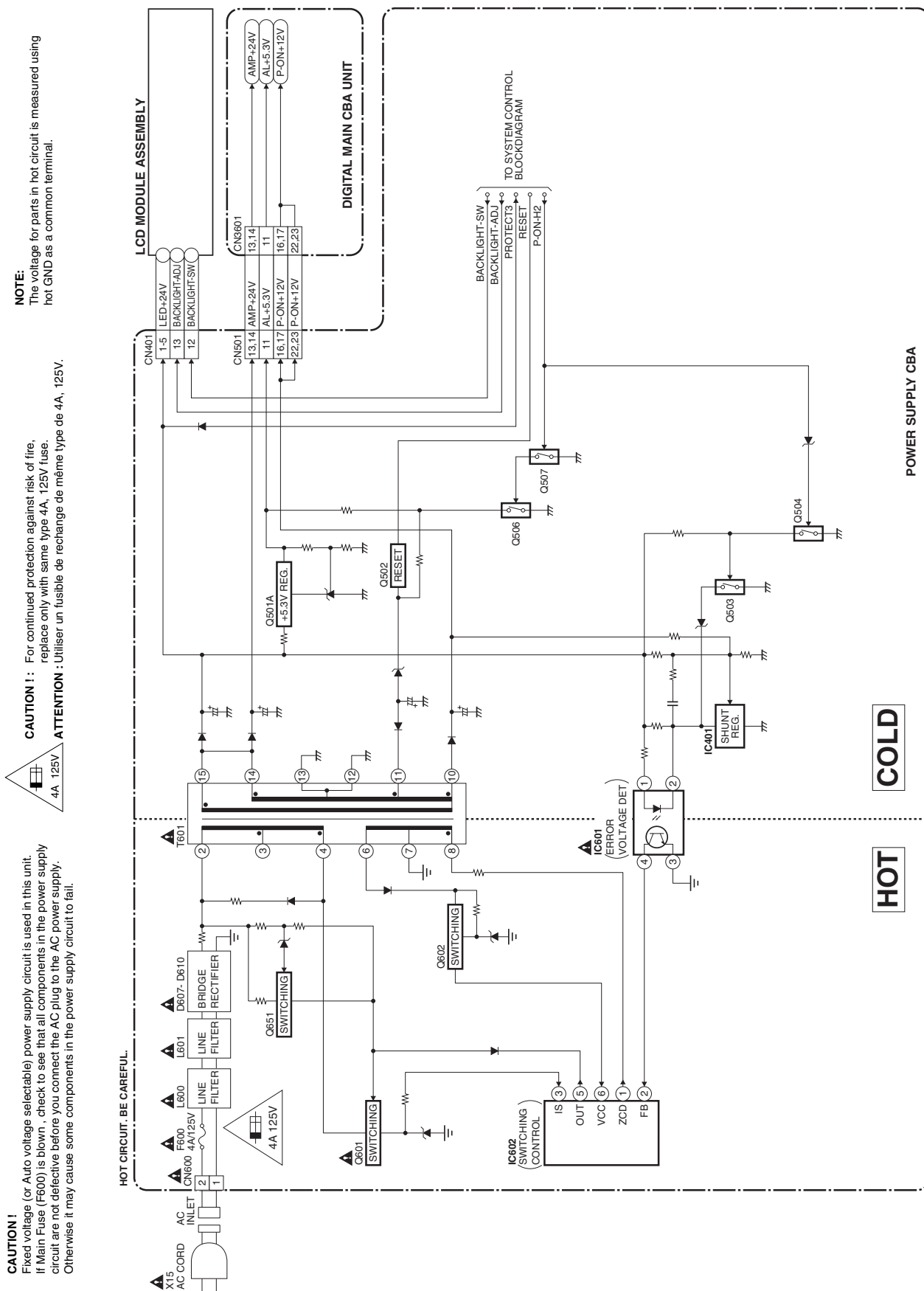
2. Video/Audio Block Diagram



3. Digital Signal Process Block Diagram



4. Power Supply Block Diagram



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 PL12.3 chassis models. Thus some parts in detail illustrated on this schematic diagrams may vary depend on the model within the PL12.3 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.

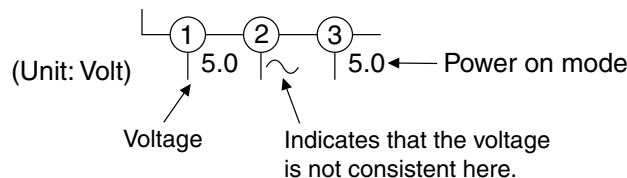
If Main Fuse (F600) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

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.:

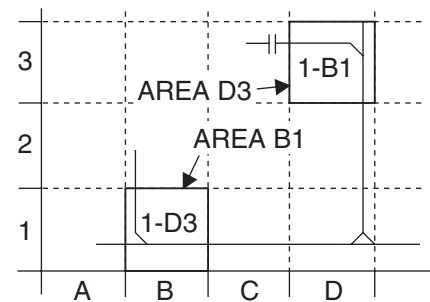


5. How to read converged lines

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.

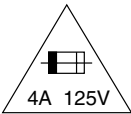
● : Used to indicate a test point with a test pin.

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

Power Supply Schematic Diagram

CAUTION !

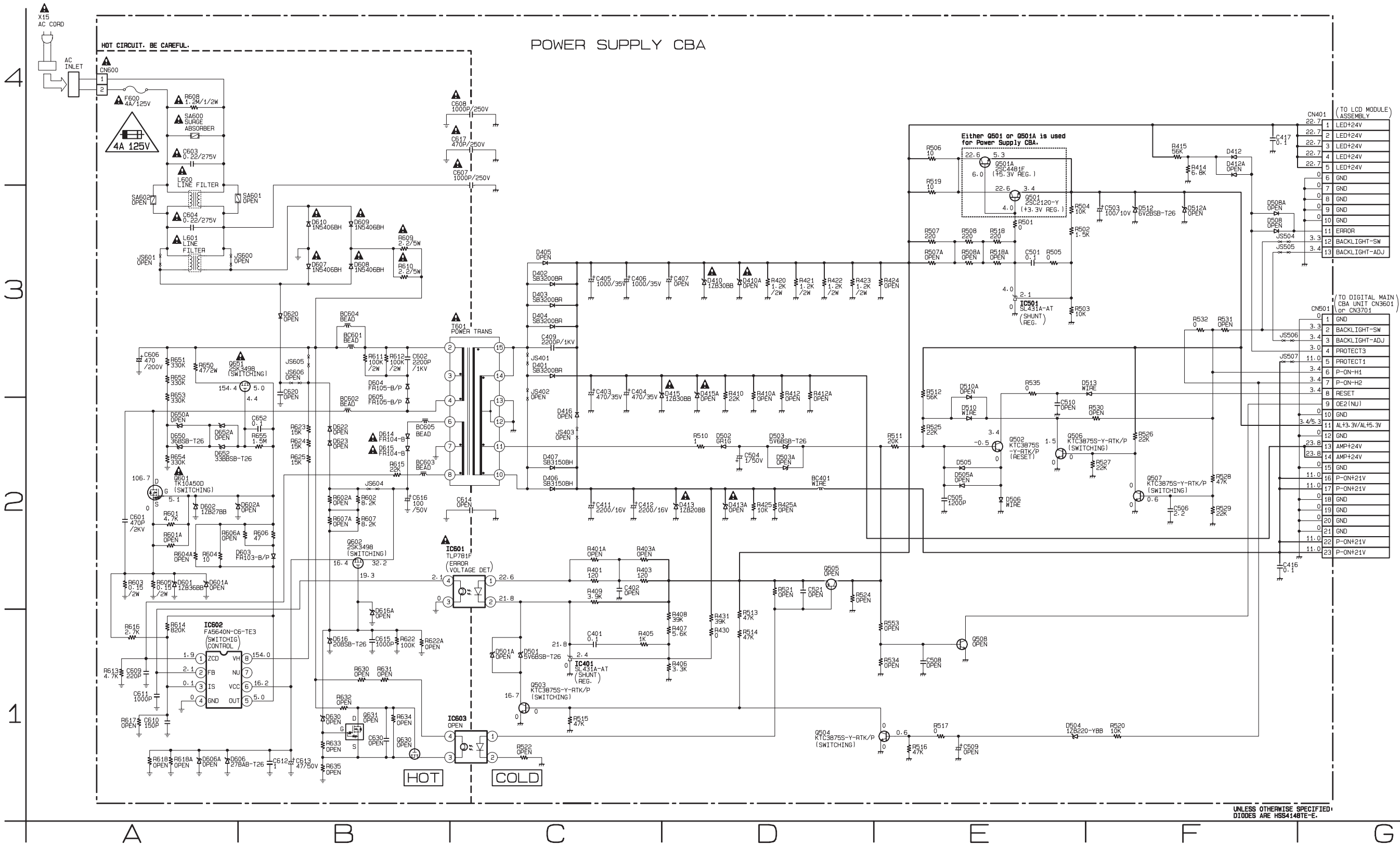
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F600) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



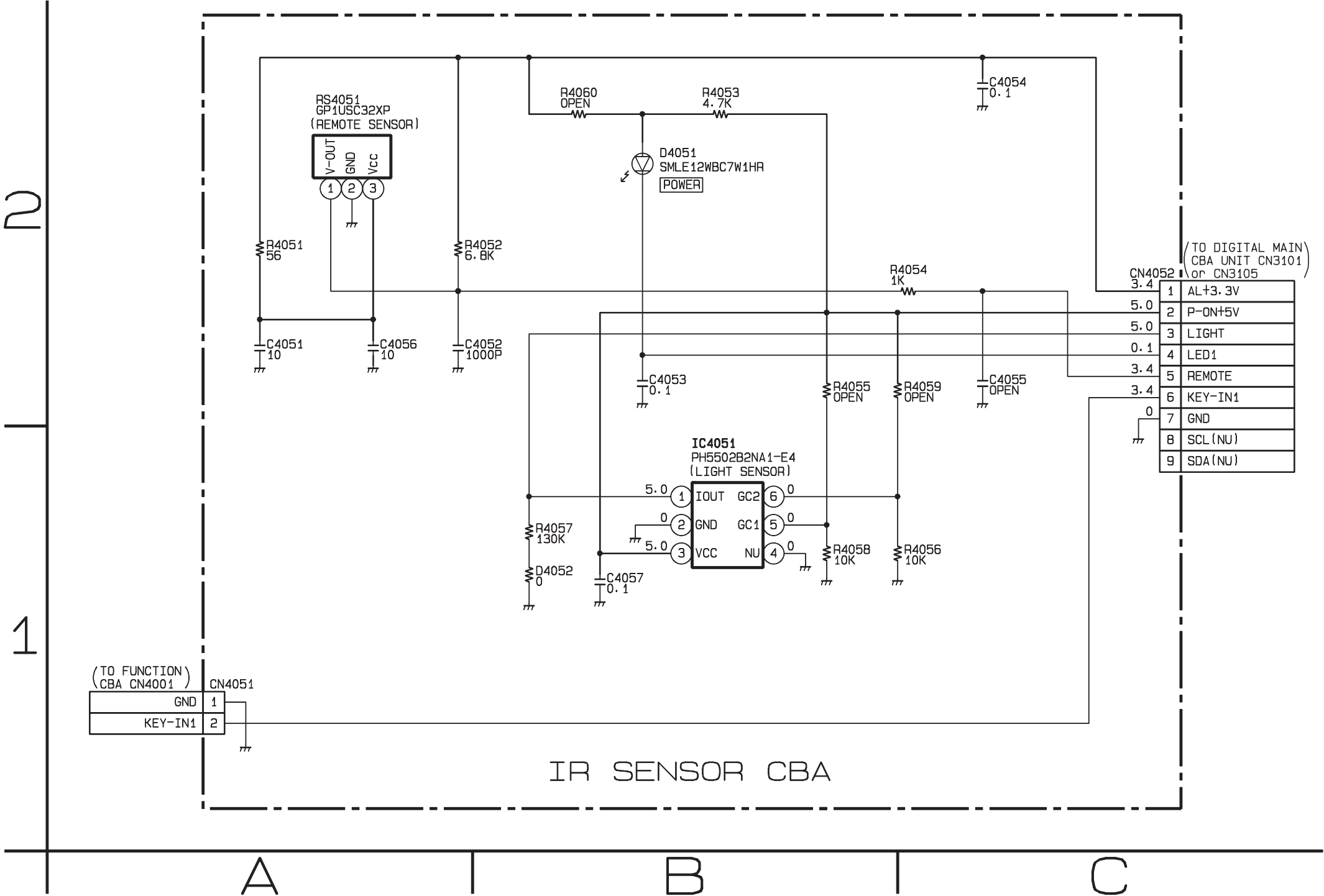
CAUTION ! : For continued protection against risk of fire,
replace only with same type 4A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

NOTE:

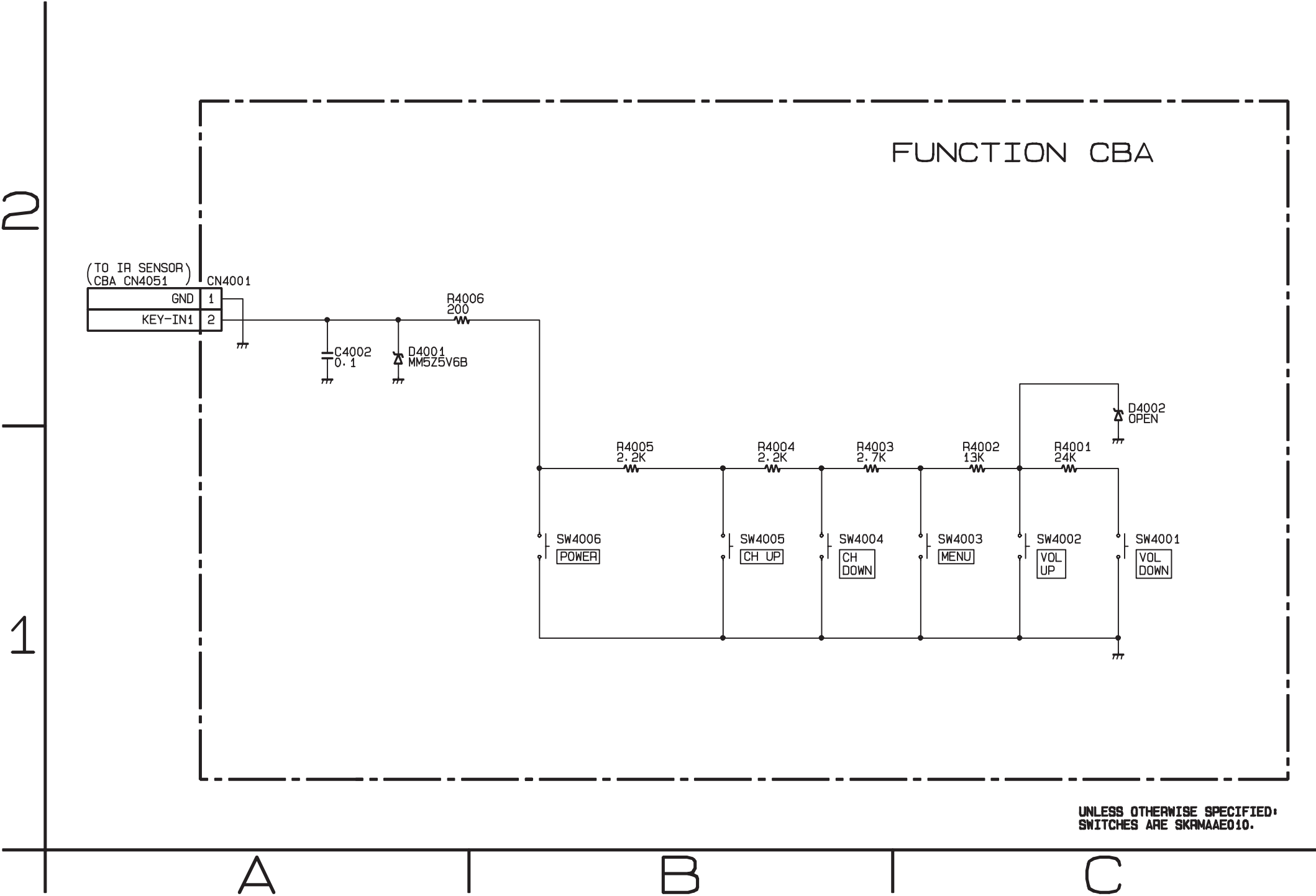
The voltage for parts in hot circuit is measured using
hot GND as a common terminal.



IR Sensor Schematic Diagram



Function Schematic Diagram

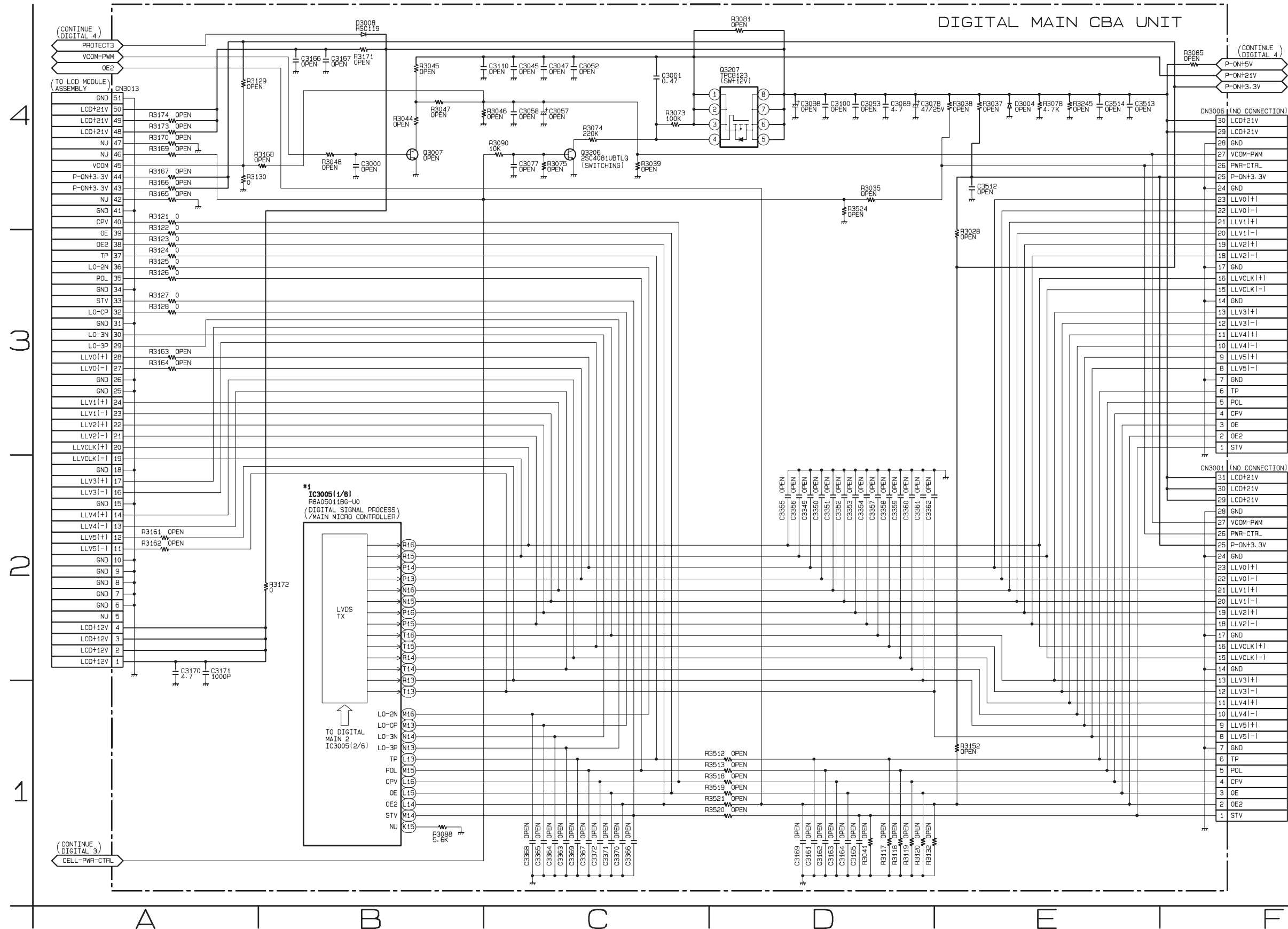


Digital Main 1 Schematic Diagram [TYPE A]

***1 NOTE:**

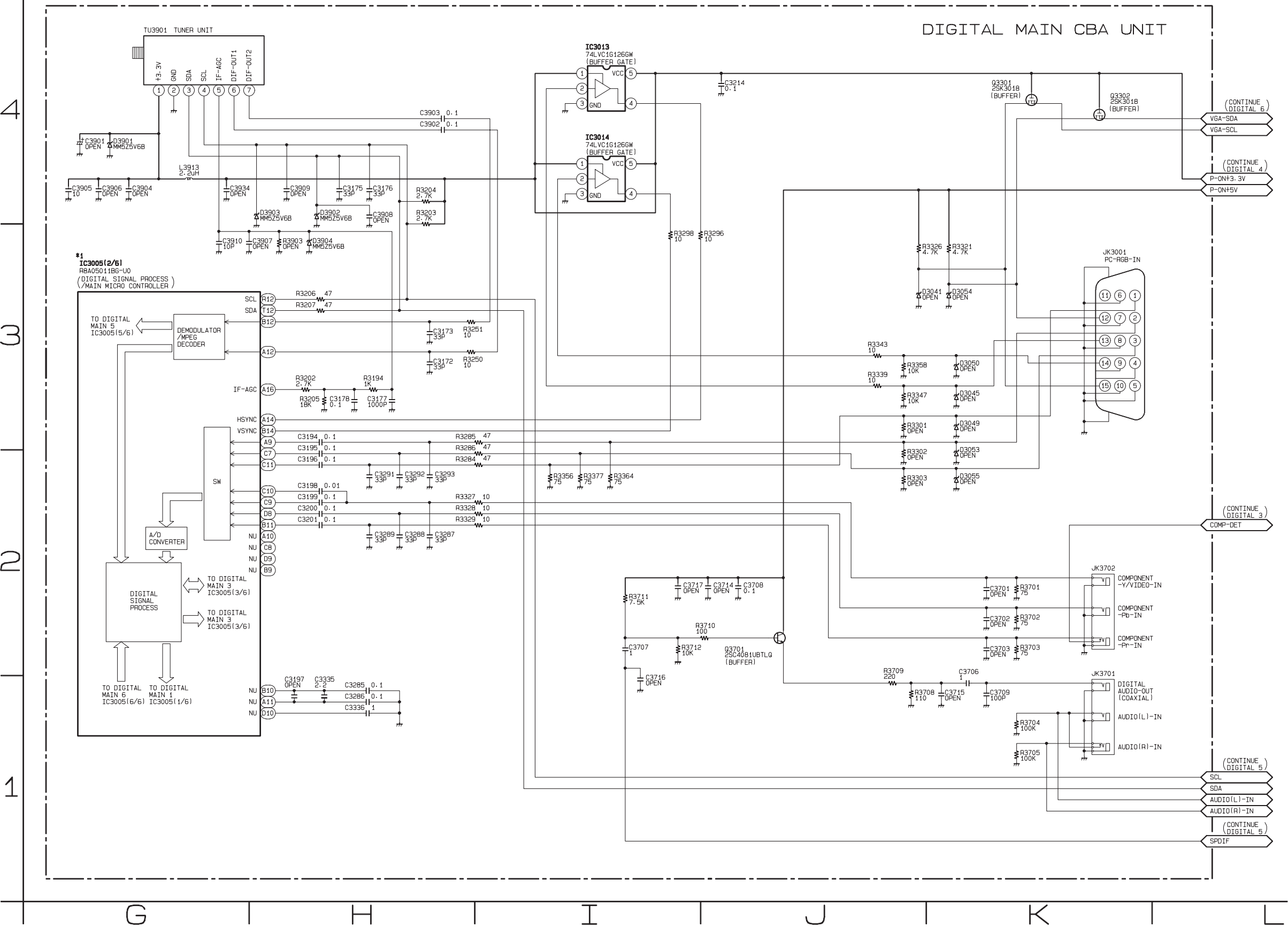
The order of pins shown in this diagram is different from that of actual IC3005.

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 [TYPE A]

***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

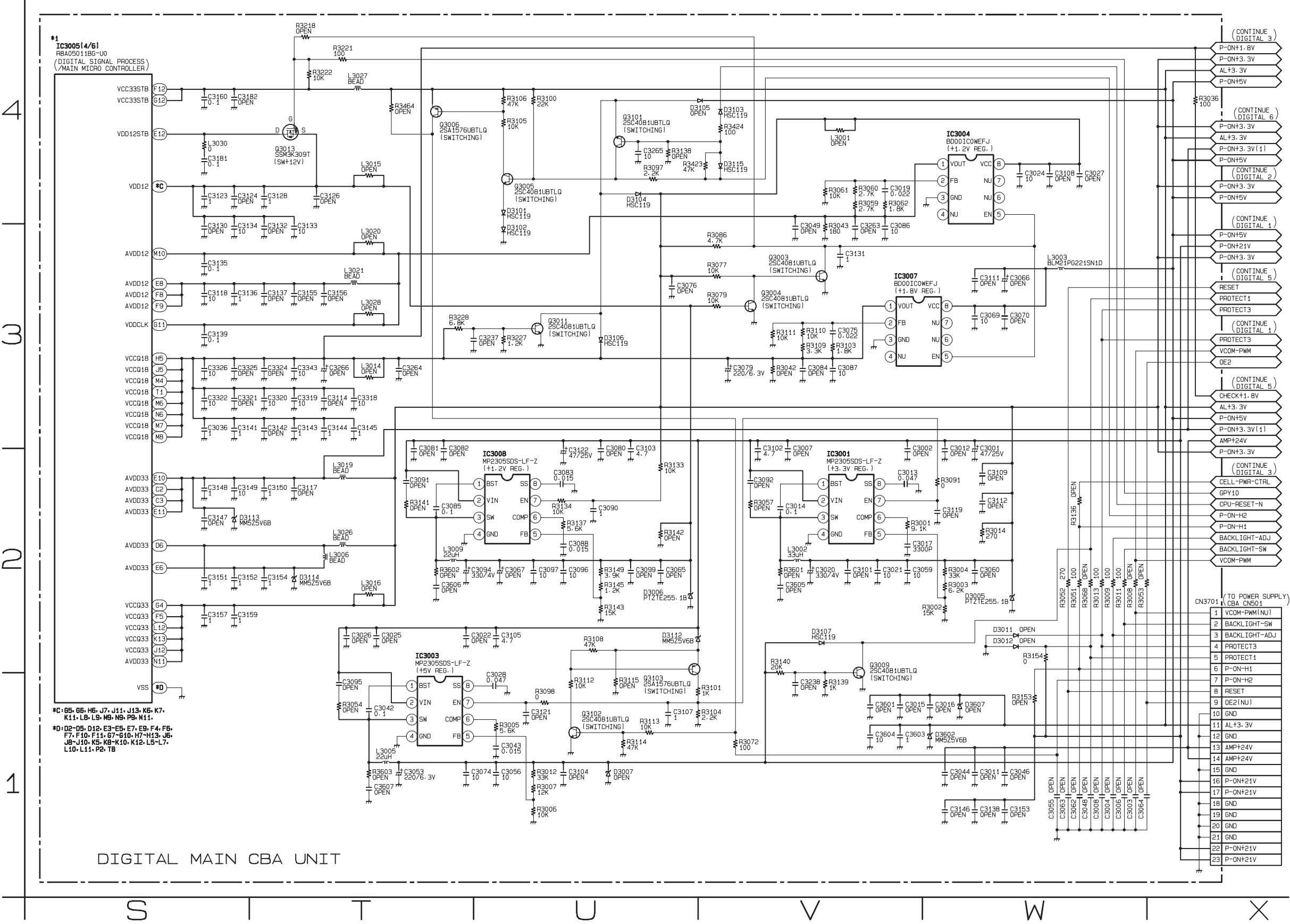
3

2



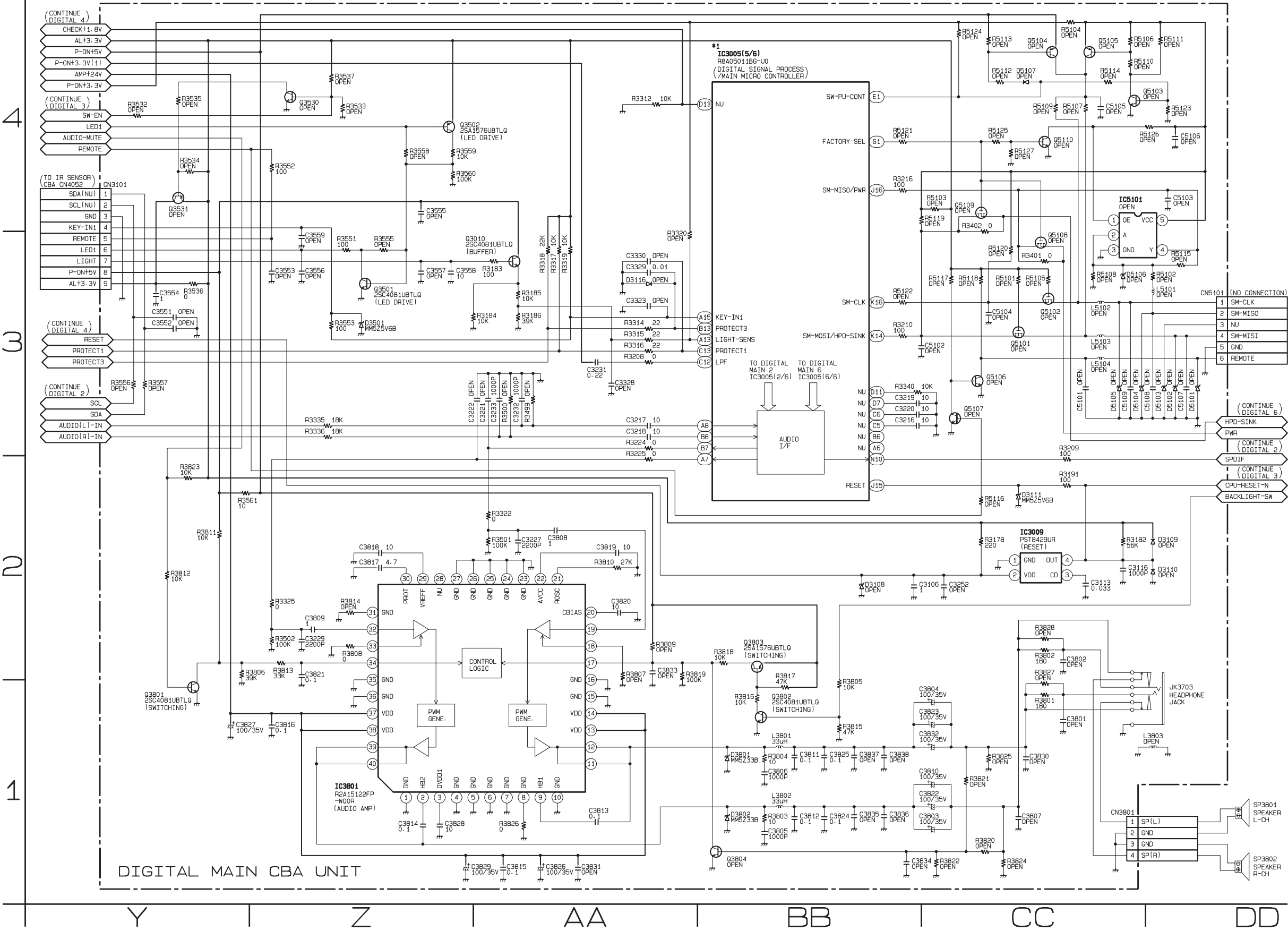
Digital Main 4 Schematic Diagram [TYPE A]

*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 5 Schematic Diagram [TYPE A]

*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.

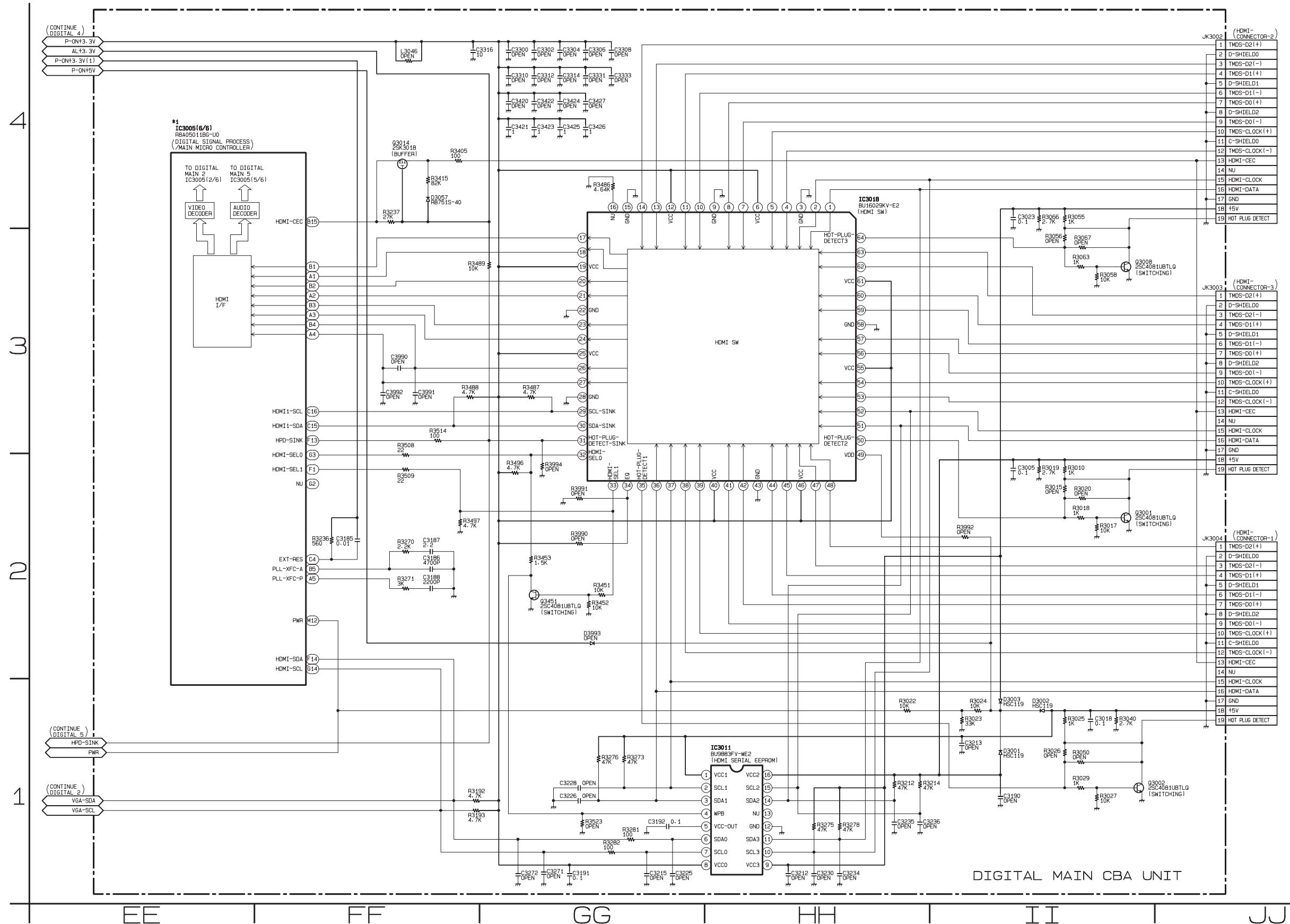


Digital Main 6 Schematic Diagram [TYPE A]

***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.

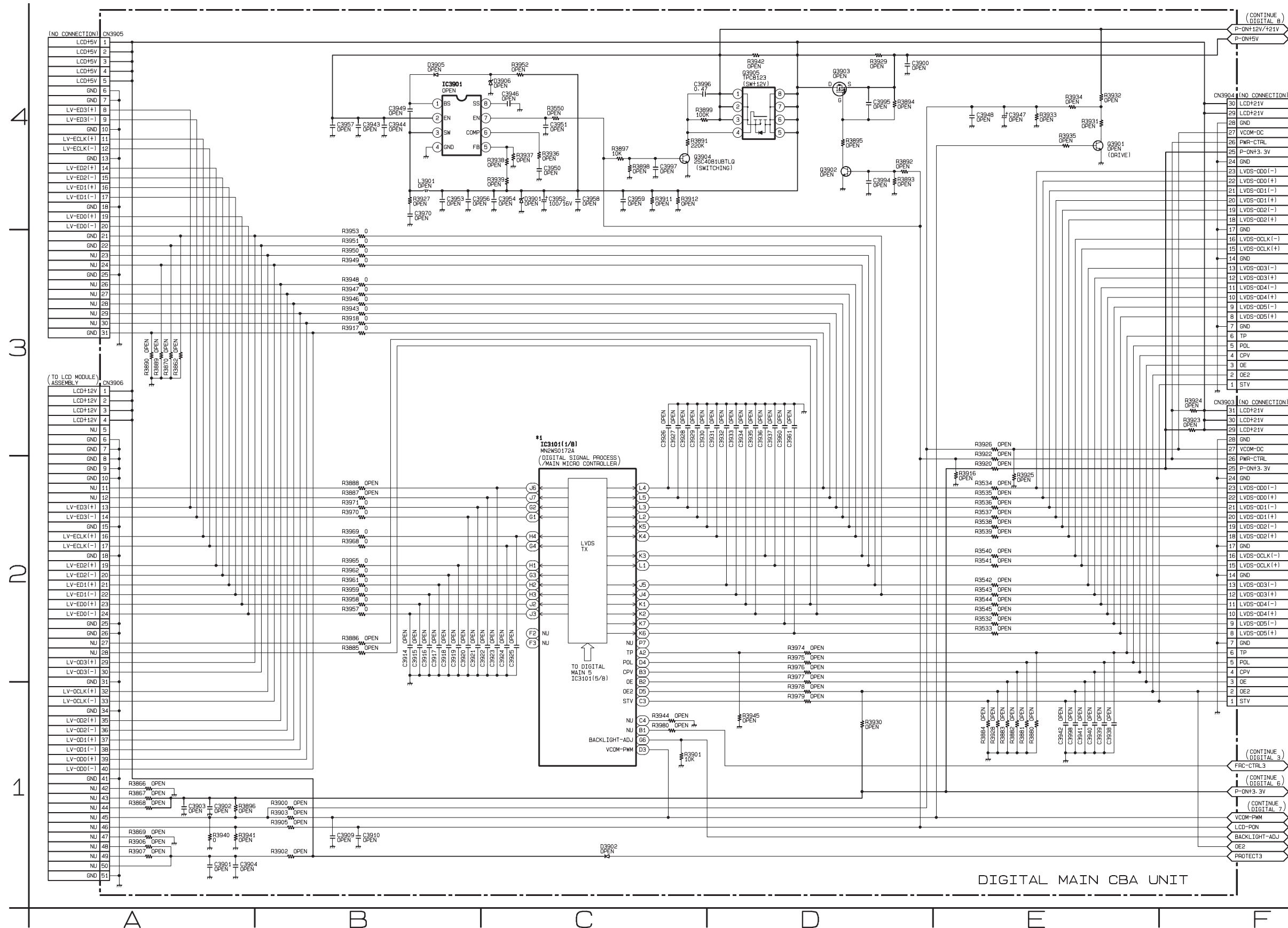


Digital Main 1 Schematic Diagram [TYPE B]

***1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3101.

IC3101 is divided into eight and shown as IC3101 (1/8) ~ IC3101 (8/8) in this Digital Main Schematic Diagram Section.

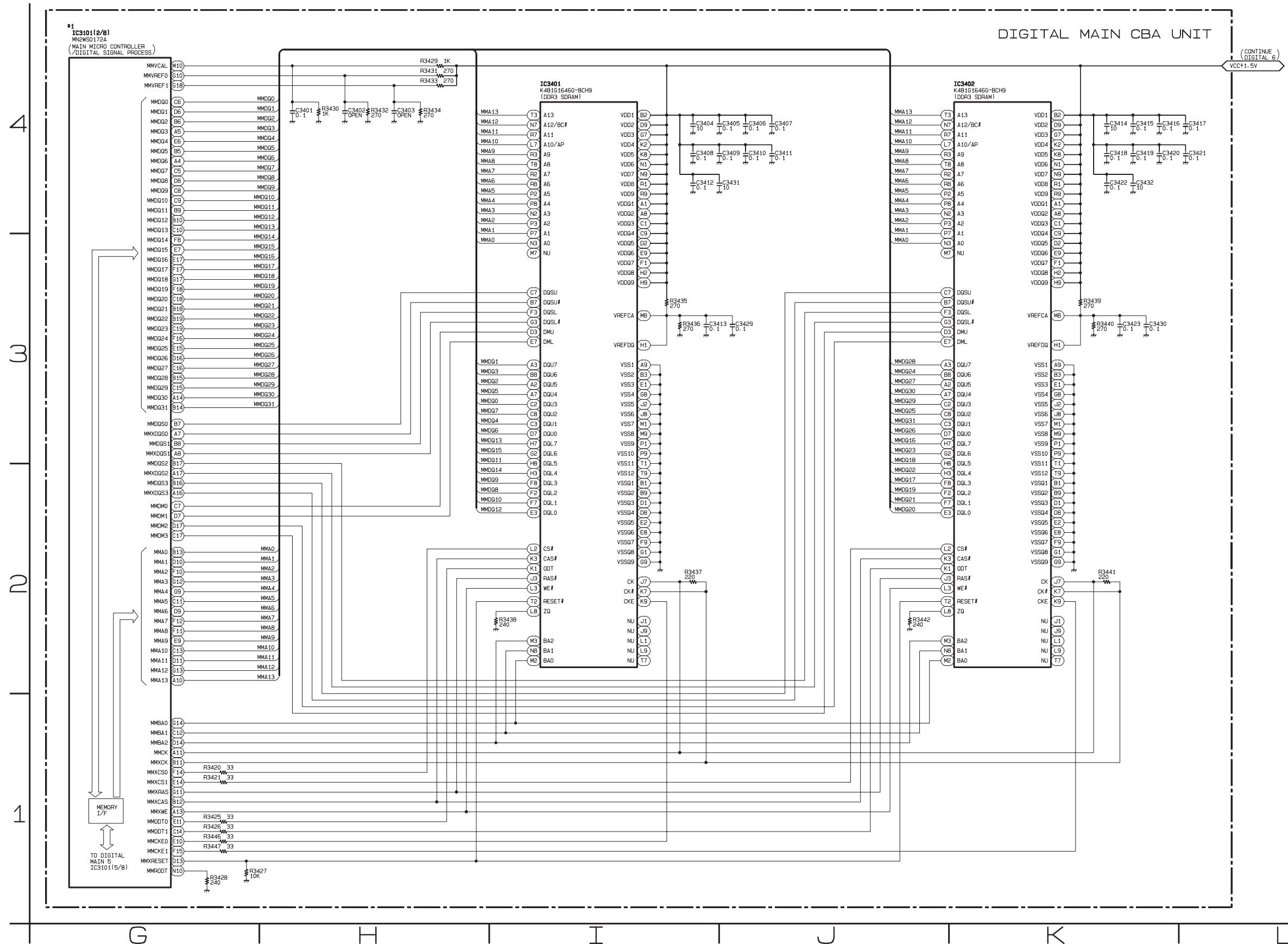


Digital Main 2 Schematic Diagram [TYPE B]

***1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3101.

IC3101 is divided into eight and shown as IC3101 (1/8) ~ IC3101 (8/8) in this Digital Main Schematic Diagram Section.

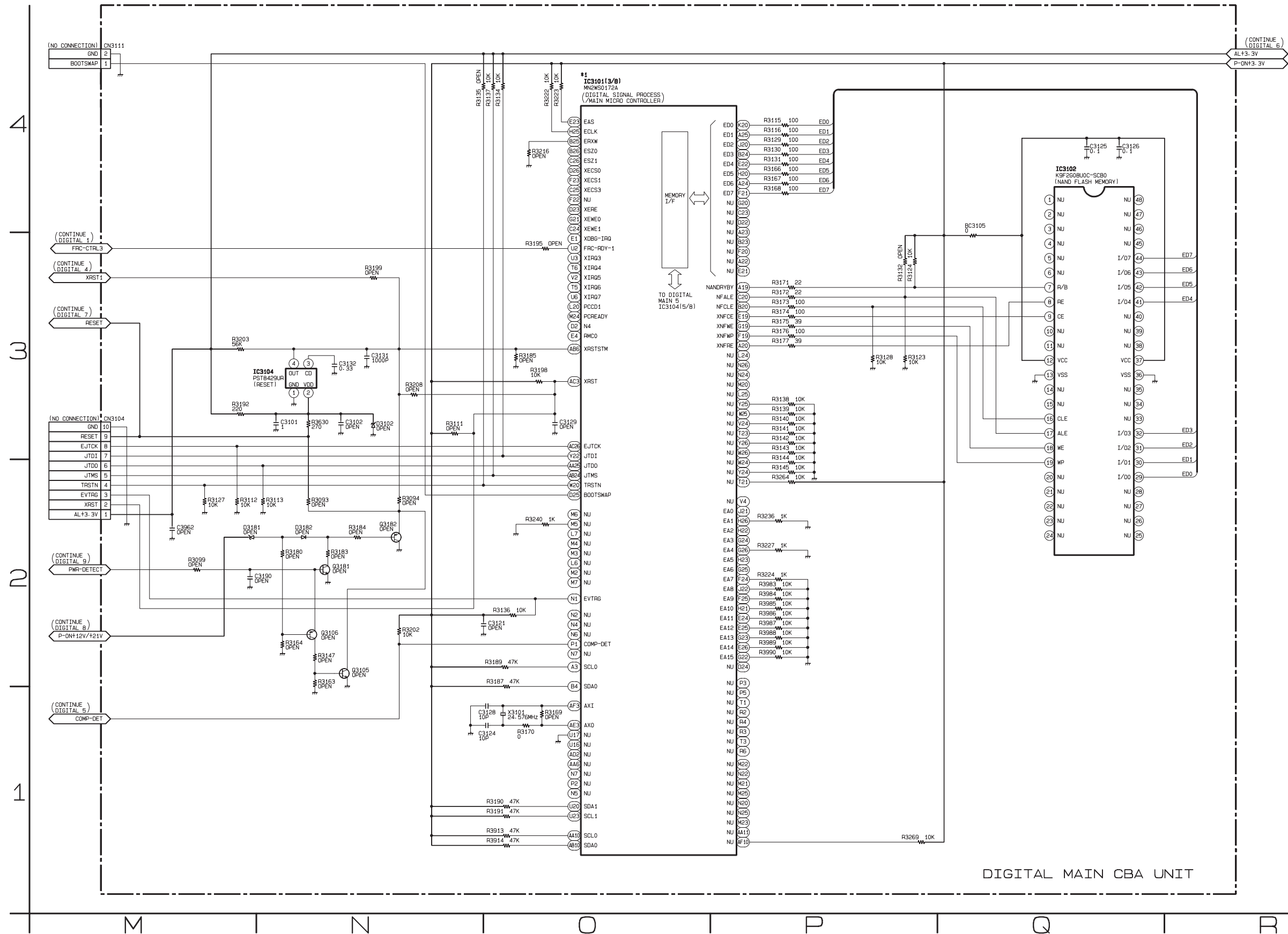


Digital Main 3 Schematic Diagram [TYPE B]

***1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3101.

IC3101 is divided into eight and shown as IC3101 (1/8) ~ IC3101 (8/8) in this Digital Main Schematic Diagram Section.

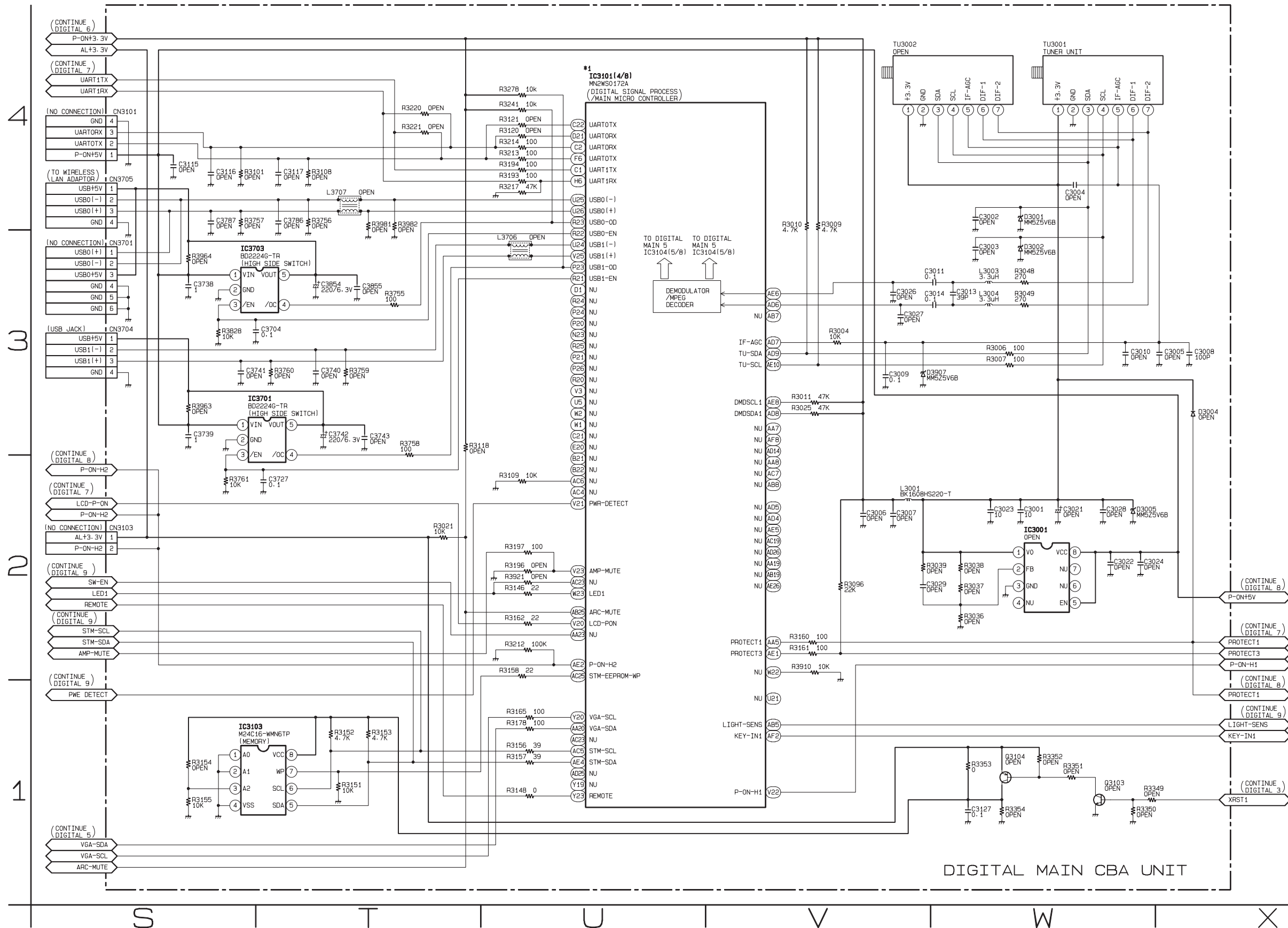


Digital Main 4 Schematic Diagram [TYPE B]

***1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3101.

IC3101 is divided into eight and shown as IC3101 (1/8) ~ IC3101 (8/8) in this Digital Main Schematic Diagram Section.

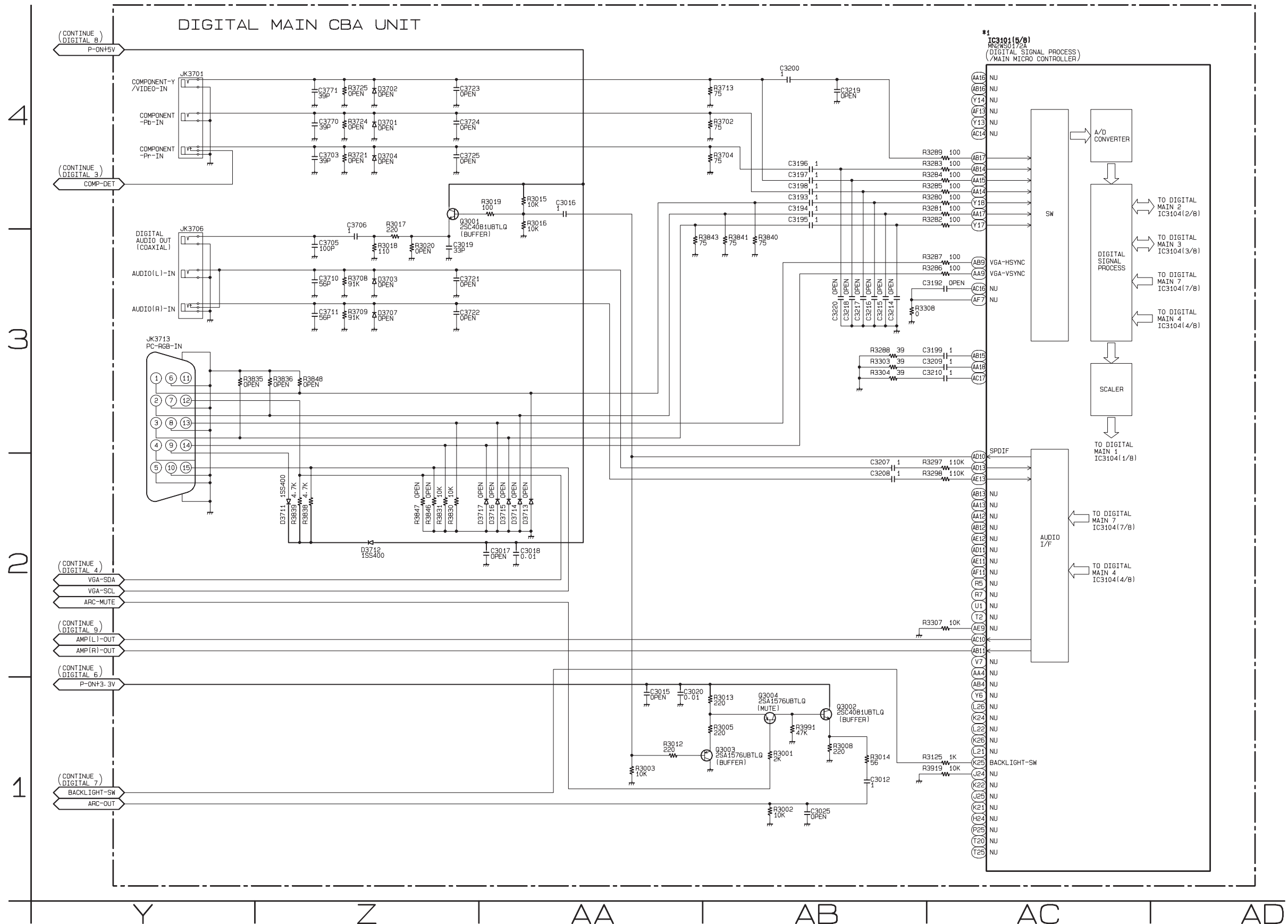


Digital Main 5 Schematic Diagram [TYPE B]

***1 NOTE:**

The order of pins shown in this diagram is different from that of actual IC3101.

IC3101 is divided into eight and shown as IC3101 (1/8) ~ IC3101 (8/8) in this Digital Main Schematic Diagram Section.

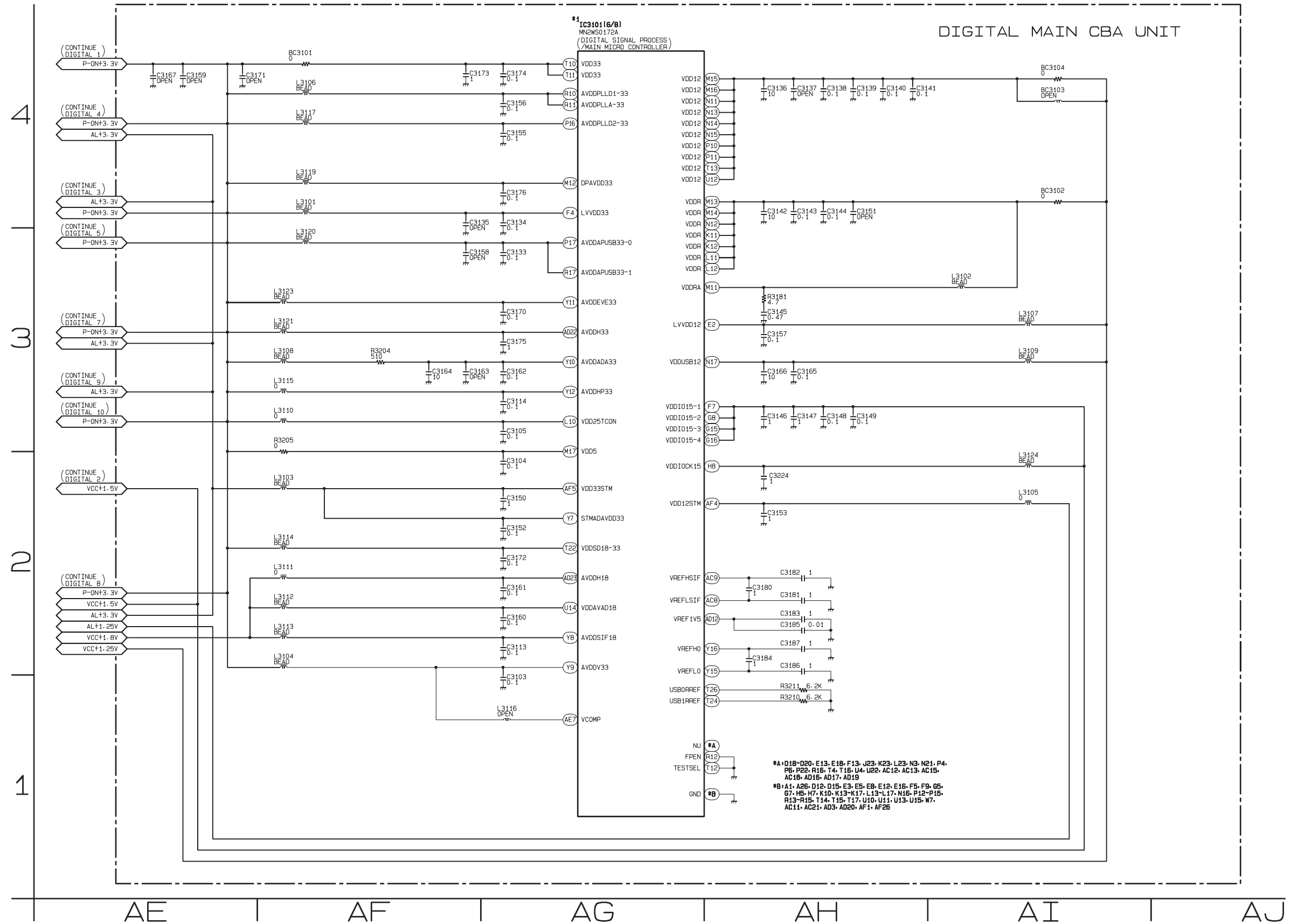


Digital Main 6 Schematic Diagram [TYPE B]

***1 NOTE:**

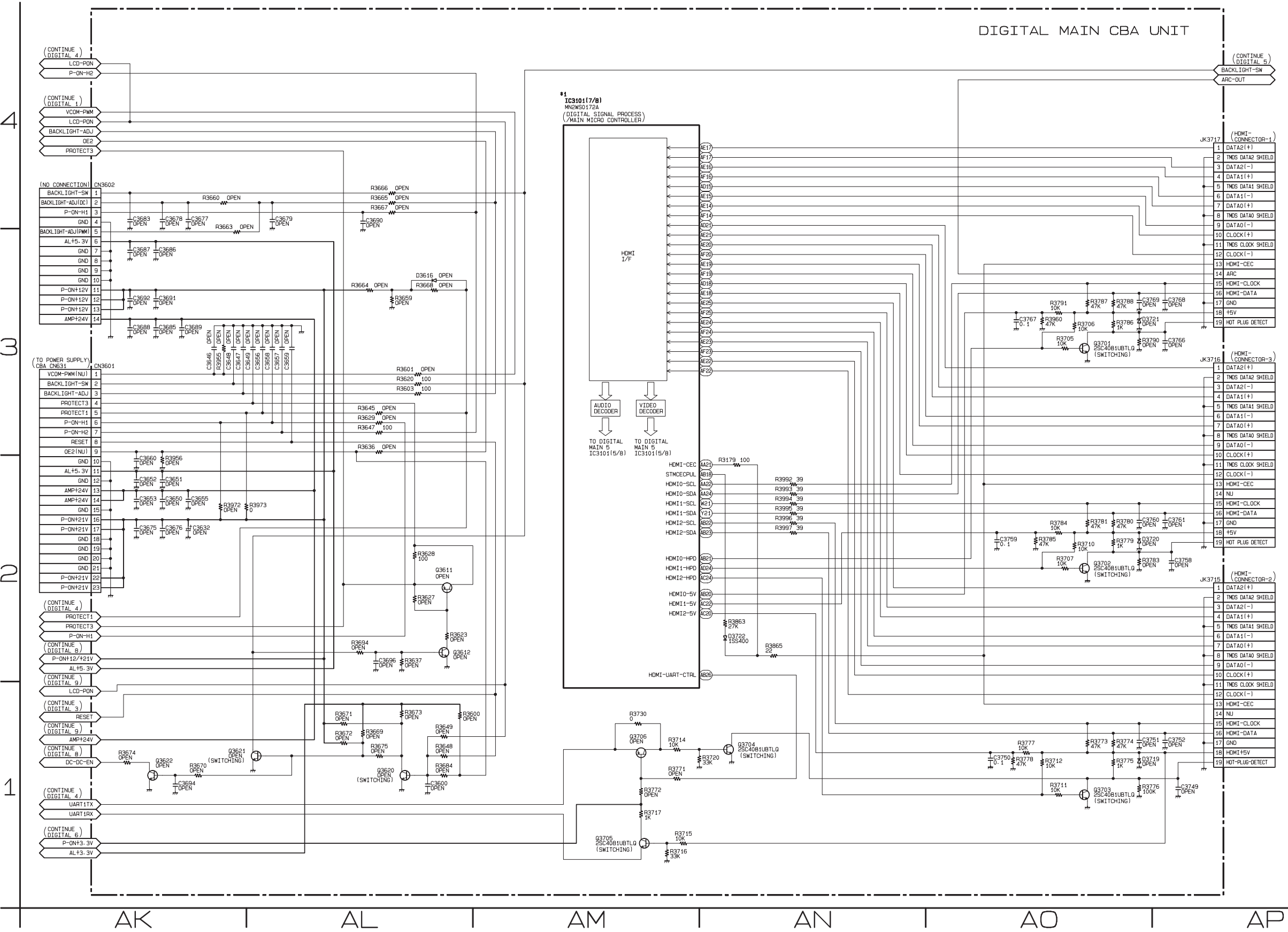
The order of pins shown in this diagram is different from that of actual IC3101.

IC3101 is divided into eight and shown as IC3101 (1/8) ~ IC3101 (8/8) in this Digital Main Schematic Diagram Section.

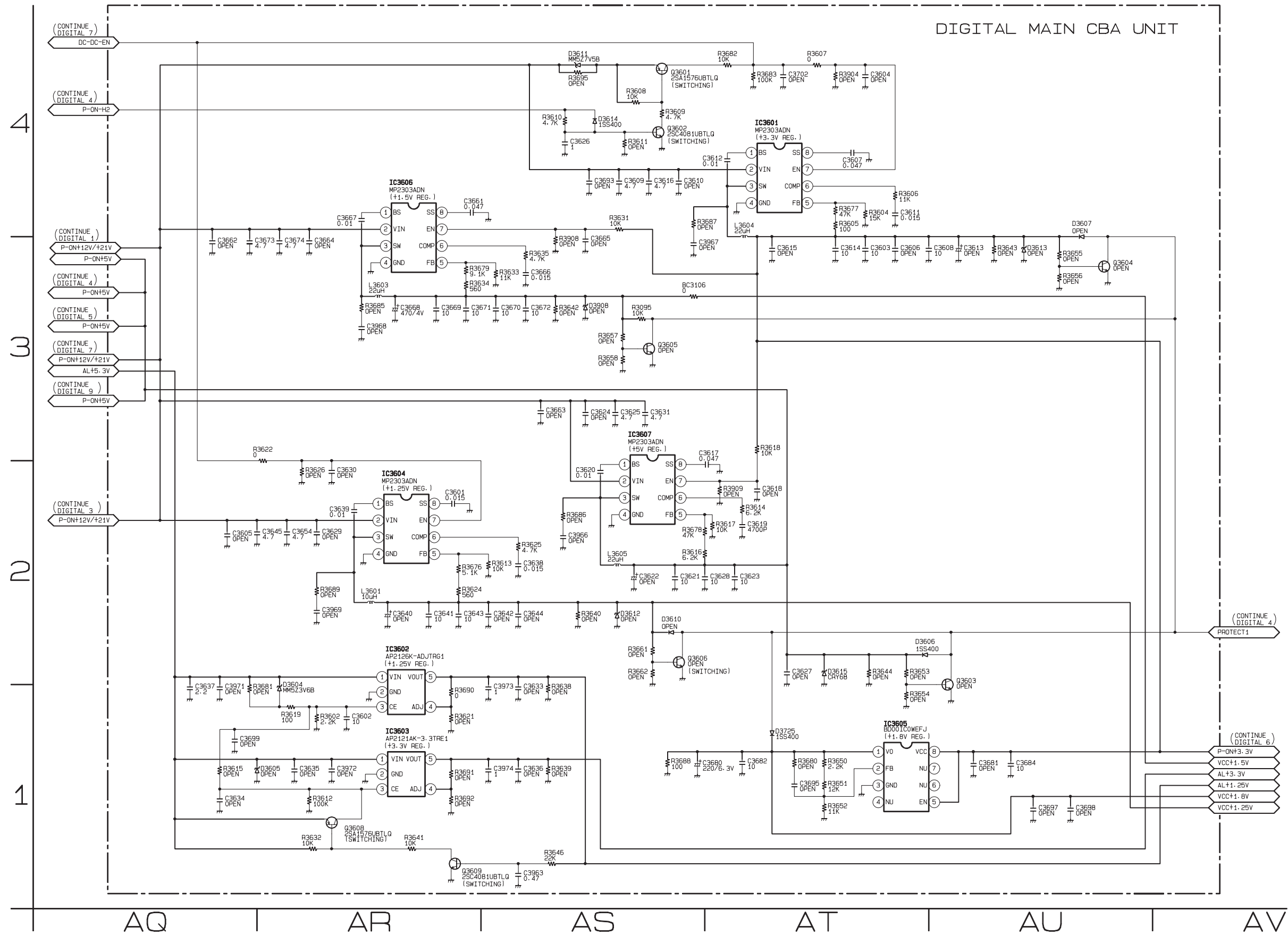


Digital Main 7 Schematic Diagram [TYPE B]

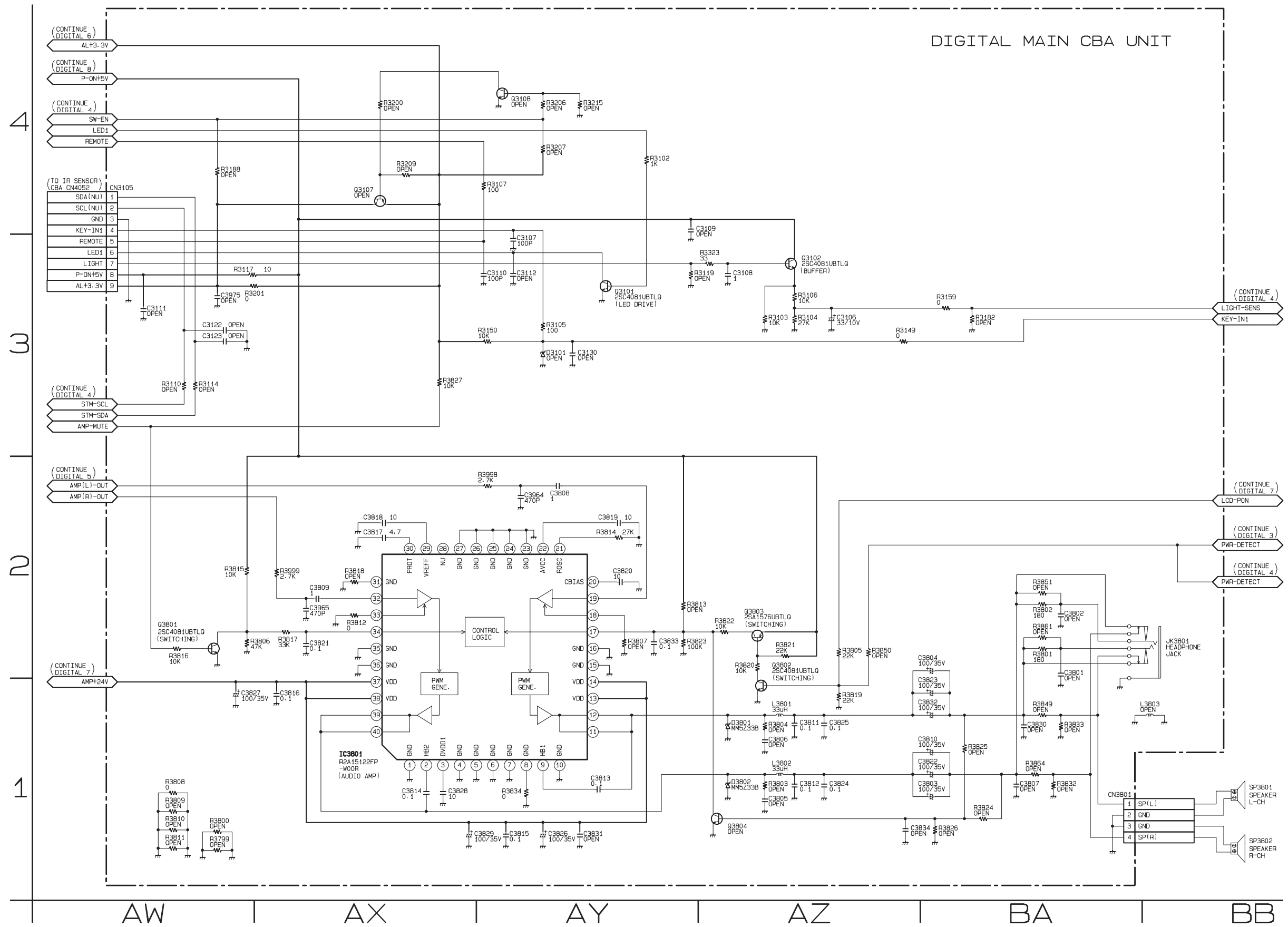
*1 NOTE:
The order of pins shown in this diagram is different from that of actual IC3101.
IC3101 is divided into eight and shown as IC3101 (1/8) ~ IC3101 (8/8) in this Digital Main Schematic Diagram Section.



Digital Main 8 Schematic Diagram [TYPE B]



Digital Main 9 Schematic Diagram [TYPE B]



4

3

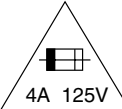
2



Power Supply CBA Top View

CAUTION !

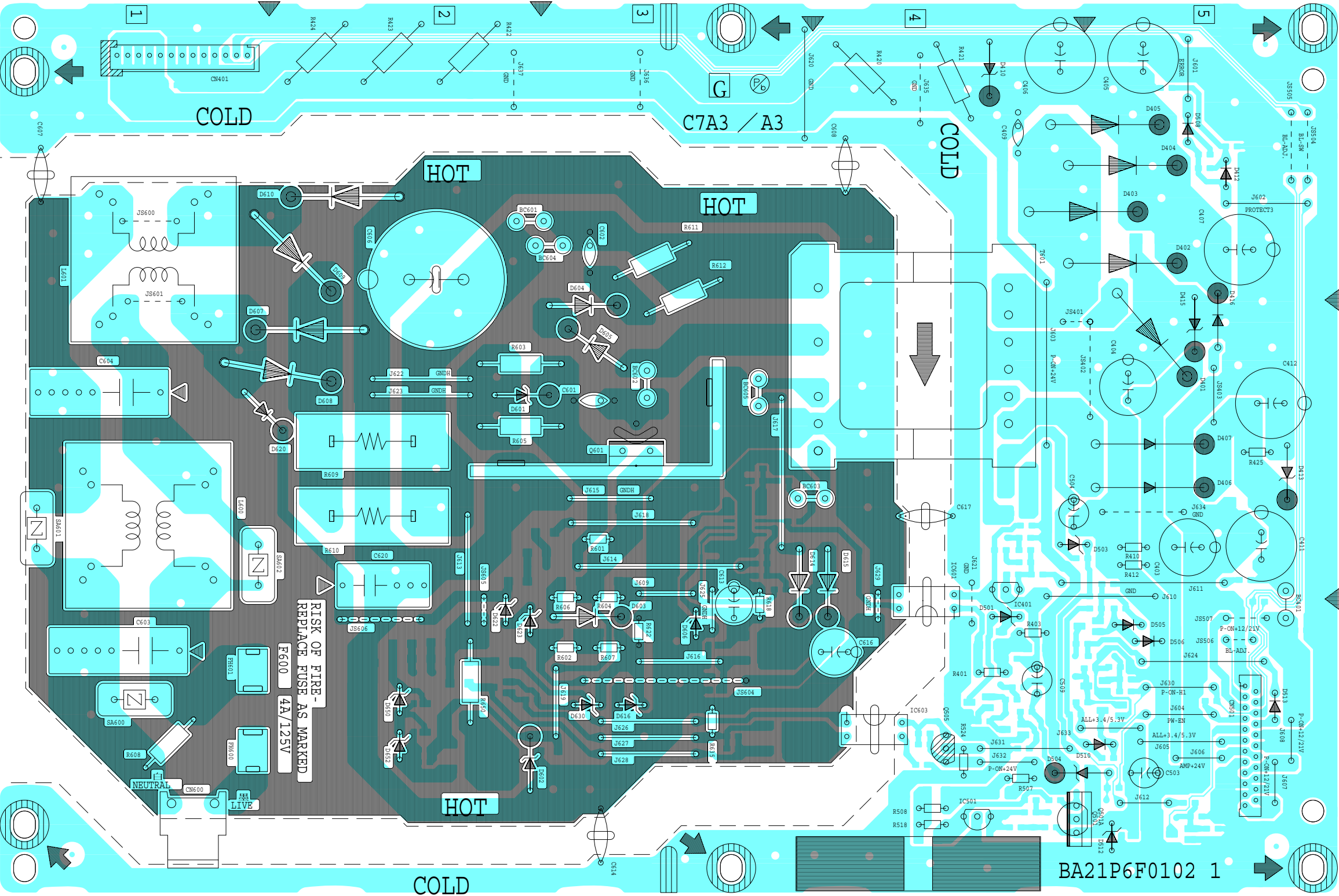
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F600) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power 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.

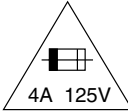
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing.
Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.

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



Power Supply CBA Bottom View

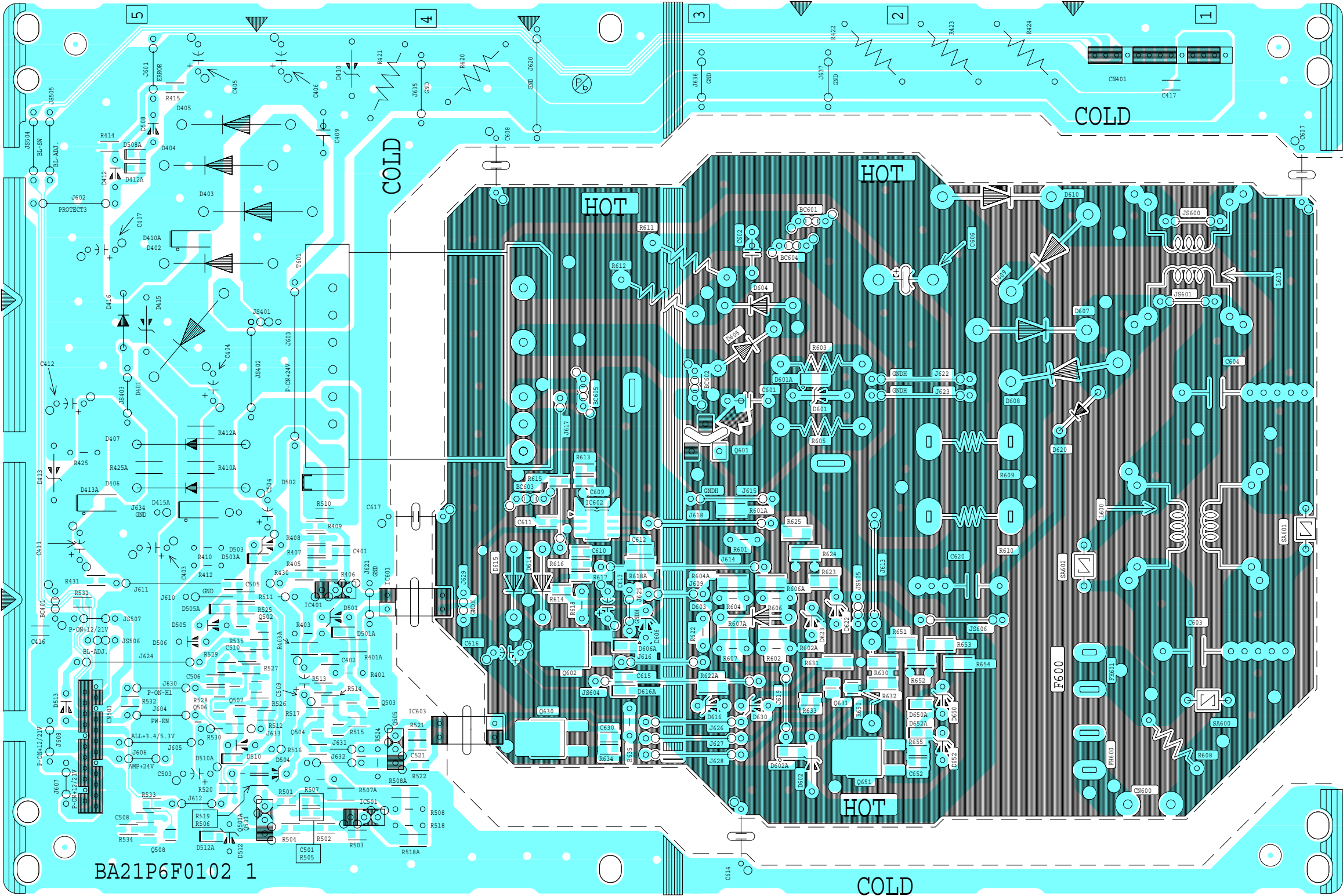
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F600) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



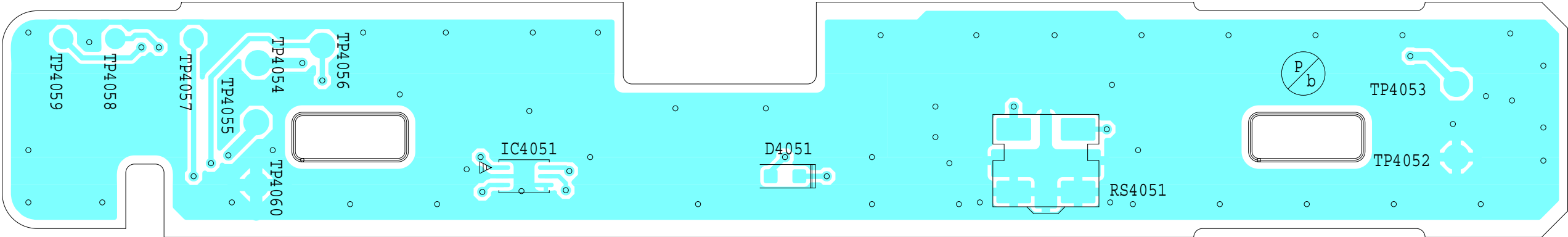
CAUTION ! : For continued protection against risk of fire,
replace only with same type 4A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

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.

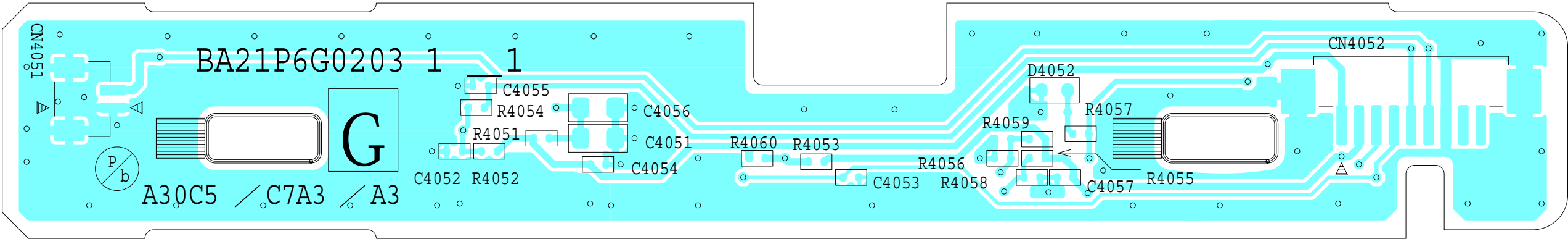
NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



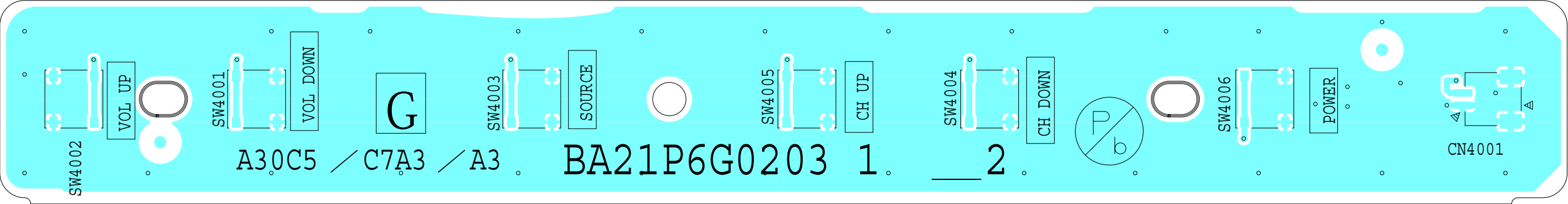
IR Sensor CBA Top View



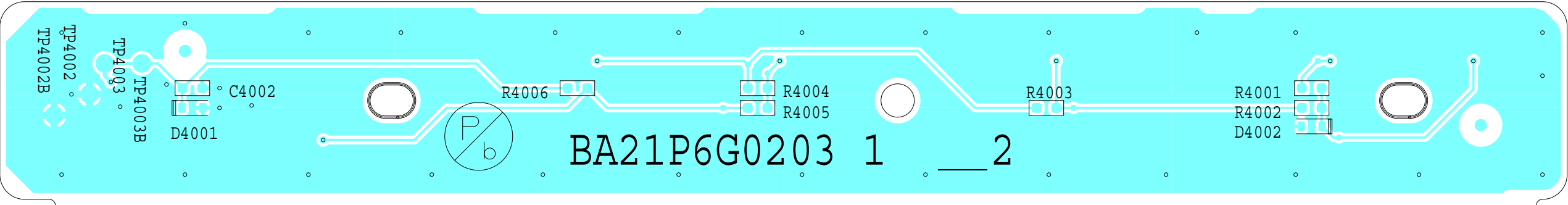
IR Sensor CBA Bottom View



Function CBA Top View

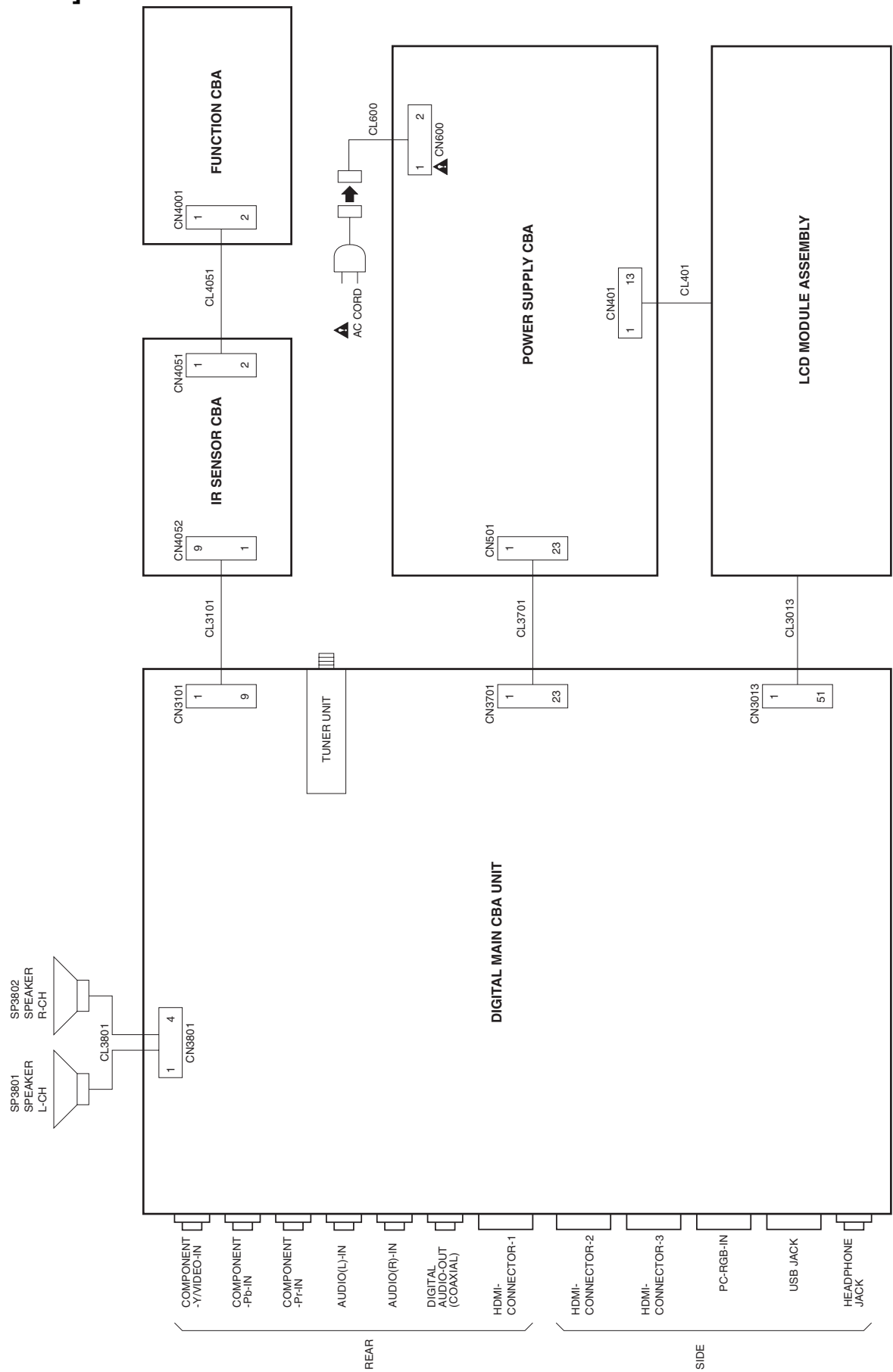


Function CBA Bottom View

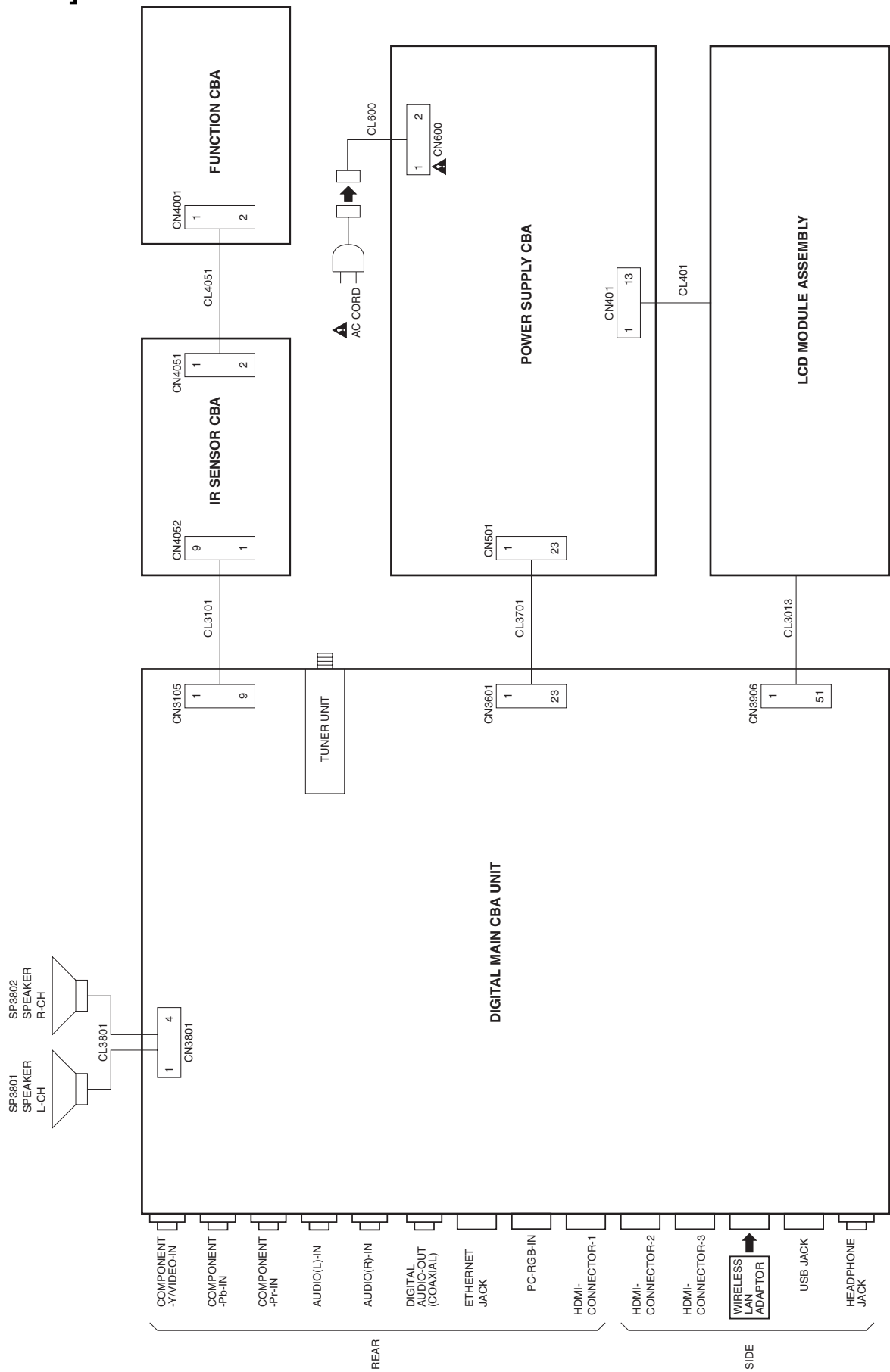


WIRING DIAGRAMS

[TYPE A]

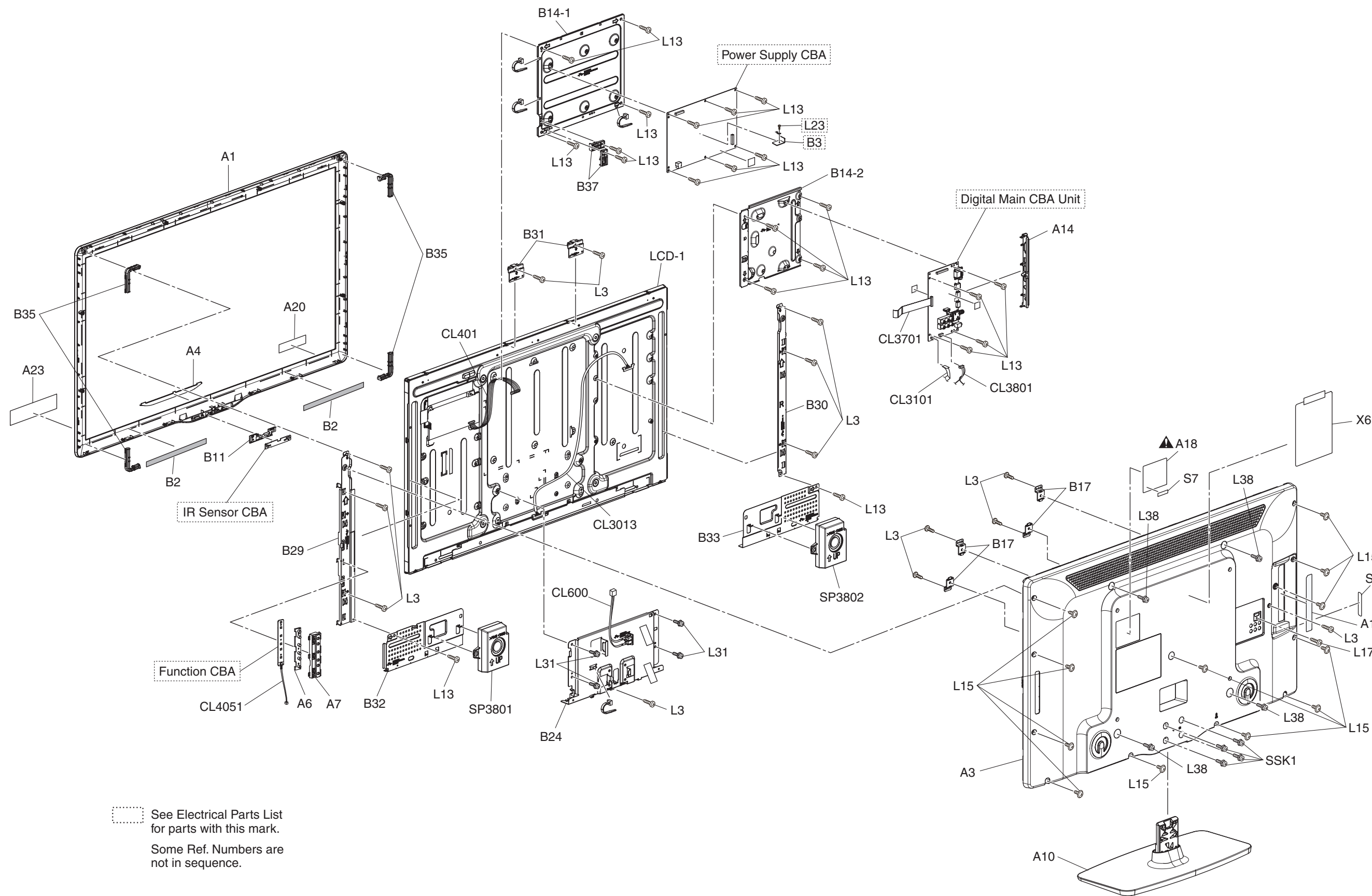


[TYPE B]

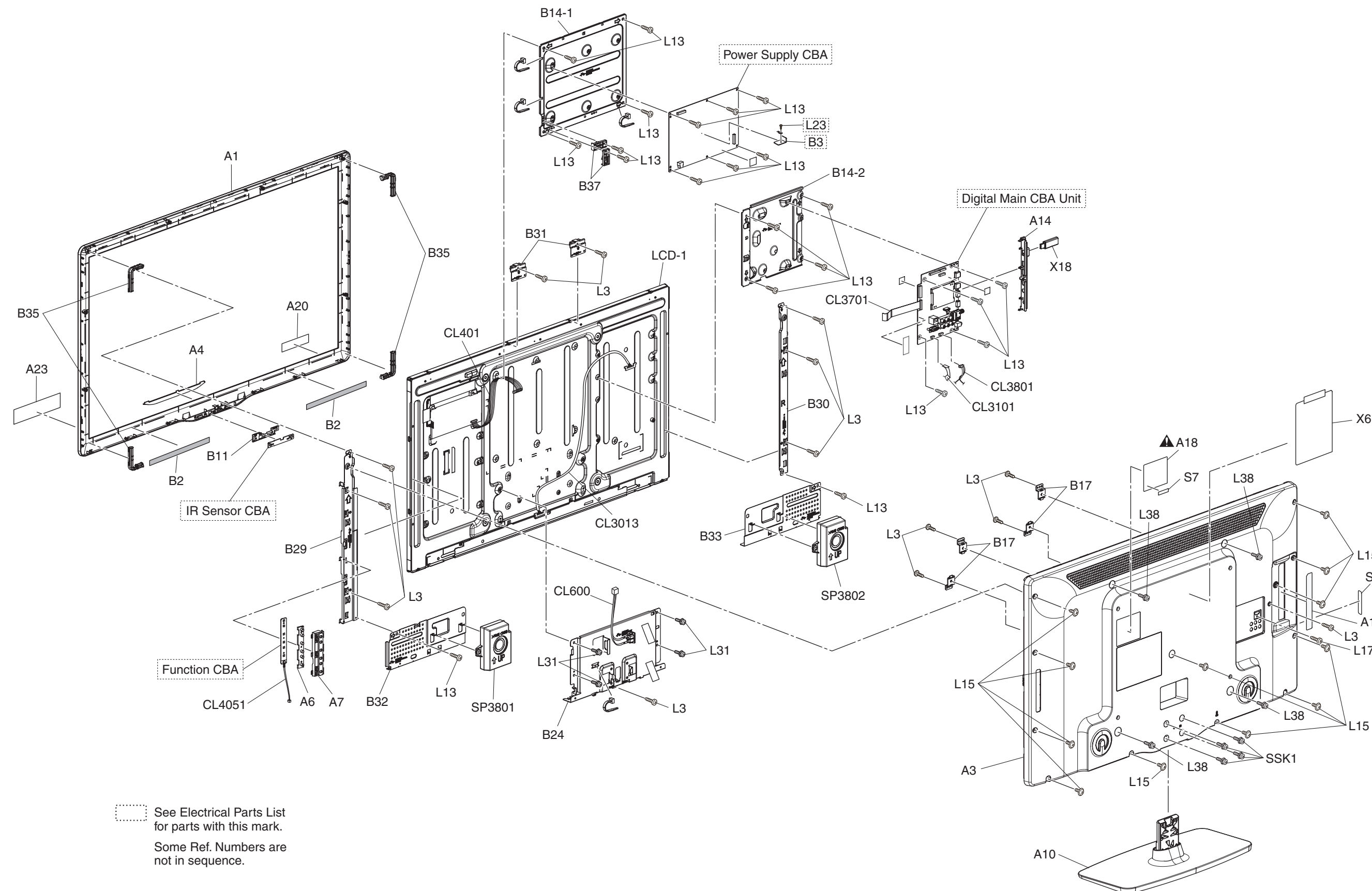


EXPLODED VIEWS

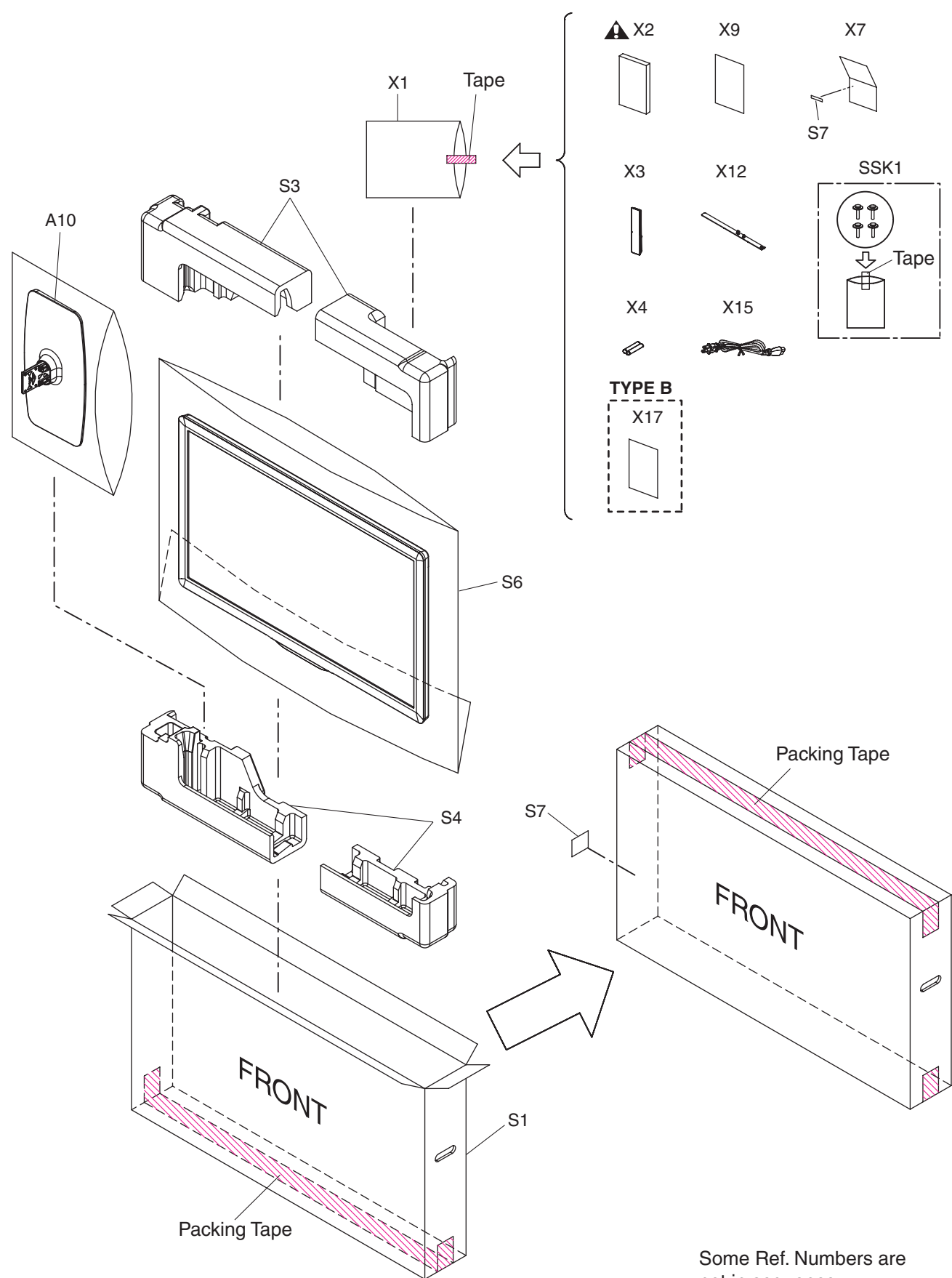
[TYPE A]



[TYPE B]



Packing



Some Ref. Numbers are not in sequence.

PARTS LIST

[40PFL4707/F7 (Serial No.: DS1), 40PFL4707/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.
A1	FRONT CABINET A11P4UH	1EM026865
A3	REAR CABINET A21P6UH	1EM028001
A4	DECORATION PANEL A11P4UH	1EM225283
A6	FUNCTION BUTTON A11P4UH	1EM329857
A7	KNOB FRAME A21P6UH	1EM227000
A10	40W5000 STAND ASSEMBLY A17P5UH	1EM027409
A14	JACK HOLDER A21P6UH	1EM227283
A16	JACK LABEL A21P6UH	1EM438139
A18 	RATING LABEL A21P6UH	-----
A20	LOGO LABEL A21P6UH	-----
A23	ENERGY GUIDE LABEL A21P6UH	-----
B2	CLOTH(10X180XT0.5) L0336JG	0EM408827
B11	SHIELD PLATE A11P4UH	1EM329858
B14-1	POWER PCB HOLDER A21P6UH	1EM127004
B14-2	DIGITAL PCB HOLDER A21P6UH	1EM127001
B17	WALL MOUNT BRACKET M6 A21U0UD	1EM332001
B24	STAND BRACKET A21P6UH	1EM028000
B29	PANEL HOLDER L A21P6UH	1EM127002
B30	PANEL HOLDER R A21P6UH	1EM127003
B31	PANEL HOLDER T A21P6UH	1EM332000
B32	SPEAKER HOLDER L A21P6UH	1EM127005
B33	SPEAKER HOLDER R A21P6UH	1EM127006
B35	CORNER BLOCK A A11P6UH	1EM331197
B37	WIRE HOLDER A21P6UH	1EM333397
CL401	WIRE ASSEMBLY 13-14PIN 13-14PIN/330MM	WX1A21P6-301
CL600	WIRE ASSEMBLY 2PIN 2PIN/190MM/WHITE BLA	WX1A21P6-302
CL3013	LVDS WIRE ASSEMBLY 51PIN 51PIN/520MM	WX1A21P6-211
CL3101	WIRE ASSEMBLY 9PIN 9PIN/468MM	WX1A21P6-102
CL3701	WIRE ASSEMBLY 23PIN 23PIN/195MM	WX1A21P6-101
CL3801	WIRE ASSEMBLY 4PIN 4PIN/575MM&110MM&100	WX1A21P6-313
CL4051	WIRE ASSEMBLY 2PIN 2PIN/540MM	WX1A21P6-304
L3	SCREW P-TIGHT 3X10 BIND HEAD+	GBHP3100
L13	SCREW S-TIGHT M3X6 BIND HEAD+	GBJS3060
L15	SCREW S-TIGHT M3X6	GCHS3060
L17	SCREW S-TIGHT M3X8 BIND HEAD+	GBHS3080
L31	SCREW SEMS M4X8 PAN HEAD +	FPJ34080
L38	DOUBLE SEMS SCREW M6X14 A11Q5UD	1EM434417
SSK1	STAND SCREW KIT A21P6UH	1ESA32012
LCD-1	TFT-LCD MODULE 40W 60HZ LTA400HM21	UDULCD0SM039

Ref. No.	Description	Part No.
SP3801	SPEAKER MAGNETIC BOX 8OHM/10W SB-05F71B	DS08050XQ015
SP3802	SPEAKER MAGNETIC BOX 8OHM/10W SB-05F71B	DS08050XQ015
PACKING		
S1	CARTON A21P6UH	1EM333097
S3	STYROFOAM TOP A21P6UH	1EM029465
S4	STYROFOAM BOTTOM A21P6UH	1EM029466
S6	SET BAG A17P5UH	1EM331778
S7	SERIAL NO. LABEL A01PBUH	-----
ACCESSORIES		
X1	POLYETHYLENE BAG HDPE 180X340XT0.03	1EM435579
X2 	OWNERS MANUAL A21P6UH	1EMN29499
X3	REMOTE CONTROL TRANSMITTER YKF259-001	URMT34JHG001
X4	BATTERY R03-B500/01S	XB0M451CZB01
X6	QUICK START GUIDE A21P6UH	1EMN29500
X7	REGISTRATION CARD(PHILIPS) A11P4UH	1EMN27321
X9	BROCHURE (PHILIPS) A01N2UH	1EMN26419
X12	CABLE MANAGEMENT TIE(BLACK) A01F2UH	1EM431197
X15	CORD W/O A GND WIRE UL/CSA/ 162/NO/BLACK	WAV0162LW001

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	A21P6MMA-001

POWER SUPPLY CBA

Ref. No.	Description	Part No.
	POWER SUPPLY CBA Consists of the following	A21P6MPW-001
CAPACITORS		
C401	CHIP CERAMIC CAP.(1608) B K 0.1µF/50V	CHD1JK30B104
C403	ELECTROLYTIC CAP. 470µF/35V M	CE1GMZNDL471
C404	ELECTROLYTIC CAP. 470µF/35V M	CE1GMZNDL471
C405	ELECTROLYTIC CAP. 1000µF/35V M	CE1GMZNDL102
C406	ELECTROLYTIC CAP. 1000µF/35V M	CE1GMZNDL102
C409	CAP CERAMIC HV 2200pF/1KV B K	CA3A222TE006
C411	ELECTROLYTIC CAP. 2200µF/16V M	CE1CMZNDL222
C412	ELECTROLYTIC CAP. 2200µF/16V M	CE1CMZNDL222
C416	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C417	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C501	CHIP CERAMIC CAP.(1608) B K 0.1µF/50V	CHD1JK30B104
C503	CAP ELE 100µF/10V/M/85	CEB1010V8006
C504	CAP ELE 1µF/50V/M/85	CEF1R00V8006
C505	CHIP CERAMIC CAP. B K 1200pF/50V	CHD1JK30B122
C601	CERAMIC CAP. 470pF/2KV	CA3D471PAN04
C602	CAP CERAMIC HV 2200pF/1KV B K	CA3A222TE006
C603 	CAP METALIZED FILM MPX-224K27B15L3	CT2E224EUR01
C604 	CAP METALIZED FILM MPX-224K27B15L3	CT2E224EUR01
C606	CAP ELECTROLYTIC 470µF/200V/M	CEA471DYG018
C607 	SAFTY CAP. 1000pF/250V KX	CA2E102MR101
C608 	SAFTY CAP. 1000pF/250V KX	CA2E102MR101
C609	CHIP CERAMIC CAP. B K 220pF/50V	CHD1JK30B221
C610	CHIP CERAMIC CAP. CH J 150pF/50V	CHD1JJ3CH151
C611	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C612	CHIP CERAMIC CAP.(2125) F Z 1µF/50V	CHE1JZ30F105
C613	CAP ELE 47µF/50V/M/85	CEF4700V8006
C615	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C616	CAP ELE 100µF/50V/M/85	CEF1010V8006
C617 	CAP CERAMIC 470pF/250V KX	CA2E471MR100

Ref. No.	Description	Part No.
C652	CHIP CERAMIC CAP.(1608) B K 0.1µF/50V	CHD1JK30B104
CONNECTORS		
CN401	CONNECTOR BASE TOP 13P B13B-PH-K-S(LF)(SN)	J3PHC13JG029
CN501	FFC CONNECTOR IMSA-9615S-23A-PP-A	JC96J23ER007
CN600 	CONNECTOR S2P3-VH (LF)(SN)	JCVHC02JG002
DIODES		
D401	DIODE SHOTTKY SB3200BR	NDWZ3200D027
D402	DIODE SHOTTKY SB3200BR	NDWZ3200D027
D403	DIODE SHOTTKY SB3200BR	NDWZ3200D027
D404	DIODE SHOTTKY SB3200BR	NDWZ3200D027
D406	DIODE SCHOTTKY SB3150BH	NDWZ00SB3150
D407	DIODE SCHOTTKY SB3150BH	NDWZ00SB3150
D410 	DIODE ZENER 1ZB30BB	NDWZ0001ZB30
D412	DIODE SWITCHING HSS4148TE-E	QDTZ0HSS4148
D413 	DIODE ZENER 1ZB20BB	NDWZ0001ZB20
D415 	DIODE ZENER 1ZB30BB	NDWZ0001ZB30
D501	DIODE ZENER 5V6BSB-T26	NDTB5R6BST26
D502	DIODE FAST RECOVERY SMD GR1G	ND1Z00GR1GTR
D503	DIODE ZENER 5V6BSB-T26	NDTB5R6BST26
D504	DIODE ZENER 1ZB220-YBB	NDWZ01ZB220Y
D505	DIODE SWITCHING HSS4148TE-E	QDTZ0HSS4148
D506	WIRE CP STP-S-0.50	XZ40FOREN001
D510	WIRE CP STP-S-0.50	XZ40FOREN001
D512	DIODE ZENER 3V9BSB-T26	NDTB3R9BST26
D513	WIRE CP STP-S-0.50	XZ40FOREN001
D601	DIODE ZENER 1ZB36BB	NDWZ0001ZB36
D602	DIODE ZENER 1ZB27BB	NDWZ0001ZB27
D603	DIODE FAST RECOVERY FR103-B/P	NDWZ0FR103BP
D604	DIODE FAST RECOVERY FR105-B/P	NDWZ0FR105BP
D605	DIODE FAST RECOVERY FR105-B/P	NDWZ0FR105BP
D606	DIODE ZENER 27BSB-T26	NDTB027BST26
D607 	DIODE 1N5406BH	NDL1001N5406
D608 	DIODE 1N5406BH	NDL1001N5406
D609 	DIODE 1N5406BH	NDL1001N5406
D610 	DIODE 1N5406BH	NDL1001N5406
D614 	DIODE FR104-B	NDLZ000FR104
D615 	DIODE FR104-B	NDLZ000FR104
D616	DIODE ZENER 20BSB-T26	NDTB020BST26
D650	DIODE ZENER 36BSB-T26	NDTB036BST26
D652	DIODE ZENER 33BSB-T26	NDTB033BST26
ICS		
IC401	IC SHUNT REGULATOR SL431A-AT	NSZBA0TAUK01
IC501	IC SHUNT REGULATOR SL431A-AT	NSZBA0TAUK01
IC601 	IC PHOTOCOUPLER TLP781F(D4-FUNBLL F)	QPEL781FBLLF
IC602	IC SWITCHING FA5640N-C6-TE3/SOP-8	QSCA0T0FD007
COILS		
L600 	COIL LINE FILTER ST1011ET28H-015/19MH	LLEG0Z0Y2031
L601 	COIL LINE FILTER ST1011ET28H-015/19MH	LLEG0Z0Y2031
TRANSISTORS		
Q501	TRANSISTOR 2SC2120-Y(Te2 F T)	QQSY2SC2120F
Q502	CHIP TRANSISTOR KTC3875S-YRTK/P	NQ1YKTC3875S
Q503	CHIP TRANSISTOR KTC3875S-YRTK/P	NQ1YKTC3875S
Q504	CHIP TRANSISTOR KTC3875S-YRTK/P	NQ1YKTC3875S
Q506	CHIP TRANSISTOR KTC3875S-YRTK/P	NQ1YKTC3875S
Q507	CHIP TRANSISTOR KTC3875S-YRTK/P	NQ1YKTC3875S
Q601 	FET MOS TK10A50D	QFWZTK10A50D
Q602	FET 2SK3498(T6L1FUNANQ	QF1Z02SK3498
Q651 	FET 2SK3498(T6L1FUNANQ	QF1Z02SK3498

Ref. No.	Description	Part No.
RESISTORS		
R401	RES CARBON FILM T 1/4W J 120 Ω	RCX4121T1001
R403	RES CARBON FILM T 1/4W J 120 Ω	RCX4121T1001
R405	RES CHIP 1608 1/10W J 1.0k Ω	RRXA102HH013
R406	RES CHIP 1608 1/10W F 3.30k Ω	RTW3301HH008
R407	RES CHIP 1608 1/10W F 5.60k Ω	RTW5601HH008
R408	RES CHIP 1608 1/10W F 39.0k Ω	RTW3902HH008
R409	RES CHIP 1608 1/10W J 3.3k Ω	RRXA332HH013
R410	RES CARBON FILM T 1/4W J 22k Ω	RCX4223T1001
R414	RES CHIP 1608 1/10W J 6.8k Ω	RRXA682HH013
R415	RES CHIP 1608 1/10W J 56k Ω	RRXA563HH013
R420	METAL OXIDE FILM RES. 2W J 1.2k Ω	RN02122ZU001
R421	METAL OXIDE FILM RES. 2W J 1.2k Ω	RN02122ZU001
R422	METAL OXIDE FILM RES. 2W J 1.2k Ω	RN02122ZU001
R423	METAL OXIDE FILM RES. 2W J 1.2k Ω	RN02122ZU001
R425	RES CARBON FILM T 1/4W J 10k Ω	RCX4103T1001
R430	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R431	RES CHIP 1608 1/10W F 39.0k Ω	RTW3902HH008
R501	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R502	RES CHIP 1608 1/10W F 100 Ω	RTW1000HH008
R503	RES CHIP 1608 1/10W F 10.0k Ω	RTW1002HH008
R504	RES CHIP 1608 1/10W F 3.60k Ω	RTW3601HH008
R505	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R506	RES CHIP 1608 1/10W J 10 Ω	RRXA100HH013
R507	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R508	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R510	RES CHIP 1608 1/10W J 1.0 Ω	RRXA1R0HH013
R511	RES CHIP 1608 1/10W F 20.0k Ω	RTW2002HH008
R512	RES CHIP 1608 1/10W F 15.0k Ω	RTW1502HH008
R513	RES CHIP 1608 1/10W J 47k Ω	RRXA473HH013
R514	RES CHIP 1608 1/10W J 47k Ω	RRXA473HH013
R515	RES CHIP 1608 1/10W J 47k Ω	RRXA473HH013
R516	RES CHIP 1608 1/10W J 47k Ω	RRXA473HH013
R517	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R518	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R519	RES CHIP 1608 1/10W J 10 Ω	RRXA100HH013
R520	RES CHIP 1608 1/10W J 10k Ω	RRXA103HH013
R525	RES CHIP 1608 1/10W F 15.0k Ω	RTW1502HH008
R526	RES CHIP 1608 1/10W J 22k Ω	RRXA223HH013
R527	RES CHIP 1608 1/10W J 22k Ω	RRXA223HH013
R528	RES CHIP 1608 1/10W J 22k Ω	RRXA223HH013
R529	RES CHIP 1608 1/10W J 22k Ω	RRXA223HH013
R532	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R535	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
R601	RES CARBON FILM T 1/4W J 4.7k Ω	RCX4472T1001
R602	RES CARBON FILM T 1/4W J 8.2k Ω	RCX4822T1001
R603	METALOXIDE RES 2W J 0.15OHM	RNJR15PAK002
R604	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R605	METALOXIDE RES 2W J 0.15OHM	RNJR15PAK002
R606	RES CARBON FILM T 1/4W J 47 Ω	RCX4470T1001
R607	RES CARBON FILM T 1/4W J 8.2k Ω	RCX4822T1001
R608▲	RES. CARBON FILM J 1/2W J 1.2M Ω	RCX125T1003
R609▲	CEMENT RESISTOR 5W J 2.2 Ω H 10MM	RW052R2PAK10
R610▲	CEMENT RESISTOR 5W J 2.2 Ω H 10MM	RW052R2PAK10
R611	METAL OXIDE FILM RES. 2W J 100k Ω	RN02104ZU001
R612	METAL OXIDE FILM RES. 2W J 100k Ω	RN02104ZU001
R613	RES CHIP 1608 1/10W J 4.7k Ω	RRXA472HH013
R614	RES CHIP 1608 1/10W J 820k Ω	RRXA824HH013
R615	RES CHIP 1608 1/10W J 22k Ω	RRXA223HH013
R616	RES CHIP 1608 1/10W F 2.70k Ω	RTW2701HH008
R622	RES CARBON FILM T 1/4W J 100k Ω	RCX4104T1001
R623	RES CHIP 3216 1/4W J 15k Ω	RRX4153HH034

Ref. No.	Description	Part No.
R624	RES CHIP 3216 1/4W J 15k Ω	RRX4153HH034
R625	RES CHIP 3216 1/4W J 15k Ω	RRX4153HH034
R650	METAL OXIDE FILM RES. 2W J 47 Ω	RN02470ZU001
R651	RES CHIP 3216 1/4W J 330k Ω	RRX4334HH034
R652	RES CHIP 3216 1/4W J 330k Ω	RRX4334HH034
R653	RES CHIP 3216 1/4W J 330k Ω	RRX4334HH034
R654	RES CHIP 3216 1/4W J 330k Ω	RRX4334HH034
R655	RES CHIP 1608 1/10W J 1.5M Ω	RRXA155HH013
MISCELLANEOUS		
B3	HEAT SINK PLT ASSEMBLY L0700UZ	1EM423290
BC401	WIRE CP STP-S-0.50	XZ40FOREN001
BC601	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC602	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC603	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC604	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC605	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
F600▲	FUSE STC4A125V U/CT	PAGE20CW3402
FH600	FUSE HOLDER MSF-015-RS-SN (B110)	XH001ZOLY001
FH601	FUSE HOLDER MSF-015-RS-SN (B110)	XH001ZOLY001
JS401	WIRE CP STP-S-0.50	XZ40FOREN001
JS504	WIRE CP STP-S-0.50	XZ40FOREN001
JS505	WIRE CP STP-S-0.50	XZ40FOREN001
JS506	WIRE CP STP-S-0.50	XZ40FOREN001
JS507	WIRE CP STP-S-0.50	XZ40FOREN001
JS604	WIRE CP STP-S-0.50	XZ40FOREN001
JS605	WIRE CP STP-S-0.50	XZ40FOREN001
L23	SCREW B-TIGHT D3X8 BIND HEAD+	GBJB3080
SA600▲	SURGE ABSORBER 470V+10PER	NVQZ10D471KB
T601▲	TRANS POWER BCK-35CI	LTT3PCMEK023

FUNCTION ASSEMBLY

Ref. No.	Description	Part No.
	FUNCTION ASSEMBLY Consist of the following	A21P6MSW-001
	FUNCTION CBA IR SENSOR CBA	----- -----

FUNCTION CBA

Ref. No.	Description	Part No.
	FUNCTION CBA Consists of the following	-----
CAPACITOR		
C4002	CHIP CERAMIC CAP.(1608) F Z 0.1 μ F/50V	CHD1JZ30F104
CONNECTOR		
CN4001	CONNECTOR PRINT OSU D/02/R/SM02B-SRSS-TB	J3SH020JG001
DIODE		
D4001	ZENER DIODE MM5Z5V6B	ND1BMM5Z5V6B
RESISTORS		
R4001	RES CHIP 1608 1/10W J 24k Ω	RRXA243HH013
R4002	RES CHIP 1608 1/10W J 7.5k Ω	RRXA752HH013
R4003	RES CHIP 1608 1/10W J 7.5k Ω	RRXA752HH013
R4004	RES CHIP 1608 1/10W J 2.2k Ω	RRXA222HH013
R4005	RES CHIP 1608 1/10W J 2.2k Ω	RRXA222HH013
R4006	RES CHIP 1608 1/10W J 200 Ω	RRXA201HH013
SWITCHES		
SW4001	TACTILE SW. SKRMAAE010	SST0101AL064
SW4002	TACTILE SW. SKRMAAE010	SST0101AL064
SW4003	TACTILE SW. SKRMAAE010	SST0101AL064
SW4004	TACTILE SW. SKRMAAE010	SST0101AL064
SW4005	TACTILE SW. SKRMAAE010	SST0101AL064

Ref. No.	Description	Part No.
SW4006	TACTILE SW. SKRMAAE010	SST0101AL064

IR SENSOR CBA

Ref. No.	Description	Part No.
	IR SENSOR CBA Consists of the following	-----
CAPACITORS		
C4051	CHIP CERAMIC CAP.(2125) B K 10 μ F/6.3V	CHE0KK30B106
C4052	CHIP CERAMIC CAP.(1005) B K 1000pF/50V	CHB1JK30B102
C4053	CHIP CERAMIC CAP.(1005) F Z 0.1 μ F/16V	CHB1CZ30F104
C4054	CHIP CERAMIC CAP.(1005) F Z 0.1 μ F/16V	CHB1CZ30F104
C4056	CHIP CERAMIC CAP.(2125) B K 10 μ F/6.3V	CHE0KK30B106
C4057	CHIP CERAMIC CAP.(1005) F Z 0.1 μ F/16V	CHB1CZ30F104
CONNECTORS		
CN4051	CONNECTOR PRINT OSU BM02B-SRSS-TB(LF)(SN)	J3SHD02JG005
CN4052	FFC CONNECTOR 9P 9611S-09Y916	JC96D09ER014
DIODE		
D4051	LED WHITE SMD SMLE12WBC7W1HR	QP1HWBC7W1HR
D4052	RES CHIP 1608 1/10W 0 Ω	RRXA000HH014
IC		
IC4051	IC LIGHT SENSOR PH5502B2NA1-E4	QP1ZPH5502B2
RESISTORS		
R4051	CHIP RES. 1/16W J 56 Ω	RRXG560HH004
R4052	RES CHIP 1005 1/16W J 6.8k Ω	RRXG682HH004
R4053	CHIP RES. 1/16W J 4.7k Ω	RRXG472HH004
R4054	CHIP RES.(1005) 1/16W J 1k Ω	RRXG102HH004
R4056	CHIP RES.(1005) 1/16W J 10k Ω	RRXG103HH004
R4057	RES CHIP 1005 1/16W F 130k Ω	RTV1303HH004
R4058	CHIP RES.(1005) 1/16W J 10k Ω	RRXG103HH004
MISCELLANEOUS		
RS4051	SENSOR REMOTE RECEIVER GP1USC32XP	USEJRS0SH004

REVISION HISTORY

Chassis PL12.3

- 2012/03/06 40PFL4707/F7 (Serial No.: DS1) Added
- 2012/03/29 40PFL4707/F8 (Serial No.: XA1) Added
- 2012/03/19 40PFL4907/F7 (Serial No.: DS1) First Draft Added

COMPARISON LIST OF MODEL NAMES

Chassis PL12.3

40PFL4707/F7	(DS1)	A21P6UH
40PFL4707/F8	(XA1)	A21PAMA
40PFL4907/F7	(DS1)	A27P6UH