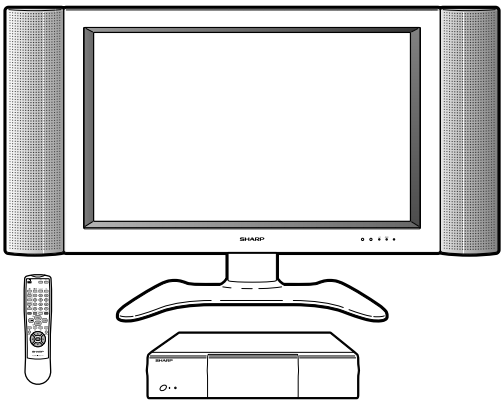
1st Edition

SHARP

SERVICE MANUAL



LCD COLOUR TELEVISION

MODEL LC-30HV4E

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

CONTENTS

SHARP CORPORATION

IMPORTANT SERVICE SAFETY PRECAUTION

■ **Service work should be perfomed only by qualified service technicians who are thoroughly familiar with all safety checks and the servicing guidelines which follow:**

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.

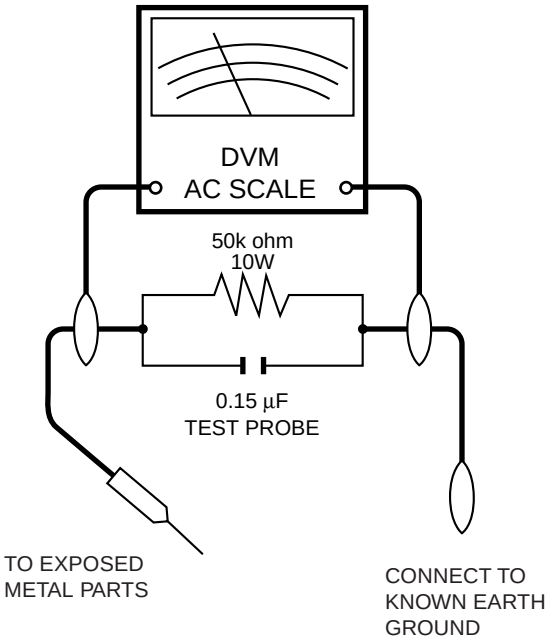
CAUTION: FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE REPLACE ONLY WITH SAME TYPE FUSE.
AVC SIDE: F701 (T2A, 250V), F702 (T2A, 250V), F1702 (T4AL, 250V) FUSE.
LCD SIDE: F1(T3.15AL, 250V), F6551, F6552, F6553, F6554, F6555, F6556 (T2.5AL, 250V)

BEFORE RETURNING THE RECEIVER (Fire & Shock Hazard)

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

1. Inspect all lead dress to make certain that leads are not pinched, and check that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulation materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Plug the AC cord directly into a 110~240 volt AC outlet, and connect the DC power cable into the receiver's DC jack. (Do not use an isolation transformer for this test).
- Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to an earth ground.
- Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity or measure the AC voltage drop across the resisor.
- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.
  All checks must be repeated with the AC cord plug connection reversed. (If necessary, a nonpolarized adaptor plug must be used only for the purpose of completing these checks.)
  Any reading of 35V peak (this corresponds to 0.7 milliamp. peak AC.) or more is excessive and indicates a potential shock hazard which must be corrected before returning the monitor to the owner.



SAFETY NOTICE

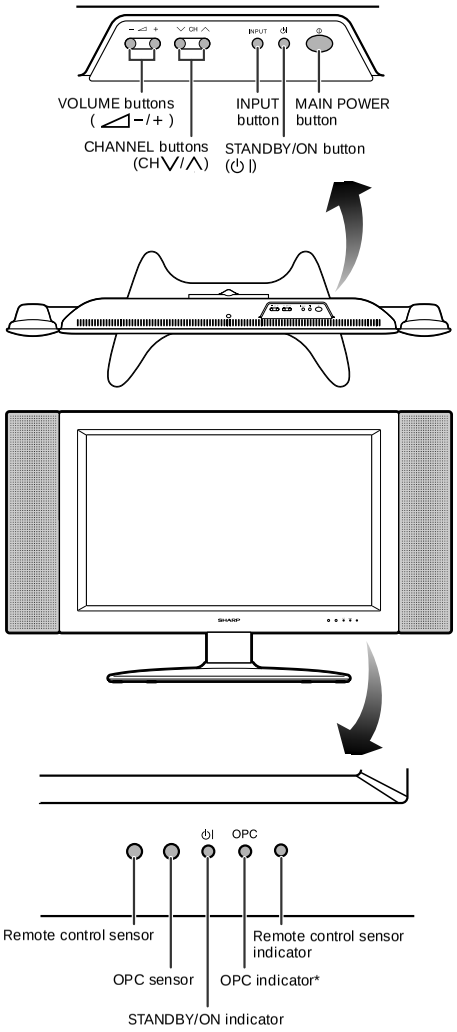
Many electrical and mechanical parts in Plasma Display television have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage, etc.
Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by " ⚠ " and shaded areas in the ***Replacement Parts List*** and ***Schematic Diagrams.***
For continued protection, replacement parts must be identical to those used in the original circuit.
The use of a substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire or other hazards.

SPECIFICATIONS

Item				**30"LCD COLOUR TV, Model:LC-30HV4E**
LCD panel				30"Advanced Super View & BLACK TFT LCD
Number of dots				2,949,120 dots (1280 × 768 × 3 dots)
Video Colour System				PAL/SECAM/NTSC 3.58/NTSC 4.43/PAL 60
TV Function	TV-standard (CCIR)			B/G, D/K, I, L/L'
	Receiving Channel	VHF/UHF		E2–E69ch, F2–F10ch, I21–I69ch, IR A–IR Jch
		CATV		Hyper-band, S1–S41ch
	TV-Tuning System			Auto Preset 99 ch, Auto Label, Auto Sort
	STEREO/BILINGAL			NICAM/IGR
Brightness				430 cd/m^2
Backlight				60,000 hours (at Save1)
Viewing angles				H : 170° V : 170°
Audio amplifier				10W × 2
Speakers				Ø 8 cm 2pcs
Terminals	AVC System	Rear	INPUT 1	SCART (AV in, RGB in, TV out)
			INPUT 2	SCART (AV in/out, S-VIDEO in, AV Link)
			INPUT 3	SCART (AV in/out, S-VIDEO in, RGB in), Component
			ANTENNA	75 Ω Din Type
			AV OUTPUT	Audio (Variable, Fixed), S-VIDEO out, AV out
			DC OUTPUT	DC6.5V 7W MAX
		Front	INPUT 4	S-VIDEO, AV in
			PC	15 Pin mini D-Sub, Audio in (Ø 3.5mm jack)
			Headphones	Ø 3.5mm jack
OSD language				English/German/French/Italian/Spanish/Dutch/Swedish/Portuguese/Greek/ Finnish/Russian/Turkish
Power Requirement				AC 220–240 V, 50/60 Hz
Power Consumption	AVC System			32 W (0.7 W Standby)
	Display			109 W (0.9 W Standby) (Method IEC60107)
Weight	AVC System			5.4 kg (w/o stand), 5.5 kg (with stand)
	Display			15.7 kg (w/o stand), 19.5 kg (with stand)
Accessories				Operation manual, Remote control unit (× 1), System cable (× 1), AC cord (× 2), LR6 ("AA" size) Alkaline battery (× 2), Stand unit (× 1), Cable clamp (× 1)

Part names

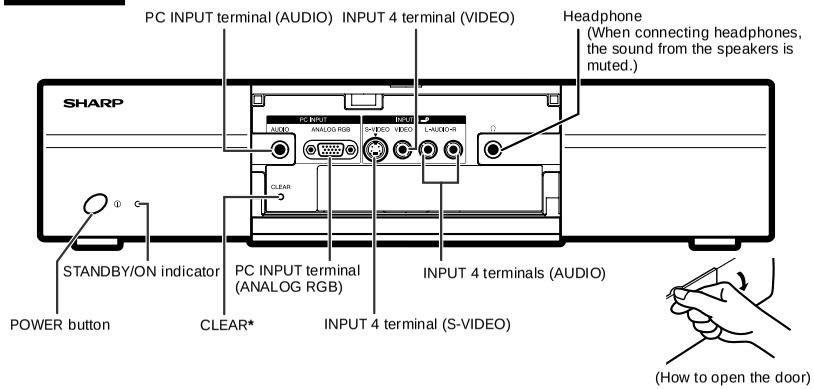
Display



*OPC: Optical Picture Control
(See Pages 36 and 38.)

AVC System

Front view

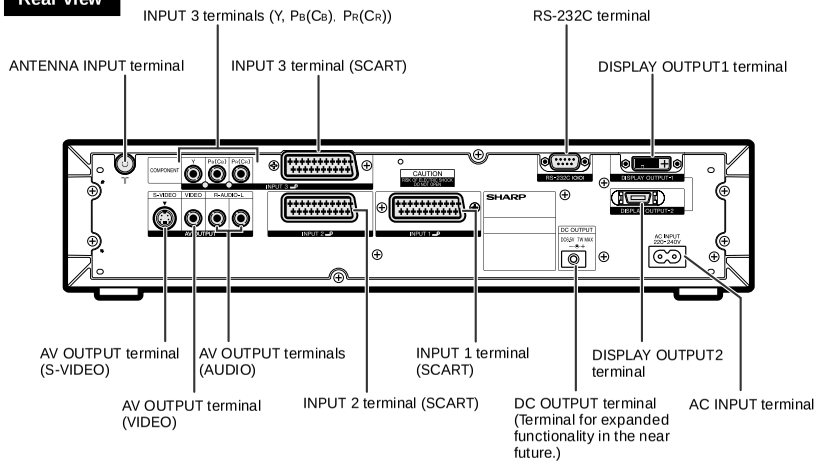


* If the AVC System is switched on but it does not appear to be operating correctly, it may need resetting. In this case, press **CLEAR**, shown in the diagram, lightly with the end of a ballpoint pen or other pointed object. This will reset the System as shown below.
  - AV MODE resets to STANDARD.
  - TV channel resets to channel 1.
  - Dual screen resets to normal.
  - Audio setting initialises.
  - SRS resets to OFF.
  - Image position is initialised.

NOTE

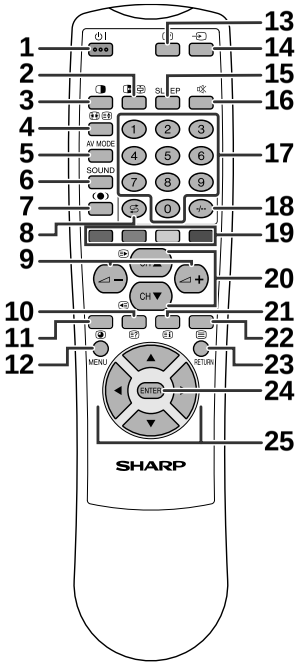
- Pressing **CLEAR** will not work if the System is in standby mode (indicator lights red).
- Pressing **CLEAR** will not delete channel preset or password. See page 60 for clearing the password when you know it. See page for initialising to the factor y preset values when you forget your password.

Rear view



Part names

Remote control unit



1 ⏻ | **(STANDBY/ON)**
To switch the power on and off.

2 **(FREEZE/HOLD for TELETEXT)**
TV/External input mode: Change the still image mode.
TELETEXT mode: Freeze a multi-page on screen while other pages are automatically updated. Press again to return to the normal image.

3 **(DUAL screen)**
Set the dual picture mode. Press again to return to normal view. (See page 61.)

4 **(WIDE MODE/ T/B/F)**
TV/External input mode: Change the wide image mode.

TELETEXT mode: Set the area of magnification. (full/upper half/ lower half)

5 **AV MODE**
Select a video setting: AV MODE (STANDARD, DYNAMIC, MOVIE, GAME, USER), PC MODE (STANDARD, USER) (See page 51.)

6 **SOUND**
Select the sound multiplex mode.

7 **( ) (SRS and FOCUS)***
Select SRS and FOCUS sound system.

8 **(Flashback)**
Press to return to the previous channel in normal viewing mode.
Press to return to the previous page in TELETEXT mode.

9 **– / + (VOLUME)**
Set the volume.

10 **(Reveal hidden for TELETEXT)**
TELETEXT mode: Display hidden characters.

11 **(SUBPAGE for TELETEXT)**
TELETEXT mode: Change the picture mode for sub-page selecting.

12 **MENU**
Display the MENU screen.

13 **(CHANNEL INFORMATION)**
Display the channel information and time.

14 **(INPUT SOURCE)**
Select an input source. (TV, INPUT 1, INPUT 2, INPUT 3, INPUT 4, PC)

15 **SLEEP**
Set the Sleep timer.

16 **(MUTE)**
Mute the sound.

17 **0 – 9**
TV/External input mode: Set the channel.
TELETEXT mode: Set the page.

18 **-/-- (Digit for channel select)**
Change the digits of the selected TV channel.

19 **Colour (RED/GREEN/YELLOW/BLUE)**
TELETEXT mode: Select a page.

20 **CH▲/CH▼(/)**
TV/External input mode: Select the channel.
TELETEXT mode: Set the page.

21 **(TOP Overview for TELETEXT)**
TELETEXT mode: Display an index page for CEEFAX/FLOF information. TOP Overview for TOP programme.

22 **(TELETEXT)**
Select the TELETEXT mode. (all TV image, all TEXT image, TV/TEXT image)

23 **RETURN**
MENU mode: Return to the previous menu screen.

24 **ENTER**
Execute a command.
Return to the initial image position after moving with ▲/▼/◄/►.

25 **▲/▼/◄/► (Cursor)**
Select a desired item on the setting screen.
Move the picture on the screen.

NOTE

- When using the remote control unit, point it at the Display.

* SRS FOCUS is a trademark of SRS Labs, Inc. FOCUS technology is incorporated under license from SRS Labs, Inc.

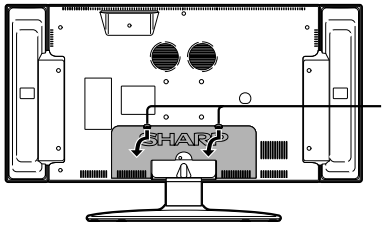
Part names

Setting the System

After putting the Display and the AVC System in place, connect the system cables and AC cords. Use the cable clamp for bundling the cables.

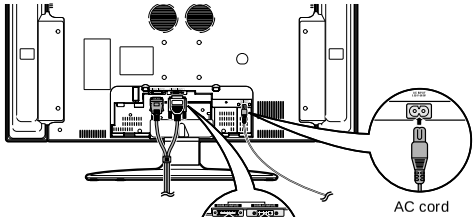
1 **Removing the terminal cover**

Display (rear view)



Press down the two upper hooks to remove the cover toward you.

2 **Connecting the system cable and the AC cord to the Display**



AC cord

(GREY)
Connect the plug firmly until the hooks on both sides click.

(WHITE)
Connect the plug into the terminal and secure it by tightening the thumb screws.

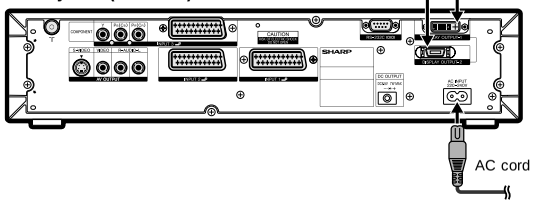
System cable

3 **Connecting the system cable and the AC cord to the AVC System**

System cable

(GREY) (WHITE)

AVC System (rear view)

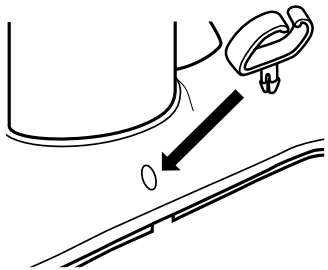


AC cord

CAUTION

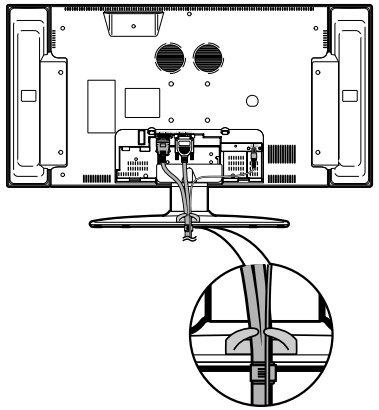
- **TO PREVENT RISK OF ELECTRIC SHOCK, DO NOT TOUCH UN-INSULATED PARTS OF ANY CABLES WITH THE AC CORD CONNECTED.**

4 **Attaching the clamp to the leg of the Display**

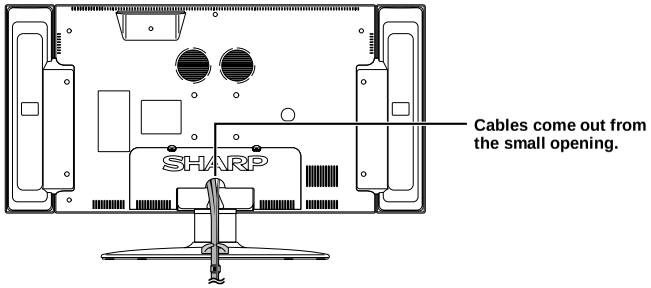


5 **Bundling the cables with the clamp**

Display (rear view)



6 **Closing the terminal cover**



Cables come out from the small opening.

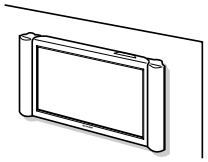
Setting the Display on the wall

Using an optional bracket to mount the Display

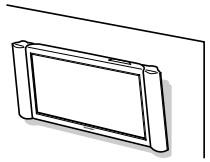
- You can ask a qualified service personnel about using an optional AN-37AG1 bracket to mount the Display to the wall.
- Carefully read the instructions that come with the bracket before beginning work.

Hanging on the wall

AN-37AG1 wall mount bracket. (See the bracket instructions for details.)



Vertical mounting



Angular mounting

CAUTION

- Installing the LCD Colour TV requires special skill that should only be performed by qualified service personnel. Customers should not attempt to do the work themselves. SHARP bears no responsibility for improper mounting or mounting that results in accident or injury.

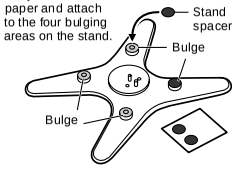
Setting the AVC System with the stand

How to install the AVC System vertically using the stand unit.

- Use the supplied stand unit for installing the AVC System vertically in an upright position.

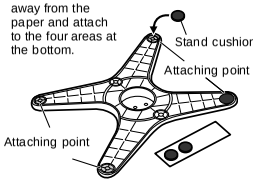
1 **Stick each spacer to the stand as shown.**

Peel each spacer away from the paper and attach to the four bulging areas on the stand.



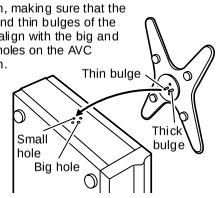
2 **Attach each cushion to the stand as shown.**

Peel each cushion away from the paper and attach to the four areas at the bottom.

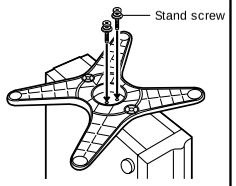


3 **Fit the stand to the AVC System.**

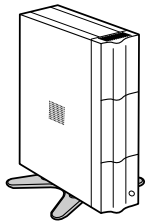
Insert the stand into the AVC System, making sure that the thick and thin bulges of the stand align with the big and small holes on the AVC System.



4 **Attach the stand using the stand screws as shown.**



The AVC System installed vertically with the stand.

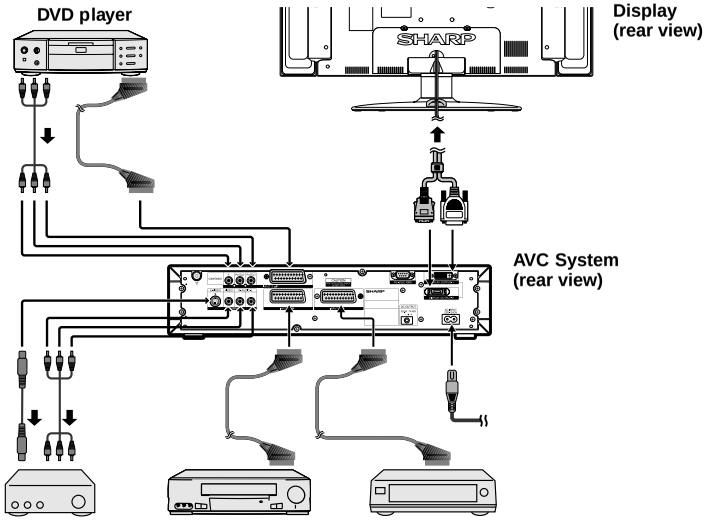


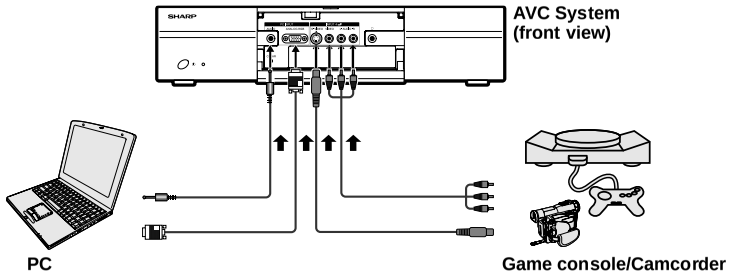
NOTE

- When mounting the AVC System vertically, always use the supplied stand. Be careful not to block vent holes when standing up directly on the floor or a flat surface as this can result in equipment failure.

Using external equipment

You can connect many types of external equipment to your System, like a decoder, VCR, DVD player, PC, game console and camcorder. To view external source images, select the input source from b on the remote control unit or **INPUT** on the Display.





CAUTION

- To protect all equipment, always turn off the AVC System before connecting to a decoder, VCR, DVD player, PC, game console, camcorder or other external equipment.
- The S-video signal only outputs when “INPUT2” or “INPUT3” is selected for “Y/C”, or when from the INPUT 4 terminal (S-VIDEO). Only the S-video signal can output from the INPUT 4 terminal (S-VIDEO).

NOTE

- Please refer to the relevant operation manual (DVD player, PC, etc.) carefully before making connections.

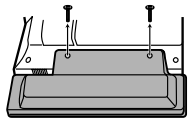
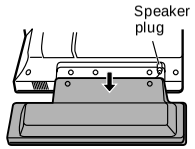
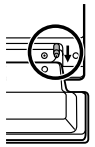
Removing the speakers

This unit has detachable type speakers.

You can detach the system speakers when using external amplifier/speakers.
Before detaching (or attaching) speakers, unplug the AC cord from the AC outlet.

Before attaching/detaching speakers

- Before performing work make sure to turn off the System.
- Before performing work spread cushioning over a flat surface to lay the Display on. This will prevent it from being damaged.

1	2	3
		
Unfasten the screws used to secure the speakers in place.	Take hold of the speaker and slowly slide it sideways. (The speaker plug is still inserted, so make sure not to pull the speaker too far.)	Remove the speaker plug from the terminal on the Display. (Do not remove the plug by pulling the cord.) Now the speaker can be detached from the Display.

CAUTION

- The speaker terminals on the Display is only for the attached speakers. Do not connect any third party plug or speaker to the terminal.
- Insert the speaker plug completely into the terminal.
- Do not handle or move the Display by the speakers.

NOTE

- Perform the same steps for both left and right speakers.
- To attach the speakers, perform the above steps in reverse order.

Appendix

RS-232C port specifications

PC Control of the System

- When a program is set, the display can be controlled from the PC using the RS-232C terminal. The input signal (PC/video) can be selected, the volume can be adjusted and various other adjustments and settings can be made, enabling automatic programmed playing.

- Attach an RS-232C cable cross-type (commercially available) to the supplied Din-D/sub RS-232C for the connections.

NOTE

- This operation system should be used by a person who is accustomed to using PC.

Communication conditions

Set the RS-232C communications settings on the PC to match the display's communications conditions. The display's communications settings are as follows:

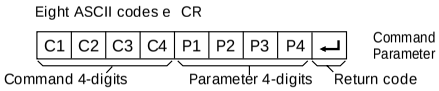
Baud rate:	9,600 bps
Data length:	8 bits
Parity bit:	None
Stop bit:	1 bit
Flow control:	None

Communication procedure

Send the control commands from the PC via the RS-232C connector.
The Display operates according to the received command and sends a response message to the PC.
Do not send multiple commands at the same time. Wait until the PC receives the OK response before sending the next command.

Command format

Eight ASCII codes e CR



Command 4-digits: Command. The text of four characters.
Parameter 4-digits: Parameter 0 – 9, x, blank, ?

Parameter

Input the parameter values, aligning left, and fill with blank(s) for the remainder. (Be sure that four values are input for the parameter.)
When the input parameter is not within an adjustable range, "ERR" returns. (Refer to "Response code format".)
No problem to input any numerical value for "x" on the table.

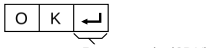
0			
0	0	0	9
–	3	0	
1	0	0	
0	0	5	5

When "?" is input for some commands, the present setting value responds.

?			
?	?	?	?

Response code format

Normal response



Problem response (communication error or incorrect command)

Commands

CONTROL ITEM	COMMAND	PARAMETER	CONTROL CONTENTS
POWER SETTING	POWR	0___	POWER OFF (STANDBY)
INPUT SELECTION A	ITGD	x	INPUT SWITCHING (TOGGLE)
	ITVD	0___	TV (CHANNEL FIXED)
	ITVD	**_	TV (CHANNEL SELCTION) (1 – 99)
	IAVD	*___	INPUT1 – 4 (1 – 4)
	IPCD	x	PC
INPUT SELECTION B	INP1	0___	INPUT1 (CVBS)
	INP1	1___	INPUT1 (RGB)
	INP2	0___	INPUT2 (CVBS)
	INP2	1___	INPUT2 (Y/C)
	INP3	0___	INPUT3 (CVBS)
	INP3	1___	INPUT3 (Y/C)
	INP3	2___	INPUT3 (RGB)
	INP3	3___	INPUT3 (COMPONENT)
AV MODE SELECTION	AVMD	0___	TOGGLE
	AVMD	1___	STANDARD
	AVMD	2___	DYNAMIC
	AVMD	3___	MOVIE
	AVMD	4___	GAME
	AVMD	5___	USER
VOLUME	VOLM	***_	VOLUME (0 – 60)
POSITION	HPOS	***_	H-POSITION (AV) (10 – 10)
	HPOS	***_	H-POSITION (PC) (90 – 90)
	VPOS	***_	V-POSITION (AV) (30 – 30)
	VPOS	***_	V-POSITION (PC) (60 – 60)
	CLCK	***_	CLOCK (90 – 90)
	PHSE	***_	PHASE (20 – 20)

CONTROL ITEM	COMMAND	PARAMETER	CONTROL CONTENTS
WIDE MODE	WIDE	0___	TOGGLE
	WIDE	1___	NORMAL
	WIDE	2___	FULL 14:9
	WIDE	3___	ZOOM 14:9
	WIDE	4___	PANORAMA
	WIDE	5___	FULL
	WIDE	6___	CINEMA 16:9
	WIDE	7___	CINEMA 14:9
	WIDE	8___	NORMAL
	WIDE	9___	FULL
	WIDE	10__	DOT BY DOT
	WIDE	11__	CINEMA
SRS	SRSS	0___	TOGGLE
	SRSS	1___	OFF
	SRSS	2___	SRS
	SRSS	3___	FOCUS
	SRSS	4___	SRS FOCUS
DUAL SCREEN	TWIN	0___	DUAL SCREEN OFF
	TWIN	1___	DUAL SCREEN ON
CHANNEL	DCCH	**_	DIRECT CHANNEL (1 – 99)
	CHUP	x	CHANNEL UP
	CHDW	x	CHANNEL DOWN
TEXT	TEXT	0___	TEXT OFF
	TEXT	1___	TEXT ON (TOGGLE)
	DCPG	***_	DIRECT PAGE JUMP (100 – 899)

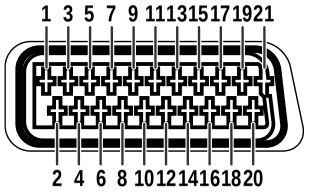
NOTE

- If an underbar (_) appears in the parameter column, enter a space.
- If an asterisk (*) appears, enter a value in the range indicated in brackets under CONTROL CONTENTS.

Appendix

Connecting pin assignments for SCART

Various audio and video devices may be connected via the SCART terminals.



SCART (INPUT 1)

1. Audio right output (TV Monitor out)
2. Audio right input
3. Audio left output (TV Monitor out)
4. Common earth for audio
5. Earth for blue
6. Audio left input
7. Blue input
8. Audio-video control
9. Earth for green
10. Not used
11. Green input
12. Not used
13. Earth for red
14. Not used
15. Red input
16. Red/Green/Blue control
17. Earth for video
18. Earth for Red/Green/Blue control
19. Video output (TV Monitor out)
20. Video input
21. Plug shield

SCART (INPUT 2)

1. Audio right output
2. Audio right input
3. Audio left output
4. Common earth for audio
5. Earth
6. Audio left input
7. Not used
8. Audio-video control
9. Earth
10. AV LINK control
11. Not used
12. Not used
13. Earth
14. Not used
15. Chroma S-Video input
16. Not used
17. Earth for video
18. Earth
19. TV Monitor output
20. Video input/S-video input
21. Plug shield

SCART (INPUT 3)

1. Audio right output
2. Audio right input
3. Audio left output
4. Common earth for audio
5. Earth
6. Audio left input
7. Blue input
8. Audio-video control
9. Earth
10. Not used
11. Green input
12. Not used
13. Earth
14. Not used
15. Red input/Chroma S-Video input
16. Red/Green/Blue control
17. Earth for video
18. Earth
19. TV Monitor output
20. Video input/S-video input
21. Plug shield

Basic adjustment settings

AV input mode menu items

List of AV menu items to help you with operations

Picture

- Contrast
- Brightness
- Colour
- Tint
- Sharpness
- Advanced
  - C.M.S.
  - Colour Temp
  - Black
  - Monochrome
  - Film Mode
  - I/P Setting
  - DNR

Audio

- Treble
- Bass
- Balance
- Surround .

Power control

- Power Save
- No Signal off
- No Operation off

Setup

- Auto Installation
- Programme Setup
- Child Lock
- Position
- WSS
- 4:3 Mode
- Full Mode
- Rotate
- Language

Option

- Input Select
- Audio Out
- Cool Climate
- Colour System

PC input mode menu items

List of PC menu items to help you with operations

Picture

- Contrast
- Brightness
- Red
- Green
- Blue
- C.M.S.

Audio

- Treble
- Bass
- Balance
- Surround

Power control

- Power Save
- Power Management

Setup

- Input Signal
- Auto Sync.
- Fine Sync.
- Rotate
- Language

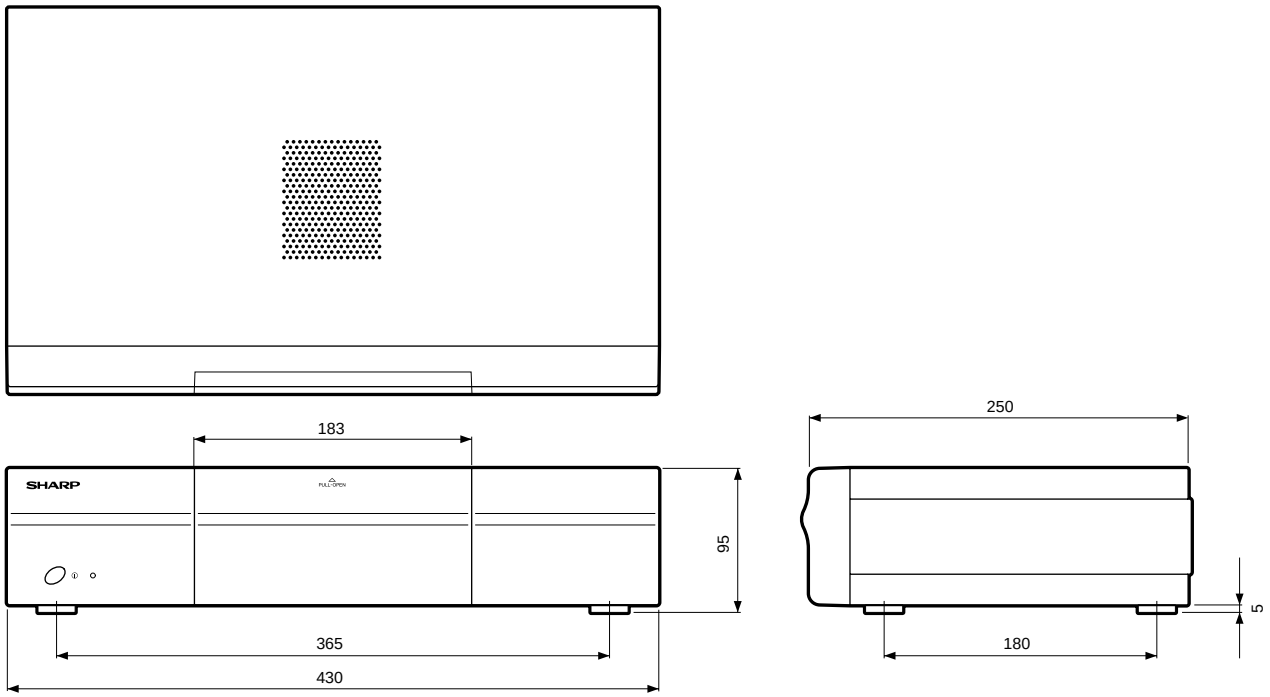
Option

- Audio Out
- Cool Climate

DIMENSIONS

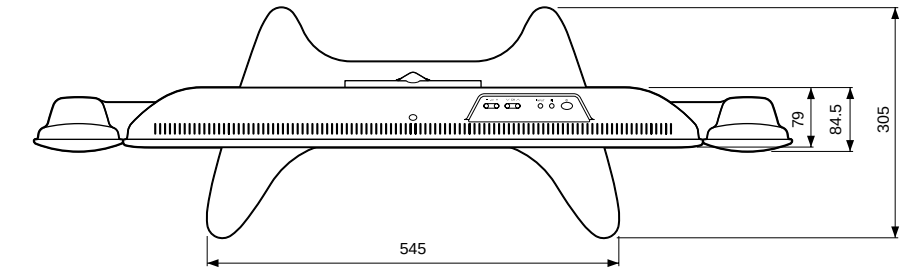
AVC System

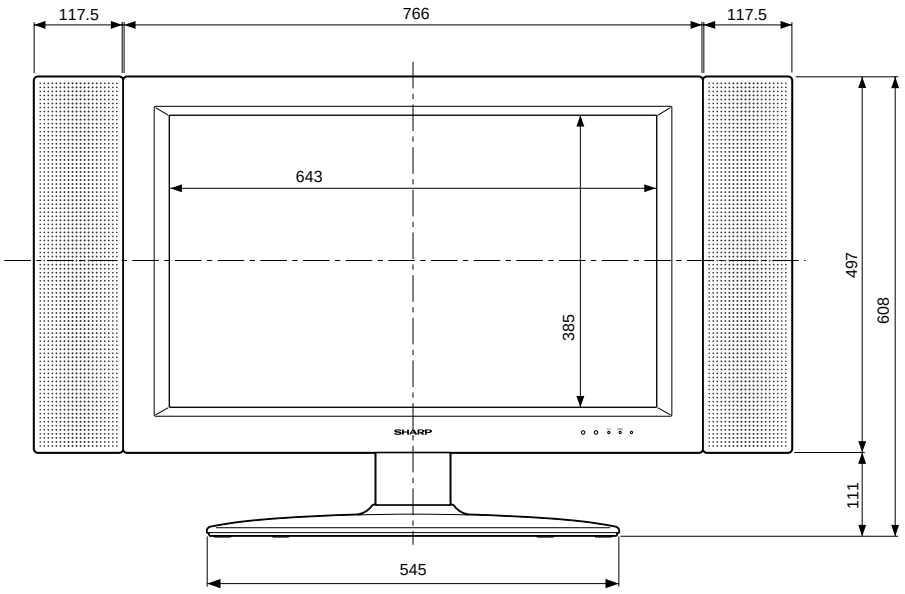
Unit: mm

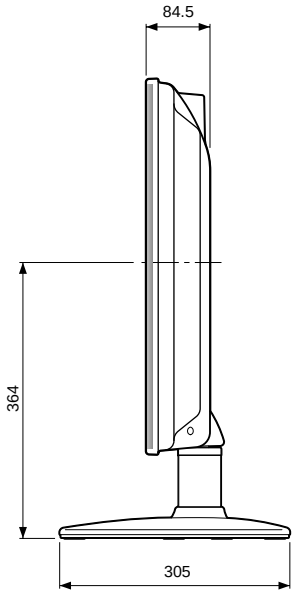


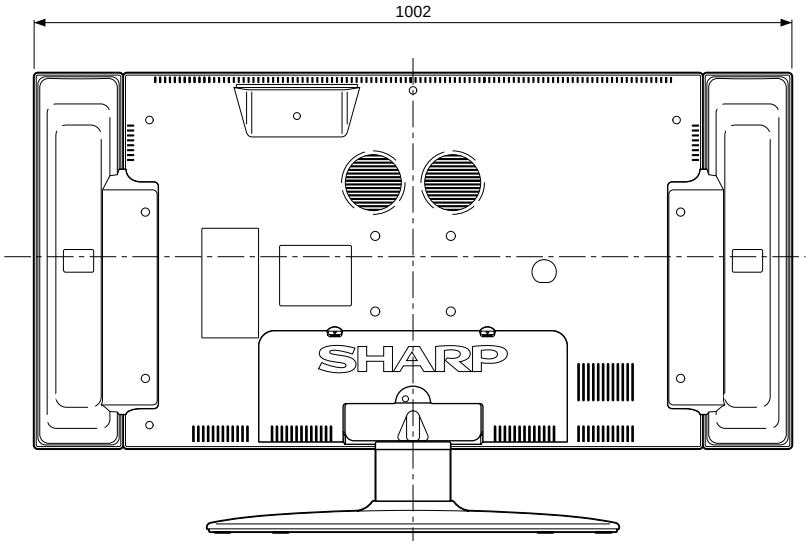
Display

Unit: mm





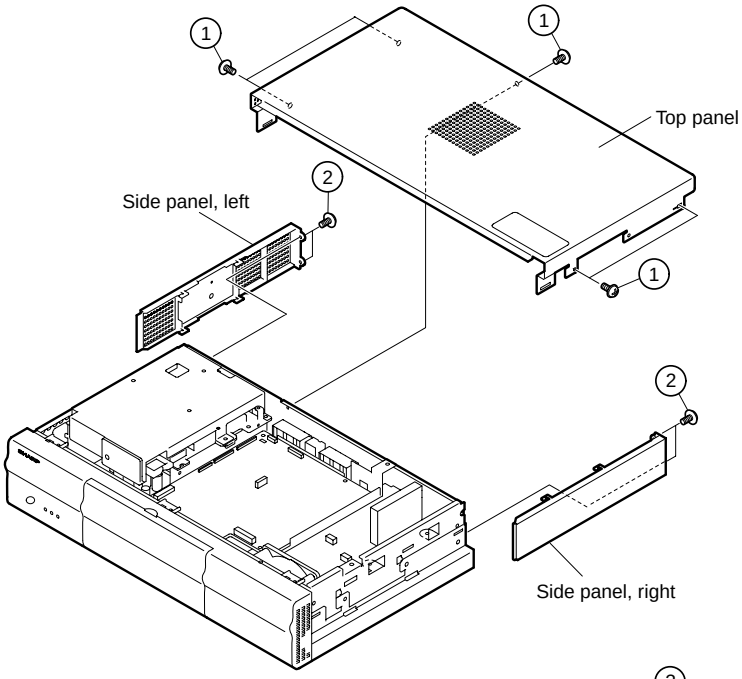


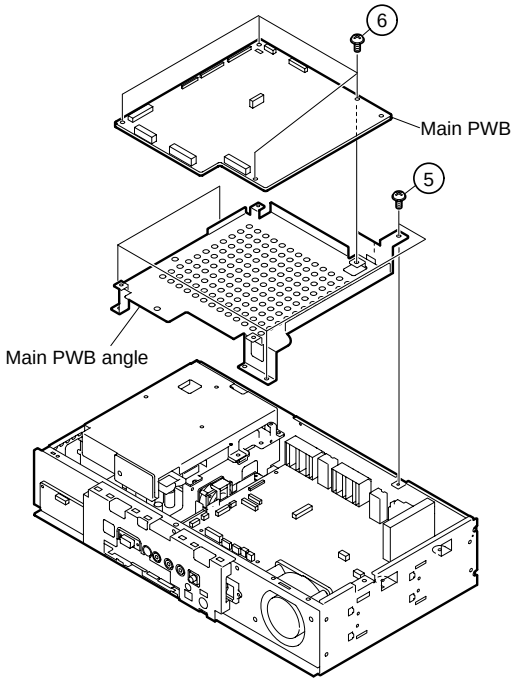


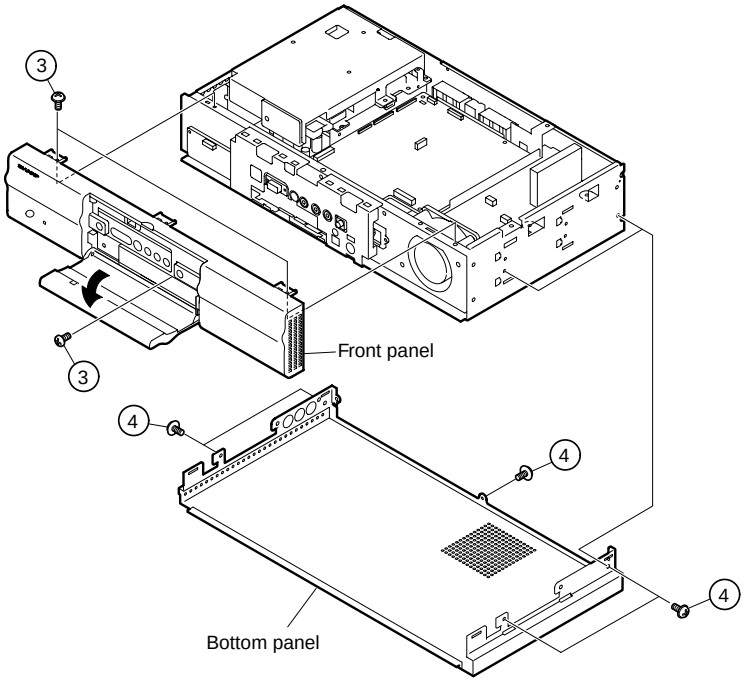
REMOVING OF MAJOR PARTS

■ AVC System

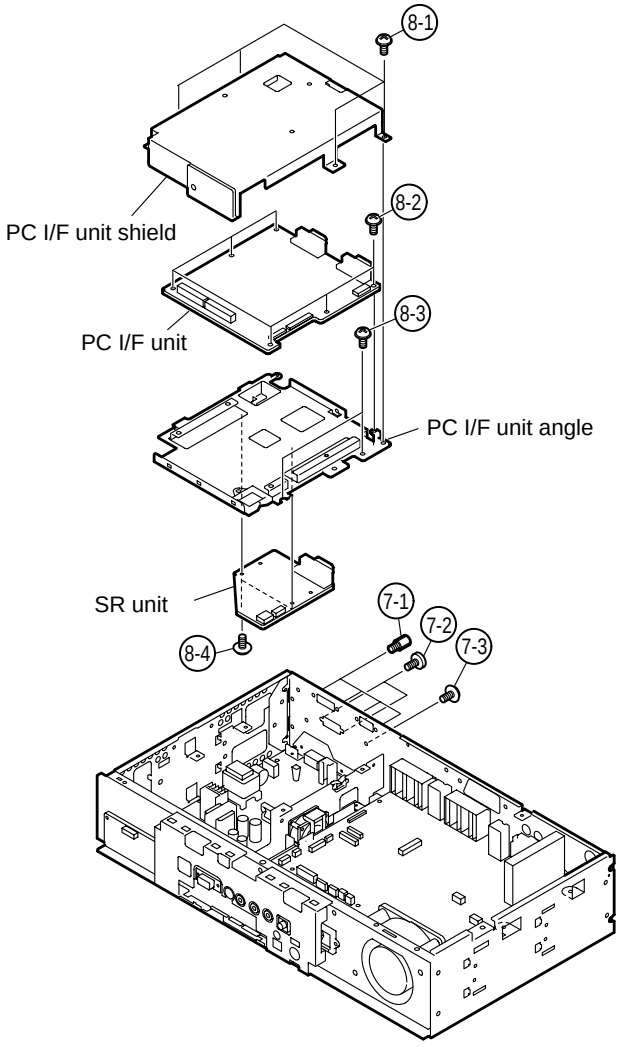
1. Remove the five top panel retaining screws and slide the top panel backward to remove it.
2. Remove the four side panel retaining screws on both the right and left sides and slide the side panels backward to remove them.
3. Remove the three front panel retaining screws and remove the front panel.
4. Remove the five bottom panel retaining screws and slide the bottom panel backward to remove it.
5. Remove the four screws securing the main PWB angle and remove the angle upward.
6. Remove the four screws securing the main PWB to the angle and remove the main PWB.

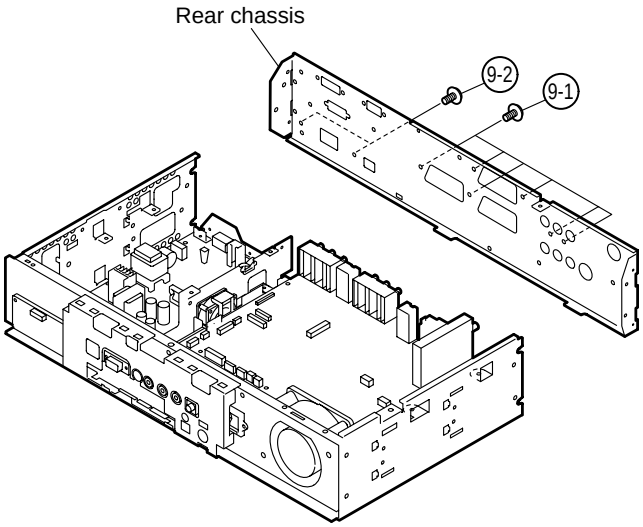


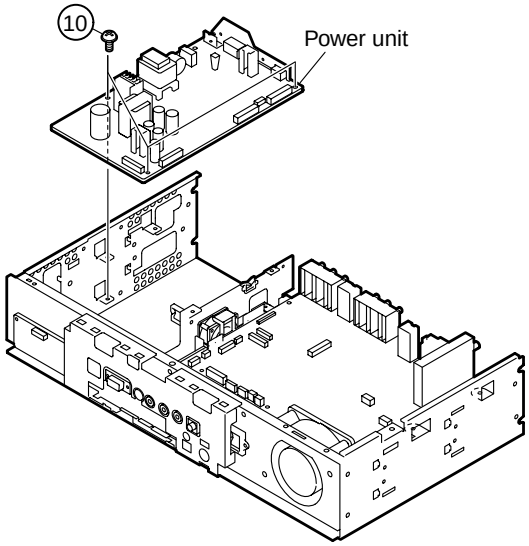




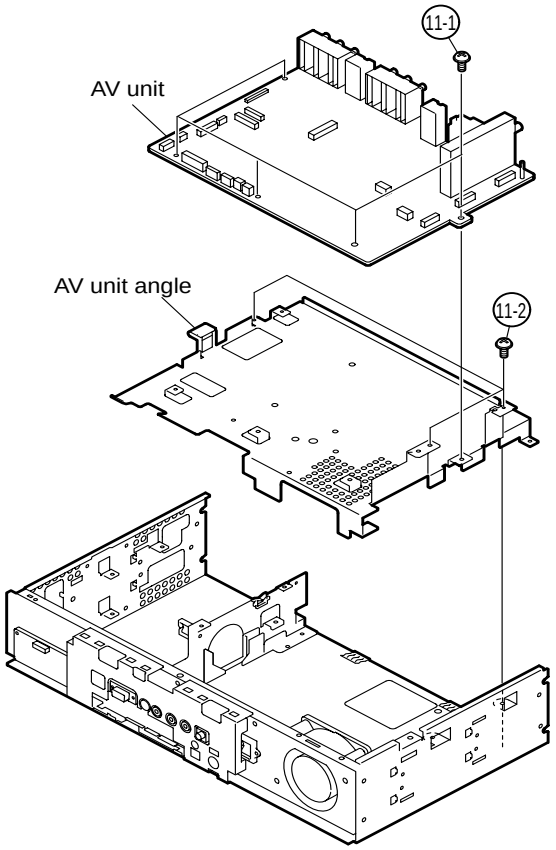
7. Remove the system/control terminal retaining:
   7-1. Remove the four hex head screws securing the terminals of the system and control cables (white).
   7-2. Remove the two screws securing the terminal of the system cable (gray).
   7-3. Remove the rear chassis retaining screw.
8. Remove the PC I/F and SR units:
   8-1. Remove the four PC I/F unit shield retaining screws and remove the shield.
   8-2. Remove the six PC I/F unit retaining screws and remove the I/F unit.
   8-3. Remove the two PC I/F unit angle retaining screws and remove the angle.
   8-4. Remove the two SR unit retaining screws and remove the SR unit.
9. Remove the rear chassis:
   9-1. Remove the two tuner nuts and washers.
   9-1. Remove the 13 rear chassis retaining screws and remove the rear chassis.
10. Remove the three power supply board retaining screws and remove the power supply board.

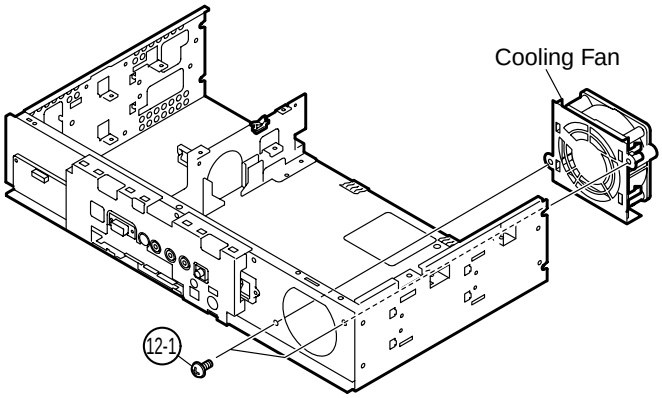


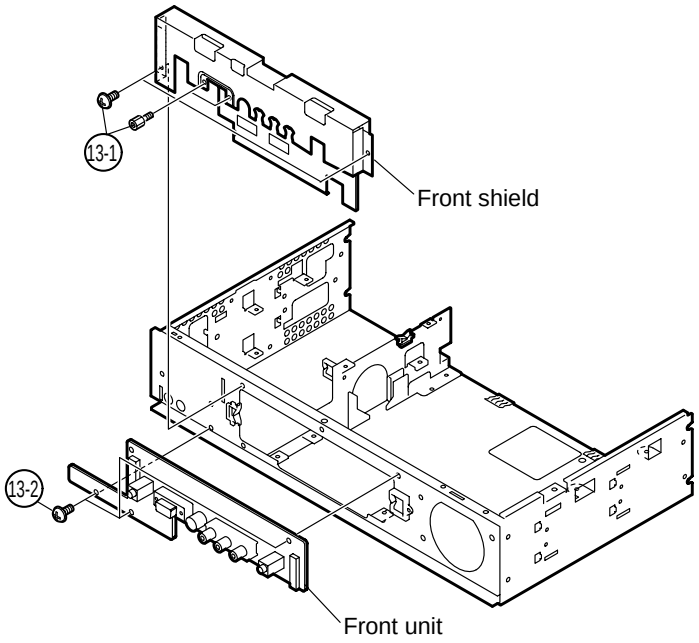




11. Remove the AV unit:
    11-1. Remove the five AV unit retaining screws and remove the AV unit.
    11-2. Remove the three AV unit angle retaining screws and remove the angle.
12. Remove the fan:
    12-1. Remove the two cooling fan retaining screws and remove the cooling fan.
13. Remove unit from the front chassis:
    13-1. Remove the two hex head screws and two screws securing the front shield to the front chassis and remove the front shield.
    13-2. Remove the four screws securing the front unit and remove the unit.

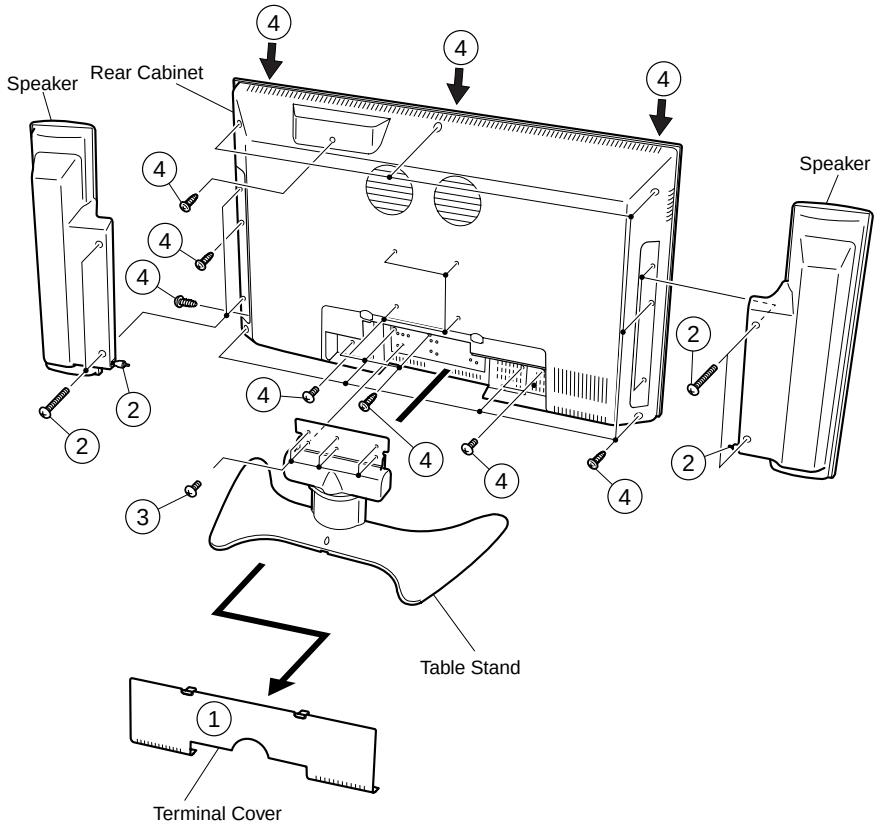




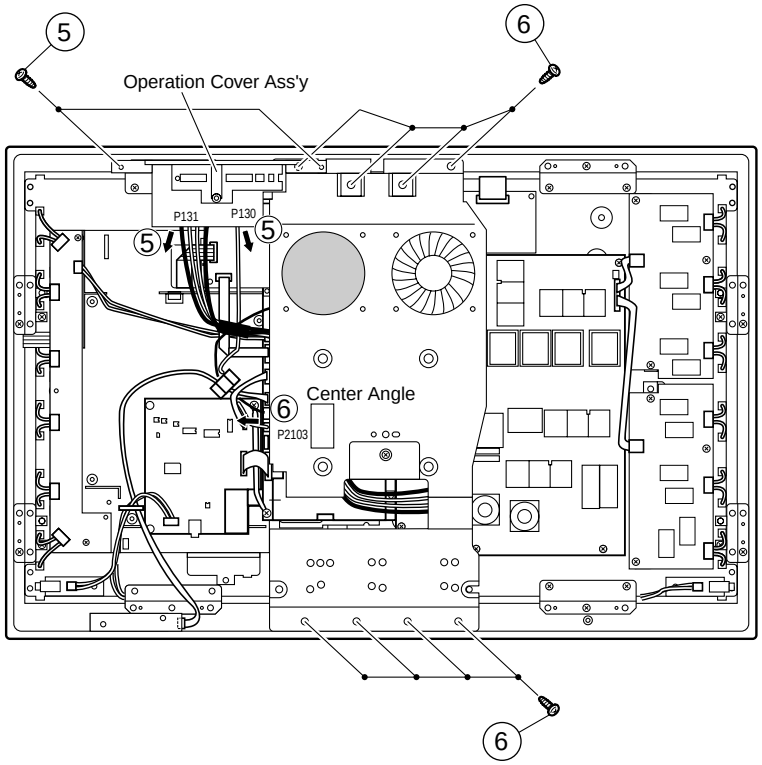


■ Display

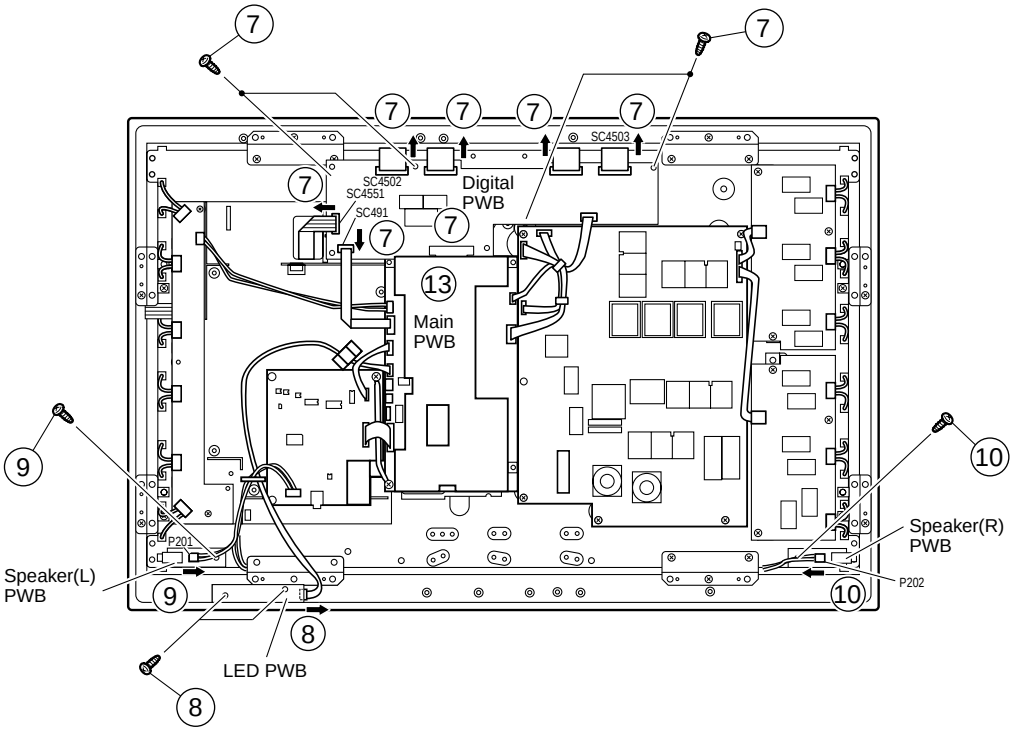
1. Take off bottom terminal cover.
2. Take off the speaker by removing 4 screws and disconnecting speaker terminals.
3. Take off the table stand by removing 6 screws.
4. Take off the rear cabinet by removing 18 screws and releasing the front cabinet's 6 hooks.



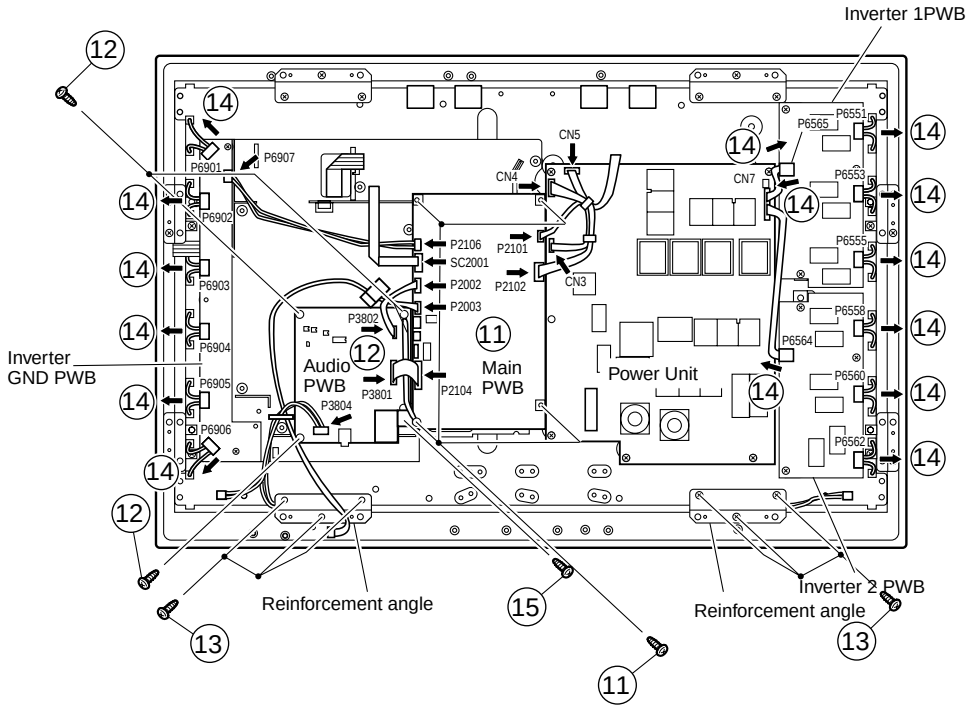
5. Take off the operation cover assembly by removing 2 screws and detaching the connector.
6. Take off the center angle by removing 8 screws and disconnecting 1 lead wire from the fan.



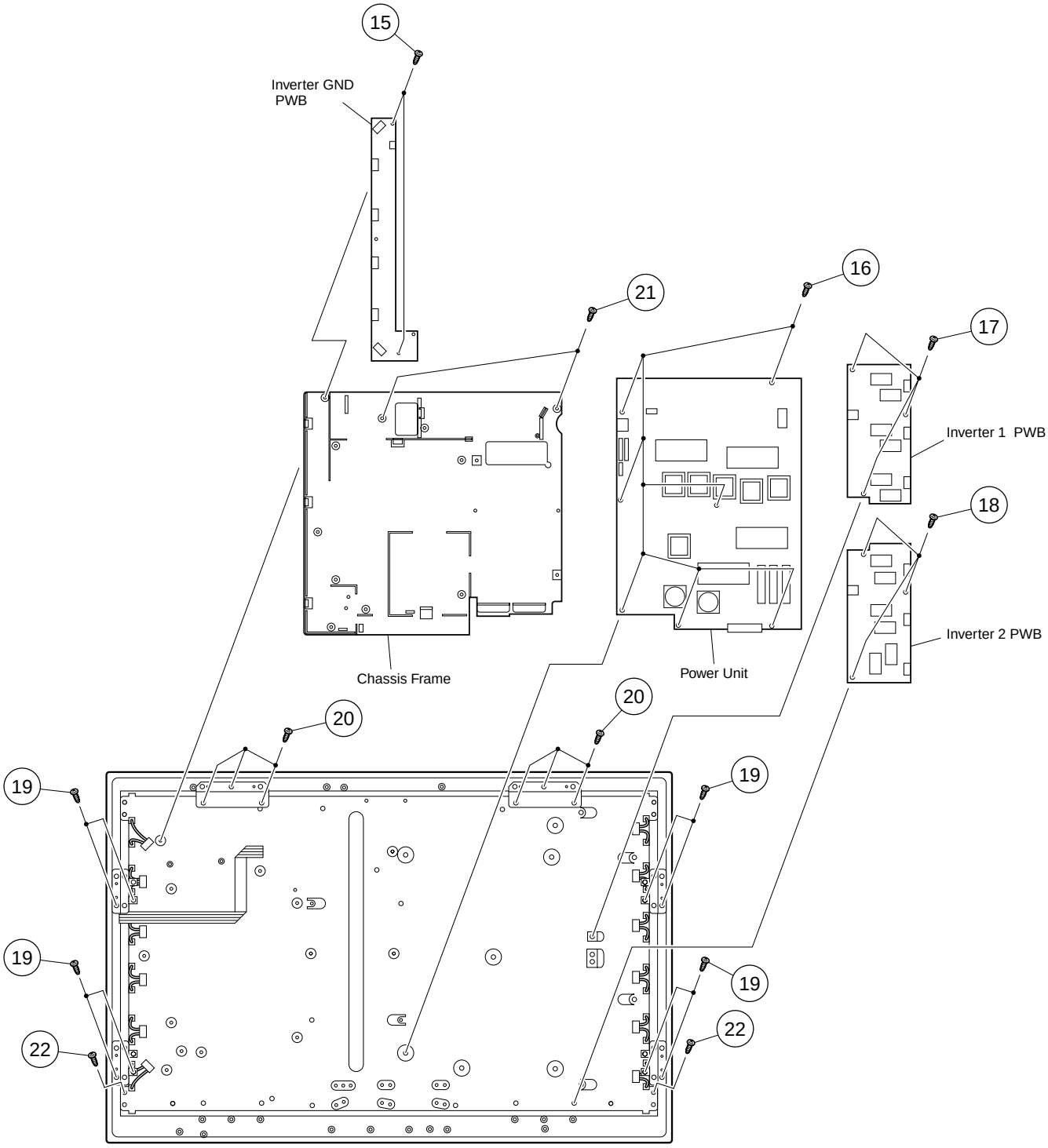
7. Take off the digital PWB by detaching 7 connectors and removing 4 screws.
8. Take off the LED PWB by detaching one connector and removing 2 screws.
9. Take off the speaker (L) PWB by detaching one connector and removing one screw.
10. Take off the speaker (R) PWB by detaching one connector and removing one screw.



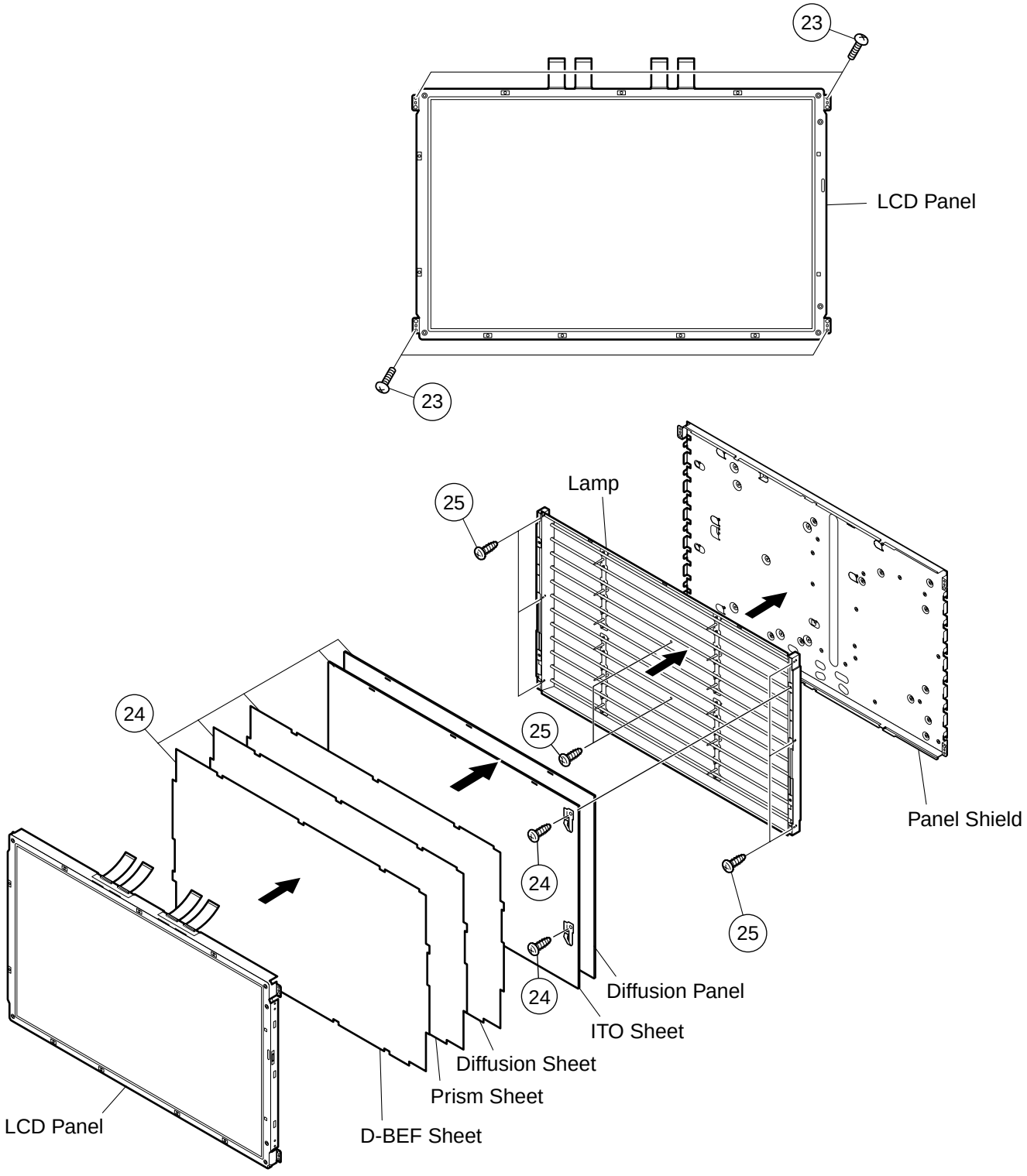
11. Take off the main board by detaching 8 connectors and removing 4 screws.
12. Take off the SOUND PWB assembly by detaching 3 connectors and removing 4 screws.
13. Take off the 2 reinforcement angles by removing 3 screws from each angle.
14. Detach each connector.



15. Take off the inverter GND PWB by removing 2 screws.
16. Take off the power PWB by removing 7 screws. Remove insulation sheet.
17. Take off the inverter 1 PWB by removing 3 screws.
18. Take off the inverter 2 PWB by removing 3 screws
19. Take off the 4 reinforcement angles by removing 2 screws from each angle.
20. Take off the 2 reinforcement angles by removing 3 screws from each angle.
21. Take off the chassis frame by removing 2 screws.
22. Take off the LCD panel assembly by removing 2 screws.



23. Take off the LCD panel with panel shield by removing 4 screws.
24. Take off D-BEF sheet, prism sheet and diffusion sheet. Take off ITO sheet and diffusion panel by removing 2 screws.
25. Take off the panel shield by removing 6 screws and 2 in the center.



ADJUSTMENT PROCEDURES (AVC SYSTEM)

Preparation for adjustment

1. The product has been adjusted and optimized in the factory. If the product needs to be readjusted for some reason, e.g., after parts replacement, follow the instructions shown below.
2. Control parameter values set in the in-process adjustment mode has been stored in the corresponding registers. When the product is readjusted, the contents of the registers are changed. Before readjustment, factory settings should be noted in case the contents of registers require to be restored.
3. Use a stabilized AC power supply.
4. To rewrite a program, you should note the items you want to change and initialize EEPROM, and then rewrite the changes into EEPROM.

How to enter the in-process adjustment mode

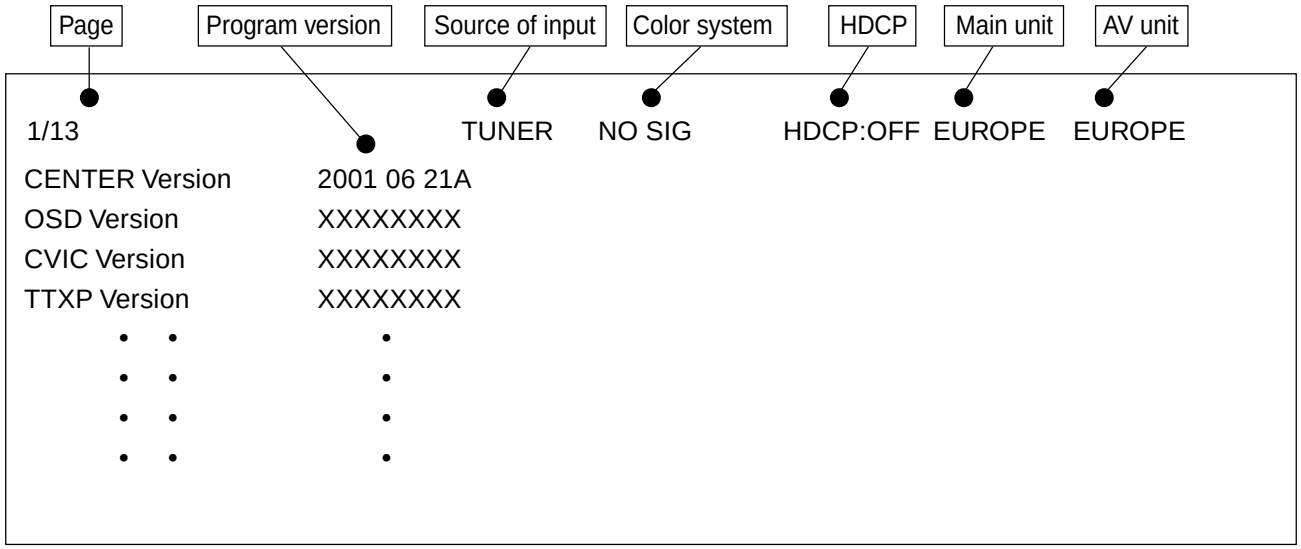
CAUTION: Exercise great care to hide the procedure in entering the in-process adjustment mode from the customer. Inadvertent setting changes in this mode may cause a fatal error resulting in a program being unrecoverable.

1. Entering the in-process adjustment mode:
   Connect the system cable between the display and AVC system.
   Turn on the main power while holding down the "Input" button and the "Volume (down)" button simultaneously. The system will be activated.
   ∗If you see multiple lines of blue characters on the display, you are in the in-process adjustment mode. If not (the normal activation screen opens), retry.
2. Accessing the inspection process mode:
   After activation of the system, make adjustments according to the instructions indicated on the process adjustment OSD menu screen.
   Move to the General Process Adjustment (AVC System Section Process).
3. Restoring factory settings:
   When the "INDUSTRY INIT" button is selected after activation of the system, factory channel setting remains unchanged after the system exits from the in-process adjustment mode.
   Changes made by the user will default to factory settings. Note that channel setting is also initialized.
4. Exiting from the in-process adjustment mode:
   Unplug the power cable while the system is in the in-process adjustment mode to exit from the mode.
   Take care not to press the "Power" button on the remote controller or the AVC system after using factory settings to run the system.
5. OSD menu screen and menu items during manual adjustment:
   ∗The layout and menu items of the OSD menu screen may somewhat vary depending on the program versions.
   ∗Just rewriting a program does not cause settings to be "initial values". (Preparation for adjustment)

①. Button operation in the in-process adjustment mode

Cursor Up	Move to the next page
Cursor Down	Back to the previous page
Volume (High)	Increase the setting by 1
Volume (Low)	Decrease the setting by 1
Enter	Execute the function
Cursor Left	Increase the setting by 10
Cursor Right	Decrease the setting by 10
Channel Select (Up)	Move the cursor up
Channel Select (Down)	Move the cursor down
Input Change	Change input (Tuner -> Input 1 -> Input 2 ->Input 3 -> Input 4 -> PC ->)

②. In-process adjustment screen layout



6. Loading the backup data and setting HDCP when the PC I/F unit is replaced

Nearly all data including factory settings, user settings, and channel setting is stored in the PC I/F unit. The product comes with EEPROM (IC1506) on the Main Unit in case the PC I/F unit is replaced; original data backed up on the EEPROM can be loaded to the new PC I/F unit.

- How to load the backup data

  Select EEPRON RECOVERT in the OSD menu (page 13/13) and turn the Volume key ON; then press ENTER.

- How to set HDCP

  After completion of adjustments, select KEY WRITE "ON" in the OSD menu (page 1/13) for manual adjustment and turn the Volume key ON; then press ENTER.

■ Adjustment parameters

1) Analog adjustment

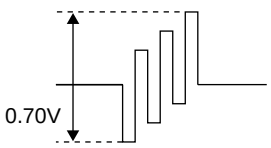
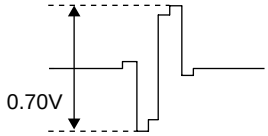
(1) AVC System voltage adjustment

	Adjustment items	Adjustment conditions	Adjustment procedures
1	In-process adjustment mode (Check the destination.)		Using the In-process adjustment remote controller, enter the in-process adjustments mode. Check that the destination is EUROPE.
2	AVC center 3.3V adjustment	Connect a DC voltmeter to TP4 at the opening on the top of the PC I/F unit.	Move the cursor to the [■+Badj3.3V] line and adjust the TP4 voltage to 3.25±0.01V.
3	AVC center 1.8V adjustment	Connect DC voltmeter to TP1701.	Move the cursor to the [■+BAdj1.8V] line and press OK. Adjustment is complete if [■+BAdj1.8V complete] appears. If ERR occurs, adjust pin 6 at CN9 on the PC I/F unit so that 1.8V is reached.

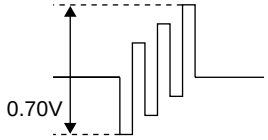
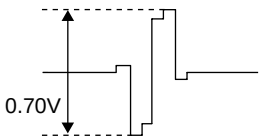
(2) PAL signal adjustment

	Adjustment items	Adjustment conditions	Adjustment procedures
1	Setup		1. Set colour system to “PAL”. 2. Select PAL source. 100% colour bar signal including 100% white, such as split field colour bar
2	Tuner level adjustment	Connect the oscilloscope to TP1101.	1. Adjust TP1101 so that the Y signal without the chroma component should be 1.00 ±0.05 Vp-p (between the bottom of sync signal and the white peak).

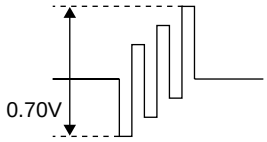
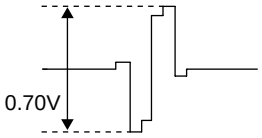
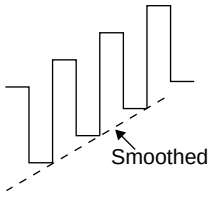
(3) PAL signal adjustment

	Adjustment items	Adjustment conditions	Adjustment procedures
1	MAIN PAL Y CONTRAST adjustment		1. Adjust pin (1) of P801 to 0.70 ±0.025 Vp-p.
2	MAIN PAL COLOR GAIN adjustment		1. Adjust pin (3) of P801 to 0.70 ±0.025 Vp-p. 
3	MAIN CR GAIN PAL adjustment		1. Adjust pin (5) of P801 to 0.70 ±0.025 Vp-p. 
4	MAIN CONTRAST adjustment		Turn off the PEAK ACL control. Adjust the output (TP815) of IC810 to have 0.90±0.025 Vp-p from the pedestal level.
		Press the DUAL screen button.	Select the special DUAL screen settings for adjustment (so that the same video source is reflected on MAIN/ SUB).
5	SUB PAL Y adjustment		1. Adjust TB1274_SUB output (TP806) to 1.5 ±0.05 Vp-p.
6	SUB PAL COLOR GAIN adjustment		1. Adjust TB1274_SUB output (TP805) to 1.5 ±0.05 Vp-p.

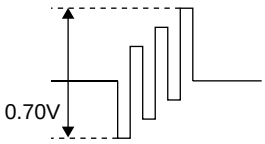
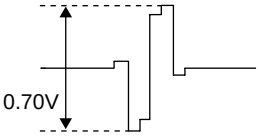
(4) SECAM signal adjustment

	Adjustment items	Adjustment conditions	Adjustment procedures
1	Setup		1. Set colour system to SECAM. 2. Select SECAM source. 100% colour bar signal including 100% white, such as split colour color bar
2	MAIN SECAM Y CONTRAST adjustment		1. Adjust pin (1) of P801 to 0.70 ±0.025 Vp-p.
3	MAIN SECAM COLOR GAIN adjustment		1. Adjust pin (3) of P801 to 0.70 ±0.025 Vp-p. 
4	MAIN CR GAIN SECAM adjustment		1. Adjust pin (5) of P801 to 0.70 ±0.025 Vp-p. 

(5) N358 signal adjustment

	Adjustment items	Adjustment conditions	Adjustment procedures
1	Setup		1. Set colour system to N358. 2. Select N358 source. 100% SMPTE colour bar or similar colour bar signal including 100% white.
2	MAIN N358 Y CONTRAST adjustment		1. Adjust pin (1) of P801 to 0.70 ±0.025 Vp-p.
3	MAIN N358 COLOR GAIN adjustment		1. Adjust pin (3) of P801 to 0.70 ±0.025 Vp-p. 
4	MAIN CR GAIN N358 adjustment		1. Adjust pin (5) of P801 to 0.70 ±0.025 Vp-p. 
5	MAIN N358 TINT adjustment		1. Adjust TB1274_MAIN output (TP802) so that waveform becomes as illustrated below: 

(6) Component 15k Hz signal adjustment

	Adjustment items	Adjustment conditions	Adjustment procedures
1	Setup		1. Select component 15k Hz. 2. Select component source. 100% colour bar signal including 100% white, like split field colour bar
2	MAIN COMP 15k Y Level adjustment		Adjust pin (1) of P801 to 0.7 0±0.025 Vp-p.
3	MAIN COMP 15k COLOR GAIN adjustment		Adjust pin (3) of P801 to 0.70 ±0.025 Vp-p. 
4	MAIN CR GAIN COMP 15k adjustment		Adjust pin (5) of P801 to 0.70 ±0.025 Vp-p. 

(7) Component HDTV signal adjustment

	Adjustment items	Adjustment conditions	Adjustment procedures
1	Setup		1. Input HDTV (1080i) component signal. 2. Select component source. 100% colour bar signal including 100% white, like split field colour bar
2	MAIN COMP HDTV CONTRAST adjustment		Turn off the PEAK ACL control. Adjust the TP815 to have 0.90 ±0.25 Vp-p from the pedestal level.

2. Factory settings

(1) Factory Setting

	Adjustment item	Description	Adjustment procedure
1	INDUSTRY INT		

* Then turn off the AC power supply of the AVC system. (Be careful not to use the power switches of the remote control unit and AVC system.)

In-process adjustment items

Do not change items, the adjustment procedure of which is not described in this manual. Inadvertent changes of such items may result in unexpected or unrecoverable errors.

Page	Item	Page	Item
Page 1	Maker Select ■+BAdj3.3V ■+BAdj1.8V(Enter: Auto) KEY WRITE ■DATA COPY INDUSTRY INIT CENTER Version OSD Version CVIC Version TTXP Version MONITOR Version STANDBY TYPE HOTEL MODE	Page 2	■PAL Y CONTRAST ■PAL COLOR GAIN ■MAIN CR GAIN PAL ■MAIN CONTRAST 15K Center Acutime RESET Monitor Acutime RESET
Page 3	■SUB PAL Adjust ■SUB PAL Y ■SUB PAL COLOR GAIN ■TUNER DAC ADJ	Page 4	■SECAM Adjust ■SECAM Y CONTRAST ■SECAM COLOR GAIN ■MAIN CR GAIN SECAM
Page 5	■N358 Adjust ■N358 Y CONTRAST ■N358 COLOR GAIN ■MAIN CR GAIN N358 ■N358 TINT ■REFERENCE Adjust	Page 6	■COMP15K Adjust ■COMP15K Y CONTRAST ■COMP15K COLOR GAIN ■MAIN CR GAIN COMP15K ■COMP HDTV Adjust ■COMP HDTV CONTRAST ■COMP HDTV SUB BRIGHT ■PEAK ACL SW
Page 7	■PAL White Balance PAL R CUTOFF PAL R DRIVE PAL G CUTOFF PAL G DRIVE PAL B CUTOFF PAL B DRIVE	Page 8	■N358 White Balance N358 R CUTOFF N358 R DRIVE N358 G CUTOFF N358 G DRIVE N358 B CUTOFF N358 B DRIVE
Page 9	■COMP15K White Balance COMP15K R CUTOFF COMP15K R DRIVE COMP15K G CUTOFF COMP15K G DRIVE COMP15K B CUTOFF COMP15K B DRIVE	Page 10	■COMP33K White Balance COMPHDTV R CUTOFF COMPHDTV R DRIVE COMPHDTV G CUTOFF COMPHDTV G DRIVE COMPHDTV B CUTOFF COMPHDTV B DRIVE
Page 11	IPMODE INTERLACE MDSW INTERLACE PTGSW INTERLACE IPMODE PROGRESSIVE MDSW PROGRESSIVE PTGSW PROGRESSIVE IPMODE FMODEON MDSW FMODEON PTGSW FMODEON IPMODE SUB MDSW SUB PTGSW SUB IPMODE FMODEON PAL MDSW FMODEON PAL PTGSW FMODEON PAL	Page 12	IPMODE PROGRESSIVE2 MDSW PROGRESSIVE2 PTGSW PROGRESSIVE2 IPMODE FMODEON2 MDSW FMODEON2 PTGSW FMODEON2 ILG LV MD LV VE LV IP MODE SEL
Page 13	DEBUG PRINT SW PIC ADJ MAKER SELECT PIC ADJ KOUTEI SELECT EEPROM SAVE EEPROM RECOVER DEBUG_SELECT_SW DEBUG COMPANY SELECT DEBUG PANELTYPE SELECT CENTER PROG UPDATE		

UPGRADING INSTALLED PROGRAMS

Programs installed in the product are mainly divided into the following two categories:
- Main programs (for AVC system)
- Monitoring program (for display)

> CAUTON: Exercise great care to hide the procedure in entering the in-process adjustment mode from the customer. Inadvertent setting changes in this mode may cause a fatal error resulting in a program being unrecoverable.

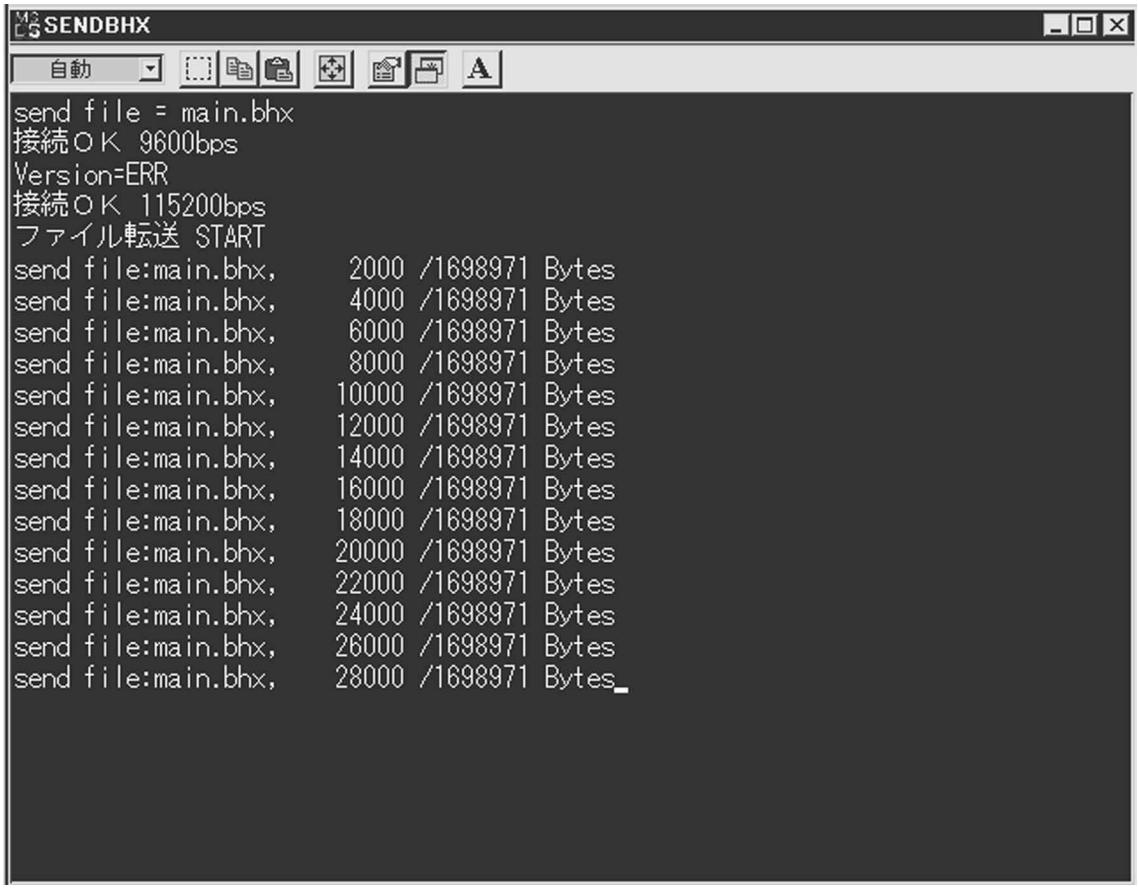
[Tools required]
- PC

A Windows 95/98/me/2000/XP PC that has a COM port (RS-232C).
A USB-R232C converter will be acceptable provided that it is appropriately set and has PC compatibility.
- RS-232C cross cable

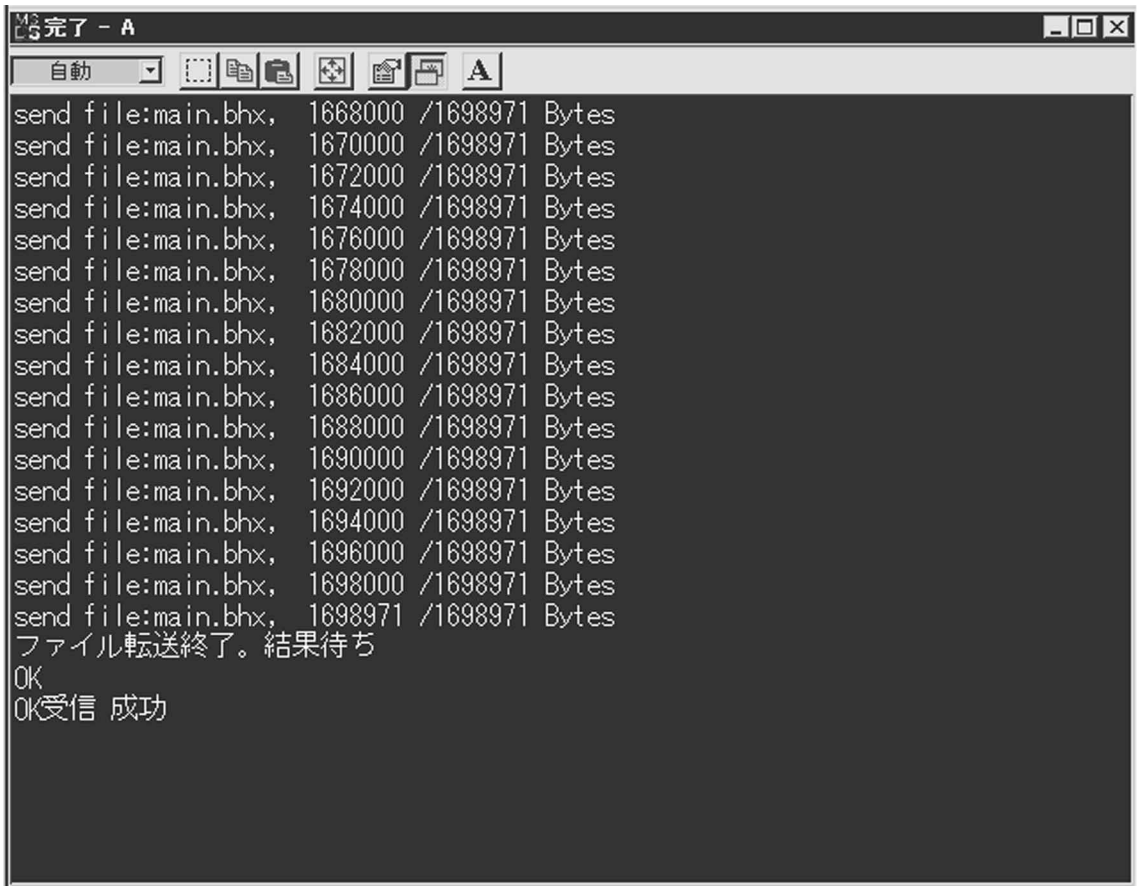
Interlink cable is also acceptable.

[Preparations]
Rewriting a program needs the product to enter the in-process adjustment mode.
1) The rewriting software is supplied in the form of an exe file named e.g., "MAIN_2002_10_10A.exe" (provisional). Create a directory on a HD and copy the software into the directory.
2) Double-click the file. The file will be self-extracted. Check the extracted file against the documentation accompanying with the software.
3) Connect the AVC System and the display unit with each other and make them ready for operation (make sure the power LEDs of the AVC System and display unit turn red).
4) Use an RS-232C cable to connect the PC to the AVC System.
5) Exercise great care to hide the procedure in entering the in-process adjustment mode from the customer. Press the MAIN POWER button while holding down the volume DOWN key and the INPUT key on the display unit simultaneously.
   If blue characters appear on the display, the system has entered the in-process adjustment mode successfully. If not (the normal activation screen opens), retry.

[Rewriting the main program]
1) In the in-process adjustment mode, press the Channel Up key on the remote controller. You will move to page 13 ("13/13" will appear on the upper left corner of the screen).
2) Make sure CENTER PROG UPDATE is highlighted.
3) Use the VOLUME -/+ keys to change OFF to ON.
4) Press the ENTER key on the remote controller. Characters on the screen will disappear and the screen blacks out.
5) Double-click the batch file specified in the document accompanying with the software.
6) A black window (MS-DOS window) will open and rewriting starts automatically.
   Rewiring of the main program is now complete. Unplug the AC cable from the AVC System and turn off the system and then on again.
7) Enter the in-process adjustment mode and make sure the version information on the CENTER Version, OSD Version and CVIC Version lines on page 1 has been updated.

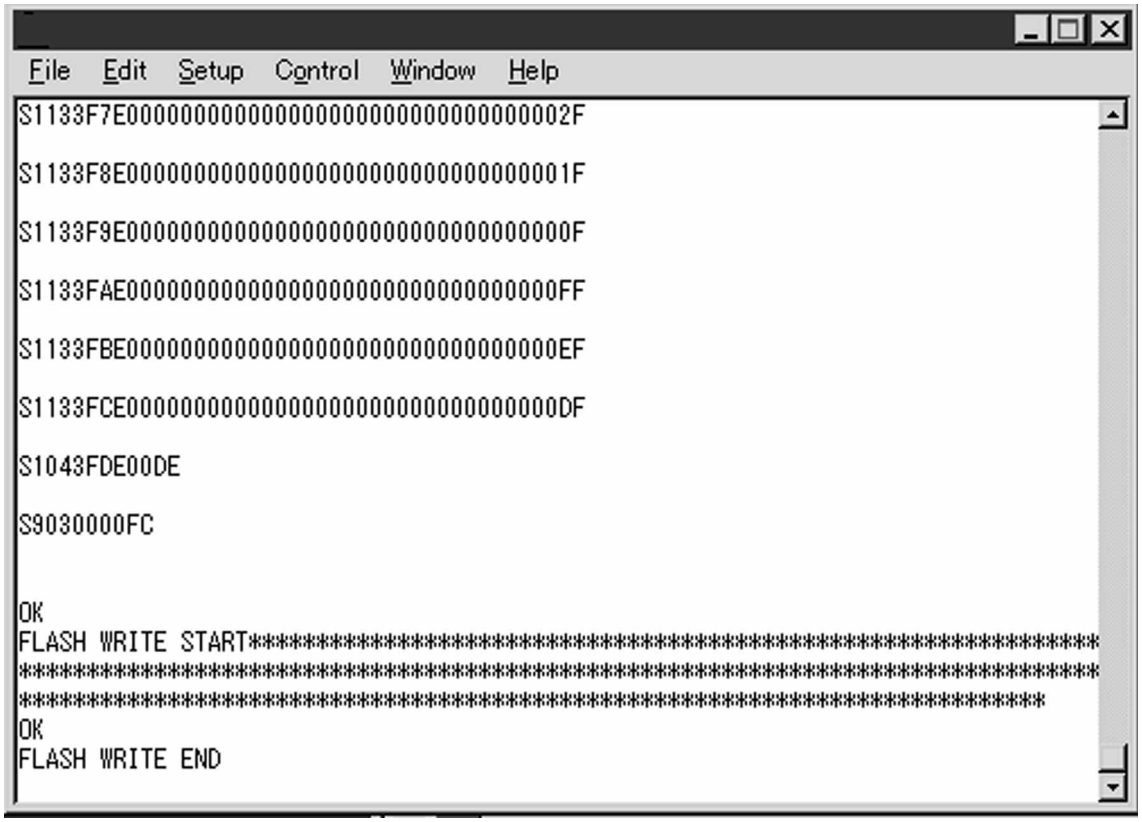

SENDBHX
自動
send file = main.bhx
接続ＯＫ 9600bps
Version=ERR
接続ＯＫ 115200bps
ファイル転送 START
send file:main.bhx, 2000 /1698971 Bytes
send file:main.bhx, 4000 /1698971 Bytes
send file:main.bhx, 6000 /1698971 Bytes
send file:main.bhx, 8000 /1698971 Bytes
send file:main.bhx, 10000 /1698971 Bytes
send file:main.bhx, 12000 /1698971 Bytes
send file:main.bhx, 14000 /1698971 Bytes
send file:main.bhx, 16000 /1698971 Bytes
send file:main.bhx, 18000 /1698971 Bytes
send file:main.bhx, 20000 /1698971 Bytes
send file:main.bhx, 22000 /1698971 Bytes
send file:main.bhx, 24000 /1698971 Bytes
send file:main.bhx, 26000 /1698971 Bytes
send file:main.bhx, 28000 /1698971 Bytes

Continued


完了 - A
自動
send file:main.bhx, 1668000 /1698971 Bytes
send file:main.bhx, 1670000 /1698971 Bytes
send file:main.bhx, 1672000 /1698971 Bytes
send file:main.bhx, 1674000 /1698971 Bytes
send file:main.bhx, 1676000 /1698971 Bytes
send file:main.bhx, 1678000 /1698971 Bytes
send file:main.bhx, 1680000 /1698971 Bytes
send file:main.bhx, 1682000 /1698971 Bytes
send file:main.bhx, 1684000 /1698971 Bytes
send file:main.bhx, 1686000 /1698971 Bytes
send file:main.bhx, 1688000 /1698971 Bytes
send file:main.bhx, 1690000 /1698971 Bytes
send file:main.bhx, 1692000 /1698971 Bytes
send file:main.bhx, 1694000 /1698971 Bytes
send file:main.bhx, 1696000 /1698971 Bytes
send file:main.bhx, 1698000 /1698971 Bytes
send file:main.bhx, 1698971 /1698971 Bytes
ファイル転送終了。結果待ち
OK
OK受信 成功

[Rewriting the monitor program]

1) Start terminal software in the in-process adjustment mode.
   (Terminal software is not supplied. Use a freeware program available on the Internet.)
2) Set as follows:
   Baud rate: 9600
   Data length: 8 bits
   Parity: None
   Stop bit: 1
   Flow control: None
3) If the settings are correct, pressing ENTER will cause ERR to appear on the screen.
4) Type "IPL_0002" and press ENTER. Characters on the screen will disappear and the screen blacks out.
   * After the above string is entered, unusual indication may appear on the screen. This is not abnormal.
5) Press ENTER. The following will appear on the screen:
   ERR
   SEND "MONITOR PROG UPDATE PROGRAM" from PC to MR
6) Change the baud rate of the terminal software to 115200.
7) Use the file transfer facility of the terminal software to transfer the file specified in the document accompanying with the rewriting software.
8) If the terminal software screen shows the following indication, the monitor program has been rewritten successfully. (The indication will vary depending on the terminal software and program versions.)
9) Enter the in-process adjustment mode and make sure the version information on the MONITOR line has been updated.



ADJUSTMENT PROCEDURES (DISPLAY)

See "Adjusting mode" for the steps to go into adjustment process mode.

1) +B adjustment (Digital PWB: R4648)
   1. Receive PAL standard color bar signal.
   2. Connect digital voltmeter to TP4602 and adjust to the specified value.
      Specification: 13.00 ± 0.05V

2) Common bias adjustment
   Make this adjustment each for "50 Hz", "60 Hz" and "PC". Select the input signal according to the indication onscreen.
   1. Go to "Adjustment process mode".
   2. On the LCD, select "14" of "PATTERN 1", dot inversion flicker pattern 2.
   3. Then, select "COM BIAS" on the LCD.
   4. Set the value so that the flicker on the screen is minimized.

   Note: Apply this adjustment after for at least 30 min.

3) Background adjustment
   1. Select video standard, and confirm the indication that the unit is preset to the standard.
   2. At video input, receive the window pattern signal having left 80% WHITE and right 20% WHITE.
   3. Set the screen size to the full mode.
   4. Go to "Adjustment process mode".
   5. Adjust "R OFFSET", "G OFFSET" and "B OFFSET" in "SIL861" so that left side 80% WHITE window pattern is set to the specified value.
   6. Adjust "R GAMMA", "G GAMMA" and "B GAMMA" in "SIL861" so that right side 20% WHITE window pattern is set to the specified value.

   Specification: x = 0.275 y = 0.273 (80% WHITE) x= 0.269 y = 0.253 (20% WHITE) [Minolta CA-110]

   Note: Apply this adjustment after for at least 30 min.

4) Initialization
   1. Go to "Adjustment process mode".
   2. Select "1" thru "3" of "CLR MODE" in "TEST".
      Setting range: 0 Normal
      1 Initial setting (User clear: Factory setting)
      2 Initial setting (All clear) Full initialization of EEPROM (except for ROM area)
      3 Full initialization of Configuration EEPROM
   3. Move the cursor down by one line.
   4. Press "VOL UP" key and change the display from "WAIT" to "SEND" (write).
   5. Do not shut down power while the display is "SEND".
   6. When the writing is finished, the display changes from "SEND" to "WAIT".

5) Resetting lamp error counter
   1. Go to "Adjustment process mode".
   2. Select "L ERR RESET" in "TEST".
   3. Reset the data to "0".

[L ERR RESET]

Function: Reset of fluorescent lamp error counter
It resets the times of fluorescent lamp errors and clears the last value in the memory.

Indication range: 0-5 (Fluorescent lamp errors)

(When lamp error exceeds 5 times, power supply is disabled. Resetting is required in this case.)

3. Adjusting Mode

1. Overview

The controller IC can be adjusted in this mode.
Adjustment is done while controlling the setting of the resistor corresponding to the selected adjustment item.
When monitor is used independently, it is adjusted using the OSD simple display function incorporated in LCD controller.
The OSD function of panel link receiver (SIL861) is used for adjustment of the independent monitor.

2. Entry to the mode

1) When cable is not connected (independent mode), follow the steps below.
   a) When power switch is turned on, press the main unit INPUT and VOL DOWN keys simultaneously.
   b) Press the remote controller's process adjustment key (R/C code: 40h) / process adjustment mode 2 key (R/C code: 31h).
2) When not in independent mode, follow the steps below.
   a) When power switch is turned on, press the main unit CH DOWN and VOL UP keys simultaneously.
   b) Press the remote controller's process adjustment mode 2 key.

3. Exit from the mode

Turn off the power.
Press the remote controller's process adjustment mode 2 key.

4. Display

1) First layer display

The third line shows the title. The 5th line and below show the items. Microprocessor's version number appears in the 16th line.

Example) 1.00 → 1 00

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	S	E	R	V	I	C	E		M	O	D	E		
2	O	M	O	D	E			5	0	H	Z			
3		L	C	D										
4		S	I	L	8	6	1							
5		T	E	S	T									
6						V	E	R		X		X	X	

2) Second layer display (Adjustment item display)

A single page shows up to 10 adjustment items (or 14 lines).
The third line shows the title and the screen mode selected in MODE items (only when LCD is selected).
The 5th line shows the item. Microprocessor's version number appears in the 16th line.
Example) 1.00 → 1 00
Setting is shown in decimal number.

a) Adjustment on the LCD items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	L	C	D			5	0	H	Z					
2	O	V	L	0								2	2	1
3		R	E	F	0							2	0	9
4		V	L	6	4								9	8
5		R	E	F	6	4						1	7	0
6		V	L	9	6								9	2
7		R	E	F	9	6						1	8	4
8		V	L	1	2	8							8	5
9		R	E	F	1	2	8					1	8	8
10		V	L	1	6	0							7	1
11		R	E	F	1	6	0					1	9	9

b) Adjustment on the TEST items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	T	E	S	T										
2	O	L		E	R	R		R	E					0
3		L	C	D		D	A	T	A		0	0	0	0
4											W	A	I	T
5		C	L	R		M	O	D	E					0
6											W	A	I	T
7		C	N	F	G		E	E	P		0	0	0	0
8											W	A	I	T

5. Changing data

In "adjustment item display", the items pointed by cursor can be changed using VOL UP/DOWN key.(Holding down the key is effective.)

For the items in "LCD DATA", select the item and hit ENTER key. The ten's digit (leftmost digit) in the address changes to red (others in green). Data change using VOL UP/DOWN key is enabled.

To move to the next digit, press CH UP key (or rightward cursor key). To go back to the previous digit, press CH DOWN key (or leftward cursor key). Thus, 4 digits data can be entered.

When CH UP key is pressed while in rightmost digit, the cursor moves to the leftmost digit. When CH DOWN key is pressed while in leftmost digit, the cursor moves to the rightmost digit.

After address data adjustment, press ENTER key to exit from 4-digit adjustment and change the entire "LCD DATA" line to red letters. (Same status as item selection)

6. Key operation

1) Basic behaviors

Basic key behaviors are as follows.

Behavior	Keys	
	Remote controller	Main unit
Upward cursor movement	Cursor up	CH UP
Downward cursor movement	Cursor down	CH DOWN
Rightward cursor movement	Cursor right	
Leftward cursor movement	Cursor left	
Data UP	VOL UP	VOL UP
Data DOWN	VOL DOWN	VOL DOWN
Set	ENTER	INPUT
Back to previous layer	RETURN	
Back (In bottom layer only)	ENTER	INPUT

2) Data UP/DOWN

For the item for which OSD display is available, switch the display.

Adjust the data with UP/DOWN operation. (Any value beyond the limit is replaced by the limit value.)

Output data processing

Data transmission for every UP/DOWN operation (Data related to peripheral controller IC)

Execution of the last memory data when key is off

While the key is held down, the second step is performed approx. 500ms after the key operation and, after this, every single step of UP/DOWN is carried out sequentially at 135ms interval.

3) Cursor UP/DOWN

Select the adjustment item by pointing it with the cursor.

When upward cursor movement is done while the cursor is at the top item, the cursor goes to the bottom item. (In the case of multiple pages, the cursor goes to the bottom item on the previous page.)

When downward cursor movement is done while the cursor is at the bottom item, the cursor goes to the top item. (In the case of multiple pages, the cursor goes to the top item on the next page.)

While the key is held down, the second step is performed approx. 500ms after the key operation and, after this, every single step of UP/DOWN is carried out sequentially at 135ms interval.

ADJUSTMENT MODE MENU LIST

First layer item	PAGE	ITEM	SETTING RANGE	INITIAL VALUE	DATA SETTING
MODE	1		50HZ/60HZ/PC	50HZ	Toggle
LCD	1	VL0	0 ~ 255	221	No Toggle
		REF0	0 ~ 255	209	No Toggle
		VL64	0 ~ 255	98	No Toggle
		REF64	0 ~ 255	170	No Toggle
		VL96	0 ~ 255	92	No Toggle
		REF96	0 ~ 255	184	No Toggle
		VL128	0 ~ 255	85	No Toggle
		REF128	0 ~ 255	188	No Toggle
		VL160	0 ~ 255	71	No Toggle
		REF160	0 ~ 255	199	No Toggle
	2	VL192	0 ~ 255	77	No Toggle
		REF192	0 ~ 255	103	No Toggle
		VL224	0 ~ 255	88	No Toggle
		REF224	0 ~ 255	112	No Toggle
		VL256	0 ~ 255	108	No Toggle
		REF256	0 ~ 255	78	No Toggle
		COM BIAS	0 ~ 255	70	No Toggle
		PWM CTRL	0 ~ 7		Toggle
		PWM FREQ	0 ~ 4095	585	No Toggle
		PWM DUTY	0 ~ 4095	0	No Toggle
	3	PATTERN1	0 ~ 14	0	Toggle
		PATTERN2	0 ~ 12	0	Toggle
		P – CLK1	0 ~ 3	0	No Toggle
		P – CLK2	0 ~ 7	0	No Toggle
		OS SW	0 ~ 1	0	Toggle
		OS D1	0 ~ 255	138	No Toggle
		OS D2	0 ~ 255	167	No Toggle
		OS D3	0 ~ 255	170	No Toggle
		OPC LV0	0 ~ 85	0(40)	No Toggle
		OPC LV1	0 ~ 85	8(44)	No Toggle
	4	OPC LV2	0 ~ 85	16(48)	No Toggle
		OPC LV3	0 ~ 85	24(52	)No Toggle
		OPC LV4	0 ~ 85	32(56)	No Toggle
		OPC LV5	0 ~ 85	40(60)	No Toggle
		OPC LV6	0 ~ 85	48(64)	No Toggle
		OPC LV7	0 ~ 85	56(68)	No Toggle
		OPC LV8	0 ~ 85	64(72)	No Toggle
		OPC LV9	0 ~ 85	72(76)	No Toggle
		OPC LV10	0 ~ 85	80(80)	No Toggle
SIL861	1	R GAMMA	20 ~ 180	100	No Toggle
		R OFFSET	0 ~ 510	256	No Toggle
		G GAMMA	20 ~ 180	100	No Toggle
		G OFFSET	0 ~ 510	256	No Toggle
		B GAMMA	20 ~ 180	100	No Toggle
		B OFFSET	0 ~ 510	256	No Toggle
TEST	1	L ERR RESET	0 ~ 5 0	Toggle	
		LCD DATA	Four digits 0 ~ F	0	Toggle
			WAIT/SEND	WAIT	———
		CLR MODE	One digits 0 ~ 2	0	Toggle
			WAIT/SEND	WAIT	———
		CNFG EEP	Four digits 0 ~ F	0	Toggle
			WAIT/SEND	WAIT	———

* Values in the parentheses are with PC.

MAJOR IC FUNCTIONS INFORMATIONS

• IC2501 (MSP4418G)
IC for decoding audio signals.
It serves as an S-IF audio signal decoder and an audio data selector.

• IC2510 (IXA385WJ)
IC for controlling audio delay.
LC-30/37HV4E uses a frame buffer to process video signals. This results in delay in outputting video signals. The IC delays output of audio signals to synchronize output of video and audio signals.

• IC1301 (CXA2069Q)
7-input, 3-output selector.
This IC selects all audio and video signals received from input terminals and the tuner, except those signals that relates to PC and components.
Video signals delivered to the IC are sent to YC separation circuits IC401 (main) and IC402 (sub). Audio signals are sent to the SR unit via IC2501 (sound processor).

• IC401 (MM1519XQ)
4-input, 3-output video selector for component input.
This IC receives AV3 component input, AV1/3 RGB input and teletext RGB signals. Its output is for main, sub and component.

• IC1601 (SDA5550M)
Teletext processing microcomputer.
This IC receives vide signals, decodes teletext and outputs data in RGB format.

• IC401/IC402 (TC90A69)
Adaptive infield 3-line digital comb filter supporting both NTSC and PAL.
This IC is a high-precision Y/C 1 chip incorporating a CNR circuit and performs YC separation of the sub video signals received from IC1301.

• IC403/IC404 (ML6428C1)
6.7 MHz low-pass filter.

• IC801/IC802 (TB1274AF)
IC for synchronous processing of video and chroma signals for PAL/NTSC/SECAM color TV.
Color demodulation is provided by a high-performance image compensation circuit in the video section, a PAL/NTSC/SECAM auto discrimination circuit in the chroma section, and a crystal that generates 4.43 MHz, 3.58 MHz and M/N-PAL clock signals.
This IC has a 4-channel YC signal input, 2-channel RGB signal input, and 2-channel chrominance signal input. It receives main and sub chrominance signals from IC401 (main) and IC402 (sub) and delivers chrominance signals via one-channel output.

• IC803 (CXA2101Q)
IC having a chrominance input integrated with a high-performance image compensation circuit. Equipped with circuits for processing baseband signals and RGB signals and a 4-channel video switch incorporating an H/V synchronization signal processing circuit.
Input selection is done by INPUT-SEL (IIC BUS). Y, Pb, Pr and GBR of Ycb, Cr and HD and their H/V synchronization signals are inputted to input pins of each channel.
Multi-scan facility permits acceptance of a horizontal scan line frequency range of 16 KHz to 60 KHz.

• IC1901 (IXA392WJ)
FPGA for synchronous processing
This IC selects synchronization signals and creates horizontal blanking signals.

• IC604 (TA1318AF)
IC for synchronous processing of TV component signals and measurement of frequency.
This IC incorporates an input signal frequency measurement feature and synchronous regeneration features.
It supports synchronous horizontal regeneration (15.75 KHz, 31.5 KHZ, 33.75 KHz and 45 KHz) and synchronous vertical regeneration (525I, 525P, 625I and 750P).

PC I/F board side
• IC4 (CX3506R)
3-channel, 8-bit, 120 MSPS A/D converter incorporating AMP and PLL.
This IC is for video signals inputted to the IF board and used for one-screen and two-screen applications, and for PC signals inputted to the front panel.
It provides A/D conversion of video signals (analog RGB) inputted to IN1 from CN6 and PC signals (analog RGB) inputted to IN2 from CN8.
Converted digital signals are sent to IC25.

• IC310 (TLC5733A)
3-channel, 8-bit, 20 MSPS A/D converter.
This IC is for video signals inputted to the IF board and used for two-screen application.
It provides A/D conversion of video signals (analog YcbCr) inputted to IC310 from CN6.
Converted digital signals are sent to IC25.

• IC25 (IXA091WJ)
IC for I/P conversion and scaling of digital image according to the output resolution, and for data conversion.
There are two input channel: V0 and V1. V1 is for sub 480i/580i input processing for two-screen application. V0 is for processing all signals for main used for one and two-screen applications.
The IC generates clamp signals based on input synchronization signals.
It also performs data matrix conversion, and creates OSD signals.
Processed signals are sent to IC413.

• IC413 (SiI170)
Panel link transmitter.
This IC converts 8-bit RGB image data received from IC25 into TMDS differential signals and sends to the monitor.

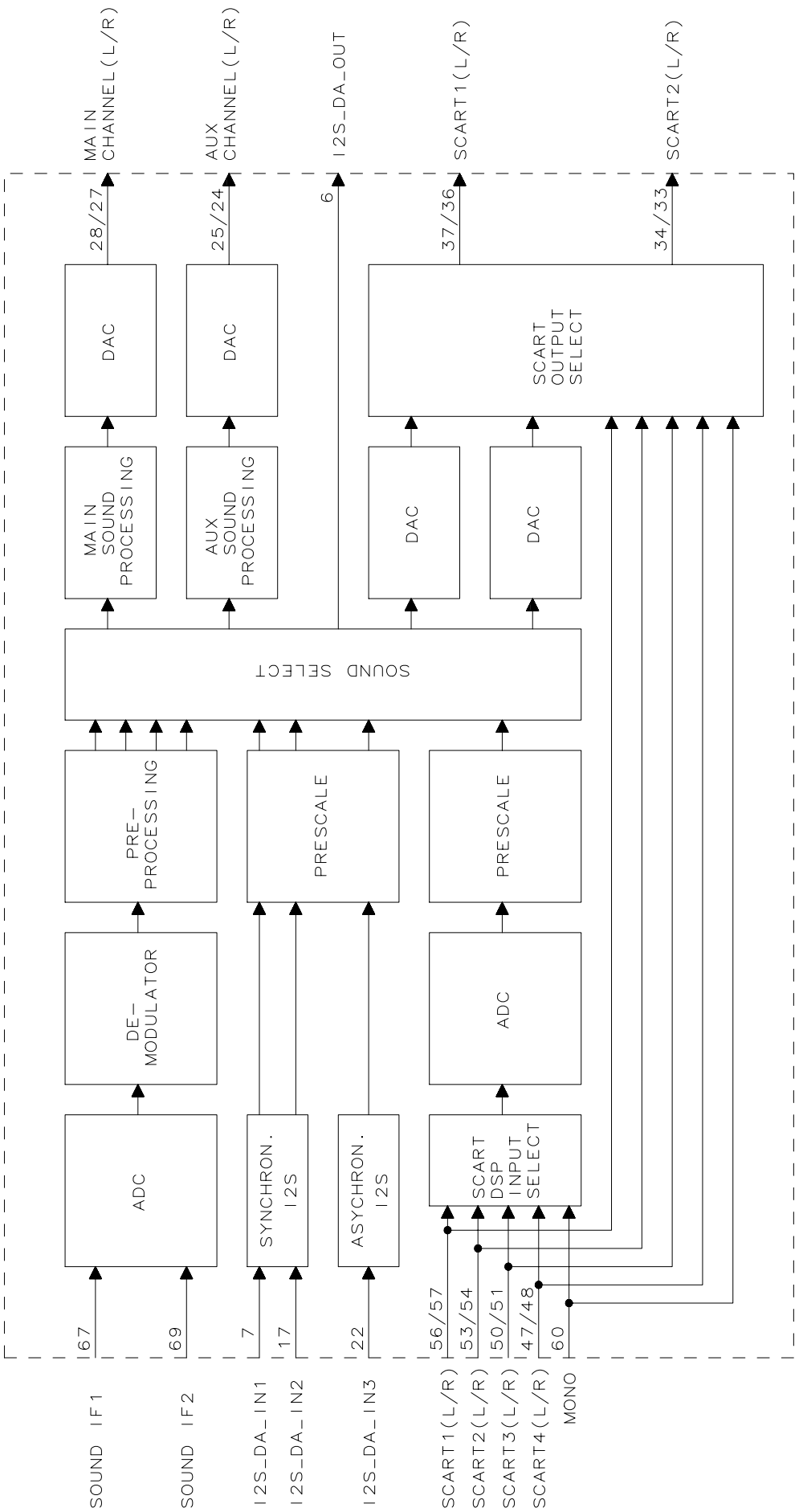
• IC1 (IX8270CE)
One-chip RISC microprocessor.
This IC communicates with the monitor and controls the system operation.
It controls all the ICs located in the media receiver.

• IC405 (UPD4721G)
RS-232 line driver/receiver conforming to EIA/TIA-232-E.
This IC enables the system to be controlled from a PC connected to the system.
It also allows IC1 to be upgraded using the PC.

■RH-iXA385WJZZ (ASSY:IC2510)

● **Pin mapping**

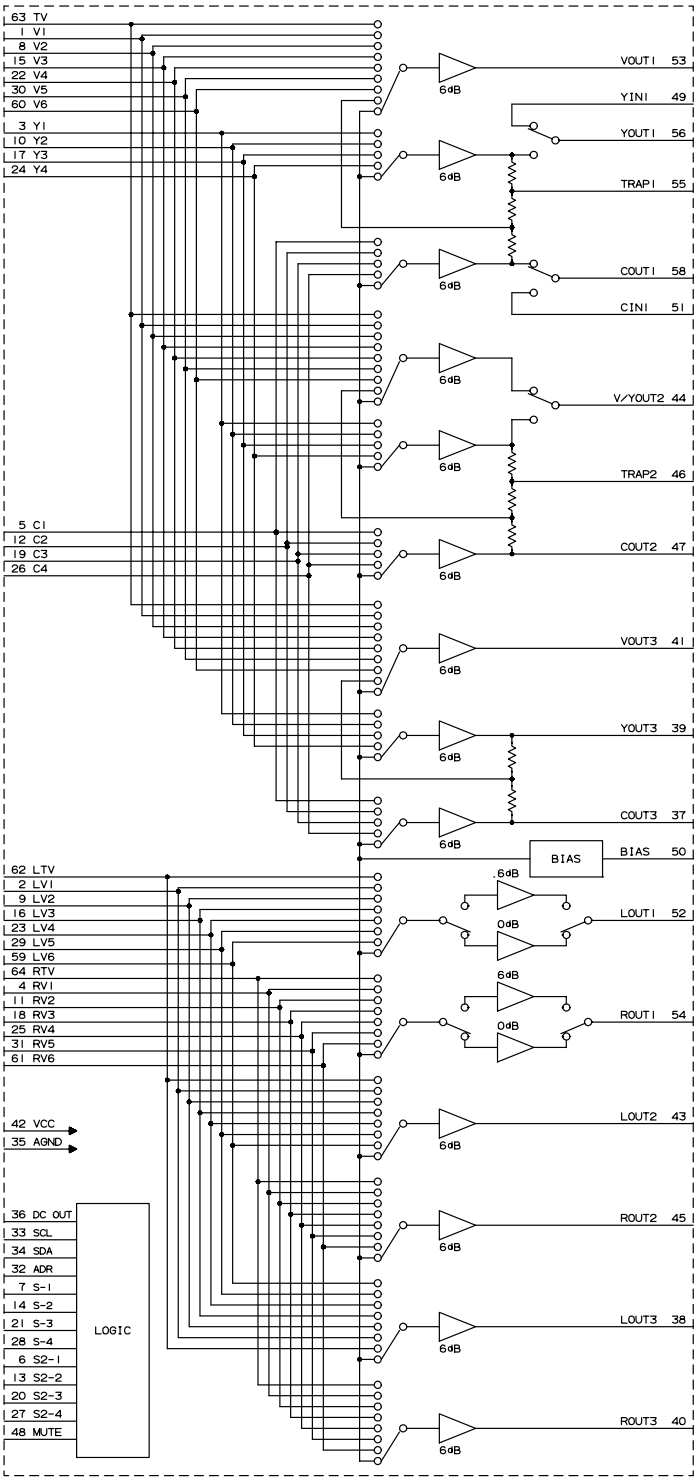
Pin No.	Pin Name	Type	Description
1, 19, 32, 33 44, 64	VDD	—	Power supply
2	PLLVDC	—	PLL power supply
3	VCOIN	I	VCO IN (used to construct external loop filter)
4	TEST	I	Input for testing
5	CPOUT	O	Charge pump out (used to construct external loop filter)
6	PLLEN	I	PLL enable signal input
7	PLLGND	—	
8, 9, 10, 18, 31 41, 42, 43, 62	GND	—	
11	PLLENO	O	PLL enable signal output
12	SPDIFO	O	S/PDIF output (3.072 Mbps)
13	SPDIFI	I	S/PDIF input (3.072 Mbps)
14	IO0	I/O	Expanded I/O, bit 0
15	IO1	I/O	Expanded I/O, bit 1
16	IO2	I/O	Expanded I/O, bit 2
17	IO3	I/O	Expanded I/O, bit 3
20	IO4	I/O	Expanded I/O, bit 4
21	UTEST	I	Input for testing
22	NANDTO	O	Output for testing
23	RESET	I	Asynchronous reset signal input
24	MEMTEST	I	Input for testing
25	BISTOUT	O	Output for testing
26	RWCLK	O	Expanded FIFO R/W clock
27	RSTRW	O	Expanded FIFO master reset
28	FEW	O	Expanded FIFO write enable
29	FRE	O	Expanded FIFO read enable
30	FD07	O	Expanded FIFO data output, bit 7
34	FD06	O	Expanded FIFO data output, bit 6
35	FD05	O	Expanded FIFO data output, bit 5
36	FD04	O	Expanded FIFO data output, bit 4
37	FD03	O	Expanded FIFO data output, bit 3
38	FD02	O	Expanded FIFO data output, bit 2
39	FD01	O	Expanded FIFO data output, bit 1
40	FD00	O	Expanded FIFO data output, bit 0
45	FD17	I	Expanded FIFO data input, bit 7
46	FD16	I	Expanded FIFO data input, bit 6
47	FD15	I	Expanded FIFO data input, bit 5
48	FD14	I	Expanded FIFO data input, bit 4
49	FD13	I	Expanded FIFO data input, bit 3
50	FD12	I	Expanded FIFO data input, bit 2
51	FD11	I	Expanded FIFO data input, bit 1
52	FD10	I	Expanded FIFO data input, bit 0
53	SDA	I/O	Serial communication data
54	SCS	I	Serial communication chip select
55	SCK	I	Serial communication chip select
56	I2SCLO	O	12S CL output
57	I2SDAO	O	12S CL output
58	I2SWSO	O	12S WS output
59	I2SWSI	I	12S WS input
60	I2SDAI	I	12S DA input
61	I2SCLI	I	12S CL input
63	REFCLK	I	PLL REF CLK (same input as 12SCLI)


MAIN CHANNEL (L/R)
AUX CHANNEL (L/R)
I2S_DA_OUT
SCART1 (L/R)
SCART2 (L/R)
28/27
25/24
6
37/36
34/33
DAC
DAC
SCART OUTPUT SELECT
MAIN SOUND PROCESSING
AUX SOUND PROCESSING
DAC
DAC
SOUND SELECT
PRE-PROCESSING
PRESCALE
PRESCALE
DE-MODULATOR
ADC
ADC
SYNCHRON. I2S
ASYCHRON. I2S
SCART DSP INPUT SELECT
67
69
7
17
22
56/57
53/54
50/51
47/48
60
SOUND IF1
SOUND IF2
I2S_DA_IN1
I2S_DA_IN2
I2S_DA_IN3
SCART1 (L/R)
SCART2 (L/R)
SCART3 (L/R)
SCART4 (L/R)
MONO

• Pin mapping

Pin No.	Pin Name	Type	Description
1	NC	—	Not connected
2	I2C_CL	I/O	I2C clock
3	I2C_DA	I/O	I2C data
4	I2S_CL	I/O	I2S clock
5	I2S_WS	I/O	I2S word strobe
6	I2S_DA_OUT	O	I2S data output
7	I2S_DA_IN1	I	I2S1 data input
8	ADR_DA	O	ADR data output
9	ADR_WS	O	ADR word strobe
10	ADR_CL	O	ADR clock
11, 12, 13	DVSUP	—	Digital power supply 5V
14, 15, 16	DVSS	—	Digital ground
17	I2S_DA_IN2	I	I2S2-data input
18	NC	—	Not connected
19	I2S_CL3	I	I2S3 clock
20	I2S_WS3	I	I2S3 word strobs
21	RESETQ	I	Power-on-reset
22	I2S_DA_IN3	I	I2S3-data input
23	NC	—	Not connected
24	DACA_R	O	Headphone out, right
25	DACA_L	O	Headphone out, left
26	VREF2	—	Reference ground 2
27	DACM_R	O	Loudspeaker out, right
28	DACM_L	O	Loudspeaker out, left
29, 30, 31, 32	NC	—	Not connected
33	SC2_OUT_R	O	SCART 2 output, right
34	SC2_OUT_L	O	SCART 2 output, left
35	VREF1	—	Reference ground 1
36	SC1_OUT_R	O	SCART 1 output, right
37	SC1_OUT_L	O	SCART 1 output, left
38	CAPL_A	—	Volume capacitor AUX
39	AHVSUP	—	Analog power supply 8V
40	CAPL_M	—	Volume capacitor MAIN
41,42	NC	—	Not connected
43,44	AHVSS	—	Analog ground
45	AGNDC	—	Analog reference voltage
46	NC	—	Not connected
47	SC4_IN_L	I	SCART 4 input, left
48	SC4_IN_R	I	SCART 4 input, right
49	ASG	—	Analog Shield Ground
50	SC3_IN_L	I	SCART 3 input, left
51	SC3_IN_R	I	SCART 3 input, right
52	ASG	—	Analog Shield Ground
53	SC2_IN_L	I	SCART 2 input, left
54	SC2_IN_R	I	SCART 2 input, right
55	ASG	—	Analog Shield Ground
56	SC1_IN_L	I	SCART 1 input, left
57	SC1_IN_R	I	SCART 1 input, right
58	VREFTOP	—	Reference voltage IF A/D converter
59	NC	—	Not connected
60	MONO_IN	I	Mono input
61, 62	AVSS	—	Analog ground
63, 64	NC	—	Not connected
65, 66	AVSUP	—	Analog power supply 5V
67	ANA_IN1+	I	IF input 1
68	ANA_IN-	I	IF common(can be left vacant, only if IF input 1 is also not in use)
69	ANA_IN2+	I	IF input 2(can be left vacant, only if IF input 1 is also not in use)
70	TESTEN	I	Test pin
71	XTAL_IN	I	Crystal oscillator
72	XTAL_OUT	O	
73	TP	—	Test pin
74	AUD_CL_OUT	O	Audio clock output(18.432MHz)
75, 76	NC	—	Not connected
77	D_CTR_I/O_1	I/O	D_CTR_I/O_1
78	D_CTR_I/O_0	I/O	D_CTR_I/O_0
79	ADR_SEL	I	I2C Bus address select
80	STANDBYQ	I	Stand-by(low-active)

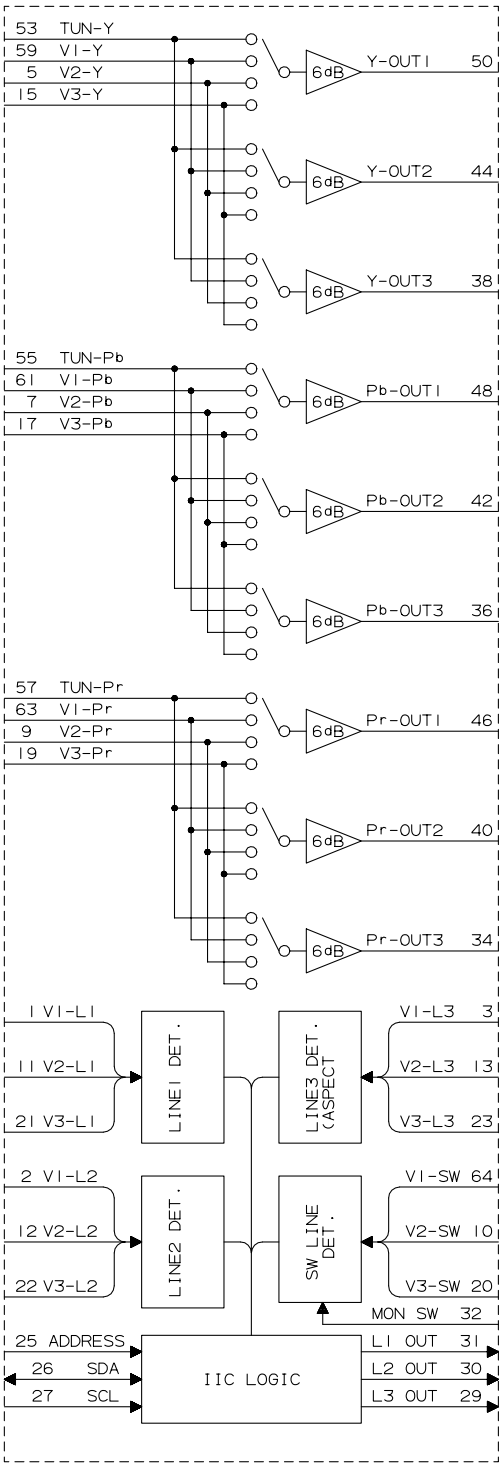
■VHiCXA2069Q-1 (ASSY:FIC1301)
S2-compatible 7-input, 3-output AV switch
●Block diagram



● Pin mapping

Pin No.	Pin Name	Type	Description
63	TV	I	Video signal input
1	V1	I	Composite video signal input
8	V2	I	
15	V3	I	
22	V4	I	
30	V4	I	
60	V4	I	
3	Y1	I	Y/C separation signal input, used for luminance signal input YIN1: Input for signal created by Y/C separation of VOUT1 output
10	Y2	I	
17	Y3	I	
24	Y4	I	
49	YIN1	I	
5	C1	I	Y/C separation signal input, used for chrominance signal input CIN1: Input for signal created by Y/C separation of VOUT1 output
12	C2	I	
19	C3	I	
26	C4	I	
51	CIN1	I	
62, 2	LTV, LV1	I	Audio signal input
9, 16	LV2, LV3	I	
23, 29	LV4, LV5	I	
59, 64	LV6, RTV	I	
4, 11	RV1, RV2	I	
18, 25	RV3, RV4	I	
31, 61	RV5, RV6	I	
53	VOUT1	O	Video signal output, used for composite vide signal output
41	VOUT3	O	
44	V/YOUT2	O	Video signal output, controlled via 12C bus and used for composite video signal output
56	YOUT1	O	Power or luminance signal output is selected.
39	YOUT3	O	Video signal output, used for luminance signal output
58	COUT1	O	Video signal output, used for chrominance signal output
47	COUT2	O	
37	COUT3	O	
52	LOUT1	O	Audis signal output
43	LOUT2	O	
38	LOUT3	O	
54	ROUT1	O	
45	ROUT2	O	
40	ROUT3	O	
6	S2-1	I	Used for detection of S2-compatible DC that is superimposed to C signal. 4:3 image signal is selected when voltage ? 1.3V, 4:3 letterbox signal when 1.3V < voltage ? 2.5V, and 16:9 squeeze signal when voltage > 2.5V. 4:3 image signal is selected when the pins are open because they are pulled down to GND via 100K?.
13	S2-2	I	
20	S2-3	I	
27	S2-4	I	
7	S-1	I	Used for selection between composite video signal and S signal. Detection result is written to the status register. S signal is selected when voltage ? 3.5V, and composite video signal when voltage > 3.5V. Composite video signal is selected when the pins are open because they are pulled down to 5V via 100K?.
14	S-2	I	
21	S-3	I	
28	S-4	I	
32	ADR	I	Used for selection of slave address for 12C bus. 90H is selected when voltage ? 1.5V, and 92H when ? 2.5V. 90H is selected when the pin are open.
33	SCL	I	12C bus signal input
34	SDA	I	12C bus signal input
36	DC OUT	O	Used for output of S2-compatible DC that is superimposed to COUT3. DC superimposition is done by connecting to COUT3 via capacitor. The pin is controlled via 12C bus. Connection of 4.7k? external resistor provides output impedance of 10?3K? that conforms to S2.
55	TRAP1	I	Connected to trap circuit for sub carrier.
46	TRAP2	I	
48	MUTE	I	Mute for audio signal output. Mute is on when voltage ? 1.3V and off when voltage ? 2.5V. Mute is off when the pin is open.
50	BIAS	I	Internal reference bias input. Connected to GND via capacitor.

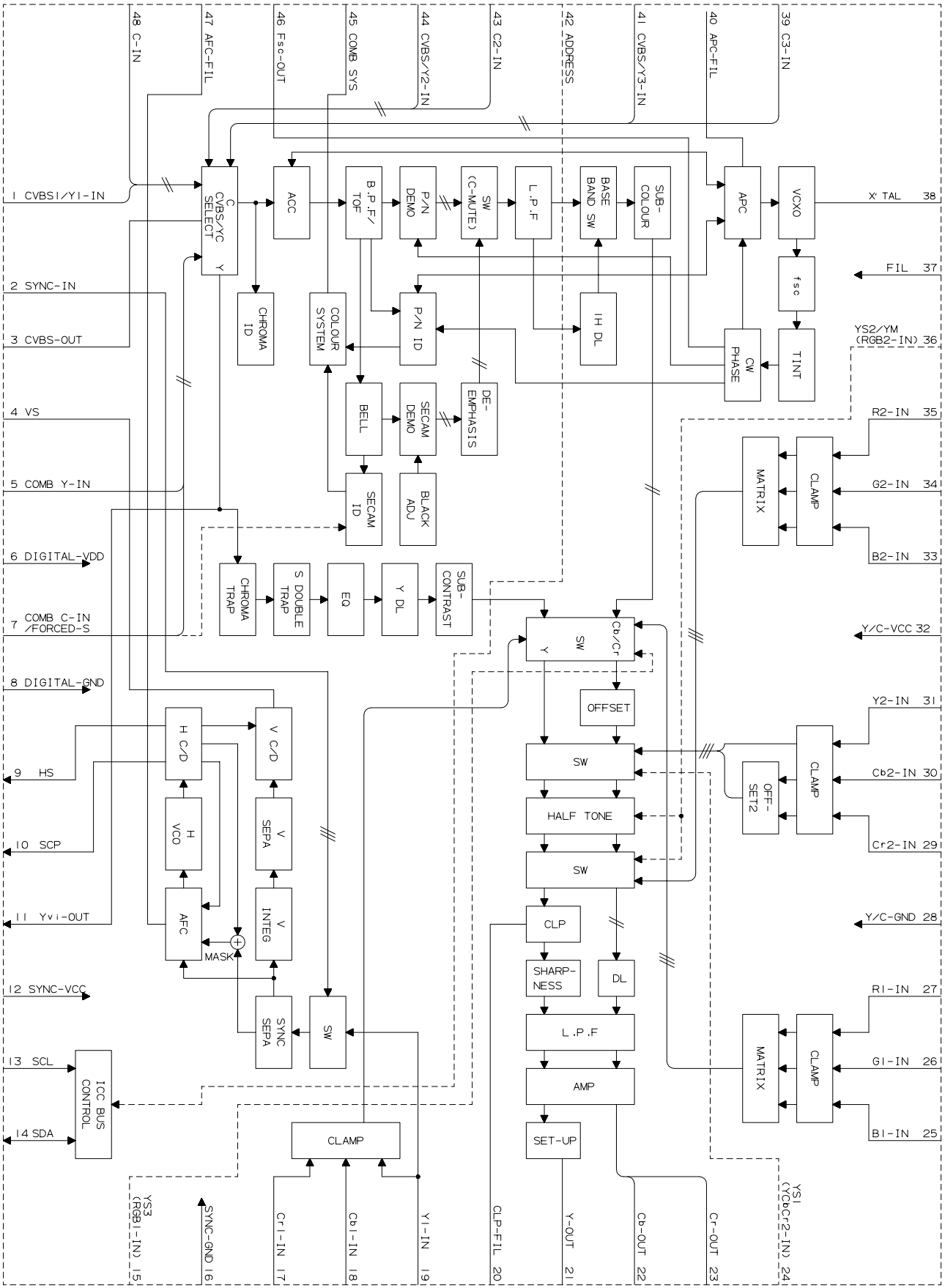
■VHiMM1519XQ-1 (IC1401)
Component Input Video Switch
●Block diagram



● Pin mapping

Pin No.	Pin Name	Type	Description
1	VIDEO 1-L1	I	D-pin connection line input
2	VIDEO 1-L2	I	
3	VIDEO 1-L3	I	
11	VIDEO 2-L1	I	
12	VIDEO 2-L2	I	
13	VIDEO 2-L3	I	
21	VIDEO 3-L1	I	
22	VIDEO 3-L2	I	
23	VIDEO 3-L3	I	
4, 14, 39,45, 52, 58	VCC	—	Analog power supply (9V)
51	AVCC	—	
5	VIDEO 2-Y	I	Y signal input
15	VIDEO 3-Y	I	
53	TUNER-Y	I	
59	VIDEO 1-Y	I	
24	DGND	—	
6, 8, 16, 18, 33,35, 37, 41, 43, 47, 49, 54, 58, 60, 62	GND	—	
7	VIDEO 2-Pb	I	Chrominance input
9	VIDEO 2-Pr	I	
17	VIDEO 3-Pb	I	
19	VIDEO 3-Pr	I	
55	TUNER-Pb	I	
57	TUNER-Pr	I	
61	VIDEO 1-Pb	I	
63	VIDEO 1-Pr	I	
10	VIDEO 2-SW	I	D-pin connection check switch line input
20	VIDEO 3-SW	I	
32	MONO-SW	I	
64	VIDEO 1-SW	I	
25	ADDRESS	I	Slave address input
26	SDA	I/O	12C bus data input/output
27	SCL	I	12C bus clock input
28	DVCC	—	Digital power supply (5V)
29	L3 OUT	O	Monitor output line output
30	L2 OUT	O	
31	L1 OUT	O	
34	Pr OUT 3	O	Image output
36	Pb OUT 3	O	
38	Y OUT 3	O	
40	Pr OUT 2	O	
42	Pb OUT 2	O	
44	Y OUT 2	O	
46	Pr OUT 1	O	
48	Pb OUT 1	O	
50	Y OUT 1	O	

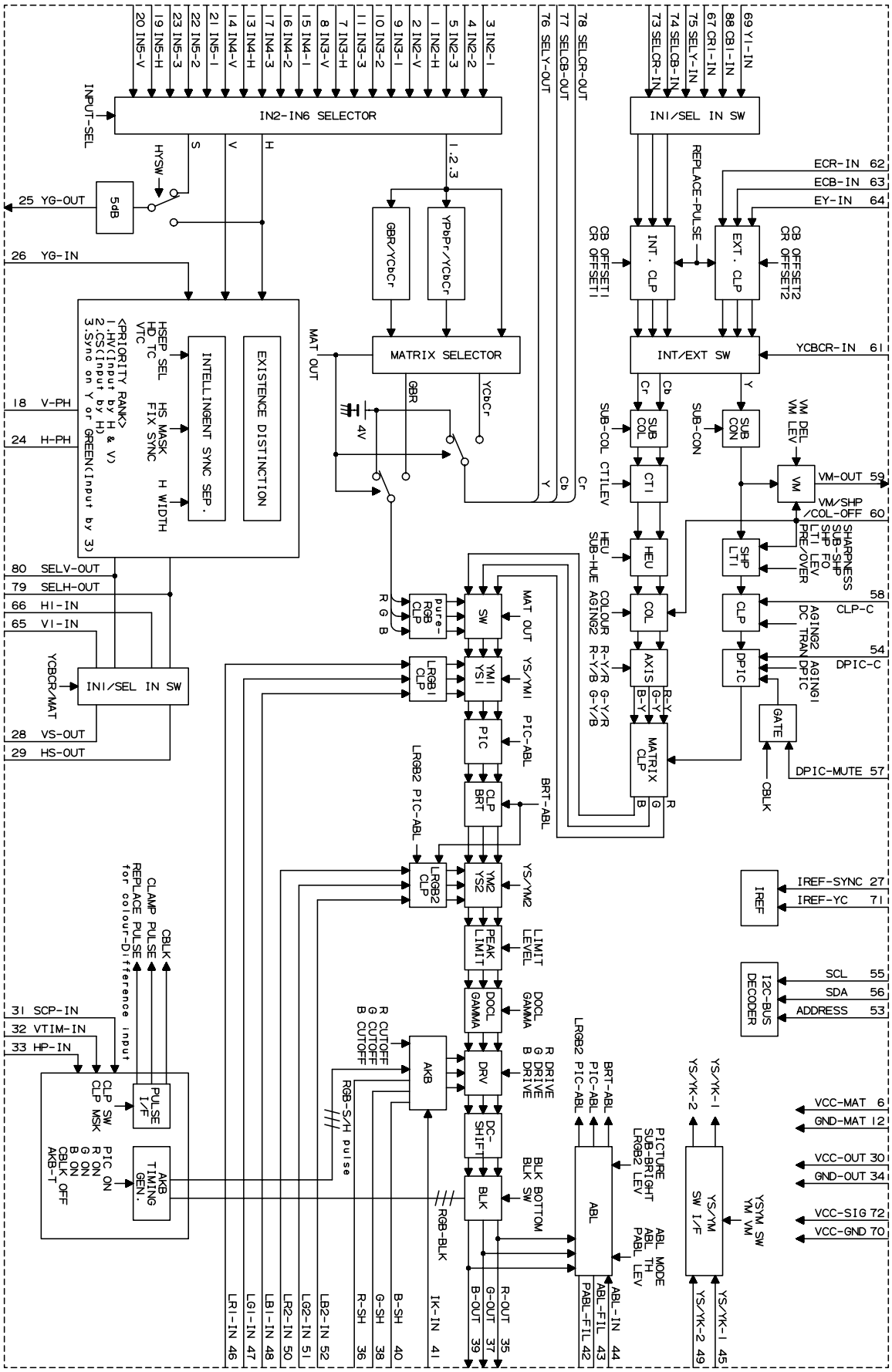
■VHiTB1274AF-1Q (ASSY:IC801, IC802)
VIDEO/CHROMA Processor
●Block diagram



● Pin mapping

Pin No.	Pin Name	Type	Description
1	CVBS1/Y1-IN	I	CVBS1 or Y1-IN signal input
2	SYNC-IN	I	Synchronization signal input
3	CVBS-OUT	O	CVBS or Y+C signal output
4	VS	O	Output of counted-down vertical synchronization signal
5	COMB Y-IN	I	Input of Y signal outputted from comb filter. Open when not used
6	D-VDD	—	5 VDC power supply to DDS/BUS/V-CD/H-CD block (standard)
7	COMB C-IN	I	Input of C signal outputted from comb filter. Open when not used
8	D-GND	—	GND for DDS/BUS/V-CD/H-CD block
9	HS	O	Output of horizontal synchronization signal under AFC
10	SCP	O	Sand castle pulse output.
			Clamp pulse and horizontal blanking pulse are outputted.
11	Yvi-IN	O	Output of synchronous input Y signal selected using video SW
12	SYNC-VCC	—	5VDC power supply to SYNC/HVCO block (standard)
13	SCL	I	12C bus SCL input
14	SDA	I/O	12C bus SDA output
15	YS3	I	Switch for selection between main signal and RGB1 input signal. This input is
	(iRGB1-in)		operative only when RGB1-ENB is enabled during bus setting.
16	SYNC-GND	—	GND for SYCN/HVOC block
17	Cr1-IN	I	Y1/Cb/Cr1 signal input
18	Cb1-IN	I	
19	Y1-IN	I	
20	CLP-FIL	—	Used to connect Y clamp filter
21	Y-OUT	O	Y/Cb/Cr signal output
22	Cb-OUT	O	
23	Cr-OUT	O	
24	YS1 (YVbC2-IN)	I	Switch for selection between main signal and input signal
25	B1-IN	I	RGB1 signal input. YS3 or 12C bus is used to select signal.
26	G1-IN	I	
27	R1-IN	I	
28	Y/C-GND	—	GND for Y/C/Text/Video-SW/1HDL block
29	Cr2-IN	I	Y2/Cb2/Cr2 signal input. YS1 is used to select signal. Open when the pin is not used.
30	Cb2-IN	I	
31	Y2-IN	I	
32	Y/C-VCC	—	5VDC Power supply to Y/C/Text/Video-SW/1HDI block. (standard)
33	B2-IN	I	RGB2 signal input. YS is used to select signal. Open when not used.
34	G2-IN	I	
35	R2-IN	I	
36	YS2/YM (RGB2-IN)	I	Switch for selection between main signal and RGB2 input signal
37	FIL.	—	Connected to Y/C-VCC pin
38	X'TAL	—	Connect to 16.2 MHz crystal oscillator
39	C3-IN	I	Chroma signal input. Open when not used.
40	APC-FIL	—	Connected to chroma modulation filter
41	CVBS3/Y3-IN	I	CVBS33 or Y3 signal input. Open when not used.
42	ADDRESS	I	Slave address input
43	C2-IN	I	Chroma signal input. Open when not used.
44	CVBS2/Y2-IN	I	CVBS2 or Y2 signal input. Open when not used.
45	COMB SYS	O	Current color system discrimination result output. Pin 46 is also used for this output.
46	Fsc-OUT	O	Sub carrier output
47	AFC-FIL	—	Connected to AFC detection filter
48	C1-IN	I	Chroma signal input. Open when not used.

■VHiCXA2101Q-1 (ASSY:IC803)
Baseband image signal processing
●Block diagram



• Pin mapping

Pin No.	Pin Name	Type	Description
1	IN2-H	I	IN2-H: Independent H periodic signal input
2	IN2-V	I	IN2-V: Independent V periodic signal input
3	IN2-1	I	IN2 system signal input
4	IN2-2	I	
5	IN2-3	I	
6	Vcc-MAT	—	Power supply to selector or synchronous processing modules
7	IN3-H	I	IN3-H: Independent H periodic signal input
8	IN3-V	I	IN3-V: Independent V periodic signal input
9	IN3-1	I	IN3 system signal input
10	IN3-2	I	
11	IN3-3	I	
12	GND-MAT	—	GND for selector or synchronous processing modules
13	IN4-H	I	IN4-H: Independent H periodic signal input
14	IN4-V	I	IN4-V: Independent V periodic signal input
15	IN4-1	I	IN4 system signal input
16	IN4-2	I	
17	IN4-3	I	
18	V-PH		Connected to capacitor for holding Vsync peak
19	IN5-H	I	IN5-H: Independent H periodic signal input
20	IN5-V	I	IN5-V: Independent V periodic signal input
21	IN5-1	I	IN5 system signal input
22	IN5-2	I	
23	IN5-3	I	
24	H-PH		Connected to capacitor for holding Hsync peak
25	YG-OUT	O	Output of composite video signal for synchronous separation
26	YG-IN	I	Input of composite video signal for synchronous separation
27	IREF-SYNC		Pin for reference current setting (approx. 4.6V)
28	VS-OUT	O	Output of HV of either IN1 system or IN2 ? IN5 system selector signals. Signal is
29	HS-OUT	O	selected by 12C bus "YCBCR/MAT".
30	Vcc-OUT	O	Power supply to RGB system
31	SCP-IN	I	Sand-castle-pulse input
32	VTIM-IN	I	V timing pulse input
33	HP-IN	I	H pulse input
34	GND-OUT	O	GND for RGB system
35	R-OUT	O	RGB signal output.
37	G-OUT	O	When 100IRE white is inputted, signal is outputted at 2.6Vp-p.
39	B-OUT	O	
36	R-SH		RGB AKB sample & hold
38	G-SH		
40	B-SH		
41	IK-IN	I	Input of returned reference pulse
42	PABL-FIL		Peak ABL peak-hold
43	ABL-FIL		Creates LPF when ABL control signal is received.
44	ABL-IN		ABL control signal input
45	ABL-IN		YM1/YS1 control signal input. Input level is judged on the three-value logic. This pin enables VM to turn off when YM or YS reaches its specified value.
46	LR1-IN	I	Analog RGB1 signal input
47	LG1-IN	I	
48	LB1-IN	I	
49	LB1-IN	I	YM2/YS2 control signal input.
			Input level is judged on the three-value logic.
			This pin enables VM to turn off when YM or YS reaches its specified value.
50	LR2-IN	I	Analog RGB2 signal input
51	LG2-IN	I	
52	LB2-IN	I	
53	ADDRESS	I	12C bus slave address input
54	DPIC-C	I	Used to connect capacitor to GND pair for detection of dynamic picture (black expansion)
55	SCL	I	12C bus SCl (serial clock) input
56	SCL	I	12C bus SDA (serial data) input
57	DPIC-MUTE	I	Used to provide mute control to dynamic picture (black expansion)
58	CLP-C		Connected to Y system clamp capacitor
59	VM-OUT	O	VM output. Differential waveform of Y signal is outputted with positive polarity.
60	VM/SHP/COL-OFF		Used to turn off VM, sharpness and color. Input level is judged on the three-value logic.
61	YCBCR-SW	I	Input for switching signal inputted to INT/EXT SW. External input pin is selected when this input is High.
62	ECR-IN	I	External Y/Cb/Cr signal input
63	ECB-IN	I	
64	EY-IN	I	

■RH-iXA385WJZZ (ASSY:IC2510)

● **Pin mapping**

Pin No.	Pin Name	Type	Description
1	NC	—	Non-connection
2	SP_CP2	I	Input of clamp signal from synchronous separation IC (for 15K system)
3	SP_VD	I	Input of vertical synchronization signal from synchronous separation IC
4	GND	—	Ground
5	SP_HD	I	Input of horizontal synchronization signal from synchronous separation IC
6	VD3	O	Output of vertical synchronization signal to synchronous separation IC
7	HD3	O	Output of horizontal synchronization signal to synchronous separation IC
8	SP_CP1	I	Input of clamp signal from synchronous separation IC (normal)
9	TDI	I	SP data input
10	TMS	I	SP mode input
11	TCK	I	SP clock input
12	TEXT_HD	O	TEXT_HD output
13	US_HD	I	RCA/TEXT horizontal synchronization signal input
14	TEXT_VD	O	TEXT_VD output
15	Vcc3.3V	—	TEXT_VD output
16	US_VD	I	RCA/TEXT vertical synchronization signal input
17	GND	—	Ground
18	MODEA	I	Mode selection signal A
19	MODEB	I	Mode selection signal B
20	MODEC	I	Mode selection signal C
21	SELA	I	Input of HD switching control signal for main video chroma/RCA
22	SELO	I	Input of control signal for TEXT synchronization signal output
23	SELC	I	Input of control signal for TEXT synchronization signal output
24	TDO	O	ISP data output
25	GND	—	Ground
26	Vcc3.3V	—	Power supply
27	VD1	I	Input of vertical synchronization signal from main video chroma IC
28	HD1	I	Input of horizontal synchronization signal from main video chroma IC
29	PL_VD	O	Vertical synchronization signal output
30	PL_HD	O	Horizontal synchronization signal output
31	PL_CP	O	Clamp signal output
32	PL_BLK	O	H blank signal output
33	MODED	I	Mode selection signal D
34	NC	—	Mode selection signal D
35	Vcc3.3V	—	Power supply
36	NC	—	Non-connection
37	CC_HD	O	Horizontal synchronization signal for closed caption
38	ow_vblk	I	Auto wide V blank signal input
39	HDS	O	Output of horizontal synchronization signal for PC board
40	VDS	O	Output of vertical synchronization signal for PC board
41	HD2	I	Input of horizontal synchronization signal from sub video chroma IC
42	VD2	I	Input of vertical synchronization signal from sub video chroma IC
43	clk	I	Clock input
44	NC	—	Non-connection

■VHiTC90A69++1Y (ASSY:IC402)

● **Pin mapping**

Pin No.	Pin Name	Type	Description
1	BIAS	—	ADC bias
2	VRT	—	ADC upper limit bias
3	VDD1	—	ADC and DAC power supply (analog system)
4	TESTI1	I	Input for testing
5	VSS2	—	ADC GND (analog system)
6	VRB	—	Video signal input
7	YCIN	I	ADC lower limit bias
8	TEST	O	Reset control and test control before shipping
9	KILLER	I	Y/C separation and vertical enhancer OFF
10	TESTI2	I	Input for testing
11	VDD3	—	Power supply to logic (digital system)
12	VSS3	—	Logic and DRAM GND (digital system)
13	VDD2	—	DRAM power supply (digital system)
14	TESTI3	I	Input for testing
15	SCL	I	IIC BUS clock input
16	SDA	I	IIC BUS data input
17	MODE1	O	MODE1 output
18	TESTOUT	I	Input for testing
19	FSC	I	Clock input
20	VDD4	—	PLL power supply (analog system)
21	VSS4	—	PLL GND (analog system)
22	FIL	I	VCO control
23	PD	O	PLL detection output
24	VB2	—	DAC bias 2
25	YOUT	O	Luminance signal output
26	VSS1	—	DAC GND (analog system)
27	COUT	O	DAC GND (analog system)
28	VB1	—	DAC bias 1

■RH-iX3270CEZZ (ASSY:IC1)

● **Pin mapping**

Pin No.	Pin Name	Type	Description
34, 36-44, 46, 48-52	D[15:0]	I/O	Data bus D [15:0]
23-26, 28, 30-32	D[23:16/PTA[7:0]	I/O	Data bus D [23:16] / I/O port A [7:0]
13-18, 20, 22	D[31:24/PTB[7:0]	I/O	Data bus D [31:24] / I/O port B [7:0]
86, 84, 82, 78-72, 70-68-60, 56-53	A[25:0]	O	Address bus A [15:0]
96	CS0	O	Chip select 0/
98	CS2/PTK[0]	O/(I/O)	Chip select 2 / I/O port K [0]
99	CS3/PTK[1]	O/(I/O)	Chip select 3 / I/O port K [1]
100	CS4/PTK[2]	O/(I/O)	Chip select 4 / I/O port K [2]
101	CS5/CE1E/PTK[3]	O/(I/O)	Chip select 5 / CE1 (area 5SPCMIA)/O port K [3]
102	CS6/CE1B	O	Chip select 6 / CE1 (area 6SPCMIA)
87	BS/PTK[4]	O/(I/O)	Bus cycle start signal / I/O port K [4]
118	RAS3U/PTE[2]	O/(I/O)	RAS (area 3DRAM, SDRAM upper 32MB address) / I/O port E [2]
106	RAS3L/PTJ[0]	O/(I/O)	RAS (area 3DRAM, SDRAM upper 32MB address) / I/O port J [0]
119	RAS2U/PTE[1]	O/(I/O)	RAS (area 2DRAM, SDRAM upper 32MB address) / I/O port E [1]
107	RAS2L/PTJ[1]	O/(I/O)	RAS (area 2DRAM, SDRAM upper 32MB address) / I/O port JE [1]
108	CASLL/CAS/PTJ[2]	O/(I/O)	D7-D0 CAS (DRAM)/CAS (SDRAM) / I/O port J [2]
110	CASLH/PTJ[3]	O/(I/O)	D15-D18 CAS (DRAM) / I/O port J [3]
112	CASHL/PTJ[4]	O/(I/O)	D23-D16 CAS (DRAM) / I/O port J [4]
113	CASHH/PTJ[5]	O/(I/O)	D31-D24 CAS (DRAM) / I/O port J [5]
116	CAS2L/PTE[6]	O/(I/O)	D31-D24 CAS (DRAM) / I/O port J [5]
117	CAS2H/PTE[3]	O/(I/O)	D31-D24 CAS (DRAM) / I/O port J [5]
89	WE0/DQMLL	O	D7-D0 selection signal/DQM (SDRAM)
90	WE1/DQMLU/WE	O	D7-D0 selection signal/DQM (SDRAM)
91	WE2/DQMUL/ ICIORD/PTK[6]	O/(I/O)	D23-D16 selection signal/DQM (SDRAM)/PCMCIA I/O port K [6]
92	WE3/DQMUU/ ICIOWR/PTK[7]	O/(I/O)	D31-D24 selection signal/DQM (SDRAM)/PCMCIA I/O write I/O port K [7]
93	RD/WR	O	Read/Write switch signal
88	RD	O	Read strobe
105	CKE/PTK[5]	O/(I/O)	CK enable (for SDRAM only) / I/O port K [5]
123	WAIT	I	Hardware wait request
11-8	IRL[3:0]/IRQ[3:0]/ PTH[3:0]	I	Hardware wait request
12	IRQ4/PTH[4]	I	External interrupt request / I/O port H [4]
7	NMI	I	Non-maskable interrupt request
160	IRQOUT	O	Interrupt request output
182	WAKEUP/PTD[3]	O/(I/O)	Standby mode interrupt request output / I/O ports D [3]
159	TCLK/PTH[7]	I/O	TMU/RTC clock I/O / I/O port H [7]
191	DREQ0/PTD[4]	I	DMA request 0 / I/O port D [4]
114	DACK0/PTD[5]	O/(I/O)	DMA ACK 0 / I/O port D [5]
192	DREQ1/PTD[6]	I	DMA request 0 / I/O port D [6]
115	DACK1/PTD[7]	O/(I/O)	DMA ACK 1 / I/O port D [7]
189	DRAK0/PTD[1]	O/(I/O)	DMA ACK 1 / I/O port D [7]
190	DRAK1/PTD[0]	O/(I/O)	DMA ACK 0 / I/O port D [0]
171	RxD0/SCPT[0]	I	Receive data 0/SCI input port [0]
164	TxD0/SCPT[0]	O	Send data 0/SCI output port [0]
165	SCK0/SCPT[1]	I/O	Serial clock 0/SCI I/O port [1]
172	RxD1/SCPT[2]	I	Receive data 0/SCI input port [2]
166	TxD1/SCPT[2]	O	Send data 0/SCI output port [2]
167	SCK1/SCPT[1]	I/O	Serial clock 1/SCI I/O port [3]
174	RxD2/SCPT[4]	I	Receive data 0/SCI input port [4]
168	TxD2/SCPT[4]	O	Send data 2/SCI output port [4]
169	SCK2/SCPT[5]	I/O	Serial clock 2/SCI I/O port [5]
170	RTS2/SCPT[6]	O/(I/O)	Send request 2/SCI I/O port [6]
176	CTS2/IRQ5/SCPT[7]	I	Send clear 2/enternal interrupt request/SCI input port [7]
104	CE2B/PTE[5]	O/(I/O)	PC card 0 chip enable 2 / I/O port E [5]
126	IOIS16/PTG[7]	I	Write protect/input port G [7]
103	CE2A/PTE[[4]	O/(I/O)	PC card 1 chip enable 2 / I/O port E [4]
146, 149	CAP[1:2]	—	PLL external capacitor pin [1:2]
156	EXTAL	I	External clock/crystal oscillator input
155	XTAL	O	Crystal oscillator output
162	CKIO	I/O	System clock I/O
5	EXTAL2	I	RTC crystal oscillator input
4	XTAL	O	RTC crystal oscillator output

● Pin mapping

Pin No.	Pin Name	Type	Description
193	RESETP	I	Power-on reset request
124 122	RESETM BREQ	I I	Manual reset request Bus request
121	BACK	O	Bus ACK
2, 1, 144	MD[2:0]	I	Clock mode select
196, 195	MD[4:3]	I	Area 0 bus width select
197	MD5	I	Endian select
194	CA	O	Chip active
158, 157	STATUS[1:0]/ PTJ[7:6]	I/O	Processor status [1:0] / I/O port J [7:6]
204-199	AN[5:0]/PTL[6:7]	I	A/D converter input [5:0]/input port L [5:0]
206, 207	AN[6:7]/DA[1:0]/ PTL[6:7]	I/O	A/D converter input [6:7] / D/A converter output [1:0] / input port L [6:7]
177-180, 185-188	PTC[7:0]/PINT[7:0]	I/O	I/O port C [7:0]/port interrupt [7:0]
184	PTD[2]/RESETOUT	I/O	I/O port D [2]/reset output
120, 94	PTE[0]/PTE[7]	I/O	I/O port E [0]/I/O port E [7]
136-143	PTF[7:0]/PINT[15:8]	I	I/O port E [7:0]/port interrupt [15:8]
127-131, 135	PTG[6:0]	I	I/O port G [6:0]
125	PTH[5]/ADTRG	I	I/O port H [5]/analog trigger
151	PTH[6]	I	I/O port H [6]
21, 29, 35, 47, 59, 71, 81, 85, 97, 111, 134, 154, 163, 175, 183	Vcc	—	Power supply (3.3V)
145, 150	Vcc(PLL)	—	Power supply (3.3V)
3	Vcc(RTC)	—	Power supply (3.3V)
205	Avcc	—	Analog power supply (3.3V)
19, 27, 33, 45, 57, 69, 79, 83, 95, 109, 132, 152, 153, 161, 173, 181	Vss	—	Power supply (0V)
147, 148	Vss(PLL)	—	Power supply (0V)
6	Vss(TRC)	—	Power supply (0V)
198, 208	Avss	—	Analog power supply (0V)

■9DK001-15079 (CXA3506R) (ASSY:IC4)

3-channel, 8-bit, 120MSPS A/D converter amplifier PLL

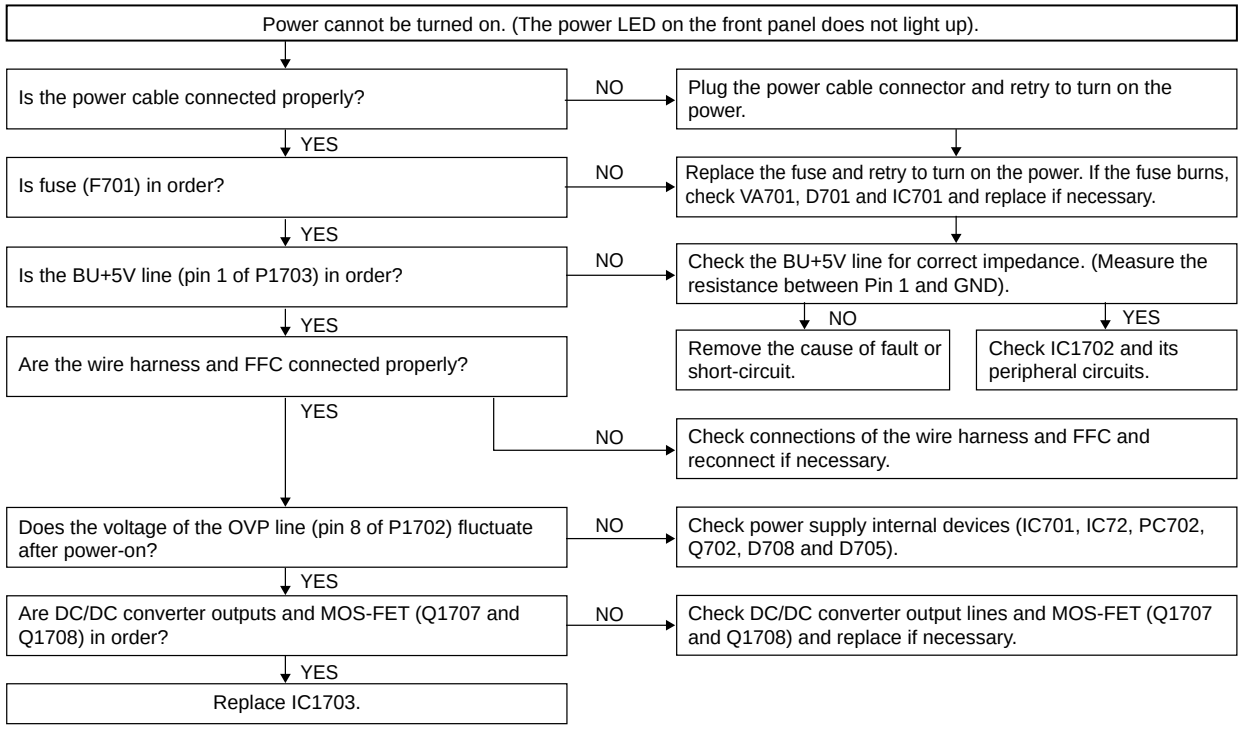
- **Pin mapping**

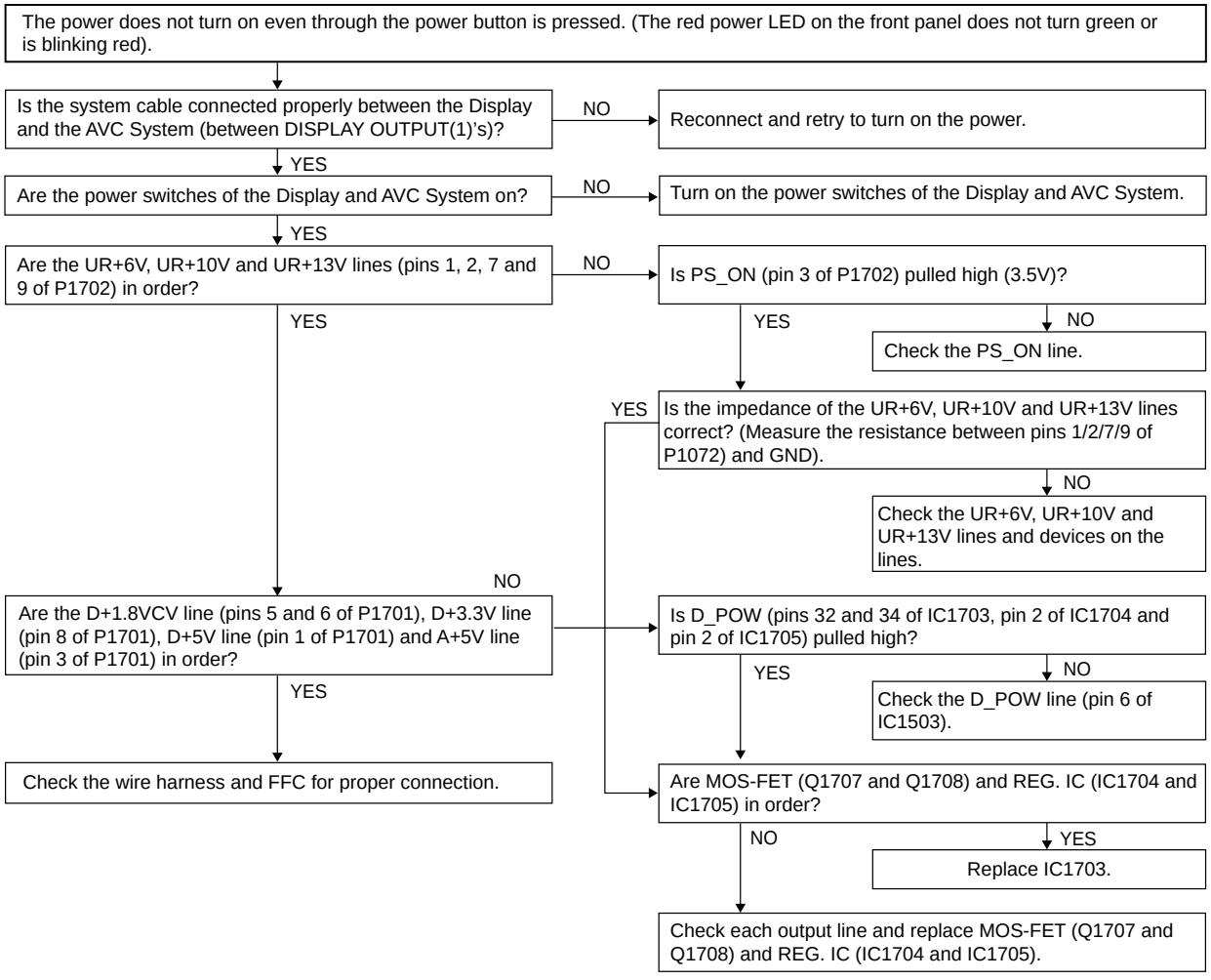
Pin No.	Pin Name	Type	Description
1	B/CbOUT	O	Amplifier output signal monitor
2	ADDRESS	I	I2C slave addressing
3	R/CrOUT	O	Amplifier output signal monitor
4	NC	—	Not used
5	NC	—	Not used
6	XPOWERSAVE	I	Power saving
7	DGNDREG	—	Resistor GND
8	DVCCREG	—	Resistor power supply
9	SDA	I	Control resistor data input
10	SCL	I	Control resistor clock signal input
11	XSENABLE	I	3-wire control resistor enable signal input
12	SEROUT	O	3-wire control resistor data read
13	3WIRE/I2C	I	12V bus mode and 3-wire bus mode select
15	AVCCADREF	—	ADC reference voltage power supply
16, 94	AVCCAD3	—	ADC analog power supply
17	VRT	O	ADC top reference voltage output
18, 92	DVCCAD3	—	ADC digital power supply
19, 32, 42, 54, 65,76,90	DVCCADTTL	—	ADC TTL output power supply
20, 33, 44, 55, 67, 77, 89	DGNDADTTL	—	ADC TLL output GND
21, 22, 24-28, 31	RA0~RA7	O	R channel port A data output
23, 30, 43, 50, 59, 66,7 9, 86	DGNDAD3	—	ADC digital GND
29, 80	AGNDAD3	—	ADC analog GND
34-41	RB0~RB7	O	R channel port B data output
45-49, 51-53	BA0~`BA7	O	B channel port A data output
56-58, 60-64	BB0~BB7	O	B channel port B data output
68-75	GA0~GA7	O	G channel port A data output
78, 81-85, 87,88	GB0~GB7	O	G channel port B data output
91	DVCCAD	—	ADC digital power supply
93	VRB	O	ADC bottom reference voltage output
95	AGNDADREF	—	ADC reference voltage GND
96	DVCCPLLTTL	—	PLL TTL output power supply
97	DGNDPLLTTL	—	PLL TTL output GND
98	XCLKCLK	O	CLK reverse output
99	1/2XCLK	O	CLK output
100	1/2CLK	O	I2CLK reverse output
101	DSYNC/	O	I2CLK output
103	DIVOUT	O	DSYNC signal outut/DIVOUT signal output
104	UNLOCK	O	UNLOCK signal output
105	SOGOUT	O	Input of sink signal of Sink-On-Green signal
106	HOLD	I	Phase comparison disable signal input
107	XTLOAD	I	Programmable counter reset
108	EVEN/ODD	I	ADC sampling clock inverse pulse input
109	XCLKIN	I	Negative test clock input
110	CLKIN	I	Positive test clock input
111	SYNCIN1	I	Sink signal input 1
112	SYNCIN2	I	Sink signal input 2
113	CLPIN	I	Clamp pulse input
114	DVCCPLL	—	PLL digital power supply
115	DGNDPLL	—	PLL digital GND
116	AVCCVCO	—	PLL VCO analog power supply
117	AGNDVCO	—	PLL VCO analog GND
118	RC1	—	External PLL loop filter
119	RC2	—	External PLL loop filter
120	AVCCIR	—	IREF analog power supply
121	IREF	I	Current input
123	AGNDIR	—	IREF analog GND
124	G/YIN1	I	G/Y signal input 1
125	AVCCAMPG	—	G/Y amplifier power supply
126	G/YIN2	I	G/Y signal input 2
127	AGNDAMPG	—	G/Y amplifier power supply
128	G/YCLP	—	Brightness clamp capacitor connection
129	B/CbCLP	—	Brightness clamp capacitor connection
130	R/CrCLP	—	Brightness clamp capacitor connection
132	SOGIN1	I	Sink-On-Green signal input 1
133	B/CbIN1	I	B/Cb signal input 1
134	AVCCAMPB	—	B/Cb amplifier power supply
135	SOGIN2	I	Sink-On-Green signal input 2
136	B/CbIN2	I	B/Cb signal input 2
137	AGNDAMPB	—	B/Cb amplifier GND

Pin No.	Pin Name	Type	Description
139	R/CrIN1	I	R/Cr signal input 1
140	AVCCAMPR	—	R/Cr amplifier power supply
141	R/CrIN2	I	R/Cr signal input 2
142	AGNDAMPR	—	R/Cr amplifier GND
143	G/YOUT	O	Amplifier output signal monitor
144	DACTEST	O	Input for testing amplifier control resistor DAC
14, 102, 122, 131, 138	OUTDPGND	—	

TROUBLE SHOOTING TABLE

AVC System





No sound (1)

No sound is heard from the speaker in all modes.

Is the monitor audio output set to "Variable"? Or Is the headphone connected?
- YES → Set the monitor audio output to "Fixed". Remove the headphone.
- NO ↓

Are the audio outputs of IC2501 (multi-sound processor) in order?
Pins 36 and 37 of IC2501 (SC1 OUT L/R).
- NO → Check IC2501 (multi-sound processor) and its peripheral circuits.
- ↓

Are audio signals applied to the AV unit connectors (pins 1 and 3 of P2502)?
- NO → Check lines and devices between pins 36/37 of IC2501 and pins 1/3 of the AV unit connector (P2502). (Q2504-5, Q2509-10 and Q2513-4)
- YES ↓

Check peripherals of the SR unit DISPLAY OUTPUT 2 pin (SC6000).
- YES ↓

Check audio circuits of the Display.

The speaker generates no sound when audio signals are inputted from an external device or a PC.

Are the audio outputs of IC1301 (AV switch) in order?
Pins 52 and 54 of IC1301 (TV MAIN OUT L/R)
- YES → Are the audio inputs of IC2501 (multi-sound processor) in order?
  Pins 56 and 57 of IC2501 (SCI IN1 L/R)
- NO ↓

Are the audio inputs of IC1301 (AV switch) in order?
Input 1: Between pins 2 and 4 of IC1301
Input 2: Between pins 9 and 11 of IC1301
Input 3: Between pins 16 and 18 of IC1301
Input 4: Between pins 23 and 25 of IC1301
PC input: Between pins 29 and 31 of IC1301
- YES → Are the audio input circuits of IC1301 (AV switch) in order?
  Input 1: Between pins 6/2 and pins 2/4 of IC1301
  Input 2: Between pins 6/2 and pins 9/11 of IC1301
  Input 3: Between pins 6/2 and pins 16/18 of IC1301
  Front panel input: Between J2404 and pins 23/25 of IC1301
  PC input: Between J2403 and pins 29/31 of IC1301
- YES ↓

Check IC1301 (A switch) and its peripherals.

No sound (2)

The speaker generates no sound when TV signal is received.

Are the tuner audio inputs of IC2501 (multi-sound processor) in order?
Pin 67 (sound IF1) of IC2501
Pin 69 (sound IF2) of IC2501
- YES → Check IC2501 (multi-sound processor) and its peripheral circuits.
- NO ↓

Is the audio signal applied to tuner output pin 21?
- YES → Check B.P.F. of SIF1 and SIF2. (Q1119-20 and Q1121-2)
- NO ↓

Check TU1101 (U/V tuner) and its peripherals.

No sound (3)

No audio output <Input1>

Has the input mode been selected on the Input Select screen?
- YES ↓

Are the audio outputs of IC2501 (multi-sound processor) in order?
Pins 27 and 28 of IC2501 (DRCM L/R)
- NO → Are the audio outputs of IC1301 (AV switch) in order?
  Pins 43 and 45 of IC1301 (SC1 TV SUB OUT L/R)
- YES ↓

Check lines and devices between pins 27/28 of IC2501 and pins 3/1 of INPUT1. Also check the audio mute circuits.
(IC2504, Q1101-2)

No audio output <INPUT2/3>

Has the input mode been selected on the Input Select screen?
- YES ↓

Are the audio outputs of IC1301 (AV switch) in order?
Pins 43 and 45 of IC1301 (SC1 TV SUB OUT L/R)
- YES ↓

Check lines and devices between pins 43/45 of IC1301 and pins 3/1 of INPUT2/3. Also check the audio mute circuits.
(IC1301, Q1104-7 and Q1109-12)

No monitor audio output or abnormal audio

The audio level is abnormal:
Is the monitor audio output set correctly?
"Variable" or "Fixed"
- YES ↓

No sound at all:
Are the audio outputs of IC2501 (Multi-sound processor) in order?
Pins 34 and 33 (SC2 OUT L/R) of IC2501
- YES ↓

Check lines and devices between pins 34/33 of IC2501 and the monitor output (J1101). Also check the audio mute circuit.
(Q2502-3, Q1114-5 and Q1106-7)

AVC System

<When video signal is received> No image (1)

No video image on INPUT1
↓ YES
Has "INPUT1" been selected on the Input Select screen? — NO → Select INPUT1 CVBS on the Input Select screen.
↓ YES
Is the video signal applied to pin 1 of IC1301 (AV switch)? — NO → Check lines and devices between pin 20 of INPUT1 (SC1101) and pin 1 of IC1301.
↓ YES
(A)

NO video image on INPUT2
↓ YES
Has "INPUT2" been selected on the Input Select screen? — NO → Select INPUT2 CVBS on the Input Select screen.
↓ YES
Is the video signal applied to pin 8 of IC1301 (AV switch)? — NO → Check lines and devices between pin 20 of INPUT2 (SC1102 1/2) and pin 8 of IC1301.
↓ YES
(B)

<When video signal is received> No image (2)

NO video image on INPUT3
↓ YES
Has "INPUT3" been selected on the Input Select screen? — NO → Select INPUT3 CVBS on the Input Select screen.
↓ YES
Is the video signal applied to pin 1 of IC1301 (AV switch)? — NO → Check lines and devices between pin 20 of INPUT3 (SC1102 1/2) and pin 15 of IC1301.
↓ YES
(C)

NO video image on INPUT4
↓ YES
Has "INPUT4" been selected on the Input Select screen? — NO → Select INPUT4 CVBS on the Input Select screen.
↓ YES
Is the video signal applied to pin 22 of IC1301 (AV switch)? — NO → Check lines and devices between pin 3 of INPUT4 (J2404) and pin 22 of IC1301.
↓ YES
(D)

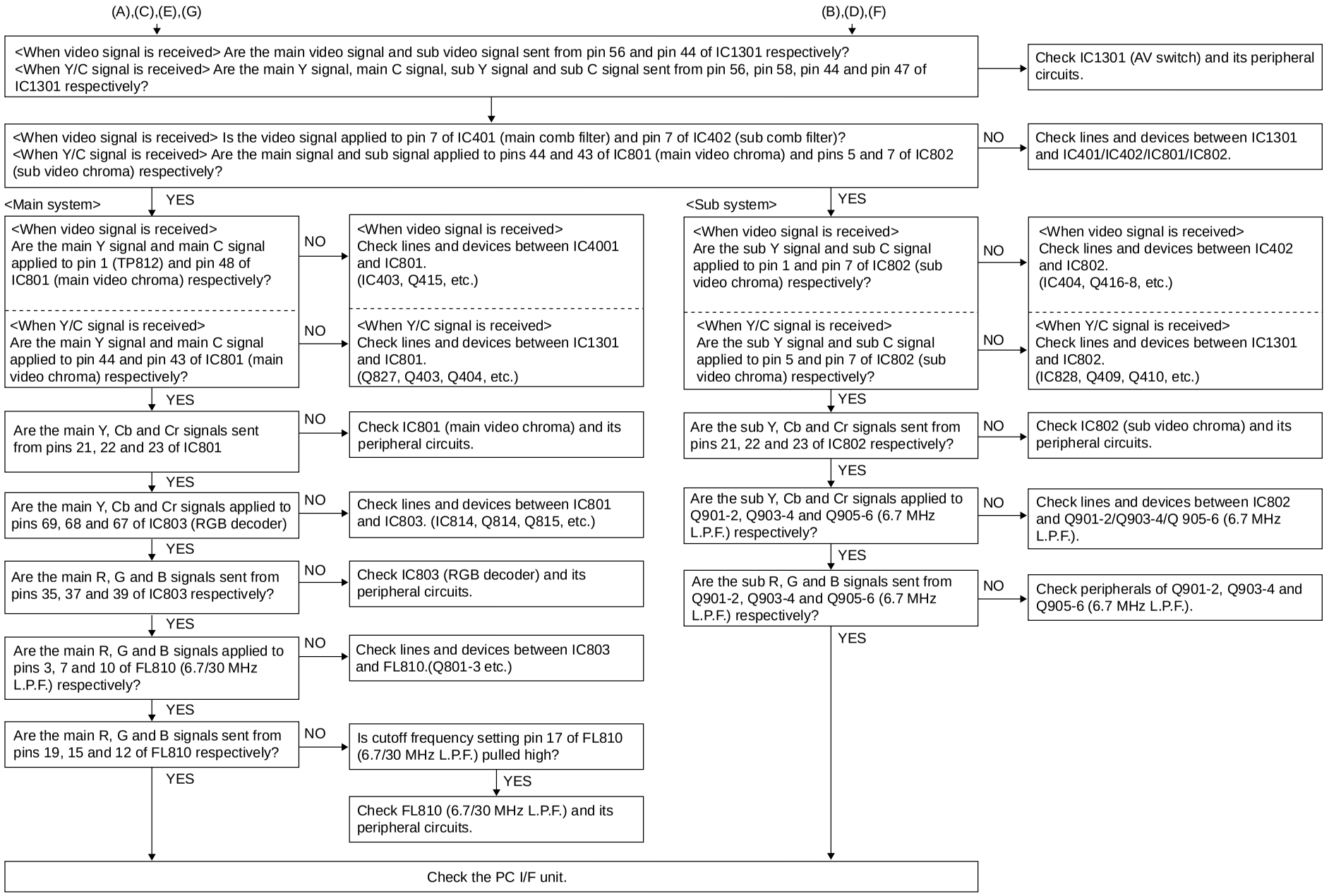
<When Y/C signal is received> No image (3)

No Y/C image on INPUT2
↓ YES
Has "INPUT2" been selected on the Input Select screen? — NO → Select INPUT2 Y/C on the Input Select screen.
↓ YES
Is the Y/C signal applied to pins 10 and 12 of IC1301 (AV switch)? — NO → Check lines and devices between pins20/15 of INPUT1 (SC1101) and pins 10/12 of IC1301.
↓ YES
(E)

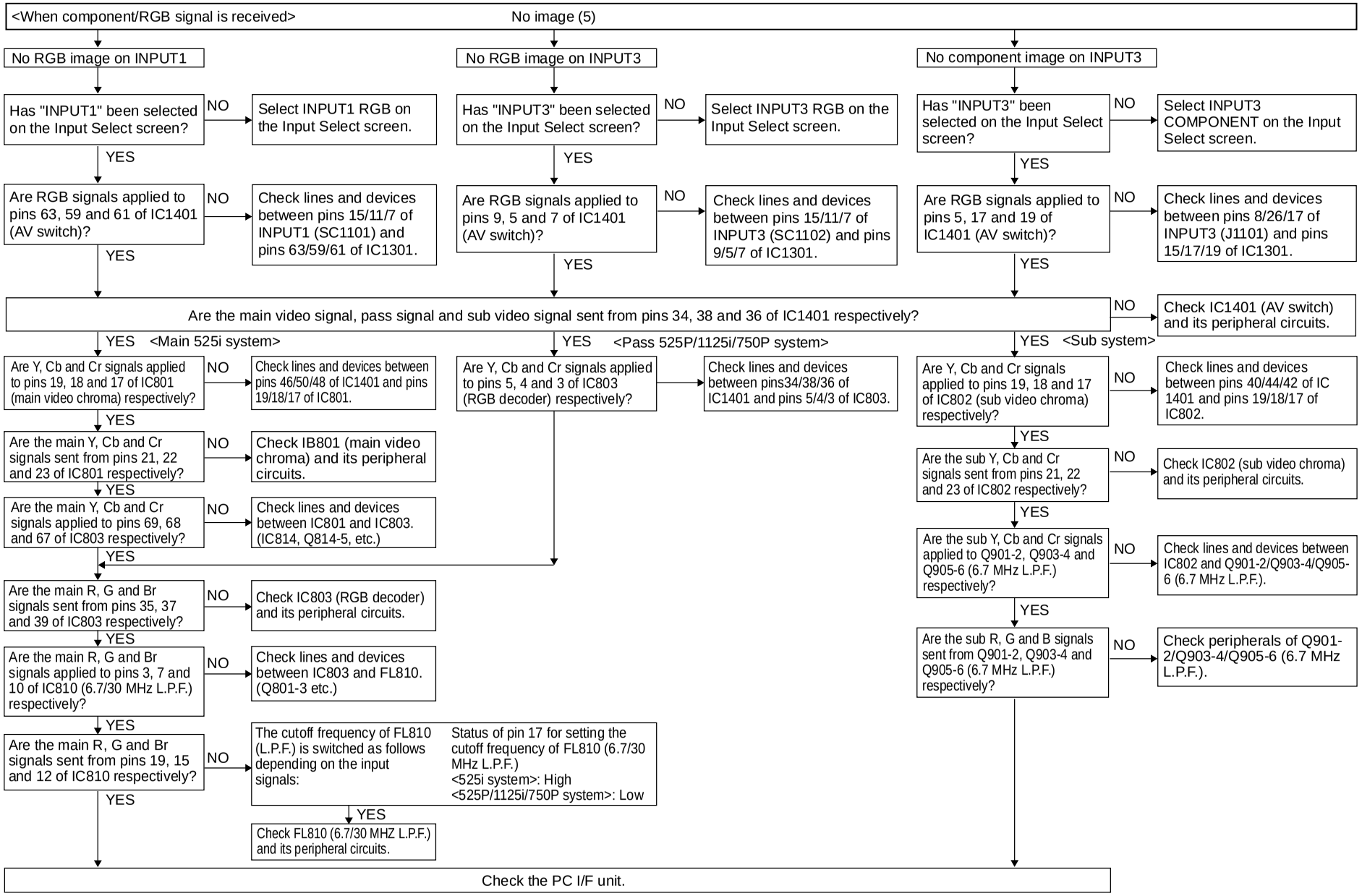
No Y/C image on INPUT3
↓ YES
Has "INPUT3" been selected on the Input Select screen? — NO → Select INPUT3 Y/C on the Input Select screen.
↓ YES
Is the Y/C signal applied to pins 17 and 19 of IC1301 (AV switch)? — NO → Check lines and devices between pins20/15 of INPUT2 (SC1102 1/2) and pins 17/19 of IC1301.
↓ YES
(F)

<When Y/C signal is received> No image (4)

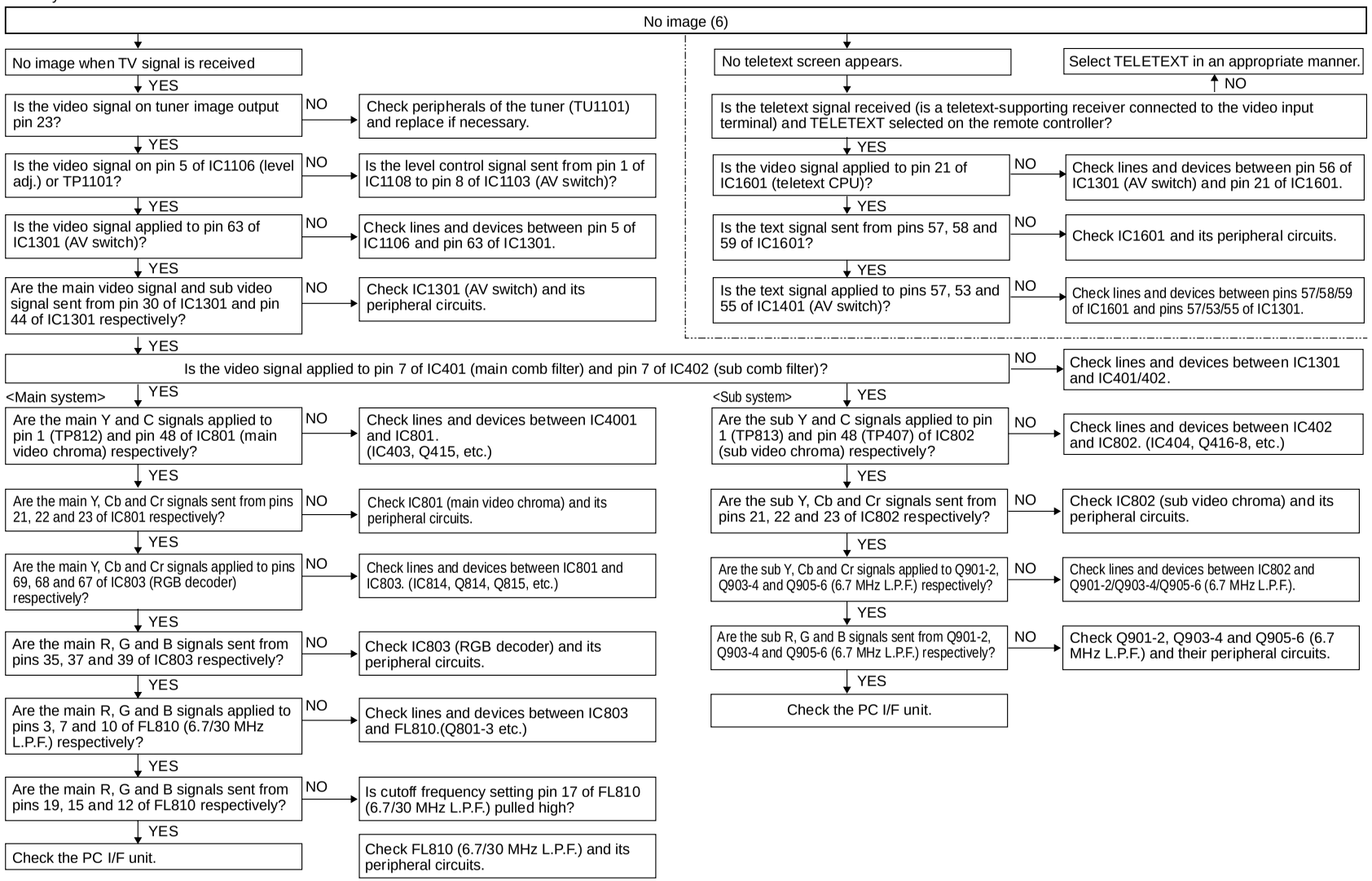
No Y/C image on INPUT4
↓ YES
Has "INPUT4" been selected on the Input Select screen? — NO → Select INPUT4 Y/C on the Input Select screen.
↓ YES
Is the Y/C signal applied to pins 24 and 262 of IC1301 (AV switch)? — NO → Check lines and devices between pins3/4 of INPUT1 (J2401) and pins 24/26 of IC1301.
↓ YES
(G)

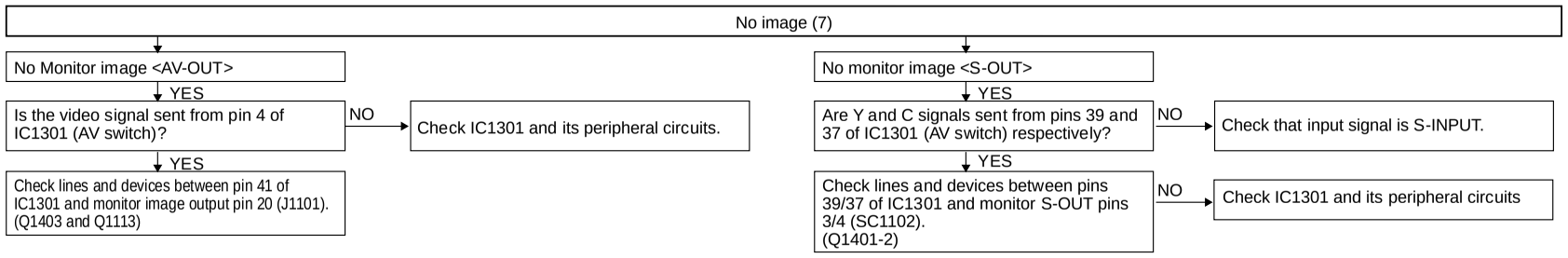

(A),(C),(E),(G)
(B),(D),(F)
<When video signal is received> Are the main video signal and sub video signal sent from pin 56 and pin 44 of IC1301 respectively?
<When Y/C signal is received> Are the main Y signal, main C signal, sub Y signal and sub C signal sent from pin 56, pin 58, pin 44 and pin 47 of IC1301 respectively?
Check IC1301 (AV switch) and its peripheral circuits.
<When video signal is received> Is the video signal applied to pin 7 of IC401 (main comb filter) and pin 7 of IC402 (sub comb filter)?
<When Y/C signal is received> Are the main signal and sub signal applied to pins 44 and 43 of IC801 (main video chroma) and pins 5 and 7 of IC802 (sub video chroma) respectively?
NO
Check lines and devices between IC1301 and IC401/IC402/IC801/IC802.
YES
<Main system>
<When video signal is received>
Are the main Y signal and main C signal applied to pin 1 (TP812) and pin 48 of IC801 (main video chroma) respectively?
NO
<When video signal is received>
Check lines and devices between IC4001 and IC801.
(IC403, Q415, etc.)
<When Y/C signal is received>
Are the main Y signal and main C signal applied to pin 44 and pin 43 of IC801 (main video chroma) respectively?
NO
<When Y/C signal is received>
Check lines and devices between IC1301 and IC801.
(Q827, Q403, Q404, etc.)
YES
Are the main Y, Cb and Cr signals sent from pins 21, 22 and 23 of IC801
NO
Check IC801 (main video chroma) and its peripheral circuits.
YES
Are the main Y, Cb and Cr signals applied to pins 69, 68 and 67 of IC803 (RGB decoder)
NO
Check lines and devices between IC801 and IC803. (IC814, Q814, Q815, etc.)
YES
Are the main R, G and B signals sent from pins 35, 37 and 39 of IC803 respectively?
NO
Check IC803 (RGB decoder) and its peripheral circuits.
YES
Are the main R, G and B signals applied to pins 3, 7 and 10 of FL810 (6.7/30 MHz L.P.F.) respectively?
NO
Check lines and devices between IC803 and FL810.(Q801-3 etc.)
YES
Are the main R, G and B signals sent from pins 19, 15 and 12 of FL810 respectively?
NO
Is cutoff frequency setting pin 17 of FL810 (6.7/30 MHz L.P.F.) pulled high?
YES
Check FL810 (6.7/30 MHz L.P.F.) and its peripheral circuits.
YES
<Sub system>
YES
<When video signal is received>
Are the sub Y signal and sub C signal applied to pin 1 and pin 7 of IC802 (sub video chroma) respectively?
NO
<When video signal is received>
Check lines and devices between IC402 and IC802.
(IC404, Q416-8, etc.)
<When Y/C signal is received>
Are the sub Y signal and sub C signal applied to pin 5 and pin 7 of IC802 (sub video chroma) respectively?
NO
<When Y/C signal is received>
Check lines and devices between IC1301 and IC802.
(IC828, Q409, Q410, etc.)
YES
Are the sub Y, Cb and Cr signals sent from pins 21, 22 and 23 of IC802 respectively?
NO
Check IC802 (sub video chroma) and its peripheral circuits.
YES
Are the sub Y, Cb and Cr signals applied to Q901-2, Q903-4 and Q905-6 (6.7 MHz L.P.F.) respectively?
NO
Check lines and devices between IC802 and Q901-2/Q903-4/Q 905-6 (6.7 MHz L.P.F.).
YES
Are the sub R, G and B signals sent from Q901-2, Q903-4 and Q905-6 (6.7 MHz L.P.F.) respectively?
NO
Check peripherals of Q901-2, Q903-4 and Q905-6 (6.7 MHz L.P.F.).
YES
Check the PC I/F unit.

AVC System


<When component/RGB signal is received>
No image (5)
No RGB image on INPUT1
Has "INPUT1" been selected on the Input Select screen?
NO
Select INPUT1 RGB on the Input Select screen.
YES
Are RGB signals applied to pins 63, 59 and 61 of IC1401 (AV switch)?
NO
Check lines and devices between pins 15/11/7 of INPUT1 (SC1101) and pins 63/59/61 of IC1301.
YES
No RGB image on INPUT3
Has "INPUT3" been selected on the Input Select screen?
NO
Select INPUT3 RGB on the Input Select screen.
YES
Are RGB signals applied to pins 9, 5 and 7 of IC1401 (AV switch)?
NO
Check lines and devices between pins 15/11/7 of INPUT3 (SC1102) and pins 9/5/7 of IC1301.
YES
No component image on INPUT3
Has "INPUT3" been selected on the Input Select screen?
NO
Select INPUT3 COMPONENT on the Input Select screen.
YES
Are RGB signals applied to pins 5, 17 and 19 of IC1401 (AV switch)?
NO
Check lines and devices between pins 8/26/17 of INPUT3 (J1101) and pins 15/17/19 of IC1301.
YES
Are the main video signal, pass signal and sub video signal sent from pins 34, 38 and 36 of IC1401 respectively?
NO
Check IC1401 (AV switch) and its peripheral circuits.
YES <Main 525i system>
YES <Pass 525P/1125i/750P system>
YES <Sub system>
Are Y, Cb and Cr signals applied to pins 19, 18 and 17 of IC801 (main video chroma) respectively?
NO
Check lines and devices between pins 46/50/48 of IC1401 and pins 19/18/17 of IC801.
YES
Are the main Y, Cb and Cr signals sent from pins 21, 22 and 23 of IC801 respectively?
NO
Check IB801 (main video chroma) and its peripheral circuits.
YES
Are the main Y, Cb and Cr signals applied to pins 69, 68 and 67 of IC803 respectively?
NO
Check lines and devices between IC801 and IC803. (IC814, Q814-5, etc.)
YES
Are Y, Cb and Cr signals applied to pins 5, 4 and 3 of IC803 (RGB decoder) respectively?
Check lines and devices between pins34/38/36 of IC1401 and pins 5/4/3 of IC803.
Are Y, Cb and Cr signals applied to pins 19, 18 and 17 of IC802 (sub video chroma) respectively?
NO
Check lines and devices between pins 40/44/42 of IC 1401 and pins 19/18/17 of IC802.
YES
Are the sub Y, Cb and Cr signals sent from pins 21, 22 and 23 of IC802 respectively?
NO
Check IC802 (sub video chroma) and its peripheral circuits.
YES
Are the sub Y, Cb and Cr signals applied to Q901-2, Q903-4 and Q905-6 (6.7 MHz L.P.F.) respectively?
NO
Check lines and devices between IC802 and Q901-2/Q903-4/Q905-6 (6.7 MHz L.P.F.).
YES
Are the sub R, G and B signals sent from Q901-2, Q903-4 and Q905-6 (6.7 MHz L.P.F.) respectively?
NO
Check peripherals of Q901-2/Q903-4/Q905-6 (6.7 MHz L.P.F.).
Are the main R, G and Br signals sent from pins 35, 37 and 39 of IC803 respectively?
NO
Check IC803 (RGB decoder) and its peripheral circuits.
YES
Are the main R, G and Br signals applied to pins 3, 7 and 10 of IC810 (6.7/30 MHz L.P.F.) respectively?
NO
Check lines and devices between IC803 and FL810. (Q801-3 etc.)
YES
Are the main R, G and Br signals sent from pins 19, 15 and 12 of IC810 respectively?
NO
The cutoff frequency of FL810 (L.P.F.) is switched as follows depending on the input signals:
Status of pin 17 for setting the cutoff frequency of FL810 (6.7/30 MHz L.P.F.)
<525i system>: High
<525P/1125i/750P system>: Low
YES
Check FL810 (6.7/30 MHZ L.P.F.) and its peripheral circuits.
YES
Check the PC I/F unit.

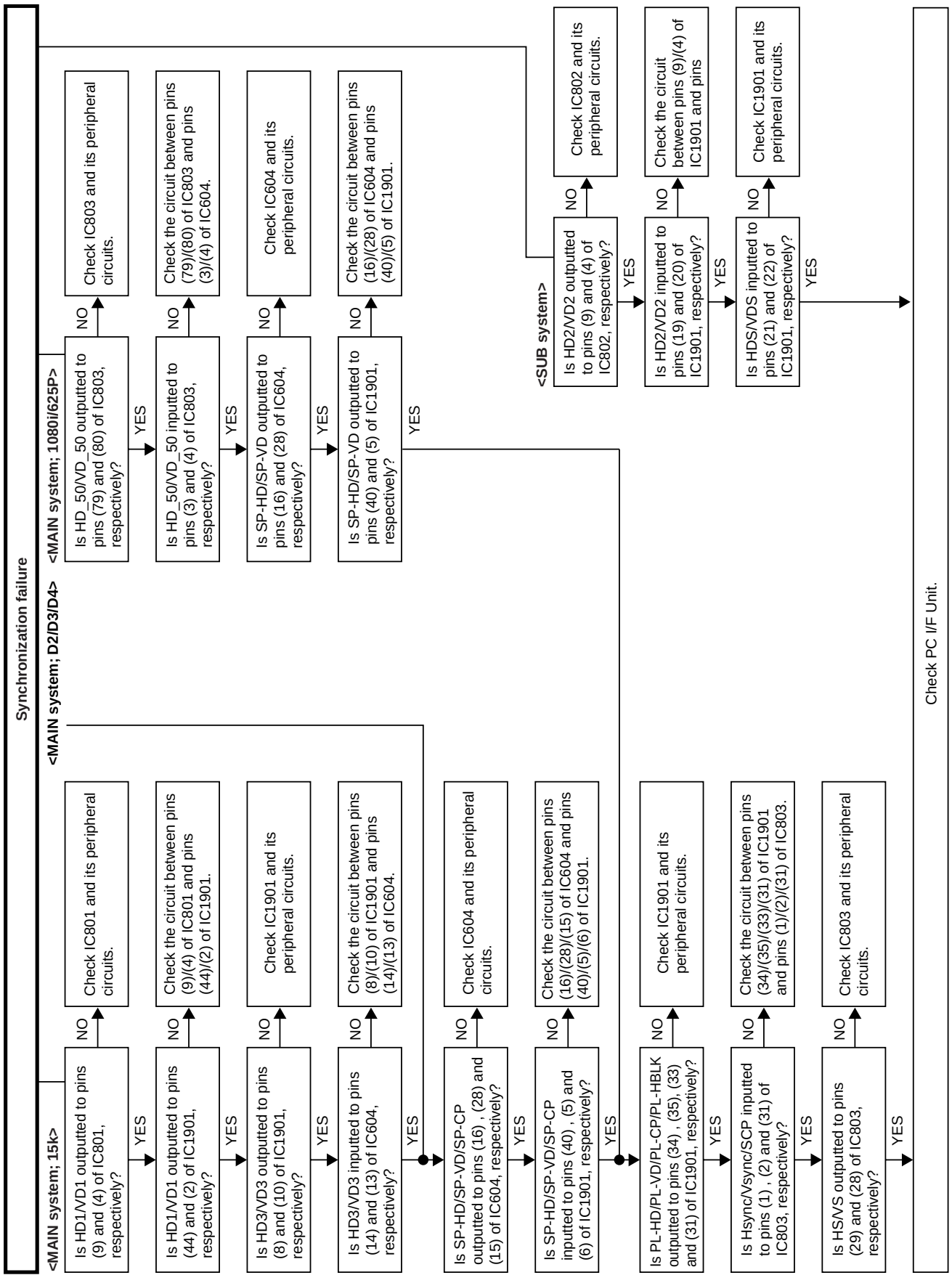
AVC System


No image (6)
No image when TV signal is received
YES
Is the video signal on tuner image output pin 23?
NO
Check peripherals of the tuner (TU1101) and replace if necessary.
YES
Is the video signal on pin 5 of IC1106 (level adj.) or TP1101?
NO
Is the level control signal sent from pin 1 of IC1108 to pin 8 of IC1103 (AV switch)?
YES
Is the video signal applied to pin 63 of IC1301 (AV switch)?
NO
Check lines and devices between pin 5 of IC1106 and pin 63 of IC1301.
YES
Are the main video signal and sub video signal sent from pin 30 of IC1301 and pin 44 of IC1301 respectively?
NO
Check IC1301 (AV switch) and its peripheral circuits.
YES
No teletext screen appears.
Select TELETEXT in an appropriate manner.
NO
Is the teletext signal received (is a teletext-supporting receiver connected to the video input terminal) and TELETEXT selected on the remote controller?
YES
Is the video signal applied to pin 21 of IC1601 (teletext CPU)?
NO
Check lines and devices between pin 56 of IC1301 (AV switch) and pin 21 of IC1601.
YES
Is the text signal sent from pins 57, 58 and 59 of IC1601?
NO
Check IC1601 and its peripheral circuits.
YES
Is the text signal applied to pins 57, 53 and 55 of IC1401 (AV switch)?
NO
Check lines and devices between pins 57/58/59 of IC1601 and pins 57/53/55 of IC1301.
YES
Is the video signal applied to pin 7 of IC401 (main comb filter) and pin 7 of IC402 (sub comb filter)?
NO
Check lines and devices between IC1301 and IC401/402.
YES
<Main system>
Are the main Y and C signals applied to pin 1 (TP812) and pin 48 of IC801 (main video chroma) respectively?
NO
Check lines and devices between IC4001 and IC801. (IC403, Q415, etc.)
YES
Are the main Y, Cb and Cr signals sent from pins 21, 22 and 23 of IC801 respectively?
NO
Check IC801 (main video chroma) and its peripheral circuits.
YES
Are the main Y, Cb and Cr signals applied to pins 69, 68 and 67 of IC803 (RGB decoder) respectively?
NO
Check lines and devices between IC801 and IC803. (IC814, Q814, Q815, etc.)
YES
Are the main R, G and B signals sent from pins 35, 37 and 39 of IC803 respectively?
NO
Check IC803 (RGB decoder) and its peripheral circuits.
YES
Are the main R, G and B signals applied to pins 3, 7 and 10 of FL810 (6.7/30 MHz L.P.F.) respectively?
NO
Check lines and devices between IC803 and FL810.(Q801-3 etc.)
YES
Are the main R, G and B signals sent from pins 19, 15 and 12 of FL810 respectively?
NO
Is cutoff frequency setting pin 17 of FL810 (6.7/30 MHz L.P.F.) pulled high?
YES
Check the PC I/F unit.
Check FL810 (6.7/30 MHz L.P.F.) and its peripheral circuits.
<Sub system>
YES
Are the sub Y and C signals applied to pin 1 (TP813) and pin 48 (TP407) of IC802 (sub video chroma) respectively?
NO
Check lines and devices between IC402 and IC802. (IC404, Q416-8, etc.)
YES
Are the sub Y, Cb and Cr signals sent from pins 21, 22 and 23 of IC802 respectively?
NO
Check IC802 (sub video chroma) and its peripheral circuits.
YES
Are the sub Y, Cb and Cr signals applied to Q901-2, Q903-4 and Q905-6 (6.7 MHz L.P.F.) respectively?
NO
Check lines and devices between IC802 and Q901-2/Q903-4/Q905-6 (6.7 MHz L.P.F.).
YES
Are the sub R, G and B signals sent from Q901-2, Q903-4 and Q905-6 (6.7 MHz L.P.F.) respectively?
NO
Check Q901-2, Q903-4 and Q905-6 (6.7 MHz L.P.F.) and their peripheral circuits.
YES
Check the PC I/F unit.


No image (7)
No Monitor image <AV-OUT>
YES
Is the video signal sent from pin 4 of IC1301 (AV switch)?
NO
Check IC1301 and its peripheral circuits.
YES
Check lines and devices between pin 41 of IC1301 and monitor image output pin 20 (J1101). (Q1403 and Q1113)
No monitor image <S-OUT>
YES
Are Y and C signals sent from pins 39 and 37 of IC1301 (AV switch) respectively?
NO
Check that input signal is S-INPUT.
YES
Check lines and devices between pins 39/37 of IC1301 and monitor S-OUT pins 3/4 (SC1102). (Q1401-2)
NO
Check IC1301 and its peripheral circuits

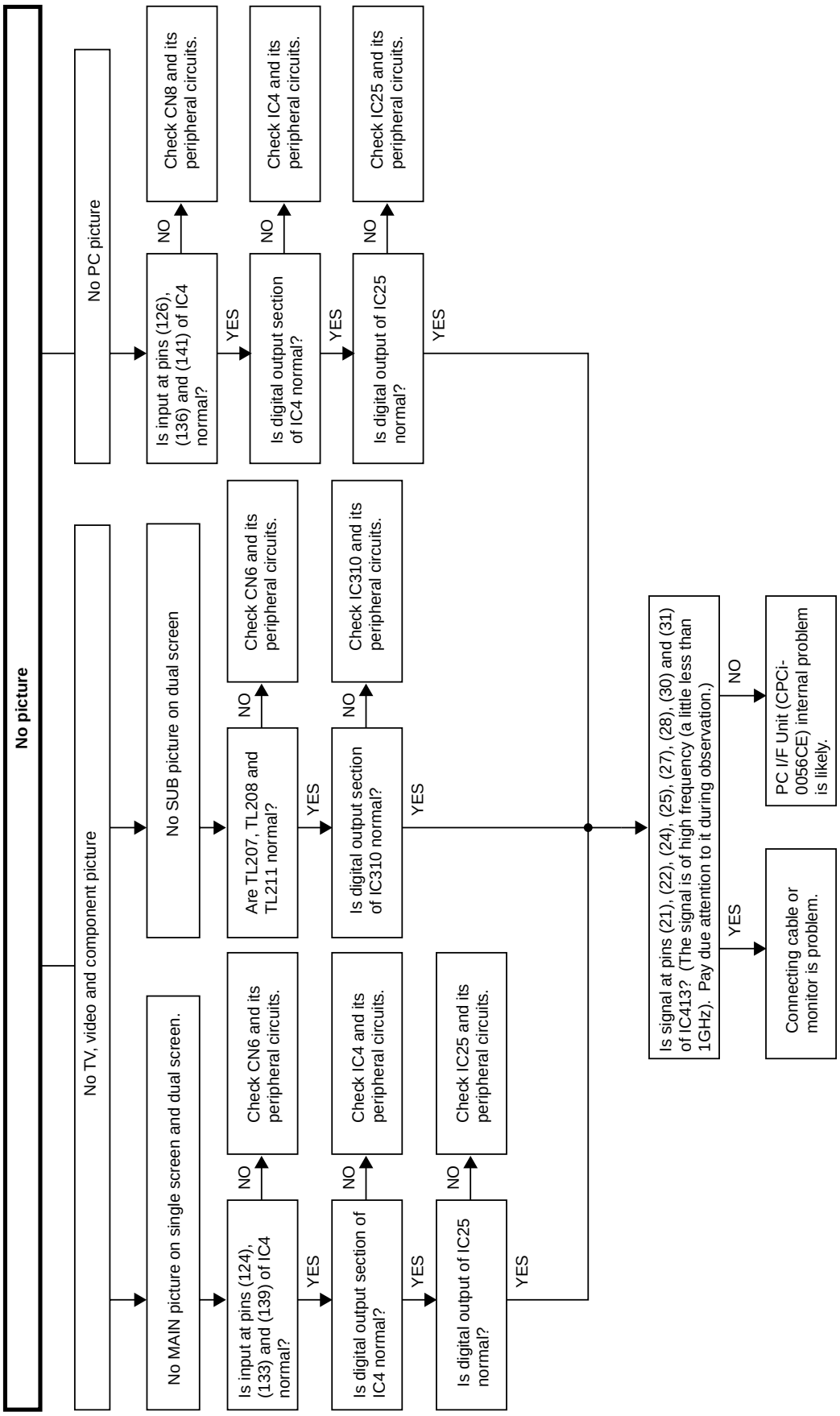
TROUBLE SHOOTING TABLE (Continued)

(AVC System)

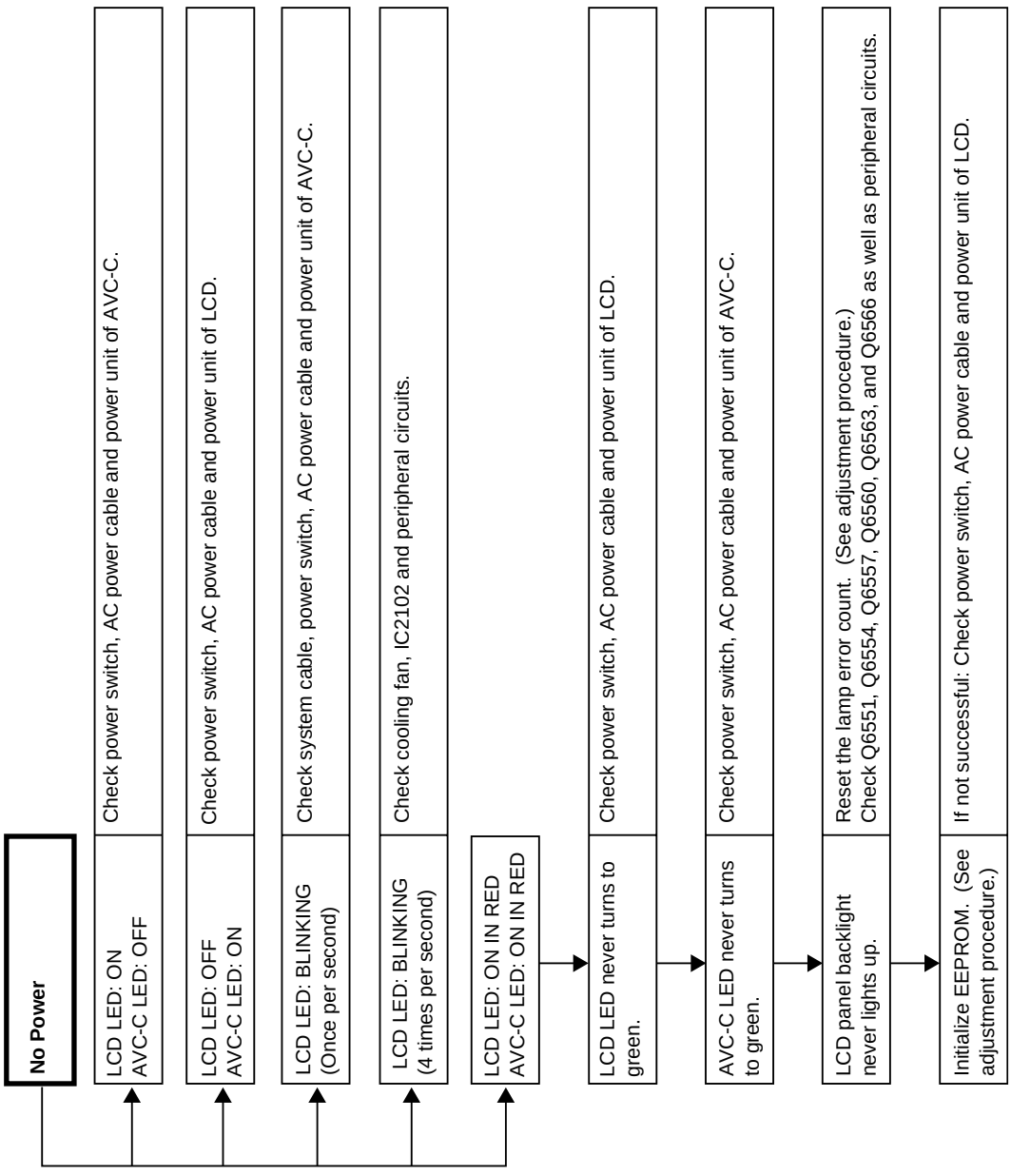


TROUBLE SHOOTING TABLE OF PC I/F UNIT

(AVC System)

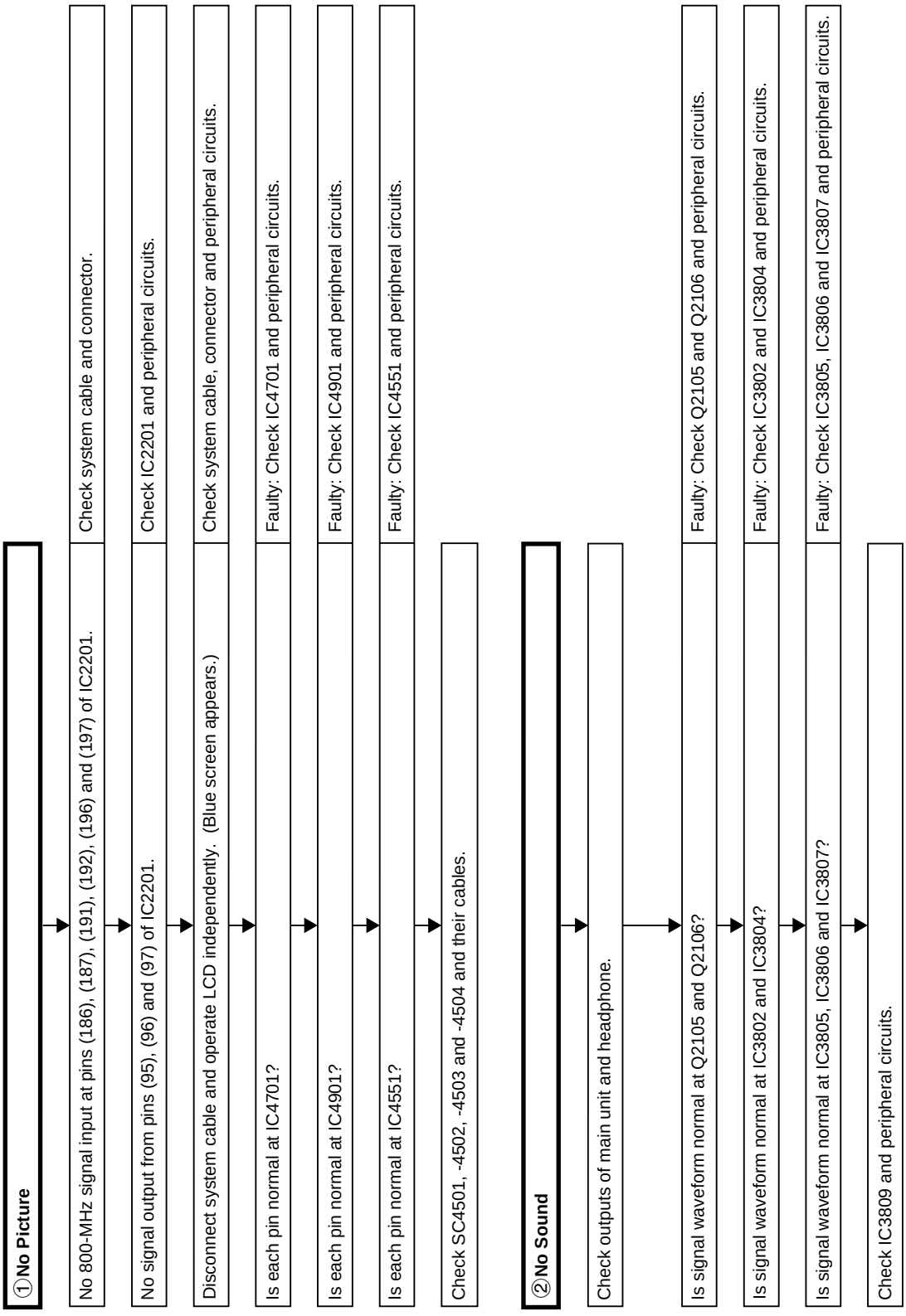


TROUBLE SHOOTING TABLE
(Display)



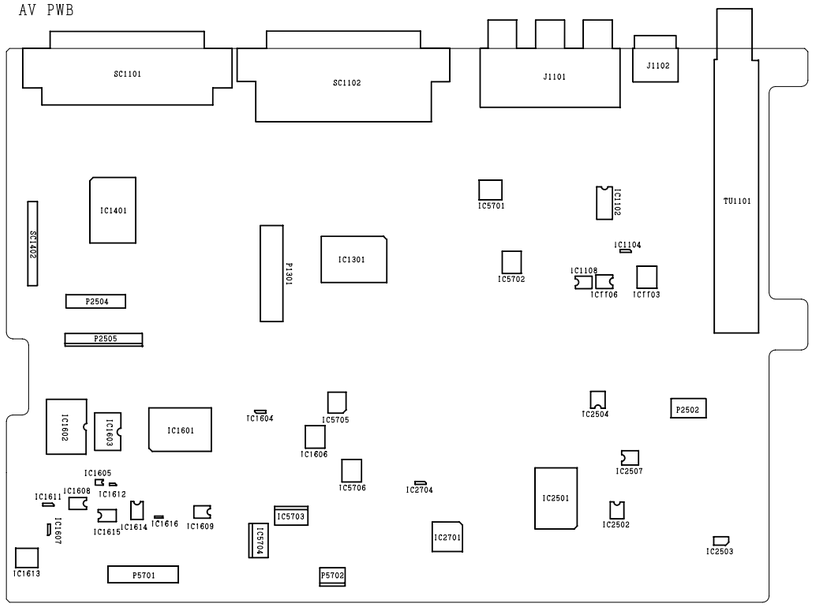
TROUBLE SHOOTING TABLE (Continued)

(Display)

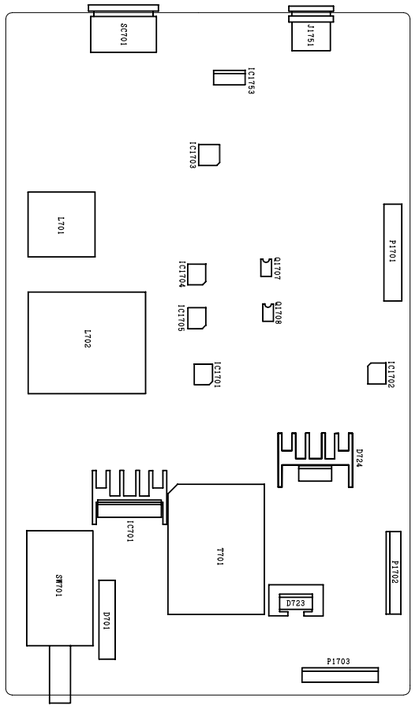


CHASSIS LAYOUT (AVC System)

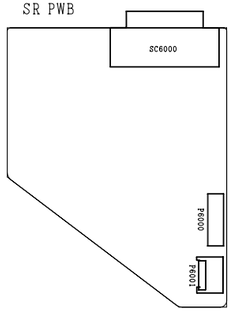
AV PWB



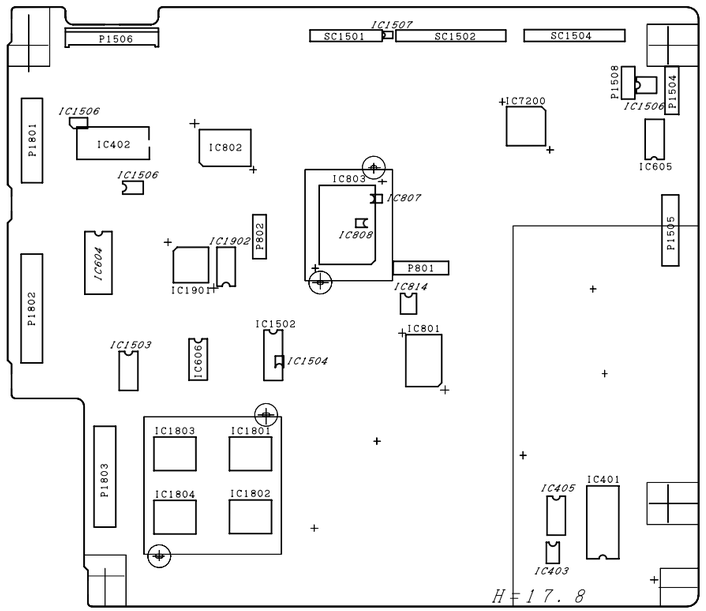
POWER PWB



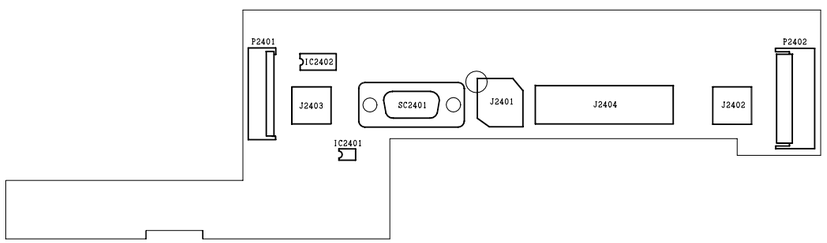
SR PWB



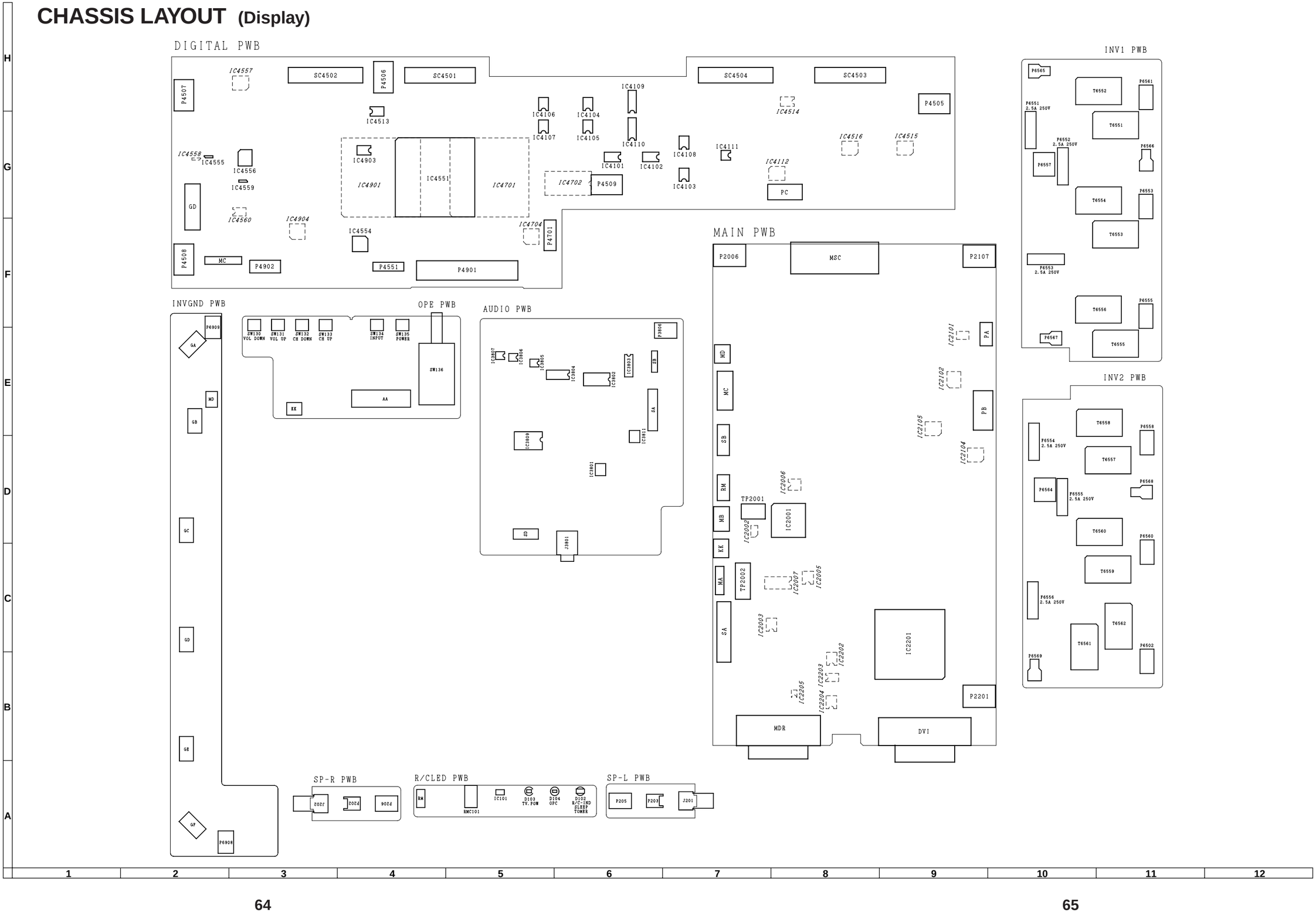
MAIN PWB



FRONT PWB

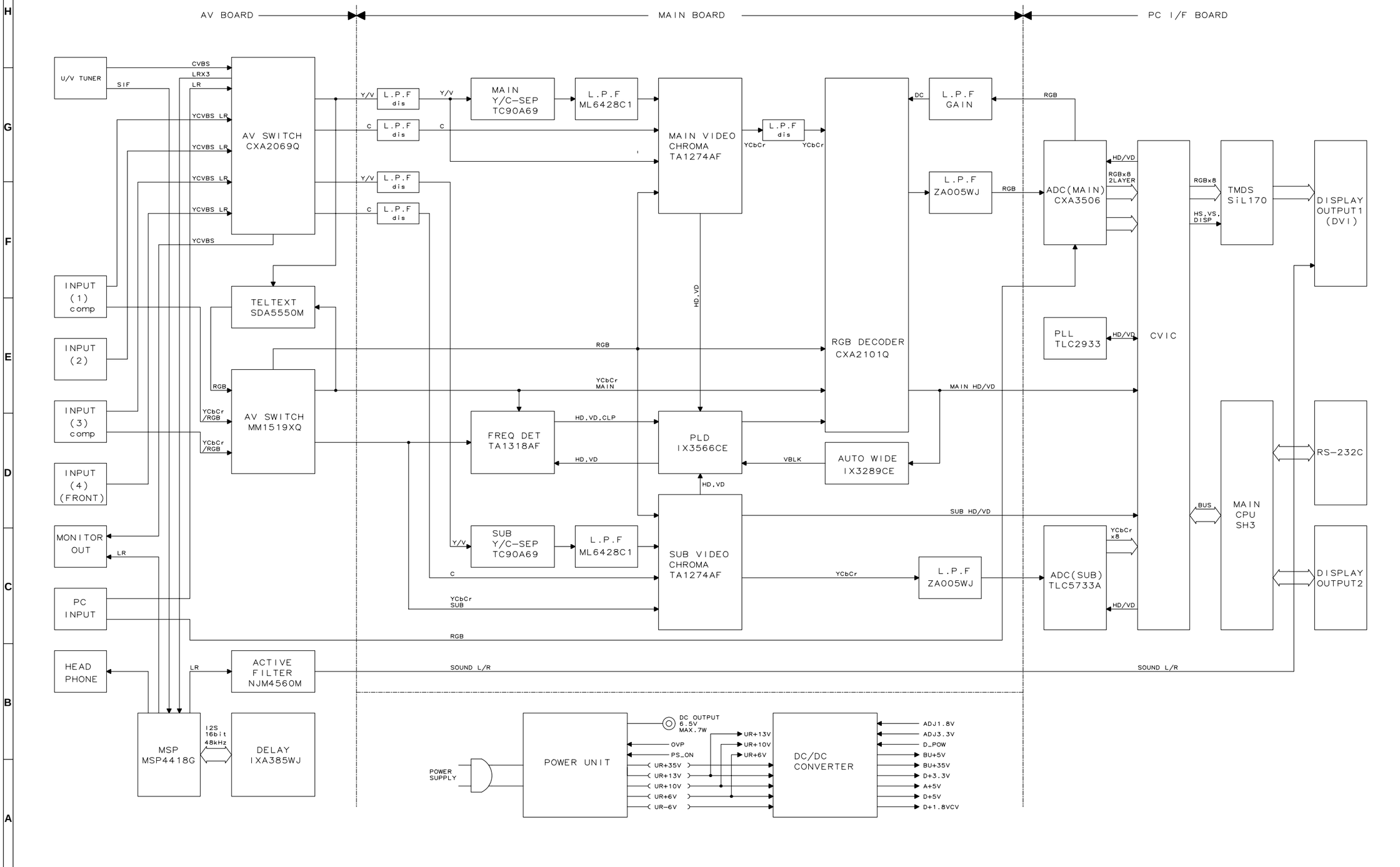


CHASSIS LAYOUT (Display)

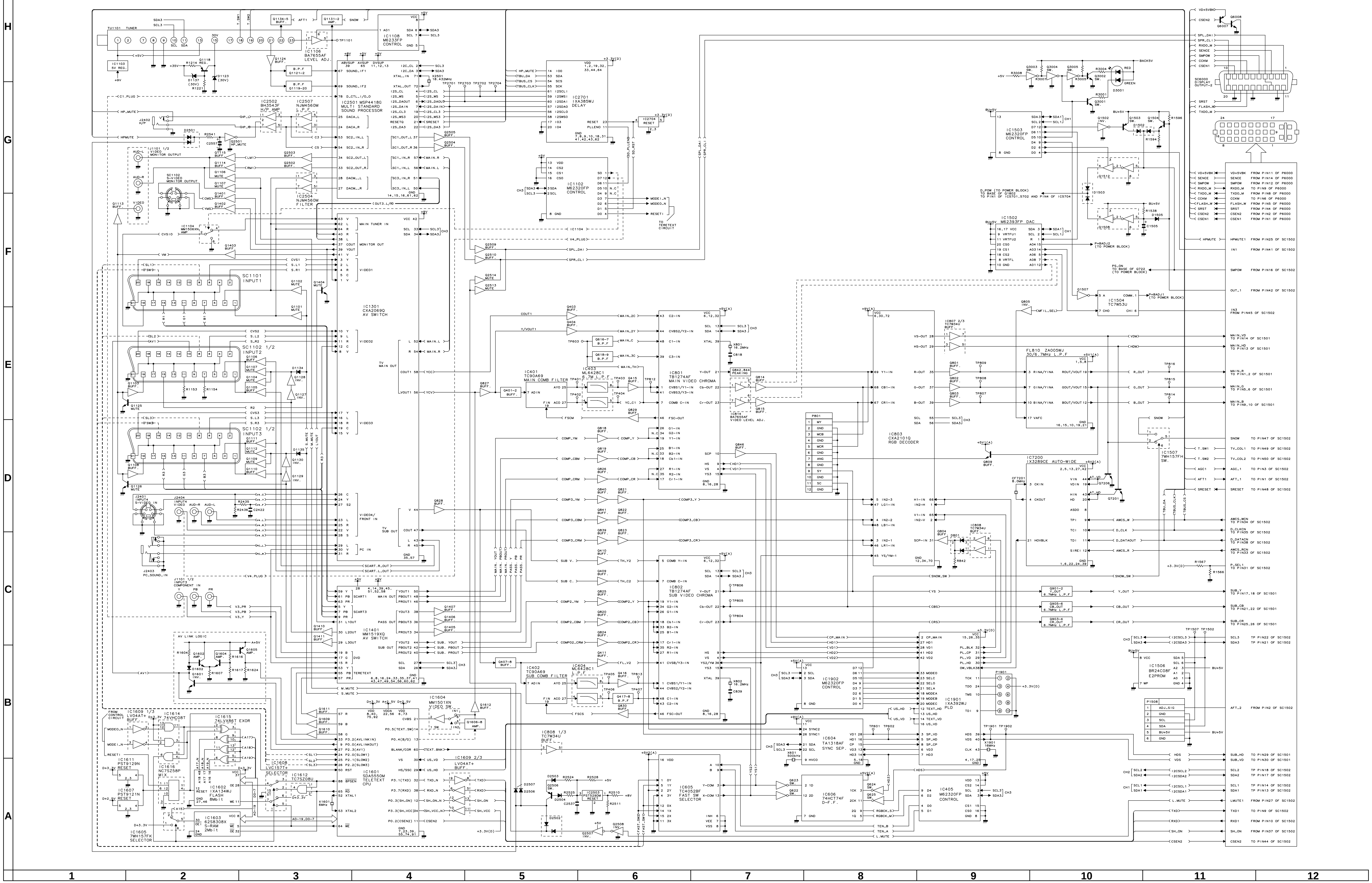


1 2 3 4 5 6 7 8 9 10 11 12

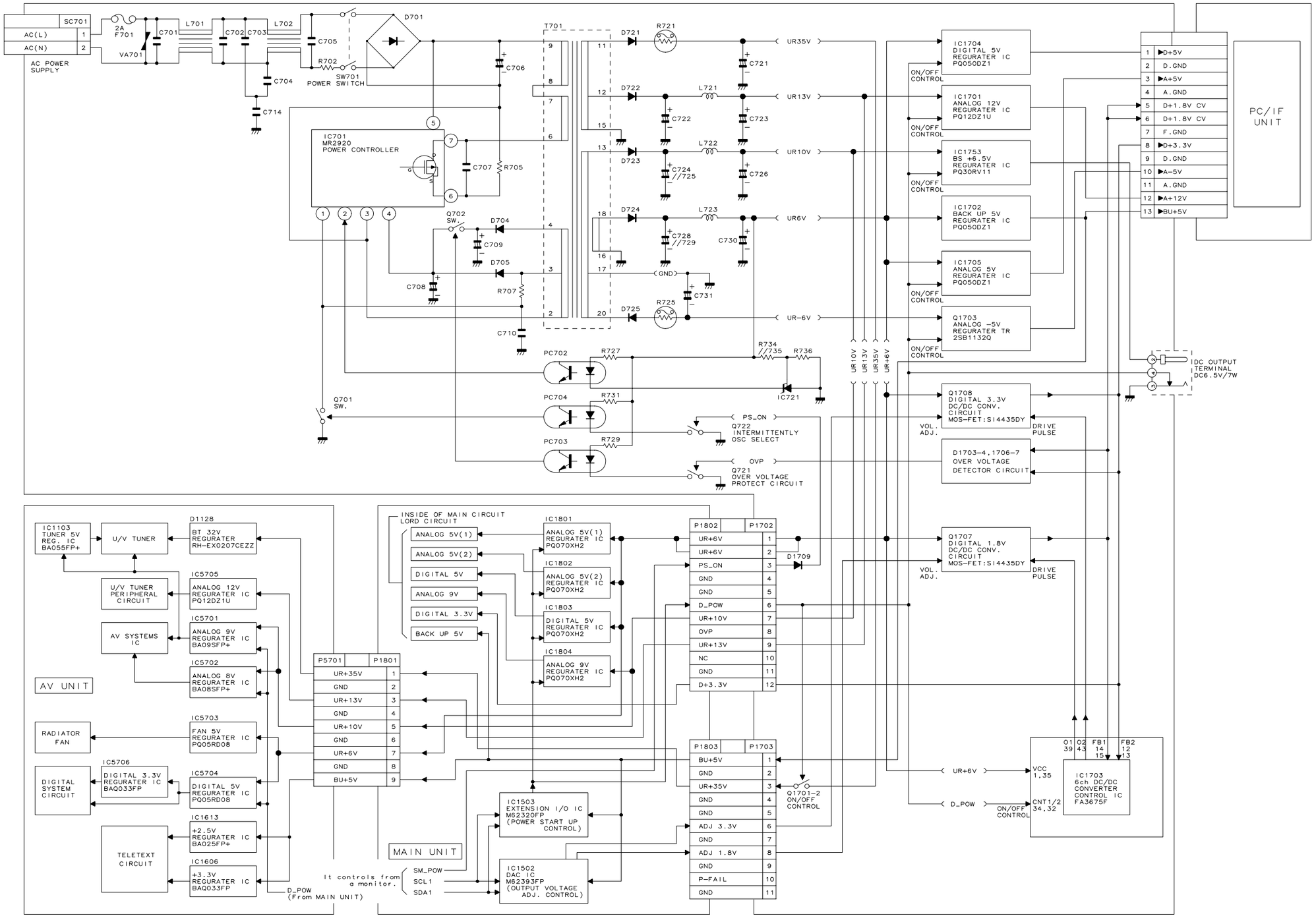
SYSTEM BLOCK DIAGRAM (AVC System)



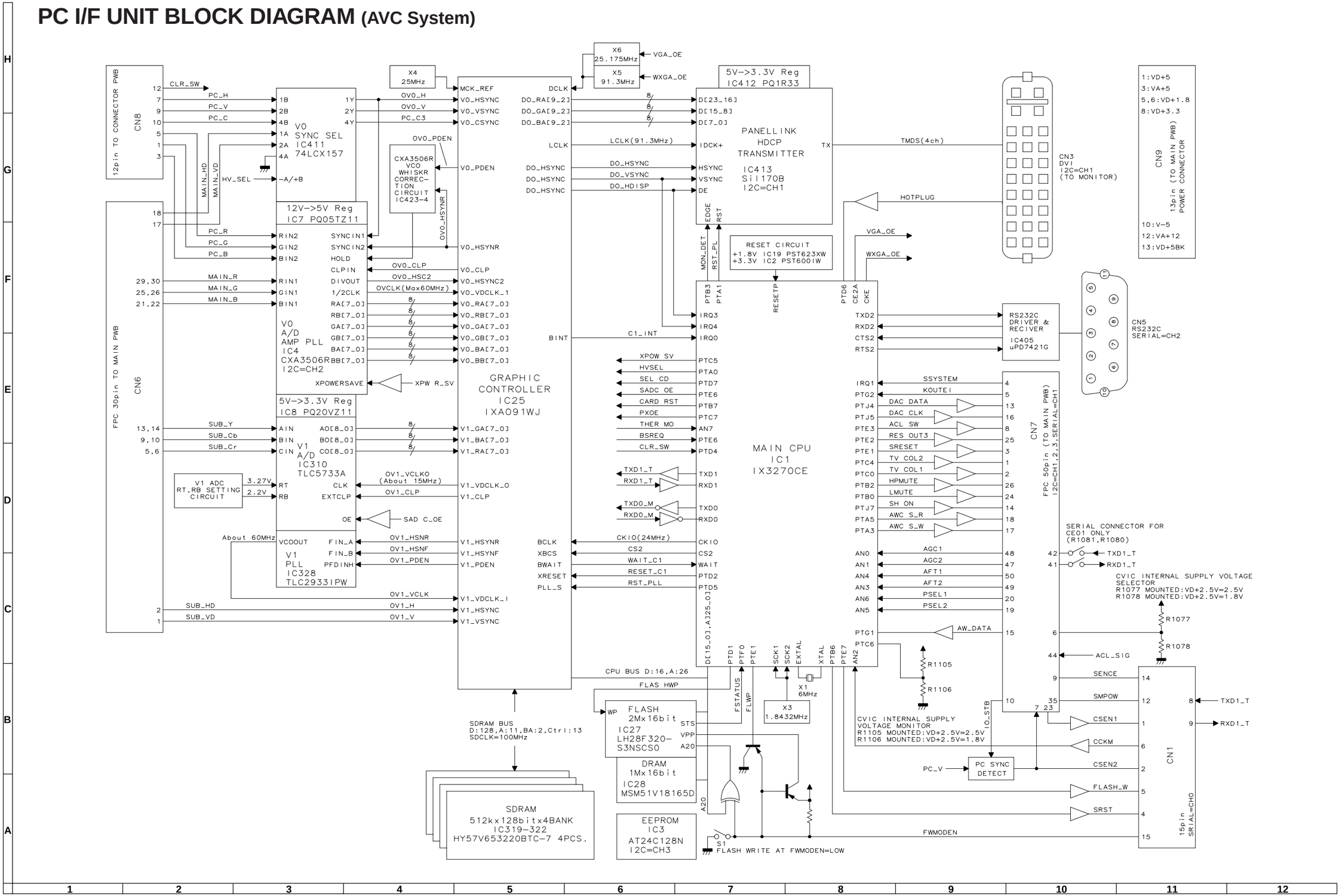
SIGNAL FLOW BLOCK DIAGRAM (AVC System)



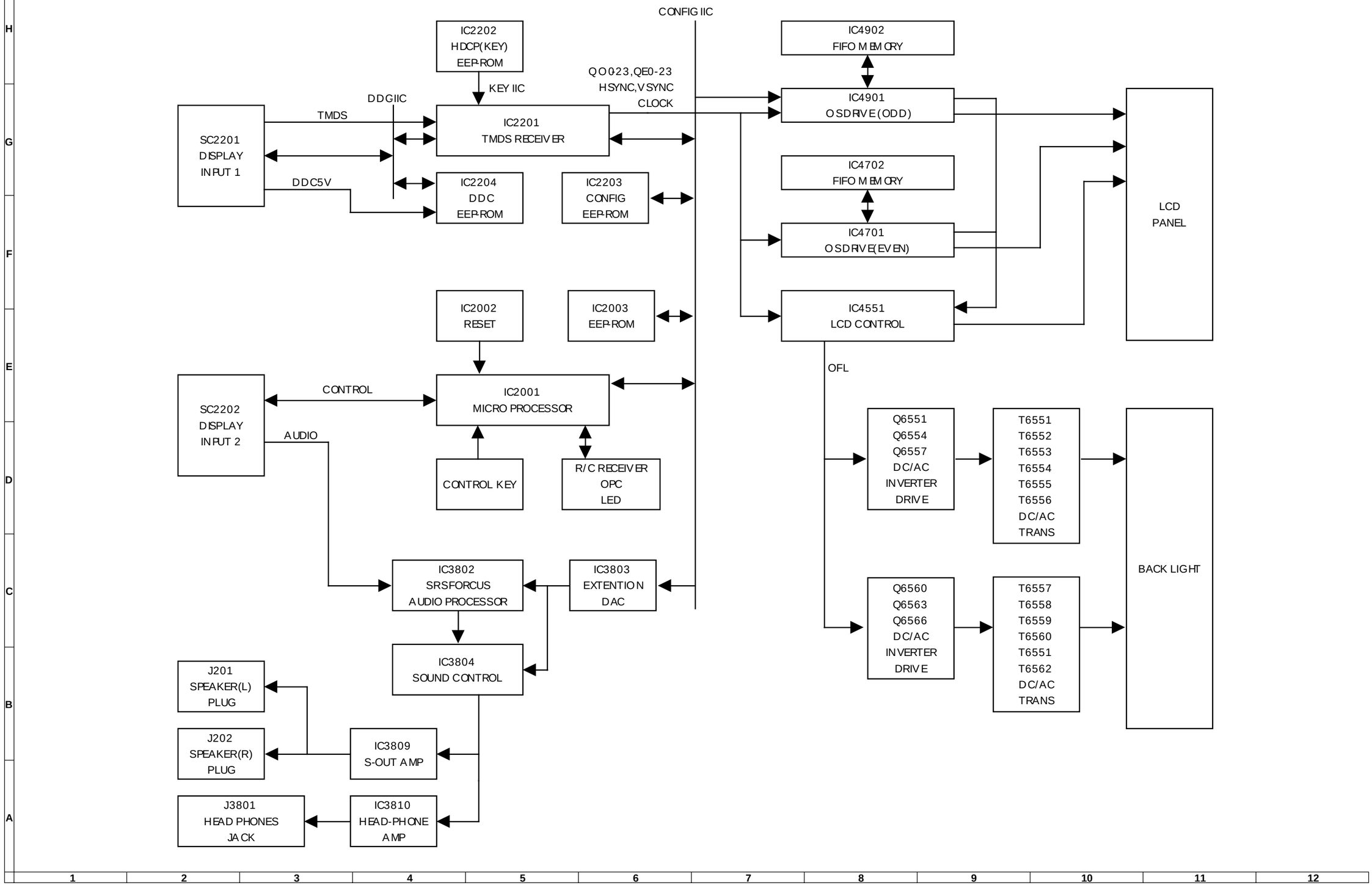
POWER SYSTEM BLOCK DIAGRAM (AVC System)



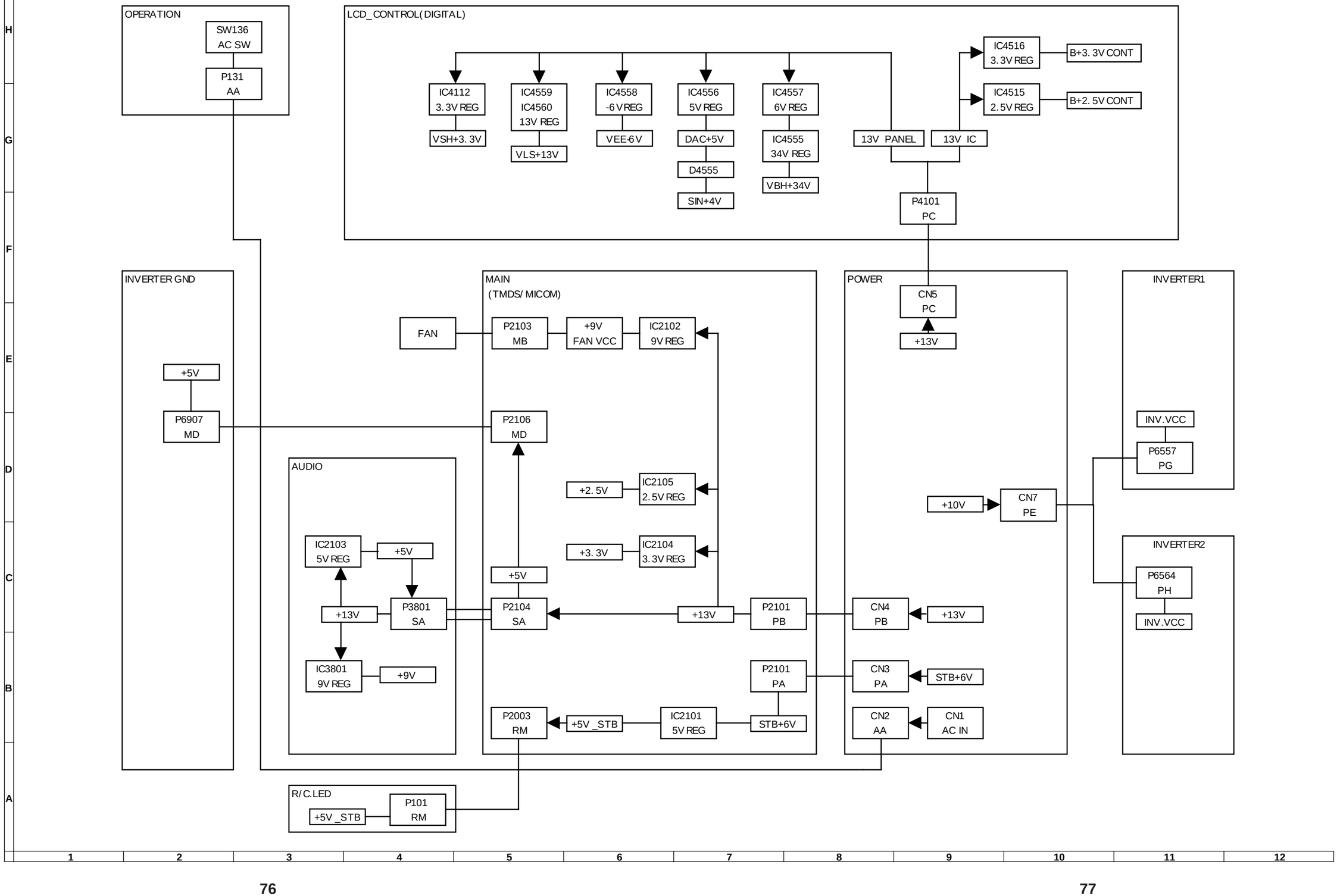
PC I/F UNIT BLOCK DIAGRAM (AVC System)



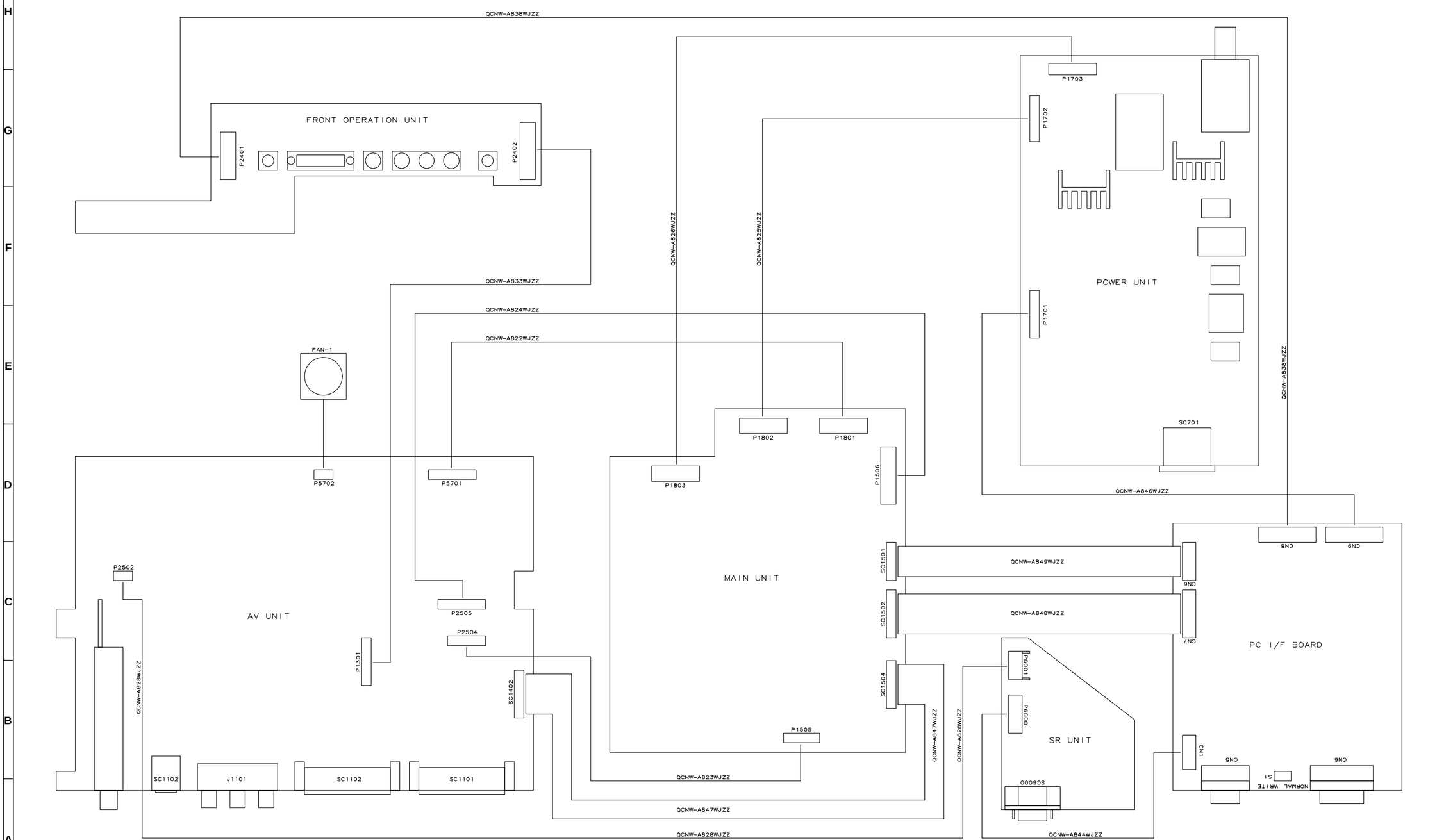
SIGNAL BLOCK DIAGRAM (Display)



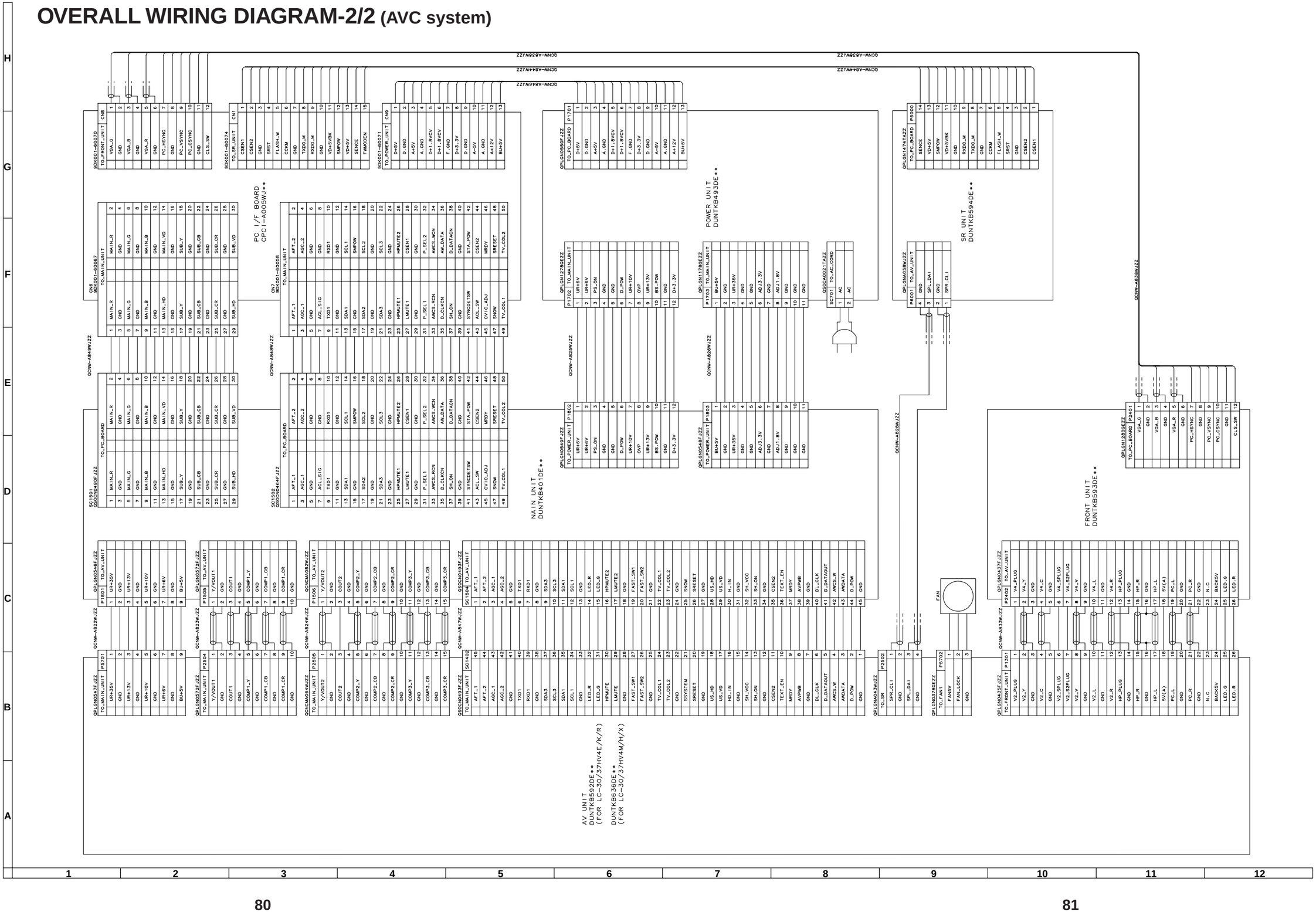
POWER UNIT BLOCK DIAGRAM (Display)



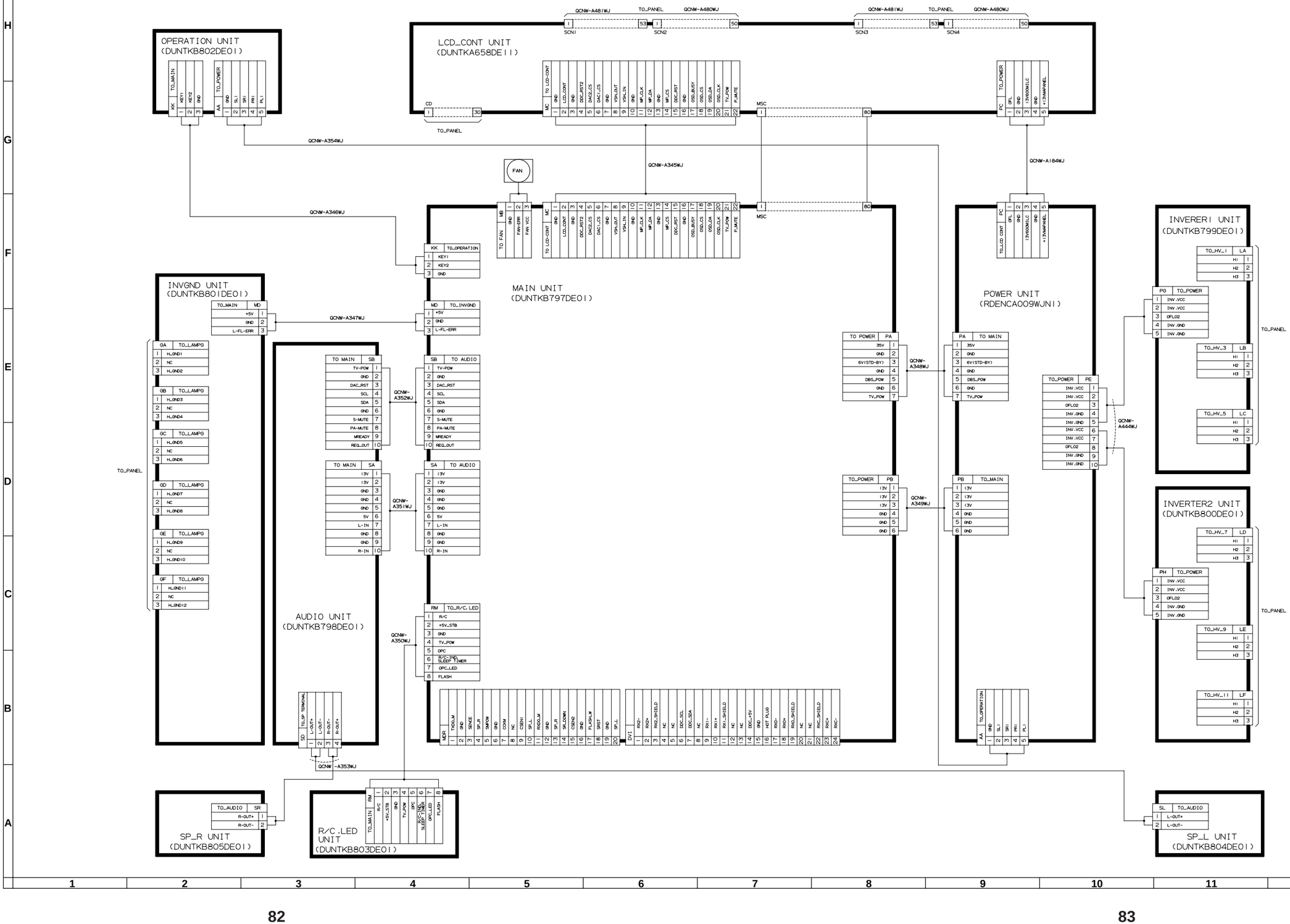
OVERALL WIRING DIAGRAM-1/2 (AVC system)



OVERALL WIRING DIAGRAM-2/2 (AVC system)



OVERALL WIRING DIAGRAM (Display)



DESCRIPTION OF SCHEMATIC DIAGRAM

VOLTAGE MEASUREMENT CONDITION:

1. When the exclusive-use AC adapter is used, the colour bar signal of colour bar generator for service is input to get the normal screen. When the audio is minimized, the voltage value is measured with the 20 kΩ/V tester.

WAVEFORM MEASUREMENT CONDITION:

1. When the exclusive-use AC adapter is used, the colour density, lightness and colour hue are set to the center position, and the signal of colour bar generator for service is observed to get waveform.
2. ◯▶ indicates waveform check points (See chart, waveforms are measured from point indicated to chassis ground.)

INDICATION OF RESISTOR & CAPACITOR:

RESISTOR

1. The unit of resistance "Ω" is omitted. (K=kΩ=1000 Ω, M=MΩ).
2. All resistors are ± 5%, unless otherwise noted. (J= ± 5%, F= ± 1%, D= ± 0.5%)
3. All resistors are Carbon type, unless otherwise noted.
   Ⓒ: Solid Ⓦ : Cement
   Ⓢ: Oxide Film Ⓣ : Special
   Ⓝ: Metal Coating

CAPACITOR

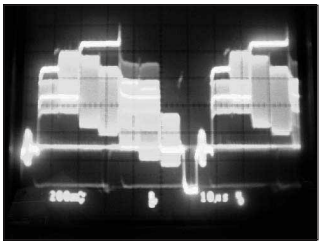
1. All capacitors are mF, unless otherwise noted. (P=pF=mmF).
2. All capacitors are Ceramic type, unless otherwise noted.
   (ML) : Mylar (TA) : Tantalum
   (PF) : Polypro Film (ST) : Styrol

CAUTION:
This circuit diagram is original one, therefore there may be a slight difference from yours.

IMPORTANT SAFETY NOTICE:
PARTS MARKED WITH "⚠" ( )ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET. BE SURE TO REPLACE THESE PARTS WITH SPECIFIED ONES FOR MAINTAINING THE SAFETY AND PERFORMANCE OF THE SET.

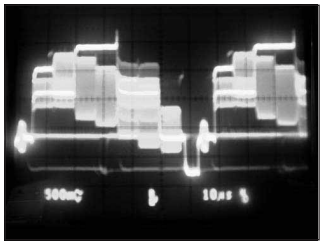
WAVEFORMS

①



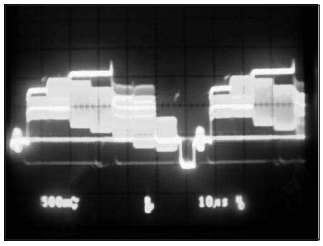
IC1301 63-pin
V: 200mV/div H: 10µsec/div

②



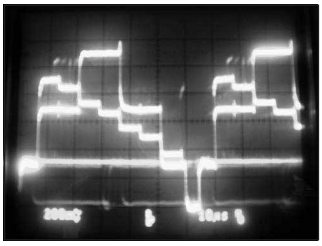
IC1301 56-pin
V: 500mV/div H: 10µsec/div

③



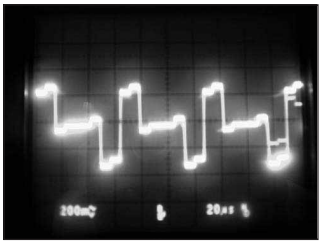
IC405 1.2-pin
V: 500mV/div H: 10µsec/div

④



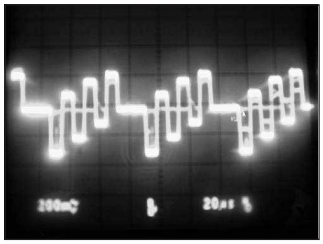
IC801 1-pin
V: 200mV/div H: 10µsec/div

⑤



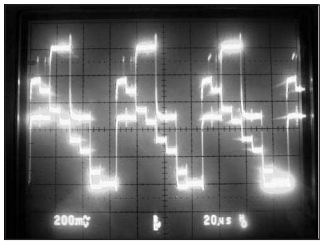
IC803 TP801
V: 200mV/div H: 20µsec/div

⑥



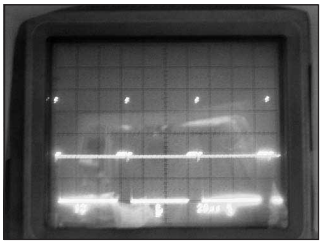
IC803 TP802
V: 200mV/div H: 20µsec/div

⑦



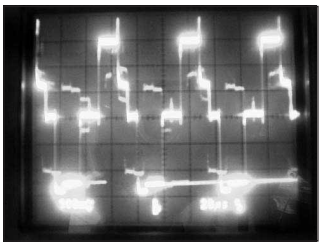
IC803 TP803
V: 200mV/div H: 20µsec/div

⑧



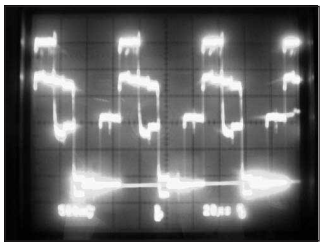
IC803 31-pin
V: 1V/div H: 20µsec/div

⑨



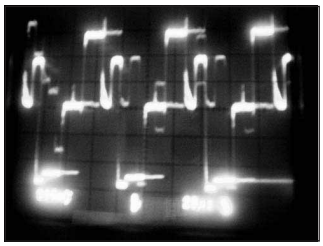
IC810 13-pin
V: 500mV/div H: 20µsec/div

⑩



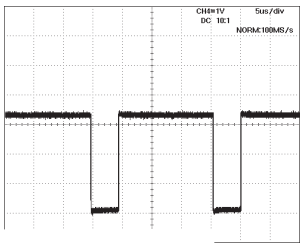
IC810 11-pin
V: 500mV/div H: 20µsec/div

⑪



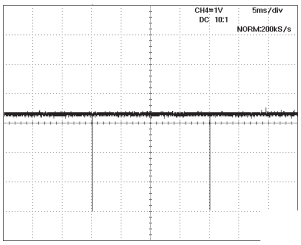
IC810 10-pin
V: 500mV/div H: 20µsec/div

⑫



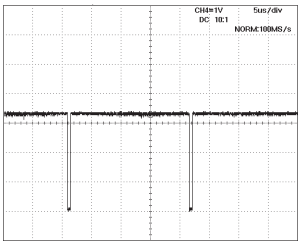
IC2201 95-pin
V: 1V/div H: 5µsec/div

⑬



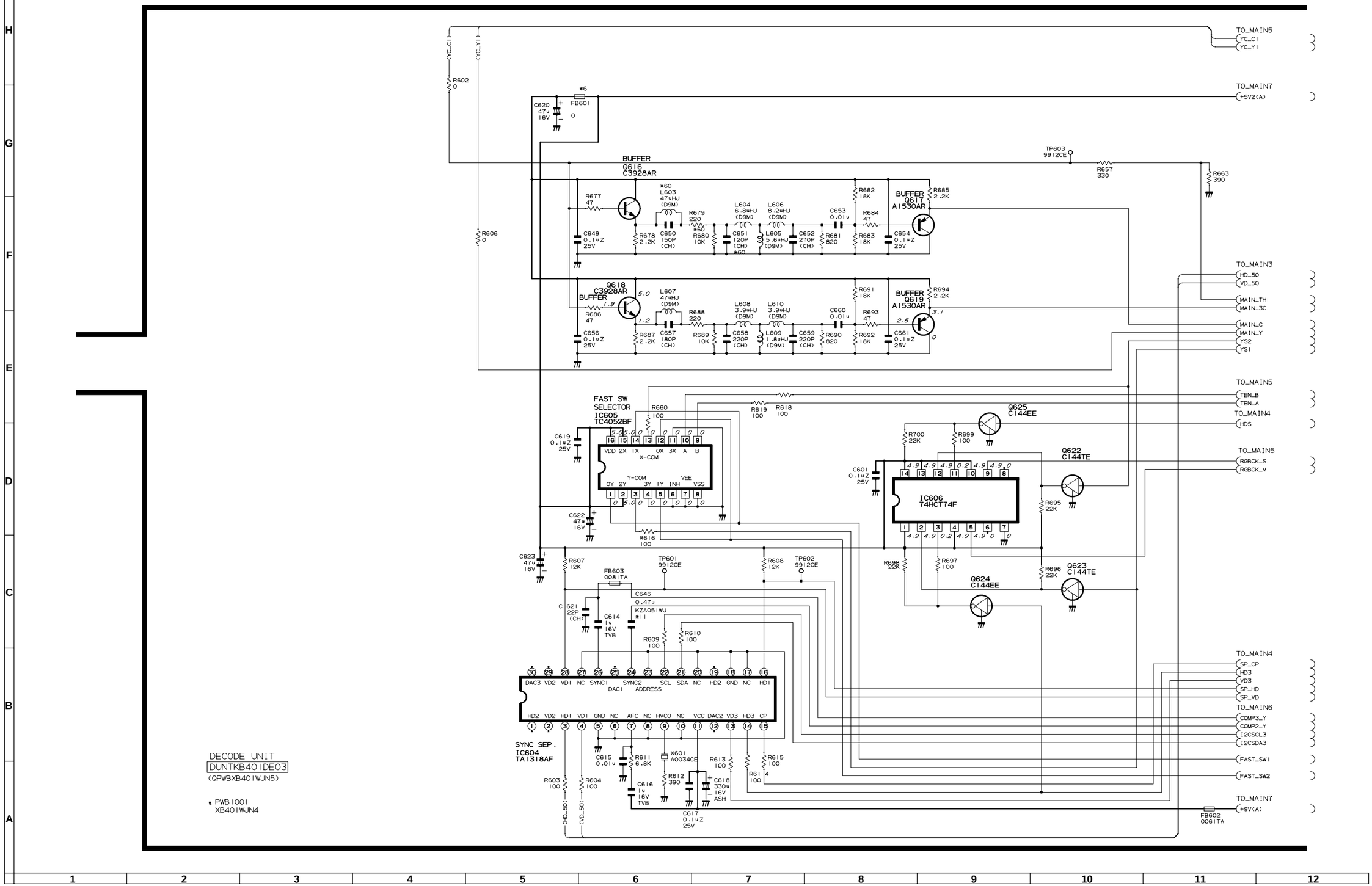
IC2201 96-pin
V: 1V/div H: 5msec/div

⑭

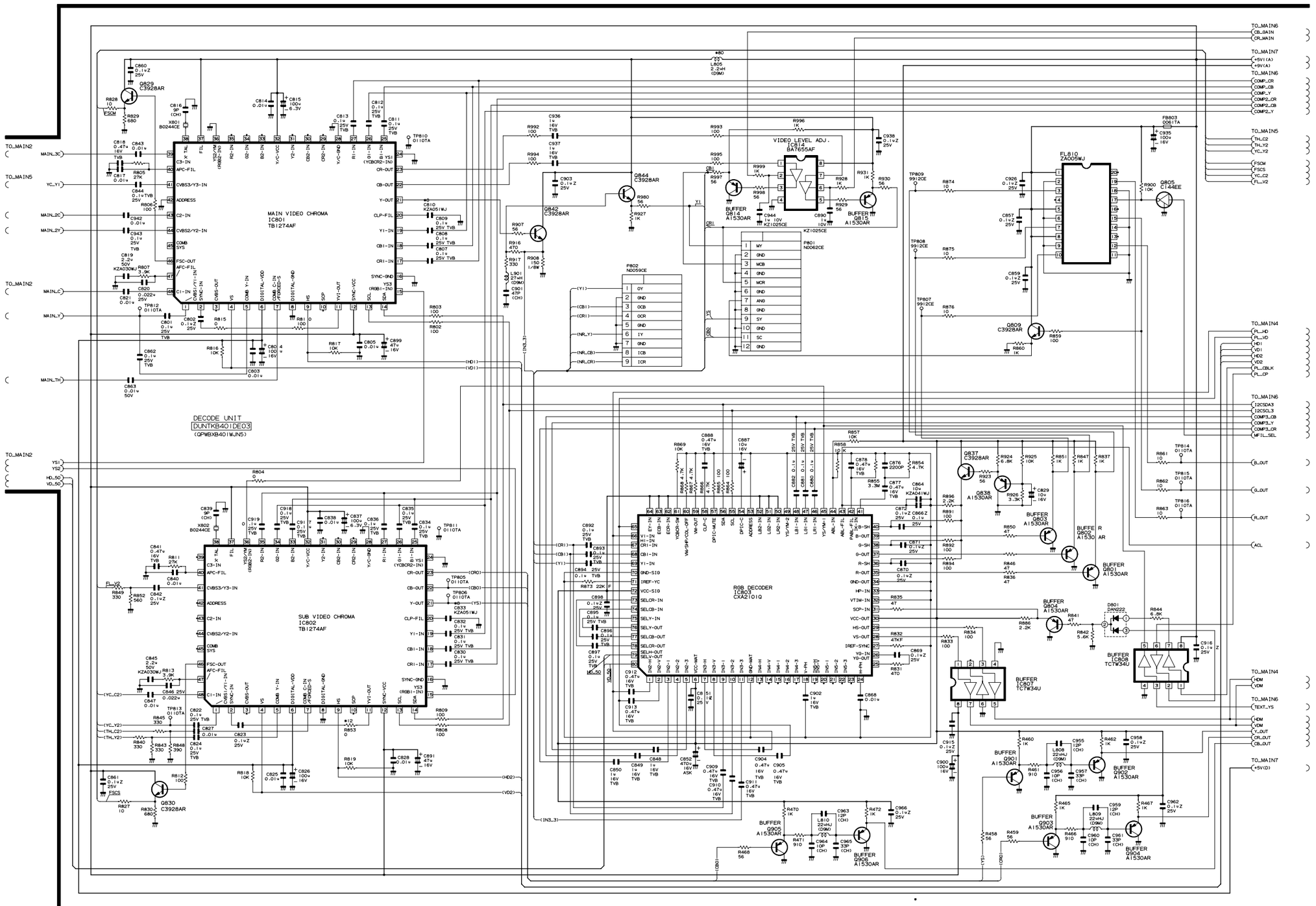


IC2201 97-pin
V: 1V/div H: 5µsec/div

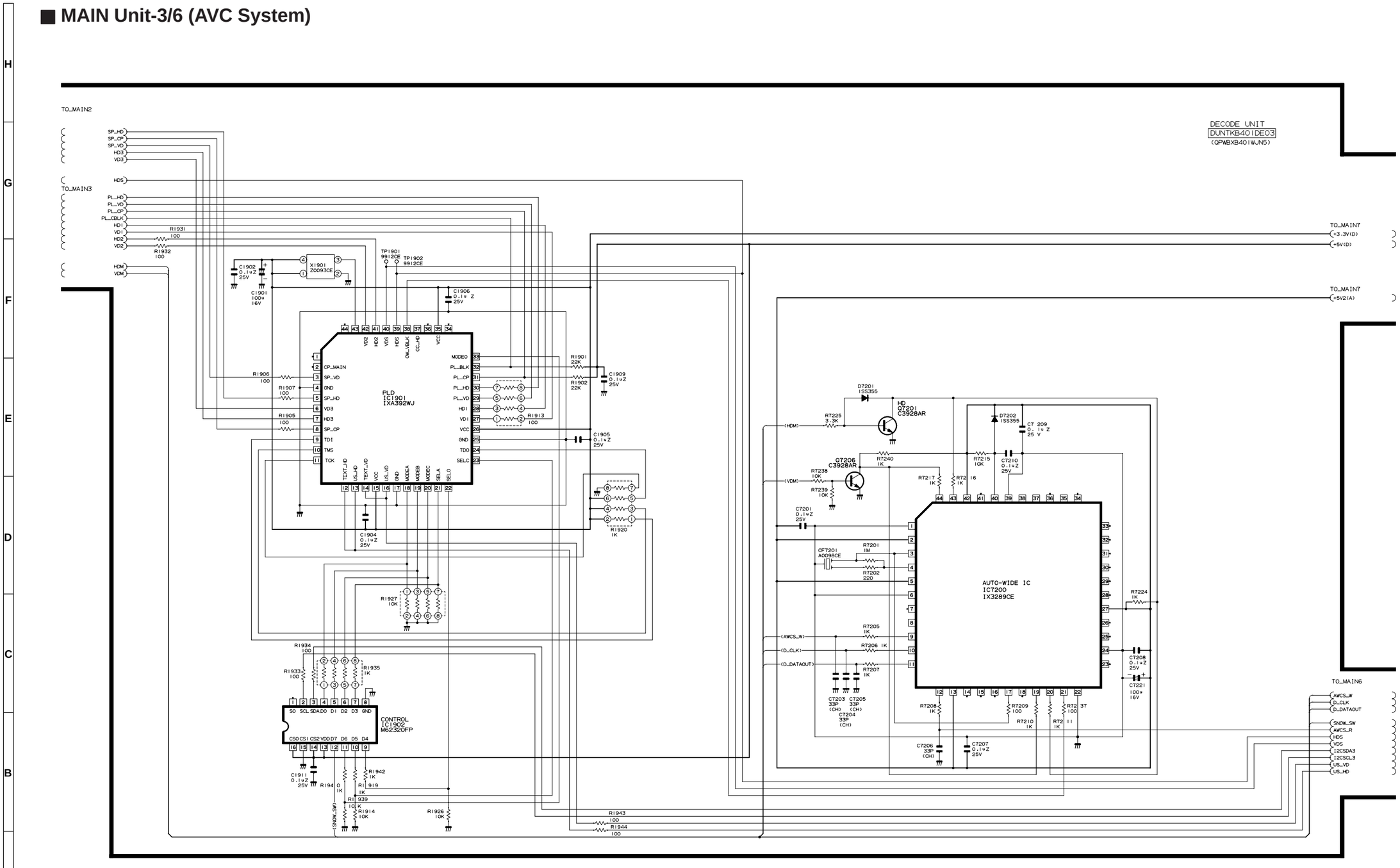
■ MAIN Unit-1/6 (AVC System)



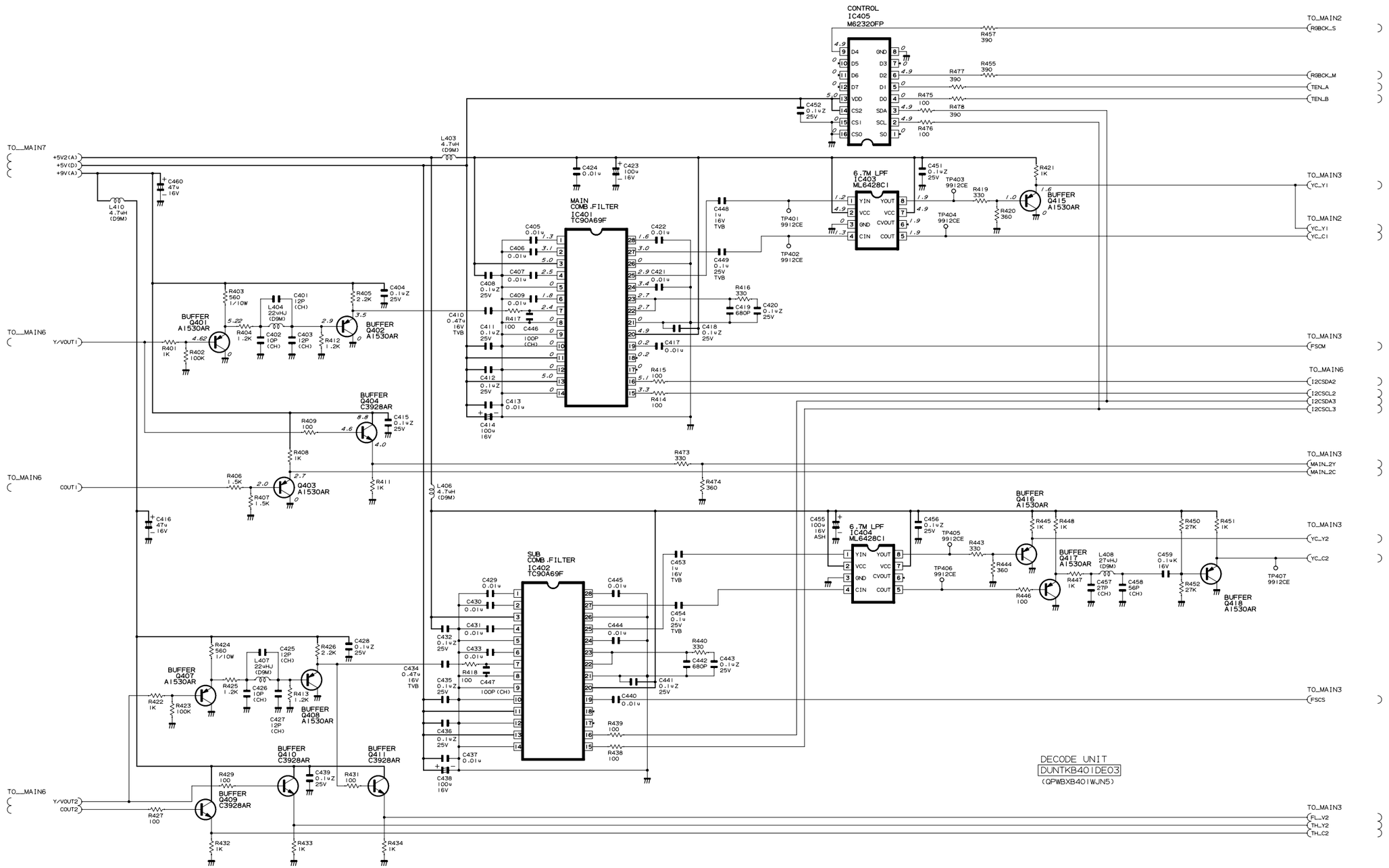
■ MAIN Unit-2/6 (AVC System)



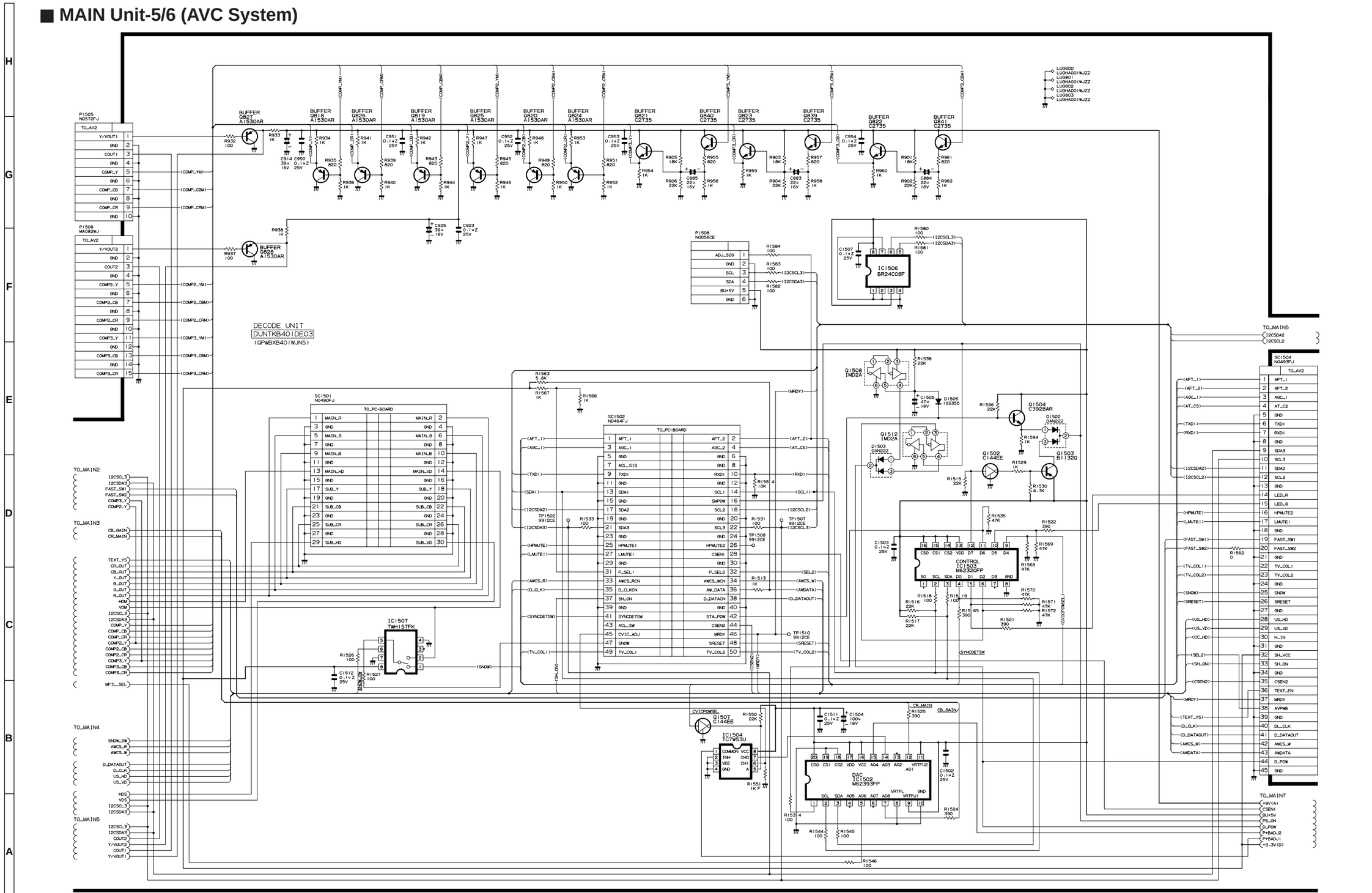
■ MAIN Unit-3/6 (AVC System)



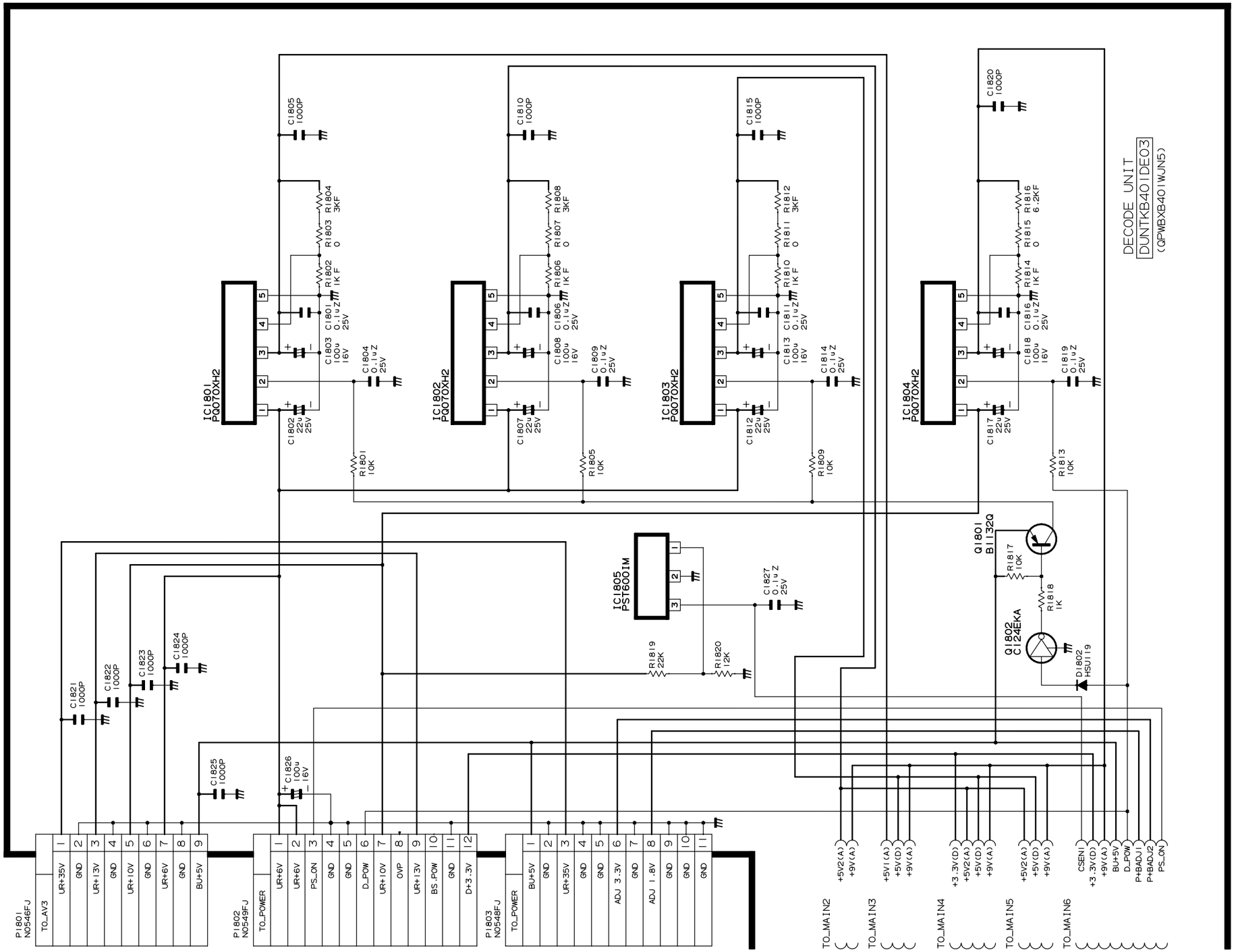
■ MAIN Unit-4/6 (AVC System)



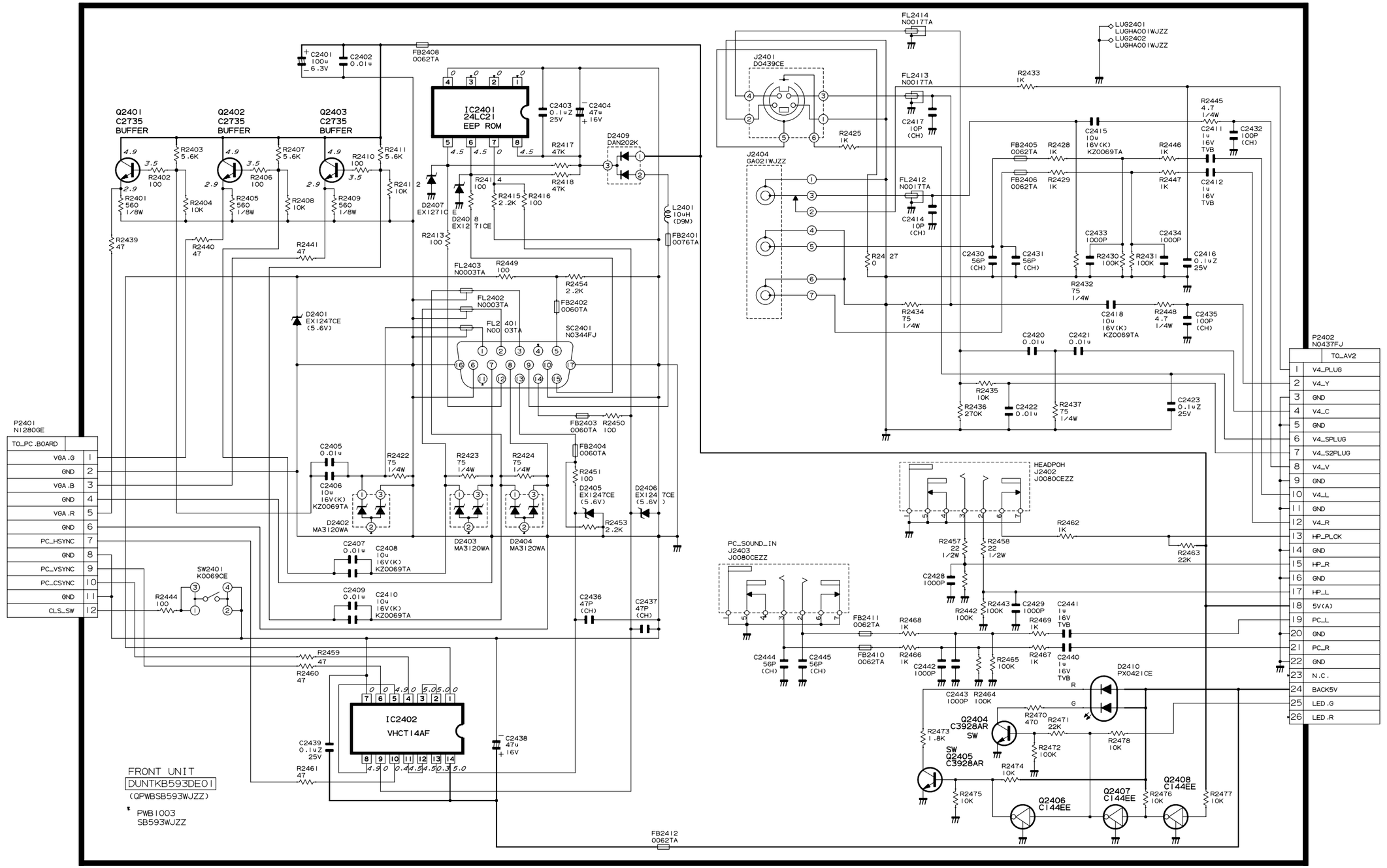
■ MAIN Unit-5/6 (AVC System)



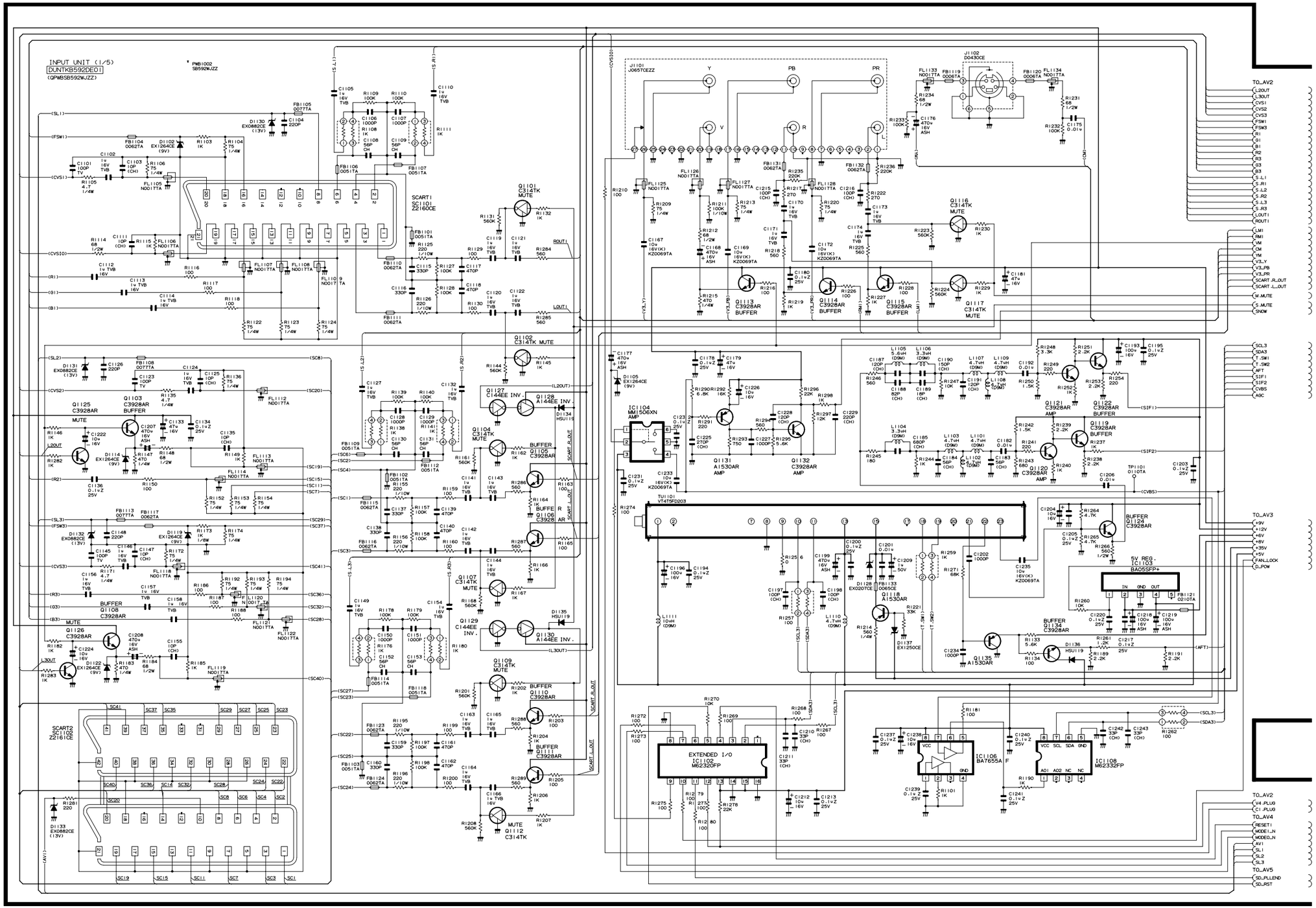
■ MAIN Unit-6/6 (AVC System)



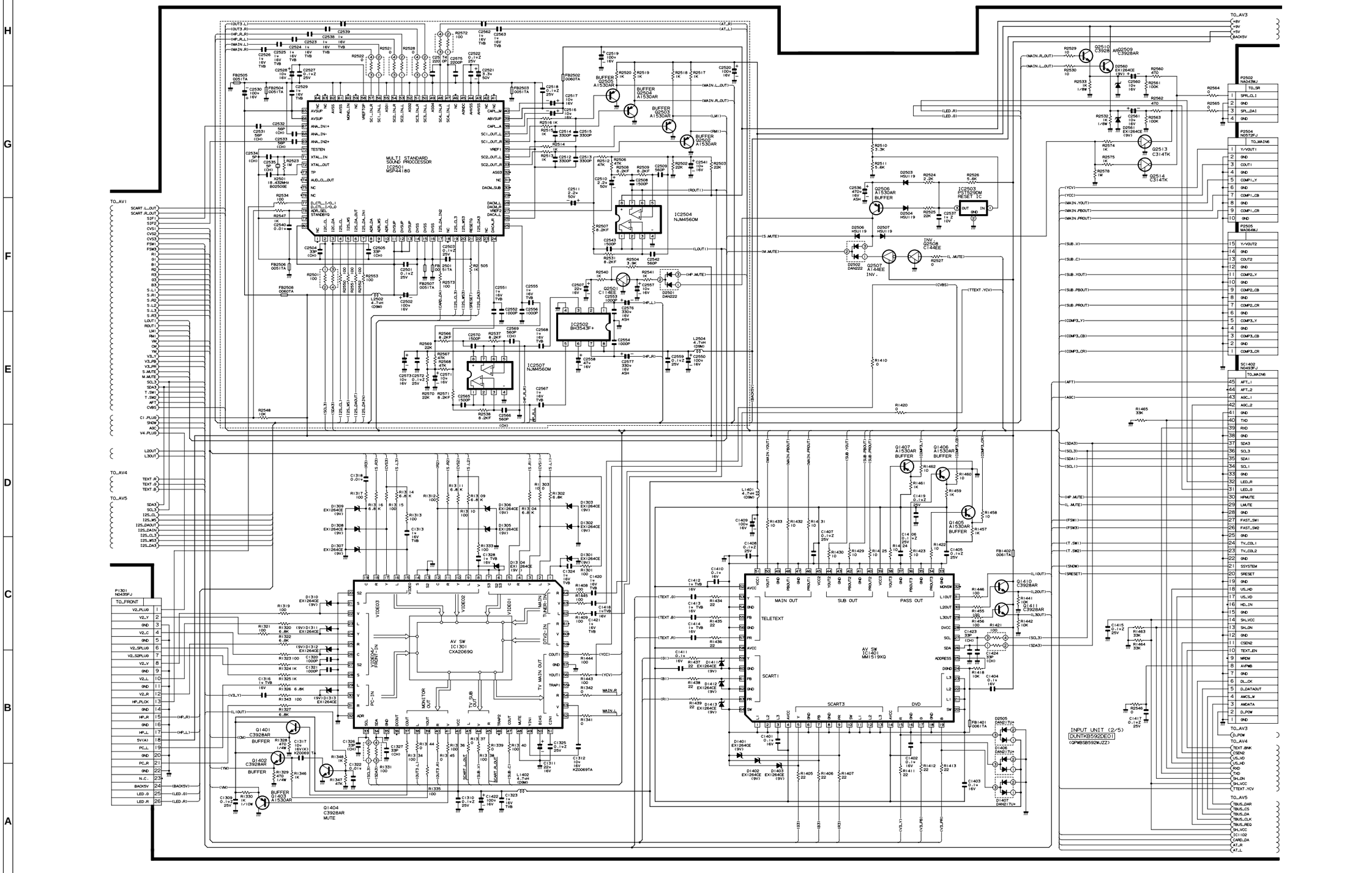
■ FRONT Unit (AVC System)



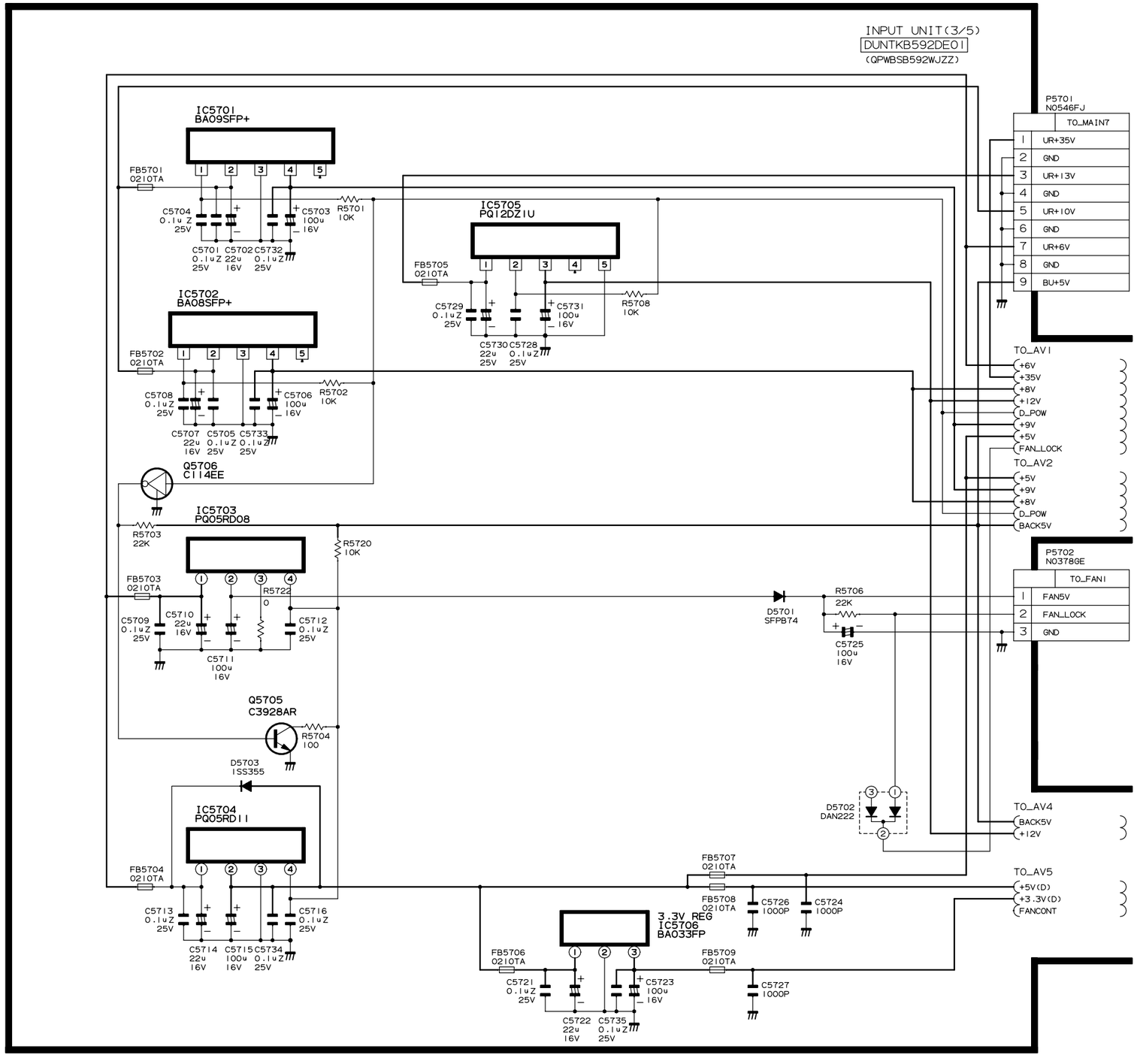
■ AV Unit-1/5 (AVC System)



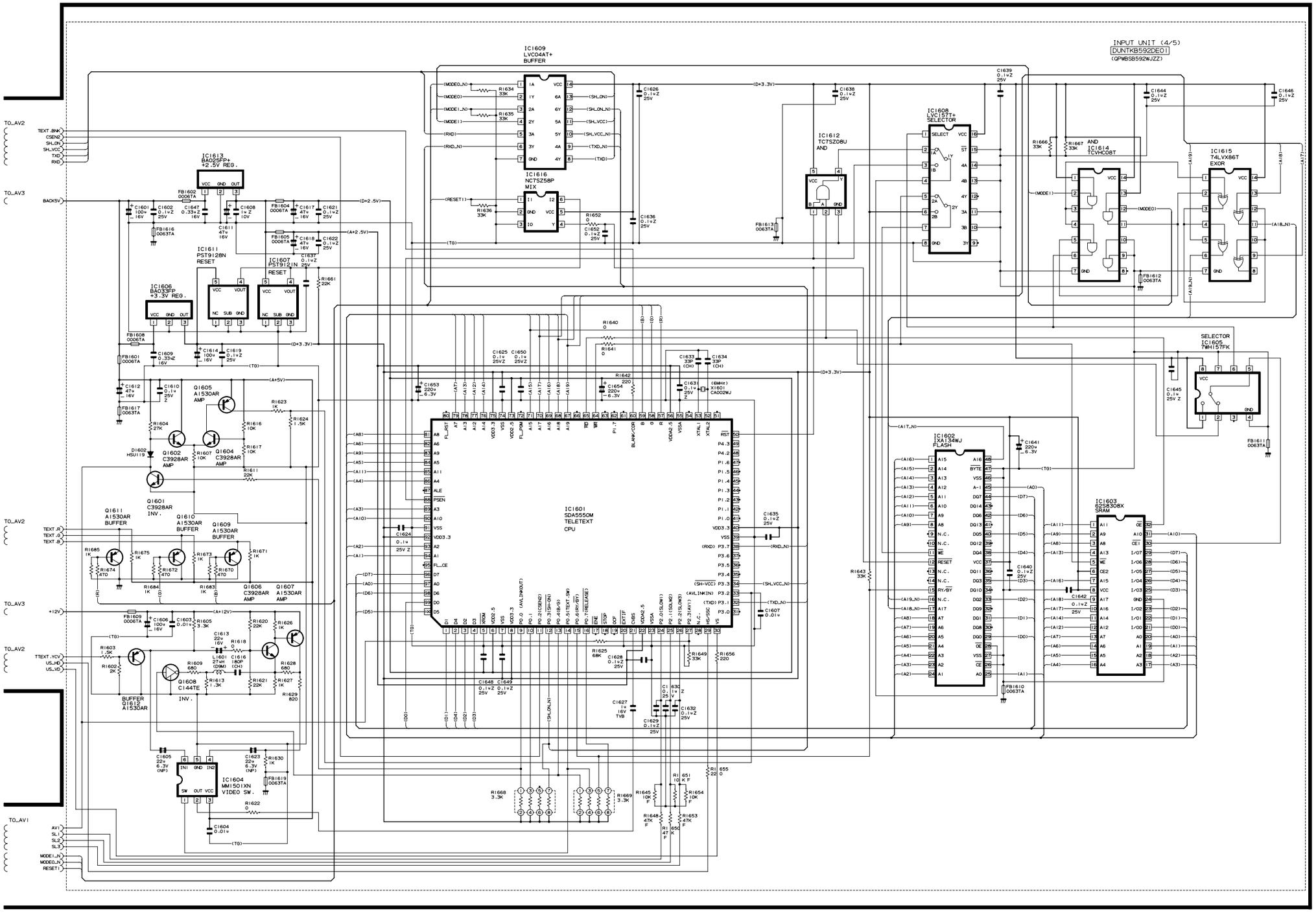
■ AV Unit-2/5 (AVC System)



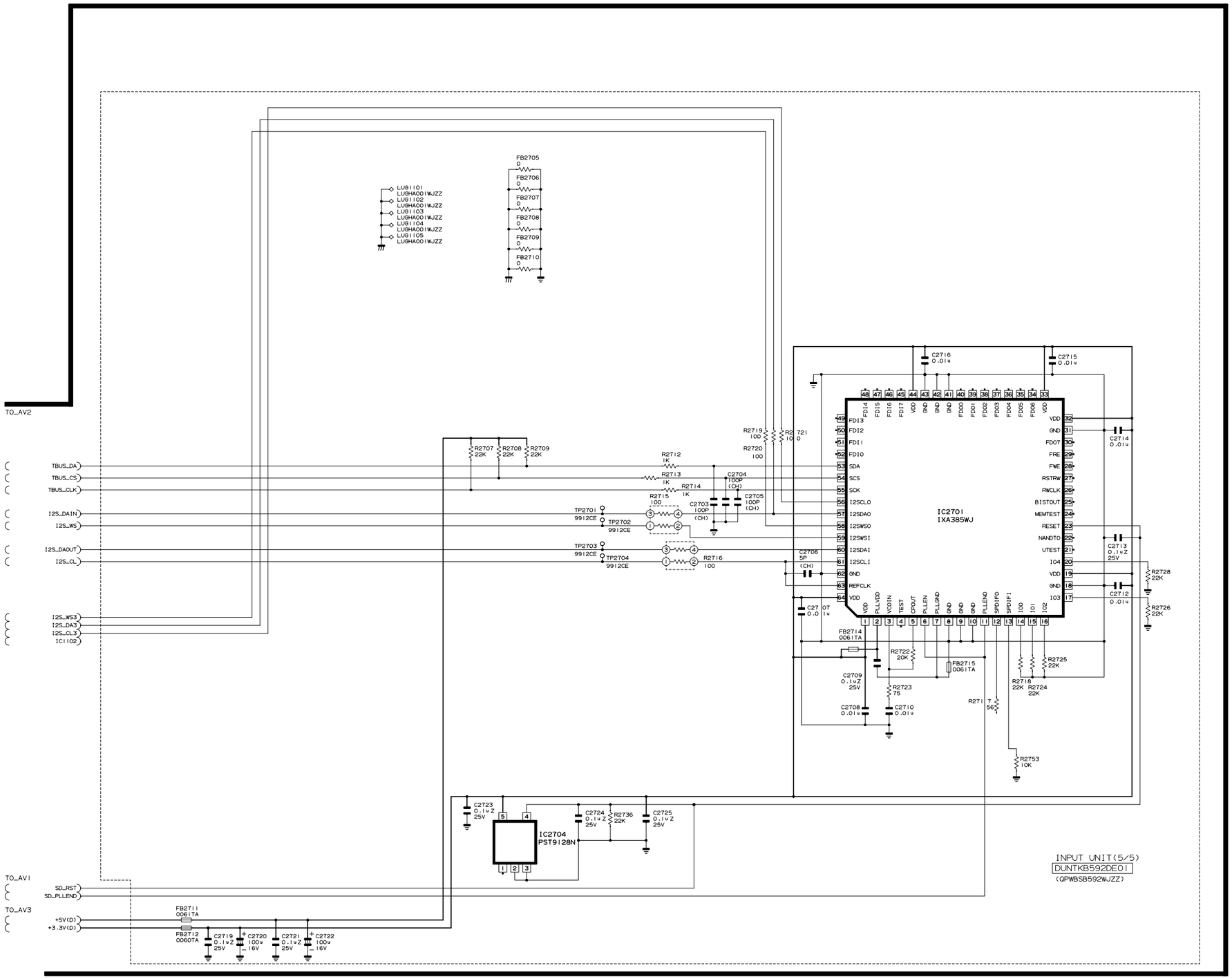
■ AV Unit-3/5 (AVC System)



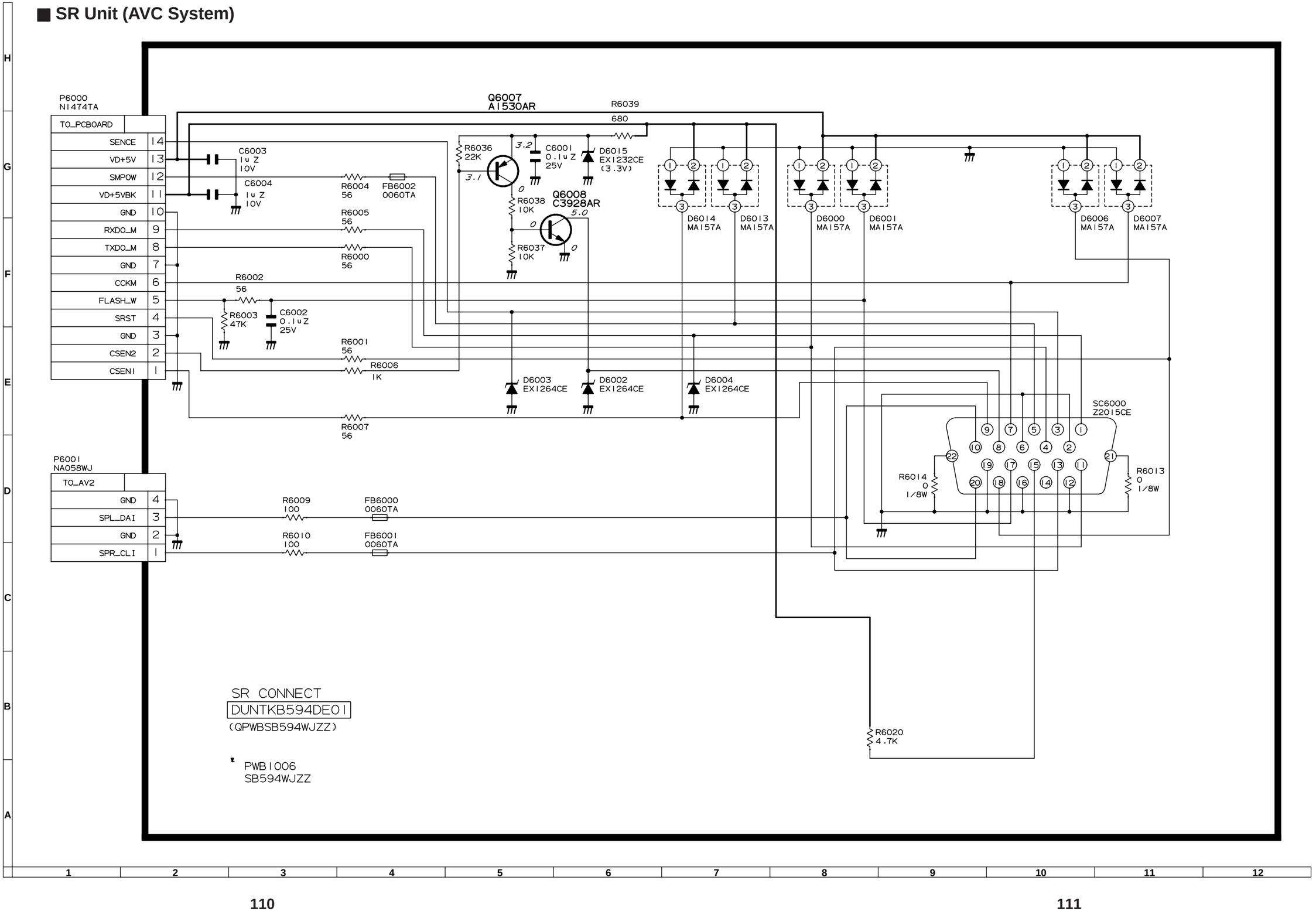
■ AV Unit-4/5 (AVC System)



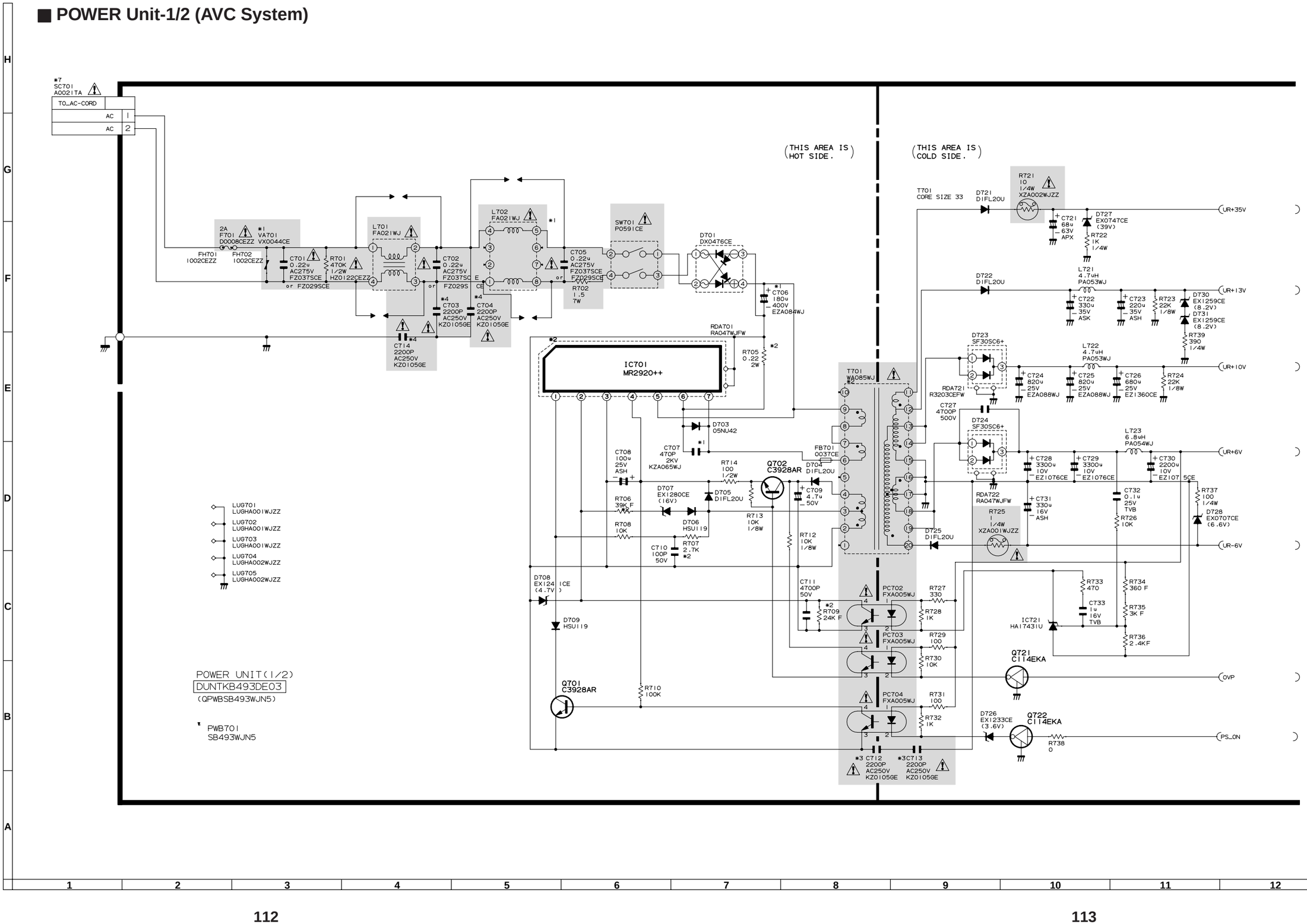
■ AV Unit-5/5 (AVC System)



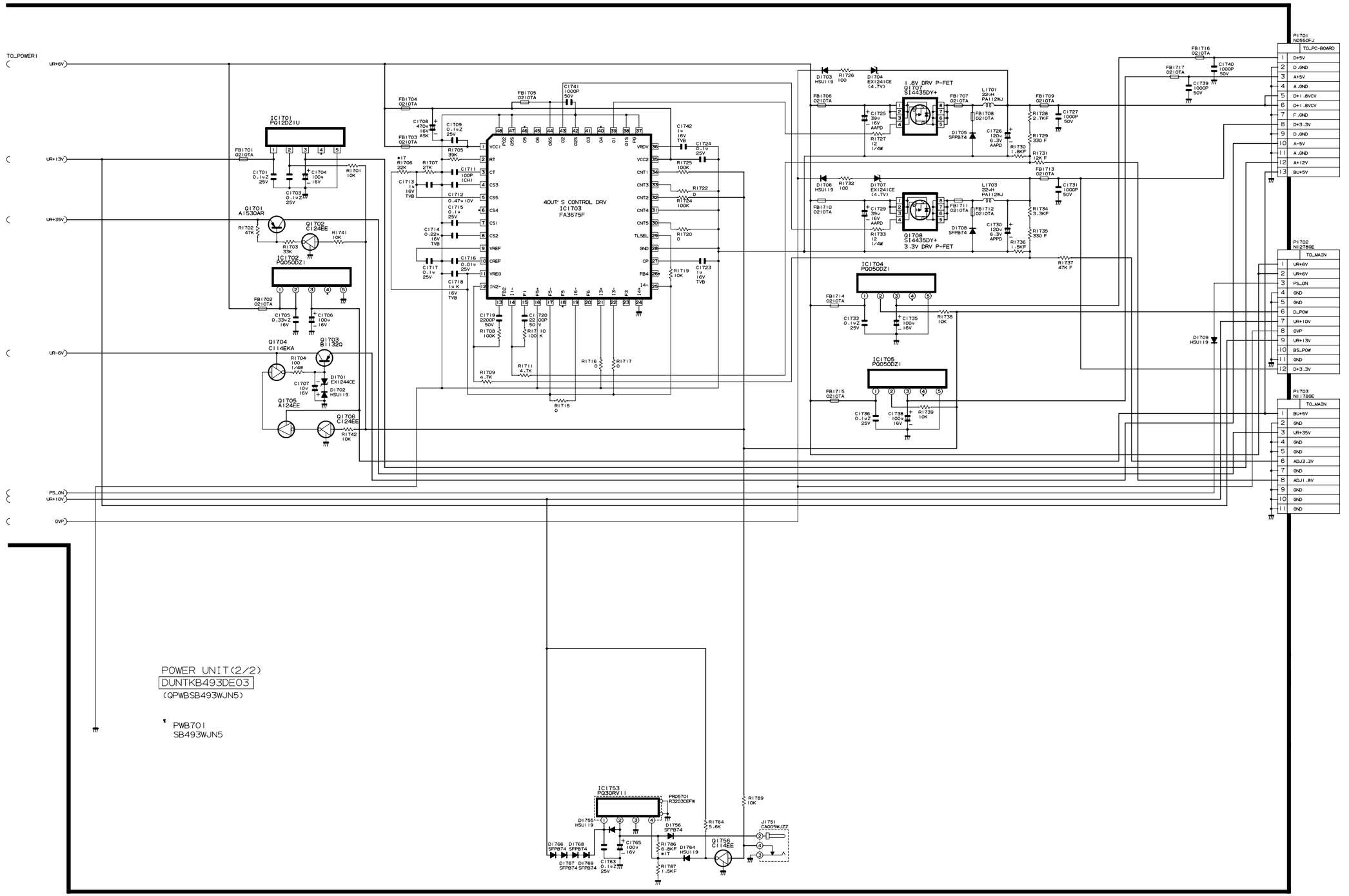
■ SR Unit (AVC System)



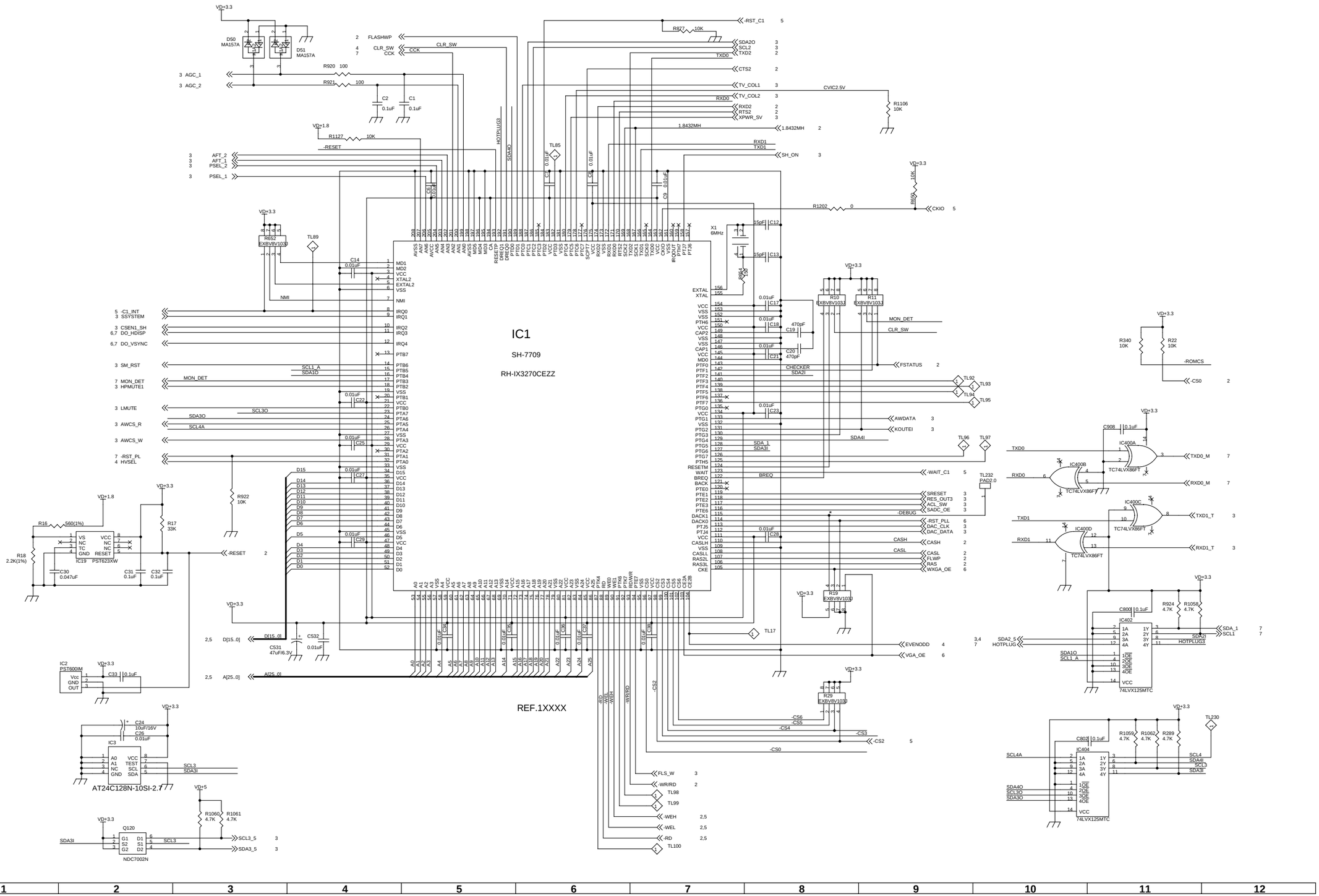
■ POWER Unit-1/2 (AVC System)



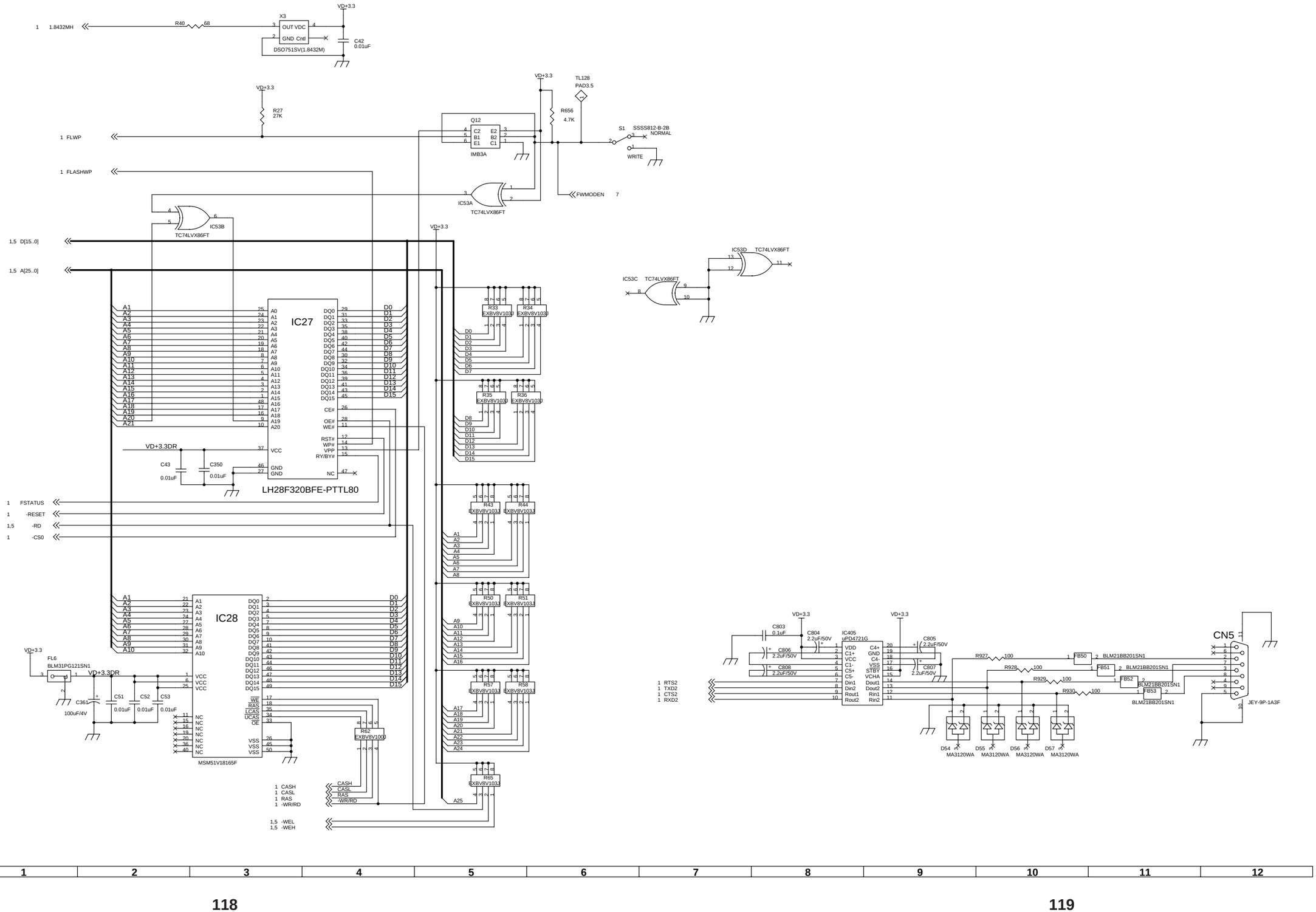
■ POWER Unit-2/2 (AVC System)



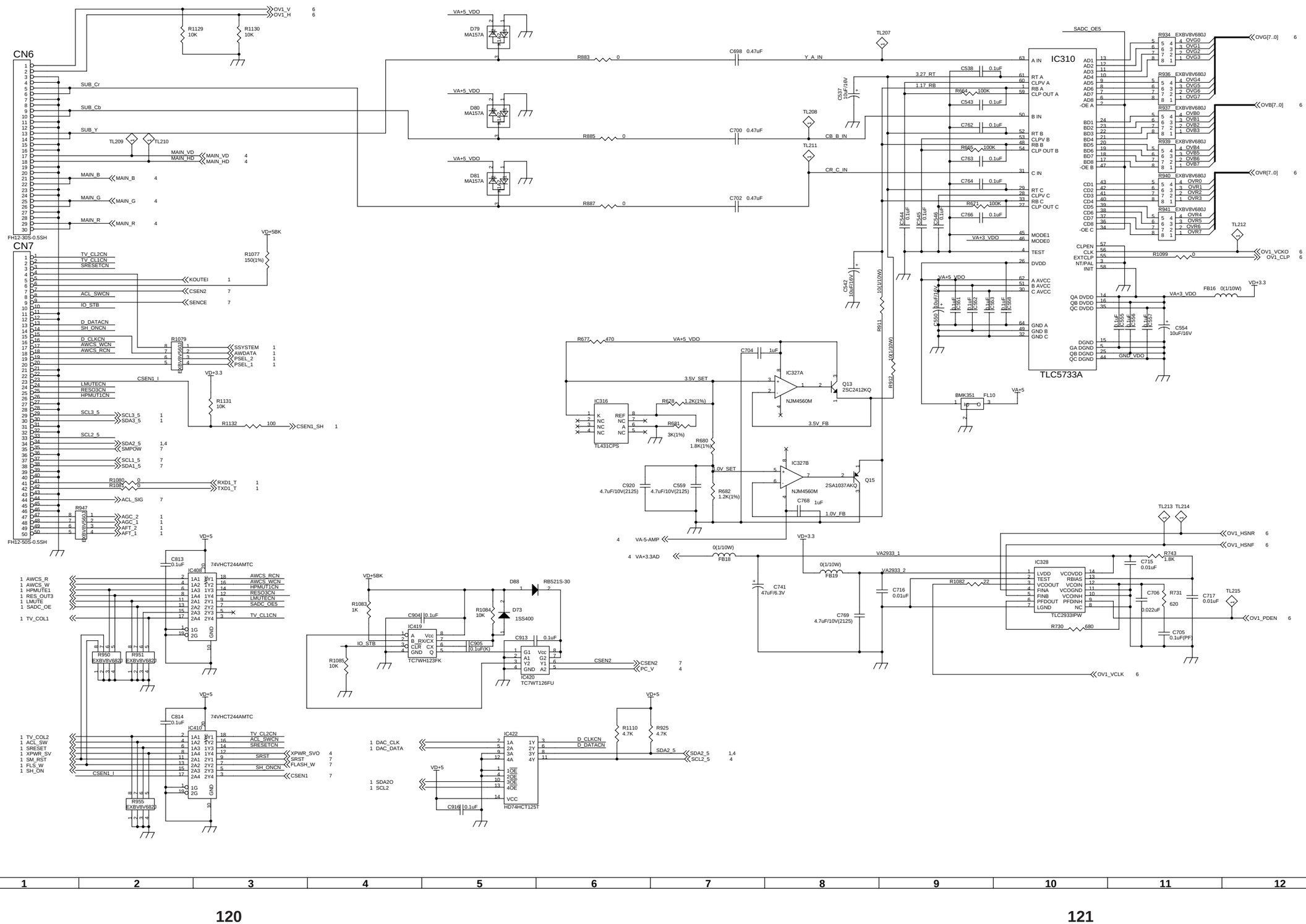
■ PC I/F Unit-1/7 (AVC System)



■ PC I/F Unit-2/7 (AVC System)

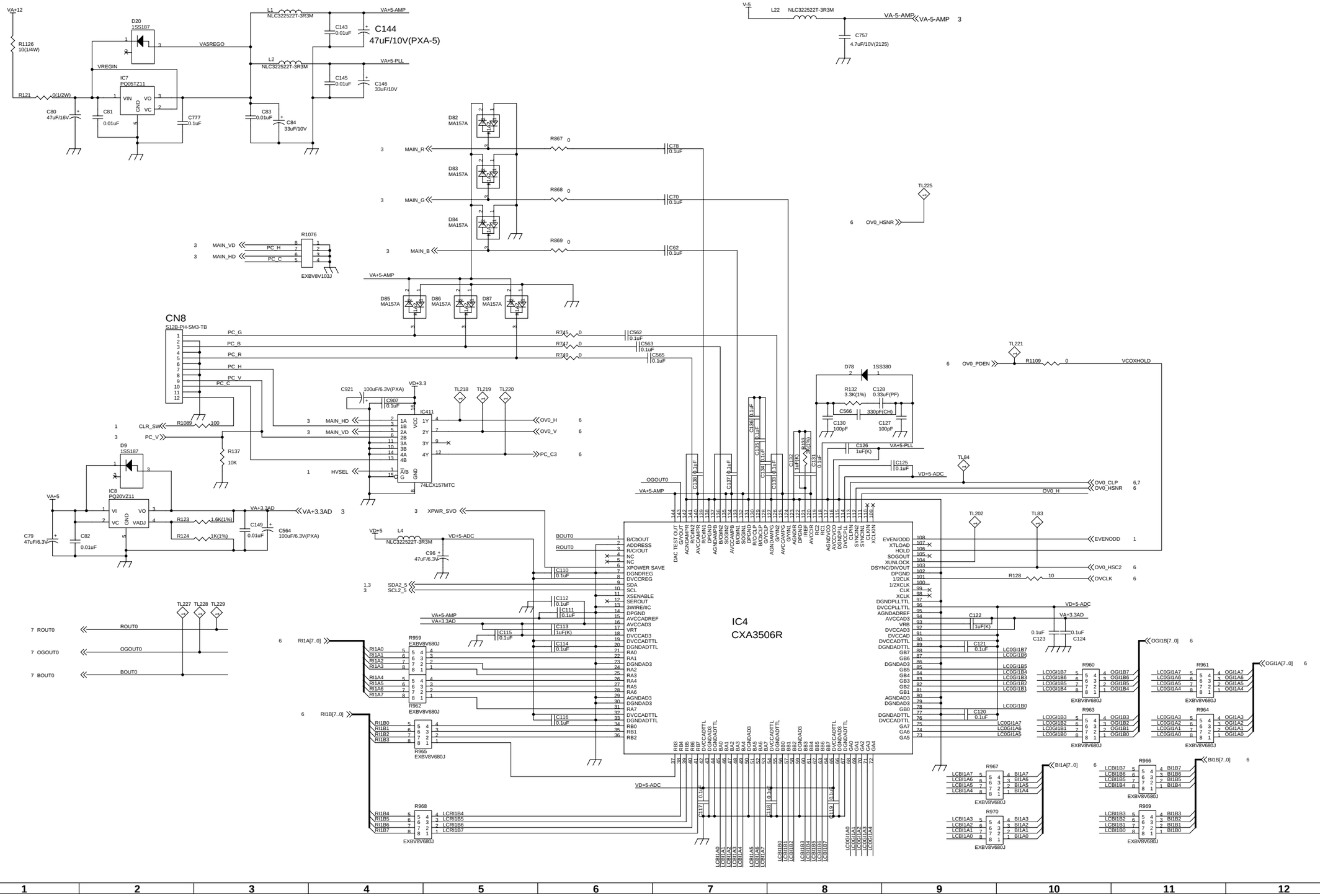


■ PC I/F Unit-3/7 (AVC System)



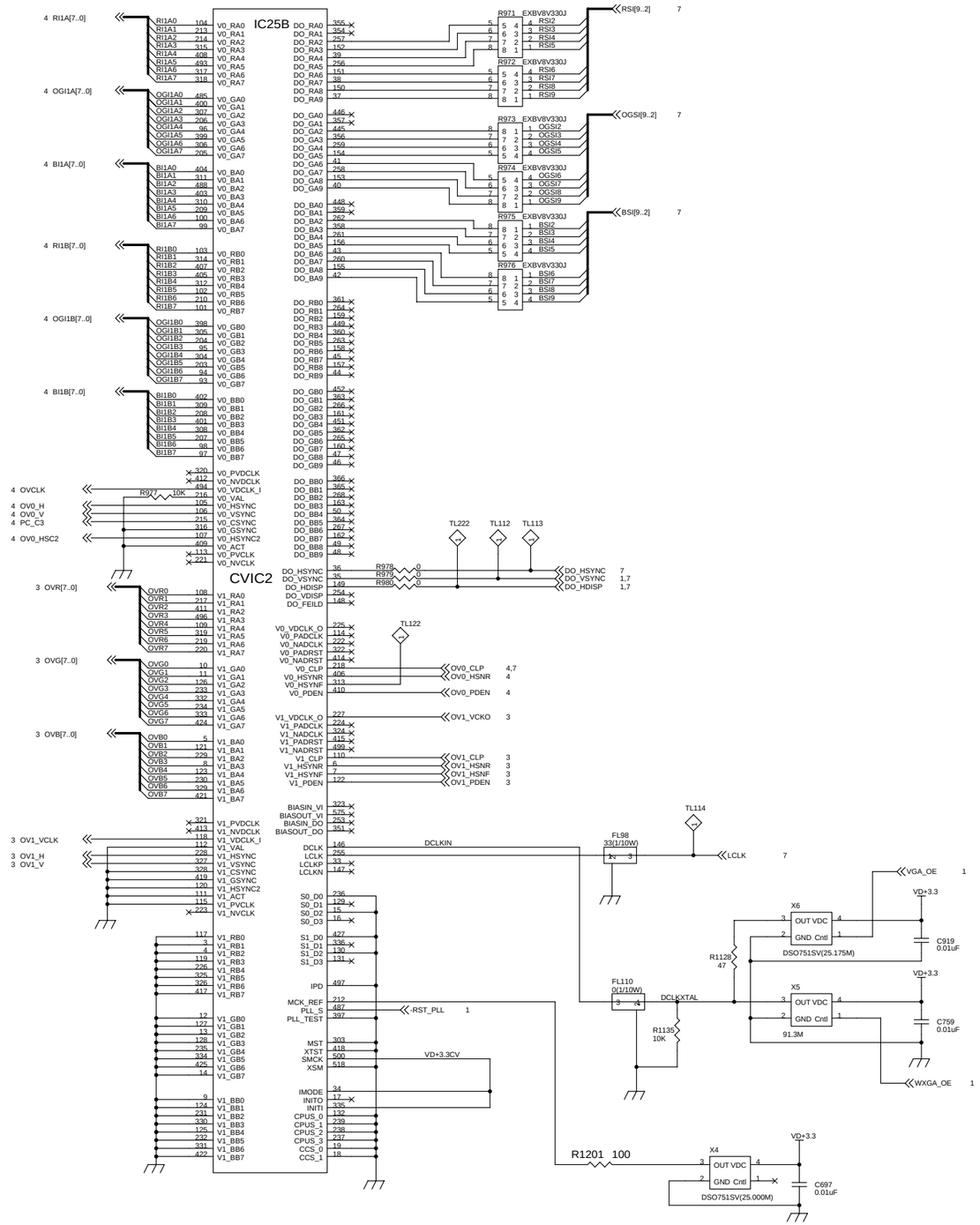
1	2	3	4	5	6	7	8	9	10	11	12

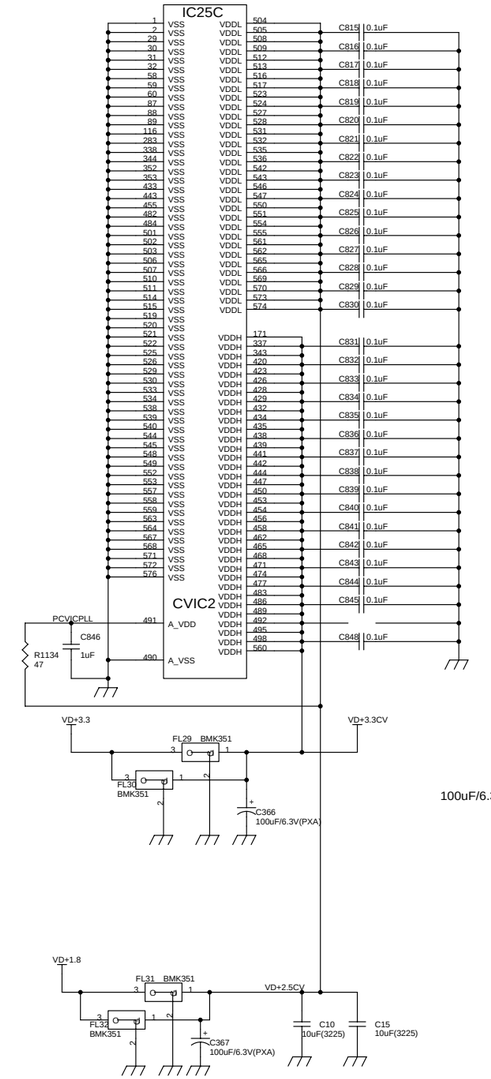
■ PC I/F Unit-4/7 (AVC System)

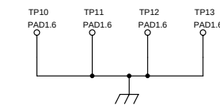


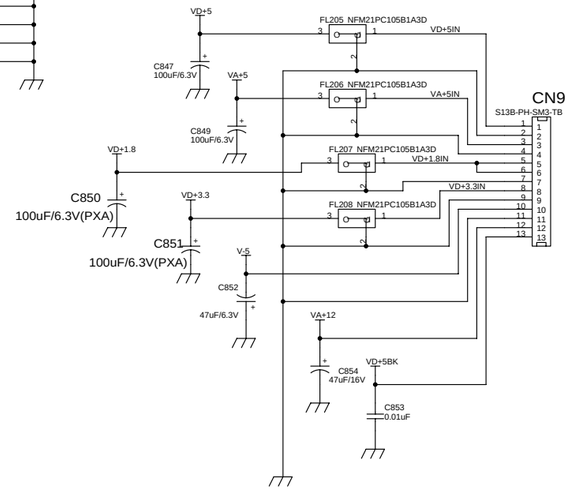
■ PC I/F Unit-5/7 (AVC System)

■ PC I/F Unit-6/7 (AVC System)

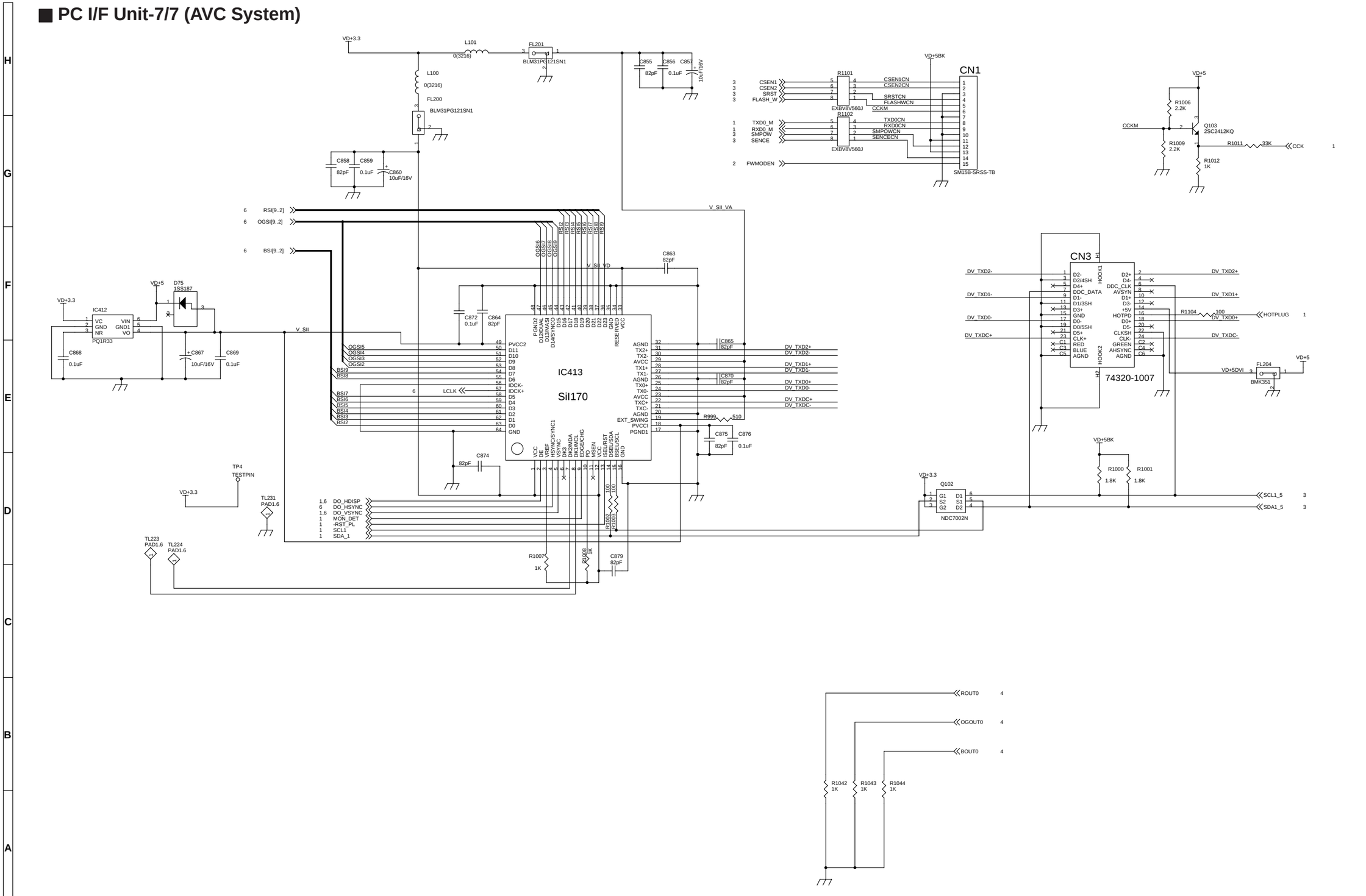




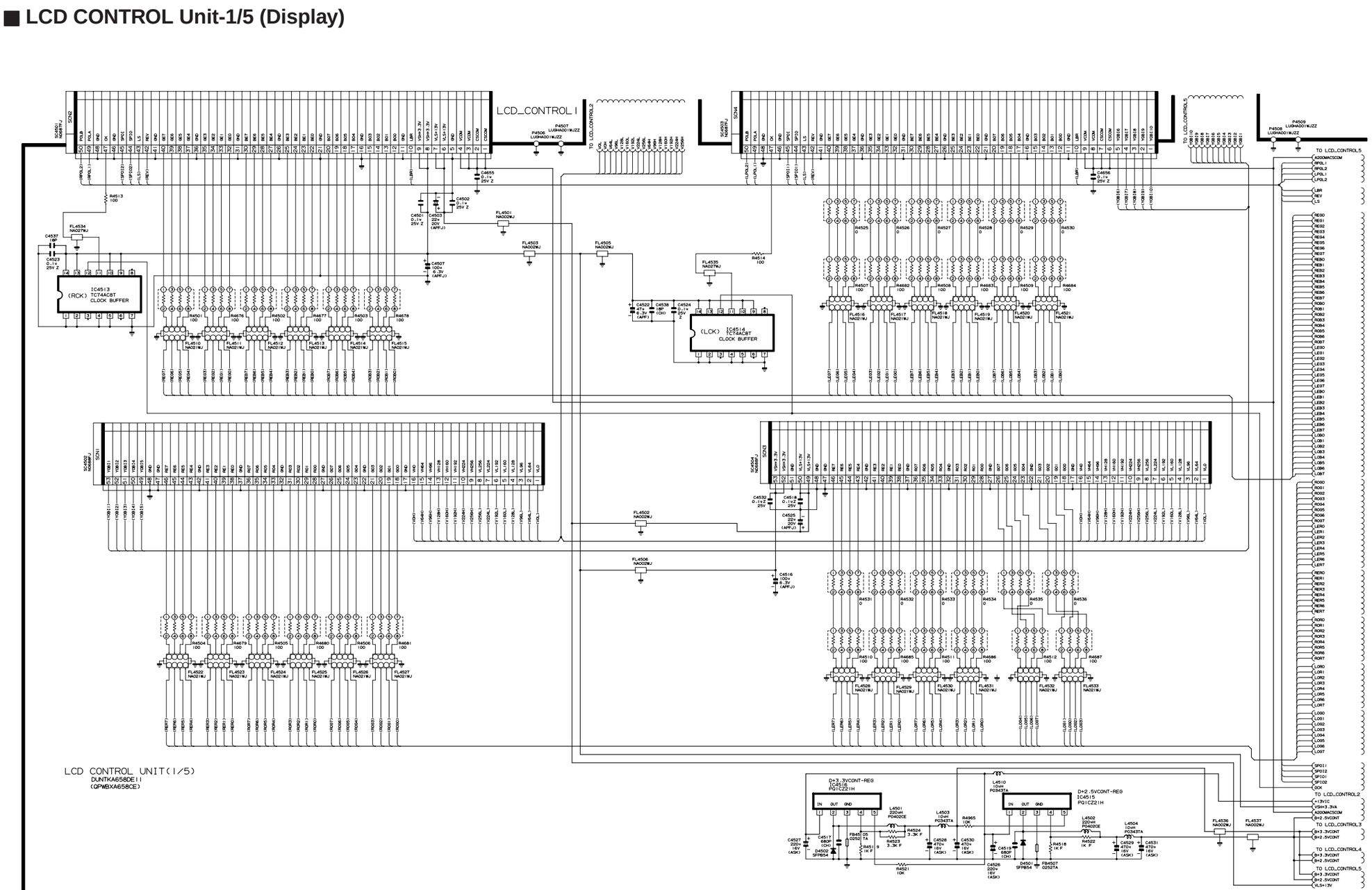




■ PC I/F Unit-7/7 (AVC System)

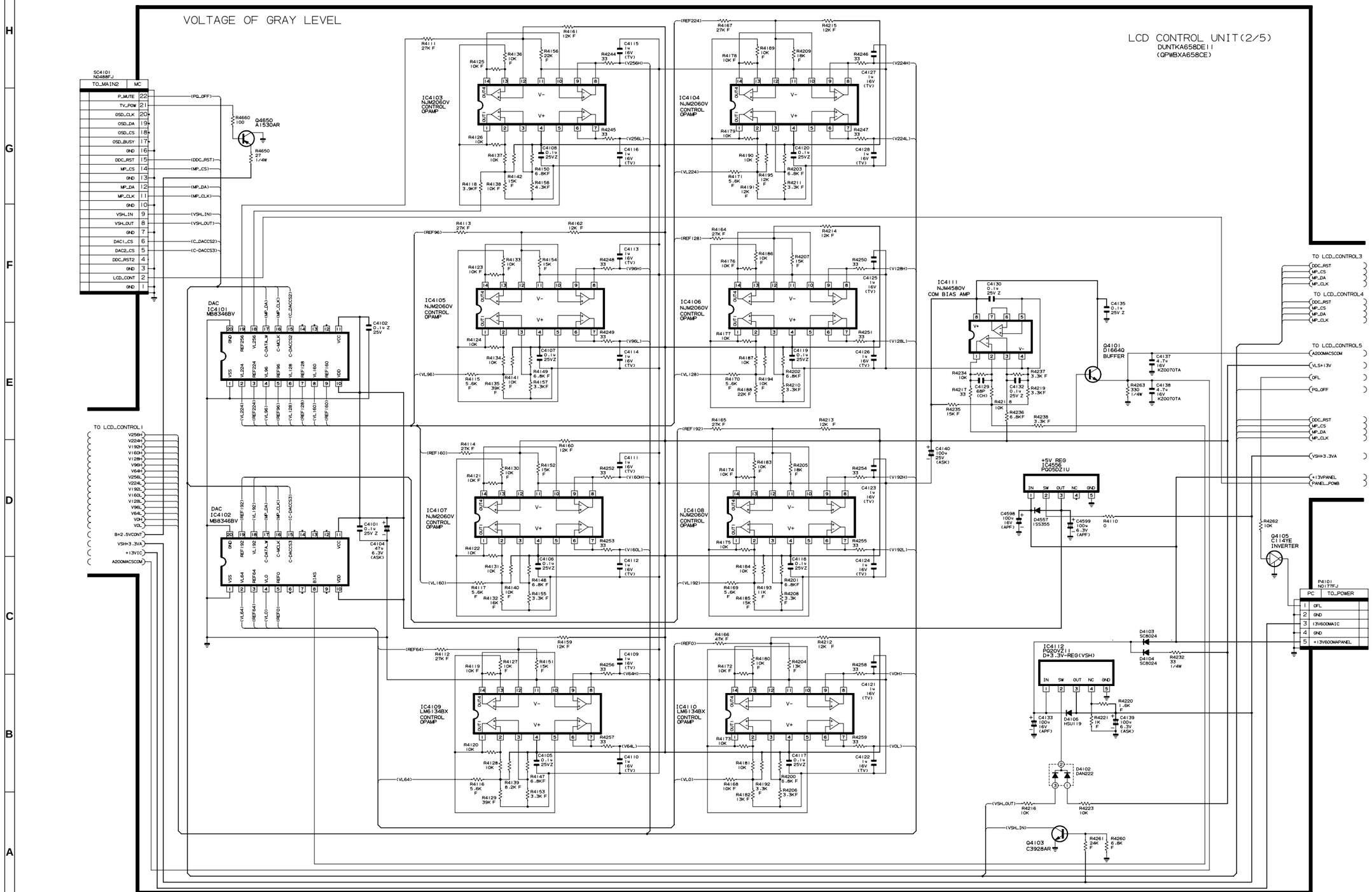


■ LCD CONTROL Unit-1/5 (Display)

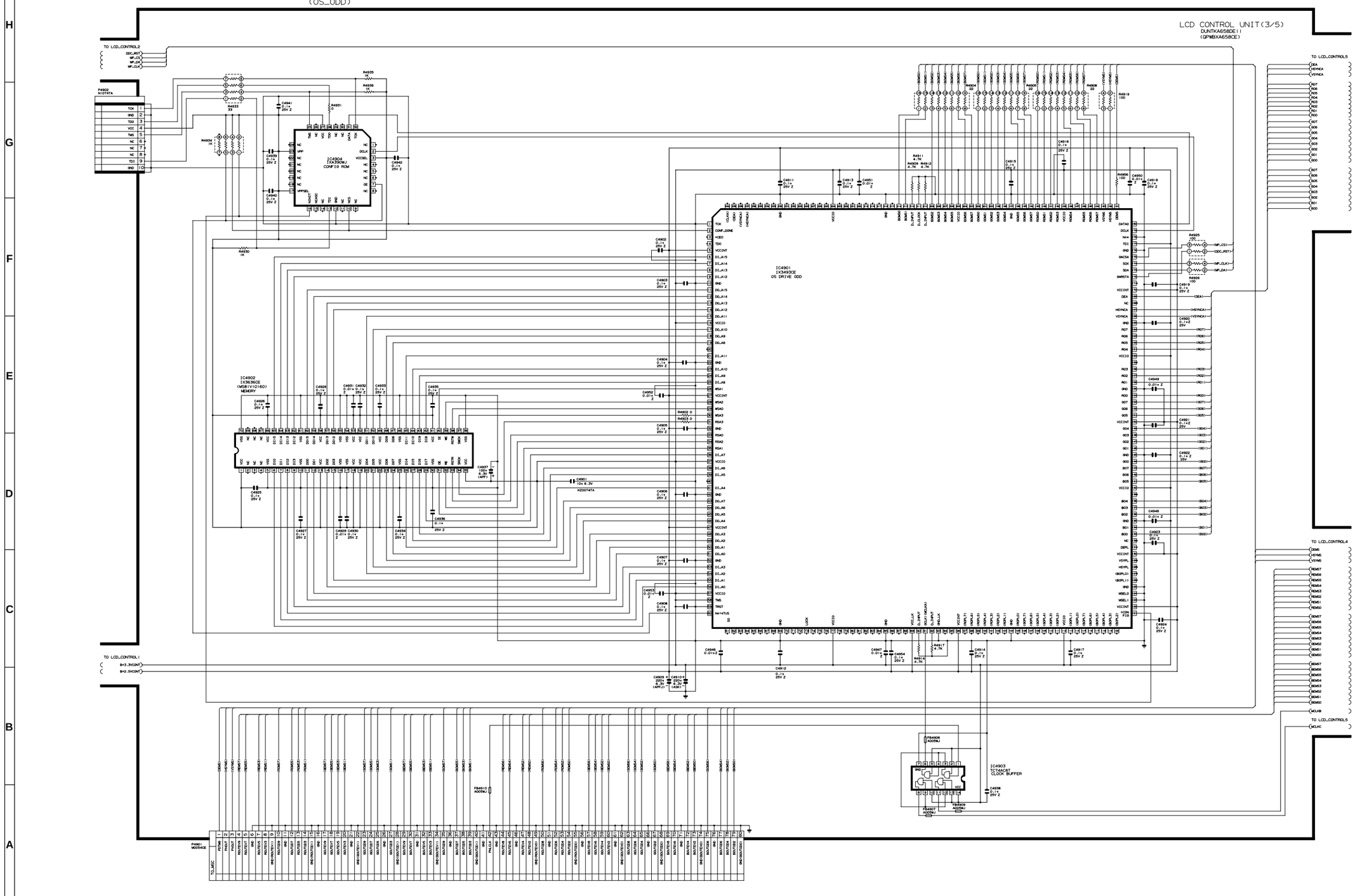


LCD CONTROL UNIT(1/5)
DUNTKA658DE11
(QPWBXA658CE)

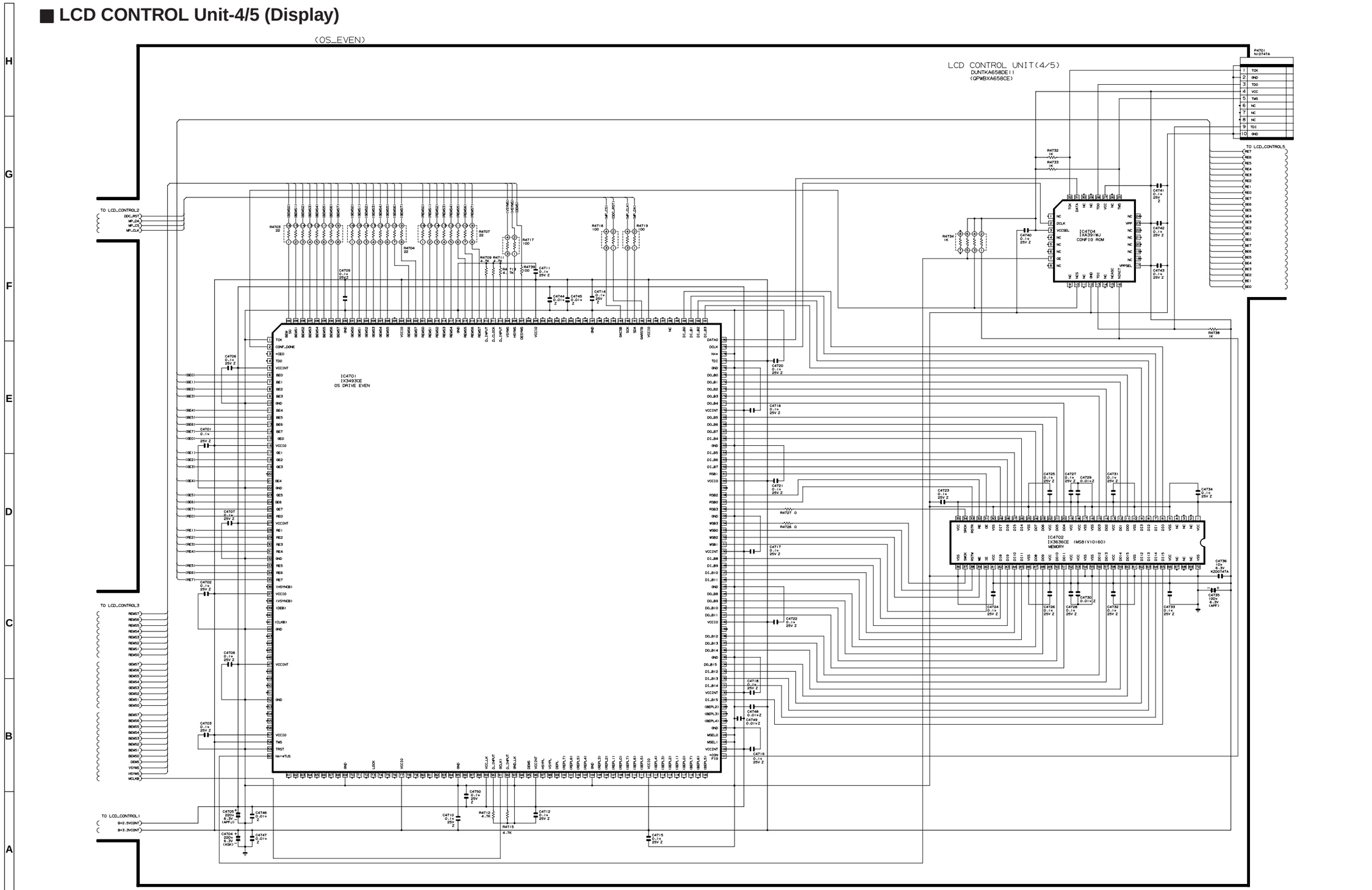
■ LCD CONTROL Unit-2/5 (Display)



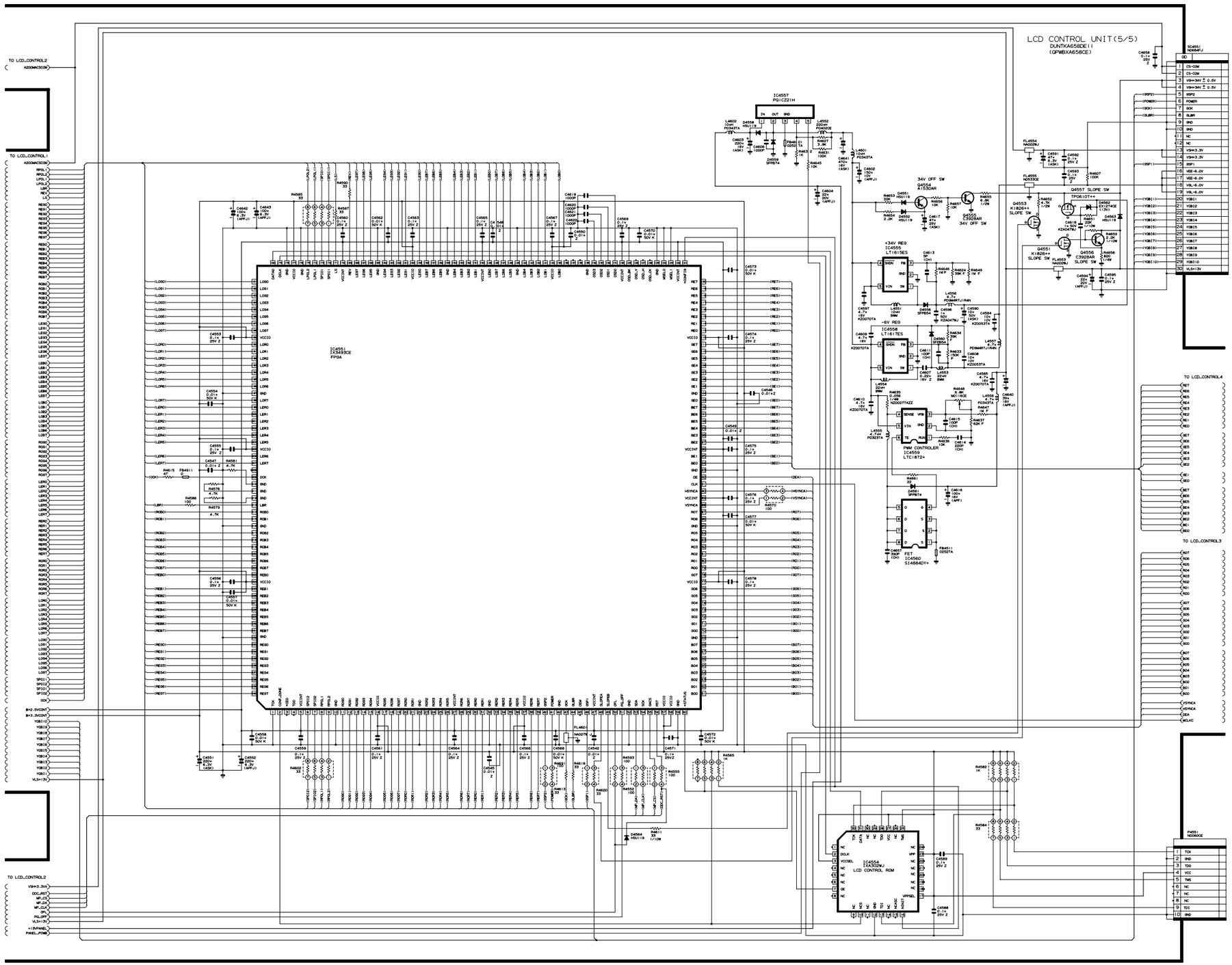
■ LCD CONTROL Unit-3/5 (Display)



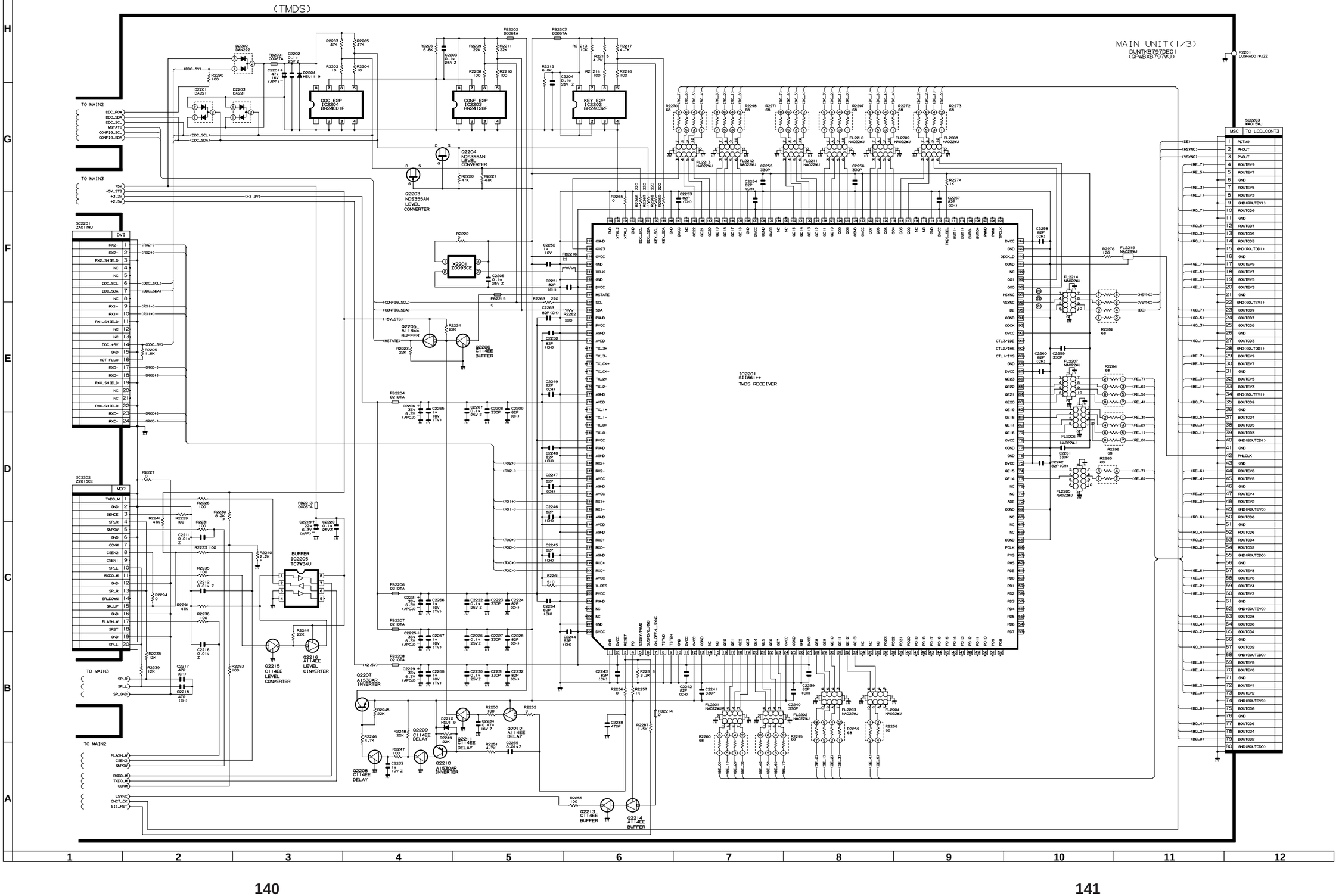
■ LCD CONTROL Unit-4/5 (Display)



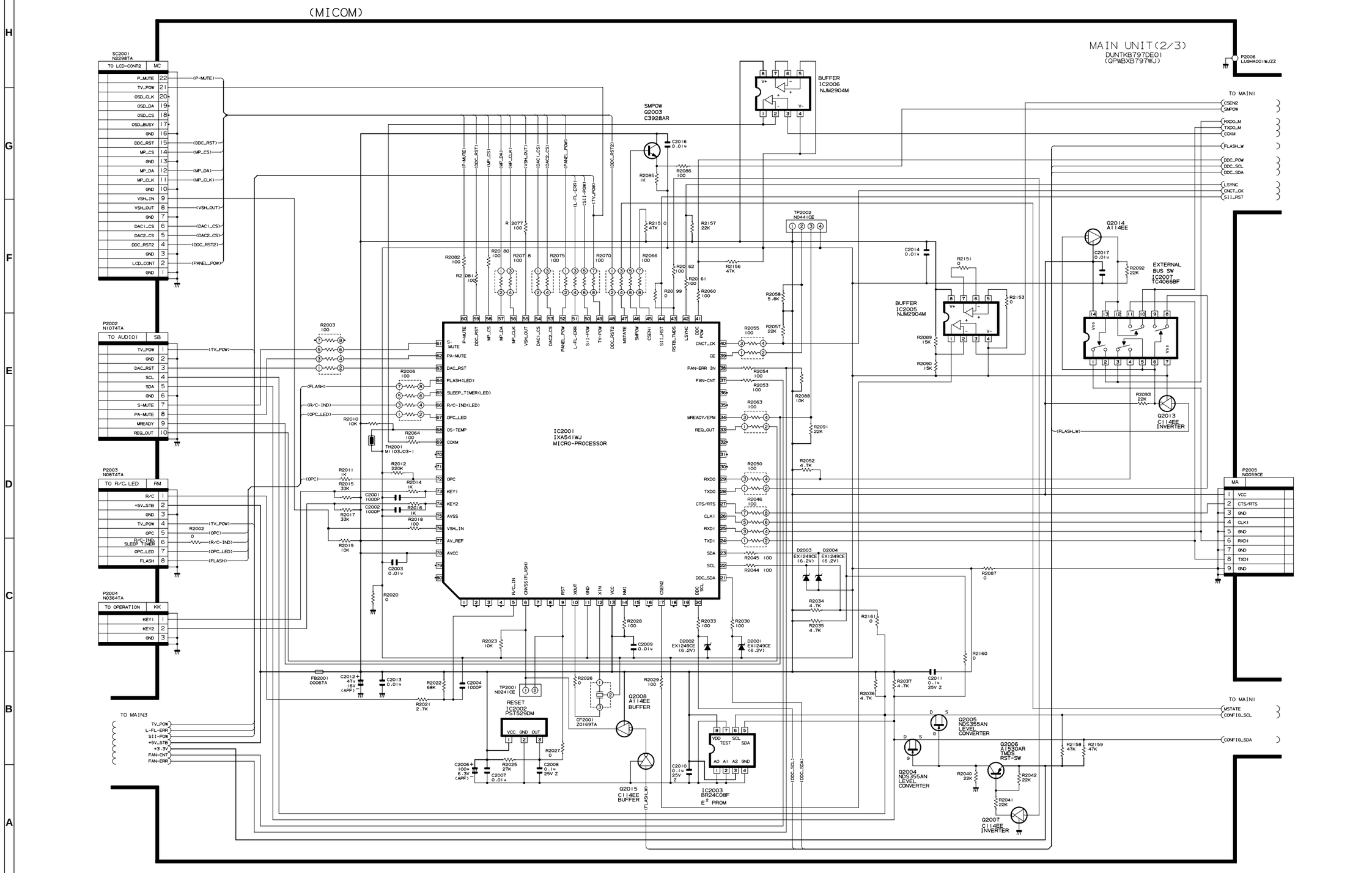
■ LCD CONTROL Unit-5/5 (Display)



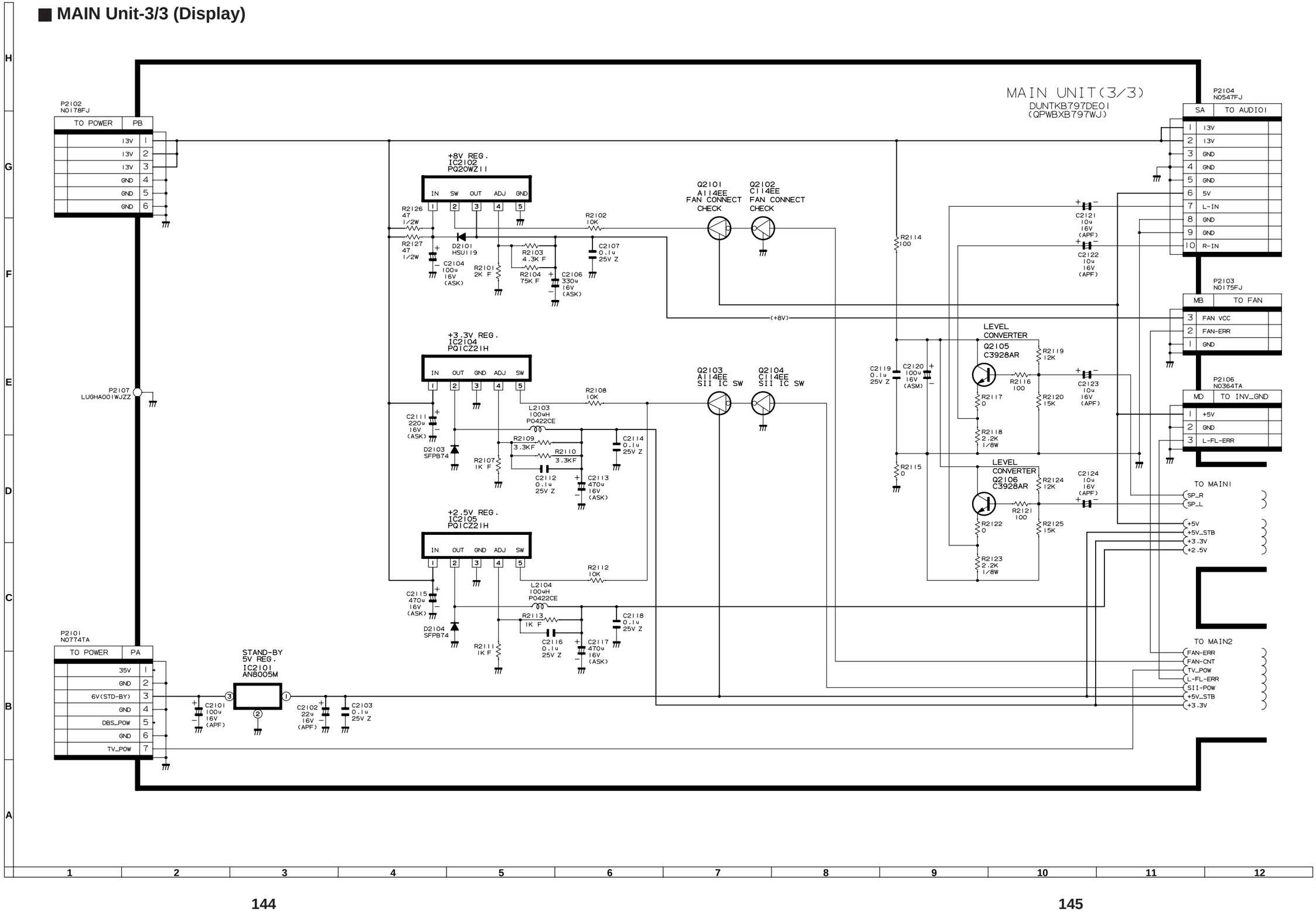
■ MAIN Unit-1/3 (Display)



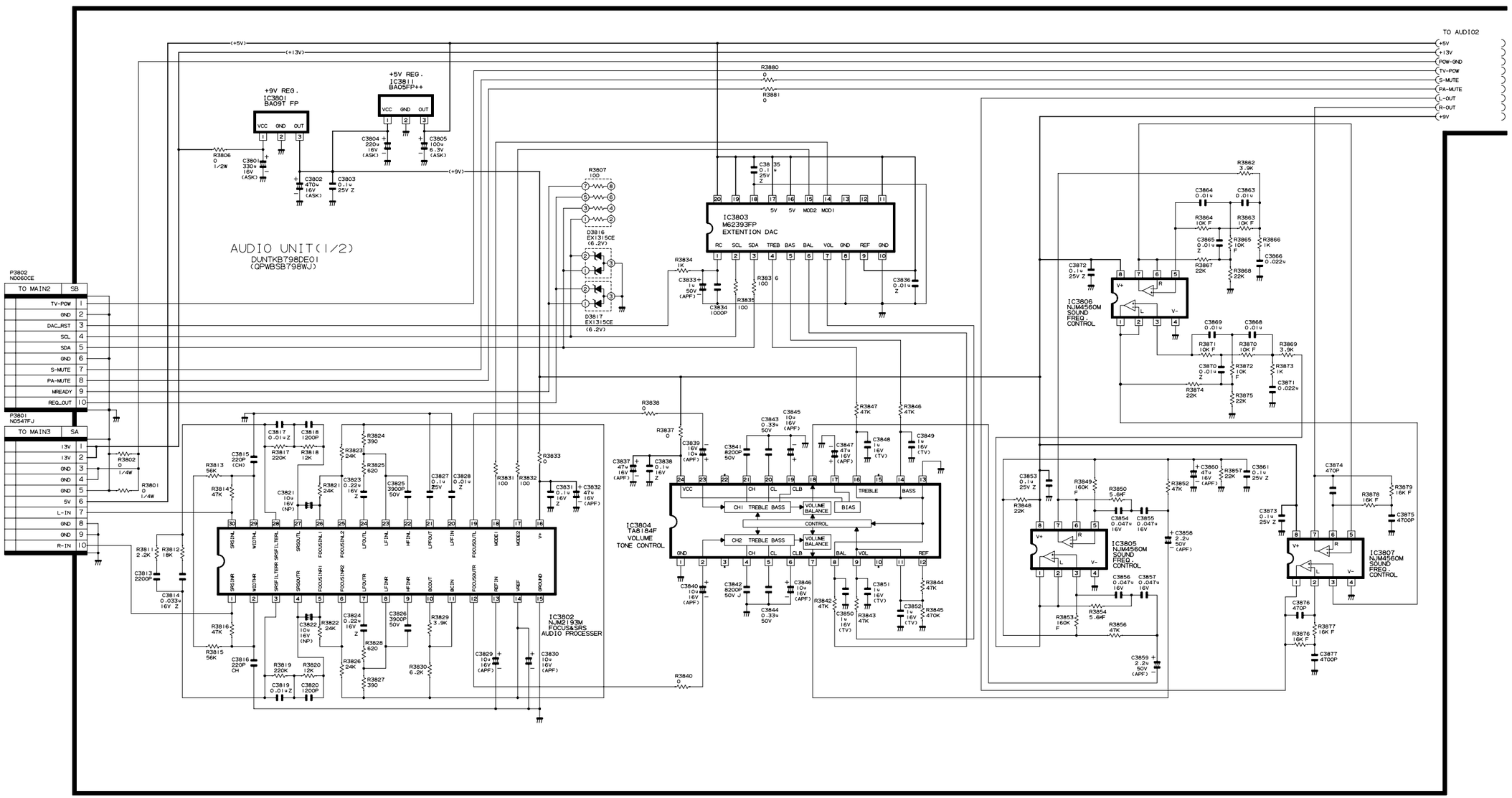
■ MAIN Unit-2/3 (Display)



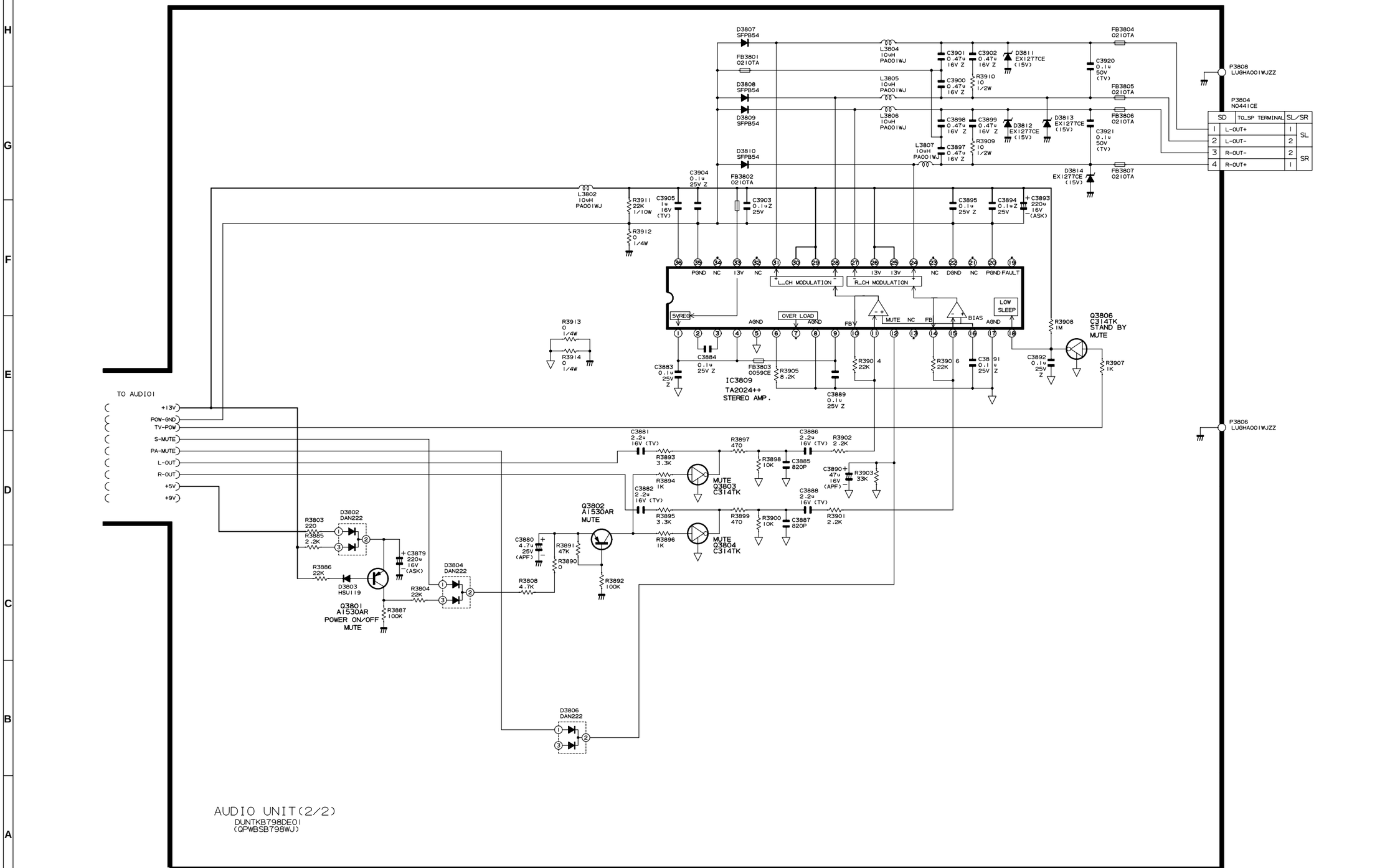
■ MAIN Unit-3/3 (Display)



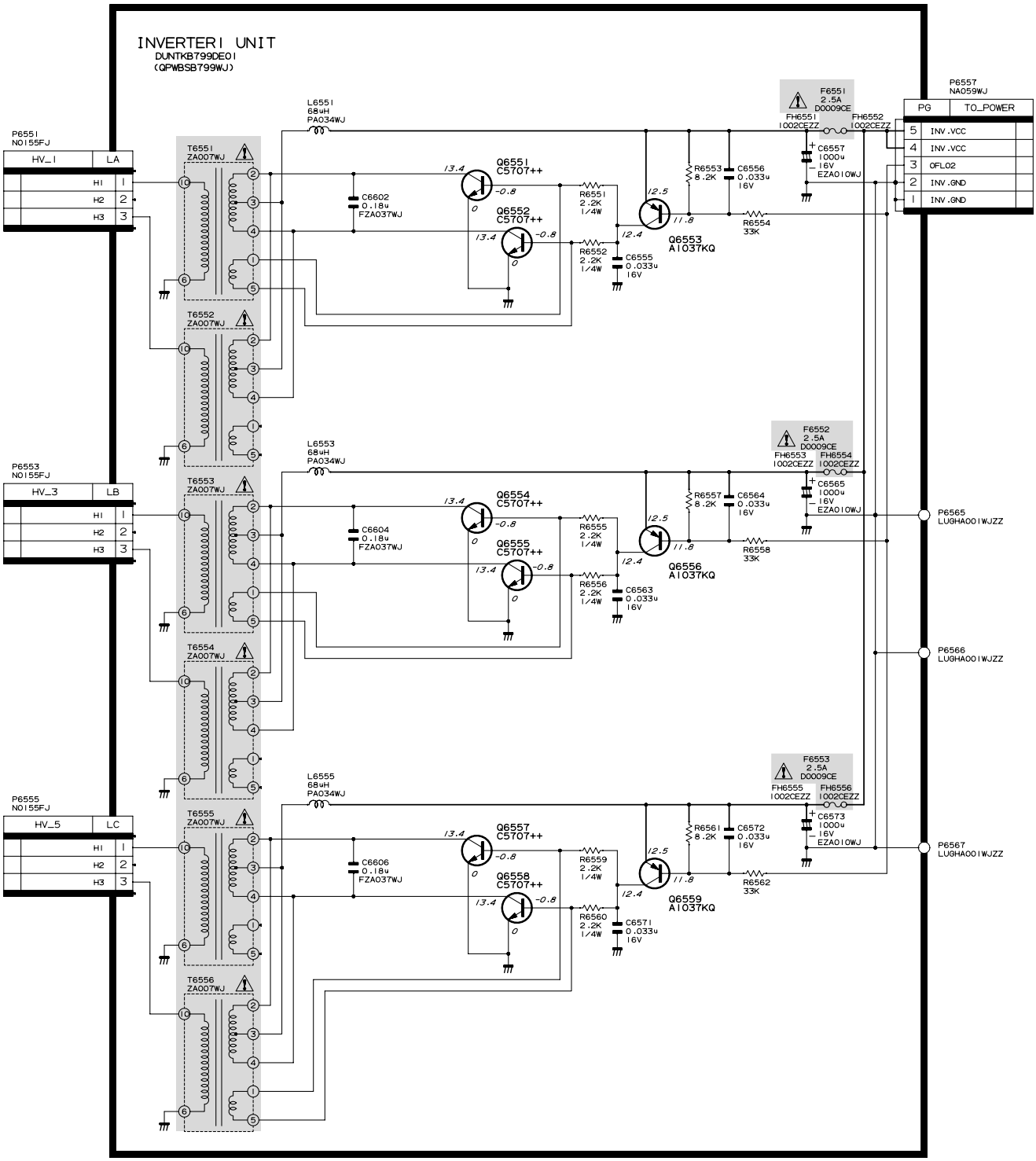
■ AUDIO Unit-1/2 (Display)



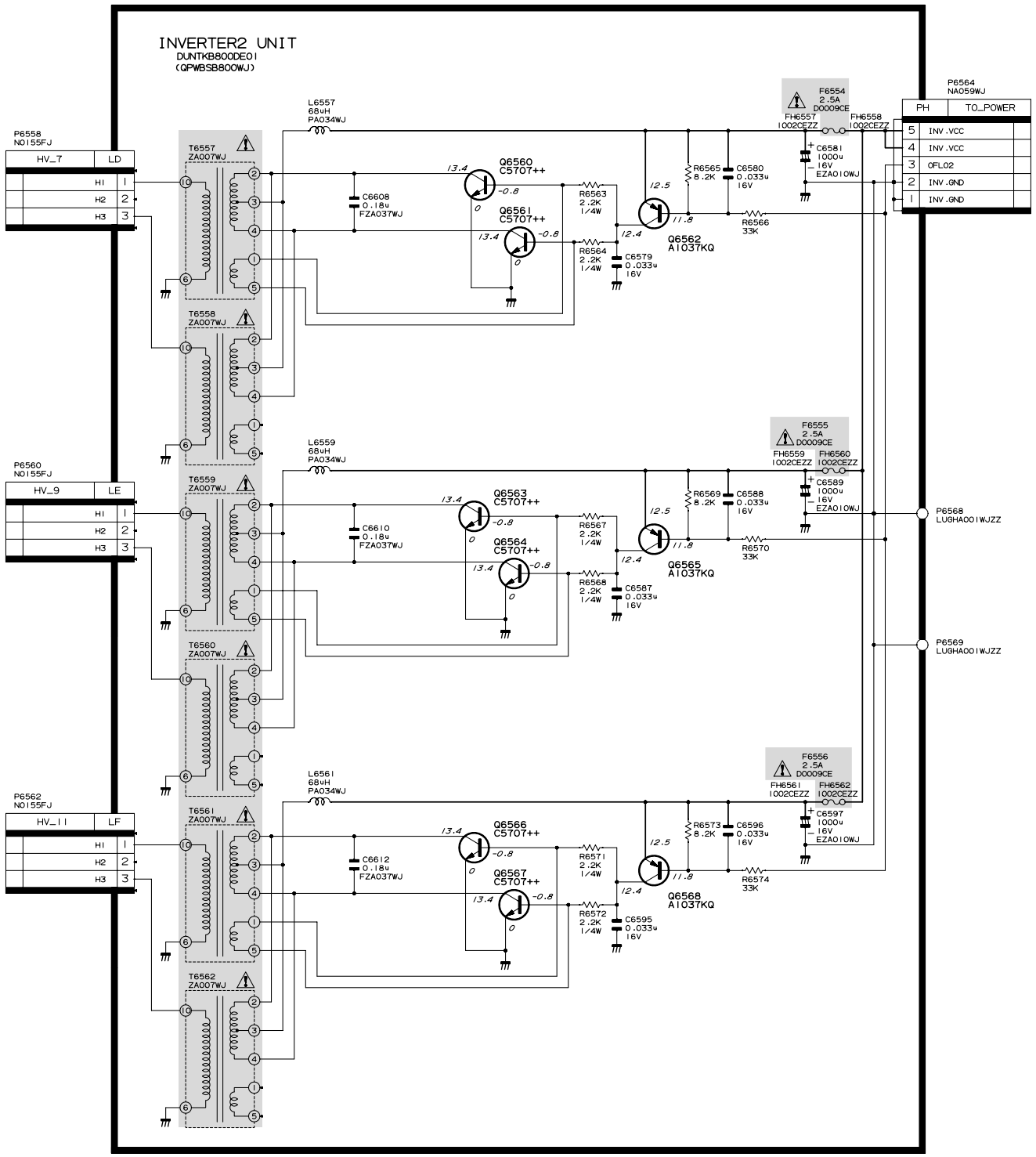
■ AUDIO Unit-2/2 (Display)



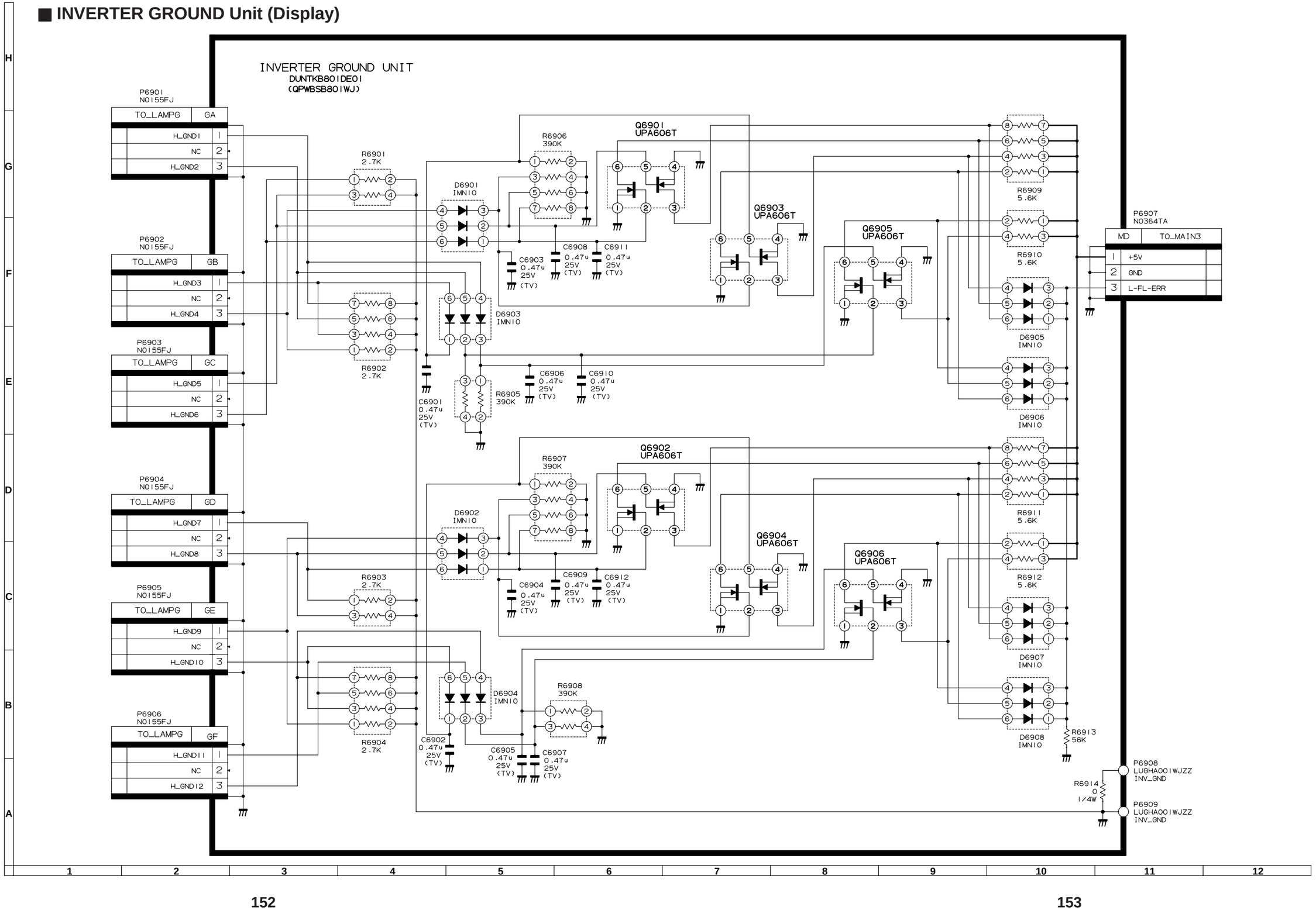
■ INVERTER-1 Unit (Display)



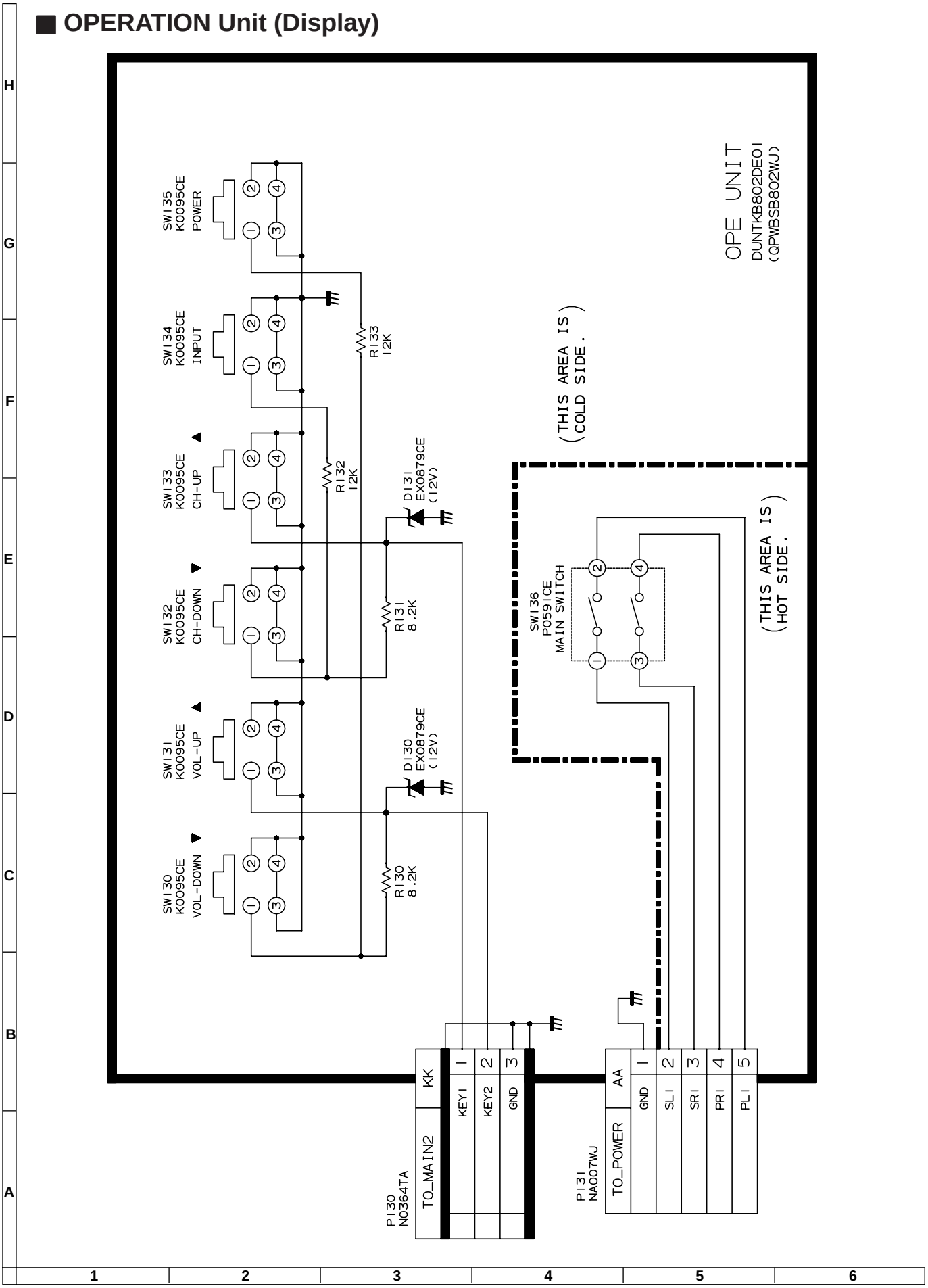
■ INVERTER-2 Unit (Display)



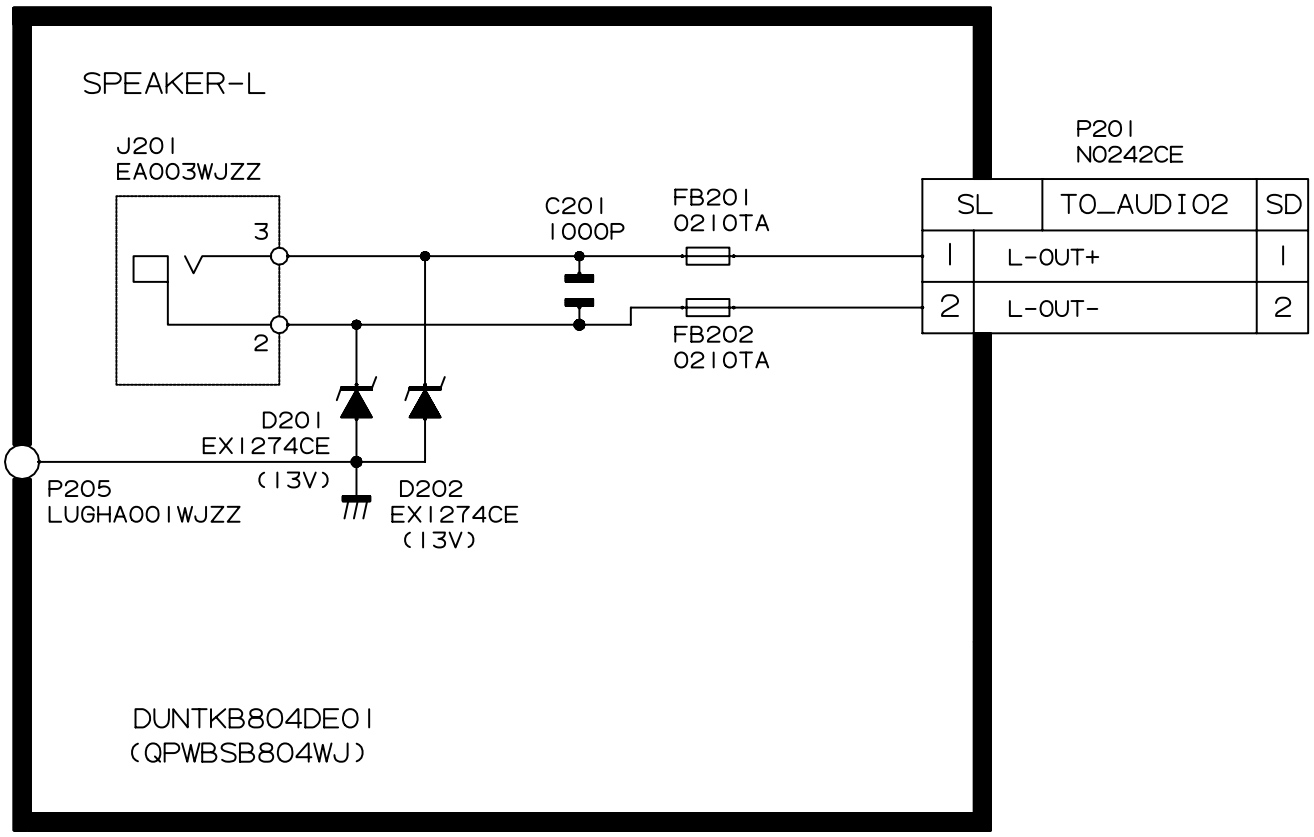
■ INVERTER GROUND Unit (Display)



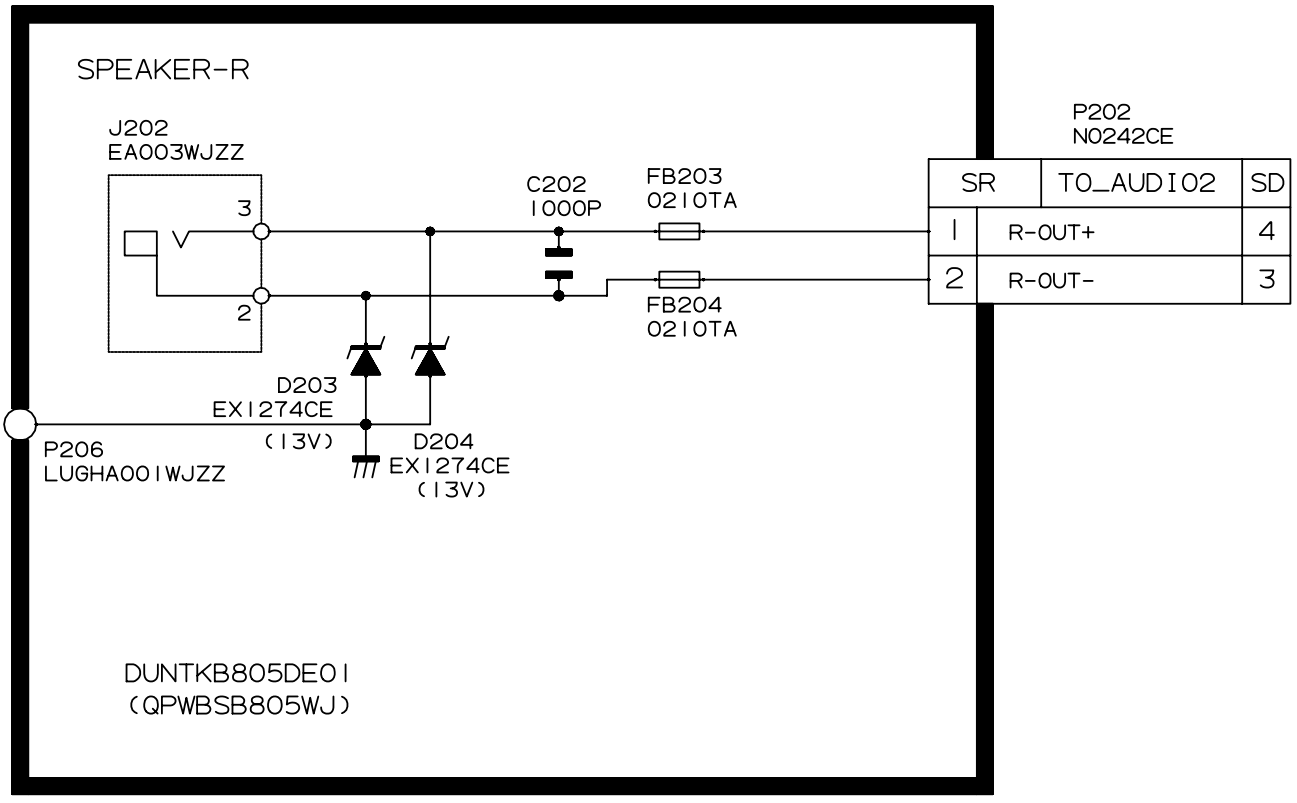
■ OPERATION Unit (Display)



■ SPEAKER-L Unit (Display)

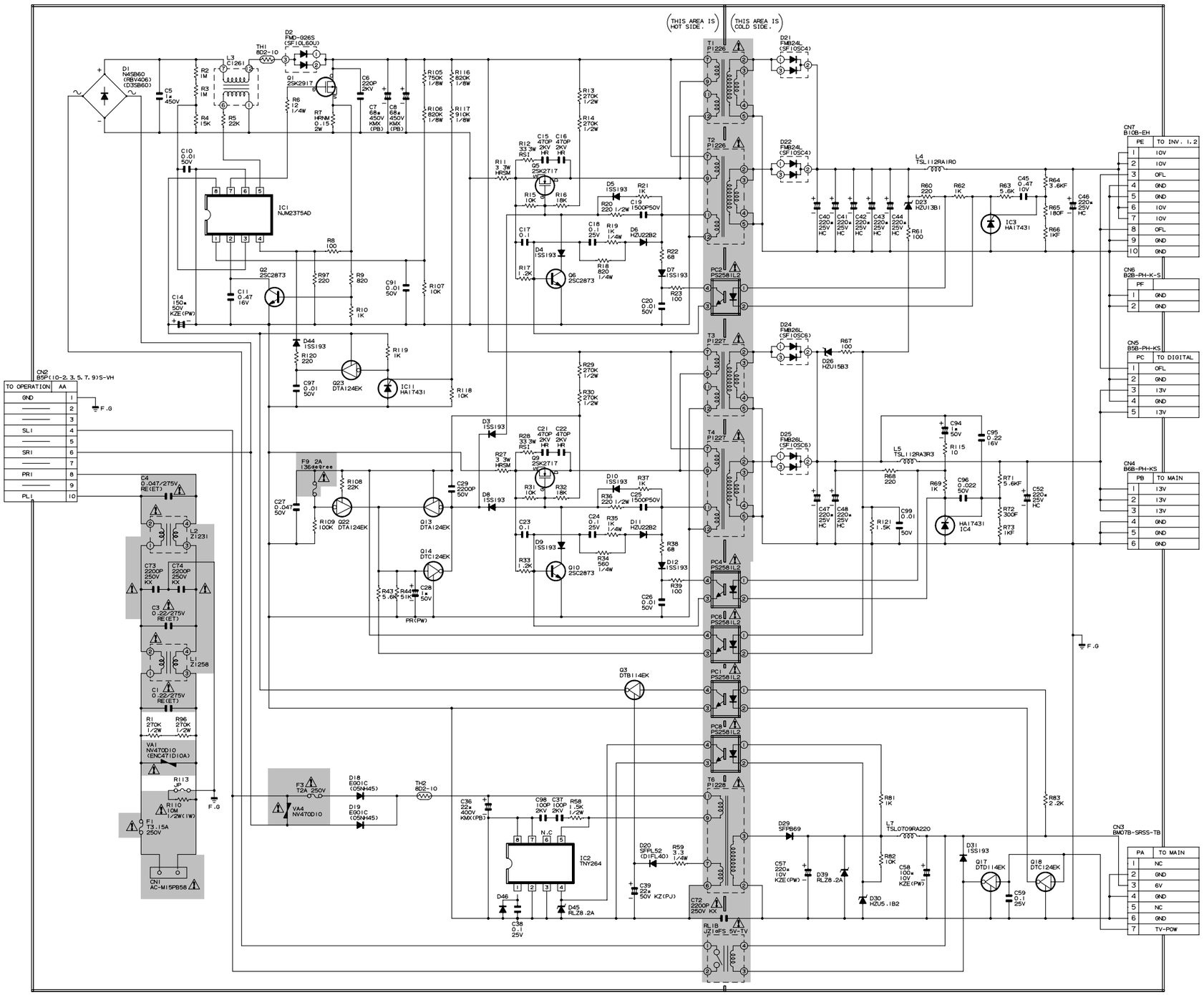


■ SPEAKER-R Unit (Display)



■ POWER Unit (Display)

POWER UNIT



■ R/C, LED Unit (Display)