JVC

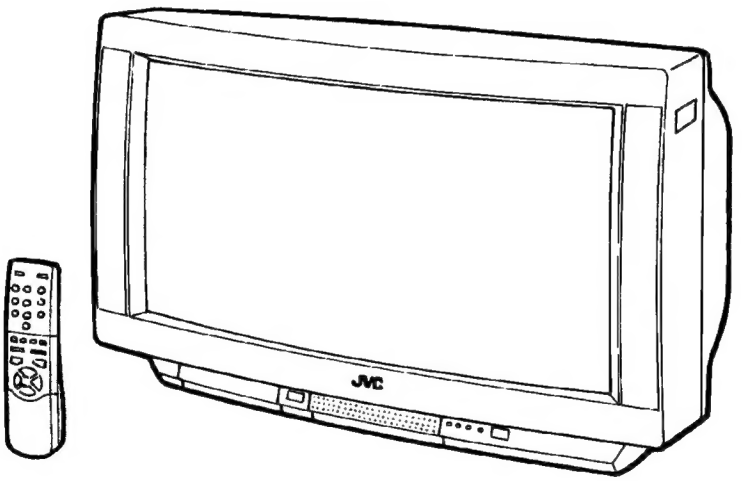
SERVICE MANUAL

COLOUR TELEVISION

BASIC CHASSIS
MB

AV-32WP2EN
AV-32WP2EP

Preliminary



CONTENTS

No. 51237
Aug. 1997

SPECIFICATIONS

Item	Content
Dimensions (W × H × D)	805mm × 550mm × 550mm
Mass	54.8kg
TV RF System	CCIR(B/G,I,L) EN MODEL:B/G ONLY
Colour System	PAL / SECAM / NTSC(Only in EXT mode)
Stereo System	A2/NICAM
Teletext System	TOP/FLOF
Receiving Frequency	
VHF	47MHz~ 470MHz
UHF	470MHz~862MHz
Intermediate Frequency	
VIF Carrier	38.9MHz(B/G,I,L) EN MODEL:B/G ONLY
SIF Carrier	33.4(5.5MHz),33.5(6.0MHz) EN MODEL: 5.5MHz ONLY
Colour Sub Carrier Freq.	
PAL	4.43MHz
SECAM	4.0625MHz / 4.25MHz
NTSC	3.58MHz / 4.43MHz
Power Input	AC 220V~240V , 50Hz
Power Consumption	266W(Max) /161W(Avg)
Picture Tube	Visible size : 76cm, Measured diagonally
High Voltage	31.0Kv +1kV (at zero beam current) -1.5kV
Speaker	ϕ10cm round (8Ω) × 2
Audio Output	20W + 20W
EXT-1/EXT-2/EXT-3 (Input/Output)	21-pin Euro connector(SCART socket)
EXT4(Input) Video	1Vp-p 75Ω (RCA pin jack)
Audio(L/R)	500mVrms(-4dBs), High Impedance (RCA pin jack)
Aerial Input Term	75Ω unbalanced, Coaxial
Headphone jack	Stereo mini jack (ϕ3.5mm)
Remote Control Unit	RM-C791 AAA(R03) dry battery × 2

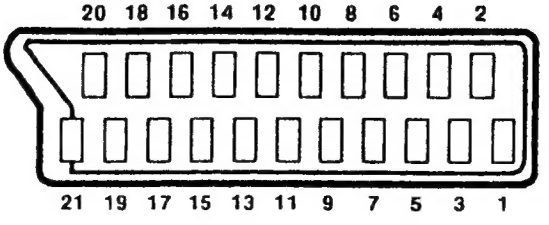
Design & specification are subject to change without notice.

■21-pin Euro connector (SCART socket) : EXT-1 / EXT-2 / EXT-3

(P-P= Peak to Peak, S-W= Sync tip to white peak, B-W= Blanking to white peak)

Pin No.	Signal Designation	Matching Value	EXT-1	EXT-2	EXT-3
1	AUDIO R output	500mVrms(Nominal), Low impedance	O (TV OUT)	O (LINE OUT)	NC
2	AUDIO R input	500mVrms(Nominal), High impedance	O	O	O
3	AUDIO L output	500mVrms(Nominal), Low impedance	O (TV OUT)	O (LINE OUT)	NC
4	AUDIO GND		O	O	O
5	GND (B)		O	O	O
6	AUDIO L input	500mVrms(Nominal), High impedance	O	O	O
7	B input	700mV_{B-W}, 75Ω	O	NC	NC
8	FUNCTON SW (SLOW SW)	Low : 0-3V, High : 8-12V, High impedance	O	O	O
9	GND (G)		O	O	O
10	--		NC	--	NC
10	SCL3		--	O	--
11	G input	700mV_{B-W}, 75Ω	O	NC	NC
12	--		NC	--	NC
12	SDA3		--	O	--
13	GND (R)		O	O	O
14	GND (Y_S)		O	NC	NC
15	R / C input	R : 700mV_{B-W}, 75Ω C : 300mV_{P-P}, 75Ω	O (only R)	O (only C)	O (only C)
16	Ys input	Low : 0 - 0.4, High : 1 - 3V, 75Ω	O	NC	NC
17	GND(VIDEO output)		O	O	O
18	GND(VIDEO input)		O	O	O
19	VIDEO output	1V_{S-W}(Negative going sync), 75Ω	O (TV)	O (LINE OUT)	NC
20	VIDEO / Y input	1V_{S-W}(Negative going sync), 75Ω	O	O	O
21	COMMON GND		O	O	O

[Pin assignment]



SAFETY PRCATIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

4. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.

5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).

6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.

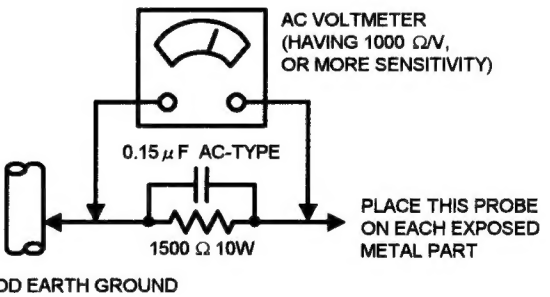
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

9. **Isolation Check**
   (Safety for Electrical Shock Hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

● **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).



SPECIFIC SERVICE INSTRUCTIONS

REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

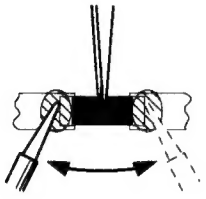
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

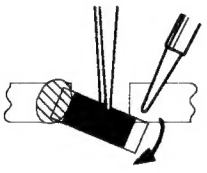
1. How to remove Chip parts

◆ **Resistors, capacitors, etc**

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

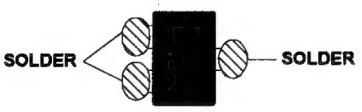


(2) Shift with tweezers and remove the chip part.

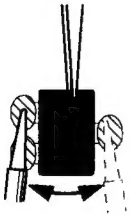


◆ **Transistors, diodes, variable resistors, etc**

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

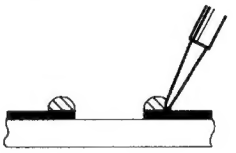


Note : After removing the part, remove remaining solder from the pattern.

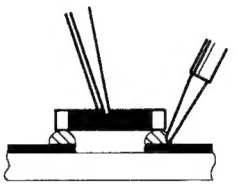
2. How to install Chip parts

◆ **Resistors, capacitors, etc**

(1) Apply solder to the pattern as indicated in the figure.



(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

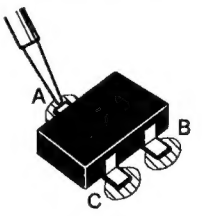


◆ **Transistors, diodes, variable resistors, etc**

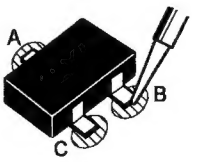
(1) Apply solder to the pattern as indicated in the figure.

(2) Grasp the chip part with tweezers and place it on the solder.

(3) First solder lead **A** as indicated in the figure.

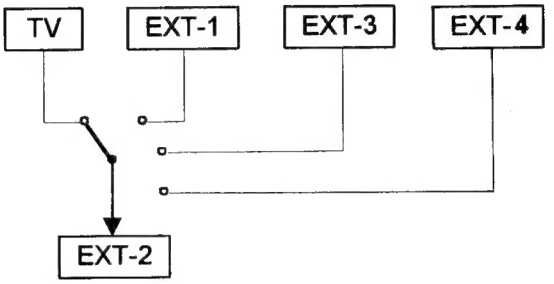


(4) Then solder leads **B** and **C**.



FEATURES

- By preference, users can select the picture size from PANORAMIC, REGULAR, FULL, 14:9 ZOOM, 16:9 ZOOM, 16:9 ZOOM SUB TITLE modes. When the TV unit received WSS picture signal, the picture can be changed to 16:9 ZOOM mode automatically.
- The TELETEXT SYSTEM has a built-in TOP and FLOF system.
- Thanks to the newly employed DSP control micro computer, users can select 3D-PHONIC, and enjoy Surround effect at each mode.
- Because this TV unit corresponds to multiplex broadcast, users can enjoy music programs and sporting events with live realism. In addition, BILINGUAL programs can be heard in their original language.
- In accordance with the brightness in a room, the brightness and/or contrast of the picture can be adjusted automatically to make the optimum picture which is easy on the eye.
- Users can make VTR dubbing of picture and sound by controlling the AV selector to select an optional source at the EXT-2 output shown in figure.



DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Unplug the power cord.
2. Remove the 13 screws marked "**A**" as shown in the Fig. 1.
3. Withdraw the rear cover toward you.

REMOVING THE CHASSIS

- After removing the rear cover.

1. Slightly raise the both sides of the chassis by hand and remove the two claws under the both sides of the chassis from the front cabinet.
2. Withdraw the chassis backward.
   (If necessary, take off the wire clamp, connectors etc.)

REMOVING THE AV TERMINAL BOARD

- After removing the rear cover.

1. Remove the 6 screws marked "**B**" as shown in the Fig. 1.
2. While raising the claw marked "**C**", remove the top of the AV TERMINAL BOARD slightly in the direction of arrow "**D**" as shown in Fig. 2.

REMOVING THE SPEAKER BOX

- After removing the rear cover.

1. Remove the 2 screws marked "**E**" as shown in Fig. 1.
2. Follow the same steps when removing the other hand speaker box.

NOTE : When removing the screws marked "**E**" of the speaker box, remove the lower side screw first, and then remove the upper screw.

CHECKING THE PW BOARD

To check the back side of the PW Board.

1) Pull out the chassis. (Refer to REMOVING THE CHASSIS).
2) Erect the chassis vertically so that you can easily check the back side of the PW Board.

[CAUTION]

- When erecting the chassis, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that the wire connector is properly connected.
- When conducting a check with power supplied, be sure to confirm that the CRT EARTH WIRE (BRAIDED ASS' Y) is connected to the CRT SOCKET PW board.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

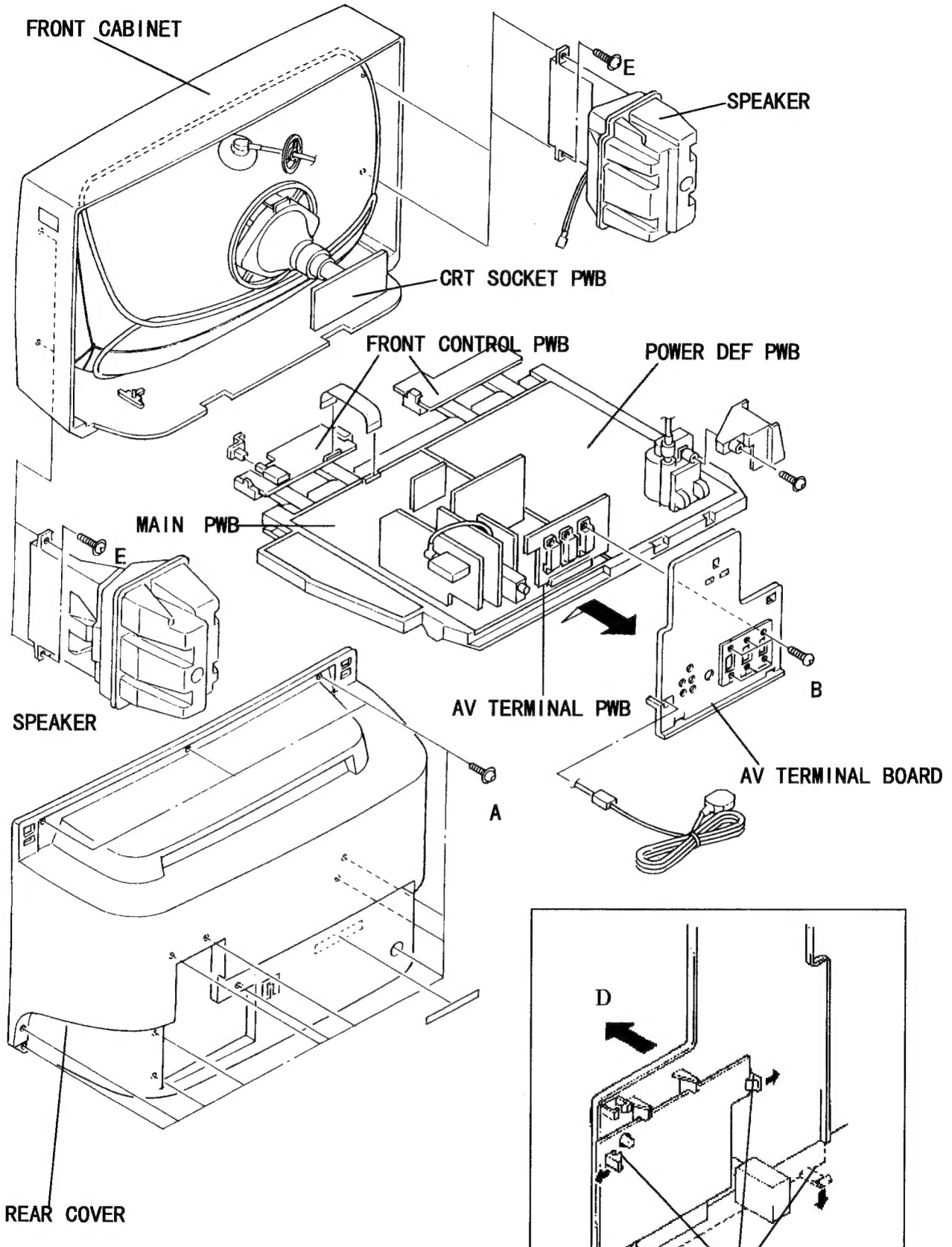

FRONT CABINET
E
SPEAKER
CRT SOCKET PWB
FRONT CONTROL PWB
POWER DEF PWB
MAIN PWB
E
SPEAKER
AV TERMINAL PWB
B
AV TERMINAL BOARD
A
REAR COVER

Fig. 1

D
C

Fig. 2

REMOVING THE CRT

*Replacement of the CRT should be performed by 2 or more persons.

- After removing the cover, chassis etc..,

1. Putting the CRT change table on soft cloth, the CRT change table should also be covered with such soft cloth (shown in Fig.3).
2. While keeping the surface of CRT down, mount the TV set on the CRT change table balanced will as shown in Fig.4.
3. Remove 4 screws marked by arrows with a box type screw driver as shown in Fig.4.

- Since the cabinet will drop when screws have been removed, be sure to support the cabinet with hands.

4. After 4 screws have been removed, put the cabinet slowly on cloth (At this time, be carefully so as not to damage the front surface of the cabinet) shown in Fig.5.

- The CRT should be assembled according to the opposite sequence of its dismounting steps.

* The CRT change table should preferably be smaller that the CRT surface, and its height be about 35cm.

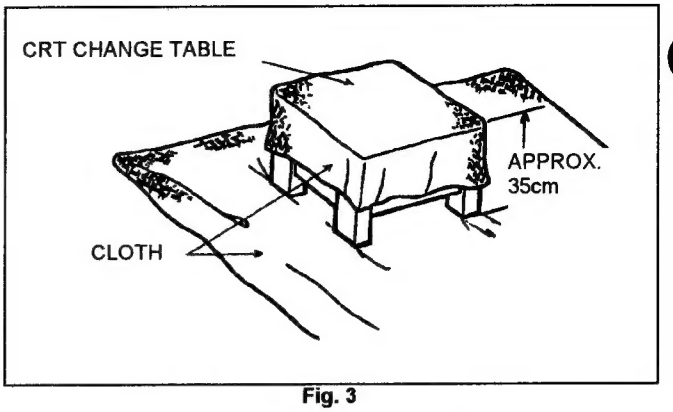


Fig. 3

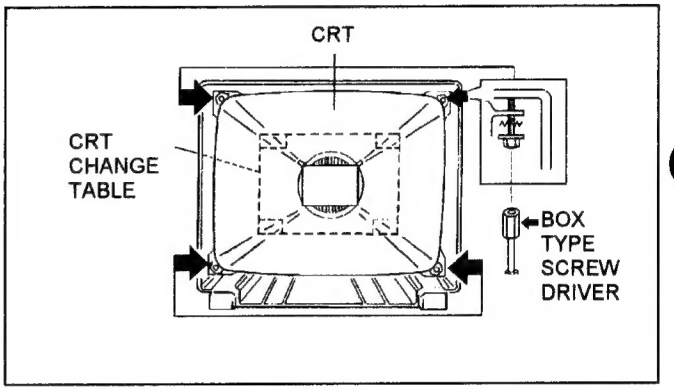


Fig. 4

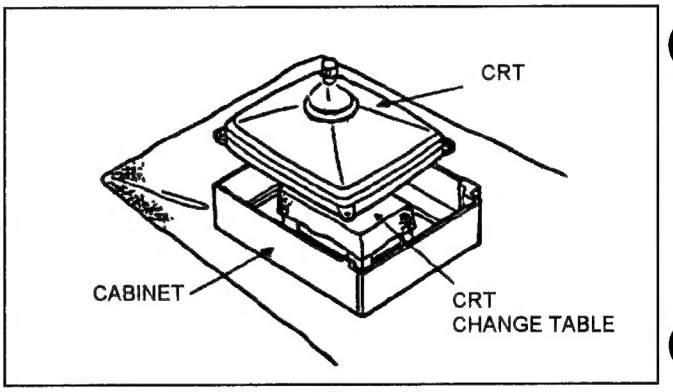


Fig. 5

COATING OF SILICON GREASE FOR ELECTRICAL INSULATION ON THE CRT ANODE CAP SECTION.

- Subsequent to replacement of the CRT and HV transformer or repair of the anode cap, etc. by dismounting them, be sure to coat silicon grease for electrical insulation as shown in Fig.6.

Wipe around the anode button with clean and dry cloth. (Fig.6)
Coat silicon grease on the section around the anode button. At this time, take care so that any silicon greases dose not stick to the anode button. (Fig.7)

★ **Silicon grease product No. KS - 650N**

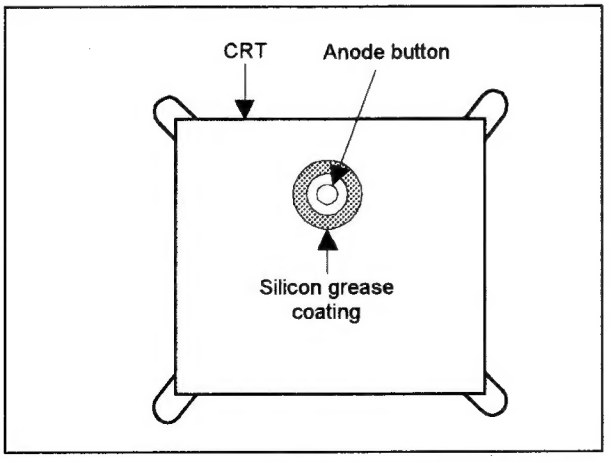


Fig. 6

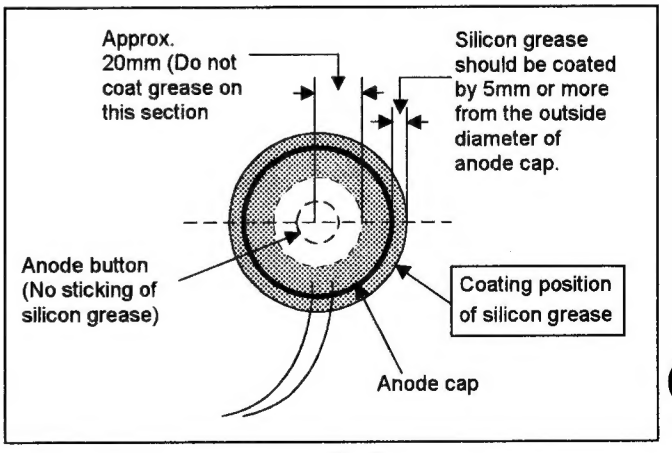


Fig. 7

REPLACEMENT OF MEMORY ICs

1. Memory ICs

This TV use memory ICs (EEP-ROM IC). In the memory ICs, there are memorized data for correctly operating the video and deflection circuits. When replacing memory ICs, be sure to use ICs written with the initial values of data.

2. Procedure for replacing memory ICs

PROCEDURE
(1) **Power off** Switch the power off and unplug the power code from the outlet.
(2) **Replace ICs.** Be sure to use memory ICs written with the initial data values.
(3) **Power on** Plug the power code into the outlet and switch the power on.
(4) **Check and set SYSTEM CONSTANT SET:** 1) Press the INFORMATION key and the MUTE key of the REMOTE CONTROL UNIT simultaneously. 2) The SERVICE MENU screen of Fig. 1 will be displayed. 3) While the SERVICE MENU is displayed, press the INFORMATION key and MUTE key simultaneously, and the SYSTEM CONSTANT SET screen of Fig. 2 will be displayed. 4) Check the setting values of the SYSTEM CONSTANT SET of Table 1. If the value is different, select the setting item with the FUNCTION UP/DOWN key, and set the correct value with the FUNCTION -/+ key. 5) Press the MENU key to memorize the setting value. 6) Press the INFORMATION key twice, and return to the normal screen.
(5) **Setting of receive channels** Set the receive channel. For setting, refer to the OPERATING INSTRUCTIONS.
(6) **User settings** Check the user setting values of Table 2, and if setting value is different, set the correct value. For setting, refer to the OPERATING INSTRUCTIONS.
(7) **Setting of SERVICE MENU** Verify the setting items of the **SERVICE MENU** of Table 3, and reset where necessary. For setting, refer to the SERVICE ADJUSTMENTS.

SERVICE MENU

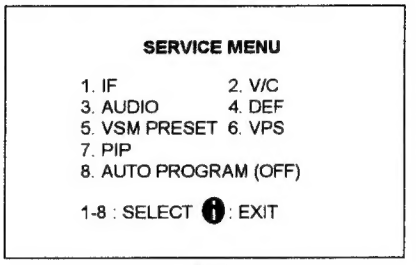


Fig.1

SYSTEM CONSTANT SET

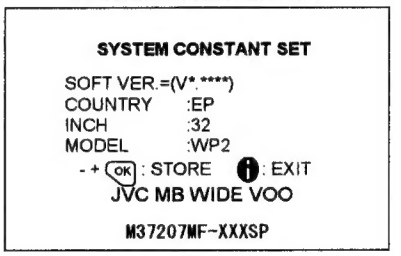


Fig.2
[AV-32WP2EN]

NAME OF REMOTE CONTROL KEY

Names of key	key
INFORMATION	
MUTE	
MENU	
FUNCTION UP/DOWN	
FUNCTION -/+	

SETTING VALUES OF SYSTEM CONSTANT SET (TABLE 1)

Setting item	Setting content	Setting value	
		AV-32WP2EN	AV-32WP2EP
1. COUNTRY	→ EN → EP → EK →	EN	EP
2. INCH	→ 28 → 32 → 24 →	32	32
3. MODEL	→ WP2 → WZ2 →	WP2	WP2

USER SETTING VALUES (TABLE 2)

Setting item		Setting value	Setting item		Setting value
SUB POWER		ON	PROLOGIC 3D PHONIC	MODE	CINEMA/GAME
CHANNEL		1 POSITION		LEVEL	CENTER
CHANNEL PRESET		See;OPERATING INSTRUCTUONS.		TV/SPEAKER	L/R/C
VOLUME		Appropriate sound volume		VOLUME	CENTER
TV / EXT		TV	DOLBY PRO LOGIC	MODE	PHANTOM
DISPLAY		CHANNEL DISPLAY		TV SPEAKER	L/R/C
ZOOM MODE		REGULAR		TEST TONE	OFF
POWER BASS		OFF		LEFT	CENTER
PIP		OFF		CENTER	CENTER
PICTURE FEATURE	LFR	OFF		RIGHIT	CENTER
	VNR	OFF		SIDE	CENTER
	4:3 AUTO ASPECT	PANORAMIC	INSTALL	LANGUAGE	ENGLISH
	COLOR SYSTEM	TV:No Setting EXT:AUTO	EXT SOURCE	EXT SETTING	ID:NO INPUT S-IN:NO INPUT
	PIP POSITION	Upper Right		DUBBING	EXT-1→EXT-2
	MULTI PICTURE	12 PICTURES	FEATURES	SLEEP TIMER	OFF
	PICTURE TILT	CENTER		BLUE BACK	ON
SOUND SETTING	BASS,TRE BALA	CENTER		CHILD LOCK	ID NO.0000 all channel off
	SPEAKER	ON			
	HEAD PHONE VOLUME	10			
	HEAD PHONE OUTPUT	MAIN			
	HEAD PHONE TV SPEAKER	OFF			
DIGITAL SRROUND		OFF			

SERVICE MENU SETING ITEMS (TABLE 3)

Setting item	Setting value
1. IF	1. VCO 2. DELAY POINT 3. L. V. LEVEL 4. ATT
2. V / C	1. RGB BLK 2. R DRIVE 3. G DRIVE 4. B DRIVE 5. R LEVEL 6. G LEVEL 7. B LEVEL 8. BRIGHT 9. CONT. 10. COLOUR(PAL/SECAM/NTSC) 11. HUE 12. PEAK DRIVE 13. GAMMA 14. VCOF 15. RELC
3. AUDIO ***(Do not adjust)***	1. CONC LIMIT 2. A2 ID THR
4. DEF.	1. V-SHIFT 2. V-SLOPE 3. V-SIZE 4. H-CENT 5. H-SIZE 6. EW-PIN 7. EW-COR 8. TRAPEZ 9. V-S.CR 10. EHT-COMP 11. CLAMP
5. VSM PRESET [COOL NORMAL WARM	1. BRIGHT 2. CONT. 3. COLOUR 4. SHARP 5. TINT 6. R DRIVE 7. B DRIVE 8. BASS 9. TREBLE
6. VPS ***(Do not adjust)***	VPS
7. PIP	1. V-CENTER 2. H-CENTER 3. B-Y LEVEL 4. R-Y LEVEL
8. AUTO PROGRAM ***(Do not adjust)***	ON / OFF

SERVICE ADJUSTMENTS

BEFORE STARTING SERVICE ADJUSTMENT

1. **There are 2 ways of adjusting this TV: One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.**
2. **The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**
3. Turn on the power of the TV and measuring instrument for warming up for at least 30 minutes before starting adjustment.
4. Make sure that connection is correctly made to AC power source.
5. If the receive or input signal is not specified, use the most appropriate signal for adjustment.
6. Never touch parts (such as variable resistors, transformers and condensers) not shown in the adjustment items of this service adjustment.
7. Preparation for adjustment (presetting):
   Unless otherwise specified in the adjustment items, preset the following functions with the REMOTE CONTROL UNIT:

(1) PICTURE MODE (VSM)	COOL
(2) SLEEP TIMER	OFF
(3) DIGITAL SURROND	OFF
(4) BALANCE	CENTER
(5) ECO	OFF
(6) ZOOM	REGULAR

MEASUREING INSTRUMENT AND FIXTURES

1. DC voltmeter (or digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator) [PAL/SECAM/NTSC]
4. Remote control unit

ADJUSTMENT ITEMS

- Check of B1 voltage.
- Adjustment of FOCUS.
- IF circuit adjustment.
- VSM preset adjust setting.
- VIDEO / CHROMA circuit adjustment.
- DEFLECTION circuit adjustment.
- AUDIO circuit adjustment. (Do not adjust)

BASIC OPERATION OF SERVICE MENU

1. TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the REMOTE CONTROL UNIT.

2. SERVICE MENU ITEMS

With the SERVICE MENU, various settings (adjustments) can be made, and they are broadly classified in the following items of settings (adjustments):

(1) **1. IF** ····· This mode adjusts the setting values of the IF circuit.

(2) **2.V/C** ····· This mode adjusts the setting values of the VIDEO / CHROMA circuit.

(3) **3.AUDIO** ····· This mode adjusts the setting values of the multiplicity SOUND circuit.

(4) **4.DEF** ····· This mode adjusts the setting values of the DEFLECTION circuit for each aspect mode given below.

PANORAMIC	(50/60Hz)
REGULAR	(50/60Hz)
14:9 ZOOM	(50/60Hz)
16:9 ZOOM	(50/60Hz)
16:9 ZOOM SUB TITLE	(50/60Hz)
FULL	(50/60Hz)

(5) **5.VSM PRSET** ····· This mode adjusts the initial setting values of COOL,NOMAL and WARM.
(VSM : Video Status Memory)

(6) **6.VPS** ····· This mode shows the monitor of the VPS and PDC.***(Do not adjust)***.
(VPS : Video Program System, PDC : Program Delivery Code)

(7) **7.PIP** ····· This mode adjusts the setting values of the PIP circuit.

(8) **8.AUTO PROGRAM** ····· By turning the power switch on, you can get the state of AUTO PROGRAM. ***(Do not adjust)***

3. BASIC OPERATION OF SERVICE MENU

(1) **How to enter SERVICE MENU**

Press the INFORMATION key and the MUTE key of the REMOTE CONTROL UNIT simultaneously, and the SERVICE MENU screen of Fig. 1 will be displayed.

SERVICE MENU

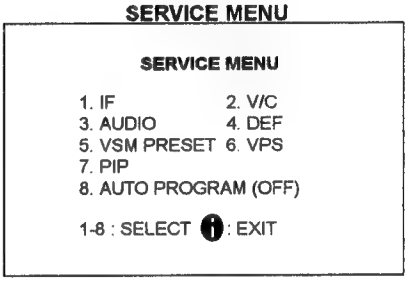


Fig.1

(2) **Selection of SUB MENU SCREEN**

Press one of keys 1~7 of the REMOTE CONTROL UNIT and select the SUB MENU SCREEN (See Fig. 3), form the SERVICE MENU.

SERVICE MENU → SUB MENU

1. IF
2. V / C
3. AUDIO
4. DEF.
5. VSM PRESET
6. VPS
7. PIP
8. AUTO PROGRAM

NEME OF REMOTE CONTOROL KEY

Names of key	key
INFORMATION	
MUTE	
MENU	
FUNCTION UP/DOWN	
FUNCTION -/+	

Fig.2

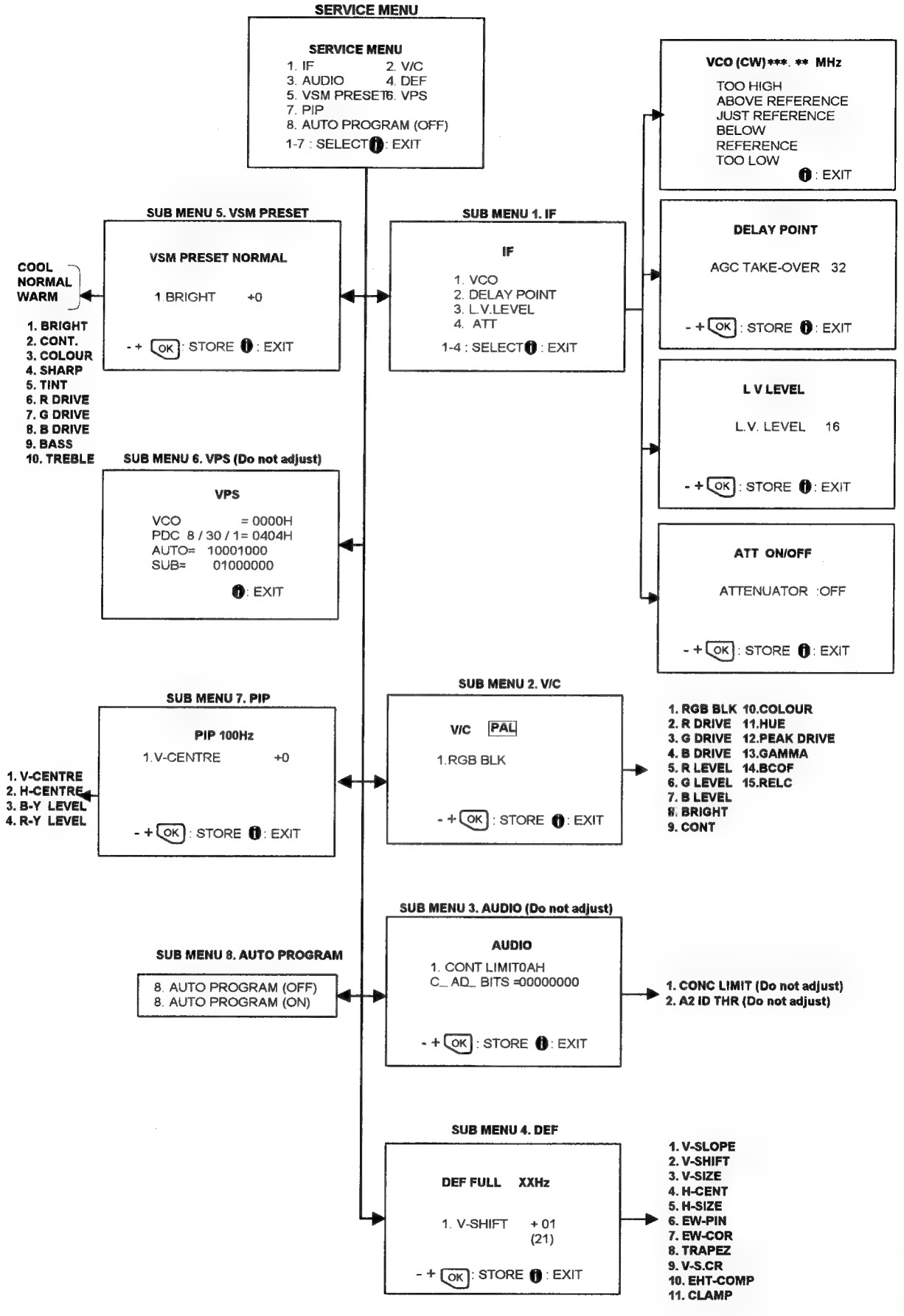


Fig. 3 SUB MENU SCREEN

(3) **Method of Setting**

1) Method of Setting **1.IF**

[1. VCO]

① 1 Key ····· Select 1.IF.

② 1 Key ····· Select 1.VCO

③ The VCO (CW) screen will be displayed in yellow when the AFC voltage is at a certain level and in blue when it is at other levels.

④ INFORMATION Key ····· As you press this twice, you will return to the **SERVICE MENU**.

[2. DELAY POINT]

① 1 Key ····· Select **1.IF**.

② 2 Key ····· Select 2.DELAY POINT.

③ FUNCTION -/+ ····· Set (adjust) the setting values of the setting items.

④ MENU Key ····· Memorize the set value.
(Before storing the setting values in memory, do not press the CH, TV, POWER ON / OFF keys - if you do, the values will not be stored in memory.)

⑤ INFORMATION Key ····· When this is pressed twice, you will return to the SERVICE MENU.

2) Method of setting **2.V/C, 3.AUDIO, 4.DEF, 5.VSM PRESET** and **7.PIP.**

① 2~5 ,7 Key ····· Select one from **2. V/C, 3. AUDIO, 4. DEF, 5. VSM PRESET** and **7.PIP**.

② FUNCTION UP/DOUN Key ····· Select setting items.

③ FUNCTION -/+ ····· Set (adjust) the setting values of the setting items.
(When 1.RGB BLK of 2.V/C is selected, press the FUNCTION-/+ key, and the whole will change to a black picture. Press the 2 key, and the screen will return to the original screen.)

④ MENU Key ····· Memorize the setting value.
(Before storing the setting values in memory, do not press the CH, TV, POWER ON / OFF key - if you do, the values will not be stored in memory.)

⑤ INFOMATION Key ····· Return to the **SERVICE MENU** screen.

3) Method of setting **6.VPS** and **8.AUTO PROGRAM.**

6.VPS ····· This mode displayed monitor of VPS systems. **Do not adjust**

8.AUTO PROGRAM ····· When the MAIN POWER is turned on with the state of AUTO PROGRAM ON, you get a mode that initializes every existing set value including language selection. Because this mode is set at the factory upon completion of the adjustment, you need not to use it for service. **Do not adjust in this mode.**

(4) **Release of SERVICE MENU**

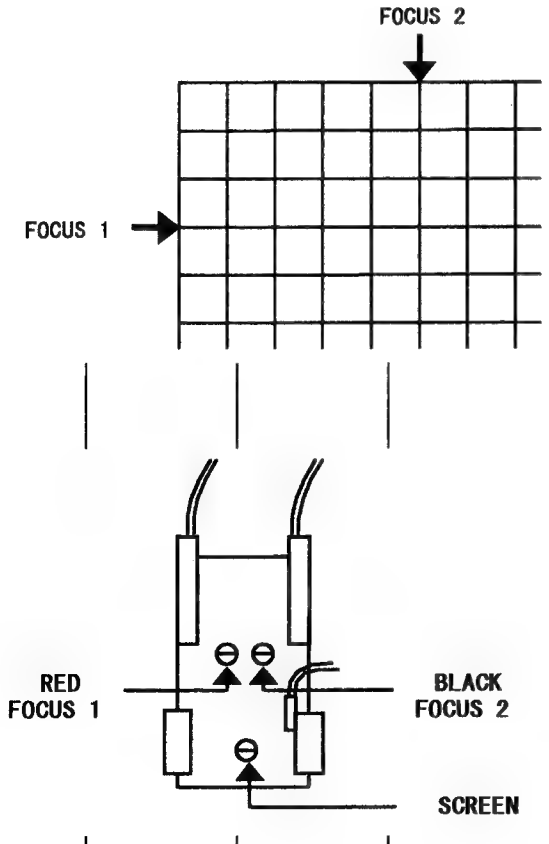
1) After completing the setting, return to the SERVICE MENU, then again press the INFORMATION key.

POWER SUPPLY CHECK

Item	Measuring instrument	Test point	Adjustment part	Description
Check of B1 voltage	Signal generator DC voltmeter	TP-91(B1) TP-E [X connector in POWER DEF PWB]		1. Receive a whole black signal. 2. Connect a DC voltmeter to TP-91(B1) and TP-E. 3. Make sure that the voltage is DC144.8±2.0V.

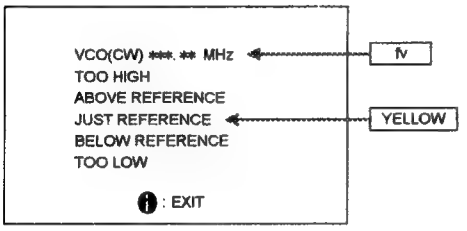
FOCUS ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of FOCUS	Signal generator		FOCUS VR [In HVT]	1. By turning the black VR FOCUS 2, adjust the picture so that the 5th vertical line from the left side of the cross-hatch picture becomes thinnest. 2. By turning the red VR FOCUS 1, adjust the picture so that the 3rd horizontal line from the upper side of the cross-hatch picture becomes uniform at the line center and its periphery. 3. Carry out adjustment by repeating the steps 2 and 3 above. 4. Make sure that when the screen is darkened, the lines remain in good focus.



IF CIRCUIT ADJUSTMENT

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>Adjustment of VCO (MAIN)</td><td>Remote control unit</td><td></td><td>P. CW TRANSF. (T050)
P.L-VL CW TRIM C (C052)
[In IF PWB]</td><td>
● Do not make any adjustment unless the adjustment is out of way and you cannot get correct PICTURE.
1. Select 1.IF from the SERVICE MENU.
2. Press 1 key and select 1.VCO.
3. Select a receivable broadcast channel with the CHANNEL key.
4. Turn the core of P. CW TRANSF. until the colour of the characters TOO HIGH displayed on the screen changes from blue to <u>Yellow</u>. (Step 1)
5. Turn the core of P. CW TRANSF. until the colour of the characters TOO LOW changes from blue to <u>Yellow</u>. (Step 2)
6. Then slowly turn back the core of P. CW TRANSF. until the colour of the characters JUST REFFERENCE changes from blue to <u>Yellow</u>. (Step 3)
7. In the district SECAM L broadcast channel with the CHANNEL key and adjust the P.L-VL CW TRIM. C in same manner as for above step. And necessary, readjust P. CW. TRANSF.
8. Press the INFORMATION key three times to return to normal screen.
9. Perform CHANNEL PRESET again, and make sure that each broadcast is being received properly.
</td></tr>
<tr><td>Adjustment of DELAY POINT</td><td>Remote control unit</td><td></td><td>DELAY POINT (AGC TAKE-OVER)</td><td>
1. Receive a black and white signal (colour off).
2. Select 1.IF from the SERVICE MENU.
3. Select 2.DELAY POINT by pressing the 2 key on the remote control.
4. Adjust the FUNCTION - or + key until video noise disappears.
5. Press the MENU key and memorize the set value.
6. Turn to other channels and make sure that there are no irregularities.
</td></tr>
<tr><td>Adjustment of L,V LEVEL
(EP MODEL ONLY)</td><td>Remote control unit
Oscilloscope</td><td></td><td>L, V LEVEL</td><td>
1. Receive a color bar signal. (SECAM-L,75% white)
2. Connect the oscilloscope to EXT-1 PIN 19.
3. Select 1.IF from the service Menu.
4. Select 3.L.V LEVEL by pressing the 3 key on the remote control.
5. Turn to other channels and make sure that there are no irregularities.
</td></tr>
</table>



Screen display	Step 1 → 2 → 3
TOO HIGH	Yellow → Blue → Blue
ABOVE REFERENCE	Blue → Blue → Blue
JUST REFERENCE	Blue → Blue → Yellow
BELOW REFERENCE	Blue → Blue → Blue
TOO LOW	Blue → Yellow → Blue

Setting item (Adjustment item)	Variable range	Initial setting value
DELAY POINT (AGC TAKE-OVER)	0~63	30

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of VCO (SUB)	**Remote control unit**		**P. CW TRANSF. (T103)** **P.L-VL CW TRIM C (C122)** **[In P&P PWB]**	● Do not make any adjustment unless the adjustment is out of way and you cannot get correct PICTURE. 1. Select 1.IF from the SERVICE MENU. 2. Press 1 key and select 1.VCO. 3. Press OK key and select " VCO (CW) = SUB ". 4. Select a receivable broadcast channel with the CHANNEL key. 5. Turn the core of P. CW TRANSF. until the colour of the characters TOO HIGH displayed on the screen changes from blue to **Yellow**. (Step 1) 6. Turn the core of P. CW TRANSF. until the colour of the characters TOO LOW changes from blue to **Yellow**. (Step 2) 7. Then slowly turn back the core of P. CW TRANSF. until the colour of the characters JUST REFFERENCE changes from blue to **Yellow**. (Step 3) 8. In the district SECAM L broadcast channel with the CHANNEL key and adjust the P.L-VL CW TRIM. C in same manner as for above step. And necessary, readjust P. CW. TRANSF. 9. Press the INFORMATION key three times to return to normal screen. 10. Perform CHANNEL PRESET again, and make sure that each broadcast is being received properly.
Adjustment of DELAY POINT (SUB)	**Remote control unit**		**NOISE VR (R137)**	1. Set to 2 screen mode. 2. Receive black and white signal on the right screen. 3. Adjust the NOISE VR (R137) to eliminate noise from the right screen.

VSM PRESET SETTING

Item	Measuring instrument	Test point	Adjustment part	Description
Setting of VSM PRESET ADJUST	**Remote control unit**		**1. BRIGHT** **2. CONT.** **3. COLOUR** **4. SHARP** **5. HUE** **6. R DRIVE** **7. G DRIVE** **8. B DRIVE** **9. BASS** **10. TREBLE**	1. Select COOL with the MENU key of the remote control unit. 2. Select 5.VSM PRESET from the SERVICE MENU. 3. Adjust the FUNCTION UP/DOWN and -/+ key to bring the set values of 1.BRIGHT ~ 10.TREBLE to the values shown in the table. 4. Press the MENU key and memorize the set value. 5. Respectively select the VSM PRESET mode for REGULAR and WARM, and make similar adjustment as in 3 above. 6. Press the MENU key and memorize the set value. * Refer to OPERATING INSTRUCTIONS for the PICTURE MODE.

VSM preset mode / Setting item	COOL	REGULAR	WARM
1. BRIGHT SETTING VALUE	+0	+0	+0
2. CONT. SETTING VALUE	+17	+10	+2
3. COLOUR SETTING VALUE	+2	+0	-2
4. SHARP SETTING VALUE	+0	+0	-2
5. HUE SETTING VALUE	+0	+0	+0
6. R DRIVE SETTING VALUE	-7	+0	+0
7. G DRIVE SETTING VALUE	+0	+0	-2
8. B DRIVE SETTING VALUE	+0	+0	-6
9. BASS SETTING VALUE	+0	+0	+6
10.TREBLE SETTING VALUE	+0	+0	+2

SETTING VALUES OF VSM PRESET

VIDEO/CHROMA CIRCUIT ADJUSTMENT

**The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**

Setting Item (Adjustment Item)	Initial setting value
1.RGB BLK	———
2.R.DRIVE	+12
3.G.DRIVE	+2
4.B.DRIVE	+0
5.R.LEVEL	+0
6.G.LEVEL	+0
7.B.LEVEL	+0
8.BRIGHT	+6
9.CONTRAST	-5

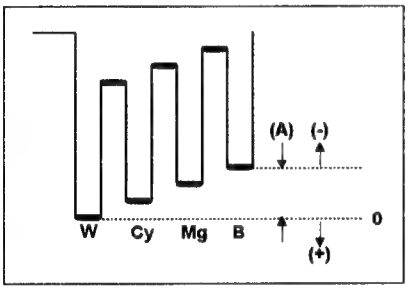
Setting item \ Colour system	Initial setting value	
	PAL/ SECAM	NTSC 3.58 NTSC 4.43
10.COLOUR	-4/0	0
11.HUE	———	0
12.PEAK DRIVE	+10	———
13.GAMMA	+0	———
14.VCOF	+0	———
15.RELC	+0	———

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of WHITE BALANCE (MAIN)	Signal generator Remote control unit		2.R DRIVE 3.G RIVE 5.R LEVEL 6.G LEVEL 7.B LEVEL	● Set the PICTURE MODE to COOL. 1. Receive a black and white signal(colour off). 2. Select 2. V/C from the SERVICE MENU. 3. Modify 2. R DRIVE and 3.G DRIVE data to adjust the white balance (high light) 4. Modify 5. R LEVEL, 6. G LEVEL and 7. B LEVEL data to adjust the white balance of low light. Components. 5. Press the MENU key and memorize the set value.

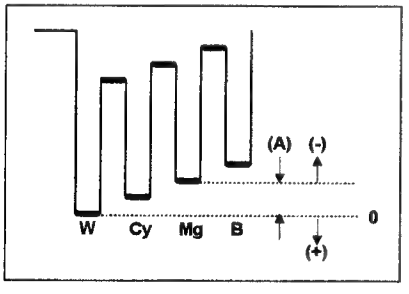
Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of WHITE BALANCE (SUB)	**Signal generator** **Remote control unit**		**3. SUB B-Y** **4. SUB R-Y**	1. Set to 2 screen mode. 2. Receive black and white signal on the right screen 3. Select 7.PIP from the service MENU. 4. Modify 3. SUB B-Y and 4. SUB R-Y data to adjust the white balance of the right screen. 5. Press the MENU key, and memorize the set values.
Adjustment of SUB BRIGHT	**Remote control unit**		**8.BRIGHT**	1. Receive any broadcast. 2. Select 2.V/C from the SERVICE MENU. 3. Select 8.BRIGHT with the FUNCTION UP/DOWN key. 4. Set the initial setting value with the FUNCTION -/+ key. 5. If the brightness is not the best with the initial setting value, make fine adjustment until you get the best brightness. 6. Press the MENU key and memorize the set value.
Adjustment of SUB CONT.	**Remote control unit**		**9.CONT.**	1. Receive any broadcast. 2. Select 2.V/C from the SERVICE MENU. 3. Select 9.CONT with the FUNCTION UP/DOWN key. 4. Set the initial setting value with the FUNCTION - or + key. 5. If the contrast is not the best with the initial setting value, make fine adjustment until you get the best contrast. 6. Press the MENU key and memorize the set value.

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB COLOUR I	**Remote control unit**		**10.COLOUR (PAL~NTSC)**	**[Method of adjustment without using measuring instrument]**
			PAL COLOUR	(PAL COLOUR) 1. Receive PAL broadcast. 2. Select 2.V/C from the SERVICE MENU. 3. Select 10.COLOUR with the FUNCTION UP/DOWN key. 4. Set the initial setting value for PAL COLOUR with the FUNCTION - or + key. 5. If the colour is not the best with the initial set value, make fine adjustment until you get the best colour. 6. Press the MENU key and memorize the set value.
			SECAM COLOUR	(SECAM COLOUR) 1. Receive a SECAM broadcast. Make fine adjustment of SECAM COLOUR in the same manner as for above.
			NTSC COLOUR	(NTSC 3.58 COLOUR) 1. Input a NTSC 3.58MHz COMPOSITE VIDEO signal from the EXT terminal. 2. Make similar fine adjustment of NTSC 3.58 COLOUR in the same manner as for above.
				(NTSC 4.43 COLOUR) 1. When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB COLOUR Ⅱ	**Signal generator** **Oscilloscope** **Remote control unit**	**TP-47B** **TP-E( )** **[CRT SOCKET PWB]**	**10.COLOUR (PAL~NTSC)**	**[Method of adjustment using measuring instrument]**
			PAL COLOUR	(PAL COLOUR) 1. Receive a PAL full field colour bar signal(75% white). 2. Select 2.V/C from the SERVICE MENU. 3. Select 5.COLOUR with the FUNCTION UP/DOWN key. 4. Set the initial setting value of PAL COLOUR with the FUNCTION - or + key. 5. Connect the oscilloscope between TP-47B and TP-E 6. Adjust PAL COLOUR and bring the value of (A) in the illustration to 12V (voltage difference between white (w) and blue (B)). 7. Press the MENU key and memorize the setting value.
			SECAM COLOUR	(SECAM COLOUR) 1. Receive a SECAM full field colour bar signal(75% white). 2. Set the initial setting value of SECAM COLOUR with the FUNCTION -/+ key. 3. Adjust SECAM COLOUR and bring the value of (A) of the illustration to 0V. 4. Press the MENU key and memorize the setting value.
			NTSC COLOUR	(NTSC 3.58 COLOUR) 1. Input a NTSC 3.58MHz COMPOSITE VIDEO signal (full field colour bar with 75% white) from the EXT terminal. 2. Set the initial setting value of NTSC 3.58 COLOUR with the FUNCTION -/+ key. 3. Adjust NTSC 3.58 COLOUR and bring the value of (A) of the illustration to 0V(W~B). 4. Press the MENU key and memorize the setting value.
				(NTSC 4.43 COLOUR) 1. When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.



Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB TINT Ⅰ	**Remote control unit**		**11.HUE**	**[Method of adjustment without using measuring instrument]**
			NTSC 3.58 TINT	[NTSC 3.58 TINT] 1. Input a NTSC 3.58MHz COMPOSITE VIDEO signal (full field colour bar with 75% white) from the EXT terminal. 2. Select 2.V/C from the SERVICE MENU. 3. Select 11.HUE with the FUNCTION UP/DOWN key. 4. Set the initial setting value of NTSC 3.58 TINT with the FUNCTION -/+ key. 5. If you cannot get the best tint with the initial setting value, make fine adjustment until you get the best tint. 6. Press the MENU key and memorize the set value.
			NTSC 4.43 TINT	[NTSC 4.43 TINT] 1. When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.
Adjustment of SUB TINT Ⅱ	**Signal generator** **Oscilloscope** **Remote control unit**	**TP-47B TP-E( ) [CRT SOCKET PWB]**	**11.HUE**	**[Method of adjustment using measuring instrument]**
			NTSC 3.58 TINT	[NTSC 3.58 TINT] 1. Input a NTSC 3.58MHz COMPOSITE VIDEO signal (full field colour bar with 75% white) from the EXT terminal. 2. Select 2.V/C from the SERVICE MENU. 3. Select 11.HUE with the FUNCTION UP/DOWN key. 4. Set the initial setting value of NTSC 3.58 TINT with the FUNCTION - or + key. 5. Connect the oscilloscope between TP-47B and TP-E 6. Adjust NTSC 3.58 TINT to bring the value of (A) in the illustration to 0V (voltage difference between white (W) and magenta(Mg)). 7. Press the MENU key and memorize the setting value
			NTSC 4.43 TINT	[NTSC 4.43 TINT] 1. When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.



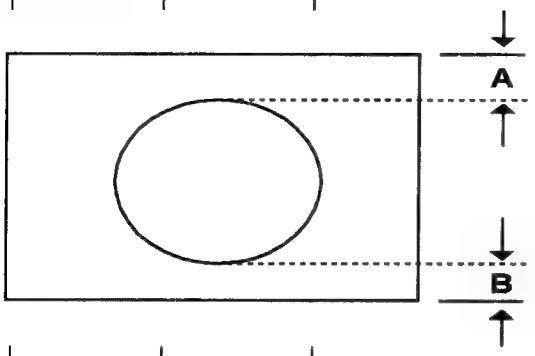
DEFLECTION CIRCUIT ADJUSTMENT

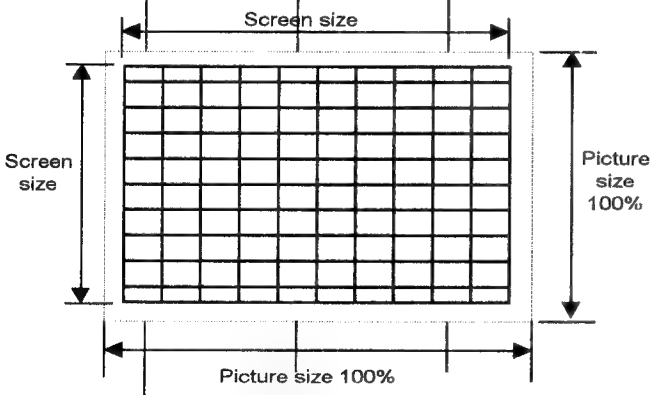
There are 3 modes of the adjustment (1) 50Hz mode (①PANORAMIC ②FULL ③SUBTITLE), (2) 60Hz mode (each aspect mode) ····· depending upon the kind of signals (vertical frequency 50Hz / 60Hz).

- **When the 50Hz PANORAMIC mode has been established, the setting of other modes will be done automatically. However, if the picture quality has not been optimized, adjust each mode again, respectively.**
- **The adjustment using the remote control unit is made on the basis of the initial setting values.**
- **The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**
- **Regular and Zoom switching is conducted not by the Deflection circuit, but by the 100 Hz PWB. Therefore, the deflection system cannot be adjusted in these modes.**

Setting item	Adjustment name	Initial setting value					
		PANORAMIC		SUBTITLE		FULL	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
1.V-SLOPE	Vertical def. Start position	17	-4	0	-4	0	-4
2.V-SHIFT	Vertical center	37	-2	0	2	-1	-1
3.V-SIZE	Vertical height	28	-2	13	-1	-1	-1
4.H-CENT	Horizontal center	33	-3	0	-1	0	-2
5.H-SIZE	Horizontal width	44	-1	-3	-1	-3	0
6.EW-PIN	Side pin correction	17	0	0	0	0	0
7.EW-COR	Side pin four corner correction	24	0	0	0	0	0
8.TRAPEZ	Trapezoidal distortion correction	37	1	-1	-1	0	1
9.V-S.CR	Vertical height correction	15	0	-12	0	-12	0
10.EHT-COMP	Size Regulation	31	0	0	0	0	0
11.CLAMP	CLAMP Position	3	0	0	0	0	0

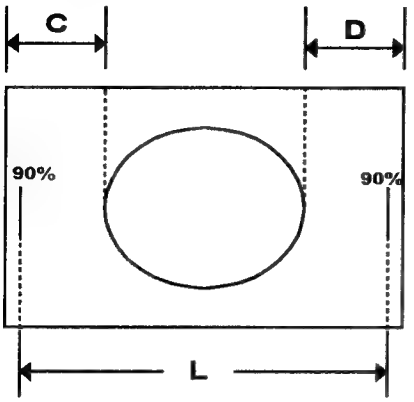
Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of VERTICAL SLOPE	**Signal generator** **Remote control unit**		**1.V-SLOPE**	[PANORAMIC mode] 1. Receive a circle pattern signal of vertical frequency 50Hz. 2. Select 4.DEF from the SERVICE MENU. 3. Select 1.V-SLOPE with the FUNCTION UP/DOWN key. 4. Set the initial setting value of V-SLOPE(50Hz mode) with the FUNCTION - or + key. Press the MENU key and memorize the set value.
Adjustment of V-SHIFT			**2.V-SHIFT**	6. Receive a circle pattern signal 7. Select 2.V-SHIFT and set the initial setting value. 8. Adjust V-SHIFT to make **A = B**. 9. Press the MENU key and memorize the set value.
Adjustment of V-SIZE			**3.V. SIZE**	10. Receive a cross-hatch signal. 11. Select 3.V-SIZE and set the initial setting value. 12. Adjust V-SIZE and make sure that the vertical screen size of the picture size is in the bellow table. 13. Press the MENU key and memorize the set value. 14. Input a NTSC VIDEO signal from the EXT terminal, and make sure that the vertical screen size of the RANORAMIC mode is in the table below. 15. Press the MENU key and memorize the set value.

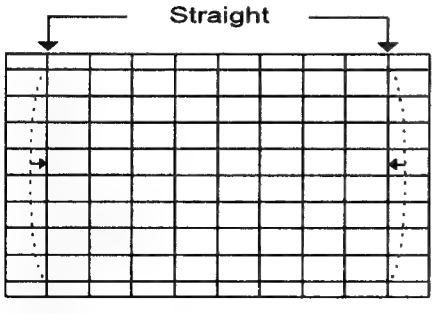




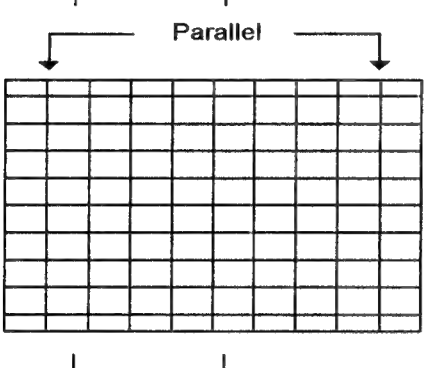
MODE	FULL	PANORAMIC	16:9 ZOOM SUB TITLE
SCREEN TOP	92%	87%	70%
SCREEN BOTTOM	92%	87%	83%

[SCREEN SIZE]

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>Adjustment of H.CENTER
 
</td><td></td><td></td><td>4.H-CENT.</td><td>16. Receive a circle pattern signal.
17. Select 4.H-CENT and set the initial setting value.
18. Adjust H-CENT to make C=D.
19. Press the MENU key and memorize the set value.</td></tr>
<tr><td>Adjustment of H.SIZE</td><td></td><td></td><td>5.H-SIZE</td><td>20. Receive a cross-hatch signal.
21. Select 5.H-SIZE and set the initial setting value.
22. Adjust H-SIZE and make sure that the horizontal screen size of the picture size is in the bellow table.
23. Press the MENU key and memorize the set value.
24. Input a NTSC VIDEO signal from the EXT terminal, and make sure that the horizoutal screen size of the PANORAMIC mode is in the table below.
25. Press the MENU key and memorize the set value.

<table><tr><th>ASPECT MODE</th><th>FULL</th><th>PANORAMIC</th><th>16:9 ZOOM SUB TITLE</th></tr><tr><td>H SIZE</td><td>92%</td><td>95%</td><td>92%</td></tr></table>[SCREEN SIZE]</td></tr>
<tr><td>Adjustment of EW-PIN
 
</td><td></td><td></td><td>6.EW-PIN</td><td>26. Select 6.EW-PIN and set the initial setting value
27. Adjust EW-PIN and make the 2nd.vertical lines at the left and right edges of the screen straight. Also make sure that the 3rd vertical lines are straight.
28. Press the MENU key and memorize the set value.</td></tr>
</table>

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of EW-COR			**7.EW-COR**	★ No alignment, but adjust this mode if result of no alignment is too bad. 29. Select 7.EW-COR and set the initial setting value. 30. Adjust EW-COR and make the vertical lines at the four corners of the screen straight. 31. Press the MENU key and memorize the set value.
Adjustment of TRAPEZ			**8.TRAPEZ**	[50Hz PANORAMIC mode] 32. Receive a cross-hatch signal of vertical frequency 50Hz. 33. Select 4.DEF from the SERVICE MENU. 34. Select 8.TRAPEZ with the FUNCTION UP/DOWN key. 35. Set the initial setting value of TRAPEZ with the FUNCTION - or + key. 36. Adjust TRAPEZ and bring the VERTICAL lines at the right and left edges of the screen parallel . 37. Press the MENU key and memorize the set value.
Adjustment of V-S.CR			**9.V-S.CR**	★ No alignment, but adjust this mode if result of no alignment is too bad. 38. Select 9.V-S.CR and set the initial setting value. 39. Adjust each item to get exact square of cross-hatch pattern. 40. Press the MENU key and memorize the set value.
				At first the adjustment in 50Hz-PANORAMIC mode should be done, then the data for the other zoom mode is corrected in the respective value at the same time. And confirm the deflection adjustment initial setting value in 60Hz(NTSC EXT mode) PANORAMIC mode. If the adjustment in 50Hz each zoom mode has been done and stored, the data for the same aspect modes in 60Hz is corrected in the respective value. Only the data for the other aspect mode in 60Hz is corrected for itself.



AUDIO CIRCUIT ADJUSTMENT

- Do not touch 3.AUDIO(1. CONC LIMIT, 2. A2 ID THR) of the SERVICE MENU as it requires no adjustment.

3. AUDIO

Setting item	Variable range	fixed value
1. CONC LIMIT***(Do not adjust)***	00H~FFH	0AH
2. A2 ID THR***(Do not adjust)***	00H~FFH	19H

AV-32WP2EN/AV-32WP2EP STANDARD CIRCUIT DIAGRAM

■NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the ⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal :PAL Colour bar signal
(2)Setting positions of each knob/button and variable resistor :Original setting position when shipped
(3)Internal resistance of tester :DC 20kΩ/V
(4)Oscilloscope sweeping time :H ⇒20μS/div
:V ⇒5mS/div
:Others ⇒ Sweeping time is specified
(5)Voltage values :All DC voltage values

* Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL[EXAMPLE]

●In the PW board :R1209→R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

●Resistance value

No unit	:[Ω]
K	:[KΩ]
M	:[MΩ]

●Rated allowable power

No indication	:1/6[W]
Others	:As specified

●Type

No indication	:Carbon resistor
OMR	:Oxide metal film resistor
MFR	:Metal film resistor
MPR	:Metal plate resistor
UNFR	:Uninflammable resistor
FR	:Fusible resistor

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

●Capacitance value

1or higher	:[pF]
less than 1	:[μF]

●Withstand voltage

No indication	:DC50[V]
Others	:DC withstand voltage[V]
AC indicated	:AC withstand voltage[V]

* Electrolytic Capacitors
47/50[Example]:Capacitance value[μF]/withstand voltage[V]

●Type

No indication	:Ceramic capacitor
MY	:Mylar capacitor
MM	:Metalized mylar capacitor
PP	:Polypropylene capacitor
MPP	:Metalized polypropylene capacitor
MF	:Metalized film capacitor
TF	:Thin film capacitor
BP	:Bipolar electrolytic capacitor
TAN	:Tantalum capacitor

(3)Coils

No unit	:[μH]
Others	:As specified

(4)Power Supply

:B1
:B2(12V)
:9V
:5V

* Respective voltage values are indicated.

(5)Test Point

: Test point
: Only test point display

(6)Connecting method

: Connector
: Wrapping or soldering
: Receptacle

(7)Ground symbol

: LIVE side ground
: ISOLATED(NEUTRAL) side ground
: EARTH ground
: DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

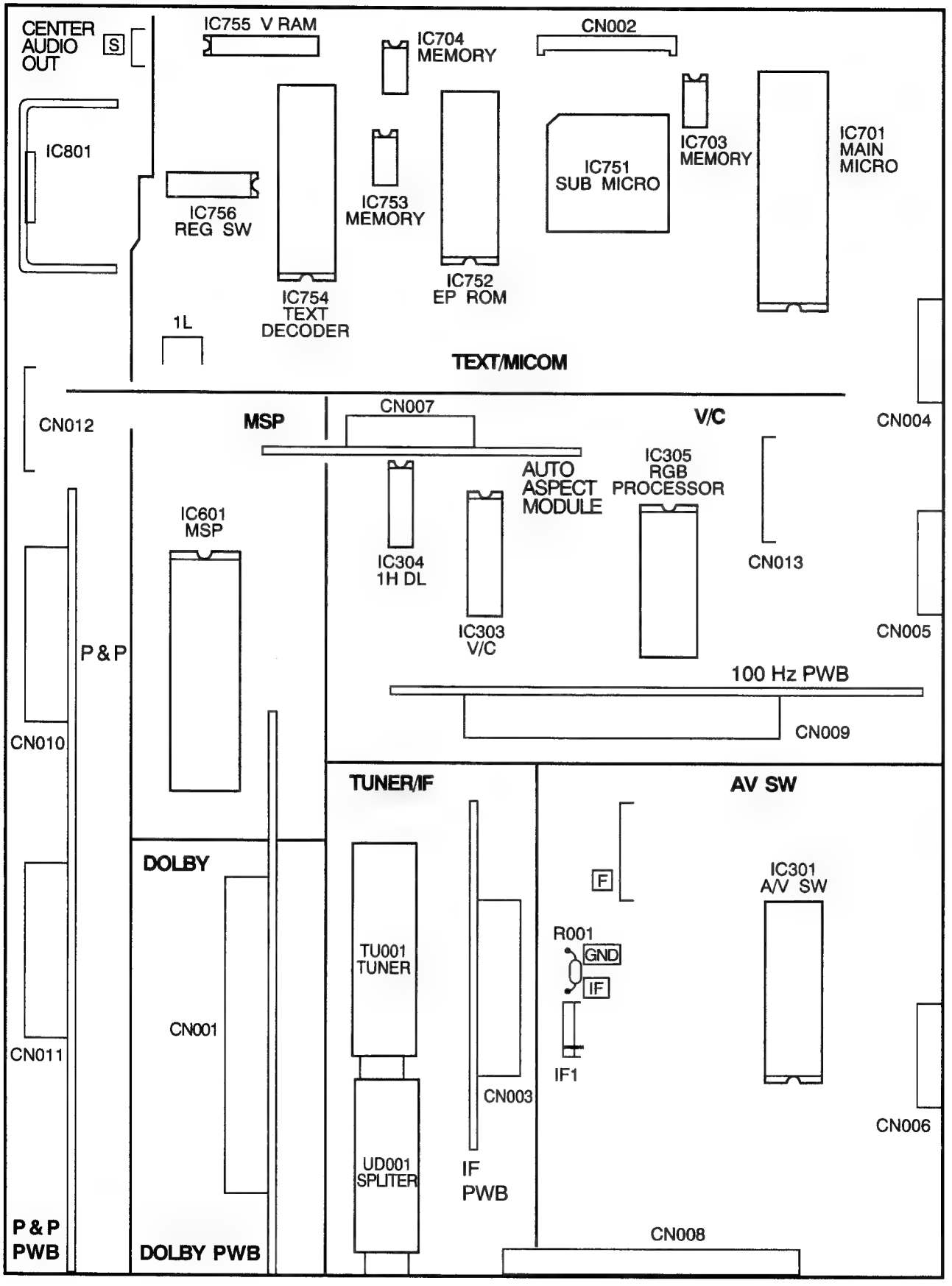
This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⏚) side GND. Therefore, care must be taken for the following points.

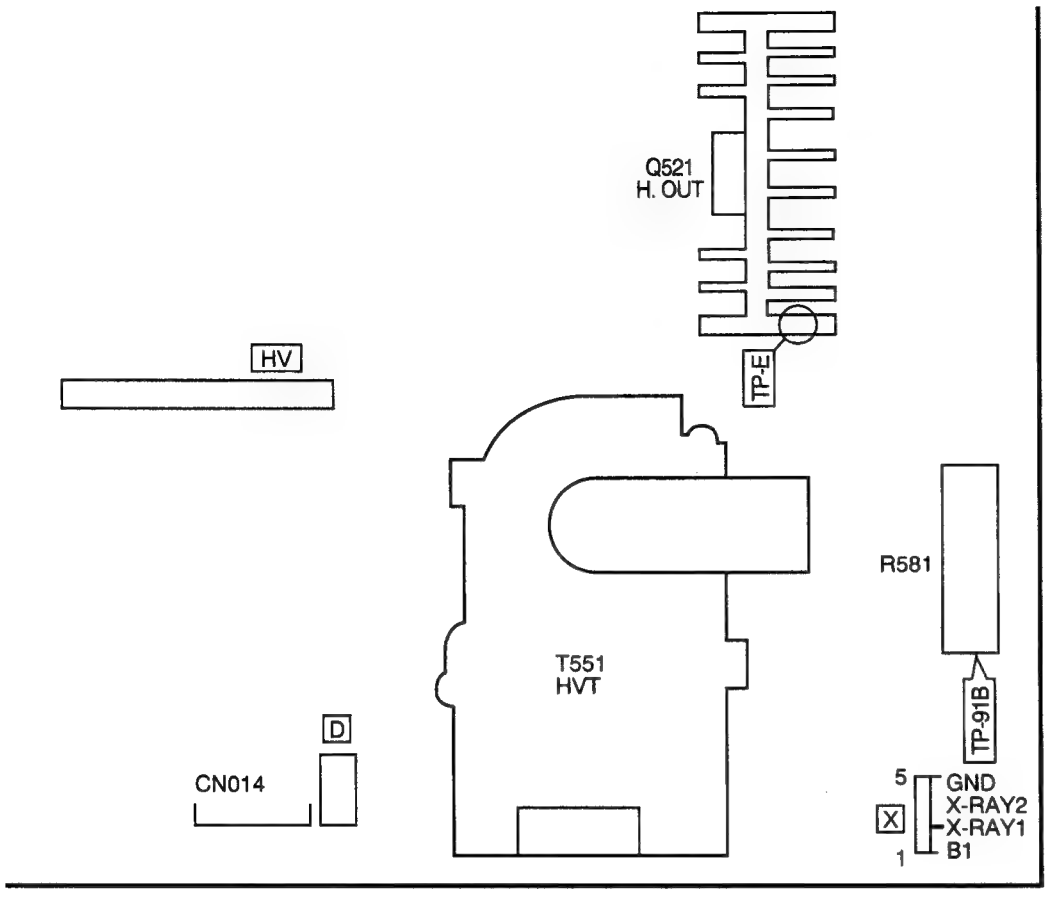
(1) Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

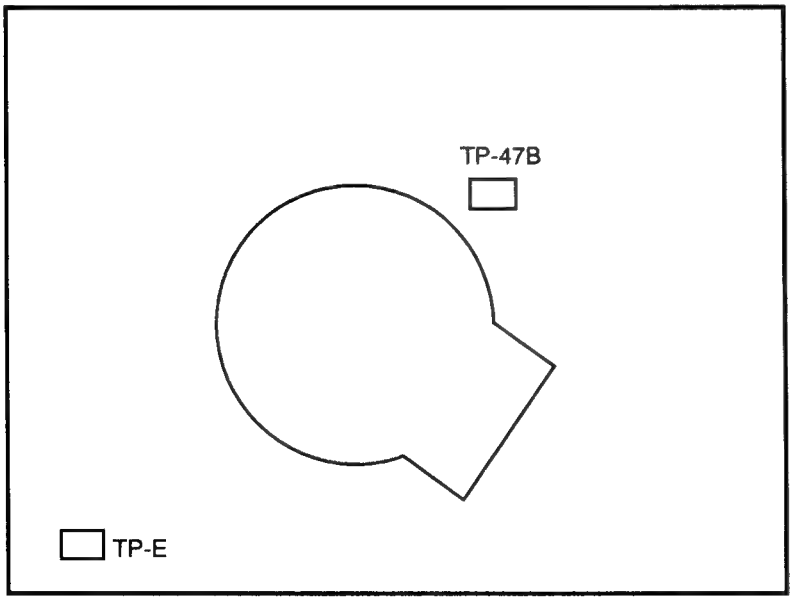
(2) Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

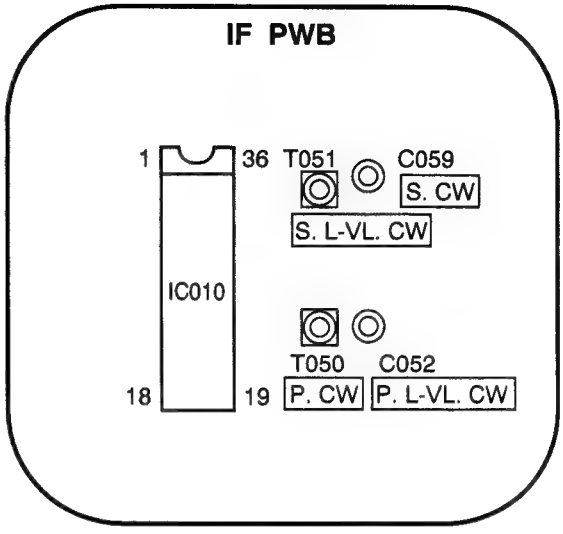
◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

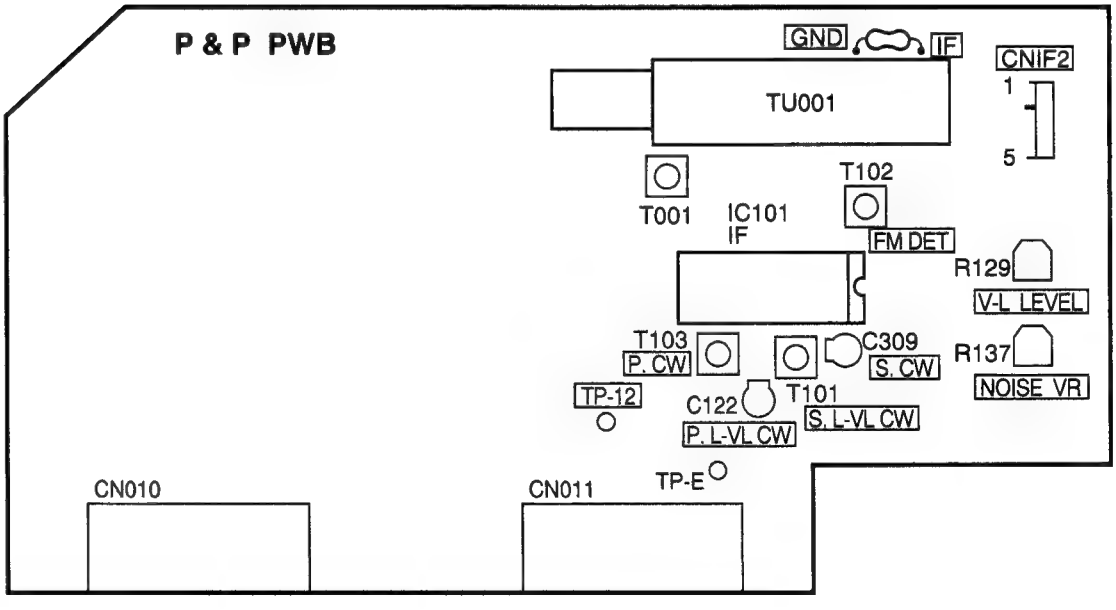
【 MAIN PARTS LOCATION AND ALIGNMENTS LOCATION】



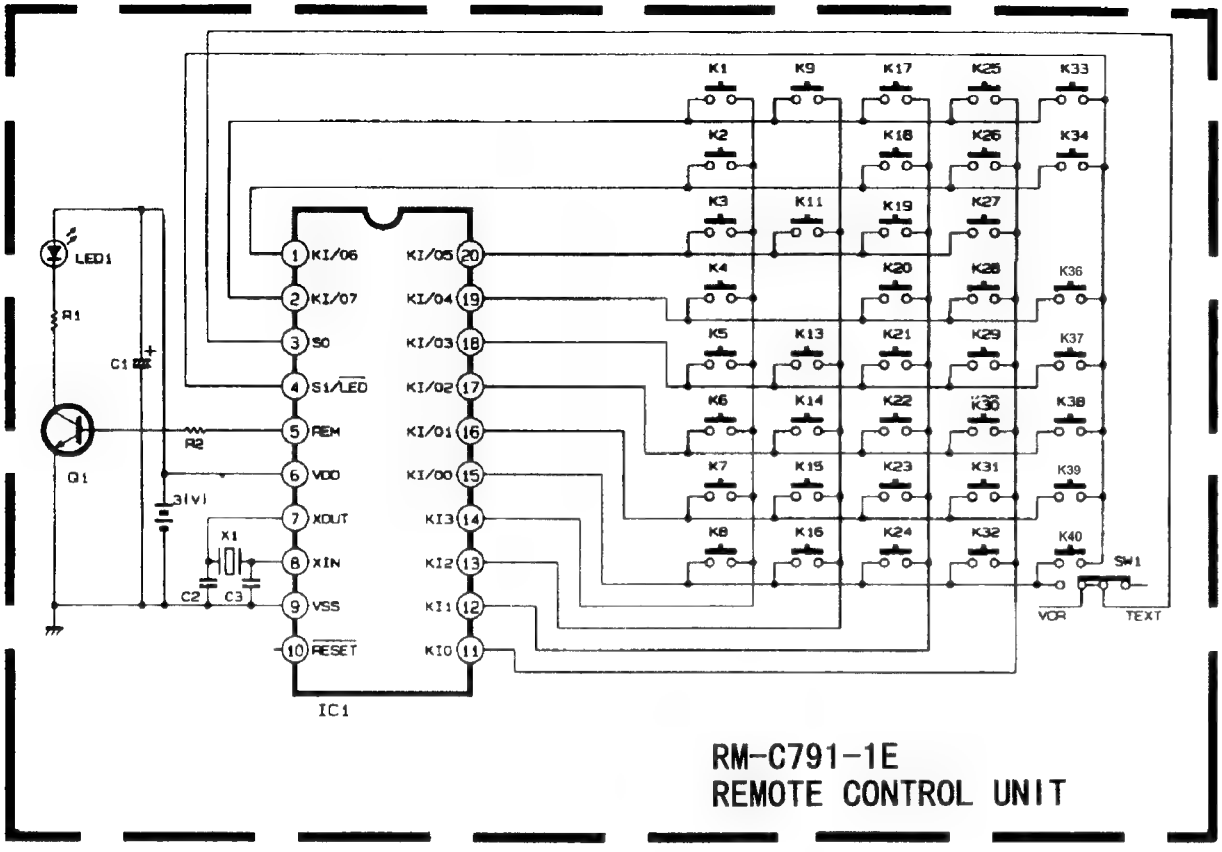

Q521
H. OUT
TP-E
HV
T551
HVT
R581
TP-91B
D
CN014
5
X
1
GND
X-RAY2
X-RAY1
B1


TP-47B
TP-E


IF PWB
1
36
T051
C059
S. CW
S. L-VL. CW
IC010
T050
C052
18
19
P. CW
P. L-VL. CW


P & P PWB
GND
IF
CNIF2
1
5
TU001
T001
IC101
IF
T102
FM DET
R129
V-L LEVEL
T103
P. CW
C309
S. CW
R137
NOISE VR
TP-12
C122
T101
S. L-VL CW
P. L-VL CW
CN010
CN011
TP-E

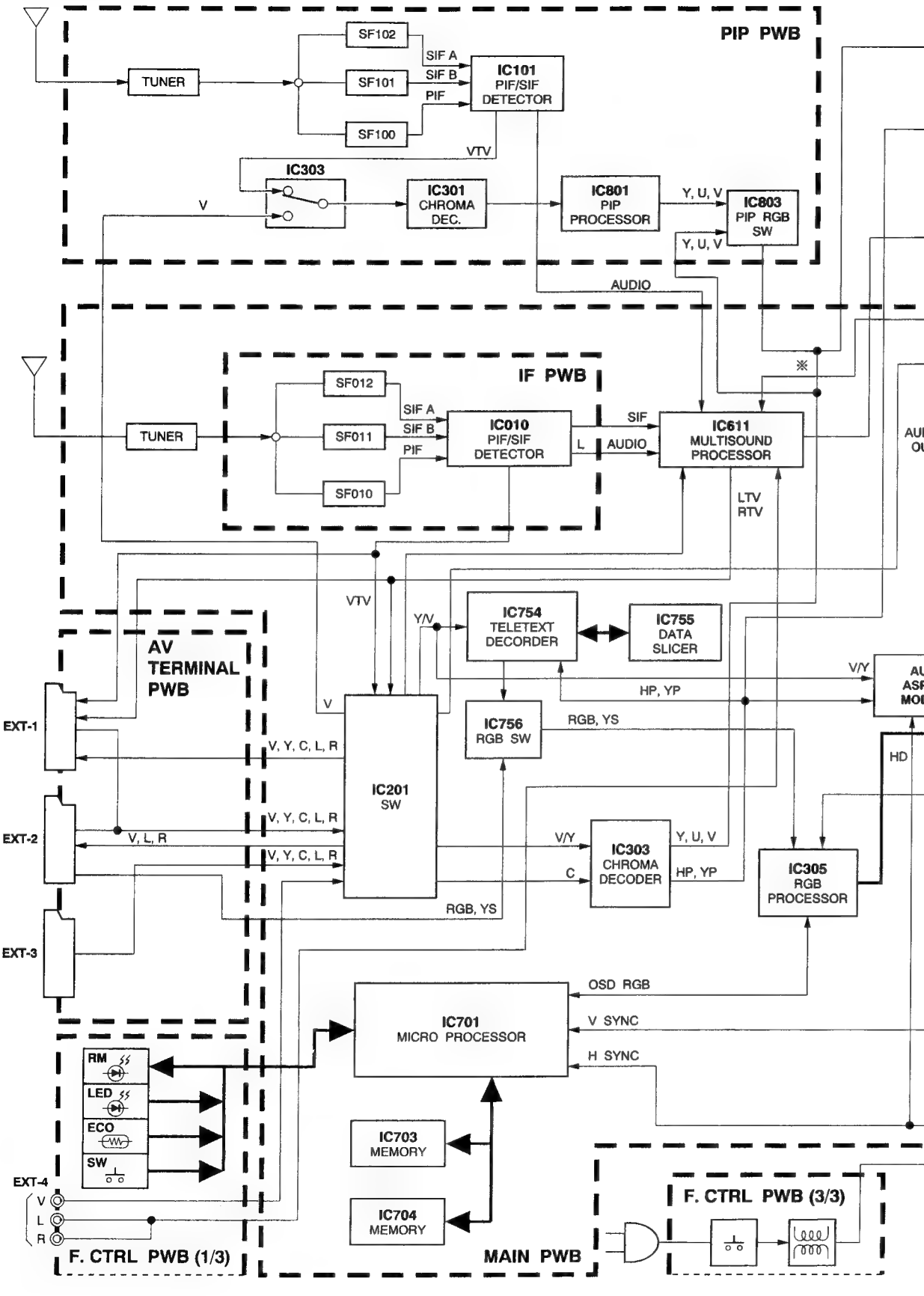
【 REMOTE CONTROL UNIT CIRCUIT DIAGRAM 】

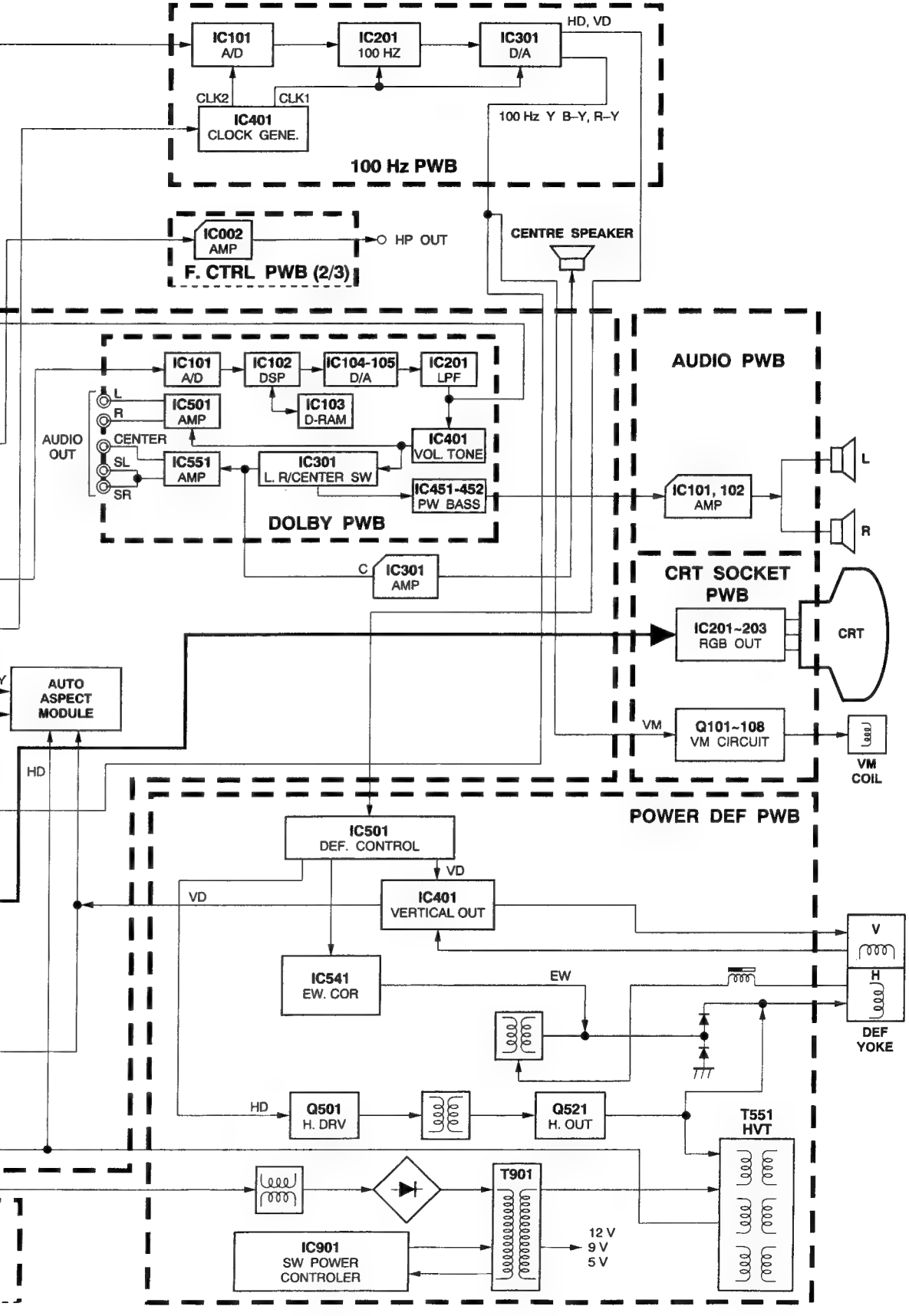


■KEY FUNCTION

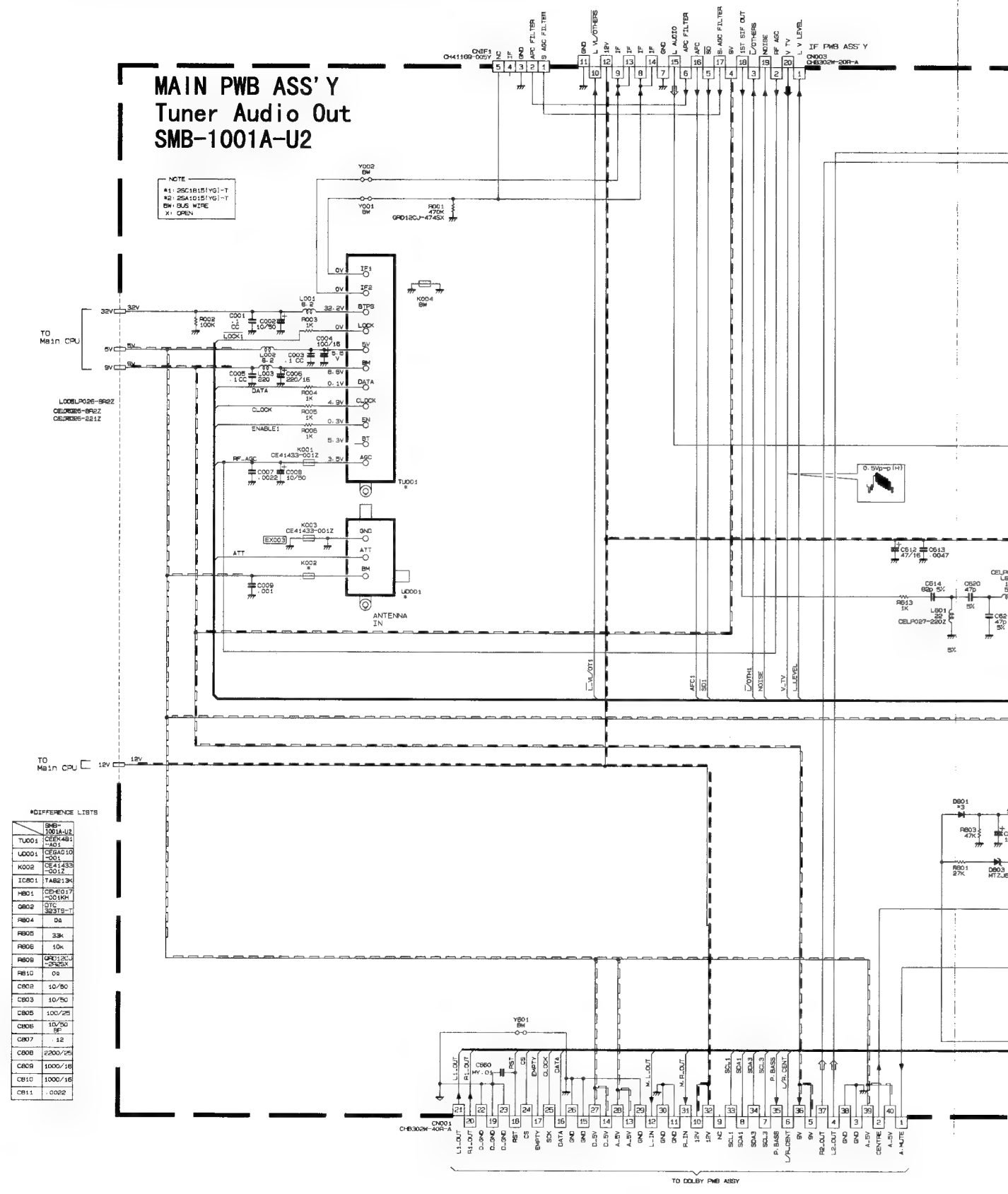
No.	Key Name	No.	Key Name	No.	Key Name	No.	Key Name
1	1	14	3D	22	MODE (TEXT)	29	CANCEL (TEXT)
2	2	15	P.BASS		REW ◀◀ (VCR)		STOP ■ (VCR)
3	3	16	PIP	23	SIZE (TEXT)	30	INDEX (TEXT)
4	4	17			FF ▶▶ (VCR)		⏻/I (VCR)
5	5	18	REVEAL (TEXT)	24	SUB PAGE(TEXT)	31	▲
6	6		PLAY ▶ (VCR)		P V (VCR)	32	◀
7	7	19	TV	25		33	▼
8	8	20	MENU/OK	26	STORE (TEXT)	34	▶
9	9	21	HOLD (TEXT)		(VCR)	36	FREEZE
11	0		P Λ (VCR)	27	⏻/I	37	MULTI
13	ZOOM			28	( )	38	SWAP
						39	SUB-P V
						40	SUB-P Λ

【 BLOCK DIAGRAM 】

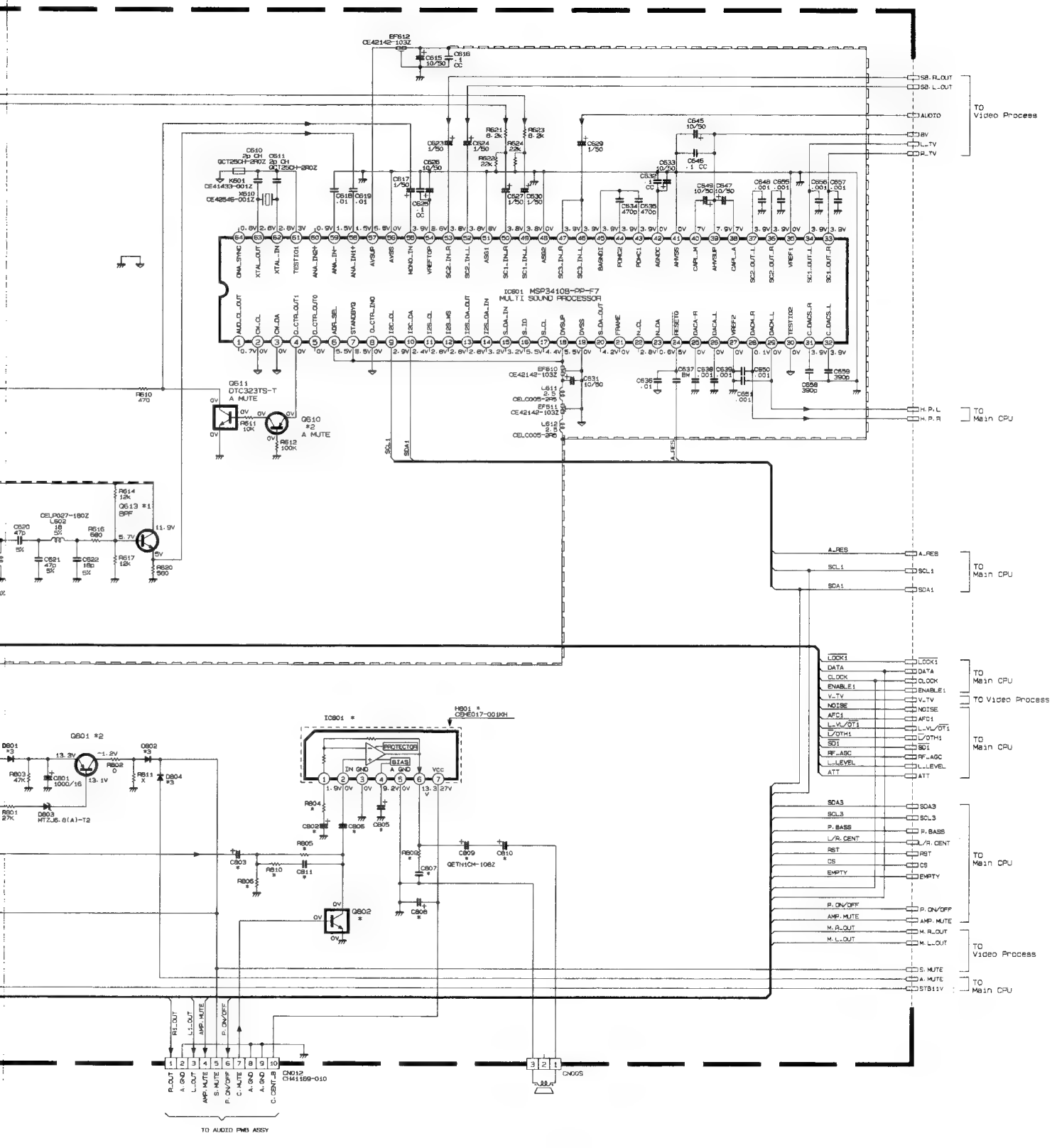



IC101
A/D
IC201
100 HZ
IC301
D/A
HD, VD
CLK2
CLK1
IC401
CLOCK GENE.
100 Hz Y B–Y, R–Y
100 Hz PWB
IC002
AMP
HP OUT
F. CTRL PWB (2/3)
CENTRE SPEAKER
AUDIO PWB
IC101
A/D
IC102
DSP
IC104-105
D/A
IC201
LPF
IC103
D-RAM
L
R
IC501
AMP
AUDIO
OUT
CENTER
SL
SR
IC551
AMP
IC401
VOL. TONE
IC301
L. R/CENTER SW
IC451-452
PW BASS
DOLBY PWB
IC101, 102
AMP
L
R
C
IC301
AMP
CRT SOCKET
PWB
IC201~203
RGB OUT
CRT
AUTO
ASPECT
MODULE
VM
Q101~108
VM CIRCUIT
VM
COIL
HD
POWER DEF PWB
IC501
DEF. CONTROL
VD
VD
IC401
VERTICAL OUT
V
H
IC541
EW. COR
EW
DEF
YOKE
HD
Q501
H. DRV
Q521
H. OUT
T551
HVT
T901
IC901
SW POWER
CONTROLER
12 V
9 V
5 V

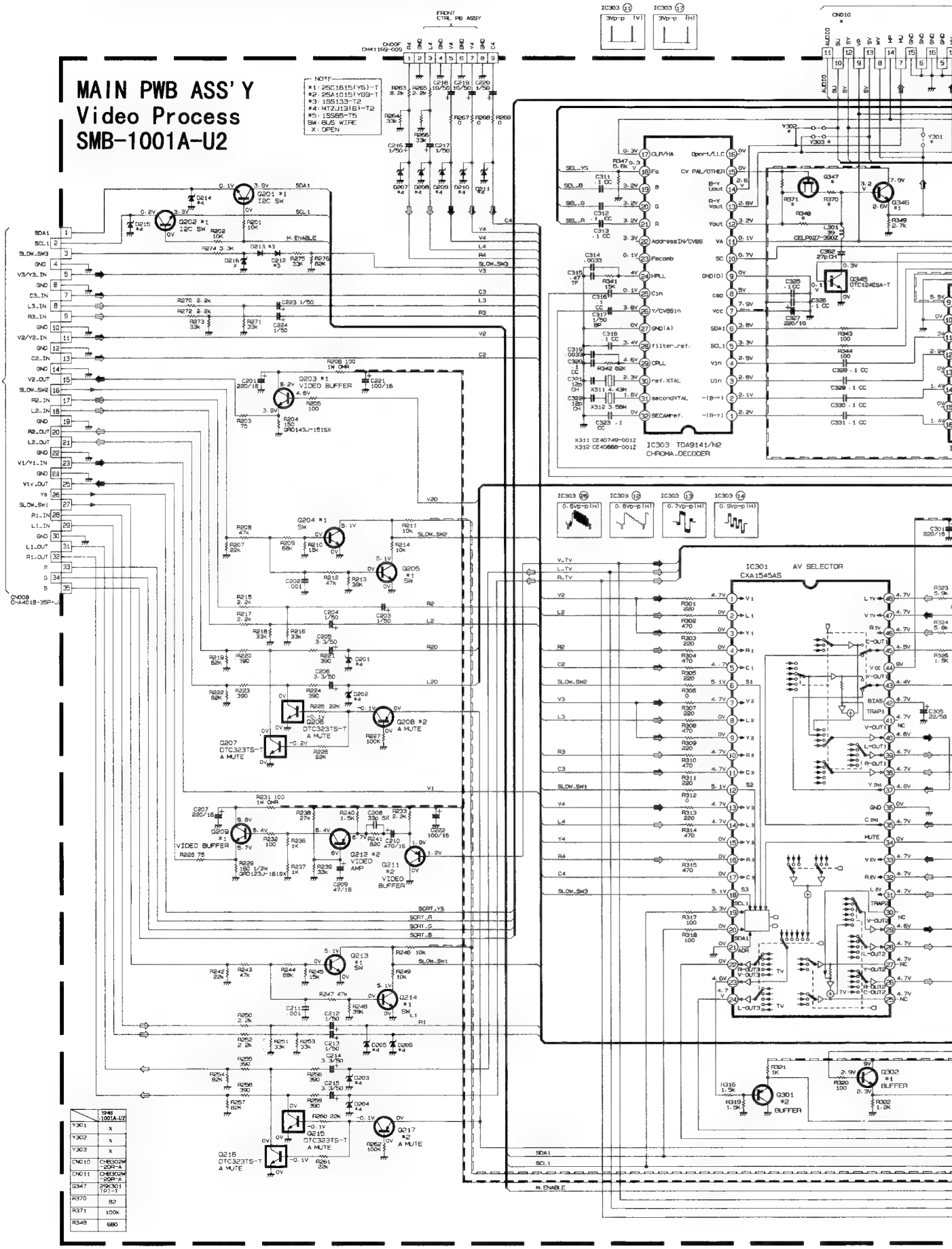
【 MAIN PWB CIRCUIT DIAGRAM (TUNER , AUDIO) 】

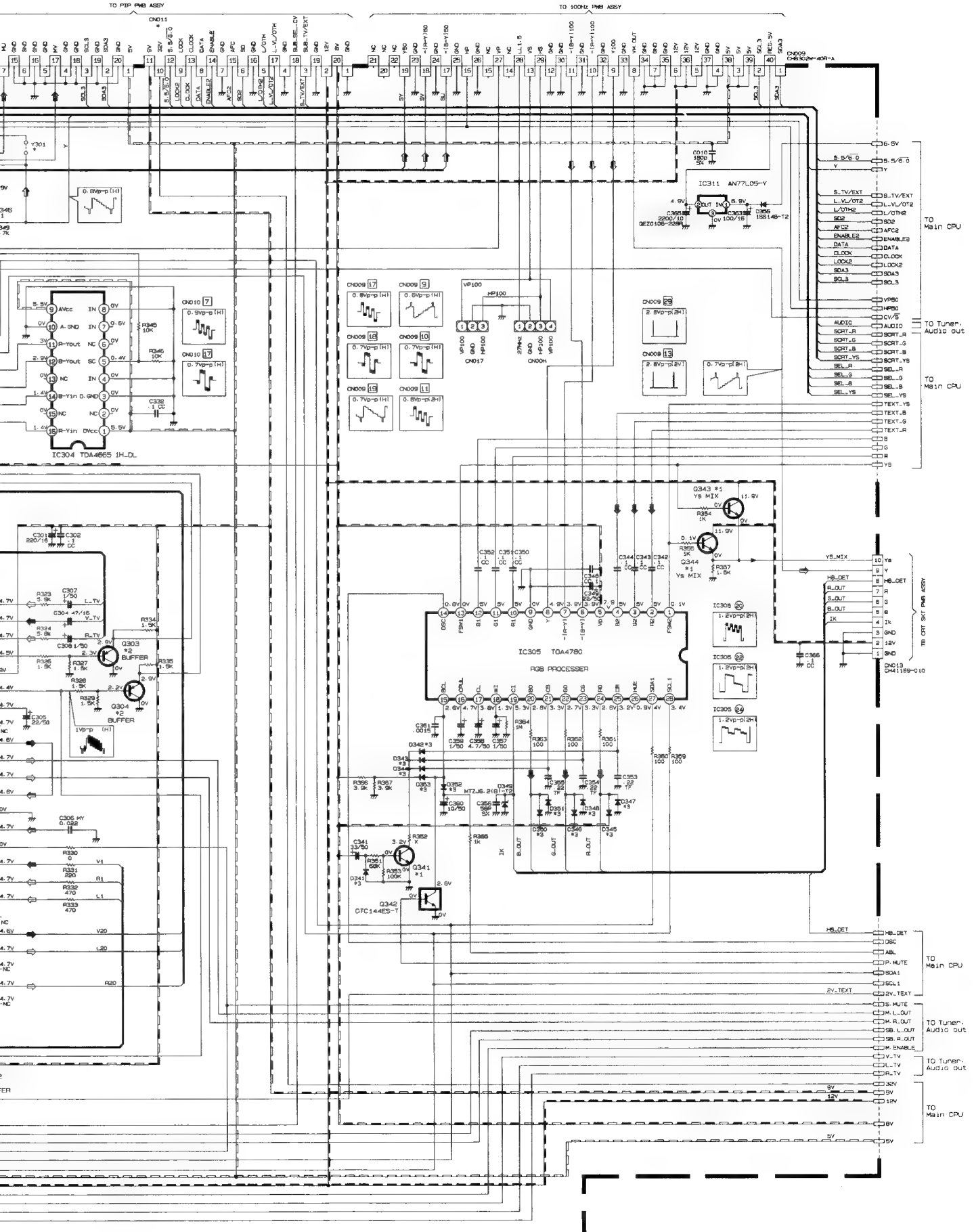


	SMB-1001A-U2
TU001	CEEK481-A01
UD001	CEGA010-001
K002	CE41433-001Z
IC801	TA8213K
HB01	CEHE017-001KH
Q802	DTC323TS-T
R804	0Ω
R805	33K
R806	10K
R809	GRD12CJ-2R2SX
R810	0Ω
C802	10/50
C803	10/50
C805	100/25
C806	10/50 BP
C807	.12
C808	2200/25
C809	1000/16
C810	1000/16
C811	.0022

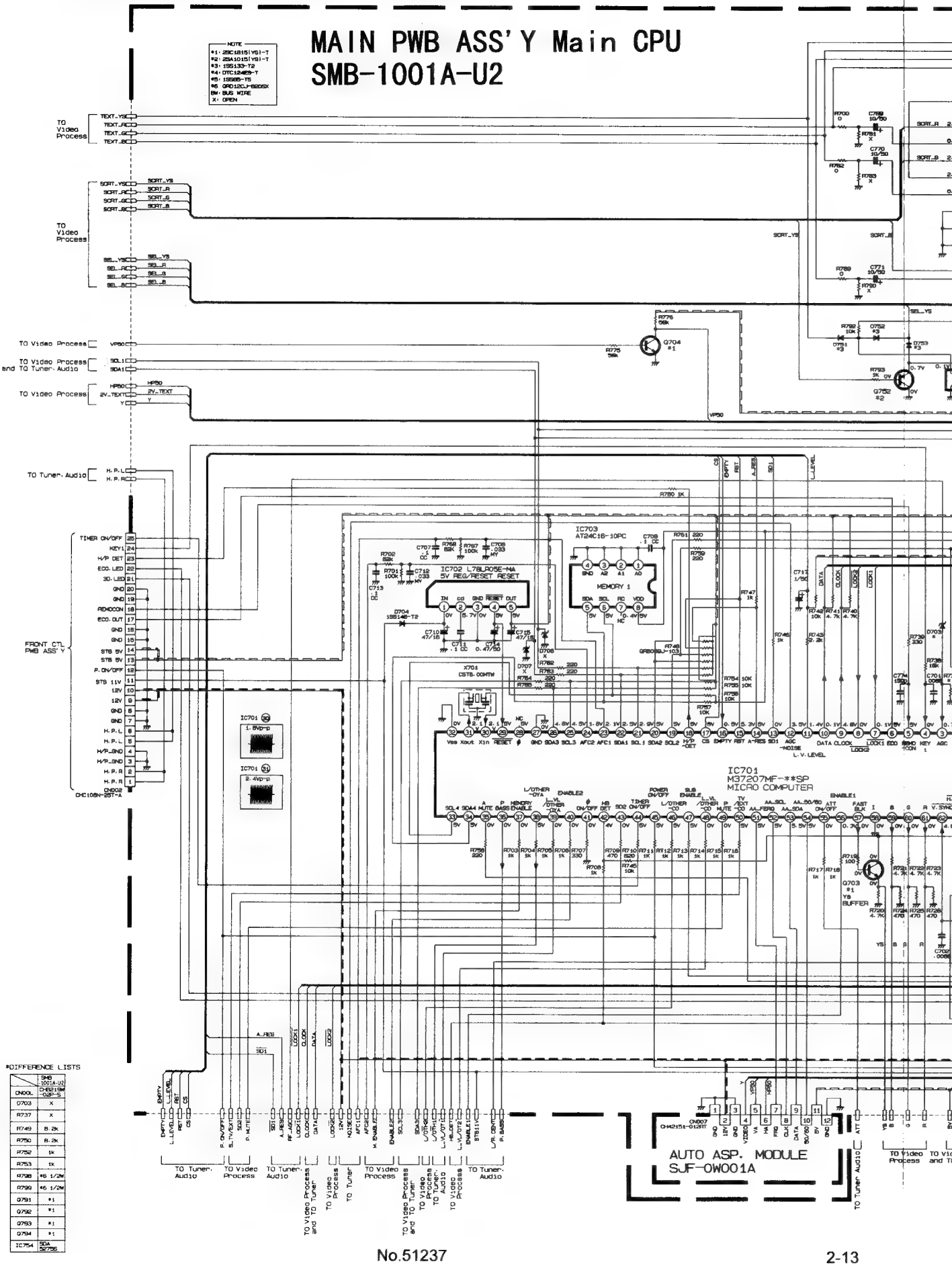

IC801 MSP3410B-PP-F7
MULTI SOUND PROCESSOR
Q611 DTC323TS-T A MUTE
Q610 *2 A MUTE
Q613 *1 BPF
Q601 *2
IC801 *
H801 * C9HE017-001KH
PROTECTOR
BIAS
A GND
IN GND
VCC
Q802 *
CN012 C141169-010
CN005
TO AUDIO PWB ASSY
TO Video Process
TO Main CPU
SB. R_OUT
SB. L_OUT
AUDIO
8V
L_TV
R_TV
H. P. L
H. P. R
A_RES
SCL1
SDA1
LOCK1
DATA
CLOCK
ENABLE1
V_TV
NOISE
AFC1
L_VL/OTH1
L/OTH1
SDI
RF_AGC
L_LEVEL
ATT
SDA3
SCL3
P. BASS
L/R. CENT
RST
CS
EMPTY
P. ON/OFF
AMP. MUTE
M. R_OUT
M. L_OUT
S. MUTE
A. MUTE
STB11V

【 MAIN PWB CIRCUIT DIAGRAM (AV SW , RGB) 】



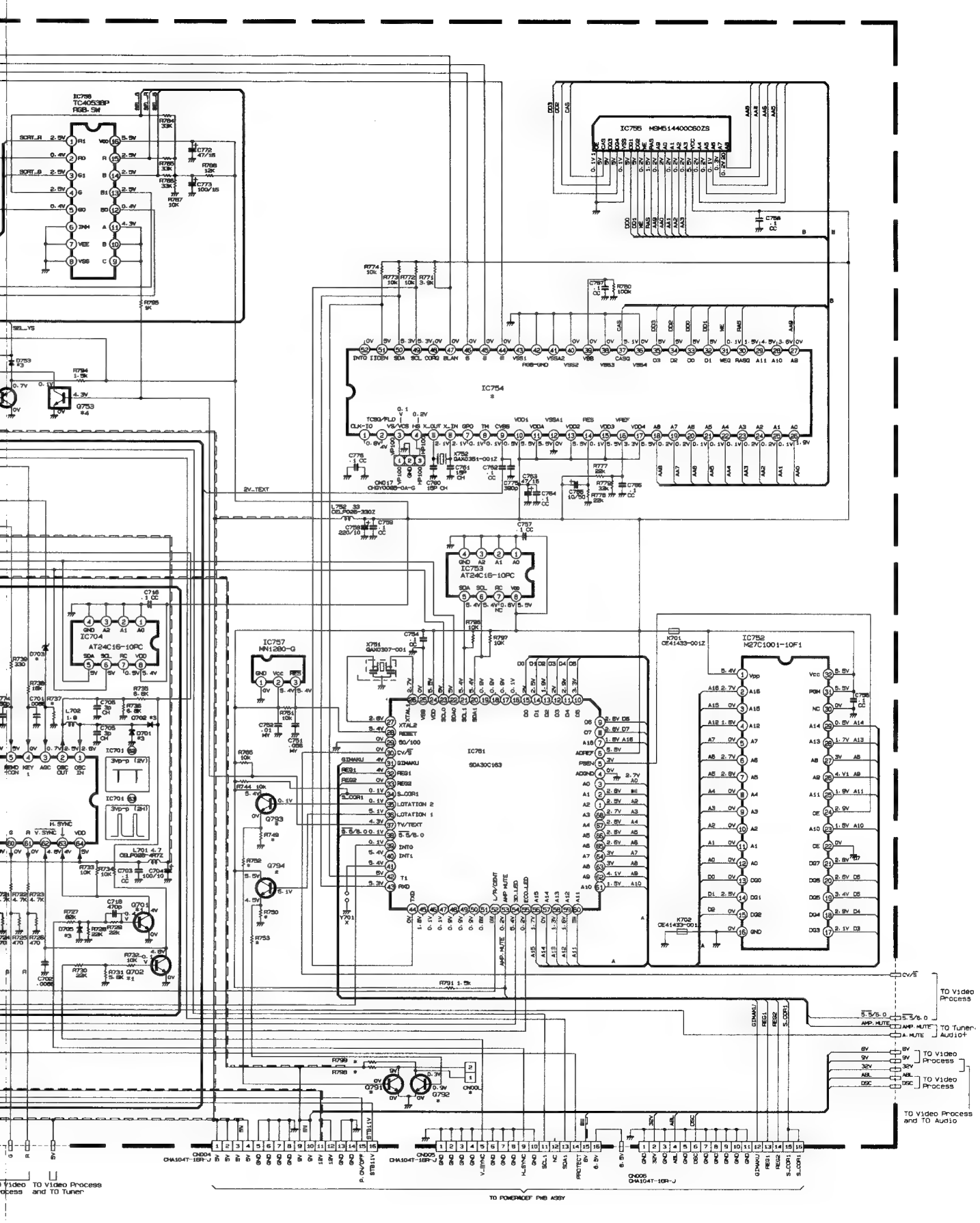

TO PIP PWB ASSY
TO 100Hz PWB ASSY
IC304 TDA4665 1H_DL
IC305 TDA4780
RGB PROCESSER
IC311 AN77L05-Y
Q303 BUFFER
Q304 BUFFER
Q341
Q342 DTC144ES-T
Q343 YS MIX
Q344 YS MIX
TO Main CPU
TO Tuner, Audio out
TO SKT PWB ASSY

【 MAIN PWB CIRCUIT DIAGRAM (MICRO. COM.) 】

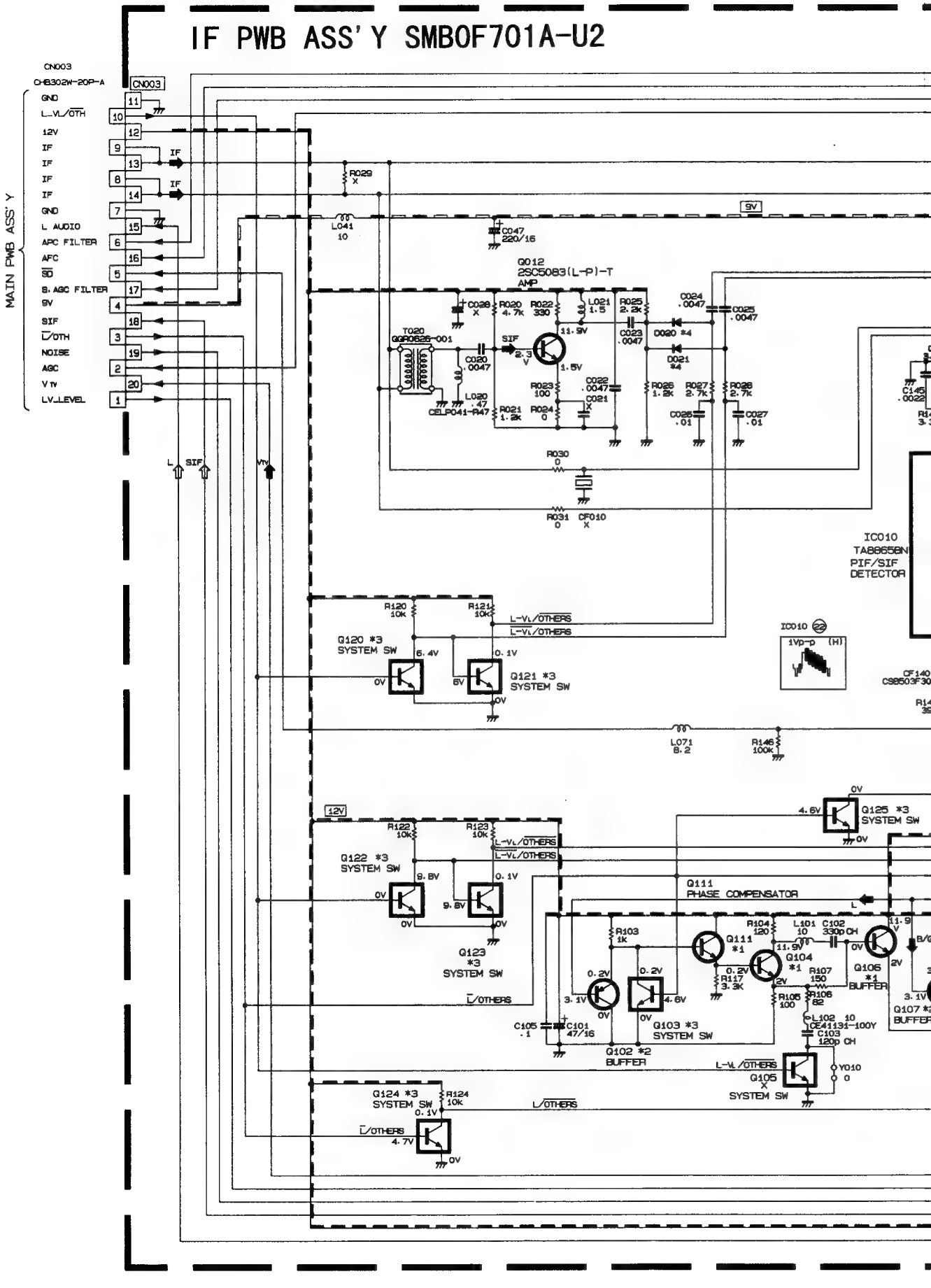


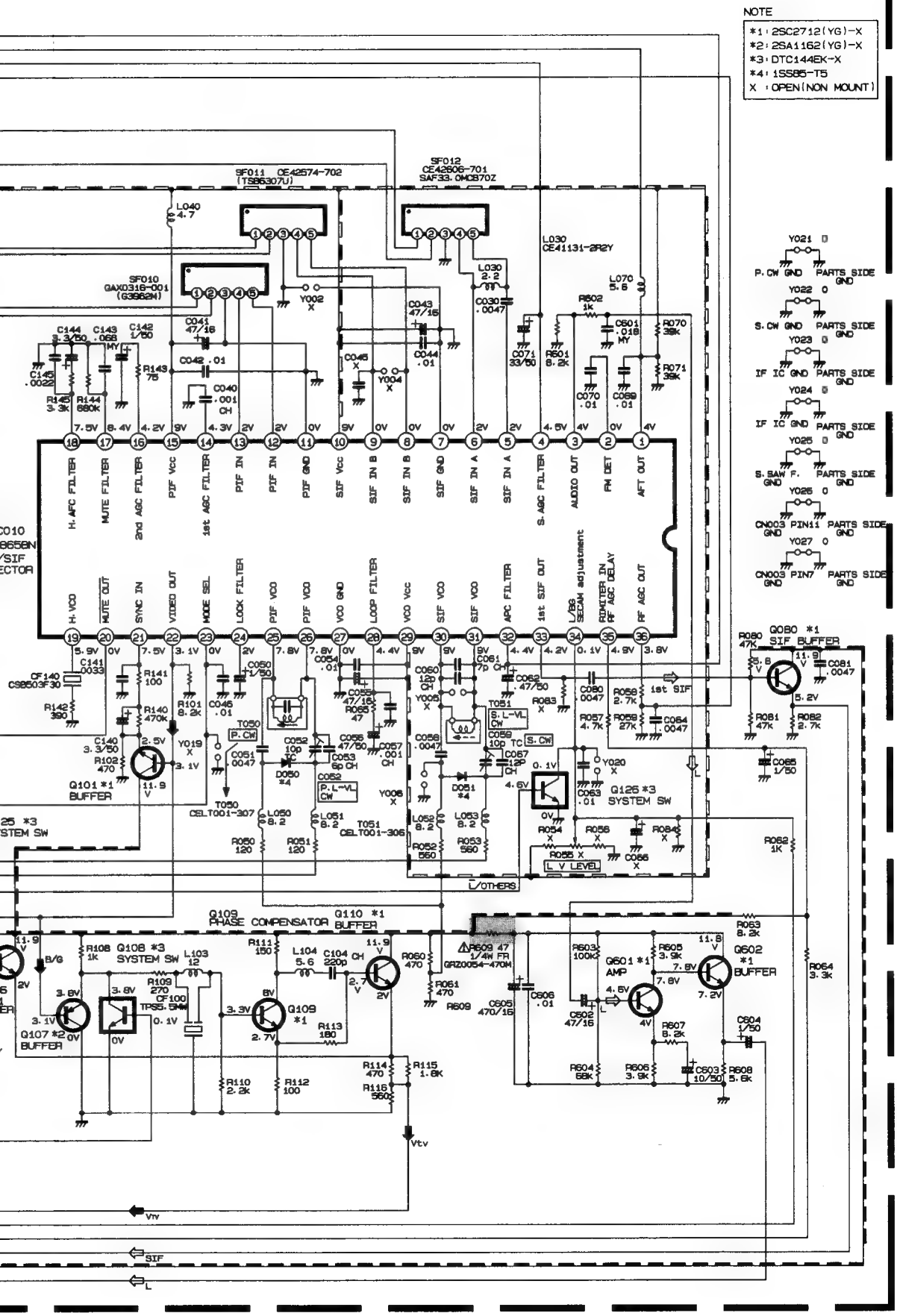
*DIFFERENCE LISTS

	SMB-1001A-U2
CNDOL	CHB219W-02P-S
D703	X
R737	X
R749	8.2k
R750	8.2k
R752	1k
R753	1k
R798	*6 1/2W
R799	*6 1/2W
Q791	*1
Q792	*1
Q793	*1
Q794	*1
IC754	SDA 52755

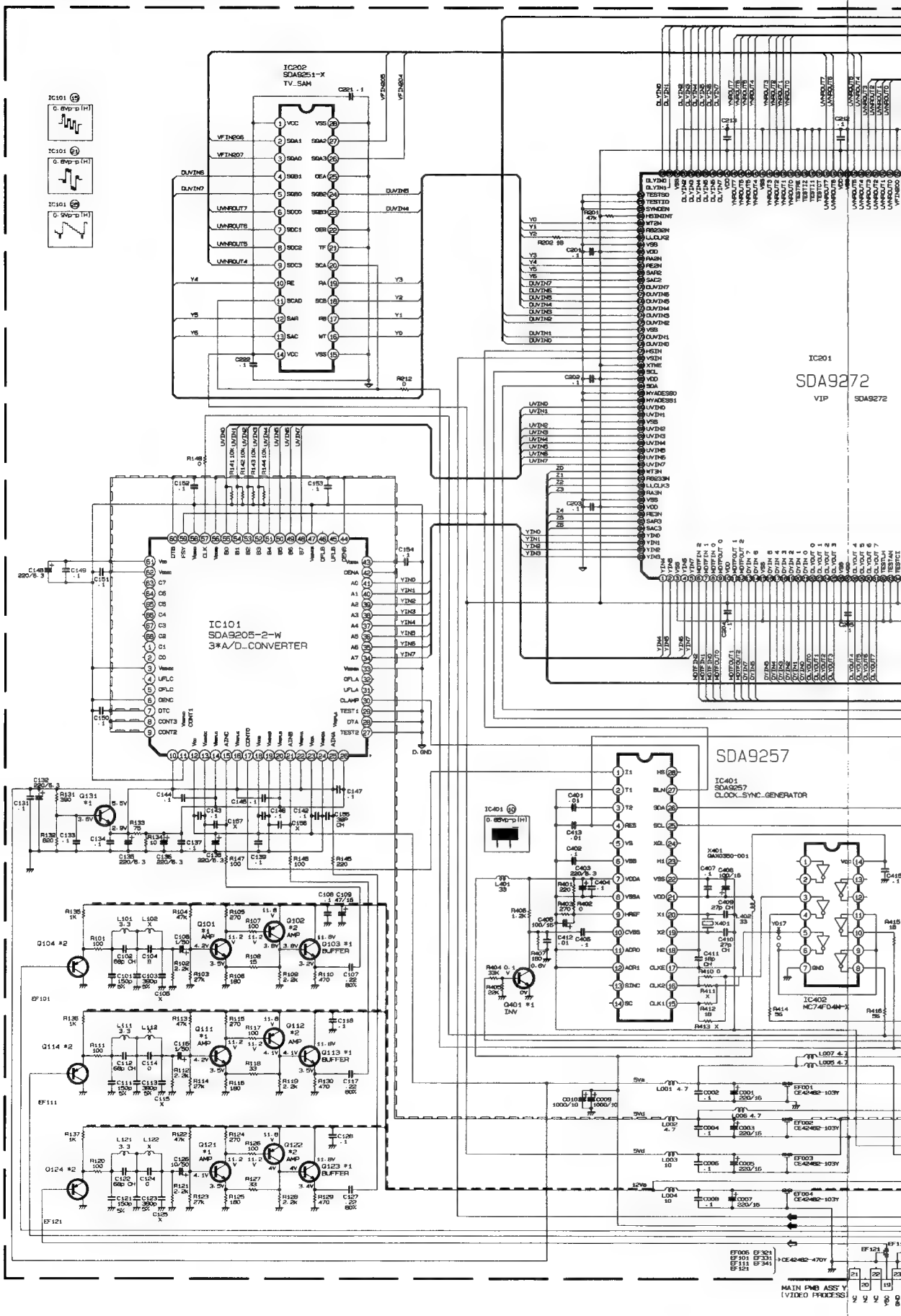

IC756
TC40S386P
RGB SW
IC755 M5M514400CS0ZS
IC754
IC753
AT24C16-10PC
IC704
AT24C16-10PC
IC757
MN1280-G
IC751
SDA30C163
IC752
M27C1001-10F1
IC701
CE41433-001Z
IC702
CE41433-001Z
X751
GAX0307-001
X752
GAX0361-001Z
2V-TEXT
TO Video Process
TO Tuner Audio
TO Video Process
TO Video Process
TO Video Process and TO Audio
TO Video Process and TO Tuner
TO POWER&DEF PWB ASSY

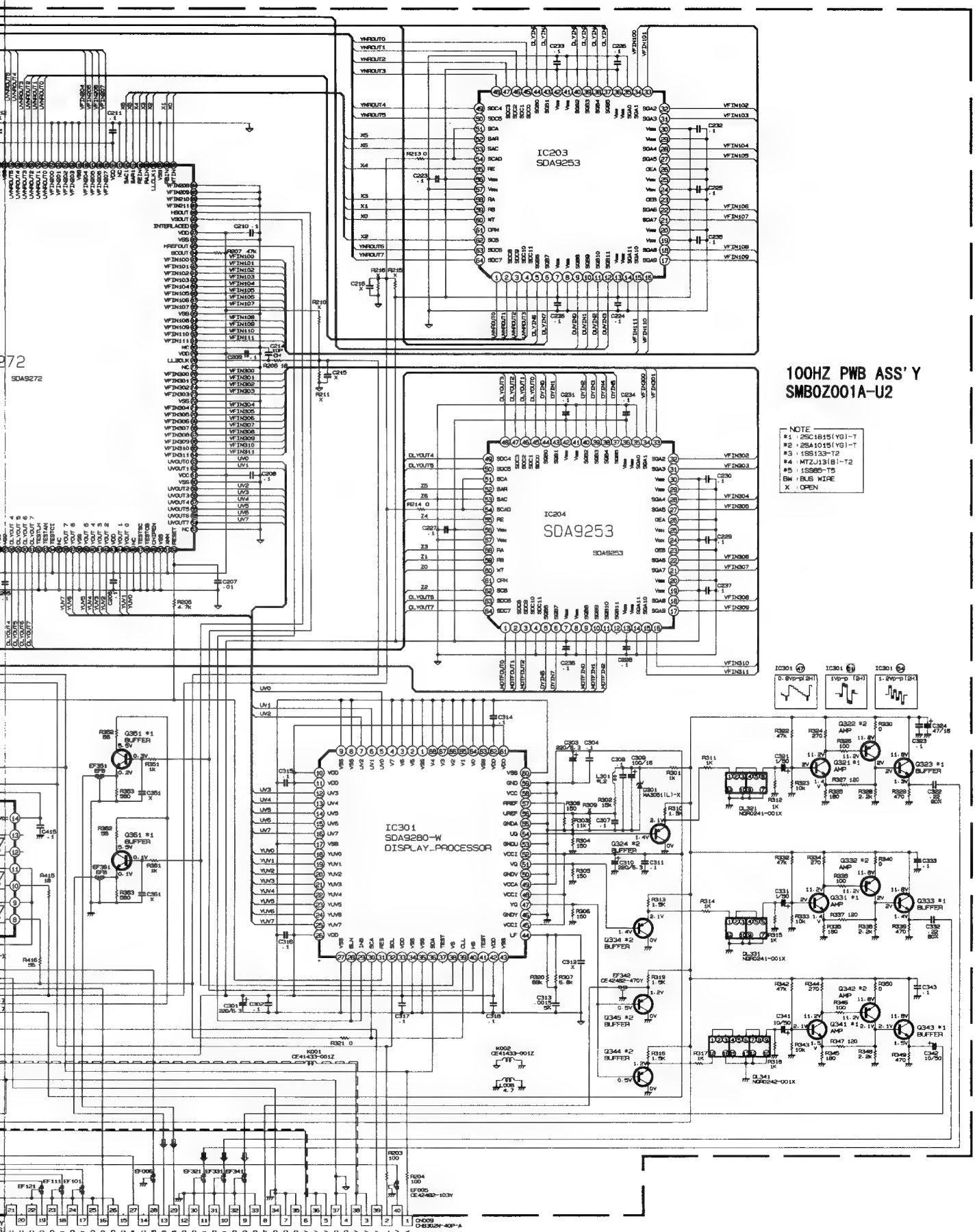
【 IF PWB CIRCUIT DIAGRAM 】



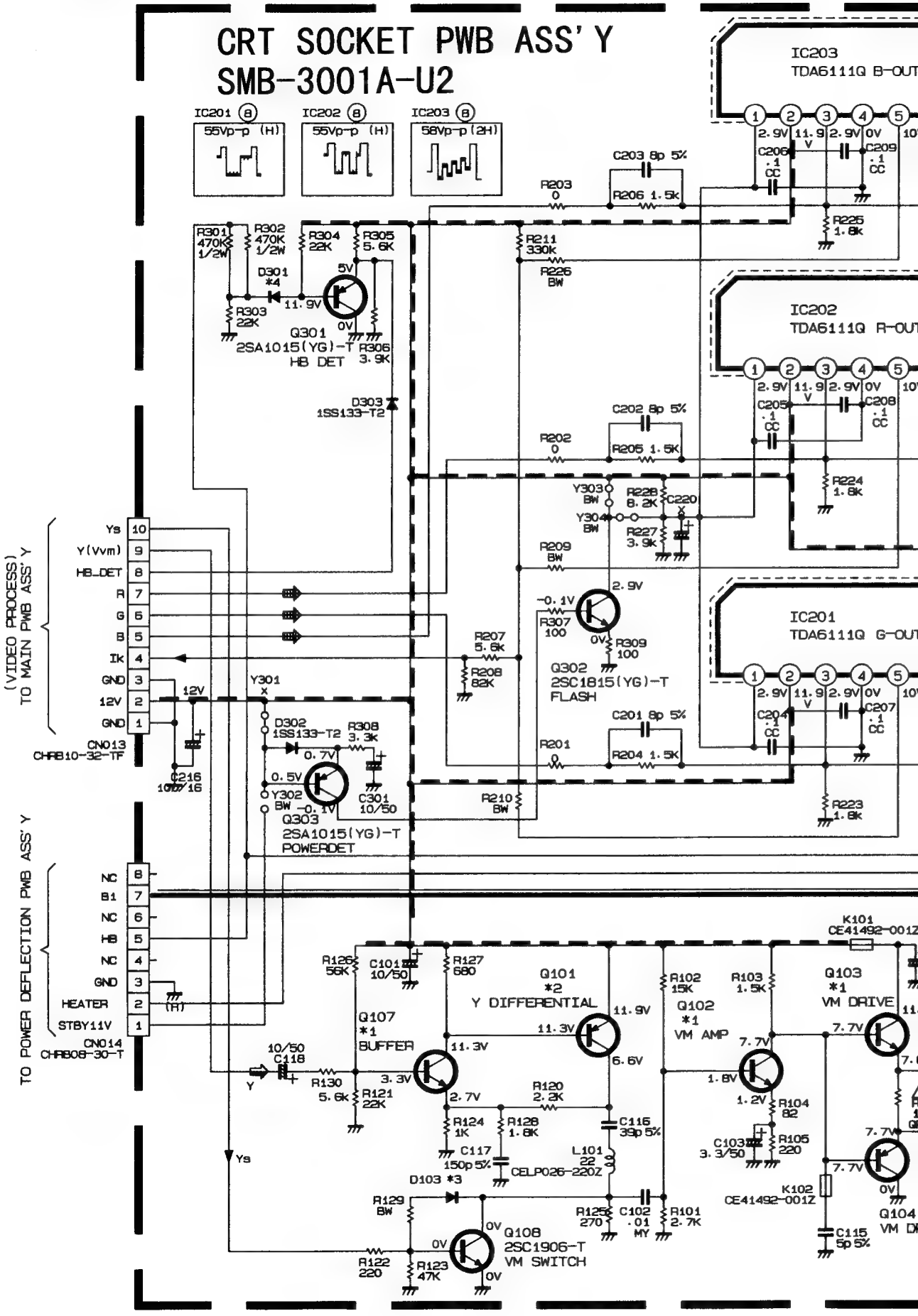

NOTE
*1 : 2SC2712(YG)-X
*2 : 2SA1162(YG)-X
*3 : DTC144EK-X
*4 : 1SS85-T5
X : OPEN(NON MOUNT)
SF011 CE42574-702 (TS86307U)
SF012 CE42606-701 SAF33.0MCB70Z
SF010 GAX0316-001 (G3962M)
L030 CE41131-2R2Y
H-AFC FILTER
MUTE FILTER
2nd AGC FILTER
PIF Vcc
1st AGC FILTER
PIF IN
PIF IN
PIF GND
SIF Vcc
SIF IN B
SIF IN B
SIF GND
SIF IN A
SIF IN A
S.AGC FILTER
AUDIO OUT
FM DET
AFT OUT
H-VCO
MUTE OUT
SYNC IN
VIDEO OUT
MODE SEL
LOOK FILTER
PIF VCO
PIF VCO
VCO GND
LOOP FILTER
VCO Vcc
SIF VCO
SIF VCO
APC FILTER
1st SIF OUT
L/BG SECAM adjustment
RDMITER IN RF AGC DELAY
RF AGC OUT
Y021 P.CW GND PARTS SIDE GND
Y022 S.CW GND PARTS SIDE GND
Y023 IF IC GND PARTS SIDE GND
Y024 IF IC GND PARTS SIDE GND
Y025 S.SAW F. GND PARTS SIDE GND
Y026 CN003 PIN11 GND PARTS SIDE GND
Y027 CN003 PIN7 GND PARTS SIDE GND
Q080 *1 SIF BUFFER
Q101 *1 BUFFER
Q126 *3 SYSTEM SW
Q109 PHASE COMPENSATOR
Q110 *1 BUFFER
Q108 *3 SYSTEM SW
Q107 *2 BUFFER
Q109 *1
Q601 *1 AMP
Q602 *1 BUFFER
L/OTHERS
1st SIF
Vtv
Vtv
SIF
L

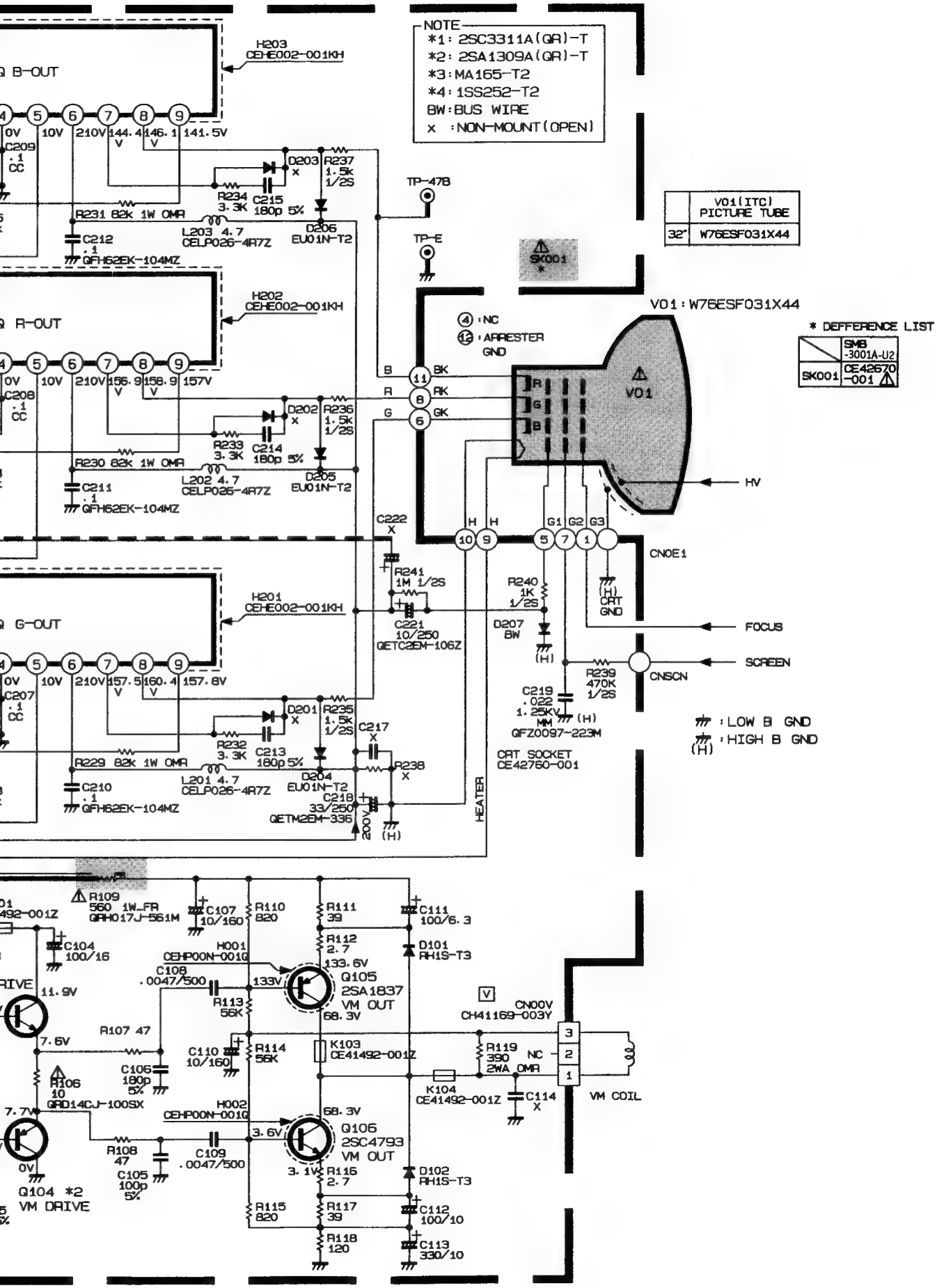
【 100Hz PWB CIRCUIT DIAGRAM 】



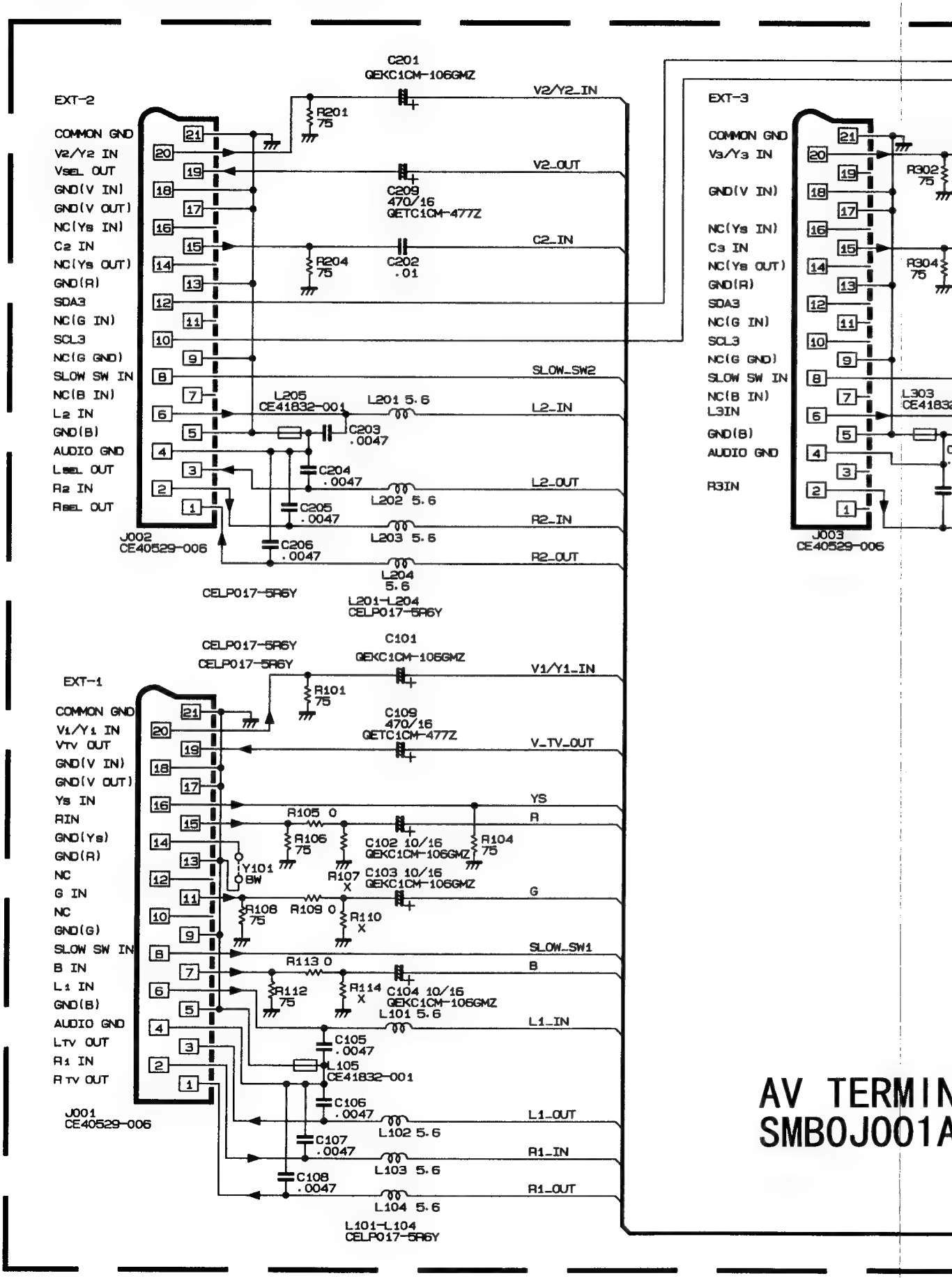

IC203
SDA9253
IC204
SDA9253
IC301
SDA9280-W
DISPLAY_PROCESSOR
100HZ PWB ASS'Y
SMB0Z001A-U2
NOTE
#1 : 2SC1815(YG)-T
#2 : 2SA1015(YG)-T
#3 : 1SS133-T2
#4 : MTZJ13(B)-T2
#5 : SS85-T5
BW : BUS WIRE
X : OPEN

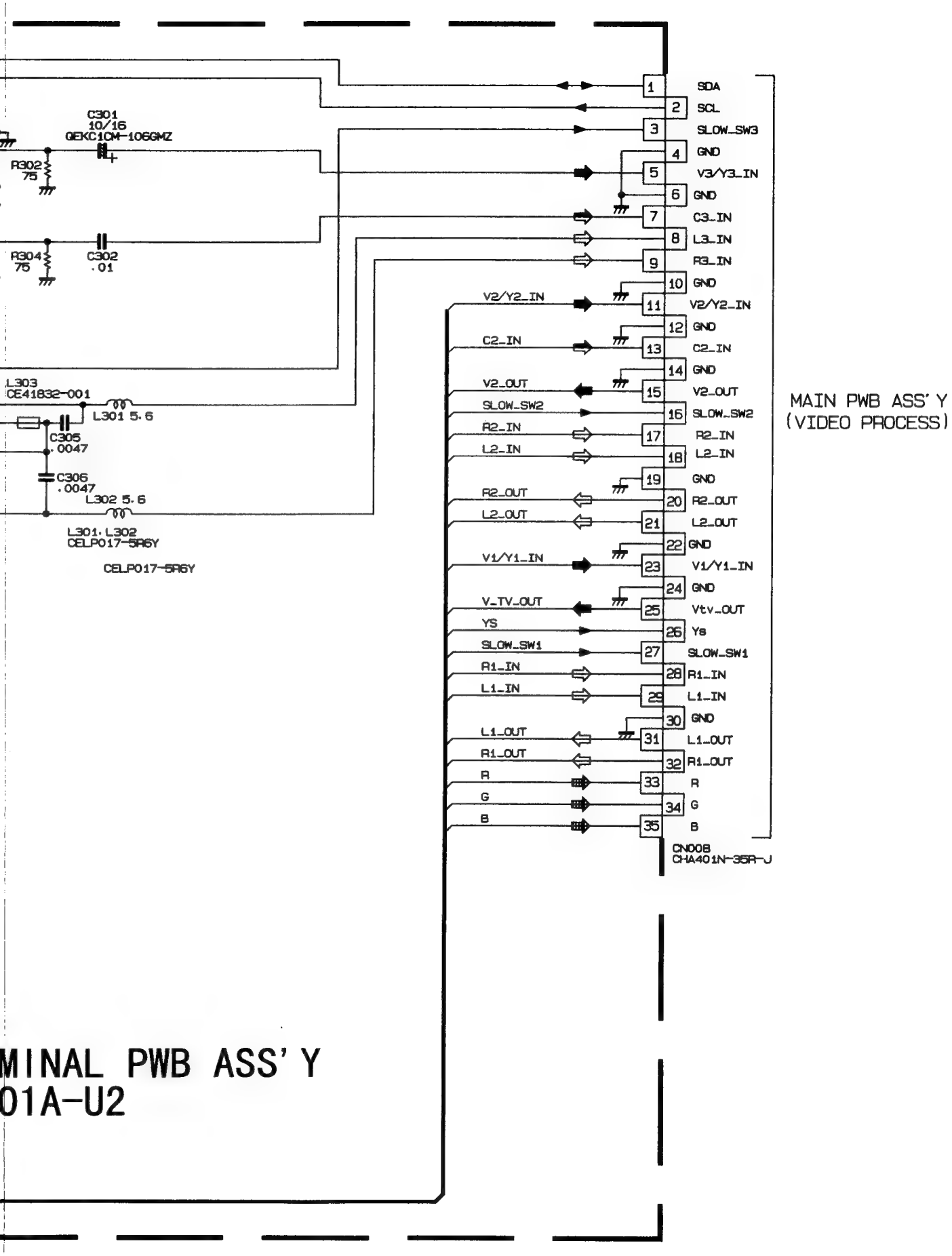
【 CRT SKT PWB CIRCUIT DIAGRAM 】



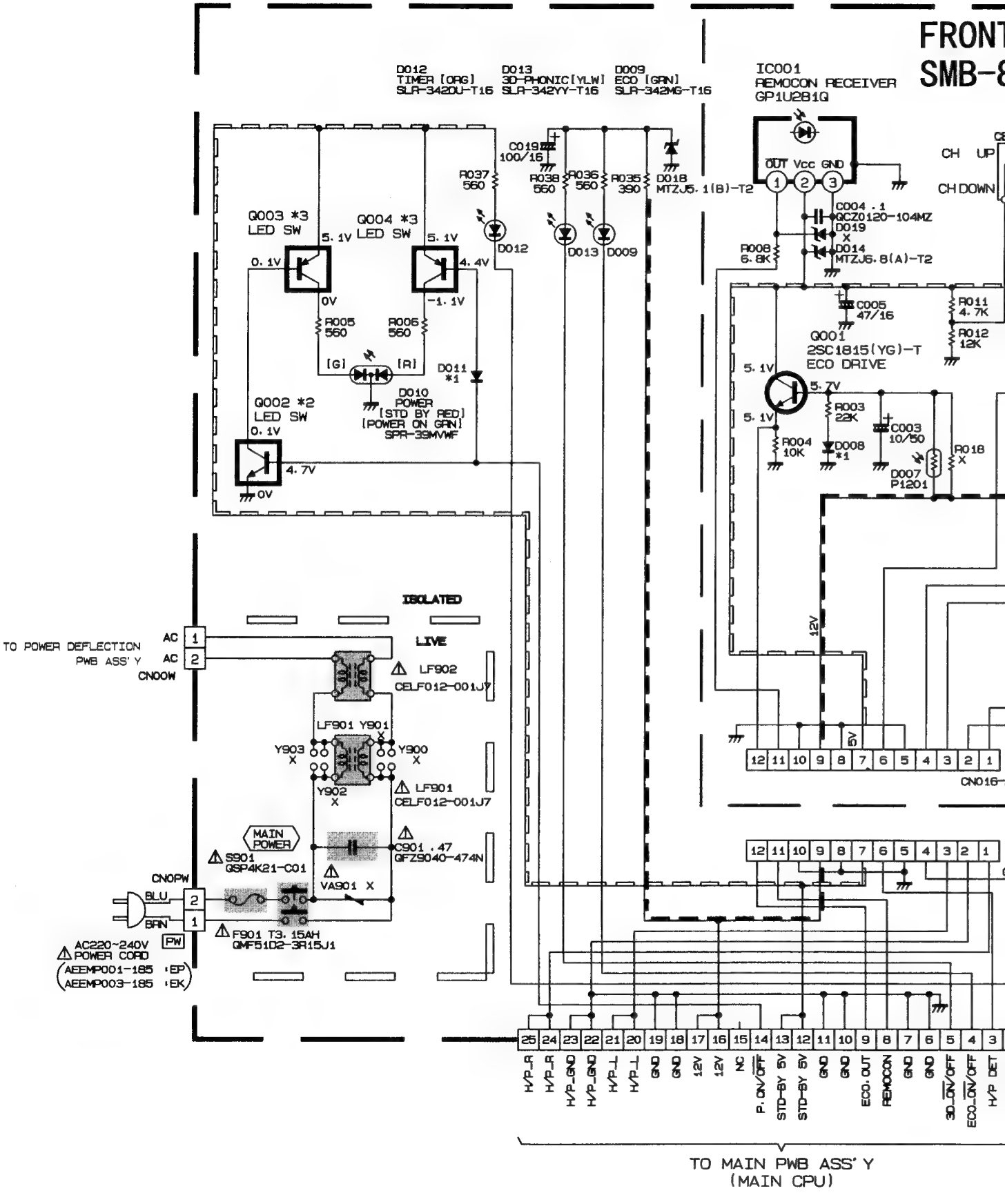

NOTE
*1: 2SC3311A(GR)-T
*2: 2SA1309A(GR)-T
*3: MA165-T2
*4: 1SS252-T2
BW: BUS WIRE
x : NON-MOUNT(OPEN)
V01(ITC) PICTURE TUBE
32" W76ESF031X44
V01 : W76ESF031X44
* DEFFERENCE LIST
SMB -3001A-U2
SK001 CE42670 -001
H203 CEHE002-001KH
H202 CEHE002-001KH
H201 CEHE002-001KH
Q B-OUT
Q R-OUT
Q G-OUT
TP-47B
TP-E
SK001
④ : NC
⑫ : ARRESTER GND
HV
FOCUS
SCREEN
CN0E1
CNSCN
CRT SOCKET CE42760-001
HEATER
: LOW B GND
(H) : HIGH B GND
CN00V CH41169-003Y
VM COIL
Q104 *2 VM DRIVE
Q105 2SA1837 VM OUT
Q106 2SC4793 VM OUT
K103 CE41492-001Z
K104 CE41492-001Z

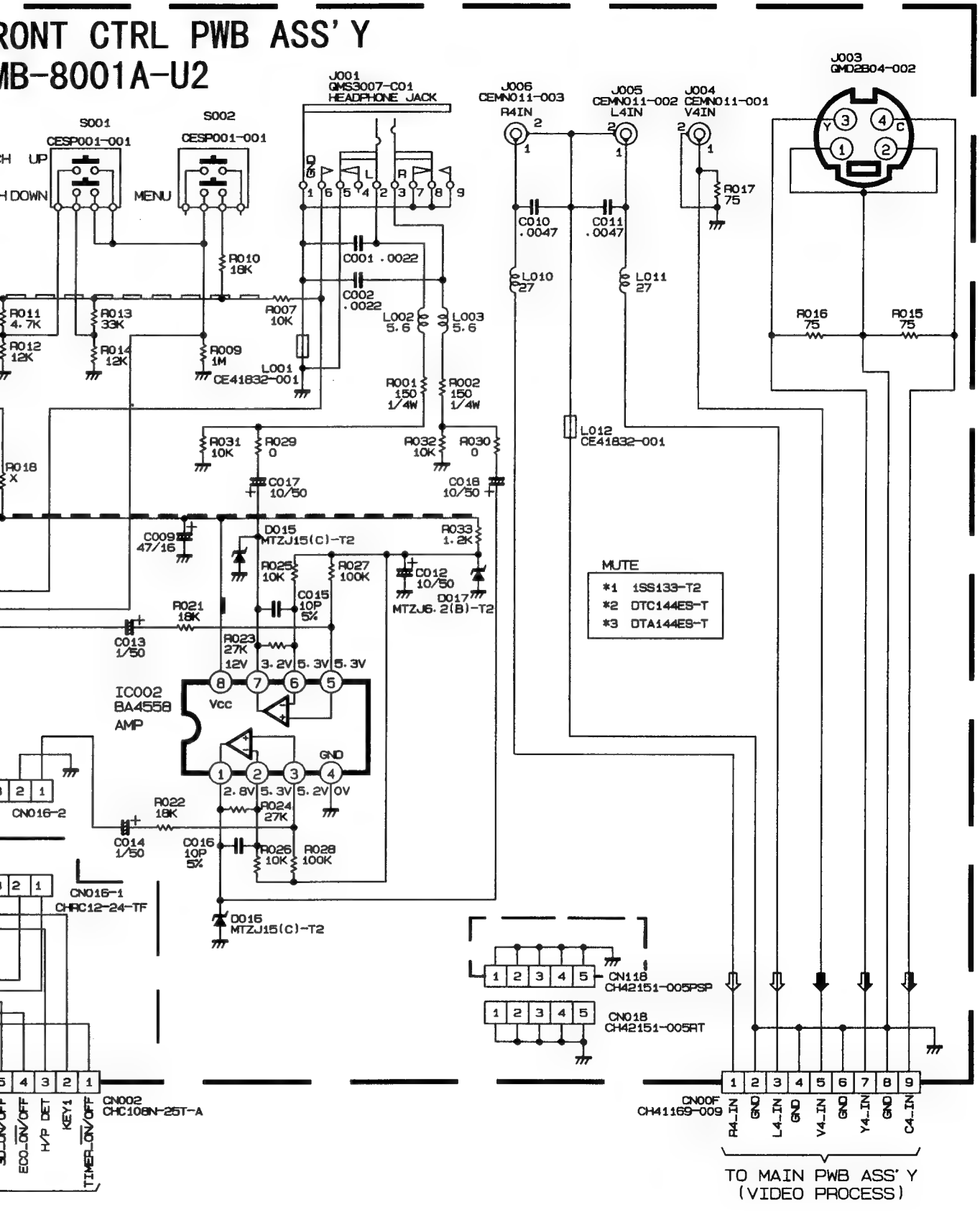
【 AV TERMINAL PWB CIRCUIT DIAGRAM 】



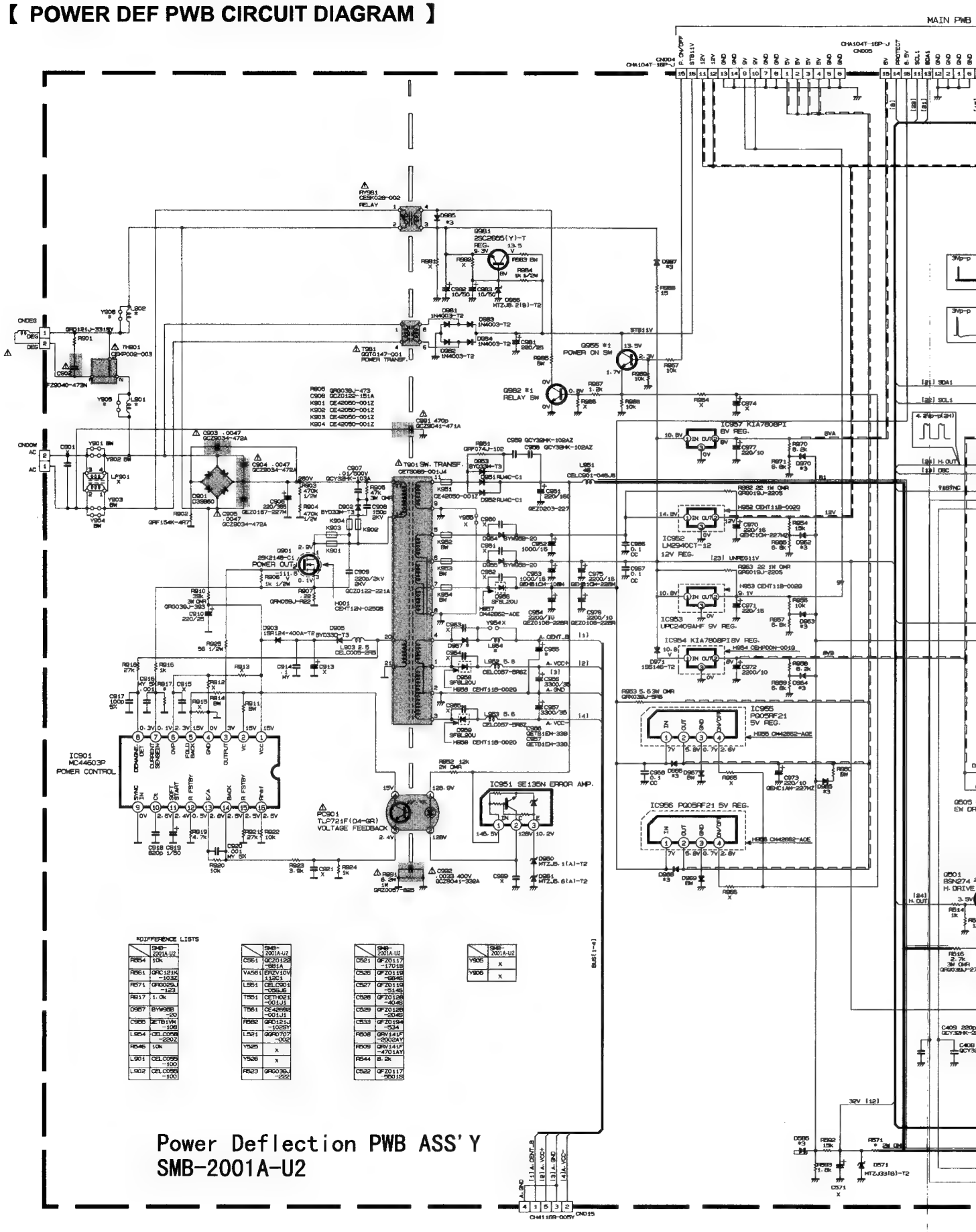

C301
10/16
QEKC1CM-106GMZ
R302
75
R304
75
C302
.01
L303
CE41832-001
L301 5.6
C305
.0047
C306
.0047
L302 5.6
L301.L302
CELP017-5R6Y
CELP017-5R6Y
1 SDA
2 SCL
3 SLOW_SW3
4 GND
5 V3/Y3_IN
6 GND
7 C3_IN
8 L3_IN
9 R3_IN
10 GND
11 V2/Y2_IN
12 GND
13 C2_IN
14 GND
15 V2_OUT
16 SLOW_SW2
17 R2_IN
18 L2_IN
19 GND
20 R2_OUT
21 L2_OUT
22 GND
23 V1/Y1_IN
24 GND
25 Vtv_OUT
26 Ys
27 SLOW_SW1
28 R1_IN
29 L1_IN
30 GND
31 L1_OUT
32 R1_OUT
33 R
34 G
35 B
CN008
CHA401N-35R-J
MAIN PWB ASS'Y
(VIDEO PROCESS)
MINAL PWB ASS'Y
01A-U2

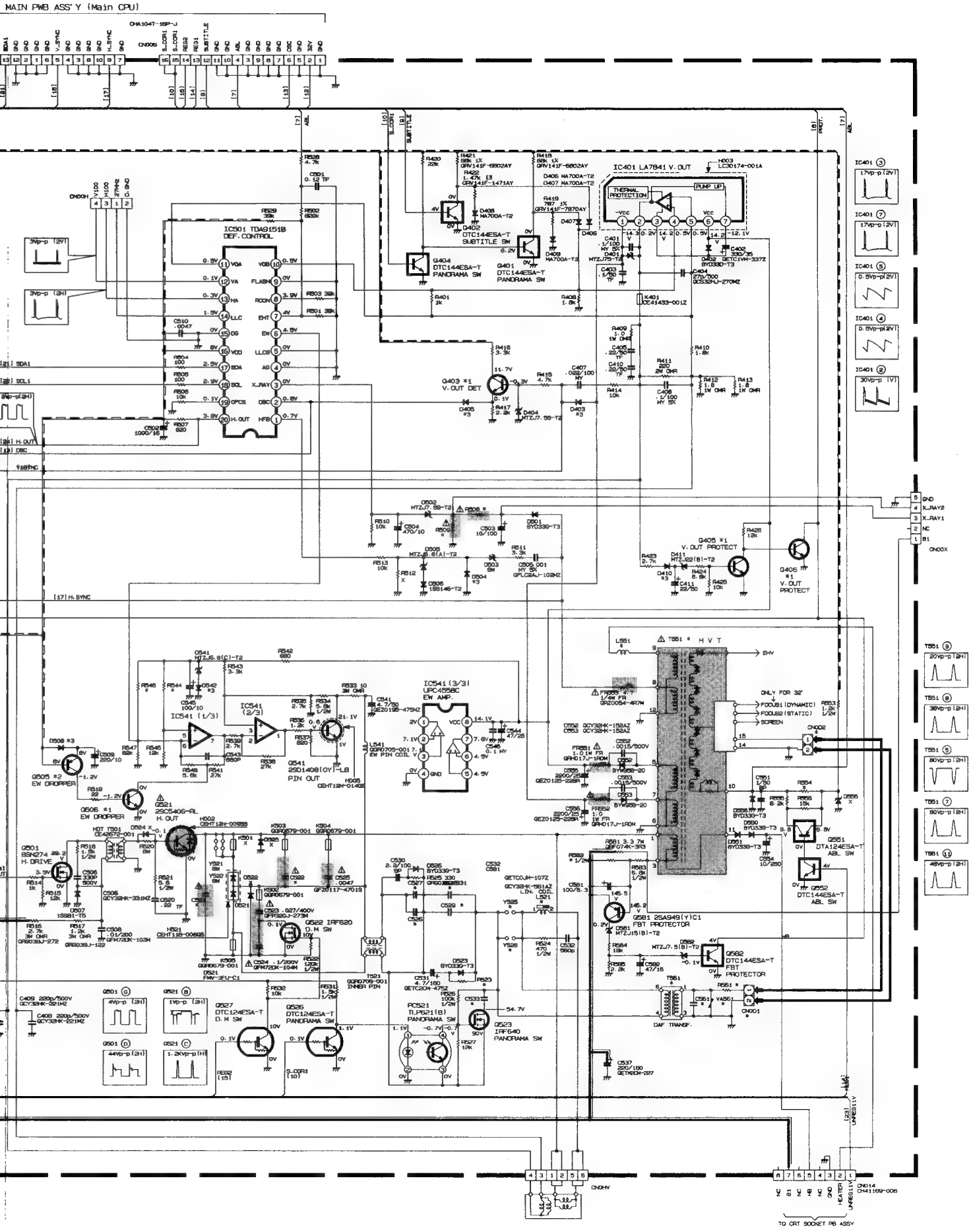
【 FRONT CONTROL PWB CIRCUIT DIAGRAM 】




RONT CTRL PWB ASS'Y
MB-8001A-U2
J001
QMS3007-C01
HEADPHONE JACK
J006
CEMN011-003
R4IN
J005
CEMN011-002
L4IN
J004
CEMN011-001
V4IN
J003
QMD2B04-002
S001
CESP001-001
S002
CESP001-001
MENU
R010
18K
C001 .0022
C002
.0022
R007
10K
L001
CE41832-001
L002
5.6
L003
5.6
R001
150
1/4W
R002
150
1/4W
C010
.0047
C011
.0047
L010
27
L011
27
R017
75
R016
75
R015
75
L012
CE41832-001
R011
4.7K
R013
33K
R012
12K
R014
12K
R009
1M
R018
X
R031
10K
R029
0
R032
10K
R030
0
C017
10/50
C018
10/50
C009
47/16
D015
MTZJ15(C)-T2
R033
1.2K
R025
10K
R027
100K
C012
10/50
D017
MTZJ6.2(B)-T2
C015
10P
5%
R021
18K
C013
1/50
R023
27K
12V
3.2V
5.3V
5.3V
IC002
BA4558
AMP
Vcc
GND
2.8V
5.3V
5.2V
0V
R022
18K
R024
27K
C014
1/50
C016
10P
5%
R026
10K
R028
100K
D016
MTZJ15(C)-T2
MUTE
*1 1SS133-T2
*2 DTC144ES-T
*3 DTA144ES-T
CN016-2
CN016-1
CHRC12-24-TF
CN118
CH42151-005PSP
CN018
CH42151-005RT
CN002
CHC108N-25T-A
SCLON/OFF
ECO_ON/OFF
H/P DET
KEY1
TIMER_ON/OFF
CN00F
CH41169-009
R4_IN
GND
L4_IN
GND
V4_IN
GND
Y4_IN
GND
C4_IN
TO MAIN PWB ASS'Y
(VIDEO PROCESS)

【 POWER DEF PWB CIRCUIT DIAGRAM 】




MAIN PWB ASS'Y (Main CPU)
IC401 LA7841 V. OUT
IC501 TDA9151B DEF. CONTROL
Q403 *1 V. OUT DET
Q405 *1 V. OUT PROTECT
IC541 (3/3) UPC1556C EW AMP
IC541 (1/3)
IC541 (2/3)
Q541 2SD1408(OY)-LB PIN OUT
Q505 *2 EW DROPPER
Q506 *1 EW DROPPER
Q521 2SC5406-AL H. OUT
Q501 2SA1274 H. DRIVE
Q581 2SA949(Y)C1 FBT PROTECTOR
Q582 DTC144ESA-T FBT PROTECTOR
Q551 DTA124ESA-T ABL SW
Q552 DTC144ESA-T ABL SW
Q527 DTC124ESA-T D.M SW
Q522 IRF620 D.M SW
Q525 DTC124ESA-T PANORAMA SW
Q523 IRF640 PANORAMA SW
Q526 TLP521(B) PANORAMA SW
Q402 DTC144ESA-T SUBTITLE SW
Q401 DTC144ESA-T PANORAMA SW
Q404 DTC144ESA-T PANORAMA SW
T551 * H V T
DAF TRANSF.
THERMAL PROTECTION
PUMP UP
ONLY FOR 32"
FOCUS1 (DYNAMIC)
FOCUS2 (STATIC)
SCREEN
EHV
CN001
CN002
CN003
CN004
CN005
CN006
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CN008
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CN010
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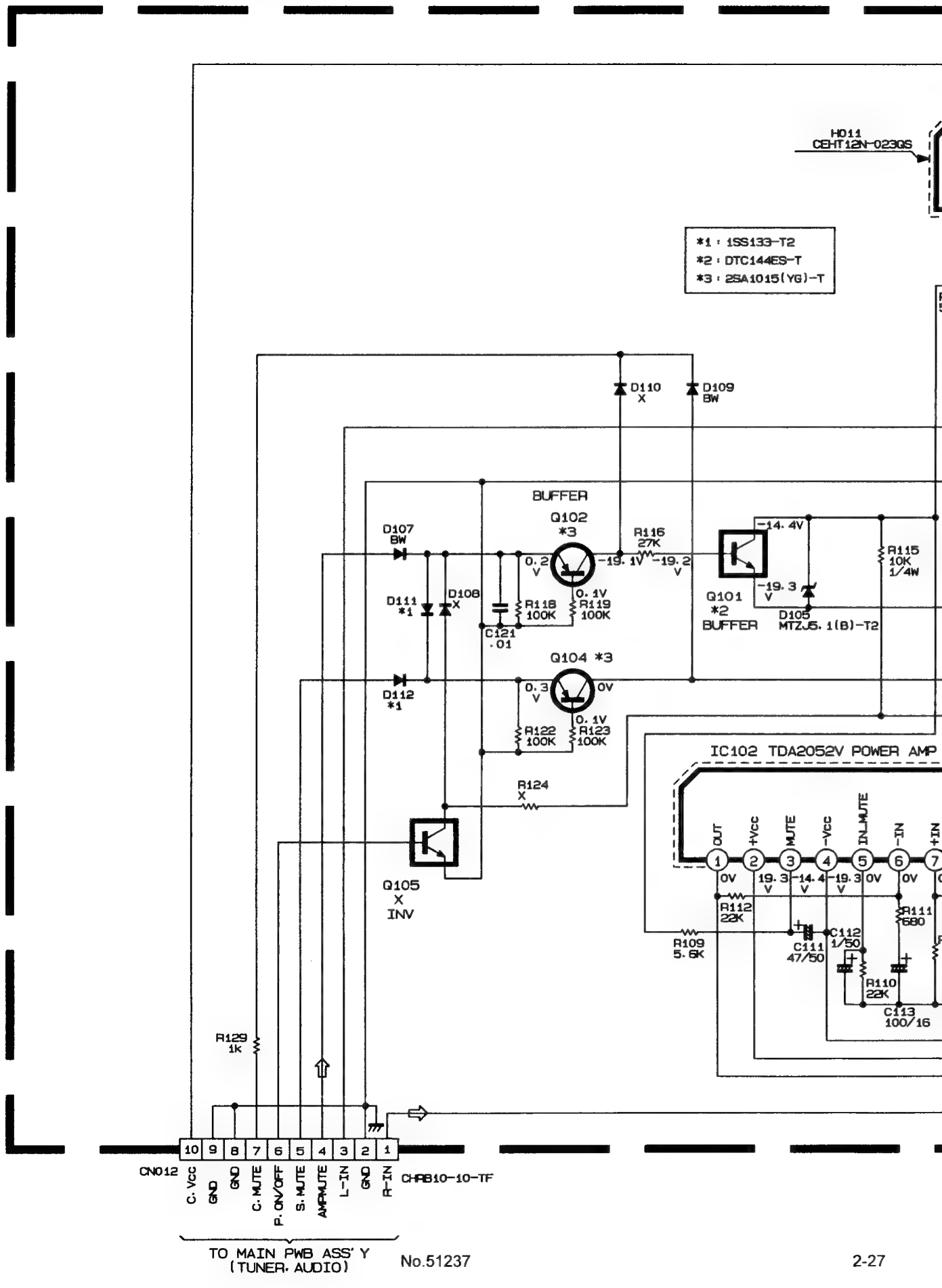
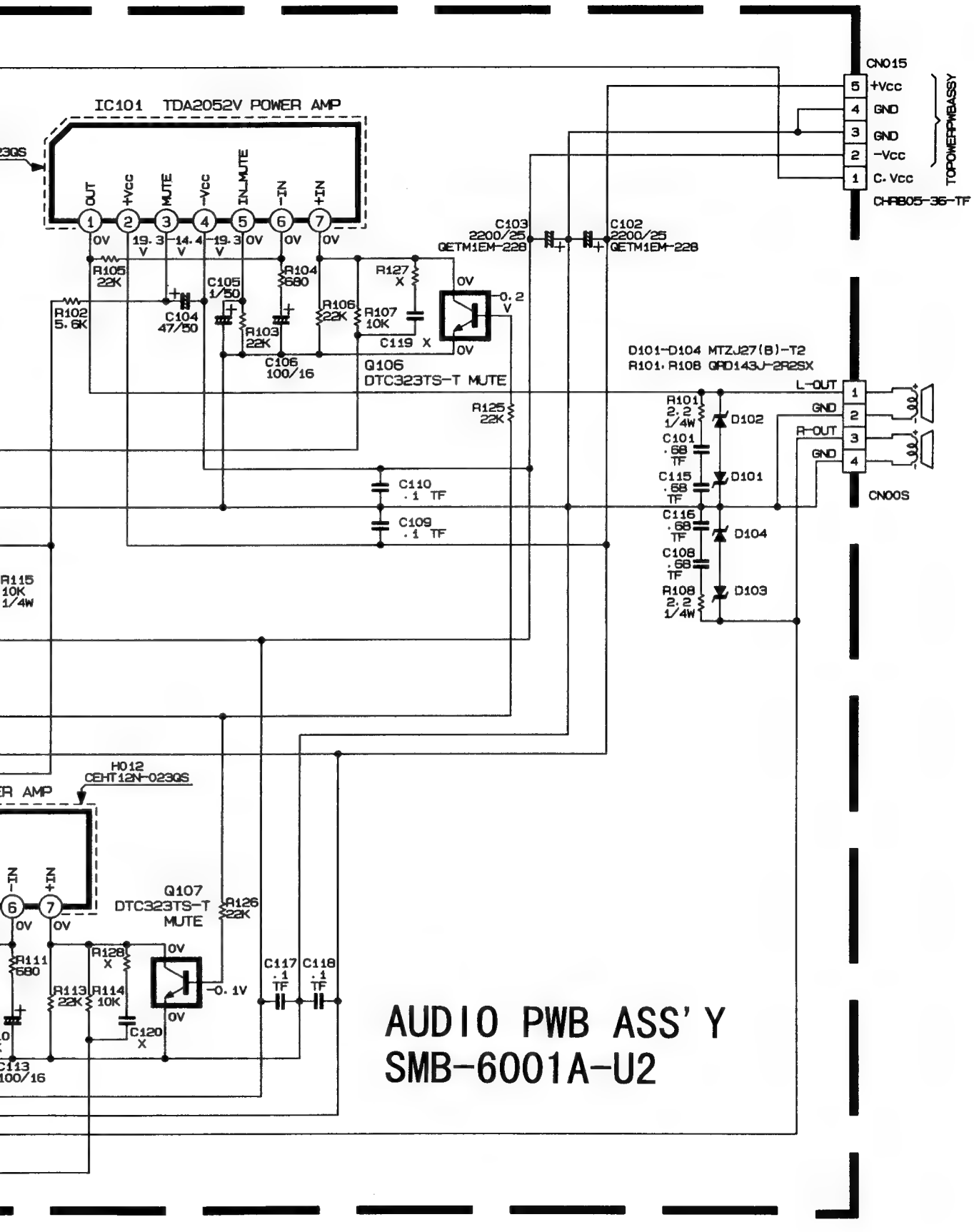
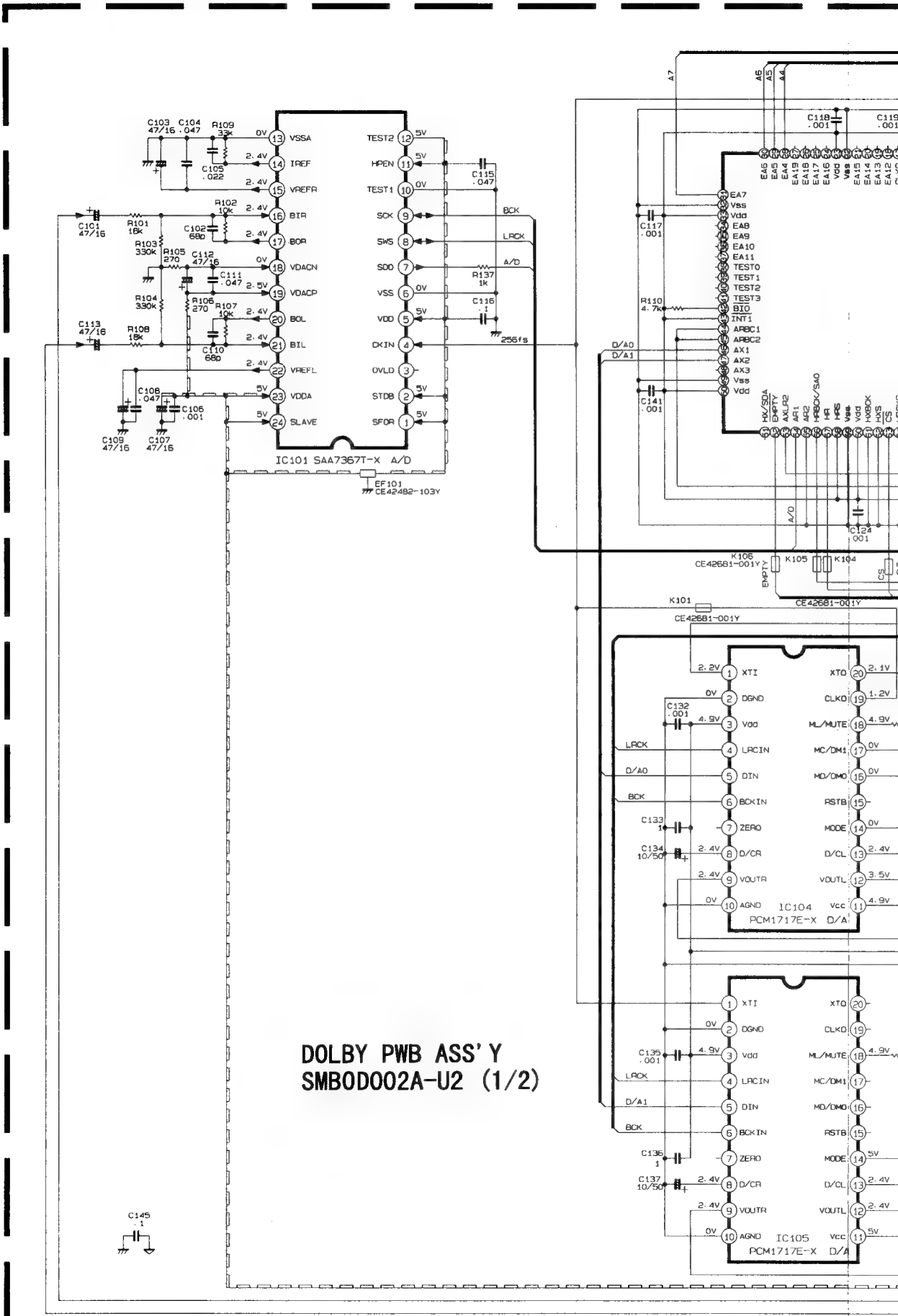
CN1000
TO CRT SOCKET PB ASSY

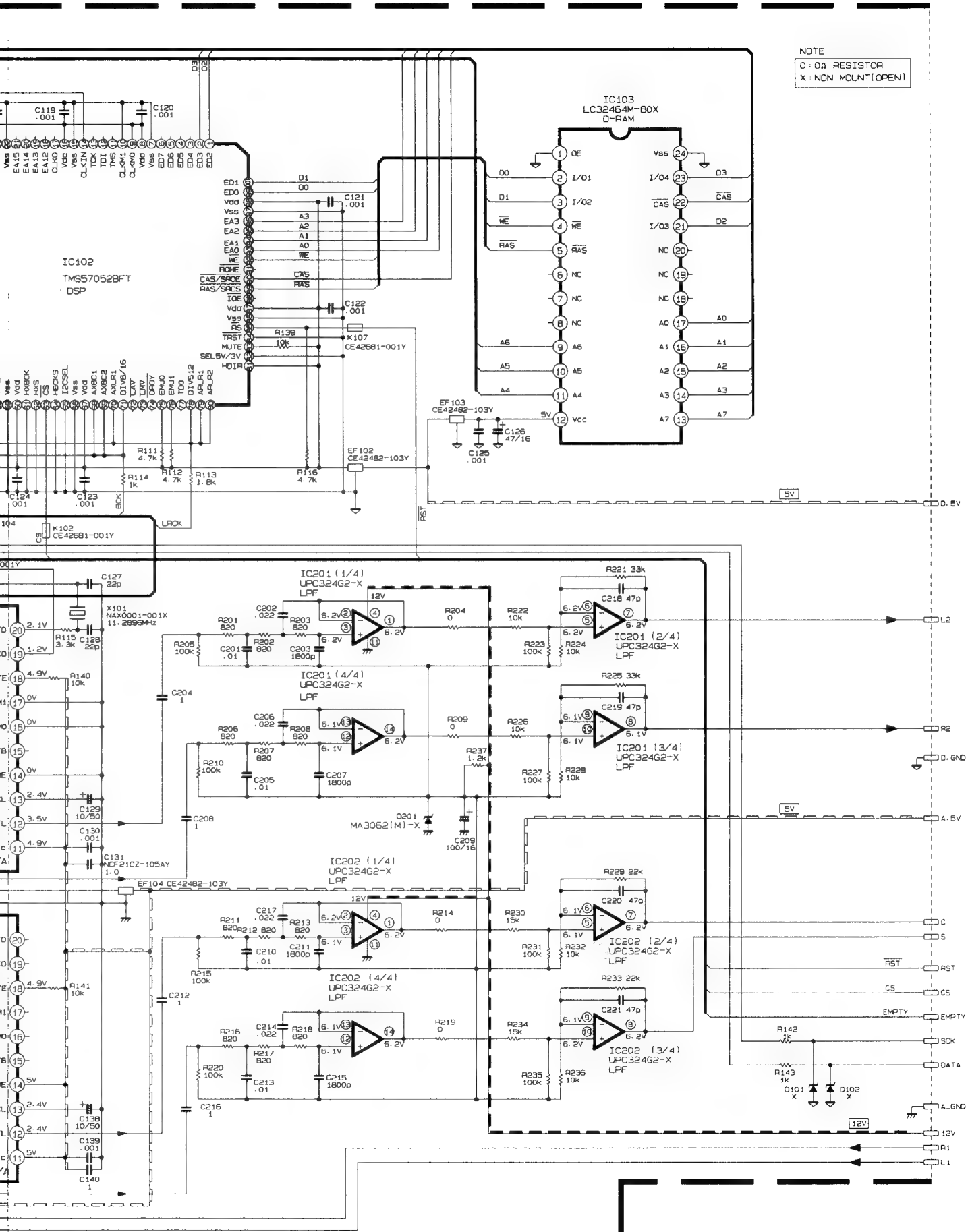
【 AUDIO PWB CIRCUIT DIAGRAM 】

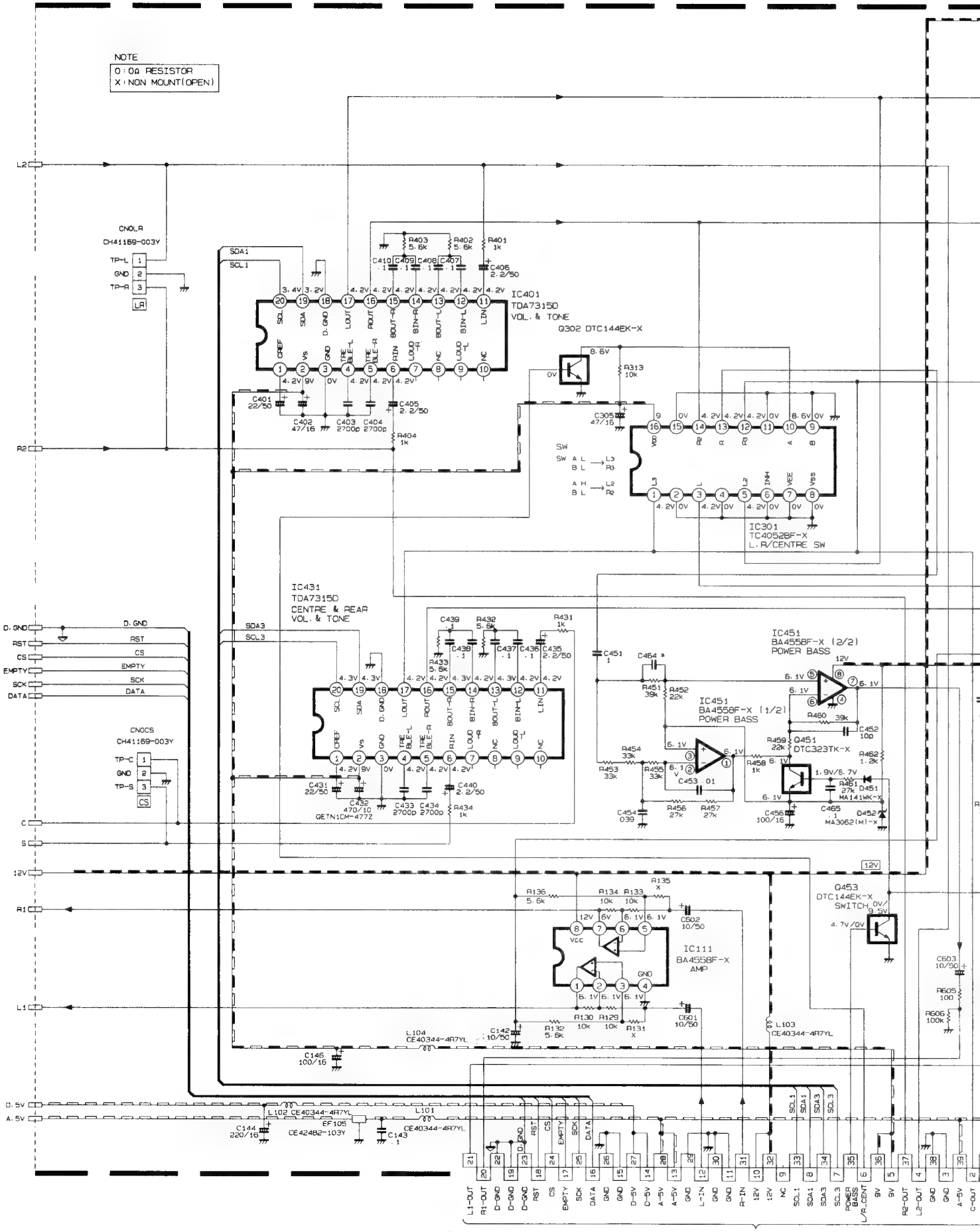


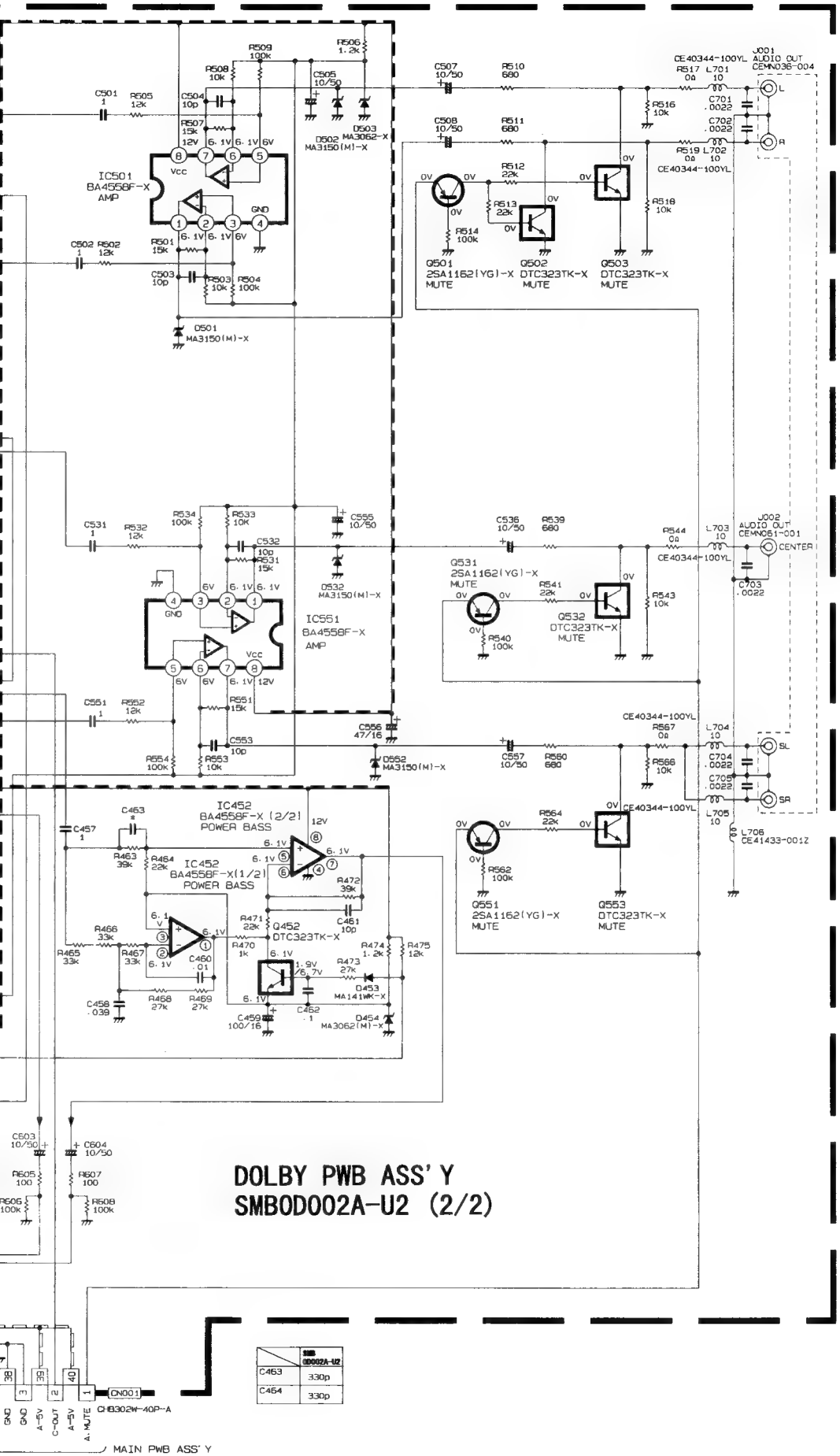

IC101 TDA2052V POWER AMP
OUT
+Vcc
MUTE
-Vcc
IN_MUTE
-IN
+IN
0V
19.3 V
14.4 V
19.3 V
0V
0V
0V
R105 22K
R102 5.6K
C104 47/50
C105 1/50
R103 22K
R104 680
C106 100/16
R106 22K
R107 10K
R127 X
C119 X
0V
0.2 V
0V
Q106 DTC323TS-T MUTE
C103 2200/25 QETM1EM-228
C102 2200/25 QETM1EM-228
CN015
5 +Vcc
4 GND
3 GND
2 -Vcc
1 C.Vcc
CHRB05-36-TF
TOPOWERPWBASSY
D101-D104 MTZJ27(B)-T2
R101.R108 GRD143J-2R2SX
L-OUT
GND
R-OUT
GND
CN00S
R101 2.2 1/4W
D102
C101 .68 TF
C115 .68 TF
D101
C116 .68 TF
D104
C108 .68 TF
R108 2.2 1/4W
D103
R125 22K
C110 .1 TF
C109 .1 TF
R115 10K 1/4W
H012 CEHT12N-023QS
Q107 DTC323TS-T MUTE
R126 22K
R128 X
0V
-0.1V
0V
R111 680
R113 22K
R114 10K
C120 X
C117 .1 TF
C118 .1 TF
C113 100/16
AUDIO PWB ASS'Y
SMB-6001A-U2

【 DOLBY PWB CIRCUIT DIAGRAM 】



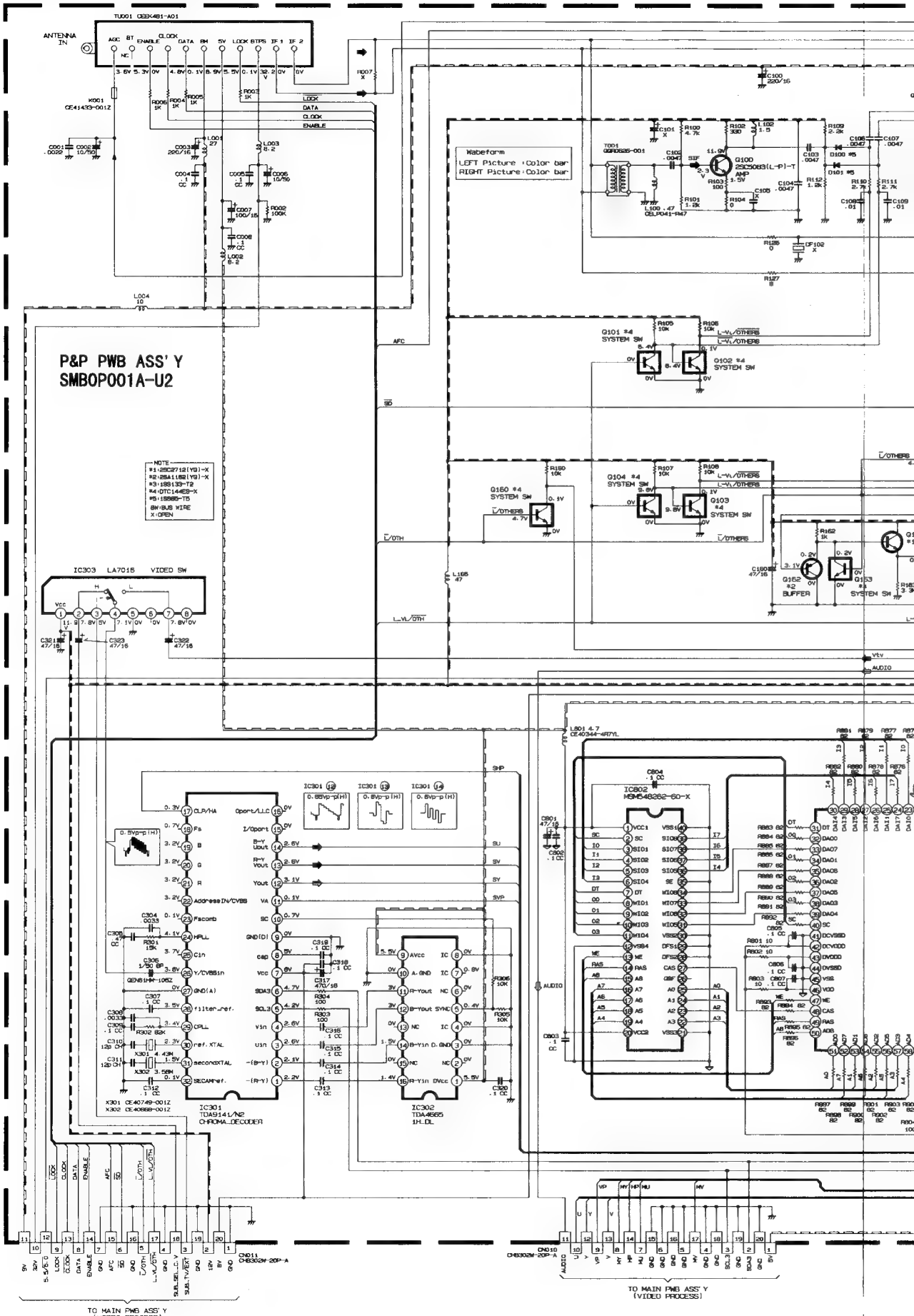

NOTE
0 : 0Ω RESISTOR
X : NON MOUNT(OPEN)
IC102
TMS57052BFT
DSP
IC103
LC32464M-80X
D-RAM
IC201 (1/4)
UPC324G2-X
LPF
IC201 (2/4)
UPC324G2-X
LPF
IC201 (3/4)
UPC324G2-X
LPF
IC201 (4/4)
UPC324G2-X
LPF
IC202 (1/4)
UPC324G2-X
LPF
IC202 (2/4)
UPC324G2-X
LPF
IC202 (3/4)
UPC324G2-X
LPF
IC202 (4/4)
UPC324G2-X
LPF
X101
NAX0001-001X
11.2896MHz
K102
CE42681-001Y
K107
CE42681-001Y
EF102
CE42482-103Y
EF103
CE42482-103Y
EF104
CE42482-103Y
D201
MA3062(M)-X
D101
X
D102
X
5V
12V
L2
R2
D.GND
A.5V
C
S
RST
CS
EMPTY
SCK
DATA
A_GND
12V
R1
L1

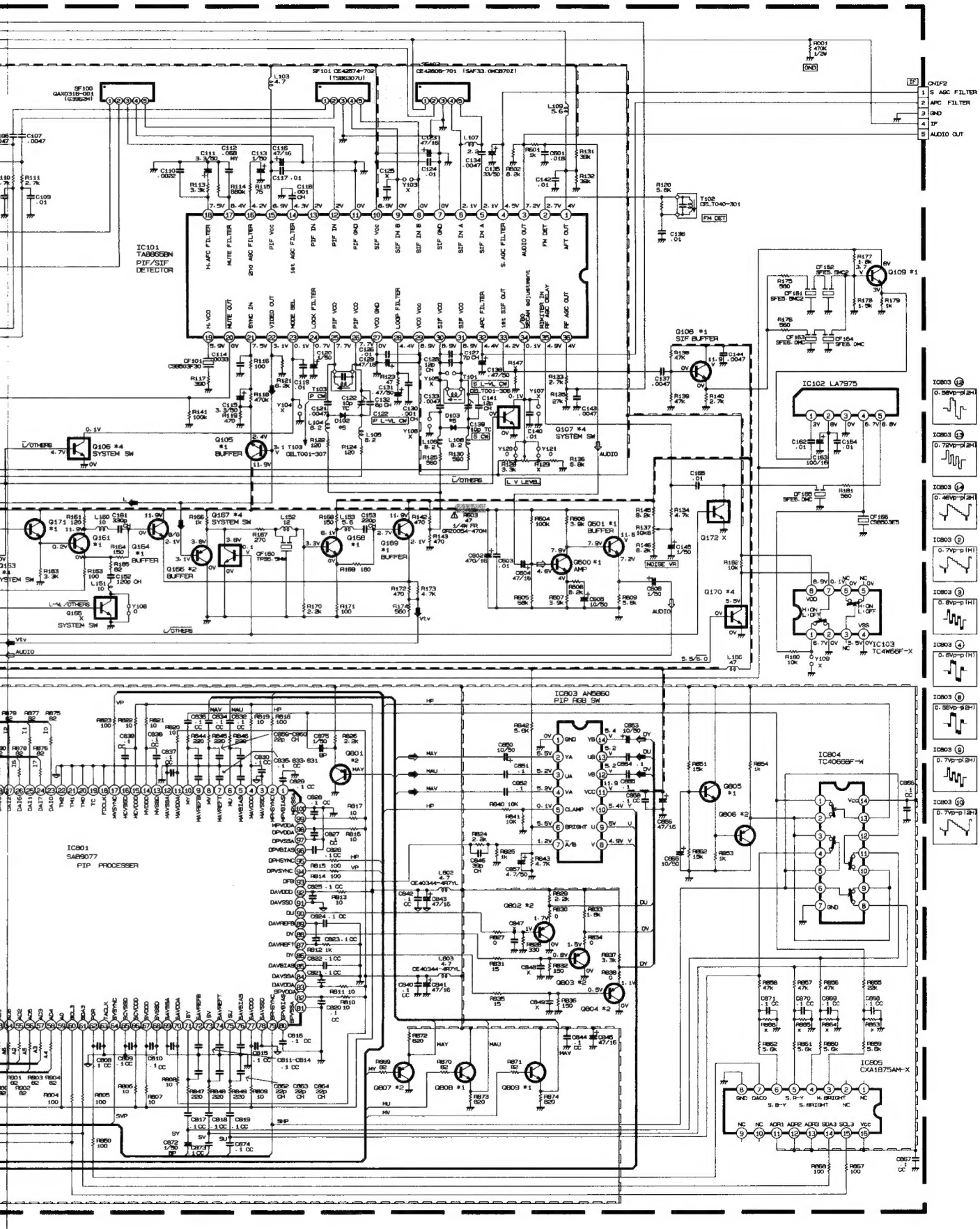

NOTE
0 : 0Ω RESISTOR
X : NON MOUNT(OPEN)
CN01A
CH41169-003Y
IC401
TDA7315D
VOL. & TONE
Q302 DTC144EK-X
IC301
TC40528F-X
L. R/CENTRE SW
IC431
TDA7315D
CENTRE & REAR
VOL. & TONE
IC451
BA4558F-X (2/2)
POWER BASS
IC451
BA4558F-X (1/2)
POWER BASS
Q451
DTC323TK-X
Q453
DTC144EK-X
SWITCH 0V/9.5V
IC111
BA4558F-X
AMP
CN03S
CH41169-003Y
D. GND
RST
CS
EMPTY
SCK
DATA
SDA1
SCL1
SDA3
SCL3
L2
R2
C
S
12V
R1
L1
D. 5V
A. 5V
No.51237
2-31



	SMB0D002A-U2
C463	330p
C464	330p

【 P&P PWB CIRCUIT DIAGRAM 】





MAIN PARTS LIST

EXPLODEDVIEW PARTS LIST

⚠	Ref No.	PARTS NAME	PARTS NO.		DESCRIPTION
			AV-32WP2EN	AV-32WP2EP	
⚠		ITC TUBE(C)	W76ESF031X44	←	V01 *
⚠		DEGAUSSING COIL	CELD062-001J2	←	L01 *
		ROTATION COIL	CELD904-001	←	L03 *
⚠		H.V. TRANSF.	CETH021-00AJ1	←	T2551 *
⚠		POWER CORD	AEEMP001-185	←	*
		SPEAKER	CEBSF10P-05KJ6	←	(x2) SP01/02 *
		SPEAKER	CEBSF10D-04KJ6	←	SP03 *
		DOME SPEAKER	2528MXSP-SZE-E	←	(x2) *
⚠		REAR COVER	CM12737-003-KD	←	
⚠		RATING LABEL	CM23048-008-E	←	*
⚠		RATING LABEL	CM23049-008-E	←	*
		FRONT CABINET ASSY	CM12587-A0N-KD	←	*
		OPERATION SHEET	CM36857-001	←	Within F.CABI ASSY *
		DOOR	CM23131-001-E	←	Within F.CABI ASSY *
		POWER KNOB	CM36225-010	←	Within F.CABI ASSY *
		JVC MARK	CM48125-001	←	Within F.CABI ASSY *
		INSULATOR ASSY(L)	CM35865-00U	←	Within F.CABI ASSY *
		INSULATOR ASSY(R)	CM35865-00V	←	Within F.CABI ASSY *

PACKING PARTS LIST

⚠	Ref No.	PARTS NAME	PARTS NO.		DESCRIPTION
			AV-32WP2EN	AV-32WP2EP	
		PACKING CASE	AEM1002-A43-E	←	*
		PACKING CUSHION	CP11549-00B-E	←	*
		SET COVER	AEM1004-007-E	←	*
		REMOCON UNIT	RM-C791-1E	←	*
		INST.BOOK	CQ40352-001-E	←	*
⚠		INST.BOOK	CQ40353-001-E	←	*
		EURO LABEL	AEM1038-060-E	←	*
		SCH.DIAGRAM	32WP2EN-HSAE	—	*

USING P.W.BOARD

PARTS NO.	PARTS NAME
SMB-1001A-U2	MAIN P.W.BOARD
SMB-2001A-U2	POWER DEF P.W.BOARD
SMB-3001A-U2	CRT SOCKET P.W.BOARD
SMB-6001A-U2	AUDIO P.W.BOARD
SMB-8001A-U2	FRONT COTROL P.W.BOARD
SMB0D002A-U2	DOLBY P.W.BOARD
SMB0P001A-U2	P&P P.W.BOARD
SMB0Z001A-U2	100Hz P.W.BOARD
SMB0J001A-U2	AV TERMINAL P.W.BOARD
SMB0F701A-U2	IF P.W.BOARD
SJF0W001A(U)	AUTO ASPECT MODULE