

1991



# Service Manual

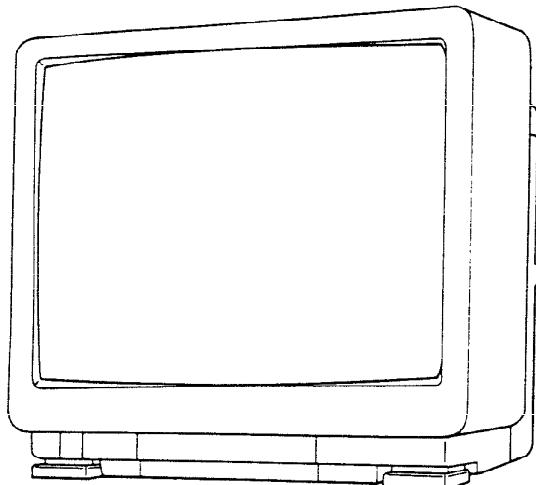
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MODEL

**CT-21A2STX**

**CT-21A2LST**

**CT-25A2STX**

**CT-25A2LST**

≡ CT-21A3STX .

≡ CT-25A3STX .



**MITSUBISHI ELECTRIC**

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**MITSUBISHI**

# **Service Manual**

*This service manual contains service parts listing only which are unique from their base model CT-21A2STX and CT-25A2STX.*

*All other information for CT-21A3STX, CT-25A3STX and CT-25A3STX(P) is identical to the base models.*

#### **MODELS:**

**CT-21A3STX  
CT-25A3STX  
CT-25A3STX(P)**

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## SPECIFICATION

<b>Reception System</b>	CCIR - I PAL
<b>Reception Frequency</b>	VHF 47MHz~300MHz : [CT - 25A2LST/CT - 21A2LST] UHF 470MHz~862MHz
<b>Mains Input</b>	AC240V 50Hz : [CT - 25A2STX/CT - 21A2STX] AC230V 50Hz : [CT - 25A2LST/CT - 21A2LST]
<b>Power Consumption</b>	95W : [CT - 25A2STX/CT - 25A2LST] 86W : [CT - 21A2STX/CT - 21A2LST]
<b>Aerial Input</b>	75 Ω
<b>Intermediate Frequency</b>	Video 39.5MHz Sound 33.5MHz/32.948MHz
<b>Audio Output Speaker</b>	10W + 10W (Music Power) 10cm (3.9") round 2pcs
<b>Chassis</b>	EURO 12
<b>Picture Tube</b>	A59ECY13X0125" 110° Deflection : [CT - 25A2STX/CT - 25A2LST] A51EAL55X0121" 90° Deflection : [CT - 21A2STX/CT - 21A2LST]
<b>Cabinet Dimensions (Approx.)</b>	574mm (W) × 509mm (H) × 489mm (D) 22.6" 20.0" 19.3" : [CT - 25A2STX/CT - 25A2LST] 504mm (W) × 453mm (H) × 480mm (D) 19.8" 17.8" 18.9" : [CT - 21A2STX/CT - 21A2LST]
<b>Weight (Approx.)</b>	28.4kg (62.7 lbs) : [CT - 25A2STX/CT - 25A2LST] 23.5kg (51.9 lbs) : [CT - 21A2STX/CT - 21A2LST]

## SAFETY PRECAUTIONS

**NOTICE :** Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

### WARNING

1. An isolation transformer should be used between the television receiver and the AC supply point before any test/service is performed on a HOT chassis television receiver.
2. Operation of these receivers outside the cabinet or with the cover removed, involves a shock hazard from the receiver power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with precautions necessary when working on high voltage equipment.
3. Do not install, remove or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
4. When service is required, observe the original lead dressing. Extra precaution should be given to assure correct lead dressing in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

## LEAKAGE CURRENT COLD CHECK

Before returning the receiver to the customer, it is recommended that the leakage current be measured according to the following methods.

With the AC plug removed from the AC source, place a jumper across the two AC plug prongs. Turn the receiver AC switch on. Using an OHM-METER, connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antennas, screwheads, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 1 meg ohm. Any resistance below this value indicates an abnormality which requires corrective action.

**CT-25A3STX  
SERVICE REFERENCE  
INFORMATION**

*This information shows unique service parts only. For the balance of service parts please refer to the CT-25A2STX service manual (part no. 871C409020)*

No.	UNIQUE SERVICE PARTS	CIRC REF.	PART NUMBER
1	CABINET FRONT	-	700A553090
2	BACK COVER	-	700C143080
3	INSTRUCTION BOOK	-	872C084010
4	CONT PCB ASSY	-	920D317090
5	AV PCB ASSY	-	920D358090
6	IC	IC702	IC702-KIT
7	MULTIPLE CR	CR	149P008010
8	CRYSTAL RESONATOR	X7701	285P062030
9	CRYSTAL RESONATOR	X7702	285P064030
10	CRYSTAL RESONATOR	X7704	285P064030

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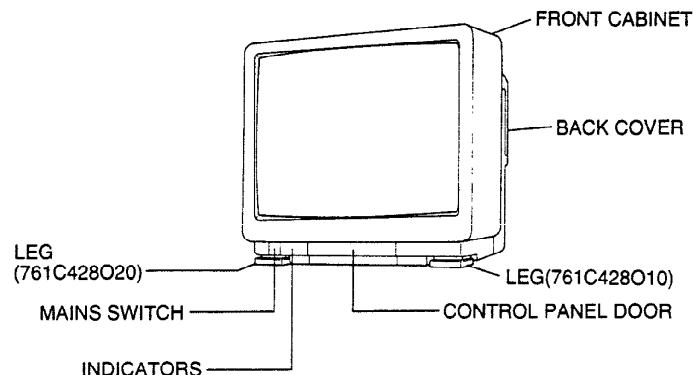
**CT-25A3STX P  
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INFORMATION**

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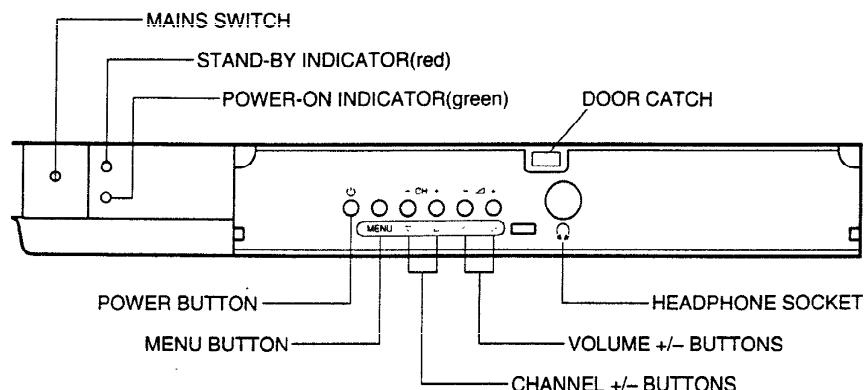
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9	CRYSTAL RESONATOR	X7702	285P064030
10	CRYSTAL RESONATOR	X7704	285P064030
11	CRT ASSY	V271	255P914030
12	CRT PCB ASSY	-	930C457005
13	RESISTOR	R454	103P397090
14	RESISTOR	R455	103P148010
15	RESISTOR	R671	103P448040
16	RESISTOR	R694	103C190060

## CONTROLS AND CABINET PARTS

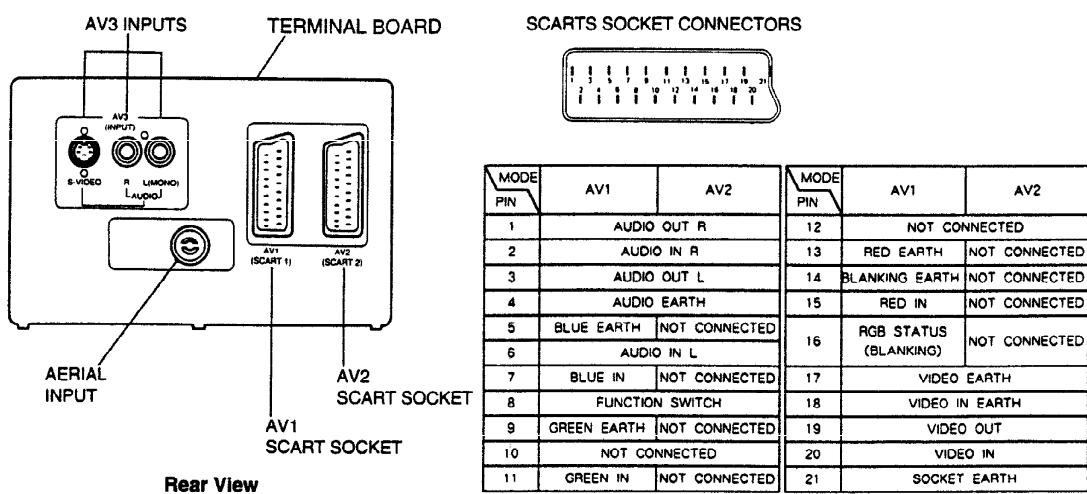
### CONTROL LOCATIONS



### CONTROL PANEL AND MAINS SWITCH



Note: In menu mode, CHANNEL +/- BUTTONS and VOLUME +/- BUTTONS control the menu function.



The lead wires to be clamped are listed in the table below.

Note: The inner wires are routed or clamped so that they do not come close to the heat generating or high-tension parts. After servicing route all wires in their original position.

The anode lead wires are routed so no tensile strength is applied to the anode cap. If the mounting angle of the anode cap and the route of the anode lead wires are changed, return them to the initial angle and route.

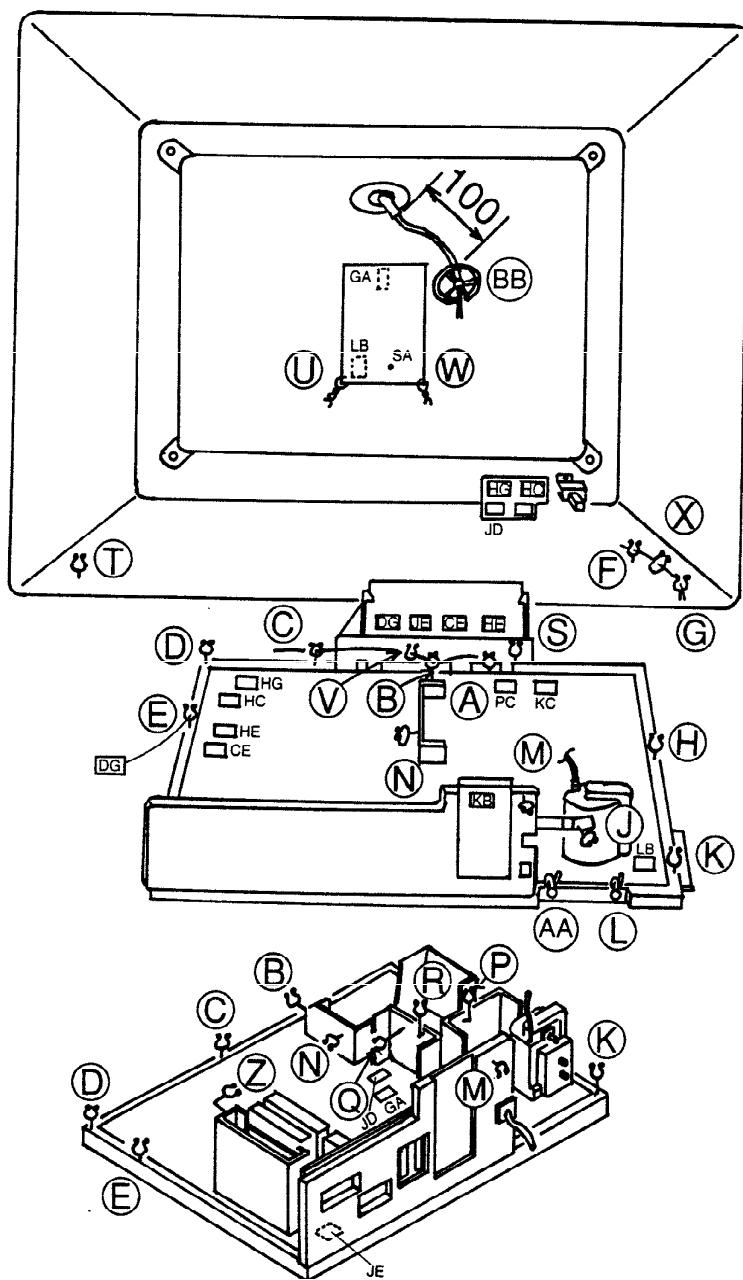
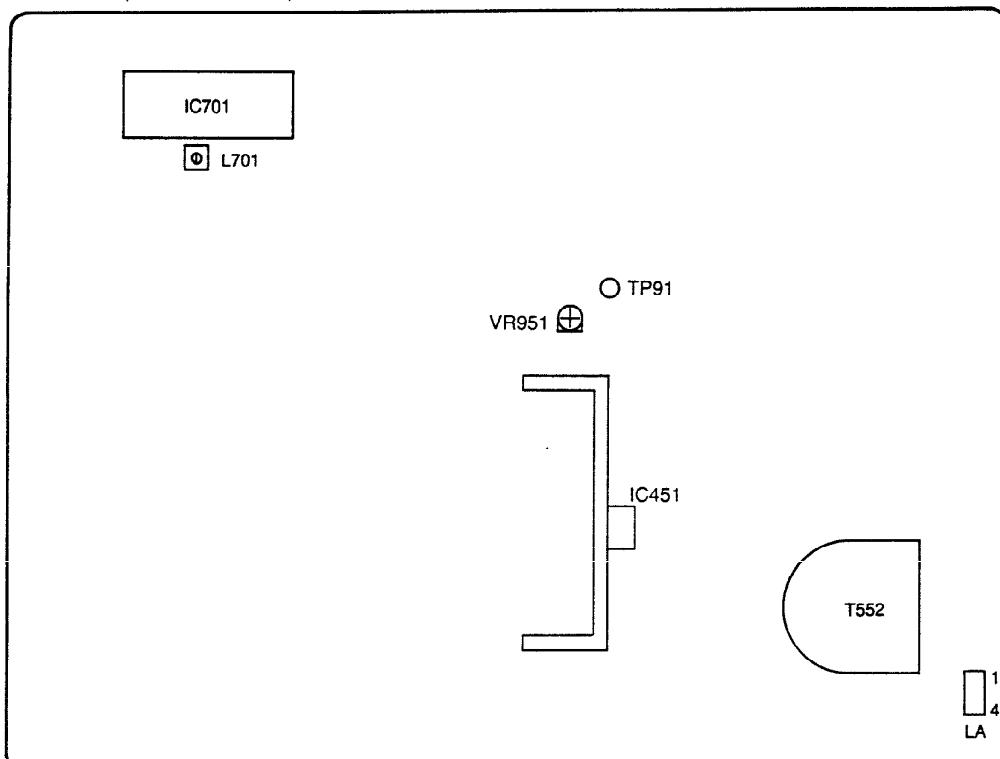


Fig. 1 Lead Dressing

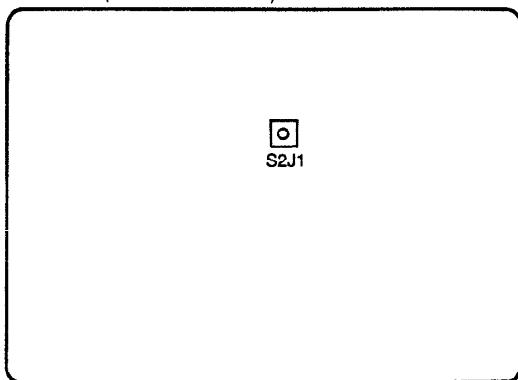
CLAMPER LIST FOR CONNECTOR LEAD

CONNECTOR LEAD	CLAMPER MARK
ANODE-LEAD	BB
CE	A-B-V-C-D-E
DG	A-B-V-C-D-E
DY	P-R-Q
FOCUS-LEAD	J-W
GA	R-U
HC	A-B-V-C-D-T-E-D
HE	A-B-V-C-D-E
HG	A-B-V-C-D-T-E-D
JD	A-B-C-N
JE	A-B-C-D-E-Z
KB	M-J-L-K-H-G-X-F-X-G-X-F
KC	S-G-X-F-X-G-X-F
LB	J
PC	S
SA	U(2 LAYER CLAMP)
SCREEN-LEAD	AA-J-W-U

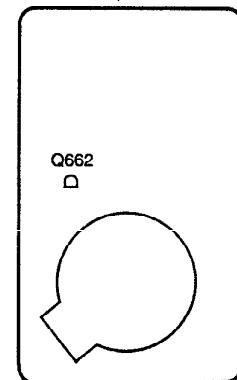
MAIN PCB (COMPONENT SIDE)



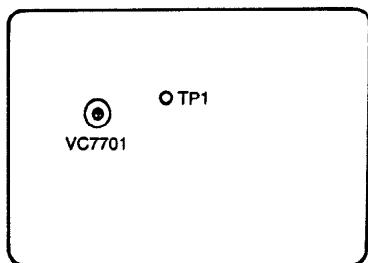
AV PCB (COMPONENT-SIDE)



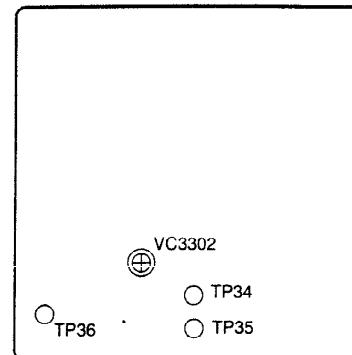
CRT PCB (COMPONENT SIDE)



TEXT PCB (COMPONENT SIDE)



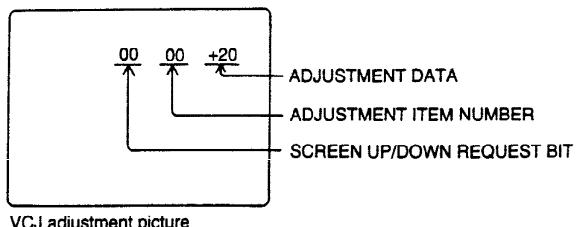
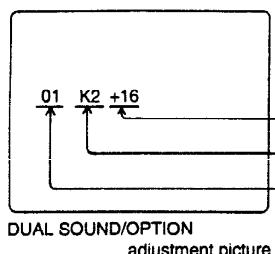
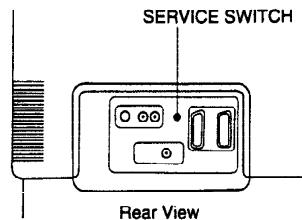
NICAM PCB(COMPONENT SIDE)



## OPERATING THE REMOTE HAND UNIT

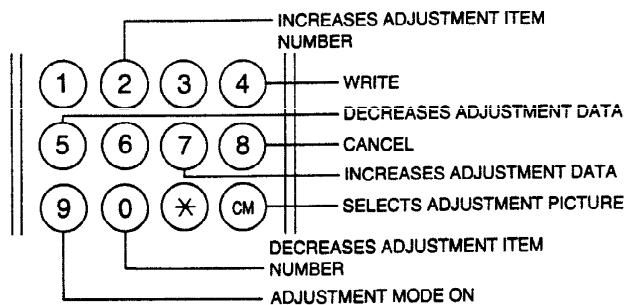
This model is normally adjusted with the remote hand unit and can memory the adjustment data in the EEPROM.

1. Turn the power on. Press the Service switch ( S2J1 ) and the button "9" within five seconds to set the adjustment mode.
2. Press "CM" button to select the VCJ or the DUAL SOUND/OPTION adjustment picture.



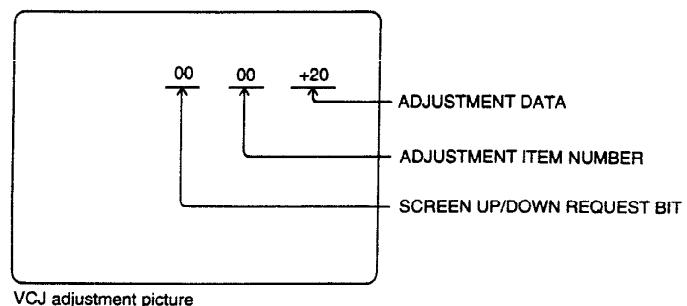
3. Press the button "2" ( to increase the adjustment item number ) or "0" ( to decrease the adjustment item number ) to select an adjustment item.
  4. Press the button "7" ( to increase the adjustment data value ) or "5" ( to decrease the value ).
  5. When completing your adjustment, press the button "4" ( WRITE ) to write the adjustment data in the EEPROM.
- If cancelling your changed data, for example, because of your mistake, press the button "8" or set power off.

The data will be set the former adjustment data before your adjustment.

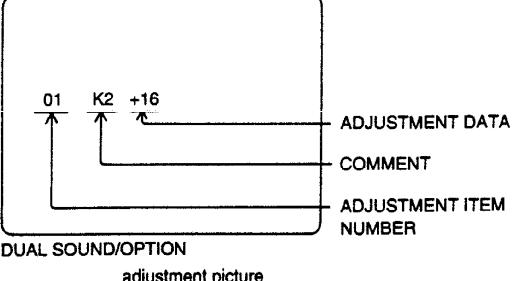


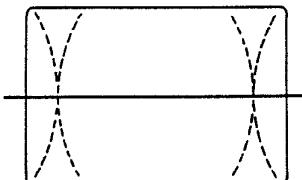
## Before Adjusting

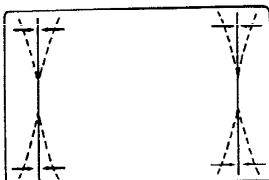
1. Supply RF signal ( programme ).
2. Press the Service switch ( S2J1 ) and the button "9" within five seconds to set the adjustment mode.
3. Press "CM" button to select the VCJ adjustment picture.
4. Make sure the Screen Up/Down Request Bit is "00".  
If not so, set it to "00" with the Screen control on the Flyback Transformer.



## ADJUSTMENT

No.	ITEM	ADJ. METHOD	ADJUSTMENT PROCEDURE																																															
1	OPTION	<ul style="list-style-type: none"> <li>• 03 ( TUNER PACK )</li> <li>• 04 ( E11 / E12 )</li> <li>• 05 ( DUAL SOUND )</li> <li>• 06 ( COLOUR )</li> <li>• 07 ( TEXT )</li> <li>• 08 ( AV4 )</li> <li>• 09 ( NICAM IC )</li> </ul>	<p>1. Select the DUAL SOUND/OPTION adjustment picture.      2. Press the button "2" or "0" on the remote hand unit to select the adjustment item numbers.      Set each value of the adjustment item numbers as shown in table below.      3. Press the button "4" ( WRITE ) on the remote hand unit to write in the EEPROM.</p> <table border="1" data-bbox="801 752 1198 965"> <thead> <tr> <th rowspan="2">Model</th> <th colspan="7">Adjustment Item Number</th> </tr> <tr> <th>03</th> <th>04</th> <th>05</th> <th>06</th> <th>07</th> <th>08</th> <th>09</th> </tr> </thead> <tbody> <tr> <td>CT-25A2STX</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>2</td> <td>0</td> <td>0</td> </tr> <tr> <td>CT-21A2STX</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>2</td> <td>0</td> <td>0</td> </tr> <tr> <td>CT-25A2LST</td> <td>1</td> <td>0</td> <td>1</td> <td>0</td> <td>2</td> <td>0</td> <td>0</td> </tr> <tr> <td>CT-21A2LST</td> <td>1</td> <td>0</td> <td>1</td> <td>0</td> <td>2</td> <td>0</td> <td>0</td> </tr> </tbody> </table>  <p>DUAL SOUND/OPTION adjustment picture</p>	Model	Adjustment Item Number							03	04	05	06	07	08	09	CT-25A2STX	0	0	1	0	2	0	0	CT-21A2STX	0	0	1	0	2	0	0	CT-25A2LST	1	0	1	0	2	0	0	CT-21A2LST	1	0	1	0	2	0	0
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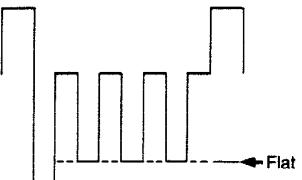
No.	ITEM	ADJ. METHOD	ADJUSTMENT PROCEDURE
<b>Deflection Circuit</b>			
* Before adjusting, set the adjustment item number "01" ( V-Breathing Correction ) to "-32".			
2	PAL HORIZONTAL CENTRE	• 09 ( H-PHASE )	<ol style="list-style-type: none"> <li>1. Connect a VCR and play an alignment tape ( PAL-Monoscope ).</li> <li>2. Select the VCJ adjustment picture.</li> <li>3. Set the adjustment item number to "09" with the button "2" or "0" on the remote hand unit.</li> <li>4. Adjust both horizontal marker width equally with the button "5" or "7" on the remote hand unit.</li> </ol>
3	PAL HORIZONTAL WIDTH (25" ONLY)	• 06 ( H-AMP )	<ol style="list-style-type: none"> <li>1. Connect a VCR and play an alignment tape ( PAL-Monoscope ).</li> <li>2. Select the VCJ adjustment picture.</li> <li>3. Set the adjustment item number to "06" with the button "2" or "0" on the remote hand unit.</li> <li>4. Adjust both horizontal width appropriately with the button "5" or "7" on the remote hand unit.</li> </ol>
4	PAL EAST-WEST PCC (25" ONLY)	• 05 ( CORNER CORRECTION )  • 03 ( PARABOLA TILT )	<ol style="list-style-type: none"> <li>1. Supply EXT signal ( PAL-Cross hatch ).</li> <li>2. Select the VCJ adjustment picture.</li> <li>3. Set the adjustment item number to "05" with the button "2" or "0" on the remote hand unit.</li> <li>4. Set the adjustment data value to "-32" with the button "7" or "5" on the remote hand unit.</li> <li>5. Set the adjustment item number to "03" ( PARABOLA TILT ) with the button "2" or "0" on the remote hand unit.</li> <li>6. Observing the second line from both ends on the screen. Make the upper and lower distortions symmetrical with the button "7" or "5" on the remote hand unit.</li> </ol> <p style="text-align: center;">  </p> <p>To be continued to the next page.</p>

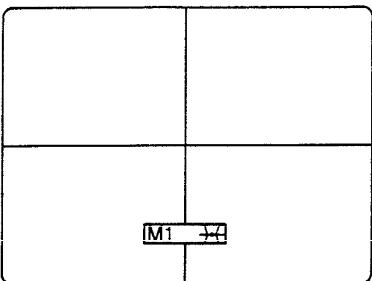
No.	ITEM	ADJ. METHOD	ADJUSTMENT PROCEDURE
		• 02 ( PARABOLA-TILT )	<p>7. Set the adjustment item number to "02" ( PARABOLA-AMP ) with the button "2" or "0" on the remote hand unit.</p> <p>8. Make both vertical lines straight with the button "7" or "5" on the remote hand unit. Repeat step 1 to 7 above, if necessary.</p>  <p>9. Connect a VCR and play an alignment tape ( PAL-Monoscope ).</p> <p>10. Make sure the horizontal width and horizontal centre. If shifted, adjust PAL Horizontal Centre ( No. 2 ) and PAL Horizontal Width ( No. 3 ) again.</p>

No.	ITEM	ADJ. METHOD	ADJUSTMENT PROCEDURE																																			
5	PAL HEIGHT AND LINEARITY	• 00 ( V-AMP ) • 04 ( V-LIN )	<ol style="list-style-type: none"> <li>1. Connect a VCR and play an alignment tape ( PAL Monoscope ).</li> <li>2. Select the VCJ adjustment picture.</li> <li>3. Press "OPTIMUM" button.</li> <li>4. Set the adjustment item number to "00" ( V-HEIGHT ) with the button "2" or "0" on the remote hand unit.</li> <li>5. Set the central circle of monoscope signal to true circle with the button "7" or "5" on the remote hand unit.</li> <li>6. Set the adjustment item number to "04" ( V-LIN ) with the button "2" or "0" on the remote hand unit.</li> <li>7. Equal a size ratio of the upper and lower of the largest circle in the centre, on the basis of the horizontal marker in the Monoscope signal with the button "7" or "5" on the remote hand unit.</li> <li>8. Set the adjustment item number to "00" ( V-HEIGHT ) with the button "2" or "0" on the remote hand unit.</li> <li>9. Set the central circle of monoscope signal to true circle with the button "7" or "5" on the remote hand unit.</li> <li>10. Repeat steps above, if necessary.</li> </ol>																																			
6	PAL VERTICAL CENTRE POSITION	• 08 ( V-POSITION )	<ol style="list-style-type: none"> <li>1. Connect a VCR and play an alignment tape ( PAL Monoscope ).</li> <li>2. Select the VCJ adjustment picture.</li> <li>3. Set the adjustment item number to "08" ( V-POSITION ) with the button "2" or "0" on the remote hand unit.</li> <li>4. Set the deviation of horizontal marker of Monoscope within <math>\pm 3\text{mm}</math> from the vertical centre on the screen with the button "7" or "5" on the remote hand unit.</li> </ol>																																			
7	NTSC DEFLECTION CIRCUIT	<ul style="list-style-type: none"> <li>• 33 ( H-PHASE )</li> <li>• 31 ( H-AMP )</li> <li>• 30 ( PARABOLA-AMP )</li> <li>• 2F ( V-AMP )</li> <li>• 32 ( V-POSITION )</li> </ul>	<ol style="list-style-type: none"> <li>1. Supply EXT signal ( NTSC Cross hatch ).</li> <li>2. Select the VCJ adjustment picture.</li> <li>3. Select the Adjustment Item numbers with the button "2" or "0" on the remote hand unit to adjust as shown in table below with the button "7" or "5" on the remote hand unit.</li> </ol> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Model</th> <th colspan="5">Adjustment item Number</th> </tr> <tr> <th>33</th> <th>31</th> <th>30</th> <th>2F</th> <th>32</th> </tr> </thead> <tbody> <tr> <td>CT-25A2STX</td> <td>+5</td> <td>+2</td> <td>+2</td> <td>+2</td> <td>-12</td> </tr> <tr> <td>CT-21A2STX</td> <td>+4</td> <td>—</td> <td>—</td> <td>+2</td> <td>-10</td> </tr> <tr> <td>CT-25A2LST</td> <td>+5</td> <td>+2</td> <td>+2</td> <td>+2</td> <td>-12</td> </tr> <tr> <td>CT-21A2LST</td> <td>+4</td> <td>—</td> <td>—</td> <td>+2</td> <td>-10</td> </tr> </tbody> </table>	Model	Adjustment item Number					33	31	30	2F	32	CT-25A2STX	+5	+2	+2	+2	-12	CT-21A2STX	+4	—	—	+2	-10	CT-25A2LST	+5	+2	+2	+2	-12	CT-21A2LST	+4	—	—	+2	-10
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CT-25A2LST	+5	+2	+2	+2	-12																																	
CT-21A2LST	+4	—	—	+2	-10																																	

No.	ITEM	ADJ. METHOD	ADJUSTMENT PROCEDURE
8	WHITE	<ul style="list-style-type: none"> <li>• 0A ( B-DRIVE )</li> <li>• 0B ( G-DRIVE )</li> <li>• 0C ( R-DRIVE )</li> </ul>	<ol style="list-style-type: none"> <li>1. Connect a VCR and play an alignment tape ( PAL Monoscope ).</li> <li>2. Select the VCJ adjustment picture.</li> <li>3. Set the adjustment item number of "0A", "0B" and "0C" to all "0" with the button "2" or "0" and "7" or "5" on the remote hand unit.</li> <li>4. Adjust the adjustment item numbers "0A" and "0C" to set white on the screen to the best.</li> </ol>
9	FOCUS	<ul style="list-style-type: none"> <li>• FOCUS control ( Flyback Transformer )</li> </ul>	<ol style="list-style-type: none"> <li>1. Supply RF signal ( PAL programme ).</li> <li>2. Adjust FOCUS control to the best overall focus.</li> </ol>

No.	ITEM	ADJ. METHOD	ADJUSTMENT PROCEDURE										
<b>VIDEO CIRCUITS</b>													
<ul style="list-style-type: none"> <li>* Perform the following adjustment after adjusting the Deflection Circuit adjustment.</li> <li>* Turn on power over 20 minutes before this adjustment for complete warm-up.</li> </ul>													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">10</td> <td style="width: 20%;">Video Circuits</td> <td style="width: 30%;"> <ul style="list-style-type: none"> <li>• SCREEN control ( Flyback Transformer )</li> <li>• 0F ( COLOUR SATURATION )</li> <li>• 0E ( BRIGHTNESS )</li> <li>• DC ammeter's (+)lead to the connector LA pin ① ( MAIN-PCB ) and (-) lead to the connector LA pin ④ ( MAIN PCB )</li> <li>• 0D ( CONTRAST )</li> </ul> </td> <td style="width: 40%;"> <ol style="list-style-type: none"> <li>1. Connect a VCR and play an alignment tape ( PAL Monoscope ).</li> <li>2. Select the VCJ adjustment picture.</li> <li>3. Make sure that Screen Up/Down Request Bit is "00". If not so, set it to "00" with the SCREEN control on the Flyback Transformer.</li> <li>4. Supply EXT signal ( PAL Cross hatch ).</li> <li>5. Adjust SCREEN control on the Flyback Transformer so that Screen Up/Down Request Bit is "00". Supply Monoscope signal again to make sure that Screen Up/Down Request Bit is "00".</li> <li>6. Supply EXT signal ( PAL Colour Bar ).</li> <li>7. Set the adjustment item number to "0F" ( COLOUR SATURATION ) with the button "2" or "0" on the remote hand unit.</li> <li>8. Set the adjustment data value to "-32" with the button "7" or "5" on the remote hand unit.</li> <li>9. Set the adjustment item number to "0E" ( BRIGHTNESS ) with the button "2" or "0" on the remote hand unit.</li> <li>10. Make sure that the blue bar area does not brighten.</li> <li>11. Turn the red bar area a little brighter without brightening the former blue bar area with the button "7" or "5" on the remote hand unit.</li> <li>12. Set the adjustment item number to "0D" ( CONTRAST ) with the button "2" or "0" on the remote hand unit.</li> <li>13. 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No.	ITEM	ADJ. METHOD	ADJUSTMENT PROCEDURE
11	COLOUR OUT-PUT	<ul style="list-style-type: none"> <li>• Oscilloscope CH-1 to the Base of Q662 ( CRT PCB )</li> <li>• 0F ( COLOUR SATURATION )</li> <li>• 10 ( HUE )</li> </ul>	<p>*Perform the adjustment after the White and Video Circuit adjustment.</p> <ol style="list-style-type: none"> <li>1. Supply EXT signal ( PAL Colour bar ).</li> <li>2. Select the VCJ adjustment picture.</li> <li>3. Set the adjustment item number to "0F" ( COLOUR SATURATION ) with "2" or "0" on the remote hand unit.</li> <li>4. Adjust the waveform as shown in figure below with the button "7" or "5" on the remote hand unit.</li> </ol>  <ol style="list-style-type: none"> <li>5. Set the adjustment item number to "10"(HUE) with the button "2" or "0" on the remote hand unit.</li> <li>6. Set the adjustment data value to "0" with the button "7" or "5" on the remote hand unit.</li> <li>7. After completing the steps above, increase five digits in the adjustment item number "0F" ( COLOUR SATURATION ).</li> </ol>

No.	ITEM	ADJ. METHOD	ADJUSTMENT PROCEDURE
<b>Micro Computer Circuit</b>			
12	DISPLAY POSITION	• L701 ( MAIN PCB )	<p>1. Supply RF signal (Programme).      2. Press "OPTIMUM" button on the remote hand unit.      3. Adjust L701 (CHARA) so that the Optimum Display should be in the middle of the horizontal width of the picture.</p>  <p style="text-align: center;">Optimum Display</p>
<b>Text Circuit</b>			
<p>* Turn on power over five minutes before this adjustment for complete warm-up.</p>			
13	TELETEXT FREE RUN FREQUENCY	• Frequency counter to TP1 ( TEXT PCB ) • VC7701 ( TEXT PCB )	<p>1. Set the no signal condition in the RF mode.      2. Adjust VC7701 so that the frequency is <math>6000.2 \pm 0.2\text{kHz}</math>.</p>

No.	ITEM	ADJ.METHOD	ADJUSTMENT PROCEDURE
<b>NICAM Circuit</b>			
14	NICAM Carrier Frequency	<ul style="list-style-type: none"> <li>• Frequency counter's (+) lead to TP34(NICAM PCB) and (-) lead to TP35(NICAM PCB)</li> <li>• VC3302(NICAM PCB)</li> </ul>	<ol style="list-style-type: none"> <li>1. Set the no signal condition in the RF mode.</li> <li>2. Connect TP36 to GND.</li> <li>3. Adjust VC3302 so that the frequency is <math>6.552\text{MHz} \pm 1\text{kHz}</math></li> </ol>
<b>Power Circuit</b>			
15	B4 VOLTAGE (21" ONLY)	<ul style="list-style-type: none"> <li>• DC voltmeter's(+) lead to TP91 (MAIN PCB) and (-) lead to radiator of IC451 (MAIN PCB)</li> <li>• VR951 (MAIN PCB)</li> </ul>	<ol style="list-style-type: none"> <li>1. Supply EXT signal (grey stair step signal).</li> <li>2. Push "OPTIMUM" button on the remote hand unit.</li> <li>3. Adjust VR951 (DC-SET) so that voltage is 122V.</li> </ol>

## WHEN CHANGING IC702 ( EEPROM )

**NOTE:** When changing IC702 ( EEPROM ), format it in accordance with step 2 and 3 below.

( Do not perform step 1 and 4. )

**NOTE:** If formatting IC702 ( EEPROM ) again, perform step 1 to 4 below.

1. Turn the Main switch off. Connect IC701 pin 23 through 100Ω ( 1/4 W ) resistor to GND.
2. Turn the Main switch on, when EEPROM starts to be formatted with the STAND BY LED indicating.
  - It will take about three seconds to be formatted.
  - The remote hand unit and the switches of this model can't be performed during format.
3. Press the power button on the remote hand unit to make sure finishing the format.  
When the power turns on, the format is completed.
4. Remove the resistor connected to IC702 pin 23.

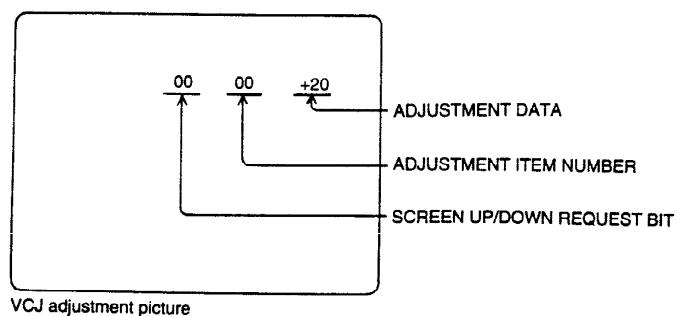
Initial Value of EEPROM

VCJ		
ADJUSTMENT ITEM NUMBER	INITIAL VALUE	ITEM
00	0	V-AMP
01	0	V-BREATHING CORRECTION
02	0	PARABOLA-AMP
03	0	PARABOLA-TILT
04	0	V-LIN
05	0	CORNER CORRECTION
06	0	H-AMP
07	0	—
08	0	V-POSITION
09	0	H-PHASE
0A	0	BLUE DRIVE
0B	0	GREEN DRIVE
0C	0	RED DRIVE
0D	0	CONTRAST
0E	0	BRIGHTNESS
0F	0	COLOUR SATURATION
10	0	HUE
17	111	—
18	010	—
2F	0	V-AMP (NTSC)
30	0	PARABOLA-AMP (NTSC)
31	0	H-AMP (NTSC)
32	0	V-POSITION (NTSC)
33	0	H-PHASE (NTSC)

DUAL SOUND		
ADJUSTMENT ITEM NUMBER	INITIAL VALUE	ITEM
01	+32	K2
OPTION		
03	0	TUNER PACK
04	0	E11/E12
05	0	DUAL SOUND
06	0	COLOUR
07	0	TEXT
08	0	AV4
09	0	NICAM IC

## WHEN CHANGING FLYBACK TRANSFORMER

1. Supply RF signal ( programme ).
2. Press the Service switch ( S2J1 ) and the button "9" on the remote hand unit within five seconds to turn the adjustment mode on.
3. Press "CM" button to select the VCJ Adjustment Picture.
4. Make sure that the Screen Up/Down Request Bit is "00" on both bright and dark pictures.  
If not so, set it to "00" with the Screen Control on the Flyback Transformer.  
Screen Up/Down Request Bit is :
  - "01" : Turn the Screen Control counterclockwise.
  - "10" : Turn the Screen Control clockwise.



## PARTS LIST

MODEL : CT - 21A2STX / CT - 21A2LST  
CT - 25A2STX / CT - 25A2LST

In order to expedite delivery of replacement part orders.

- Specify :
1. Model number / Serial number
  2. Part number and Description
  3. Quantity

Unless full information is supplied, delay in execution of orders will result.

$\triangle$  : Critical components       $\circ$  : New Parts

MARK	B	C	D	F	G	J	K
TOLERANCE (%)	$\pm 0.1$	$\pm 0.25$	$\pm 0.5$	$\pm 1$	$\pm 2$	$\pm 5$	$\pm 10$

MARK	M	N	V	X	Z	P	Q
TOLERANCE (%)	$\pm 20$	$\pm 30$	$+10$ $-10$	$+40$ $-20$	$+80$ $-20$	$+100$ $-0$	$+30$ $-10$

MARK	B	C	D	F	G
TOLERANCE (pF)	$\pm 0.1$	$\pm 0.25$	$\pm 0.5$	$\pm 1$	$\pm 2$

## ABBREVIATION

- [21S] : CT - 21A2STX  
[21L] : CT - 21A2LST  
[25S] : CT - 25A2STX  
[25L] : CT - 25A2LST

[21S] : CT - 21A2STX [21L] : CT - 21A2LST  
 [25S] : CT - 25A2STX [25L] : CT - 25A2LST

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
TUBES							
AV 271	255P801010	CRT ASSY	A51EAL55X01 [21L, 21S]	Q 3302	260P543030	TRANSISTOR	JC501-R
AV 271	255P930010	CRT ASSY	A59ECY13X01 [25L, 25S]	Q 3303	260P543030	TRANSISTOR	JC501-R
INTEGRATED CIRCUITS							
IC1A1	272P654010	IC	M51497L	Q 401	260P543030	TRANSISTOR	JC501-R
IC201	272P590010	IC	MC44000	Q 402	260P428020	TRANSISTOR	2SC2168-O, Y
IC202	272P124010	IC	NJM2208S	Q 501	260P543030	TRANSISTOR	JC501-R
IC251	272P027010	IC	AN5862K	Q 551	260P422010	TRANSISTOR	2SC2482
IC2J1	272P575010	IC	CXA1114P	Q 552	260P606010	TRANSISTOR	2SD1877 [21L, 21S]
IC361	272P459010	IC	TA8200AH/MC13500	Q 552	260P607010	TRANSISTOR	2SD1878 [25L, 25S]
IC3302	266P620010	IC	AN608P [21L, 25L]	Q 553	260P543050	TRANSISTOR	JC501-Q
IC3302	266P982010	IC	AN608P [21S, 25S]	Q 554	260P543050	TRANSISTOR	JC501-Q
IC3303	266P620010	IC	AN608P [21L, 25L]	Q 651	260P425080	TRANSISTOR	2SC688-L, M, N
IC3303	266P982010	IC	AN608P [21S, 25S]	Q 652	260P425080	TRANSISTOR	2SC688-L, M, N
IC3304	272P666020	IC	TB1210N	Q 653	260P425080	TRANSISTOR	2SC688-L, M, N
IC3305	272P284010	IC	TD6710AN	Q 654	260P44030	TRANSISTOR	JA101-Q
IC3306	272P667010	IC	AFS816F14000A1	Q 655	260P654030	TRANSISTOR	2SC2058S-0
IC3307	266P172010	IC	M5218L	Q 656	260P654030	TRANSISTOR	2SC2058S-0
IC3309	272P752010	IC	TDA8425	Q 657	260P654030	TRANSISTOR	2SC2058S-Q
IC451	272P588020	IC	TDA8178S	Q 658	260P422010	TRANSISTOR	2SC2482
IC551	272P406010	IC	TEA2031A [25L, 25S]	Q 659	260P422010	TRANSISTOR	2SC2482
IC601	272P591010	IC	MC44140	Q 660	260P422010	TRANSISTOR	2SC2482
IC602	272P170010	IC	TDA4565 CTI	Q 661	260P514010	TRANSISTOR	BF423
IC701	263P432020	IC	CXP80424-123S	Q 662	260P514010	TRANSISTOR	BF423
IC702	263P434020	IC	X24C04P	Q 663	260P514010	TRANSISTOR	BF423
IC704	274P008050	IC	MN1380-T	Q 665	260P543050	TRANSISTOR	JC501-Q
IC7705	272P096020	IC	SAA5231	Q 666	260P544030	TRANSISTOR	JA101-Q
IC7706	272P095050	IC	SAA52430/E	Q 6J1	260P543050	TRANSISTOR	JC501-Q
IC7707	263P622020	IC	HM6264ALSP10/12	Q 702	260P543050	TRANSISTOR	JC501-Q
IC7708	263P434010	IC	X24C02P	Q 703	260P543050	TRANSISTOR	JC501-Q
IC7709	272P193010	IC	MA88461P	Q 704	260P543050	TRANSISTOR	JC501-Q
IC901	272P514010	IC	TEA2261	Q 705	260P543050	TRANSISTOR	JC501-Q
IC950	272P412010	IC	TEA5170	Q 706	260P635010	TRANSISTOR	2SC3065F/2SC3065G
IC951	267P076010	IC	SI-3120C	Q 707	260P635010	TRANSISTOR	2SC3065F/2SC3065G
IC952	267P076030	IC	SI-3050C	Q 708	260P543050	TRANSISTOR	JC501-Q
IC954	266P922010	IC	$\mu$ PC78M05H	Q 709	260P543050	TRANSISTOR	JC501-Q
IC955	266P010020	IC	$\mu$ PC574J-K	Q 710	260P543050	TRANSISTOR	JC501-Q
TRANSISTORS							
Q 102	260P543050	TRANSISTOR	JC501-Q	Q 7704	260P654020	TRANSISTOR	2SC2058S-P
Q 1A1	260P543050	TRANSISTOR	JC501-Q	Q 7705	260P543050	TRANSISTOR	JC501-Q
Q 202	260P543050	TRANSISTOR	JC501-Q	Q 7707	260P543050	TRANSISTOR	JC501-Q
Q 203	260P635010	TRANSISTOR	2SC3065F/2SC3065G	Q 7708	260P544030	TRANSISTOR	JA101-Q
Q 251	260P543050	TRANSISTOR	JC501-Q	Q 901	260P663010	TRANSISTOR	2SD1887
Q 252	260P543050	TRANSISTOR	JC501-Q	Q 902	260P543050	TRANSISTOR	JC501-Q
Q 253	260P543050	TRANSISTOR	JC501-Q	Q 903	260P543030	TRANSISTOR	JC501-R
Q 254	260P543050	TRANSISTOR	JC501-Q	Q 951	260P255040	TRANSISTOR	2SA950-Y
Q 255	260P543030	TRANSISTOR	2SC2058S-Q	Q 952	260P325030	TRANSISTOR	2SC2655-Y
Q 2J3	260P543050	TRANSISTOR	JC501-Q	Q 954	260P668010	TRANSISTOR	ZSB1135-R, S
DIODES							
D 252	260P543050	DIODE	JC501-Q	D 251	264P370010	DIODE	1N4148
D 253	260P543050	DIODE	JC501-Q	D 253	264P370010	DIODE	1N4148
D 254	260P543050	DIODE	JC501-Q	D 254	264P370010	DIODE	1N4148
D 255	260P543030	DIODE	2SC2058S-Q	D 2J0	264P462090	DIODE	EQA02-08A/RD7.5EB3
D 2J3	260P543050	DIODE	JC501-Q	D 2J1	264P462090	DIODE	EQA02-08A/RD7.5EB3
D 2J4	260P543050	DIODE	JC501-Q	D 2J4	264P462090	DIODE	EQA02-08A/RD7.5EB3
D 2J5	260P544030	DIODE	JA101-Q	D 2J5	264P462090	DIODE	EQA02-08A/RD7.5EB3
D 2K1	260P543050	DIODE	JC501-Q	D 2J6	264P462090	DIODE	EQA02-08A/RD7.5EB3
D 301	260P387030	DIODE	2SC2236-Y	D 2J6	264P462090	DIODE	EQA02-08A/RD7.5EB3

[21S] : CT - 21A2STX [21L] : CT - 21A2LST  
 [25S] : CT - 25A2STX [25L] : CT - 25A2LST

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
D 2J7	264P462090	DIODE	EQA02-08A/RD7.5EB3	D 907	264P481050	DIODE	RD3.0FB1	
D 2J8	264P462090	DIODE	EQA02-08A/RD7.5EB3	D 908	264P481050	DIODE	RD3.0FB1	
D 2J9	264P462090	DIODE	EQA02-08A/RD7.5EB3	D 909	264P458090	DIODE	RD4.3EB2	
D 2K1	264P462090	DIODE	EQA02-08A/RD7.5EB3	D 910	264P370010	DIODE	1N4148	
D 2K2	264P462090	DIODE	EQA02-08A/RD7.5EB3	D 911	264P488080	DIODE	RD15FB3	
D 2K3	264P462090	DIODE	EQA02-08A/RD7.5EB3	D 943	264P374020	DIODE	IN4003ID	
D 2K5	264P370010	DIODE	1N4148	D 951	264P358070	DIODE	RU 4AM	
D 2K6	264P370010	DIODE	1N4148	D 952	264P358070	DIODE	RU 4AM	
D 2K7	264P370010	DIODE	1N4148	D 953	264P358070	DIODE	RU 4AM	
D 2L0	264P462090	DIODE	EQA02-08A/RD7.5EB3	D 954	264P358070	DIODE	RU 4AM	
D 2L1	264P462090	DIODE	EQA02-08A/RD7.5EB3	D 955	264P377010	DIODE	BYW95B	
D 301	264P464010	DIODE	EQA02-10AB/RD10EB2	D 958	264P370010	DIODE	1N4148	
D 3301	264P370010	DIODE	1N4148	D 959	264P370010	DIODE	1N4148	
D 451	264P374020	DIODE	IN4003ID	D 960	264P370010	DIODE	1N4148	
D 551	264P371010	DIODE	BYD33G	D 961	264P370010	DIODE	1N4148	
D 554	264P375010	DIODE	BY228	[25L]	D 962	264P370010	DIODE	1N4148
D 554	264P375020	DIODE	BY228	[25S]	D 964	264P370010	DIODE	1N4148
D 555	264P378010	DIODE	BYW96E	[25L, 25S]	OTHER SEMICONDUCTORS			
D 556	264P371010	DIODE	BYD33G	△RP901 265P047050 POSITIVE THERMISTOR				
D 557	264P460060	DIODE	EQA02-05C/RD5.1EB1	FILTERS				
D 558	264P370010	DIODE	1N4148	CF1A1 299P051050 CERAMIC RESONATOR				
D 559	264P370010	DIODE	1N4148	CF3301 299P144010 CERAMIC RESONATOR			16.93MHz	
D 560	264P370010	DIODE	1N4148	CF701 299P118040 CERAMIC RESONATOR			4.0MHz	
D 562	264P371010	DIODE	BYD33G	LC3301 409P453010 BAND PASS FILTER				
D 563	264P371010	DIODE	BYD33G	COILS				
D 564	264P464050	DIODE	EQA02-10C	△ 409B041040 DEGAUSSING COIL			[21L, 21S]	
D 565	264P462090	DIODE	EQA02-08A/RD7.5EB3	△ 409B041060 DEGAUSSING COIL			[25L, 25S]	
D 601	264P370010	DIODE	1N4148	L 101	325C124030	PEAKING COIL	0.22 μ H-M	
D 651	264P370010	DIODE	1N4148	L 201	325C162030	PEAKING COIL	68 μ H-K	
D 652	264P370010	DIODE	1N4146	L 202	325C120090	PEAKING COIL	4.7 μ H-K	
D 653	264P370010	DIODE	1N4148	L 2J0	325C120010	PEAKING COIL	1 μ H-M	
D 654	264P371010	DIODE	BYD33G	L 2J1	325C120010	PEAKING COIL	1 μ H-M	
D 655	264P370010	DIODE	1N4148	L 2J2	325C120010	PEAKING COIL	1 μ H-M	
D 656	264P370010	DIODE	1N4148	L 3J0	325C120070	PEAKING COIL	3.3 μ H-K	
D 657	264P370010	DIODE	1N4148	L 3J1	325C120070	PEAKING COIL	3.3 μ H-K	
D 6J1	264P462090	DIODE	EQA02-08A/RD7.5EB3	L 3J2	325C120070	PEAKING COIL	3.3 μ H-K	
D 702	264P461040	DIODE	EQA02-06A/RD5.6EB2	L 3J3	325C120070	PEAKING COIL	3.3 μ H-K	
D 703	264P370010	DIODE	1N4148	L 3J4	325C120070	PEAKING COIL	3.3 μ H-K	
D 7X1	264P393010	LIGHT EMITTING DIODE	SLC-26VR5F	L 3J5	325C120070	PEAKING COIL	3.3 μ H-K	
D 7X2	264P393020	LIGHT EMITTING DIODE	SLC-26GG5F	L 3J6	325C120070	PEAKING COIL	3.3 μ H-K	
D 7705	264P370010	DIODE	1N4148	L 3J7	325C120070	PEAKING COIL	3.3 μ H-K	
D 7708	264P370010	DIODE	1N4148	L 3J8	325C120070	PEAKING COIL	3.3 μ H-K	
D 7709	264P370010	DIODE	1N4148	L 3J9	325C120070	PEAKING COIL	3.3 μ H-K	
D 7710	264P370010	DIODE	1N4148	L 3Y1	325C121030	PEAKING COIL	10 μ H-K	
D 7711	264P370010	DIODE	1N4148	L 3Y2	325C121030	PEAKING COIL	10 μ H-K	
D 7712	264P370010	DIODE	1N4148	L 3Y3	325C121030	PEAKING COIL	10 μ H-K	
D 7713	264P370010	DIODE	1N4148	L 3301	325C121030	PEAKING COIL	10 μ H-K	
D 7714	264P370010	DIODE	1N4148	L 3302	325C121030	PEAKING COIL	10 μ H-K	
D 7715	264P370010	DIODE	1N4148	L 3303	325C121030	PEAKING COIL	10 μ H-K	
D 901	264P376010	DIODE	BYW56	L 3304	325C121030	PEAKING COIL	10 μ H-K	
D 902	264P376010	DIODE	BYW56	L 3305	325C121030	PEAKING COIL	10 μ H-K	
D 903	264P376010	DIODE	BYW56	L 3306	325C121030	PEAKING COIL	10 μ H-K	
D 904	264P376010	DIODE	BYW56					
D 905	264P371010	DIODE	BYD33G					
D 906	264P372010	DIODE	BYV96E					

[21S] : CT - 21A2STX [21L] : CT - 21A2LST

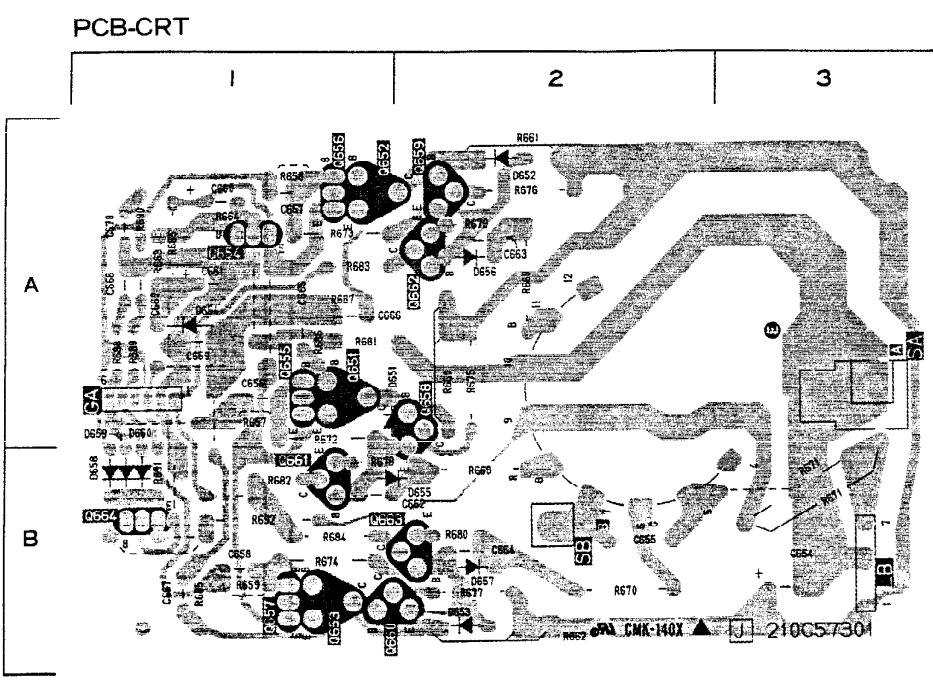
[25S] : CT - 25A2STX [25L] : CT - 25A2LST

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
L 451	411P001070	FERRITE LEAD		△R 976	103P397090	FUSE	1/2W 0.82Ω-J
L 551	321C030010	RF COIL	1μH-K				CAPACITORS AND TRIMMERS
L 552	409P408010	PCC COIL		C 455	189P081050	C-M-PP	200V 0.1μF-J
			[25L, 25S]	C 558	189P071060	C-M-PLASTIC-PP	200V 0.43μF-J[21L, 21S]
L 553	409P407010	BRIDGE COIL		C 558	189P081040	C-M-PLASTIC-PP	200V 0.68μF-J[25L, 25S]
L 554	333P012030	H-LIN. COIL		C 559	189P071080	C-M-PLASTIC-PP	200V 0.47μF-J[25L, 25S]
L 554	333P032010	H-LIN. COIL		C 564	189P081050	C-M-PP	200V 0.1μF-J
L 555	409P006080	FILTER COIL					
L 556	411D009020	FERRITE CORE FILTER		C 904	185D056030	ELECTROLYTIC-C	H400V 220μF-M
L 701	409P699010	OSCILLATOR COIL		△C 910	189P094020	AC CERAMIC	ACT4K E3300pF-M
L 702	325C110010	PEAKING COIL	1μH-K	VC3302	202P109030	TRIMMER CAPACITOR	5.5pF-30pF
L 7X1	325C121030	PEAKING COIL	10μH-K	VC7701	202P109030	TRIMMER CAPACITOR	5.5pF-30pF
L 7701	325C121050	PEAKING COIL	15μH-K				
L 7703	321C031040	RF COIL	10μH-K				
L 901	411P001070	FERRITE LEAD					SWITCHES
L 902	411P001070	FERRITE LEAD		S 2J1	432P100010	KEY BOARD SWITCH	1-1 H=4.3
L 903	411P001070	FERRITE LEAD		S 7Y3	432P085070	KEY BOARD SWITCH	
L 904	321C030050	RF COIL	2.2μH-K	△S 991	432P076010	PUSH SWITCH	2-1 AC250V 5A L18
L 951	325D059060	PEAKING COIL	390μH-K				MISCELLANEOUS
L 953	409P674020	FILTER COIL		△	449C081010	CRT SOCKET	
L 991	351P011020	LINE FILTER		△F 991	283D047040	FUSE	2A-T
L 992	351P047020	LINE FILTER		IP101	295P268040	TUNER HF PACK	[21L, 25L]
L 994	351P047020	LINE FILTER		IP101	295P268030	TUNER HF PACK	39.5MHz [21S, 25S]
				J 2J1	449C102010	SOCKET DIN MINI	
				J 2J2	451C058010	CONNECTOR	
				J 2J3	451C058010	CONNECTOR	
				J 3Y1	451C082040	MICROPHONE JACK	
				△K 901	287P049030	POWER RELAY	
				SP391	480P383060	SPEAKER	C100P03M6960
				SP392	480P393060	SPEAKER	C100P03M6960
				X 3301	285P154010	CRYSTAL RESONATOR	11.6MHz
				X 3302	285P091010	CRYSTAL RESONATOR	6.55MHz
				X 601	285P142010	CRYSTAL RESONATOR	17.7MHz
				X 7701	285P062020	CRYSTAL RESONATOR	13.9MHz
				X 7702	285P064020	CRYSTAL RESONATOR	6MHz
				X 7704	285P064020	CRYSTAL RESONATOR	6MHz
				△Z 551	299P087060	PROTECTOR	[25L, 25S]
				Z 701	939P226010	PREAMP UNIT	SBX1483
				△Z 952	299P087080	PROTECTOR	PRF 3150
							PRINTED CIRCUIT BOARD ASSY'S
				△	920D358030	AV PCB ASSY	[21L, 21S]
				△	920D358040	AV PCB ASSY	[25L, 25S]
				△	920D301030	CONTROL PCB ASSY	[21L, 21S]
				△	920D320090	CONTROL PCB ASSY	[25L, 25S]
				△	930C457003	CRT PCB ASSY	[21L, 21S]
				△	930C457001	CRT PCB ASSY	[25L, 25S]
				△	920A389004	MAIN PCB ASSY	[21L]
				△	920A389003	MAIN PCB ASSY	[21S]
				△	920A389006	MAIN PCB ASSY	[25L]
				△	920A389005	MAIN PCB ASSY	[25S]
				△	930C547001	NICAM PCB ASSY	
				△	930C456003	TEXT PCB ASSY	

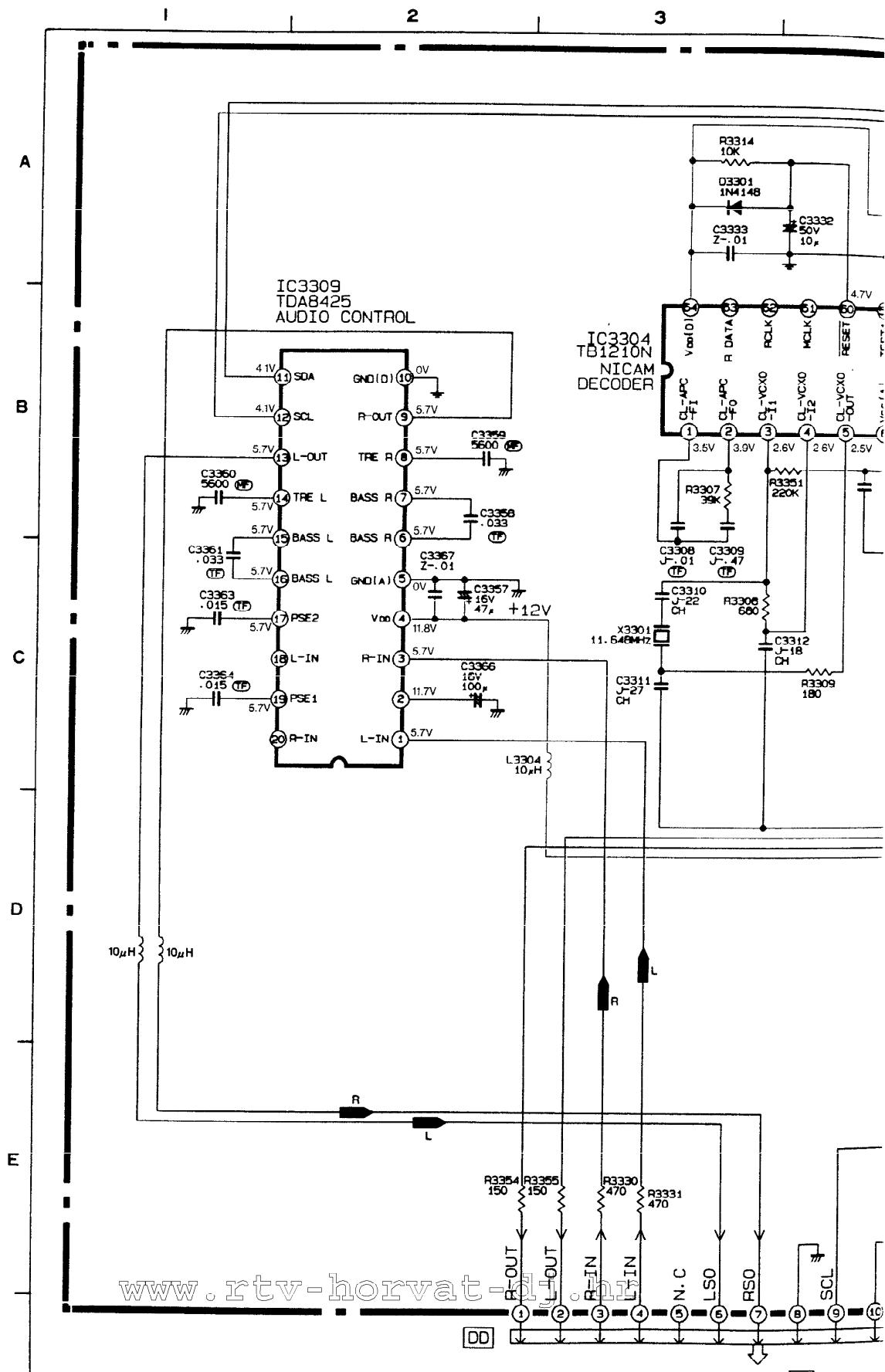
[21S] : CT - 21A2STX [21L] : CT - 21A2LST  
 [25S] : CT - 25A2STX [25L] : CT - 25A2LST

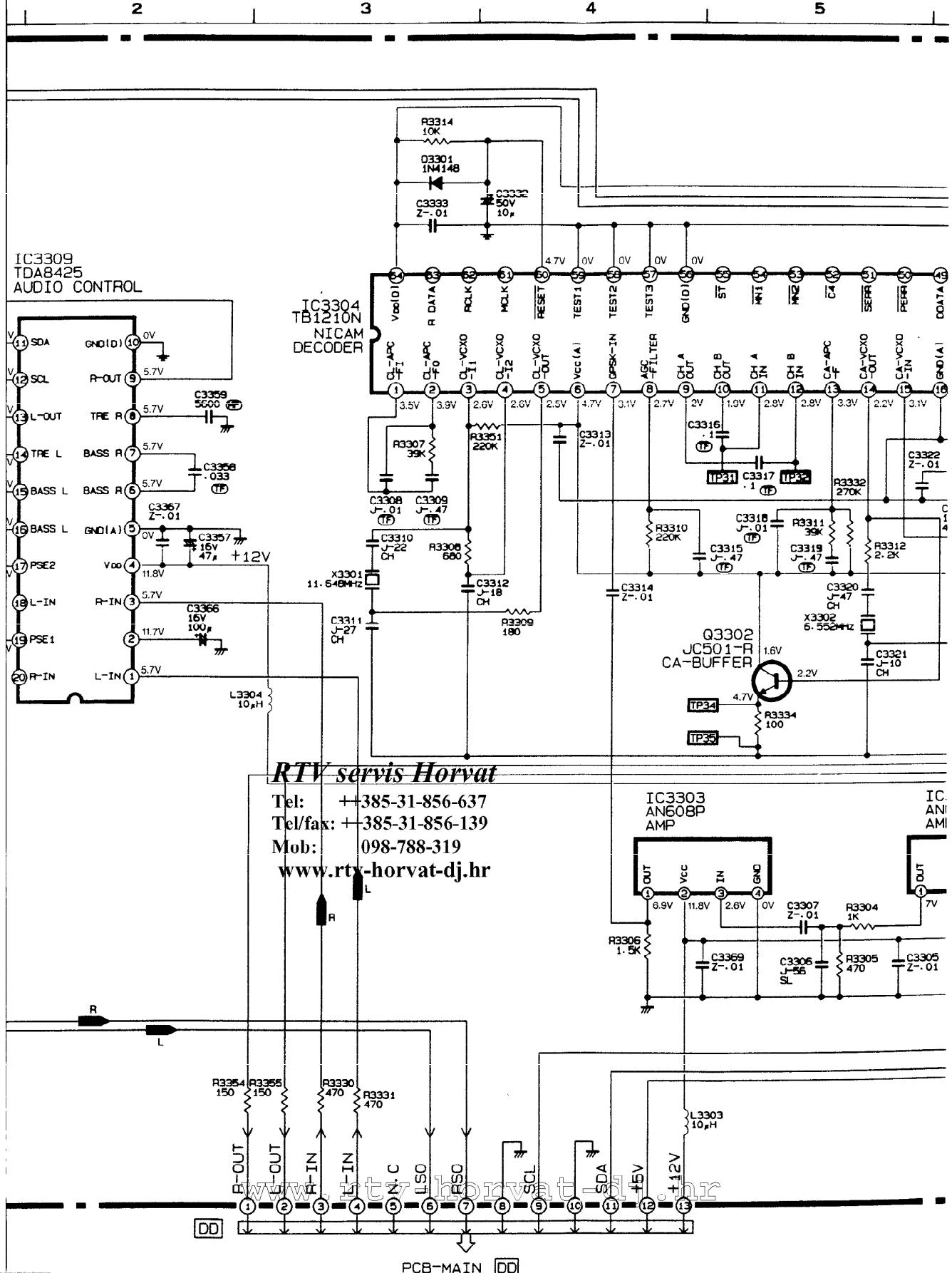
SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
MECHANICAL PARTS							
	669D220030	SCREW	3X10 46LA005				
	669D221030	SCREW	4X10 46LA005				
	669D221060	SCREW	4X16 46LA005				
	669D221080	SCREW	4X25(10P) [25L, 25S]				
	669D212010	SCREW	3X12				
	669D212040	SCREW	3X10				
COSMETIC PARTS							
△	246C140010	AC POWER CORD					
△	700C130020	BACK COVER			[21L]		
△	700A573020	BACK COVER			[21S]		
△	700C129080	BACK COVER			[25L]		
△	700A550020	BACK COVER			[25S]		
	641D173010	CLIP	(A40R)				
	702B796030	SP COVER			[21L]		
	702B796020	SP COVER			[25L]		
	702C837010	DOOR					
	761C273010	DOOR CATCH	25C781				
	700A572030	CABINET FRONT			[21L, 21S]		
	700A553030	CABINET FRONT			[25L, 25S]		
	702A326030	GRILLE SPEAKER			[21L]		
	702A326020	GRILLE SPEAKER			[25L]		
	704C376040	POWER KNOB					
	761C428010	LEG					
	761C428020	LEG					
	761A084010	TERMINAL BOARD					
J 3 J1	451C114010	PIN JACK(2P)	RED+WHITE				
PACKING PARTS AND ACCESSORY							
	803A266010	PACKING CUSHION			[21L, 21S]		
	803A261010	PACKING CUSHION			[25L, 25S]		
	803C315010	PACKING CUSHION			[25L, 25S]		
	872C028040	INSTRUCTION BOOK			[21L]		
	872C028010	INSTRUCTION BOOK			[21S, 25S]		
	872C028030	INSTRUCTION BOOK			[21S]		
	872C028020	INSTRUCTION BOOK			[25L]		
	801C097040	PACKING CASE			[21L]		
	801C097030	PACKING CASE			[21S]		
	801C084040	PACKING CASE			[25L]		
	801C084030	PACKING CASE			[25S]		
	831D262010	PACKING BAG					
	831D222020	PACKING BAG			[21L, 21S]		
	831D222030	PACKING BAG			[25L, 25S]		
	829D138020	PACKING SHEET					
△	939P403010	REMOTE HAND UNIT					

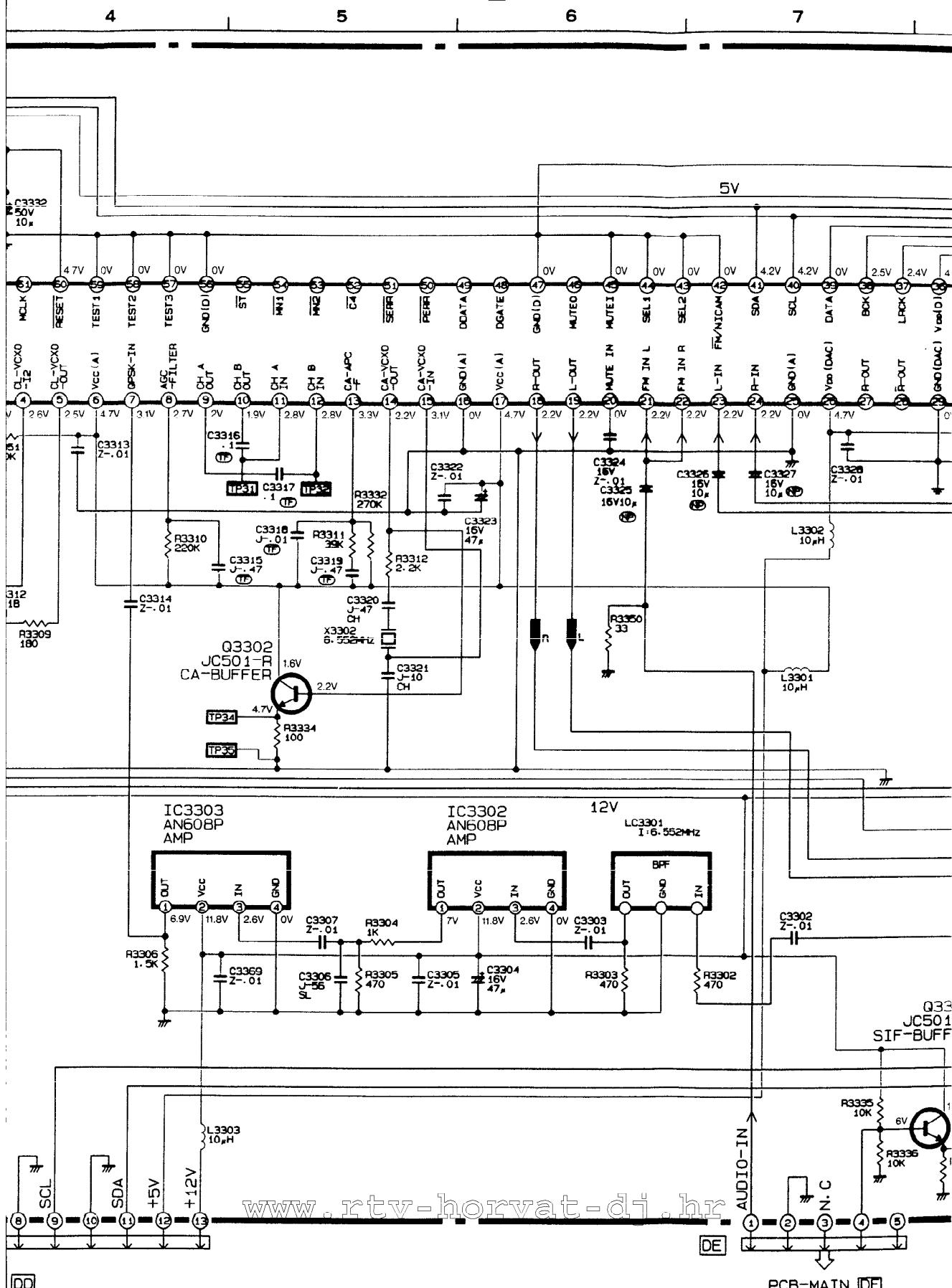
**PCB - CRT**



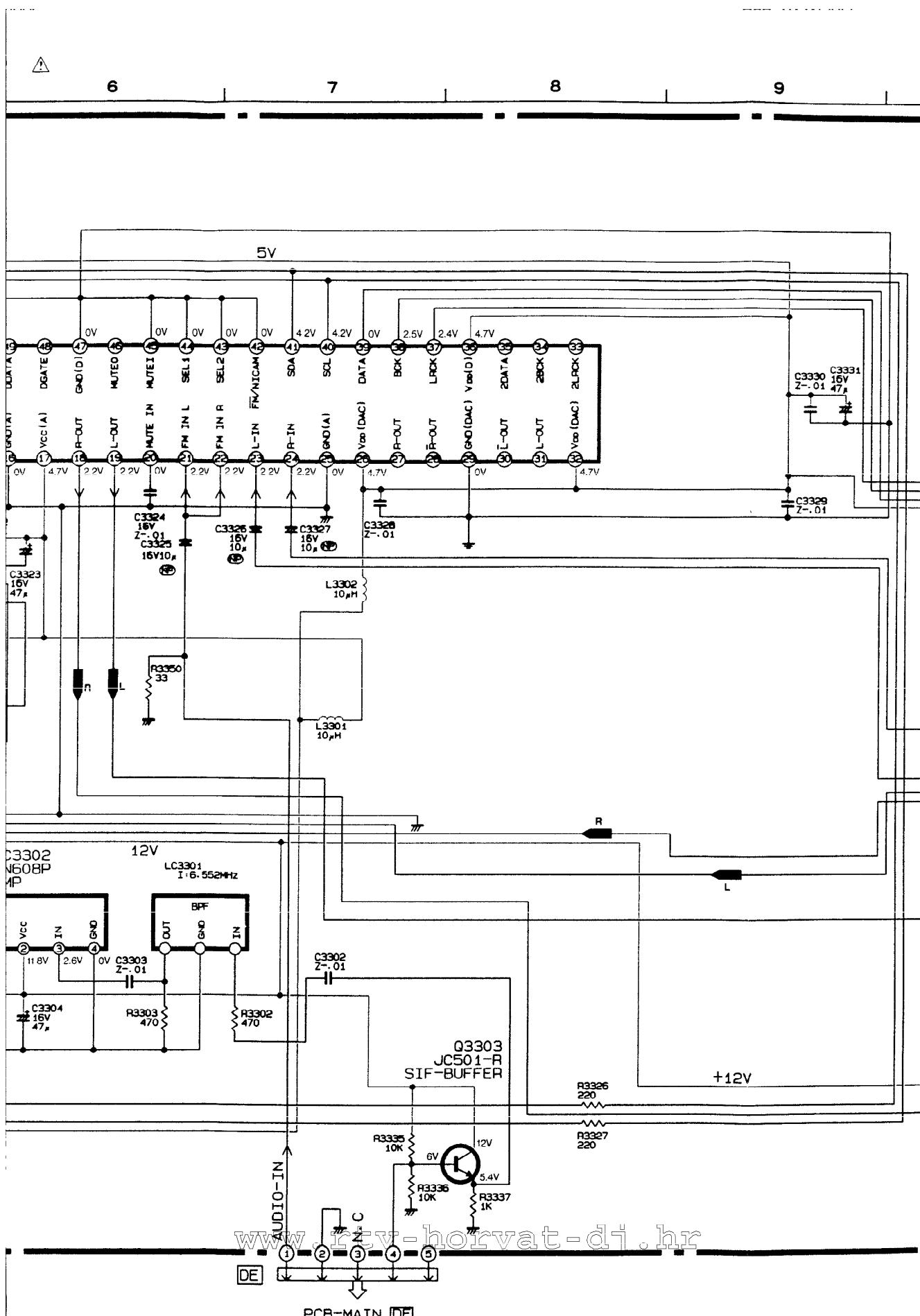
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D656	A-2
D657	B-2
D658	B-1
D659	A-1
D660	A-1
Q651	A-1
Q652	A-1
Q653	B-1
Q654	A-1
Q655	A-1
Q656	A-1
Q657	B-1
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Q660	B-1
Q661	B-1
Q662	A-2
Q663	B-1
Q664	B-1

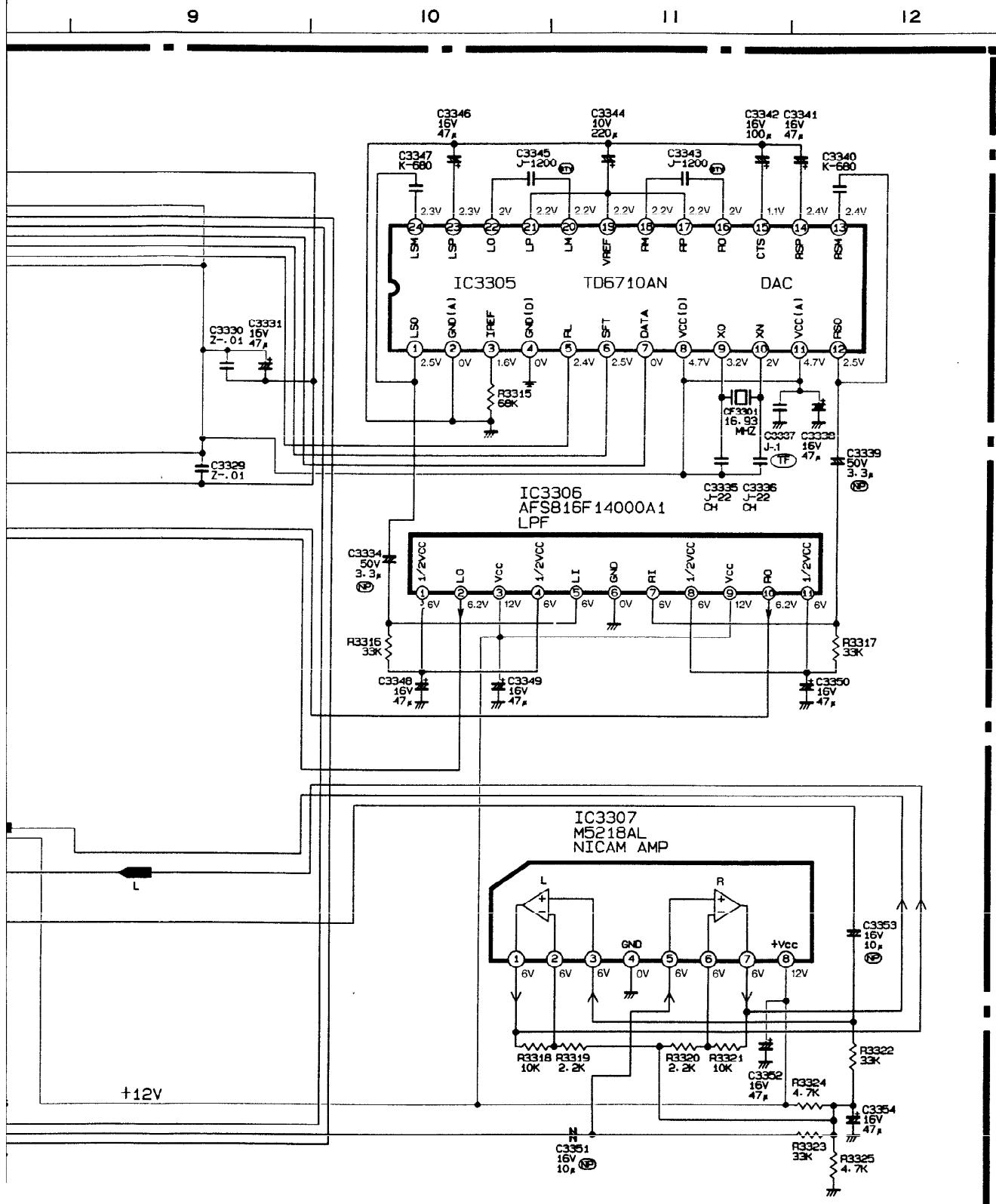


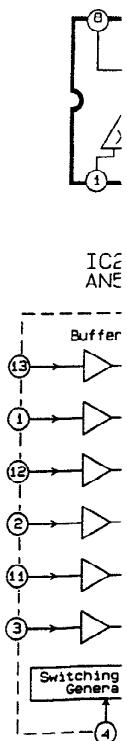
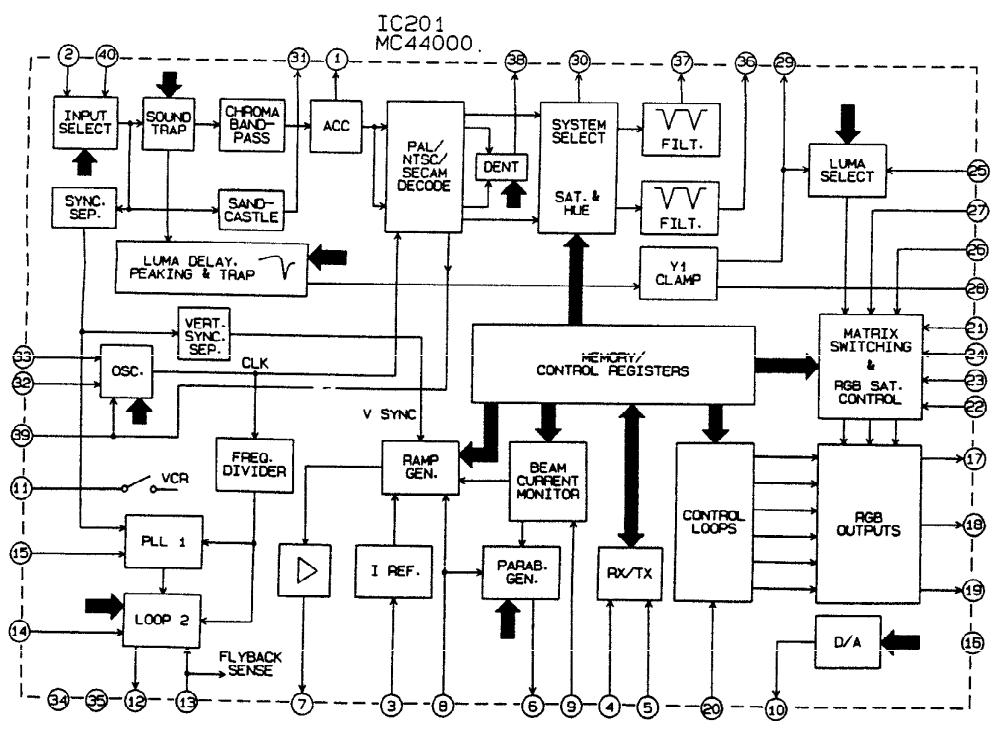
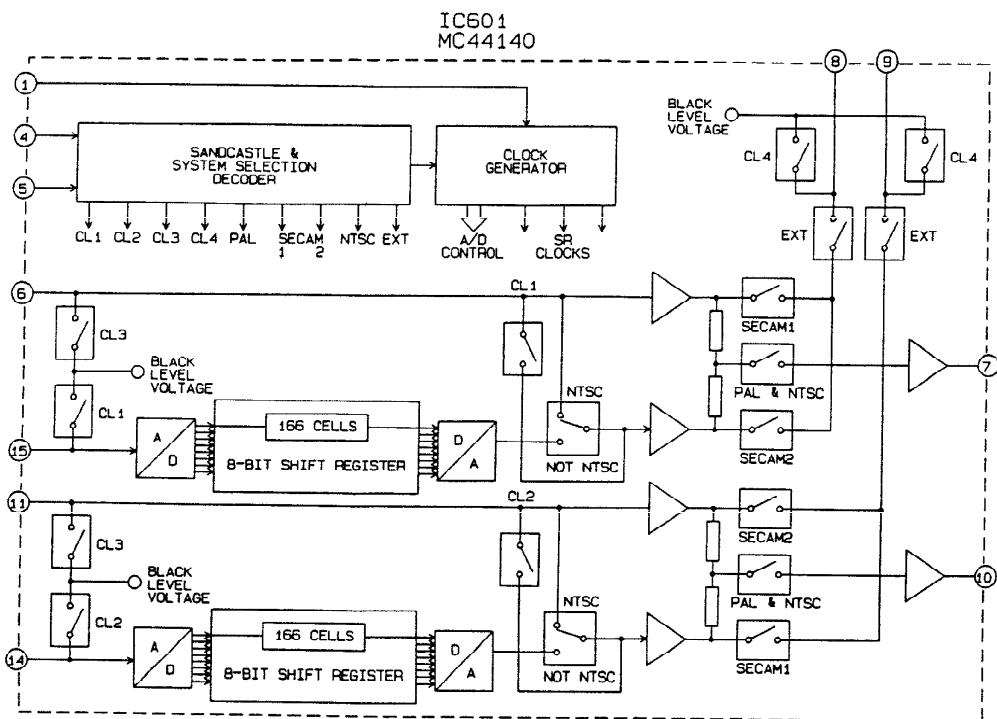




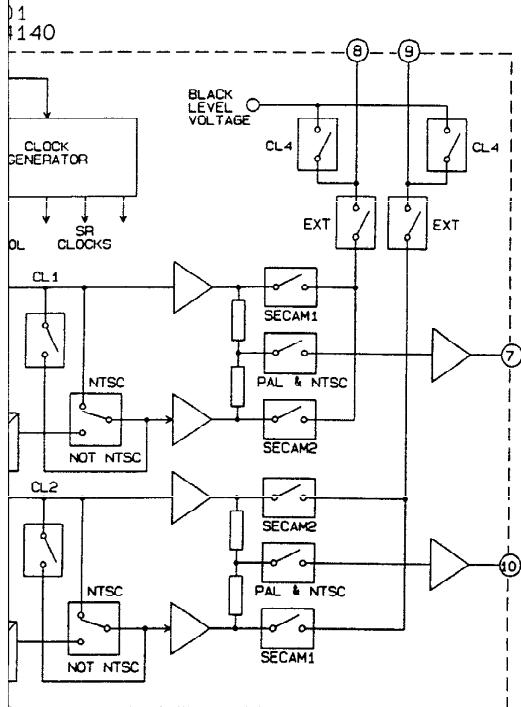
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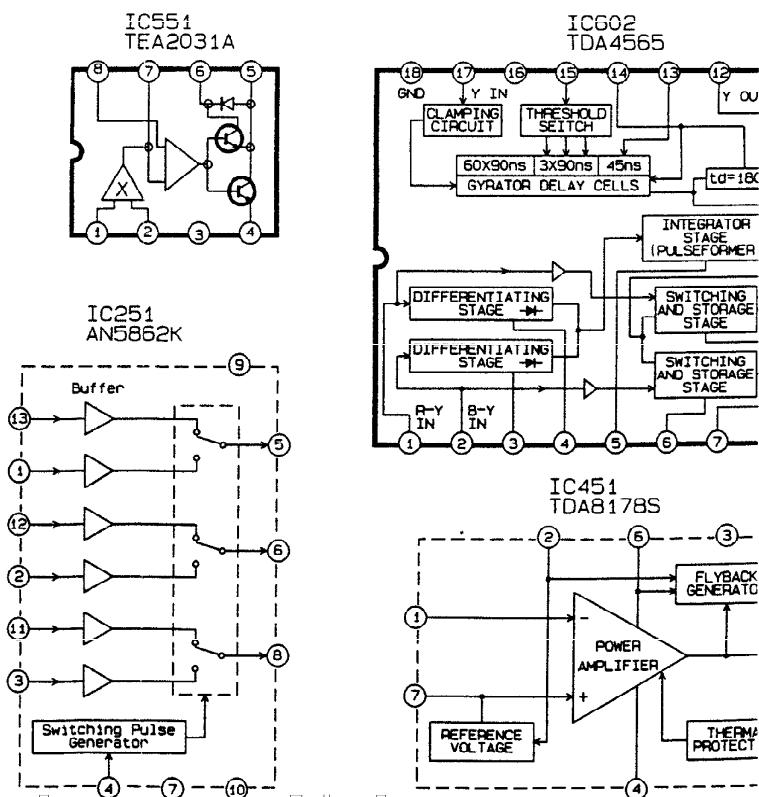
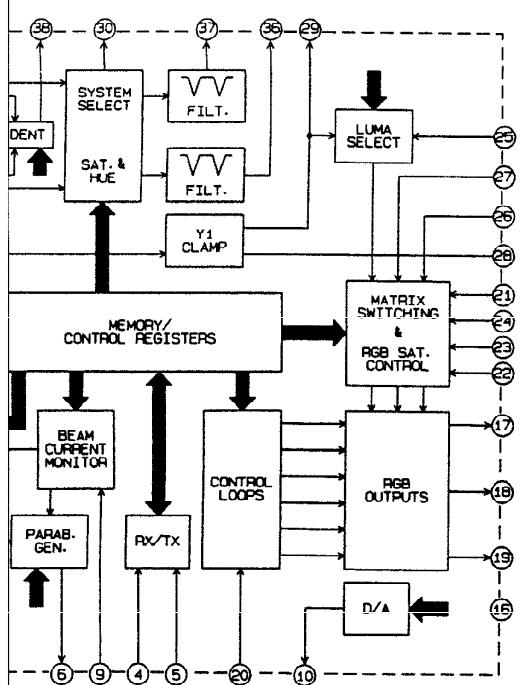
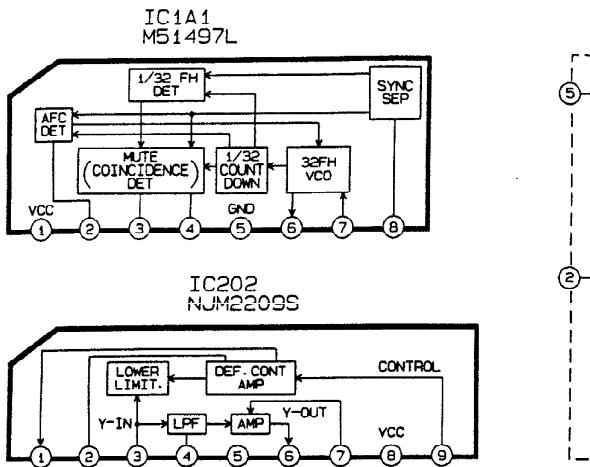




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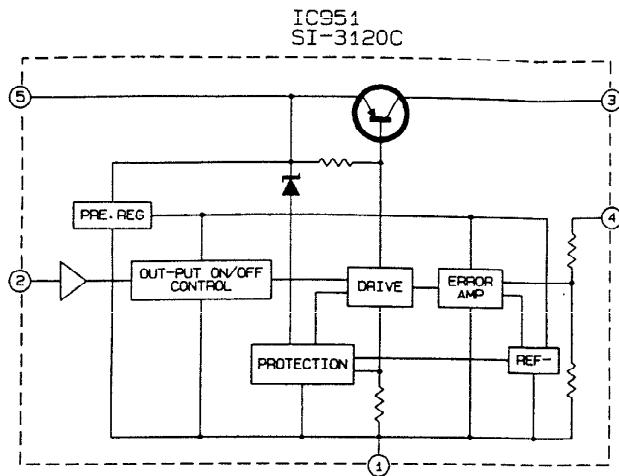
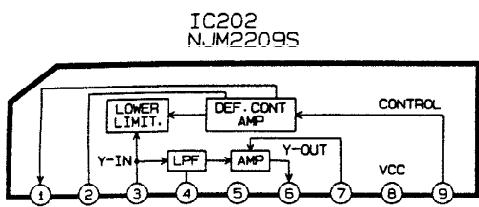
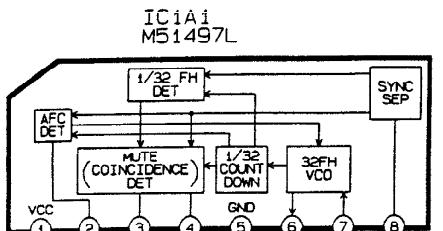
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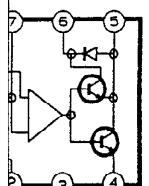
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## IC BLOCK DIAGRAM

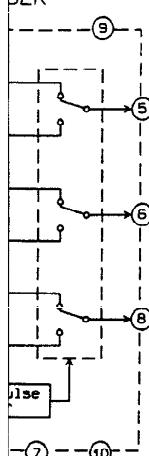
[PCB-MAIN]



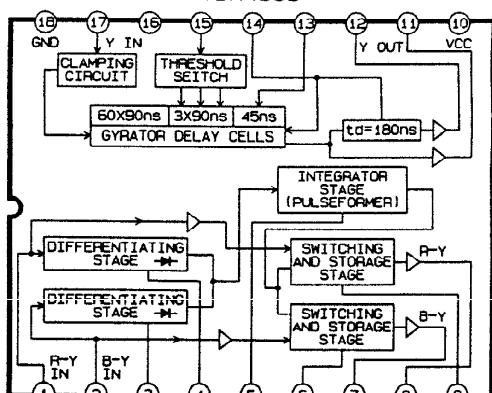
**IC551  
A2031A**



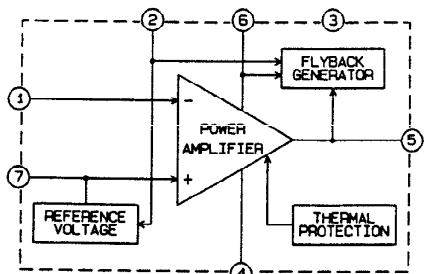
52K



**IC602  
TDA4565**

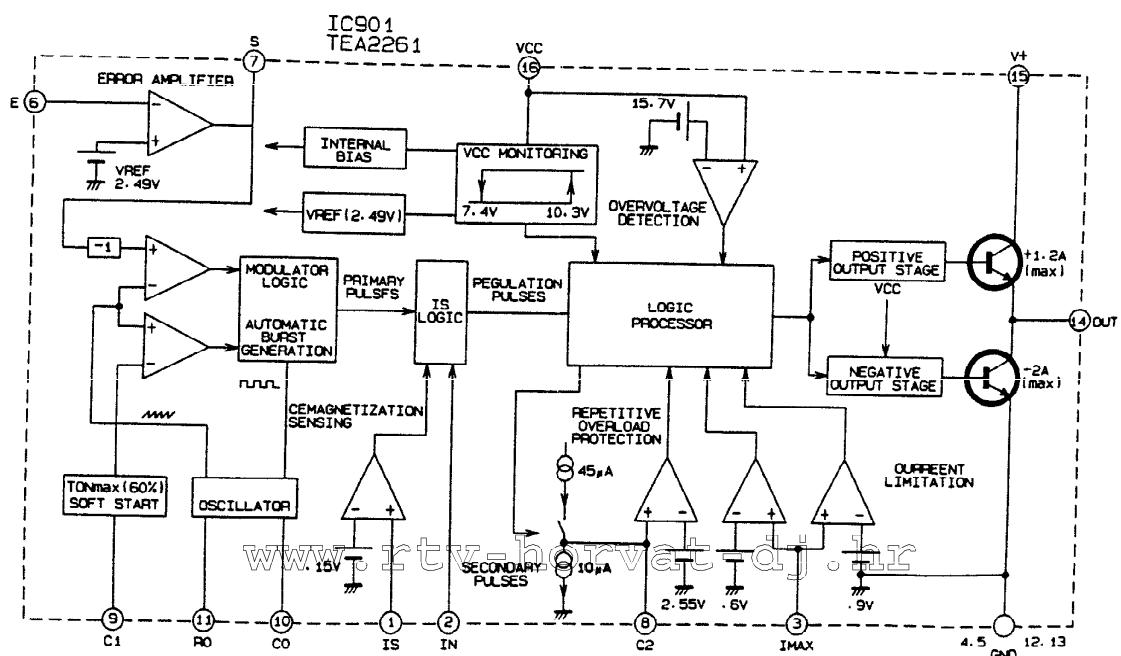
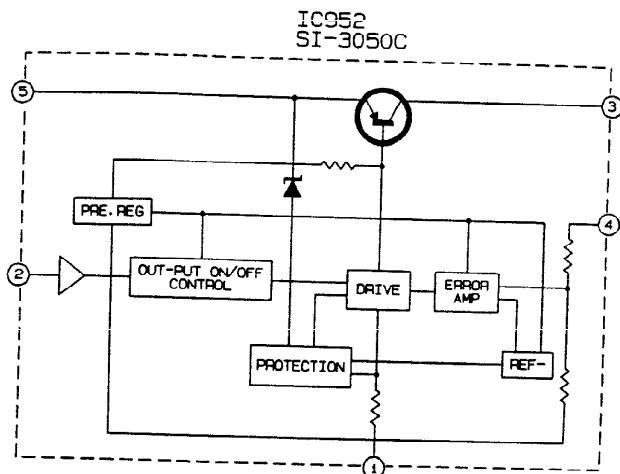
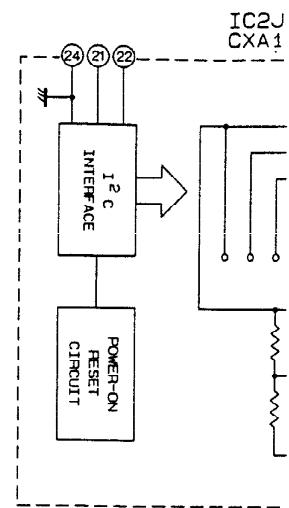
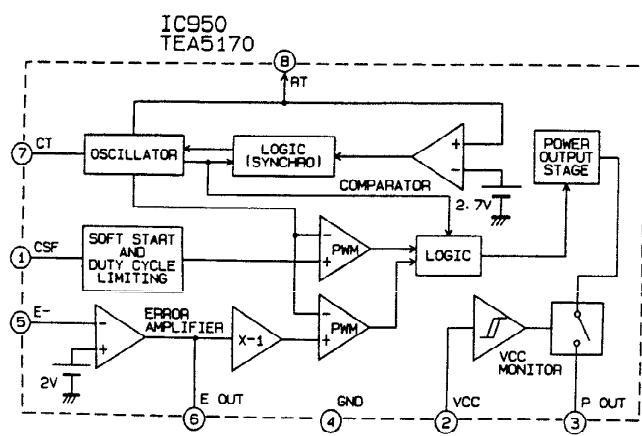


**IC451  
TDA8178S**

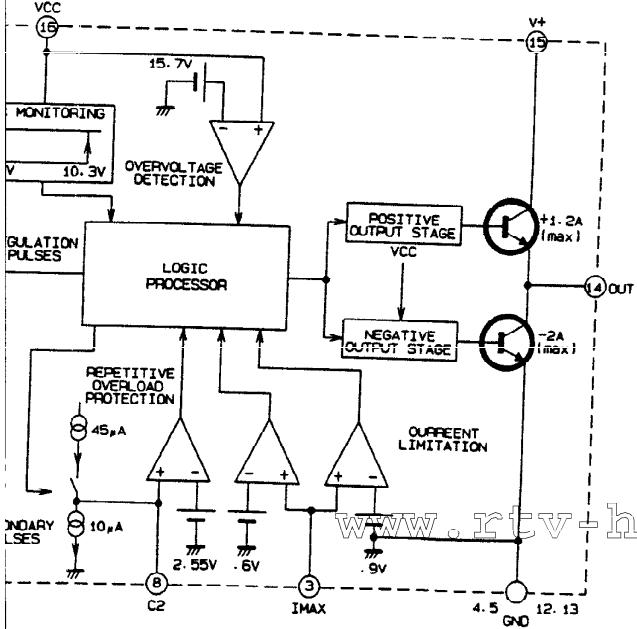
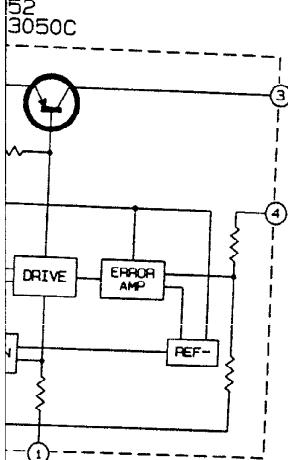
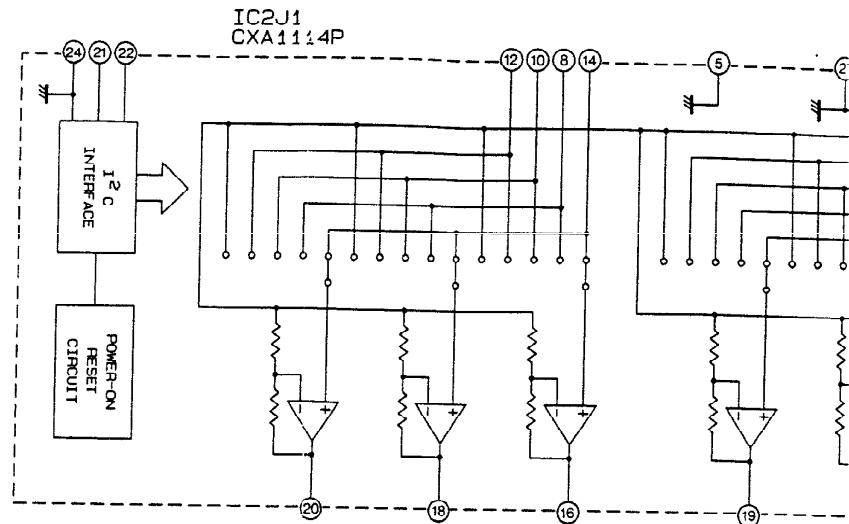
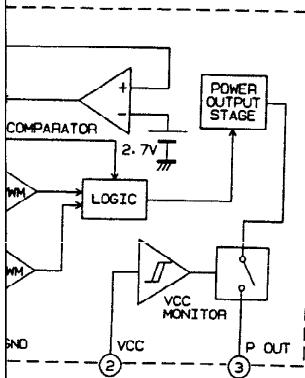


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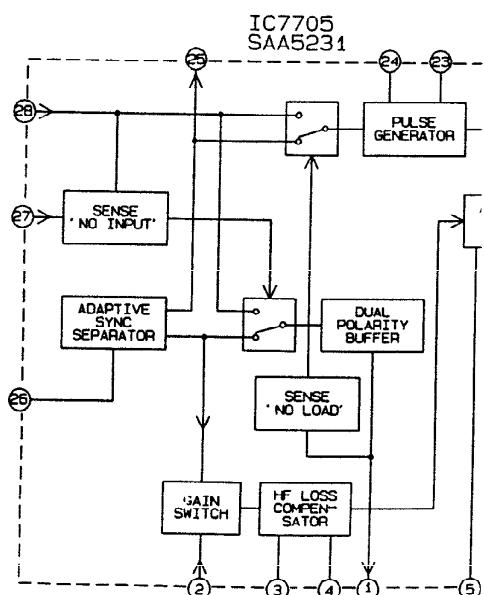
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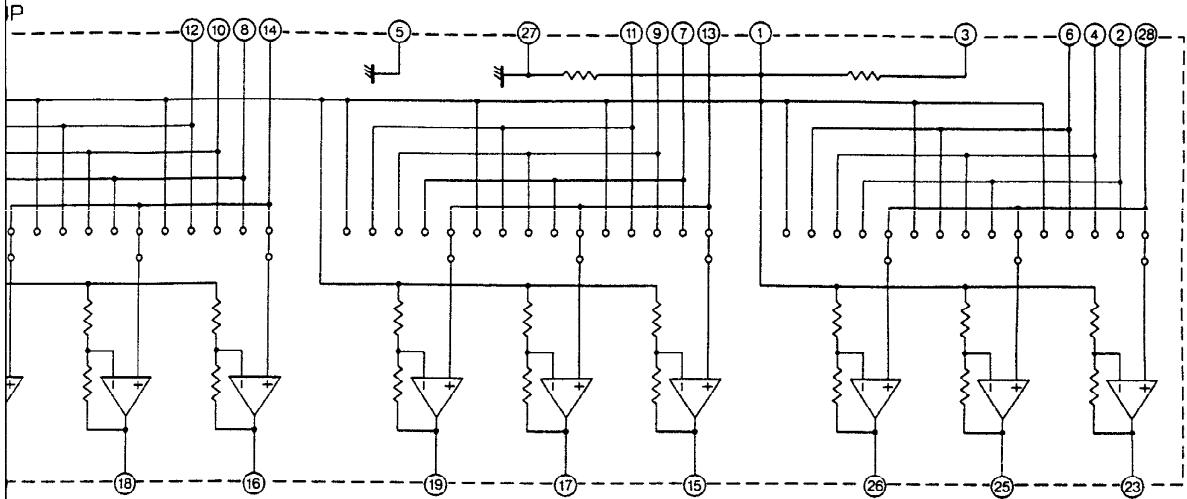
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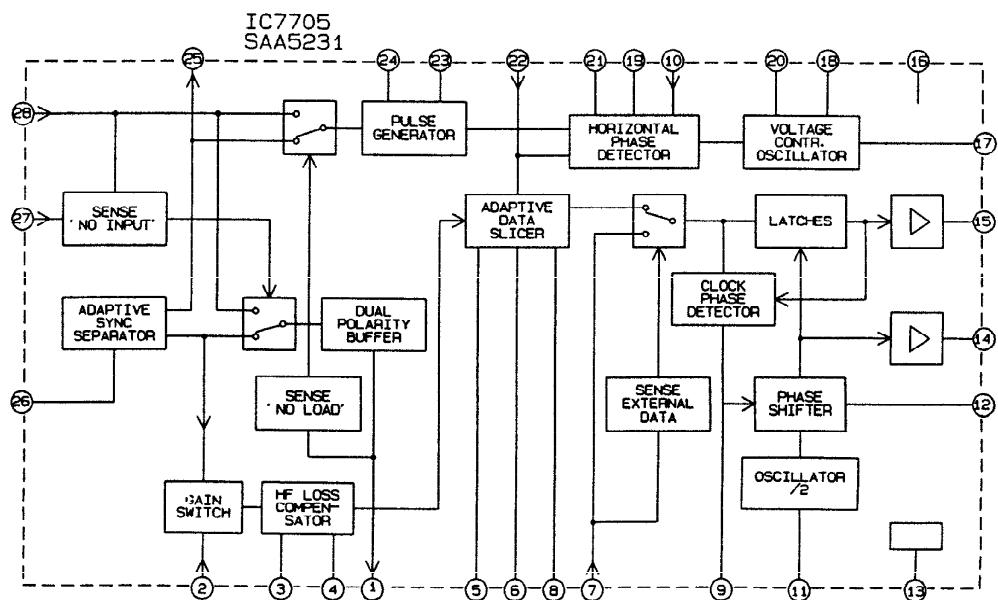
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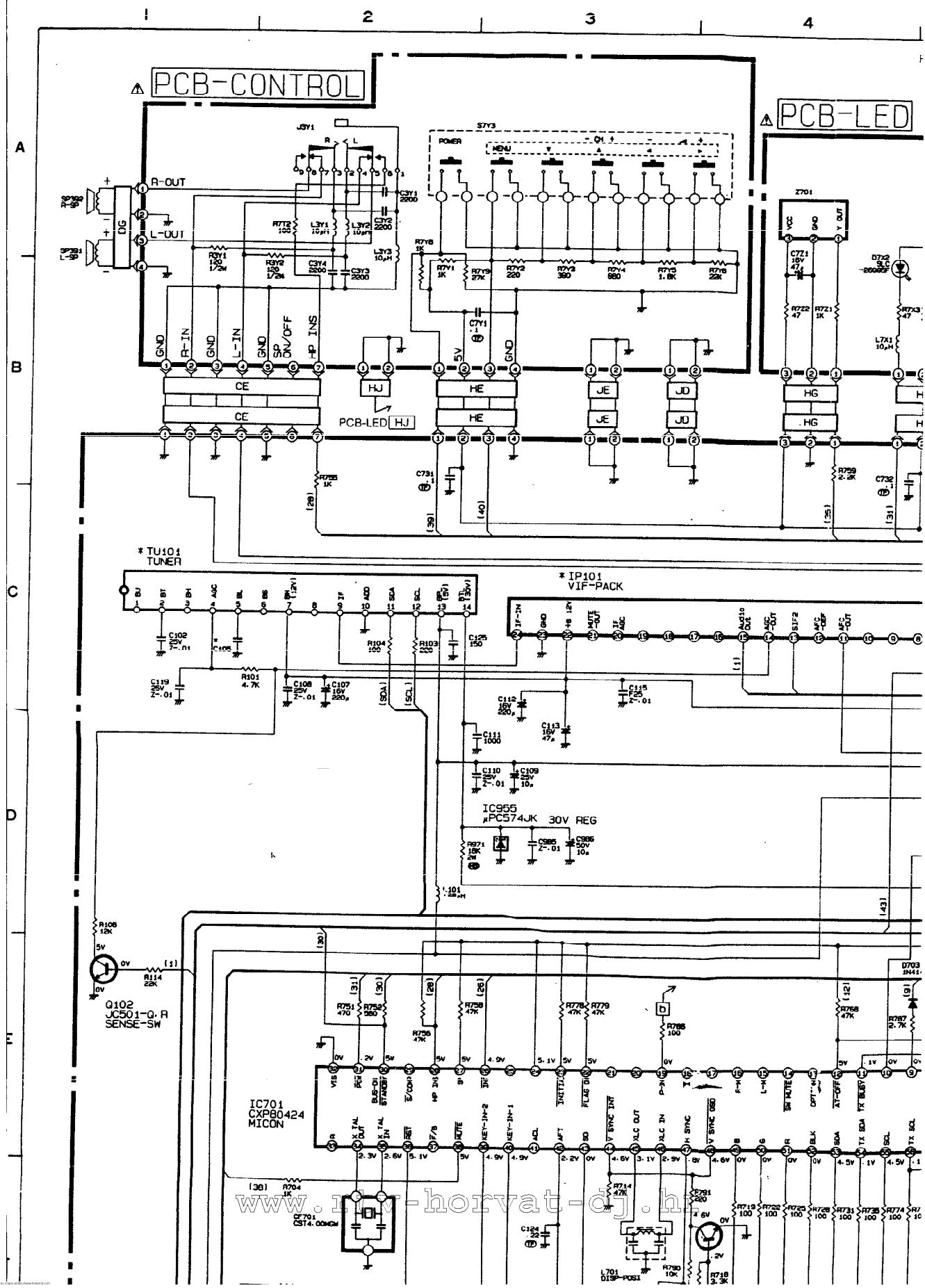


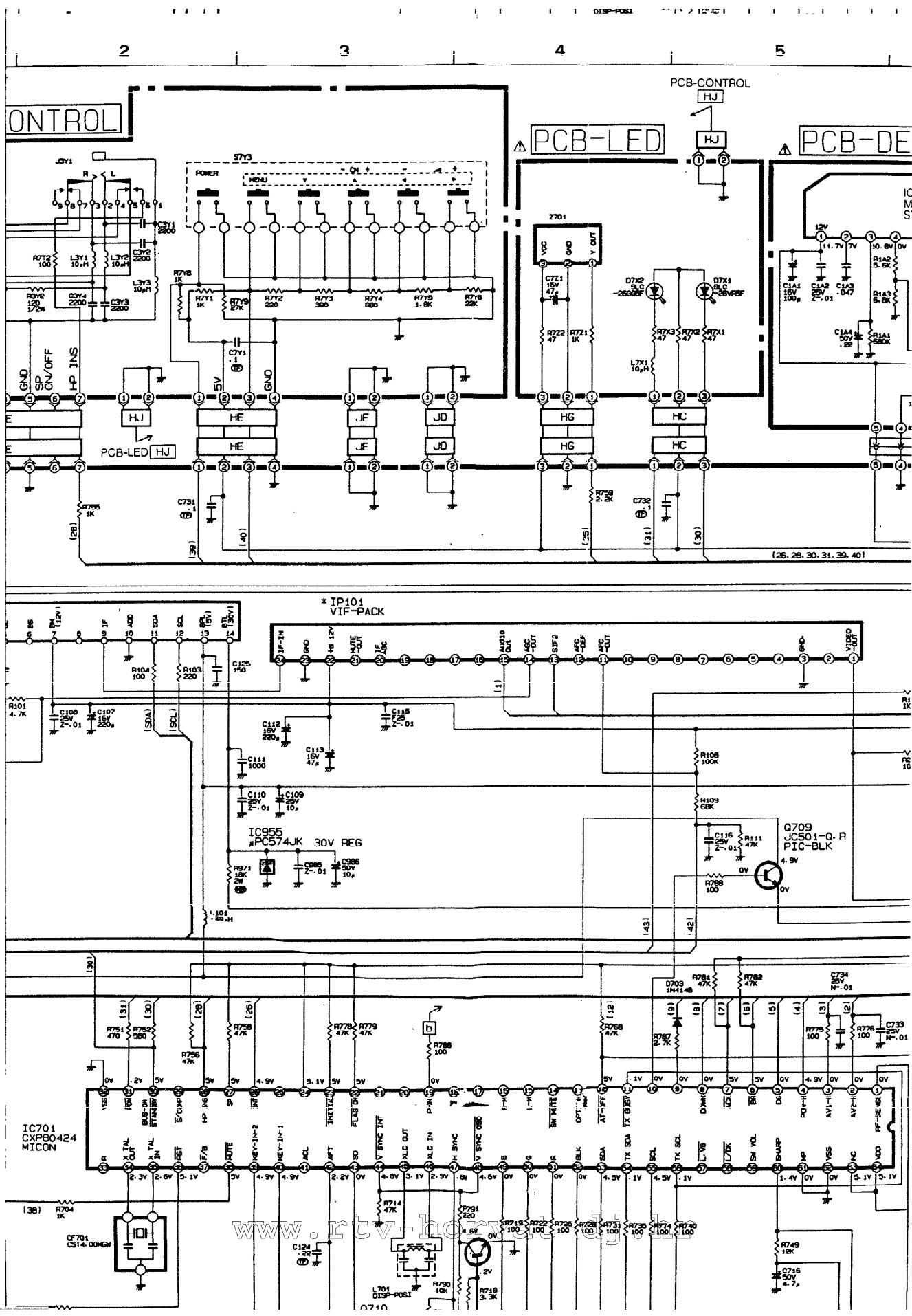
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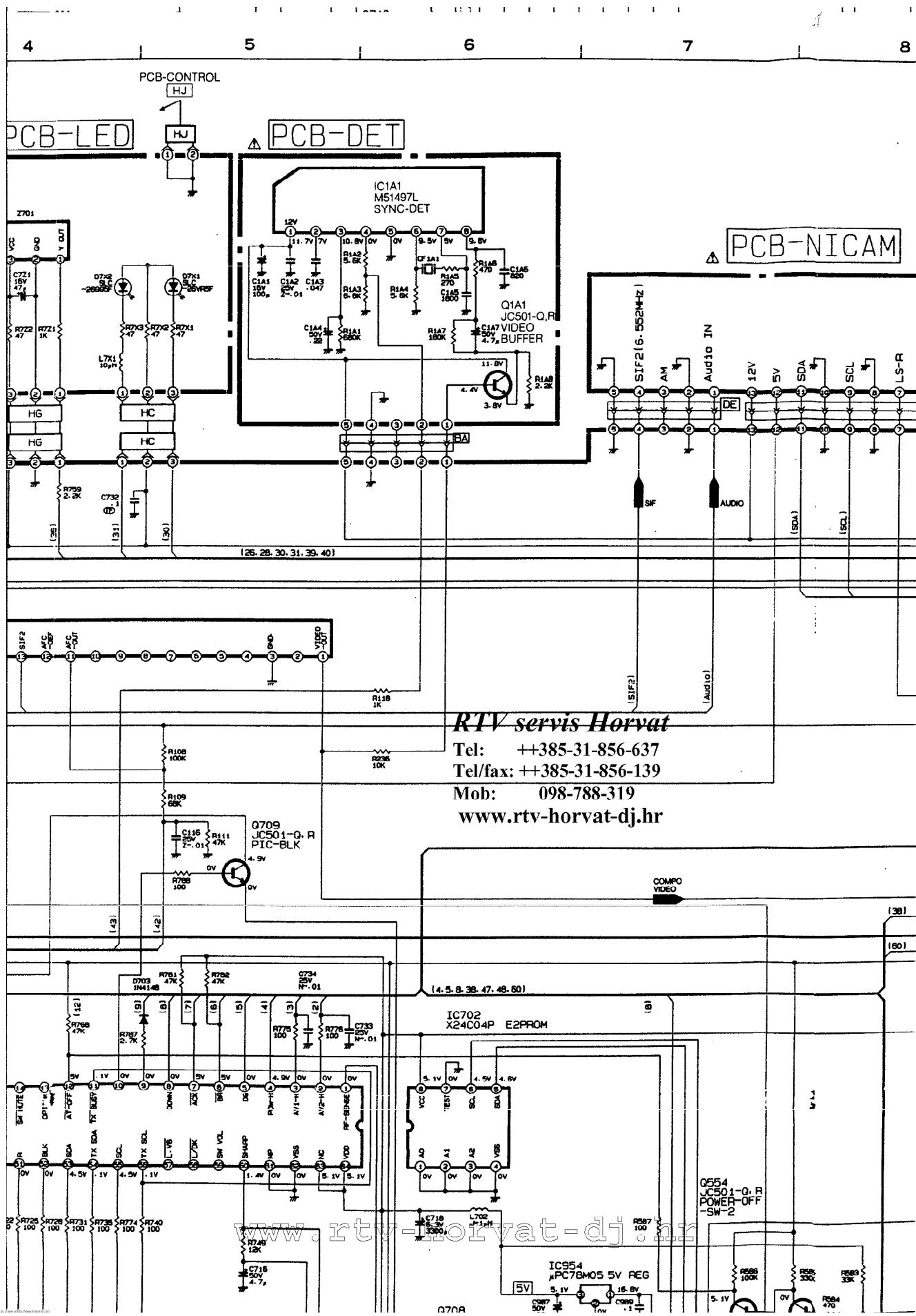


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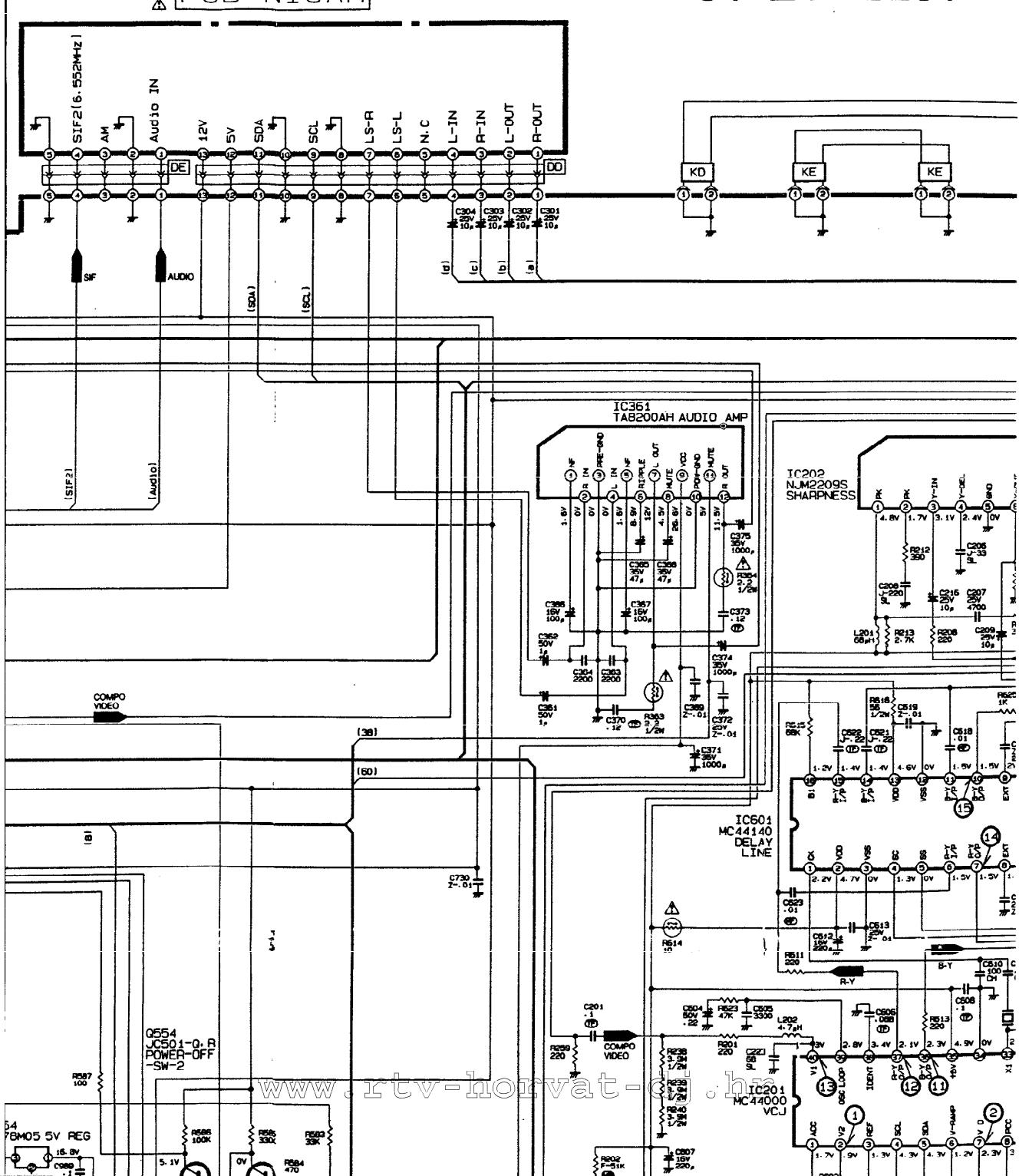
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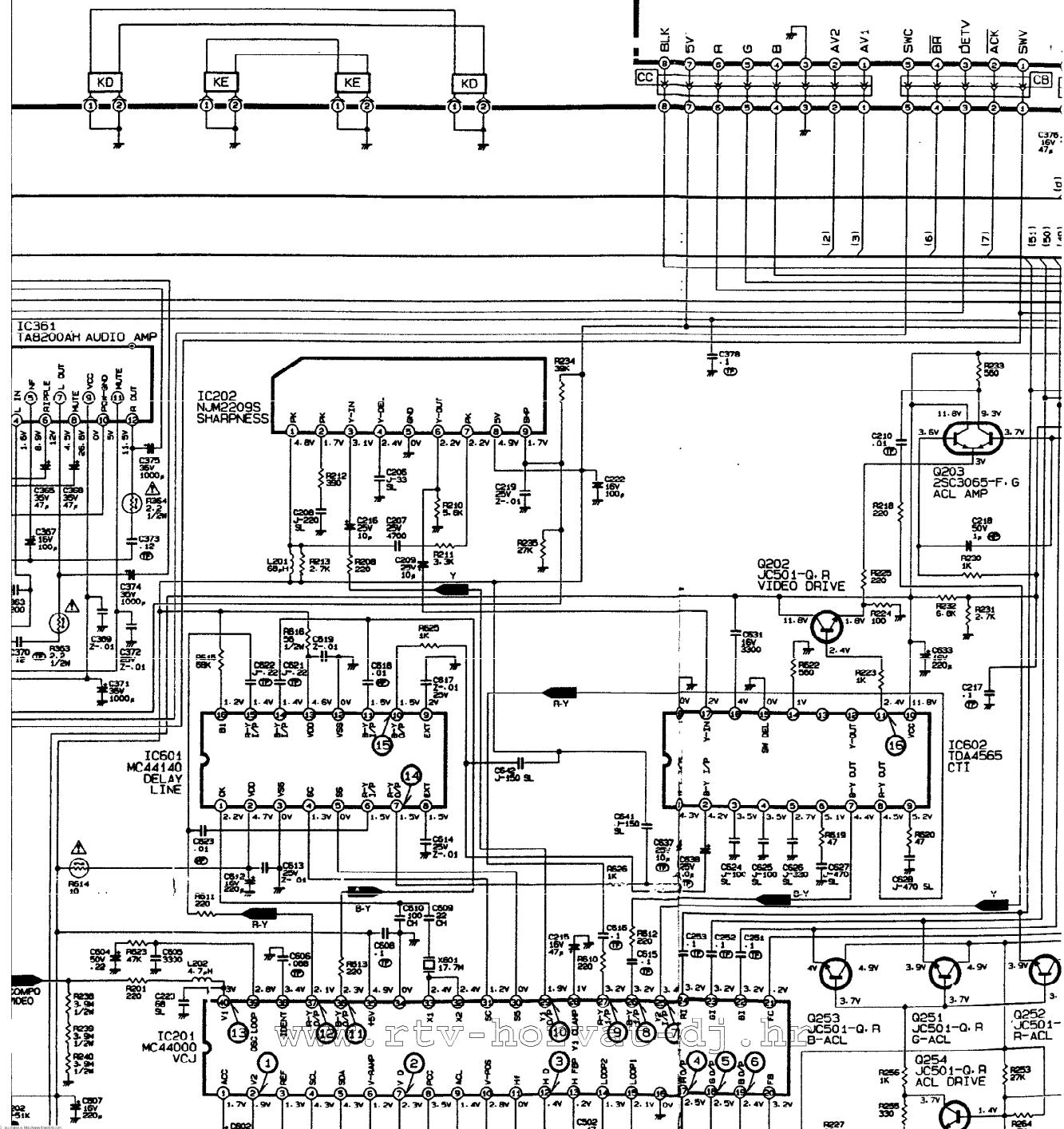
# SCHEMATIC DIAGRAM MODELS : CT-21A2STX CT-21A2LST



# ATIC DIAGRAM MODELS

## : CT-21A2STX CT-21A2LST

△ PCB-AV



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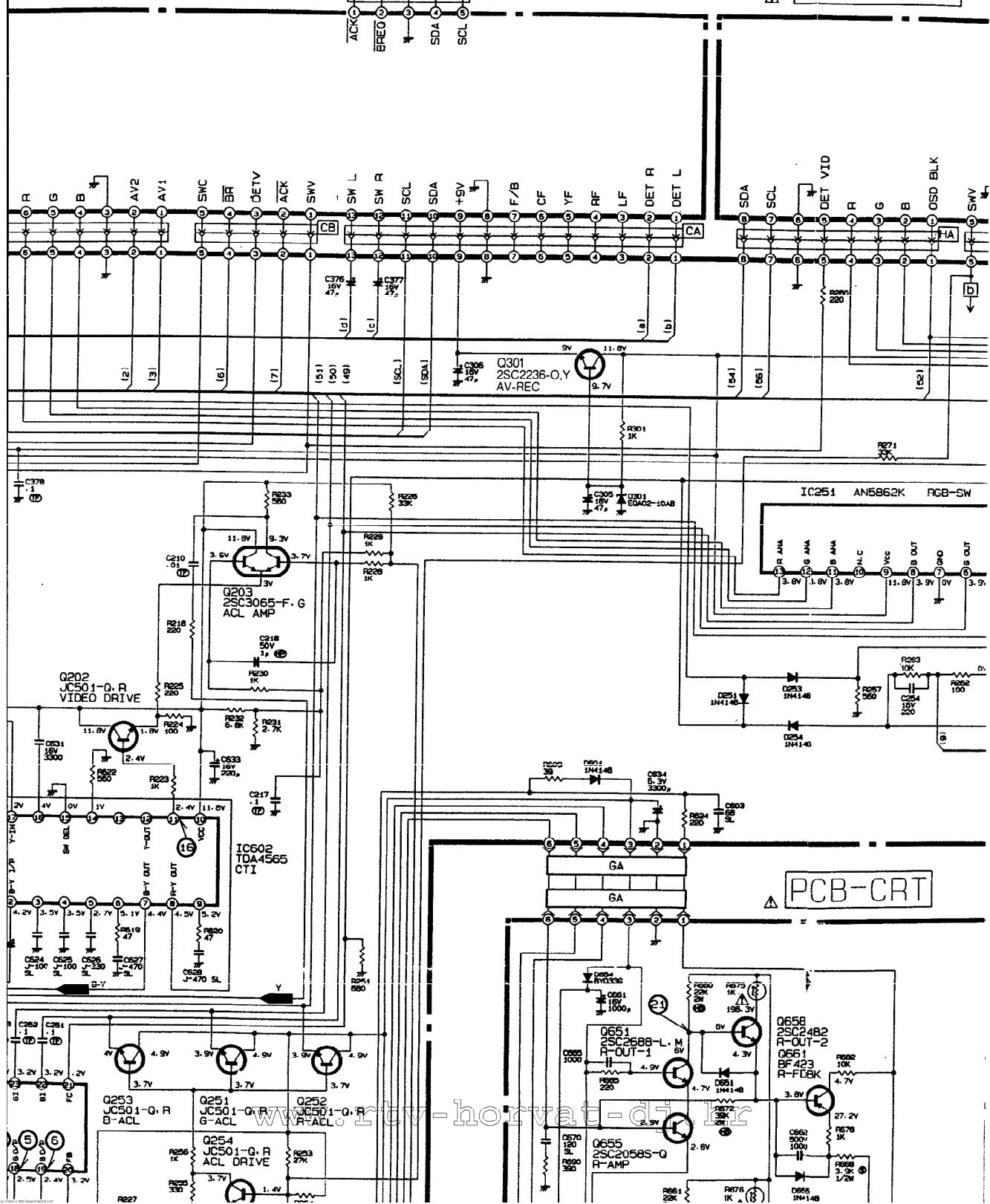
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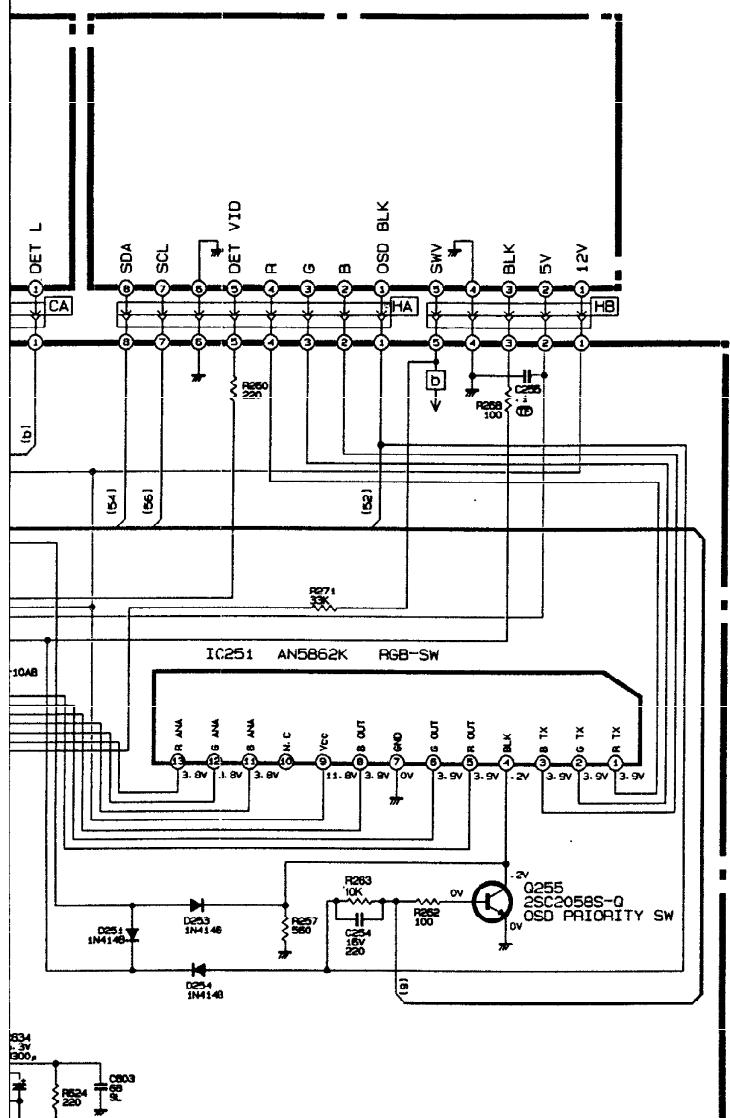
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PCB-AV

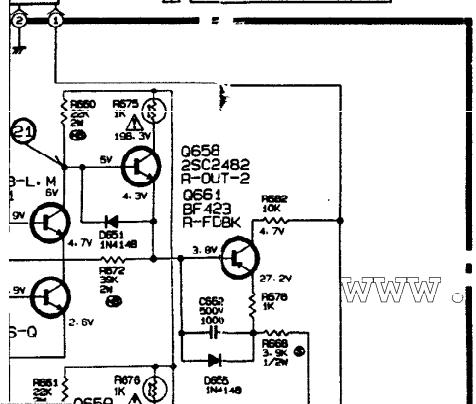
PCB-TEXT



△ PCB-TEXT



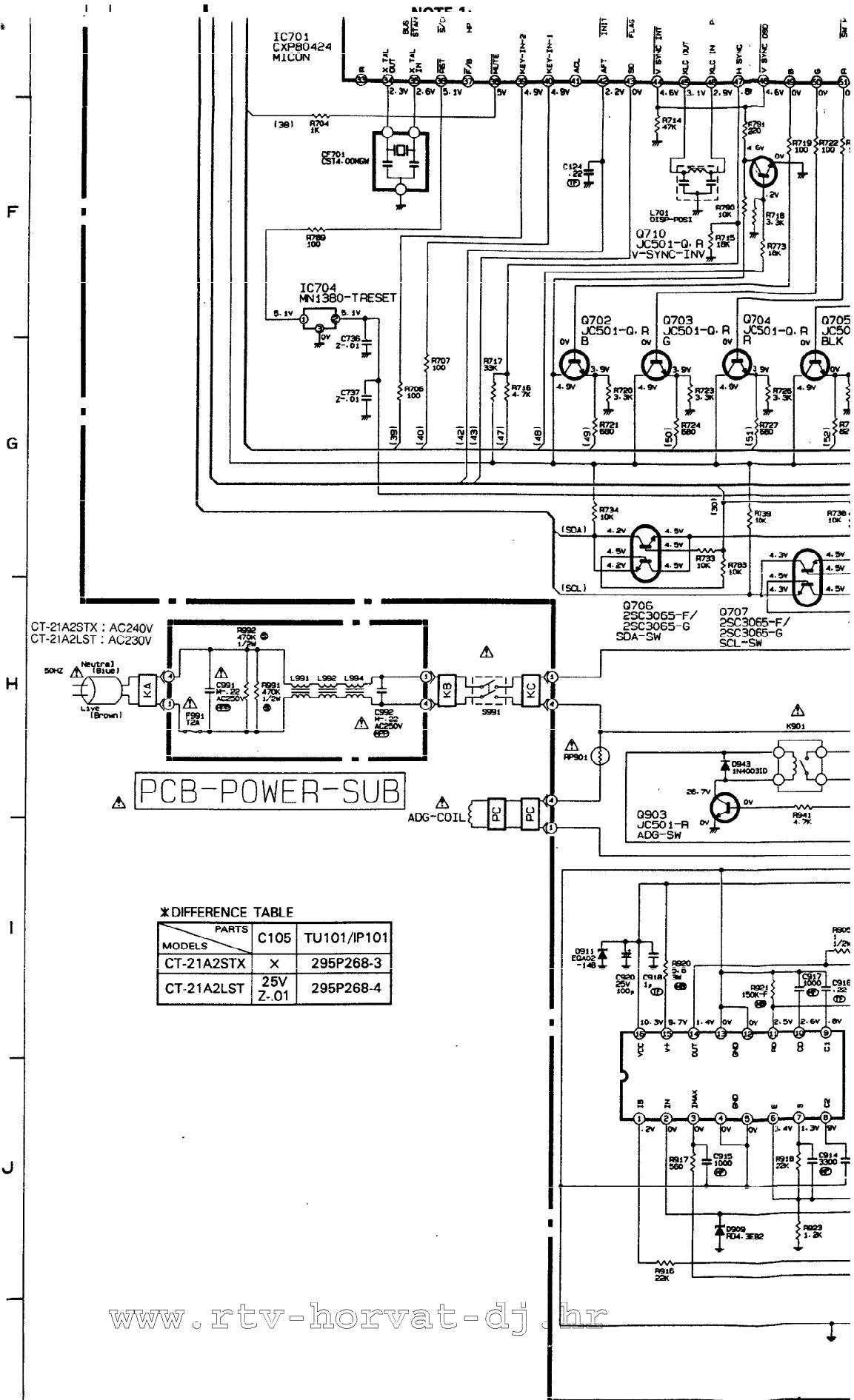
△ PCB-CRT

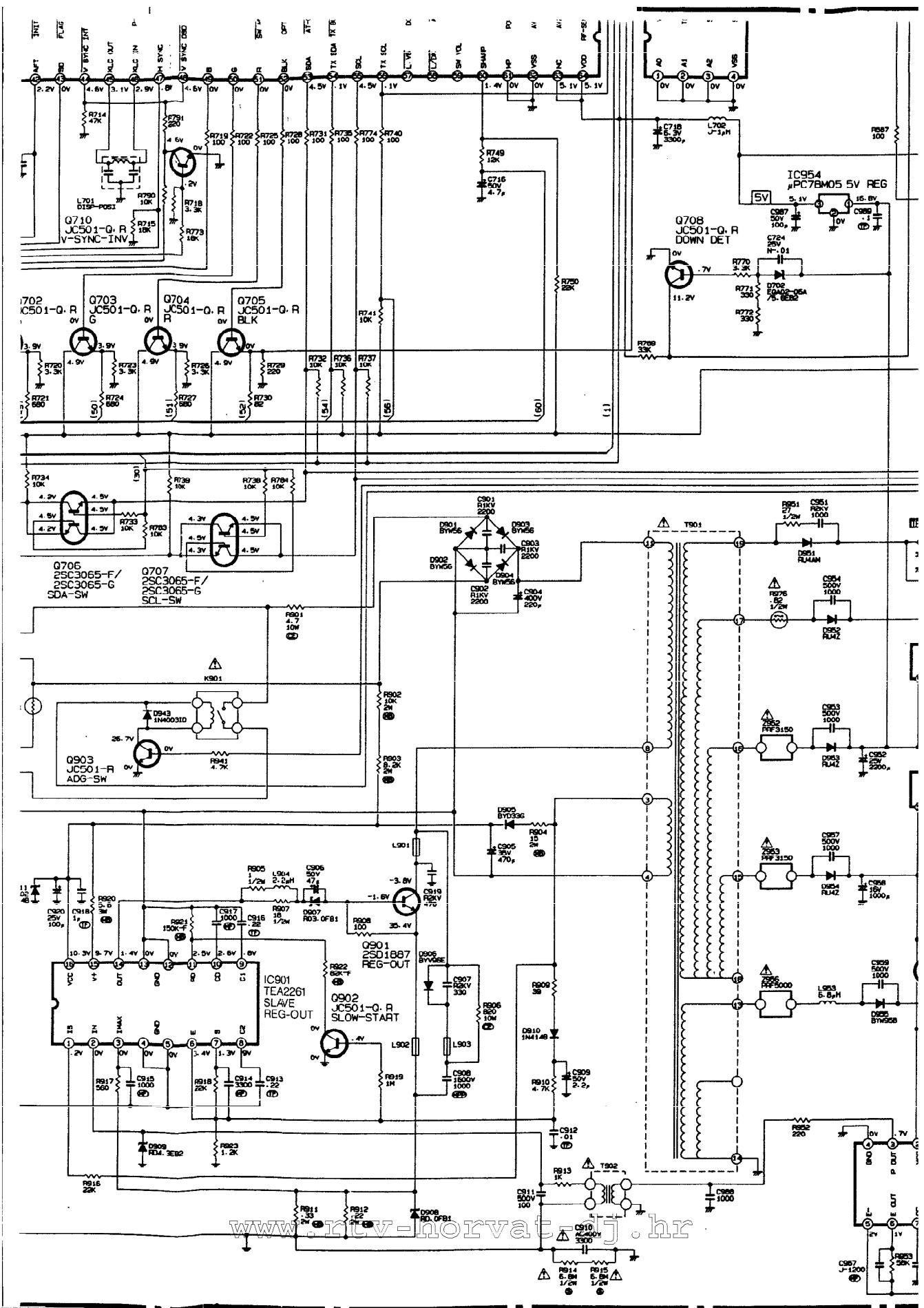


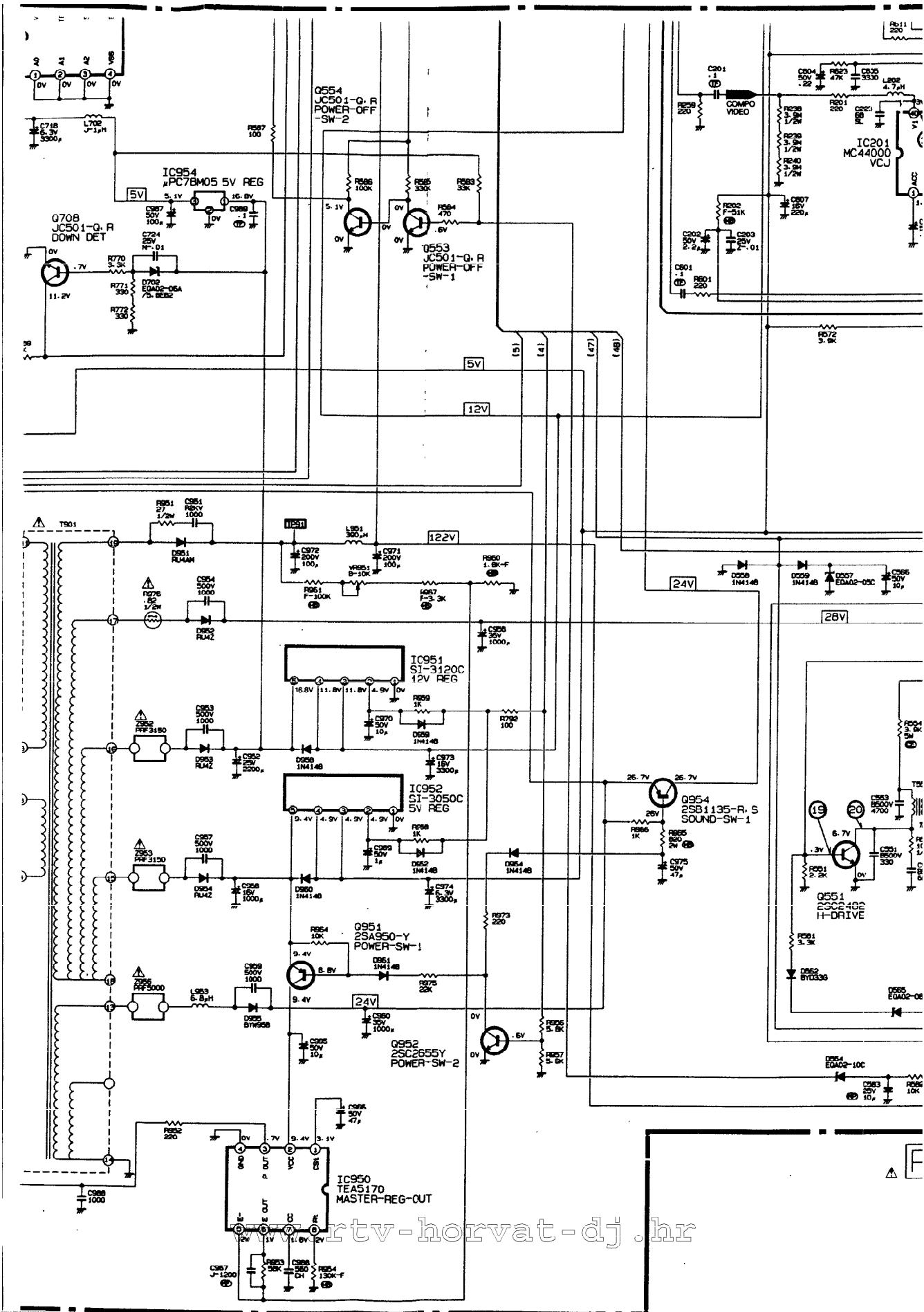
**SERVICING PRECAUTION**

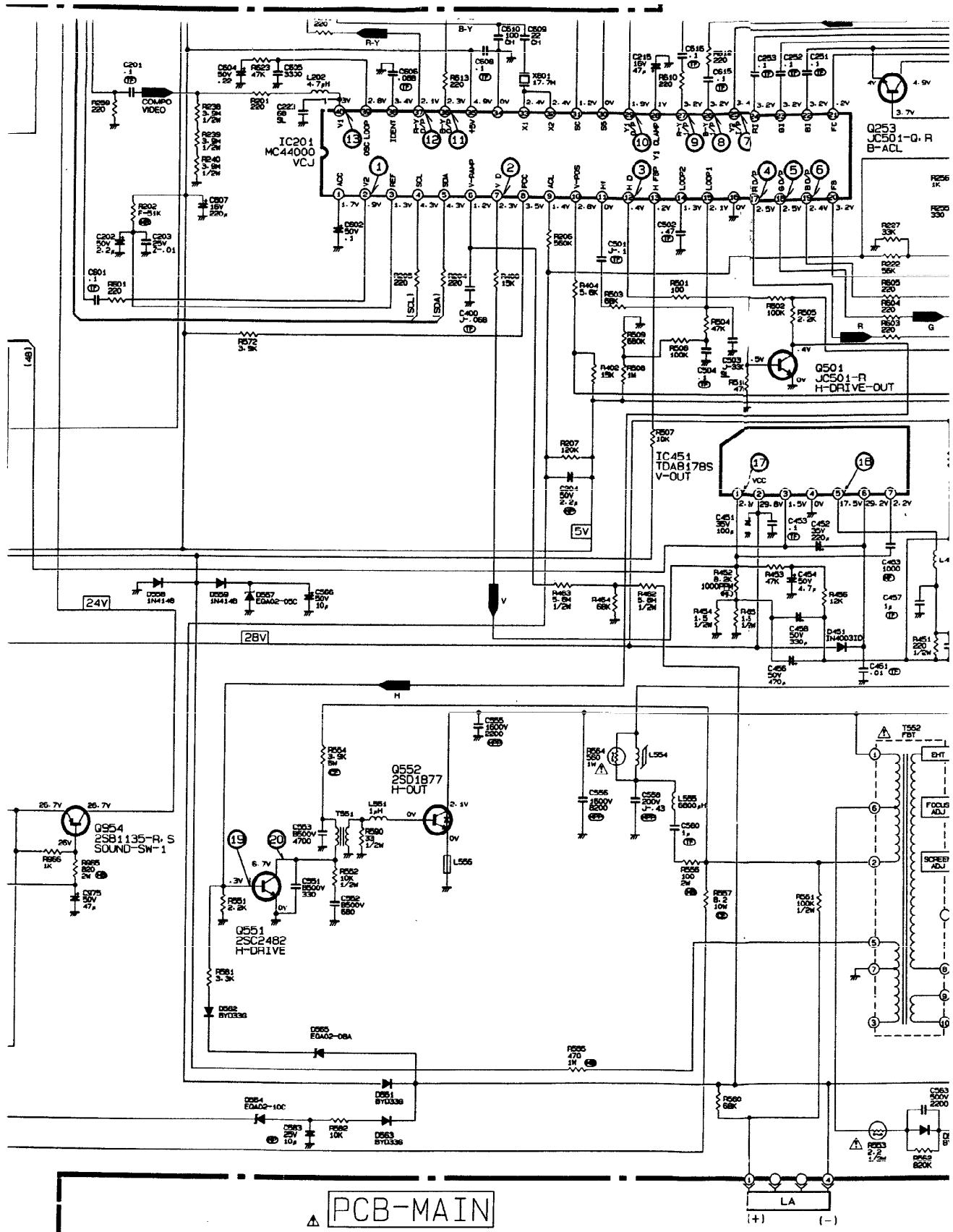
SYMBOLS INDICATE COMPONENTS HAVING SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY AND PERFORMANCE. THEREFORE REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS. FOR ACCURACY OF THE REPLACEMENT REFER TO THE PARTS LIST OF SERVICE MANUAL.

DON'T DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

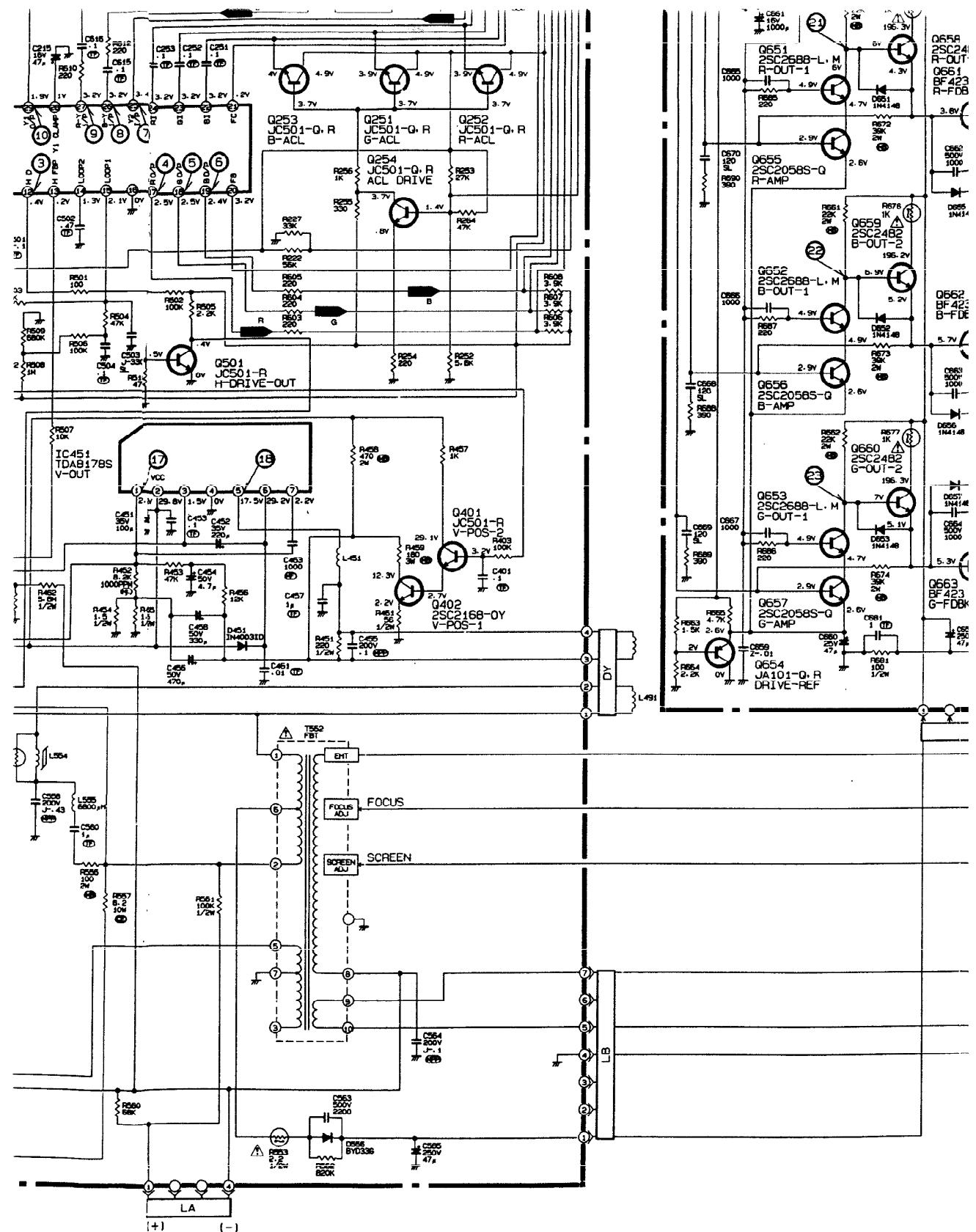




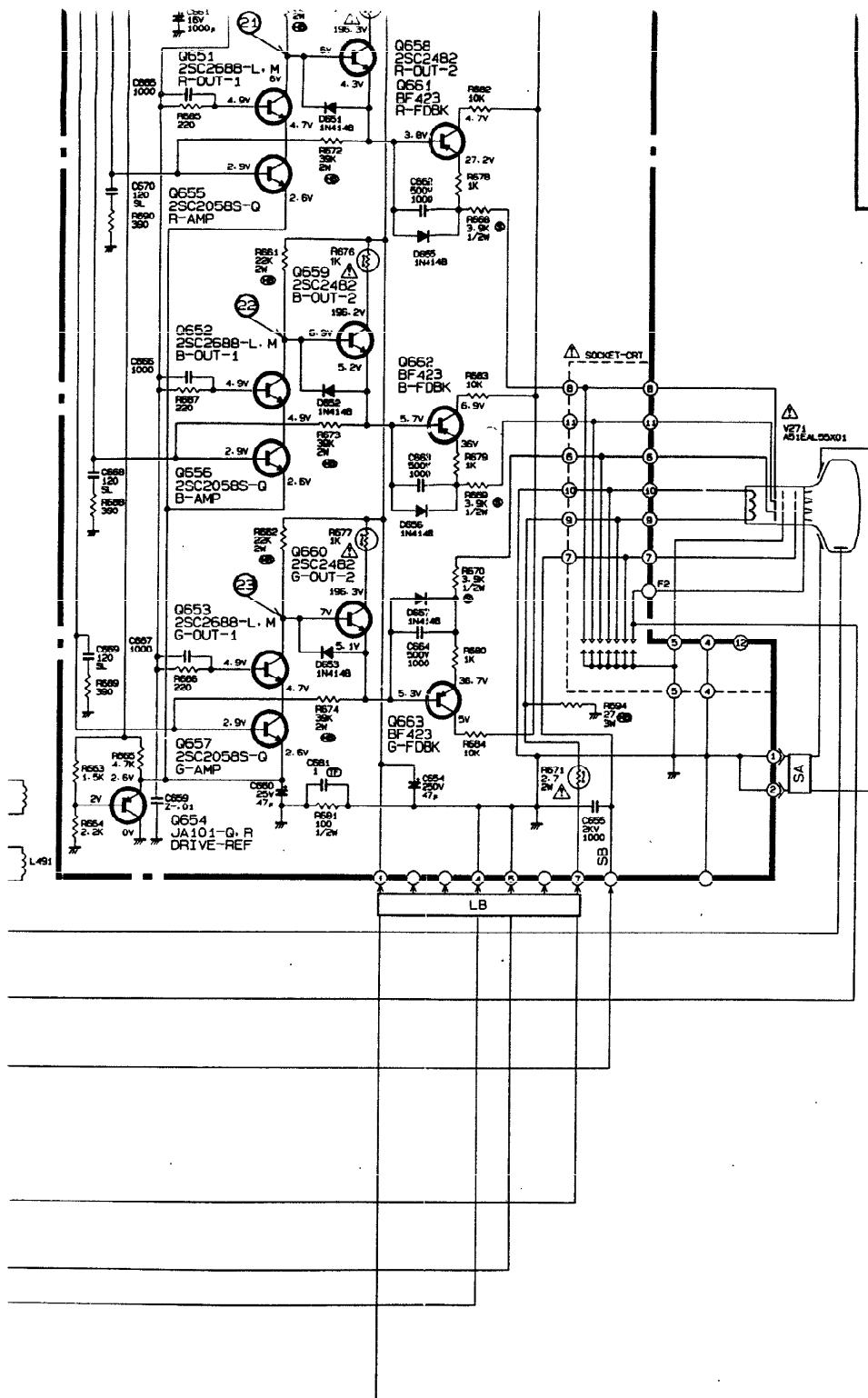




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PERFORMANCE. THEREFORE REPLACEMENT PARTS SHOULD BE IDENTICAL IN CHARACTERISTICS. FOR ACCURATE REPLACEMENT REFER TO THE PARTS MANUAL.

DON'T DEGRADE THE SAFETY OF  
THROUGH IMPROPER SERVICING.

**NOTE 1:**

- The unit of resistance is "ohm" with no  
Accordingly.  $K = 1000 \text{ ohm}$   
 $M = 1000K \text{ ohm}$
  - The wattage of resistors, if not specified  
than 1/4 watt.
  - Resistors, if not specifically designated.
  - The marks of resistors are as follows:
 

<b>CE</b>	: Cemented resistor
<b>MB</b>	: Metal oxide film resistor ( $\pm 1\%$ )
<b>MPC</b>	: Metal plate cement resistor
<b>ML</b>	: Metal linear resistor.
<b>S</b>	: Fixed composition resistor
<b>W</b>	: Wire wound resistor
<b>M</b>	: Metal film resistor
  - The tolerance of resistor value, if not specified  
 $\pm 5\%$ ,  $K = \pm 10\%$   $M = \pm 20\%$
  - The unit of capacitance, if not specified  
a)  $\mu F$ . for numbers less than 1  
b) PF. for numbers more than 1
  - Capacitors, if not specifically designated  
. except electrolytic capacitors.
  - The marks of capacitors are as follows:
 

<b>ALM</b>	: Aluminum electrolytic capacitor
<b>MF</b>	: Polyester capacitor
<b>PP</b>	: Polypropylene film capacitor
<b>TANT</b>	: Tantalum capacitor
<b>TF</b>	: Twin film capacitor.
<b>MP_PP</b>	: Polyester polypropylene film capacitor
<b>MPP</b>	: Metallize plastic film capacitor
<b>NP</b>	: Non polarized electrolytic capacitor
<b>PS</b>	: Styrol capacitor.
<b>SC</b>	: Semiconductor capacitor.
<b>#</b>	: Electrolytic capacitor
  - The DC working voltage of capacitor, if  
specified is: 50V
  - The tolerance of capacitor value, if not specified:  
 $\pm 10\%$  for polyester capacitor  
 $\pm 5\%$  for ceramic capacitor  
and  $J = \pm 5\%$   $K = \pm 10\%$   $M = \pm 20\%$   
 $C = \pm 0.25PF$   $D = \pm 0.5PF$   $F = \pm 1P$

## SPECIFIC SYMB

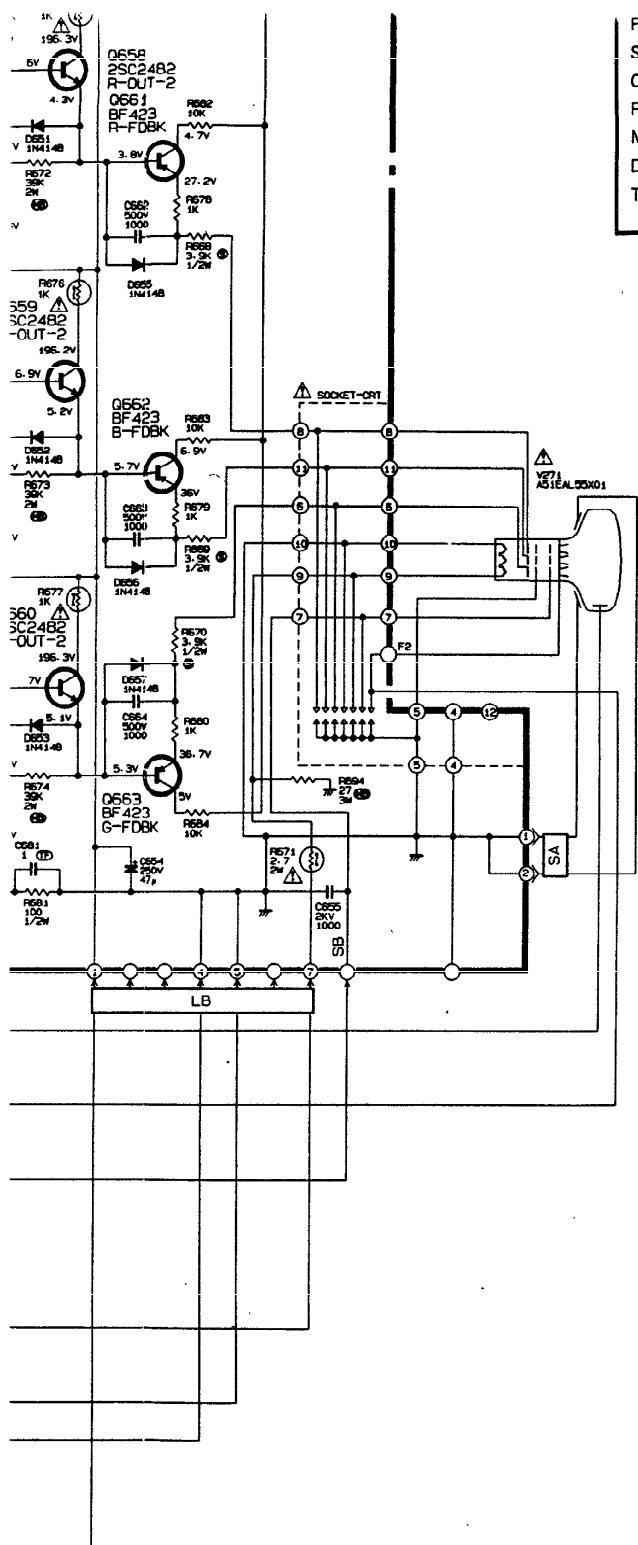
	Zener Diode		C
	Varicap		A
	Posistor		P
	Thermistor		O
	Fusible Resistor		C

**NOTE 2:**

1. DC voltages were measured from point ground with a high-Z voltmeter.
  2. Waveforms were taken with offset PAL.
  3. This is a basic schematic diagram. Some modification according to engineering im

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CT-2  
CT-2  
CT-2  
CT-2



PERFORMANCE. THEREFORE REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS. FOR ACCURACY OF THE REPLACEMENT REFER TO THE PARTS LIST OF SERVICE MANUAL.

DON'T DEGRADE THE SAFETY OF THE RECEIVERS  
THROUGH IMPROPER SERVICING.

**NOTE 1:**

- The unit of resistance is "ohm" with no symbol.  
Accordingly,  $K = 1000$  ohms  
 $M = 1000K$  ohms.
  - The wattage of resistors, if not specifically designated, is less than 1/4 watt.
  - Resistors, if not specifically designated, are carbon resistors.
  - The marks of resistors are as follows:
    - CE** : Cemented resistor
    - MB** : Metal oxide film resistor (type B)
    - MPC** : Metal plate cement resistor.
    - ML** : Metal linear resistor.
    - S** : Fixed composition resistor
    - W** : Wire wound resistor
    - M** : Metal film resistor
  - The tolerance of resistor value, if not specifically designated, is:  
 $\pm 5\%$ .  $K = \pm 10\%$   $M = \pm 20\%$
  - The unit of capacitance, if not specifically designated, is:
    - $\mu F$ , for numbers less than 1
    - $PF$ , for numbers more than 1
  - Capacitors, if not specifically designated are Ceramic capacitors except electrolytic capacitors.
  - The marks of capacitors are as follows:
    - ALM** : Aluminus electrolytic capacitor
    - MF** : Polyester capacitor
    - PP** : Polypropylene film capacitor
    - TANT** : Tantalum capacitor
    - TF** : Twin film capacitor.
    - MF.PP** : Polyester polypropylene film capacitor.
    - MPP** : Metallize plastic film capacitor.
    - NP** : Non polarized electrolytic capacitor.
    - PS** : Styrol capacitor.
    - SC** : Semi conductor capacitor.
    - \*** : Electrolytic capacitor
  - The DC working voltage of capacitor, if not specifically designated is: 50V
  - The tolerance of capacitor value, if not specifically designated is:
    - $\pm 10\%$  for polyester capacitor
    - $\pm 5\%$  for ceramic capacitor

## **SPECIFIC SYMBOL**

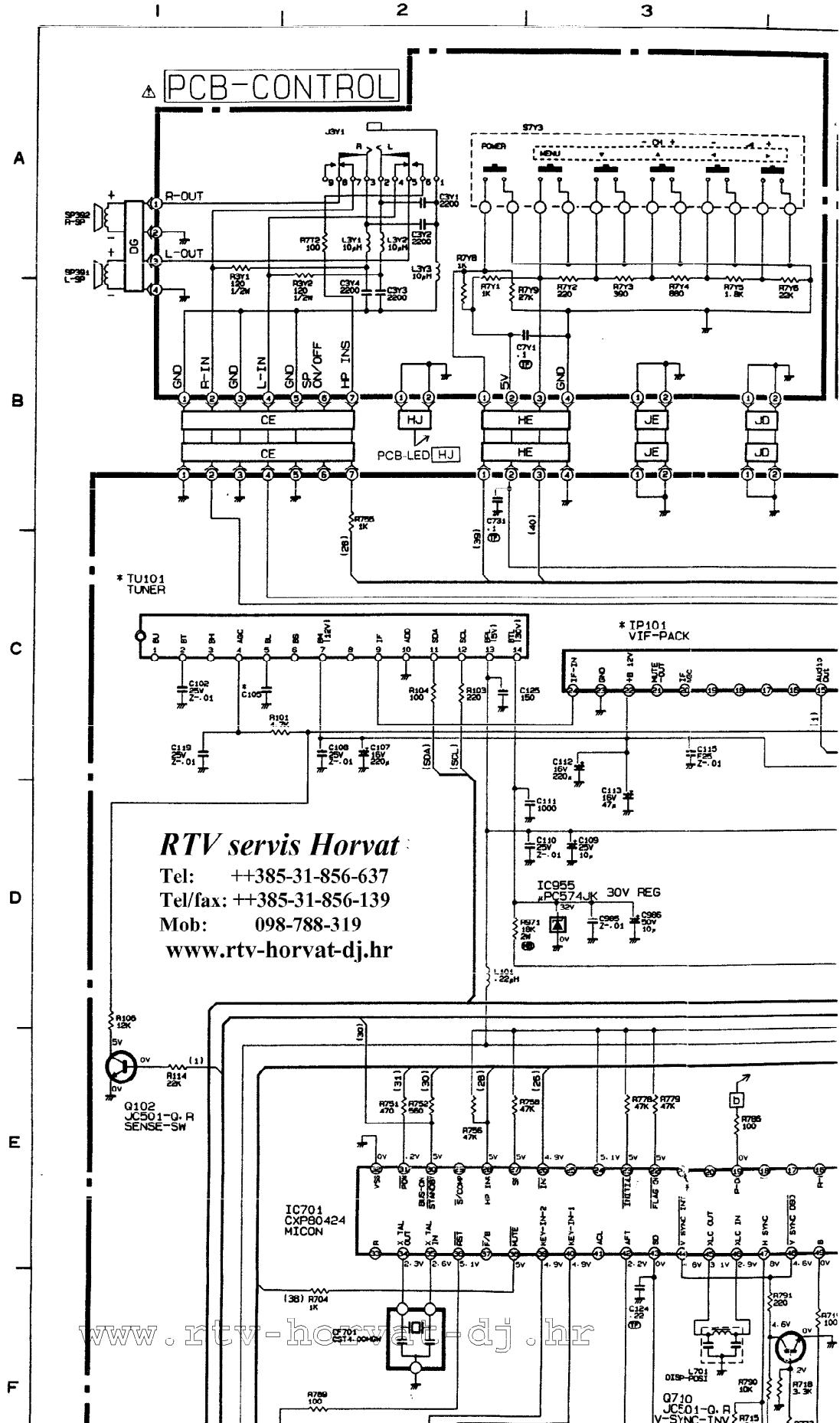
	Zener Diode		Varistor
	Varicap		Crystal unit
	Posistor		Air Gap
	Thermistor		Part (resistor) attached on the copper-foil side
	Fusible Resistor		of PCB Ceramic filter

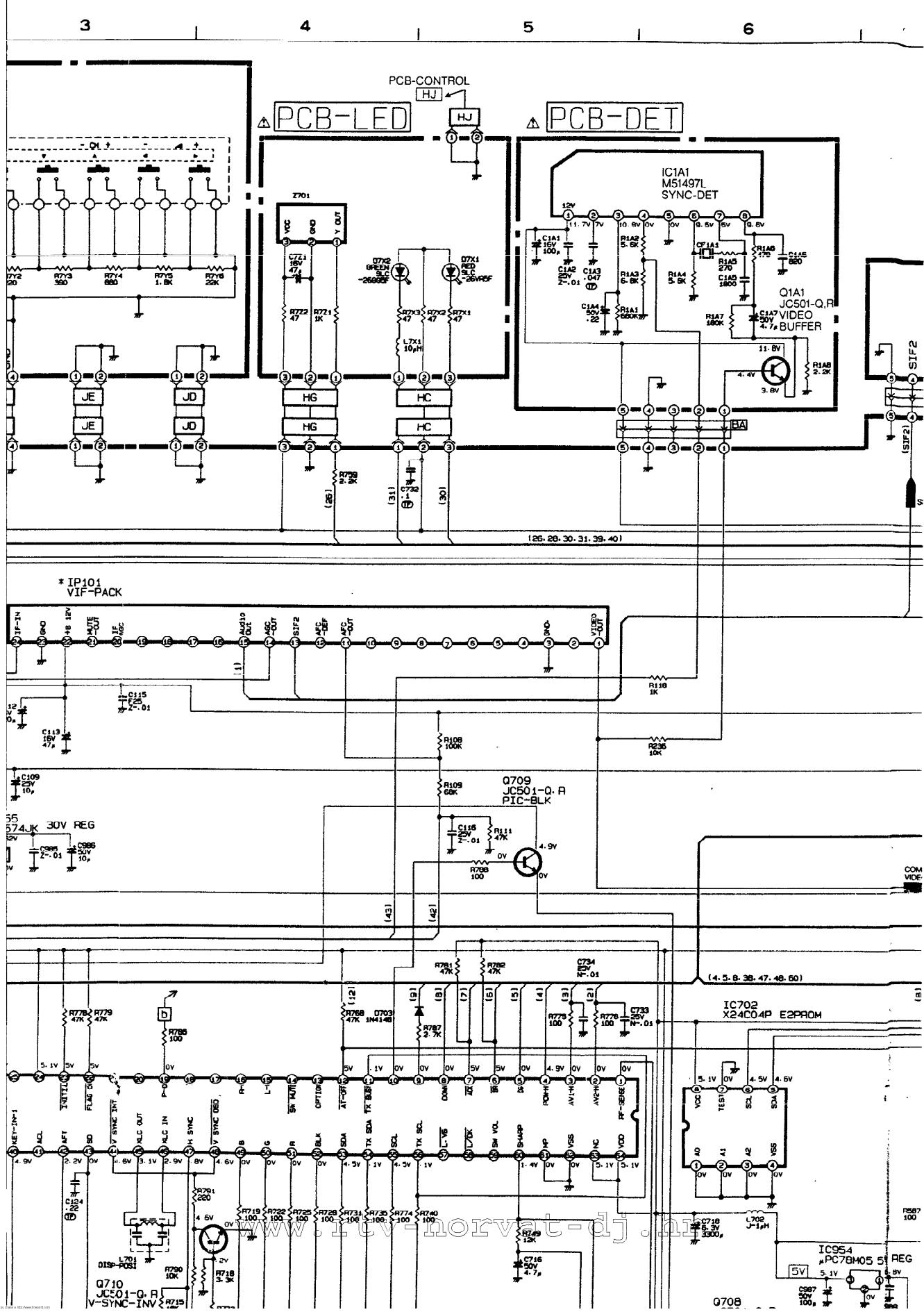
**NOTE 2:**

1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
  2. Waveforms were taken with offset PAL colour bar signal.
  3. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

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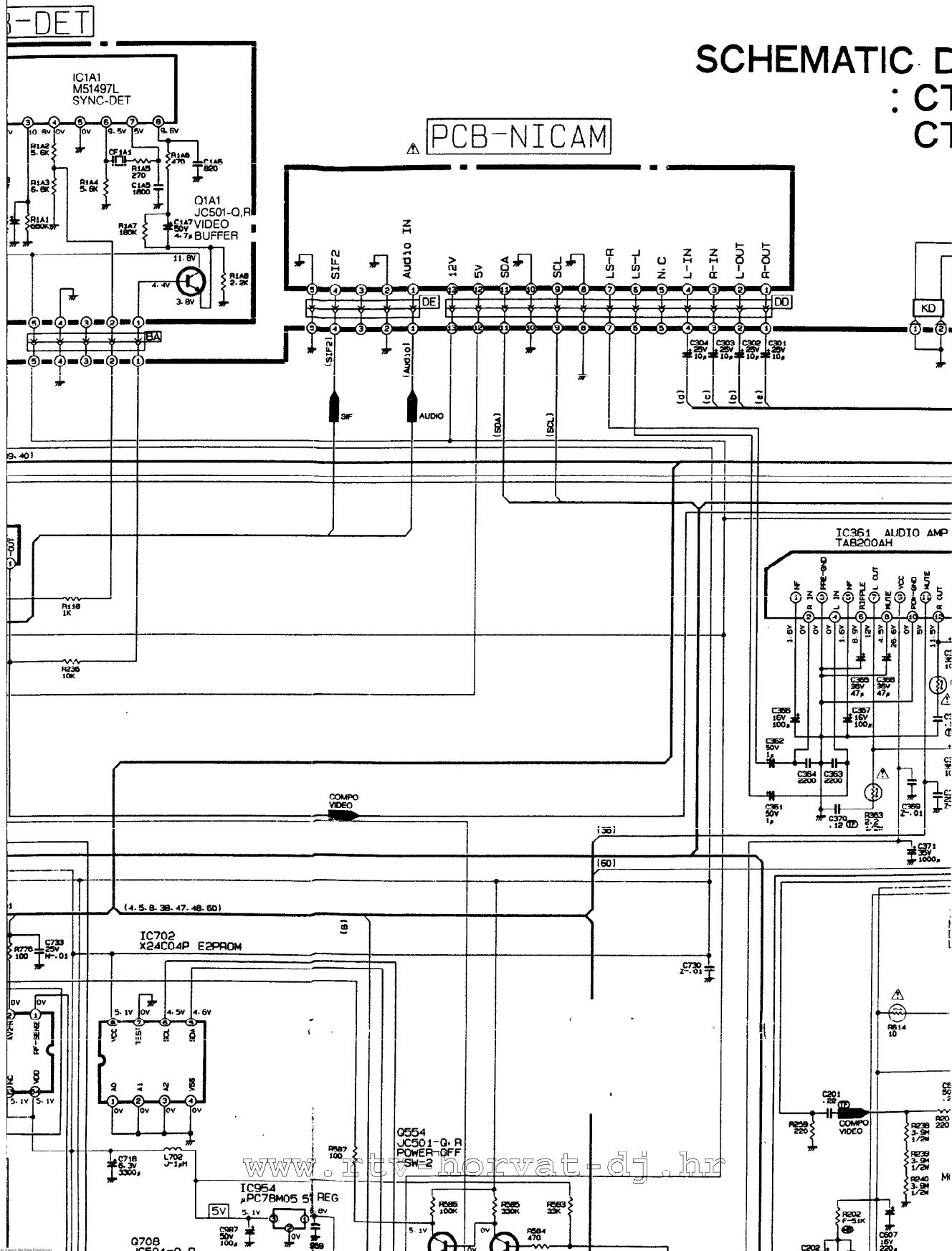
CT-21A2STX  
CT-21A2LST  
CT-25A2STX  
CT-25A2LST(1/4)





# SCHEMATIC C

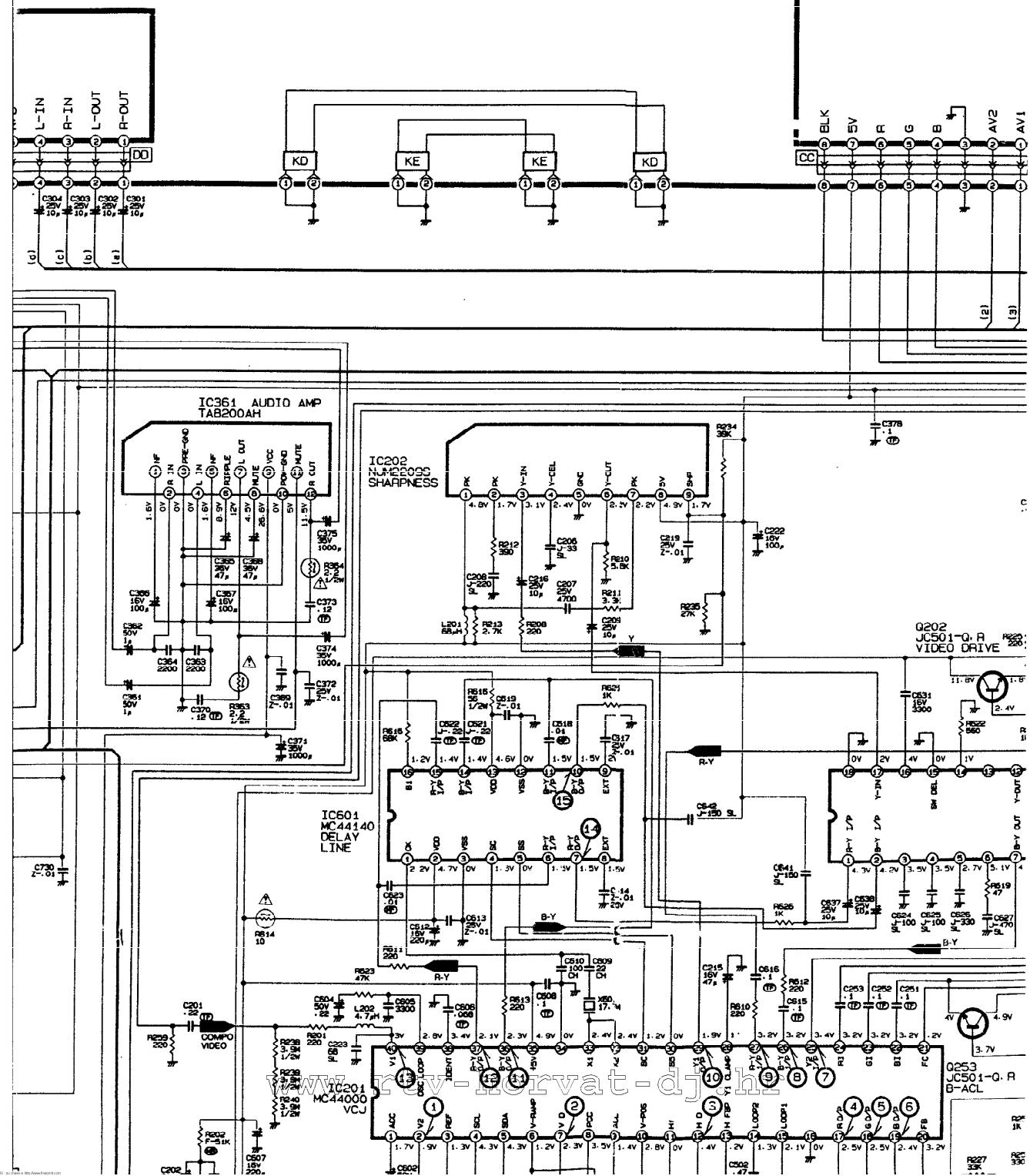
: C1  
C1



# SCHEMATIC DIAGRAM MODELS

## : CT-25A2STX CT-25A2LST

PCE



11

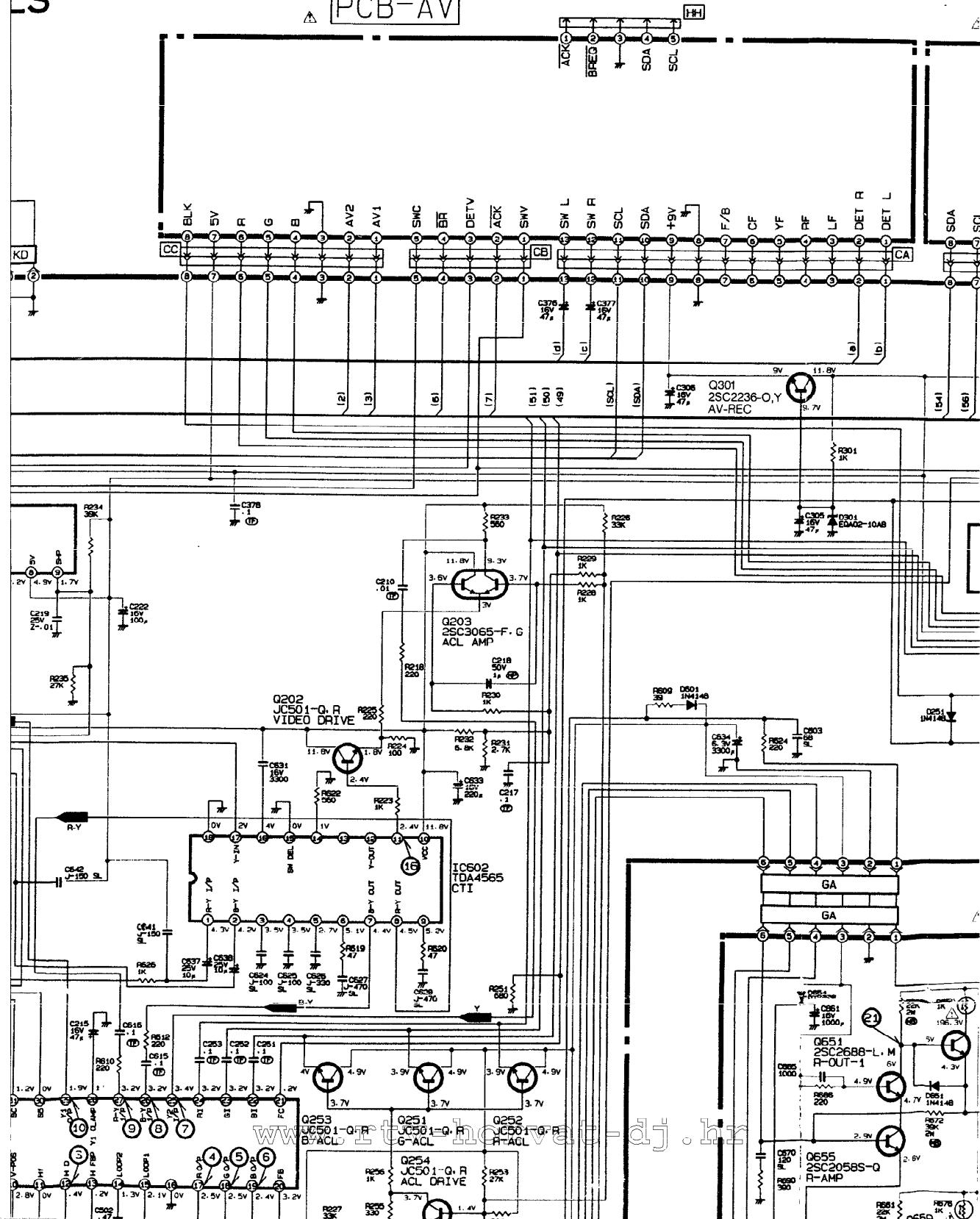
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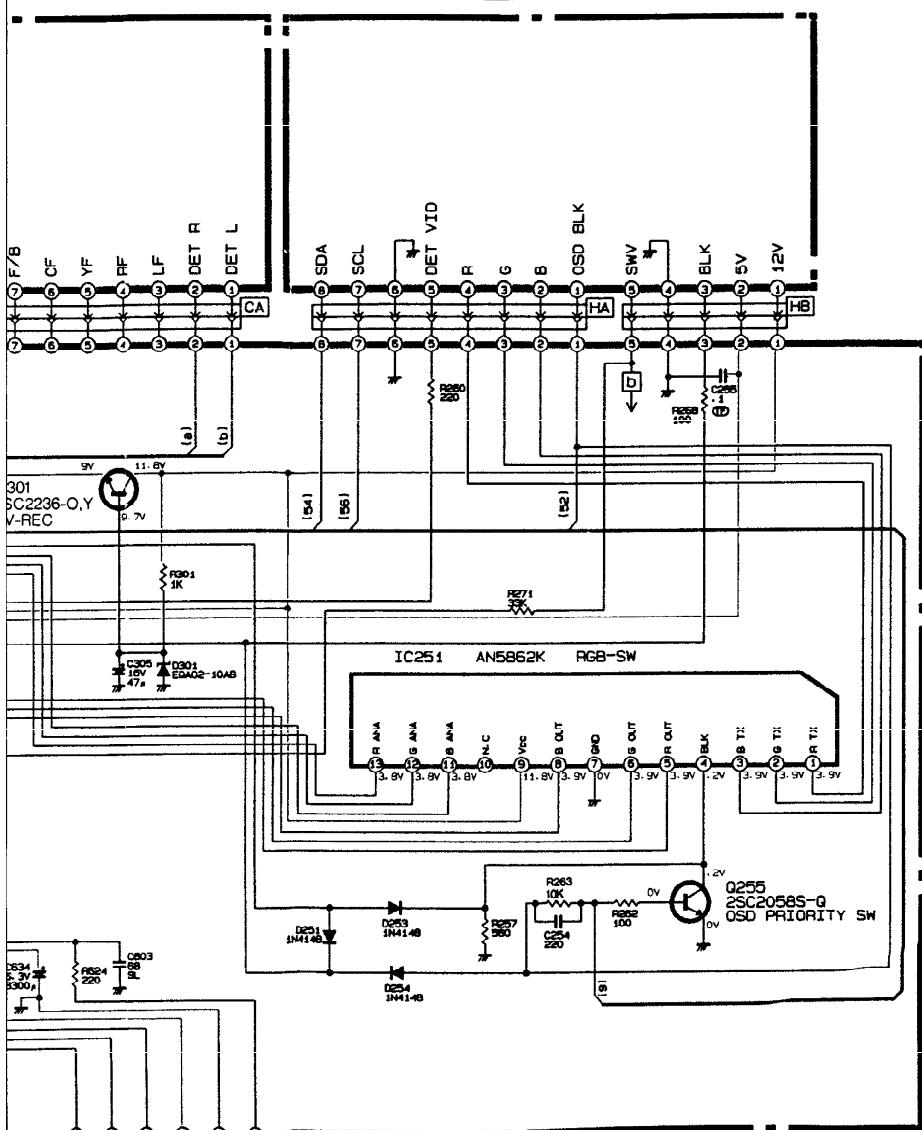
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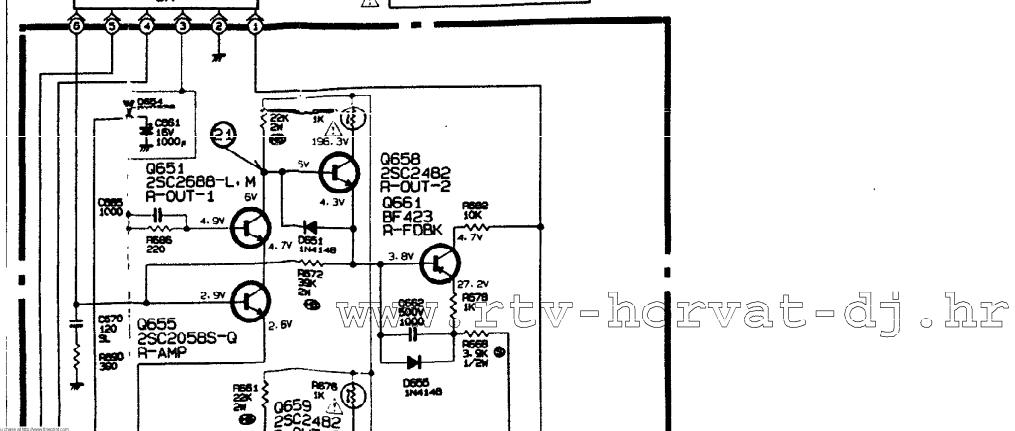
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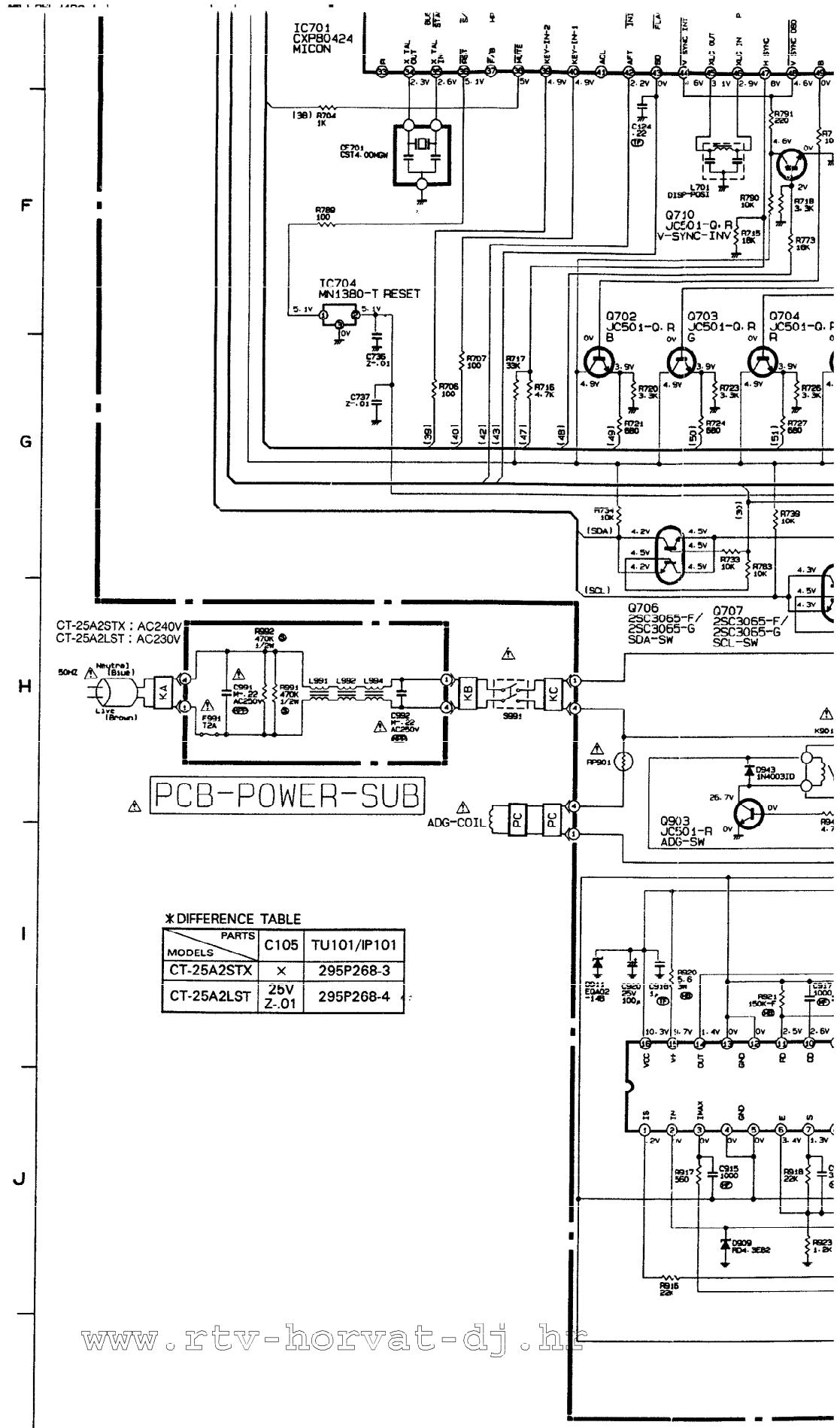


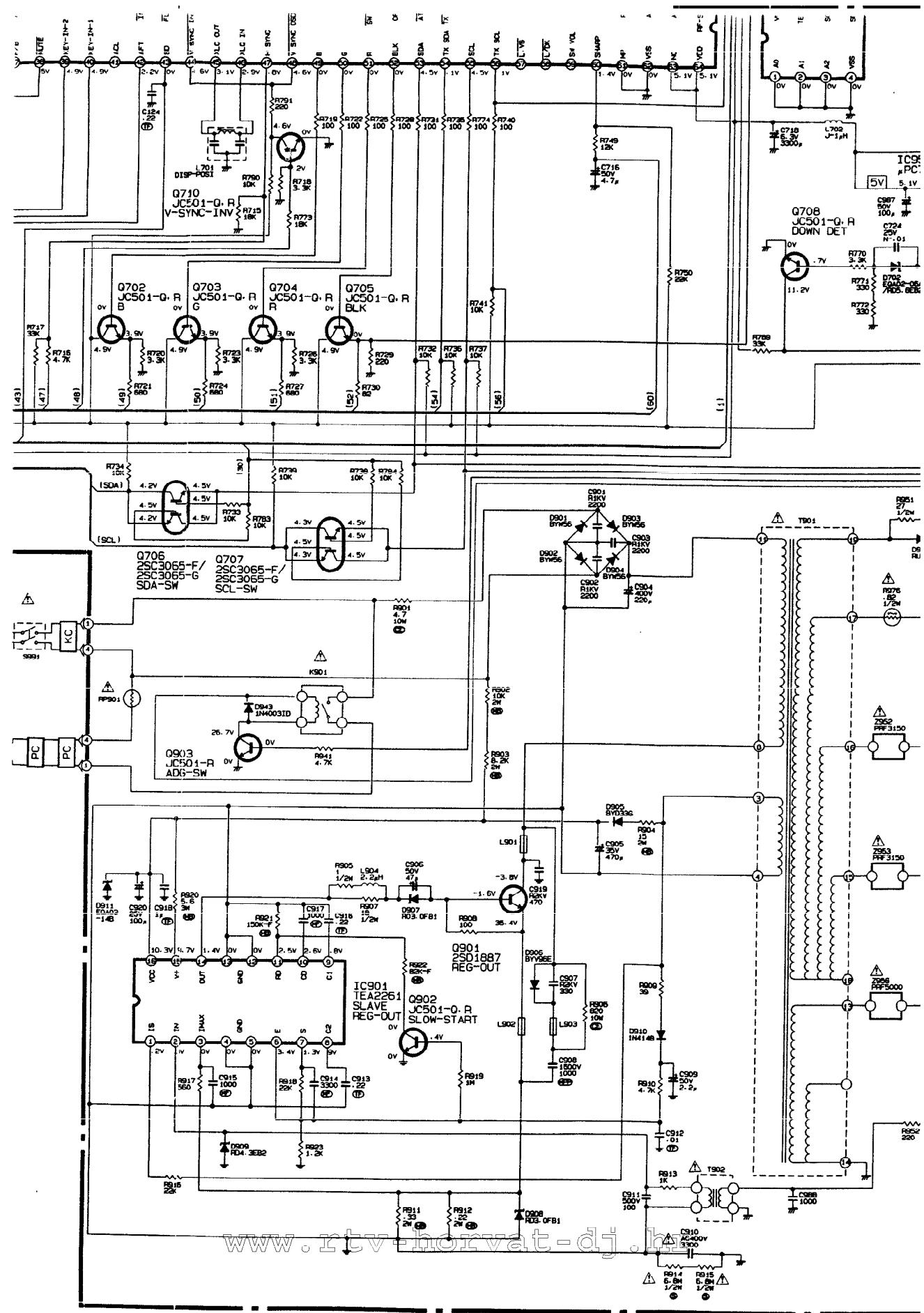
PCB-TEXT

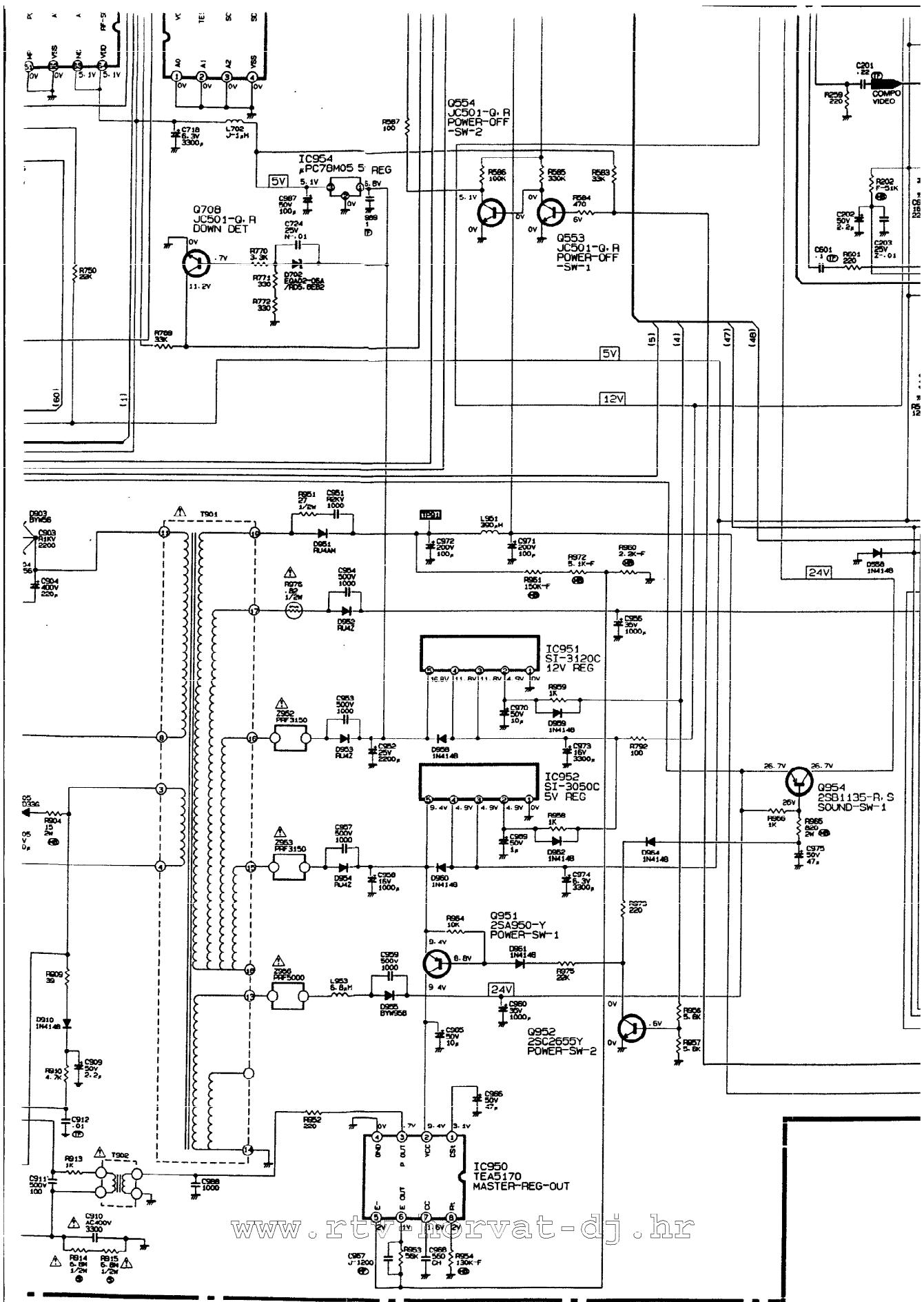


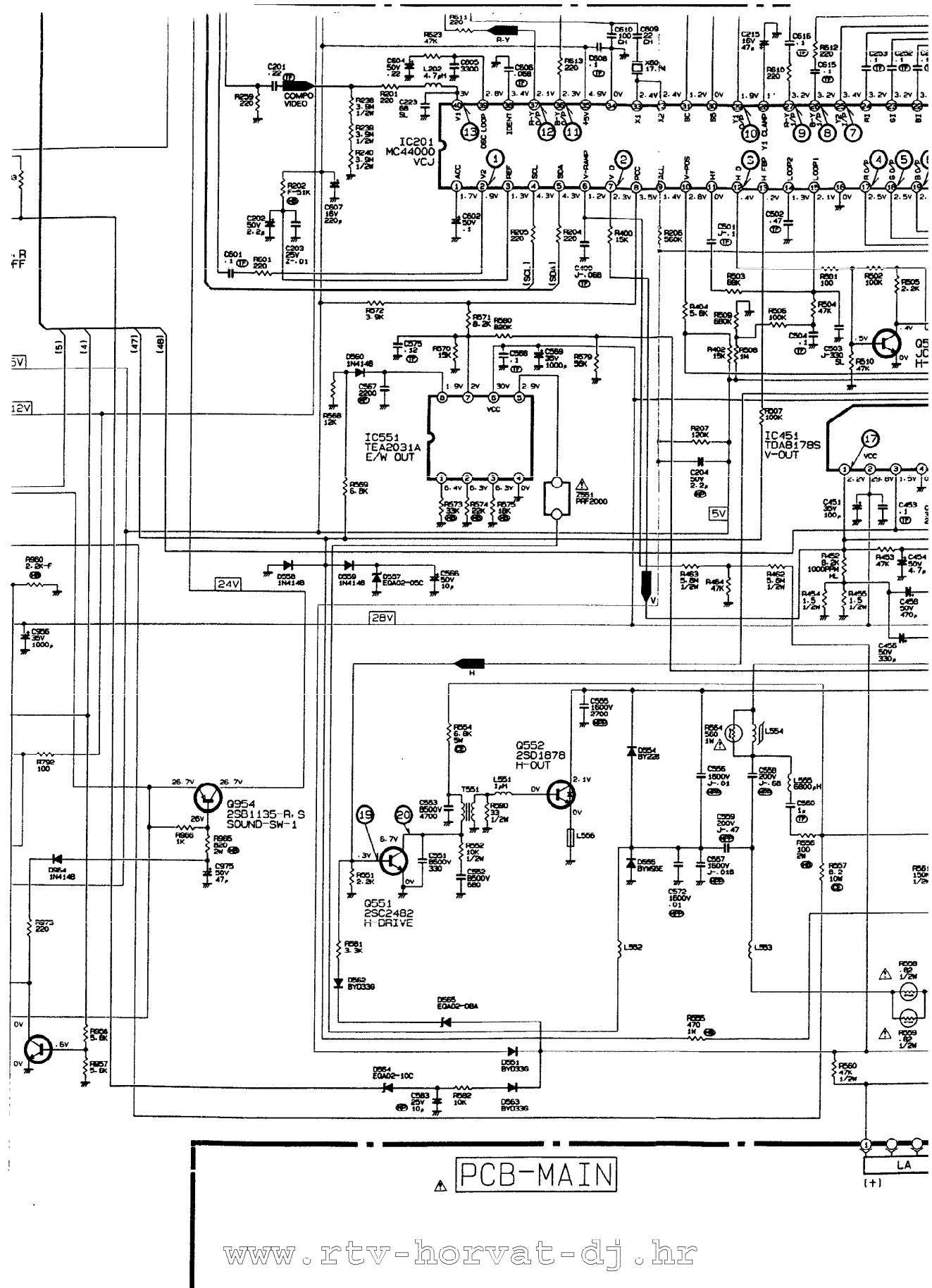
PCB-CRT

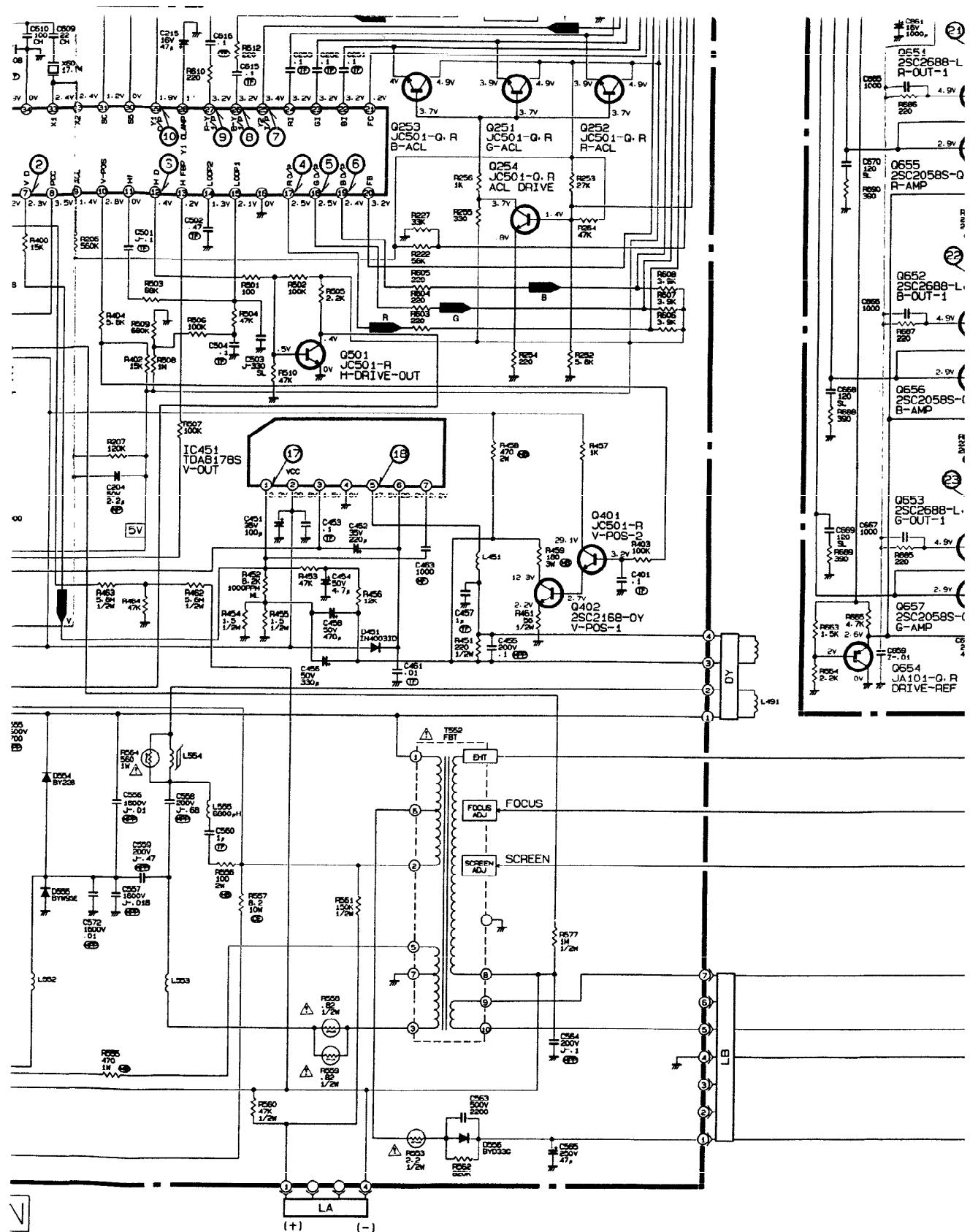




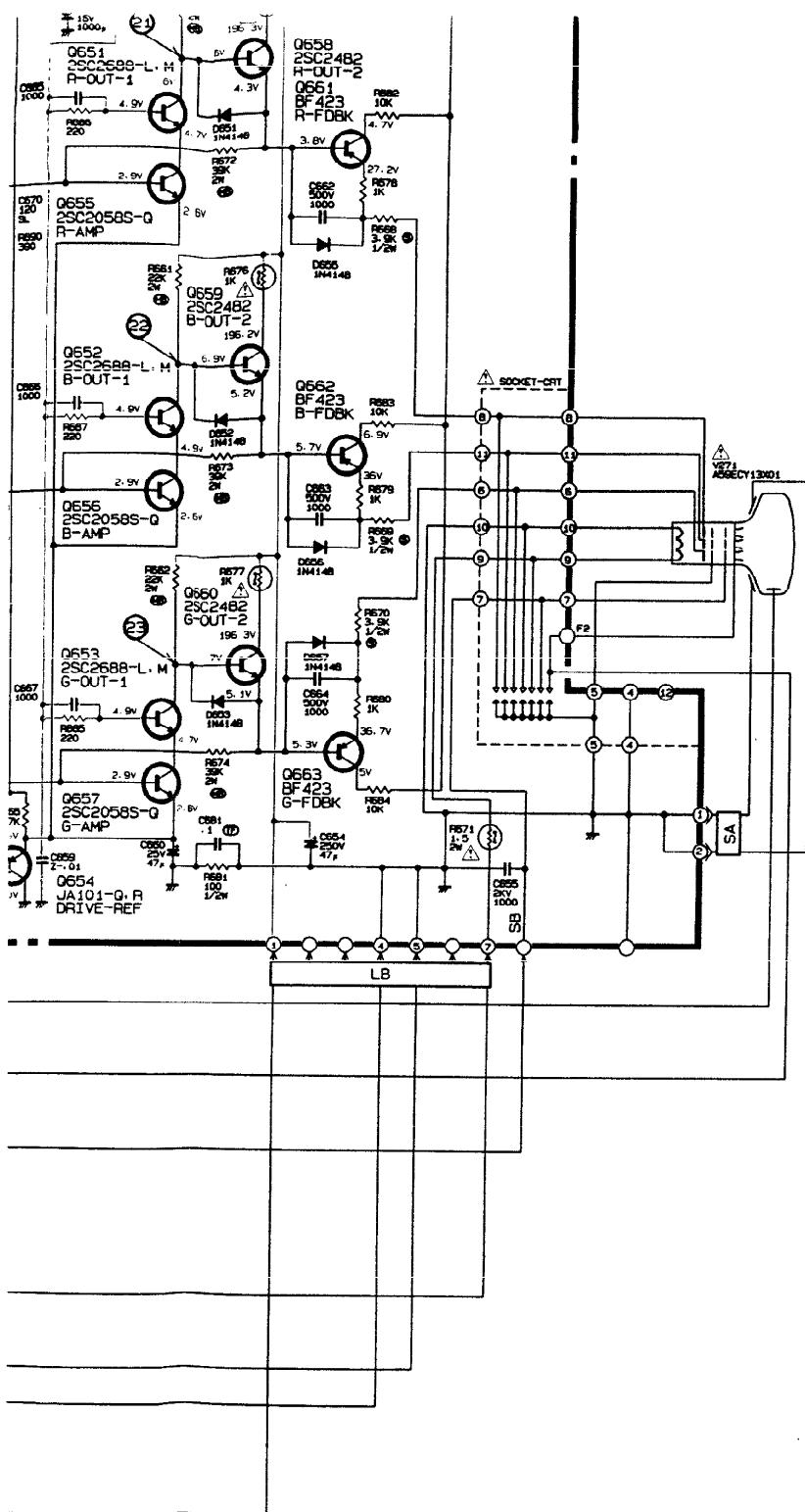




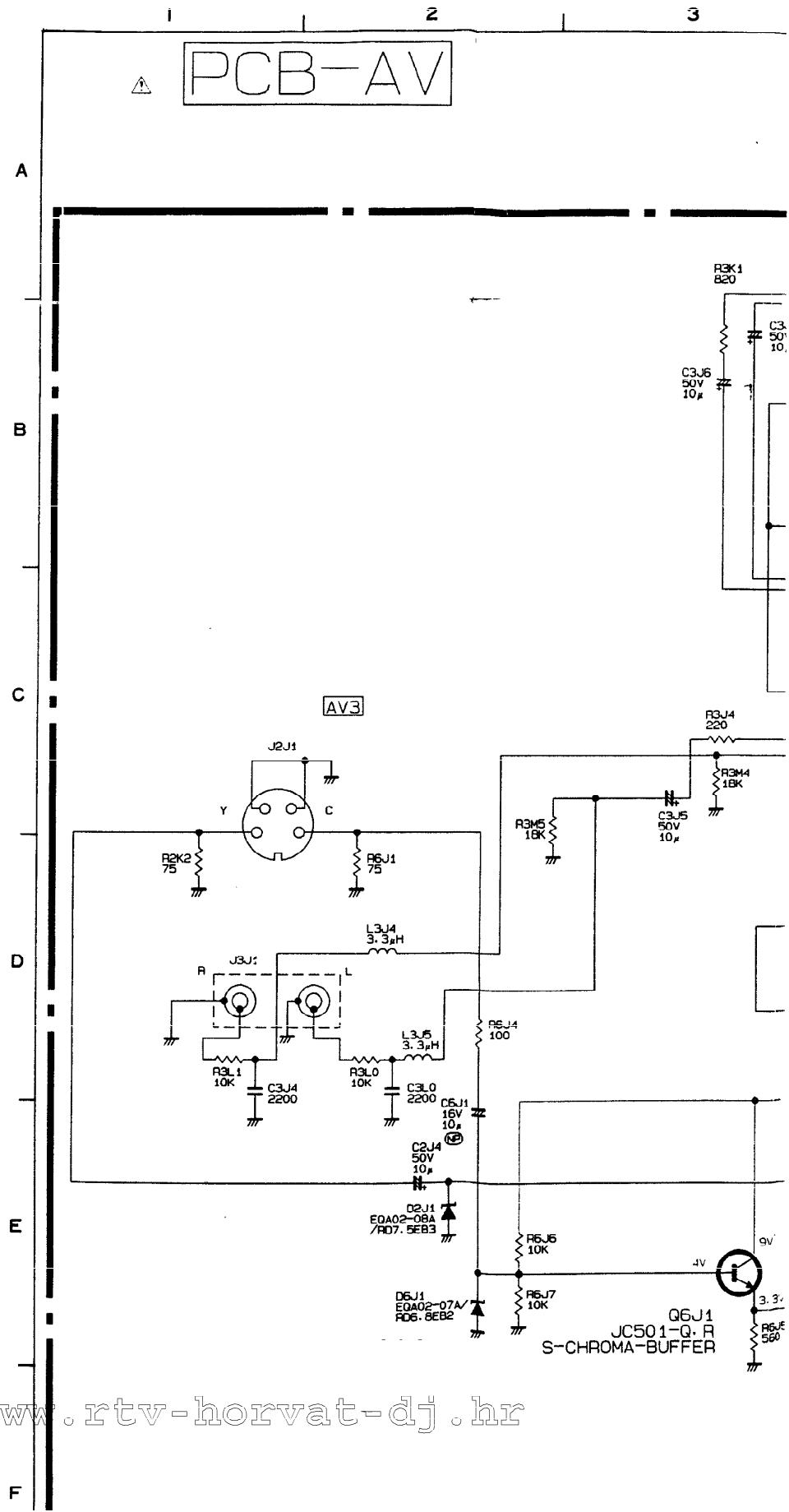




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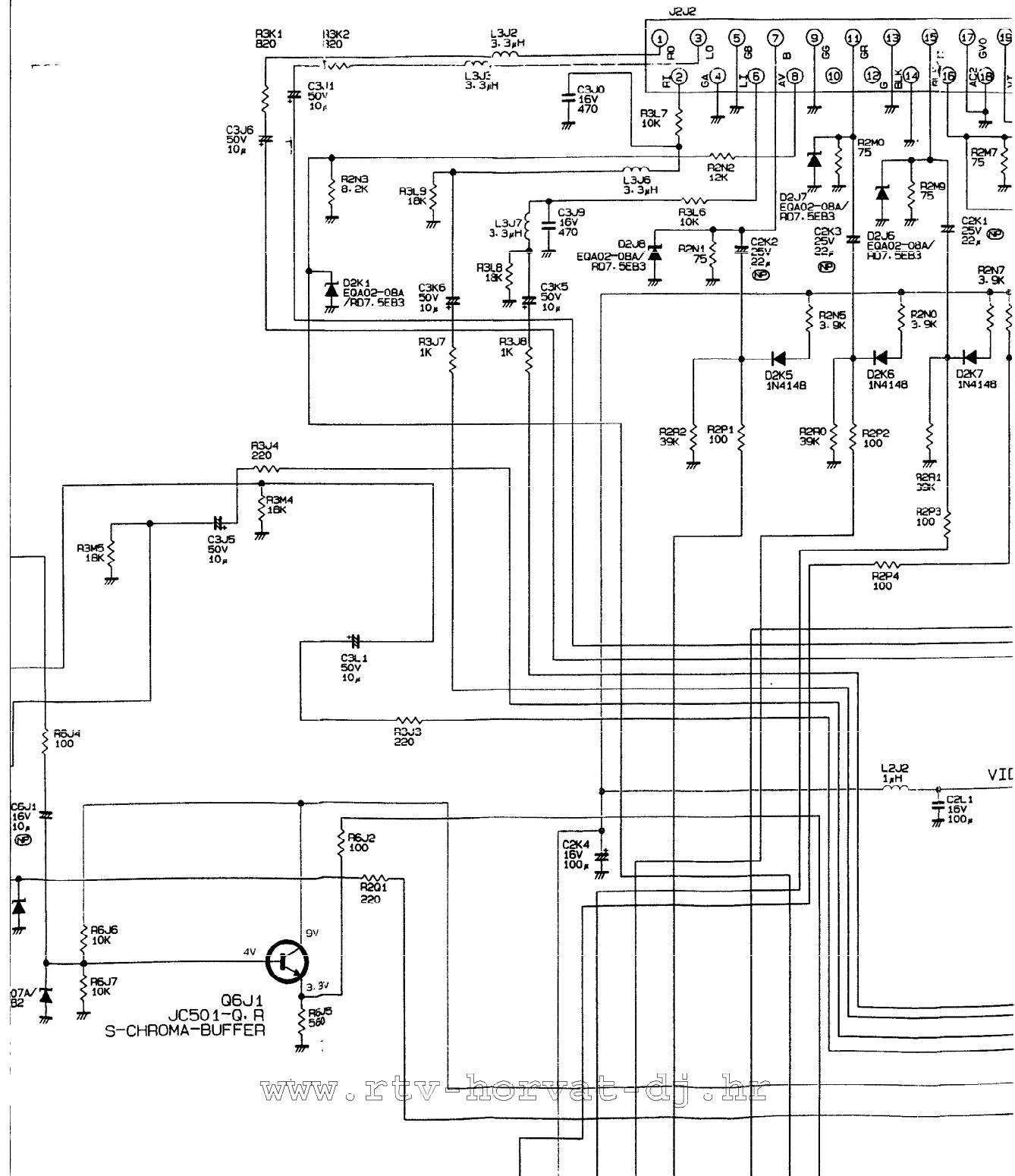
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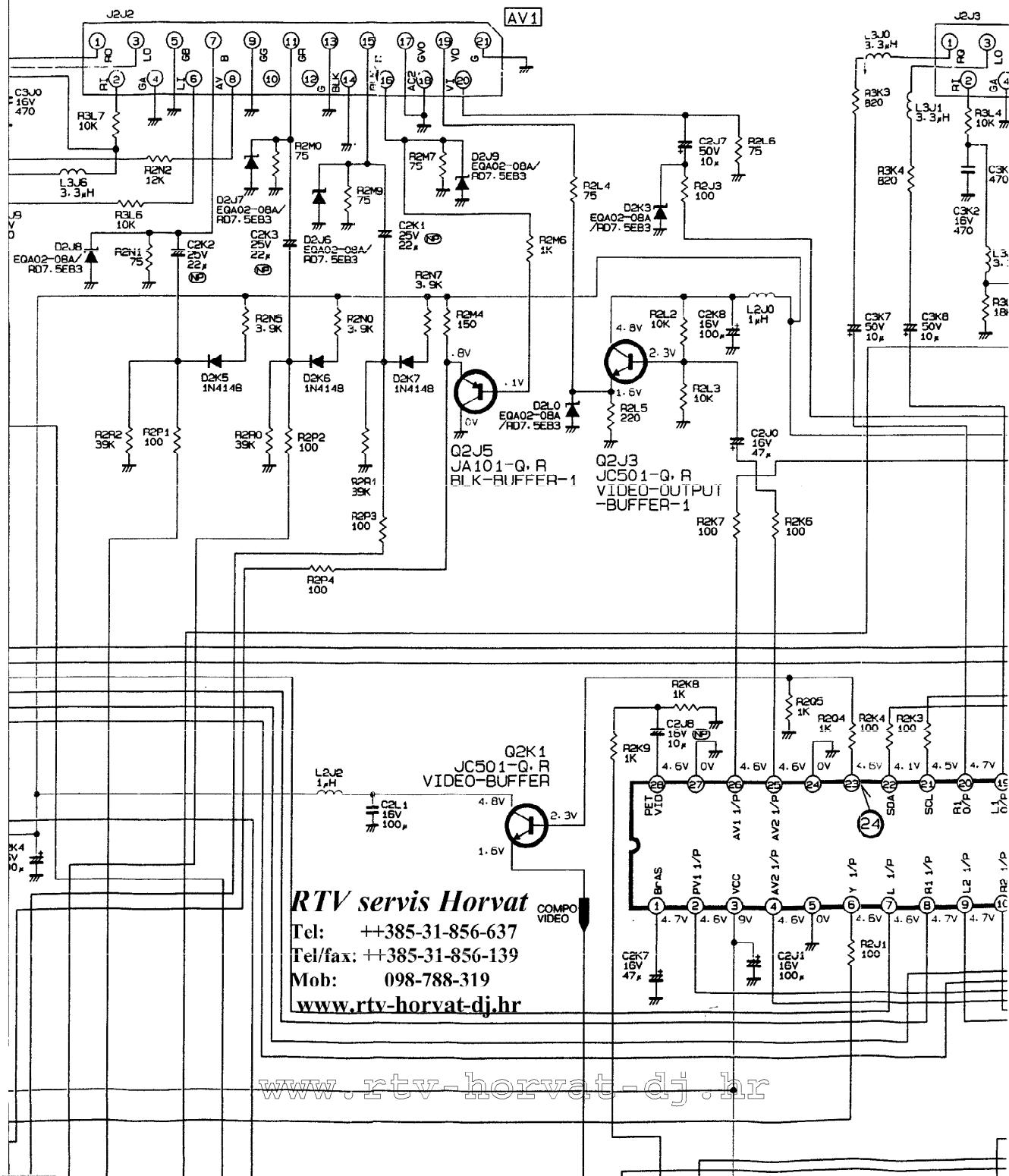
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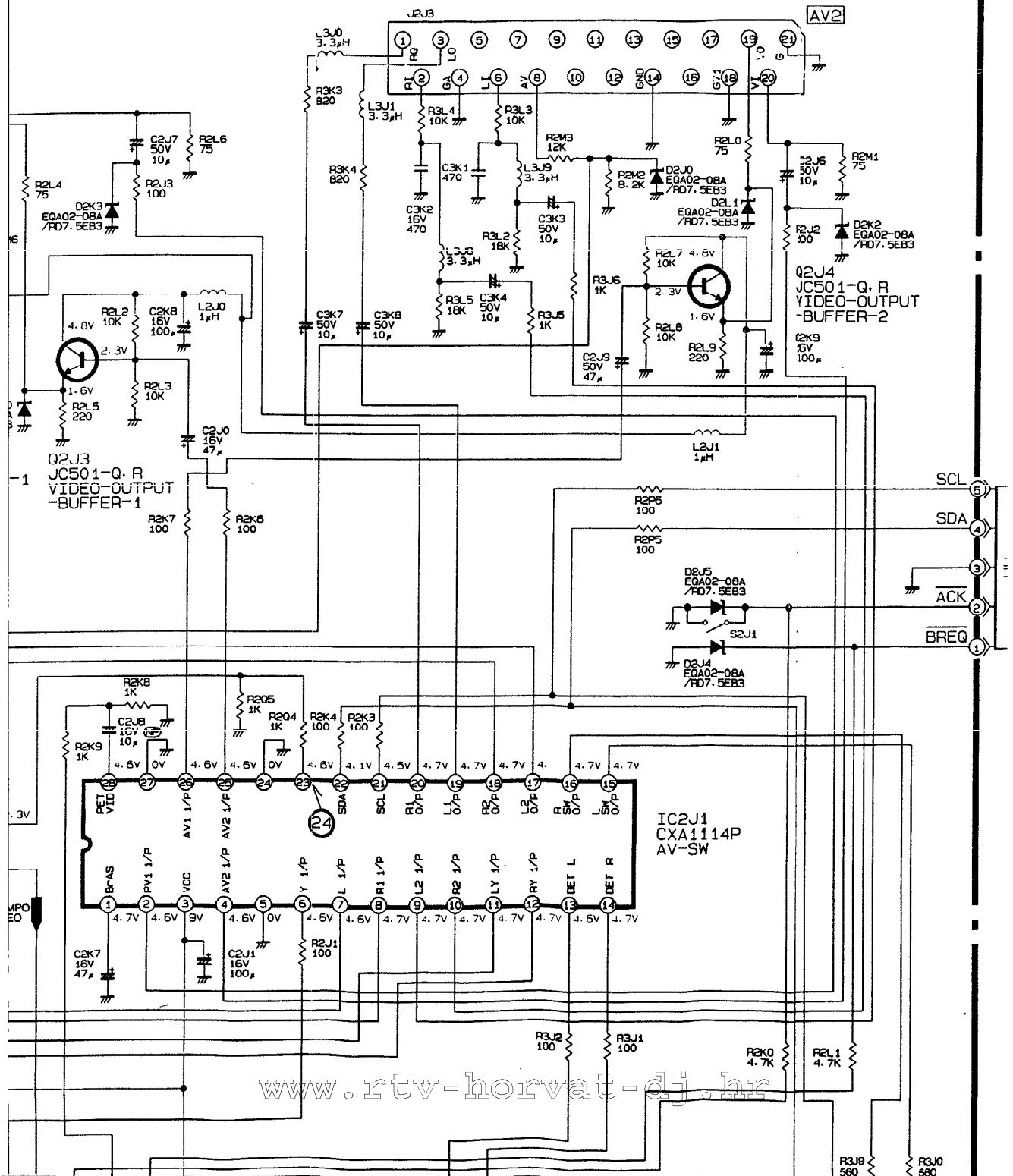
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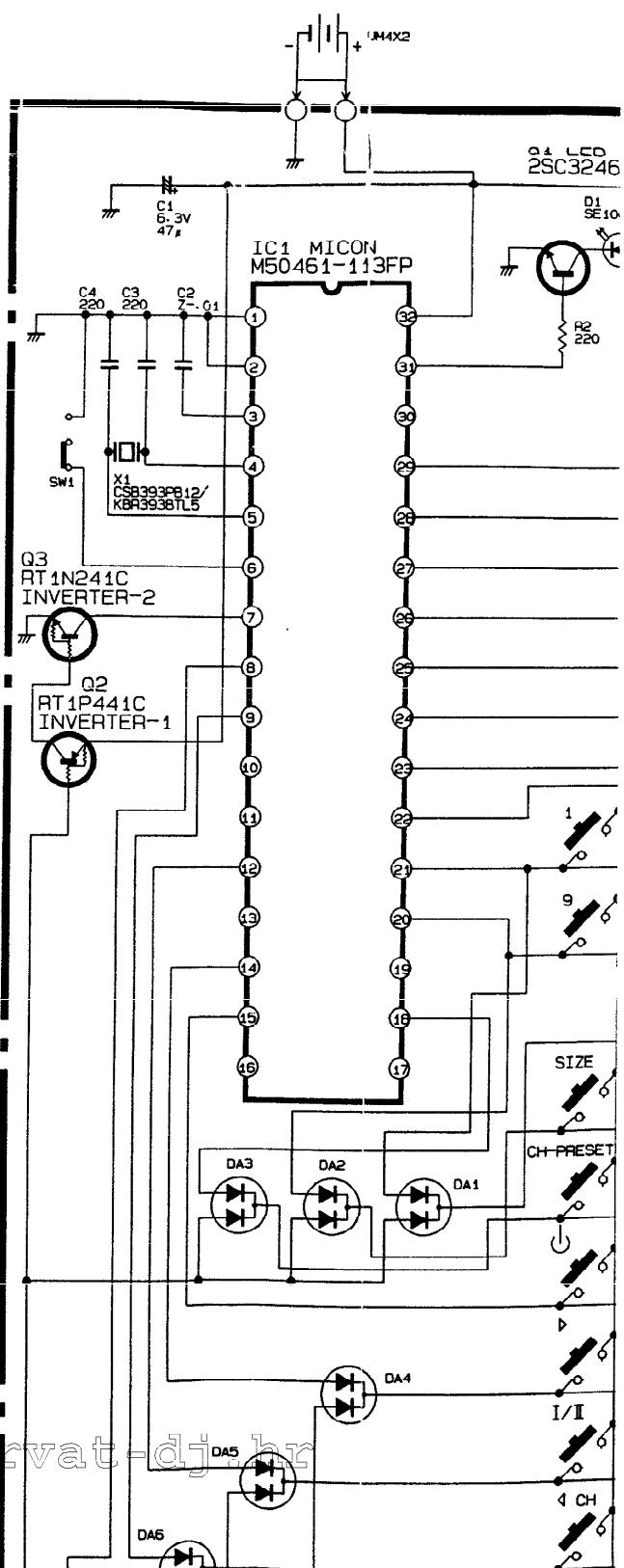
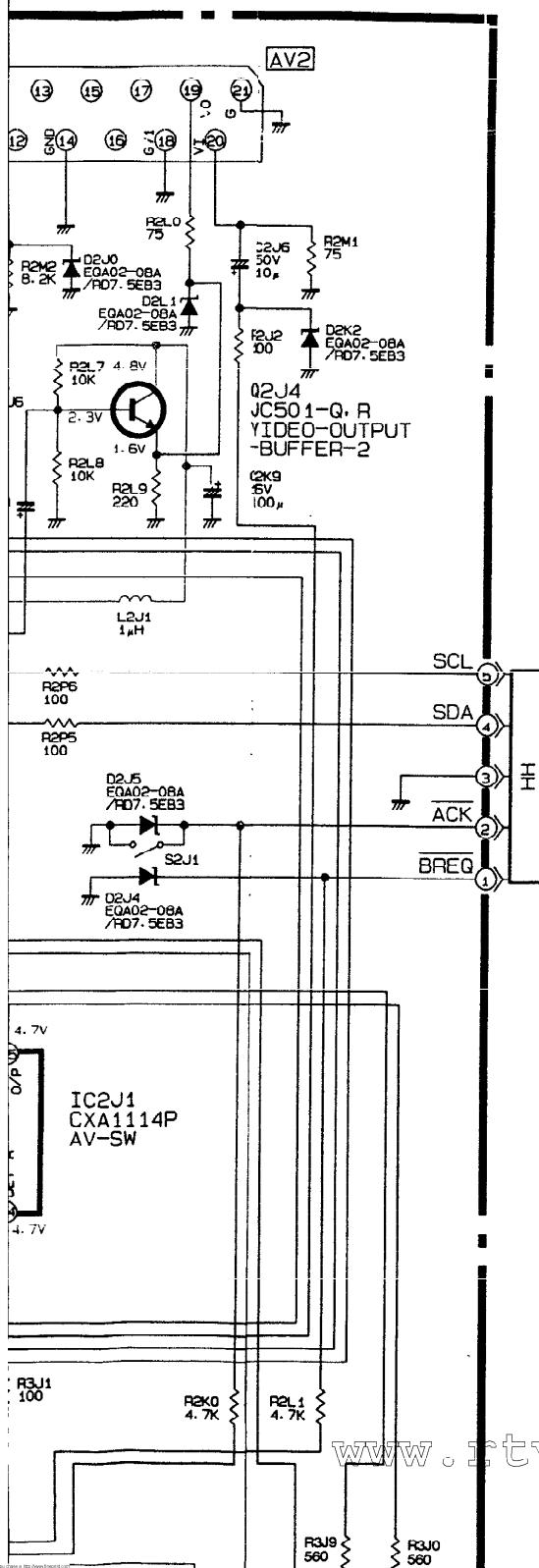
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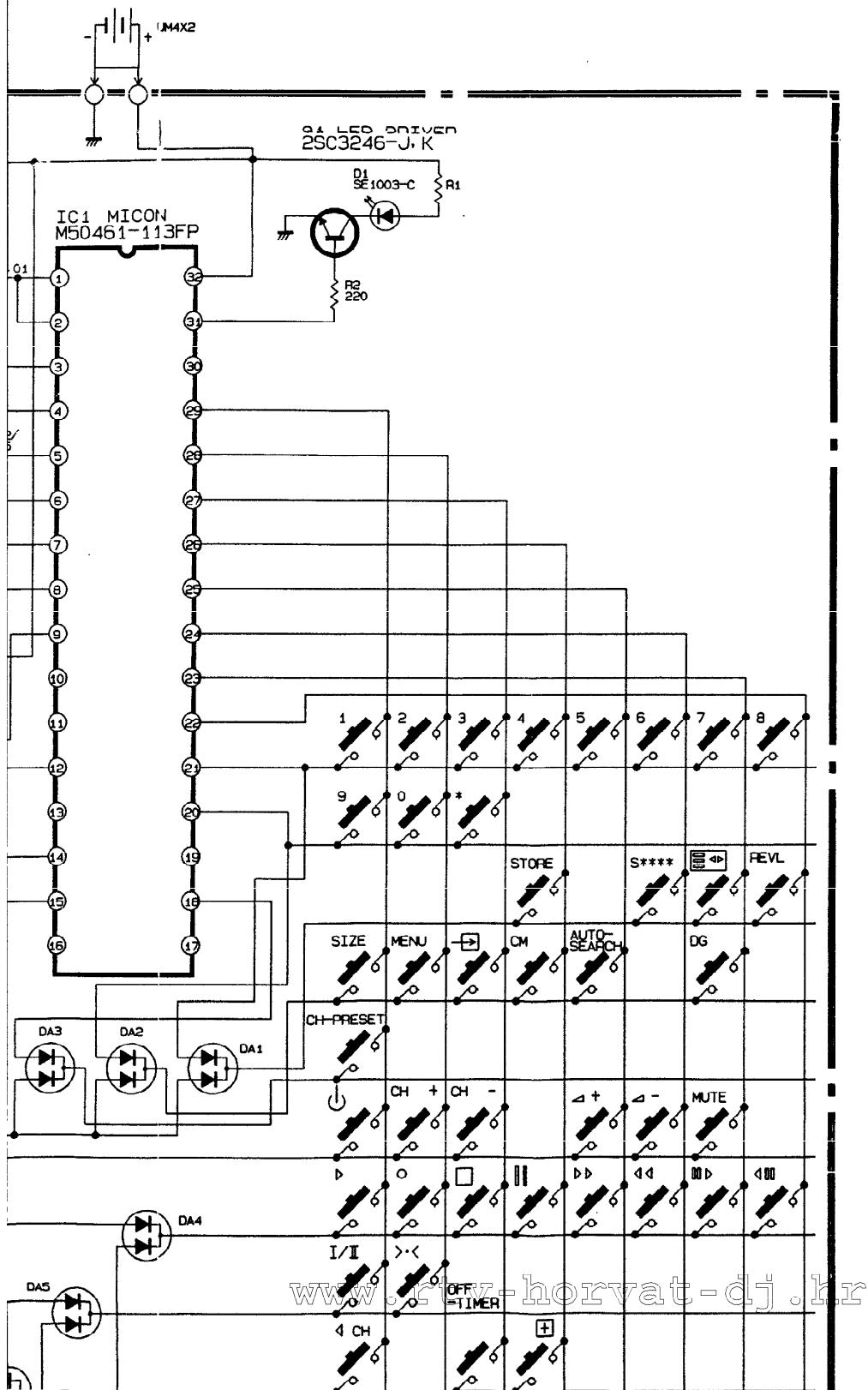
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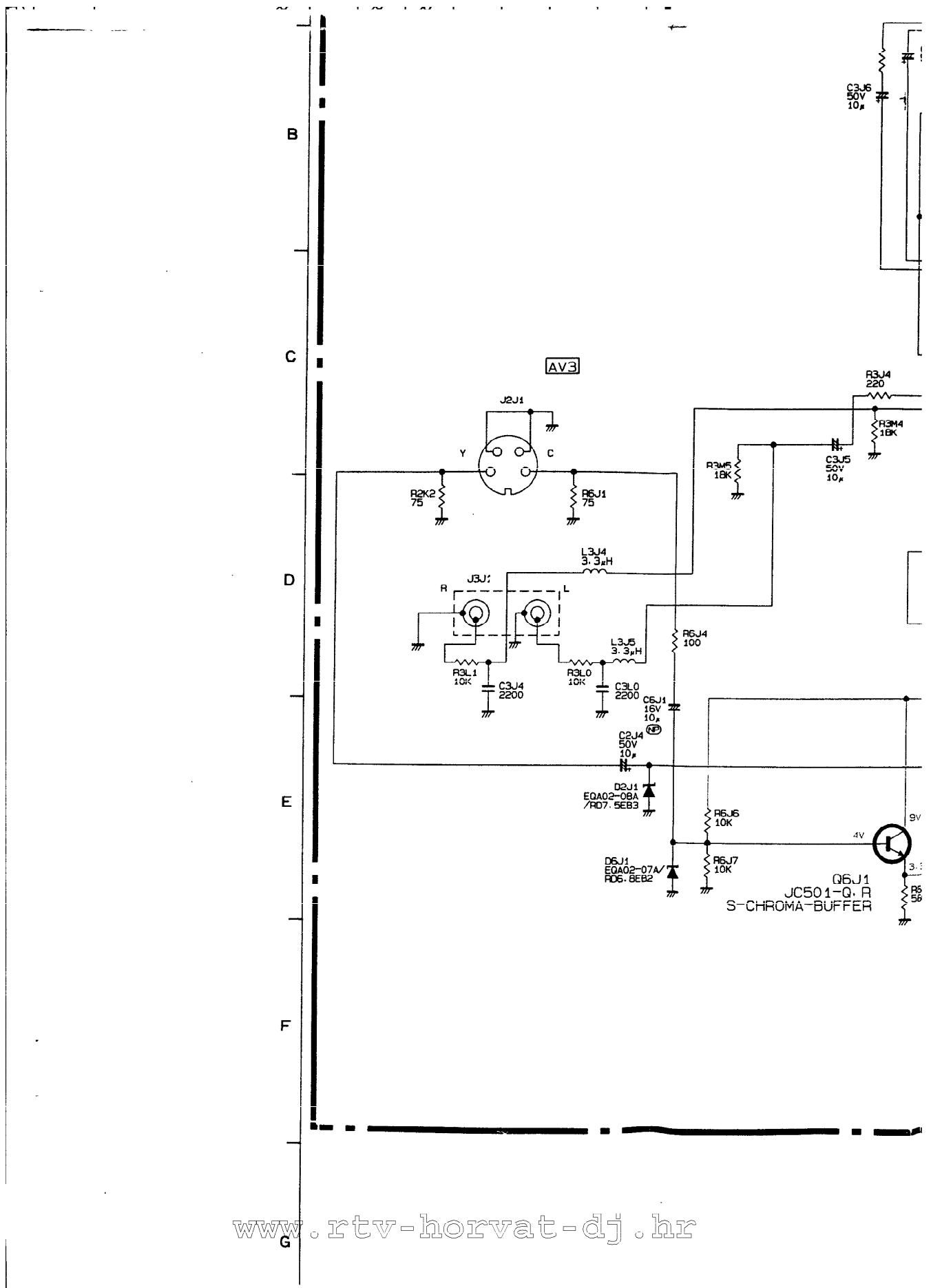
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# TRANSMITTER

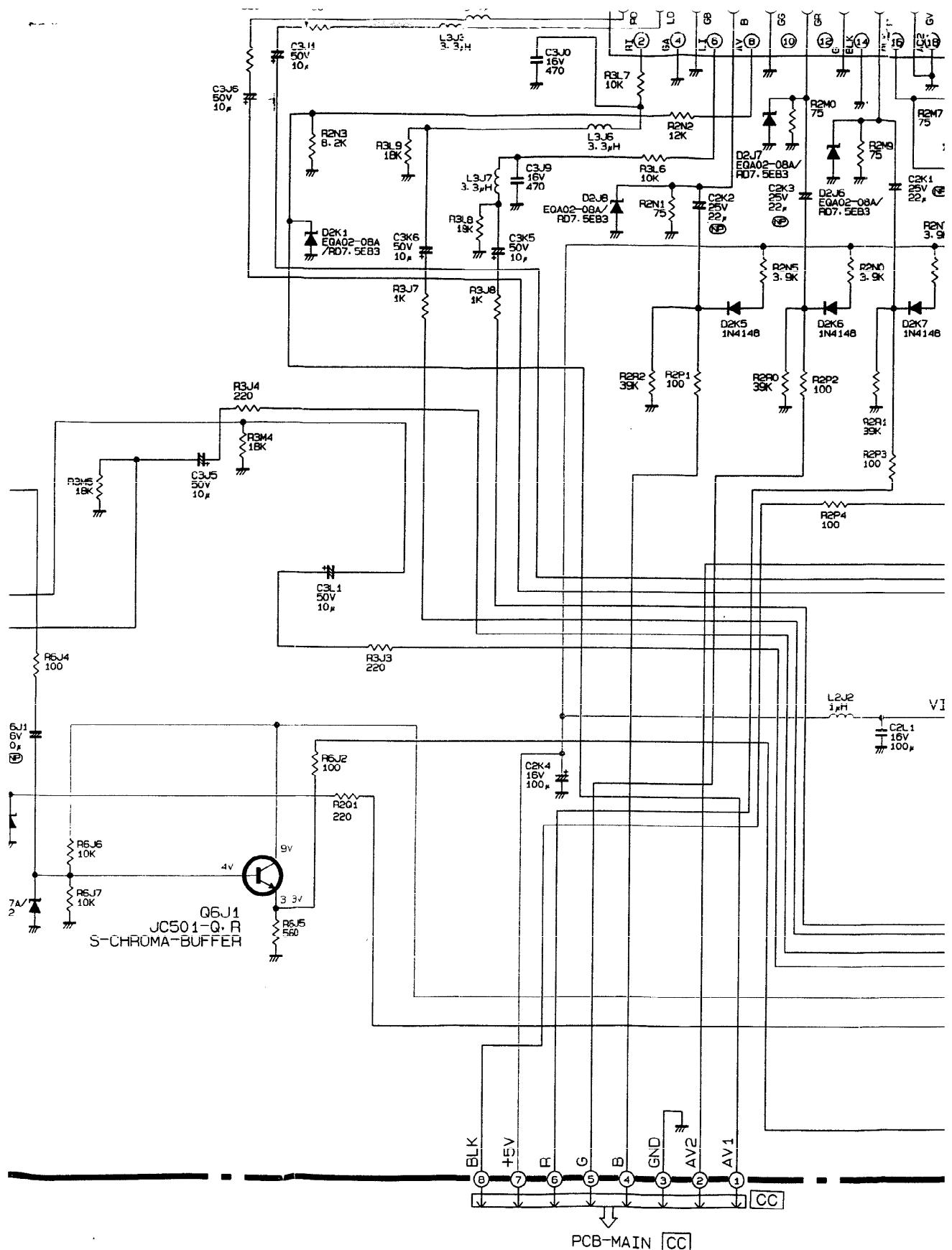


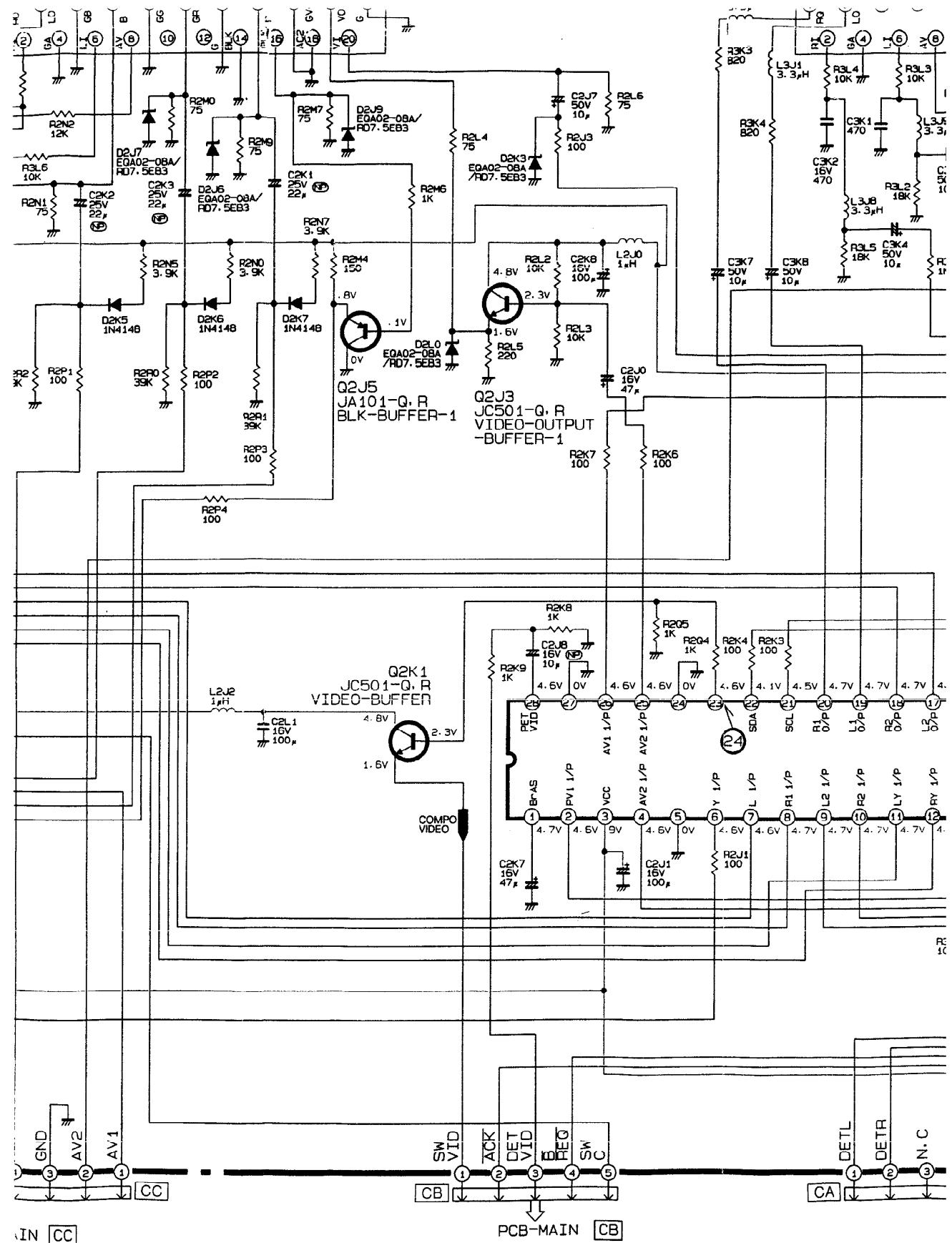
# TRANSMITTER-REMOCON



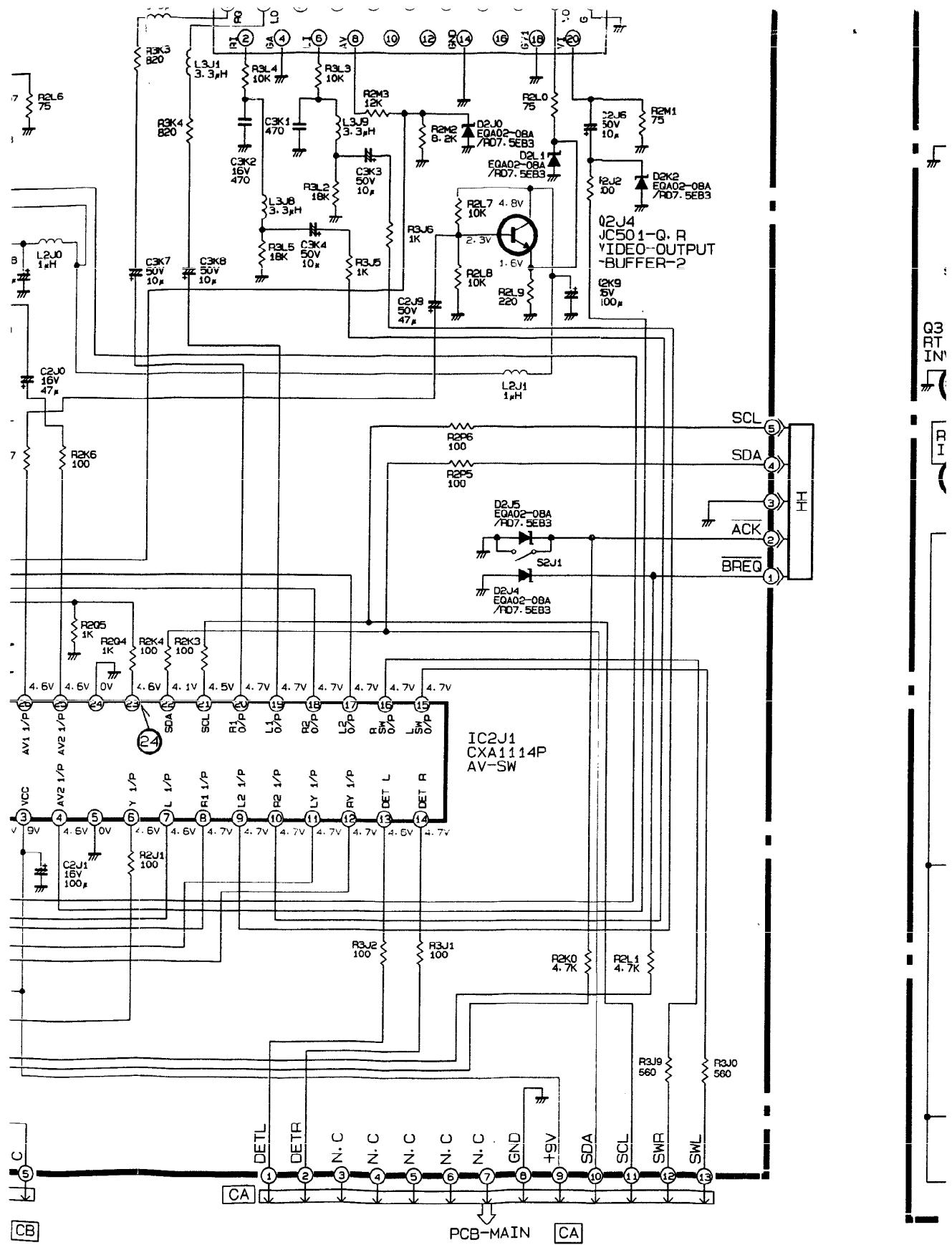


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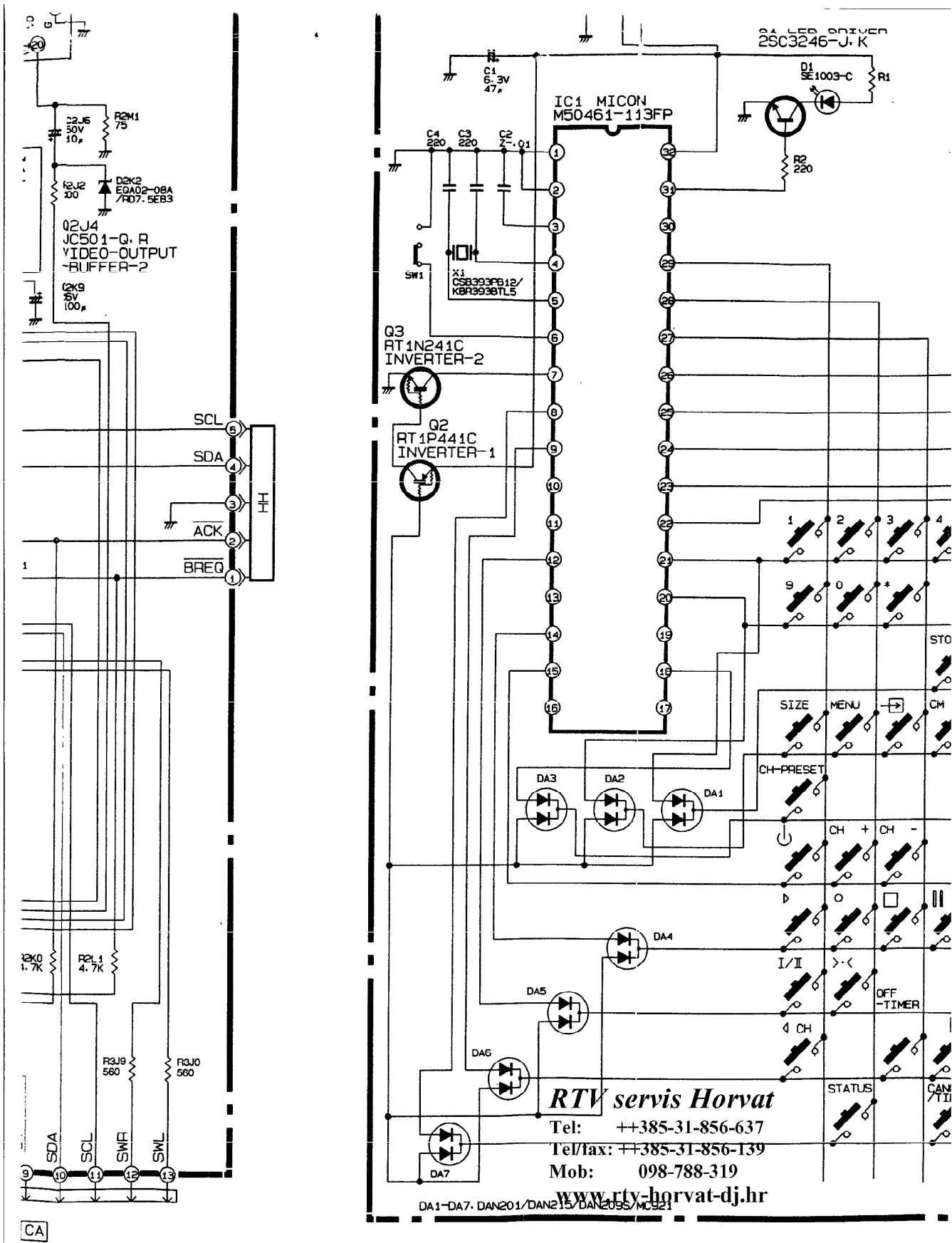




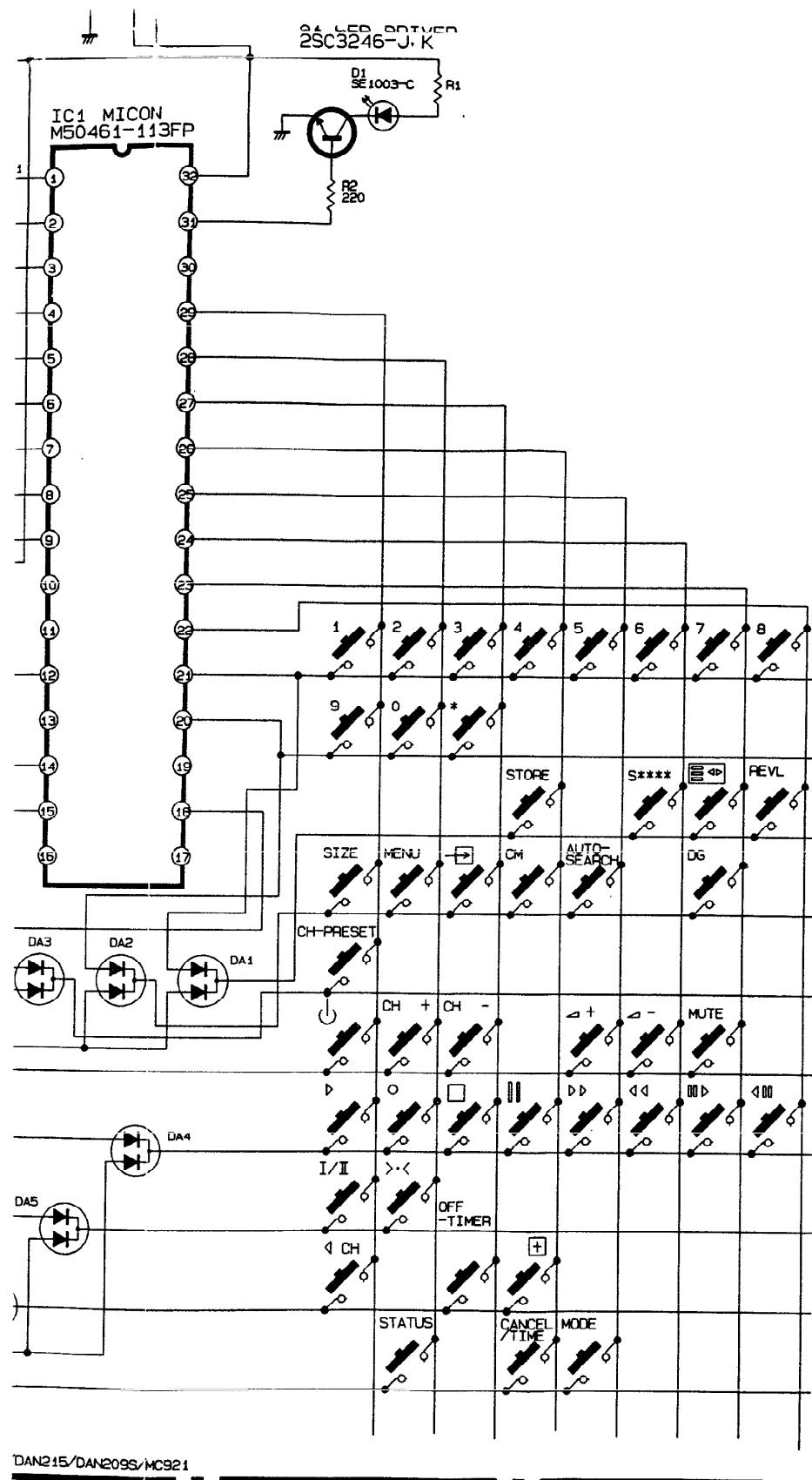
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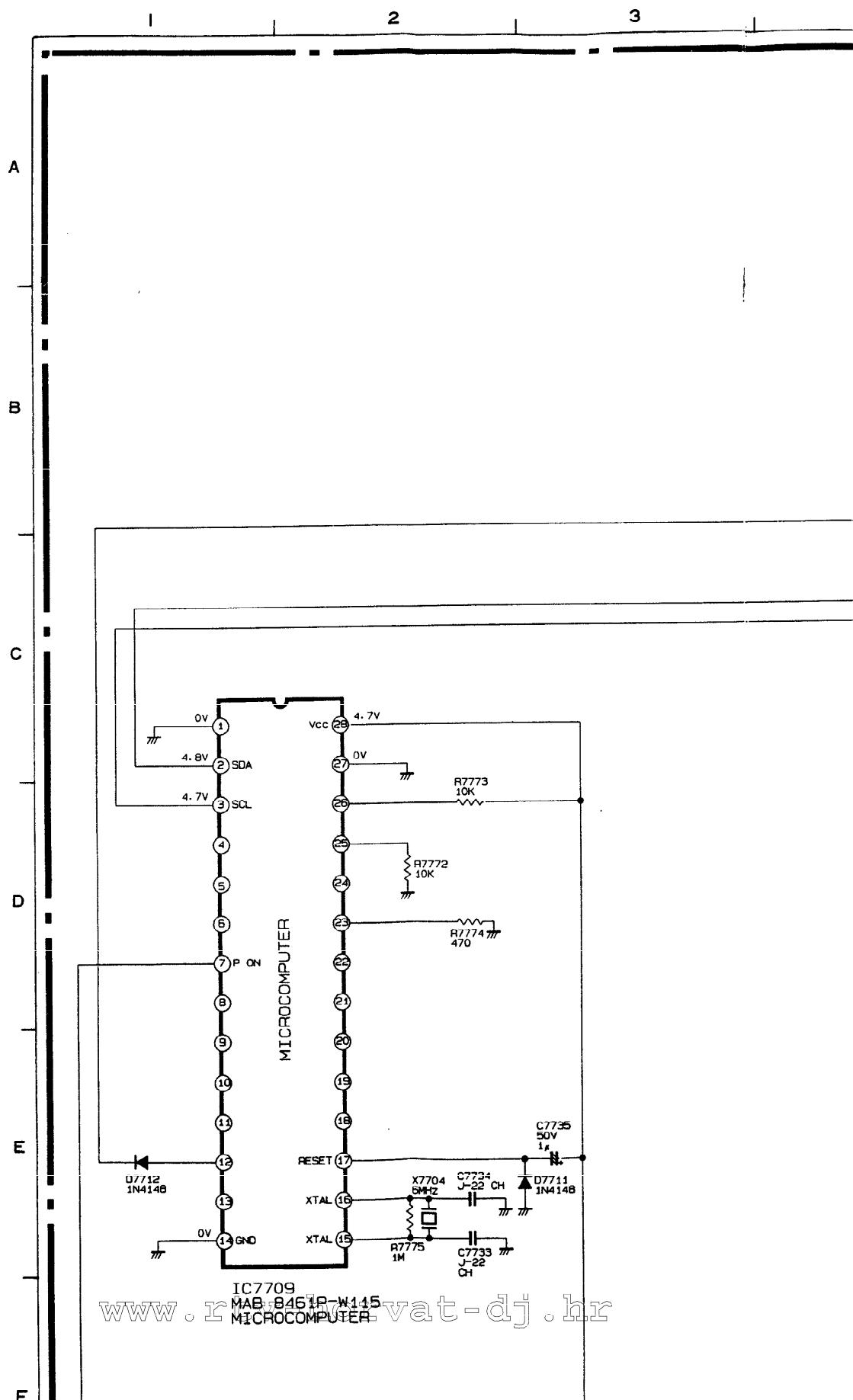


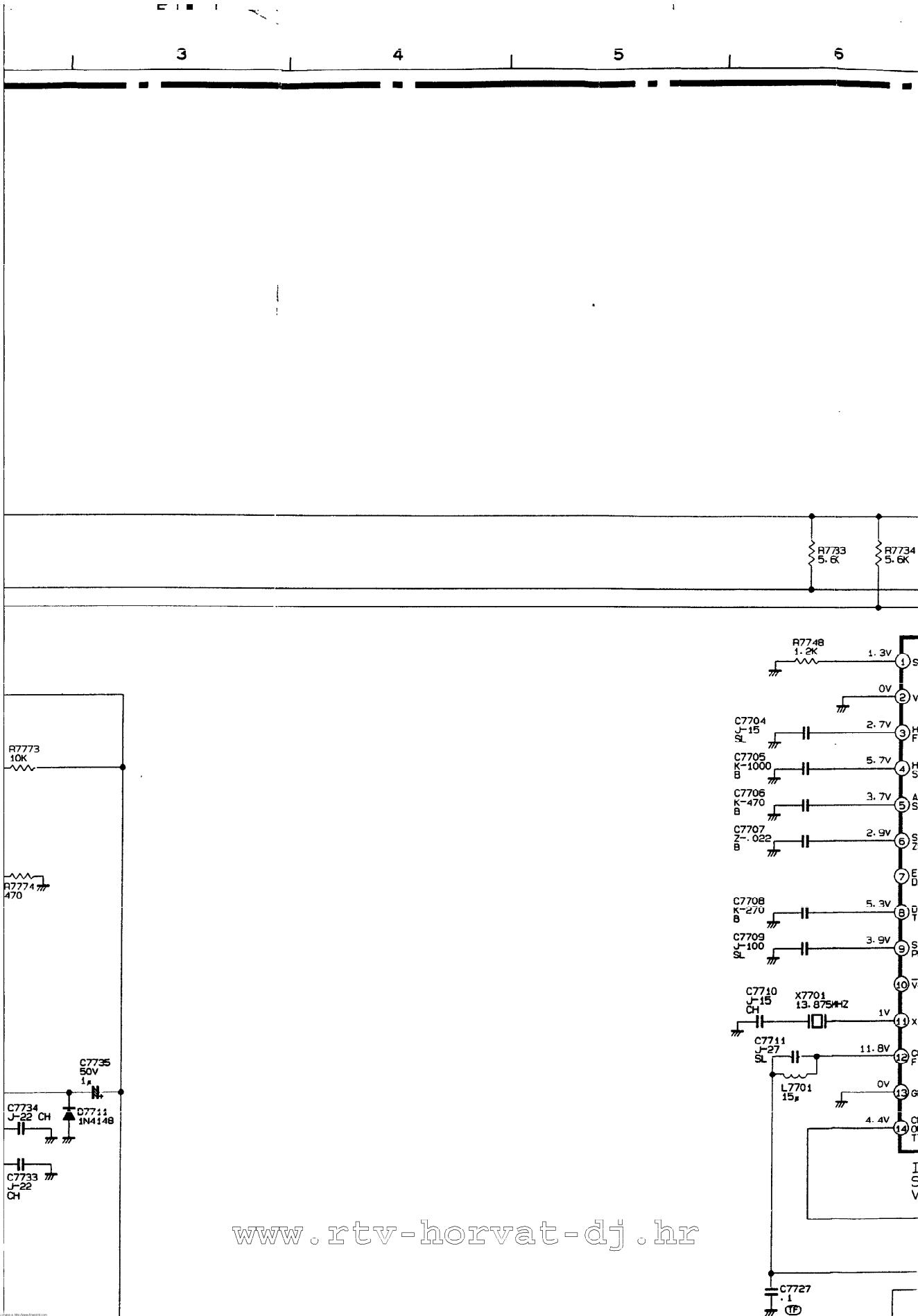
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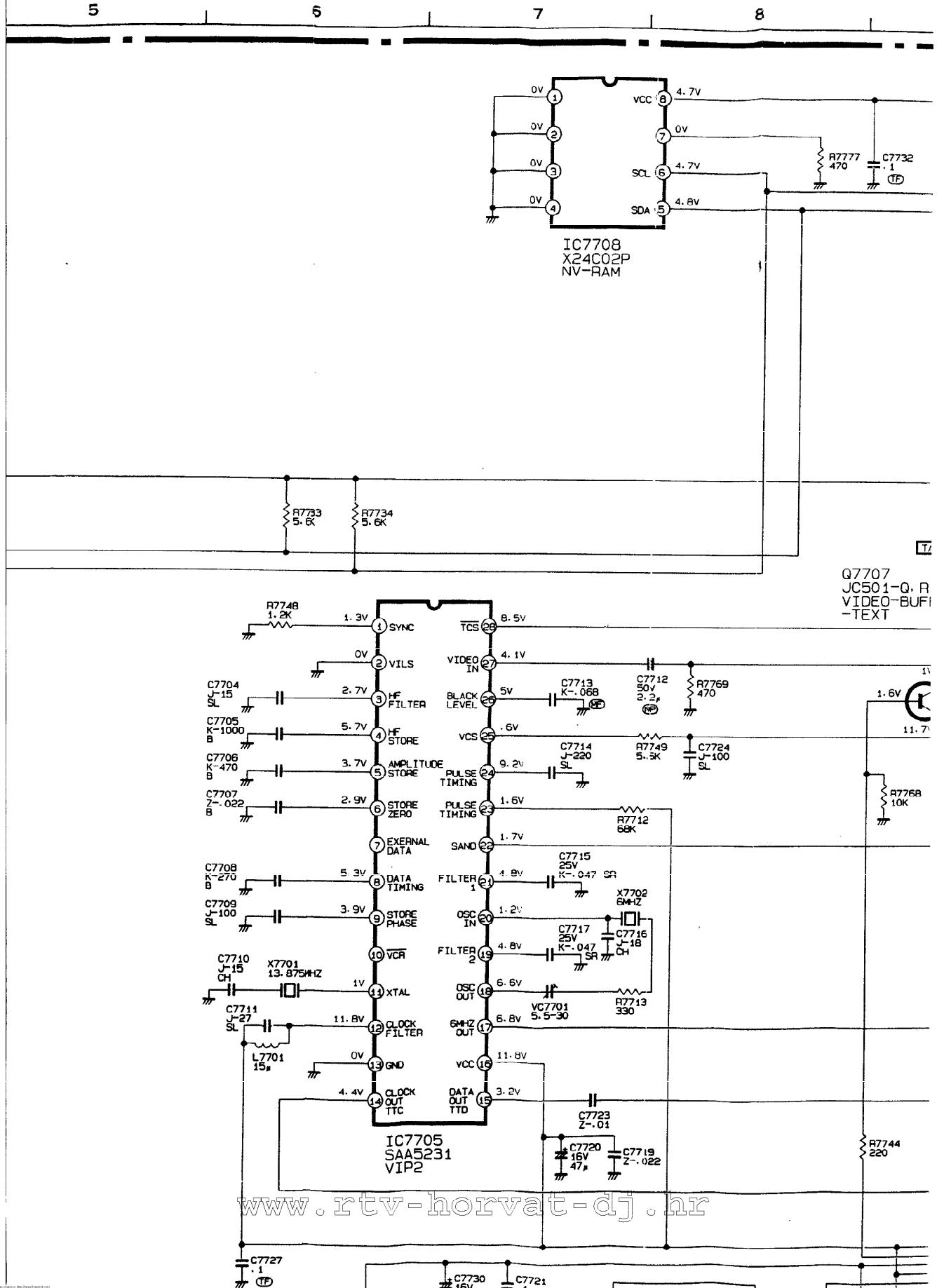
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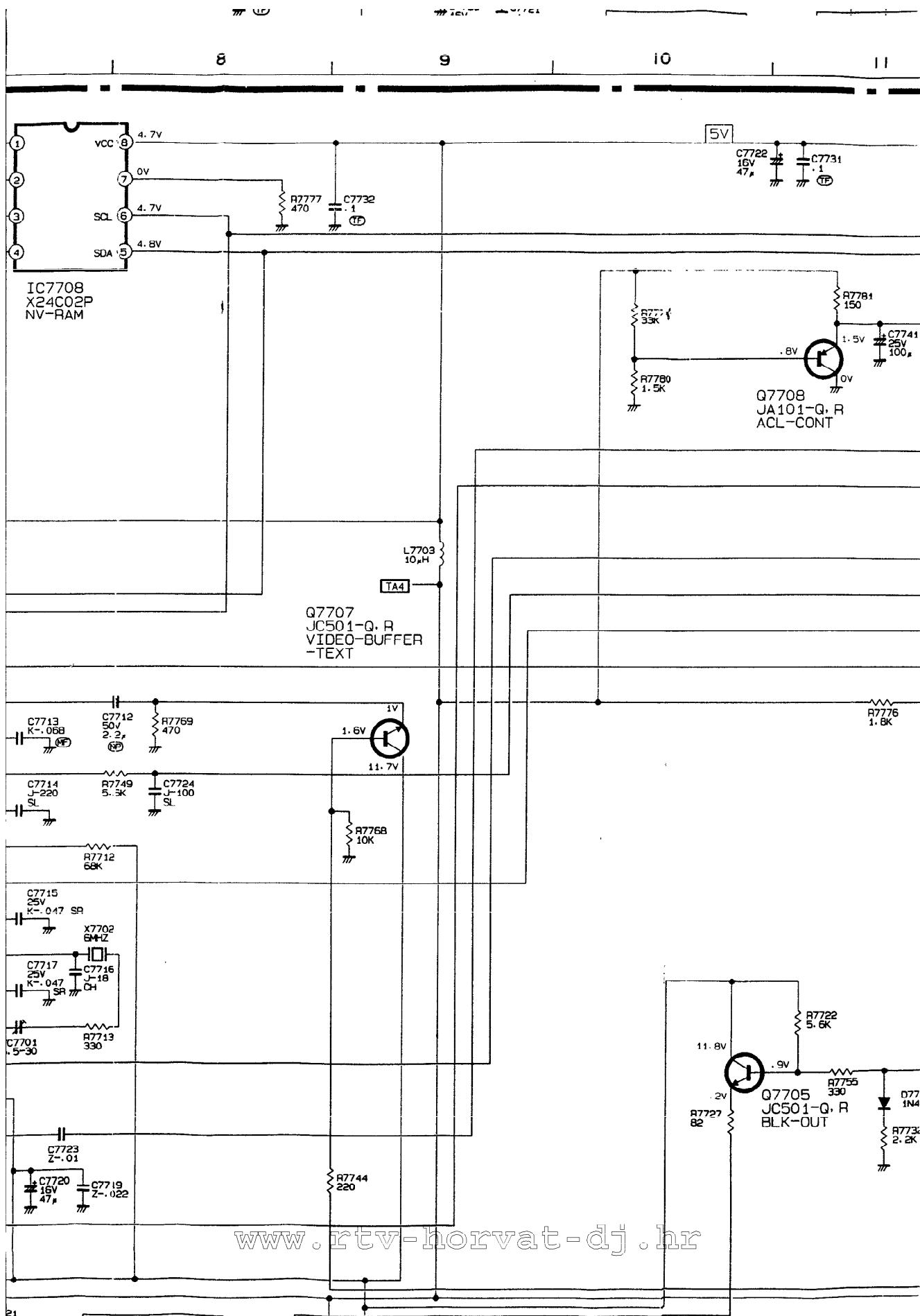
CT-21A2STX  
 CT-21A2LST  
 CT-25A2STX  
 CT-25A2LST(2/4)

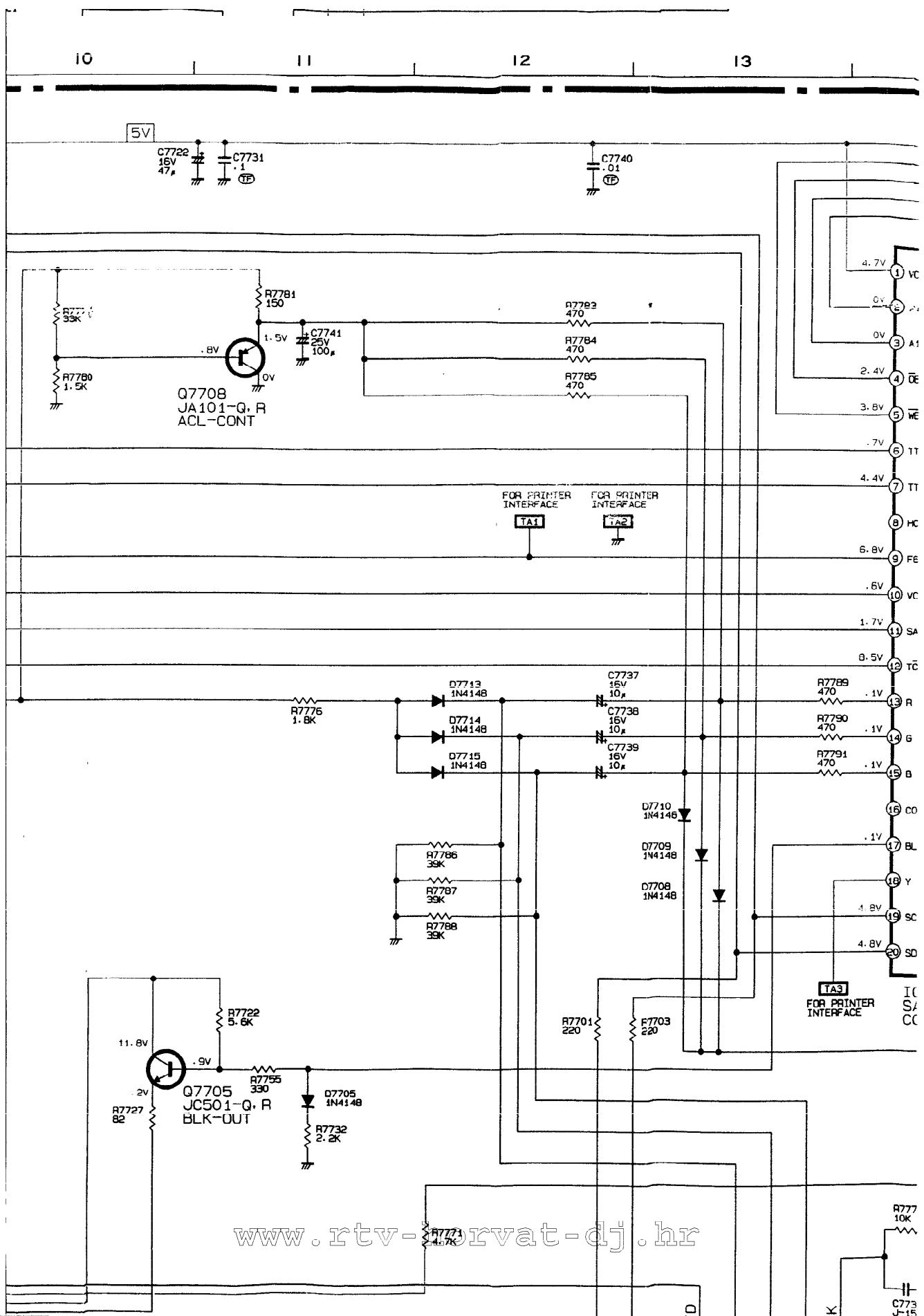




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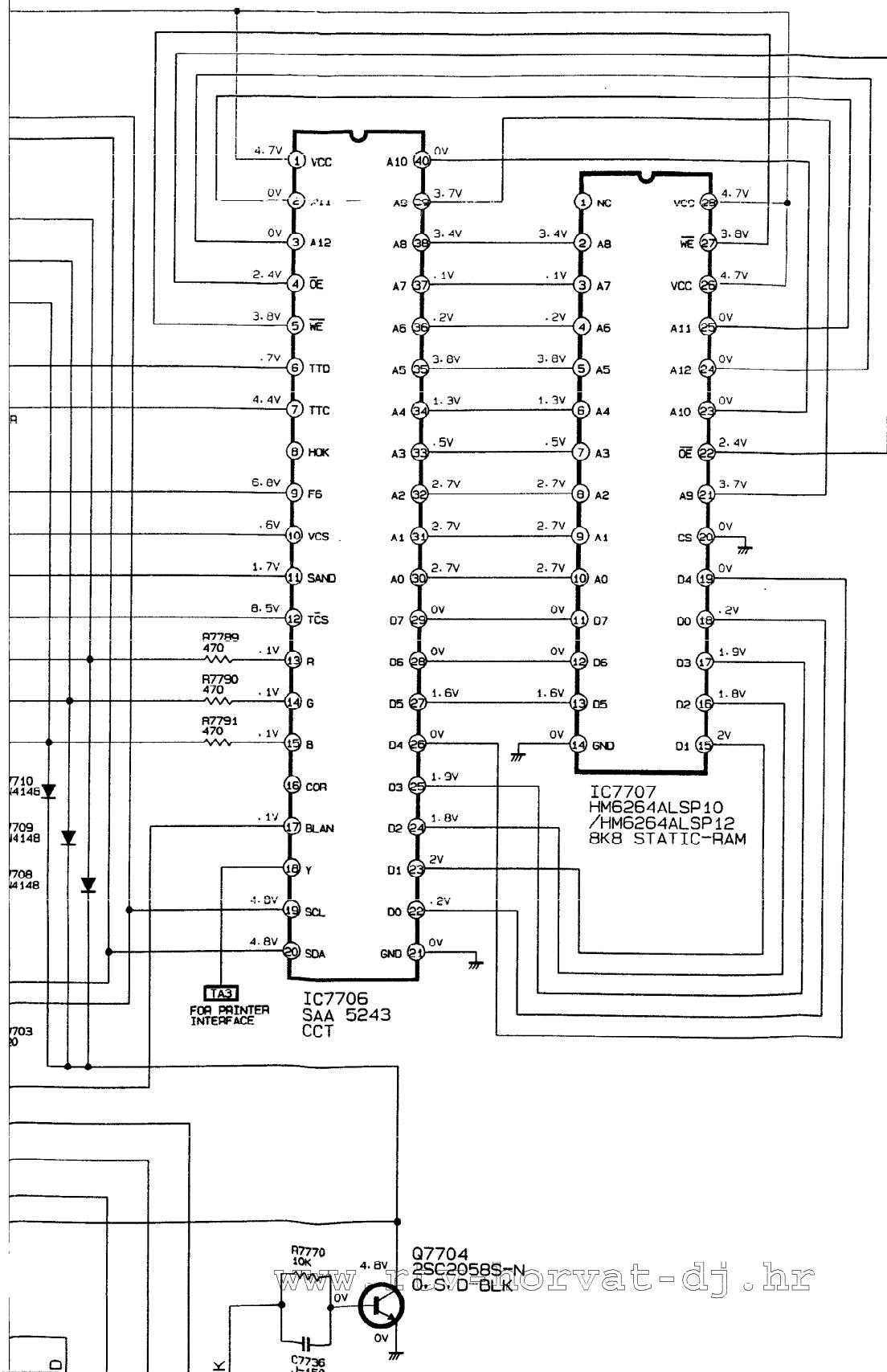
www.rtv-sorvat-dj.hr

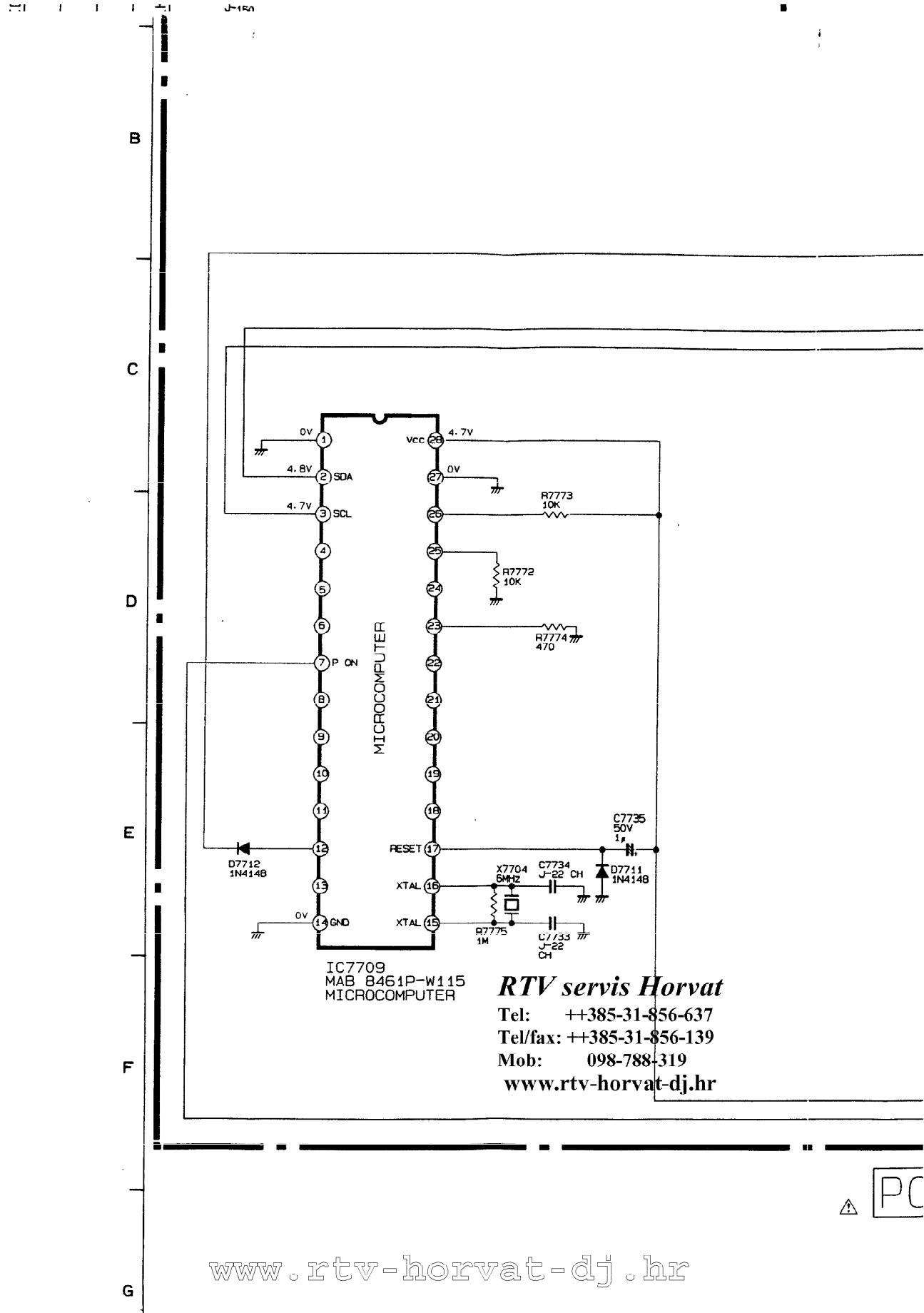
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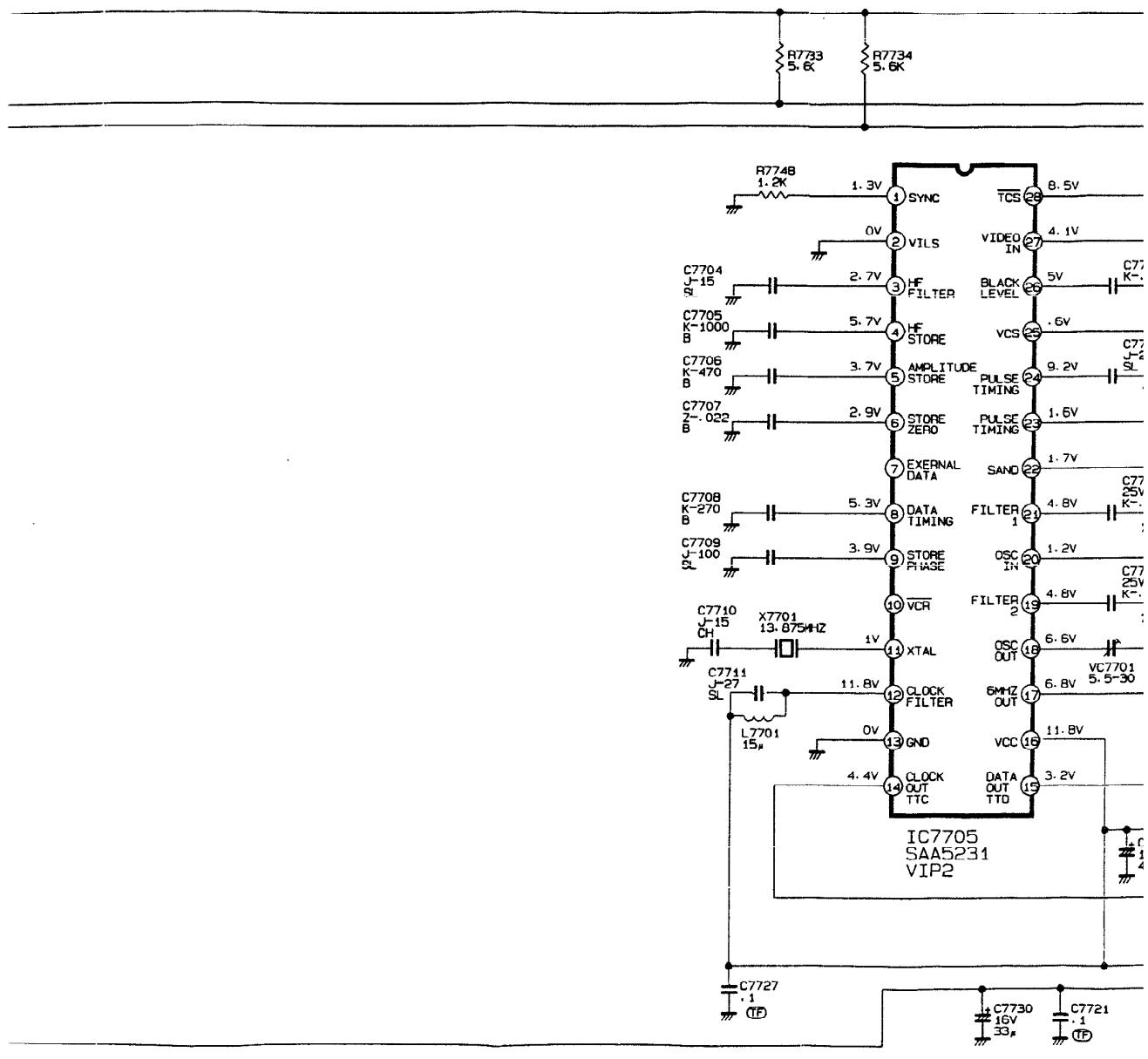
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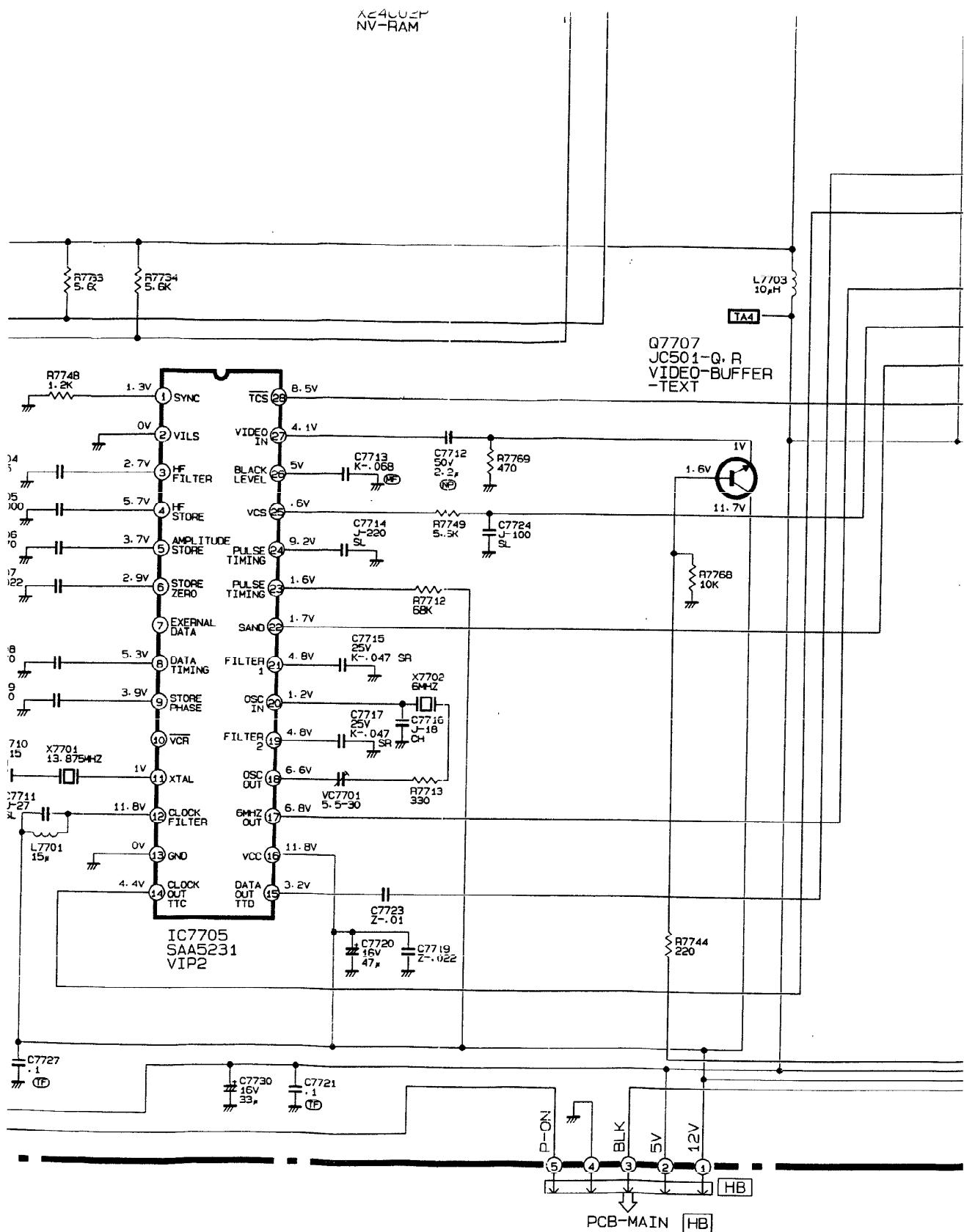




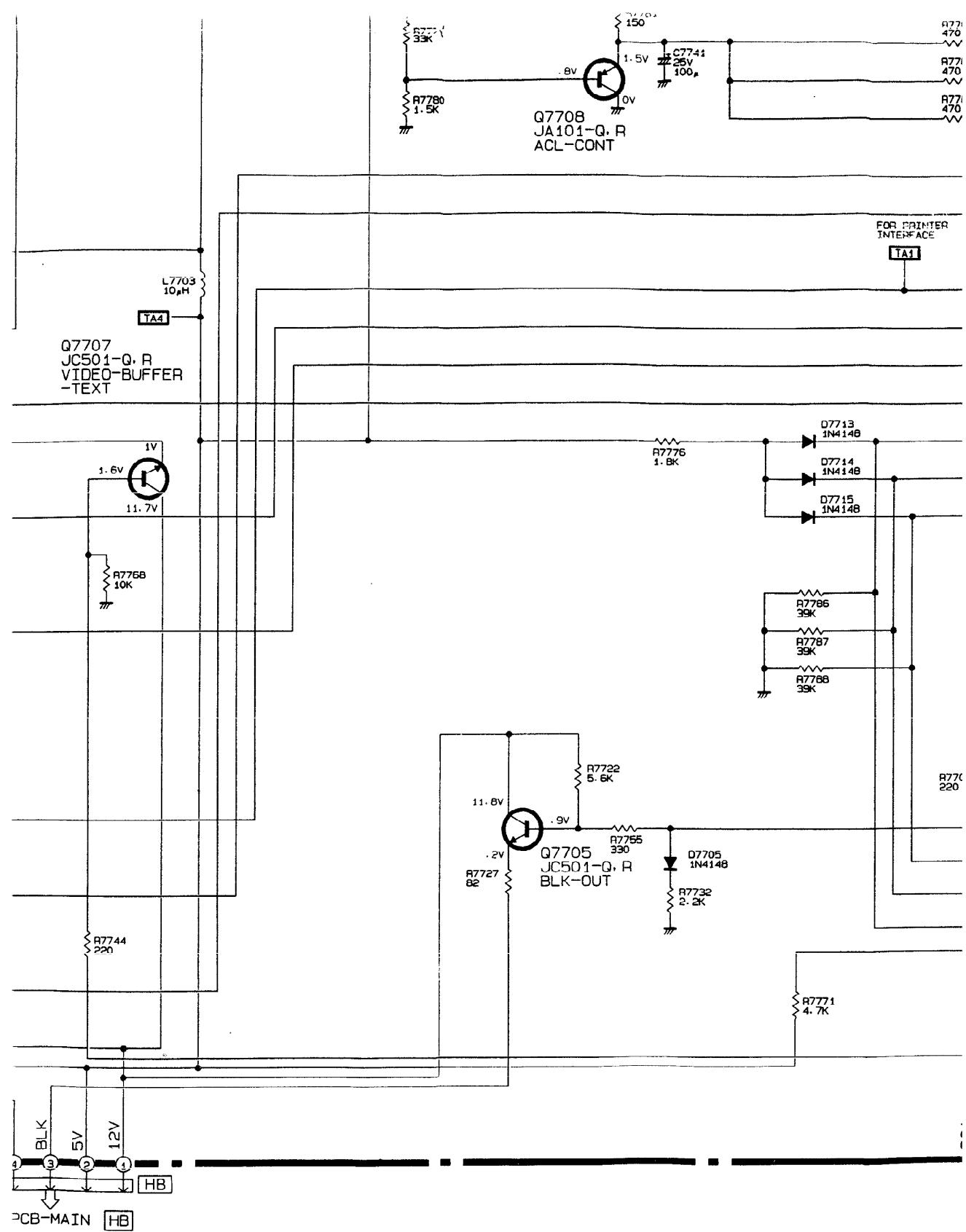


PCB-TEXT

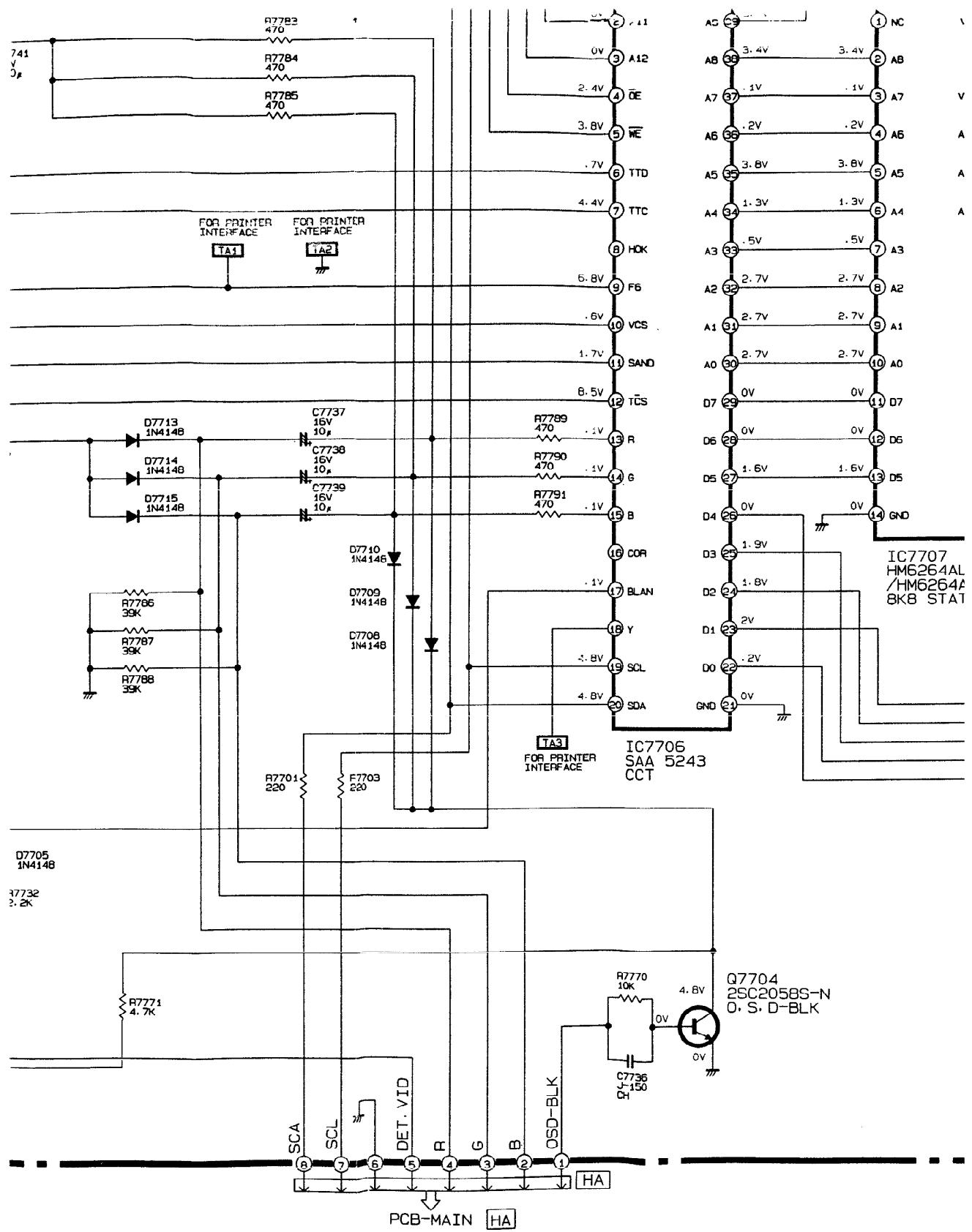
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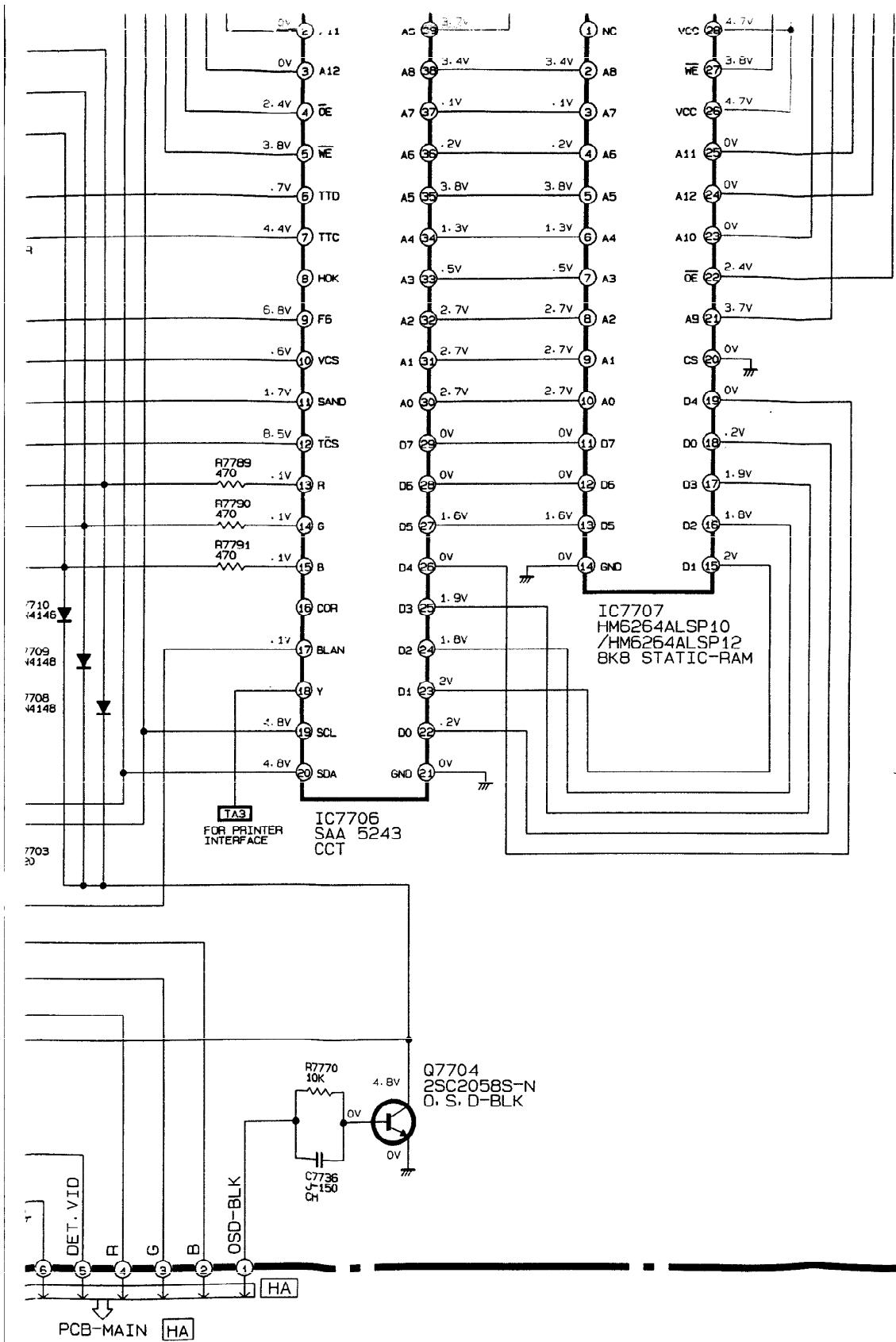
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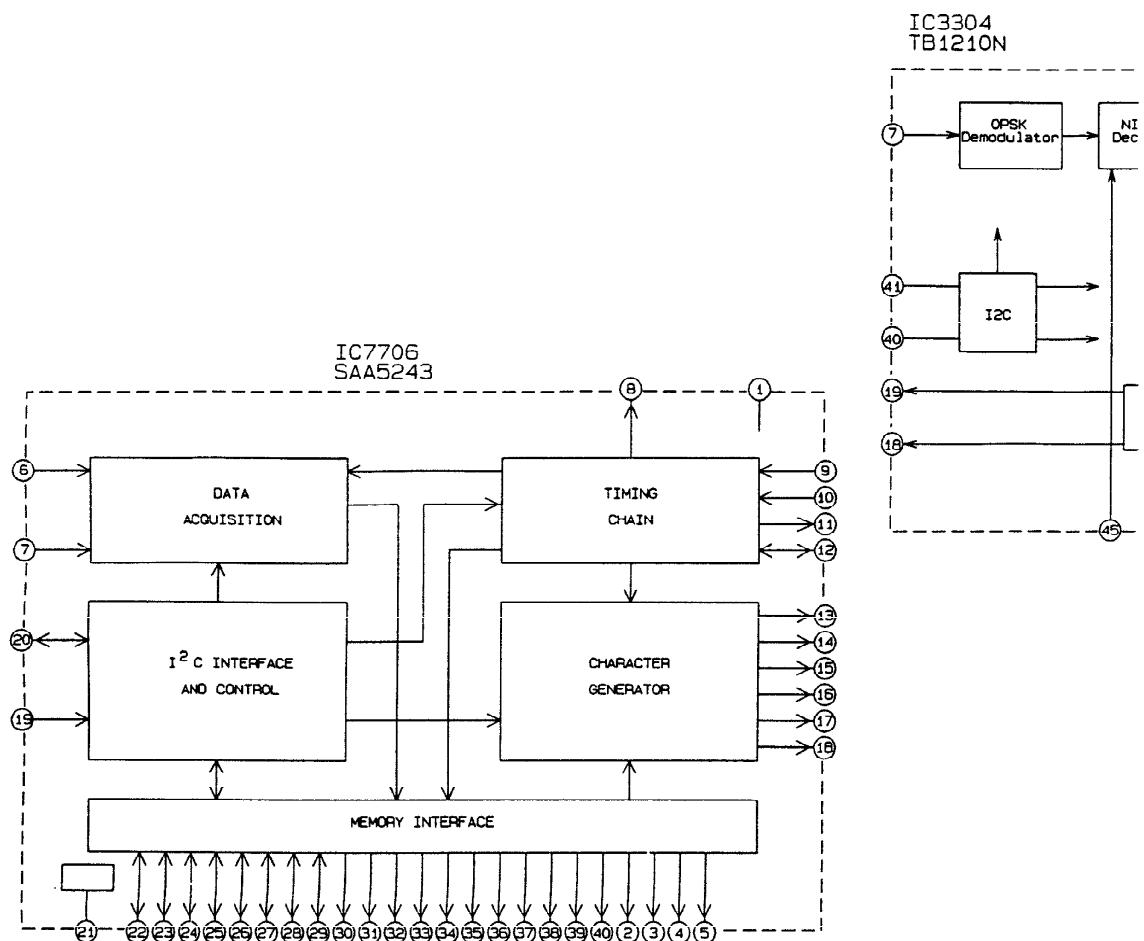
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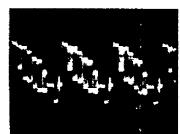
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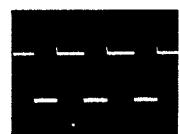
## CHASSIS WAVEFORMS



①2.0Vp-p(H)



②1.8Vp-p(V)



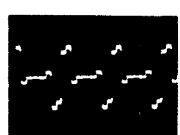
③0.7Vp-p(H)



④2.3Vp-p(H)



⑤2.2Vp-p(H)



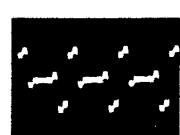
⑨0.8Vp-p(H)



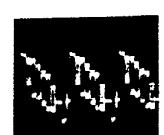
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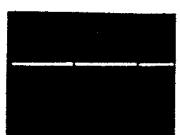
⑪1.0Vp-p(H)



⑫0.8Vp-p(H)



⑬0.9Vp-p(H)



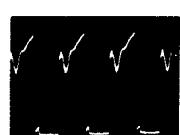
⑯0.5Vp-p(V)



⑯60.0Vp-p(V)



⑰0.8Vp-p(H)

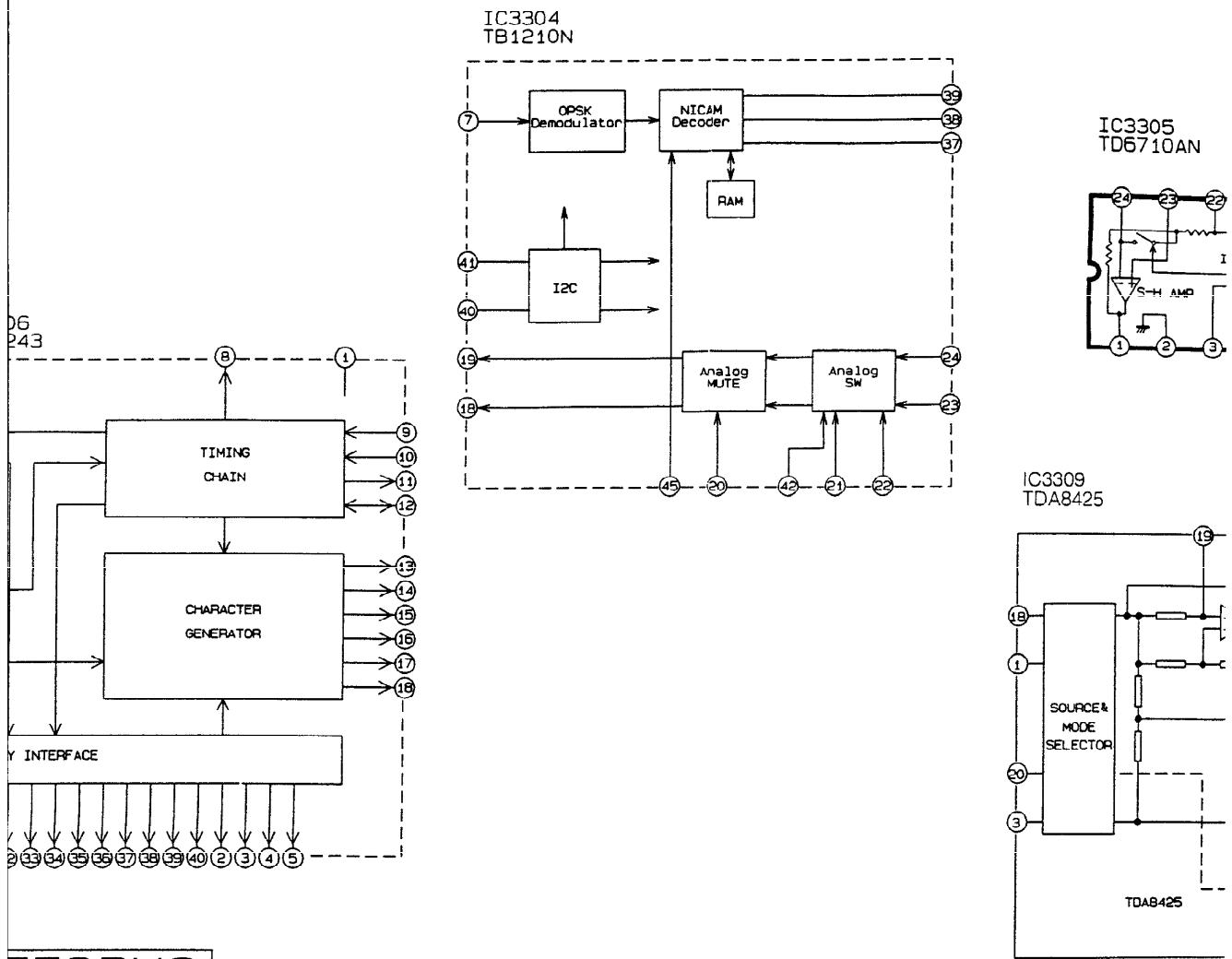


⑲124.0Vp-p(H)

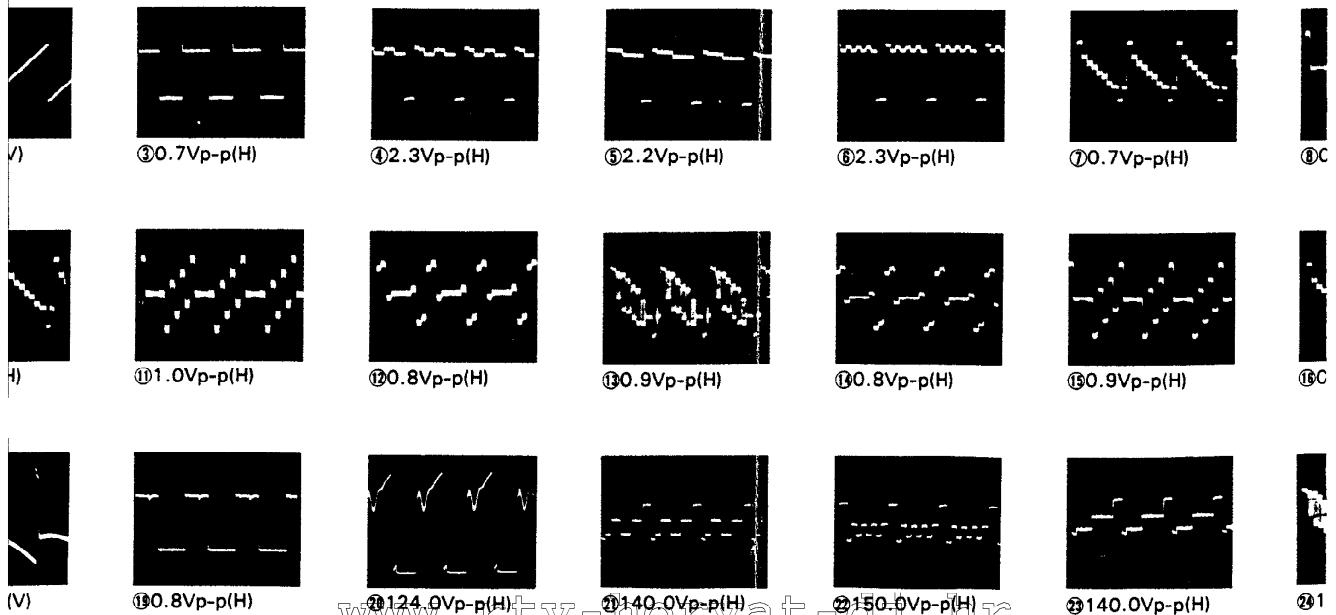


⑳140.0Vp-p(H)

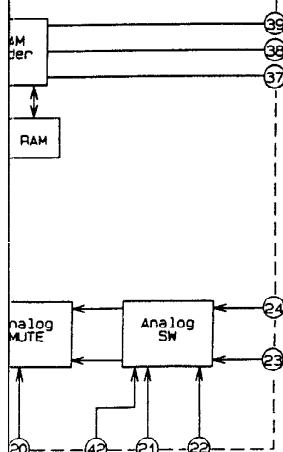
[www.itv-horvat-dj.hr](http://www.itv-horvat-dj.hr)



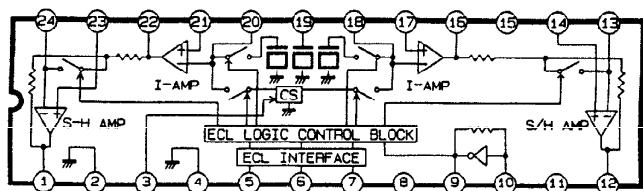
EFORMS



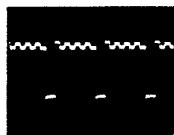
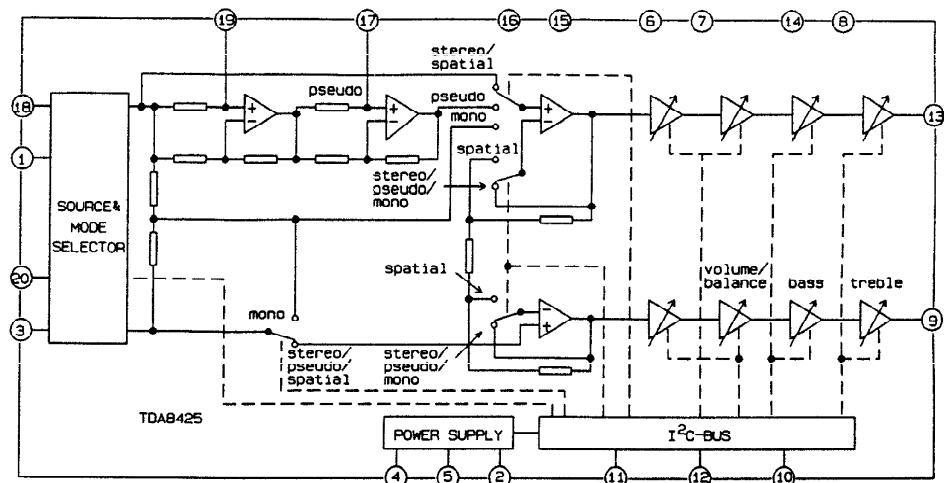
www.ltv-holusat-dj.ir



IC3305  
TD6710AN



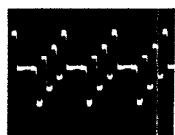
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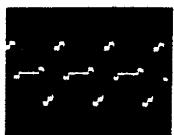
⑥2.3Vp-p(H)



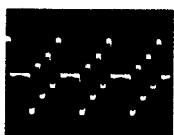
⑦0.7Vp-p(H)



⑧0.9Vp-p(H)



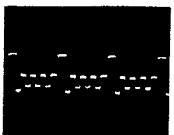
⑩0.8Vp-p(H)



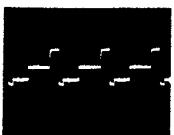
⑪0.9Vp-p(H)



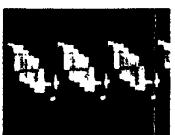
⑫0.8Vp-p(H)



⑯150.0Vp-p(H)



⑰140.0Vp-p(H)



⑲1.9Vp-p(H)

CT-21A2STX  
CT-21A2LST  
CT-25A2STX  
CT-25A2LST(3/4)

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