

HITACHI

SM0102



SERVICE MANUAL MANUEL D'ENTRETIEN WARTUNGSHANDBUCH

HTADD1E
HTADD1EBS
HTADD1W
HTADD1WUN

CAUTION:

Before servicing this chassis, it is important that the service technician read the "Safety Precautions" and "Product Safety Notices" in this service manual.

ATTENTION:

Avant d'effectuer l'entretien du châassis, le technicien doit lire les «Précautions de sécurité» et les «Notices de sécurité du produit» présentés dans le présent manuel.

VORSICHT:

Vor Öffnen des Gehäuses hat der Service-Ingenieur die „Sicherheitshinweise" und „Hinweise zur Produktsicherheit" in diesem Wartungshandbuch zu lesen.

Data contained within this Service manual is subject to alteration for improvement.

Les données fournies dans le présent manuel d'entretien peuvent faire l'objet de modifications en vue de perfectionner le produit.

Die in diesem Wartungshandbuch enthaltenen Spezifikationen können sich zwecks Verbesserungen ändern.



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PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

**AV SURROUND RECEIVER
September 2000**


ENGLISH

SAFETY PRECAUTIONS

WARNING: The following precautions must be observed.

ALL PRODUCTS

Before any service is performed on the chassis an isolation transformer should be inserted between the power line and the product.

1. When replacing the chassis in the cabinet, ensure all the protective devices are put back in place.
2. When service is required, observe the original lead dressing. Extra precaution should be taken to ensure correct lead dressing in any high voltage circuitry area.
3. Many electrical and mechanical parts in HITACHI 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 by marking with a  on the schematics and the replacement parts list.
The use of a substitute replacement component that does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list, may create electrical shock, fire, X-radiation, or other hazards.
4. Always replace original spacers and maintain lead lengths. Furthermore, where a short circuit has occurred, replace those components that indicate evidence of overheating.
5. Insulation resistance should not be less than 2M ohms at 500V DC between the main poles and any accessible metal parts.
6. No flashover or breakdown should occur during the dielectric strength test, applying 3kV AC or 4.25kV DC for two seconds between the main poles and accessible metal parts.
7. Before returning a serviced product to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock. The service technician must make sure that no protective device built into the instrument by the manufacturer has become defective, or inadvertently damaged during servicing.

CE MARK

1. HITACHI products may contain the CE mark on the rating plate indicating that the product contains parts that have been specifically approved to provide electromagnetic compatibility to designated levels.
2. When replacing any part in this product, please use only the correct part itemised in the parts list to ensure this standard is maintained, and take care to replace lead dressing to its original state, as this can have a bearing on the electromagnetic radiation/immunity.

PICTURE TUBE

1. The line output stage can develop voltages in excess of 25kV; if the E.H.T. cap is required to be removed, discharge the anode to chassis via a high value resistor, prior to its removal from the picture tube.
2. High voltage should always be kept at the rated value of the chassis and no higher. Operating at higher voltages may cause a failure of the picture tube or high voltage supply, and also, under certain circumstances could produce X-radiation levels moderately in excess of design levels. The high voltage must not, under any circumstances, exceed 29kV on the chassis (except for projection Televisions).
3. The primary source of X-radiation in the product is the picture tube. The picture tube utilised for the above mentioned function in this chassis is specially constructed to limit X-radiation. For continued X-radiation protection, replace tube with the same type as the original HITACHI approved type
4. Keep the picture tube away from the body while handling. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled

LASERS

If the product contains a laser avoid direct exposure to the beam when the cover is open or when interlocks are defeated or have failed.

WARNING


Check that exposed parts are acceptably insulated from the supply circuit before returning the repaired instrument to the customer.

CHECKING METHOD

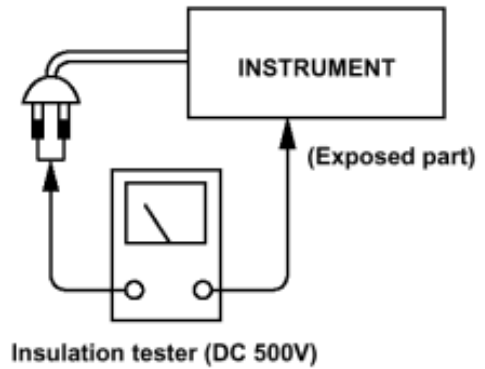
Measure the resistance value between the both poles of attachment cup (power supply plug) and the exposed parts (parts such as covers etc. where the customer can easily touch) and check that the resistance value is 500k ohms or more.

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

Since many parts in the unit have special safety related characteristics, always use genuine HITACHI replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with a  in the circuit diagram and printed wiring board.

Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.



SPECIFICATIONS

● Audio section

(Power amplifier)

Rated output:	Front: 60 W + 60 W Centre: 60 W Surround: 60 W + 60 W	(8W/ohms, 20 Hz ~ 20 kHz with 0.08 % T.H.D.) (8W/ohms, 20 Hz ~ 20 kHz with 0.08 % T.H.D.) (8W/ohms, 20 Hz ~ 20 kHz with 0.08 % T.H.D.)
Output terminals	Front: A or B A + B Center/Surround:	8 to 16W/ohms 16W/ohms or more 8 to 16W/ohms

(Analog)

LINE input - PRE OUT

Input sensitivity / input impedance:	200 mV / 47 kW/kohms
Frequency response:	10 Hz ~ 50 kHz: +1, -3 dB
S/N ratio:	92 dB (IHF-A weighted)
Total harmonic distortion:	0.08 % (20 Hz ~ 20 kHz)
Rated output:	1.2 V

PHONO input-REC OUT

Input sensitivity / input impedance:	2.5 mV / 47 kW/kohms
RIAA deviation:	±1 dB (20 Hz ~ 20 kHz)
S/N ratio:	74 dB (IHF-A weighted, with 5 mV input)
Total harmonic distortion:	0.03 % (1 kHz, 3 V)
Rated output / Maximum output:	150 mV / 7V

● Video section

(standard video jacks)

Input/output level and impedance:	1 Vp-p, 75 W/ohms
Frequency response:	5 Hz ~ 10 MHz +1, -3 dB

● Tuner section

Receiving range:	[FM] (note: μV at 75 W/ohms, 0 dBf = 1×10^{-15} W) 87.50 MHz ~ 108 MHz (0.05 MHz step)	[AM] 522 kHz ~ 1611 kHz (9 kHz step) (E, EBS), 522 kHz ~ 1611 kHz (9 kHz step) (W, WUN) 520 kHz ~ 1710 kHz (10 kHz step) (W, WUN) 18 μV
Usable sensitivity:	1.0 μV (11.2 dBf)	
50 dB quieting sensitivity:	MONO 1.6 μV (15.3 dBf) STEREO 23 μV (38.5 dBf)	
S/N ratio:	MONO 80 dB (IHF-A weighted) STEREO 75 dB (IHF-A weighted)	
Total harmonic distortion:	MONO 0.2 % (1 kHz) STEREO 0.4 % (1 kHz)	

● General

Power supply:	AC 230 V, 50 Hz (E, EBS), AC 115/230 V, 50/60 Hz (W, WUN)
Power consumption:	180 W
Maximum external dimensions:	434 (W) \times 144 (H) \times 320 (D) mm
Weight:	7.1 kg

● Remote control unit (RB-DD1S)

Batteries:	R6P/AA Type (two batteries)
External dimensions:	54 (W) \times 172 (H) \times 27.2 (D) mm
Weight:	100 g (including batteries)

● Accessory supplied

Operating instructions, Remote control unit (RB-DD1S),
R6P/AA batteries, AM loop antenna and FM indoor antenna

* For purposes of improvement, specifications and design are subject to change without notice.

SERVICE POINTS

1. Removal of Top Cover

(a) Remove 4 screws 2 from the rear plate.

(b) Remove 2 screws 1 from each side.

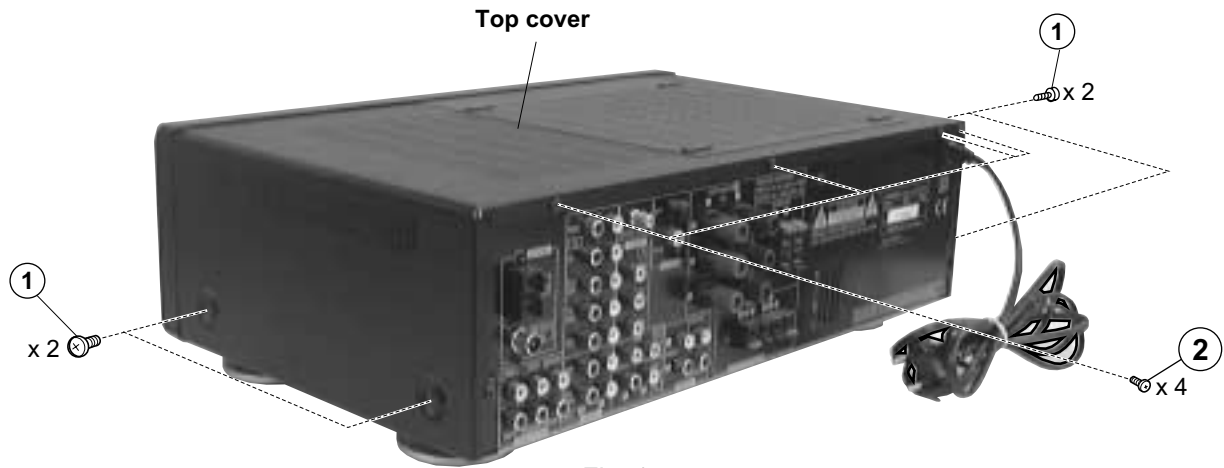


Fig. 1

2. Removal of the Rear Plate

(a) Remove 23 screws 3 and 1 screw 4 from the rear plate.

(b) Remove 5 screws + from the Bottom Chassis.

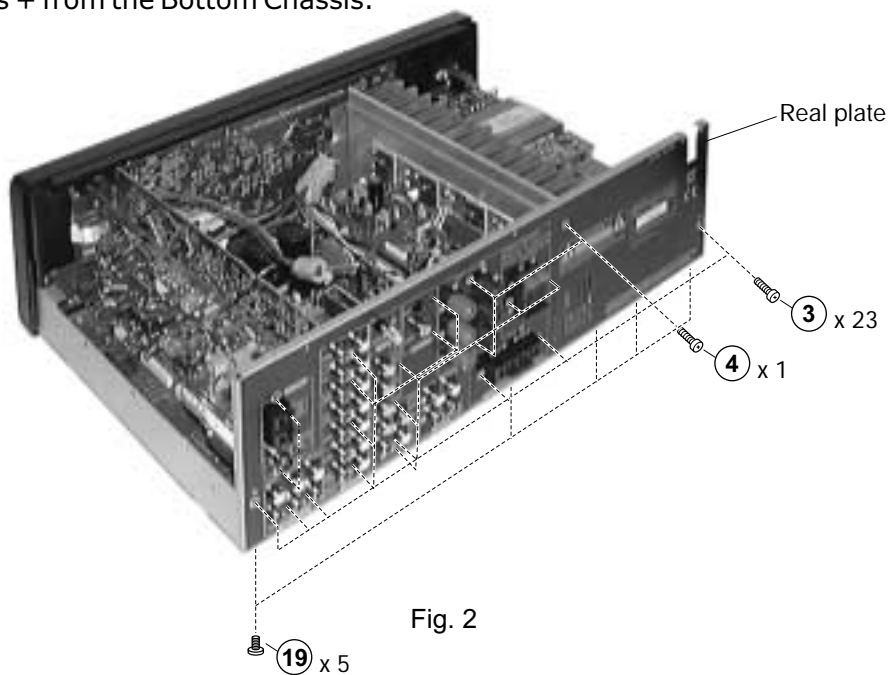
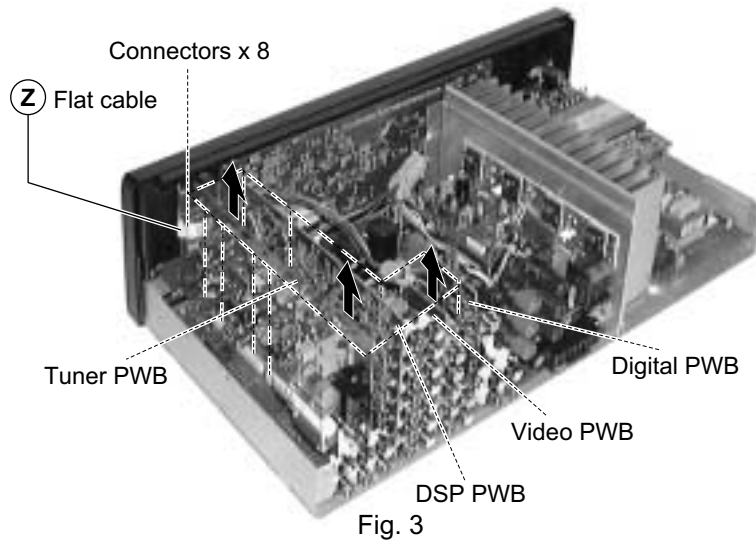


Fig. 2

3. Removal of Tuner/DSP/Video/Digital PWB Board

- (a) Remove the Flat cable Z at the Tuner PWB.
- (b) Gently pull the Tuner/DSP/Video PWB Board upwards to detach 8 connectors from Main PWB Board.
- (c) Detach the connector from DSP PWB Board to remove the Digital PWB.



4. Removal of Heat Sink and Transformer

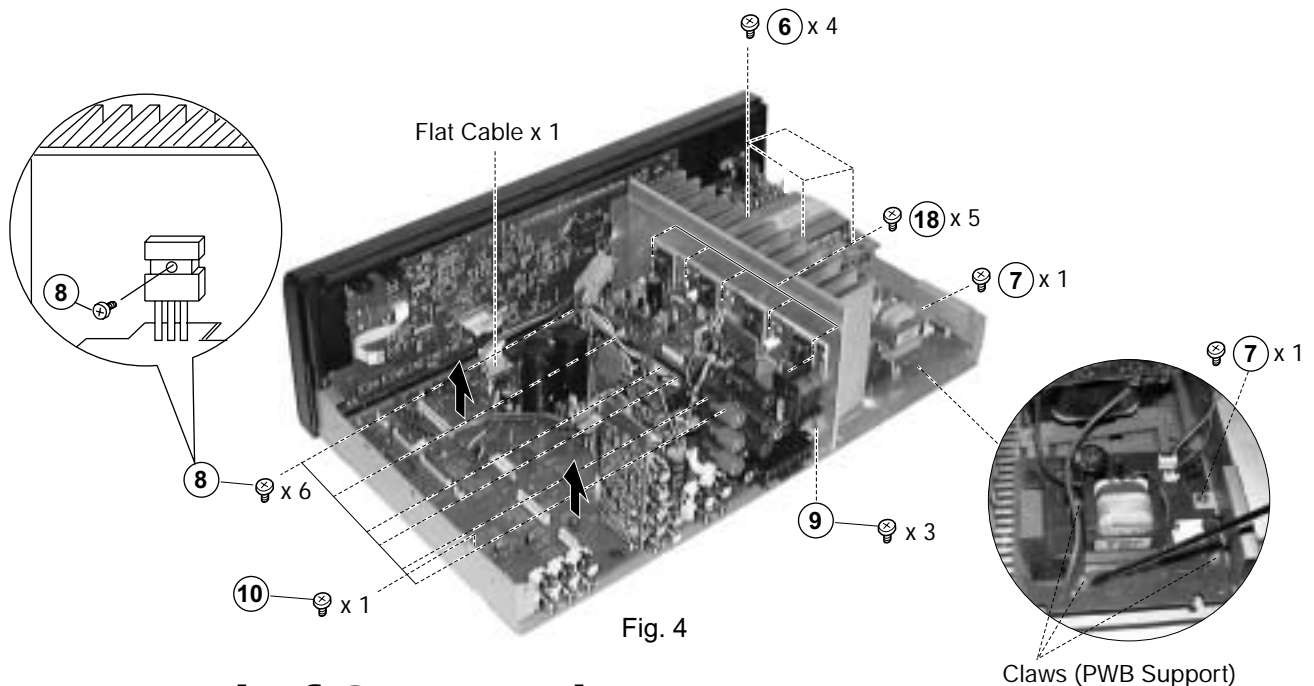
- (a) Invert the Bottom Chassis, remove 2 screws 5 connect to the heat sink. (Fig. 5)
- (b) Remove 4 screws 6 and pull the transformer upward together with the Power PWB section.

5. Removal of Power PWB Board

- (a) Remove 1 screw 7 from the Bottom Chassis at the side.
- (b) Release board from its 3 holding claws (PWB SUPPORT) and gently pull the board free.

6. Removal of Main PWB Board

- (a) Detach Flat cable from FL PWB Board.
- (b) Remove 6 screws 8 to release the transistors from the heat sink.
- (c) Remove 3 screws 9 to release the bracket from the heat sink.
- (d) Remove 1 screw ! to release the main PWB from the Bottom Chassis.



7. Removal of Surround PWB

- (a) Remove 5 screws ~ to release surround PWB from the heat sink.

8. Removal of Front Panel

(a) Invert the Bottom Chassis and remove 4 screws ".

(b) Remove the Master Vol. & Bass/Treble Knob before remove the Front panel.

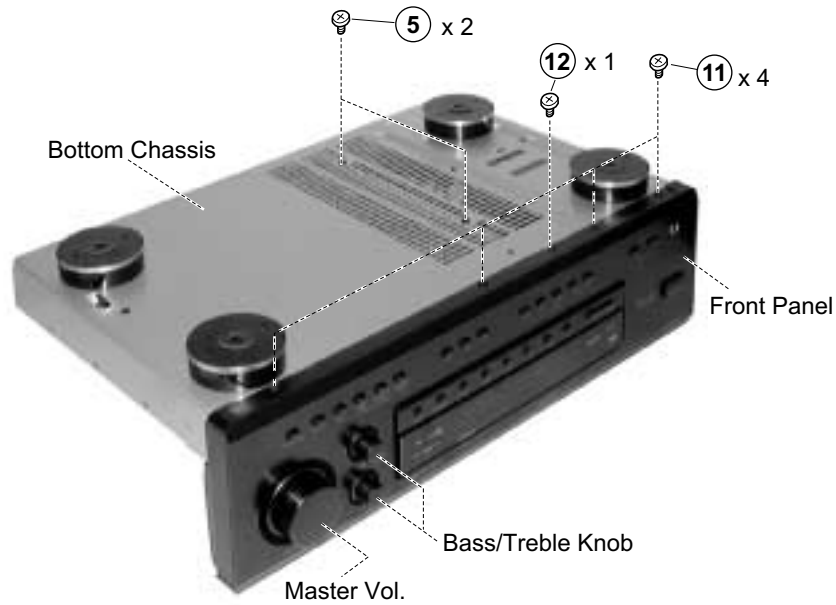


Fig. 5

9. Removal of Inner Panel, Power Switch, Phone Jack and FL PWB

(a) Release the inner panel from the Bottom Chassis by remove 1 screw # (Fig. 5) and 2 screws \$.

(b) Remove 11 screws % and 3 nuts to release the FL board.

(c) Remove 2 screws & to release the Power Switch.

(d) Remove 2 screws (to release the Phone Jack.

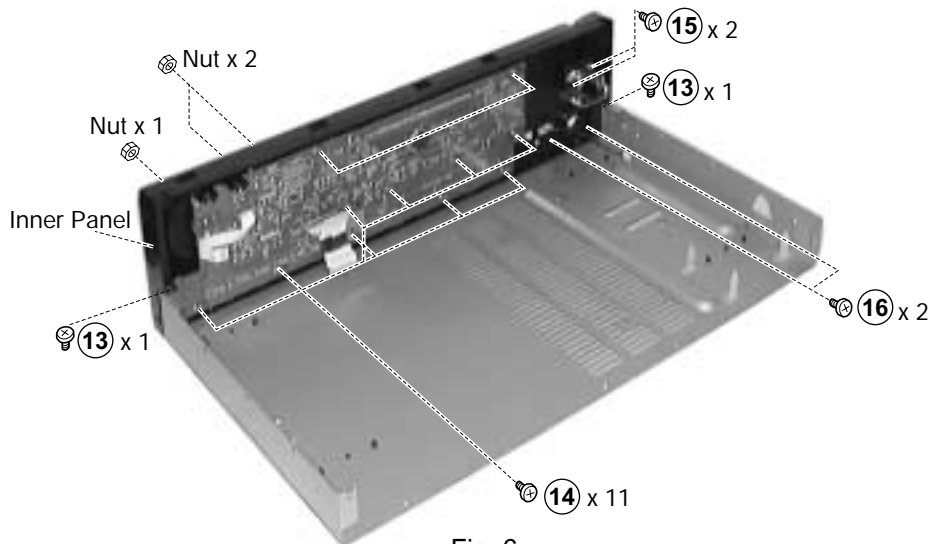


Fig. 6

10. Removal of Foot

(a) Remove 4 screws) to remove foot.

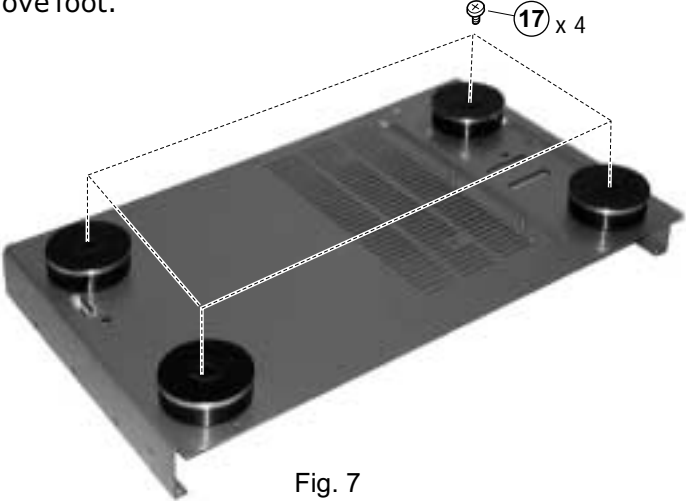


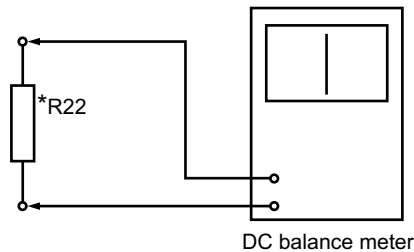
Fig. 7

ADJUSTMENTS

1) FM Discriminator

Measuring instrument and condition.

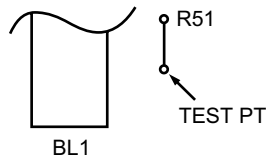
Input Terminal	Output Terminal	Measuring Instrument	Frequency	Adjust	Reading
FM Antenna 1kHz, 60 dB μ 22.5kHz dev.	* R22	DC Balance Meter	98.1MHz	T4	0 \pm 30mV



2) Voltage of covering (Reference)

Measuring instrument and condition.

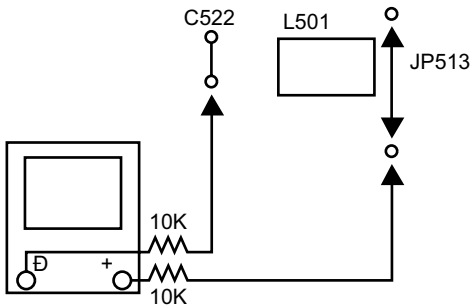
Band	Destination	Frequency	Specification		Note
			Limit (V)	Average (V)	
FM	50 kHz step [E, EBS, W, WUN]	87.50 MHz	1.3 - 3.7	2.3	
		108.00 MHz	6.0 - 9.0	7.5	
AM	10 kHz step [W, WUN]	520 kHz	0.9 - 1.2	1.0	
		1,710 kHz	6.0 - 9.0	7.5	
	9 kHz step [E, EBS, W, WUN]	522 MHz	0.9 - 1.2	1.0	
		1,611 kHz	6.0 - 9.0	7.5	



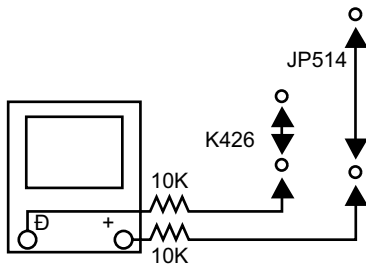
3) Idling voltage (No adjustment is needed)

Test points

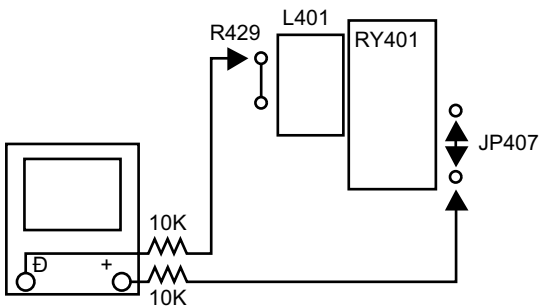
a) Front left channel (MAIN PWB)



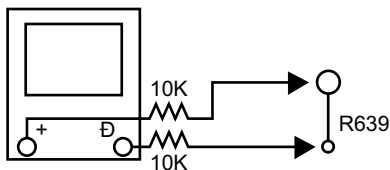
b) Front right channel (MAIN PWB)



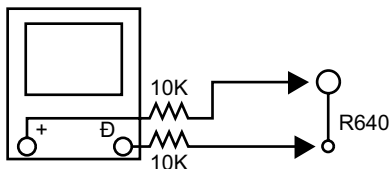
c) Center channel (MAIN PWB)



d) Surr left channel (SURR PWB)



e) Surr right channel (SURR PWB)



Condition

Master volume : --- (min)

Temperature : 15 ~ 30°C

Reading (SPEC)

- 1) POWER ON AFTER ONE MIN.
0.5 ~ 2.0 mV
- 2) STABLE Æ 1 HOUR
0.8 ~ 8 mV

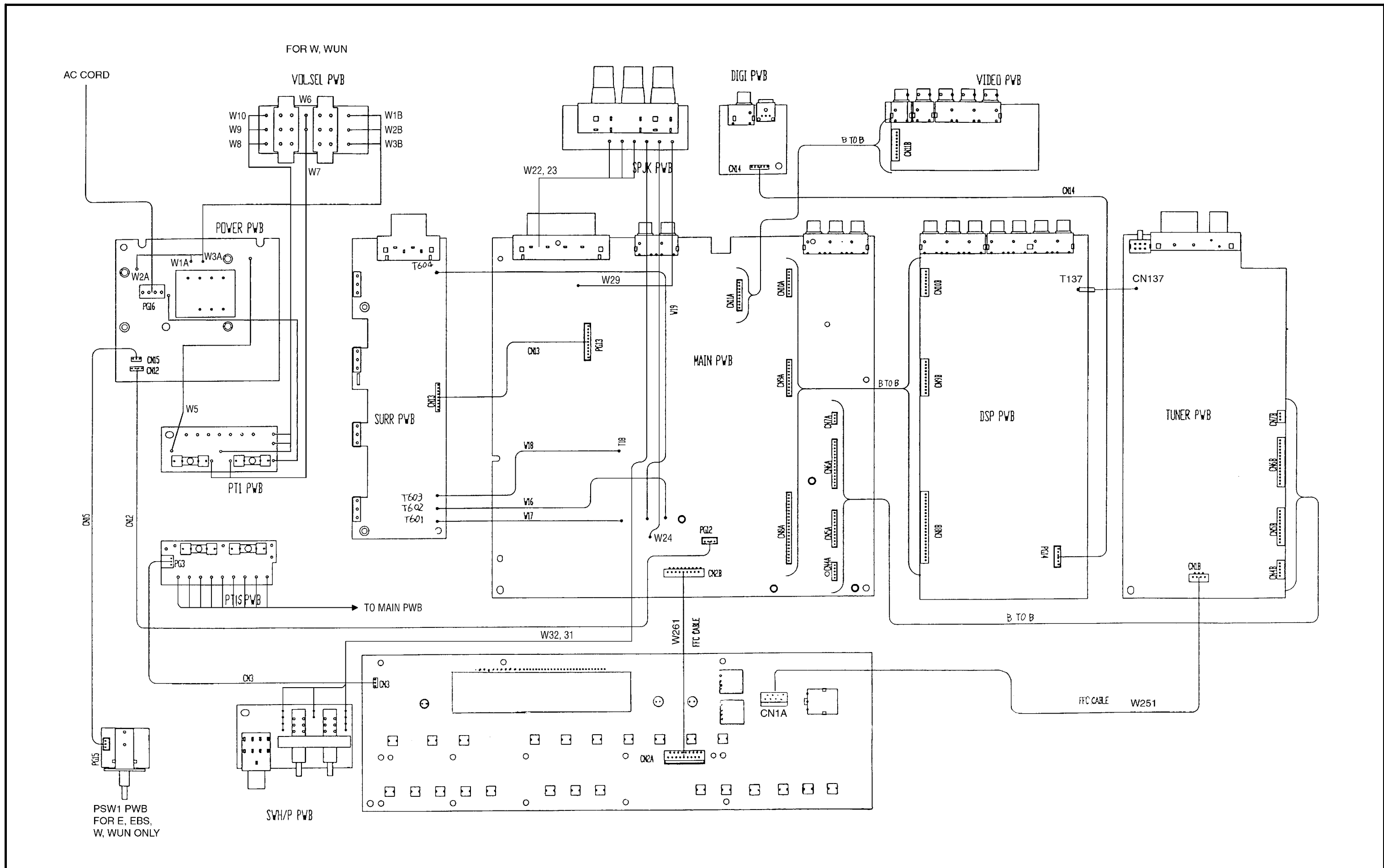
- IF THIS IDLING VOLT - 0.4 mV
R625 (SURROUND LEFT)
R626 (SURROUND RIGHT)
R529 (FRONT LEFT)
R530 (FRONT RIGHT)
R416 (CENTER)

NEED TO CUT AWAY

- IF 2.1 mV

NEED TO ADD ABOVE RESISTOR

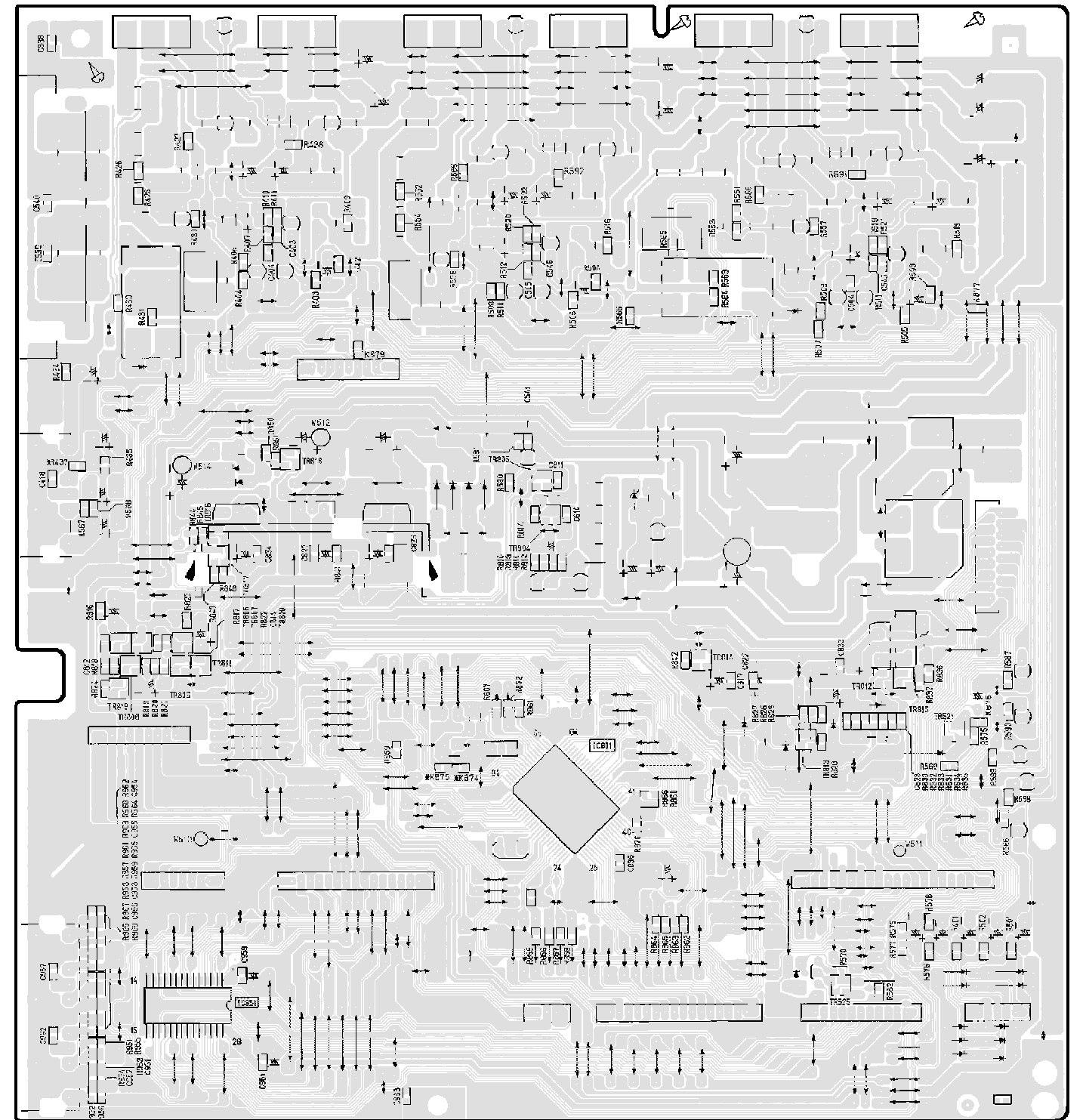
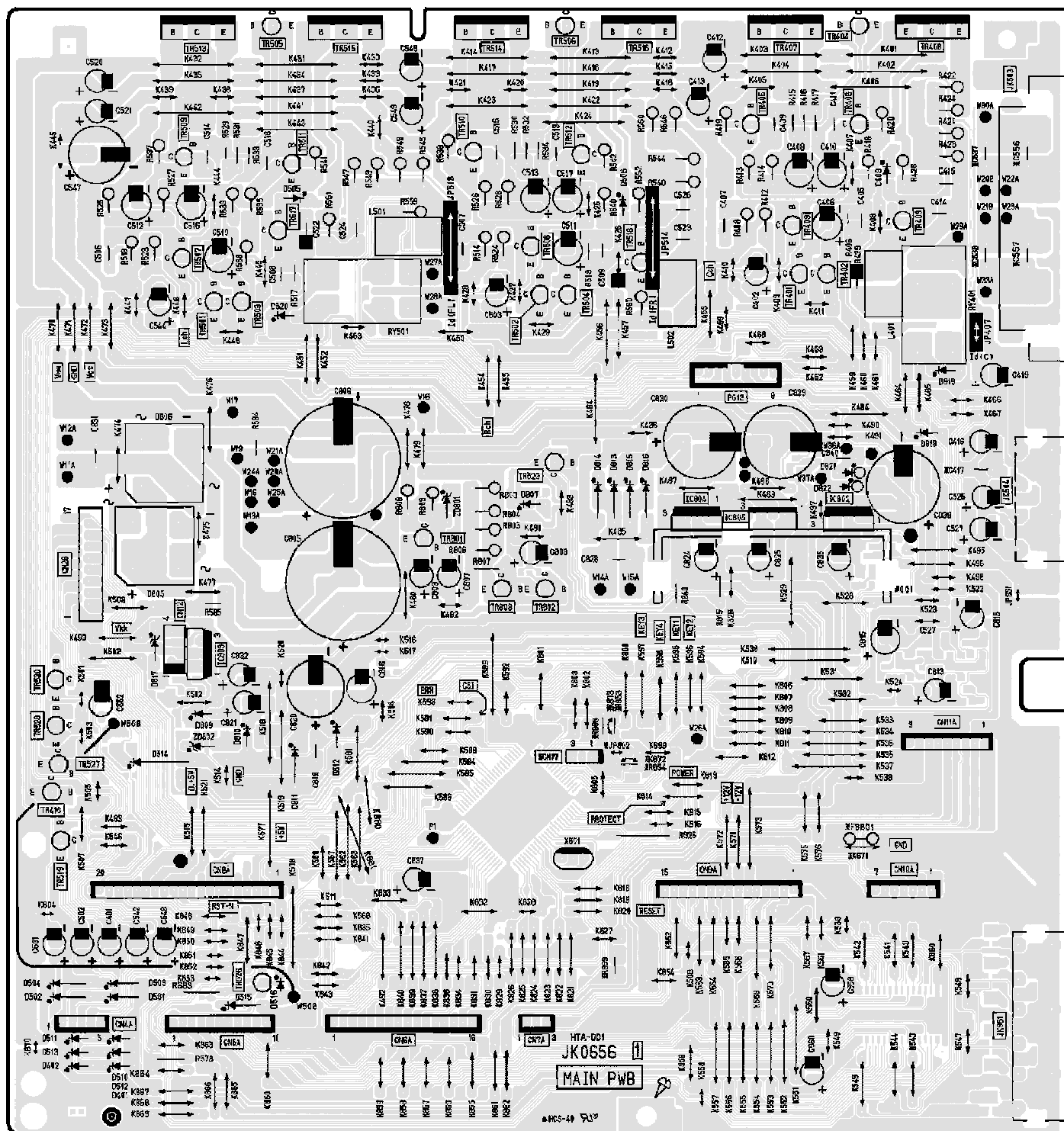
(IF DON'T HAVE ABOVE RESISTOR)



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WIRING DIAGRAM

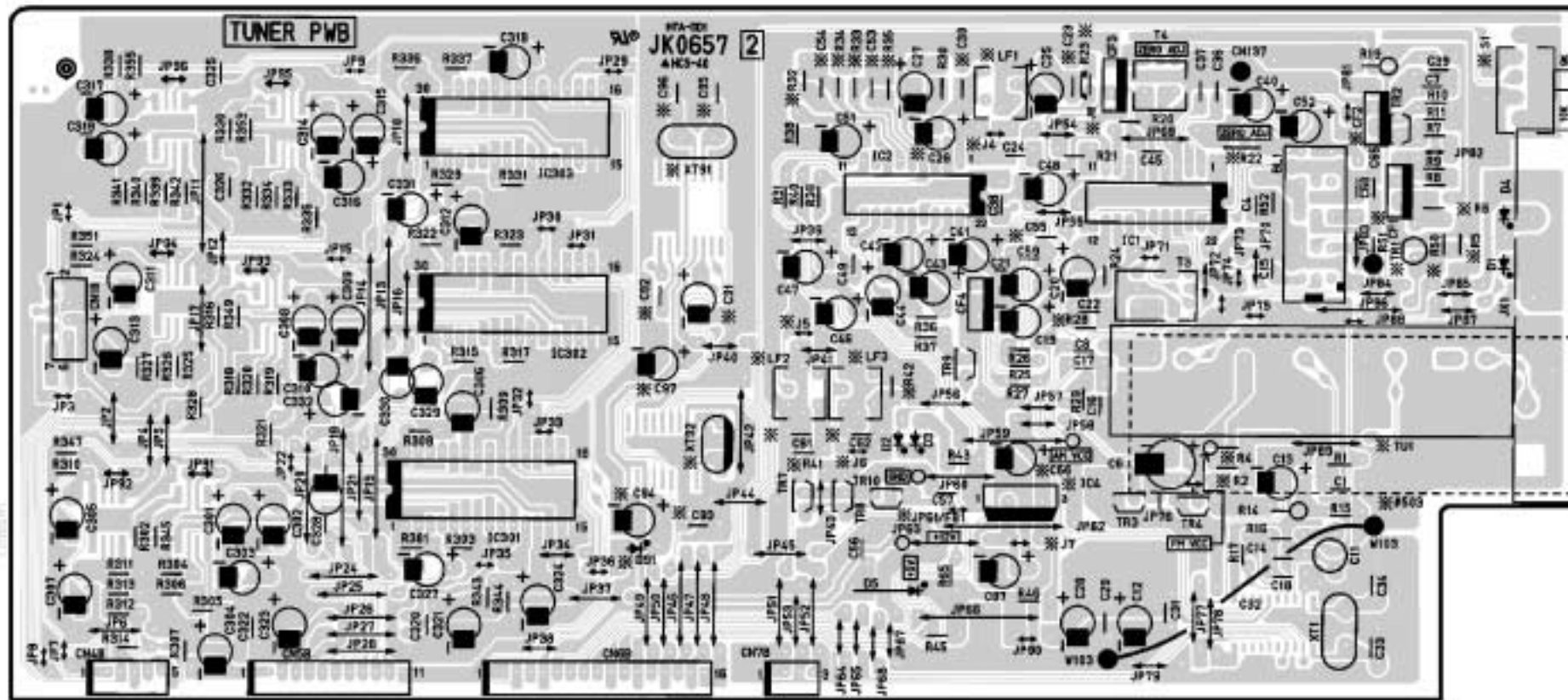
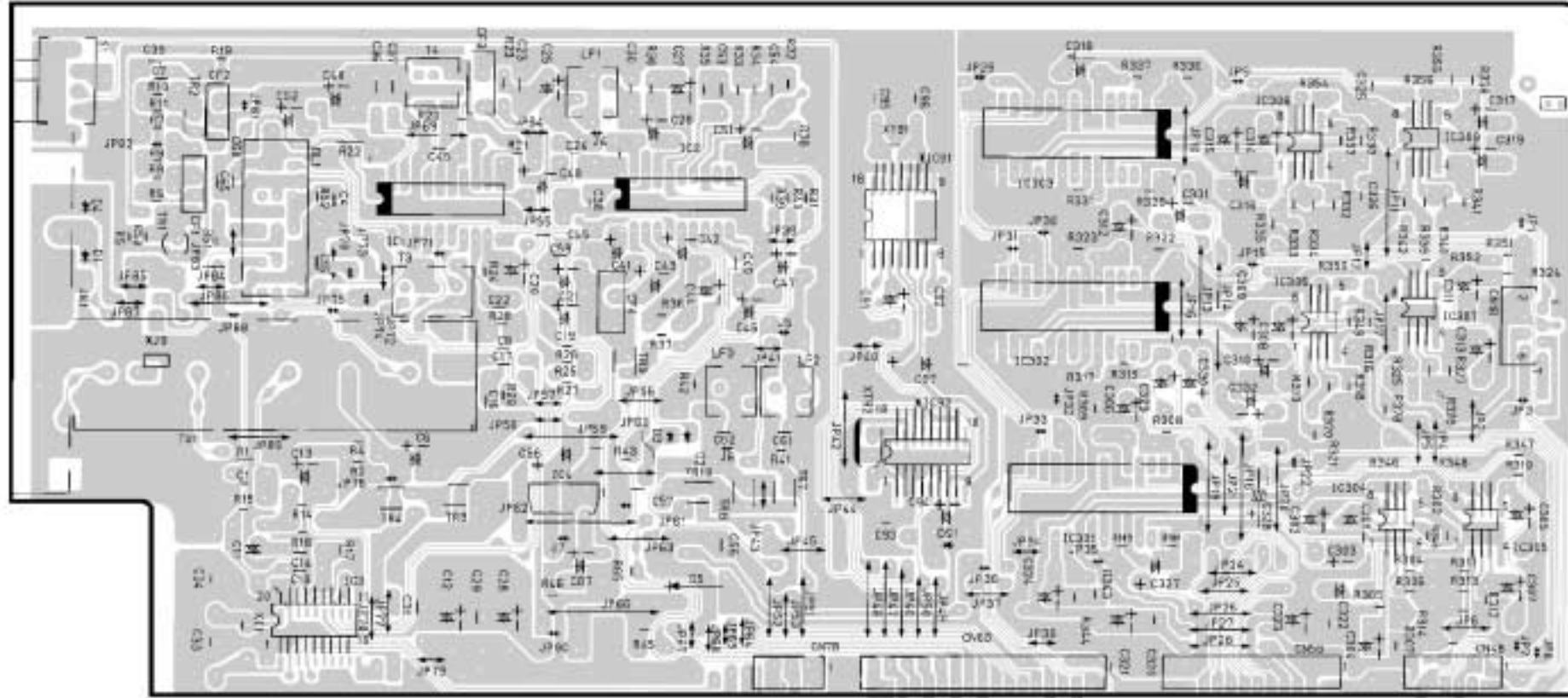
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MAIN PCB

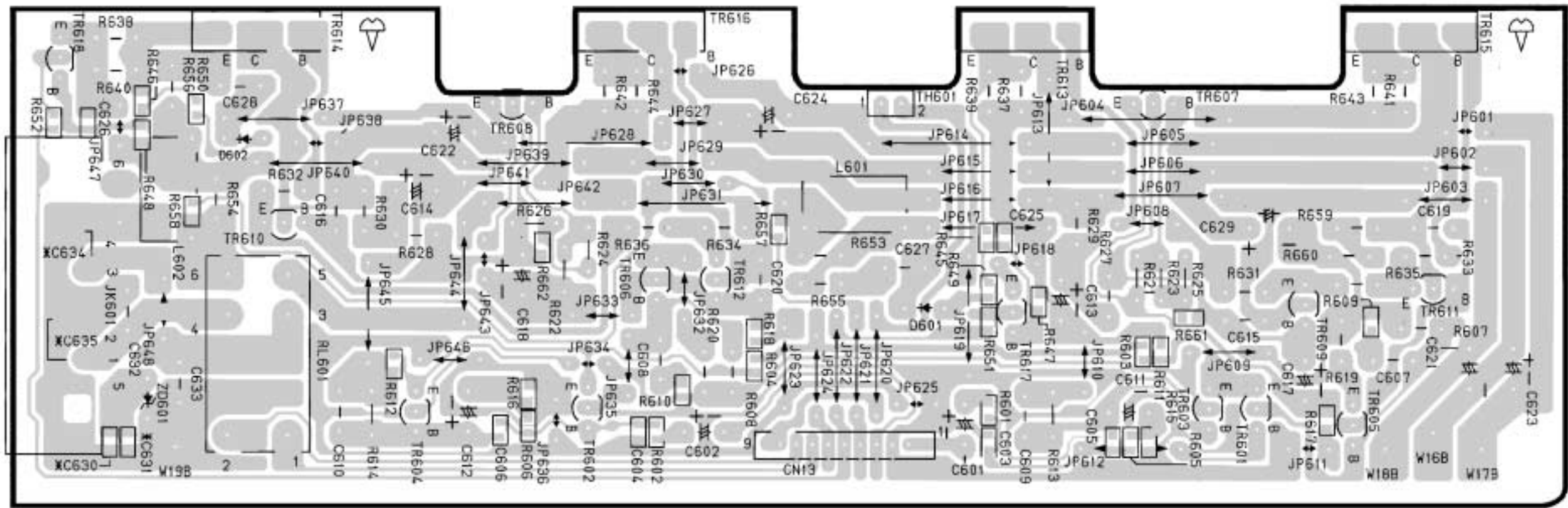
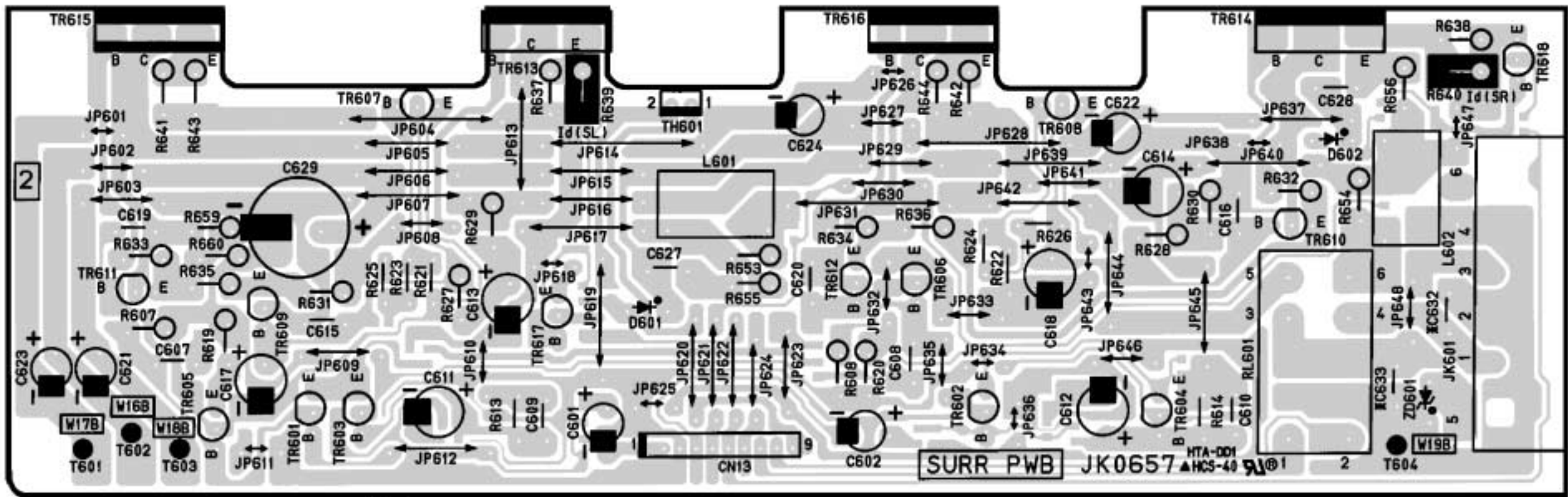
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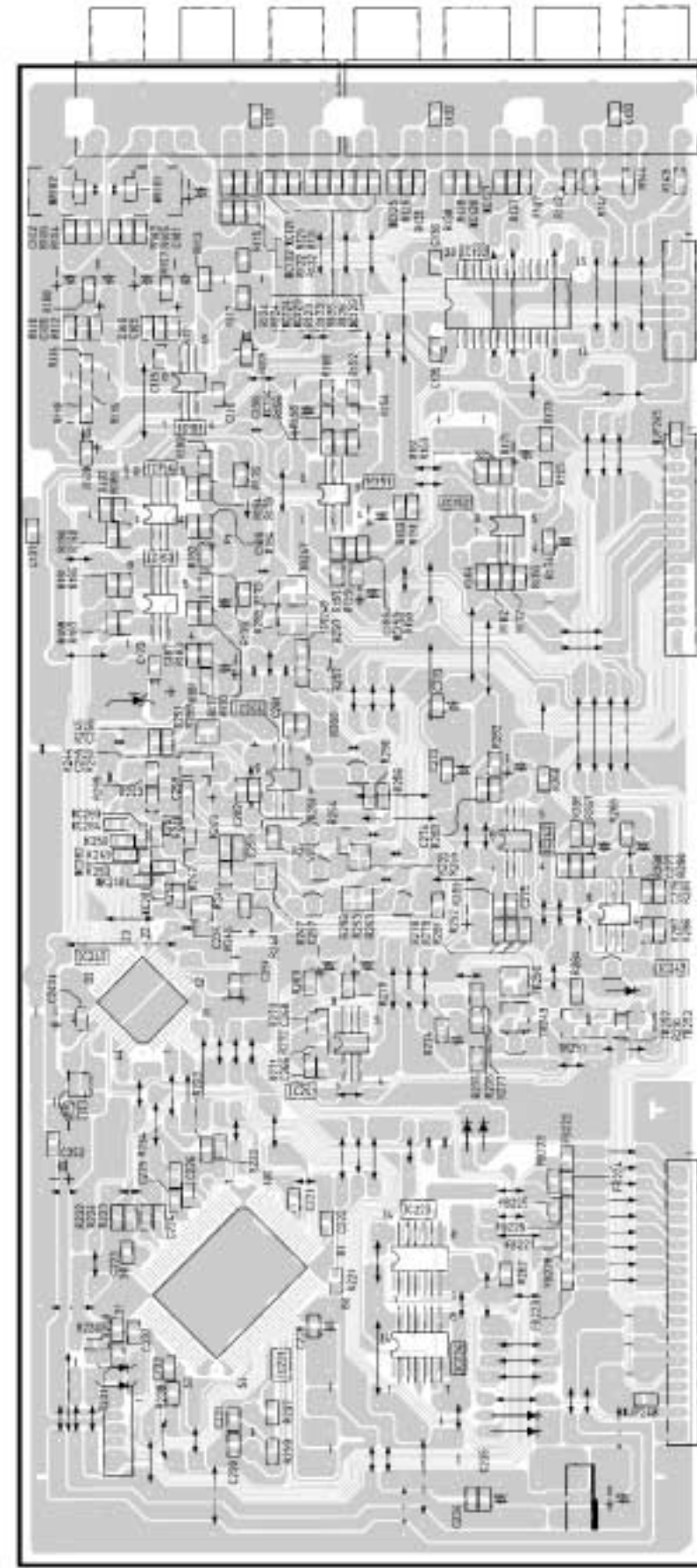
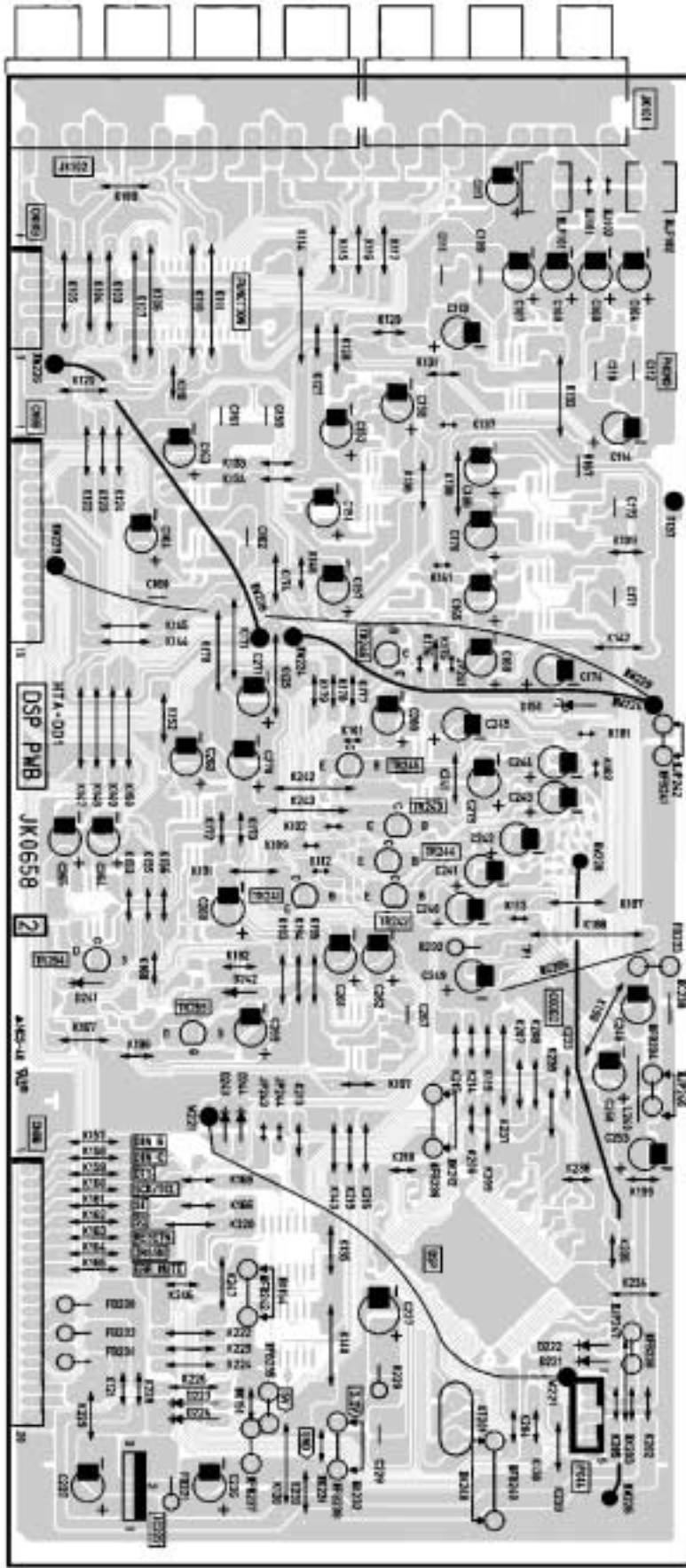


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TUNER PCB

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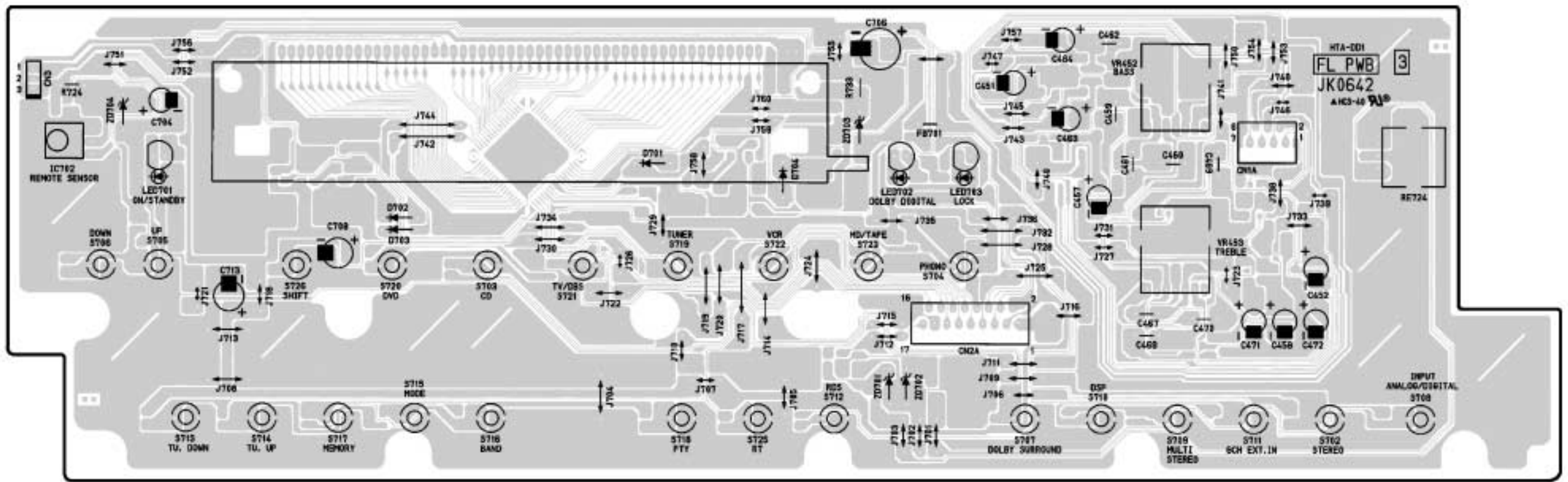
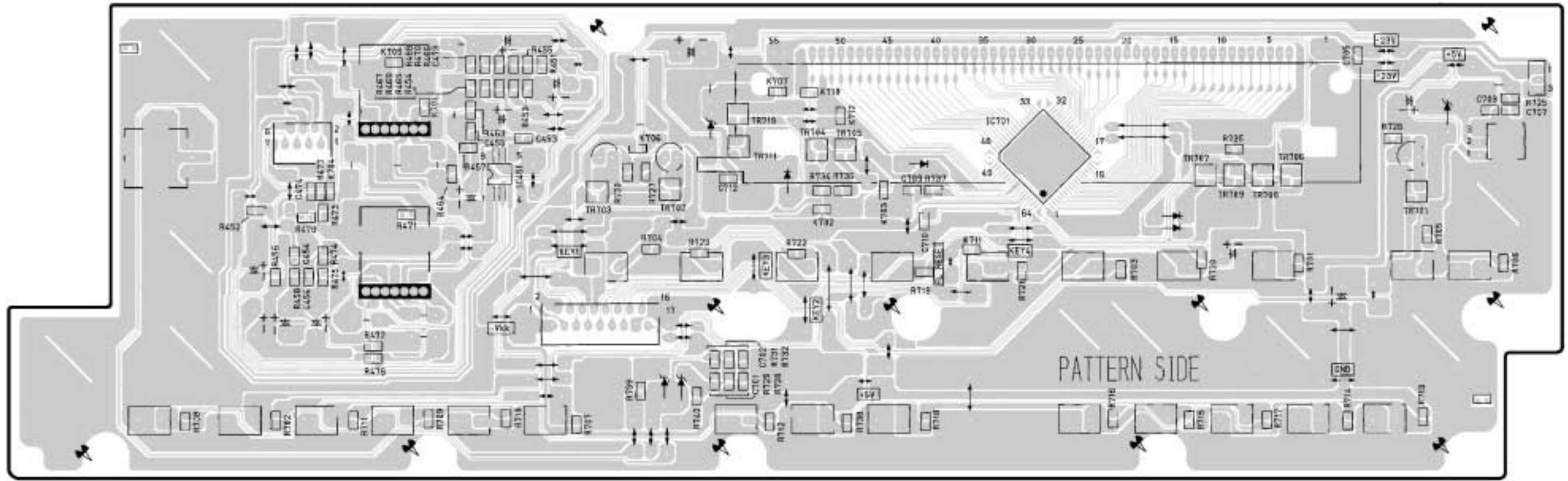




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DSP PCB

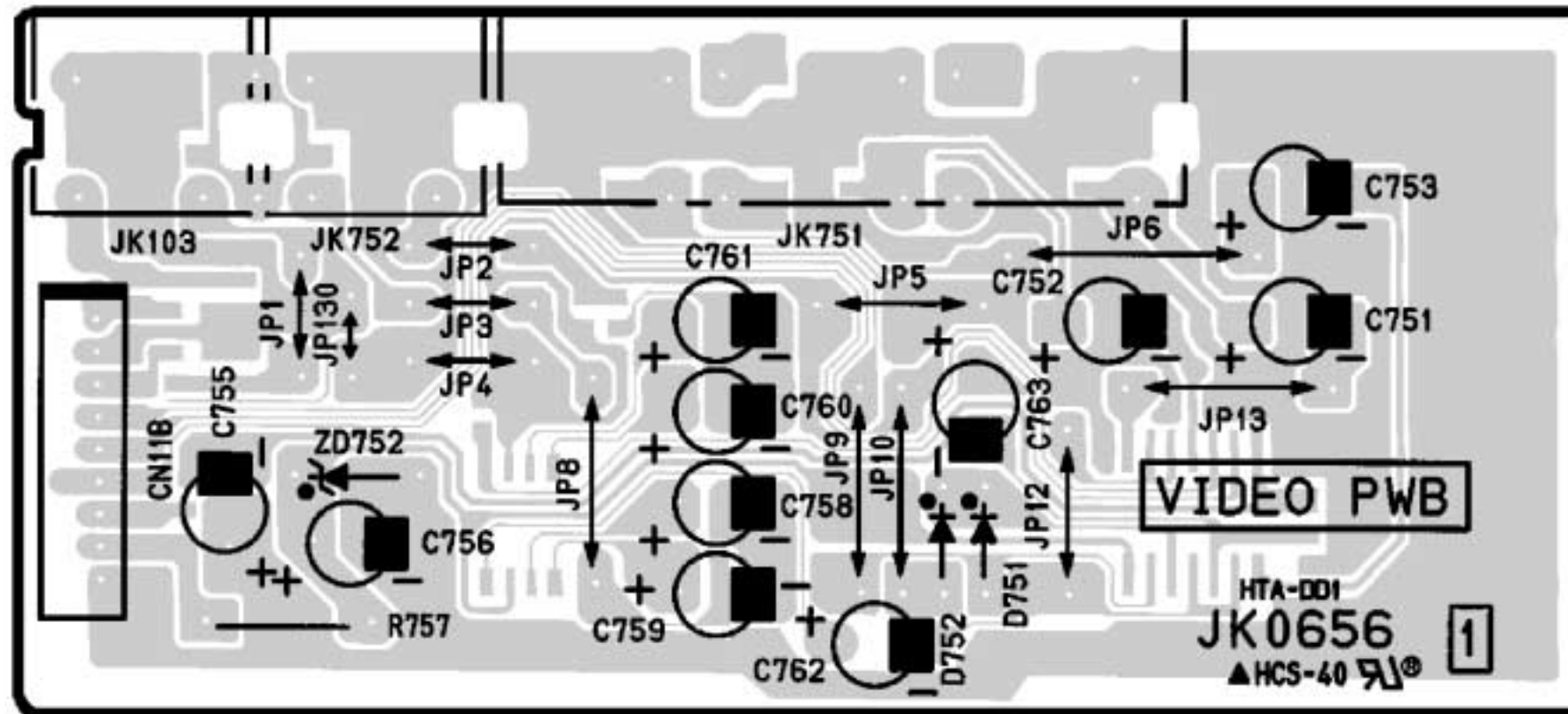
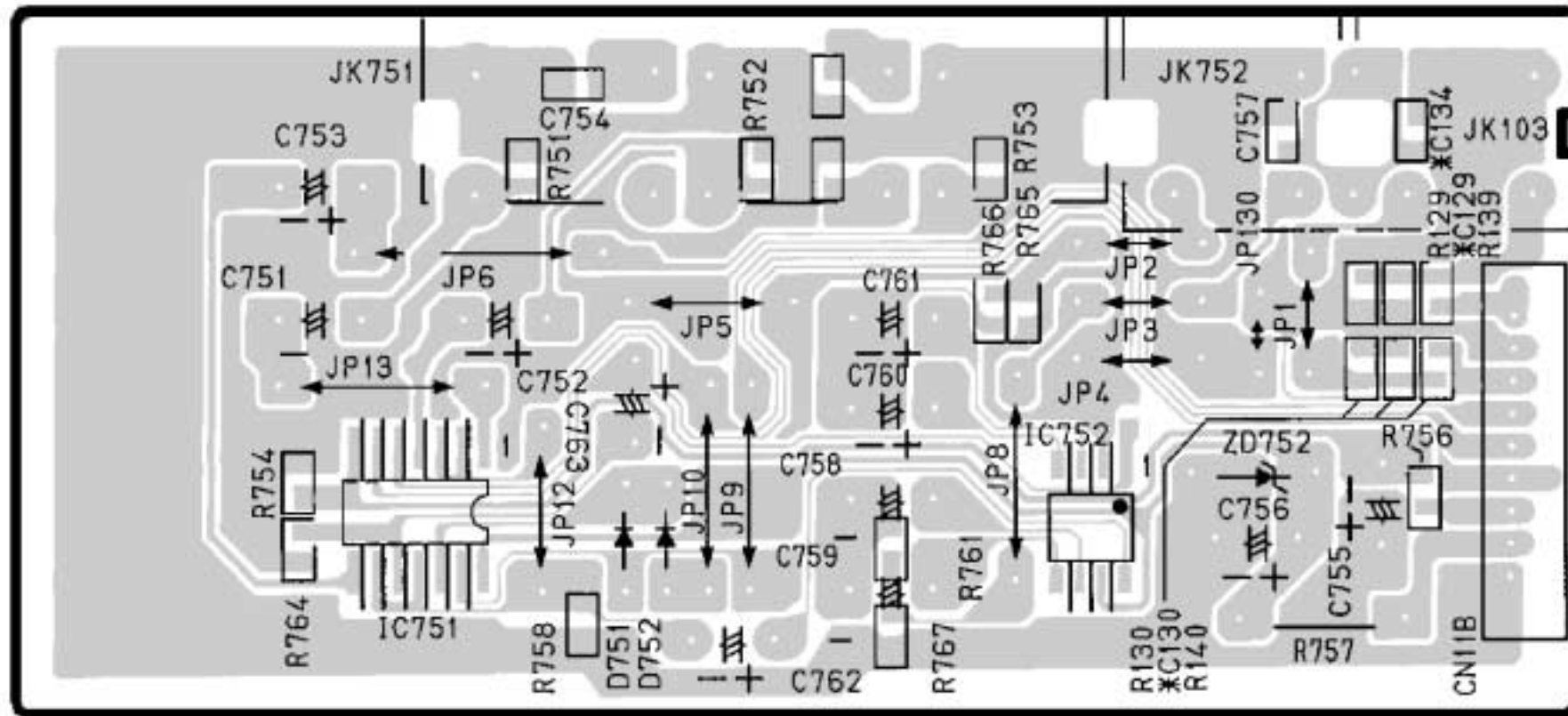
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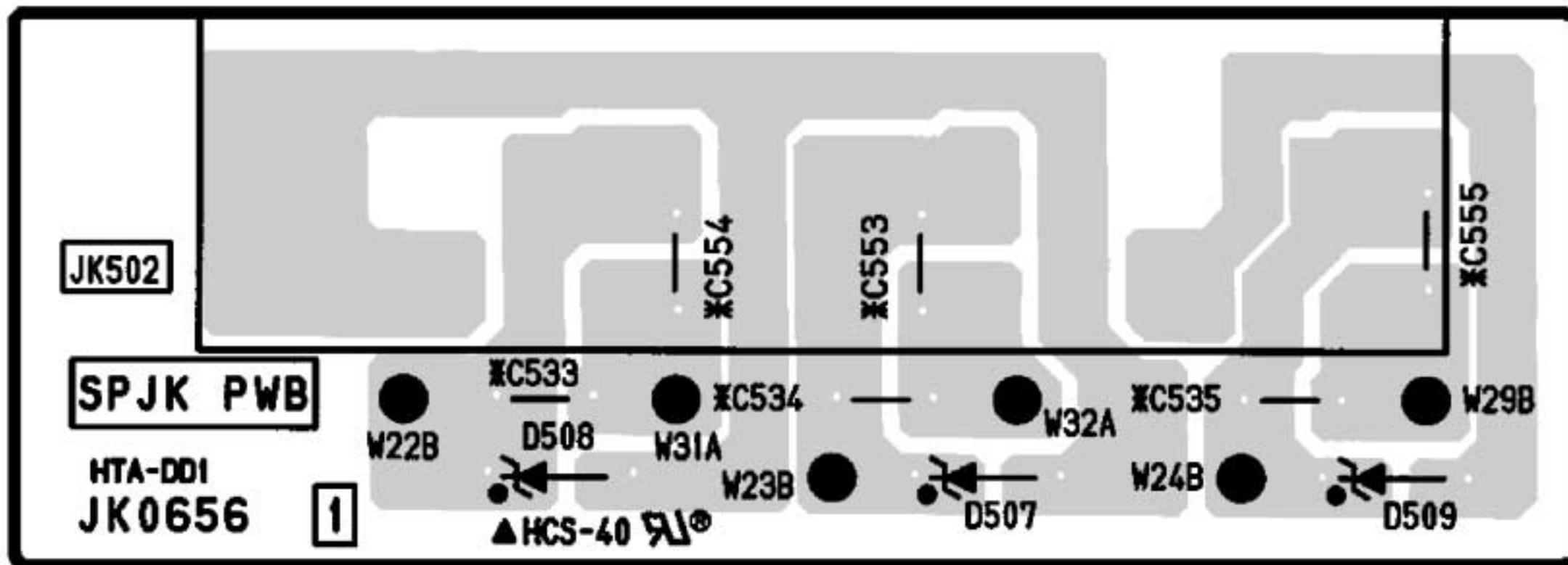
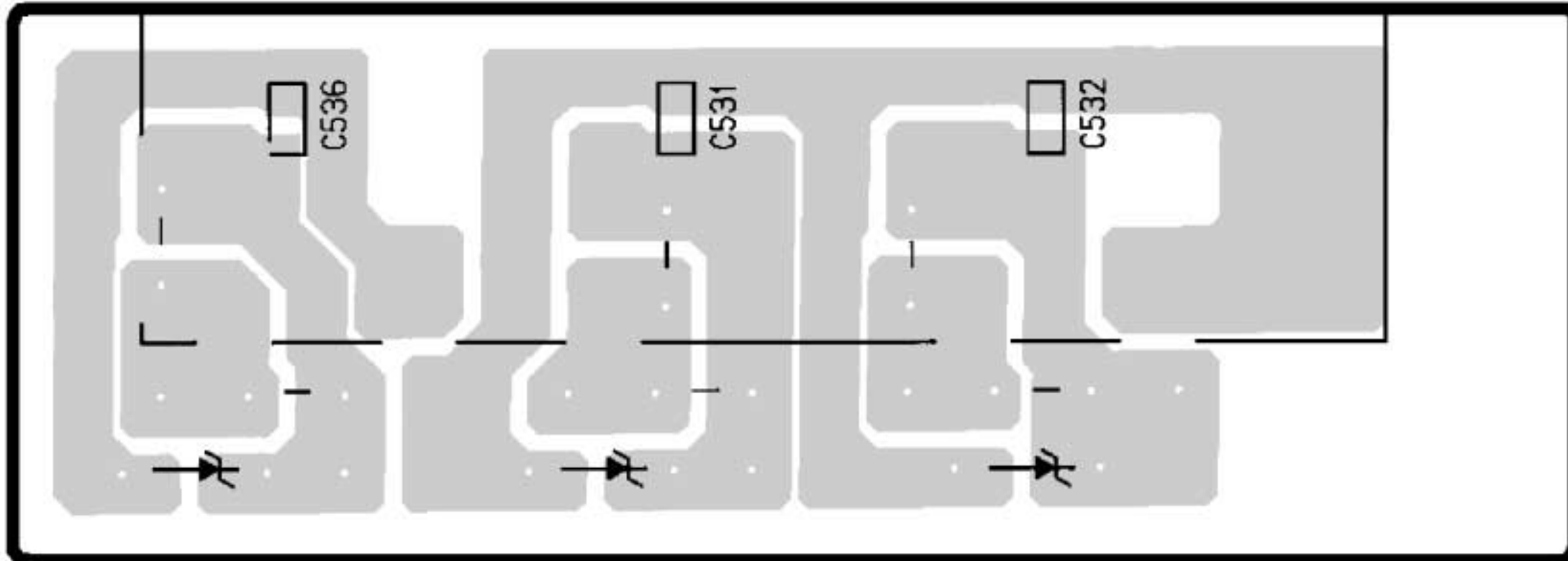


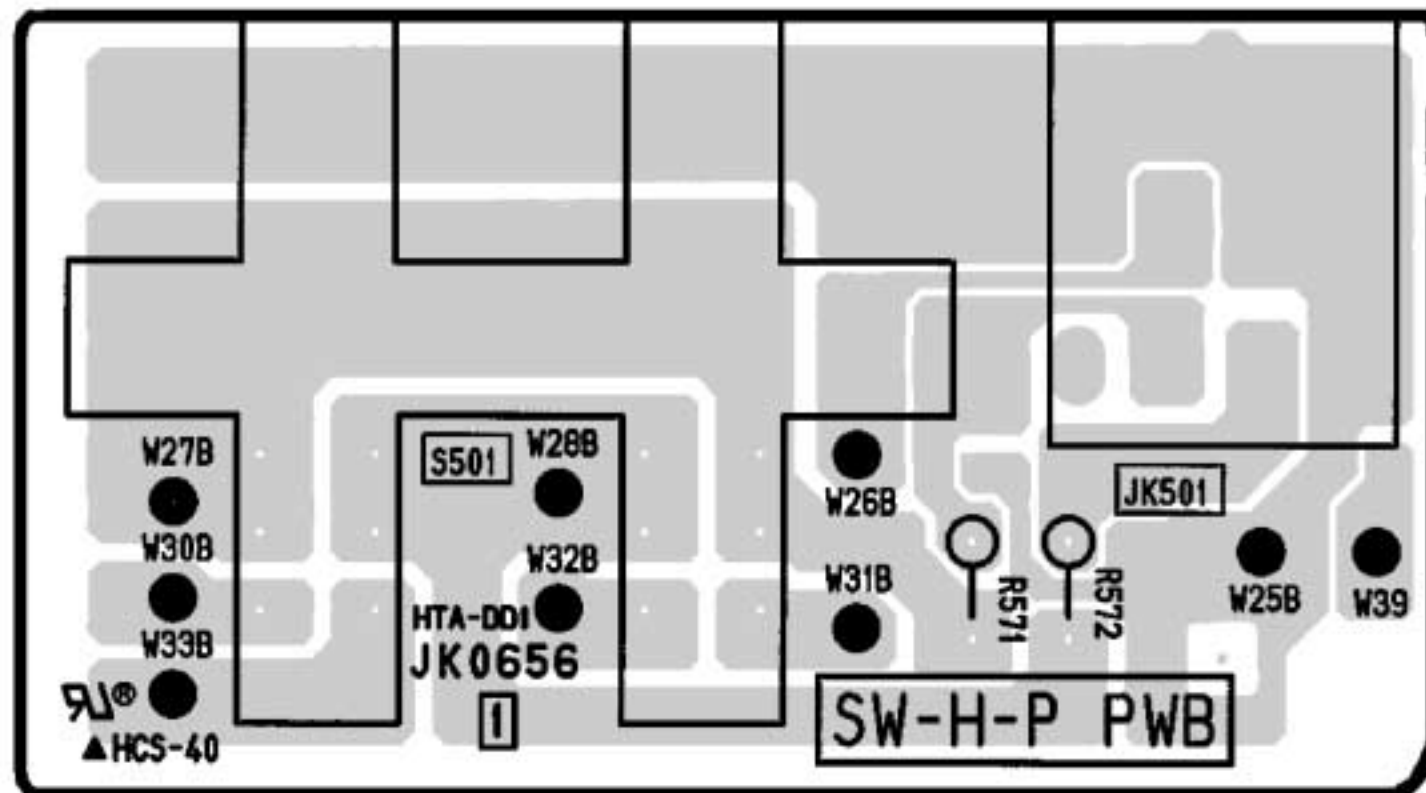
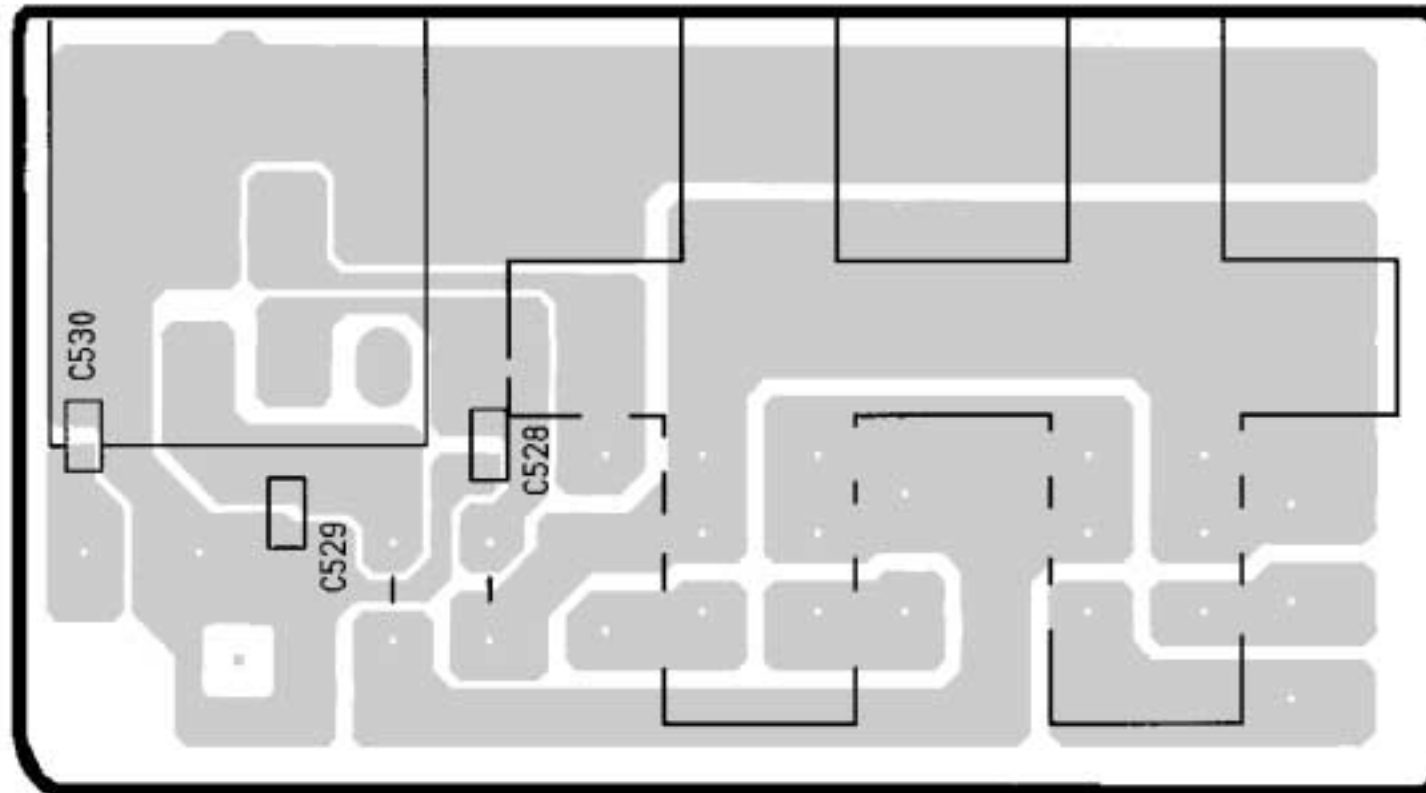
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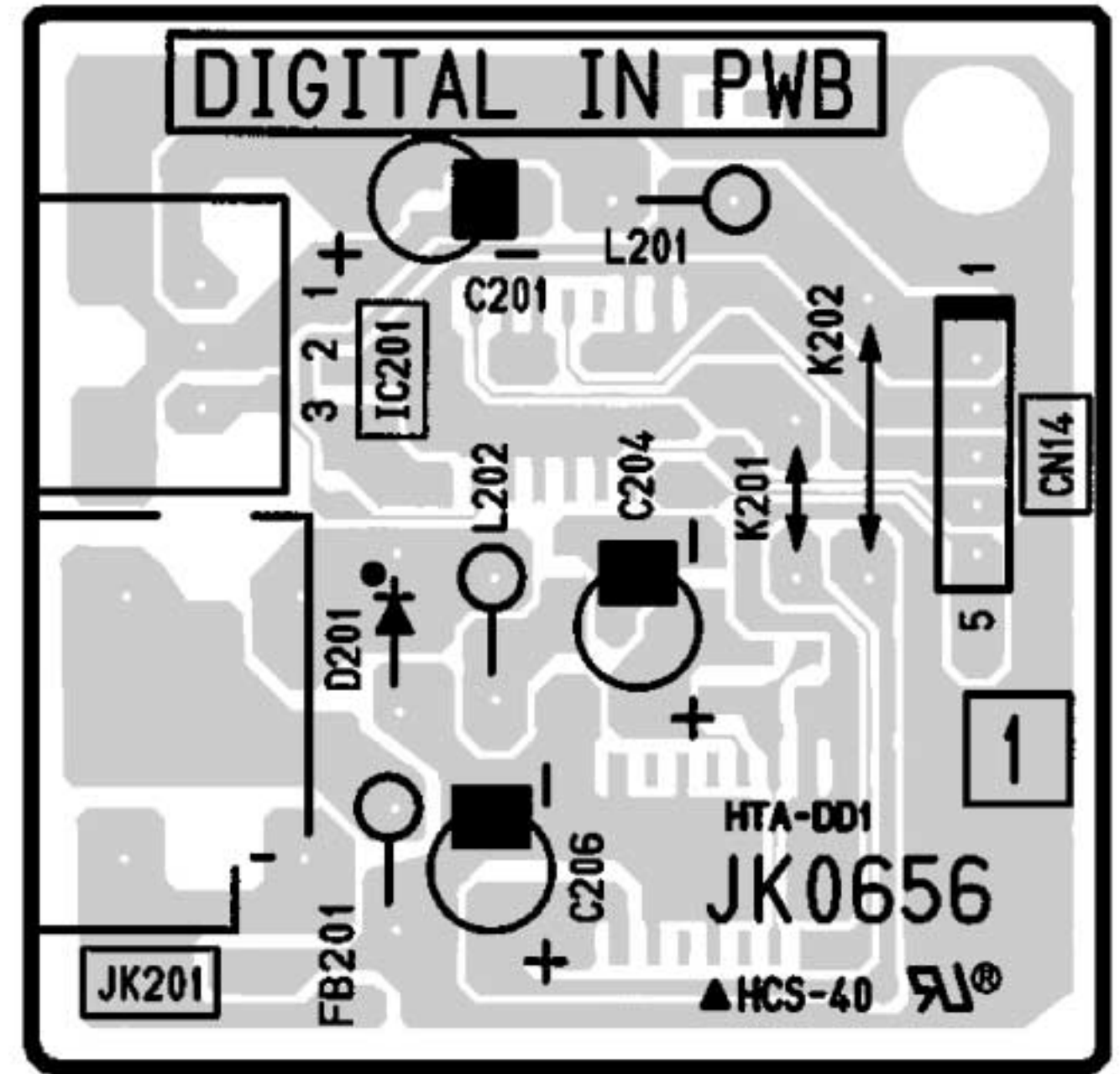
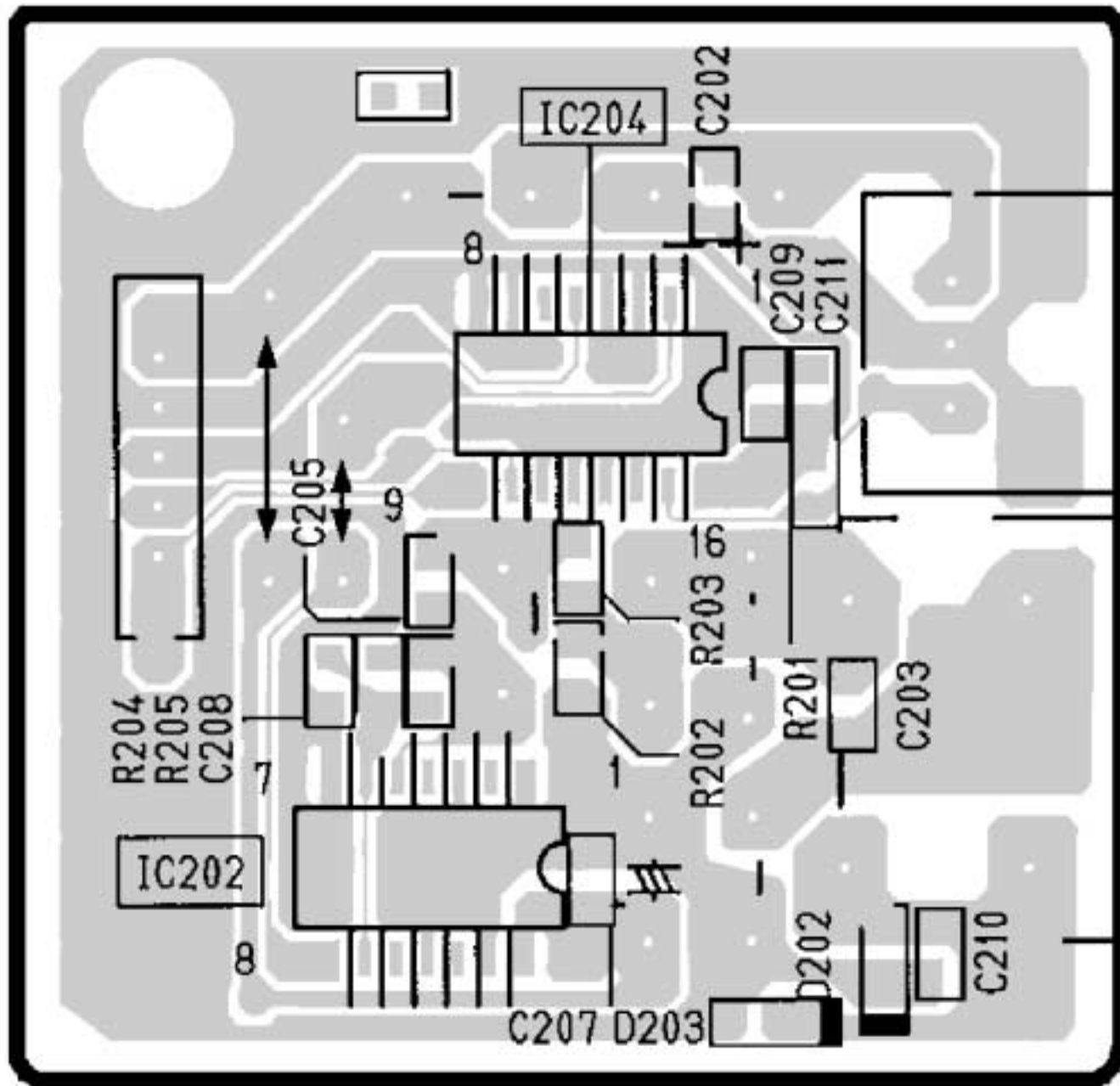
FL PCB

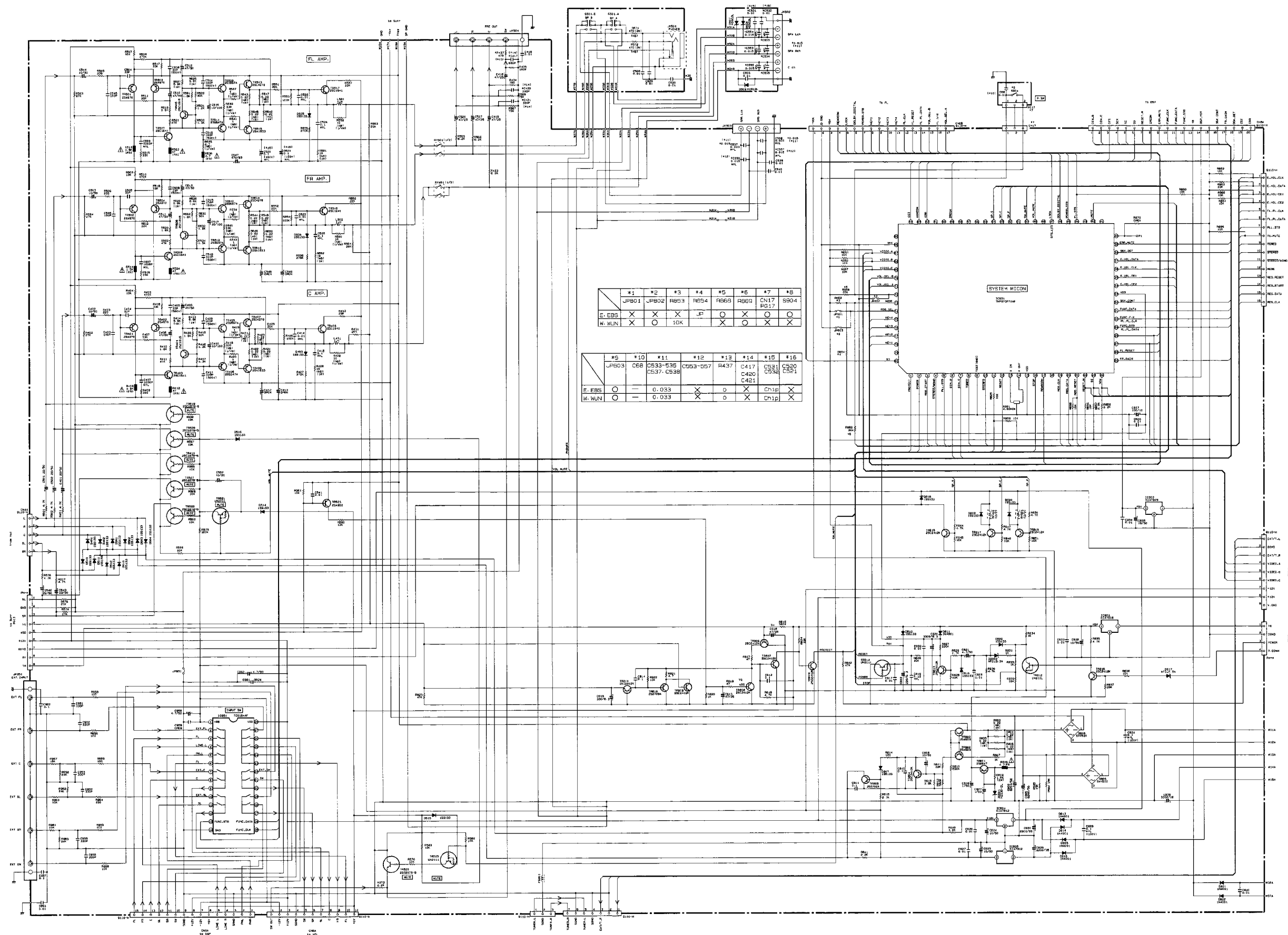
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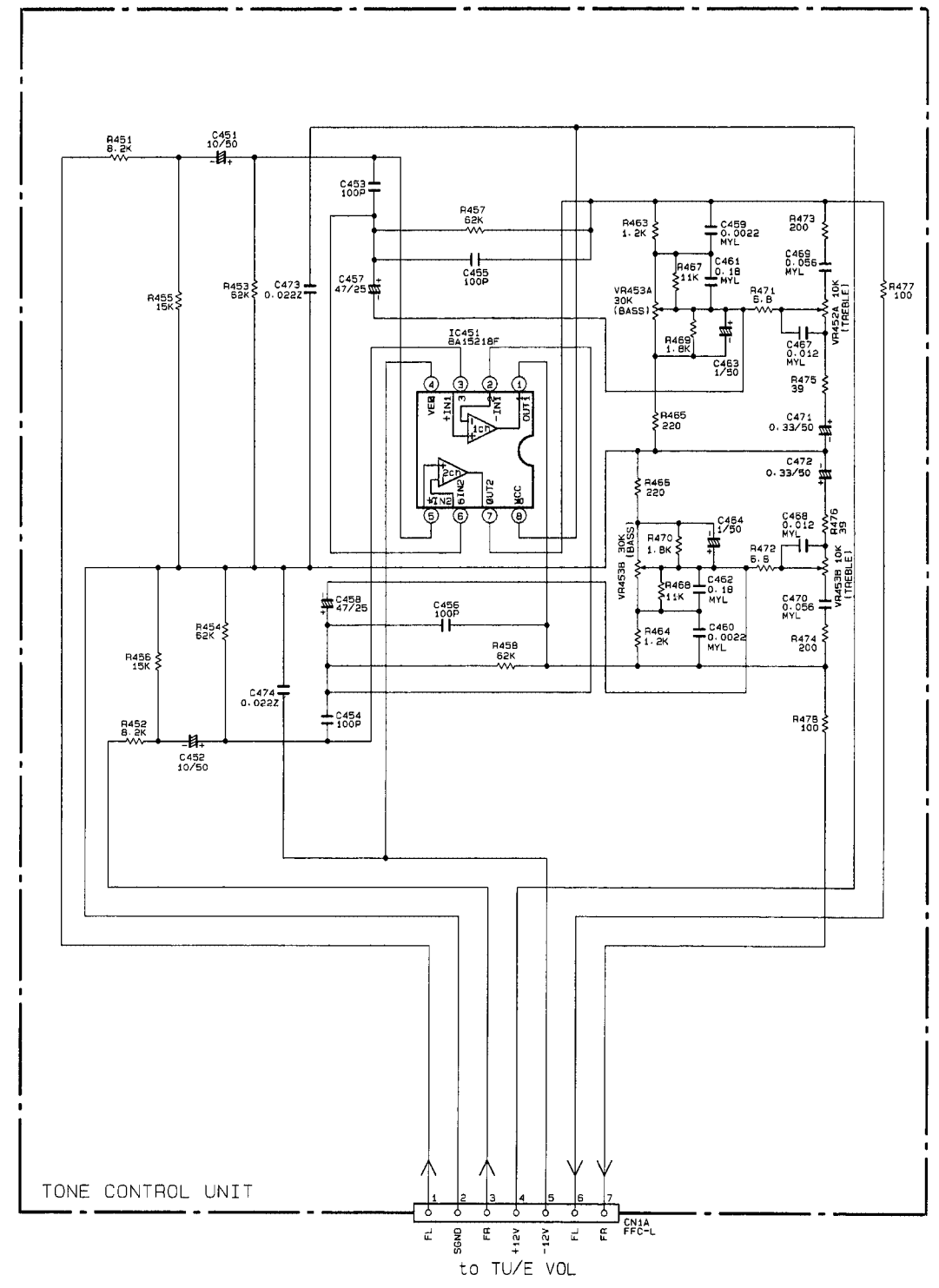
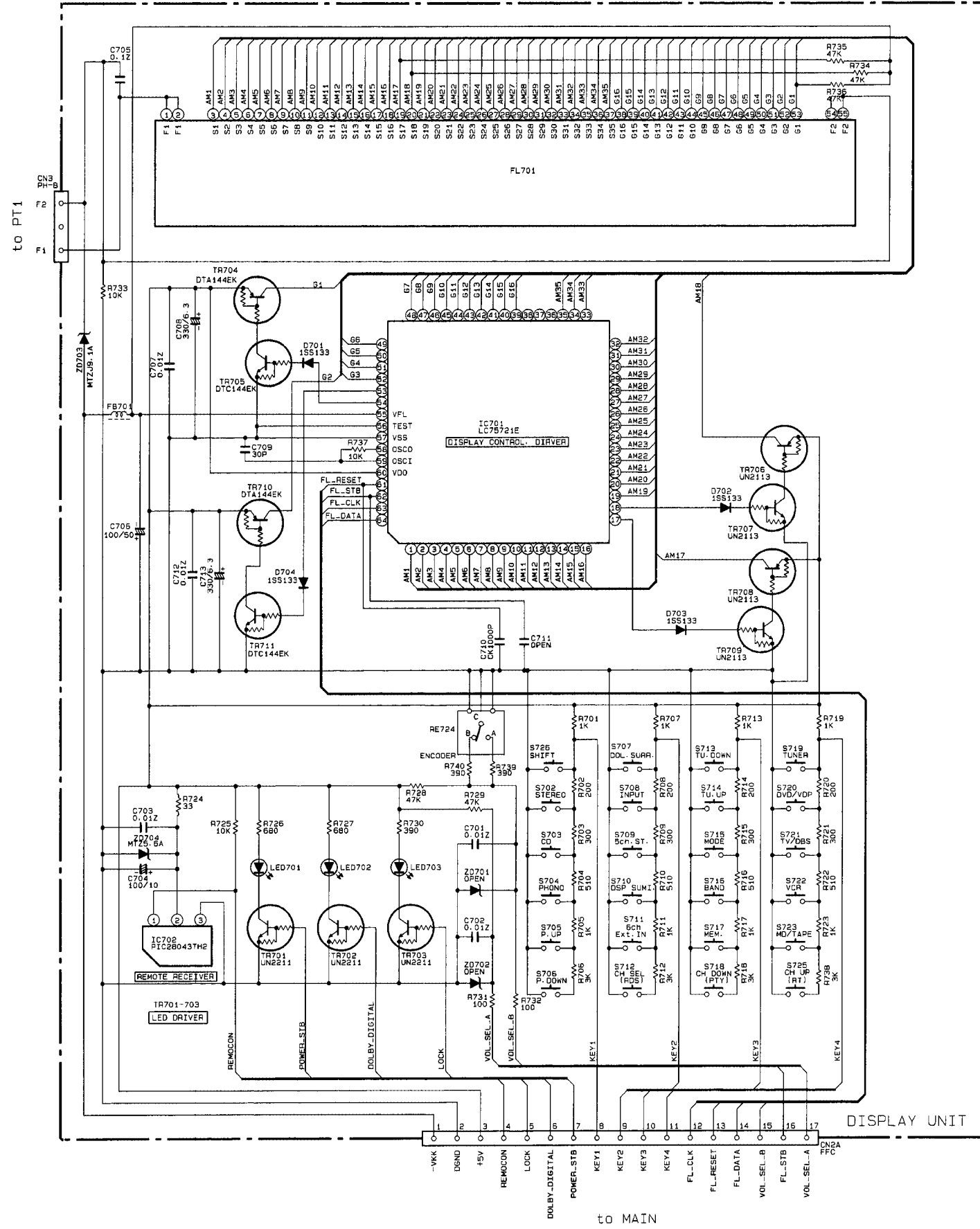
	*1	*2	*3	*4	*5	*6	*7	*8
	JPB01	JPB02	R803	R854	R865	R869	CV17 PG17	SS04
E. EBS	X	X	X	X	X	X	X	X
W. WLN	X	O	10K					

	*9	*10	*11	*12	*13	*14	*15	*16
	JPB03	CE8	CS33-535 CS37, CS38	CS53-557	R437	C417 C420 C421	CS31 CS32	CS30 CS31
E. EBS	O		0.033	X	O	X	Chip	X
W. WLN	O		0.033				Chip	X

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MAIN CIRCUIT

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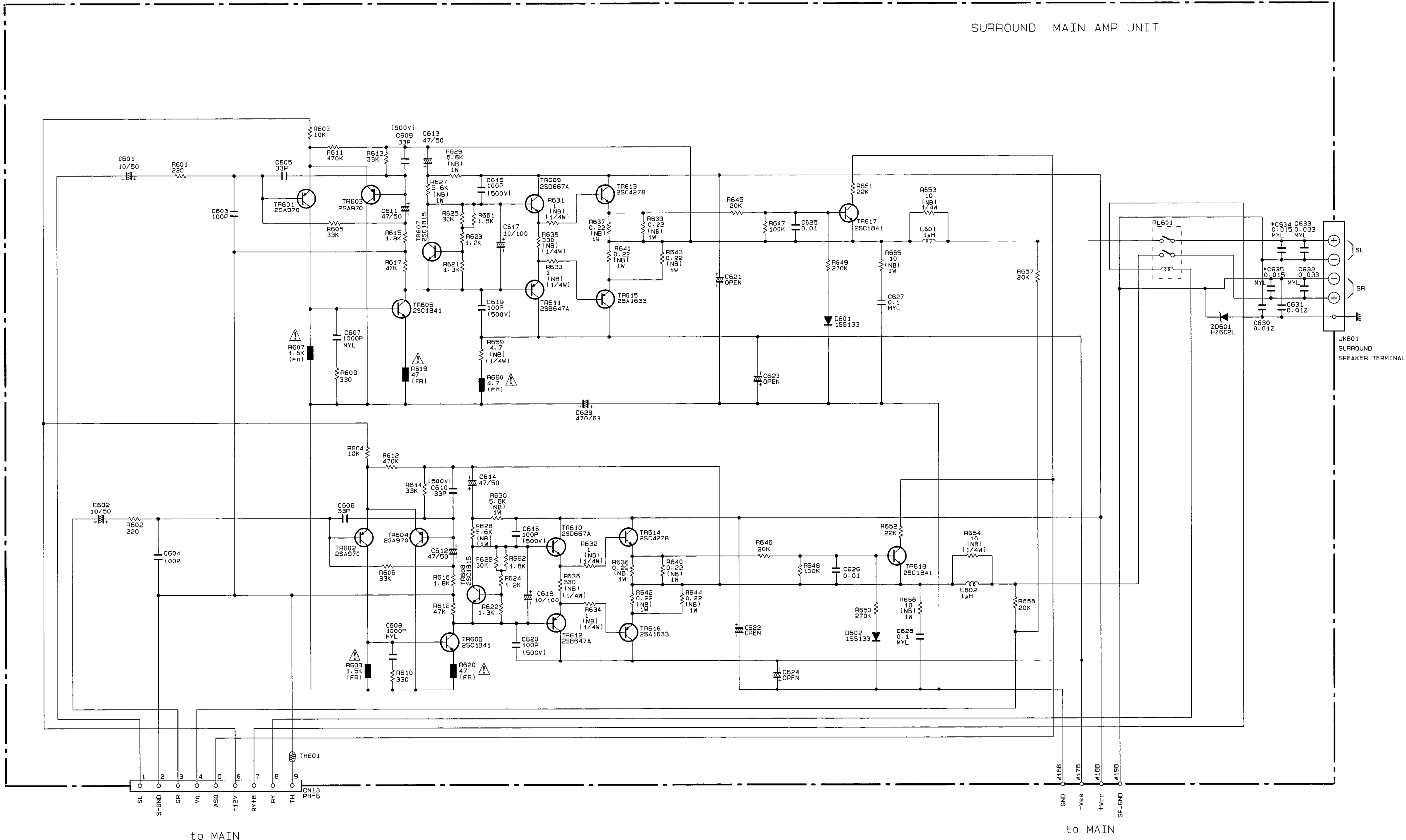


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DISP / TONE CIRCUIT

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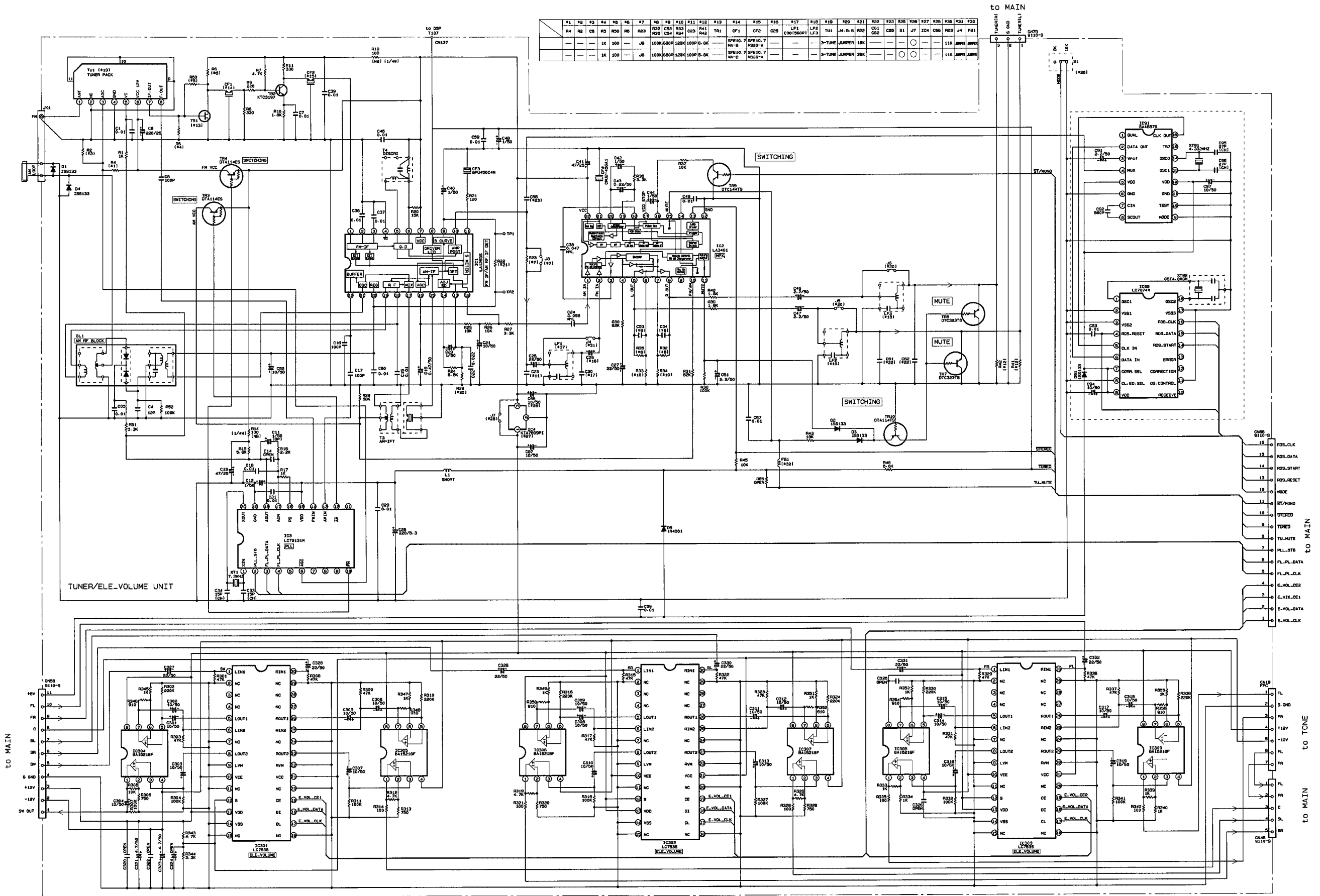
SURROUND MAIN AMP UNIT



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SURROUND MAIN AMP CIRCUIT

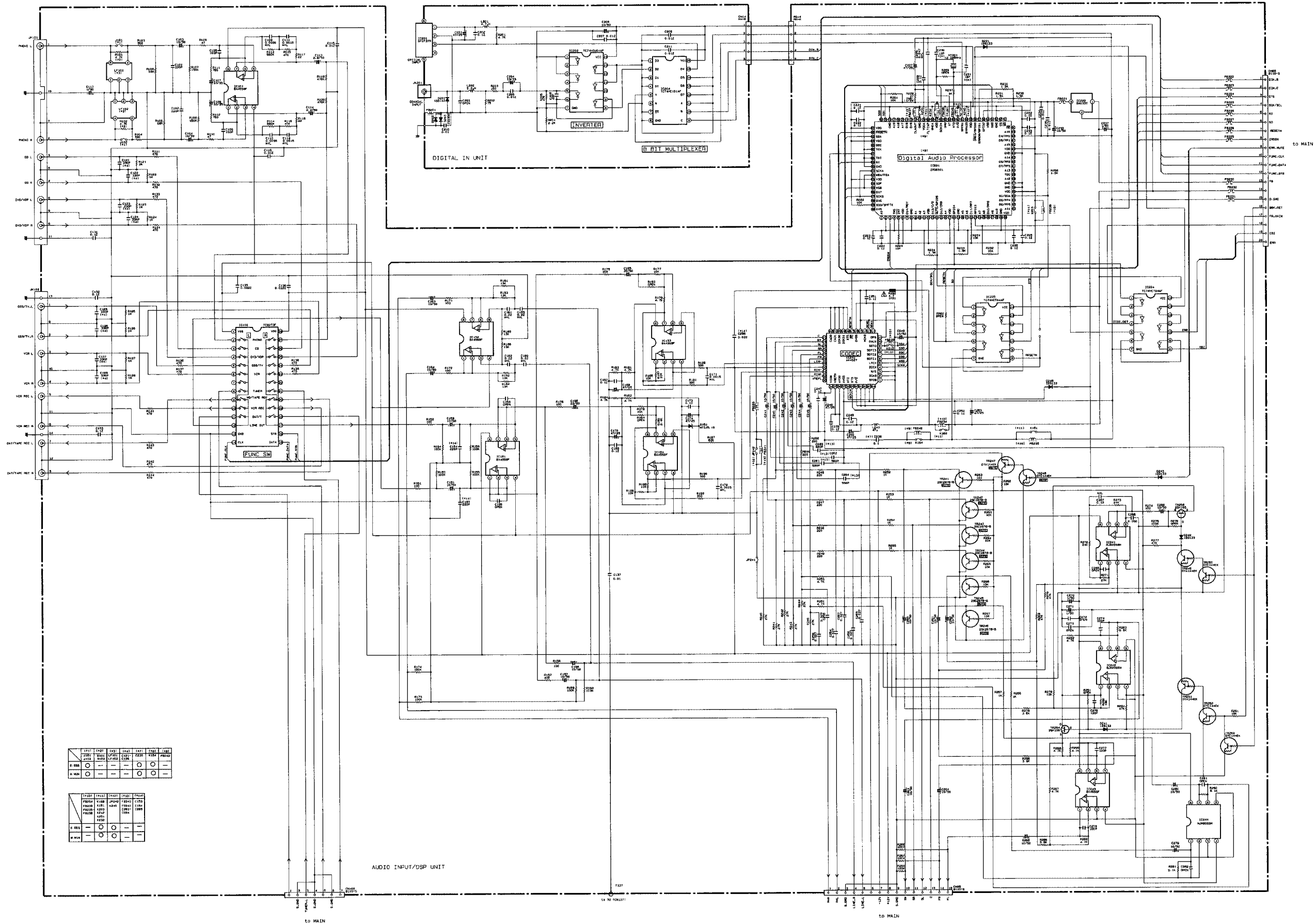
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TUNER / VOLUME CIRCUIT

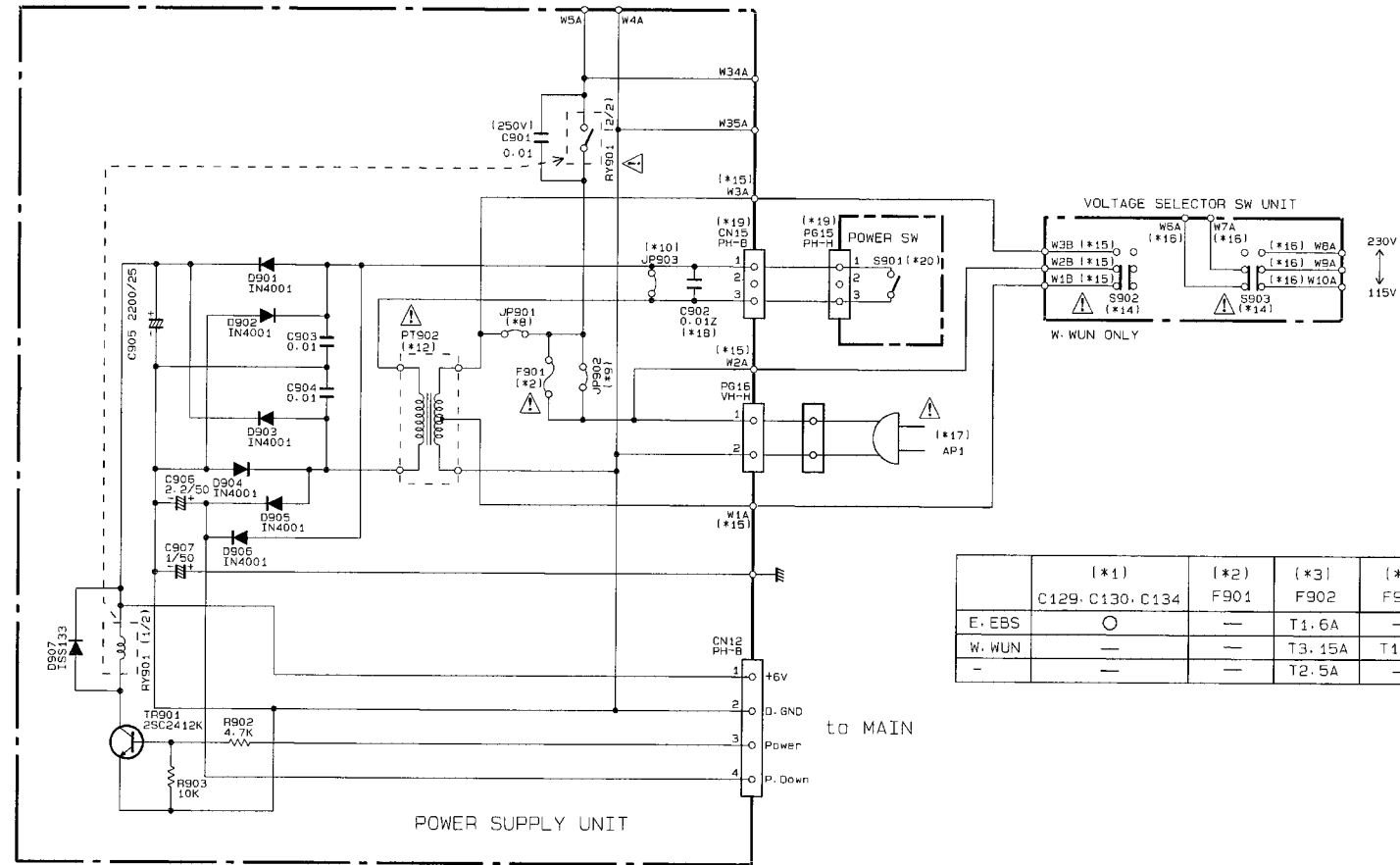
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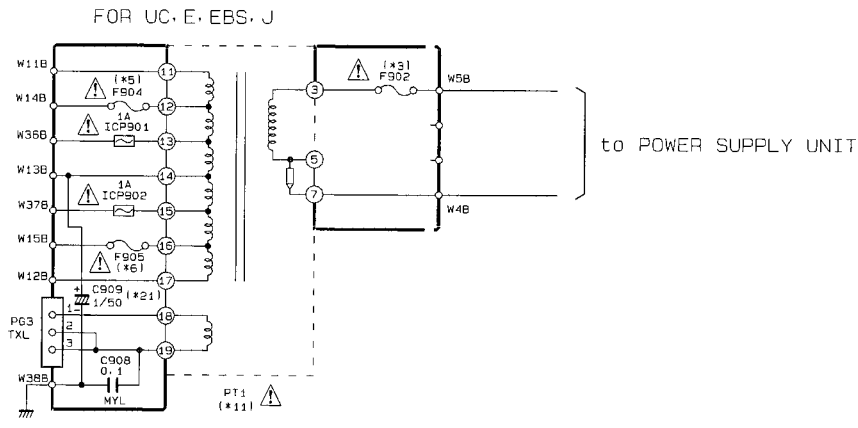
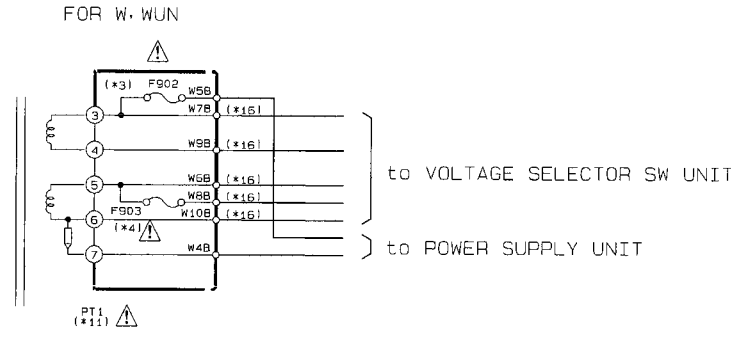
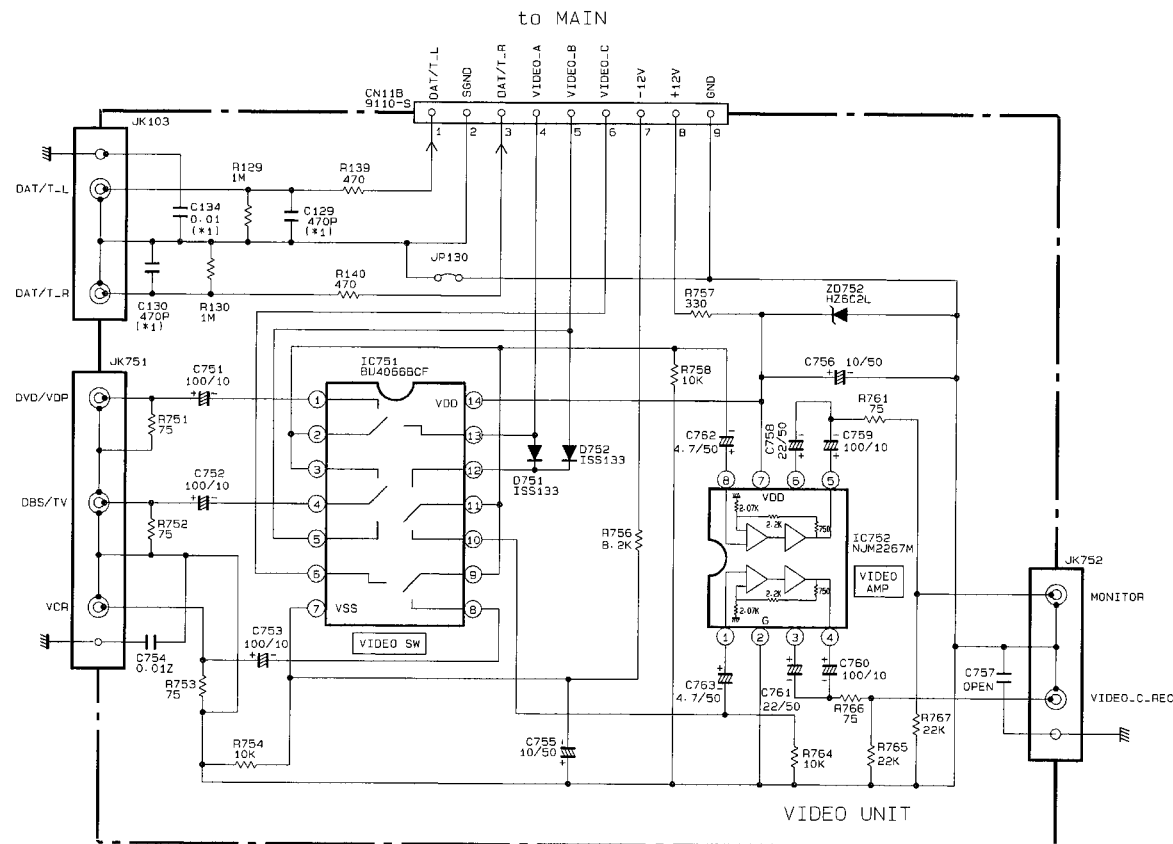
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DSP CIRCUIT

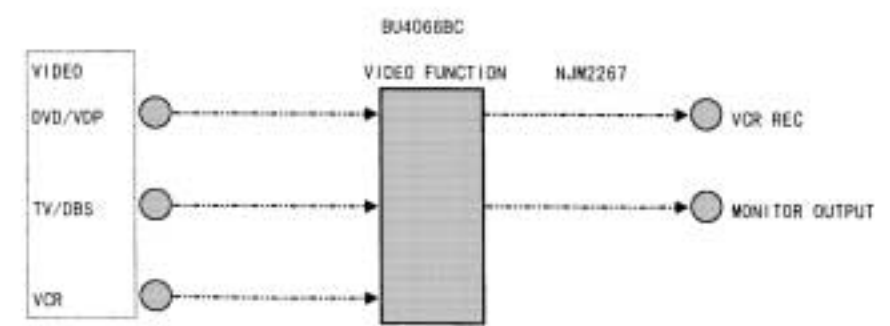
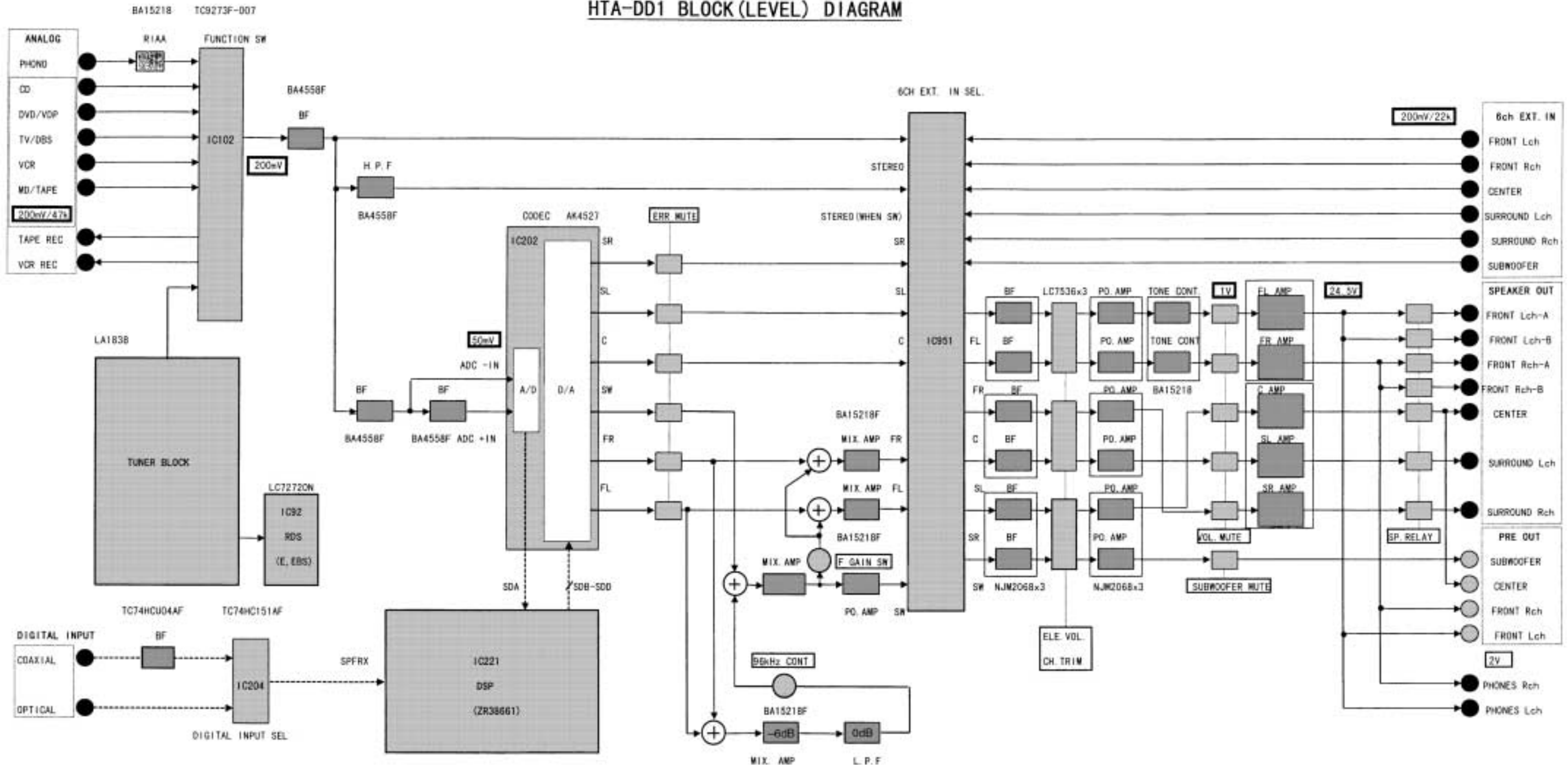
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	(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	
E. EBS	○	—	—	—	—	—	—	—	—	—	○	○	—	—	—	—	—	—	○	○	○	○
W. WUN	—	—	T1.6A	T1.6A	T1A	T1A	—	○	○	—	—	—	—	○	○	○	—	—	○	○	○	○
—	—	—	T2.5A	—	T1A	T1A	—	○	○	—	—	—	—	—	—	—	—	—	○	○	○	○

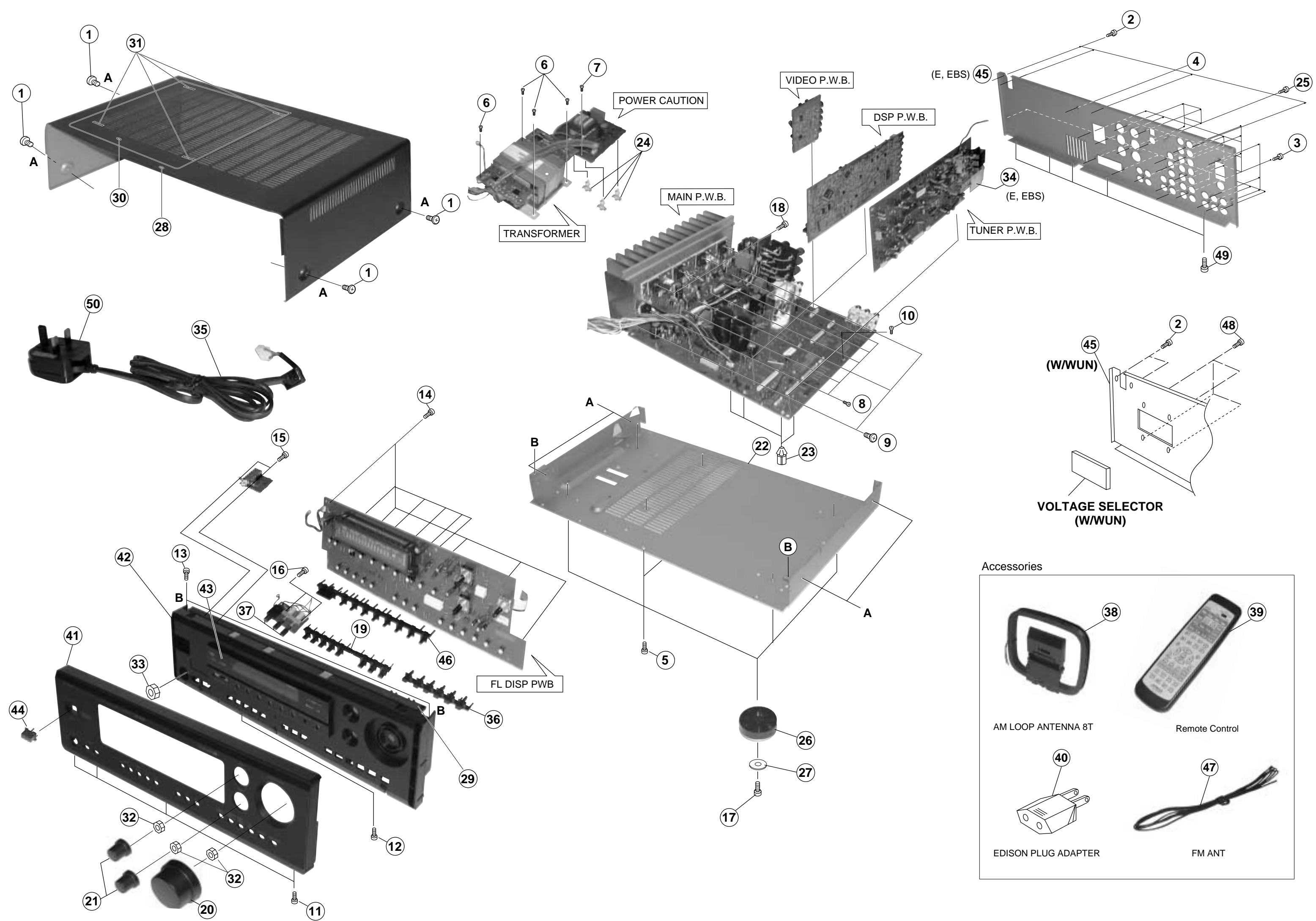


HTA-DD1 BLOCK (LEVEL) DIAGRAM



REMARKS

1. THIS DRAWING IS THE HTA-DD1 CIRCUIT BLOCK (LEVEL) DIAGRAM.
2. ———> ANALOG SIGNAL, - - - - -> DIGITAL SIGNAL, - - - - -> VIDEO SIGNAL
3. □ - - - - -> I²C-DM CONTROL SIGNAL



Accessories



**THE UPDATED PARTS LIST
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