

SERVICE MANUAL



FISHER

AM/FM DIGITAL SYNTHESIZER
STEREO RECEIVER WITH
RRS-Z1 WIRELESS REMOTE
CONTROL

RS-Z1

(EUROPE)



132 347 40 (EUROPE)
132 347 41 (SWISS)
132 347 42 (SWEDEN)

SPECIFICATIONS

Remote Control (RRS-Z1) 46-function,
Wireless Remote Control

AMPLIFIER SECTION

Minimum RMS sine wave power per channel within stated
bandwidth at no more than stated
distortion and with 8 Ω load 100 Watts
distortion and with 4 Ω load 150 Watts
Power Bandwidth 20 Hz ~ 20 kHz
Total Harmonic Distortion
(100 W/8 Ω) 0.007%
(150 W/4 Ω) 0.015%
I.M. Distortion
(100 W/8 Ω) 0.007%
(150 W/4 Ω) 0.015%
Load Impedance for Speakers
A or B 4 ~ 8 Ω
A + B 8 ~ 16 Ω
Speaker Damping > 50
Slew Factor 3
Overall Frequency Response
Phono (RIAA) (20 Hz ~ 20 kHz) ± 1.0 dB
Aux/CD/Tape (20 Hz ~ 20kHz) ± 0.5 dB

Input Sensitivity and Impedance

Phono MC
(100 W/8 Ω) 250 μ V/100 Ω
(1 W/8 Ω) 20.4 μ V/100 Ω
Phono MM
(100 W/8 Ω) 2.5 mV/50 k Ω
(1 W/8 Ω) 204 μ V/50 k Ω
Aux/CD/Tape
(100 W/8 Ω) 150 mV/50 k Ω
(1 W/8 Ω) 12 mV/50 k Ω
Output Level and Impedance
Tape Rec Out 150 mV/ < 1 k Ω
Headphones 330 mV (8 Ω)/100 Ω
Volume Control Attenuation 115 dB
Balance Control Attenuation 45 dB
Tone Controls
Bass ± 10 dB
Treble ± 10 dB
Subsonic Filter (15 Hz, -3 dB) 12 dB/Oct
Loudness Contour (-30 dB)
(100 Hz/10 kHz) +8 dB/+4 dB
Input Overload Capability
Phono MC 16 mV
Phono MM 160 mV
Aux/CD/Tape 8 V

- Specifications and design are subject to change without notice. -

REFERENCE No. WM-570346

SPECIFICATIONS (Continued)

Signal-to-Noise Ratio (IHF, A-Network)	
Phono MC	70 dB
Phono MM	80 dB
Aux/CD/Tape	100 dB
Crosstalk (20 Hz ~ 10 kHz)	
Between Left and Right Channels	60 dB
Between Functions	75 dB
Speakers Selector	A, B, A + B, OFF
Display	FL with 3-step Dimmer
Timer	30/60 minutes
Audio Muting	- 50 dB
DIGITAL SECTION	
Sampling Frequency	32/44.1/48 kHz
D/A Conversion	Full-time 18-bit Linear 2 D/A Converters
Input/Output Terminals	
CD Input	Optical
Aux (Front/Rear) Input	Coaxial
DAT Input/Output	Optical
Optical Input	- 15 dBm ~ - 24 dBm
Optical Output	- 15 dBm ~ - 21 dBm
Coaxial Input	500 mVp-p/75 Ω ±20%
Filters	8-times Oversampling Digital Filter, 3rd Order Linear Phase Low Pass Filter
Frequency Response (20 Hz ~ 20 kHz)	±0.3 dB
Signal-to-Noise Ratio	115 dB
Dynamic Range	97 dB
Total Harmonic Distortion (1 kHz)	0.004%
Channel Separation (1 kHz)	90 dB
FM SECTION	
Tuning Range	87.50 MHz ~ 108.00 MHz
Antenna Terminals	(2) 75 Ω
Usable Sensitivity	
Mono	0.9 μV
Stereo	5.0 μV
46 dB Quieting Sensitivity	
Mono	2.5 μV
Stereo	30 μV
Signal Seeker Stop Sensitivity	5.0 μV
Signal-to-Noise Ratio	
Mono	75 dB
Stereo	70 dB
Total Harmonic Distortion (46 dB Quieting)	
Mono	0.5%
Stereo	0.6%
Total Harmonic Distortion (60 dBμ)	
Mono (100 Hz/1 kHz/6 kHz)	
Wide	0.05/0.05/0.1%
Stereo (100 Hz/1 kHz/6 kHz)	
Wide	0.1/0.1/0.1%
Stereo Separation	
Wide (100 Hz/1 kHz/10 kHz)	45/45/35 dB
Capture Ratio	
Wide	1.3 dB
Narrow	3.0 dB
Selectivity	
Wide	40 dB
Narrow	80 dB
Image Response Ratio	120 dB
Spurious Response Ratio	120 dB
IF Response Ratio	120 dB
AM Suppression Ratio	60 dB
Audio Frequency Response	
(20 Hz - 15 kHz)	±0.5 dB
Sub-Carrier Rejection (19 kHz/38 kHz)	80/90 dB
Stereo Threshold	19.17 dBf
AM SECTION	
Tuning Range	522 kHz ~ 1611 kHz
IHF Usable Sensitivity	
External Antenna	100 μV
Loop Antenna	400 μV/m
Signal Seeker Stop Sensitivity	500 μV/m
Signal-to-Noise Ratio	55 dB
Image Response Ratio	40 dB
IF Response Ratio	65 dB
Selectivity (±9 kHz)	50 dB
Volume Sensitivity	150 μV/m
Total Harmonic Distortion	0.3%
Frequency Response (- 3 dB)	2.5 kHz
GENERAL	
Power Requirements	AC 220V (50 Hz) 400 Watts
AC Outlets	3
Dimensions (WxHxD)	480 x 165 x 440cm
Weight (approx.)	21kg

- Specifications and design are subject to change without notice. -

FM TUNER ALIGNMENT

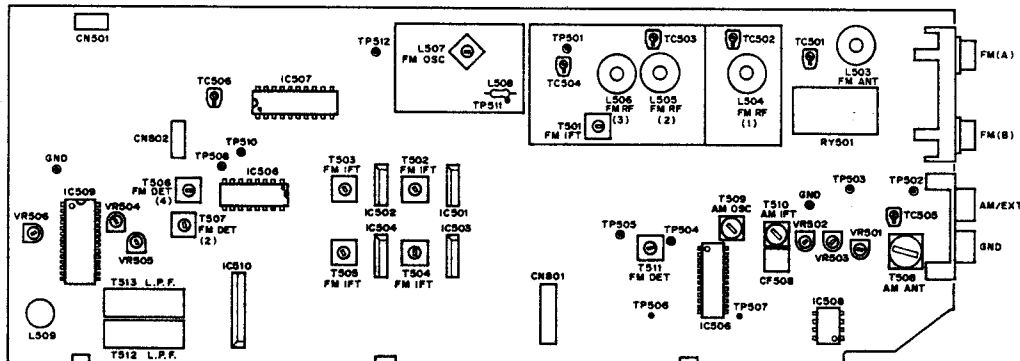
FM ALIGNMENT - Band Selector switch to FM/ST(MUTE) position.
Note is almost unnecessary to adjust coil in Front End as perfectly adjusted.

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
1. FRONT END FREQUENCY COVER ALIGNMENT (108MHz)	Do not connect generator.	Front Panel DIGITAL Counter Display Set to 108MHz.	Connect DC Voltmeter to TP512 and ground lead to chassis.	Adjust FM OSC Coil (L507) until DC Voltmeter reads 25.0V ±0.2V.
2. (87.5MHz)	Same as above.	DIGITAL Counter Display Set to 87.5MHz.	Same as above.	Check DC Voltmeter for Indication 3.5V ~ 4.0V.
Note: Repeat the adjustments in Items 1 and 2. Then, confirm that each voltage becomes 3.5V to 25.0V at receiving frequency of 87.5MHz to 108MHz.				
3. FM RF TRACKING ALIGNMENT (88.0MHz)	Connect Spectrum analyzer (with FM RF Tracking generator) output to FM Antenna terminals. Set generator to 88.0MHz. Modulate with 1kHz to provide 2MHz deviation. Setting generator with attenuator output level for 60dBμV.	DIGITAL Counter Display Set to 88.0MHz.	Connect Spectrum analyzer input to TP501 and ground lead to chassis.	Adjust FM ANT Coil (L503) and FM RF Coil (L504 ~ L506) so that S-wave from becomes symmetrical.
4. (108MHz)	Change generator Setting to 108MHz.	Change DIGITAL Counter Display Set to 108MHz.	Same as above.	Adjust FM ANT Trimmer (TC501) and FM RF Trimmer (TC502 ~ TC504) so that S-wave from becomes Symmetrical.
Note: Repeat the adjustments in Items 3 and 4. Then, confirm there is no tracking error.				
5. REFERENCE PLL OSC ALIGNMENT	Change generator Setting to 98MHz.	Change DIGITAL Counter Display Set to 98MHz.	Connect Frequency Counter to TP511 and ground lead to chassis.	Adjust PLL OSC Trimmer (TC506) of IC507 LM7000 (Side) until Frequency Counter reads 108.700MHz ±1kHz.
6. FM CENTER VOLTAGE (DETECTOR) ALIGNMENT	Same as above. Adjust attenuator output level to 60dBμV (1kHz, 40kHz deviation) / MONO Mode.	Same as above.	Connect DC Voltmeter across TP504 and TP505.	Adjust FM DET Coil (T511) until DC Voltmeter reads 0V ±20mV.
7. FM MUTING AUTO STOP SENSITIVITY ADJUSTMENT	Set generator to 98MHz. Adjust attenuator output level to 14dBμV.	Same as above.	Front panel TUNED Indicator Display.	Set Mode Switch to ST(MUTE). Adjust VR503 until the TUNED Indicator partly light up.
Note: Decrease the output level (10dBμV) of ATT and confirm that the wave form disappears. Increase the output level (20dBμV) of ATT again and confirm that the input level meets the specifications sufficiently when the wave form has appeared.				
8. FM CENTER VOLTAGE ALIGNMENT	Same as above. Adjust attenuator output level to 60dBμV / MONO Mode.	Same as above.	Connect DC Voltmeter across TP508 and TP509.	Adjust FM DET (1) Coil (T506) until DC Voltmeter reads 0V ±50mV.
9. DETECTOR ALIGNMENT (MINIMUM T.H.D.)	Same as above. (IF BAND Switch to WIDE)	Same as above.	Connect Harmonic Distortion Analyzer to Audio output (CN108).	Adjust FM DET (2) Coil (T507) and FM IFT Coil (T503, T504) for minimum gain and best linearity.
Note: Repeat Step 8 (FM DET 1 Coil T506) and 9 (FM DET 2 Coil T507 and FM IFT coil T503, T504) until optimum alignment is reached				
10. DETECTOR ALIGNMENT (MINIMUM T.H.D.)	Same as above. (Change IF BAND Switch to NARROW) Modulate with 100Hz Stereo Signal (L-R).	Same as above. Set Tuning Switch to (AUTO) ON position.	Same as above.	Adjust FM IFT (T504, T505) for minimum gain and best linearity.
Notes: Set the Modulate Signal of the FM stereo signal SG to 6 kHz (L - R) and make sure that the Distortion Analyzer indicators within the specifications. (If the distortion level at 100 Hz is wrong, adjust C609). When adjusting, do not touch the FM DET (1) coil (T506) and FM DET (2) coil (T507) adjusted in step 8 and 9.				

FM TUNER ALIGNMENT (Continued)

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
11. MPX PILOT CANCELLOR ADJUSTMENT	As this adjustment is to be fully attenuated by the backward L.P.F. (T513 and T512), turn the VR506 fully clockwise.			
12. FM STEREO SIGNAL SEPARATION CONTROL	Connect FM Stereo SG to FM Antenna terminals. 19kHz signal ON. Main channel, Sub channel signal ON. Apply 1000Hz signal from LEFT channel.	Same as above. Set Mode switch to ST(MUTE) position. (IF BAND Switch to WIDE)	Connect AC VTVM and Oscilloscope to RIGHT REC OUT.	Adjust VR505 for minimum output.
			Connect AC VTVM and Oscilloscope to LEFT REC OUT.	Adjust VR504 for minimum output.
13. HI - BLEND CHECKING	First receive the stereo signal and then make sure that the separation at 1 kHz shows about 16 dB in the HI - BLEND switch "ON" mode.			
14. ANT. A/B SEPARATION CHECKING	A/B Input the signal into either ANTENNA FM A or B and change the ANTENNA A or B switch. Make sure isolation at more than 35 dB can be obtained by the output difference of signal generation.			

TUNER P.C.BOARD ADJUSTMENT POINT (TOP VIEW)



AM TUNER ALIGNMENT

AM ALIGNMENT - Band Selector switch to AM position.
Maintain generator output as low as possible for suitable indication.

Note: Perform this alignment after FM Tuner Alignment.

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
1. AM RF FREQUENCY COVER ALIGNMENT (1622kHz)	Do not connect generator.	Front Panel DIGITAL Counter Display Set to 1622kHz.	Connect DC Voltmeter to TP503 and ground lead to chassis.	Check DC Voltmeter for indication 7.0V ~ 12.0V. Do not adjust the AM OSC coil (T509).
2. (522kHz)	Same as above.	DIGITAL Counter Display Set to 522kHz.	Same as above.	Check DC Voltmeter for indication 1.0V ~ 1.5V.
Note: Repeat the adjustments in Items 1 and 2. Then, confirm that each voltage becomes 1.0V to 11.0V at receiving frequency of 522kHz to 1622kHz.				
3. AM IF ALIGNMENT	Connect 450kHz Radio IF Genescope output to AM antenna terminal. Adjust output level to 70dB μ V.	DIGITAL Counter Display Set to 999kHz.	Connect Radio IF Genescope input to TP507 and ground lead to chassis.	Adjust AM IFT (T510) for maximum gain and best symmetry. Keep signal low enough for noise on response.
4. MW RF TRACKING ALIGNMENT (603kHz)	Connect AM RF Signal Generator through AM Dummy Antenna to AM Antenna terminals. Use 4.7k Ω resistor in series with AM Dummy Antenna output lead and Connect Loop antenna (Unit) to antenna terminal. Generator Setting to 603kHz or 1404kHz. Modulate with 400Hz (30% modulation).	Change DIGITAL Counter Display Set to 603kHz.	Connect AC VTVM and Oscilloscope to REC OUT.	Adjust AM ANT Coil (T508) for maximum gain output.
5. (1404kHz)	Same as above.	Change DIGITAL Counter Display Set to 1404kHz.	Same as above.	Adjust AM ANT Trimmer (TC505) for maximum gain output.
Note: Repeat the adjustments in Items 4 and 5. Then, confirm there is no tracking error.				
6. AM TUNED INDICATOR ADJUSTMENT	Same as above. Change generator Setting to 999kHz. and output level to 54dB μ V.	Change DIGITAL Counter Display Set to 999kHz.	Front Panel TUNED Indicator Display.	Adjust VR502 until the Indicator partly light up.
Note: After adjustment, adjust the output of SG and make sure that AUTO STOP is completed at 60 dB μ V and not completed at 50 dB μ V.				
7. AGC LEVEL ADJUSTMENT	Same as above. Adjust attenuator output level to 120dB μ V.	Same as above.	Connect DC Voltmeter to TP502 and ground lead to chassis.	Adjust VR501 until DC Voltmeter reads 1.8V \pm 0.5V. Do not adjust the VR503.
Note: Make sure that the Signal Meter lights all LEDs at 100 dB μ V and over 4 LEDs at 80 dB μ V. However, if the position of the VR 501 for the AGC adjustment is not fixed (unstable), all LEDs may not light up. Therefore, check the AUTO STOP and SIGNAL METER after the AGC adjustment.				

POWER AMPLIFIER ADJUSTMENT

BEFORE ADJUSTMENT

Unplug the AC power cord and set the front panel controls as follows:

- Power Switch to OFF position.
- Set the SPEAKERS Switch to OFF position.
- Turn the MASTER VOLUME Control to minimum position.
- IDLING CURRENT ADJUSTMENT VR301/VR401 (on the Left & Right Main Amplifier P.C.Board) setting to mechanical center position.
- Connect the AC power cord and Power Switch to ON position.

IDLING CURRENT ADJUSTMENT

This adjustment is very sensitive to changes in ambient temperature. Allow set to operate for 2 minutes before attempting this alignment.

LEFT AMPLIFIER

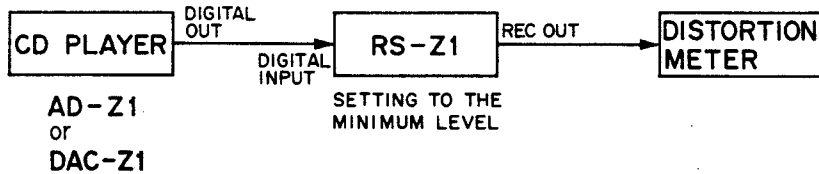
1. Connect the DC Voltmeter to the BIAS terminal on the Main Left Amplifier P.C.Board.
2. Adjust the VR301 for an indication of $15\text{ mV} \pm 5\text{ mV}$ on the DC Voltmeter.

RIGHT AMPLIFIER

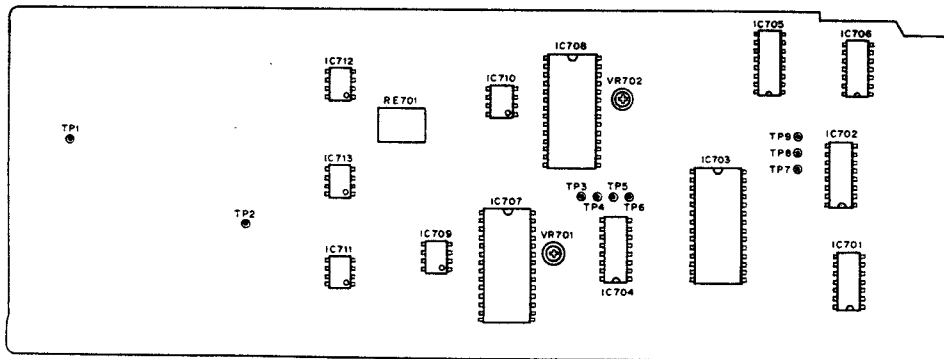
1. Connect the DC Voltmeter to the BIAS terminal on the Main Right Amplifier P.C.Board.
2. Adjust the VR401 for an indication of $15\text{ mV} \pm 5\text{ mV}$ on the DC Voltmeter.

MSB (Most Significant Bit) ADJUSTMENT (DAC P.C.BOARD)

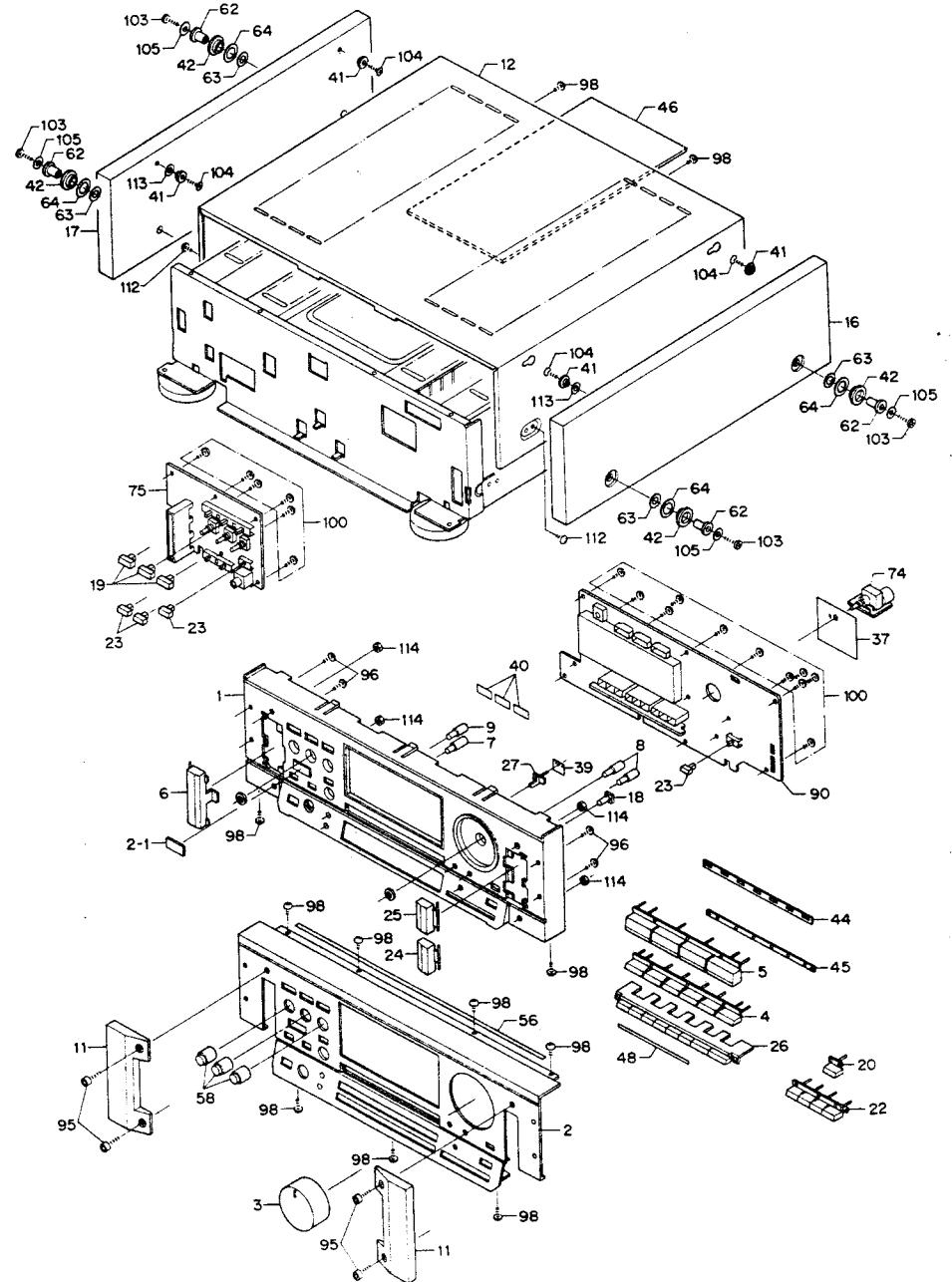
1. Connect the Digital CD input of the AD-Z1 or DAC-Z1 to the Digital CD Input of this unit (RS-Z1) and connect the Harmonic Distortion Meter to the REC OUT jack. (See Figure)
2. Set the test disc CD-1 (CBS RECORDS) into the CD player and play back No.1. (0 dB, 1 kHz) and adjust the DAC P.C.Board VR701 (left channel) and VR702 (right channel) so that distortion is at a minimum level.



DAC P.C.BOARD ADJUSTMENT POINTS (TOP VIEW)



CABINET & CHASSIS EXPLODED VIEW (1)



CABINET & CHASSIS PARTS LIST

Table with columns: Ref. No., Part No., Description, Q'ty. Includes sections for PACKAGE, ACCESSORIES, and CABINET.

NOTES:

- 1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

P.C.BOARD PARTS LIST

Table with columns: Ref. No., Part No., Description, Q'ty. Includes sections for ASSY_PCB_TUNER, IC513, IC501, Q502, Q503, Q504, Q505, Q506, Q507, Q508, Q509, Q510, Q511, Q512, Q513, Q514, Q515, Q516, Q517, Q518, Q519, F501, F502, L501, L502, L503, L504, L505, L506, L507, L508, L509, RY501, TC501, TC502, TC503, TC504, TC505, T501, T502, T503, T504, T505, T506, T507, T508, T509, T510, T511, T512, T513, T514, VR501, VR502, VR503, VR504, VR505, X501, IC501, IC502, IC503, IC504, IC505, IC506, IC507, IC508, IC509, IC510, IC511, IC512.

P.C.BOARD PARTS LIST (Continued)

Table listing P.C. Board Parts (Left Column). Includes columns: Ref. No., Part No., Description, Q'ty. Sub-sections include ASSEY.PCB.SHIELD (2) LEFT, ASSEY.PCB.SHIELD (1) RIGHT, ASSEY.PCB.SHIELD (2) RIGHT, ASSEY.PCB.W.MICON, ASSEY.PCB.POWER SUPPLY, and ASSEY.PCB.LINE FILTER.

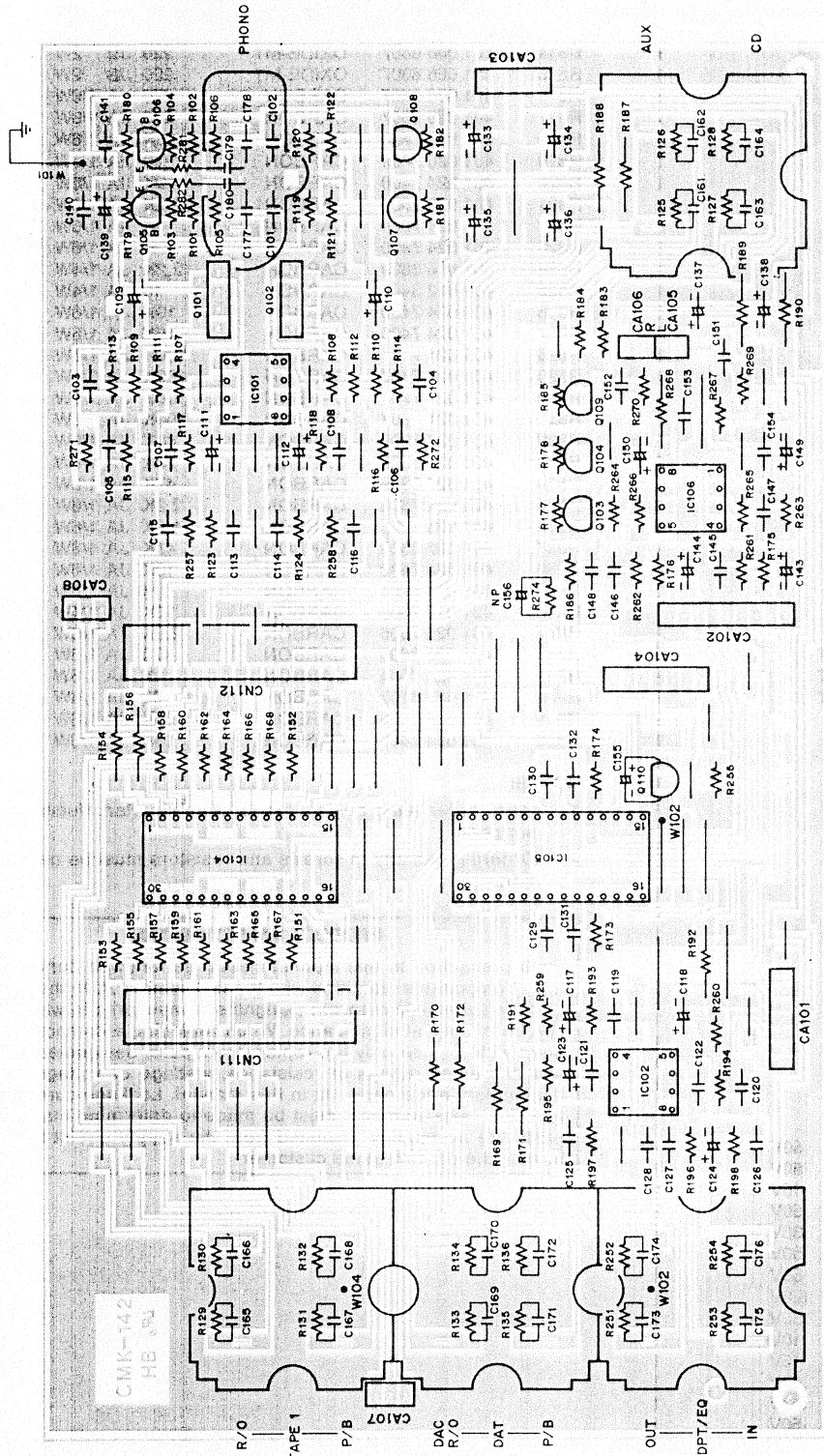
P.C.BOARD PARTS LIST (Continued)

Table listing P.C. Board Parts (Right Column). Includes columns: Ref. No., Part No., Description, Q'ty. Sub-sections include ASSEY.PCB.W.MICON, ASSEY.PCB.POWER SUPPLY, and ASSEY.PCB.LINE FILTER.

NOTES: 1. Parts order must contain Model Number, Part Number and Description. 2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

PRODUCT SAFETY NOTICE: Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol Δ in the parts list and the schematic diagram designate components in which safety can be of special significance.

INPUT P.C. BOARD (BOTTOM VIEW)



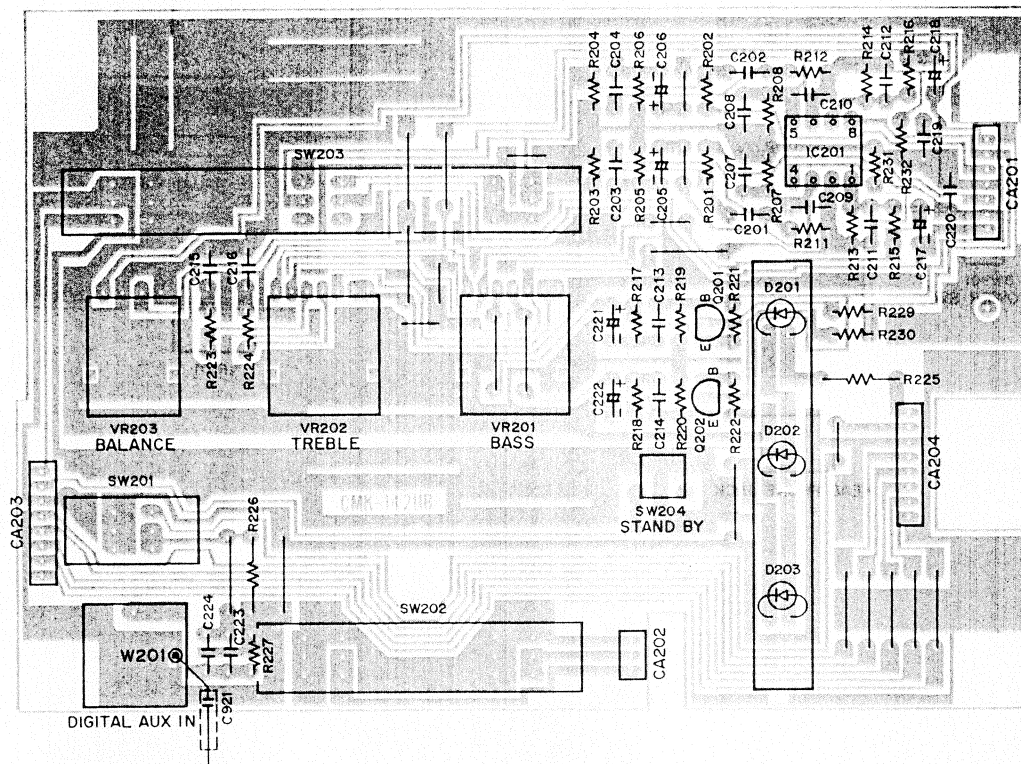
IC PIN NUMBERS DC VOLTAGES

Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
IC101	NJM4580	0V	8.4V	8.4V	-16.2V	8.4V	8.4V	0V	15.2V	-	-	-	-	-	-	-	-	-	-	-	-	-
IC102	NJM4580	0V	0V	0V	-14.7V	0V	0V	0V	13.7V	-	-	-	-	-	-	-	-	-	-	-	-	-
IC103	LC7821	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	-18.2V	0V	0V	0V	0V	0V	16.9V	17.2V	0V	-
IC104	LC7821	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	-
IC105	LC7823	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V
IC106	NJM4580	0V	0V	0V	-14.7V	0V	0V	0V	13.7V	-	-	-	-	-	-	-	-	-	-	-	-	-

TRANSISTOR DC VOLTAGES

Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E
Q103	2SC3792	-1.7V	0V	0V	Q107	2SC3792	0V	0V	0V
Q104	2SC3792	-1.7V	0V	0V	Q108	2SC3792	0V	0V	0V
Q105	2SC3792	0V	0V	0V	Q109	2SA608	5.7V	-1.7V	4.2V
Q106	2SC3792	0V	0V	0V	Q110	2SC536	0.4V	16.9V	0V
					Q101	2SK389	0V	8.4V	0.3V
					Q102	2SK389	0V	8.4V	0.3V

TONE P.C.BOARD (BOTTOM VIEW)



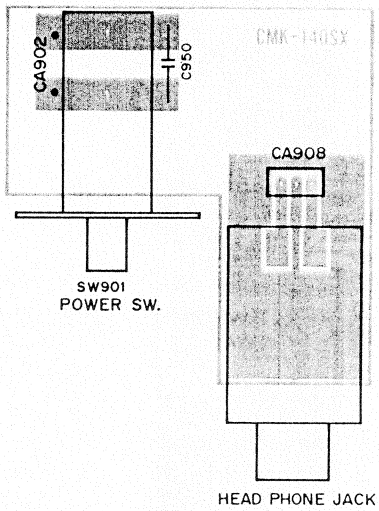
IC PIN NUMBERS DC VOLTAGES

Ref. No.	DEVICE	1	2	3	4	5	6	7	8
IC201	NJM4580	0V	0V	0V	-15.7V	0V	0V	0V	14.8V

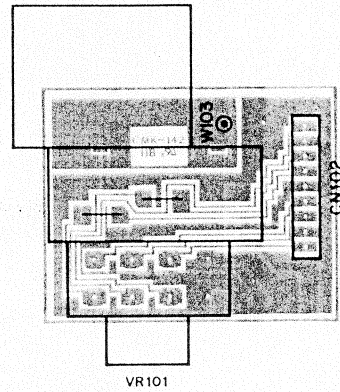
TRANSISTOR DC VOLTAGES

Ref. No.	DEVICE	B	C	E
Q201	2SC1570	-0.6V	12.7V	-1.2V
Q202	2SC1570	-0.6V	12.7V	-1.2V

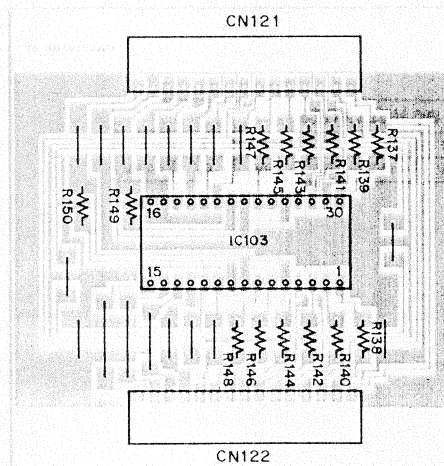
**POWER SW. P.C.BOARD
(BOTTOM VIEW)**



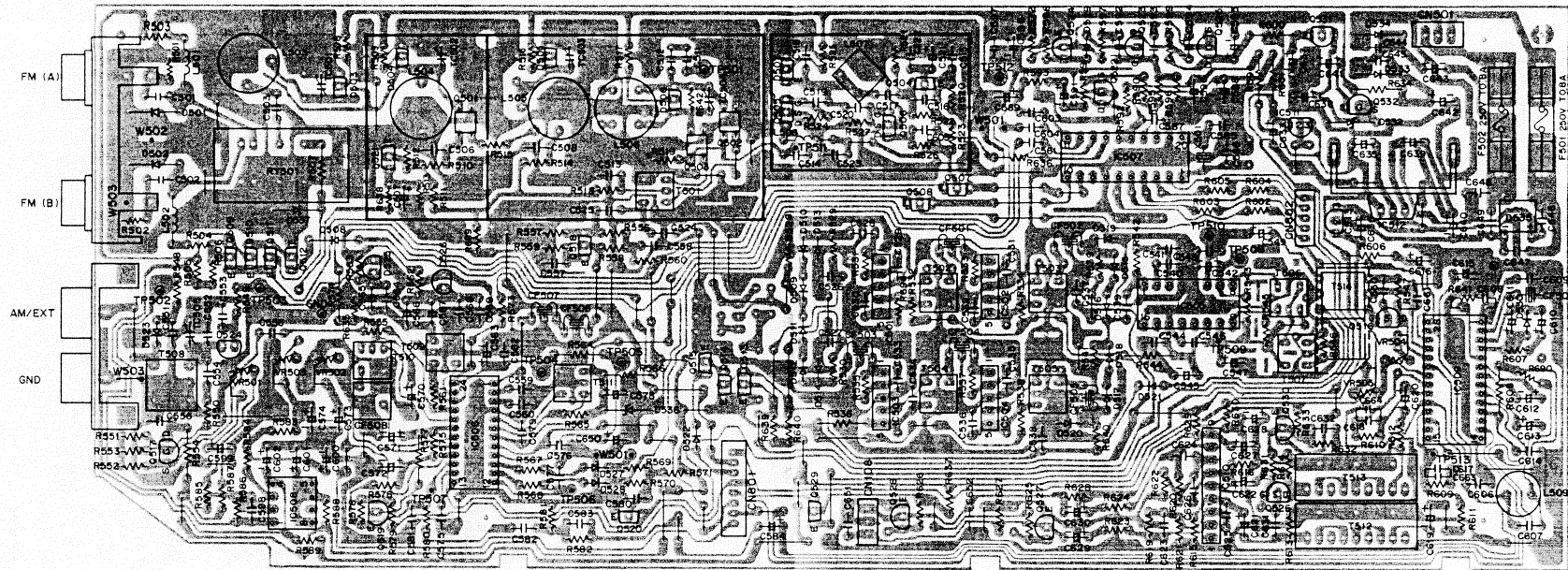
**MAIN VOLUME P.C.BOARD
(BOTTOM VIEW)**



**INPUT SELECTOR P.C.BOARD
(BOTTOM VIEW)**



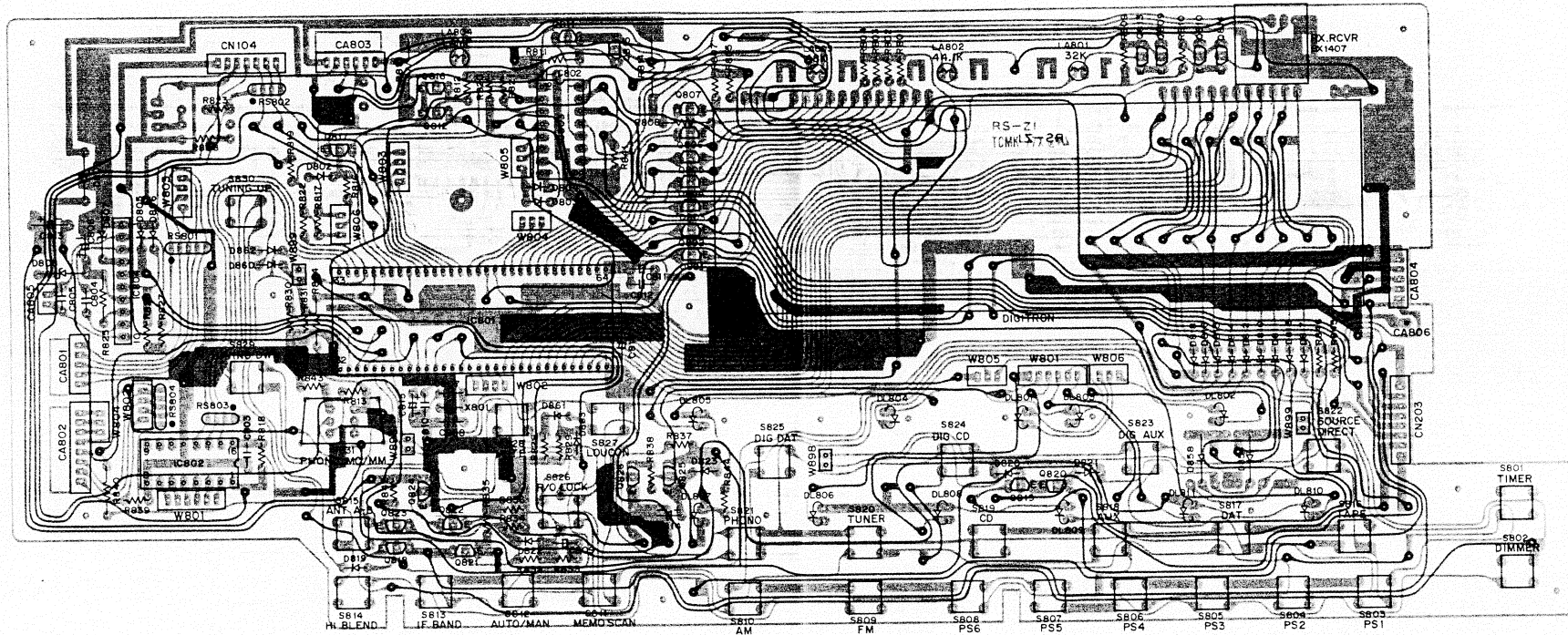
TUNER PRINTED CIRCUIT BOARD (BOTTOM VIEW)



IC PIN NUMBERS DC VOLTAGES																						
Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
IC501	TA7060AP	1.4V	1.4V	0V	12.4V	12.4V	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
IC502	TA7060AP	1.4V	1.4V	0V	12.4V	12.4V	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
IC503	TA7060AP	1.4V	1.4V	0V	12.4V	12.4V	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
IC504	TA7060AP	1.4V	1.4V	0V	12.4V	12.4V	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
IC505	LA1235	2.9V	2.9V	2.9V	0V	0V	6.2V	6.2V	6.2V	6.2V	6.2V	13.0V	--	--	--	0V	--	--	--	--	--	--
IC506	LA1266	2.6V	2.6V	2.6V	0V	9.7V	9.6V	9.6V	5.0V	4.0V	2.5V	2.8V	3.2V	9.6V	1.3V	1.5V	0V	0V	1.0V	1.5V	9.5V	--
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	--
IC507	LM7000	1.5V	0V	0V	0V	0V	5.4V	--	--	--	15.0V	9.5V	--	--	--	--	5.2V	5.2V	--	--	0V	1.5V
IC508	LA6458	-9.0V	0.4V	0V	-11.0V	12.3V	12.3V	--	12.3V	--	--	--	--	--	--	--	--	--	--	--	--	--
IC509	LA3450	5.5V	3.3V	2.6V	2.6V	2.6V	2.6V	2.6V	2.6V	2.6V	0V	5.6V	4.7V	0.6V	0V	--	--	--	5.5V	5.5V	5.5V	5.5V
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	--
IC510	LA6458	--	0V	0V	0V	-13.0V	0V	0V	0V	13.0V	--	--	--	--	--	--	--	--	--	--	--	--
IC511	NJM78L05	5.6V	0V	15.0V	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IC512	NJM78M15	15.0V	0V	21.0V	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IC513	NJM79L15	0V	-23.0V	-15.0V	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TRANSISTOR DC VOLTAGES														
Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E
Q504	2SC2999	7.1V	14.4V	8.5V	Q515	2SC3399	-30.0V	0V	0V	Q531	2SC2274	27.5V	40.0V	27.5V
Q507	2SA1345	15.0V	15.0V	15.0V	Q518	2SC2839	2.6V	13.3V	1.7V					
Q508	2SA1345	9.5V	0V	9.5V	Q519	2SA608	0V	1.5V	1.5V			G	D	8
Q509	2SA1345	-0.8V	-11.0V	15.0V	Q520	2SC3399	0V	15.0V	0V	Q505	2SK241	0V	15.0V	0V
Q510	2SA1345	0V	-0.8V	15.0V	Q527	2SC3792	-14.9V	0V	0V	Q506	2SK241	0V	13.4V	0V
Q511	2SA1345	0V	12.0V	15.0V	Q528	2SC3792	-14.9V	0V	0V	Q516	2SK583	-0.4V	0V	5.5V
Q512	2SC3399	4.8V	0V	0V	Q529	2SA1345	--	-14.9V	5.6V	Q517	2SK246	4.0V	13.0V	8.5V
Q513	2SA1345	15.0V	15.0V	15.0V	Q530	2SA1345	4.0V	-7.4V	5.6V	Q532	2SK246	27.5V	27.5V	40.0V
Q514	2SA1345	-30.0V	-0.4V	15.0V										

MICRO COMPUTER PRINTED CIRCUIT BOARD (BOTTOM VIEW)



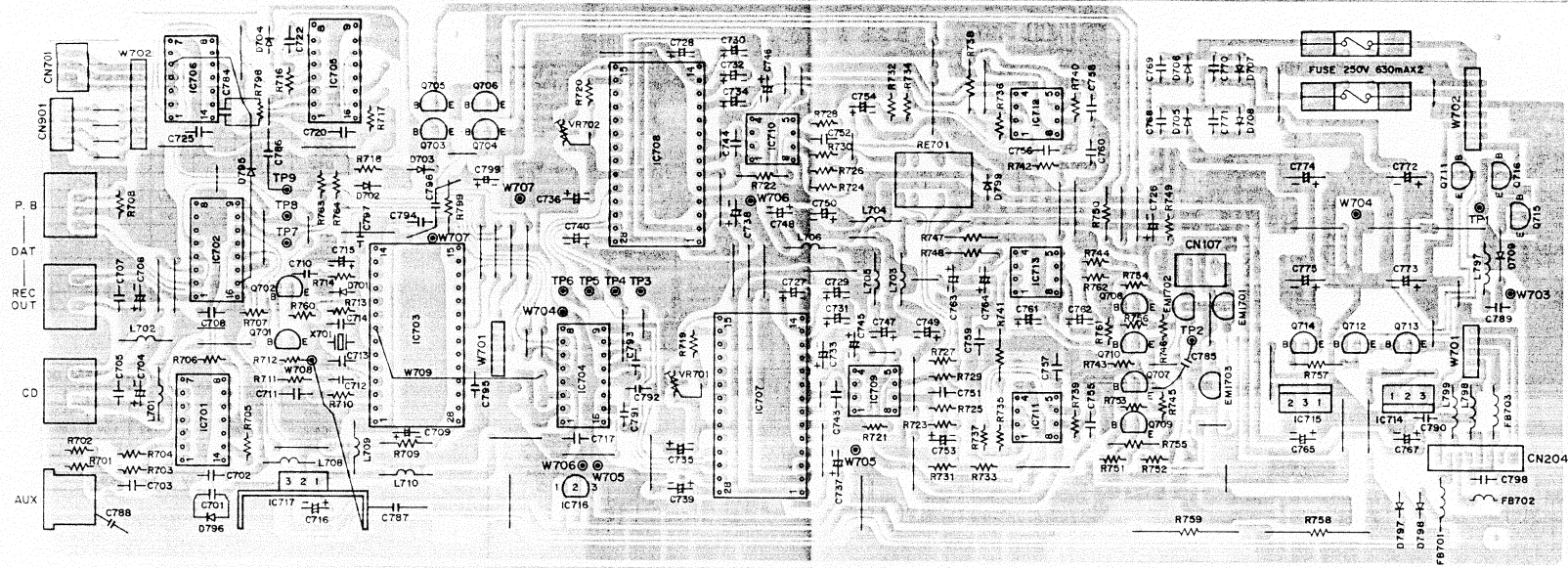
IC PIN NUMBERS DC VOLTAGES

Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
IC801	TMP47P870N	-34.0V	0V	0V	-1.0V	-13.0V	0V	-34.0V	-1.8V	-34.0V	-21.0V	-10.0V	0V	-34.0V	0.2V	5.3V	5.3V	5.3V	0V	2.2V	2.2V			
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40			
		4.7V	5.6V	5.2V	0V	8V	0V	0V	5.4V	5.6V	0V	0V	0V	0V	5.6V	0V	3.8V	3.7V	0V	0V				
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60			
		5.5V	0V	0V	0V	0V	0V	4.7V	-34.0V	-7.0V	4.7V	4.7V	-32.0V	-32.0V	-32.0V	-32.0V	-32.0V	-32.0V	-32.0V	-32.0V	-32.0V			
		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80			
		-32.0V	-32.0V	-32.0V	4.8V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		IC802	SN74LS145N	0V	1.3V	1.3V	1.3V	1.3V	1.3V	0.3V	0V	0V	0V	0V	5.6V	5.6V	0V	5.6V	-	-	-	-	-	-
		IC803	SN74LS139N	3.6V	0V	0V	4.1V	4.1V	5.0V	4.1V	0V	5.0V	5.0V	5.0V	5.0V	0V	3.7V	5.4V	5.6V	-	-	-	-	-
		IC804	LB1641	0V	0.5V	0.7V	0.45V	0V	0V	16.5V	5.0V	0.7V	0.5V	-	-	-	-	-	-	-	-	-	-	-

TRANSISTOR DC VOLTAGES

Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E
Q801	2SC2021	-32.0V	5.6V	-32.0V	Q811	DTC114E	4.1V	0V	0V	Q819	DTA114	5.6V	0V	3.5V
Q802	2SC2021	-32.0V	5.6V	-32.0V	Q812	DTC114E	-7.0V	0.7V	0V	Q820	DTA114	5.6V	0V	3.5V
Q803	2SC2021	-32.0V	5.6V	-32.0V	Q813	2SC2021	0V	26.0V	0V	Q821	DTA114	5.6V	0V	5.6V
Q804	2SC2021	-32.0V	5.6V	-32.0V	Q814	2SC2021	0V	26.0V	0V	Q822	2SC2021	0V	4.7V	0V
Q805	2SC2021	-32.0V	5.6V	-32.0V	Q815	2SC2021	0V	26.0V	0V	Q823	2SC2021	5.6V	4.8V	4.8V
Q806	2SC2021	-32.0V	5.6V	-32.0V	Q816	2SC2021	0.7V	0V	0V	Q824	2SA937	4.8V	0V	2.3V
Q807	2SC2021	-32.0V	5.6V	-32.0V	Q817	DTC114	3.7V	0.4V	0V	Q825	2SA937	5.6V	0V	5.4V
Q808	DTC114E	4.1V	0V	0V	Q818	DTA114	5.6V	0V	3.2V	Q826	DTC114	0V	5.6V	0V
Q810	DTC114E	4.1V	0V	0V										

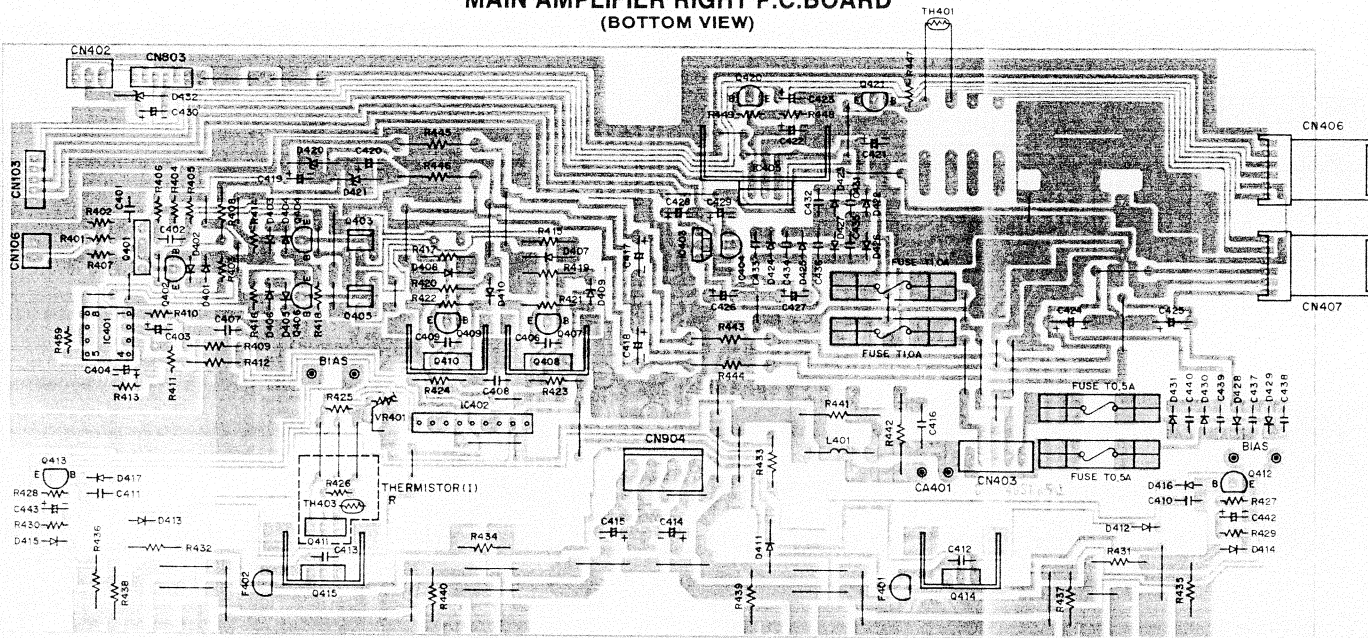
DAC PRINTED CIRCUIT BOARD (BOTTOM VIEW)



IC PIN NUMBERS DC VOLTAGES																					
Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC701	MC74HC04	2.12V	2.12V	2.12V	2.5V	2.5V	0.42V	0V	0.23V	2.93V	2.93V	2.1V	2.1V	2.1V	5.0V	-	-	-	-	-	-
IC702	MC74HC4053	0.33V	0.35V	0.34V	0.35V	0.42V	0V	0V	0V	3.85V	0.11V	5.0V	0.23V	0.42V	0.42V	0.35V	5.0V	-	-	-	-
IC703	YM3823B	5.1V	0V	5.1V	0V	2.3V	2.3V	6.1V	2.12V	1.22V	5.1V	5.1V	1.97V	4.92V	0V	2.54V	0V	0V	2.5V	1.27V	1.27V
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		4.84V	5.1V	0V	0.1V	0V	5.1V	0V	0.35V	-	-	-	-	-	-	-	-	-	-	-	-
IC704	YM3434	3.12V	2.47V	2.48V	5.1V	1.97V	2.54V	0V	5.1V	0.18V	0.18V	2.5V	1.48V	0V	5.1V	5.1V	1.56V	-	-	-	-
IC705	UPD74HC123	0V	0V	5.0V	5.0V	0V	5.0V	0V	0V	4.8V	5.0V	5.0V	0V	0V	5.0V	5.0V	0V	-	-	-	-
IC706	UPD74HC00	5.0V	0V	5.0V	5.0V	5.0V	0V	0V	0V	4.8V	4.8V	0V	5.0V	5.0V	5.0V	5.0V	0V	-	-	-	-
IC707-708	PCM58P	2.4V	5.0V	-6.2V	2.95V	0V	0V	0V	-11.7V	0V	0V	-	-	-	-	-	-	-	-	-	-
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IC709-710	NJM5532D	0V	0V	0V	-11.7V	0V	0V	0V	11.8V	-	-	-	-	-	-	-	-	-	-	-	-
IC711,712	NJM5532D	0V	-0.18V	0V	-11.7V	0V	-0.16V	0V	11.8V	-	-	-	-	-	-	-	-	-	-	-	-
IC713	NJM4380D	10.3V	0V	0V	0V	-10.3V	0V	0V	0V	-	-	-	-	-	-	-	-	-	-	-	-
IC714	NJM79M12	17.0V	0V	11.8V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IC715	NJM79M12	0V	-11.7V	-20.3V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IC716	NJM79L05	11.5V	0V	5.0V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IC717	NJM79M05	5.1V	0V	11.5V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TRANSISTOR DC VOLTAGES														
Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E
Q701	DTC114	-	-	-	Q707	2SC3792	0.7V	0V	0V	Q712	DTA114	0V	16.6V	16.5V
Q702	DTC114	-	-	-	Q708	2SC3792	0.7V	0V	0V	Q713	2SB560	16.5V	17.0V	17.6V
Q703	DTC114	3.6V	0V	0V	Q709	2SC3792	0.65V	0V	0V	Q714	2SD438	-19.8V	-20.3V	-20.5V
Q704	DTC114	0V	11.8V	0V	Q710	2SC3792	0.65V	0V	0V	Q715	DTC114	7.5V	0V	0V
Q705	DTA114	0V	11.8V	11.8V	Q711	DTC114	2.6V	0V	0V	Q716	DTC114	0V	3.6V	0V
Q706	DTA114	11.8V	-11.7V	11.8V	-	-	-	-	-	-	-	-	-	-

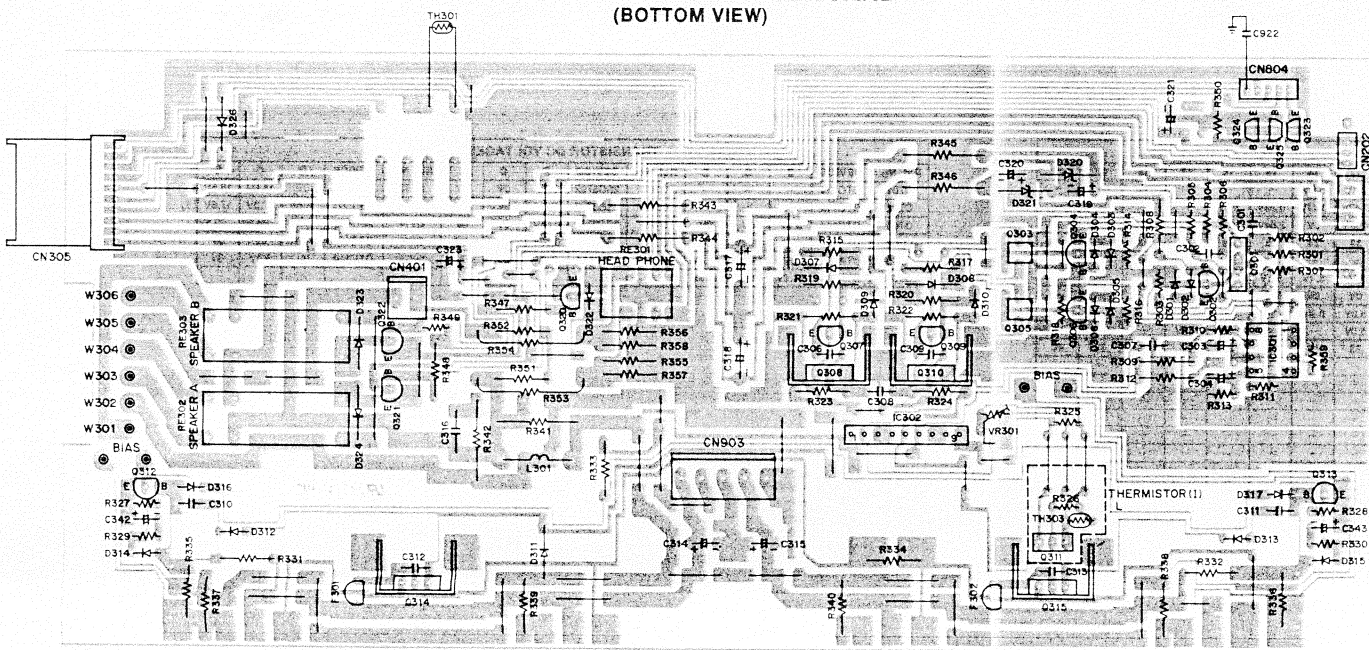
**MAIN AMPLIFIER RIGHT P.C.BOARD
(BOTTOM VIEW)**



TRANSISTOR DC VOLTAGES									
Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E
Q402	2SC1570	-17.1V	0.3V	-17.7V	Q414	2SC3117	1.1V	69.3V	0.6V
Q403	2SC3067	9.9V	66.4V	9.4V	Q415	2SA1249	-1.1V	-69.3V	-0.6V
Q404	2SC1570	-17.1V	9.4V	-17.7V	Q416	2SC2922	0.6V	69.3V	0V
Q405	2SA1240	-	-	-	Q417	2SC2922	0.6V	69.3V	0V
Q406	2SA929	-	-	-	Q418	2SA1216	-0.6V	-69.3V	0V
Q407	2SA929	66.3V	62.6V	66.8V	Q419	2SA1216	-0.6V	-69.3V	0V
Q408	2SA1209	62.0V	1.3V	62.6V	Q420	2SA606	5.3V	5.7V	6.1V
Q409	2SC1570	-	-	-	Q421	2SC536	0V	5.7V	0V
Q410	2SC2911	-	-	-					
Q411	2SD1682	0.1V	0.4V	0V			G	D	S
Q412	2SC3330	0V	1.0V	0V	Q401	2SK389	0V	9.9V	0.3V
Q413	2SA1317	0V	-1.0V	0V					

IC PIN NUMBERS DC VOLTAGES											
Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10
IC401	LA6458	0V	0V	0V	-18.3V	0V	0V	0V	18.5V	-	-
IC402	LA2500	1.1V	0.4V	1.0V	1.0V	-1.1V	0V	-0.5V	-0.5V	-0.4V	-
IC403	NJM78L18A	17.2V	0V	27.6V	-	-	-	-	-	-	-
IC404	NJM78L18A	0V	-28.6V	-18.2V	-	-	-	-	-	-	-
IC405	NJM79M06	6.1V	0V	26.9V	-	-	-	-	-	-	-

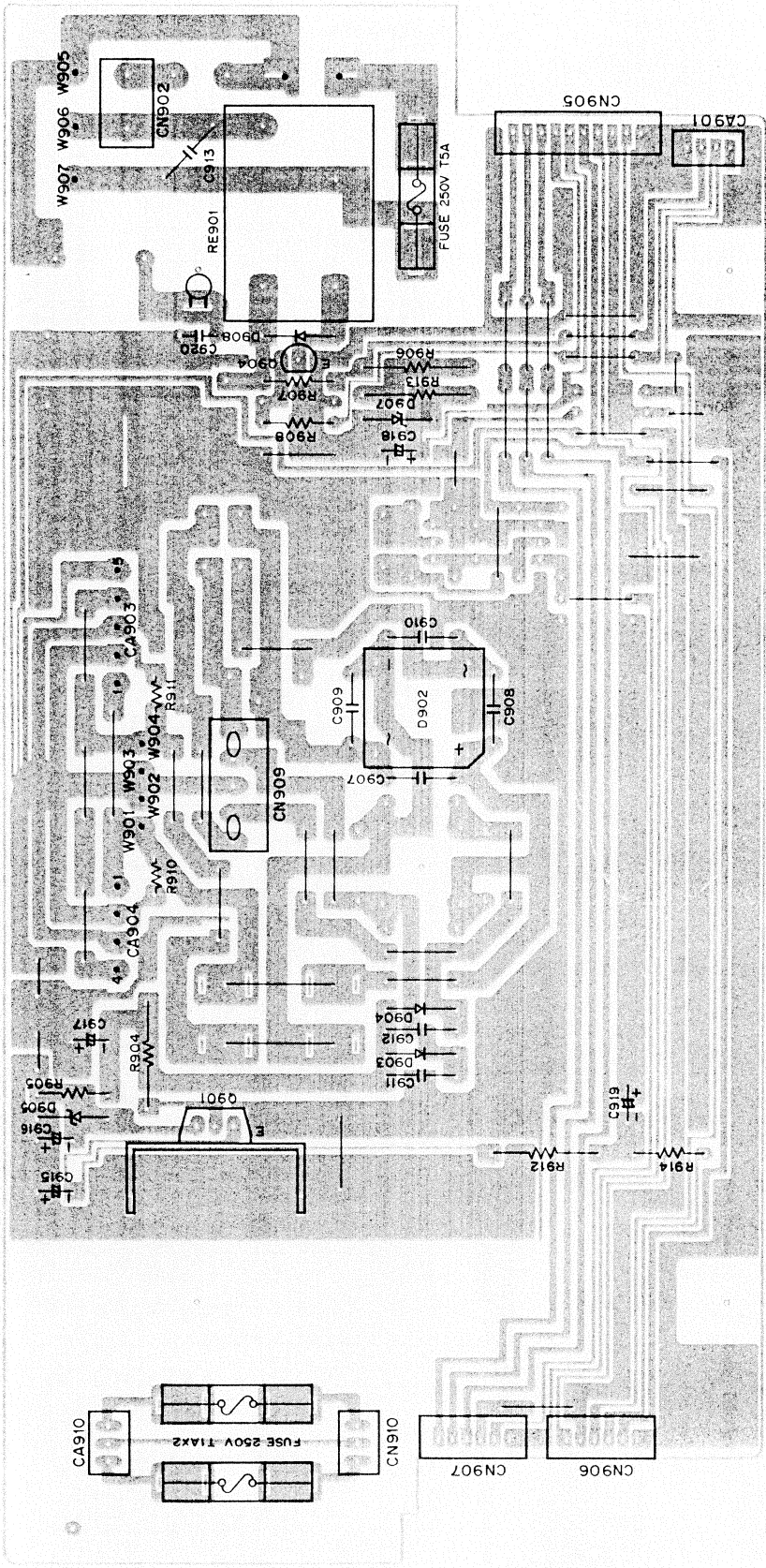
**MAIN AMPLIFIER LEFT P.C.BOARD
(BOTTOM VIEW)**



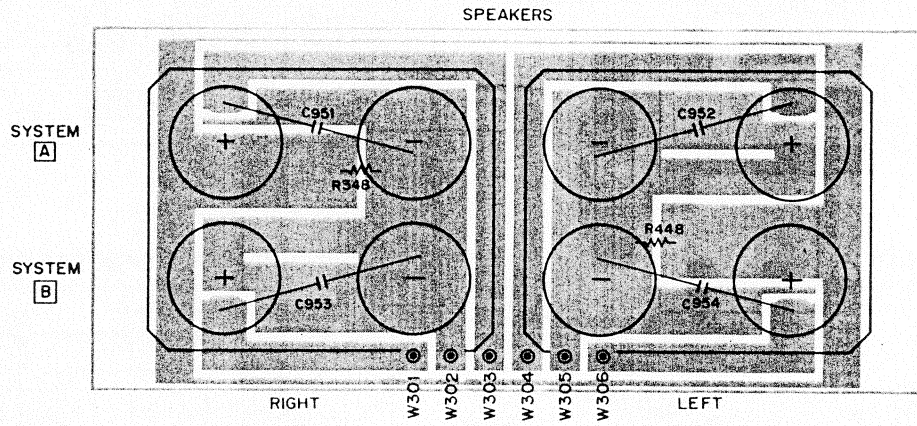
TRANSISTOR DC VOLTAGES									
Ref. No.	DEVICE	B	C	E	Ref. No.	DEVICE	B	C	E
Q302	2SC1570	-17.1V	0.3V	-17.7V	Q316	2SC2922	0.6V	69.3V	0V
Q303	2SC3067	9.9V	66.4V	9.4V	Q317	2SC2922	0.6V	69.3V	0V
Q304	2SC1570	1.0V	9.4V	-17.7V	Q318	2SA1216	-0.6V	-69.3V	0V
Q305	2SA1240	9.9V	-68.4V	10.5V	Q319	2SA1216	-0.6V	-69.3V	0V
Q306	2SA929	17.3V	10.5V	17.8V	Q320	2SC536	0.6V	0V	0V
Q307	2SA929	66.3V	62.0V	66.8V	Q321	2SC536	0.6V	0V	0V
Q308	2SA1209	62.0V	1.3V	62.0V	Q322	2SC536	0V	26.8V	0V
Q309	2SC1570	-66.3V	-62.6V	-66.8V	Q323	DTA114	5.7V	0V	5.7V
Q310	2SC2911	-62.0V	-1.1V	-62.6V	Q324	2SC536	0V	5.7V	0V
Q311	2SD1682	0.1V	0.4V	-0.4V	Q325	2SC536	0V	5.7V	0V
Q312	2SC3330	0V	1.0V	0V					
Q313	2SA1317	0V	-1.0V	0V			G	D	S
Q314	2SC3117	1.3V	69.3V	0.6V	Q301	2SK389	0V	9.9V	0.3V
Q315	2SA1249	-1.1V	-69.3V	-0.6V					

IC PIN NUMBERS DC VOLTAGES											
Ref. No.	DEVICE	1	2	3	4	5	6	7	8	9	10
IC301	LA6458	0V	0V	0V	-18.3V	0V	0V	0V	18.5V	-	-
IC302	LA2500	1.1V	0.4V	1.0V	1.0V	-1.1V	0V	-0.5V	-0.5V	-0.4V	-

POWER SUPPLY P.C. BOARD (BOTTOM VIEW)

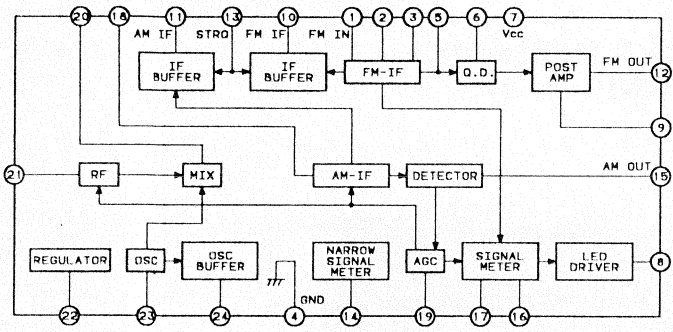


SPEAKER TERMINAL P.C.BOARD (BOTTOM VIEW)

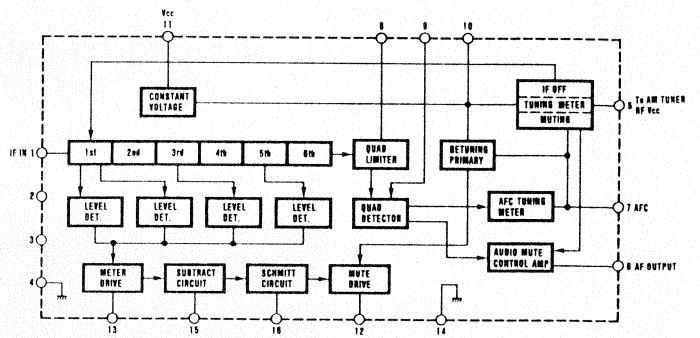


IC BLOCK DIAGRAM

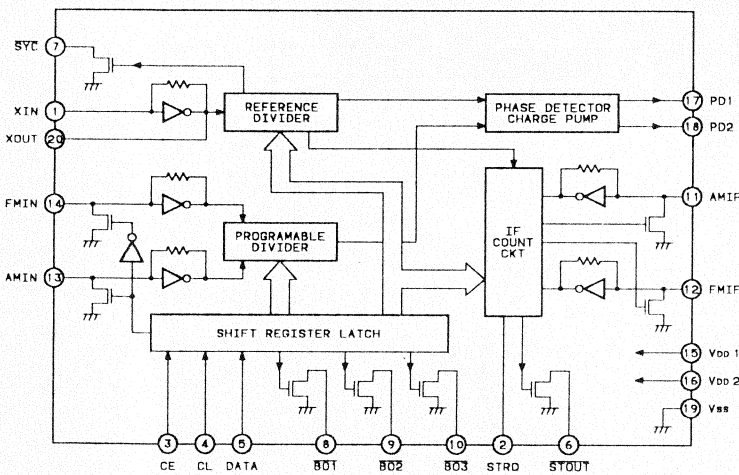
LA1266 BLOCK DIAGRAM



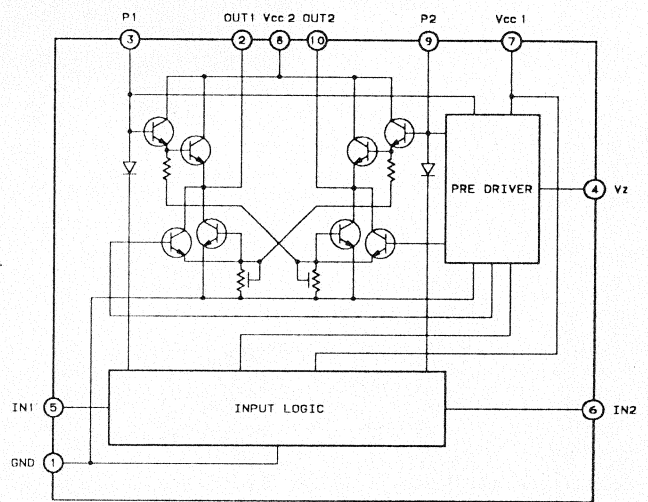
LA1235 BLOCK DIAGRAM



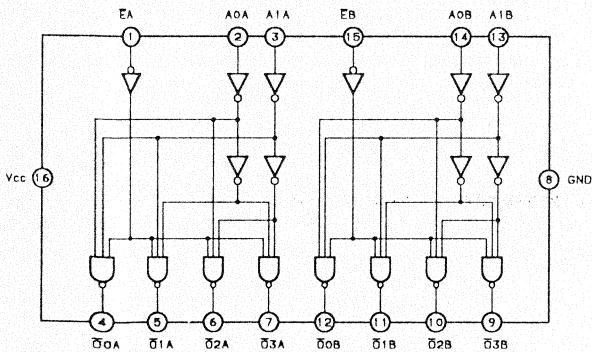
LM7000 BLOCK DIAGRAM



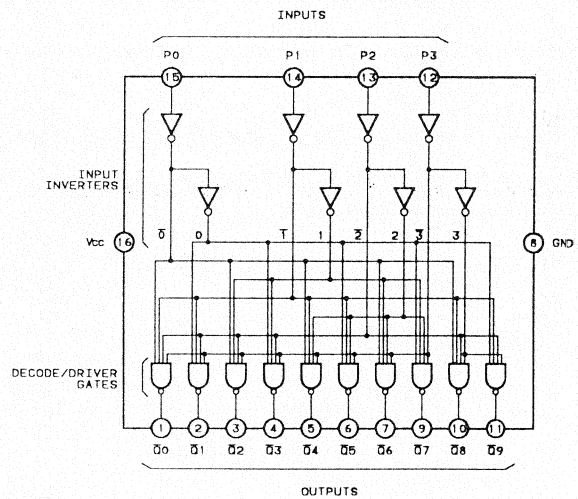
LB1641 BLOCK DIAGRAM



SN74LS139N BLOCK DIAGRAM

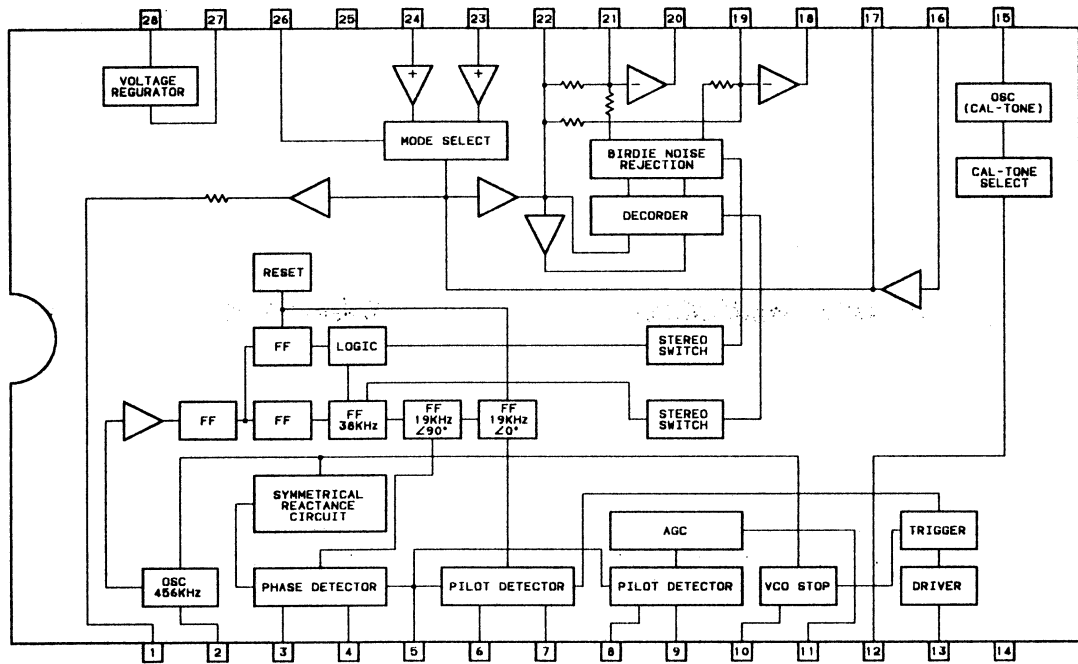


SN74LS145N BLOCK DIAGRAM

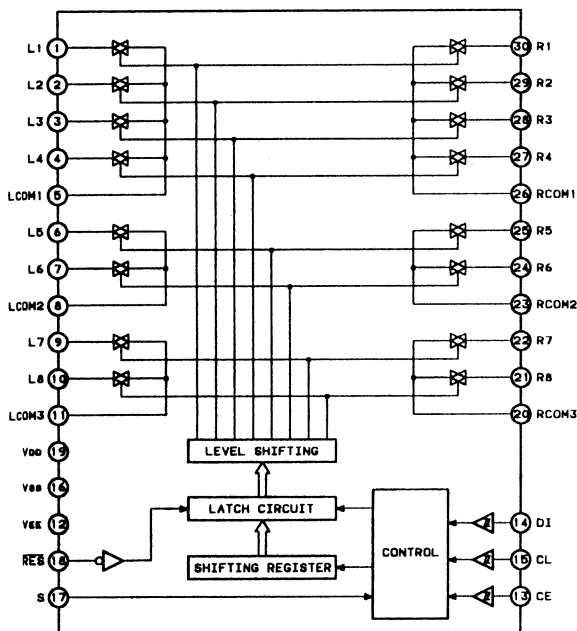


IC BLOCK DIAGRAM (Continued)

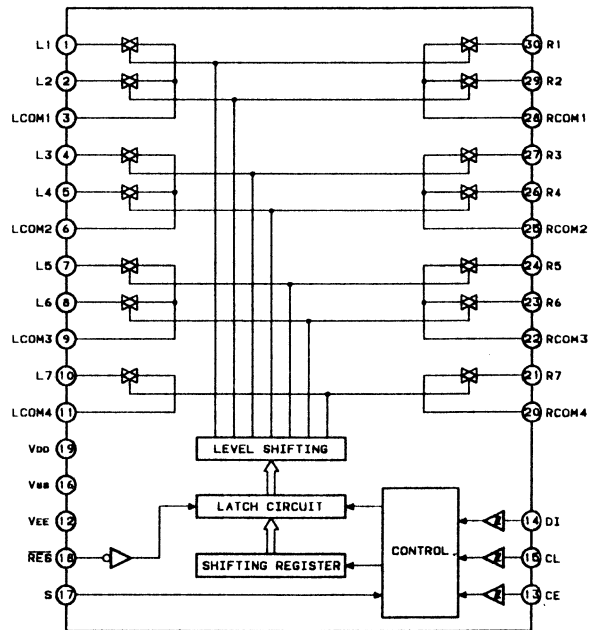
LA3450 BLOCK DIAGRAM



LC7821 BLOCK DIAGRAM

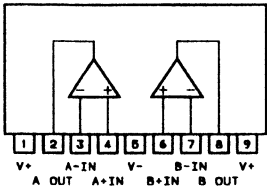


LC7823 BLOCK DIAGRAM

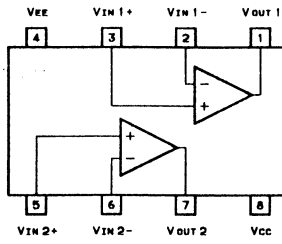


IC BLOCK DIAGRAM (Continued)

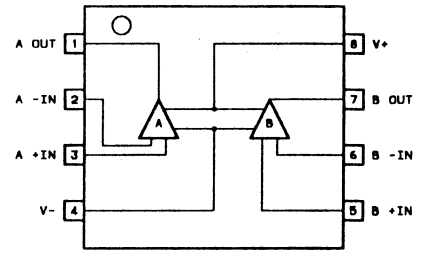
LA6458SS BLOCK DIAGRAM



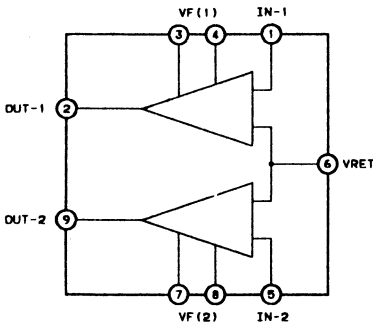
**LA6458D BLOCK DIAGRAM
LA6458DS BLOCK DIAGRAM**



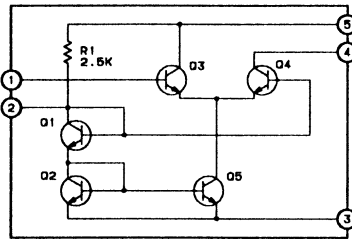
**NJM4580D BLOCK DIAGRAM
NJM5532D BLOCK DIAGRAM**



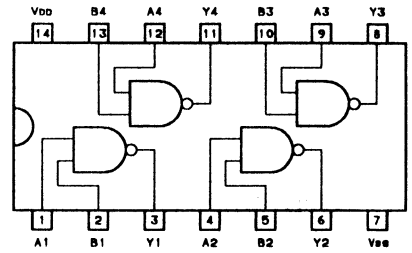
LA2500 BLOCK DIAGRAM



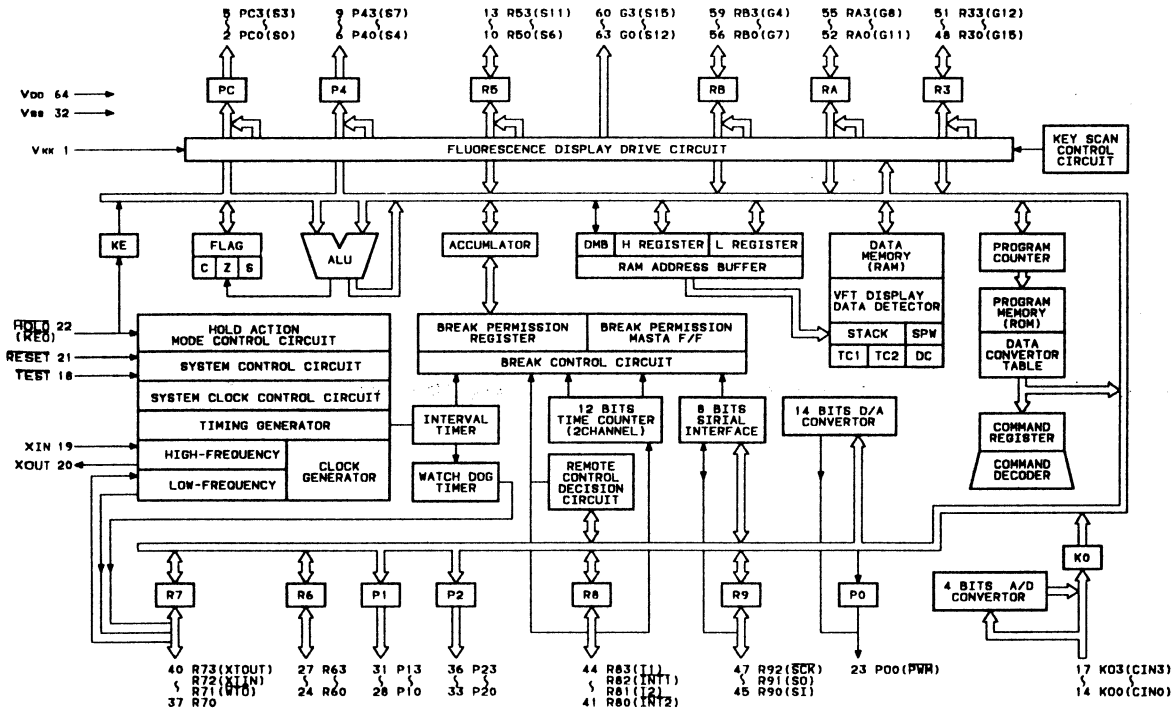
TA7060AP BLOCK DIAGRAM



UPD74HC00C BLOCK DIAGRAM

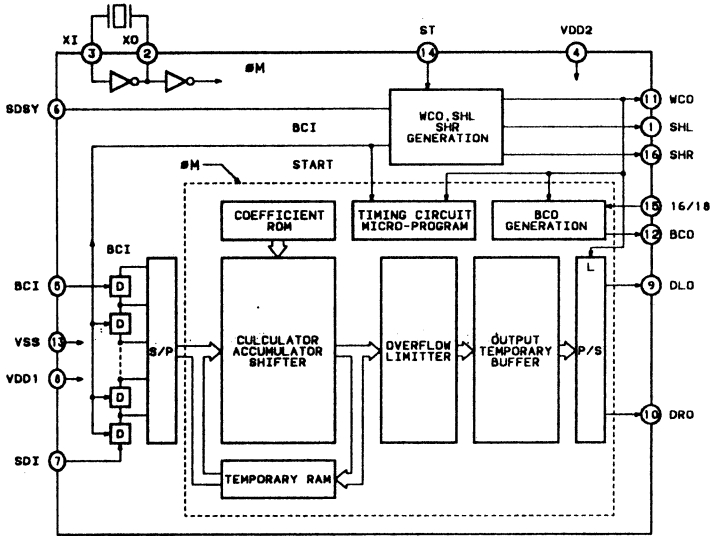


TMP47P870N-RS-Z1 BLOCK DIAGRAM

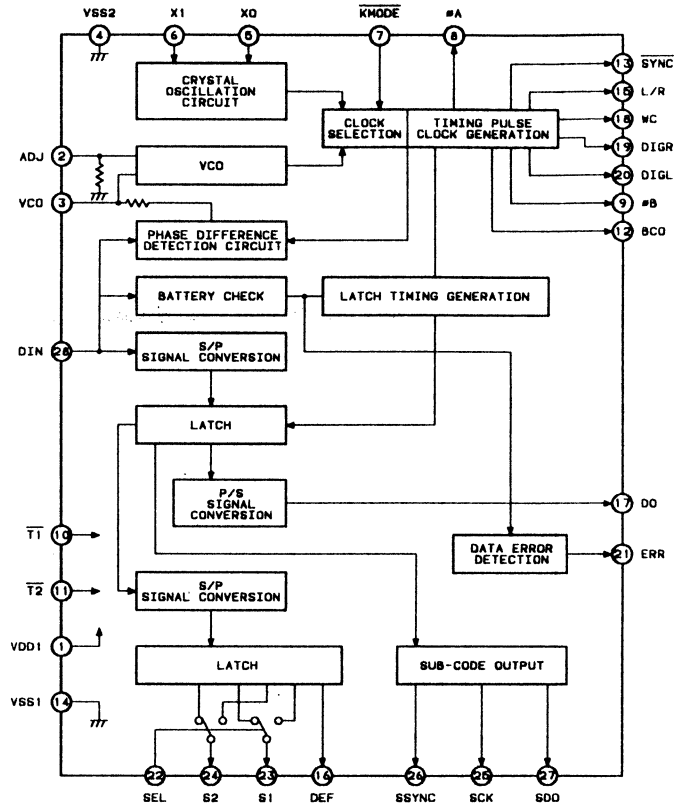


IC BLOCK DIAGRAM (Continued)

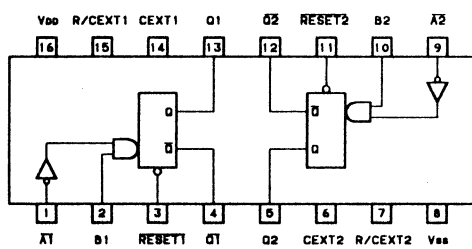
YM3434 BLOCK DIAGRAM



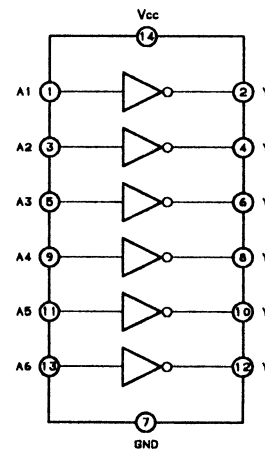
YM3623B BLOCK DIAGRAM



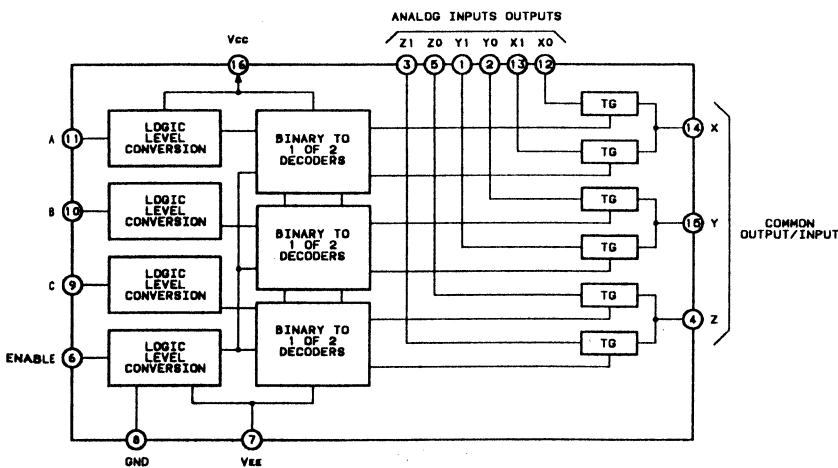
UPD74HC123AC BLOCK DIAGRAM



MC74HC04N BLOCK DIAGRAM

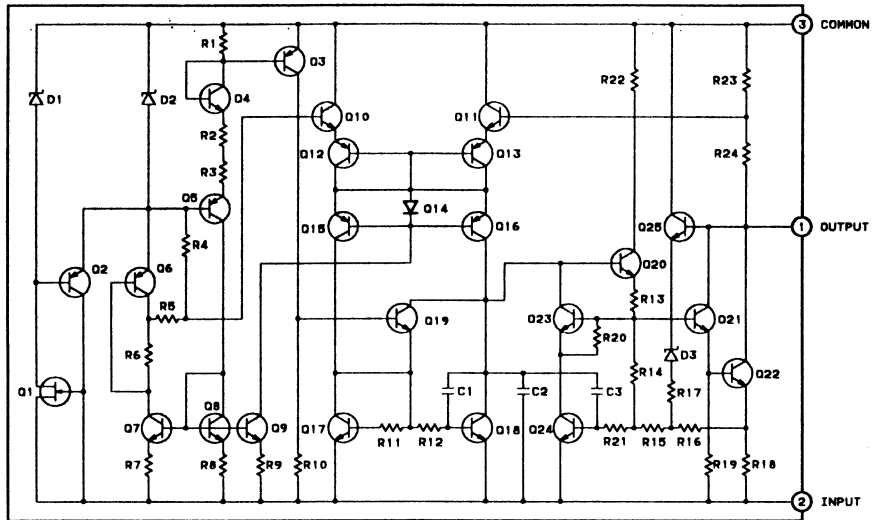


MC74HC4053N BLOCK DIAGRAM

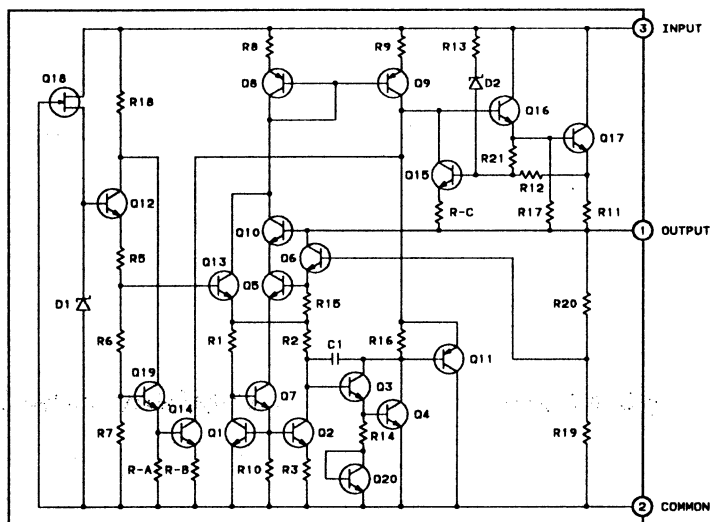


IC BLOCK DIAGRAM (Continued)

NJM79L15A BLOCK DIAGRAM NJM79L18A BLOCK DIAGRAM

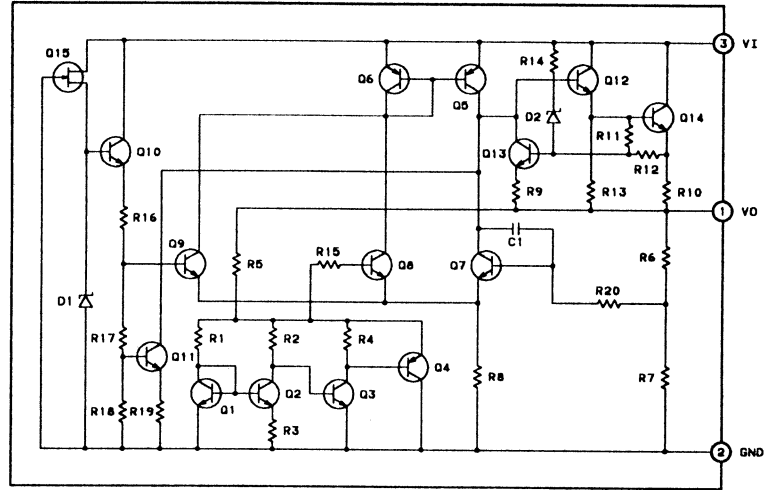


NJM78M05FA BLOCK DIAGRAM NJM78M06FA BLOCK DIAGRAM NJM78M12FA BLOCK DIAGRAM NJM78M15FA BLOCK DIAGRAM NJM78M18FA BLOCK DIAGRAM

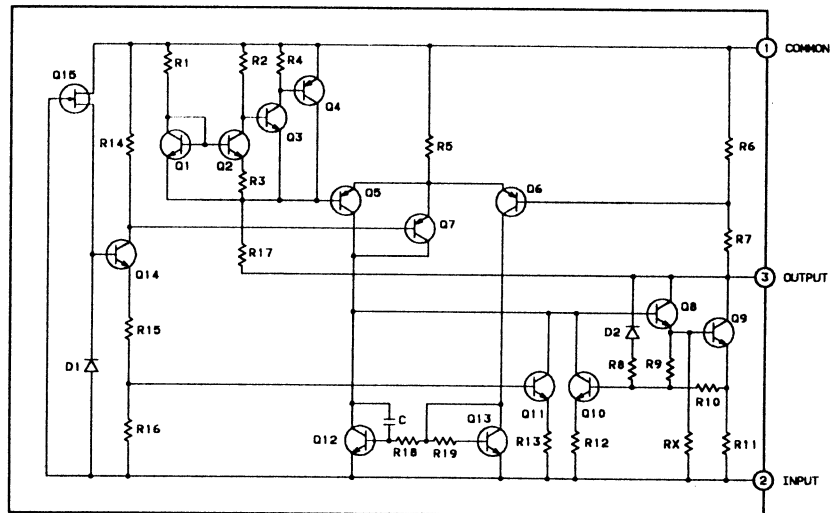


IC BLOCK DIAGRAM (Continued)

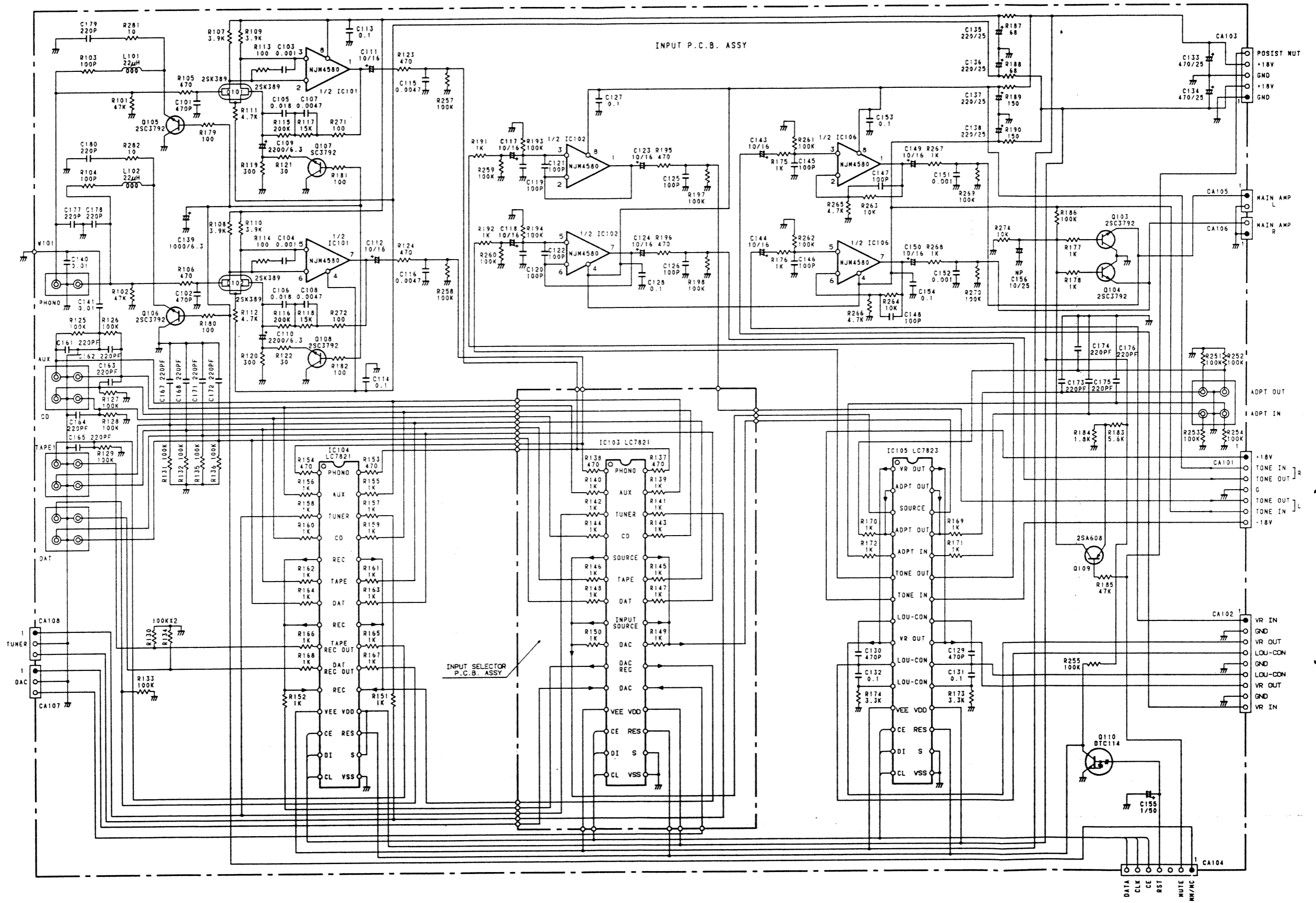
NJM78L05A BLOCK DIAGRAM



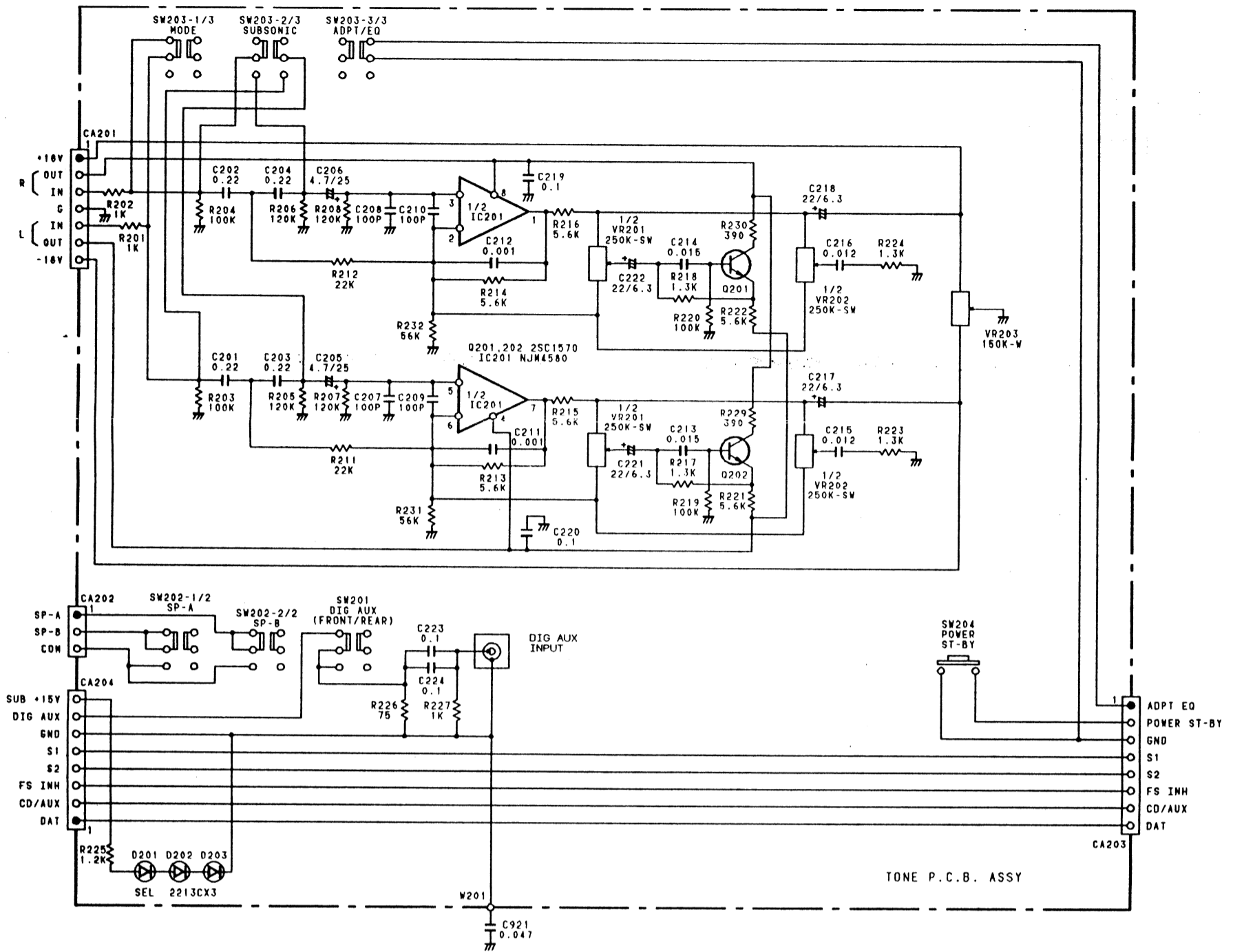
NJM79M12FA BLOCK DIAGRAM



SCHEMATIC DIAGRAM (INPUT Section)

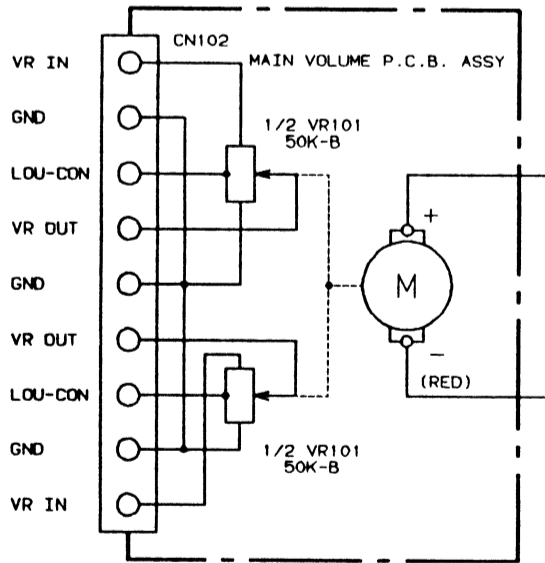


SCHEMATIC DIAGRAM (TONE CONTROL Section)

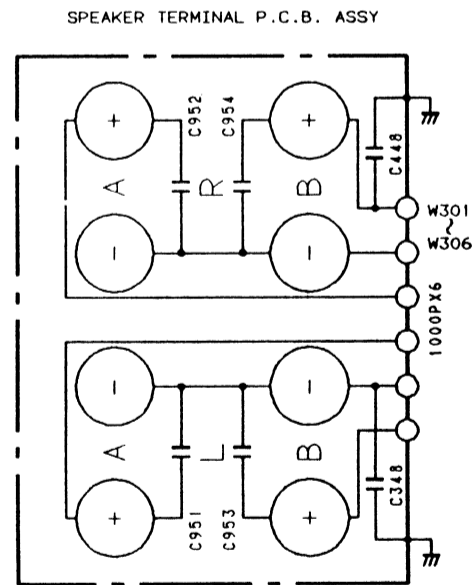


SCHEMATIC DIAGRAM

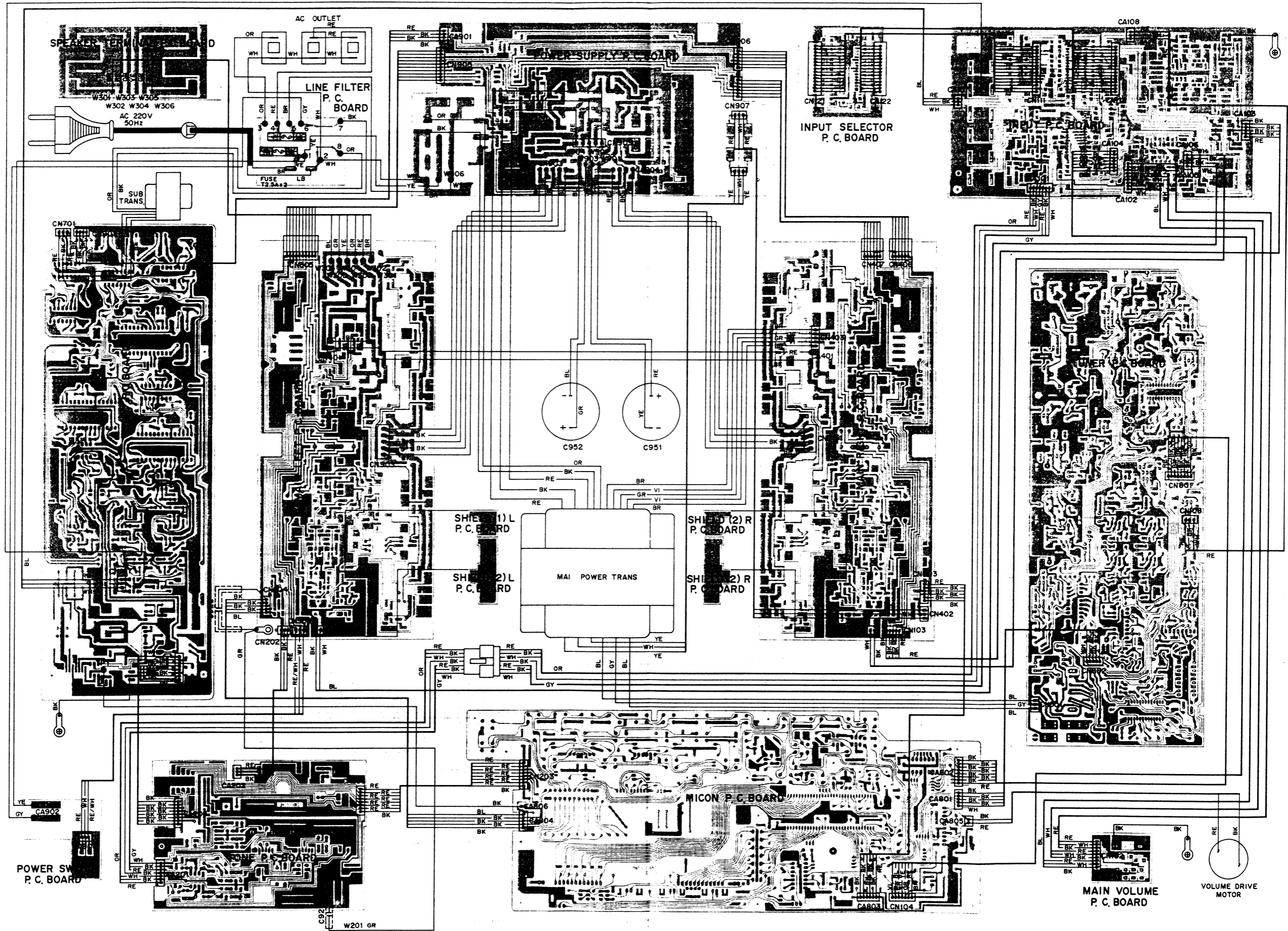
(MAIN VR P.C.B.)



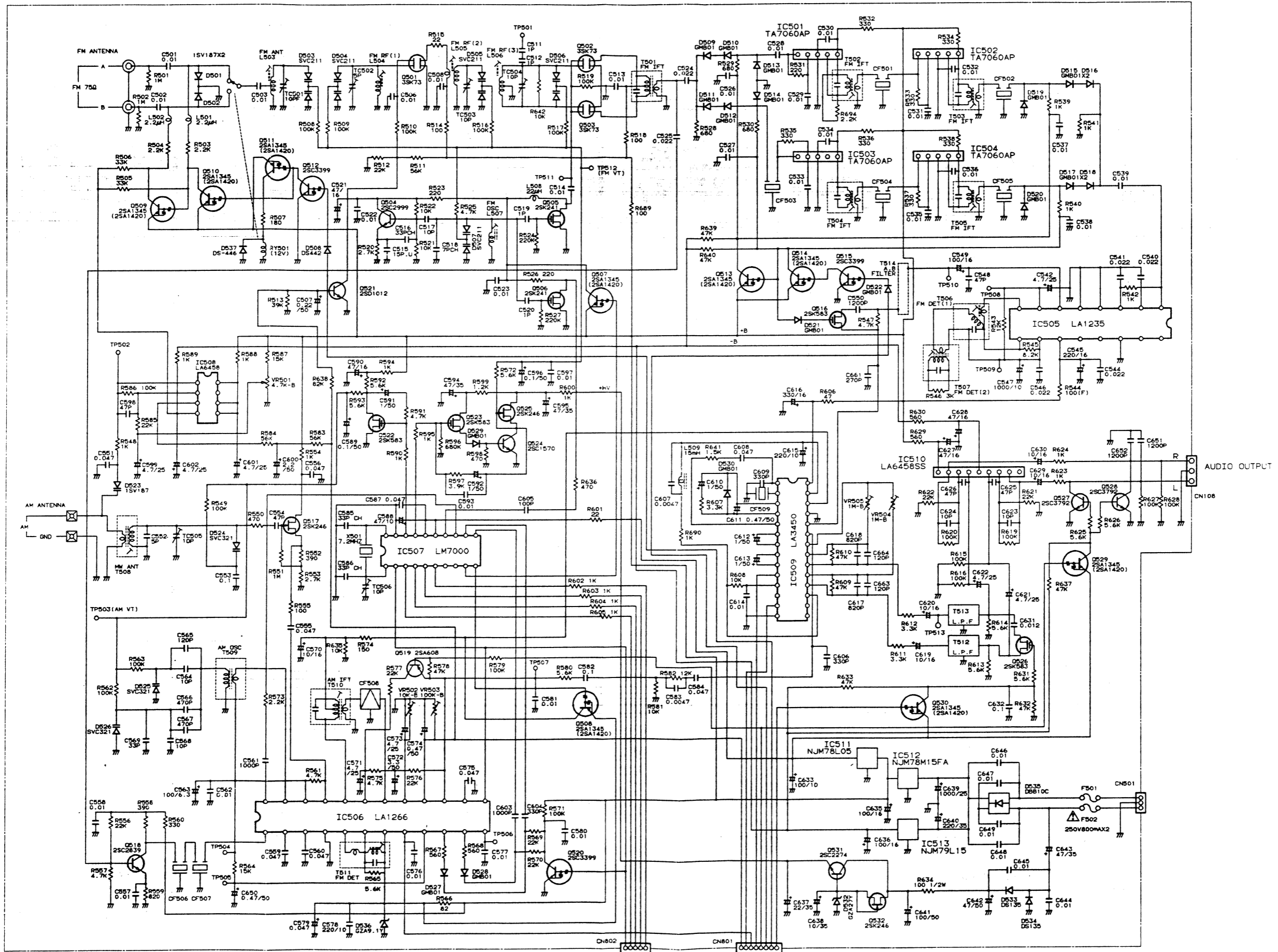
(SP. TERMINAL P.C.B.)



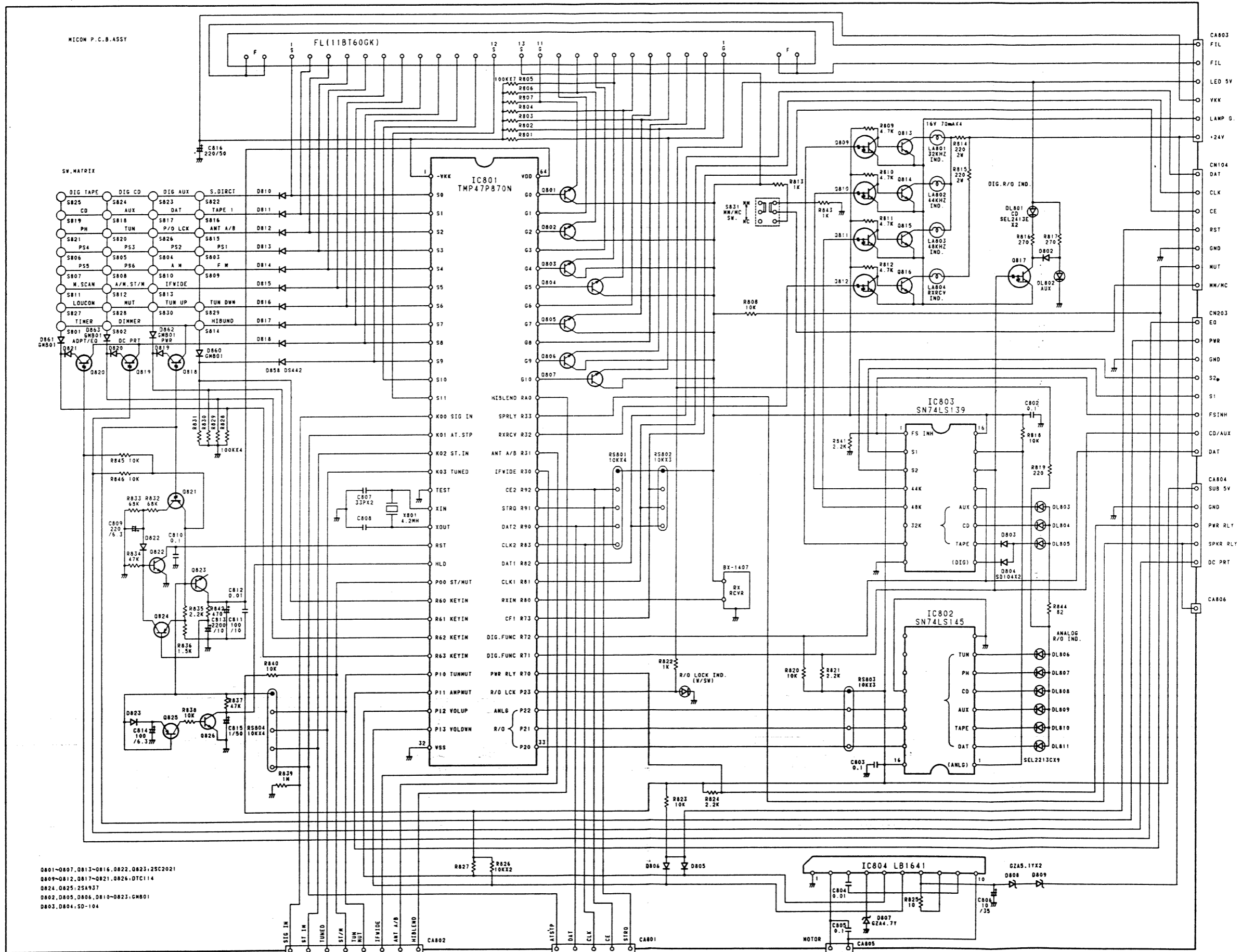
POINT TO POINT WIRING DIAGRAM



SCHEMATIC DIAGRAM (TUNER Section)

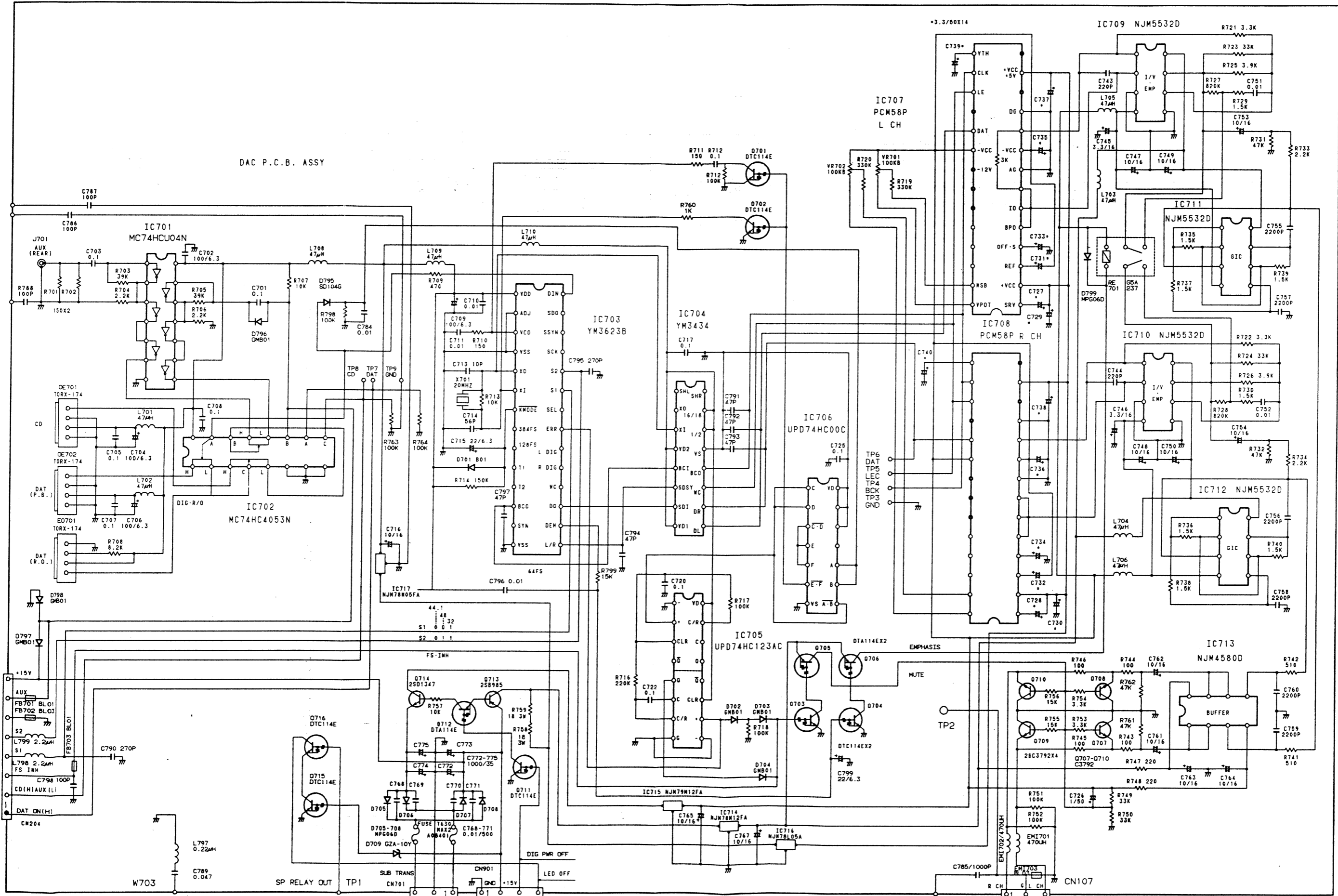


SCHEMATIC DIAGRAM (FUNCTION SELECTOR Section)

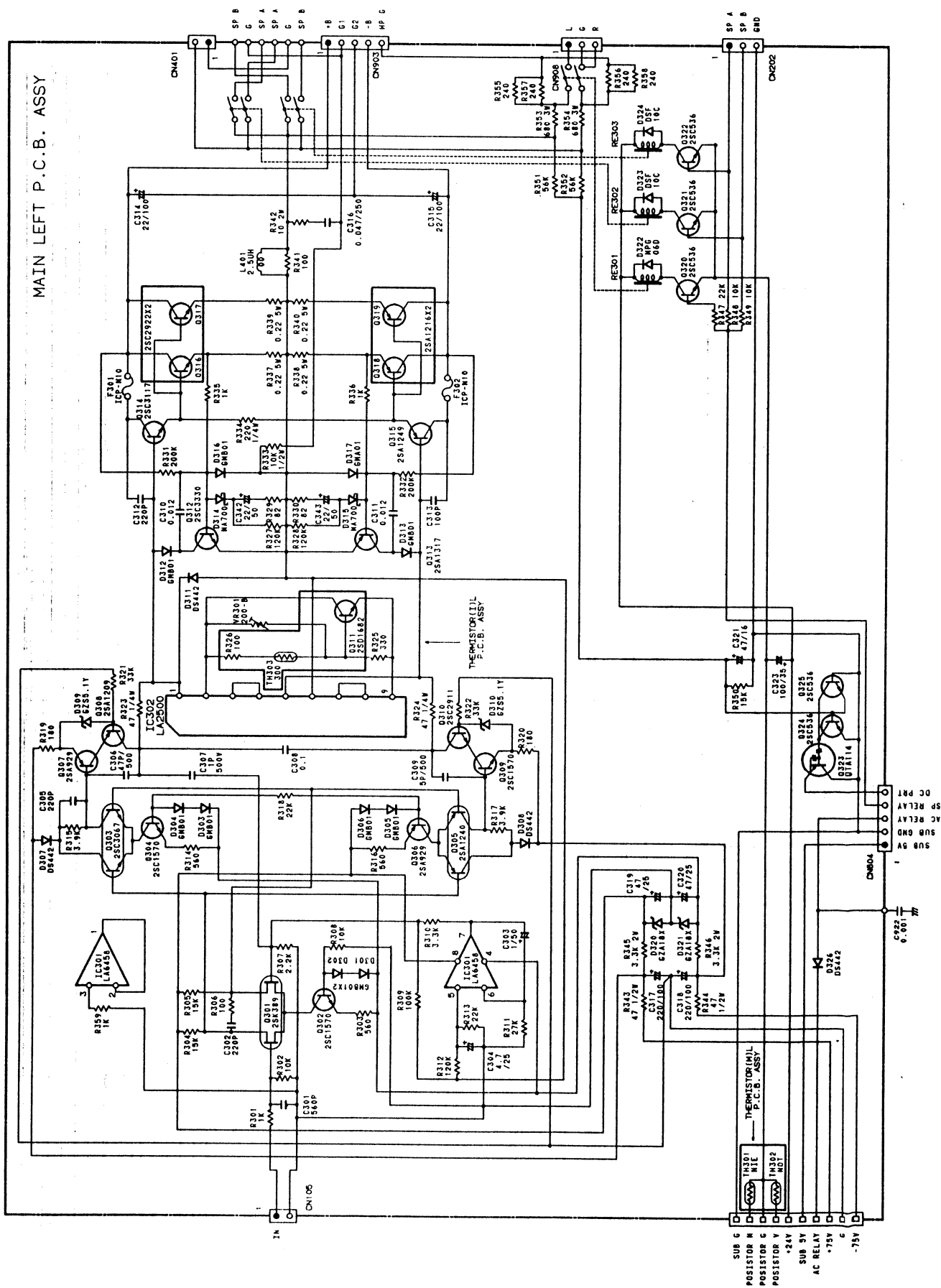


0801-0807, 0813-0816, 0822, 0823, 25C2021
 0809-0812, 0817-0821, 0826, DTC114
 0824, 0825: 25A937
 0802, 0805, 0806, 0810-0823, C8001
 0803, 0804, SD-104

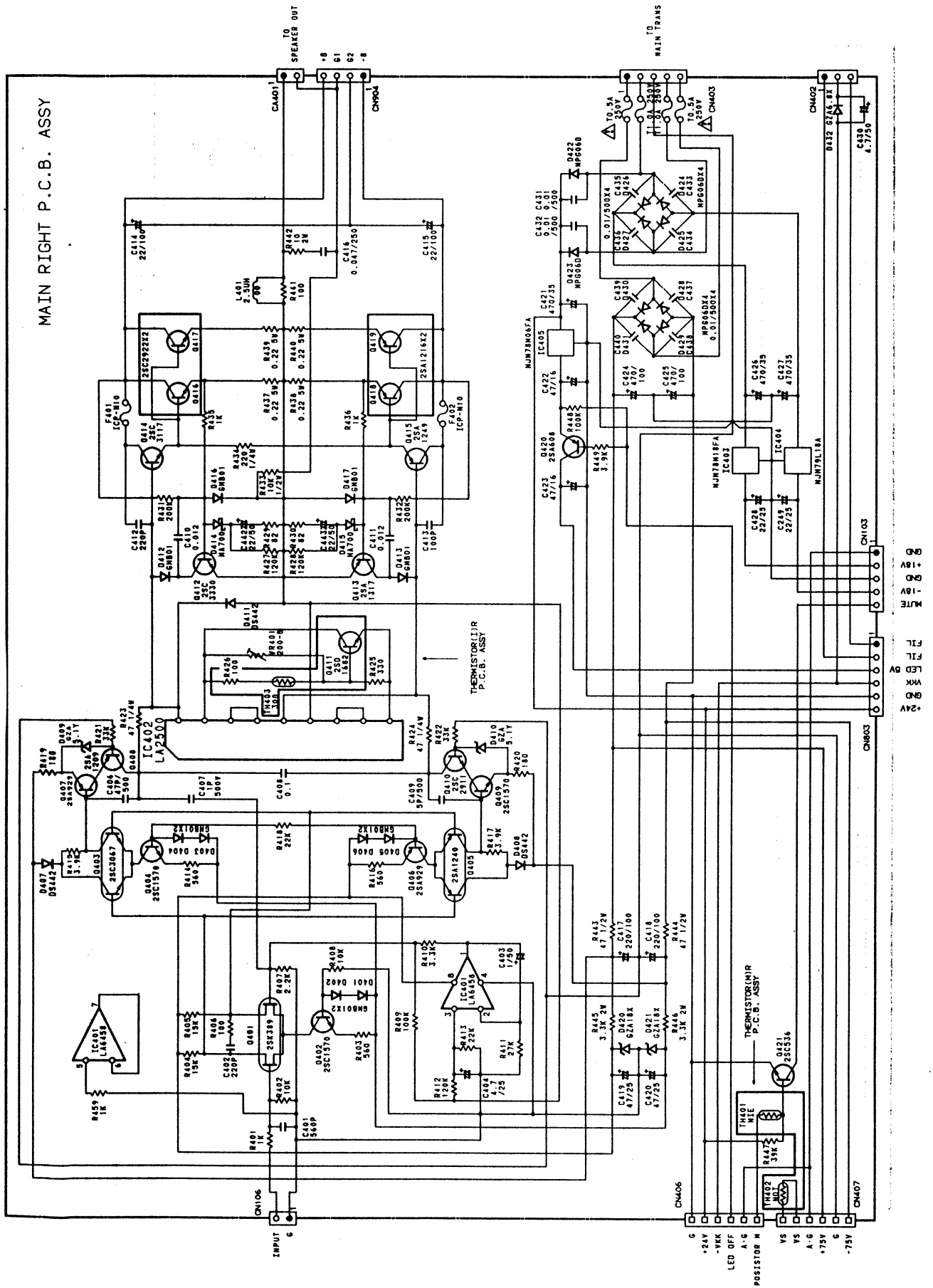
SCHEMATIC DIAGRAM (DIGITAL/ANALOG CONVERTER Section)



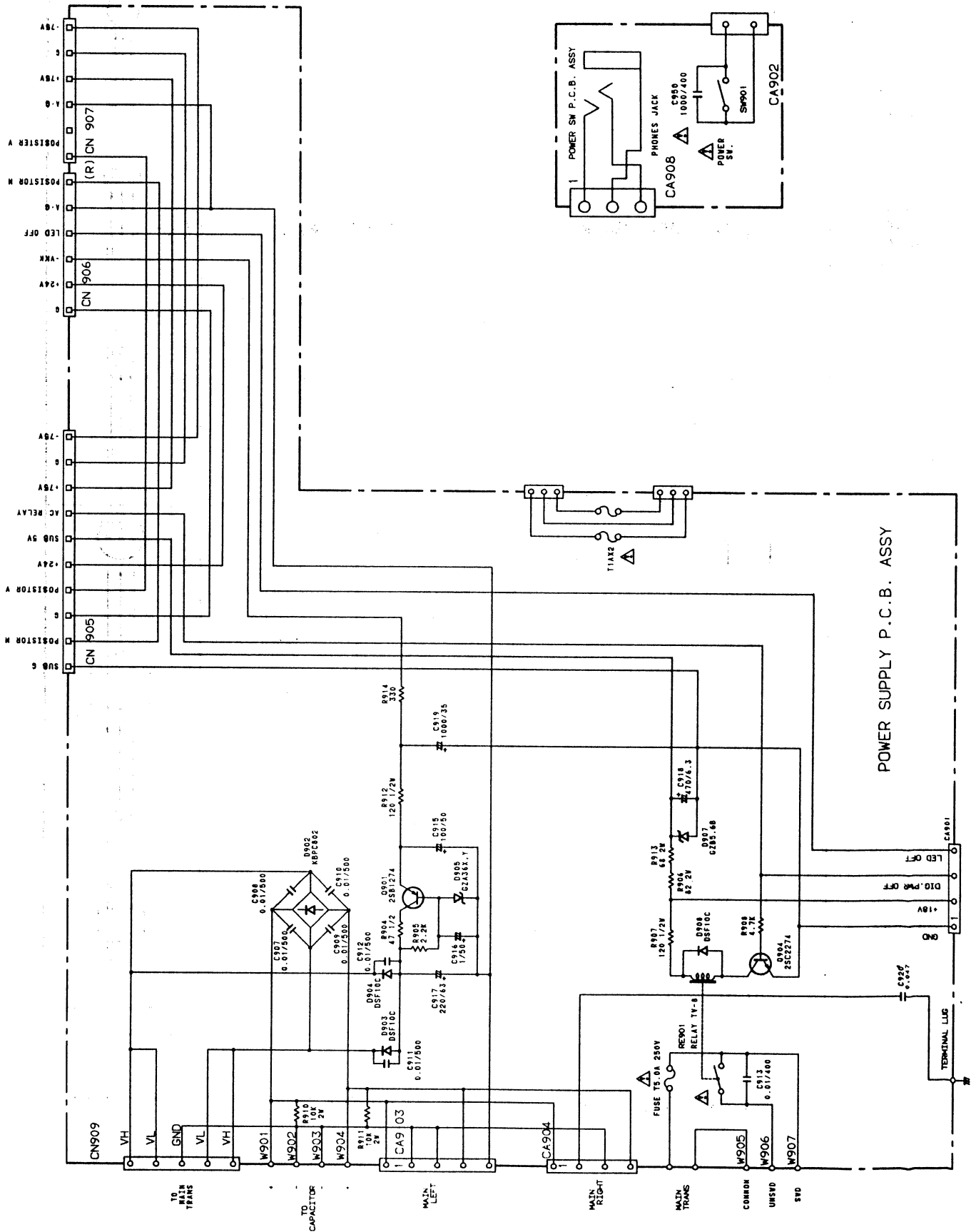
SCHEMATIC DIAGRAM (MAIN AMP. Left Section)



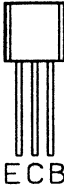

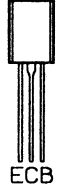
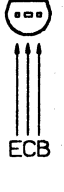

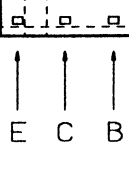

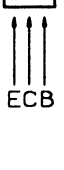
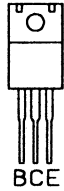

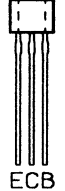
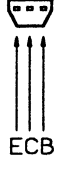

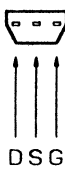

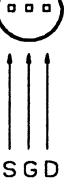
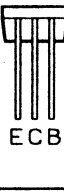

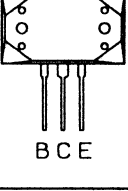
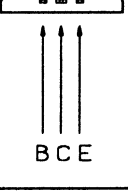

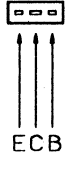
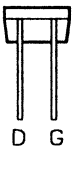
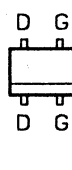
SCHEMATIC DIAGRAM (MAIN AMP. Right Section)



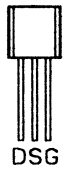

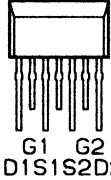
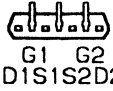
SCHEMATIC DIAGRAM (POWER SW./SUPPLY Section)



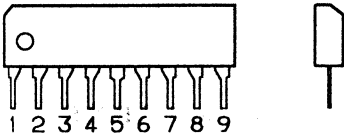
IC & TRANSISTOR LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW	TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SA608 2SA929 2SC1570 2SC2274 2SC3792 2SC536	 ECB	 ECB	2SB985 2SD1347	 ECB	 ECB
DTA114 DTC114 2SA937 2SC2021	 E C B	 E C B	2SA1209 2SA1249 2SC2911 2SC3117	 ECB	 ECB
2SB1274	 BCE	 BCE	DTA114 DTC114 2SA1317 2SA1345 2SC2839 2SC2999 2SC3330 2SC3399 2SC536 2SD1012	 ECB	 ECB
2SK241	 D S G	 D S G	2SK246	 S G D	 S G D
2SA1240 2SC3067	 ECB	 ECB	2SA1216 2SC2922	 BCE	 BCE
2SD1682	 ECB	 ECB	3SK73	 D G	 D G
TERMINAL NAME					
		B → BASE C → COLLECTOR E → EMITTER			S → SOURCE G → GATE D → DRAIN

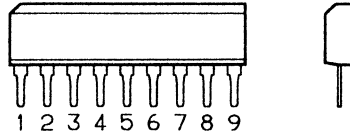
IC & TRANSISTOR LEAD IDENTIFICATION (Continued)

TRANSISTOR	FRONT VIEW	BOTTOM VIEW	TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SK583			2SK389		
TERMINAL NAME					
B → BASE C → COLLECTOR E → EMITTER			S → SOURCE G → GATE D → DRAIN		

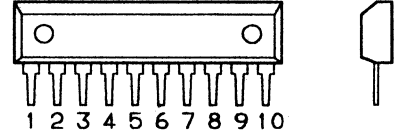
LA6458SS FRONT/SIDE VIEWS



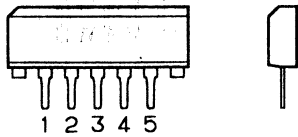
LA2500 FRONT/SIDE VIEWS



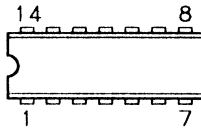
LB1641 FRONT/SIDE VIEWS



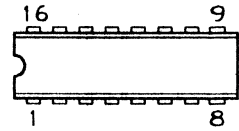
TA7060AP FRONT/SIDE VIEWS



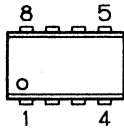
UPD74HC00C TOP VIEW



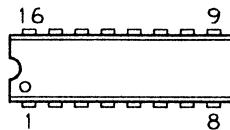
UPD74HC123AC TOP VIEW



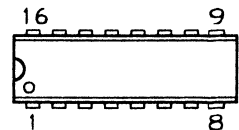
**LA6458D TOP VIEW
LA6458DS TOP VIEW
NJM4580D TOP VIEW
NJM5532D TOP VIEW**



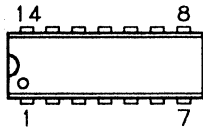
**SN74LS139N TOP VIEW
SN74LS145N TOP VIEW**



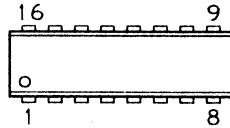
**LA1235 TOP VIEW
MC74HC4053N TOP VIEW**



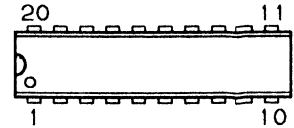
MC74HCU04N TOP VIEW



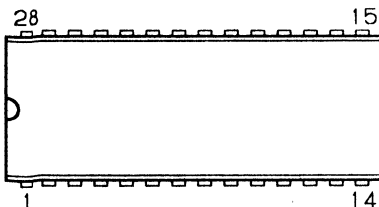
YM3434 TOP VIEW



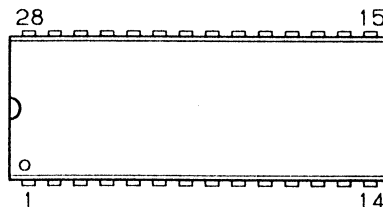
LM7000 TOP VIEW



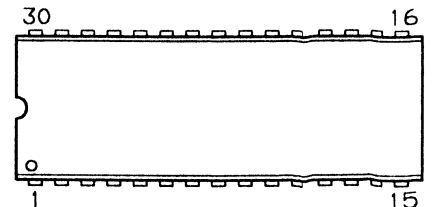
**PCM58P TOP VIEW
YM3623B TOP VIEW**



LA3450 TOP VIEW

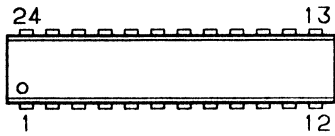


LC7823 TOP VIEW

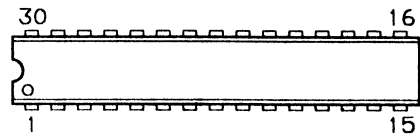


IC & TRANSISTOR LEAD IDENTIFICATION (Continued)

LA1266 TOP VIEW



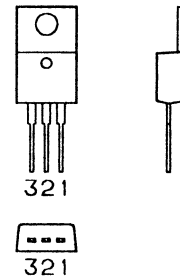
LC7821 TOP VIEW



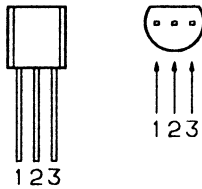
TMP47P870N-RS-Z1 TOP VIEW



NJM78M05FA TOP/SIDE VIEWS



**NJM78L05A TOP/SIDE VIEWS
NJM79M12FA TOP/SIDE VIEWS**



**NJM78M06FA TOP/SIDE VIEWS
NJM78M12FA TOP/SIDE VIEWS
NJM78M15FA TOP/SIDE VIEWS
NJM78M18FA TOP/SIDE VIEWS
NJM79L15A TOP/SIDE VIEWS
NJM79L18A TOP/SIDE VIEWS**

