

CPM-300 SERVICE NOTES

First Edition

Issued by RJA

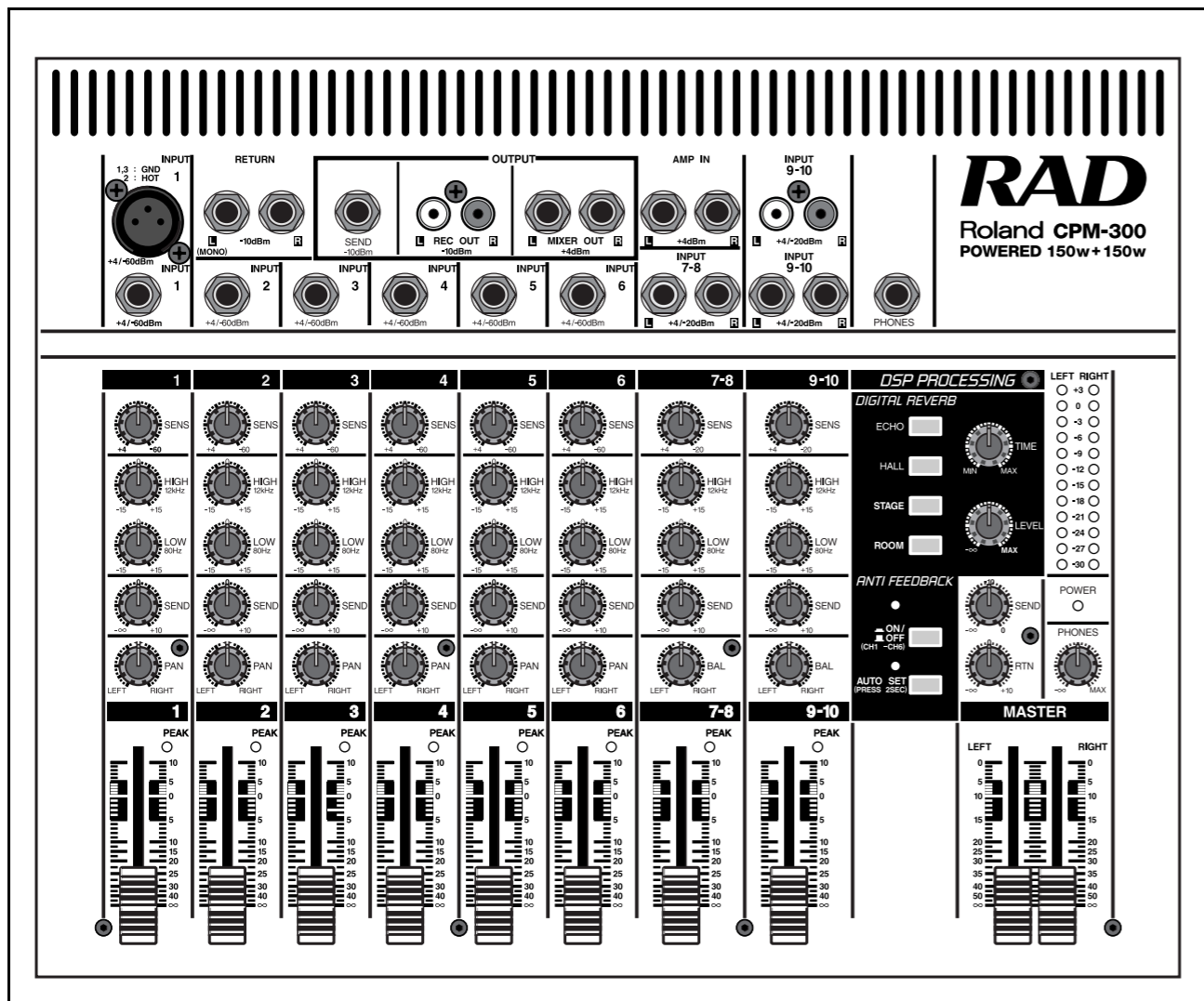
SPECIFICATIONS

TABLE OF CONTENTS

SPECIFICATIONS.....	Page 1
LOCATION OF CONTROLS	2
EXPLODED VIEW	3
PARTS LIST	4~5
TEST MODE	6~8
BLOCK DIAGRAM	9
WIRING DIAGRAM	10
CIRCUIT DIAGRAM.....	11~14
CIRCUIT BOARD.....	15~19

- Mixer Section
 - Frequency Response: 20 Hz-20 kHz +1/-2 dB (Sens : min)
 - Total Harmonic Distortion: 0.1 % or less (sens : min, 20 Hz-20 kHz, rated output)
 - Noise Level: (Input 150 W terminated, IHF-A Weighted typ.)
 - ◆ Equivalent input Noise Level: -120 dBm
 - ◆ Residual Noise:
 - 89 dBm (all fader : min)
 - 72 dBm (master fader : max) (all channel fader : min)
 - 72 dBm (master fader : max) (all channel fader : nominal) (all sens : min)
 - 49 dBm (master fader : max) (all channel fader : nominal) (all sens : max)
 - Crosstalk:
 - 70 dB or less (1 kHz between channels)
 - 60 dB or less (1 kHz between L and R)
 - Equalizer:
 - HIGH EQ: ±15 dB (12 kHz shelving type)
 - LOW EQ: ±15 dB (80 Hz shelving type)
 - Digital Reverb:
 - Sampling Frequency: 48 kHz
 - Internal Signal Processing: 24 bits
- Power Amplifier Section
 - Rated Output:
 - 100 W x 2 (Stereo, 8 W load, 1 kHz, 0.1 % or less THD)
 - 150 W x 2 (Stereo, 4 W load, 1 kHz, 0.1 % or less THD)
 - Recommended Load Impedance: 4 ohms or greater (STEREO)
 - Frequency Response: 20 Hz-50 kHz (+0/-1 dB 1W/8 W)
 - Total Harmonic Distortion: 0.05 % or less (Stereo, 8 W load, 1 kHz, 50 W)
 - S/N Ratio: 100 dB or greater (amp in 150 W terminated, IHF-A Weighted)
- Others
 - Power: AC 117/230/240 V (50/60 Hz)
 - Power Consumption: 150 W (AC 117/230/240 V)
 - Dimensions: 375 (W) x 307 (D) x 131 (H) mm / 14-13/16 (W) x 12-1/8 (D) x 5-3/16 (H) inches
 - Weight: 6.0 kg / 13 lb 4 oz
 - Accessories: Owner's Manual (ENGLISH/JAPANESE G6017274)

* 0 dBm = 0.775 Vrms

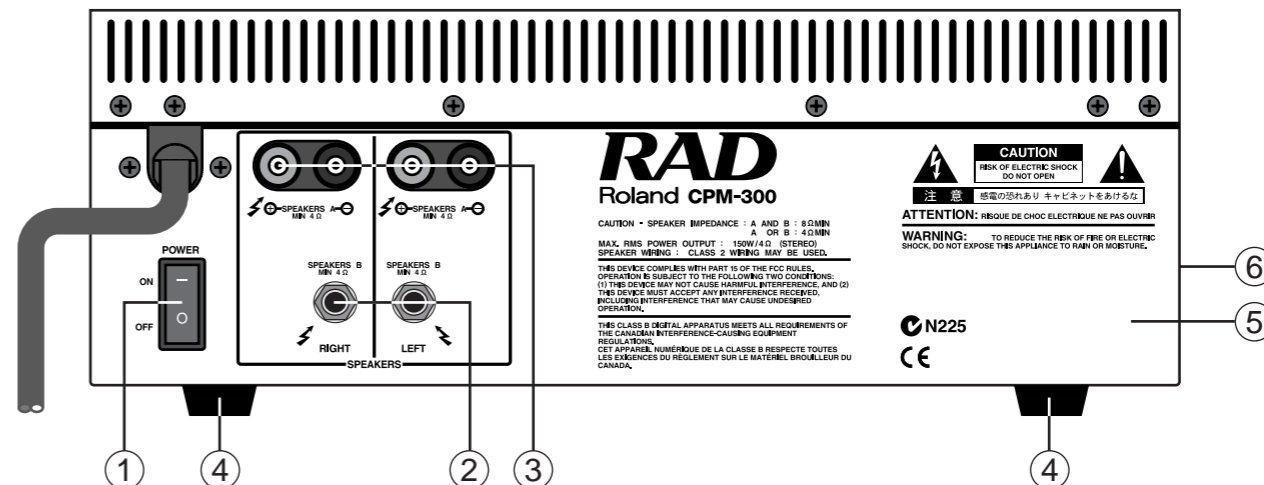


Copyright ©1999 ROLAND CORPORATION

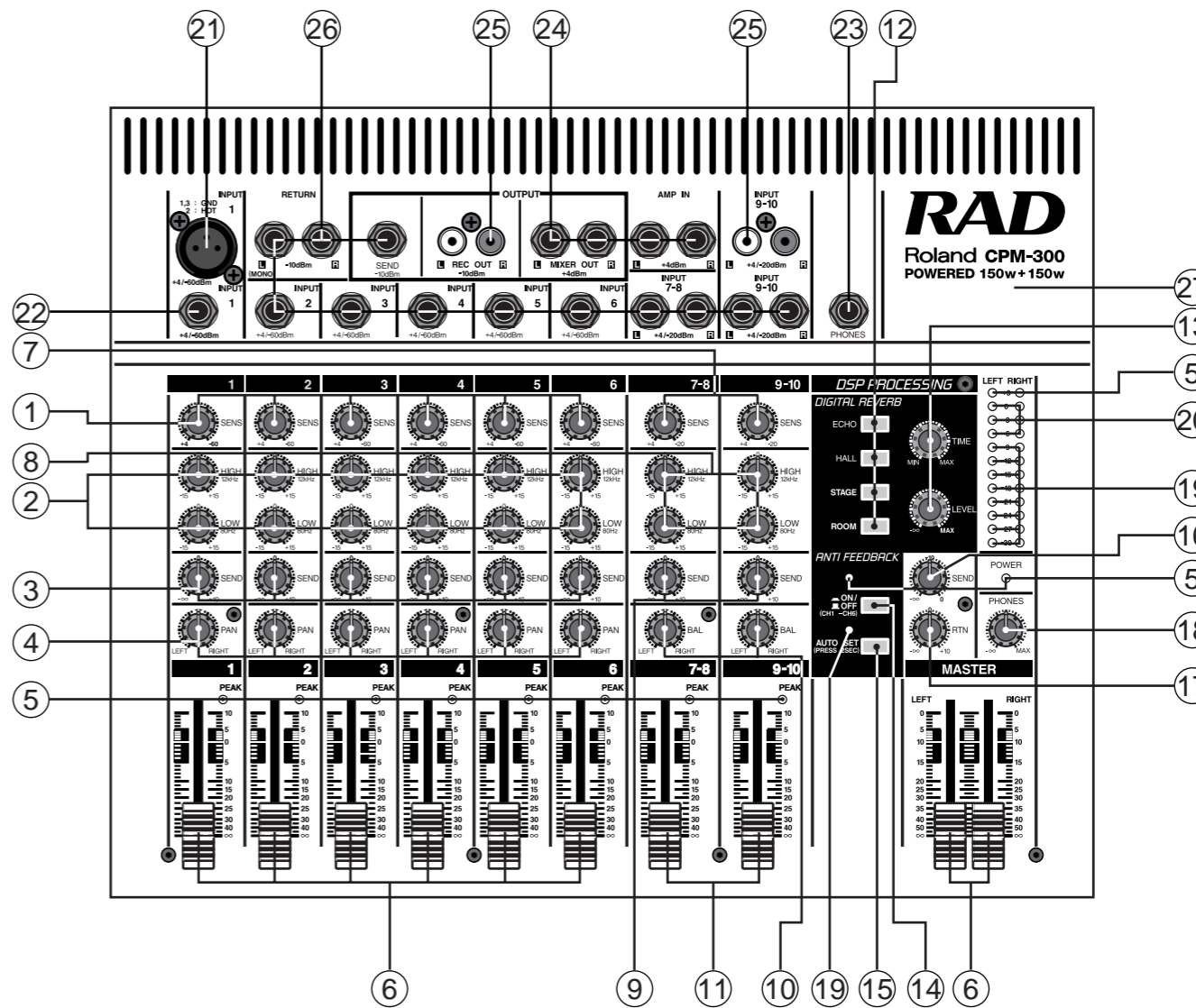
All rights reserved. No part of this publication may be reproduced in any form without the written permission of ROLAND CORPORATION.

LOCATION OF CONTROLS

No.	PART CODE	PART NAME	DESCRIPTION
①	01457190	SEESAW SWITCH	SDDJF1003A
②	01673712	JACK	JY-6353-01-130
③	F3459107	SPEAKER TERMINAL	A215C
	F2369808	COVER	SR-4 230V 240V only
④	22355334	BASE (FOOT BASE)	235-334
⑤	G2817128	BOTTOM CHASSIS	
⑥	12319402	HANDLE	231-402(H20)



No.	PART CODE	PART NAME	DESCRIPTION
①	01451789	ROTARY POTENTIOMETER 12M/M	EVJ YK5 F03 622
	01452467	U R-KNOB M1 LCG BLK	
②	01451801	ROTARY POTENTIOMETER 9M/M	EVU F1L FL3 B24
	01452489	U R-KNOB M1 LCG GRN	
③	01451812	ROTARY POTENTIOMETER 9M/M	EVU F0L FL3 B54
	01452478	U R-KNOB M1 LCG RED	
④	01451801	ROTARY POTENTIOMETER 9M/M	EVU F1L FL3 B24
	01452445	U R-KNOB M1 LCG BLU	
⑤	01453012	LED	LN88RPX
⑥	01349423	KNOB	U S-KNOB M1 LCG DCG
	01563356	SLIDE POTENTIOMETER 45M/M	RS45111A6
⑦	01451778	ROTARY POTENTIOMETER 12M/M	EVJ Y15 F03 B54
	01452467	U R-KNOB M1 LCG BLK	
⑧	01451767	ROTARY POTENTIOMETER 12M/M	EVJ Y96 F03 B24
	01452489	U R-KNOB M1 LCG GRN	
⑨	01451778	ROTARY POTENTIOMETER 12M/M	EVJ Y15 F03 B54
	01452478	U R-KNOB M1 LCG RED	
⑩	01451734	ROTARY POTENTIOMETER 12M/M	EVJ YK6 F03 403
	01452445	U R-KNOB M1 LCG BLU	
⑪	01563367	SLIDE POTENTIOMETER 45M/M	RS45112A6
	01349423	KNOB	U S-KNOB M1 LCG DCG
⑫	13129376	SWITCH (PUSH)	SPEA12 4POLES
	01671723	BUTTON MCG	
⑬	01451790	ROTARY POTENTIOMETER 12M/M	EVU F2L FL3 B24
	01452489	U R-KNOB M1 LCG GRN	
⑭	13129376	SWITCH (PUSH)	SPEA12 4POLES
	2247064700	BUTTON	
⑮	13129380	SWITCH	SPEA12 NONLOCK
	2247064700	BUTTON	
⑯	01451790	ROTARY POTENTIOMETER 12M/M	EVU F2L FL3 B24
	01452478	U R-KNOB M1 LCG RED	
⑰	01451756	ROTARY POTENTIOMETER 12M/M	EVJ Y15 F03 B24
	01452478	U R-KNOB M1 LCG RED	
⑱	01451745	ROTARY POTENTIOMETER 12M/M	EVJ YL5 F03 A24
	01452467	U R-KNOB M1 LCG BLK	
⑲	01453034	LED	LN38GPX
⑳	01453023	LED	LN48YPX
㉑	01453123	CANNON JACK	NC3FAV2-0
㉒	01349045	JACK	JY-6353A-02-250 (remove int tooth washer)
㉓	01349045	JACK	JY-6353A-02-250
㉔	F3449114	JACK	JY-6353A-02-130
㉕	F3429104	JACK RCA(PIN)	JK0200560N
㉖	01673712	JACK	JY-6353-01-130
㉗	G2817129	FRONT PANEL	

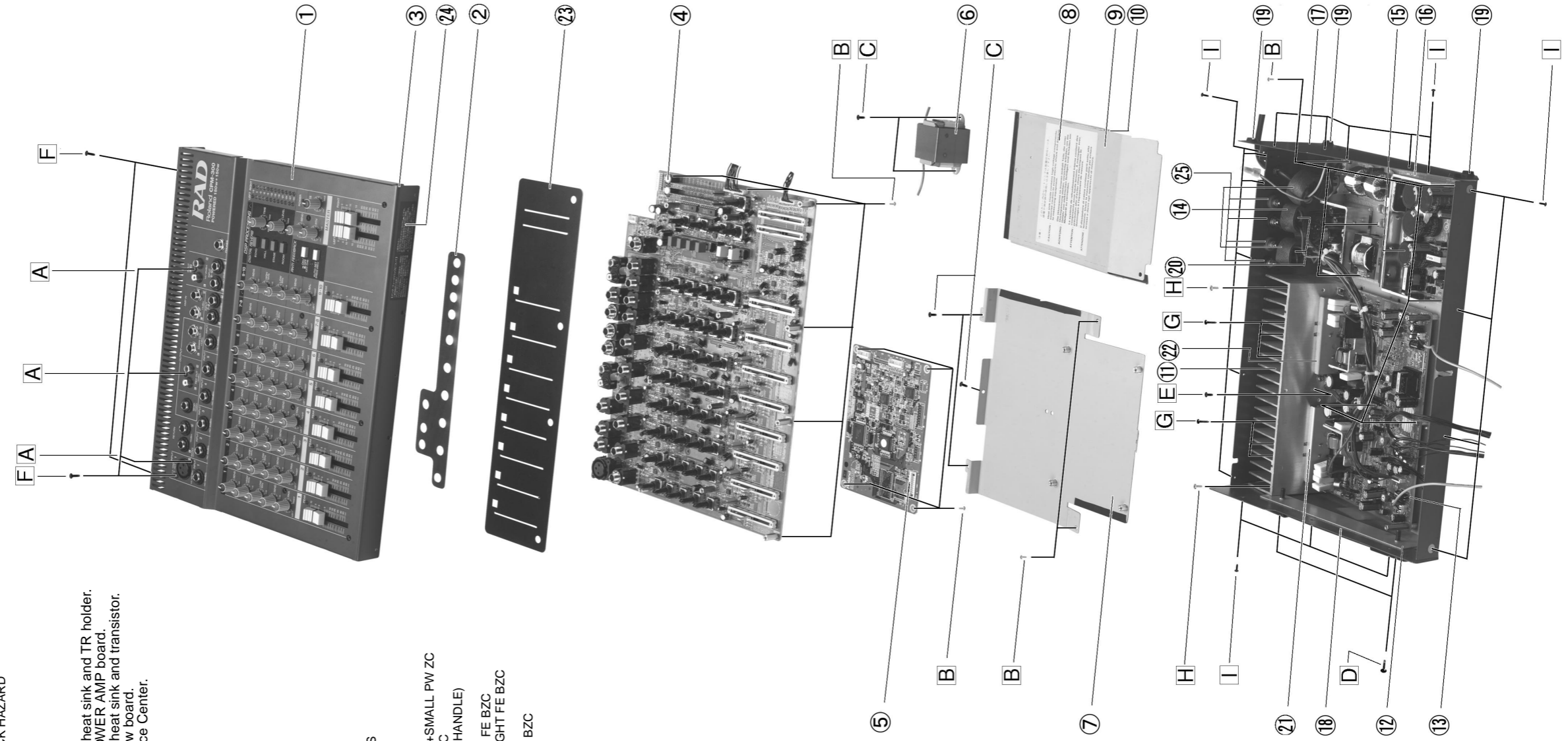


EXPLODED VIEW

DESCRIPTION

NO. PART CODE PART NAME

- ① G2817129 FRONT PANEL
- ② G2257120 JACK COVER
- ③ G2247105 DUST COVER
- ④ 71019478 MIXER ASSY
NOTE: Replacement MIXER ASSY includes the JACK BOARD
- ⑤ 71019489 EFFECT BOARD
- ⑥ F244920601 CHOCK TRANS
- ⑦ G2247103 SHIELD COVER A
- ⑧ G2537721 LABEL
- ⑨ G2247104 SHIELD COVER P
- ⑩ G2257117 INSULATING SHEET TOP
- ⑪ G2467702 HEATSINK
- ⑫ G2127103 HANDLE HOLDER
- ⑬ 71019490 POWER AMP BOARD
NOTE: Replacement POWER AMP board does not include a heat sink and TR holder. Remove the heat sink and TR holders from the old POWER AMP board. Apply silicone grease on the contacting surface of the heat sink and transistor. Then, attach the heat sink and TR holders onto the new board. The silicone grease is available from the Roland Service Center. (Silicone grease KS-64, P/N 17049573)
- ⑭ 00451567 GASKET CHASSIS (S)
- ⑮ 01456190 SWTNG REG PS BOARD 100V
- ⑯ 01456201 SWTNG REG PS BOARD 117V
- ⑰ 01456212 SWTNG REG PS BOARD 230V
- ⑱ 01671767 SWTNG REG PS BOARD 240V
- ⑲ G2257118 INSULATING SHEET BOTTOM
- ⑳ G2817128 BOTTOM CHASSIS
- ㉑ 12319402 HANDLE
- ㉒ 12359137 RUBBER FOOT
- ㉓ 01677201 FERRITE-CORE
- ㉔ G2207375 TR HOLDER L
- ㉕ G2207376 TR HOLDER R
- ㉖ G2247401 VR COVER
- ㉗ G2537817 LABEL
- ㉘ F2369808 COVER
- ㉙ 40011201 SCREW M3X8
- ㉚ 40013056 SCREW M3X6
- ㉛ 40011056 SCREW M3X6
- ㉜ 40010478 SCREW M5X25
- ㉝ 22155548 BOSS NUT
- ㉞ 40011101 SCREW M3X8
- ㉟ 40011089 SCREW M3X14
- ㊱ 40011434 SCREW M3X8
- ㊲ 40011090 SCREW M3X6



- AF EXPLANATIONS
- SR-4
- PAN P-TITE FE BZC
- PAN MACHIN W/SW+SMALL PW ZC
- BINDING B-TIGHT ZC
- OVAL FE BZC (FOR HANDLE)
- 215-548
- BINDING TAPITE-B FE BZC
- BINDING HEAD B-TIGHT FE BZC
- PAN SEMS FECM
- BINDING TAPITE B BZC

PARTS LIST

SAFETY PRECAUTIONS:
The parts marked Δ have safety-related characteristics. Use only listed parts for replacement.

SAFETY PRECAUTIONS:
The parts marked Δ have safety-related characteristics. Use only listed parts for replacement.

QTY	PART NUMBER	DESCRIPTION	MODEL NUMBER
Ex. 10	22575241	Sharp Key	C-20/50
15	2247017300	Knob (orange)	DAC-15D

Failure to completely fill the above items with correct number and description will result in delayed or even undelivered replacement.

NOTE: The parts marked # are new. (initial parts)

PAB → POWER AMP ASSY

EB → EFFECT BOARD

MIX → MIXER ASSY

CASING

#	G2817128	BOTTOM CHASSIS	
#	G2247105	DUST COVER	
#	G2247103	SHIELD COVER A	
#	G2247104	SHIELD COVER P	
#	G2247401	VR COVER	
	12359137	FOOT	SJ-5012 BLK
	22355334	FOOT MKS	
	12319402	HANDLE H-20	
#	G2127103	HANDLE HOLDER	
#	G2817129	FRONT PANEL	

CHASSIS

	00451567	GASKET CHASIS S	
#	G2467702	HEATSINK	
#	G2467109	HEATSINK S L	
#	G2467108	HEATSINK S R	
#	G2207375	TR HOLDER L	
#	G2207376	TR HOLDER R	
#	G1667101	TR HOLDER	
#	G2257117	INSULATING SHEET TOP	
#	G2257118	INSULATING SHEET BOTTOM	
	12169359	LED SPACER	LDS-140G 216-359

KNOB, BUTTON

#	01671723	BUTTON MCG	
	2247064700	BUTTON 247-647	
	01349423	U S-KNOB M1 LCG DCG	
#	01452445	U R-KNOB M1 LCG BLU	
#	01452467	U R-KNOB M1 LCG BLK	
#	01452478	U R-KNOB M1 LCG RED	
#	01452489	U R-KNOB M1 LCG GRN	

SWITCH

#	01453045	PUSH SWITCH	SPEA41	SW2 on MIX
#	Δ 01457190	SEESAW SWITCH	SDDJF1003A	
	13129376	PUSH SWITCH	SPEA12 4 circuit	SW1 on MIX
	13129380	PUSH SWITCH	SPEA12 2 circuit non-lock	SW3 on MIX

JACK, SOCKET

#	F3429104	RCA(PIN) JK0200560N	RCA(PIN) JK0200560N	JK903,JK2 on MIX
#	01453123	NC3FAV2-0	CANNON	JK102 on MIX
#	F3449114	JY-6353A-02-130	JACK	JK3-6 on MIX / JK2001,2002 on SJB
#	01349045	JY-6353A-02-250	JACK	JK1, 101 on MIX
#	01673712	JY-6353-01-130	JACK	JK7-9,701,702,901,902,201,301,401,501,601 on MIX

POWER SUPPLY UNIT

#	Δ 01456190	SWTNG REG PS BOARD 100V	
#	Δ 01456201	SWTNG REG PS BOARD 117V	
#	Δ 01456212	SWTNG REG PS BOARD 230V	
#	Δ 01671767	SWTNG REG PS BOARD 240V	
#	Δ F244920601	CHOCK TRANS	230V ONLY

PWB ASSY

#	\square 71019489	EFFECT BOARD	
#	71019478	MIXER ASSY	NOTE: Replacement MIXER ASSY includes the JACK BOARD
#	71019490	POWER AMP BOARD	NOTE: Replacement POWER AMP board does not include a heat sink and TR holder. Remove the heat sink and TR holders from the old POWER AMP board. Apply silicone grease on the contacting surface of the heat sink and transistor. Then, attach the heat sink and TR holders onto the new board. The silicone grease is available from the Roland Service Center. (Silicone grease KS-64, P/N 17049573)

IC

#	01453078	HD6433041F MASK V1.00	CPU MASK	
	01236401	TMS57070FFT	DSP	
	01126778	24LC01BT-I/SN	EEPROM	IC1 on EB
#	01457134	NN514260-50(P40SJ-2B)	DRAM	IC5 on EB
	01126767	UDA1309H	AD/DA	IC16, 18 on EB"
	00127490	TC7W08F(TE12L)		IC9 on EB
	00232634	TC7W74F(TE12L)		IC8 on EB
	15249111	TC7WU04F(TE12L)		IC6 on EB
	01125012	NJM4556AM	OP AMP	IC3 on MIX
#	01453056	UPC1099GS	DC/DC CONVERTER	IC7, 10 on PAB
	15289105	UPC4570G2-E2	OP AMP	IC6,8,9,11 on PAB/IC1,2,4-8,101,102,201,301,302,401,501,502,601,701-703,901-903 on MIX/IC21,17 on EB
	01344056	SI-8501L	REGULATOR	IC3 on PAB
	15199209	NJM7815FA		
	15199208	NJM7915FA		
	15199245J0	NJM7812FA		
	15289402	TA78L05F	REGULATOR	IC15 on EB
	15219188	BA683A	LED DRIVER	IC9,10 on MIX
	15289123	M51953AFP-600C	RESET IC	IC10 on EB
#	01670178	P873-G35-552	PHOTO CUPLR	IC12,13 on PAB

TRANSISTOR

	01239990	2SC4117-GR	TRANSISTOR	Q18,59,60,64,65,67,74,82,83,88,92,99 on PAB
#	01452978	2SK2289-4100	TRANSISTOR PW MOSFET	Q85, 56 on PAB
#	01452989	2SK2279-4061	TRANSISTOR PW MOSFET	Q47, 52 on PAB
#	01452990	2SJ365-4061	TRANSISTOR PW MOSFET	Q43, 48 on PAB
#	01453001	2SJ376-4100	TRANSISTOR PW MOSFET	Q62, 45 on PAB
#	01455889	2SA1145-Y	TRANSISTOR	Q3,76 on PAB
#	01455890	2SC2705-Y	TRANSISTOR	Q11,80 on PAB
#	01457112	2SB1236ATV2P	TRANSISTOR	Q46,51 on PAB
#	01457123	2SD1857ATV2P	TRANSISTOR	Q49,44 on PAB
	15119156	2SA1358-Y	TRANSISTOR	Q12,37 on PAB
	15119715	2SA1673-P -15A/-180V/85W	TRANSISTOR	Q13,38 on PAB
	15129421	2SC3421-Y	TRANSISTOR	Q1,7,26,79 on PAB
	15129623	2SD667CTZ	TRANSISTOR	Q23 on PAB
	15129723	2SC4388-P 15A/180V/85W	TRANSISTOR	Q2,27 on PAB
	15309104	2SA1586-GR	TRANSISTOR	Q10,22,24,35,41,54,89,91 on PAB/C101,201,301,401,501,601,701,901,1101 on MIX
#	15309105	2SA1587-GR(TE85L)	TRANSISTOR	Q9,57,58,61,63,68,71,72,75,77,78,84,86 on PAB
	15319101	2SC2412KR T146	TRANSISTOR	Q5,6 on EB
	15319102	2SC2882-Y(TE12L,C)	TRANSISTOR	Q2 on EB
	15319105	2SC3326-A	TRANSISTOR	Q1-3,51-53,81 on MIX
	15319107	2SC4116-GR	TRANSISTOR	Q4,14,16,20,21,25,29,39,40,53,90 on PAB / Q102,202,302,402,502,602,702,902,1102,1103 on MIX
	15329516	DTC114EKT146	TRANSISTOR	Q82 on MIX

DIODE

#	00129767	RD10M-T1B B2	ZENER DIODE	D68,77 on PAB
	01121323	DA204U	ARRAY DIODE	DA1, 2, 5 on EB
	01122334	MTZJ T-77 20B	ZENER DIODE	D3001-D3010 on PAB
#	01452967	ESAC83M-006(20A)	SCHOTTKY DIODE	DA5, 6 on PAB
#	01563801	RD20MB	ZENER DIODE	D8 on PAB
#	01565667	RD9.1FM B	ZENER DIODE	D29,31,33,36 on PAB
#	01565678	RD5.1M-T2B	ZENER DIODE	D66,71,75,79 on PAB
	15039142	S5688G(TPB5)	RECTIFIER DIODE	D15,50 on PAB
	15339105	DAN202K	ARRAY DIODE	DA101,102,201,202,301,302,401,402,501,502,601,602,701-703,901-903 on MIX
	15339108	DA204K	ARRAY DIODE	DA1,2,4,7 on PAB
	15339314	RD16M-T1BB2	ZENER DIODE CHIP	D20,21,44,45 on PAB
	15339320	RD6.8M-T2B	ZENER DIODE CHIP TAPE	D63,81,83,87 on PAB
#	15339324	RD2.0M-T1BB1	ZENER DIODE	D58,61 on PAB
	15339119T0	1SS352		D1,4,6,7,9,12-14,16-18,25-28,30,32,39-43,46-49,51-54,57,62,64-70,72-74,76,78,80,82,88-93 on PAB
#	01453012	LN88RPX	LED	LED1,13,25,26,101,201,301,401,501,601,701,901 on MIX
#	01453023	LN48YPX	LED	LED2-4,14-16 on MIX
#	01453034	LN38GPX	LED	LED5-12,17-24,27 on MIX

RESISTOR			
#	01230201	RSS2 L15 10 OHM J	MTL.OXIDE RESISTOR R11,19, 80, 88 on PAB
#	01561745	MCR25 JZH J 0R0	MTL.FILM RESISTOR RJ1-4, 6-15, 20
#	01563956	MCR50 JZH J 331	MTL.FILM RESISTOR R135,146,151,188,196,206 on PAB
#	01565556	BPR58F 0.47 OHM K	MTL.PLATE RESISTOR R9,10,22,23,78,79,91,92,162,176 on PAB
#	01565623	RF25S 47 OHM J	FUSE RESISTOR R254,264,318,342 on PAB
#	01565634	RF25S 4.7 OHM J	FUSE RESISTOR R256,263,321,338 on PAB
#	01565645	RF25S 330 OHM J	FUSE RESISTOR R259,328 on PAB
#	01565656	RF25S 820 OHM J	FUSE RESISTOR R257,261,262,323,325,335,336,344 on PAB
#	01670167	RSS2 L15 100 OHM J	MTL.OXIDE RESISTOR R310,315,349,350 on PAB
#	01673890	RF25S 18 OHM J	FUSE RESISTOR R266 on PAB
#	15229936	PTH9M04BC471TS2F333	POSISTOR R68 on PAB
#	15399916	1/2W MCR50-181J	CHIP RESISTOR R356, 357 on PAB
#	15399926	MCR50-101J	CHIP RESISTOR R71, 21 on MIX
#	15399952	1/2W MCR50JZH470	CHIP RESISTOR R44 on EB
#	00346690	RPCE9A682JAG7A	R-ARRAY RA5, 7 on EB
#	15399957	RPCB8C103J5 10KX4	R-ARRAY RA1, 8, 9 on EB
#	15399965	RPCE9A103JAG7A	R-ARRAY RA3, 4 on EB
#	15399997	RPCB8C101J5 100X4	R-ARRAY RA14, 13 on EB
#	15399349	RPC10T 100 J 1/10W	MTL. FILM RESISTOR
#	15399411	RPC10T 392 J 1/10W	MTL. FILM RESISTOR
#	15399419	RPC10T 822 J 8.2K OHM 1/10W	MTL. FILM RESISTOR
#	15399445	RPC10T 104 J 1/10W	MTL. FILM RESISTOR
#	15399417	RPC10T 682 J 1/10W	MTL. FILM RESISTOR
#	15399413	RPC10T 472 J 1/10W	MTL. FILM RESISTOR
#	15399463	RPC10T 564 J 560K 1/10W	RESISTOR MTL. FILM
#	15359436R0	GRM40B102K50PT10 1000PF/50V	CERAMIC CAPACITOR
#	15399383	RPC10T 270 J	RESISTOR
#	15399385	RPC10T 331 J 1/10W	MTL. FILM RESISTOR
POTENTIOMETER			
#	01451734	EVJ YK6 F03 403	ROTARY POT. VR705, 905 on MIX
#	01451745	EVJ YL5 F03 A24	ROTARY POT. VR3 on MIX
#	01451756	EVJ Y15 F03 B24	ROTARY POT. VR5 on MIX
#	01451767	EVJ Y96 F03 B24	ROTARY POT. VR702, 703, 902, 903 on MIX
#	01451778	EVJ Y15 F03 B54	ROTARY POT. VR701, 704, 901, 904 on MIX
#	01451789	EVJ YK5 F03 622	ROTARY POT. VR101, 201, 301, 401, 501, 601 on MIX
#	01451790	EVU F2L FL3 B24	ROTARY POT. VR4, 6, 7 on MIX
#	01451801	EVU F1L FL3 B24	ROTARY POT. VR102,103,105,202,203,205,302,303,305, 402, 403, 405, 502, 503, 505, 602, 603, 605 on MIX
#	01451812	EVU F0L FL3 B54	ROTARY POT. VR104, 204, 304, 404, 504, 604 on MIX
#	01563356	RS45111A6	SLIDE POT. VR1,2,106,206,306,406,506,606 on MIX
#	01563367	RS45112A6	SLIDE POT. VR706,906 on MIX
#	01565212	RH063MCS3R (4.7K B)	TRIMMER VR5, 6 on PAB
#	13299251	RH063MCS2R (470 B)	TRIMMER VR1,7 on PAB
CAPACITOR			
#	01563701	GRM40CH220J200	CERAMIC CAPACITOR C4,18,139,148 on PAB
#	01563712	ECQV1H105JL3	POLYEST. CAPACITOR C10,34 on PAB
#	01563734	ECA1JHG102E	CHEMICAL CAPACITOR C49,133 on PAB
#	01563767	ECQV1J104JM3	POLYEST. CAPACITOR C121,128,130,137 on PAB
#	01563778	DE509-979R332K250	CERAMIC CAPACITOR C160,161,164,165 on PAB
#	01563789	ECQE1335KF	POLYEST. CAPACITOR C162,163 on PAB
#	01564045	ECA1JHG471E	CHEMICAL CAPACITOR C136,129 on PAB
#	01678289	GRM40CH100D200PT	CERAMIC CAPACITOR C9,146 on PAB
#	13649102M0	ECEA1HN100SB	CHEMICAL-BP CAPACITOR C23, 47 on PAB
#	13649103M0	ECEA1CN100SB	CHEMICAL-BP CAPACITOR C22, 46 on PAB
INDUCTOR, COIL, FILTER			
#	00452167	0.7 micro H	COIL L1, 2 on PAB
#	01455912	OH14-865-073	CHOCOIL L11,13 on PAB
#	F2449206	45 micro H	CHOCOIL For 230V Only
#	00907856	FERRITE-BEAD	BLM21A601SPT
#	01340834	FERRITE-BEAD	EXCML20A390 L3-8 on PAB / L3, 53 on MIX
#	01565578	FERRITE-BEAD	N1608Z601T01 L81,82,83,101,190,201,301,401,501,601,701,721,901,921,990, 991 on MIX
#	01677201	FERRITE-CORE	ESD-R-19SD
#	12449347	FERRITE-BEAD	EXC ELDR35V L9,10,12,14-16 on PAB
CRYSTAL, RESONATOR			
#	00901912	MA-406 24.576MHZ TE24	CRYSTAL X1 on EB
RELAY			
#	01565545	JY1AJN-DC24V	RELAY RL1,2 on PAB
CONNECTOR			
#	13369586	B3P-VH JST	CONNECTOR CN11 on PAB
#	13369924	53253-0210	WAFER CN3,9 on PAB
#	13369925	53253-0310	WAFER CN7,15 on PAB
#	13369928	53253-0610	WAFER CN13,16 on PAB
#	13369929	53253-0710	WAFER CN12 on PAB
#	13369930	53253-0810	WAFER CN4 on PAB, CN10 on MIX
#	13369931	53253-0910	WAFER
#	13369934	53253-1210	WAFER CN3 on MIX
#	13369940	53254-0410	WAFER CN1 on EB / CN1 on MIX
#	13369943	53254-0710	WAFER CN5 on EB
#	13369944	53254-0810	WAFER CN8 on EB / CN2 on MIX

WIRING				1336994853254-1210 WAFERCN3 on EB
#	01564945	SRA-200E WIRING 12		
#	01564956	SRA-200E WIRING 13		
#	01564967	SRA-200E WIRING 14		
#	G3417149	WIRING 01		
#	G3417150	WIRING 02		
#	G3417151	WIRING 03		
#	G3417152	WIRING 04		
#	G3417153	WIRING 05		
#	G3417154	WIRING 06		
#	G3417155	WIRING 07		
#	G3417156	WIRING 08		
#	G3487407	WIRING 09		
#	G3487408	WIRING 10		
#	G3487409	WIRING 11		
#	G3487410	WIRING 12		
#	G3487411	WIRING 13		
#	G3487412	WIRING 14		
AC CORD ASSY				
#	71D193A100	AC CORD ASSY 100V		
#	71D193A200	AC CORD ASSY 117V		
#	71D193A400	AC CORD ASSY 230V		
#	71D193A500	AC CORD ASSY 230VE		
#	71D193A600	AC CORD ASSY 240VA		
SCREW				
#	40010478	OVAL MACHINE SCREW M5x25 BZC		
#	40011056	BINDING TAPTITE B 3x6 ZC		
#	40011067	BINDING TAPTITE B 3x8 ZC		
#	40011089	BINDING TAPTITE B 3x14 ZC		
#	40011090	BINDING TAPTITE B 3x6 BZC		
#	40011101	BINDING TAPTITE B 3x8 BZC		
#	40011201	PAN TAPTITE P 3x8 BZC		
#	40011434	PAN MACHINE SCREW W/SW M3x8 ZC		
#	40013056	PAN MACHINE SCREW W/SW+SMALL PW M3x6 ZC		
#	22155548	BOSS NUT M3/M3 L25		
#	40016689	JACK NUT #704 BLACK		
#	40123545	JACK NUT HLJ0999-01-240		
#	40011778	CONICAL SPRING NUT M3 ZC		
#	40019956	SPRING NUT M4		
#	40016412	JACK WASHER 9x13.5x0.45		
#	40016690	COLOR WASHER #19 GREEN		
#	40129956	PLAIN WASHER 4x10x0.8 ZC		
PACKING				
#	G2617149	PACKING CASE		
#	G2237602	PAD L		
#	G2237603	PAD R		
MISCELLANEOUS				
#	13459171	CHECKER CHIP	RCS00000C	TP2,3 on PAB
#	40341023	CHECK-POINT	ST-4-2	TP1, 4 on PAB
#	G2537721	LABEL PS ELECTRIC SHOCK HAZARD		
#	G2537817	LABEL AF 'EXPLANATIONS		
#	F3459107	SPEAKER TERMINAL		
#	12199584	GROUNDING TERMINAL M1698		
#	F2369808	COVER	SR-4 (230V 240V only)	
#	G2257120	JACK COVER		
ACCESSORIES (STANDARD)				
#	G6017274	OWNER'S MANUAL ENGLISH/JAPANESE		

TEST MODE

CPM-300 Adjustment

- Checking operation of high-efficiency power amplifiers

The CPM-300 has high-efficiency power amplifiers fabricated through the ECOS technology.

This section explains how to check and adjust these high-efficiency amplifiers.

Carry out the checking/adjusting procedure described below whenever the power amp board has been repaired or replaced.

◆ Adjusting ±Va

1. Setup

INPUTS ----- No signal

SPEAKERS ----- Open

MASTER FADERS ----- MIN.

The Effect board can be left removed for the purpose of adjustment because it is not involved in the adjustment.

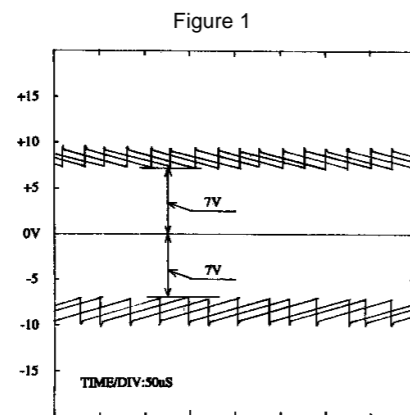
2. Adjustment

Connect the probes of a dual channel oscilloscope across the following points:

- Power amp board
+Va: EMI bead L12 and GND
-Va : EMI bead L14 and GND

Adjust VR5 for +Va and VR6 for -Va so that +7 V and -7 V are obtained, respectively, between the trough of the waveforms and ground reference (DC components).

(See Figure 1.)



Make the exact adjustment. If a voltage is out of spec, it causes undesirable amp operation:

- A higher Va causes the power transistor to generate more heat, decreasing the efficiency.
- A lower Va causes the power transistor to distort the signal.

◆ ±Va waveform specifications

1. Setup

INPUTS ----- Connect CH 1 (INPUT 1) to an audio generator

HIGHs, LOWs ----- Flat

SENDS ----- MIN

PANs ----- Center

SPEAKERS ----- Into 8-ohm loads, LEFT and RIGHT

SENS's, FADERS, MASTER FADERS

----- Adjust as described in the step 2 below.

The Effect board can be left removed for the purpose of adjustment because it is not involved in the adjustment.

2. Monitoring waveforms

Connect the probes from the oscilloscope across the points.

Adjust the frequency and output level (sine wave) of the audio generator and the panel controls SENS's, FADERS and MASTER FADERS so that the output shown in Figs. 2-5 are obtained.

Check the +Va and -Va displayed on the scope against the figures shown in Figs. 2-5.

- Power amp board
+Va: EMI bead L12 and GND
-Va : EMI bead L14 and GND

Fig. 2 SP OUTPUT: 28.3 Vrms, 1 kHz

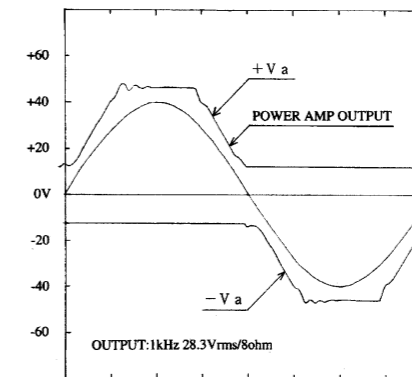


Fig. 3 SP OUTPUT: 28.3 Vrms, 4 kHz

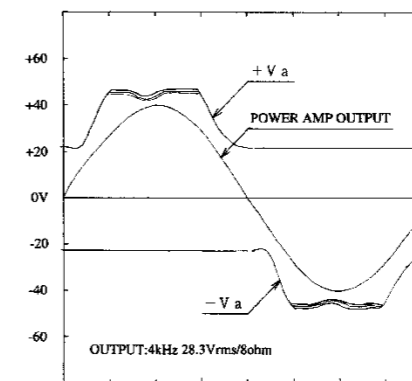


Fig. 4 SP OUTPUT: 28.3 Vrms, 6 kHz

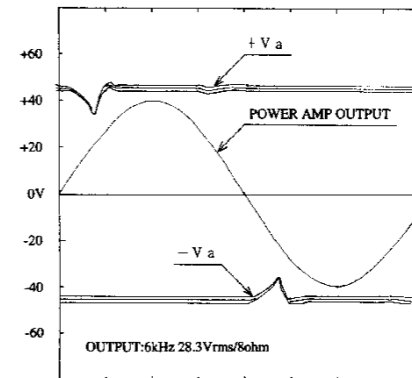
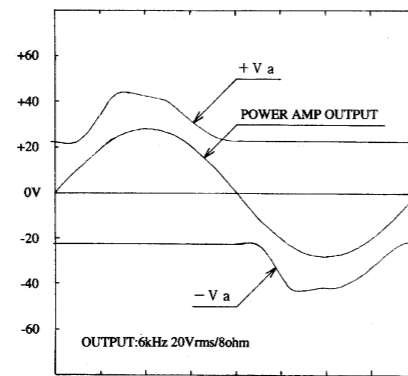


Fig. 5 SP OUTPUT: 20.0 Vrms, 6 kHz



• Adjusting voltage during idling

CAUTION: If the temperature of the heat sink is higher than 30°C, wait until the heat sink becomes cool.

1. Setup

INPUTs ----- No signal
SPEAKERS ----- Open
MASTER FADERS ----- MIN.

The Effect board can be left removed for the purpose of adjustment because it is not involved in the adjustment.

2. Adjustment

For this measurement, connect a voltmeter (digital voltmeter is recommended) across the following points.

Using trial-and-error method, adjust VR1 (CH A) and VR7 (CH B) so that the voltage across the test points reaches +5 mVDC \pm 2mV upon power-up.

• Power amp board

CH A: TP1(+) and R11 lead (TP1 side) (common)
CH B: TP4(+) and R80 lead (TP1 side) (common)

Make the exact adjustment. If a voltage is out of spec, it causes undesirable effects:

- A lower idling voltage increases the total harmonic distortion factor.
- A higher idling voltage causes the transistor to generate more heat, which in turn increases the temperature of the heat sink.

• Circuit description of power amp board

1. Protection circuits

The protection circuit, when activated by the following circuit, turns off output relays RL1 and RL2, shutting off the outputs.

◆ Thermal protection circuit (for amps)

The thermal sensor R68 activates the protection circuit as it detects a temperature of 100°C or higher on the heat sink. The sensor deactivates the circuit when the temperature drops to 90°C and below.

◆ DC sensing circuit (for speakers)

This circuit monitors the DC components in the output to SPEAKERS. When a power output contains DC components of ± 5.5 V or higher, the circuit activates the protection circuit. To check the sensitivity of the circuit, apply a voltage between +3 V and +3.5 V to the test point of CH A/B shown below, and a voltage between -3V and -3.5V to CH A/B. The protection circuit should be triggered.

• Power amp board

CH A test point: TP2 and GND
CH B test point: TP3 and GND

◆ Muting circuit (for speakers)

Triggers the protection circuit for approx. 5 seconds upon power up to suppress pop noises.

2. PC limit circuit (for amps)

The PC limit circuit reduces the output when overloaded or the load is too small (below 2 Ω).

3. Limiter circuit

Upon detecting clipped waveform from a power amp, the circuit reduces the maximum level of the input signal to the power amp: limits the nominal input level range within approx. +12 dB at 1 kHz.

• DSP test mode

◆ test items

1. Version identification and LED

2. Volume

3. Switches

4. Diagnosis

EEPROM, DSP

5. Level balance

Upon successful completion of this test, the unit returns to the normal operation mode.

6. Anti-feedback

This test is performed in the normal operation mode.

◎ Preparation

0. Entering the test mode

Select DIGITAL REVERB, ROOM. Set TIME to MAX and LEVEL to MIN. While holding down the AUTO SET, turn on power.

1. Version identification and LED test

Once in the test mode, the AUTO SET LED lights for 2 seconds. Then, the LED blinks to represent the version number in three digits (1-digit major version and 2-digit minor version). The on-duration and interval between blinks depend on the number to be expressed, as shown below.

0 : turns on for 0.5 sec.

1-9 : blinks at a 0.12 sec. interval, the number of blinks is equivalent of the number to express.

Example: Ver. 1.20 - turns on for 0.5 s, blinks twice and then turns on for 0.5 s. Then, the test program proceeds to the test 2.

2. Volume

The AUTO SET LED turns on indicating the initiation of the test 2.

Set the TIME to MIN and the LEVEL to MAX. The AUTO SET LED turns off and the program proceeds to the test 3.

3. Switches

Press ECHO and verify the lighting AUTO SET LED. In the similar way, press the HALL, STAGE and ROOM in that order and verify the lighting LED upon pressing. The program proceeds to the test 4.

4. Diagnosis

During the self-diagnostics sequence the AUTO SET LED lights. While the LED is lighting, any other operation is not accepted.

4.1. EEPROM

When the test is successful, the program turns proceeds to the test 4.2.

If the test fails, the program lights the LED 3 times and won't proceed to the test 4.2.

4.2. DSP

When the test is successful, the program turns off the LED and proceeds to the test 5. If the test fails, the program lights the LED 4 times and won't proceed to the test 5.

To force the test program to proceed to the test 5, press and hold AUTO SET until the test continues.

5. Level balance

Connect the audio generator to any of channels 1 to 6 and set the audio generator to the value shown below.

Waveform :Sine
 Output level :as appropriate
 Input Level :+4dB
 Frequency :1 kHz

Set the CPM-300 as follows (controls on a channel are for the channel carrying the test signal):

Channel controls
 SENS : +4 dBm (full-counterclockwise)
 HIGH : Center
 LOW : Center
 SEND : Center
 PAN : Center
 FADER:At "0" on the scale

Master controls
 SEND : 0 (full-clockwise)
 FADER : At "0" on the scale
 Connect oscilloscope input to MIXER OUT: L and R

This is to keep a level balance between DSP board output and THRU output.

While repeatedly pressing ANTI FEEDBACK ON/OFF switch, turn TIME knob which should vary the channel L output waveforms on the scope gradually. Adjust TIME knob until the waveform on the scope is maintained almost at the same upon ON and OFF of ANTI FEEDBACK switch. During this adjustment, AUTO SET LED blinks at a slower rate.

Repeat the procedure for the R channel but this time adjust LEVEL knob.

Press AUTO SET to save the settings into memory. The program proceeds to the test 6.

6. Anti-feedback

Connect the audio generator to any of channels 1 to 6 and set the audio generator to the value shown below.

Waveform : Sine
 Output level : As specified in a step
 Frequency : As specified in a step

Set the CPM-300 as follows (controls on a channel are for the channel carrying the test signal):

Channel controls
 SENS : +4 dBm (full-counterclockwise)
 HIGH : Center
 LOW : Center
 SEND : Full-counterclockwise
 PAN : Center
 FADER : At "0" on the scale

Master controls
 SEND : Full-counterclockwise
 FADER : At "0" on the scale
 Connect oscilloscope input to: MIXER OUT L and R

Apply the following steps to the L channel and repeat for the R channel.

6.1 Set the audio generator to the values shown below.

Output level : +4 dBm
 Frequency : 100 Hz

Press ANTI FEEDBACK switch to ON and verify smooth fading of the output.

6.2 Set the audio generator to the values shown below.

Output level : +4 dBm
 Frequency : 1 kHz

Press ANTI FEEDBACK switch to ON and verify smooth fading of the output.

6.3 Set the audio generator to the values shown below.

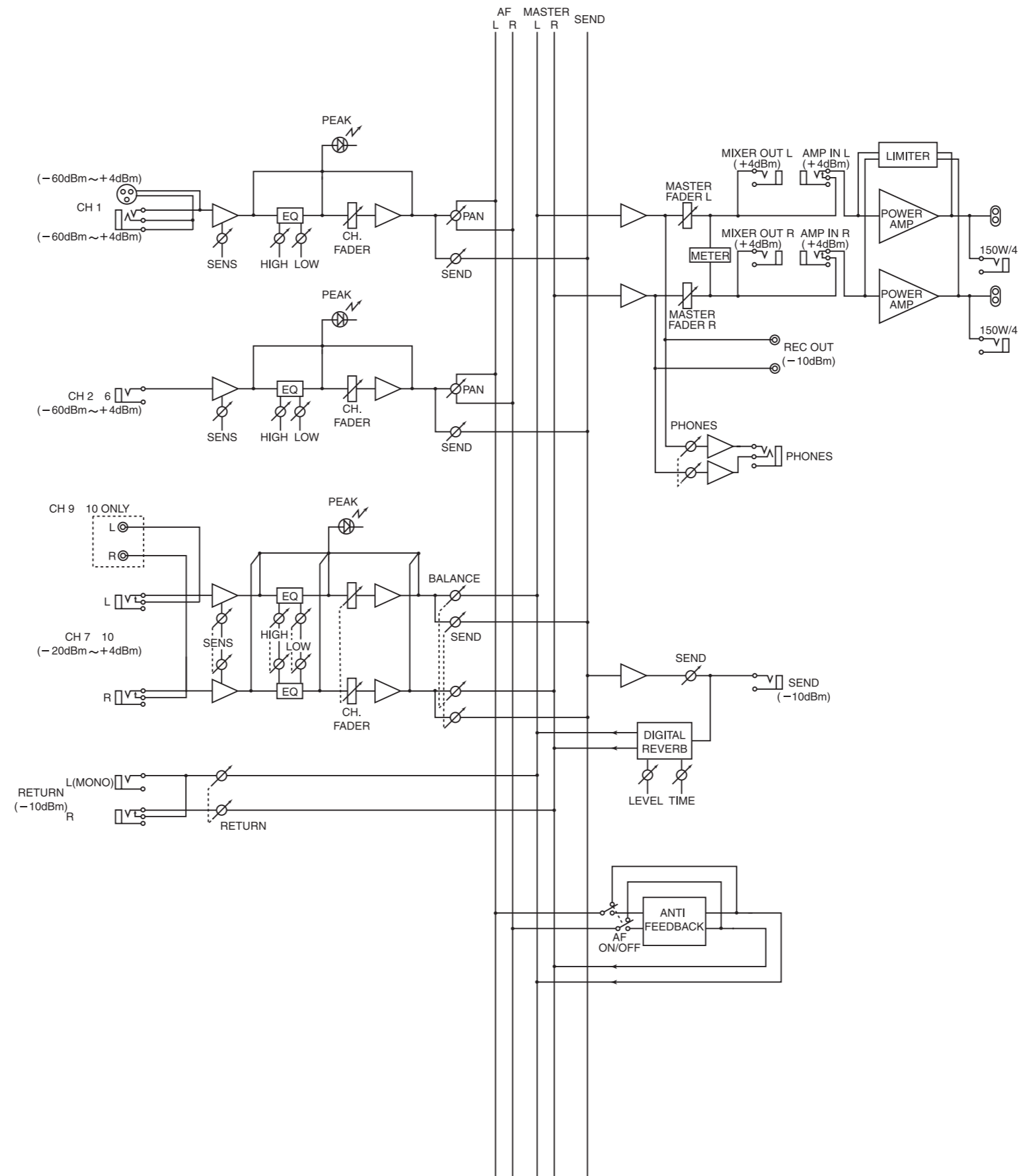
Output level : +4 dBm
 Frequency : 10 kHz

Press ANTI FEEDBACK switch to ON and verify smooth fading of the output.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

A BLOCK DIAGRAM

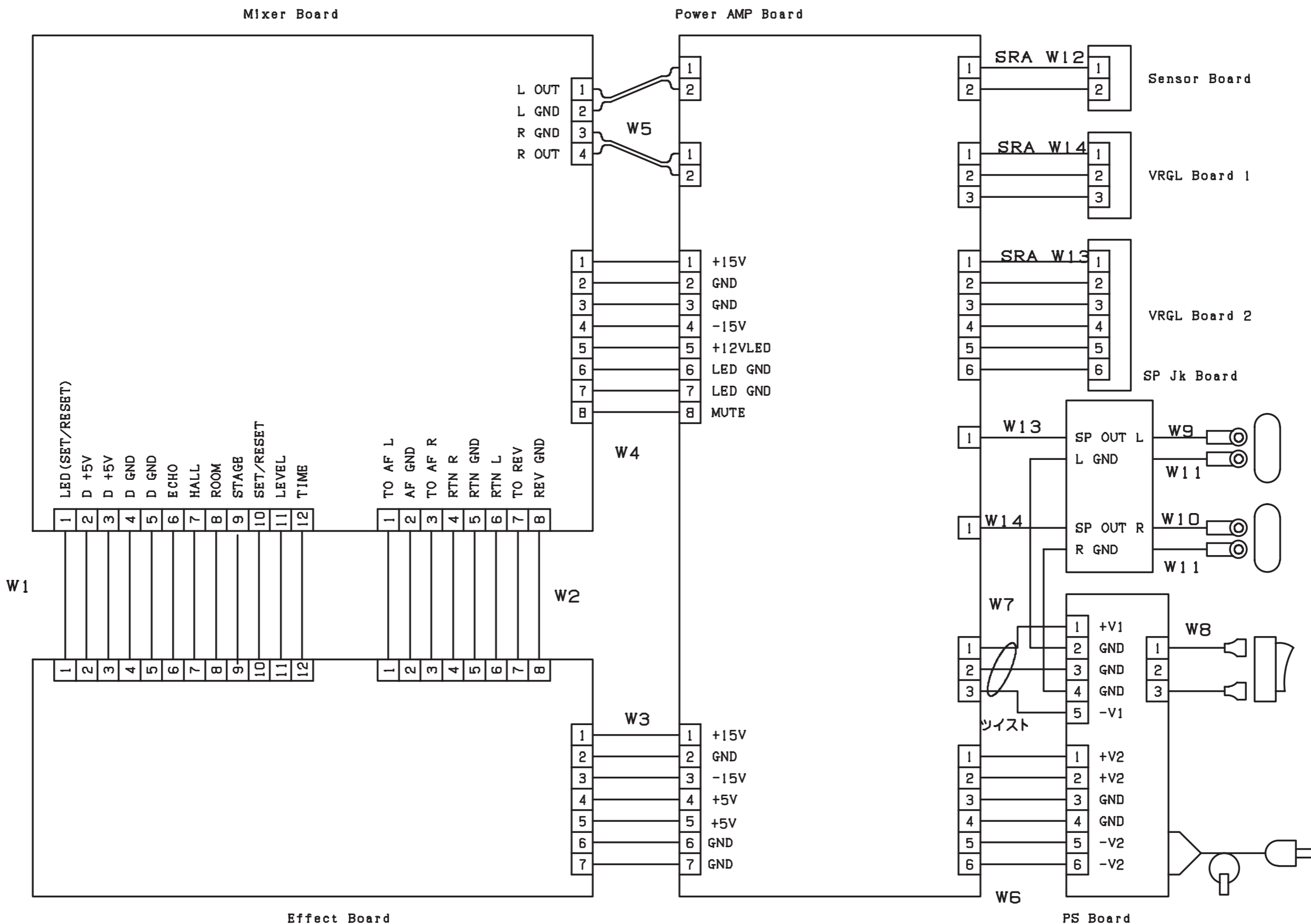
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

A WIRING DIAGRAM

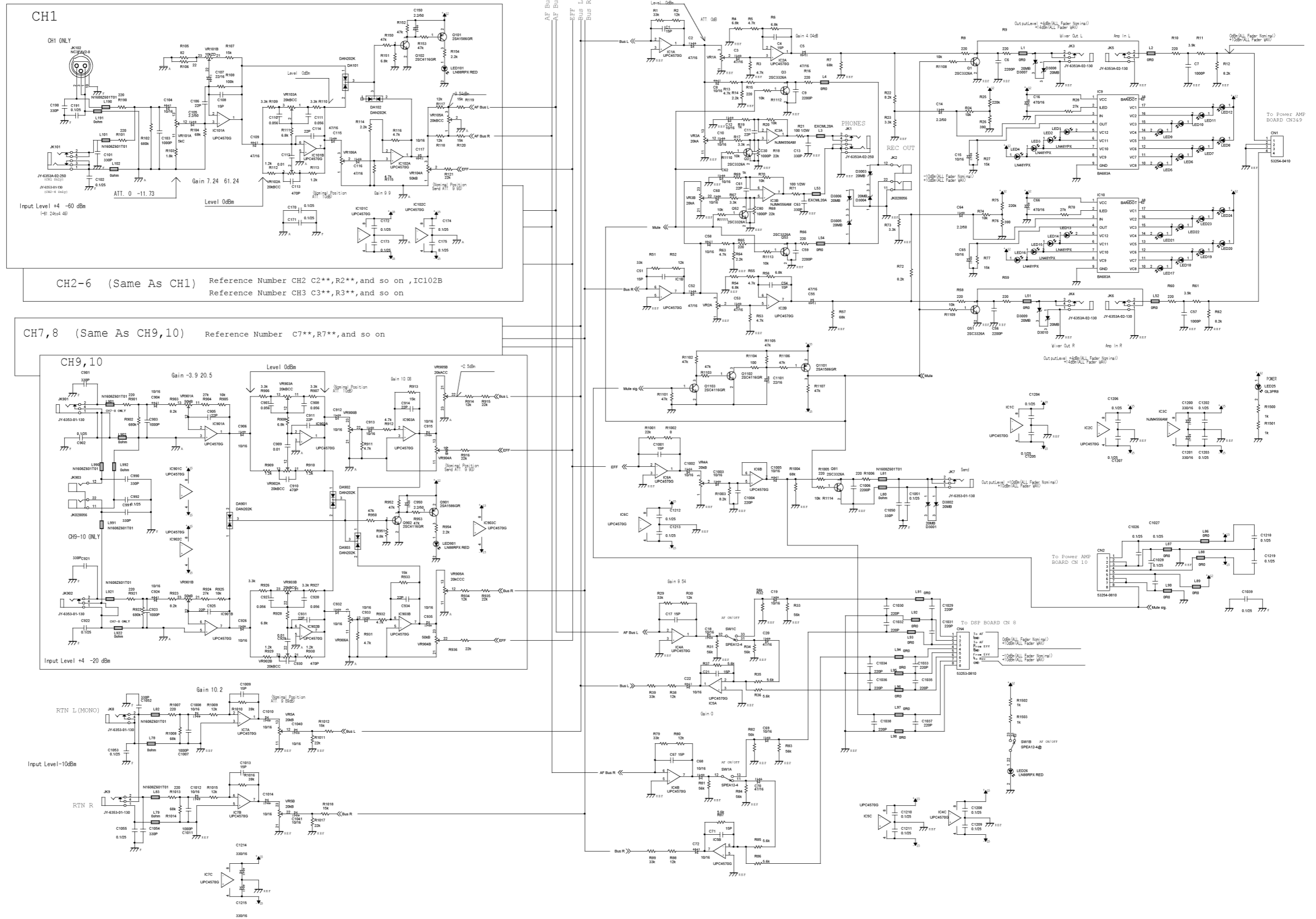
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

A CIRCUIT DIAGRAM
B MIXER BOARD ASSY (71019478)
C MIXER SHEET SCHEMATIC 2-1 SIGNAL SECTION

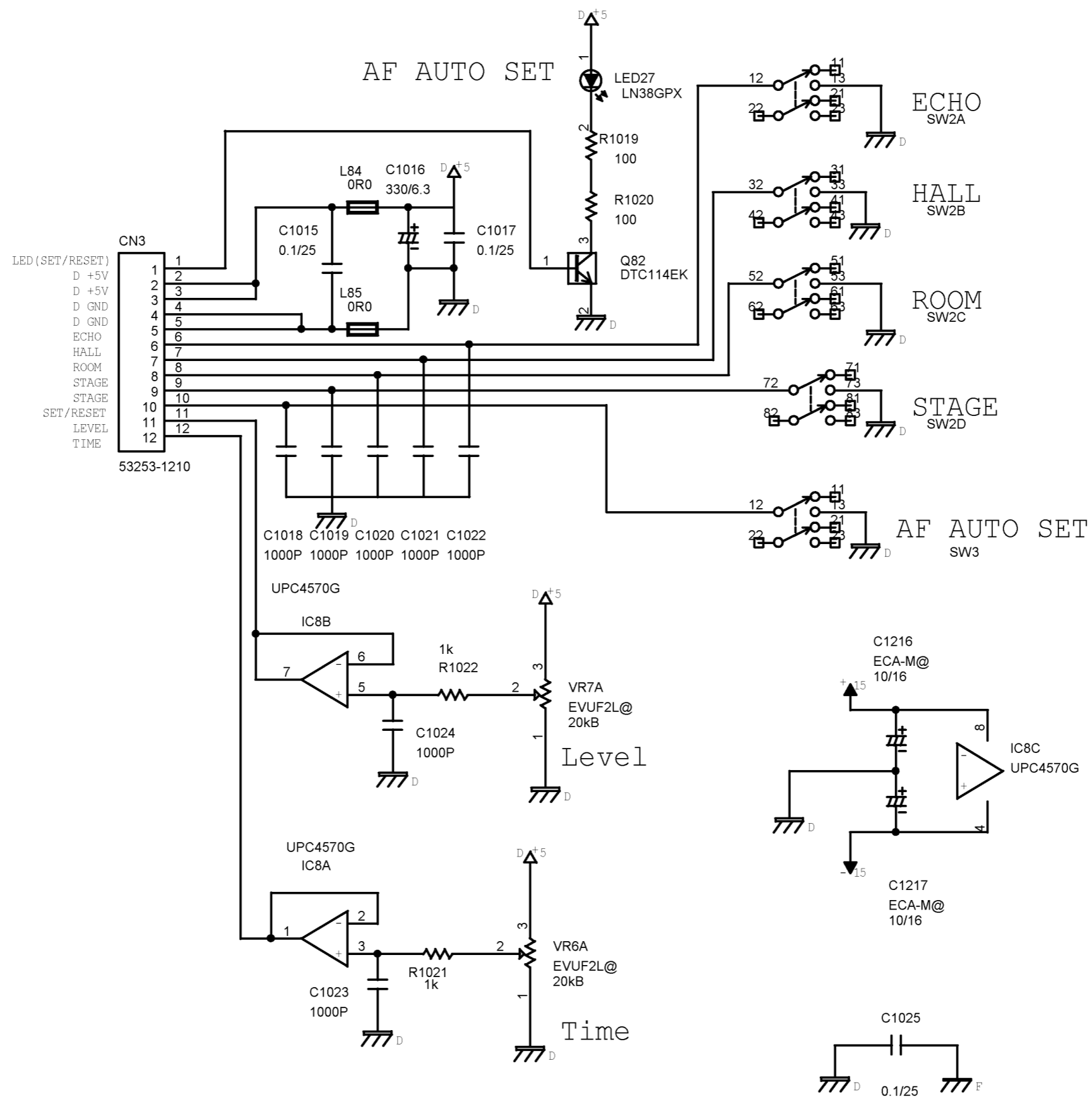
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

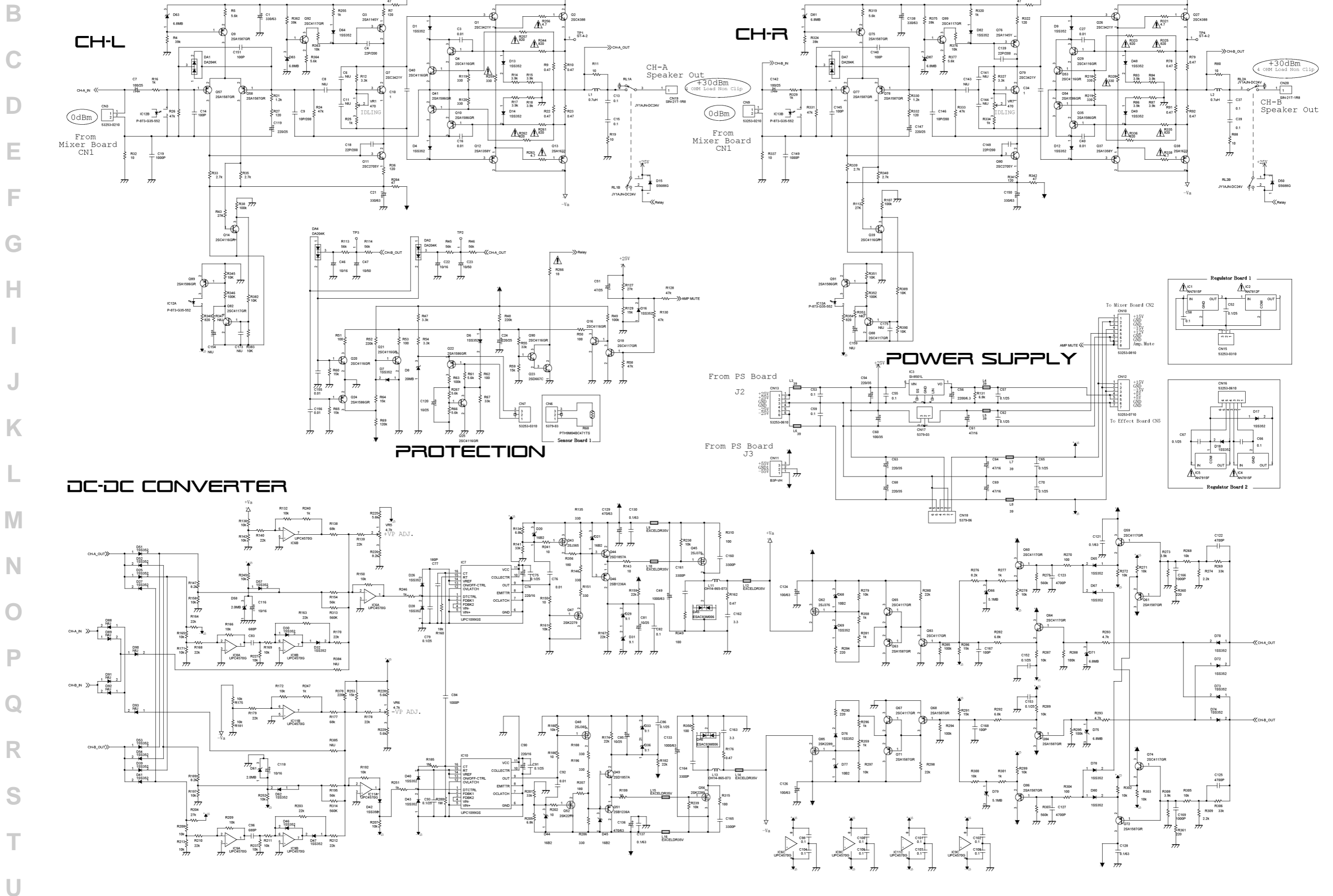
A MIXER SHEET SCHEMATIC 2-2 CONTROL SECTION

B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

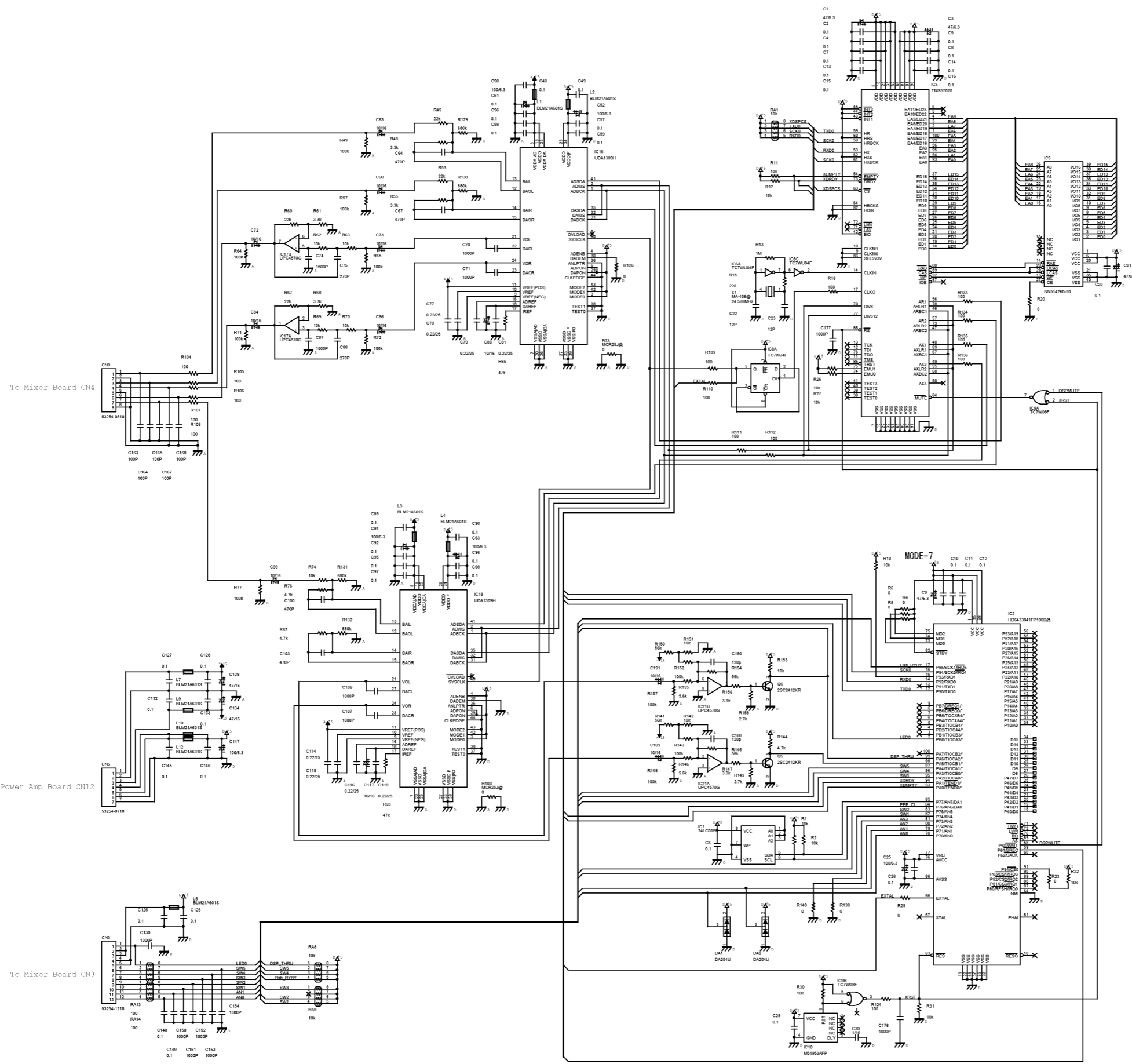
A POWER AMP BOARD ASSY (71019490)



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

A DSP BOARD ASSY

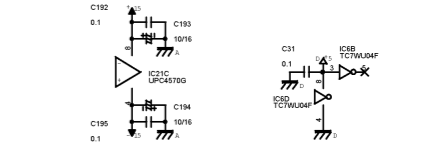
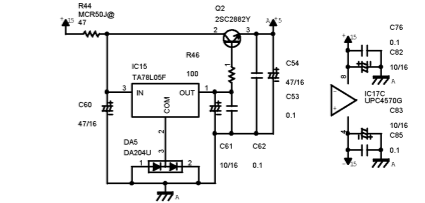
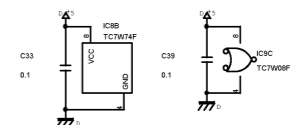
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U



To Mixer Board CN4

From Power Amp Board CN12

To Mixer Board CN3

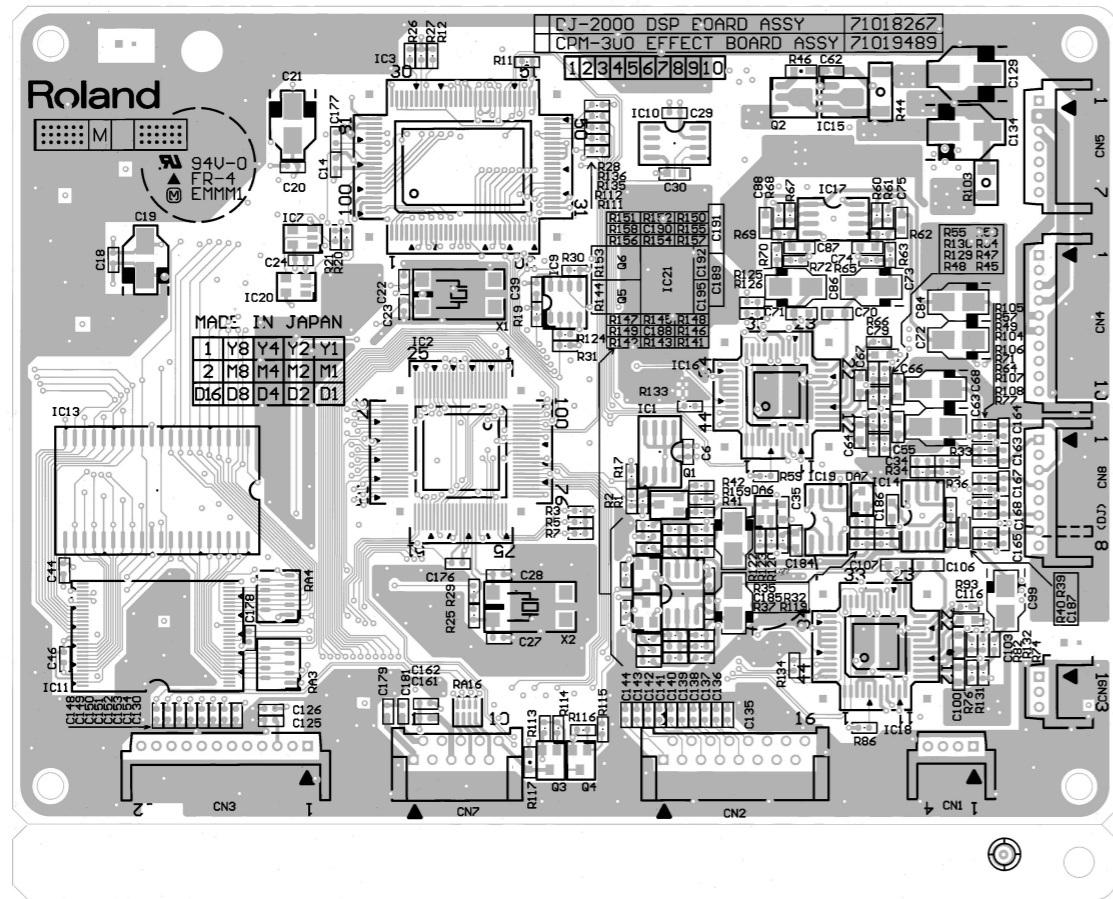


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

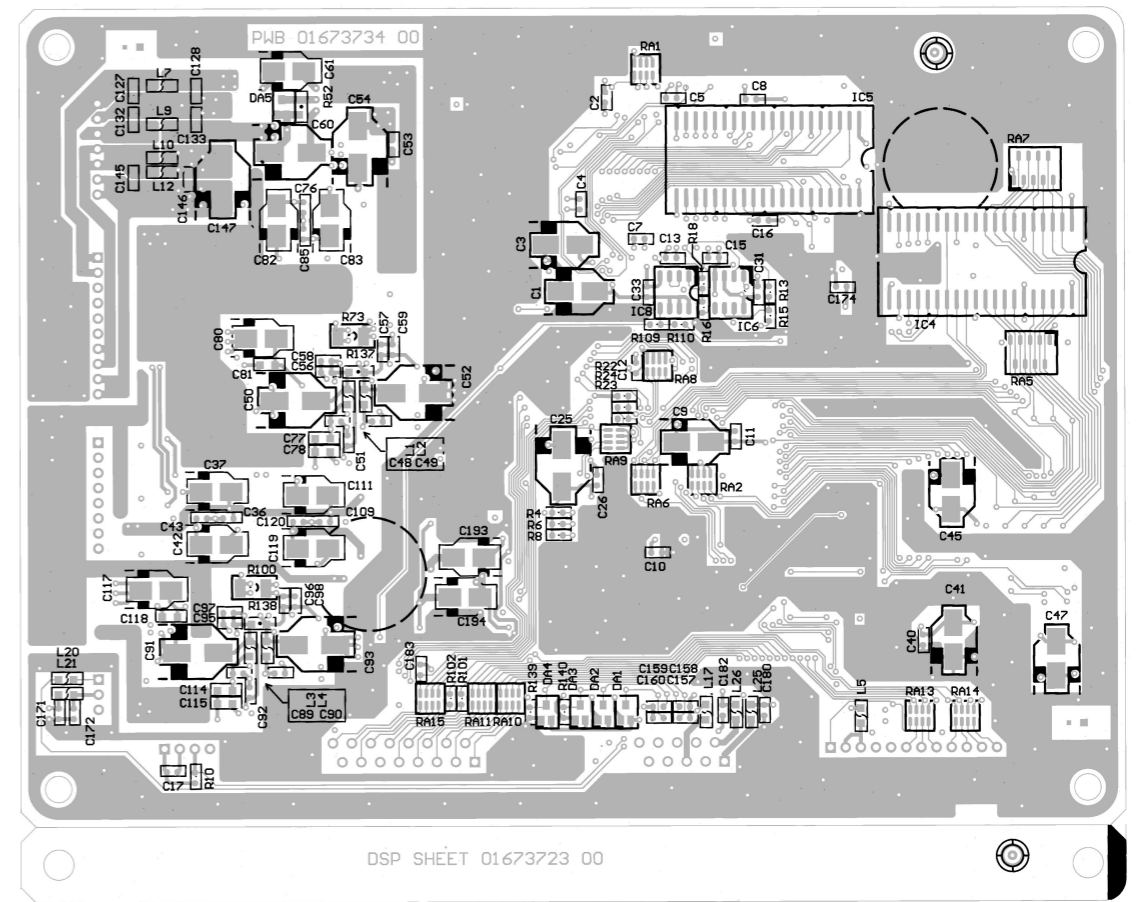
A C I C U I T B O A R D

B E F F E C T B O A R D (7 1 0 1 9 4 8 9)

C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U



View from component side.



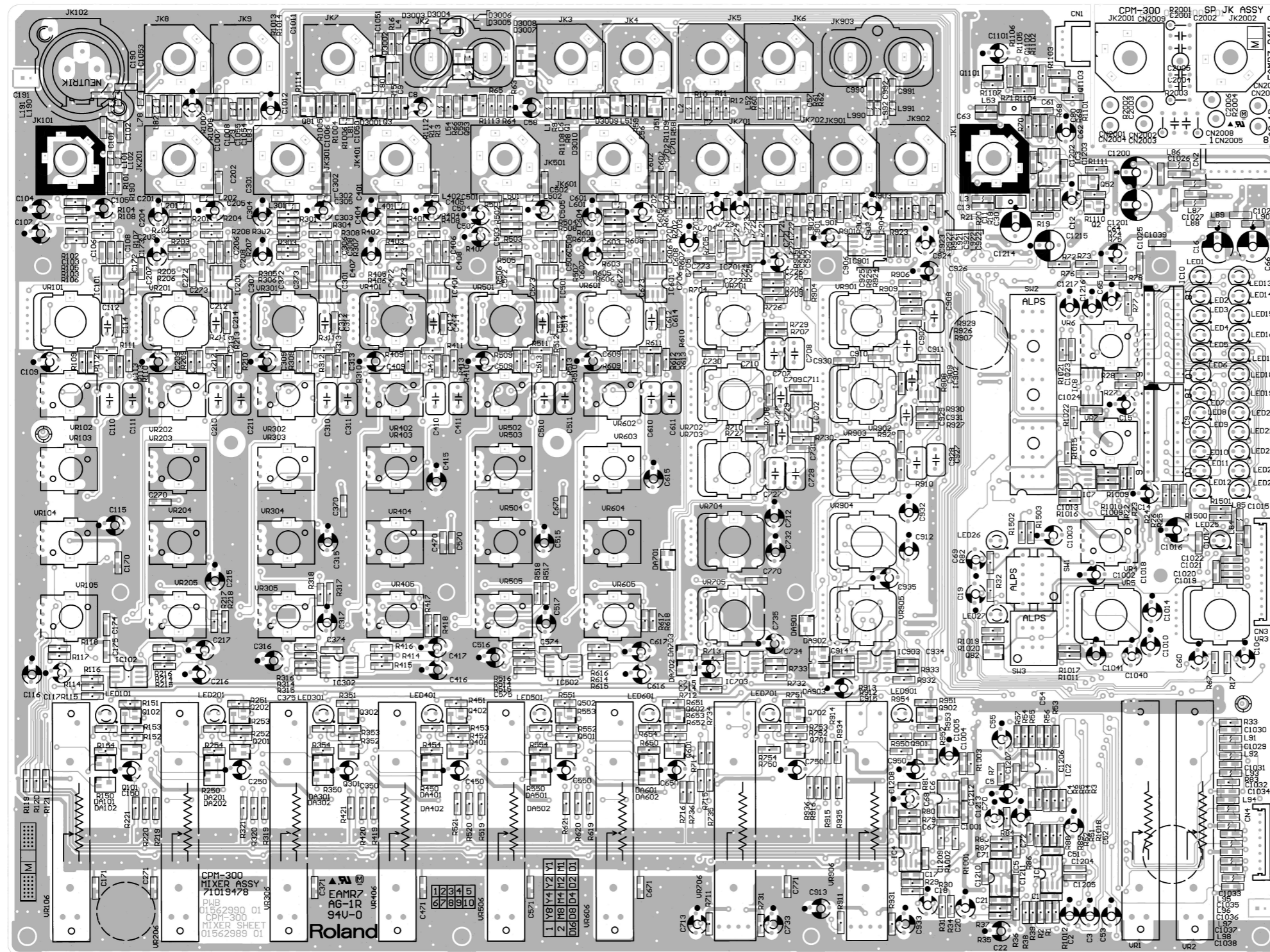
View from foil side.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

A MIXSER BOARD ASSY (71019478) / JACK BOARD ASSY

B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U

JACK BOARD ASSY



MIXER BOARD ASSY (71019478)



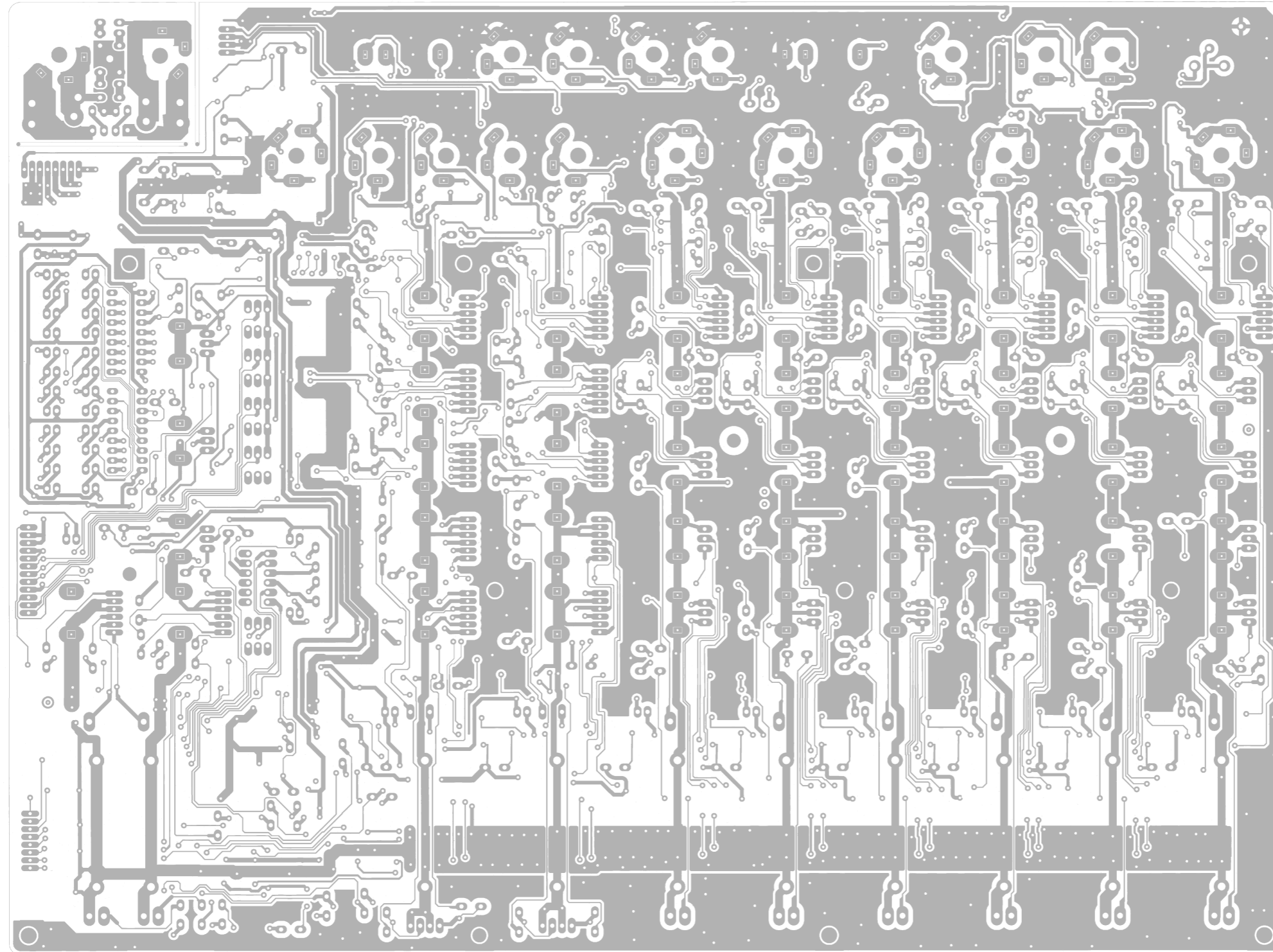
View from component side.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

A MIXSER BOARD ASSY (71019478) /JACK BOARD ASSY

B JACK BOARD ASSY

C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U



MIXER BOARD ASSY (71019478)

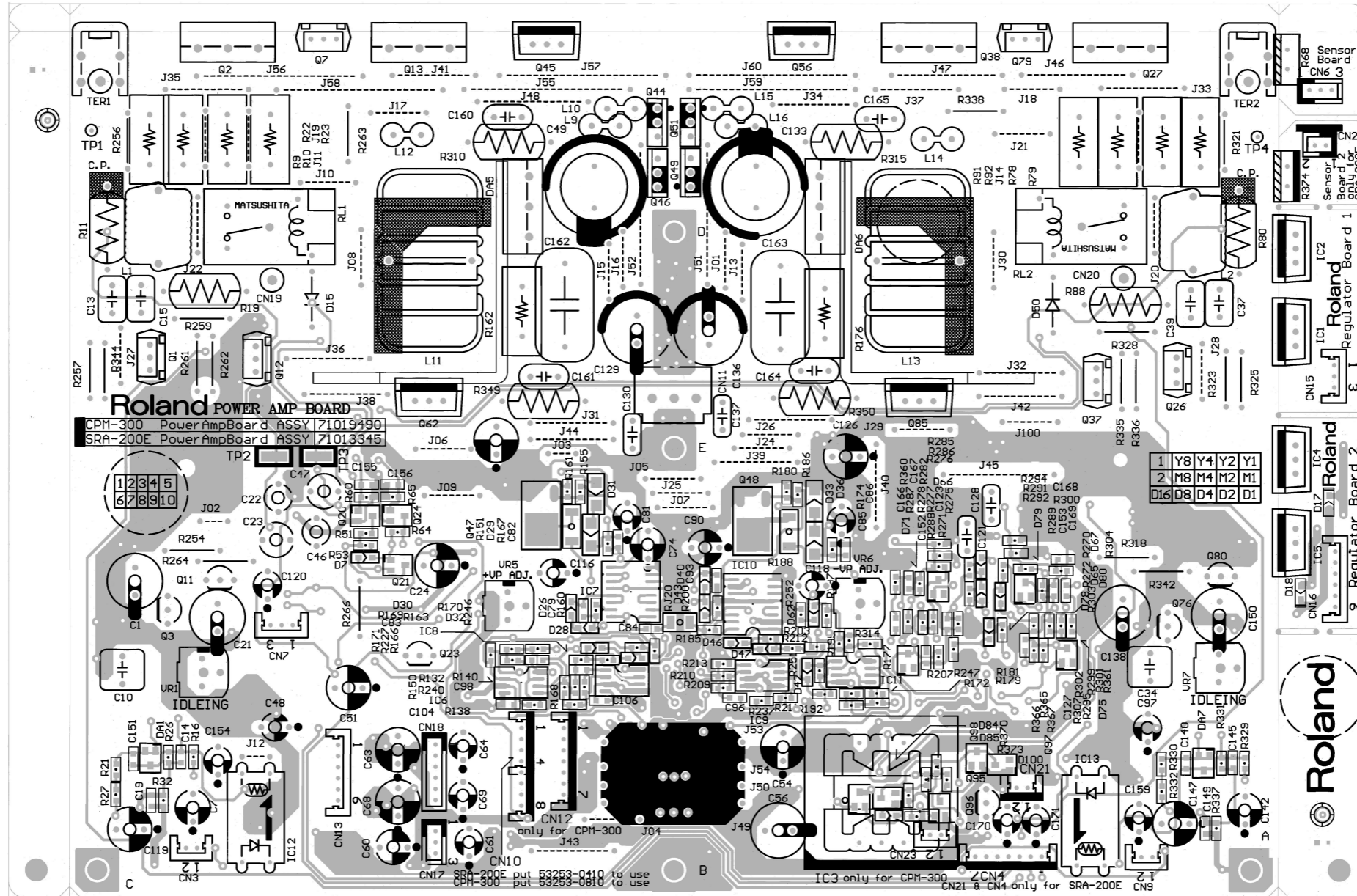


View from foil side.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

A POWER AMP BOARD (71019490)

B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U

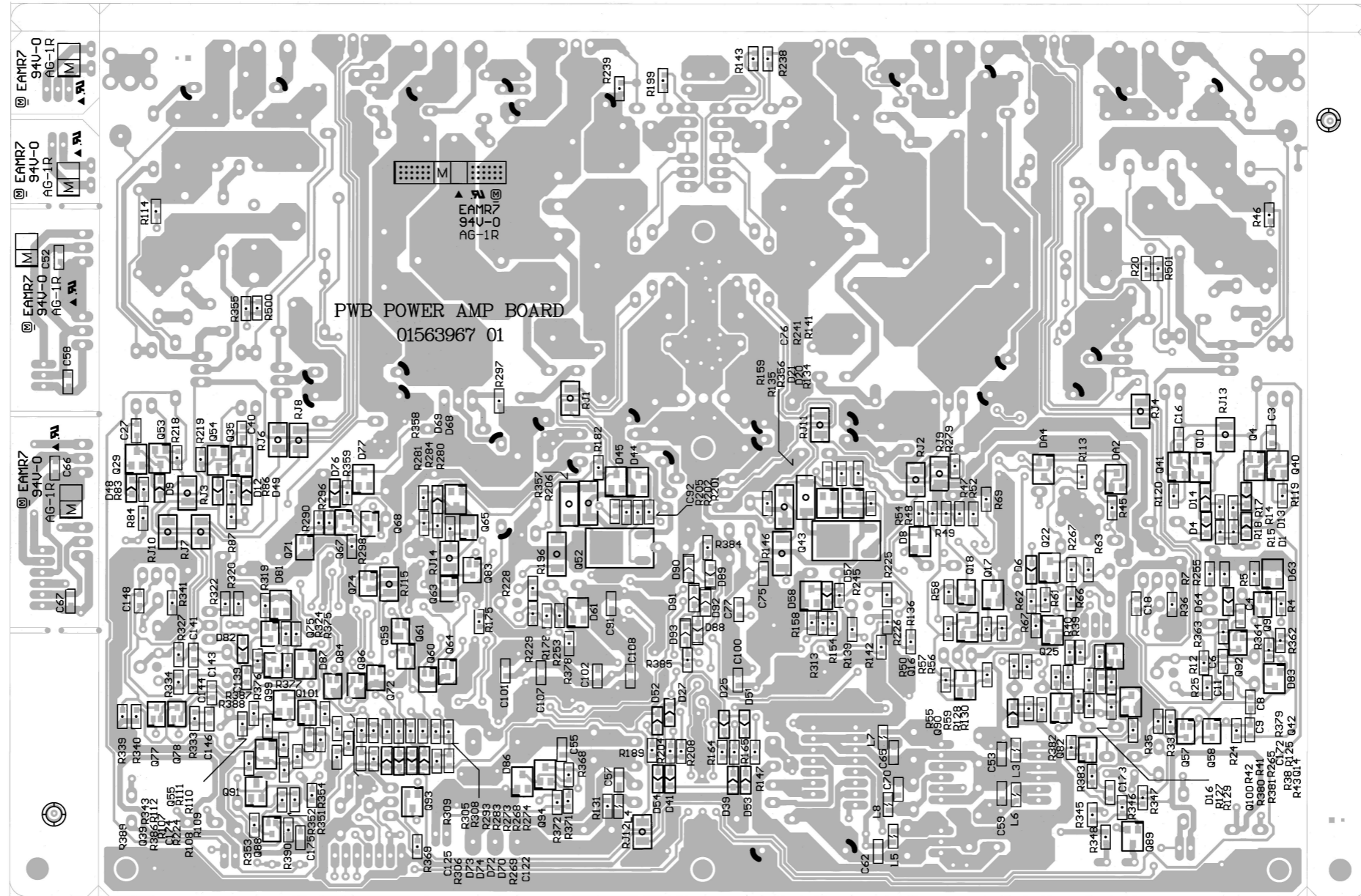


View from component side.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

A POWER AMP BOARD (71019490)

B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U



View from foil side.