

# Integra SERVICE MANUAL

R E S E A R C H

Ref. No. 3804


Nov, 2004

## SEVEN CHANNEL AMPLIFIER MODEL RDA-7.1



ADD	120 V AC, 60Hz
APP	230-240 V AC, 50Hz
APA	230-240 V AC, 50Hz
AGT	220-230 V AC, 50/60Hz
AGK	220-230 V AC, 50/60Hz

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

## SPECIFICATIONS

### AMPLIFIER SECTION

Number of channels :	7
Power :	150 watts per channel min. RMS at 8 ohms, 2 channels driven from 20 Hz to 20 kHz with no more than 0.1 % total harmonic distortion (FTC). 300 watts per channel min. RMS at 4 ohms, 2 channels driven at 1 kHz with no more than 0.1 % total harmonic distortion (FTC). 350 W (EIAJ, 4 ohm, 1 kHz, 10 %) 300 W (DIN, 4 ohm, 1 kHz, 0.7 %)
Frequency response at -3 dB :	3.5 Hz - 250 kHz
Input Impedance :	47 kohm each phase
Input signal for max output power :	1.2 V
Input Sensitivity (Unbalanced) :	100 mVrms
Input Sensitivity (Balanced) :	200 mV
THD :	0.03 % (20 Hz to 20 kHz)
Damping Factor :	40 at 8 ohm
Power consumption	
USA, Canada and some Asian model :	15 A
Other models :	10 A
Rated Speaker Impedance :	4 ohms

### GENERAL

Power Supply :	AC 120 V, 60 Hz AC 230 V, 50 Hz AC 220 V, 50/60 Hz
Dimensions (W x H x D) :	450 x 197 x 602 mm 17-11/16" x 7-3/4" x 23-11/16"
Weight :	52.5 kg, 115.7 lbs.

Specifications and features are subject to change without notice.

Power supply and voltage vary depending on the area in which the unit is purchased.

## SERVICE PROCEDURE-1

### PRIMARY CONNECTIONS FOR DIFFERENT VOLTAGES

#### AC Board Jumpers

For voltages in the 100V - 120V range, install the two jumpers marked L.

For voltages in the 200V - 240V range, install the single jumper marked H.

#### Main Transformer Jumpers

The following connections should be made for different line voltages.

##### 100V :

K1-3 to TB1-4  
P7 to TB1-3  
P2 to TB1-2  
K2-3 to TB1-12  
P8 to TB1-11  
P3 to TB1-10

##### 110V :

K1-3 to TB1-6  
P7 to TB1-5  
P2 to TB1-2  
K2-3 to TB1-14  
P8 to TB1-13  
P3 to TB1-10

##### 120V :

K1-3 to TB1-8  
P7 to TB1-7  
P2 to TB1-2  
K2-3 to TB1-16  
P8 to TB1-15  
P3 to TB1-10

##### 200V :

K1-3 to TB1-4  
TB1-2 to TB1-3  
K2-3 to TB1-12  
TB1-10 to TB1-11

##### 220V :

K1-3 to TB1-6  
TB1-2 to TB1-5  
K2-3 to TB1-14  
TB1-10 to TB1-13

##### 230V :

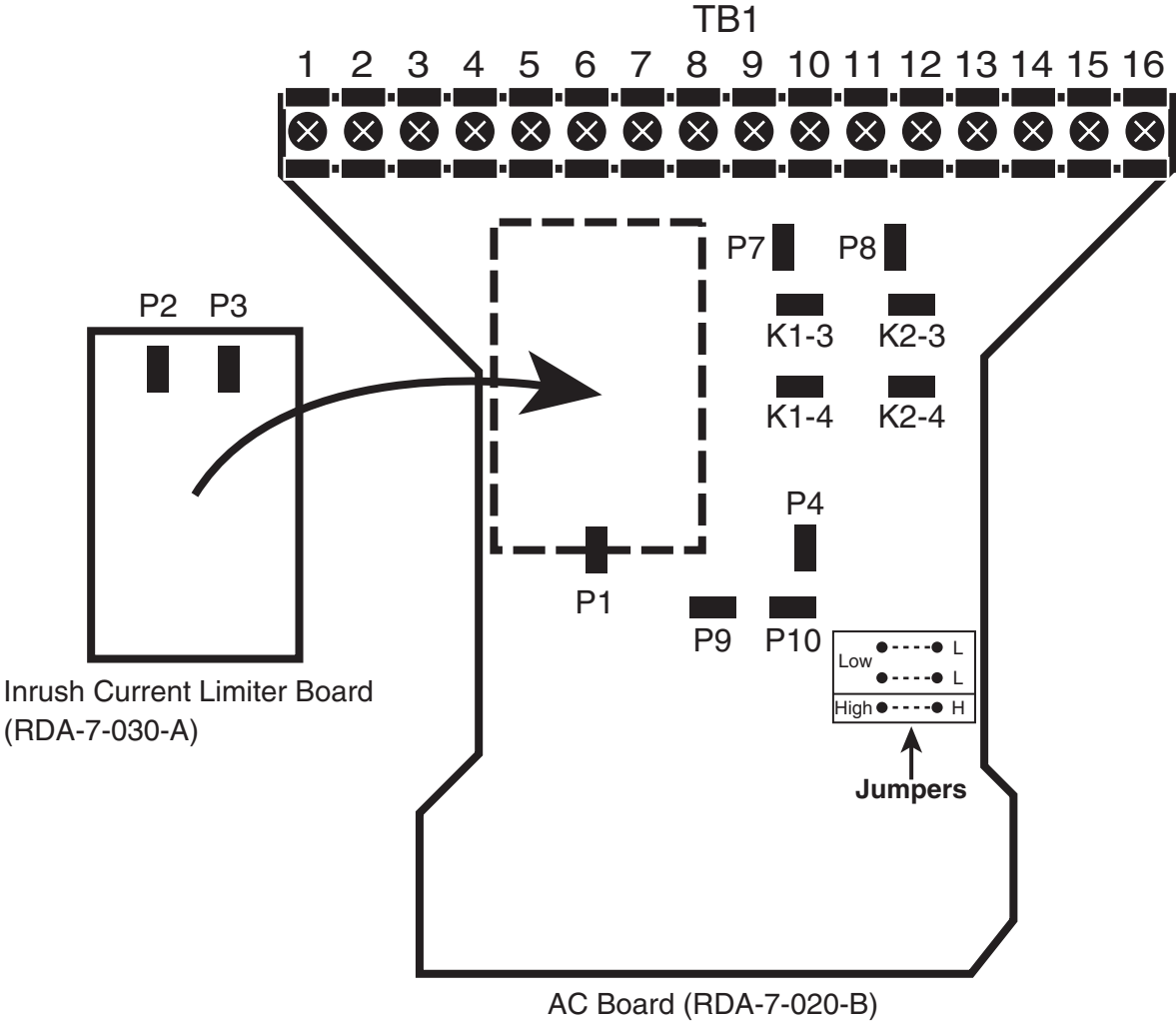
K1-3 to TB1-6  
TB1-2 to TB1-7  
K2-3 to TB1-14  
TB1-10 to TB1-15

##### 240V :

K1-3 to TB1-8  
TB1-2 to TB1-7  
K2-3 to TB1-16  
TB1-10 to TB1-15

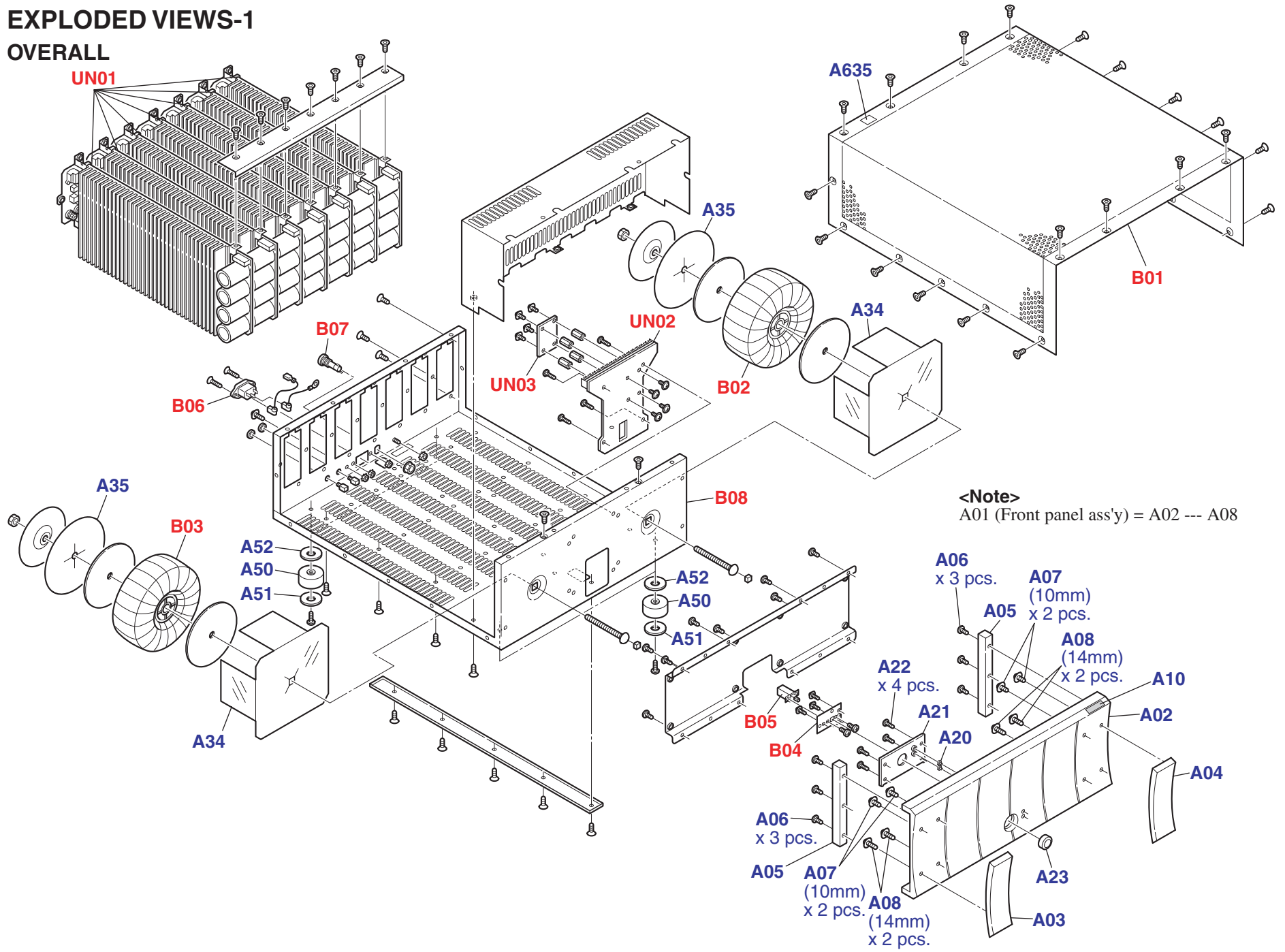
SERVICE PROCEDURE-2

PRIMARY CONNECTIONS FOR DIFFERENT VOLTAGES (Continued)



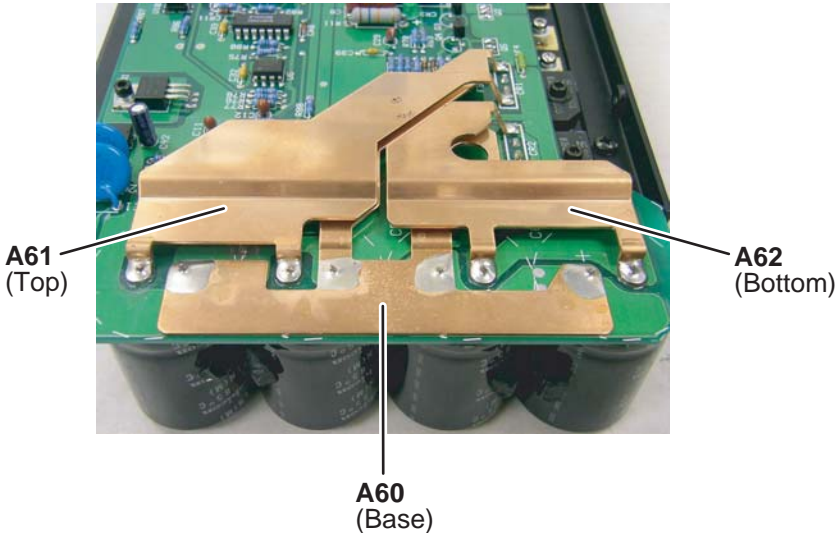
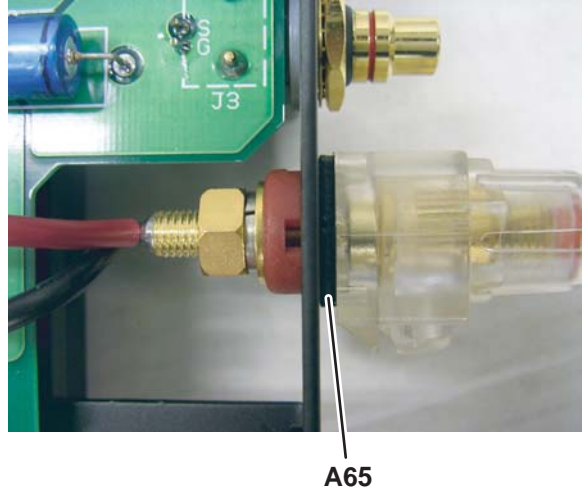
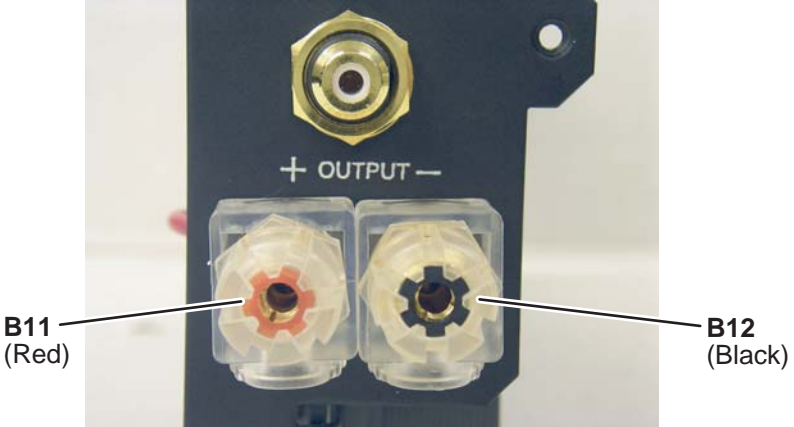
# EXPLODED VIEWS-1

## OVERALL

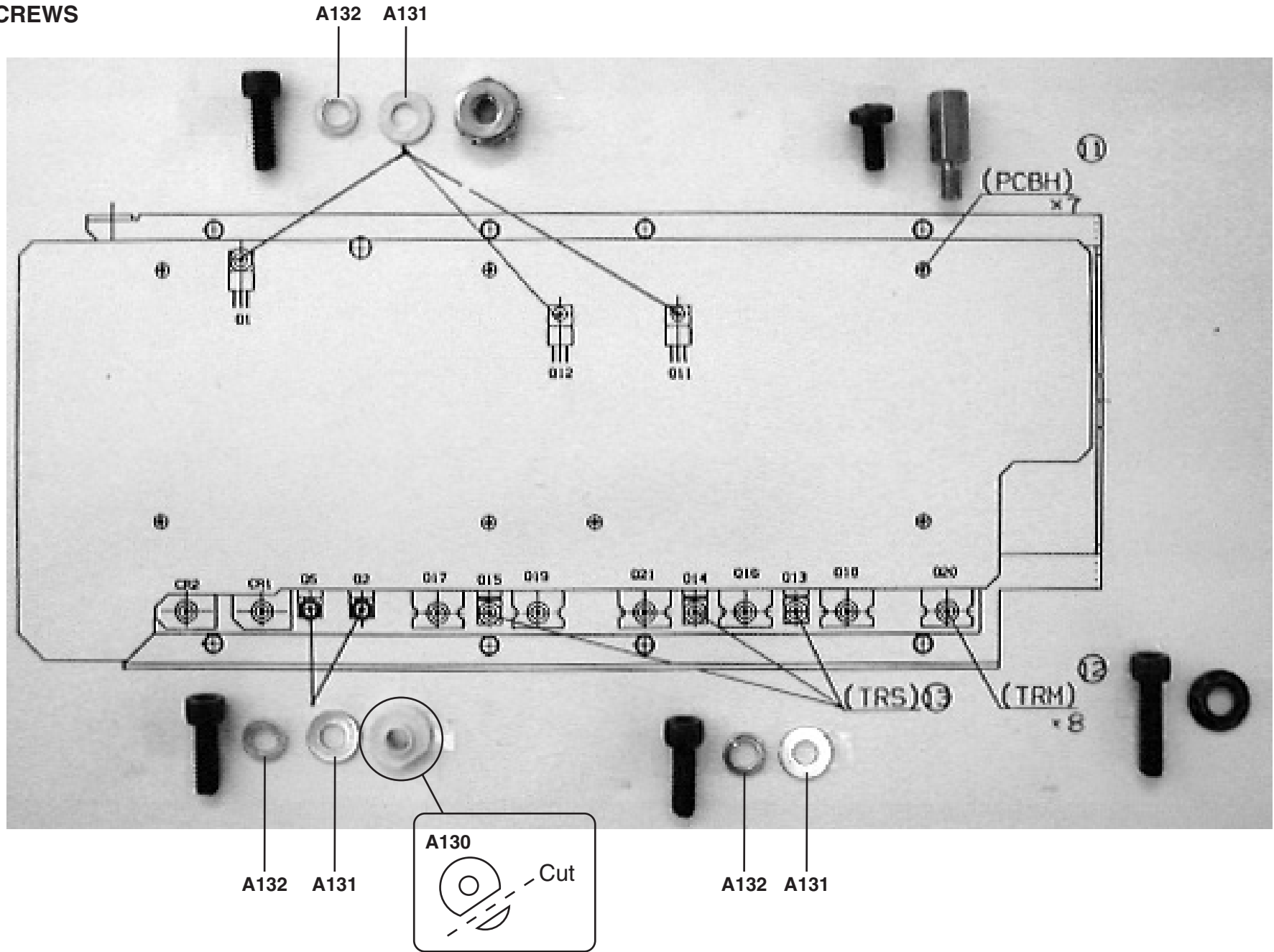


<Note>  
 A01 (Front panel ass'y) = A02 --- A08

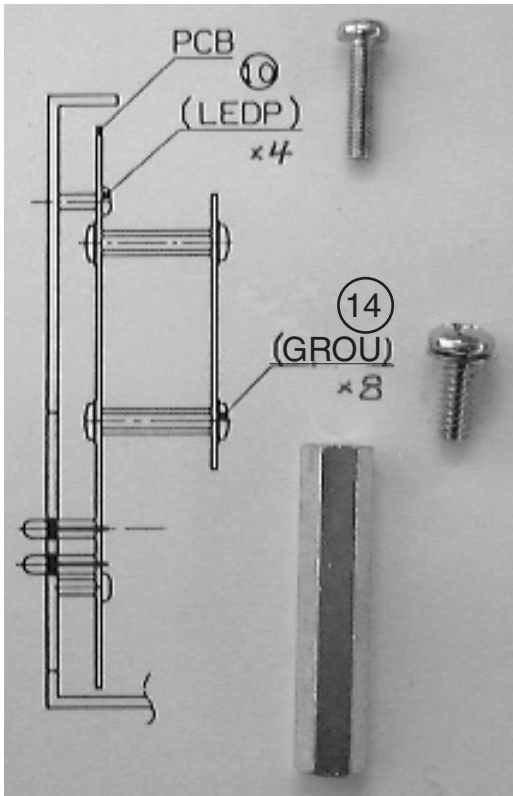
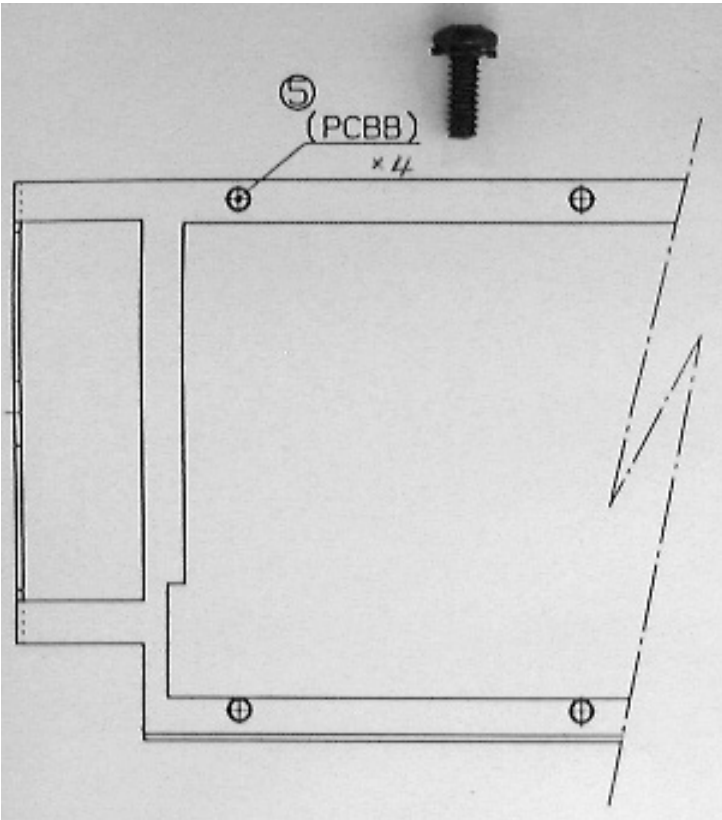
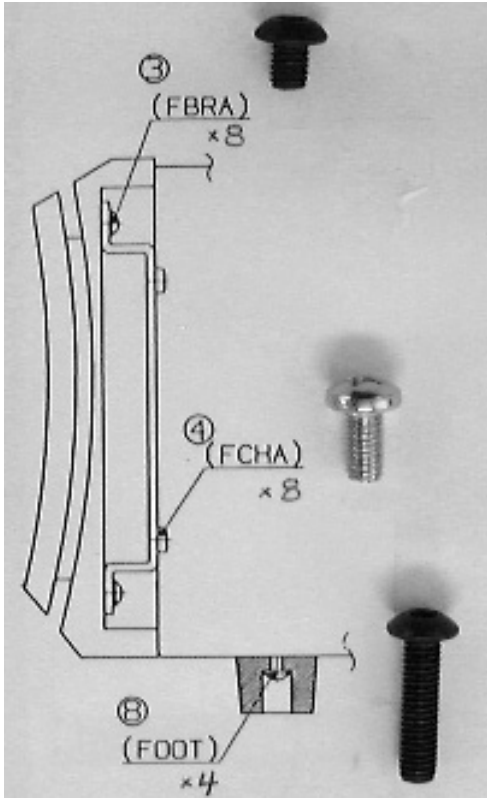
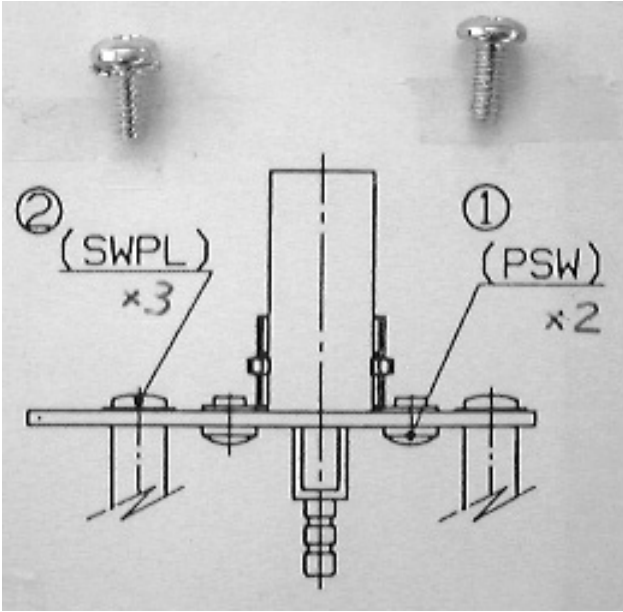
# EXPLODED VIEWS-2 AMPLIFIER MODULE



### EXPLODED VIEWS-3 SCREWS

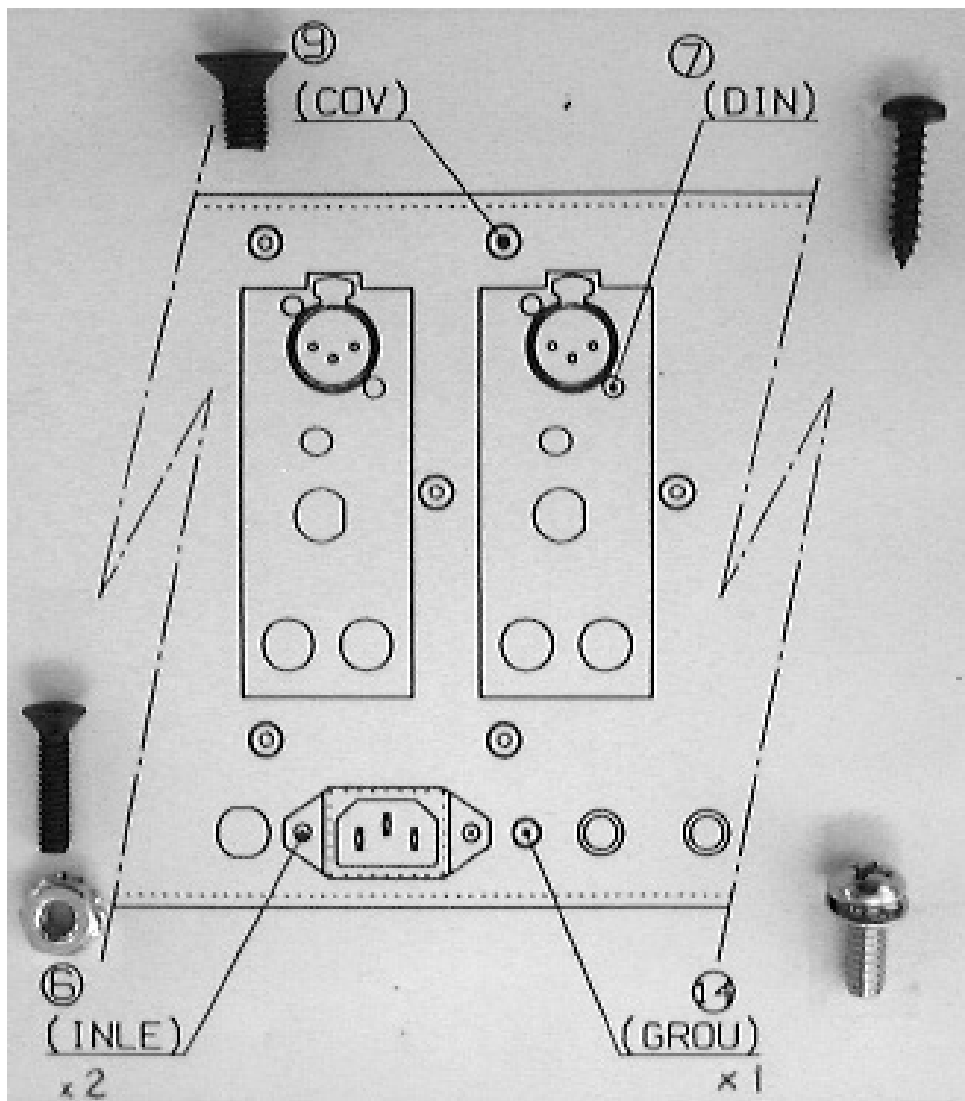


EXPLODED VIEWS-4  
SCREWS





# EXPLODED VIEWS-5 SCREWS



A

B

C

D

# SCHEMATIC DIAGRAMS-1

## POWER SUPPLY

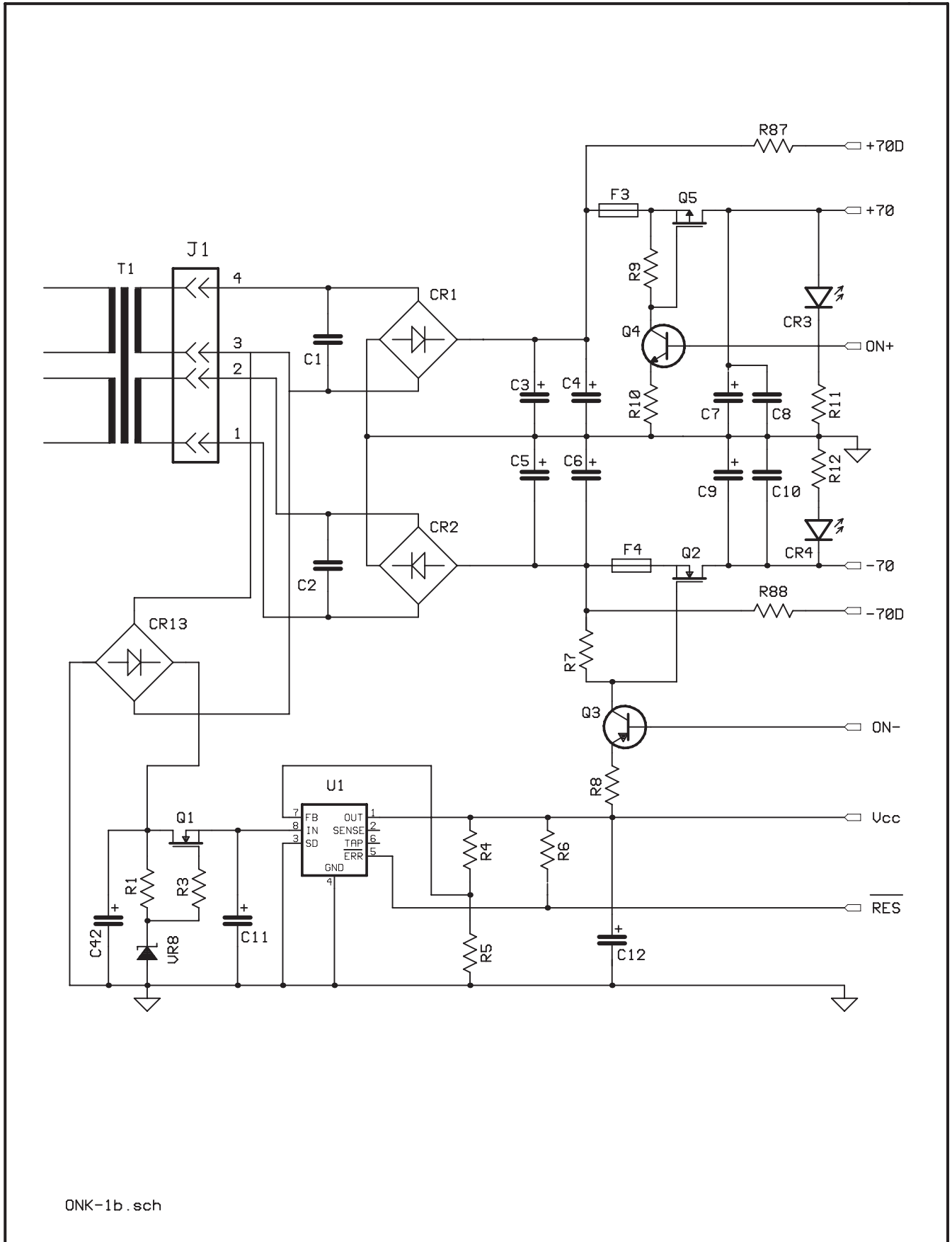
1

2

3

4

5



A

B

C

D

**SCHEMATIC DIAGRAMS-2**

**DRIVER CIRCUIT**

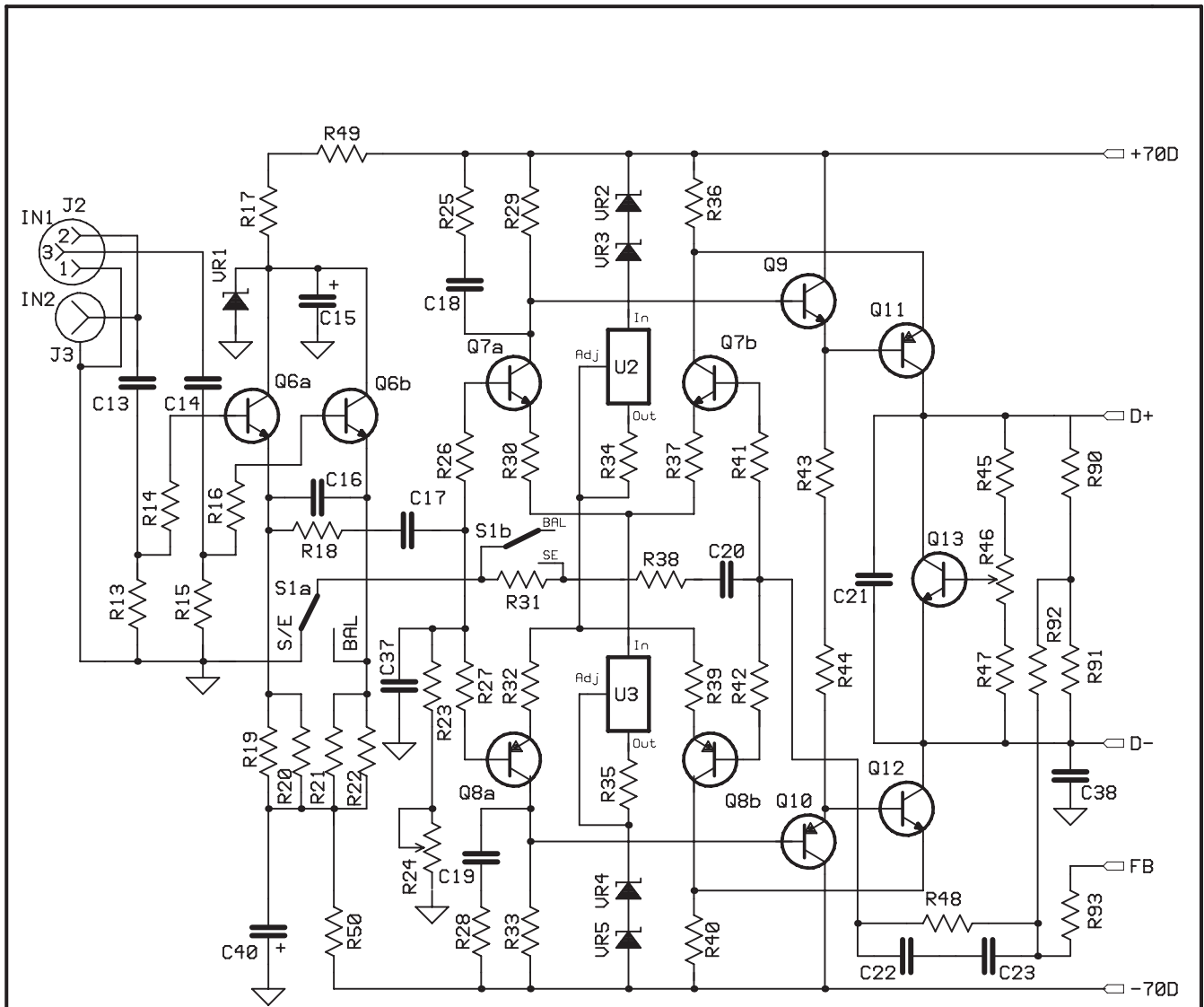
1

2

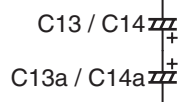
3

4

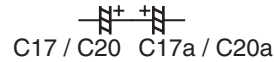
5



**C13 / C14**  
ROB C (For audio)



**C17 / C20**  
ROB C (For audio)



A

B

C

D

# SCHEMATIC DIAGRAMS-3

## OUTPUT STAGE AND PROTECTION

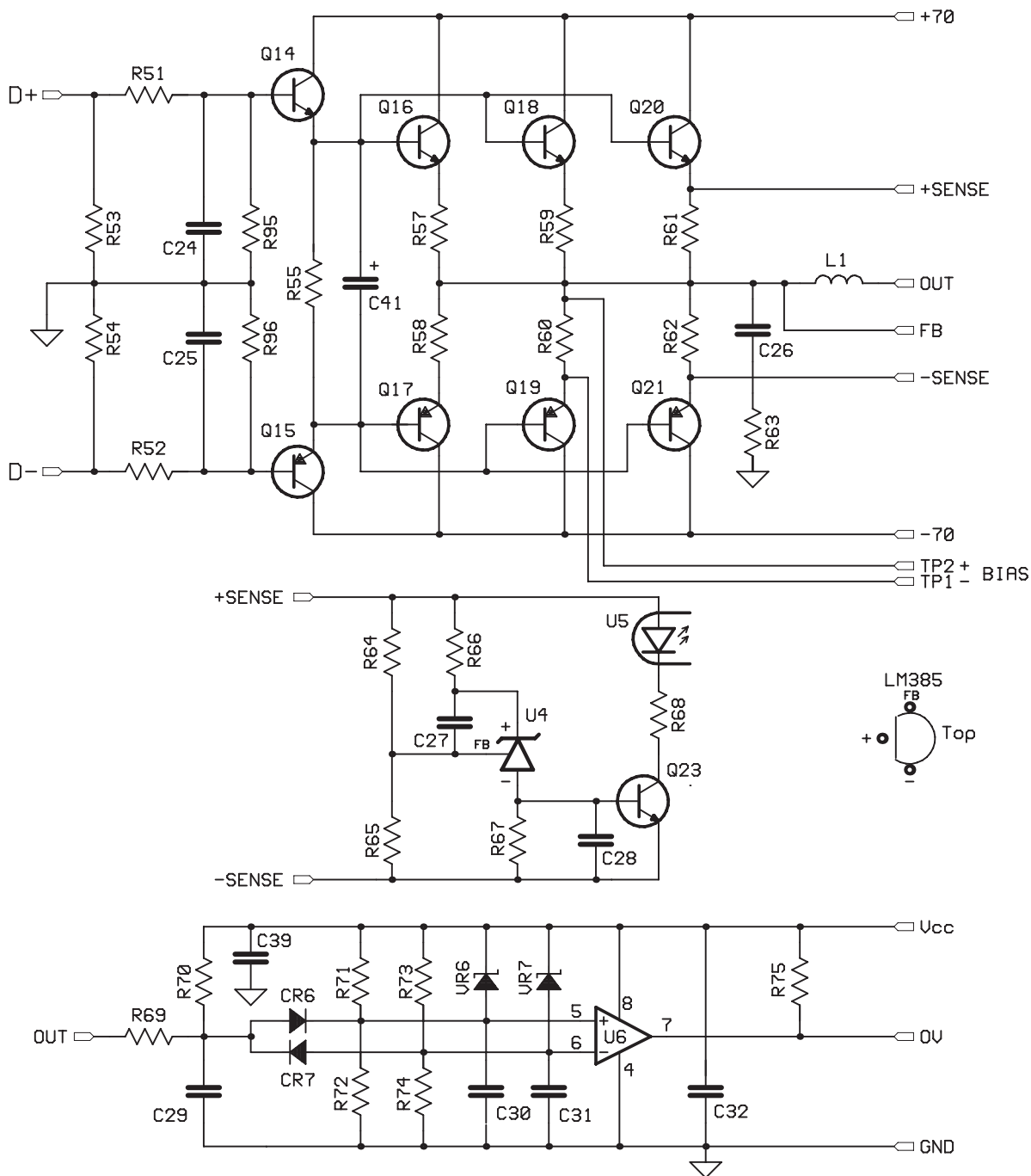
1

2

3

4

5



A

B

C

D

# SCHEMATIC DIAGRAMS-4

## PROTECTION

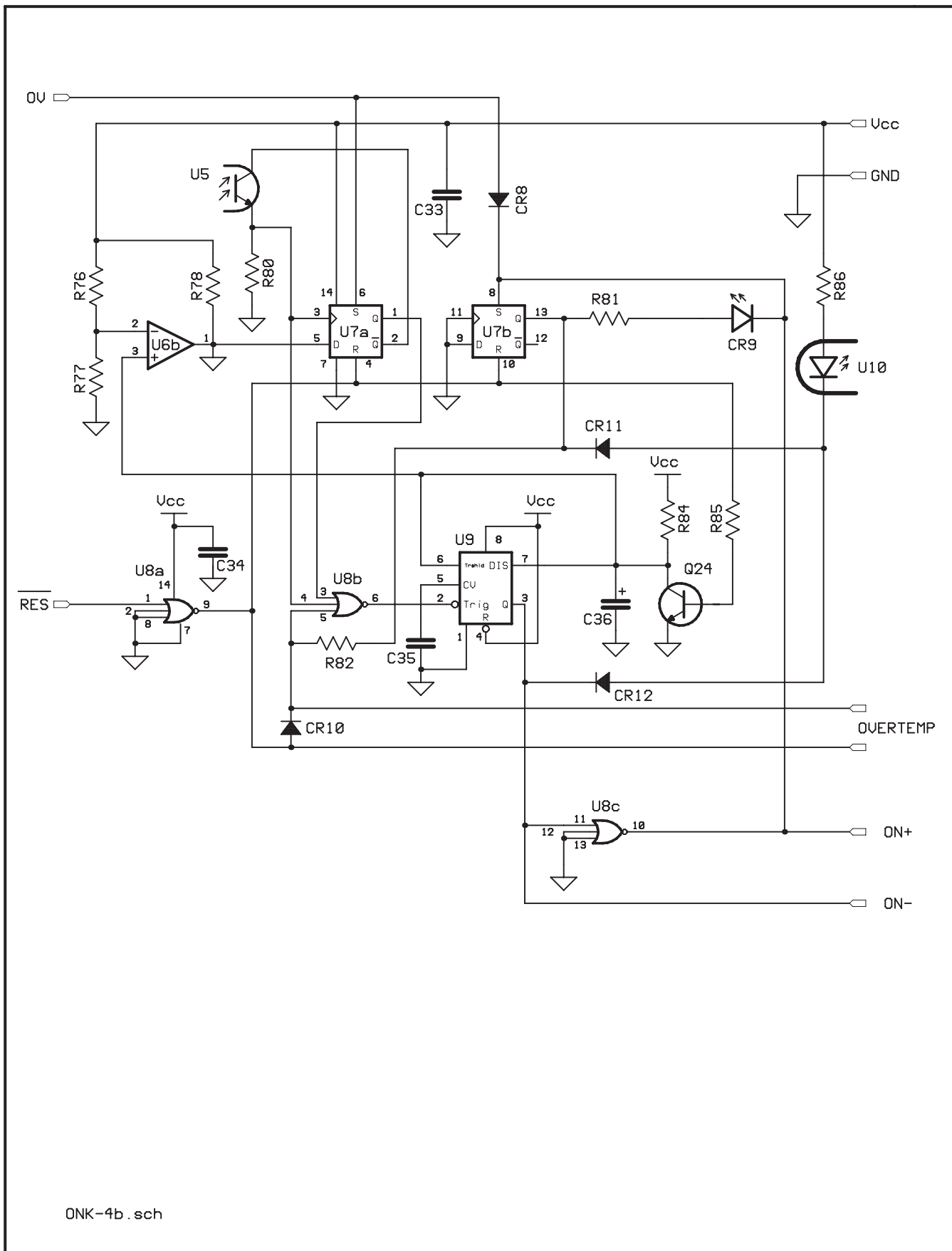
1

2

3

4

5



A

B

C

D

# SCHEMATIC DIAGRAMS-5

## AC BOARD

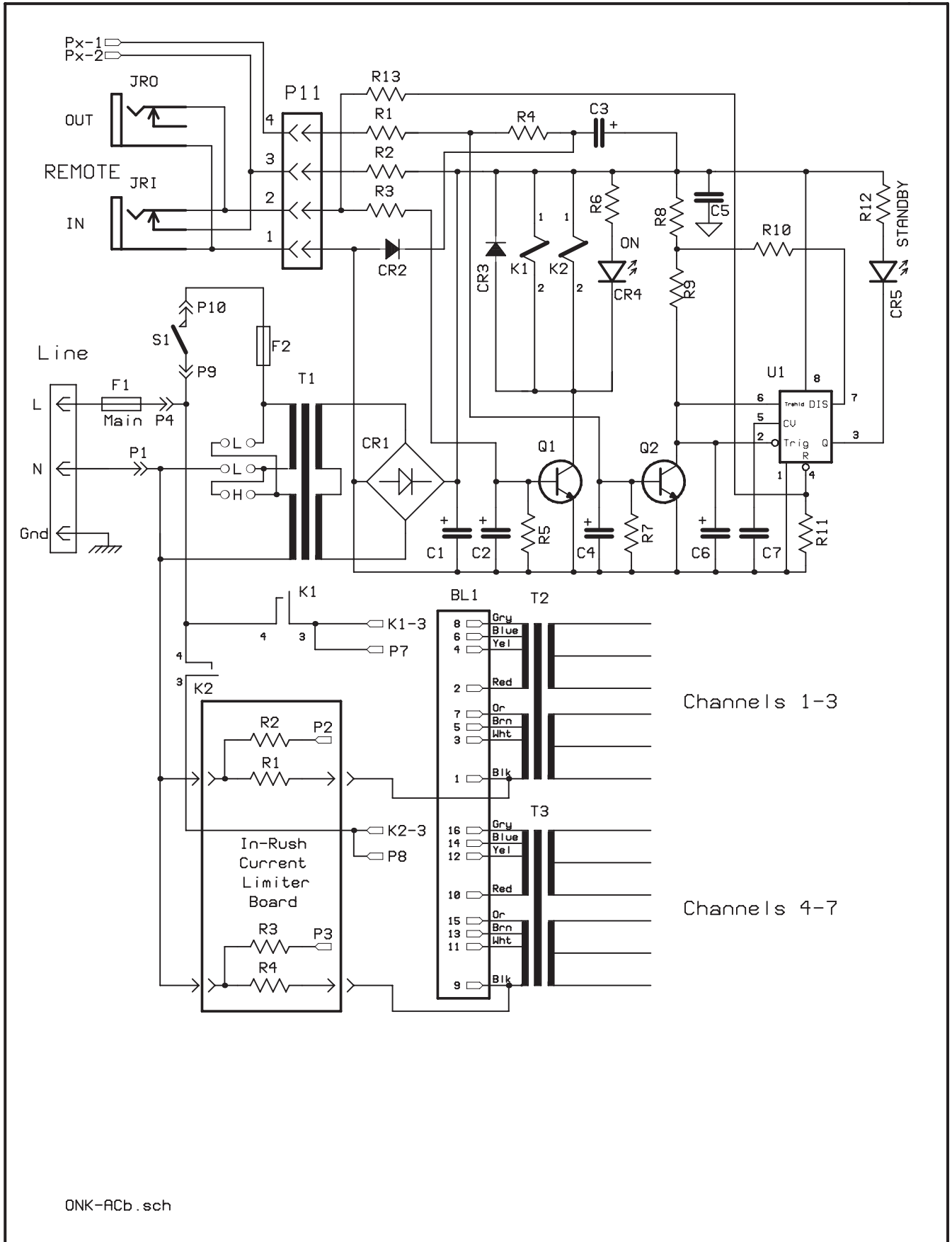
1

2

3

4

5



A

B

C

D

# SCHEMATIC DIAGRAMS-6 PROTECTION WIRING

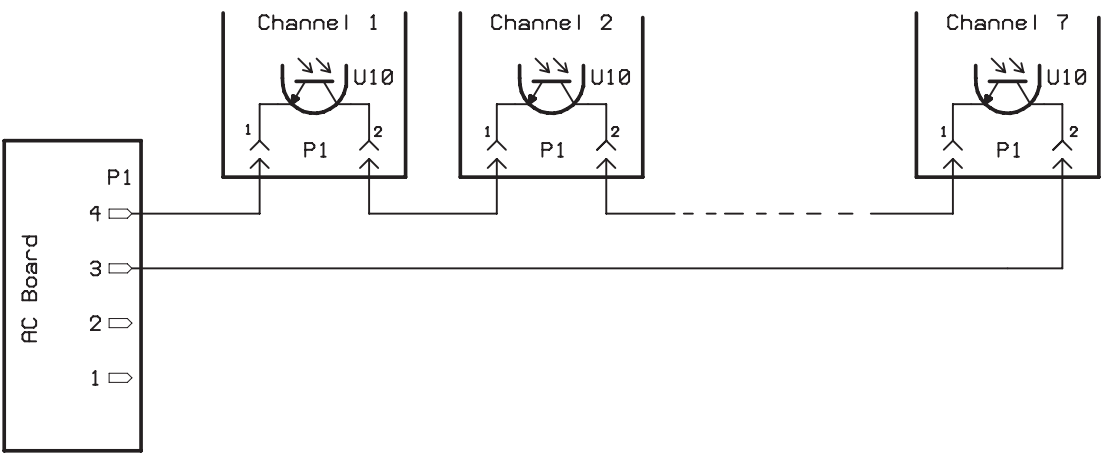
1

2

3

4

5



A

B

C

D

# PRINTED CIRCUIT BOARD VIEWS-1

## AMPLIFIER PC BOARD

1

### UN01 AMPLIFIER PC BOARD (RDA-7-010-F)

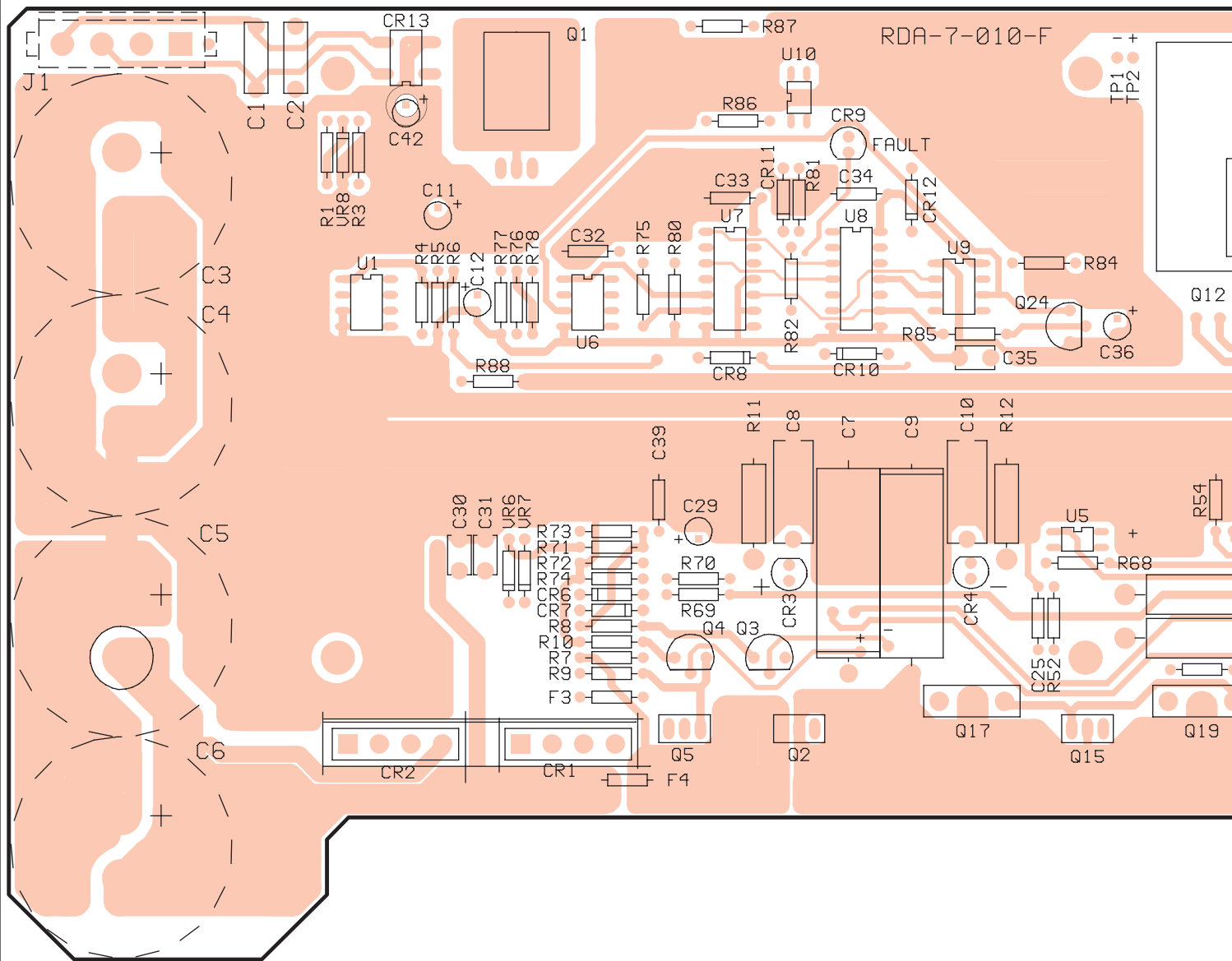
Side-A (Top)

2

3

4

5



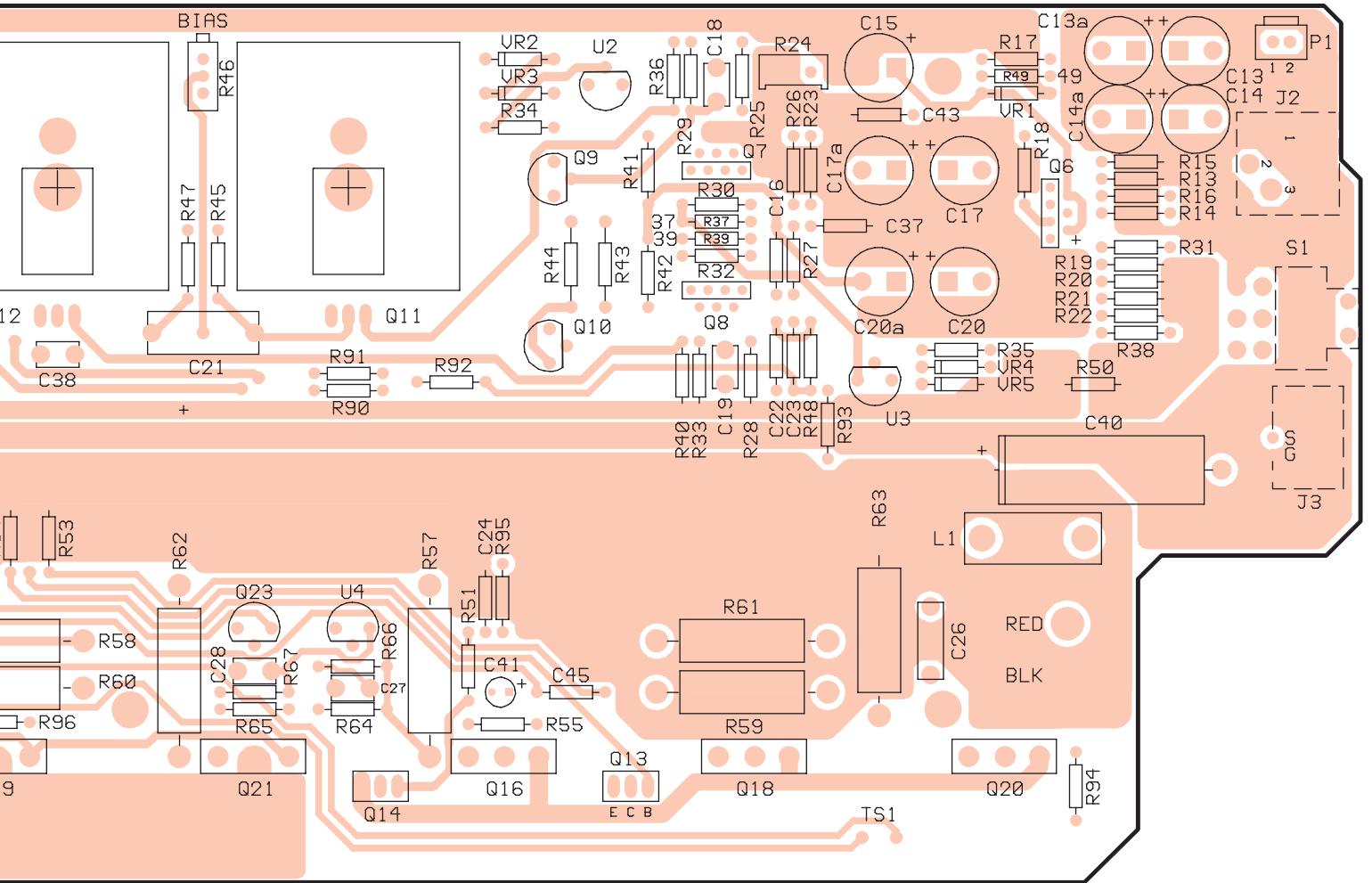


E

F

G

H

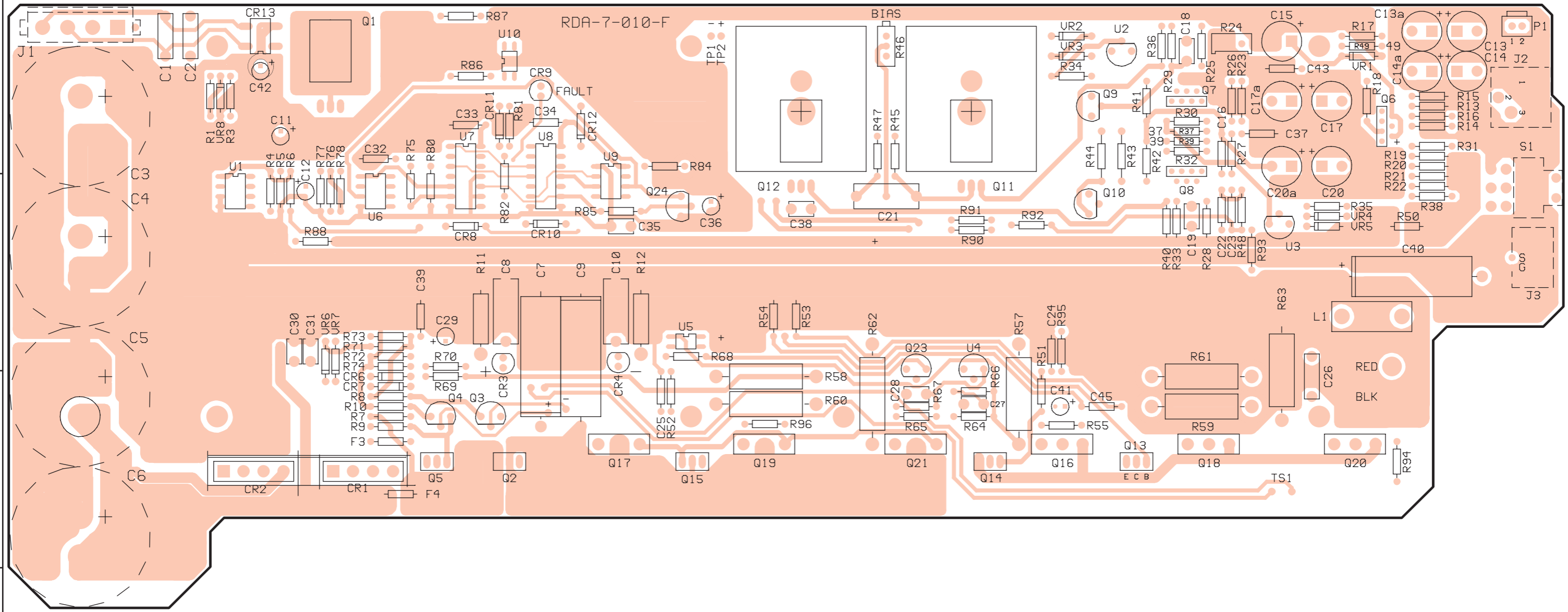


PRINTED CIRCUIT BOARD VIEWS-1  
AMPLIFIER PC BOARD

1  
2  
3  
4  
5

**UN01** AMPLIFIER PC BOARD (RDA-7-010-F)

Side-A (Top)



A

B

C

D

# PRINTED CIRCUIT BOARD VIEWS-2

## AMPLIFIER PC BOARD

1

### UN01 AMPLIFIER PC BOARD (RDA-7-010-F)

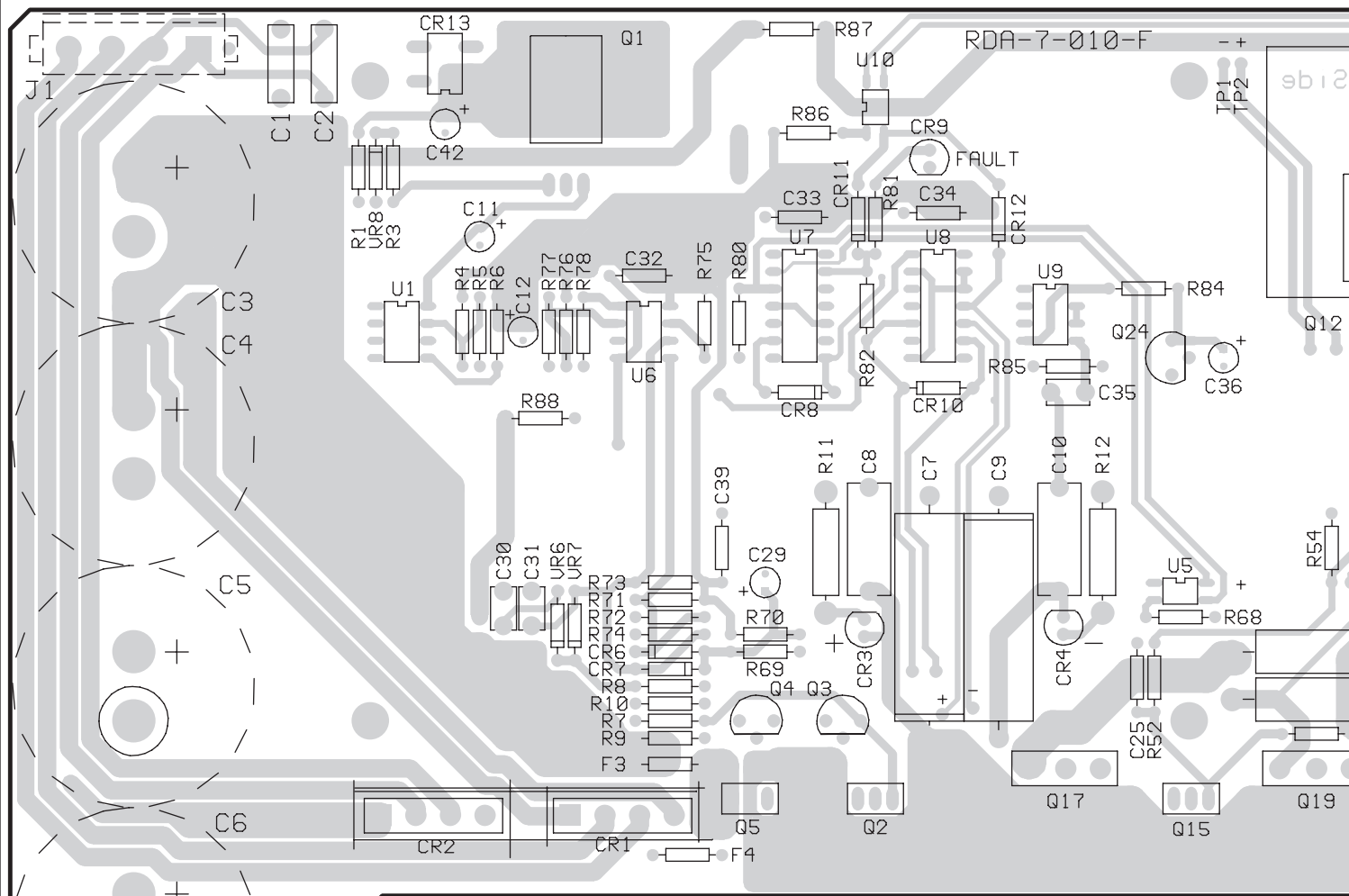
Side-B (Bottom)

2

3

4

5

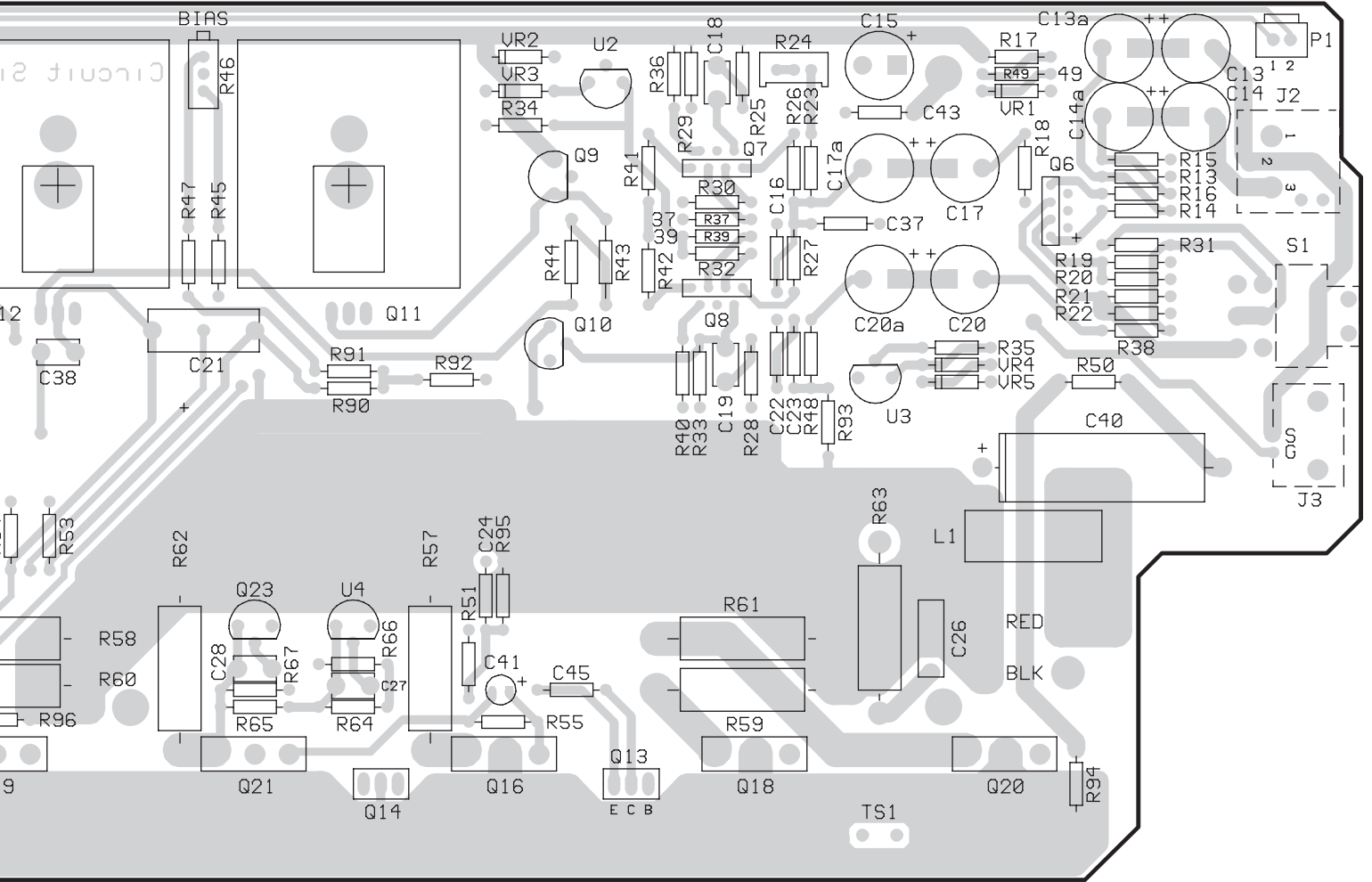


E

F

G

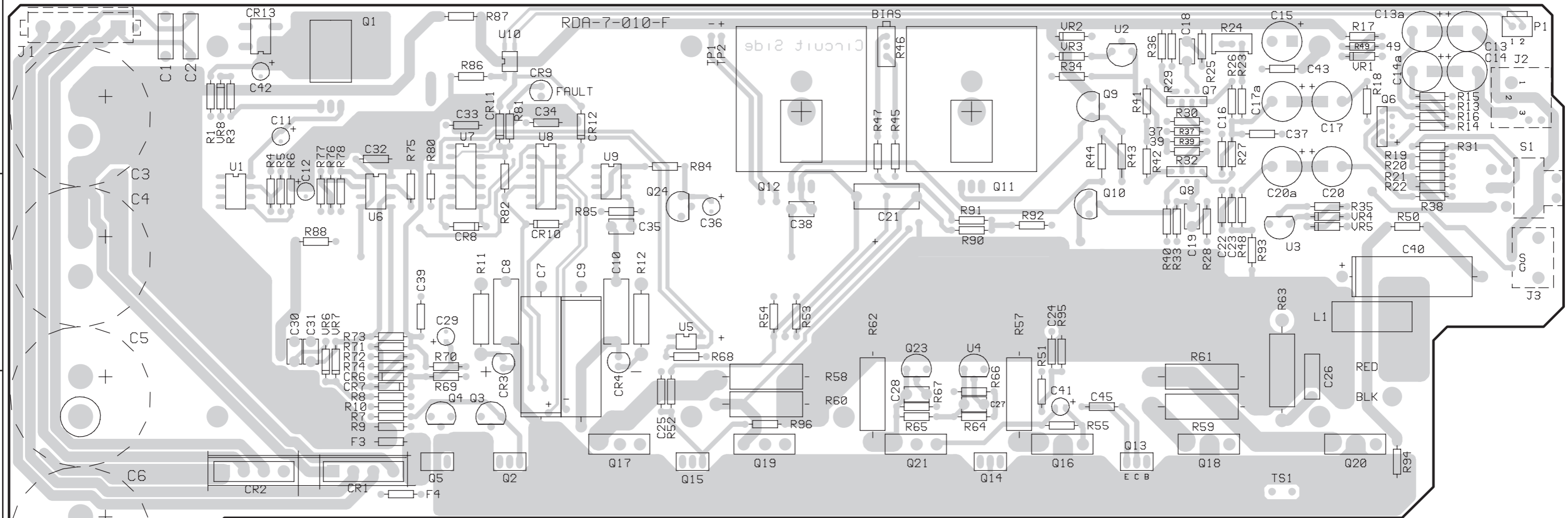
H



PRINTED CIRCUIT BOARD VIEWS-2  
AMPLIFIER PC BOARD

1  
2  
3  
4  
5

**UN01** AMPLIFIER PC BOARD (RDA-7-010-F)  
Side-B (Bottom)



## ADJUSTMENT PROCEDURE-1

### BIAS & DC Offset Adjustment

1. Connect the assembled channel to the power transformer.
2. Connect the power cord into an AC wall outlet.
3. Turn ON the unit. After about 3 seconds the two green LED's should turn ON.

Measure the following voltages and make sure they are within the specifications.

C7 (+) : 70 V +/- 3 V

C9 (-) : -70 V +/- 3 V

L1 : 0 V +/- 0.1 V

4. Connect the DC voltmeter to the test points TP1 (-) and TP2 (+) and adjust the voltage to 4 mV using the R46 BIAS adjustment trimming resistor.
5. Allow the channel to warm up for 30 minutes, adjusting the bias currents every 10 minutes.
6. Measure the output DC voltage and adjust it as close to zero as possible using the R24 trimming resistor.

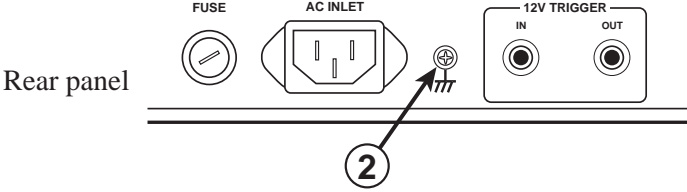
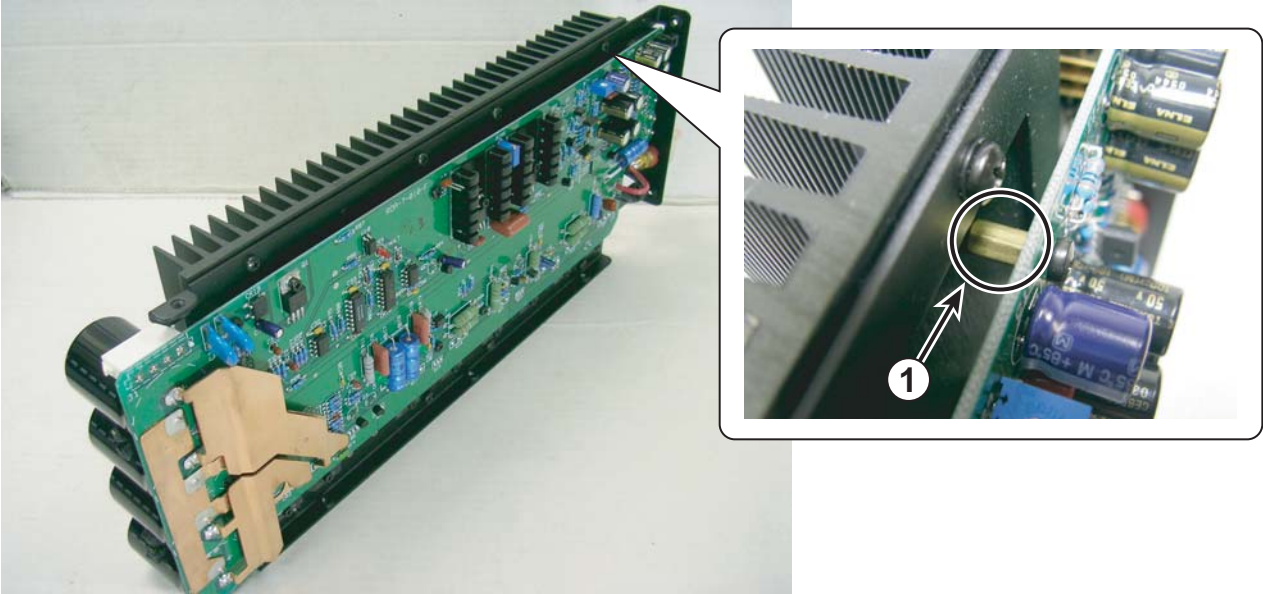
### Main Chassis Check

1. Assemble the chassis / power supply.
2. Connect the power cord into an AC wall outlet.
3. Turn ON the unit. The blue ON LED should come ON.
4. Turn OFF the unit and plug a remote control plug into the Remote IN jack.
5. Turn ON the unit. The Red Standby LED should be ON.
6. Apply 12V to the remote control plug. The unit should turn ON, the blue LED should be ON.
7. Measure the secondary voltages on all power cables going to the channels. Each secondary should read 50 VAC +/- 2 VAC.

# ADJUSTMENT PROCEDURE-2

## Final Assembly Check

Check the screw which is the fixation of AMPLIFIER MODULE when the electric conductivity between 1 and 2 is ruined.



**RDA-7.1****<Note>**

Parts marked by 'NSP' are generally unavailable because they are not in our Master Spare Parts List.

**NOTE : THE COMPONENTS IDENTIFIED BY THE MARK  
! ARE CRITICAL FOR RISK OF FIRE AND  
ELECTRIC SHOCK. REPLACE ONLY WITH PART  
NUMBER SPECIFIED.**

**EXPLODED VIEWS PARTS LIST**

	REF. NO.	PART NAME	DESCRIPTION	Q'TY	PART NO. (SN)	MARK
EXPLODED	A01	F PANEL ASS'Y	AS	1	27212607A	
EXPLODED	A02	F PANEL	---	(1)	27212608A	
EXPLODED	A03	HANDLE	(L)	(1)	28158002	
EXPLODED	A04	HANDLE	(R)	(1)	28158004	
EXPLODED	A05	END CAP	---	(2)	28125372	
EXPLODED	A06	SCREW	3P+6FN(BC)	(6)	82143006	
EXPLODED	A07	SCREW	4TTC+10C(BC)	(4)	830440109	
EXPLODED	A08	SCREW	4TTC+14C(BC)	(4)	830440149	
EXPLODED	A10	BADGE	(RESEARCH)	1	28135293	
EXPLODED	A20	FACET	(1)	2	28198908	
EXPLODED	A21	GUIDE	(POW)	1	27268013	
EXPLODED	A22	SCREW	3P+6FN(BC)	4	82143006	
EXPLODED	A23	KNOB	(POW)AS	1	28325734	
EXPLODED	A34	SHLD PLT	(PT)	2	27150462	
EXPLODED	A35	SHLD PLT	---	2	27150463	
EXPLODED	A50	LEG	---	4	27175402	
EXPLODED	A51	CUSHION	---	4	28141560	
EXPLODED	A52	CUSHION	(LEG)	4	28141590	
EXPLODED	A60	RETAINER	(BASE)	7	27141900	
EXPLODED	A61	RETAINER	(T)	7	27141901	
EXPLODED	A62	RETAINER	(B)	7	27141902	
EXPLODED	A65	RETAINER	(S)	7	27141906	
EXPLODED	A635	LABEL	LABEL(FLASH)	1	29360778	
EXPLODED	A130	BUSH	(TOSHIBA AC331)	2	28170075	
EXPLODED	A131	WASHER	W3 x 8F(BC)	8	87643008	
EXPLODED	A132	SP WASHER	SW-3(SP-WASHER)	8	871130	
EXPLODED	B01	TOP COVER	---	1	14-ONK-0006	
EXPLODED	B02	TRANSFORMER	4ch	1	56-0041	!
EXPLODED	B03	TRANSFORMER	3ch	1	56-0042	!
EXPLODED	B04	SWITCH PLATE	---	1	14-ONK-0011	
EXPLODED	B05	POWER SWITCH	TV-5, UL, VDE, SEMKO, 5A	1	51-0024	!
EXPLODED	B06	AC INLET	(UL APPROVED)	1	21-0091	!
EXPLODED	B07	FUSE HOLDER	(UL/CSA APPROVED)	1	43-0010	!
EXPLODED	B08	CHASSIS	(ADD, APP, APA, AGT, AGK, AJJ)	1	---	NSP
EXPLODED	B11	SP TERMINAL	(RED)	7	---	NSP
EXPLODED	B12	SP TERMINAL	(BLACK)	7	---	NSP
EXPLODED	UN01	AMPLIFIER PC BOARD	(RDA-7-010-F)	7	---	NSP
EXPLODED	UN02	AC BOARD	(RDA-7-020-B)	1	70-ONK-0002	
EXPLODED	UN03	INRUSH CURRENT LIMITER BOARD	(RDA-7-030-A)	1	---	NSP



RDA-7.1

## PRINTED CIRCUIT BOARD PARTS LIST

UN01 AMPLIFIER PC BOARD (RDA-7-010-F)

	CIRCUIT NO.	PART NAME	DESCRIPTION	Q'TY	PART NO. (SN)	MARK
PCB01	U1	IC	LP2951CN (Voltage Regulator)	1	48-0097	
PCB01	U2	IC	LM317L (Voltage Regulator)	1	48-0098	
PCB01	U3	IC	LM317L (Voltage Regulator)	1	48-0098	
PCB01	U4	IC	LM385Z (Voltage Reference)	1	48-0099	
PCB01	U5	PHT CP	PS2502-1	1	24120092	
PCB01	U6	IC	TLC372CP (Dual Comparator)	1	48-0101	
PCB01	U7	IC	CD4013BCN (Dual D Flip-Flop)	1	48-0102	
PCB01	U8	IC	CD4025BCN (Triple 3 Input NOR)	1	48-0103	
PCB01	U9	IC	TLC555 8PIN DIP	1	48-0104	
PCB01	U10	PHT CP	PS2502-1	1	24120092	
PCB01	Q1	TR	MOS FET IRF620 or IRF621	1	48-0085	
PCB01	Q2	TR	IRF540	1	48-0087	
PCB01	Q3	TR	2N5401	1	48-0088	
PCB01	Q4	TR	2N5551	1	48-0089	
PCB01	Q5	TR	IRF5210 or IRF9540N	1	48-0086	
PCB01	Q6	TR	2SC3381	1	48-0041	
PCB01	Q7	TR	2SC3381	1	48-0041	
PCB01	Q8	TR	2SA1349	1	48-0043	
PCB01	Q9	TR	2N5550	1	48-0090	
PCB01	Q10	TR	2N5400	1	48-0091	
PCB01	Q11	TR	2SA1837	1	48-0092	
PCB01	Q12	TR	2SC4793	1	48-0093	
PCB01	Q13	TR	MJF15030	1	48-0094	
PCB01	Q14	TR	MJF15030	1	48-0094	
PCB01	Q15	TR	MJF15031	1	48-0095	
PCB01	Q16	TR	2SC5200-O	1	2202823	
PCB01	Q17	TR	2SA1943-O	1	2202813	
PCB01	Q18	TR	2SC5200-O	1	2202823	
PCB01	Q19	TR	2SA1943-O	1	2202813	
PCB01	Q20	TR	2SC5200-O	1	2202823	
PCB01	Q21	TR	2SA1943-O	1	2202813	
PCB01	Q23	TR	MPS2222A	1	48-0096	
PCB01	Q24	TR	MPS2222A	1	48-0096	
PCB01	CR1	DIODE	RECTIFIER BRIDGE 10A 400V	1	48-0039	
PCB01	CR2	DIODE	RECTIFIER BRIDGE 10A 400V	1	48-0039	
PCB01	CR6	DIODE	SWITCHING 1N4150	1	48-0025	
PCB01	CR7	DIODE	SWITCHING 1N4150	1	48-0025	
PCB01	CR8	DIODE	SWITCHING 1N4150	1	48-0025	
PCB01	CR10	DIODE	SWITCHING 1N4150	1	48-0025	
PCB01	CR11	DIODE	SWITCHING 1N4150	1	48-0025	
PCB01	CR12	DIODE	SWITCHING 1N4150	1	48-0025	
PCB01	CR13	DIODE	DIP BRIDGE 1A 400V 4PIN	1	48-0011	
PCB01	VR1	DIODE	ZENER 30V 400mW 1N5256B	1	48-0015	
PCB01	VR2	DIODE	ZENER 24V 400mW 1N5252B	1	48-0036	
PCB01	VR3	DIODE	ZENER 24V 400mW 1N5252B	1	48-0036	

PCB01	VR4	DIODE	ZENER 24V 400mW 1N5252B	1	48-0036	
PCB01	VR5	DIODE	ZENER 24V 400mW 1N5252B	1	48-0036	
PCB01	VR6	DIODE	ZENER 12V 400mW 1N5242B	1	48-0084	
PCB01	VR7	DIODE	ZENER 12V 400mW 1N5242B	1	48-0084	
PCB01	VR8	DIODE	ZENER 24V 400mW 1N5252B	1	48-0036	
PCB01	C3	ELECT C	CE69W80V-10000M	1	3504395	
PCB01	C4	ELECT C	CE69W80V-10000M	1	3504395	
PCB01	C5	ELECT C	CE69W80V-10000M	1	3504395	
PCB01	C6	ELECT C	CE69W80V-10000M	1	3504395	
PCB01	C7	ELECT C	100uF 100V	1	15-0104	
PCB01	C9	ELECT C	100uF 100V	1	15-0104	
PCB01	C13, C13a	ROB C	CE04W35V-100M(ROB) (For audio)	2	395861017	
PCB01	C14, C14a	ROB C	CE04W35V-100M(ROB) (For audio)	2	395861017	
PCB01	C17, C17a	ROB C	CE04W50V-22M(ROB) (For audio)	2	395882207	
PCB01	C20, C20a	ROB C	CE04W50V-22M(ROB) (For audio)	2	395882207	
PCB01	C40	ELECT C	100uF 100V	1	15-0104	
PCB01	R24	TRIM R	TRIMPOT 50 kohm (503)	1	46-0019	
PCB01	R46	TRIM R	TRIMPOT 25 Turn 500 ohm (501)	1	46-0020	
PCB01	F3	FUSE	LITTLE FUSE R251 015 F837-ND	1	43-0042	
PCB01	F4	FUSE	LITTLE FUSE R251 015 F837-ND	1	43-0042	
PCB01	S1	SW	NKKM2022S2A2G30	1	51-0035	
PCB01	J2	JACK	XLR NC3FAHL-2	1	21-0126	
PCB01	J3	JACK	RCA	1	21-0110	

**UN02** AC BOARD (RDA-7-020-B)

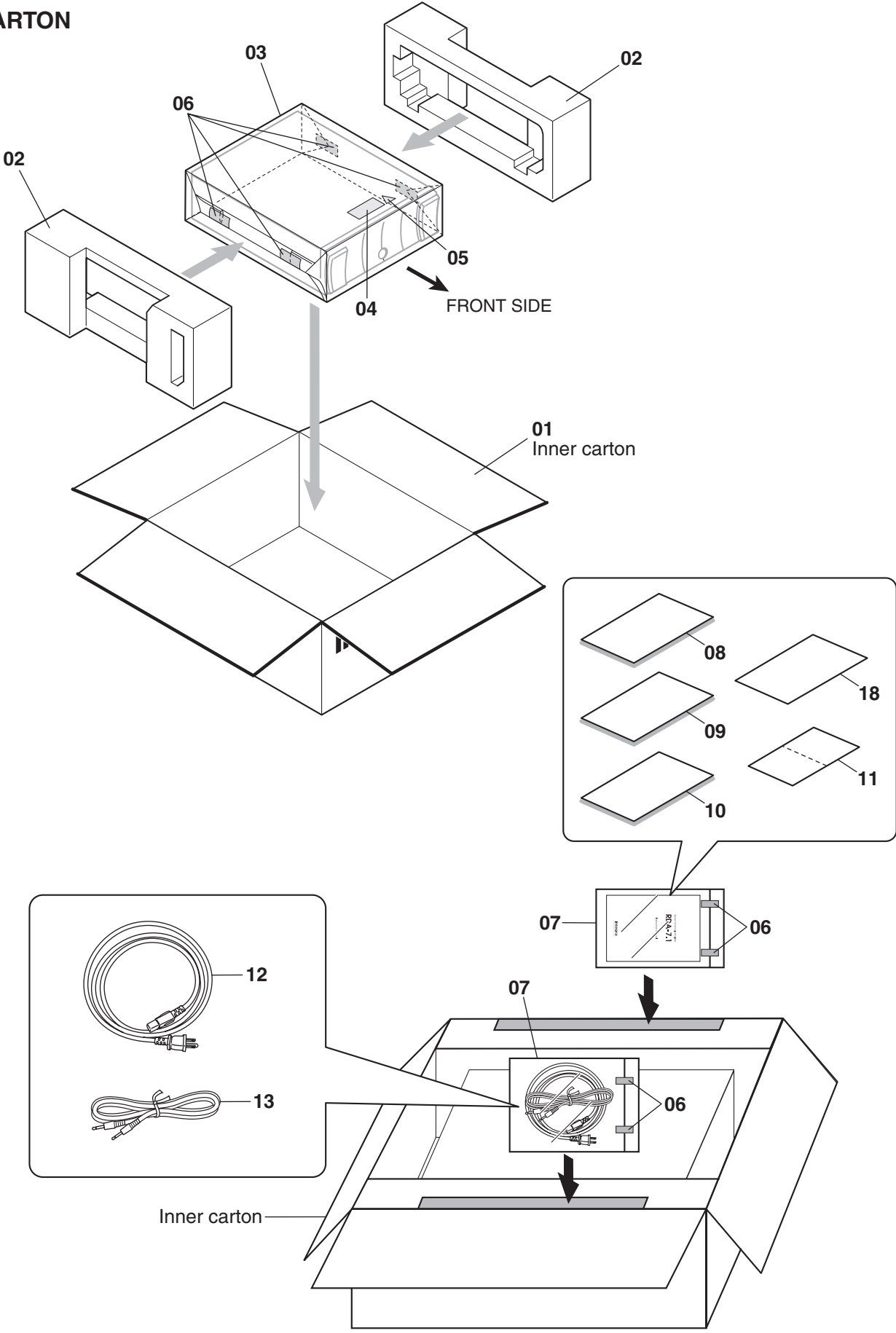
	CIRCUIT NO.	PART NAME	DESCRIPTION	Q'TY	PART NO. (SN)	MARK
PCB02	U1	IC	TLC555 8PIN DIP	1	48-0104	
PCB02	Q1	TR	MPS2222A	1	48-0096	
PCB02	Q2	TR	MPS2222A	1	48-0096	
PCB02	CR1	DIODE	DIP BRIDGE 1A 400V 4PIN	1	48-0011	
PCB02	CR2	DIODE	SWITCHING 1N4150	1	48-0025	
PCB02	CR3	DIODE	SWITCHING 1N4150	1	48-0025	
PCB02	CR4	LED	SEL2E10C (BLUE)	1	225374	
PCB02	F2	FUSE	LITTLE FUSE R251 001 F826-ND	1	43-0043	!
PCB02	T1	TRANSFORMER	MICROTRAN MT3101	1	56-0168	!
PCB02	K1	RELAY	821-W-1A-C 12V DC	1	51-0009	
PCB02	K2	RELAY	821-W-1A-C 12V DC	1	51-0009	

**RDA-7.1****PACKING PROCEDURE PARTS LIST**

	REF. NO.	PART NAME	DESCRIPTION	Q'TY	PART NO. (SN)	MARK
PACKING	01	INNER CARTON	RDA-7.1	1	34-ONK-0001	
PACKING	02	PAD	L & R	1	---	NSP
PACKING	03	POLY BAG	---	1	34-0010	
PACKING	04	WARNING LABEL	---	1	---	NSP
PACKING	05	LABEL	(PE-LD)	1	29361573	
PACKING	06	TAPE	(SEROHAN) NITTO NO.29	(1)	29110149	
PACKING	07	POLY BAG	350 x 250	2	29100097-1A	
PACKING	08	INS MANUAL	E(RDA7.1)	1	29343637A	<ADD>
PACKING	08	INS MANUAL	E(RDA7.1)	1	29343637A	<APP>

PACKING	08	INS MANUAL	E(RDA7.1)	1	29343637A	<APA>
PACKING	08	INS MANUAL	E(RDA7.1)	1	29343637A	<AGT>
PACKING	08	INS MANUAL	E(RDA7.1)	1	29343637A	<AGK>
PACKING	09	INS MANUAL	U6(RDA-7.1)	1	29343638A	<APP>
PACKING	10	INS MANUAL	T(RDA-7.1)	1	29343639A	<AGT>
PACKING	11	WRNTY CARD	(RESEARCH)	1	29365091A	<ADD>
PACKING	12	AC CORD	---	1	---	NSP
PACKING	13	PLUG CORD	3.5-MINI PLUG (RI)	1	2010200	
PACKING	14	OUTER CARTON	RDA-7.1	1	34-ONK-0002	
PACKING	15	UPC LABEL	---	(1)	29363591	<ADD>
PACKING	15	EAN LABEL	---	(1)	29363590	<APP>
PACKING	15	EAN LABEL	---	(1)	29363590	<APA>
PACKING	15	EAN LABEL	---	(1)	29363590	<AGT>
PACKING	15	EAN LABEL	---	(1)	29363590	<AGK>
PACKING	16	PP TAPE	W50	(1)	29110071 or	
PACKING	16	PP TAPE	W48 OPP TAPE	(1)	29110148 or	
PACKING	16	PP TAPE	NITTO 3703 SUPER W50L100	(1)	29110176	
PACKING	17	DESTINATION LABEL	---	(2)	---	NSP
PACKING	18	INST SHEET	E(RDA-7.1)	1	29355513	

# PACKING PROCEDURE-1 INNER CARTON



# PACKING PROCEDURE-2 OUTER CARTON

