

audison

- SERVICE MANUAL -

LRx 4.5

Issued in July 2007

elettromedia

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				ABLD	CPU	PSC			
Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A
Rk = 12 Ohm	PS2.1A	AB7-2.1	4.5-C.1A	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. B	Rev. A

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				ABLD	CPU	PSC			
Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A
Rk = 12 Ohm	PS2.1A	AB7-2.1	4.5-C.1A	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. B	Rev. A

PART 1

ELECTRONIC PART

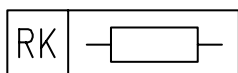
1. MAINBOARD IDENTIFICATION

There is a key resistor called "Rk" on the amplifiers mainboard; it allows you to identify which PCB it is and to find the proper electric diagrams and components layouts for it.

How to find the right diagrams to refer to

- 1) Find "**Rk**" resistor on the mainboard and determine its value.
- 2) Please check the item "**Rev/Rk**" in the cataloguing information table; then select the diagrams where "Rk" value corresponds to the pre-determined one.

Example:



"Rk" resistor assembled onto mainboard, its value is 10 Ohms.

Consult the diagrams where you can find 10 Ohms value in item "Rev/ Rk"



Type:	MAINBOARD	Rev/Rk:	10 ohm
Date:	28/oct/06	Sheet:	

Caution

When "Rk" resistor is not onto the PCB, you will find " - " in the diagrams instead of its value.

2. MODULES IDENTIFICATION AND REPLACEMENT

Besides the module identification name, you can usually find a number (indicating version) and a letter (indicating revision) onto the PCB.

By decoding these two figures, you can handle the compatibility of the modules you have to replace and find the corresponding diagrams.

Example of how to decode the modules VERSION / REVISION.

LRx2CD-S.0A

LRx2CD-S = Module type

.0 = Version number

A = Revision letter

(If this letter is missing, it means the module is the first release).

VERSION NUMBER

A different number indicates a non compatible VERSION.

Please don't use modules with a different VERSION NUMBER for replacement, unless it is indicates.

Contact Audison for any necessary clarifications.

REVISION LETTER

A different letter indicates the module improved revision. Compatibility is not compromised. It is always suitable to replace a module with another one having the same letter or the successive one.

How to find the right diagrams to refer to

- 1) Find the version/revision identification figures on the module.
- 2) Please check the item "Rev/RK" in the cataloguing information table; then select the diagrams with corresponding version/revision figures.

Example:

LRx2-CD. 0A

Version / Revision
corresponding to ".0A".

Consult the diagrams where you can find ".0A" in item "Rev/Rk".



Type:	LRx2CD-S	Rev/Rk:	.0A
Date:	29/mar/2006	Sheet:	

PART 1: ELECTRONIC PART

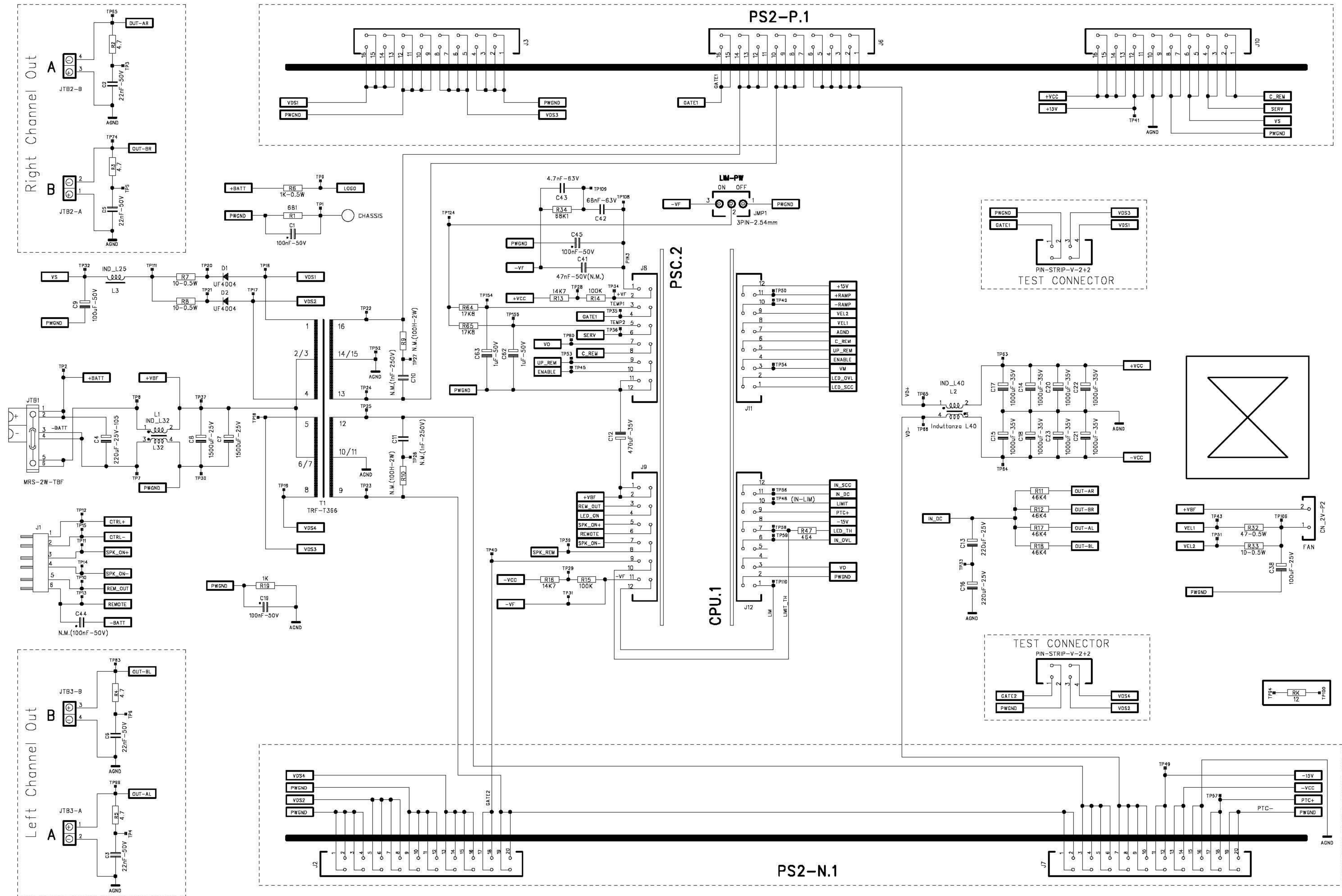
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First Version: Rk = 12 Ohm

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Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A



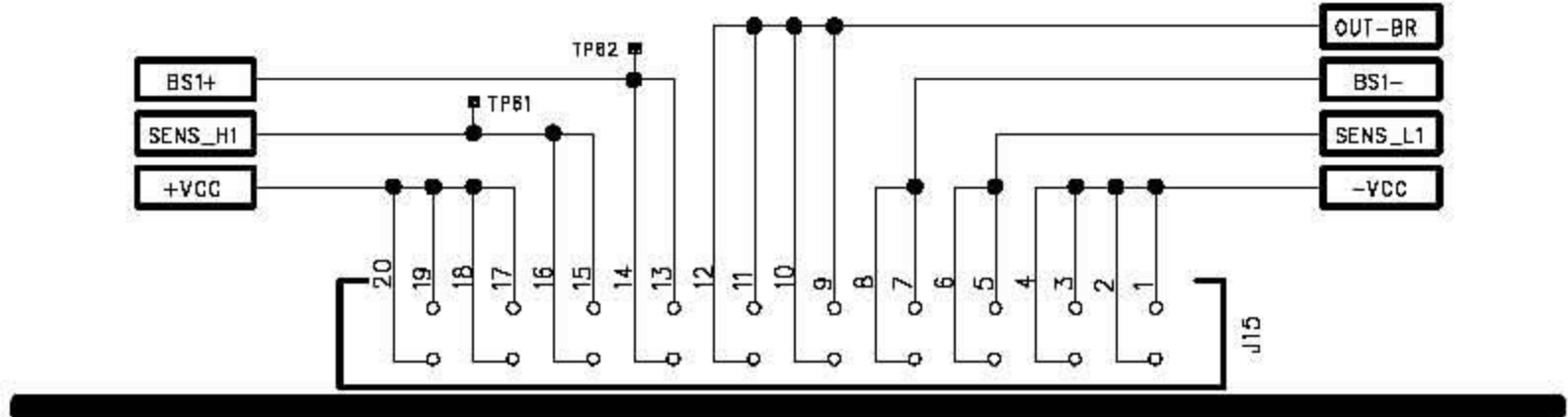
audison
TS: **BAF142D**

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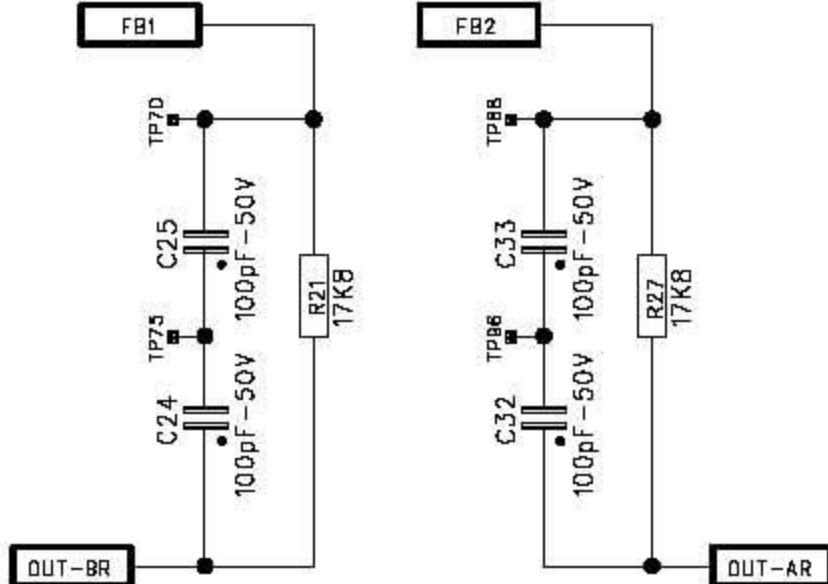
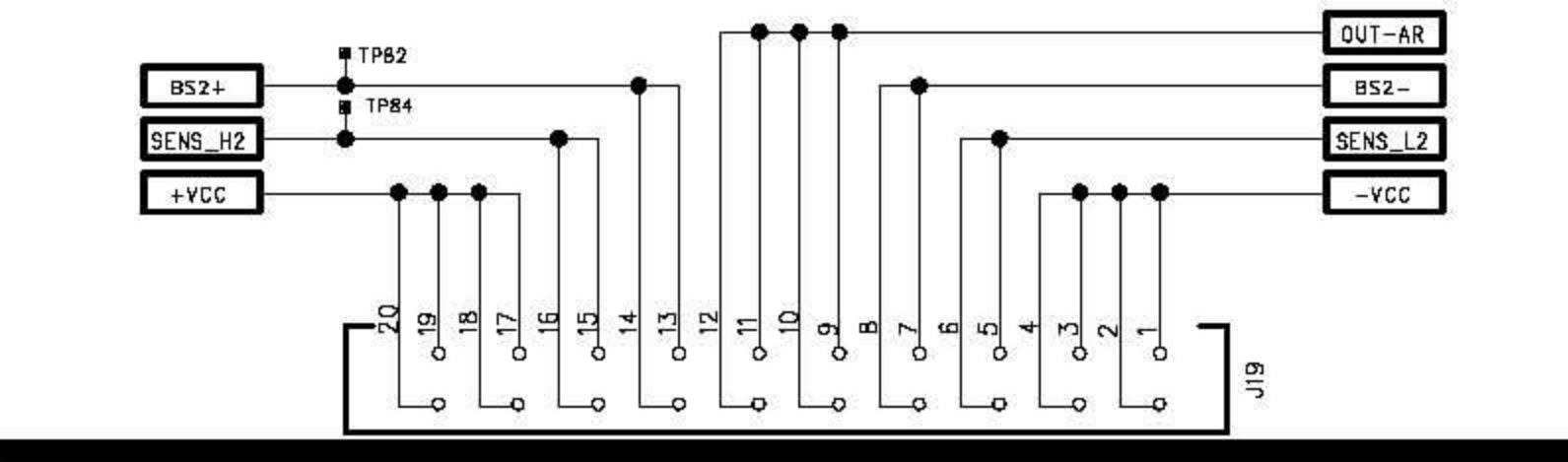
Product: LRx 4.5
PCB code: 16726310 E
Type: MAIN BOARD
Date: 14/oct/2005
Rev/Rk: 12 ohm
Sheet: 1 OF 2



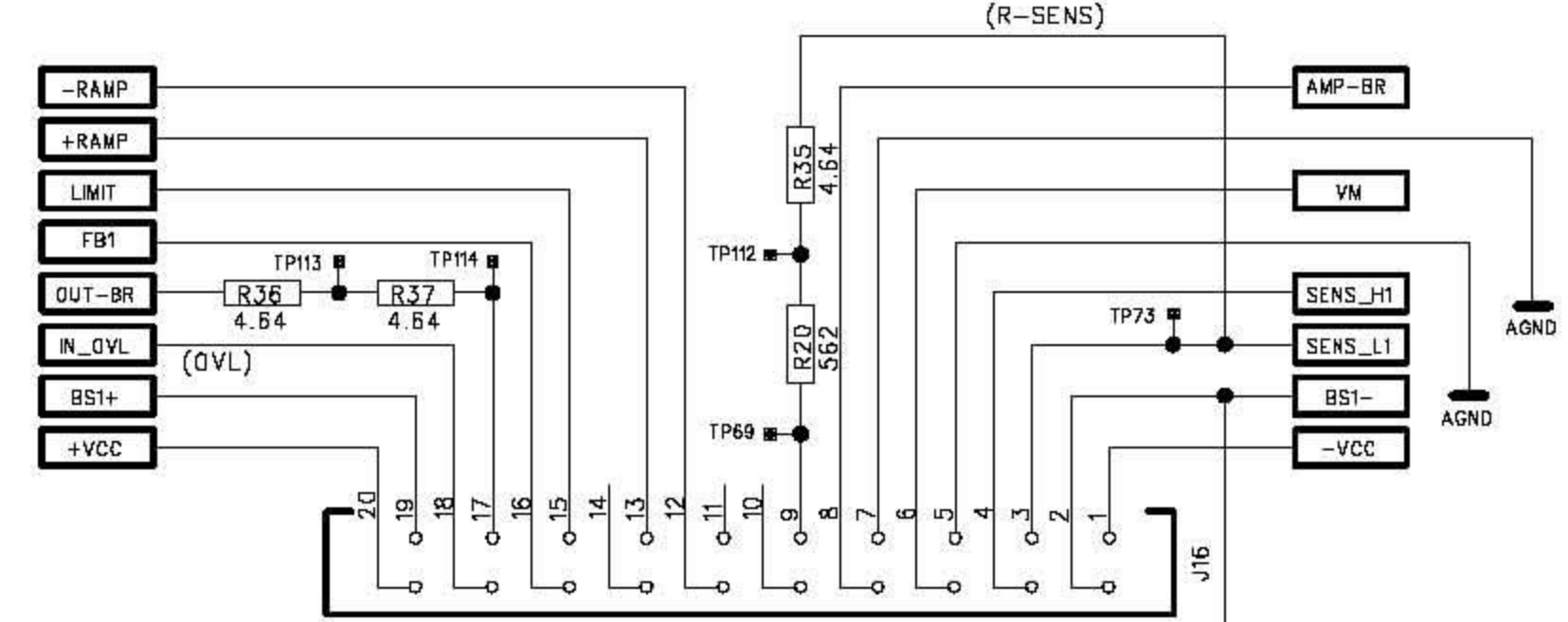
B-Right Channel Amplifier (AB7-2.1)



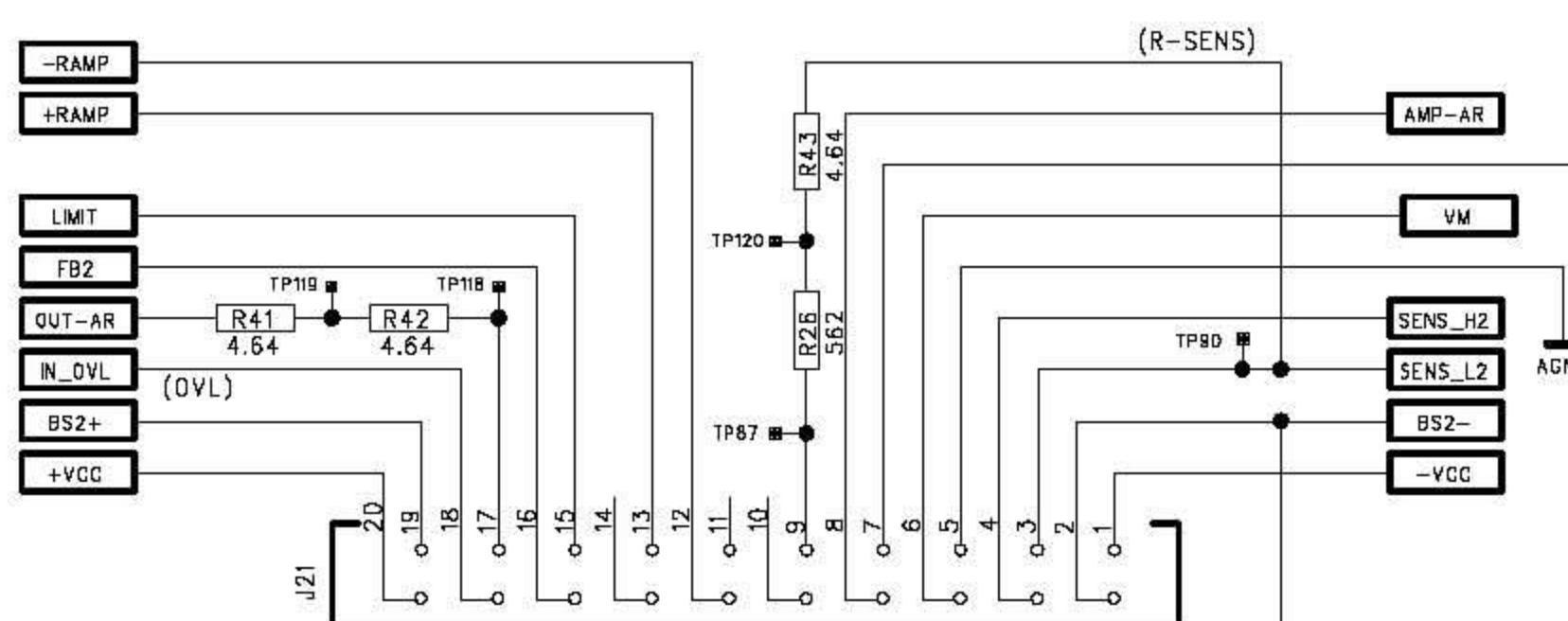
A-Right Channel Amplifier (AB7-2.1)



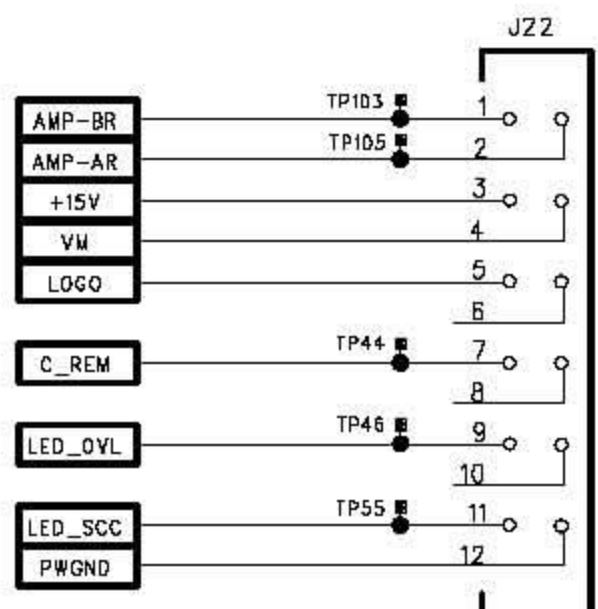
B-Right Channel - Linear Driver (ABLD.1)



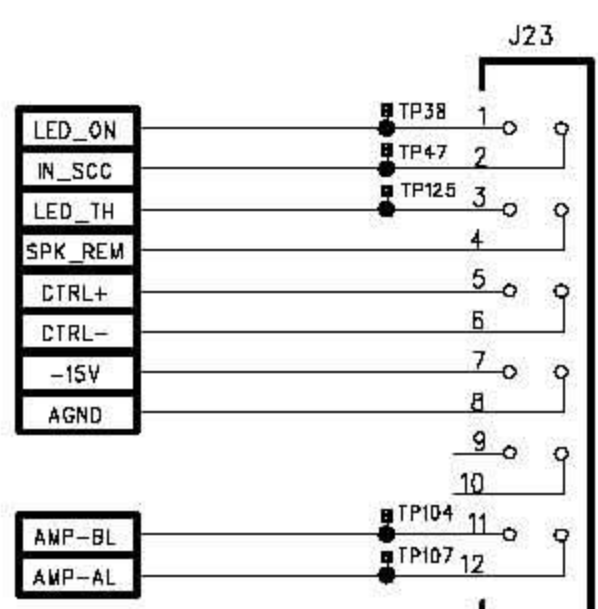
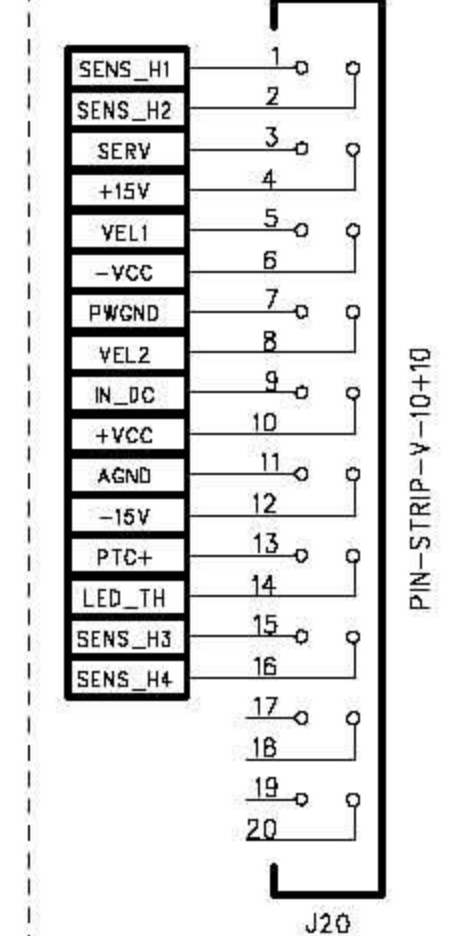
A-Right Channel - Linear Driver (ABLD.1)



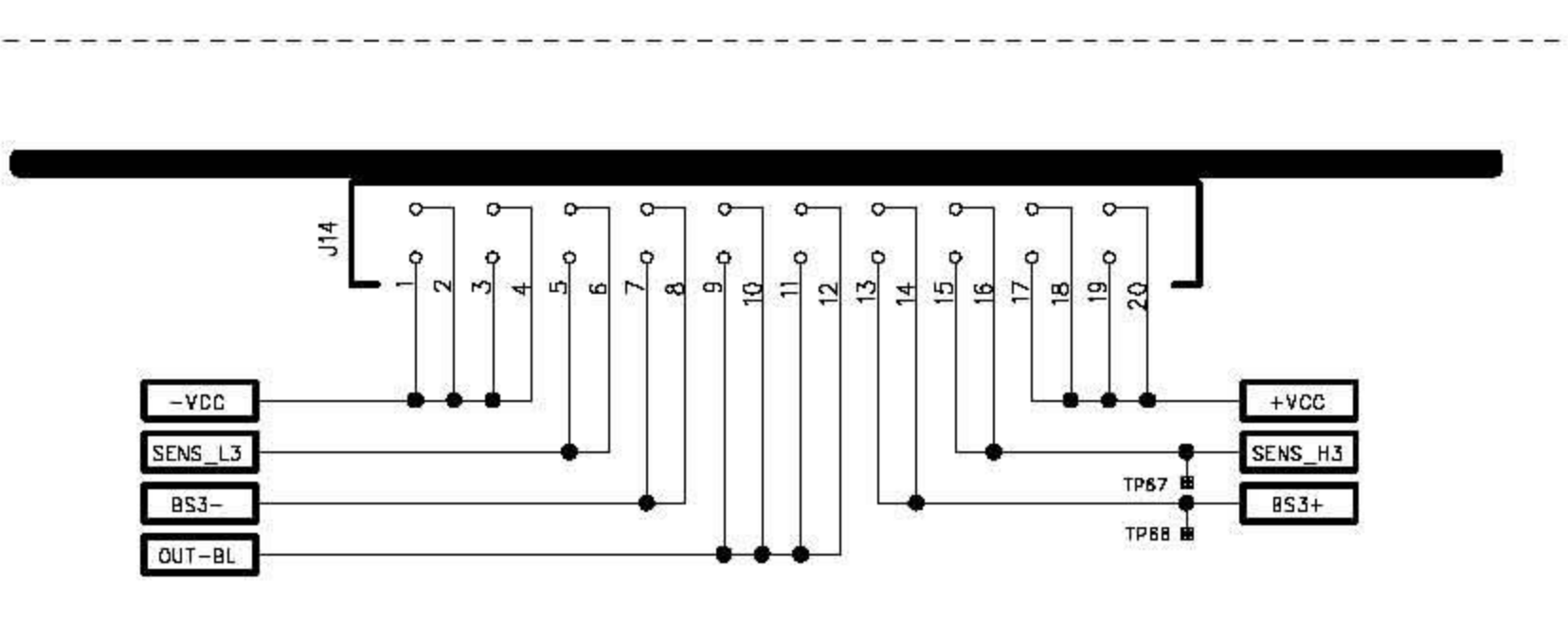
Controls



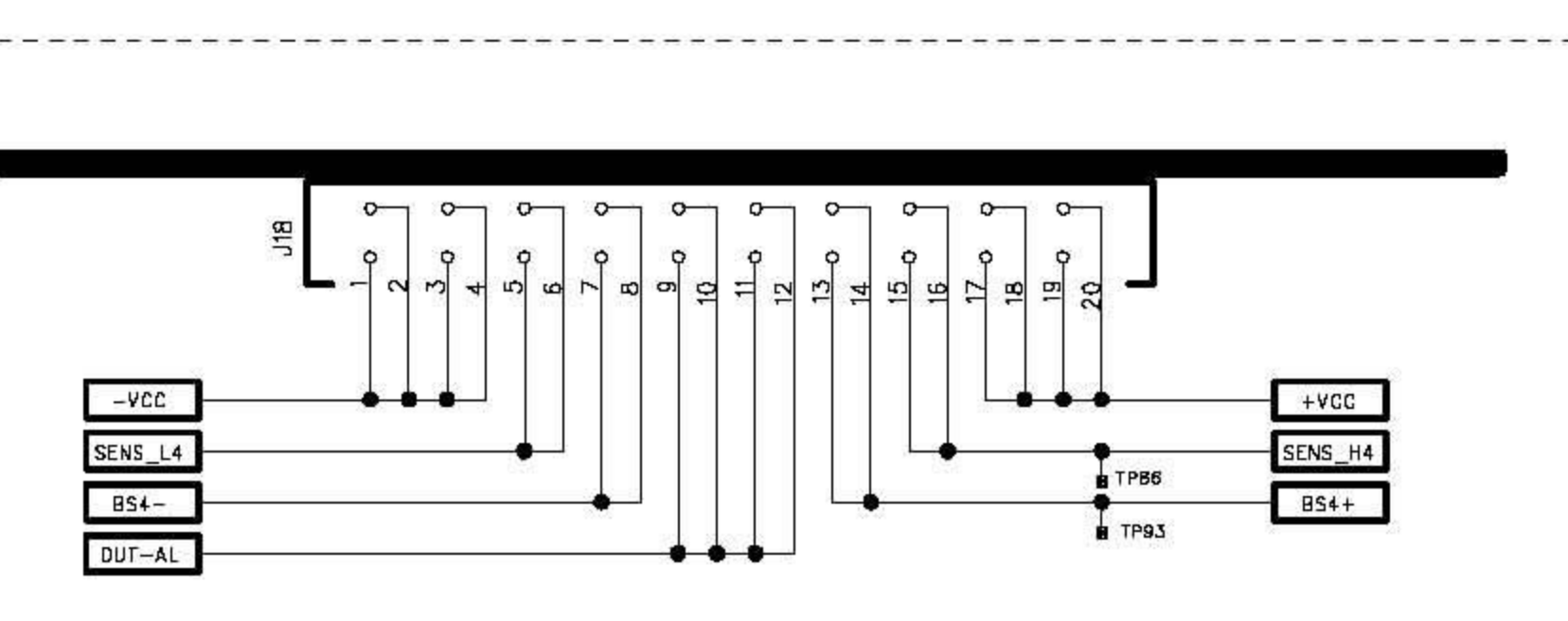
TEST
Connector



B-Left Channel - Linear Driver (ABLD.1)



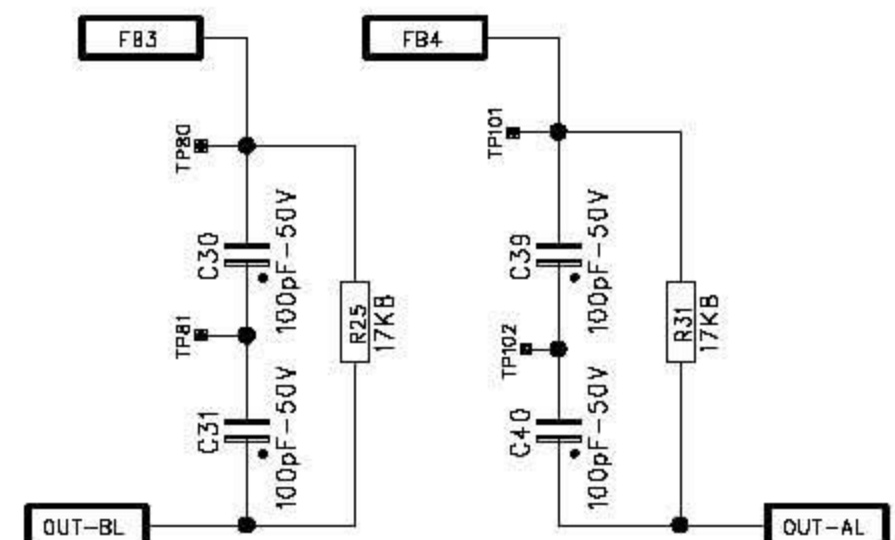
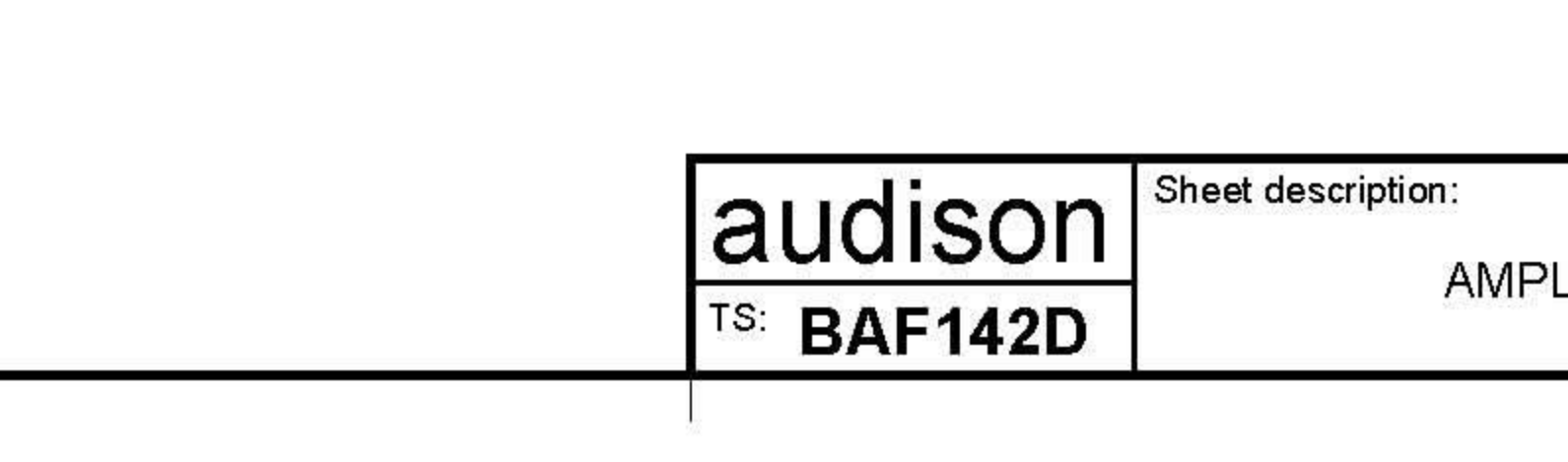
A-Left Channel - Linear Driver (ABLD.1)



B-Left Channel Amplifier (AB7-2.1)



A-Left Channel Amplifier (AB7-2.1)



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TS: **BAF142D**

Sheet description:
AMPLIFIER + CONTROLS

Product:

LRx 4.5

PCB code:

16726310 E

Type:

MAIN BOARD

Date:

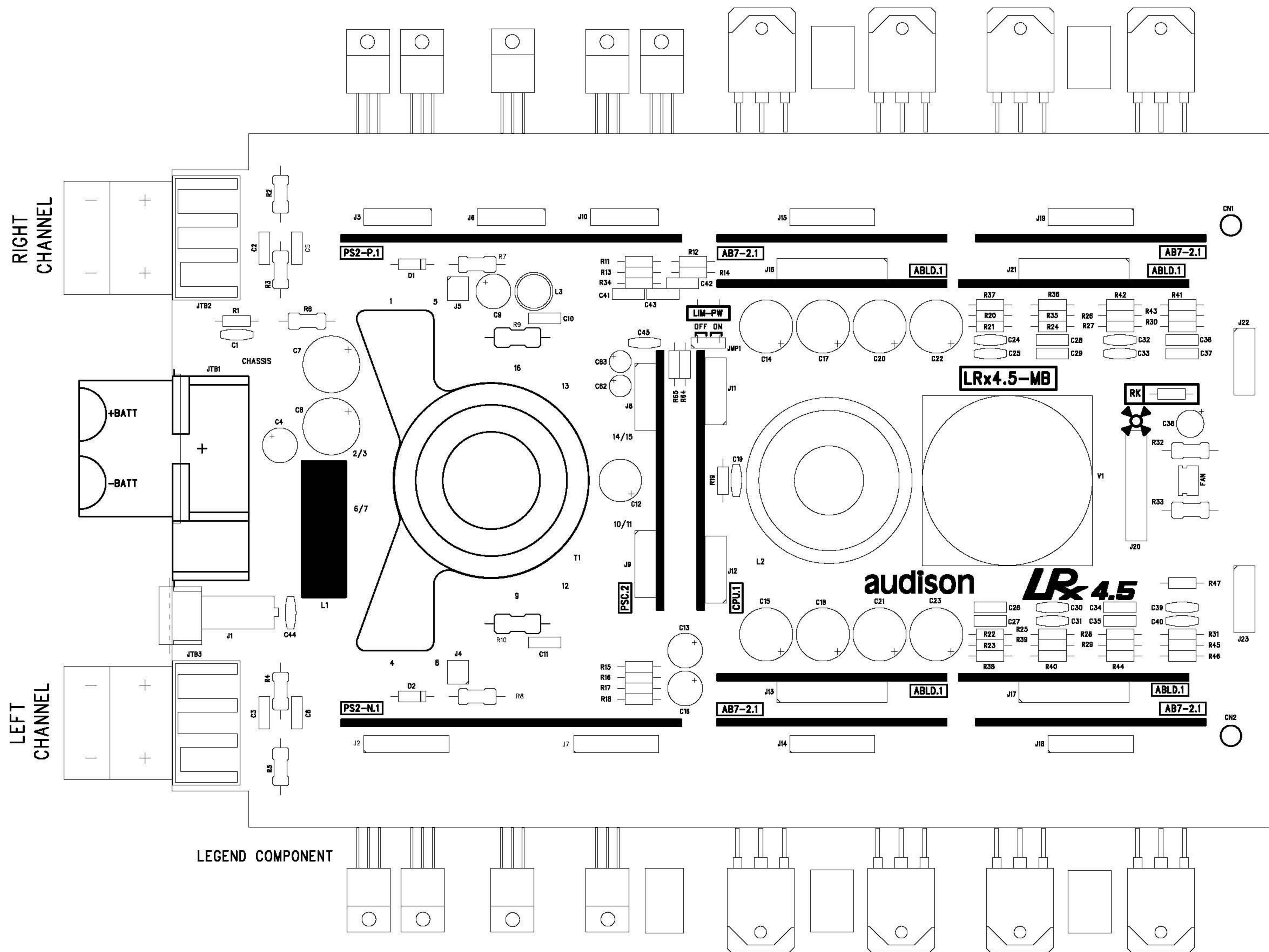
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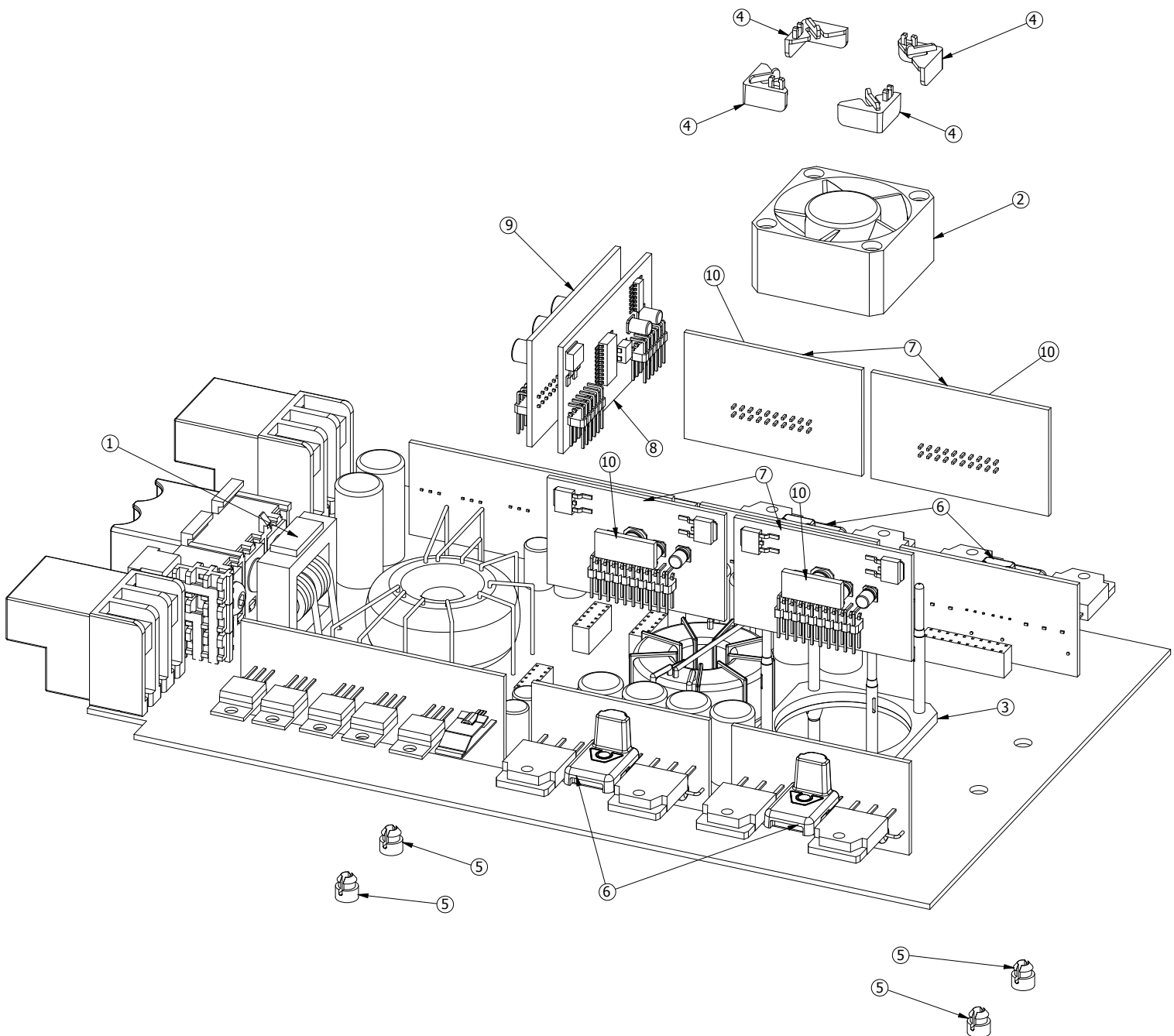
2 OF 2

Rev/Rk:

12 ohm



Printed Circuit Board Exploded View



LRx 4.5 PCB PARTS LIST

Rk = 12 Ohm

REF. NO	PART NO	DESCRIPTION	Q.TY
INSULATOR			
FOR INDUCTOR L40	10035010	DIAM. 35mm ADHESIVE MYLAR	1
FOR TOROIDAL TRANSFORMER	10035020	ADHESIVE MYLAR FOR LRx TRANSFORMER	1
CONNECTION WIRE AND CONNECTORS			
CHASSIS	15100100	L 60mm BLACK WIRE	1
JTB1	15213020	2W-TBF TERMINAL BLOCK	1
JTB2 JTB3	15213111	4W ATP TERMINAL BLOCK	2
J4 J5	15231710	2.54mm STRAIGHT PIN HEADER 2+2 CONTACT	2
J20	15231760	2.54mm STRAIGHT PIN HEADER 10+10 CONTACT	1
JMP1 (1 da 3 Vie)	15232500	2.54mm STRAIGHT PIN HEADER 3 CONTACT	0,075
J8 J9 J11 J12 J22 J23	15235040	2.54mm STRAIGHT FEMALE HEADER 6+6 CONTACT	6
J13 J16 J17 J21	15235060	2.54mm STRAIGHT FEMALE HEADER 10+10 CONTACT	4
FAN	15237120	2mm PCB CONNECTOR 2 WAY	1
J1	15240010	6W FASTON PCB CONNECTOR	1
MAGNETIC WIREWOUND			
L3	15721250	47uH INDUCTOR	1
L1	15721320	"UR" CORE - L32	1
L2	15721360	2 x TOROIDAL CORE - L40	1
T1	35754810	TOROIDAL TRANSFORMER T366	1
RESISTORS			
R35 R36 R37 R38 R39 R40 R41 R42 R43	16000800	1/4W 1% 4.64 Ohm (MRS25)	12
R44 R45 R46			
R47	16010500	1/4 W 1% 464 Ohm	1
R20 R23 R26 R29	16011000	1/4 W 1% 562 Ohm	4
R1	16011500	1/4 W 1% 681 Ohm	1
R19	16012500	1/4 W 1% 1 KOhm	1
R22 R24 R28 R30	16018500	1/4 W 1% 10 KOhm	4
R13 R16	16019500	1/4 W 1% 14.7 KOhm	2
R21 R25 R27 R31 R64 R65	16020000	1/4 W 1% 17.8 KOhm	6
R11 R12 R17 R18	16021400	1/4 W 1% 46.4 KOhm	4
R34	16021900	1/4 W 1% 68.1 KOhm	1
R14 R15	16022500	1/4 W 1% 100 KOhm	2
RK	16120400	1/4 W 5% 12 Ohm	1
R2 R3 R4 R5	16140500	1/2 W 5% 4.7 Ohm	4
R7 R8 R33	16141000	1/2 W 5% 10 Ohm	3
R32	16141500	1/2 W 5% 47 Ohm	1
R6	16143000	1/2W 5% 1 KOhm	1
CAPACITORS			
C24 C25 C30 C31 C32 C33 C39 C40	16402001	CERAMIC 100p 50V 10% P.5mm	8
C1 C19 C45	16407001	CERAMIC cl3 100n 50V >20% P.5mm	3
C26 C27 C28 C29 C34 C35 C36 C37	16430200	POLYESTER 1nF 63Vdc/40Vac P.5mm	8
C43	16430600	POLYESTER 4.7nF 63Vdc/40Vac P.5mm	1
C42	16431900	POLYESTER 68nF 63Vdc/40Vac P.5mm	1
C2 C3 C5 C6	16441601	POLYESTER 22nF 50Vdc/30Vac P.5mm	4
C7 C8	16530530	ELECTROLYTIC 105° 1500uF 25V Low imp.	2
C38	16530801	ELECTROLYTIC 85° 100uF 25V	1
C13 C16	16530831	ELECTROLYTIC 85° 220uF 25V	2
C4	16530841	ELECTROLYTIC 105° 220uF 25V	1
C62 C63	16540000	ELECTROLYTIC 85° 1uF 50V	2
C12	16540450	ELECTROLYTIC 85° 470uF 35V	1
C9	16540900	ELECTROLYTIC 85° 100uF 50V	1
C14 C15 C17 C18 C20 C21 C22 C23	16541200	ELECTROLYTIC 85° 1000uF 35V	8
DIODES			
D1 D2	16621100	U-FAST 1A 400V UF4004	2
ASSEMBLED PCB			
AB7-2.1	36726710	LRx AMP-AB 2xTO247	4
PS2-P/N.1	36726910	LRx PWR SIDE 2 MOS P/N	1

LRx 4.5 EXPLODED PCB PARTS LIST

Rk = 12 Ohm

REF. NO	PART NO	DESCRIPTION	Q.TY
1	10071100	9.5x11mm ADHESIVE FELT	1
2	10090080	40x40x20mm FAN WITH CONNECTOR	1
3	10096010	LRx - 40mm FAN SUPPORT	1
4	10096020	LRx FAN SUPPORT - ANGLE CLIP	4
5	12420140	De 6.4 di 3.2 h. 4.8mm PLASTIC SPACER	4
6	13540140	LRx BIAS-DRV THERMAL BRIDGE	4
7	46780740	ABLD.1 MODULE	4
8	46780750	CPU.1 MODULE	1
9	46780761	PSC.2 MODULE	1
10	10071190	8x18mm ADHESIVE FELT	4

PART 1: ELECTRONIC PART

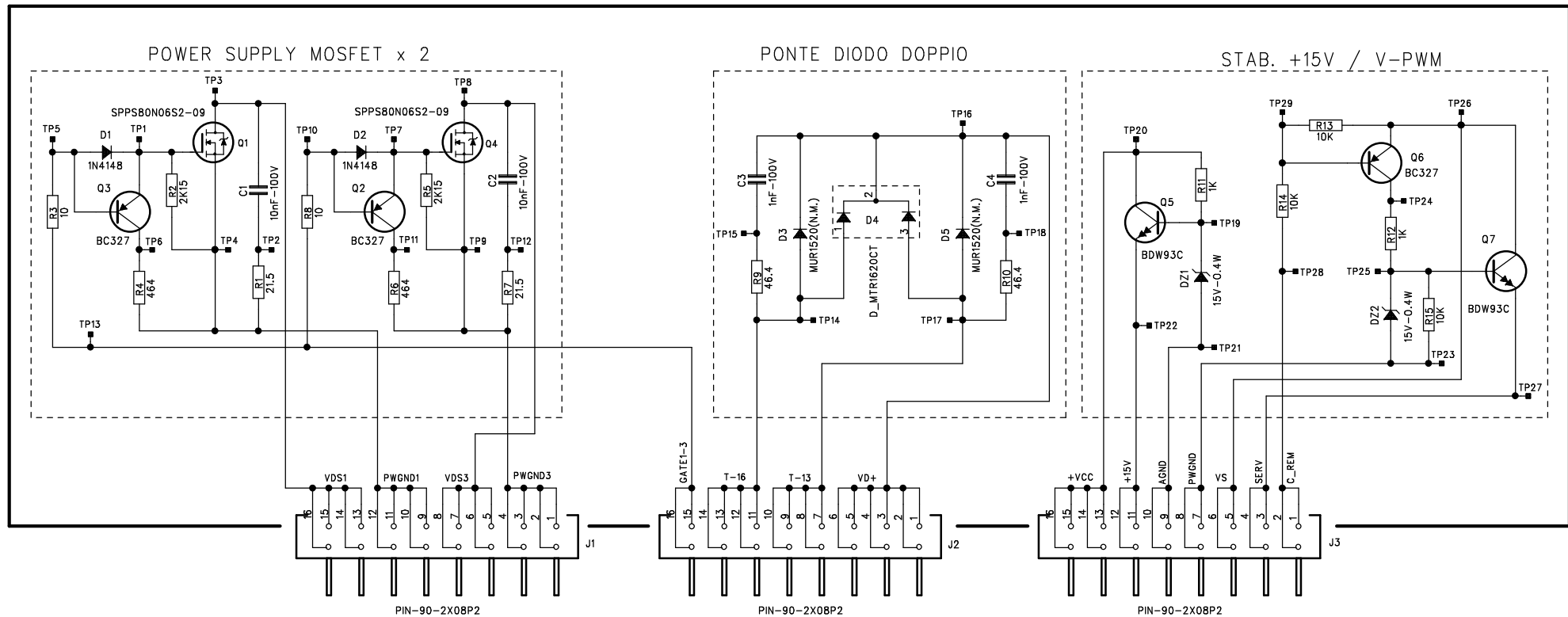
Section C: Power Side 2 Module Revision

First Version: Rev. = .1

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|---|-------------------|
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| 2. Components layout - Rev. = .1 | sheet from 1 to 1 |
| 3. PCB parts list - Rev. = .1 | page from 1 to 1 |

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Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A



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TS: **BAF152B**

Sheet description:

POWER SIDE POSITIVE

Product:
LRx2-NEW

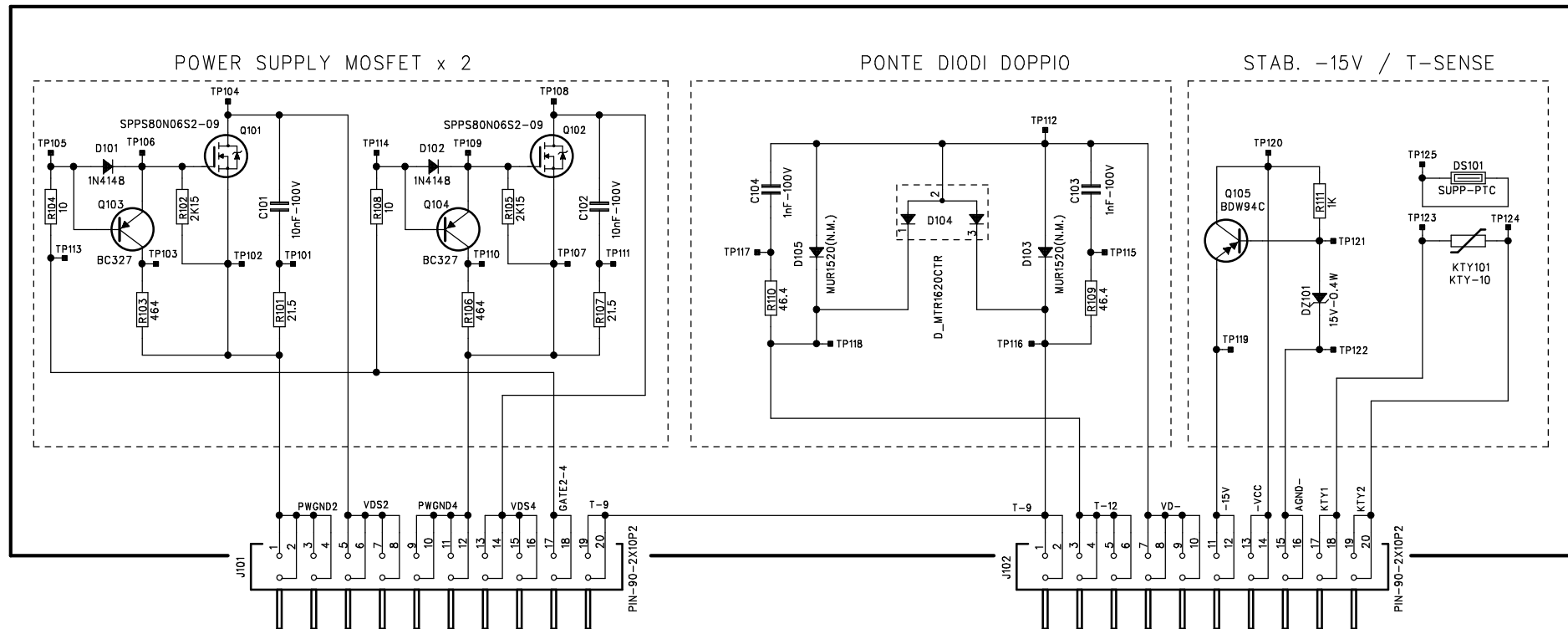
PCB code:
16726910 B

Type:
PS2

Date:
30/jun/2005

Sheet:
1 OF 2

Rev/Rk:
.1



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TS: **BAF152B**

Sheet description:

POWER SIDE NEGATIVE

Product: **LRx2-NEW**

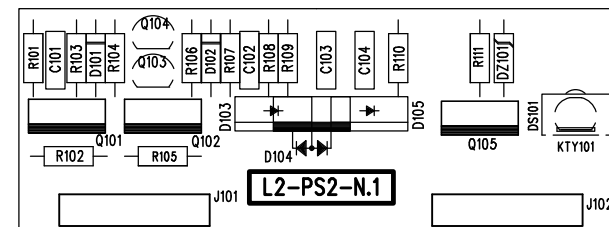
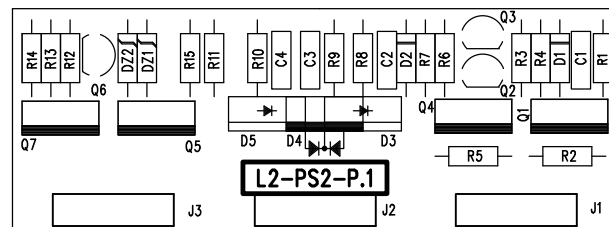
PCB code: **16726910 B**

Type: **PS2**

Date: **30/jun/2005**

Rev/Rk: **.1**

Sheet: **2 OF 2**



PS2-P/N.1 MODULE PCB PARTS LIST

Revision .1

REF. NO	PART NO	DESCRIPTION	Q.TY
MECHANICAL PARTS			
DS101	14244000	TEMPERATURE SENSOR SUPPORT	1
CONNECTION WIRE AND CONNECTORS			
J1 J2 J3	15232720	2mm RIGHT ANGLE PIN HEADER 08+08 CONTACT	3
J101 J102	15232730	2mm RIGHT ANGLE PIN HEADER 10+10 CONTACT	2
RESISTORS			
R1 R7 R101 R107	16002500	1/4 W 1% 21.5 Ohm	4
R3 R8 R104 R108	16004000	1/4 W 1% 39.2 Ohm	4
R9 R10 R109 R110	16004500	1/4 W 1% 46.4 Ohm	4
R4 R6 R103 R106	16010500	1/4 W 1% 464 Ohm	4
R11 R12 R111	16012500	1/4 W 1% 1 KOhm	3
R2 R5 R102 R105	16014500	1/4 W 1% 2.15 KOhm	4
R13 R14 R15	16018500	1/4 W 1% 10 KOhm	3
CAPACITORS			
C3 C4 C103 C104	16430200	POLYESTER 1nF 63Vdc/40Vac P.5mm	4
C1 C2 C101 C102	16430600	POLYESTER 4.7nF 63Vdc/40Vac P.5mm	4
TRANSISTORS			
Q1 Q4 Q101 Q102	16606110	MOSFET TO220 IPP80N06S2-09	4
Q2 Q3 Q6 Q103 Q104	16610100	PNP 45V 0.5A BC327	5
Q105	16611400	BDW 94 C	1
Q5 Q7	16611800	BDW 93 C	2
DIODES			
D1 D2 D101 D102	16620000	SIGNAL 1N4148	4
DZ1 DZ2 DZ101	16621400	ZENER 0.4 W 5% 15 V	3
D104	16631460	UF ITO220 2x10A 200V A-C	1
D4	16631480	UF ITO220 2x10A 200V K-C	1
SENSORS			
KTY101	16832200	KTY 10-5 TEMPERATURE SENSOR	1

PART 1: ELECTRONIC PART

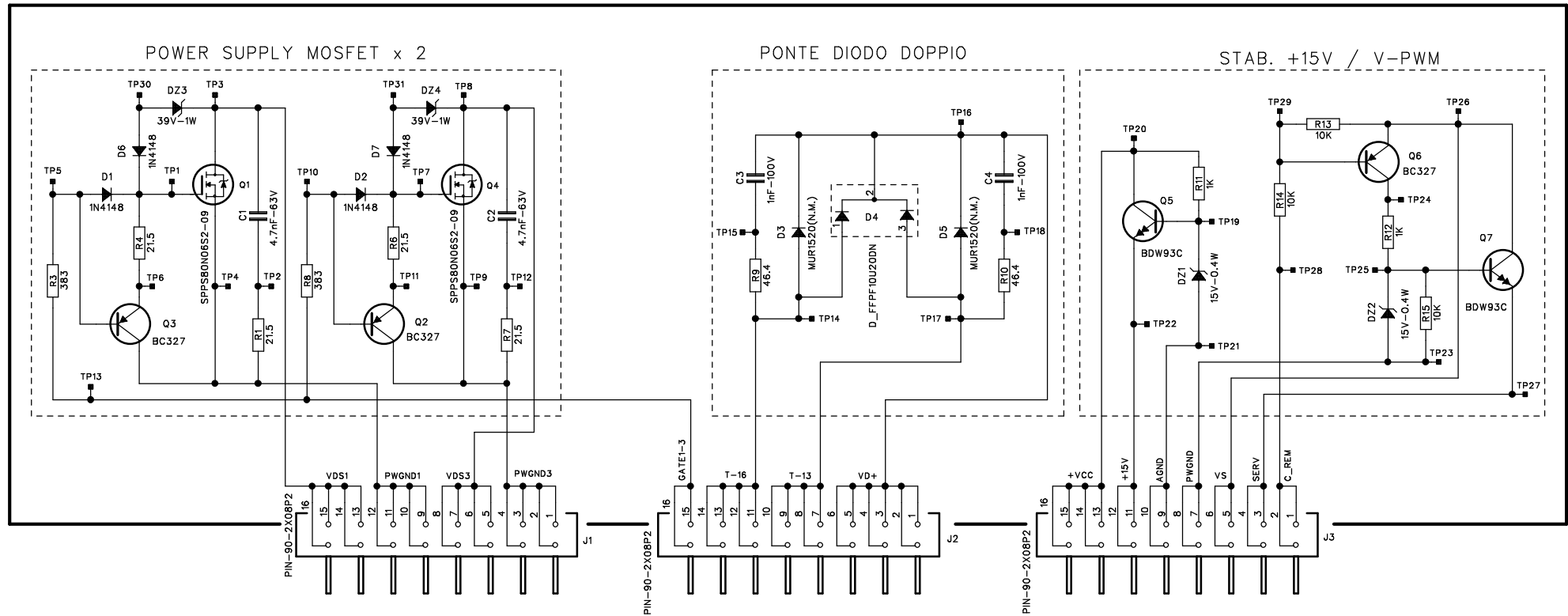
Section C : Power Side 2 Module Revision

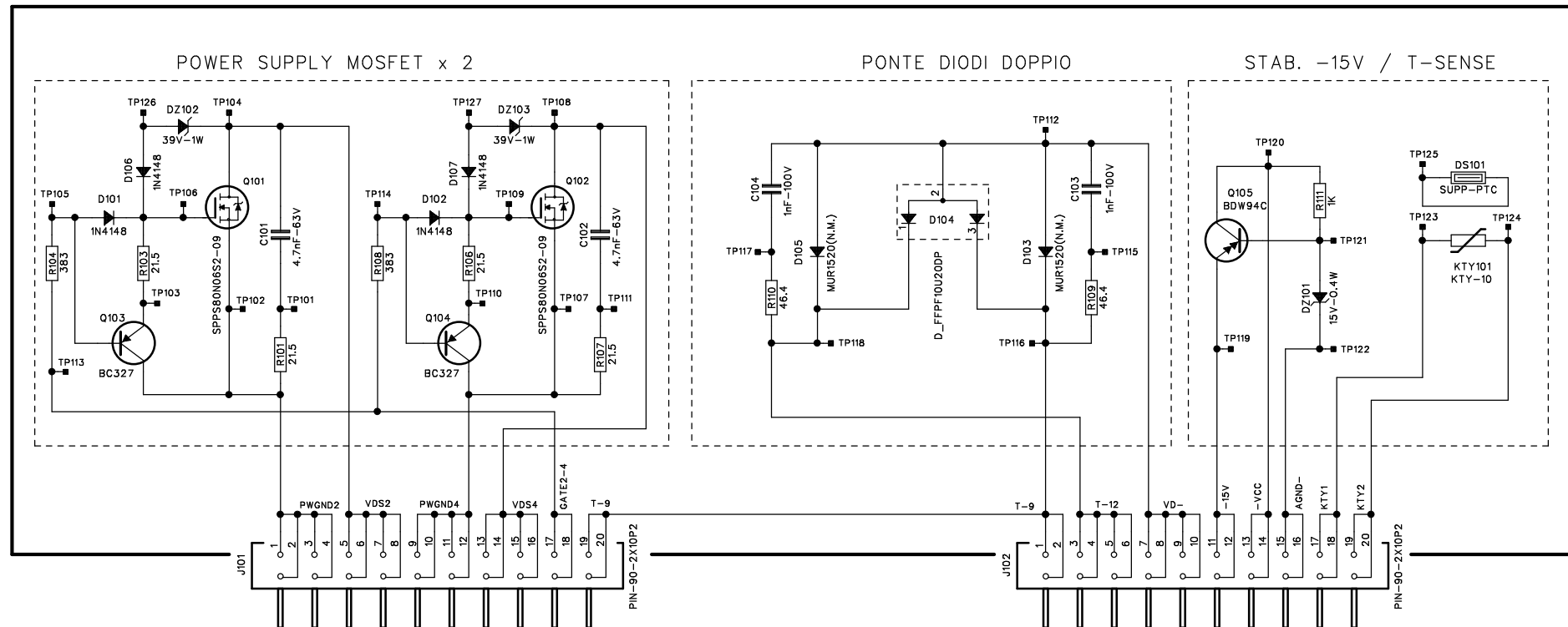
Upgrading Version: Rev. = .1A

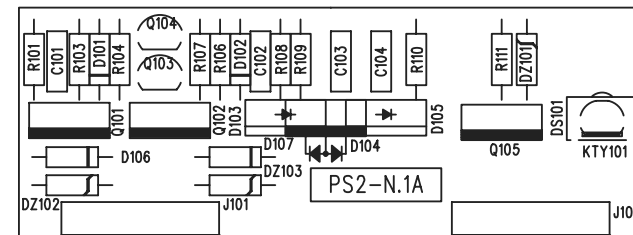
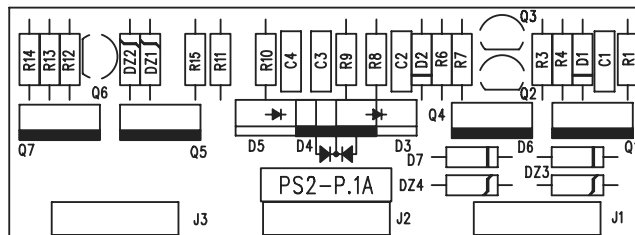
- | | |
|--|-------------------|
| 1. Electrical diagrams - Rev. = .1A | sheet from 1 to 2 |
| 2. Components layout - Rev. = .1A | sheet from 1 to 1 |
| 3. PCB parts list - Rev. = .1A | page from 1 to 1 |

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Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A
Rk = 12 Ohm	PS2.1A	AB7-2.1	4.5-C.1A	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. B	Rev. A







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TS: **BAC161D**

Sheet description:

COMPONENTS LAY-OUT

Product: LRx2

Type: PS2-P/N

Rev/RK: .1A

PCB code: 16726910 C

Date: 19/02/2007

Sheet: 1 of 1

PS2-P/N.1A MODULE PCB PARTS LIST

Revision .1A

REF. NO	PART NO	DESCRIPTION	Q.TY
MECHANICAL PARTS			
DS101	14244000	TEMPERATURE SENSOR SUPPORT	1
CONNECTION WIRE AND CONNECTORS			
J1 J2 J3	15232720	2mm RIGHT ANGLE PIN HEADER 08+08 CONTACT	3
J101 J102	15232730	2mm RIGHT ANGLE PIN HEADER 10+10 CONTACT	2
RESISTORS			
R1 R4 R6 R7 R101 R103 R106 R107	16002500	1/4 W 1% 21.5 Ohm	8
R3 R8 R104 R108	16010000	1/4 W 1% 383 Ohm	4
R11 R12 R111	16012500	1/4 W 1% 1 KOhm	3
R13 R14 R15	16018500	1/4 W 1% 10 KOhm	3
CAPACITORS			
C1 C2 C101 C102	16430600	POLYESTER 4.7nF 63Vdc/40Vac P.5mm	4
TRANSISTORS			
Q1 Q4 Q101 Q102	16606110	MOSFET TO220 IPP80N06S2-09	4
Q2 Q3 Q6 Q103 Q104	16610100	PNP 45V 0.5A BC327	5
Q105	16611400	BDW 94 C	1
Q5 Q7	16611800	BDW 93 C	2
DIODES			
D1 D2 D6 D7 D101 D102 D106 D107	16620000	SIGNAL 1N4148	8
DZ1 DZ2 DZ101	16621400	ZENER 0.4W 5% 15 V	3
DZ3 DZ4 DZ102 DZ103	16621700	ZENER 1W 39V 5%	4
D104	16631460	UF ITO220 2x10A 200V A-C	1
D4	16631480	UF ITO220 2x10A 200V K-C	1
SENSORS			
KTY101	16832200	TEMPERATURE SENSOR KTY 10-5	1

PART 1: ELECTRONIC PART

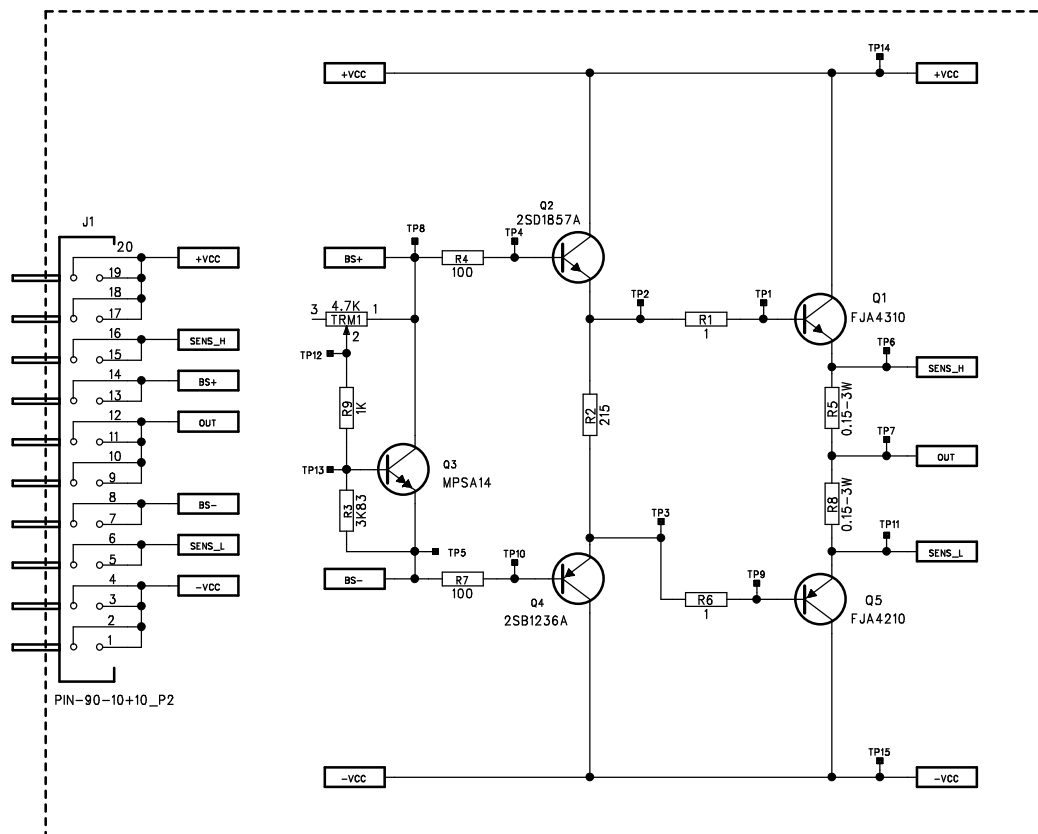
Section D : Class AB Final Modules

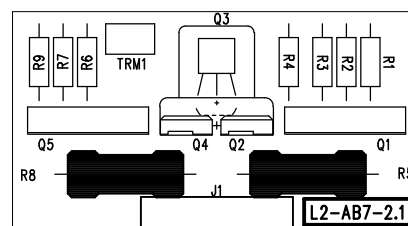
First Version: Rev. = .1

- | | |
|---|-------------------|
| 1. AB7-2.1 Electrical diagrams - Rev. = .1 | sheet from 1 to 1 |
| 2. AB7-2.1 Components layout - Rev. = .1 | sheet from 1 to 1 |
| 3. AB7-2.1 PCB parts list - Rev. = .1 | page from 1 to 1 |

Table of the last upgrading revisions

UPGRADING REVISIONS									
PART 1 ELECTRONIC PART							PART 2 MECHANICAL PART	PART 3 Technical Notes	
SECT. B Mainboard	SECT. C PS2-P/N	SECT. D AB7-2	SECT. E Controls	ABLD	SECT. F CPU	PSC	SECT. G Comp. Pin-out	SECT. A - Exploded views and parts list	Technical Notes
Rk =12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A





audison

TS: **BAC158C**

Sheet description:

COMPONENTS LAY-OUT

Product:

LRx2

Type:

AB7-2

Rev/Rk:

.1

PCB code:

16726710 B

Date:

18/oct/2005

Sheet:

1 OF 1

AB7- 2.1 MODULE PCB PARTS LIST

Revision .1

REF. NO	PART NO	DESCRIPTION	Q.TY
CONNECTION WIRE AND CONNECTORS			
J1	15232730	2mm RIGHT ANGLE PIN HEADER 10+10 CONTACT	1
RESISTORS			
R1 R6	16000000	1/4W 1% 1 Ohm (MRS25)	2
R4 R7	16006500	1/4 W 1% 100 Ohm	2
R2	16008500	1/4 W 1% 215 Ohm	1
R9	16012500	1/4 W 1% 1 KOhm	1
R3	16016000	1/4 W 1% 3.83 KOhm	1
R5 R8	16184980	WIRE - 3W 5% 0.15 Ohm	2
TRIMMER			
TRM1	16360500	CARBON 5x5 4.7KOhm	1
TRANSISTORS			
Q3	16600200	NPN TO92 MPSA14	1
Q4	16601100	PNP ATV 2SB1236A-Q	1
Q2	16601120	NPN ATV 2SD1857A-Q	1
Q1	16614650	NPN TO247 FJA4310-O 10A 120V	1
Q5	16614750	PNP TO247 FJA4210-O 10A 120V	1

PART 1: ELECTRONIC PART

Section E : Controls Modules

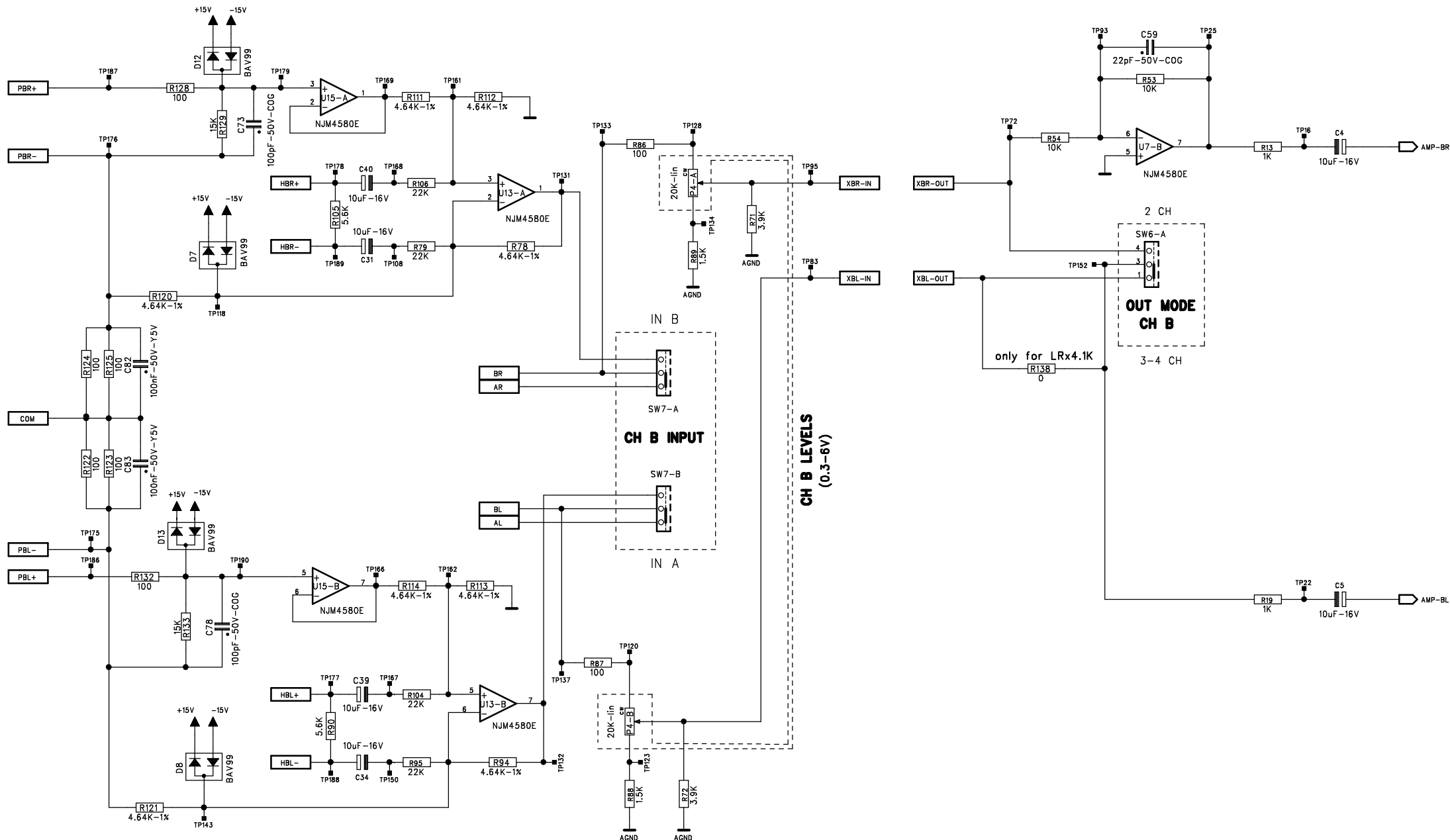
First Version: Rev. = .1

1. LRx 4.5 - C Electrical diagrams - **Rev. = .1** sheet from 1 to 8
2. LRx 4.5 - C Components layout - **Rev. = .1** sheet from 1 to 1
3. LRx 4.5 - C PCB parts list - **Rev. = .1** page from 1 to 2

Table of the last upgrading revisions

UPGRADING REVISIONS									
PART 1 ELECTRONIC PART							PART 2 MECHANICAL PART	PART 3 Technical Notes	
SECT. B Mainboard	SECT. C PS2-P/N	SECT. D AB7-2	SECT. E Controls	SECT. F ABLD	CPU	PSC	SECT. G Comp. Pin-out	SECT. A - Exploded views and parts list	Technical Notes
Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A





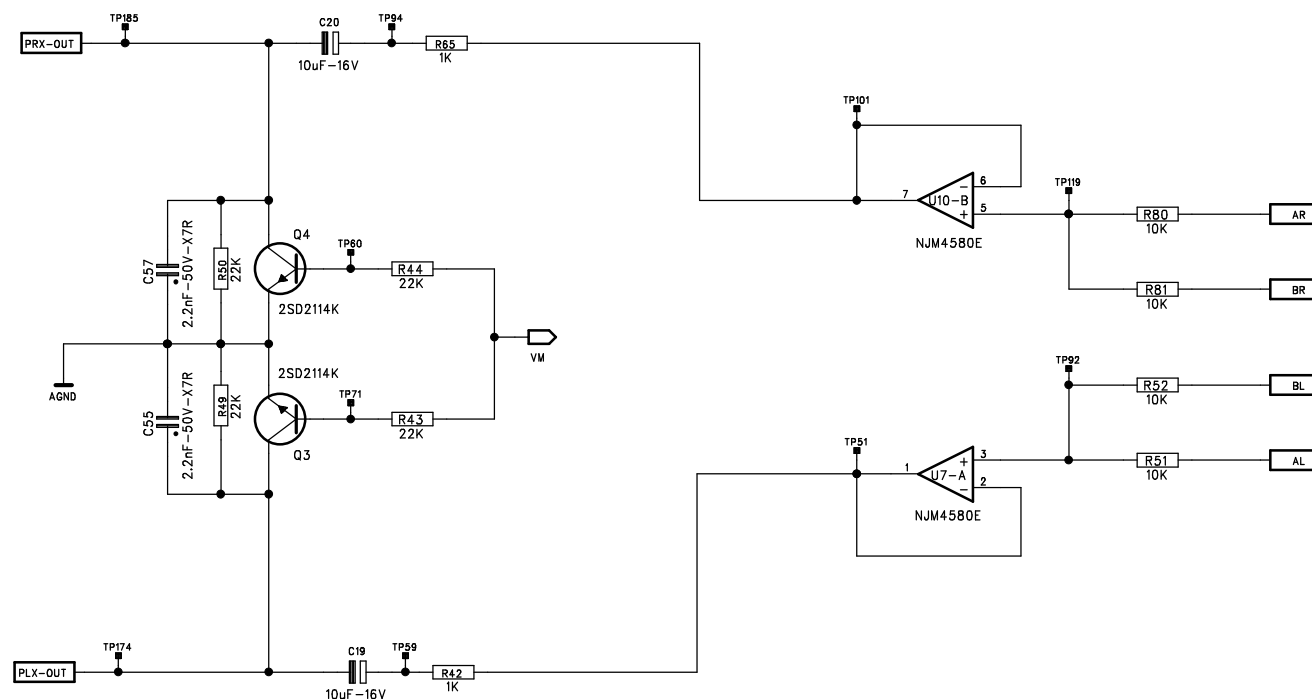
audison

TS: BAF143C

Sheet description:

PRE INPUT CH-B AND FUNCTION SWITCH

Product:
LRx4.5/1KType:
LRx4.5/1K-CRev/RK:
.1PCB code:
16726630 CDate:
14/09/2005Sheet:
2 of 8



audison

TS: BAF143C

Sheet description:

OUTPUT PREAMP

Product:

LRx4.5/1K

Type:

LRx4.5/1K-C

Rev/RK:

.1

PCB code:

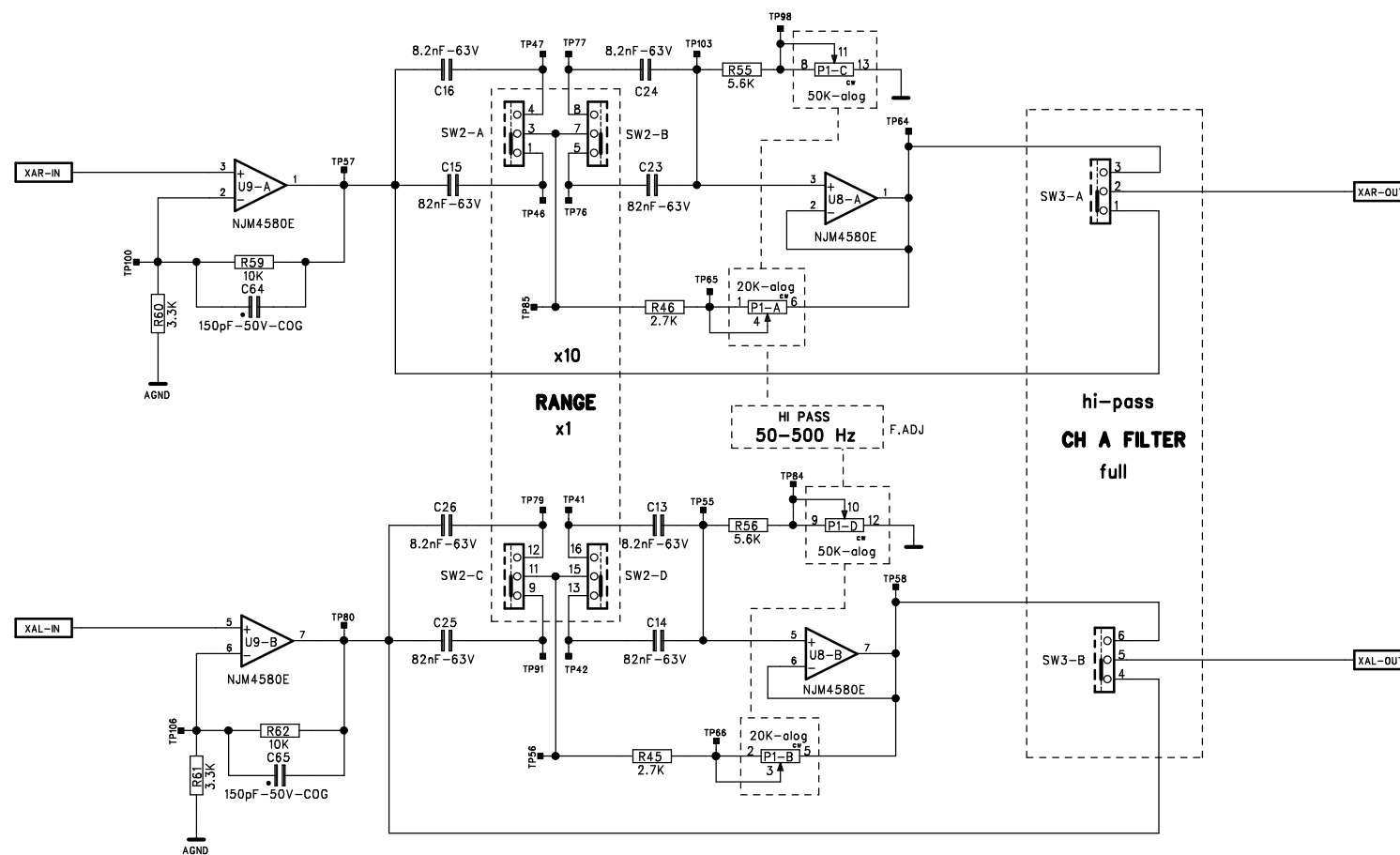
16726630 C

Date:

14/09/2005

Sheet:

3 of 8



audison

TS: BAF143C

Sheet description:

HI-PASS FILTER - REAR SECTION

Product:

LRx4.5/1K

Type:

LRx4.5/1K-C

Rev/RK:

.1

PCB code:

16726630 C

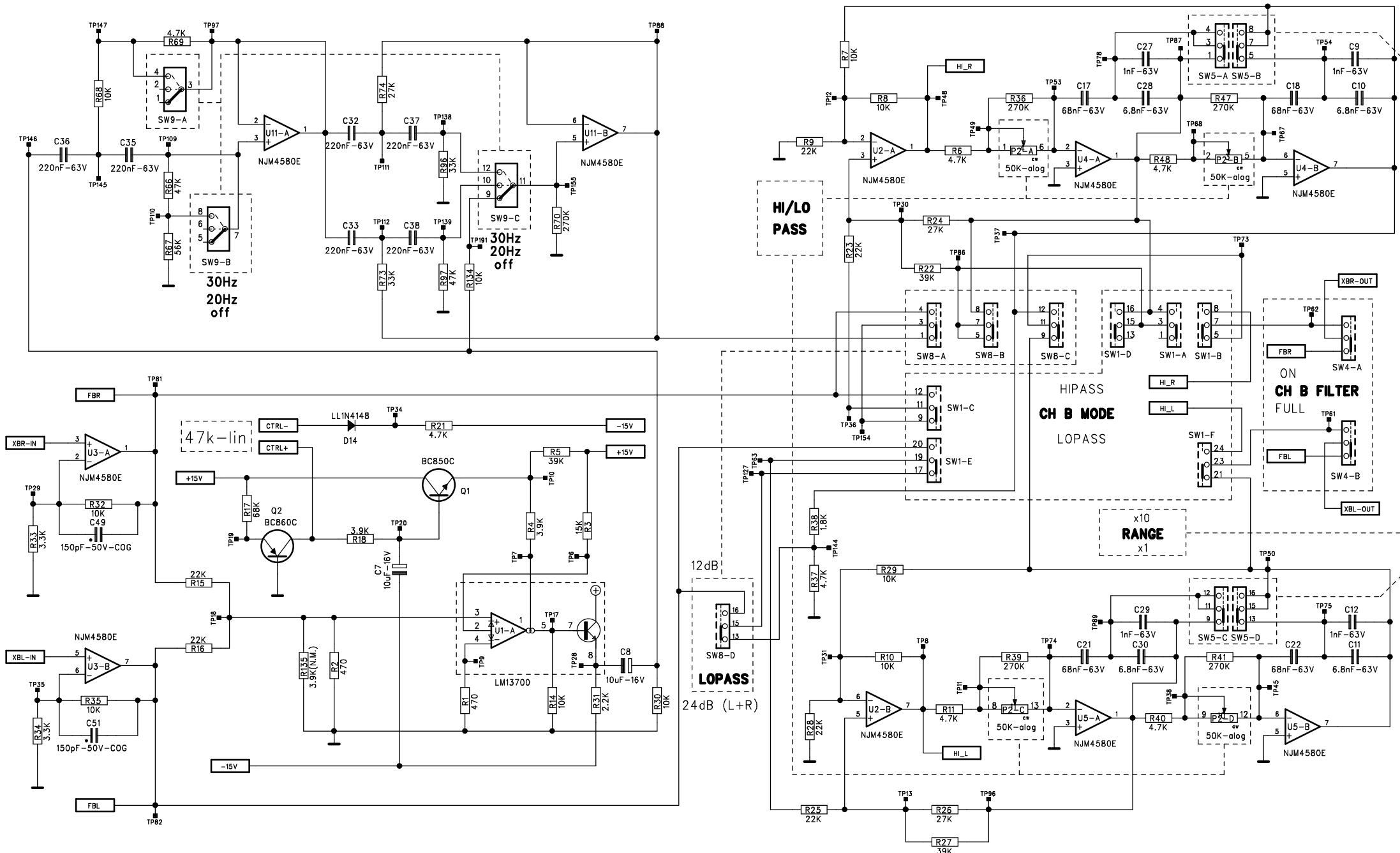
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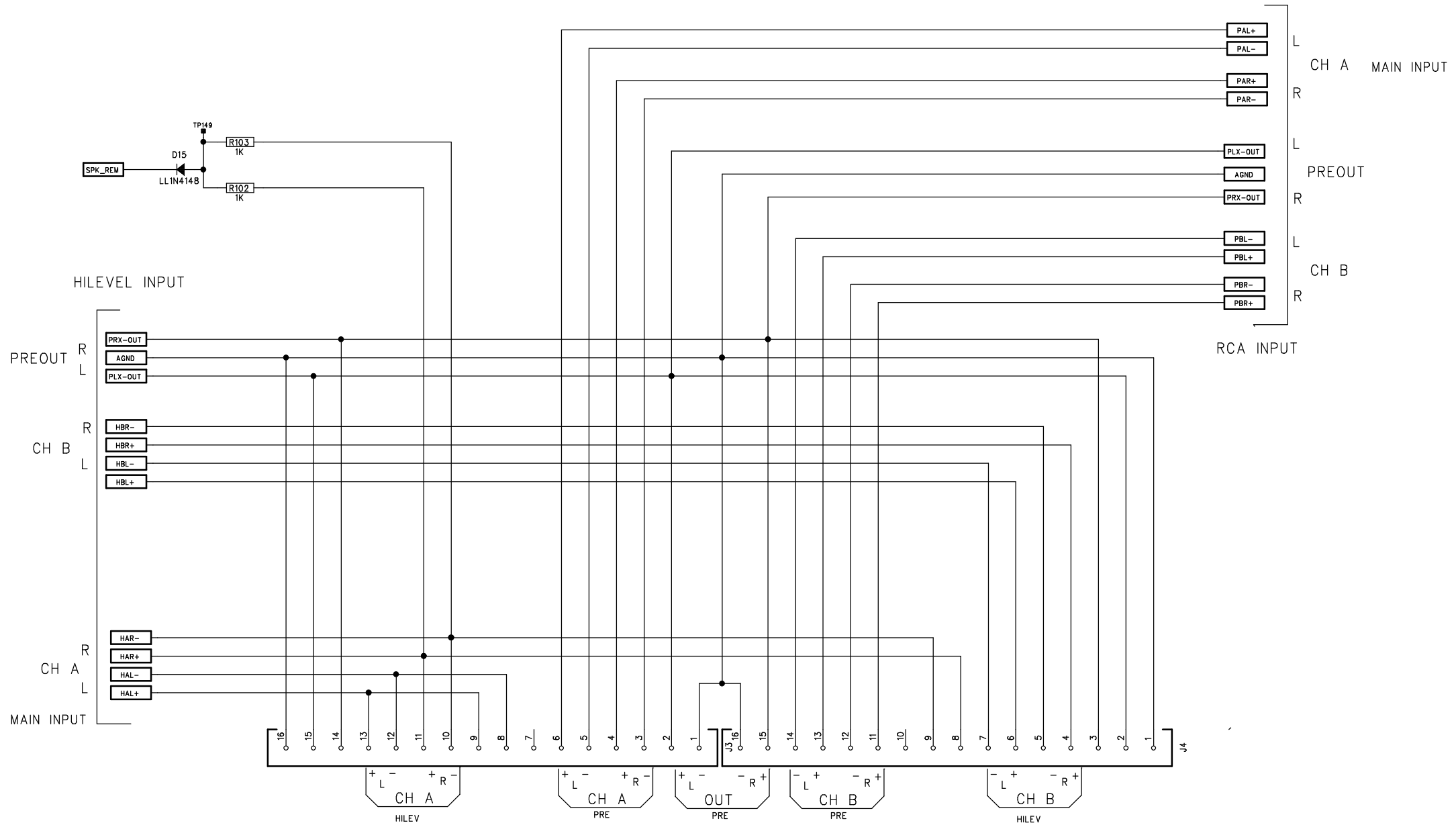
14/09/2005

Sheet:

4 of 8

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printed or given to thirds without previous writted consent by **elettromedia**





audison

TS: BAF143C

Sheet description:

PRE INPUT SOCKET

Product:

LRx4.5/1K

Type:

LRx4.5/1K-C

Rev/RK:

.1

PCB code:

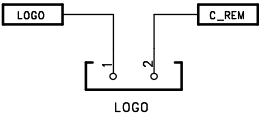
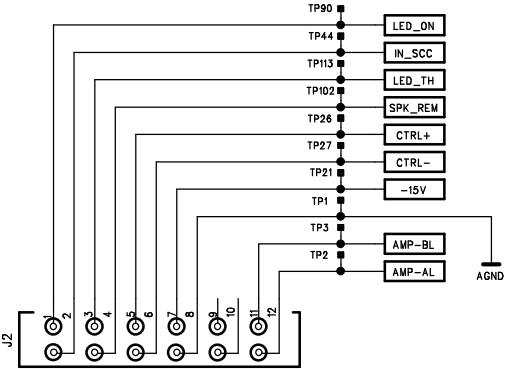
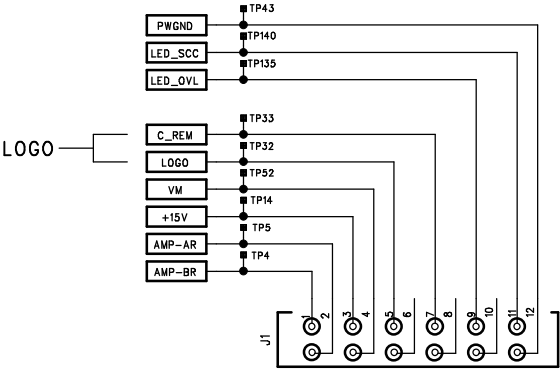
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Date:

14/09/2005

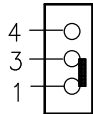
Sheet:

6 of 8

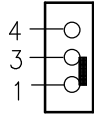


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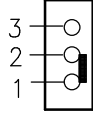
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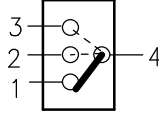
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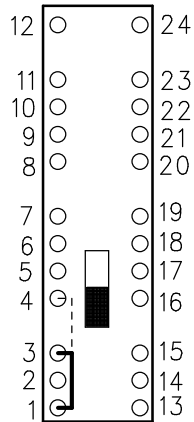
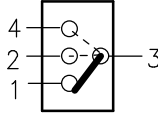
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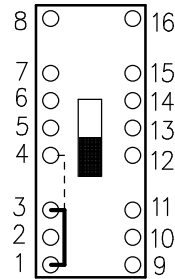
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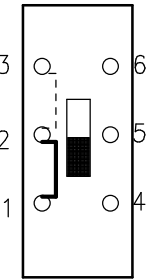
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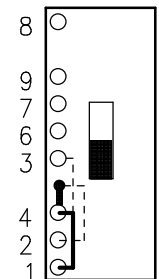
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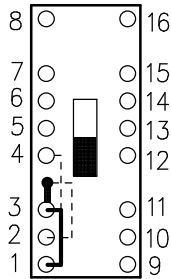
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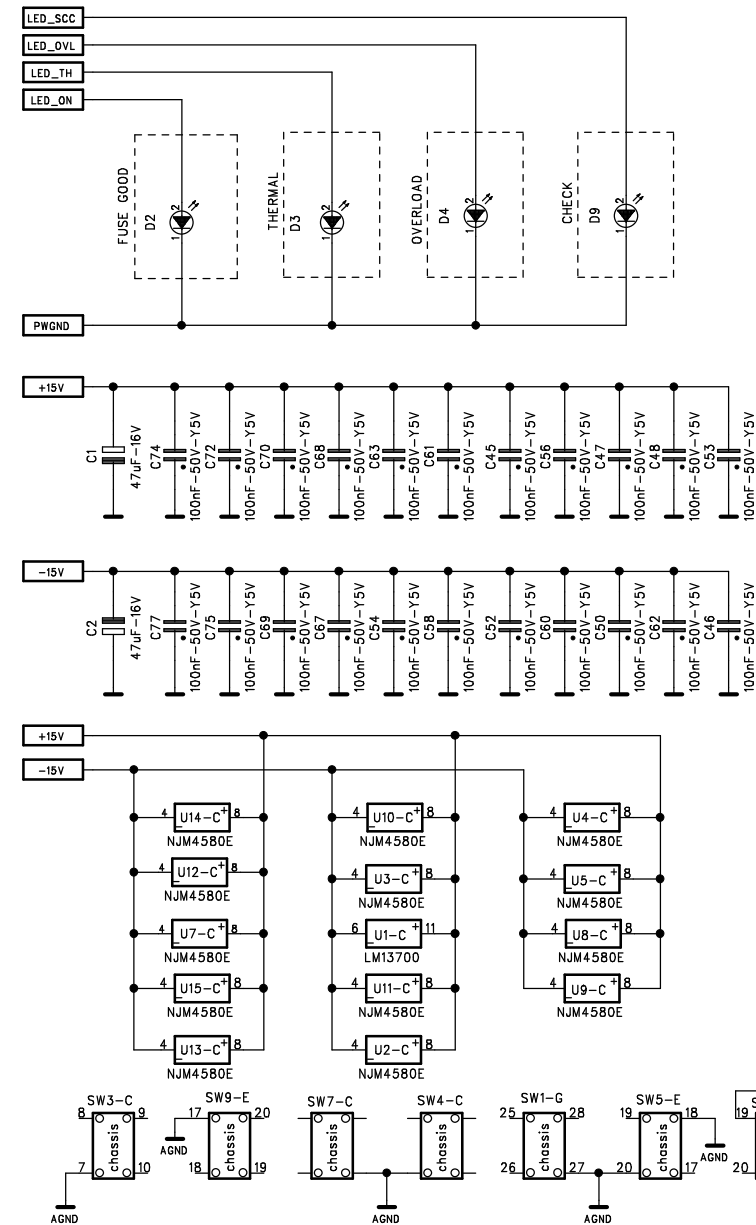
2V - 2P



2V - 3P



4V - 3P



audison

TS: BAF143C

Sheet description:

POWER SUPPLY CAPACITOR AND LED

Product:

LRx4.5/1K

Type:

LRx4.5/1K-C

Rev/RK:

.1

PCB code:

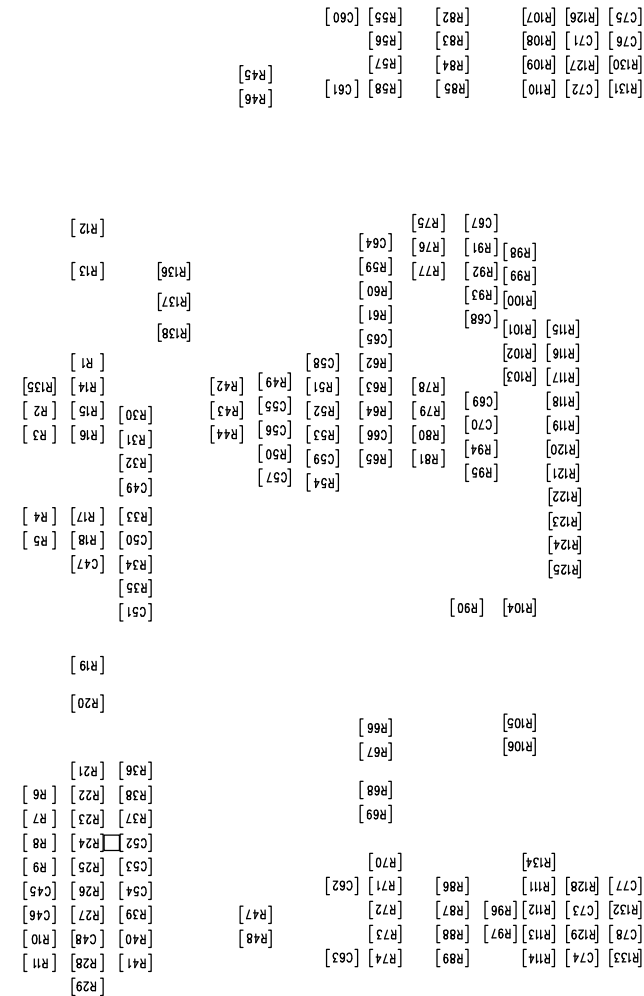
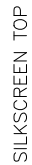
16726630 C

Date:

14/09/2005

Sheet:

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LRx 4.5 - C.1 PCB PARTS LIST

Revision .1

REF. NO	PART NO	DESCRIPTION	Q.TY
MECHANICAL PARTS			
	10023520	LRx SPACERS for 4 LED	1
CONNECTION WIRE AND CONNECTORS			
J1 J2	15231742	2.54mm STRAIGHT PIN HEADER 6+6 CONTACT	2
J3 J4	15235870	2.54mm STR. FEMALE H. 16 CONTACT BOTTOM ENTRY	2
LOGO	15237120	2mm PCB CONNECTOR 2 WAY	1
SW3 SW4 SW7	15310411	SLIDE SWITCH V. 2 POLES - 2 POSITIONS	3
SW2 SW5 SW6 SW8	15310421	SLIDE SWITCH V. 4 POLES - 2 POSITIONS	4
SW1	15310431	SLIDE SWITCH V. 6 POLES - 2 POSITIONS	1
SW9	15310450	SLIDE SWITCH V. 4 POLES - 3 POSITIONS	1
POTENTIOMETERS			
P3 P4	16310100	POT. 14mm 2x22K LIN L15x6 VER.	2
P2	16310200	POT. 14mm 4xC50K ALOG L20x6 VER.	1
P1	16310210	POT. 14mm 2xC50K+2xC20K ALOG L20x6 VER.	1
RESISTORS			
R82 R83 R86 R87 R115 R116 R117 R118 R122	16343600	SMD 1/10W 0805 100 Ohm 100V 5%	16
R123 R124 R125 R127 R128 R131 R132			
R1 R2 R119	16344400	SMD 1/10W 0805 470 Ohm 100V 5%	3
R12 R13 R19 R20 R42 R65 R102 R103	16344800	SMD 1/10W 0805 1 KOhm 100V 5%	8
R84 R85 R88 R89	16345000	SMD 1/10W 0805 1.5 KOhm 100V 5%	4
R38	16345100	SMD 1/10W 0805 1.8 KOhm 100V 5%	1
R31	16345200	SMD 1/10W 0805 2.2 KOhm 100V 5%	1
R45 R46	16345300	SMD 1/10W 0805 2.7 KOhm 100V 5%	2
R33 R34 R60 R61	16345400	SMD 1/10W 0805 3.3 KOhm 100V 5%	4
R4 R18 R57 R58 R71 R72	16345500	SMD 1/10W 0805 3.9 KOhm 100V 5%	6
R6 R11 R21 R37 R40 R48 R69	16345600	SMD 1/10W 0805 4.7 KOhm 100V 5%	7
R55 R56 R90 R100 R101 R105	16345700	SMD 1/10W 0805 5.6 KOhm 100V 5%	6
R7 R8 R10 R14 R29 R30 R32 R35 R51 R52	16346000	SMD 1/10W 0805 10 KOhm 100V 5%	20
R53 R54 R59 R62 R63 R64 R68 R80 R81 R134			
R3 R126 R129 R130 R133	16346200	SMD 1/10W 0805 15 KOhm 100V 5%	5
R9 R15 R16 R23 R25 R28 R43 R44 R49 R50	16346400	SMD 1/10W 0805 22 KOhm 100V 5%	18
R77 R79 R92 R95 R98 R99 R104 R106			
R24 R26 R74	16346500	SMD 1/10W 0805 27 KOhm 100V 5%	3
R73 R96	16346600	SMD 1/10W 0805 33 KOhm 100V 5%	2
R5 R22 R27	16346700	SMD 1/10W 0805 39 KOhm 100V 5%	3
R66 R97	16346800	SMD 1/10W 0805 47 KOhm 100V 5%	2
R67	16346900	SMD 1/10W 0805 56 KOhm 100V 5%	1
R17	16346950	SMD 1/10W 0805 68 KOhm 100V 5%	1
R36 R39 R41 R47 R70	16347600	SMD 1/10W 0805 270 KOhm 100V 5%	5
R75 R76 R78 R91 R93 R94 R107 R108 R109	16353770	SMD 1/10W 0805 4.64 KOhm 100V 1%	16
R110 R111 R112 R113 R114 R120 R121			
CAPACITORS			
C9 C12 C27 C29	16430200	POLYESTER 1nF 63Vdc/40Vac P.5mm	4
C10 C11 C28 C30	16430800	POLYESTER 6.8nF 63Vdc/40Vac P.5mm	4
C13 C16 C24 C26	16430900	POLYESTER 8.2nF 63Vdc/40Vac P.5mm	4
C17 C18 C21 C22	16431900	POLYESTER 68nF 63Vdc/40Vac P.5mm	4
C14 C15 C23 C25	16431950	POLYESTER 82nF 63Vdc/40Vac P.5mm	4
C32 C33 C35 C36 C37 C38	16432280	POLYESTER 220nF 63Vdc/40Vac P.5mm	6
C59 C66	16570032	CERAMIC COG 0805 22pF 50V 5%	2
C71 C73 C76 C78	16570048	CERAMIC COG 0805 100pF 50V 5%	4
C49 C51 C64 C65	16570052	CERAMIC COG 0805 150pF 50V 5%	4
C55 C57	16570080	CERAMIC X7R 0805 2.2nF 50V 10%	2
C45 C46 C47 C48 C50 C52 C53 C54 C56 C58	16570224	CERAMIC Y5V 0805 100nF 50V	27
C60 C61 C62 C63 C67 C68 C69 C70 C72 C74			
C75 C77 C79 C80 C81 C82 C83			
C3 C4 C5 C6 C7 C8 C19 C20 C31 C34 C39	16570540	ELECTROLYTIC 10uF 16V 4x5.3	16
C40 C41 C42 C43 C44			
C1 C2	16570560	ELECTROLYTIC 47uF 16V 6.3x5.3	2
TRANSISTORS			
Q3 Q4	16615300	NPN SMD SOT23 2SD2114K	2
Q1	16615800	NPN SMD SOT23 BC850C	1
Q2	16616000	PNP SMD SOT23 BC860C	1

LRx 4.5 - C.1 PCB PARTS LIST

Revision .1

REF. NO	PART NO	DESCRIPTION	Q.TY
DIODES			
D3.....	16635401.....	DIFFUSED RED LED 3mm 12.6 mcd.....	1
D2.....	16635501.....	DIFFUSED GREEN LED 3mm 12.6 mcd.....	1
D9.....	16635510.....	DIFFUSED YELLOW LED 3mm.....	1
D4.....	16635521.....	DIFFUSED ORANGE LED 3mm.....	1
D1 D14 D15.....	16637000.....	SIGNAL SOD80 150mA 75V /4148.....	3
D5 D6 D7 D8 D10 D11 D12 D13.....	16637030.....	DUAL SIGNAL SMD SOT23 70V.....	8
ICS			
U2 U3 U4 U5 U7 U8 U9 U10 U11 U12 U13.....	16691560.....	SMD SO08 NJM 4580E.....	13
U14 U15			
U1.....	16691580.....	SMD SO16 LM13700M.....	1
PHOTOCOUPLER			
U6.....	16692800.....	PHOTOTRANSISTOR SO8 (4 pin).....	1
THERMISTORS			
PTC1.....	16831000.....	PTC 20V 0.15A COMM. 0.3A.....	1

PART 1: ELECTRONIC PART

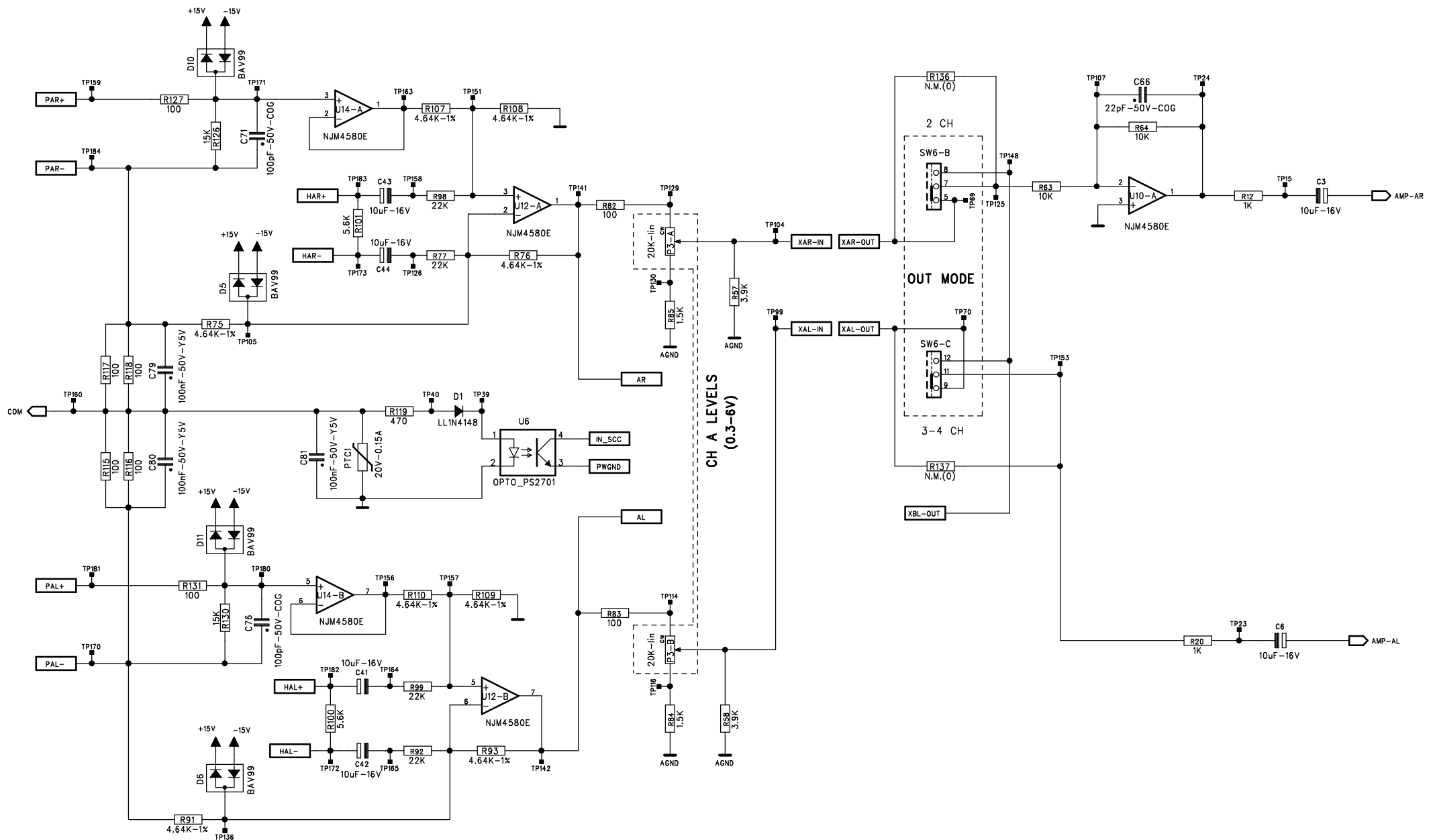
Section E : Controls Modules

Upgrading Version: Rev. = .1A

1. LRx 4.5 - C Electrical diagrams - **Rev. = .1A** sheet from 1 to 8
2. LRx 4.5 - C Components layout - **Rev. = .1A** sheet from 1 to 1
3. LRx 4.5 - C PCB parts list - **Rev. = .1A** page from 1 to 2

Table of the last upgrading revisions

UPGRADING REVISIONS									
PART 1 ELECTRONIC PART							PART 2 MECHANICAL PART	PART 3 Technical Notes	
SECT. B Mainboard	SECT. C PS2-P/N	SECT. D AB7-2	SECT. E Controls	SECT. F			SECT. G Comp. Pin-out	SECT. A - Exploded views and parts list	Technical Notes
				ABLD	CPU	PSC			
Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A
Rk = 12 Ohm	PS2.1A	AB7-2.1	4.5-C.1A	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. B	Rev. A



audison

TS: BAF143D

Sheet description:

PRE INPUT CH-A AND FUNCTION SWITCH

Product:

LRx4.5

Type:

LRx4.5-C

Rev/RK:

.1A

PCB code:

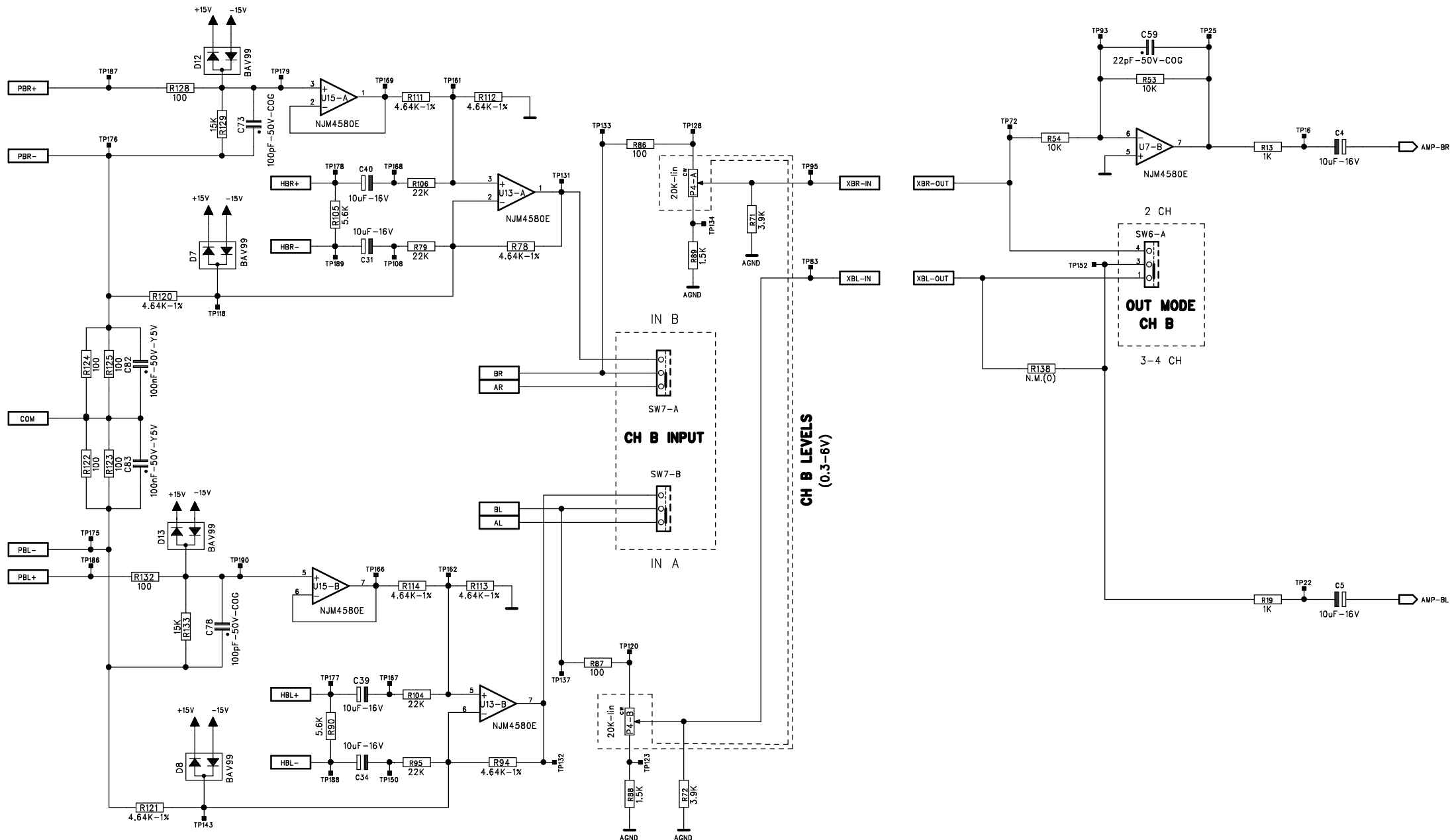
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Date:

10/10/2005

Sheet:

1 of 8



audison

TS: BAF143D

Sheet description:

PRE INPUT CH-B AND FUNCTION SWITCH

Product:

LRx4.5

Type:

LRx4.5-C

Rev/RK:

.1A

PCB code:

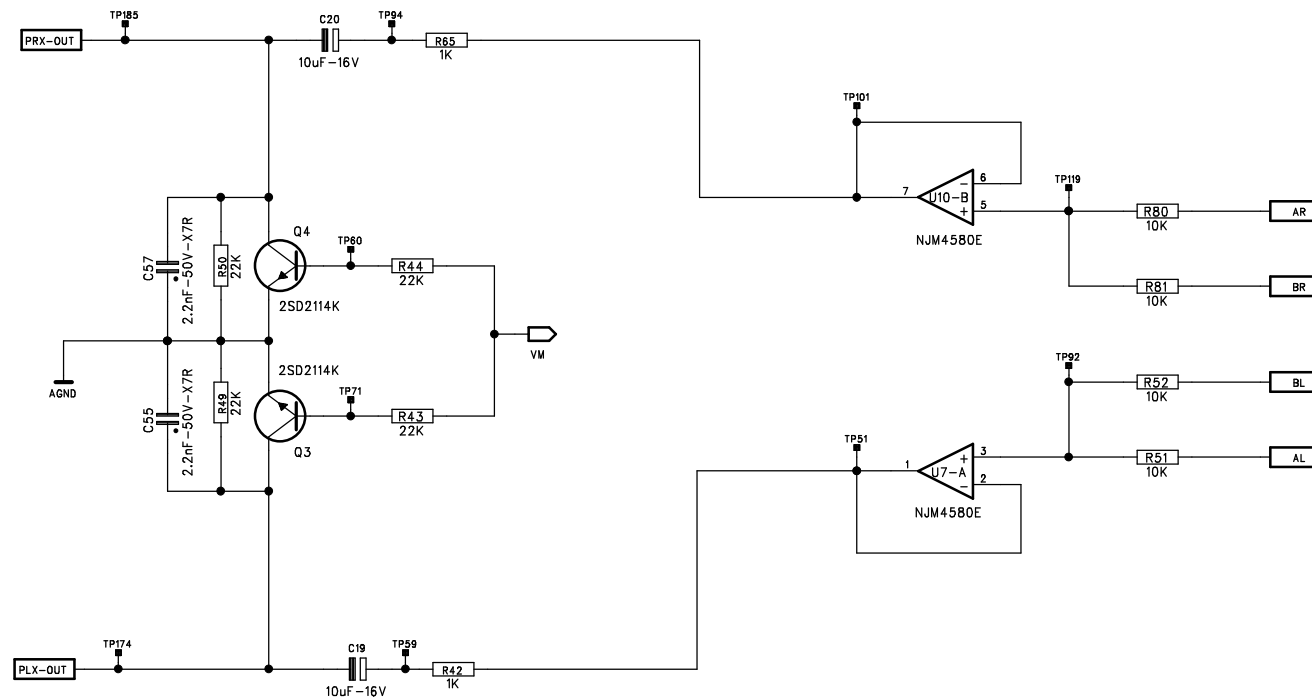
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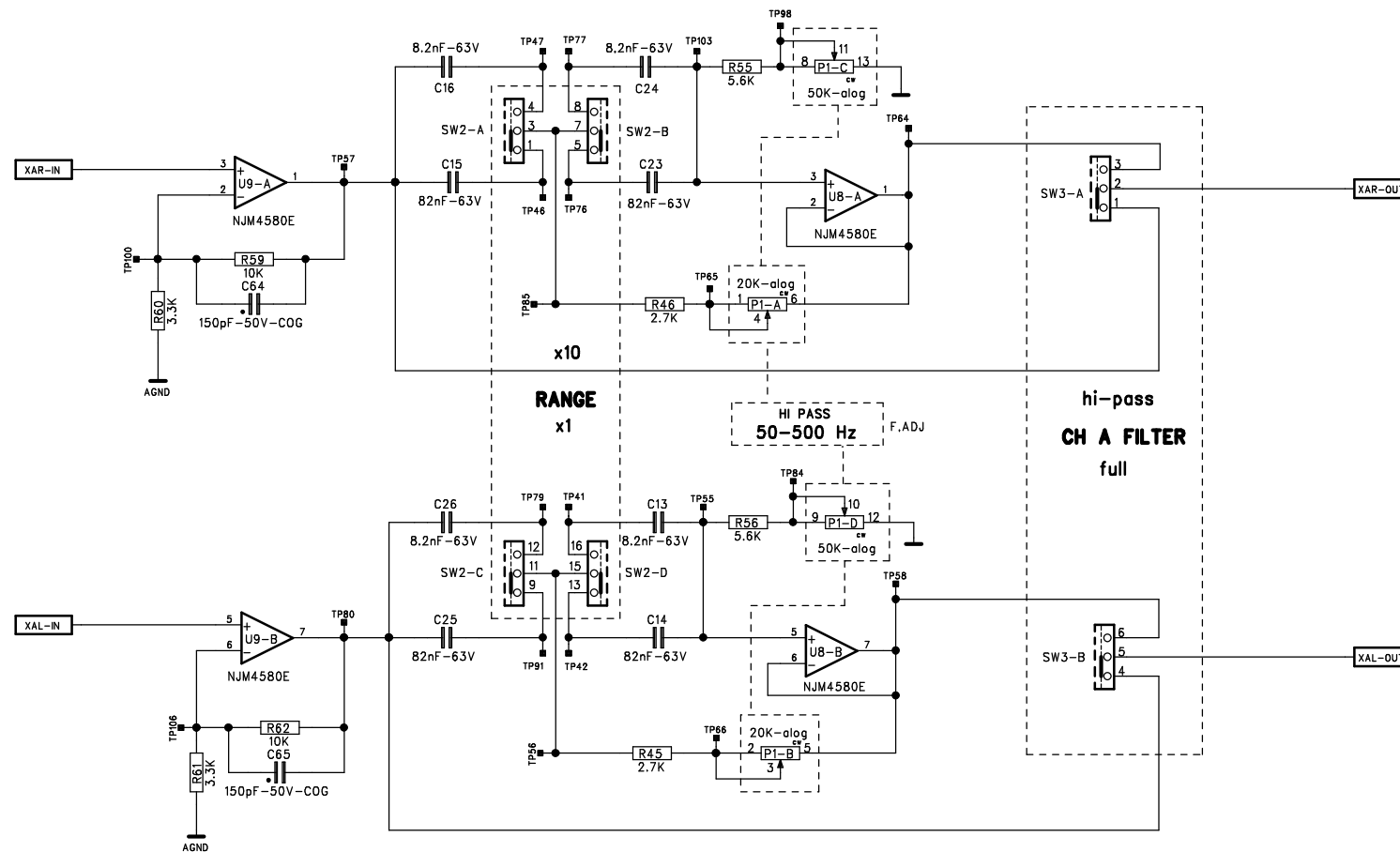
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10/10/2006

Sheet:

2 of 8





audison

TS: BAF143D

Sheet description:

HI-PASS FILTER - REAR SECTION

Product:

LRx4.5

Type:

LRx4.5-C

Rev/RK:

.1A

PCB code:

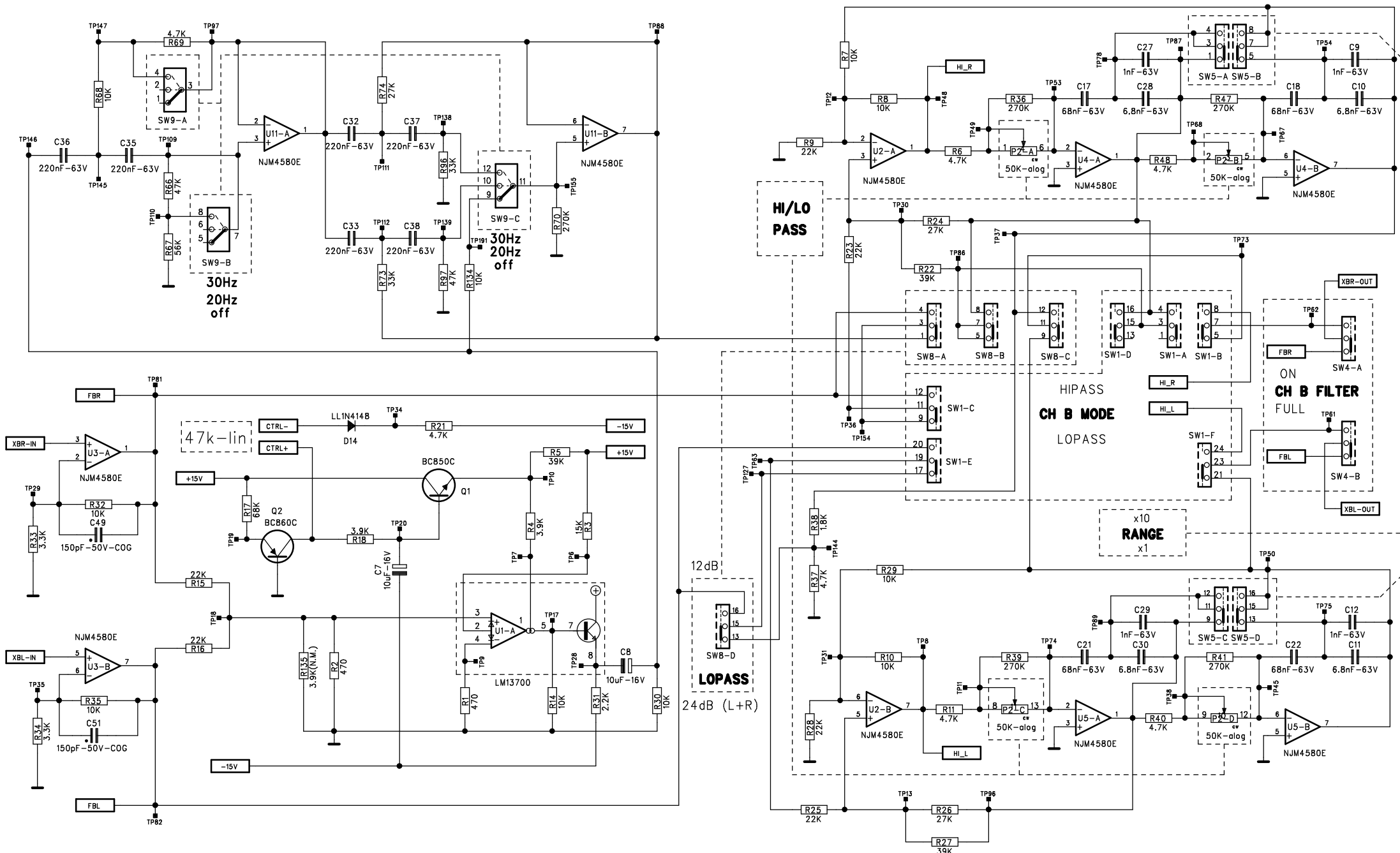
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10/10/2006

Sheet:

4 of 8



audison

TS: BAF143D

Sheet description:

HI-LO FILTER AND VCA AND SUBSONIC

Product:

LRx4.5

Type:

LRx4.5-C

Rev/RK:

.1A

PCB code:

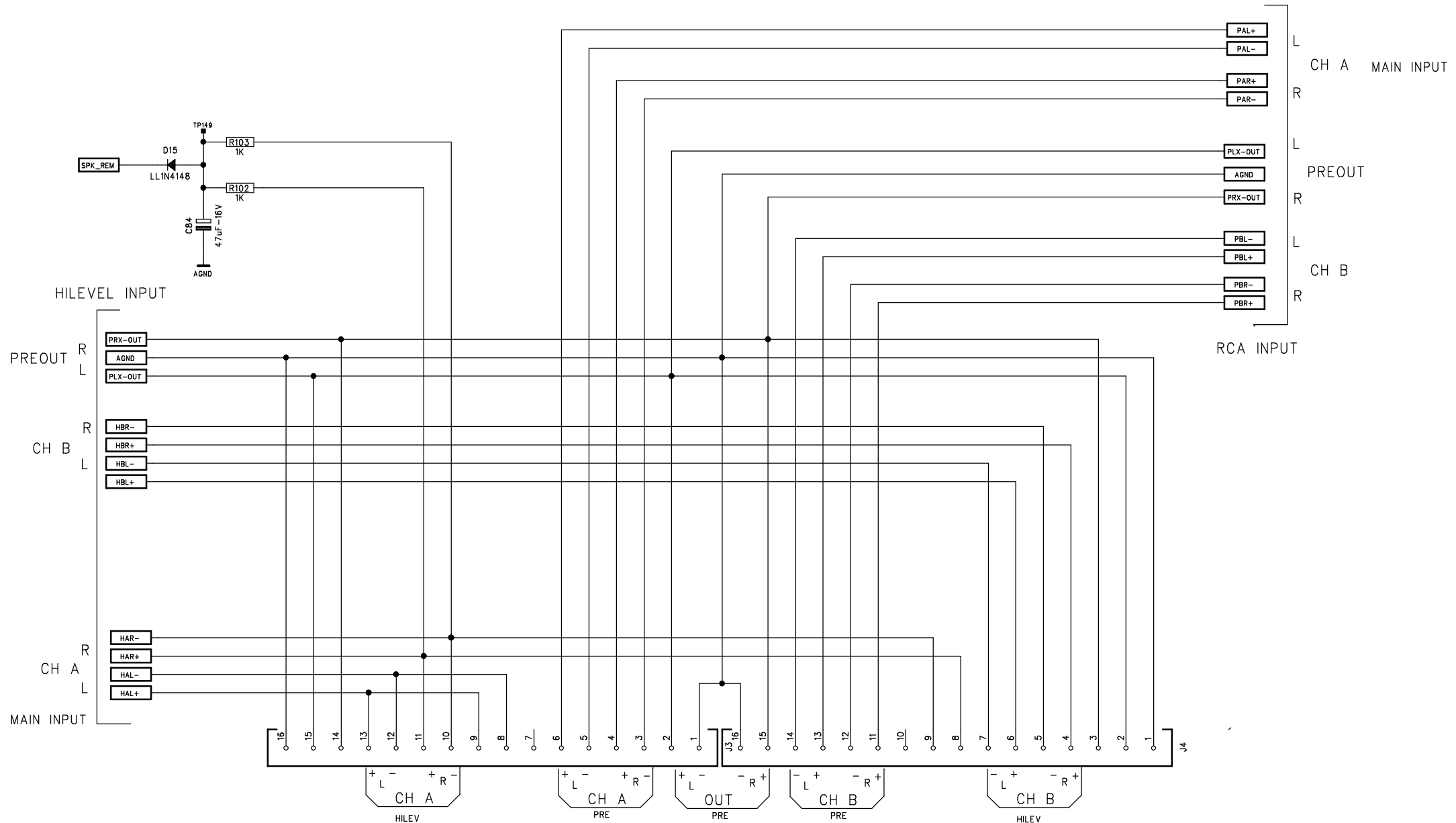
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Date:

10/10/2006

Sheet:

5 of 8

**audison**TS: **BAF143D**

Sheet description:

PRE INPUT SOCKET

Product:

LRx4.5

Type:

LRx4.5-C

Rev/RK:

.1A

PCB code:

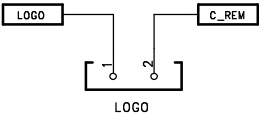
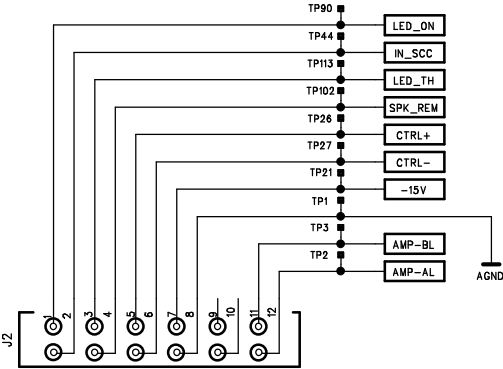
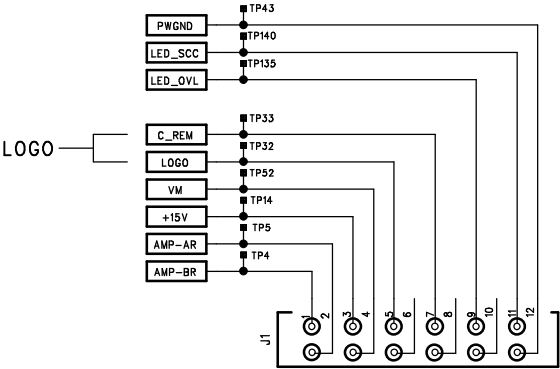
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10/10/2006

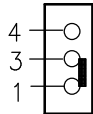
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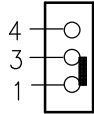


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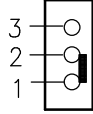
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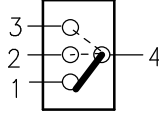
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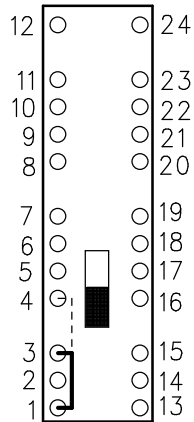
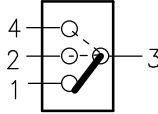
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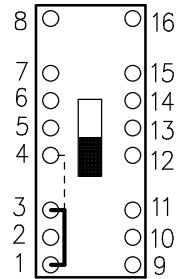
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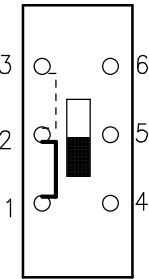
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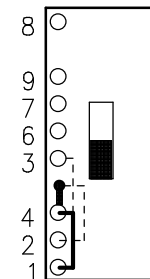
6V - 2P



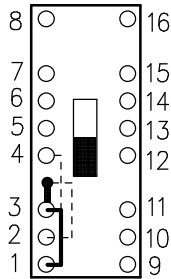
4V - 2P



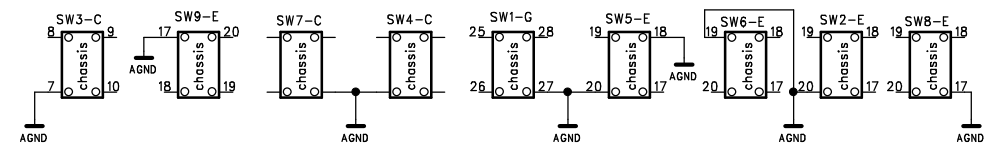
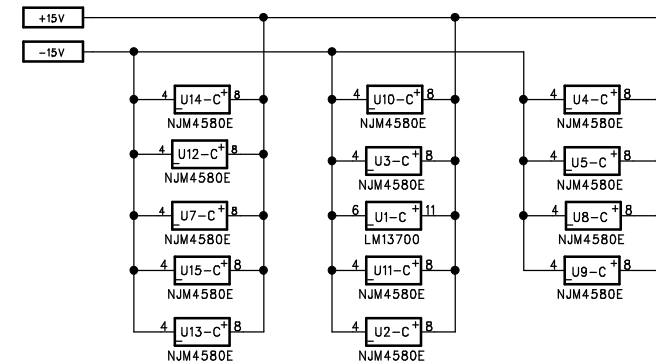
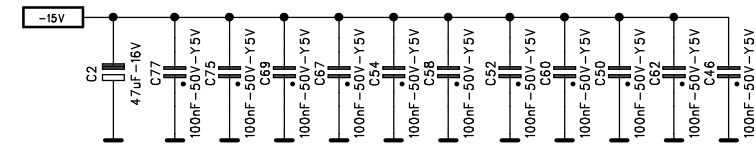
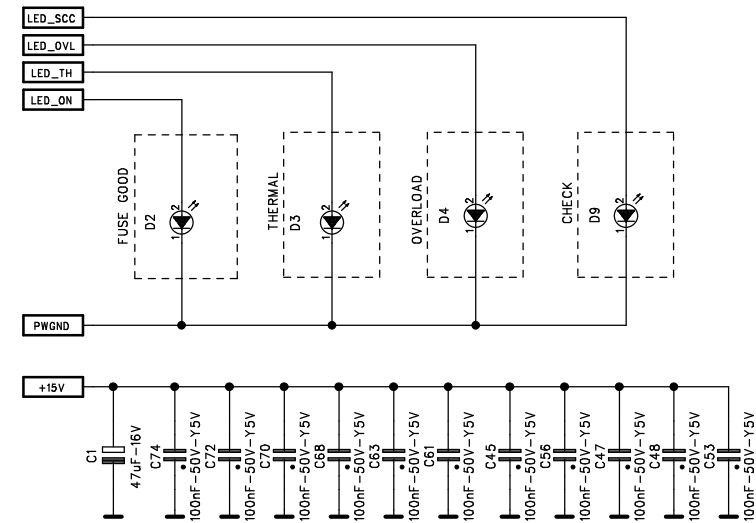
2V - 2P



2V - 3P



4V - 3P



audison

TS: BAF143D

Sheet description:

POWER SUPPLY CAPACITOR AND LED

Product:

LRx4.5

Type:

LRx4.5-C

Rev/RK:

.1A

PCB code:

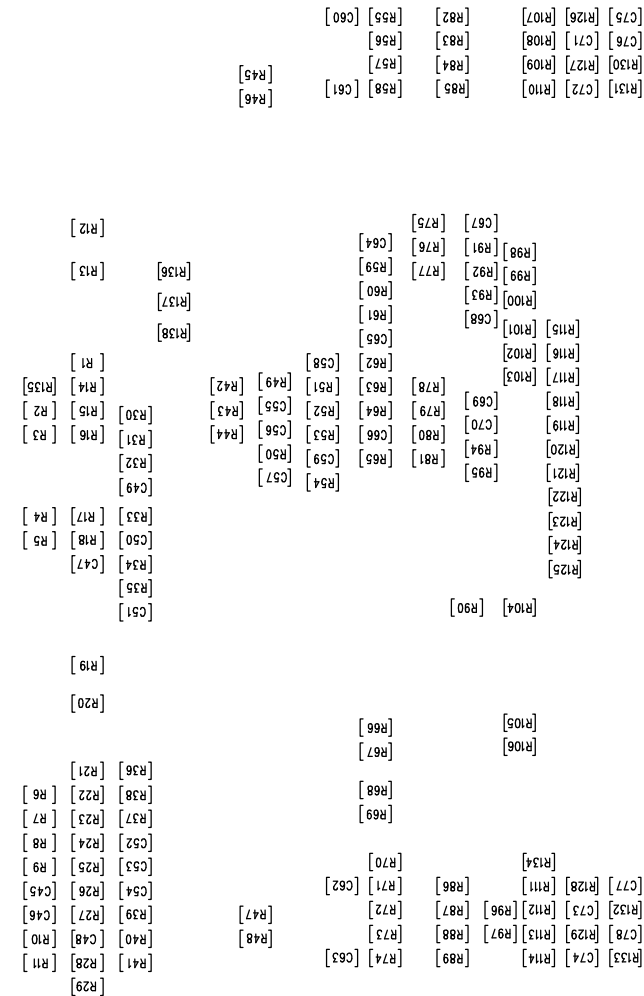
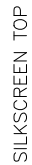
16726630 D

Date:

10/10/2006

Sheet:

8 of 8



LRx 4.5 - C.1A PCB PARTS LIST

Revision .1A

REF. NO	PART NO	DESCRIPTION	Q.TY
MECHANICAL PARTS			
	10023520	LRx SPACERS for 4 LED	1
CONNECTION WIRE AND CONNECTORS			
J1 J2	15231742	2.54mm STRAIGHT PIN HEADER 6+6 CONTACT	2
J3 J4	15235870	2.54mm STR. FEMALE H. 16 CONTACT BOTTOM ENTRY	2
LOGO	15237120	2mm PCB CONNECTOR 2 WAY	1
SW3 SW4 SW7	15310411	SLIDE SWITCH V. 2 POLES - 2 POSITIONS	3
SW2 SW5 SW6 SW8	15310421	SLIDE SWITCH V. 4 POLES - 2 POSITIONS	4
SW1	15310431	SLIDE SWITCH V. 6 POLES - 2 POSITIONS	1
SW9	15310450	SLIDE SWITCH V. 4 POLES - 3 POSITIONS	1
POTENTIOMETERS			
P3 P4	16310100	POT. 14mm 2x22K LIN L15x6 VER.	2
P2	16310200	POT. 14mm 4xC50K ALOG L20x6 VER.	1
P1	16310210	POT. 14mm 2xC50K+2xC20K ALOG L20x6 VER.	1
RESISTORS			
R82 R83 R86 R87 R115 R116 R117 R118 R122	16343600	SMD 1/10W 0805 100 Ohm 100V 5%	16
R123 R124 R125 R127 R128 R131 R132			
R1 R2 R119	16344400	SMD 1/10W 0805 470 Ohm 100V 5%	3
R12 R13 R19 R20 R42 R65 R102 R103	16344800	SMD 1/10W 0805 1 KOhm 100V 5%	8
R84 R85 R88 R89	16345000	SMD 1/10W 0805 1.5 KOhm 100V 5%	4
R38	16345100	SMD 1/10W 0805 1.8 KOhm 100V 5%	1
R31	16345200	SMD 1/10W 0805 2.2 KOhm 100V 5%	1
R45 R46	16345300	SMD 1/10W 0805 2.7 KOhm 100V 5%	2
R33 R34 R60 R61	16345400	SMD 1/10W 0805 3.3 KOhm 100V 5%	4
R4 R18 R57 R58 R71 R72	16345500	SMD 1/10W 0805 3.9 KOhm 100V 5%	6
R6 R11 R21 R37 R40 R48 R69	16345600	SMD 1/10W 0805 4.7 KOhm 100V 5%	7
R55 R56 R90 R100 R101 R105	16345700	SMD 1/10W 0805 5.6 KOhm 100V 5%	6
R7 R8 R10 R14 R29 R30 R32 R35 R51 R52	16346000	SMD 1/10W 0805 10 KOhm 100V 5%	20
R53 R54 R59 R62 R63 R64 R68 R80 R81 R134			
R3 R126 R129 R130 R133	16346200	SMD 1/10W 0805 15 KOhm 100V 5%	5
R9 R15 R16 R23 R25 R28 R43 R44 R49 R50	16346400	SMD 1/10W 0805 22 KOhm 100V 5%	18
R77 R79 R92 R95 R98 R99 R104 R106			
R24 R26 R74	16346500	SMD 1/10W 0805 27 KOhm 100V 5%	3
R73 R96	16346600	SMD 1/10W 0805 33 KOhm 100V 5%	2
R5 R22 R27	16346700	SMD 1/10W 0805 39 KOhm 100V 5%	3
R66 R97	16346800	SMD 1/10W 0805 47 KOhm 100V 5%	2
R67	16346900	SMD 1/10W 0805 56 KOhm 100V 5%	1
R17	16346950	SMD 1/10W 0805 68 KOhm 100V 5%	1
R36 R39 R41 R47 R70	16347600	SMD 1/10W 0805 270 KOhm 100V 5%	5
R75 R76 R78 R91 R93 R94 R107 R108 R109	16353770	SMD 1/10W 0805 4.64 KOhm 100V 1%	16
R110 R111 R112 R113 R114 R120 R121			
CAPACITORS			
C9 C12 C27 C29	16430200	POLYESTER 1nF 63Vdc/40Vac P.5mm	4
C10 C11 C28 C30	16430800	POLYESTER 6.8nF 63Vdc/40Vac P.5mm	4
C13 C16 C24 C26	16430900	POLYESTER 8.2nF 63Vdc/40Vac P.5mm	4
C17 C18 C21 C22	16431900	POLYESTER 68nF 63Vdc/40Vac P.5mm	4
C14 C15 C23 C25	16431950	POLYESTER 82nF 63Vdc/40Vac P.5mm	4
C32 C33 C35 C36 C37 C38	16432280	POLYESTER 220nF 63Vdc/40Vac P.5mm	6
C59 C66	16570032	CERAMIC COG 0805 22pF 50V 5%	2
C71 C73 C76 C78	16570048	CERAMIC COG 0805 100pF 50V 5%	4
C49 C51 C64 C65	16570052	CERAMIC COG 0805 150pF 50V 5%	4
C55 C57	16570080	CERAMIC X7R 0805 2.2nF 50V 10%	2
C45 C46 C47 C48 C50 C52 C53 C54 C56 C58	16570224	CERAMIC Y5V 0805 100nF 50V	27
C60 C61 C62 C63 C67 C68 C69 C70 C72 C74			
C75 C77 C79 C80 C81 C82 C83			
C3 C4 C5 C6 C7 C8 C19 C20 C31 C34 C39	16570540	ELECTROLYTIC 10uF 16V 4x5.3	16
C40 C41 C42 C43 C44			
C1 C2 C84	16570560	ELECTROLYTIC 47uF 16V 6.3x5.3	3
TRANSISTORS			
Q3 Q4	16615300	NPN SMD SOT23 2SD2114K	2
Q1	16615800	NPN SMD SOT23 BC850C	1
Q2	16616000	PNP SMD SOT23 BC860C	1

LRx 4.5 - C.1A PCB PARTS LIST

Revision .1A

REF. NO	PART NO	DESCRIPTION	Q.TY
DIODES			
D3.....	16635401.....	DIFFUSED RED LED 3mm 12.6 mcd.....	1
D2.....	16635501.....	DIFFUSED GREEN LED 3mm 12.6 mcd.....	1
D9.....	16635510.....	DIFFUSED YELLOW LED 3mm.....	1
D4.....	16635521.....	DIFFUSED ORANGE LED 3mm.....	1
D1 D14 D15.....	16637000.....	SIGNAL SOD80 150mA 75V /4148.....	3
D5 D6 D7 D8 D10 D11 D12 D13.....	16637030.....	DUAL SIGNAL SMD SOT23 70V.....	8
ICS			
U2 U3 U4 U5 U7 U8 U9 U10 U11 U12 U13.....	16691560.....	SMD SO08 NJM 4580E.....	13
U14 U15			
U1.....	16691580.....	SMD SO16 LM13700M.....	1
PHOTOCOUPLER			
U6.....	16692800.....	PHOTOTRANSISTOR SO8 (4 pin).....	1
THERMISTORS			
PTC1.....	16831000.....	PTC 20V 0.15A COMM. 0.3A.....	1

PART 1: ELECTRONIC PART

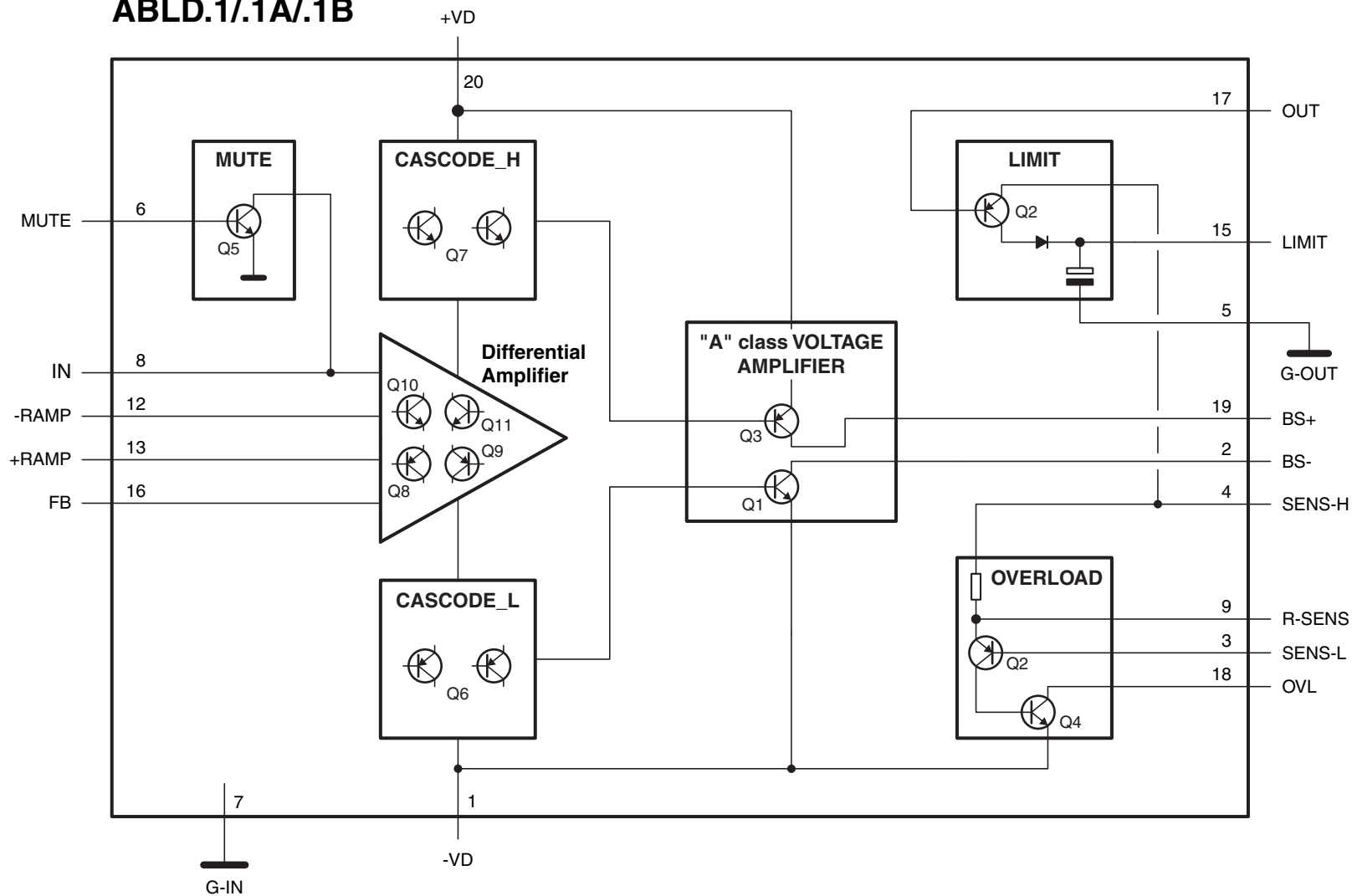
Section F : Modules Block Diagrams

- | | |
|---|-------------------|
| 1. ABLD Block diagrams - Rev. = .1 / .1A / .1B | sheet from 1 to 1 |
| 2. CPU Block diagrams - Rev. = .1 / .1A | sheet from 1 to 1 |
| 3. PSC Block diagrams - Rev. = .2 / .2A | sheet from 1 to 1 |

Table of the last upgrading revisions

UPGRADING REVISIONS									
PART 1 ELECTRONIC PART							PART 2 MECHANICAL PART	PART 3 Technical Notes	
SECT. B Mainboard	SECT. C PS2-P/N	SECT. D AB7-2	SECT. E Controls	SECT. F ABLD	SECT. F CPU	PSC	SECT. G Comp. Pin-out	SECT. A - Exploded views and parts list	Technical Notes
Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A

ABLD.1/.1A/.1B



audison

TS: -

Sheet description:

BLOCK DIAGRAM

Product:

LRx

Type:

ABLD

Rev/Rk:

.1/.1A/.1B

code:

36780740 / 41 / 42

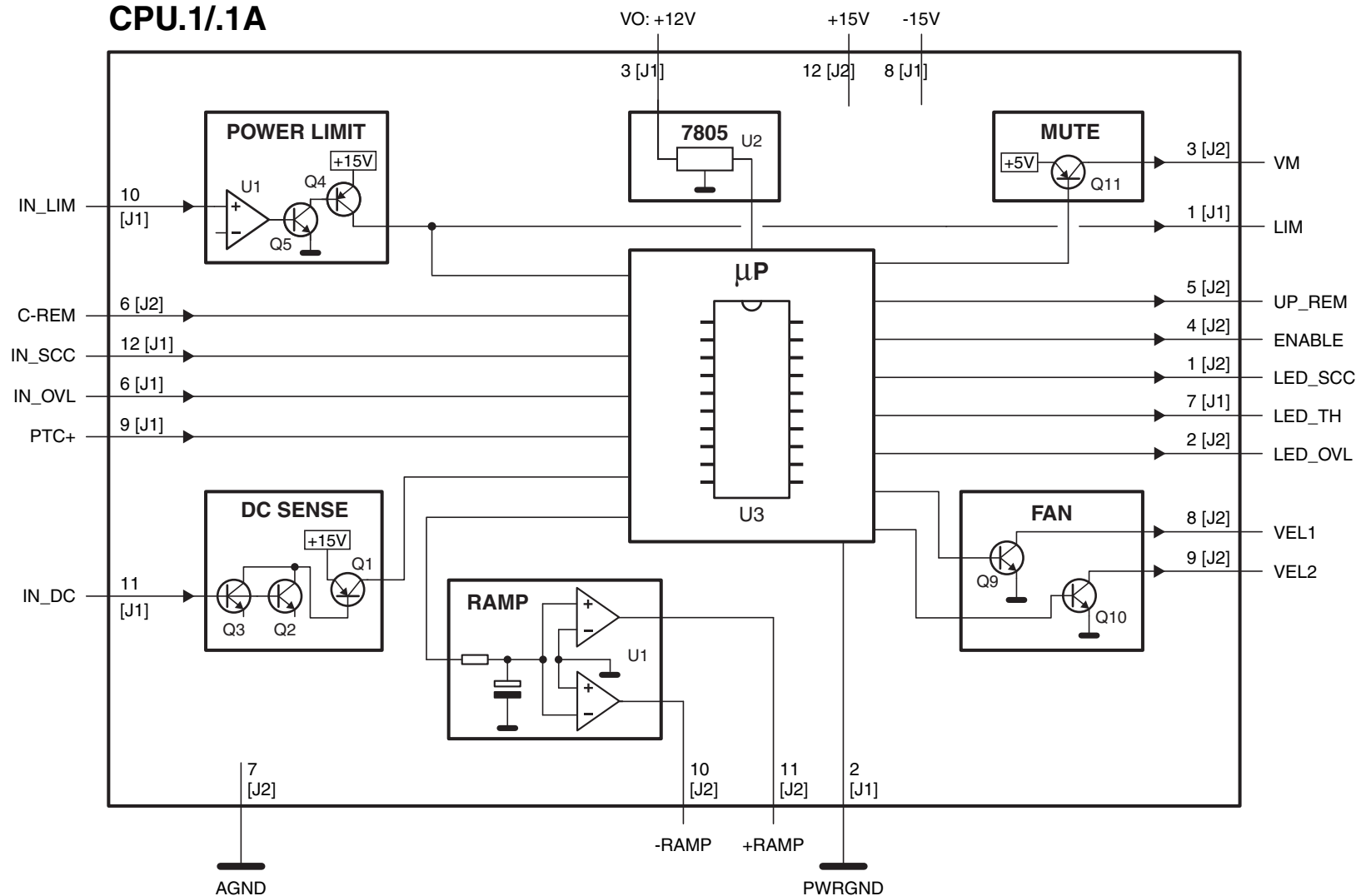
Date:

28/oct/06

Sheet:

1 OF 1

CPU.1/.1A



audison

TS: -

Sheet description:

BLOCK DIAGRAM

Product:

LRx

Type:

CPU

Rev/Rk:

.1/.1A

code:

36780750 / 51

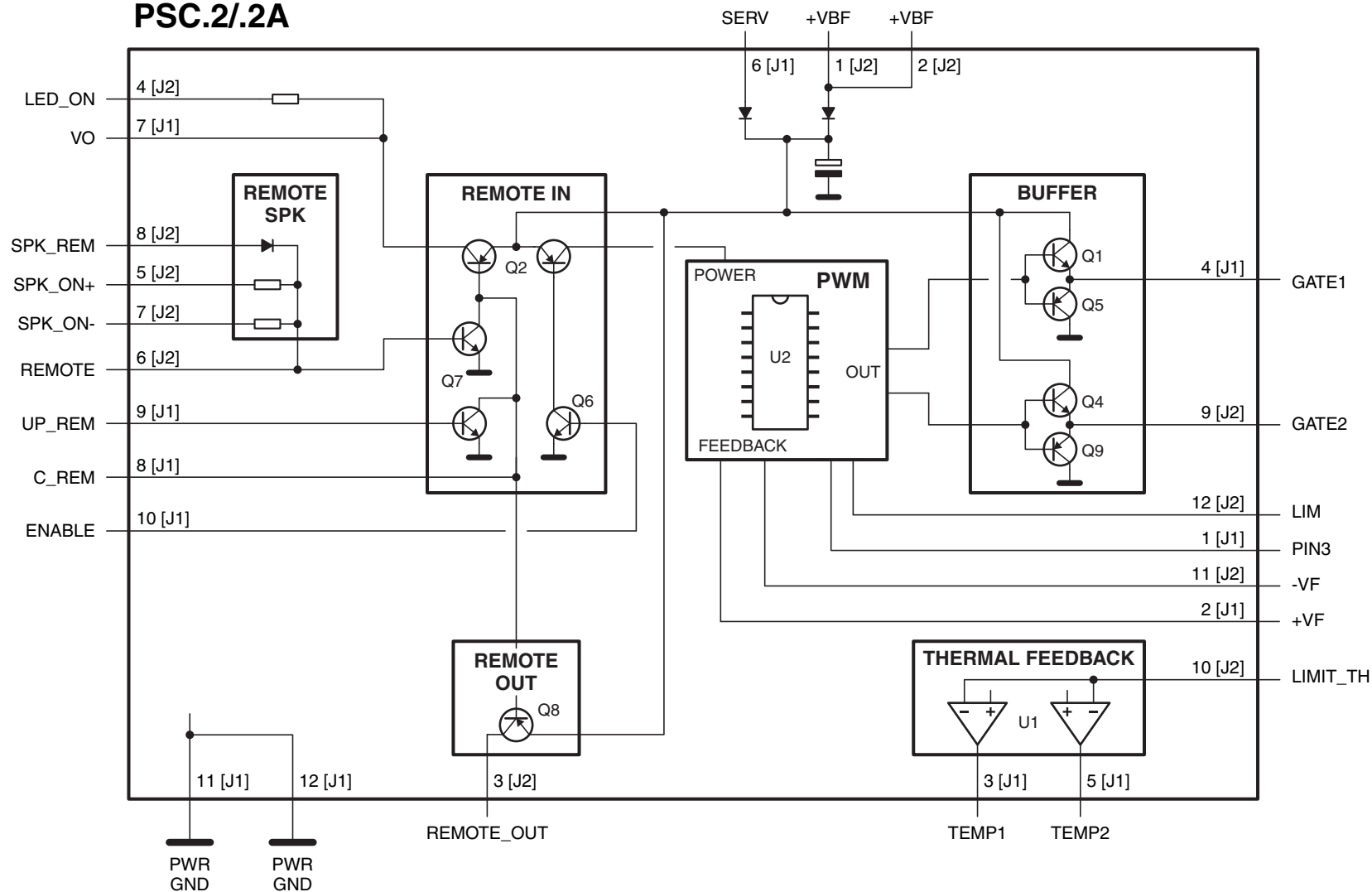
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Sheet:

1 OF 1

PSC.2/.2A



audison

TS: -

Sheet description:

BLOCK DIAGRAM

Product:

LRx

Type:

PSC

Rev/Rk:

.2/.2A

code:

36780761 / 62

Date:

28/oct/06

Sheet:

1 OF 1

PART 1: ELECTRONIC PART

Section G: LRx Series components pin-out

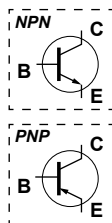
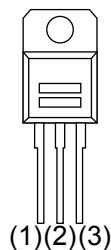
First Version: Rev. A

- | | |
|----------------------|------------------|
| 1. Leaded components | page from 1 to 3 |
| 2. SMT components | page from 4 to 7 |

Table of the last upgrading revisions

UPGRADING REVISIONS									
PART 1 ELECTRONIC PART							PART 2 MECHANICAL PART	PART 3 Technical Notes	
SECT. B Mainboard	SECT. C PS2-P/N	SECT. D AB7-2	SECT. E Controls	ABLD	SECT. F CPU	PSC	SECT. G Comp. Pin-out	SECT. A - Exploded views and parts list	Technical Notes
Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A

Case TO220

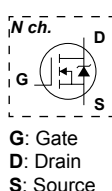
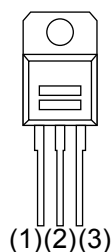


NPN bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Audio driver	2SD2400A	-	B	C	E
	Darlington	BDW93C	BDW93	B	C	E

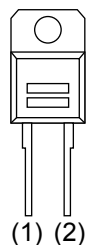
PNP bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Audio driver	2SB1569A	-	B	C	E
	Darlington	BDW94C	BDW94	B	C	E



N channel mosfet transistor

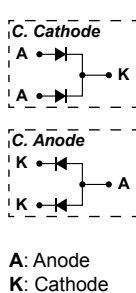
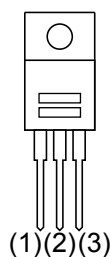
Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Switching power	IPP80N06S2-09	2N0609	G	D	S
	Switching power	IPP80N06S2-05	2N0605	G	D	S
	Switching power	IRFB33N15D	FB33N15D	G	D	S
	Switching power	IRFB52N15D	FB52N15D	G	D	S
	Switching power	IRFB61N15D	FB61N15D	G	D	S
	Switching power	IRFB260N	FB260N	G	D	S



Single ultra fast power diodes

Ref.	Type	Product name	Marking code	PIN OUT	
				(1)	(2)
	Power rectifier	BYT79-500	BYT79-500	K	A
	Power rectifier	MUR1540	MUR1540	K	A

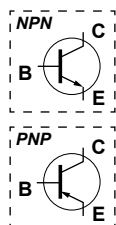
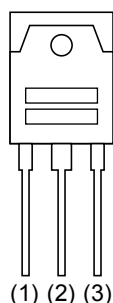
Case TO220F (to insulate with thermo-conductive grease)



Dual ultra fast power diodes

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Common Cathode	FFPF10U20DN	F10U20DN	A	K	A
	Common Anode	FFPF10U20DP	F10U20DP	K	A	K

Case TO3P



B: Base
C: Collector
E: Emitter

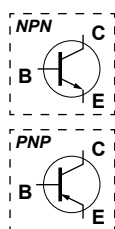
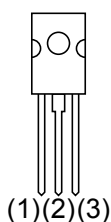
NPN bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Audio power	FJA4310-O	J4310-O	B	C	E

PNP bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Audio power	FJA4210-O	J4210-O	B	C	E

Case TO126

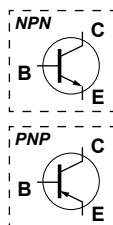
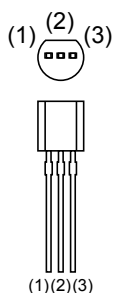


B: Base
C: Collector
E: Emitter

NPN bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Audio driver	BD681	BD681	E	C	B

Case TO92



B: Base
C: Collector
E: Emitter

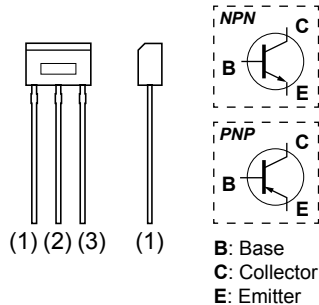
NPN bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Audio preamplifier	BC550C	BC550C	C	B	E
	Audio driver	BC639-16	BC639-16	E	C	B
	Darlington	MPSA14	MPSA14	E	B	C

PNP bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Audio driver	BC640-16	BC640-16	E	C	B
	Audio preamplifier	BC327	BC327	E	C	B

Case ATV- TV2



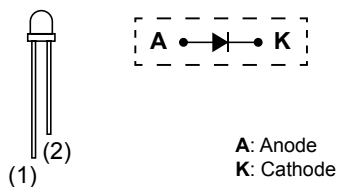
NPN bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Audio driver	2SD1857A-Q	D1857A	E	C	B

PNP bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Audio driver	2SB1236A-Q	B1236A	E	C	B

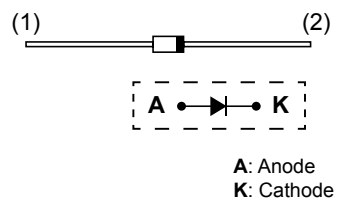
3mm cylinder type leds



Leds

Ref.	Type	Product name	Marking code	PIN OUT	
				(1)	(2)
	Red led	SLR-342VC3F GL3PR8	-	A	K
	Green led	SLR-342MC3F GLK3KG8	-	A	K
	Orange led	SLR-342MC3F GLK3KG8	-	A	K
	Yellow led	SLR-342MC3F GLK3KG8	-	A	K

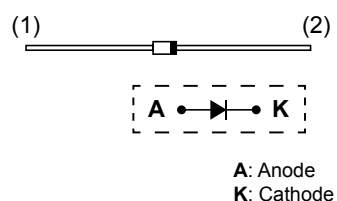
Case DO-41 / DO-204AL



Diodes

Ref.	Type	Product name	Marking code	PIN OUT	
				(1)	(2)
	Ultra fast	UF4004	UF4004	A	K
	General Purpose	1N4148	1N4148	A	K
	Zener 1W 39V	1N4754A	-	A	K

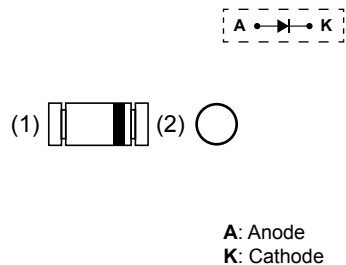
Case DO-35 Glass



Zener diodes

Ref.	Type	Product name	Marking code	PIN OUT	
				(1)	(2)
	500mW 15V	BZX55C15	SF14 ER102	A	K

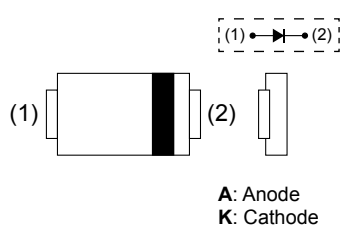
Case SOD-80 / MiniMELF



Diodes

Ref.	Type	Product name	Marking code	PIN OUT	
				(1)	(2)
	General purpose 150mA 75V	LL4148	-	A	K
	General Purpose 200mA 150V	BAV102 RLS245 FDLL 459/A	-	A	K
	Zener 6V8 5%	BZV55C6V8	-	A	K

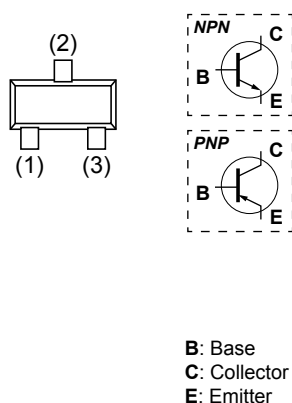
Case DO-214AC



Diodes

Ref.	Type	Product name	Marking code	PIN OUT	
				(1)	(2)
	Ultra fast rectifier 1A 200V	ES1D	ED	A	K

Case SOT23

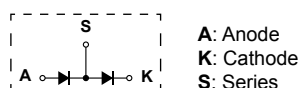


NPN bipolar transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Signal	BC817-25	6B	B	C	E
	Signal	BC850C	-	B	C	E
	Muting	2SD2114K	BBV	B	C	E
	Audio preamplifier	2SC3906K	TR	B	C	E

PNP bipolar transistor

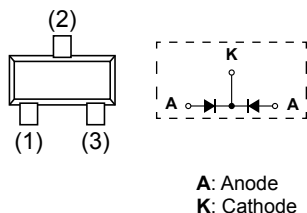
Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Signal	BC807-25	5B	B	C	E
	Signal	BC860C	-	B	C	E



Signal diodes

Ref.	Application	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Signal	BAV99	A7	A	S	K

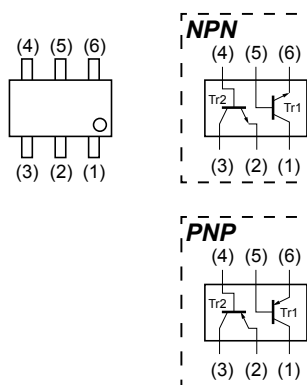
Case SOT323



Switching dual diodes

Ref.	Application	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Signal	BAV70W	KJA	A	K	A

Case SMT6



NPN bipolar dual transistor

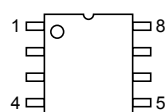
Ref.	Type	Product name	Marking code	PIN OUT
	Dual audio preamplifier	IMX3	X3	See DWG.
	Dual audio preamplifier	IMX8	X8	See DWG.

PNP bipolar dual transistor

Ref.	Type	Product name	Marking code	PIN OUT
	Dual audio preamplifier	IMT3A	T3	See DWG.
	Dual audio preamplifier	IMT4	T4	See DWG.

(1): Tr1 collector (2): Tr2 emitter (3): Tr2 collector
(4): Tr2 base (5): Tr1 base (6): Tr1 emitter

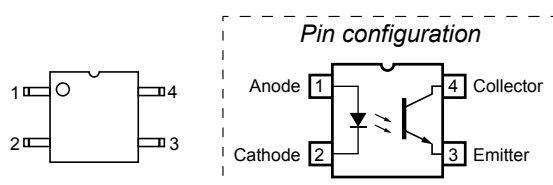
Case SO8



Linear ICs

Ref.	Type	Product name	Marking code
	Dual op amp	BA4580F	4580
	Dual comparator	LM393	393

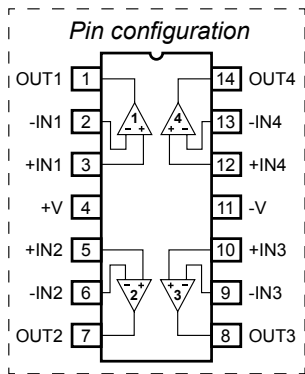
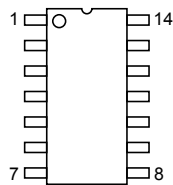
Case SO8 (4 pins)



Optoelectronics component

Ref.	Type	Product name	Marking code
	Optocoupler	PS2701-1 PC357NT TLP181	PS2701-1 PC357NT P181

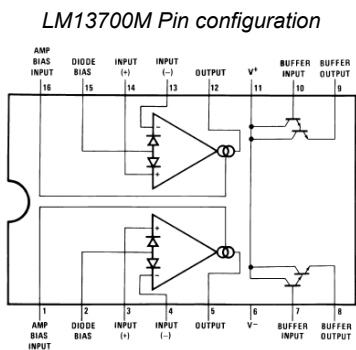
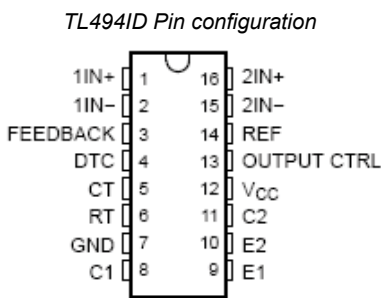
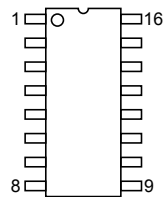
Case SO14



ICS

Ref.	Type	Product name	Marking code
1N	Quad op amps	LM324	324

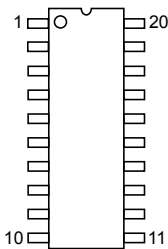
Case SO16



ICS

Ref.	Type	Product name	Marking code
	PWM driver	TL494ID	TL494ID
	Dual operational transconductance amplifier	LM13700M	LM13700M

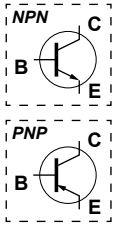
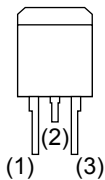
Case SOIC20



ICS

Ref.	Type	Product name	Marking code
	Microcontroller	ATtiny26-SU	ATTINY26-S

Case D PACK



B: Base
C: Collector
E: Emitter

NPN transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Epitaxial planar transistor	KTC2983D	C2983	B	C	E

PNP transistor

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Epitaxial planar transistor	KTA1225D	A1225	B	C	E

Voltage regulators

Ref.	Type	Product name	Marking code	PIN OUT		
				(1)	(2)	(3)
	Positive voltage regulator	78M05C	78M05	I	G	O

G: GND
O: Output
I: Input

PART 2

MECHANICAL PART

PART 2: MECHANICAL PART

Section A : Exploded views and parts list

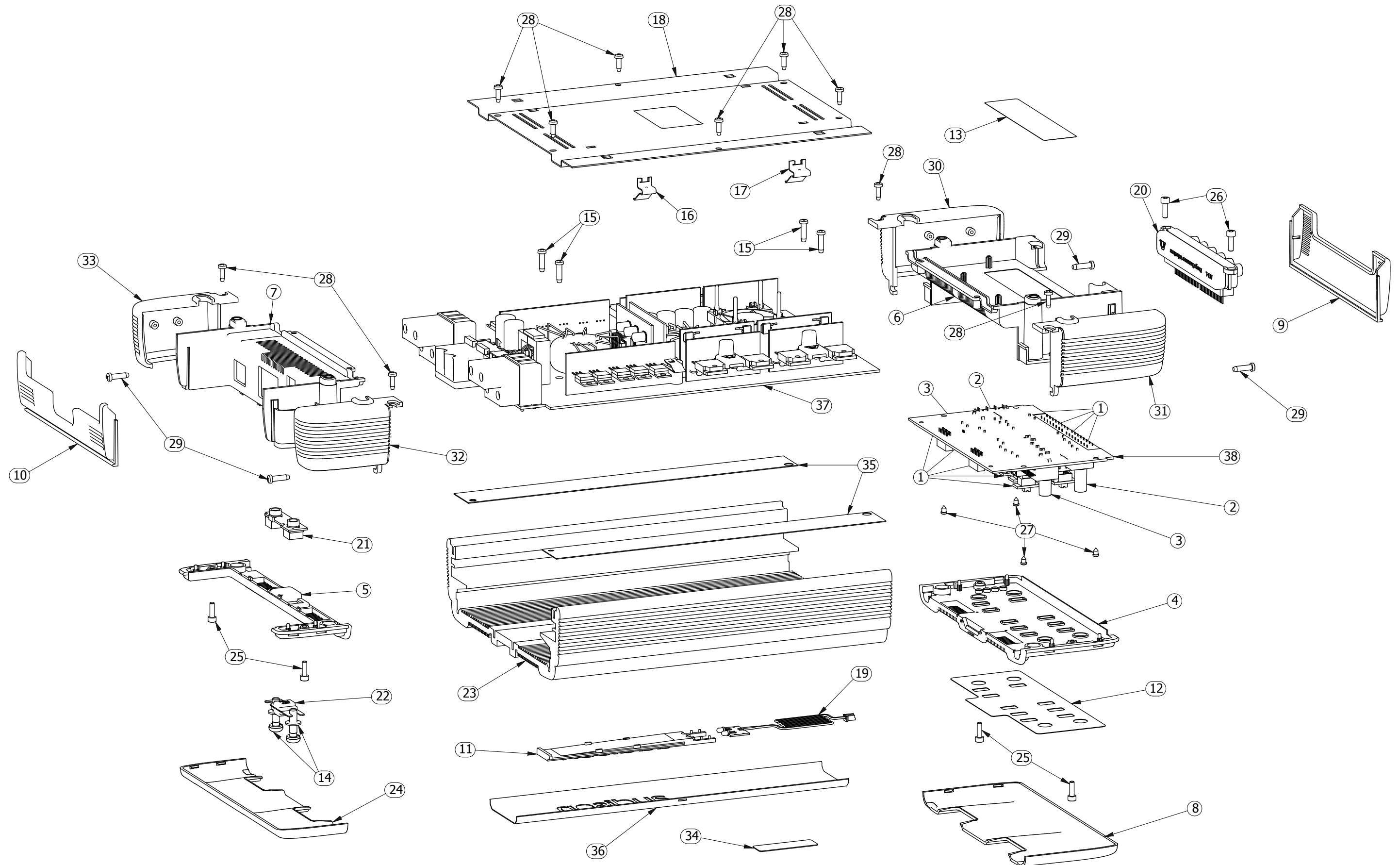
First Version - Rev. A

- | | |
|-----------------------------|-------------------|
| 1. Mechanical exploded view | sheet from 1 to 1 |
| 2. Package exploded view | sheet from 1 to 1 |
| 3. Amplifier parts list | page from 1 to 2 |

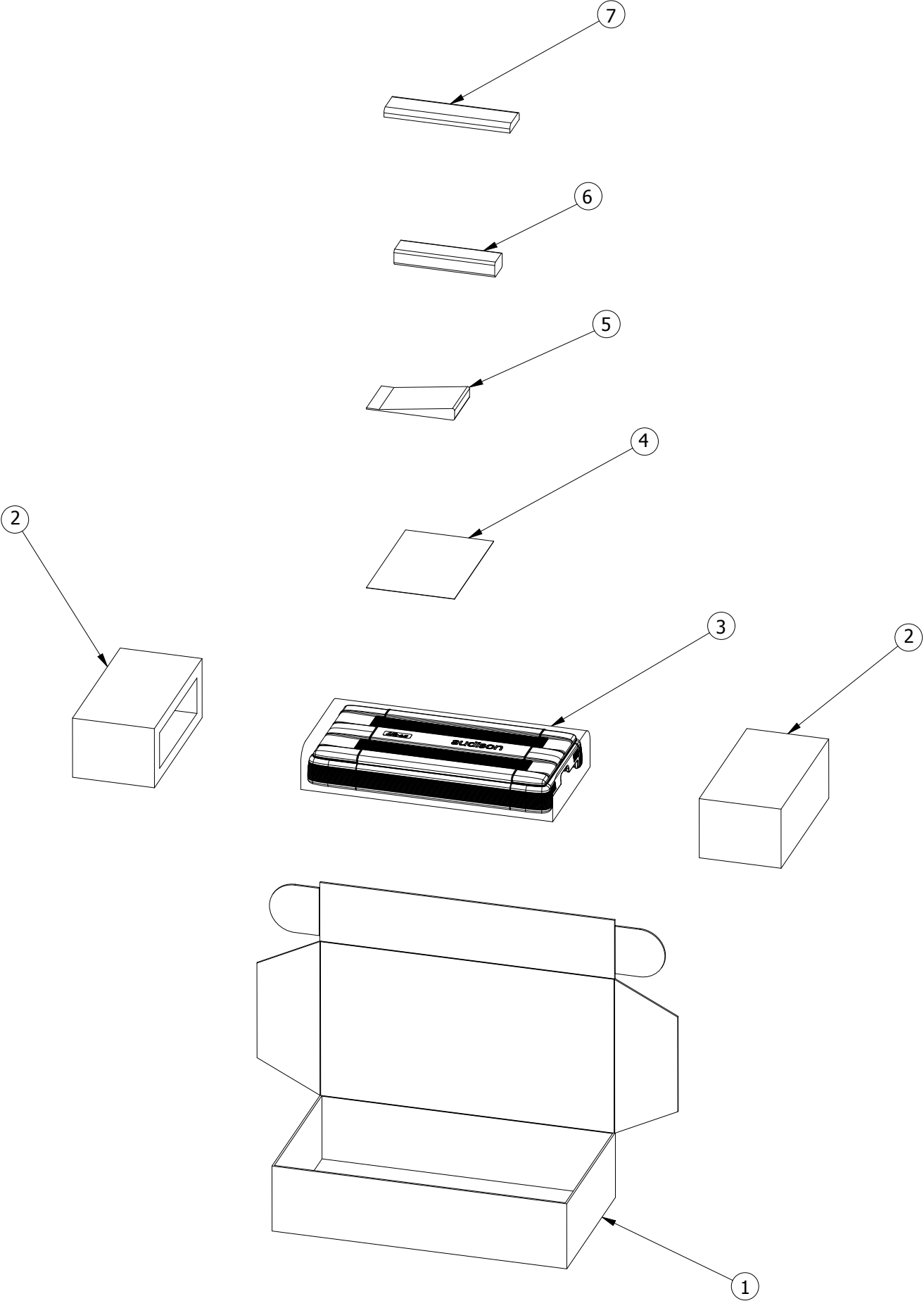
Table of the last upgrading revisions

UPGRADING REVISIONS									
PART 1 ELECTRONIC PART							PART 2 MECHANICAL PART	PART 3 Technical Notes	
SECT. B Mainboard	SECT. C PS2-P/N	SECT. D AB7-2	SECT. E Controls	ABLD	SECT. F CPU	PSC	SECT. G Comp. Pin-out	SECT. A - Exploded views and parts list	Technical Notes
Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A

1. Mechanical Exploded View



2. *Package Exploded View*



LRx 4.5 ASSEMBLED AMPLIFIER PARTS LIST

Rev. A

REF. NO	PART NO	DESCRIPTION	Q.TY
1	10020510	LRx SLIDE SWITCH KNOB	9
2	10020520	LRx POTENTIOMETER KNOB Lg	2
3	10020530	LRx POTENTIOMETER KNOB Sh	2
4	10081110	LRx Lg CONTROL PANEL	1
5	10081120	LRx PWR-FUSE PANEL PAINTED	1
6	10081130	LRx Lg-IN ENDS SUPPORT	1
7	10081160	LRx4.5 PWR ENDS SUPPORT (ATP 4-6W) WITH SILKSCREEN	1
8	10081170	LRx SATIN BLU TRANSP Lg COVER	1
9	10081190	LRx FRONT-END SHIELD	1
10	10081210	LRx CABLE-END SHIELD	1
11	10081241	LRx TRANSP AUDISON LOGO	1
12	10221170	LRx4.5 STICKER FOR CONTROL PANEL	1
13	10221220	LRx4.5 / LRx4.1k STICKER FOR Lg-IN ENDS SUPPORT	1
14	12112910	M5x18 SCREW TB EI (4) + WASHERS NICKEL PLATED	2
15	12130200	2.9x13 SCREW (AFsp TC C ZN)	4
16	12500560	LRx TO220 SPRING (10mm)	10
17	12500570	LRx TO3P SPRING (15mm)	12
18	14403060	LRx 218mm BOTTOM (LRx 4.5)	1
19	15120100	LRx ASSEMBLED DISPLAY PCB - CABLE 210mm	1
20	15230510	LRx RCA INPUT	1
21	15270520	FUSEHOLDER FOR 2W-TBF	1
22	15289846	FUSE 40A (SFA TYPE)	2
23	23824060	LRx 243mm HEAT-SINK (LRx4.5)	1
24	10081181	LRx Sh COVER - PAINTED	1
25	32101210	3x10 SCREW (HILO TBOTT. EI 2 CR)	4
26	32101220	3x10 SCREW (UNI 9707 HILO TC C ZN)	2
27	32130501	2.9x4.5 SCREW (AFsp TC C ZN)	4
28	32150031	3.2x7.0 SCREW (AFsp TFR C ZN)	10
29	32150110	3.5x13 SCREW (AF TC C ZB)	4
30	33540100	LRx Lg LEFT ZAMAK TERMINAL	1
31	33540110	LRx Lg RIGHT ZAMAK TERMINAL	1
32	33540120	LRx Sh LEFT ZAMAK TERMINAL	1
33	33540130	LRx Sh RIGHT ZAMAK TERMINAL	1
34	34125040	LRx 4.5 LABEL	1
35	34150020	242x25mm INSULATION AL. STRIP	2
36	34561020	LRx 243mm STRIP - SILVER (LRx4.5)	1
37	36726310	LRx4.5-MB C.S.ASS. (LRx4.5 MAIN BOARD)	1
38	36726630	LRx4.5-C.1 C.S.ASS. (LRx4.5 CONTROLS)	1

LRx 4.5 PACKAGE PARTS LIST

Rev. A

REF. NO	PART NO	DESCRIPTION	Q.TY
1	11116930	LRx4.5 CARTON BOX	1
2	11501540	LRx INNER CARTON	2
3	10039800	HIGH DENSITY POLIETHYLENE BAG 27x56	1
4	10040400	HIGH DENSITY POLIETHYLENE BAG 20x30	1
4	10120900	AUDISON WARRANTY rev. B	1
4	10125110	RAEE/WEE INFORMATION	1
4	10125240	LRx 4.5 / LRx 4.1k OWNER'S MANUAL	1
4	10125260	LRx FIXING TEMPLATE	1
4	10125270	LRx 4.5 CONFIGURATION TEMPLATE	1
4	90200020	AW STICKER S - AUDISON Transfer Sticker 19x7	1
5	10045000	10x16 AUDISON BAG	1
5	10081221	LRx PLAST SNAP-IN CABLE FIX ACCESSORY KIT	1
5	12150520	3.9x25 SCREW (AFcp TC C ZN)	4
5	12600610	90mm PH2 INSERT	1
5	15240030	LRx FASTON ACCESSORY KIT	1
5	30024510	AUDISON MULTISPANNER	1
6	15230520	LRx IN-HI INPUT (ECI-HI)	1
7	10040400	HIGH DENSITY POLIETHYLENE BAG 20x30	1
7	10081200	LRx REAR-END SHIELD	1
7	10081170	LRx Lg COVER - PAINTED	1

LRx 4.5 EXPENDABLE MATERIALS

Rev. A

PART NO	DESCRIPTION	Q.TY
07000400	THERMO COND. GREASE 50g.	
07000600	1-2577 SILICONE RESIN	0.1

PART 2: MECHANICAL PART

Section A : Exploded views and parts list

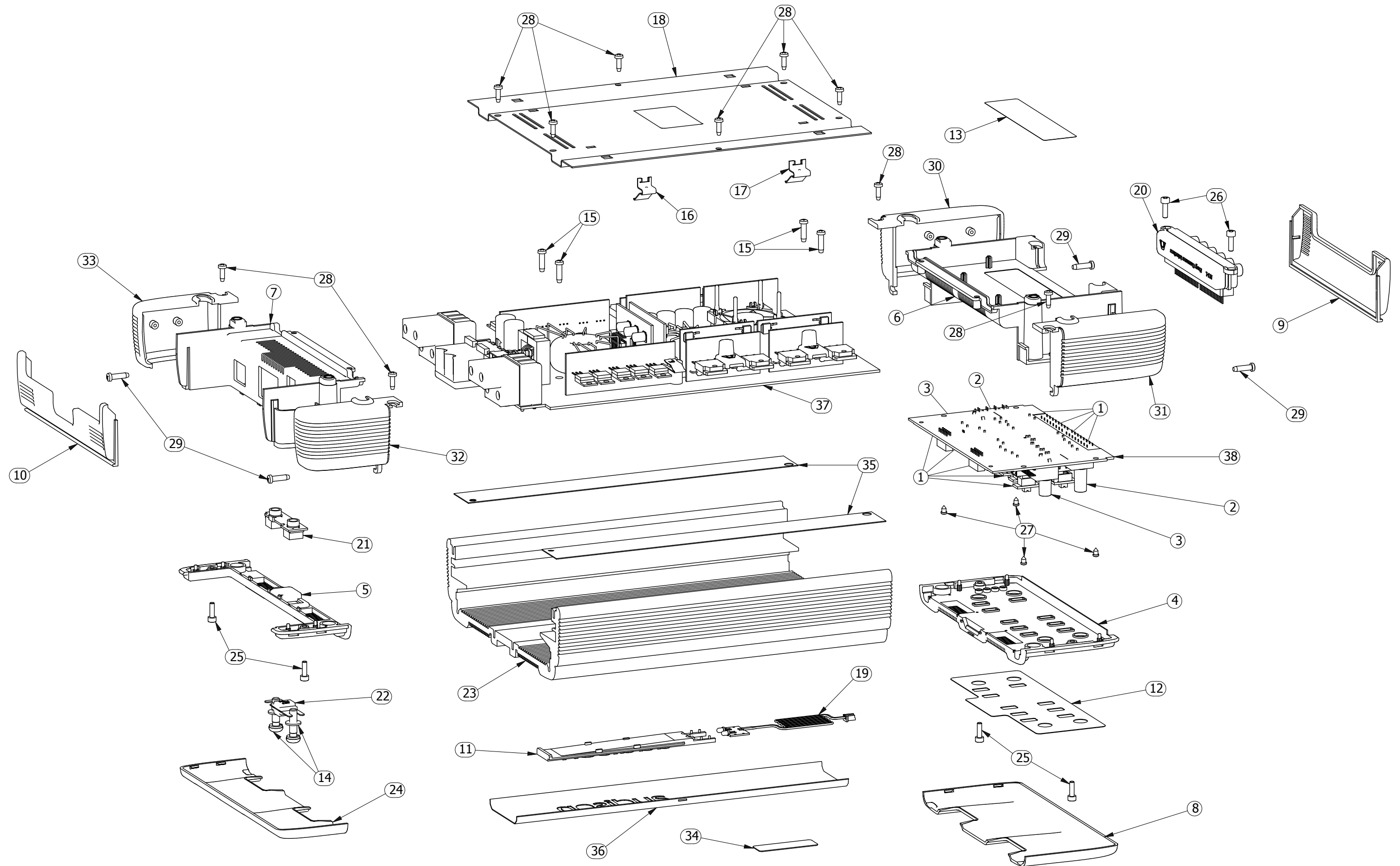
Upgrading Version - Rev. B

- | | |
|-----------------------------|-------------------|
| 1. Mechanical exploded view | sheet from 1 to 1 |
| 2. Package exploded view | sheet from 1 to 1 |
| 3. Amplifier parts list | page from 1 to 2 |

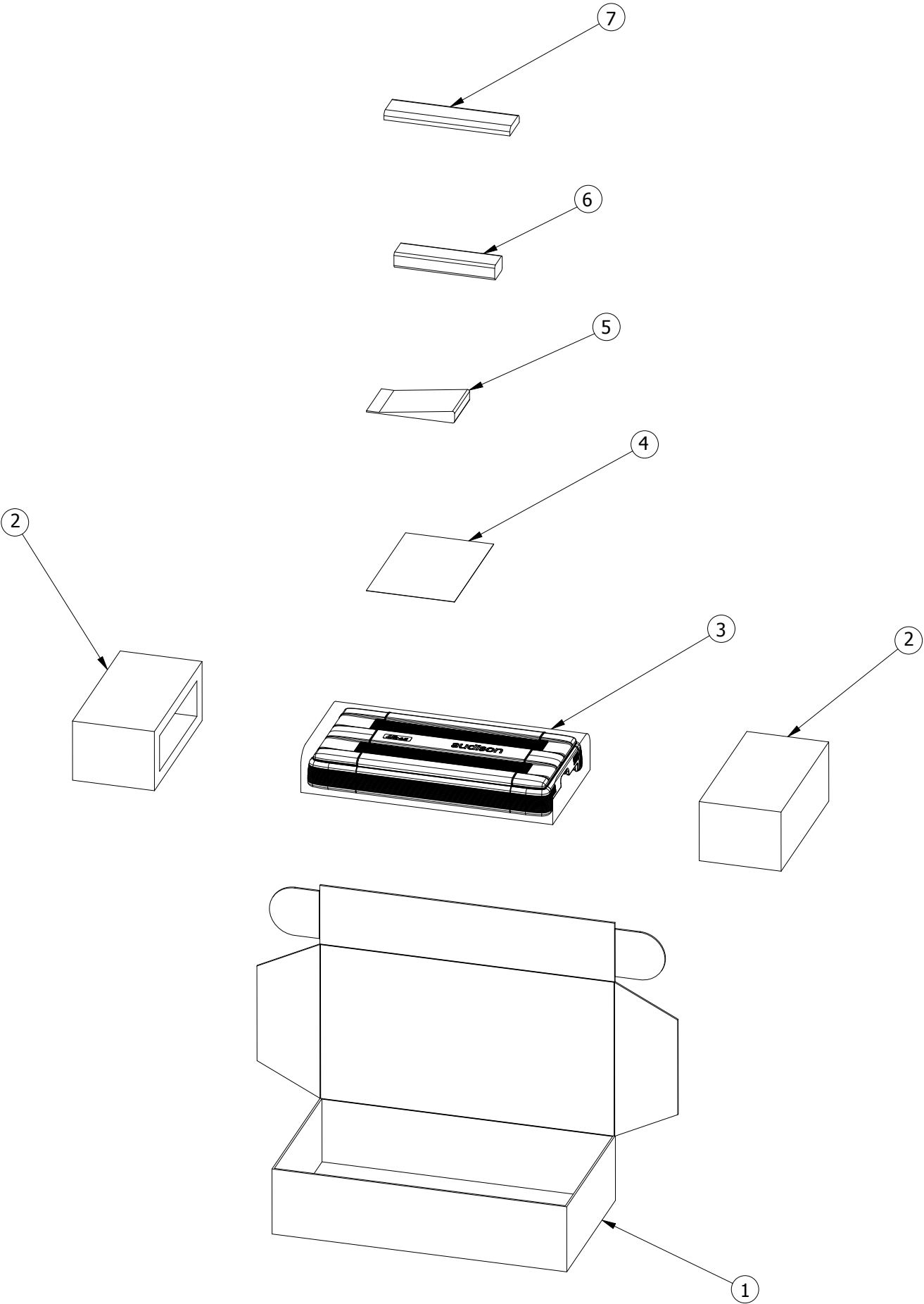
Table of the last upgrading revisions

UPGRADING REVISIONS									
PART 1 ELECTRONIC PART							PART 2 MECHANICAL PART	PART 3 Technical Notes	
SECT. B Mainboard	SECT. C PS2-P/N	SECT. D AB7-2	SECT. E Controls	SECT. F			SECT. G Comp. Pin-out	SECT. A - Exploded views and parts list	Technical Notes
				ABLD	CPU	PSC			
Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A
Rk = 12 Ohm	PS2.1A	AB7-2.1	4.5-C.1A	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. B	Rev. A

1. Mechanical Exploded View



2. *Package Exploded View*



LRx 4.5 ASSEMBLED AMPLIFIER PARTS LIST

Rev. B

REF. NO	PART NO	DESCRIPTION	Q.TY
1	10020510	LRx SLIDE SWITCH KNOB	9
2	10020520	LRx POTENTIOMETER KNOB Lg	2
3	10020530	LRx POTENTIOMETER KNOB Sh	2
4	10081113	LRx Lg GRAY CONTROL PANEL	1
5	10081123	LRx GRAY PWR-FUSE PANEL PAINTED	1
6	10081130	LRx Lg-IN ENDS SUPPORT	1
7	10081160	LRx4.5 PWR ENDS SUPPORT (ATP 4-6W) WITH SILKSCREEN	1
8	10081173	LRx SATIN GRAY TRANSP Lg COVER	1
9	10081193	LRx GRAY FRONT-END SHIELD	1
10	10081213	LRx GRAY CABLE-END SHIELD	1
11	10081241	LRx TRANSP AUDISON LOGO	1
12	10221173	LRx4.5 GRAY STICKER FOR CONTROL PANEL	1
13	10221220	LRx4.5 / LRx4.1k STICKER FOR Lg-IN ENDS SUPPORT	1
14	12112910	M5x18 SCREW TB EI (4) + WASHERS NICKEL PLATED	2
15	12130200	2.9x13 SCREW (AFsp TC C ZN)	4
16	12500560	LRx TO220 SPRING (10mm)	10
17	12500570	LRx TO3P SPRING (15mm)	12
18	14403060	LRx 218mm BOTTOM (LRx 4.5)	1
19	15120100	LRx ASSEMBLED DISPLAY PCB - CABLE 210mm	1
20	15230510	LRx RCA INPUT	1
21	15270520	FUSEHOLDER FOR 2W-TBF	1
22	15289846	FUSE 40A (SFA TYPE)	2
23	23824063	LRx 243mm GRAY HEAT-SINK (LRx4.5)	1
24	10081181	LRx Sh COVER - PAINTED	1
25	32101210	3x10 SCREW (HILO TBOTT. EI 2 CR)	4
26	32101220	3x10 SCREW (UNI 9707 HILO TC C ZN)	2
27	32130501	2.9x4.5 SCREW (AFsp TC C ZN)	4
28	32150031	3.2x7.0 SCREW (AFsp TFR C ZN)	10
29	32150110	3.5x13 SCREW (AF TC C ZB)	4
30	33540103	LRx Lg LEFT GRAY ZAMAK TERMINAL	1
31	33540113	LRx Lg RIGHT GRAY ZAMAK TERMINAL	1
32	33540123	LRx Sh LEFT GRAY ZAMAK TERMINAL	1
33	33540133	LRx Sh RIGHT GRAY ZAMAK TERMINAL	1
34	34125043	LRx 4.5 GRAY LABEL	1
35	34150020	242x25mm INSULATION AL. STRIP	2
36	34561020	LRx 243mm STRIP - SILVER (LRx4.5)	1
37	36726310	LRx4.5-MB C.S.ASS. (LRx4.5 MAIN BOARD)	1
38	36726630	LRx4.5-C.1 C.S.ASS. (LRx4.5 CONTROLS)	1

LRx 4.5 PACKAGE PARTS LIST

Rev. B

REF. NO	PART NO	DESCRIPTION	Q.TY
1	11116930	LRx4.5 CARTON BOX	1
2	11501540	LRx INNER CARTON	2
3	10039800	HIGH DENSITY POLIETHYLENE BAG 27x56	1
4	10040400	HIGH DENSITY POLIETHYLENE BAG 20x30	1
4	10120900	AUDISON WARRANTY rev. B	1
4	10125110	RAEE/WEE INFORMATION	1
4	10125240	LRx 4.5 / LRx 4.1k OWNER'S MANUAL	1
4	10125260	LRx FIXING TEMPLATE	1
4	10125270	LRx 4.5 CONFIGURATION TEMPLATE	1
4	90200020	AW STICKER S - AUDISON Transfer Sticker 19x7	1
5	10045000	10x16 AUDISON BAG	1
5	10081221	LRx PLAST SNAP-IN CABLE FIX ACCESSORY KIT	1
5	12150520	3.9x25 SCREW (AFcp TC C ZN)	4
5	12600610	90mm PH2 INSERT	1
5	15240030	LRx FASTON ACCESSORY KIT	1
5	30024510	AUDISON MULTISPANNER	1
6	15230520	LRx IN-HI INPUT (ECI-HI)	1
7	10040400	HIGH DENSITY POLIETHYLENE BAG 20x30	1
7	10081203	LRx GRAY REAR-END SHIELD	1
7	10081170	LRx Lg COVER - PAINTED	1

LRx 4.5 EXPENDABLE MATERIALS

Rev. B

PART NO	DESCRIPTION	Q.TY
07000400	THERMO COND. GREASE 50g.	
07000600	1-2577 SILICONE RESIN	0.1

PART 3

TECHNICAL NOTES

PART 3: TECHNICAL NOTES

First Version: Rev. A

1. Springs Replacing
2. 40x40x20 mm Fan Replacing
3. Idling Current Adjustment

Table of the last upgrading revisions

UPGRADING REVISIONS									
PART 1 ELECTRONIC PART							PART 2 MECHANICAL PART	PART 3 Technical Notes	
SECT. B Mainboard	SECT. C PS2-P/N	SECT. D AB7-2	SECT. E Controls	ABLD	SECT. F CPU	PSC	SECT. G Comp. Pin-out	SECT. A - Exploded views and parts list	Technical Notes
Rk = 12 Ohm	PS2.1	AB7-2.1	4.5-C.1	ABLD.1	CPU.1	PSC.2	Rev. A	Rev. A	Rev. A

1. Springs Replacing

REMOVING

- 1- Insert the blade of the screwdriver in the center of the spring as shown in figure n°1.
- 2- Using the aluminium heatsink of the amplifier as leverage, slowly extract the spring as shown in figure n°2, being careful to not use too much force.

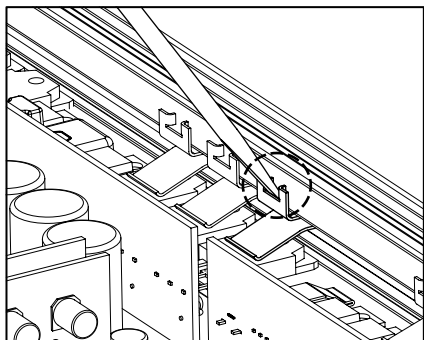


fig.1

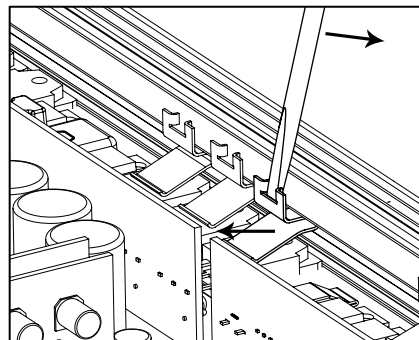


fig.2

INSERTION

- 1- Fit the spring into the heatsink, over the transistor as shown in figure n°3.
- 2- Using the supplied tool, hook the spring with one end of the tool, while using the heatsink as leverage for the other end. Make sure the spring remains as straight as possible as shown in figure n°4.
- 3- With constant pressure applied to the tool, insert the clamp into position as shown in figure n°5. Carefully remove the clamp.

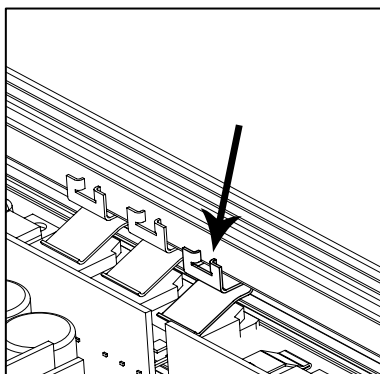


fig.3

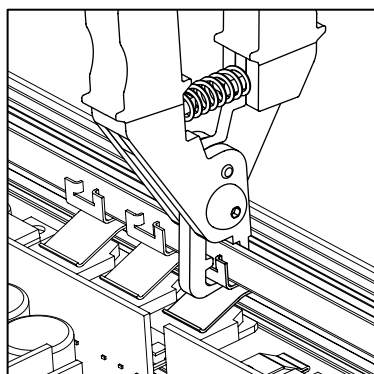


fig.4

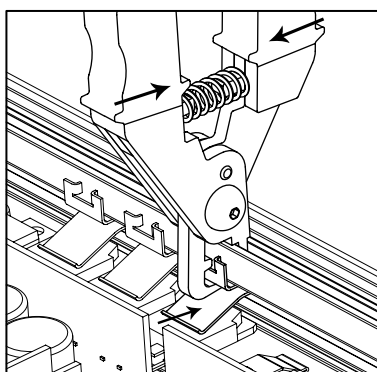


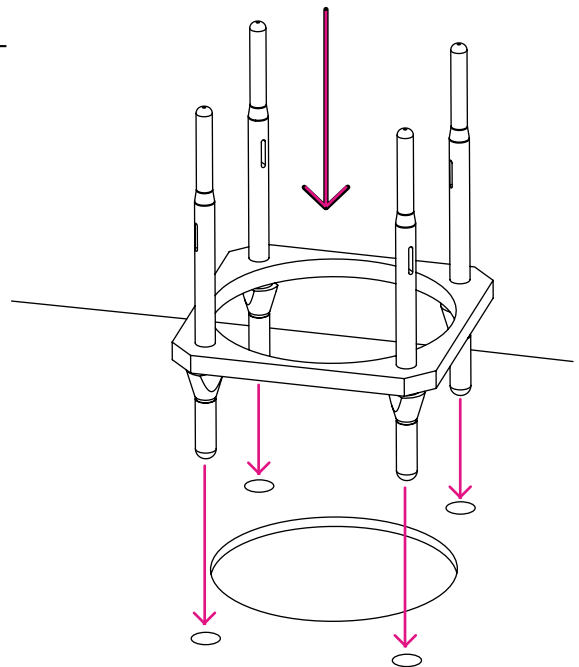
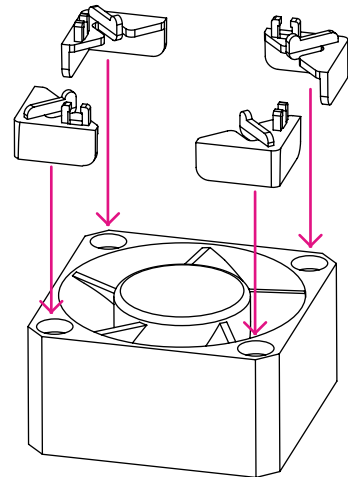
fig.5

2. 40x40x20 mm Fan Replacing

In the case you need to replace the fan, please proceed as per the following steps.

A. Fan rigid fixing with rivets (first batch of products)

- 1- Remove the bottom of the product.
- 2- Remove all the springs and the screws which fix the mainboard to the heatsink.
- 3- Remove the electronic board from the heatsink.
- 4- Unfasten the rigid rivets.
- 5- Remove the fan.
- 6- Insert the fan rubber support as shown in the drawing. In order to fix the rubber support to the mainboard, fasten the bottom part from the PCB bottom side.
- 7- Cut the excess bottom part of the rubber pin.
- 8- Insert the new fan running the 4 pins of the rubber support through the fan fixing holes.
- 9- Pull the top 4 rubber pins until you see the slots on the pin sides.
- 10- Apply the clips to the fan angles. Insert the rubber pin slots into the hooks of the angle clips.



B. Fan flexible fixing through rubber support and angle clips.

- 1- Unhook the rubber pin slots from the angle clips hooks.
- 2- Remove the fan.
- 3- Repeat steps from 8 to 10 as shown in Procedure A.

3. Idling Current Adjustment

1. Before adjusting the idling current, turn the amplifier on and let it play for several minutes. When the heat sink temperature reaches a range between 30 and 45°C (86 ÷ 113°F) that is the optimal condition to perform the adjustment.
 2. Disconnect loads and input signals and open the amplifier bottom cover.
 3. Take a digital multimeter and set it in continuous voltage. Then connect probes to the Emitter power transistor leads as shown in the picture.
 4. Take a very small screwdriver and adjust the trimmer till you read 5.0 ÷ 6.0 mVDC on the multimeter.
 5. Repeat the same procedure for each channel.
- Note: Small variations regarding the values indicated, do not cause working defects.

