

**Pioneer** *sound.vision.soul*

# Service Manual



GM-X372/XH/UC

ORDER NO.  
**CRT3006**

BRIDGEABLE POWER AMPLIFIER

# GM-X372

XH/UC, XH/EW, XH/ES



For details, refer to "Important symbols for good services".

**PIONEER CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan  
**PIONEER ELECTRONICS (USA) INC.** P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.  
**PIONEER EUROPE NV** Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium  
**PIONEER ELECTRONICS ASIACENTRE PTE.LTD.** 253 Alexandra Road, #04-01, Singapore 159936

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## SAFETY INFORMATION

### ● GM-X372/XH/UC

#### **CAUTION**

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

#### **WARNING**

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.  
Health & Safety Code Section 25249.6 - Proposition 65

#### **[ Important symbols for good services ]**

In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely. When you find the procedures bearing any of the symbols, be sure to fulfill them:

##### 1. Product safety



You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

##### 2. Adjustments



To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

##### 3. Cleaning



For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

##### 4. Shipping mode and shipping screws



To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

##### 5. Lubricants, glues, and replacement parts



Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount. For replacement parts or tools, the prescribed ones should be used.

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## 1. SPECIFICATIONS

Power source .....	14.4 V DC (10.8 — 15.1 V allowable)
Grounding system .....	Negative type
Current consumption .....	14.4 A (at continuous power, 4 Ω)
Backup current .....	3.0 mA or less
Average current drawn* .....	5.0 A (4 Ω for two channels) 7.5 A (4 Ω for one channel)
Fuse .....	25 A × 1
Dimensions .....	255 (W) × 50 (H) × 169 (D) mm [10 (W) × 2 (H) × 6-5/8 (D) in]
Weight .....	2.0 kg (4.4 lbs) (Leads for wiring not included)
Maximum power output .....	100 W × 2 / 240 W × 1
Continuous power output .....	50 W × 2 (at 14.4 V, 4 Ω, 20 — 20,000 Hz, 0.15% THD) 120 W × 1 (at 14.4 V, 4 Ω, 20 — 20,000 Hz, 0.8% THD) 60 W × 2 (at 14.4 V, 2 Ω, 20 — 20,000 Hz, 0.8% THD)
Load impedance .....	4 Ω (2 — 8 Ω allowable) (Bridge connection: 4 — 8 Ω allowable)
Frequency response .....	10 — 50,000 Hz (+0 dB, -1 dB)
Signal-to-noise ratio .....	100 dB (IHF-A network)
Distortion .....	0.008% (10 W, 1 kHz)
Separation .....	60 dB (1 kHz)
Low pass filter .....	Cut off frequency: 80 Hz Cut off slope: -12 dB/oct
Maximum input level/impedance .....	RCA: 6.5 V/22 kΩ (0.2 — 6.5 V) Speaker: 26 V/40 kΩ (0.8 — 26 V)

### Note:

- Specifications and the design are subject to possible modification without notice due to improvements.

### \*Average current drawn

- The average current drawn is nearly the maximum current drawn by this unit when an audio signal is input. Use this value when working out total current drawn by multiple power amplifiers.

# 2. EXPLODED VIEWS AND PARTS LIST

## 2.1 PACKING

A

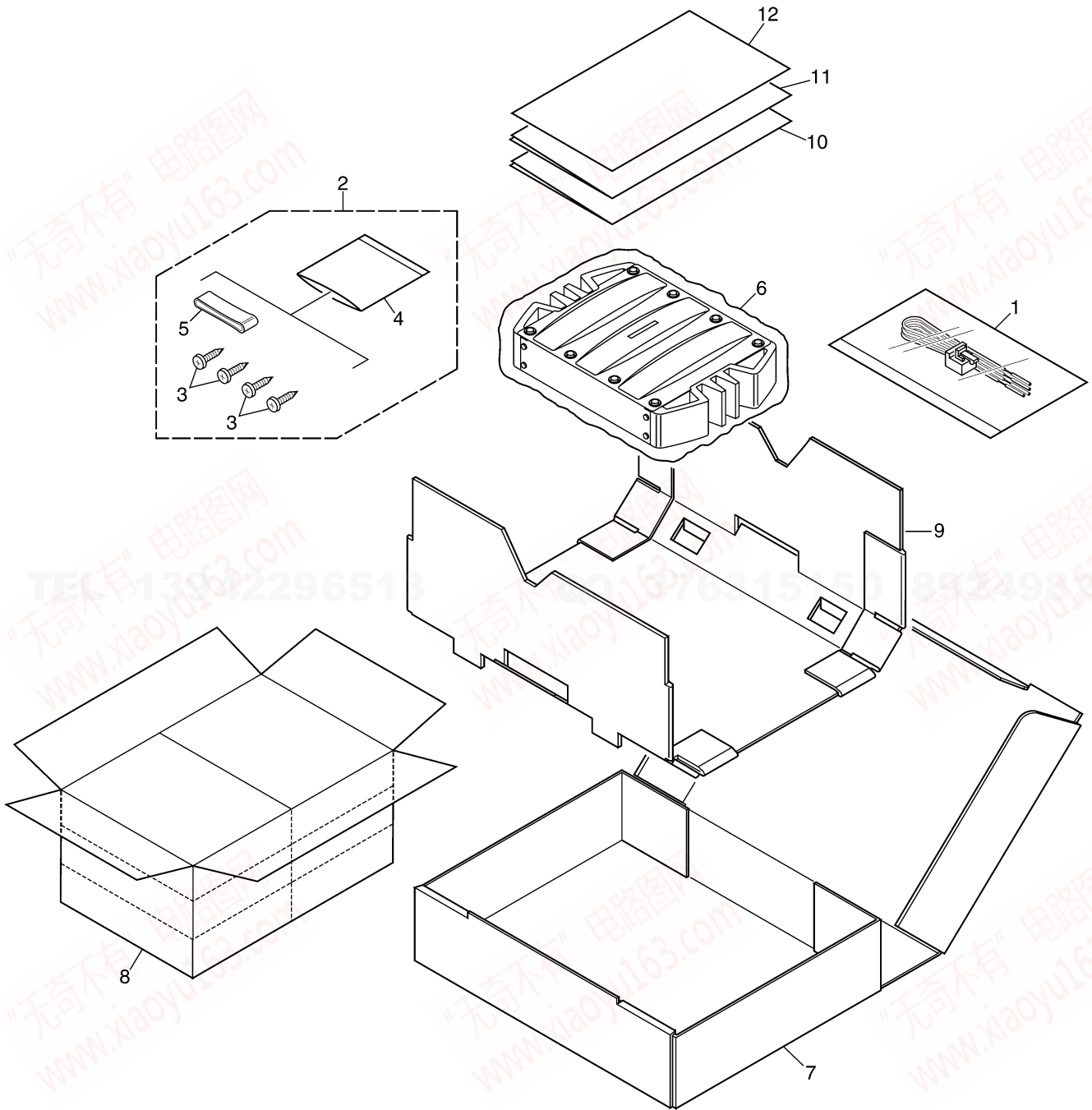
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**NOTE:**

- Parts marked by "\*" are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.
- For the applying amount of lubricants or glue, follow the instructions in this manual.  
( In the case of no amount instructions, apply as you think it appropriate.)

**● PACKING SECTION PARTS LIST**

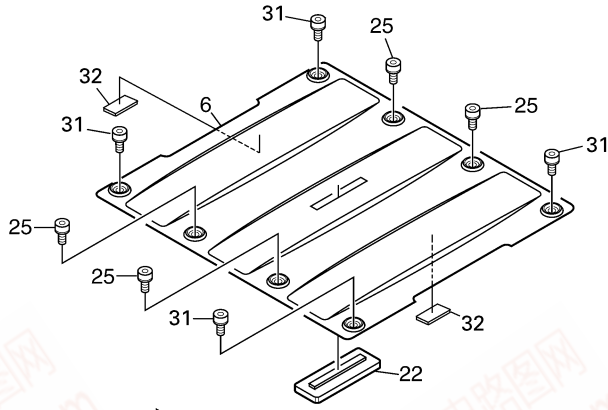
Mark No.	Description	Part No.
1	Cord	HDE0044
2	Screw Assy	HEA0058
3	Screw	BYC40P180FZK
4	Polyethylene Bag	HEG0011
5	Cover	HNS0101
6	Polyethylene Bag	HEG0013
7	Carton	HHG0341
8	Contain Box	HHL0341
9	Protector	HHP0170
10	Owner's Manual(UC)	HRD0226
	Owner's Manual(EW)	HRD0227
	Owner's Manual(ES)	HRD0228
11	Owner's Manual(ES)	HRD0229
*	12 Warranty Card	HRY1157

**● Owner's Manual**

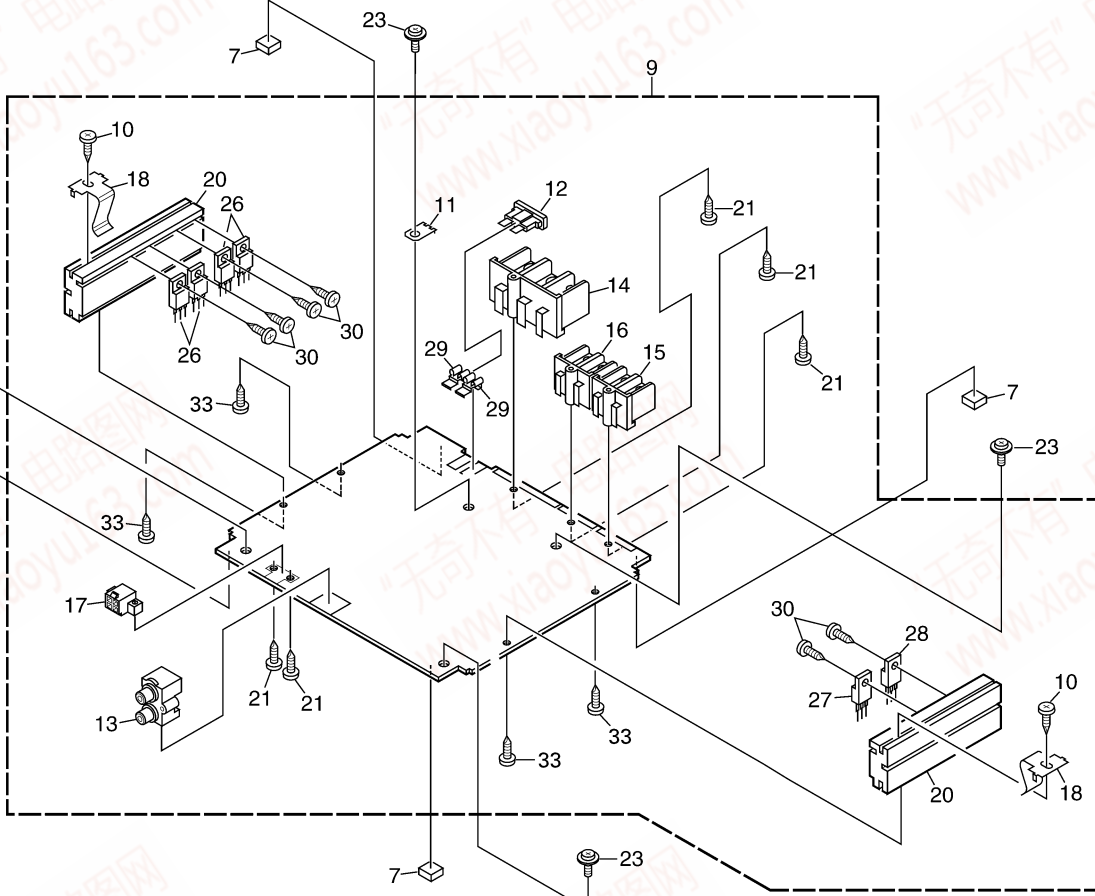
Part No.	Language
HRD0226	English, French
HRD0227	English, French, Spanish, German, Italian, Dutch
HRD0228	English, Spanish
HRD0229	Portuguese(B), Arabic

# 2.2 EXTERIOR

A



B

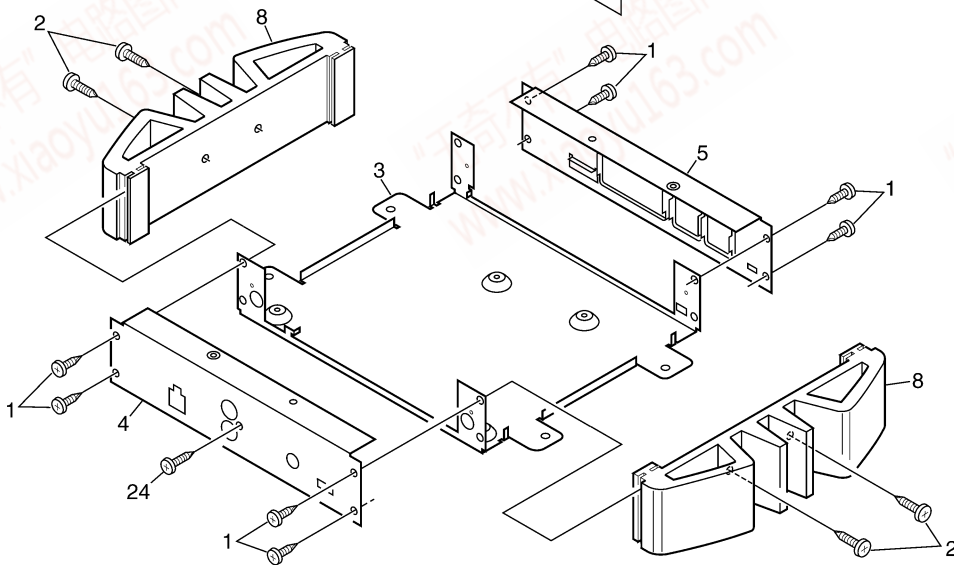


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## ● EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No.
1	Screw	BBZ30P060FZK
2	Screw	BBZ30P110FZK
3	Chassis	HNA0015
4	Panel	HNB0187
5	Panel	HNB0191
6	Case	HNB0196
7	Spacer	HNM0124
8	Heat Sink	HNR0236
9	Amp Unit(UC)	HWH0201
	Amp Unit(EW)	HWH0202
	Amp Unit(ES)	HWH0203
10	Screw	BBZ30P050FZK
11	Terminal(CN604)	CKF1059
12	Fuse(25A)	HEK0025
13	Pin Jack(CN801)	HKB0020
14	Terminal(CN601)	HKE0048
15	Terminal(CN851)	HKE0049
16	Terminal(CN852)	HKE0049
17	Connector(CN803)	HKM1077
18	Clip	HNC0145
19	.....	
20	Heat Sink	HNR0237
21	Screw	PPZ30P100FZK
22	Light Pipe Unit	HXA0391
23	Screw	ISS30P055FUC
24	Screw	PPZ30P100FZK
25	Screw	HBA0029
26	FET(Q612,613,614,615)	STP55NF06FP
27	Diode(D611)	FML22R
28	Diode(D612)	FML22S
29	Holder	HNC0082
30	Screw	BBZ30P080FMC
31	Screw	HBA0030
32	Cushion	HNM6623
33	Screw	BBZ30P060FZK

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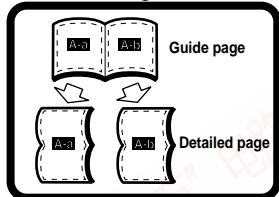
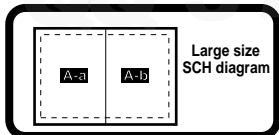
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### 3. SCHEMATIC DIAGRAM

#### 3.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

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B

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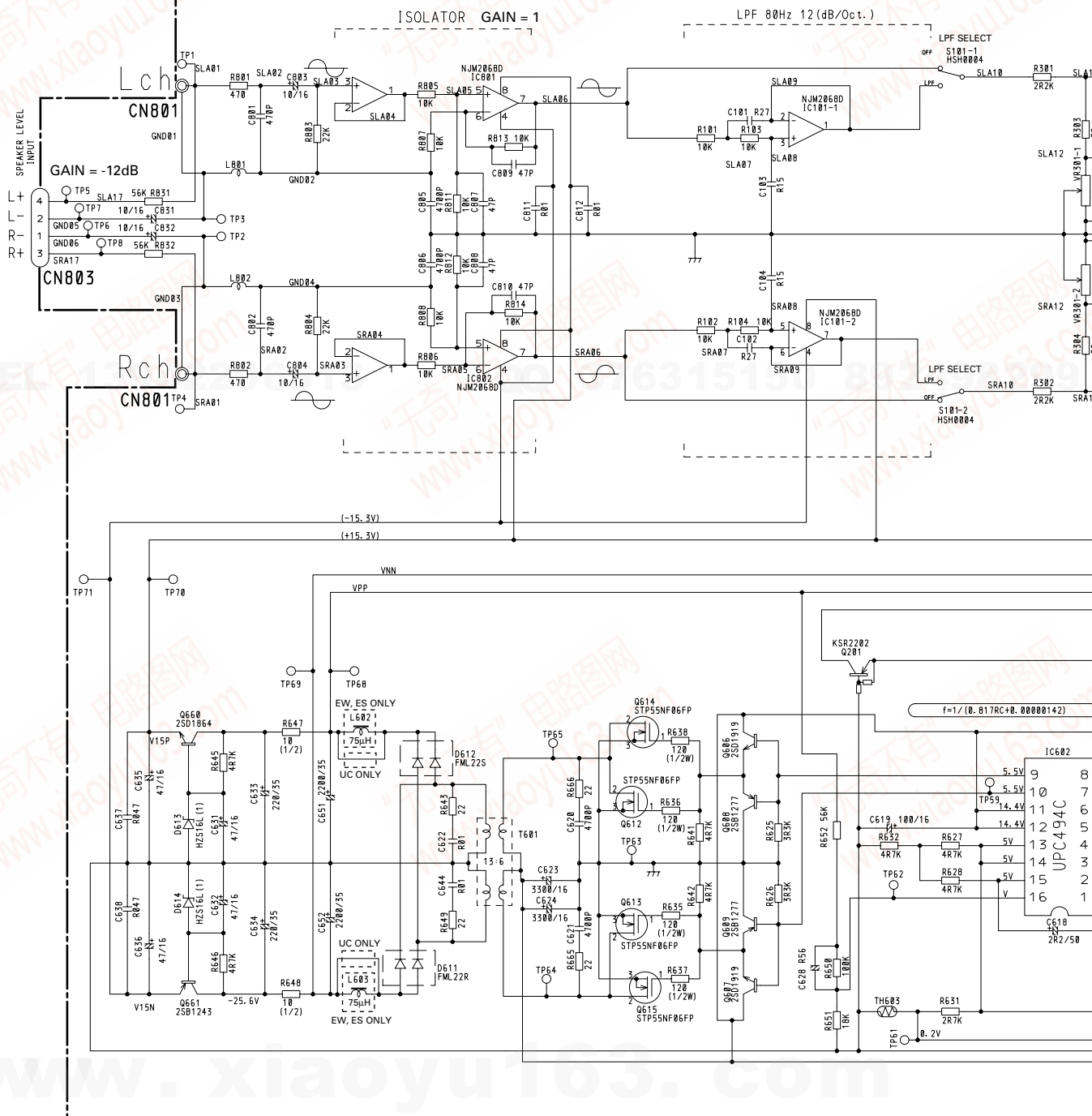
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## A AMP UNIT

# A-a



8

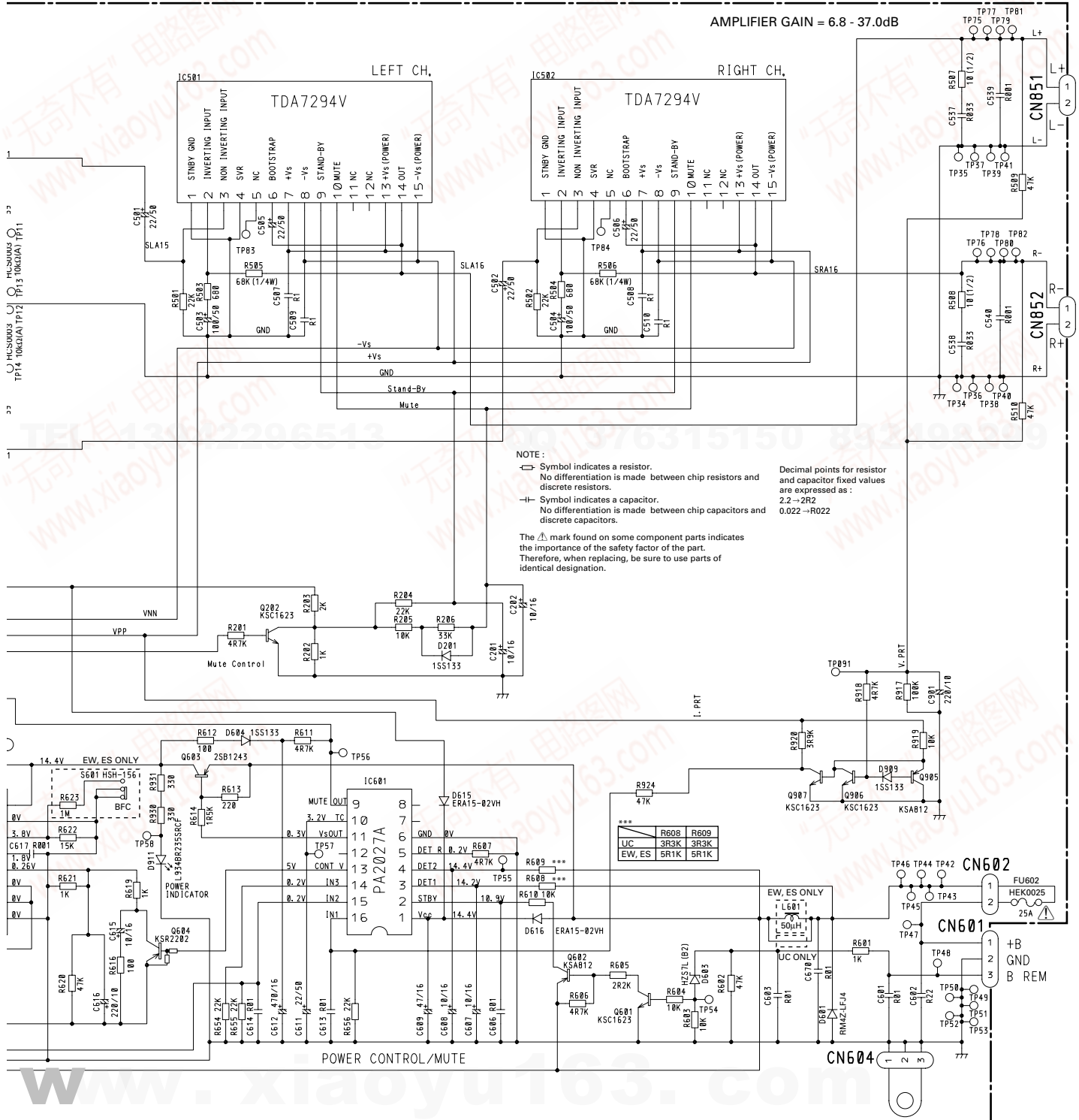
## A



QQ 376315150 892498299

# A-b

AMPLIFIER GAIN = 6.8 - 37.0dB



NOTE:

- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- ⊢ Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Decimal points for resistor and capacitor fixed values are expressed as:  
 2.2 → 2R2  
 0.022 → R022

R608	R609
UC	3R3K
EW, ES	5R1K
	5R1K

A-a A-b

A

B

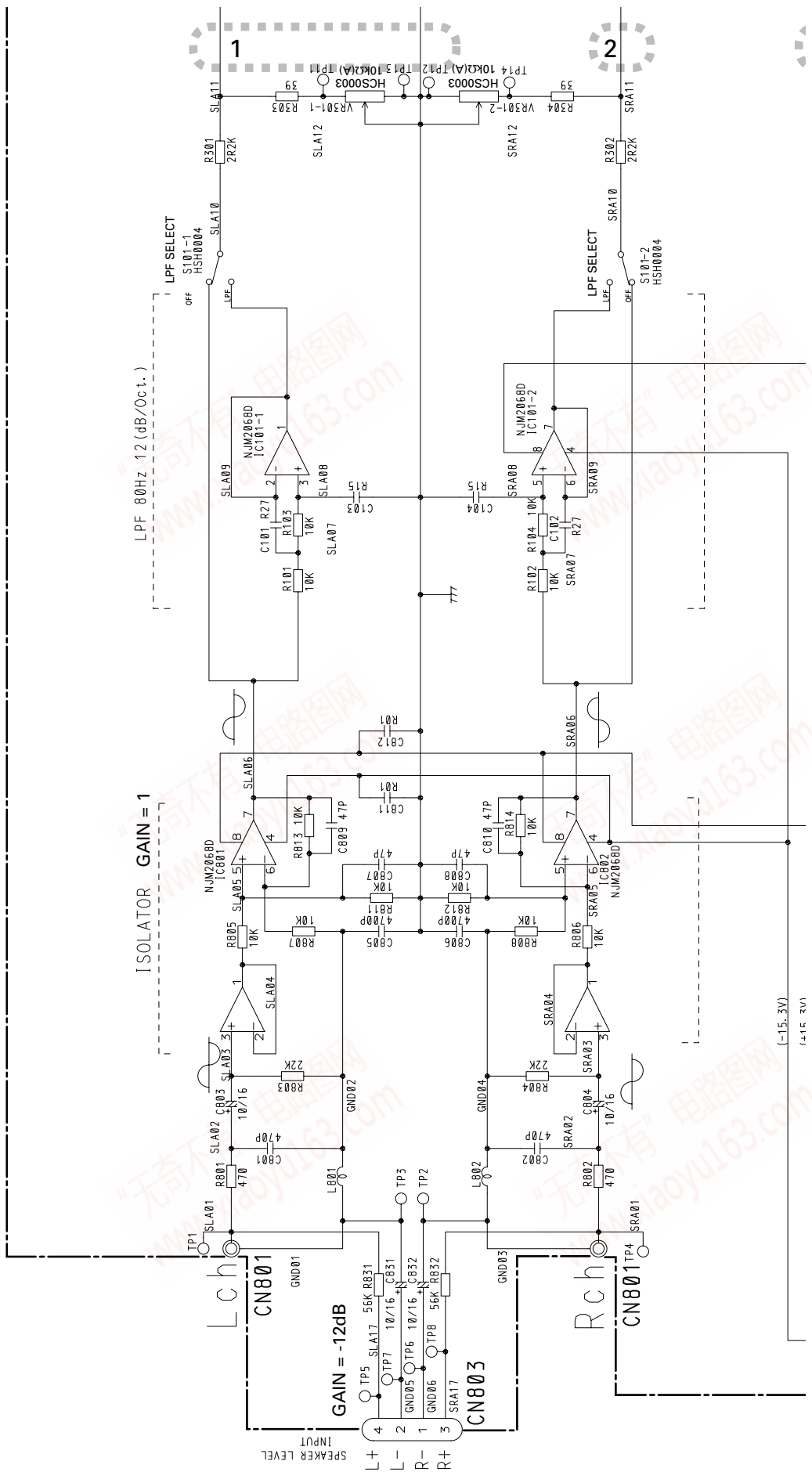
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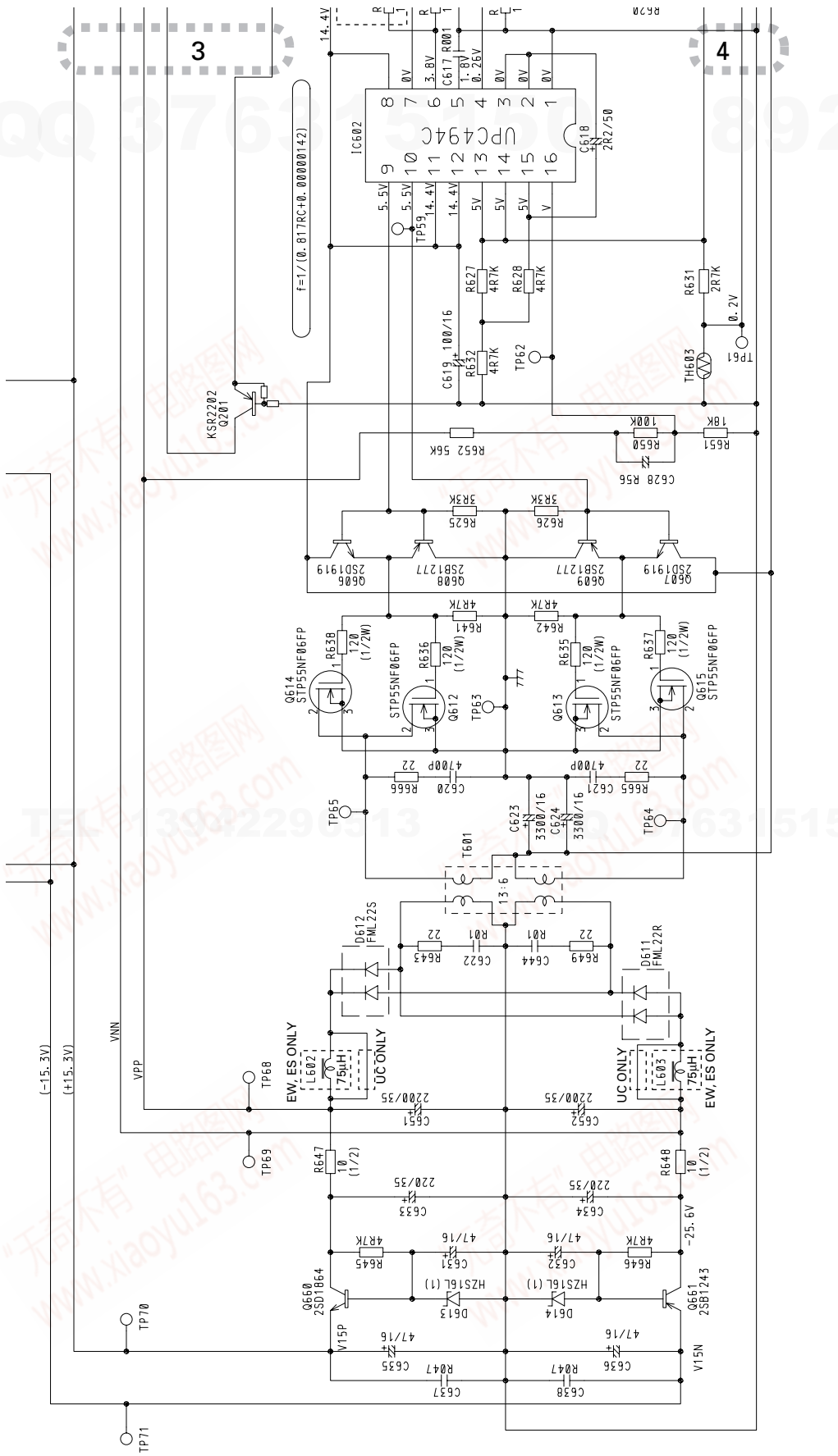
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# A AMP UNIT





A-a A-b

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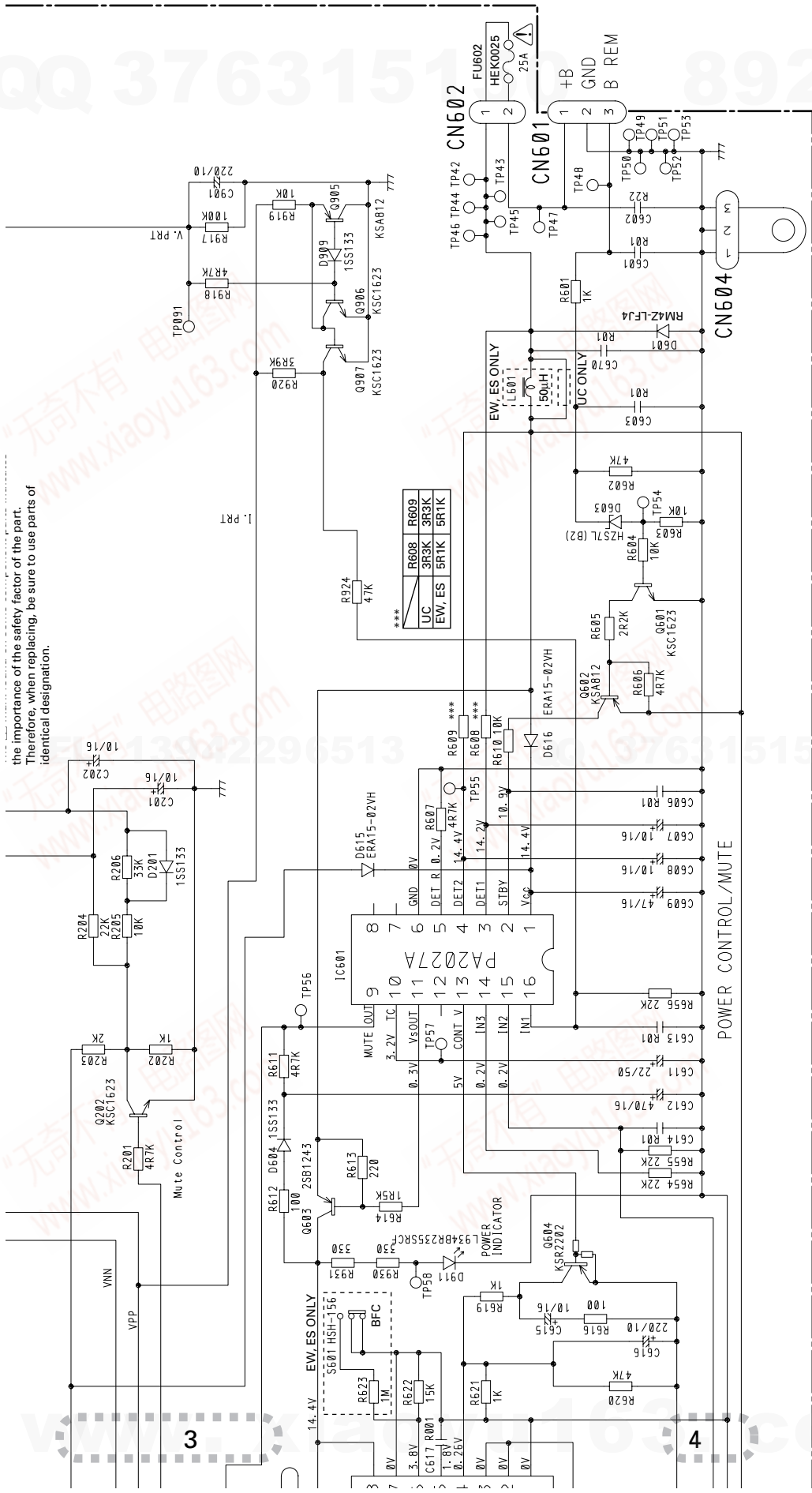
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A-a A-b

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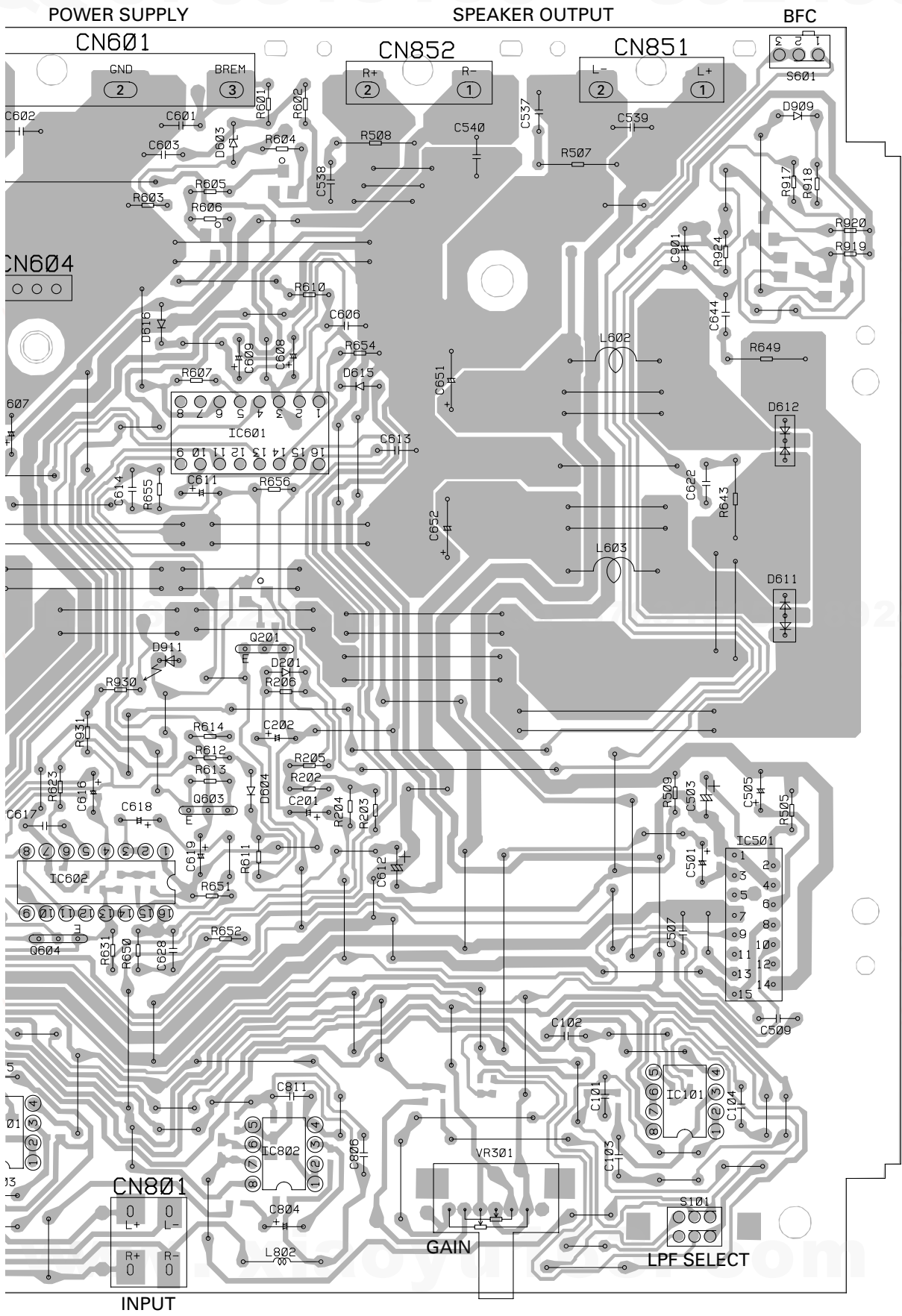
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SIDE A

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A B C D E F





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**A** AMP UNIT

A

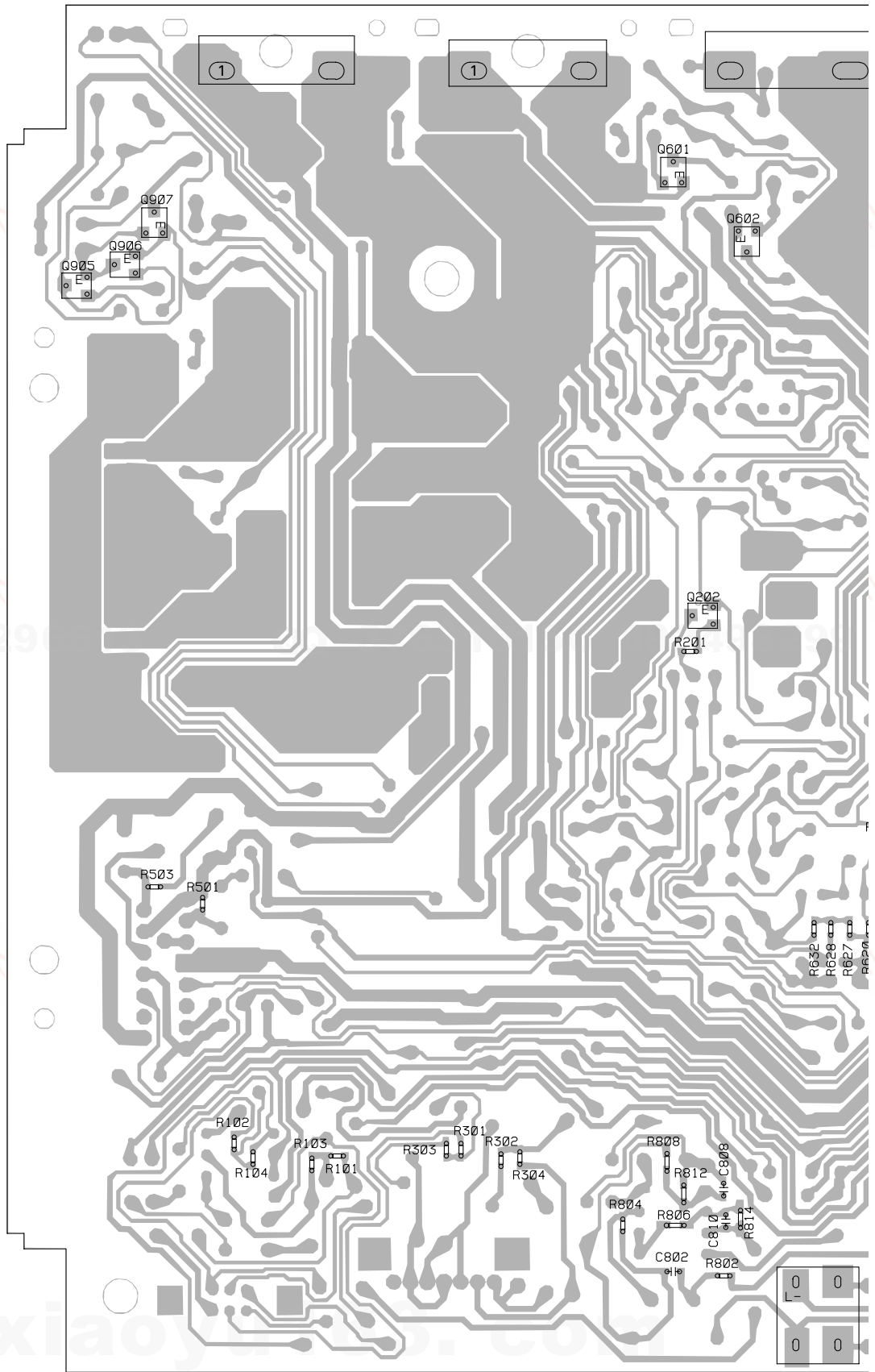
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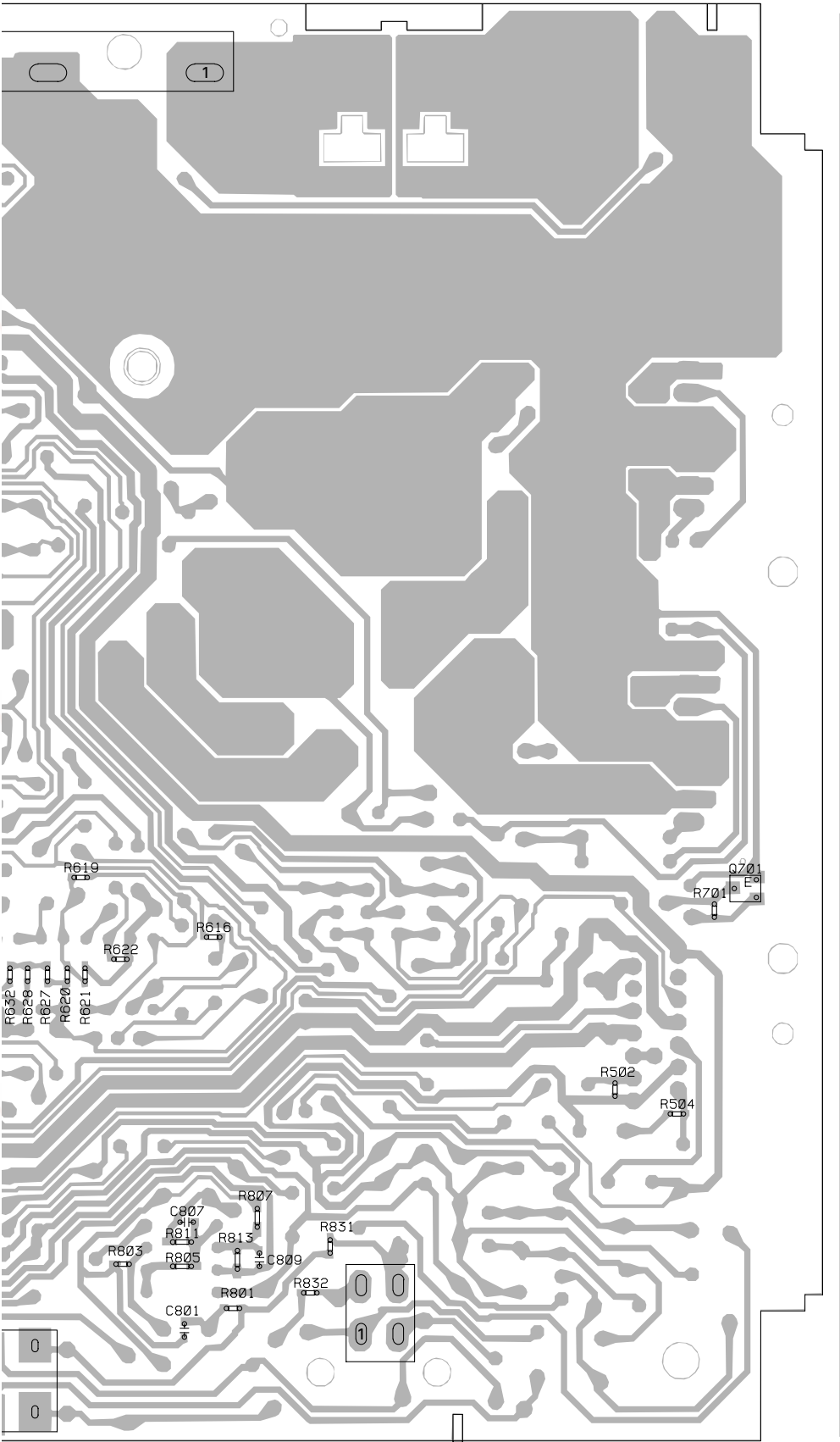
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SIDE B



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A

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# 5. ELECTRICAL PARTS LIST

## NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/OSOOOJ,RS1/OOSOOOJ

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

====Circuit Symbol and No.====Part Name	Part No.	====Circuit Symbol and No.====Part Name	Part No.
<b>A</b> Unit Number : HWH0201 (UC)		S 101 Switch(LPF SELECT)	HSH0004
: HWH0202 (EW)		S 601 Switch(BFC) (EW, ES)	HSH-156
: HWH0203 (ES)		VR 301 Volume 10kΩ(A)	HCS0003
Unit Name : Amp Unit		FU 602 Fuse(25A)	HEK0025
<b>MISCELLANEOUS</b>		<b>RESISTORS</b>	
IC 101 IC	NJM2068D	R 101	RS1/16S103J
IC 501 IC	TDA7294V	R 102	RS1/16S103J
IC 502 IC	TDA7294V	R 103	RS1/16S103J
IC 601 IC	PA2027A	R 104	RS1/16S103J
IC 602 IC	UPC494C	R 201	RS1/16S472J
IC 801 IC	NJM2068D	R 202	RD1/4PU102J
IC 802 IC	NJM2068D	R 203	RD1/4PU202J
Q 201 Transistor	KSR2202	R 204	RD1/4PU223J
Q 202 Transistor	KSC1623	R 205	RD1/4PU103J
Q 601 Transistor	KSC1623	R 206	RD1/4PU333J
Q 602 Transistor	KSA812	R 301	RS1/16S222J
Q 603 Transistor	2SB1243	R 302	RS1/16S222J
Q 604 Transistor	KSR2202	R 303	RS1/16S390J
Q 606 Transistor	2SD1919	R 304	RS1/16S390J
Q 607 Transistor	2SD1919	R 501	RS1/16S223J
Q 608 Transistor	2SB1277	R 502	RS1/16S223J
Q 609 Transistor	2SB1277	R 503	RS1/16S681J
Q 612 FET	STP55NF06FP	R 504	RS1/16S681J
Q 613 FET	STP55NF06FP	R 505	RD1/4PU683J
Q 614 FET	STP55NF06FP	R 506	RD1/4PU683J
Q 615 FET	STP55NF06FP	R 507	RS1/2PMF100J
Q 660 Transistor	2SD1864	R 508	RS1/2PMF100J
Q 661 Transistor	2SB1243	R 509	RD1/4PU473J
Q 905 Transistor	KSA812	R 510	RD1/4PU473J
Q 906 Transistor	KSC1623	R 601	RD1/4PU102J
Q 907 Transistor	KSC1623	R 602	RD1/4PU473J
D 201 Diode	1SS133	R 603	RD1/4PU103J
D 601 Diode	RM4Z-LFJ4	R 604	RD1/4PU103J
D 603 Diode	HZS7L(B2)	R 605	RD1/4PU222J
D 604 Diode	1SS133	R 606	RD1/4PU472J
D 611 Diode	FML22R	R 607	RD1/4PU472J
D 612 Diode	FML22S	R 608 (UC)	RD1/4PU332J
D 613 Diode	HZS16L(1)	R 608 (EW, ES)	RD1/4PU512J
D 614 Diode	HZS16L(1)	R 609 (UC)	RD1/4PU332J
D 615 Diode	ERA15-02VH	R 609 (EW, ES)	RD1/4PU512J
D 616 Diode	ERA15-02VH	R 610	RD1/4PU103J
D 909 Diode	1SS133	R 611	RD1/4PU472J
D 911 LED	L934BR235SRCF	R 612	RD1/4PU101J
L 601 Choke Coil 50μH (EW, ES)	HTH0005	R 613	RD1/4PU221J
L 602 Choke Coil 75μH (EW, ES)	HTH0010	R 614	RD1/4PU152J
L 603 Choke Coil 75μH (EW, ES)	HTH0010	R 616	RS1/16S101J
L 801 Ferri-Inductor	CTF1007	R 619	RS1/16S102J
L 802 Ferri-Inductor	CTF1007	R 620	RS1/16S473J
T 601 Transformer	HTT0015	R 621	RS1/16S102J
TH 603 Thermistor	HCX0001	R 622	RS1/16S153J

====Circuit Symbol and No.====Part Name	Part No.	====Circuit Symbol and No.====Part Name	Part No.
R 623 (EW, ES)	RD1/4PU105J	C 505	CEAT220M50
R 625	RD1/4PU332J	C 506	CEAT220M50
R 626	RD1/4PU332J	C 507	CFTNA104J50
R 627	RS1/16S472J	C 508	CFTNA104J50
R 628	RS1/16S472J	C 509	CFTNA104J50
R 631	RD1/4PU272J	C 510	CFTNA104J50
R 632	RS1/16S472J	C 537	CFTNA333J50
R 635	RS1/2PMF121J	C 538	CFTNA333J50
R 636	RS1/2PMF121J	C 539	CQMA102J50
R 637	RS1/2PMF121J	C 540	CQMA102J50
R 638	RS1/2PMF121J	C 601	CFTNA103J50
R 641	RD1/4PU472J	C 602	CFTNA224J50
R 642	RD1/4PU472J	C 603	CFTNA103J50
R 643	RS1/2PMF220J	C 606	CFTNA103J50
R 645	RD1/4PU472J	C 607	CEAT100M16
R 646	RD1/4PU472J	C 608	CEAT100M16
R 647	RS1/2PMF100J	C 609	CEAT470M16
R 648	RS1/2PMF100J	C 611	CEAT220M50
R 649	RS1/2PMF220J	C 612	HCH0013
R 650	RD1/4PU104J	C 613	CFTNA103J50
R 651	RD1/4PU183J	C 614	CFTNA103J50
R 652	RD1/4PU563J	C 615	CEAT100M16
R 654	RD1/4PU223J	C 616	CEAT221M10
R 655	RD1/4PU223J	C 617	CQMA102J50
R 656	RD1/4PU223J	C 618	CEAT2R2M50
R 665	RS1/2PMF220J	C 619	CEAT101M16
R 666	RS1/2PMF220J	C 620	CQMA472J50
R 801	RS1/16S471J	C 621	CQMA472J50
R 802	RS1/16S471J	C 622	CQMA103J50
R 803	RS1/16S223J	C 623	HCH0005
R 804	RS1/16S223J	C 624	HCH0005
R 805	RN1/10SE1002D	C 628	CFTNA564J50
R 806	RN1/10SE1002D	C 631	CEAT470M16
R 807	RN1/10SE1002D	C 632	CEAT470M16
R 808	RN1/10SE1002D	C 633	CEAT221M35
R 811	RN1/10SE1002D	C 634	CEAT221M35
R 812	RN1/10SE1002D	C 635	CEAT470M16
R 813	RN1/10SE1002D	C 636	CEAT470M16
R 814	RN1/10SE1002D	C 637	CFTNA473J50
R 831	RS1/16S184J	C 638	CFTNA473J50
R 832	RS1/16S184J	C 644	CQMA103J50
R 917	RD1/4PU104J	C 651	HCH0003
R 918	RD1/4PU472J	C 652	HCH0003
R 919	RD1/4PU103J	C 670	CQMA103J50
R 920	RD1/4PU392J	C 801	CCSRCH471J50
R 924	RD1/4PU473J	C 802	CCSRCH471J50
R 930	RD1/4PU331J	C 803	CEAT100M16
R 931	RD1/4PU331J	C 804	CEAT100M16
		C 805	CQMA472J50
		C 806	CQMA472J50
<b>CAPACITORS</b>			
C 101	CFTNA274J50	C 807	CCSRCH470J50
C 102	CFTNA274J50	C 808	CCSRCH470J50
C 103	CFTNA154J50	C 809	CCSRCH470J50
C 104	CFTNA154J50	C 810	CCSRCH470J50
C 201	CEAT100M16	C 811	CFTNA103J50
C 202	CEAT100M16	C 812	CFTNA103J50
C 501	CEAT220M50	C 831	CEAT100M16
C 502	CEAT220M50	C 832	CEAT100M16
C 503	CEAT101M50	C 901	HCH0012
C 504	CEAT101M50		

## 6. ADJUSTMENT

There is no information to be shown in this chapter.

# 7. GENERAL INFORMATION

## 7.1 DIAGNOSIS

### 7.1.1 DISASSEMBLY

#### ● Removing the Case (not shown)

1. Remove the eight screws and then remove the Case.

#### ● Removing the Amp Unit (Fig.1)

**1** Remove the eight screws.

**2** Remove the screw and then remove the two Panels.

**3** Remove the four screws and then remove the two Heat Sinks.

**4** Remove the four screws and then remove the Amp Unit.

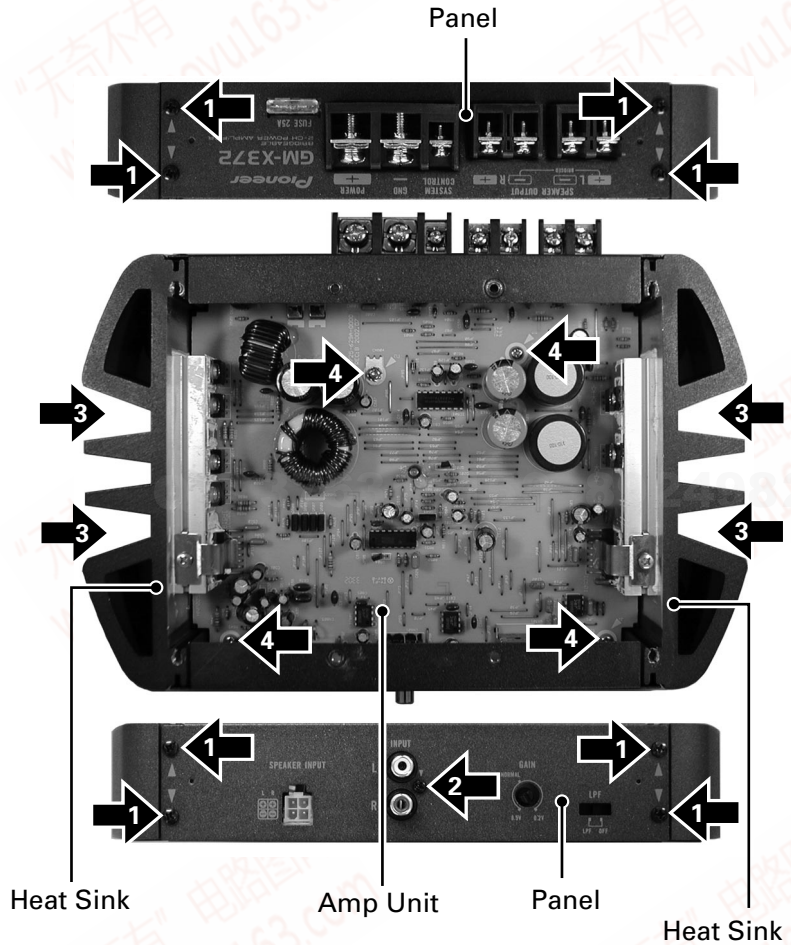
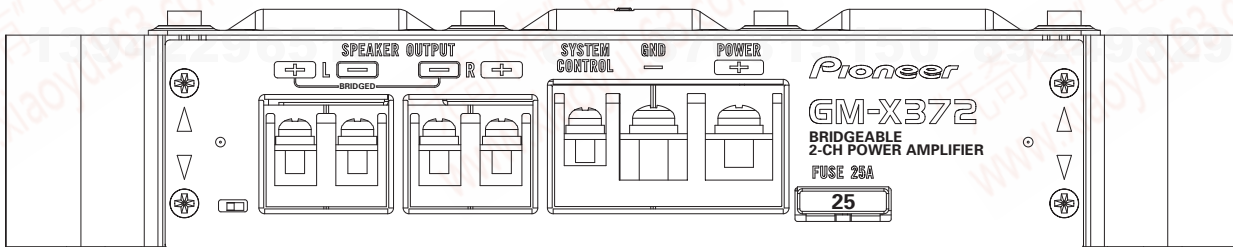
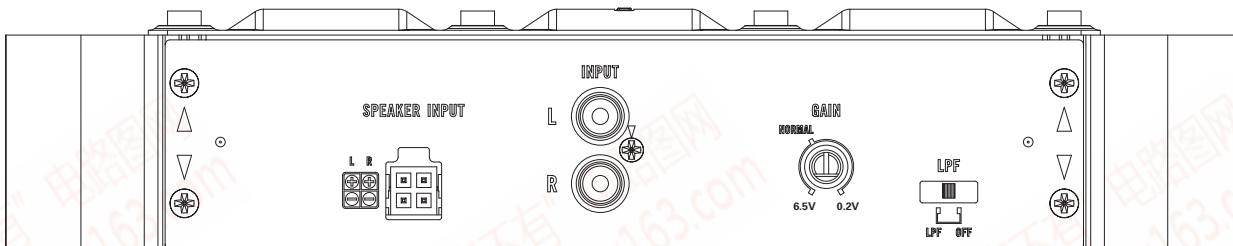


Fig.1

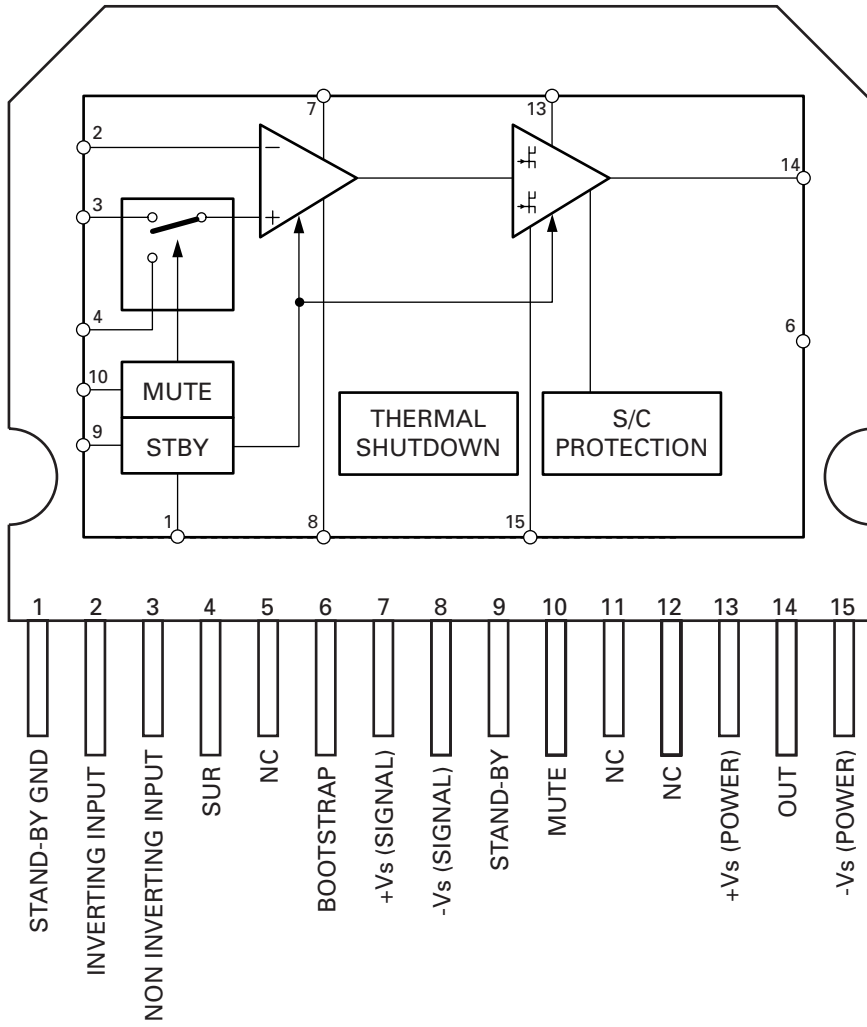
### 7.1.2 CONNECTOR FUNCTION DESCRIPTION

#### ● GM-X372/XH/UC



# 7.2 IC

\*TDA7294V



IC's marked by \* are MOS type.  
 Be careful in handling them because they are very liable to be damaged by electrostatic induction.



## 8. OPERATIONS

**Power Indicator**  
The power indicator lights when the power is switched on.

**Gain Control**  
If the sound level is too low, even when the volume of the car stereo used along with this power amplifier is turned up, turn gain control on the front of the power amplifier clockwise. If the sound distorts when the volume is turned up, turn the gain control counter-clockwise.

- When using with an RCA equipped car stereo (standard output of 500 mV), set to the NORMAL position. When using with an RCA equipped Pioneer car stereo with max. output of 4 V or more, adjust level to match the car stereo output level.
- If you hear too much noise when using the speaker input terminals, turn the gain control counter-clockwise.

**BFC (Beat Frequency Control) Switch**  
If you hear a beat while listening to an MW/LW broadcast with your car stereo, change the BFC switch using a small standard tip screwdriver.

GM-X372/XH/EW  
GM-X372/XH/ES

**LPF (Low-Pass Filter) Select Switch**  
Set the LPF select switch as follows according to the type of speaker that is connected to the speaker output connector and the car stereo system:

LPF Select Switch	Audio frequency range to be output	Speaker Type	Remarks
LPF (left)	Very Low Frequency range	Subwoofer	Connect a subwoofer.
OFF (right)	Full range	Full range	

# Connection Diagram

A

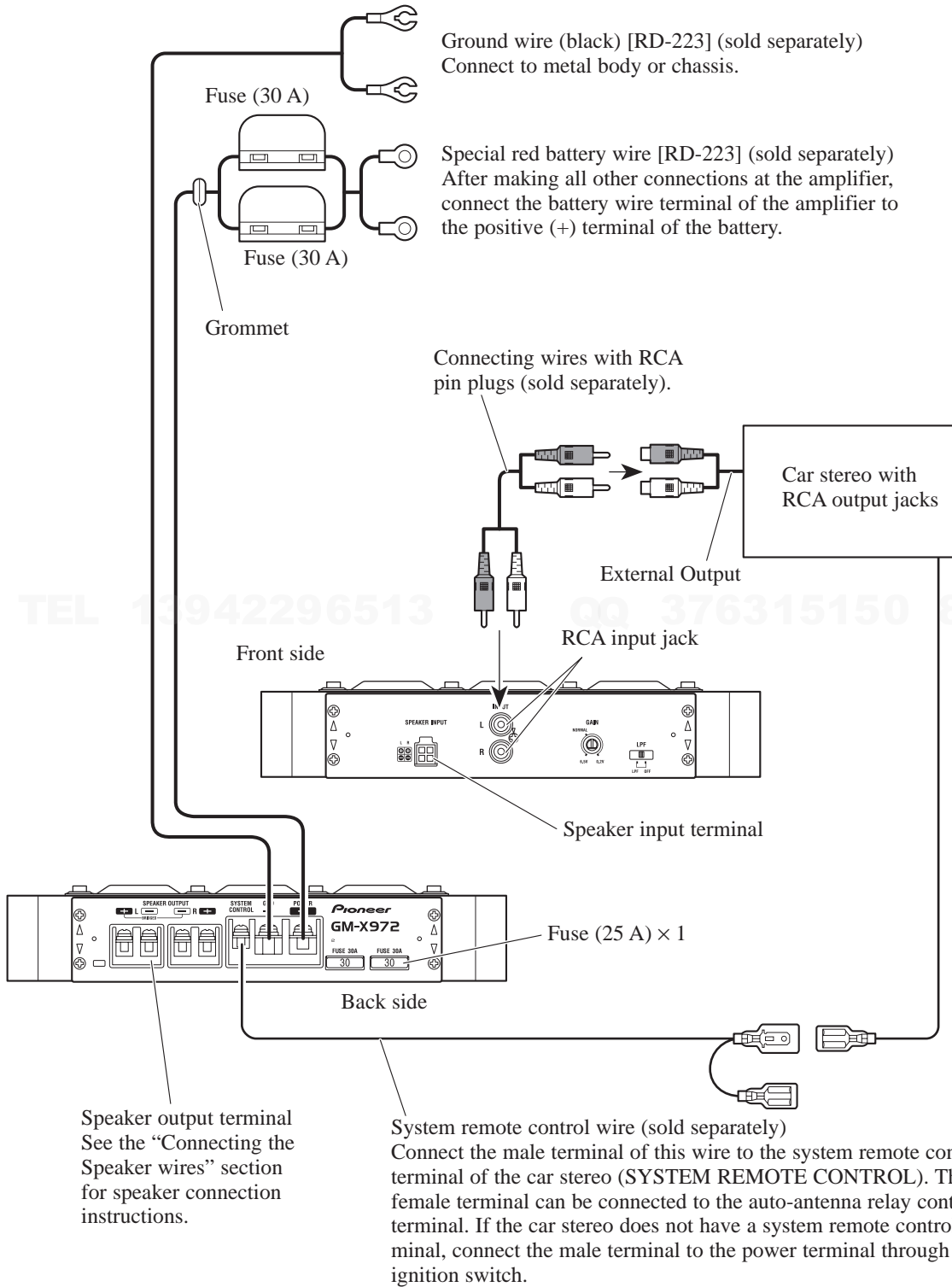
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