

Service Manual

MA700 U, F
74MA700 /02B
Mono Amplifier

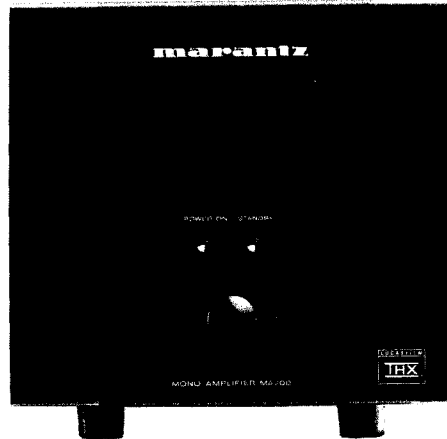


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Please use this service manual with referring to the user guide (D.F.U.) without fail.
修理の際は、必ず取扱説明書を準備し操作方法を確認の上作業を行ってください。

MARANTZ

model MA700

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, **MARANTZ** company has created the ultimate in stereo sound. Only original **MARANTZ** parts can insure that your **MARANTZ** product will continue to perform to the specifications for which it is famous.

Parts for your **MARANTZ** equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS :

Parts can be ordered either by mail or by Fax.. In both cases, the correct part number has to be specified.

The following information must be supplied to eliminate delays in processing your order :

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature : any order form or Fax. must be signed, otherwise such part order will be considered as null and void.

USA

MARANTZ AMERICA, INC.
440 MEDINAH ROAD
ROSELLE, ILLINOIS 60172-2330
USA
PHONE : 630 - 307 - 3100
FAX : 630 - 307 - 2687

CANADA

LENBROOK INDUSTRIES LIMITED
633 GRANITE COURT,
PICKERING, ONTARIO L1W 3K1
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PHONE : 416 - 831 - 6333
FAX : 416 - 831 - 6936

EUROPE

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BUILDING SFF2
5600 JB EINDHOVEN
THE NETHERLANDS
PHONE : +31 - 40 - 2732241
FAX : +31 - 40 - 2735578

PROFESSIONAL USA

SUPERSCOPE TECHNOLOGIES, INC.
MARANTZ PROFESSIONAL PRODUCTS
1000 CORPORATE BLVD., SUITE D
AURORA, ILLINOIS 60504 USA
PHONE : 630 - 820 - 4800
FAX : 630 - 820 - 8103

PROFESSIONAL CANADA

TC ELECTRONICS CANADA LTD
540 FIRING AVE.
BAIE D'URFE, QUEBEC H9X 3T2
CANADA
PHONE : 514 - 457 - 4044
FAX : 514 - 457 - 5524

TRADING

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CEP 04698-970
Sao Paulo, SP, BRAZIL
PHONE : 0800 - 123123(Discagem Direta Gratuita)
FAX : +55 11 534. 8988

THAILAND

MRZ STANDARD CO.,LTD
746 - 750 WANGBURAPA BANGKOK
10200 THAILAND
PHONE : +66 2222 9181
FAX : +66 2225 8871

HONG KONG

FORWARD INTERNATIONAL CORP. LTD.
15 TH FLOOR, REGENT CENTRE,
88 QUEEN'S ROAD, CENTRAL, H. K.
PHONE : +852 521 - 0883
FAX : +852 521 - 7835

TAIWAN

PAI-YUING CO., LTD.
6 TH FL NO, 148 SUNG KIANG ROAD,
TAIPEI, 10429, TAIWAN R.O.C.
PHONE : +886 (2) 5221304 - 8
FAX : +886 (2) 5630415

MALAYSIA

WO KEE HONG ELECTRONICS SDN. BHD.
NO. 102 JALAN SS 21/35, DAMANSARA
UTAMA, 47400 PETALING JAYA
SELANGOR DARUL EHSAN,
MA LAYS IA
PHONE : +60 3 - 7184666
FAX : +60 3 - 7173828

JAPAN *Technical*

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35- 1, 7- chome, Sagamino
Sagamihara - shi, Kanagawa
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PHONE : +81 427 44 7950
FAX : +81 427 48 0889

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営業本部 〒150
東京都渋谷区恵比寿南 1-11-9

SINGAPORE

FORWARD MARKETING (SINGAPORE) PTE. LTD.
29, LENG KEE ROAD
SINGAPORE 159099,
PHONE : +65 475 - 4555
FAX : +65 475 - 8623

SHOCK, FIRE HAZARD SERVICE TEST :

CAUTION : After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard NO. 1492.

In case os difficulties, do not hesitate to contact the Technical Department at above mentioned address.

1. SPECIFICATIONS

Rated output	200 W, 8 Ω rms
Distortion	0.02 %
Rated input level	1 V rms
Frequency response (-1 dB)	5 Hz to 100 kHz
S/N ratio (IHF-A)	110 dB
Damping factor (1 kHz)	200
Power supply	230 V AC, 50 Hz
Power consumption	220 W (Stand-by) 3.5 W

Dimensions

Width	145 mm
Height	146 mm
Depth	472 mm
Weight	8 kg

Accessories

Remote control cable	x 1
Speaker cable for BTL connection	x 1
Audio cable	x 1

Design and specifications are subject to change without notice.

2. IDLING CURRENT ADJUSTMENT

1. Connect a digital voltmeter to two adjustment pins J798 and J799.
2. After the setup above, turn the mains switch ON and heat up the amplifier about 10 minutes.
3. Adjust variable resistor R717 (on the PCB P701) according to the digital voltmeter reading. The target setting value is 10mV(37mA).

Time since power switched on	Idling current adjustment
1 min. 30 sec. ± 20 sec	2.0 mV ± 0.2 mV
2 min. ± 20 sec	3.0 mV ± 0.2 mV
4 min. ± 20 sec	5.5 mV ± 0.3 mV
6 min. ± 20 sec	8.2 mV ± 0.3 mV
8 min	10.0 mV ± 0.5 mV

規格

定格出力	200W 8 Ω RMS
歪率	0.02%
定格入力レベル	1V RMS
周波数特性 (-1dB)	5 Hz ~ 100 kHz
SN比 (IHF-A)	110dB
ダンピングファクター (1 kHz)	200
電源	AC100V、50/60 HZ
消費電力 (電気用品取締法)	220W (スタンバイ時) 3.5W

外形寸法

幅	145 mm
高さ	146 mm
奥行き	472 mm
重量	8 kg

付属品

リモコンケーブル	× 1
BTL用スピーカーケーブル	× 1
音声用ケーブル	× 1

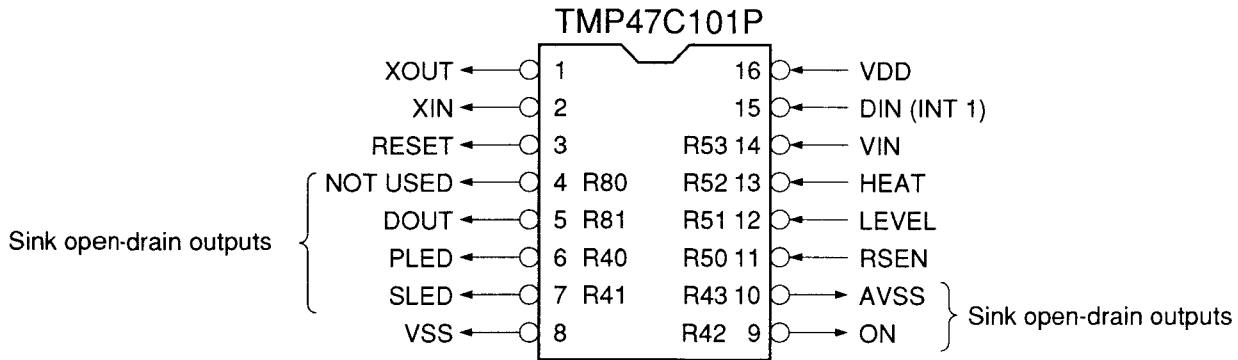
本機の規格および外観は改良のため予告なく変更することがありますが、ご了承ください。

アイドリング電流調整手順

1. 調整用端子J798とJ799の2本にデジタルボルトメーターを接続します。
2. 電源スイッチをオンにし、アイドリング電流が安定するまで、およそ10分間放置します。
3. P701基板上の半固定抵抗R717を時計回りにまわしデジタルボルトメーターの値が10mV(37mA)になるように調整します。

電源投入後経過時間	アイドリング電流調整値
1分30秒後 ± 20秒	2.0 mV ± 0.2 mV
2分後 ± 20秒	3.0 mV ± 0.2 mV
4分後 ± 20秒	5.5 mV ± 0.3 mV
6分後 ± 20秒	8.2 mV ± 0.3 mV
8分後	10.0 mV ± 0.5 mV

3. MICROCOMPUTER PIN LAYOUT



4. PORT ASSIGNMENT TABLE

Port	Pins	Name	In/Out	Active	Description
R80	4		Input		Not used
R81	5	DOUT	Output		Data output from RC5.
R82	15	DIN	Input	L	Data input to RC5.
R40	6	PLED	Output	L	Power LED.
R41	7	SLED	Output	L	Stand-by LED.
R42	9	ON	Output	L/H	Power amplifier OFF/ON
R43	10	AVSS	Output	L/H	Power amp supply voltage control. Low/High voltage.
R50	11	RSEN	Input	H/L	Power amp output muting status detection input. OFF/ON.
R51	12	LEVEL	Input	L/H	Power amp output level detection input. High/Low power.
R52	13	HEAT	Input	L/H	Heat sink overheating detection input. Overheat/Normal.
R53	14	VIN	Input	L/H	Video and DC signal detection input. Detected/Not detected.

5. POWER AMPLIFIER INTERNAL OPERATION DESCRIPTION

● Supply B voltage switching

Switches the supply B voltage of the power amplifier between high and low according to the audio output voltage (AVSS).

The audio output voltage is detected by the level comparator (QU05). When it exceeds about 23 Vrms, the microcomputer (QU08) switches the supply B voltage to the high voltage by activating the AVSS relay (L802) on the secondary side of the power amp's transformer.

● Overheat protection

The power amp is protected against overheating based on the two supply B voltages.

The temperature is detected by the posistor (QN99) which is attached to the heat sink using a screw. The microcomputer (QU08) reads the temperature data and, when it exceeds 100 degrees C, it initiates the overheat protection operation for reducing the heat sink temperature by forcing the supply B voltage to be fixed at "Low" to reduce the output power.

パワーアンプ内部動作説明

● 電源 B 電圧の切り替え動作

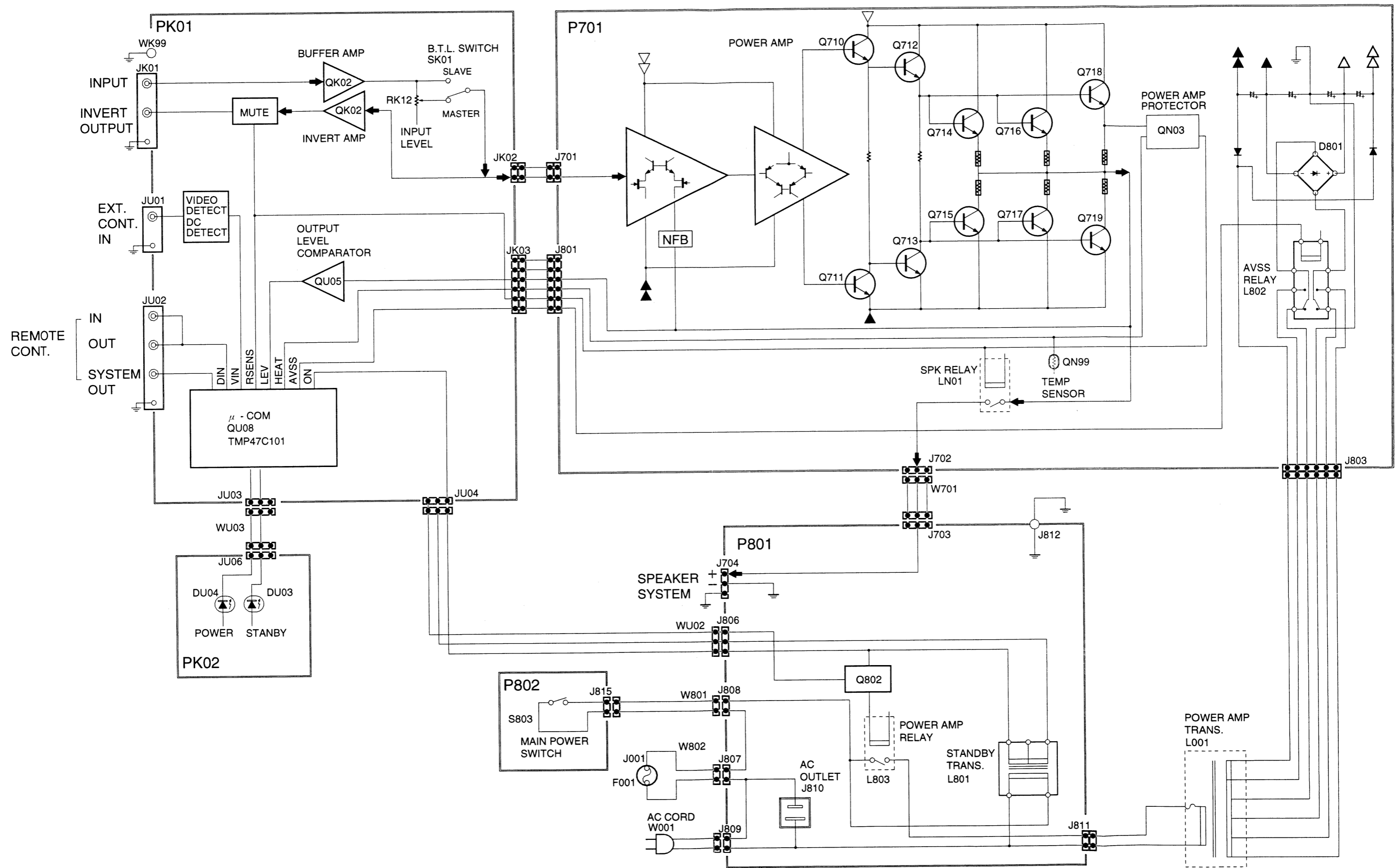
パワーアンプの電源 B 電圧を音声出力電圧に対応して、高い低いの 2 段階を切り替える動作をする。(AVSS) 音声出力電圧はレベルコンパレーターで (QU05) で検出して、約 23Vrms を超えると、パワーアンプトランスの 2 次側にある AVSS リレー (L802) をマイコン (QU08) が動かして電源 B 電圧を高い方に切り替える。

● 過熱保護動作

2 段階ある電源 B 電圧を利用して、パワーアンプの過熱保護をする。

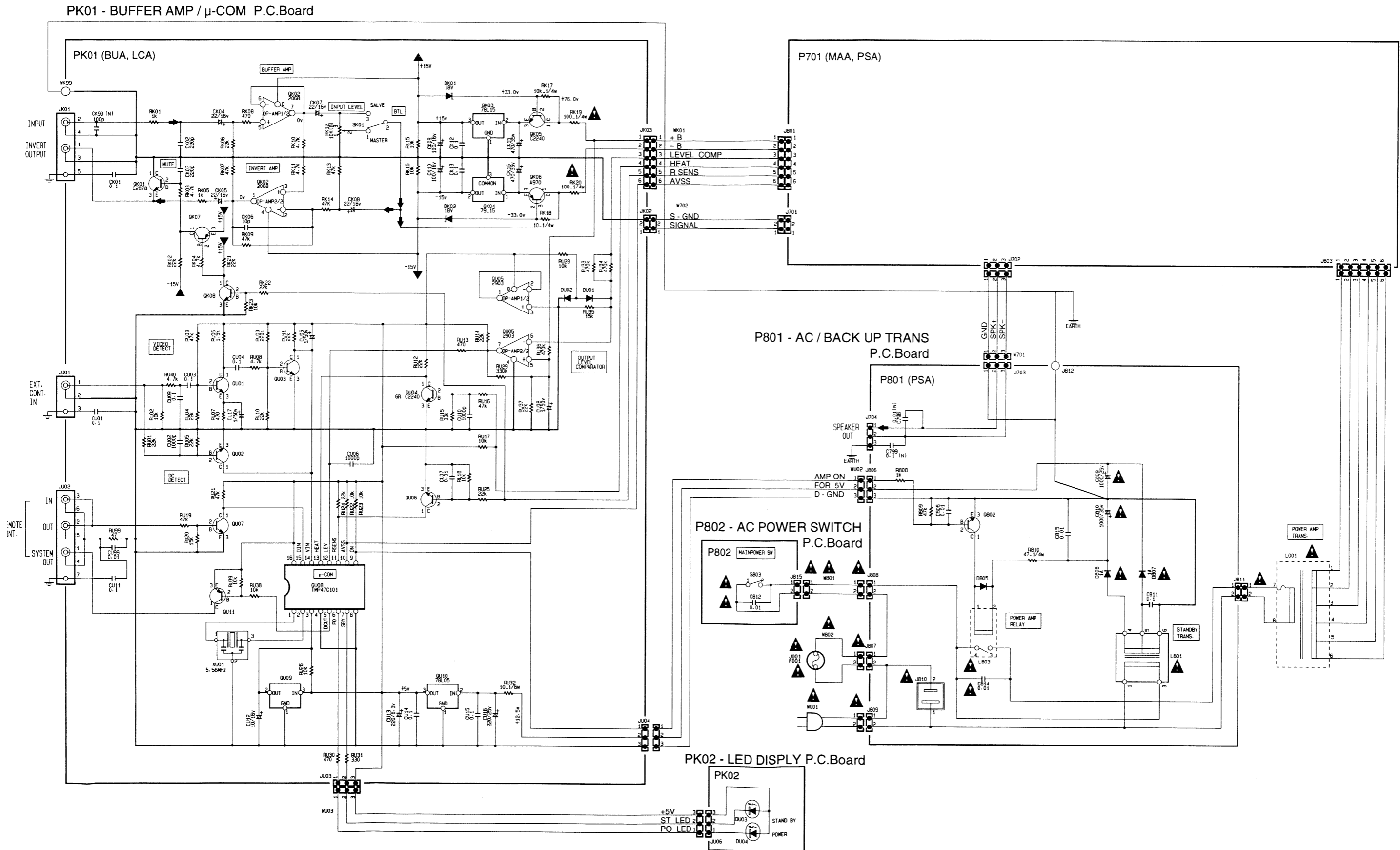
ヒートシンクにネジ止めされたポジスター (QN99) で温度検出を行い、マイコン (QU08) に読ませる。温度が 100℃ を超えると強制的に電源 B 電圧を低い方に固定して出力パワーを下げ、ヒートシンクの温度上昇を抑え過熱保護動作をする。

6. BLOCK DIAGRAM



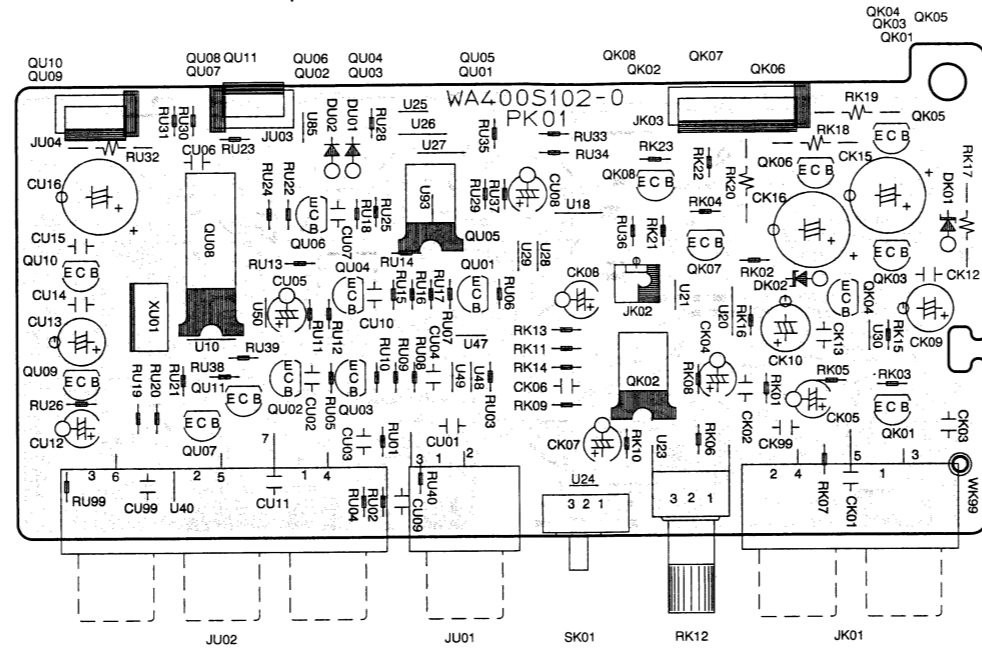
. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern Side)

SCHEMATIC DIAGRAM (1)

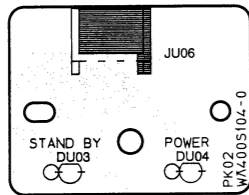


P.C BOARDS (1)

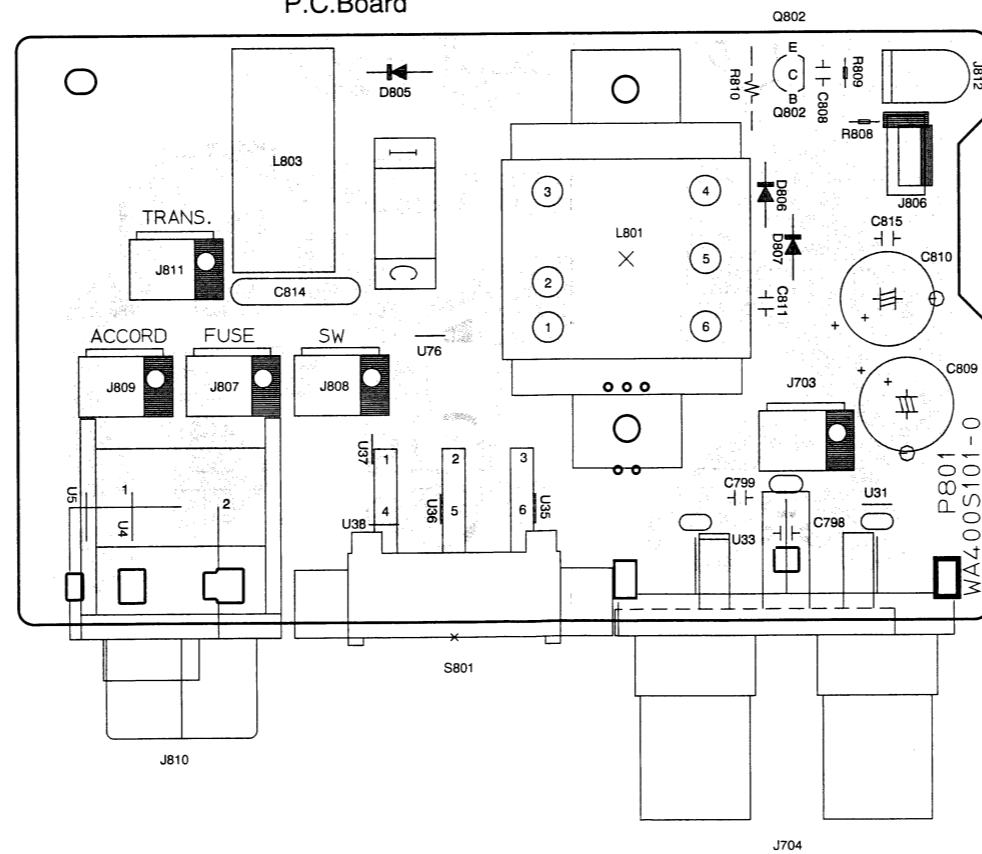
PK01 - BUFFER AMP / μ -COM P.C.Board



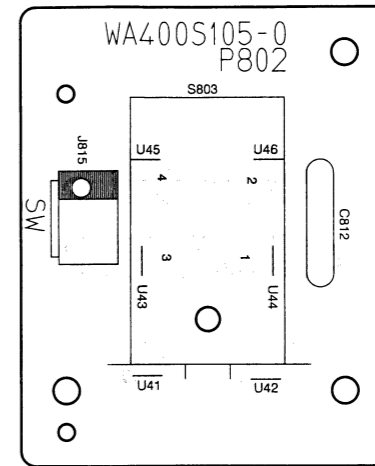
PK02 - LED DISPLY P.C.Board



P801 - AC / BACK UP TRANS
P.C.Board

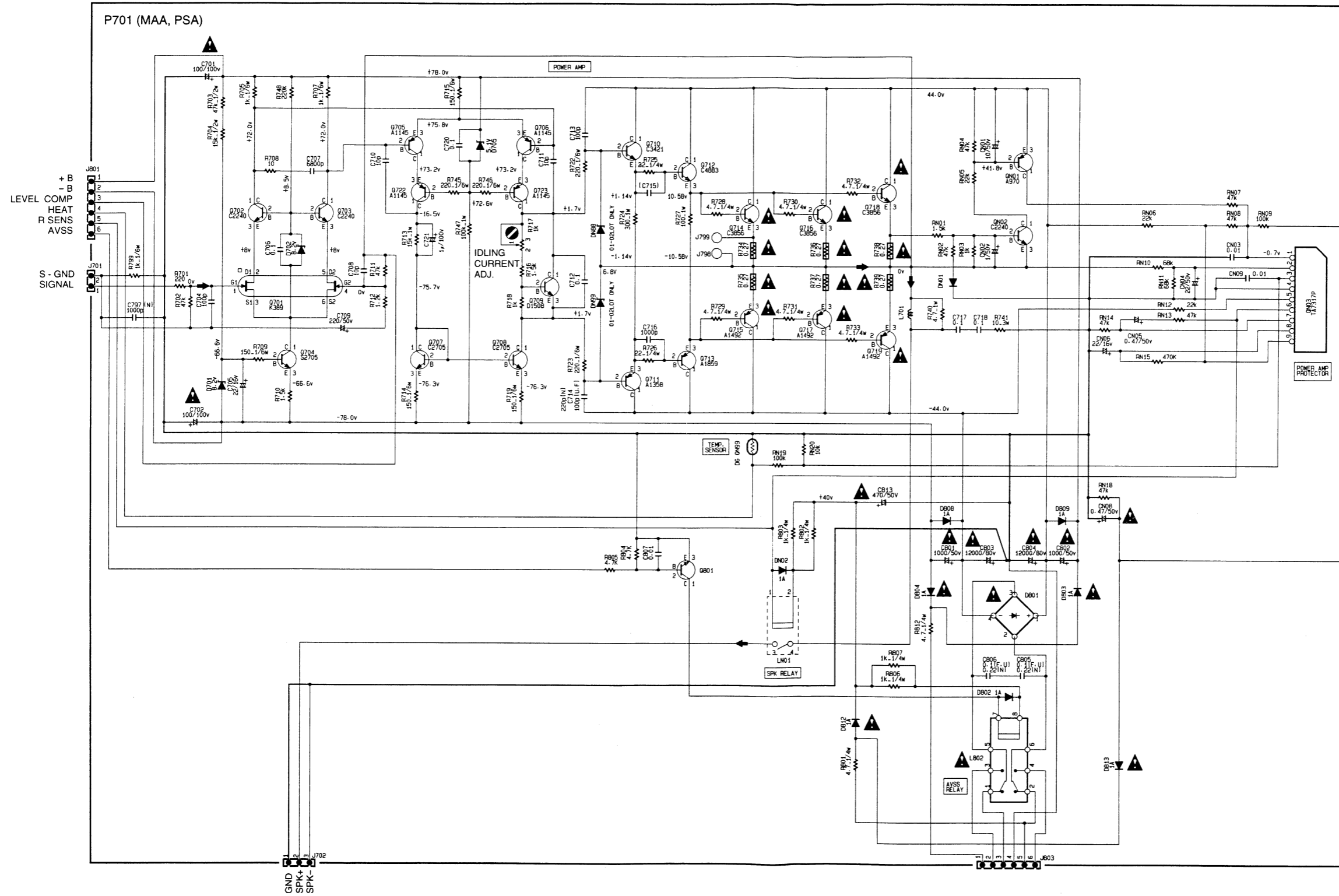


P802 - AC POWER SWITCH
P.C.Board



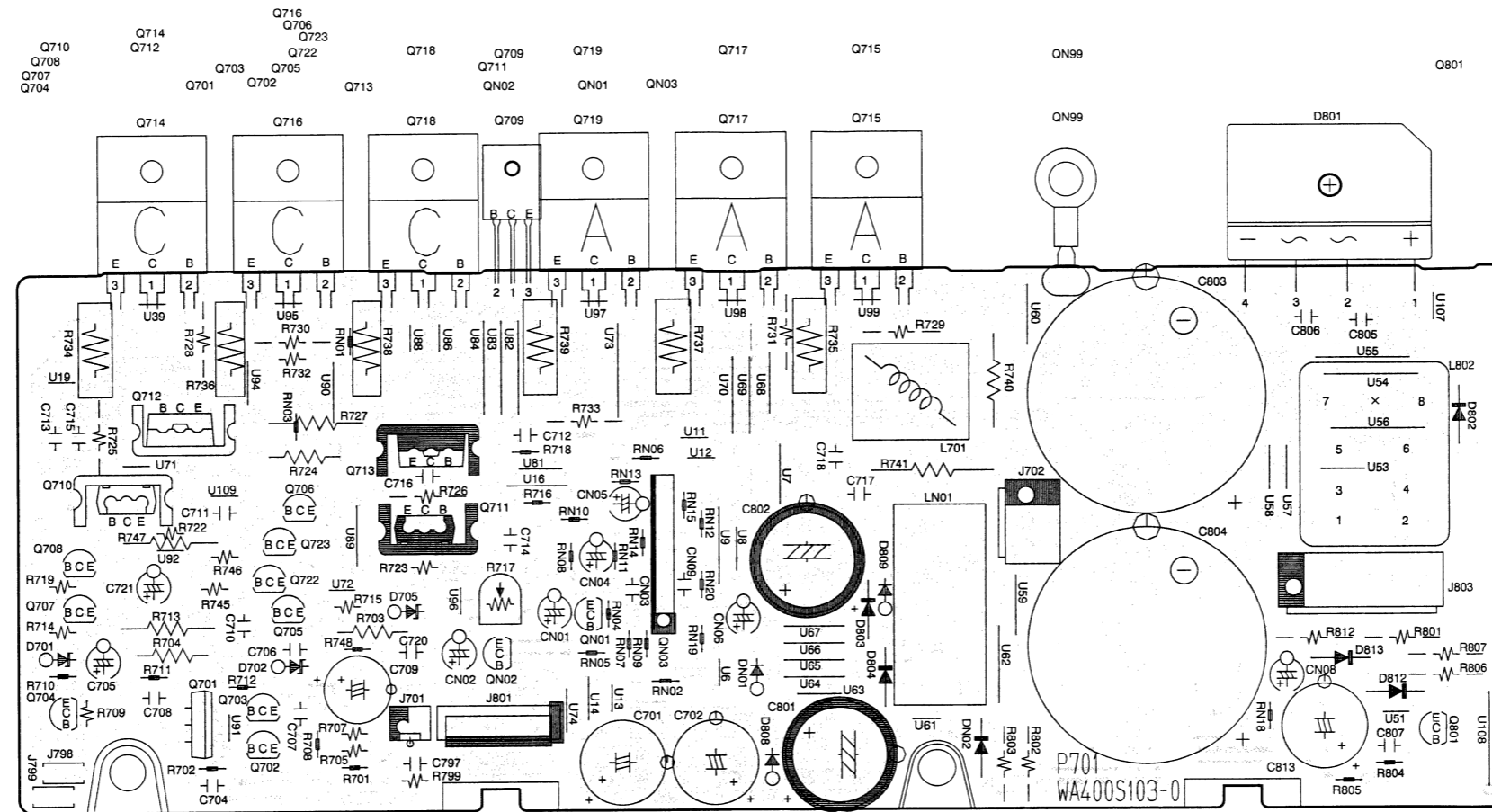
SCHEMATIC DIAGRAM (2)

P701 - POWER AMP P.C.Board



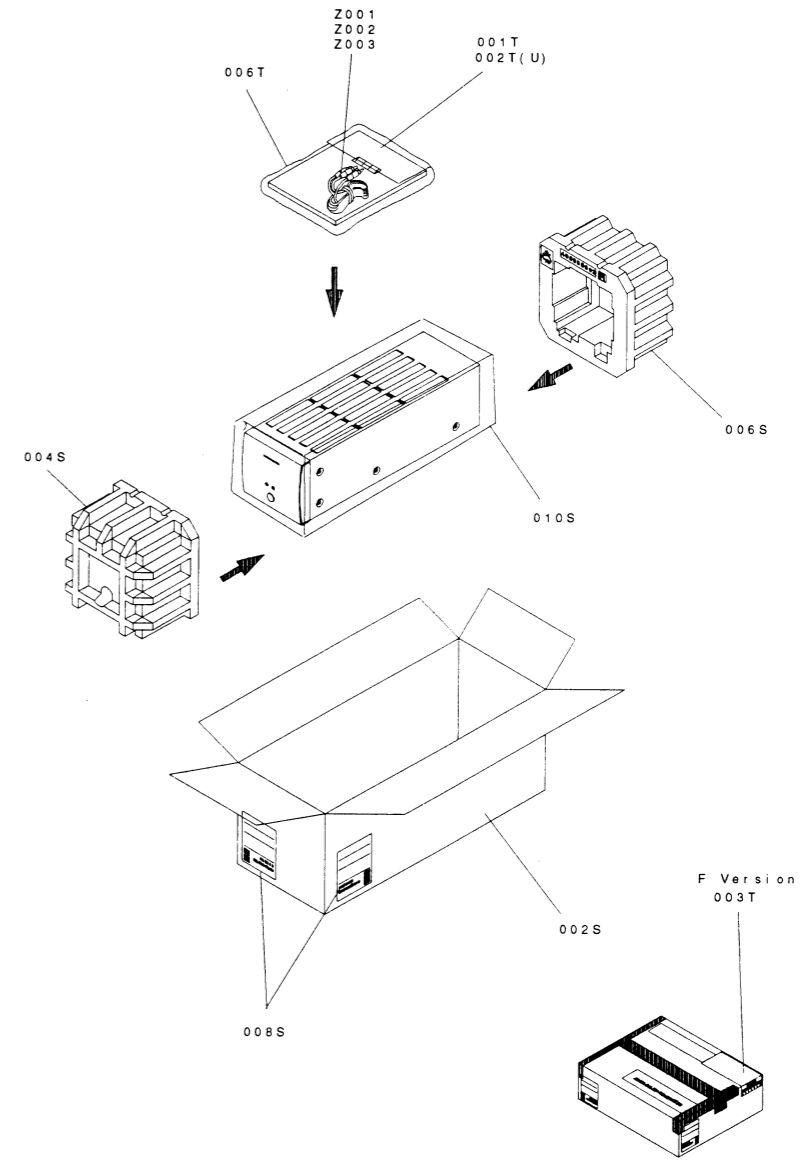
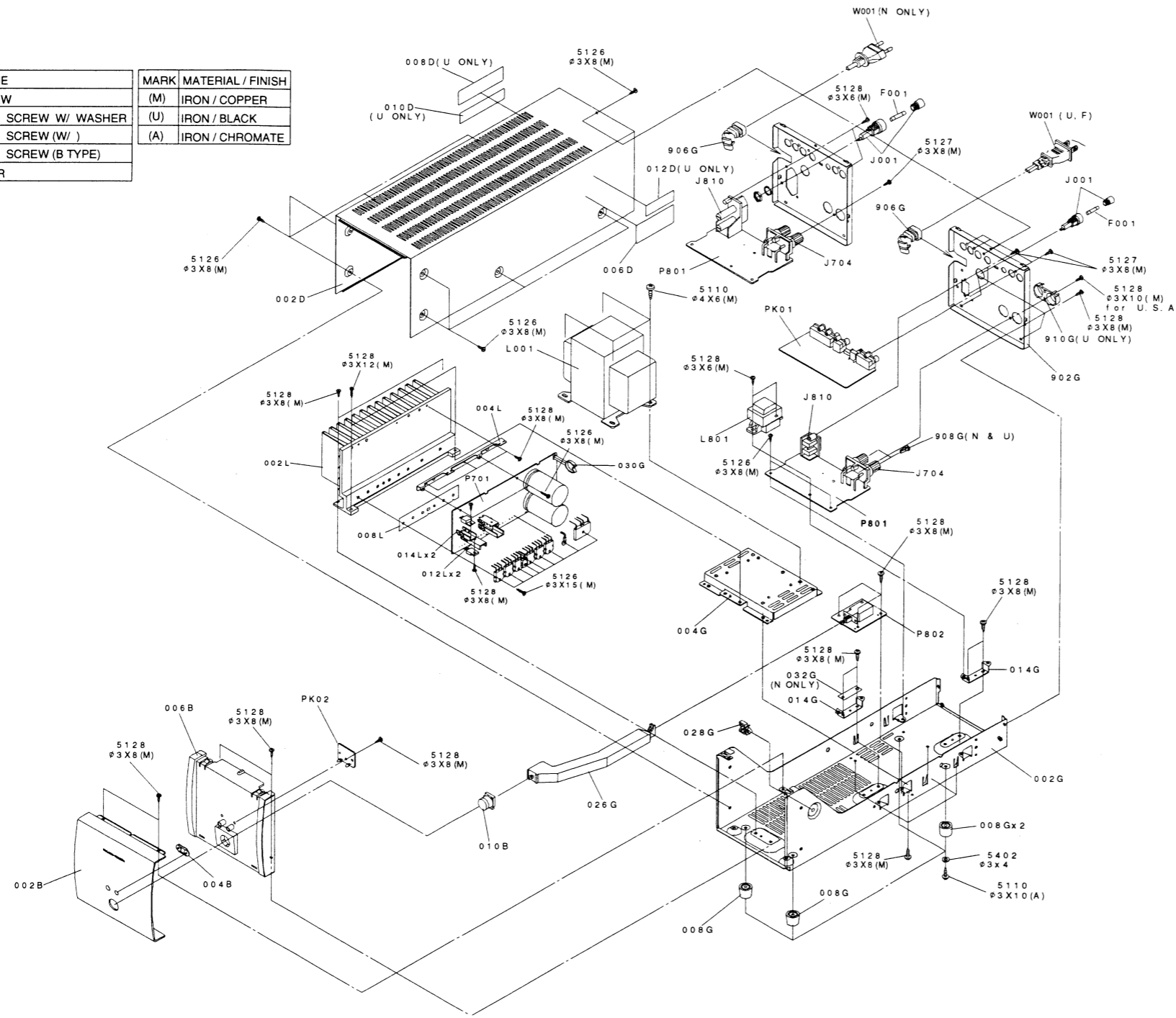
P.C BOARDS (2)

P701 - POWER AMP P.C.Board



3. EXPLODED VIEW AND PARTS LIST

SYMBOL	STYLE	PARTS NAME	MARK	MATERIAL / FINISH
5110	⊗	+B.H.M. SCREW	(M)	IRON / COPPER
5126	⊗	+B.H.TAP TITE SCREW W/ WASHER	(U)	IRON / BLACK
5127	⊗	+B.H.TAP TITE SCREW (W /)	(A)	IRON / CHROMATE
5128	⊗	+B.H.TAP TITE SCREW (B TYPE)		
5402	⊗	FLAT WASHER		



(VERS. : VERSION, U : U.S.A., F : JAPAN, K : FAR EAST, /XX : EUROPE)

POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJ)
002B	FB		FRONT PANEL,MA700	400S248020
002B	/02B	4822 459 04694	FRONT PANEL,MA700	400S248010
	UBL			
004B		4822 381 11415	LENS, FOR FRONT PANEL	176J355010
006B			CHASSIS, FRONT	400S105030
010B		4822 410 11275	BUTTON, POWER	176J270050
008G		4822 462 42026	LEG,	176J057010
026G		4822 402 10791	LINK, FOR POWER SW.	400S121010
906G		4822 532 60948	BUSHING, MAINS CORD BUSH	450H259010
▲ C814		4822 122 33276	CER., DE7150 F 103M	DK17103840
▲ F001	F,U		FUSE, 8A 250V 30MM F	FS10800530
▲ F001	/02	4822 253 30387	FUSE, T4A 250V 20MM N	FS10400850
▲ L001	F		MAINS TRANSF., MAIN, F	TS19639010
▲ L001	/02	4822 146 10841	MAINS TRANSF., MAIN, /02	TS19639030
▲ L001	U		MAINS TRANSF., MAIN, U	TS19639020
▲ W001	F		MAINS CORD, F	YC01900180
▲ W001	/02	4822 321 11343	MAINS CORD, /02	YC01800790
▲ W001	U		MAINS CORD, U	YC01800780
			PACKING	
002S	F		PACKING CASE,	400S801010
004S	F		CUSHION, (FRONT)	400S809010
006S	F		CUSHION, (REAR)	400S809020
001T	F		USER MANUAL, F	400S851110
001T	/02	4822 736 15584	USER MANUAL, /02	400S851310
001T	U		USER MANUAL, U	400S851250
Z001			CONNECTIVE CORD, RCA RC-5 CORD 0.9M	ZD00900100
Z003			CONNECTIVE CORD, 1PIN RCA CORD 1.5M	ZD01500370

ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTORS

R * * * : 1) GD05 x x x 140, Carbon film fixed resistor, ±5% 1/4W
R * * * : 2) GD05 x x x 160, Carbon film fixed resistor, ±5% 1/6W

Examples ;

① Resistance value
 0.1 Ω 001 10 Ω 100 1k Ω .. 102 100k Ω 104
 0.5 Ω 005 18 Ω 180 2.7k Ω .. 272 680k Ω 684
 1 Ω 010 100 Ω 101 10k Ω .. 103 1M Ω 105
 6.8 Ω 068 390 Ω 391 22k Ω .. 223 4.7M Ω 475

Note : Please distinguish 1/4W from 1/6W by the shape of parts used actually.

CAPACITORS

C * * * : CERAMIC CAP.

3) DD1 x x x x 370, Ceramic capacitor
 Disc type
 Temp.coeff. P350~N1000, 50V
 ③ Capacity value
 ② Tolerance

Examples

② ATolerance (Capacity deviation)
 ± 0.25 pF 0
 ± 0.5 pF 1
 ± 5 % 5

* Tolerance of COMMON PARTS handled here are as follows :

0.5 pF - 5 p ± 0.25 pF
 6 pF - 10 pF ± 0.5 pF
 12 F - 560 pF ... ± 5 %

③ Capacity value



0.5 pF ... 005 3 pF ... 030 100 pF 101
 1 pF ... 010 10 pF ... 100 220 pF 221
 1.5 p ... 015 47 pF ... 470 560 pF 561

C * * * : CERAMIC CAP.

4) DK16 x x x 300, High dielectric constant ceramic capacitor
 Disc type
 Temp.chara. 2B4, 50V
 ④ Capacity value

Examples

④ Capacity value
 100 pF 101 1000 pF 102 10000 pF 103
 470 pF 471 2200 pF 222

C * * * 5) ELECTROLY CAP. (), 6) FILM CAP ()

5) EA x x x x x x 10, Electrolytic capacitor
 One-way lead type Tolerance ±20%
 ⑥ Working voltage
 ⑤ Capacity value

Examples

⑤ Capacity value
 0.1μ F 04 4.7μ F 475 100μ F 107
 0.33μ F 334 10μ F 106 330μ F 337
 1μ F 105 22μ F 226 1100μ F 118
 2200μ F 228

⑥ Working voltage

6.3 V . . .006 25 V . . .025
 10 V . . .010 35 V . . .035
 16 V . . .016 50 V . . .050

6) DF15 x x x 350 → Plastic film capacitor
 DF15 x x x 310 → One-way type, Mylar ±5% 50V
 DF16 x x x 310 → Plastic film capacitor
 One-way type, Mylar ±10% 50V

⑦ Capacity value

Examples

⑦ Capacity value
 0.001μ F (1000pF) 102 0.1μ F 104
 0.0018μ F 182 0.56μ F 564
 0.01μ F 103 1μ F 105
 0.015μ F 151

- 1) The above CODES (R * * *, R * * *, C * * *, C * * * and C * * *) are omitted on the schematic diagram in some case.
- 2) On the occasion, be confirmed the common parts on the parts list.
- 3) Refer to "Common Parts List" for the other common parts (RI05, DD4, DK4).

NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows ;

1. KOA Corporation

Part No.(MJI)	Type No.(KOA)	Description
NH05 x x x 140	RF25S x x x x Ω J	(±5% 1/4W)
NH05 x x x 120	RF50S x x x x Ω J	(±5% 1/2W)
NH85 x x x 110	RF73B2A x x x x Ω J	(±5% 1/10W)
NH95 x x x 140	RF73B2E x x x x Ω J	(±5% 1/4W)

* Resistance value

Resistance value(0.1 Ω- 10k Ω)

2. Matsushita Electronic Components Co., Ltd

Part No.(MJI)	Type No.(MEC)	Description
NF05 x x x 140	ERD-2FCJ x x x	(±5% 1/4W)
RF05 x x x 140		
NF02 x x x 140	ERD-2FCG x x x	(±2% 1/4W)
RF02 x x x 140		



Examples :

* Resistance value
 0.1 Ω 001 10 Ω 100 1k Ω .. 102 100k Ω 104
 0.5 Ω 005 18 Ω 180 2.7k Ω .. 272 680k Ω 684
 1 Ω 010 100 Ω 101 10k Ω .. 103 1M Ω 105
 6.8 Ω 068 390 Ω 391 22k Ω .. 23 4.7M Ω 475


ABBREVIATION AND MARKS

ANT. : ANTENNA	BATT. : BATTERY
CAP. : CAPACITOR	CER. : CERAMIC
CONN. : CONNECTING	DIG. : DIGITAL
HP : HEADPHONE	MIC. : MICROPHONE
μ-PRO : MICROPROCESSOR	REC. : RECORDING
RES. : RESISTOR	SPK : SPEAKER
SW : SWITCH	TRANSF. : TRANSFORMER
TRIM. : TRIMMING	TRS. : TRANSISTOR
VAR. : VARIABLE	X'TAL : CRYSTAL

NOTE ON SAFETY:

Symbol  Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

安全上の注意:

 がついている部品は、安全上重要な部品です。必ず指定されている部品番号の部品を使用して下さい。

(VERS. : VERSION, U : U.S.A., F : JAPAN, K : FAR EAST, /XX : EUROPE)

POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJI)	POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJI)
			P701-POWER AMP CIRCUIT BOARD		▲ R734		4822 116 53302	0.27Ω ±10% 5W	GO10272050
			P701-PACITORS		I				
CN01		4822 124 22571	ELECT.,10μF ±20% 50V RA-2	OA10605020	▲ R739		4822 053 10478	4.7Ω ±5% 1W	GA05047010
CN02		4822 124 41543	ELECT.,1μF ±20% 50V RA-2	OA10505020	R740		4822 116 83353	METAL ,10Ω ±5% 3W	NK05100030
CN03		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310	R741		4822 052 10221	220Ω ±5% 1/6W	GG05221160
CN04		4822 124 90362	ELECT.,22μF ±20% 50V RA-2	OA22605020	R745		4822 052 10221	220Ω ±5% 1/6W	GG05221160
CN05		4822 124 22273	ELECT.,0.47μF ±20% 50V RA2	OA47405020	R746		4822 052 10221	100kΩ ±5% 1W	GA05104010
CN06		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620	R747				
CN08		4822 124 22273	ELECT.,0.47μF ±20% 50V RA2	OA47405020	R799		4822 052 10102	1kΩ ±5% 1/6W	GG05102160
CN09		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310	R801		4822 050 24708	4.7Ω ±5% 1/4W	GG05047140
▲ C701		4822 124 80771	ELECT.,100μF 100V	OA10710020	R802				
▲ C702		4822 124 80771	ELECT.,100μF 100V	OA10710020	I		4822 050 21022	1kΩ ±5% 1/4W	GG05102140
C705		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620	R807				
C707		4822 121 70179	FILM CAP., 0.0068μF 100V	DF15682550	R812		4822 050 24708	4.7Ω ±5% 1/4W	GG05047140
C708		4822 123 30088	MICA,10pF D 250WV AUDIO	DF31100520					
C709		4822 124 90366	ELECT.,220mF ±20% 50V RA-2	OA22705020	R***			P701-RESISTORS(COMMON) CARBON FILM FIXED RES., ±5% 1/6W: R701, R702, R708, R710-R712, R716, R718, R748, R804, R805, RN01-RN15, RN18-RN20	
C710		4822 123 30088	MICA,10pF D 250WV	DF31100520					
C711		4822 123 30088	MICA,10pF D 250WV	DF31100520					
C713		4822 121 42712	FILM CAP., 100pF 100V	DF15101550					
C714	F,U	4822 121 42712	FILM CAP., 100pF 100V	DF15101550					
C714	/02	4822 121 42344	FILM CAP., 220pF 100V	DF15221550					
C721			ELECT.,1μF 100V	OA10510020					
▲ C801		4822 124 23918	ELECT.,ELNA RA2 16X25	OA10805020	DN01		4822 130 80837	DIODE,HSS81TD 150V 150MA	HD20027010
▲ C802		4822 124 23918	ELECT.,ELNA RA2 16X25	OA10805020	DN02		4822 130 32508	DIODE,1A 10MM	HD20003000
▲ C803		4822 124 12041	ELECT,12μF 82V	EB12908210	D701		4822 130 80273	ZENER DIODE, 8.2VEQUIVALENT	HD30821000
▲ C804		4822 124 12041	ELECT,12μF 82V	EB12908210	D702		4822 130 80273	ZENER DIODE, 8.2VEQUIVALENT	HD30821000
C805	F,U	4822 122 40617	CER.,50V 0.1μF +80% -20%	DD38104010	D705		4822 130 80317	ZENER DIODE, 5.1VEQUIVALENT	HD30511000
C806	F,U	4822 122 40617	CER.,50V 0.1μF +80% -20%	DD38104010					
C807		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310	▲ D801		4822 130 83438	DIODE,D5SB-20 I=6.0A V=200V	HE20016290
▲ C813		4822 124 41542	ELECT.,470μF ±20% 50V RA-2	OA47705020	D802		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
			P701-CAPACITORS(COMMON)		▲ D803		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
			PLASTIC FILMCAP., ±5% 50V: C706, C712, C717, C718, C720, C805(02B), C806(02B)		D804		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
			P701-RESISTORS		D808		4822 130 80839	DIODE,1A 5MM	HD20029050
			HIGH DIELECTRIC CONSTANT CERAMIC CAP. ±10% 50V: C704, C716, C797(/02B)		D809		4822 130 80839	DIODE,1A 5MM	HD20029050
					▲ D812		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
					▲ D813		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
R703			47kΩ ±5% 1/2W	GG05473120	QN01		4822 130 42949	TRS.2SA970 GR OR BL	HT109702A0
R704		4822 050 21503	15kΩ ±5% 1/2W	GG05153120	QN02		4822 130 43233	TRS.2SC2240 GR OR BL	HT322402A0
R705		4822 052 10102	1kΩ ±5% 1/6W	GG05102160	QN03		4822 209 83312	IC,TA7317P	HC10042050
R707		4822 052 10102	1kΩ ±5% 1/6W	GG05102160	QN99		4822 126 90009	VARISTOR,TEMP SENSOR	HP00029230
R709		4822 052 10151	150Ω ±5% 1/6W	GG05151160	Q701		4822 130 42843	F.E.T.,2SK389 GR OR BL	HF203892A0
R713		4822 116 51848	10kΩ ±5% 1W	GA05153010	Q702		4822 130 43233	TRS.2SC2240 GR	HT322401A0
R714		4822 052 10151	150Ω ±5% 1/6W	GG05151160	Q703		4822 130 43233	TRS.2SC2240 GR	HT322401A0
R715		4822 052 10151	150Ω ±5% 1/6W	GG05151160	Q704		4822 130 43283	TRS.2SC2705 O OR Y	HT327052A0
R717		4822 100 11386	TRIMMING,1kW RH0683C13R	RA01020780	Q705		4822 130 42999	TRS.2SA1145 O OR Y	HT111452A0
R719		4822 052 10151	150Ω ±5% 1/6W	GG05151160	Q706		4822 130 42999	TRS.2SA1145 O OR Y	HT111452A0
R722		4822 052 10221	220Ω ±5% 1/6W	GG05221160	Q707		4822 130 43283	TRS.2SC2705 O OR Y	HT327052A0
R723		4822 052 10221	220Ω ±5% 1/6W	GG05221160	Q708		4822 130 43283	TRS.2SC2705 O OR Y	HT327052A0
R724		4822 117 10003	330Ω ±5% 1/2W	GG05331120	Q709		4822 130 60526	TRS.2SD1508 DARLINGTON TR.HFE>4000	HT415080A0
R725		4822 050 22209	22Ω ±5% 1/4W	GG05220140	Q710		4822 130 60354	TRS.2SC3421 PRE DRIVER	HT334212A0
R726		4822 050 22209	22Ω ±5% 1/4W	GG05220140	Q711		4822 130 60353	TRS.2SA1358 PRE DRIVER	HT348832A0
R727		4822 116 60327	100Ω ±5% 1W	GA05101010	Q712		4822 130 63312	TRS.2SC4883 DRIVER	HT348832A0
R728					Q713		4822 130 63308	TRS.2SA1859 DRIVER	HT118592A0
I		4822 050 24708	4.7Ω ±5% 1/4W	GG05047140	Q714		4822 130 10962	TRS.2SC3856 130W	HT338563A0
R733					Q715		4822 130 10963	TRS.2SA1492 130W	HT114923A0
					Q716		4822 130 10962	TRS.2SC3856 130W	HT338563A0
					Q717		4822 130 10963	TRS.2SA1492 130W	HT114923A0
					Q718		4822 130 10962	TRS.2SC3856 130W	HT338563A0

(VERS.: VERSION, U: U.S.A., F: JAPAN, K: FAR EAST, /XX: EUROPE)

POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJ)
Q719		4822 130 10963	TRS.2SA1492 130W	HT114923A0
Q722		4822 130 42999	TRS.2SA1145 O OR Y	HT111452A0
Q723		4822 130 42999	TRS.2SA1145 O OR Y	HT111452A0
Q801		4822 130 43233	TRS.2SC2240 GR OR BL	HT322402A0
			P701-MISCELLANEOUS	
▲ LN01		4822 280 10343	RELAY,VS24MBU-551 SPK OUT	LY10240270
L701		4822 157 52453	COIL,0.5mH 1.6PEW 12MM-D 7-1/2T	LJ31115080
▲ L802		4822 280 20403	RELAY,LY2-0 AVSS	LY20240350
			P801-AC & BACK UP TRANS. CIRCUIT BOARD	
			P801-CAPACITORS	
C798	/02	4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
C799	/02	4822 122 40617	CER.,0.1μF 50V	DD38104010
C808		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
▲ C809		4822 124 22723	ELECT.,1000μF ±20% 25V RA2	OA10802520
▲ C810		4822 124 90356	ELECT.,1000μF ±20% 35V RA2	OA10803520
C811		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
C815		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
			P801-RESISTORS	
R810		4822 052 10479	47Ω ±5% 1/4W	GG05470140
			P801-RESISTORS(COMMON)	
R***			CARBON FILM FIXED RES., ±5% 1/6W:R808, R809	
			P801-SEMICONDUCTOR	
▲ D807		4822 130 32508	DIODE,RL103E DSF10C	HD20003000
Q802		4822 130 43233	TRS.2SC2240 GR OR BL	HT322402A0
			P801-MISCELLANEOUS	
J704	F		TERMINAL,SPK BANANA	YT01020260
J704	/02,U	4822 290 81596	TERMINAL,SPK BRN/RED 94-V1 [U]	YT01020190
▲ J810	F,U	4822 267 31262	JACK,AC OUTLET 1P	YJ04001590
▲ J810	/02	4822 267 31194	JACK,AC SOKET YKE31-0090	YJ04001640
▲ L801	F		POWER TRANSF.,STAND BY	TS13516040
▲ L801	/02	4822 146 21569	POWER TRANSF.,STAND BY	TS13516070
▲ L801	U	4822 146 21577	POWER TRANSF.,STAND BY	TS13516060
▲ L803		4822 280 80773	RELAY,POWER VS 24MB-NR-UL	LY10240240
			P802-AC POWER SW CIRCUIT BOARDS	
			P802-CAPACITORS	
▲ C812		4822 122 33276	CER.,DE7150 F 103M	DK17103840
			P802-MISCELLANEOUS	
▲ S803		4822 276 13892	PUSH SW.,SDDFC3 TV-8 ALPS STROKE 1.5MM	SP02012260

POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJ)
			PK01-BUFFER AMP & μ-COM CIRCUIT BOARD	
			PK01-CAPACITORS	
CK01		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CK04		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
CK05		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
CK06		4822 122 32185	CER.,10pF D CH 50V BLK	DD11100300
CK07		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
CK08		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
CK09		4822 124 90354	ELECT.,100μF ±20% 16V RA-2	OA10701620
CK10		4822 124 90354	ELECT.,100μF ±20% 16V RA-2	OA10701620
CK12		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CK13		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CK15		4822 124 41541	ELECT.,470μF ±20% 35V RA-2	OA47703520
CK16		4822 124 41541	ELECT.,470μF ±20% 35V RA-2	OA47703520
CK99	/02B	5322 122 32265	CER.,100pF ±5% CH 50V BLK	DD15101300
CU01		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CU05		4822 124 41543	ELECT.,1μF ±20% 50V RA-2	OA10505020
CU07		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
CU08		4822 124 41543	ELECT.,1μF ±20% 50V RA-2	OA10505020
CU11		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CU12		4822 124 90352	ELECT.,10μF ±20% 16V RA-2	OA10601620
CU13		4822 124 41537	ELECT.,220μF ±20% 6.3V RA2	OA22700620
CU14		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CU15		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CU16		4822 124 90365	ELECT.,220μF ±20% 25V RA-2	OA22702520
CU17		4822 124 23053	ELECT.,1μF /50V	EJ10505010
			PK01-CAPACITORS(COMMON)	
C***			PLASTIC FILM CAP., ±5% 50V:CU03, CU04, CU09	
			PK01-RESISTORS	
			HIGH DIELECTRIC CONSTANT CERAMIC CAP. ±10% 50V: CK02, CK03, CU02, CU06, CU10	
RK12		4822 101 11798	VAR.,RK09K111(B) 10kΩ	RK01031470
RK17		4822 111 91252	10kΩ ±5% 1/4W RES.	GG05103140
RK18		4822 111 91252	10kΩ ±5% 1/4W RES.	GG05103140
RK19		4822 111 90744	FUSIBLE,100Ω ±5% 1/4W	NH05101140
RK20		4822 111 90744	FUSIBLE,100Ω ±5% 1/4W	NH05101140
RU32		4822 052 10109	10Ω ±5% 1/6W	GG05100160
RU99		4822 126 12496	CER.,0.01mF 50V	DD38103010
			PK01-RESISTORS(COMMON)	
R***			CARBON FILM FIXED RES., ±5% 1/6W: CU99, RK01-RK11, RK13-RK16, RK21-RK23, RU01-RU26, RU28-RU31, RU33-RU40	
			PK01-SEMICONDUCTOR	
DK01		4822 130 80838	ZENER DIODE, 18VEQUIVALENT	HD31801000
DK02		4822 130 80838	ZENER DIODE, 18VEQUIVALENT	HD31801000
DU01		4822 130 32362	DIODE,1SS176,MA165,1SS254 30V 0.1A	HD20002000
DU02		4822 130 32362	DIODE,1SS176,MA165,1SS254 30V 0.1A	HD20002000

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POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJ)
QK01		4822 130 43818	TRS. 2SC2878 MUTE TR	HT328782A0
QK02		4822 209 73064	IC,NJM-2068-DD	HC10053090
QK03		4822 209 71038	IC,NJM78L15A +15V 0.1A	HC38115090
QK04		4822 209 71039	IC,NJM79L15A -15V 500MW	HC39115090
QK05		4822 130 43233	TRS.2SC2240 GR OR BL	HT322402A0
QK06		4822 130 42949	TRS.2SA970 (GR) OR (BL)	HT109702A0
QK07		4822 130 42949	TRS.2SA970 (GR) OR (BL)	HT109702A0
QK08		4822 130 42298	TRS.2SC536SP, 2SC2458, 2SC3311, 2SC1740S	HT30001000
QU01				
I		4822 130 42298	TRS.2SC536SP, 2SC2458, 2SC3311, 2SC1740S	HT30001000
QU03				
QU04		4822 130 43233	TRS.2SC2240 (GR)	HT322401A0
QU05		4822 209 83088	IC,NJM2903D DUAL COMPARATOR	HC10022090
QU06				
I		4822 130 42298	TRS.2SC536SP, 2SC2458, 2SC3311, 2SC1740S	HT30001000
QU07				
QU08		4822 20915768	MICROPROCESSOR TMP47C201P DIP	HU400ST000
QU09		4822 209 14883	IC,V-SENSOR S-806C 4.55V	HC10075530
QU10		4822 209 71373	IC,NJM78L05A	HC38105090
QU11		4822 130 42715	TRS.2SA608SP, 2SA1048, 2SA1309, 2SA933S	HT10001000
			PK01-MISCELLANEOUS	
JK01		4822 265 20355	TERMINAL,RCA AUDIO IN/INVERT OUT	YT02020650
JK02		4822 267 31203	JACK,B2B-PH-K-S	YJ06006220
JU01		4822 265 11043	TERMINAL,VIDEO BUS IN	YT02010730
JU02		4822 265 11044	TERMINAL,D-BUS IN/OUT/SYSTEM OUT	YT02030470
SK01		4822 277 11716	SLIDE SW.,SSSS9 1-POLE 2- POSITION BTL	SS01020730
XU01		4822 242 72592	SER.VIB.,CST 5.56MGW-TF01	FQ05564010
			PK02-LED DISPLAY CIRCUIT BOARD PK02-SEMICONDUCTORS	
DU03		4822 130 80326	L.E.D.,STAND BY LED	HI10062320
DU04		4822 130 81715	L.E.D.,POWER LED	HI10095320

