CLARION CO. LTD.
50, KAMITODA, TODA-SHI, SAITAMA 335-8511, JAPAN
PHONE (81) 48-443-1111; FAX (48) 433-6996

CLARION CORPORATION OF AMERICA
661 W REDONDO BEACH BLVD, GARDENA, CA 90247, USA
PHONE (310) 327-9100; FAX (310) 327-1999
WEBSITE HTTP://WWW.CLARION.COM

PUBLISHED BY SERVICE DEPT. MAR 2005
PRINTED IN TAIWAN

VERSION A1 SINCE S/N 05020001

Service Manual

MONO AMPLIFIER

Model **APA2001**

■SPECIFICATIONS

Power output (THD@1%4Ω) :	256W	1KHz IN
(THD@1%2Ω) :	364W	1KHz IN
T.H.D 4ohm Load	<0.45%	1W Output
2ohm Load	<0.5%	1W Output
S/N [Full rated power100Hz] :	>70dB	
Frequency response for -3Db (1W output) :	15Hz-39KHz	1KHz/0dB
LPF for-3dB	28Hz - 243Hz	100Hz/0dB
Input Impedance	Line in	20K
	Line in	470 ohm
Idle Current For 4ohm Load	0.8A	
Boost bass	6.2dB, 11.8dB	50Hz/0dB
MAX current (2 ohms)THD=1%	47.2A	1KHz IN
Input Sensitivity	Line in	195mV-6.6V
	High in	395mV-13V
Turn-on/off noise :	OK	
Thermal Protection	88℃	
Power Requirement:	13.8V DC	

NOTE: FOR FURTHER IMPROVEMENT, SPECIFI CATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE.

■ FEATURES

- · Maximum Power Output 400 Watts
- · Continuous Average Power Output 200 Watts Into 4 Ohms Crossover
- · Typical 2-Ohm Mono Power 1kHz 230 Watts
- · Switchable Bass Boost at 0dB/6dB/12dB
- · Adjustable 50Hz-250Hz, 12dB/oct. High-/Low-Pass
- · Speaker Level Inputs

■TO ENGINEERS IN CHARGE OF REPAIR OR INSPECTION OF OUR PRODUCTS:

BEFORE REPAIR OR INSPECTION, MAKE SURE TO FOLLOW THE INSTRUCTIONS SO THAT CUSTOMERS AND ENGINEERS IN CHARGE OF REPAIR OR INSPECTION CAN AVOID SUFFERING ANY RISK OR INJURY. REMODELING FOR WHICH WE SHALL NOT BE LIABLE. THE ONUS OF PRODUCT LIABLITY (PL) SHALL NOT BE OUR RESPONSIBILITY IN CASES WHERE AN ACCIDENT OR FAILURE IS AS A RESULT OF UNSPECIFIED PARTS BEING USED OR DUE TO NEGLIGENCE DURING REPAIR.

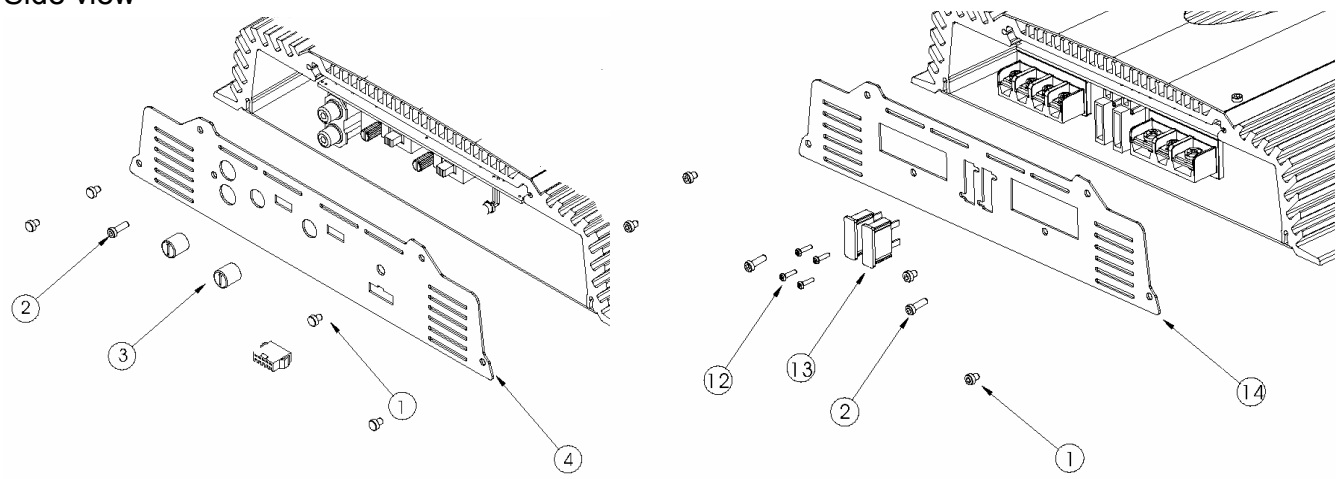
1. USE SPECIFIED PARTS.
THE SYSTEM USES PARTS WITH SPECIAL SAFETY FEATURES AGAINST FIRE AND VOLTAGE. USE ONLY PARTS WITH EQUIVALENT CHARACTERISTICS WHEN REPLACING THEM.
2. PLACE THE PARTS AND WIRING BACK IN THEIR ORIGINAL POSITIONS AFTER REPLACEMENT OR RE-WIRING.
FOR PROPER CIRCUIT CONSTRUCTION, USE OF INSULATION TUBES, BONDING, GAPS TO PWB, ETC, IS INVOLVED. THE WIRING CONNECTION AND ROUTING TO THE PWB ARE SPECIALLY PLANNED USING CLAMPS TO KEEP AWAY FROM HEATED AND HIGH VOLTAGE PARTS. ENSURE THAT THEY ARE PLACED BACK IN THEIR ORIGINAL POSITIONS AFTER REPAIR OR INSPECTION.
3. CHECK FOR SAFETY AFTER REPAIR.
CHECK THAT THE SCREWS, PARTS AND WIRES ARE PUT BACK SECURELY IN THEIR ORIGINAL POSITION AFTER REPAIR. ENSURE FOR SAFETY REASONS THERE IS NO POSSIBILITY OF SECONDARY PROBLEMS AROUND THE REPAIRED SPOTS.
4. CAUTION IN REMOVAL AND MAKING WIRING CONNECTION TO THE PARTS FOR THE AUTOMOBILE. DISCONNECT THE BATTERY TERMINAL AFTER TURNING THE IGNITION KEY OFF. IF WRONG WIRING CONNECTIONS ARE MADE WITH THE BATTERY CONNECTED, A SHORT CIRCUIT AND/OR FIRE MAY OCCUR.
5. CAUTIONS REGARDING CHIPS.
DO NOT REUSE REMOVED CHIPS EVEN WHEN NO ABNORMALITY IS OBSERVED IN THEIR APPEARANCE. ALWAYS REPLACE THEM WITH NEW ONES. (THE CHIP PARTS INCLUDE RESISTORS, CAPACITORS, DIODES, TRANSISTORS, ETC). THE NEGATIVE POLE OF TANTALUM CAPACITORS IS HIGHLY SUSCEPTIBLE TO HEAT, SO USE SPECIAL CARE WHEN REPLACING THEM AND CHECK THE OPERATION AFTERWARDS.
6. CAUTIONS IN HANDLING FLEXIBLE PWB BEFORE WORKING WITH A SOLDERING IRON MAKE SURE THAT THE IRON TIP TEMPERATURE IS AROUND 270 ℃. TAKE CARE NOT TO APPLY THE IRON TIP REPEATEDLY (MORE THAN THREE TIMES) TO THE SAME PATTERNS. ALSO TAKE CARE NOT TO APPLY THE TIP WITH FORCE.
7. TURN THE UNIT OFF DURING DISASSEMBLY AND PARTS REPLACEMENT. RECHECK ALL WORK BEFORE YOU APPLY POWER TO THE UNIT NOTE: FOR FURTHER IMPROVEMENT, SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE.

■TROUBLESHOOTING

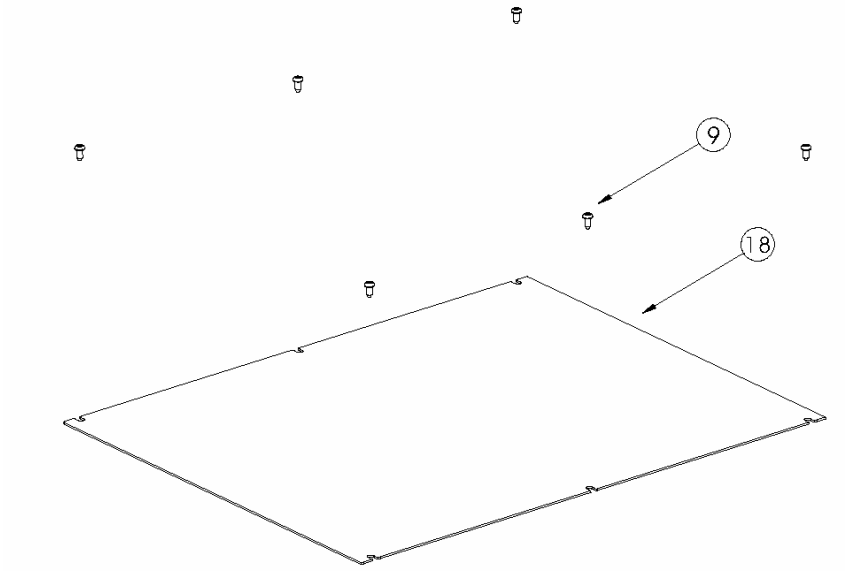
PROBLEM	POSSIBLE CAUSE	SOLUTION
NO AUDIO	LOW OR NO REMOTE TURN-ON VOLTAGE	CHECK REMOTE CONNECTIONS AT AMPLIFIER AND SOURCE UNIT.
	BLOWN AMPLIFIER FUSE	REPLACE WITH NEW FAST-BLOW FUSE (SAME RATING).
	POWER WIRES NOT CONNECTED	CHECK BATTERY AND GROUND WIRING AT AMPLIFIER; ALSO CHECK BATTERY CONNECTIONS.
	SPEAKER LEADS SHORTED	CHECK SPEAKER CONTINUITY TO GROUND, IT SHOULD NOT SHOW A COMMON GROUND.
	SPEAKERS NOT CONNECTED OR ARE BLOWN	CHECK SPEAKER CONNECTIONS AT AMPLIFIER, MEASURE COIL IMPEDANCE.
AUDIO CYCLES ON AND OFF	THERMAL PROTECTION CIRCUITS ARE SHUTTING AMPLIFIER OFF	CHECK LOCATION FOR ADEQUATE VENTILATION; CONSULT AN AUTHORIZED CLARION AUDIO DEALER.
DISTORTED AUDIO.	GAIN IS NOT SET PROPERLY, OR DAMAGED SPEAKER CONES	REVIEW SETTING GAIN; INSPECT EACH SPEAKER CONE FOR SIGNS OF DAMAGE (I.E., FROZEN CONE, BURNING SMELL, ETC.)
AMPLIFIER FUSE KEEPS BLOWING	INCORRECT WIRING OR SHORT CIRCUIT	REVIEW INSTALLATION AND CHECK ALL WIRING CONNECTION.
WHINING OR TICKING NOISE IN THE AUDIO WITH ENGINE ON.	AMPLIFIER IS PICKING UP ALTERNATION NOISE OR RADIATED NOISE	TURN DOWN INPUT GAIN AND MOVE AUDIO CABLES AWAY FROM POWER WIRES. CHECK POWER AND GROUND CONNECTIONS ON AMPLIFIER AND INSTALL AN IN-LINE NOISE FILTER ON SOURCE UNIT'S POWER WIRE. ALSO CHECK THE ALTERNATOR AND /OR VOLTAGE. TEST FOR WEAK BATTERY OR ADD WATER TO BATTERY.

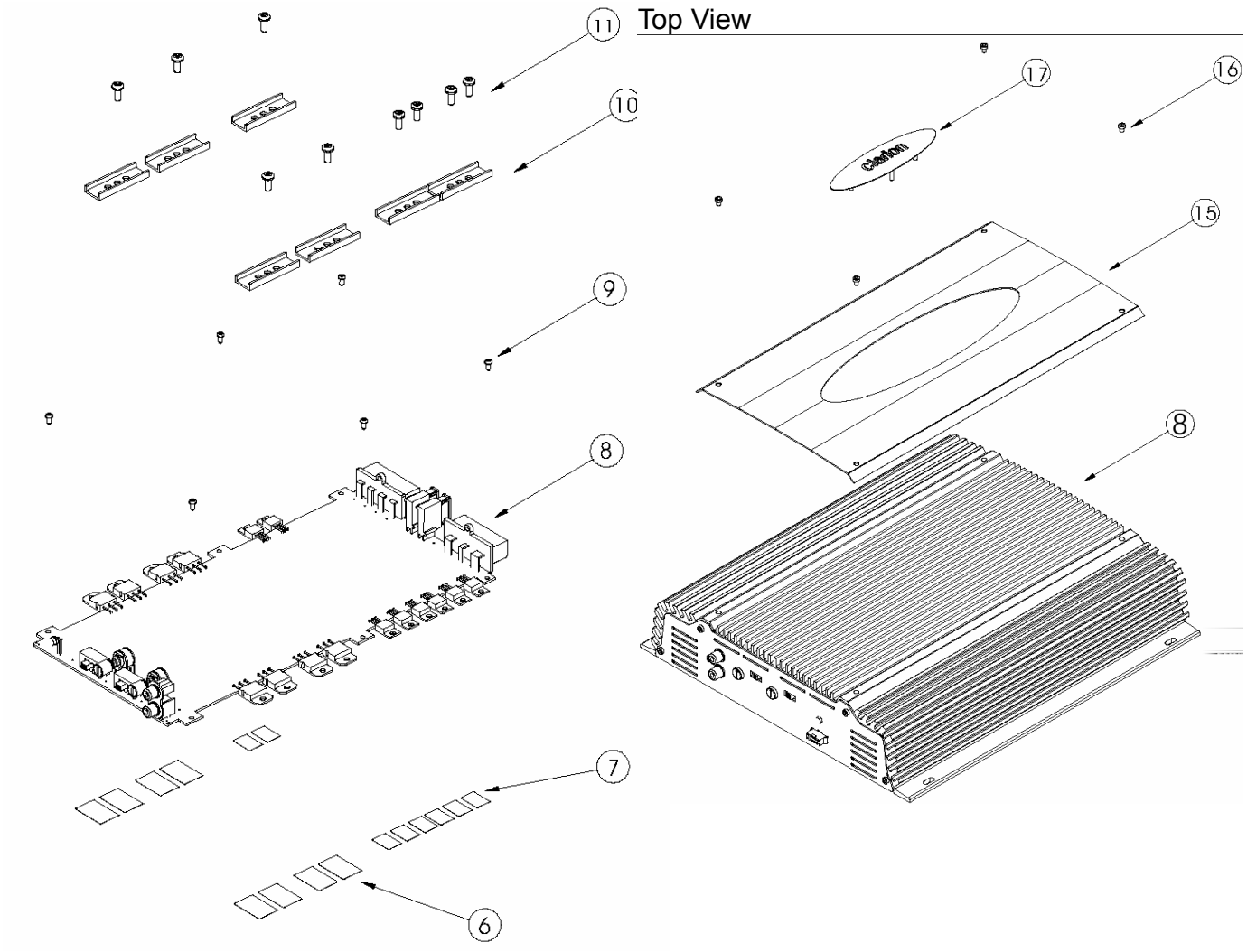
■EXPLODED VIEW

Side view



Bottom View





PARTS LIST:

ITEM	PART NO	DESCRIPTION	Q'TY
1	ST-IH430-08	SCREW T/R 3X8	8
2	ST-IH430-12	SCREW T/R 3 X 12	3
3	76-00381-00	VR KNOB	2
4	71-00584-00	FRONT PANEL	1
5	77-00298-00	HEATSINK	1
6	78-00308-00	MICA 25 X 20 MM	8
7	78-00334-01	MICA 11 X 20 MM	8
8	11-00611-00	MAIN PCB	1
9	ST-RP430-06	SCREW T/R 3 X 6	12
10	74-00174-00	CLIP A	7
11	SM-RP240-12	SCREW M/R 4 X 12	9
12	ST-RP420-08	SCREW T/R 2 X 8	4
13	76-00279-00	FUSE	2
14	71-00585-00	REAR PANEL	1
15	72-00389-00	TOP COVER	1
16	ST-IH430-05	SCREW T/R 3 X 5	4
17	75-00021-00	LOGO BADGE	1
18	72-00390-00	BOTTOM COVER	1

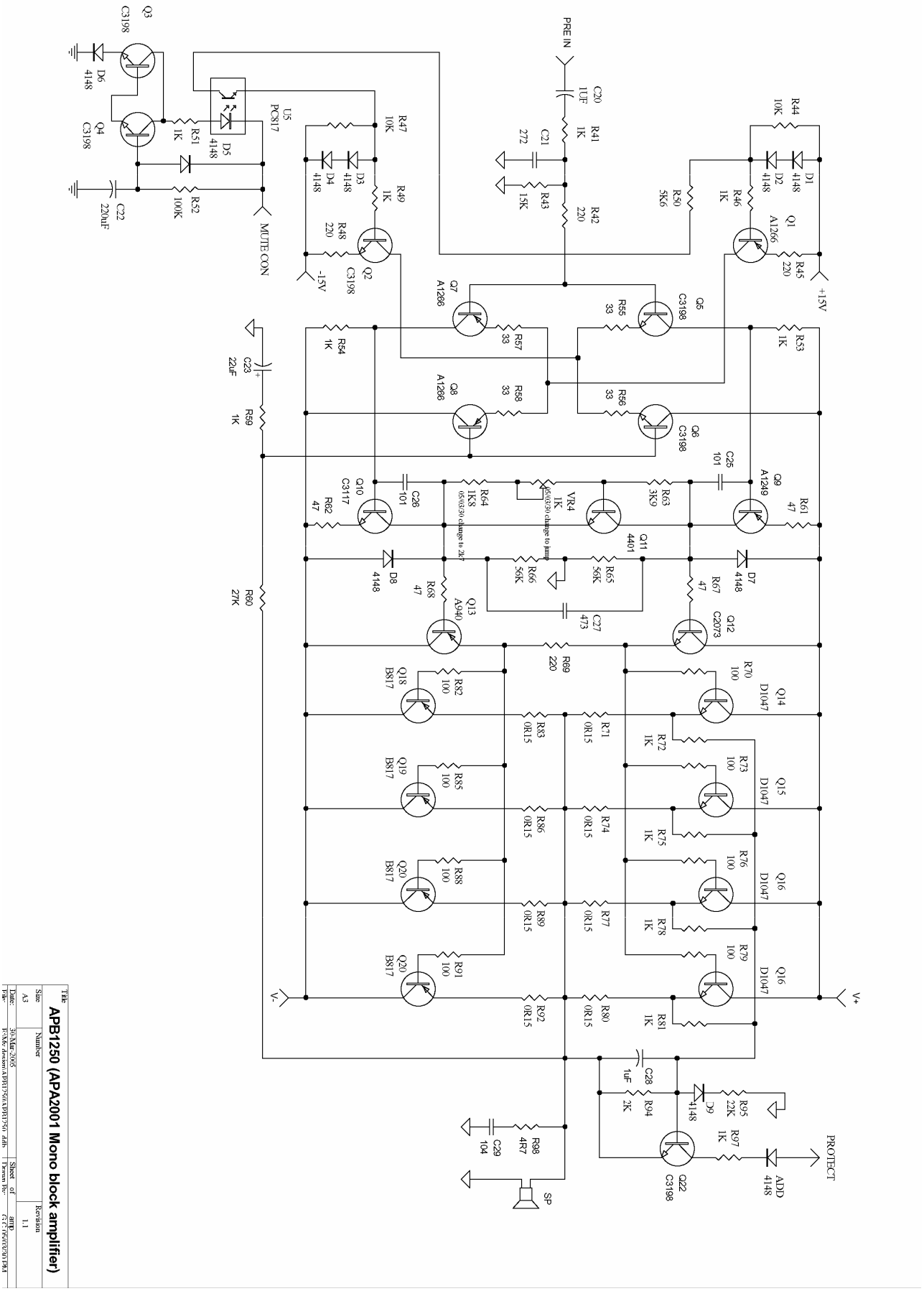
■ELECTRICAL PART LIST:

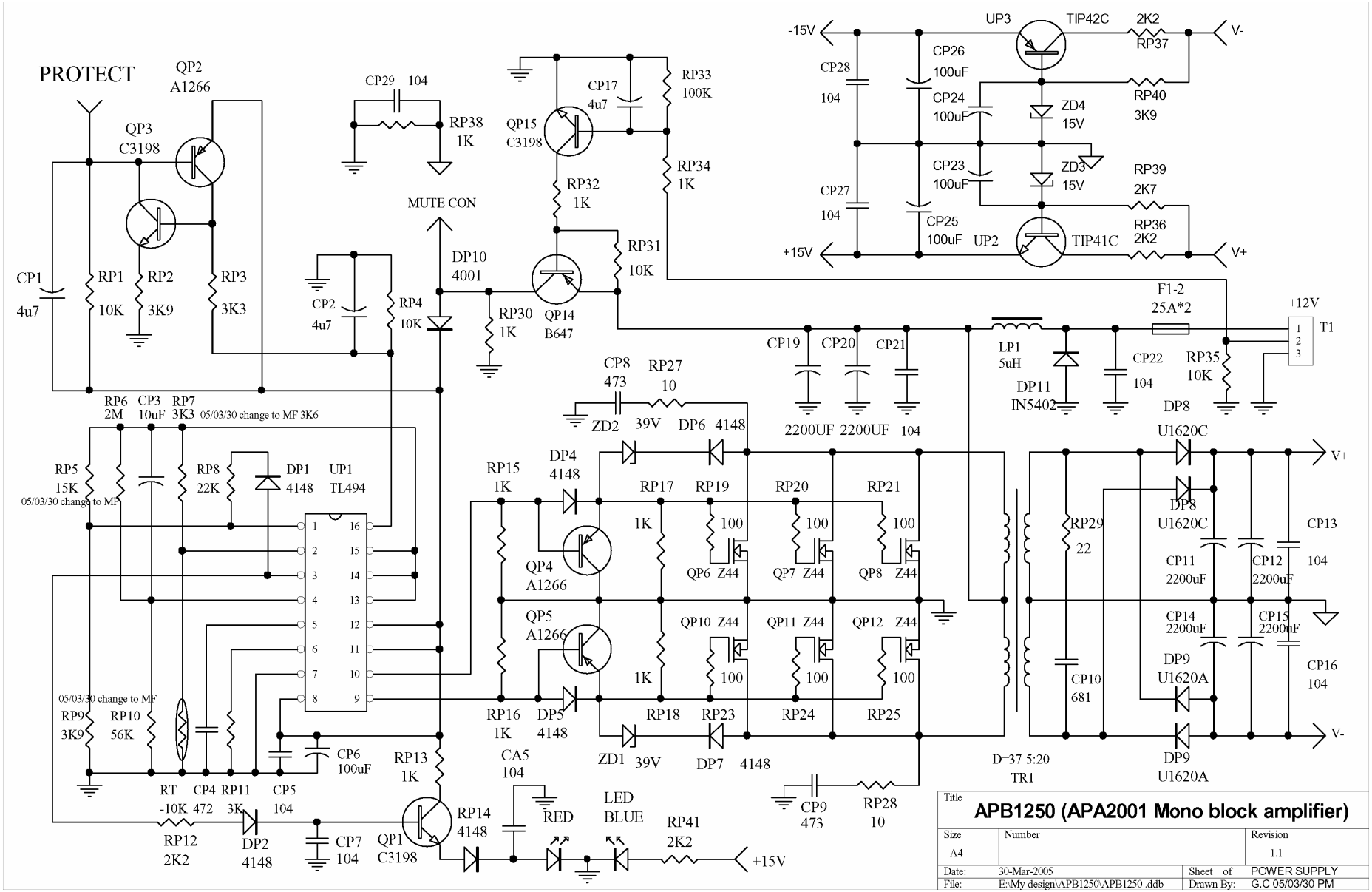
MAIN PWB SECTION

PART NO	REMARK	NAME SPEC	Qty
01-00005-00	J37 J58 J59 J99 J100 J101	JUMP 5MM	6
01-00006-00	J11 J111 J112 J113 J12 J17 J15 J16 J114 J115 J36 J38 J39 J40 J41 J42 J43 J44 J47 J48 J49 J62 J116 J76 J79 RP39 J77 ZD3 VR4	JUMP 6MM	28
01-00008-00	J6 J14 J19 J20 J21 J22 J23 J24 J60 J104 J105 J64 J65 J66	JUMP 8MM	14
01-00010-00	J2 J3 J106 J107	JUMP 10MM	4
01-00013-00	J45 J46 J103	JUMP 13MM	3
01-00015-00	J25 J26 J27 J28 J29 J30 J31 J32 J33 J34 J35 J61 J52 J68 J69 J70 J71 J72 J73 J74 J75 J80 J81 J82 J83 J84 J85 J86 J87 J88 J89 J90 J91 J92 J93 J94 J95 J108 J109	JUMP 15MM	39
01-00016-00	J102 J9	JUMP 16MM	2
01-00018-00	J63	JUMP 18MM	1
01-00019-00	ADD	JUMP 19MM	1
01-00020-00	J53 J54 J55 J56 J57 J67 J96 J97 J98	JUMP 20MM	9
01-11000-63	R37	RES 10 1/8W	1
01-13300-63	R55 R56 R57 R58	RES 33 1/8W	4
01-14700-63	R61 R62 R67 R68	RES 47 1/8W	4
01-12210-63	R42 R45 R48 R69	RES 220 1/8W	4
01-16810-63	R22	RES 680 1/8W	1
01-11020-63	R9 R18 R41 R46 R51 R53 R54 R59 RP13 RP15 RP16 RP30 RP32 RP34	RES 1K 1/8W	14
01-12020-63	R94	RES 2K 1/8W	1
01-12220-63	RP12	RES 2K2 1/8W	1
01-13020-63	RP11	RES 3K 1/8W	1
01-13320-63	RP3 RP7	RES 3K3 1/8W	1
01-13920-63	RP2 RP9	RES 3K9 1/8W	1
01-15120-63	R32	RES 5K1 1/8W	1
01-16820-63	R5 R14	RES 6K8 1/8W	2
01-11030-63	R34 R40 R100 RP1 RP4 RP31 RP35	RES 10K 1/8W	7
01-11530-63	RP5 R6 R15 R38 R39 R43	RES 15K 1/8W	5
01-12030-63	R4 R13	RES 20K 1/8W	2
01-12230-63	RP8	RES 22K 1/8W	1
01-12730-63	R60	RES 27K 1/8W	1
01-15630-63	RP10	RES 56K 1/8W	1
01-16830-61	R31 R33 R36	RES 68K 1/8W	3
01-18230-61	R101	RES 82K 1/8W	1
01-11040-63	R26 R99 R52 RP33	RES 100K 1/8W	4
01-11840-63	R30	RES 180K 1/8W	1
01-12050-63	RP6	RES 2M 1/8W	1
01-11010-43	R70 R73 R76 R79 R82 R85 R88 R91 RP19 RP20 RP21 RP23 RP24 RP25	RES 100 1/4W	14
01-11020-43	R49 R72 R75 R78 R81 R97 RP17 RP18 RP38	RES 1K 1/4W	9
01-11820-43	R64	RES 2K7 1/4W	1
01-12220-43	RP41	RES 2K2 1/4W	1
01-13920-43	R63	RES 3K9 1/4W	1
01-11030-43	R44 R47	RES 10K 1/4W	2
01-12230-43	R95	RES 22K 1/4W	1
01-15630-43	R65 R66	RES 56K 1/4W	2
01-11000-22	RP27 RP28	RES 10 1/2W	2
01-12200-22	RP29	RES 22 1/2W	1
01-11810-22	R2 R11	RES 180 1/2W	2
01-12720-22	RP39	RES 2K7 1/2W	1
01-13920-22	RP40	RES 3K9 1/2W	1
01-15620-22	R50	RES 5K6 1/2W	1
01-11030-22	R3 R12	RES 10K 1/2W	2
01-14701-22	R98	RES 4R7 1/2W	1
01-14710-12	R1 R10	RES 470 1W	2
01-12220-72	RP36 RP37	RES 2K2 2W	2
01-31500-51	R71 R74 R77 R80 R83 R86 R89 R92	RES 0R15 5W SQM	8
13-00215-00	RT	NTC -10K	1
02-22203-36	CP19 CP20	E/C 2200UF/35V LOW ESR	2
02-22203-63	CP11 CP12 CP14 CP15	E/C 2200UF/63V 105'	4
02-21000-41	C2 C5 C20 C28	E/C 1UF/50V 105'	4
02-22200-41	CA2	E/C 2U2/50V 105'	1
02-24700-41	CP1 CP2 CP17	E/C 4U7/50V 105'	3
02-21001-41	C12 CP3	E/C 10UF/50V 105'	2
02-22201-41	C23	E/C 22UF/50V 105'	1
02-21002-41	CP23 CP24	E/C 100UF/50V 105'	2
02-21002-31	C1 C4 CP6 CP25 CP26	E/C 100UF/25V 105'	5
02-22202-32	C22	E/C 220UF/25V 105'	1
04-20100-01	C30	C/C 10P/50V	1
04-21000-02	C25 C26	C/C 101P/50V	2
04-24700-01	C3 C6	C/C 471P/50V	2

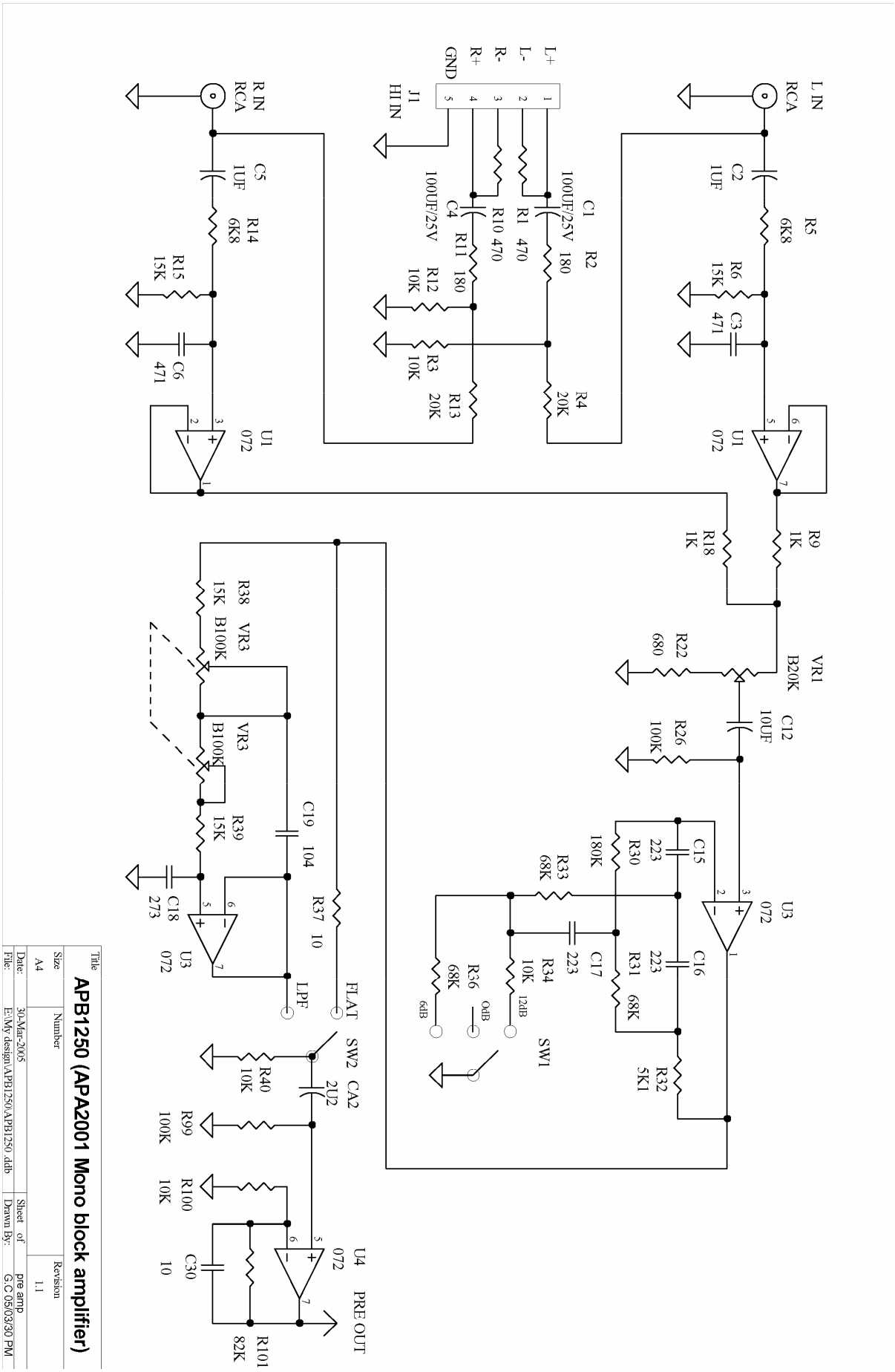
04-21040-02	CP5 CP7 CP21 CP22 CP27 CP28 CP29 CA5	C/C 104P/50V	8
04-26800-01	CP10	C/C 681P/250V	1
03-21040-04	CP13 CP16	P/E 104P/100V	2
03-22230-01	C15 C16 C17	M/C 223J 63V	3
03-22720-01	C21	M/C 272J 63V	1
03-24730-01	C27 CP8 CP9	M/C 473J 63V	3
03-22730-03	C18	M/C 273J 63V	1
03-24720-01	CP4	M/C 472J 63V	1
03-21040-01	C19A C29	M/C 104J 63V	2
09-14001-01	DP10	DIODE IN4001	1
09-14148-01	RP14 D1 D2 D3 D4 D5 D6 D7 D8 D9 DP1 DP2 DP4 DP5 DP6 DP7 ADD	DIODE IN4148	17
09-15401-01	DP11B	DIODE IN5402	1
09-20390-03	ZD1 ZD2	ZENER 39V 1/2W	2
09-20150-03	ZD3 ZD4	ZENER 15V 1W	2
08-01266-00	Q1 Q7 Q8 QP2 QP4 QP5	TRANS A1266 TO-92 "K"	6
08-03198-00	Q2 Q3 Q4 Q5 Q6 Q22 QP1 QP3 QP15	TRANS C3198 TO-92 "K"	9
08-04401-00	Q11	TRANS 2N4401 TO-92 "F"	1
08-21047-01	Q14 Q15 Q16 Q17	TRANS D1047 TO-3 PN "KEC"	4
08-20817-01	Q18 Q19 Q20 Q21	TRANS B817 TO*3 PN "KEC"	4
08-01249-00	Q9	TRANS A1249 TO-126	1
08-03117-00	Q10	TRANS C3117 TO-126	1
08-10647-01	QP14	TRANS B647 TO-92L	1
08-00940-00	Q13	TRANS A940 TO-220 "F"	1
08-02073-00	Q12	TRANS C2073 TO-220 "F"	1
08-20041-01	UP2	TRANS TIP41C TO-220 "F"	1
08-20042-01	UP3	TRANS TIP42C TO-220 "F"	1
15-20203-28	VR1	VR B20K*2 D=13mm L=20mm	1
15-21040-01	VR3	VR B100K*2 D=13mm L=20mm	1
07-00817-01	U5	OPT PC817	1
32-00666-00	RCA1	RCA JACK 4PIN	1
18-00876-00	SW1	SW 2P3T L=6mm	1
18-00884-00	SW2	SW 2P2T L=6mm	1
20-00167-00	LP1	INDUCTOR 3UH	1
07-00494-00	UP1	IC TL494CN DIP-16PIN "TI"	1
07-00072-01	U1 U3 U4	IC TL 072 DIP-8PIN "ST"	3
08-00Z44-00	QP6 QP7 QP8 QP10 QP11 QP12	MOSFET Z44N TO-220AB "IR"	6
32-00637-02	T1	TERMINAL 3PIN BLACK	1
32-00638-02	T2	TERMINAL 4PIN BLACK	1
20-00169-00	TR1	TRANSFORMER 5:20 φ37	1
76-00239-00	F1 F2	FUSE HOLDER	2
76-00279-00	F1 F2	FUSE 25A (UL)	2
09-01620-02	DP9	FRR U1620A TO-220AB	1
09-01620-01	DP8	FRR U1620C TO-220AB	1
34-00150-01	L+ L- R+ R- GND HIGH LEVEL IN	WIRE (with wafer)5PIN 160mm	1
19-00317-00	LED	LED φ5mm RED&BLUE	1
26-00371-00	GND	WIRE with "o"type terminal 60mm	1
77-00307-00	Q9 Q10	H/S 12.35(L)*8.5(W)*18(H) mm	2

■ SCHEMATIC DIAGRAM

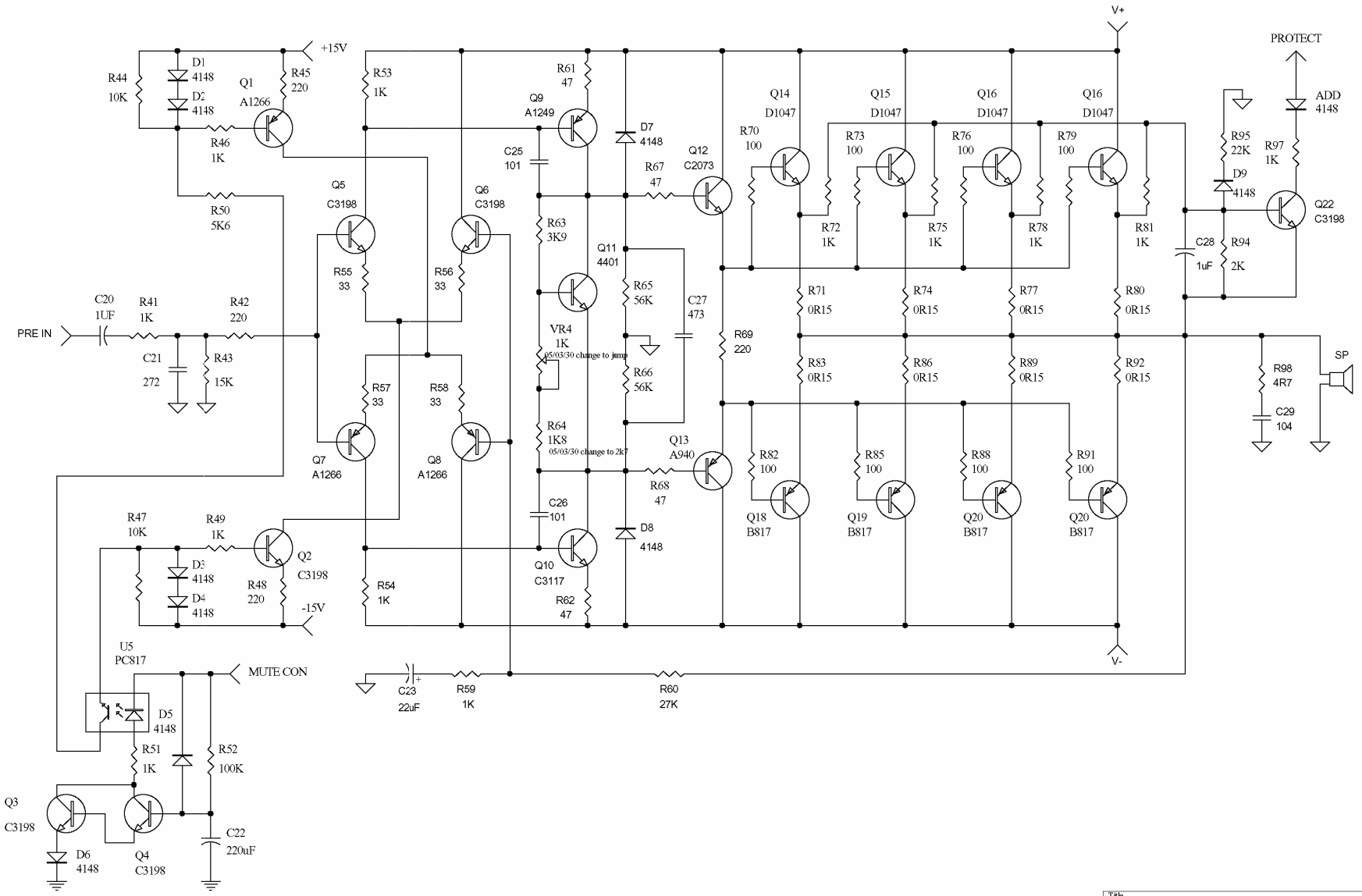




Title	APB1250 (APA2001 Mono block amplifier)	
Size: A4	Number:	Revision: 1.1
Date: 30-Mar-2005	Sheet of	POWER SUPPLY
File: E:\My design\APB1250\APB1250 .ddb	Drawn By:	G.C 05/03/30 PM

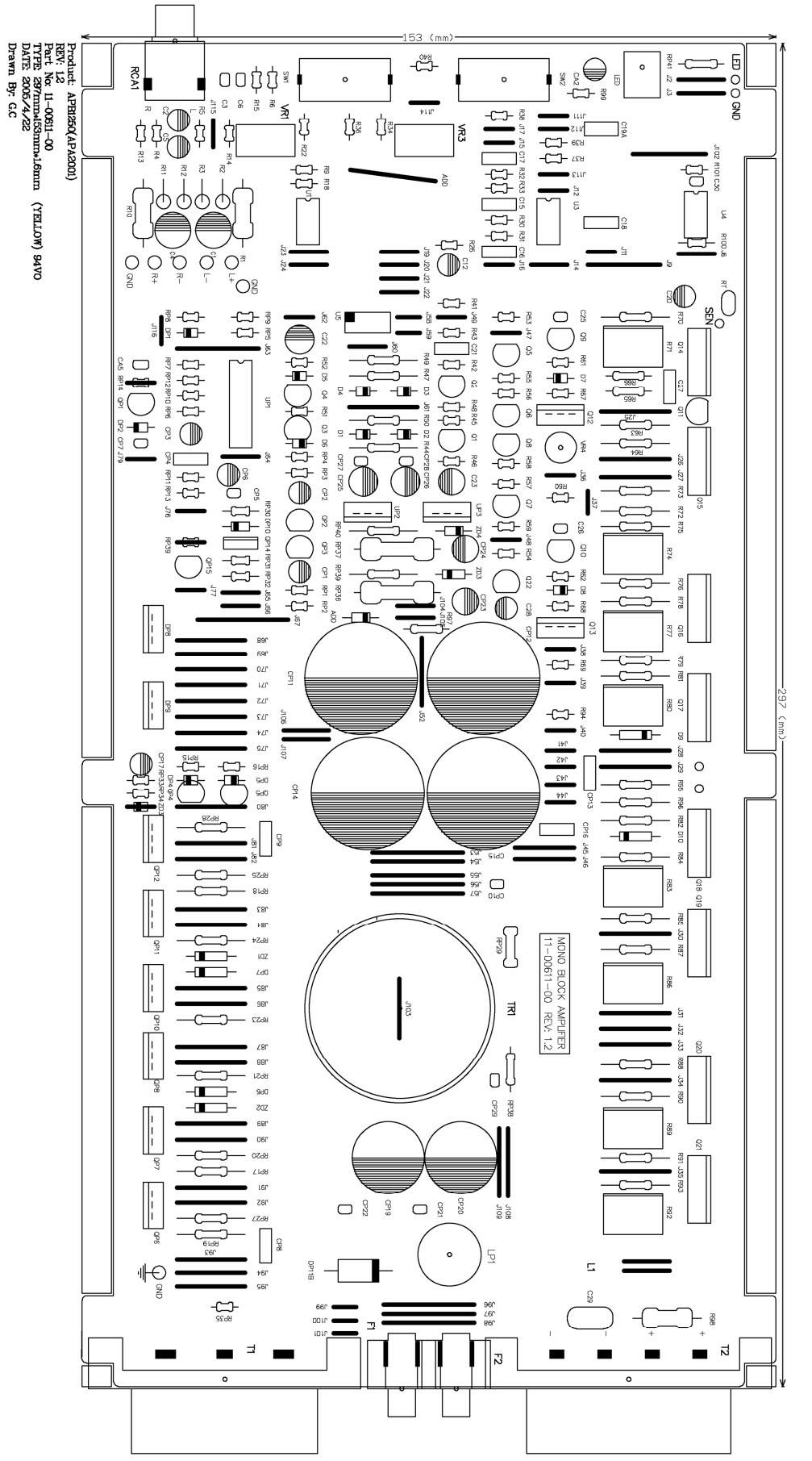


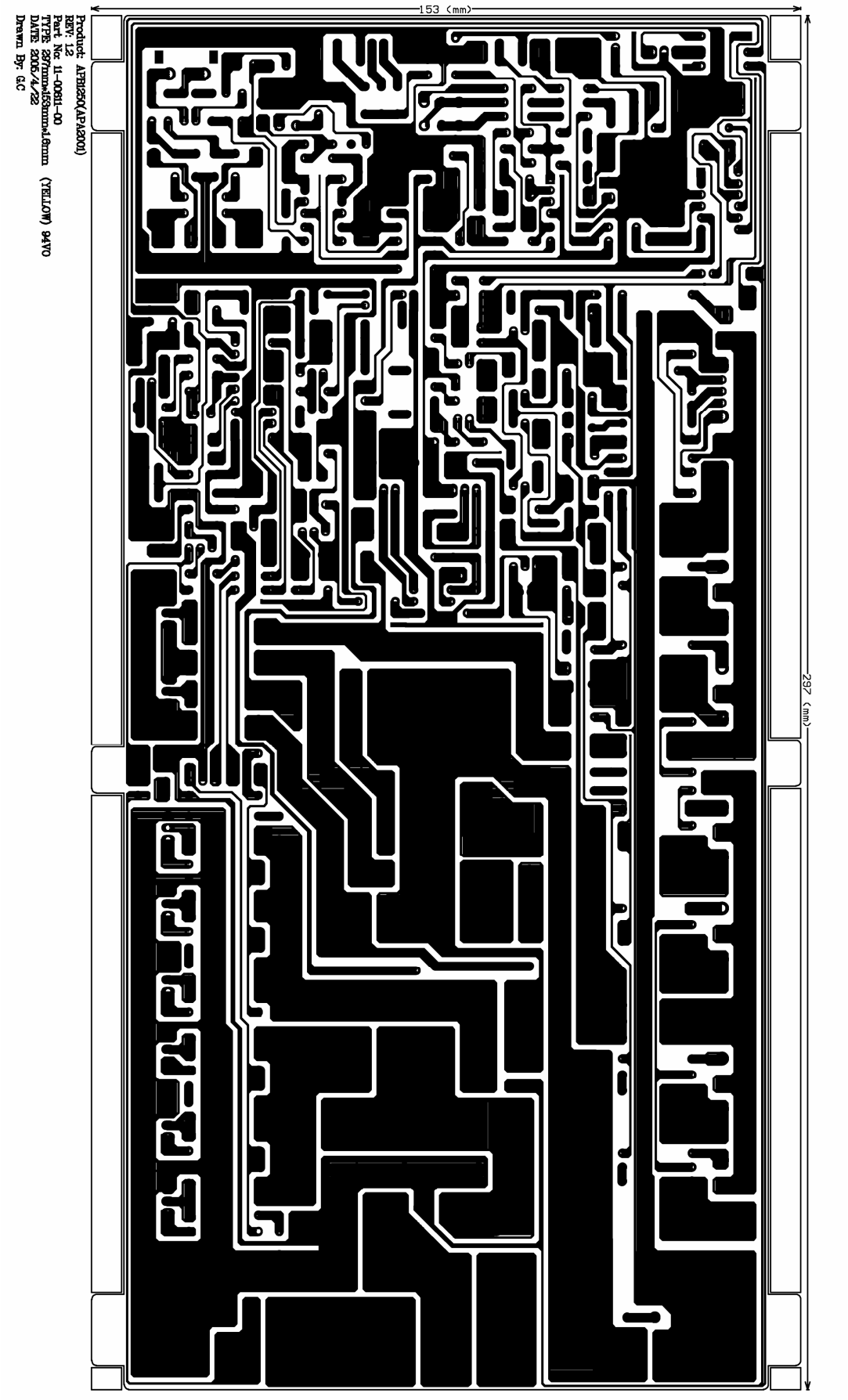
Title	APB1250 (APA2001 Mono block amplifier)		
Size: A4	Number:		Revision: 1.1
Date: 30-Mar-2005		Sheet of	pre amp
File: E:\My design\APB1250\APB1250.ddb		Drawn By:	G.C 05/03/30 PM

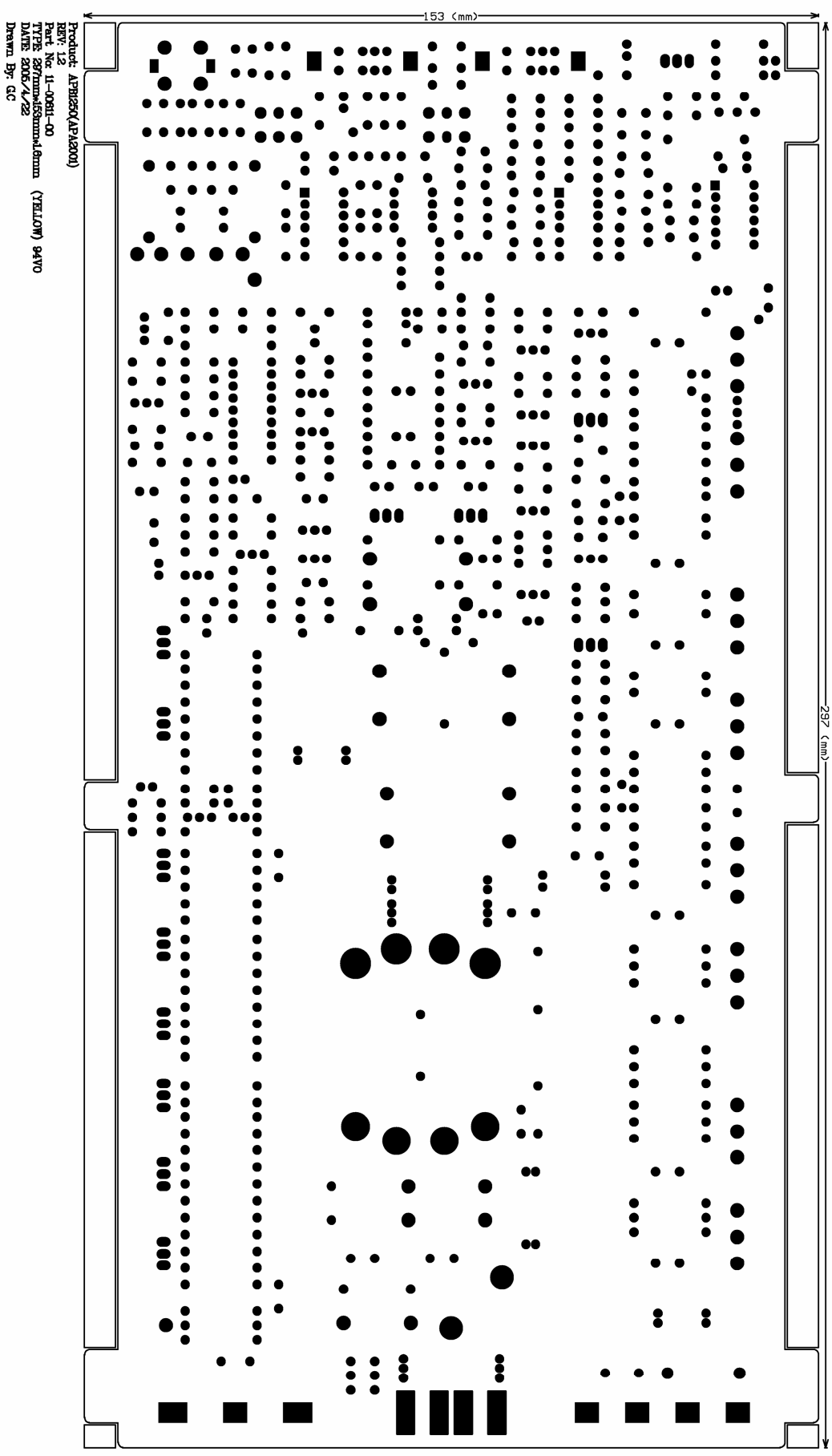


Title	APB1250 (APA2001 Mono block amplifier)		
Size	Number		Revision
A3			1.1
Date:	30-Mar-2005	Sheet of	amp
File:	E:\My design\APB1250\APB1250 .ddb	Drawn By:	G C 05/03/30 PM

■ PRINTED WIRING BOARD:




153 (mm)
297 (mm)
Product: APB8250(APA2001)
REV: 1.2
Part No: 11-00681-00
TYPE: 297mmx153mmx1.6mm (YELLOW) 94V0
DATE: 2005/4/22
Drawn By: GC


153 (mm)
297 (mm)
Product: APB1250(APA2001)
REV: 1.2
Part No: 11-00811-00
TYPE: 297mm*153mm*1.0mm (YELLOW) 94V0
DATE: 2005/4/22
Drawn By: GC