

# **Service** *Manual*

**MODEL: A200.2**

## CONTENT

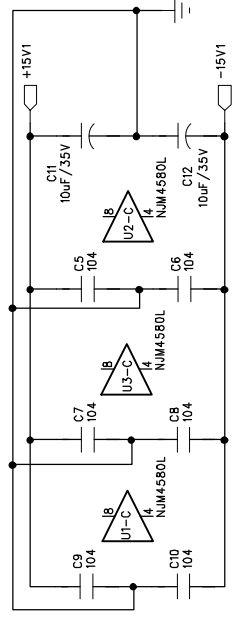
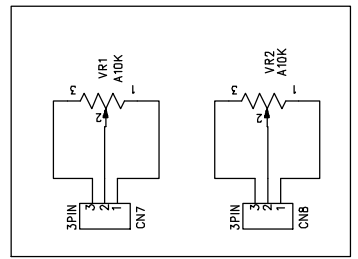
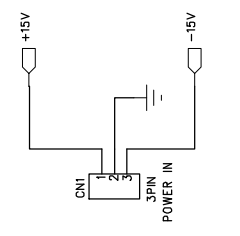
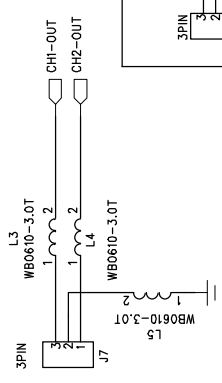
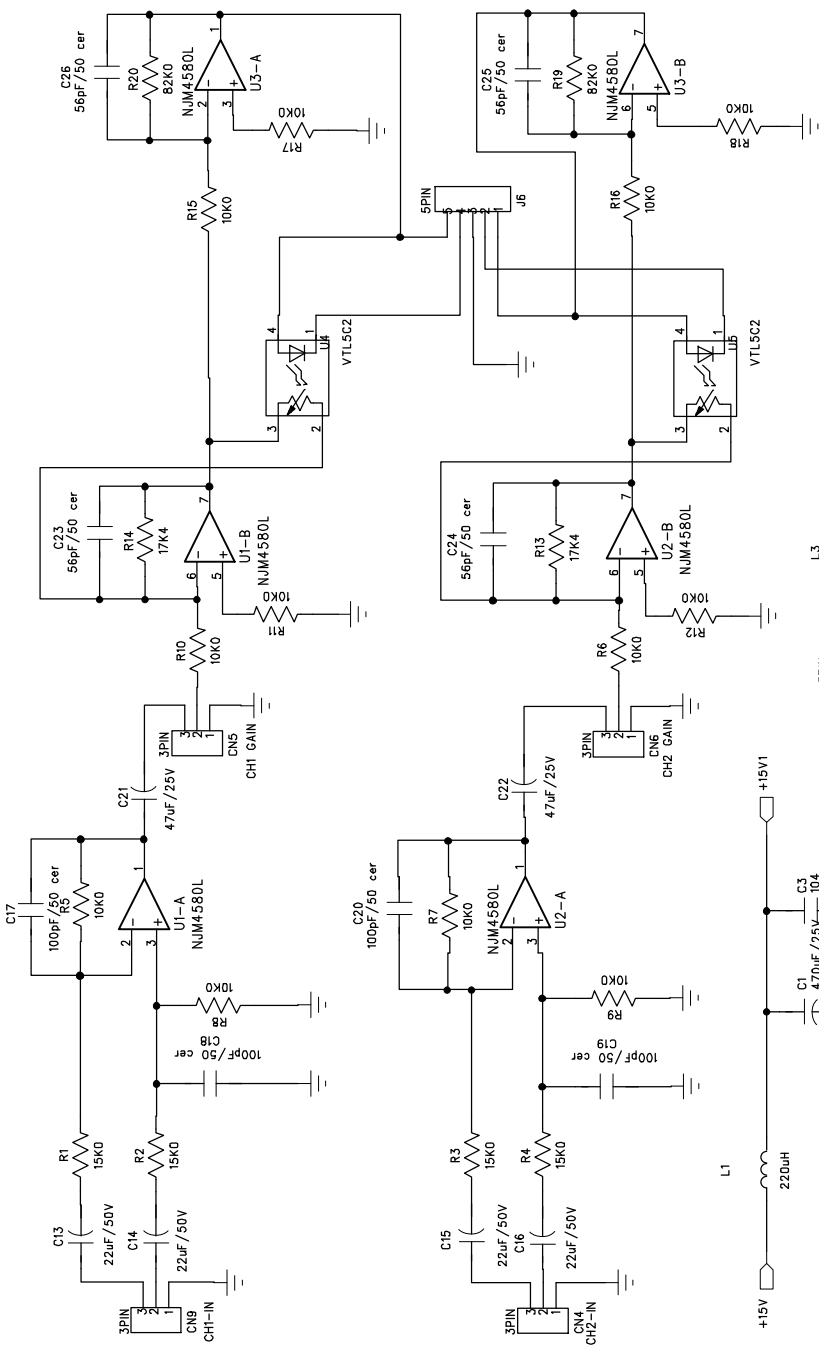
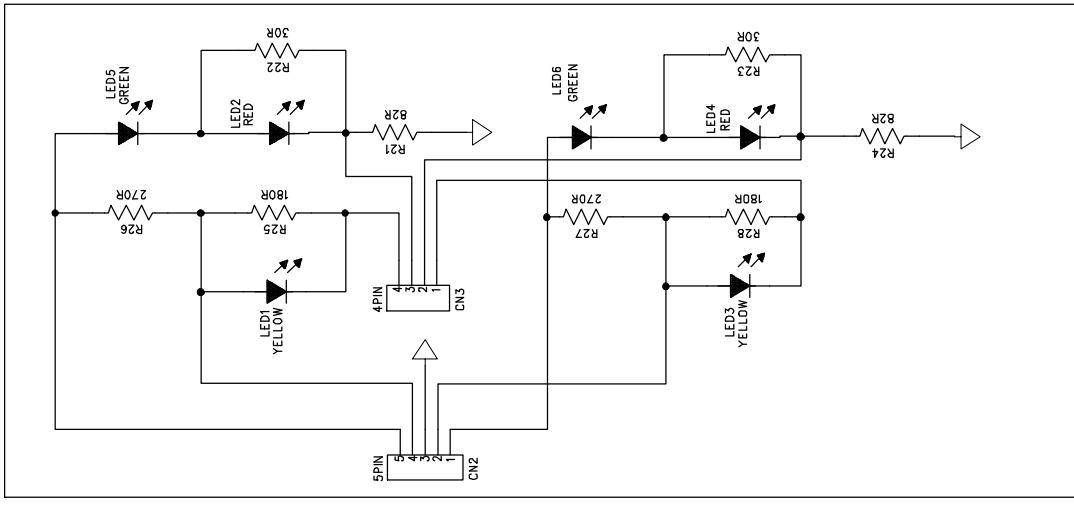
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## 1. Introduction

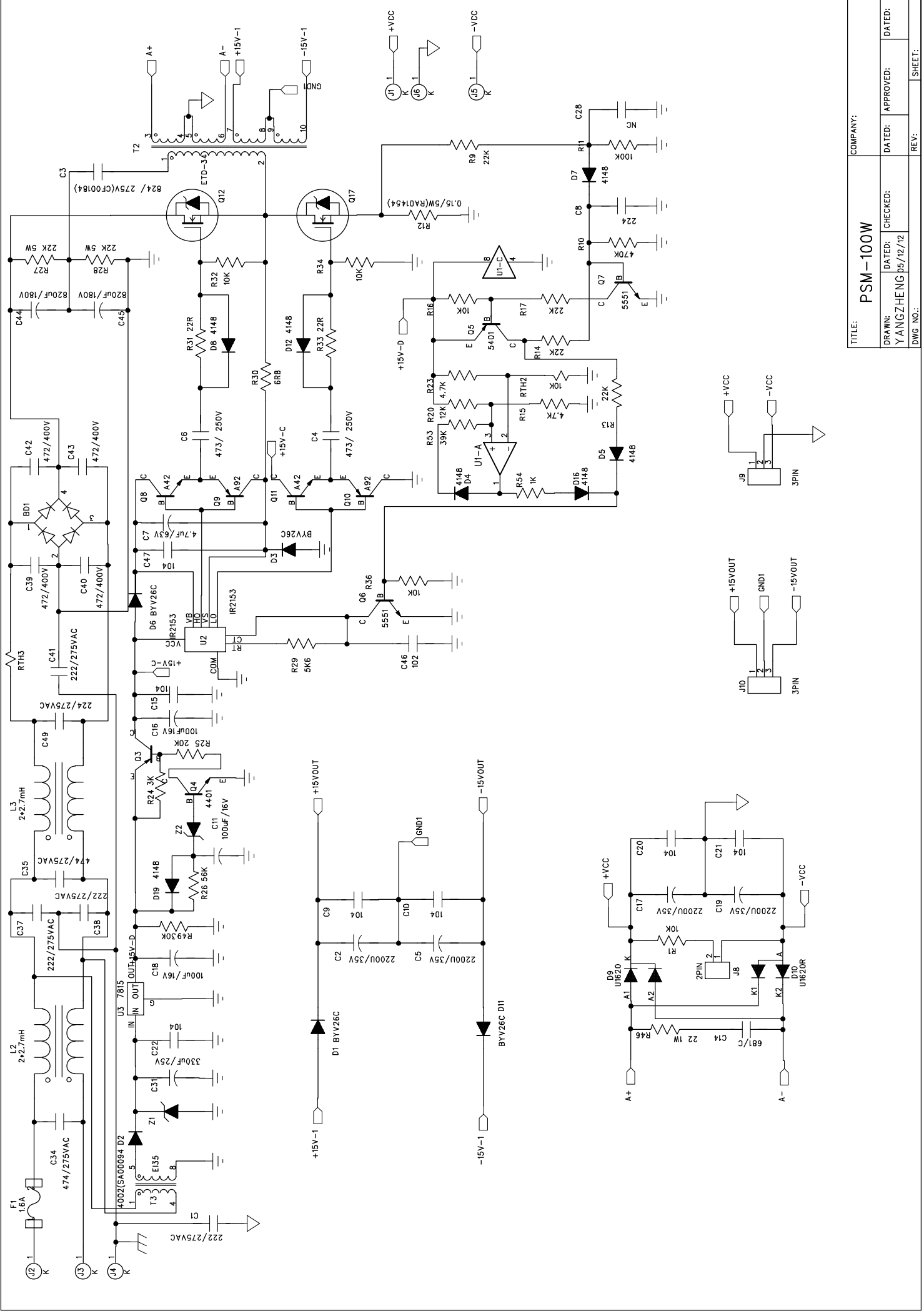
- 1U 1/2 rack, stereo high power amplifier.
- Fantastic audio quality even with extremely high volume levels.
- Solid and durable, and can be mounted into a cabinet.
- User-controllable clip limiter.
- 2×120Watts on 4Ohms (EIAJ)
- Balanced XLR inputs and 1/4"TRS jack to ensure noiseless long wiring.
- 1/4" TRS jack connectors for output.
- Front panel LED indicators for signal, limit and clip.
- Accurate gain control.
- Independent thermal overload protection on each channel automatically protects amplifier and speakers.
- Single channel over-heat protection.

## 2. Specification

MODEL	A200.2 DRAGONFLY
20Hz 20KHz@0.1%THD, Stereo Mode	
8 ohms per channel(EIAJ)	65W
4 ohms per channel(EIAJ)	120W
4 ohms per channel(RMS)	60W (at THD 1%)
Controls	FRONT: Power switch, CH1 & CH2 LEVEL knobs
Input Sensitivity @4 ohms	-3dBu
	REAR: CH1 & CH2 LIMITER
Indicators (per channel)	Power-On: Green LED
	Clip: Red LED
	Limit: Yellow LED
	Signal: Green LED
Connectors of each channel	Input: COMBO connector
	Output: 1/4" TRS connector
Power Supply	190-240 Vac~50Hz / 95-120Vac~60Hz
Dimension	310*208.5*44mm
Net Weight	3.6Kg



TOTAL A200.2 PRE 1226	
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Drawn By: YZ	



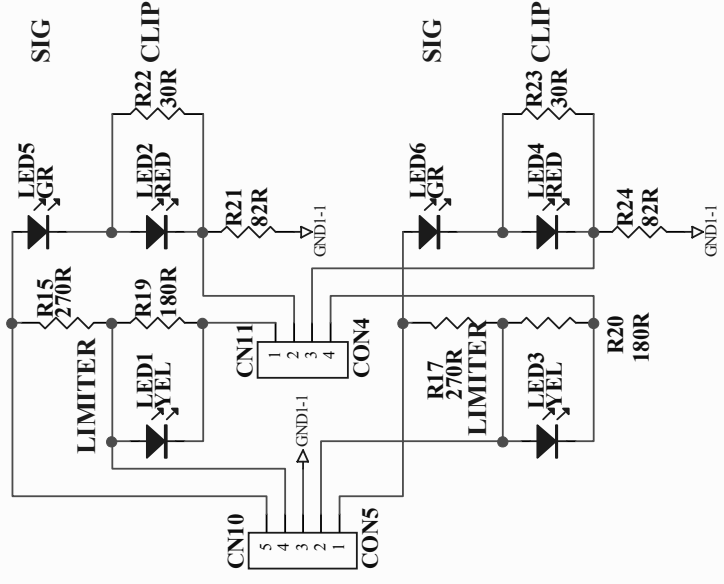
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DRAWN: YANGZHENG	CHECKED:	APPROVED:	DATED:
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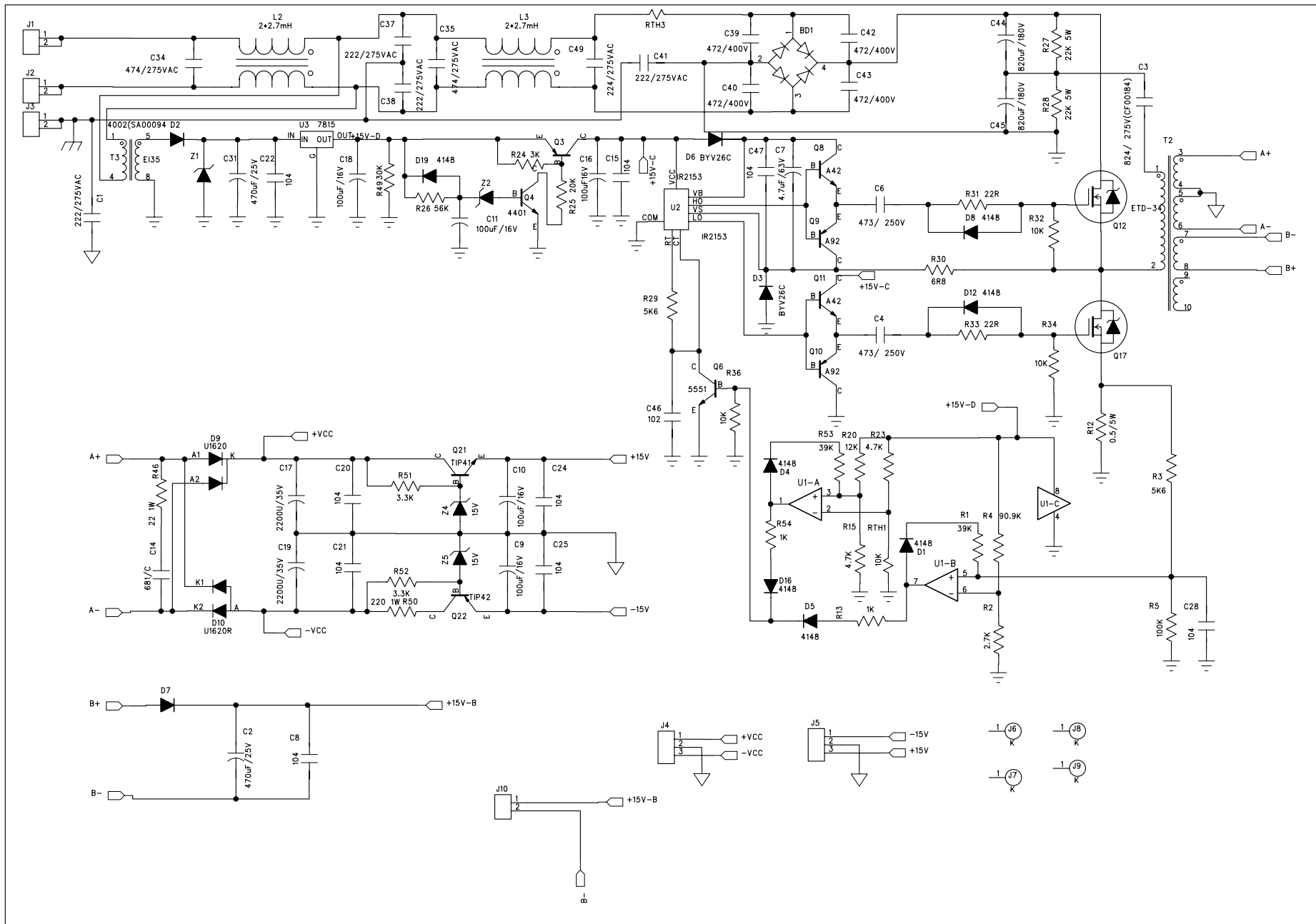


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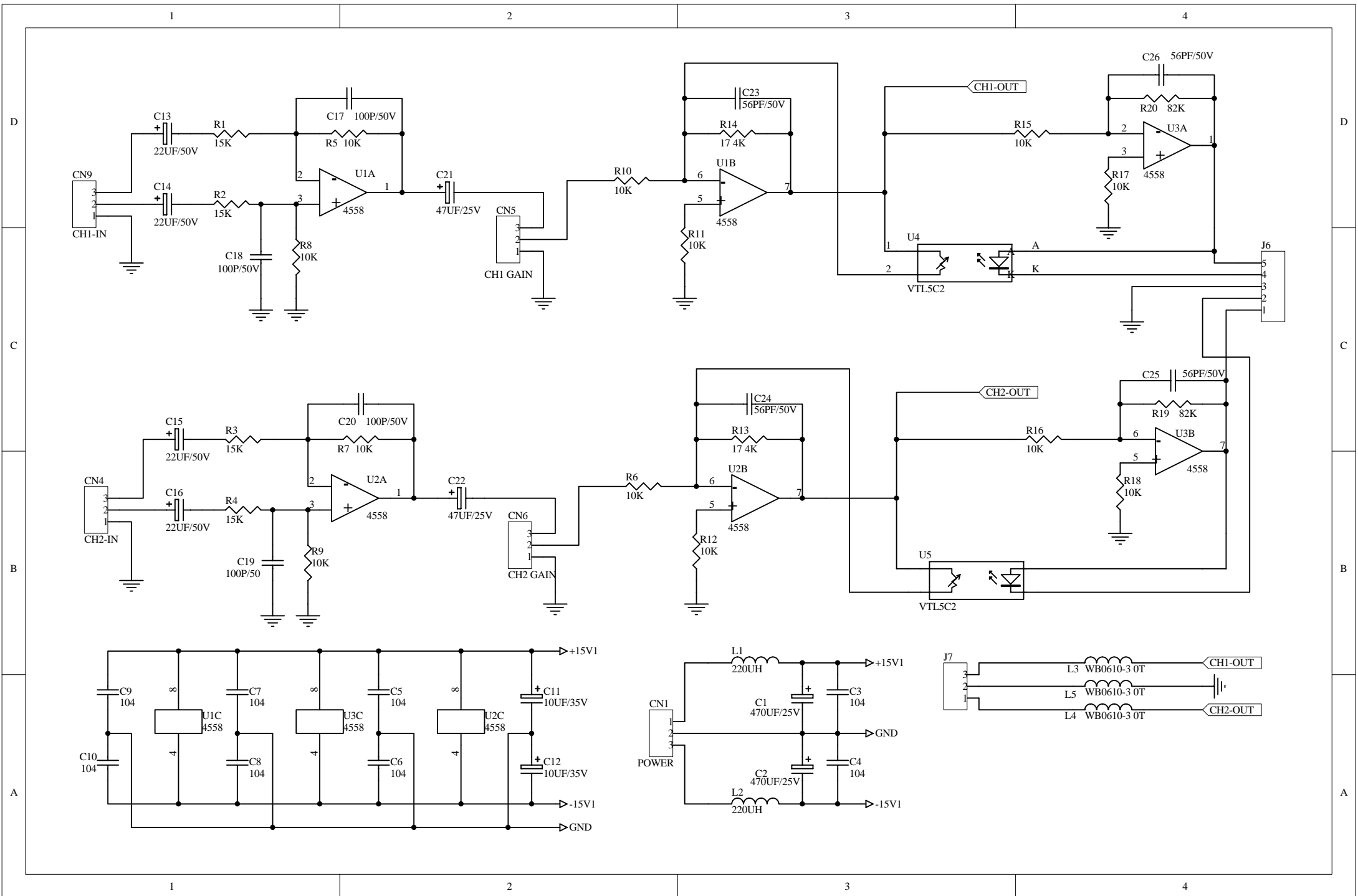
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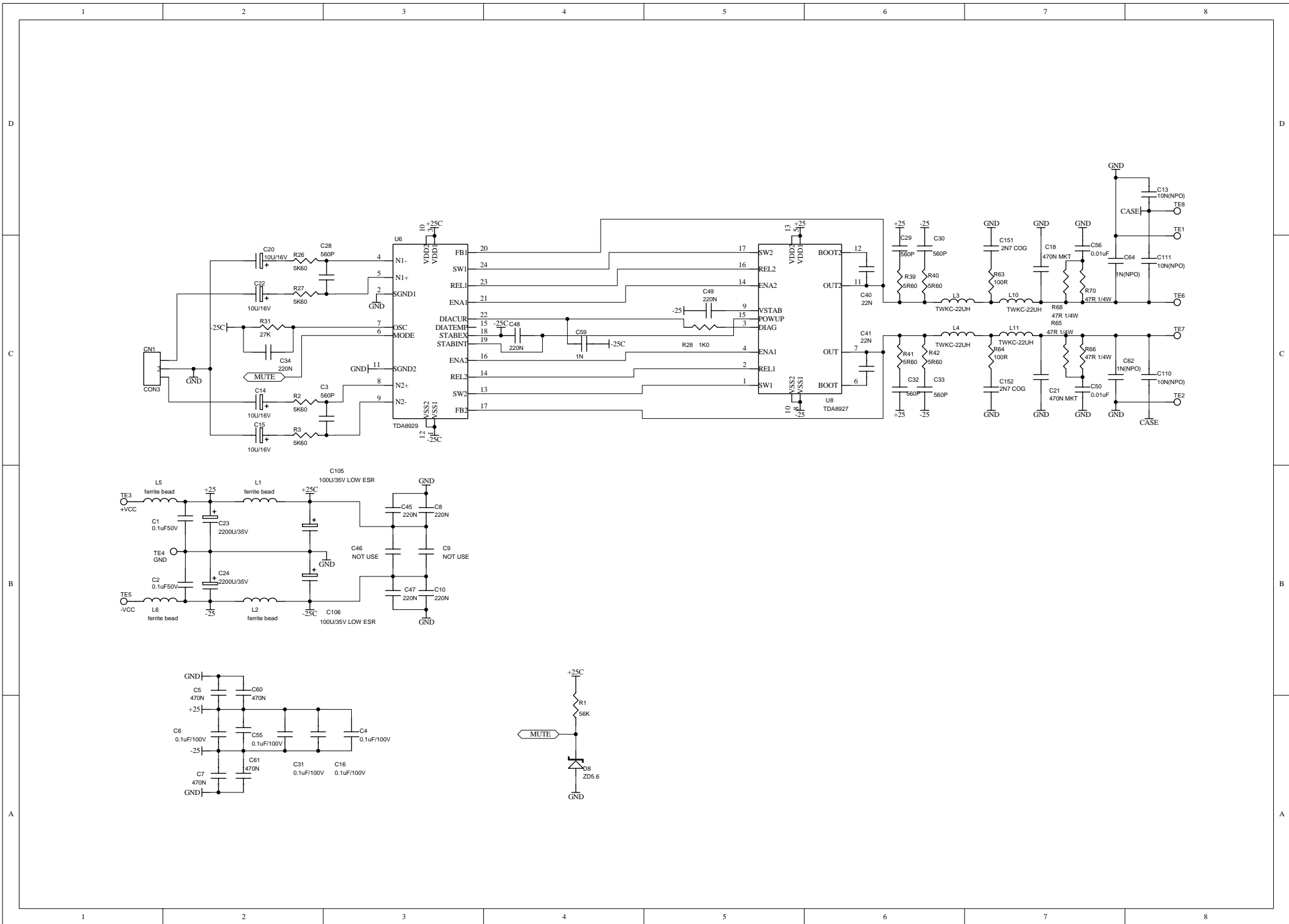
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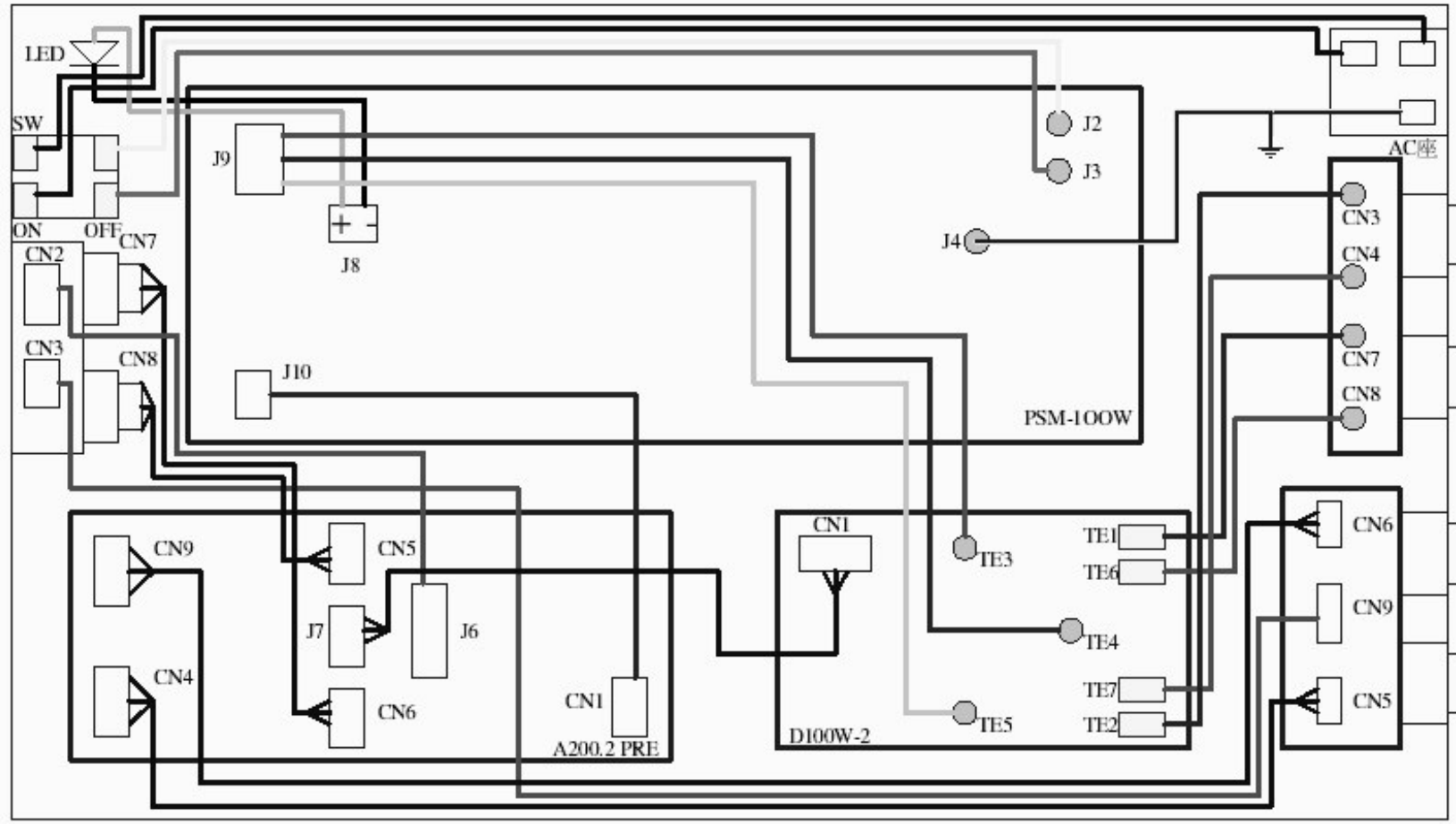
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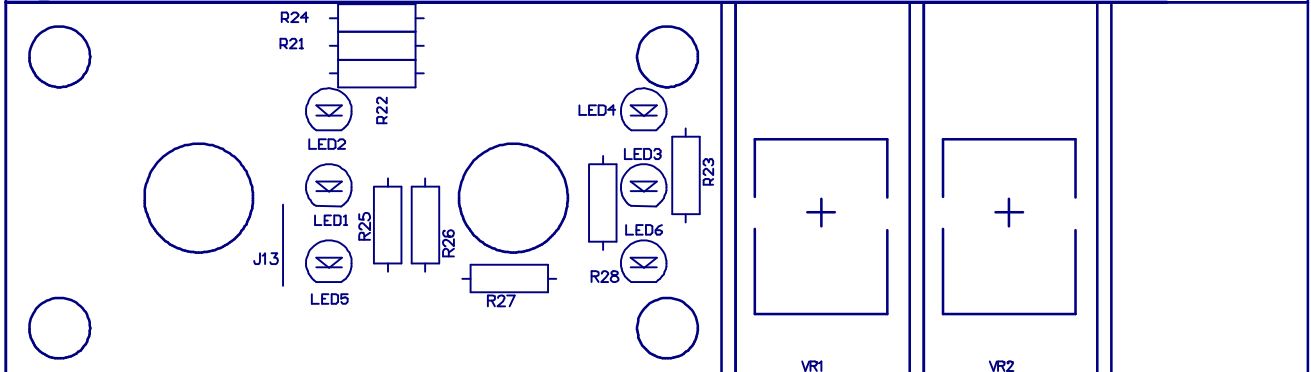
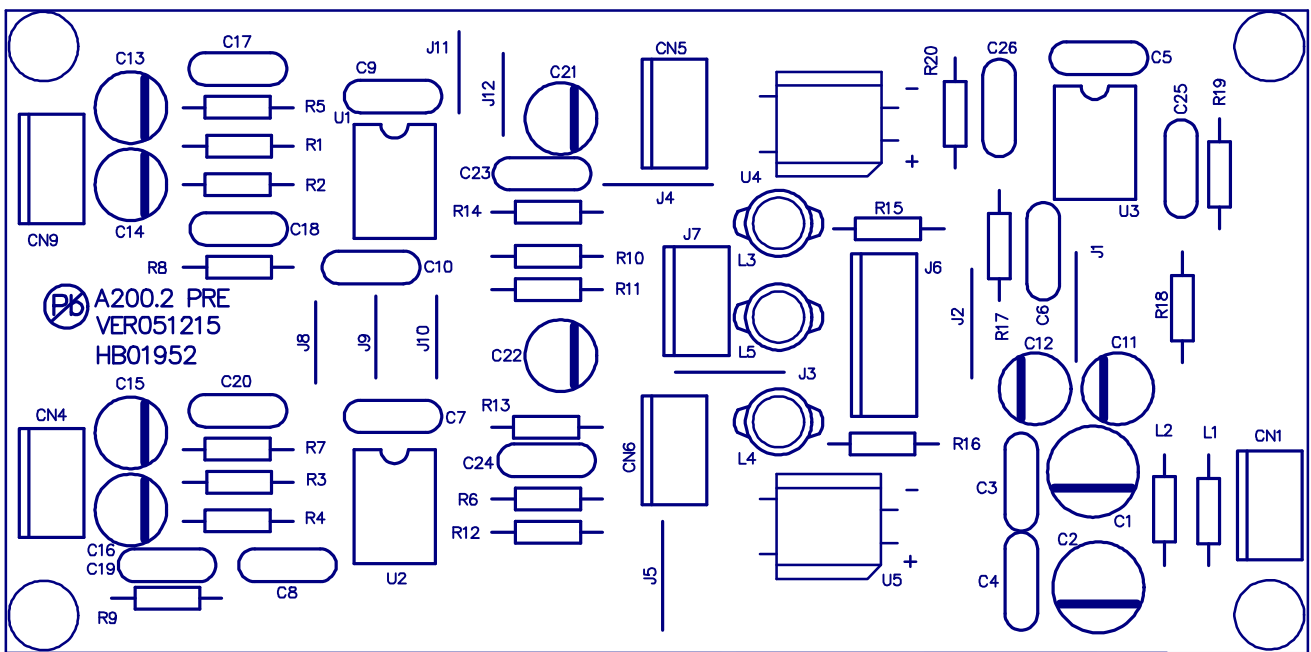
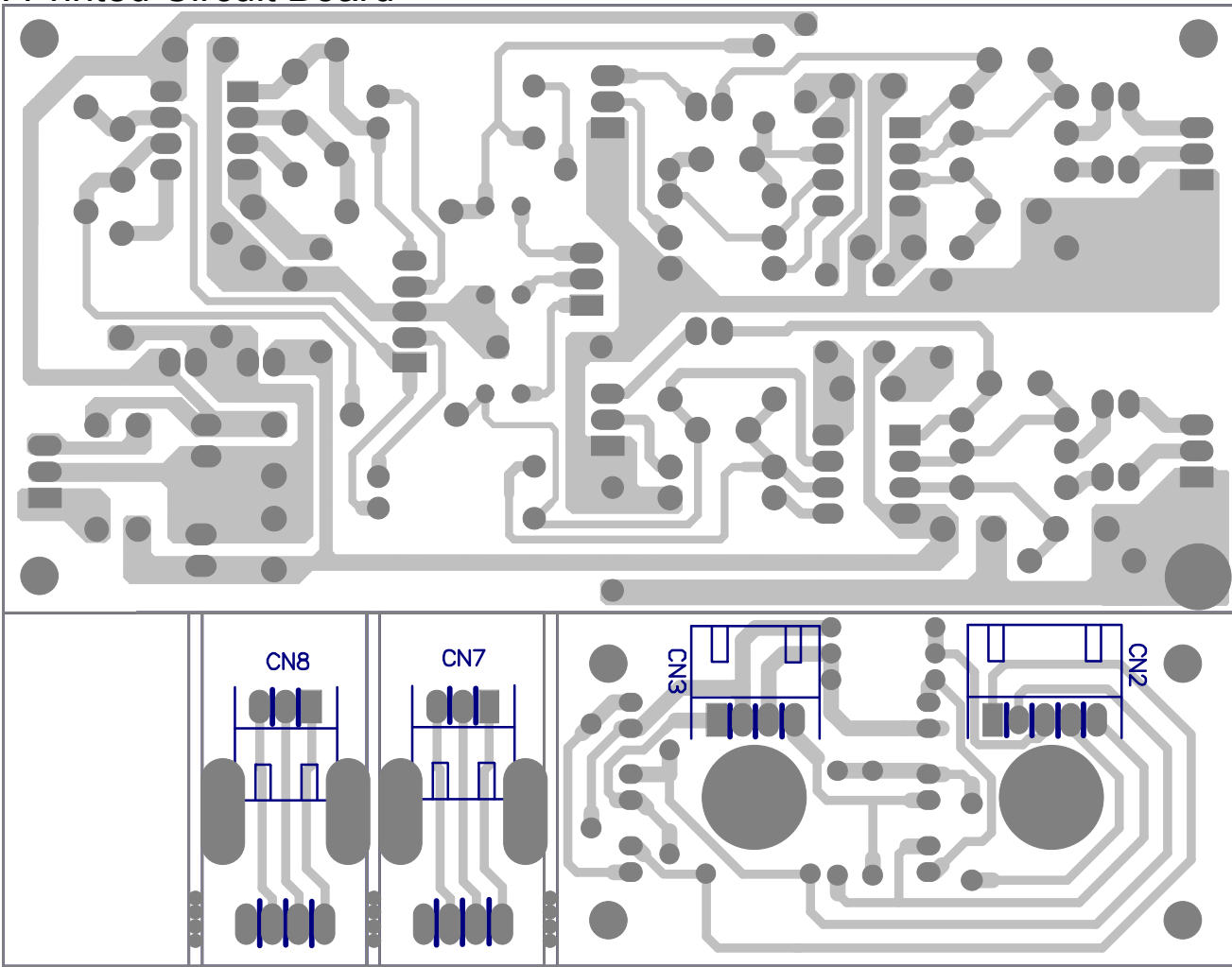
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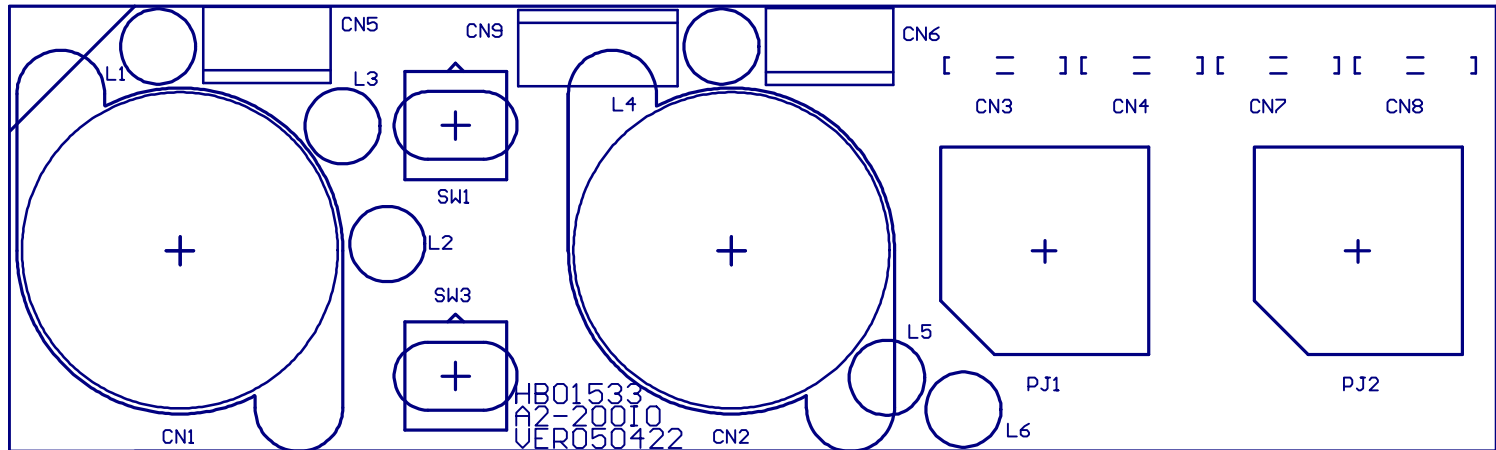
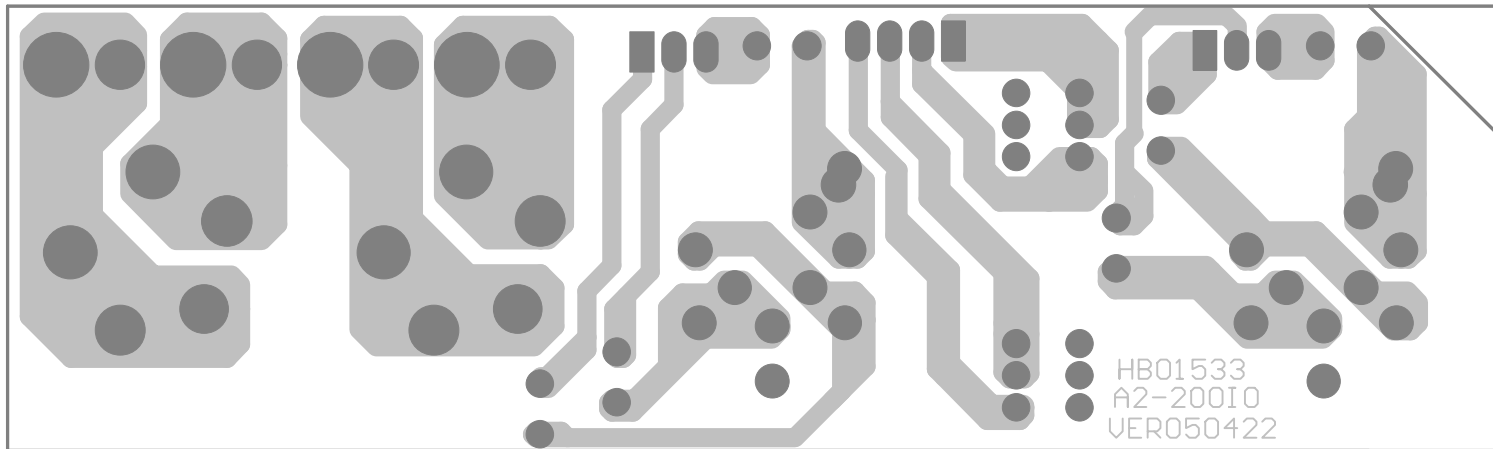
FRONT

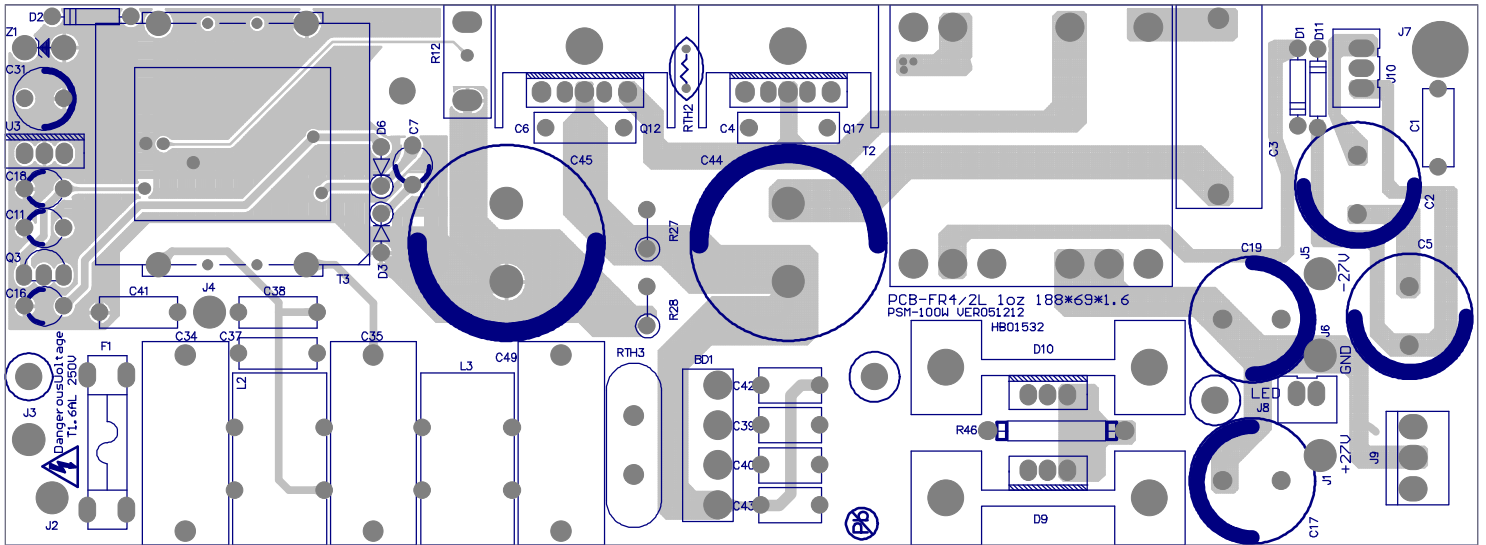
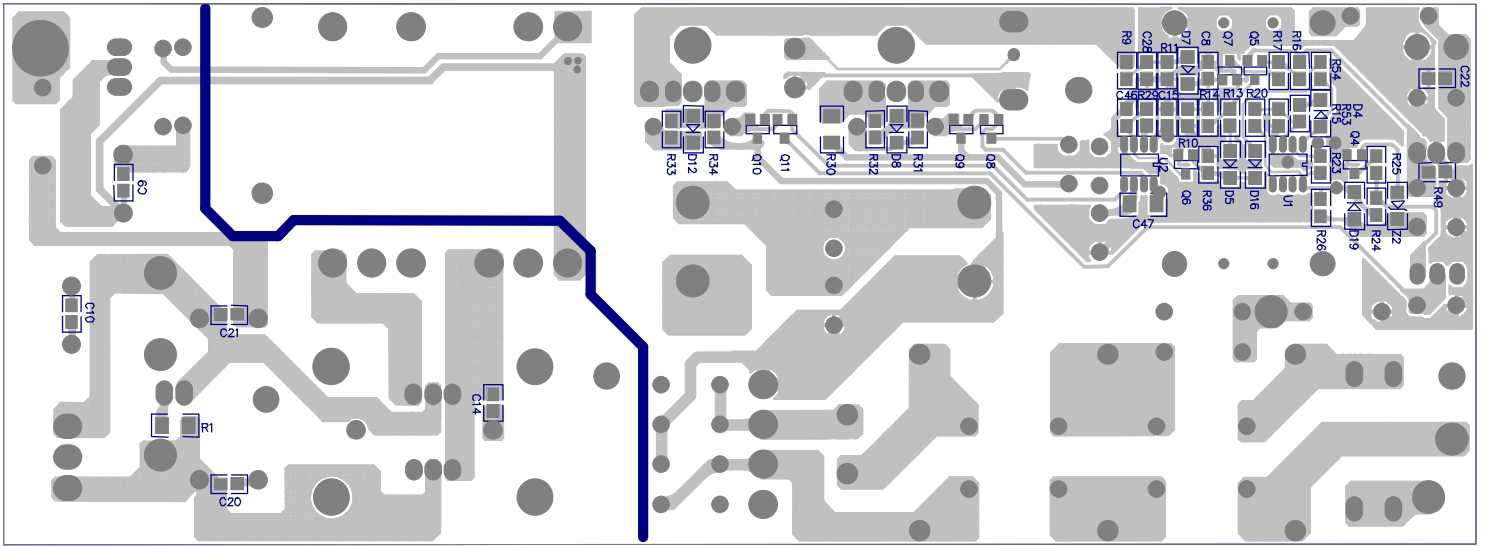


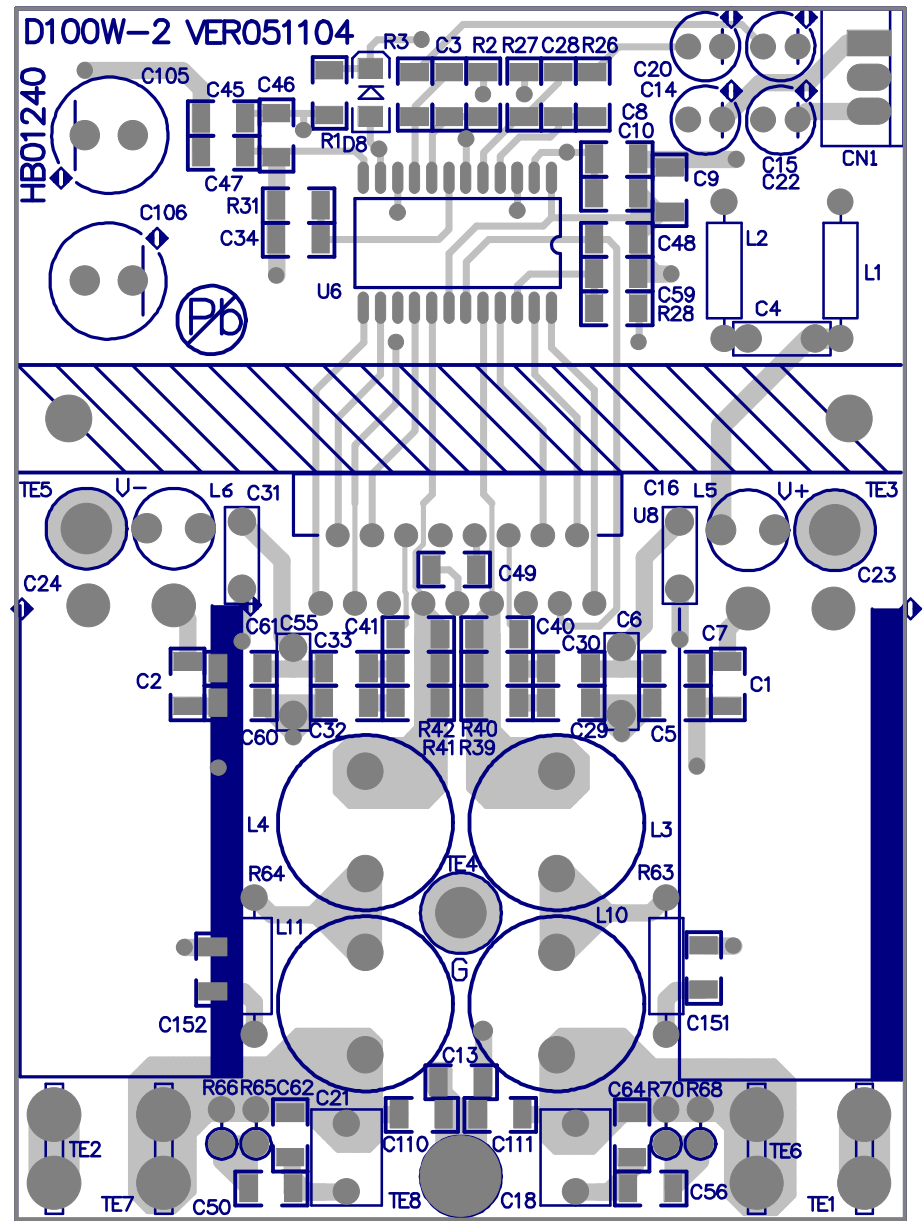
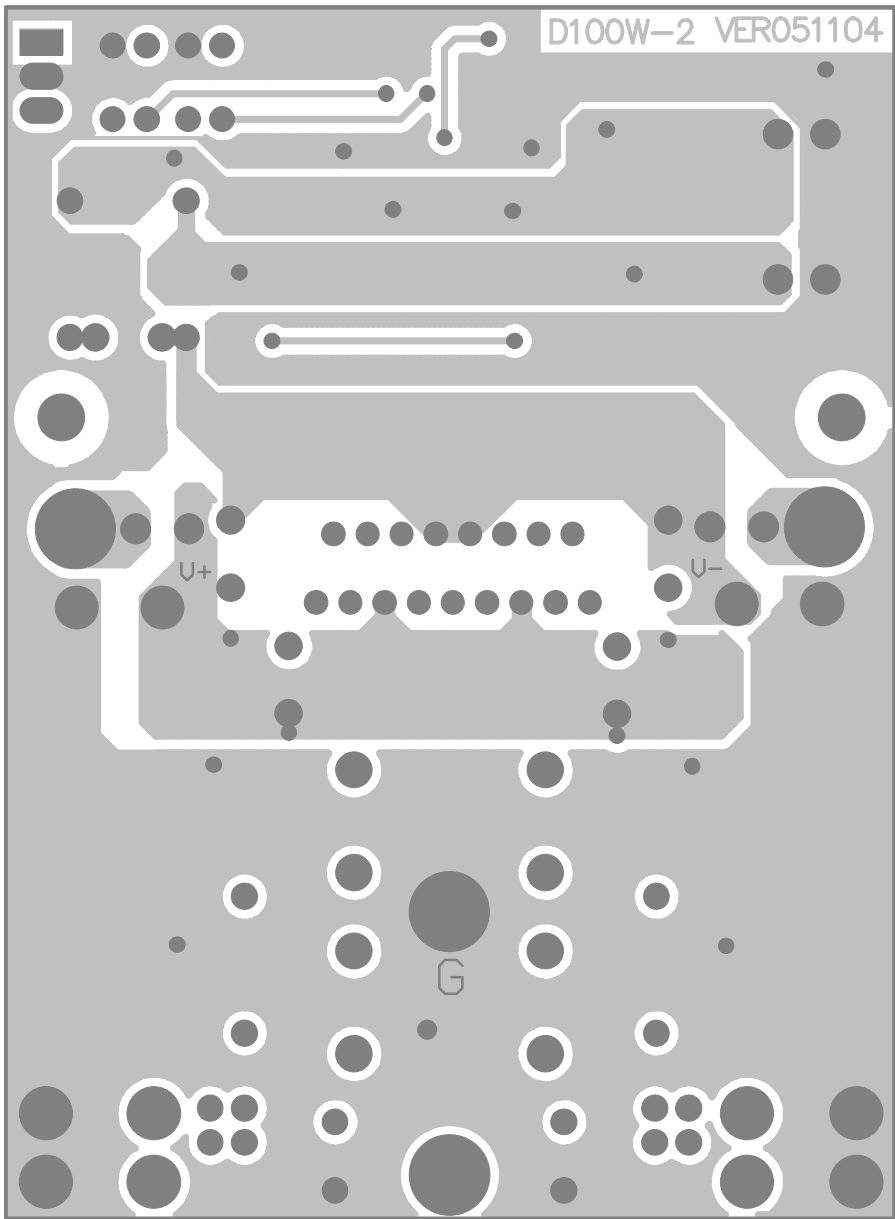
BACK

# 5. Printed Circuit Board



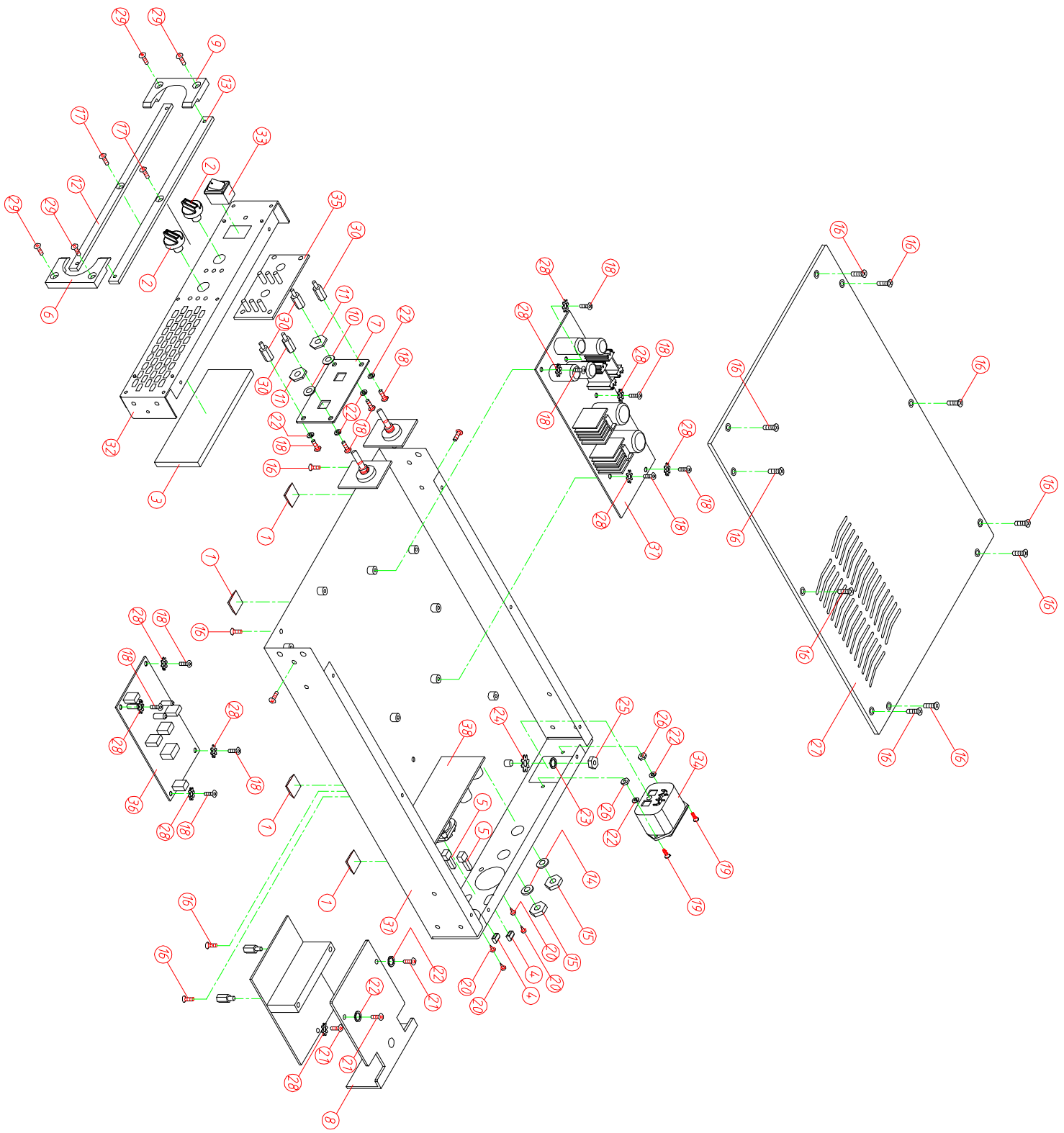






# 6. Exploded View & Mechanical Parts List

SEKARU





## Part List

Mechanical Parts List				
No.	Item NO.	Item Description	Specification	pcs
1	NI00498	self-adhesive cushion	12.7*7*6mm(SF-005)	4
2	NI00360	plastic knob	15*15mm	2
3	NI03382	net-PU (black)	A200.2 97*39*5_V1.0	1
4	NI01863	button-RS	5.5*W10*7.5 black	2
5	NI01862	button handle	5.5*5.5*12.8	2
6	MI02578	ZE-front panel-RS	A200.2 right_V1.0	1
7	MI02580	ZD-fixed board-A200.2-08	A200.2 65*34*1.2_V1.0	1
8	MI02581	ZD-heat sink-A200.2-09	A200.2 89.5*66*30.6_V1.0	1
9	MI02604	ZC-front panel	ALTO_V1.0	1
10	MF00004	washer-RS	9* 14*0.5t	2
11	ME00006	nut-RS	9	2
12	MJ00473	ZE-cushion	A200.2 top_V1.0	1
13	MJ00471	ZE-cushion	A200.2 bottom_V1.0	1
14	MF00061	washer	9.6* 13*0.5t	2
15	ME00060	MIC socket nut-HC00125 accessory	Hexagon JY-6351G-02-250	2
16	MG00025	black plated screw-pan head	M3*6	14
17	MG00281	Ni screw	M3*6	2
18	MG00041	black plated screw-pill	M3*6	13
19	MG00042	black plated screw-pan head	M3*10	2
20	MG00061	black plated-pill	M3*10	4
21	MG00162	Ni screw-pill	M3*8	3
22	MF00037	spring washer-Zn plated	3.2* 5.5*1t	8
23	MF00038	spring washer-Zn plated	4*φ7*1t	1
24	MF00048	shake proof washer-Zn plated	4*φ8*0.5t	1
25	ME00016	nut	4mm	1
26	ME00015	nut	3mm	2
27	MC00667	ZC-top cover	A200.2 DRAGONFLY_V1.0	1
28	MF00014	Shake proof washer-Zn plated	3* 6.5*0.5t	10
29	MG00578	Ni screw	M3*10*0.5PH_V1.0	4
30	MG00261	copper pillar	M3*8.5*0.5PH	4
31	MB03805	ZC-rear bottom panel	A200.2 DRAGONFLY_V1.1	1
32	MA00637	ZC-front panel-TL771	A200.2 DRAGONFLY_V1.1	1
33	HI00030	power switch-RS	4P R9D2KKFTOF(I/O)	1

34	HC00008	AC socket	3515 A TYPE(RF-2004-C-4.8)	1
35	HA00861	power cord-RS	LT-312+0.75*3C(H05VV-F) 6FT+LT-501	1
36	HK04126	K-PC board	P-D100W-2-DIP(A200.2)	1
37	HK06475	K-PC board	P-A200.2 PRE	1
38	HK06369	K-PC board	P-PSM-100W-DIP	1
39	HK04985	K-PC board	P-A2-200IO	1

## 7. Electrical Parts List

No.	Part No.	Description	Specification	Remark
1	MC00667	top cover	A200.2 DRAGONFLY_V1.0	
2	MC00668	top cover	A200.2	
3	MC00669	top cover	A200.2 1.2t*208.5*304_V1.4	
4	MJ00059	single light board	1.2*2135*1220 24.54kg	
5	MD00741	grille	A200.2 0.5t*84*123_V1.1	
6	MD00343	iron net	1M*134mm	
7	MB03805	chassis	A200.2 DRAGONFLY_V1.1	
8	MB03806	chassis	A200.2	
9	MB03807	chassis	A200.2_V1.0	
10	MJ00059	single light board	1.2*2135*1220 24.54kg	
11	ME00142	iron pillar	M3*7.2*0.5PH	
12	ME00001	screw pillar	M4*10*0.7PH	
13	ME00140	iron pillar	M3*8.2*0.5PH	
14	MA00637	panel	A200.2 DRAGONFLY_V1.1	
15	MA00645	panel	A200.2	
16	MA00662	panel	A200.2_V1.2	
17	MJ00059	single light board	1.2*2135*1220 24.54kg	
18	ME00184	iron pillar	A200.2 M3*11.2*0.5PH*φ5.8_V1.0	
19	MI02604	front board	A200.2 DRAGONFLY left ALTO_V1.0	
20	MI02577	front board	A200.2 left	
21	MI02576	front board	A200.2 left_V1.1	
22	MI03117	front board	6T*28*1M+5(1M/0.38KG)_V 1.0	
23	MI02578	front board	A200.2 right_V1.0	
24	MI02579	front board	A200.2 right_V1.1	
25	MI03117	front board	6T*28*1M+5(1M/0.38KG)_V 1.0	
26	MJ00471	cushion	A200.2 up_V1.0	
27	MJ00472	cushion	A200.2 up_V1.0	
28	MJ00057	AL plate-RS	3.0t*2000*1000mm 16.32kg	
29	MJ00473	cushion	A200.2 down_V1.0	
30	MJ00474	cushion	A200.2 down_V1.0	
31	MJ00057	AL plate-RS	3.0t*2000*1000mm 16.32kg	
32	MI02580	fixed board	A200.2 65*34*1.2_V1.0	
33	MJ00063	iron board	1.2*2135*1220 24.54kg	
34	NI03382	net	A200.2 97*39*5_V1.0	
35	ME00060	MIC jack	JY-6351G-02-250	
36	MF00061	MIC jack	φ9.6*φ13*0.5t	
37	NI00360	knob	φ15*15mm	
38	MG00061	screw	M3*10	
39	MG00042	screw	M3*10	
40	HI00030	power switch-RS	4P R9D2KKFT0F(SHOW 1/0)	
41	NI00261	sleeve	φ5*20mm	
42	NI00258	sleeve	φ5*1000mm	

No.	Part No.	Description	Specification	Remark
43	HA00861	power cord Europe 3P	LT-312+LT-501	
44	HA02710	single terminal wiring	100mm UL1015 14AWG	
45	MF00038	washer	φ4*φ7*1t	
46	MF00048	washer	φ4*φ8*0.5t	
47	NI01862	key	5.5*5.5*14.5_V1.1	
48	NI01863	key-RS	φ5.5*W10*7.5	
49	ME00016	color nut	4m/m	
50	NI00222	sleeve	φ1.5*30mm	
51	NI00221	sleeve	1.5φ*1000mm	
52	SA00052	L.E.D	φ3 round(green)long foot 26	
53	HA01388	row-wire connector wiring	2P 100	
54	HA03718	row-stand connector wiring	3P-3P 350mm UL2547 28AWG	
55	HA03716	row-stand connector wiring	3P-3P 150mm UL2547 28AWG	
56	HA03717	row-stand connector wiring	3P-3P 200mm UL2854 28AWG	
57	HA03715	row-stand connector wiring	5P-5P 200mm UL1007 26AWG red/white	
58	HA03495	wire	4P-4P 500mm UL1007 28AWG	
59	MI02581	heat-sink	A200.2 89.5*66*30.6_V1.0	
60	MJ00055	AL plate	2*2000*1000 10.88kg	
61	MF00037	washer	φ3.2*φ5.5*1t	
62	MG00261	copper pillar	M3*8.5*0.5PH	
63	MF00014	washer	φ3*φ6.5*0.5t	
64	MG00041	screw	M3*6	
65	MG00025	screw	M3*6	
66	MG00281	screw	M3*6	
67	MG00578	screw	M3*10*0.5PH_V1.0	
68	MG00162	screw	M3*8	
69	NI00498	self-adhere foot cushion	12.7*7*6mm(SF-005)	
70	NA00137	clip-chain bag	5*7	
71	HJ00006	dessicant	30g	
72	NA00135	PE bag	0.05t*610*500mm	
73	NB03380	gift carton	A200.2 ALTO_V1.0	
74	NB03373	cushion	A200.2_V1.0	
75	NB03376	carton	A200.2 ALTO_V1.1	
76	NE11347	label	ALTO PI	
77	NH00334	cone paper	0.040*1m	
78	NF00061	assurance card	ALTO	
79	NA00279	clip-chain bag	0.04t*100*150mm_V1.0	
80	AD00012	twin adhesive	90*120mm_V1.0	
81	ND00150	silicone sleeve	φ12*150mm	
82	ND00026	silicone sleeve	100*20	
83	NI00218	cable tie	ALT-102SB	
84	ND00145	silicone sleeve	φ12*50mm	

No.	Part No.	Description	Specification	Remark
85	ND00026	silicone sleeve	100*20	
86	ND00547	silicone sleeve	φ4*150mm	
87	ND00196	silicone sleeve	φ4*1000mm	
88	ME00015	color nut	3m/m	
89	HK04985	PC board	P-A2-200IO	
90	HB01533	PCB	A2-200IO_VER050422	
91	HC00077	connector(male)	3P 2.5mm 180°	CN5,CN6
92	HC00078	connector(male)	4P 2.5mm 180°	CN9
93	HC00582	balance MIC jack	NCJ6FI-V (NEUTRIK)	CN1,CN2
94	HI00162	push-button switch	2 paragraphs 6p PS-22E8552L	SW1,SW3
95	HC00371	MIC jack	SCJ-0658-1-Y	PJ1,PJ2
96	HA03720	single terminal wiring	240mm UL1015 18AWG red	CN7
97	HA03721	single terminal wiring	240mm UL1015 18AWG black	CN8
98	CN00149	inductance	WB0610-3.0T	L1,L2,L3,L4,L5,L6
99	AC00179	tin without lead	M705E Sn 3Ag-0.5Cu	
100	HA02324	single terminal wiring	160mm UL1015 18AWG black	CN4
101	HA03661	single terminal wiring	80mm UL1015 14AWG write	CN3
102	HK04126	PC board	P-D100W-2-DIP(A200.2)	
103	CB00021	electrolytic capacitor	10uF/16V φ4*5mm	C20,C22,C14,C15
104	CB00162	electrolytic capacitor	100uF/35V 105°C TL φ8*11mm	C105,C106
105	CB00164	electrolytic capacitor	2200uF/35V 105°C TL φ16*32mm	C23,C24
106	CF00042	metal-film capacitor MSC	0.47uF/63V 5% CASE02	C18,C21
107	CN00045	fixed inductance	TWLC-220K	L3,L4,L10,L11
108	CN00069	inductance-EMI SUPPRESSOR	TB36-13-850485	L1,L2
109	ME00015	color nut	3m/m	
110	MF00132	MIC jack	φ3*φ8*0.8t_v1.0	
111	MF00030	washer	φ3.5*φ8*0.8t_V1.0	
112	MJ00067	single light board	0.8t*2135*1220mm 18.69kg	
113	MF00037	washer	φ3.2*φ5.5*1t	
114	MG00357	screw	M3*18	
115	MI02112	heat sink	66*24*8mm D100W-2_V1.0	
116	NI02597	knob	3M#1350Y 10mm*66M	
117	NC00027	insulator	0.2t*63.5*18mm	
118	HK04125	PC board	P-D100W-2-SMD	
119	HB01240	PCB	D100W-2(2*2)_VER051104	
120	CI00141	SMD ceramic capacitor 1206	0.0027uF/50V X7R ±10%	C151,C152
121	CI00042	SMD ceramic capacitor 1206	0.001uF/50V NPO	C59,C62,C64,C110,C111
122	CI00045	SMD ceramic capacitor 1206	0.022uF/50V X7R ±5%	C40,C41
123	CI00134	SMD ceramic capacitor 1206	0.01uF/50V NPO ±5%	C13,C1,C2
124	CI00136	SMD ceramic capacitor 1206	560PF/50V NPO ±5%	C28,C29,C30,C32,C33,C3
125	CI00138	SMD ceramic capacitor 1206	0.22uF/50V X7R ±10%	C34,C48,C49,C50,C56
126	RD00245	SMD precise resistor 1/4W	1.00KΩ ±1% 1206	R28

No.	Part No.	Description	Specification	Remark
127	RD00249	SMD precise resistor 1/4W	5.60K $\Omega$ $\pm$ 1% 1206	R2,R3,R26,R27
128	RD00417	SMD precise resistor 1/4W	27.0K $\Omega$ $\pm$ 1% 1206	R31
129	RD00429	SMD precise resistor 1/4W	5.60 $\Omega$ $\pm$ 1% 1206	R39,R40,R41,R42
130	RD00433	SMD precise resistor 1/4W	56.0K $\Omega$ $\pm$ 1% 1206	R1
131	SE00017	SMD Zener diode	1/2W 5.6V(RLZ5.6B) LL-34	D8
132	SG00293	integrated circuit	ADU29_V1.1	U6
133	SG00150	SMD integrated circuit	TDA8929T	
134	CI00154	SMD ceramic capacitor 1206	0.1 $\mu$ F/100V X7R $\pm$ 10%	C6,C55,C5,C7,C60,C61,C8,C10,C45,C47
135	AE00449	solder material without lead	9308/Sn Ag Cu	
136	HC00324	connect terminal	6.5m/m (PC250)	TE1,TE2,TE6,TE7
137	MG00461	copper pillar	M3*7.3*0.5PH	
138	SD00257	integrated circuit	ADU27_V1.1	U8
139	SD00148	integrated circuit	TDA8927J/N1	
140	AC00179	tin without lead	M705E Sn 3Ag-0.5Cu	
141	CN00149	inductance	WB0610-3.0T	L5,L6
142	CF00031	metal-film capacitor	0.1 $\mu$ F/100V	C31,C16,C4
143	RA00184	fixed resistor 1/4W	100 $\Omega$ M type	R63,R64
144	RA00173	fixed resistor 1/4W	47 $\Omega$ F type	R65,R66,R68,R70
145	HA02160	single terminal wiring	UL1617 18AWG 330mm blue	
146	ME00006	nut	9 $\phi$	
147	MF00004	washer	$\phi$ 9* $\phi$ 14*0.5t	
148	NF02160	instruction	A200.2 ALTO_V1.3	
149	NH00149	paper	889*640mm	
150	NE13783	label	A200.2_V1.0	
151	NH00334	cone paper	0.040*1m	
152	HD00008	glass tube fuse	1A 250V $\phi$ 5.2*20mm CSA/S/UL/VDE	
153	HA03197	single terminal wiring	260mm UL1015 18AWG	
154	HA03196	single terminal wiring	260mm UL1015 18AWG	
155	HK06369	PC board	P-PSM-100W-DIP	
156	TC00265	transformer	XPK35P2001501A1_240V	T3
157	RA01454	chassis bracket 5W	0.15 $\Omega$ $\pm$ 5% SQP	R12
158	RA01246	metal-oxide-film resistor 3W	22K $\pm$ 5% P type	R27,R28
159	RA00007	metal-oxide-film resistor 1W	22 $\Omega$ P type	R46
160	SD00077	integrated circuit	L7815CV(TO-220)(ST)(MOROCCO)	U3
161	SA00165	Zener diode	5W 22V 1N5358A	Z1
162	RH00012	thermistors	10 $\Omega$ S364(B57364-S100-M)	RTH3
163	RH00008	thermistors	10K $\Omega$ (TDC05C310L)	RTH2
164	SA00130	diode	1A/600V/35ns BYV26C	D1,D3,D6,D11
165	SA00094	rectifier diode	1N4002/100V	D2
166	SA00005	bridge rectifier	4A/400V RS405	BD1
167	SB00110	transistor	STW9NB80	Q12,Q17
168	NI02249	plastic washer	TW-1(TO-220)	D9,D10

No.	Part No.	Description	Specification	Remark
169	ND00175	silicone sleeve	φ1*8mm	
170	ND00171	silicone sleeve	φ1*1000mm	
171	NC00004	silicone insulator	TO-3P3 22*28 square (big)	Q12,Q17
172	NC00005	silicone insulator	TO-220 square type	D9,D10
173	MI00257	heat-sink	25*34.6*12*1.5 DX26	D9,D10
174	MG00167	screw	M3*10	Q12,Q10,Q9,Q17
175	MF00037	washer	φ3.2*φ5.5*1t	
176	ME00015	color nut	3m/m	
177	MI00178	heat-sink piece	MB217*25m/m*1PIN	Q12,Q17
178	HC00064	FUSE holder	JEF-503B (5.2mm)	F1,F1
179	HC00172	connector(male)	3P 3.96mm 180°	J9
180	HC00077	connector(male)	3P 2.5mm 180°	J10
181	HC00076	connector(male)	2P 2.5mm 180°	J8
182	HD00009	glass tube fuse	1.6A 250V φ5.2*20mm CSA/S/UL/VDE	F1
183	CG00056	X2 capacitor	0.47uF/275VAC	C34,C35
184	CB00142	electrolytic capacitor	4.7uF/63V φ5*11mm	C7
185	CB00128	electrolytic capacitor	2200uF/35V φ16*26mm	C2,C5,C17,C19
186	CB00132	electrolytic capacitor	330uF/25V 105 LZ φ8*15mm	C31
187	CF00027	metal-film capacitor MEC	0.047uF/250V 5% SIZE=C1	C4,C6
188	HA01174	single terminal wiring CF:W146	80 green/yellow	J4
189	CF00184	metal-film capacitor	0.82uF/275V 10% CASE01 4mm	C3
190	CG00029	high-voltage capacitor	4700PF/2000V Z5V+80%-20%	C39,C40,C42,C43
191	CG00023	X1/Y1 capacitor	0.0022uF/250VAC Y5U	C41,C1
192	CG00025	Y2 capacitor	0.0022uF/275VAC (PHE 842MA4220M)	C37,C38
193	CG00026	X2 capacitor	0.22uF/275VAC (PHE 840/830)PH22.5mm	C49
194	CB00167	electrolytic capacitor	100uF/16V φ5*11mm	C11,C16,C18
195	AC00179	tin without lead	M705E Sn 3Ag-0.5Cu	
196	SA00273	diode	MUR1620CTRG(TO220)/(ON)	D10
197	SA00274	diode	MUR1620CTG(TO220)/(ON)	D9
198	SB00207	transistor	2SB647AC(TO-92)/(RENESAS)	Q3
199	TC00305	transformer	ETD34	T2
200	CN00160	inductance	2.7mH φ0.7*28.5T	L2,L3
201	HK06370	PC board	P-PSM-100W-SMD	
202	RD00024	SMD fixed resistor 1/8W	3KΩ ±5% 0805	R24
203	RD00156	SMD fixed resistor 1/4W	6.8Ω ±5% 1206	R30
204	RD00018	SMD fixed resistor 1/8W	1.0KΩ ±5% 0805	R54
205	RD00041	SMD fixed resistor 1/8W	30KΩ ±5% 0805	R49
206	RD00033	SMD fixed resistor 1/8W	12KΩ ±5% 0805	R20
207	RD00037	SMD fixed resistor 1/8W	20KΩ ±5% 0805	R25
208	RD00032	SMD fixed resistor 1/8W	10KΩ ±5% 0805	R16,R36,R32,R34
209	RD00038	SMD fixed resistor 1/8W	22KΩ ±5% 0805	R9,R13,R14,R17
210	RD00049	SMD fixed resistor 1/8W	100KΩ ±5% 0805	R11

No.	Part No.	Description	Specification	Remark
211	RD00043	SMD fixed resistor 1/8W	39KΩ ±5% 0805	R53
212	RD00027	SMD fixed resistor 1/8W	4.7KΩ ±5% 0805	R15,R23
213	RD00054	SMD fixed resistor 1/8W	470KΩ ±5% 0805	R10
214	RD00046	SMD fixed resistor 1/8W	56KΩ ±5% 0805	R26
215	SE00011	SMD rectifier diode	RLS4148 0.5A (LL-34)	D4,D5,D7,D8,D12,D16,D19
216	SE00020	SMD Zener diode	1/2W 7.5V	Z2
217	SG00033	SMD integrated circuit	LM358M;LM358DT(SO-8);NJM2904M	U1
218	RD00500	SMD precise resistor 1/8W	5.60KΩ ±1% 0805	R29
219	RD00523	SMD fixed resistor 1/10W	22Ω ±5% 0805	R31,R33
220	RD00142	SMD fixed resistor 1/4W	10KΩ ±5% 1206	R1
221	CI00100	SMD ceramic capacitor 0805	0.1uF/50V X7R ±10%	C9,C10,C15,C20,C21,C22
222	CI00021	SMD ceramic capacitor 0805	0.001uF/50V NPO ±5%	C46
223	CI00020	SMD ceramic capacitor 0805	680PF/50V NPO	C14
224	CI00146	SMD ceramic capacitor 0805	0.22uF/50V X7R ±10%	C8
225	CI00154	SMD ceramic capacitor 1206	0.1uF/100V X7R ±10%	C47
226	AC00179	tin without lead	M705E Sn 3Ag-0.5Cu	
227	HB01532	PCB	PSM-100W VER051212	
228	SG00429	integrated circuit	IR2153SPbF(SOIC8)/(IR)	U2
229	SF00080	transistor	PMBTA42(SOT-23)/(PHI)	Q8,Q11
230	SF00079	transistor	PMBTA92(SOT-23)/(PHI)	Q9,Q10
231	SF00082	transistor	MMBT5401LT1G(SOT-23)/(ON)	Q5
232	SF00081	transistor	MMBT4401LT1G(SOT-23)/(ON)	Q4
233	SF00083	transistor	MMBT5551LT1G(SOT-23)/(ON)	Q6,Q7
234	CB00321	electrolytic capacitor-RS	470uF/180V φ25*25mm	C44,C45
235	HK06475	PC board	P-A200.2 PRE	
236	HA01925	jump	10mm	J1,J2,J3,J4,J5
237	HA02249	wire	φ0.6_Ti-plated	
238	HA01918	jump	4mm	L5
239	HA02441	jump	7.5mm	J8,J9,J10,J11,J12,J13
240	HA02249	wire	φ0.6_Tin-plated	
241	HC00077	connector(male)	3P 2.5mm 180°	CN1,CN4,CN5,CN6,CN9,J7
242	HC00079	connector(male)	5P 2.5mm 180°	J6
243	CA00023	ceramic capacitor	100PF SL	C17,C18,C19,C20
244	CA00052	ceramic capacitor	0.1uF SL	C3,C4,C5,C6,C7,C8,C9,C10
245	CA00018	ceramic capacitor	56PF NPO foot distance 5mm	C23,C24,C25,C26
246	CB00112	electrolytic capacitor	10uF/35V 105 φ4*7mm	C11,C12
247	CB00030	electrolytic capacitor	22uF/50V φ6*5mm	C13,C14,C15,C16
248	CB00065	electrolytic capacitor	470uF/25V φ10*16mm	C1,C2
249	CB00039	electrolytic capacitor	47uF/25V φ5*11mm	C21,C22
250	SD00130	integrated circuit	NJM4580D	U1,U2,U3
251	AC00179	tin without lead	M705E Sn 3Ag-0.5Cu	
252	CN00038	inductance	220uH(LGA0307-221K)	L1,L2



No.	Part No.	Description	Specification	Remark
253	RA00515	precise resistor 1/4W	10.0KΩ M type	R5,R6,R7,R8,R9,R10,R11,R12,R15, R16,R17,R18
254	RA00524	precise resistor 1/4W	15.0kΩ M type	R1,R2,R3,R4
255	RA00528	precise resistor 1/4W	17.4KΩ M type	R13,R14
256	RA01108	precise resistor 1/4W	82.0KΩ M type	R19,R20
257	HK02231	Photodiode	P-photosensitive resistance+φ5LLED	U4,U5
258	RH00020	photosensitive resistance	VT90N1	
259	SA00201	L.E.D	φ5 red(LI3330/A)	
260	NI02779	sleeve	φ9*30mm	
261	NI00274	sleeve	φ9*1000mm	
262	CN00149	inductance	WB0610-3.0T	L3,L4
263	HB01952	PCB-RS	A200.2 PRE_VER051215	
264	RC00209	potentiometer	A10KΩ RV110-40E1-225A-A14	VR1,VR2
265	RA00168	fixed resistor 1/4W	30Ω M type	R22,R23
266	RA00181	fixed resistor 1/4W	82Ω M type	R21,R24
267	RA00191	fixed resistor 1/4W	180Ω M type	R25,R28
268	RA00196	fixed resistor 1/4W	270Ω M type	R26,R27
269	NI01781	LED spacer support	LEDS-8 8mm	LED1,LED2,LED3,LED4,LED5,LED6
270	HC00067	connector(male)	4P 2.5mm 90°	CN3
271	HC00069	connector(male)	5P 2.5mm 90°	CN2
272	HC00066	connector(male)	3P 2.5mm 90°	CN7,CN8
273	SA00054	L.E.D	3m/m round(yellow)long foot 26	LED1,LED3
274	SA00052	L.E.D	φ3 round(green)long foot 26	LED5,LED6
275	SA00053	L.E.D	φ3 round(red)long foot 26mm	LED2,LED4
276	HC00008	AC socket	3515 A TYPE(RF-2004-C-4.8)	
277	HA01970	header wiring	3P-3P 200mm black	
278	HA03942	wire	3P 350mm UL1015 18AWG orange/black/red	