

Service Manual

Model: MC500.4



www.altoproaudio.com

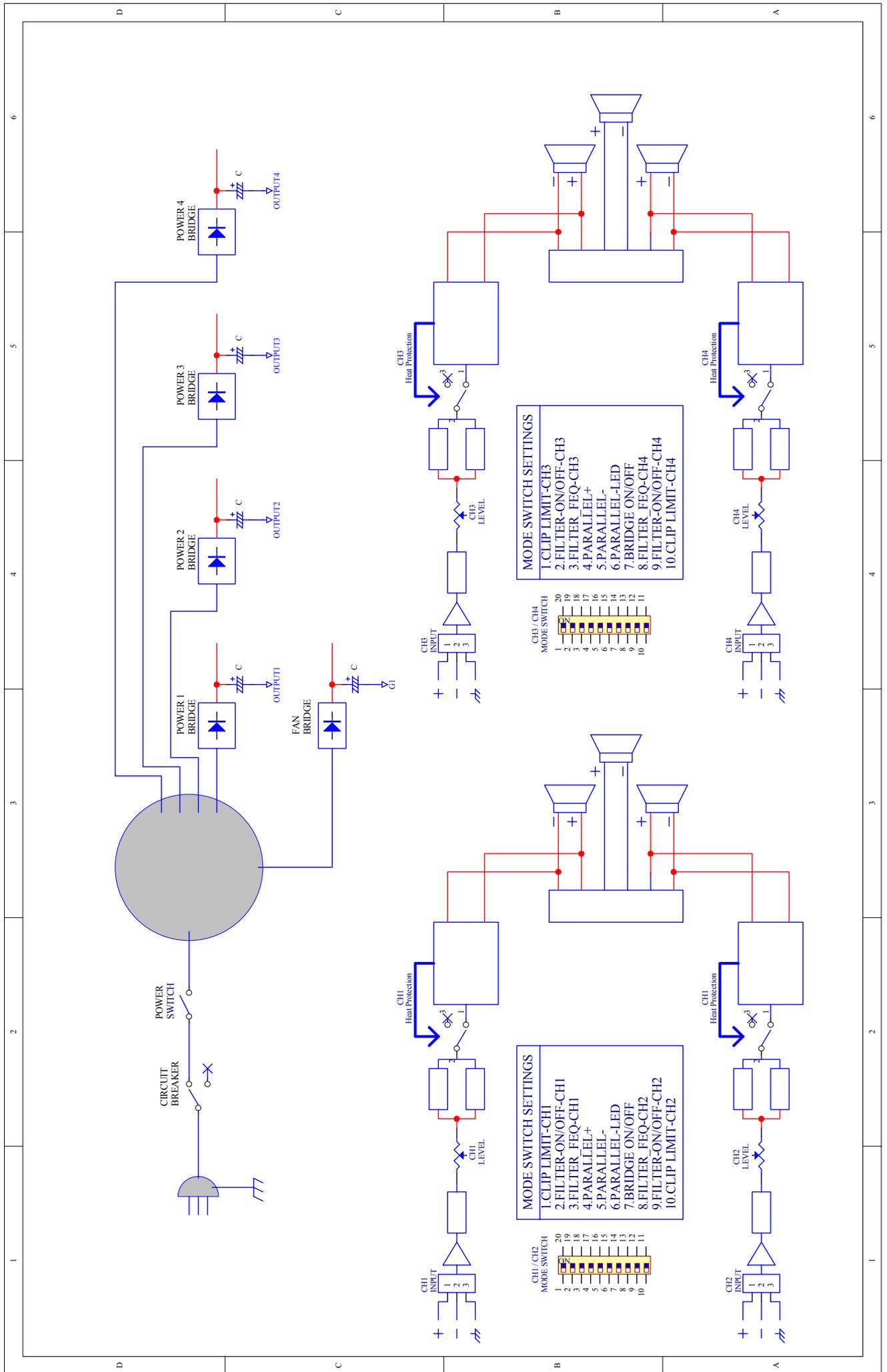
Version: .1.0

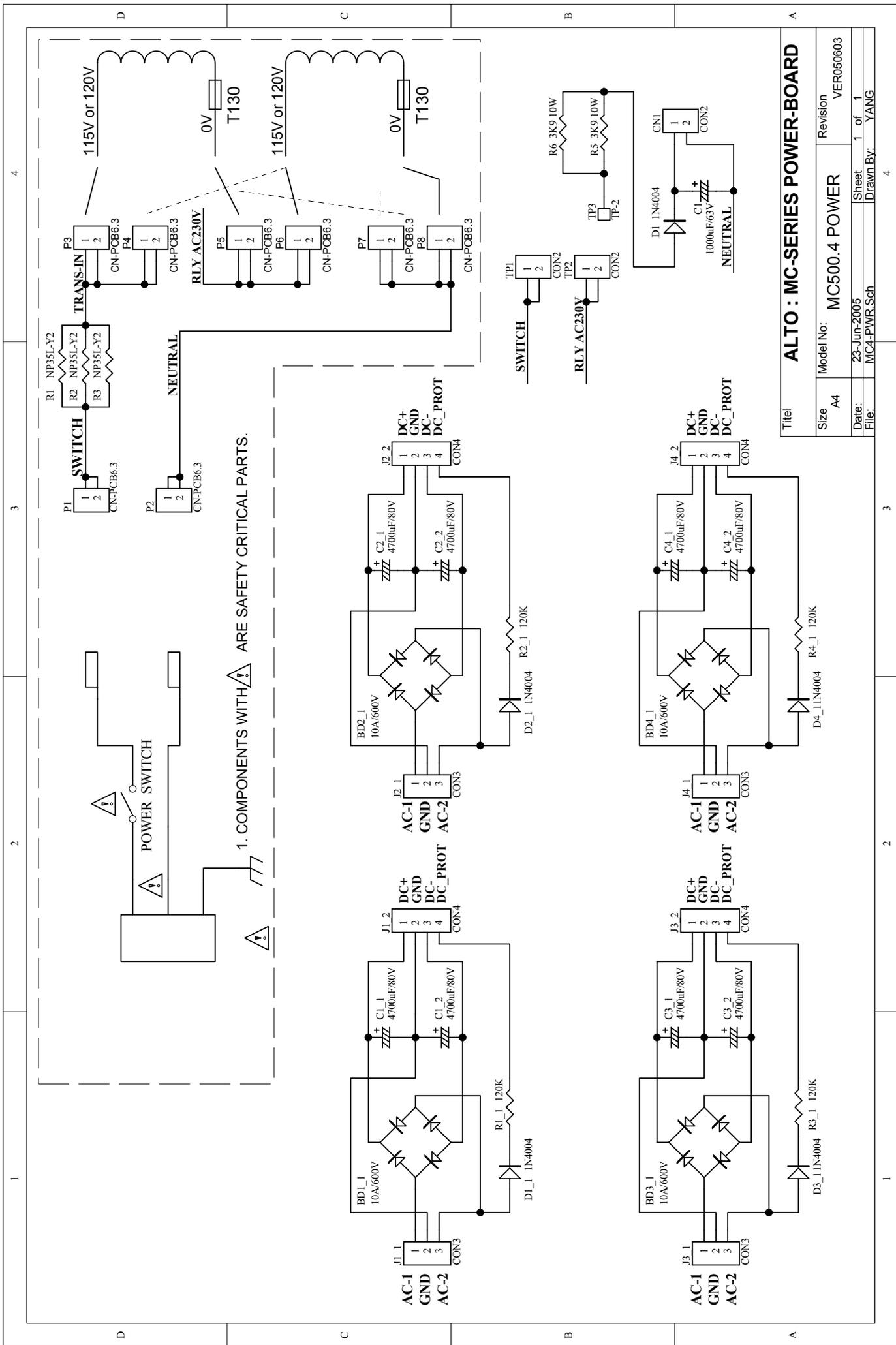
INSTRUCTION

▲LTO MC amplifiers are series of innovative design power amplifiers. Air flow is from the front to the back to keep in a nice air circulation inside the rack. The automatic fan which is affected by the machine temperature includes various kinds of speed. This low-noise fan makes a good result in cooling the heat from machines.

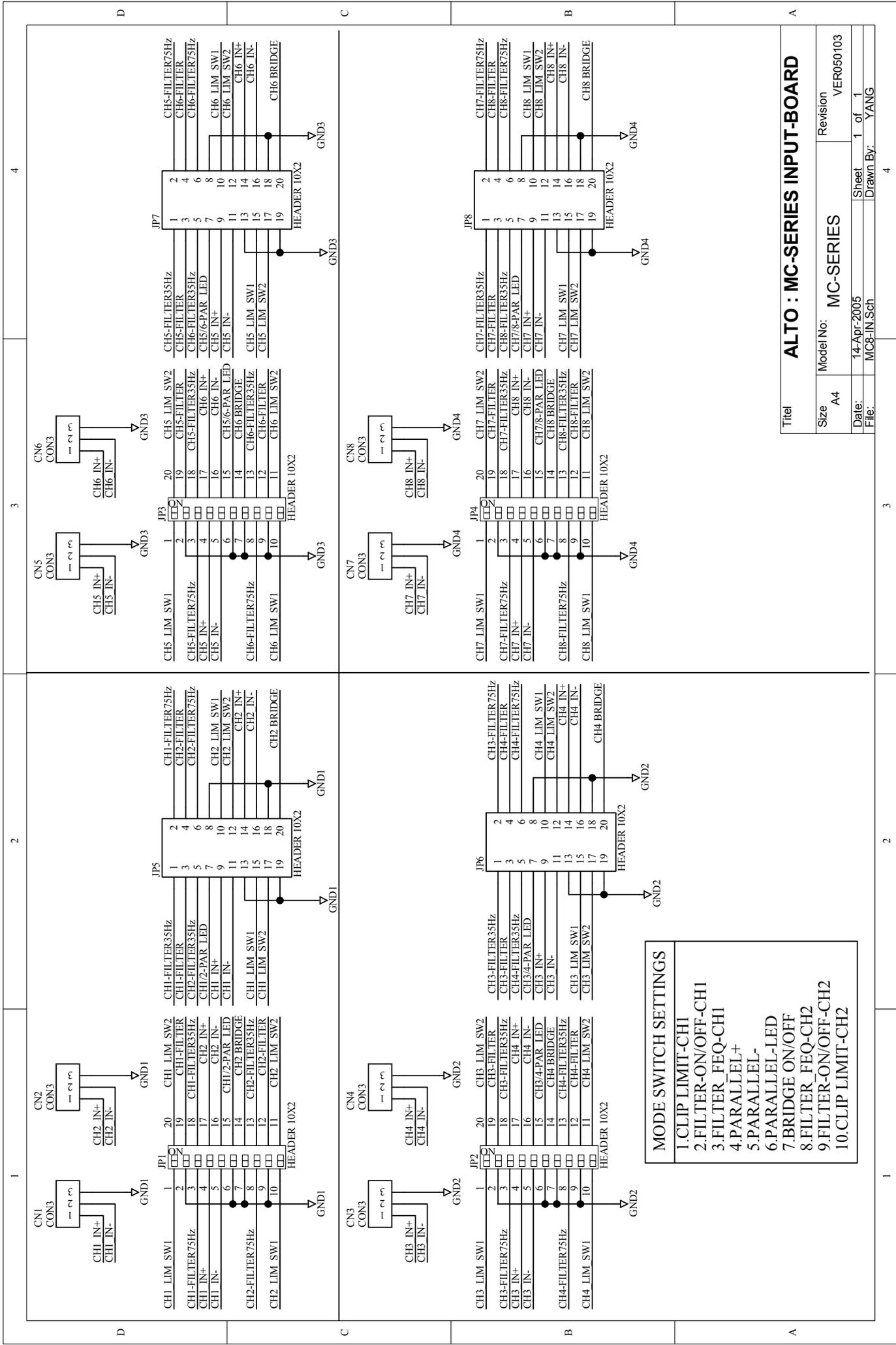
▲LTO MC500.4 amplifier include 4 independent channels with separate and power supply. The independent protection system avoids over-heating.

- Innovative design and stability power amplifier
- Fan-cooled AB class high power amplifier in 19" rack, 2U size
- Rugged amplifier in a strong, compact chassis
- Indicators: operation/protection, limit, par, brdg, clip, LEVEL: -20 and -10dB
- User-controllable clip limiter
- Auto-adjusting speed fan
- 4 independent channels with separate protection system
- Smart-designed protection system for auto re-operation after fault
- Parallel-input: CH1 to CH2, CH3 to Ch4
- Allowing the selection of Stereo or Bridge operation
- Low Pass Filter: Allow selection of flat, 35Hz or 75 Hz





Titel		ALTO : MC-SERIES POWER-BOARD	
Size	A4	Model No:	MC500.4 POWER
Date:	23-Jun-2005	Revision	VER050603
File:	MC4-PWR.Sch	Sheet	1 of 1
		Drawn By:	YANG

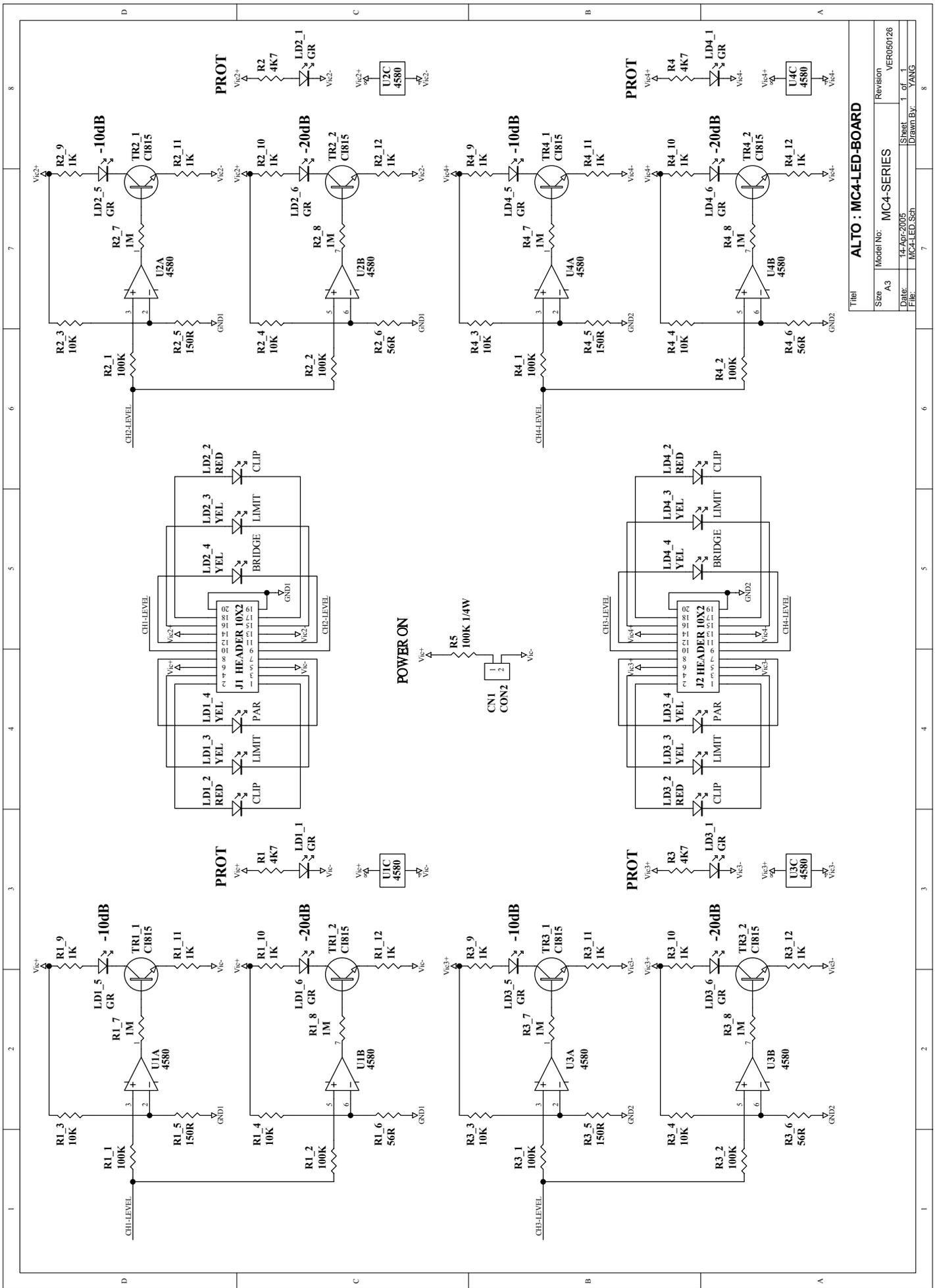


Title		ALTO : MC-SERIES INPUT-BOARD	
Size	A4	Model No:	MC-SERIES
Date:	14-Apr-2005	Revision	VER050103
File:	MC8-IN.Sch	Sheet	1 of 1
		Drawn By:	YANG

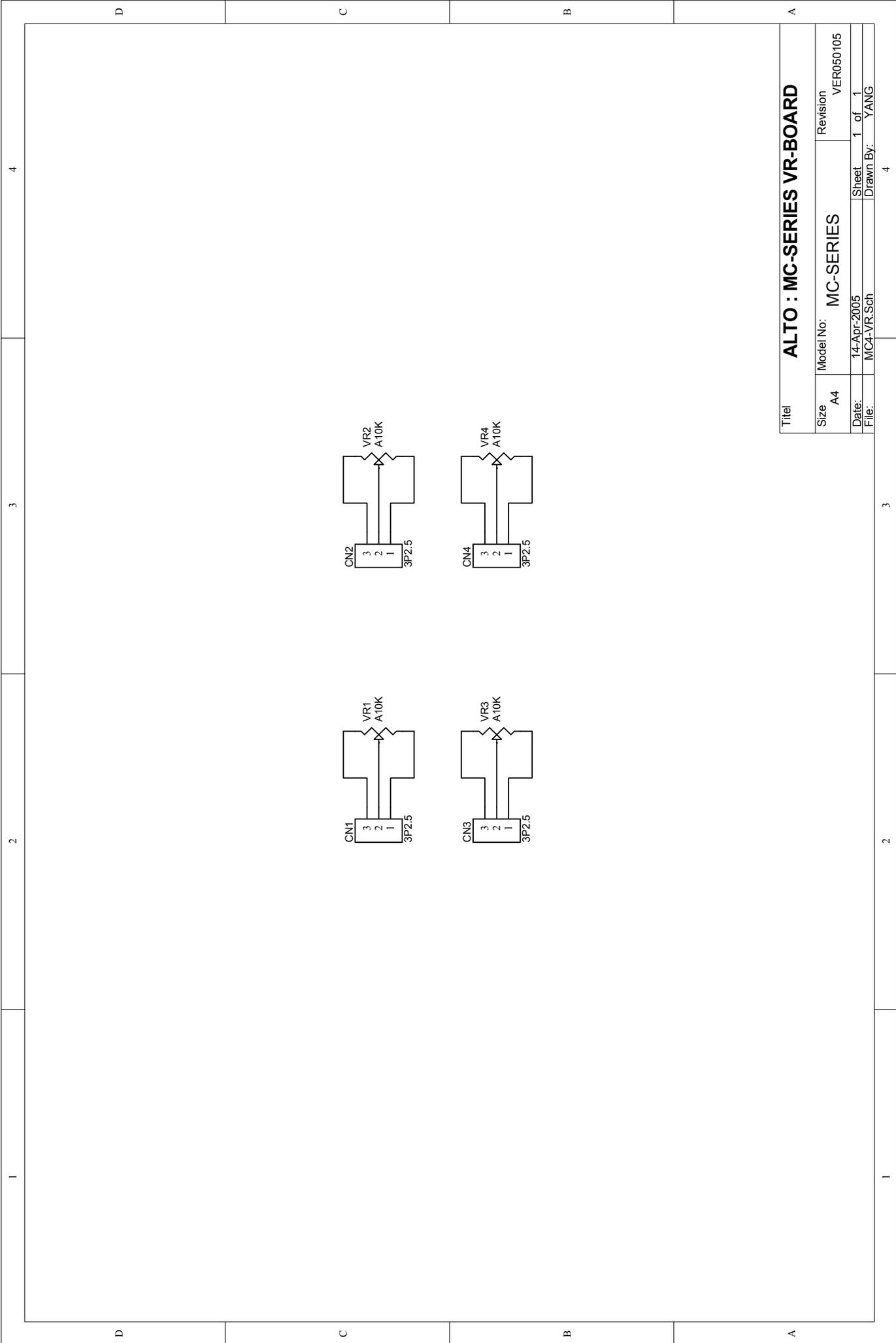


ALTO : MC-SERIES SW-BOARD

Titel		Revision	
Size	Model No:	MC-SERIES	VER040526
A4			
Date:	14-Apr-2005	Sheet	1 of 1
File:	MC8-SW.Sch	Drawn By:	YANG

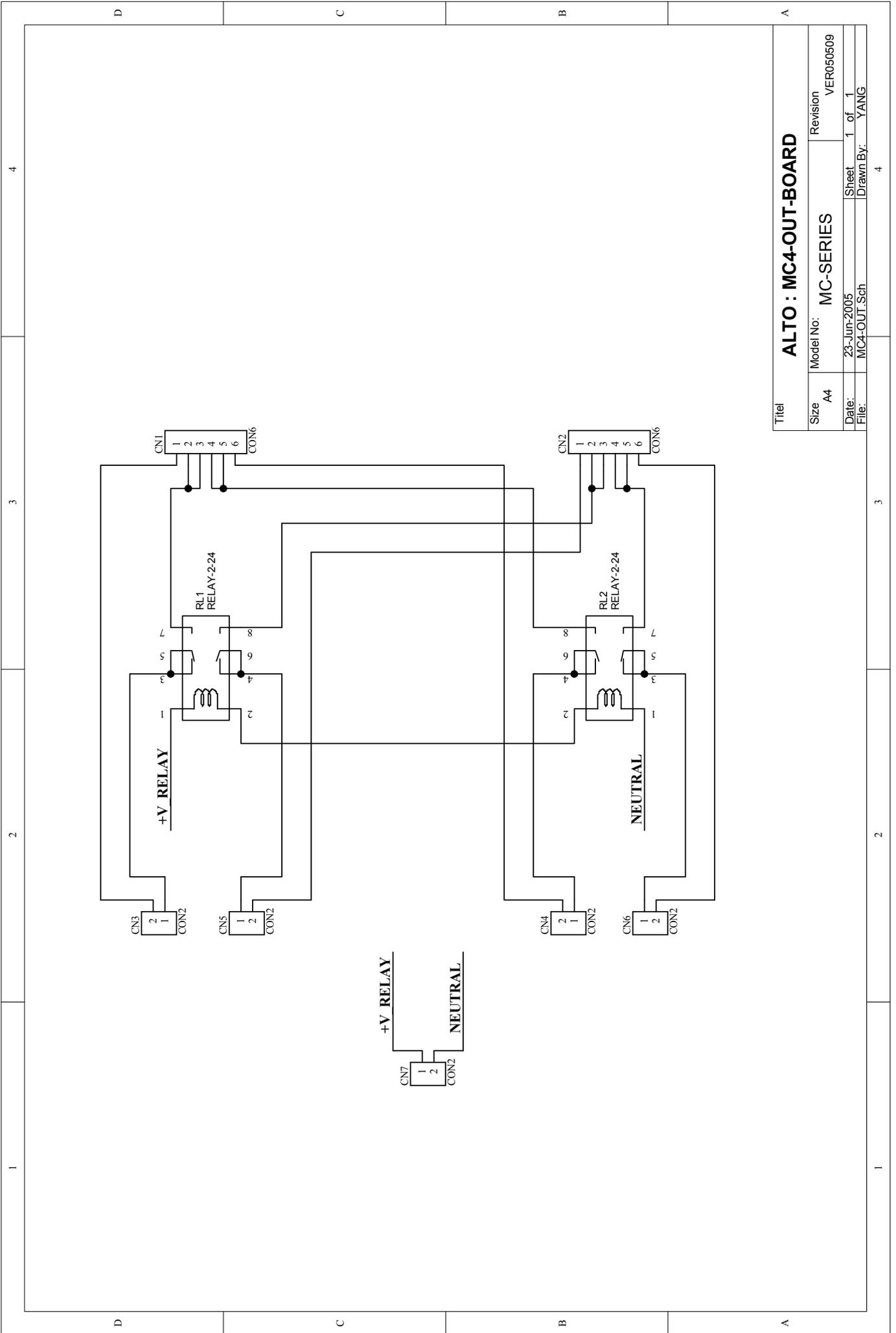


Title		ALTO : MC4-LED-BOARD	
Size	A3	Model No.	MC4-SERIES
Date:	14-Apr-2005	Revision	VER050126
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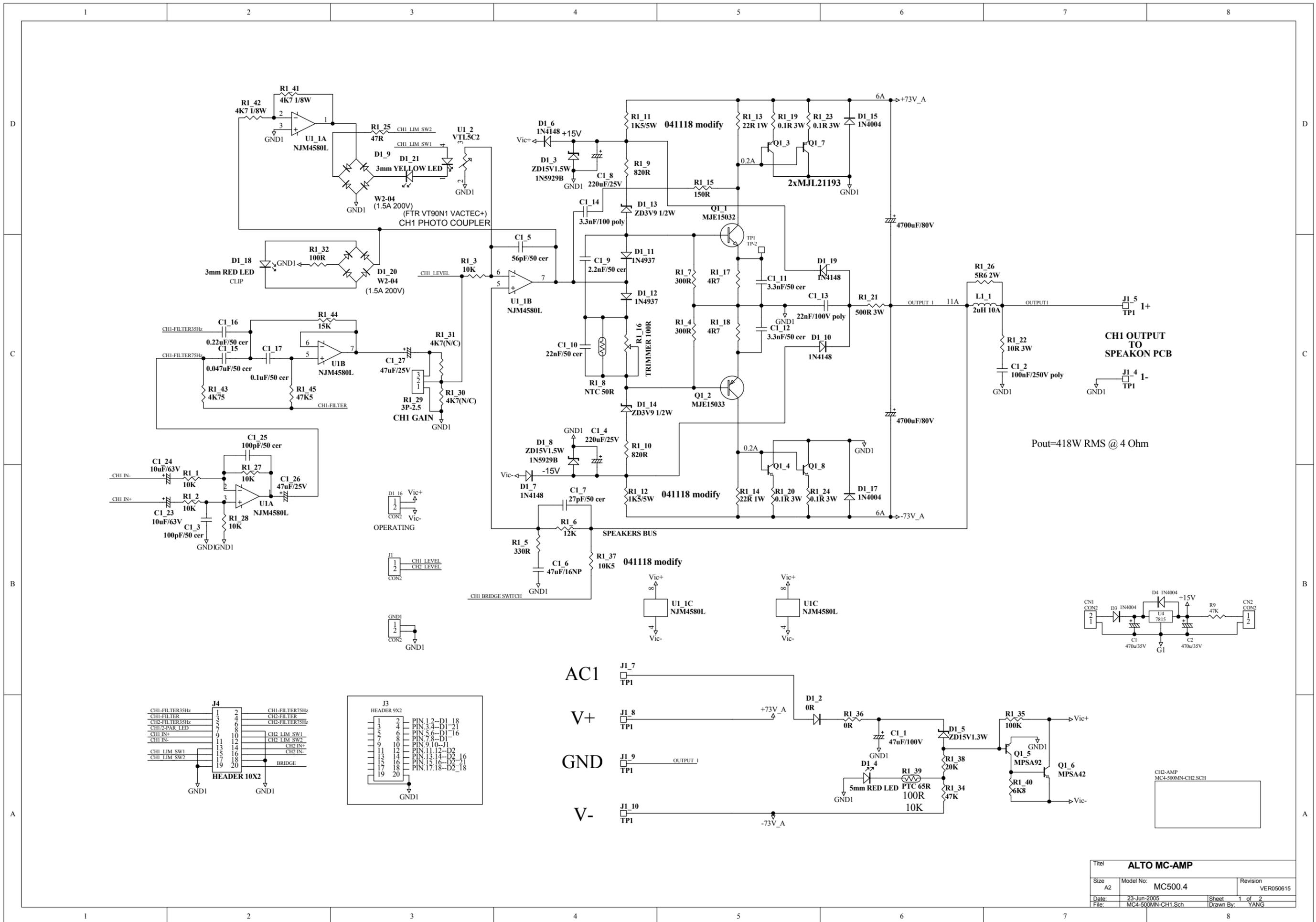


ALTO : MC-SERIES VR-BOARD

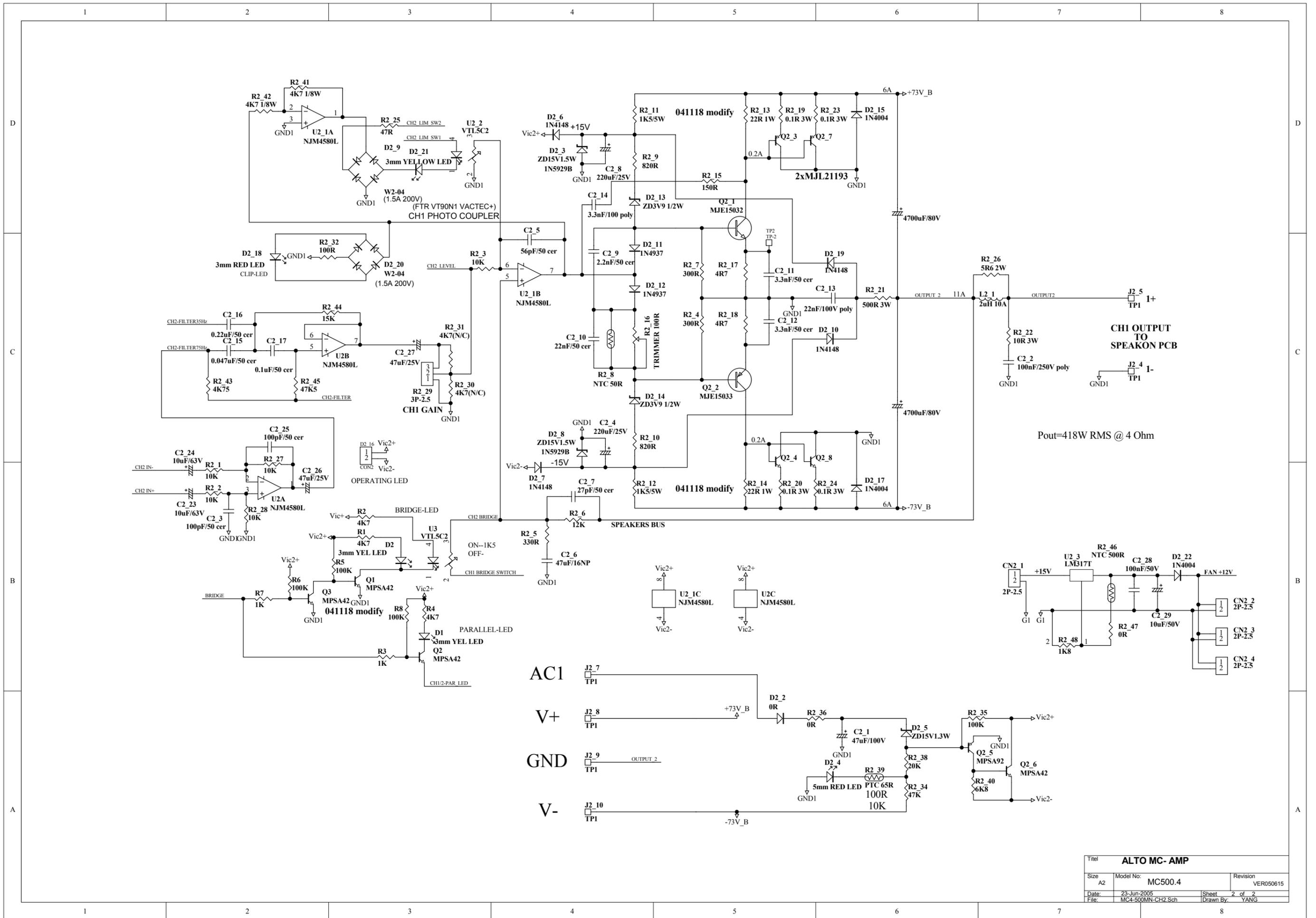
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Size	A4	Model No:	MC-SERIES
		Revision	VER050105
Date:	14-Apr-2005	Sheet	1 of 1
File:	MCA-VR.Sch	Drawn By:	YANG



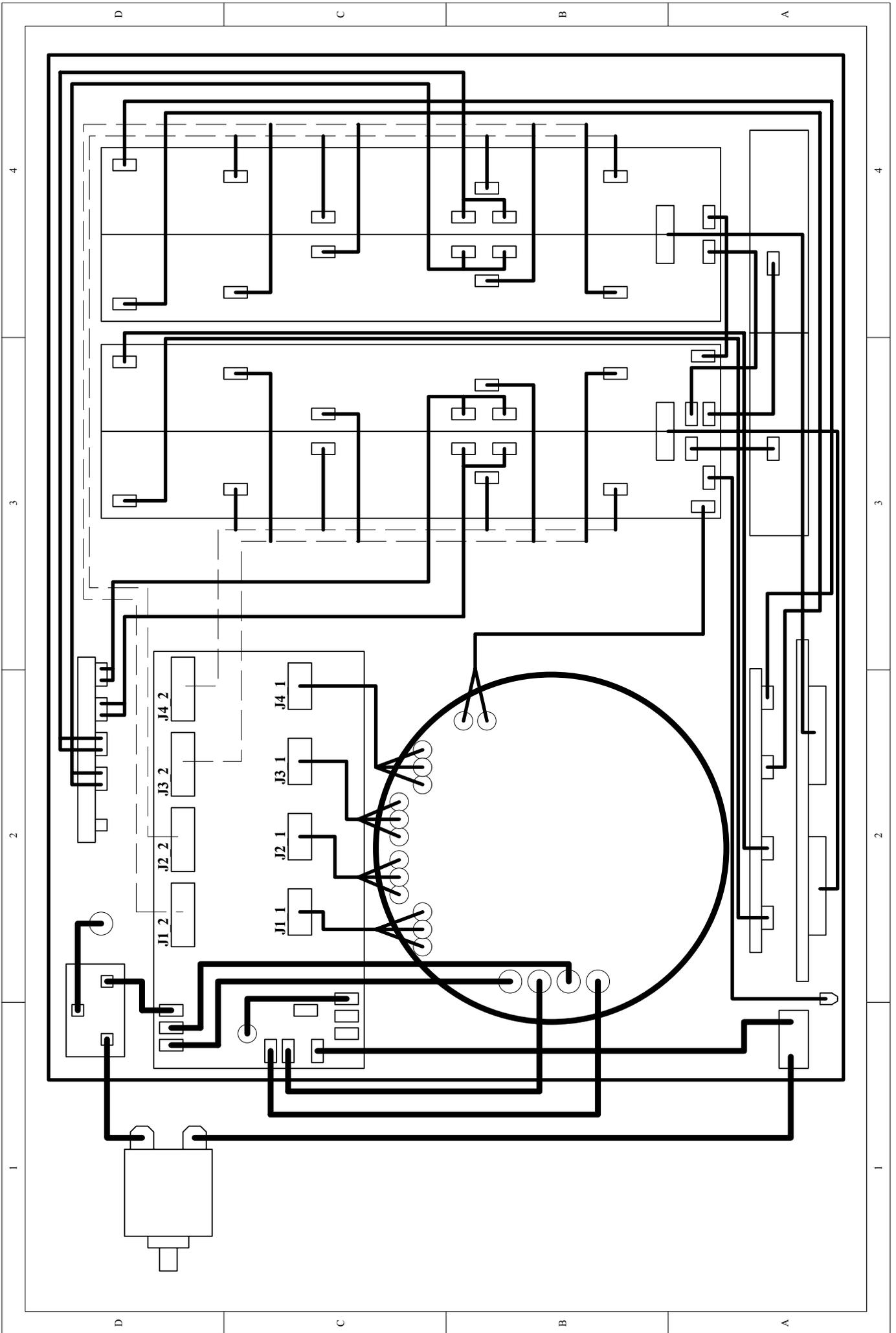
Titel		ALTO : MC4-OUT-BOARD	
Size	A4	Model No:	MC-SERIES
		Revision	VER050509
Date:	23-Jun-2005	Sheet	1 of 1
File:	MC4-OUT.Sch	Drawn By:	YANG

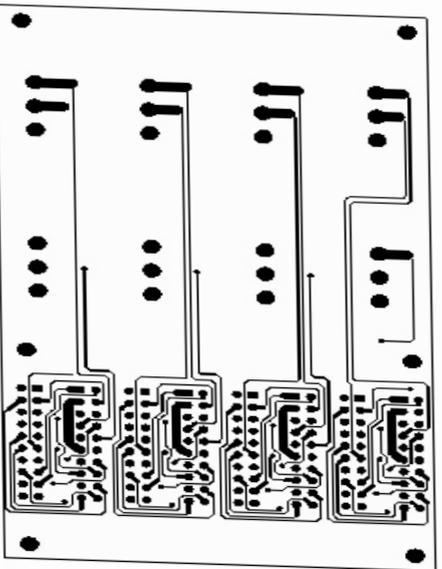


Title: ALTO MC-AMP		
Size: A2	Model No: MC500.4	Revision: VER050615
Date: 23-Jun-2005	Sheet: 1 of 2	Drawn By: YANG
File: MC4-500MN-CH1.Sch		

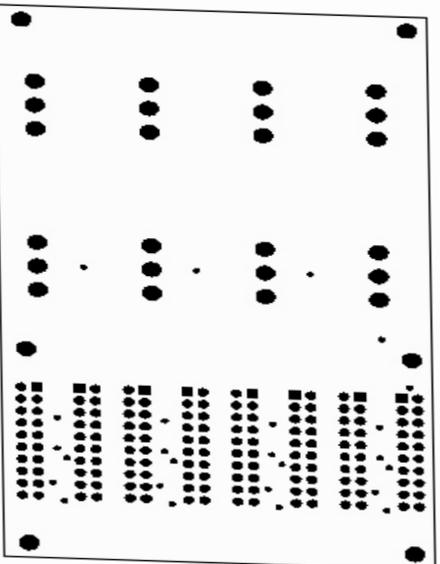


Title: ALTO MC- AMP		
Size: A2	Model No: MC500.4	Revision: VER050615
Date: 23-Jun-2005	Sheet: 2 of 2	
File: MC4-500MN-CH2.Sch	Drawn By: YANG	

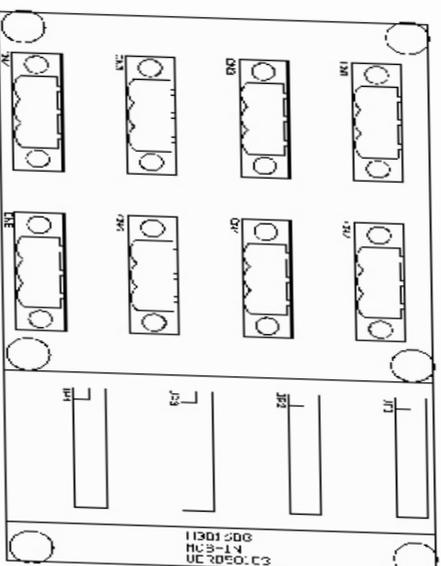




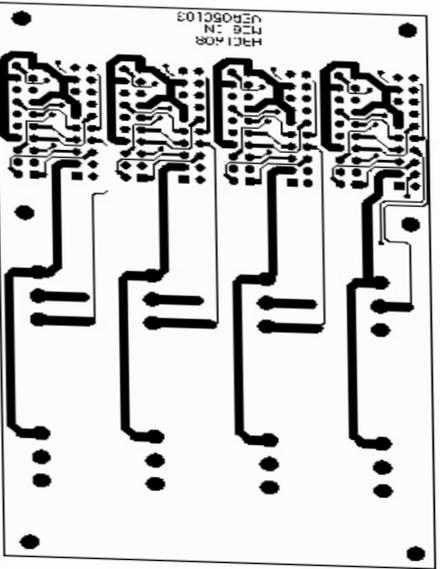
PCB : MC8-IN Top Layer



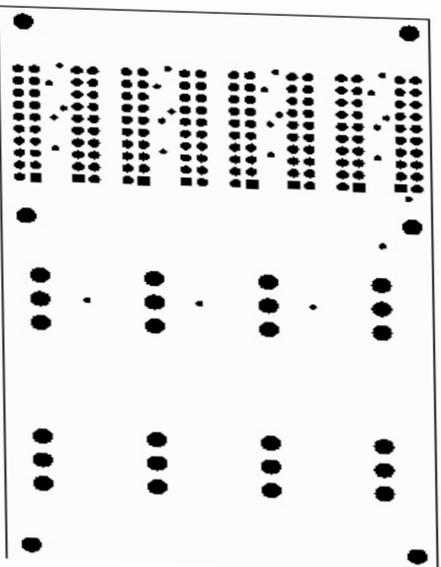
PCB : MC8-IN Top Solder Mask



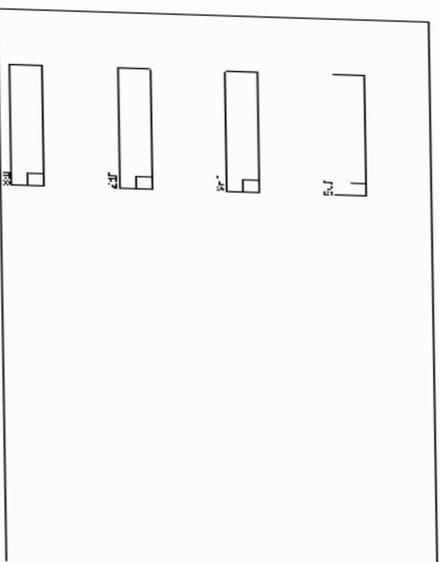
PCB : MC8-IN Top Overlay



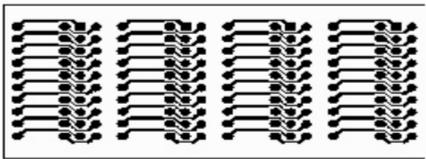
PCB : MC8-IN Bottom Layer



PCB : MC8-IN Bottom Solder Mask

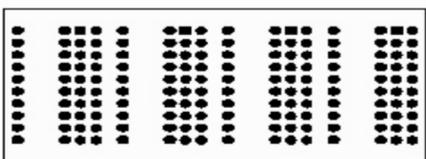


PCB : MC8-IN Bottom Overlay



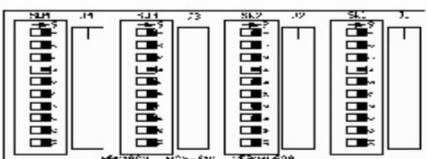
PCB : MC8-SW

Top Layer



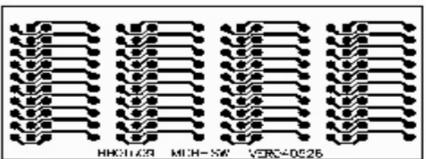
PCB : MC8-SW

Top Solder Mask



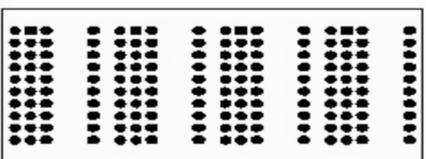
PCB : MC8-SW

Top Overlay



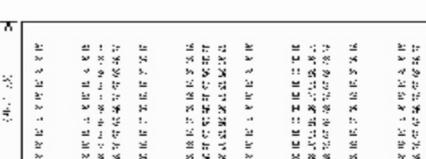
PCB : MC8-SW

Bottom Layer



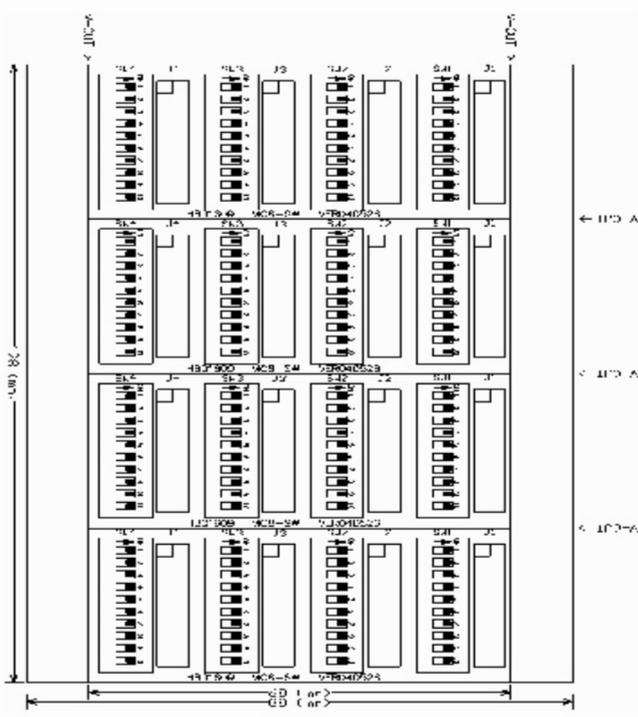
PCB : MC8-SW

Bottom Solder Mask

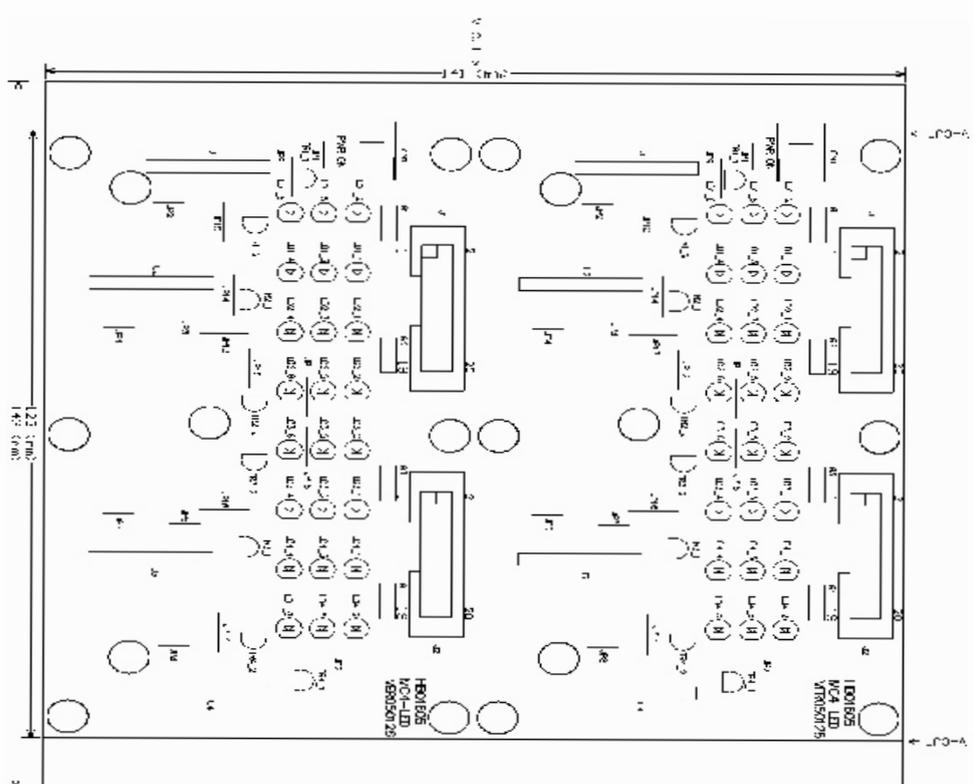


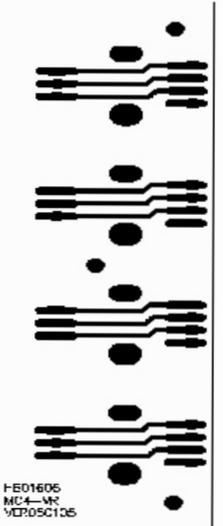
PCB : MC8-SW

Drill Drawing

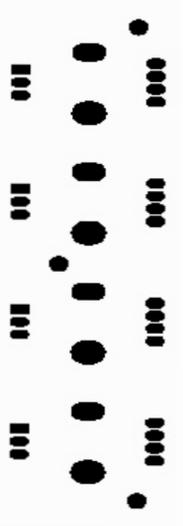


Tool	Hole Size	Hole Count/Place
1	31=1 (0.7544mm)	80
2	35=1 (0.889mm)	96
Totals		160

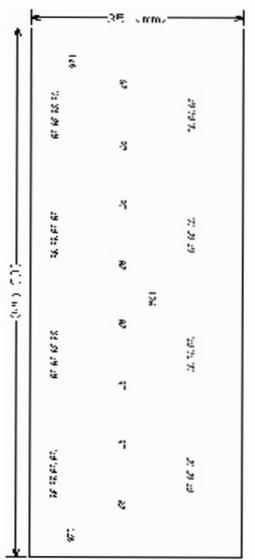




PCB : MC4-VR Top Overlay

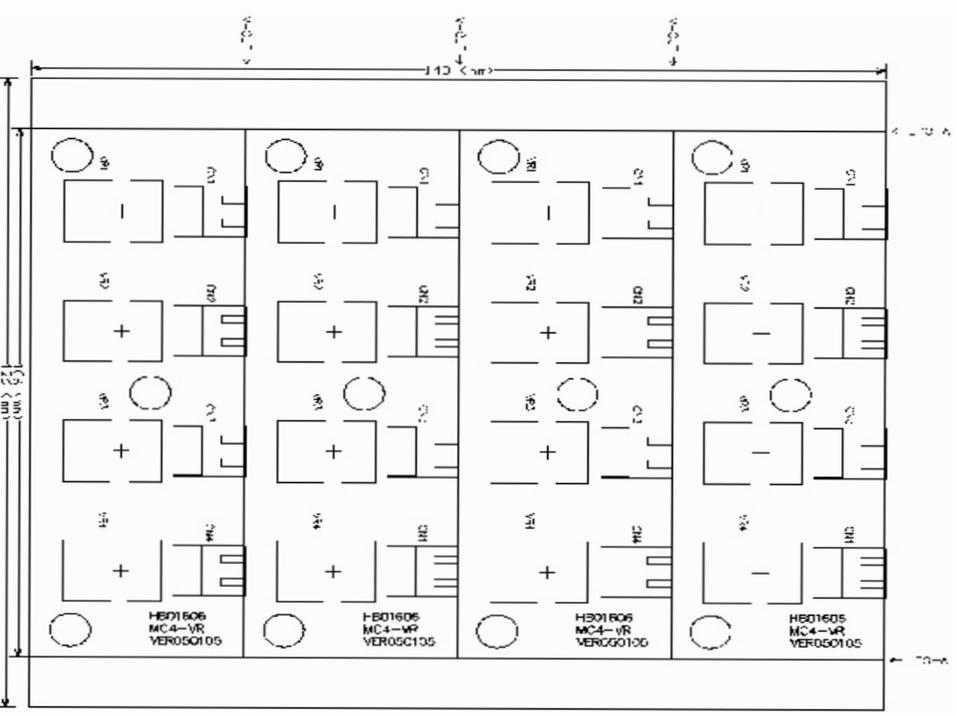


PCB : MC4-VR Bottom Solder Mask

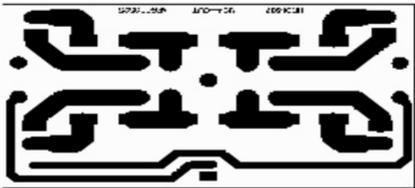


PCB : MC4-VR Drill Drawing

Tool	Hole Size	Hole Count (Pales)
1	35mil (0.906mm)	23
2	87mil (2.206mm)	8
3	125mil (3.205mm)	5
TOTAL		30

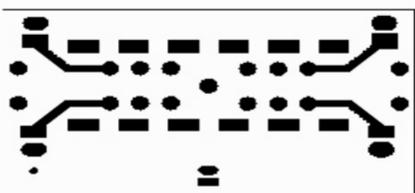


PCB : MC4-VR Top Overlay



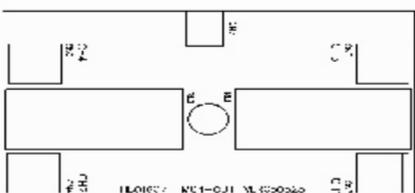
PCB : MC4-OUT

Bottom Layer



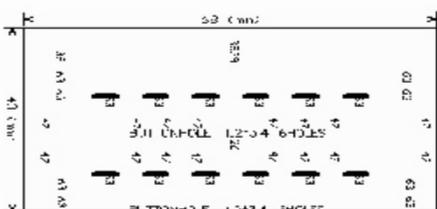
PCB : MC4-OUT

Bottom Solder Mask



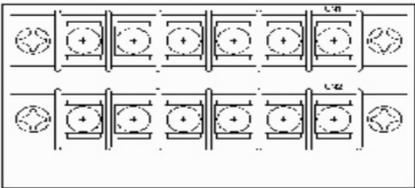
PCB : MC4-OUT

Top Overlay



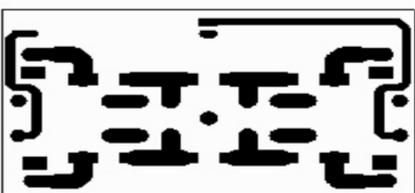
PCB : MC4-OUT

Drill Drawing



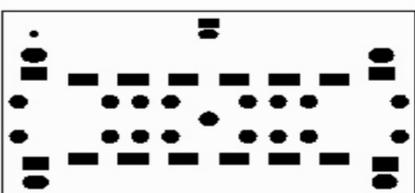
PCB : MC4-OUT

Bottom Overlay



PCB : MC4-OUT

Top Layer



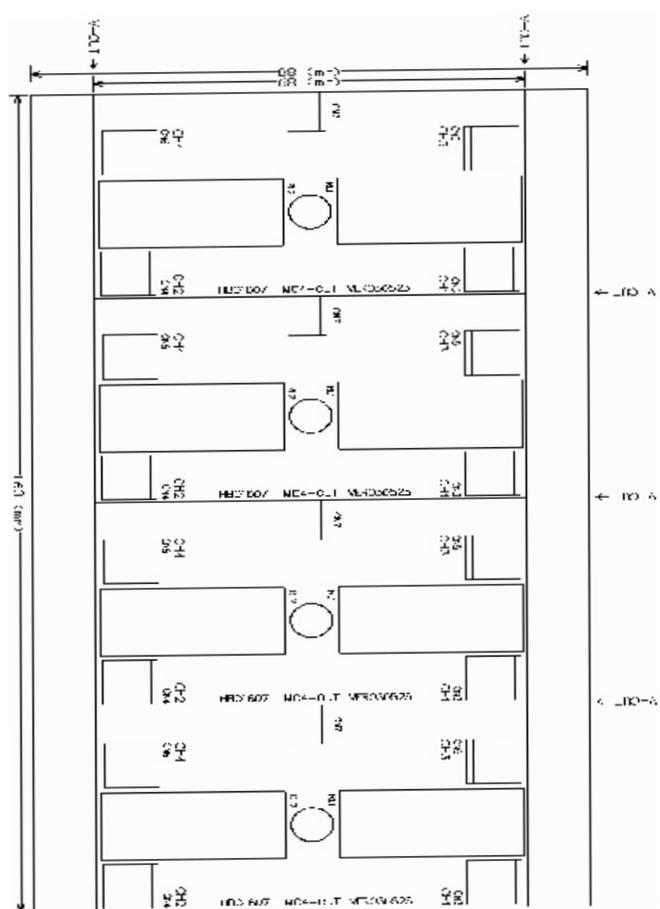
PCB : MC4-OUT

Top Solder Mask

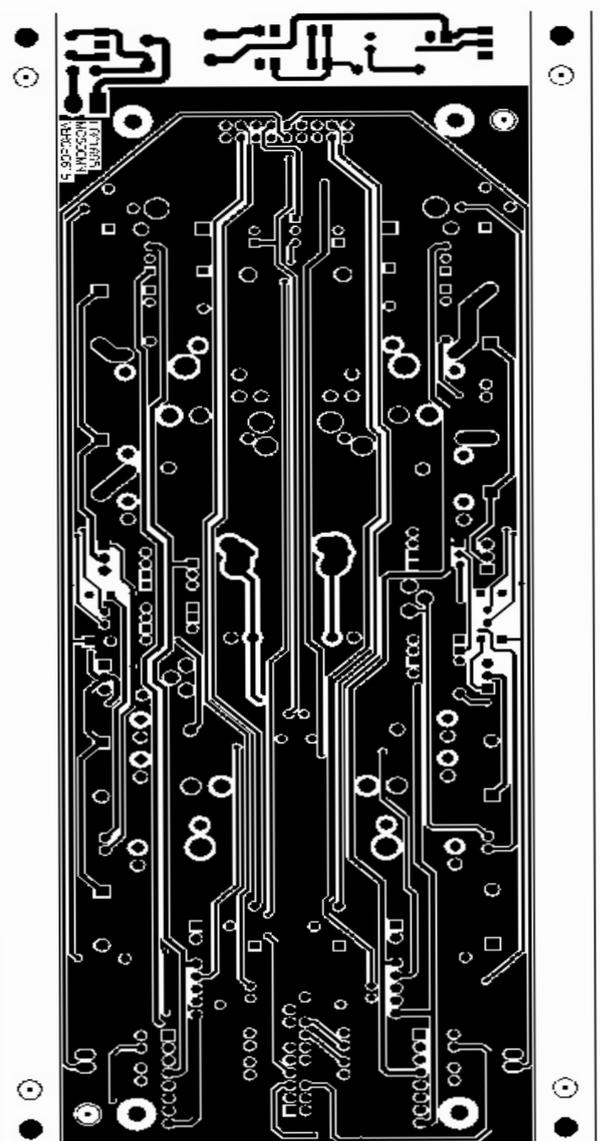
Tool	Hole Size	Hole Count (Panel)	Tool Travel
T1	30mil (0.762mm)	3	5.07mm (0.20019 inch)
T2	7.7mil (0.1953mm)	18	10.82mm (0.42589 inch)
T3	63mil (1.6002mm)	26	12.40mm (0.48817 inch)
T4	26mm (1.0236 inch)	1	6.57mm (0.25876 inch)

Totals: 70

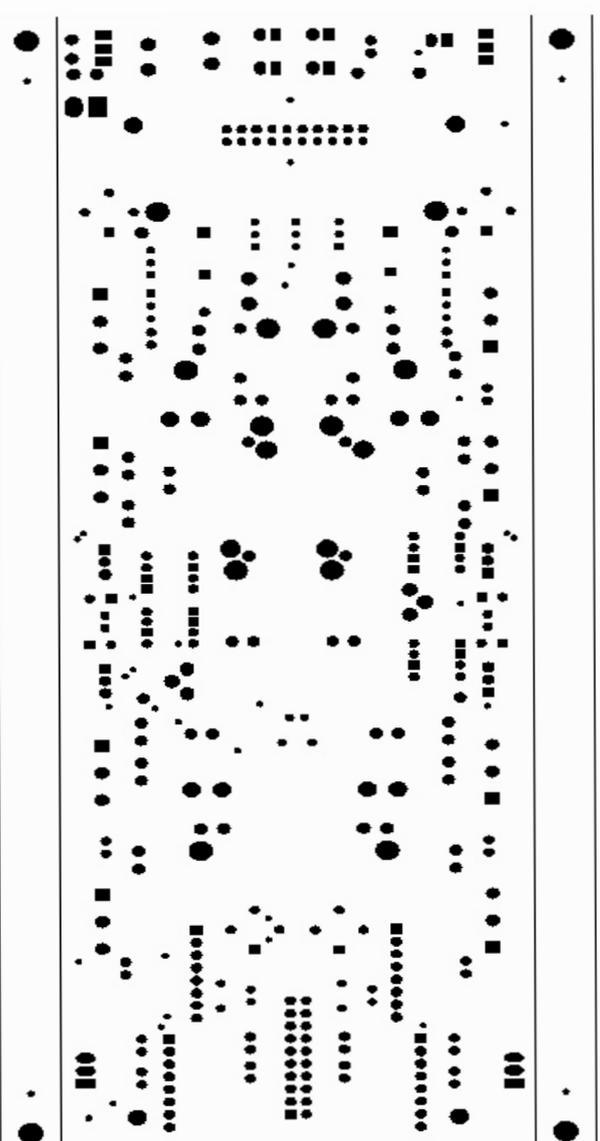
5.80mm (0.22834 inch)



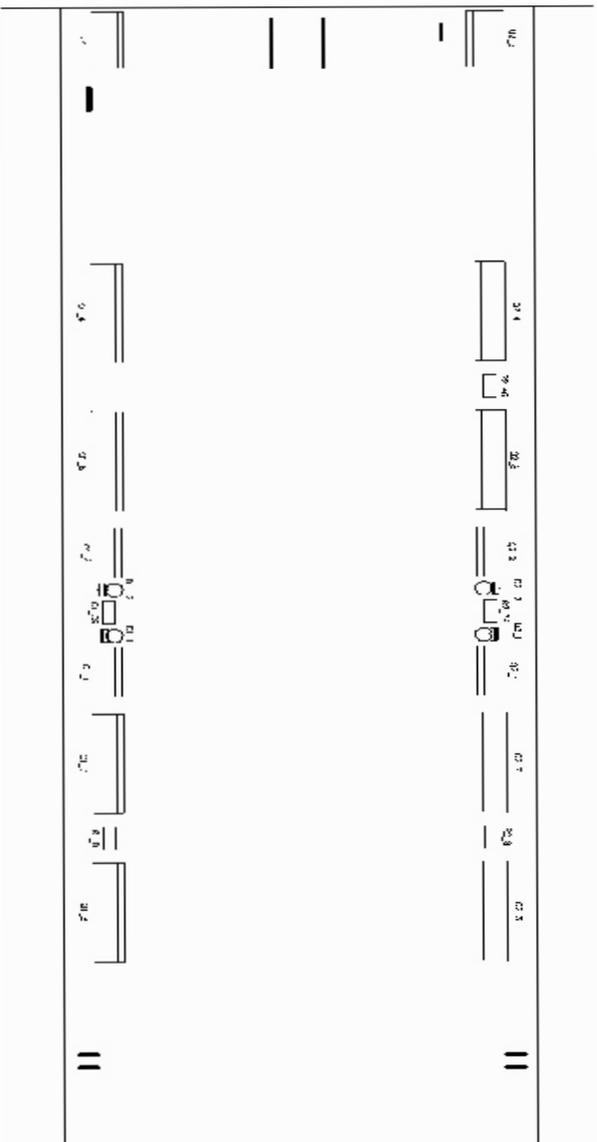
版次: VER050615



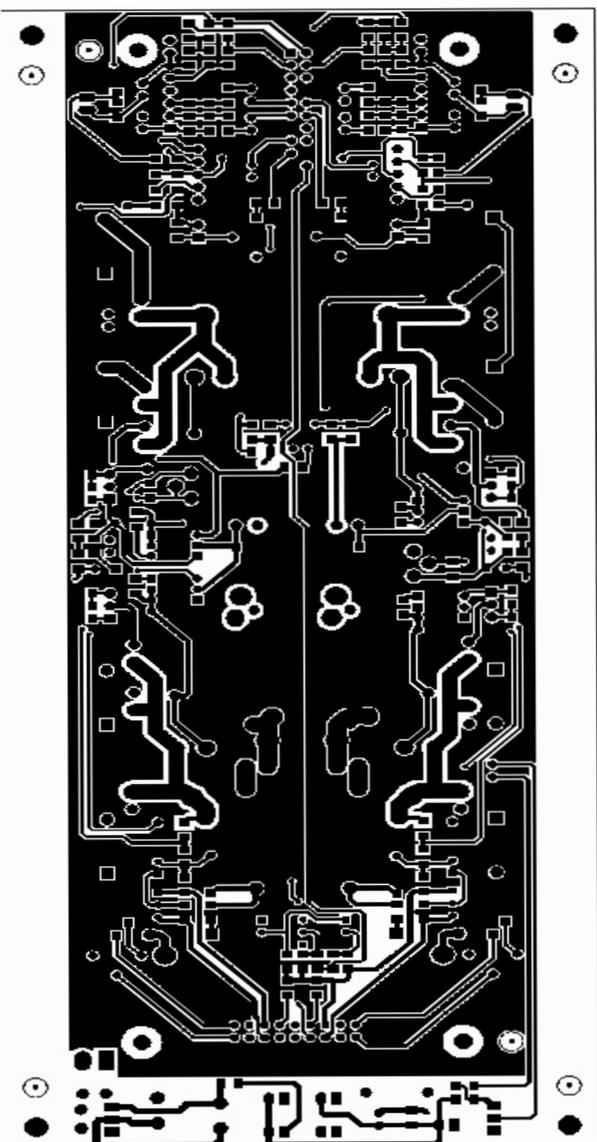
PCB :MC500MN Bottom Layer



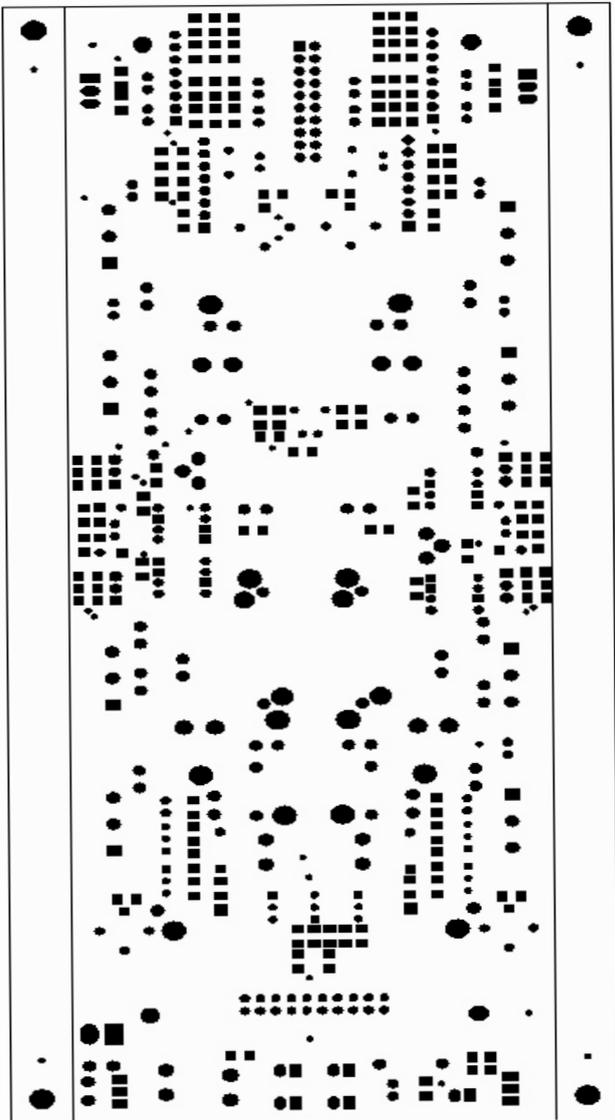
PCB : MC500MN Bottom Solder Mask



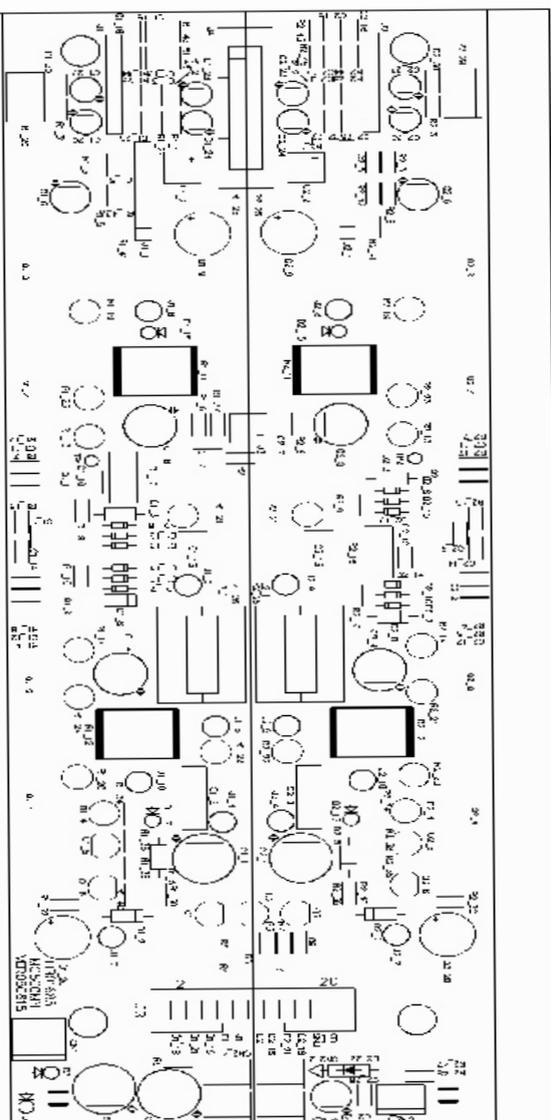
PCB : MC500MN Bottom Overlay



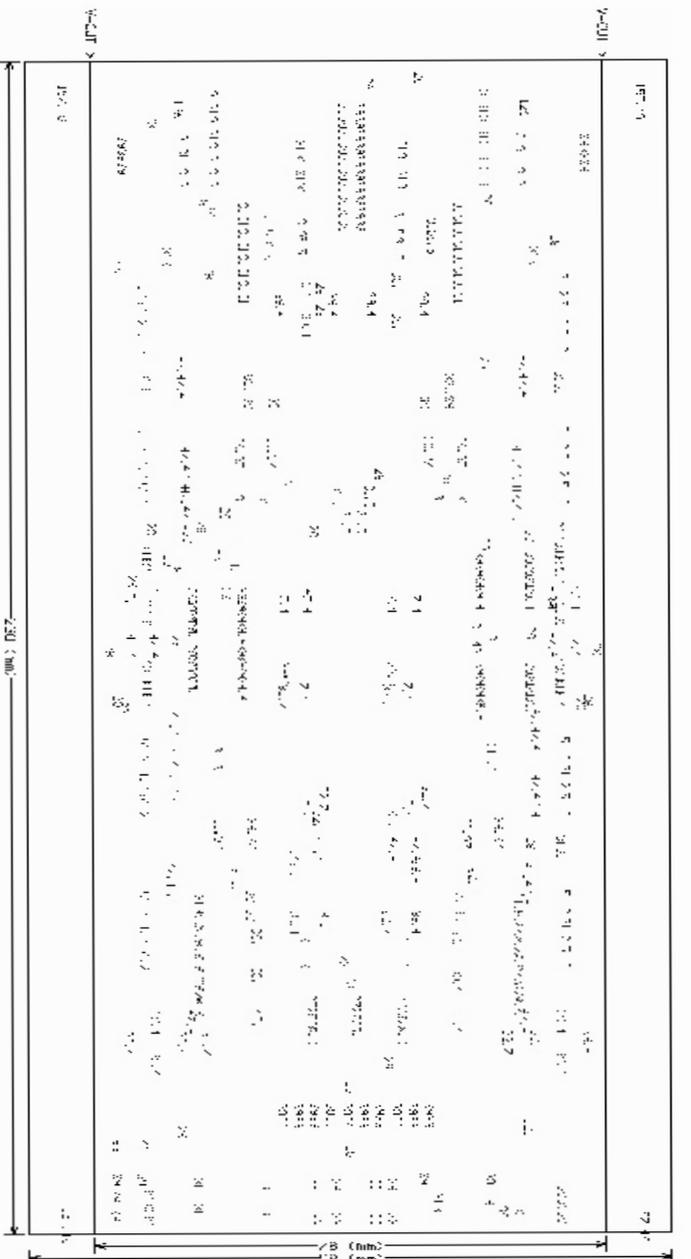
PCB : MC500MN Top Layer



PCB :MC500MN Top Solder Mask

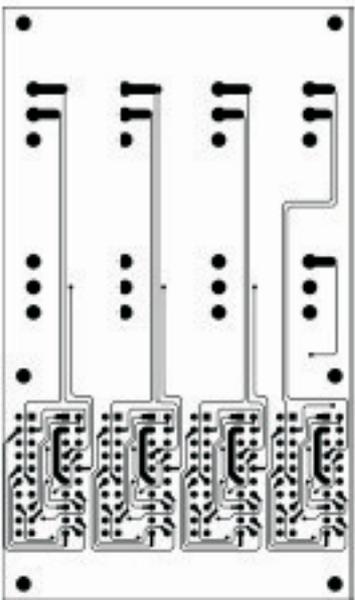


PCB :MC500MN Top Overlay

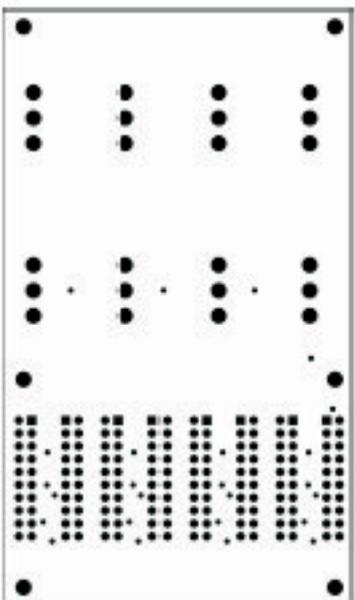


PCB:MC500MN Drill Drawing

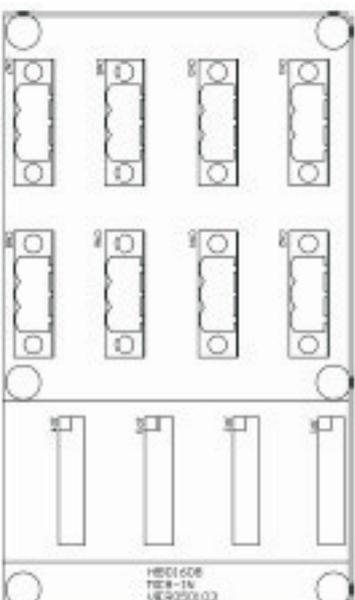
Tool	Hole Size	Hole Count Placed	Tool Travel
T1	28mil (0.7112mm)	62	58.54 Inch (1486.96 mm)
T2	31mil (0.7874mm)	80	57.05 Inch (1449.07 mm)
T3	32mil (0.8128mm)	16	40.52 Inch (1029.11 mm)
T4	39mil (0.9906mm)	142	70.29 Inch (1785.31 mm)
T5	43mil (1.0922mm)	18	32.25 Inch (819.21 mm)
T6	47mil (1.1938mm)	48	53.40 Inch (1356.45 mm)
T7	51mil (1.2954mm)	24	41.19 Inch (1046.12 mm)
T8	63mil (1.6002mm)	2	29.57 Inch (751.14 mm)
T9	83mil (2.1082mm)	16	42.39 Inch (1076.77 mm)
T10	126mil (3.2004mm)	4	47.31 Inch (1201.68 mm)
T11	157mil (3.9878mm)	4	43.23 Inch (1098.05 mm)
Totals		416	515.74 Inch (13099.88 mm)



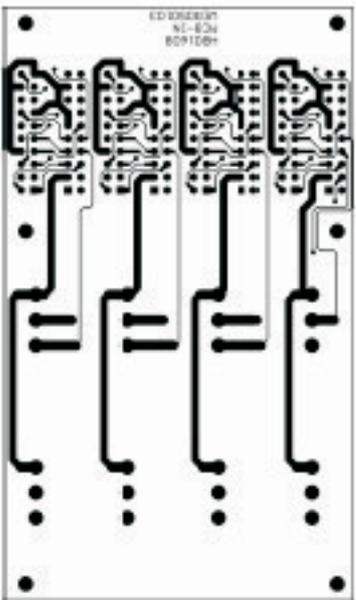
PCB : MCB8-IN Top Layer



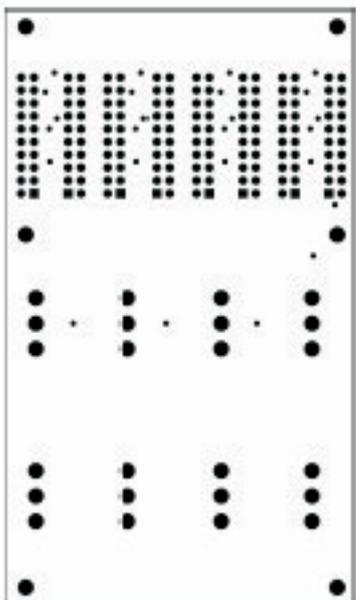
PCB : MCB8-IN Top Solder Mask



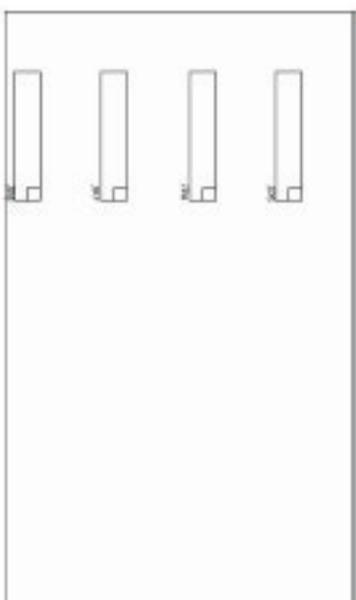
PCB : MCB8-IN Top Overlay



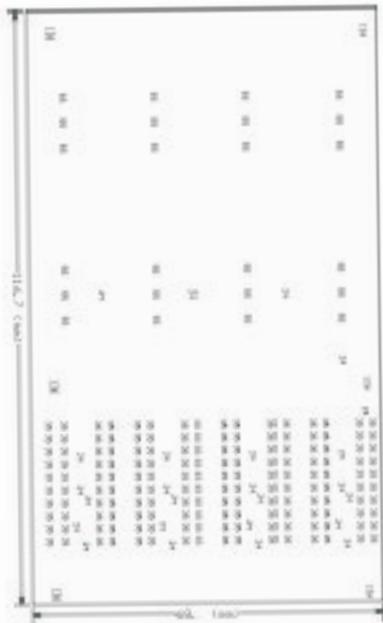
PCB : MCB8-IN Bottom Layer



PCB : MCB8-IN Bottom Solder Mask

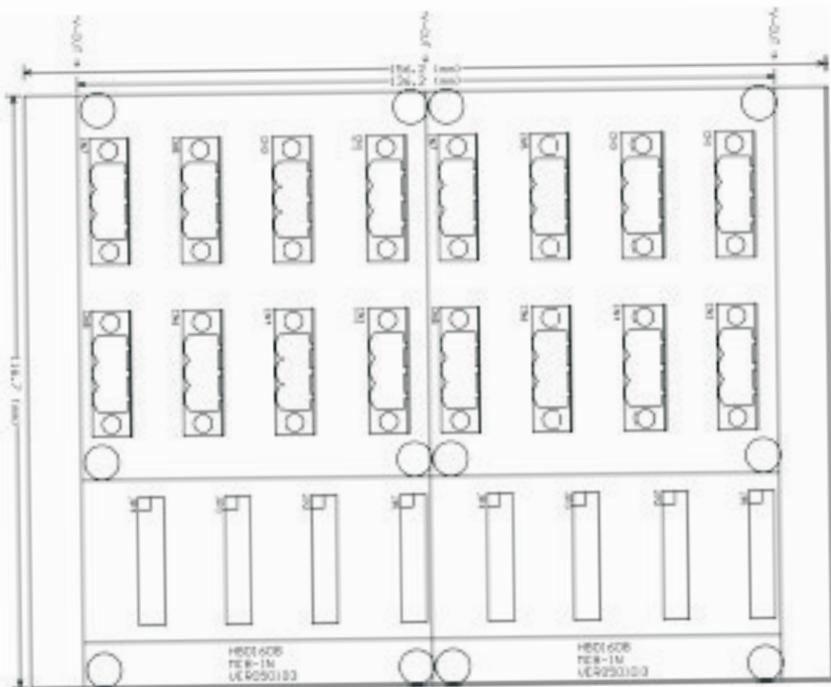


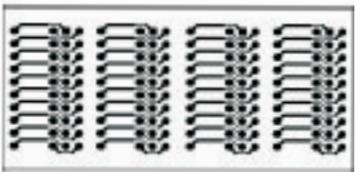
PCB : MCB8-IN Bottom Overlay



PCB : MC8-IN Drill Drawing

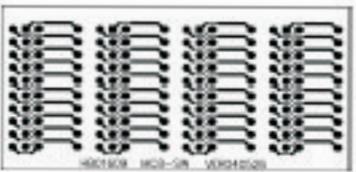
Tool	Hole Size	Hole Count/Part
T1	24mil (0.6096mm)	39
T2	55mil (1.397mm)	160
T3	55mil (1.397mm)	24
T4	120mil (3.048mm)	6
Totals		229





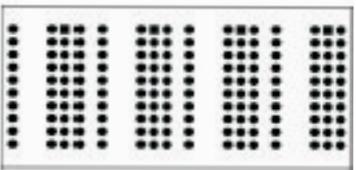
PCB : MC8-SW

Top Layer



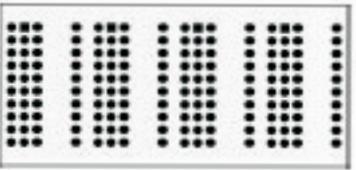
PCB : MC8-SW

Bottom Layer



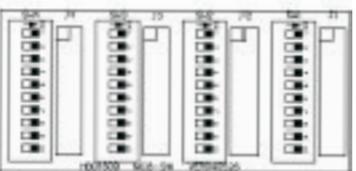
PCB : MC8-SW

Top Solder Mask



PCB : MC8-SW

Bottom Solder Mask



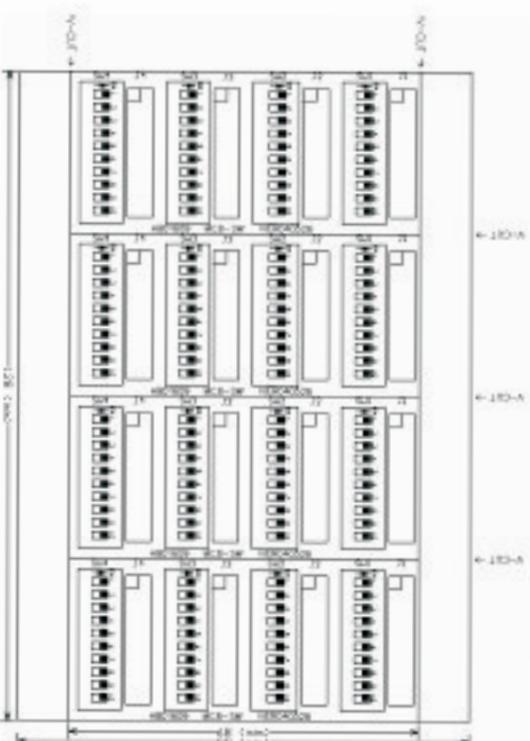
PCB : MC8-SW

Top Overlay

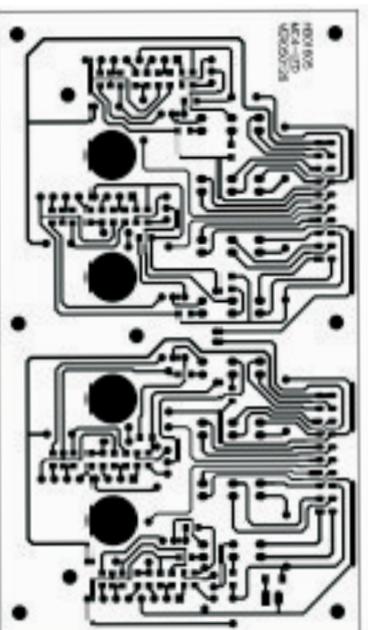


PCB : MC8-SW

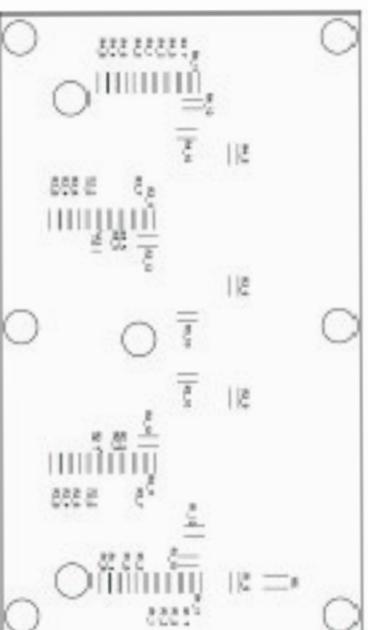
Drill Drawing



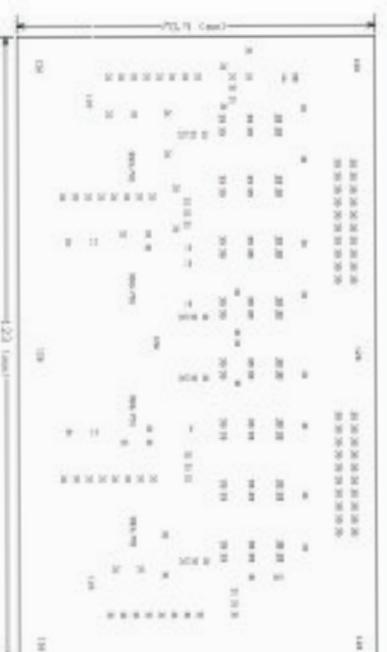
Tool	Hole Size	Hole Count / Pared
T1	31mil (0.7874mm)	80
T2	35mil (0.889mm)	80
Totals		160



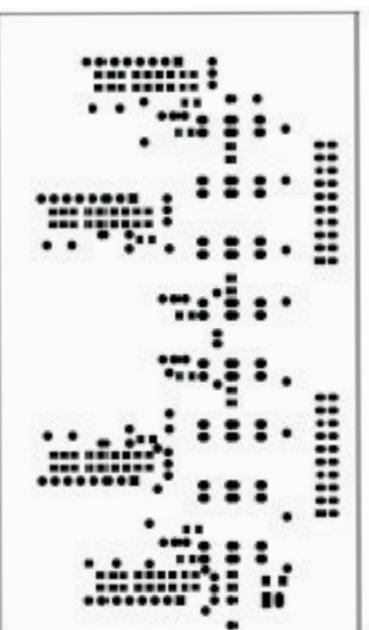
PCB : MC4-LED Bottom Layer



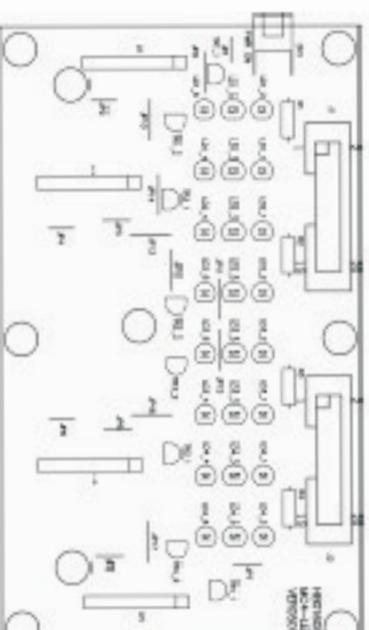
PCB : MC4-LED Bottom Overlay



PCB : MC4-LED Drill Drawing

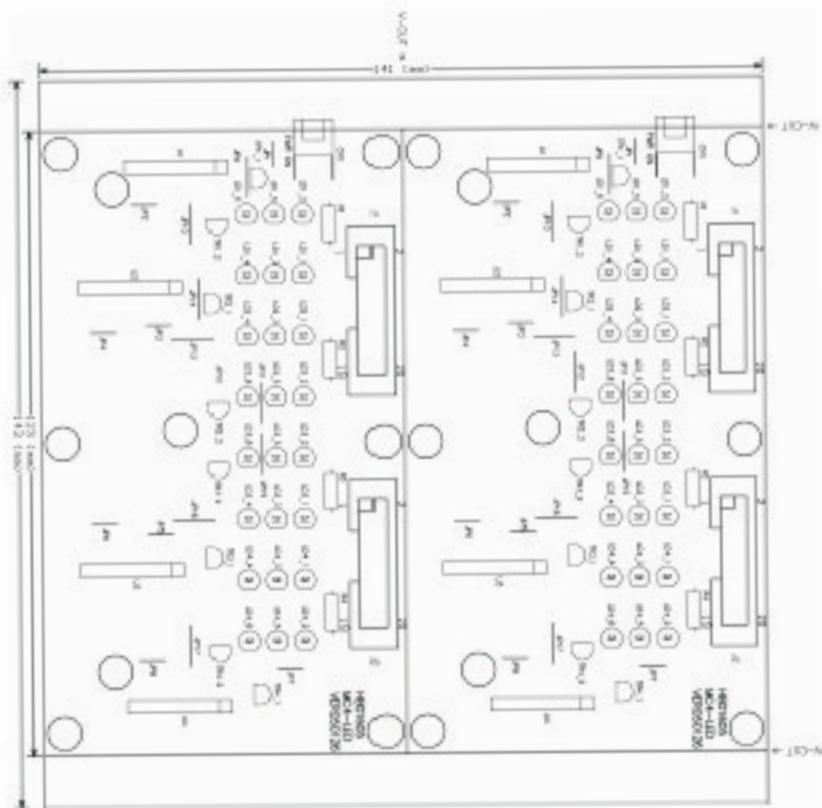


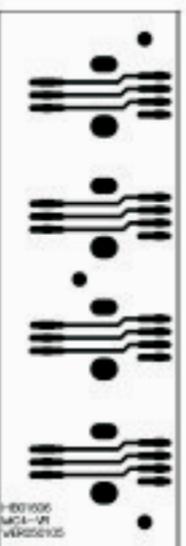
PCB : MC4-LED Bottom Solder Mask



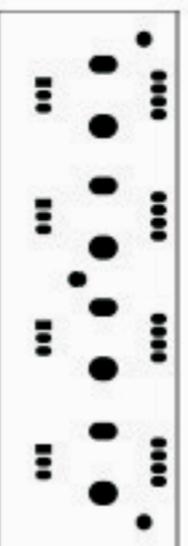
PCB : MC4-LED Top Overlay

Tool	Hole Size	Hole Count/Pair
T1	31mil (0.7874mm)	98
T2	55mil (0.8891mm)	40
T3	59mil (0.9398mm)	50
T4	126mil (3.2006mm)	9
T5	594mil (10.0076mm)	4
Total		201





PCB : MICA-VR Bottom Layer



PCB : MICA-VR Bottom Solder Mask

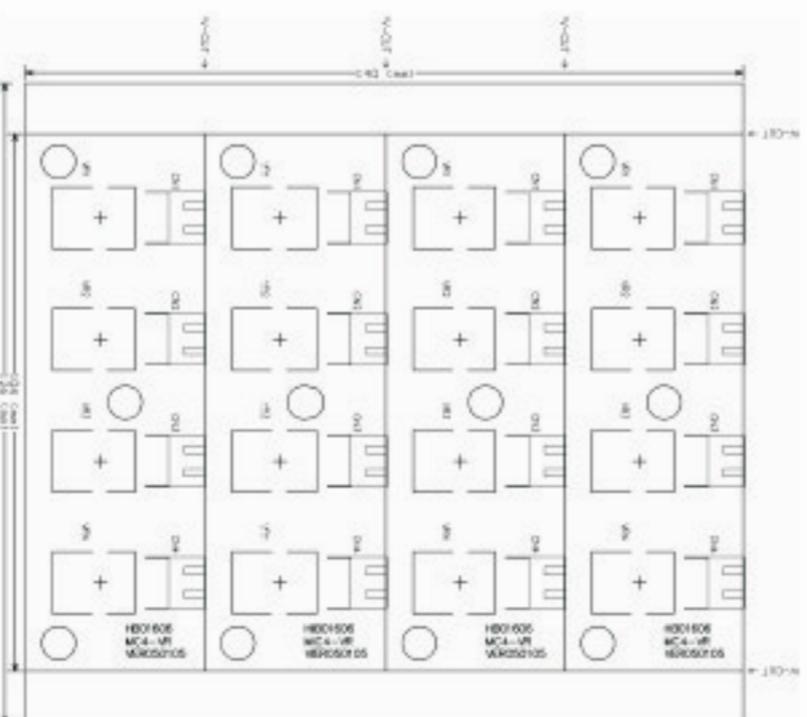


PCB : MICA-VR Top Overlay



PCB : MICA-VR Drill Drawing

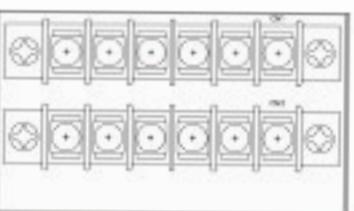
Tool	Hole Size	Hole Count/Pair
T1	30mil (0.9906mm)	28
T2	80mil (2.098mm)	8
T3	120mil (3.2004mm)	3
Totals		39





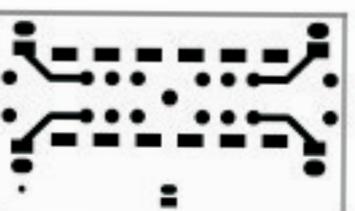
PCB : MC4-OUT

Bottom Layer



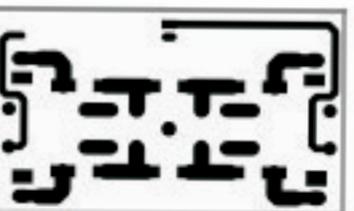
PCB : MC4-OUT

Bottom Overlay



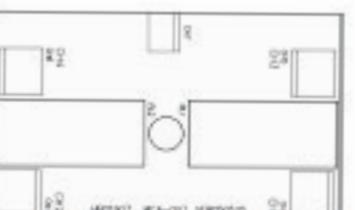
PCB : MC4-OUT

Bottom Solder Mask



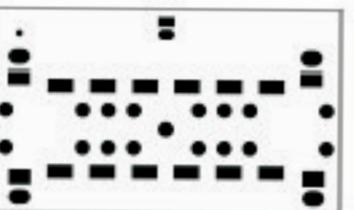
PCB : MC4-OUT

Top Layer



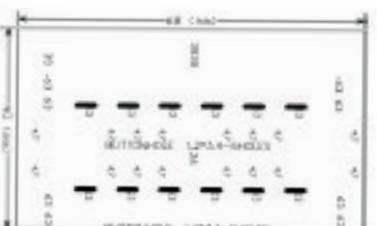
PCB : MC4-OUT

Top Overlay



PCB : MC4-OUT

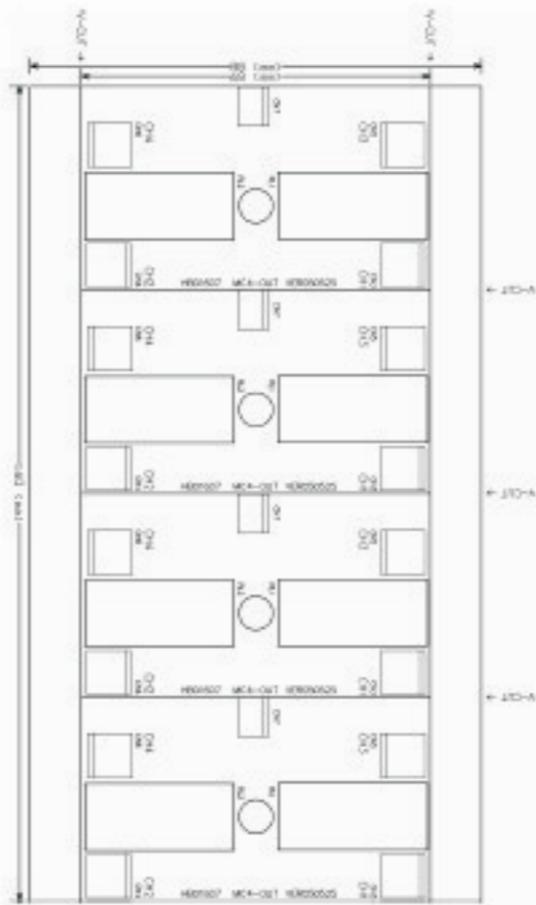
Top Solder Mask

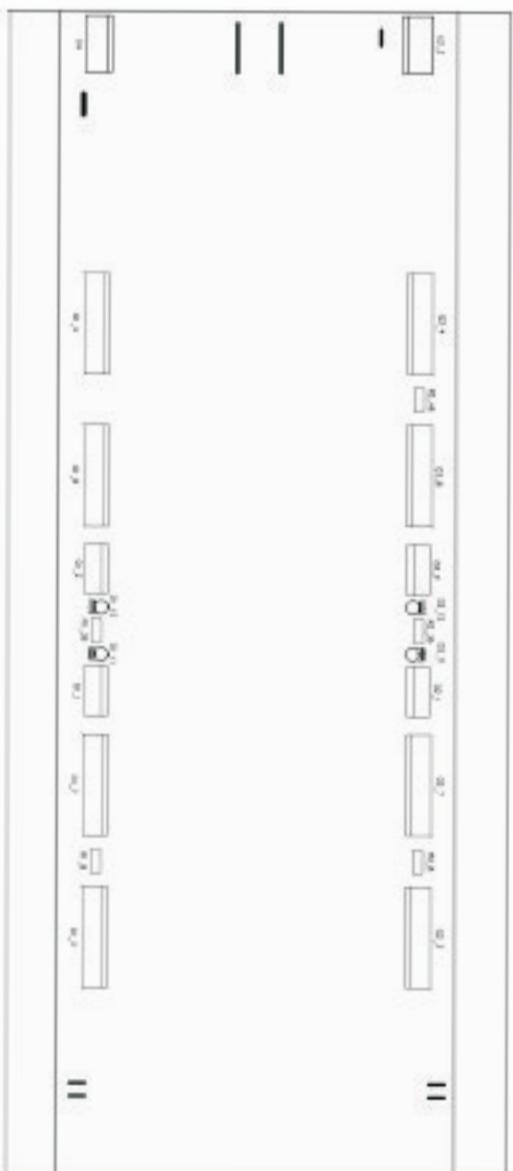


PCB : MC4-OUT

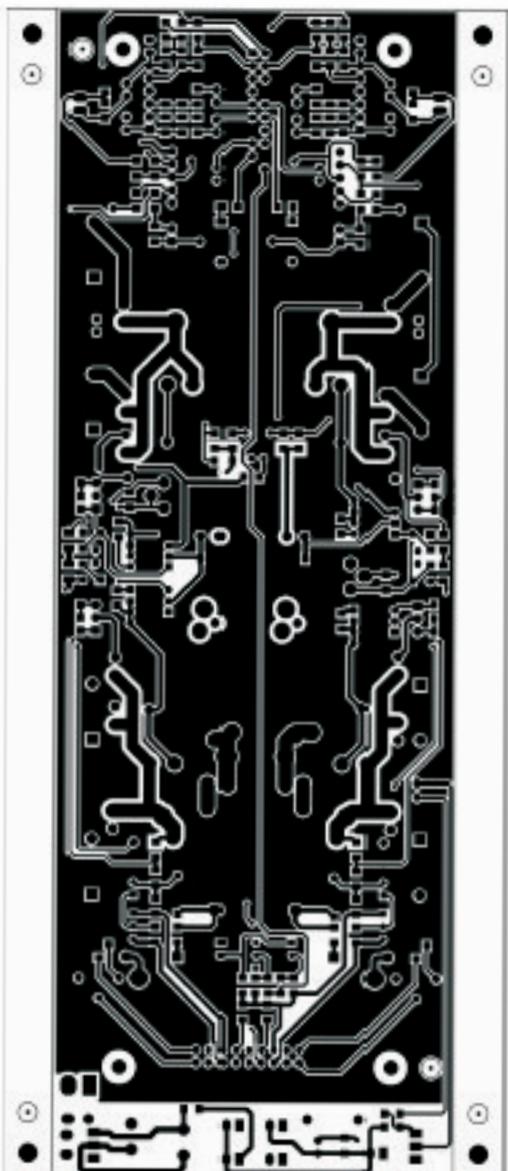
Drill Drawing

Tool	Hole Size	Hole Count/Pair	Tool Travel
T1	39mil (0.9906mm)	3	5.91 Inch (150.19 mm)
T2	47mil (1.1938mm)	36	10.82 Inch (274.90 mm)
T3	63mil (1.6002mm)	20	12.50 Inch (317.37 mm)
T4	126mil (3.2004mm)	1	NPTH 6.57 Inch (166.76 mm)
Totals		40	35.80 Inch (909.22 mm)

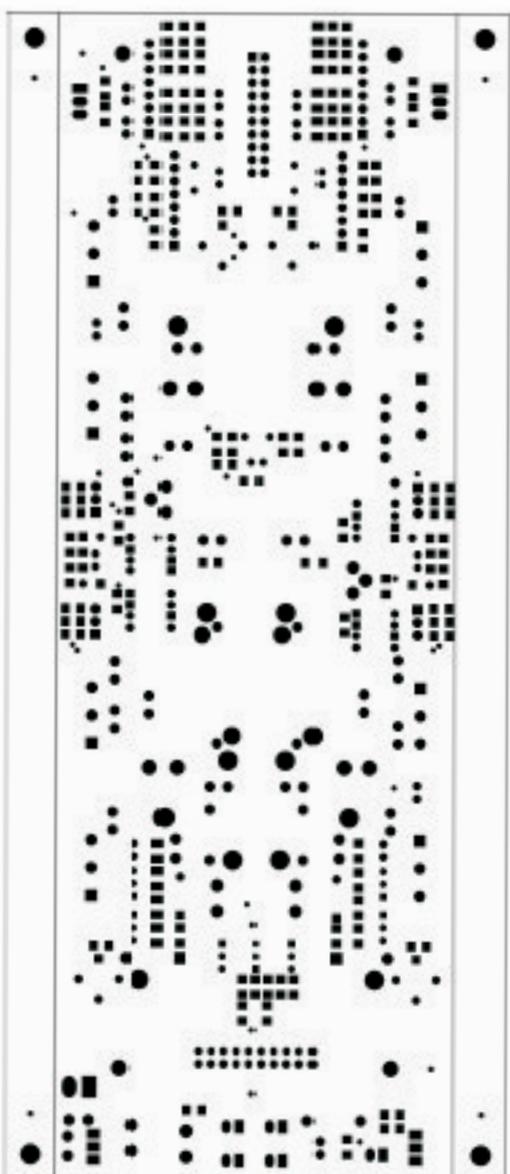




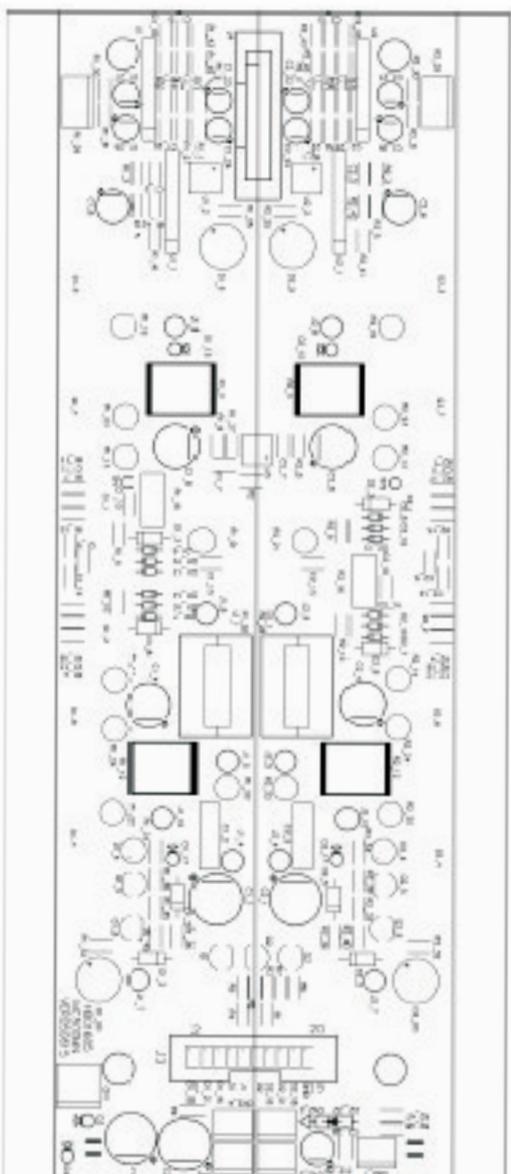
PCB : MC500MN Bottom Overlay



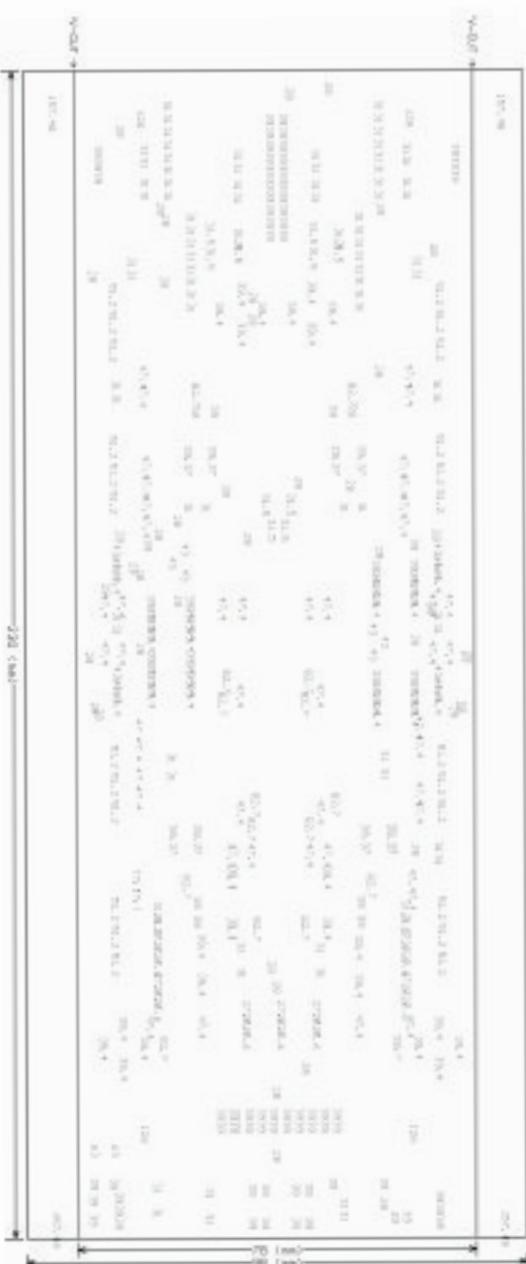
PCB : MC500MN Top Layer



PCB:MC500MN Top Solder Mask

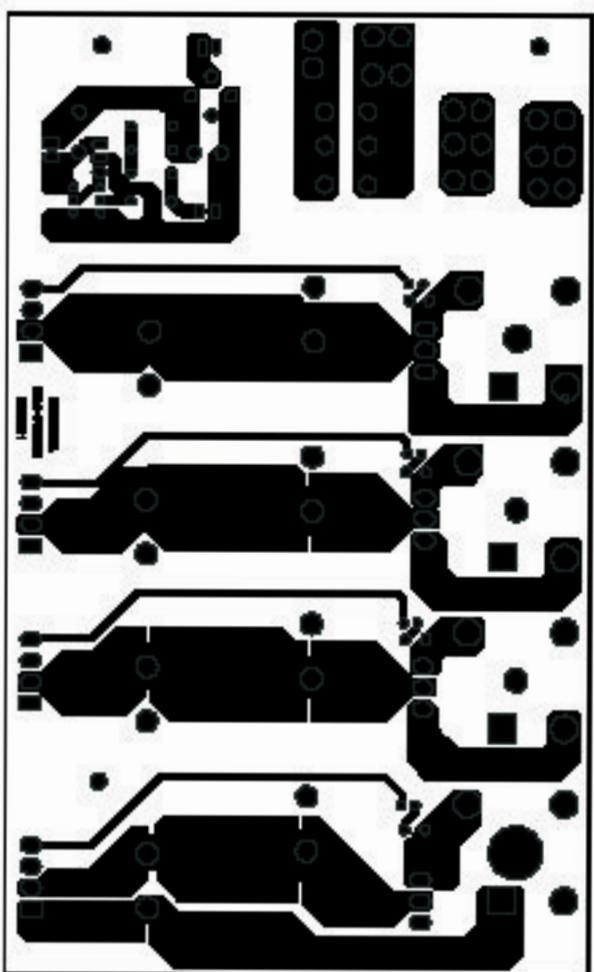


PCB:MC500MN Top Overlay

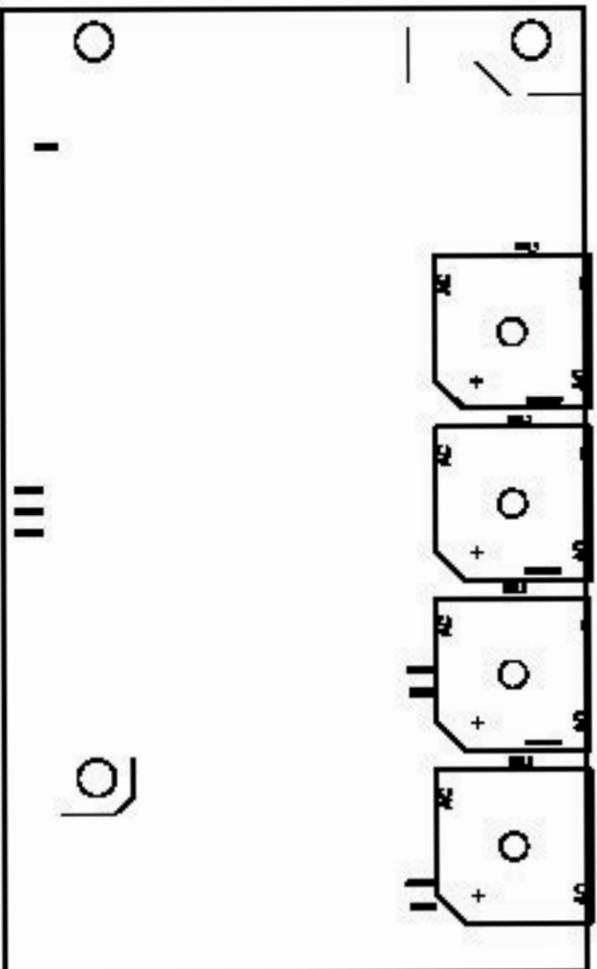


PCB :MC500MN Drill Drawing

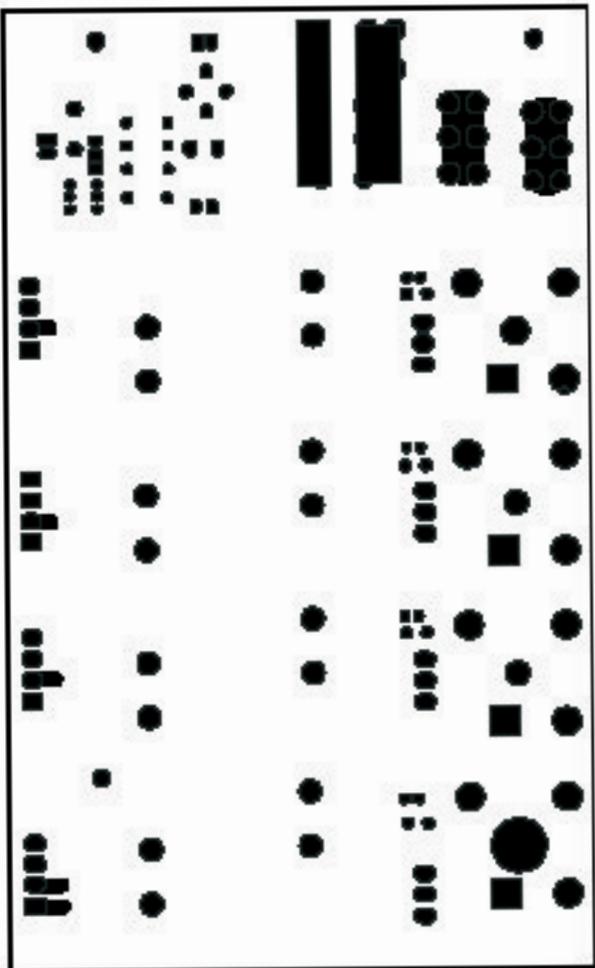
Tool	Hole Size	Hole Count Placed	Tool Travel
T1	28mil (0.7112mm)	62	58.54 Inch (1486.96 mm)
T2	31mil (0.7874mm)	80	57.05 Inch (1449.07 mm)
T3	32mil (0.8128mm)	16	40.52 Inch (1029.11 mm)
T4	39mil (0.9906mm)	142	70.29 Inch (1785.31 mm)
T5	43mil (1.0922mm)	18	32.25 Inch (819.21 mm)
T6	47mil (1.1938mm)	48	53.40 Inch (1356.43 mm)
T7	51mil (1.2954mm)	24	41.19 Inch (1046.12 mm)
T8	63mil (1.6002mm)	2	29.57 Inch (751.14 mm)
T9	83mil (2.1082mm)	16	42.39 Inch (1076.77 mm)
T10	126mil (3.2004mm)	4	47.31 Inch (1201.68 mm)
T11	157mil (3.9878mm)	4	43.23 Inch (1098.05 mm)
Totals		416	515.74 Inch (13099.88 mm)



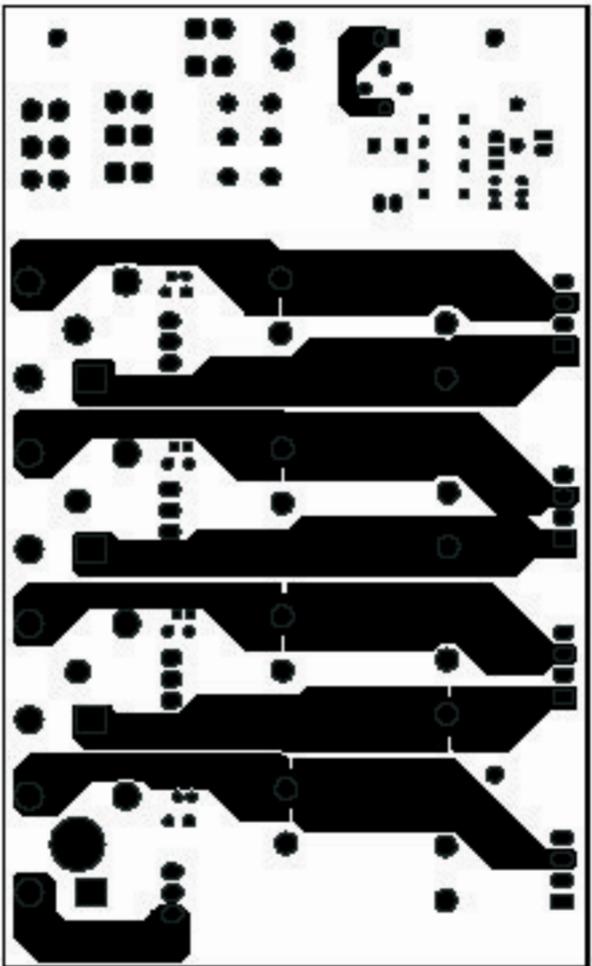
BOTTOM LAYER



BOTTOM OVERLAY

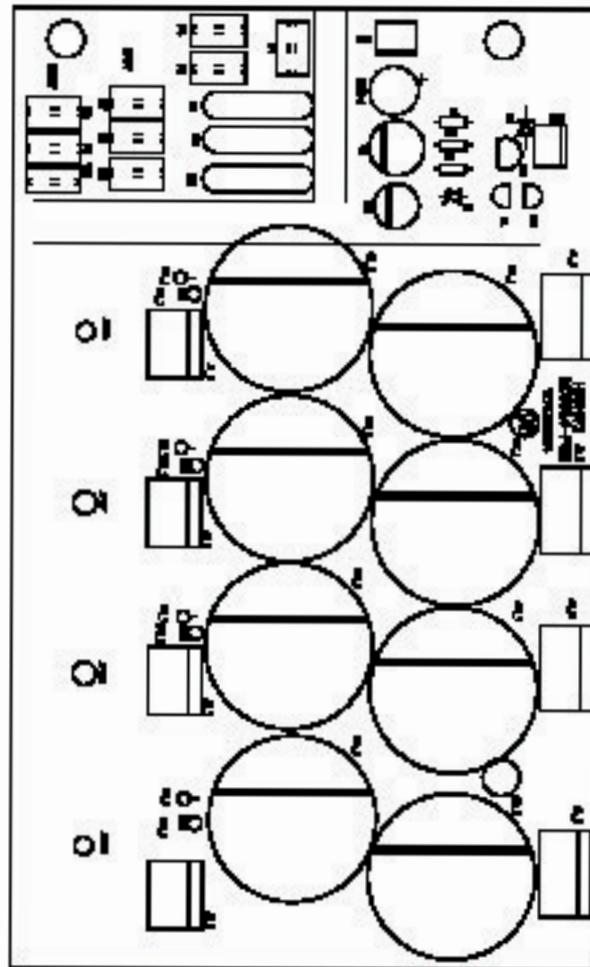


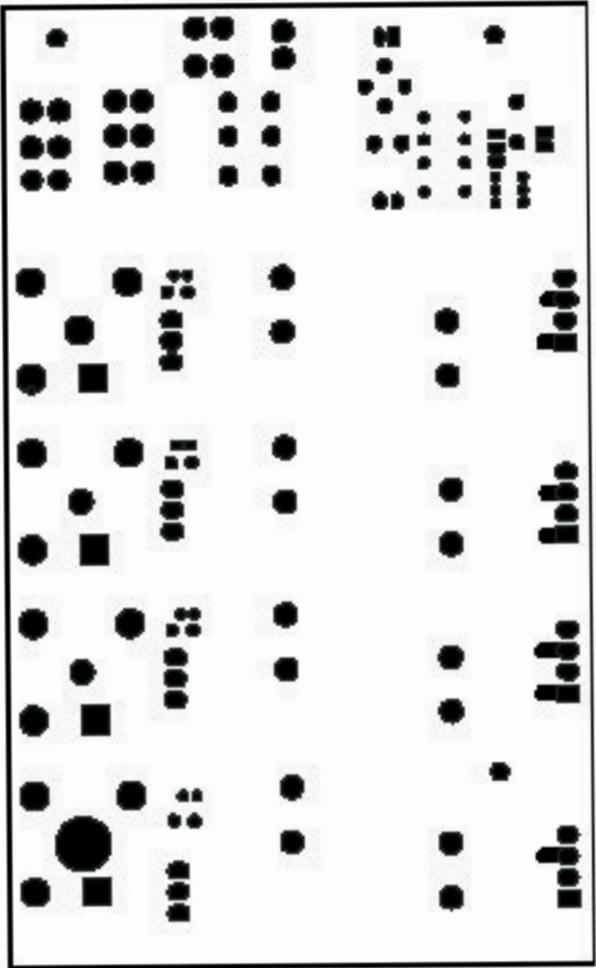
BOTTOM SOLDER



TOP LAYER

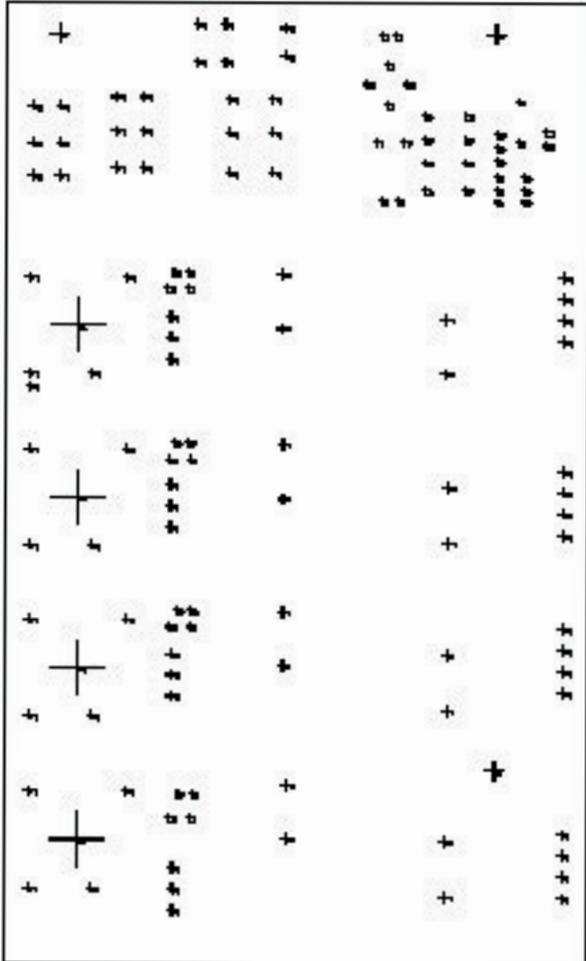
TOP OVERLAY





TOP SOLDER

DRILL DRAWING



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

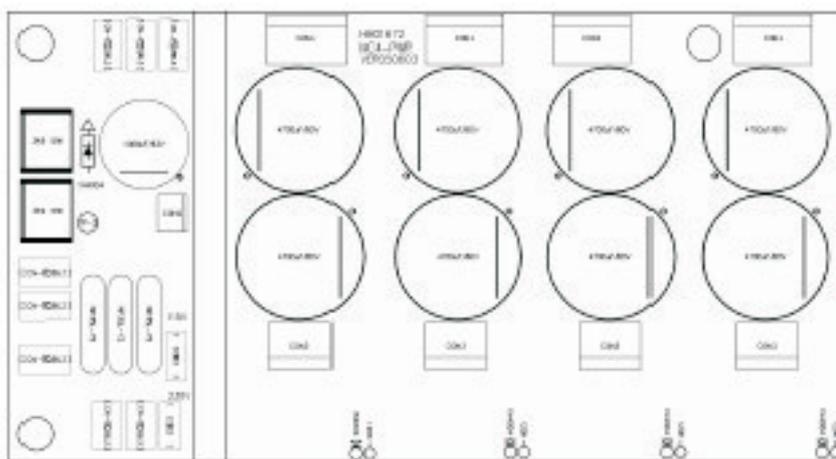
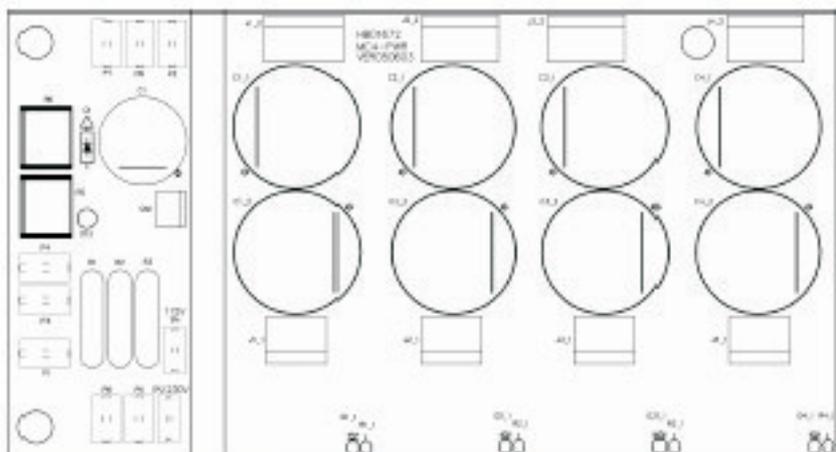
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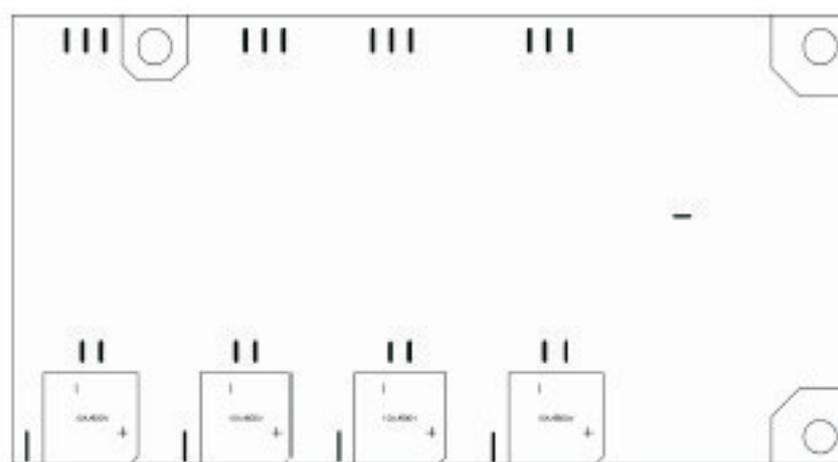
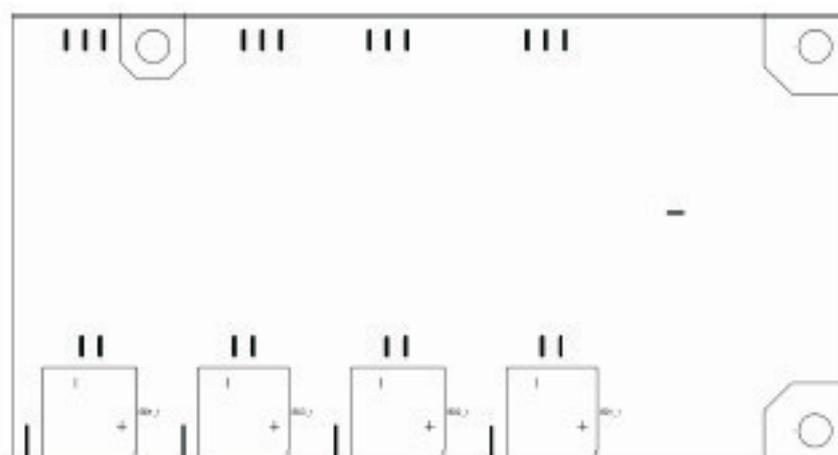
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

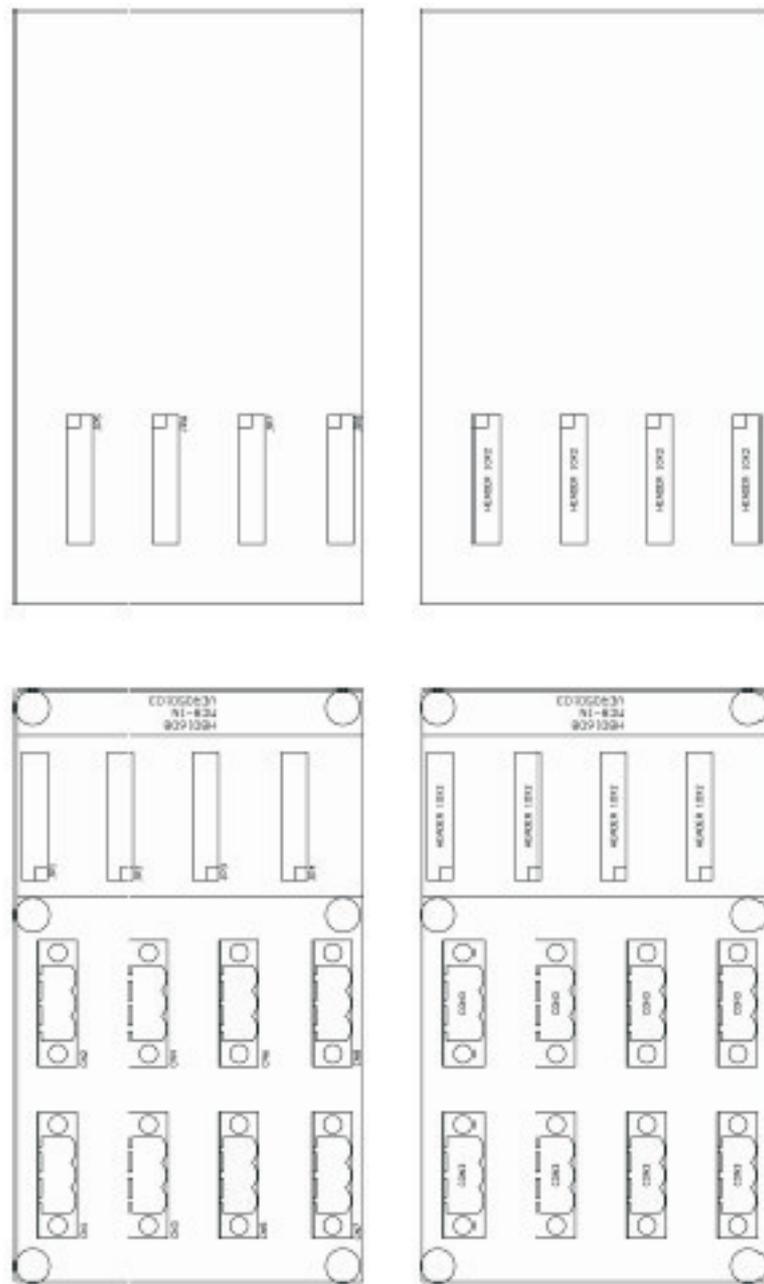
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MC4-PWR 零件組值圖

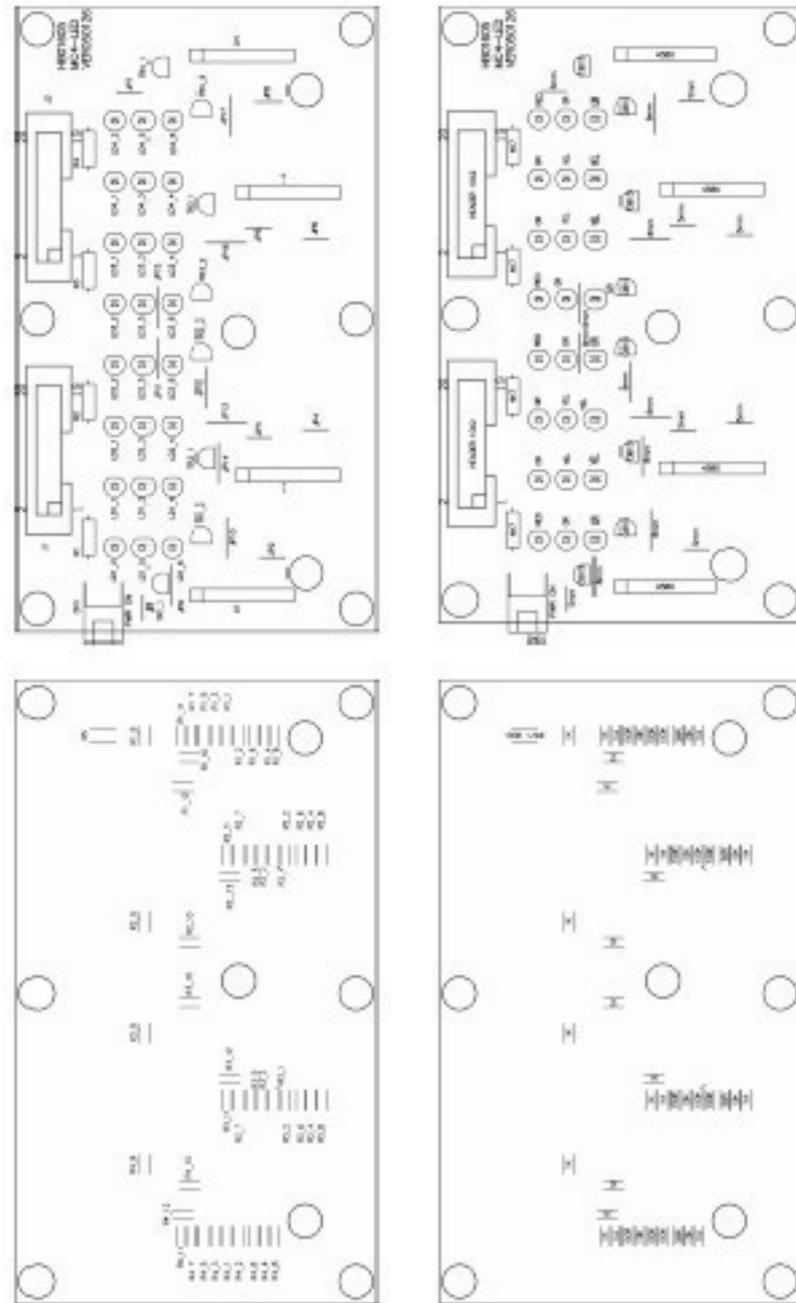




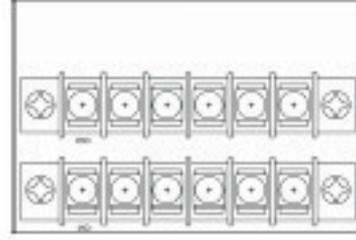
PCB:MC8-IN 零件阻值圖



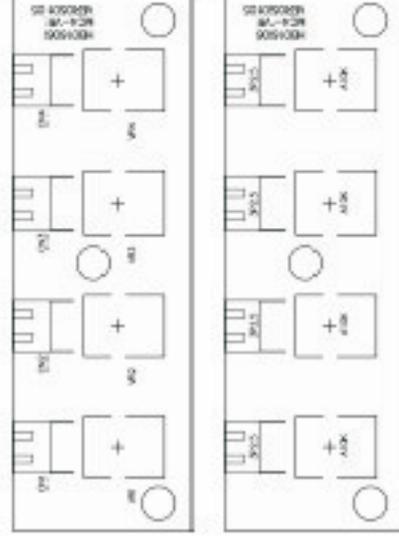
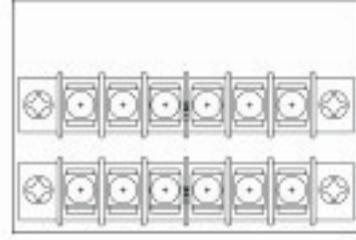
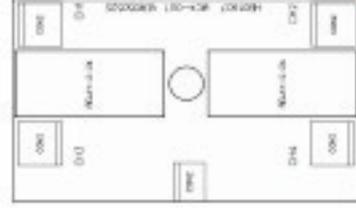
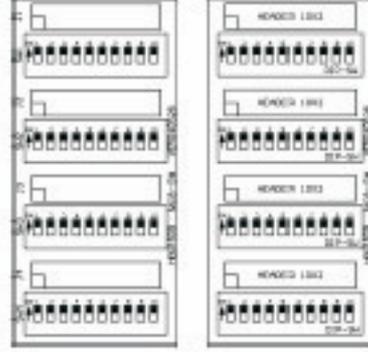
PCB:MC4-LED 零件阻值圖

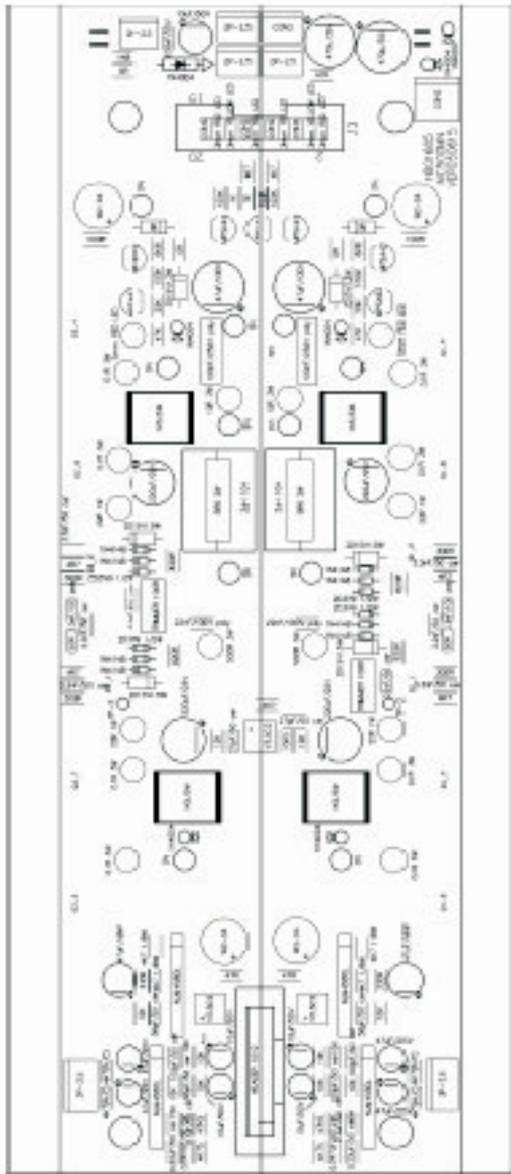


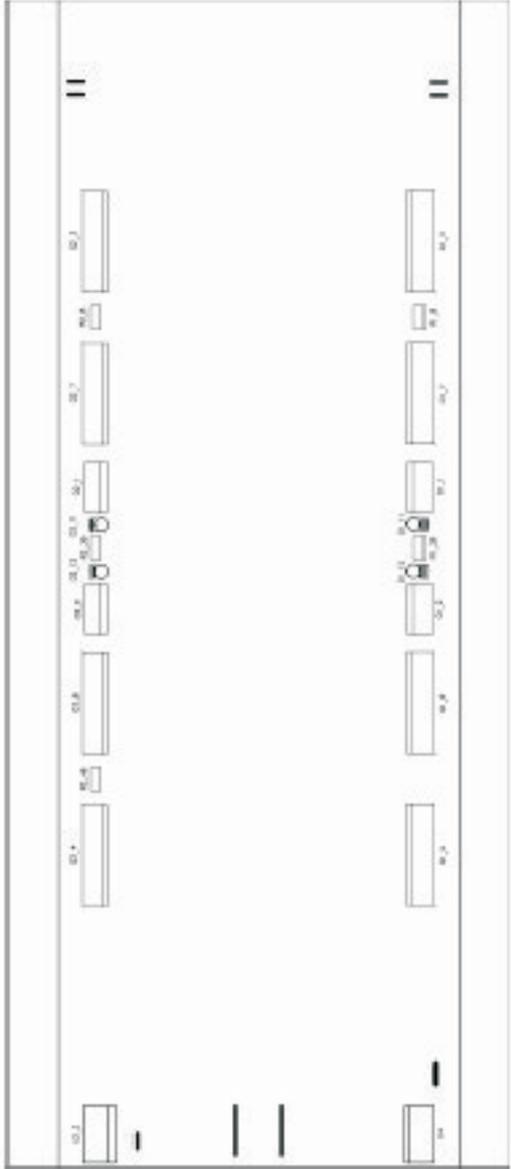
MC4-OUT 零件阻值圖

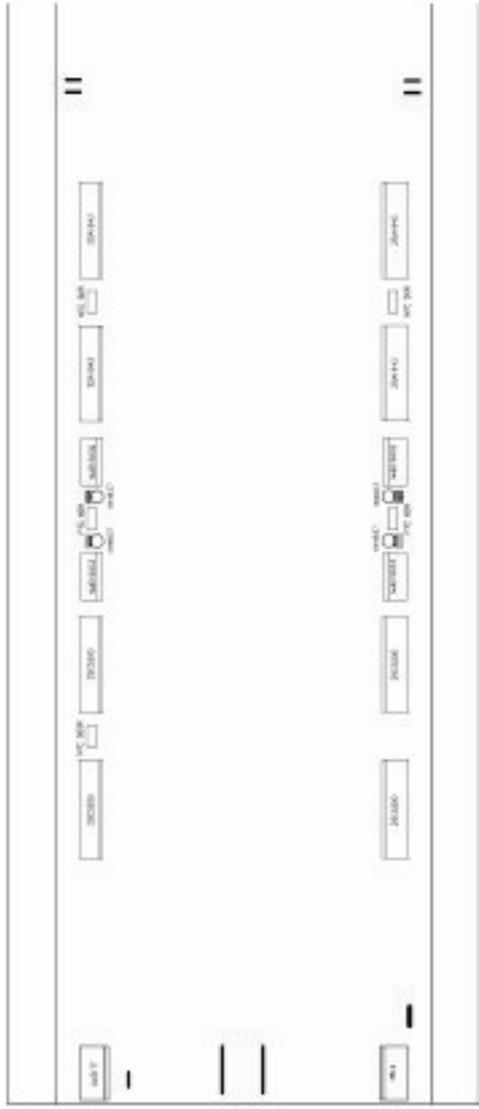


MC8-SW 與 MC4-VR 零件阻值圖









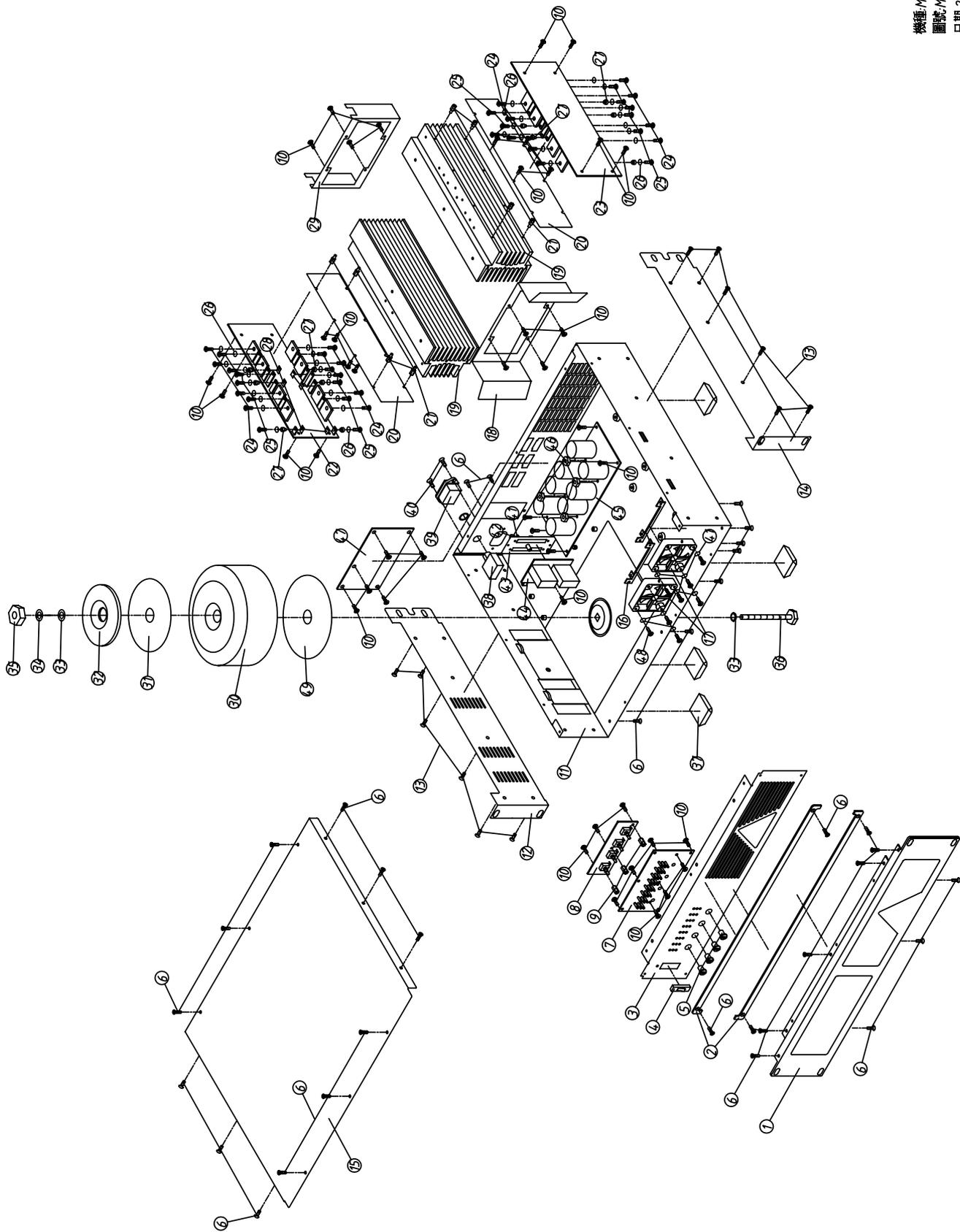
MC500.4 FINISHED PRODUCTS TEST PROCEDURES

1. TEST INSTRUMENTS

- 1). power source
- 2). multi-purpose meter
- 3). audio precision
- 4). Oscillograph
- 5). 4Ω (400W) load resistor*2pcs

2. TEST STEPS

- 1). Set all the dip switches to the position OFF and turn the VR of CH1/CH2/CH3/CH4 to MAX, and then turn on the power switch. The blue power LED lights up, and the PROT LEDs of CH1/CH2/CH3/CH4 light up.
- 2). Without signal input, adjust R1_16/R2_16 for the purpose that the voltage of R1_17/R2_17 is $120\pm 2\text{mV}$. Add 4Ω load to the output terminal, input 5KHz signal to CH1/CH2/CH3/CH4, and then adjust the signal intensity for the purpose that output is 5Vp-p (about 2Vrms). Adjust the wave on oscillograph for the purpose that there is no cross distortion. After test is done, check the angle of potentiometer. The angle of potentiometer should not be much different with the angle which is written on the operation manual (if there is much difference, this means the unit is not a good one).
- 3). Following step 2, input 1KHz 0.6dBu signal, then the output should be $39\text{V}\pm 0.5\text{V}$ and the distortion should be less than 1%. Input 1KHz, $> 0.6\text{dBu}$ signal. When VR is being turned greater, LEVEL LED lights up in turn from -20dB to -10dB. When CLIP LED lights up, the wave clips.
- 4). When the output is max, short circuit the output terminal, then the power consumption should be less than 480W.
- 5). S/N should be more than 90dB (weighted more than 100dB)
- 6). LIMITER TEST: set the dip switch as the CLIP LIMIT marks on the chassis, input 1 KHz/ +10dB signal, and turn VR to max. LIMIT LED on the front panel lights up and there is no clip on the output signals.
- 7). Input 1 KHz/0dB signal to CH1/CH3 respectively and no signal to CH2/CH4. Set VR of CH2/CH4 to max, CH2/CH4 output no signal. Set dip switch as PARALLEL MODE marks, then the PAR LED on the front panel lights up. Turn VR of CH2/CH4, then the output waves can be seen.
- 8). Set dip switch as FILTERS marks to the position FILTER ON and 75Hz FILTER. Turn TIME/DIV knob to the position 10ms and input 100Hz/0dB signal. Turn VR for the purpose that the output is 5Vp-p . Then decrease the input signal frequency. When the frequency is lower than 70Hz, wave Vp-p become smaller as the frequency decreases.
- 9). Set dip switch as the BRIDGE MONO marks. BRDG LED on the front panel lights up. Input 1 KHz signal from CH1/CH3 (set VR of CH2/CH4 to min). Add 8Ω load to the output terminal and output $69\pm 0.5\text{V}$ voltage. At this time, the distortion should be less than 1%.
- 10). Turn off all the input signals. Power consumption in the standby mode should be less than 80W.



MECHANICAL PART LIST

No	Part No	Description	Specification	pcs
1	MA01026	front panel	MC500.4 ALTO_V1.0	1
2	MJ01130	padding board	MC250.8_V1.0	2
3	MA01413	front panel	MC500.4_V1.0	1
4	HI00031	power switch	R415KKETOF	1
5	NI00360	plastic knob	φ 15*15mm black	4
6	MG00025	black plated screw-head pan	M3*6	33
7	HK05155	K-PCB	P-MC4-LEM-DIP	1
8	HK05156	K-PCB	P-MC4-VR	1
9	MG00248	copper pole	M3*15*0.5PH two flat	3
10	MG00041	black plated screw-pill	M3*6	44
11	MB03015	chassis	MC500.4_V1.0	1
12	MI02805	the fixing rack of front panel	MC500.4 L type left_V1.0	1
13	MG00295	black plated screw-head pan	M4*6	12
14	MI01752	the fixing rack of front panel	MISTRAL4000 right L type	1
15	MC00691	top cover	MC250.8_V1.0	1
16	MI00427	fixed rack	PSA-3000 L type	2
17	HE00050	fan--JF0825S1UR000C827	DV12V/0.37A 80*80*25 360mm JST2P	2
18	MJ01115	seperation board	MC500.4 217*51.9*76_V1.1	1
19	MI02642	heat sink	MC500.4 79*59.5*260 1.29kg_V1.2	2
20	MI02643	fixed board	MC500.4 260*58*1t_V1.0	2
21	MG00284	copper pole	M3*8*0.5PH single flat total length14	8
22	HK05151	K-PCB	P-MC500MN-CH1-DIP	1
23	HK05153	K-PCB	P-MC500MN-CH2-DIP	1
24	MG00169	Nickel screw- head pan	M3*12	16
25	MG00162	Nickel screw- pill	M3*8	21
26	MF00037	spring washer	φ 3* φ 5*1t	37
27	NI02249	plastic bush	TW-1(TO-220)	11
28	NC00005	silicone insulating piece	TO-220 square	11
29	MJ01117	seperation board	MC500.4 131*54.5*81_V1.1	1
30	TD00444	loop transformer	PT-MC500.4_115/230V	1
31	NI00440	rubber loop	φ 20* φ 105*2tB	1
32	MH00766	iron piece	φ 11* φ 90*2_V1.1	1
33	MF00026	color washer	φ 8* φ 18*1.5t	2
34	MF00041	spring washer-color plated	φ 8* φ 13.5*2t	1
35	ME00026	Zinc nut	M8	1
36	MG00556	Zinc screw-T-square	M8*82.5*1.25PH_V1.0	1
37	NI01867	adhesive pad	20.5*14*7.6mm(SF-006)	4
38	HI00142	manual returning switch	A0701HM-15A	1
39	HC00005	AC socket	AC-008	1
40	MG00042	black plated screw-head pan	M3*10	2
41	MF00038	spring washer	φ 4* φ 7*1t	5
42	ME00016	color nut	4mm	1

43	MI02644	fixed board	MC500.4_V1.0	1
44	HK05157	K-PCB	P-MC4-OUT	1
45	HK05152	K-PCB	P-MC500MN-CH2-SMD	1
46	ME00015	color nut	3mm	4
47	HK05158	K-PCB	P-MC8-IN	1
48	MG00067	black plated -flat	M4*35	4
49	NI00437	rubber loop	$\varphi 20^* \varphi 120^*2tB$	1

BOM

No	Part No	Description	Specification	Remarks
1	TD00444	loop transformer	PT-MC500.4_115/230V	
2	SA00194	LED-RS	φ 3 round blue LDBK2040	
3	NI00437	rubber loop-RS	φ 20* φ 120*2tB	
4	NI00252	N-heat shrink sleeve	φ 4*20mm	
5	NI00360	plastic knob-semicircle	φ 15*15mm black	
6	NI00389	ZD-plastic washer	φ 12* φ 16*0.5 white	
7	NI00233	N-heat shrink sleeve	φ 2*20mm	
8	NI00218	tie bar	ALT-102SB	
9	NI01867	adhesive pad	20.5*14*7.6mm(SF-006)	
10	NE11347	serial bar code 30*11mm	ALTO PI for special function	
11	NF00061	warranty	ALTO	
12	NE13918	ZC-bar code sticker 30*11mm	MC500.4 model_V1.0	
13	NE02227	ZC-voltage mark 40*17mm	PSA-31500 220-240V	
14	NB01944	inner cardboard-RS	PSA-3000 series_V1.1	
15	NB02086	carton	MACRO series ALTO	
16	NB03882	color box-RS	MC500.4 ALTO_V1.0	
17	MI02805	ZB-front panel rack	MC500.4 L type Left_V1.0	
18	MI01752	ZB-front panel rack	MISTRAL4000 right Ltype	
19	NA00279	plastic bag	0.04t*100*150mm_V1.0	
20	NA00116	PE bag	0.04t*170*100mm	
21	NA00135	PE bag	0.05t*610*500mm	
22	NA00137	plastic bag	5*7	
23	MJ01117	ZD-separation board -MC500.4-04	MC500.4 131*54.5*81_V1.3	
24	MJ01130	ZB-padding board-5076 black and blue	MC250.8_V1.0	
25	MJ01115	ZD-separation board-MC500.4-06	MC500.4 217*51.9*76_V1.2	
26	MG00025	black plated screw-RS-head pan	M3*6	
27	MG00020	black plated screw-RS-flat- self tapping	M3*8	
28	MG00041	black plated screw-RS-pill	M3*6	
29	MG00042	black plated screw-RS-head pan	M3*10	
30	MG00295	black plated screw-RS-head pan	M4*6	
31	MF00030	Nickel washer	φ 3.5* φ 8*0.8t	
32	MF00026	color washer	φ 8* φ 18*1.5t	
33	MF00037	spring washer-zinc plated	φ 3.2* φ 5.5*1t	
34	MF00041	spring washer-color plated	φ 8* φ 13.5*2t	
35	MF00038	spring washer-zinc plated	φ 4* φ 7*1t	
36	MF00048	shake proof -zinc plated	φ 4* φ 8*0.5t	
37	ME00016	color nut-RS	4mm	
38	MG00067	black plated screw-RS-flat	M4*35	
39	ME00015	color nut-RS	3mm	
40	ME00026	Zinc nut	M8	
41	MC00691	ZC-top cover	MC250.8_V1.0	
42	MG00569	Zinc screw-RS-T-square	M8*75*1.25PH_V1.0	

43	MG00248	copper pole-RS	M3*15*0.5PH two flat	
44	MB03015	ZC-chassis	MC500.4_V1.2	
45	MA01026	ZC-front panel	MC500.4 ALTO_V1.0	
46	MA01413	ZC-front panel-5076 black and blue	MC500.4_V1.1	
47	HC00692	terminal jack	5ESDVM-03P	
48	HJ00006	desiccant-RS	30g	
49	HI00031	power SW-RS	R415KKETOF	
50	HI00144	manual returning SW	A0701HM-11A	
51	HE00050	fan-RS-JF0825S1UR000C827	DV12V/0.37A 80*80*25 360mm JST2P	
52	HC00005	AC座-RS	AC-008	
53	HA01460	head wiring -RS AF:W220	2P-2P 350	
54	HA01985	single terminal wire-RS CF:W265	85mm green and yellow	
55	HA01243	2 terminal wire-RS PC250 terminal	300mm UL1015 14AWG brown	
56	HA01247	single terminal wire-RS PC250 terminal	180mm UL1015 14AWG blue	
57	HA01248	single terminal wire-RS PC250 terminal	150mm UL1015 14AWG brown	
58	HA01439	header wire-RS AF:W184	2P-2P 120	
59	HA00871	power supplywire-RS EURO 3P	LT-322+1.5*3C(H05VV-F) 6FT+LT-501	
60	HA01638	header wire-RS AF:W94	2P 280	
61	HA02470	header wire-RS	3P-3P 600mm 28AWG blue	
62	HA02469	header wire-RS	3P-3P 480mm 28AWG blue	
63	AD00012	two side sticker	90*120mm_V1.0	
64	NF02240	user's manual- English	MC500.4 ALTO_V1.1	
65	MH02024	ZD-iron piece-PT attachment-04	1.5t*φ 11*φ 120*12_V1.0	
66	HA04068	header wire-RS 2.5	3P-3P 600mm UL2547 28AWG brown	
67	HA04066	header wire-RS 2.5	3P-3P 480mm UL2547 28AWG orange	
68	MI00427	ZD-fixing rack-PSA3000-15	PSA-3000 Ltype	
69	NI03762	N-wire protection sleeve-PE-white	5.3*30mm	
70	HK05155	K-PCB	P-MC4-LED-DIP	
71	HK05156	K-PCB	P-MC4-VR	
72	HK05157	K-PCB	P-MC4-OUT	
73	HK05153	K-PCB	P-MC500MN-CH2-DIP	
74	HK05158	K-PCB	P-MC8-IN	
75	HK05676	K-PCB	P-MC250.4-PWR	
76	HK05151	K-PCB	P-MC500MN-CH1-DIP	
77	HK05155	K-PCB	P-MC4-LED-DIP	
78	RA00231	fixed resistor-RS 1/4W	4.7KΩ M type	R1,R2,R3,R4
79	SB00034	transistor	2SC1815GR(zonal)	TR1-1,TR1-2,TR2-1,TR2-2, TR3-1,TR3-2,TR4-1,TR4-2
80	SD00173	IC	NJM4580L(JRC)	U1,U2,U3,U4
81	SA00054	LED-RS	φ 3 round yellow long pin26mm	LD1-3,LD1-4,LD2-3,LD2-4
82				,LD3-3,LD3-4,LD4-3,LD4-4
83	SA00052	LED-RS	φ 3 round yellow long pin26mm	LD1-1,LD1-5,LD1-6,LD2-1,LD2-5,LD2-6
84				,LD3-1,LD3-5,LD3-6,LD4-1,LD4-5,LD4-6

85	SA00053	LED-RS	φ 3 round yellow long pin26mm	LD1-2,LD2-2,LD3-2,LD4-2
86	NI01786	LED spacer	LEDS-12 12mm	
87	HA03861	header wire 3100(male)- 3130(female)	20P-20P 400mm UL2651 28AWG PH1.27mm	J2
88	HA03862	header wire 3100(male)- 3130(female)	20P-20P 250mm UL2651 28AWG PH1.27mm	J1
89	HA01922	jumper	8mm	JP10,JP11,JP12,JP13, JP14,JP15,JP16,JP17
90	HA01919	jumper-RS	5mm	JP1,JP2,JP3,JP4,JP5,JP6,JP7,JP8
91	AC00002	tin (Sn) strip	63/37%	
92	HK05154	K-PCB	P-MC4-LED-SMD	
93	HK05154	K-PCB	P-MC4-LED-SMD	
94	RD00015	SMD fixed resistor-RS 1/8W	560Ω ±5% 0805	R1-5,R2-5,R3-5,R4-5
95	RD00055	SMD fixed resistor-RS 1/8W	680KΩ ±5% 0805	R1-7,R1-8,R2-7,R2-8,R3-7,R3-8,R4-7,R7-8
96	RD00504	SMD fixed resistor-RS 1/8W	169Ω ±1% 0805	R1-6,R2-6,R3-6,R4-6
97	RD00380	SMD fixed resistor-RS 1/8W	10.0KΩ ±1% 0805	R1-3,R1-4,R2-3,R2-4,R3-3,R3-4,R4-3,R4-4
98	RD00378	SMD fixed resistor-RS 1/8W	1.00KΩ ±1% 0805	R1-9,R1-10,R2-9,R2-10, R3-9,R3-10,R4-9,R4-10
99	RD00403	SMD fixed resistor-RS 1/8W	100KΩ ±1% 0805	R1-1,R1-2,R2-1,R2-2,R3-1,R3-2,R4-1,R4-2
100	HB01605	PCB-RS-CEM-1 123*70.5*1.6	MC4-LED_VER050803	
101	AE00221	retinol-RS	SJ-617 500G per pot	
102	HK05156	K-PCB	P-MC4-VR	
103	RC00209	potentiometer	A10KΩ RV110-40E1-225A-A14	VR1,VR2,VR3,VR4
104	HB01606	PCB-RS-CEM-1 106*35*1.6	MC4-VR_VER050105	
105	HC00066	male header	3P 2.5mm 90°	CN1,CN2,CN3,CN4
106	AC00002	tin (Sn) strip	63/37%	
107	HK05157	K-PCB	P-MC4-OUT	
108	MI02644	ZB-fixed board	MC500.4_V1.0	
109	MG00041	black plated screw-RS-pill	M3*6	
110	MG00060	black plated screw-RS-flat -self tapping	M3*6	
111	HC00088	male header	2P 3.9mm 180°	CN3,CN4,CN5,CN6
112	HC00695	terminal block	DT-35-A02W-06 6PIN 180°	CN1,CN2
113	HI00007	relay	942H-2C-24DS(8 pin)	RL1,RL2
114	HC00076	male header	2P 2.5mm 180°	CN7
115	HB01607	PCB-FR4/2L 2oz 74*40*1.6	MC4-OUT_VER050729	
116	AC00002	tin (Sn) strip	63/37%	
117	HK05153	K-PCB	P-MC500MN-CH2-DIP	
118	RA00722	metal oxide film resistor-RS 3W	500Ω P type	R1-21,R2-21
119	RA00980	metal oxide film resistor-RS 3W	10Ω P type	R1-22,R2-22
120	RA00158	fixed resistor-RS 1/4W	0.0Ω M type	D1-2,D2-2
121	RA00051	metal oxide film resistor-RS 2W	5.6Ω P type	R1-26,R2-26
122	RA00071	metal oxide film resistor-RS 3W	0.1Ω RSS P type	R1-19,R1-20,R1-23,R1-24, R2-19,R2-20,R2-23,R2-24
123	RA00007	metal oxide film resistor-RS 1W	22Ω P type	R1-13,R1-14,R2-13,R2-14
124	SD00249	IC	LM317LZ(TO-92)/(ST)	U2-3
125	SB00130	transistor	MPSA42/(PHILIPS)	Q1,Q2,Q3,Q1-6,Q2-6

126	SB00129	transistor	MPSA92(TO92)/(PHI)	Q1-5,Q2-5
127	SB00021	power transistor	2SC5200	Q1-4,Q1-8,Q2-4,Q2-8
128	SB00023	power transistor	2SA1943-O	Q1-3,Q1-7,Q2-3,Q2-7
129	SD00173	IC	NJM4580L(JRC)	U1,U2,U1-1,U2-1
130	SA00167	bridge rectifier-RS	2A W2-08	D1-9,D1-20,D2-9,D2-20
131	SB00042	transistor	MJE15032	Q1-1,Q2-1
132	SB00044	transistor	MJE15033	Q1-2,Q2-2
133	SA00205	zener diode-RS	1/2W 3.9V	D1-13,D1-14,D2-13,D2-14
134	RH00004	P.T.C-RS NTC	90Ω (NSA05A090L-500)	R1-8,R2-8
135	SA00093	rectifying diode -RS	1N4148 0.5A strip	D1-6,D1-7,D1-10,D1-19,D2-6, D2-7,D2-10,D2-19
136	SA00098	rectifying diode-RS	1A/400V 1N4004 strip	D1-15,D1-17,D2-15,D2-17,D2-22
137	SA00107	zener diode-RS	1W 15V 1N4744	D1-3,D2-3,D1_3,D1_8,D2_3,D2_8
138	RH00029	P.T.C-RS PTC	100Ω (PBS7101ZF)	R1-39,R2-39
139	SA00002	fast diode-RS	1A/600V 1N4937	D1-11,D1-12,D2-11,D2-12
140	RH00028	P.T.C-RS NTC	500Ω (NDA05C150L-W)	R2-46
141	SA00053	LED-RS	φ 3 round red long pin 26mm	D1-4,D2-4
142	NI01775	LED spacer	LEDS-2.5 2.5mm	D2-4,D1-4
143	NI02249	plastic bush	TW-1(TO-220)	
144	ND00177	N-silicone sleeve	φ 1*15mm	D1-11,D1-12,D2-11,D2-12
145	ND00176	N-silicone sleeve	φ 1*10mm	D1-11,D1-12,D2-11,D2-12
146	NC00005	silicone insulating piece -RS	TO-220 square	
147	MI02643	ZD-fixed board-MC500.4-05	MC500.4 260*57*1t_V1.1	
148	MG00284	copper pole-RS	M3*8*0.5PH single flat length-14	
149	MG00041	black plated screw-RS-pill	M3*6	
150	MG00162	black plated screw-RS-pill	M3*8	
151	MG00169	Nickel screw-RS-head pan	M3*12	
152	MF00037	spring washer -zinc plated	φ 3.2* φ 5.5*1t	
153	HK02231	K-photosentive +led	P-photosensitive+ φ 5LLED	U1-2,U2-2,U3
154	HC00343	male header	20P 2.54mm 180°	J3,J4
155	HC00399	row pin header (one row) #1100	2.54 180° 1P(gold plated) 14mm 2.8/2.3mm	TP1
156	HC00077	male header	3P 2.5mm 180°	R1-29,R2-29
157	HC00076	male header	2P 2.5mm 180°	CN2-1,CN2-3
158	CB00185	electrolyte capacitor -RS	10uF/63V φ 5*11mm pin distance 2mm	C1-23,C1-24,C2-23,C2-24
159	CF00033	metal film capacitor-RS MEF	0.1uF/250V	C1-2,C2-2
160	CB00039	electrolyte capacitor-RS	47uF/25V φ 5*11mm	C1-26,C1-27,C2-26,C2-27
161	CN00060	fixed inductor	2uH 10A(CSAF-302824)(φ 1.5mm*12 1/2T)	L1-1,L2-1
162	CB00025	electrolyte capacitor-RS	10uF/50V φ 6*7mm	C2-29
163	CB00169	electrolyte capacitor-RS	47uF/16V NP φ 6.3*11mm	C1-6,C2-6
164	CB00043	electrolyte capacitor-RS	47uF/100V φ 10*12mm pin length 4mm	C1-1,C2-1
165	CB00056	electrolyte capacitor-RS	220uF/25V φ 8*11mm	C1-4,C1-8,C2-4,C2-8
166	AC00002	tin strip	63/37%	
167	RC00537	semi-fixed resistor-RS	B100Ω F-101-2 100Ω-MO	R1-16,R2-16
168	RA01518	cement resistor 5W	1.8KΩ SQM type	R1-11,R1-12,R2-11,R2-12

169	HA04082	row pin header wire-RS 3.96	4P 420/470/530mm UL1015 16AWG red black brown orange	J2-7,J2-8,J2-9,J2-10
170	HA04086	row pin header wire-RS 3.96	2P 580mm UL1015 16AWG white orange	J2-4,J2-5
171	HA04083	row pin header wire-RS 3.96	4P 480/510/560mm UL1015 16AWG red black brown yellow	J1-7,J1-8,J1-9,J1-10
172	HA04085	row pin header wire-RS 3.96	2P 580mm UL1015 16AWG white yellow	J1-4,J1-5
173	HK05675	K-PCB	P-MC250.4MN-SMD	
174	MI02642	ZD-heat sink-aluminum -MC500.4-02	MC500.4 79*59.5*260 1.29kg_V1.3	
175	HK05675	K-PCB	P-MC250.4MN-SMD	
176	RD00320	SMD precise resistor-RS 1/4W	12.0K Ω \pm 1% 1206	R1-6,R2-6,R1_38,R2_38
177	RD00452	SMD precise resistor-RS 1/4W	15.0K Ω \pm 1% 1206	R1-44,R2-44
178	RD00255	SMD precise resistor-RS 1/4W	100K Ω \pm 1% 1206	R5,R6,R8,R1-35,R2-35
179	RD00246	SMD precise resistor-RS 1/4W	1.80K Ω \pm 1% 1206	R2-48
180	RD00245	SMD precise resistor-RS 1/4W	1.00K Ω \pm 1% 1206	R3,R7
181	RD00516	SMD precise resistor-RS 1/4W	150 Ω \pm 1% 1206	R1-15,R2-15
182	RD00518	SMD precise resistor-RS 1/4W	10.5K Ω \pm 1% 1206	R1-37
183	RD00517	SMD precise resistor-RS 1/4W	4.75K Ω \pm 1% 1206	R1-43,R2-43
184	RD00519	SMD precise resistor-RS 1/4W	47.5K Ω \pm 1% 1206	R1-45,R2-45,R9
185	RD00515	SMD precise resistor-RS 1/4W	4.7 Ω \pm 1% 1206	R1-17,R1-18,R2-17,R2-18
186	RD00399	SMD precise resistor-RS 1/4W	10.0K Ω \pm 1% 1206	R1-1,R1-2,R1-3,R1-27,R1-28, R2-1,R2-2,R2-3,R2-27,R2-28
187	RD00411	SMD precise resistor-RS 1/4W	4.7K Ω \pm 1% 1206	R1,R2,R4,R1-41,R1-42,R2-41,R2-42
188	RD00135	SMD fixed resistor-RS 1/4W	330 Ω \pm 5% 1206	R1-5,R2-5
189	RD00129	SMD fixed resistor-RS 1/4W	0.0 Ω \pm 5% 1206	R1-36,R2-36,R2-47
190	RD00133	SMD fixed resistor-RS 1/4W	100 Ω \pm 5% 1206	R1-32,R2-32
191	RD00132	SMD fixed resistor-RS 1/4W	47 Ω \pm 5% 1206	R1-25,R2-25
192	RD00137	SMD fixed resistor-RS 1/4W	820 Ω \pm 5% 1206	R1-9,R1-10,R2-9,R2-10
193	RD00141	SMD fixed resistor-RS 1/4W	6.8K Ω \pm 5% 1206	R1-40,R2-40
194	RD00146	SMD fixed resistor-RS 1/4W	47K Ω \pm 5% 1206	R1-34,R2-34
195	HB01685	PCB-FR4/2L 2oz 230*78*1.6	MC500MN_VER050615	
196	CI00095	SMD ceramic capacitor-RS 1206	0.1uF/50V X7R	C1-17,C2-17,C2-28
197	CI00103	SMD ceramic capacitor-RS 1206	100PF/50V NPO \pm 5%	C1-3,C1-25,C2-3,C2-25
198	CI00105	SMD ceramic capacitor-RS 1206	0.0022uF/50V NPO \pm 5%	C1-9,C2-9
199	CI00045	SMD ceramic capacitor 1206	0.022uF/50V X7R \pm 5%	C1-10,C2-10
200	CI00138	SMD ceramic capacitor-RS 1206	0.22uF/50V X7R \pm 10%	C1-16,C2-16
201	CI00183	SMD ceramic capacitor 1206	0.0033uF/100V NPO \pm 5%	C1-14,C2-14
202	CI00181	SMD ceramic capacitor 1206	27PF/50V NPO \pm 5%	C1-7,C2-7
203	CI00182	SMD ceramic capacitor 1206	56PF/50V NPO \pm 5%	C1-5,C2-5
204	CI00184	SMD ceramic capacitor 1206	0.022uF/100V X7R \pm 5%	C1-13,C2-13
205	CI00043	SMD ceramic capacitor-RS 1206	0.0033uF/50V NPO \pm 5%	C1-11,C1-12,C2-11,C2-12
206	AE00221	retinol-RS	SJ-617 500G/pot	
207	CI00212	SMD ceramic capacitor 1206	0.047uF/50V X7R \pm 5%	C1_15,C2_15
208	RD00552	SMD fixed resistor-RS 1/4W	270 Ω \pm 5% 1206	R1-4,R1-7,R2-4,R2-7
209	HK05158	K-PCB	P-MC8-IN	
210	HC00654	terminal block	5EHDVM-03P	CN1,CN2,CN3,CN4
211	HC00354	row pin(two row) #2200	2.54 180° 2*10P(gold plated) 4/9.5mm	JP1,JP2

212	HB01608	PCB-FR4/2L 116.7*68.1*1.6	MC8-IN_VER050103	
213	HA03861	row pin wire3100(male)-3130(female)	20P-20P 400mm UL2651 28AWG PH1.27mm grey red	JP6
214	AC00002	tin strip	63/37%	
215	HA04077	row pin wire3100(male)-3130(female)	20P-20P 160mm UL2651 28AWG PH1.27mm grey red	JP5
216	HK05159	K-PCB	P-MC8-SW	
217	HK05159	K-PCB	P-MC8-SW	
218	HI00248	dip SW	10P EDG110S	SW1,SW2
219	HB01609	PCB-FR4/2L 68*32*1.6	MC8-SW_VER040526	
220	AC00002	tin strip	63/37%	
221	HK05676	K-PCB	P-MC250.4-PWR	
222	RA00297	fixed resistor-RS 1/4W	300K Ω M type	R6
223	RA00283	fixed resistor-RS 1/4W	120K Ω F type	R1-1,R2-1,R3-1,R4-1
224	RA00252	fixed resistor-RS 1/4W	22K Ω M type	R4
225	SB00130	transistor	MPSA42/(PHILIPS)	Q1
226	SB00129	transistor	MPSA92(TO92)/(PHI)	Q2
227	SA00167	bridge rectifier-RS	2A W2-08	BDR5-1
228	SA00093	rectifying diode -RS	1N4148 0.5A strip	D2
229	SA00098	rectifying diode -RS	1A/400V 1N4004 strip	D1-1,D2-1,D3-1,D4-1
230	SA00120	rectifying diode -RS	1/2W 8.2V 9A2	D1
231	SA00012	bridge rectifier	25A/600V BP25-06PWS round pin	BD1-1,BD2-1,BD3-1,BD4-1
232	NI02230	N-heat shrink sleeve	ϕ 22*30mm	
233	HB01672	PCB-FR4/2L 2oz 179*108*1.6	MC4-PWR_VER050924	
234	HC00174	male header	4P 3.96mm 180°	J1-2,J2-2,J3-2,J4-2
235	HC00172	male header	3P 3.96mm 180°	J1-1,J2-1,J3-1,J4-1
236	HC00076	male header	2P 2.5mm 180°	CN1,CN2
237	HC00324	connecting terminal	6.5mm (PC250)	P1,P2,P3,P4,P5,P6,P7,P8,TP2
238	CG00044	NTC-RS	NP35L-Y2	R1,R2,R3
239	CB00151	electrolyte capacitor-RS	220uF/63V ϕ 10*16mm pin distance 5mm	C1
240	CB00208	electrolyte capacitor-RS	4700uF/100V ϕ 30*50mm	C1-1,C1-2,C2-1,C2-2, C3-1,C3-2,C4-1,C4-2
241	CB00249	electrolyte capacitor-RS	47uF/50V ϕ 6.3*11mm low resistance pin distance2.5mm	C2
242	AC00002	tin strip	63/37%	
243	HK05151	K-PCB	P-MC500MN-CH1-DIP	
244	RA00722	metal oxide film resistor-RS 3W	500 Ω P type	R1-21,R2-21
245	RA00980	metal oxide film resistor-RS 3W	10 Ω P type	R1-22,R2-22
246	RA00158	fixed resistor-RS 1/4W	0.0 Ω M type	D1-2,D2-2
247	RA00051	metal oxide film resistor-RS 2W	5.6 Ω P type	R1-26,R2-26
248	RA00071	metal oxide film resistor-RS 3W	0.1 Ω RSS P type	R1-19,R1-20,R1-23,R1-24, R2-19,R2-20,R2-23,R2-24
249	RA00007	metal oxide film resistor-RS 1W	22 Ω P type	R1-13,R1-14,R2-13,R2-14
250	SD00249	IC	LM317LZ(TO-92)/(ST)	U2-3
251	SB00130	transistor	MPSA42/(PHILIPS)	Q1,Q2,Q3,Q1-6,Q2-6
252	SB00129	transistor	MPSA92(TO92)/(PHI)	Q1-5,Q2-5
253	SB00021	power transistor	2SC5200	Q1-4,Q1-8,Q2-4,Q2-8

254	SB00023	power transistor	2SA1943-O	Q1-3,Q1-7,Q2-3,Q2-7
255	SD00173	IC	NJM4580L(JRC)	U1,U2,U1-1,U2-1
256	SA00167	bridge rectifier-RS	2A W2-08	D1-9,D1-20,D2-9,D2-20
257	SB00042	transistor	MJE15032	Q1-1,Q2-1
258	SB00044	transistor	MJE15033	Q1-2,Q2-2
259	SA00205	zener diode-RS	1/2W 3.9V	D1-13,D1-14,D2-13,D2-14
260	RH00004	P.T.C-RS NTC	90Ω (NSA05A090L-500)	R1-8,R2-8
261	SA00093	rectifying diode-RS	1N4148 0.5A strip	D1-6,D1-7,D1-10,D1-19, D2-6,D2-7,D2-10,D2-19
262	SA00098	rectifying diode-RS	1A/400V 1N4004 strip	D1-15,D1-17,D2-15,D2-17,D2- 22,D2
263	SA00107	zener diode-RS	1W 15V 1N4744	D1-5,D2-5,D1_3,D1_8,D2_3,D2_8
264	RH00029	P.T.C-RS PTC	100Ω (PBS7101ZF)	R1-39,R2-39
265	SA00002	fast diode-RS	1A/600V 1N4937	D1-11,D1-12,D2-11,D2-12
266	RH00028	P.T.C-RS NTC	500Ω (NDA05C150L-W)	R2-46
267	SA00053	LED-RS	φ 3 round red long pin 26mm	D1-4,D2-4
268	NI01775	LED spacer	LEDS-2.5 2.5mm	D1-4,D2-4
269	NI02249	plastic bush	TW-1(TO-220)	
270	ND00177	N-silicone sleeve	φ 1*15mm	D1-11,D1-12,D2-11,D2-12
271	ND00176	N-silicone sleeve	φ 1*10mm	D1-11,D1-12,D2-11,D2-12
272	NC00005	silicone insulating piece-RS	TO-220 square	
273	MI02643	ZD-fixed board -MC500.4-05	MC500.4 260*57*1t_V1.1	
274	MG00284	copper pole-RS	M3*8*0.5PH single flat total length 14	
275	MG00041	black plated screw-RS-pill	M3*6	
276	MG00162	Nickel screw-RS-pill	M3*8	
277	MG00169	Nickel screw-RS-head pan	M3*12	
278	MF00037	spring washer -Zinc plated	φ 3.2* φ 5.5*1t	
279	HK02231	K-photosensitive resistor +LED	P-photosensitive resistor+ φ 5LLED	U1-2,U2-2,U3
280	HC00088	male header	2P 3.9mm 180°	CN1
281	HC00343	male header	20P 2.54mm 180°	J3,J4
282	HC00399	row pin (one row) #1100	2.54 180° 1P(gold plated) 14mm 2.0/2.2mm	
283	HC00077	male header	3P 2.5mm 180°	R1-29,R2-29
284	HC00076	male header	2P 2.5mm 180°	CN2-1,CN2-3,CN2-2,CN2-4,CN2
285	CB00185	electrolyte capacitor-RS	10uF/63V φ 5*11mm pin distance 2mm	C1-23,C1-24,C2-23,C2-24
286	CF00033	metal film capacitor -RS MEF	0.1uF/250V	C1-2,C2-2
287	CB00039	electrolyte capacitor-RS	47uF/25V φ 5*11mm	C1-26,C1-27,C2-26,C2-27
288	CN00060	fixed inductance	2uH 10A(CSAF-302824)(φ 1.5mm*12 1/2T)	L1-1,L2-1
289	CB00067	electrolyte capacitor-RS	470uF/35V φ 10*20mm	C1,C2
290	HA01918	jumper-RS	4mm	D4
291	CB00025	electrolyte capacitor-RS	10uF/50V φ 6*7mm	C2-29
292	CB00169	electrolyte capacitor-RS	47uF/16V NP φ 6.3*11mm	C1-6,C2-6
293	CB00043	electrolyte capacitor-RS	47uF/100V φ 10*12mm pin length 4mm	C1-1,C2-1
294	CB00056	electrolyte capacitor-RS	220uF/25V φ 8*11mm	C1-4,C1-8,C2-4,C2-8
295	AC00002	tin strip	63/37%	
296	RC00537	semi-fixed resistor-RS	B100Ω F-101-2 100Ω-MO	R-_16,R2-16

297	RA01518	cement resistor 5W	1.8K Ω SQM type	R1-11,R1-12,R2-11,R2-12
298	HA04115	row pin header wire-RS 3.96	4P 260/320/380mm UL1015 16AWG red black blue brown	
299	HA04080	row pin header wire-RS 3.96	2P 340mm UL1015 16AWG white gray	J2-4,J2-5
300	HA04081	row pin header wire-RS 3.96	4P 220/300/380mm*2 UL1015 16AWG red black brown gray	
301	HA04084	row pin header wire-RS 3.96	2P 340mm UL1015 16AWG white brown	J1-4,J1-5
302	HK05675	K-PCB	P-MC250.4MN-SMD	
303	MI02642	ZD-heat sink -Aluminum - MC500.4-03	MC500.4 79*59.5*260 1.29kg_V1.3	
304	HK05675	K-PCB	P-MC250.4MN-SMD	
305	RD00320	SMD precise resistor-RS 1/4W	12.0K Ω \pm 1% 1206	R1-6,R2-6,R1_38,R2_38
306	RD00452	SMD precise resistor-RS 1/4W	15.0K Ω \pm 1% 1206	R1-44,R2-44
307	RD00255	SMD precise resistor-RS 1/4W	100K Ω \pm 1% 1206	R5,R6,R8,R1-35,R2-35
308	RD00246	SMD precise resistor-RS 1/4W	1.80K Ω \pm 1% 1206	R2-48
309	RD00245	SMD precise resistor-RS 1/4W	1.00K Ω \pm 1% 1206	R3,R7
310	RD00516	SMD precise resistor-RS 1/4W	150 Ω \pm 1% 1206	R1-15,R2-15
311	RD00518	SMD precise resistor-RS 1/4W	10.5K Ω \pm 1% 1206	R1-37
312	RD00517	SMD precise resistor-RS 1/4W	4.75K Ω \pm 1% 1206	R1-43,R2-43
313	RD00519	SMD precise resistor-RS 1/4W	47.5K Ω \pm 1% 1206	R1-45,R2-45,R9
314	RD00515	SMD precise resistor-RS 1/4W	4.7 Ω \pm 1% 1206	R1-17,R1-18,R2-17,R2-18
315	RD00399	SMD precise resistor-RS 1/4W	10.0K Ω \pm 1% 1206	R1-1,R1-2,R1-3,R1-27,R1-28, R2-1,R2-2,R2-3,R2-27,R2-28
316	RD00411	SMD precise resistor-RS 1/4W	4.7K Ω \pm 1% 1206	R1,R2,R4,R1-41,R1-42,R2-41,R2-42
317	RD00135	SMD fixed resistor-RS 1/4W	330 Ω \pm 5% 1206	R1-5,R2-5
318	RD00129	SMD fixed resistor-RS 1/4W	0.0 Ω \pm 5% 1206	R1-36,R2-36,R2-47
319	RD00133	SMD fixed resistor-RS 1/4W	100 Ω \pm 5% 1206	R1-32,R2-32
320	RD00132	SMD fixed resistor-RS 1/4W	47 Ω \pm 5% 1206	R1-25,R2-25
321	RD00137	SMD fixed resistor-RS 1/4W	820 Ω \pm 5% 1206	R1-9,R1-10,R2-9,R2-10
322	RD00141	SMD fixed resistor-RS 1/4W	6.8K Ω \pm 5% 1206	R1-40,R2-40
323	RD00146	SMD fixed resistor-RS 1/4W	47K Ω \pm 5% 1206	R1-34,R2-34
324	HB01685	PCB-FR4/2L 2oz 230*78*1.6	MC500MN_VER050615	
325	CI00095	SMD ceramic capacitor-RS 1206	0.1uF/50V X7R	C1-17,C2-17,C2-28
326	CI00103	SMD ceramic capacitor-RS 1206	100PF/50V NPO \pm 5%	C1-3,C1-25,C2-3,C2-25
327	CI00105	SMD ceramic capacitor-RS 1206	0.0022uF/50V NPO \pm 5%	C1-9,C2-9
328	CI00045	SMD ceramic capacitor 1206	0.022uF/50V X7R \pm 5%	C1-10,C2-10
329	CI00138	SMD ceramic capacitor-RS 1206	0.22uF/50V X7R \pm 10%	C1-16,C2-16
330	CI00183	SMD ceramic capacitor 1206	0.0033uF/100V NPO \pm 5%	C1-14,C2-14
331	CI00181	SMD ceramic capacitor 1206	27PF/50V NPO \pm 5%	C1-7,C2-7
332	CI00182	SMD ceramic capacitor 1206	56PF/50V NPO \pm 5%	C1-5,C2-5
333	CI00184	SMD ceramic capacitor 1206	0.022uF/100V X7R \pm 5%	C1-13,C2-13
334	CI00043	SMD ceramic capacitor-RS 1206	0.0033uF/50V NPO \pm 5%	C1-11,C1-12,C2-11,C2-12
335	AE00221	retinol-RS	SJ-617 500G/pot	
336	CI00212	SMD ceramic capacitor 1206	0.047uF/50V X7R \pm 5%	C1_15,C2_15
337	RD00552	SMD fixed resistor -RS 1/4W	270 Ω \pm 5% 1206	R1-4,R1-7,R2-4,R2-7