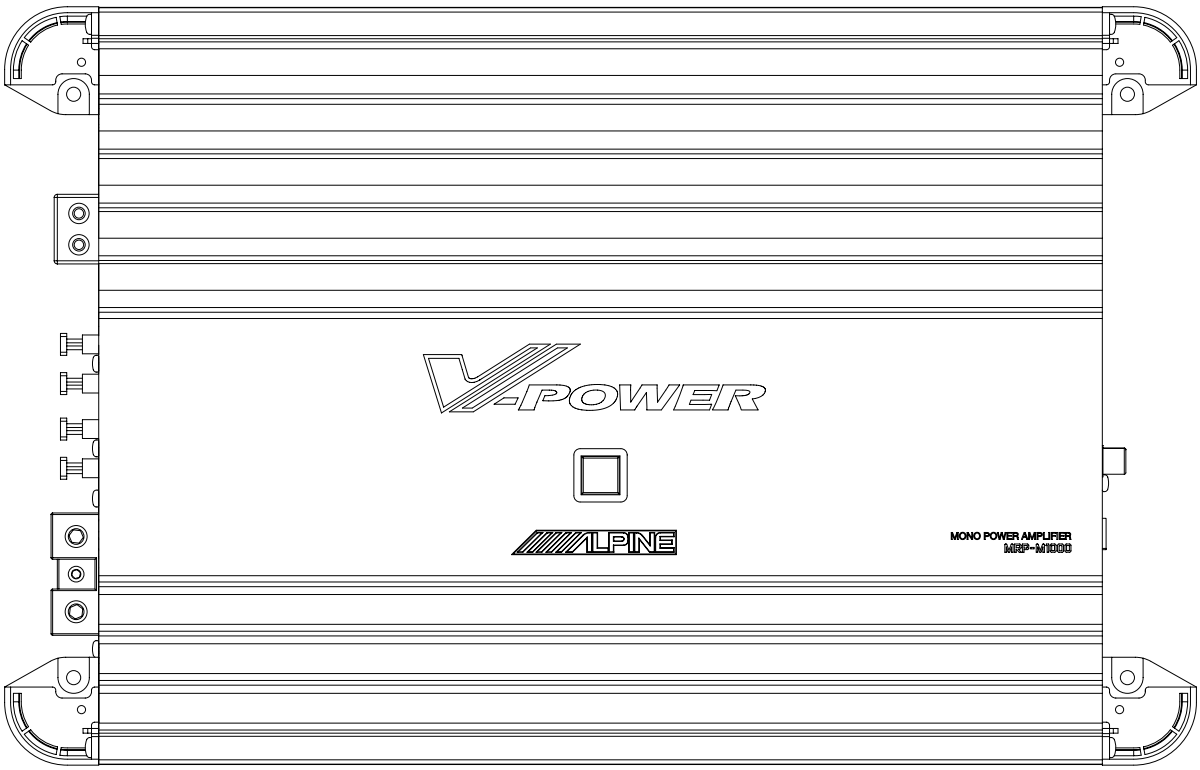
ALPINE

SERVICE MANUAL

MONO POWER AMPLIFIER



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MRP-M1000

<Cautions for Safe Repair Work>

The following cautions will prevent accidents in the workplace and will ensure safe products.
*The symbols indicate caution is needed to prevent injuries and damage to property.
The symbols and their meanings follow.

Warning	If you ignore this symbol and handle the product incorrectly or unsafely, serious injury or death may result.
Caution	If you ignore this symbol and handle the product incorrectly or unsafely, injury or only material damage may result.

*The following symbols indicate two levels of cautions.

	When you see this symbol, you have to be very careful.
	When you see this symbol, you have to follow the instructions there.

Warning

Do not look squarely into the laser light coming from the pickup. You may loose you sight.	**Fuse Caution** Always use a designated fuse. Use of an incorrect fuse may result in a fire.

Caution

Do not allow wiring to be caught in the screw/chassis. If wiring is caught in the screw/chassis, it may cause a short circuit, resulting in a fire.	**Battery Caution** Use the designated battery. Confirm the correct polarity and seat of the battery. An incorrect battery or an improperly connected or seated battery may result in a fire.
High Temperature Caution Touching the heat sink may cause severe burns.	**Designated Parts Caution** Look up the part list and ensure that only designated parts are used to prevent problems or accidents.
Reverse Power Supply Connections or Misconnections Caution Reverse power supply connections or misconnections may cause ignition problems and smoke may result.	**Wiring Caution** Ensure that the wiring is correct when rewiring to prevent problems with ignition/breakdown.
Soldering Caution Hot solder from solder splash may cause severe burns.	**Wear Gloves** Wear gloves to prevent electrical shocks or injury from the end face of the metal.

Contents

NOTE : Due to continuing product improvement, specifications and designs are subject to change without notice.

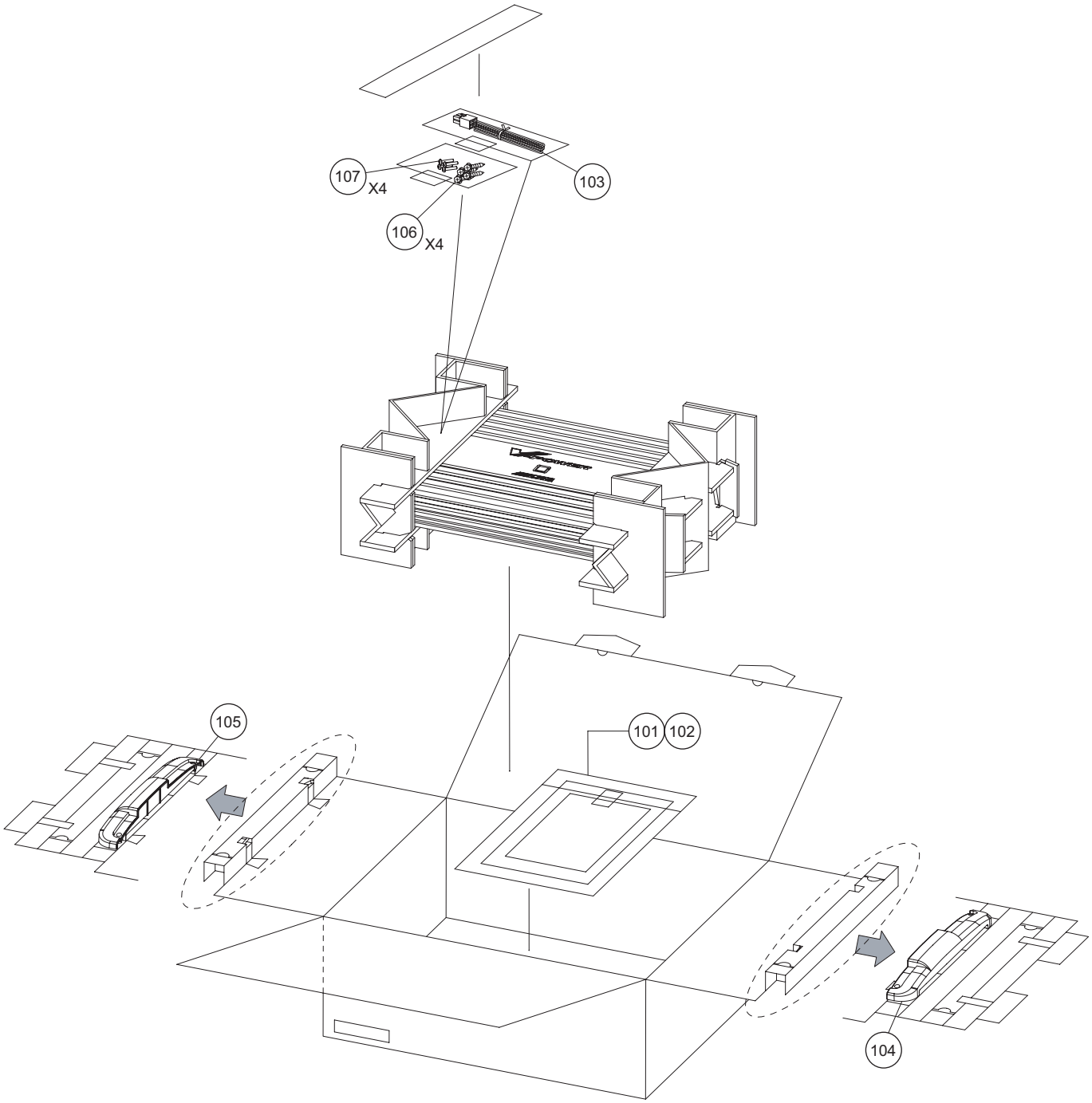
Packing Assembly Parts List

Symbol No.	Part No.	Description
#1 101	68-10872Z20	MANUAL,OWNER'S(AO)
$1 101	68-10872Z21	MANUAL,OWNER'S(GO)
%1 101	68-10872Z21	MANUAL,OWNER'S(GO)
&1 101	68-10872Z23	MANUAL,OWNER'S(AOCH)
$1 102	68-10872Z22	MANUAL,OWNER'S(IGS)

Symbol No.	Part No.	Description
103	01E39152S01	ASSY,CONNECTOR 4P
104	15E40539S01	COVER,PLATE-R
105	15E40540S01	COVER,PLATE-L
106	03E40419S01	SCR,M4X20(BLK)
107	03E39167S01	SCR,M3X12(P)(BLK)

NOTE : #1 : For North American Model Only, $1 : For European Model Only, %1 : For General Foreign Model Only,
&1 : For Chinese Model Only, Others : Common.

Packing Method View



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Specifications

Power Output	(20Hz, 4ohm, 1.0% T.H.D. (14.4V))	600W
	(100Hz, 4ohm, 1.0% T.H.D. (14.4V))	600W
	(20Hz, 2ohm, 1.0% T.H.D. (14.4V))	1000W
	(100Hz, 2ohm, 1.0% T.H.D. (14.4V))	1000W
T.H.D.	(100Hz, 10W, 4ohm (14.4V), Gain position : Center(NOM))	1.0%
Residual Noise	(Ref.Output 600W/4ohm, Input Short, Gain position : Center(NOM))	40mV
S/N Ratio	(Ref.Output 600W/4ohm, Input Short, Gain position : Center(NOM))	94dB
Frequency Response	(Ref.Output 1W/4ohm, Ref.Frequency : 100Hz 0dB)	20Hz : -0.5±2dB 200Hz(LPF MAX) : -3.0+4dB,-2dB
Output Offset Voltage	(No Signal)	±150mV
Remote On Voltage	(1W Output)	6.5±1V
Current Drain	(No Signal)	2.7A
	(10% T.H.D., 2ohm Load)	170A
	(Remote Current Drain)	0.26±0.1mA
	(Back Up Current Drain)	1.2mA
Input Sensitivity	(Ref.Output 600W/4ohm, 100Hz, Speaker Input)	Gain VR MIN : 8.0V±3dB
	(Ref.Output 600W/4ohm, 100Hz, RCA Input)	Gain VR MAX : 0.2V±3dB Gain VR MIN : 4.0V±3dB
Input Impedance	(Reference)	RCA Input : 20k ohm±10% Speaker Input : 39.6k ohm±10%
Fuse Requirement		25A(Peak) x 4 (For Battery Line)
Power Source		DC14.4V (11 to 16V)
Dimensions (W x H x D)		380 x 60 x 241.8mm
Weight		4.3kg

NOTE : Due to Continuing product improvement, specifications and designs are subject to change without notice.

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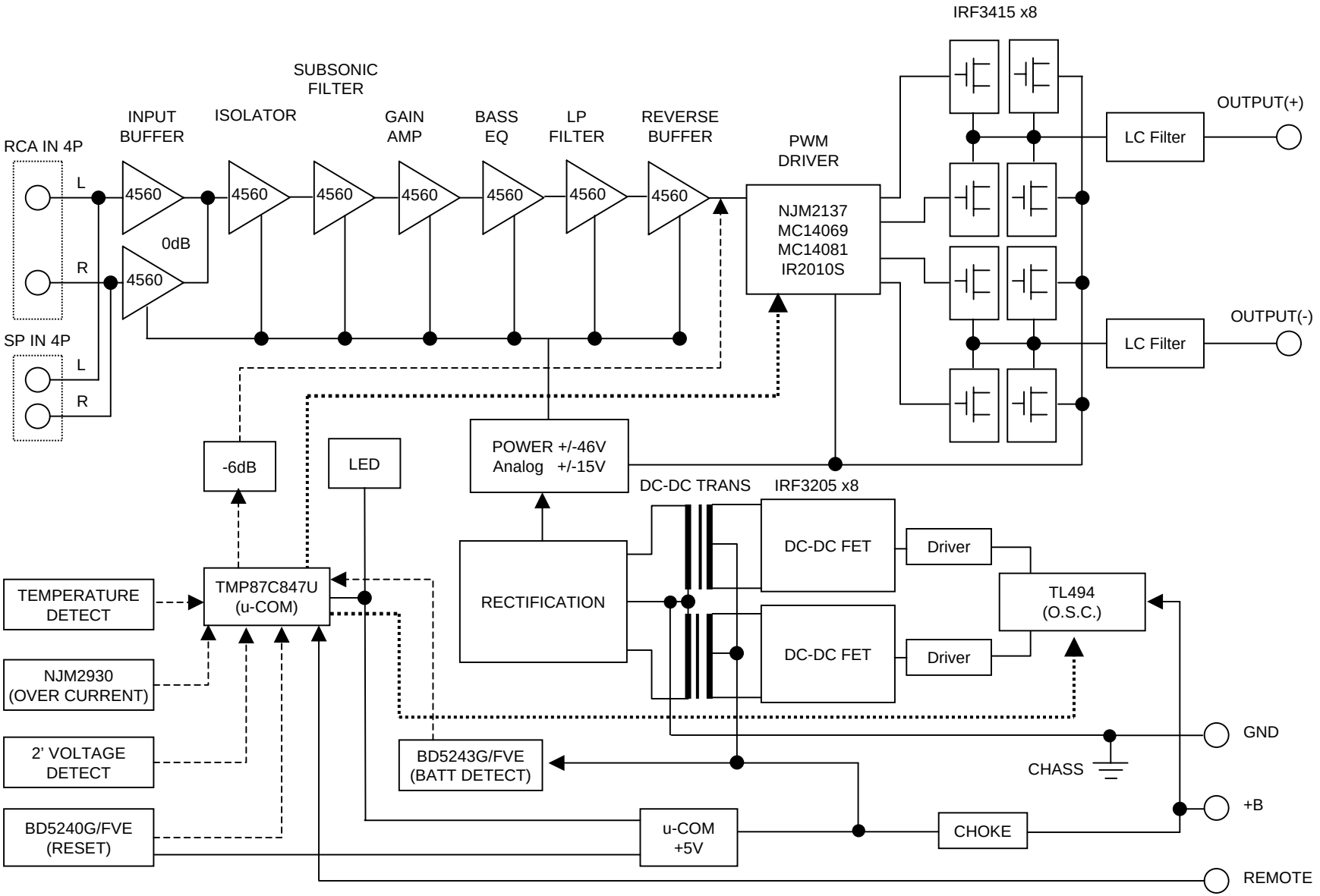
Block Diagram



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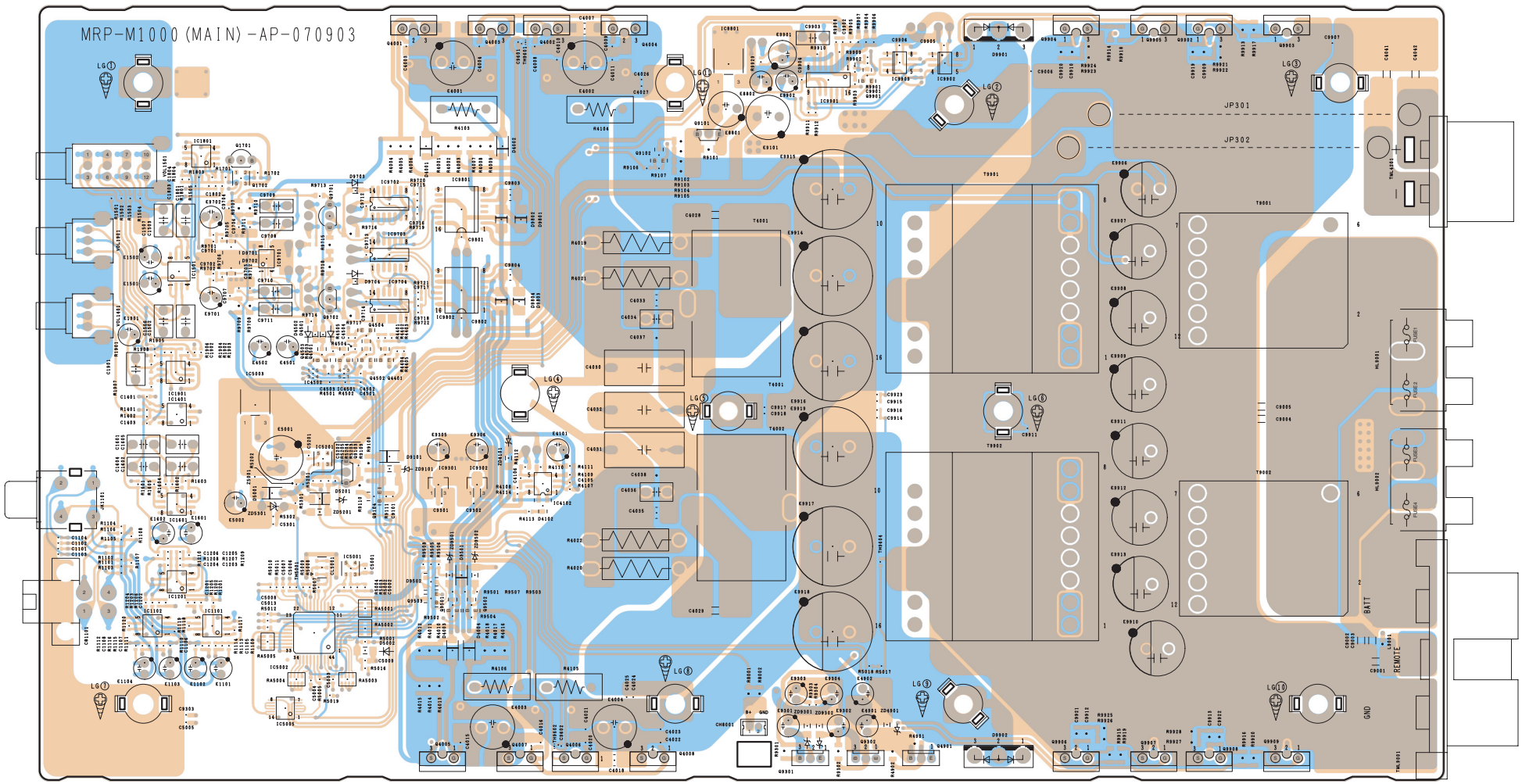
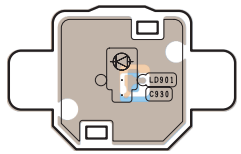
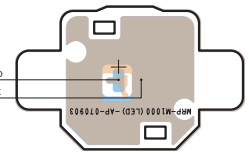
MAIN P.W.Board (Component Side View)



LED P.W.Board
(Component Side View)





LED P.W.Board
(Foil Side View)

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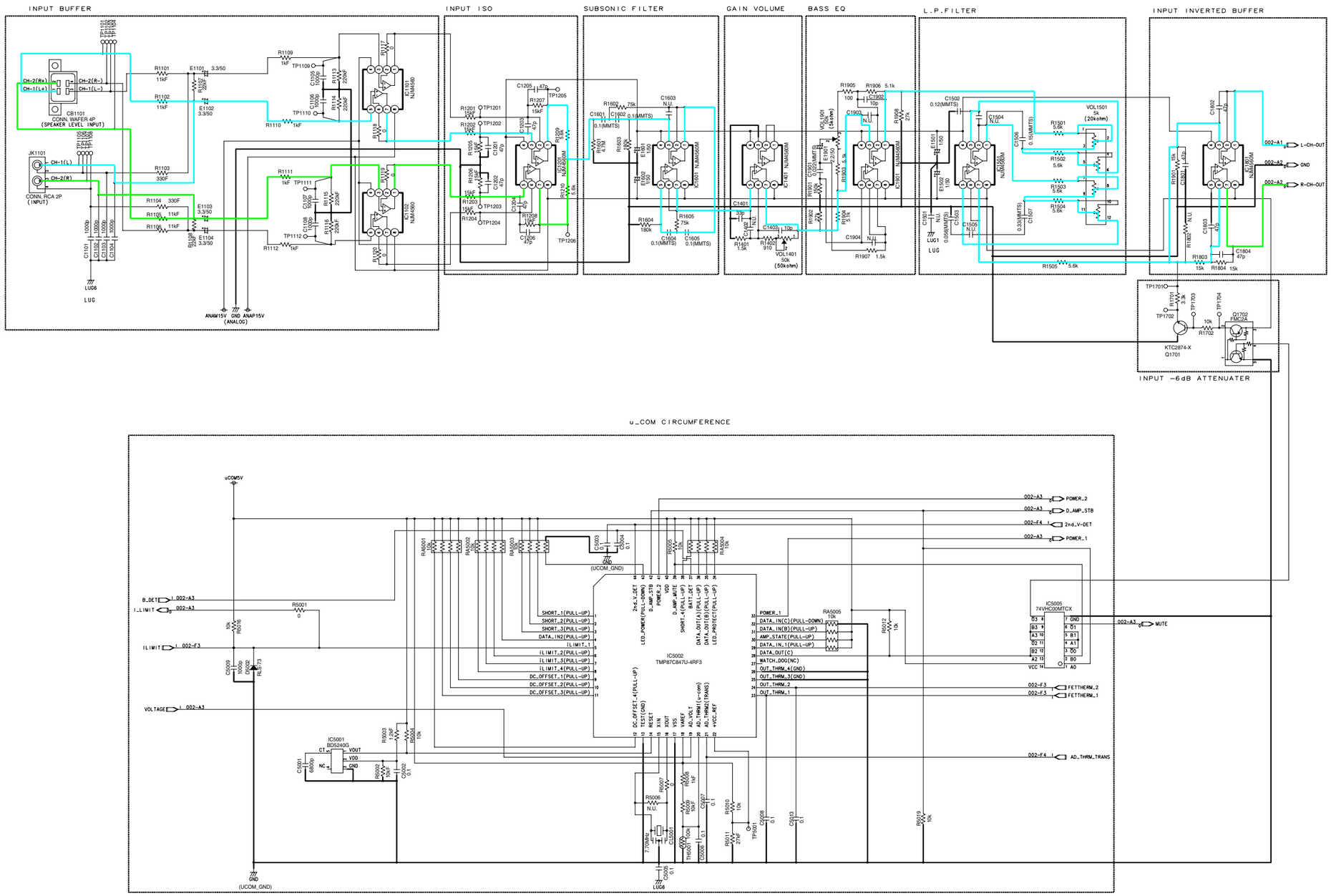
Orange Color Pattern:Component Side Pattern
Blue Color Pattern:Foil Side Pattern

Schematic Diagram(1/2)

MRP-M1000



MAIN P.W.Board(1/2)
NOTE:N.U.is Not Used Parts.

TO P. W. BOARD
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Schematic Diagram(2/2)

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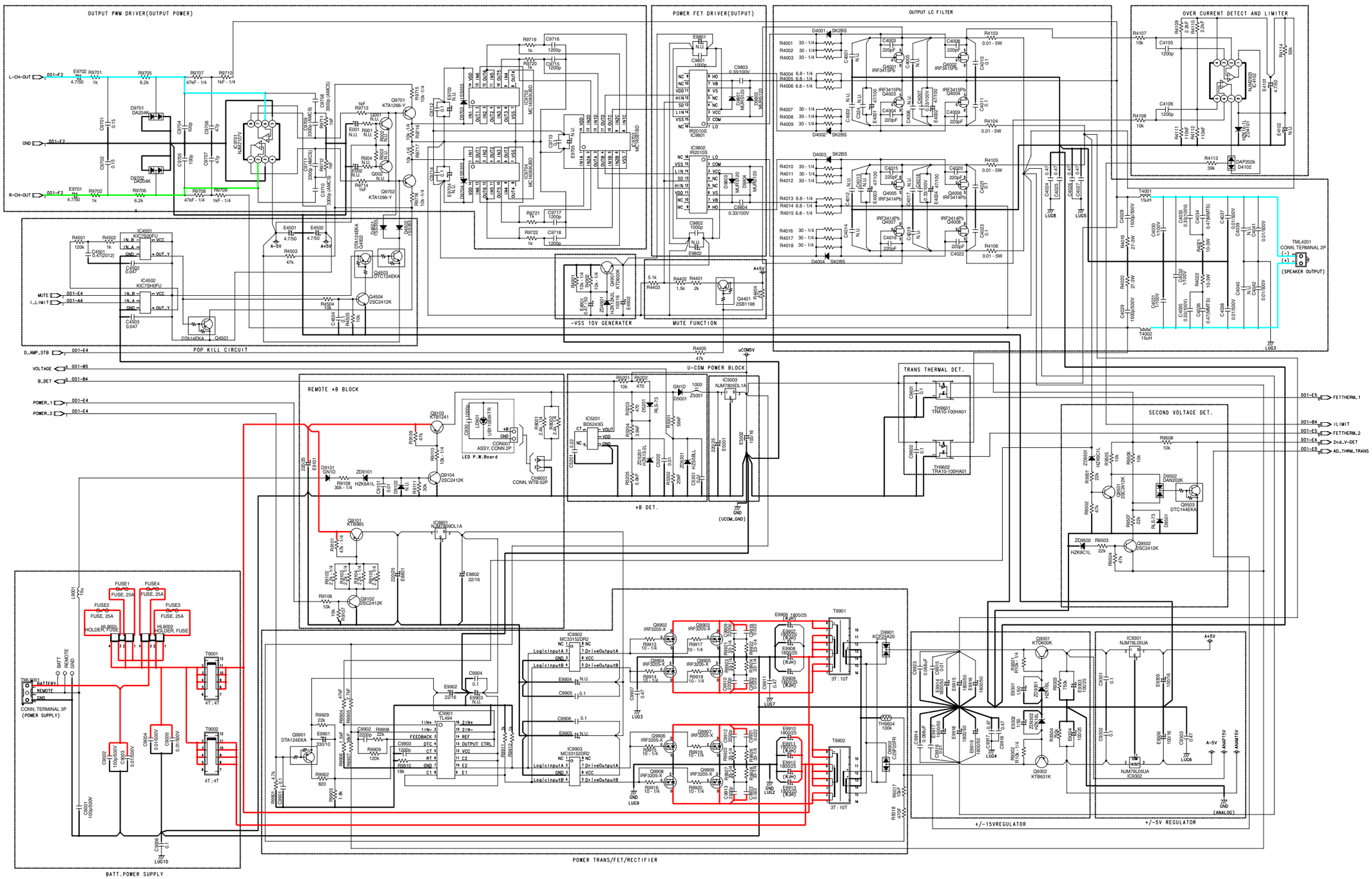

MAIN P.W.Board(2/2)
NOTE:N.U.is Not Used Parts.

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Terminal Voltage of IC/TR

Unit : V

IC1101	
1	8.9mv
2	8.8mv
3	8.6mv
4	-15.05v
5	8.7mv
6	8.8mv
7	8.8mv
8	15v

IC1102	
1	8.9mv
2	8.8mv
3	-0.6mv
4	-15.06v
5	9.4mv
6	9.1mv
7	9.1mv
8	15v

IC1201	
1	0.4mv
2	4.9mv
3	4.9mv
4	-15.06v
5	5mv
6	5.5mv
7	1.2mv
8	15v

IC1401	
1	0.6mv
2	0.6mv
3	0.5mv
4	-15.08v
5	7.3mv
6	7.9mv
7	56.8mv
8	15v

IC1501	
1	58.1mv
2	58mv
3	57.9mv
4	-15.05v
5	58.6mv
6	58.8mv
7	58.8mv
8	15v

IC1601	
1	7.5mv
2	7.4mv
3	7.1mv
4	-15.09v
5	7.8mv
6	7.3mv
7	7.3mv
8	15v

IC1801	
1	34.3mv
2	34.3mv
3	34.1mv
4	-15.06v
5	0.5mv
6	0.8mv
7	-32.9mv
8	15v

IC1901	
1	57.4mv
2	57.5mv
3	57.2mv
4	-15.05v
5	6mv
6	6.2mv
7	6.3mv
8	15v

IC4102	
1	4.79v
2	-47v
3	-46.1v
4	-47v
5	-46.7v
6	-47v
7	4.89v
8	-15.82v

IC4501	
1	5.07v
2	5.06v
3	0.6mv
4	4.97v
5	4.97v

IC4502	
1	4.91v
2	4.97v
3	0.6mv
4	6mv
5	4.9v

IC5001	
1	5.06v
2	4.52v
3	0.6mv
4	-1.02v
5	2.52v

IC5002							
1	5.05	12	5.04	23	0.52	34	0.03
2	5.03	13	0.00	24	0.00	35	5.04
3	5.04	14	5.03	25	0.00	36	5.03
4	5.03	15	1.78	26	0.00	37	5.03
5	5.04	16	2.20	27	0.50	38	5.03
6	5.03	17	0.00	28	0.03	39	5.03
7	5.03	18	5.04	29	5.04	40	5.03
8	5.04	19	3.80	30	5.04	41	4.93
9	5.03	20	4.33	31	5.04	42	4.98
10	5.04	21	4.33	32	0.00	43	4.98
11	0.10	22	3.68	33	4.93	44	5.03

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IC5003	
1	13.57v
2	0.6mv
3	5.07v

IC5005			
1	5.01v	8	0.7v
2	5.06v	9	5.07v
3	0.06mv	10	5.07v
4	0.06mv	11	5.07v
5	0.06mv	12	31.9mv
6	144.9mv	13	31.9mv
7	0.06mv	14	5.07v

IC5201	
1	5.06v
2	8v
3	0.6mv
4	-1.02v
5	4.13v

IC8801	
1	14.33v
2	0.7mv
3	9v

IC9301	
1	4.97v
2	0.4mv
3	14.91v

IC9302	
1	0.5mv
2	-14.97v
3	-4.94v

IC9701	
1	2.13v
2	2.2mv
3	2.4mv
4	-4.95v
5	0.4mv
6	-2.1v
7	-2.18v
8	4.97v

IC9702			
1	-40.6v	8	-35.2v
2	-41.3v	9	-47v
3	-41.3v	10	-41.8v
4	-41v	11	-41.3v
5	-41v	12	-41.3v
6	-41.7v	13	-41.7v
7	-47v	14	-35.2v

IC9703			
1	-41.8v	8	-41v
2	-41.5v	9	-41.3v
3	-43.6v	10	-42.6v
4	-42.6v	11	-43.6v
5	-41.3v	12	-41.3v
6	-41.1v	13	-41.9v
7	-47v	14	-35.3v

IC9704			
1	-40.6v	8	-35.2v
2	-41.4v	9	-47v
3	-41.4v	10	-41.8v
4	-41.1v	11	-41.3v
5	-41.1v	12	-41.3v
6	-41.7v	13	-41.3v
7	-47v	14	-35.2v

IC9801			
1	-43.4v	9	222mv
2	-47v	10	50mv
3	-35.2v	11	-35.2v
4	50.5mv	12	-43.5v
5	50mv	13	-47v
6	-84.3mv	14	-42.6v
7	5.22v	15	-47v
8	2.331v	16	136mv

IC9802			
1	-43.2v	9	220mv
2	-47v	10	51mv
3	-35.3v	11	-35.1v
4	51mv	12	-43.6v
5	50mv	13	-47v
6	-44.3mv	14	-42.6v
7	5.24v	15	-47v
8	2.225v	16	149mv

IC9901			
1	1.448v	9	2.218v
2	1.447v	10	2.218v
3	1.847v	11	8.99v
4	0.366v	12	8.99v
5	1.447v	13	4.87v
6	3.6v	14	4.87v
7	0.7mv	15	4.87v
8	8.99v	16	0.7mv

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IC9902	
1	50.6mv
2	2.21v
3	0.8mv
4	2.21v
5	2.513v
6	8.99v
7	2.513v
8	50mv

IC9903	
1	50.5mv
2	2.206v
3	0.8mv
4	2.206v
5	2.506v
6	8.99v
7	2.51v
8	51.5mv

FET	G	D	S
Q4001	-43.8v	0.633v	-47v
Q4002	-43.8v	-0.285v	-47v
Q4003	1.7v	47v	-0.634v
Q4004	1.65v	47.2v	-0.63v
Q4005	1.73v	47.2v	-0.197v
Q4006	1.75v	47.2v	-0.613v
Q4007	-43.9v	-0.197v	-47.1v
Q4008	-43.9v	-0.198v	-47.1v
Q9902	2.47v	14.2v	0
Q9903	2.47v	14.2v	0
Q9904	2.47v	14.2v	0
Q9905	2.46v	14.2v	0
Q9906	2.46v	14.2v	0
Q9907	2.45v	14.2v	0
Q9908	2.45v	14.2v	0
Q9909	2.43v	14.2v	0

TR	E	B	C
Q1701	0.033	-	0
Q4401	4.93	4.91	-4.95
Q4501	4.93	0	4.86
Q4502	4.93	4.91	-4.95
Q4503	-4.97	-4.95	-
Q4504	0	4.91	0
Q4901	-34.8	0	-34.4
Q9101	14.37	13.64	14.36
Q9102	0	0.72	0.13
Q9103	14.37	13.71	14.32
Q9104	0	0.65	0.026
Q9301	-15.1	-15.69	-46.7
Q9302	15.15	15.76	46.9
Q9501	0	0.69	0
Q9502	-46.7	-46.1	-46.7
Q9503	0	5.02	0
Q9701	-1.5	-2.14	-40.3
Q9702	-1.5	-2.18	-40.3
Q9901	4.93	4.91	0.37

TR	1	2	3	4	5
Q1702	14.99	0.326	15.05	0	0

[Measuring Conditions]

1. Power Supply Voltage : DC 14.4V
2. Measuring Meter : Digital Multi Voltmeter
3. Measuring Point Reference : Between GND
4. Measuring Condition : No Signal Input

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Description of IC Terminal

TMP87C847UG : IC5002

No.	Symbol	I/O	Terminal Description
1	SHORT_1(PULL-UP)	-	Pull-up connect terminal.
2	SHORT_2(PULL-UP)		
3	SHORT_3(PULL-UP)		
4	DATA_IN2(PULL-UP)		
5	iLIMIT_1	I	Output overcurrent detection terminal-1.
6	iLIMIT_2(PULL-UP)	-	Pull-up connect terminal.
7	iLIMIT_3(PULL-UP)		
8	iLIMIT_4(PULL-UP)		
9	DC_OFFSET_1(PULL-UP)		
10	DC_OFFSET_2(PULL-UP)		
11	DC_OFFSET_3(PULL-UP)		
12	DC_OFFSET_4(PULL-UP)		
13	TEST(GND)	-	GND connect terminal.
14	RESET	I	RESET terminal.
15	XIN	I	Crystal oscillator connection terminal.
16	XOUT	O	
17	VSS	-	GND connect terminal. (A/D converter basis ground)
18	VAREF	-	Reference voltage of A/D converter terminal.
19	AD_VOLT	I	Power supply voltage detection terminal. (A/D input)
20	AD_THRM1(u-com)	I	Ambient temperature of u-COM detection terminal. (A/D input)
21	AD_THRM2(TRANS)	I	TRANS temperature detection terminal. (A/D input)
22	+VCC_REF	I	The second voltage reference value input terminal. (A/D input)
23	OUT_THRM_1	I	Output element temperature detection terminal-1. (A/D input)
24	OUT_THRM_2	I	Output element temperature detection terminal-2. (A/D input)
25	OUT_THRM_3(GND)	-	GND connect terminal.
26	OUT_THRM_4(GND)		
27	WATCH_DOG(NC)	-	No connect terminal.
28	DATA_OUT(C)	O	-6dB Level Down circuit control terminal.
29	DATA_IN_1(PULL-UP)	-	Pull-up connect terminal.
30	AMP_STATE(PULL-UP)		
31	DATA_IN(B)(PULL-UP)		
32	DATA_IN(C)(PULL-DOWN)	-	Pull-down connect terminal.
33	POWER_1	O	Power circuit control terminal.
34	LED_PROTECT(PULL-UP)	-	Pull-up connect terminal.
35	DATA_OUT(B)(PULL-UP)		
36	DATA_OUT(A)(PULL-UP)		
37	BATT_DET	I	BATT-DET terminal.
38	SHORT_4(PULL-UP)	-	Pull-up connect terminal.
39	D_AMP_MUTE	O	PWM device MUTE control terminal.
40	VDD	-	Power supply terminal.
41	POWER_2	O	TL494 control terminal.
42	D_AMP_STB	O	PWM device STANDBY control terminal.
43	LED_POWER(PULL-DOWN)	-	Pull-down connect terminal.
44	2nd_V_DET	I	The second voltage detection terminal.

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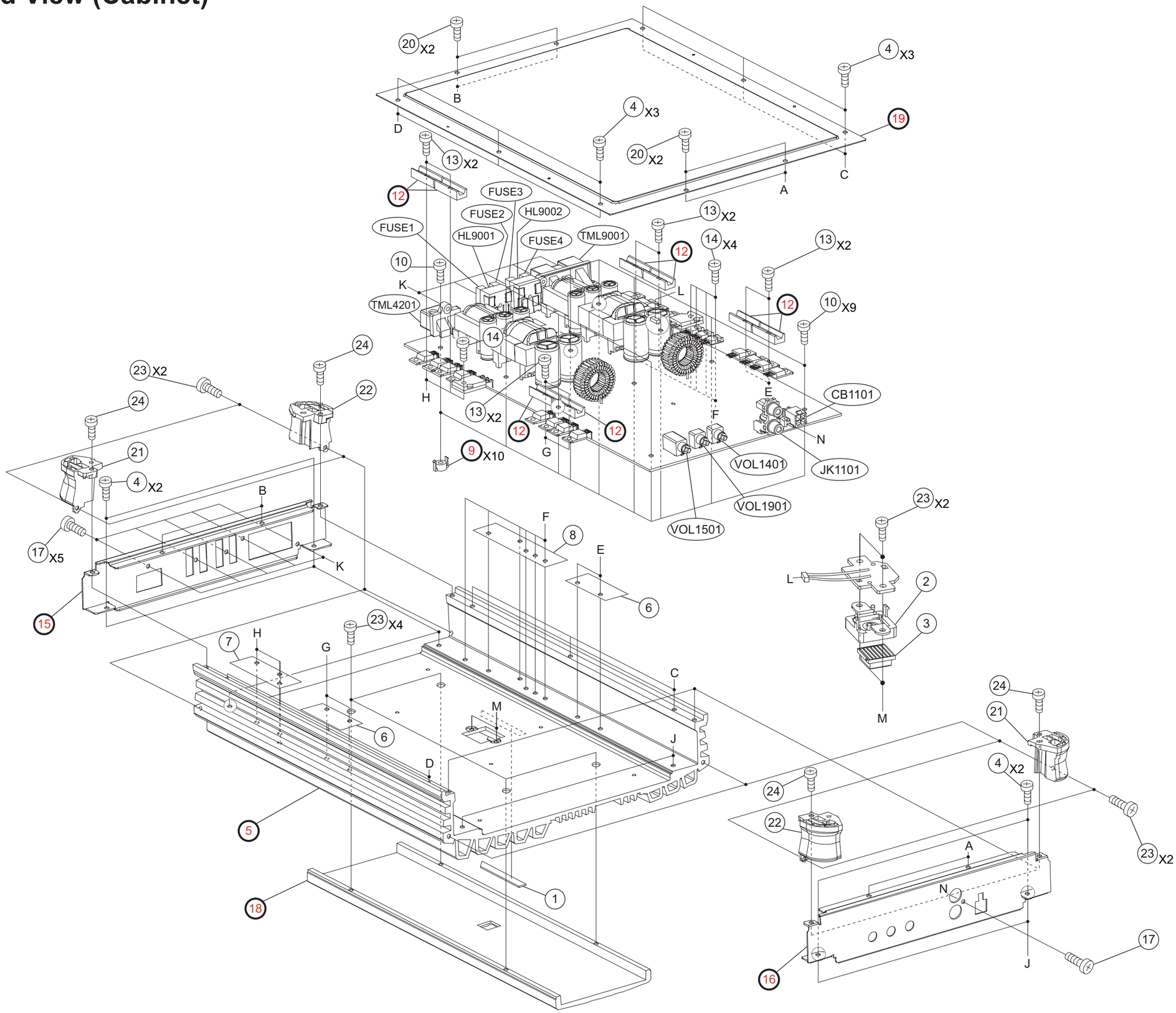
Exploded View (Cabinet)



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