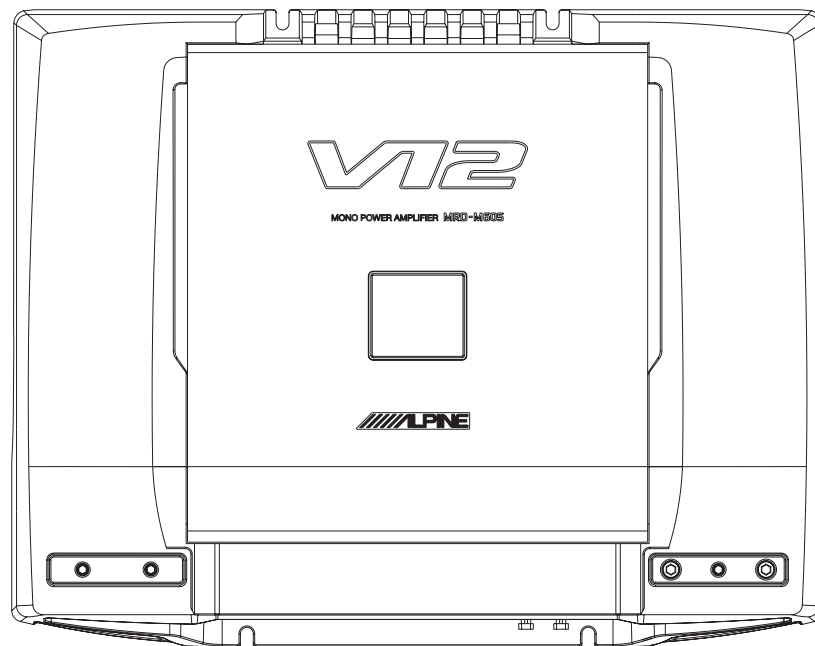


////ALPINE

SERVICE MANUAL

MONO POWER AMPLIFIER



1 / 05-A
68E37842S01



MRD-M605

<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 lose your 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

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

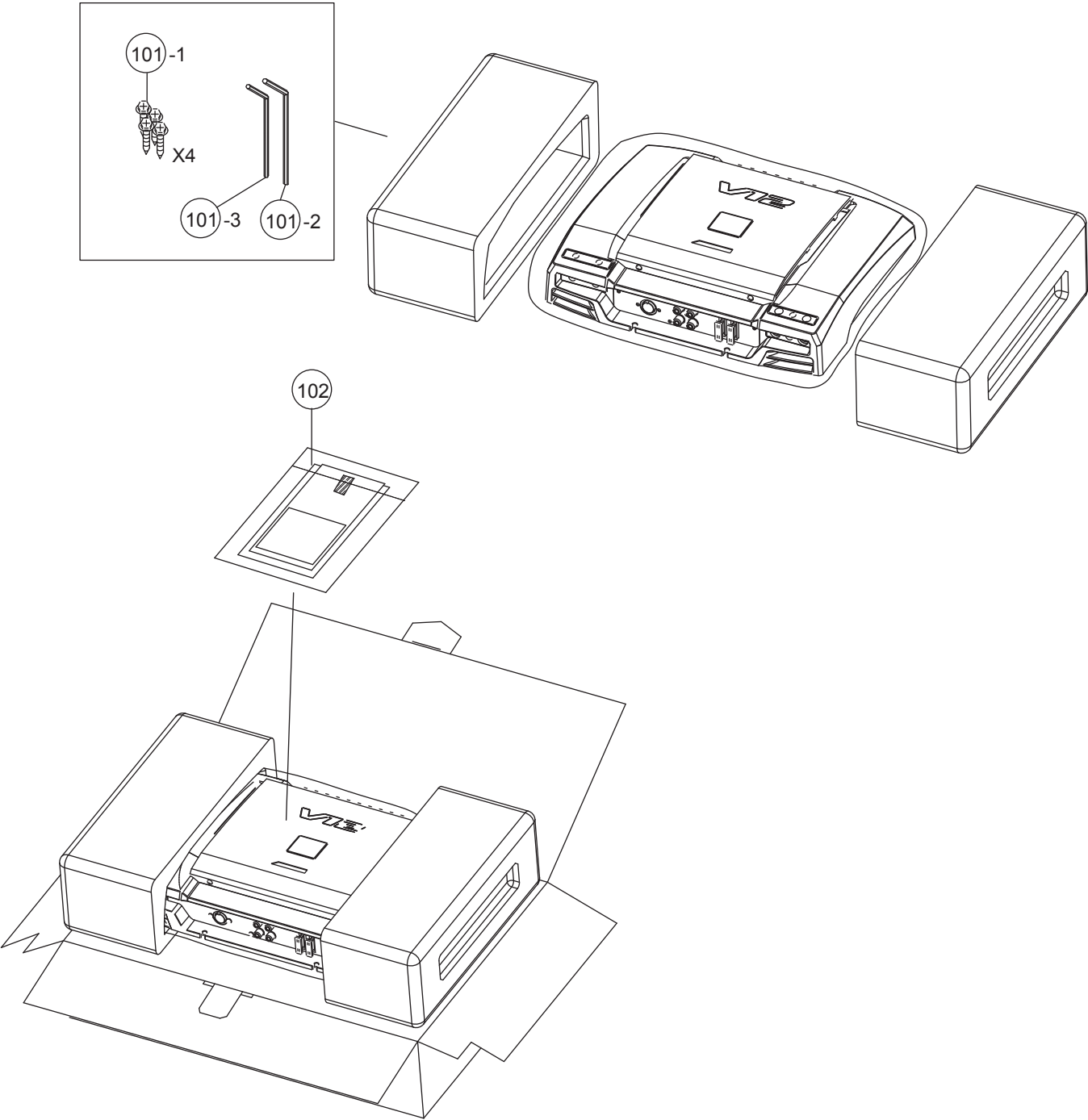
Packing Assembly Parts List

Symbol No.	Part No.	Description
101-1	03E36238S01	SCR,M4X20 TPG1
101-2	03E36690S01	WRENCH,2.5X2.9
101-3	03E36692S01	WRENCH,4X4.6
#1 102	68-02278Z44	OWNER'S MANUAL
\$1 102	68-02278Z45	OWNER'S MANUAL
\$1 102	68-02278Z46	OWNER'S MANUAL

Symbol No.	Part No.	Description

NOTE:#1:For North American Model Only,\$1:For General Foreign Model Only,Others:Common.

Packing Method View



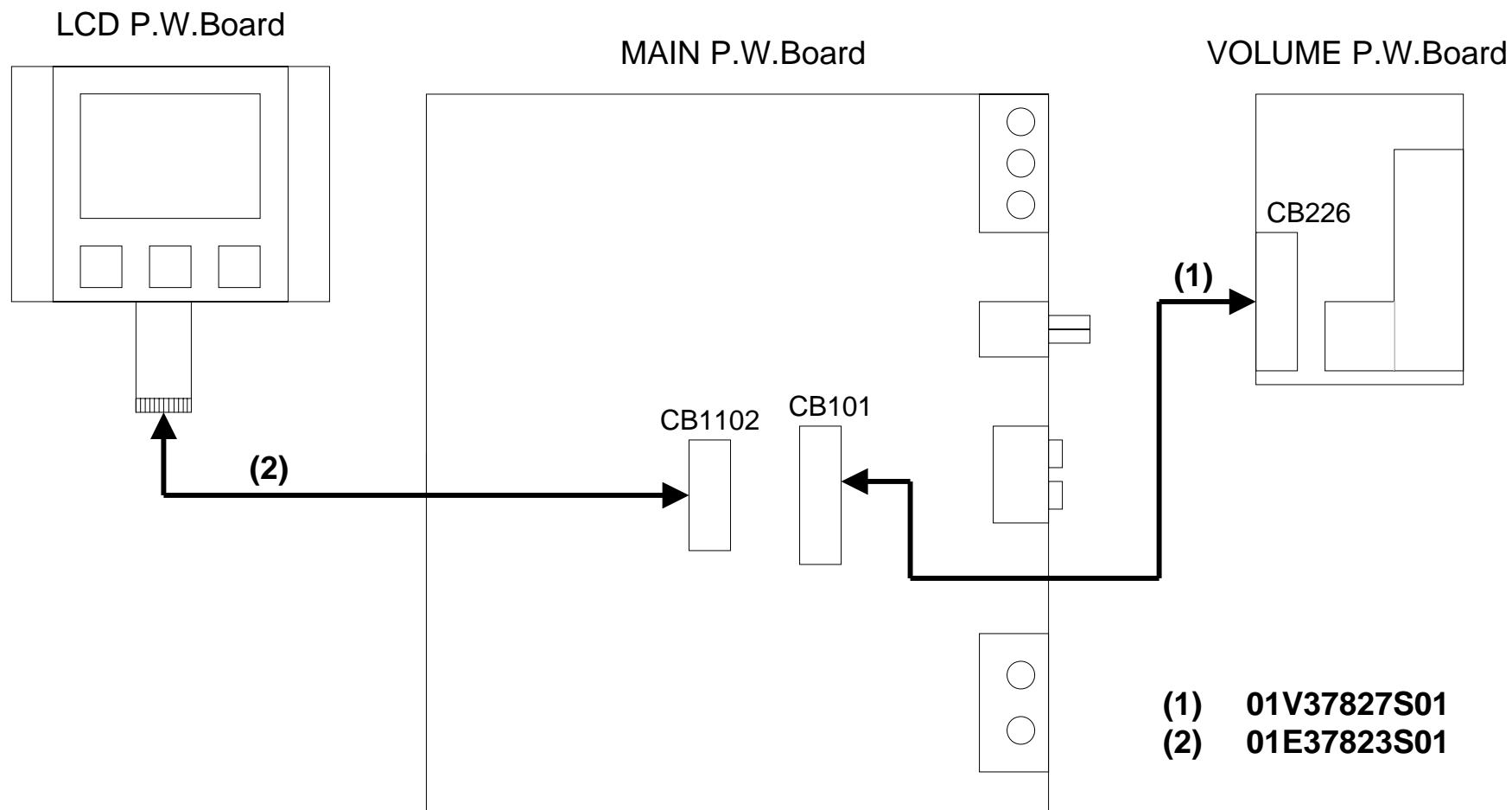
Specifications

Power Output	20Hz/100Hz, 4ohm, 1.0% T.H.D.(14.4V) : 330W
	20Hz/100Hz, 2ohm, 1.0% T.H.D.(14.4V) : 550W
T.H.D. (100Hz, 200W/4ohm(14.4V), Display Gain position -12dB(0.5V))	1.0%
Residual Noise (Ref.Output 300W/4ohm, Input Short, Display Gain position -12dB(0.5V))	30mV
S/N Ratio (Ref.Output 300W/4ohm, Input Short, Display Gain position -12dB(0.5V))	81dB
Frequency Response (Ref.Output 1W/4ohm, Ref.100Hz 0dB)	20Hz : -0.5±2dB
	200Hz : -3.0±2dB
Output Offset Voltage (No Signal)	±150mV
Remote On Voltage (1W Output)	6.5±1V
Current Drain	No Signal : 2.0A
	10% T.H.D., 2ohm Load : 90A
	Remote Current Drain : 0.26±0.1mA
	Back Up Current Drain : 1.2mA
Input Sensitivity (Ref.) (Ref.Output 400W/4ohm)	Gain position 0.1V : RCA Input Level : 0.15V±2dB
	Gain position 0.2V : RCA Input Level : 0.24V±2dB
	Gain position 0.3V : RCA Input Level : 0.30V±2dB
	Gain position 0.4V : RCA Input Level : 0.47V±2dB
	Gain position 0.5V : RCA Input Level : 0.60V±2dB
	Gain position 0.7V : RCA Input Level : 0.75V±2dB
	Gain position 1.0V : RCA Input Level : 0.95V±2dB
	Gain position 1.5V : RCA Input Level : 1.50V±2dB
	Gain position 2.5V : RCA Input Level : 2.70V±2dB
	Gain position 4.0V : RCA Input Level : 4.0V±2dB
	Gain position 8.0V : RCA Input Level : 8.4V±2dB
Pre-Out Level at 1.0V Input (Ref.)	1.0V±2dB
Input Impedance (Ref.)	100k ohm±10%
Fuse Requirement	30A(Peak) x 2 (For Battery Line)
Power Source	DC14.4V (11 to 16V)
Dimensions (W x H x D)	290 x 60 x 227.8mm
Weight	3.9kg

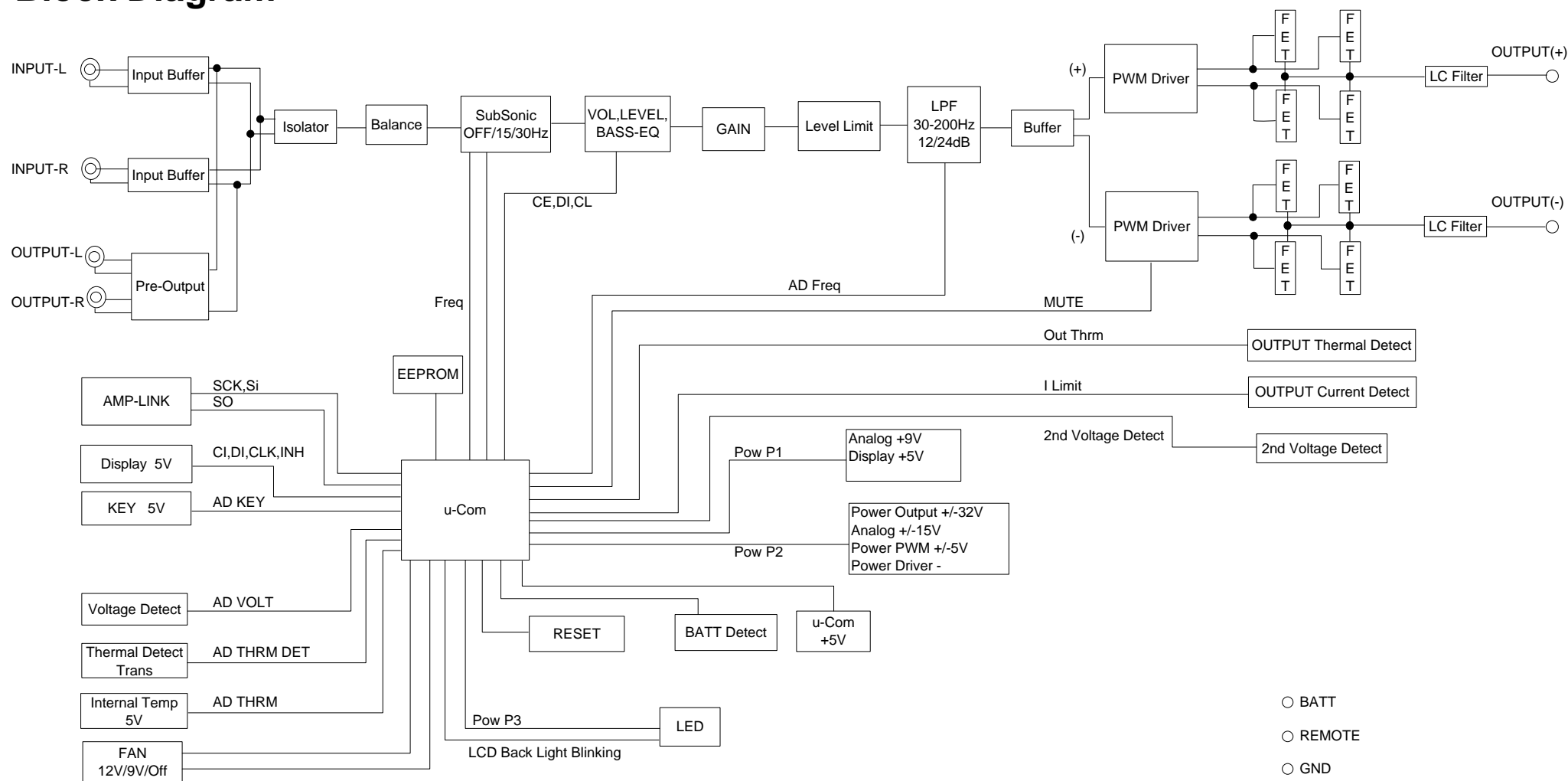
NOTE : Due to Continuing product improvement, specifications and designs are subject to change without notice.

Extension Cable

*Always connect the Extension Cable when making checks of voltage and repair.



Block Diagram



1

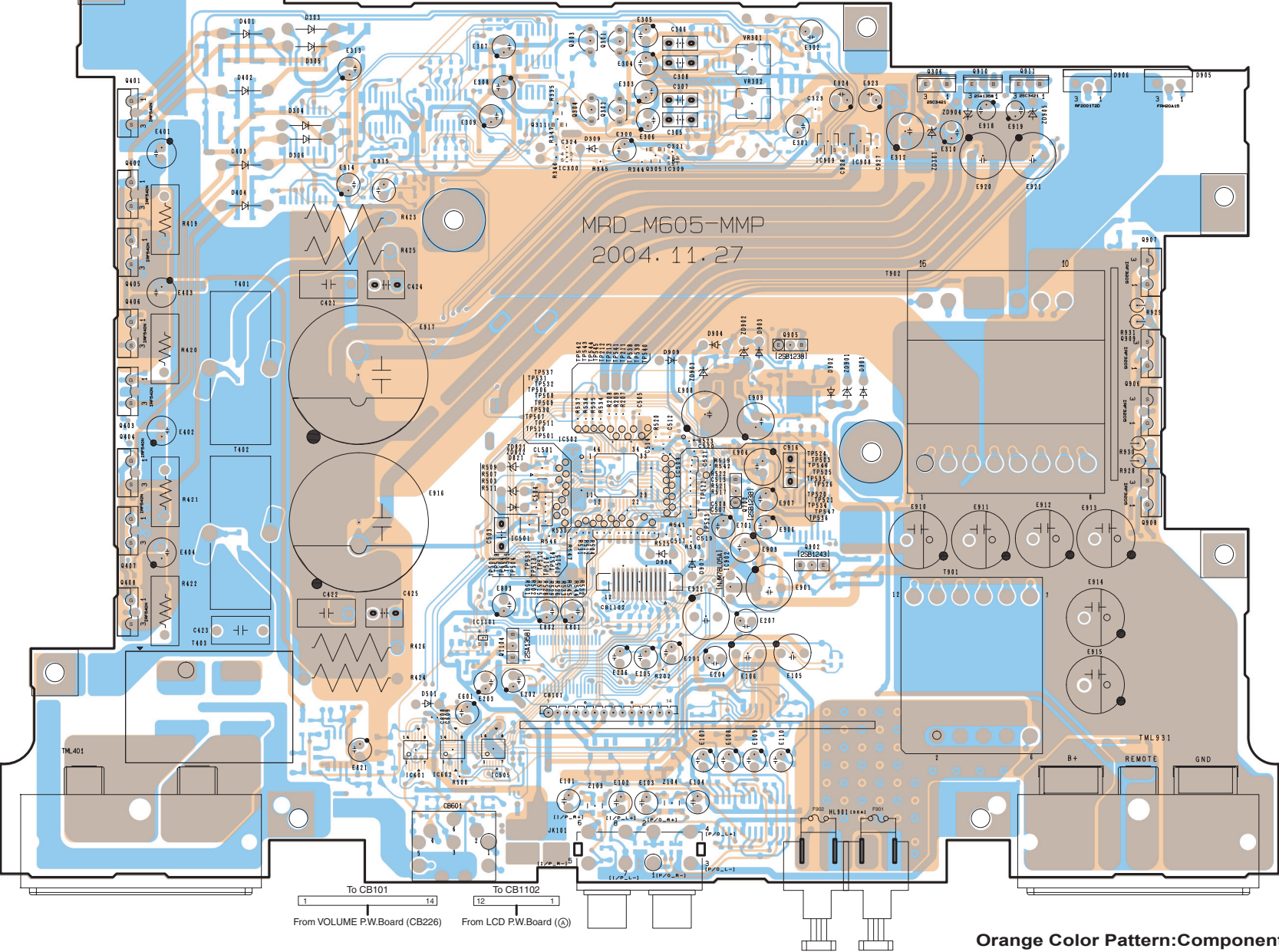
2

3

4

5

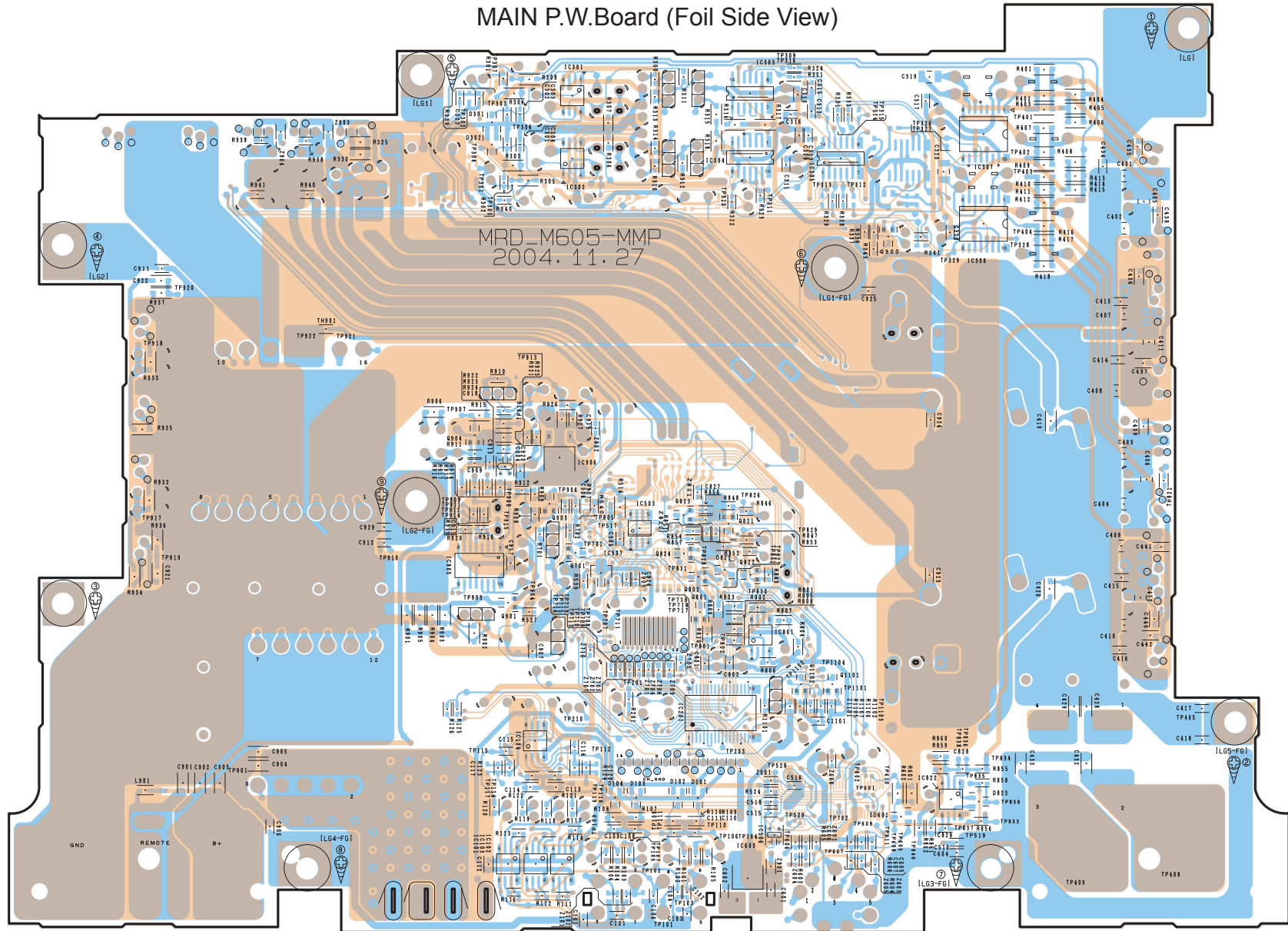
MAIN P.W.Board (Component Side View)



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

A | B | C | D | E | F | G

MAIN P.W.Board (Foil Side View)

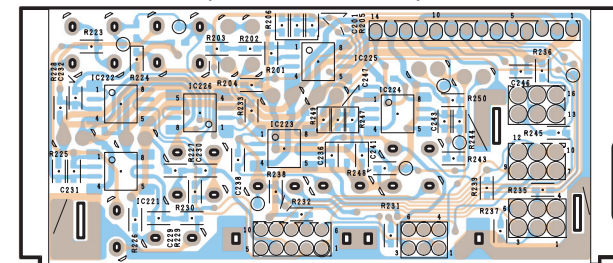


Orange Color Pattern:Component Side Pattern
Blue Color Pattern:Foil Side Pattern

A	B	C	D	E	F	G
---	---	---	---	---	---	---

5

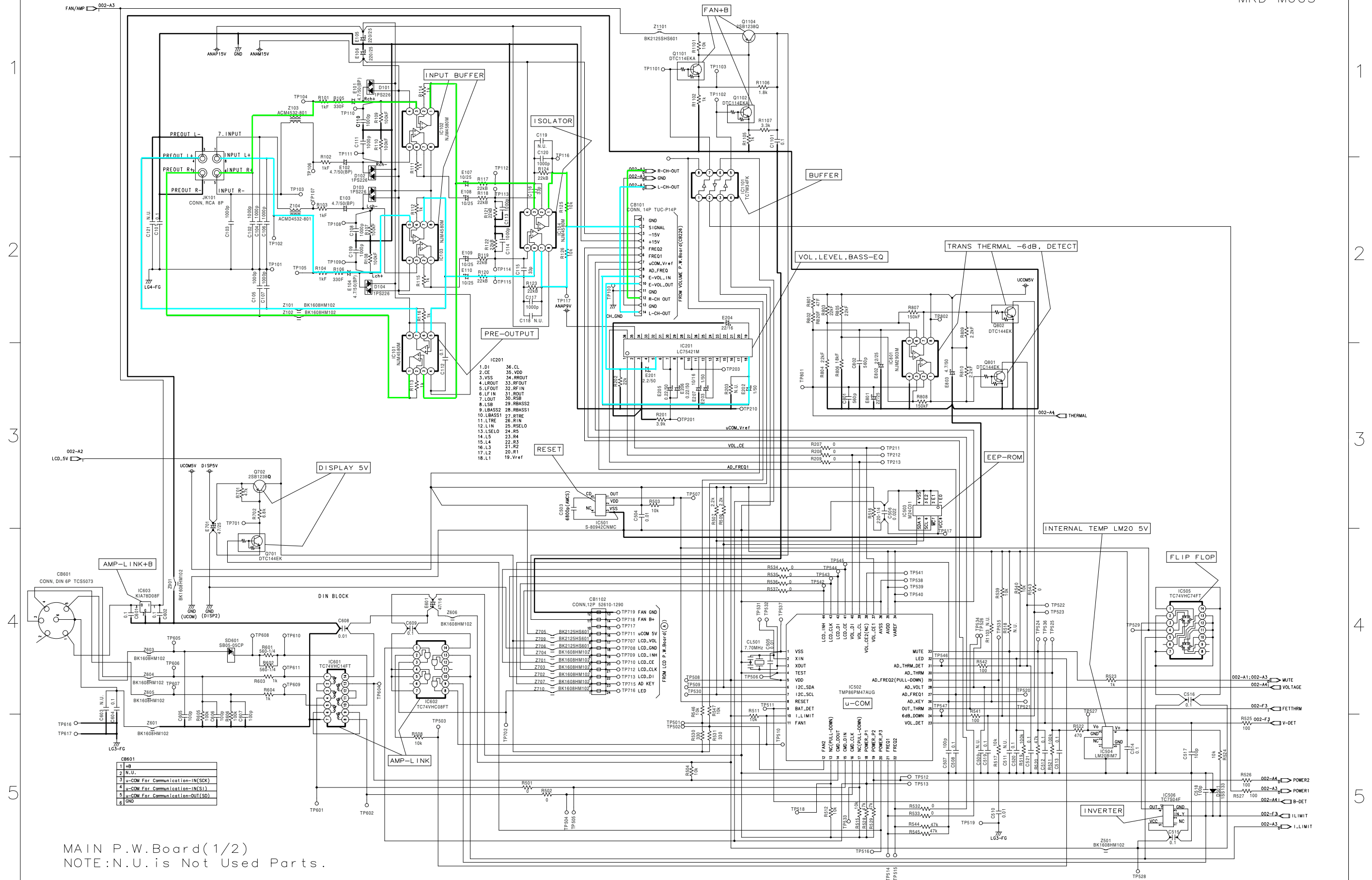
Orange Color Pattern:Component Side Pattern
Blue Color Pattern:Foil Side Pattern



G

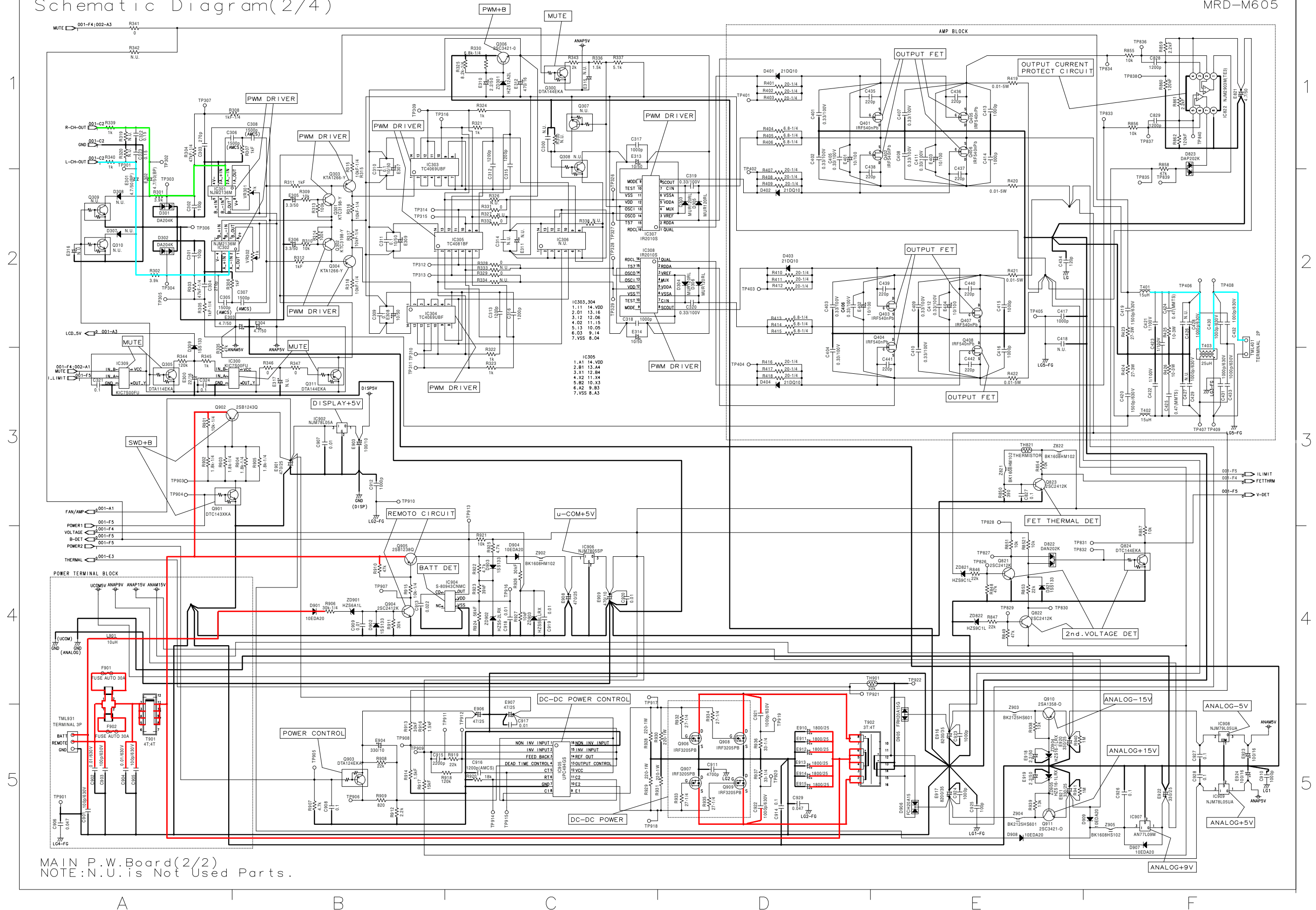
Schematic Diagram(1/4)

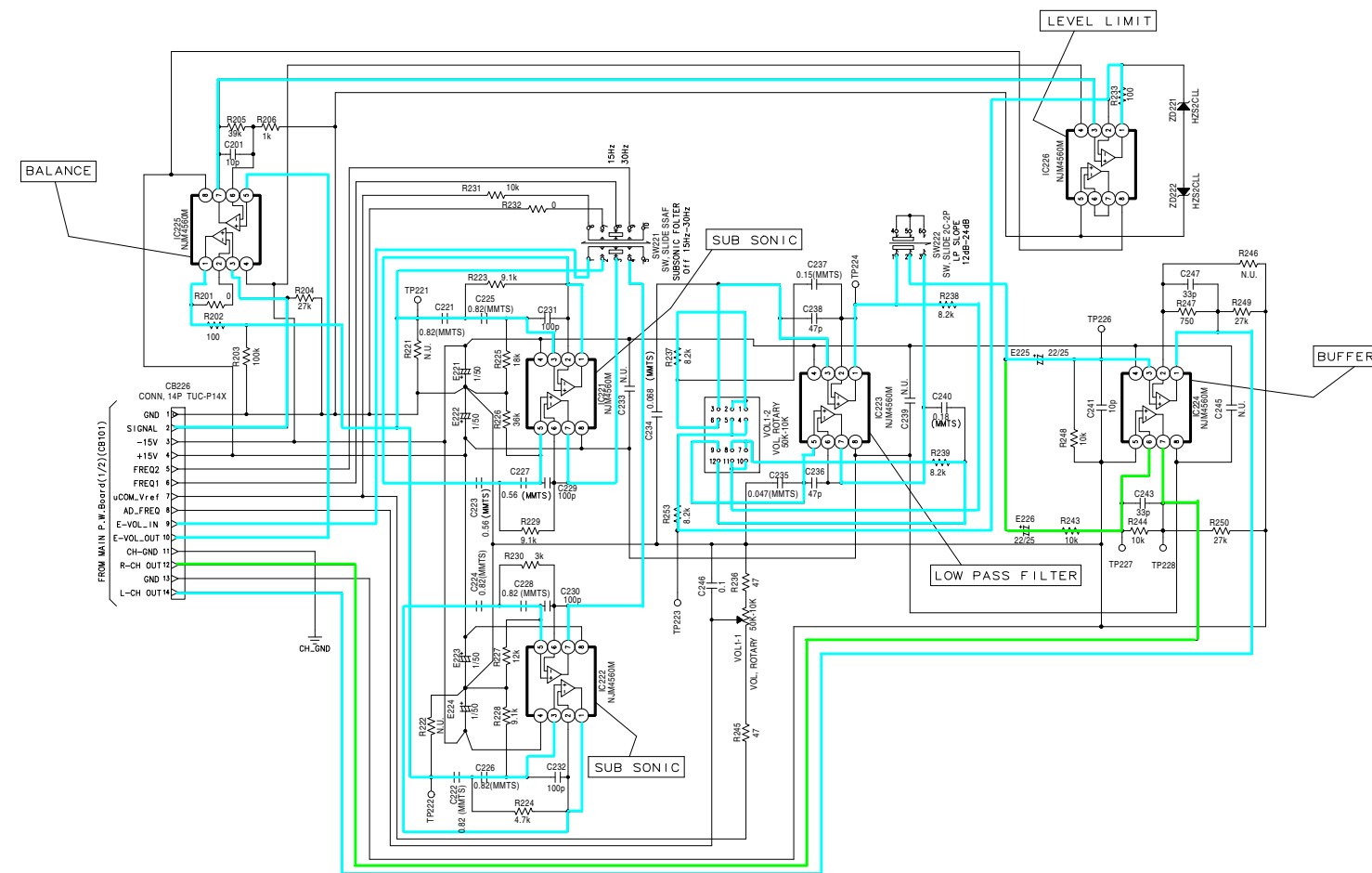
MRD-M605



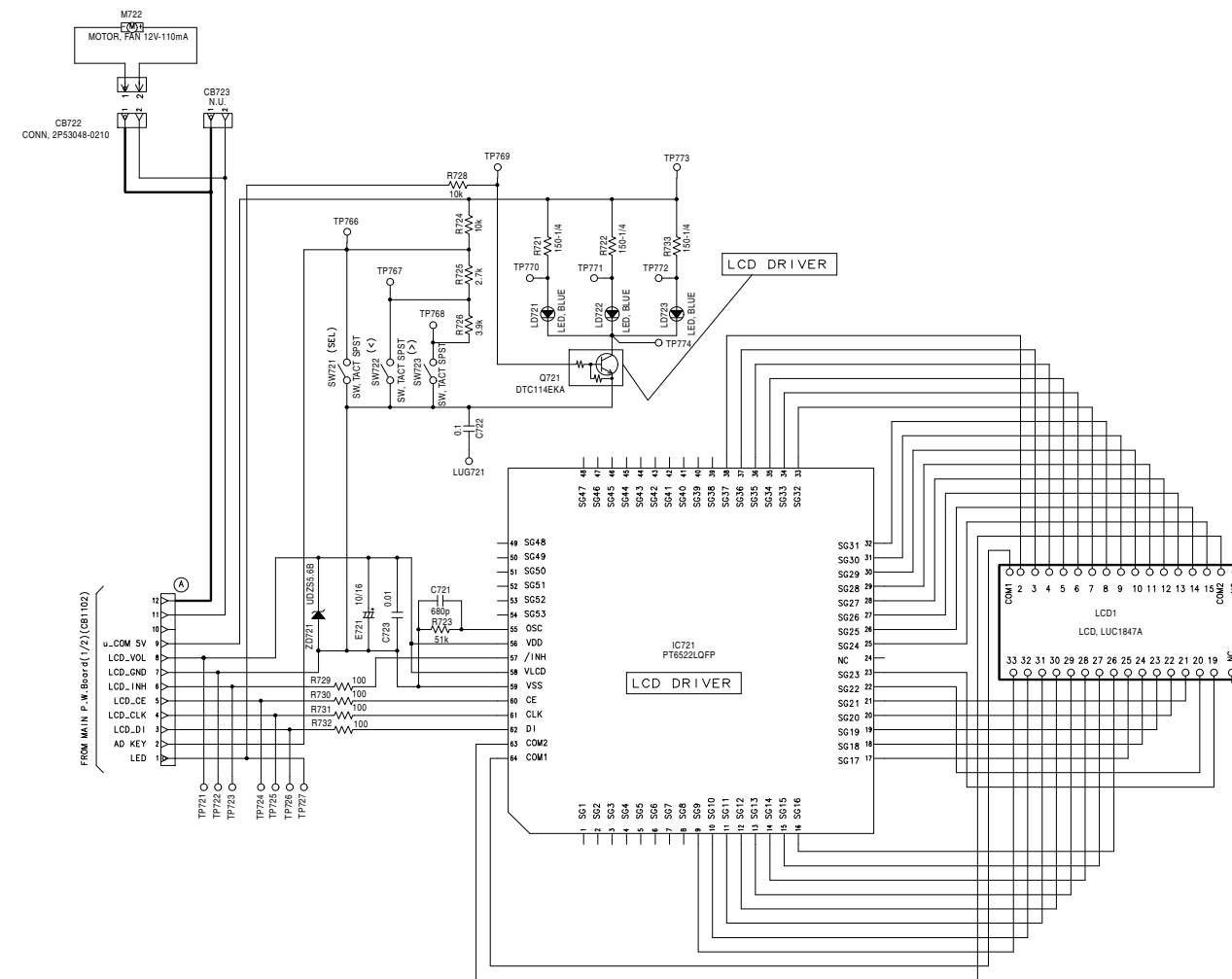
Schematic Diagram(2/4)

MRD-M605





VOLUME P.W.Board
NOTE:N.U.is Not Used Parts.



LCD P.W.Board
NOTE:N.U.is Not Used Parts.

Terminal Voltage of IC/TR

IC101		
1	41	mV
2	41	mV
3	42	mV
4	-15.215	V
5	42	mV
6	41	mV
7	42	mV
8	15.304	V

IC102		
1	45	mV
2	45	mV
3	45	mV
4	-15.227	V
5	45	mV
6	45	mV
7	45	mV
8	15.303	V

IC103		
1	41	mV
2	40	mV
3	41	mV
4	-15.236	V
5	42	mV
6	42	mV
7	42	mV
8	15.307	V

IC104		
1	30	mV
2	33	mV
3	33	mV
4	-15.242	V
5	34	mV
6	34	mV
7	32	mV
8	15.311	V

IC201					
1	26	mV	19	4.504	V
2	27	mV	20	-	
3	17	mV	21	-	
4	-		22	-	
5	4.509	V	23	-	
6	4.511	V	24	-	
7	4.512	V	25	-	
8	4.481	V	26	-	
9	4.512	V	27	-	
10	4.513	V	28	-	
11	4.485	V	29	-	
12	4.488	V	30	-	
13	4.512	V	31	-	
14	-		32	-	
15	-		33	-	
16	-		34	-	
17	-		35	8.997	V
18	4.488	V	36	25	mV

IC221		
1	0	mV
2	0	mV
3	3.4	mV
4	-15.79	V
5	0	mV
6	0	mV
7	4.5	mV
8	15.834	V

IC222		
1	3	mV
2	3	mV
3	4	mV
4	-15.861	V
5	3	mV
6	1	mV
7	1	mV
8	15.87	V

IC223		
1	0.154	V
2	0.154	V
3	0.155	V
4	-15.892	V
5	0.155	V
6	0.156	V
7	0.156	V
8	15.89	V

IC224		
1	3	mV
2	3	mV
3	4	mV
4	-15.905	V
5	2.3	mV
6	3.2	mV
7	3.1	mV
8	15.899	V

IC225		
1	3.4	mV
2	3.4	mV
3	3.1	mV
4	-15.914	V
5	5.6	mV
6	6.3	mV
7	0.153	V
8	15.905	V

IC226		
1	0.154	V
2	0.154	V
3	0.154	V
4	-15.922	V
5	2.2	mV
6	3.1	mV
7	2.3	mV
8	15.906	V

IC300		
1	4.97	V
2	5.04	V
3	5.6	mV
4	11	mV
5	11	mV

IC301		
1	5.018	V
2	10	mV
3	5	mV
4	-4.982	V
5	-	
6	-1.564	V
7	5.028	V
8	5.02	V

IC302		
1	5.02	V
2	8	mV
3	7	mV
4	-4.981	V
5	-	mV
6	-1.575	V
7	5.027	V
8	5.02	V

IC303								
1	-27.11	V	6	-27.35	V	11	-26.95	V
2	-27.36	V	7	-33.05	V	12	-26.95	V
3	-27.36	V	8	-21.28	V	13	-27.35	V
4	-26.94	V	9	-33.08	V	14	-21.26	V
5	-26.94	V	10	-27.49	V			

IC304								
1	-27.1	V	6	-27.32	V	11	-26.98	V
2	-27.32	V	7	-33.05	V	12	-26.98	V
3	-27.32	V	8	-21.28	V	13	-27.33	V
4	-26.97	V	9	-33.06	V	14	-21.26	V
5	-26.97	V	10	-27.45	V			

IC305								
1	-27.44	V	6	-26.98	V	11	-30.11	V
2	-27.32	V	7	-33.05	V	12	-27.36	V
3	-30.02	V	8	-26.96	V	13	-27.482	V
4	-28.97	V	9	-26.95	V	14	-21.26	V
5	-26.98	V	10	-28.91	V			

IC307								
1	-29.49	V	7	11.289	V	13	-33.07	V
2	-33.04	V	8	2.387	V	14	-28.91	V
3	-21.24	V	9	-		15	-	
4	-		10	-		16	-	
5	-		11	-21.29	V			
6	70	mV	12	-30.13	V			

IC308								
1	-29.58	V	7	11.265	V	13	-33.07	V
2	-33.09	V	8	2.441	V	14	-28.95	V
3	-21.29	V	9	-		15	-	
4	-		10	-		16	-	
5	-		11	-21.29	V			
6	48	mV	12	-30.04	V			

IC309		
1	4.958	V
2	5.023	V
3	2	mV
4	0	mV
5	5.023	V

IC501		
1	5.034	V
2	5.039	V
3	2	mV
4	-	
5	2	mV

IC502								
1	2	mV	16	3	mV	31	5.035	V
2	2.12	V	17	24	mV	32	5.032	V
3	2.405	V	18	5.027	V	33	5.028	V
4	2	mV	19	4.937	V	34	5.039	V
5	5.039	V	20	5.027	V	35	5.039	V
6	5.038	V	21	17	mV	36	2	mV
7	5.038	V	22	56	mV	37	10	mV
8	5.026	V	23	5.034	V	38	9	mV
9	5.034	V	24	5.035	V	39	9	mV
10	5.039	V	25	13	mV	40	8	mV
11	0.37	V	26	5.026	V	41	0.43	V
12	0.376	V	27	5.015	V	42	0.105	V
13	27	mV	28	3.568	V	43	77	mV
14	5.034	V	29	16	mV	44	5.038	V
15	3	mV	30	1.358	V			

IC503		
1	25	mV
2	25	mV
3	25	mV
4	25	mV
5	5.052	V
6	5.052	V
7	18	mV
8	5.053	V

IC504		
1	-	
2	2	
3	1.354	
4	5.035	
5	2	

IC506		
1	6	mV
2	5.071	V
3	42	mV
4	28	mV
5	5.08	V

IC505		
1	5.04	V
2	2	mV
3	2	mV
4	5.034	V
5	5.039	V
6	-	mV
7	2	mV
8	-	V
9	-	V
10	2	mV
11	2	mV
12	2	mV
13	2	mV
14	5.04	V

IC601					
1	4	mV	8	4	mV
2	5.04	V	9	5.04	V
3	5.04	V	10	5.04	V
4	4	mV	11	4	mV
5	5	mV	12	4	mV
6	5.04	V	13	5.034	V
7	4	mV	14	5.04	V

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IC602					
1	5.027	V	8	5.04	V
2	5.028	V	9	5.035	V
3	5.033	V	10	5.04	V
4	2	mV	11	-	
5	2	mV	12	-	
6	-		13	5.04	V
7	2	mV	14	5.04	V

IC603		
1	14.375	V
2	44	mV
3	8.8173	V

IC721								
1	-		23	2.4	V	45	-	
2	-		24	-		46	-	
3	-		25	2.4	V	47	-	
4	-		26	2.4	V	48	-	
5	-		27	2.4	V	49	-	
6	-		28	2.4	V	50	-	
7	-		29	2.4	V	51	-	
8	-		30	2.4	V	52	-	
9	2.4	V	31	2.4	V	53	-	
10	2.4	V	32	2.4	V	54	-	
11	2.4	V	33	2.4	V	55	3.7	V
12	2.4	V	34	2.4	V	56	4.88	V
13	2.4	V	35	2.4	V	57	5	V
14	2.4	V	36	2.4	V	58	4.88	V
15	2.4	V	37	2.4	V	59	15	mV
16	2.4	V	38	2.4	V	60	15	mV
17	2.4	V	39	-		61	14	mV
18	2.4	V	40	-		62	14	mV
19	2.4	V	41	-		63	2.4	V
20	2.4	V	42	-		64	2.4	V
21	2.4	V	43	-				
22	2.4	V	44	-				

IC801		
1	0.139	V
2	4.72	V
3	2.161	V
4	27	mV
5	2.373	V
6	4.717	V
7	0.135	V
8	5.059	V

IC822		
1	4.801	V
2	-32.99	V
3	-32.43	V
4	-33.03	V
5	-32.43	V
6	-32.99	V
7	4.79	V
8	20	mV

IC902		
1	4.979	V
2	15	mV
3	14.452	V

IC904		
1	5.054	V
2	8	V
3	3	mV
4	-	
5	25	mV

IC905					
1	1.59	V	9	3.412	V
2	1.589	V	10	3.422	V
3	2.548	V	11	14.38	V
4	0.48	V	12	14.38	V
5	1.715	V	13	5.028	V
6	3.816	V	14	5.029	V
7	23	mV	15	5.029	V
8	14.38	V	16	23	mV

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IC906		
1	5.059	V
2	26	mV
3	13.562	V

IC907		
1	9.006	V
2	26	mV
3	14.523	V

IC908		
1	0	V
2	-15.897	V
3	-4.989	V

IC909		
1	4.958	V
2	0	V
3	5.023	V

IC1101		
1	5.039	V
2	2	mV
3	5.028	V
4	2	mV
5	2	mV
6	0.42	V
7	4.998	V
8	0.385	V

TR	B		C		E	
Q300	5.036	V	-33.03	V	5.03	V
Q301	-4.919	V	-1.531	V	-4.983	V
Q302	-4.934	V	-1.533	V	-4.983	V
Q303	-1.79	V	-26.99	V	-1.09	V
Q304	-1.78	V	-26.93	V	-1.12	V
Q305	26	mV	5.016	V	5.022	V
Q306	-20.71	V	9	mV	-21.4	V
Q311	10.96	mV	4.96	V	5.04	V
Q701	5.036	V	40	mV	12	mV
Q702	4.328	V	4.903	V	4.981	V
Q721	2.872	V	0.376	V	9	mV
Q801	0.126	V	5.043	V	12	mV
Q802	0.122	V	5.043	V	12	mV
Q821	0.694	V	18	mV	11	mV
Q822	-32.37	V	-33.05	V	-33.06	V
Q823	0.772	V	12	mV	1	mV
Q824	29	mV	5.043	V	12	mV
Q901	4.907	V	98	mV	12	mV
Q902	13.688	V	14.377	V	14.395	V
Q903	4.844	V	0.47	V	5.022	V
Q904	0.653	V	38	mV	12	mV
Q905	13.702	V	14.307	V	14.394	V
Q910	-15.83	V	-33.08	V	-15.19	V
Q911	15.89	V	32.95	V	15.21	V
Q1101	10	mV	14.361	V	12	mV
Q1102	10	mV	14.361	V	12	mV
Q1104	14.364	V	15	mV	14.378	V

FET	G		D		S	
Q401	-29.65	V	-160	mv	-33	V
Q402	-67	mV	32.9	V	-170	mV
Q403	19	mV	32.9	V	-103	mV
Q404	-30.16	V	-103	mV	-33	V
Q405	-29.62	V	-175	mV	-33	V
Q406	-67	mV	32.9	V	-172	mV
Q407	-70	mV	32.9	V	-105	mV
Q408	-30.1	V	-109	mV	-33	V
Q906	2.72	V	14.39	V	8.7	mV
Q907	2.71	V	14.39	V	8.7	mV
Q908	2.71	V	14.39	V	8.6	mV
Q909	2.70	V	14.39	V	8.7	mV

[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

Description of IC Terminal

TMP86PM47AUG : IC502

No.	Symbol	I/O	Terminal Description
1	VSS	I	GND connect terminal.
2	XIN	I	Crystal OSC connect terminal.
3	XOUT	O	
4	TEST	I	TEST terminal.
5	VDD	-	Power supply terminal. (4.5 to 5.5V)
6	I2C_SDA	O	I2C_SDA output terminal.
7	I2C_SCL	O	I2C_SCL output terminal.
8	RESET	I	RESET terminal.
9	BAT_DET	I	BAT-DET terminal.
10	I_LIMIT	I	I_LIMIT input terminal.
11	FAN1	O	FAN power supply control terminal. (9V)
12	FAN2	O	FAN power supply control terminal. (12V)
13	NC(PULL-DOWN)	-	Pull-down connect terminal.
14	CMD_DOUT	O	AMP LINK data output terminal.
15	CMD_DIN	I	AMP LINK data input terminal.
16	CMD_CLK	I	AMP LINK clock terminal.
17	NC(PULL-DOWN)	-	Pull-down connect terminal.
18	POWER_P1	O	Power supply circuit control signal output terminal -1.
19	POWER_P2	O	Power supply circuit control signal output terminal -2.
20	POWER_P3	O	Power supply circuit control signal output terminal -3. (for LCD circuit)
21	FREQ1	I	Subsonic 15Hz input terminal.
22	FREQ2	I	Subsonic 30Hz input terminal.
23	VOL_DET	I	VOL-DET terminal. (Secondary voltage, DC-OFFSET)
24	6dB_DOWN	I	-6dB temperature detection input terminal.
25	OUT_THRM	I	Output Thermal detect terminal.
26	AD_KEY	I	KEY level input terminal.
27	AD_FREQ1	I	Frequency signal input terminal.
28	AD_VOLT	I	Voltage signal input terminal.
29	AD_FREQ2 (PULL-DOWN)	-	Pull-down connect terminal.
30	AD_THRM	I	Temperature signal input terminal.
31	AD_THRM_DET	I	Temperature detection input terminal.
32	LED	O	LED (Back Light) ON output terminal.
33	MUTE	O	MUTE output terminal.
34	VAREF	-	Analog reference power supply terminal for A/D converter.
35	AVDD	-	Power supply terminal for A/D converter.
36	AVSS	-	Analog reference GND terminal for A/D converter.
37	VOL_CE1	O	E-VOL chip enable terminal.
38	VOL_CE2(NC)	-	No connect terminal.
39	VOL_CL	O	E-VOL synchronous clock terminal.
40	VOL_DI	O	E-VOL transmission data terminal.
41	LCD_CE	O	LCD driver chip enable terminal.
42	LCD_DI	O	LCD driver transmission data terminal.
43	LCD_CLK	O	LCD driver synchronous clock terminal.
44	LCD_INH	O	LCD driver INH terminal.

Exploded View (Cabinet)

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