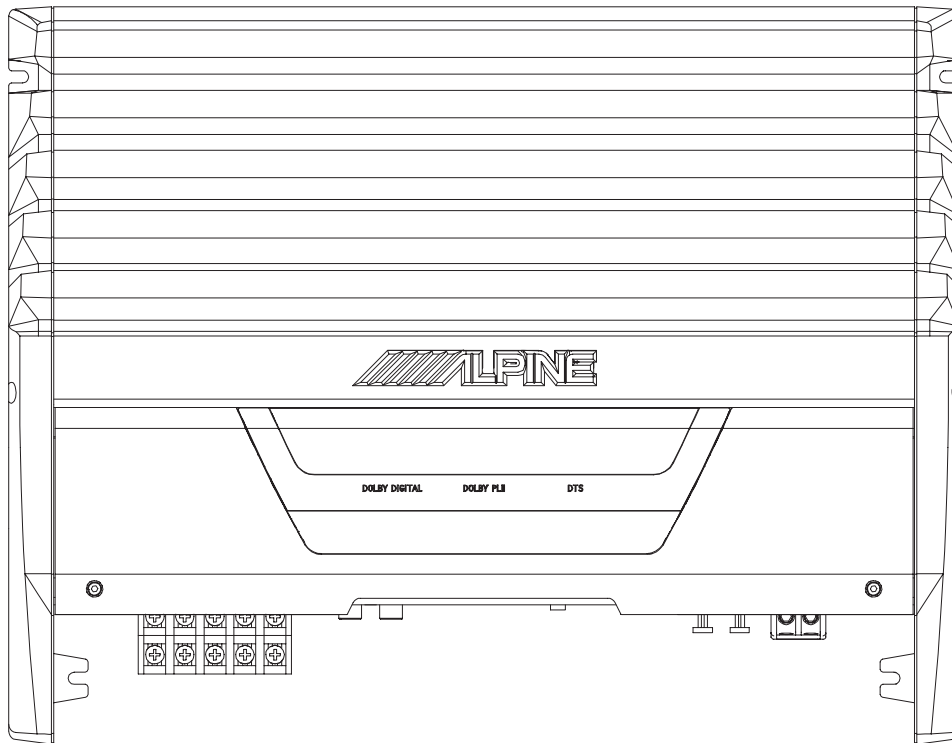


# **////ALPINE**

# **SERVICE MANUAL**

---

## **DIGITAL THEATER AMPLIFIER**



12 / 04-A  
68E37809S01

---



# **MRA-D550**

## <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.

 <b>Warning</b>	If you ignore this symbol and handle the product incorrectly or unsafely, serious injury or death may result.
 <b>Caution</b>	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**

 <b>Do not look squarely into the laser light coming from the pickup.</b> You may lose your sight.	 <b>Fuse Caution</b> Always use a designated fuse. Use of an incorrect fuse may result in a fire.
--	--

### **Caution**

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

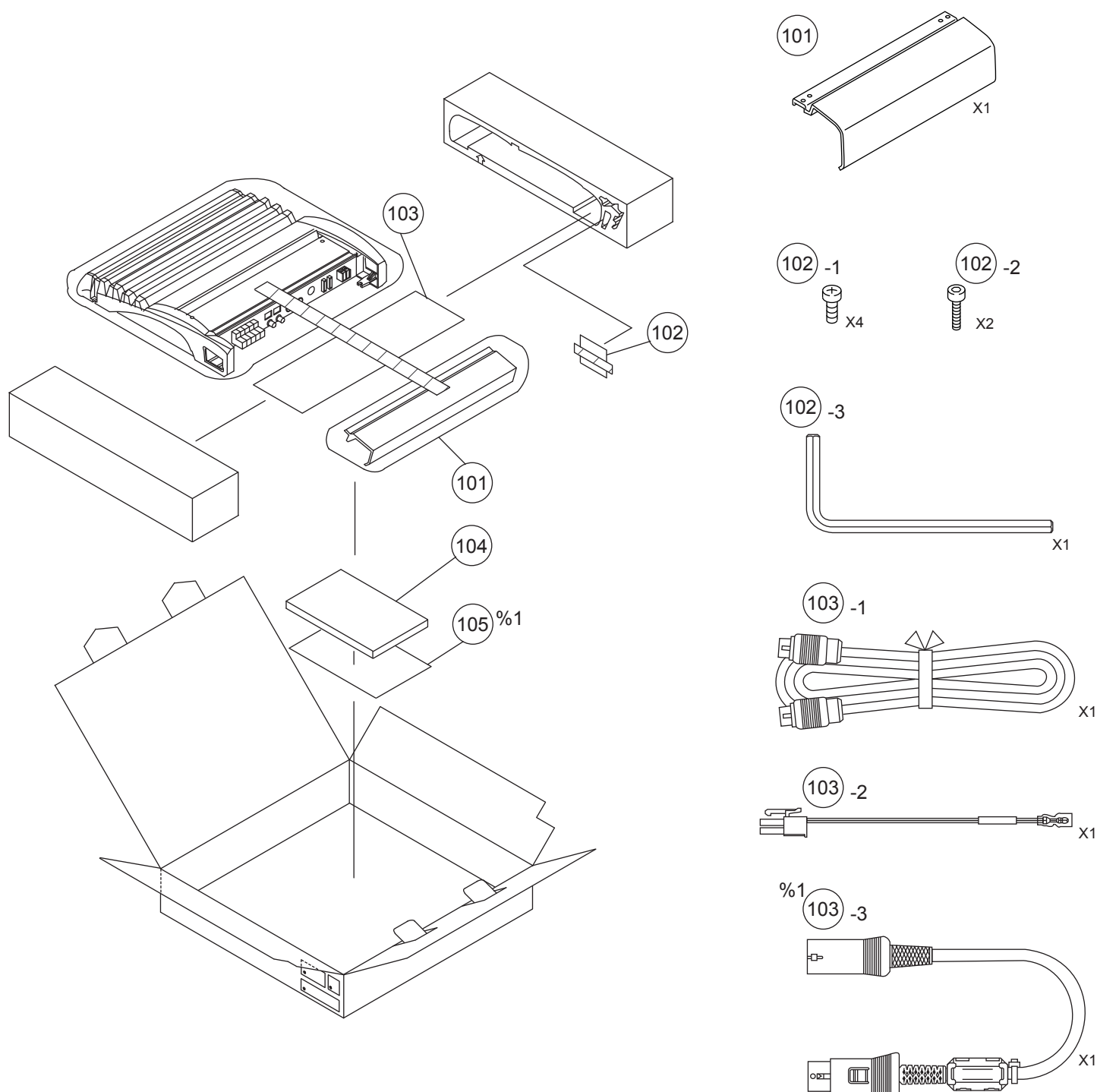
# Packing Assembly Parts List

Symbol No.	Part No.	Description
101	15-00938Z01	COVER, TERMINAL
102-1	03-01282Z01	SCR, 6TP 4X20 ZB A
102-2	03-01280Z01	SCR, CUS 3X12 NN
102-3	47A65641F06	SHAFT, WRENCH M3
103-1	01T55561W73	DIN AI-NET S/S 6000
103-2	09-01421Z01	ATFC-0469-01A

Symbol No.	Part No.	Description
%1 103-3	09-02927Z01	ASSY, ATFD-0600-01A
#1 104	68-00323Z42	O/M AOAM
\$1 104	68-00323Z43	O/M AOEU
%1 104	68-00323Z43	O/M AOEU
%1 105	68-00323Z44	O/M-IGS AOEU

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

## Packing Method View



# Specifications

Power Output (20Hz/1kHz/10kHz input, 1% T.H.D.)

Digital In Mode at H/U input ..... Front ch : 60W

Analog In Mode at H/U input ..... Front/Rear/Center ch : 60W

Analog In Mode at Changer input ..... Front ch : 60W

Power Output (20Hz/31.5Hz input, H/U Volume Max(Step 35))

Analog In Mode at H/U input or Changer input ..... SubW ch : 3.4Vrms

Total Harmonic Distortion (H/U Volume Step 18, 10kHz input)

Digital In Mode at H/U input ..... Front ch : 0.3%

Analog In Mode at H/U input ..... Front/Rear/Center ch : 0.3%

Analog In Mode at Changer input ..... Front ch : 0.3%

Total Harmonic Distortion (H/U Volume Step 18, 20kHz input)

Analog In Mode at H/U input or Changer input ..... SubW ch : 0.05%

Residual Noise (H/U Volume Step 1, 20kHz SPCL and A-weighting Filter in AUDIO PRECISION)

Digital In Mode at H/U input ..... Front/Rear/Center ch : 600uV

SubW ch : 125uV

(Digital In Mode : Digital generator output off in AUDIO PRECISION)

Analog In Mode at H/U and Changer input ..... Front ch : 600uV

Analog In Mode at H/U input or Changer input ..... SubW ch : 125uV

(Analog In Mode : input short)

Frequency Range

Analog In Mode at H/U input ..... Front/Rear/Center ch : 20Hz : -0.7±2dB

20kHz : -0.7±2dB

Analog In Mode at Changer input ..... Front ch : 20Hz : -0.7±2dB

20kHz : -0.7±2dB

Frequency Range (Reference Frequency : 31.5Hz)

Analog In Mode at H/U or Changer input ..... SubW ch : 20Hz : -0.5±2dB

Cross Talk (20kHz SPCL Filter in AUDIO PRECISION, H/U Volume Step 29)

Analog In Mode at H/U input ..... Front/Rear/Center ch : 65dB

(Signal input ch : Front L/R, Rear L/R)

Dolby Test Disc (Dolby Digital Test DVD Version 1.5) ..... 65dB

Navi Sound Input Sensitivity (H/U Navi Mix ON, H/U Navi In ON, H/U Navi Level 5, Input 5VDC in Guide Cont Port,

Input 1kHz 0.8Vrms in Guide Input Port) ..... Front ch : (0.25±2dB)W

Output Offset Voltage ..... ±150mV

Current Drain ..... No Signal : 2A

4 ohm Load, 1% T.H.D, All Channel Drive : 45A

Back Up Current Drain : 6mA

Navi Sound Output Time ..... 100msec

Fuse Requirement ..... 20A(Peak) x 2 (For Battery Line)

Power Source ..... DC14.4V (11~16V)

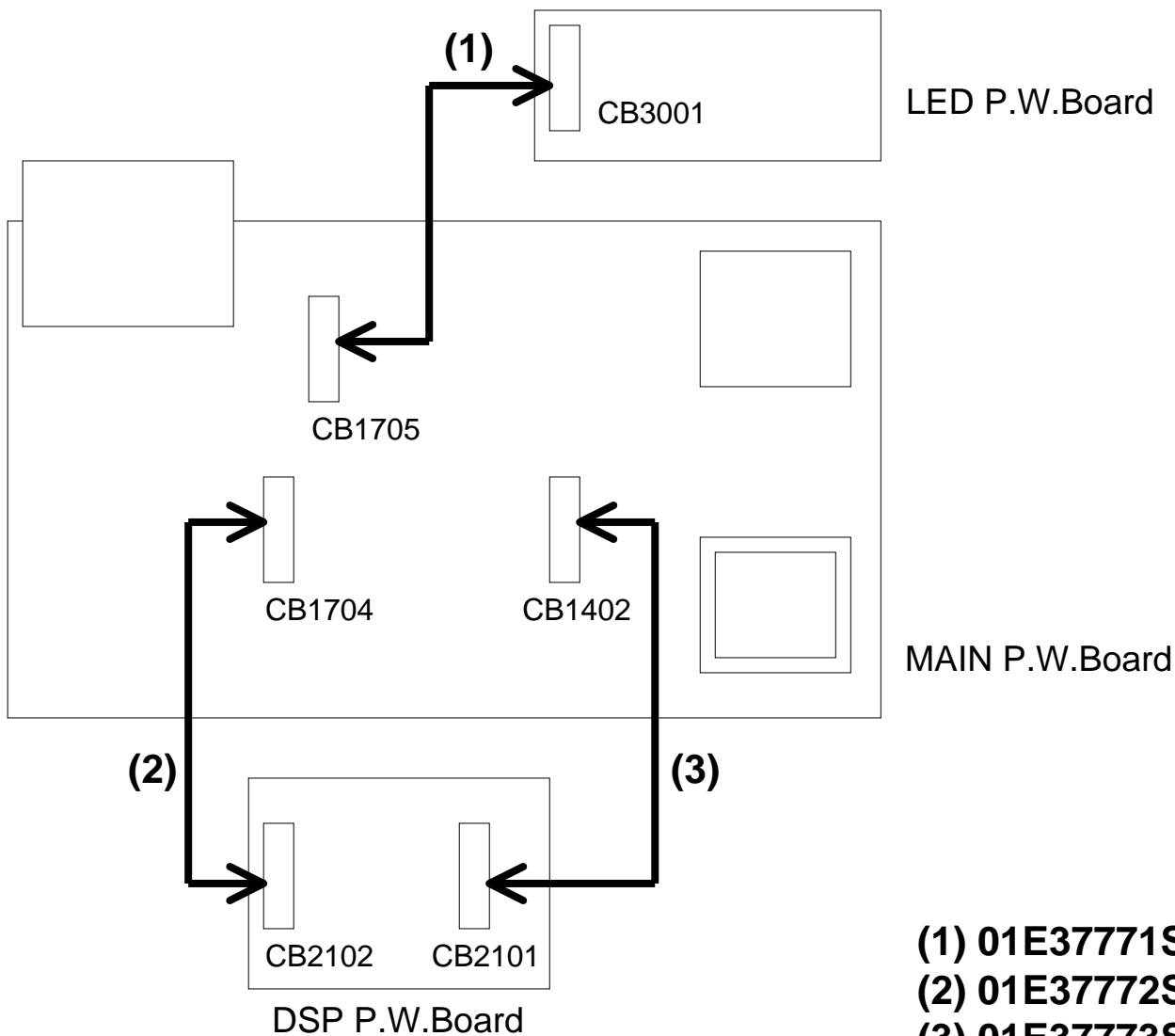
Dimensions (W x H x D) ..... 347.8 x 65.1 x 269.8mm

Weight ..... 4.3kg

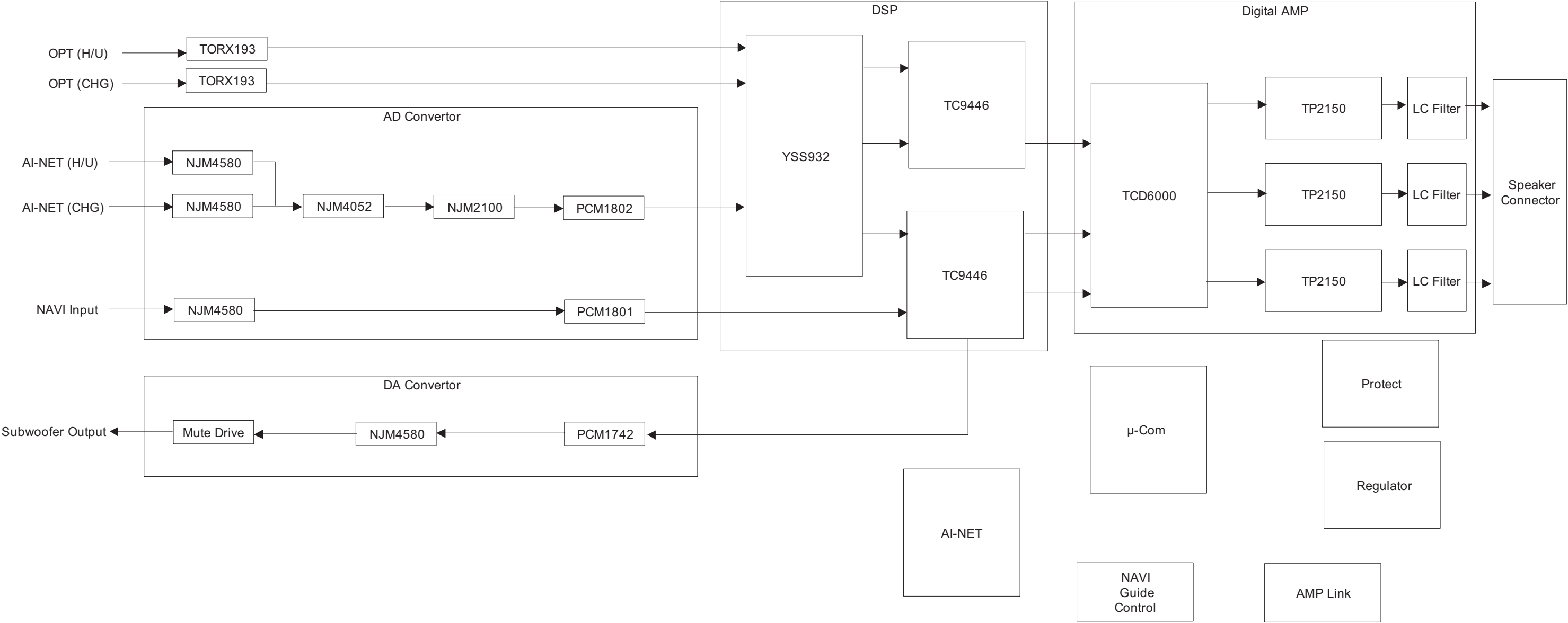
NOTE : Due to Continuing product improvement, specifications and designs are subject to change without notice.

## Extension Cable

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



Block Diagram



1

2

3

4

5

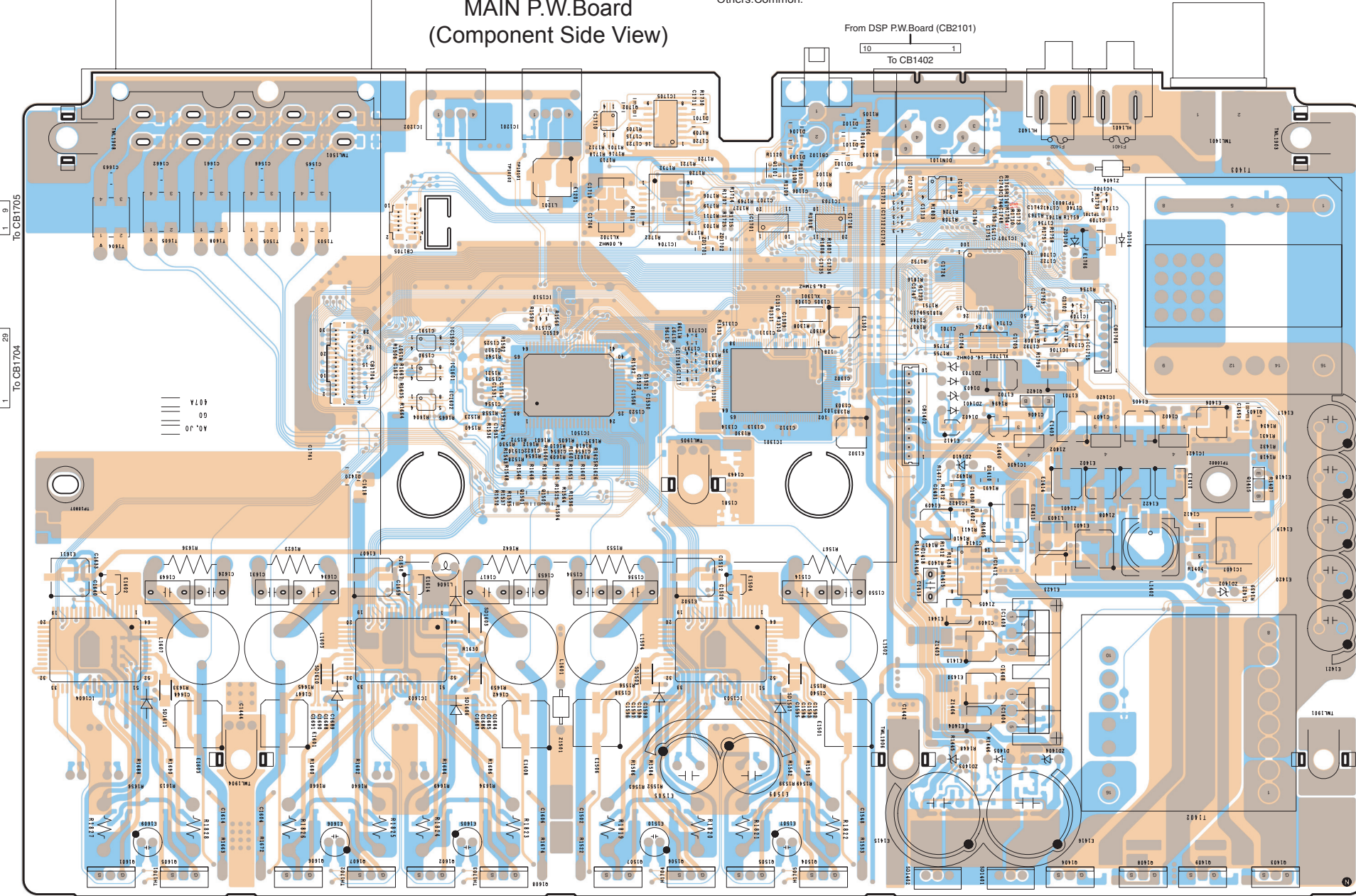
From LED P.W.Board (CB3001)  
From DSP P.W.Board (CB2102)

MAIN P.W.Board  
(Component Side View)

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

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

From DSP P.W.Board (CB2101)  
To CB1402



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







1

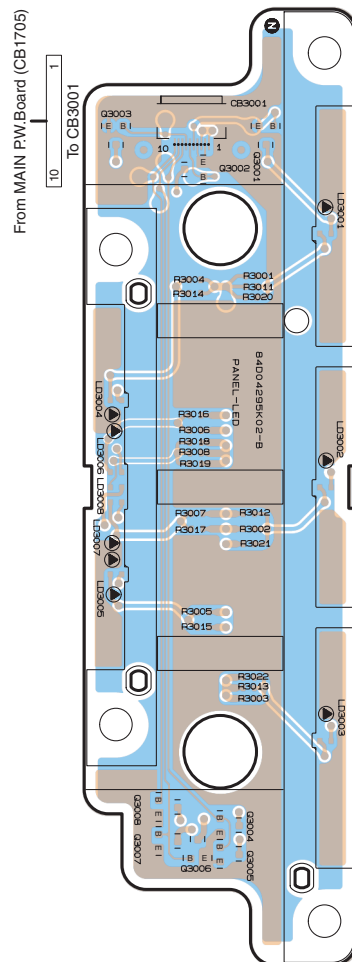
2

3

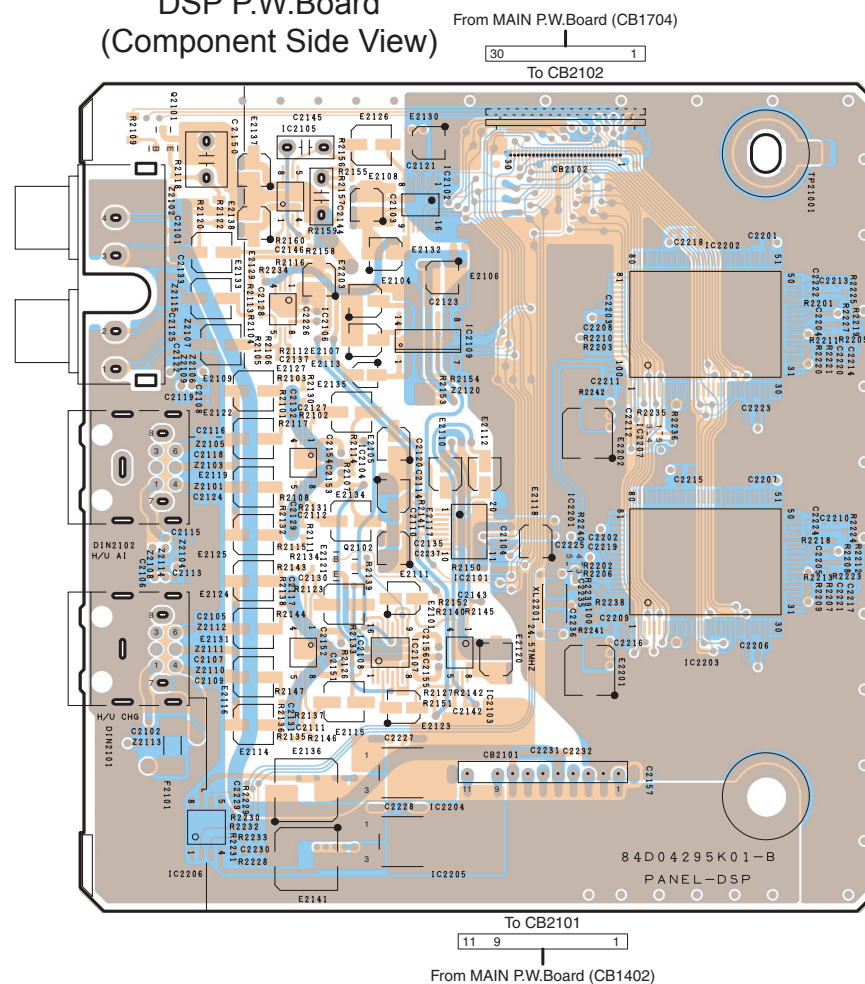
4

5

LED P.W.Board  
(Component Side View)

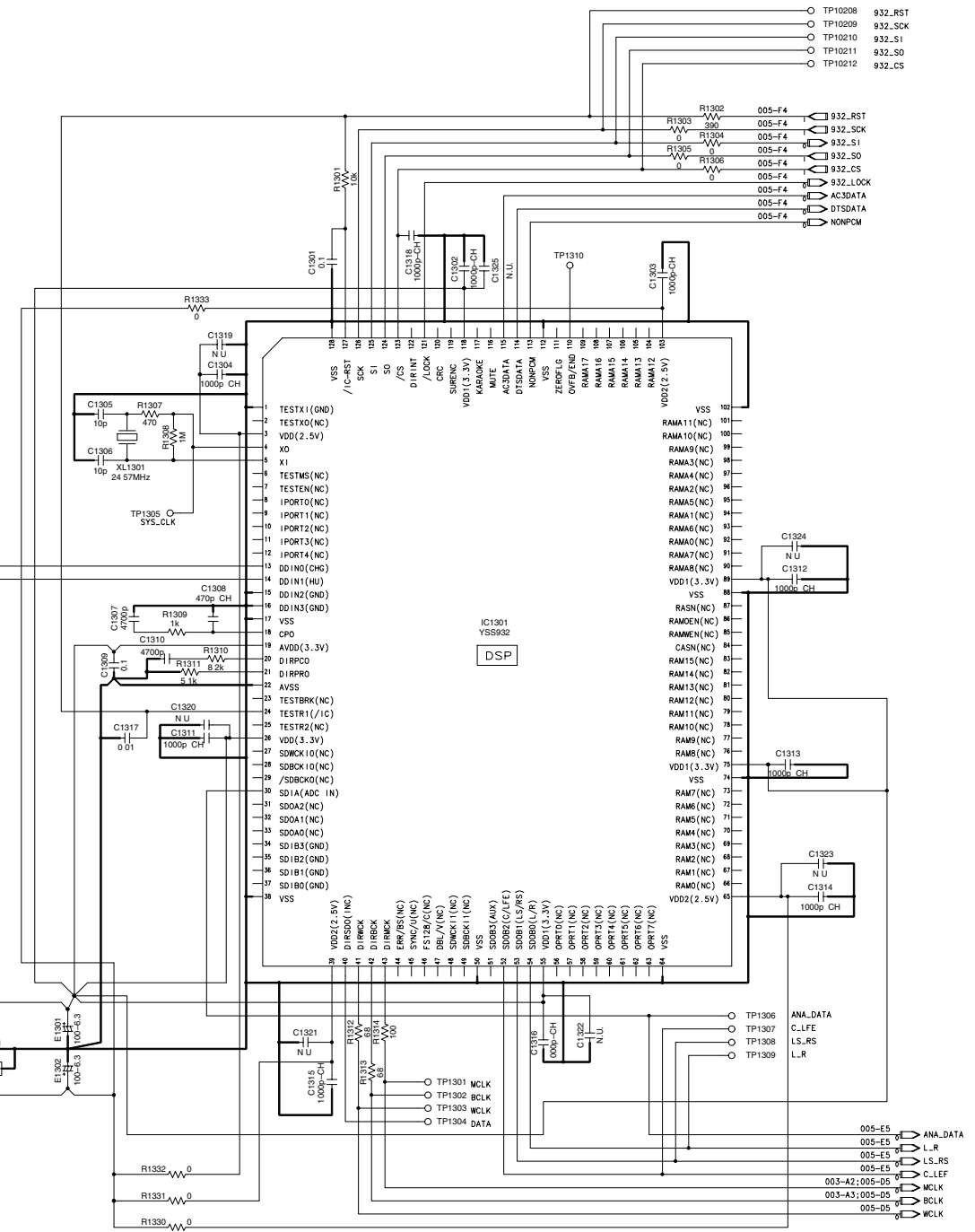


DSP P.W.Board  
(Component Side View)



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

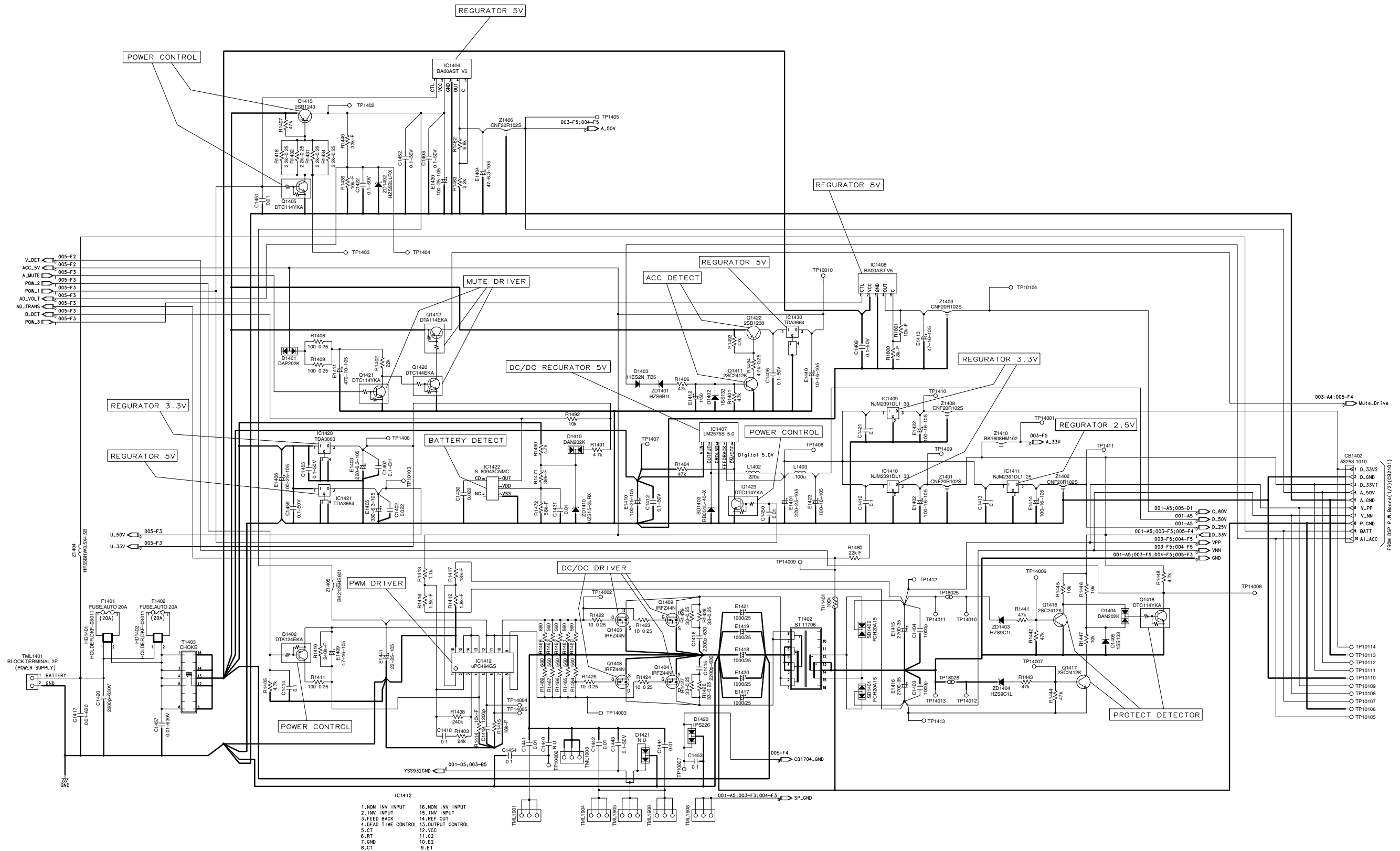
## MRA-D550



NOTE:N.U.is Not Used Parts.

# Schematic Diagram(2/8)

MRA-D550

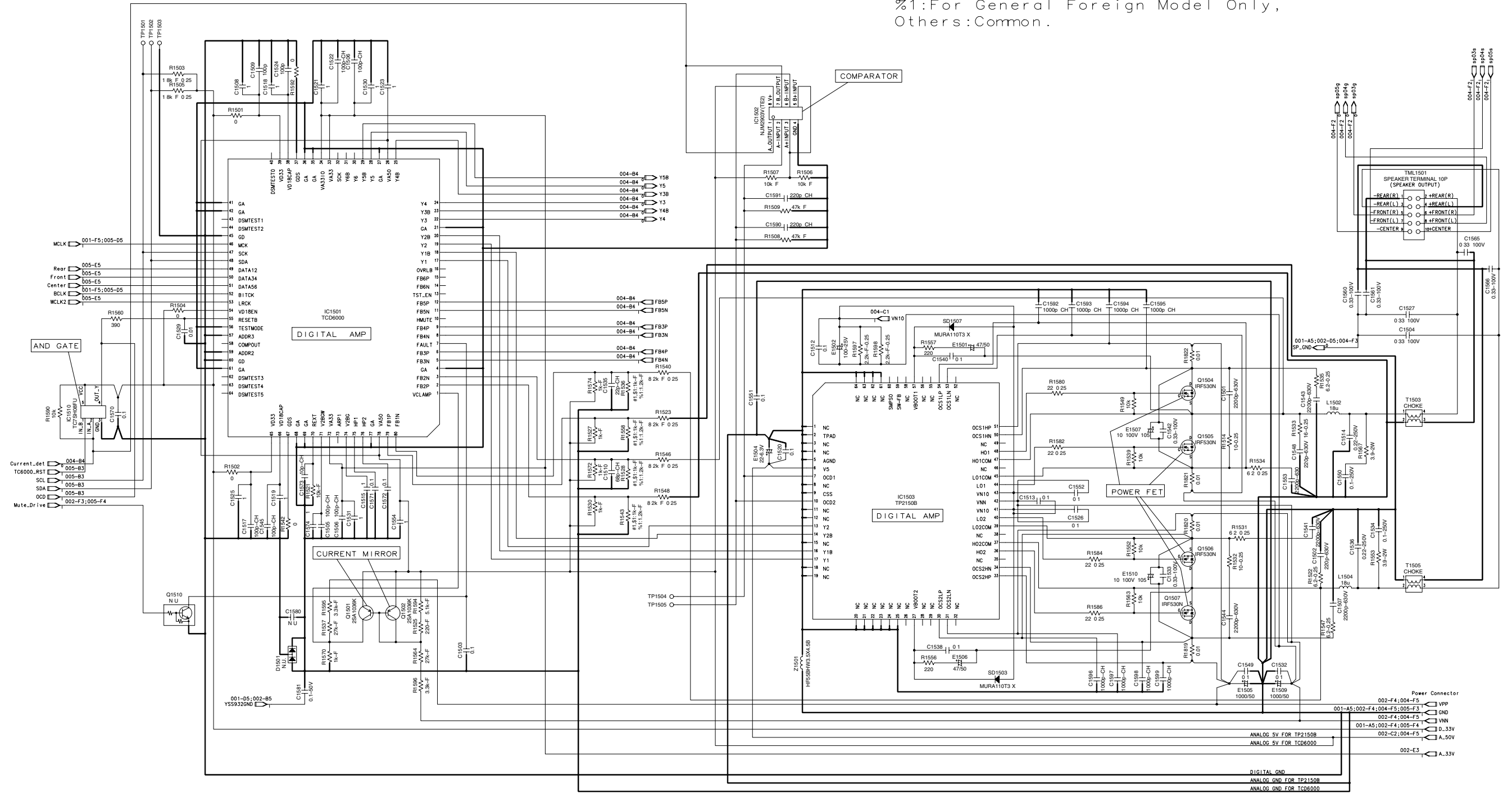


MAIN P.W.Board(2/5)  
NOTE:N.U.is Not Used Parts.

# Schematic Diagram(3/8)

MRA-D550

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

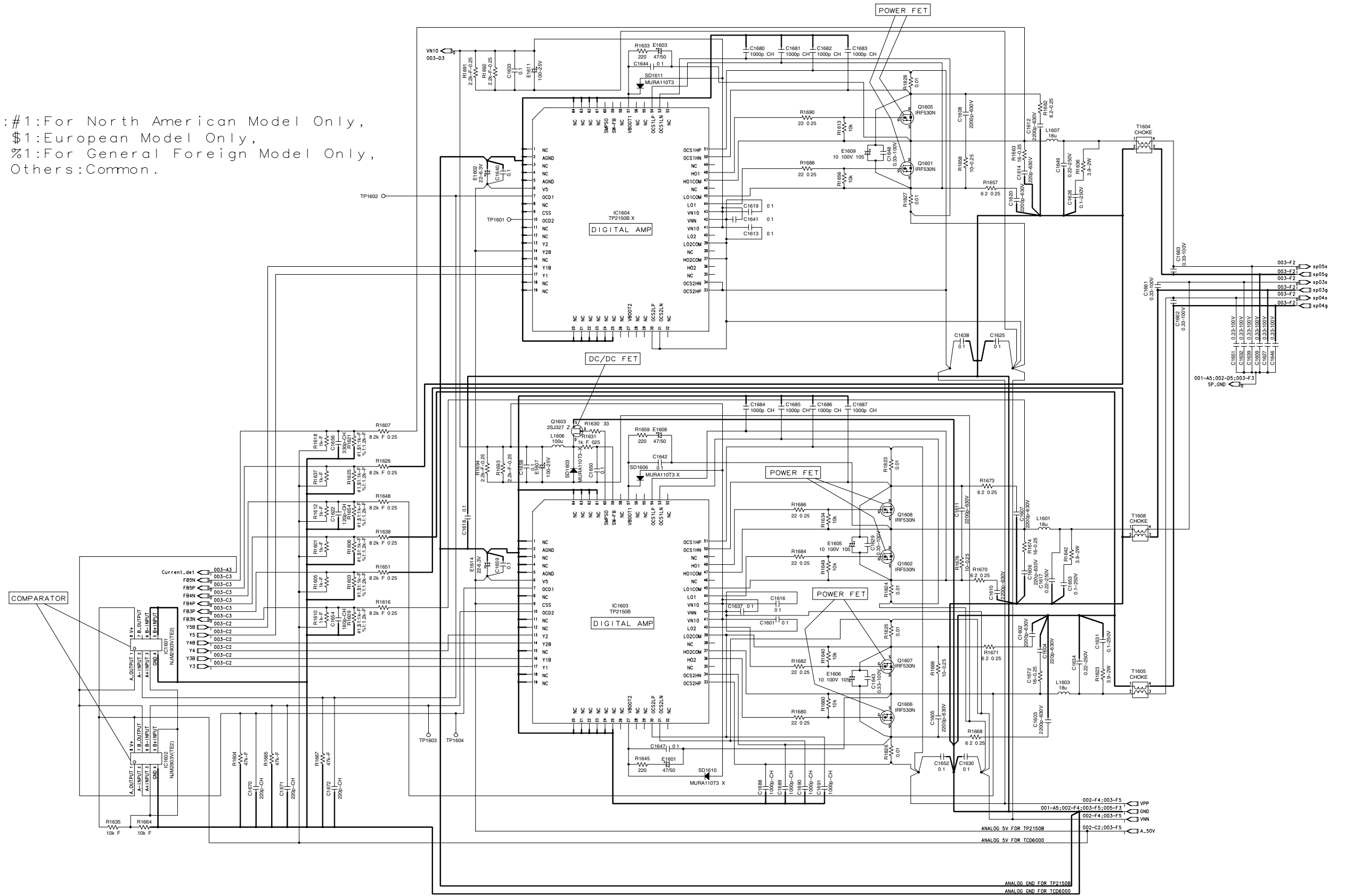


MAIN P.W.Board(3/5)  
NOTE:N.U.is Not Used Parts.

# Schematic Diagram(4/8)

MRA-D550

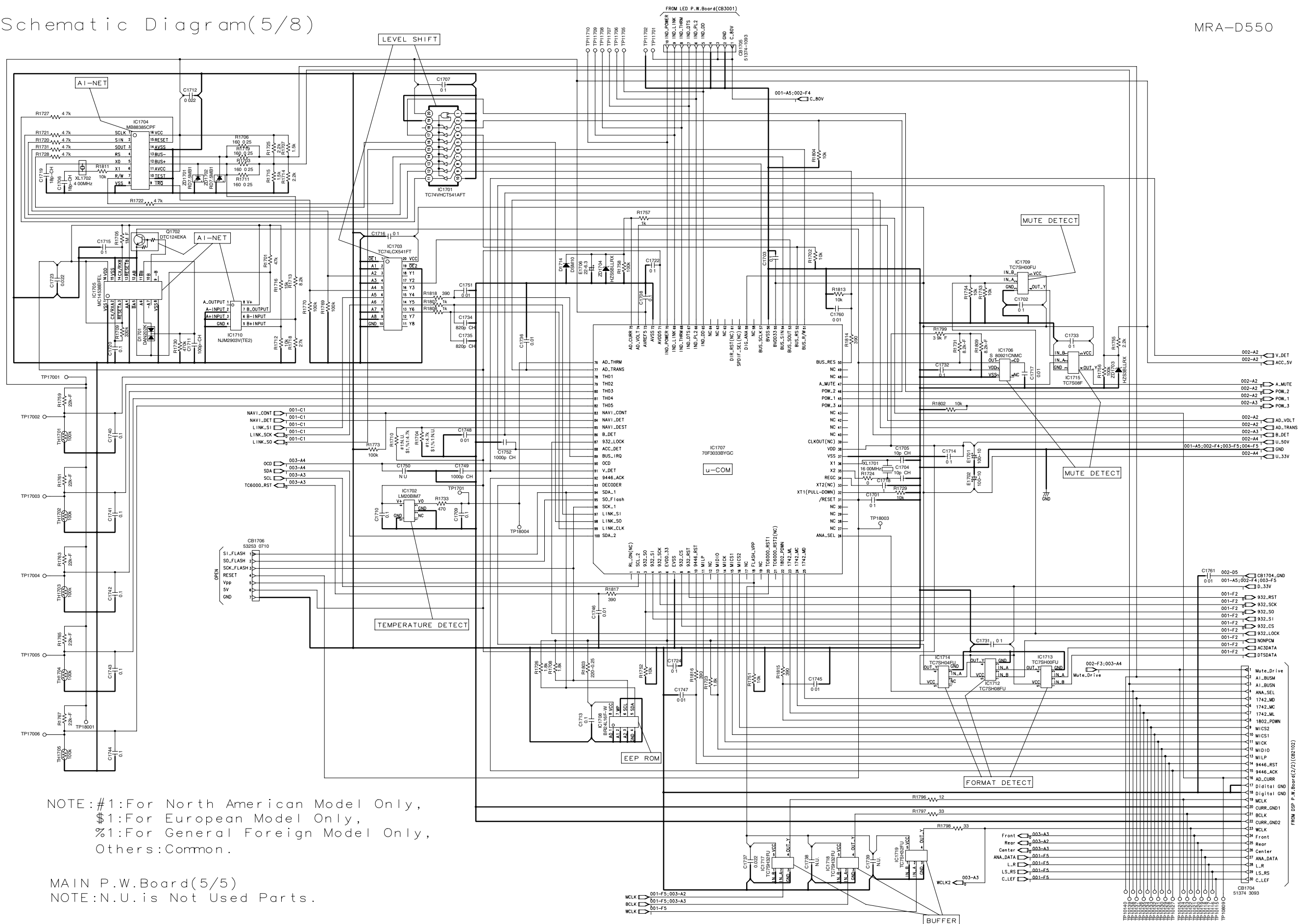
NOTE:#1:For North American Model Only,  
\$1:European Model Only,  
%1:For General Foreign Model Only,  
Others:Common.



MAIN P.W.Board(4/5)  
NOTE:N.U.is Not Used Parts.

# Schematic Diagram(5/8)

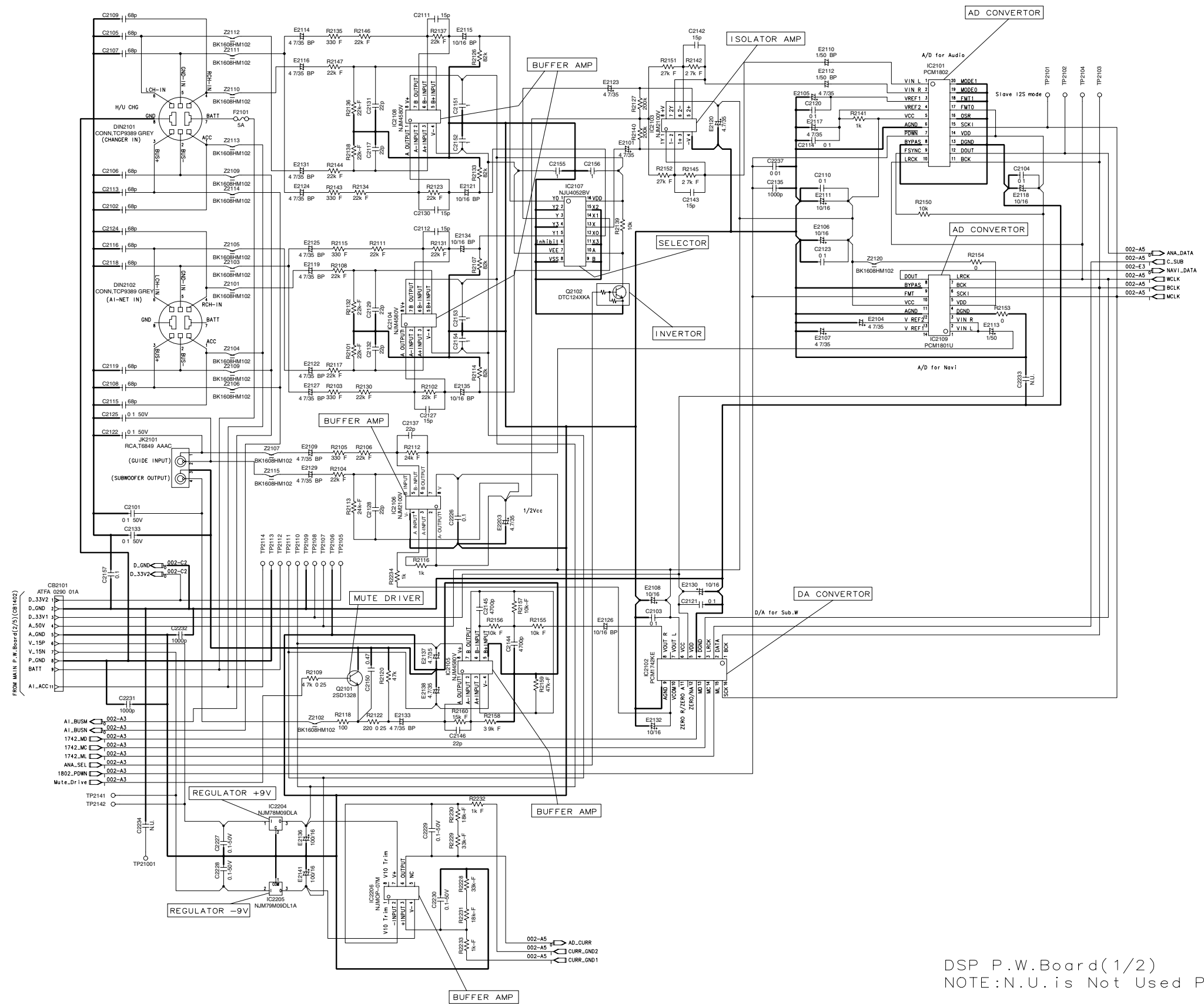
MRA-D550



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

MAIN P.W.Board(5/5)  
 NOTE:N.U.is Not Used Parts.

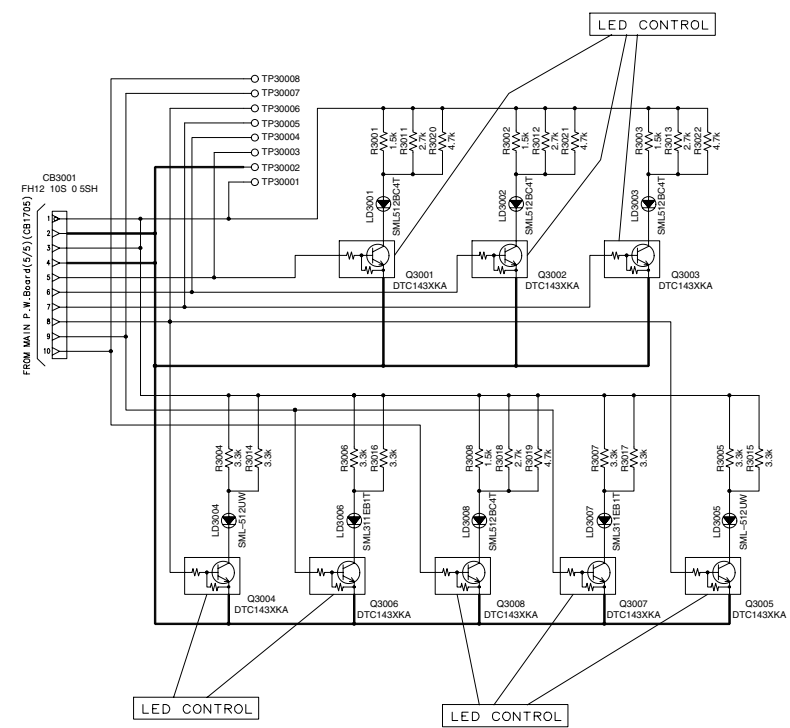






# Schematic Diagram(8/8)

MRA-D550



LED P.W.Board

## Terminal Voltage of IC/TR

Ref.No.	Pin No.	Voltage	Note
IC1201	1	4.82	PWM
	2	GND	
	3	4.82	
	4	GND	
IC1202	1	4.83	PWM
	2	GND	
	3	4.83	
	4	GND	
IC1301-1	1	GND	
	2	3.25	
	3	2.49	
	4	3.6	PWM
	5	2.66	
	6	3.25	
	7	3.25	
	8	3.25	
	9	3.25	
	10	3.25	
	11	3.25	
	12	3.25	
	13	GND	
	14	GND	
	15	GND	
	16	GND	
	17	GND	
	18	1	
	19	3.25	
	20	1.8	
	21	1.7	
	22	GND	
	23	GND	
	24	3.23	
	25	3.23	
	26	3.29	
	27	3.23	
	28	3.23	
	29	GND	
	30	GND	
	31	GND	
	32	GND	
	33	3.3	pulse
	34	GND	
	35	3.23	
	36	3.23	
	37	3.23	
	38	3.23	
	39	2.47	
	40	GND	
	41	3.3	pulse

Ref.No.	Pin No.	Voltage	Note
IC1301-2	42	3.3	pulse
	43	3.3	pulse
	44	3.27	
	45	3.26	pulse
	46	3.26	pulse
	47	GND	
	48	3.26	
	49	3.23	
	50	GND	
	51	GND	
	52	3.23	pulse
	53	3.23	pulse
	54	3.23	pulse
	55	3.29	
	56	GND	
	57	GND	
	58	GND	
	59	GND	
	60	GND	
	61	GND	
	62	GND	
	63	GND	
	64	GND	
	65	2.49	
	66	GND	
	67	GND	
	68	GND	
	69	GND	
	70	GND	
	71	GND	
	72	GND	
	73	GND	
	74	GND	
	75	3.29	
	76	GND	
	77	GND	
	78	GND	
	79	GND	
	80	GND	
	81	GND	
	82	GND	
	83	GND	
	84	GND	
	85	3.23	
	86	3.23	
	87	3.23	
	88	GND	
	89	3.29	
	90	3.26	

Ref.No.	Pin No.	Voltage	Note
IC1301-3	91	GND	
	92	GND	
	93	GND	
	94	3.26	
	95	GND	
	96	GND	
	97	3.26	
	98	3.26	
	99	GND	
	100	GND	
	101	GND	
	102	GND	
	103	2.49	
	104	GND	
	105	GND	
	106	GND	
	107	GND	
	108	GND	
	109	GND	
	110	3.23	pulse
	111	GND	
	112	GND	
	113	GND	
	114	GND	
	115	GND	
	116	GND	
	117	GND	
	118	3.29	
	119	GND	
	120	GND	
	121	3.24	
	122	GND	
	123	3.25	
	124	3.24	
	125	GND	
	126	GND	
	127	3.26	
	128	GND	
IC1404	1	3.3	
	2	12.81	
	3	GND	
	4	5	
	5	1.26	
IC1407	1	12.87	
	2	12.87	PWM
	3	GND	
	4	5.01	
	5	0.6	
IC1408	1	3.2	
	2	12.81	
	3	GND	
	4	8.01	
	5	1.26	

Ref.No.	Pin No.	Voltage	Note
IC1409	1	5.01	
	2	GND	
	3	3.29	
IC1410	1	5.01	
	2	GND	
	3	3.29	
IC1411	1	5.01	
	2	GND	
	3	2.49	
IC1412	1	GND	
	2	3	
	3	GND	
	4	GND	
	5	GND	
	6	4	
	7	GND	
	8	13	
	9	12	pulse
	10	12	pulse
	11	13.2	
	12	13.2	
	13	5	
	14	5	
	15	5	
	16	GND	
IC1420	1	12.87	
	2	GND	
	3	3.28	
	4	GND	
IC1421	1	12.87	
	2	GND	
	3	5.1	
	4	GND	
IC1422	1	3.8	
	2	7.6	
	3	GND	
	4	GND	
	5	GND	
IC1430	1	12.79	
	2	GND	
	3	5	
	4	GND	
IC1501-1	1	2	
	2	2.5	
	3	5	pulse
	4	GND	
	5	5	pulse
	6	2.5	
	7	2.2	
	8	5	pulse
	9	2.5	
	10	GND	
	11	1.5	

Ref.No.	Pin No.	Voltage	Note
IC1501-2	12	2.5	
	13	GND	
	14	2	
	15	2	
	16	GND	
	17	5.1	pulse
	18	5.1	pulse
	19	5.1	pulse
	20	5.1	pulse
	21	GND	
	22	5.1	pulse
	23	5.1	pulse
	24	5.1	pulse
	25	5.1	pulse
	26	5.1	
	27	GND	
	28	5.1	
	29	GND	
	30	5.1	
	31	GND	
	32	3.4	
	33	3.4	
	34	3.4	
	35	GND	
	36	GND	
	37	GND	
	38	2.1	
	39	3.4	
	40	GND	
	41	GND	
	42	GND	
	43	GND	
	44	GND	
	45	GND	
	46	GND	
	47	3.4	
	48	3.4	
	49	3.3	pulse
	50	3.3	pulse
	51	3.3	pulse
	52	3.3	pulse
	53	3.3	pulse
	54	3.4	
	55	3.4	
	56	GND	
	57	GND	
	58	3.4	
	59	GND	
	60	GND	
	61	GND	
	62	GND	
	63	GND	

Ref.No.	Pin No.	Voltage	Note
IC1501-3	64	GND	
	65	3.4	
	66	2	
	67	GND	
	68	GND	
	69	GND	
	70	1.1	
	71	2.6	
	72	3.4	
	73	1.9	
	74	2.6	
	75	2.8	pulse
	76	2.8	pulse
	77	GND	
	78	5.1	
	79	2.6	
	80	5	pulse
IC1502	1	3.3	
	2	0.7	
	3	2.5	
	4	GND	
	5	2.5	
	6	0.7	
	7	3.3	
	8	5	
IC1503-1	1	GND	
	2	GND	
	3	GND	
	4	GND	
	5	GND	
	6	5.2	
	7	1.5	
	8	GND	
	9	GND	
	10	1.5	
	11	GND	
	12	GND	
	13	5.1	pulse
	14	5.1	pulse
	15	GND	
	16	5.1	pulse
	17	5.1	pulse
	18	GND	
	19	GND	
	20	GND	
	21	GND	
	22	GND	
	23	GND	
	24	GND	
	25	GND	
	26	+/-1	pulse
	27	-21/44	pulse



Ref.No.	Pin No.	Voltage	Note
IC1503-2	28	GND	
	29	GND	
	30	-30	
	31	-30	
	32	GND	
	33	31	
	34	31	
	35	GND	
	36	-32/41	pulse
	37	+/-33	pulse
	38	+/-1	pulse
	39	-34	
	40	-30/-17	pulse
	41	-19	
	42	-30	
	43	-19	
	44	-30/-17	pulse
	45	-30	
	46	+/-1	pulse
	47	+/-33	pulse
	48	-32/41	pulse
	49	+/-1	pulse
	50	31	
	51	30	
	52	GND	
	53	-30	
	54	-30	
	55	+/-1	pulse
	56	+/-1	pulse
	57	-21/44	pulse
	58	+/-1	pulse
	59	-30	
	60	-10	
	61	GND	
	62	GND	
	63	GND	
	64	GND	
IC1510	1	3.3	
	2	3.3	
	3	GND	
	4	3.3	
	5	3.3	
IC1601	1	3.3	
	2	0.7	
	3	2.5	
	4	GND	
	5	GND	
	6	GND	
	7	3.3	
	8	5	

Ref.No.	Pin No.	Voltage	Note
IC1602	1	3.3	
	2	0.7	
	3	2.5	
	4	GND	
	5	2.5	
	6	0.7	
	7	3.3	
	8	5	
IC1603-1	1	GND	
	2	GND	
	3	GND	
	4	GND	
	5	GND	
	6	5.2	
	7	1.5	
	8	GND	
	9	5	
	10	1.5	
	11	GND	
	12	GND	
	13	5.1	
	14	5.1	
	15	GND	
	16	5.1	
	17	5.1	
	18	GND	
	19	GND	
	20	GND	
	21	GND	
	22	GND	
	23	GND	
	24	GND	
	25	GND	
	26	+/-1	
	27	-21/44	
	28	GND	
	29	GND	
	30	-30	
	31	-30	
	32	GND	
	33	31	
	34	31	
	35	GND	
	36	-32/41	
	37	+/-33	
	38	+/-1	
	39	-34	
	40	-30/-17	
	41	-19	
	42	-30	
	43	-19	
	44	-30/-17	

Ref.No.	Pin No.	Voltage	Note
IC1603-2	45	-30	
	46	+/-1	
	47	+/-33	
	48	-32/41	
	49	+/-1	
	50	31	
	51	30	
	52	GND	
	53	-30	
	54	-30	
	55	+/-1	
	56	+/-1	
	57	-21/44	
	58	+/-1	
	59	-17.8/16.8	
	60	-11/0	
	61	GND	
	62	GND	
	63	GND	
	64	GND	
IC1604-1	1	GND	
	2	GND	
	3	GND	
	4	GND	
	5	GND	
	6	5.2	
	7	1.5	
	8	GND	
	9	GND	
	10	1.5	
	11	GND	
	12	GND	
	13	5.1	
	14	5.1	
	15	GND	
	16	5.1	
	17	5.1	
	18	GND	
	19	GND	
	20	GND	
	21	GND	
	22	GND	
	23	GND	
	24	GND	
	25	GND	
	26	+/-1	
	27	-21/44	
	28	GND	
	29	GND	
	30	-30	
	31	-30	
	32	GND	

Ref.No.	Pin No.	Voltage	Note
IC1604-2	33	31	
	34	31	
	35	GND	
	36	-32/41	
	37	+/-33	
	38	+/-1	
	39	-34	
	40	-30/-17	
	41	-19	
	42	-30	
	43	-19	
	44	-30/-17	
	45	-30	
	46	+/-1	
	47	+/-33	
	48	-32/41	
	49	+/-1	
	50	31	
	51	30	
	52	GND	
	53	-30	
	54	-30	
	55	+/-1	
	56	+/-1	
	57	-21/44	
	58	+/-1	
	59	-30	
	60	-10	
IC1701	61	GND	
	62	GND	
	63	GND	
	64	GND	
	1	GND	
	2	GND	
	3	GND	
	4	GND	
	5	3.4	
	6	3.4	
	7	GND	
	8	3.4	
	9	GND	
	10	GND	
	11	5.2	
	12	5.2	
	13	GND	
	14	5.2	
	15	5.2	
	16	5.2	
	17	5.2	
	18	GND	
	19	GND	
	20	5.2	

Ref.No.	Pin No.	Voltage	Note
IC1702	1	GND	
	2	GND	
	3	1.6	
	4	5.2	
	5	GND	
IC1703	1	GND	
	2	GND	
	3	GND	
	4	GND	
	5	5.2	
	6	GND	
	7	GND	
	8	GND	
	9	GND	
	10	GND	
	11	GND	
	12	GND	
	13	GND	
	14	GND	
	15	3.4	
	16	GND	
	17	GND	
	18	GND	
	19	GND	
	20	3.4	
IC1704	1	5.2	
	2	GND	
	3	GND	
	4	5.2	
	5	3.3	pulse
	6	5.1	pulse
	7	5.2	
	8	GND	
	9	5.2	
	10	GND	
	11	5.2	
	12	2.2	
	13	3.2	
	14	GND	
	15	5.2	
	16	5.2	
IC1705-1	1	GND	
	2	5	
	3	5.2	
	4	GND	
	5	4.6	
	6	GND	
	7	5.2	
	8	GND	
	9	5.2	
	10	GND	
	11	4.4	

Ref.No.	Pin No.	Voltage	Note
IC1705-2	12	GND	
	13	GND	
	14	GND	
	15	GND	
	16	5.2	
IC1706	1	3.6	
	2	3.6	
	3	GND	
	4	GND	
	5	GND	
IC1707-1	1	3.3	
	2	3.3	
	3	3.3	
	4	3.3	
	5	GND	
	6	3.3	
	7	GND	
	8	3.3	
	9	3.3	
	10	3.3	
	11	3.3	
	12	GND	
	13	GND	
	14	3.3	
	15	3.3	
	16	3.3	
	17	GND	
	18	GND	
	19	GND	
	20	3.3	
	21	GND	
	22	3.3	
	23	3.3	
	24	GND	
	25	GND	
	26	GND	
	27	GND	
	28	GND	
	29	GND	
	30	GND	
	31	3.3	
	32	GND	
	33	3.3	
	34	3.3	
	35	3.3	sine wave
	36	3.3	sine wave
	37	GND	
	38	5.5	
	39	GND	
	40	GND	
	41	GND	
	42	GND	

Ref.No.	Pin No.	Voltage	Note
IC1707-2	43	GND	
	44	3.3	
	45	3.3	
	46	3.3	
	47	GND	
	48	GND	
	49	GND	
	50	3.3	
	51	3.3	
	52	3.3	
	53	GND	
	54	GND	
	55	3.3	
	56	GND	
	57	3.3	
	58	GND	
	59	GND	
	60	GND	
	61	GND	
	62	GND	
	63	GND	
	64	GND	
	65	GND	
	66	GND	
	67	GND	
	68	GND	
	69	GND	
	70	3.3	
	71	5	
	72	GND	
	73	5	
	74	3.3	
	75	GND	
	76	1	
	77	3.3	
	78	3.3	
	79	3.3	
	80	3.3	
	81	3.3	
	82	3.3	
	83	GND	
	84	1	
	85	GND	
	86	3.3	
	87	3.3	
	88	3.3	
	89	3.3	
	90	3.3	
	91	3.3	
	92	3.3	
	93	3.3	
	94	3.3	

Ref.No.	Pin No.	Voltage	Note
IC1707-3	95	GND	
	96	3.3	
	97	GND	
	98	3.3	
	99	GND	
	100	3.3	
IC1708	1	GND	
	2	GND	
	3	GND	
	4	GND	
	5	3.4	
	6	3.4	
	7	GND	
	8	3.4	
IC1709	1	GND	
	2	3.4	
	3	GND	
	4	GND	
	5	GND	
IC1710	1	GND	
	2	GND	
	3	GND	
	4	GND	
	5	2.2	
	6	1.8	
	7	4.7	
	8	5.2	
IC1712	1	GND	
	2	3.5	
	3	GND	
	4	GND	
	5	3.4	
IC1713	1	GND	
	2	GND	
	3	GND	
	4	3.4	
	5	3.4	
IC1714	1	GND	
	2	GND	
	3	GND	
	4	3.4	
	5	3.4	
IC1715	1	3.4	
	2	3.4	
	3	GND	
	4	3.4	
	5	3.4	
IC1717	1	GND	
	2	3.4	pulse
	3	GND	
	4	3.4	pulse
	5	3.4	

Ref.No.	Pin No.	Voltage	Note
IC1718	1	GND	
	2	3.4	pulse
	3	GND	
	4	3.4	pulse
	5	3.4	
IC1719	1	GND	
	2	3.4	pulse
	3	GND	
	4	3.4	pulse
	5	3.4	
IC2101	1	2.7	
	2	2.7	
	3	2.7	
	4	5	
	5	5.2	
	6	GND	
	7	3.4	
	8	GND	
	9	3.4	
	10	3.6	pulse
	11	3.4	pulse
	12	3.6	pulse
	13	GND	
	14	3.4	
	15	3.6	pulse
	16	GND	
	17	3.5	
	18	GND	
	19	GND	
	20	GND	
IC2102	1	3.4	pulse
	2	GND	
	3	3.4	pulse
	4	GND	
	5	3.6	
	6	5.2	
	7	2.8	
	8	2.8	
	9	GND	
	10	2.8	
	11	3.5	
	12	3.5	
	13	GND	
	14	GND	
	15	3.5	
	16	3.5	pulse
IC2103	1	2.8	
	2	2.7	
	3	2.7	
	4	GND	
	5	2.8	
	6	2.8	
	7	2.8	
	8	GND	

Ref.No.	Pin No.	Voltage	Note
IC2104	1	GND	
	2	GND	
	3	GND	
	4	-9	
	5	GND	
	6	GND	
	7	GND	
	8	8	
IC2105	1	GND	
	2	GND	
	3	GND	
	4	-9	
	5	GND	
	6	GND	
	7	GND	
	8	8	
IC2106	1	2.8	
	2	2.8	
	3	2.8	
	4	GND	
	5	2.8	
	6	2.8	
	7	2.8	
	8	5.2	
IC2107	1	GND	
	2	GND	
	3	GND	
	4	GND	
	5	GND	
	6	GND	
	7	-9	
	8	GND	
	9	GND	
	10	8	
	11	GND	
	12	GND	
	13	GND	
	14	GND	
	15	GND	
	16	8	
IC2108	1	GND	
	2	GND	
	3	GND	
	4	-9	
	5	GND	
	6	GND	
	7	GND	
	8	8	

Ref.No.	Pin No.	Voltage	Note
IC2109	1	2.4	
	2	2.4	
	3	GND	
	4	5.2	
	5	3.6	pulse
	6	3.6	pulse
	7	3.6	pulse
	8	5.8	pulse
	9	GND	
	10	3.6	
	11	5.2	
	12	GND	
	13	3.4	
	14	2.3	
IC2201	1	GND	
	2	3.4	pulse
	3	GND	
	4	3.4	pulse
	5	3.4	
IC2202-1	1	3.6	
	2	GND	
	3	3.5	
	4	3.5	
	5	GND	
	6	3.5	
	7	3.5	
	8	3.5	
	9	3.5	
	10	3.5	
	11	3.5	
	12	GND	
	13	GND	
	14	3.5	pulse
	15	3.5	pulse
	16	GND	
	17	GND	
	18	GND	
	19	GND	
	20	3.5	pulse
	21	3.5	pulse
	22	GND	
	23	GND	
	24	3.4	
	25	GND	
	26	GND	
	27	3.4	
	28	3.4	
	29	GND	
	30	GND	
	31	3.4	
	32	3.4	
	33	3.4	

Ref.No.	Pin No.	Voltage	Note
IC2202-2	34	GND	
	35	GND	
	36	3.4	
	37	1.7	
	38	3.4	
	39	3.4	
	40	1.7	
	41	3.4	
	42	GND	
	43	1.7	
	44	GND	
	45	GND	
	46	GND	
	47	3.6	pulse
	48	GND	
	49	GND	
	50	3.4	
	51	GND	
	52	3.4	
	53	3.4	
	54	3.4	
	55	3.4	
	56	3.4	
	57	3.4	
	58	3.4	
	59	3.4	
	60	3.4	
	61	3.4	
	62	GND	
	63	GND	
	64	GND	
	65	GND	
	66	GND	
	67	GND	
	68	GND	
	69	GND	
	70	GND	
	71	3.4	
	72	GND	
	73	GND	
	74	GND	
	75	GND	
	76	GND	
	77	GND	
	78	GND	
	79	GND	
	80	GND	
	81	GND	
	82	GND	
	83	GND	
	84	GND	
	85	GND	



Ref.No.	Pin No.	Voltage	Note
IC2202-3	86	GND	
	87	GND	
	88	GND	
	89	GND	
	90	3.4	
	91	1.3	
	92	3.4	
	93	3.4	
	94	GND	
	95	GND	
	96	GND	
	97	GND	
	98	3.6	pulse
	99	3.6	pulse
	100	3.4	
IC2203-1	1	3.6	
	2	GND	
	3	3.5	
	4	3.5	
	5	GND	
	6	3.5	
	7	3.5	
	8	3.5	
	9	3.5	
	10	3.5	
	11	3.5	
	12	GND	
	13	GND	
	14	3.5	pulse
	15	3.5	pulse
	16	GND	
	17	GND	
	18	GND	
	19	GND	
	20	3.5	pulse
	21	3.5	pulse
	22	GND	
	23	GND	
	24	3.4	
	25	GND	
	26	GND	
	27	3.4	
	28	3.4	
	29	GND	
	30	GND	
	31	3.4	
	32	3.4	
	33	3.4	
	34	GND	
	35	GND	
	36	3.4	
	37	1.7	

Ref.No.	Pin No.	Voltage	Note
IC2203-2	38	3.4	
	39	3.4	
	40	1.7	
	41	3.4	
	42	GND	
	43	1.7	
	44	GND	
	45	GND	
	46	GND	
	47	3.6	pulse
	48	GND	
	49	GND	
	50	3.4	
	51	GND	
	52	3.4	
	53	3.4	
	54	3.4	
	55	3.4	
	56	3.4	
	57	3.4	
	58	3.4	
	59	3.4	
	60	3.4	
	61	3.4	
	62	GND	
	63	GND	
	64	GND	
	65	GND	
	66	GND	
	67	GND	
	68	GND	
	69	GND	
	70	GND	
	71	3.4	
	72	GND	
	73	GND	
	74	GND	
	75	GND	
	76	GND	
	77	GND	
	78	GND	
	79	GND	
	80	GND	
	81	GND	
	82	GND	
	83	GND	
	84	GND	
	85	GND	
	86	GND	
	87	GND	
	88	GND	
	89	GND	

Ref.No.	Pin No.	Voltage	Note
IC2203-3	90	3.4	
	91	1.3	
	92	3.4	
	93	3.4	
	94	GND	
	95	GND	
	96	GND	
	97	GND	
	98	3.6	pulse
	99	3.6	pulse
	100	3.4	
IC2204	1	30	
	2	GND	
	3	9	
IC2205	1	GND	
	2	-30	
	3	-9	
IC2206	1	9	
	2	GND	
	3	GND	
	4	-9	
	5	GND	
	6	GND	
	7	9	
	8	9	
IC2207	1	3.4	
	2	3.4	
	3	GND	
	4	3.4	
	5	3.4	

Ref.No.	Pin No.	Voltage	Note
Q1101	1	3.23	
	2	GND	
	3	3.23	
	4	GND	
	5	GND	
Q1402	B	5	
	C	GND	
	E	5	
Q1403	G	12	pulse
	D	28	pulse
	S	GND	
Q1404	G	12	pulse
	D	28	pulse
	S	GND	
Q1405	B	3.3	
	C	13.2	
	E	GND	
Q1408	G	12	pulse
	D	28	pulse
	S	GND	
Q1409	G	12	pulse
	D	28	pulse
	S	GND	
Q1411	E	GND	
	B	0.8	
	C	13.2	
Q1412	B	0.8	
	C	GND	
	E	13.2	
Q1415	E	13.2	
	C	13.2	
	B	12.6	
Q1416	E	GND	
	B	19.7	
	C	3.3	
Q1417	E	-28	
	B	-10	
	C	5	
Q1418	B	4.2	
	C	3.3	
	E	GND	
Q1420	B	5	
	C	0.6	
	E	GND	
Q1421	B	3.3	
	C	5	
	E	GND	
Q1422	E	13.2	
	C	12.6	
	B	12.6	
Q1423	B	5	
	C	0.6	
	E	GND	

Ref.No.	Pin No.	Voltage	Note
Q1501	B	4.39	
	C	1.74	
	E	4.96	
Q1502	B	4.39	
	C	4.29	
	E	4.96	
Q1504	G	-30/40	pulse
	D	32	
	S	+/-32	pulse
Q1505	G	-32/-16	pulse
	D	+/-32	pulse
	S	-30	
Q1506	G	-32/-16	pulse
	D	+/-32	pulse
	S	-30	
Q1507	G	-30/40	pulse
	D	32	
	S	+/-32	pulse
Q1601	G	-30/40	pulse
	D	32	
	S	+/-32	pulse
Q1602	G	-30/40	pulse
	D	32	
	S	+/-32	pulse
Q1603	G	-11/0	pulse
	S	GND	
	D	-20/0	pulse
Q1605	G	-30/40	pulse
	D	32	
	S	+/-32	pulse
Q1606	G	-30/40	pulse
	D	32	
	S	+/-32	pulse
Q1607	G	-30/40	pulse
	D	32	
	S	+/-32	pulse
Q1608	G	-30/40	pulse
	D	32	
	S	+/-32	pulse
Q1702	B	4.58	
	C	4.22	
	E	GND	

Ref.No.	Pin No.	Voltage	Note
Q2101	E	GND	
	B	GND	
	C	GND	
Q2102	B	GND	
	C	9	
	E	GND	
Q3001	B	GND	
	C	5	
	E	GND	
Q3002	B	GND	
	C	5	
	E	GND	
Q3003	B	GND	
	C	5	
	E	GND	
Q3004	B	GND	
	C	5	
	E	GND	
Q3005	B	GND	
	C	5	
	E	GND	
Q3006	B	GND	
	C	5	
	E	GND	
Q3007	B	GND	
	C	5	
	E	GND	
Q3008	B	3	
	C	GND	
	E	GND	

## [Measuring Conditions]

- 1.Power Supply Voltage : DC13.7V
- 2.Measuring Meter : Oscilloscope
- 3.Measuring Point Reference : Between GND
- 4.Measuring Condition : IVA-D900 connect / 5 channel load (4 ohm) / normal temperature

## Description of IC Terminal

### 70F3033BYGC : IC1707

No.	Symbol	I/O	Terminal Description
1	RL_ON(NC)	-	No connect terminal.
2	SCL_2	O	Digital AMP control terminal.
3	932_SO	I	DSP Decoder control terminal.
4	932_SI	O	
5	932_SCK	O	
6	EVDD_33	-	3.3V connect terminal.
7	EVSS	-	GND connect terminal.
8	932_CS	O	DSP Decoder control terminal.
9	932_RST	O	
10	9446_RST	O	DSP (EQ, MX etc.) control terminal.
11	MILP	O	
12	NC	-	No connect terminal.
13	MIDIO	O	DSP (EQ, MX etc.) control terminal.
14	MICK	O	
15	MICS1	O	
16	MICS2	O	
17	NC	-	No connect terminal.
18	FLASH_VPP	-	Flash writing terminal.
19	NC	-	No connect terminal.
20	TC6000_RST1	O	Digital AMP Reset control terminal.
21	TC6000_RST2(NC)	-	No connect terminal.
22	1802_PDWN	O	AD Convertor control terminal.
23	1742_ML	O	DA Convertor control terminal.
24	1742_MC	O	
25	1742_MD	O	
26	ANA_SEL	O	Analog Selector control terminal.
27	NC	-	No connect terminal.
28			
30			
31	/RESET	I	u-COM Reset terminal.
32	XT1(PULL-DOWN)	-	Pull-down connect terminal.
33	XT2(NC)	-	No connect terminal.
34	REGC	-	Capacitor connect terminal for regulator.
35	X2	-	Crystal connect terminal for system clock OSC. (20MHz)
36	X1	-	
37	VSS	-	GND connect terminal.
38	VDD	-	5.0V connect terminal.
39	CLKOUT(NC)	-	No connect terminal.
40	NC		
41			
43			
44	POW_3	O	Power supply control terminal for LED.
45	POW_1	O	Power supply control terminal for DSP etc..
46	POW_2	O	Power supply control terminal for AMP.
47	A_MUTE	O	Audio Mute control terminal.
48	NC	-	No connect terminal.
49			
50	BUS_RES	O	Ai-NET Reset control terminal.

No.	Symbol	I/O	Terminal Description
51	BUS_R/W	O	Ai-NET R/W control terminal.
52	BUS_RS	I	Ai-NET RS control terminal.
53	BUS_SOUT	I	Ai-NET SOUT control terminal.
54	BUS_SIN	O	Ai-NET SIN control terminal.
55	BVDD33	-	+3.3V connect terminal.
56	BVSS	-	GND connect terminal.
57	BUS_SCLK	O	Ai-NET SCLK control terminal.
58	NC	-	No connect terminal.
59	DIG_ANA	O	Mute control terminal.
60	SPDIF_SEL(NC)	-	No connect terminal.
61	DIR_RST(NC)		
62	NC		
I			
64			
65	IND_DD	O	LED_DOLBY control terminal.
66	IND_PL2	O	LED_PRO2 control terminal.
67	IND_DTS	O	LED_DTS control terminal.
68	IND_THRM	O	LED_PTR control terminal.
69	IND_LINK	O	LED_LINK control terminal.
70	IND_POWER	O	LED_POWER control terminal.
71	AVDD5	-	+5.0V connect terminal.
72	AVSS	-	GND connect terminal.
73	AVREF5	-	+5.0V connect terminal. (standard power of AD Converter)
74	AD_VOLT	I	Voltage value input terminal.
75	AD_CURR	I	Current value input terminal.
76	AD_THRM	I	Product temperature detect terminal.
77	AD_TRANS	I	TRANS temperature detect terminal.
78	TH01	I	Power AMP Channel 1 temperature detect terminal.
79	TH02	I	Power AMP Channel 2 temperature detect terminal.
80	TH03	I	Power AMP Channel 3 temperature detect terminal.
81	TH04	I	Power AMP Channel 4 temperature detect terminal.
82	TH05	I	Power AMP Channel 5 temperature detect terminal.
83	NAVI_CONT	I	Navi Mix control terminal.
84	NAVI_DET	I	Navi connection detect terminal.
85	NAVI_DEST	-	Model destination setting terminal.
86	B_DET	I	BATT detect terminal.
87	932_LOCK	I	DSP Decoder DIR UNLOCK detect terminal.
88	ACC_DET	I	ACC ON/OFF detect terminal.
89	BUS_IRQ	I	Ai-NET IRQ control terminal.
90	OCD	I	Over current detect terminal.
91	V_DET	I	Secondary voltage detect terminal.
92	9446_ACK	I	DSP (EQ, MX etc.) control terminal.
93	DECODER	I	DSP decoding state detect terminal.
94	SDA_1	I/O	EEPROM SDA control terminal.
95	SO_Flash	O	Flash writing terminal.
96	SCK_1	O	EEPROM SCK control terminal. / Flash writing terminal.
97	LINK_SI	I	AMP LINK control terminal.
98	LINK_SO	O	
99	LINK_CLK	I	
100	SDA_2	I/O	Digital AMP control terminal.

### Exploded View (Cabinet)

## MRA-D550

