

# DIGITAL KARAOKE MIXING AMPLIFIER

# KMA-1000/KMA-950

## SERVICE MANUAL

For T model

### IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

**WARNING:** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

**IMPORTANT:** The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING:** Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

**IMPORTANT:** Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

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# YAMAHA


YAMAHA CORPORATION  
P.O. Box 1, Hamamatsu, Japan

'09.05

KMA-1000/KMA-950

## ■ TO SERVICE PERSONNEL

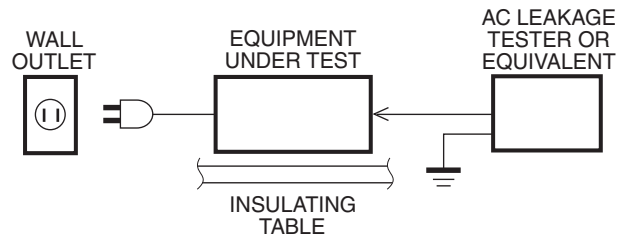
### 1. Critical Components Information

Components having special characteristics are marked  and must be replaced with parts having specifications equal to those originally installed.

### 2. Leakage Current Measurement (For 120V Models Only)

When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohms shunted by 0.15µF.



- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.



### “CAUTION”

“F401: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 2.5A, 250V FUSE.”

“F402: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A, 250V FUSE.”

## WARNING: CHEMICAL CONTENT NOTICE!

This product contains chemicals known to the State of California to cause cancer, or birth defects or other reproductive harm.

**DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!**

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

## About Lead Free Solder

All of the P.C.B.s installed in this unit and solder joints are soldered using the lead free solder.

Among some types of lead free solder currently available, it is recommended to use one of the following types for the repair work.

- Sn + Ag + Cu (tin + silver + copper)
- Sn + Cu (tin + copper)
- Sn + Zn + Bi (tin + zinc + bismuth)

### Caution:

As the melting point temperature of the lead free solder is about 30°C to 40°C (50°F to 70°F) higher than that of the lead solder, be sure to use a soldering iron suitable to each solder.

## WARNING: Lithium batteries

### CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

**WARNING:** Lithium batteries are dangerous because they can be exploded by improper handling. Observe the following precautions when handling or replacing lithium batteries.

- Leave lithium battery replacement to qualified service personnel.
- Always replace with batteries of the same type.
- When installing on the PC board by soldering, solder using the connection terminals provided on the battery cells. Never solder directly to the cells. Perform the soldering as quickly as possible.
- Never reverse the battery polarities when installing.
- Do not short the batteries.
- Do not attempt to recharge these batteries.
- Do not disassemble the batteries.
- Never heat batteries or throw them into fire.

### ADVARSEL!

Lithiumbatteri –Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

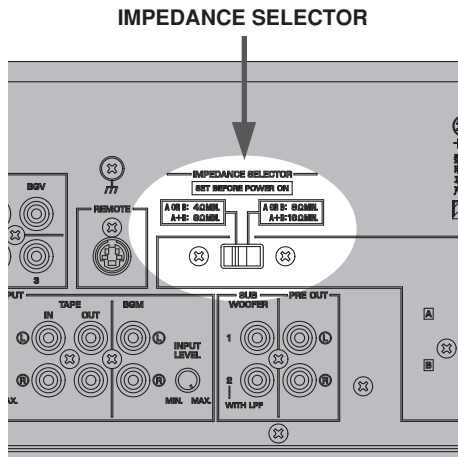
### VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikanterns instruktion.

### VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

## ■ IMPEDANCE SELECTOR



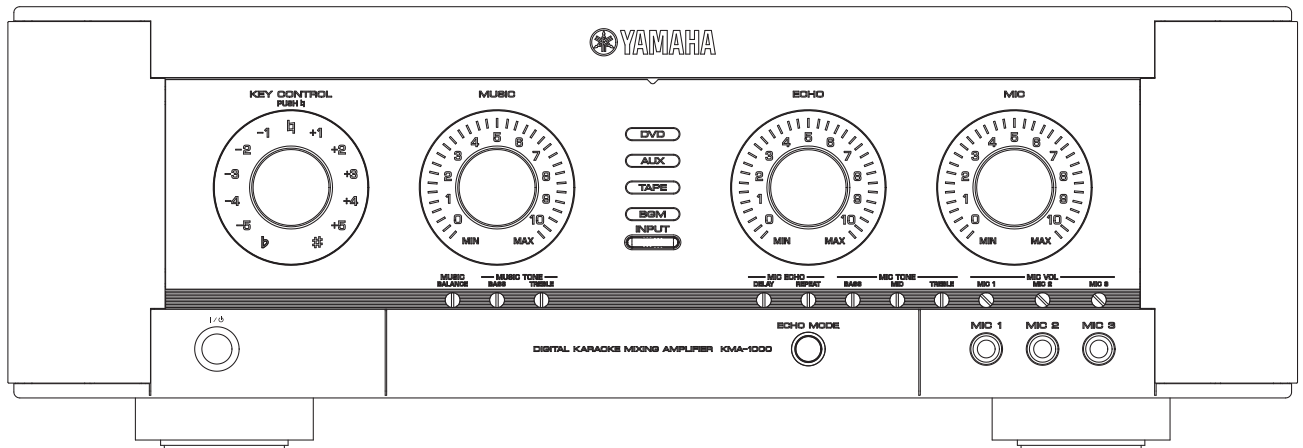
### KMA-1000 model

**WARNING:**

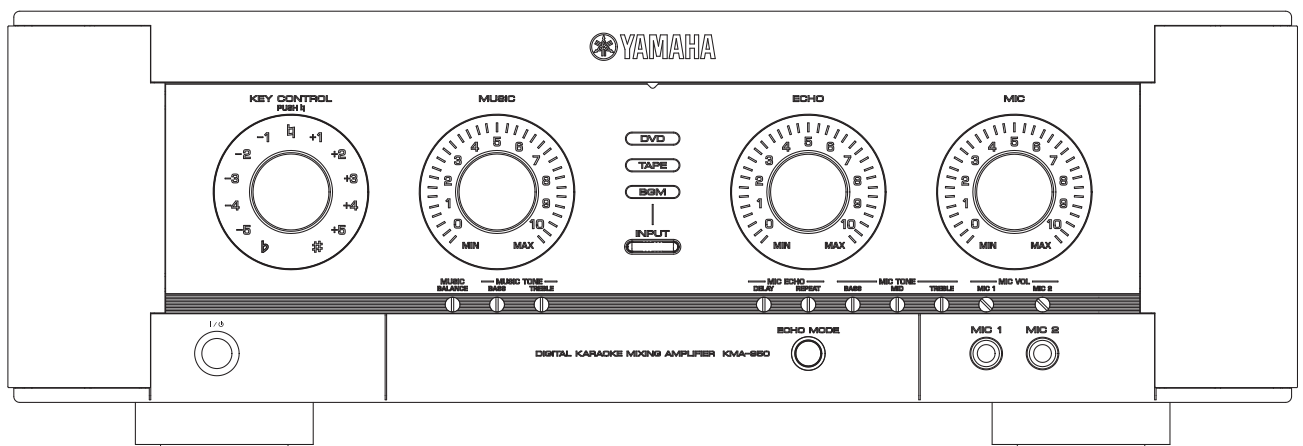
Do not change the setting of the IMPEDANCE SELECTOR switch when the unit power is switched on, as doing so may damage the unit.

## ■ FRONT PANELS

### ▼ KMA-1000

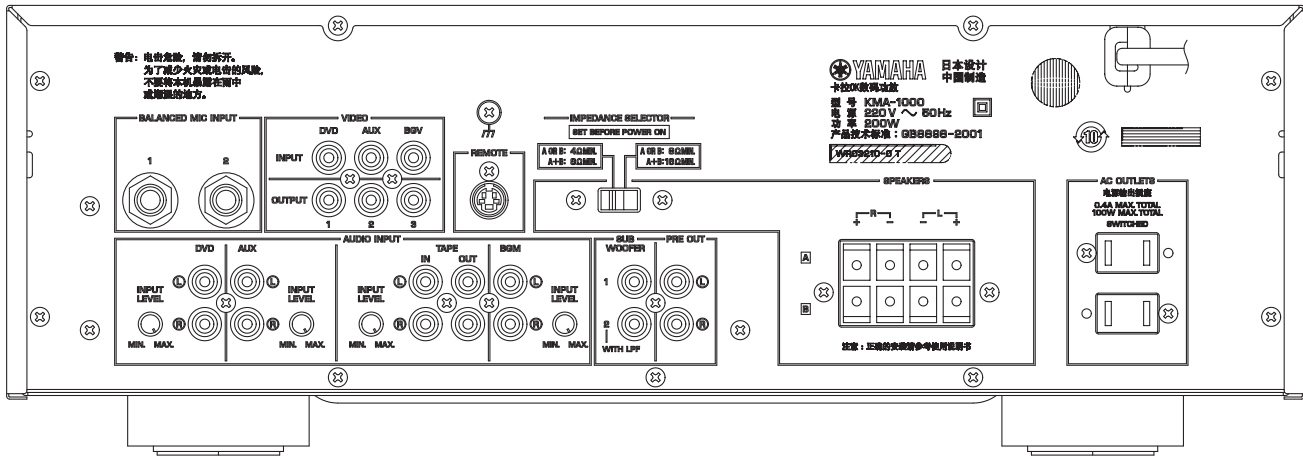


### ▼ KMA-950

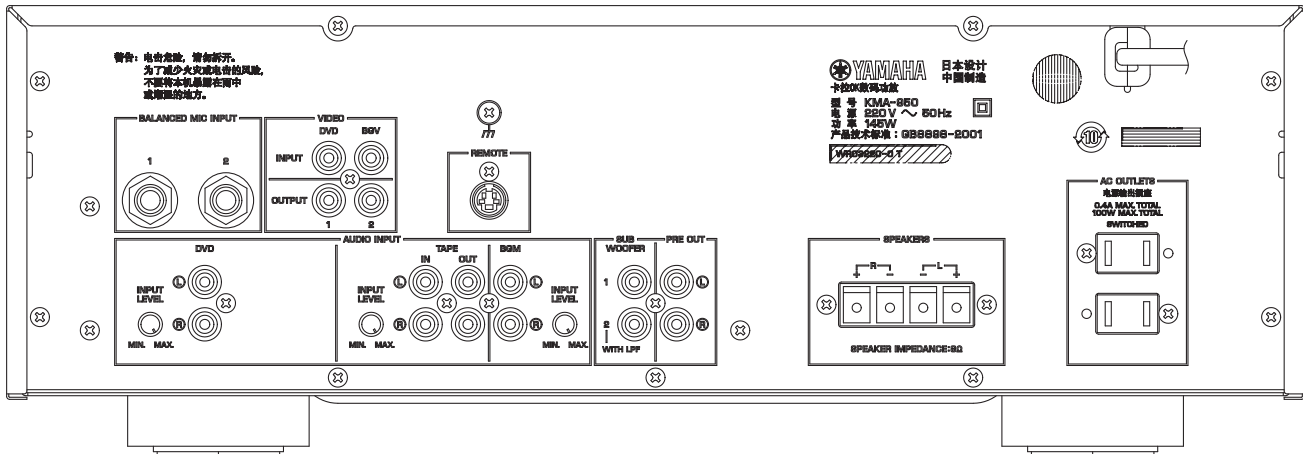


# REAR PANELS

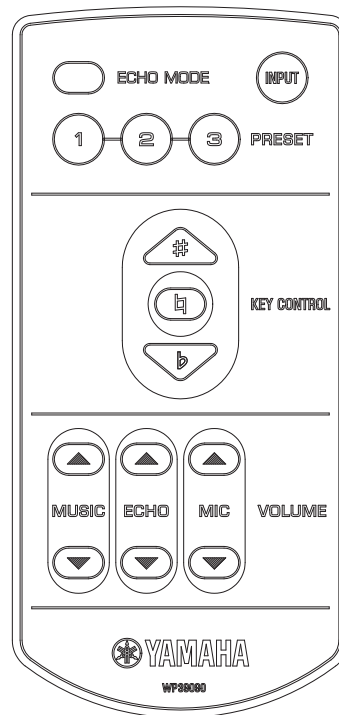
## ▼ KMA-1000 (T model)



## ▼ KMA-950 (T model)



## ■ REMOTE CONTROL PANEL



## ■ SPECIFICATIONS

### AMPLIFIER SECTION

Minimum RMS Output Power	
L/R (1 kHz, 1% THD, 8-ohms)	
KMA-1000	160 W + 160 W
KMA-950	120 W + 120 W
Maximum Useful Output Power (JEITA)	
L/R (1 kHz, 10% THD, 8-ohms)	
KMA-1000	200 W + 200 W
KMA-950	150 W + 150 W
Damping Factor	
20 Hz to 20 kHz, 8-ohms	60 or more
Input Sensitivity/Input Impedance	
DVD etc.	200 mV/42 k-ohms
Mic	6 mV/20 k-ohms
Maximum Input Voltage	
DVD etc.	2.3 V or more
Mic	60 mV or more
Rated Output Voltage/Output Impedance	
Subwoofer	2.0 V/1.2 k-ohms
Rec out	1.0 V/1.2 k-ohms
Total Harmonic Distortion (20 Hz to 20 kHz)	
DVD etc. to SP OUT	
KMA-1000 (80 W/8-ohms)	0.1% or less
KMA-950 (60 W/8-ohms)	0.1% or less
Signal to Noise Rate (IHF-A Network)	
DVD etc., Input shorted (200 mV)	85 dB or more
MIC, Input shorted (6 mV)	75 dB or more
Residual Noise (IHF-A Network)	
DVD etc., Input 5.1 k-ohms shorted	180 $\mu$ V or less
Channel Separation (1 kHz)	
DVD etc., Input 5.1 k-ohms shorted	55 dB or more

### Tone Control Characteristics

#### MUSIC

Bass boost/cut (100 Hz)	$\pm$ 12 dB
Treble boost/cut (10 kHz)	$\pm$ 12 dB

#### MIC

Bass boost/cut (100 Hz)	$\pm$ 12 dB
Mid boost/cut (1 kHz)	$\pm$ 12 dB
Treble boost/cut (10 kHz)	$\pm$ 10 dB

Gain Tracking Error	2.0 dB or less
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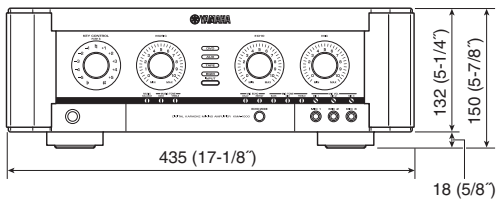
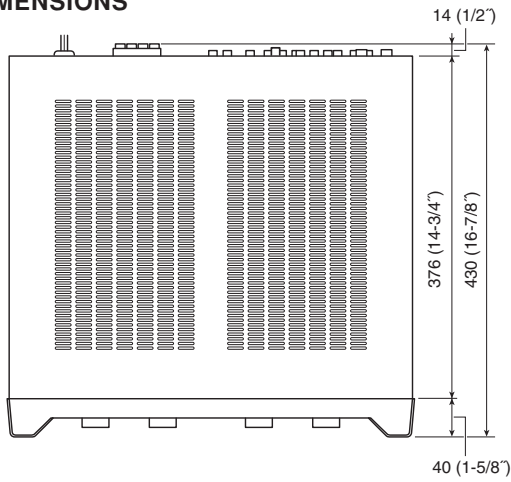
### GENERAL

Power Supply	AC220 V, 50 Hz
Power Consumption	
KMA-1000	200 W
KMA-950	145 W
AC Outlet	
2 switched outlets	100 W max. total
Dimensions (W x H x D)	
	435 x 150 x 430 mm (17-1/8" x 5-7/8" x 16-7/8")
Weight	
KMA-1000	11.3 kg (24.9 lbs.)
KMA-950	10.7 kg (23.6 lbs.)
Finish	
	Black color
Accessories	
	Remote control x 1 Lithium battery (CR2025) x 1

\* Specifications are subject to change without notice due to product improvements.

**T..... Chinese model**

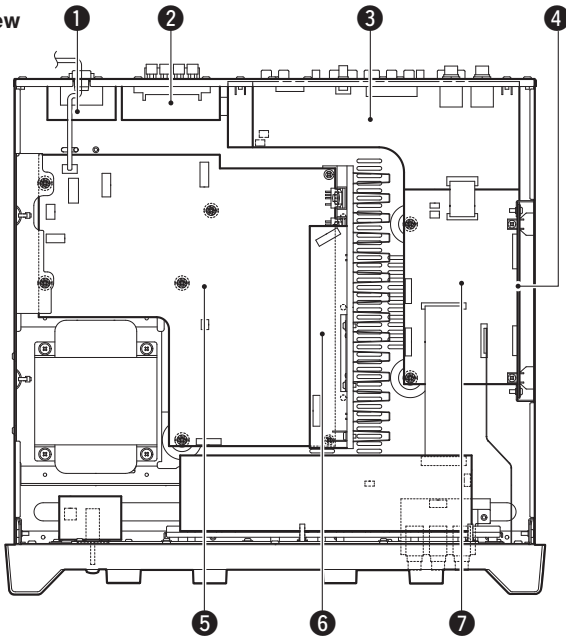
**DIMENSIONS**



Unit : mm (inch)

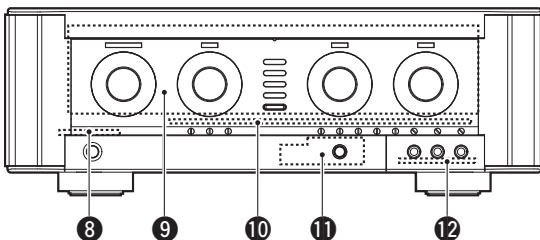
**INTERNAL VIEW**

Top view



- ❶ MAIN (5) P.C.B.
- ❷ MAIN (3) P.C.B. (KMA-1000)  
MAIN (4) P.C.B. (KMA-950)
- ❸ OPERATION (1) P.C.B.
- ❹ FUNCTION (3) P.C.B.
- ❺ MAIN (1) P.C.B.
- ❻ MAIN (2) P.C.B.
- ❼ FUNCTION (1) P.C.B.
- ❽ OPERATION (3) P.C.B.
- ❾ OPERATION (2) P.C.B.
- ❿ FUNCTION (2) P.C.B.
- ⓫ OPERATION (5) P.C.B. (KMA-1000)  
OPERATION (6) P.C.B. (KMA-950)
- ⓬ OPERATION (4) P.C.B.

Front view



## ■ DISASSEMBLY PROCEDURES

(Remove parts in the order as numbered.)

### 1. Removal of Top Cover

- Remove 8 screws (①) and 2 screws (②). (Fig. 1)
- Slide the top cover rearward to remove it. (Fig. 1)

### 2. Removal of Front Panel Unit

- Remove 4 screws (③) and 4 screws (④). (Fig. 1)
- Remove CB2, CB15 and CB562. (Fig. 1)
- Remove the front panel unit. (Fig. 1)

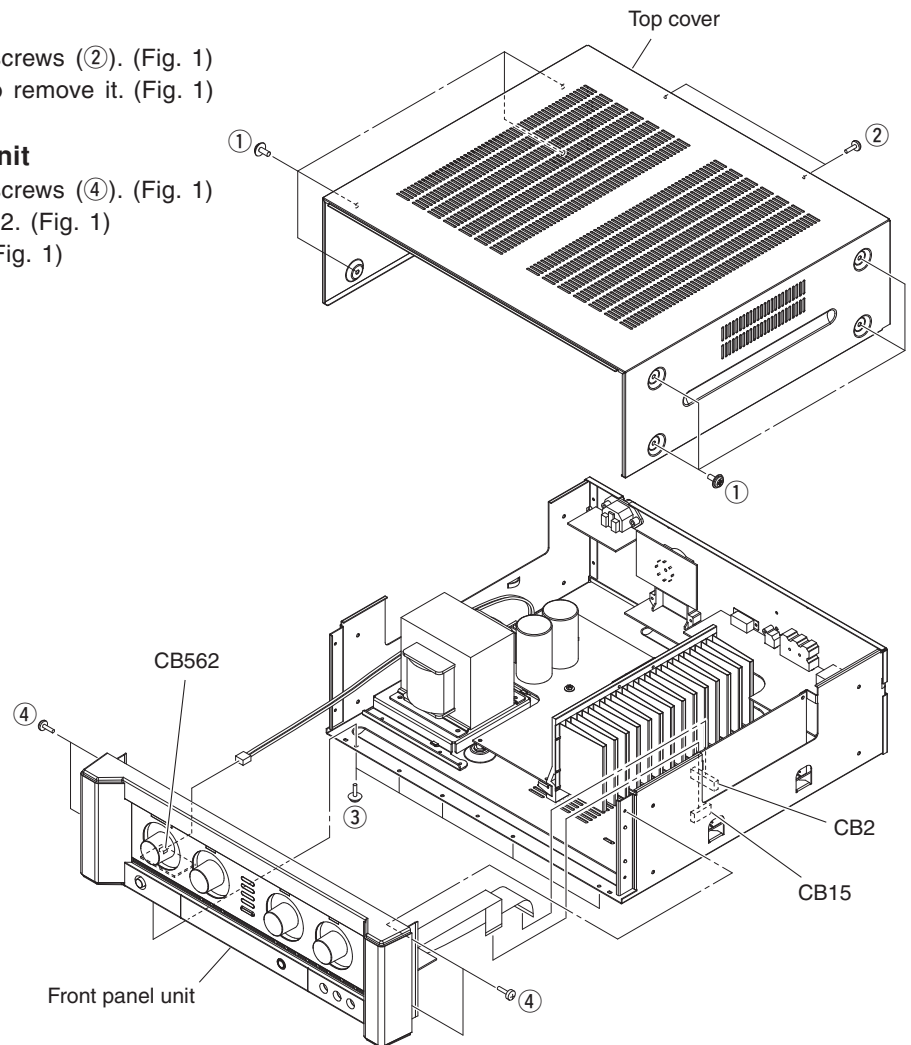


Fig. 1

### 3. Removal of OPERATION (1) P.C.B.

- Remove 6 (KMA-1000) / 3 (KMA-950) screws (⑤) and 2 nuts (⑥). (Fig. 2)
- Remove CB237. (Fig. 2)
- Remove the OPERATION (1) P.C.B.. (Fig. 2)

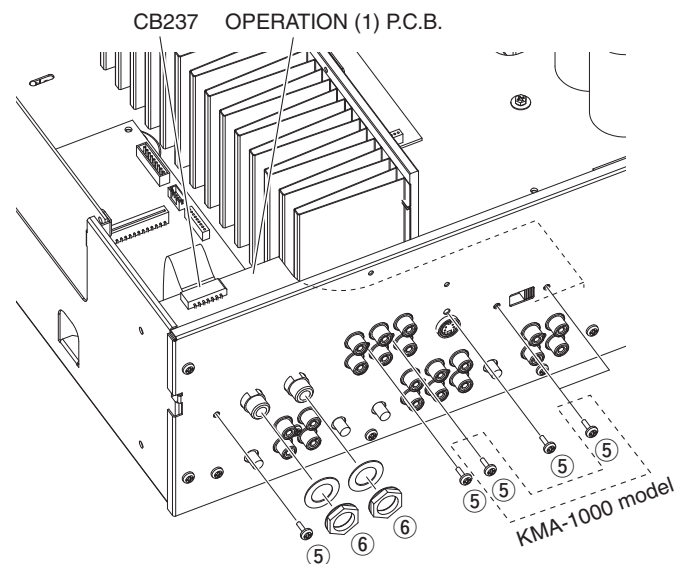
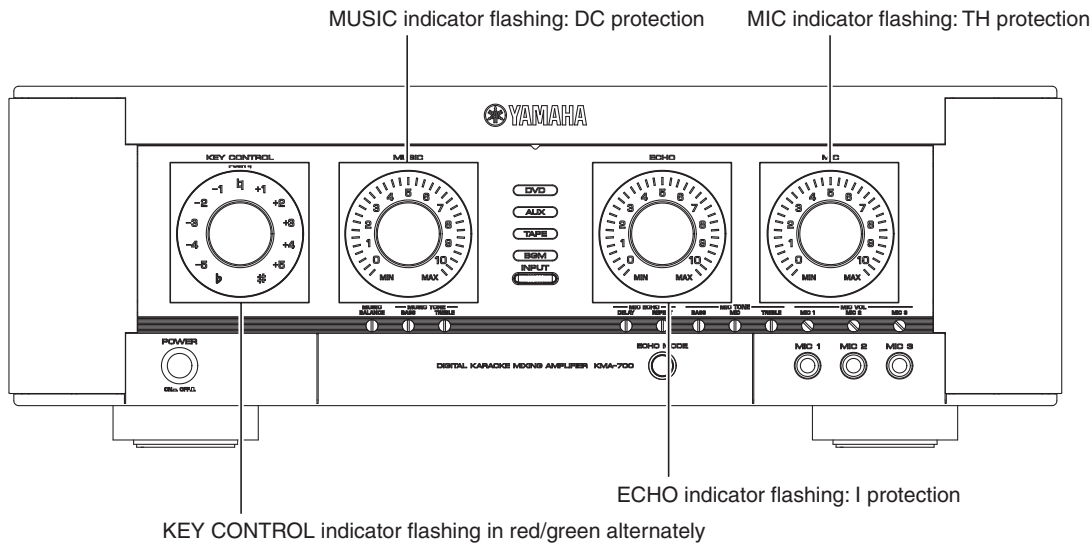


Fig. 2

## ■ INDICATION OF PROTECTION INFORMATION

If any of indicators shown below flashes after turning on the power to this unit, it means that the protection function is at work and normal operation is not available.



### ● Details of Protection Information

#### a. DC protection

Cause: Abnormal DC voltage of amplifier output L/R

Normal value: 0.312 to 2.327 V

Detection port: PRD (58 pin of microprocessor IC15)

Detected at: Amplifier output L/Rch of MAIN P.C.B.

#### b. I protection

Cause: Excess current flow into amplifier

Normal value: Low (0 V)

Detection port: PRI (56 pin of microprocessor IC15)

Detected at: Amplifier output L/Rch of MAIN P.C.B.

#### c. TH protection

Cause: Abnormal temperature of heat sink.

Normal value: 0.3 to 1.4 V

Detection port: TH\_R (57 pin of microprocessor IC15)

Detected at: Heat sink temperature detection IC401 of MAIN P.C.B.



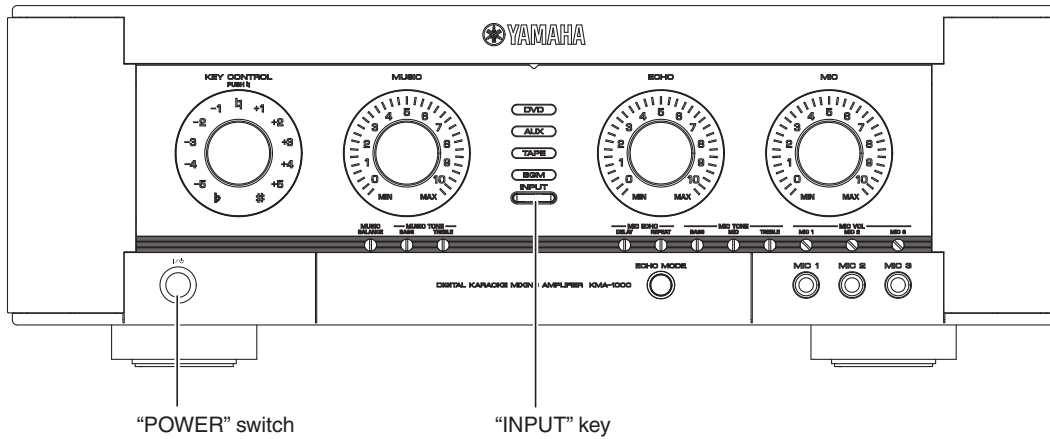
## ■ SELF-DIAGNOSTIC FUNCTION

This unit has self-diagnostic functions that are intended for inspection, measurement and location of faulty point. There are 10 main menu items, each of which has sub-menu items. Listed in the table below are main menu items and sub-menu items.

No.	Main menu	Sub-menu	
1	FIRMWARE VERSION	a	Firmware Version #1
		b	Firmware Version #2
2	TEMPERATURE of HEAT SINK	a	Monitor
		b	Maximum
		c	Minimum
3	TEMPERATURE of POWER TRANSFORMER	a	Monitor
		b	Maximum
		c	Minimum
4	DC VOLTAGE	a	DC Voltage
5	PROTECTION HISTORY	a	History 1
		b	History 2
		c	History 3
6	CHECKSUM	a	Upper bit
		b	Lower bit
7	ANALOG CHECK	a	DVD
		b	AUX (KMA-1000) / TAPE (KMA-950)
		c	TAPE (KMA-1000) / BGM (KMA-950)
		d	BGM (KMA-1000) / – (KMA-950)
8	KP MUSIC CHECK	a	DVD
		b	AUX (KMA-1000) / TAPE (KMA-950)
		c	TAPE (KMA-1000) / BGM (KMA-950)
		d	BGM (KMA-1000) / – (KMA-950)
9	KP MIC CHECK	a	L ch
		b	R ch
10	INDICATOR CHECK	a	All Light up
		b	All Off
		c	Automatic Sequential Lighting
11	INPUT MODE	a	DVD
		b	AUX (KMA-1000) / TAPE (KMA-950)
		c	TAPE (KMA-1000) / BGM (KMA-950)
		d	BGM (KMA-1000) / – (KMA-950)
12	KP DELAY CHECK	a	DVD
		b	AUX (KMA-1000) / TAPE (KMA-950)
		c	TAPE (KMA-1000) / BGM (KMA-950)
		d	BGM (KMA-1000) / – (KMA-950)

● Starting Self-Diagnostic Function

While pressing the “INPUT” key of this unit, press the “POWER” switch to turn ON the power.



● Canceling Self-Diagnostic Function

Press the “POWER” switch of this unit to turn OFF the power.

● Operation Procedure of Main menu and Sub-menu

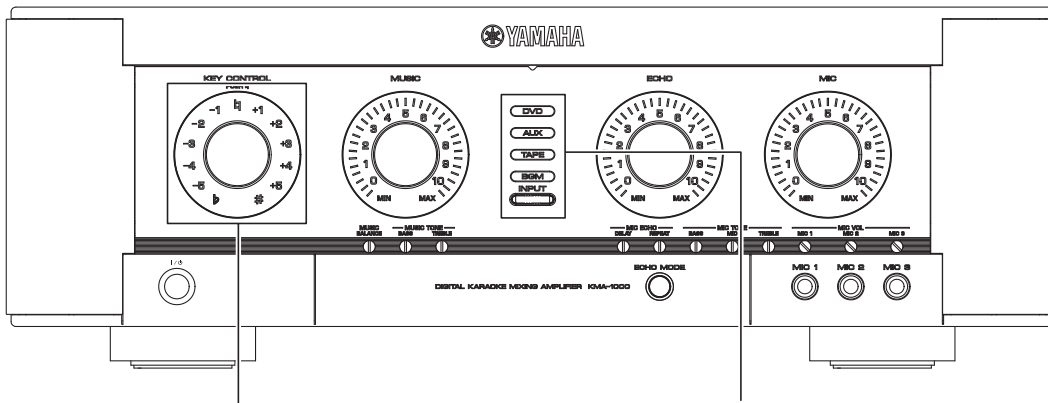
There are 12 main menu items, each of them having sub-menu items.

**Main menu selection**

Select the main menu using “KEY CONTROL” knob.

**Sub-menu selection**

Select the sub-menu using “INPUT” key.



Main menu indicator (lit in red)

Main menu No.	KEY CONTROL indicators
1	h
2	+ 1
3	+ 2
4	+ 3
5	+ 4
6	+ 5
7	- 1
8	- 2
9	- 3
10	- 4
11	- 5
12	- 5, - 4

Sub-menu indicator

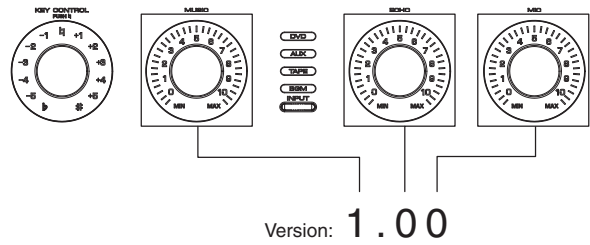
Sub-menu Code	INPUT indicators	
	KMA-1000	KMA-950
a	DVD	DVD
b	AUX	TAPE
c	TAPE	BGM
d	BGM	-

● Details of Self-Diagnostic Function menu

**1. FIRMWARE VERSION**

The firmware version is indicated.

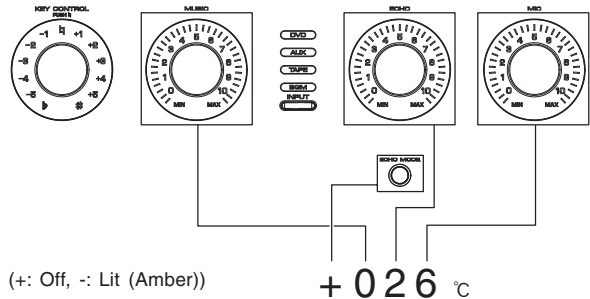
- a. Firmware Version #1: Firmware free area
- b. Firmware Version #2: Firmware fixed area



**2. TEMPERATURE of HEAT SINK**

The temperature of heat sink is indicated.

- a. Monitor: Current temperature
- b. Maximum: Highest value
- c. Minimum: Lowest value

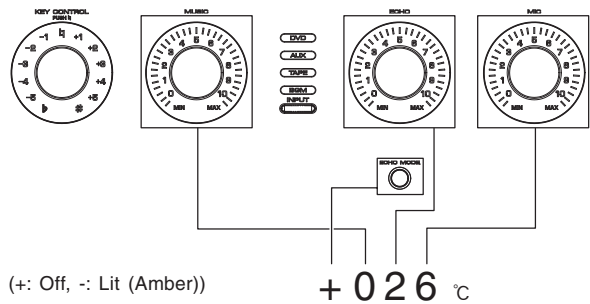


(+: Off, -: Lit (Amber))

**3. TEMPERATURE of POWER TRANSFORMER**

The temperature of power transformer is indicated.

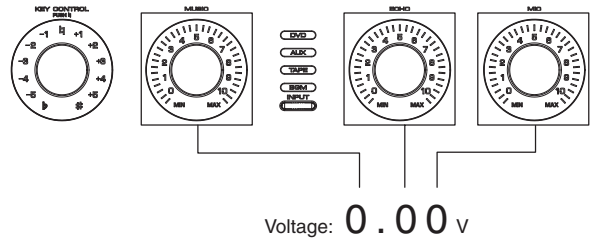
- a. Monitor: Current temperature
- b. Maximum: Highest value
- c. Minimum: Lowest value



(+: Off, -: Lit (Amber))

**4. DC VOLTAGE**

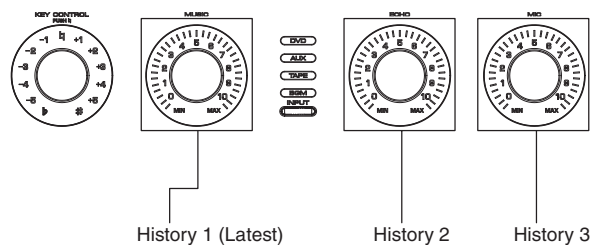
The DC voltage of amplifier output L/R is indicated.



**5. PROTECTION HISTORY**

The 3 protection histories are indicated.

- 0. No protection
- 1. DC protection
- 2. I protection
- 3. TH protection



History 1 (Latest)

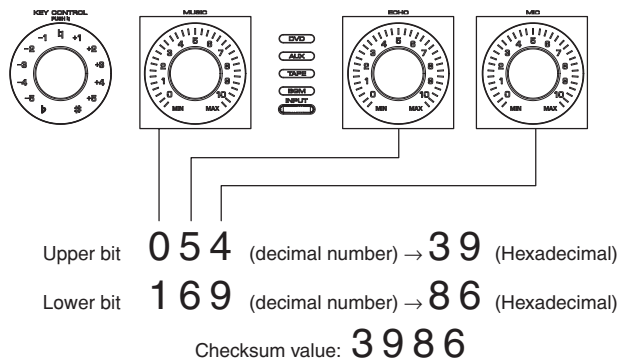
History 2

History 3

### 6. CHECKSUM

The checksum value is indicated in the decimal number.

- a. Upper bit
- b. Lower bit



### 7. ANALOG CHECK

The signal passage is checked. (Fig. 3)

INPUT select: DVD, AUX (KMA-1000 model), TAPE, BGM  
 MUTE ON/OFF: "ECHO MODE" key (ON: Lit (amber), OFF: Off)

### 8. KP (Karaoke processor) MUSIC CHECK

The signal passage is checked. (Fig. 3)

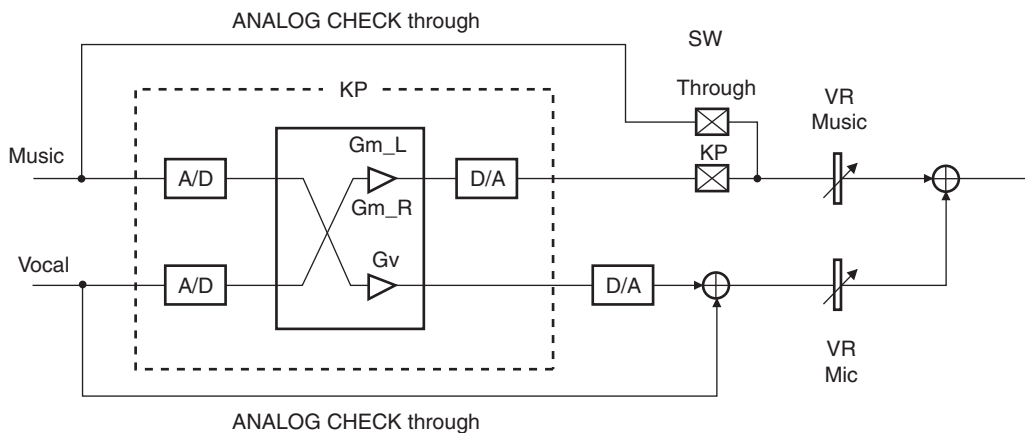
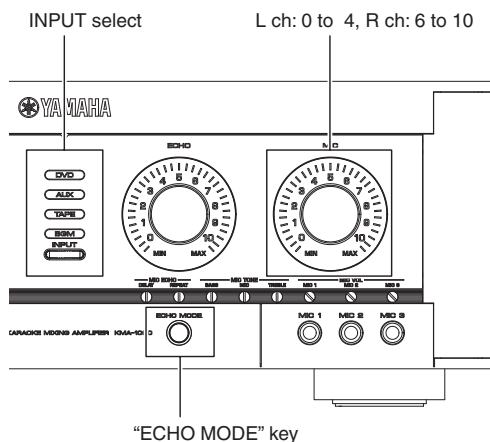
INPUT select: DVD, AUX (KMA-1000 model), TAPE, BGM

### 9. KP (Karaoke processor) MIC CHECK

The signal passage is checked. (Fig. 3)

Channel select: "ECHO MODE" key

- a. L ch (0 to 4 of MIC indicator light up)
- b. R ch (6 to 10 of MIC indicator light up)



	KEY CONTROL	Volume			INPUT	Gm_L	Gm_R	Gv	SW
		MUSIC	ECHO	MIC					
ANALOG CHECK	⏸	Active (Min)	Min	Active (Min)	Active (DVD)	- ∞	- ∞	- ∞	through
KP MUSIC CHECK	⏸	- ∞	0 dB	Active (Min)	Active (DVD)	- ∞	- ∞	0 dB	off
KP MIC CHECK L ch	⏸	Active (Min)	Min	- ∞	off	0 dB	- ∞	- ∞	KP
KP MIC CHECK R ch	⏸	Active (Min)	Min	- ∞	off	- ∞	0 dB	- ∞	KP

Fig. 3

## 10. INDICATOR CHECK

This menu is used to check the indicators.

- a. All Light up
- b. All Off
- c. Automatic Sequential Lighting

## 11. INPUT MODE

Both Auto and Manual of INPUT mode are activated.

## 12. KP (Karaoke processor) DELAY CHECK

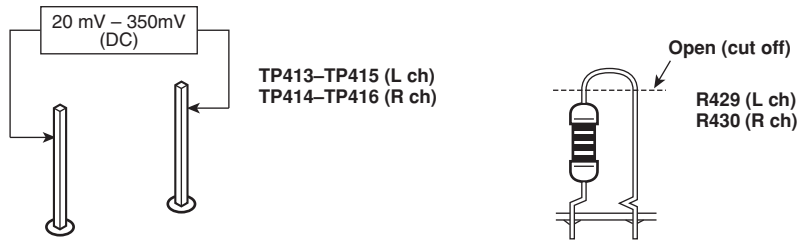
The delay time is checked. (Fig. 3)

INPUT select: DVD, AUX (KMA-1000 model), TAPE, BGM

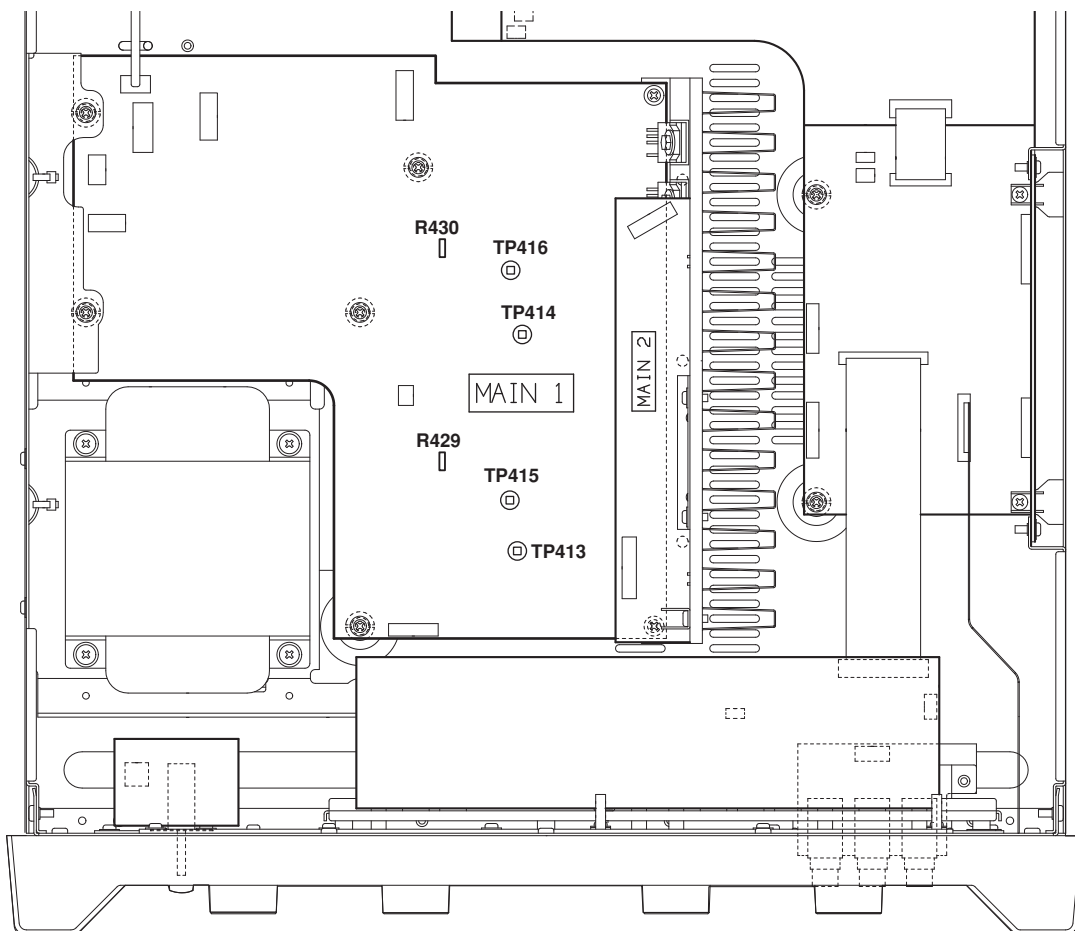
DELAY time: "ECHO MODE" key (560 $\mu$ s: Lit (amber), 622ms: Off)

## ■ CONFIRMATION OF IDLING CURRENT OF AMP UNIT

Item	Condition	Test point	Rating	Remark
Idling current	No input signal Wait for 2-3 minutes	TP413-TP415 (L ch)	DC 20-350mV	If measured voltage exceeds 350 mV, open (cut off) R429 (L ch), R430 (R ch) and reconfirm the voltage.
		TP414-TP416 (R ch)		



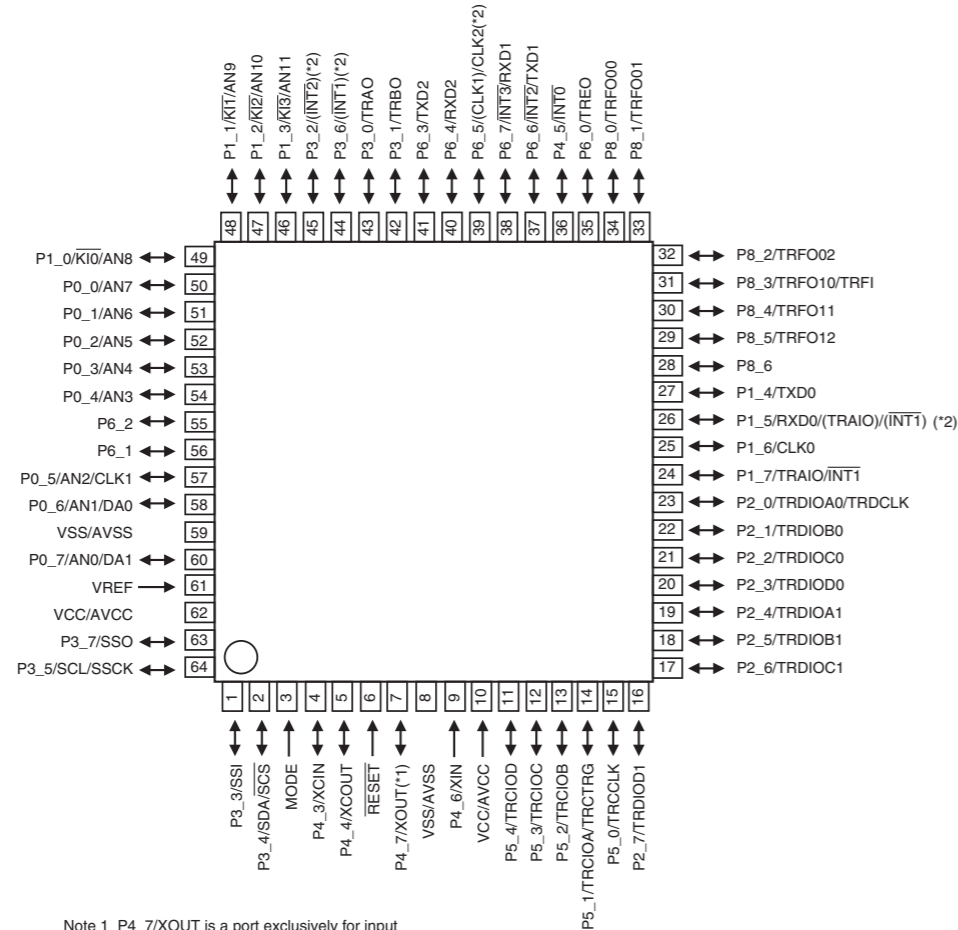
Rear side



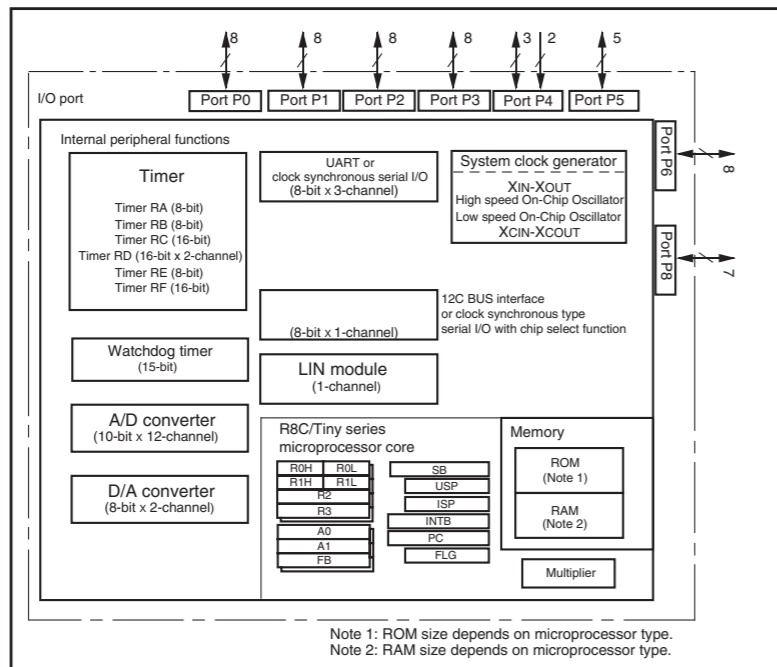
Front side

IC DATA

IC15 : R5F212A8SNFA (FUNCTION P.C.B.)  
Microprocessor



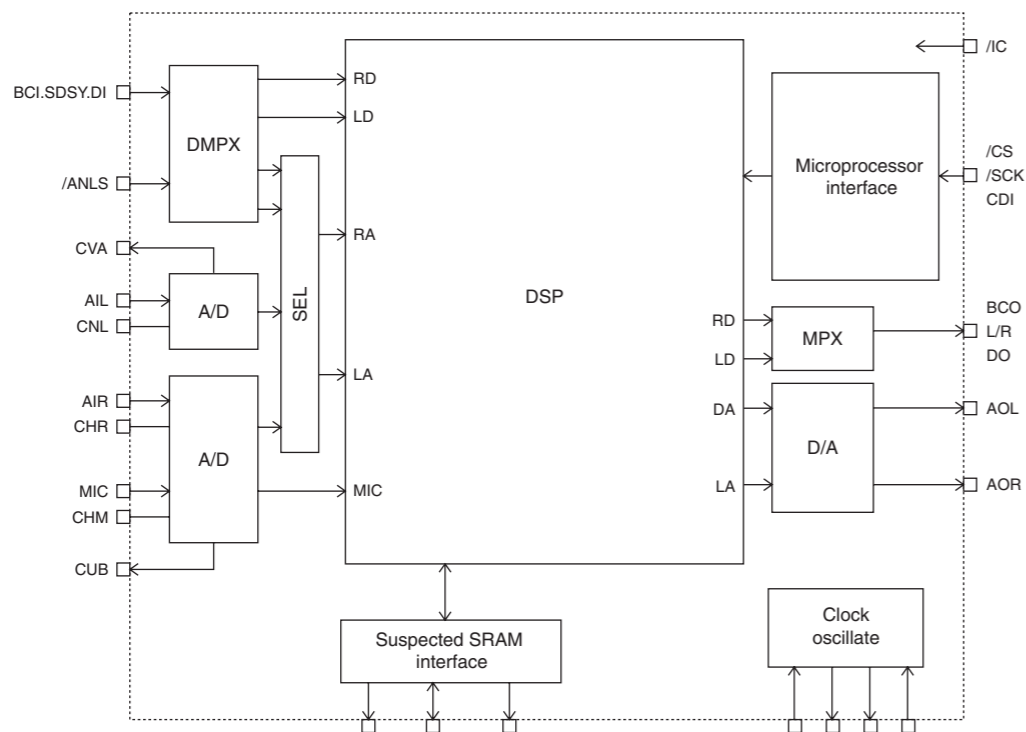
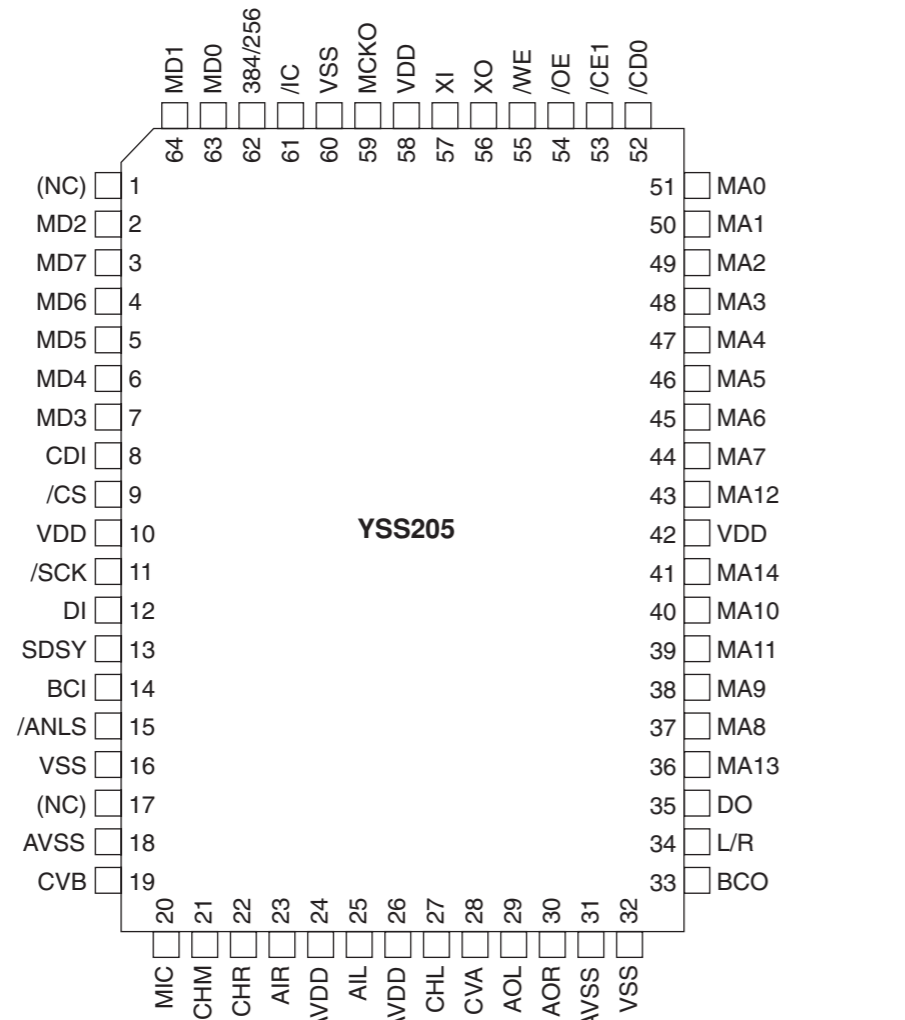
Note 1 P4\_7/XOUT is a port exclusively for input  
Note 2 Arrangement to the terminal in parentheses ( ) is available by programming.



Note 1: ROM size depends on microprocessor type.  
Note 2: RAM size depends on microprocessor type.

Pin No.	Port Name	Function Name	I/O	Detail of Function			Default
1	P3_3/SSI	SDATA	O	For device, commonly used		DATA	Low
2	P3_4/SDA/SCS	FSTL	O	LED/key	PT6313 / NJM7318	STB	High
3	MODE	MODE					
4	P4_3/XCIN	SSDATA	O	LED/key	PT6313 / NJM7318	DATA	Low
5	P4_4/XCOUT	SSCLK	O	LED/key	PT6313 / NJM7318	SCK	Low
6	RESET	/RESET					
7	P4_7/XOUT	XOUT					
8	VSS/AVSS	VSS/AVSS					
9	P4_6/XIN	XIN					
10	VCC/AVCC	VCC/AVCC					
11	P5_4/TRCIOD	MUTE_PRE	O	MUTE control			Low
12	P5_3/TRCIOC	MUTE_REC	O	MUTE control			Low
13	P5_2/TRCIOB	MUTE_PAMP	O	MUTE control			Low
14	P5_1/TRCIOA/TRCTR	/VL_ICN	O	Interface for electronic volume	YSS520	ICN	Low
15	P5_0/TRCCLK	/VL_CS1	O	Interface for electronic volume	YSS520	CS	High
16	P2_7/TRDIOD1	MODEL	I	Model detection		x	
17	P2_6/TRDIOC1	SEL_ST	O	Audio analog switch	NJM7313	ST	Low
18	P2_5/TRDIOB1	/MS	O	Interface for DAC	DAC	/MS	High
19	P2_4/TRDIOA1	RCK	O	Video analog switch	TC74VHC595	RCK	Low
20	P2_3/TRDIOD0	KP_IC	O	Interface for KP		IC	Low
21	P2_2/TRDIOC0	EVOL_DATA	O	Interface for electronic volume	YSS520	DATA	Low
22	P2_1/TRDIOB0	VIDEO_DET	I	For video input detection		x	
23	P2_0/TRDIOA0/TRDCLK	Pre_S	O	MUSIC pre-output select	TC74VHC595	/G	Low
24	P1_7/TRAIO/INT1	/KP_CS	O	Interface for KP		/CS	High
25	P1_6/CLK0	EVOL_CLK	O	Interface for electronic volume	YSS520	CLK	Low
26	P1_5/RXD0/(TRAIO)/(INT1) (*)	RXD_PC	I	PC interface (RX)		RX	x
27	P1_4/TXD0	TXD_PC	O	PC interface (TX)		TX	x
28	P8_6	MUS_RA	I	Rotary encoder input for MUSIC volume	EC12E2460814	A signal	x
29	P8_5/TRFO12	MUS_RB	I	Rotary encoder input for MUSIC volume		B signal	x
30	P8_4/TRFO11	MIC_RA	I	Rotary encoder input for MIC volume	EC12E2460814	A signal	x
31	P8_3/TRFO10/TRFI	MIC_RB	I	Rotary encoder input for MIC volume		B signal	x
32	P8_2/TRFO02	ECHO_RA	I	Rotary encoder input for ECHO volume	EC12E2460814	A signal	x
33	P8_1/TRFO01	ECHO_RB	I	Rotary encoder input for ECHO volume		B signal	x
34	P8_0/TRFO00	KEY_RA	I	Rotary encoder input for KEY CONTROL volume	EC12E2460814	A signal	x
35	P6_0/TREO	KEY_RB	I	Rotary encoder input for KEY CONTROL volume		B signal	x
36	P4_5/INT0	REM	I	For front remote controller reception			High
37	P6_6/INT2/TXD1	TXD_WR	O	ICE, for FLASH writing		x	
38	P6_7/INT3/RXD1	RXD_WR	I	ICE, for FLASH writing		x	
39	P6_5/(CLK1)/CLK2	PA_S	O	MIC power amplifier output select			Low
40	P6_4/RXD2	ASW_DATA	O	Audio analog switch	NJM7313	DATA	Low
41	P6_3/TXD2	ASW_CLK	O	Audio analog switch	NJM7313	CLK	Low
42	P3_1/TRBO	/EROM_CS	O	EEPROM		CS	High
43	P3_0/TRAO	EROM_DIN	I	EEPROM		DATA	x
44	P3_6/(INT1)	RM_IN	I	Panel bak expansion remote controller			x
45	P3_2/(INT2)	RM_DIR	I				?
46	P1_3/KI3/AN11	TAPE_IN	I				Low
47	P1_2/KI2/AN10	AUX_IN	I				Low
48	P1_1/KI1/AN9	DVD_IN	I				Low
49	P1_0/KI0/AN8	VOL_REPEAT	I	AD volume	Repeat		x
50	P0_0/AN7	PDET	I	Input for power detect			?
51	P0_1/AN6	VOL_DELAY	I	AD volume	Delay		x
52	P0_2/AN5	SPA	O	Speaker relay control			Low
53	P0_3/AN4	VOL_BAL	I	AD volume	Balance		x
54	P0_4/AN3	TH_R2	I	For thermal measurement			?
55	P6_2	DIAG_AD	O	Volume maximum detection at self-diagnostic function mode			Low
56	P6_1	PRI	I	Excess current detection			Low
57	P0_5/AN2/CLK1	TH_R	I	For thermal measurement			?
58	P0_6/AN1/DA0	PRD	I	Power amplifier DC detection			?
59	VSS/AVSS	VSS/AVSS					
60	P0_7/AN0/DA1	DIAG	O	Self-diagnostic function mode detection			Low
61	VREF	VREF					
62	VCC/AVCC	VCC/AVCC					
63	P3_7/SSO	SDOUT	I	Key input			Low
64	P3_5/SCL/SSCK	SCK	O	For device, commonly used		SCK	Low

IC602 : YSS205B (FUNCTION P.C.B.)  
Karaoke processor



Pin no.	Function name	I/O	Detail of function
1	(NC)	I/O	(Not connected)
2	MD2	I/O	External suspected SRAM interface data terminal
3	MD7	I/O	External suspected SRAM interface data terminal
4	MD6	I/O	External suspected SRAM interface data terminal
5	MD5	I/O	External suspected SRAM interface data terminal
6	MD4	I/O	External suspected SRAM interface data terminal
7	MD3	I	External suspected SRAM interface data terminal
8	CD1	I	Microprocessor interface serial data
9	/CS	-	Microprocessor interface chip selector
10	YDD	I	+5V supply (digital)
11	/SCK	I+	Microprocessor interface serial lock
12	DI	I+	Digital audio input - serial data
13	SDSY	I+	Digital audio input - L/R clock
14	BCI	I+	Digital audio input - bit clock
15	/ANLS	-	YM7110 interface - serial data
16	VSS	A	GND (digital)
17	(NC)	-	(Not connected)
18	AYSS	A-	"GND (A/D, D/A system to connect VSS at out side)"
19	CVB	AI	"R channel, ADC center voltage of the MIC channel"
20	MIC	A-	Inputs ADC of the analog audio MIC channel
21	CHM	A-	MIC inputting sample/holding condenser connector terminal
22	CHR	AI	AIR inputting sample/holding condenser connector terminal
23	AIR	A-	Inputs ADC of the analog audio R channel
24	AVDD	AI	"+5V supply (A/D, D/A system to connect VDD at out side)"
25	AIL	A-	Inputs ADC of the analog audio L channel
26	AVDD	A-	"+5V supply (A/D, D/A system to connect VDD at out side)"
27	CHL	A-	AIL inputting sample/holding condenser connector terminal
28	CVA	AO	L channel of ADC center voltage
29	AOL	AO	Outputs DAC of the analog audio L channel
30	AOR	A-	Outputs DAV of the analog audio L channel
31	AVSS	-	"GND (A/D, D/A system to connect VDD at out side)"
32	VSS	O	GND (digital)
33	BCO	O	Digital audio output - bit clock
34	L/R	O	Digital audio output - L/R clock
35	DO	O	Digital audio output - serial data
36	MA13	O	External suspected SRAM interface address terminal
37	MA8	O	External suspected SRAM interface address terminal
38	MA9	O	External suspected SRAM interface address terminal
39	MA11	O	External suspected SRAM interface address terminal
40	MA10	O	External suspected SRAM interface address terminal
41	MA14	-	External suspected SRAM interface address terminal
42	VDD	O	GND (digital)
43	MA12	O	External suspected SRAM interface address terminal
44	MA7	O	External suspected SRAM interface address terminal
45	MA6	O	External suspected SRAM interface address terminal
46	MA5	O	External suspected SRAM interface address terminal
47	MA4	O	External suspected SRAM interface address terminal
48	MA3	O	External suspected SRAM interface address terminal
49	MA2	O	External suspected SRAM interface address terminal
50	MA1	O	External suspected SRAM interface address terminal
51	MA0	O	External suspected SRAM interface address terminal
52	/CE0	O	External suspected SRAM interface Chip selector = 0
53	/CE1	O	External suspected SRAM interface Chip selector = 1 (Available when two item are connected)
54	/OE	O	External suspected SRAM interface OE terminal
55	/WE	O	External suspected SRAM interface WE terminal
56	XO	I	Crystal oscillator connected terminal
57	XI	-	Crystal oscillator connected terminal or External clock input terminal
58	VDD	O	+5V supply (digital)
59	MCKO	-	Outputs the master clock (XI clock)
60	VSS	I	GND (digital)
61	/IC	I+	Initial clear terminal
62	384/256	I/O	Switches the master clock rate ('H' = 384fs, 'L' = 256fs)
63	MD0	I/O	External suspected SRAM interface data terminal
64	MD1	I/O	External suspected SRAM interface data terminal

Note) +: Pull-up terminal,  
A: Analog terminal



KMA-1000 KMA-950

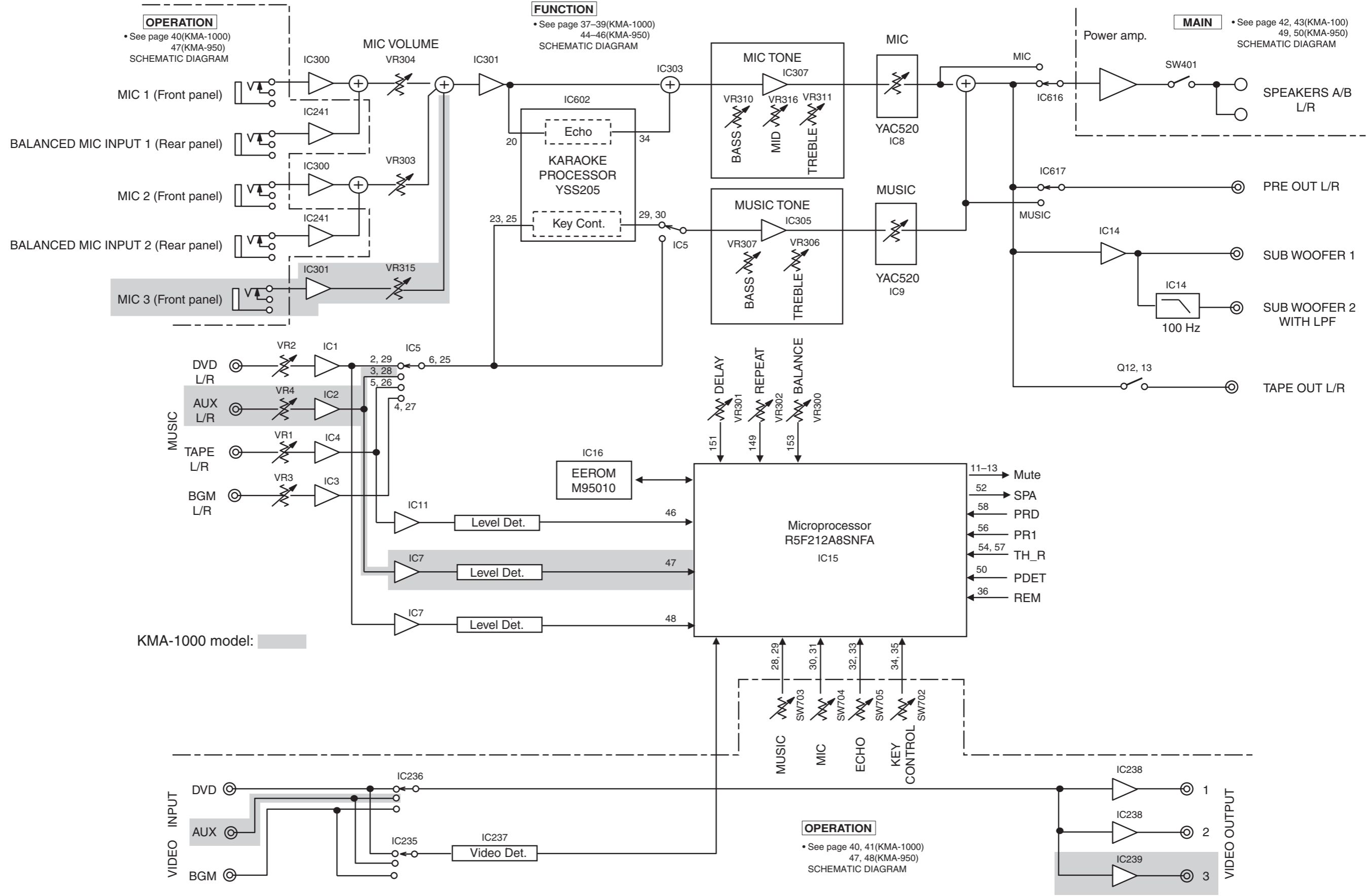
BLOCK DIAGRAM

1

**OPERATION**  
 • See page 40(KMA-1000)  
 47(KMA-950)  
 SCHEMATIC DIAGRAM

**FUNCTION**  
 • See page 37-39(KMA-1000)  
 44-46(KMA-950)  
 SCHEMATIC DIAGRAM

**MAIN**  
 • See page 42, 43(KMA-100)  
 49, 50(KMA-950)  
 SCHEMATIC DIAGRAM



2

3

4

5

6

KMA-1000 model: [shaded box]

**OPERATION**  
 • See page 40, 41(KMA-1000)  
 47, 48(KMA-950)  
 SCHEMATIC DIAGRAM

## ■ PIN CONNECTION DIAGRAMS

### ICs

<p>KIA7912PI</p>	<p>LM61CIZ</p>	<p>NJM7805FA NJM7812FA</p>	<p>NJM78M05DL1A</p>
<p>M5M51008DFP-55H</p>	<p>NJU3718AM</p>	<p>NJU7313AM</p>	<p>YAC520-EE2</p>
<p>PCM1780DBQR</p>	<p>TC74HC4053AFT TC74HC595AF</p>	<p>BA7649AF</p>	<p>TC74HCU04AFEL</p>
<p>R5F212A8SNFA</p>	<p>YSS205B-F</p>	<p>NJM2267M UPC4570G2-E1-A</p>	<p>M95010-WMN6TP</p>

### Transistors

<p>2N5401C-AT 2SA970-GR 2SA1015-Y</p>	<p>2N5551C-AT</p>	<p>2SC1815-Y</p>	<p>2SA1037K</p>	<p>2SC2412K</p>	<p>2SC4081 T106 2SD1938F</p>
<p>2SB1237</p>	<p>2SA1689 E,F 2SC4449 E,F</p>	<p>KRA102M-AT</p>	<p>DTC114ESA-TP</p>	<p>DTC114EKA</p>	
<p>2SA1837/2SC4793</p>	<p>STD04P/STD04N</p>		<p>STD04P</p>	<p>STD04N</p>	

### Diodes

<p>1SR139 ISR140 1SS133 1SS176 1SS270A 1T2 EL02ZLF S2L20U</p>	<p>1SS355</p>	<p>1SS226 (TE85R)</p>	<p>MA8047-M 4.7V</p>	
<p>MTZJ12B MTZJ12C MTZJ5.1C MTZJ5.6B</p>	<p>RLZ4.7A 4.7V RLZ5.1B 5.1V</p>	<p>D15XBN20</p>	<p>RS203M</p>	<p>RS403M</p>

KMA-1000

KMA-1000/KMA-950

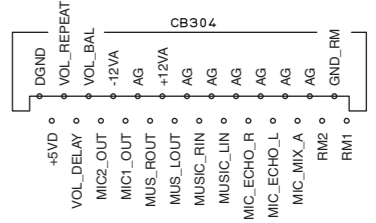
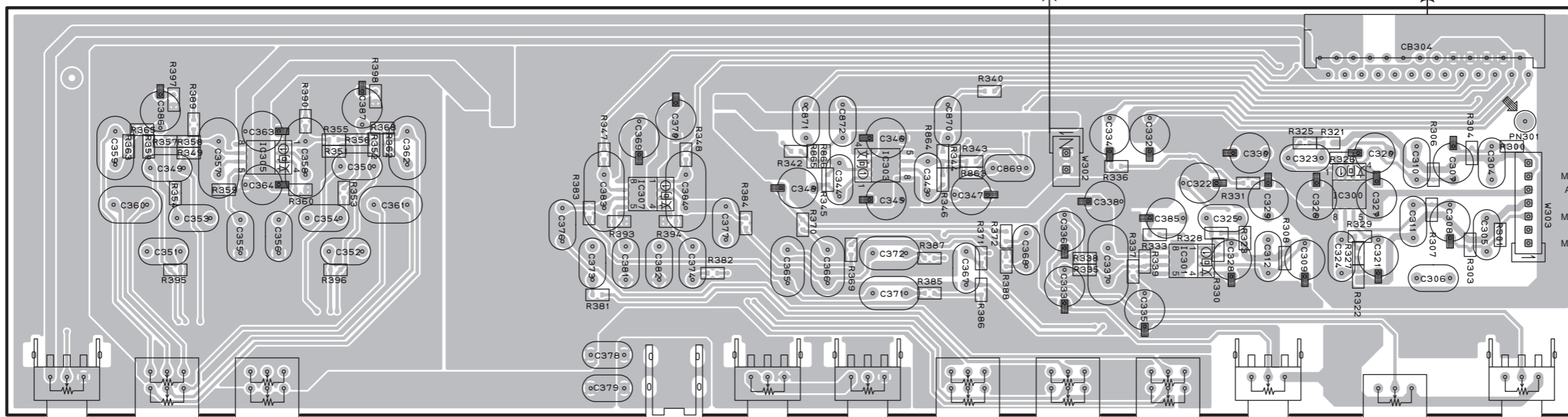
PRINTED CIRCUIT BOARDS

FUNCTION (2) (Side A)

(Side A)

FUNCTION (1) (CB3)

FUNCTION (1) (CB2)



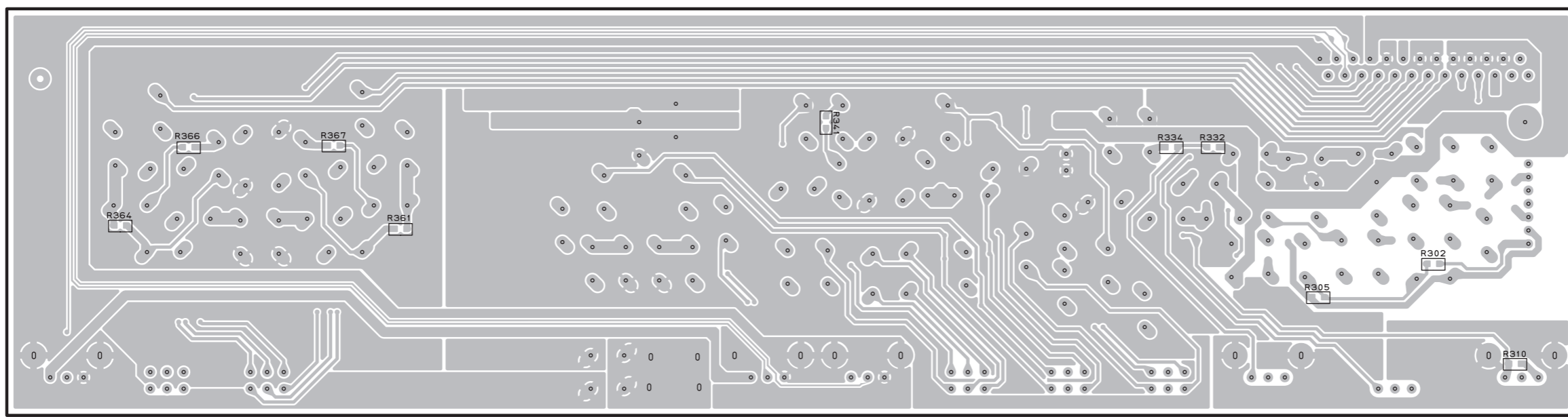
OPERATION (4) (CB901)

● Semiconductor Location

Ref. No.	Location
IC300	F2
IC301	F2
IC303	D2
IC305	B2
IC307	C2

FUNCTION (2) (Side B)

(Side B)



1

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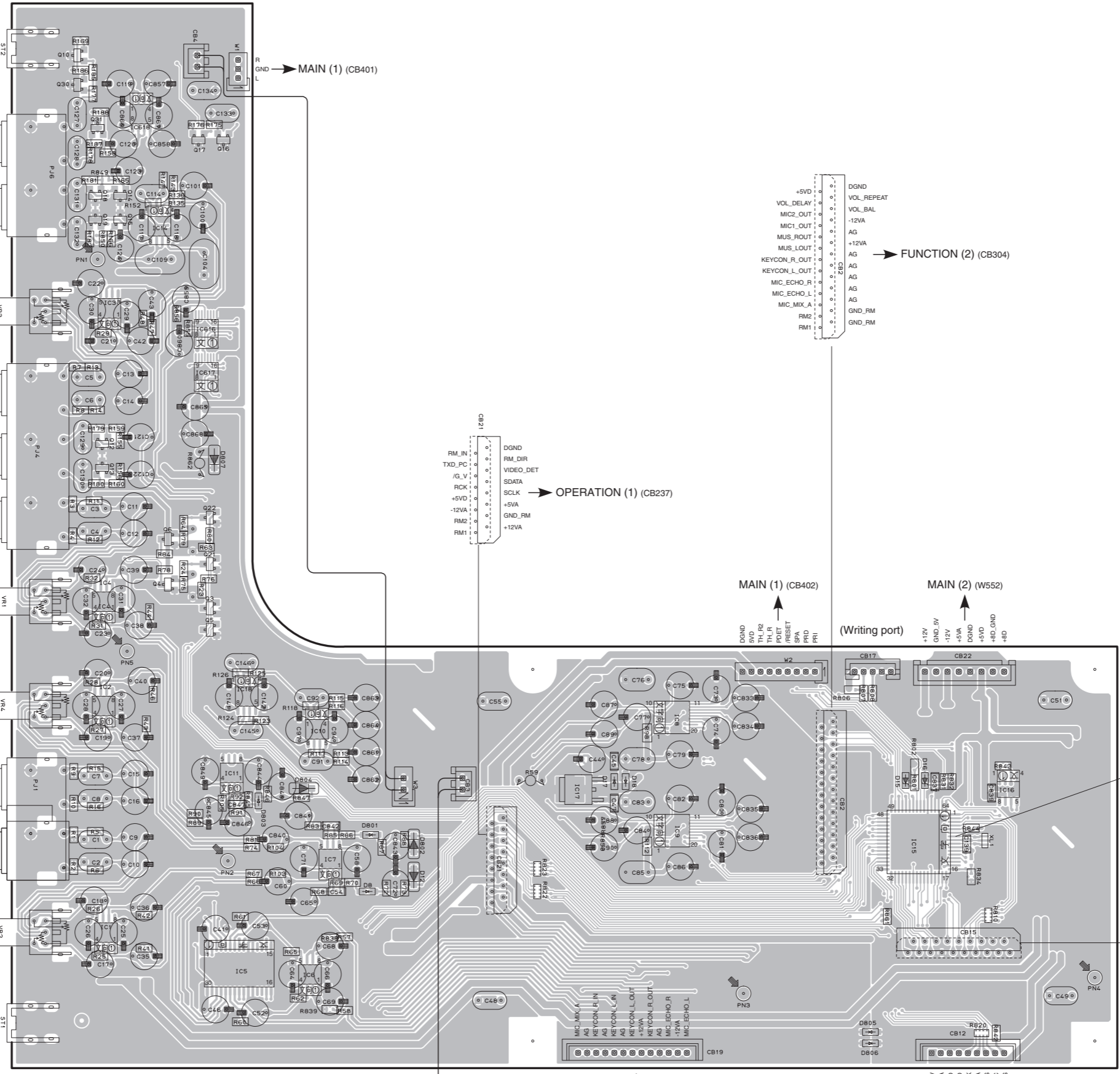
FUNCTION (1)

(Side A)

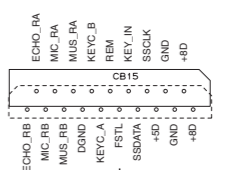
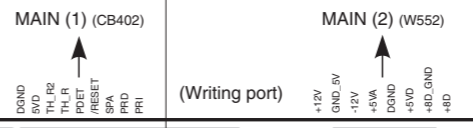
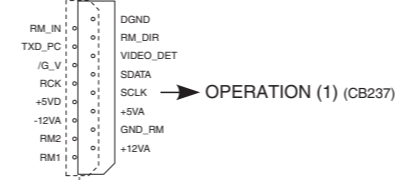
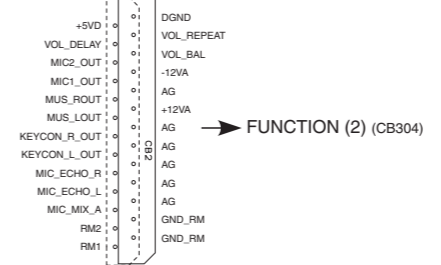
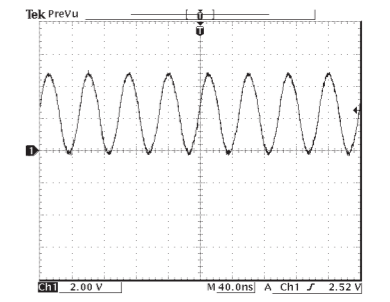
● Semiconductor Location

Ref. No.	Location
D8	D5
D12	D5
D15	F4
D16	G4
D17	E4
D18	E4
D801	D5
D802	D5
D803	D4
D804	D4
D805	F5
D806	F5
D807	C3
IC1	C5
IC2	C4
IC3	C2
IC4	C4
IC5	D5
IC6	D5
IC7	D5
IC8	E4
IC9	E4
IC10	D4
IC11	D4
IC14	C2
IC15	F5
IC16	G4
IC17	E4
IC18	D4
IC616	C2
IC617	C3
IC618	C1
Q3	C4
Q4	C3
Q5	C4
Q6	C3
Q10	C1
Q12	C3
Q13	C3
Q14	C2
Q15	C2
Q16	C2
Q17	C2
Q18	C2
Q19	C2
Q21	C3
Q22	C3
Q30	C1
Q31	C1

- PRE OUT (L/R)
- SUB WOOFER 1/2 (WITH LPF)
- BGM (INPUT LEVEL)
- BGM (INPUT L/R)
- TAPE OUT (L/R)
- TAPE IN (L/R)
- TAPE (INPUT LEVEL)
- AUX (INPUT LEVEL)
- AUX IN (L/R)
- DVD IN (L/R)
- DVD (INPUT LEVEL)



Point ① Pin 7 of IC15



KMA-1000

1

FUNCTION (1)

(Side B)

● Semiconductor Location

Ref. No.	Location
Q11	C1

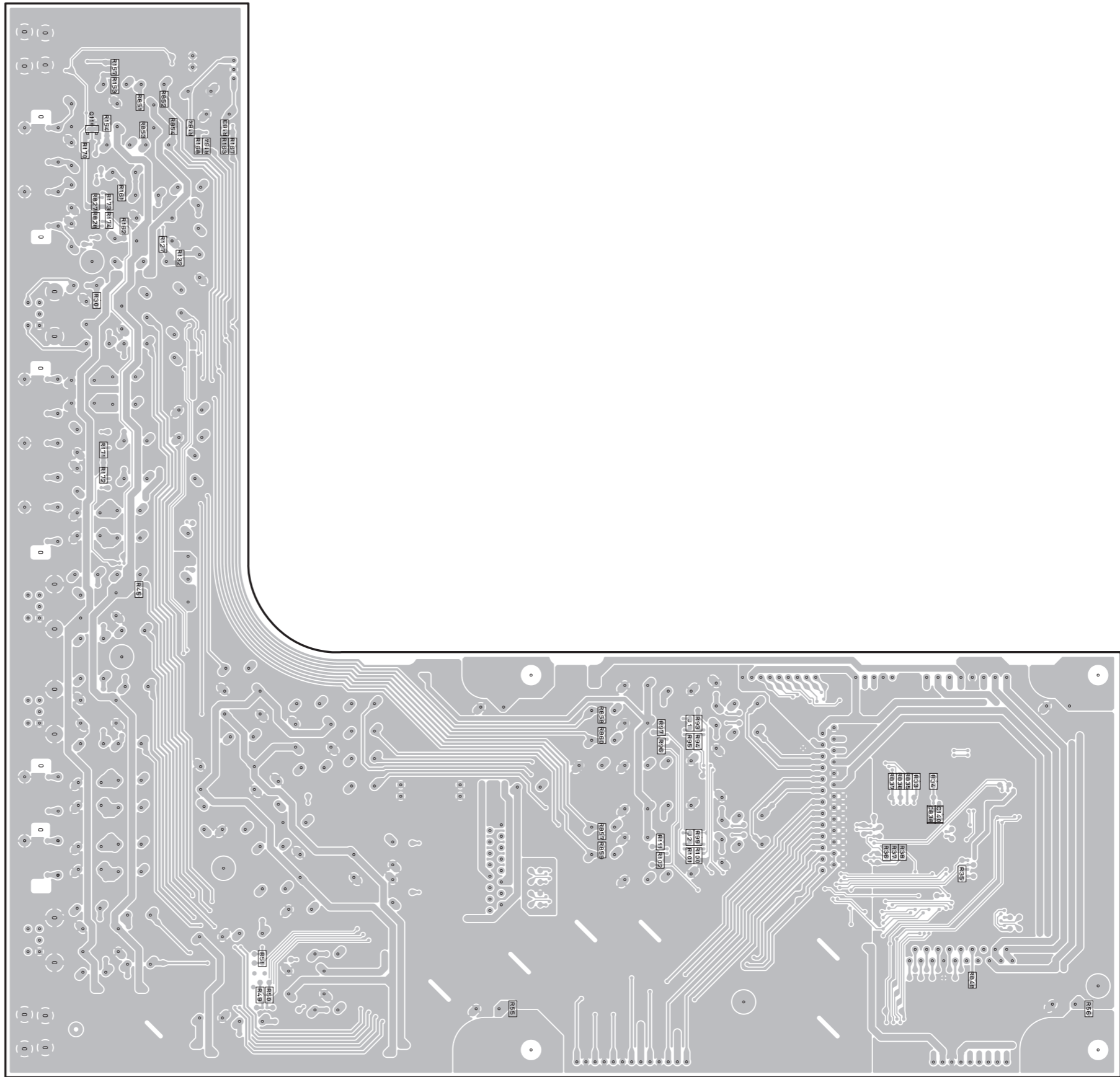
2

3

4

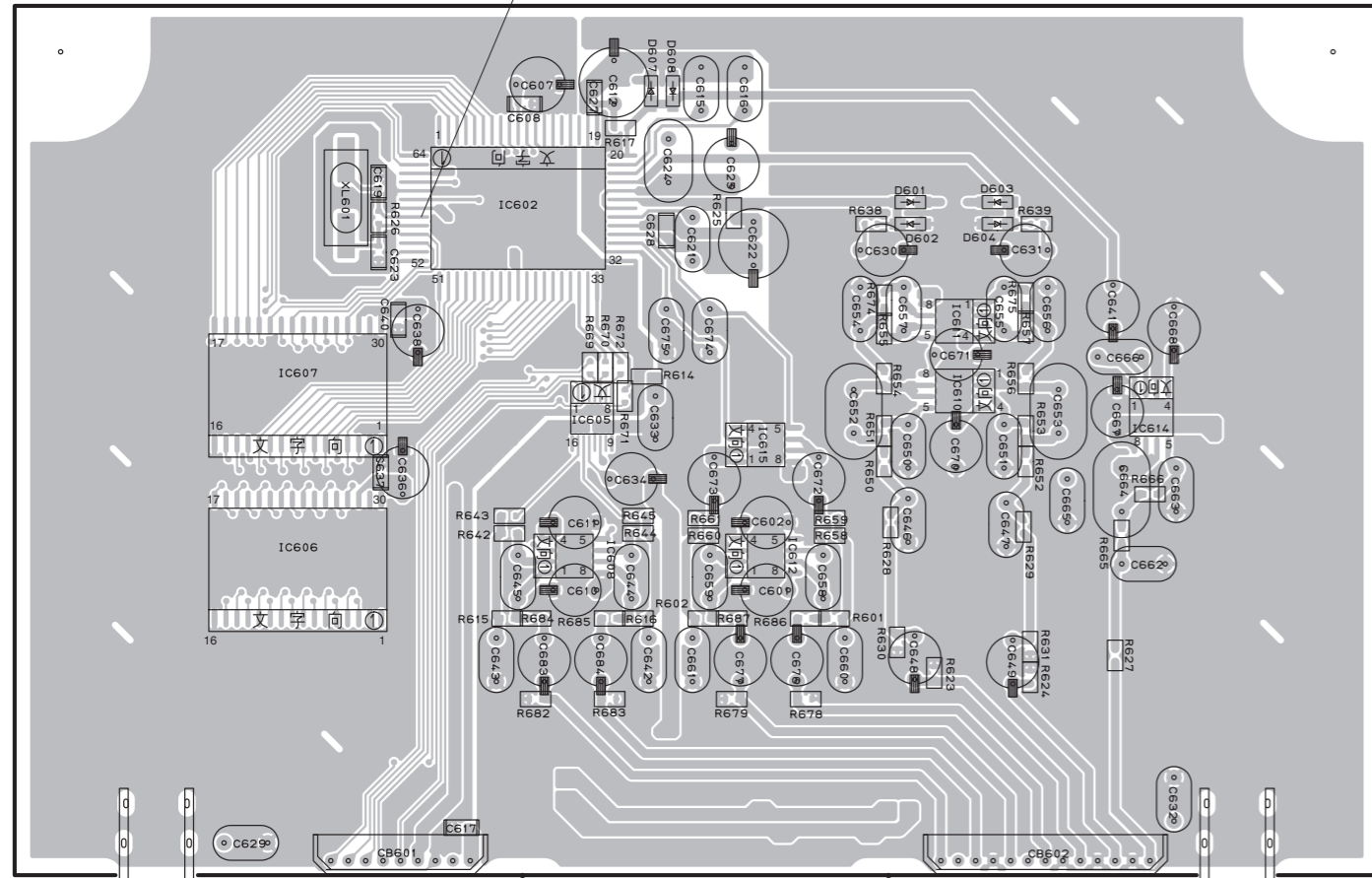
5

6



FUNCTION (3)

(Side A)

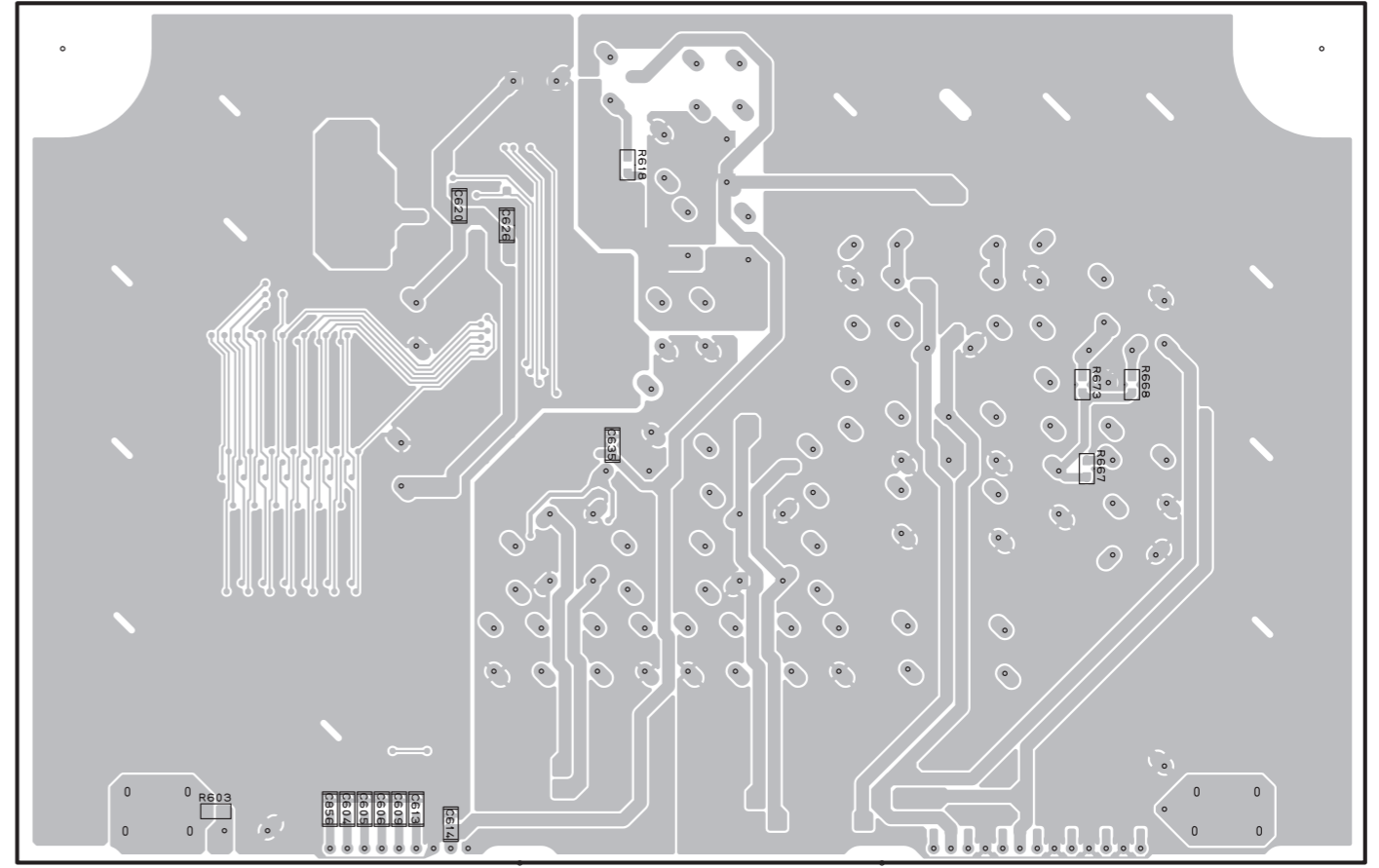


FUNCTION (1) (CB12)

FUNCTION (1) (CB19)

FUNCTION (3)

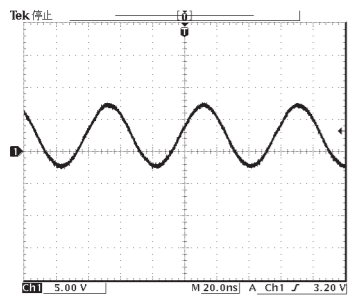
(Side B)



● Semiconductor Location

Ref. No.	Location
D601	C2
D602	C2
D603	C2
D604	C2
D607	C1
D608	C1
IC602	B2
IC605	B2
IC606	B3
IC607	B2
IC608	B3
IC610	C2
IC611	C2
IC612	C3
IC614	D2
IC615	C2

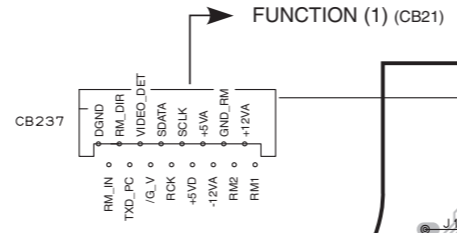
Point ② Pin 57 of IC602



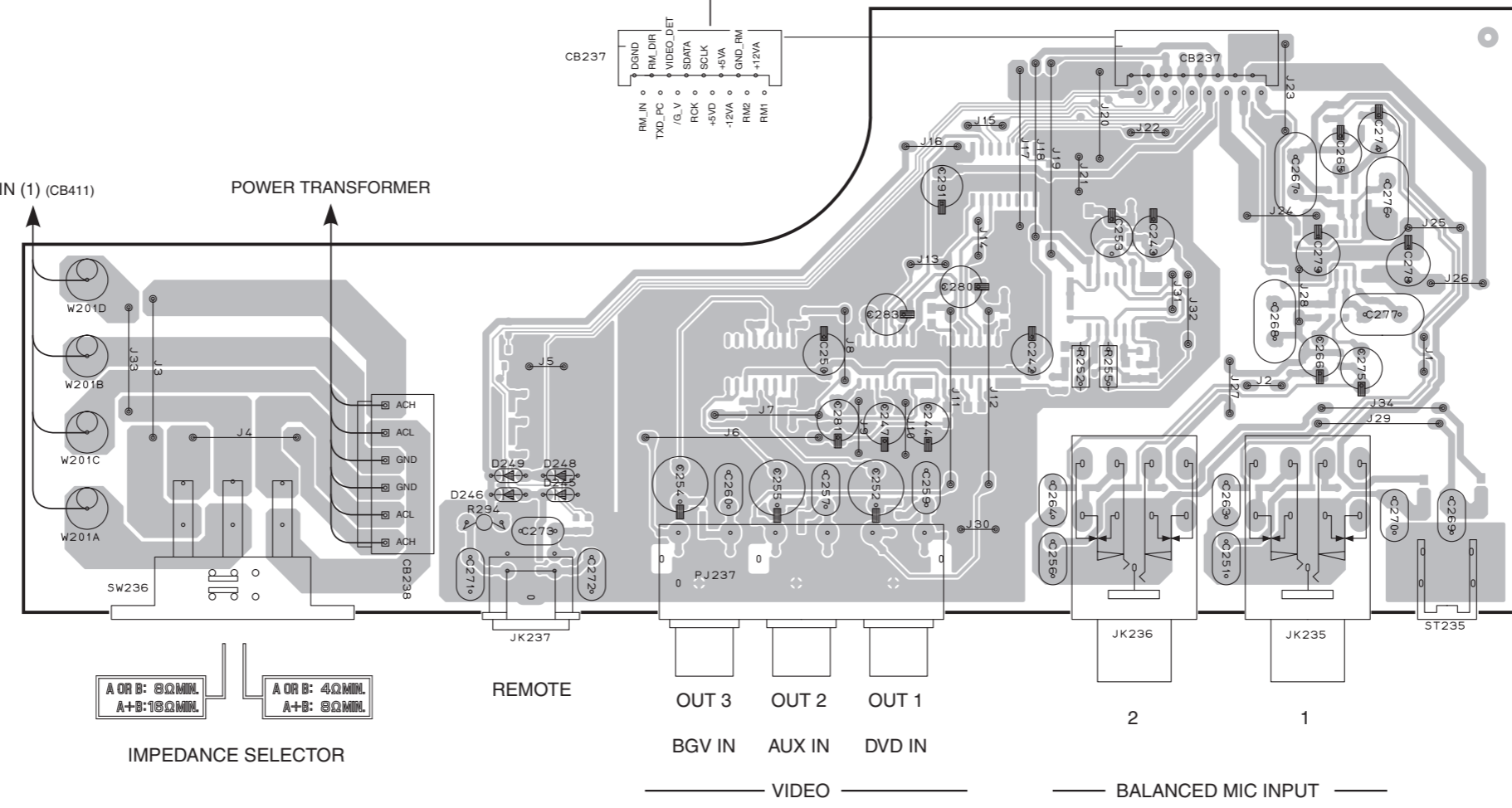
1

OPERATION (1) (Side A)

KMA-1000



MAIN (1) (CB411) POWER TRANSFORMER



● Semiconductor Location

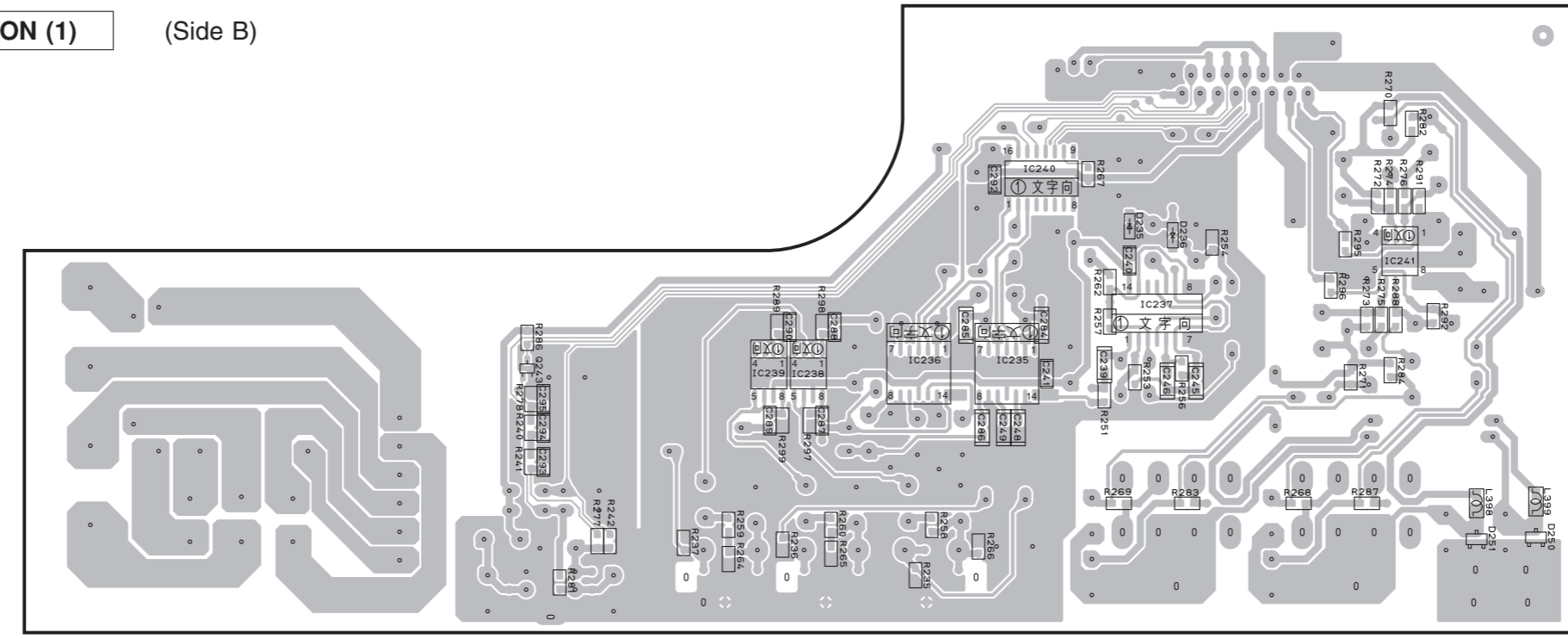
Ref. No.	Location
D235	E5
D236	E5
D245	D3
D246	C3
D248	D3
D249	C3
D250	G5
D251	F5
IC235	E5
IC236	E5
IC237	E5
IC238	D5
IC239	D5
IC240	E4
IC241	F5
Q243	C5

2

3

4

OPERATION (1) (Side B)

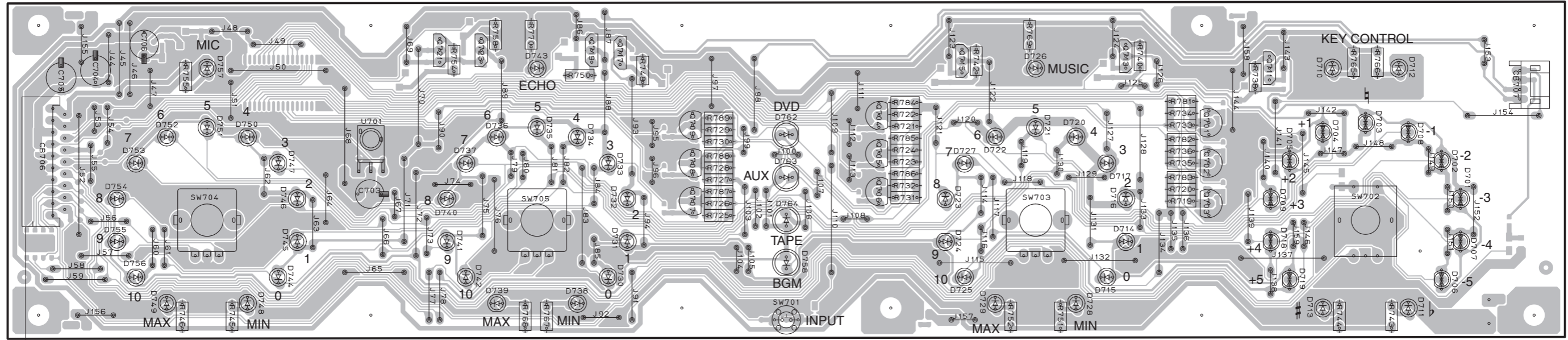


5

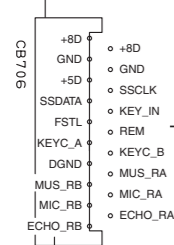
6

OPERATION (2)

(Side A)



RV-LED-OUT  
RKEY-OUT  
RV-LED-G  
RV-LED-R



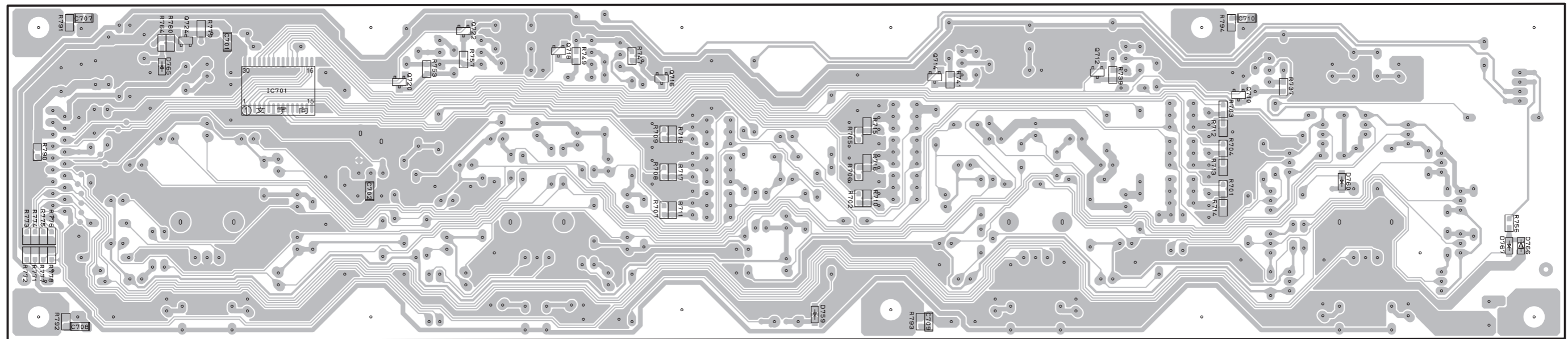
MIC  
ECHO  
MUSIC  
KEY CONTROL  
OPERATION (5)  
(W701)

● Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D701	H2	D713	G2	D725	F2	D737	C2	D749	B2	D762	E2	Q706	E2
D702	H2	D714	F2	D726	F1	D738	D2	D750	B2	D763	E2	Q707	D2
D703	G2	D715	F2	D727	F2	D739	C2	D751	B2	D764	E2	Q708	D2
D704	G2	D716	F2	D728	F2	D740	C2	D752	B2	D765	B4	Q709	D2
D705	G2	D717	F2	D729	F2	D741	C2	D753	B2	D766	H5	Q710	D2
D706	H2	D718	G2	D730	D2	D742	C2	D754	B2	D767	H5	Q711	G1
D707	H2	D719	G2	D731	D2	D743	D1	D755	B2	IC701	B4	Q712	F4
D708	H2	D720	F2	D732	D2	D744	B2	D756	B2	Q701	G2	Q713	F1
D709	G2	D721	F2	D733	D2	D745	B2	D757	B1	Q702	G2	Q714	E4
D710	G1	D722	F2	D734	D2	D746	B2	D758	E2	Q703	G2	Q715	E1
D711	H2	D723	E2	D735	D2	D747	B2	D759	E5	Q704	E2	Q716	D4
D712	H1	D724	E2	D736	C2	D748	B2	D760	G5	Q705	E2	Q717	D1
												Q718	D4
												Q719	D1
												Q720	C4
												Q721	C1
												Q722	C4
												Q723	C1
												Q724	B4

OPERATION (2)

(Side B)





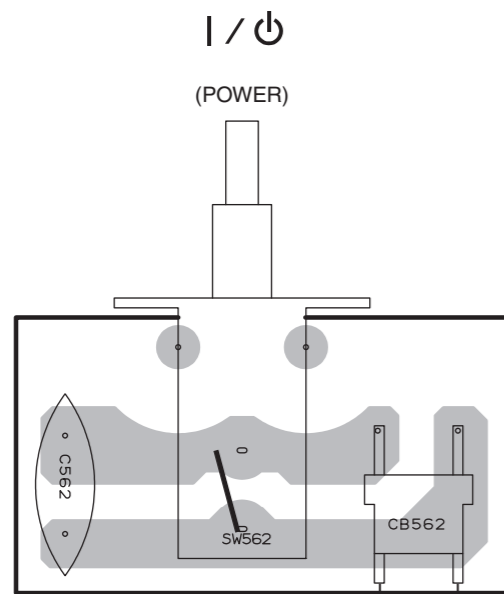
KMA-1000

KMA-1000/KMA-950

1

OPERATION (3)

(Side A)



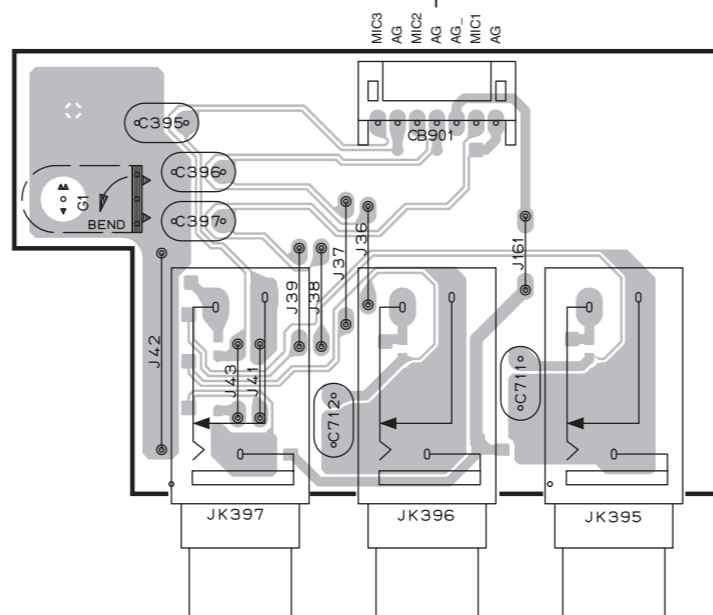
MAIN (1)  
(CB409)

2

OPERATION (4)

(Side A)

FUNCTION (2) (W303)



MIC 3

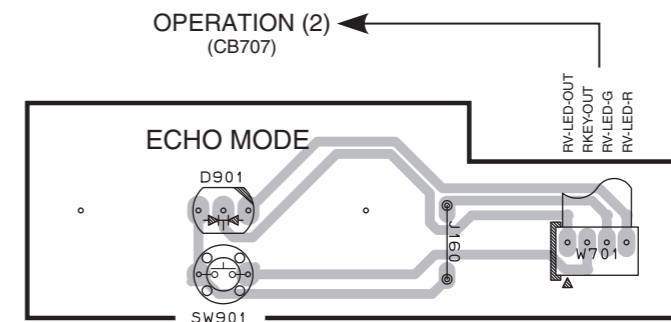
MIC 2

MIC 1

3

OPERATION (5)

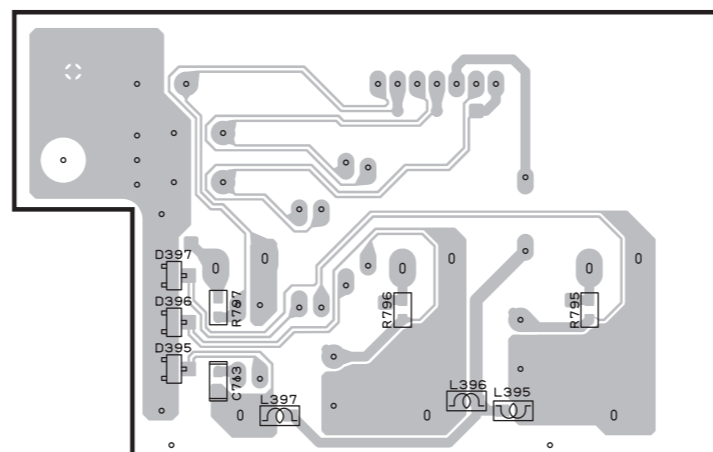
(Side A)



4

OPERATION (4)

(Side B)



5

● Semiconductor Location

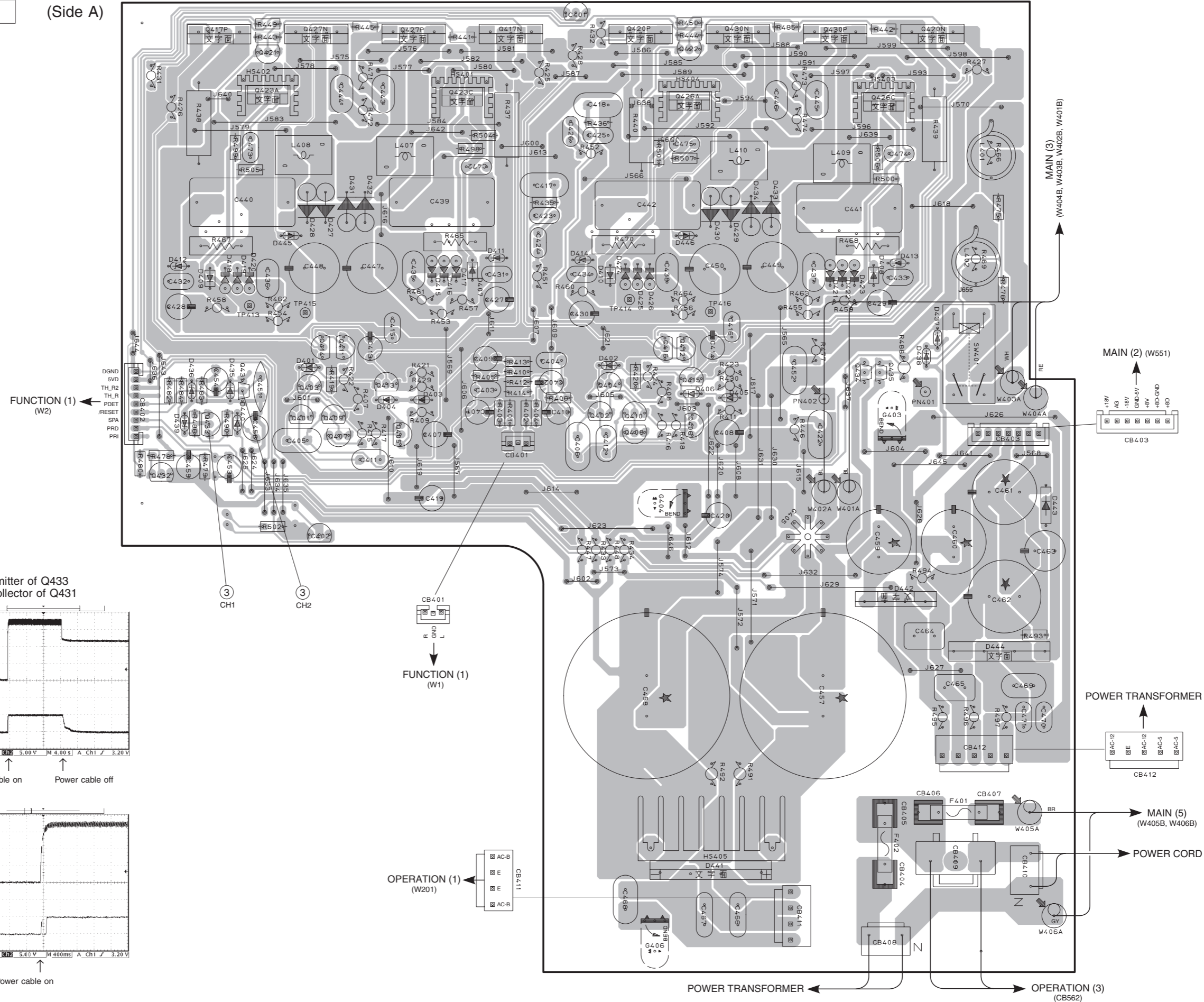
Ref. No.	Location
D395	C5
D396	C5
D397	C4
D901	F2

6

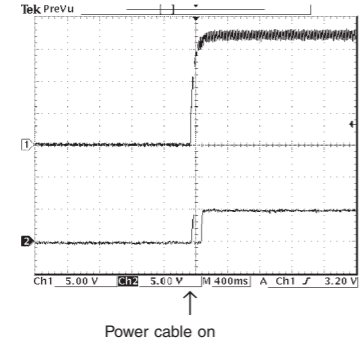
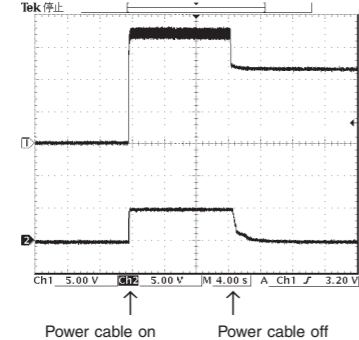
MAIN (1) (Side A)

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D401	D3	IC401	E1
D402	E3	IC402	D4
D403	D3	Q401	D3
D404	D3	Q402	E3
D405	F3	Q403	D3
D406	F3	Q404	E3
D407	E2	Q405	D3
D408	G2	Q406	F3
D409	C2	Q407	D3
D410	E2	Q408	E3
D411	E2	Q409	D3
D412	C2	Q410	E3
D413	G2	Q411	D3
D414	E2	Q412	F3
D415	D2	Q413	D3
D416	D2	Q414	D3
D417	D2	Q415	F3
D418	C2	Q416	E3
D419	C2	Q417N	E1
D420	C2	Q417P	C1
D421	F2	Q420N	G1
D422	F2	Q420P	E1
D423	F2	Q421	C1
D424	E2	Q422	F1
D425	E2	Q423A	C1
D426	E2	Q423C	D1
D427	D2	Q426A	F1
D428	D2	Q426C	G1
D429	F2	Q427N	D1
D430	F2	Q427P	D1
D431	D2	Q430N	F1
D432	D2	Q430P	F1
D433	F2	Q431	C3
D434	F2	Q432	C3
D435	C3	Q433	C3
D436	C3	Q434	F3
D437	G3	Q435	G3
D438	G3		
D439	C3		
D440	C3		
D441	F5		
D442	G4		
D443	G3		
D444	G4		
D445	D2		
D446	F2		



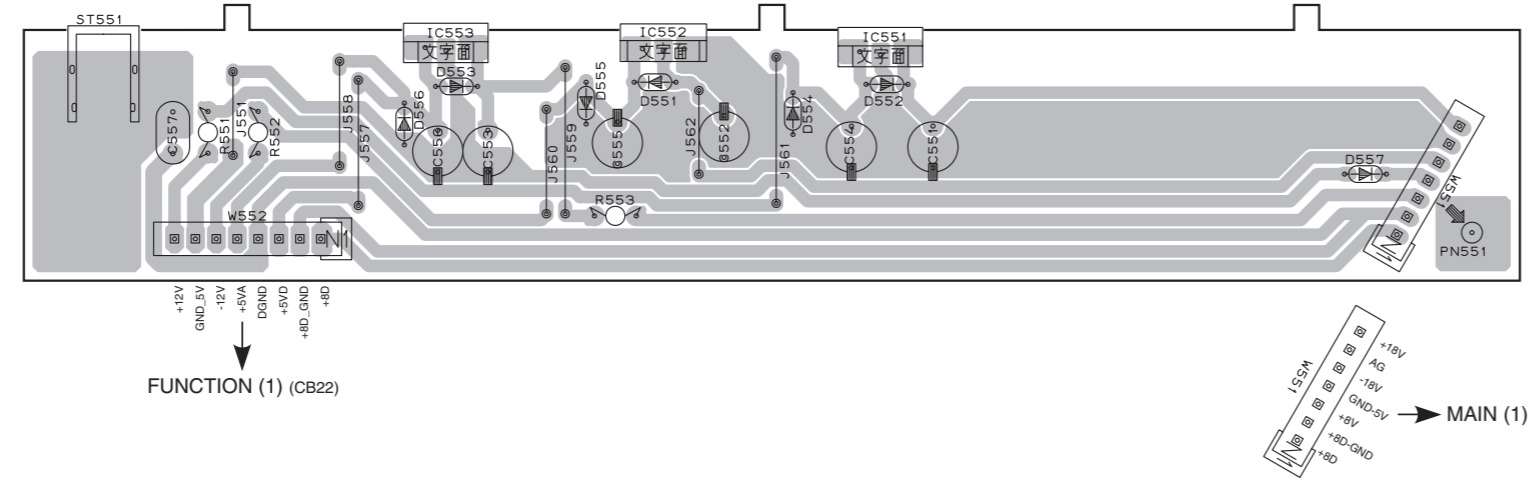
Point ③  
CH 1 : Emitter of Q433  
CH 2 : Collector of Q431



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1

MAIN (2) (Side A)

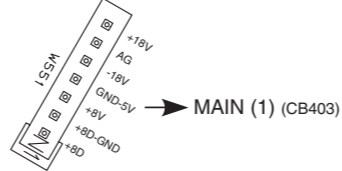


● Semiconductor Location

Ref. No.	Location
D551	C2
D552	D2
D553	C2
D554	C2
D555	C2
D556	B2
D557	E2
IC551	D1
IC552	C1
IC553	C1

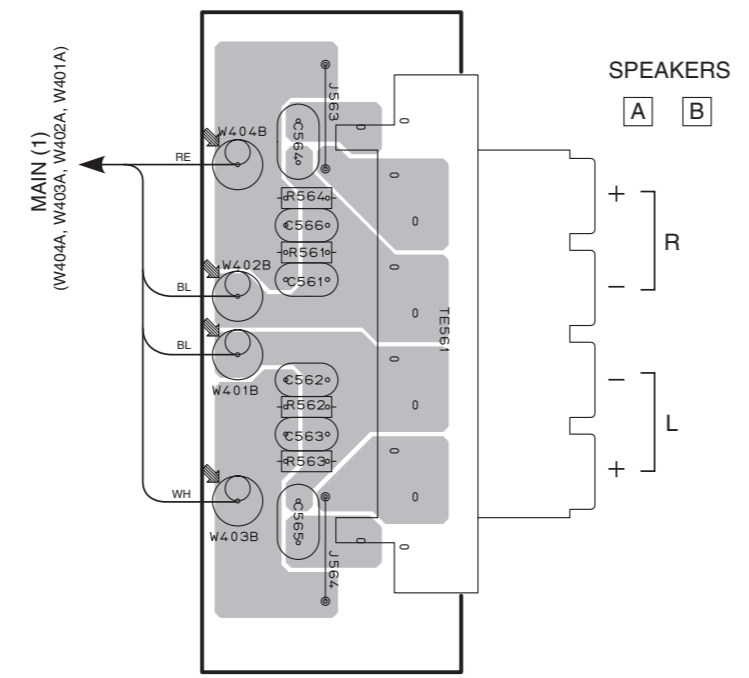
2

FUNCTION (1) (CB22)



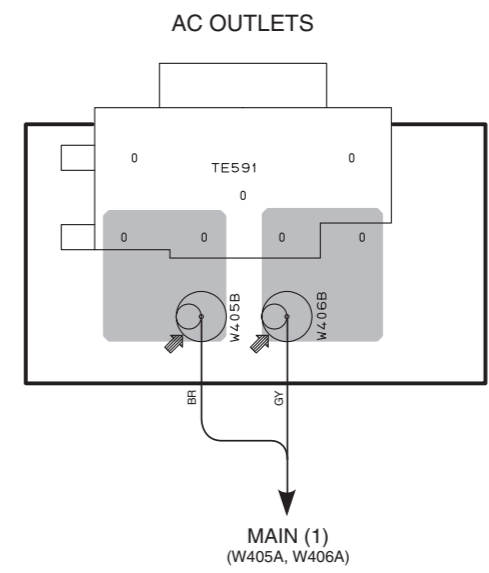
3

MAIN (3) (Side A)



4

MAIN (5) (Side A)



5

6

FUNCTION (1)

(Side A)

● Semiconductor Location

Ref. No.	Location
D8	D5
D12	D5
D15	F4
D16	G4
D17	E4
D18	E4
D803	D4
D804	D4
D805	F5
D806	F5
D807	C3
IC1	C5
IC2	C4
IC3	C2
IC4	C4
IC5	D5
IC6	D5
IC7	D5
IC8	E4
IC9	E4
IC10	D4
IC11	D4
IC14	C2
IC15	F5
IC16	G4
IC17	E4
IC18	D4
IC616	C2
IC617	C3
IC618	C1
Q3	C4
Q4	C3
Q5	C4
Q6	C3
Q10	C1
Q12	C3
Q13	C3
Q14	C2
Q15	C2
Q16	C2
Q17	C2
Q18	C2
Q19	C2
Q21	C3
Q22	C3
Q30	C1
Q31	C1

PRE OUT (L/R)

SUB WOOFER 1/2 (WITH LPF)

BGM (INPUT LEVEL)

BGM (INPUT L/R)

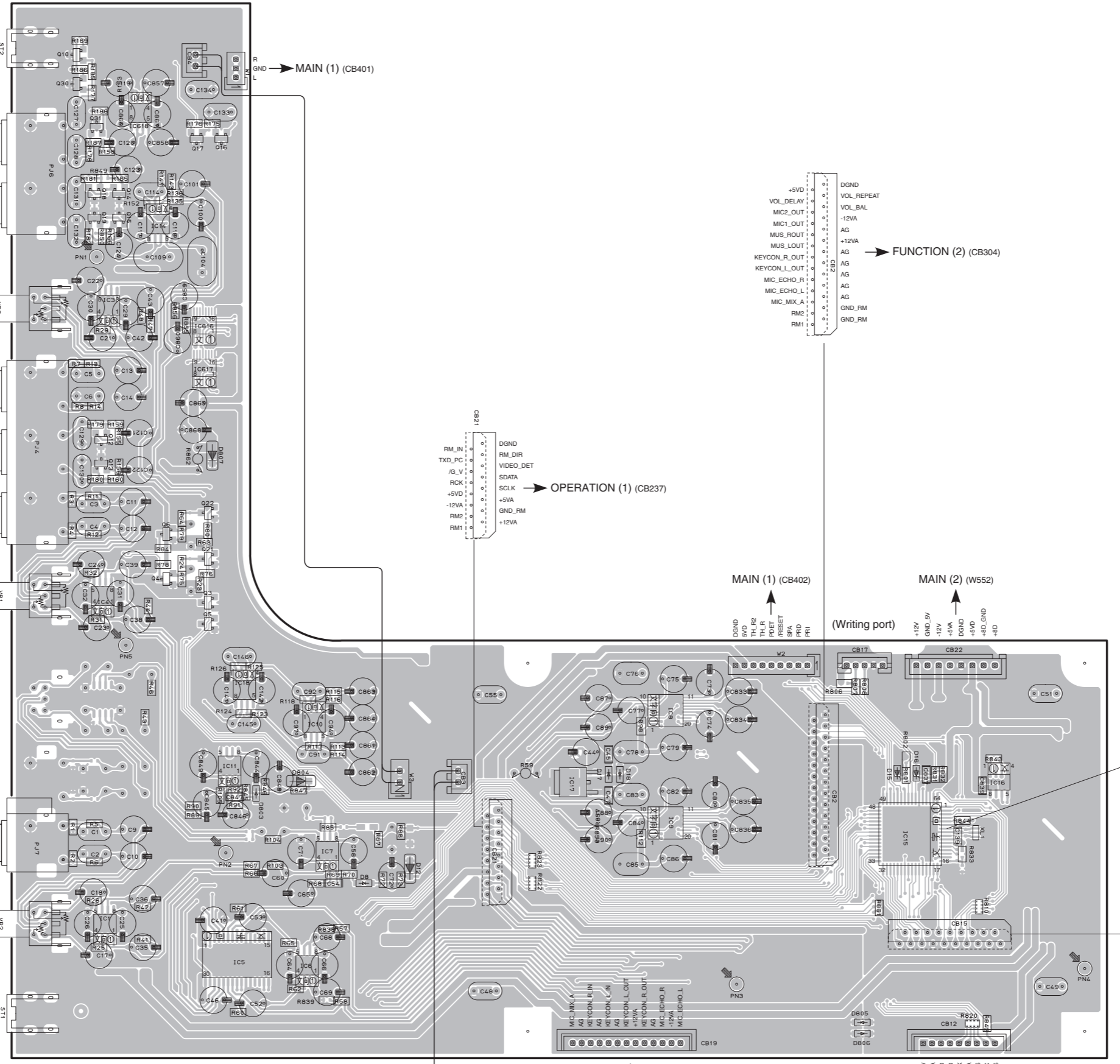
TAPE OUT (L/R)

TAPE IN (L/R)

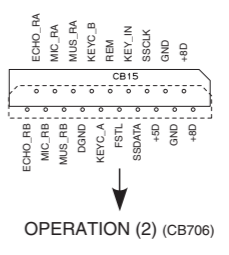
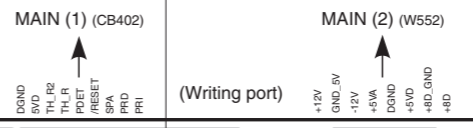
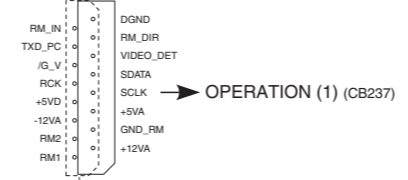
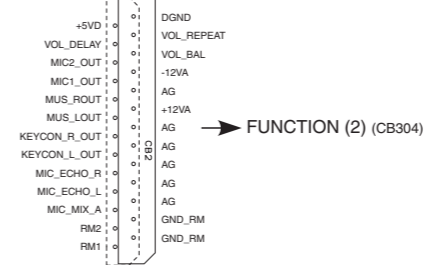
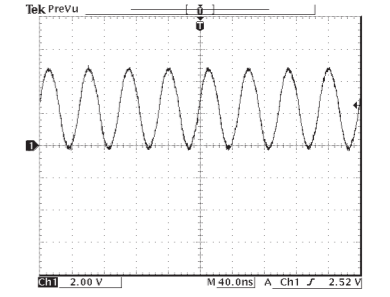
TAPE (INPUT LEVEL)

DVD IN (L/R)

DVD (INPUT LEVEL)



Point ① Pin 7 of IC15



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1

FUNCTION (1)

(Side B)

● Semiconductor Location

Ref. No.	Location
Q11	C1

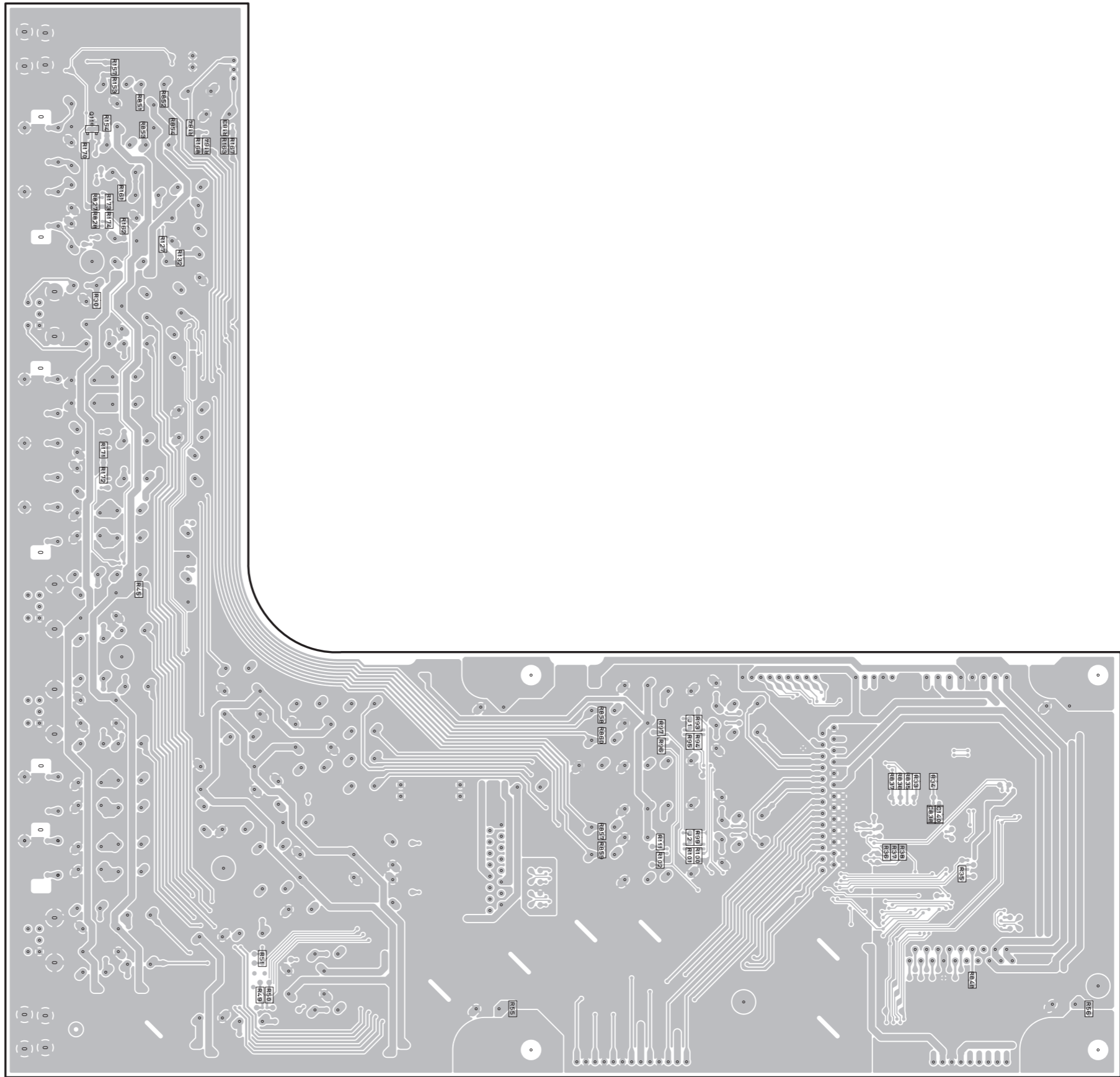
2

3

4

5

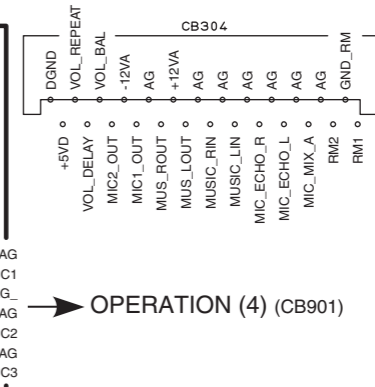
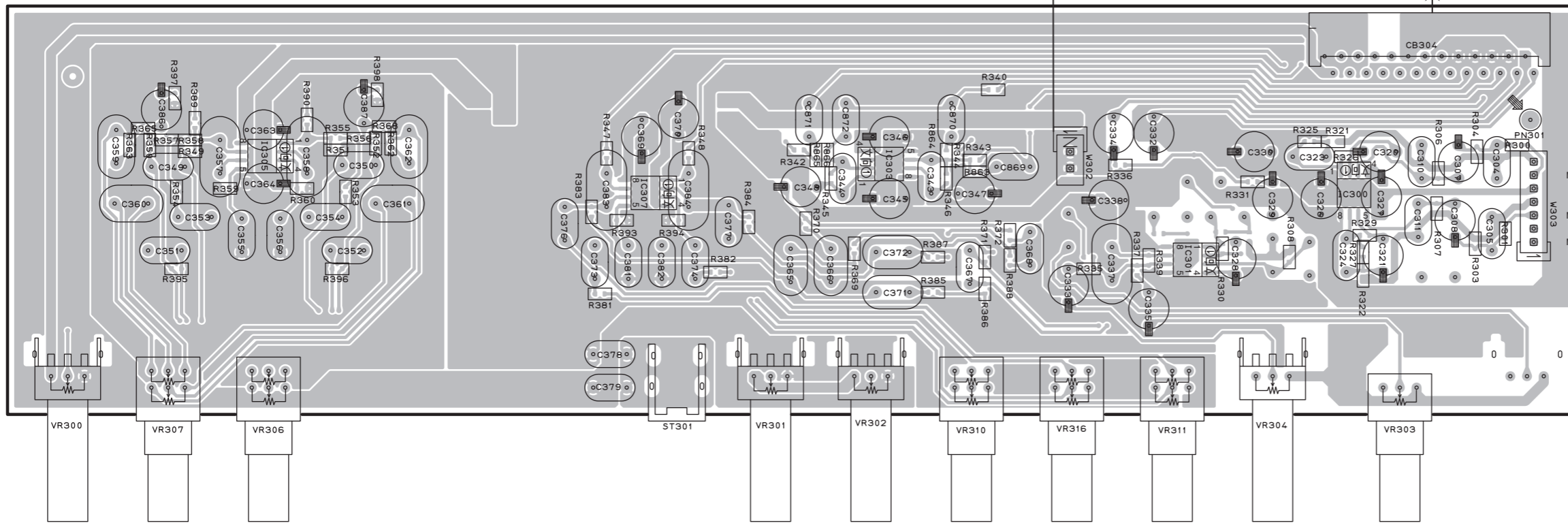
6



FUNCTION (2) (Side A)

FUNCTION (1) (CB3)

FUNCTION (1) (CB2)



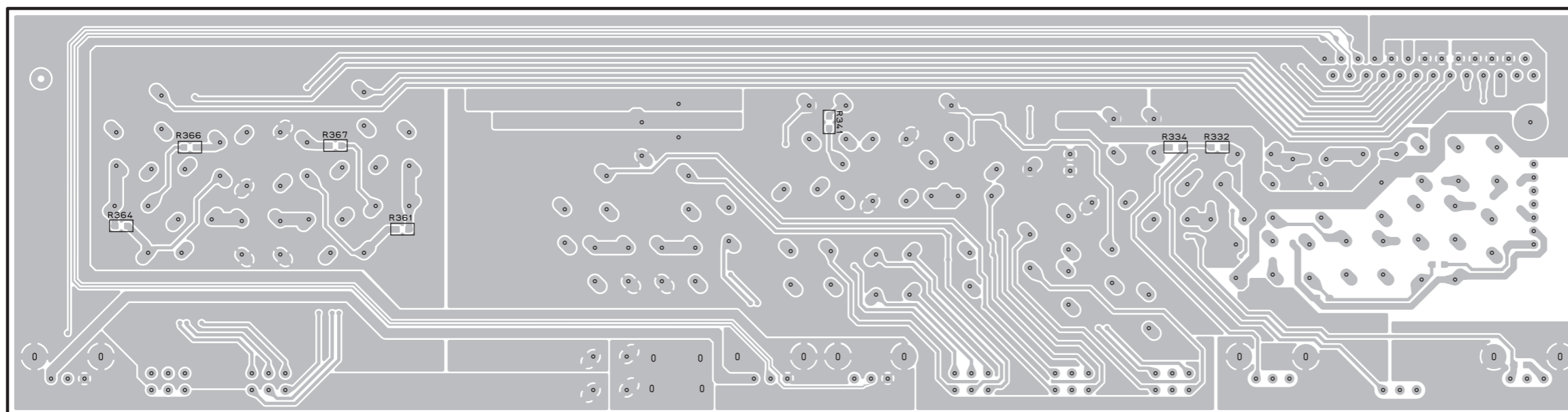
OPERATION (4) (CB901)

**● Semiconductor Location**

Ref. No.	Location
IC300	F2
IC301	F2
IC303	D2
IC305	B2
IC307	C2

MUSIC BALANCE — MUSIC TONE —  
 VR300 VR307 VR306  
 BASS TREBLE  
 ST301  
 VR301 VR302 VR310 VR316 VR311 VR304 VR303  
 DELAY REPEAT BASS MID TREBLE MIC 1 MIC 2  
 — MIC ECHO — — MIC TONE — — MIC VOL —

FUNCTION (2) (Side B)



1

FUNCTION (3) (Side A)

FUNCTION (3) (Side B)

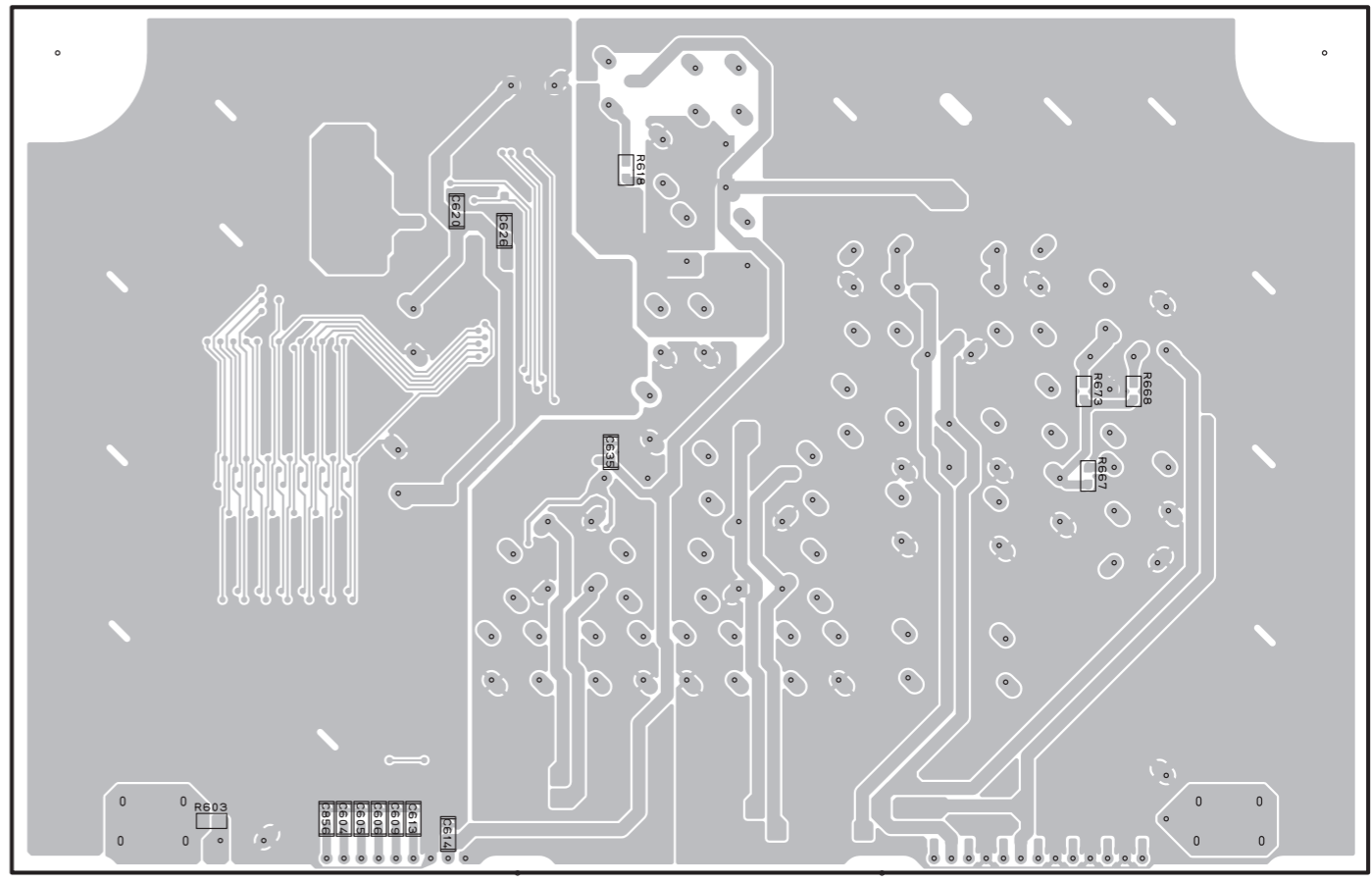
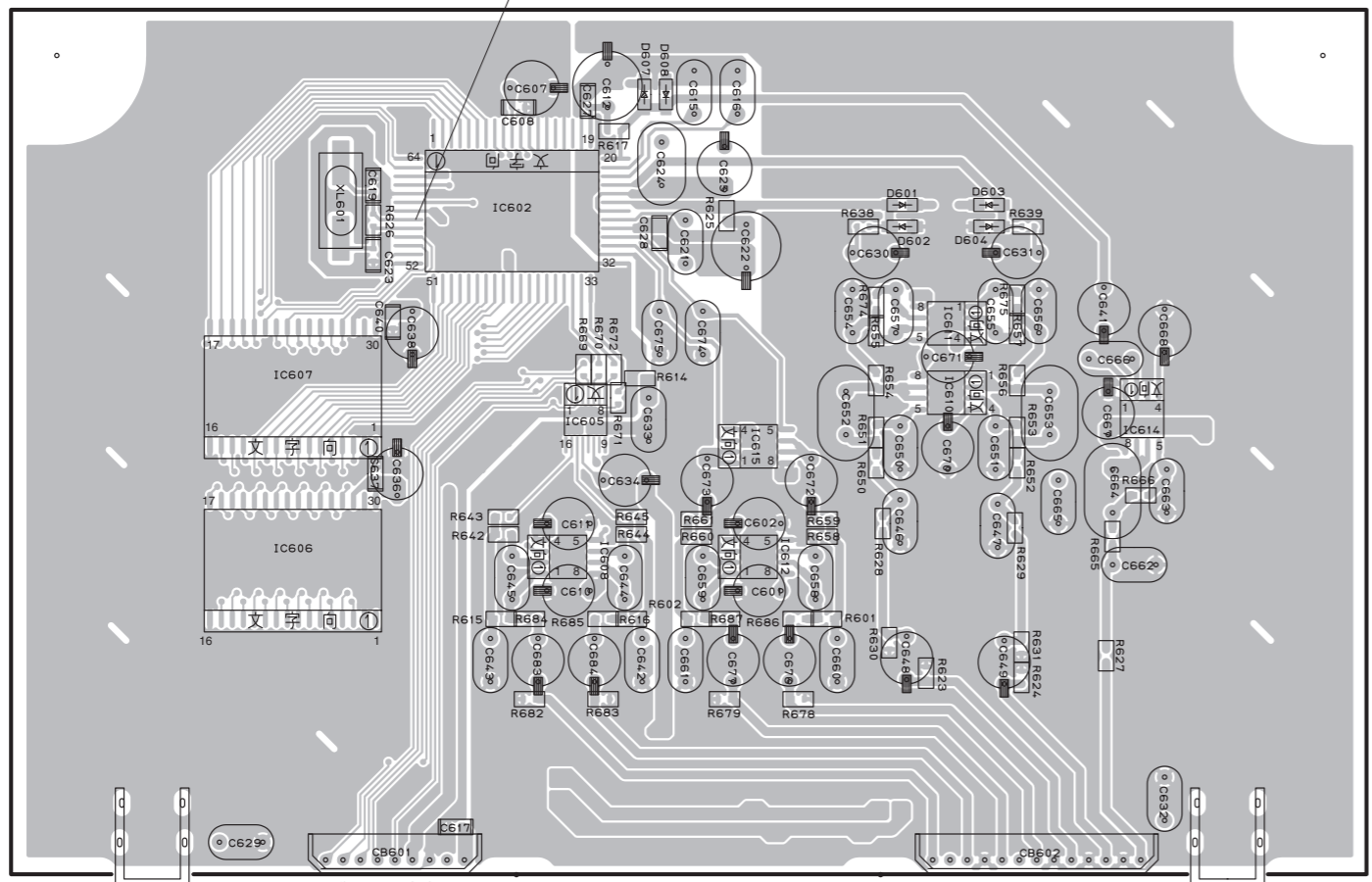
2

3

4

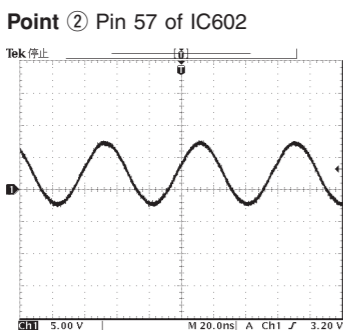
5

6



FUNCTION (1) (CB12)

FUNCTION (1) (CB19)

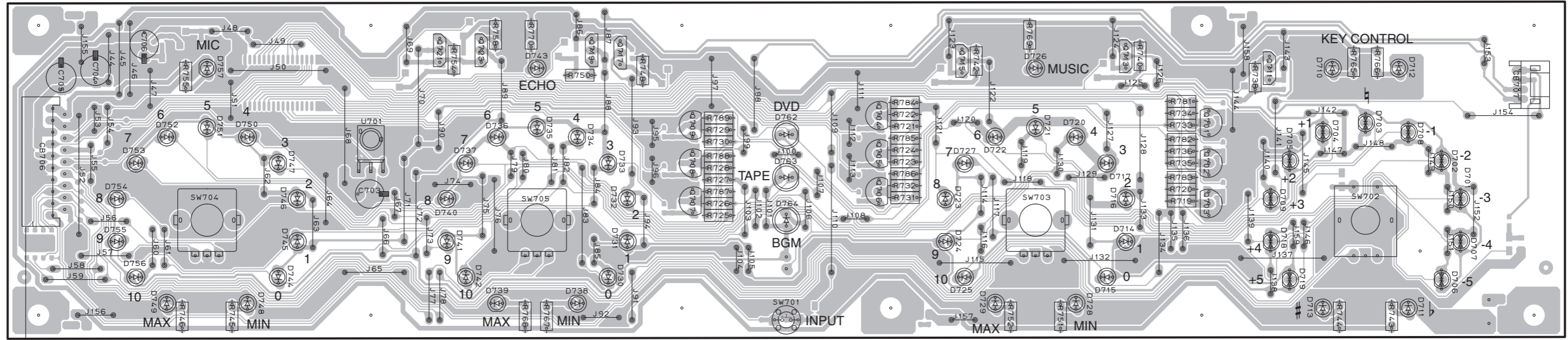


● Semiconductor Location

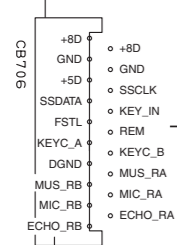
Ref. No.	Location
D601	C2
D602	C2
D603	C2
D604	C2
D607	C1
D608	C1
IC602	B2
IC605	B2
IC606	B3
IC607	B2
IC608	B3
IC610	C2
IC611	C2
IC612	C3
IC614	D2
IC615	C2

OPERATION (2)

(Side A)



RV-LED-OUT  
RKEY-OUT  
RV-LED-G  
RV-LED-R



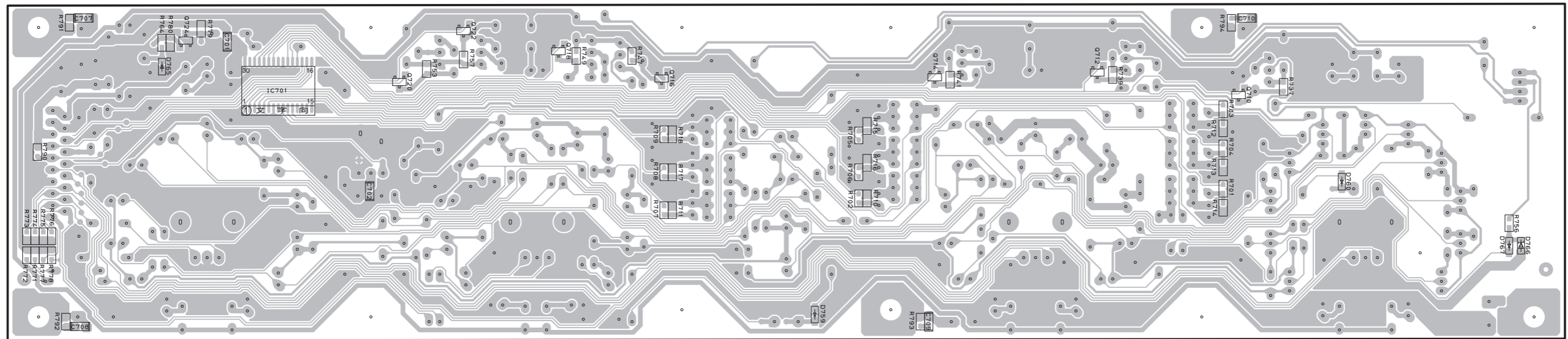
MIC  
ECHO  
MUSIC  
KEY CONTROL  
OPERATION (6)  
(W702)

● Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D701	H2	D713	G2	D725	F2	D737	C2	D749	B2	D763	E2	Q707	D2
D702	H2	D714	F2	D726	F1	D738	D2	D750	B2	D764	E2	Q708	D2
D703	G2	D715	F2	D727	F2	D739	C2	D751	B2	D765	B4	Q709	D2
D704	G2	D716	F2	D728	F2	D740	C2	D752	B2	D766	H5	Q710	G4
D705	G2	D717	F2	D729	F2	D741	C2	D753	B2	D767	H5	Q711	G1
D706	H2	D718	G2	D730	D2	D742	C2	D754	B2	IC701	B4	Q712	F4
D707	H2	D719	G2	D731	D2	D743	D1	D755	B2	Q701	G2	Q713	F1
D708	H2	D720	F2	D732	D2	D744	B2	D756	B2	Q702	G2	Q714	E4
D709	G2	D721	F2	D733	D2	D745	B2	D757	B1	Q703	G2	Q715	E1
D710	G1	D722	F2	D734	D2	D746	B2	D759	E5	Q704	E2	Q716	D4
D711	H2	D723	E2	D735	D2	D747	B2	D760	G5	Q705	E2	Q717	D1
D712	H1	D724	E2	D736	C2	D748	B2	D762	E2	Q706	E2	Q718	D4

OPERATION (2)

(Side B)

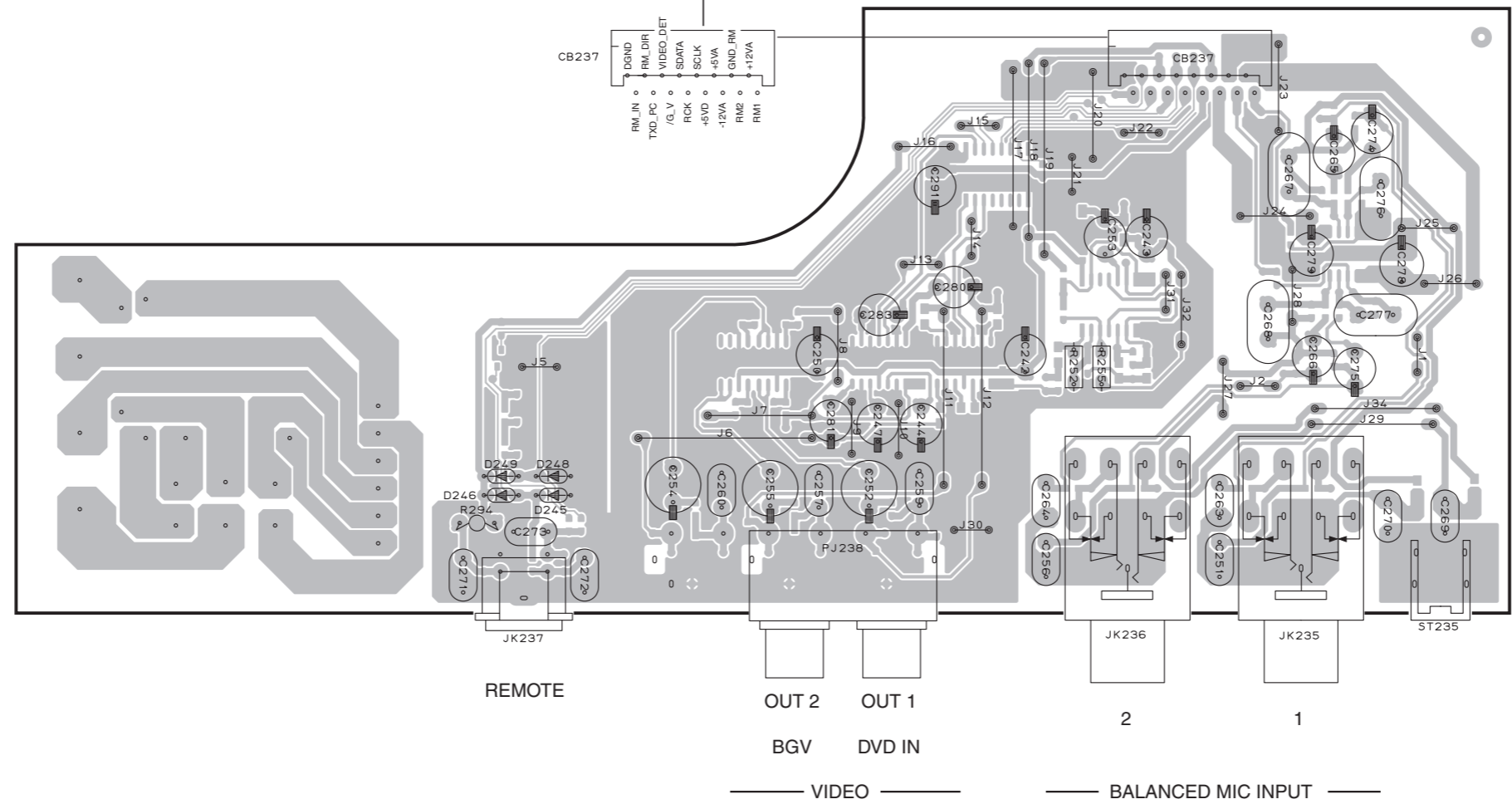
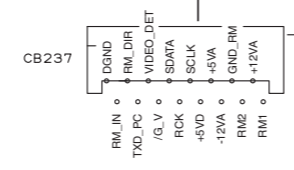




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OPERATION (1) (Side A)

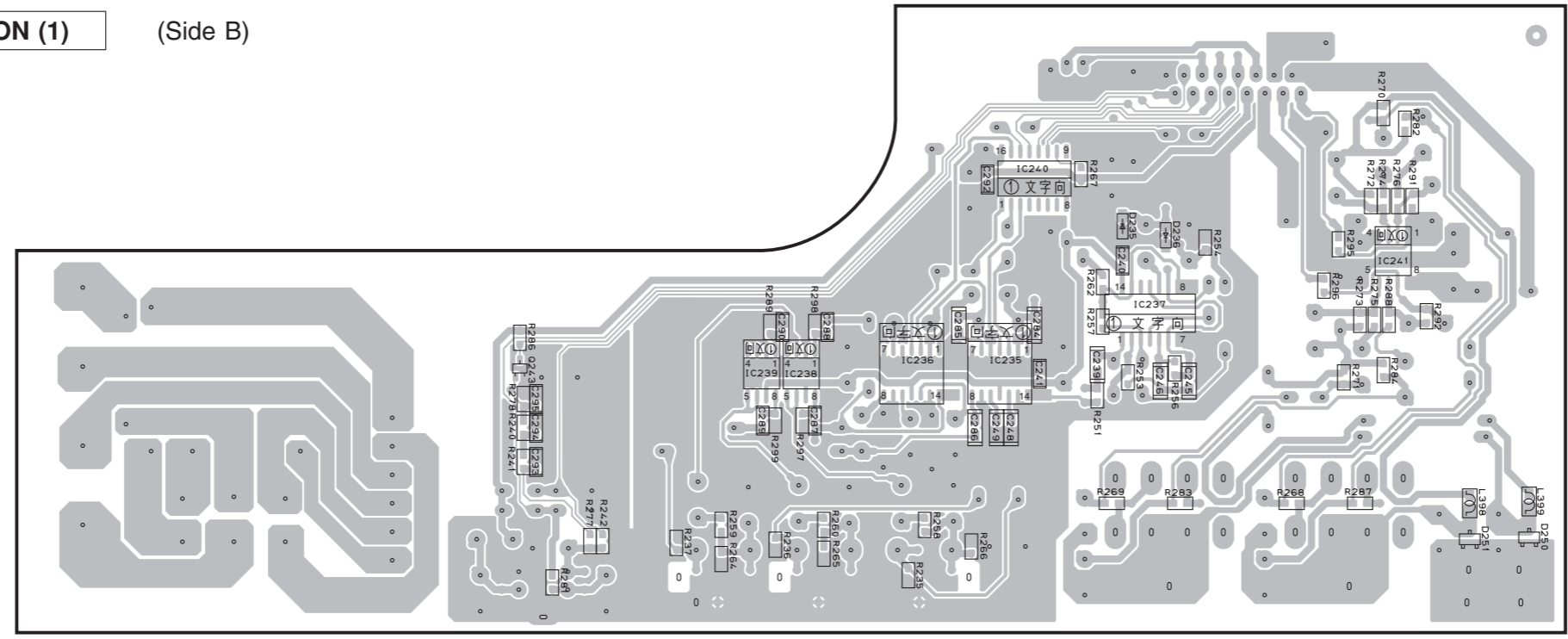
FUNCTION (1) (CB21)



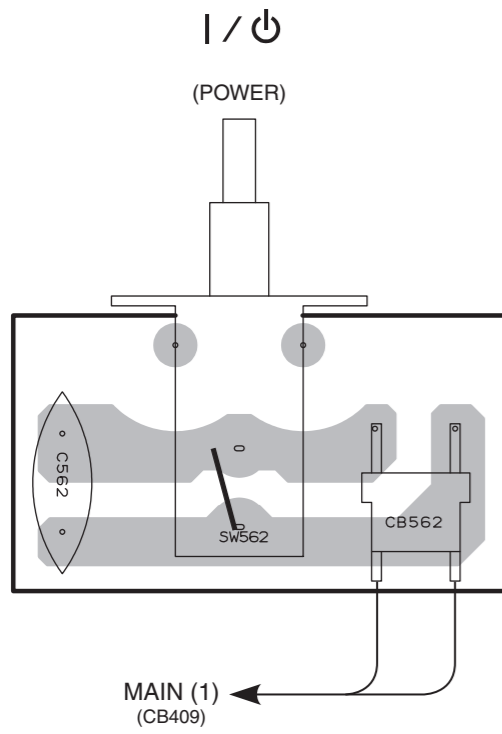
• Semiconductor Location

Ref. No.	Location
D235	E5
D236	E5
D245	D3
D246	C3
D248	D3
D249	C3
D250	G5
D251	F5
IC235	E5
IC236	E5
IC237	E5
IC238	D5
IC239	D5
IC240	E4
IC241	F5
Q243	C5

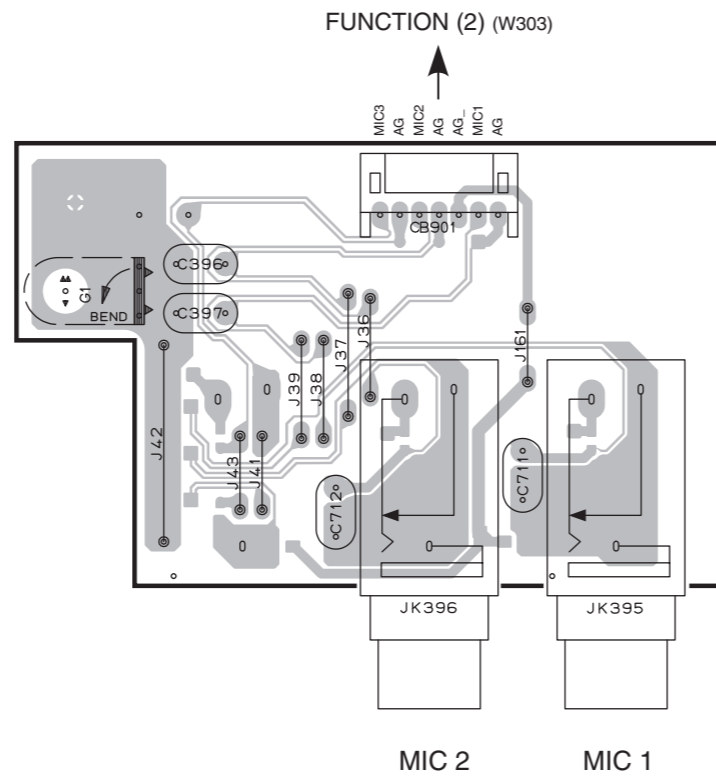
OPERATION (1) (Side B)



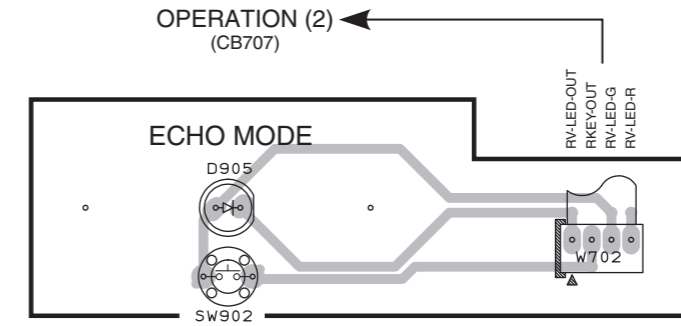
OPERATION (3) (Side A)



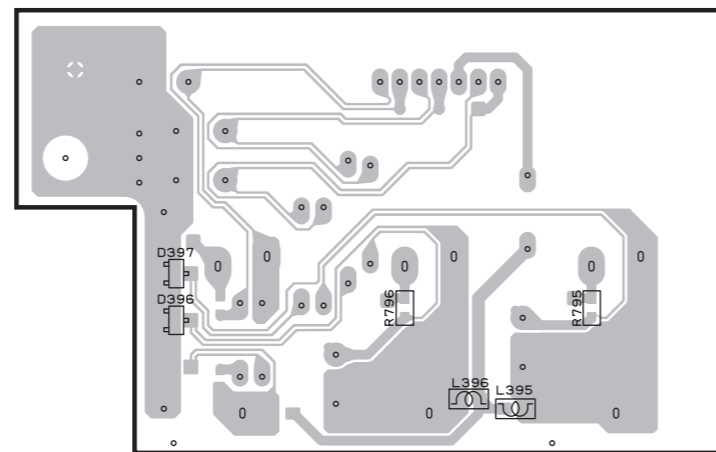
OPERATION (4) (Side A)



OPERATION (6) (Side A)



OPERATION (4) (Side B)



● Semiconductor Location

Ref. No.	Location
D396	D5
D397	D4
D905	F2

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### MAIN (1) (Side A)

#### ● Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D401	D3	IC401	E1
D402	E3	IC402	D4
D403	D3	Q401	D3
D404	D3	Q402	E3
D405	F3	Q403	D3
D406	F3	Q404	E3
D407	E2	Q405	D3
D408	G2	Q406	F3
D409	C2	Q407	D3
D410	E2	Q408	E3
D411	E2	Q409	D3
D412	C2	Q410	E3
D413	G2	Q411	D3
D414	E2	Q412	F3
D415	D2	Q413	D3
D416	D2	Q414	D3
D417	D2	Q415	F3
D418	C2	Q416	E3
D419	C2	Q417N	E1
D420	C2	Q417P	C1
D421	F2	Q420N	G1
D422	F2	Q420P	E1
D423	F2	Q421	C1
D424	E2	Q422	F1
D425	E2	Q423A	C1
D426	E2	Q423C	D1
D427	D2	Q426A	F1
D428	D2	Q426C	G1
D429	F2	Q427N	D1
D430	F2	Q427P	D1
D431	D2	Q430N	F1
D432	D2	Q430P	F1
D433	F2	Q431	C3
D434	F2	Q432	C3
D435	C3	Q433	C3
D436	C3	Q434	F3
D437	G3	Q435	G3
D438	G3		
D439	C3		
D440	C3		
D441	F5		
D442	G4		
D443	G3		
D444	G4		
D445	D2		
D446	F2		

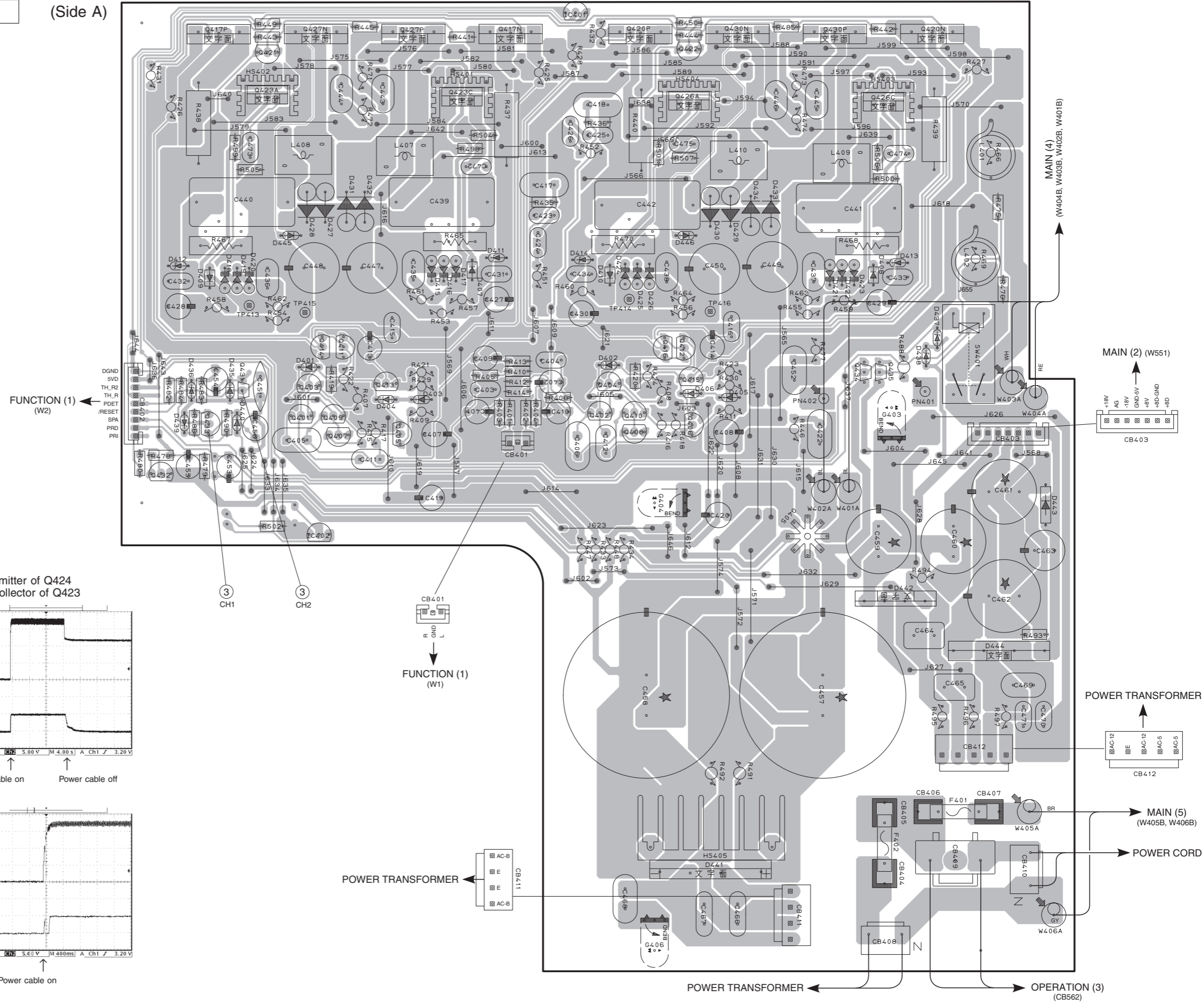
2

3

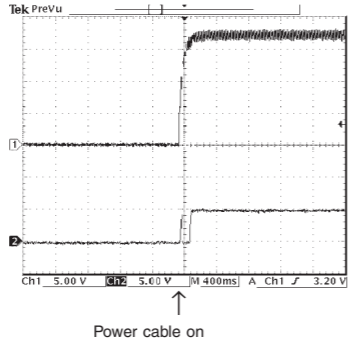
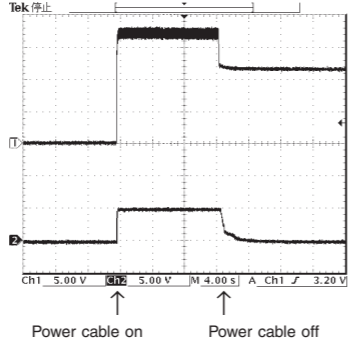
4

5

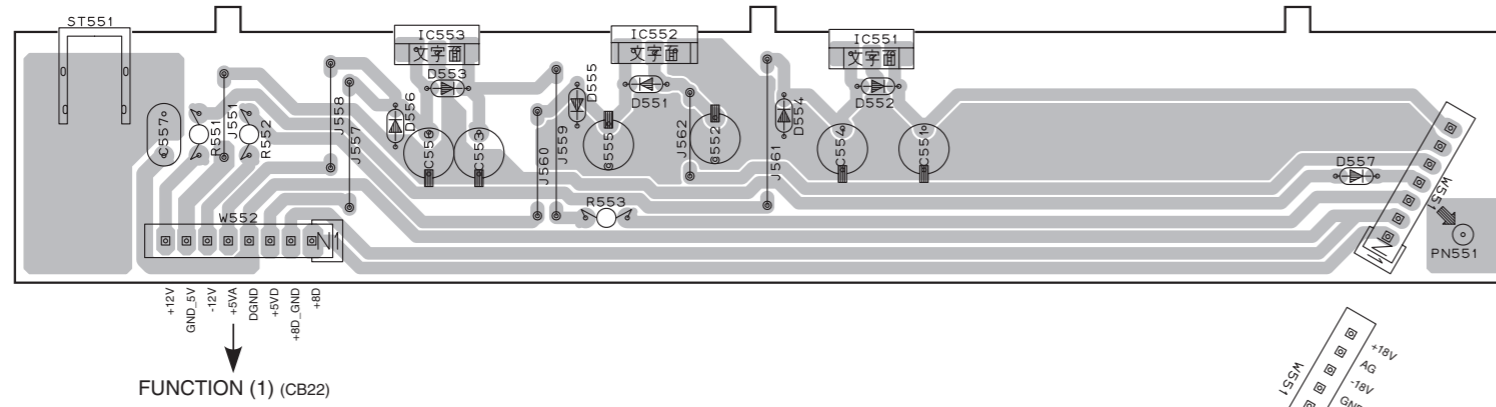
6



**Point ③**  
 CH 1 : Emitter of Q424  
 CH 2 : Collector of Q423

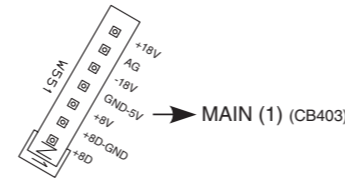


MAIN (2) (Side A)



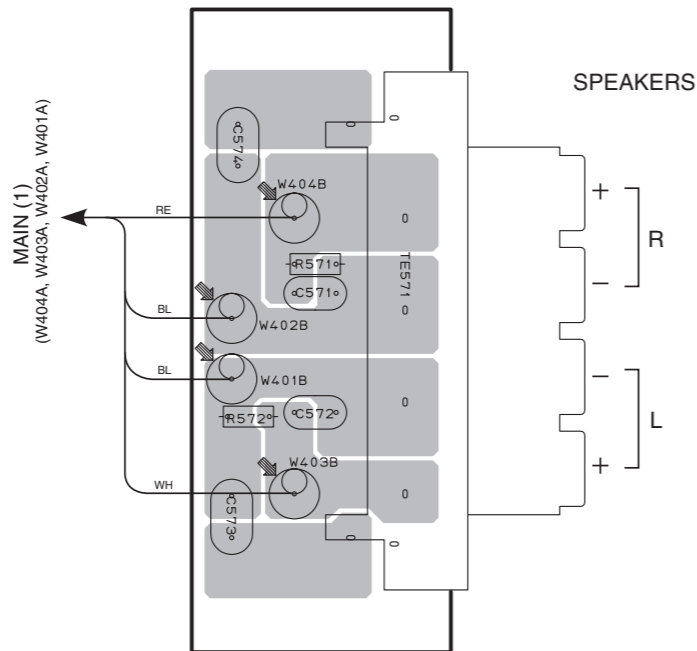
● Semiconductor Location

Ref. No.	Location
D551	C2
D552	D2
D553	C2
D554	C2
D555	C2
D556	B2
D557	E2
IC551	D1
IC552	C1
IC553	C1

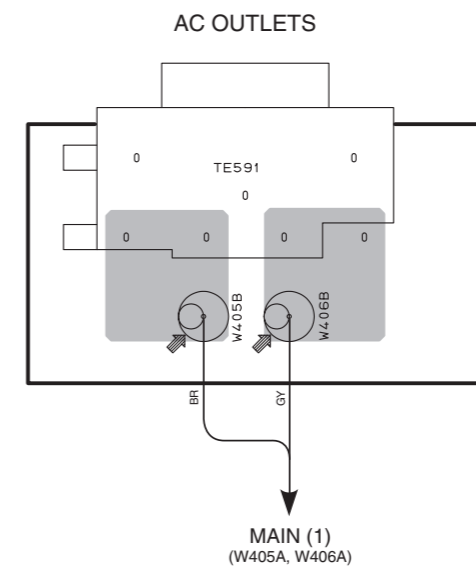


FUNCTION (1) (CB22)

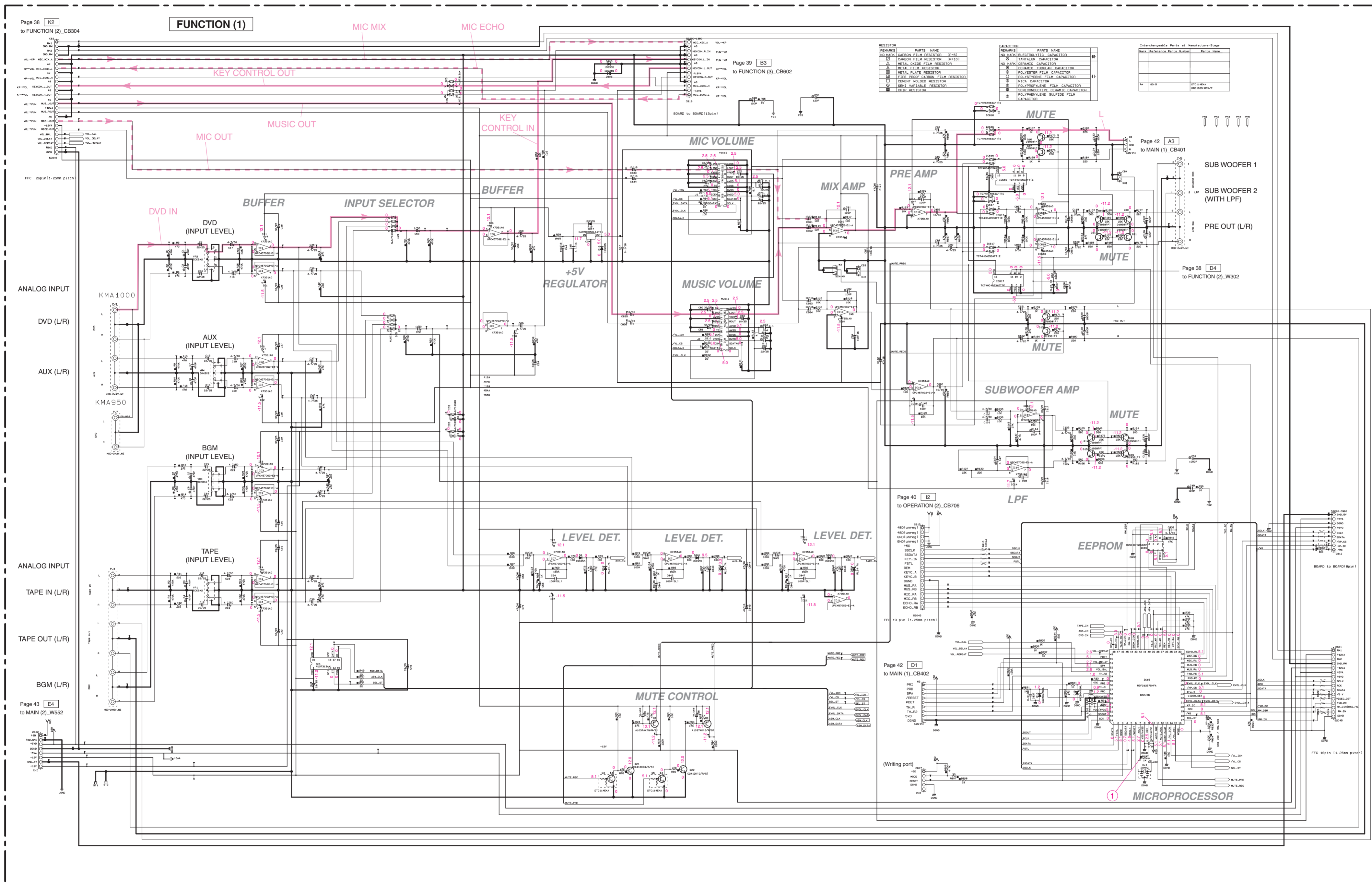
MAIN (4) (Side A)



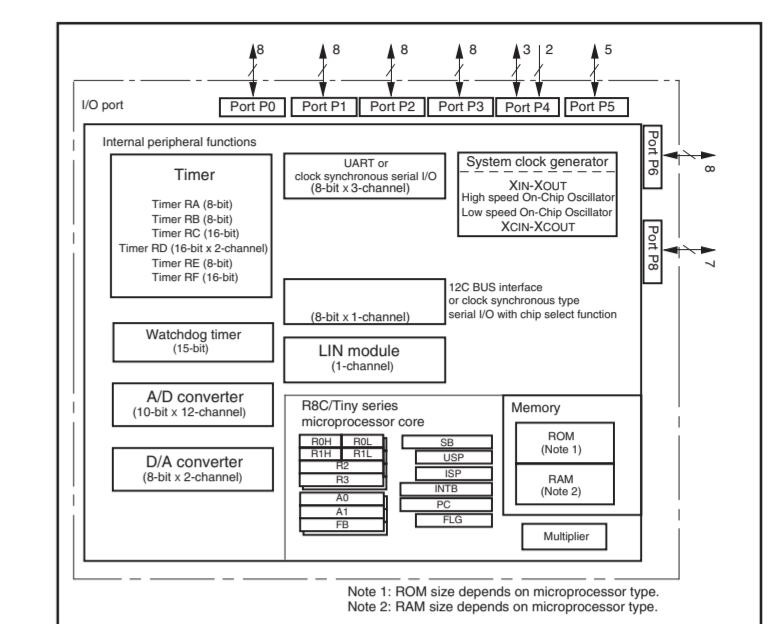
MAIN (5) (Side A)



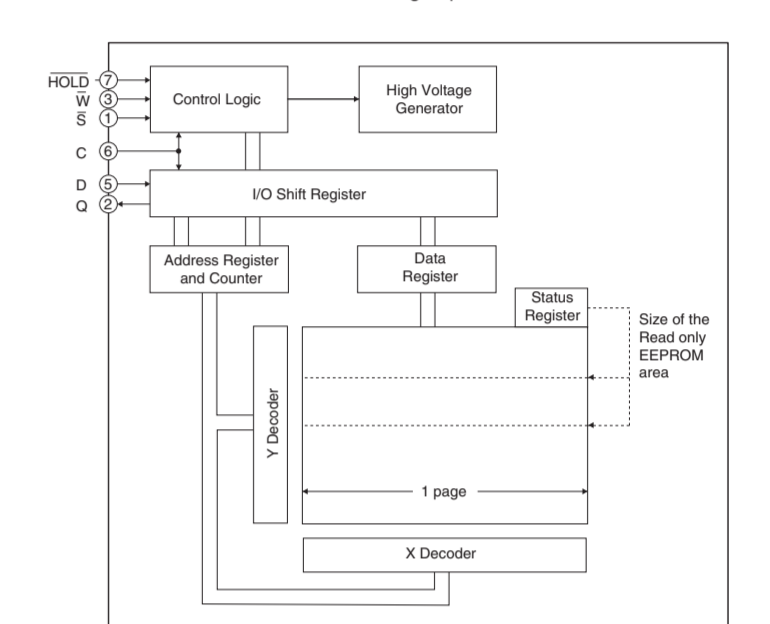
FUNCTION 1/3



IC15: R5F212A8SNFA  
Microprocessor



IC16: M95010-WMN6TP  
1 k-bit serial SPI bus EEPROM with high speed clock

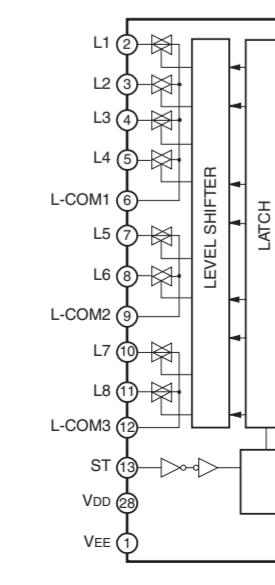


S	1	8	Vcc
Q	2	7	HOLD
W	3	6	C
Vss	4	5	D

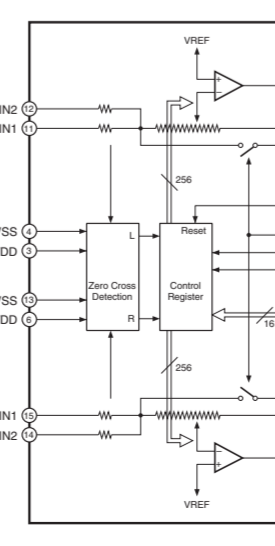
Page 38 [B2]  
to FUNCTION (3)\_CB601

Page 41 [K4]  
to OPERATION (1)\_CB237

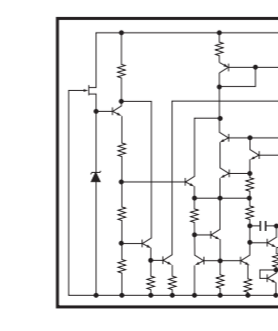
IC5: NJU7313AM  
Analog function switch



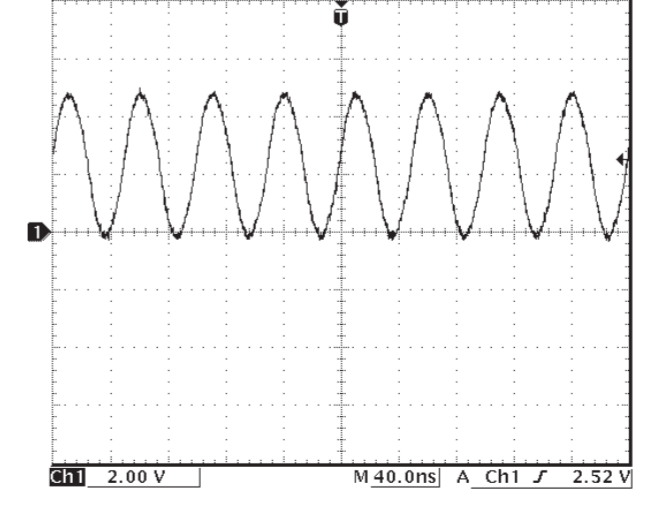
IC8, 9: YAC520-EE2  
Stereo digital volume controller



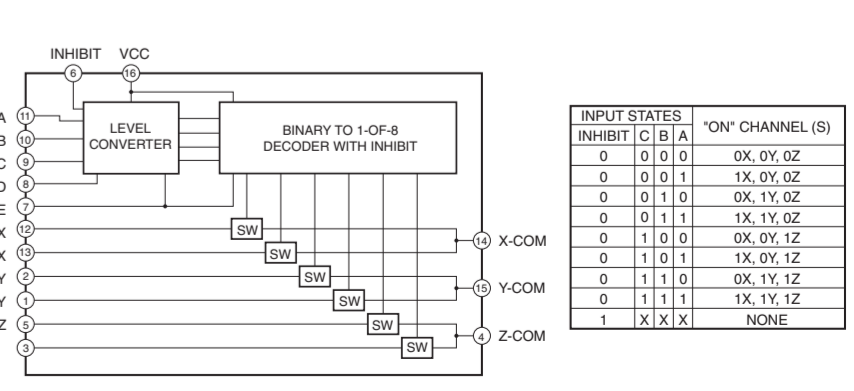
IC17: NJM78M05DL1A  
Voltage regulator



Point ① Pin 7 of IC15



IC616, 617: TC74HC4053AFT  
Analog multiplexer/demultiplexer

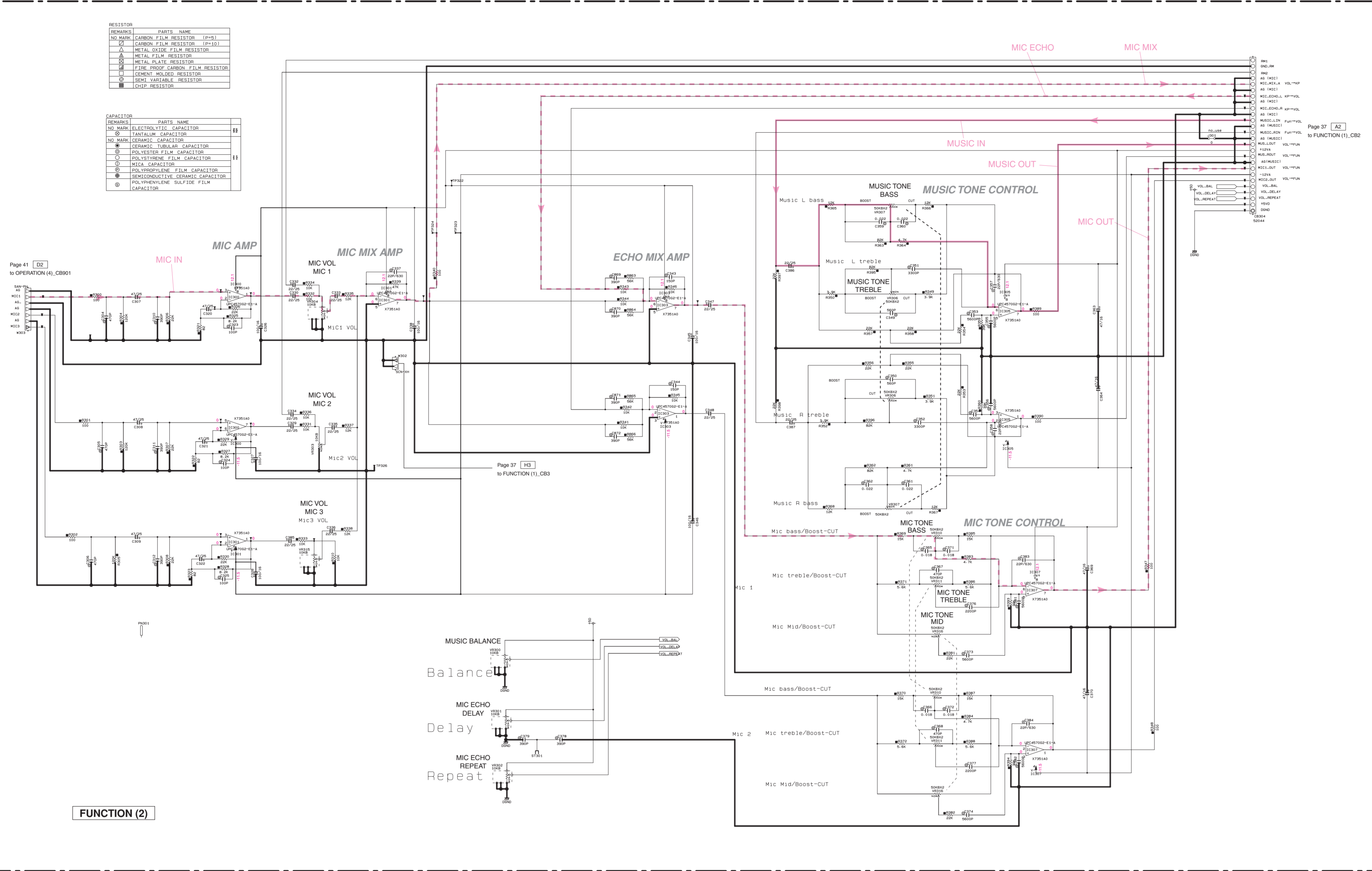


All voltages are measured with a 10M $\Omega$ /V DC electronic volt meter.  
 Components having special characteristics are marked  $\Delta$  and must be replaced with parts having specifications equal to those originally installed.  
 Schematic diagram is subject to change without notice.

FUNCTION 2/3

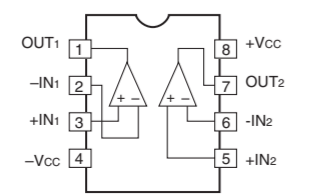
RESISTOR	
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P+9)
□	CARBON FILM RESISTOR (P+10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
■	METAL PLATE RESISTOR
▨	FINE PROOF CARBON FILM RESISTOR
□	CEMENT MOUNTED RESISTOR
◇	SEMI-VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR	
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
□	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
□	CERAMIC TUBULAR CAPACITOR
○	POLYESTER FILM CAPACITOR
○	POLYETHYLENE FILM CAPACITOR
○	MICA CAPACITOR
○	POLYPROPYLENE FILM CAPACITOR
○	SEMICONDUCTIVE CERAMIC CAPACITOR
○	POLYPHENYLENE SULFIDE FILM CAPACITOR



FUNCTION (2)

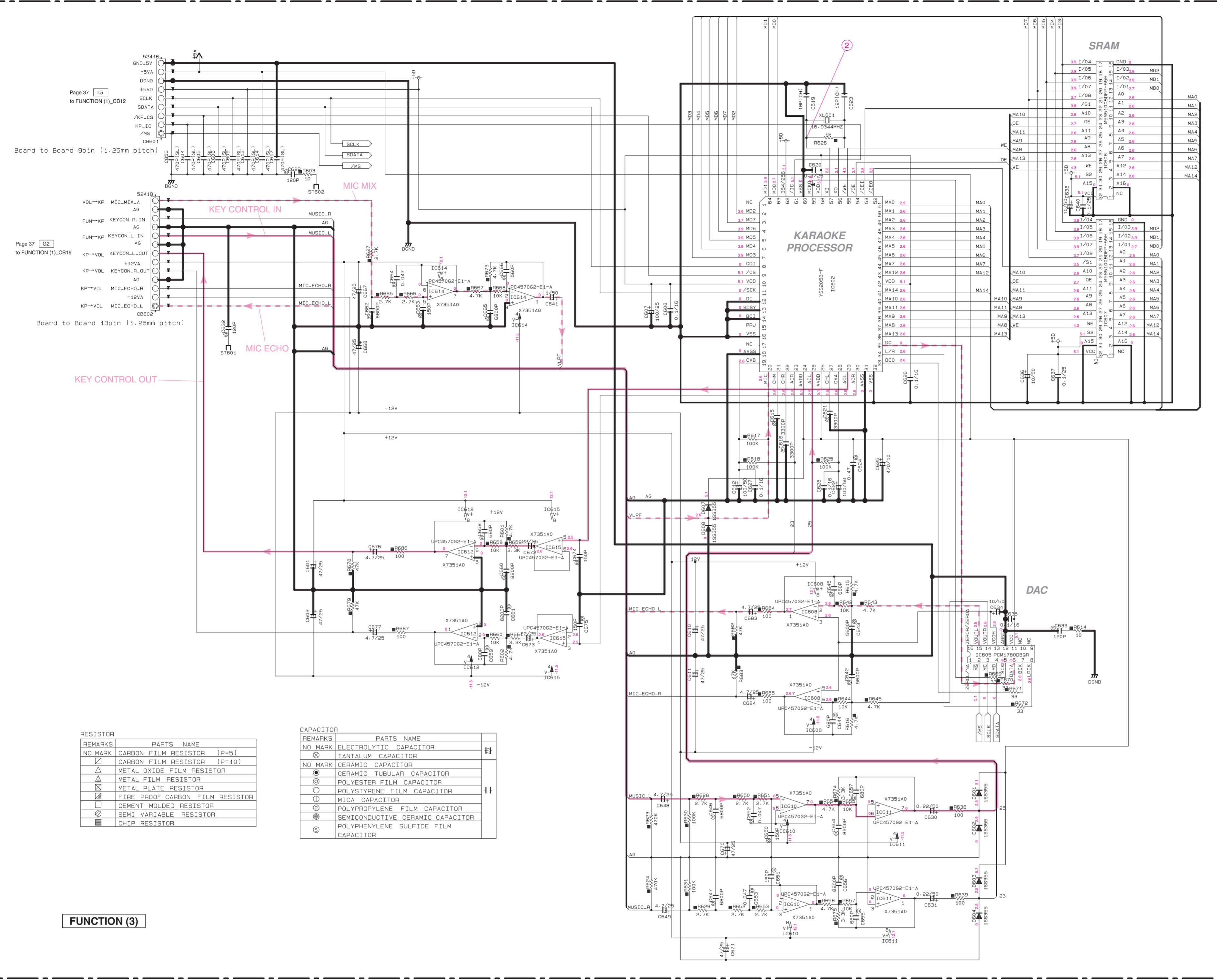
IC300, 301, 303, 305, 307: UPC4570G2-E1-A Dual operational amplifier



\* All voltages are measured with a 10MΩ/V DC electronic volt meter.  
 \* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.  
 \* Schematic diagram is subject to change without notice.

FUNCTION 3/3

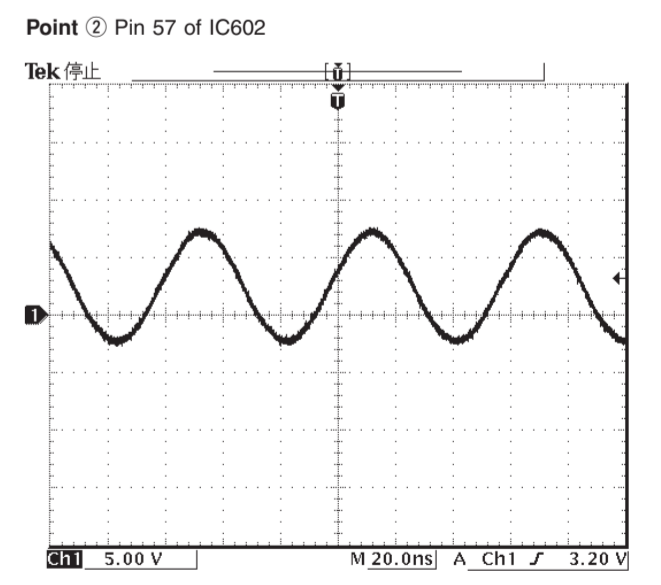
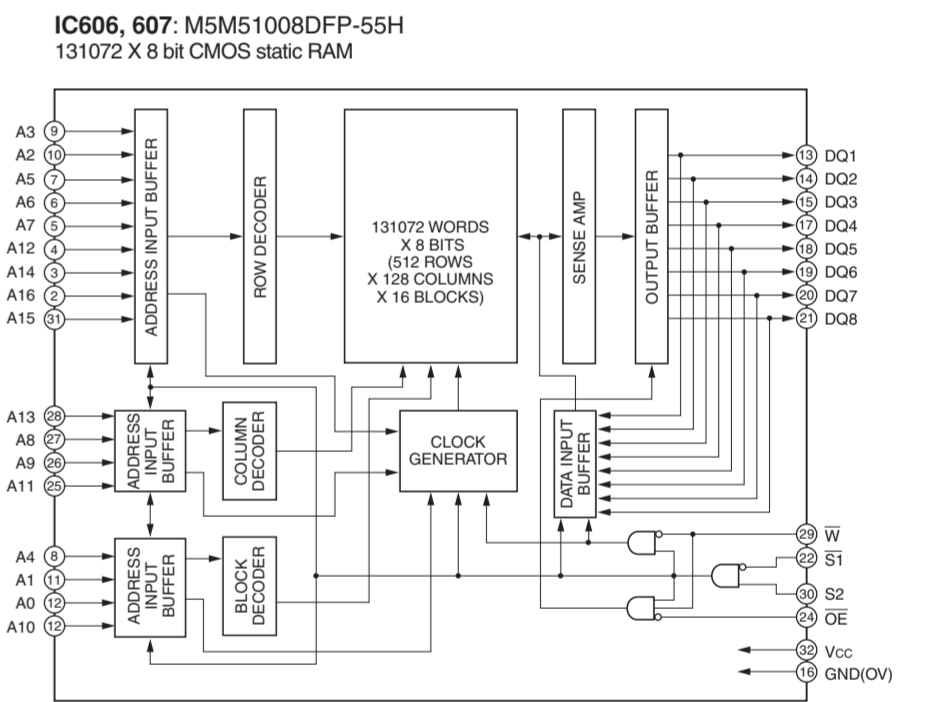
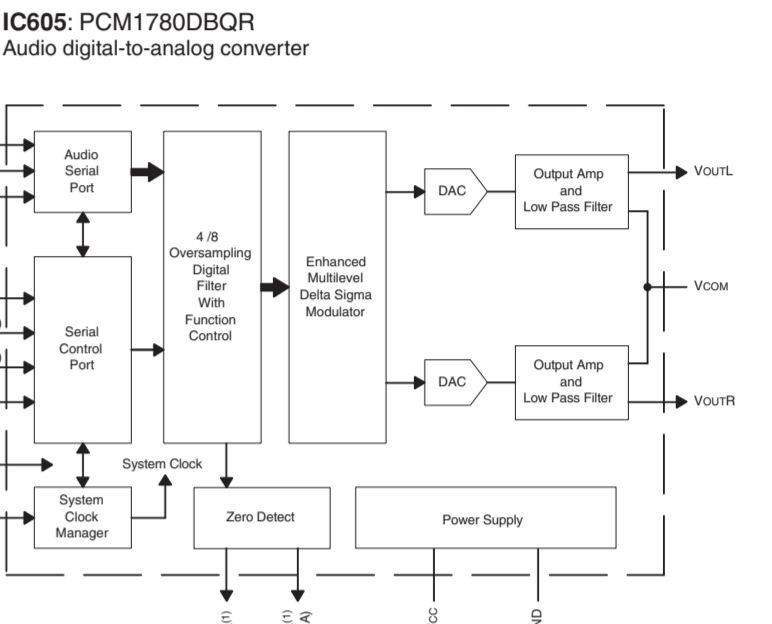
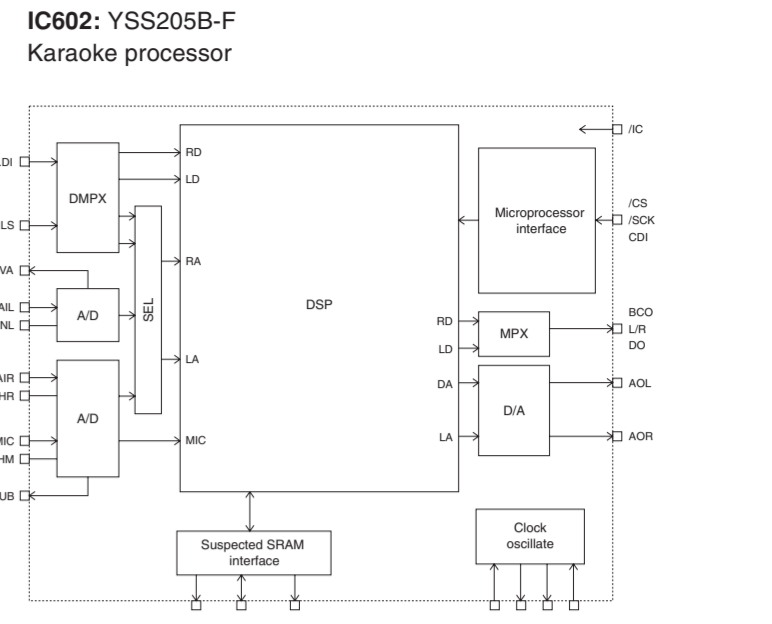
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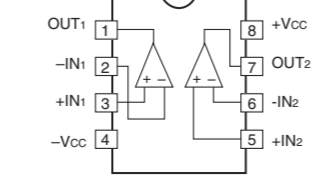
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
⊠	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
⊞	METAL FILM RESISTOR
⊞	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
⊞	CEMENT MOLDED RESISTOR
⊞	SEMI VARIABLE RESISTOR
⊞	CHIP RESISTOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊙	CERAMIC TUBULAR CAPACITOR
⊙	POLYESTER FILM CAPACITOR
⊙	POLYSTYRENE FILM CAPACITOR
⊙	MICA CAPACITOR
⊙	POLYPROPYLENE FILM CAPACITOR
⊙	SEMICONDUCTIVE CERAMIC CAPACITOR
⊙	POLYPHENYLENE SULFIDE FILM CAPACITOR

FUNCTION (3)



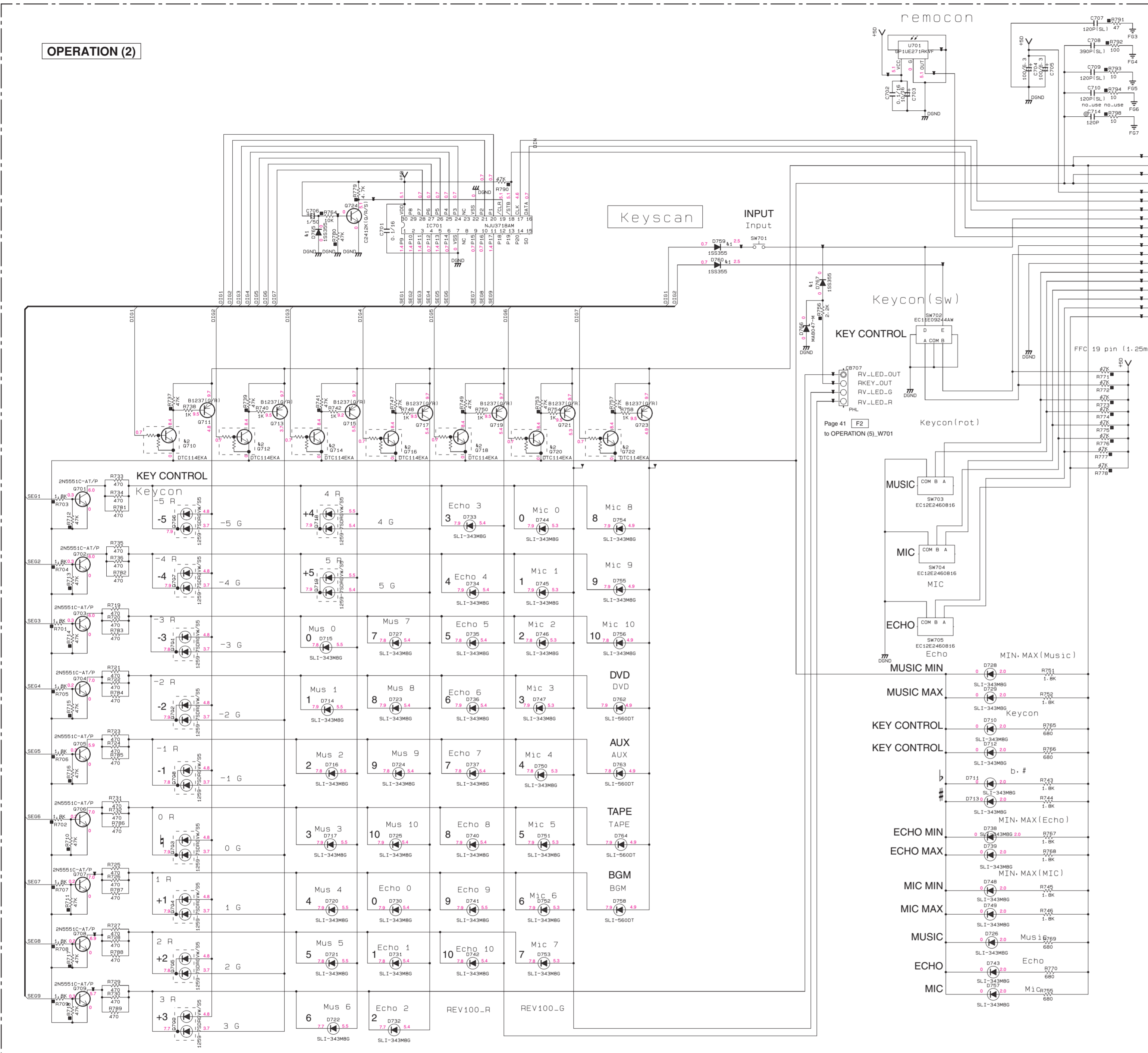
IC608, 610-612, 614, 615: UPC4570G2-E1-A Dual operational amplifier



All voltages are measured with a 10MΩ/V DC electronic volt meter.  
 Components having special characteristics are marked △ and must be replaced with parts having specifications equal to those originally installed.  
 Schematic diagram is subject to change without notice.

OPERATION 1/2

OPERATION (2)



RESISTOR

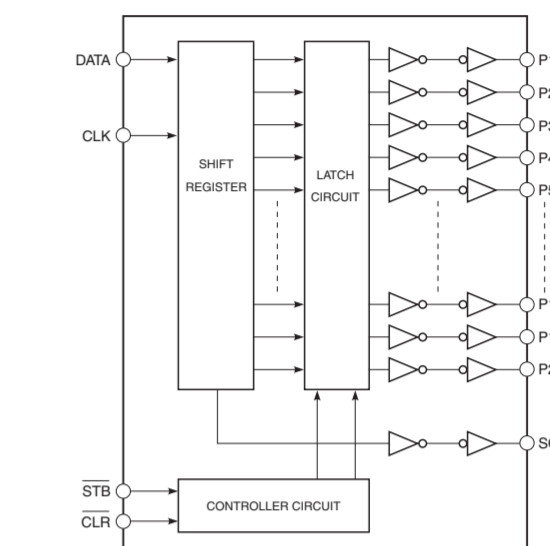
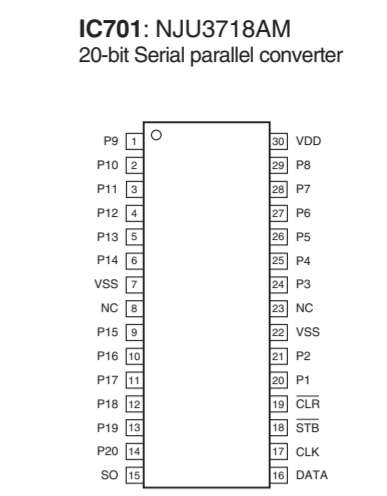
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
□	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
▣	METAL PLATE RESISTOR
▤	FIRE PROOF CARBON FILM RESISTOR
▥	CEMENT MOLDED RESISTOR
▧	SEMI-VARIABLE RESISTOR
▨	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
●	CERAMIC TUBULAR CAPACITOR
○	POLYESTER FILM CAPACITOR
⊙	POLYSTYRENE FILM CAPACITOR
⊚	MICA CAPACITOR
⊛	POLYPROPYLENE FILM CAPACITOR
⊜	SEMICONDUCTIVE CERAMIC CAPACITOR
⊝	POLYPHENYLENE SULFIDE FILM CAPACITOR

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
k1	0235-236-759-760-765-767	ISS355
k2	0710-712-714-716-718-720	OTC114EKA
	722	KRC1025-RH/P
k3	0245-246-248-249	HSS104
		ISS176
		ISS133



Page 37 H6 to FUNCTION (1)\_CB15

Page 41 F2 to OPERATION (5)\_W701

\* All voltages are measured with a 10MΩ/V DC electronic volt meter.  
 \* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.  
 \* Schematic diagram is subject to change without notice.



OPERATION 2/2

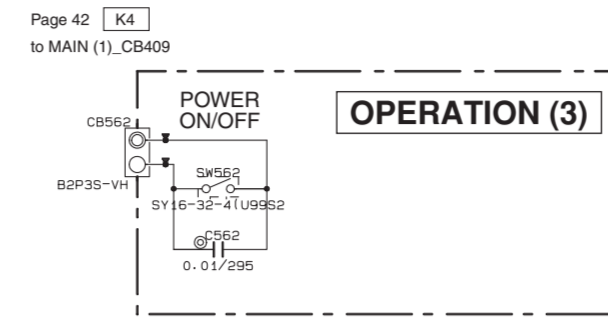
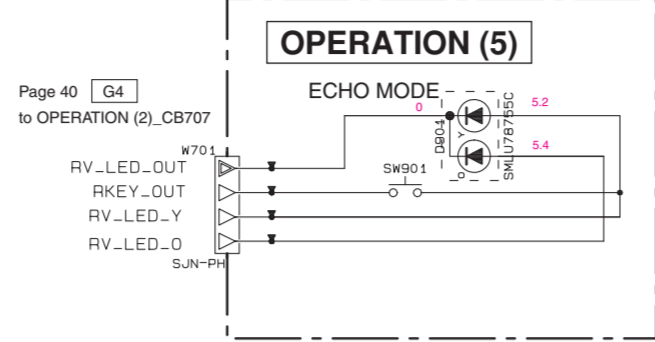
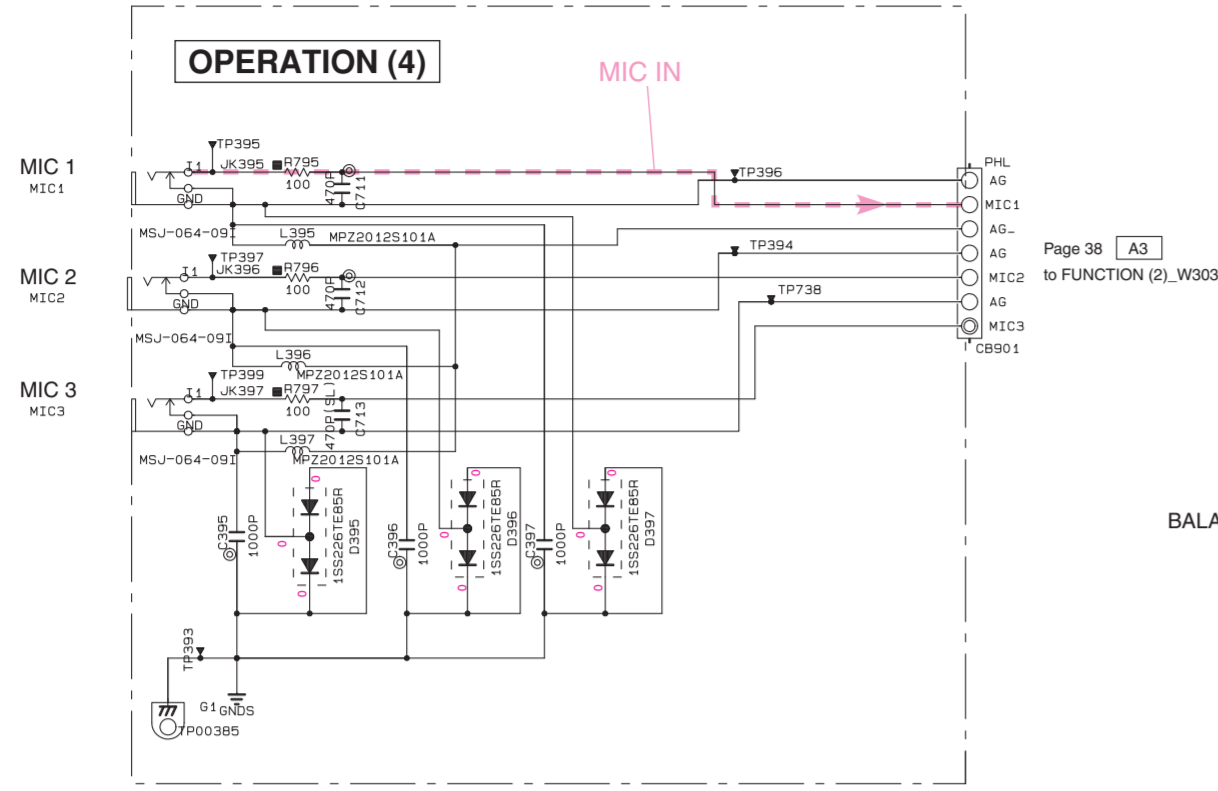
KMA-1000

KMA-1000/KMA-950

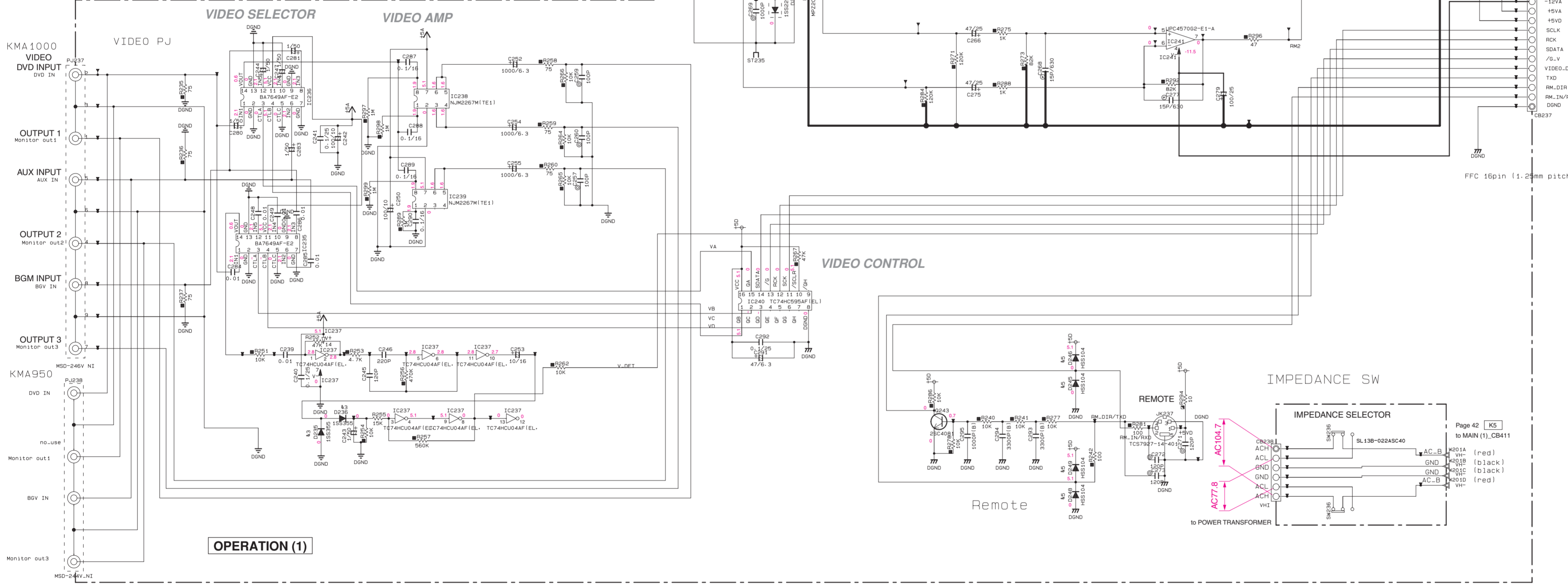
MIC JACK

REV\_SW (KMA1000)

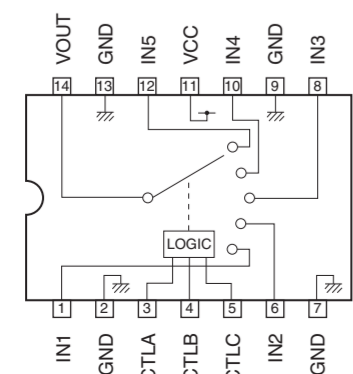
POWER\_SW



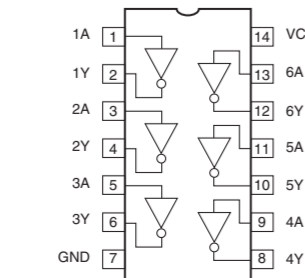
VIDEO



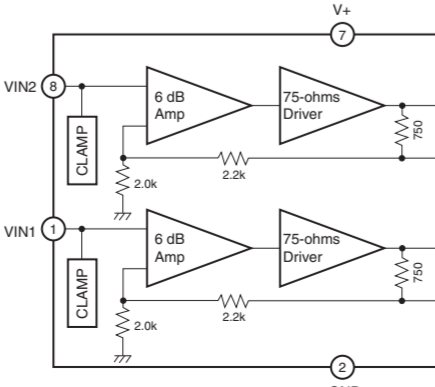
IC235, 236: BA7649AF-E2  
Video signal switcher for VTR, TV



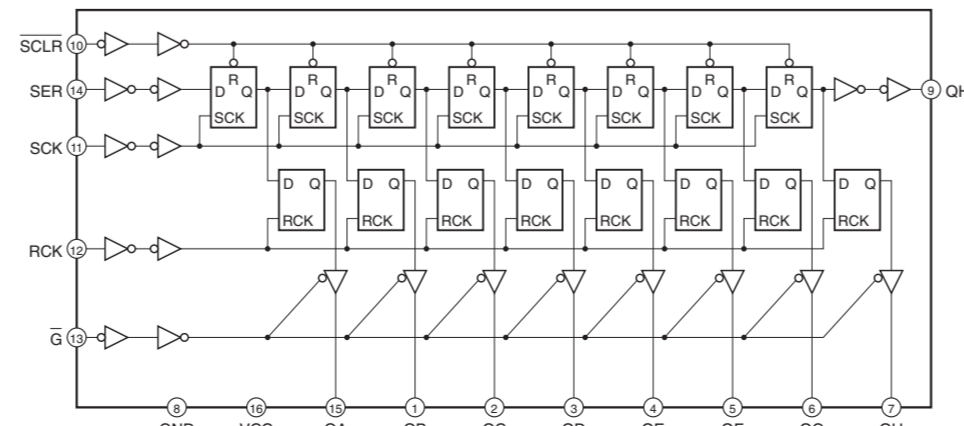
IC237: TC74HCU04FEL  
Hex inverters



IC238, 239: NJM2267M  
Dual video 6 dB amplifier with 75-ohms driver

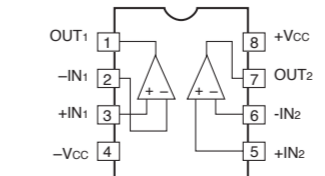


IC240: TC74HC595AF  
8-bit Shift register/latch (3-state)

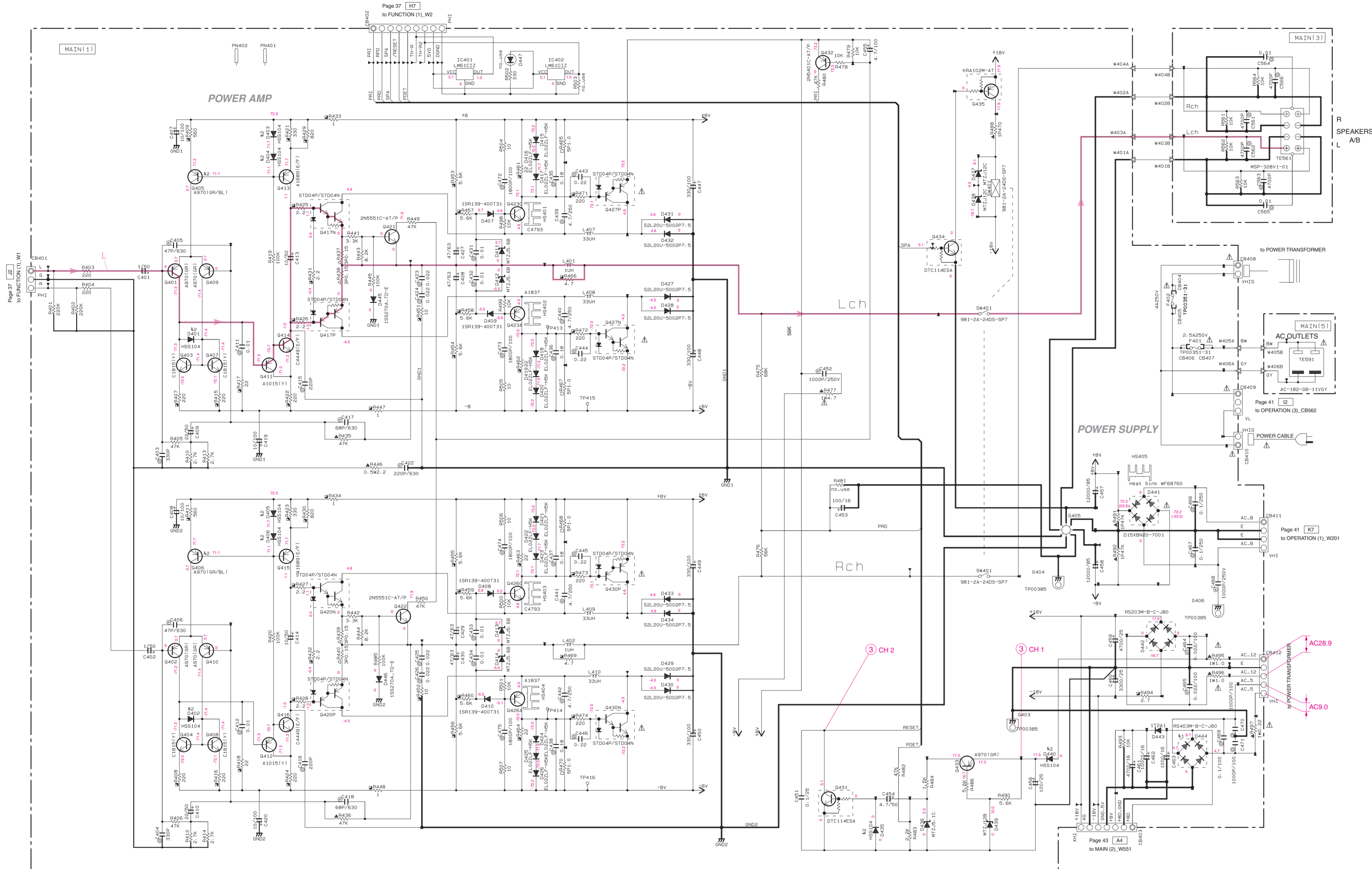


RCK	SCK	SCLR	Q	FUNCTION
X	X	X	1	QA thru QH = Tri-State
X	X	L	X	Shift Register cleared
X	X	H	X	Shift Register clocked
X	X	H	X	Contents of Shift Register transferred to output latches

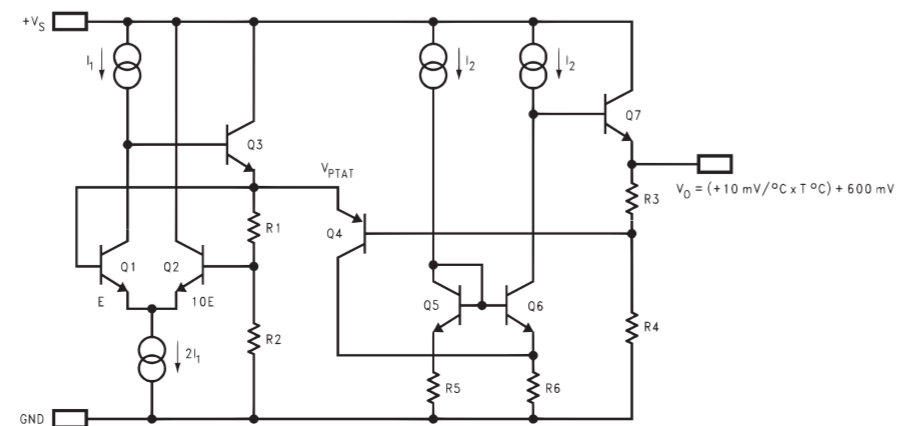
IC241: UPC4570G2-E1-A  
Dual operational amplifier



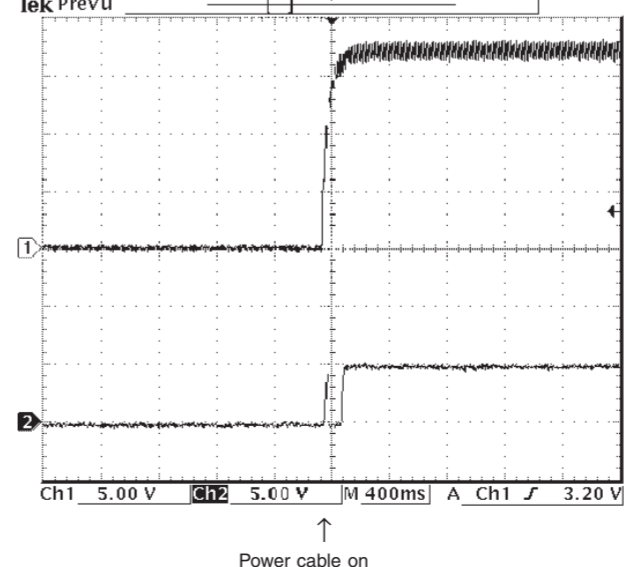
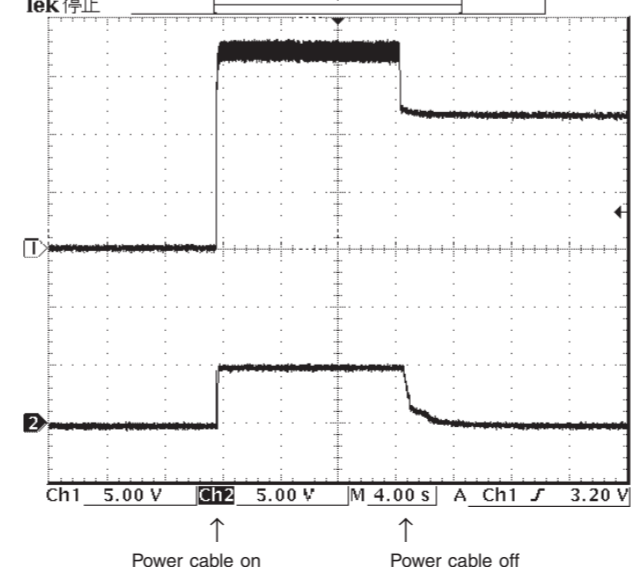
• All voltages are measured with a 10MΩ/V DC electronic volt meter.  
• Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.  
• Schematic diagram is subject to change without notice.



IC401, 402: LM61C1Z  
Temperature sensor



Point ③  
CH 1 : Emitter of Q433  
CH 2 : Collector of Q431  
Tek 停止



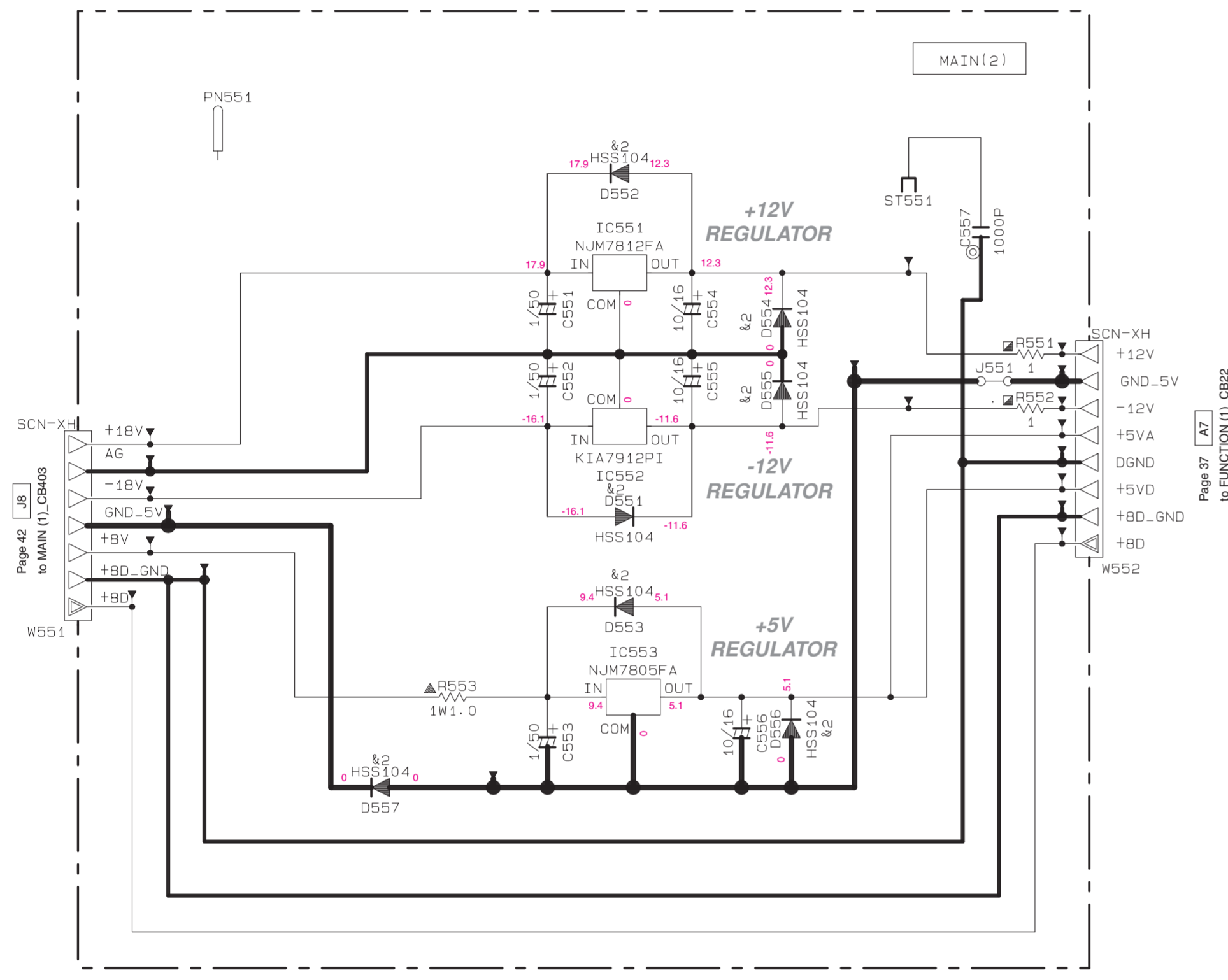
\* All voltages are measured with a 10MΩ/V DC electronic volt meter.  
\* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.  
\* Schematic diagram is subject to change without notice.

MAIN 2/2

KMA-1000

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&1	D444	RS403M-B-C-J80 TS4803G-07
&2	D401-406, 435, 440, 551-557	HSS104 1SS133 1SS176

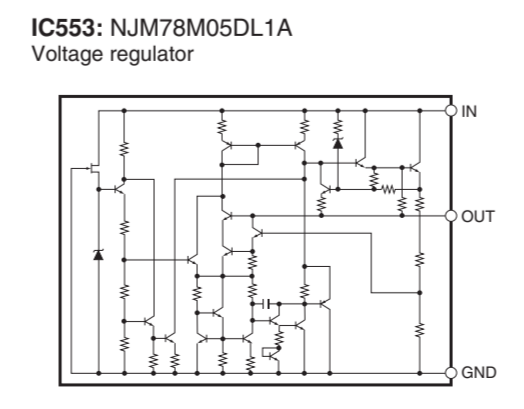
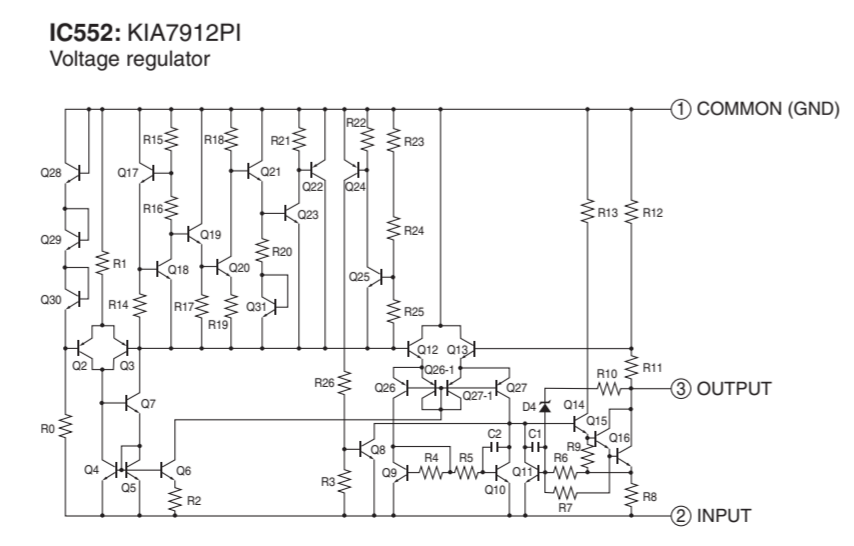
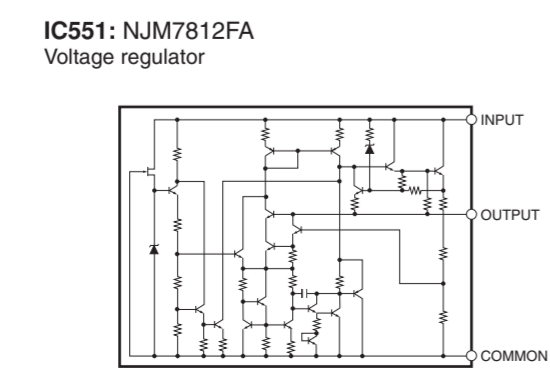


RESISTOR

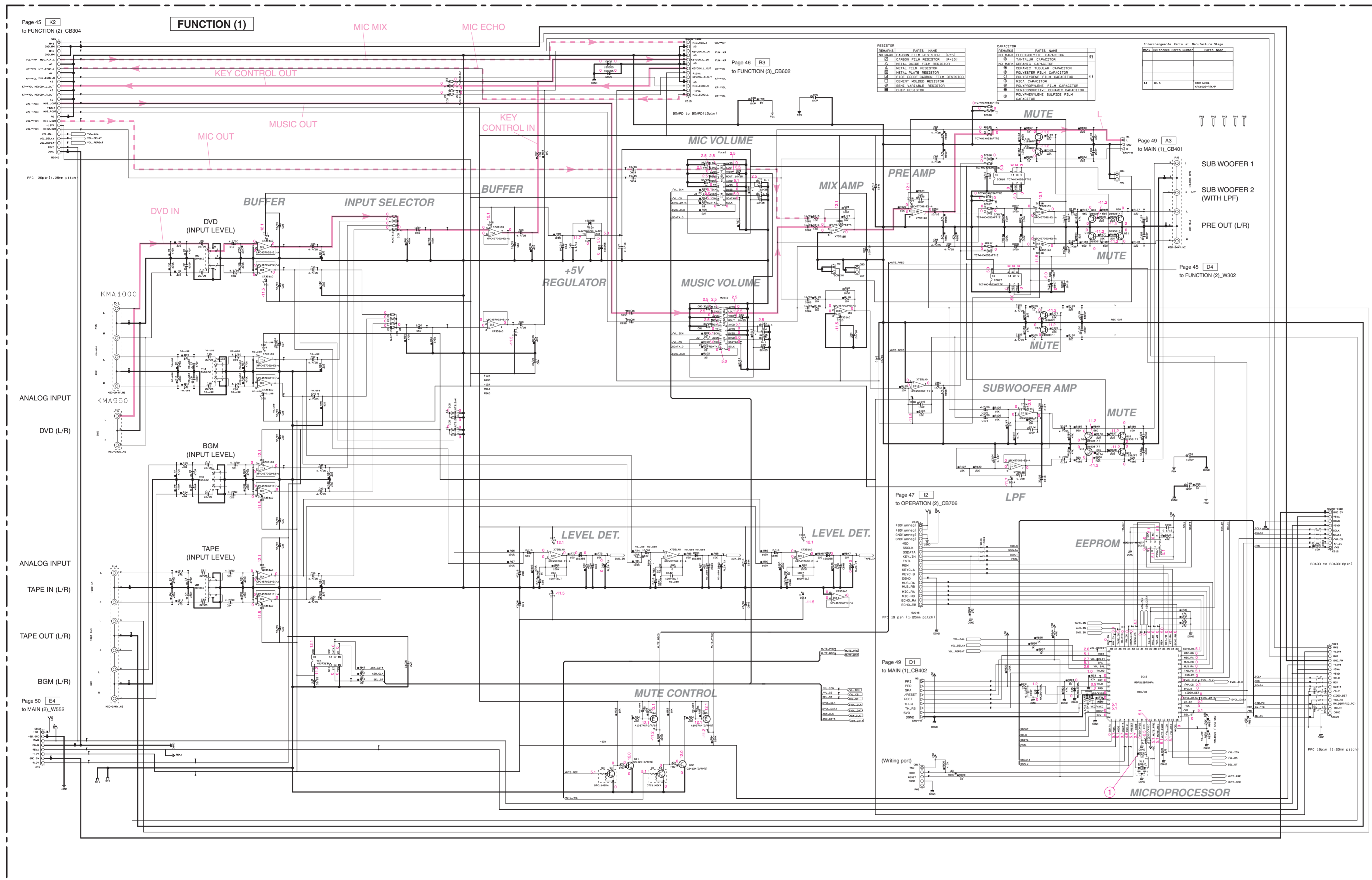
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
□	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊕	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

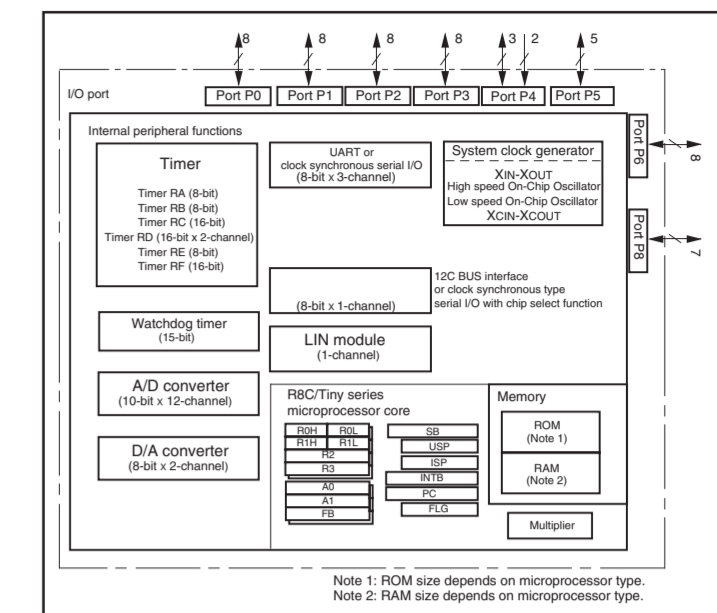
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
●	CERAMIC TUBULAR CAPACITOR
⊙	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⊖	MICA CAPACITOR
⊕	POLYPROPYLENE FILM CAPACITOR
⊗	SEMICONDUCTIVE CERAMIC CAPACITOR



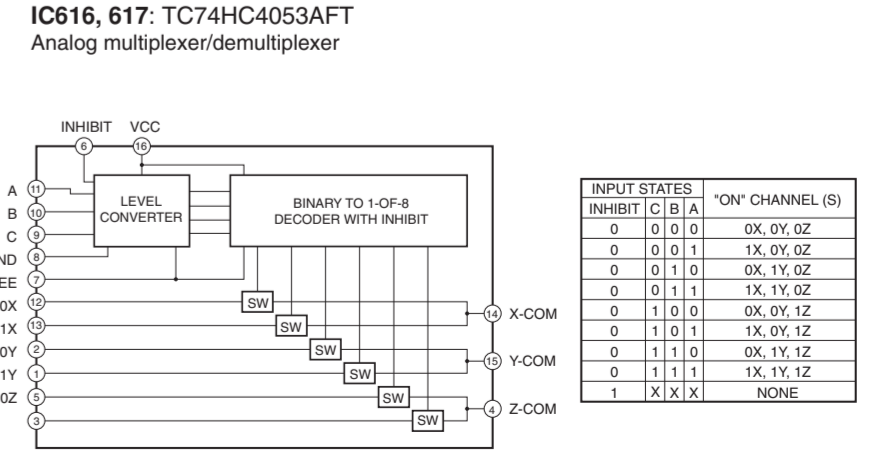
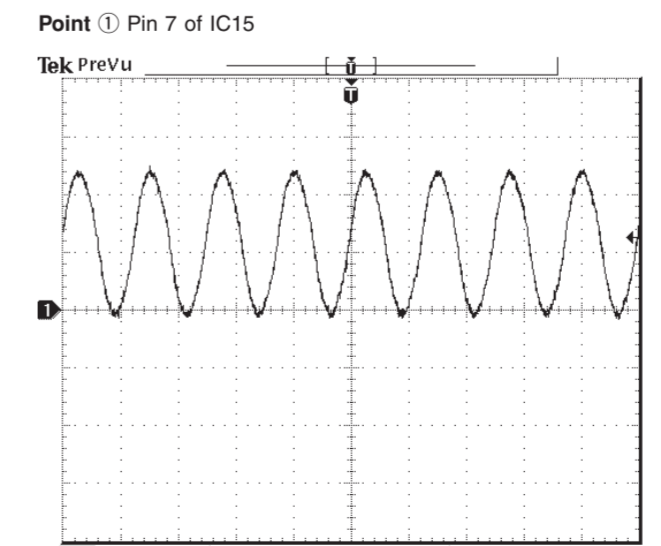
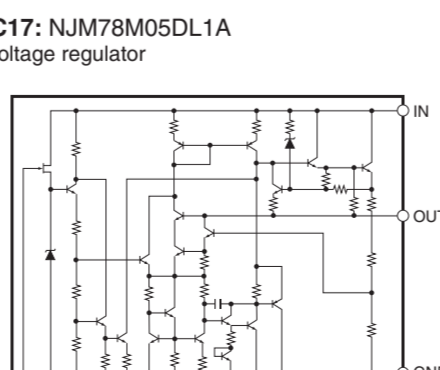
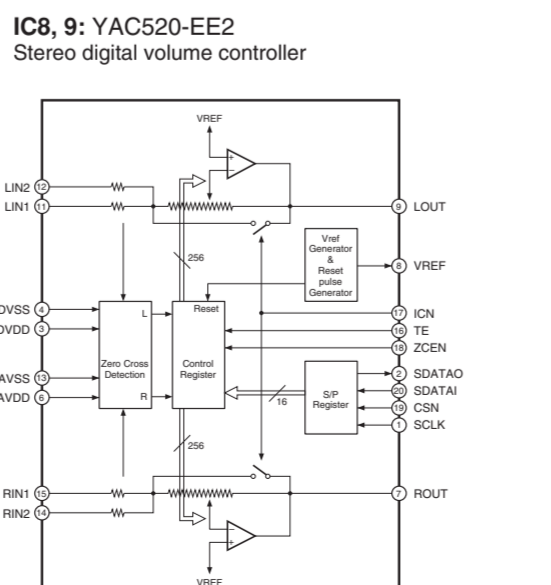
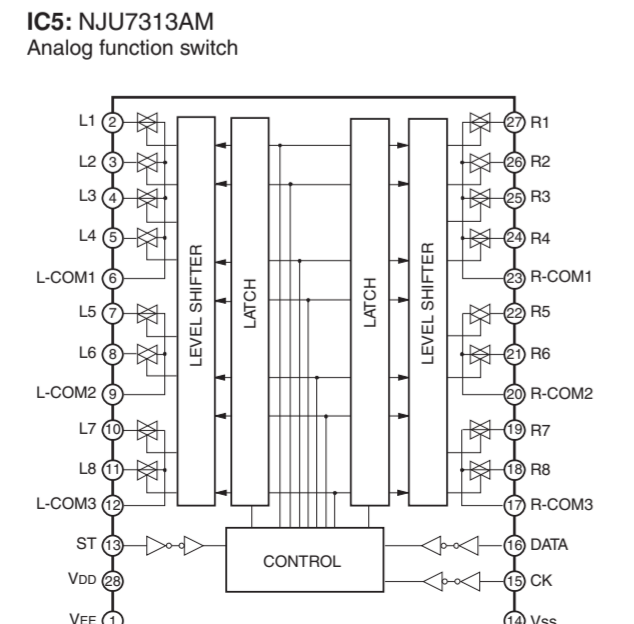
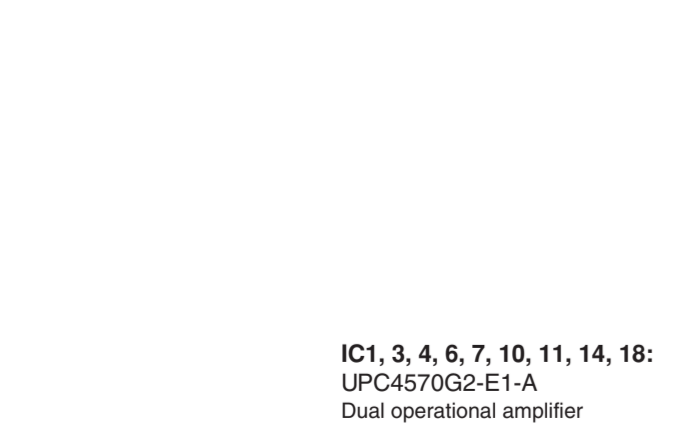
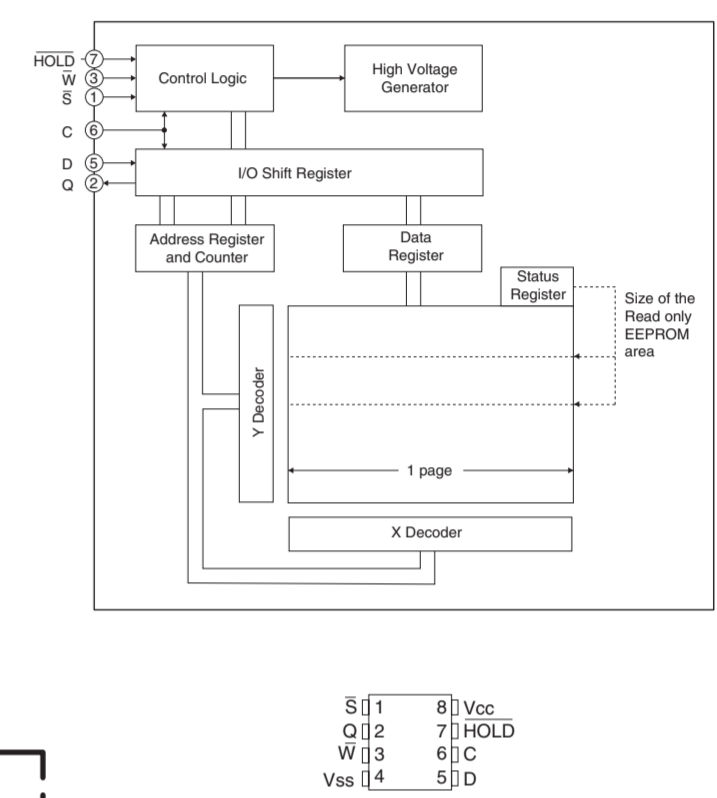
• All voltages are measured with a 10MΩ/V DC electronic volt meter.  
• Components having special characteristics are marked △ and must be replaced with parts having specifications equal to those originally installed.  
• Schematic diagram is subject to change without notice.



IC15: R5F212A8SNFA  
Microprocessor



IC16: M95010-WMN6TP  
1-k-bit serial SPI bus EEPROM with high speed clock



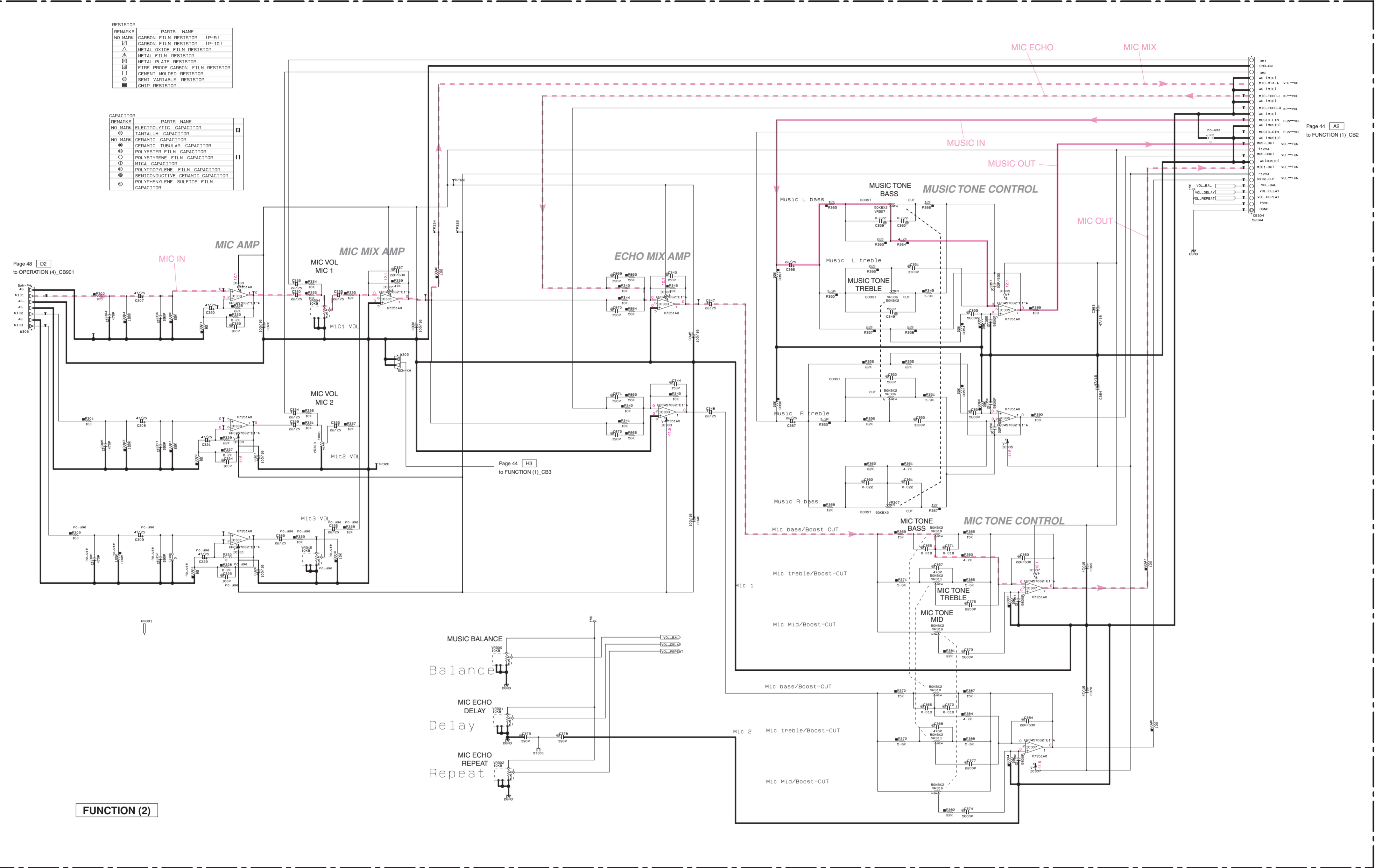
All voltages are measured with a 10MΩ/V DC electronic volt meter.  
Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.  
Schematic diagram is subject to change without notice.

FUNCTION 2/3

KMA-950

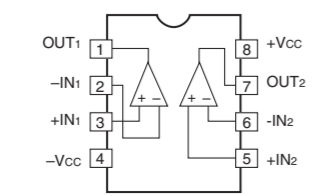
RESISTOR	
REMARKS	PARTS NAME
□	CARBON FILM RESISTOR (P-P)
□	CARBON FILM RESISTOR (P-P)
△	METAL OXIDE FILM RESISTOR
△	METAL FILM RESISTOR
△	METAL PLATE RESISTOR
△	FILM PROOF CARBON FILM RESISTOR
△	CEMENT HOUSED RESISTOR
△	SEMI-VARIABLE RESISTOR
△	CHIP RESISTOR

CAPACITOR	
REMARKS	PARTS NAME
□	ELECTROLYTIC CAPACITOR
□	TANTALUM CAPACITOR
□	CERAMIC CAPACITOR
□	CERAMIC TUBULAR CAPACITOR
□	POLYESTER FILM CAPACITOR
□	POLYSTYRENE FILM CAPACITOR
□	MICA CAPACITOR
□	POLYPROPYLENE FILM CAPACITOR
□	SEMICONDUCTIVE CERAMIC CAPACITOR
□	POLYPHENYLENE SULFIDE FILM CAPACITOR



FUNCTION (2)

IC300, 301, 303, 305, 307:  
UPC4570G2-E1-A  
Dual operational amplifier

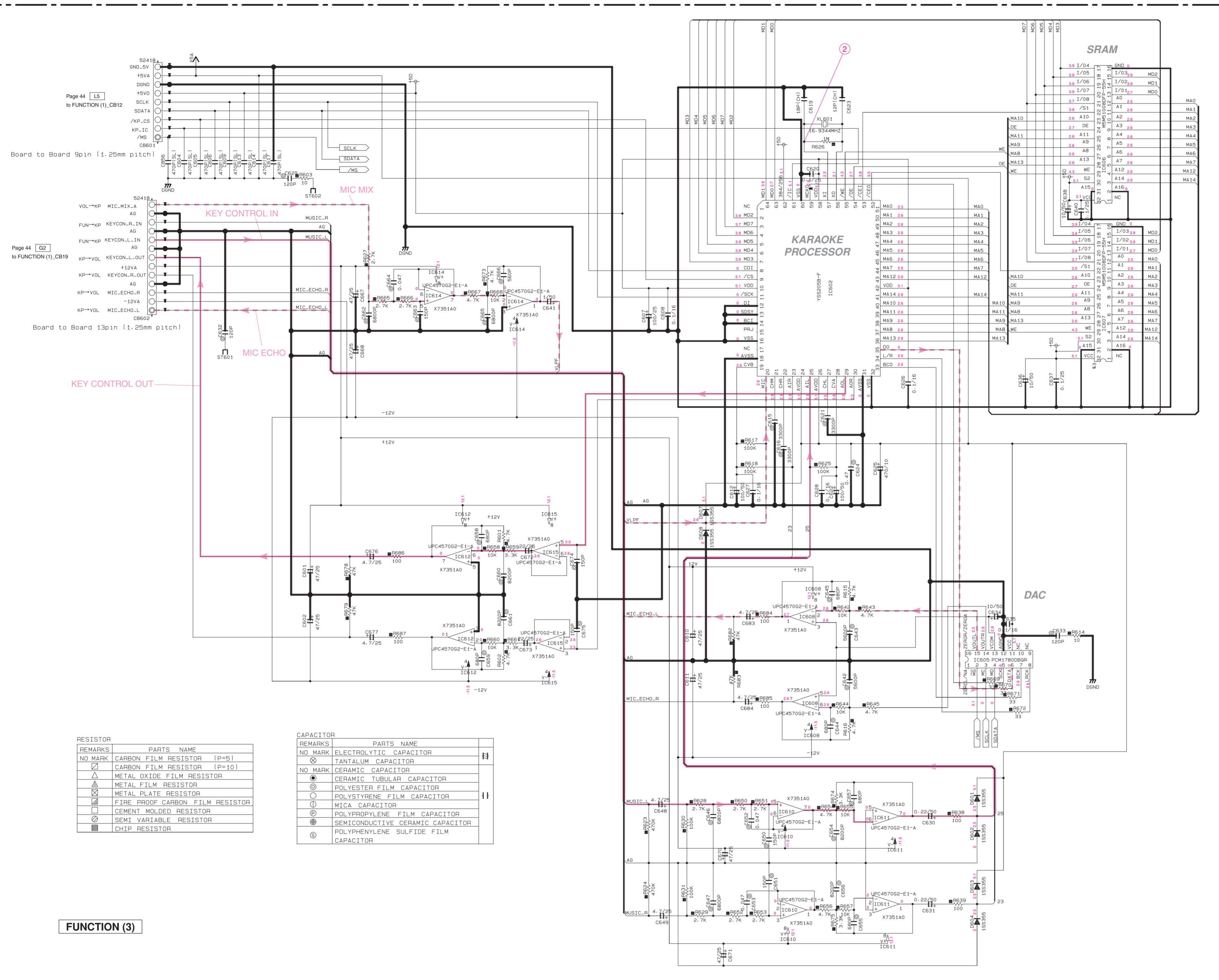


Page 44 A2 to FUNCTION (1)\_CB2

Page 44 H3 to FUNCTION (1)\_CB3

- All voltages are measured with a 10MΩ/V DC electronic volt meter.
- Components having special characteristics are marked △ and must be replaced with parts having specifications equal to those originally installed.
- Schematic diagram is subject to change without notice.

FUNCTION 3/3



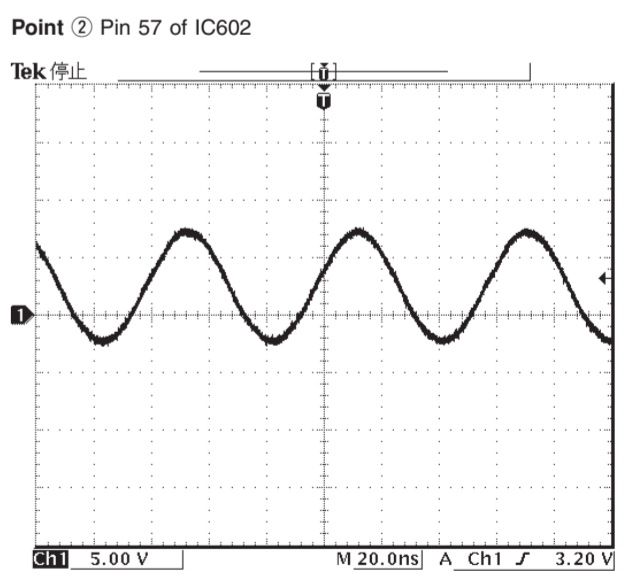
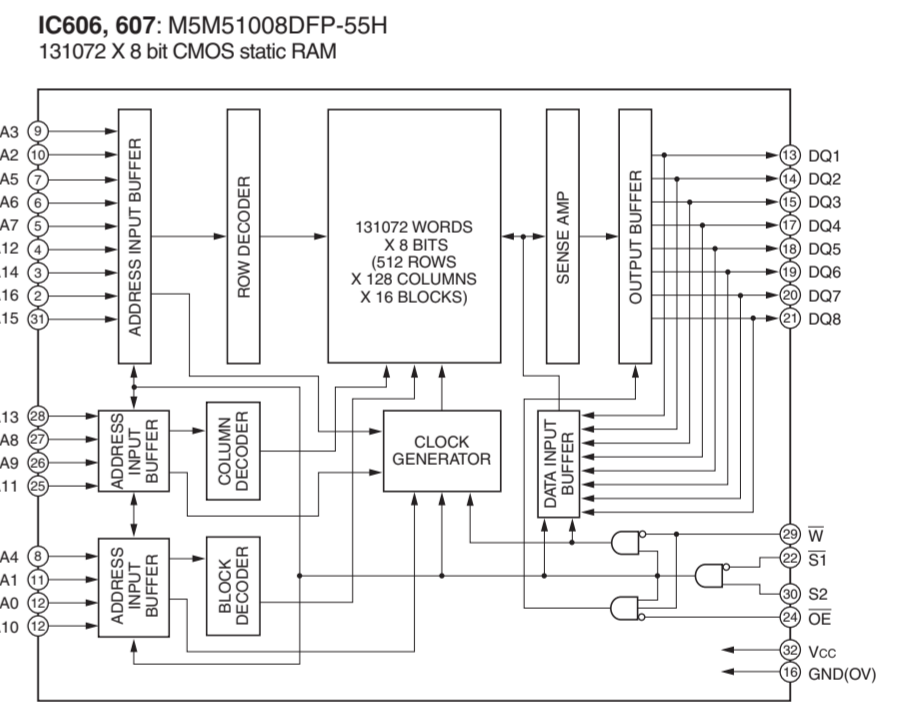
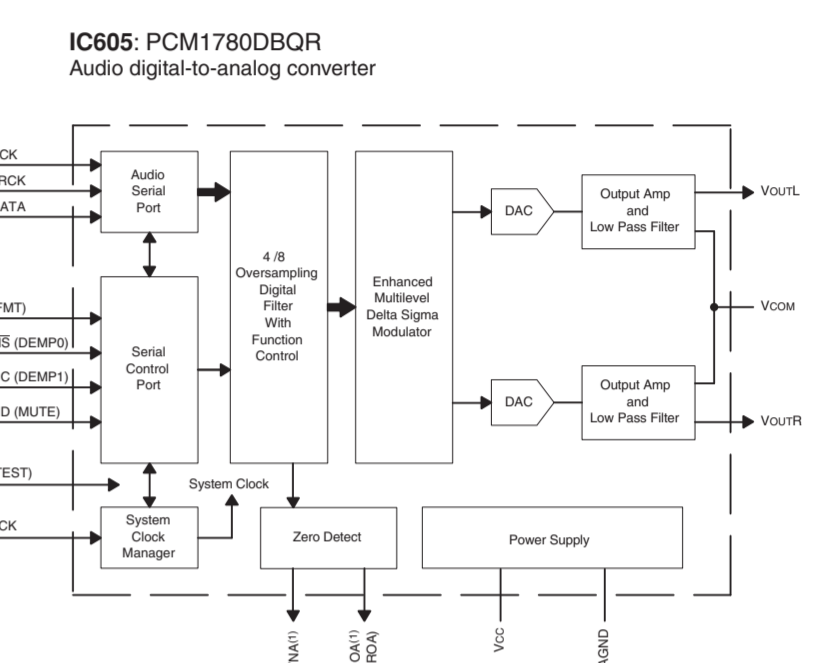
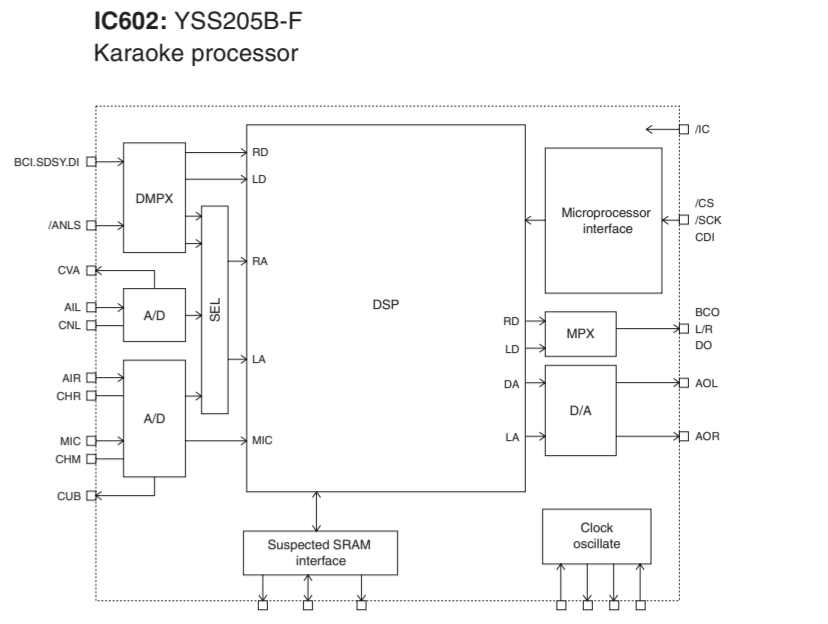
RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
□	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
⊞	CEMENT MOLDED RESISTOR
⊞	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

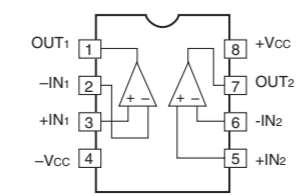
CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊙	CERAMIC TUBULAR CAPACITOR
⊖	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⊖	MICA CAPACITOR
⊖	POLYPROPYLENE FILM CAPACITOR
⊖	SEMICONDUCTIVE CERAMIC CAPACITOR
⊖	POLYPHENYLENE SULFIDE FILM CAPACITOR

FUNCTION (3)



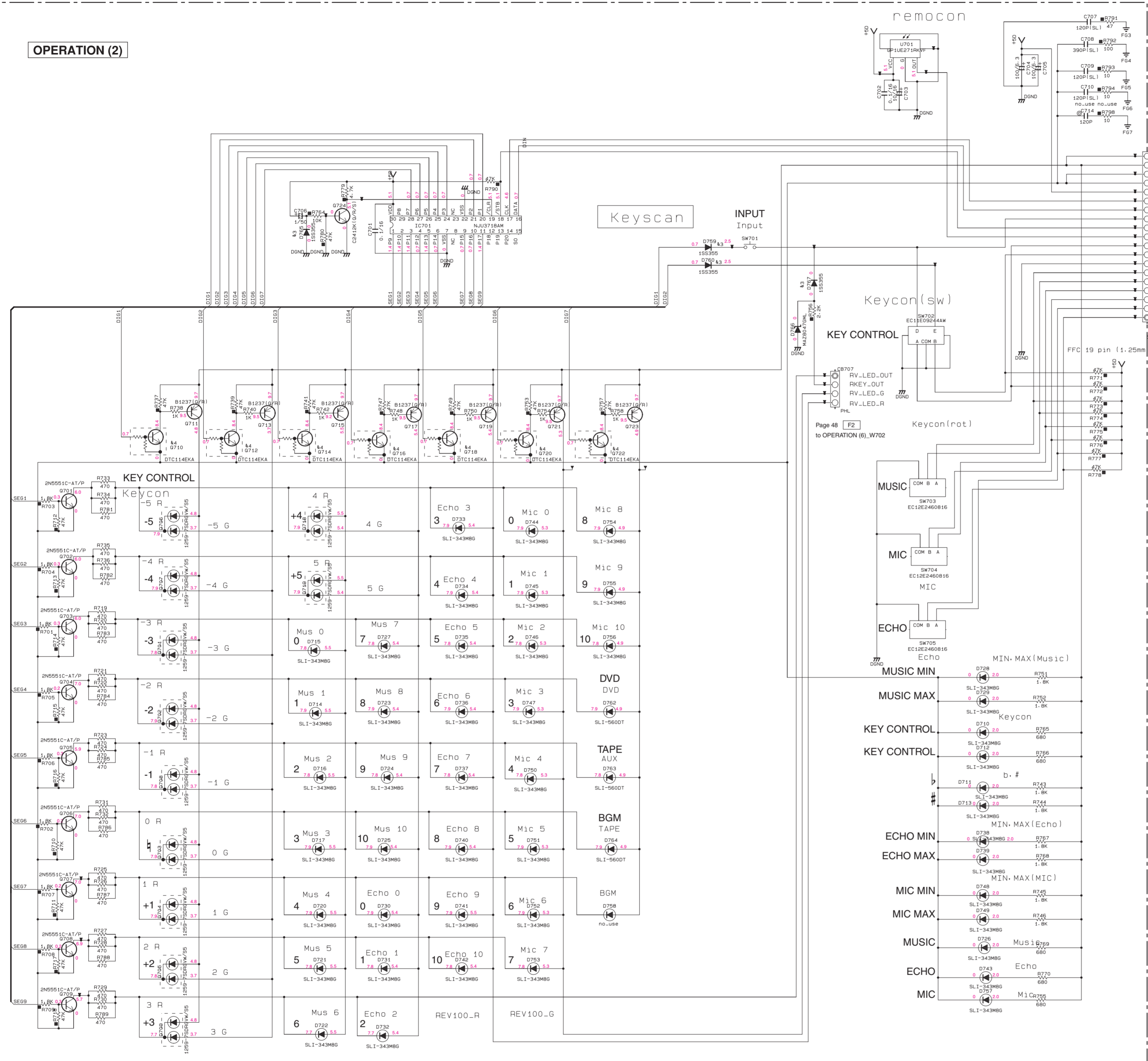
IC608, 610-612, 614, 615:  
UPC4570G2-E1-A  
Dual operational amplifier



All voltages are measured with a 10MΩ/V DC electronic volt meter.  
Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.  
Schematic diagram is subject to change without notice.

OPERATION 1/2

OPERATION (2)



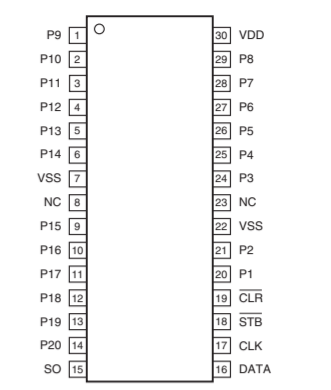
RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
□	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
▣	FIRE PROOF CARBON FILM RESISTOR
■	CEMENT MOLDED RESISTOR
⊙	SEMI-VARIABLE RESISTOR
⊚	CHIP RESISTOR

CAPACITOR

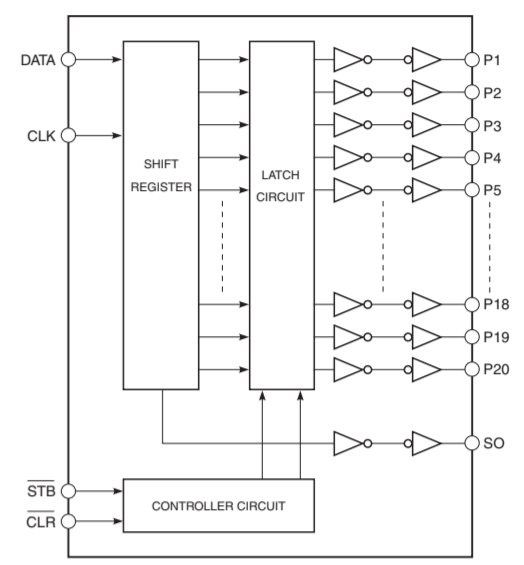
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊕	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊖	CERAMIC TUBULAR CAPACITOR
⊙	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⊖	MICA CAPACITOR
⊙	POLYPROPYLENE FILM CAPACITOR
⊕	SEMICONDUCTIVE CERAMIC CAPACITOR
⊙	POLYPHENYLENE SULFIDE FILM CAPACITOR

IC701: NUJ3718AM 20-bit Serial parallel converter



Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
41	D235-236-759-760-765-767	ISS305 MARJ1150GL
42	0710-712-714-716-718-720	DTC114EKA KRC1025-RTK/P
43	D245-246-248-249	HSS104 ISS196 ISS193



Page 44 H6 to FUNCTION (1), CB15

Page 48 F2 to OPERATION (6), W702

• All voltages are measured with a 10MΩ/V DC electronic volt meter.  
 • Components having special characteristics are marked △ and must be replaced with parts having specifications equal to those originally installed.  
 • Schematic diagram is subject to change without notice.

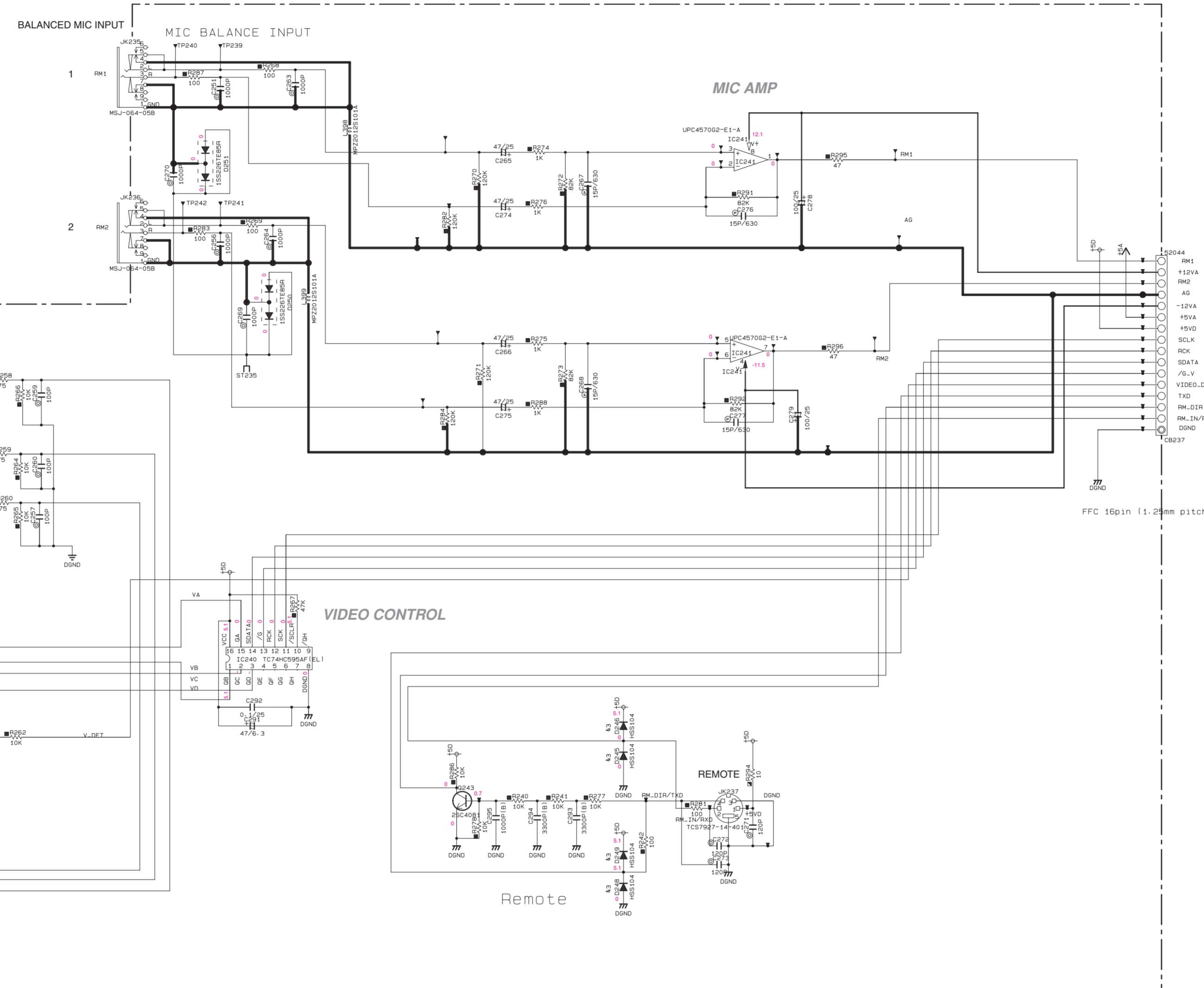
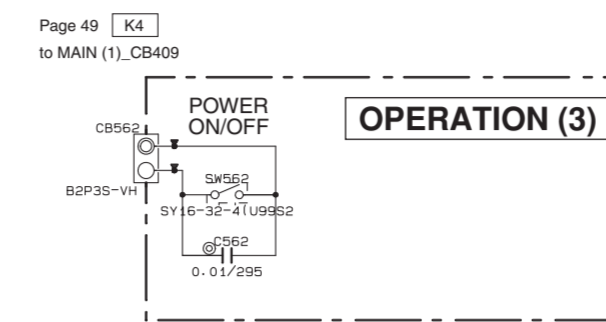
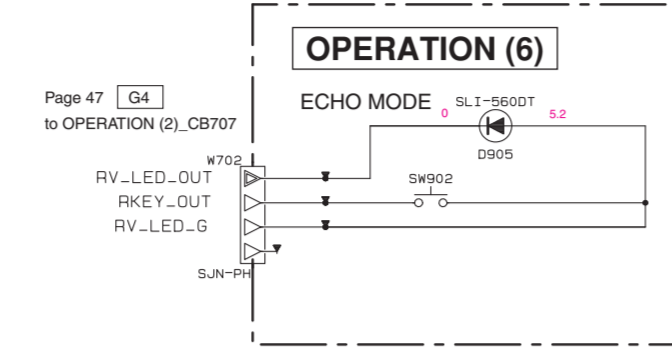
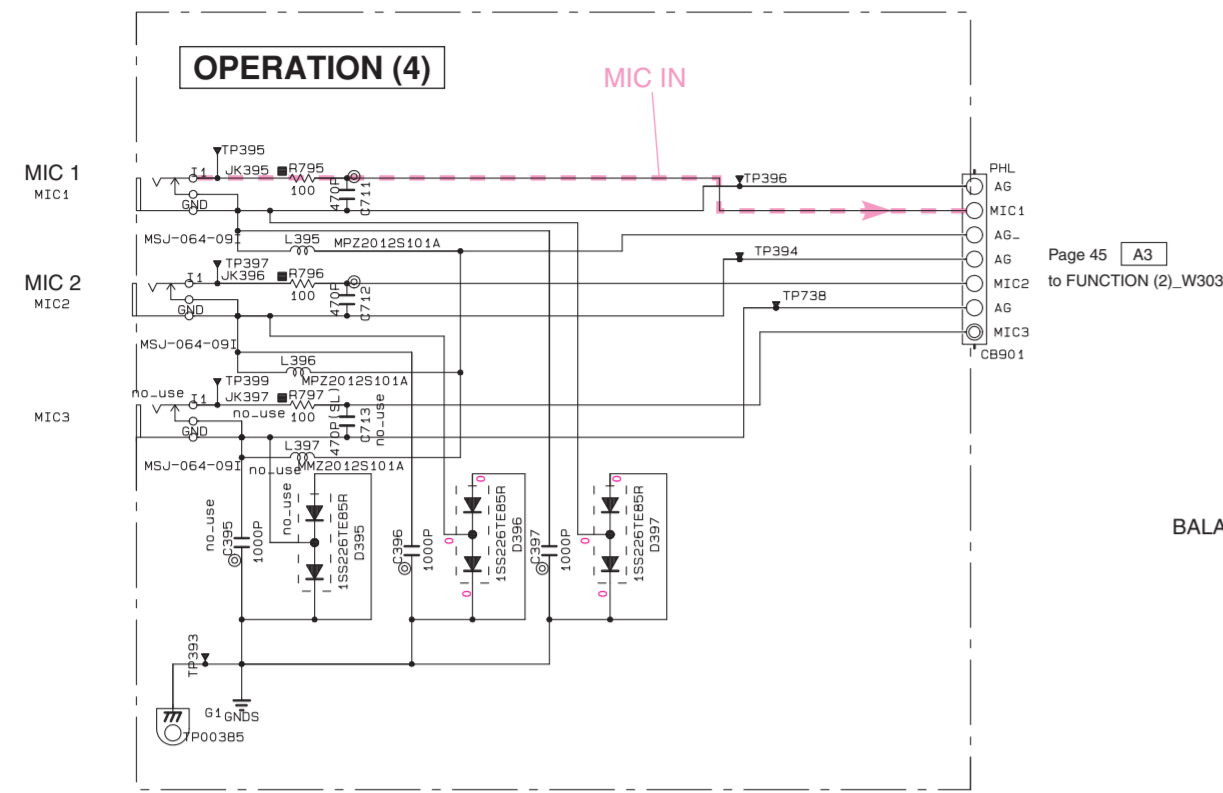
OPERATION 2/2

KMA-950

MIC JACK

REV\_SW (KMA950)

POWER\_SW



VIDEO

KMA1000 VIDEO PJ

DVD IN

Monitor out1

AUX IN

no-use

Monitor out2

Monitor out3

KMA950 VIDEO DVD IN

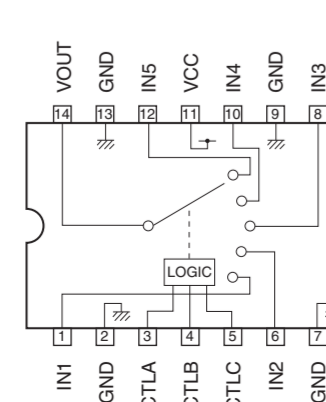
OUTPUT 1 Monitor out1

BGM INPUT BGV IN

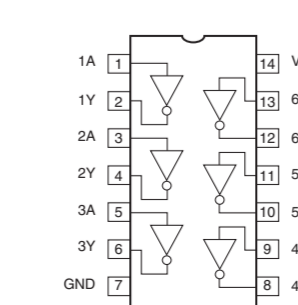
OUTPUT 2 Monitor out3

OPERATION (1)

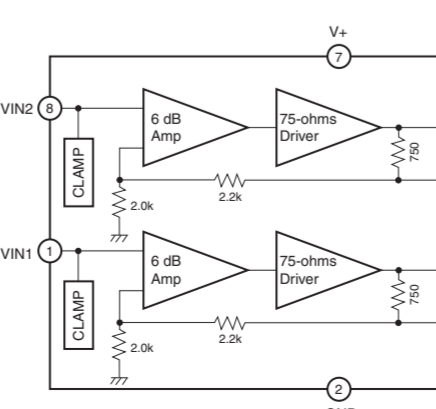
IC235, 236: BA7649AF-E2 Video signal switcher for VTR, TV



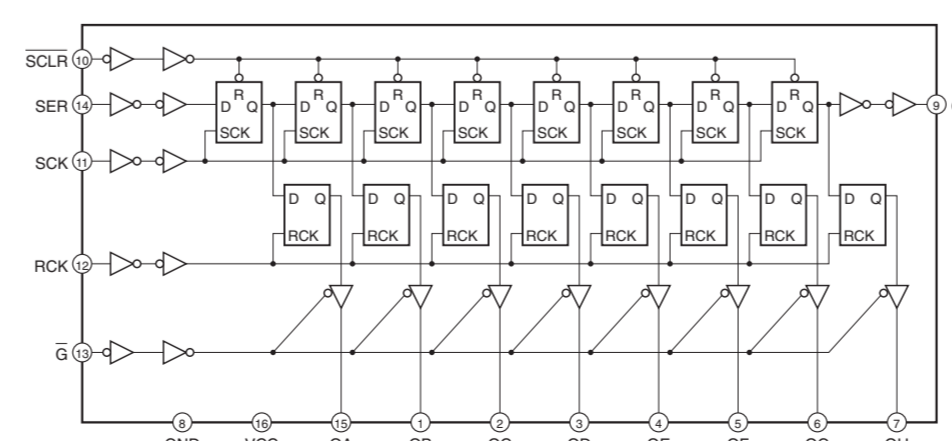
IC237: TC74HC04AFEL Hex inverters



IC238, 239: NJM2267M Dual video 6 dB amplifier with 75-ohms driver

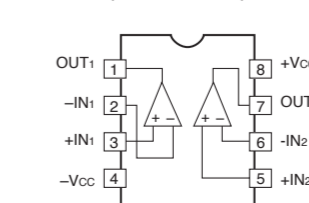


IC240: TC74HC595AF 8-bit Shift register/latch (3-state)



RCK	SCK	SCLR	S	FUNCTION
X	X	X	1	QA thru QH = Tri-State
X	X	L	X	Shift Register cleared
X	#	H	X	Shift Register clocked
#	X	H	X	Contents of Shift Register transferred to output latches

IC241: UPC4570G2-E1-A Dual operational amplifier

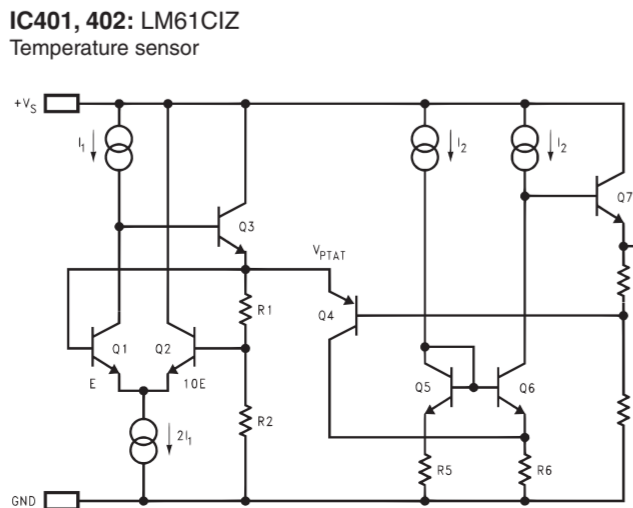
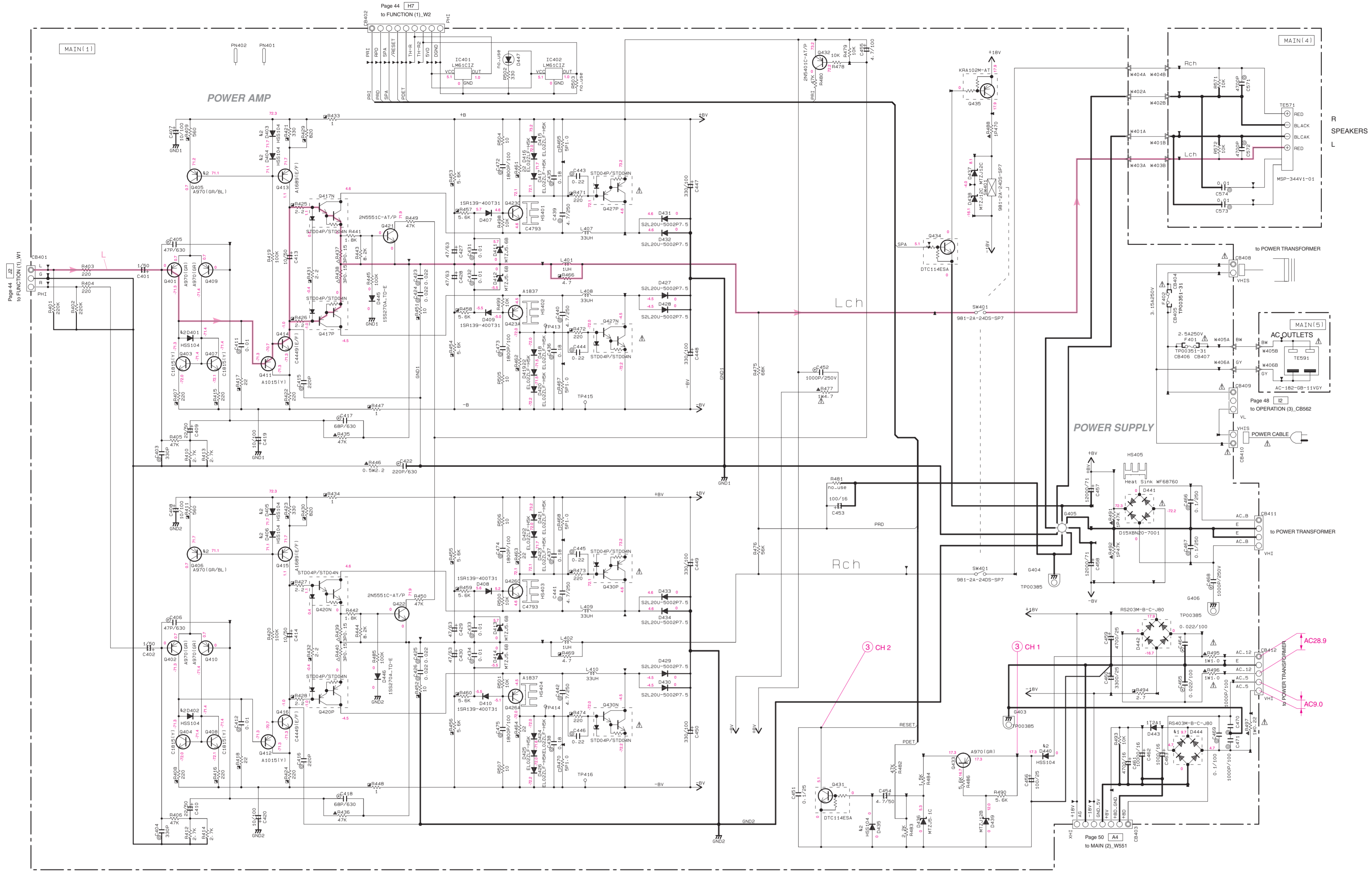


\* All voltages are measured with a 10MΩ/V DC electronic volt meter.  
 \* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.  
 \* Schematic diagram is subject to change without notice.

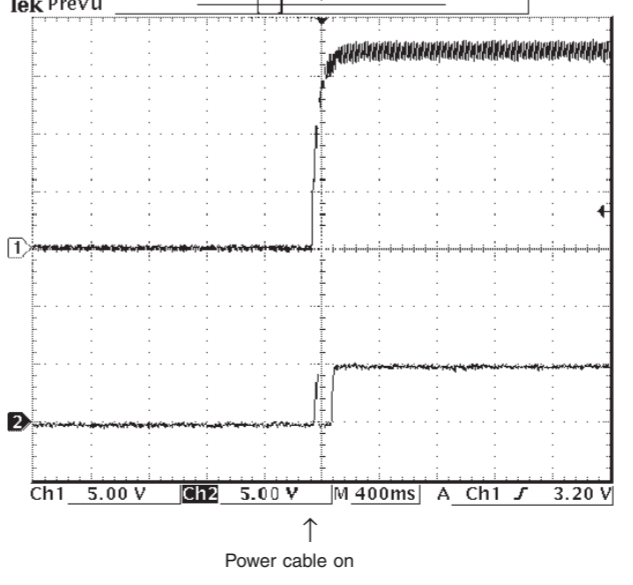
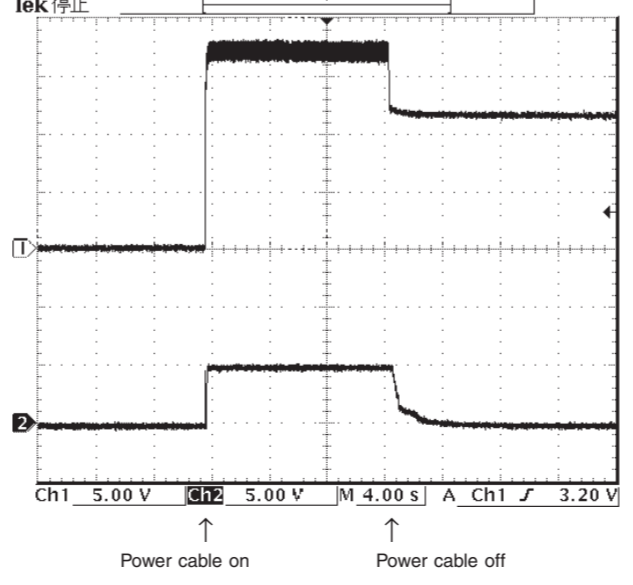


MAIN 1/2

KMA-950



Point ③  
CH 1 : Emitter of Q433  
CH 2 : Collector of Q431  
Tek 停止

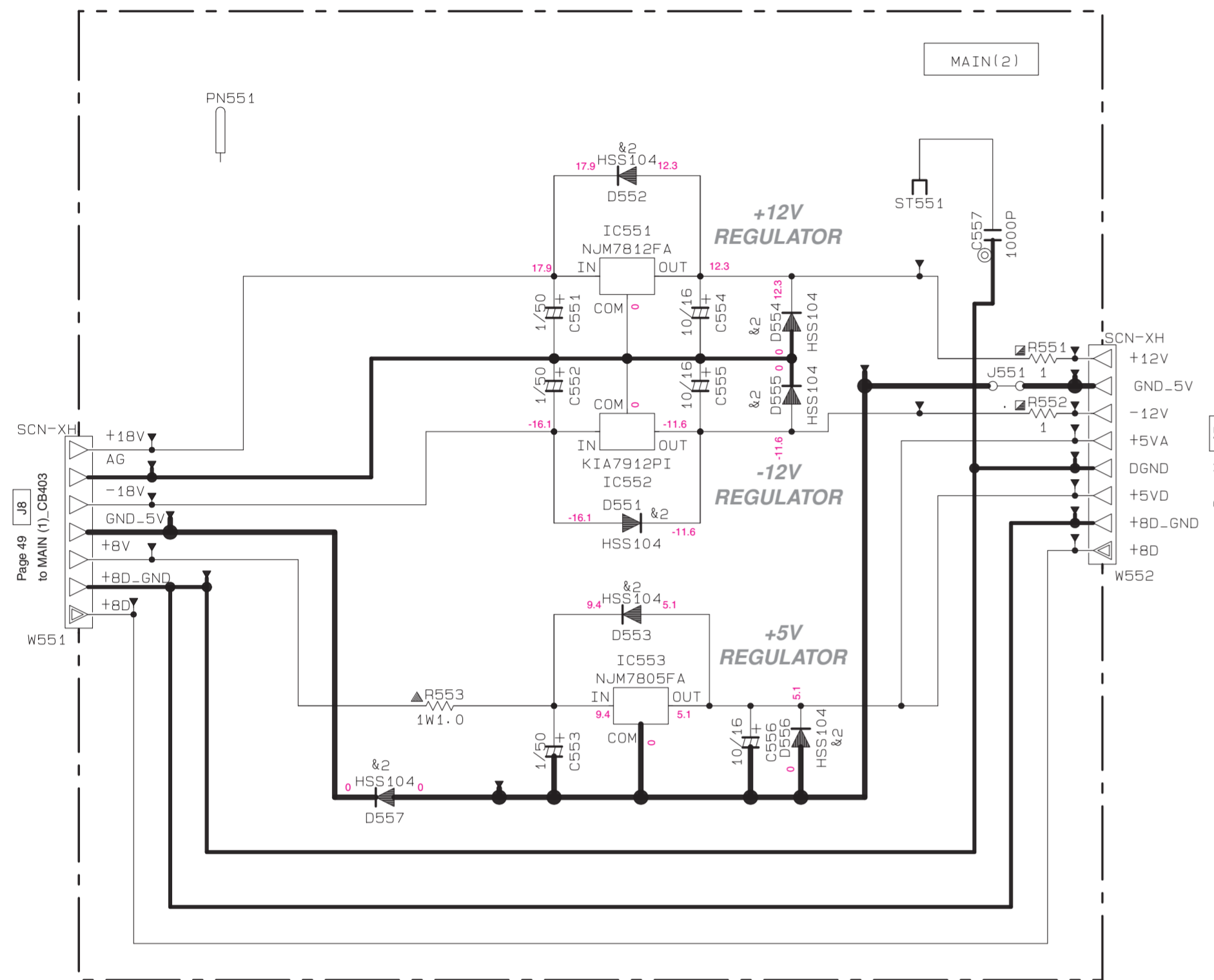


- All voltages are measured with a 10MΩ/V DC electronic volt meter.
- Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
- Schematic diagram is subject to change without notice.

MAIN 2/2

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&1	D444	RS403M-B-C-J80 TS4B03G-07
&2	D401-406. 435. 440. 551-557	HSS104 1SS133 1SS176



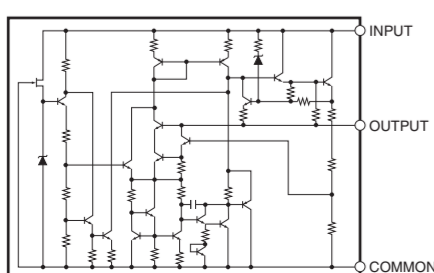
RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
□	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
▨	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊕	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

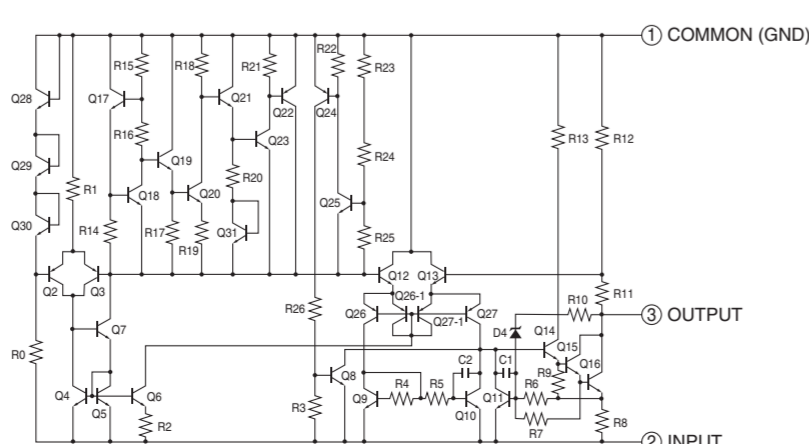
CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
●	CERAMIC TUBULAR CAPACITOR
⊙	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⊖	MICA CAPACITOR
⊕	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

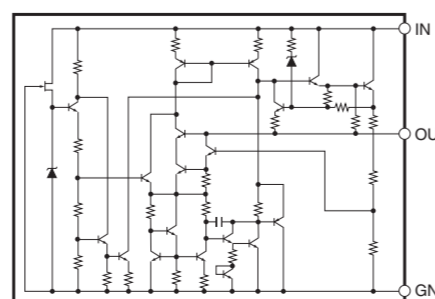
IC551: NJM7812FA  
Voltage regulator



IC552: KIA7912PI  
Voltage regulator



IC553: NJM7805DL1A  
Voltage regulator



\* All voltages are measured with a 10MΩ/V DC electronic volt meter.  
 \* Components having special characteristics are marked △ and must be replaced with parts having specifications equal to those originally installed.  
 \* Schematic diagram is subject to change without notice.

## ■ REPLACEMENT PARTS LIST

### ● ELECTRICAL COMPONENT PARTS

#### WARNING

- Components having special characteristics are marked  $\triangle$  and must be replaced with parts having specifications equal to those originally installed.
- The chip resistor is not supplied as a replacement part.  
\* When a chip resistor is necessary, use the following part.  
AAX60720: CHIP RESISTOR SAMPLE BOOK

#### ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED, INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR, RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN, TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.CEMENT	: CEMENT RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.FLM	: METAL FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.TNTL	: TANTALUM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TITE SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR, BASE PIN	SCR.CUP	: CUP TITE SCREW
CN.CANNON	: CONNECTOR, CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR, DIN	SCR.TR	: SCREW, TRANSISTOR
CN.FLAT	: CONNECTOR, FLAT CABLE	SUPRT.PCB	: SUPPORT, P.C.B.
CN.POST	: CONNECTOR, BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL, AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL, FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL, FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL, FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.VAR	: VARACTOR DIODE	SW.SLIDE	: SLIDE SWITCH
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.SP	: SPEAKER TERMINAL
DIODE.ZENR	: ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DSCR.CE	: CERAMIC DISCRIMINATOR	THRMST.CHP	: CHIP THERMISTOR
FER.BEAD	: FERRITE BEADS	TR.CHP	: CHIP TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT	: DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS	: TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PULS	: PULSE TRANSFORMER
FLTR.COMB	: COMB FILTER MODULE	TRANS.PWR	: POWER TRANSFORMER ASS'y
FLTR.LC.RF	: LC FILTER ,EMI	TUNER.AM	: TUNER PACK, AM
GND.MTL	: GROUND PLATE	TUNER.FM	: TUNER PACK, FM
GND.TERM	: GROUND TERMINAL	TUNER.PK	: FRONT-END TUNER PACK
HOLDER.FUS	: FUSE HOLDER	VR	: ROTARY POTENTIOMETER
IC.PRTCT	: IC PROTECTOR	VR.MTR	: POTENTIOMETER WITH MOTOR
JUMPER.CN	: JUMPER CONNECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.TST	: JUMPER, TEST POINT	VR.SLIDE	: SLIDE POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE	VR.TRIM	: TRIMMER POTENTIOMETER

## KMA-1000

## P.C.B. FUNCTION

Ref No.	Part No.	Description	Markets
*	WR479400	P. C. B.	FUNCTION
CB2	VN520900	GN. BS. PIN	52045 26P TE
CB3-4	LB918020	GN. BS. PIN	2P
CB12	VQ963000	GN. BS. PIN	9P
CB15	VQ047400	GN. BS. PIN	19P
CB17	VB390100	GN. BS. PIN	5P
CB19	VQ963400	GN. BS. PIN	13P
CB21	VM859700	GN. BS. PIN	16P
CB22	LB918080	GN. BS. PIN	8P
CB304	VQ045500	GN. BS. PIN	26P
CB601	VQ961200	GN. BS. PIN	9P
CB602	VQ961600	GN	13P
C1-8	WJ603300	C. MYLAR	470pF 50V J
C9-16	UR147220	C. EL	22uF 25V
C17-24	UR166470	C. EL	4. 7uF 50V
C25-32	UR147330	C. EL	33uF 25V
* C35-40	UR146470	C. EL	4. 7uF 25V
C41	UR847330	C. EL	33uF 25V
* C42-43	UR146470	C. EL	4. 7uF 25V
C44	UR838100	C. EL	100uF 16V
C45	US135100	C. CE. CHP	0. 1uF 16V
C46	UR847330	C. EL	33uF 25V
C47	US135100	C. CE. CHP	0. 1uF 16V
C48-49	UA352120	C. MYLAR	120pF 50V
C51	WJ603700	C. MYLAR	1000pF 50V
C52-53	UR166100	C. EL	1uF 50V
C54	US062100	C. CE. CHP	100pF 50V B
C55	UA352120	C. MYLAR	120pF 50V
C58	UR837470	C. EL	47uF 16V
C60	UR837100	C. EL	10uF 16V
C64	UR147330	C. EL	33uF 25V
C65	UR837100	C. EL	10uF 16V
C66	UR147330	C. EL	33uF 25V
* C68-69	UR146470	C. EL	4. 7uF 25V
C71	UR837470	C. EL	47uF 16V
C72	UR866100	C. EL	1uF 50V
C73-74	UR147330	C. EL	33uF 25V
C75	UR147100	C. EL	10uF 25V
C76	UA355100	C. MYLAR	0. 1uF 50V
C77	UR147220	C. EL	22uF 25V
C78	UA355100	C. MYLAR	0. 1uF 50V
C79	UR147220	C. EL	22uF 25V
C80-81	UR147330	C. EL	33uF 25V
C82	UR147100	C. EL	10uF 25V
C83	UA355100	C. MYLAR	0. 1uF 50V
C84	UR147220	C. EL	22uF 25V
C85	UA355100	C. MYLAR	0. 1uF 50V
C86	UR147220	C. EL	22uF 25V
* C87-90	UR146470	C. EL	4. 7uF 25V
C91-92	WJ602900	C. MYLAR	100pF 50V K
C94	UR838100	C. EL	100uF 16V
C97	UR838100	C. EL	100uF 16V
* C100-101	UR166470	C. EL	4. 7uF 50V
C104	WJ605800	C. MYLAR	0. 047uF 50V J

\* New Parts ( 新規部品 )

Ref No.	Part No.	Description	Markets
* C109	WJ606000	C. MYLAR	0. 068uF 50V
C114	WJ602900	C. MYLAR	100pF 50V K
C117-118	UR147330	C. EL	33uF 25V
* C119-122	UR146470	C. EL	4. 7uF 25V
* C123-124	UR166470	C. EL	4. 7uF 50V
C127-128	WJ603600	C. MYLAR	820pF 50V J
C129-132	WJ604000	C. MYLAR	1800pF 50V
C133-134	WJ603100	C. MYLAR	220pF 50V
C139-140	US135100	C. CE. CHP	0. 1uF 16V
C141-142	UR137470	C. EL	47uF 16V
C145-146	WJ602900	C. MYLAR	100pF 50V K
C304-306	WJ603300	C. MYLAR	470pF 50V J
C307-309	UR147470	C. EL	47uF 25V
C310-312	WP172700	C. MYLAR	390pF 50V
C320-322	UR147470	C. EL	47uF 25V
C323-325	WJ602900	C. MYLAR	100pF 50V K
C326-328	UR238100	C. EL	100uF 16V
C329-330	UR147220	C. EL	22uF 25V
C332-336	UR147220	C. EL	22uF 25V
C337	WE100200	C. PP	22pF 630V
C338	UR238100	C. EL	100uF 16V
C343-344	WJ603000	C. MYLAR	150pF 50V
C345-346	UR838100	C. EL	100uF 16V
C347-348	UR147220	C. EL	22uF 25V
C349-350	WJ603400	C. MYLAR	560pF 50V
C351-352	WJ604300	C. MYLAR	3300pF 50V
C353-356	WJ604600	C. MYLAR	5600pF 50V
C357-358	WE100200	C. PP	22pF 630V
C359-362	WJ605400	C. MYLAR	0. 022uF 50V J
C363-364	UR137470	C. EL	47uF 16V
C365-366	WJ605300	C. MYLAR	0. 018uF 50V
C367-368	WJ603300	C. MYLAR	470pF 50V J
C369-370	UR137470	C. EL	47uF 16V
C371-372	WJ605300	C. MYLAR	0. 018uF 50V
C373-374	WJ604600	C. MYLAR	5600pF 50V
C376-377	WJ604100	C. MYLAR	2200pF 50V
C378-379	WP172700	C. MYLAR	390pF 50V
C381-382	WJ604600	C. MYLAR	5600pF 50V
C383-384	WE100200	C. PP	22pF 630V
C385-387	UR147220	C. EL	22uF 25V
C601-602	UR147470	C. EL	47uF 25V
C604-606	US062470	C. CE. CHP	470pF 50V B
C607	UR848100	C. EL	100uF 25V
C608	US035100	C. CE. CHP	0. 1uF 16V B
C609	US062470	C. CE. CHP	470pF 50V B
C610-611	UR147470	C. EL	47uF 25V
C612	UR868100	C. EL	100uF 50V
C613-614	US062470	C. CE. CHP	470pF 50V B
C615-616	WJ604300	C. MYLAR	3300pF 50V
C617	US062470	C. CE. CHP	470pF 50V B
C619	US061180	C. CE. CHP	18pF 50V B
C620	US145100	C. CE. CHP	0. 1uF 25V
C621	WJ604300	C. MYLAR	3300pF 50V
C622	UR868100	C. EL	100uF 50V

\* New Parts ( 新規部品 )

## KMA-1000

## P.C.B. FUNCTION

Ref No.	Part No.	Description	Markets
C623	US061120	C. CE. CHP 12pF 50V B	
C624	VR169200	C. MYLAR 0. 47uF 50V	
C625	UR828470	C. EL 470uF 10V	
C626-628	US035100	C. CE. CHP 0. 1uF 16V B	
C629	UA352120	C. MYLAR 120pF 50V	
C630-631	UR165220	C. EL 0. 22uF 50V	
C632-633	UA352120	C. MYLAR 120pF 50V	
C634	UR167100	C. EL 10uF 50V	
C635	US135100	C. CE. CHP 0. 1uF 16V	
C636	UR867100	C. EL 10uF 50V	
C637	US145100	C. CE. CHP 0. 1uF 25V	
C638	UR867100	C. EL 10uF 50V	
C640	US145100	C. CE. CHP 0. 1uF 25V	
C641	UR166100	C. EL 1uF 50V	
C642-643	WJ604600	C. MYLAR 5600pF 50V	
C644-645	WJ603500	C. MYLAR 680pF 50V	
C646-647	WJ604700	C. MYLAR 6800pF 50V	
* C648-649	UR146470	C. EL 4. 7uF 25V	
C650-651	WJ603000	C. MYLAR 150pF 50V	
C652-653	WJ605800	C. MYLAR 0. 047uF 50V J	
C654	WJ604800	C. MYLAR 8200pF 50V	
C655	WJ603500	C. MYLAR 680pF 50V	
C656	WJ604800	C. MYLAR 8200pF 50V	
C657-659	WJ603500	C. MYLAR 680pF 50V	
C660-661	WJ604800	C. MYLAR 8200pF 50V	
C662	WJ604700	C. MYLAR 6800pF 50V	
C663	WJ603000	C. MYLAR 150pF 50V	
C664	WJ605800	C. MYLAR 0. 047uF 50V J	
C665	WJ604700	C. MYLAR 6800pF 50V	
C666	WJ603400	C. MYLAR 560pF 50V	
C667-668	UR147470	C. EL 47uF 25V	
C670-671	UR147470	C. EL 47uF 25V	
C672-673	UR147220	C. EL 22uF 25V	
C674-675	WJ603000	C. MYLAR 150pF 50V	
C676-677	UR146470	C. EL 4. 7uF 25V	
C683-684	UR146470	C. EL 4. 7uF 25V	
C833-836	UR137100	C. EL 10uF 16V	
C837	US064100	C. CE. CHP 0. 01uF 50V B	
C838-839	US135100	C. CE. CHP 0. 1uF 16V	
C840-841	UR837100	C. EL 10uF 16V	
C842	US062100	C. CE. CHP 100pF 50V B	
C843	UR866100	C. EL 1uF 50V	
C844	UR837470	C. EL 47uF 16V	
C845-846	UR837100	C. EL 10uF 16V	
C847	US062100	C. CE. CHP 100pF 50V B	
C848	UR866100	C. EL 1uF 50V	
C849	UR837470	C. EL 47uF 16V	
C856	US062470	C. CE. CHP 470pF 50V B	
C857-858	UR166100	C. EL 1uF 50V	
C859-868	UR137100	C. EL 10uF 16V	
C869-872	WP172700	C. MYLAR 390pF 50V	
D8	VT332900	DIODE 1SS355	
D12	VV657700	DIODE. ZENR RLZ4. 7A 4. 7V	
D15-16	VU992200	DIODE. ZENR MAZ8047GML 4. 7V	

\* New Parts ( 新規部品 )

Ref No.	Part No.	Description	Markets
D17-18	VT332900	DIODE 1SS355	
D601-604	VT332900	DIODE 1SS355	
D607-608	VT332900	DIODE 1SS355	
D801	VT332900	DIODE 1SS355	
D802	VV657700	DIODE. ZENR RLZ4. 7A 4. 7V	
D803	VT332900	DIODE 1SS355	
D804	VV657700	DIODE. ZENR RLZ4. 7A 4. 7V	
D805-806	VT332900	DIODE 1SS355	
D807	VV658100	DIODE. ZENR RLZ5. 1B 5. 1V	
IC1-4	X7351A00	IC UPC4570G2-E1-A	
IC5	X5043A00	IC NUJ7313AM	
IC6-7	X7351A00	IC UPC4570G2-E1-A	
IC8-9	XZ545A00	IC YAC520-EE2	
IC10-11	X7351A00	IC UPC4570G2-E1-A	
IC14	X7351A00	IC UPC4570G2-E1-A	
* IC15	YA945A00	IC. CPU R5F212A8SNFA	written
IC16	X7802A00	IC M95010-WMN6TP	
IC17	XS534A00	IC NJM78M05DL1A	
IC18	X7351A00	IC UPC4570G2-E1-A	
IC300-301	X7351A00	IC UPC4570G2-E1-A	
IC303	X7351A00	IC UPC4570G2-E1-A	
IC305	X7351A00	IC UPC4570G2-E1-A	
IC307	X7351A00	IC UPC4570G2-E1-A	
IC602	XH853B00	IC YSS205B-F/KP	
IC605	X7356A00	IC PCM1780DBQR	
IC606-607	X0652A00	IC M5M51008DFP-55H	
IC608	X7351A00	IC UPC4570G2-E1-A	
IC610-612	X7351A00	IC UPC4570G2-E1-A	
IC614-615	X7351A00	IC UPC4570G2-E1-A	
IC616-617	XV944A00	IC TC74HC4053AFT	
IC618	X7351A00	IC UPC4570G2-E1-A	
PJ1	WP307400	JACK. PIN 4P	
PJ4	WP307500	JACK. PIN 6P	
PJ6	WP335400	JACK. PIN 4P	
Q3	VV655400	TR. DGT DTC114EKA	
Q4	VV556500	TR 2SA1037K Q, R, S	
Q5	VV655400	TR. DGT DTC114EKA	
Q6	VV556500	TR 2SA1037K Q, R, S	
Q10-19	VZ725900	TR 2SD1938F S, T	
Q21-22	VV556400	TR 2SC2412K Q, R, S	
Q30-31	VZ725900	TR 2SD1938F S, T	
* R59	WB625500	R. MTL. OXD 15 Ω 1W	
R862	HV755680	R. CAR. FP 680 Ω 1/4W	
ST1-2	WA789600	SCR. TERM M3	
ST301	WA789600	SCR. TERM M3	
ST601-602	WA789700	SCR. TERM D3. 5	
VR1-4	WN954400	VR B 50K Ω	
VR300-302	WS021300	VR B 20K RK09K1110D4W	
VR303	WQ335000	VR B 10K Ω RK09711106	
VR304	WN960900	VR B 10K Ω	
VR306-307	WN961000	VR B 50K Ω	
VR310-311	WN961000	VR B 50K Ω	
VR315	WN960900	VR B 10K Ω	
VR316	WN961000	VR B 50K Ω	

\* New Parts ( 新規部品 )

## P.C.B. FUNCTION and OPERATION

Ref No.	Part No.	Description	Markets
XL1	WF997400	RSNR. CE	20MHz
XL601	WB872100	RSNR. CRYST	16.9344MHz
*	WR479600	P. C. B.	OPERATION
CB237	VQ044700	GN. BS. PIN	16P
CB238	LB932060	GN. BS. PIN	6P
CB562	VP245600	GN	2P
CB706	VQ044900	GN. BS. PIN	19P
CB707	VB858300	GN. BS. PIN	4P
CB901	VB858600	GN. BS. PIN	7P
C239	UB044100	C. CE. CHP	0.01uF 50V
C240-241	US145100	C. CE. CHP	0.1uF 25V
C242	UR828100	C. EL	100uF 10V
C243-244	UR866100	C. EL	1uF 50V
C245	UB052120	C. CE. CHP	120pF 50V
C246	UB012220	C. CE. CHP	220pF 50V
C247	UR866100	C. EL	1uF 50V
C248-249	UB044100	C. CE. CHP	0.01uF 50V
C250	UR828100	C. EL	100uF 10V
C251	WJ603700	C. MYLAR	1000pF 50V
C252	UR819100	C. EL	1000uF 6.3V
C253	UR837100	C. EL	10uF 16V
C254-255	UR819100	C. EL	1000uF 6.3V
C256	WJ603700	C. MYLAR	1000pF 50V
C257	WJ602900	C. MYLAR	100pF 50V K
C259-260	WJ602900	C. MYLAR	100pF 50V K
C263-264	WJ603700	C. MYLAR	1000pF 50V
C265-266	UR147470	C. EL	47uF 25V
C267-268	WE100100	C. PP	15pF 630V
C269-270	WJ603700	C. MYLAR	1000pF 50V
C271-273	UA352120	C. MYLAR	120pF 50V
C274-275	UR147470	C. EL	47uF 25V
C276-277	WE100100	C. PP	15pF 630V
C278-279	UR148100	C. EL	100uF 25V
C280-281	UR866100	C. EL	1uF 50V
C283	UR866100	C. EL	1uF 50V
C284-286	UB044100	C. CE. CHP	0.01uF 50V
C287-290	US135100	C. CE. CHP	0.1uF 16V
C291	UR817470	C. EL	47uF 6.3V
C292	US145100	C. CE. CHP	0.1uF 25V
C293-294	US063330	C. CE. CHP	3300pF 50V B
C295	US063100	C. CE. CHP	1000pF 50V B
C395-397	WJ603700	C. MYLAR	1000pF 50V
C562	WB121400	C. CE. SAFTY	0.01uF 295V
C701-702	US135100	C. CE. CHP	0.1uF 16V
C703	UM397100	C. EL	10uF 16V
C704-705	UM388100	C. EL	100uF 10V
C706	UM416100	C. EL	1uF 50V
C707	US062120	C. CE. CHP	120pF 50V B
C708	US062390	C. CE. CHP	390pF 50V B
C709-710	US062120	C. CE. CHP	120pF 50V B
C711-712	WJ603300	C. MYLAR	470pF 50V J

\* New Parts (新規部品)

Ref No.	Part No.	Description	Markets
C713	US062470	C. CE. CHP	470pF 50V B
D235-236	VT332900	DIODE	1SS355
D248-249	VD631600	DIODE	1SS133, 176
D250-251	VD303900	D10D. ARRAY	1SS226 TE85R
D395-397	VD303900	D10D. ARRAY	1SS226 TE85R
D701-709	WN928200	LED. 2COLOR	RED/GREEN
D710-717	WP354200	LED	GREEN
D718-719	WN928200	LED. 2COLOR	RED/GREEN
D720-757	WP354200	LED	GREEN
D758	WP484900	LED	UMBER
D759-760	VT332900	DIODE	1SS355
D762-764	WP484900	LED	UMBER
D765	VT332900	DIODE	1SS355
D766	VU992200	DIODE. ZENR	MAZ8047GML 4.7V
D767	VT332900	DIODE	1SS355
D901	WQ270700	LED. 2COLOR	YELLOW/UMBER
IC235-236	XT398A00	IC	BA7649AF-E2
IC237	XD598A00	IC	TC74HC04AFEL INV
IC238-239	XT396A00	IC	NJM2267M 2CH
IC240	X6292A00	IC	TC74HC595AF (EL)
IC241	X7351A00	IC	UPC4570G2-E1-A
IC701	X9730A00	IC	NJU3718AM
* JK235-236	WP945900	JACK. PHONE	MSJ-064-05B
JK237	VJ875300	JACK. DIN	4P
JK395-397	WN753900	JACK. PHONE	MSJ-064-09I
PJ237	WP307600	JACK. PIN	6P
Q243	VQ986700	TR	2SC4081 T106
Q701-709	WC398400	TR	2N5551C-AT
Q710	VV655400	TR. DGT	DTC114EKA
Q711	VE613300	TR	2SB1237 Q, R
Q712	VV655400	TR. DGT	DTC114EKA
Q713	VE613300	TR	2SB1237 Q, R
Q714	VV655400	TR. DGT	DTC114EKA
Q715	VE613300	TR	2SB1237 Q, R
Q716	VV655400	TR. DGT	DTC114EKA
Q717	VE613300	TR	2SB1237 Q, R
Q718	VV655400	TR. DGT	DTC114EKA
Q719	VE613300	TR	2SB1237 Q, R
Q720	VV655400	TR. DGT	DTC114EKA
Q721	VE613300	TR	2SB1237 Q, R
Q722	VV655400	TR. DGT	DTC114EKA
Q723	VE613300	TR	2SB1237 Q, R
Q724	VV556400	TR	2SC2412K Q, R, S
Q725-726	VV655400	TR. DGT	DTC114EKA
R294	HV754100	R. CAR. FP	10 Ω 1/4W
ST235	WA789600	SCR. TERM	M3
SW236	V4104200	SW. SLIDE	SL13B-022-AMCS
SW562	V9661700	SW. PUSH	SY16-32-4 (U99S2) / T
SW701	WD483100	SW. TACT	SKRGAAD010
SW702	WK413900	ENCODER	EC11E09244AW
SW703-705	WQ336800	SW. RT. ENC	EC12E2460816
SW901	WD483100	SW. TACT	SKRGAAD010
U701	WK918500	L. DTCT	GPIUE271RKVF
*	WQ478000	SPACER	LED H3

\* New Parts (新規部品)

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## P.C.B. MAIN

Ref No.	Part No.	Description	Markets	Ref No.	Part No.	Description	Markets		
				C564-565	WJ605000	C. MYLAR	0.01uF 50V J		
				C566	WJ604500	C. MYLAR	4700pF 50V		
				D401-406	VD631600	DIODE	1SS133, 176		
				D407-410	VU264100	DIODE	1SR139, 400		
*	WR479200	P. C. B.	MAIN	D411-414	VG437700	DIODE. ZENR	MTZJ5. 6B 5. 6V		
	CB401	VB389900	CN. BS. PIN	3P	D415-426	V6934100	DIODE	EL02ZLF-H5K	
	CB402	VB390500	CN. BS. PIN	9P	D427-434	VP779200	DIODE	S2L20U	
	CB403	LB918070	CN. BS. PIN	7P	D435	VD631600	DIODE	1SS133, 176	
	CB404-407	WN103000	CLIP. FUSE	TP00351-31	D436	VG437500	DIODE. ZENR	MTZJ5. 1C 5. 1V	
△	CB408	VG879900	CN. BS. PIN	2P	D437-438	VG440300	DIODE. ZENR	MTZJ12C 12V	
△	CB409	VZ120400	CN. BS. PIN	3P	D439	VG440200	DIODE. ZENR	MTZJ12B 12V	
△	CB410	VG879900	CN. BS. PIN	2P	D440	VD631600	DIODE	1SS133, 176	
	CB411	LB932040	CN. BS. PIN	4P	△	D441	WK878000	DIODE. BRG	D15XBN20-7001 15A
	CB412	LB932050	CN. BS. PIN	5P	D442	WH487300	DIODE. BRG	RS203M 2. 0A 200V	
	C401-402	UU266100	C. EL	1uF 50V	D443	VS997800	DIODE	1T2	
	C403-404	WJ603200	C. MYLAR	330pF 50V	D444	WJ286700	DIODE. BRG	RS403M 4A 140V	
	C405-406	WE100400	C. PP	47pF 630V	D445-446	VN008700	DIODE	1SS270A	
	C407-408	UR297100	C. EL	10uF 100V	D551-557	VD631600	DIODE	1SS133, 176	
	C409-410	UR267220	C. EL	22uF 50V	△	F401	VV071600	FUSE	2. 5A 250V
	C411-412	WJ605000	C. MYLAR	0.01uF 50V J	△	F402	VV071800	FUSE	4A 250V
	C413-414	UR267100	C. EL	10uF 50V		G405	V5995800	PLATE. GND	
	C415-416	WJ603100	C. MYLAR	220pF 50V		IC401-402	X0515A00	IC	LM61CIZ THERMAL
*	C417-418	WG221900	C. PP	68pF 630V		IC551	XJ608A00	IC	NUM7812FA
	C419-420	UR297100	C. EL	10uF 100V		IC552	X4154A00	IC	KIA7912PI
	C422	WE100900	C. PP	220pF 630V		IC553	XJ607A00	IC	NUM7805FA 5V
	C423-426	UA354220	C. MYLAR	0.022uF 50V		Q401-402	iA097040	TR	2SA970 GR
*	C427-430	UR277470	C. EL	47uF 63V		Q403-404	iC181510	TR	2SC1815 Y
	C431-434	UA354100	C. MYLAR	0.01uF 50V		Q405-406	iA097030	TR	2SA970 GR, BL
	C435-438	VE326300	C. MYLAR	0.18uF 50V		Q407-408	iC181510	TR	2SC1815 Y
	C439-442	V5058000	C. MYLAR	4.7uF 250V		Q409-410	iA097040	TR	2SA970 GR
	C443-446	VE326400	C. MYLAR	0.22uF 50V		Q411-412	iA101510	TR	2SA1015 Y
*	C447-450	UR298330	C. EL	330uF 100V		Q413	V5876800	TR	2SA1689 E, F
	C451	V8689300	C. CE. SMI	0.1uF 25V		Q414	V5876900	TR	2SC4449 E, F
	C452	WN156000	C. PP	1000pF 250V		Q415	V5876800	TR	2SA1689 E, F
	C453	UR838100	C. EL	100uF 16V		Q416	V5876900	TR	2SC4449 E, F
	C454	UR866470	C. EL	4.7uF 50V		Q417	WN970800	TR. PAIR	STD04P/STD04N
	C455	UR896470	C. EL	4.7uF 100V		Q420	WN970800	TR. PAIR	STD04P/STD04N
	C456	UR848100	C. EL	100uF 25V		Q421-422	WC398400	TR	2N5551C-AT
*	C457	WR080900	C. EL	12000uF 85V		Q423	VQ116600	TR. PAIR	2SA1837/C4793 0, Y
*	C458	WR080900	C. EL	12000uF 85V		Q426	VQ116600	TR. PAIR	2SA1837/C4793 0, Y
	C459	UR049470	C. EL	4700uF 25V		Q427	WN970800	TR. PAIR	STD04P/STD04N
	C460	UR049330	C. EL	3300uF 25V		Q430	WN970800	TR. PAIR	STD04P/STD04N
	C461	WH930500	C. EL	4700uF 16V	△	Q431	VV911900	TR. DGT	DTC114ESA TP
	C462	UR73A100	C. EL	10000uF 16V	△	Q432	WC397700	TR	2N5401C-AT
	C463	UR839100	C. EL	1000uF 16V		Q433	iA097040	TR	2SA970 GR
	C464-465	WN165500	C. PP	0.022uF 100V		Q434	VV911900	TR. DGT	DTC114ESA TP
	C466-467	WB540200	C. POL. MTL	0.1uF 250V		Q435	WC398500	TR. DGT	KRA102M-AT
	C468	WN156000	C. PP	1000pF 250V		R407-408	HV755220	R. CAR. FP	220 Ω 1/4W
	C469	VR324900	C. MYLAR	0.1uF 100V		R409	HV755560	R. CAR. FP	560 Ω 1/4W
	C470-471	WJ608900	C. MYLAR	1000pF 100V		R411	HV755560	R. CAR. FP	560 Ω 1/4W
*	C472-475	WJ609200	C. MYLAR	1800pF 100V		R415-416	HV755220	R. CAR. FP	220 Ω 1/4W
	C551-553	UR266100	C. EL	1uF 50V		R417-418	HV754220	R. CAR. FP	22 Ω 1/4W
	C554-556	WK041800	C. EL	10uF 16V		R421	HV755330	R. CAR. FP	330 Ω 1/4W
	C557	WJ603700	C. MYLAR	1000pF 50V		R422	HV755220	R. CAR. FP	220 Ω 1/4W
	C561-563	WJ604500	C. MYLAR	4700pF 50V					

\* New Parts (新規部品)

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## P.C.B. FUNCTION

Ref No.	Part No.	Description	Markets	Ref No.	Part No.	Description	Markets
*	WR479500	P. C. B.	FUNCTION	*	C109	WJ606000 C. MYLAR	0. 068uF 50V
	CB2	VN520900 CN. BS. PIN	52045 26P TE		C114	WJ602900 C. MYLAR	100pF 50V K
	CB3-4	LB918020 CN. BS. PIN	2P		C117-118	UR147330 C. EL	33uF 25V
	CB12	VQ963000 CN. BS. PIN	9P	*	C119-122	UR146470 C. EL	4. 7uF 25V
	CB15	VQ047400 CN. BS. PIN	19P	*	C123-124	UR166470 C. EL	4. 7uF 50V
	CB17	VB390100 CN. BS. PIN	5P		C127-128	WJ603600 C. MYLAR	820pF 50V J
	CB19	VQ963400 CN. BS. PIN	13P		C129-132	WJ604000 C. MYLAR	1800pF 50V
	CB21	VM859700 CN. BS. PIN	16P		C133-134	WJ603100 C. MYLAR	220pF 50V
	CB22	LB918080 CN. BS. PIN	8P		C139-140	US135100 C. CE. CHP	0. 1uF 16V
	CB304	VQ045500 CN. BS. PIN	26P		C141-142	UR137470 C. EL	47uF 16V
	CB601	VQ961200 CN. BS. PIN	9P		C145-146	WJ602900 C. MYLAR	100pF 50V K
	CB602	VQ961600 CN	13P		C304-306	WJ603300 C. MYLAR	470pF 50V J
	C1-8	WJ603300 C. MYLAR	470pF 50V J		C307-309	UR147470 C. EL	47uF 25V
	C9-16	UR147220 C. EL	22uF 25V		C310-312	WP172700 C. MYLAR	390pF 50V
	C17-24	UR166470 C. EL	4. 7uF 50V		C320-322	UR147470 C. EL	47uF 25V
	C25-32	UR147330 C. EL	33uF 25V		C323-325	WJ602900 C. MYLAR	100pF 50V K
*	C35-40	UR146470 C. EL	4. 7uF 25V		C326-328	UR238100 C. EL	100uF 16V
	C41	UR847330 C. EL	33uF 25V		C329-330	UR147220 C. EL	22uF 25V
*	C42-43	UR146470 C. EL	4. 7uF 25V		C332-336	UR147220 C. EL	22uF 25V
	C44	UR838100 C. EL	100uF 16V		C337	WE100200 C. PP	22pF 630V
	C45	US135100 C. CE. CHP	0. 1uF 16V		C338	UR238100 C. EL	100uF 16V
	C46	UR847330 C. EL	33uF 25V		C343-344	WJ603000 C. MYLAR	150pF 50V
	C47	US135100 C. CE. CHP	0. 1uF 16V		C345-346	UR838100 C. EL	100uF 16V
	C48-49	UA352120 C. MYLAR	120pF 50V		C347-348	UR147220 C. EL	22uF 25V
	C51	WJ603700 C. MYLAR	1000pF 50V		C349-350	WJ603400 C. MYLAR	560pF 50V
	C52-53	UR166100 C. EL	1uF 50V		C351-352	WJ604300 C. MYLAR	3300pF 50V
	C54	US062100 C. CE. CHP	100pF 50V B		C353-356	WJ604600 C. MYLAR	5600pF 50V
	C55	UA352120 C. MYLAR	120pF 50V		C357-358	WE100200 C. PP	22pF 630V
	C58	UR837470 C. EL	47uF 16V		C359-362	WJ605400 C. MYLAR	0. 022uF 50V J
	C60	UR837100 C. EL	10uF 16V		C363-364	UR137470 C. EL	47uF 16V
	C64	UR147330 C. EL	33uF 25V		C365-366	WJ605300 C. MYLAR	0. 018uF 50V
	C65	UR837100 C. EL	10uF 16V		C367-368	WJ603300 C. MYLAR	470pF 50V J
	C66	UR147330 C. EL	33uF 25V		C369-370	UR137470 C. EL	47uF 16V
*	C68-69	UR146470 C. EL	4. 7uF 25V		C371-372	WJ605300 C. MYLAR	0. 018uF 50V
	C71	UR837470 C. EL	47uF 16V		C373-374	WJ604600 C. MYLAR	5600pF 50V
	C72	UR866100 C. EL	1uF 50V		C376-377	WJ604100 C. MYLAR	2200pF 50V
	C73-74	UR147330 C. EL	33uF 25V		C378-379	WP172700 C. MYLAR	390pF 50V
	C75	UR147100 C. EL	10uF 25V		C381-382	WJ604600 C. MYLAR	5600pF 50V
	C76	UA355100 C. MYLAR	0. 1uF 50V		C383-384	WE100200 C. PP	22pF 630V
	C77	UR147220 C. EL	22uF 25V		C601-602	UR147470 C. EL	47uF 25V
	C78	UA355100 C. MYLAR	0. 1uF 50V		C604-606	US062470 C. CE. CHP	470pF 50V B
	C79	UR147220 C. EL	22uF 25V		C607	UR848100 C. EL	100uF 25V
	C80-81	UR147330 C. EL	33uF 25V		C608	US035100 C. CE. CHP	0. 1uF 16V B
	C82	UR147100 C. EL	10uF 25V		C609	US062470 C. CE. CHP	470pF 50V B
	C83	UA355100 C. MYLAR	0. 1uF 50V		C610-611	UR147470 C. EL	47uF 25V
	C84	UR147220 C. EL	22uF 25V		C612	UR868100 C. EL	100uF 50V
	C85	UA355100 C. MYLAR	0. 1uF 50V		C613-614	US062470 C. CE. CHP	470pF 50V B
	C86	UR147220 C. EL	22uF 25V		C615-616	WJ604300 C. MYLAR	3300pF 50V
*	C87-90	UR146470 C. EL	4. 7uF 25V		C617	US062470 C. CE. CHP	470pF 50V B
	C91-92	WJ602900 C. MYLAR	100pF 50V K		C619	US061180 C. CE. CHP	18pF 50V B
	C94	UR838100 C. EL	100uF 16V		C620	US145100 C. CE. CHP	0. 1uF 25V
	C97	UR838100 C. EL	100uF 16V		C621	WJ604300 C. MYLAR	3300pF 50V
*	C100-101	UR166470 C. EL	4. 7uF 50V		C622	UR868100 C. EL	100uF 50V
	C104	WJ605800 C. MYLAR	0. 047uF 50V J		C623	US061120 C. CE. CHP	12pF 50V B

\* New Parts ( 新規部品 )

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## KMA-950

## P.C.B. FUNCTION

Ref No.	Part No.	Description	Markets
C624	VR169200	C. MYLAR	0. 47uF 50V
C625	UR828470	C. EL	470uF 10V
C626-628	US035100	C. CE. CHP	0. 1uF 16V B
C629	UA352120	C. MYLAR	120pF 50V
C630-631	UR165220	C. EL	0. 22uF 50V
C632-633	UA352120	C. MYLAR	120pF 50V
C634	UR167100	C. EL	10uF 50V
C635	US135100	C. CE. CHP	0. 1uF 16V
C636	UR867100	C. EL	10uF 50V
C637	US145100	C. CE. CHP	0. 1uF 25V
C638	UR867100	C. EL	10uF 50V
C640	US145100	C. CE. CHP	0. 1uF 25V
C641	UR166100	C. EL	1uF 50V
C642-643	WJ604600	C. MYLAR	5600pF 50V
C644-645	WJ603500	C. MYLAR	680pF 50V
C646-647	WJ604700	C. MYLAR	6800pF 50V
* C648-649	UR146470	C. EL	4. 7uF 25V
C650-651	WJ603000	C. MYLAR	150pF 50V
C652-653	WJ605800	C. MYLAR	0. 047uF 50V J
C654	WJ604800	C. MYLAR	8200pF 50V
C655	WJ603500	C. MYLAR	680pF 50V
C656	WJ604800	C. MYLAR	8200pF 50V
C657-659	WJ603500	C. MYLAR	680pF 50V
C660-661	WJ604800	C. MYLAR	8200pF 50V
C662	WJ604700	C. MYLAR	6800pF 50V
C663	WJ603000	C. MYLAR	150pF 50V
C664	WJ605800	C. MYLAR	0. 047uF 50V J
C665	WJ604700	C. MYLAR	6800pF 50V
C666	WJ603400	C. MYLAR	560pF 50V
C667-668	UR147470	C. EL	47uF 25V
C670-671	UR147470	C. EL	47uF 25V
C672-673	UR147220	C. EL	22uF 25V
C674-675	WJ603000	C. MYLAR	150pF 50V
C676-677	UR146470	C. EL	4. 7uF 25V
C683-684	UR146470	C. EL	4. 7uF 25V
C833-836	UR137100	C. EL	10uF 16V
C837	US064100	C. CE. CHP	0. 01uF 50V B
C838-839	US135100	C. CE. CHP	0. 1uF 16V
C844	UR837470	C. EL	47uF 16V
C845-846	UR837100	C. EL	10uF 16V
C847	US062100	C. CE. CHP	100pF 50V B
C848	UR866100	C. EL	1uF 50V
C849	UR837470	C. EL	47uF 16V
C856	US062470	C. CE. CHP	470pF 50V B
C857-858	UR166100	C. EL	1uF 50V
C859-868	UR137100	C. EL	10uF 16V
C869-872	WP172700	C. MYLAR	390pF 50V
D8	VT332900	DIODE	1SS355
D12	VV657700	DIODE. ZENR	RLZ4. 7A 4. 7V
D15-16	VU992200	DIODE. ZENR	MAZ8047GML 4. 7V
D17-18	VT332900	DIODE	1SS355
D601-604	VT332900	DIODE	1SS355
D607-608	VT332900	DIODE	1SS355
D803	VT332900	DIODE	1SS355

\* New Parts ( 新規部品 )

Ref No.	Part No.	Description	Markets
D804	VV657700	DIODE. ZENR	RLZ4. 7A 4. 7V
D805-806	VT332900	DIODE	1SS355
D807	VV658100	DIODE. ZENR	RLZ5. 1B 5. 1V
IC1-4	X7351A00	IC	UPC4570G2-E1-A
IC5	X5043A00	IC	NJU7313AM
IC6-7	X7351A00	IC	UPC4570G2-E1-A
IC8-9	XZ545A00	IC	YAC520-EE2
IC10-11	X7351A00	IC	UPC4570G2-E1-A
IC14	X7351A00	IC	UPC4570G2-E1-A
* IC15	YA945A00	IC. CPU	R5F212A8SNFA written
IC16	X7802A00	IC	M95010-WMN6TP
IC17	XS534A00	IC	NJM78M05DL1A
IC18	X7351A00	IC	UPC4570G2-E1-A
IC300-301	X7351A00	IC	UPC4570G2-E1-A
IC303	X7351A00	IC	UPC4570G2-E1-A
IC305	X7351A00	IC	UPC4570G2-E1-A
IC307	X7351A00	IC	UPC4570G2-E1-A
IC602	XH853B00	IC	YSS205B-F/KP
IC605	X7356A00	IC	PCM1780DBQR
IC606-607	X0652A00	IC	M5M51008DFP-55H
IC608	X7351A00	IC	UPC4570G2-E1-A
IC610-612	X7351A00	IC	UPC4570G2-E1-A
IC614-615	X7351A00	IC	UPC4570G2-E1-A
IC616-617	XV944A00	IC	TC74HC4053AFT
IC618	X7351A00	IC	UPC4570G2-E1-A
PJ4	WP307500	JACK. PIN	6P
PJ6	WP335400	JACK. PIN	4P
PJ7	WP307300	JACK. PIN	2P
Q3	VV655400	TR. DGT	DTC114EKA
Q4	VV556500	TR	2SA1037K Q, R, S
Q5	VV655400	TR. DGT	DTC114EKA
Q6	VV556500	TR	2SA1037K Q, R, S
Q10-19	VZ725900	TR	2SD1938F S, T
Q21-22	VV556400	TR	2SC2412K Q, R, S
Q30-31	VZ725900	TR	2SD1938F S, T
* R59	WB625500	R. MTL. OXD	15 Ω 1W
R862	HV755680	R. CAR. FP	680 Ω 1/4W
ST1-2	WA789600	SCR. TERM	M3
ST301	WA789600	SCR. TERM	M3
ST601-602	WA789700	SCR. TERM	D3. 5
VR1-4	WN954400	VR	B 50K Ω
VR300-302	WS021300	VR	B 20K RK09K1110D4W
VR303	WQ335000	VR	B 10K Ω RK09711106
VR304	WN960900	VR	B 10K Ω
VR306-307	WN961000	VR	B 50K Ω
VR310-311	WN961000	VR	B 50K Ω
VR316	WN961000	VR	B 50K Ω
XL1	WF997400	RSNR. CE	20MHz
XL601	WB872100	RSNR. CRYST	16. 9344MHz

\* New Parts ( 新規部品 )

## KMA-950

## P.C.B. OPERATION

Ref No.	Part No.	Description	Markets	Ref No.	Part No.	Description	Markets
*	WR479700	P. C. B.	OPERATION				
CB237	VQ044700	CN. BS. PIN	16P	D758	WP484900	LED	UMBER
CB562	VP245600	CN	2P	D759-760	VT332900	DIODE	1SS355
CB706	VQ044900	CN. BS. PIN	19P	D762-764	WP484900	LED	UMBER
CB707	VB858300	CN. BS. PIN	4P	D765	VT332900	DIODE	1SS355
CB901	VB858600	CN. BS. PIN	7P	D766	VU992200	DIODE. ZENR	MAZ8047GML 4. 7V
C239	UB044100	C. CE. CHP	0. 01uF 50V	D767	VT332900	DIODE	1SS355
C240-241	US145100	C. CE. CHP	0. 1uF 25V	D905	WP484900	LED	AMBER
C242	UR828100	C. EL	100uF 10V	IC235-236	XT398A00	IC	BA7649AF-E2
C243-244	UR866100	C. EL	1uF 50V	IC237	XD598A00	IC	TC74HCU04AFEL INV
C245	UB052120	C. CE. CHP	120pF 50V	IC238-239	XT396A00	IC	NJM2267M 2CH
C246	UB012220	C. CE. CHP	220pF 50V	IC240	X6292A00	IC	TC74HC595AF (EL)
C247	UR866100	C. EL	1uF 50V	IC241	X7351A00	IC	UPC4570G2-E1-A
C248-249	UB044100	C. CE. CHP	0. 01uF 50V	IC701	X9730A00	IC	NJU3718AM
C250	UR828100	C. EL	100uF 10V	* JK235-236	WP945900	JACK. PHONE	MSJ-064-05B
C251	WJ603700	C. MYLAR	1000pF 50V	JK237	VJ875300	JACK. DIN	4P
C252	UR819100	C. EL	1000uF 6. 3V	JK395-397	WN753900	JACK. PHONE	MSJ-064-09I
C253	UR837100	C. EL	10uF 16V	PJ238	WP323900	JACK. PIN	4P
C254-255	UR819100	C. EL	1000uF 6. 3V	Q243	VQ986700	TR	2SC4081 T106
C256	WJ603700	C. MYLAR	1000pF 50V	Q701-709	WC398400	TR	2N5551C-AT
C257	WJ602900	C. MYLAR	100pF 50V K	Q710	VV655400	TR. DGT	DTC114EKA
C259-260	WJ602900	C. MYLAR	100pF 50V K	Q711	VE613300	TR	2SB1237 Q, R
C263-264	WJ603700	C. MYLAR	1000pF 50V	Q712	VV655400	TR. DGT	DTC114EKA
C265-266	UR147470	C. EL	47uF 25V	Q713	VE613300	TR	2SB1237 Q, R
C267-268	WE100100	C. PP	15pF 630V	Q714	VV655400	TR. DGT	DTC114EKA
C269-270	WJ603700	C. MYLAR	1000pF 50V	Q715	VE613300	TR	2SB1237 Q, R
C271-273	UA352120	C. MYLAR	120pF 50V	Q716	VV655400	TR. DGT	DTC114EKA
C274-275	UR147470	C. EL	47uF 25V	Q717	VE613300	TR	2SB1237 Q, R
C276-277	WE100100	C. PP	15pF 630V	Q718	VV655400	TR. DGT	DTC114EKA
C278-279	UR148100	C. EL	100uF 25V	Q719	VE613300	TR	2SB1237 Q, R
C280-281	UR866100	C. EL	1uF 50V	Q720	VV655400	TR. DGT	DTC114EKA
C283	UR866100	C. EL	1uF 50V	Q721	VE613300	TR	2SB1237 Q, R
C284-286	UB044100	C. CE. CHP	0. 01uF 50V	Q722	VV655400	TR. DGT	DTC114EKA
C287-290	US135100	C. CE. CHP	0. 1uF 16V	Q723	VE613300	TR	2SB1237 Q, R
C291	UR817470	C. EL	47uF 6. 3V	Q724	VV556400	TR	2SC2412K Q, R, S
C292	US145100	C. CE. CHP	0. 1uF 25V	Q725-726	VV655400	TR. DGT	DTC114EKA
C293-294	US063330	C. CE. CHP	3300pF 50V B	R294	HV754100	R. CAR. FP	10 Ω 1/4W
C295	US063100	C. CE. CHP	1000pF 50V B	ST235	WA789600	SCR. TERM	M3
C562	WB121400	C. CE. SAFTY	0. 01uF 295V	SW562	V9661700	SW. PUSH	SY16-32-4 (U99S2) /T
C701-702	US135100	C. CE. CHP	0. 1uF 16V	SW701	WD483100	SW. TACT	SKRGAAD010
C703	UM397100	C. EL	10uF 16V	SW702	WK413900	ENCODER	EC11E09244AW
C704-705	UM388100	C. EL	100uF 10V	SW703-705	WQ336800	SW. RT. ENC	EC12E2460816
C706	UM416100	C. EL	1uF 50V	SW901	WD483100	SW. TACT	SKRGAAD010
C707	US062120	C. CE. CHP	120pF 50V B	U701	WK918500	L. DTCT	GP1UE271RKVF
C708	US062390	C. CE. CHP	390pF 50V B	* WQ478000		SPACER	LED H3
C709-710	US062120	C. CE. CHP	120pF 50V B				
C711-712	WJ603300	C. MYLAR	470pF 50V J				
D235-236	VT332900	DIODE	1SS355				
D248-249	VD631600	DIODE	1SS133, 176				
D250-251	VD303900	D10D. ARRAY	1SS226 TE85R				
D701-709	WN928200	LED. 2COLOR	RED/GREEN				
D710-717	WP354200	LED	GREEN				
D718-719	WN928200	LED. 2COLOR	RED/GREEN				
D720-757	WP354200	LED	GREEN				

\* New Parts ( 新規部品 )

\* New Parts ( 新規部品 )

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P.C.B. MAIN

Ref No.	Part No.	Description	Markets
*	WR479300	P. C. B.	MAIN
CB401	VB389900	CN. BS. PIN	3P
CB402	VB390500	CN. BS. PIN	9P
CB403	LB918070	CN. BS. PIN	7P
CB404-407	WN103000	CLIP. FUSE	TP00351-31
△	CB408	VG879900	CN. BS. PIN 2P
△	CB409	VZ120400	CN. BS. PIN 3P
△	CB410	VG879900	CN. BS. PIN 2P
	CB411	LB932040	CN. BS. PIN 4P
	CB412	LB932050	CN. BS. PIN 5P
	C401-402	UU266100	C. EL 1uF 50V
	C403-404	WJ603200	C. MYLAR 330pF 50V
	C405-406	WE100400	C. PP 47pF 630V
	C407-408	UR297100	C. EL 10uF 100V
	C409-410	UR267220	C. EL 22uF 50V
	C411-412	WJ605000	C. MYLAR 0.01uF 50V J
	C413-414	UR267100	C. EL 10uF 50V
	C415-416	WJ603100	C. MYLAR 220pF 50V
*	C417-418	WG221900	C. PP 68pF 630V
	C419-420	UR297100	C. EL 10uF 100V
	C422	WE100900	C. PP 220pF 630V
	C423-426	UA354220	C. MYLAR 0.022uF 50V
*	C427-430	UR277470	C. EL 47uF 63V
	C431-434	UA354100	C. MYLAR 0.01uF 50V
	C435-438	VE326300	C. MYLAR 0.18uF 50V
	C439-442	V5058000	C. MYLAR 4.7uF 250V
	C443-446	VE326400	C. MYLAR 0.22uF 50V
*	C447-450	UR298330	C. EL 330uF 100V
	C451	V8689300	C. CE. SMI 0.1uF 25V
	C452	WN156000	C. PP 1000pF 250V
	C453	UR838100	C. EL 100uF 16V
	C454	UR866470	C. EL 4.7uF 50V
	C455	UR896470	C. EL 4.7uF 100V
	C456	UR848100	C. EL 100uF 25V
	C457	WJ788600	C. EL 12000uF 71V
	C458	WJ788600	C. EL 12000uF 71V
	C459	URO49470	C. EL 4700uF 25V
	C460	URO49330	C. EL 3300uF 25V
	C461	WH930500	C. EL 4700uF 16V
	C462	UR73A100	C. EL 10000uF 16V
	C463	UR839100	C. EL 1000uF 16V
	C464-465	WN165500	C. PP 0.022uF 100V
	C466-467	WB540200	C. POL. MTL 0.1uF 250V
	C468	WN156000	C. PP 1000pF 250V
	C469	VR324900	C. MYLAR 0.1uF 100V
	C470-471	WJ608900	C. MYLAR 1000pF 100V
*	C472-475	WJ609200	C. MYLAR 1800pF 100V
	C551-553	UR266100	C. EL 1uF 50V
	C554-556	WK041800	C. EL 10uF 16V
	C557	WJ603700	C. MYLAR 1000pF 50V
	C571-572	WJ604500	C. MYLAR 4700pF 50V
	C573-574	WJ605000	C. MYLAR 0.01uF 50V J
	D401-406	VD631600	DIODE 1SS133, 176
	D407-410	VU264100	DIODE 1SR139, 400

Ref No.	Part No.	Description	Markets
D411-414	VG437700	DIODE. ZENR	MTZJ5. 6B 5. 6V
D415-426	V6934100	DIODE	EL02ZLF-H5K
D427-434	VP779200	DIODE	S2L20U
D435	VD631600	DIODE	1SS133, 176
D436	VG437500	DIODE. ZENR	MTZJ5. 1C 5. 1V
D437-438	VG440300	DIODE. ZENR	MTZJ12C 12V
D439	VG440200	DIODE. ZENR	MTZJ12B 12V
D440	VD631600	DIODE	1SS133, 176
△	D441	WK878000	DIODE. BRG D15XBN20-7001 15A
	D442	WH487300	DIODE. BRG RS203M 2. 0A 200V
	D443	VS997800	DIODE 1T2
	D444	WJ286700	DIODE. BRG RS403M 4A 140V
	D445-446	VN008700	DIODE 1SS270A
	D551-557	VD631600	DIODE 1SS133, 176
△	F401	VV071600	FUSE 2. 5A 250V
△	F402	VV071700	FUSE 3. 15A 250V
	G405	V5995800	PLATE. GND
	IC401-402	X0515A00	IC LM61C1Z THERMAL
	IC551	XJ608A00	IC NJM7812FA
	IC552	X4154A00	IC KIA7912PI
	IC553	XJ607A00	IC NJM7805FA 5V
	Q401-402	iA097040	TR 2SA970 GR
	Q403-404	iC181510	TR 2SC1815 Y
	Q405-406	iA097030	TR 2SA970 GR, BL
	Q407-408	iC181510	TR 2SC1815 Y
	Q409-410	iA097040	TR 2SA970 GR
	Q411-412	iA101510	TR 2SA1015 Y
	Q413	V5876800	TR 2SA1689 E, F
	Q414	V5876900	TR 2SC4449 E, F
	Q415	V5876800	TR 2SA1689 E, F
	Q416	V5876900	TR 2SC4449 E, F
	Q417	WN970800	TR. PAIR STD04P/STD04N
	Q420	WN970800	TR. PAIR STD04P/STD04N
	Q421-422	WC398400	TR 2N5551C-AT
	Q423	VQ116600	TR. PAIR 2SA1837/C4793 0, Y
	Q426	VQ116600	TR. PAIR 2SA1837/C4793 0, Y
△	Q427	WN970800	TR. PAIR STD04P/STD04N
△	Q430	WN970800	TR. PAIR STD04P/STD04N
	Q431	VV911900	TR. DGT DTC114ESA TP
	Q432	WC397700	TR 2N5401C-AT
	Q433	iA097040	TR 2SA970 GR
	Q434	VV911900	TR. DGT DTC114ESA TP
	Q435	WC398500	TR. DGT KRA102M-AT
	R407-408	HV755220	R. CAR. FP 220 Ω 1/4W
	R409	HV755560	R. CAR. FP 560 Ω 1/4W
	R411	HV755560	R. CAR. FP 560 Ω 1/4W
	R415-416	HV755220	R. CAR. FP 220 Ω 1/4W
	R417-418	HV754220	R. CAR. FP 22 Ω 1/4W
	R421	HV755330	R. CAR. FP 330 Ω 1/4W
	R422	HV755220	R. CAR. FP 220 Ω 1/4W
	R423	HV755330	R. CAR. FP 330 Ω 1/4W
	R424	HV755220	R. CAR. FP 220 Ω 1/4W
	R425-428	HV753220	R. CAR. FP 2. 2 Ω 1/4W
	R429-430	HV755820	R. CAR. FP 820 Ω 1/4W

\* New Parts ( 新規部品 )

\* New Parts ( 新規部品 )

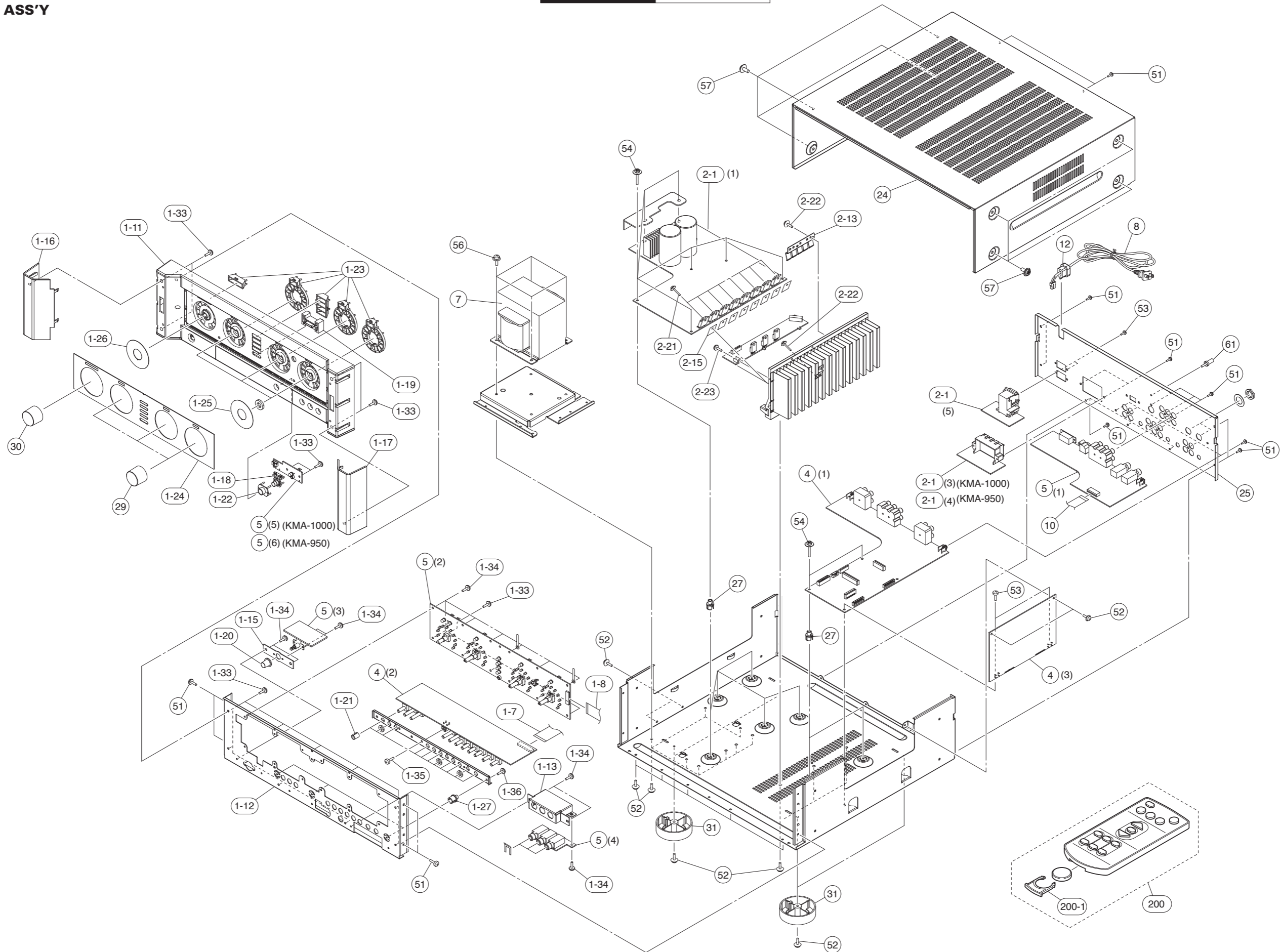


KMA-1000/KMA-950

KMA-1000

KMA-950

● OVERALL ASS'Y



KMA-1000

KMA-950

Ref No.	Part No.	Description	Remarks	Markets
* 1-7	WR401600	FLEXIBLE FLAT CABLE	26P 180mm P=1.25	
* 1-8	WR394100	FLEXIBLE FLAT CABLE	19P 250mm P=1.25	
* 1-11	WR262500	FRONT PANEL		KMA-1000
* 1-11	WR262600	FRONT PANEL		KMA-950
* 1-16	WR976300	PANEL SIDE L		
* 1-17	WR976500	PANEL SIDE R		
1-18	WP332800	BUTTON ECHO ASS'Y		
1-19	WN974600	BUTTON INPUT		
1-20	WN975100	BUTTON POWER		
1-21	WN996600	KNOB CAP VOLUME		
1-22	WN976700	LENS ECHO		
1-23	WP180800	REFLECTOR LED		
* 1-24	WR901800	SHEET PANEL		KMA-1000
* 1-24	WR901900	SHEET PANEL		KMA-950
1-25	WN979300	SHEET VOLUME		
1-26	WN979500	SHEET KEY-CONTROL		
1-27	WH242000	SUPPORT H8		
1-33	WF266600	BIND HEAD P-TIGHT SCREW	3x8 MFZN2B3	
1-34	WF002600	PW HEAD B-TIGHT SCREW	3x8 MFZN2W3	
1-35	WE774100	BIND HEAD BONDING B-T. SCREW	3x8 MFZN2B3	
1-36	WQ315900	PW HEAD B-TIGHT SCREW	3x15 MFZN2W3	
* 2-1	WR479200	P. C. B. ASS'Y	MAIN	KMA-1000
* 2-1	WR479300	P. C. B. ASS'Y	MAIN	KMA-950
2-13	WG451000	SUPPORT TR	5P	
2-15	WM280900	MICA SHEET	TBM-51W	
2-21	WM220800	HEXAGONAL HEAD B-TIGHT SCREW	3x15 SP MFZN2W3	
2-22	WF002600	PW HEAD B-TIGHT SCREW	3x8 MFZN2W3	
2-23	WE774300	BIND HEAD B-TIGHT SCREW	3x8 MFZN2W3	
* 4	WR479400	P. C. B. ASS'Y	FUNCTION	KMA-1000
* 4	WR479500	P. C. B. ASS'Y	FUNCTION	KMA-950
* 5	WR479600	P. C. B. ASS'Y	OPERATION	KMA-1000
* 5	WR479700	P. C. B. ASS'Y	OPERATION	KMA-950
△ * 7	YA676A00	POWER TRANSFORMER		KMA-1000
△ * 7	YA675A00	POWER TRANSFORMER		KMA-950
△ 8	WB120600	POWER CABLE	2m	
* 10	WR390000	FLEXIBLE FLAT CABLE	16P 80mm P=1.25	
12	V2438700	CORD STOPPER	10P1	
24	WN988500	TOP COVER		
* 25	WR032100	REAR PANEL		KMA-1000
* 25	WR032200	REAR PANEL		KMA-950
27	WH242000	SUPPORT H8		
* 29	WR976600	KNOB	D28 MUSIC	KMA-1000
29	WQ165400	KNOB	D28 MUSIC	KMA-950
* 30	WR976700	KNOB	D28 KEY CONTROL	KMA-1000
30	WQ165500	KNOB	D28 KEY CONTROL	KMA-950
31	WE622300	LEG	D60 H21	
51	WE774100	BIND HEAD BONDING B-T. SCREW	3x8 MFZN2B3	
52	WF002600	PW HEAD B-TIGHT SCREW	3x8 MFZN2W3	
53	WE774300	BIND HEAD B-TIGHT SCREW	3x8 MFZN2W3	
54	WQ315900	PW HEAD B-TIGHT SCREW	3x15 MFZN2W3	
56	WE774700	BIND HEAD S-TIGHT SCREW	4x10 MFZN2W3	
57	VH313200	PW HEAD S-TIGHT SCREW	4x8-10 MFNI3BL	
61	AA627310	GROUND TERMINAL		

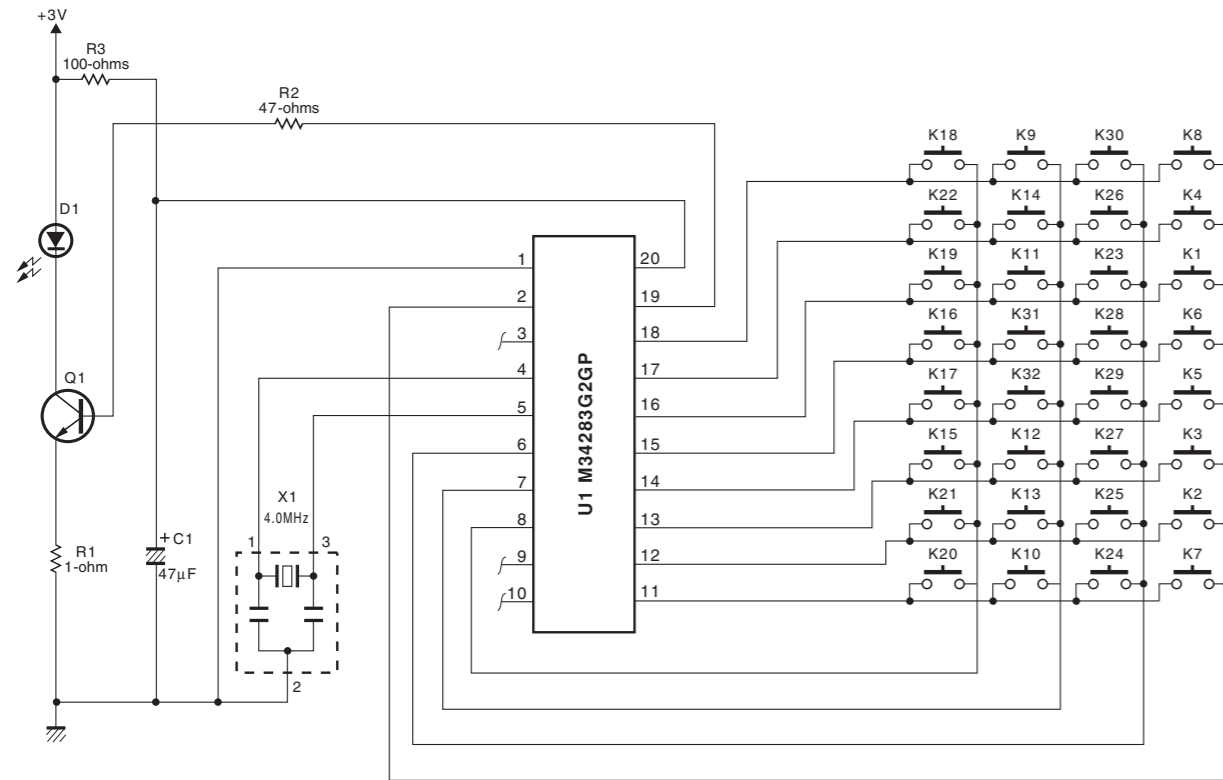
\* New Parts ( 新規部品 )

Ref No.	Part No.	Description	Remarks	Markets
200	WP390900	ACCESSORIES		
200-1	AAX71770	REMOTE CONTROL		
		BATTERY HOLDER	CG-4335 Black	2AA041110
		LITHIUM BATTERY	CR2025 1pc	

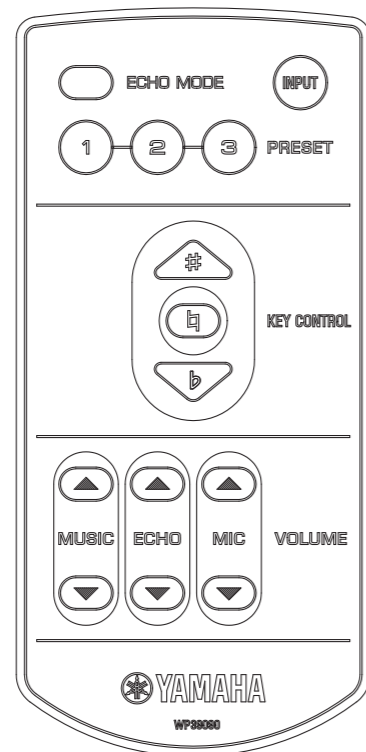
\* New Parts ( 新規部品 )

## ■ REMOTE CONTROL

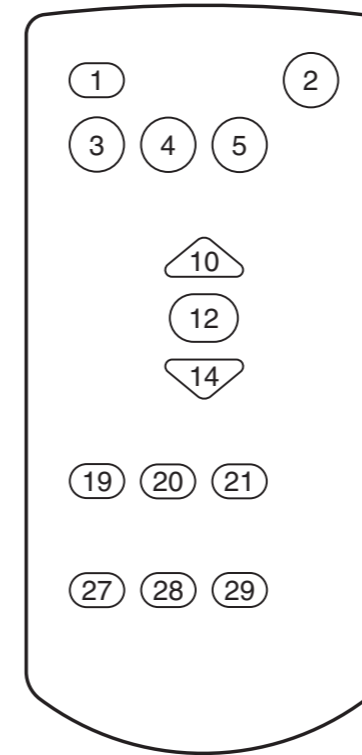
### ● SCHEMATIC DIAGRAM



### ● PANEL



### ● KEY NO. LAYOUT



### ● KEY CODE

Key no.	Key name	Custom code	Data code
1	ECHO MODE	7B	92
2	INPUT	7B	8C
3	PRESET 1	7B	DD
4	PRESET 2	7B	DE
5	PRESET 3	7B	DF
10	KEY CONTROL #	7B	96
12	KEY CONTROL ↑	7B	97
14	KEY CONTROL ↓	7B	98
19	MUSIC UP	7B	84
20	ECHO UP	7B	88
21	MIC UP	7B	86
27	MUSIC DOWN	7B	85
28	ECHO DOWN	7B	89
29	MIC DOWN	7B	87

### ● EXTERNAL (REMOTE IN) CODE

Command name	Code 1	Code 2
MUSIC up	7B-84	87-82
MUSIC down	7B-85	87-83
MIC up	7B-86	87-84
MIC down	7B-87	87-85
ECHO up	7B-88	87-86
ECHO down	7B-89	87-87
INPUT	7B-8C	-
DVD	7B-8E	-
TAPE	7B-8F	-
BGM	7B-90	-
AUX	7B-91	-
ECHO MODE	7B-92	-
KEY CONTROL up	7B-96	-
KEY CONTROL # 5	-	87-9D
KEY CONTROL # 4	-	87-88
KEY CONTROL # 3	-	87-89
KEY CONTROL # 2	-	87-8A
KEY CONTROL # 1	-	87-8B
KEY CONTROL ↑	7B-97	87-8C
KEY CONTROL ↓ 1	-	87-8D
KEY CONTROL ↓ 2	-	87-8E
KEY CONTROL ↓ 3	-	87-8F
KEY CONTROL ↓ 4	-	87-90
KEY CONTROL ↓ 5	-	87-9E
KEY CONTROL down	7B-98	87-92
ECHO 1	7B-C2	
ECHO 2	7B-C3	
ECHO 3	7B-C4	
PRESET 1	7B-DD	
PRESET 2	7B-DE	
PRESET 3	7B-DF	

(KMA-1000 model)



# SETUP MODE

## ■ Menus in Setup mode

You can set the following menus in Setup mode:

### 1. Power ON recall

Select Last memory or Preset, to recall the settings of MIC volume/ECHO amount/MUSIC volume/ECHO MODE when the unit is turned on.

**Last memory\*:** The settings when the unit was turned off last are recalled.

**Preset:** The settings saved to PRESET 1 are recalled.

### 2. Input mode

Set Input mode to Auto or Manual.

**Auto\*:** The input source is set automatically.

**Manual:** The input source is selected by INPUT.

Source is selected in order of DVD, AUX\*\*, TAPE, BGM.

### 3. Auto input condition

Set the conditions for each source (DVD, AUX\*\* and TAPE) for Auto Input mode described in 2.

**Audio\*:** The source is switched based on audio signal.

**Video:** The source is switched based on video signal.

**Audio/Video:** The source is switched based on audio or video signal.

For only this menu, select desired source by INPUT before selecting the desired item.

### 4. Enable remote

Enable or disable remote control.

**Enable\*:** The remote control is enabled.

**Disable:** The remote control is disabled.

### 5. Remote mode

Set the light receiving device.

**Front&Ext.:** Both the front panel and external remote control satellite receive the signal from the remote control.

**Front:** Only the front panel receives the signal.

**Ext.:** Only the external remote control satellite receives the signal.

### 6. MIC/MUSIC max level

Set the maximum volume of MIC and MUSIC.

**10\*:** No setting.

**9 to 3:** The maximum volume is set to the level indicated (2 to 0 cannot be set).

### 7. MIC/MUSIC volume select

Select how MIC and MUSIC volumes increase/decrease (i.e., the volume curve) when the controls are turned.

**Pattern 1\*:** Steep curve

**Pattern 2:** Less steep curve

**Pattern 3:** Least steep curve, and is most suitable for fine adjustment.

### 8. Ext Output select

Set the output signals from PRE OUT/SPEAKERS.

**Normal\*:** PRE OUT/SPEAKERS output both of the mic/

music signals.

**Separate:** PRE OUT outputs music; SPEAKERS outputs mic signals.

### 9. Power Amplifier mode

You can also use this unit as a 2ch power amplifier. Most of the functions on this unit are not available in Power Amplifier mode. The default setting is Normal (Digital Karaoke Mixing Amplifier). See the CAUTION on page 67.

### 10. Initializing

Reset all the settings set in Setup mode to the defaults.

**Cancel:** Initializing is not executed.

**Initialize:** Initializing is executed.

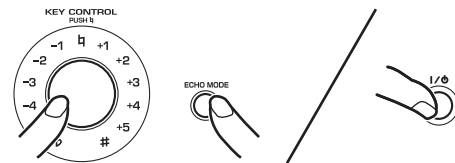
When pressing KEY CONTROL with MUSIC set to 3, Initializing is executed.

\* Default setting

\*\* KMA-1000 only

To set each menu above, set the corresponding controls as shown in the "Setup mode table" on pages 66 to 67 according to the following procedure.

- To enter Setup mode, turn off the main unit and press I/⏻ while pressing KEY CONTROL and ECHO MODE.**

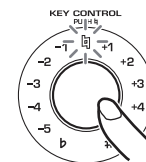


- Set KEY CONTROL and MUSIC according to the "Setup mode table" on page 66 to set desired menus and items.**

For Auto input condition, select the desired source before selecting the item.

Set all settings you want to change before moving to step 3.


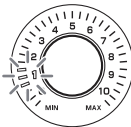
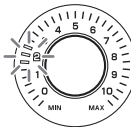

































- Press KEY CONTROL to enter the settings.**









"h" blinks once when the settings are entered.

- To terminate Setup mode, turn off the main unit.**

■ Setup mode table

Menu	KEY CONTROL	Items/MUSIC
1. Power ON recall	+1 	Last memory: 1  Preset: 2 
2. Input mode	+2 	Auto: 1  Manual: 2 
3. Auto input condition	+3 	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>KMA-1000     </p> </div> <div style="width: 45%;"> <p>KMA-950    </p> </div> </div> <p>Select desired source by INPUT. Example: DVD</p> <p>Audio: 1  Video: 2  Audio/Video: 3 </p>
4. Enable remote	+4 	Enable: 1  Disable: 2 
5. Remote mode	+5 	Front&Ext.: 1  Front: 2  Ext.: 3 
6. MIC/MUSIC max level	-1 	No setting: 10  Set to the indicated level: 9 to 3  Example: 3
7. MIC/MUSIC volume select	-2 	Pattern 1: 1  Pattern 2: 2  Pattern 3: 3 
8. Ext Output select	-3 	Normal: 1  Separate: 2 

**SETUP MODE**

Menu	KEY CONTROL	Items/MUSIC
9. Power Amplifier mode	<p style="text-align: center;">-4</p> 	<p>Normal: 1      Power Amplifier: 2</p>   <p>See the CAUTION.</p>
10. Initializing	<p style="text-align: center;">-5</p> 	<p>Cancel: 1      Initialize: 3</p>  

**CAUTION**

- Always use the default setting for Power Amplifier mode in normal use.
- If “Power Amplifier: 2” is set, the volume level of this unit will be maximum and cannot be controlled by rotating MUSIC on the front panel.
- Be careful of inadvertent setting to avoid excessive volume output.
- Consult your dealer when using this unit in Power Amplifier mode.

# KMA-1000/KMA-950

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