

ICD-P110/P210

SERVICE MANUAL

Ver. 1.3 2005.03



Photo: ICD-P110

US Model
AEP Model
UK Model
ICD-P110/P210
Canadian Model
E Model
Chinese Model
Tourist Model
ICD-P210

SPECIFICATIONS

Recording media	Built-in flash memory 16MB (ICD-P110)/32MB (ICD-P210), Monaural recording	Power requirements	Two LR03 (size AAA) alkaline batteries: 3 V DC
Recording time	ICD-P110: HQ: 1 hour 40 minutes SP: 4 hours 35 minutes LP: 7 hours 35 minutes ICD-P210: HQ: 3 hours 35 minutes SP: 9 hours 40 minutes LP: 15 hours 45 minutes	Dimensions (w/h/d) (not incl. projecting parts and controls)	30.0 × 103.5 × 16.0 mm (1 3/16 × 4 1/8 × 21/32 in.)
Frequency range	HQ: 250 Hz – 6,800 Hz SP/LP: 220 Hz – 3,400 Hz	Mass (incl. batteries)	60 g (2.1 oz)
Speaker	approx. 2.0 cm (13/16 in.) dia.	Supplied accessories	Operating instructions (For the IC recorder (1)/For the application software (1))/LR03 (size AAA) alkaline batteries (2) (For the US and UK only)/USB connecting cable (1) Application software (CD-ROM) (1) Carrying pouch (1) (For Chinese and Korea only) Receiver MDR-E0110LP/BC (1) (For Chinese and Korea only)
Power output	250 mW		
Input/Output	<ul style="list-style-type: none">• Earphone jack (minijack) for 8 – 300 ohms ear receiver/headphones• Microphone jack (minijack, monaural) Plug in power Minimum input level 0.6 mV 3 kilohms or lower impedance microphone		

Design and specifications are subject to change without notice.

IC RECORDER

9-879-330-04
2005C04-1
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Personal Audio Group
Published by Sony Engineering Corporation

SONY®

Notes on Chip Component Replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

● UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.

Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.

Soldering irons using a temperature regulator should be set to about 350 °C.

Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!

- Strong viscosity

Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.

- Usable with ordinary solder

It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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SECTION 1 SERVICE NOTE

1-1. CAUTIONS OF FLASH MEMORY (IC701) EXCHANGE

[Precaution When the Flash Memory (IC701) is Replaced]

When the flash memory (IC701) is replaced, be sure to perform the BAD BLOCK check* and writing of the model code. If they are not completed, the unit will not operate normally.

* BAD BLOCK check is to check the flash ROM memory area (the BAD BLOCK area) where data cannot be guaranteed. The resultant information of this check is stored in the TOC-AREA so that the BAD BLOCK area should not be used.

[BAD BLOCK Check Procedure]

1. When the power is turned on after the flash memory (IC701) is replaced, the BAD BLOCK check starts automatically and the [OPR] (D701) lights in orange.
2. In about 30 seconds after start of the check, the [OPR] (D701) changes the color to green indicating that the check is completed.

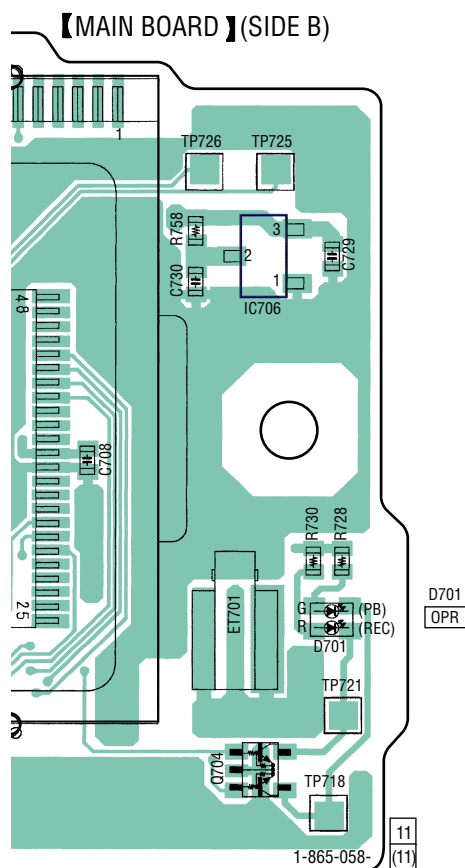
1-2. NOTES FOR REPLACEMENT OF THE MICROCOMPUTER (IC702)

The IC702 on the MAIN board has former and new types of models.

Former type : MB91F233LLGA-GE1 (flash microcomputer)

New type : MB91233LLGA-G-107E1 (mask microcomputer)

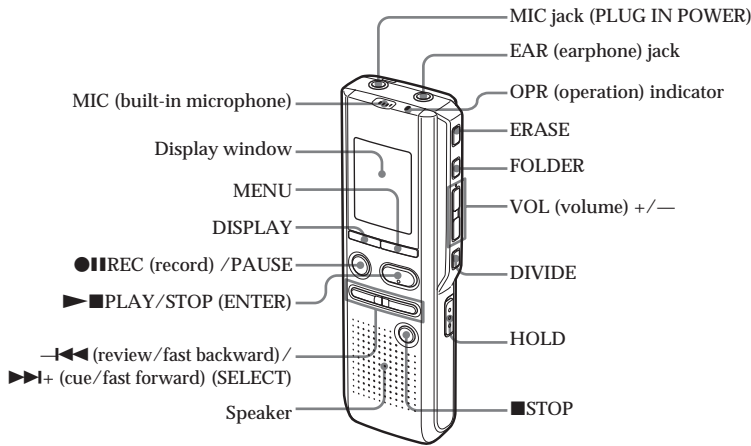
The service parts include only new types of models. When replacing the IC702, check the model number. The transistors Q706 and Q707 for program write should be removed when the previous type is installed.



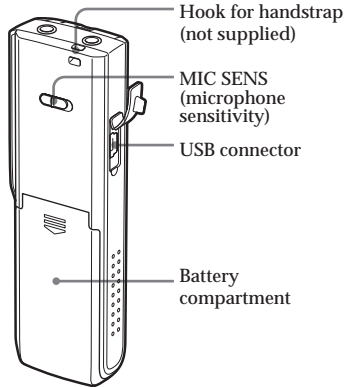
This section is extracted from instruction manual.

Index to Parts and Controls

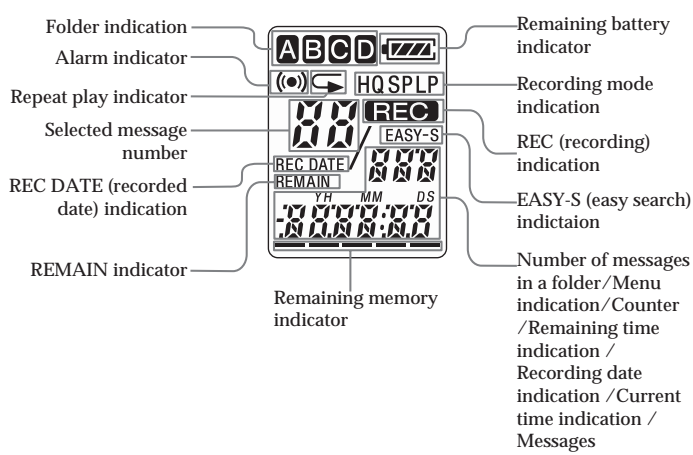
Main unit



Rear

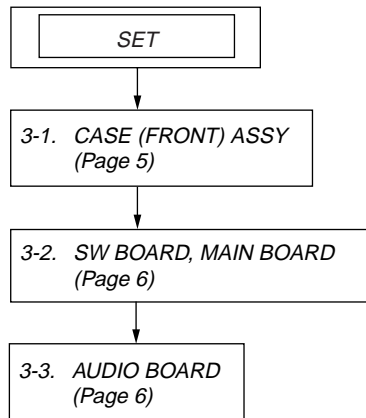


Display window



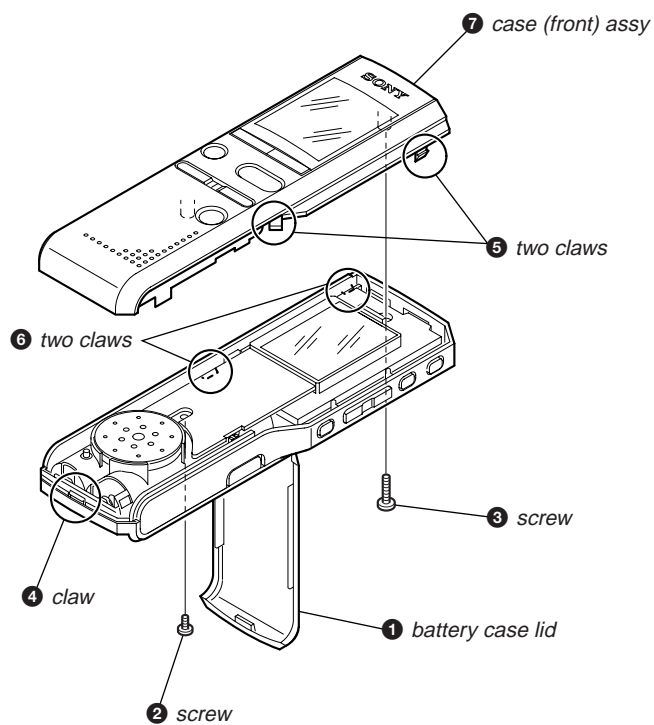
SECTION 3 DISASSEMBLY

- This set can be disassembled in the order shown below.

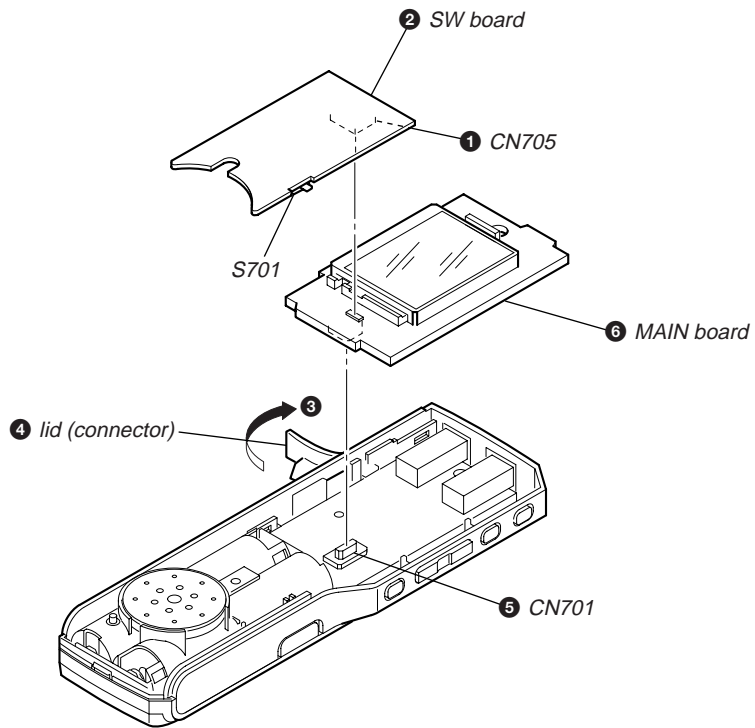


Note: Follow the disassembly procedure in the numerical order given.

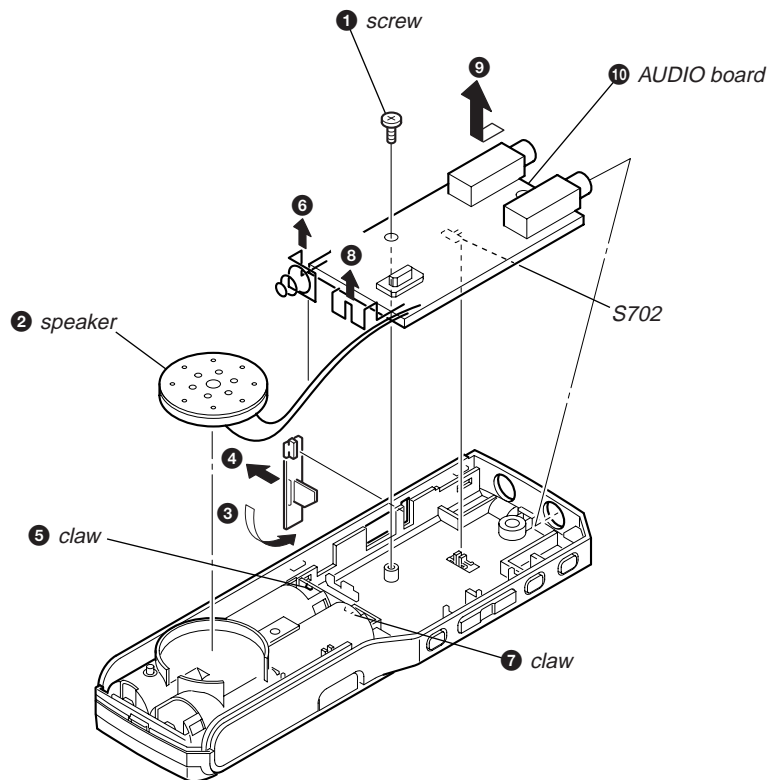
3-1. CASE (FRONT) ASSY



3-2. SW BOARD, MAIN BOARD



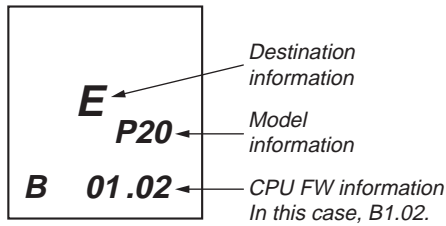
3-3. AUDIO BOARD



SECTION 4 SERVICE MODE

4-1. SETTING METHOD OF THE SERVICE MODE

To enter the service mode, turn on the **[HOLD]** switch while pressing the **[STOP]** key and **[VOL-]** key at the same time with the power on.



4-2. EXITING METHOD OF THE SERVICE MODE

Exit the service mode by turning off the power.

4-3. CONTROL OPERATIONS AND DISPLAYS

4-3-1. Layers

The service mode has a maximum of three layers according to the mode items:

Layer for item selection

Layer for operation selection

Layer for operating state or test result display

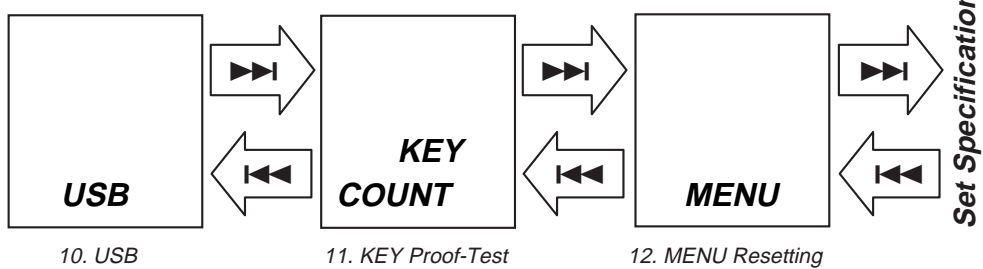
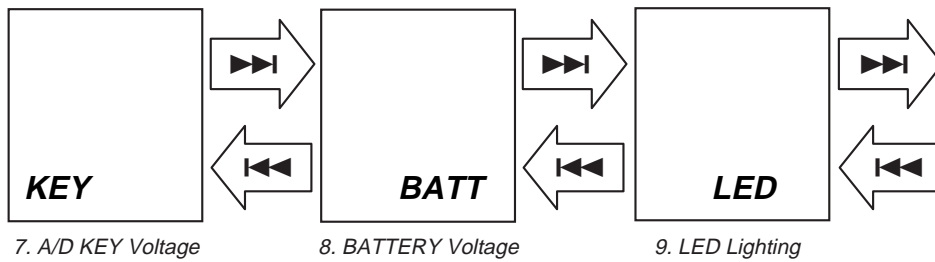
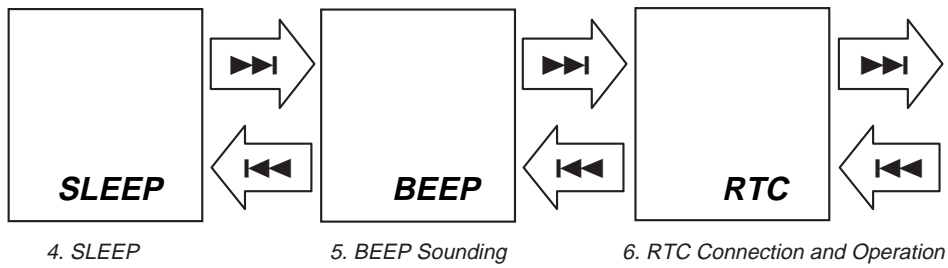
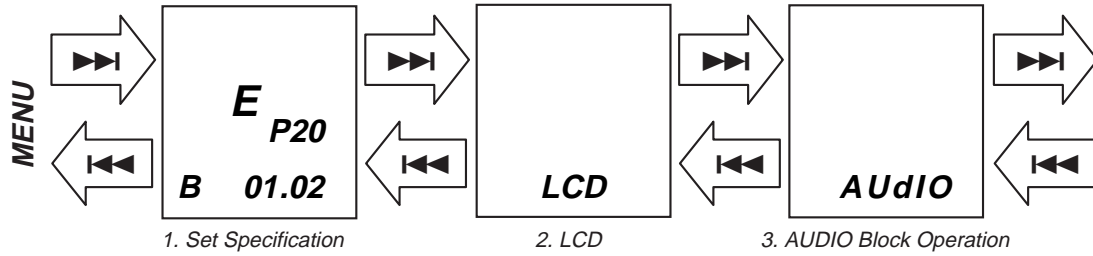
To switch to another layer in a certain layer, basically **[▶■]** key switches to another layer and **[■ STOP]** key returns to the previous layer.

To select the next item/operation in a layer, the **[▶▶]** key is used. To select the previous item/operation, the **[◀◀]** key is used. When the items are circulated by selecting them, the first item is displayed.

4-3-2. Control Operations for Item Selection

These control operations are used to select the following items.

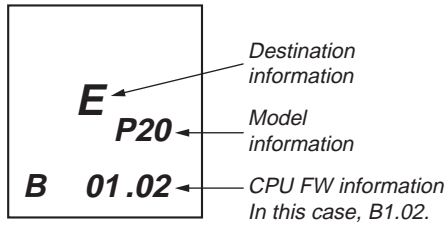
However, "Set Specification" has no more layers since all is displayed in the layer.



4-3-3. Control and Display Specification for Each Service Mode

1. Set specification

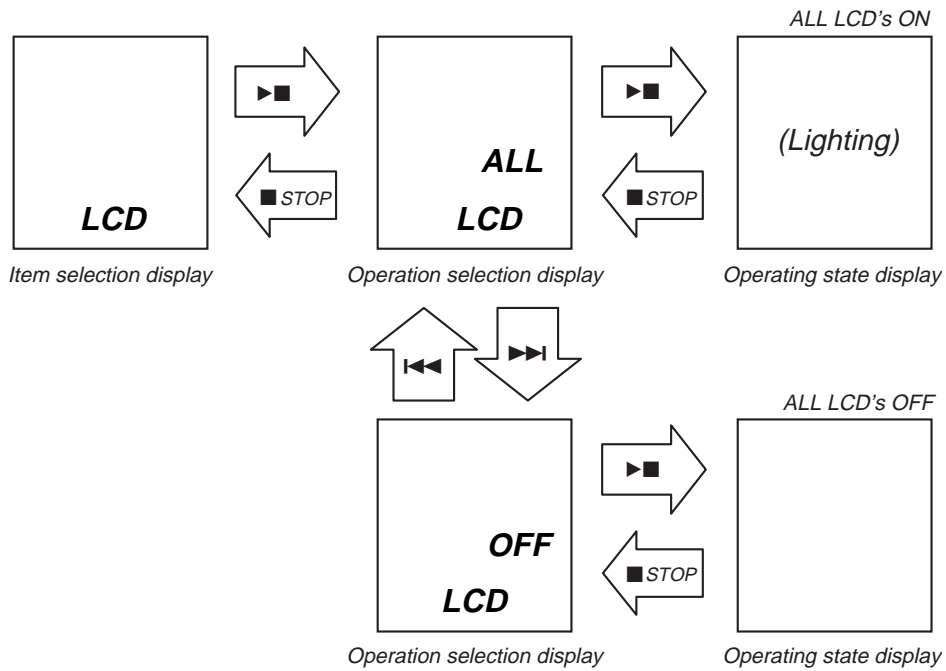
This mode checks the destination, model, CPU version and has no layers.



2. LCD segment connection

This mode checks the LCD Common/Segment connections.

There are two displays: All LCD's ON and All LCD's OFF.



3. AUDIO block operation

This mode tests the AUDIO circuit by DSP LOOP operation.

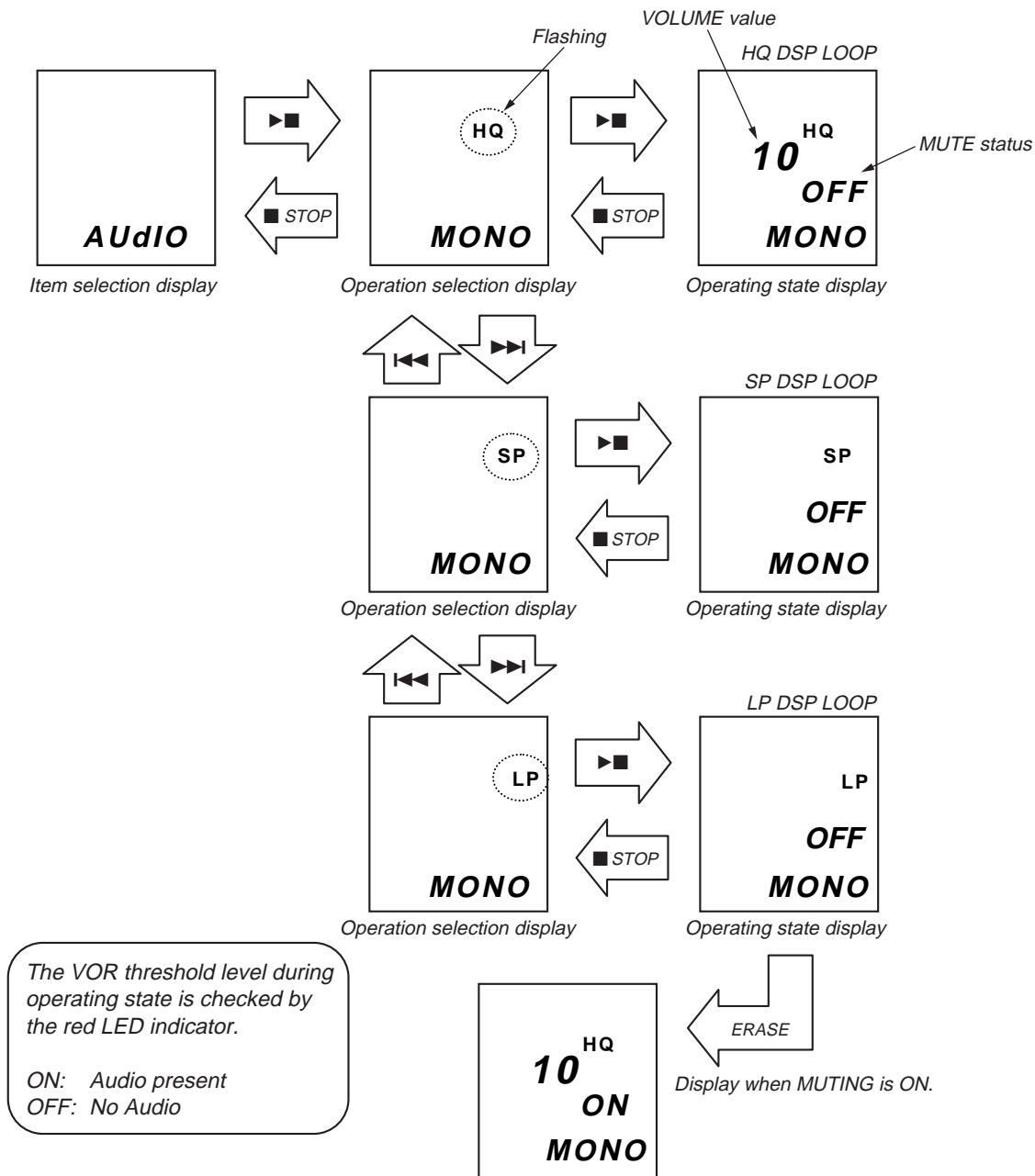
When earphone is not inserted into earphone jack, SP-AMP is turned ON. When it is inserted into earphone jack, SP-AMP is OFF and HP-AMP is ON.

Pressing of the **ERASE** key turns MUTING ON or OFF.

Pressing of the **VOL +** key or **VOL -** key allows the volume value to be controlled.

The MIC sensitivity can be changed LOW or HIGH by operating the **MIC SENS** switch. There is no display.

The VOR threshold level is shown by the red LED indicator that lights with AUDIO present.



4. SLEEP test

In this mode, the waiting current and the WAKE UP circuit can be checked during SLEEP mode.

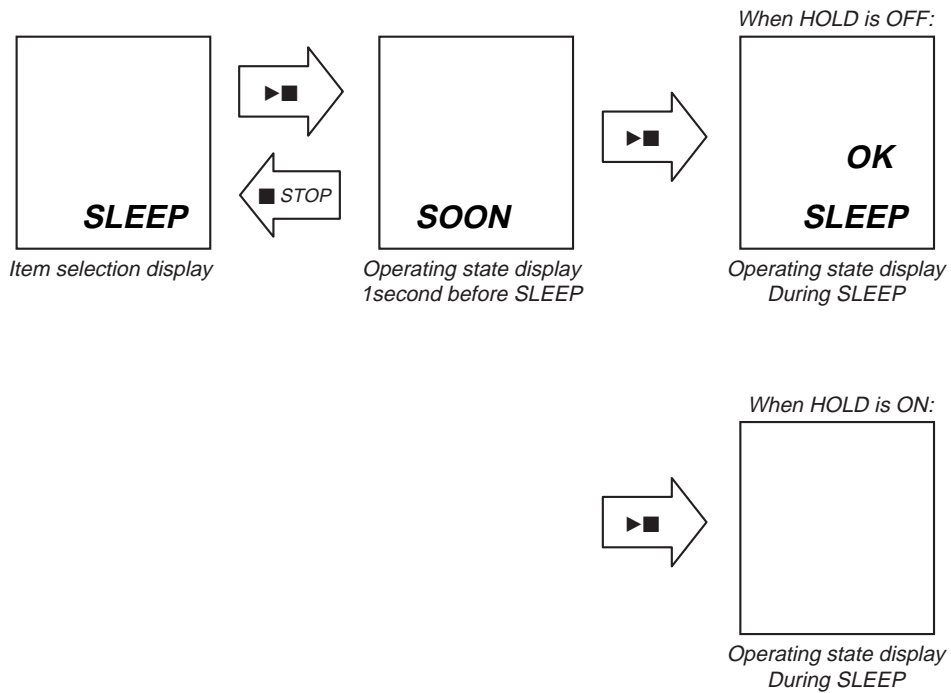
This SLEEP test is executed about 1 second after the  key is pressed. There is no operation selection display.

The display depends on whether the **HOLD** switch is ON or OFF.

→ HOLD SW OFF: OK SLEEP

HOLD SW ON: All display OFF

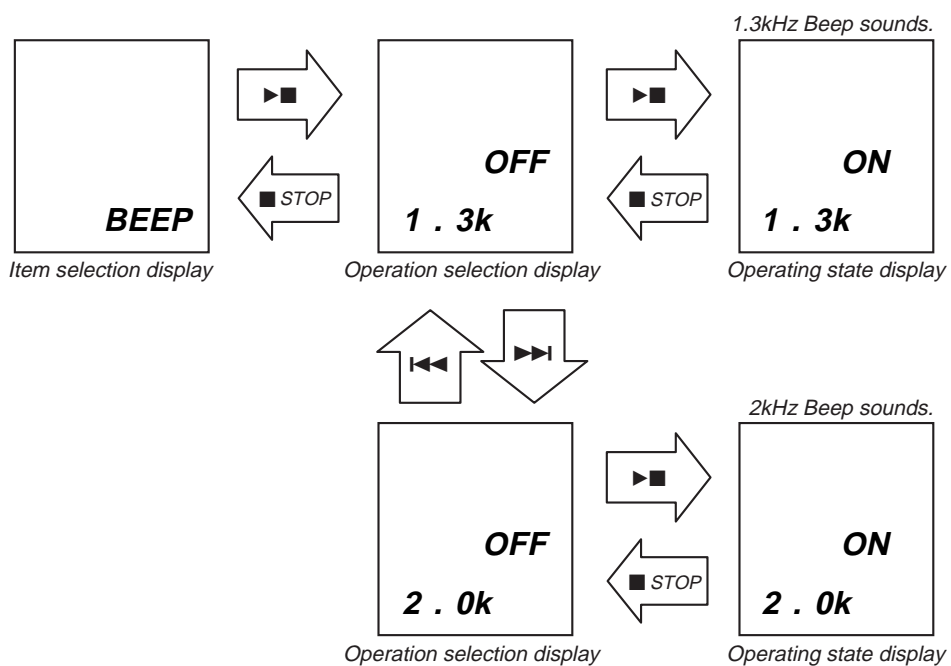
A WAKE UP operation such as any key stroke during SLEEP returns to the layer for item selection.



5. BEEP sounding

This mode cause 1.3 kHz and 2 kHz beeps to sound.

The P-AMP operation is based on the earphone jack specification.

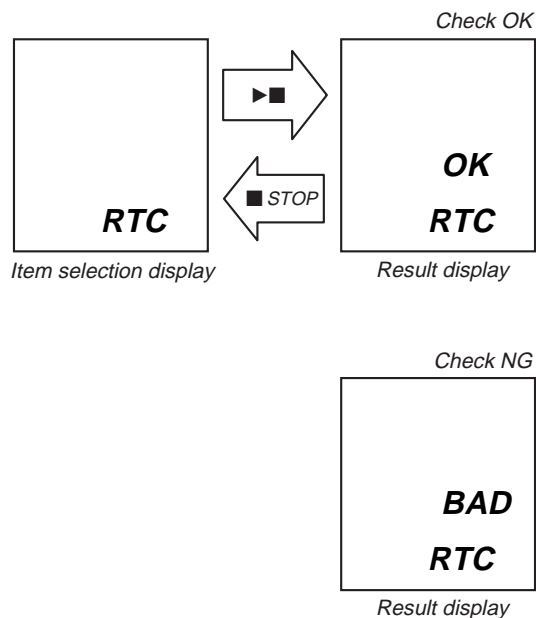


6. RTC connection and operation

This mode provides self-check of the RTC connection and operation.

It includes three checks: RTC connection check, data write and read check, and XRTCINTR (interrupt signal) check. There is no layer (display) for operation selection.

Result of this check is shown as “OK” or “BAD”.

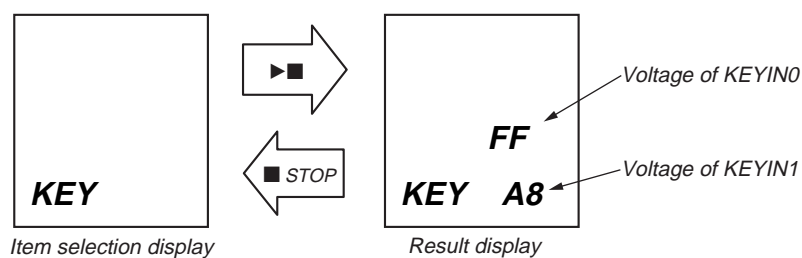


7. A/D KEY voltage

This mode displays the CPU input voltages of KEYIN0 and KEYIN1 in hexadecimal (HEX) format.

Pressing of a specific key causes the corresponding voltage to be displayed.

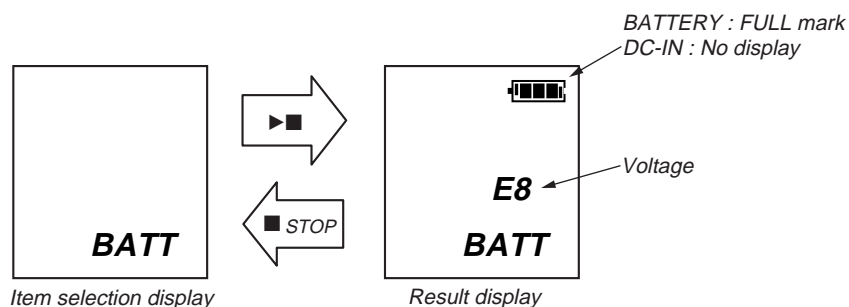
In this mode, the [STOP] key will display the corresponding voltage while it is being pressed. The display will be returned to the layer for item selection by releasing the [STOP] key. There is no layer (display) for operation selection.



8. BATTERY/DC-IN CPU input detection voltage

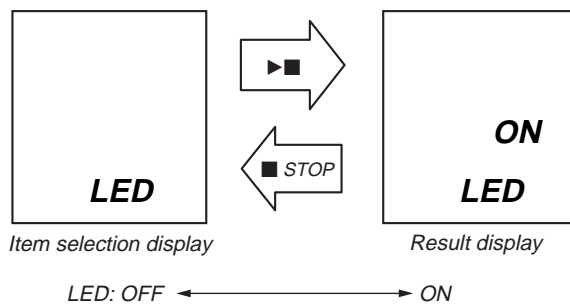
This mode displays the CPU input voltage of either BATTERY or DC-IN in hexadecimal (HEX) format.

A battery full mark is shown during BATTERY operation and this mark is extinguished during DC-IN operation. There is no layer (display) for operation selection.



9. LED lighting

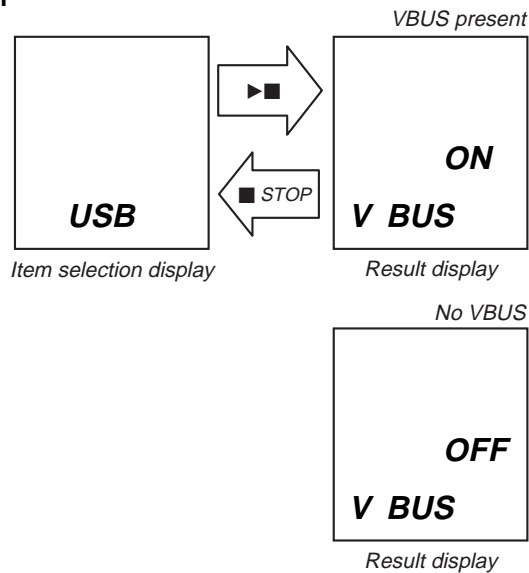
This mode causes LED's to light for checking.
The red and green LED's are controlled at the same time.



10. USB test

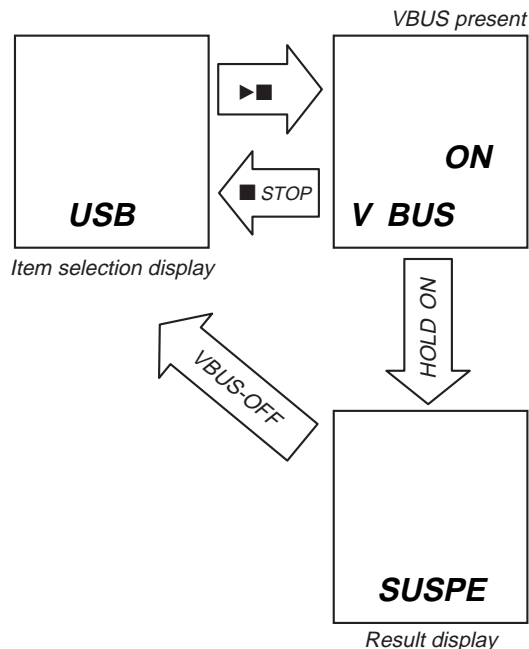
This mode provides VBUS ON/OFF display and SUSPEND test.
There is no layer (display) for operation selection.
The **[▶■]** key displays the VBUS status as “ON” or “OFF”.
With VBUS ON, turning the **[HOLD]** switch ON causes SUSPEND mode to be performed.

• VBUS TEST



• SUSPEND TEST

With VBUS ON, turning the **[HOLD]** switch ON causes SUSPEND mode to be performed.
To cancel this mode, switch VBUS to OFF.



11. KEY proof-test

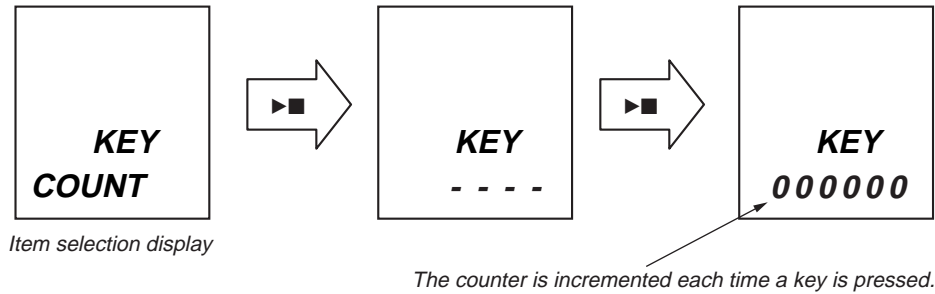
In this mode, counts are displayed by pressing a specific key.

It is possible to check how many times the key is pressed for KEY proof-test. Keys to be tested include slide switches (HOLD and MIC SENS).

Counts are displayed to the upper limit of “999999” in decimal format.

However, the value will not be reset in this mode.

To exit from this mode, the power should be turned off.



12. MENU and FLASH MEMORY contents resetting

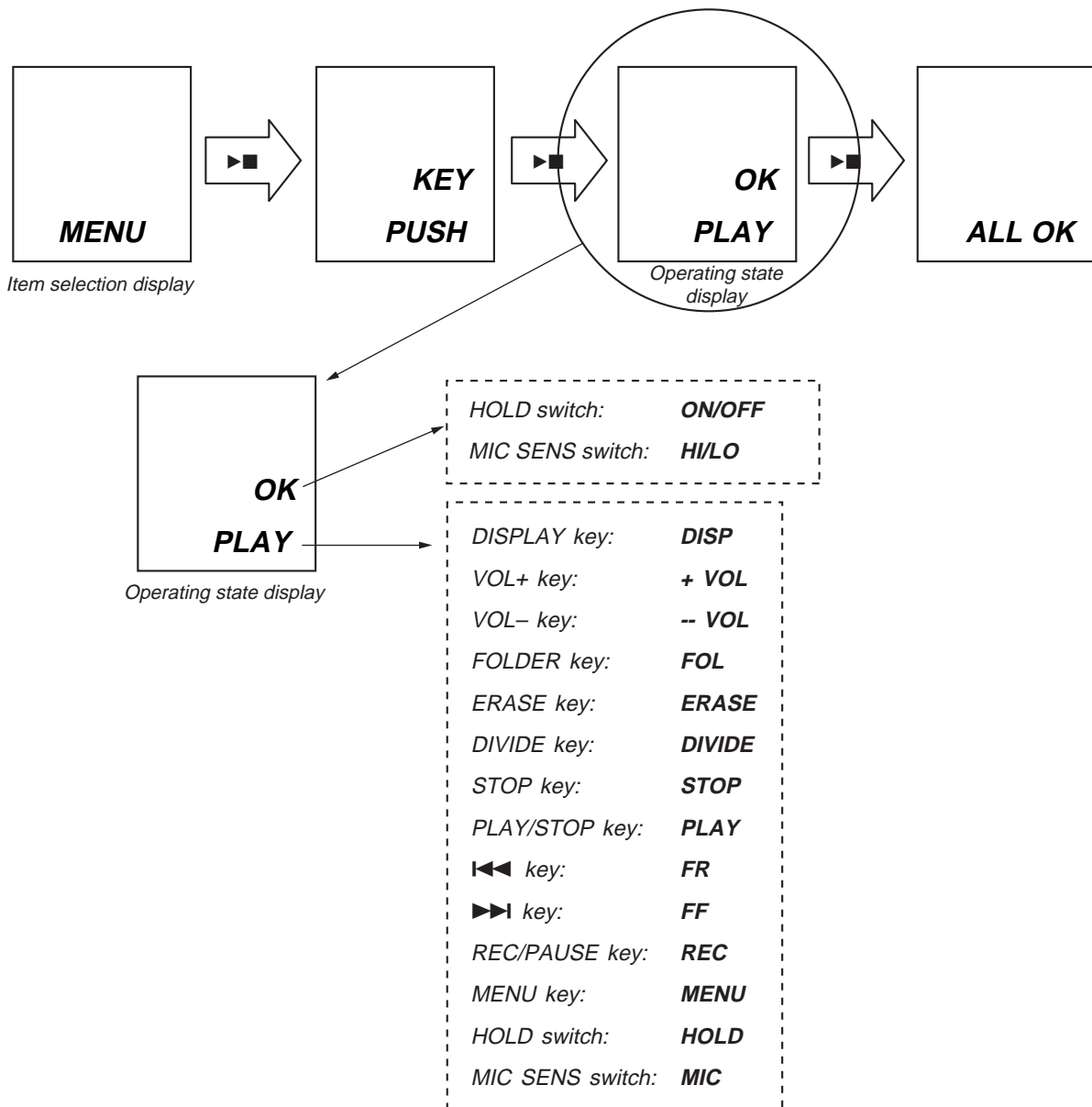
This mode initializes MENU information (including clock to be set) and all erases all the folders.

In order to complete this test, all the keys and all the slide switches must be operated.

In control of keys and slide switches, their names are displayed.

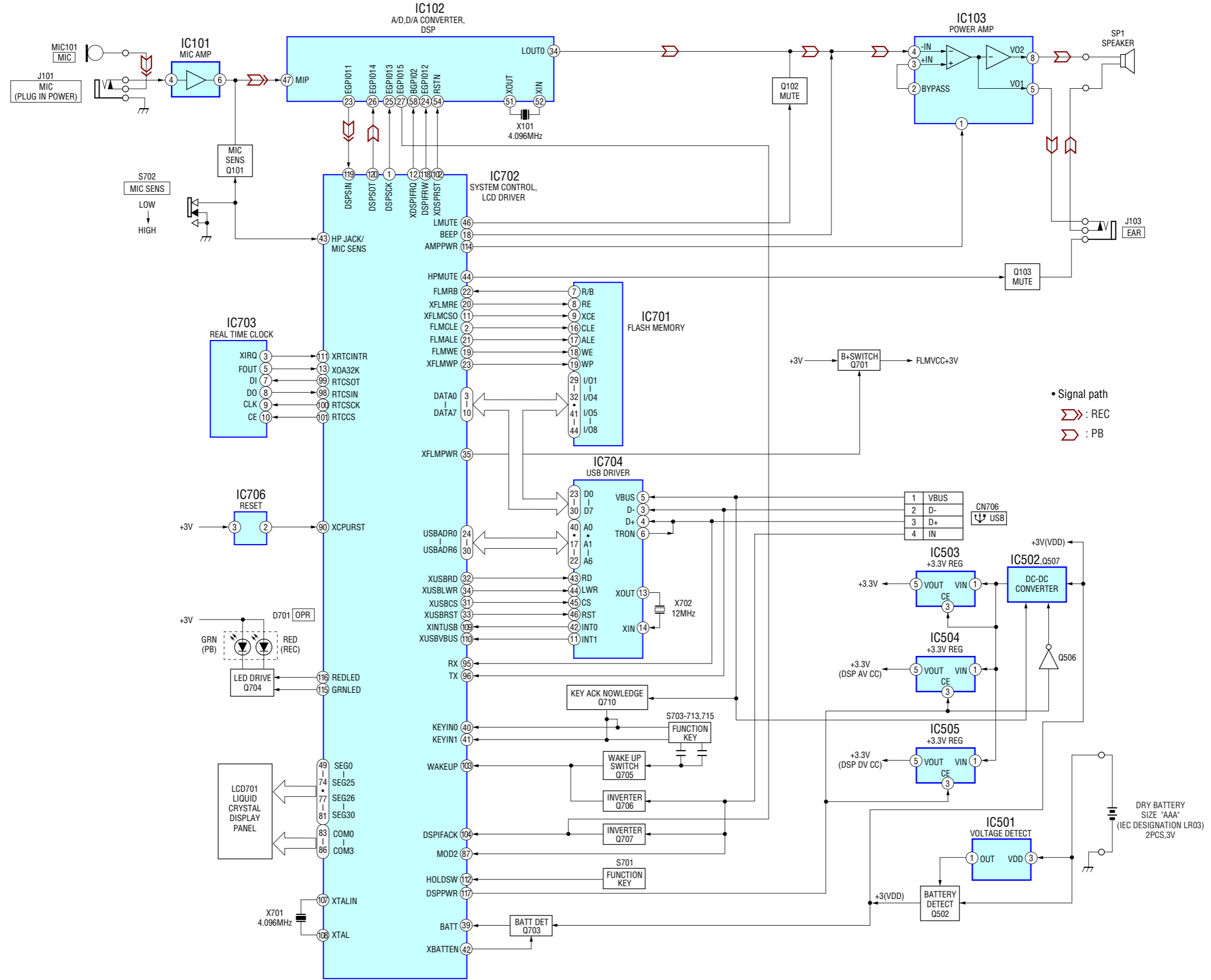
The WAKE UP signal is also checked for tact keys. If any key or switch names are not displayed, the controls are faulty.

To exit from this mode, the power should be turned off.



SECTION 5 DIAGRAMS

5-1. BLOCK DIAGRAM



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
 (In addition to this, the necessary note is printed in each block.)

Common Note on Schematic Diagrams:

- All capacitors are in μF unless otherwise noted. (p: pF) 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- % : indicates tolerance.
- Δ : internal component.
- \square : panel designation.
- — : B+ Line.
- Power voltage is dc 3V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- no mark : REC
- () : PB
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- Σ : PB
- \Rightarrow : REC
- For CSP (chip size package), it is impossible to measure the voltage and waveforms since the package has a different outline from conventional IC's.

Common Note on Printed Wiring Boards:

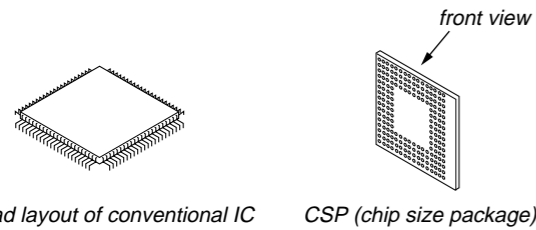
- \circ : parts extracted from the component side.
- — : parts extracted from the conductor side.
- Δ : internal component.
- : Pattern from the side which enables seeing. (The other layer's patterns are not indicated.)

Caution:

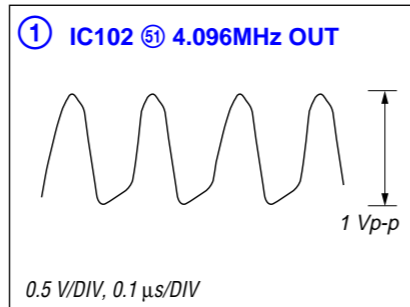
Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
 (SIDE B)
 Parts face side: Parts on the parts face side seen from the parts face are indicated.
 (SIDE A)

* A special tool is necessary to serve to IC702 used in this.

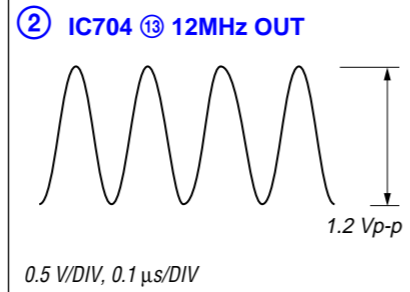
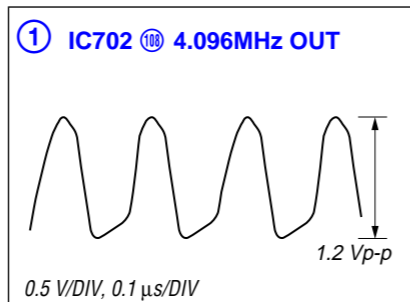
• Lead Layouts



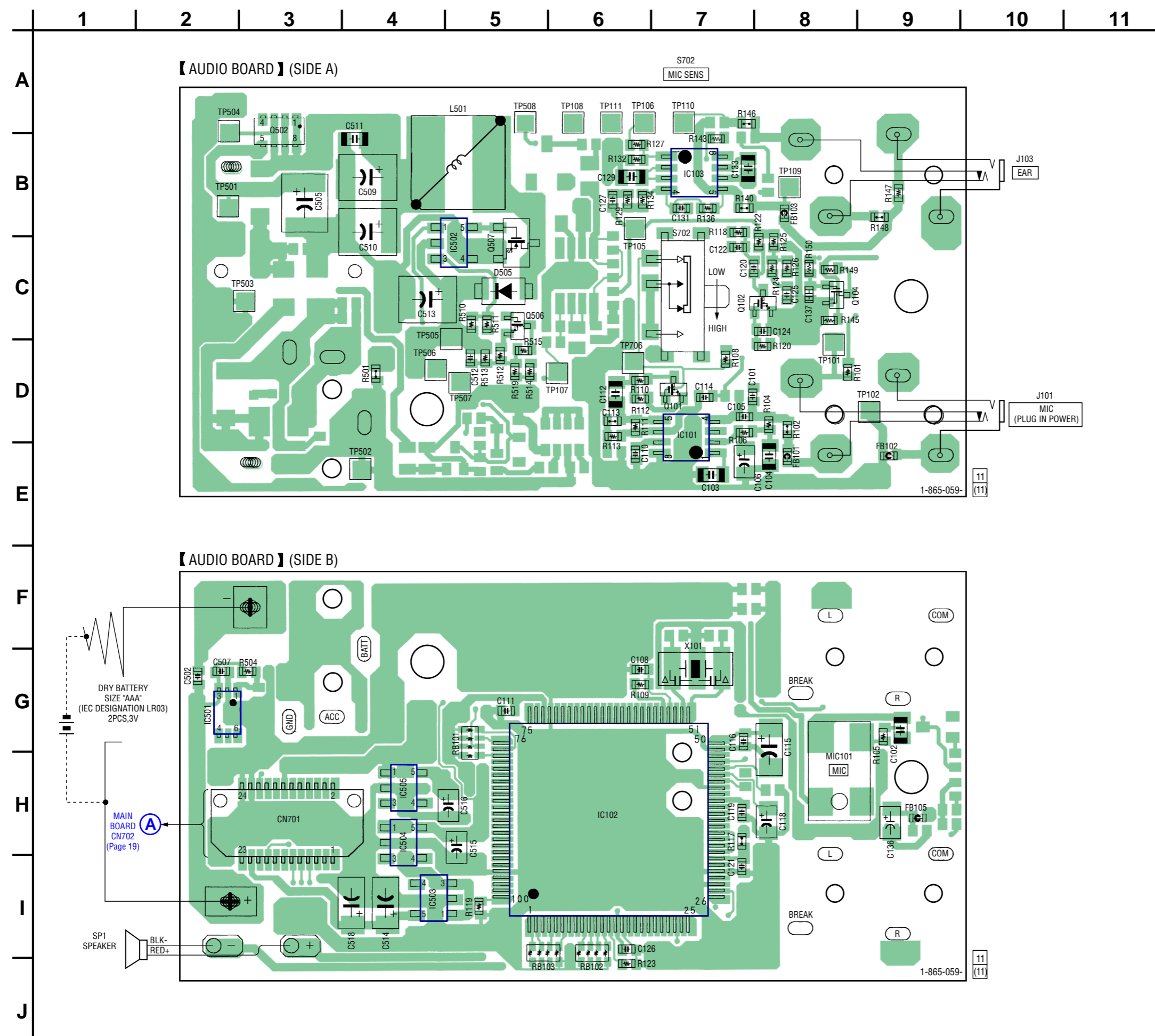
• Waveforms
 – AUDIO board –



– MAIN board –



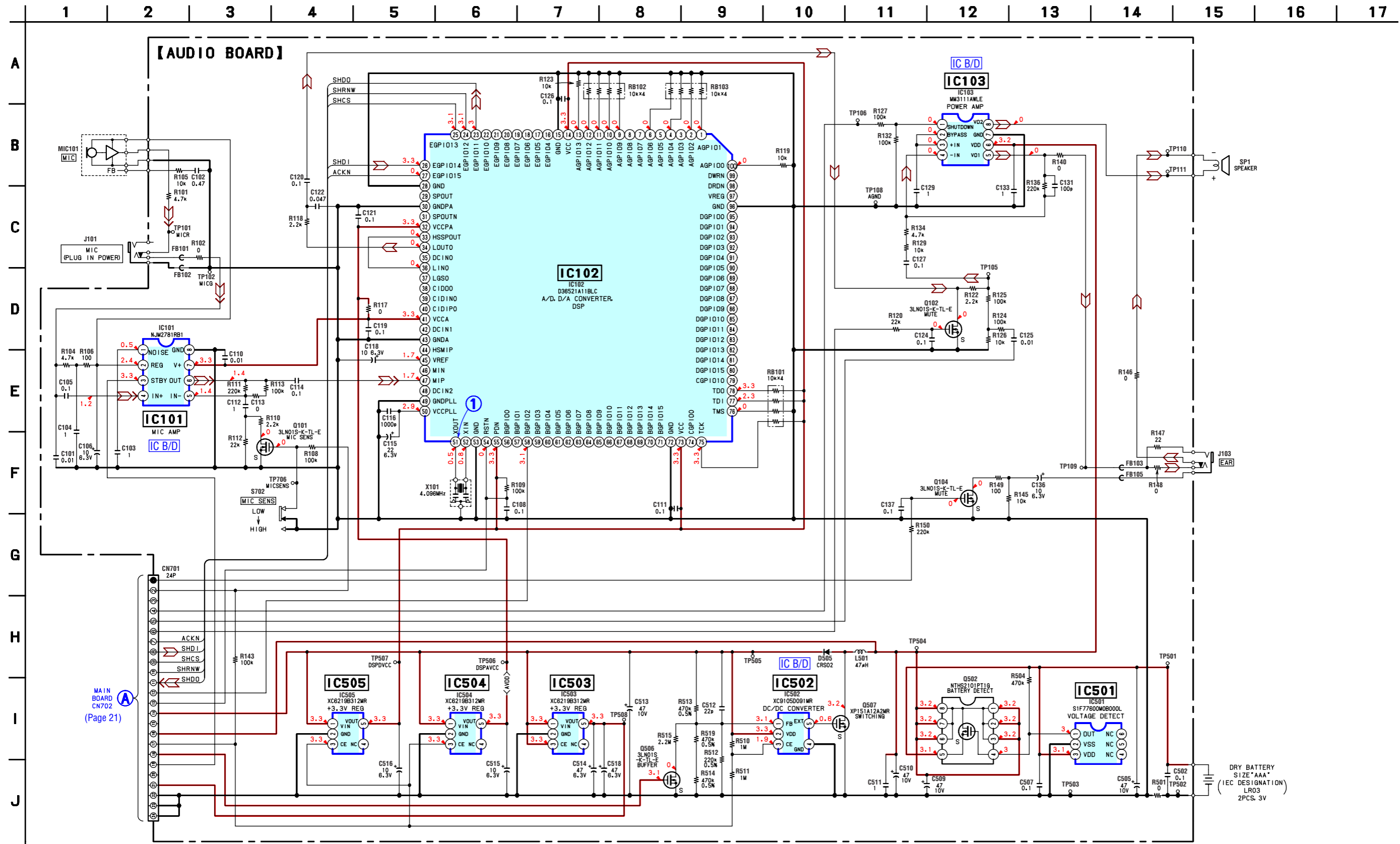
5-2. PRINTED WIRING BOARD — AUDIO SECTION —  :Uses unleaded solder.



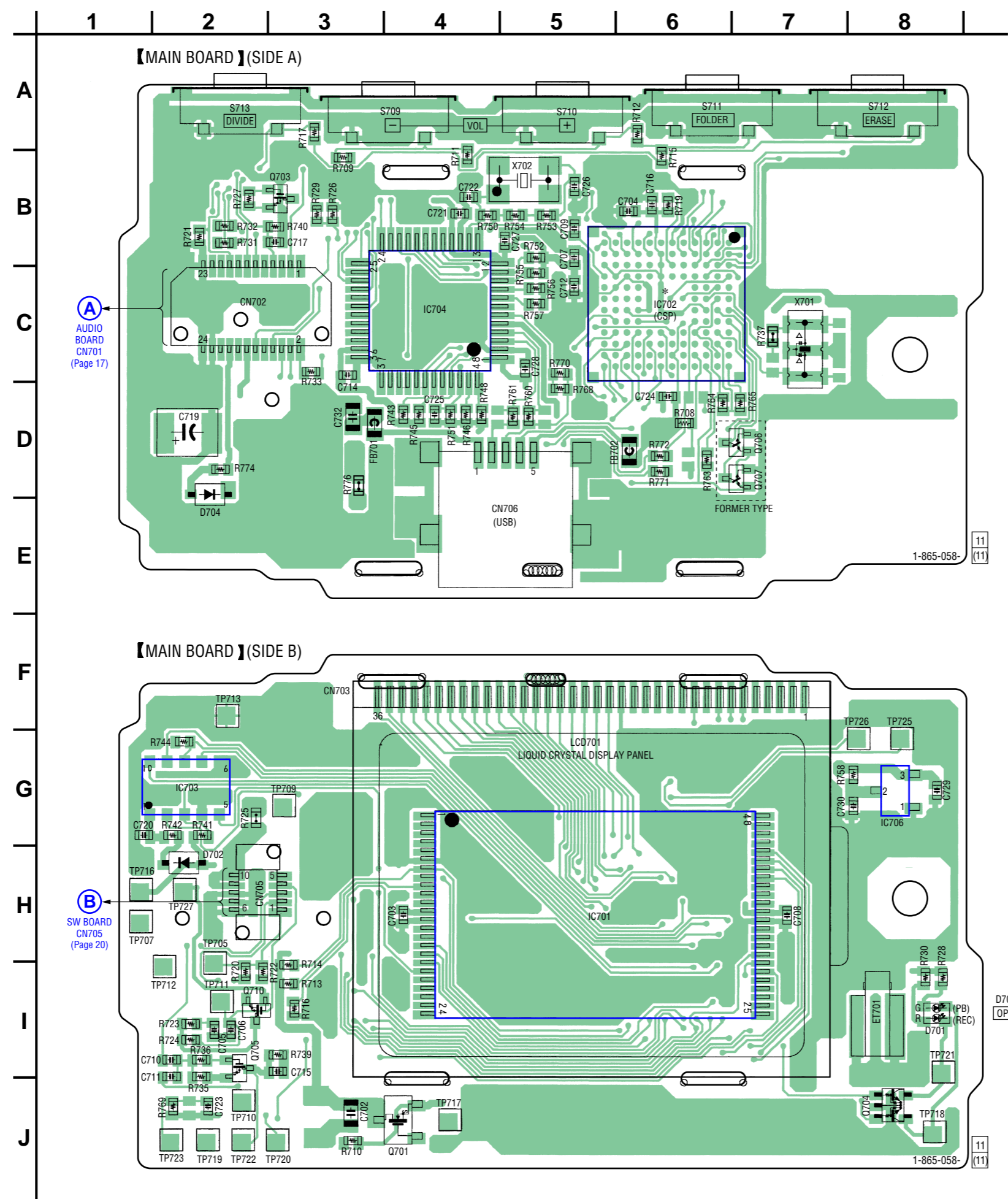
• Semiconductor Location

Ref. No.	Location
D505	C-5
IC101	E-7
(IC102)	H-6
IC103	B-7
(IC501)	G-2
IC502	C-5
(IC503)	I-4
(IC504)	H-4
(IC505)	H-4
Q101	D-7
Q102	C-8
Q104	C-8
Q502	B-3
Q506	C-5
Q507	C-5

() : SIDE B



5-4. PRINTED WIRING BOARD — MAIN SECTION —  :Uses unleaded solder.



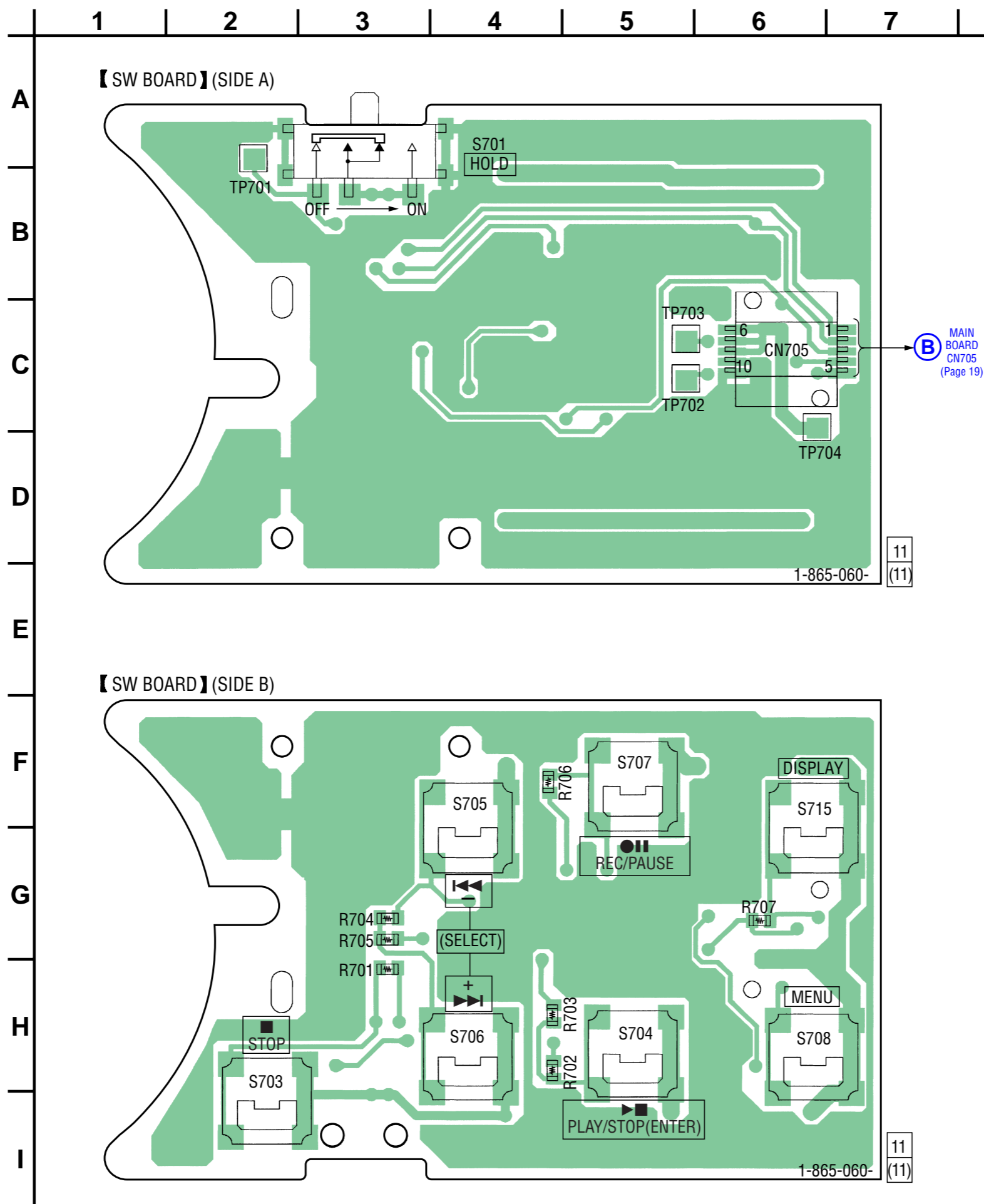
• Semiconductor Location

Ref. No.	Location
(D701)	I-8
(D702)	H-2
D704	E-2
(IC701)	H-5
IC702	C-6
(IC703)	G-2
IC704	C-4
(IC706)	G-8
(Q701)	J-4
Q703	B-3
(Q704)	J-8
(Q705)	I-2
Q706	D-7
Q707	D-7
(Q710)	I-2

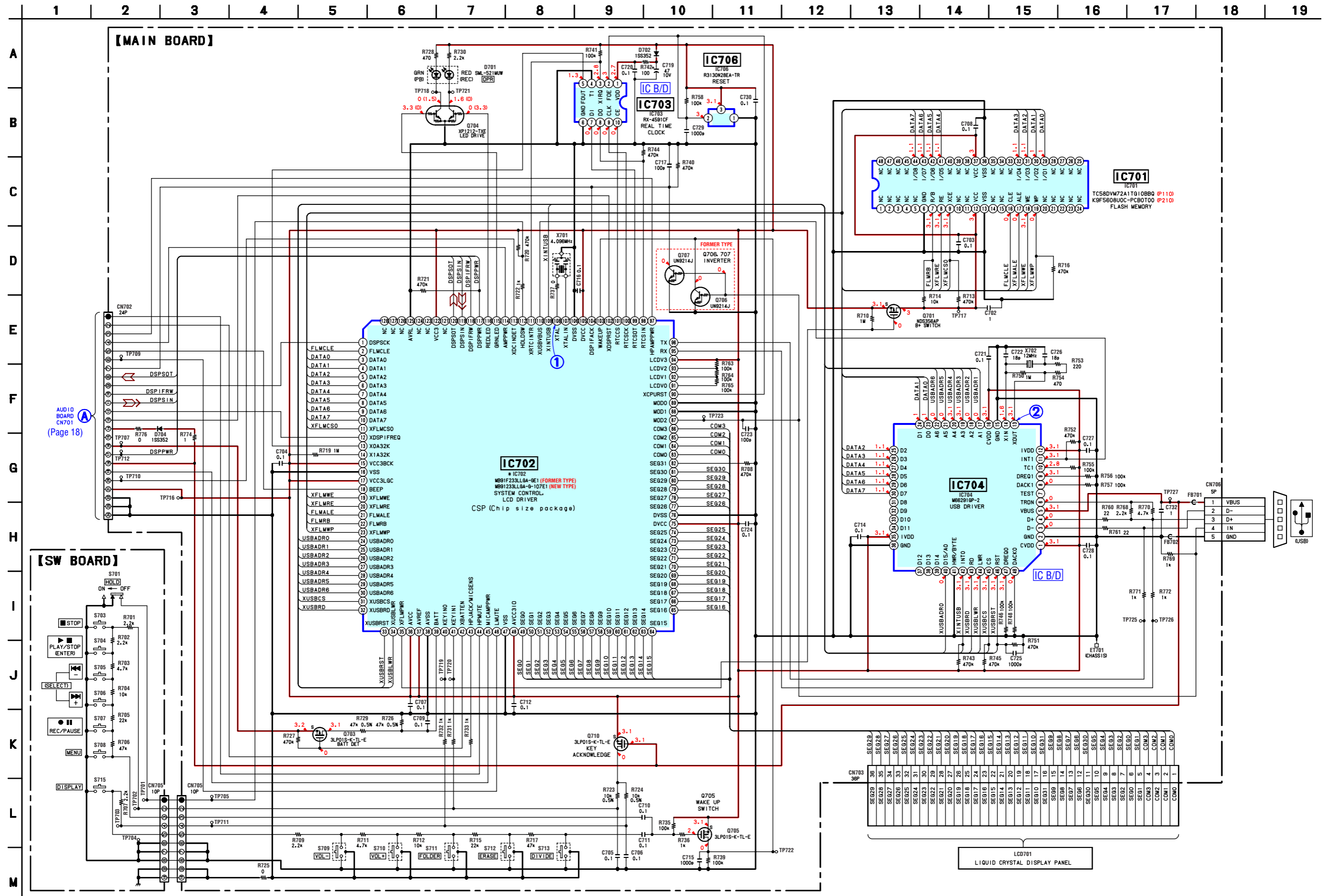
() : SIDE B

(A)
AUDIO BOARD
CN701
(Page 17)

(B)
SW BOARD
CN705
(Page 20)

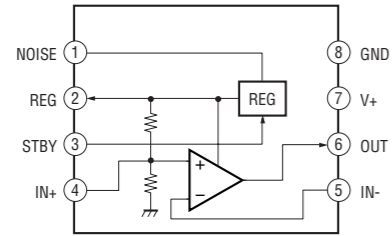


5-6. SCHEMATIC DIAGRAM — MAIN/SW SECTION — • See page 16 for Waveforms. • See page 22 for IC Block Diagrams. • See page 23 for IC Pin Function Description.

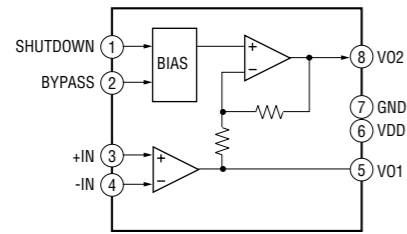


• IC Block Diagrams

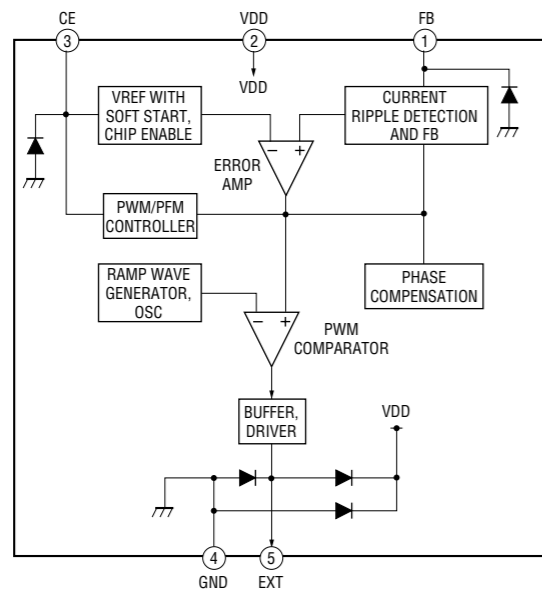
– AUDIO Board –
IC101 NJM2781RB1



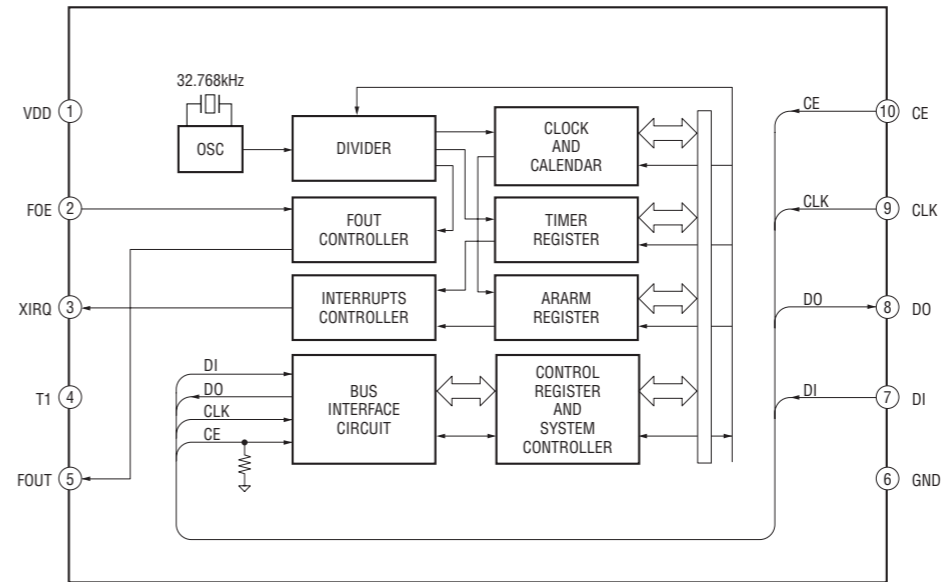
IC103 MM3111AWLE



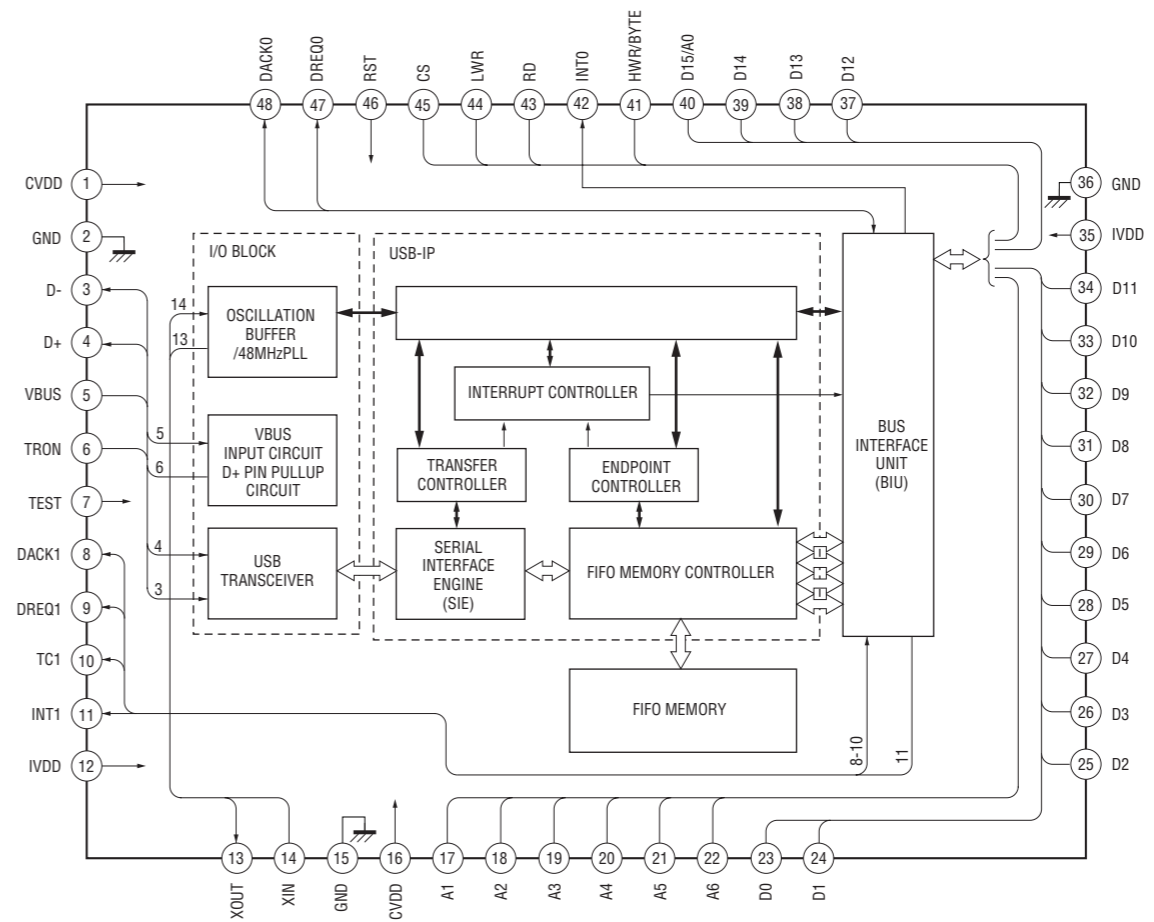
IC502 XC9105D091MR



– MAIN Board –
IC703 RX-4591CF



IC704 M66291GP-2



• IC Pin Function Description

IC702 MB91233LLGA-G-107E1 (SYSTEM CONTROL, LCD DRIVER) (MAIN BOARD)

Pin No.	Pin Name	I/O	Description
1	DSPSCK	O	Serial clock signal output
2	FLMCLE	O	Command latch enable signal output
3 to 10	DATA0 to 7	I/O	Data input/output 0 to 7
11	XFLMCS0	O	Chip enable signal output
12	XDSPIFREQ	O	System clock control signal output
13	X0A32K	I	32 kHz signal input
14	X1A32K	O	32 kHz signal output (Fixed at H in this set)
15	VCC3BCK	—	Power supply pin for internal logic backup
16	VSS	—	Ground
17	VCC3LGC	—	Power supply pin for internal logic
18	BEEP	O	Beep signal output
19	XFLMWE	O	Write enable signal output
20	XFLMRE	O	Read enable signal output
21	FLMALE	O	Address latch enable signal output
22	FLMRB	I	Ready/busy signal input
23	XFLMWP	O	Write protect signal output
24 to 30	USBADR0 to 6	O	Address signal output 0 to 6
31	XUSBCS	O	Chip select signal output
32	XUSBRD	O	Read strobe signal output
33	XUSBRST	O	Reset signal output
34	XUSBLWR	O	Low write strobe signal output
35	XFLMPWR	O	Power supply control signal output
36	AVCC	—	Power supply pin for analog
37	AVREF	—	Reference voltage supply pin for analog
38	AVSS	—	Ground for analog
39	BATT	I	Dry battery voltage detection signal input
40, 41	KEYIN0, 1	I	Key A/D input 0, 1
42	XBATTEN	O	Dry battery detection control signal output
43	HPJACK/MICSENS	I	Earphone jack/Mic sensitivity select signal input
44	HPMUTE	I	Earphone mute signal input
45	MICAMPPWR	I	Mic amplifier power supply control signal input
46	LMUTE	O	Line mute signal output
47	VSS	—	Ground
48	AVCC3IO	—	Power supply pin
49 to 74	SEG0 to 25	O	LCD segment signal output 0 to 25
75	DVCC	—	Power supply pin for digital
76	DVSS	—	Ground for digital
77 to 82	SEG26 to 31	O	LCD segment signal output 26 to 31
83 to 86	COM0 to 3	O	LCD common signal output 0 to 3
87	MOD2	I	Operation mode signal input 2
88, 89	MOD1, 0	I	Operation mode signal input 1, 0 (Connect to ground in this set)
90	XCPURST	I	CPU external reset signal input
91 to 94	LCDV0 to 3	—	LCD reference voltage supply pin
95	RX	I	Input port (Flash write RX)
96	TX	O	Output port (Flash write TX)
97	HPAMPPWR	O	Earphone amplifier power control signal output
98	RTCSIN	I	Serial data input

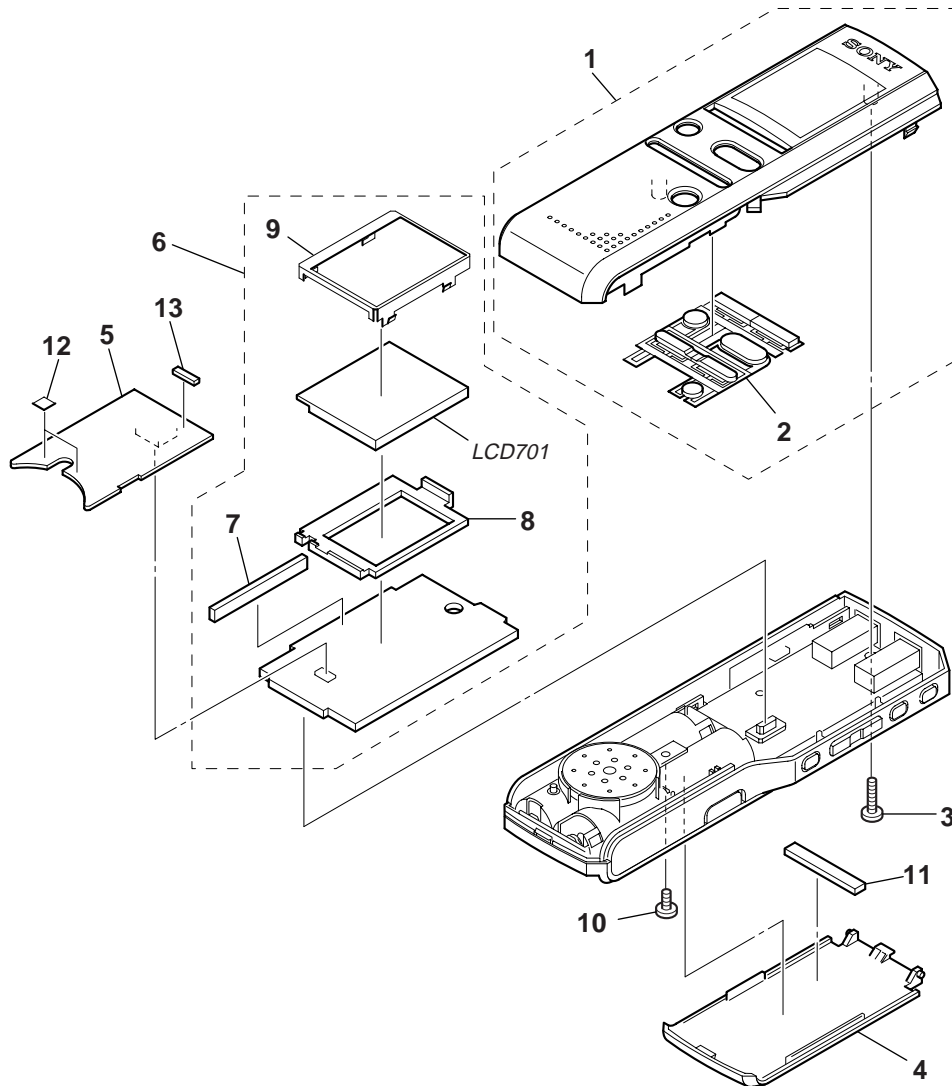
Pin No.	Pin Name	I/O	Description
99	RTCSOT	O	Serial data output
100	RTCSCK	O	Serial clock signal output
101	RTCCS	O	Chip select signal output
102	XDSPRST	O	Reset signal output
103	WAKEUP	I	Wakeup interruption signal input
104	DSPIFACK	I	DSP I/F acknowledge signal input
105	DVCC	—	Power supply pin for digital
106	DVSS	—	Ground for digital
107	XTALIN	I	Main clock signal input (4.096 MHz)
108	XTAL	O	Main clock signal output (4.096 MHz)
109	XINTUSB	I	Interruption request signal input
110	XUSBVBUS	I	VBUS detection interruption request signal input
111	XRTCINTR	I	Constant cycle interruption signal input
112	HOLD SW	I	HOLD switch signal input (interruption)
113	XDCINDET	O	Power control signal output
114	AMPPWR	O	Power amplifier power control signal output
115	GRNLED	O	Green LED (PB) drive signal output
116	REDLED	O	Red LED (REC) drive signal output
117	DSPPWR	O	Power circuit control signal output
118	DSPIFRW	O	I/F RW signal output
119	DSP SIN	I	Serial data input
120	DSP SOT	O	Serial data output
121	NC	—	Not used (Open)
122	VCC3	—	Power supply pin
123, 124	NC	—	Not used (Open)
125	AVRL	—	Not used (Connect to ground in this set)
126 to 128	NC	—	Not used (Open)

SECTION 6 EXPLODED VIEWS

NOTE:

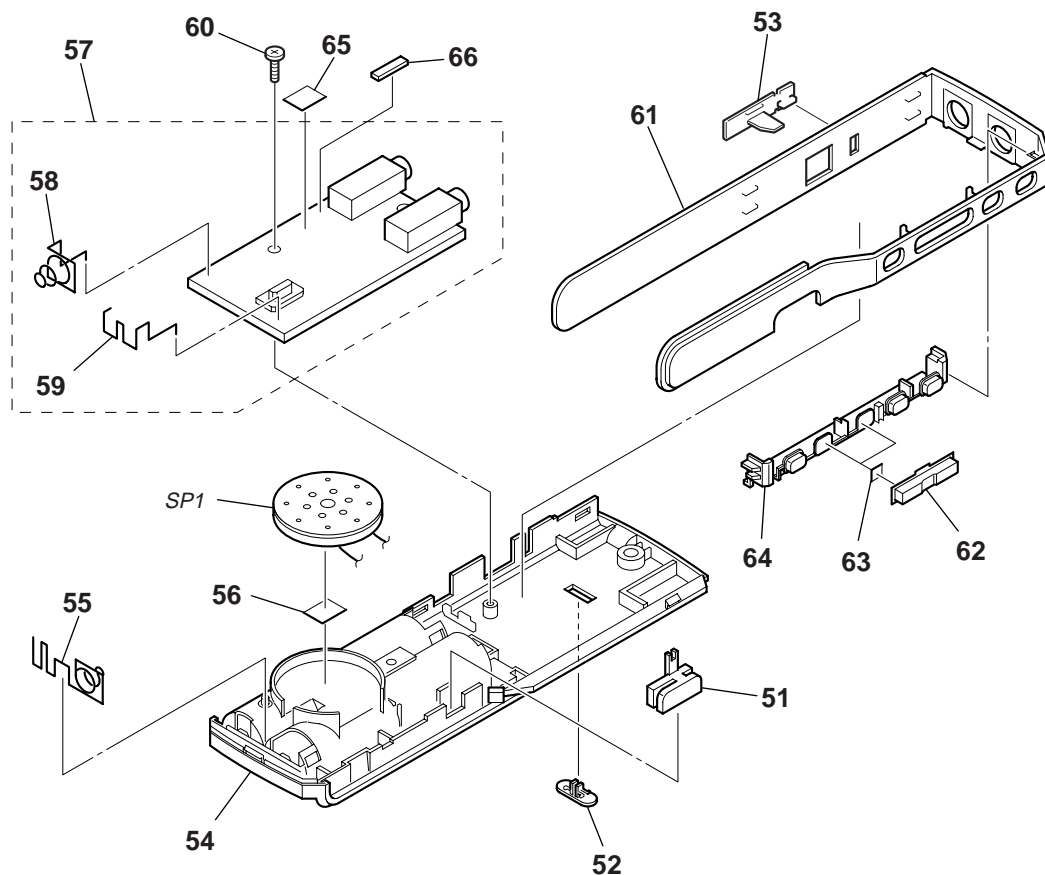
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

6-1. CASE (FRONT) SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	A-1084-928-A	CASE (FRONT) ASSY (P210)		7	1-780-155-21	CONDUCTIVE BOARD, CONNECTION	
1	A-1084-936-A	CASE (FRONT) ASSY (P110)		8	2-050-736-01	SPACER (LCD)	
2	2-050-738-11	BUTTON (FRONT)		9	2-050-735-02	HOLDER, LCD	
3	3-254-083-01	SCREW		10	3-254-014-01	SCREW	
4	2-050-730-01	LID, BATTERY CASE (P110)		11	2-584-596-01	CUSHION (BATTERY CASE LID)	
4	2-050-730-31	LID, BATTERY CASE (P210)		12	2-581-505-01	SPACER (SPEAKER)	
5	A-1084-364-A	SW BOARD, COMPLETE		13	2-584-399-01	SPACER (LCD HOLDER)	
6	A-1084-925-A	MAIN BOARD, COMPLETE (P210)		LCD701	1-805-647-11	DISPLAY PANEL, LIQUID CRYSTAL	
6	A-1084-933-A	MAIN BOARD, COMPLETE (P110)					

6-2. CASE (REAR) SECTION



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
51	2-050-733-01	KNOB (HOLD)		59	2-050-740-01	TERMINAL (+), BATTERY	
52	2-050-742-01	KNOB (MIC) (P110)		60	3-254-014-01	SCREW	
52	2-050-742-11	KNOB (MIC) (P210)		61	2-050-731-31	BELT, ORNAMENTAL	
53	2-345-341-01	LID (CONNECTOR)		62	2-067-090-01	BUTTON (VOL)	
54	2-050-729-41	CASE (REAR) (P110)		63	2-177-067-01	SHEET (VOL BUTTON), ADHESIVE	
54	2-050-729-51	CASE (REAR) (P210)		64	2-050-737-02	BUTTON (SIDE)	
55	2-050-739-02	TERMINAL (+,-), BATTERY		65	2-581-503-01	SPACER (USB-A)	
56	2-148-313-01	SHEET (SPEAKER), ADHESIVE		66	2-581-504-01	SPACER (USB-B)	
57	A-1084-922-A	AUDIO BOARD, COMPLETE		SP1	1-826-026-11	SPEAKER (2cm)	
58	2-050-741-02	TERMINAL (-), BATTERY					

SECTION 7 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA. . . : μ A. . . uPA. . . : μ PA. . .
uPB. . . : μ PB. . . uPC. . . : μ PC. . .
uPD. . . : μ PD. . .
- CAPACITORS
uF: μ F
- COILS
uH: μ H

When indicating parts by reference number, please include the board name.

- Accessories are given in the last of this parts list.
- Abbreviation
CND : Canadian model
JE : Tourist model
CH : Chinese model
KR : Korean model

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-1084-922-A	AUDIO BOARD, COMPLETE *****		C516	1-117-919-11	TANTAL. CHIP 10uF 20%	6.3V
	2-050-740-01	TERMINAL (+), BATTERY		C518	1-100-539-11	TANTAL. CHIP 47uF 20%	6.3V
	2-050-741-02	TERMINAL (-), BATTERY		< CONNECTOR >			
		< CAPACITOR >		CN701	1-818-644-21	CONNECTOR, BOARD TO BOARD 24P	
C101	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V	< DIODE >			
C102	1-117-863-11	CERAMIC CHIP 0.47uF	10% 6.3V	D505	8-719-074-47	DIODE CRS02(TE85L)	
C103	1-125-837-11	CERAMIC CHIP 1uF	10% 6.3V	< FERRITE BEAD >			
C104	1-125-837-11	CERAMIC CHIP 1uF	10% 6.3V	FB101	1-469-084-21	INDUCTOR, FERRITE BEAD (1005)	
C105	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	FB102	1-469-084-21	INDUCTOR, FERRITE BEAD (1005)	
C106	1-117-919-11	TANTAL. CHIP 10uF	20% 6.3V	FB103	1-469-084-21	INDUCTOR, FERRITE BEAD (1005)	
C108	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	FB105	1-469-084-21	INDUCTOR, FERRITE BEAD (1005)	
C110	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V	< IC >			
C111	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	IC101	6-703-863-01	IC NJM2781RB1	
C112	1-125-837-11	CERAMIC CHIP 1uF	10% 6.3V	IC102	6-707-481-01	IC D36521A11BLC	
C113	1-218-990-11	SHORT CHIP 0		IC103	6-707-089-01	IC M3111AWLE	
C114	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	IC501	6-707-246-01	IC S1F77600M0B000L	
C115	1-119-750-11	TANTAL. CHIP 22uF	20% 6.3V	IC502	6-701-734-01	IC XC9105D091MR	
C116	1-164-937-11	CERAMIC CHIP 0.001uF	10% 50V	IC503	6-707-586-01	IC XC6219B312MR	
C118	1-117-919-11	TANTAL. CHIP 10uF	20% 6.3V	IC504	6-707-586-01	IC XC6219B312MR	
C119	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	IC505	6-707-586-01	IC XC6219B312MR	
C120	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	< JACK >			
C121	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	J101	1-793-703-12	JACK (DIA. 3.5) (MIC (PLUG IN POWER))	
C122	1-119-923-11	CERAMIC CHIP 0.047uF	10% 10V	J103	1-816-210-12	JACK (EAR)	
C124	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	< COIL >			
C125	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V	L501	1-419-978-21	INDUCTOR 47uH	
C126	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	< MICROPHONE >			
C127	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	MIC101	1-542-597-11	MICROPHONE (MIC)	
C129	1-125-837-11	CERAMIC CHIP 1uF	10% 6.3V	< TRANSISTOR >			
C131	1-164-931-11	CERAMIC CHIP 100PF	10% 50V	Q101	6-550-746-01	FET 3LN01S-K-TL-E	
C133	1-125-837-11	CERAMIC CHIP 1uF	10% 6.3V	Q102	6-550-746-01	FET 3LN01S-K-TL-E	
C136	1-117-919-11	TANTAL. CHIP 10uF	20% 6.3V	Q104	6-550-746-01	FET 3LN01S-K-TL-E	
C137	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	Q502	6-550-861-01	FET NTHS2101PT1G	
C502	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V	Q506	6-550-746-01	FET 3LN01S-K-TL-E	
C505	1-137-934-11	TANTAL. CHIP 47uF	20% 10V	Q507	8-729-053-03	FET XP151A12A2MR	
C507	1-125-777-11	CERAMIC CHIP 0.1uF	10% 10V				
C509	1-137-934-11	TANTAL. CHIP 47uF	20% 10V				
C510	1-137-934-11	TANTAL. CHIP 47uF	20% 10V				
C511	1-125-837-11	CERAMIC CHIP 1uF	10% 6.3V				
C512	1-164-858-11	CERAMIC CHIP 22PF	5% 50V				
C513	1-137-934-11	TANTAL. CHIP 47uF	20% 10V				
C514	1-100-539-11	TANTAL. CHIP 47uF	20% 6.3V				
C515	1-117-919-11	TANTAL. CHIP 10uF	20% 6.3V				

ICD-P110/P210

AUDIO **MAIN**

Ref. No.	Part No.	Description	Remark
< RESISTOR >			
R101	1-218-961-11	RES-CHIP 4.7K 5%	1/16W
R102	1-218-990-11	SHORT CHIP 0	
R104	1-218-961-11	RES-CHIP 4.7K 5%	1/16W
R105	1-218-965-11	RES-CHIP 10K 5%	1/16W
R106	1-218-941-81	RES-CHIP 100 5%	1/16W
R108	1-218-977-11	RES-CHIP 100K 5%	1/16W
R109	1-218-977-11	RES-CHIP 100K 5%	1/16W
R110	1-218-957-11	RES-CHIP 2.2K 5%	1/16W
R111	1-218-981-11	RES-CHIP 220K 5%	1/16W
R112	1-218-969-11	RES-CHIP 22K 5%	1/16W
R113	1-218-977-11	RES-CHIP 100K 5%	1/16W
R117	1-218-990-11	SHORT CHIP 0	
R118	1-218-957-11	RES-CHIP 2.2K 5%	1/16W
R119	1-218-965-11	RES-CHIP 10K 5%	1/16W
R120	1-218-969-11	RES-CHIP 22K 5%	1/16W
R122	1-218-957-11	RES-CHIP 2.2K 5%	1/16W
R123	1-218-965-11	RES-CHIP 10K 5%	1/16W
R124	1-218-977-11	RES-CHIP 100K 5%	1/16W
R125	1-218-977-11	RES-CHIP 100K 5%	1/16W
R126	1-218-965-11	RES-CHIP 10K 5%	1/16W
R127	1-218-977-11	RES-CHIP 100K 5%	1/16W
R129	1-218-965-11	RES-CHIP 10K 5%	1/16W
R132	1-218-977-11	RES-CHIP 100K 5%	1/16W
R134	1-218-961-11	RES-CHIP 4.7K 5%	1/16W
R136	1-218-981-11	RES-CHIP 220K 5%	1/16W
R140	1-218-990-11	SHORT CHIP 0	
R143	1-218-977-11	RES-CHIP 100K 5%	1/16W
R145	1-218-965-11	RES-CHIP 10K 5%	1/16W
R146	1-218-990-11	SHORT CHIP 0	
R147	1-218-933-11	RES-CHIP 22 5%	1/16W
R148	1-218-990-11	SHORT CHIP 0	
R149	1-218-941-81	RES-CHIP 100 5%	1/16W
R150	1-218-981-11	RES-CHIP 220K 5%	1/16W
R501	1-218-990-11	SHORT CHIP 0	
R504	1-218-985-11	RES-CHIP 470K 5%	1/16W
R510	1-218-989-11	RES-CHIP 1M 5%	1/16W
R511	1-218-989-11	RES-CHIP 1M 5%	1/16W
R512	1-208-943-11	METAL CHIP 220K 0.5%	1/16W
R513	1-218-985-11	RES-CHIP 470K 5%	1/16W
R514	1-218-985-11	RES-CHIP 470K 5%	1/16W
R515	1-220-804-11	RES-CHIP 2.2M 5%	1/16W
R519	1-218-985-11	RES-CHIP 470K 5%	1/16W
< NETWORK RESISTOR >			
RB101	1-233-967-11	RES, NETWORK (CHIP TYPE) 10KX4	
RB102	1-233-967-11	RES, NETWORK (CHIP TYPE) 10KX4	
RB103	1-233-967-11	RES, NETWORK (CHIP TYPE) 10KX4	
< SWITCH >			
S702	1-572-922-11	SWITCH, SLIDE (MIC SENS)	
< VIBRATOR >			
X101	1-795-268-21	VIBRATOR, CERAMIC (4.096MHZ)	

Ref. No.	Part No.	Description	Remark
A-1084-925-A		MAIN BOARD, COMPLETE (P210)	
A-1084-933-A		MAIN BOARD, COMPLETE (P110)	

1-780-155-21		CONDUCTIVE BOARD, CONNECTION	
2-050-735-02		HOLDER, LCD	
2-050-736-01		SPACER (LCD)	
< CAPACITOR >			
C702	1-125-837-11	CERAMIC CHIP 1uF 10%	6.3V
C703	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C704	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C705	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C706	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C707	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C708	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C709	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C710	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C711	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C712	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C714	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C715	1-164-937-11	CERAMIC CHIP 0.001uF 10%	50V
C716	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C717	1-164-931-11	CERAMIC CHIP 100PF 10%	50V
C719	1-137-934-11	TANTAL. CHIP 47uF 20%	10V
C720	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C721	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C722	1-164-856-81	CERAMIC CHIP 18PF 5%	50V
C723	1-164-931-11	CERAMIC CHIP 100PF 10%	50V
C724	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C725	1-164-937-11	CERAMIC CHIP 0.001uF 10%	50V
C726	1-164-856-81	CERAMIC CHIP 18PF 5%	50V
C727	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C728	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C729	1-164-937-11	CERAMIC CHIP 0.001uF 10%	50V
C730	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C732	1-125-837-11	CERAMIC CHIP 1uF 10%	6.3V
< CONNECTOR >			
CN702	1-818-645-21	CONNECTOR, BOARD TO BOARD 24P	
CN705	1-818-643-21	CONNECTOR, BOARD TO BOARD 10P	
CN706	1-815-153-11	CONNECTOR (USB) 5P (USB)	
< DIODE >			
D701	6-500-781-01	LED SML-521MUW (OPR)	
D702	8-719-016-74	DIODE 1SS352	
D704	8-719-016-74	DIODE 1SS352	
< TERMINAL >			
ET701	1-694-974-21	TERMINAL, CONTACT	
< FERRITE BEAD >			
FB701	1-500-282-11	INDUCTOR, FERRITE BEAD	
FB702	1-500-282-11	INDUCTOR, FERRITE BEAD	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		< IC >		R745	1-218-985-11	RES-CHIP 470K 5%	1/16W
IC701	6-705-077-01	IC K9F5608U0C-PCB0T00 (P210)		R746	1-218-977-11	RES-CHIP 100K 5%	1/16W
IC701	6-705-201-01	IC TC58DVM72A1TGIOBBQ (P110)		R748	1-218-977-11	RES-CHIP 100K 5%	1/16W
IC702	6-805-285-01	IC MB91233LLGA-G-107E1		R750	1-218-989-11	RES-CHIP 1M 5%	1/16W
IC703	6-703-861-01	IC RX-4591CF		R751	1-218-985-11	RES-CHIP 470K 5%	1/16W
IC704	6-702-098-01	IC M66291GP-2		R752	1-218-985-11	RES-CHIP 470K 5%	1/16W
IC706	6-701-736-01	IC R3130N28EA-TR		R753	1-218-945-11	RES-CHIP 220 5%	1/16W
		< LIQUID CRYSTAL DISPLAY >		R754	1-218-949-11	RES-CHIP 470 5%	1/16W
LCD701	1-805-647-11	DISPLAY PANEL, LIQUID CRYSTAL		R755	1-218-977-11	RES-CHIP 100K 5%	1/16W
		< TRANSISTOR >		R756	1-218-977-11	RES-CHIP 100K 5%	1/16W
Q701	8-729-041-23	FET NDS356AP		R757	1-218-977-11	RES-CHIP 100K 5%	1/16W
Q703	6-550-747-01	FET 3LP01S-K-TL-E		R758	1-218-977-11	RES-CHIP 100K 5%	1/16W
Q704	8-729-426-25	TRANSISTOR XP1212-TXE		R760	1-218-933-11	RES-CHIP 22 5%	1/16W
Q705	6-550-747-01	FET 3LP01S-K-TL-E		R761	1-218-933-11	RES-CHIP 22 5%	1/16W
Q706	8-729-042-72	TRANSISTOR UN9214J-(K8).SO (FORMER TYPE)		R763	1-218-977-11	RES-CHIP 100K 5%	1/16W
Q707	8-729-042-72	TRANSISTOR UN9214J-(K8).SO (FORMER TYPE)		R764	1-218-977-11	RES-CHIP 100K 5%	1/16W
Q710	6-550-747-01	FET 3LP01S-K-TL-E		R765	1-218-977-11	RES-CHIP 100K 5%	1/16W
		< RESISTOR >		R768	1-218-957-11	RES-CHIP 2.2K 5%	1/16W
R708	1-218-985-11	RES-CHIP 470K 5%	1/16W	R769	1-218-953-11	RES-CHIP 1K 5%	1/16W
R709	1-218-957-11	RES-CHIP 2.2K 5%	1/16W	R770	1-218-961-11	RES-CHIP 4.7K 5%	1/16W
R710	1-218-989-11	RES-CHIP 1M 5%	1/16W	R771	1-218-953-11	RES-CHIP 1K 5%	1/16W
R711	1-218-961-11	RES-CHIP 4.7K 5%	1/16W	R772	1-218-953-11	RES-CHIP 1K 5%	1/16W
R712	1-218-965-11	RES-CHIP 10K 5%	1/16W	R774	1-242-967-81	RES-CHIP 1 5%	1/16W
R713	1-218-985-11	RES-CHIP 470K 5%	1/16W	R776	1-218-990-11	SHORT CHIP 0	
R714	1-218-965-11	RES-CHIP 10K 5%	1/16W			< SWITCH >	
R715	1-218-969-11	RES-CHIP 22K 5%	1/16W	S709	1-771-248-11	SWITCH, TACTILE (VOL -)	
R716	1-218-985-11	RES-CHIP 470K 5%	1/16W	S710	1-771-248-11	SWITCH, TACTILE (VOL +)	
R717	1-218-973-11	RES-CHIP 47K 5%	1/16W	S711	1-786-075-21	SWITCH, TACTILE (FOLDER)	
R719	1-218-989-11	RES-CHIP 1M 5%	1/16W	S712	1-786-075-21	SWITCH, TACTILE (ERASE)	
R720	1-218-985-11	RES-CHIP 470K 5%	1/16W	S713	1-786-075-21	SWITCH, TACTILE (DIVIDE)	
R721	1-218-985-11	RES-CHIP 470K 5%	1/16W			< VIBRATOR >	
R722	1-218-953-11	RES-CHIP 1K 5%	1/16W	X701	1-795-977-21	VIBRATOR, CERAMIC (4.096MHz)	
R723	1-208-911-11	METAL CHIP 10K 0.5%	1/16W	X702	1-795-752-21	VIBRATOR, CRYSTAL (12MHz)	
R724	1-208-911-11	METAL CHIP 10K 0.5%	1/16W	*****			
R725	1-218-990-11	SHORT CHIP 0		A-1084-364-A	SW BOARD, COMPLETE *****		
R726	1-208-927-11	METAL CHIP 47K 0.5%	1/16W			< CONNECTOR >	
R727	1-218-985-11	RES-CHIP 470K 5%	1/16W	CN705	1-816-623-41	CONNECTOR, BOARD TO BOARD 10P	
R728	1-218-949-11	RES-CHIP 470 5%	1/16W			< RESISTOR >	
R729	1-208-927-11	METAL CHIP 47K 0.5%	1/16W	R701	1-218-957-11	RES-CHIP 2.2K 5%	1/16W
R730	1-218-957-11	RES-CHIP 2.2K 5%	1/16W	R702	1-218-957-11	RES-CHIP 2.2K 5%	1/16W
R731	1-218-953-11	RES-CHIP 1K 5%	1/16W	R703	1-218-961-11	RES-CHIP 4.7K 5%	1/16W
R732	1-218-953-11	RES-CHIP 1K 5%	1/16W	R704	1-218-965-11	RES-CHIP 10K 5%	1/16W
R733	1-218-953-11	RES-CHIP 1K 5%	1/16W	R705	1-218-969-11	RES-CHIP 22K 5%	1/16W
R735	1-218-977-11	RES-CHIP 100K 5%	1/16W	R706	1-218-973-11	RES-CHIP 47K 5%	1/16W
R736	1-218-953-11	RES-CHIP 1K 5%	1/16W	R707	1-218-957-11	RES-CHIP 2.2K 5%	1/16W
R737	1-218-990-11	SHORT CHIP 0				< SWITCH >	
R739	1-218-977-11	RES-CHIP 100K 5%	1/16W	S701	1-572-922-11	SWITCH, SLIDE (HOLD)	
R740	1-218-985-11	RES-CHIP 470K 5%	1/16W	S703	1-771-844-21	SWITCH, TACTILE (SMD) (■ STOP)	
R741	1-218-977-11	RES-CHIP 100K 5%	1/16W	S704	1-771-844-21	SWITCH, TACTILE (SMD) (▶■ PLAY/STOP (ENTER))	
R742	1-218-941-81	RES-CHIP 100 5%	1/16W	S705	1-771-844-21	SWITCH, TACTILE (SMD) (- (SELECT))	
R743	1-218-985-11	RES-CHIP 470K 5%	1/16W				
R744	1-218-985-11	RES-CHIP 470K 5%	1/16W				

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SW

Ref. No.	Part No.	Description	Remark
S706	1-771-844-21	SWITCH, TACTILE (SMD) (+ (SELECT))	
S707	1-771-844-21	SWITCH, TACTILE (SMD) (●■ REC/PAUSE)	
S708	1-771-844-21	SWITCH, TACTILE (SMD) (MENU)	
S715	1-771-844-21	SWITCH, TACTILE (SMD) (DISPLAY)	

MISCELLANEOUS

SP1	1-826-026-11	SPEAKER (2cm)	
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ACCESSORIES

1-756-398-11	BATTERY, ALKALINE MANGANESE (LR03)	(US,UK)
1-823-519-31	CORD, CONNECTION (USB CABLE)	
2-059-703-02	POUCH, CARRYING (CH,KR)	
2-348-237-11	MANUAL, INSTRUCTION (ENGLISH)	
2-348-237-21	MANUAL, INSTRUCTION (FRENCH) (CND,AEP)	
2-348-237-31	MANUAL, INSTRUCTION (SPANISH) (AEP,E)	
2-348-237-41	MANUAL, INSTRUCTION (DUTCH) (AEP)	
2-348-237-51	MANUAL, INSTRUCTION (SWEDISH) (AEP)	
2-348-237-61	MANUAL, INSTRUCTION (PORTUGUESE) (AEP)	
2-348-237-71	MANUAL, INSTRUCTION (GERMAN) (AEP)	
2-348-237-81	MANUAL, INSTRUCTION (ITALIAN) (AEP)	
2-348-237-91	MANUAL, INSTRUCTION (RUSSIAN) (AEP)	
2-348-265-12	SOFT (CD-ROM), APPLICATION	
2-348-335-11	MANUAL, INSTRUCTION	(TRADITIONAL CHINESE) (E,JE,CH)
2-348-335-21	MANUAL, INSTRUCTION	(SIMPLIFIED CHINESE) (E,JE)
2-348-335-31	MANUAL, INSTRUCTION (KOREAN) (E,JE,KR)	
2-587-484-11	MANUAL, INSTRUCTION (DVE) (ENGLISH)	
2-587-484-21	MANUAL, INSTRUCTION (DVE)	(TRADITIONAL CHINESE) (AEP,E,JE)
2-587-484-31	MANUAL, INSTRUCTION (DVE)	(SIMPLIFIED CHINESE) (AEP,E,JE,CH)
2-587-484-41	MANUAL, INSTRUCTION (DVE) (KOREAN)	(AEP,E,JE,KR)
2-587-484-51	MANUAL, INSTRUCTION (DVE)	(FRENCH,SPANISH) (CND,AEP,E)
2-587-484-61	MANUAL, INSTRUCTION (DVE)	(GERMAN,PORTUGUESE) (AEP)
2-587-484-71	MANUAL, INSTRUCTION (DVE)	(DUTCH,SWEDISH) (AEP)
2-587-484-81	MANUAL, INSTRUCTION (DVE) (ITALIAN) (AEP)	
2-587-484-91	MANUAL, INSTRUCTION (DVE) (RUSSIAN)	(AEP)
8-954-047-90	RECEIVER MDR-E0110LP/BC (CH,KR)	

MEMO

