SPP-A1070/A1071

SERVICE MANUAL

Ver 1.1 2001.12

Photo: SPP-A1070

US Model
SPP-A1070
Canadian Model
SPP-A1071

SPECIFICATIONS

General

Operating frequency
- Base unit: 902 - 905 MHz (310µW)
- Hand set: 925 - 928 MHz (400µW)

Operating channel
- 30 channels

Dial signal
- Tone, 10 PPS (pulse) selectable

Supplied accessories
- AC power adaptor AC-T122
- Telephone line cord
- Rechargeable battery pack BP-T18
- Belt clip
- Wall bracket

Handset

Power source
- Rechargeable battery pack BP-T18

Battery life
- Standby: Approx. 7 days
- Talk: Approx. 7 hours

Dimensions
- Approx. 2 ¼ x 1 ⅞ x 7 ¼ inches (w/h/d), antenna excluded (approx. 55 x 47 x 183 mm)
- Antenna: Approx. 1 ⅜ inches (approx. 34 mm)

Mass
- Approx. 7.7 oz (approx. 220 g), battery included

Base unit

Power source
- DC 9V from AC power adaptor AC-T122

Battery charging time
- Approx. 12 hours

Dimensions
- Approx. 6 ¾ x 2 ¼ x 7 ½ inches (w/h/d), antenna excluded (approx. 171 x 57 x 189 mm)
- Antenna: Approx. 6 ⅛ inches (approx. 153 mm)

Mass
- Approx. 15 oz (approx. 412 g), wall bracket excluded

Answering machine

Maximum recording time
- Approx. 15 minutes, using incorporated IC

Greeting message
- Up to 90 seconds per each

Incoming Memo message
- Up to 4 minutes per message

Design and specifications are subject to change without notice.

CORDLESS TELEPHONE WITH ANSWERING SYSTEM

9-873-145-12
2001L0500-1

Sony Corporation
Personal Audio Company
Published by Sony Engineering Corporation

SONY®

TABLE OF CONTENTS

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.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1
SERVICING NOTES

NOTE FOR REPLACEMENT OF THE EEPROM

The ID cord is written in the EEPROM.
When replacing the EEPROM, U6 on the BASE MAIN board and U4 on HAND MAIN board should be replaced together as a pair. (Parts No. X-3381-019-1)

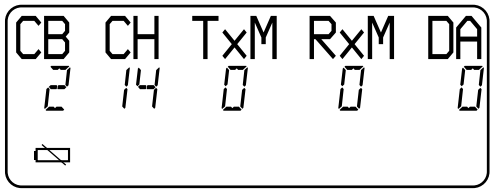
PRIOR CHECK FOR SERVICING

This set can rewrite the ID number of handset to the ID number of base unit in the test mode even their serial numbers are different. You can find which is wrong, handset or base unit with this function.

Note: A normal set is needed for this test.
Define A as the normal set and B as the faulty set.
Disconnect their power.

Procedure:

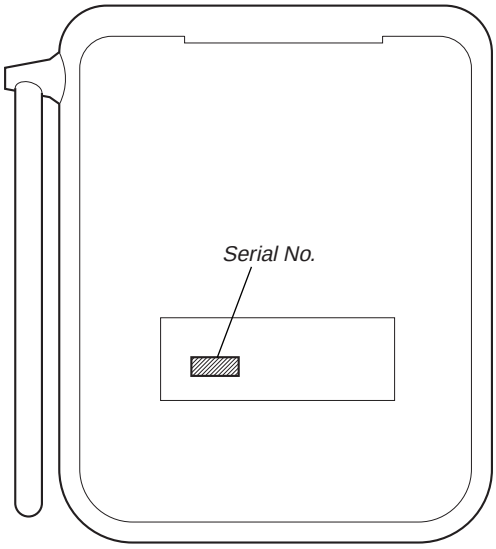
1. Press the [PGM] key.
2. Select the "DIAL MODE" menu by pressing [▲] or [▼] keys.
3. Press the key sequence [SELECT], [2], [1], [0], [4].
4. When enter the test mode, happy tone is emitted, and the LCD displays as shown below.



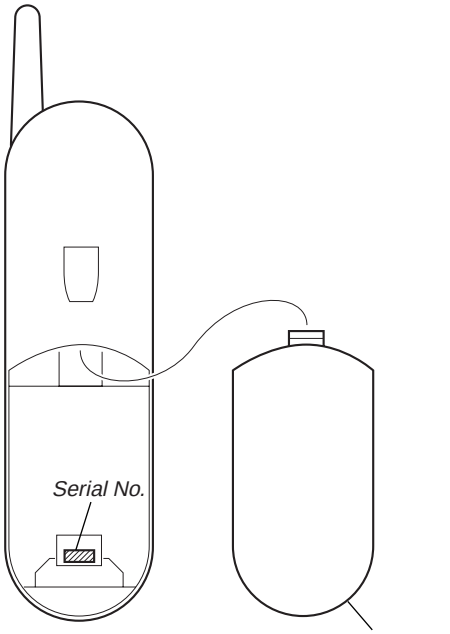
5. While pressing the [HANDSET LOCATOR] key of the base unit A, turn the power on, then release and press it again within 2 seconds to enter the test mode.
6. When enter the test mode, the [LINE] LED blinks slowly .
7. Disconnect the power of the handset B, then connect the power again.
8. Disconnect the power of the base unit A, then connect the power again.
9. Cradle the handset B on the base unit A to charge the battery of handset B for about 1 minute.
10. Press the [TALK] key of the handset B and join the base unit A.
11. When joining is successful, the handset B is normal. But when it fails, charge the battery of the handset B again.
12. Next, repeat the step 1 to step 9 with the handset A and base unit B
13. When joining is successful with handset A and base unit B, base unit B is normal and handset B is faulty.

NEW/FORMER TYPE DISCRIMINATION

In this set with the following serial No. or later BASE MAIN and HAND MAIN boards have been changed.
SPP-A1070 : Serial No. 0316344 or later
SPP-A1071 : Serial No. A0103501 or later



Bottom View

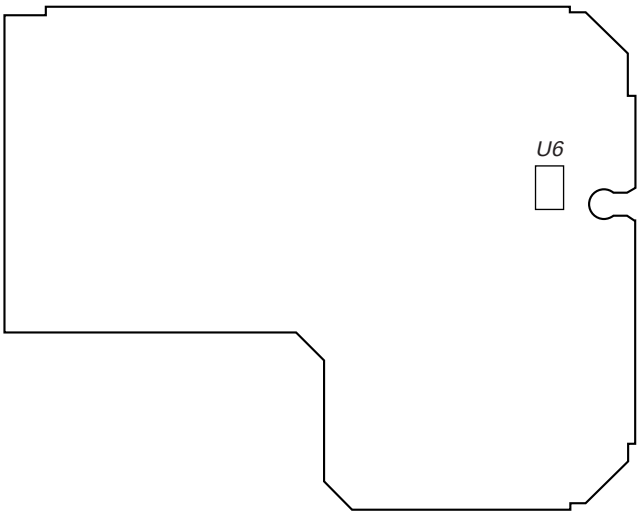


Bottom View

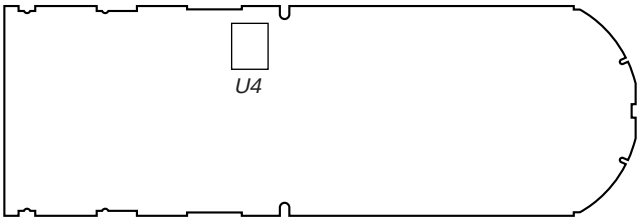
NOTE FOR REPAIRING AND REPLACEMENT OF THE NEW TYPE BOARD

When a new type board is damaged or out of order, do not repair that board, but replace with an former type board (BASE MAIN board : Part No. A-3062-656-A, HAND MAIN board : Part No. A-3062-658-A (A1070)/A-3062-742-A(A1071)). In this case, remove the EEPROM (BASE MAIN board : Ref No. U6, HAND MAIN board : Ref No. U4) from the new type board and install it on the former type board as a replacement.

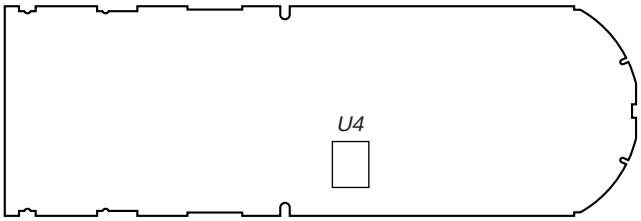
– BASE MAIN BOARD (Conductor Side) –



– HAND MAIN BOARD (Component Side) –



Former Type



New Type

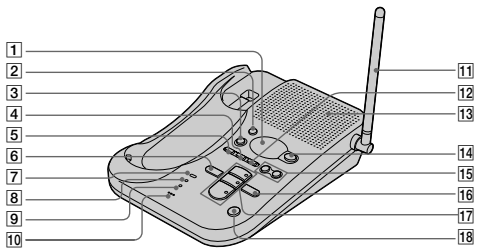
SECTION 2
GENERAL

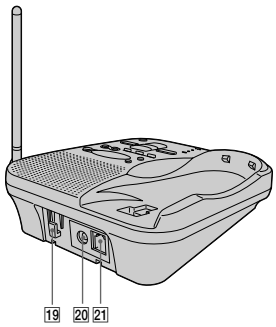
This section is extracted from instruction manual.

Identifying the parts

Refer to the pages indicated in parentheses for details.

Base Unit





1 **Message counter** (p. 35, 61)
Indicates the number of new messages recorded. "A" appears in the announcement only mode. "F" appears when there is no space to record messages. "CL" flashes when the power is turned on.

2 **REC/MEMO button** (p. 31, 41)
Press to record a greeting.
Also used to record a memo message.

3 **ERASE button** (p. 32, 38)
Erases the recorded greeting or messages.

4 **SELECT button** (p. 30)
Press to enter the selection and bring you to the next selection.

5 **TIME/SET button** (p. 30)
Press to check the current time.
Also used to set the timer of the base unit.

6 **REPEAT/SLOW button** (p. 37)
Press to repeat the current message.
Also used to go back to the previous message or to play the message slowly.

7 **NEW CALL lamp** (p. 46)
Flashes when there is a "NEW" data in the Caller ID list.

8 **CHARGE lamp** (p. 9, 19)
Lights while the battery is being charged.

9 **LINE lamp** (p. 18)
Lights when the handset is in use.

10 **MIC (microphone)** (p. 31, 41)

11 **Antenna** (p. 7, 54)

12 **MENU button** (p. 30, 42)
Press repeatedly to select a setting item when setting up the answering machine.

13 **Speaker** (p. 38)

14 **ANSWER ON/OFF button** (p. 35)
Turns the answering function on or off. Lights when the answering function is on, and flashes when a new message is recorded.

15 **VOLUME +/– buttons** (p. 38)
Adjusts the speaker volume.

16 **SKIP/QUICK button** (p. 37)
Press to skip to the next message. Keep the button pressed for quick playback of messages.

17 **PLAY/STOP (MAILBOX 1, 2, 3) buttons** (p. 37, 38)
Plays back the messages in each mail box.

18 **HANDSET LOCATOR button** (p. 29)
Allows you to page the handset.

19 **Hook for AC power adaptor cord** (p. 7)

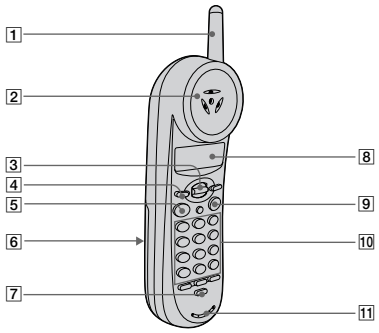
20 **DC IN 9V jack** (p. 7)

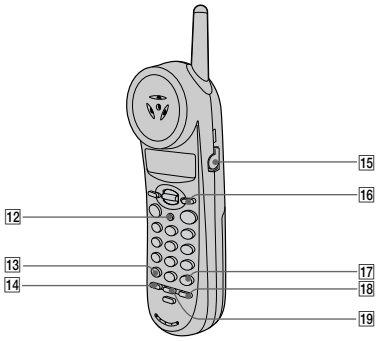
21 **LINE (telephone line) jack** (p. 7)

continued

Identifying the parts (continued)

Handset





1 **Antenna**

2 **Speaker**

3 **Jog lever** (p. 11, 22, 46)

4 **HOLD button** (p. 18)
Press to put a call on hold.

5 **TALK button** (p. 18)
Lets you make or receive a call.

6 **Battery compartment** (p. 9)

7 **CHANNEL button** (p. 18)
Press to select a better channel.

8 **Display** (p. 11, 45)

9 **OFF button** (p. 18)
Allows you to disconnect the call.

10 **Dialing keys**

11 **Microphone**

12 **FLASH button** (p. 18, 53)
Switches to a second call if you have "call waiting" service, or lets you make a new call.

13 ✳ **TONE button** (p. 18)
Allows you to switch temporarily to tone dialing.

14 **ONE-TOUCH button** (p. 23)

15 **(HEADSET) jack** (p. 56)

16 **SELECT button** (p. 11, 22, 24, 48)
Press to enter the selection and bring you to the next selection.

17 ♯ **button** (p. 51)
Used to change the number of digits of the phone number in the Caller ID list.

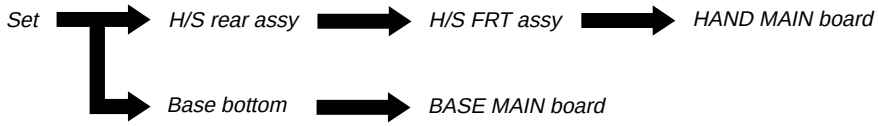
18 **REDIAL/PAUSE button** (p. 20, 23)
Redials the last number called / inserts a pause in the dialing sequence.

19 **PGM (Program) button** (p. 11, 22, 24)
Press to start the procedure for setting up the phone such as choosing the dialing mode.
Also used to store the setting to finish the procedure.

SECTION 3
DISASSEMBLY

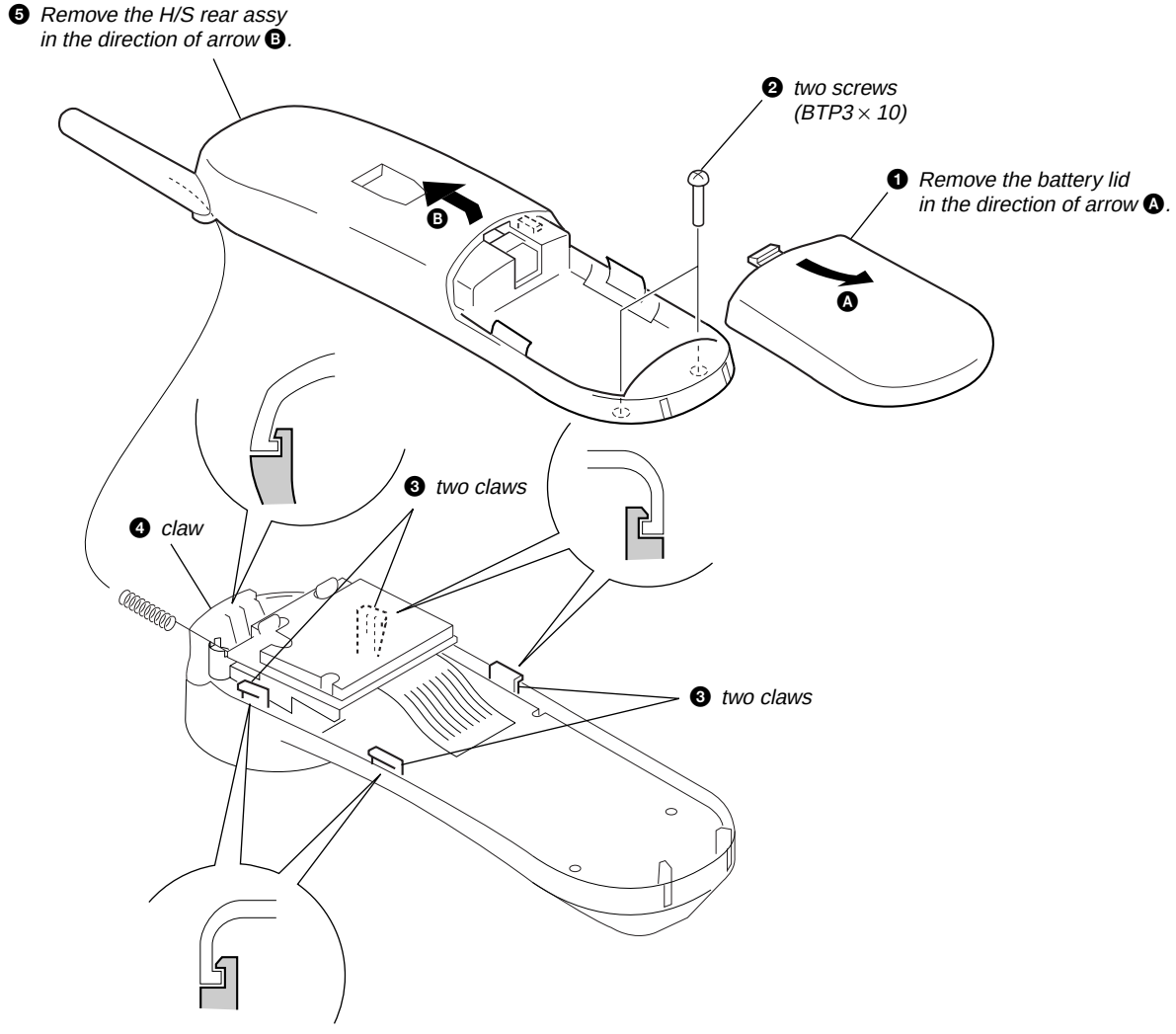
• This set can be disassembled in the order shown below.

3-1. DISASSEMBLY FLOW

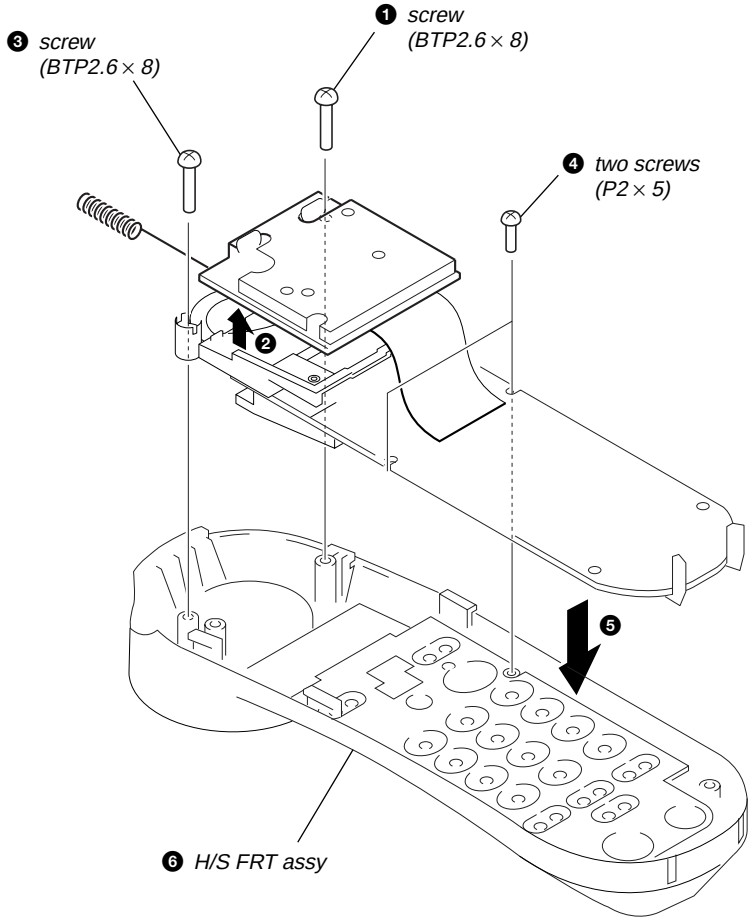


Note: Follow the disassembly procedure in the numerical order given.

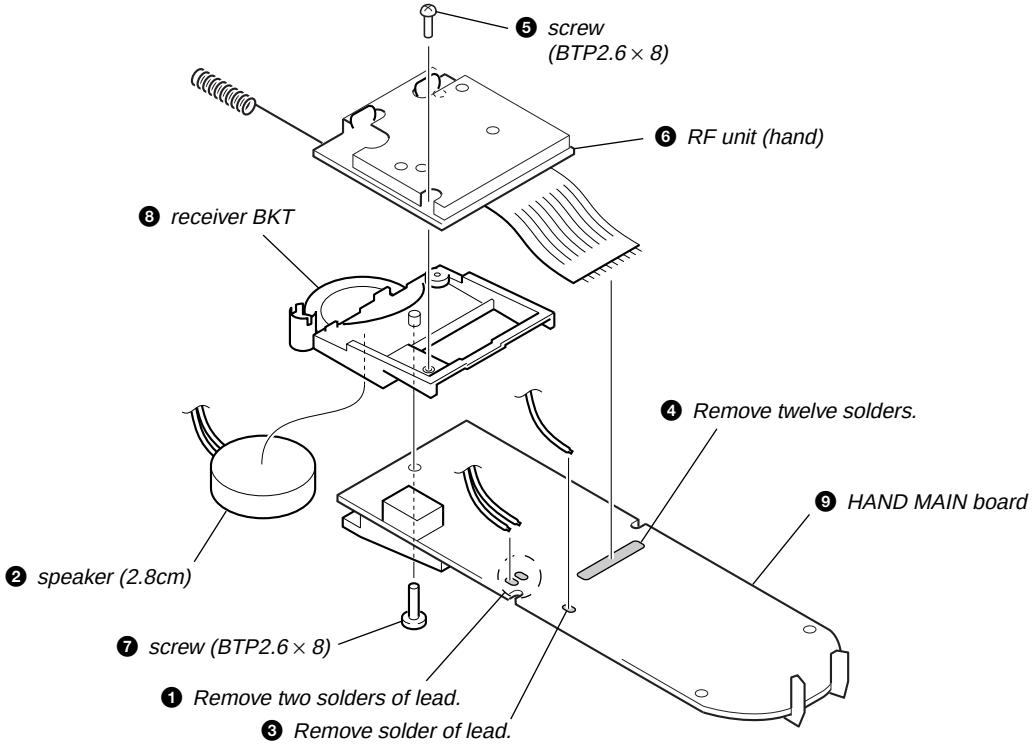
3-2. H/S REAR ASSY



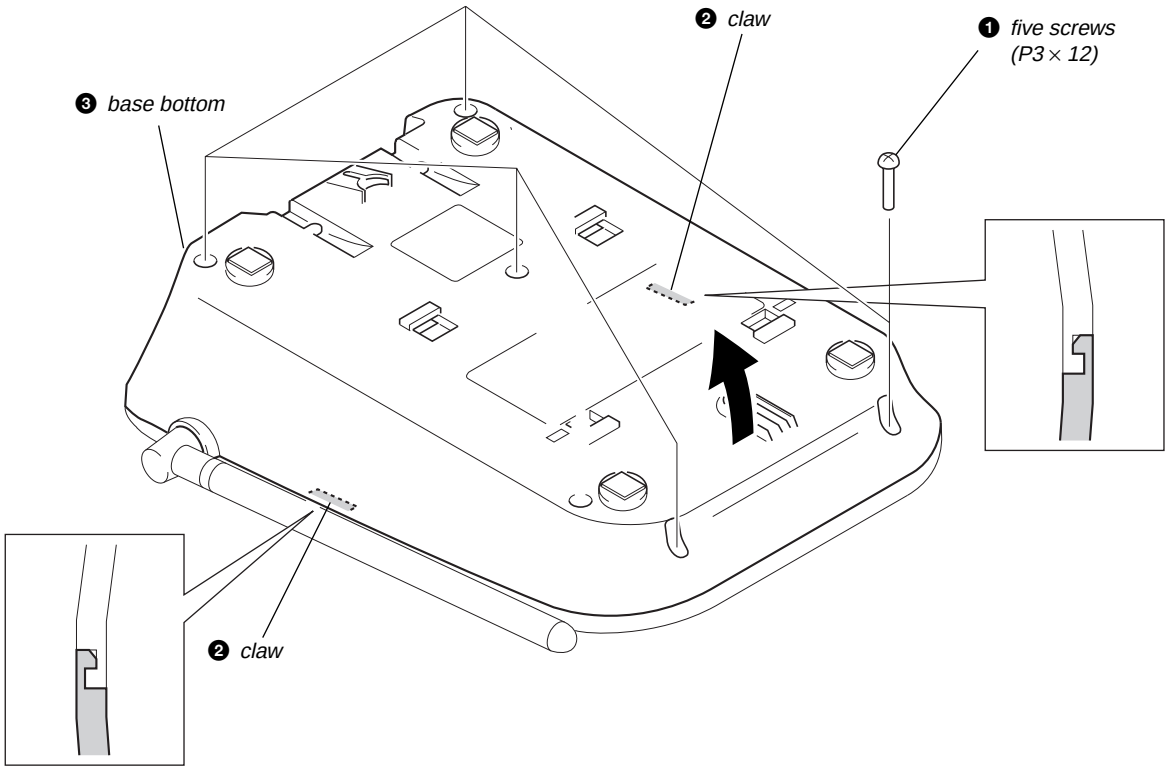
3-3. H/S FRT ASSY



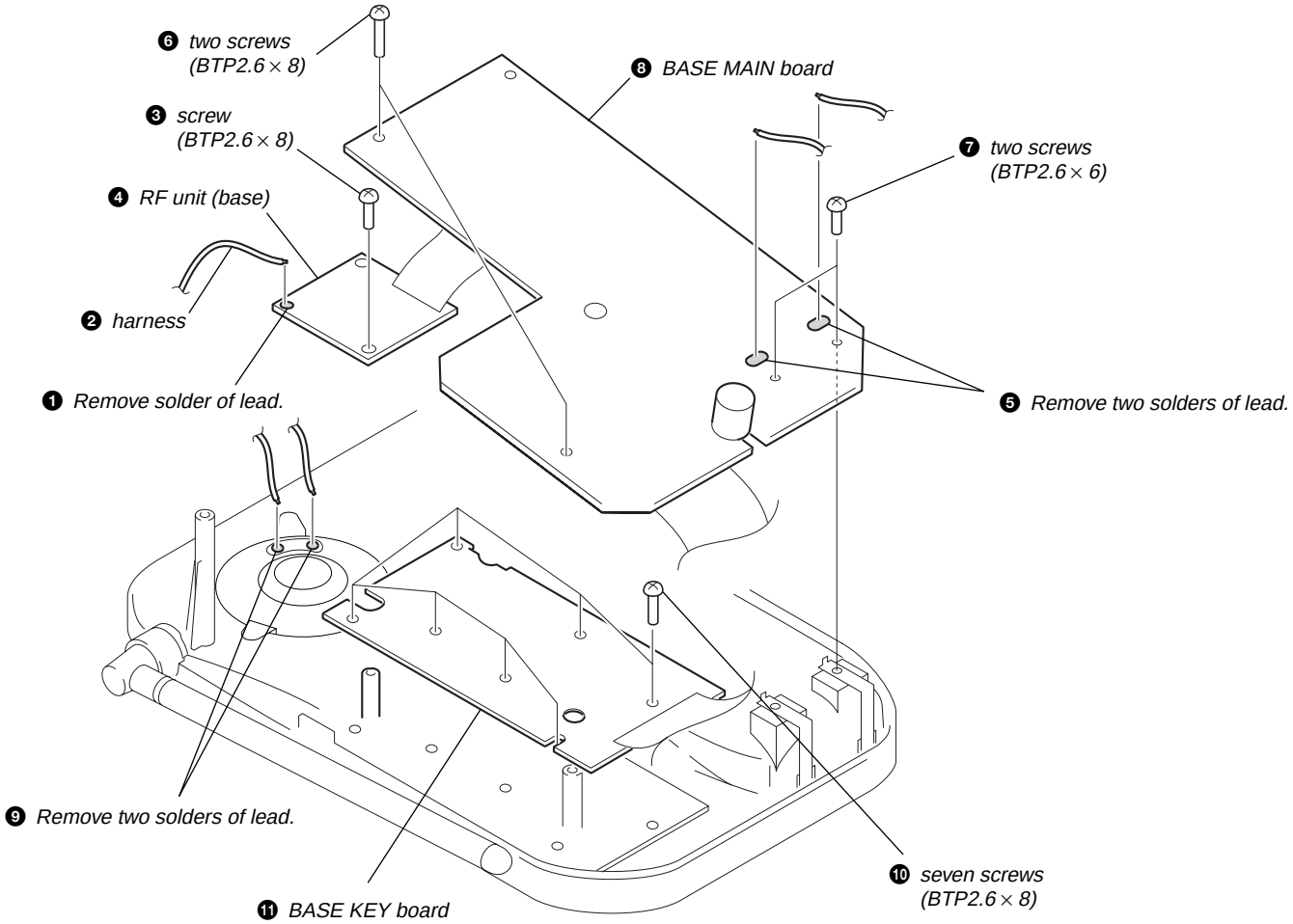
3-4. HAND MAIN BOARD



3-5. BASE BOTTOM



3-6. BASE MAIN BOARD



SECTION 4
TEST MODE

Introduction

The manual test mode can be used for testing the RF and audio sections of the base unit and handset. The manual test mode is also required for the FCC testing in which the phone is tested for interference at the first, middle, and last RF channels.

The following features are provided in manual test mode.
- Able to set operating mode of the combo chip.
- Able to mute or unmute the audio path.
- Able to change the RF channel. (Both RX and TX)
- Able to transmit or receive data packet.
- Able to synchronize the security code.

BASE UNIT

1. Entering the Manual Test Mode

1. While pressing the [HANDSET LOCATOR] key, turn the power on, then releasing and pressing it again within 2 seconds.
2. When enter the test mode, the [LINE] LED blinks slowly.

2. Default Settings

- Channel set to 14. (out of 0 to 29)
- Combo set to active mode.
- TX audio path unmuted.
- RX audio path unmuted.
- Off hooked.
- Date transmission disabled.

3. HANDSET LOCATOR Key Operation

1.
Condition: Press the [HANDSET LOCATOR] key while the [LINE] LED lights up.
Operation: Advance channel by one, following 15, 16, 17...28, 29, 0, 1....
Indication: LED remains on for 3 seconds and then blinks again.

2.
Condition: Press the [HANDSET LOCATOR] key while the [LINE] LED goes off.
Operation: Toggle combo between active mode and RX mode.
Indication: LED remains off for 3 seconds and then blinks again.

3.
Condition: Press the [HANDSET LOCATOR] key over 2 seconds.
Operation: Enable data transmission.
Set combo to active mode.
Indication: LED toggles once and then remains steady.

4.
Condition: Press the [HANDSET LOCATOR] key while data transmission is enabled.
Operation: Disable data transmission.
Set combo to RX mode.
Indication: LED is on for 1 seconds and then blinks again.

5.
Condition: Power down.
Operation: Release the test mode

4. Data Link

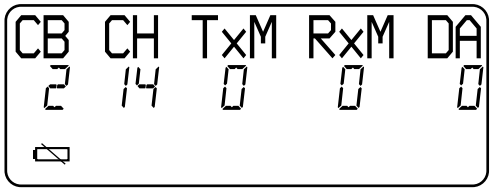
Data bits are encoded in manchester format for which bit “0” is represented by 500 µs low and 500 µs high while bit “1” by 500 µs high and 500 µs low.
If data transmission is enabled, it will transmit data packet with the following fields continuously.
(“0”=500 µs low and “1”=500 µs high)
- 8 bit preamble :0101010101010101
- 8 bit word sync :0110010010010110
- 20 bit security code :Restored from EEPROM
- 4 bit reserved data :01010101
- 8 bit command :0101010101010101
- 8 bit data :0101010101010101

If data transmission is enabled, it will toggle the [LINE] LED every time when a data packet is received. (No security code would be checked)

HANDSET

1. Entering the Manual Test Mode

1. Press the [PGM] key.
2. Select the “DIAL MODE” menu by pressing [▲] or [▼] keys.
3. Press the key sequence [SELECT], [2], [1], [0], [4].
4. When enter the test mode, happy tone is emitted, and the LCD displays as shown below.



2. Default Settings

- Channel set to 14. (out of 00 to 29)
- Combo set to active mode.
  (0: inactive mode, 1: RX mode, 2: active mode)
- TX audio path unmuted. (0: unmuted, 1: muted)
- RX audio path unmuted. (0: unmuted, 1: muted)
- Date transmission disabled. (0: disabled, 1: enabled)
- Battery detection.
  (“” icon on: RSSI detection, “” icon off: battery detection)

3. Key Definition

[1] key
Operation: Set combo to inactive mode.
Indication: CB=0

[2] key
Operation: Set combo to RX mode.
Indication: CB=1

[3] key
Operation: Set combo to active mode.
Indication: CB=2

[4] key
Operation: Increment channel by 1.
Indication: CH=CH+1

[5] key
Operation: Mute TX audio path.
Indication: TxM=1

[6] key
Operation: Mute RX audio path.
Indication: RxM=1

[7] key
Operation: Decrement channel by 1.
Indication: CH=CH–1

[8] key
Operation: Mute TX audio path.
Indication: TxM=0

[9] key
Operation: Mute RX audio path.
Indication: RxM=0

[0] key
Operation: Start LCD segment test.
Indication: Various patterns shown on LCD for a few seconds.

[*] key
Operation: Set combo to active mode.
Enable data transmission.
Indication: DA=1

[#] key
Operation: Disable data transmission.
Indication: DA=0

[ONE TOUCH] key
Operation: Switch to RSSI detection.
Indication: "✆" icon turns off.

[REDIAL] key
Operation: Switch to battery detection.
Indication: "✆" icon turns on.

[OFF] key
Operation: Release the test mode.

Note: All keys pressed will emit the key tone.

4. Data Link

Data bits are encoded in manchester format for which bit "0" is represented by 500 µs high and 500 µs low while bit "1" by 500 µs low and 500 µs high.
If data transmission is enabled, it will transmit data packet with the following fields continuously.
("0"=500 µs low and "1"=500 µs high)

- 8 bit preamble :1010101010101010
- 8 bit word sync :1001101101101001
- 20 bit security code :Restored from EEPROM
- 4 bit reserved data :10101010
- 8 bit command :1010101010101010
- 8 bit data :1010101010101010

No matter data transmission is enabled or not, it toggles the "NEW" icon every time when a data packet is received. (No security code would be checked)

Security Code Synchronization

The following procedures should be followed if the security codes of both unit do not match to each other.

1. Put the handset into manual test mode, making sure the channel is set at 14 (default) out of 0 to 29.
2. Press the [*] key to start data transmission under which the SC_SYNC command is sent continuously.
3. Put the base unit into manual test mode.
4. Before the base unit enters the manual test mode, it waits one second for receiving SC_SYNC command from the handset. If the command is received in the period, its security code will be saved into EEPROM and then flash the [LINE] LED for indication.

Frequency Allocation Tables

Base Unit Frequencies:

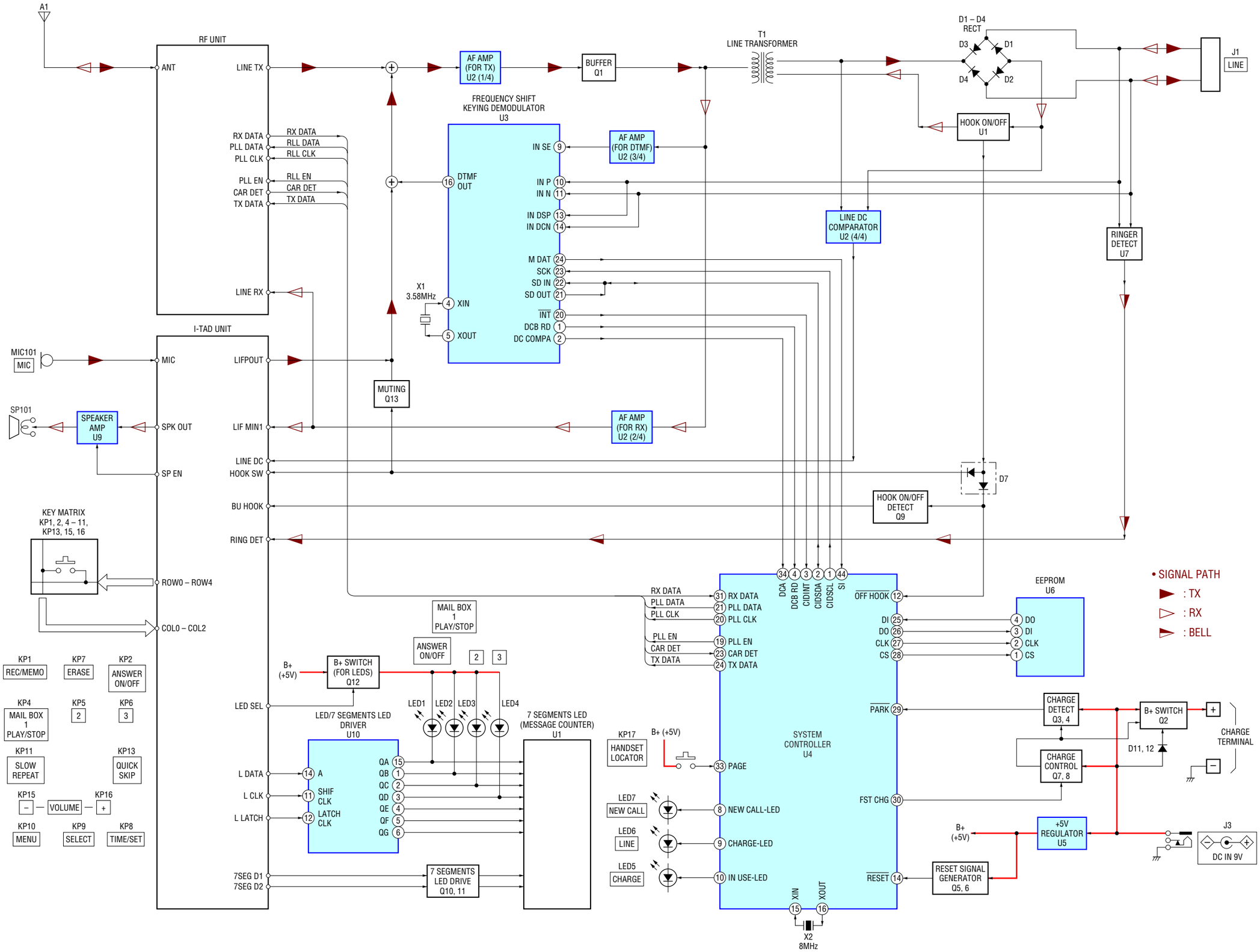
Channel	Transmit Frequency	Receive Frequency	RX LO Frequency
0	902.30 MHz	925.05 MHz	935.75 MHz
1	903.35 MHz	926.10 MHz	936.80 MHz
2	904.40 MHz	927.15 MHz	937.85 MHz
3	905.45 MHz	923.40 MHz	934.10 MHz
4	906.50 MHz	924.45 MHz	935.15 MHz
5	903.05 MHz	925.80 MHz	936.50 MHz
6	904.10 MHz	926.85 MHz	937.55 MHz
7	905.15 MHz	923.10 MHz	933.80 MHz
8	906.20 MHz	924.15 MHz	934.85 MHz
9	902.75 MHz	925.50 MHz	936.20 MHz
10	903.80 MHz	926.55 MHz	937.25 MHz
11	904.85 MHz	927.60 MHz	938.30 MHz
12	905.90 MHz	923.85 MHz	934.55 MHz
13	902.45 MHz	925.20 MHz	935.90 MHz
14	903.50 MHz	926.25 MHz	936.95 MHz
15	904.55 MHz	927.30 MHz	938.00 MHz
16	905.60 MHz	923.55 MHz	934.25 MHz
17	906.65 MHz	924.60 MHz	935.30 MHz
18	903.20 MHz	925.95 MHz	936.65 MHz
19	904.25 MHz	927.00 MHz	937.70 MHz
20	905.30 MHz	923.25 MHz	933.95 MHz
21	906.35 MHz	924.30 MHz	935.00 MHz
22	902.90 MHz	925.65 MHz	936.35 MHz
23	903.95 MHz	926.70 MHz	937.40 MHz
24	905.00 MHz	927.75 MHz	938.45 MHz
25	906.05 MHz	924.00 MHz	934.70 MHz
26	902.60 MHz	925.35 MHz	936.05 MHz
27	903.65 MHz	926.40 MHz	937.10 MHz
28	904.70 MHz	927.45 MHz	938.15 MHz
29	905.75 MHz	923.70 MHz	934.40 MHz

Handset Frequencies:

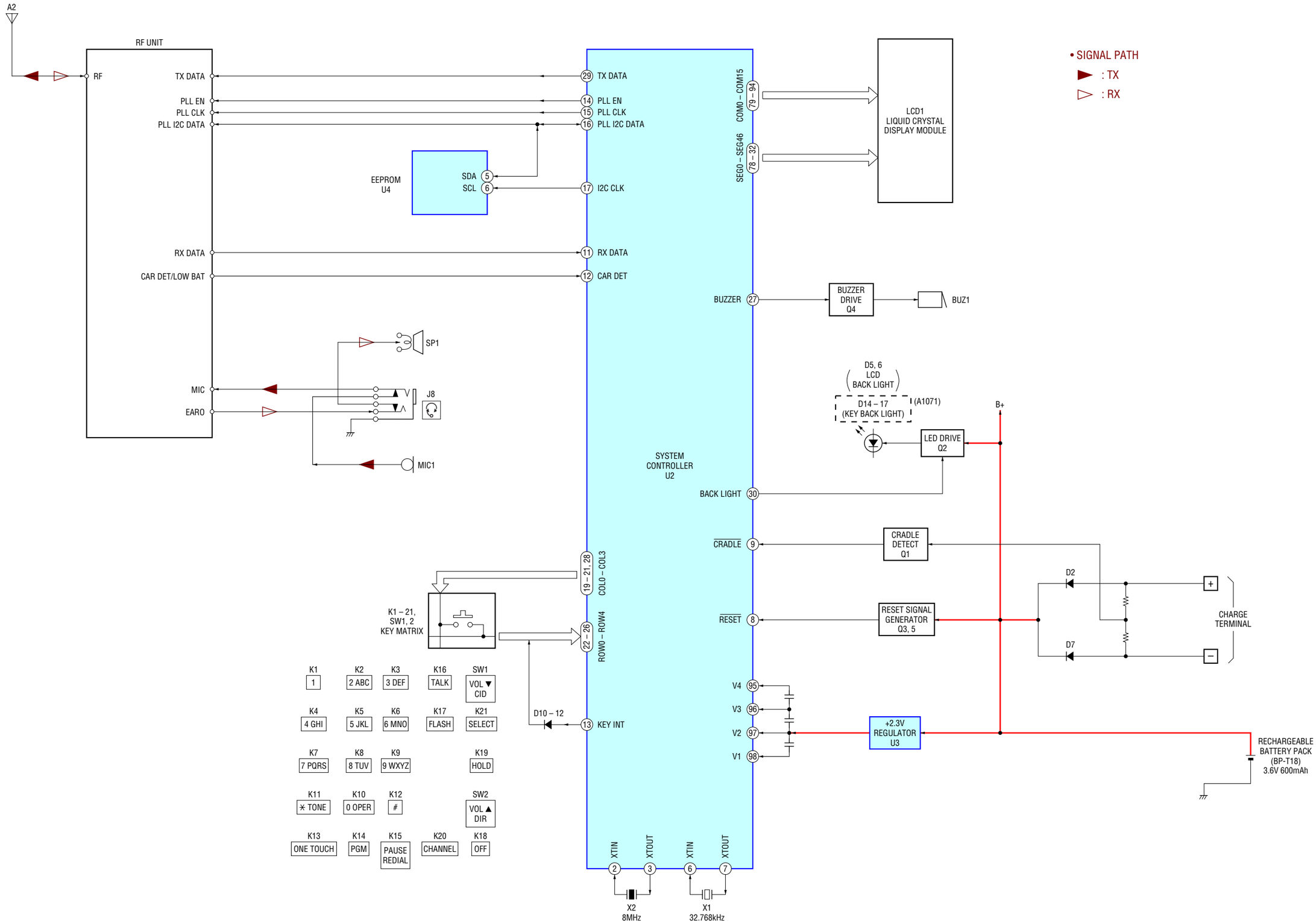
Channel	Transmit Frequency	Receive Frequency	RX LO Frequency
00	925.05 MHz	902.30 MHz	891.60 MHz
01	926.10 MHz	903.35 MHz	892.65 MHz
02	927.15 MHz	904.40 MHz	893.70 MHz
03	923.40 MHz	905.45 MHz	894.75 MHz
04	924.45 MHz	906.50 MHz	895.80 MHz
05	925.80 MHz	903.05 MHz	892.35 MHz
06	926.85 MHz	904.10 MHz	893.40 MHz
07	923.10 MHz	905.15 MHz	894.45 MHz
08	924.15 MHz	906.20 MHz	895.50 MHz
09	925.50 MHz	902.75 MHz	892.05 MHz
10	926.55 MHz	903.80 MHz	893.10 MHz
11	927.60 MHz	904.85 MHz	894.15 MHz
12	923.85 MHz	905.90 MHz	895.20 MHz
13	925.20 MHz	902.45 MHz	891.75 MHz
14	926.25 MHz	903.50 MHz	892.80 MHz
15	927.30 MHz	904.55 MHz	893.85 MHz
16	923.55 MHz	905.60 MHz	894.90 MHz
17	924.60 MHz	906.65 MHz	895.95 MHz
18	925.95 MHz	903.20 MHz	892.50 MHz
19	927.00 MHz	904.25 MHz	893.55 MHz
20	923.25 MHz	905.30 MHz	894.60 MHz
21	924.30 MHz	906.35 MHz	895.65 MHz
22	925.65 MHz	902.90 MHz	892.20 MHz
23	926.70 MHz	903.95 MHz	893.25 MHz
24	927.75 MHz	905.00 MHz	894.30 MHz
25	924.00 MHz	906.05 MHz	895.35 MHz
26	925.35 MHz	902.60 MHz	891.90 MHz
27	926.40 MHz	903.65 MHz	892.95 MHz
28	927.45 MHz	904.70 MHz	894.00 MHz
29	923.70 MHz	905.75 MHz	895.05 MHz

SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM – BASE UNIT Section –



5-2. BLOCK DIAGRAM – HANDSET Section –



5-3. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ● : Through hole.
- : Pattern from the side which enables seeing.
- : Carbon pattern.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

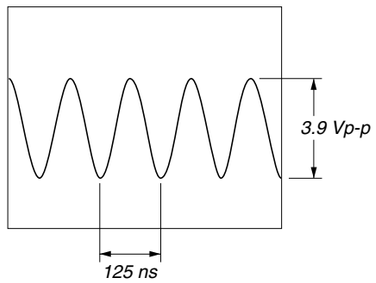
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.
- : panel designation.
- : B+ Line.
- Power voltages are dc 9 V and fed with regulated dc power supply from external power voltage jack (J3) on the BASE MAIN board, dc 12 V and fed with regulated dc power supply from modular jack (J1) on the BASE MAIN board with 100 Ω in series, and dc 3.6 V and fed with regulated dc power supply from battery terminal (J5) on the HAND MAIN board.
- Voltages and waveforms are dc with respect to ground in test mode.
  * : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). 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.
  : RX
  : TX
  : BELL

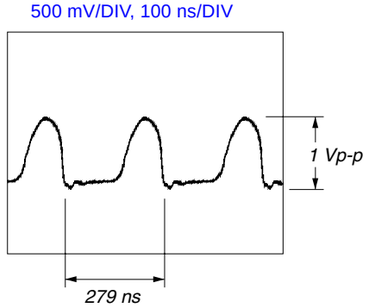
- **Waveforms**

– BASE MAIN Board –

❶ U4 ⑯ (XOUT)
1 V/DIV, 50 ns/DIV

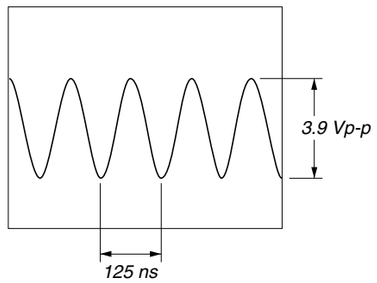


❷ U3 ⑤ (XOUT)
500 mV/DIV, 100 ns/DIV

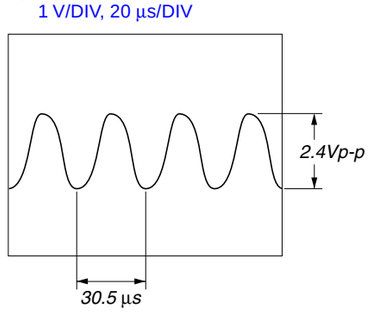


– HAND MAIN Board –

⓫ U2 ③ (XOUT)
1 V/DIV, 50 ns/DIV



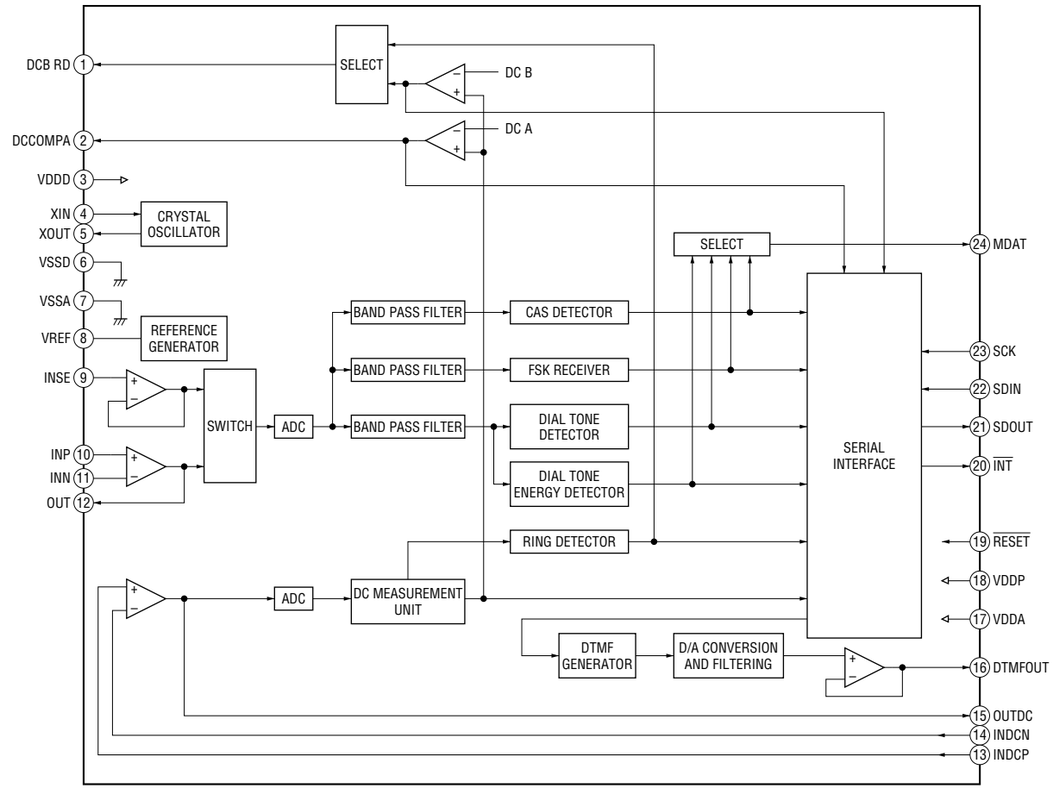
⓬ U2 ⑦ (XTOUT)
1 V/DIV, 20 μs/DIV



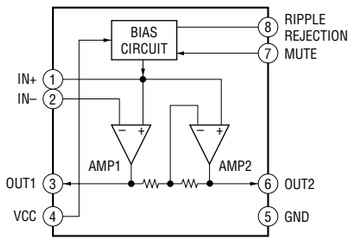
- **IC Block Diagrams**

– BASE MAIN Board –

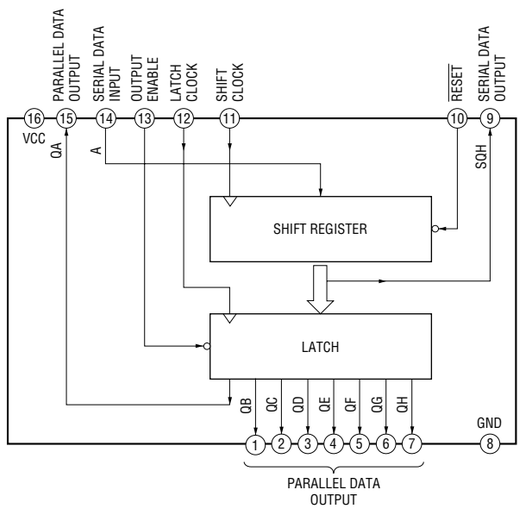
U3 PCC318



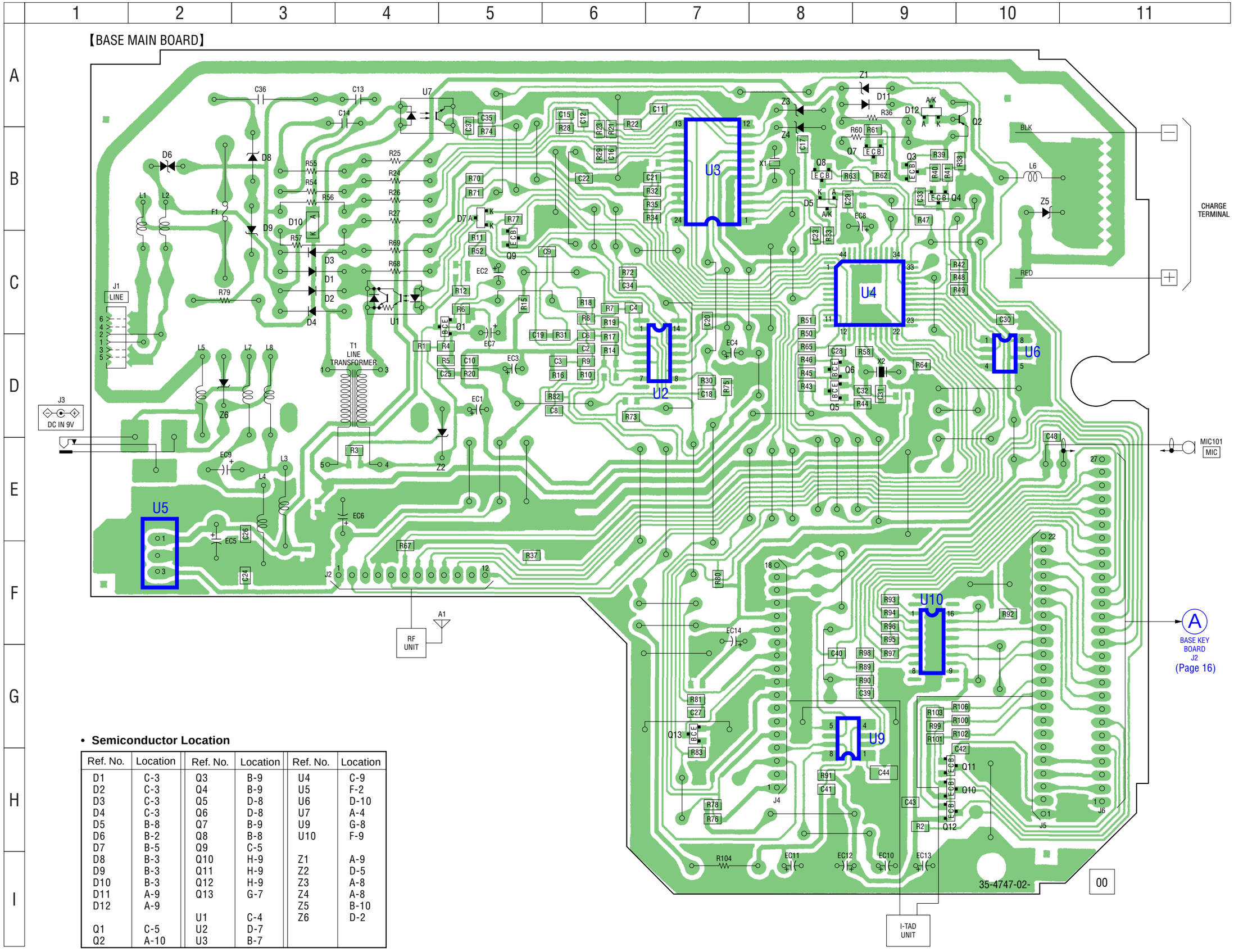
U9 KA8602D



U10 SN74HC595ADBR



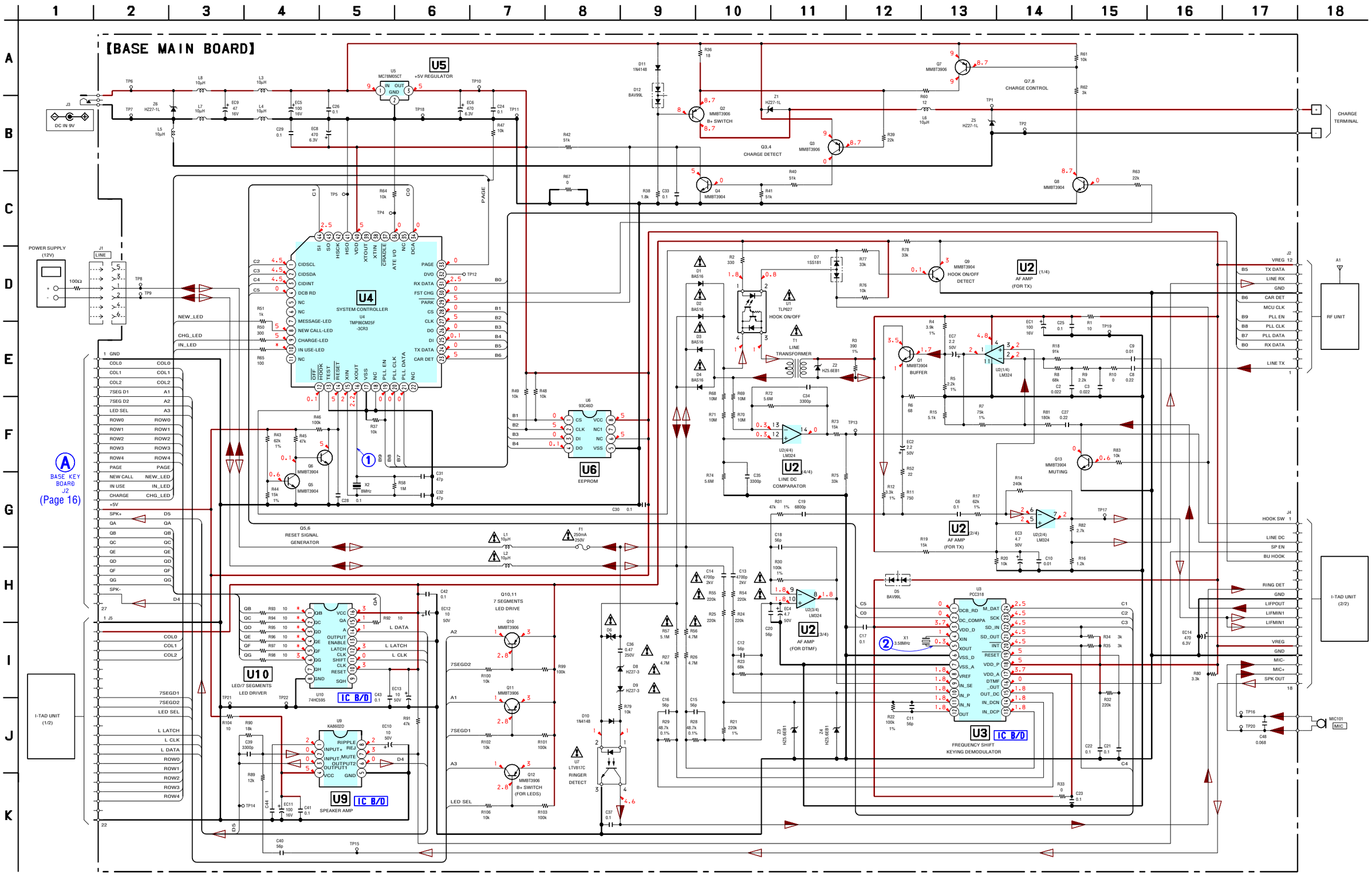
5-4. PRINTED WIRING BOARD – BASE MAIN Board –



- **Semiconductor Location**

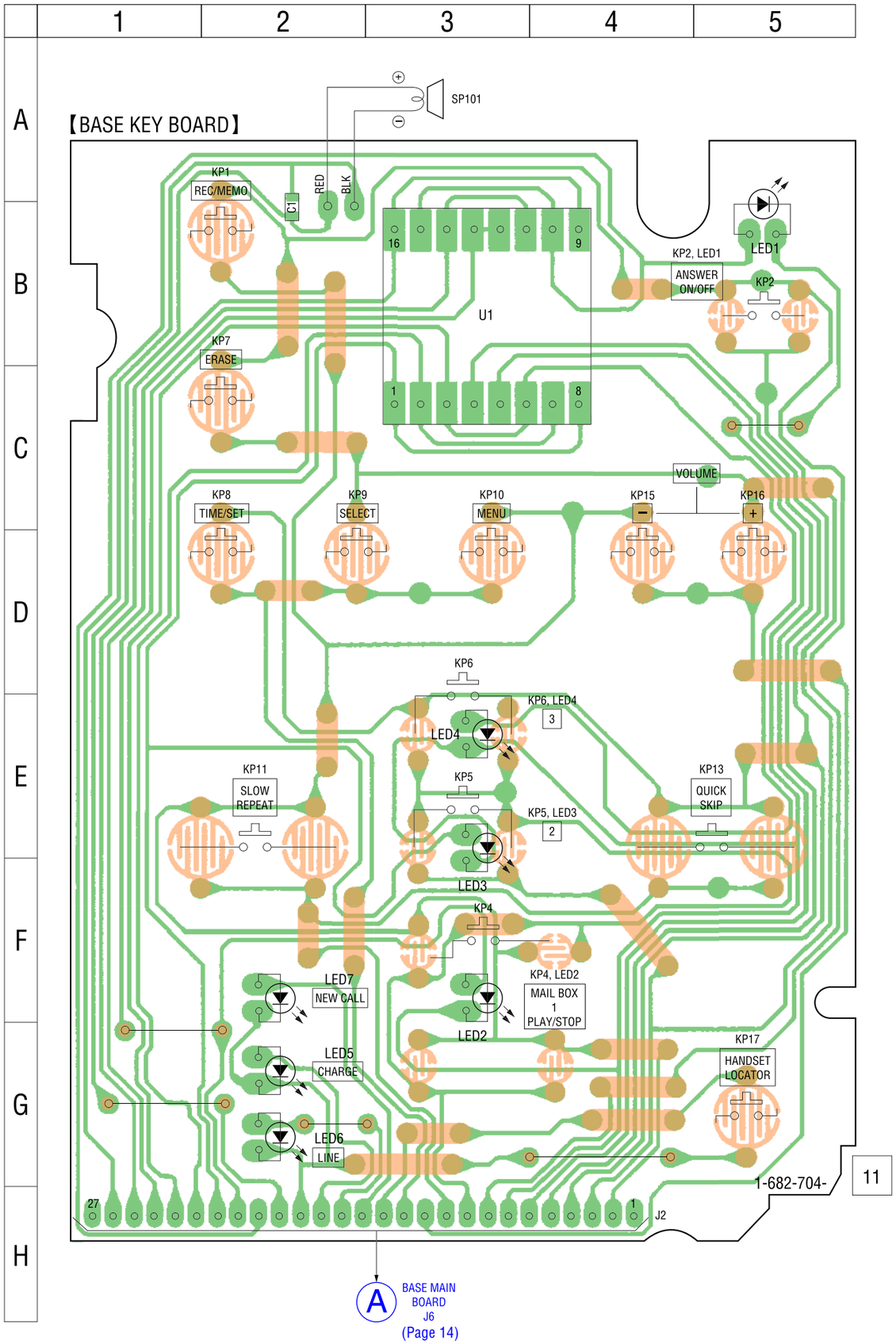
Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D1	C-3	Q3	B-9	U4	C-9
D2	C-3	Q4	B-9	U5	F-2
D3	C-3	Q5	D-8	U6	D-10
D4	C-3	Q6	D-8	U7	A-4
D5	B-8	Q7	B-9	U9	G-8
D6	B-2	Q8	B-8	U10	F-9
D7	B-5	Q9	C-5		
D8	B-3	Q10	H-9	Z1	A-9
D9	B-3	Q11	H-9	Z2	D-5
D10	B-3	Q12	H-9	Z3	A-8
D11	A-9	Q13	G-7	Z4	A-8
D12	A-9			Z5	B-10
		U1	C-4	Z6	D-2
Q1	C-5	U2	D-7		
Q2	A-10	U3	B-7		

5-5. SCHEMATIC DIAGRAM – BASE MAIN Board – • See page 13 for Waveforms. • See page 13 for IC Block Diagrams.

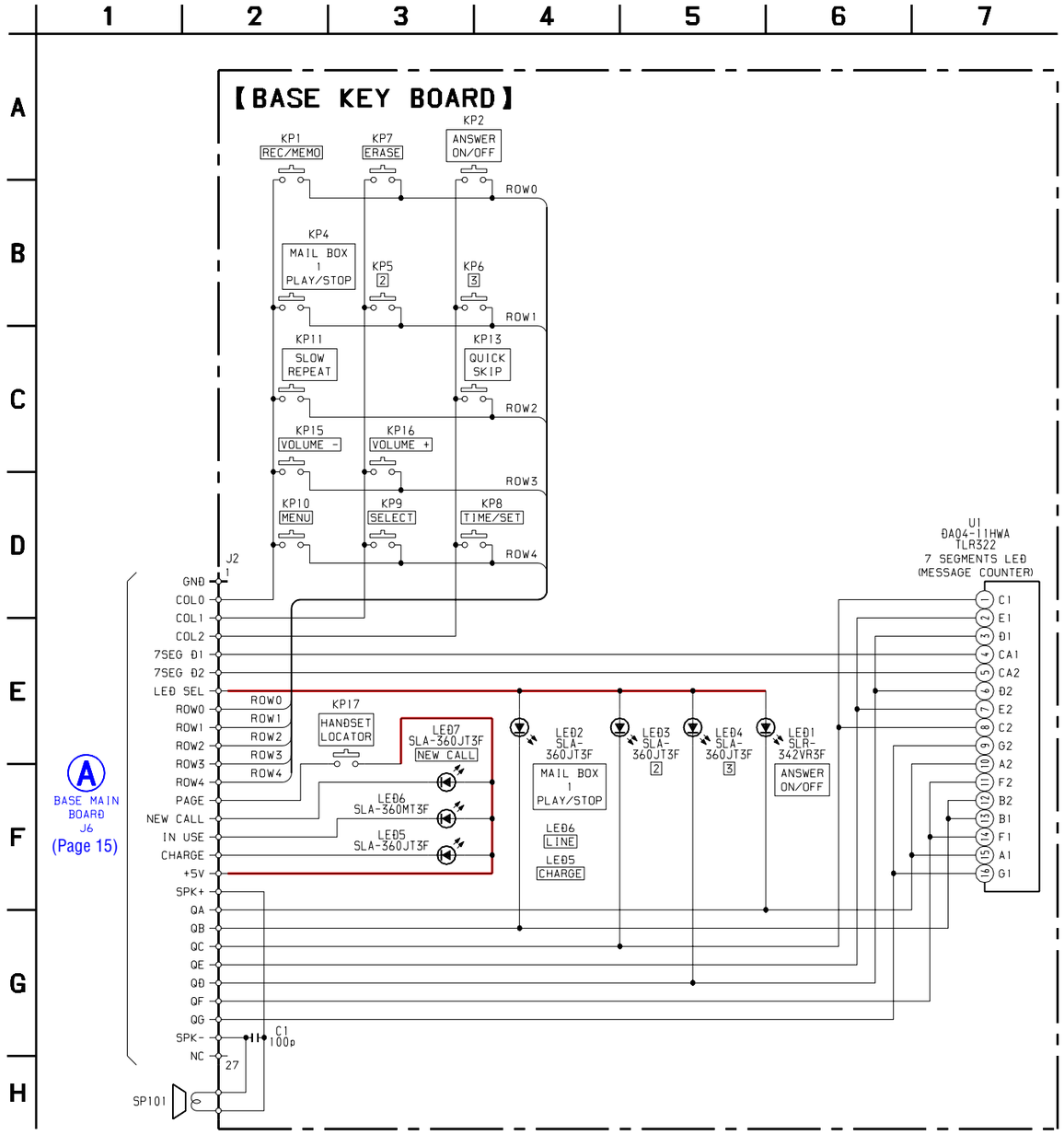


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-6. PRINTED WIRING BOARD – BASE KEY Board –



5-7. SCHEMATIC DIAGRAM – BASE KEY Board –



- **Semiconductor Location**

Ref. No.	Location
LED1	B-5
LED2	F-3
LED3	E-3
LED4	E-3
LED5	G-2
LED6	G-2
LED7	F-2
U1	B-3

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5-8. IC PIN FUNCTION DESCRIPTION

• BASE MAIN BOARD U4 TMP86CM25F-3CR3 (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	CIDSCL	O	Caller-ID clock signal output to the PCC318 (U3)
2	CIDSDA	I/O	Caller-ID two-way data bus with the PCC318 (U3)
3	$\overline{\text{CIDINT}}$	I	Caller-ID interruption signal input from the PCC318 (U3) “L” active
4	DCB RD	I	Line DC input or ringer detection signal input from the PCC318 (U3)
5, 6	NC	—	Not used (open)
7	MESSAGE-LED	O	LED drive signal output of the MESSAGES indicator “L”: LED on Not used (open)
8	NEW CALL-LED	O	LED drive signal output of the NEW CALL indicator (LED7) “L”: LED on
9	CHARGE-LED	O	LED drive signal output of the CHARGE indicator (LED5) “L”: LED on
10	IN USE-LED	O	LED drive signal output of the LINE indicator (LED6) “L”: LED on
11	NC	—	Not used (open)
12	$\overline{\text{OFF HOOK}}$	I	Hook on/off control signal input terminal “L”: hook off, “H”: hook on
13	TEST	I	Setting terminal for the test Not used (fixed at “L”)
14	$\overline{\text{RESET}}$	I	System reset signal input terminal “L”: reset For several hundreds msec. after the power supply rises, “L”: is input, then it changes to “H”
15	XIN	I	Main system clock input terminal (8 MHz)
16	XOUT	O	Main system clock output terminal (8 MHz)
17	VSS	—	Ground terminal
18	NC	—	Not used (fixed at “L”)
19	PLL EN	O	Chip enable signal output to the RF unit When PLL EN goes from “L” to “H”, it load data from PLL DATA
20	PLL CLK	O	Serial data transfer clock signal output to the RF unit
21	PLL DATA	O	Serial data output to the RF unit
22	NC	—	Not used (open)
23	CAR DET	I	Carrier detection signal input from the RF unit “L”: signal, “H”: no signal
24	TX DATA	O	Transmit data output to the RF unit
25	DI	I	Serial data input from the EEPROM (U6)
26	DO	O	Serial data output to the EEPROM (U6)
27	CLK	O	Serial data transfer clock signal output to the EEPROM (U6)
28	CS	O	Chip select signal output to the EEPROM (U6)
29	$\overline{\text{PARK}}$	I	Charge detection signal input terminal “L”: charge on
30	FST CHG	O	Battery charge control signal output terminal
31	RX DATA	I	Receive data input from the RF unit
32	DVO	O	Not used (open)
33	PAGE	I	HANDSET LOCATOR switch (KP17) input terminal “H” input when key pressing
34	DCA	I	Line DC input from the PCC318 (U3)
35	NC	—	Not used (open)
36	ATE I/O	I/O	Communication in/out terminal with ATE program Not used (fixed at “L”)
37	$\overline{\text{CRADLE}}$	I	Detection signal input of the handset on cradle or off cradle “L”: on cradle, “H”: off cradle Not used (open)
38	XTIN	I	Sub system clock input terminal (32.768 kHz) Not used (open)
39	XTOUT	O	Sub system clock output terminal (32.768 kHz) Not used (open)
40	VDD	—	Power supply terminal (+5V)
41	HSO	O	Not used (fixed at “L”)
42	HSCK	O	Not used (open)
43	SO	O	Not used (open)
44	SI	I	Caller-ID data input from the PCC318 (U3)

• HAND MAIN BOARD U2 TMP87C807U-3CR4 (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	VSS	—	Ground terminal
2	XIN	I	Main system clock input terminal (8 MHz)
3	XOUT	O	Main system clock output terminal (8 MHz)
4	TEST	I	Setting terminal for the test Not used (fixed at “L”)
5	VDD	—	Power supply terminal (+3.6V)
6	XTIN	I	Sub system clock input terminal (32.768 kHz)
7	XTOUT	O	Sub system clock output terminal (32.768 kHz)
8	$\overline{\text{RESET}}$	I	System reset signal input terminal “L”: reset For several hundreds msec. after the power supply rises, “L”: is input, then it changes to “H”
9	$\overline{\text{CRADLE}}$	I	Detection signal input of the handset unit on cradle or off cradle “L”: on cradle, “H”: off cradle
10	ATE IO	I/O	Communication in/out terminal with ATE program Not used (pull down)
11	RX DATA	I	Receive data input from the RF unit
12	CAR DET	I	Carrier detection signal input from the RF unit “L”: signal, “H”: no signal
13	KEY INT	O	Key interruption signal output terminal
14	PLL EN	O	Chip enable signal output to the RF unit When PLL EN goes from “L” to “H”, it load data from PLL DATA
15	PLL CLK	O	Serial data transfer clock signal output to the RF unit
16	PLL I2C DATA	I/O	Two-way data bus with the RF unit and EEPROM (U4)
17	I2C CLK	O	Serial data transfer clock signal output to the EEPROM (U4)
18	VAREF	I	Reference voltage input terminal Not used (fixed at “L”)
19 to 21	COL0 to COL2	O	Key scan output to the key matrix “L” output when key waiting
22 to 26	ROW0 to ROW4	I	Key scan input from the key matrix “L” input when key pressing
27	BUZZER	O	Buzzer (BUZ1) drive signal output terminal
28	COL3	O	Key scan output to the key matrix “L” output when key waiting
29	TX DATA	O	Transmit data output to the RF unit
30	BACKLIGHT	O	LED drive signal output of the liquid crystal display module back light (D5, D6) “L”: LED on
31	NC	O	Not used (pull up)
32 to 78	SEG0 to SEG46	O	Segment drive signal output to the liquid crystal display module (LCD1)
79 to 94	COM0 to COM14	O	Common drive signal output to the liquid crystal display module (LCD1)
95 to 98	V1 to V4	I	Input terminal for doubler circuit capacitor connection to develop liquid crystal display module drive voltage
99, 100	C1, C2	I	Input terminal for doubler circuit capacitor connection to develop liquid crystal display module drive voltage

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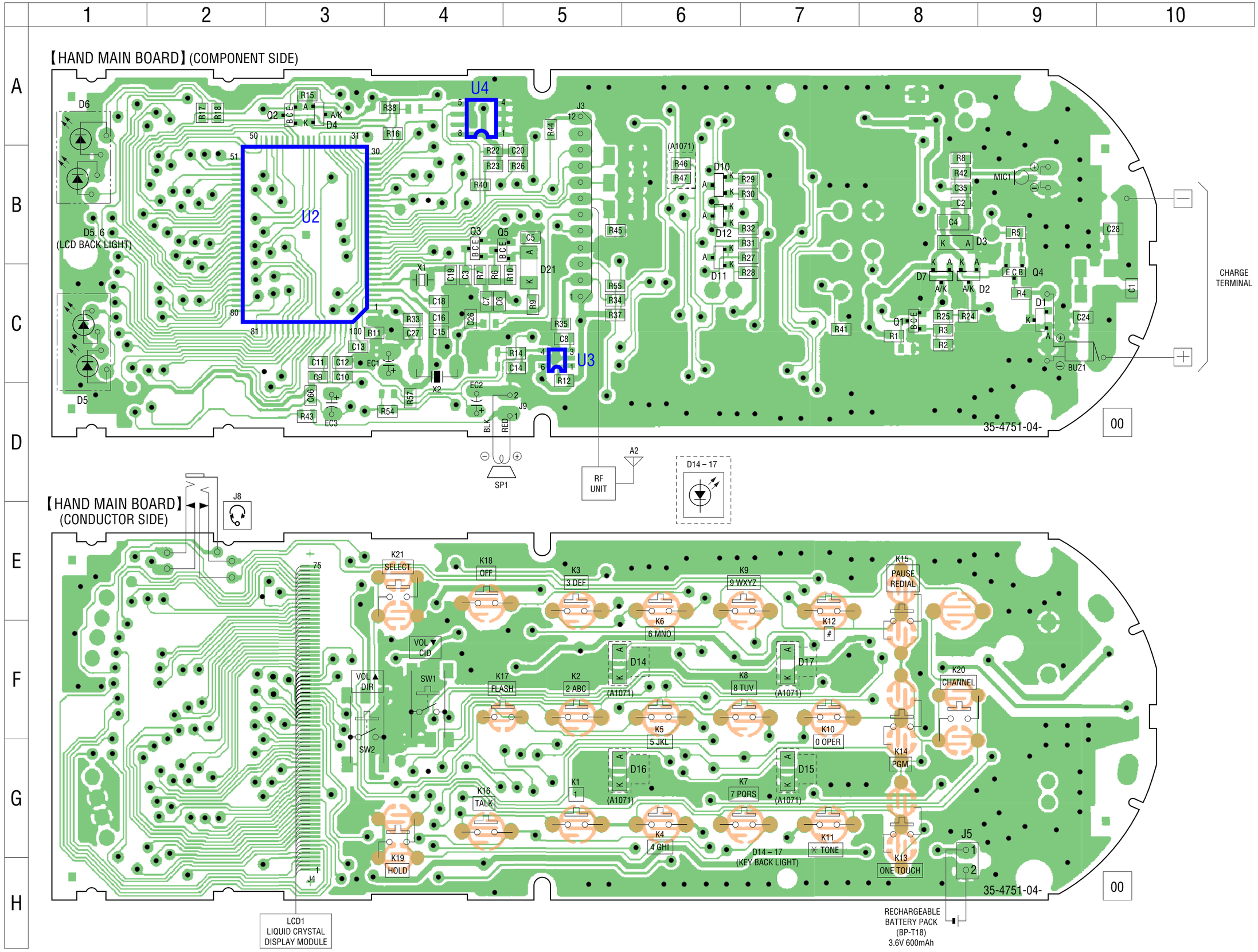
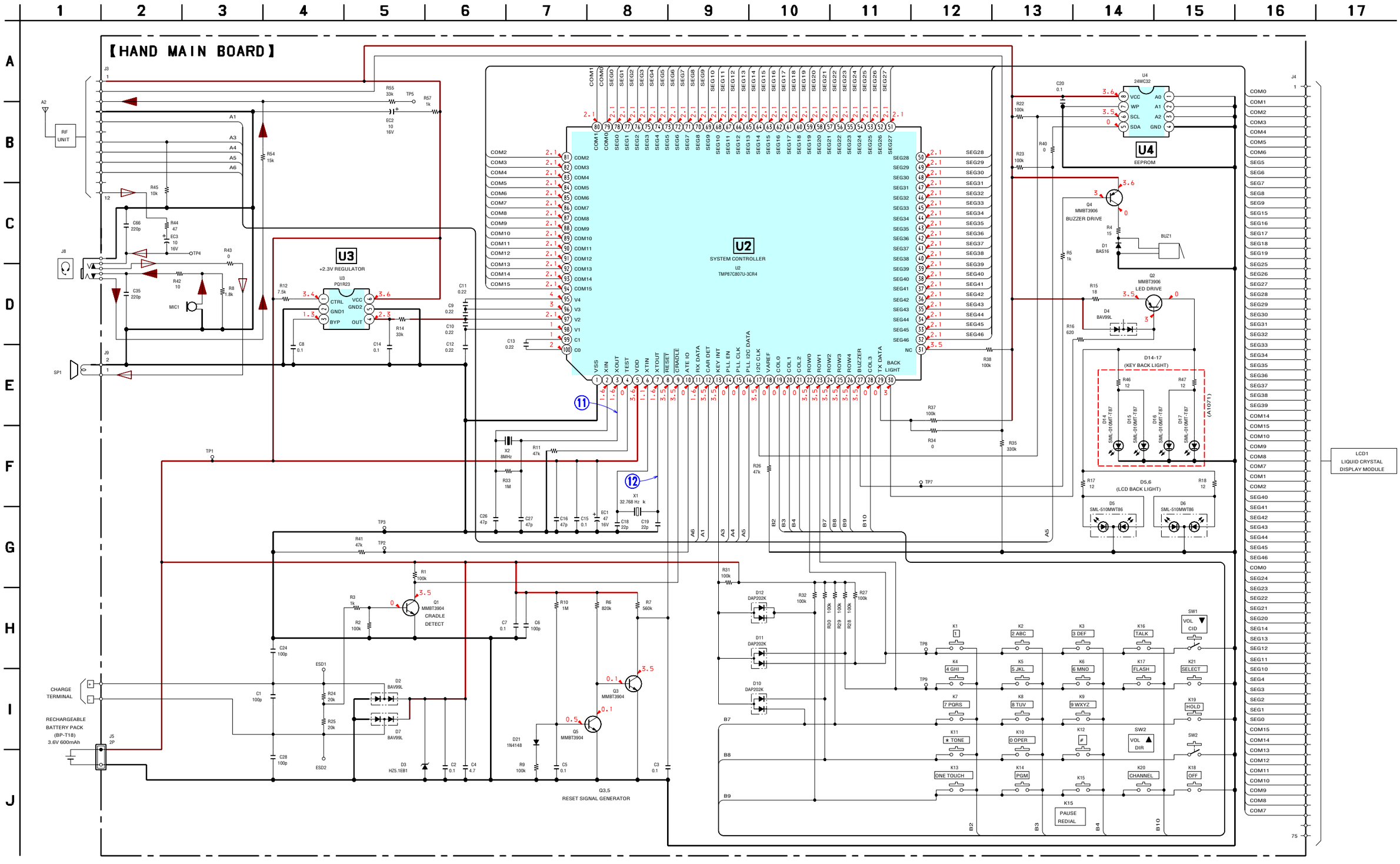
5-9. PRINTED WIRING BOARD – HAND MAIN Board –

- **Semiconductor Location**

Ref. No.	Location
D1	C-9
D2	C-8
D3	B-8
D4	A-3
D5	C-1
D6	B-1
D7	C-8
D10	B-6
D11	B-6
D12	B-6
D14	F-5
D15	G-7
D16	G-5
D17	F-7
D21	C-5
Q1	C-8
Q2	A-3
Q3	B-4
Q4	C-9
Q5	B-4
U2	B-3
U3	C-5
U4	A-4



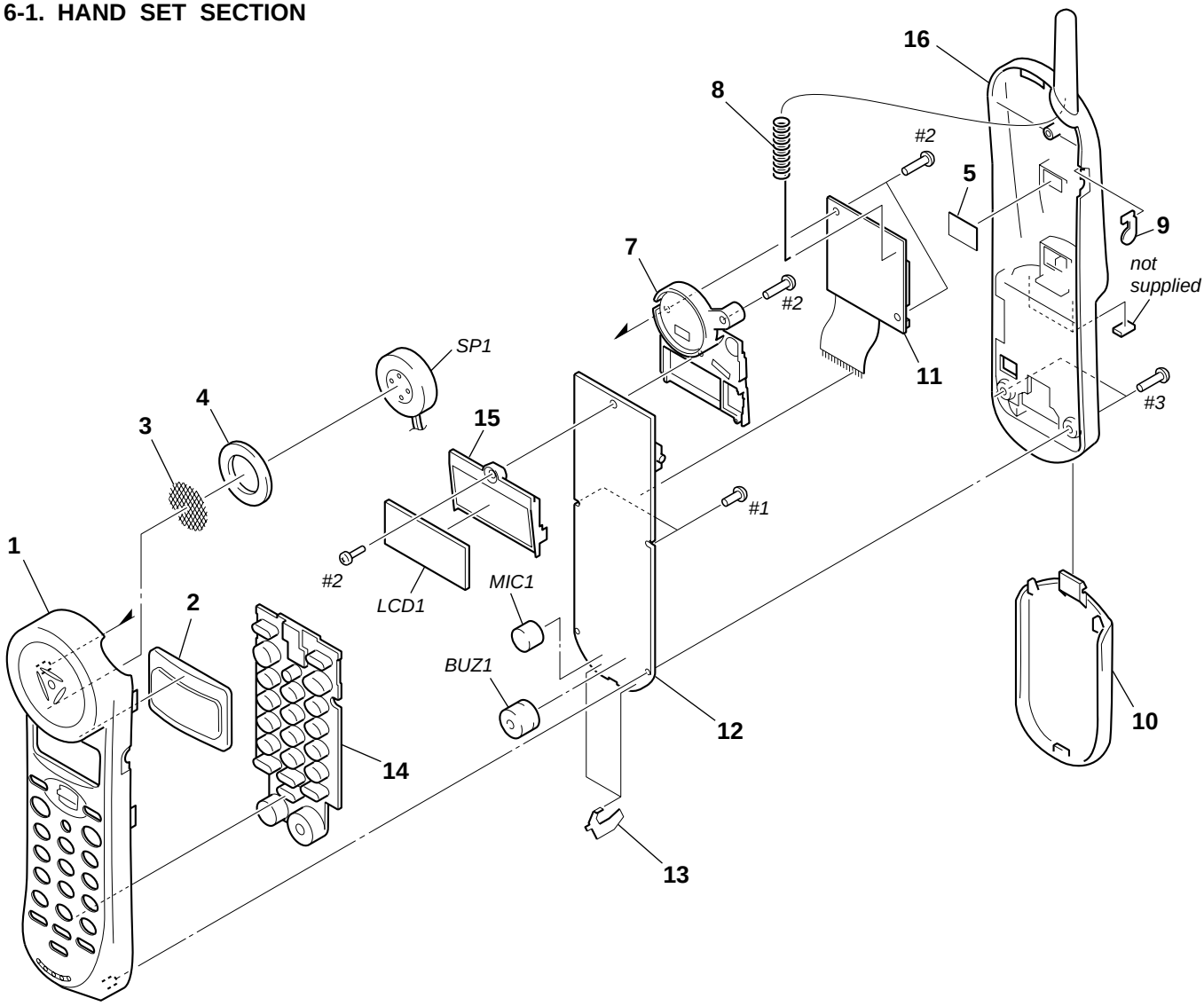
5-10. SCHEMATIC DIAGRAM – HAND MAIN Board – • See page 13 for Waveforms.



SECTION 6
EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories are given in the last of the electrical parts list.

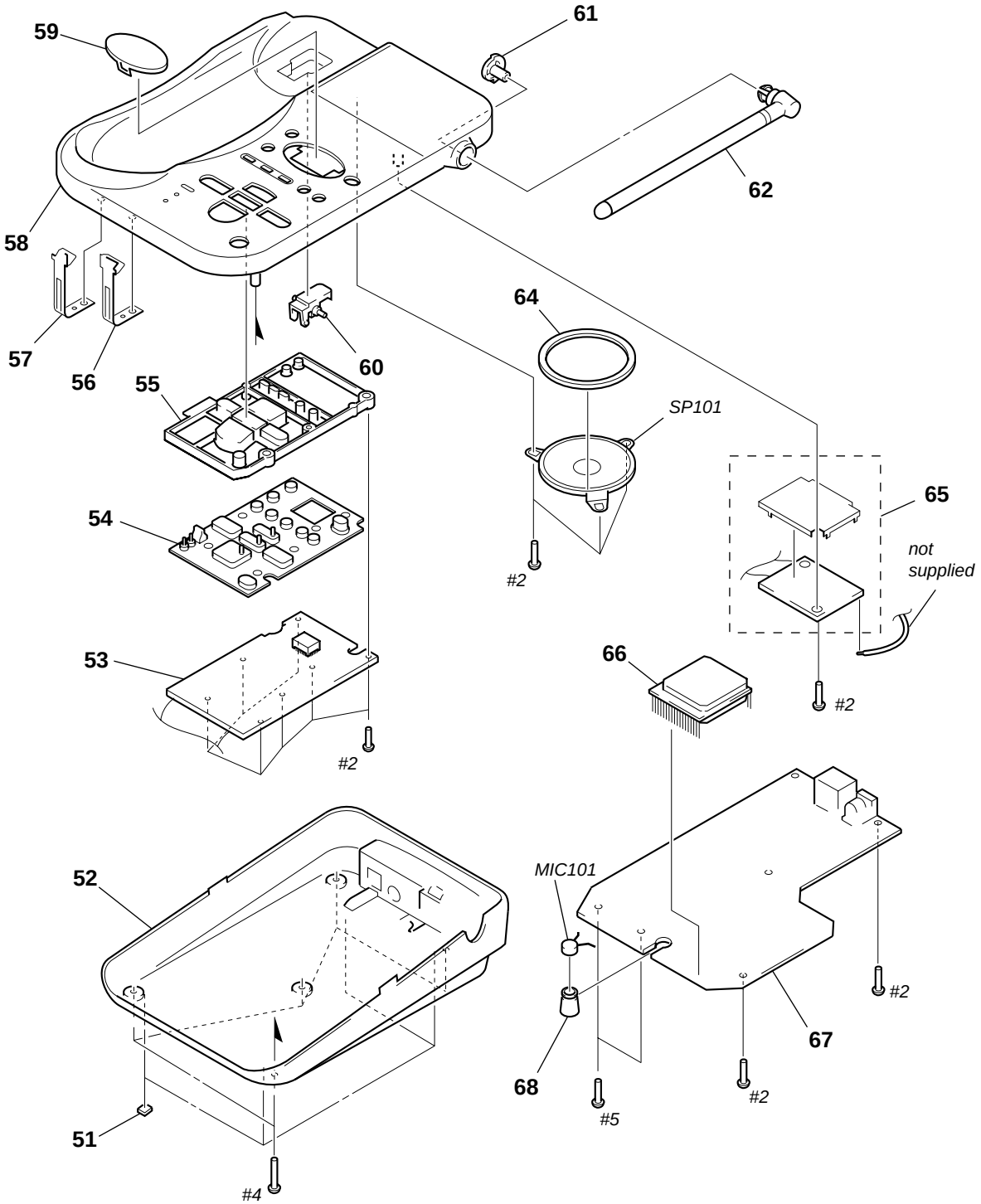
6-1. HAND SET SECTION



Ref. No.	Part No.	Description	Remark
1	X-3381-065-1	H/S FRT ASSY (A1070)	
1	X-3381-067-1	H/S FRT ASSY (A1071)	
2	3-230-080-01	LENS (H/S)	
3	3-012-611-01	SHEET (RECEIVER)	
4	3-371-005-01	GASKET (RECEIVER) (TWN)	
5	3-041-535-01	FELT, RX	
* 7	3-230-085-01	RECEIVER BKT	
8	3-234-372-01	SPRING, ANT	
9	3-230-079-01	COVER HP JACK	
10	3-230-074-01	LID BATTERY	
11	A-3062-653-A	HAND RF UNIT	

Ref. No.	Part No.	Description	Remark
* 12	A-3062-658-A	HAND MAIN BOARD, COMPLETE (A1070)	
* 12	A-3062-742-A	HAND MAIN BOARD, COMPLETE (A1071)	
13	3-233-775-01	TERMINAL (HS) (L), CHARGE	
14	3-230-078-01	RUBBER KEY (H/S)	
15	3-230-081-01	DIFFUSER	
16	X-3381-064-1	H/S REAR ASSY	
BUZ1	1-544-603-11	BUZZER	
LCD1	1-804-511-11	LCD MODULE (H/S)	
MIC1	1-542-260-31	MICROPHONE, ELECTRET CONDENSER	
SP1	1-505-593-11	SPEAKER (2.8cm)	

6-2. BASE SET SECTION



Ref. No.	Part No.	Description	Remark
51	3-041-534-01	FOOT, RUBBER	
52	3-230-088-01	BASE BOTTOM (A1070)	
52	3-234-971-01	BASE BOTTOM (A1071)	
* 53	1-682-704-11	BASE KEY BOARD	
54	3-230-090-01	BASE KEY PAD	
55	3-230-089-01	BASE KEY SET	
56	3-233-779-01	TERMINAL (BS) (RA), CHARGE	
57	3-233-778-01	TERMINAL (BS) (LA), CHARGE	
58	3-230-087-01	BASE TOP (A1070)	
58	3-234-970-01	BASE TOP (A1071)	
59	3-230-067-01	LENS (7 SEG)	

Ref. No.	Part No.	Description	Remark
60	3-230-068-01	HOOK HANGER	
61	3-233-543-01	STOPPER, ANT	
62	3-233-542-01	ANT B/S	
64	3-236-106-01	FORM, SPK CUSHION BS	
65	A-3062-655-A	BASE RF UNIT	
* 66	A-3672-917-A	BASE I-TAD UNIT	
* 67	A-3062-656-A	BASE MAIN BOARD, COMPLETE	
* 68	3-042-428-01	CUSHION, MIC	
MIC101	1-542-260-31	MICROPHONE, ELECTRET CONDENSER	
SP101	1-544-035-11	SPEAKER (5cm)	

SECTION 7
ELECTRICAL PARTS LIST

BASE KEY

BASE MAIN

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. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

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

Ref. No.	Part No.	Description			Remark
*	1-682-704-11	BASE KEY BOARD			
		**********			
		< CAPACITOR >			
C1	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
		< LED >			
LED1	8-719-059-40	LED SLR-342VR3F (ANSWER ON/OFF)			
LED2	8-719-064-51	LED SLA-360JT3F (MAIL BOX 1, PLAY/STOP)			
LED3	8-719-064-51	LED SLA-360JT3F (2)			
LED4	8-719-064-51	LED SLA-360JT3F (3)			
LED5	8-719-064-51	LED SLA-360JT3F (CHARGE)			
LED6	8-719-081-87	LED SLA-360MT3F (LINE)			
LED7	8-719-064-51	LED SLA-360JT3F (NEW CALL)			
U1	8-719-803-22	LED TLR322 (MESSAGE COUNTER)			
**********					
*	A-3062-656-A	BASE MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C2	1-125-779-21	CERAMIC CHIP	0.022uF		
C3	1-125-779-21	CERAMIC CHIP	0.022uF		
C6	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C8	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C9	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C10	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C11	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C12	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
⚠C13	1-162-114-00	CERAMIC	0.0047uF		2KV
⚠C14	1-162-114-00	CERAMIC	0.0047uF		2KV
C15	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C16	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C17	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C18	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C19	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C20	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C21	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C22	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C23	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C24	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C25	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C26	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C27	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C28	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C29	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C30	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C31	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C32	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C33	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C34	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C35	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
⚠C36	1-136-193-11	MYLAR	0.47uF	5%	250V
C37	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C39	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C40	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C41	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C42	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C43	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C44	1-164-346-11	CERAMIC CHIP	1uF		16V
C48	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
		< DIODE/VARISTOR >			
⚠D1	8-719-029-30	DIODE BAS16			
⚠D2	8-719-029-30	DIODE BAS16			
⚠D3	8-719-029-30	DIODE BAS16			
⚠D4	8-719-029-30	DIODE BAS16			
D5	8-719-909-90	DIODE BAV99			
⚠D6	1-801-730-11	VARISTOR			
D7	8-719-820-05	DIODE 1SS181			
⚠D8	8-719-110-72	DIODE RD30ESB2			
⚠D9	8-719-110-72	DIODE RD30ESB2			
D10	8-719-055-76	DIODE 1N4148			
D11	8-719-055-76	DIODE 1N4148			
D12	8-719-909-90	DIODE BAV99			
		< CAPACITOR >			
EC1	1-126-933-11	ELECT	100uF	20%	16V
EC2	1-126-961-11	ELECT	2.2uF	20%	50V
EC3	1-126-963-11	ELECT	4.7uF	20%	50V
EC4	1-126-963-11	ELECT	4.7uF	20%	50V
EC5	1-126-933-11	ELECT	100uF	20%	16V
EC6	1-126-935-11	ELECT	470uF	20%	6.3V
EC7	1-126-961-11	ELECT	2.2uF	20%	50V
EC8	1-126-935-11	ELECT	470uF	20%	6.3V
EC9	1-126-947-11	ELECT	47uF	20%	16V
EC10	1-126-964-11	ELECT	10uF	20%	50V

BASE MAIN

Ref. No.	Part No.	Description			Remark
EC11	1-126-933-11	ELECT	100uF	20%	16V
EC12	1-126-964-11	ELECT	10uF	20%	50V
EC13	1-126-964-11	ELECT	10uF	20%	50V
EC14	1-126-935-11	ELECT	470uF	20%	6.3V
		< FUSE >			
⚠F1	1-533-842-11	FUSE (250mA/250V)			
		< JACK >			
J1	1-565-999-11	JACK, MODULAR 2P (LINE)			
J3	1-779-215-11	JACK, DC (DC IN 9V)			
		< COIL >			
⚠L1	1-408-117-00	INDUCTOR	10uH		
⚠L2	1-408-117-00	INDUCTOR	10uH		
L3	1-408-117-00	INDUCTOR	10uH		
L4	1-408-117-00	INDUCTOR	10uH		
L5	1-408-117-00	INDUCTOR	10uH		
L6	1-408-117-00	INDUCTOR	10uH		
L7	1-408-117-00	INDUCTOR	10uH		
L8	1-408-117-00	INDUCTOR	10uH		
		< TRANSISTOR >			
Q1	T-941-615-31	TRANSISTOR	MMBT3904LT1		
Q2	8-729-026-07	TRANSISTOR	MMBT3906LT1		
Q3	8-729-026-07	TRANSISTOR	MMBT3906LT1		
Q4	T-941-615-31	TRANSISTOR	MMBT3904LT1		
Q5	T-941-615-31	TRANSISTOR	MMBT3904LT1		
Q6	T-941-615-31	TRANSISTOR	MMBT3904LT1		
Q7	8-729-026-07	TRANSISTOR	MMBT3906LT1		
Q8	T-941-615-31	TRANSISTOR	MMBT3904LT1		
Q9	T-941-615-31	TRANSISTOR	MMBT3904LT1		
Q10	8-729-026-07	TRANSISTOR	MMBT3906LT1		
Q11	8-729-026-07	TRANSISTOR	MMBT3906LT1		
Q12	8-729-026-07	TRANSISTOR	MMBT3906LT1		
Q13	T-941-615-31	TRANSISTOR	MMBT3904LT1		
		< RESISTOR >			
R1	1-216-797-11	METAL CHIP	10	5%	1/16W
R2	1-216-815-11	METAL CHIP	330	5%	1/16W
R3	1-218-311-11	RES-CHIP	390	1%	1/16W
R4	1-218-301-11	RES-CHIP	3.9K	1%	1/16W
R5	1-218-298-11	RES-CHIP	2.2K	1%	1/16W
R6	1-216-807-11	METAL CHIP	68	5%	1/16W
R7	1-218-355-11	RES-CHIP	75K	1%	1/16W
R8	1-216-843-11	METAL CHIP	68K	5%	1/16W
R9	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R10	1-216-864-11	METAL CHIP	0	5%	1/16W
R11	1-218-484-11	METAL CHIP	750	5%	1/16W
R12	1-218-300-11	RES-CHIP	3.3K	1%	1/16W
R14	1-218-349-11	METAL CHIP	240K	5%	1/16W
R15	1-218-272-11	METAL CHIP	5.1K	5%	1/16W
R16	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R17	1-218-455-11	RES-CHIP	62K	1%	1/16W
R18	1-218-347-11	METAL CHIP	91K	5%	1/16W
R19	1-216-835-11	METAL CHIP	15K	5%	1/16W
R20	1-216-833-11	METAL CHIP	10K	5%	1/16W
R21	1-220-933-11	METAL CHIP	220K	1%	0.063W

Ref. No.	Part No.	Description			Remark
R22	1-218-306-11	METAL CHIP	100K	1%	1/16W
R23	1-216-843-11	METAL CHIP	68K	5%	1/16W
R24	1-249-608-11	CARBON	220K	5%	1/4W
R25	1-249-608-11	CARBON	220K	5%	1/4W
R26	1-211-893-11	METAL	4.7M	10%	1/4W
R27	1-211-893-11	METAL	4.7M	10%	1/4W
R28	1-240-225-11	RES-CHIP	48.7K	0.1%	1/16W
R29	1-240-225-11	RES-CHIP	48.7K	0.1%	1/16W
R30	1-218-306-11	METAL CHIP	100K	1%	1/16W
R31	1-218-322-11	METAL CHIP	47K	1%	1/16W
R32	1-216-849-11	METAL CHIP	220K	5%	1/16W
R33	1-216-864-11	METAL CHIP	0	5%	1/16W
R34	1-216-865-11	METAL CHIP	3K	5%	1/16W
R35	1-216-865-11	METAL CHIP	3K	5%	1/16W
R36	1-249-510-11	CARBON	18	5%	1/4W
R37	1-216-833-11	METAL CHIP	10K	5%	1/16W
R38	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R39	1-216-837-11	METAL CHIP	22K	5%	1/16W
R40	1-218-331-11	METAL CHIP	51K	5%	1/16W
R41	1-218-331-11	METAL CHIP	51K	5%	1/16W
R42	1-218-331-11	METAL CHIP	51K	5%	1/16W
R43	1-218-455-11	RES-CHIP	62K	1%	1/16W
R44	1-218-320-11	RES-CHIP	15K	1%	1/16W
R45	1-216-841-11	METAL CHIP	47K	5%	1/16W
R46	1-216-845-11	METAL CHIP	100K	5%	1/16W
R47	1-216-833-11	METAL CHIP	10K	5%	1/16W
R48	1-216-833-11	METAL CHIP	10K	5%	1/16W
R49	1-216-833-11	METAL CHIP	10K	5%	1/16W
R50	1-218-288-11	METAL CHIP	300	5%	1/16W
R51	1-216-821-11	METAL CHIP	1K	5%	1/16W
R52	1-216-801-11	METAL CHIP	22	5%	1/16W
⚠R54	1-249-608-11	CARBON	220K	5%	1/4W
⚠R55	1-249-608-11	CARBON	220K	5%	1/4W
⚠R56	1-211-893-11	METAL	4.7M	10%	1/4W
⚠R57	1-220-787-11	METAL	5.1M	5%	1/16W
R58	1-216-857-11	METAL CHIP	1M	5%	1/16W
R60	1-249-506-11	CARBON	12	5%	1/4W
R61	1-216-833-11	METAL CHIP	10K	5%	1/16W
R62	1-216-865-11	METAL CHIP	3K	5%	1/16W
R63	1-216-837-11	METAL CHIP	22K	5%	1/16W
R64	1-216-833-11	METAL CHIP	10K	5%	1/16W
R65	1-216-809-11	METAL CHIP	100	5%	1/16W
R67	1-216-864-11	METAL CHIP	0	5%	1/16W
R68	1-211-895-11	METAL	10M	10%	1/4W
R69	1-211-895-11	METAL	10M	10%	1/4W
R70	1-219-570-11	METAL CHIP	10M	5%	1/16W
R71	1-219-570-11	METAL CHIP	10M	5%	1/16W
R72	1-242-957-11	RES-CHIP	5.6M	5%	1/16W
R73	1-216-835-11	METAL CHIP	15K	5%	1/16W
R74	1-242-957-11	RES-CHIP	5.6M	5%	1/16W
R75	1-216-839-11	METAL CHIP	33K	5%	1/16W
R76	1-216-833-11	METAL CHIP	10K	5%	1/16W
R77	1-216-839-11	METAL CHIP	33K	5%	1/16W
R78	1-216-839-11	METAL CHIP	33K	5%	1/16W
R79	1-249-947-11	CARBON	10K	5%	1/4W
R80	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R81	1-216-848-11	METAL CHIP	180K	5%	1/16W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

BASE MAIN

Ref. No.	Part No.	Description			Remark
R82	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R83	1-216-833-11	METAL CHIP	10K	5%	1/16W
R89	1-216-834-11	METAL CHIP	12K	5%	1/16W
R90	1-216-836-11	METAL CHIP	18K	5%	1/16W
R91	1-216-841-11	METAL CHIP	47K	5%	1/16W
R92	1-216-797-11	METAL CHIP	10	5%	1/16W
R93	1-216-797-11	METAL CHIP	10	5%	1/16W
R94	1-216-797-11	METAL CHIP	10	5%	1/16W
R95	1-216-797-11	METAL CHIP	10	5%	1/16W
R96	1-216-797-11	METAL CHIP	10	5%	1/16W
R97	1-216-797-11	METAL CHIP	10	5%	1/16W
R98	1-216-797-11	METAL CHIP	10	5%	1/16W
R99	1-216-845-11	METAL CHIP	100K	5%	1/16W
R100	1-216-833-11	METAL CHIP	10K	5%	1/16W
R101	1-216-845-11	METAL CHIP	100K	5%	1/16W
R102	1-216-833-11	METAL CHIP	10K	5%	1/16W
R103	1-216-845-11	METAL CHIP	100K	5%	1/16W
R104	1-249-504-11	CARBON	10	5%	1/4W
R106	1-216-833-11	METAL CHIP	10K	5%	1/16W
		< TRANSFORMER >			
⚠T1	1-431-965-11	TRANSFORMER, LINE			
		< PHOTO COUPLER/IC >			
⚠U1	8-719-821-66	PHOTO COUPLER TLP627			
U2	8-759-983-74	IC LM324S			
U3	6-700-981-01	IC PCC318			
U4	6-800-574-01	IC TMP86CM25F-3CR3			
U5	8-759-701-56	IC NJM78M05FA			
U6	X-3381-019-1	EEROM ASSY			
⚠U7	8-719-018-89	PHOTO COUPLER LTV817-C			
U9	8-759-658-47	IC KA8602D			
U10	8-759-268-33	IC SN74HC595ADBR			
		< VIBRATOR >			
X1	1-577-166-11	VIBRATOR, CRYSTAL (3.58MHz)			
X2	1-567-132-21	VIBRATOR, CERAMIC (8MHz)			
		< DIODE >			
Z1	8-719-922-71	DIODE HZ27-1L			
Z2	8-719-915-76	DIODE HZ5.6EB1			
Z3	8-719-915-76	DIODE HZ5.6EB1			
Z4	8-719-915-76	DIODE HZ5.6EB1			
Z5	8-719-922-71	DIODE HZ27-1L			
Z6	8-719-922-71	DIODE HZ27-1L			

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*	A-3062-658-A	HAND MAIN BOARD, COMPLETE (A1070)
*	A-3062-742-A	HAND MAIN BOARD, COMPLETE (A1071)

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		< CAPACITOR >			
C1	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C2	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4	1-127-820-11	CERAMIC CHIP	4.7uF		16V
C5	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

HAND MAIN

Ref. No.	Part No.	Description			Remark
C6	1-164-874-11	CERAMIC CHIP	100PF	5%	16V
C7	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C8	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C9	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C10	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C11	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C12	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C13	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C14	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C15	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C16	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C18	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C19	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C20	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C24	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C26	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C27	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C28	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C35	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C66	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
		< DIODE >			
D1	8-719-029-30	DIODE BAS16			
D2	8-719-909-90	DIODE BAV99			
D3	8-719-915-73	DIODE HZ5.1EB1			
D4	8-719-909-90	DIODE BAV99			
D5	8-719-063-83	LED SML-510MWT86 (LCD BACK LIGHT)			
D6	8-719-063-83	LED SML-510MWT86 (LCD BACK LIGHT)			
D7	8-719-909-90	DIODE BAV99			
D10	8-719-914-44	DIODE DAP202K			
D11	8-719-914-44	DIODE DAP202K			
D12	8-719-914-44	DIODE DAP202K			
D14	8-719-047-17	LED SML-010MT-T87 (KEY BACK LIGHT) (A1071)			
D15	8-719-047-17	LED SML-010MT-T87 (KEY BACK LIGHT) (A1071)			
D16	8-719-047-17	LED SML-010MT-T87 (KEY BACK LIGHT) (A1071)			
D17	8-719-047-17	LED SML-010MT-T87 (KEY BACK LIGHT) (A1071)			
D21	8-719-055-76	DIODE 1N4148			
		< CAPACITOR >			
EC1	1-126-947-11	ELECT	47uF	20%	16V
EC2	1-124-233-11	ELECT	10uF	20%	16V
EC3	1-124-233-11	ELECT	10uF	20%	16V
		< CONNECTOR/JACK >			
J5	1-794-439-11	PIN, CONNECTOR (PC BOARD) 2P			
J8	1-794-682-11	JACK (🎧)			
		< TRANSISTOR >			
Q1	T-941-615-31	TRANSISTOR	MMBT3904LT1		
Q2	8-729-026-07	TRANSISTOR	MMBT3906LT1		
Q3	T-941-615-31	TRANSISTOR	MMBT3904LT1		
Q4	8-729-026-07	TRANSISTOR	MMBT3906LT1		
Q5	T-941-615-31	TRANSISTOR	MMBT3904LT1		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

HAND MAIN

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R1	1-216-845-11	METAL CHIP	100K	5%	1/16W
R2	1-216-845-11	METAL CHIP	100K	5%	1/16W
R3	1-216-821-11	METAL CHIP	1K	5%	1/16W
R4	1-216-799-11	METAL CHIP	15	5%	1/16W
R5	1-216-821-11	METAL CHIP	1K	5%	1/16W
R6	1-218-917-11	METAL CHIP	820K	0.5%	1/16W
R7	1-216-854-11	METAL CHIP	560K	5%	1/16W
R8	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R9	1-216-845-11	METAL CHIP	100K	5%	1/16W
R10	1-216-857-11	METAL CHIP	1M	5%	1/16W
R11	1-216-841-11	METAL CHIP	47K	5%	1/16W
R12	1-218-344-11	METAL CHIP	7.5K	5%	1/16W
R14	1-216-839-11	METAL CHIP	33K	5%	1/16W
R15	1-216-800-11	METAL CHIP	18	5%	1/16W
R16	1-220-373-11	METAL CHIP	620	5%	1/16W
R17	1-216-798-11	METAL CHIP	12	5%	1/16W
R18	1-216-798-11	METAL CHIP	12	5%	1/16W
R22	1-216-845-11	METAL CHIP	100K	5%	1/16W
R23	1-216-845-11	METAL CHIP	100K	5%	1/16W
R24	1-218-292-11	METAL CHIP	20K	5%	1/16W
R25	1-218-292-11	METAL CHIP	20K	5%	1/16W
R26	1-216-841-11	METAL CHIP	47K	5%	1/16W
R27	1-216-845-11	METAL CHIP	100K	5%	1/16W
R28	1-216-845-11	METAL CHIP	100K	5%	1/16W
R29	1-216-845-11	METAL CHIP	100K	5%	1/16W
R30	1-216-845-11	METAL CHIP	100K	5%	1/16W
R31	1-216-845-11	METAL CHIP	100K	5%	1/16W
R32	1-216-845-11	METAL CHIP	100K	5%	1/16W
R33	1-216-857-11	METAL CHIP	1M	5%	1/16W
R34	1-216-864-11	METAL CHIP	0	5%	1/16W
R35	1-216-851-11	METAL CHIP	330K	5%	1/16W
R37	1-216-845-11	METAL CHIP	100K	5%	1/16W
R38	1-216-845-11	METAL CHIP	100K	5%	1/16W
R40	1-216-864-11	METAL CHIP	0	5%	1/16W
R41	1-216-841-11	METAL CHIP	47K	5%	1/16W
R42	1-216-797-11	METAL CHIP	10	5%	1/16W
R43	1-216-864-11	METAL CHIP	0	5%	1/16W
R44	1-216-805-11	METAL CHIP	47	5%	1/16W
R45	1-216-833-11	METAL CHIP	10K	5%	1/16W
R46	1-216-798-11	METAL CHIP	12	5%	1/16W (A1071)
R47	1-216-798-11	METAL CHIP	12	5%	1/16W (A1071)
R54	1-216-835-11	METAL CHIP	15K	5%	1/16W
R55	1-216-839-11	METAL CHIP	33K	5%	1/16W
R57	1-216-821-11	METAL CHIP	1K	5%	1/16W
		< SWITCH >			
SW1	1-571-188-21	SWITCH, TACTILE (REFLOW TYPE) (VOL ▼ CID)			
SW2	1-571-188-21	SWITCH, TACTILE (REFLOW TYPE) (VOL ▲ DIR)			
		< IC >			
U2	6-800-573-01	IC TMP87C807U-3CR4			
U3	6-701-032-01	IC PQ1R23			
U4	X-3381-019-1	EEROM ASSY			

Ref. No.	Part No.	Description	Remark
		< VIBRATOR >	
X1	1-760-627-11	VIBRATOR, CRYSTAL (32.768kHz)	
X2	1-567-918-21	VIBRATOR, CERAMIC (8MHz)	
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		MISCELLANEOUS	
		**********	
LCD1	1-804-511-11	LCD MODULE (H/S)	
BUZ1	1-544-603-11	BUZZER	
MIC1	1-542-260-31	MICROPHONE, ELECTRET CONDENSER	
MIC101	1-542-260-31	MICROPHONE, ELECTRET CONDENSER	
SP1	1-505-593-11	SPEAKER (2.8cm)	
SP101	1-544-035-11	SPEAKER (5cm)	
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		**********	
		HARDWARE LIST	
		**********	
#1	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT	
#2	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#3	7-685-547-19	SCREW +BTP 3X10 TYPE2 N-S	
#4	7-685-648-79	SCREW +P 3X12 TYPE2 NON-SLIT	
#5	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S	
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		ACCESSORIES & PACKING MATERIALS	
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⚠	1-475-852-11	ADAPTOR, AC (AC-T122)	
	1-528-813-11	BATTERY PACK (BP-T18)	
	1-696-454-11	CORD (WITH MODULAR PLUG) (LINE)	
	3-230-071-01	CASE (WALL HOOK)	
	3-230-541-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH)	(A1070)
	3-230-541-21	MANUAL, INSTRUCTION (ENGLISH)	(A1071)
	3-230-541-31	MANUAL, INSTRUCTION (FRENCH)	(A1071)
	3-230-542-11	GUIDE, QUICK START (ENGLISH, SPANISH)	(A1070)
	3-230-542-21	GUIDE, QUICK START (ENGLISH, FRENCH)	(A1071)
	3-230-543-11	CARD, REMOTE CONTROL (ENGLISH, SPANISH)	(A1070)
	3-230-543-21	CARD, REMOTE CONTROL (ENGLISH, FRENCH)	(A1071)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.