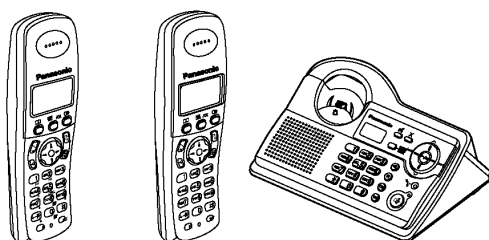# Service Manual

Telephone Equipment

Caller ID Compatible

KX-TCA122CXS KX-TCA121CXS   KX-TG1283JXS/JXT
(HANDSET)   (BASE UNIT)

● **The difference between KX-TCA122 and KX-TCA121**
KX-TCA122 has the icons for answering system printed below the dial keys.

(CHARGER UNIT)

Configuration for each model

Model No	Base Unit	Handset	Charger Unit
KX-TG1283	1	1 (TCA122)	
KX-TCA121		1 (TCA121)	1

KX-TCA121 is an optional accessory, which contains a handset and a charger.

KX-TG1283JXS
KX-TG1283JXT
KX-TCA122CXS
KX-TCA122CXT
KX-TCA121CXS
KX-TCA121CXT

Digital Cordless Answering System

Silver Version

Titanium Black Version

(for Middle East)

SPECIFICATION

Standard:	DECT (Digital Enhanced Cordless Telecommunications), GAP (Generic Access Profile)
Number of channels:	120 Duplex Channels
Frequency range:	1.88 GHz to 1.9 GHz
Duplex procedure:	TDMA (Time Division Multiple Access)
Channel spacing:	1728 kHz
Bit rate:	1152 kbit/s
Modulation:	GFSK (Gaussian Frequency Shift Keying)
RF Transmission power:	Approx. 250 mW
Voice coding:	ADPCM 32 kbit/s
Operation range:	Up to 300 m outdoors, Up to 50 m indoors
Analog telephone connection:	Telephone Line

Power source:	AC Adaptor (220 V - 240 V AC, 50/60 Hz)
Power consumption, Base Unit:	Standby: Approx. 3.8 W/Maximum: Approx. 9.2 W
Charger Unit:	Standby: Approx. 2.3 W/Maximum: Approx. 6.8 W
Battery life, Handset (if batteries are fully charged):	Stand-by: Up to 170 hours (Ni-MH) Talk: Up to 20 hours (Ni-MH)
Operating conditions:	5 ˚C - 40 ˚C, 20 % - 80 % relative air humidity (dry)
Dimensions, Base Unit (D x W x L):	Approx. 86 mm x 183 mm x 122 mm
Dimensions, Handset (D x W x L):	Approx. 148 mm x 48 mm x 32 mm
Dimensions, Battery Box (D x W x L):	Approx. 39 mm x 90 mm x 75 mm
Dimensions, Charger Unit (D x W x L):	Approx. 85 mm x 94 mm x 65 mm
Mass (weight), Base Unit:	Approx. 425 g
Mass (weight), Handset:	Approx. 130 g
Mass (weight), Battery Box:	Approx. 132 g
Mass (weight), Charger Unit:	Approx. 90 g

Specifications are subject to change.
The illustrations used in this manual may differ slightly from the actual product.

IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING
If lead free solder was used in the manufacture of this product the printed circuit boards will be marked PbF.
Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.
When this mark does appear, please read and follow the special instructions described in this manual on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

Panasonic

⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service
or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.

Note:

Because CONTENTS 4 is the extract from the Operating Instructions of this model, it is subject to change without notice. You can
download and refer to the original Operating Instructions on TSN Server for further information.

CONTENTS

1 ABOUT LEAD FREE SOLDER (PbF: Pb free)

Note:

In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

We will use PbF solder when discussing the lead free solder used in our manufacturing process which is made from Tin (Sn), Silver (Ag), and Copper (Cu).

This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB. For service and repair work we suggest using the same type of solder although, with some precautions, standard Pb solder can also be used.

Caution

- PbF solder has a melting point that is 50°F ~ 70°F (30°C ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700°F ± 20°F (370°C ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.
- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F (600°C).
- If you must use Pb solder on a PCB manufactured using PbF solder, remove as much of the original PbF solder as possible and be sure that any remaining is melted prior to applying the Pb solder.
- When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See the figure below).
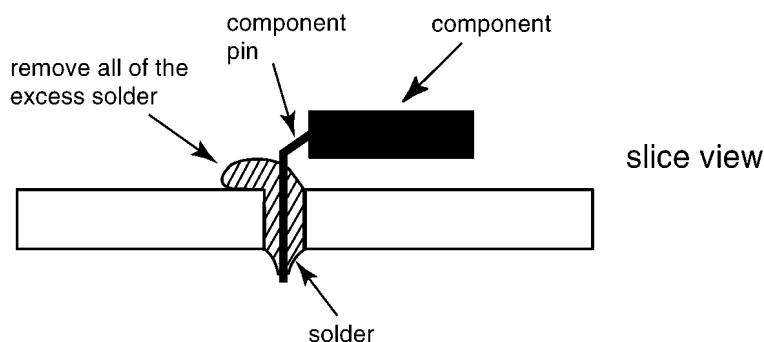
1.1. Suggested PbF Solder

There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper (Sn+Ag+Cu), you can also use Tin and Copper (Sn+Cu) or Tin, Zinc, and Bismuth (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their products and any precautions for using their product with other materials.

The following lead free (PbF) solder wire sizes are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g

1.2. How to recognize that Pb Free solder is used

(Example: Handset P.C.B.)

(Component View)
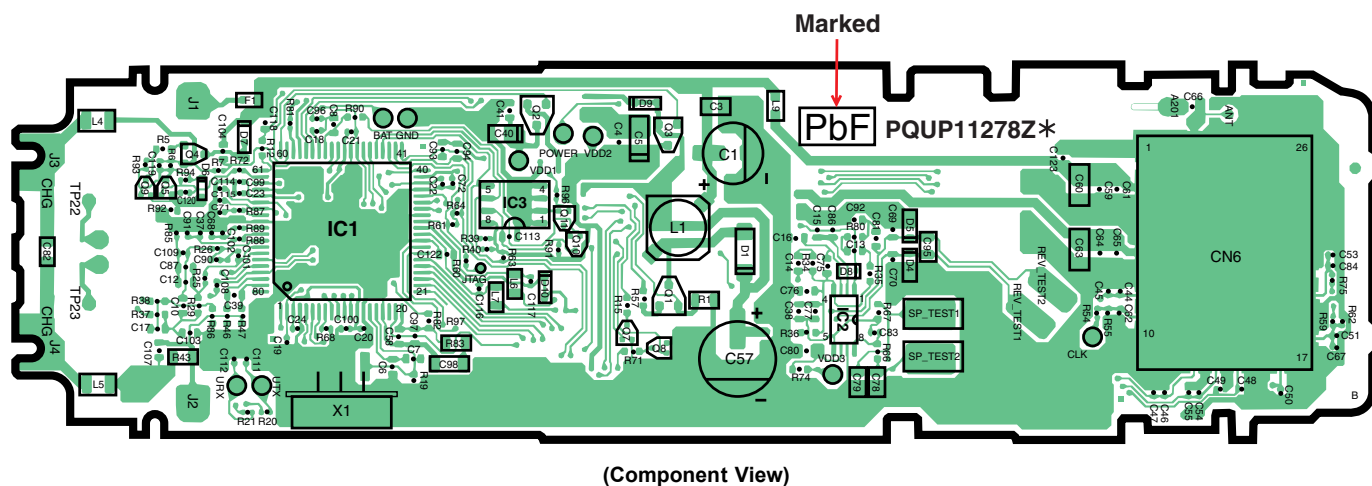
Note:

The location of the "PbF" mark is subject to change without notice.

2 FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.

When repairing, the following precautions will help prevent recurring malfunctions.

1. Cover the plastic parts boxes with aluminum foil and ground them.
2. Ground the soldering irons.
3. Use a conductive mat on the worktable.
4. Do not touch IC or LSI pins with bare fingers.

3 CAUTION

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

Dispose of used batteries according to the manufacture's Instructions.

4 OPERATING INSTRUCTIONS

4.1. To Use the Unit in the Event of a Power Failure

The included battery box functions as an emergency power source for Panasonic cordless phones in the event of a power failure.

4.2. Battery

4.2.1. Battery Installation for Battery Box

This battery box can provide 6 V of emergency power supplied by standard 4 alkaline batteries of AA (LR6) size.
Important:
- Use alkaline batteries. Operating time when using non-alkaline batteries will be dramatically shortened.
- Do not use rechargeable batteries for battery box.

1 Move the lock switch to the "RELEASE" position (①). Open the battery cover (②).
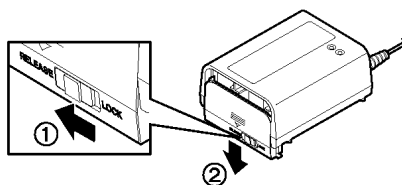
2 Install the batteries in the battery compartment.
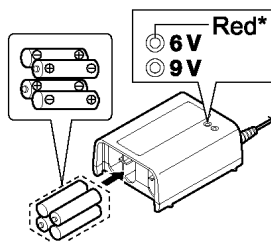
*This is not a battery level indicator.

3 When finished, close the cover and move the lock switch to the "LOCK" position.

Battery caution for battery box
- The batteries should be used correctly, otherwise the battery box may be damaged due to battery leakage.
- Do not mix old, new or different types of batteries.
- Do not charge, short-circuit, disassemble, or heat the batteries.
- Do not dispose of batteries in a fire.
- Do not use rechargeable batteries, such as nickel-cadmium (Ni-Cd) or nickel-metal hydride (Ni-MH) batteries.
- It is recommended that batteries are replaced annually.
- It is recommended that batteries are replaced after a power outage.
- Operating time may be shortened depending on usage conditions, ambient temperature, and battery quality.

Battery life for battery box

During a power failure, the following performance will be available.

Alkaline batteries

Operation	Operating Time
While in use (talking)	6 hours max.
While not in use (standby)	13 hours max.

Note:
- The operating time depends on the type of batteries.
- Do not charge the handset in the event of a power failure. Operating time will be shortened.

4.2.2. Battery Installation for Handset

1. Insert the batteries negative ($\ominus$) terminal first.
2. Close the handset cover.

Note:

- Use only rechargeable Ni-MH batteries HHR-4EPT.
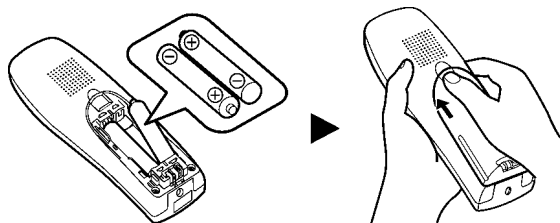
4.2.3. Battery Charge

Place the handset on the base unit for about 7 hours before initial use.

When charging, the battery icon is shown as follows. When the batteries are fully charged, ▉▉▉ remains on the display.
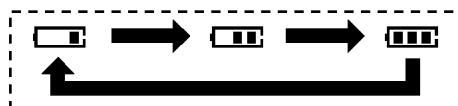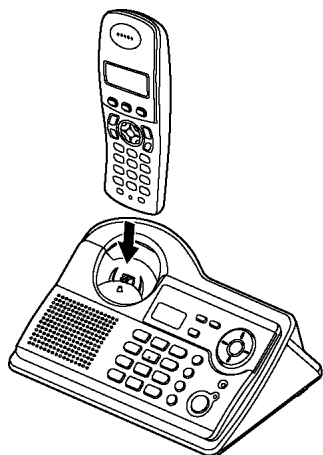
Battery icon	Battery strength
▉▉▉	High
▉▉	Medium
▉	Low When flashing: Needs to be charged.

Note:

- It is normal for the handset to feel warm during charging.
- It takes 7 hours to fully charge the batteries, however, you can use the handset before the batteries are fully charged.
- Clean the charge contacts of the handset and base unit with a soft, dry cloth, otherwise the batteries may not charge properly. Clean if the unit is exposed to grease, dust or high humidity.
- When ▉ flashes, recharge the handset batteries. ▉ will continue to flash until the batteries have been charged for at least 15 minutes.
- If the handset is turned off, it will be turned on automatically when it is placed on the base unit.

Battery Life

After your Panasonic batteries are fully charged, you can expect the following performance:

Ni-MH batteries (700 mAh)

Operation	Operating Time
While in use (talking)	20 hours max.
While not in use (standby)	170 hours max.

Note:

- Actual battery performance depends on a combination of how often the handset is in use (talking) and how often it is not in use (standby).
- Battery operating time may be shortened over time depending on usage conditions and ambient temperature.

4.2.4. Battery Replacement

If 🔋 flashes even after the handset batteries have been charged for 7 hours, the batteries must be replaced.

Important:

- We recommend the use of Panasonic rechargeable Ni-MH batteries HHR-4EPT. If you install non-rechargeable batteries and start charging, the batteries may leak electrolyte.
- Do not mix old and new batteries.

1. Press the notch on the handset cover firmly and slide it in the direction of the arrow.
2. Remove the old batteries positive ($\oplus$) terminal first and install the new ones.
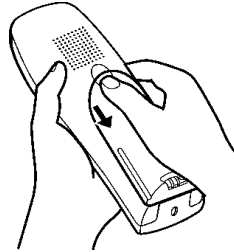
4.3. Location of Controls

4.3.1. Base Unit

【Answer on】/Answer on indicator
Display 【《》】 (Greeting)
Charge contact 【✕】 (Erase)
Speaker Navigator key *1

【•》】 (Page)
【R】 (Flash)
【↺●】 (Redial/Pause)
【✉】 (Mute)
Microphone

【►/■】 (Play/Stop)
In use indicator *2
【🕪】 (Speakerphone)/Speakerphone indicator
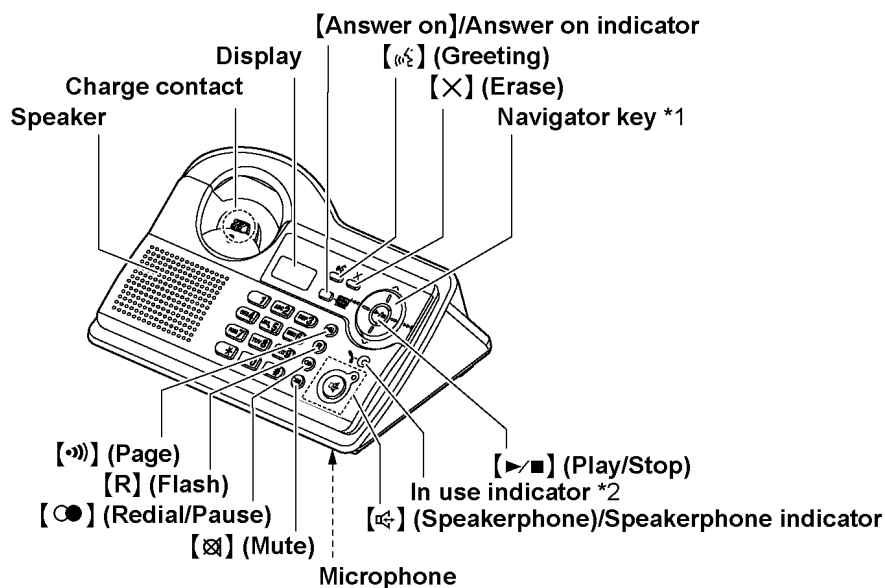
- *1: 【∧】【∨】: To adjust the ringer and speaker volumes.
  【I◀◀】【▶▶I】: To select the desired ringtone or to repeat or skip the recorded messages.
- *2: Lights when a handset is in use (on a call, editing the shared phonebook, using the answering system, etc.).
  Flashes when a call is being received or when the answering system is answering a call.

4.3.2. Handset

Speaker

Receiver

Display

【▤/OK】 (Menu/OK)
【▥】 (Phonebook)
【✆】 (Talk)
Navigator key *1
【🕪】 (Speakerphone)

【↺●】 (Redial/Pause)
【✆⏻】 (Off/Power)
【C/✉】 (Clear/Mute)

Dial keypad *2

【INT】 (Intercom)
Microphone

Charge contact

【R】 (Flash)
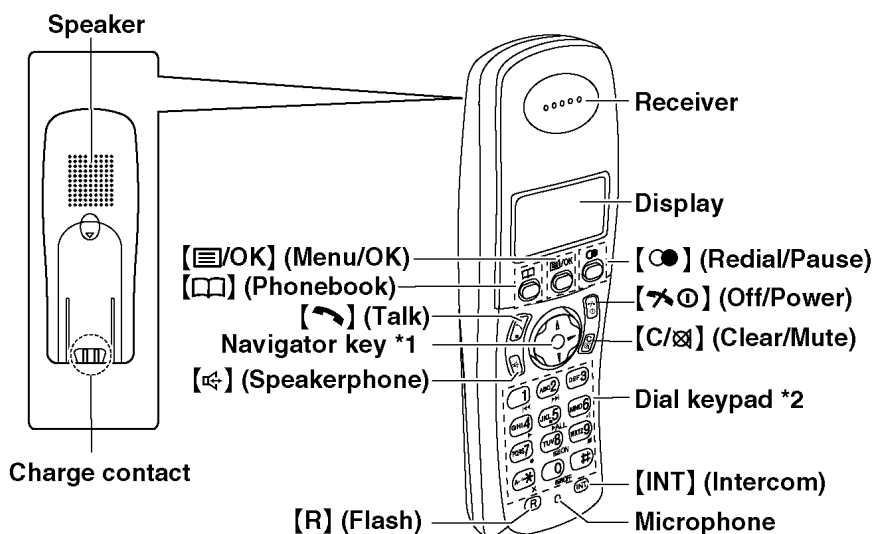
Model shown is KX-TCA122.

*1 【▲】【▼】: To search for the desired item in menus.
【 ▶ 】: To select the desired item or move the cursor to the right.
【 ◀ 】: To return to the previous screen or move the cursor to the left.
*2 The icons printed below the dial keys shown in the illustration (▶, 《》, ■ etc.)
indicate answering system operations.

Note:

- Up to 3 menu items can be displayed at a time. To select a menu item not shown on the current page, scroll up or down by pressing the navigator key, 【▲】 or 【▼】, respectively.

4.4. Connections

4.4.1. Base Unit

When the AC adaptor is connected, a short beep will be heard. If it is not heard, check the connections.
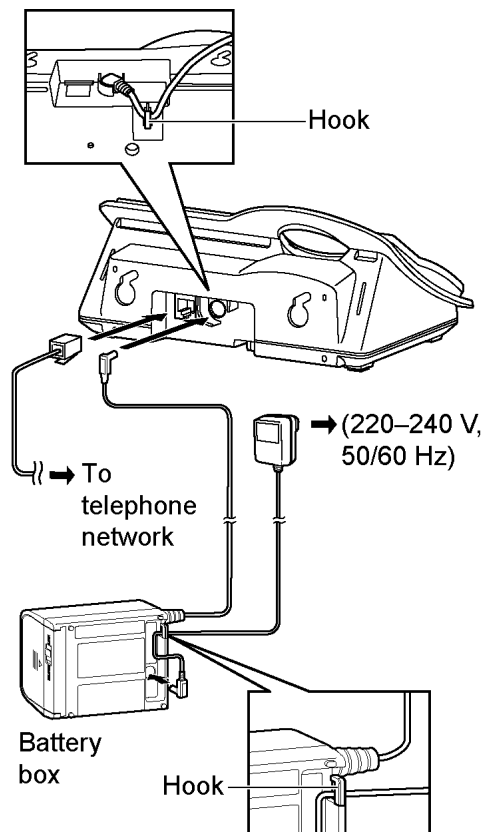
Important:

- Use only the AC adaptor PQLV19BXY and telephone line cord supplied with this unit.

Note:

- After connection, you must charge the batteries to make or answer calls with the handset.
- Never install telephone wiring during a lightning storm.
- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)
- The AC adaptor should be connected to a vertically oriented or floor-mounted AC outlet. Do not connect the AC adaptor to a ceiling-mounted AC outlet, as the weight of the adaptor may cause it to become disconnected.

4.4.2. Charger Unit
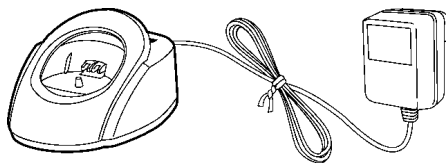
Important:

- Use only the AC adaptor PQLV200BXY.

Note:

- The AC adaptor must remain connected at all times (It is normal for the adaptor to feel warm during use).

4.5.   Guide to Settings

For your reference, a chart of all items which can be customised for the base unit and the handset is printed below.

● When customising the base unit and the handset, the current item or setting is highlighted.

4.5.1.   Base Unit Settings

● These items are customised using the handset.

Settings menu	Sub-menu	Sub-menu 2	Default setting	Remarks (selectable options)
Ringer Setup	Night Mode	Start/End	*23:00/06:00*	—
		On/Off	Off	On/Off
		Ring Delay	60 sec.	30/60/90/120 sec and No Ringing
Call Options	Dial Mode		Tone	Tone/Pulse
	Recall		600 msec.	80/90/100/110/160/200/250/300/ 400/600/700/900 msec
	Pause Length		3 sec.	3 sec/5 sec
	Emergency No.		—	Up to 5 numbers
	ARS Settings	Area Code	—	Up to 4 area codes
	Call Restrict		—	Up to 6 numbers
	Call Bar		Off	On/Off
Other Options	Base Unit PIN		0000	—
	Repeater Mode		Off	On/Off
	Reset Base		—	—

Note:

● Up to 3 menu items can be displayed at a time. To select a menu item not shown on the current page, scroll up or down by pressing the navigator key, 【▲】 or 【▼】, respectively.

4.5.2.   Answering System Settings

Answering system setting	Default setting	Remarks (selectable Options)
Answering system on/off	Answer On	Answer On/Answer Off
Remote access code	—	000~999/Off (⊠)
Number of rings	4 Rings	Auto/2-7 Rings
Caller's recording time	3 Minutes	Greeting Only/1 Minute/3 Minutes
Call screening	On	On/Off
Message alert	Off	On/Off

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4.5.3. Handset Settings

Settings menu	Sub-menu	Sub-menu 2	Default setting	Remarks (selectable options)
Time Settings	Set Date & Time		—	—
	Alarm		Off	Once/Daily/Off
Ringer Setup	Ringer Volume		*Maximum***	Off/1 to 6**
	Ext. Ringtone (External ringtone)		Ringtone 1	1 to 15
	Int. Ringtone (Intercom ringtone)		Ringtone 1	1 to 15
	Night Mode	Start/End	*23:00/06:00*	—
		On/Off	Off	On/Off
		Ring Delay	60 sec.	30/60/90/120 sec and No Ringing
		Select Category	—	—
Display Setup	Standby Display		Off	Base Number/Handset Nubmer/Off
	Select Language		English	14 languages selectable
	Contrast		*Level 3***	Level 1 to Level 6**
Call Options	Call Bar		Off	On/Off
	Auto Talk		Off	On/Off
Registration	Register H.set (Register handset)		—	—
Select Base	—		Auto	Auto/Base 1/Base 2/Base 3/Base 4 *1
Other Options	Handset PIN		0000	—
	Keytones		On	On/Off
	Reset Handset		—	—

*1 Here, only the case that a handset is registered to a maximum of 4 Base Units is mentioned.

Note:

- Up to 3 menu items can be displayed at a time. To select a menu item not shown on the current page, scroll up or down by pressing the navigator key, 【▲】 or 【▼】, respectively.
- The items with a mark "∗∗" are not shown on the display.

4.6. For Service Hint

Items	Contents
Battery	You could use other rechargeable batteries sold in a market, but the unit is not guaranteed to work properly.
PIN Code	If you forget Base Unit or Handset PIN code, press *, 7, 0, 0, 0 as a PIN code. This is called "super password" and is effective when you have forgotten the PIN code.

5 DISASSEMBLY INSTRUCTIONS

5.1. Base Unit

Remove Tapes and Solders.

Fig. 1

Fig. 2

Remove the Clear Grille.

Remove the Main P.C.Board.

Remove Cable.

Remove the Cabinet Body.

(A)

(B)

(C)

Remove the Operational P.C.Board.
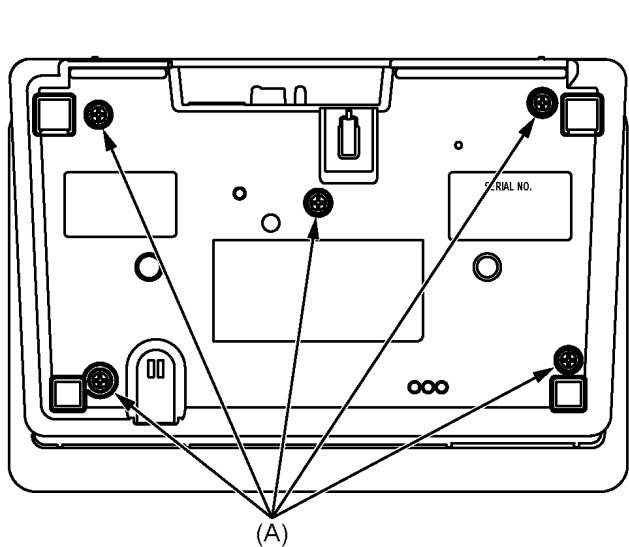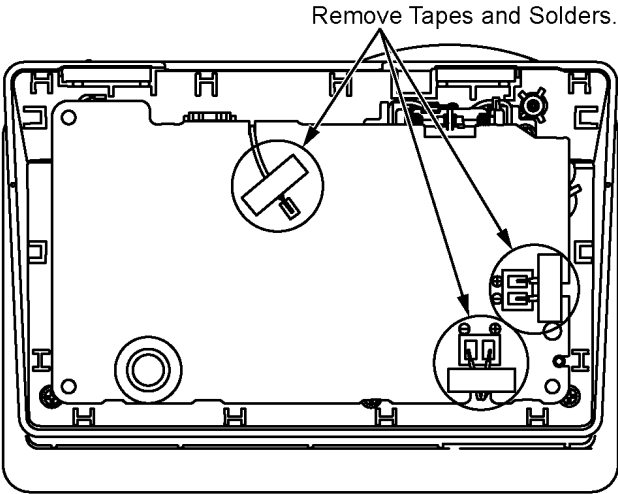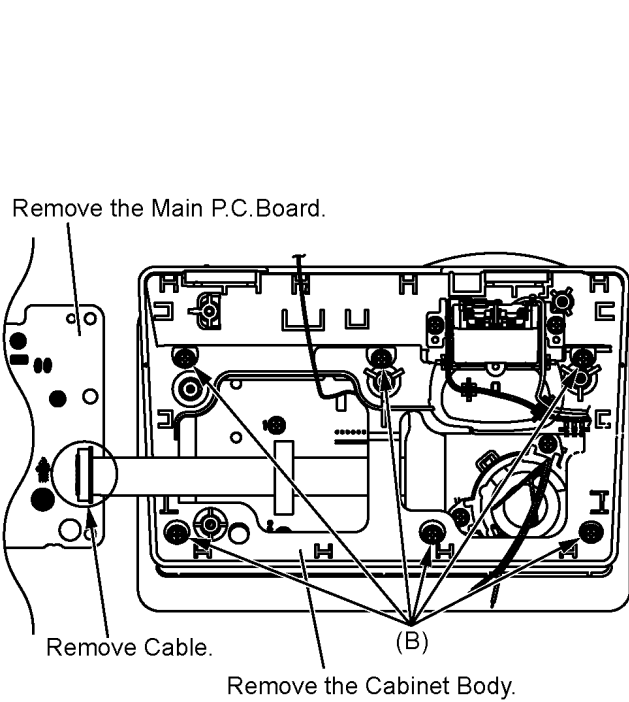
Fig. 3
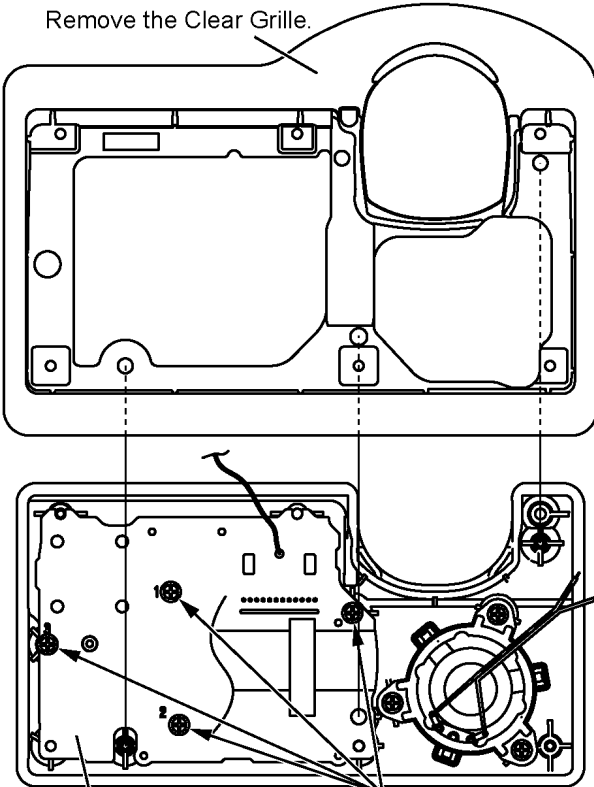
Fig. 4

Shown in Fig.-	To Remove	Remove
1	Cabinet Cover	Screws (2.6 × 14)........(A) × 5
2	Main P.C.Board	Tapes and Solders
3	Main P.C.Board	Cable
		Main P.C.Board
	Cabinet Body	Screws (2.6 × 14).........(B) × 6
4	Operational P.C.Board	Clear Grille
		Screws (2.6 × 8).............(C) × 4
		Operational P.C.Board

5.2. Handset

(E)

Remove Tapes
and Solders.

Cabinet Cover

Remove the
Main P.C. Board.

(D)

(F)
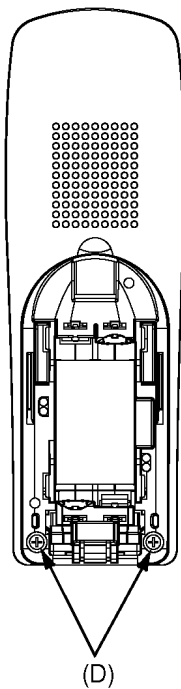
Fig. 5
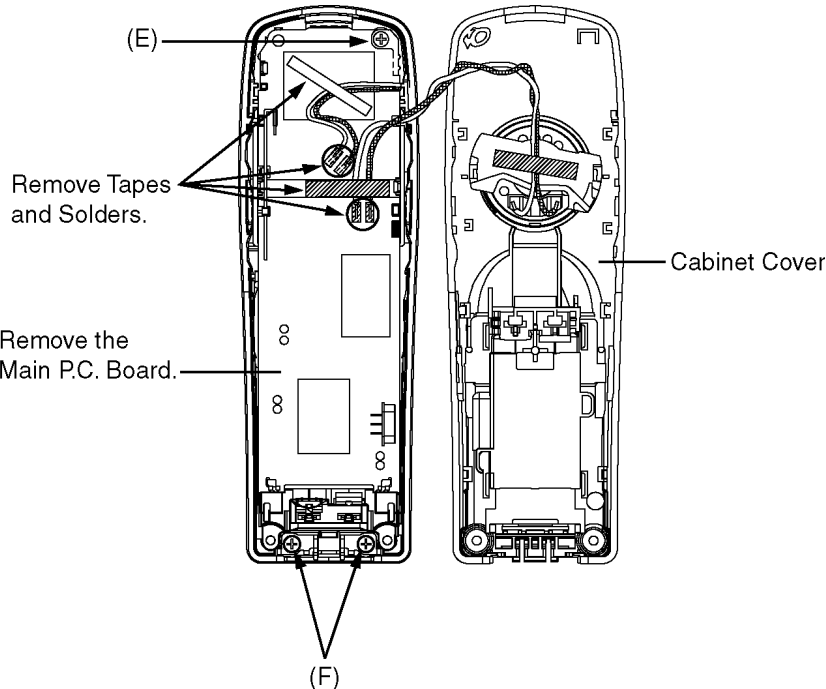
Fig. 7
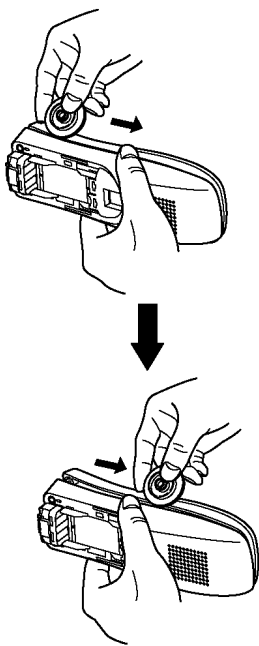
Insert a JIG (PQDJ10006Y)
between the Cabinet Body
and the Cabinet Cover, then
pull it along the gap to open
the Cabinet.
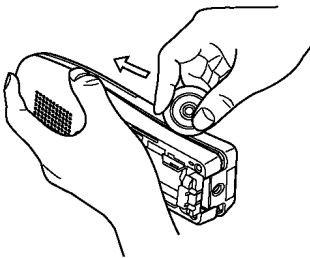
Likewise, open the other
side of the Cabinet.
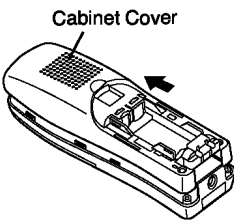
Cabinet Cover

Remove the Cabinet Cover
by pushing it upward.

Fig. 6

Shown in Fig.-	To Remove	Remove
5	Cabinet Cover	Screws (2 × 10)..........(D) × 2
6		Follow the procedure.
7	Main P.C.Board	Screw (2 × 10)............(E) × 1
		Screws (2 × 10)..........(F) × 2
		Tapes and Solders
		Main P.C.Board

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5.3. Charger Unit

Remove the Main P.C. Board.

(G)
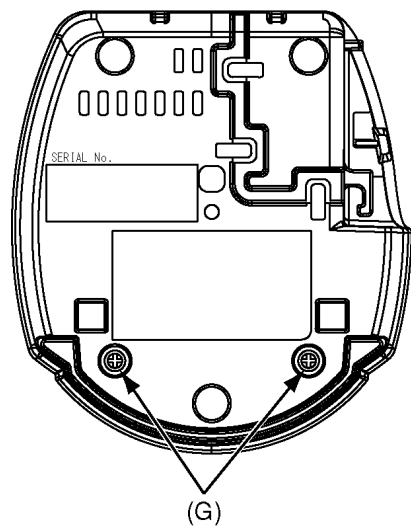
Fig. 8
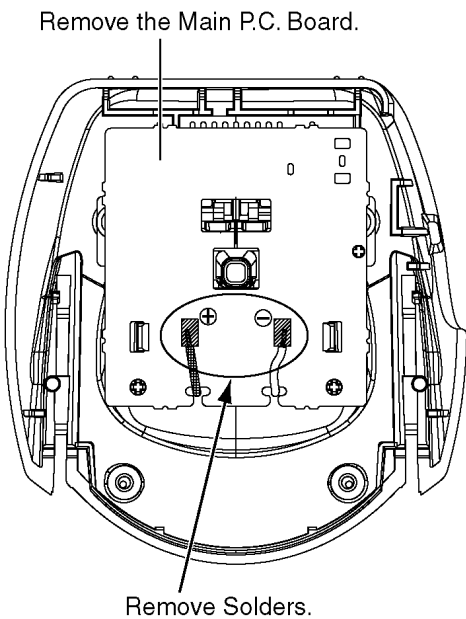
Remove Solders.

Fig. 9

Shown in Fig.-	To Remove	Remove
8	Cabinet Cover	Screws (2.6 × 10).........(G) × 2
9	Main P.C.Board	Solders
		Main P.C.Board

6 HOW TO REPLACE THE HANDSET LCD

①
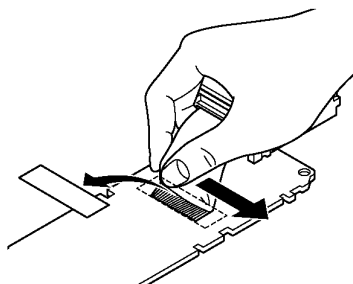
Remove the tape, and then peel off the
FFC (Flexible Flat Cable) of LCD in the
direction of the arrow not to damage the
foil on the P.C. Board.

②
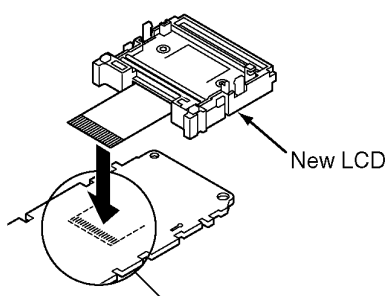
New LCD

Fit the Heatseal of a New LCD
to the P.C. Board.

③

Soldering Iron is
not supplied.

Tip of Soldering Iron
(Part No. PQZZ430PIR)

Rubber of Soldering Iron
(Part No. PQZZ430PRB)
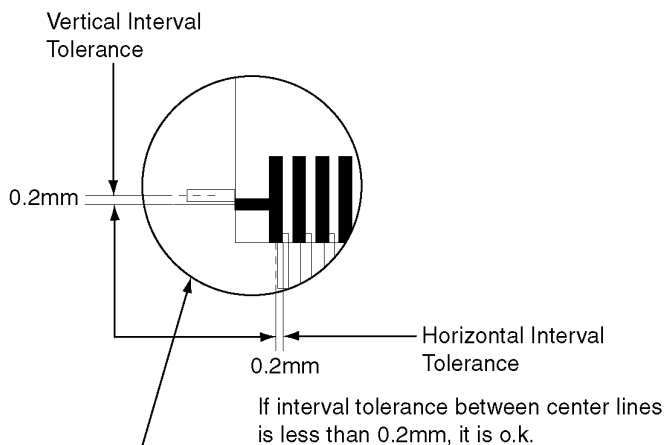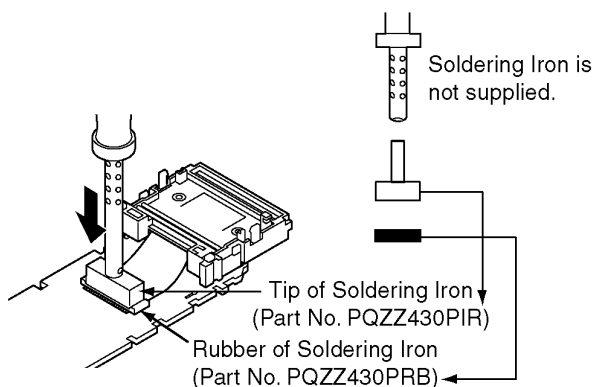
Heatweld with the Tip of Soldering
Iron about 5 to 10 seconds
(in case of 60W soldering iron).

④
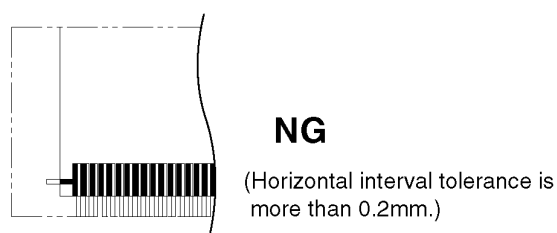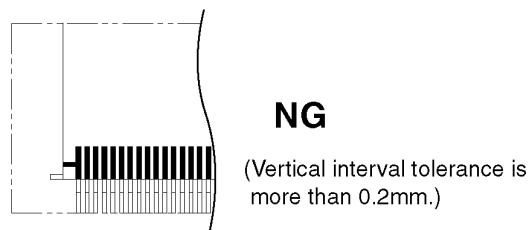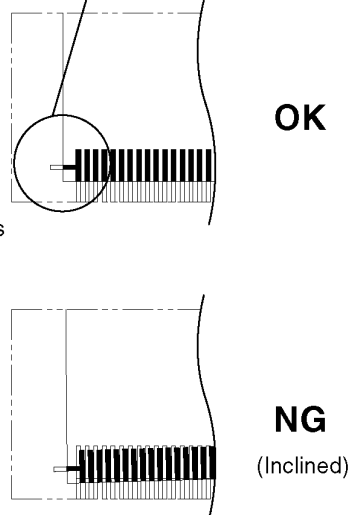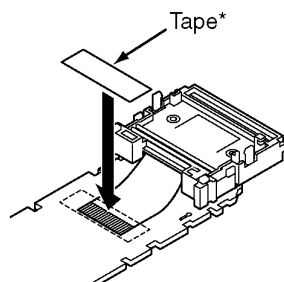
Tape*

Stick the Tape* over the FFC.
* Use the Tape which was removed first.

Vertical Interval
Tolerance

0.2mm

Horizontal Interval
Tolerance

0.2mm

If interval tolerance between center lines
is less than 0.2mm, it is o.k.

OK

NG
(Inclined)

NG
(Vertical interval tolerance is
more than 0.2mm.)

NG
(Horizontal interval tolerance is
more than 0.2mm.)

7 TROUBLESHOOTING FLOWCHART

Flow Chart

Power ON Base Unit	Not Work → Check Power
OK	
Bell	No Bell → Bell Reception
OK	
Link	
OK / Not Link	
Battery Charge	Not Charge → Check Battery Charge
OK	→ Check Link
Handset Voice Transmission	No Voice → Check Handset Transmission
OK	
Handset Voice Reception	No Voice → Check Handset Reception
OK	
DTMF dial	No Signal → SIGNAL ROUTE
OK	
Base Speakerphone Transmission	No Voice → Check Base Speakerphone Transmission
OK	
Base Speakerphone Reception	No Voice → Check Base Speakerphone Reception
OK	
TAM Operation	Not Work → Check TAM Operation

Cross Reference:

Check Power (P.19)

Bell Reception (P.26)

Check Battery Charge (P.20)

Check Link (P.21)

Check Handset Transmission (P.25)

Check Handset Reception (P.25)

SIGNAL ROUTE (P.51)

Check Base Speakerphone Transmission (P.25)

Check Base Speakerphone Reception (P.25)

Check TAM Operation (P.26)

7.1. Check Power

7.1.1. Base Unit

Is the AC Adaptor inserted into AC outlet? (Check AC Adaptor's specification.)

| Is input of IC1 about 5.5V - 11V? | NO → | Check D1, R154 are not opened, C1, C2 are not shorted. |

YES ↓   YES ↓

Check AC Adaptor.

| Is the output voltage of IC1 about 4.0V? | NO → |

YES ↓

| Is the output voltage of IC11 about 2.5V? | NO → |

YES ↓

Check **Power Supply Circuit**.

| Is the Collector of Q2 about 3.0V? | NO → |

YES ↓

| Is the Collector of Q3 about 1.8V? | NO → |

YES ↓

| Is BBIC (IC4: 120) High? | NO → | Check BBIC (IC4). |

YES ↓

| Does BBIC (IC4: 21) oscillate at 10.368MHz? | NO → | Check X1, C42, C43. |

YES ↓

Check BBIC (IC4).

Cross Reference:

Power Supply Circuit (P.46)

7.1.2. Handset

| Is the battery inserted to J1 and J2? |

YES ↓

| Is the voltage of J1 (BATT) 2.3V more? | NO → | Check the battery and around J1 and J2 are not shorted. |

YES ↓

| Is the voltage of VDD3 about 3.3V? | NO → |

YES ↓

Check **Power Supply Circuit/Reset Circuit**.

| Is the voltage of VDD2 about 2.5V? | NO → |

YES ↓

| Is the voltage of VDD1 about 1.8V? | NO → |

YES ↓

| Does BBIC (IC1: 16) oscillate at 10.368MHz? | NO → | Check X1, C7, R19. |

YES ↓

Check BBIC (IC1).

Cross Reference:

Power Supply Circuit/Reset Circuit (P.49)

7.2. Check Battery Charge

7.2.1. Base Unit

Plug in the AC Power source.
Charge Handset on Base Unit.

Is the voltage of two charge contacts about 5.5V and 0V from GND level?

NO → Check **Charge Circuit** of Base Unit.

OK ↓

Check Handset.

YES ↓

Check Charge Contacts at
Base Unit from mechanical point of view.

Cross Reference:
Charge Circuit (P.49)

7.2.2. Handset

Is **Check Power** OK?

NO → **Check Power** of Handset.

YES ↓

Is BBIC (IC1: 52) high at charge state?

NO → Check **Charge Circuit**.

Cross Reference:
Check Power (P.19)
Charge Circuit (P.49)

7.2.3. Charger Unit

Plug in the AC Power source.
Charge Handset on Charger Unit.

Is the voltage of two charge contacts about 5.5V and 0V from GND level?

NO → Check **Charge Circuit** of Charger Unit.

OK ↓

Check Handset.

YES ↓

Check Charge Contacts at Charger Unit
from mechanical point of view.

Cross Reference:
Charge Circuit (P.49)

7.3. Check Link

7.3.1. Base Unit

| Does Base Unit make link with Handset? (Correct working unit) | → YES → | Base Unit is OK. Check Handset. |

↓ NO

| Are the voltage of RF module (IC2: 3, 6) about 2.5 V? Refer to **Check Point...(A)**. | NO → | Check around **Power Supply Circuit**. |

↓ YES

| Is the voltage of C10 about 3.0V? Refer to **Check Point...(B)**. | NO → |

↓ YES

| Is the voltage of C25 about 1.8V? | NO → | Adjust C25 voltage to 1.8V. Refer to **Check Point...(C)**. |

↓ YES   OK

| Does the RF clock (CLK) oscillate: 10.368MHz in Base Unit Test Mode? Refer to **Check Point...(F)**. | NO → | Check around X1 and RF module and adjust clock frequency. Refer to **Check Point...(F)**. |

↓ YES

| Is there CMD60 (: DECT Tester)? | NO → |

↓ YES

| Does Base Unit make link with CMD60 in Base Unit Test Mode? Refer to **Check Point...(I)**. | NO → |

↓ YES

| Is the NTP value OK? Refer to **Check Point...(I)**. | NO → | Replace with a new Circuit Board. |

↓ YES

| Is the modulation OK? Refer to **Check Point...(J)**. | NO → |

↓ YES

| Is the Frequency Offset OK? Refer to **Check Point...(K)**. | NO → |

↓ YES

⋮ Continued to the next page.

⋮

↓ YES

| Is the Frequency Drift OK?
Refer to **Check Point...(L)**. | NO → |

↓ YES

| Is the Sensitivity Receiver OK?
Refer to **Check Point...(M)**. | NO → |

↓ YES

| Is the Timing OK?
Refer to **Check Point...(N)**. | NO → | → | Replace with a new Circuit Board. |

↓ YES

| Is the RSSI Level OK?
Refer to **Check Point...(O)**. | NO → |

↓ YES

| Is the Power RAMP OK?
Refer to **Check Point...(P)**. | NO → |

Cross Reference:

Power Supply Circuit (P.46)

Check Point (Base Unit) (P.27)

7.3.2. Handset

Does Handset make link with Base Unit? (Correct working unit)	YES →	Handset is OK. Check Base Unit.

NO ↓

Is the voltage of C40 about 1.8V? Refer to **Check Point...(A)**.	NO →	Adjust C40 voltage to 1.8V. Refer to **Check Point...(A)**.

YES ↓ ← OK

OK / NO

Is the voltage of C5 about 2.5V? Refer to **Check Point...(B)**.	NO →	Check around **Power Supply Circuit/Reset Circuit**.

YES ↓

Is the voltage of C57 about 3.3V?	NO →

YES ↓

Does the RF clock (CLK) oscillate: 10.368MHz in Handset Test Mode? Refer to **Check Point...(J)**.	NO →	Check around X1 and RF module and adjust clock frequency. Refer to **Check Point...(J)**.

YES ↓

Is there CMD60 (: DECT Tester)?	NO →

YES ↓

Does Handset make link with CMD60 in Handset Test Mode? Refer to **Check Point...(K)**.	NO →

YES ↓

Is the NTP value OK? Refer to **Check Point...(K)**.	NO →	Replace with a new Circuit Board.

YES ↓

Is the modulation OK? Refer to **Check Point...(L)**.	NO →

YES ↓

Is the Frequency Offset OK? Refer to **Check Point...(M)**.	NO →

YES ↓

⋮ Continued to the next page.

⋮

↓ YES

```
┌─────────────────────────────────┐      NO
│ Is the Frequency Drift OK?      │ ───────→
│ Refer to Check Point...(N).     │
└─────────────────────────────────┘
              ↓ YES
┌─────────────────────────────────┐      NO
│ Is the Sensitivity Receiver OK? │ ───────→
│ Refer to Check Point...(O).     │
└─────────────────────────────────┘
              ↓ YES
┌─────────────────────────────────┐      NO          ┌─────────────────────────────────────┐
│ Is the Timing OK?               │ ───────────────→ │ Replace with a new Circuit Board.   │
│ Refer to Check Point...(P).     │                  └─────────────────────────────────────┘
└─────────────────────────────────┘
              ↓ YES
┌─────────────────────────────────┐      NO
│ Is the RSSI Level OK?           │ ───────→
│ Refer to Check Point...(Q).     │
└─────────────────────────────────┘
              ↓ YES
┌─────────────────────────────────┐      NO
│ Is the Power RAMP OK?           │ ───────→
│ Refer to Check Point...(R).     │
└─────────────────────────────────┘
```

Cross Reference:

Power Supply Circuit/Reset Circuit (P.49)

Check Point (Handset) (P.35)

7.4.   Check Handset Transmission

Check MIC of Handset.

↓ OK

Check CDL TX (HANDSET) in **SIGNAL ROUTE**.

Cross Reference:
  SIGNAL ROUTE (P.51)

7.5.   Check Handset Reception

Check Handset Speaker in **HOW TO CHECK THE SPEAKER OR RECEIVER**.

↓ OK

Check CDL RX (HANDSET) in **SIGNAL ROUTE**.
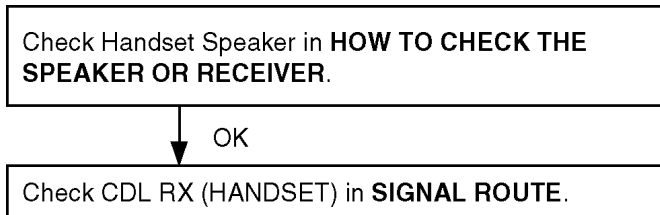
Cross Reference:
  HOW TO CHECK THE SPEAKER OR RECEIVER (P.43).
  SIGNAL ROUTE (P.51)

7.6.   Check Caller ID

Check Caller ID in **SIGNAL ROUTE**.

Cross Reference:
  SIGNAL ROUTE (P.51)

7.7.   Check Base Speakerphone Transmission

Check MIC of Base Unit.

↓ OK

Check SP-PHONE TX (Base) in **SIGNAL ROUTE**.
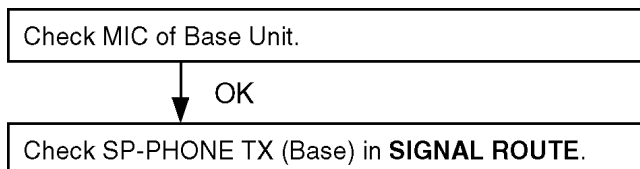
Cross Reference:
  SIGNAL ROUTE (P.51)

7.8.   Check Base Speakerphone Reception

Check Speaker of Base Unit.

↓ OK

Check SP-PHONE RX (Base) in **SIGNAL ROUTE**.
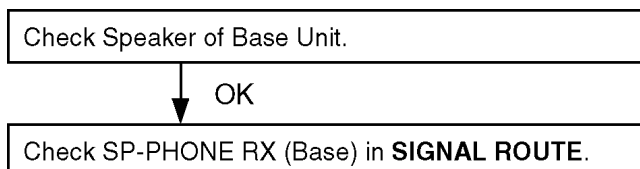
Cross Reference:
  SIGNAL ROUTE (P.51)

7.9. Bell Reception

7.9.1. Base Unit

When bell signal coming, is there bell signal at BBIC (IC4: 107, 112)?	NO →	Check around C12, C13, C101, C102, R16, R17, R106, R107, R24, C21, R32, C27.

YES ↓

When bell signal coming, is there bell signal at BBIC (IC4: 98)?	NO →	Check around C22, R27, R38, C32, C38, C173.

YES ↓

When bell signal coming, is there bell sound signal at BBIC (IC4: 110)?	NO →	Check BBIC (IC4).

YES ↓

When bell signal coming, is there bell sound signal at CN3 (SP-), CN4 (SP+)?	NO →	Check around C363, C320, R312, C315, C314, R308, IC7, C365, R314, R311, R375 .

YES ↓

Does the bell sound from SPEAKER?	NO →	Check cable of SPEAKER and resistance value of SPEAKER.

7.9.2. Handset

When bell signal coming, is there bell sound signal at BBIC (IC1: 30, 32)?	NO →	Check BBIC (IC1).

YES ↓

When bell signal coming, is there bell sound signal at SP_TEST1, SP_TEST2?	NO →	Check around L6, L7.

YES ↓

Does the bell sound from SPEAKER?	NO →	Check cable of SPEAKER and resistance value of SPEAKER.

Cross Reference:

Telephone Line Interface (P.47)

Check Link (P.21)

HOW TO CHECK THE SPEAKER OR RECEIVER (P.43)

7.10. Check TAM Operation

Does the Answer ON/OFF inidicator (LED) of Base Unit light on?	NO →	Set Answer on the TAM operation.

YES ↓

Is the voltage of IC6_7pin of Base Unit About 3.0V?	NO →	Check Power Supply Circuit.

YES ↓

Check IC6 and BBIC (IC4) of Base Unit.
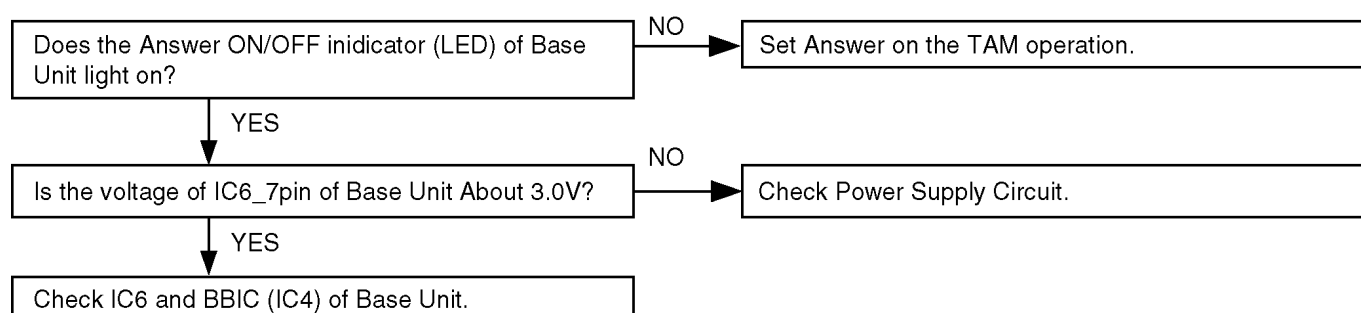
Cross Reference:

Power Supply Circuit (P.46)

8 TROUBLESHOOTING BY SYMPTOM (BASE UNIT AND CHARGER UNIT)

If your unit has below symptoms, follow the instructions in remedy column. Remedies depend on whether you have DECT tester (*1) or not.

Symptom	Remedy (*2)	
	You don't have DECT Tester.	You have DECT Tester. (Model Number : CMD60)
You cannot dial.	Check item (**A**)-(**G**).	Check item (**A**)-(**G**), (**I**)-(**O**).
You cannot hear the caller's voice.	Check item (**A**)-(**F**).	Check item (**A**)-(**F**), (**I**)-(**L**), (**N**).
You cannot use handset a little away from base unit even if the handset is within range of the base unit.	-	Check item (**I**), (**M**).
The acoustic transmission level is high or low.	Check item (**Q**).	Check item (**Q**).
The acoustic reception level is high or low.	Check item (**Q**).	Check item (**Q**).
The unit does not link.	Check item (**A**)-(**H**).	Check item (**A**)-(**P**).
The transmission level of base speakerphone is high or low.	Check item (**R**).	Check item (**R**).
The reception level of base speakerphone is high or low.	Check item (**R**).	Check item (**R**).
The unit cannot charge.	Check item (**S**).	Check item (**S**).
TAM does not work.	Check item (**T**).	Check item (**T**).

Note:

(*1): A general repair is possible even if you don't have the DECT tester because it is for confirming the levels, such as Acoustic level in detail.

(*2): Refer to **Check Point (Base Unit)** (P.27)

8.1. Check Point (Base Unit)

Please follow the items below when BBIC or EEPROM or FLASH ROM is replaced.

Note:

After the measuring, sock up the solder of TP.

*: **PC Setting** (P.39) is required beforehand.

The connections of adjustment equipments are as shown in **Adjustment Standard (Base Unit)** (P.33).

	Items	Check Point	Procedure	Check or Replace Parts
(**A**)	2.5V Supply Confirmation	VDD4	1. Confirm that the voltage between test point VDD4 and GND is 2.5V ± 0.2V.	D1, IC11, C4, C7, R10, R11, C30, C26, C28, L12
(**B**)	3.0V Supply Confirmation	VDD3	1. Confirm that the voltage between test point VDD3 and GND is 3.0V ± 0.2V.	C2, IC1, C3, C8, Q2, R5, C10, R18, R19, C11
(**C**)*	1.8V Supply Confirmation	VDD5	1. Confirm that the voltage between test point VDD5 and GND is 1.8V ± 0.1V.	Q3, R6, C25, D7, D8
(**D**)*	BBIC Confirmation	-	1. BBIC Confirmation (Execute the command "getchk"). 2. Confirm the returned checksum value. Connection of checksum value and program number is shown below. ex.) <table><tr><td>checksum value</td><td>program number</td></tr><tr><td>5003</td><td>D601ZC</td></tr></table>	IC4, X1, C42, C43, R40, C81, C82, C84

	Items	Check Point	Procedure	Check or Replace Parts

(E)*	EEP-ROM Confirmation	-	1. EEP-ROM Confirmation (Execute the command "ChkTCD240XXrevYY").
			
			   XX: country code
			
			   YY: revision number
			
			2. Confirm the returned checksum value.
			
			Note:
			"XX", "YY", and "checksum" vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.32).
				IC3, C53, R56, R57, C57, Q6, Q7, R64, R65, R35

(F)*	BBIC Clock Adjustment	CLK	1. Input Command "rdeeprom 00 01 01", then you can confirm the current value. 2. Adjust the frequency of CLK executing the command "setfreq xx (where xx is the value)" so that the reading of the frequency counter is 10.368000MHz ± 10Hz.	IC2, IC4, R137, R125, C153, X1, C42, C43
(G)*	Hookswitch Check with DC Characteristics	-	1. Connect CN1 (Telephone Socket) to Tel-simulator which is connected with 600 Ω. 2. Set line voltage to 48V and line current to 40mA at off-hook condition of nomal telephone. 3. Execute the command "hookoff" 4. Confirm that the line current is 40mA ± 5mA. 5. Execute the command "hookon". 6. Confirm that the line current is less than + 0.8mA.	CN1, L6, L7, Q4, R23, R25, Q5, R26, R28, IC4, D3
(H)*	DTMF Generator Check	-	1. Connect CN1 (Telephone Socket) to DTMF tester. 2. Execute the command "hookoff" and "dtmf_hi". 3. Confirm that the high frequency (1477Hz) is -4.0dBm ~ -8.0dBm. 4. Execute the command "dtmf_lo". 5. Confirm that the low frequency (852Hz) is -6.5dBm ~ -10.5dBm.	IC4, R63, R39, C41, R49, C46, C47, R42, R43, R44, R45, R46, R47, R48, C108, C109, C40, C36, Q8, D4

(I)*	Transmitted Power Confirmation	-	Remove L4 before starting step from 1 to 7.
			1. Configure the DECT tester (CMD60) as follows;
			
			   <Setting>
			
			   • Test mode: FP
			
			   • Traffic Carrier: 5
			
			   • Traffic Slot: 4
			
			   • Mode: Loopback
			
			   • PMID: 00000
			
			   • RF LEVEL = -70dBm.
			
			2. Execute the command "testmode".
			
			3. Execute the command "sendchar dmv 2 2".
			
			4. Check that "Signalling Status" has been set to "Locked", then press "ACCEPT RFPI".
			
			5. Initiate connection from Dect tester ("set up connect")
			
			6. Execute the command "ANT1".
			
			7. Confirm that the NTP value at ANT is 20dBm ~ 25dBm.
				IC2, IC4, R137, R125, C153, L8, L5, L10, L9, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, L12, C30, IC11, R10, R11, C28, C26, C147, C151, C157, R123, C158, R128, R129, C159, C160, R131, R130, C161, C162, R132, C164, C136, R134, R117, R127, C156, C154, C155, R135, R136

(J)	Modulation Check and Adjustment	-	Follow steps 1 to 6 of **(I)**. 7. Confirm that the B-Field Modulation is -350 ~ -400/+320 ~ +370kHz/div using data type Fig31. 8. Adjust the B-Field Modulation if required. (Execute the command "readmod" and "wrtmod xx", where xx is the value.)	IC2, IC4, R137, R125, C153, L8, L5, L10, L9, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, L12, C30, IC11, R10, R11, C28, C26, C147, C151, C157, R123, C158, R128, R129, C159, C160, R131, R130, C161, C162, R132, C164, C136, R134, R117, R127, C156, C154, C155, R135, R136

	Items	Check Point	Procedure	Check or Replace Parts
(K)	Frequency Offset Check	-	Follow steps 1 to 6 of **(I)**. 7.Confirm that the frequency offset is < ± 45kHz.	IC2, IC4, R137, R125, C153, L8, L5, L10, L9, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, L12, C30, IC11, R10, R11, C28, C26, C147, C151, C157, R123, C158, R128, R129, C159, C160, R131, R130, C161, C162, R132, C164, C136, R134, R117, R127, C156, C154, C155, R135, R136
(L)	Frequency Dirft Confirmation	-	Follow steps 1 to 6 of **(I)**. 7.Confirm that the frequency drift is < ± 30kHz/ms.	IC2, IC4, R137, R125, C153, L8, L5, L10, L9, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, L12, C30, IC11, R10, R11, C28, C26, C147, C151, C157, R123, C158, R128, R129, C159, C160, R131, R130, C161, C162, R132, C164, C136, R134, R117, R127, C156, C154, C155, R135, R136
(M)	Sensitivity Receiver Confirmation	-	Follow steps 1 to 6 of **(I)**. 7.Set DECT tester power to -88dBm. 8.Confirm that the BER is < 1000ppm.	IC2, IC4, R137, R125, C153, L8, L5, L10, L9, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, L12, C30, IC11, R10, R11, C28, C26, C147, C151, C157, R123, C158, R128, R129, C159, C160, R131, R130, C161, C162, R132, C164, C136, R134, R117, R127, C156, C154, C155, R135, R136

	Items	Check Point	Procedure	Check or Replace Parts
(N)	Timing Confirmation	-	Follow steps 1 to 6 of (I). 7.Confirm that the Timing accuracy is < ± 2.0ppm.	IC2, IC4, R137, R125, C153, L8, L5, L10, L9, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, L12, C30, IC11, R10, R11, C28, C26, C147, C151, C157, R123, C158, R128, R129, C159, C160, R131, R130, C161, C162, R132, C164, C136, R134, R117, R127, C156, C154, C155, R135, R136
(O)*	RSSI Level Confirmation	-	Follow steps 1 to 6 of (I). 7.Execute the command "readrssi". 8. Confirm that the returned value is 0×22 ± A (hex).	IC2, IC4, R137, R125, C153, L8, L5, L10, L9, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, L12, C30, IC11, R10, R11, C28, C26, C147, C151, C157, R123, C158, R128, R129, C159, C160, R131, R130, C161, C162, R132, C164, C136, R134, R117, R127, C156, C154, C155, R135, R136
(P)	Power RAMP Confirmation	-	Follow steps 1 to 6 of (I). 7.Confirm that Power RAMP is matching.	IC2, IC4, R137, R125, C153, L8, L5, L10, L9, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, L12, C30, IC11, R10, R11, C28, C26, C147, C151, C157, R123, C158, R128, R129, C159, C160, R131, R130, C161, C162, R132, C164, C136, R134, R117, R127, C156, C154, C155, R135, R136

	Items	Check Point	Procedure	Check or Replace Parts

(**Q**)*	Audio Check	-	1. Link with Handset.
			2. Input -45dBm/1kHz to MIC of Handset.
			   Measure the Level at Line I/F and distortion level.
			3. Confirm that the level is -8.0dBm ± 2dBm and that the distortion level is < 5% at TEL Line (600Ω Load).
			4. Input -20dBm/1kHz to Line I/F.
			   Measure the level at Receiver of Handset and distortion level
			   (*Receive volume set to second position from minimum).
			5. Confirm that the level is -21dBm ± 2dBm and that the distortion level is < 5% at Receiver (Volume Middle, 150Ω Load).
				IC4, CN1, SA1, L6, L7, D3, Q4, Q5, R23, R25, R26, R28, R63, R39, C41, R49, C46, C47, R42, R43, R44, R45, R46, R47, R48, C108, C109, C40, C36, Q8, C24, R60, R62

(**R**)	SP-Phone Audio Check	-	1. Press SP-PHONE button. 2. Press MUTE button. 3. Input -30Bm/1kHz to Line interface. (SP-Phone volume Maximum.) 4. Measure the output level and distortion level at base speaker. 5. Confirm that the level is -3dBm ±5dBm and that the distortion level is < 5%. 6. Press MUTE button. 7. Input -45dBm/1kHz to SP-Phone MIC. (TP1-TP2) 8. Measure the output level and distortion level at line interface. 9. Confirm that the level is -0dBm ±5dBm and that the distortion level is < 5%.	IC4, IC7, D311, R375, C312, C313, C314, C315, C316, C317, C318, C319, R308, R311, R312, R314, C320, C367, D301, R301, R302, R303, R304, R305, R307, C301, C302, C303, C304, C305, R306
(**S**)	Charging Check	-	1. Connect Charge Contact 12Ω/2W resistor between charge+ and charge-. 2. Measure and confirm voltage across the resistor is 2.85V ± 0.2V.	R2, R3, R4, D6, C180, C181, C182, D361, Q361, Q362, C361, C362, R361, R362, R363, C322, L13, L14
(**T**)	TAM Operation Confirmation	-	1. TAM Confirmation (Execute the command "sendchar_VPI") 2. Confirm the returned Value (Value is "D597EC").	IC6, R91, R92, C86, R33, R34

8.2. The Setting Method of JIG (Base Unit)

8.2.1. Preparation

8.2.1.1. Equipment Required

- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision; ±4ppm).
  Hewlett Packard, 53131A is recommended.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

8.2.1.2. JIG and PC

- EEPROM serial JIG
  JIG Cable: PQZZ1CD300E*
- PC which runs in DOS mode
- **Batch file CD-ROM** for setting: PQZZTG1283JX

Note:

*: If you have the JIG Cable for TCD500 series (PQZZ1CD505E), change the following values of resistance. Then you can use it as a JIG Cable for both TCD300 and TCD500 series. (It is an upper compatible JIG Cable.)

Resistor	Old value (kΩ)	New value (kΩ)
R2	22	3.3
R3	22	3.3
R4	22	4.7
R7	4.7	10

8.2.2. PC Setting

8.2.2.1. Connections

Note:
Connect the **Power Supply** and the **JIG Cable** in the following order.
① POWER SUPPLY ON
② JIG-CABLE GND
③ JIG-CABLE UTX/URX

Oscilloscope or Frequency Counter (for Clock Freq.)

DECT Tester (for Loop Back)

RF cable (loss: 0.7dBm)

Fix Part (Base Unit)

JIG Cable

Digital Multi-meter (DMM)

Simulator

AC adaptor

PC

Serial Port (com port 1)

8.2.2.2. PC Setting

1. Open a window of MS-DOS mode from the start-up menu.
2. Change a directory.
3. Type "**SET_COM=1**" from the keyboard (when COM port 1 is used for the connection).
4. Type "doskey".

Note:

See the table below for frequently used commands.

Command name	Function	Example
rdeeprom	Read the data of EEPROM	Type "rdeeprom 00 00 FF", and the data from address "00 00" to "FF" is read out.
readid	Read ID (RFPI)	Type "readid", and the registered ID is read out.
writeid	Write ID (RFPI)	Type "writeid 00 18 E0 0E 98", and the ID "0018 E0 0E 98" is written.
setfreq	Adjust Frequency of RFIC	Type "setfreq nn".
hookoff	Off-hook mode on Base	Type "hookoff".
hookon	On-hook mode on Base	Type "hookon".
getchk	Read checksum	Type "getchk".
wreeprom	Write the data of EEPROM	Type "wreeprom 01 23 45". "01 23" is address and "45" is data to be written.

8.3. Adjustment Standard (Base Unit)

When connecting the Simulator Equipments for checking, please refer to below.
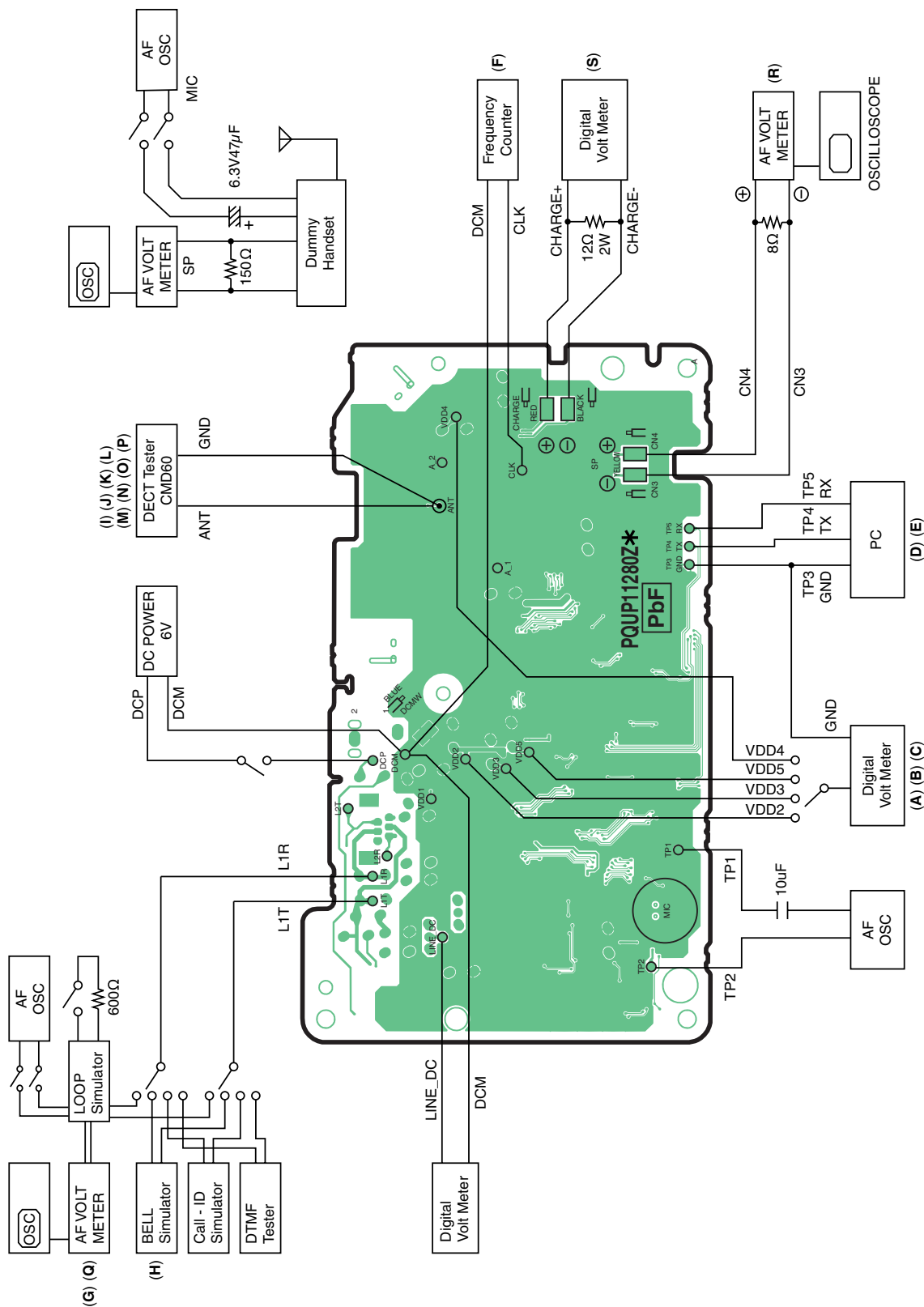
Note:

(A) - (S) is referred to **Check Point (Base Unit)** (P.27)

8.4. Check Point (Charger Unit)

	Items	Check Point	Procedure	Check or Replace Parts
(A)	Charging Check	-	1. Connect Charge Contact 12Ω/2W resistor between charge+ and charge-. 2. Measure and confirm voltage across the resistor is 2.85V ± 0.2V.	D11, R11, R12

Note:

After the measuring, sock up the solder of TP.

The connection of adjustment equipment is as shown in **Adjustment Standard (Charger Unit)** (P.34).

8.5. Adjustment Standard (Charger Unit)

When connecting the Simulator Equipments for checking, please refer to below.

8.5.1. Flow Solder Side View

Note:

(**A**) is referred to **Check Point (Charger Unit)** (P.34)

9 TROUBLESHOOTING BY SYMPTOM (HANDSET)

If your unit has below symptoms, follow the instructions in remedy column. Remedies depend on whether you have DECT tester (*1) or not.

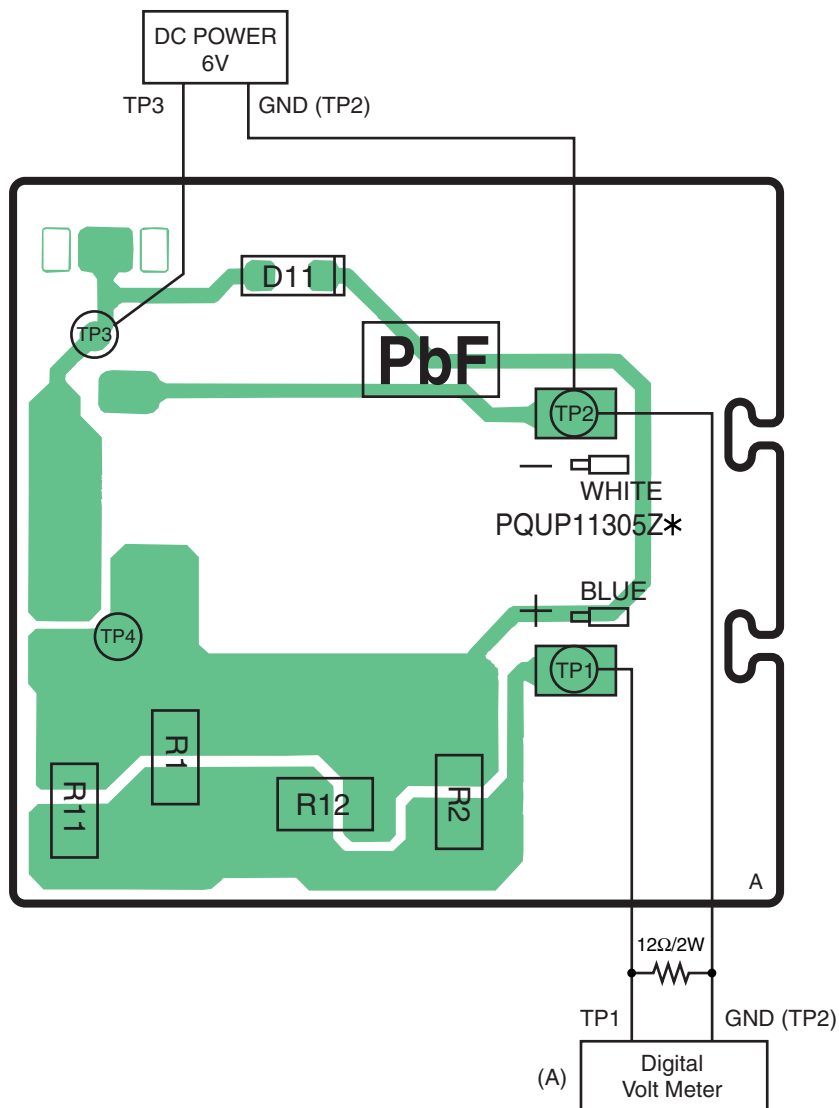| Symptom	Remedy (*2)	
	You don't have DECT Tester.	You have DECT Tester. (Model Number : CMD60)
Battery strength is not indicated correctly by Battery icon.	Check item (**A**)-(**D**), (**H**)-(**I**).	Check item (**A**)-(**D**), (**H**)-(**I**).
You cannot hear the caller's voice.	Check item (**A**)-(**D**), (**J**).	Check item (**A**)-(**D**), (**J**)-(**M**), (**N**), (**P**).
You cannot use handset a little away from base unit even if the handset is within range of the base unit.	-	Check item (**K**), (**O**).
Does not link between base unit and handset.	Check item (**A**)-(**D**), (**J**).	Check item (**A**)-(**D**), (**J**)-(**Q**).
The Audio level is high or low.	Check item (**S**).	Check item (**S**).
The SP-Phone level is high or low.	Check item (**T**).	Check item (**T**).

Note:

(*1): A general repair is possible even if you don't have the DECT tester because it is for confirming the levels, such as Acoustic level in detail.

(*2): Refer to **Check Point (Handset)** (P.35)

9.1. Check Point (Handset)

Please follow the items below when BBIC or EEPROM is replaced.

Note:

After the measuring, sock up the solder of TP.

*: **PC Setting** (P.39) is required beforehand.

The connections of adjustment equipments are as shown in **Adjustment Standard (Handset)** (P.40).

	Items	Check Point	Procedure	Check or Replace Parts
(**A**)*	1.8V Supply Adjustment	VDD1	1. Confirm that the voltage between test point VDD1 and GND is 1.8V ± 0.02V. 2. Execute the command "bandgap", then check the current value. 3. Adjust the 1.8V voltage of VDD1 executing command "bandgap XX"(XX is the value).	IC1, Q2, C40
(**B**)	DC/DC Supply Confirmation	VDD3	1. Confirm that the voltage between test point VDD3 and GND is 3.3V ± 0.3V (Backlight is ON).	IC1, F1, C1, C3, C57, R1, Q1, D1, L1,57
(**C**)	2.5V Supply Confirmation	VDD2	1. Confirm that the voltage between test point VDD2 and GND is 2.5V ± 0.1V.	IC1, Q3, C4, C5
(**D**)*	BBIC Confirmation	-	1. BBIC Confirmation (Execute the command "getchk"). 2. Confirm the returned checksum value. Connection of checksum value and program number is shown below. ex.) <table><tr><td>checksum value</td><td>program number</td></tr><tr><td>9104</td><td>D562ZB</td></tr></table>	IC1, X1,C7, R19
(**E**)*	EEP-ROM Confirmation	-	1. EEP-ROM Confirmation (Execute the command "ChkTCA121XXrevYY"). XX: country code YY: revision number 2. Confirm the returned checksum value. **Note:** "XX", "YY", and "checksum" vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.39).	IC3, IC1, R39, R40, R91, R90, R96, Q10, Q11, C113

	Items	Check Point	Procedure	Check or Replace Parts
(F)	Charge Control Check & Charge Current Monitor Check	-	1. Apply 6V between J3(+) and J4(-) with DC power supply and set current limit to 250mA. 2. Confirm that the current limit LED of DC power supply is ON/OFF. 3. Decrease current limit of DC power supply to 100mA. 4. Confirm that the current limit LED of DC power supply is stable. (Current limiter is ON.) (If charge control cannot be confirmed by this procedure, please use battery to handset power supply and try again.)	IC1, Q4, Q5, Q9, D6, L4, L5, C119, C120, R5, R6, R7, R72, F1
(G)*	Charge Detection (OFF) Check	-	1. Stop supplying 6V to CHARGE(+) and CHARGE(-). 2. Execute the command "Backloff" then "charge". 3. Confirm that the returned value is 0x00 (hex).	IC1, Q4, Q5, Q9 D6, D7, L4, L5, C119, C120, R5, R6, R7, R72, F1
(H)*	Battery Monitor Check	-	1. Apply 2.25V between BATT and GND. 2. Execute the command "readbatt". It assumes that the return value is XX. a) 1E ≦ XX ≦ 2C: No need to adjust b) XX: 18 ~ 1D: Need to adjust XX: 2D ~ 32: Need to adjust Write AD value of 2.25V to EEPROM. ex) read data: XX = 1D, write data: YY = 1D read data: XX = 2D, write data: YY = 2D EEPROM = 0X0004(Low Voltage) write "YY", then EEPROM = 0X0005(No Voltage) write "YY - 1D" EEPROM = 0X000A(Low Voltage BL) write "YY - 06" No Voltage writing data limit is '00'. c) XX: 00 ~ 17: Reject XX: 33 ~ FF: Reject	IC1, F1, C1 C3, C118
(I)	Battery Low Confirmation	-	1. Apply 2.40V between BATTERY(+) and BATTERY(-). 2. Confirm that there is no flashing of Battery Icon. 3. Apply 2.25V ± 0.08V between BATTERY(+) and BATTERY(-). 4. Confirm that there is flashing of Battery Icon.	IC1, F1, C1 C3, C118
(J)*	BBIC Clock Adjustment	CLK	1. Apply 2.6V between BATTERY(+) and BATTERY(-) with DC power. 2. Execute the command "conttx". 3. Input Command "rdeeprom 00 01 01", then you can confirm the current value. 4. Adjust the frequency of CLK executing the command "setfreq xx (where xx is the value)" so that the reading of the frequency counter is 10.368000MHz ± 10Hz. Note: CLK is displayed only for a few seconds when executing the command "conttx" after battery is inserted.	IC1, X1, CN6, C7, R54, C62

(K)*	Transmitted Power Confirmation	-	Remove the Antenna before starting step from 1 to 4.
			1. Configure the DECT tester (CMD60) as follows;
			
			    \<Setting>
			
			    ● Test mode: PP
			
			    ● RFPI: 0102030405
			
			    ● Traffic Carrier: 5
			
			    ● Traffic Slot: 4
			
			    ● Mode: Loopback
			
			    ● RF LEVEL = -70dBm
			
			2. Execute the command "regcmd60 01 02 03 04 05".
			
			3. Initiate connection from DECT tester.
			
			4. Confirm that the NTP value at A201 is 20dBm ~ 25dBm.
				IC1, R54, C62, C123, C60, C63, C45, C44, C47, C46, C49, C48, C50, C53, C51, R59, C54, C55, CN6

	Items	Check Point	Procedure	Check or Replace Parts
(L)*	Modulation Check and Adjustment	-	Follow steps 1 to 3 of (K). 4. Confirm that the B-Field Modulation is -350 ~ -400/+320 ~ +370kHz/div using data type Fig 31. 5. Adjust the B-Field Modulation if required. (Execute the command "Readmod" and "wrtmod xx", where xx is the value.)	IC1, R54, C62, C123, C60, C63, C45, C44, C47, C46, C49, C48, C50, C53, C51, R59, C54, C55, CN6
(M)	Frequency Offset Confirmation	-	Follow steps 1 to 3 of (K). 4. Confirm that the frequency Offset is < ± 45kHz.	IC1, R54, C62, C123, C60, C63, C45, C44, C47, C46, C49, C48, C50, C53, C51, R59, C54, C55, CN6
(N)	Frequency Drift Confirmation	-	Follow steps 1 to 3 of (K). 4. Confirm that the frequency Drift is < ± 30kHz/ms.	IC1, R54, C62, C123, C60, C63, C45, C44, C47, C46, C49, C48, C50, C53, C51, R59, C54, C55, CN6
(O)	Sensitivity Receiver Confirmation	-	Follow steps 1 to 3 of (K). 4. Set DECT tester power to -88dBm. 5. Confirm that the BER is < 1000ppm.	IC1, R54, C62, C123, C60, C63, C45, C44, C47, C46, C49, C48, C50, C53, C51, R59, C54, C55, CN6
(P)	Timing Confirmation	-	Follow steps 1 to 3 of (K). 4. Confirm that the Timing accuracy is < ± 2.0ppm.	IC1, R54, C62, C123, C60, C63, C45, C44, C47, C46, C49, C48, C50, C53, C51, R59, C54, C55, CN6
(Q)*	RSSI Level Confirmation	-	Follow steps 1 to 3 of (K). 4. Set DECT tester power to -81dBm. 5. Execute the command "readrssi". 6. Confirm that the returned value is 0×1C ± 8 (hex). 7. Set DECT tester power to -63dBm. 8. Execute the command "readrssi". 9. Confirm that the returned value is 0×25 ± 8 (hex).	IC1, R54, C62, C123, C60, C63, C45, C44, C47, C46, C49, C48, C50, C53, C51, R59, C54, C55, CN6
(R)	Power RAMP Confirmation	-	Follow steps 1 to 3 of (K). 4. Confirm that Power RAMP is matching.	IC1, R54, C62, C123, C60, C63, C45, C44, C47, C46, C49, C48, C50, C53, C51, R59, C54, C55, CN6
(S)	Audio Check and Confirmation	-	1. Link to BASE which is connected to Line Simulator. 2. Set line voltage to 48V and line current to 40mA. 3. Input -45dBm/1KHz to MIC and measure Line output level. 4. Confirm that the level is -8.0dBm ± 2dBm and that the distortion level is < 5% at TEL Line (600Ω Load). 5. Input -20dBm/1KHz to Line I/F and measure Receiving level at REV1 and REV2. 6. Confirm that the level is -21dBm ± 2dBm and that the distortion level is < 5% at Receiver. (vol = 2)	IC1, C37, C68, C91, R25, R26, C20, C12, C87, C109, R85, C103, C10, C17, R86, R29, R37, R38, D4, D5, C69, C70, C95

	Items	Check Point	Procedure	Check or Replace Parts
(T)	SP phone Audio Check and Confirmation	-	1. Link to Base which is connected to Line Simulator. 2. Set line voltage to 48V and line current to 40mA. 3. Set the handset off-hook using SP-Phone key. 4. Input -25dBm/1KHz to Line I/F and measure Receiving level at SP1 and SP2. 5. Confirm that the level is -15.5dBm ± 2dBm and that the distortion level is < 5%. (vol = 3)	IC1, C37, C68, C91, R25, R26, C20, C12, C87, C109, R85, C103, C10, C17, R86, R29, R37, R38, L6, L7, C79, C78

9.2. Troubleshooting for Speakerphone (Handset)

When the customer's telephone line corresponds to the following conditions and transmission signal of SP-Phone is interrupted, performing the next set up to a cordless handset will improve it to some extent.

Conditions

1. When customer's line has less line loss.

   ex.) The customer is using optical fiber, ISDN terminal adaptor, or PBX.

   In this case, receiving signal is strong and it may affect transmission signal.

2. When the other party is talking from noisy place.

   ex.) The other party is using cellular phone. The background noise is very loud.

   In this case, the noise from the other party (i.e. surrounding noise) may affect transmission signal.

Setting Method

● Change the address of EEPROM (0×0144) from 0×00 to 0×01.

9.3. The Setting Method of JIG (Handset)

9.3.1. Preparation

9.3.1.1. Equipment Required

- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision; ±4ppm).
  Hewlett Packard, 53131A is recommended.
- DC power: it must be able to output at least 1A current under 2.4V for Handset.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

9.3.1.2. JIG and PC

- EEPROM serial JIG
  JIG Cable: PQZZ1CD300E*
- PC which runs in DOS mode.
- **Batch file CD-ROM** for PC setting: PQZZTG1283JX

Note:

*: If you have the JIG Cable for TCD500 series (PQZZ1CD505E), change the following values of resistance. Then you can use it as a JIG Cable for both TCD300 and TCD500 series. (It is an upper compatible JIG Cable.)

Resistor	Old value (kΩ)	New value (kΩ)
R2	22	3.3
R3	22	3.3
R4	22	4.7
R7	4.7	10

9.3.2. PC Setting

9.3.2.1. Connections
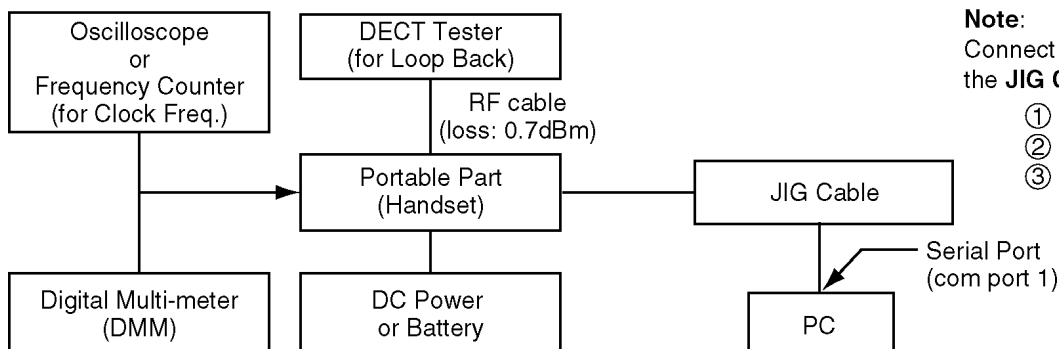
Note:
Connect the **Power Supply** and the **JIG Cable** in the following order.
① POWER SUPPLY ON
② JIG-CABLE GND
③ JIG-CABLE UTX/URX

9.3.2.2. PC Setting

1. Open a window of MS-DOS mode from the start-up menu.
2. Change a directory.
3. Type "**SET_COM=1**" from the keyboard (when COM port 1 is used for the connection).
4. Type "doskey".

Note:

See the table below for frequently used commands.

Command name	Function	Example
rdeeprom	Read the data of EEPROM	Type "rdeeprom 00 00 FF", and the data from address "00 00" to "FF" is read out.
readid	Read ID (RFPI)	Type "readid", and the registered ID is read out.
writeid	Write ID (RFPI)	Type "writeid 00 18 E0 0E 98", and the ID "0018 E0 0E 98" is written.
setfreq	Adjust Frequency of RFIC	Type "setfreq nn".
getchk	Read checksum	Type "getchk".
wreeprom	Write the data of EEPROM	Type "wreeprom 01 23 45". "01 23" is address and "45" is data to be written.

9.4. Adjustment Standard (Handset)

When connecting the Simulator Equipments for checking, please refer to below.
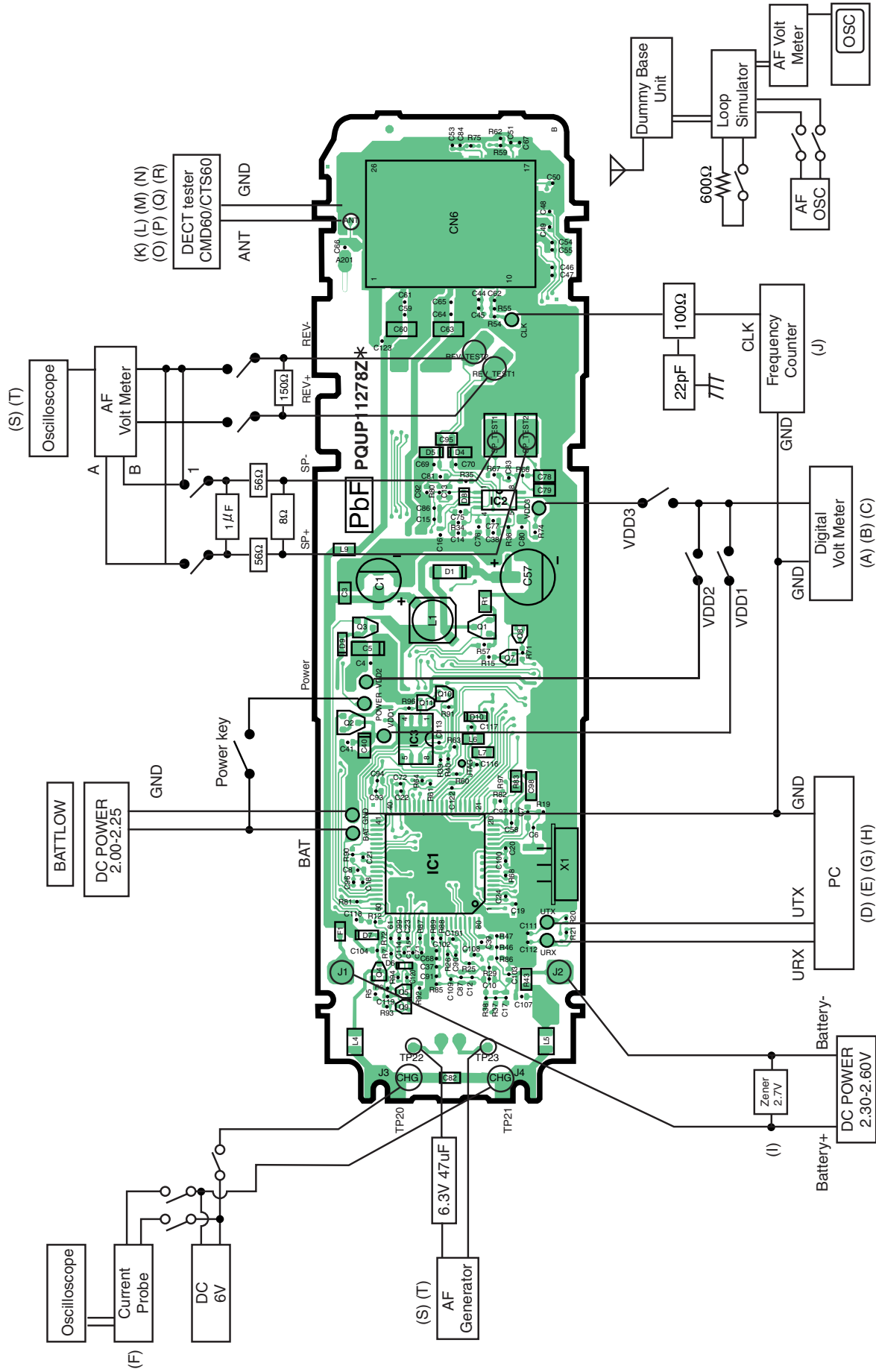
Note:

(A) - (T) is referred to **Check Point (Handset)** (P.35).

10 THINGS TO DO AFTER REPLACING IC

Cautions:

Since this page is common to each country, it may not apply to some models in your country. The contents below are the minimum adjustments required for operation.

10.1. Base Unit

	IC	Necessary Adjustment
BBIC	Programs for Voice processing, interface for RF and EEPROM	1. Default batch file: Execute the command "default". 2. Country version batch file: Execute the command "TCD240XXrevYY". (*1) 3. Clock adjustment: Refer to Check Point (F). (*2)
EEPROM	Adjustment parameter data (country version batch file, default batch file, etc.)	1. Change the address "0000" of EEPROM to "AA". 2. Default batch file: Execute the command "default". 3. Country version batch file: Execute the command "TCD240XXrevYY". (*1) 4. Clock adjustment: Refer to Check Point (F). (*2)
FLASH 1	Voice prompt data (vary depending on country version)	No need to adjust.
FLASH 2	Program	No need to adjust.

Note:

(*1) XX: country code, YY: revision number

"XX" and "YY" vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.32).

(*2) Refer to **Check Point (Base Unit)** (P.27)

10.2. Handset

	IC	Necessary Adjustment
BBIC	Programs for Voice processing, interface for RF and EEPROM	1. Default batch file: Execute the command "default". 2. Default batch file (remaining); Execute the command "TCA121 DEFrevYY". (*3) (Except for KX-TCA121/122 FX and KX-TCA121/122 RU). 3. Country version batch file: Execute the command "TCA121XXrevYY". (*3) 4. Clock adjustment: Refer to Check Point (J). (*4) 5. 1.8 V setting and battery low detection: Refer to Check Point (A), (H) and (I). (*4)
EEPROM	Adjustment parameter data (country version batch file, default batch file, etc.)	1. Change the address "0015" of EEPROM to "55". 2. Default batch file: Execute the command "default". 3. Default batch file (remaining): Execute the command "TCA121DEFrevYY". (*3) (Except for KX-TCA121/122 FX and KX-TCA121/122 RU). 4. Country version batch file: Execute the command "TCA121XXrevYY". (*3) 5. Clock adjustment: Refer to Check Point (J). (*4) 6. 1.8 V setting and battery low detection: Refer to Check Point (A), (H) and (I). (*4)

Note:

(*3) XX: country code, YY: revision number

"XX" and "YY" vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.39).

(*4) Refer to **Check Point (Handset)** (P.35)

11 RF SPECIFICATION

11.1. Base Unit

Item	Value	Refer to -. *	Remarks
TX Power	20 dBm ~ 25 dBm	**Check Point (Base Unit) (I)**	
Modulation	-350 ~ -400/+320 ~ +370 kHz/div	**Check Point (Base Unit) (J)**	Data type: Fig31
Frequency Offset	-45 kHz ~ +45 kHz	**Check Point (Base Unit) (K)**	
Frequency Drift	< ± 30 kHz / ms	**Check Point (Base Unit) (L)**	
RX Sensitivity	< 1000 ppm	**Check Point (Base Unit) (M)**	
Timing Accuracy	< ± 2.0 ppm	**Check Point (Base Unit) (N)**	
RSSI Level	0x22 hex ± A hex	**Check Point (Base Unit) (O)**	
Power RAMP	Power RAMP is matching	**Check Point (Base Unit) (P)**	

*: Refer to **Check Point (Base Unit)** (P.27)

11.2. Handset

Item	Value	Refer to -. **	Remarks
TX Power	20 dBm ~ 25 dBm	**Check Point (Handset) (K)**	
Modulation	-350 ~ -400/+320 ~ +370 kHz/div	**Check Point (Handset) (L)**	Data type: Fig31
Frequency Offset	-45 kHz ~ +45 kHz	**Check Point (Handset) (M)**	
Frequency Drift	< ± 30 kHz / ms	**Check Point (Handset) (N)**	
RX Sensitivity	< 1000 ppm	**Check Point (Handset) (O)**	
Timing Accuracy	< ± 2.0 ppm	**Check Point (Handset) (P)**	
RSSI Level	0x1C hex ± 8 hex (at -81dBm) 0x25 hex ± 8 hex (at -63dBm)	**Check Point (Handset) (Q)**	
Power RAMP	Power RAMP is matching	**Check Point (Handset) (R)**	

: Refer to **Check Point (Handset) (P.35)

12 HOW TO CHECK THE SPEAKER OR RECEIVER

1. Prepare the digital voltmeter, and set the selector knob to ohm meter.
2. Put the probes at the speaker (receiver) terminals as shown below.

SPEAKER (Handset or Base Unit):
    Is the value between

    (+) terminal and (–) terminal about 8Ω?
RECEIVER (Handset):
    Is the value between

    (+) terminal and (–) terminal about 150Ω?

YES → OK

NO → NG

Replace the new speaker (receiver).

Handset speaker (receiver)
or
Base Unit speaker

Digital Voltmeter
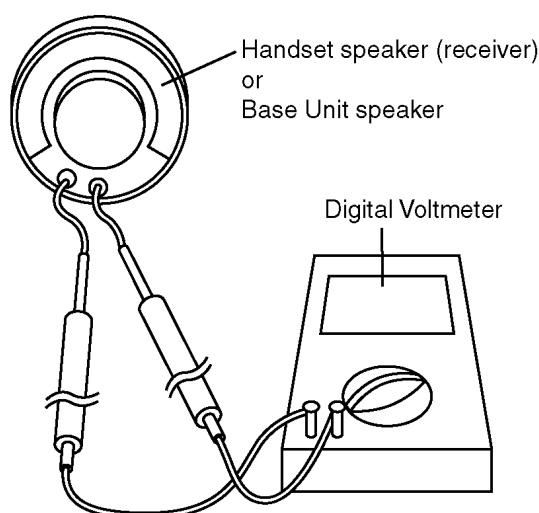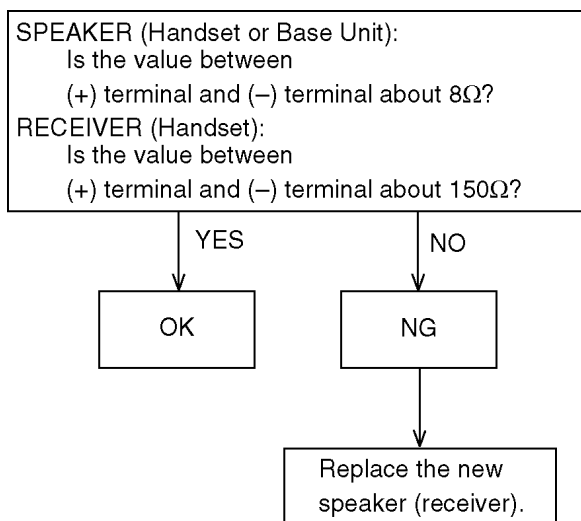
13 FREQUENCY TABLE (MHz)

Channel No	BASE UNIT		HANDSET	
	Transmit Frequency	Receive Frequency	Transmit Frequency	Receive Frequency
1	1897.344	1897.344	1897.344	1897.344
2	1895.616	1895.616	1895.616	1895.616
3	1893.888	1893.888	1893.888	1893.888
4	1892.160	1892.160	1892.160	1892.160
5	1890.432	1890.432	1890.432	1890.432
6	1888.704	1888.704	1888.704	1888.704
7	1886.976	1886.976	1886.976	1886.976
8	1885.248	1885.248	1885.248	1885.248
9	1883.520	1883.520	1883.520	1883.520
10	**1881.792**	**1881.792**	**1881.792**	**1881.792**

Note:

    Channel No. 10: In the Test Mode on Base Unit and Handset.

14 BLOCK DIAGRAM (BASE UNIT)

KX-TG1283 BLOCK DIAGRAM (BASE UNIT)

15 CIRCUIT OPERATION (BASE UNIT)

15.1. Outline

Base Unit consists of the following ICs as shown in **BLOCK DIAGRAM (BASE UNIT)** (P.44).

- DECT BBIC (**B**ase **B**and IC): IC4
    - Handling all the audio, signal and data processing needed in a DECT base unit
    - Controlling the DECT specific physical layer and radio section (**B**urst **M**odule **C**ontroller section)
    - ADPCM codec filter for speech encoding and speech decoding (DSP section)
    - Echo-cancellation and Echo-suppression (DSP section)
    - Any tones (tone, sidetone, ringing tone, etc.) generation (DSP section)
    - DTMF receiver (DSP section)
    - Clock Generation for RF Module
    - ADC, DAC, timer, and power control circuitry
    - All interfaces (ex: RF module, EEPROM, LED, Analog Front End, etc.)
- RF Module: IC2
    - PLL Oscillator
    - Detector
    - Compress/Expander
    - First/Second Mixer
    - Amplifier for transmission and reception
- EEPROM: IC3
    - Temporary operating parameters (for RF, etc.)
- FLASH MEMORY: IC6
    - Voice Prompt (TAM) D/L (Down Load) Area
- FLASH MEMORY: IC8
    - Program D/L (Down Load) Area
- Additionally,
    - Power Supply Circuit (+4.0V, +3.0V, +2.5V, +1.8V output)
    - Crystal Circuit (10.368MHz)
    - Charge Circuit
    - Telephone Line Interface Circuit
    - SP Phone Circuit

15.2. Power Supply Circuit

The power is supplied to the DECT BBIC, RF Module, EEPROM and Charge Contact from AC Adaptor (+6V) as shown in Fig.101. The power supply is as follows;

- DECT BBIC (IC4):

  CN1 (+6V) → D1 → IC1 → Q2 → IC4 (3.0V)

  CN1 (+6V) → D1 → IC1 → Q3 → IC4 (1.8V)

- RF Module (IC2):

  CN1 (+6V) → D1 → IC11 → IC2 (2.5V)

- EEPROM (IC3):

  CN1 (+6V) → D1 → IC1 → Q2 → IC3 (3.0V)

- FLASH MEMORY (IC8):

  CN1 (+6V) → D1 → IC1 → Q2 → IC8 (3.0V)

- SP AMP (IC7):

  CN1 (+6V) → D1 → IC1 → IC7 (4.0V)

- TAM FLASH MEMORY (IC6):

  CN1 (+6V) → D1 → IC1 → Q2 → IC6 (3.0V)

- LOGIC IC (IC9, IC10):

  CN1 (+6V) → D1 → IC1 → Q2 → IC9, IC10 (3.0V)

- Charge Contact (TP15):

  CN1 (+6V) → D1 → R2, R4 → TP15

<Fig.101>
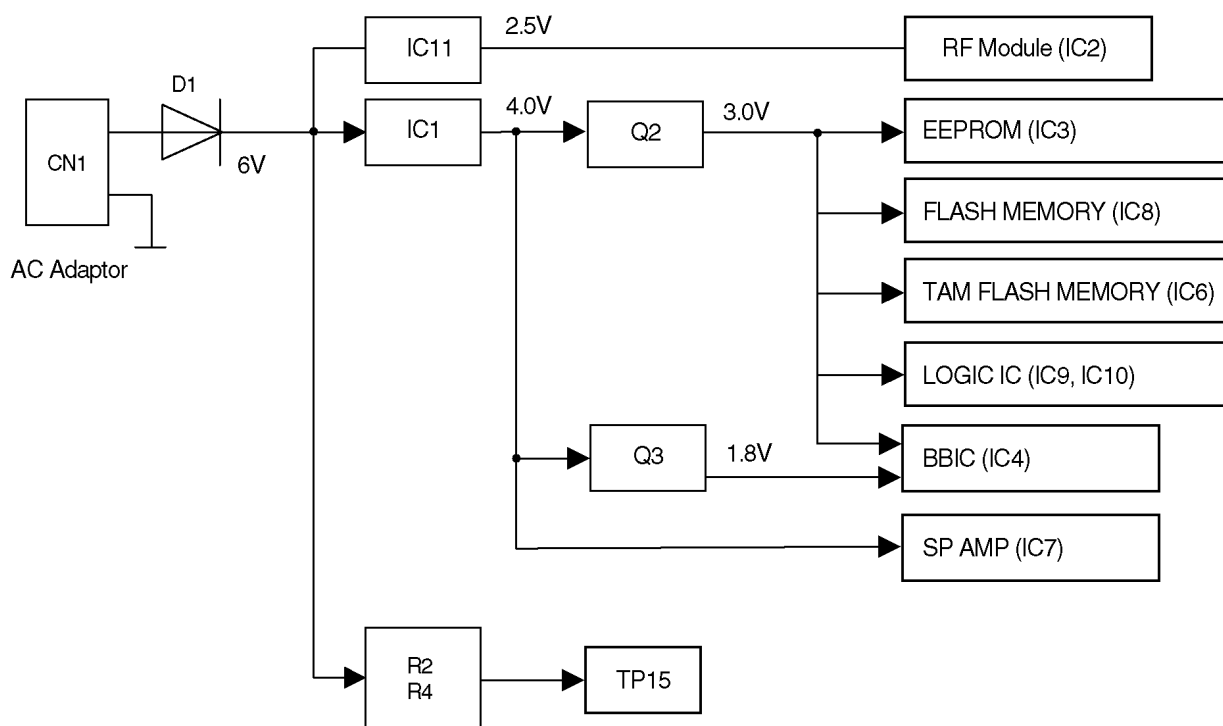
15.3. Telephone Line Interface

<Function>

- Bell signal detection
- Clip signal detection
- ON/OFF hook circuit
- Audio circuits
- DTMF tone signal circuits

Bell & Clip (: Calling Line Identification Presentation: Caller ID) signal detection:

In the standby mode, Q4 is open to cut the DC loop current and decrease the ring load.

When ring voltage appears at the L1T (A) and L1R (B) leads (when the telephone rings), the AC ring voltage is transferred as follows;

- A → C13 → R17 → R24 → IC4 Pin 107 (CID INp)
- B → C12 → R16 → R32 → IC4 Pin 112 (CID INn)

ON/OFF hook circuit:

In the standby mode, Q4 is open, and connected as to cut the DC loop current and to cut the voice signal. The unit is consequently in an **on-hook condition**.

When press SP Key onto the base unit or press the TALK Key onto the handset, Q5 turns on and then Q4 turns on, thus providing an **off-hook condition** (active DC current flow through the circuit) and the following signal flow is for the loop current.

- A → D3 → Q4 → Q8 → R45 → R46 → D3 → B [**OFF HOOK**]

15.4. Transmitter/Receiver

Base Unit and Handset mainly consist of RF Module and DECT BBIC.

Base Unit and Handset transmit/receive voice signal and data signal through the antenna on carrier frequency.

Signal Path:

*Refer to **SIGNAL ROUTE** (P.51).

15.4.1. Transmitter Block

The voice signal input from the TEL LINE interface goes to RF Module (IC2) through DECT BBIC (IC4) as shown in **BLOCK DIAGRAM (BASE UNIT)** (P.44)

The voice signal passes through the analog part of IC4 where it is amplified and converted to a digital audio stream signal. The burst switch controller processes this stream performing encryption and scrambling, adding the various other fields to produce the GAP (**G**eneric **A**ccess **P**rofile) standard DECT frame, assigning to a time slot and channel etc.

In IC2, the carrier frequency is changing, and frequency modulated RF signal is generated and amplified, and radiated from antenna. Handset detects the voice signal or data signal in the circuit same as the following explanation of Receiver Block.

15.4.2. Receiver Block

The signal of 19.2 MHz band (18.81792 MHz ~ 18.97344 MHz) which is input from antenna is input to IC2 as shown in **BLOCK DIAGRAM (BASE UNIT)** (P.44).

In IC2, the signal of 19.2 MHz band is downconverted to 864 kHz signal and demodulated, and goes to IC4 as GAP (**G**eneric **A**ccess **P**rofile) standard DECT frames. It passes through the decoding section burst switch controller where it separates out the frame information and performs de-encryption and de-scrambling as required. It then goes to the DSP section where it is turned back into analog audio. This is amplified by the analog front end, and goes to the TEL LINE Interface.

15.5. Pulse Dialling

During pulse dialing the hookswitch (Q4,Q5) is used to generate the pulses using the HOOK control signal, which is set high during pulses. To force the line impedance low during the "pause" intervals between dial pulses, the PULSE_DIAL signal turns on Q12.

16 BLOCK DIAGRAM (HANDSET)
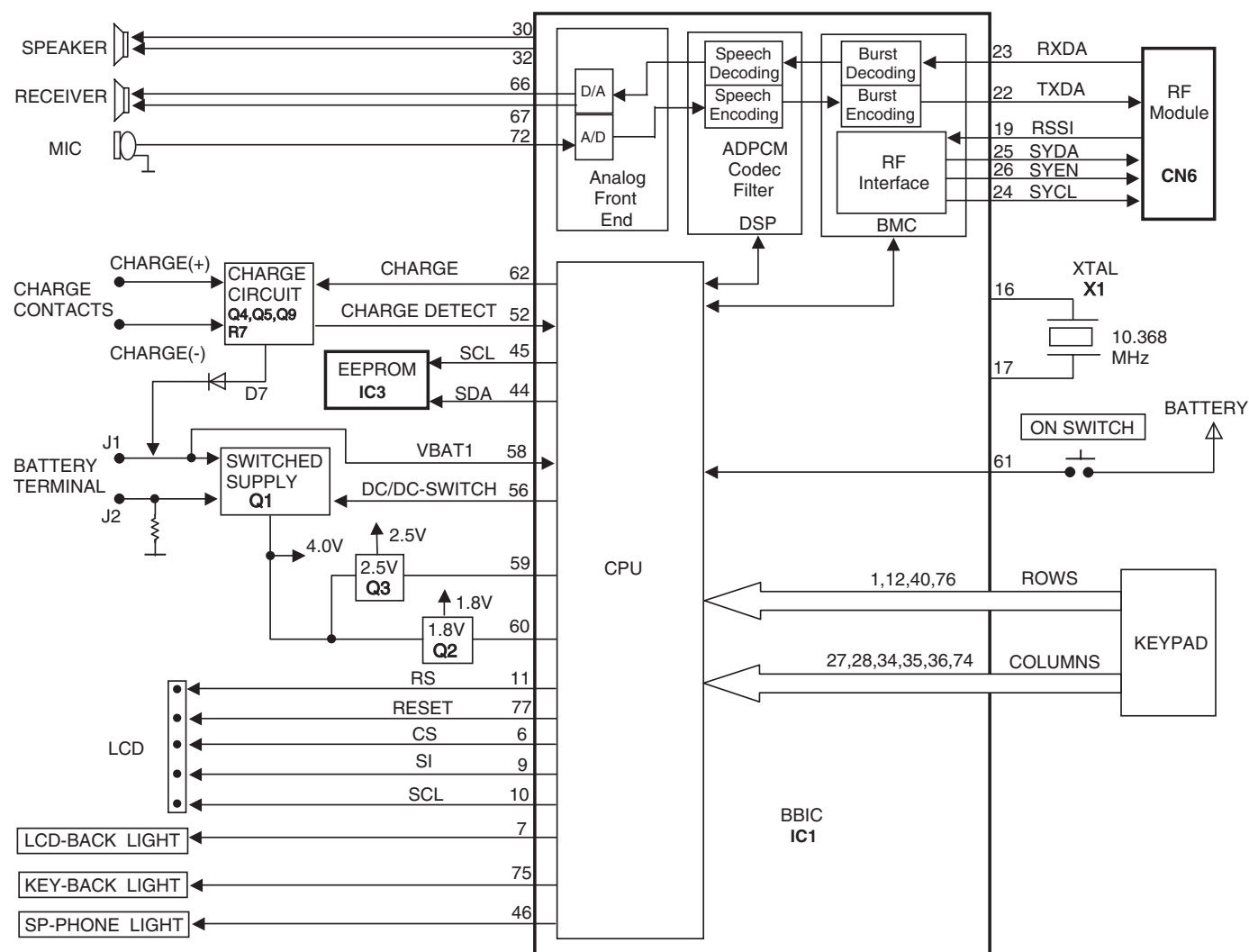
KX-TCA122/121 BLOCK DIAGRAM (HANDSET)

17 CIRCUIT OPERATION (HANDSET)

17.1. Outline

Handset consists of the following ICs as shown in **BLOCK DIAGRAM (HANDSET)** (P.48).

- DECT BBIC (**B**ase **B**and IC): IC1
    - All data signals (forming/analyzing ACK or CMD signal)
    - All interfaces (ex: Key, Detector Circuit, Charge, DC/DC Converter, EEPROM, LCD)
- RF Module: CN6
    - PLL Oscillator
    - Detector
    - Compress/Expander
    - Amplifier for transmission and reception
- EEPROM: IC3
    - Temporary operating parameters (for RF, etc.)

17.2. Power Supply Circuit/Reset Circuit

Circuit Operation:

When power on the Handset, the voltage is as follows;

BATTERY(2.2 V ~ 2.6 V: J1) $\rightarrow$ L1, D1 $\rightarrow$ Q2 (1.8 V), Q3 (2.5 V), Q1 (4.0 V)

The Reset signal generates IC1 (53 pin) and 1.8 V.

17.3. Charge Circuit

Circuit Operation:

When charging the handset on the Base Unit, the charge current is as follows;

DC+(5.5V ~ 6V) $\rightarrow$ D1 $\rightarrow$ R4, R5 $\rightarrow$ CHARGE+(Base) $\rightarrow$ CHARGE+(Handset) $\rightarrow$ L4 $\rightarrow$ Q4 $\rightarrow$ D7$\rightarrow$ F1 $\rightarrow$ BATTERY+ ...
Battery ... BATTERY- $\rightarrow$ R43 $\rightarrow$ GND $\rightarrow$ CHARGE-(Handset)$\rightarrow$ CHARGE-(Base) $\rightarrow$ GND $\rightarrow$ DC-(GND)

In this way, the BBIC on Handset detects the fact that the battery is charged.

The charge current is controlled by switching Q5 of Handset.

Refer to Fig.101 in **Power Supply Circuit** (P.46).

17.4. Battery Low/Power Down Detector

Circuit Operation:

"Battery Low" and "Power Down" are detected by BBIC which check the voltage from battery.

The detected voltage is as follows;

- Battery Low

    Battery voltage: V (Batt) $\leqq$ 2.25V ± 50mV

    The BBIC detects this level and "▭▮" starts flashing.

- Power Down

    Battery voltage: V (Batt) $\leqq$ 2.0V ± 50mV

    The BBIC detects this level and power down.

    Refer to **Check Point (Handset)** (P.35).

17.5. Speakerphone

The hands-free loudspeaker at SP+ and SP- works as a ringer/alarm as well.

Refer to **Troubleshooting for Speakerphone (Handset)** (P.38).

18 CIRCUIT OPERATION (CHARGER UNIT)

18.1. Power Supply Circuit

The power supply is as shown.

AC Adaptor

19 SIGNAL ROUTE

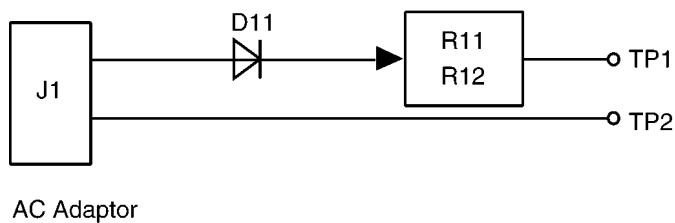| SIGNAL ROUTE	IN SIGNAL ROUTE OUT
DTMF TONE (to Tel Line)	(BASE UNIT) IC4 (100) - R63 - R39 - R49 - C46 - Q8 - Q4 - D3 ⊤ A 　　　　　　　　　　　　　　　　　　　　└ B
DTMF TONE (from Tel Line)	(BASE UNIT) A ⊤ D3 - Q4 - R42 - C24 - R60 - R62 - IC4 (102) B ┘
CDL TX (to Tel Line)	(HANDSET) MIC - R37 - C10 - R26 - IC1 (72) - IC1 (22) - CN6 (18) - CN6 (31) - ANTENNA to BASE UNIT (BASE UNIT) from HANDSET ⊤ ANT1 - L5 - L9 - C141 ⊤ DA1 - C144 - L4 - IC2 (31) - IC2 (16) - R132 　　　　　　　└ ANT2 - L8 - L10 - C140 ┘ - IC4 (26) - IC4 (100) - R63 - R39 - R49 - C46 - Q8 - Q4 - D3 ⊤ A 　　　　　　　　　　　　　　　　　　　　　　　　└ B
CDL RX (from Tel Line)	(BASE UNIT) A ⊤ D3 - Q4 - R42 - C24 - R60 - R62 - IC4 (102) - IC4 (28) - R127 - IC2 (18) - IC2 (31) - L4 B ┘ - C144 - DA1 ⊤ C141 - L9 - L5 - ANT1 to HANDSET 　　　　　└ C140 - L10 - L8 - ANT2 to HANDSET (HANDSET) from BASE UNIT - ANTENNA - CN6 (31) - CN6 (16) - IC1(23) ⊤ IC1(66) - REV_TEST1(+) 　　　　　　　　　　　　　　　　　　　　　　　└ IC1(67) - REV_TEST2(-)
Handset **SP-PHONE TX** (to Tel Line)	(HANDSET) MIC - R37 - C10 - R26 - IC1 (72) - IC1 (22) - CN6 (18) - CN6 (31) - ANTENNA to BASE UNIT (BASE UNIT) from HANDSET ⊤ ANT1 - L5 - L9 - C141 ⊤ DA1 - C144 - L4 - IC2 (31) - IC2 (16) - R132 - IC4 (26) 　　　　　　　└ ANT2 - L8 - L10 - C140 ┘ - IC4 (100) - R63 - R39 - R49 - C46 - Q8 - Q4 - D3 ⊤ A 　　　　　　　　　　　　　　　　　　　└ B
Handset **SP-PHONE RX** (from Tel Line)	(BASE UNIT) A ⊤ D3 - Q4 - R42 - C24 - R60 - R62 - IC4 (102) - IC4 (28) - R127 - IC2 (18) - IC2 (31) - L4 B ┘ - C144 - DA1 ⊤ C141 - L9 - L5 - ANT1 to HANDSET 　　　　　└ C140 - L10 - L 8 - ANT2 to HANDSET (HANDSET) from BASE UNIT - ANTENNA - CN6 (31) - CN6 (16) - IC1 (23) ⊤ IC1 (32) - SP(+) 　　　　　　　　　　　　　　　　　　　　　　└ IC1 (30) - SP(-)

SIGNAL ROUTE	SIGNAL ROUTE
	IN ━━━━▶ ━━━━▶ OUT

CALLER ID/BELL
(from Tel Line)

(BASE UNIT)
A - C13 - R17 - R24 - IC4 (107) ┐
B - C12 - R16 - R32 - IC4 (112) ┘ IC4 (113) ┬ C48 - R41 - IC4 (101) [Caller ID]
                                                             └ C32 - IC4 (98) [Bell]

Base SP-Phone TX
(to Tel Line)

(BASE UNIT)
MIC - R303 - R304 - R307 - C306 - R306 - IC4 (118) - IC4 (100) - R63 - R39 - R49
- C46 - Q8 - Q4 - D3 ┬ A
                             └ B

Base SP-Phone RX
(from Tel Line)

(BASE UNIT)
A ┬ D3 - Q4 - R42 - C24 - R60 - R62 - IC4 (102) - IC4 (110) - C320 - R314 - R312
B ┘
- IC7 (4) ┬ IC7 (8) - R375 - CN3 (SP-)
         └ IC7 (5) - CN4 (SP+)

Playing Back Greeting and Recorded Message
(to Speaker of Base)

(BASE UNIT)
IC6 (16) - IC4 (79) - IC4 (110) - C320 - R314 - R312 - IC7 (4) ┬ IC7 (8) - R375 - CN3 (SP-)
                                                                       └ IC7 (5) - CN4 (SP+)

Playing Back Greeting and Recorded Message
(to Tel Line)

(BASE UNIT)
IC6 (16) - IC4 (79) - IC4 (100) - R63 - R39 - R49 - C46 - Q8 - Q4 - D3 ┬ A
                                                                                      └ B

Recording ICM
(from Tel Line)

(BASE UNIT)
A ┬ D3 - Q4 - R42 - C24 - R60 - R62 - IC4 (102) - IC4 (94) - IC6 (15)
B ┘

Recording Greeting Message
(from MIC of Base)

(BASE UNIT)
MIC - R303 - R304 - R307 - C306 - R306 - IC4 (118) - IC4 (94) - IC6 (15)

20 CPU DATA (BASE UNIT)

20.1. IC4 (BBIC)

Pin No	Description	I/O	Connection	at Normal mode	at Reset mode
1	VDDIO	-	VDDID	-	-
2	VSS	-	VSS	-	-
3	AD8	D.O	AD8	O	Hi
4	AD9	D.O	AD9	O	Hi
5	AD10	D.O	AD10	O	Hi
6	AD11	D.O	AD11	O	Hi
7	AD12	D.O	AD12	O	Hi
8	AD13	D.O	AD13	O	Hi
9	AD14	D.O	AD14	O	Hi
10	RESET	D.O	RESET	O	Hi-Z
11	SP_AMP_CS	D.O	SP_AMP_CS	O	Hi-Z
12	CHARGE DET	D.I	CHARGE DETECT	I	Hi-Z
13	INUSE_LED	D.O	INUSE_LED	O	Hi-Z
14	SP_LED	D.O	SP_LED	O	Hi-Z
15	KEY_OUT6	D.O	key_strobe	O	Hi-Z
16	VDD	-	VDD	-	-
17	VSS	-	VSS	-	-
18	RFCLK	D.O	RFCLK	O	Low
19	VDDRF	-	VDDRF	-	-
20	VSSRF	-	VSSRF	-	-
21	Xtal1	A.I	Xtal1	I	I
22	CAP	A.I	CAP	I	I
23	AVS	-	AVS	-	-
24	AVD	-	AVD	-	-
25	RSSI	A.I	RSSI	I	I
26	RXDA	A.I	RXDA	I	I
27	CMPREF	A.I	CMPREF	I	I
28	TXDA	A.O	TXDA	O	Hi-Z
29	AD15	D.O	AD15	O	Hi
30	AD16	D.O	AD16	O	Hi
31	AD17	D.O	AD17	O	Hi
32	AD18	D.O	AD18	O	Hi
33	AD19	D.O	NC	O	Hi
34	AD20	D.O	NC	O	Hi
35	AD21	D.O	NC	O	Hi
36	AD22	D.O	NC	O	Hi
37	AD23	D.O	NC	O	Hi
38	LE	D.O	LE	O	Low
39	SO	D.O	SO	O	Low
40	SK	D.O	SK	O	Hi-Z
41	ADC2	A.I	ADC2	I	I
42	KEY_OUT5	D.O	key_strobe	O	Hi-Z
43	RDN	D.O	RDN	O	Hi
44	WRN	D.O	WRN	O	Hi
45	MI/READY	D.O	NC	O	I
46	SCLK	D.O	NC	O	Hi
47	UTX	D.O	UTX	O	I
48	URX	D.I	URX	I	I
49	JTIO	D.I/O	JTIO	I/O	I
50	KEY_OUT4	D.I	key_strobe	I	I
51	KEY_OUT3	D.I	key_strobe	I	I
52	KEY_OUT2	D.I	key_strobe	I	I
53	KEY_OUT1	D.I	key_strobe	I	I
54	KEY_OUT0	D.I	key_strobe	I	I
55	VDDIO	-	VDDIO	-	-
56	VSS	-	VSS	-	-
57	RDY/BUSY	D.O	RDY/BUSY	O	I
58	KEY_IN3	D.O	key_input with internal pull up	O	I
59	ACS1	D.O	ACS1	O	I
60	ACS0	D.O	ACS0	O	Hi
61	KEY_IN2	D.O	key_input with internal pull up	O	I

Pin No	Description	I/O	Connection	at Normal mode	at Reset mode
62	KEY_IN1	D.I	key_input with internal pull up	I	I
63	KEY_IN0	D.I	key_input with internal pull up	I	Hi
64	NC	D.O	NC	O	Hi
65	NC	D.O	NC	O	Hi
66	SCL	D.O	SCL	O	Hi-Z
67	SDA	D.I/O	SDA	I/O	I
68	DAB0	D.I/O	DAB0	I/O	I
69	DAB8	D.I/O	DAB8	I/O	I
70	DAB1	D.I/O	DAB1	I/O	I
71	DAB9	D.I/O	DAB9	I/O	I
72	DAB2	D.I/O	DAB2	I/O	I
73	DAB10	D.I/O	DAB10	I/O	I
74	DAB3	D.I/O	DAB3	I/O	I
75	DAB11	D.I/O	DAB11	I/O	I
76	VSS	-	VSS	-	-
77	VDD	-	VDD	-	-
78	VDDIO	-	VDDIO	-	-
79	SO	D.O	SO	O	I
80	SCK/CLK	D.O	SCK/CLK	O	I
81	ADC0	A.I	ADC0	I	I
82	ADC1	A.I	ADC1	I	I
83	CS	D.O	CS	O	I
84	HOOK	D.O	HOOK	O	I
85	DAB4	D.I/O	DAB4	I/O	I
86	DAB12	D.I/O	DAB12	I/O	I
87	DAB5	D.I/O	DAB5	I/O	I
88	DAB13	D.I/O	DAB13	I/O	I
89	DAB6	D.I/O	DAB6	I/O	I
90	DAB14	D.I/O	DAB14	I/O	I
91	DAB7	D.I/O	DAB7	I/O	I
92	DAB15	D.I/O	DAB15	I/O	I
93	TM	D.I	TM	I	Low
94	SI	D.O	SI	O	Hi-Z
95	PON	A.I	PON	I	I
96	PULSE	D.I/O	nHOOK	I/O	I
97	RLY	D.O	RLY	O	Low
98	RINGING	A.I	RINGING	I	I
99	LINEREF	A.O	LINEREF	O	-
100	LINEOUT	A.O	LINEOUT	O	-
101	LINE_IN+	A.I	LINE_IN+	I	-
102	LINE_IN-	A.I	LINE_IN-	I	-
103	LDO1_Senes	A.I	LDO1_Senes	I	I
104	LDO1_CTRL	A.O	LDO1_CTRL	O	Hi
105	LDO2_CTRL	A.O	LDO2_CTRL	O	Low
106	VBAT2	A.I	VBAT2	I	I
107	CIDIN+	A.I	CIDIN+	I	I
108	AVS2	-	AVS2	-	-
109	AVD2	-	AVD2	-	-
110	LSR+/REF	A.O	LSR+/REF	O	O
111	LSR-/REF	A.O	NC	O	O
112	CIDIN-	A.I	CIDIN-	I	O
113	CIDOUT	A.O	CIDOUT	O	O
114	MIC-	A.I	NC	I	I
115	VREF-	A.O	VREF-	O	O
116	VBUF	A.O	VBUF	O	O
117	AGND	A.O	AGND	O	O
118	MIC+	A.I	MIC+	I	I
119	VREF+	A.O	NC	O	I
120	RSTn	A.I	RSTn	I	I
121	EXT_MEMORY	D.I	EXT_MEMORY	I	I
122	AD1	D.O	AD1	O	Hi
123	AD2	D.O	AD2	O	Hi
124	AD3	D.O	AD3	O	Hi
125	AD4	D.O	AD4	O	Hi
126	AD5	D.O	AD5	O	Hi

Pin No	Description	I/O	Connection	at Normal mode	at Reset mode
127	AD6	D.O	AD6	O	Hi
128	AD7	D.O	AD7	O	Hi

21 CPU DATA (HANDSET)

21.1. IC1 (BBIC)

Pin No	Description	I/O	Connection	at Normal mode	at Reset mode
1	INTIn/P1[1]	D,I	ROW1	I	I-PU
2	VDDIO	-	-	-	-
3	VDD	-	-	-	-
4	VSS	-	-	-	-
5	LED1/PWM0/P2[0]	D,O	PWM0	O-L	I-PU
6	LED2/PWM1/P2[1]	D,O	LCD_CSB	O-H	I-PU
7	LED3	A,I	LED_BKL	I	I
8	LED_BIAS/P3[6]/PD	A.O	LED_BIAS	O	I-PD
9	SDA1/P2[5]	D,I/O	LCD_SI	I/O	I
10	SCL1/P2[4]	D,O	LCD_SCL	O	I
11	INT5n/VDDE/P1[5]	D,O	LCD_RS	O-L	I-PU
12	INT2n/P1[2]	D,I	ROW2	I	I-PU
13	AVD	-	-	-	-
14	AVS	-	-	-	-
15	CAP	A,I	CAP	I	I
16	Xta11	A,I	Xtal1	I	-
17	VSSRF	-	-	-	-
18	RFCLKp	A,O	NC	O	Hi-Z
19	RSSI/RFCLKm	A,I	RSSI	I	Hi-Z
20	VDDRF	-	-	-	-
21	RFCLKd	D,O	RFCLKd	O	O-L
22	TDD	A,O	TDO	O	-
23	RDI	D,I	RDI	I	I
24	SK	D,I/O	SK	-	O-L
25	PD1/SIO	D,I/O	SIO	-	I-PD
26	LE	D,I/O	LE	O-L	O-H
27	P3[1]/PD1	D,I/O	COL1	O-L	I-PD
28	P3[2]/PD2	D,I/O	COL2	O-L	I-PD
29	VSSPA	-	-	-	-
30	PAOUTm	D,O	PAOUTm	O	O
31	VDDPA	-	-	-	-
32	PAOUTp	D,O	PAOUTp	O	O
33	VSSPA	-	-	-	-
34	P3[3]/PD3	D,I/O	COL3	O-L	I-PD
35	P3[4]/PD4	D,I/O	COL4	O-L	I-PD
36	TDOD/P3[5]/PD5	D,I/O	COL5	O-L	I-PD
37	VSS	-	-	-	-
38	VDDIO	-	-	-	-
39	VDD	-	-	-	-
40	PCM_FSC/INT0n/P1[0]	D,I	ROW0	I	I-PU
41	P0[0]/UTX	D,I/O	UTX	O	I-PU
42	P0[1]/URX	D,I/O	URX	O	I-PU
43	P0[2]/JTIO	D,I/O	JTIO	O	I-PU
44	P0[3]/SDA2	D,I/O	P0[3]	O	I-PU
45	P0[4]/SCL2	D,I/O	P0[4]	O	I-PU
46	P0[5]/SPICLK/PCM	D,I/O	SP_LED	O	I-PU
47	P0[6]/SPIDO/PCM_D	D,O	CD_AMP	O	I-PU
48	P0[7]/SPIDI/PCM_D	D,I/O	RESET	O	I-PU
49	VSS	-	-	-	-
50	VDD	-	-	-	-
51	P2[3]/ADC1	O	EEP_WP	O	O
52	P1[7]/CHARGE/INT7	I	CHARGE	I	I-PD
53	RSTn	I	RSTn	I	I-PU
54	DC_stab	O	DC_stab	O	O
55	DC_1	I	DC_I	I	I
56	DC_CTRL	O	DC_CTRL	O	O-PD
57	DC_Sence	I	DC_Sence	I	I
58	VBAT1	A,I	VBAT1	I	I
59	LDO1_CTRL	D,O	LDO1_CTRL	O	O-H
60	LDO2_CTRL	D,O	LDO2_CTRL	O	O-H
61	P1[6]/PON/INT6	I	power_det	I	I-PD
62	P2[6]/stop_charge	A,O	stop_charge	O	O-O

Pin No	Description	I/O	Connection	at Normal mode	at Reset mode
63	LDO1_Sense	D,I	LDO1_Sense	I	O-L
64	AVS2	-	-	-	-
65	AVD2	-	-	-	-
66	LSRn/REF	A,O	REF	O	O
67	LSRp/REF	A,O	LSRp	O	O
68	MICn	A,I	RINGING	I	I
69	VREFm	-	-	-	-
70	VBUF	O	VBUF	O	O
71	AGND	A,O	AGND	O	O
72	MICp	A,I	MICp	I	I
73	VREFp	A,I	CIDINp	I	I
74	P3[0]	D,I/O	COL0	O-L	I-PD
75	P1[4]/INT4n	D,O	Key_LED	O	O-L
76	P1[3]/INT3n	D,I	ROW3	I	I
77	P2[2]/CLK100	D,O	LCD_RESET	O	I-PD
78	AVS_sence	I	AVS_sence	I	I
79	ADC2	A,I	ADC2	I	I
80	ADC0	A,I	NC	I	I

22 ENGINEERING MODE

22.1. Base Unit

Important:

Make sure the address on LCD is correct when entering new data. Otherwise, you may ruin the unit.
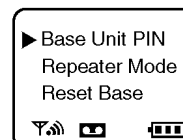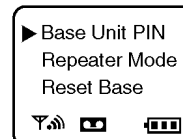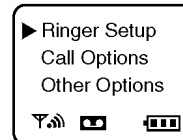

Receiver
Display
【▤/OK】 (Menu/OK)
【▢】 (Phonebook)
【➟】 (Talk)
Navigator key
【◁】 (Speakerphone)
【◐】 (Redial/Pause)
【✂①】 (Off/Power)
【C/✕】 (Clear/Mute)
Dial keypad
【INT】 (Intercom)
【R】 (Flash)
Microphone

Model shown is KX-TCA122.

H/S key operation

H/S LCD
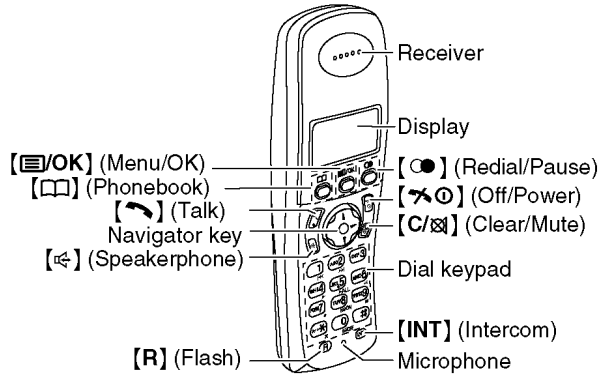
1). Register a Handset to a Base Unit.

2). Press "【▤/OK】" (Menu/OK) key, then
select "Base Unit Setup" by navigator key.

```
Handset Setup
▶Base Unit Setup

 ⍦    ▭    ◖▮▮▮
```

3). Press "【▤/OK】" (Menu/OK) key.

```
Enter Base PIN

:----

 ⍦⍲   ▭    ◖▮▮▮
```

4). Enter "0", "0", "0", "0".
Note: This 4 digits are default setting.

```
▶Ringer Setup
 Call Options
 Other Options
 ⍦⍲   ▭    ◖▮▮▮
```

5). Select "Other Options".

```
 Ringer Setup
 Call Options
▶Other Options
 ⍦⍲   ▭    ◖▮▮▮
```

6). Press "【▤/OK】" (Menu/OK).

```
▶Base Unit PIN
 Repeater Mode
 Reset Base
 ⍦⍲   ▭    ◖▮▮▮
```

7). Select "Base Unit PIN".

```
▶Base Unit PIN
 Repeater Mode
 Reset Base
 ⍦⍲   ▭    ◖▮▮▮
```

8). Press "【▤/OK】" (Menu/OK).

```
Enter New PIN

:----

 ⍦⍲   ▭    ◖▮▮▮
```

9). Enter "7", "2", "6", "2".

```
Enter New PIN
: 7262
```

10). Enter "7", "6", "6", "4".
   Note: 7262 7664 = PANA SONI
   (see alphabets printed on dial keys)

```
Enter New PIN
: 7664
```

11). Press "[≡/OK]" (Menu/OK).

```
Engineering Mode
▶Read EEPROM
 Write EEPROM
```

12). Select "Write EEPROM".

```
Engineering Mode
 Read EEPROM
▶Write EEPROM
```

13). Press "[≡/OK]" (Menu/OK).

```
Set Address:

---- --
```

14). Enter "●", "●", "●", "●" (Address). *

```
Set Address:

●●●●|**|  ◀— Default Data
```

15). Enter "*", "*" (New Data).

```
Set Address:

●●●●|**|  ◀— New Data
```

16). Press "[≡/OK]" (Menu/OK).
   A long confirmation beep will be heard.

```
Set Address:

---- --
```
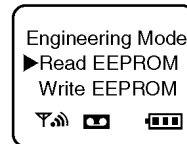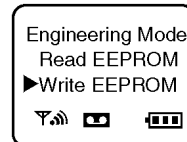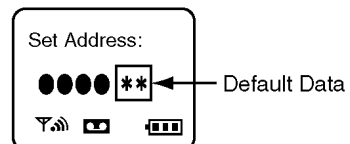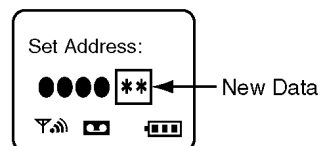
17). Press "✕⏻" (off) to return to standby mode.
   After that, turn the base unit power off and then power on.

Note:

*: When you enter the address, please refer to the table below.

Desired Number (hex)	Input Keys	Desired Number (hex)	Input Keys
0	0	A	[R] + 0
1	1	B	[R] + 1
.	.	C	[R] + 2
.	.	D	[R] + 3
.	.	E	[R] + 4
9	9	F	[R] + 5

ex.)

Items (*2)	Address	Default Data	New Data		Remarks
C-ID (FSK) sensitivity	04 3D	00	01 (6dB up)	02 (12dB up)	When hex changes from "00" to "01" or "02", gain increases by 6dB or 12dB.
C-ID (DTMF) sensitivity	04 4B	50	60 (6dB up)	70 (12dB up)	When hex changes from "50" to "60" or "70", gain increases by 6dB or 12dB.
Frequency	00 01	75	-	-	Use these items in a **READ-ONLY** mode to confirm the contents. Careless rewriting may cause serious damage to the computer system.
ID	00 10~00 14	Given value	-	-	
Bell length	01 F6	64 (10sec) (*1)	1E (3sec)	14 (2sec)	This is time until bell stops ringing. (Unit: 100ms)
PULSE Dial speed (10PPS -> 20PPS)	03 48	28 (40msec) (*1)	14 (20msec)	-	This is pulse make time. (Unit:1ms)
	03 49	3C (60msec) (*1)	1E (30msec)	-	This is pulse break time. (Unit:1ms)
	01 E4	57 (870msec) (*1)	2C (440msec)	-	This is inter-digit time in pulse mode. (Unit:10ms)

(*1)

Bell length	64(hex) = 100(dec) → 100 × 100msec = 10000msec (10sec)
PULSE Dial speed (10PPS -> 20PPS)	28(hex) = 40(dec) → 40 × 1msec = 40msec
	3C(hex) = 60(dec) → 60 × 1msec = 60msec
	57(hex) = 87(dec) → 87 × 10msec = 870msec

(*2)

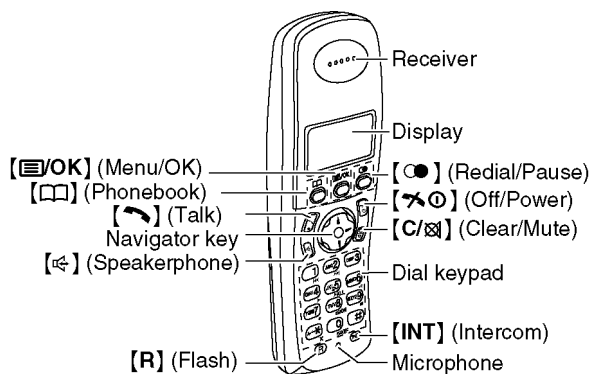| Items	Description
C-ID (FSK) sensitivity	FSKGain_shiftgain
C-ID (DTMF) sensitivity	Foutgains:HPFilter Foutgains
Frequency	Setting value of FREQ_TRIM_REG
ID	ID
Bell length	Time until it stops bell.
PULSE Dial speed (10PPS -> 20PPS)	Pulse MakeTime and BreakTime. bMakeTime:Pulse MakeTime Unit: 1ms bBreakTime:Pulse Break Time Unit: 1ms
	Inter-digit time in Pulse mode. Unit:10ms

22.2. Handset

Important:

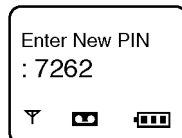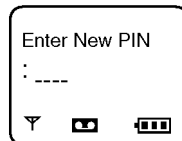Make sure the address on LCD is correct when entering new data. Otherwise, you may ruin the unit.

[▤/OK] (Menu/OK) —
[▥] (Phonebook) —
[➘] (Talk)
Navigator key —
[◁] (Speakerphone) —

[R] (Flash) —

Receiver
Display
[⊙●] (Redial/Pause)
[☏⊙] (Off/Power)
[C/⊠] (Clear/Mute)
Dial keypad
[INT] (Intercom)
Microphone

Model shown is KX-TCA122.

H/S key operation	**H/S LCD**
1). Press "**[▤/OK]**" (Menu/OK) key, then select "Handset Setup" by navigator key.	►Handset Setup Base Unit Setup

2). Press "**[▤/OK]**" (Menu/OK).	►Time Settings
	  Ringer Setup
	  Display Setup

3). Select "Other Options".	►Other Options

4). Press "**[▤/OK]**" (Menu/OK).	►Handset PIN
	  Keytones
	  Reset Handset

5). Select "Handset PIN".	►Handset PIN
	  Keytones
	  Reset Handset

6). Press "**[▤/OK]**" (Menu/OK).	Enter Old PIN : ____
7). Enter "0", "0", "0", "0". **Note:** This 4 digits are default setting.	Enter New PIN : ____
8). Enter "7", "2", "6", "2".	Enter New PIN : 7262

9). Enter "7", "6", "6", "4".
   Note: 7262 7664 = PANA SONI
   (see alphabets printed on dial keys)

Enter New PIN
: 7664

10). Press "**[▤/OK]**" (Menu/OK).

Engineering Mode
▶Read EEPROM
 Write EEPROM

11). Select "Write EEPROM".

Engineering Mode
 Read EEPROM
▶Write EEPROM

12). Press "**[▤/OK]**" (Menu/OK).

Set Address:
  ---- --

13). Enter "●", "●", "●", "●" (Address). *

Set Address:
●●●● ** ◄── Default Data

14). Enter "＊", "＊" (New Data).

Set Address:
●●●● ** ◄── New Data

15). Press "**[▤/OK]**" (Menu/OK).
    A long confirmation beep will be heard.

Set Address:
  ---- --
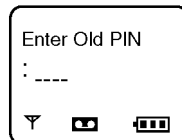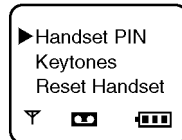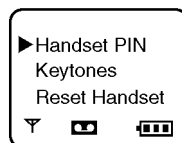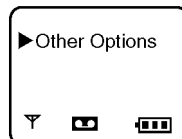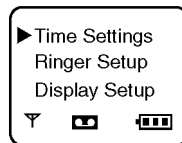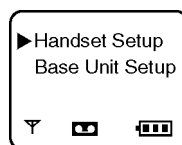
16). Press "✆☏" (off) to return to standby mode.
    After that, turn the handset power off and then power on.
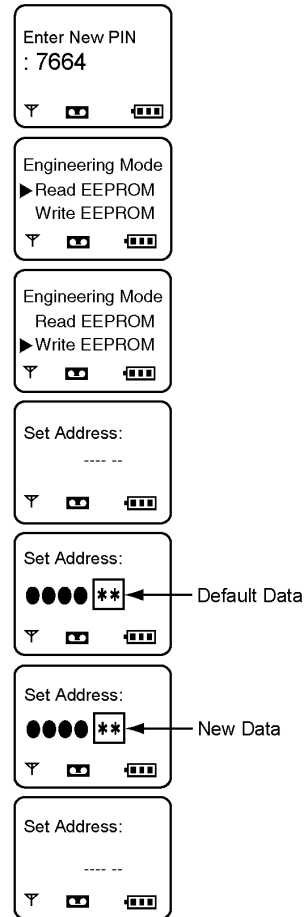
Note:

*: When you enter the address, please refer to the table in **Note:** (P.59) of **ENGINEERING MODE**.

ex.)

Items (*4)	Address	Default Data	New Data	Possible Adjusted Value MAX (hex)	Possible Adjusted Value MIN (hex)	Remarks
Sending level	00 06	Adjusted value	Given value	6F	00	(*1)
Receiving level	00 07	Adjusted value	Given value	00	3F	(*2)
Battery Low	00 04	25	-	-	-	(*3)
Frequency	00 01	75	-	-	-	
ID	00 10~00 14	Given value	-	-	-	

(*1) When adding "01" (hex) to default value, sending level increases by 0.25dB.

ex.)

Item	Default Data	New Data	
	3A	3E	36
Sending level	-8.0dBm	-7.0dBm	-9.0dBm

(*2) When reducing "01" (hex) from default value, receiving level increases by 0.25dB.

ex.)

Item	Default Data	New Data	
	14	18	10
Receiving level	-21dBm	-22dBm	-20dBm

(*3) Use these items in a READ-ONLY mode to confirm the contents. Careless rewriting may cause serious damage to the handset.

(*4)

Items	Description
Sending level	Analog Front End MIC Setting for Handset Mode
Receiving level	Analog Front End LSR Setting for Handset Mode
Battery Low	ADC value for battery low detection
Frequency	Setting value of FREQ_TRIM_REG
ID	International Portable Part Equipment Identities

23 HOW TO REPLACE THE FLAT PACKAGE IC

Even if you do not have the special tools (for example, a spot heater) to remove the Flat IC, with some solder (large amount),
a soldering iron and a cutter knife, you can easily remove the ICs that have more than 100 pins.

23.1.   PREPARATION

● PbF (: Pb free) Solder

● Soldering Iron

Tip Temperature of 700°F ± 20°F (370°C ± 10°C)

Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with
less experience could overheat and damage the PCB foil.

● Flux

Recommended Flux: Specific Gravity → 0.82.

Type → RMA (lower residue, non-cleaning type)

Note: See **ABOUT LEAD FREE SOLDER (PbF: Pb free)** (P.4).

23.2.   FLAT PACKAGE IC REMOVAL PROCEDURE

1. Put plenty of solder on the IC pins so that the pins can be completely covered.
    Note:

      If the IC pins are not soldered enough, you may give pressure to the P.C. board when cutting the pins with a cutter.
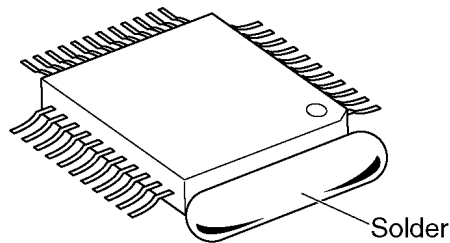
2. Make a few cuts into the joint (between the IC and its pins) first and then cut off the pins thoroughly.
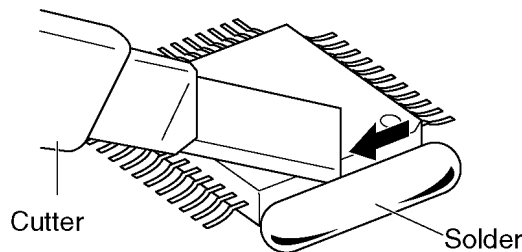
3. While the solder melts, remove it together with the IC pins.
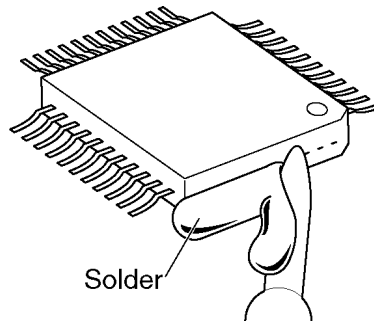
When you attach a new IC to the board, remove all solder left on the land with some tools like a soldering wire. If some solder is
left at the joint on the board, the new IC will not be attached properly.

23.3. FLAT PACKAGE IC INSTALLATION PROCEDURE

1. Temporarily fix the FLAT PACKAGE IC, soldering the two marked pins.

● – – – – – – –Temporary soldering point.
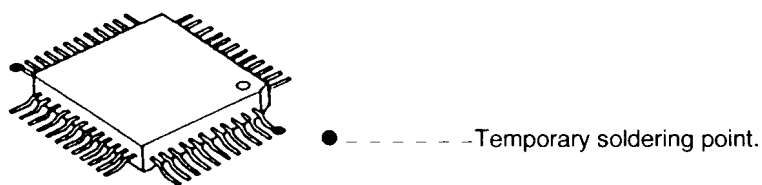
*Check the accuracy of the IC setting with the corresponding soldering foil.

2. Apply flux to all pins of the FLAT PACKAGE IC.

– – – – – – Flux
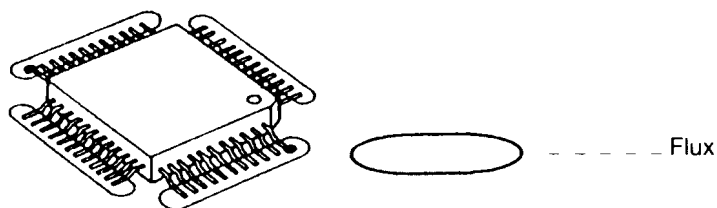
3. Solder the pins, sliding the soldering iron in the direction of the arrow.

Soldering Iron

Specified Solder
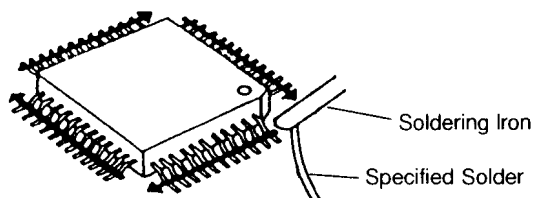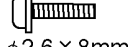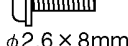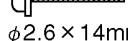
23.4. BRIDGE MODIFICATION PROCEDURE

1. Lightly resolder the bridged portion.
2. Remove the remaining solder along the pins using a soldering iron as shown in the figure below.

Bridge

Soldering Iron
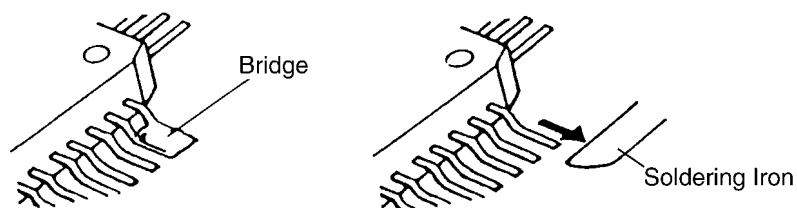
24 CABINET AND ELECTRICAL PARTS (BASE UNIT)
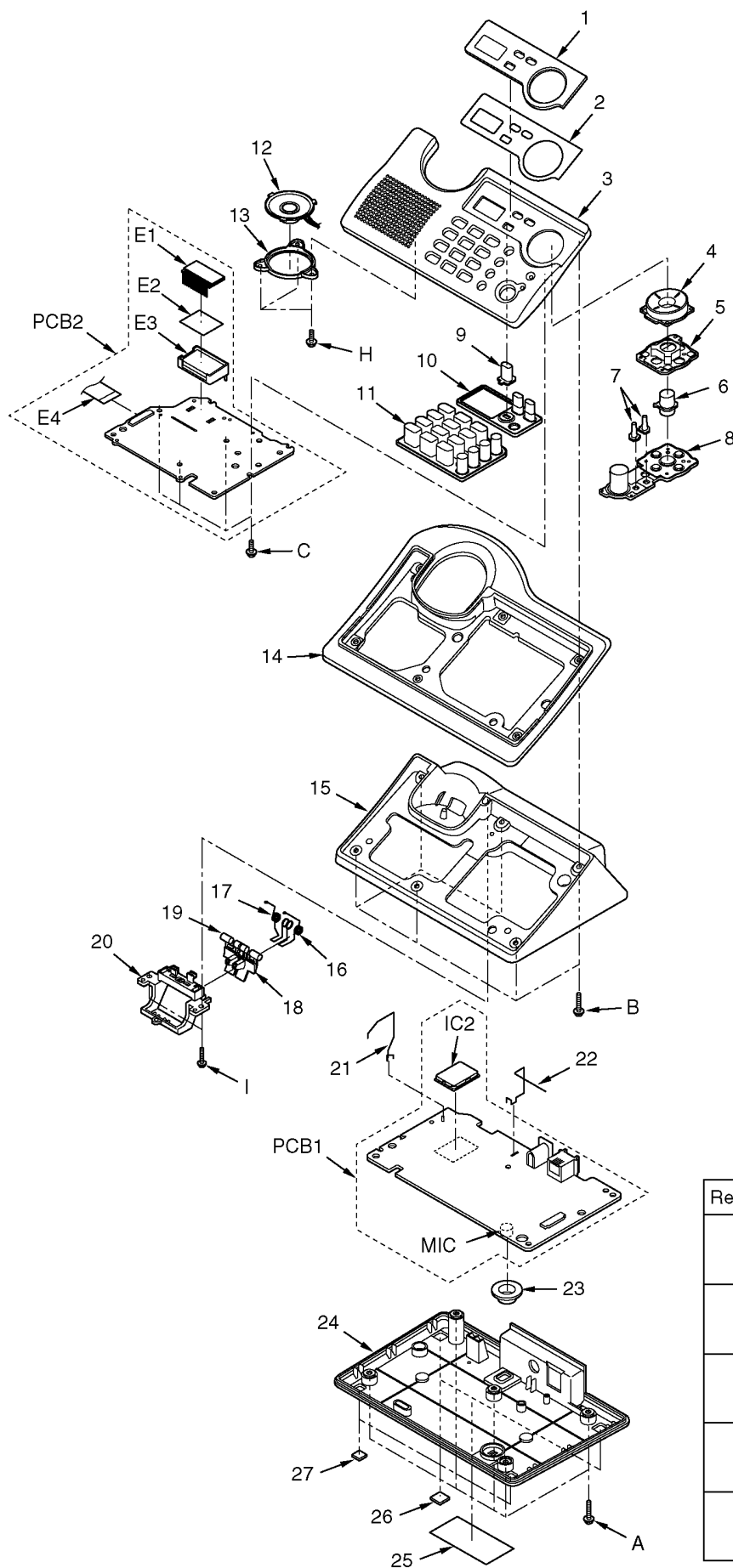
Ref.No.	Part No.	Figure
A	XTW26+14PFJ7	φ2.6 × 14mm
B	XTW26+14PFJ7	φ2.6 × 14mm
C	XTW26+8PFJ7	φ2.6 × 8mm
H	XTW26+8PFJ7	φ2.6 × 8mm
I	XTW26+14PFJ7	φ2.6 × 14mm

25 CABINET AND ELECTRICAL PARTS (HANDSET)
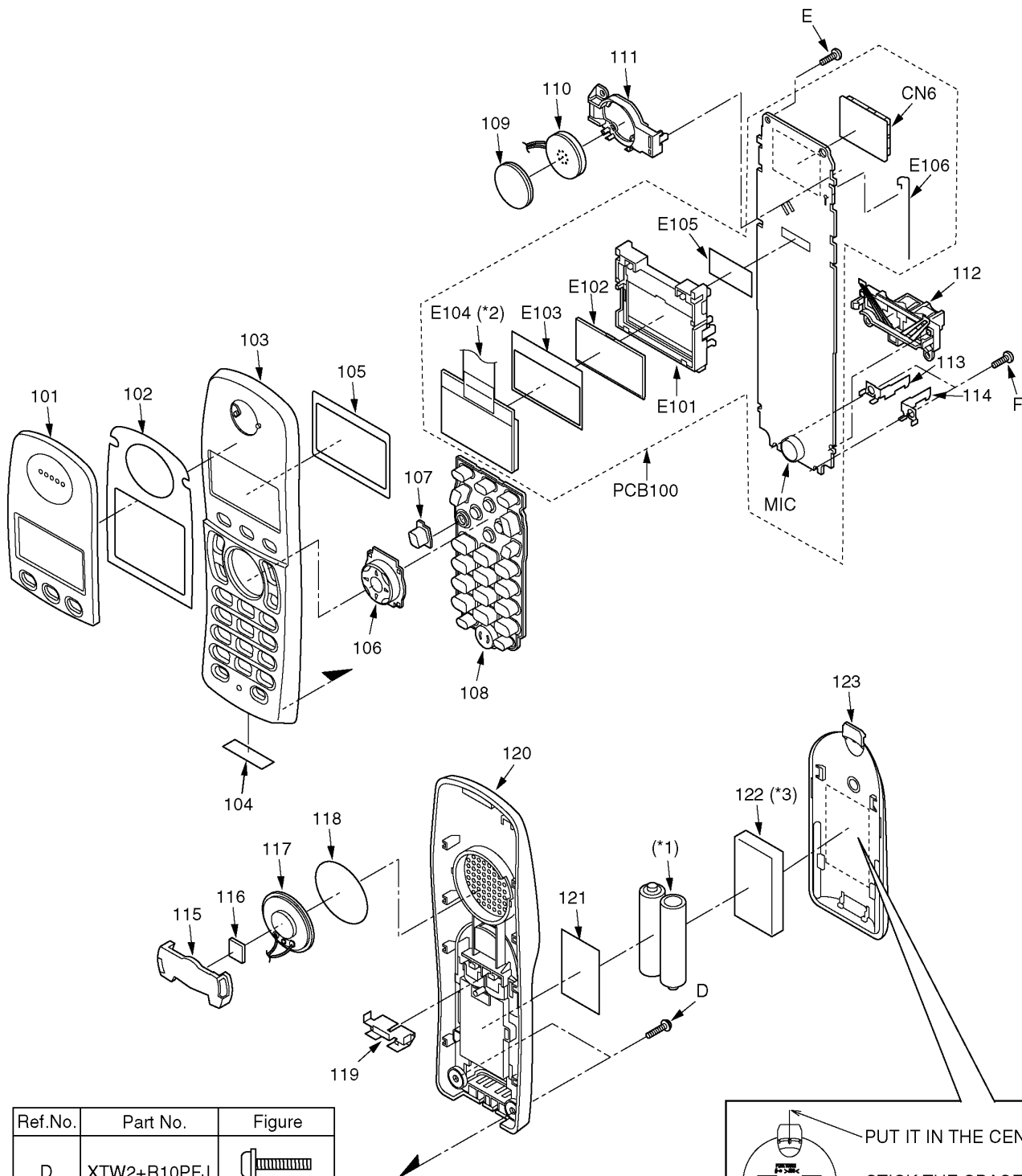
Ref.No.	Part No.	Figure
D	XTW2+R10PFJ	φ2 × 10mm
E	XTW2+R10PFJ	φ2 × 10mm
F	XTW2+R10PFJ	φ2 × 10mm

PUT IT IN THE CENTER.

STICK THE SPACER ALONG BY UNDER LINE OF THE RIB.

BATTERY COVER

SPACER (No.122)

Note:

(*1) The rechargeable Ni-MH battery HHR-4EPT is available through sales route of Panasonic.

(*2) This cable is fixed by welding. Refer to **HOW TO REPLACE THE HANDSET LCD** (P.17).

(*3) Attach the spacer (No. 122) to the exact location described above.

26 CABINET AND ELECTRICAL PARTS (CHARGER UNIT)

Ref.No.	Part No.	Figure
G	PQHV2610PJ65	φ2.6 × 10mm
J	PQHV2610PJ65	φ2.6 × 10mm
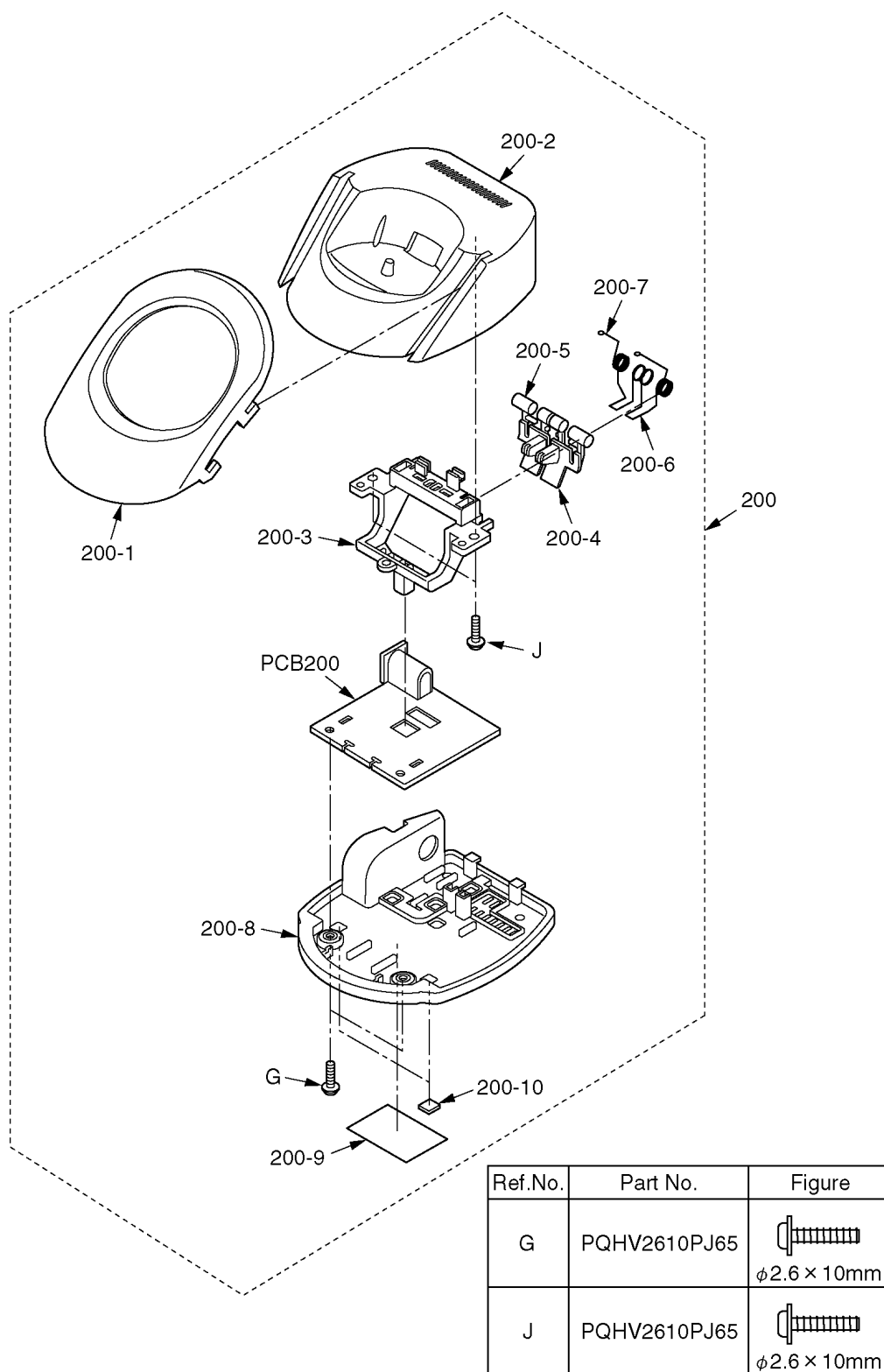
27 ACCESSORIES AND PACKING MATERIALS

27.1. KX-TG1283JXS/JXT
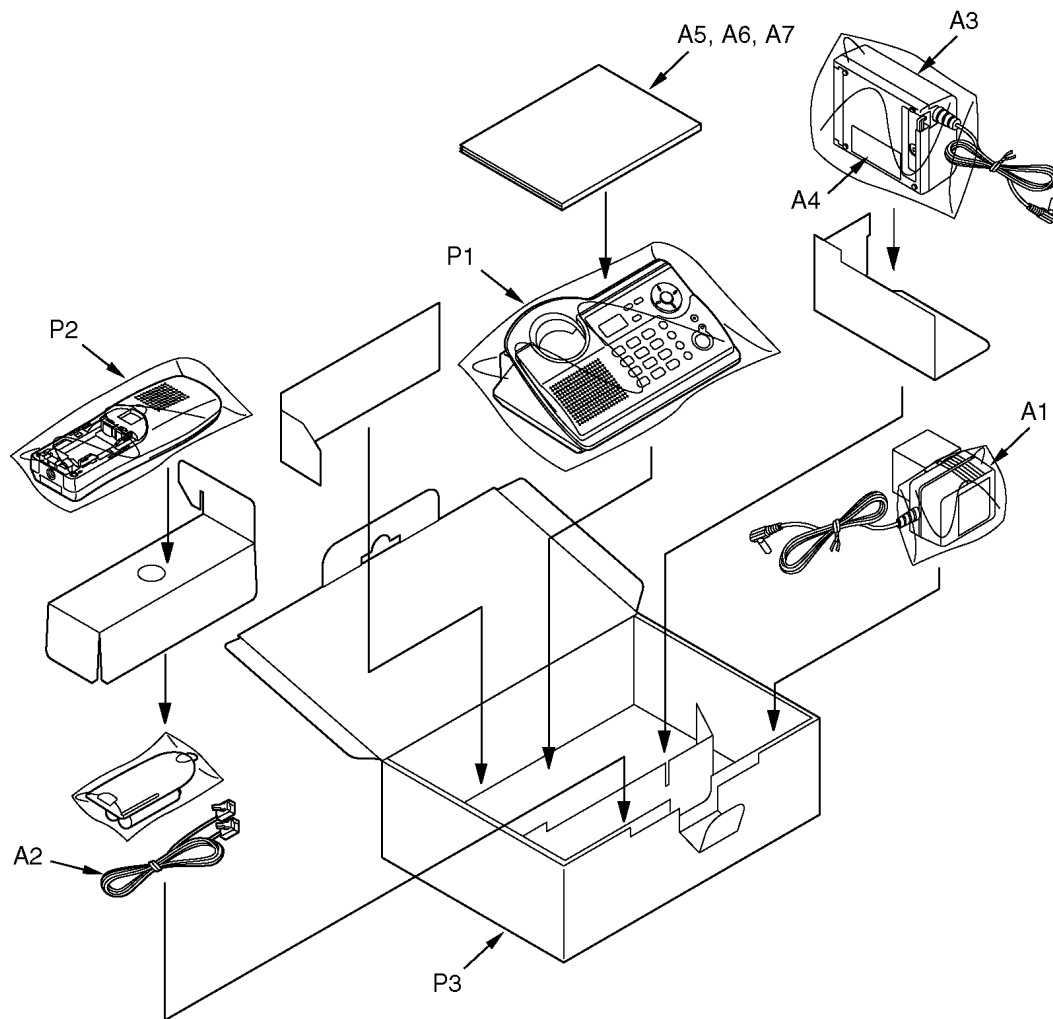
27.2. KX-TCA121CXS/CXT

A2, A3, A4

P1

P2

A1

P3
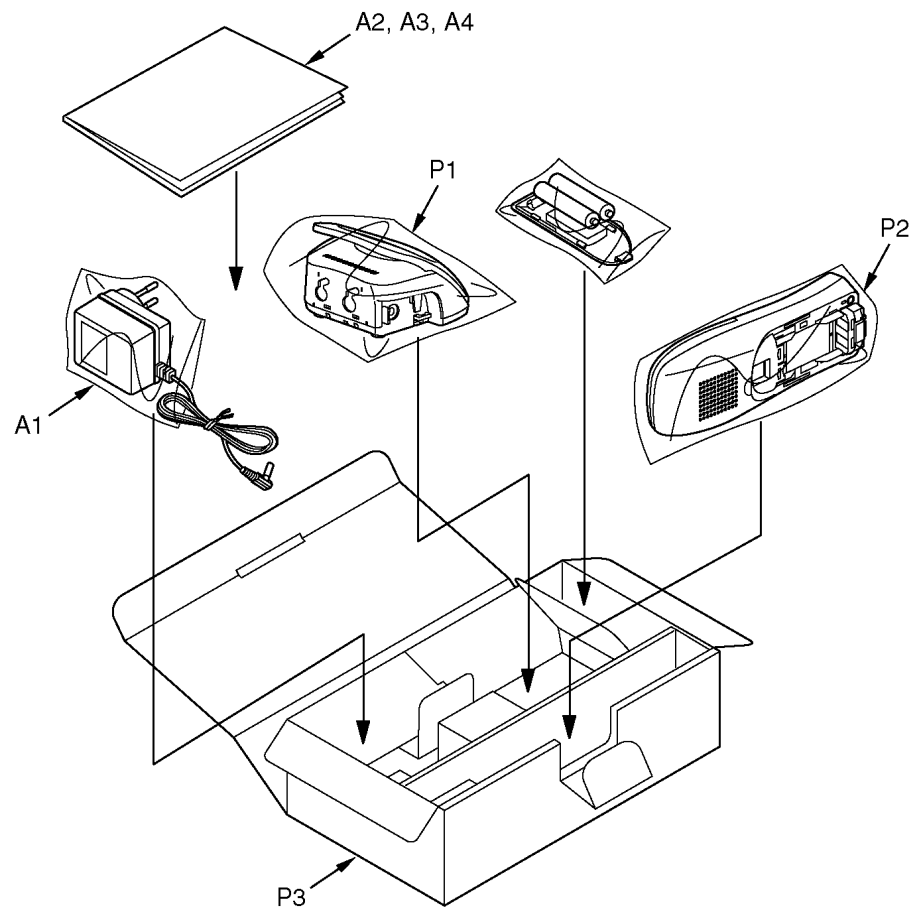
28 TERMINAL GUIDE OF THE ICs, TRANSISTORS AND DIODES

28.1. Base Unit

PQWICD300NEH	C1CB00002180	C0CBAYF00016	C0DBZGE00007	PQWI31233JXH
C0JBAF000223	C1BB00000265	B1ACGP000007 B1AAJC000010	PQVTBF822T7, B1ADGE000004 B1ABCF000103, 2SB1218A PQVTDTC143E, B1ABCE000009	
PQVDS1ZB60F1	B0JAME000095	MA8047, B0JCDD000002, MA112 B0ECKM000008, MA1Z300, MA8220	B0DDCM000001	
LNJ308G8JRA PQVDBR1111C	PQWI21233JXH			

28.2. Handset

C1CB00002038	PQWI2A130EXR	PQVTFDN335N	PSVTDTC143X, UN9219J B1ADGE000004, B1ABCF000103
B0BC2R1A0006, MA8047 MA2Z72000, B0JCME000035	LNJ308G8JRA	PQVDBR1111C	

70

28.3. Charger Unit

Cathode

Anode

B0JCME000035
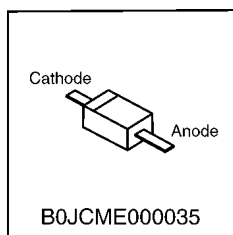
29 REPLACEMENT PARTS LIST

1. RTL (Retention Time Limited)

   Note:

   The marking (RTL) indicates that the Retention Time is limited for this item.

   After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

2. Important safety notice

   Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

5. RESISTORS & CAPACITORS

   Unless otherwise specified;

   All resistors are in ohms (Ω) K=1000Ω, M=1000kΩ

   All capacitors are in MICRO FARADS (μF)P=μμF

   *Type & Wattage of Resistor

Type

ERC:Solid ERDS:Carbon ERJ:Chip	ERX:Metal Film ERG:Metal Oxide ER0:Metal Film	PQ4R:Chip ERS:Fusible Resistor ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage Of Capacitor

Type

ECFD:Semi-Conductor ECQS:Styrol ECUV,PQCUV,ECUE:Chip ECQMS:Mica	ECCD,ECKD,ECBT,F1K,ECUV:Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECST,EEE:Electlytic ECQP:Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others		
1H:50V 2A:100V 2E:250V 2H:500V	05:50V 1:100V 2:200V	0F:3.15V 1A:10V 1V:35V 0J:6.3V	0J :6.3V 1A :10V 1C :16V 1E,25:25V	1V :35V 50,1H:50V 1J :16V 2A :100V	

29.1. Base Unit

29.1.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQGP10286Z1	PANEL, LCD (for KX-TG1283JXS)	AS-HB
1	PQGP10286Z2	PANEL, LCD (for KX-TG1283JXT)	AS-HB
2	PQHS10675Z	TAPE, DOUBLE SIDED (LCD)	
3	PQGG10293Z1	GRILLE, FRONT (for KX-TG1283JXS)	PS-HB
3	PQGG10293Z2	GRILLE, FRONT (for KX-TG1283JXT)	PS-HB
4	PQBC10429Z1	BUTTON, NAVI KEY (for KX-TG1283JXS)	ABS-HB

Ref. No.	Part No.	Part Name & Description	Remarks
5	PQHR11125Z	GUIDE, NAVI KEY BUTTON	POM-HB
6	PQBC10430Z1	BUTTON, PLAY	ABS-HB
7	PQHR11124Z	OPTIC CONDUCTIVE PARTS, LED LENDS	PS-HB
8	PQSX10291Z	KEYBOARD SWITCH, 6 KEY	
9	PQBC10431Z1	BUTTON, ANSWER ON	ABS-HB
10	PQSX10293Z	KEYBOARD SWITCH, TAM KEY (for KX-TG1283JXS)	
10	PQSX10293Y	KEYBOARD SWITCH, TAM KEY (for KX-TG1283JXT)	
11	PQSX10292Z	KEYBOARD SWITCH, 16 KEY (for KX-TG1283JXS)	
11	PQSX10292Y	KEYBOARD SWITCH, 16 KEY (for KX-TG1283JXT)	
12	L0AA04A00028	SPEAKER	
13	PQHR11082Z	GUIDE, SPEAKER	POM-HB
14	PQGG10294Z3	GRILLE, CLEAR (for KX-TG1283JXS)	PC-HB
14	PQGG10294Z4	GRILLE, CLEAR (for KX-TG1283JXT)	PC-HB
15	PQKM10685Y1	CABINET BODY (for KX-TG1283JXS)	PS-HB
15	PQKM10685Y2	CABINET BODY (for KX-TG1283JXT)	PS-HB
16	PQJT10218Y	CHARGE TERMINAL (R)	
17	PQJT10219Y	CHARGE TERMINAL (L)	
18	PQKE10384Z3	HOLDER, CHARGE TERMINAL (R)	POM-HB
19	PQKE10385Z3	HOLDER, CHARGE TERMINAL (L)	POM-HB
20	PQHR11126Z	CASE, CHARGE TERMINAL	
21	PQSA10164Z	ANTENNA (L)	
22	PQSA10165Z	ANTENNA (R)	
23	PQMG10025Z	RUBBER PARTS, MIC	
24	PQKF10676Z1	CABINET COVER (for KX-TG1283JXS)	PS-HB
24	PQKF10676Z2	CABINET COVER (for KX-TG1283JXT)	PS-HB
25	PQGT18176Z	NAME PLATE (for KX-TG1283JXS)	
25	PQGT18176X	NAME PLATE (for KX-TG1283JXT)	
26	PQHA10017Z	RUBBER PARTS, LEG CUSHION	
27	PQHA10018Z	RUBBER PARTS, FOOT CUSHION	

29.1.2. Main P.C.Board Parts

Note:

(*1) When replacing IC3 or IC4, data need to be written to it with PQZZTG1283JX. Refer to **Base Unit** (P.41) of **THINGS TO DO AFTER REPLACING IC**.

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PQWP11233JXH	MAIN P.C.BOARD ASS´Y (RTL)	
		(ICs)	
IC1	C0DBZGE00007	IC	
IC3	PQWICD300NEH	IC (EEPROM) (*1)	
IC4	C1CB00002180	IC (BBIC) (*1)	
IC6	PQWI21233JXH	IC (FLASH MEMORY)	
IC7	C1BB00000265	IC	
IC8	PQWI31233JXH	IC (FLASH MEMORY)	
IC9	C0JBAF000223	IC	
IC10	C0JBAF000223	IC	
IC11	C0CBAYF00016	IC	
		(TRANSISTORS)	
Q2	B1ADGE000004	TRANSISTOR(SI)	
Q3	B1ADGE000004	TRANSISTOR(SI)	
Q4	B1ACGP000007	TRANSISTOR(SI)	
Q5	PQVTBF822T7	TRANSISTOR(SI)	
Q6	B1ABCF000103	TRANSISTOR(SI)	
Q7	B1ABCF000103	TRANSISTOR(SI)	
Q8	B1AAJC000010	TRANSISTOR(SI)	
Q12	B1ABCE000009	TRANSISTOR(SI)	
Q361	2SB1218A	TRANSISTOR(SI)	
Q362	PQVTDTC143E	TRANSISTOR(SI)	S

Ref. No.	Part No.	Part Name & Description	Remarks		Ref. No.	Part No.	Part Name & Description	Remarks
		(DIODES)			R46	ERJ12YJ270	27	
D1	B0JAME000095	DIODE(SI)			R47	ERJ3GEYJ104	100K	
D3	PQVDS1ZB60F1	DIODE(SI)	S		R48	ERJ3GEYJ473	47K	
D4	MA1Z300	DIODE(SI)	S		R49	ERJ3GEYJ560	56	
D6	MA8220	DIODE(SI)	S		R51	ERJ3GEYJ103	10K	
D7	MA112	DIODE(SI)	S		R52	ERJ3GEYJ820	82	
D8	B0JCDD000002	DIODE(SI)			R54	ERJ3GEYJ821	820	
D301	MA8047	DIODE(SI)	S		R55	ERJ3GEYJ473	47K	
D311	B0JCDD000002	DIODE(SI)			R56	ERJ3GEYJ103	10K	
D361	B0ECKM000008	DIODE(SI)			R57	ERJ3GEYJ103	10K	
DA1	B0DDCM000001	DIODE(SI)			R61	ERJ2GEJ181	180	
		(COILS)			R62	ERJ2GEJ102	1K	
L3	PQLQR2M33NKT	COIL	S		R64	ERJ2GEJ684	680K	
L5	PQLQR2M6N8KT	COIL	S		R65	ERJ2GEJ103	10K	
L6	PQLQXF330K	COIL	S		R69	ERJ3GEYJ104	100K	
L7	PQLQXF330K	COIL	S		R70	ERJ3GEYJ104	100K	
L8	PQLQR2M6N8KT	COIL	S		R71	ERJ3GEYJ104	100K	
L12	ELJPA6R8MF	COIL			R72	ERJ3GEYJ474	470K	
L13	G1C100MA0072	COIL			R73	ERJ3GEYJ101	100	
L14	G1C100MA0072	COIL			R74	ERJ3GEYJ102	1K	
		(JACKS AND CONNECTOR)			R75	ERJ3GEYJ101	100	
CN1	PQJJ1TA15Z	JACK	S		R76	ERJ3GEYJ102	1K	
CN2	PQJJ1B4Y	JACK	S		R77	ERJ3GEYJ103	10K	
CN6	K1MN30B00031	CONNECTOR			R79	ERJ3GEYJ681	680	
		(LCR FILTERS)			R80	PQ4R18XJ100	10	S
R60	J0JCC0000277	LCR FILTER			R82	ERJ3GEYJ103	10K	
R63	J0JCC0000277	LCR FILTER			R85	ERJ3GEY0R00	0	
R144	J0JCC0000277	LCR FILTER			R86	ERJ3GEY0R00	0	
R145	J0JCC0000277	LCR FILTER			R87	ERJ3GEY0R00	0	
R156	J0JCC0000277	LCR FILTER			R88	ERJ3GEY0R00	0	
R304	J0JCC0000309	LCR FILTER			R89	ERJ3GEY0R00	0	
R308	J0JCC0000277	LCR FILTER			R90	ERJ3GEY0R00	0	
		(COMPONENTS PARTS)			R91	ERJ3GEYJ103	10K	
RA1	EXB28V222JX	RESISTOR ARRAY			R92	ERJ3GEYJ103	10K	
RA2	EXB28V222JX	RESISTOR ARRAY			R96	ERJ2GEJ104	100K	
RA3	D1H810240004	RESISTOR ARRAY	S		R97	ERJ2GEJ104	100K	
RA4	EXB28V101JX	RESISTOR ARRAY			R105	ERJ3GEYJ103	10K	
RA5	EXB28V101JX	RESISTOR ARRAY			R106	ERJ3GEYJ184	180K	
RA6	EXB28V101JX	RESISTOR ARRAY			R107	ERJ3GEYJ184	180K	
RA7	EXB28V101JX	RESISTOR ARRAY			R117	ERJ2GEJ102	1K	
		(VARISTORS)			R118	ERJ3GEYJ181	180	
SA1	J0LF00000026	VARISTOR (SURGE ABSORBER)			R119	ERJ3GEYJ181	180	
SA2	PQVDDSS301L	VARISTOR (SURGE ABSORBER)	S		R123	ERJ2GE0R00	0	
		(RESISTORS)			R125	ERJ2GEJ820	82	
R2	ERJ1WYJ220	22			R127	ERJ2GEJ101	100	
R4	ERJ1WYJ220	22			R128	ERJ2GEJ472X	4.7K	
R5	ERJ3GEYJ562	5.6K			R129	ERJ2GEJ102	1K	
R6	ERJ3GEYJ153	15K			R130	ERJ2GEJ472X	4.7K	
R10	ERJ3GEYJ221	220			R131	ERJ2GEJ102	1K	
R11	ERJ3GEYJ221	220			R132	ERJ2GE0R00	0	
R16	ERJ3GEYJ105	1M			R134	ERJ2GEJ472X	4.7K	
R17	ERJ3GEYJ105	1M			R135	ERJ2GEJ102	1K	
R18	ERJ3EKF5601	5.6K			R136	ERJ2GEJ472X	4.7K	
R19	ERJ3EKF2401	2.4K			R137	ERJ2GEJ391	390	
R22	ERJ3GEYJ104	100K			R140	ERJ2GEJ391	390	
R23	ERJ3GEYJ104	100K			R141	ERJ2GEJ391	390	
R24	ERJ3GEYJ101	100			R142	ERJ2GEJ391	390	
R25	PQ4R10XJ272	2.7K	S		R143	ERJ2GEJ391	390	
R26	ERJ3GEYJ103	10K			R146	ERJ2GEJ103	10K	
R27	ERJ3GEYJ104	100K			R147	ERJ2GEJ391	390	
R28	ERJ3GEYJ222	2.2K			R148	ERJ2GEJ391	390	
R32	ERJ3GEYJ101	100			R149	ERJ2GEJ391	390	
R33	ERJ3GEYJ473	47K			R150	ERJ2GEJ391	390	
R34	ERJ3GEYJ103	10K			R151	ERJ2GEJ391	390	
R35	ERJ2GEJ104	100K			R152	ERJ2GEJ391	390	
R38	ERJ3GEYJ104	100K			R153	ERJ2GEJ391	390	
R39	ERJ3GEYJ560	56			R154	ERJ3GEY0R00	0	
R40	ERJ3GEYJ335	3.3M			R155	ERJ3GEY0R00	0	
R41	ERJ3GEYJ101	100			R157	ERJ2GEJ222	2.2K	
R42	ERJ3GEYJ273	27K			R158	ERJ2GEJ222	2.2K	
R43	ERJ3GEYJ822	8.2K			R159	ERJ2GEJ104	100K	
R44	ERJ3GEYJ272	2.7K			R160	ERJ2GEJ104	100K	
R45	ERJ12YJ120	12			R162	ERJ2GEJ273X	27K	

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
R163	ERJ2GEJ273X	27K		C57	ECUV1H101JCV	100P	
R164	ERJ2GEJ273X	27K		C58	ECUV1C104KBV	0.1	
R301	ERJ3GEYJ331	330		C69	ECUV1C104KBV	0.1	
R302	ERJ3GEYJ222	2.2K		C70	ECUV1C683KBV	0.068	
R303	ERJ3GEYJ330	33		C71	ECUV1C104KBV	0.1	
R305	ERJ3GEYJ330	33		C74	ECUV1H103KBV	0.01	
R306	ERJ3GEYJ471	470		C75	ECUV1H103KBV	0.01	
R307	ERJ3GEYJ471	470		C76	ECUV1H103KBV	0.01	
R311	ERJ3GEYJ154	150K		C77	ECUV1C104KBV	0.1	
R312	ERJ3GEYJ101	100		C79	ECUV1C104KBV	0.1	
R314	ERJ3GEYJ393	39K		C81	ECUV1C104KBV	0.1	
R361	ERJ3GEYJ332	3.3K		C82	ECUV1C104KBV	0.1	
R362	ERJ3GEYJ103	10K		C84	ECUV1C104KBV	0.1	
R363	ERJ3GEYJ102	1K		C86	ECUV1C104KBV	0.1	
R365	ERJ2GEJ102	1K		C87	ECUV1C104KBV	0.1	
R366	ERJ2GEJ102	1K		C88	ECUV1H101JCV	100P	
R367	ERJ2GEJ102	1K		C89	ECUV1H101JCV	100P	
R368	ERJ2GEJ102	1K		C90	ECUV1H101JCV	100P	
R369	ERJ2GEJ102	1K		C101	ECUV1H102KBV	0.001	
R370	ERJ2GEJ102	1K		C102	ECUV1H102KBV	0.001	
R371	ERJ2GE0R00	0		C103	ECUV1C104KBV	0.1	
R372	ERJ2GE0R00	0		C104	ECUV1H391JCV	390P	
R373	ERJ2GE0R00	0		C106	ECUV1C104KBV	0.1	
R374	ERJ2GE0R00	0		C107	ECUV1C104KBV	0.1	
R375	ERJ8GEY0R00	0		C130	ECUV1H100DCV	10P	
R376	ERJ3GEYJ102	1K		C136	ECUE1H102KBQ	0.001	S
J10	ERJ3GEY0R00	0		C140	ECUV1H060DCV	6P	S
L4	ERJ3GEY0R00	0		C141	ECUV1H060DCV	6P	S
L9	ERJ3GEY0R00	0		C142	ECUV1H100DCV	10P	
L10	ERJ3GEY0R00	0		C143	ECUV1H100DCV	10P	
L11	ERJ3GEYJ100	10		C144	ECUV1H060DCV	6P	S
		(CAPACITORS)		C147	ECUV1A475KB	4.7	
C1	ECUV1H100DCV	10P		C151	ECUV1A475KB	4.7	
C2	ECEA1EU101	100	S	C153	ECUE1H220JCQ	22P	S
C3	ECEA0JU331	330	S	C154	ECUE1H100DCQ	10P	S
C4	ECUV1H100DCV	10P		C155	ECUE1H2R0CCQ	2P	
C6	ECUE1H471KBQ	470P	S	C156	ECUE1H100DCQ	10P	S
C7	ECEA1CK101	100	S	C157	ECUE1H070DCQ	7P	S
C8	ECUV1H100DCV	10P		C158	ECUE1H100DCQ	10P	S
C9	ECUV1H100DCV	10P		C159	ECUE1H2R0CCQ	2P	
C10	ECEA1AU101	100	S	C160	ECUE1H100DCQ	10P	S
C11	ECUV1H040CCV	4P		C161	ECUE1H2R0CCQ	2P	
C12	F1B2H152A048	0.0015		C162	ECUE1H100DCQ	10P	S
C13	F1B2H152A048	0.0015		C164	F1G1H151A444	150P	
C14	ECKD2H681KB	680P	S	C173	ECUV1H100DCV	10P	
C15	ECKD2H681KB	680P	S	C180	ECUV1H100DCV	10P	
C17	ECJ1VB1H221K	220P		C181	ECUV1H100DCV	10P	
C21	ECUV1H100DCV	10P		C182	ECUV1H102KBV	0.001	
C22	ECJ1VB1H221K	220P		C301	ECUV1H100DCV	10P	
C23	ECUV1H100DCV	10P		C302	ECUV1H100DCV	10P	
C24	PQCUV1C104KB	0.1		C303	ECUV1H100DCV	10P	
C25	ECEA1AU101	100	S	C304	ECEA0JU331	330	S
C26	ECUV1H100DCV	10P		C305	ECUV1H821KBV	820P	
C27	ECUV1H100DCV	10P		C306	ECUV1C104KBV	0.1	
C28	ECEA0JKA331	330		C307	ECUV1H332KBV	0.0033	
C30	ECEA1AKA221	220		C312	ECUV1H100DCV	10P	
C32	ECUV1E223KBV	0.022		C313	ECUV1C104KBV	0.1	
C36	ECJ1VB1H472K	0.0047		C314	ECJ1VB1H221K	220P	
C38	ECUV1C104KBV	0.1		C315	ECUV1H100DCV	10P	
C40	PQCUV1A225KB	2.2		C316	ECUV1H220JCV	22P	
C41	PQCUV1C224KB	0.22		C317	ECUV1A224KBV	0.22	
C42	ECUV1H300JCV	30P		C319	ECUV1A224KBV	0.22	
C43	ECUV1H120JCV	12P		C320	ECUV1C104KBV	0.1	
C45	ECUV1H100DCV	10P		C322	ECUV1A105KBV	1	
C46	PQCUV1A105KB	1		C361	ECUV1H102KBV	0.001	
C47	PQCUV1C224KB	0.22		C362	ECUE1C103KBQ	0.01	S
C48	ECUV1C104KBV	0.1		C363	ECUV1H471JCV	470P	S
C49	ECEA1HKA100	10		C364	ECUV1H152KBV	0.0015	
C51	ECUV1H100DCV	10P		C365	ECUV1H152KBV	0.0015	
C53	ECUV1C104KBV	0.1		C367	ECUV1H101JCV	100P	
C54	ECUV1C224KBV	0.22		C368	ECUE1H101JCQ	100P	S
C55	ECUV1C683KBV	0.068				(OTHERS)	
C56	ECUV1H100DCV	10P		MIC	L0CBAB000052	MICROPHONE	

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Ref. No.	Part No.	Part Name & Description	Remarks
IC2	PQLP10263Z	RF UNIT	
X1	H0D103500003	CRYSTAL OSCILLATOR	

29.1.3. Operational P.C.Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PQWP21233JXH	OPERATIONAL P.C.BOARD ASS´Y (RTL)	
		(TRANSISTORS)	
Q901	PQVTDTC143E	TRANSISTOR(SI)	S
Q902	PQVTDTC143E	TRANSISTOR(SI)	S
Q903	PQVTDTC143E	TRANSISTOR(SI)	S
		(LEDS)	
LED901	PQVDBR1111C	LED	S
LED902	LNJ308G8JRA	LED	
LED903	PQVDBR1111C	LED	S
		(RESISTORS)	
R901	ERJ3GEYJ561	560	
R902	ERJ3GEYJ820	82	
R903	ERJ3GEYJ181	180	
		(CONNECTOR)	
CN901	K1MN30B00031	CONNECTOR	
		(OTHERS)	
E1	L5DCBCB00017	LIQUID CRYSTAL DISPLAY	
E2	PQHS10327Z	TAPE LCD	
E3	PQHR11102Z	GUIDE LCD	PS-HB
E4	PQJE10145Z	LEAD WIRE FFC	

29.2. Handset

29.2.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
101	PQGP10272Z1	PANEL LCD (for KX-TCA122CXS) (for KX-TCA121CXS)	AS-HB
101	PQGP10272Z3	PANEL LCD (for KX-TCA122CXT) (for KX-TCA121CXT)	AS-HB
102	PQHS10673W	TAPE DOUBLE SIDED	
103	PQKM10647W8	CABINET BODY (for KX-TCA122CXS)	ABS-HB
103	PQKM10647W0	CABINET BODY (for KX-TCA122CXT)	ABS-HB
103	PQKM10647Y1	CABINET BODY (for KX-TCA121CXS)	ABS-HB
103	PQKM10647Y3	CABINET BODY (for KX-TCA121CXT)	ABS-HB
104	PQGT18182Z	NAME PLATE (for KX-TCA122CXS)	
104	PQGT18182X	NAME PLATE (for KX-TCA122CXT)	
104	PQGT17789Z	NAME PLATE (for KX-TCA121CXS)	
104	PQGT17789X	NAME PLATE (for KX-TCA121CXT)	
105	PQHS10705Z	SPACER LCD CUSHION	
106	PQBC10413Z1	BUTTON NAVI KEY	ABS-HB
107	PQBC10414Y1	BUTTON SP PHONE	ABS-HB
108	PQSX10274Z	KEYBOARD SWITCH (for KX-TCA122CXS)(for KX-TCA121CXS)	
108	PQSX10274X	KEYBOARD SWITCH (for KX-TCA122CXT)(for KX-TCA121CXT)	
109	PQHS10467Z	COVER SP NET	
110	L0AD02A00015	SPEAKER	
111	PQHR11104Z	GUIDE SPEAKER	ABS-HB
112	PQWE10034Z	BATTERY TERMINAL	
113	PQJT10216Z	CHARGE TERMINAL (R)	
114	PQJT10217Z	CHARGE TERMINAL (L)	
115	PQHR11059Z	GUIDE SPEAKER	ABS-HB
116	PQHG10702Z	RUBBER PARTS SPEAKER	
117	L0AD02A00010	SPEAKER	
118	PQHS10622Z	COVER SP NET	
119	PQJC10056Y	BATTERY TERMINAL	
120	PQKF10630X1	CABINET COVER (for KX-TCA122CXS)(for KX-TCA121CXS)	ABS-HB
120	PQKF10630X3	CABINET COVER (for KX-TCA122CXT)(for KX-TCA121CXT)	ABS-HB

Ref. No.	Part No.	Part Name & Description	Remarks
121	PQHX11356Z	PLASTIC PARTS BATTERY COVER SHEET (for KX-TCA122CXS/CXT)	
121	PQHX11299Z	PLASTIC PARTS BATTERY COVER SHEET (for KX-TCA121CXS/CXT)	
122	PQHS10561Y	SPACER BATTERY COVER	
123	PQKK10583Z1	LID BATTERY COVER (for KX-TCA122CXS)(for KX-TCA121CXS)	ABS-HB
123	PQKK10583Z3	LID BATTERY COVER (for KX-TCA122CXT)(for KX-TCA121CXT)	ABS-HB

29.2.2. Main P.C.Board Parts

Note:

(*1) When replacing IC1 or IC3, data need to be written to them with PQZZTG1283JX. Refer to **Handset** (P.41) of **THINGS TO DO AFTER REPLACING IC**.

(*2) When replacing the Handset LCD, see **HOW TO REPLACE THE HANDSET LCD** (P.17).

Ref. No.	Part No.	Part Name & Description	Remarks
PCB100	PQWPG1233JXR	MAIN P.C.BOARD ASS´Y (RTL) (for KX-TG1283JXS/JXT)	
PCB100	PQWPCA122CXR	MAIN P.C.BOARD ASS´Y (RTL) (for KX-TCA121CXS/CXT)	
		(ICs)	
IC1	C1CB00002038	IC (BBIC) (*1)	
IC3	PQWI2A130EXR	IC (EEPROM) (*1)	
		(TRANSISTORS)	
Q1	PQVTFDN335N	TRANSISTOR(SI)	S
Q2	B1ADGE000004	TRANSISTOR(SI)	
Q3	B1ADGE000004	TRANSISTOR(SI)	
Q4	B1ADGE000004	TRANSISTOR(SI)	
Q5	B1ABCF000103	TRANSISTOR(SI)	
Q7	PSVTDTC143X	TRANSISTOR(SI)	S
Q8	PSVTDTC143X	TRANSISTOR(SI)	S
Q9	UN9219J	TRANSISTOR(SI)	S
Q10	B1ABCF000103	TRANSISTOR(SI)	
Q11	B1ABCF000103	TRANSISTOR(SI)	
		(DIODES)	
D1	B0JCME000035	DIODE(SI)	
D4	MA8047	DIODE(SI)	S
D5	MA8047	DIODE(SI)	S
D6	B0BC2R1A0006	DIODE(SI)	
D7	MA2Z72000	DIODE(SI)	
LED1	LNJ308G8JRA	LED	
LED2	LNJ308G8JRA	LED	
LED3	LNJ308G8JRA	LED	
LED4	LNJ308G8JRA	LED	
LED5	LNJ308G8JRA	LED	
LED6	LNJ308G8JRA	LED	
LED7	LNJ308G8JRA	LED	
LED9	PQVDBR1111C	LED	S
		(COILS)	
L1	G1C470M00025	COIL	
L4	G1C100MA0072	COIL	
L5	G1C100MA0072	COIL	
L9	PQLQR2M33NKT	COIL	S
F1	PQLQR2M5N6K	COIL	S
		(RESISTORS)	
R1	ERJ6RSJR10V	0.1	
R5	ERJ3GEYJ471	470	
R6	ERJ2GEJ103	10K	
R7	ERJ2GEJ224	220K	
R12	ERJ3GEYJ393	39K	
R15	ERJ3GEYJ100	10	
R19	ERJ3GEYJ565	5.6M	
R20	ERJ2GEJ102	1K	
R21	ERJ2GEJ102	1K	
R25	ERJ2GEJ331	330	
R26	ERJ2GEJ331	330	
R29	ERJ3GEYJ222	2.2K	
R37	ERJ3GEY0R00	0	

Ref. No.	Part No.	Part Name & Description	Remarks
R38	ERJ3GEY0R00	0	
R39	ERJ2GEJ103	10K	
R40	ERJ2GEJ103	10K	
R43	ERJ6RSJR10V	0.1	
R46	ERJ3GEYJ562	5.6K	
R47	ERJ3GEYJ562	5.6K	
R54	ERJ2GE0R00	0	
R57	ERJ3GEYJ680	68	
R59	ERJ2GE0R00	0	
R60	ERJ2GEJ101	100	
R61	ERJ2GEJ102	1K	
R63	ERJ2GEJ103	10K	
R64	ERJ2GEJ103	10K	
R68	ERJ2GEJ682	6.8K	
R69	ERJ3EKF8203	820K	
R70	ERJ3EKF4303	430K	
R71	ERJ3GEYJ221	220	
R72	ERJ2GEJ102	1K	
R73	ERJ3GEYJ104	100K	
R75	ERJ2GEJ102	1K	
R81	ERJ2GEJ4R7	4.7	
R82	ERJ3GEYJ101	100	
R83	ERJ6GEY0R00	0	
R85	ERJ2GEJ330	33	
R86	ERJ3GEYJ330	33	
R87	ERJ2GEJ181	180	
R88	ERJ2GEJ181	180	
R89	ERJ2GEJ181	180	
R90	ERJ3GEYJ684	680K	
R91	ERJ2GEJ104	100K	
R92	ERJ3GEY0R00	0	
R95	ERJ3GEY0R00	0	
R96	ERJ2GEJ103	10K	
R97	ERJ2GE0R00	0	
L6	ERJ6GEY0R00	0	
L7	ERJ6GEY0R00	0	
L8	ERJ3GEY0R00	0	
		(CAPACITORS)	
C1	EEE0GA331WP	330	
C3	ECUV1C104KBV	0.1	
C4	ECUV1H100DCV	10P	
C5	ECST0JY106	10	
C6	ECUV1H080DCV	8P	
C7	ECUV1H150JCV	15P	
C8	ECUV1A224KBV	0.22	
C10	ECUV1C104KBV	0.1	
C12	ECUV1A105KBV	1	
C17	ECUV1H100DCV	10P	
C18	ECJ0EB1H102K	0.001	
C19	F1G1A1040003	0.1	
C20	F1G1A1040003	0.1	
C21	F1G1A1040003	0.1	
C22	F1G1A1040003	0.1	
C23	F1G1A1040003	0.1	
C24	F1G1A1040003	0.1	
C27	ECUV1A105KBV	1	
C28	ECUV1A105KBV	1	
C30	ECUV1A105KBV	1	
C31	ECUV1A105KBV	1	
C32	ECUV1A105KBV	1	
C33	ECUV1A105KBV	1	
C34	ECUV1A105KBV	1	
C35	ECUV1A105KBV	1	
C37	F1G1A1040003	0.1	
C39	ECUV1A105KBV	1	
C40	ECST0JY106	10	
C44	ECJ0EC1H100D	10P	
C45	ECJ0EB1H102K	0.001	
C46	ECJ0EC1H100D	10P	
C47	ECJ0EC1H020C	2P	
C48	ECJ0EC1H100D	10P	
C49	ECJ0EC1H020C	2P	
C50	ECJ0EC1H100D	10P	

Ref. No.	Part No.	Part Name & Description	Remarks
C51	ECJ0EC1H100D	10P	
C52	ECUV1C104KBV	0.1	
C53	ECJ0EC1H151J	150P	
C54	ECJ0EC1H100D	10P	
C55	ECJ0EC1H020C	2P	
C57	EEE0JA331P	330	
C58	ECUV1C104KBV	0.1	
C60	ECUV1A475KB	4.7	
C62	ECJ0EC1H220J	22P	
C63	ECUV1A475KB	4.7	
C66	ECUV1H020CCV	2P	
C68	F1G1A1040003	0.1	
C69	ECUV1H100DCV	10P	
C70	ECUV1H100DCV	10P	
C71	ECJ0EC1H100D	10P	
C72	F1G1A1040003	0.1	
C78	PQCUV1H100DC	10P	S
C79	PQCUV1H100DC	10P	S
C84	ECJ0EB1H102K	0.001	
C87	ECUV1H100DCV	10P	
C91	ECJ0EC1H100D	10P	
C93	ECUV1H101JCV	100P	
C94	ECUV1H101JCV	100P	
C95	PQCUV1H100DC	10P	S
C97	ECUV1H100DCV	10P	
C98	ECUV1A475KB	4.7	
C100	ECJ0EC1H100D	10P	
C103	ECUV1H100DCV	10P	
C104	ECUV1A105KBV	1	
C107	ECUV1H101JCV	100P	
C108	ECJ0EC1H100D	10P	
C109	ECJ0EC1H100D	10P	
C111	ECJ0EC1H101J	100P	
C112	ECJ0EC1H101J	100P	
C113	ECUV1H101JCV	100P	
C114	ECJ0EC1H100D	10P	
C115	ECJ0EC1H100D	10P	
C116	ECJ0EC1H100D	10P	
C117	ECJ0EC1H100D	10P	
C118	ECUV1H103KBV	0.01	
C119	F1G1A1040003	0.1	
C120	F1G1A1040003	0.1	
C121	ECUV1H102KBV	0.001	
C122	ECUV1A105KBV	1	
C123	ECUV1H100DCV	10P	
		(OTHERS)	
MIC	L0CBAB000052	MICROPHONE	
E101	PQHR11088Y	GUIDE, LCD	
E102	PQHR11092Z	TRANSPARENT PLATE, LCD PLATE	
E103	PQHX11289Z	COVER, LCD COVER SHEET	
E104	L5DCADC00013	LIQUID CRYSTAL DISPLAY (*2)	
E105	PQWEA144EXR	PLASTIC PARTS, TAPE	
E106	PQSA10159Z	ANTENNA	
CN6	PQLP10263Z	RF UNIT	
X1	H0D103500007	CRYSTAL OSCILLATOR	

29.3. Charger Unit

29.3.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
200	PQLV30032ZS	CHARGER UNIT (for KX-TCA121CXS)	
200	PQLV30032ZT	CHARGER UNIT (for KX-TCA121CXT)	
200-1	PQGG10276Z1	GRILLE (for KX-TCA121CXS)	PC-HB
200-1	PQGG10276Z3	GRILLE (for KX-TCA121CXT)	PC-HB
200-2	PQKM10656Z1	CABINET BODY (for KX-TCA121CXS)	ABS-HB
200-2	PQKM10656Z3	CABINET BODY (for KX-TCA121CXT)	ABS-HB
200-3	PQHR11085Z	CASE CHARGE TERMINAL	
200-4	PQKE10384Z1	HOLDER CHARGE TERMINAL (R)	POM-HB

Ref. No.	Part No.	Part Name & Description	Remarks
200-5	PQKE10385Z1	HOLDER CHARGE TERMINAL (L)	POM-HB
200-6	PQJT10218Y	CHARGE TERMINAL (R)	
200-7	PQJT10219Y	CHARGE TERMINAL (L)	
200-8	PQKF10653Z1	CABINET COVER (for KX-TCA121CXS)	PS-HB
200-8	PQKF10653Z3	CABINET COVER (for KX-TCA121CXT)	PS-HB
200-9	PQGT17399Z	NAME PLATE (for KX-TCA121CXS)	
200-9	PQGT17399X	NAME PLATE (for KX-TCA121CXT)	
200-10	PQHA10023Z	RUBBER PARTS FOOT CUSHION	

29.3.2. Main P.C.Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
PCB200	PQWPA130ETCH	MAIN P.C.BOARD ASS´Y (RTL)	
		(DIODE)	
D11	B0JCME000035	DIODE(SI)	
		(JACK)	
J1	PQJJ1B4Y	JACK	S
		(RESISTORS)	
R11	ERJ1WYJ220	22	
R12	ERJ1WYJ220	22	

29.4. Accessories and Packing Materials

Note:

(*1) You can download and refer to the Operating Instructions (Instruction book) on TSN Server.

29.4.1. KX-TG1283JXS/JXT

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQLV19BXY	AC ADAPTOR	⚠
A2	PQJA10075Z	CORD TELEPHONE	
A3	KX-TCA200BXB	BATTERY BOX	
A4	PQQT22858Z	LABEL CAUTION	
A5	PQQX14597Z	INSTRUCTION BOOK (*1)	
A6	PQQW14636Z	QUICK GUIDE (for Arabic)	
A7	PQQW14711Z	QUICK GUIDE (for Percian)	
P1	PQPP10124Z	PROTECTION COVER (for Base Unit)	
P2	PQPP10084Z	PROTECTION COVER (for Handset)	
P3	PQPK14871Z	GIFT BOX	

29.4.2. KX-TCA121CXS/CXT

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQLV200BXY	AC ADAPTOR	⚠
A2	PQQX14634Z	INSTRUCTION BOOK (for English) (*1)	
A3	PQQX14635Z	INSTRUCTION BOOK (for Arabic) (*1)	
A4	PQQX14650Z	INSTRUCTION BOOK (for Persian) (*1)	
P1	PQPP10086Z	PROTECTION COVER (for Charger Unit)	
P2	PQPP10084Z	PROTECTION COVER (for Handset)	
P3	PQPK14634Z	GIFT BOX	

29.5. Fixtures and Tools

Note:

(*1) See **The Setting Method of JIG (Base Unit)** (P.32), and **The Setting Method of JIG (Handset)** (P.39).

(*2) When replacing the Handset LCD, see **HOW TO**

REPLACE THE HANDSET LCD (P.17).

Part No.	Part Name & Description	Remarks
PQZZ1CD300E	JIG CABLE (*1)	
PQZZTG1283JX	BATCH FILE CD-ROM (*1)	
PQZZ430PIR	TIP OF SOLDERING IRON (*2)	
PQZZ430PRB	RUBBER OF SOLDERING IRON (*2)	

Memo

30 FOR SCHEMATIC DIAGRAM

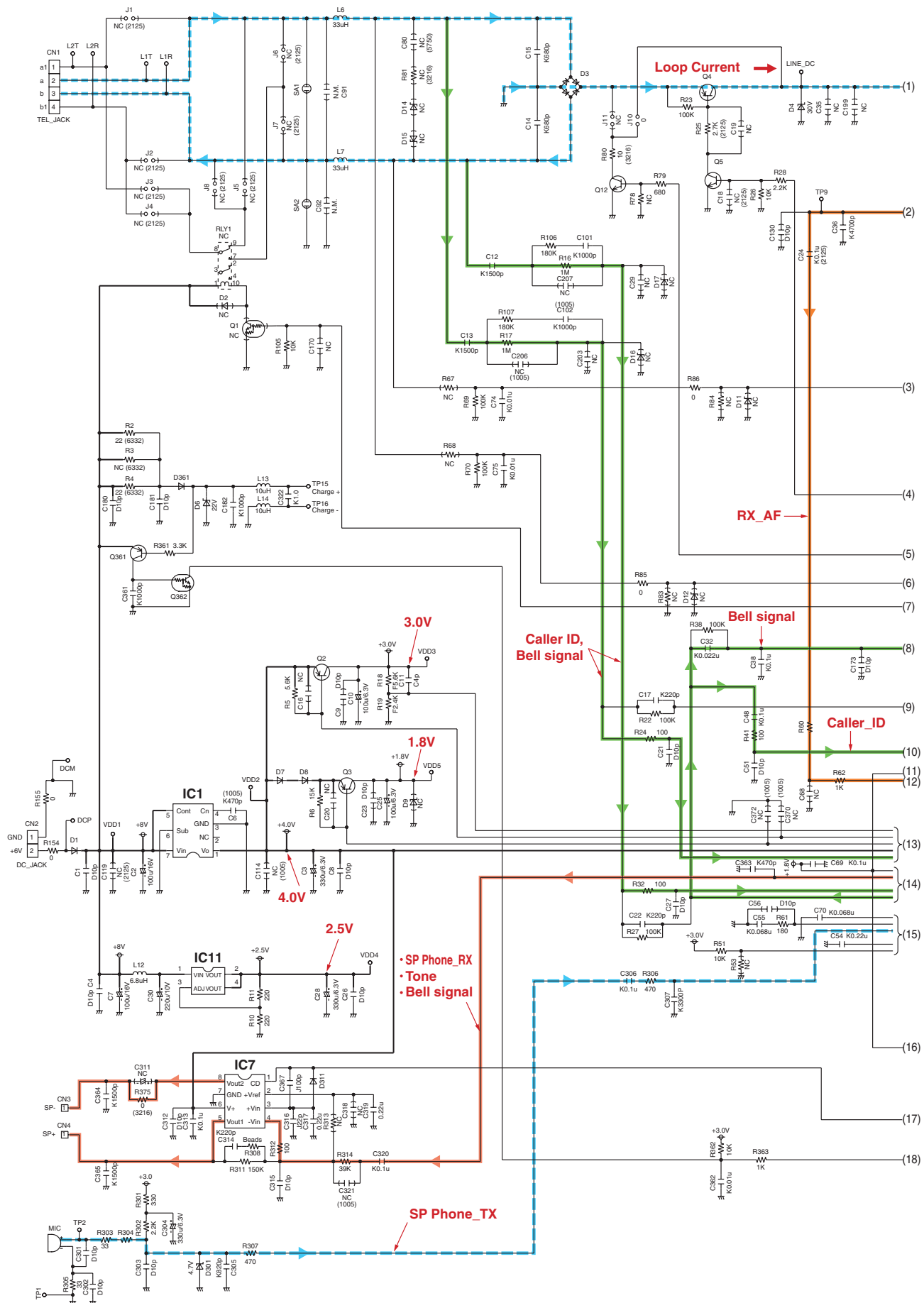## 30.1. Base Unit (SCHEMATIC DIAGRAM (BASE UNIT_MAIN))

Notes:

1. DC voltage measurements are taken with voltmeter from the negative voltage line.

> Important Safety Notice:
> Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

2. This schematic diagram may be modified at any time with the development of new technology.
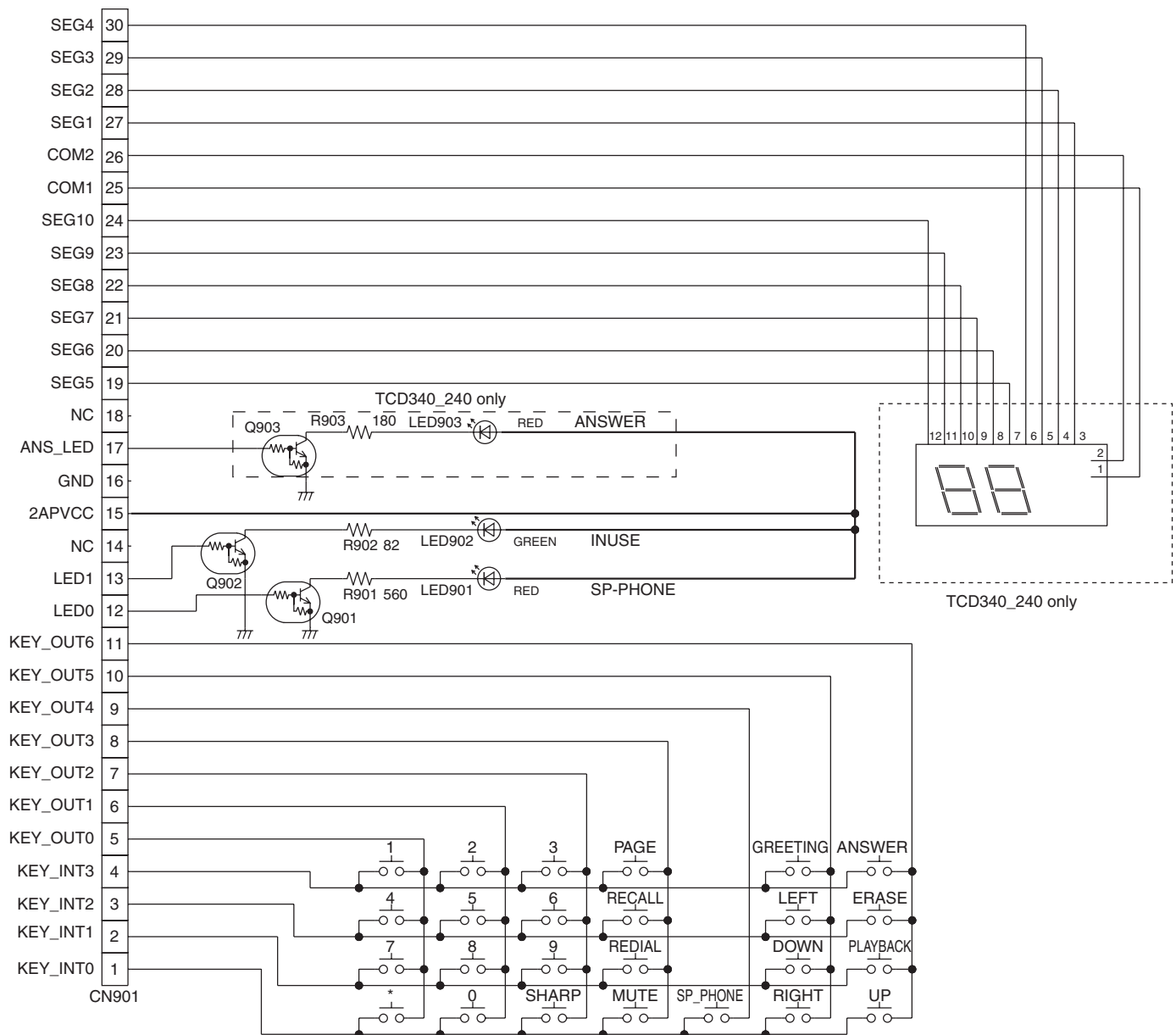
30.2. Handset (SCHEMATIC DIAGRAM (HANDSET))

Notes:

1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.

2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.

30.3. Charger Unit (SCHEMATIC DIAGRAM (CHARGER UNIT))

Notes:

1. DC voltage measurements are taken with voltmeter from the negative voltage line.

> Important Safety Notice:
> Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

2. This schematic diagram may be modified at any time with the development of new technology.

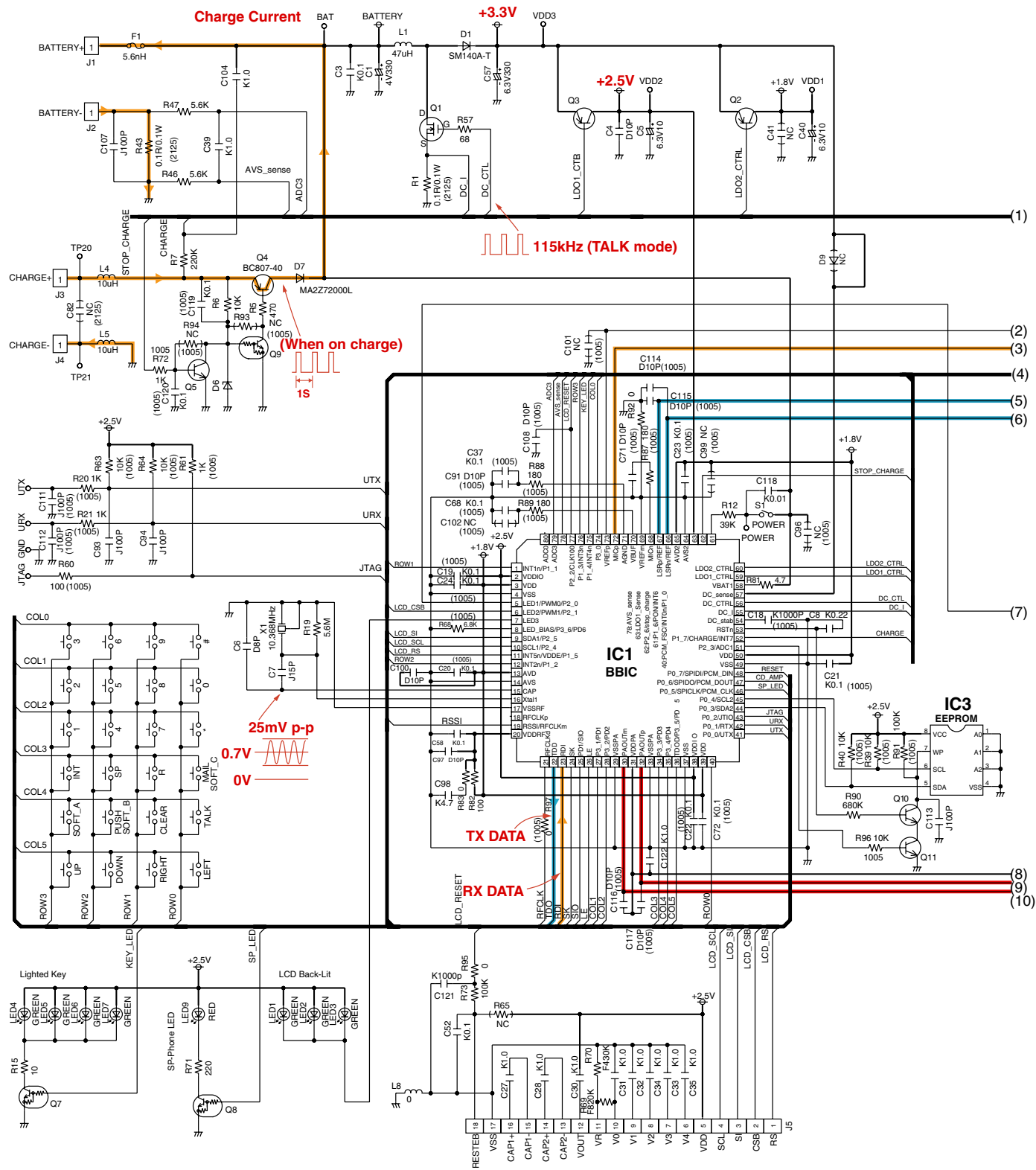# 31 SCHEMATIC DIAGRAM (BASE UNIT_MAIN)

NC : No Components

NC : No Components

KX-TG1283 SCHEMATIC DIAGRAM (BASE UNIT)
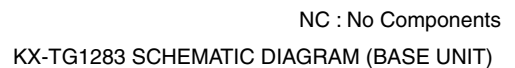
32 SCHEMATIC DIAGRAM (BASE UNIT_OPERATION)

KX-TG1283 SCHEMATIC DIAGRAM (Base Unit_Operation)

Memo

33 SCHEMATIC DIAGRAM (HANDSET)

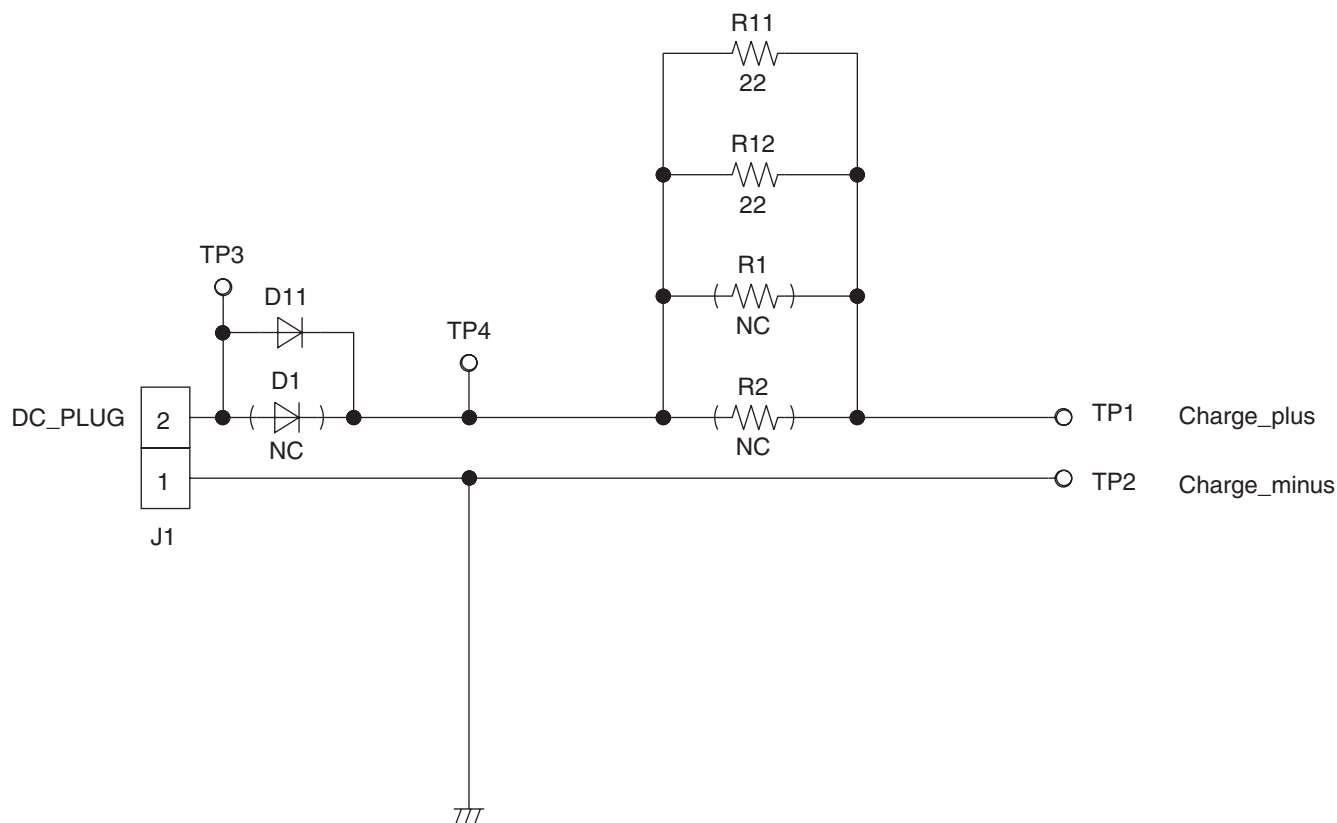NC : No Components

10.368MHz

TX DATA

RX DATA

1.0V DC supply to MIC

TX-AF

SP-phone RX Signal
Beep

RX_AF
(Handset)
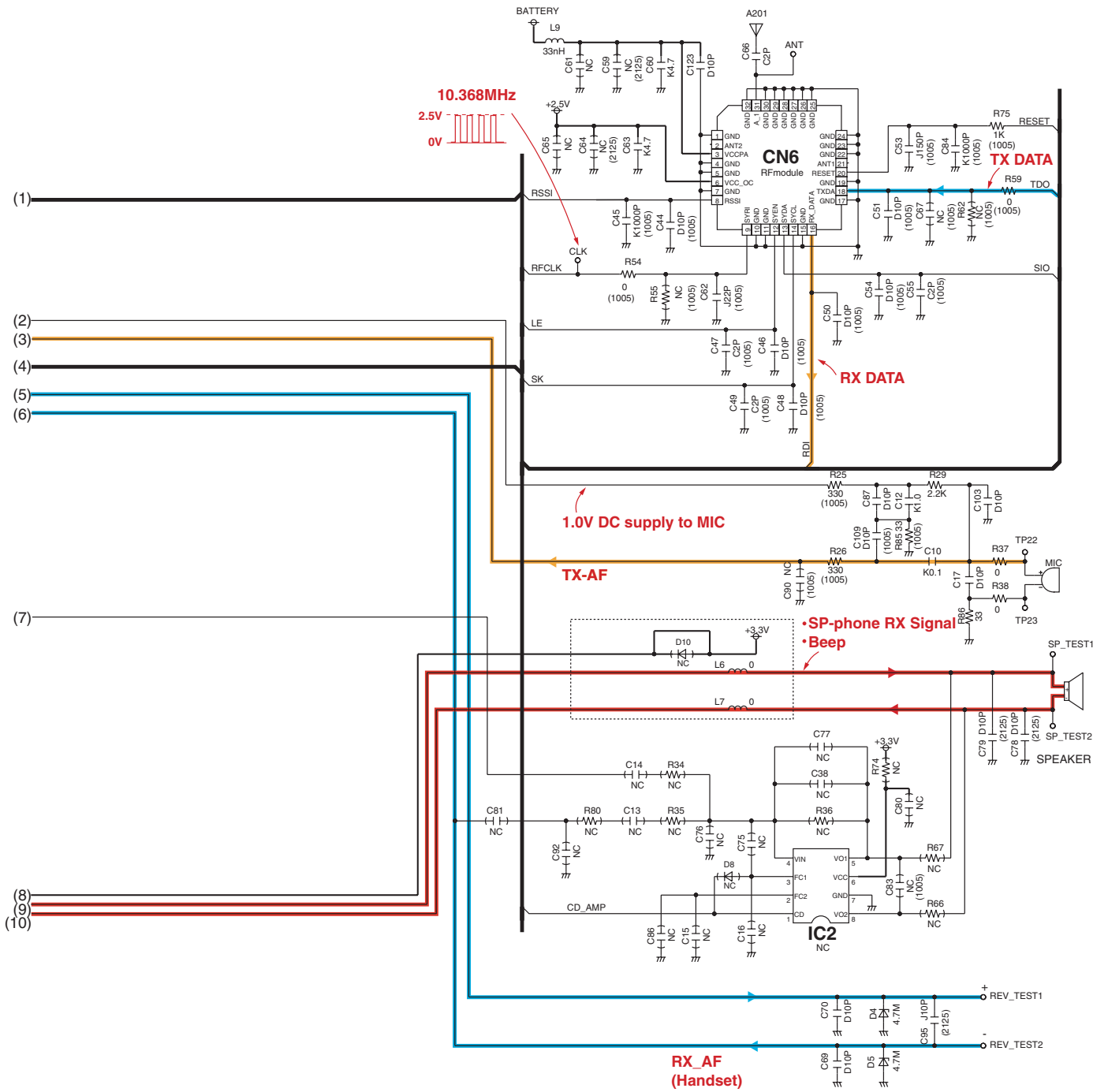
NC : No Components

KX-TCA122/121 SCHEMATIC DIAGRAM (HANDSET)

34 SCHEMATIC DIAGRAM (CHARGER UNIT)

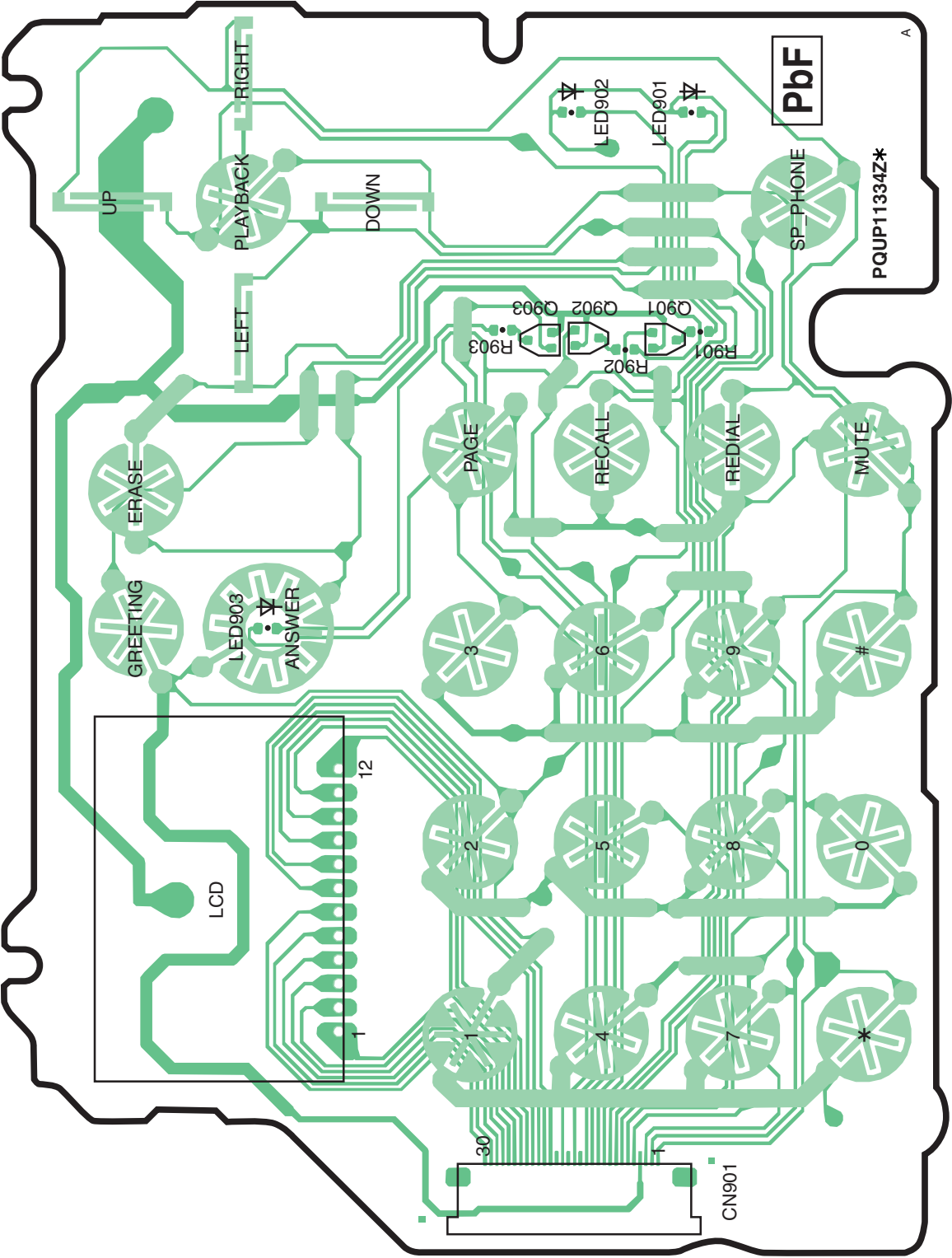NC : No Components

SCHEMATIC DIAGRAM (CHARGER UNIT)

35 CIRCUIT BOARD (BASE UNIT_MAIN)

35.1. Component View

KX-TG1283 CIRCUIT BOARD (Base Unit_Main (Component View))

Q2 Collector (3.0V)

Q3 Collector (1.8V)

RESET (BBIC: 120)

IC4 (BBIC)

BBIC: 21

Bell Sound (BBIC: 110) (10.368MHz)

IC1 (8V) IN

IC1 (4.0V) OUT

IC2 (RF Module)

IC11 (2.5V) OUT

IC11 (8V) IN

PQUP11280Z✶

PbF
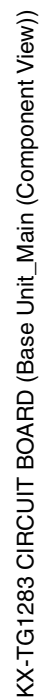
35.2. Flow Solder Side View
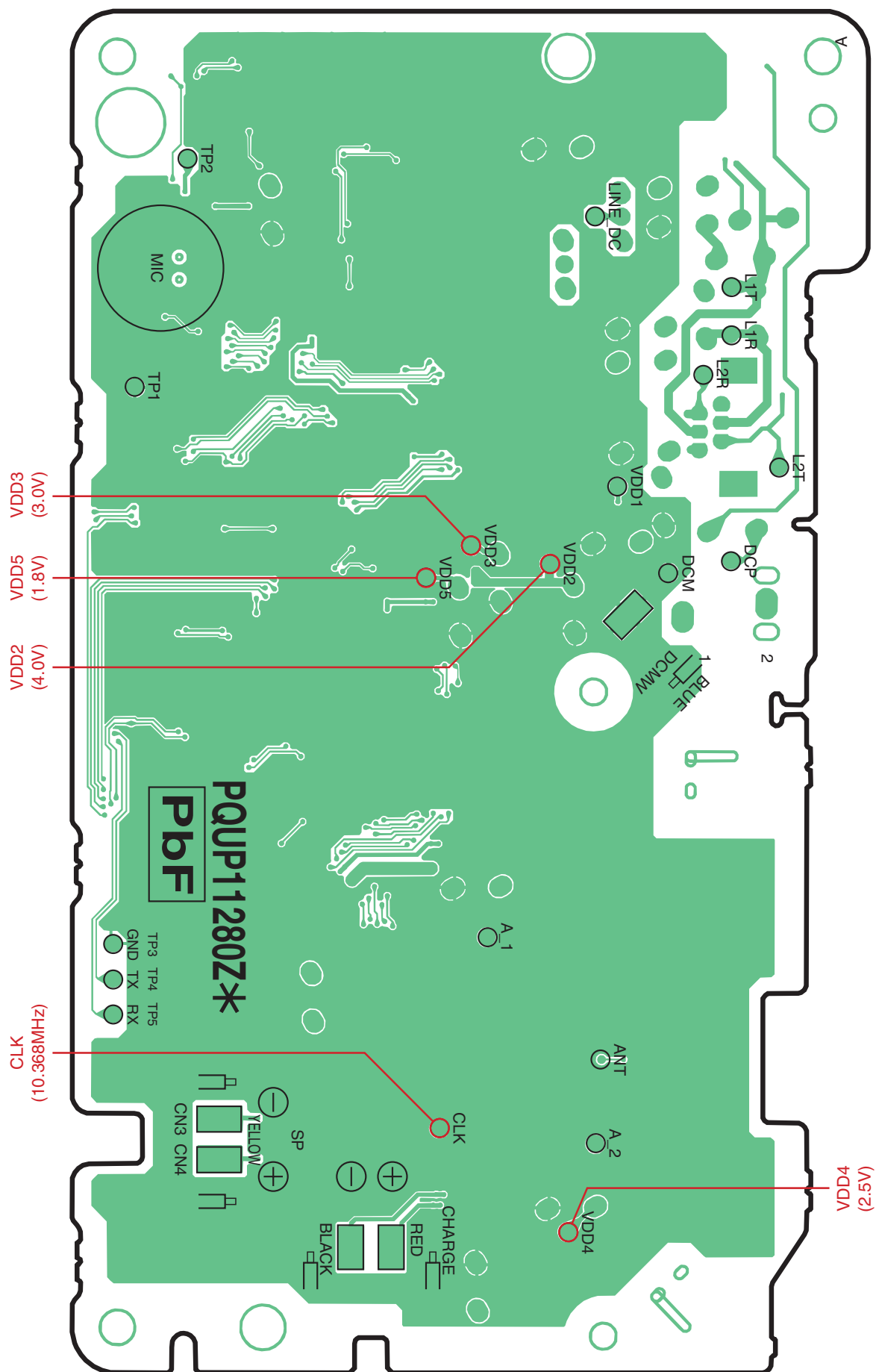
KX-TG1283 CIRCUIT BOARD (Base Unit_Main (Flow Solder Side View))

PQUP11280Z✳

PbF

TP2

MIC

TP1

VDD3 (3.0V)

VDD5 (1.8V)

VDD2 (4.0V)

CLK (10.368MHz)

GND TP3
TX TP4
RX TP5

VDD3
VDD5
VDD2

VDD1

LINE_DC

L1T
L1R
L2R

L2T

DCP
DCM
DCMM
1 BLUE
2

A

A_1

A_2

ANT

CLK

YELLOW
CN3 CN4

SP

BLACK
RED
CHARGE

VDD4
VDD4 (2.5V)

36 CIRCUIT BOARD (BASE UNIT_OPERATION)

36.1. Component View

KX-TG1283 CIRCUIT BOARD (Base Unit_Operation (Component View))
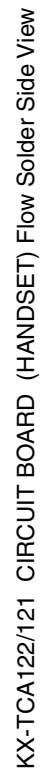
36.2. Flow Solder Side View
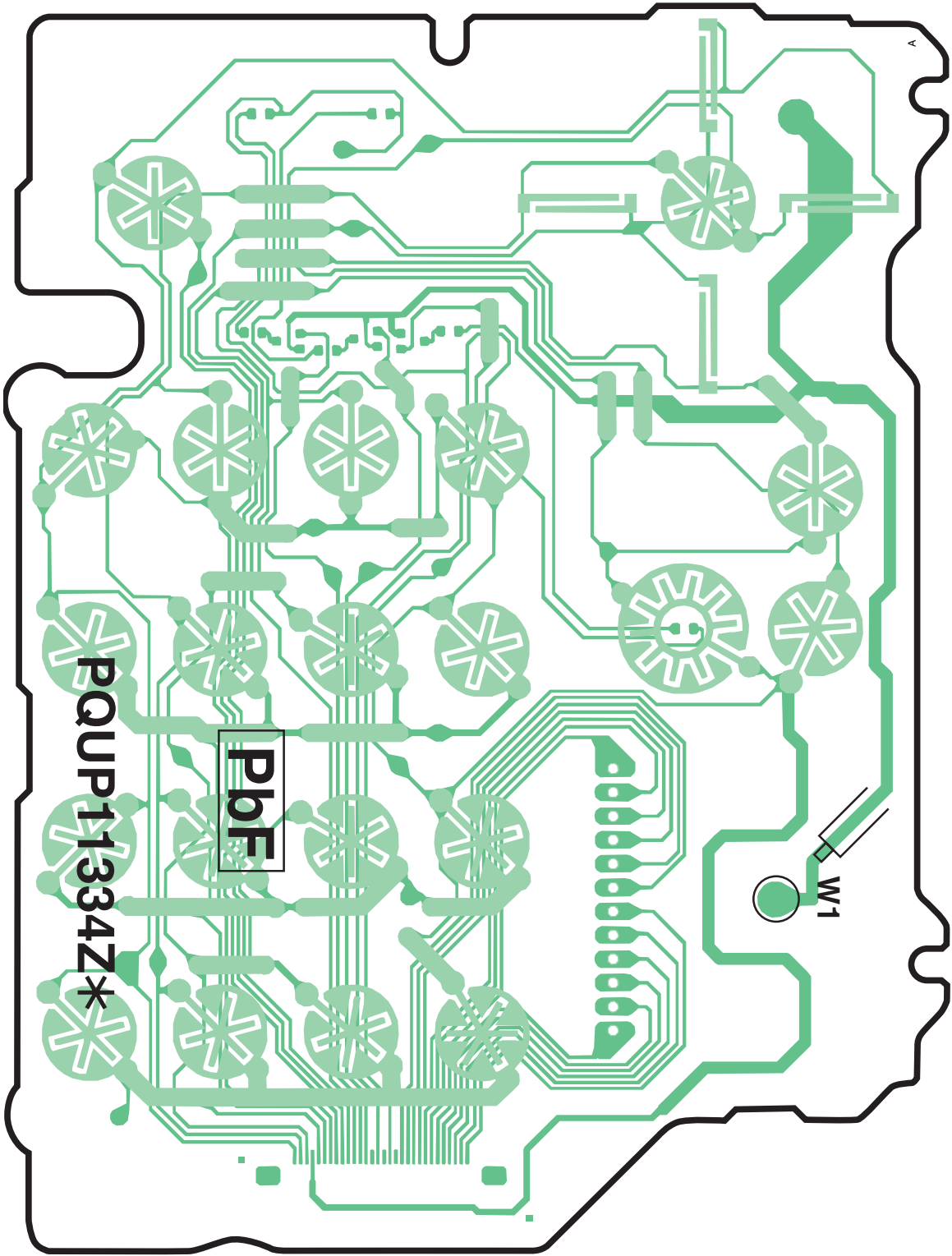
KX-TG1283 CIRCUIT BOARD (Base Unit_Operation (Flow Solder Side View))

PQUP1134Z*

PbF

W1

37 CIRCUIT BOARD (HANDSET)

37.1. Component View
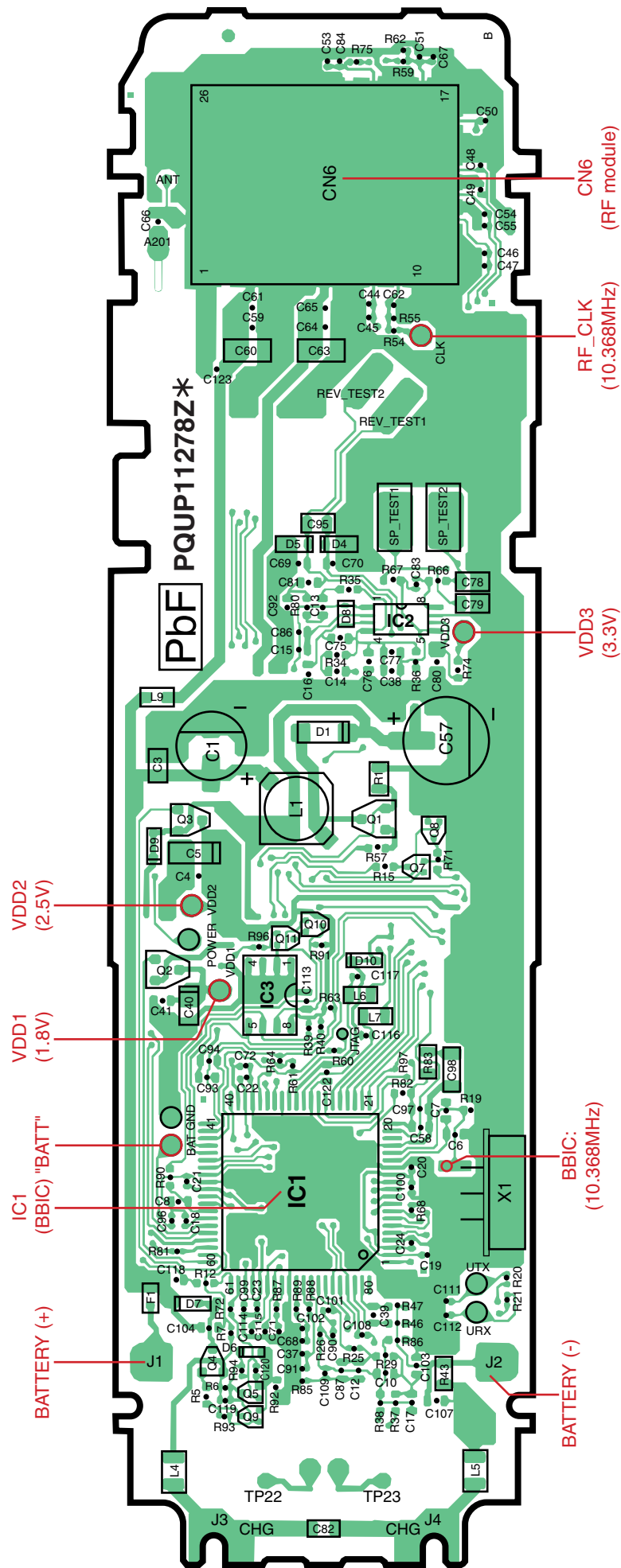
KX-TCA122/121 CIRCUIT BOARD (HANDSET) Component View
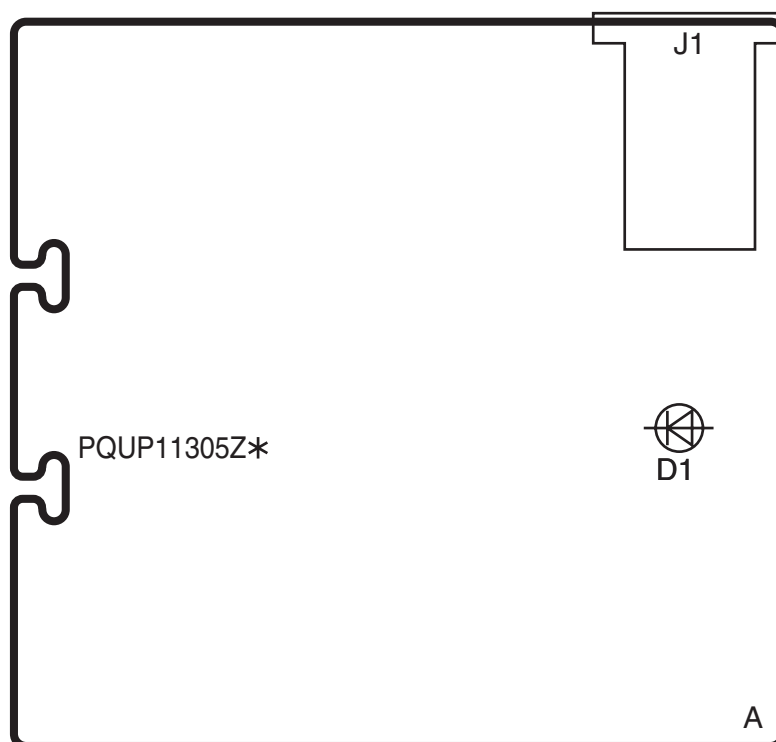
37.2. Flow Solder Side View

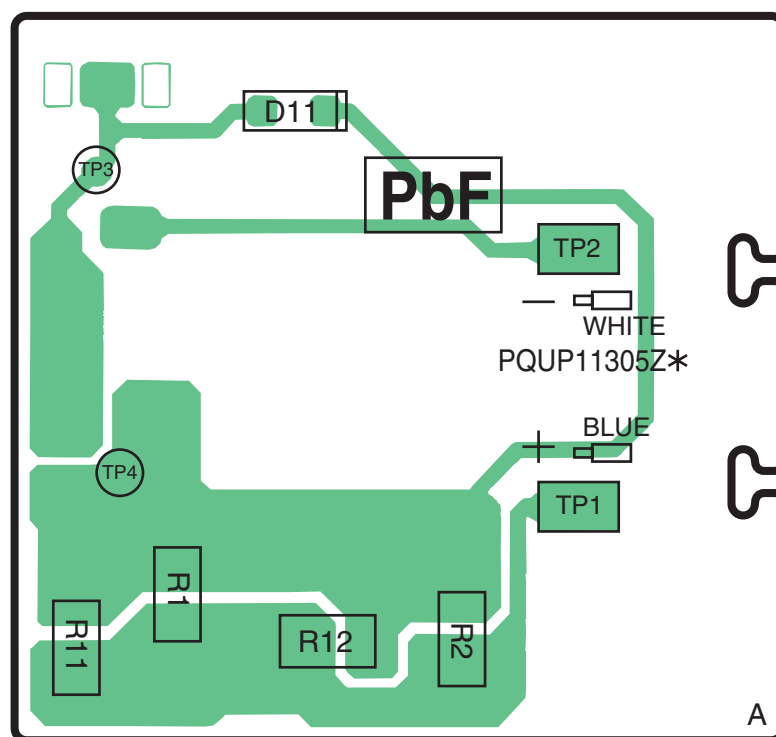KX-TCA122/121 CIRCUIT BOARD (HANDSET) Flow Solder Side View

38 CIRCUIT BOARD (CHARGER UNIT)

38.1. Component View

CIRCUIT BOARD (CHARGER UNIT) Component View

38.2. Flow Solder Side View

CIRCUIT BOARD (CHARGER UNIT) Flow Solder Side View

M.T/S
KXTG1283JXS
KXTG1283JXT
KXTCA122CXS
KXTCA122CXT
KXTCA121CXS
KXTCA121CXT