

Service Manual

DIGITAL PROPRIETARY TELEPHONE

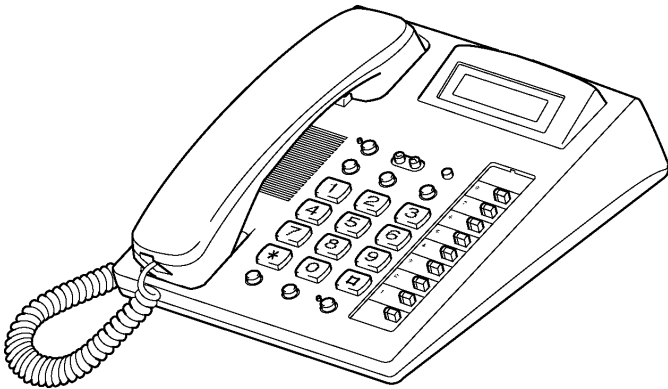
KX-T7565AL

KX-T7565AL-B

White Version

Black Version

(for Australia)



■ SPECIFICATIONS

| | |
|---------------------|--|
| Station Loop Limit: | 40 ohms |
| Cabling Method: | 2 pair wire |
| Jacks: | PABX, Handset/Headset, Telephone |
| Display: | 16 digits (max.) |
| Dimensions: | 7 ⁷ / ₁₆ " x 3 ³ / ₈ " x 8 ³ / ₄ " |
| Weight: | [189 (W) x 86 (H) x 222(D)mm] 1.48 ld. (670g) with handset |

- Design and specifications are subject to change without notice.

⚠ 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.

Panasonic

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1 CAUTION

Note:

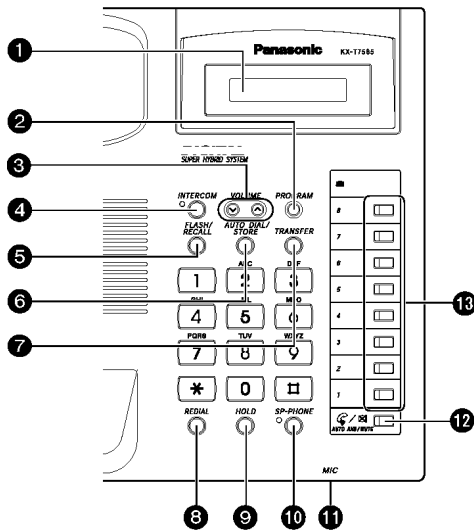
When you mention the serial number, write down all 11 digits.
The serial number may be found the label affixed to the bottom of the unit.

2 FOR SERVICE TECHNICIANS

1. Note the following items when exchanging the LEDs (Ref. No. D100-107) of Main Board.

- 1) Do not reuse a LED which is removed from the P.C. Board.
- 2) Use a soldering iron (less than 15 W) for exchanging LED.
- 3) Do not heat the LED for more than 2 seconds.
- 4) Do not move the LED after soldering.

3 LOCATION OF CONTROLS

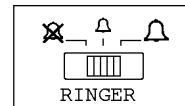


- ❶ **LCD (Liquid Crystal Display)**
- ❷ **PROGRAM:** Used to enter and exit the programming mode. (For station programming mode only. For system programming, please use another Digital Proprietary Telephone with display.)
- ❸ **VOLUME Control Button:** Used to adjust the volume.
- ❹ **INTERCOM:** Used to make or receive intercom calls.
- ❺ **FLASH/RECALL:** Used to disconnect the current call and make another call with holding the same outside line.

- ❻ **AUTO DIAL/STORE:** Used for speed dialling in the system or storing program changes.
- ❼ **TRANSFER:** Used to transfer a call to another party.
- ❽ **REDIAL (ordinarily):** Used to redial. **PAUSE (in programming):** Used to insert a pause for One-touch dialling numbers.
- ❾ **HOLD:** Used to place a call on hold.
- ❿ **SP-PHONE:** Used for the handsfree operation.
- ⓫ **Microphone:** Used for the handsfree conversation.
- ⓬ **AUTO ANS (Auto Answer):** Used to answer an intercom call automatically without touching telephone. **MUTE:** Used to listen to the other party without them hearing you. You can mute the handset microphone or the Microphone.
- ⓭ **Flexible Outside (CO) Line Button:** Used to make or receive an outside call, or access a feature if the button is assigned as a One-touch dialling button.

Adjusting the ringer volume

Adjust the **RINGER volume selector** lever (at the bottom of the unit) to the desired setting. (OFF, LOW, HIGH)



Adjusting the display contrast

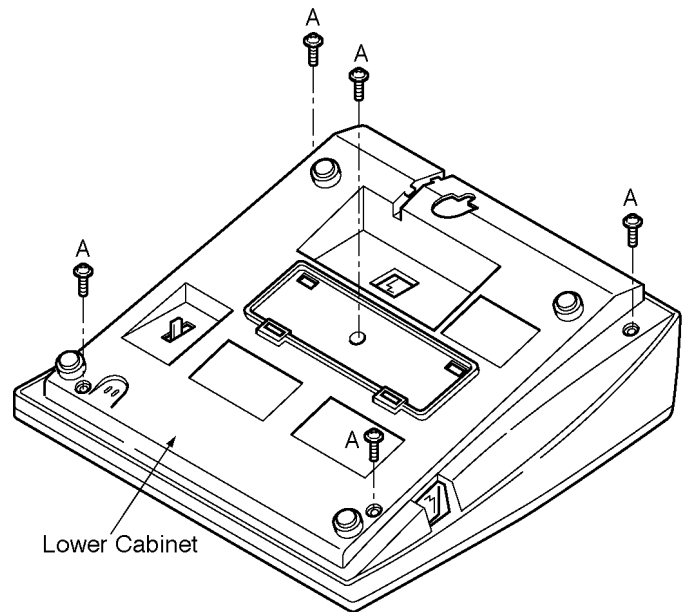
While idle and on-hook, and not ringing

Press **FLASH/RECALL** button first. Press **UP** (▲) or **DOWN** (▼) key within 2 seconds after releasing FLASH/RECALL button. (3 steps)

4 DISASSEMBLY INSTRUCTION

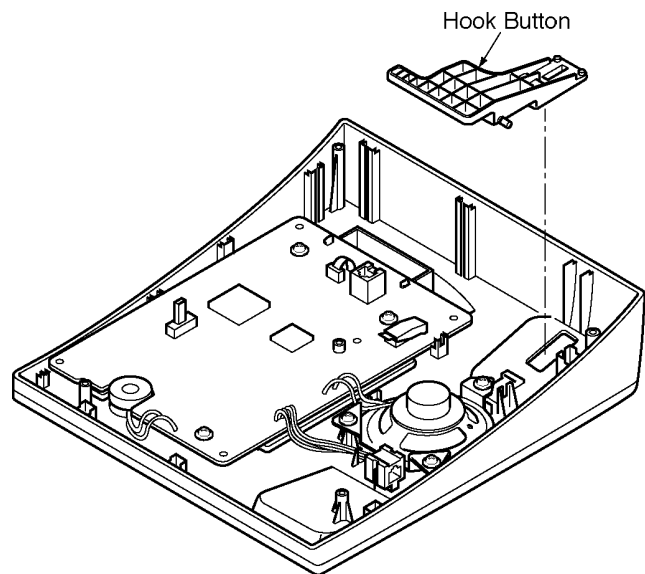
4.1. HOW TO REMOVE THE LOWER CABINET (Procedure 1)

- (1) Remove the 5 screws A.
- (2) Remove the lower cabinet.



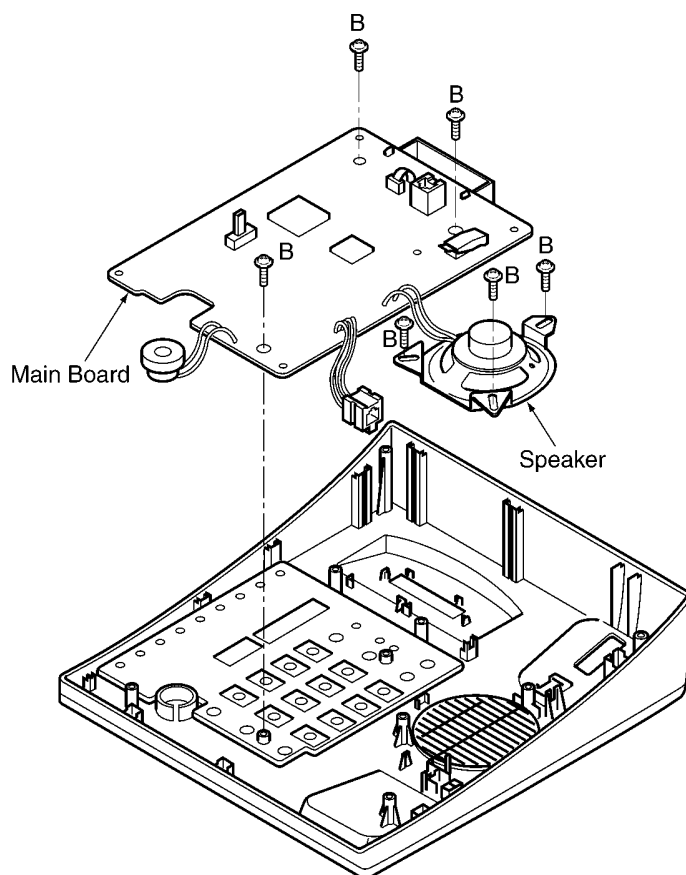
4.2. HOW TO REMOVE THE HOOK BUTTON (Procedure 1→2)

- (1) Remove the hook button.



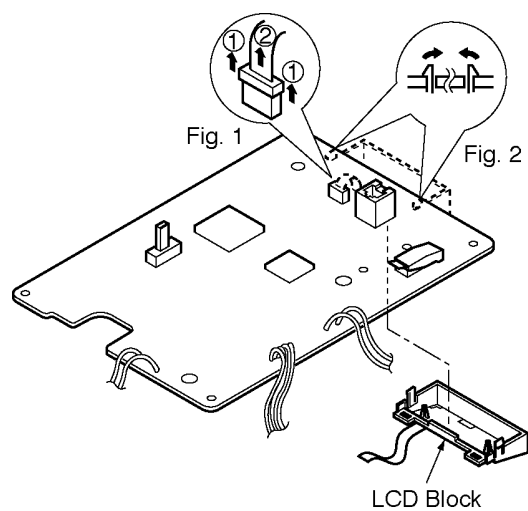
4.3. HOW TO REMOVE THE MAIN BOARDS (Procedure 1→2→3)

- (1) Remove the 6 screws A.
- (2) Remove the main board, speaker, H/S jack and mic.



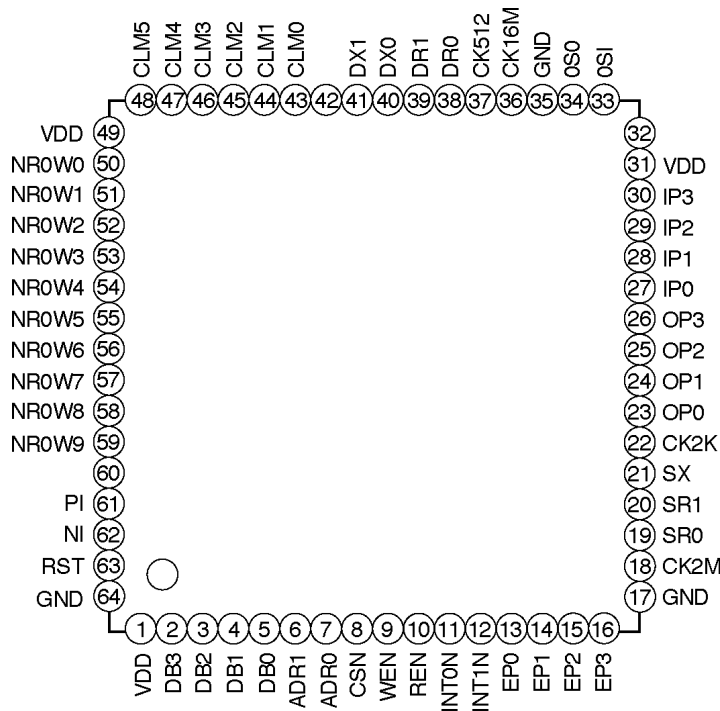
4.4. HOW TO REMOVE THE LCD BLOCK (Procedure 1→2→3→4)

- (1) Pull out the flat cable. (See Fig. 1)
- (2) Remove the LCD block. (See Fig.2)



5 IC DATA

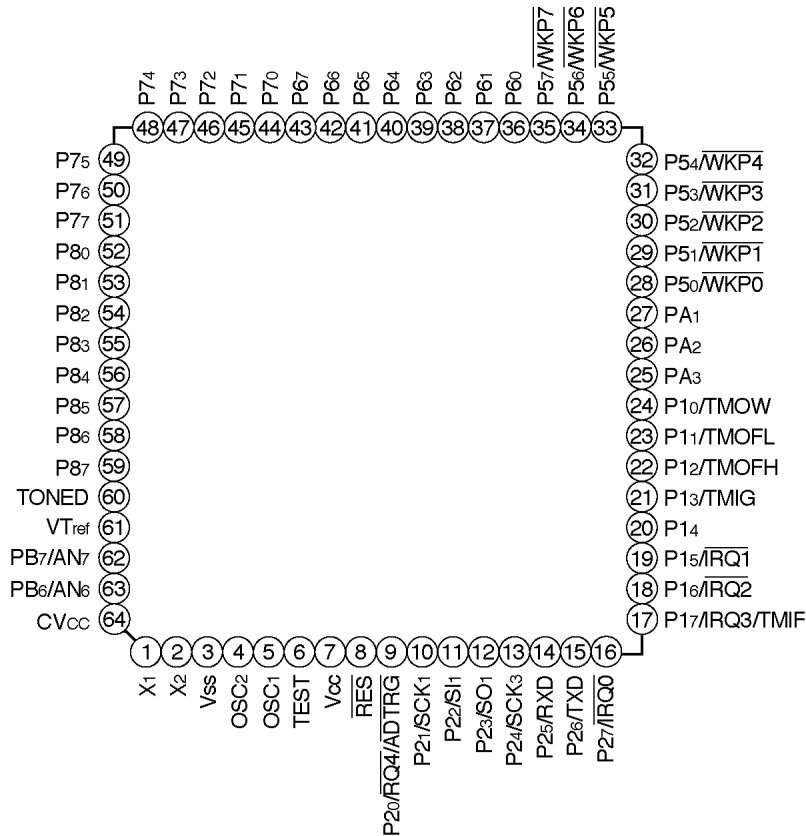
5.1. IC1



| Name | Pin | Dir. | Pull Up | Type | Io | Act. | Block | MHz | Descriptions |
|--------|-----|--------|---------|--------------|-------|------|---------|------|--------------------------------|
| DB3 | 2 | bidir | --- | TTL | 8.0mA | high | PT5B03 | 2 | Data Bus [3] |
| DB2 | 3 | bidir | --- | TTL | 8.0mA | high | PT5B03 | 2 | Data Bus [2] |
| DB1 | 4 | bidir | --- | TTL | 8.0mA | high | PT5B03 | 2 | Data Bus [1] |
| DB0 | 5 | bidir | --- | TTL | 8.0mA | high | PT5B03 | 2 | Data Bus [0] |
| ADR1 | 6 | input | 12-38k | TTL | --- | high | PT5D01U | 2 | Address Bus [1] |
| ADR0 | 7 | input | 12-38k | TTL | --- | high | PT5D01U | 2 | Address Bus [0] |
| CSN | 8 | input | --- | TTL | --- | low | PT5D01 | 1 | Chip Select |
| REN | 10 | input | 12-38k | TTL | --- | low | PT5D01U | 2 | Read Enable Command |
| WEN | 9 | input | 12-38k | TTL | --- | low | PT5D01U | 2 | Write Enable Command |
| RST | 63 | input | --- | CMOS schmidt | --- | high | PC5D21 | 0.01 | Asynchronous Reset Input |
| INT0N | 11 | output | --- | CMOS | 2.0mA | low | PC5O01 | 0.01 | Interrupt Request |
| INT1N | 12 | output | --- | CMOS | 2.0mA | low | PC5O01 | 0.01 | Interrupt Request |
| DR0 | 38 | input | --- | CMOS | --- | low | PC5D01 | 0.6 | Dpits Receive Data [1] |
| DR1 | 39 | input | --- | CMOS | --- | low | PC5D01 | 0.6 | Dpits Receive Data [0] |
| DX0 | 40 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.6 | Dpits Transmit Data [1] |
| DX1 | 41 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.6 | Dpits Transmit Data [0] |
| CK512K | 37 | output | --- | CMOS | 2.0mA | high | PC5O01 | 0.6 | Dpits Bit Rate Clock |
| SR0 | 19 | input | 12-38k | TTL | --- | high | PT5D01U | 0.1 | Serial Receive Data Stream [0] |
| SR1 | 20 | input | 12-38k | TTL | --- | high | PT5D01U | 0.1 | Serial Receive Data Stream [1] |
| SX | 21 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.1 | Serial Transmit Data Stream |
| CK2M | 18 | output | --- | CMOS | 4.0mA | high | PC5O02 | 2.1 | Serial Stream Clock |
| EP0 | 13 | output | --- | CMOS | 2.0mA | high | PC5O01 | 0.01 | not used |
| EP1 | 14 | output | --- | CMOS | 2.0mA | high | PC5O01 | 0.01 | not used |
| EP2 | 15 | output | --- | CMOS | 2.0mA | high | PC5O01 | 0.01 | External Channel Pulse [2] |
| EP3 | 16 | output | --- | CMOS | 2.0mA | high | PC5O01 | 0.01 | not used |
| PI | 61 | input | --- | CMOS schmidt | --- | high | PC5D21 | 0.01 | not used |
| NI | 62 | input | --- | CMOS schmidt | --- | high | PC5D21 | 0.01 | not used |
| CLM0 | 43 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | LED Column Drive [0] |
| CLM1 | 44 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | LED Column Drive [1] |
| CLM2 | 45 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | LED Column Drive [2] |
| CLM3 | 46 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | LED Column Drive [3] |
| CLM4 | 47 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | LED Column Drive [4] |
| CLM5 | 48 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | LED Column Drive [5] |
| NROW0 | 50 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [0] |
| NROW1 | 51 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [1] |
| NROW2 | 52 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [2] |
| NROW3 | 53 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [3] |

| | | | | | | | | | |
|-------|----|--------|--------|--------|-------|------|---------|------|-------------------|
| NROW4 | 54 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [4] |
| NROW5 | 55 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [5] |
| NROW6 | 56 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [6] |
| NROW7 | 57 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [7] |
| NROW8 | 58 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [8] |
| NROW9 | 59 | output | --- | CMOS | 4.0mA | low | PC5O02 | 0.01 | LED Row Drive [9] |
| IP0 | 27 | input | 12-38k | CMOS | --- | high | PC5D01U | 0.01 | not used |
| IP1 | 28 | input | 12-38k | CMOS | --- | high | PC5D01U | 0.01 | not used |
| IP2 | 29 | input | 12-38k | CMOS | --- | high | PC5D01U | 0.01 | not used |
| IP3 | 30 | input | 12-38k | CMOS | --- | high | PC5D01U | 0.01 | not used |
| OP0 | 23 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | LCD Vol.control 1 |
| OP1 | 24 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | LCD Vol.control 2 |
| OP2 | 25 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | not used |
| OP3 | 26 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.01 | not used |
| CK2K | 22 | output | --- | CMOS | 4.0mA | high | PC5O02 | 0.2 | not used |
| CK16M | 36 | output | --- | CMOS | 2.0mA | high | PC5O01 | 16.4 | Master Clock Out |
| OSI | 33 | input | --- | Analog | --- | --- | PC5X02 | 16.4 | X'tal In (XIN) |
| OSO | 34 | output | --- | Analog | --- | --- | PC5X02 | 16.4 | X'tal Out (XOUT) |
| N.C. | 32 | --- | --- | --- | --- | --- | --- | --- | not used |
| N.C. | 42 | --- | --- | --- | --- | --- | --- | --- | not used |
| N.C. | 60 | --- | --- | --- | --- | --- | --- | --- | not used |
| VDD1 | 1 | vdd | --- | --- | --- | --- | --- | --- | Vdd (5V) |
| VDD2 | 31 | vdd | --- | --- | --- | --- | --- | --- | Vdd (5V) |
| VDD3 | 49 | vdd | --- | --- | --- | --- | --- | --- | Vdd (5V) |
| VSS1 | 17 | vss | --- | --- | --- | --- | --- | --- | Vss (GND) |
| VSS2 | 35 | vss | --- | --- | --- | --- | --- | --- | Vss (GND) |
| VSS3 | 64 | vss | --- | --- | --- | --- | --- | --- | Vss (GND) |

5.2. IC2



| Classification | Terminal | Pin No. | Input/Output | Function |
|----------------|----------|---------|--------------|--|
| Power supply | Vcc | 7 | - | Power supply terminal |
| | GND | 3 | - | Ground terminal |
| | CVcc | 64 | - | Connect to the Vcc terminal |
| | Vtref | 61 | - | DTMF reference level voltage terminal Connect to the Vcc terminal |
| Oscillation | X1 | 1 | Input | Input/Output terminal to the main oscillator. |
| | X2 | 2 | Output | Connect to the ceramic oscillator.(8MHz) |
| | OSC1 | 5 | Input | No use |
| | OSC2 | 4 | Output | No use |
| Reset | RESET | 8 | Input | Reset terminal of MCU (Active Low) |
| Test | TEST | 6 | Input | No use |
| I/O port | P20 | 9 | Output | DTMF tone control |
| | P24 | 13 | Output | Handset tone control |
| | P25 | 14 | Output | SP-Phone tone control |
| | P26 | 15 | Output | Ringer tone control |
| | P27 | 16 | Input | Hook Switch |
| | SCK1 | 10 | Output | LCD serial clock |
| | P22 | 11 | Output | LCD write enable command |
| | SO1 | 12 | Output | LCD data |
| | P17 | 17 | Input | Interrupt request from G/A (IC1) |
| | P16 | 18 | Input | Interrupt request from G/A (IC1) |
| | P15 | 19 | Output | Reset terminal of G/A (IC1) (Active Hi) |
| | P14 | 20 | Output | KEY communication output 1 |
| | P13 | 21 | Output | KEY communication output 2 |
| | P12 | 22 | Output | KEY communication output 3 |
| | P11 | 23 | Output | KEY communication output 4 |
| | P10 | 24 | Output | KEY communication output 5 |
| | P50 | 28 | Input | KEY communication input 0 |
| | P51 | 29 | Input | KEY communication input 1 |
| | P52 | 30 | Input | KEY communication input 2 |
| | P53 | 31 | Input | KEY communication input 3 |
| | P54 | 32 | Input | KEY communication input 4 |
| | P55 | 33 | Input | KEY communication input 5 |
| | P56 | 34 | Input | KEY communication (HOLD key) |
| | P57 | 35 | Input | No use |
| | PA3 | 25 | Output | W.OHCA control |

| | | | |
|-----|----|--------------|---|
| PA2 | 26 | Output | Ringer tone vol. Control 1 |
| PA1 | 27 | Output | Ringer tone vol. Control 2 |
| P60 | 36 | Output | Handset speaker mute control |
| P61 | 37 | Output | Handset mic mute control |
| P62 | 38 | Output | SP-Phone speaker mute control |
| P63 | 39 | Output | Off-hook-monitor control |
| P64 | 40 | Output | Handset power control |
| P65 | 41 | Output | SP-Phone power control |
| P66 | 42 | Output | Side tone control |
| P67 | 43 | Output | Select A-Law/m-Law |
| P70 | 44 | Output | SP-Phone mic mute control |
| P71 | 45 | Output | Handset vol. Control 1 |
| P72 | 46 | Output | Handset vol. Control 2 |
| P73 | 47 | Output | Handset vol. Control 3 |
| P74 | 48 | Output | Read enable terminal of G/A (IC1) (Active Low) |
| P75 | 49 | Output | Write enable terminal of G/A (IC1) (Active Low) |
| P76 | 50 | Output | Address bus 1 for G/A (IC1) |
| P77 | 51 | Output | Address bus 2 for G/A (IC1) |
| P80 | 52 | Input/Output | Data bus 1 for G/A (IC1) |
| P81 | 53 | Input/Output | Data bus 2 for G/A (IC1) |
| P82 | 54 | Input/Output | Data bus 3 for G/A (IC1) |
| P83 | 55 | Input/Output | Data bus 4 for G/A (IC1) |
| P84 | 56 | Output | SP-Phone vol. Control 1 |
| P85 | 57 | Output | SP-Phone vol. Control 2 |
| P86 | 58 | Output | SP-Phone vol. Control 3 |
| P87 | 59 | Output | SP-Phone vol. Control 4 |
| AN7 | 61 | Input | Select Model/Area cord |
| AN6 | 62 | Input | Select Ringer position |

6 HOW TO REPLACE THE FLAT PACKAGE IC

If you do not have the special tools (for example: SPOT HEATER) to remove the SPOT HEATER'S Flat IC, If you have solder (large amount) a soldering iron and a cutter knife, you can easily remove IC's even though large than 100 pin.

6.1. PREPARATION

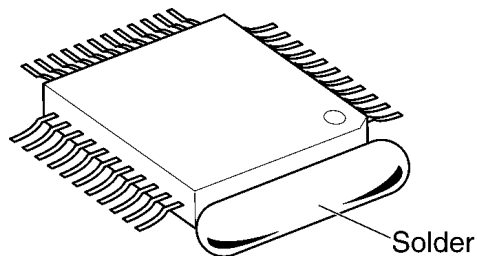
- SOLDER
Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA
- Soldering iron
Recommended power consumption is between 30 W to 40 W.
Temperature of Copper Rod 662 ± 50°F (350 ± 10°C)
(An expert may handle a 60~80 W iron, but beginner might damage foil by overheating.)
- Flux
HI115 Specific gravity 0.863
(Original flux should be replaced daily.)

6.2. FLAT PACKAGE IC REMOVE PROCEDURE

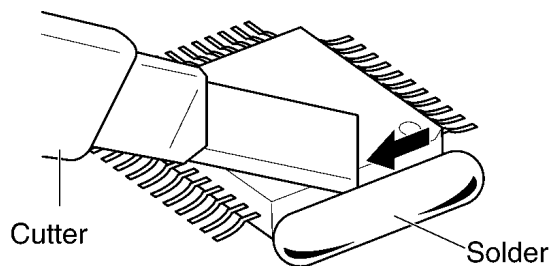
1. When all of the IC lead can not been seen at the standard degree, fill with large quantities of solder.

Note:

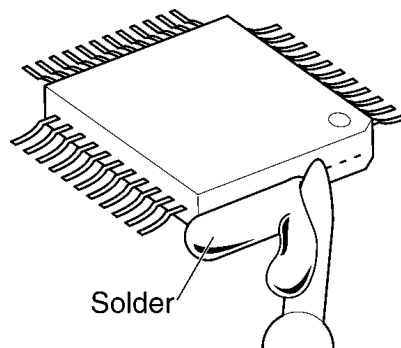
If you do not fill with solder and directly cut the IC lead with the cutter, stress may build up directly in the P.C.board's pattern.
If you do not fill with large quantities of solder as in step 1 the P.C.board pattern may be removed.



2. Using a cutter, cut the lead at the source. (Cut the contents with the cutter lightly 5 or 6 times.)



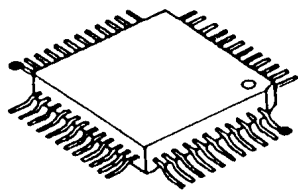
3. Remove when the solder melts. (Remove the lead at the same time.)



After removing the Flat IC and when attaching the new IC, remove any of the excess solder on the land using the soldering wire, etc. If the excess solder is not removed from the land, the IC will slip and not be attached properly.

6.3. FLAT PACKAGE IC INSTALLATION PROCEDURE

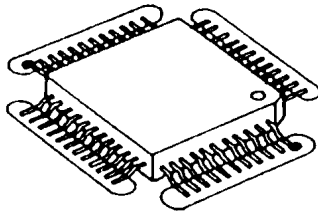
1. Temporary fix FLAT PACKAGE IC by soldering on two marked pins.



● - - - - - Temporary soldering point.

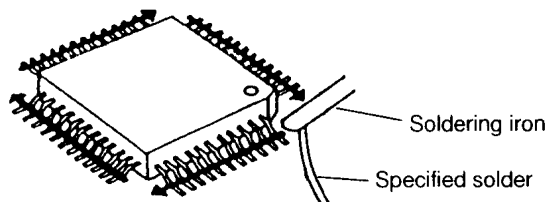
*Check the accuracy of the IC setting with the corresponding soldering foil.

2. Apply flux for all pins of FLAT PACKAGE IC.



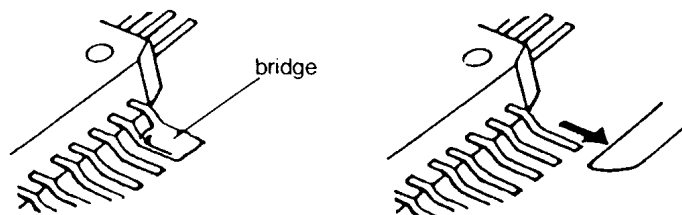
○ - - - - - Flux

3. Solder using the specified solder, in the direction of the arrow, by sliding the soldering iron.

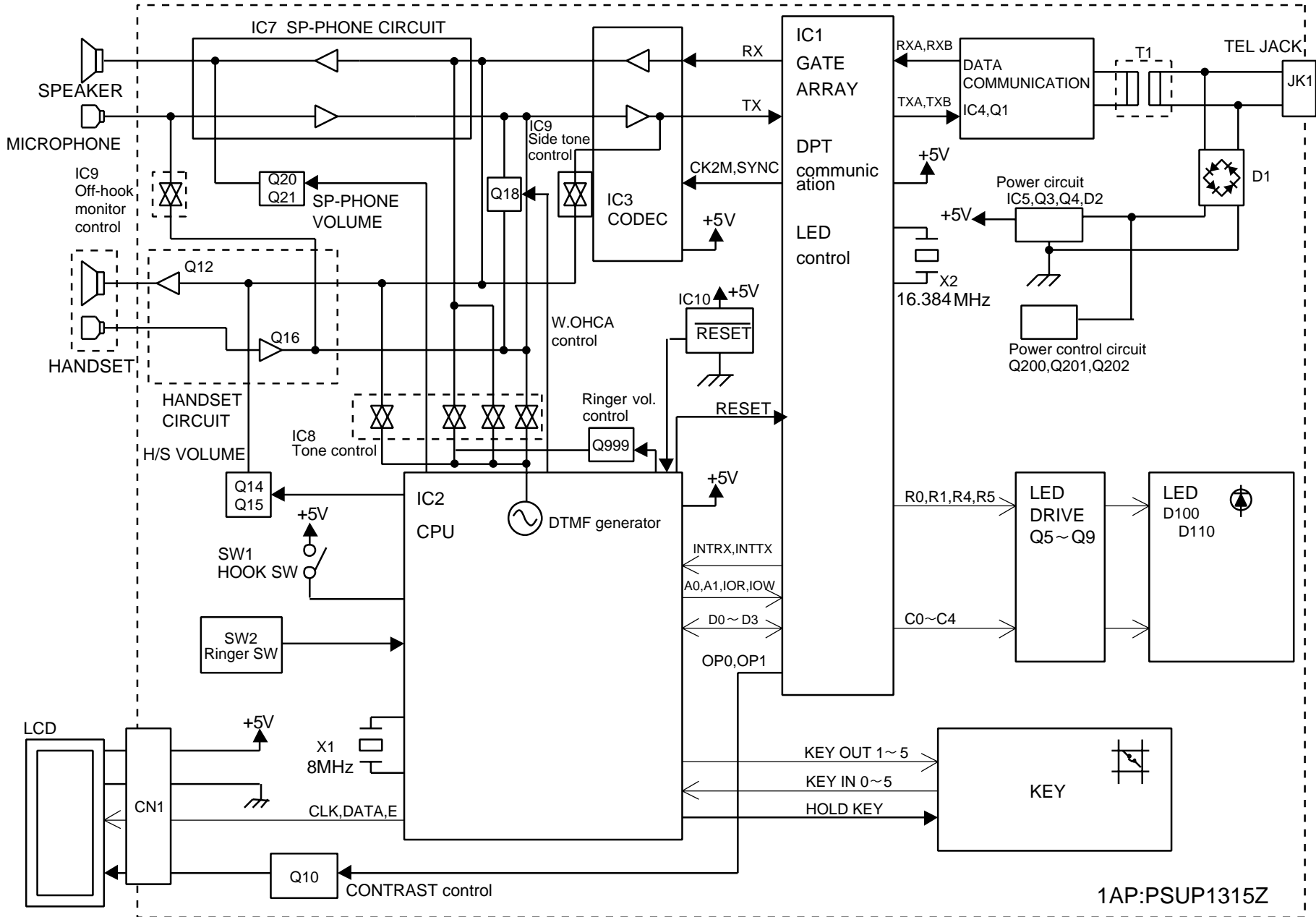


6.4. BRIDGE MODIFICATION PROCEDURE

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



7 BLOCK DIAGRAM



1AP:PSUP1315Z

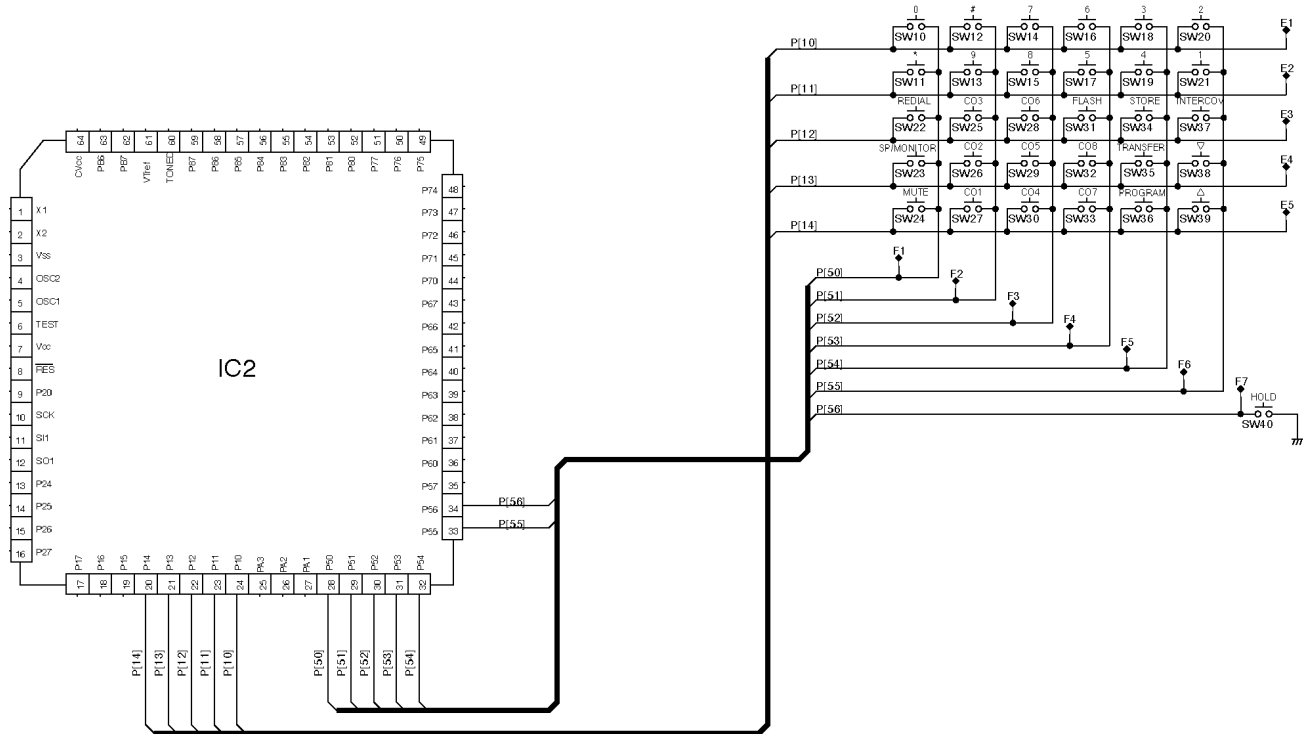
8 CIRCUIT OPERATIONS

8.1. KEY INPUT CONTROL CIRCUIT

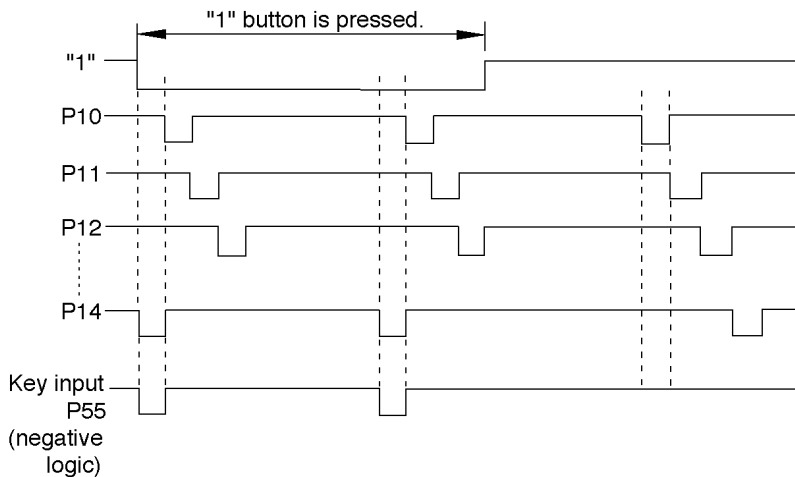
(1) CIRCUIT OPERATION

Sequential input information (negative logic) from the DSHS proprietary telephone is executed by dynamic scanning. The ports P10 to P14 of IC2 are brought to low status consecutively. If a key is pressed, the key-in information input is executed by port S P50 to P56.

Circuit diagram



Key Input Control Timing Chart



When "P55" is low status and the "1" button is pressed, the key-in information is read.

8.2. LCD CONTROL CIRCUIT

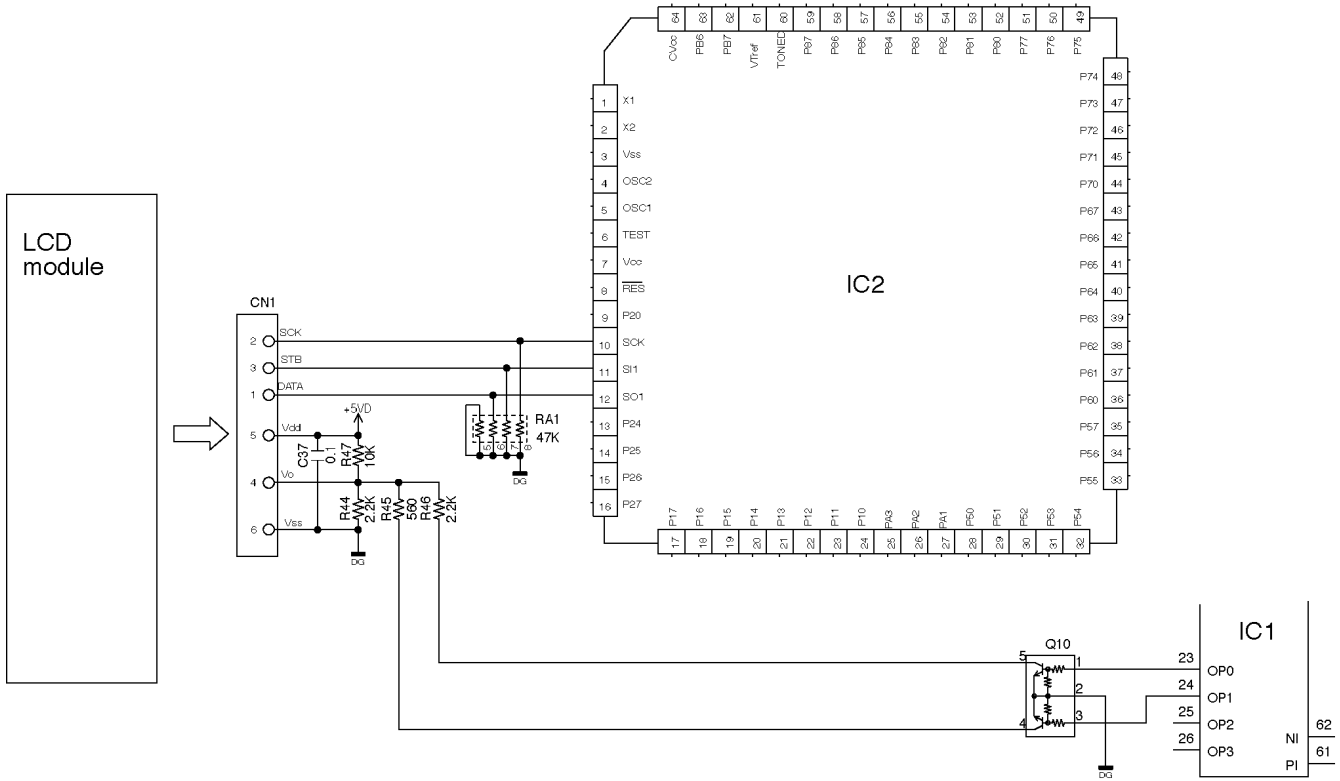
(1) CIRCUIT OPERATION

The LCD data is output from pins 12 of IC2.

LCD contrast adjustment is performed by the circuit composed of Q10, R44, R45, R46 and R47.

The contrast is determined only by the voltage level between pin 4 of CN1 and +5 V. Higher potential makes the contrast high.

Circuit diagram



LCD Contrast Control

| CONTRAST | IC1 Pin 23 | IC2 Pin 24 |
|----------|------------|------------|
| HIGH | L | L |
| MIDDLE | H | L |
| LOW | L | H |

8.3. LED CIRCUIT

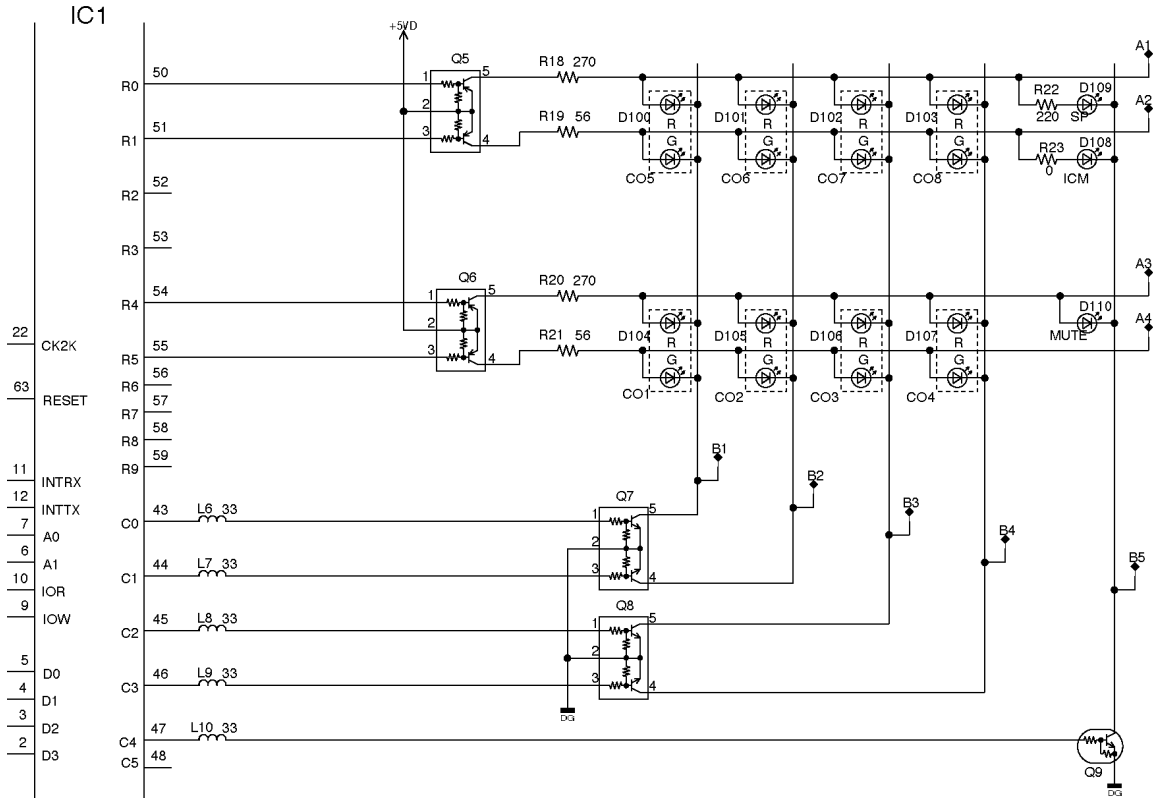
(1) CIRCUIT OPERATION

The LED executes dynamic lighting for the status indicators, and control is executed by the output ports C0 to C4 (column) and R0, R1, R4, R5 (row) of IC1.

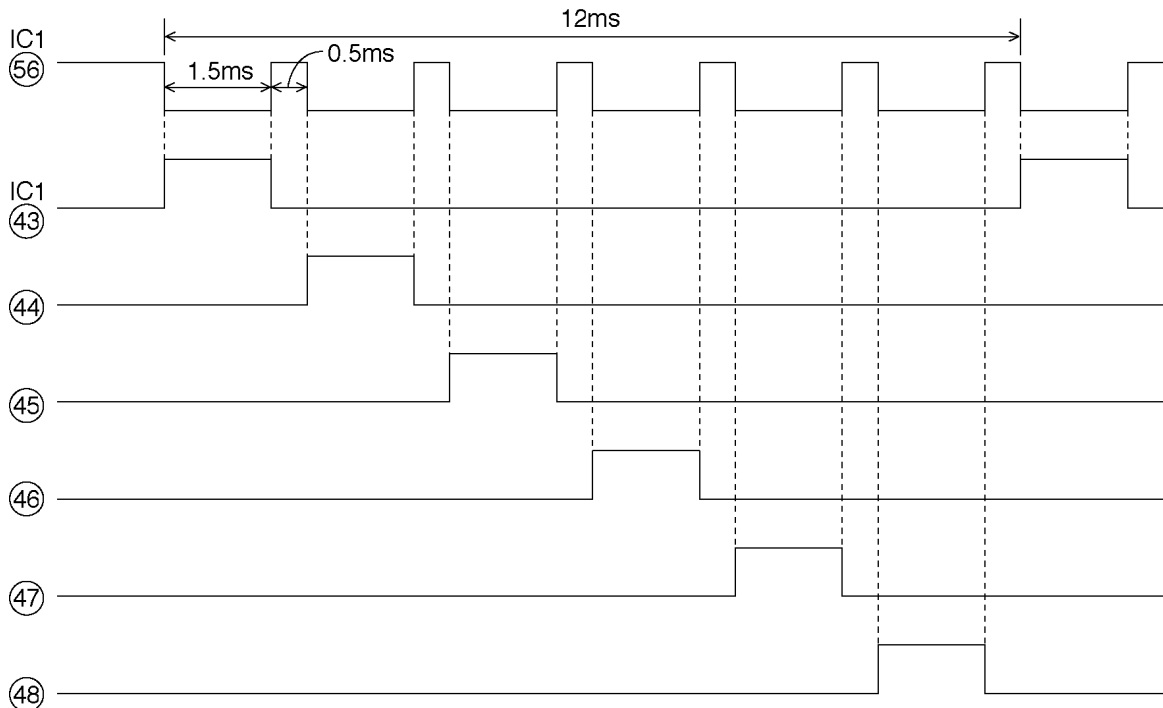
A fixed pulse (T=1.5 msec) is output continuously from IC1. This pulse is counted and the output of IC1 is shifted sequentially from C0 to C4.

R0 to R5 of IC1 also output pulses, and the lighting of the LED is controlled by the timing of the output ports C0 to C4.

Circuit diagram



Timing Chart



8.4. DATA COMMUNICATION CIRCUIT

(1) FUNCTION

The data communication circuit serves the following functions:

Information exchanger between the DSHS and DSHS proprietary telephone, key input information as well as data for the LED control, LCD control, etc. This information is continuously exchanged at all times.

(2) CIRCUIT OPERATION

When the DSHS proprietary telephone receives an IRQ signal from the DSHS and after sending the key input information to the DSHS and receiving data for the LED control, etc., the DSHS proprietary telephone will return to the DSHS an acknowledge signal.

(3) RECEPTION

The data from the EMSS is received via the H and L lines along the path shown below.

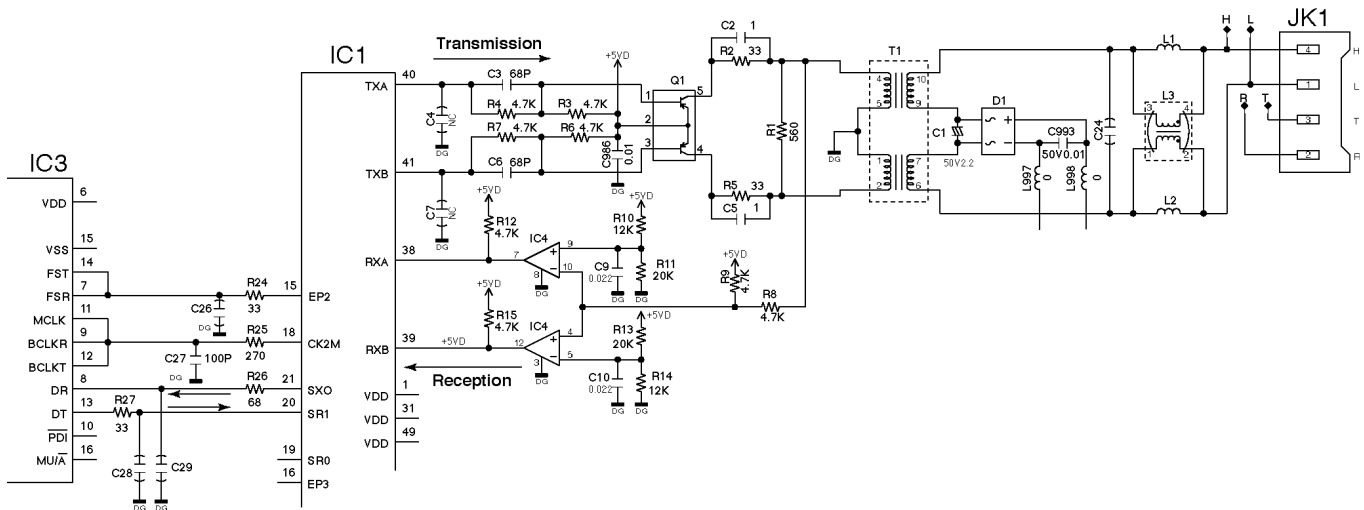
H, L Line → T1 → IC4 Pin (4), (10) → IC1 Pin (38), (39) → IC1 Pin (21) → IC3 Pin (8)

(4) TRANSMISSION

The data to the EMSS proprietary telephone is transmitted along the following path.

IC3 Pin (13) → IC1 Pin (20) → IC1 Pin (40), (41) → Q1 → T1 → H, L Line

Circuit diagram

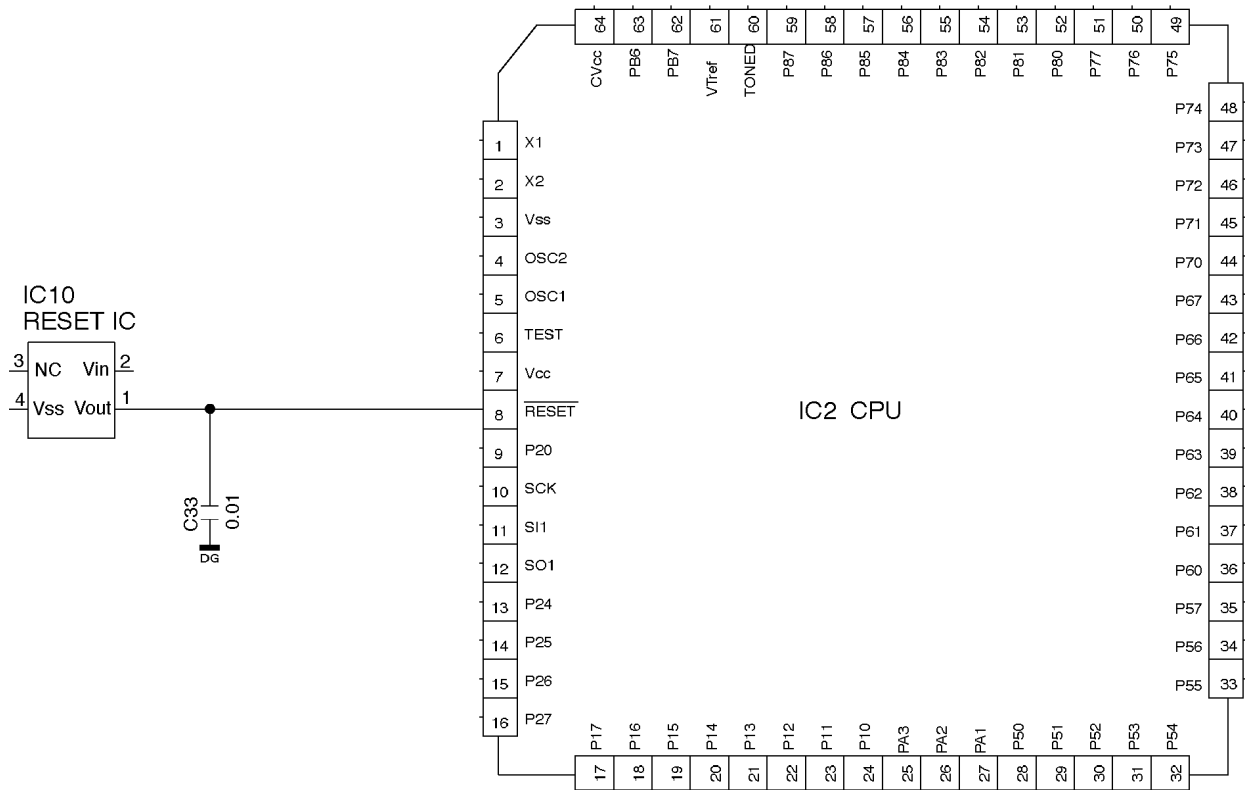


8.5. RESET CIRCUIT

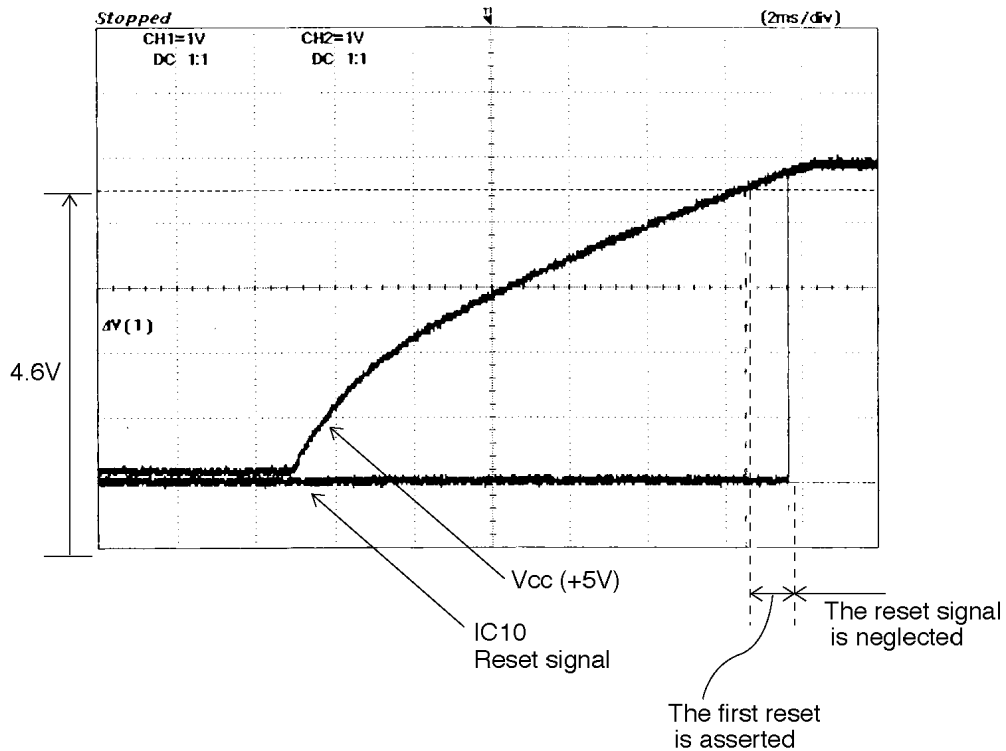
(1) CIRCUIT OPERATION

This circuit is used for transmission of a reset pulse to the CPU (IC2) at the following times, connecting the telephone line jack and circuit operation.

Circuit diagram



Timing Chart

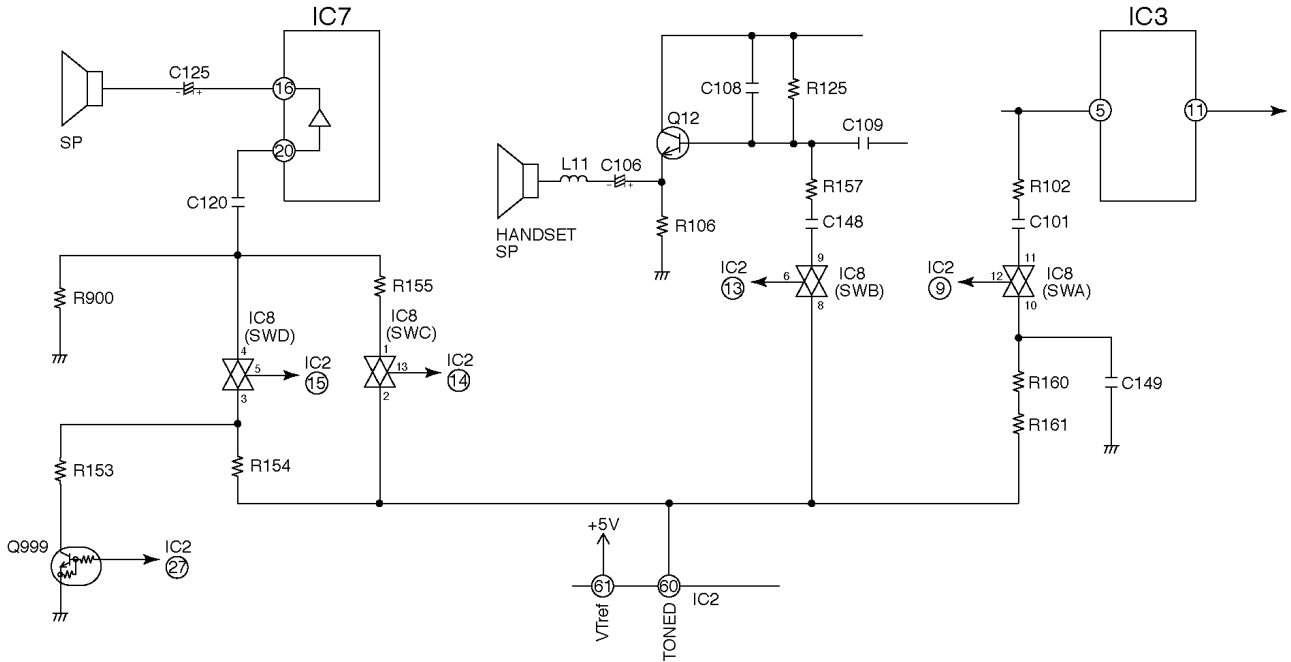


8.6. TONE GENERATION CIRCUIT

(1) FUNCTION

All system tones including COL, extension, busy, DTMF signal and key-in tones are sent from Pins 60 of IC2 and controls the path by the Analog Switch (IC8).

Circuit diagram



(2) CALLING TONES FROM COL AND EXT.

For a calling tone from a CO line or extension, the single row tone signal is output from Pin 60 of IC2 and the tone volume is controlled by transistors Q999.

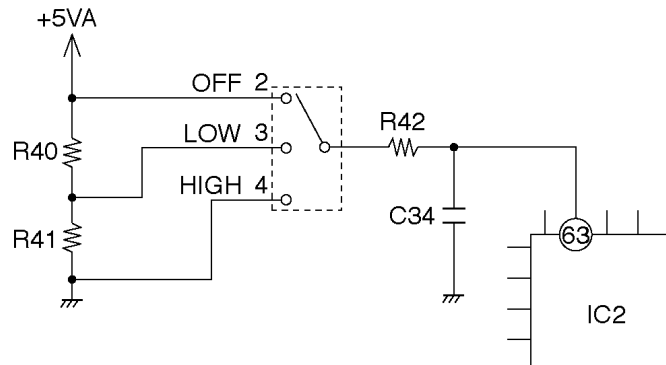
IC2 Pin 60 → IC8 Pin 3 ~ 4 → C120 → IC7 Pin 20 → IC7 Pin 16 → C125 → SP

Ringer Volume Control

| Level | OFF | LOW | HIGH |
|-------|-----|-----|------|
| Q999 | OFF | ON* | OFF |

***CAUTION:**

It is ON with ringer sound and it is OFF with no ringer sound regardless of the ringer volume.



(3) BUSY STATION CALLING TONE

852 Hz and 697 Hz signals are output from Pin 61 of IC7 alternately at intervals of 60 ms.
The signal flow is shown below.

IC2 Pin ⑥⑩ → IC8 Pin ② ~ ① → R155 → C120 → IC7 Pin ⑳ → IC7 Pin ①⑥ → C125 → SP
 → IC8 Pin ⑧ ~ ⑨ → C148 → R157 → Q12 ② → Q12 ⑤ → C106 → L11 → Handset SP

(4) DTMF SIGNAL

A DTMF tone is generated by IC7 and the signal flow is shown below.

IC2 Pin ⑥⑩ → R161 → R160 → IC8 Pin ⑩ ~ ⑪ → C101 → R102 → IC3 Pin ⑤ → Telephone Line
 → IC8 Pin ⑧ ~ ⑨ → C148 → R157 → Q12 → C106 → Handset Speaker
 (IC8 Pin ② ~ ① → R155 → C120 → IC7 Pin ⑳ → IC7 Pin ①⑥ → C125 → SP)

| | | High Group | | |
|-----------|--------|------------|--------|--------|
| | | 1209 Hz | 1336Hz | 1477Hz |
| Low Group | 697 Hz | 1 | 2 | 3 |
| | 770 Hz | 4 | 5 | 6 |
| | 852 Hz | 7 | 8 | 9 |
| | 941 Hz | * | 0 | # |

(5) KEY-IN TONE

An 852 Hz single tone is used as the key-in tone. A tone is generated from IC7 and is heard at the speaker.
The signal flow is shown below.

IC2 Pin ⑥⑩ → IC8 Pin ⑧ ~ ⑨ → C148 → R157 → Q12 → C106 → Handset SP
 → IC8 Pin ② ~ ① → R155 → C120 → IC7 Pin ⑳ → IC7 Pin ①⑥ → C125 → SP

| CONDITION | IC8 SWA | IC8 SWB | IC8 SWC | IC8 SWD |
|--------------------------|---------|---------|---------|---------|
| Ringing | OFF | OFF | OFF | ON |
| Call Waiting | OFF | OFF | ON | OFF |
| Tone Dial (Handset) | ON | ON | OFF | OFF |
| Tone Dial (Speakerphone) | ON | OFF | ON | OFF |

8.7. HANDSET CIRCUIT

(1) TRANSMISSION SIGNAL PATH

The analog input signal for the handset microphone is changed to a digital signal and sent through the telephone line via the following path:

Handset MIC → L12 → C111 → R118 → Q16 → C116 → R121 → C100 → R101 → IC3 (18) → IC3 (13) → IC1 (20) → IC1 (40), (41) →

Q1 → T1 → Telephone Line

(2) RECEPTION SIGNAL PATH

The digital input signal from the telephone line is changed to an analog signal by IC3 and sent to the receiver via the following path:

Telephone Line → T1 → IC4 (4), (10) → IC1 (38), (39) → IC1 (21) → IC3 (8) → IC3 (4) → R100 → C144 → R115 → C109 →

Q12 → C106 → L11 → Handset Speaker

(3) CIRCUIT DIAGRAM FOR TRANSMISSION / RECEPTION SIGNAL PATH.

8.8. SPEAKER-PHONE CIRCUIT

(1) FUNCTION

This circuit controls the automatic switching of the transmitted and received signals to and from the telephone line, when the unit is used in the hands-free mode.

(2) CIRCUIT OPERATION

The speakerphone can only provide a one-way communication path.

In other words, it can either transmit an outgoing signal or receive an incoming signal.

This switching circuit is contained in IC8 and consists of a Voice Detector, Tx Attenuator, Rx Attenuator, Comparator and Attenuator Control. The circuit analyzes whether the Tx (transmit) or Rx (receive) signal is louder, and then it processes the signals so that the louder signal is given precedence.

The Voice Detector provides a DC input to the Attenuator Control corresponding to the Tx signal. The Comparator receives a Tx and Rx signal, and supplies DC input to the Attenuator Control corresponding to the Rx signal. The Attenuator Control provides a control signal to the Tx and Rx Attenuator to switch the appropriate signals ON and OFF. The Attenuator Control also detects the level of the volume control to automatically adjust the volume for changing ambient conditions.

(3) CONTROL SIGNAL PATH

Control signals for transmission and reception are input to IC8 via the following path:

(Transmission Control Signal Path)

MIC → IC7 Pin (9) → IC7 Pin (10) → IC7 Pin (3) → IC7 Pin (4) → IC7 Pin (5)

(Reception Control Signal Path)

Telephone Line → IC3 Pin (4) → R147 → IC7 Pin (7)

(4) TRANSMISSION / RECEPTION SWITCHING

The comparison result between Tx and Rx output is a DC level at IC7 Pin 23.

| | |
|-----------------------|---------------------|
| Tx level is high..... | Pin 23=Pin 20-6mV |
| Rx level is high..... | Pin 23=Pin 20-150mV |

The comparator output is connected to the attenuator control inside IC7.

(5) VOICE DETECTOR

The output of the mic amp (Pin 10 of IC7) is supplied to Pin 13 of IC7 as a control signal for the voice detector.

(6) ATTENUATOR CONTROL

The attenuator control detects the setting of the volume control through Pin 24 of IC8 and automatically adjusts the volume for changing ambient conditions.

(7) TRANSMISSION SIGNAL PATH

The input signal from the microphone is sent through the circuit via the following path:

MIC → C118 → IC9 (1), (2) → C121 → IC7 (9) → IC7 (10) → R145 → C135 → IC7 (3) → IC7 (4) → R148 → C102 → IC3 (18) →
IC3 (13) → C1 (20) → IC1 (40), (41) → Q1 → T1 → Telephone Line

(8) RECEPTION SIGNAL PATH

Signals received from the telephone line are output to the speaker via the following path:

Telephone Line → T1 → IC4 (4), (10) → IC1 (38), (39) → IC1 (21) → IC3 (8) → IC3 (4) → R100 → IC9 (11), (12) → C140 →
R147 → C134 → IC7 (29) → IC7 (28) → R133 → C119 → C120 → IC7 (20) → IC7 (16) → C125 → SP

(9) OFF-HOOK MONITOR CIRCUIT

The input signal from the handset microphone is output through the speakerphone circuit.

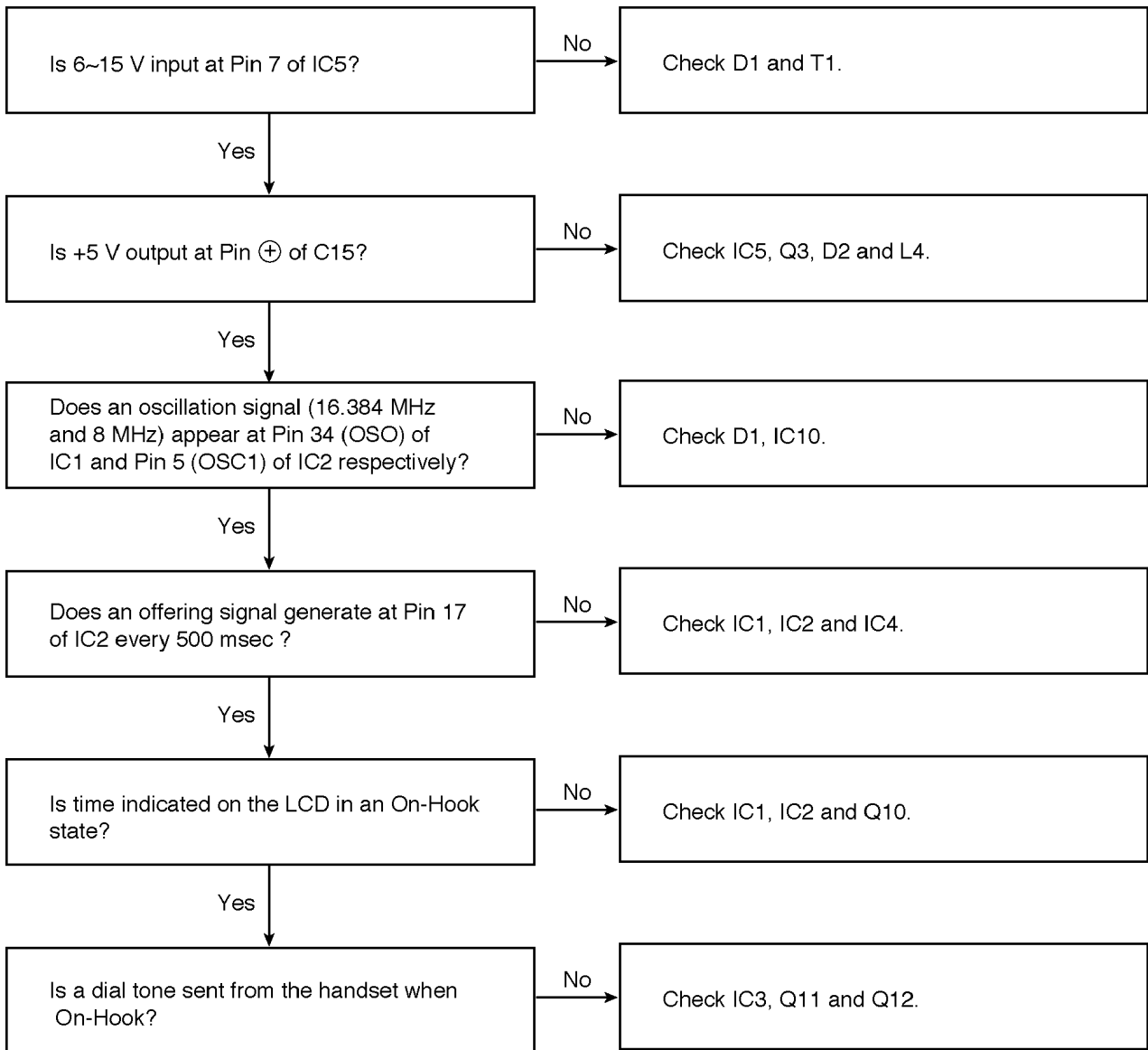
Handset MIC → L12 → C111 → R118 → Q16 → C147 → R162 → IC9 (4), (3) → C121 → IC7 (9) → IC7 (10) →
R145 → C135 → IC7 (3) → IC7 (4) → R148 → C102 → IC3 (18) → IC3 (13) → IC1 (20) →
IC1 (40), (41) → Q1 → T1 → Telephone Line

(10) CIRCUIT DIAGRAM FOR SIGNAL PATH

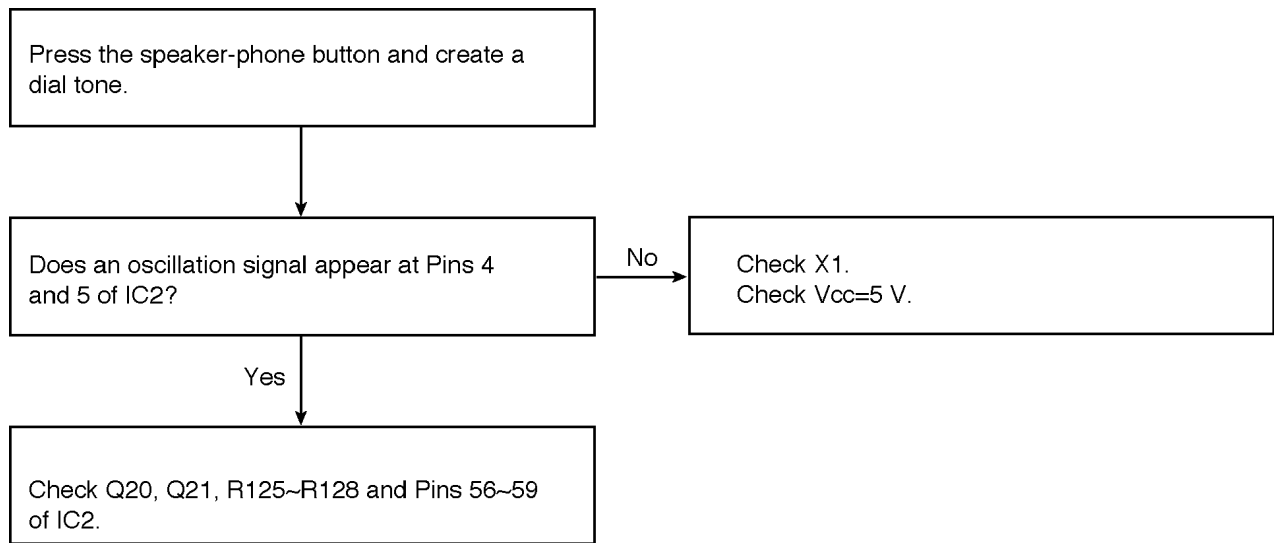
Refer to page Schematic diagram.

9 TROUBLE SHOOTING GUIDE

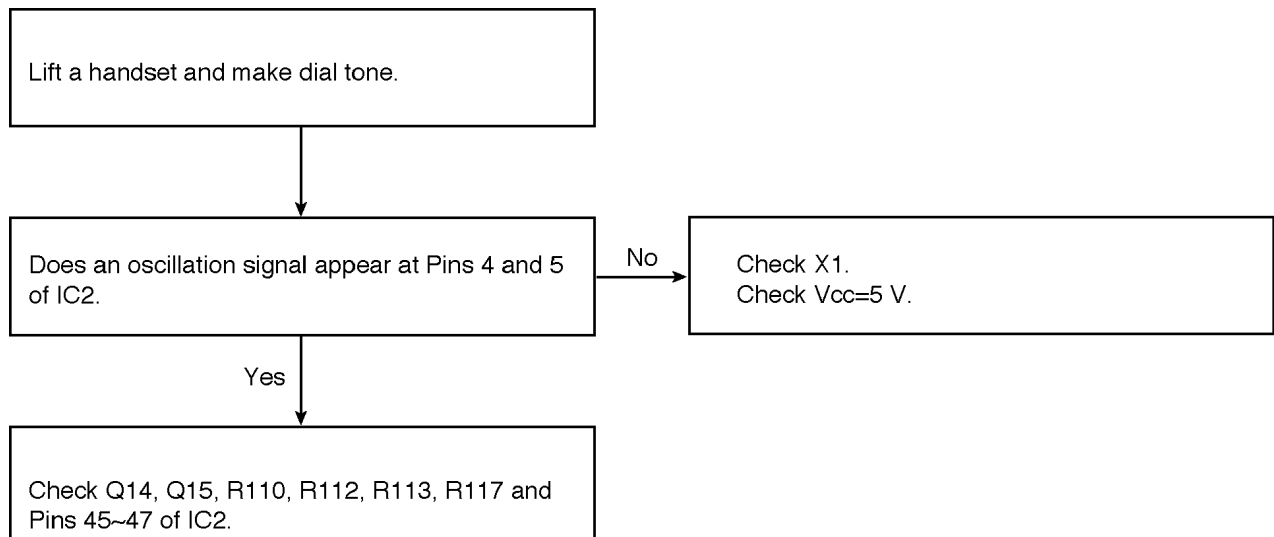
9.1. NO OPERATION



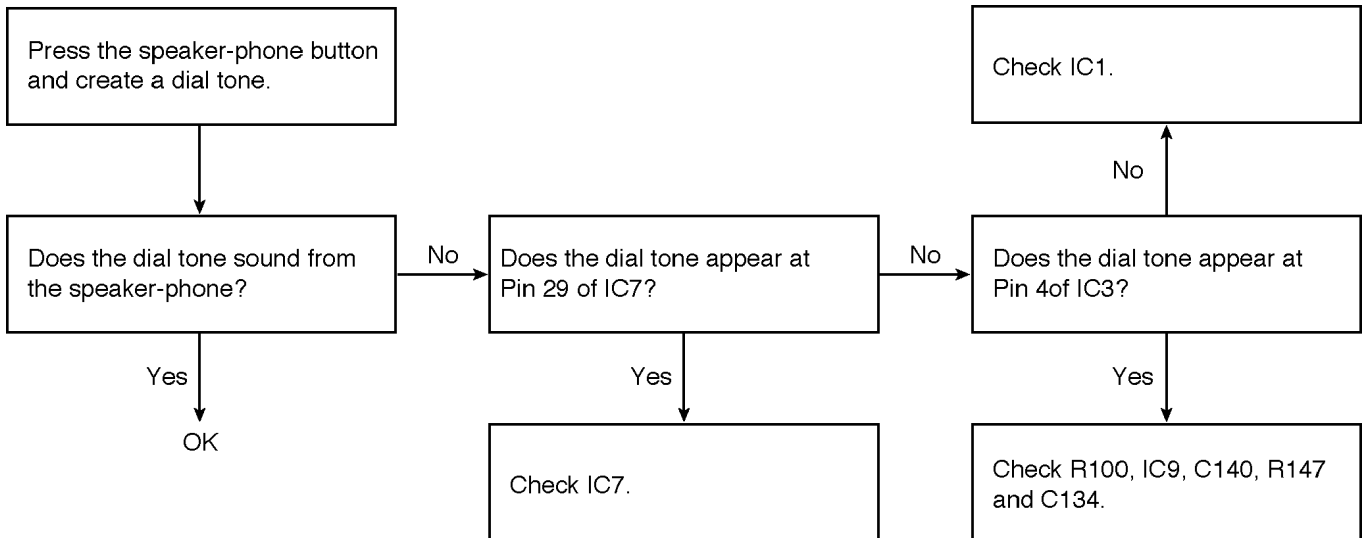
9.2. THE ELECTRONIC VOLUME OF THE SPEAKER-PHONE DOES NOT WORK



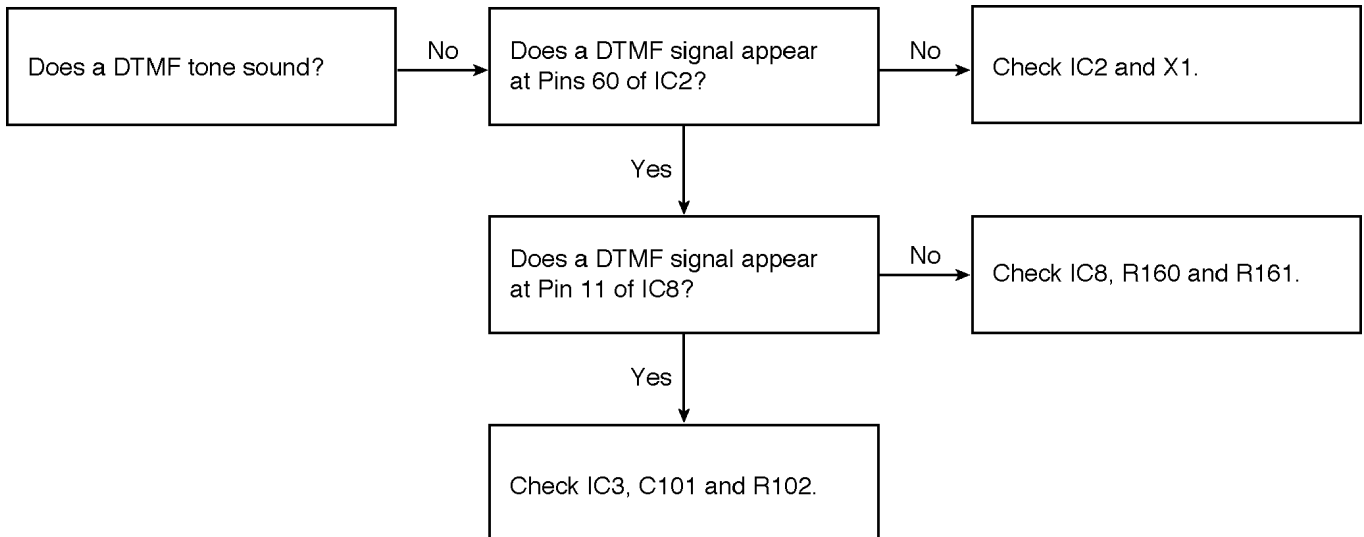
9.3. THE ELECTRONIC VOLUME OF THE HANDSET DOES NOT WORK



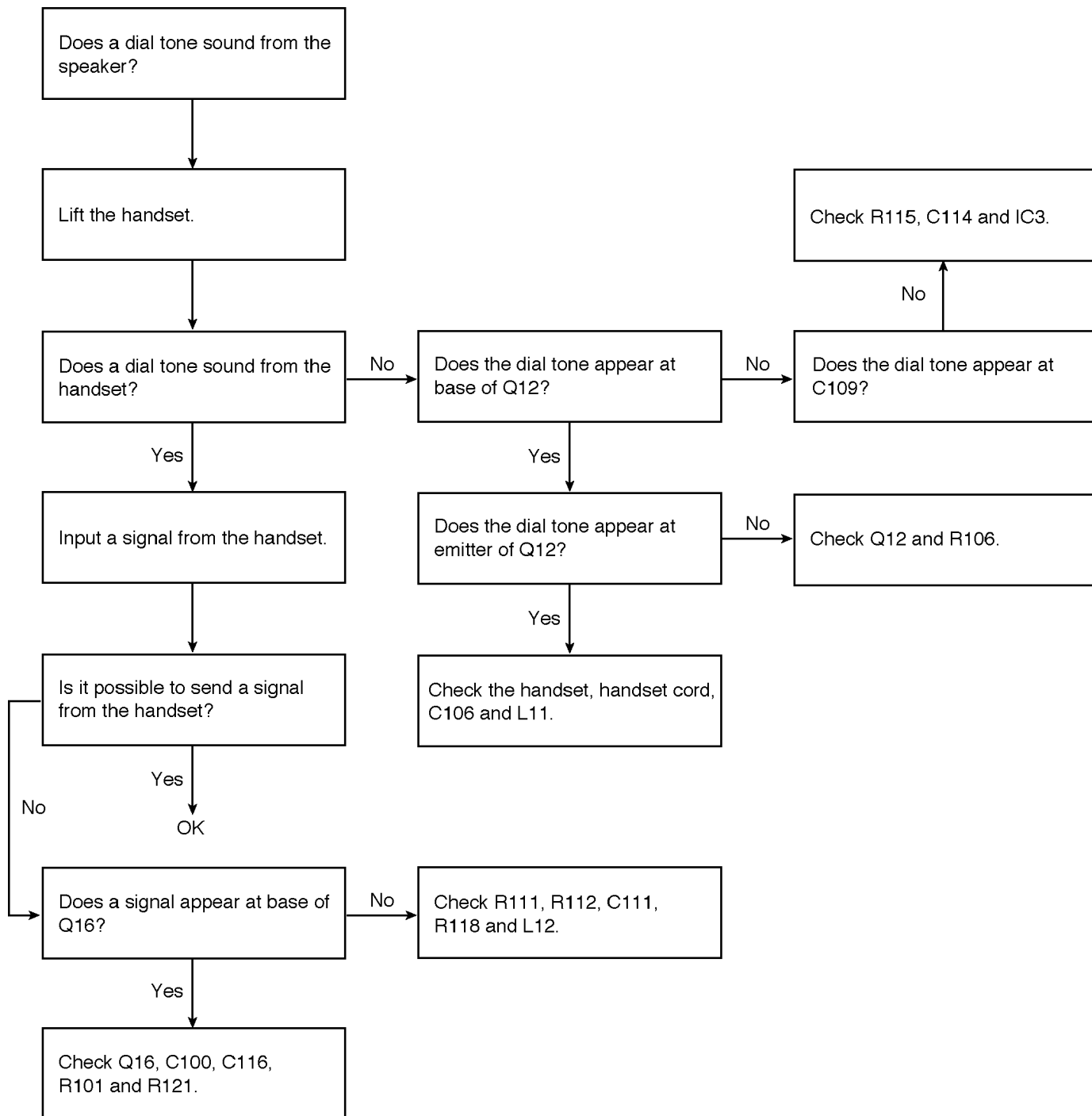
9.4. SPEAKER-PHONE TROUBLE



9.5. TONE DIAL TROUBLE

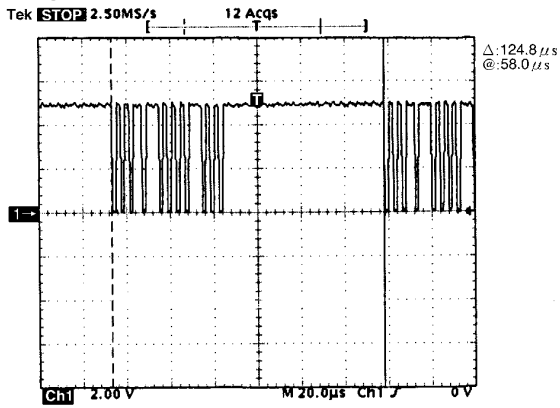


9.6. HANDSET TROUBLE

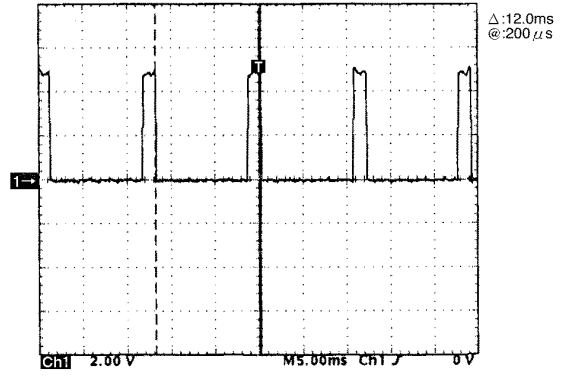


10 WAVEFORM

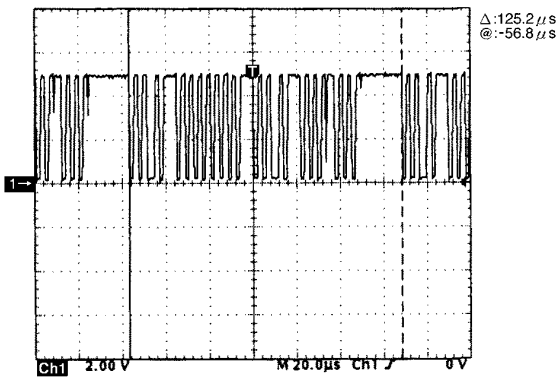
① TX DATA TRANSFER



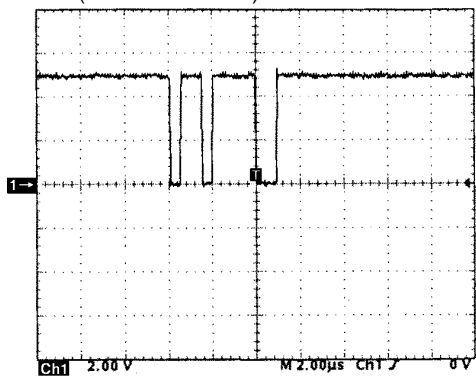
⑤ LED CONTROL DATA



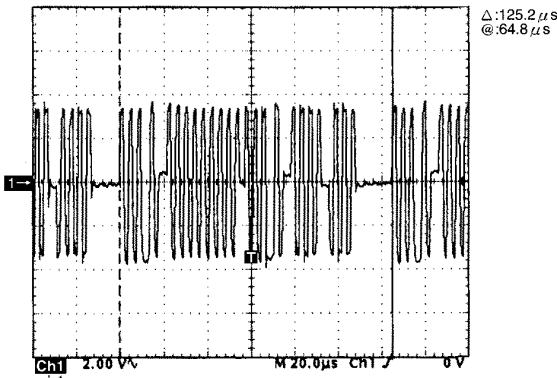
② RX DATA TRANSFER



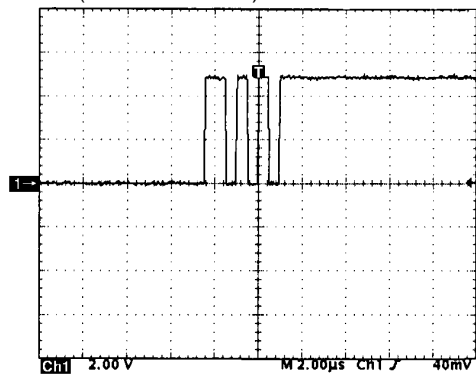
⑥ RX VOICE SERIAL DATA (VOICE DATA ON)



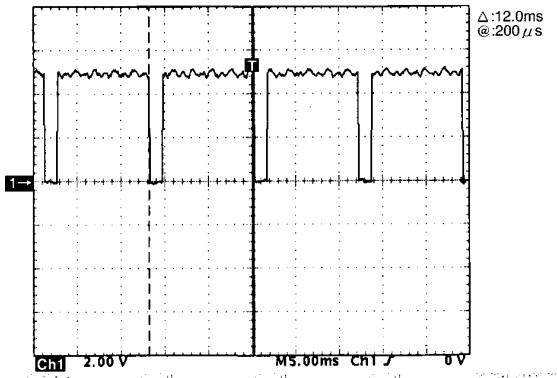
③ H-L DATA



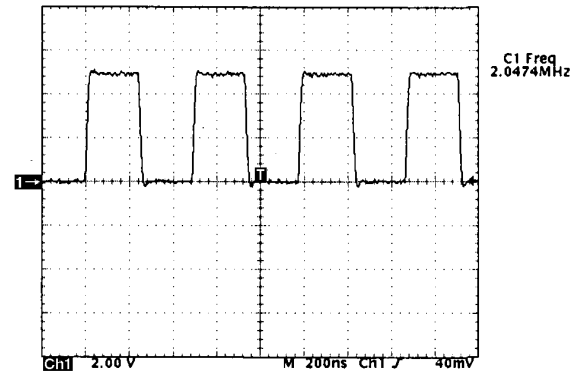
⑦ TX VOICE SERIAL DATA (VOICE DATA ON)



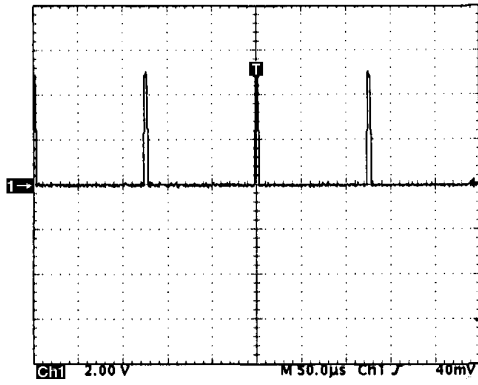
④ LED CONTROL DATA



⑧ CK2M

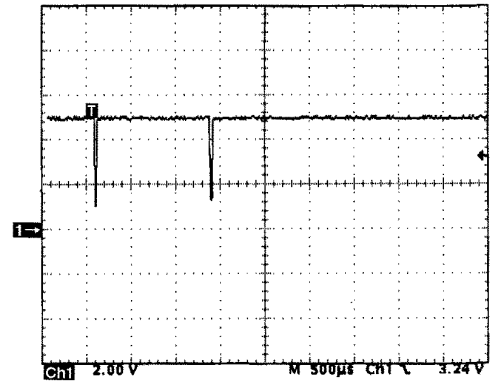


⑨ EP2

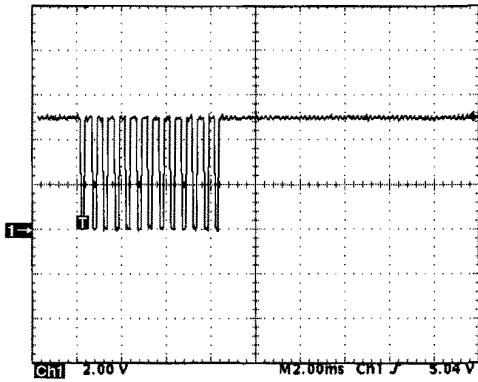


C1 Freq
8.000kHz
Unstable
histogram

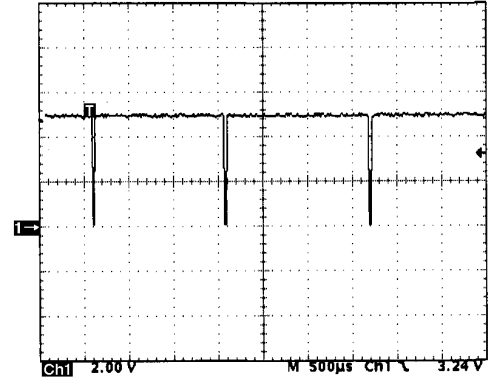
⑬ KEY INPUT (KEY ON)



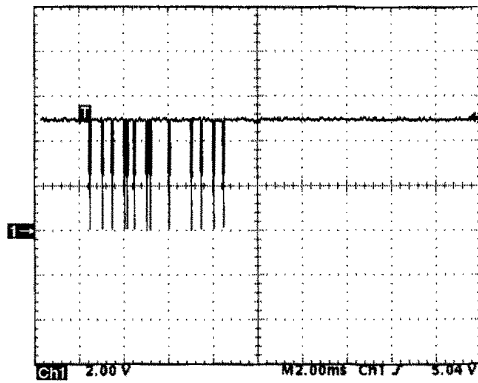
⑩ INT RX, INT TX



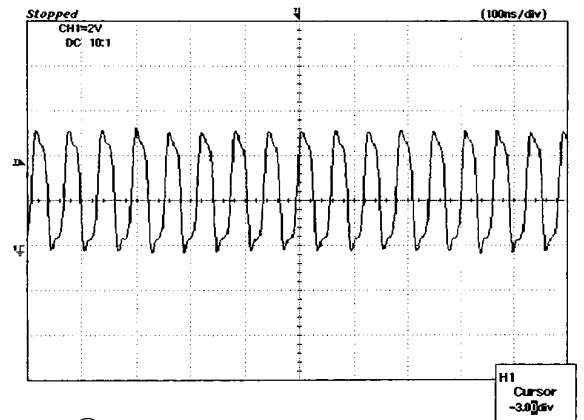
⑭ KEY SIGNAL



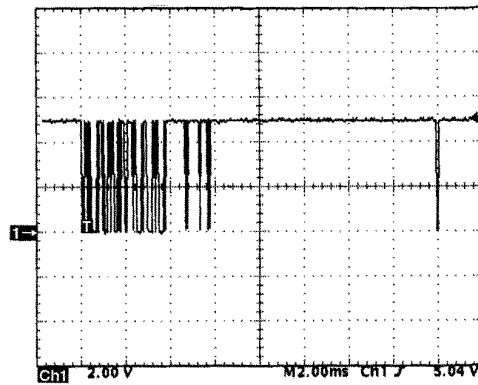
⑪ A0, A1, IOR, IOW



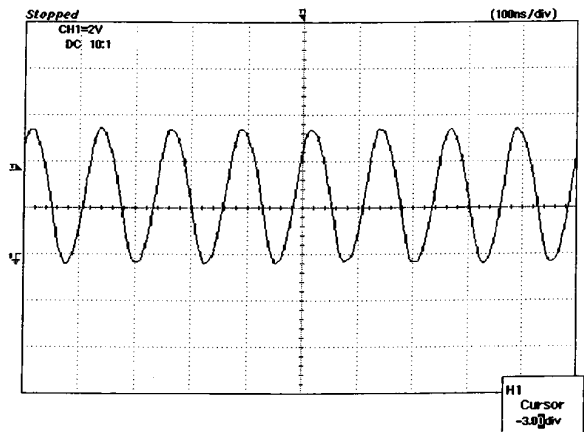
⑮ 16.384MHz



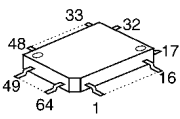
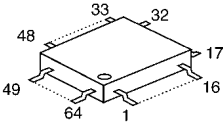
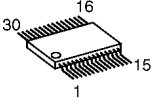
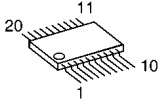
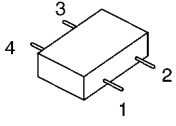
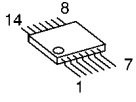
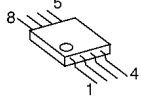
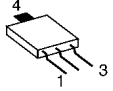
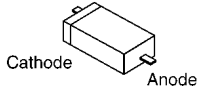
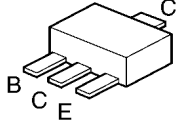
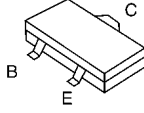
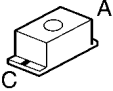
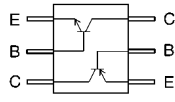
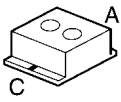
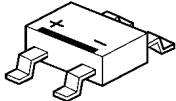
⑫ D0, D1, D2, D3



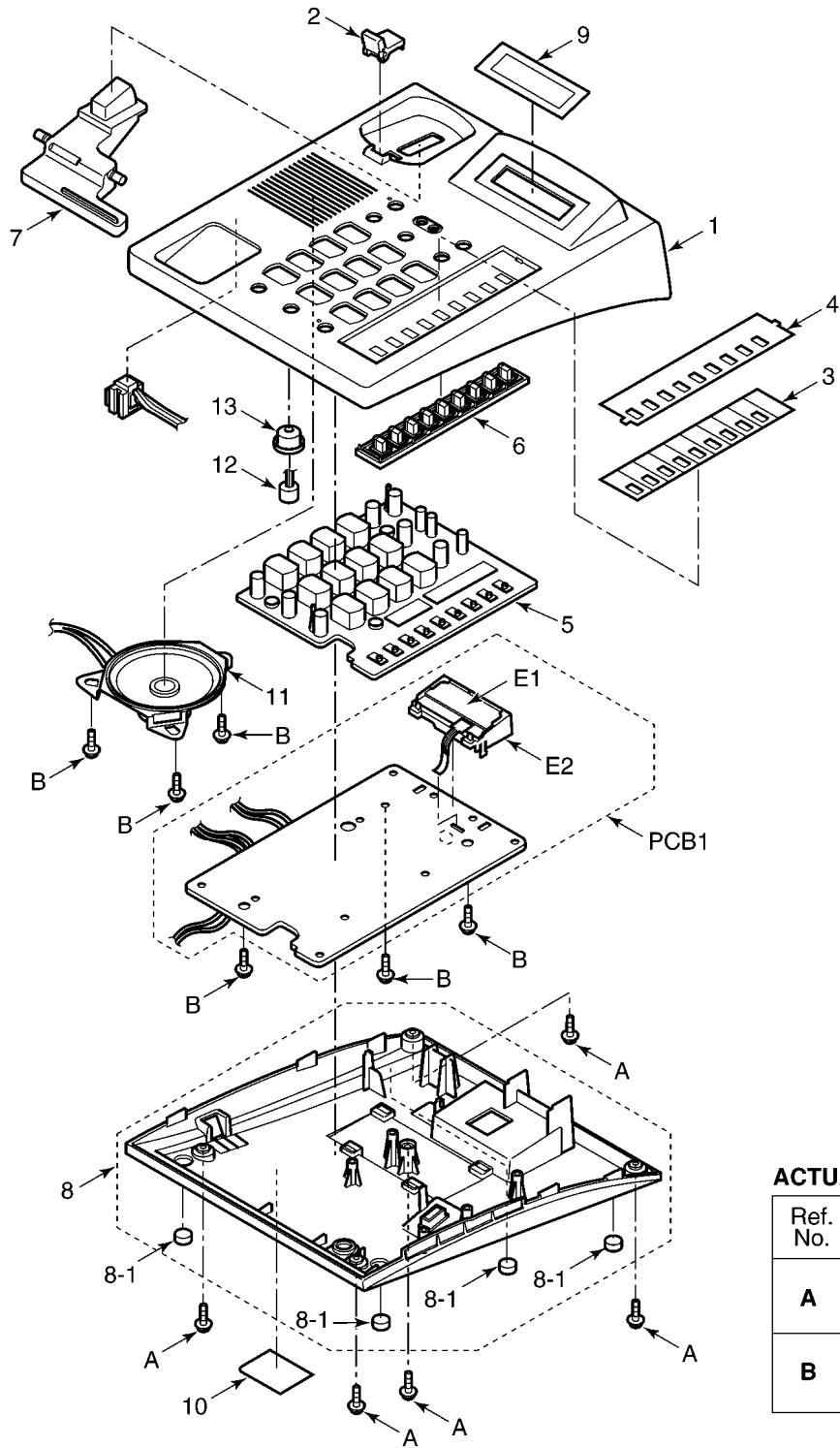
⑯ 8MHz



11 TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

| | | | | |
|---|---|--|--|---|
|  <p>PSVI3622SA21</p> |  <p>PSVIBU65050D</p> |  <p>PQVISC77655V</p> |  <p>PQVIMC45503W</p> |  <p>PSVIXC614602</p> |
|  <p>PQVINJM319V, PSVICD4066BS</p> |  <p>PQVIMC34063M</p> |  <p>PSVTUMG2NTR, PSVTUMG11NTR, PSVTUMS1NTR, PSVTUMA7NTR</p> |  <p>PQVDEC10</p> |  <p>2SA1900</p> |
|  <p>PQVTFB1J3P, PQVTDTC123E, PQVTDTA143XU, 2SA1576R, UN5213, 2SC4081Q,</p> | |  <p>PSVD1VGCT, PSVD1SRCT</p> |  <p>PSVTUMB4NTN</p> |  <p>PQVDBRPY1204</p> |
|  <p>PQVDS1ZB60F1</p> | | | | |

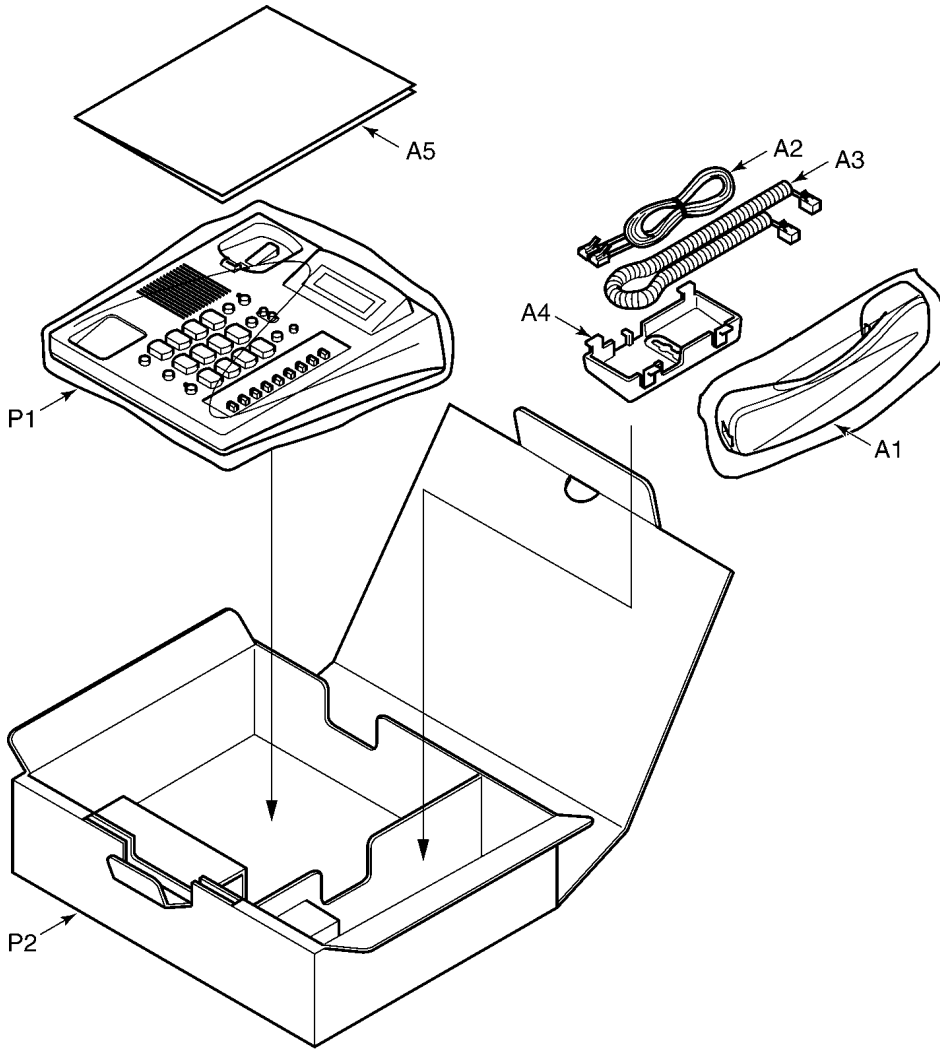
12 CABINET AND ELECTRICAL PARTS LOCATION



ACTUAL SIZE OF SCREWS

| Ref. No. | Part No. | Figure |
|----------|-----------|--------|
| A | XTW3+S14P | |
| B | XTW3+S10P | |

13 ACCESSORIES AND PACKING MATERIALS



14 REPLACEMENT PARTS LIST

Model KX-T7565AL/KX-T7565AL-B only.

Note:

1. RTL (Retention Time Limited)

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 depends on the type of assembly and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.

2. Important safety notice

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

3. The S mark indicates service standard parts and may differ from production parts.

4. RESISTORS & CAPACITORS

Unless otherwise specified;

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

All capacitors are in MICRO FARADS (μ F) P= μ F

*Type & Wattage of Resistor

Type

| | | |
|--|---|--|
| ERC:Solid ERD:Carbon PQRD:Carbon | ERX:Metal Film ERG:Metal Oxide ER0:Metal Film | PQ4R:Carbon ERS:Fusible Resistor ERF:Cement Resistor |
|--|---|--|

Wattege

| | | | | | |
|------------|------------|---------|------|------|------|
| 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 PQCUV:Chip ECQMS:Mica | ECCD,ECKD,ECBT,PQCBC: Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECSZ: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 :63V 2A :100V | |

14.1. CABINET AND ELECTRICAL PARTS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|-------------|-------------------------------|---------|
| 1 | PSKM1079Z1 | UPPER CABINET (WHITE VERSION) | S |
| 1 | PSKM1079Z2 | UPPER CABINET (BLACK VERSION) | S |
| 2 | PQKE10070Z3 | HANGER (WHITE VERSION) | S |
| 2 | PQKE10070Z1 | HANGER (BLACK VERSION) | S |
| 3 | PSGD1056Z | CARD, TEL | |
| 4 | PSHR1223Z | COVER, TEL CARD | |
| 5 | PSSX1017Z1 | KEY SWITCH (WHITE VERSION) | S |
| 5 | PSSX1017Z2 | KEY SWITCH (BLACK VERSION) | S |
| 6 | PSBX1084Z1 | BUTTON, CO KEY(WHITE VERSION) | S |
| 6 | PSBX1084Z2 | BUTTON, CO KEY(BLACK VERSION) | S |
| 7 | PSBH1004Z1 | BUTTON, HOOK (WHITE VERSION) | S |
| 7 | PSBH1004Z2 | BUTTON, HOOK (BLACK VERSION) | S |
| 8 | PSYF1033Y1 | LOWER CABINET (WHITE VERSION) | S |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|------------|-------------------------------|---------|
| 8 | PSYF1033Y2 | LOWER CABINET (BLACK VERSION) | S |
| 8-1 | PSHA1002Z | RUBBER PARTS, FOOT | |
| 9 | PSGP1067Z1 | PANEL, LCD (WHITE VERSION) | S |
| 9 | PSGP1067Z2 | PANEL, LCD (BLACK VERSION) | S |
| 10 | PSGT2102Z | NAME PLATE (WHITE VERSION) | |
| 10 | PSGT2103Z | NAME PLATE (BLACK VERSION) | |
| 11 | PQAS57P03Z | SPEAKER | |
| 12 | PQJML22Z | MICROPHONE | |
| 13 | PQMG10022Z | RUBBER PARTS, MIC | |

14.2. ACCESSORIES AND PACKING MATERIALS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|------------|-------------------------------|---------|
| A1 | PQJXF0202Z | HANDSET (WHITE VERSION) | |
| A1 | PQJXF0201Z | HANDSET (BLACK VERSION) | |
| A2 | PQJA10034Z | CORD, TEL | |
| A3 | PQJA214Y | CORD, HANDSET (WHITE VERSION) | |
| A3 | PQJA214V | CORD, HANDSET (BLACK VERSION) | |
| A4 | PQKL24Z82 | STAND (WHITE VERSION) | S |
| A4 | PQKL24Z0 | STAND (BLACK VERSION) | S |
| A5 | PSQW1567Z | QUICK REFERENCE GUIDE | |
| P1 | PQPP170Z | PROTECTION COVER | |
| P2 | PSPK1867Z | GIFT BOX (WHITE VERSION) | |
| P2 | PSPK1868Z | GIFT BOX (BLACK VERSION) | |

14.3. MAIN BOARD PARTS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|---------------------------------|---------|
| PCB1 | PSWPT7565AL | MAIN BOARD ASS'Y (RTL) (ICS) | |
| IC1 | PSVIBU65050D | IC | |
| IC2 | PSVI3622SA21 | IC | |
| IC3 | PQVIMC45503W | IC | S |
| IC4 | PQVINJM319V | IC | |
| IC5 | PQVIMC34063M | IC | |
| IC7 | PQVIS77655V | IC | |
| IC8 | PSVICD4066BS | IC | |
| IC9 | PSVICD4066BS | IC | |
| IC10 | PSVIXC614602 | IC | |
| | | (TRANSISTORS) | |
| Q1 | PSVTUMS1NTR | TRANSISTOR(SI) | |
| Q3 | 2SA1900 | TRANSISTOR(SI) | |
| Q4 | PSVTUMB4NTN | TRANSISTOR(SI) | |
| Q5 | PSVTUMA7NTR | TRANSISTOR(SI) | |
| Q6 | PSVTUMA7NTR | TRANSISTOR(SI) | |
| Q7 | PSVTUMG11NTR | TRANSISTOR(SI) | |
| Q8 | PSVTUMG11NTR | TRANSISTOR(SI) | |
| Q9 | PQVTDTC123E | TRANSISTOR(SI) | |
| Q10 | PSVTUMG2NTR | TRANSISTOR(SI) | |
| Q11 | PQVTDTA143XU | TRANSISTOR(SI) | |
| Q12 | 2SC4081Q | TRANSISTOR(SI) | |
| Q13 | PQVTFB1J3P | TRANSISTOR(SI) | |
| Q14 | PSVTUMG2NTR | TRANSISTOR(SI) | |
| Q15 | UN5213 | TRANSISTOR(SI) | S |
| Q16 | 2SC4081Q | TRANSISTOR(SI) | |
| Q18 | PSVTUMG2NTR | TRANSISTOR(SI) | |
| Q19 | PQVTDTC123E | TRANSISTOR(SI) | |
| Q20 | PSVTUMG2NTR | TRANSISTOR(SI) | |
| Q21 | PSVTUMG2NTR | TRANSISTOR(SI) | |
| Q200 | 2SA1576R | TRANSISTOR(SI) | |
| Q201 | 2SA1576R | TRANSISTOR(SI) | |
| Q202 | 2SA1576R | TRANSISTOR(SI) | |
| Q999 | UN5213 | TRANSISTOR(SI) | S |
| | | (DIODES) | |
| D1 | PQVDS1ZB60F1 | DIODE(SI) | |
| D2 | PQVDEC10 | DIODE(SI) | |

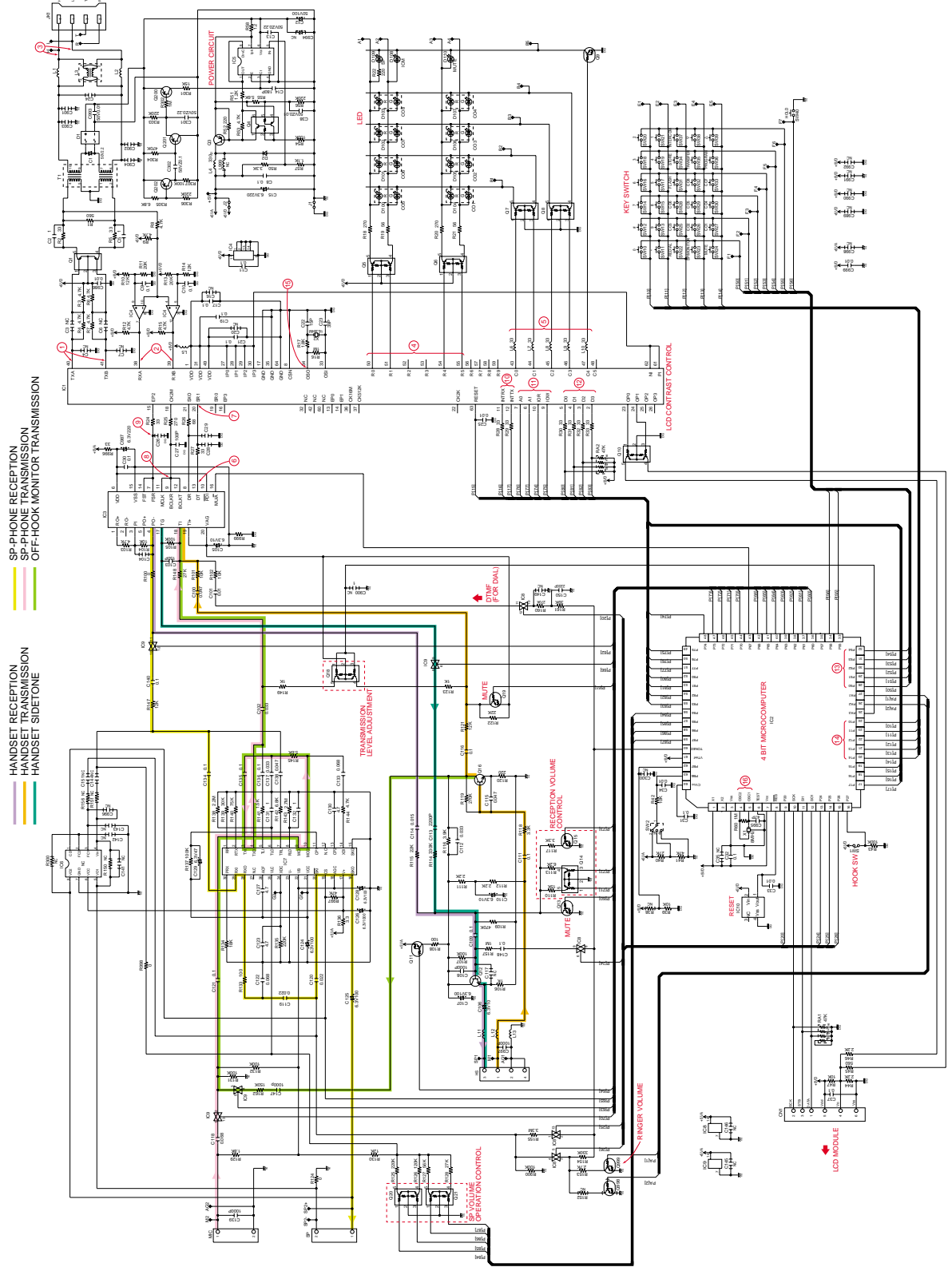
| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|--------------------------|---------|
| D100 | PQVDBRPY1204 | LED | S |
| D101 | PQVDBRPY1204 | LED | S |
| D102 | PQVDBRPY1204 | LED | S |
| D103 | PQVDBRPY1204 | LED | S |
| D104 | PQVDBRPY1204 | LED | S |
| D105 | PQVDBRPY1204 | LED | S |
| D106 | PQVDBRPY1204 | LED | S |
| D107 | PQVDBRPY1204 | LED | S |
| D108 | PSVD1VGCT | LED | |
| D109 | PSVD1SRCT | LED | |
| D110 | PSVD1SRCT | LED | |
| | | (CONNECTORS) | |
| CN1 | PSJS06B01Z | CONNECTOR, 6P | |
| | | (COILS) | |
| R999 | PQLQR1RS121 | COIL | |
| L1 | PQLQR1LT | COIL | |
| L2 | PQLQR1LT | COIL | |
| L4 | ELC09D331F | COIL | |
| L5 | PQLQR1RM601 | COIL | |
| L11 | PQLQR1LT | COIL | |
| L12 | PQLQR1LT | COIL | |
| L13 | PQLQR1LT | COIL | |
| | | (COMPONENTS COMBINATION) | |
| RA1 | EXB38V473JV | RESISTOR ARRAY, 47K | |
| RA2 | EXB38V473JV | RESISTOR ARRAY, 47K | |
| | | (CRYSTAL OSCILLATORS) | |
| X1 | PQVBCST8.00M | CRYSTAL OSCILLATOR | |
| X2 | PSVCC0052C | CRYSTAL OSCILLATOR | |
| | | (JACKS) | |
| JK1 | PSJJ1T020Z | JACK, TEL | |
| W002 | PQJJ1TB2T | JACK, HANDSET | S |
| | | (SWITCHES) | |
| SW1 | ESE14A211C | SWITCH, HOOK | |
| SW2 | PQSS3B101Z | SWITCH, RINGER | |
| | | (TRANSFORMER) | |
| T1 | PSLT9Z4A | TRANSFORMER | |
| | | (RESISTORS) | |
| L6 | ERJ3GEYJ330 | 33 | |
| L7 | ERJ3GEYJ330 | 33 | |
| L8 | ERJ3GEYJ330 | 33 | |
| L9 | ERJ3GEYJ330 | 33 | |
| L10 | ERJ3GEYJ330 | 33 | |
| R1 | ERJ3GEYJ561 | 560 | |
| R2 | ERJ3GEYJ330 | 33 | |
| R3 | ERJ3GEYJ472 | 4.7K | |
| R4 | ERJ3GEYJ472 | 4.7K | |
| R5 | ERJ3GEYJ330 | 33 | |
| R6 | ERJ3GEYJ472 | 4.7K | |
| R7 | ERJ3GEYJ472 | 4.7K | |
| R8 | ERJ3GEYJ472 | 4.7K | |
| R9 | ERJ3GEYJ472 | 4.7K | |
| R10 | ERJ3GEYJ123 | 12K | |
| R11 | ERJ3GEYJ203 | 20K | |
| R12 | ERJ3GEYJ472 | 4.7K | |
| R13 | ERJ3GEYJ203 | 20K | |
| R14 | ERJ3GEYJ123 | 12K | |
| R15 | ERJ3GEYJ472 | 4.7K | |
| R16 | ERJ3GEYJ105 | 1M | |
| R17 | ERJ3GEYJ182 | 1.8K | |
| R18 | ERJ3GEYJ271 | 270 | |
| R19 | ERJ3GEYJ560 | 56 | |
| R20 | ERJ3GEYJ271 | 270 | |
| R21 | ERJ3GEYJ560 | 56 | |
| R22 | ERJ3GEYJ221 | 220 | |
| R24 | ERJ3GEYJ330 | 33 | |
| R25 | ERJ3GEYJ271 | 270 | |
| R26 | ERJ3GEYJ680 | 68 | |
| R27 | ERJ3GEYJ330 | 33 | |
| R28 | ERJ3GEYJ330 | 33 | |
| R29 | ERJ3GEYJ330 | 33 | |
| R30 | ERJ3GEYJ330 | 33 | |
| R31 | ERJ3GEYJ330 | 33 | |
| R32 | ERJ3GEYJ330 | 33 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|-------------|-------------------------|---------|
| R33 | ERJ3GEYJ330 | 33 | |
| R39 | ERJ3GEYJ103 | 10K | |
| R40 | ERJ3GEYJ273 | 27K | |
| R41 | ERJ3GEYJ473 | 47K | |
| R42 | ERJ3GEYJ103 | 10K | |
| R43 | ERJ3GEYJ104 | 100K | |
| R44 | ERJ3GEYJ222 | 2.2K | |
| R45 | ERJ3GEYJ561 | 560 | |
| R46 | ERJ3GEYJ222 | 2.2K | |
| R47 | ERJ3GEYJ103 | 10K | |
| R50 | ERJ3GEYJ332 | 3.3K | |
| R51 | PQ4R10XJ122 | 1.2K | S |
| R52 | ERJ3GEYJ221 | 220 | |
| R53 | PQ4R18XJ472 | 4.7K | S |
| R54 | ERJ3GEYJ104 | 100K | |
| R55 | ERJ3GEYJ562 | 5.6K | |
| R56 | ERJ3GEYJ224 | 220K | |
| R57 | ERJ3GEYJ112 | 1.1K | |
| R58 | ERJ3GEYJ1R2 | 1.2 | |
| R60 | ERJ3GEYJ105 | 1M | |
| R100 | ERJ3GEY0R00 | 0 | |
| R101 | ERJ3GEYJ103 | 10K | |
| R102 | ERJ3GEYJ103 | 10K | |
| R103 | ERJ3GEYJ472 | 4.7K | |
| R104 | ERJ3GEYJ103 | 10K | |
| R105 | ERJ3GEYJ104 | 100K | |
| R106 | ERJ3GEYJ102 | 1K | |
| R107 | ERJ3GEYJ104 | 100K | |
| R108 | ERJ3GEYJ101 | 100 | |
| R109 | ERJ3GEYJ474 | 470K | |
| R110 | ERJ3GEYJ153 | 15K | |
| R111 | ERJ3GEYJ222 | 2.2K | |
| R112 | ERJ3GEYJ222 | 2.2K | |
| R113 | ERJ3GEYJ622 | 6.2K | |
| R114 | ERJ3GEYJ334 | 330K | |
| R115 | ERJ3GEYJ223 | 22K | |
| R116 | ERJ3GEYJ392 | 3.9K | |
| R117 | ERJ3GEYJ332 | 3.3K | |
| R118 | ERJ3GEYJ332 | 3.3K | |
| R119 | ERJ3GEYJ274 | 270K | |
| R120 | ERJ3GEYJ221 | 220 | |
| R121 | ERJ3GEYJ123 | 12K | |
| R122 | ERJ3GEYJ223 | 22K | |
| R123 | ERJ3GEYJ102 | 1K | |
| R124 | ERJ3GEY0R00 | 0 | |
| R125 | ERJ3GEYJ224 | 220K | |
| R126 | ERJ3GEYJ124 | 120K | |
| R127 | ERJ3GEYJ563 | 56K | |
| R128 | ERJ3GEYJ273 | 27K | |
| R129 | ERJ3GEYJ182 | 1.8K | |
| R130 | ERJ3GEYJ123 | 12K | |
| R131 | ERJ3GEYJ104 | 100K | |
| R132 | ERJ3GEYJ104 | 100K | |
| R133 | ERJ3GEYJ101 | 100 | |
| R134 | ERJ3GEYJ183 | 18K | |
| R135 | ERJ3GEYJ224 | 220K | |
| R136 | PQ4R18XJ3R3 | 3.3 | S |
| R137 | ERJ3GEYJ104 | 100K | |
| R138 | ERJ3GEYJ225 | 2.2M | |
| R139 | ERJ3GEYJ303 | 30K | |
| R140 | ERJ3GEYJ753 | 75K | |
| R141 | ERJ3GEYJ152 | 1.5K | |
| R142 | ERJ3GEYJ682 | 6.8K | |
| R143 | ERJ3GEYJ275 | 2.7M | |
| R144 | ERJ3GEYJ472 | 4.7K | |
| R145 | ERJ3GEYJ562 | 5.6K | |
| R147 | ERJ3GEYJ123 | 12K | |
| R148 | ERJ3GEYJ273 | 27K | |
| R149 | ERJ3GEYJ102 | 1K | |
| R153 | ERJ3GEYJ272 | 2.7K | |
| R154 | ERJ3GEYJ334 | 330K | |
| R155 | ERJ3GEYJ335 | 3.3M | |
| R157 | ERJ3GEYJ105 | 1M | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| R160 | ERJ3GEYJ274 | 270K | |
| R161 | ERJ3GEYJ393 | 39K | |
| R162 | ERJ3GEYJ154 | 150K | |
| R301 | ERJ3GEYJ153 | 15K | |
| R302 | ERJ3GEYJ105 | 1M | |
| R303 | ERJ3GEYJ224 | 220K | |
| R304 | ERJ3GEYJ474 | 470K | |
| R305 | ERJ3GEYJ682 | 6.8K | |
| R306 | ERJ3GEYJ224 | 220K | |
| R307 | ERJ3GEYJ104 | 100K | |
| R900 | ERJ3GEYJ104 | 100K | |
| R996 | ERJ3GEYJ330 | 33 | |
| R997 | ERJ3GEYJ473 | 47K | |
| R998 | ERJ3GEY0R00 | 0 | |
| | | (CAPACITORS) | |
| C1 | ECEV1HA2R2N | 2.2 | |
| C2 | PQCUV1H105JC | 1 | S |
| C5 | PQCUV1H105JC | 1 | S |
| C8 | ECUV1C104ZFB | 0.1 | S |
| C9 | ECUV1C104ZFB | 0.1 | S |
| C10 | ECUV1C104ZFB | 0.1 | |
| C11 | ECUV1C104ZFB | 0.1 | |
| C12 | ECEA1HU101 | 100 | |
| C13 | PQCUV1H224ZF | 0.22 | |
| C14 | ECUV1H181JCV | 180P | |
| C15 | ECEV0JA221WP | 220 | |
| C17 | ECUV1C104ZFB | 0.1 | |
| C19 | ECUV1C104ZFB | 0.1 | |
| C21 | ECUV1C104ZFB | 0.1 | |
| C22 | ECUV1H150JCV | 15P | |
| C23 | ECUV1H390JCV | 39P | |
| C25 | ECUV1H103KFV | 0.01 | S |
| C27 | ECUV1H101JCV | 100P | |
| C30 | ECUV1C104ZFB | 0.1 | S |
| C31 | ECUV1C104ZFB | 0.1 | |
| C32 | ECUV1C104ZFB | 0.1 | |
| C33 | ECUV1H103KFV | 0.01 | S |
| C34 | ECUV1H103KFV | 0.01 | S |
| C37 | ECUV1C104ZFB | 0.1 | |
| C38 | ECUV1H103KFV | 0.01 | S |
| C100 | ECUV1C473KBV | 0.047 | |
| C101 | ECUV1H103KBV | 0.01 | |
| C102 | ECUV1C333KDV | 0.033 | S |
| C103 | ECUV1H151JCV | 150P | |
| C105 | ECST0JY106 | 10 | |
| C106 | ECST0JY106 | 10 | |
| C107 | PSCEV0JA101 | 100P | |
| C108 | PQCUV1H102J | 0.001 | S |
| C109 | ECUV1C104KBV | 0.1 | |
| C110 | ECST0JY106 | 10 | |
| C111 | ECUV1C104KBV | 0.1 | |
| C112 | ECUV1C333KDV | 0.033 | S |
| C113 | ECUV1H222KBV | 0.0022 | |
| C114 | ECUV1H153KBV | 0.015 | |
| C115 | ECUV1C473KBV | 0.047 | |
| C116 | ECUV1C104KBV | 0.1 | |
| C118 | ECUV1C683KBV | 0.068 | |
| C119 | ECUV1H223KBV | 0.022 | S |
| C120 | ECUV1H223KBV | 0.022 | S |
| C121 | ECUV1C104KBV | 0.1 | |
| C122 | ECUV1C683KBV | 0.068 | |
| C123 | PQCUV1A475ZF | 4.7 | |
| C124 | PSCEV0JA101 | 100P | |
| C125 | PSCEV0JA101 | 100P | |
| C126 | PSCEV0JA102 | 0.001 | |
| C127 | PQCUV1A475ZF | 4.7 | |
| C128 | PSCEV0JA101 | 100P | |
| C129 | PSCEV0JA470 | 47P | |
| C130 | PQCUV1A475ZF | 4.7 | |
| C131 | PQCUV1H105JC | 1 | S |
| C132 | PQCUV1H105JC | 1 | S |
| C133 | ECUV1C683KBV | 0.068 | |
| C134 | ECUV1C104KBV | 0.1 | |

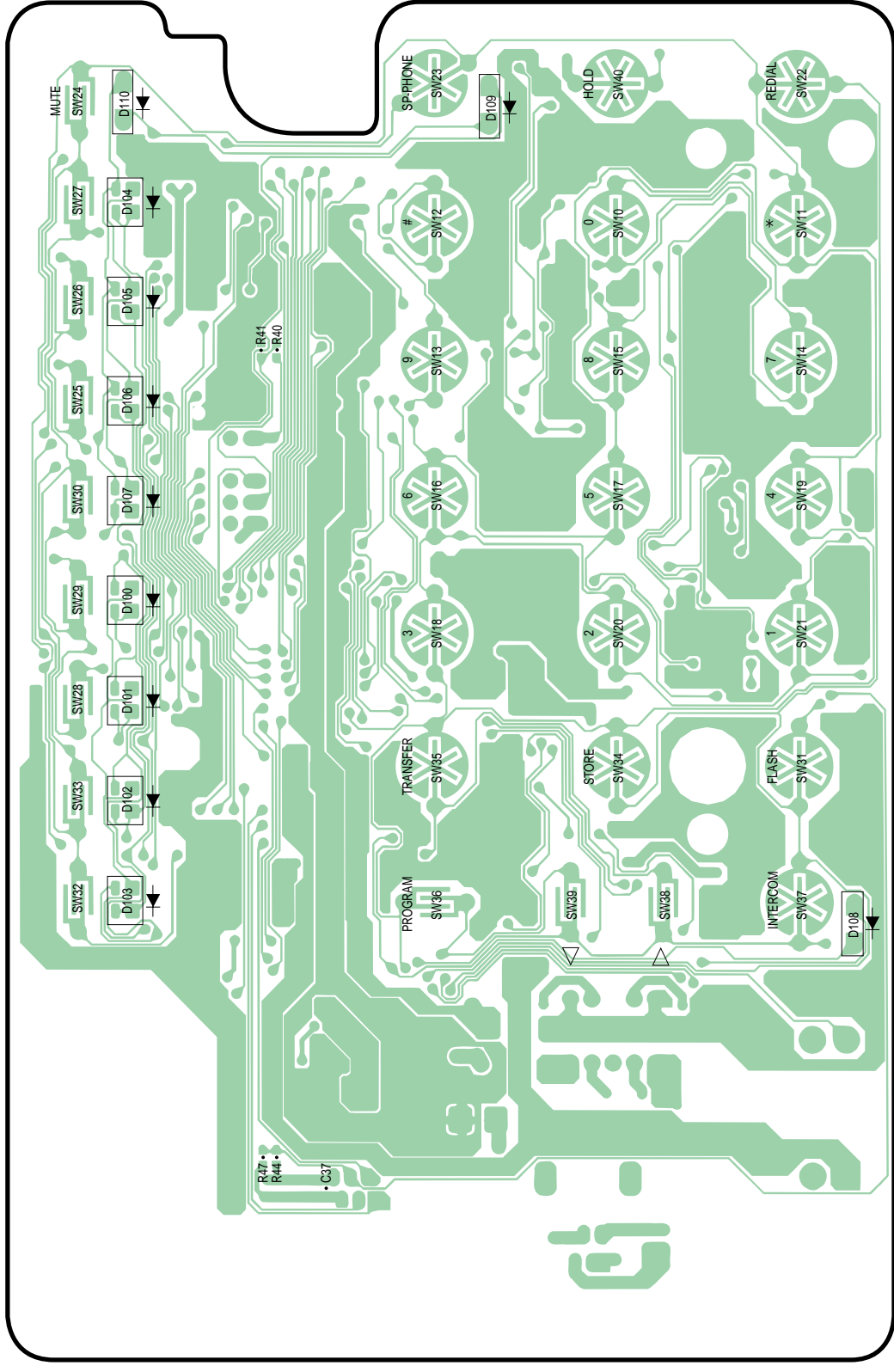
| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| C135 | ECUV1C104KBV | 0.1 | |
| C136 | ECUV1C104KBV | 0.1 | |
| C137 | ECUV1C333KDV | 0.033 | S |
| C138 | ECUV1C473KBV | 0.047 | |
| C139 | PQCUV1H102J | 0.001 | S |
| C140 | ECUV1C104KBV | 0.1 | |
| C147 | PQCUV1H102J | 0.001 | S |
| C148 | ECUV1C104ZFB | 0.1 | |
| C150 | ECUV1H222KBV | 0.0022 | |
| C301 | PQCUV1H224ZF | 0.22 | |
| C302 | ECUV1H104ZFB | 0.1 | |
| C986 | ECUV1H103KFV | 0.01 | S |
| C987 | ECEV0JA221WP | 220 | |
| C993 | ECUV1H103KFV | 0.01 | S |
| C995 | ECUV1H470JCV | 47P | |
| C997 | PQCUV1H102J | 0.001 | S |
| C999 | ECUV1H103KFV | 0.01 | S |
| | | (OTHERS) | |
| E1 | PSADLMG161S3 | LIQUID CRYSTAL DISPLAY | |
| E2 | PSHR1222Z | LCD HOLDER | |

15 SCHMATIC DIAGRAM



16 PRINTED CIRCUIT BOARD (MAIN BOARD)

16.1. COMPONENT VIEW



16.2. BOTTOM VIEW

