

# Service Manual

## Telephone Equipment



**KX-TS2350CAB**  
**KX-TS2350CAC**  
**KX-TS2350CAH**  
**KX-TS2350CAR**  
**KX-TS2350CAW**

Integrated Telephone System

Black Version

Blue Version

Gray Version

Red Version

White Version

(for Kazakhstan)

(for Uzbekistan)

### ■ SPECIFICATIONS

Power Source:	From telephone line
Dialing Mode:	Tone (DTMF) /Pulse
Redial:	Last dialed telephone number
Speaker:	Handset; 3 cm (13/16") PM dynamic type receiver unit, 150 $\Omega$
Microphone:	Electret condenser microphone
Dimensions (H x W x D):	Approx. 96mm x 150mm x 200mm
Mass (Weight):	Approx. 475g
Operating Environment:	5°C - 40°C

Specifications are subject to change without notice.

### 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

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 **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 section 3 of this manual is an extract from the operating instructions for 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.

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# 1 ABOUT LEAD FREE SOLDER (PbF: Pb free)

## Note:

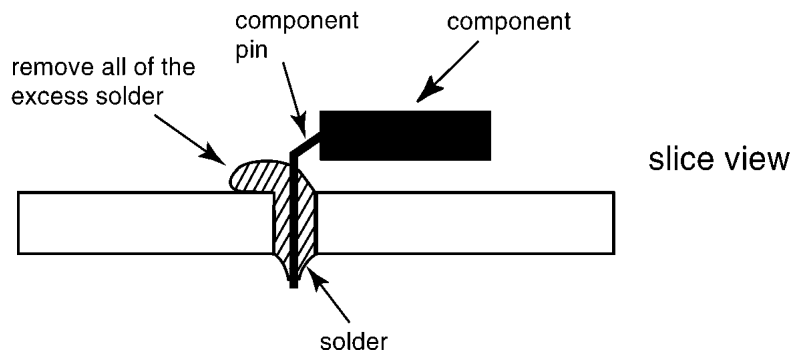
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

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.

## 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).
- Exercise care while using higher temperature soldering irons.:  
Do not heat the PCB for too long time in order to prevent solder splash or damage to the PCB.
- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F (600°C).
- 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

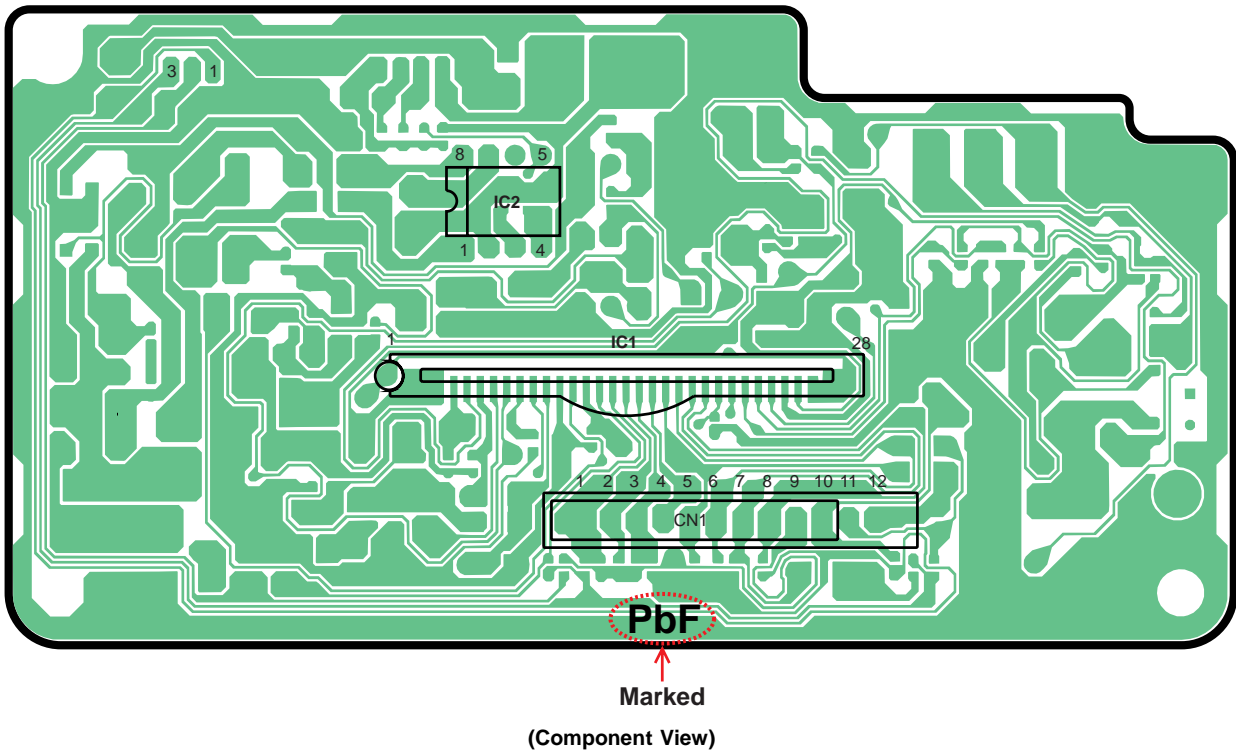
There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper (Sn+Ag+Cu), you can also use Tin and Copper (Sn+Cu) or Tin, Zinc, and Bismuth (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their 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: 0.3 mm, 0.6 mm and 1.0 mm.

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

## 1.2. How to Recognize that Pb Free Solder is Used

(Example: Main P.C.B.)



**Note:**

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

## 2 FOR SERVICE TECHNICIANS

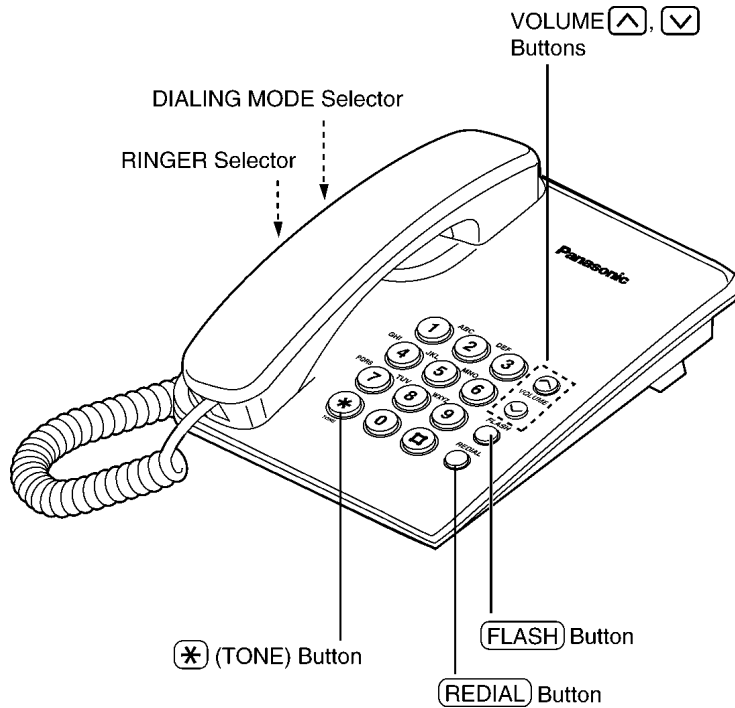
ICs and LSIs are vulnerable to static electricity.

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

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

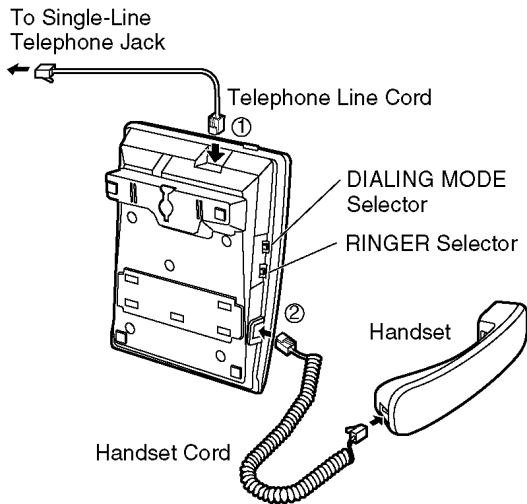
### 3 OPERATING INSTRUCTIONS

#### 3.1. Location of Controls

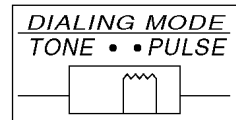


#### 3.2. Connection

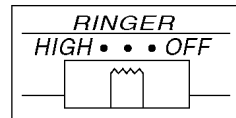
- 1 Connect the telephone line cord (①).
- 2 Connect the handset cord (②), then confirm the dial tone.



- 3 Set the DIALING MODE selector to PULSE.
  - If you cannot dial, set to TONE.



- 4 Set the RINGER selector to HIGH, LOW or OFF. (Example. "LOW" is selected.)



- When set to OFF, the unit will not ring.

#### 3.3. Troubleshooting

Problem	Remedy
The unit does not work.	Check the settings.
The call cannot be connected even if you dialed correctly.	Check whether the DIALING MODE selector setting is correct or not.
The unit does not ring.	The RINGER selector is set to OFF. Set to HIGH or LOW.

# 4 DISASSEMBLY INSTRUCTIONS

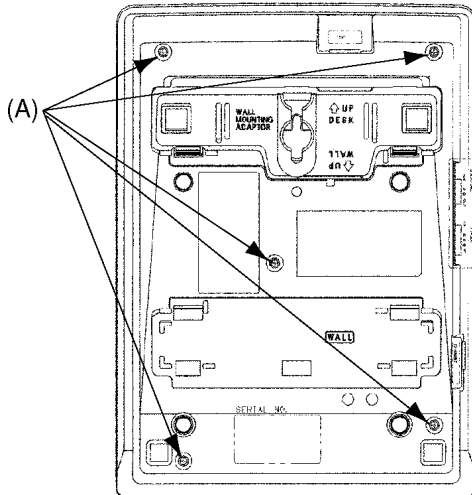
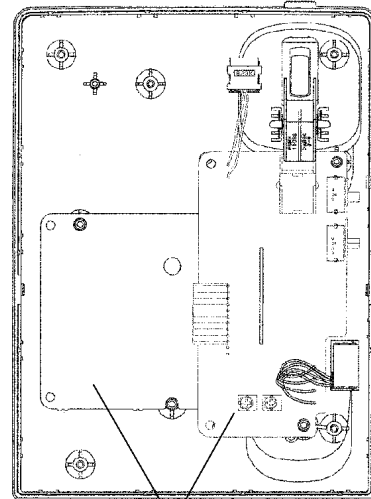


Fig. 1



Remove the P.C. Boards  
Fig. 2

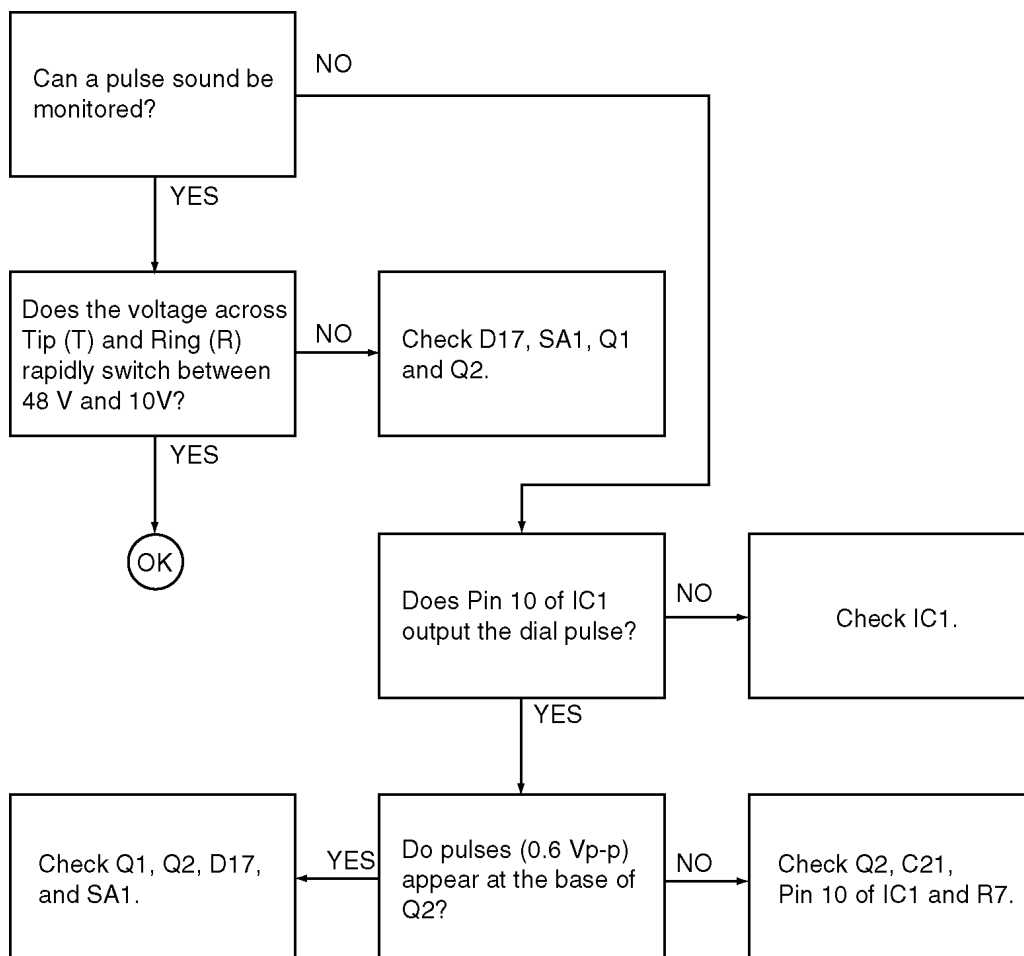
Shown in Fig —.	To remove —.	Remove —.
1	Cabinet Cover	Screws (2.6 x 10)..... (A) x 5
2	P.C. Boards	Remove the P.C.Boards

# 5 TROUBLESHOOTING GUIDE

## 5.1. Service Hints

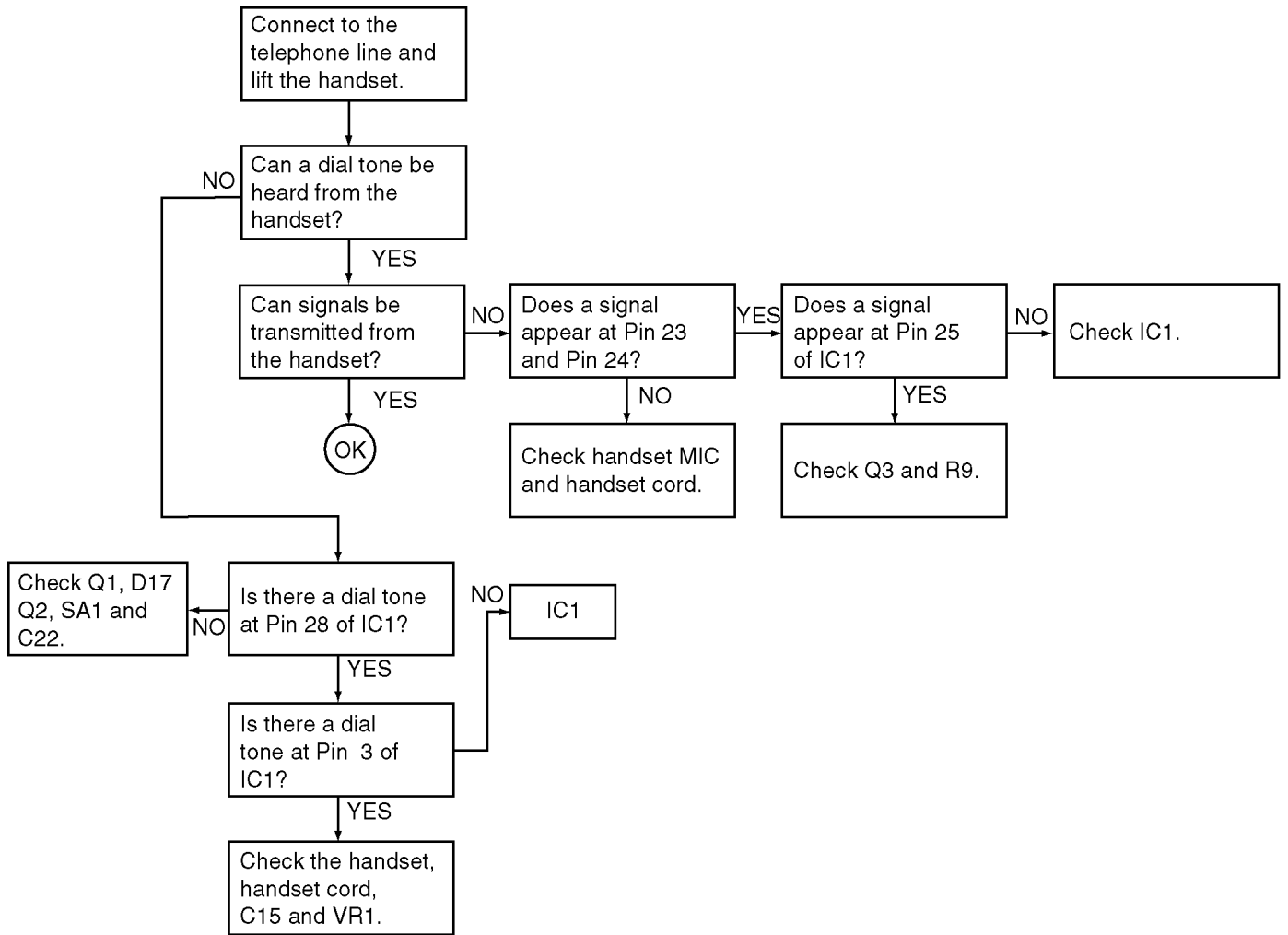
SYMPTOM	CURE
No Tone Dialing	Check IC1, Q2, Q1, C22 and VR1.
Dead	Check IC1, Q2, Q1 and D17.
Rings, no dial tone, no pulse or tone dial	Check Q1, Q2, D17, Q3 and IC1.
No rings	Check C1, R2 and IC2.
No volume Handset	Check IC1, VR1, C15 and C22.
Buttons stick under upper cabinet assembly. From key board	Adjust the setting of buttons.
No pulse dial	Check Q1, Q2 and IC1.

## 5.2. Pulse Dialing Problems

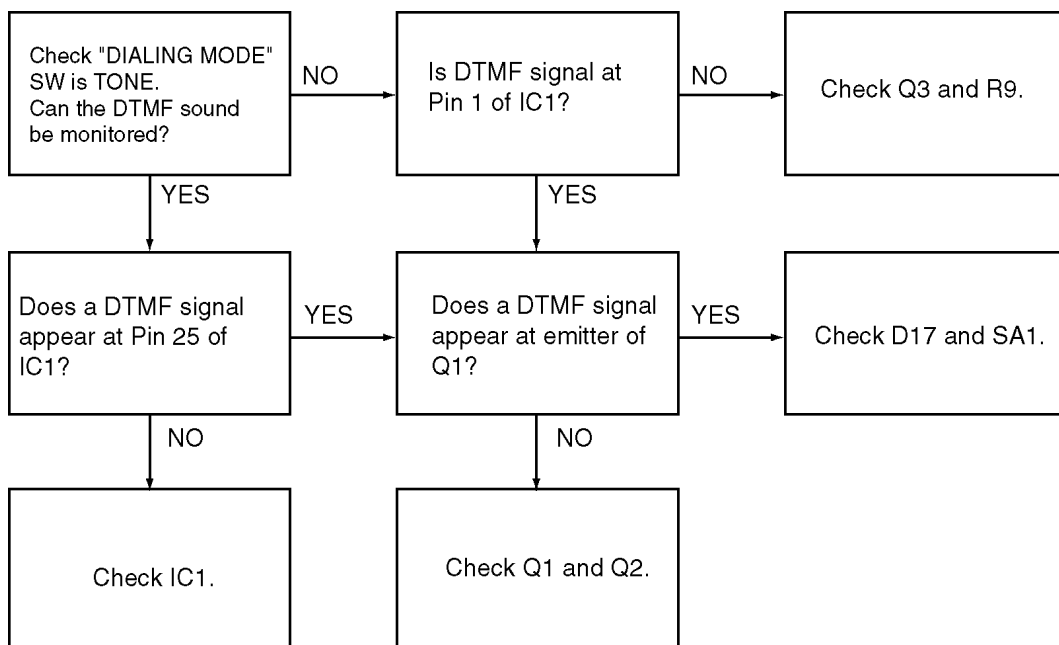




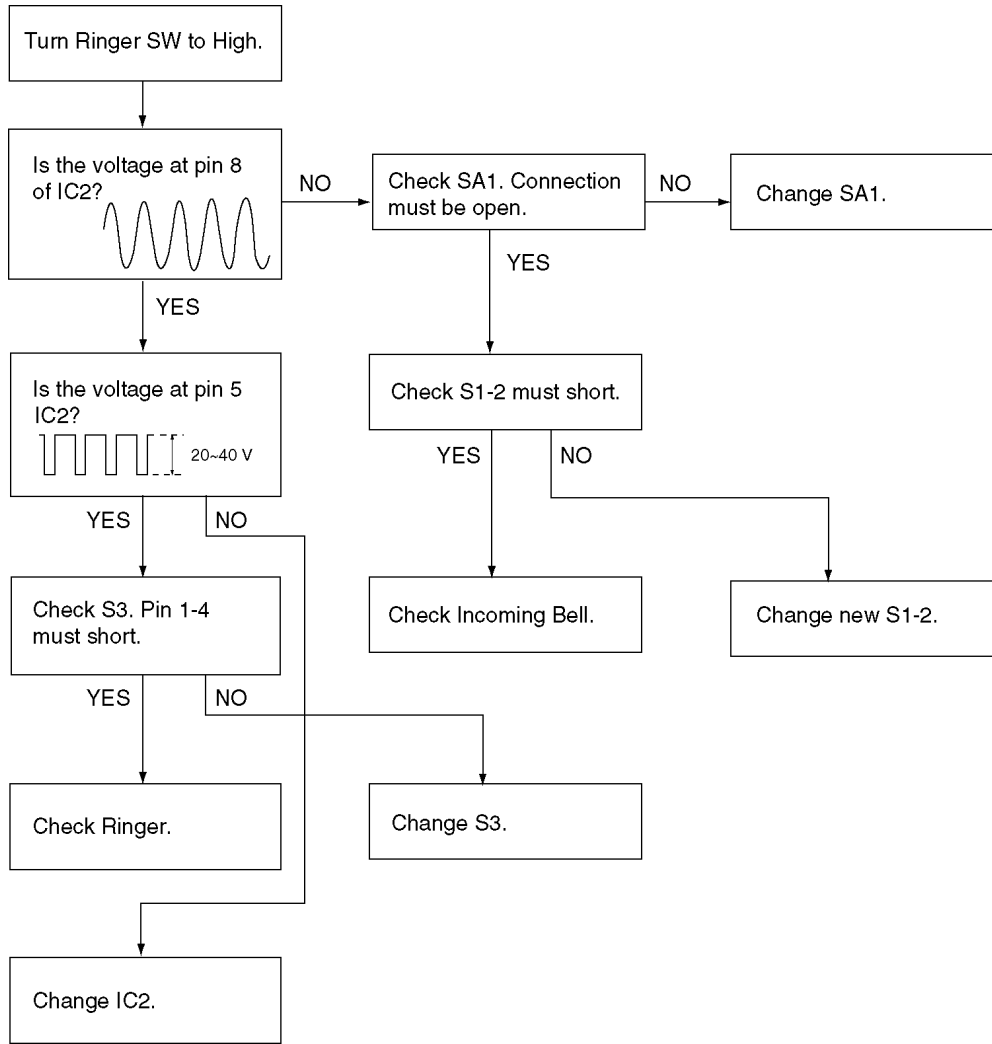
### 5.3. Problems With the Handset



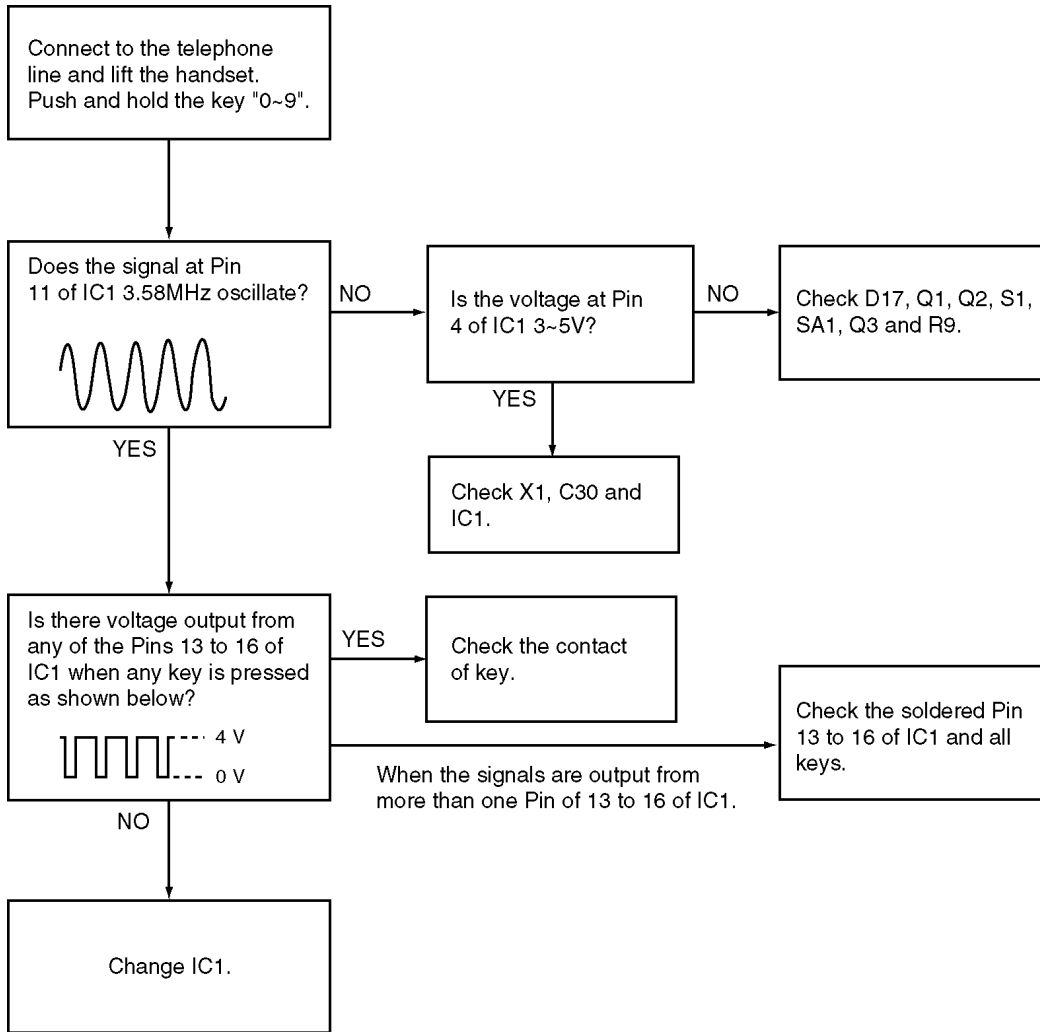
### 5.4. Tone Dialing Problems



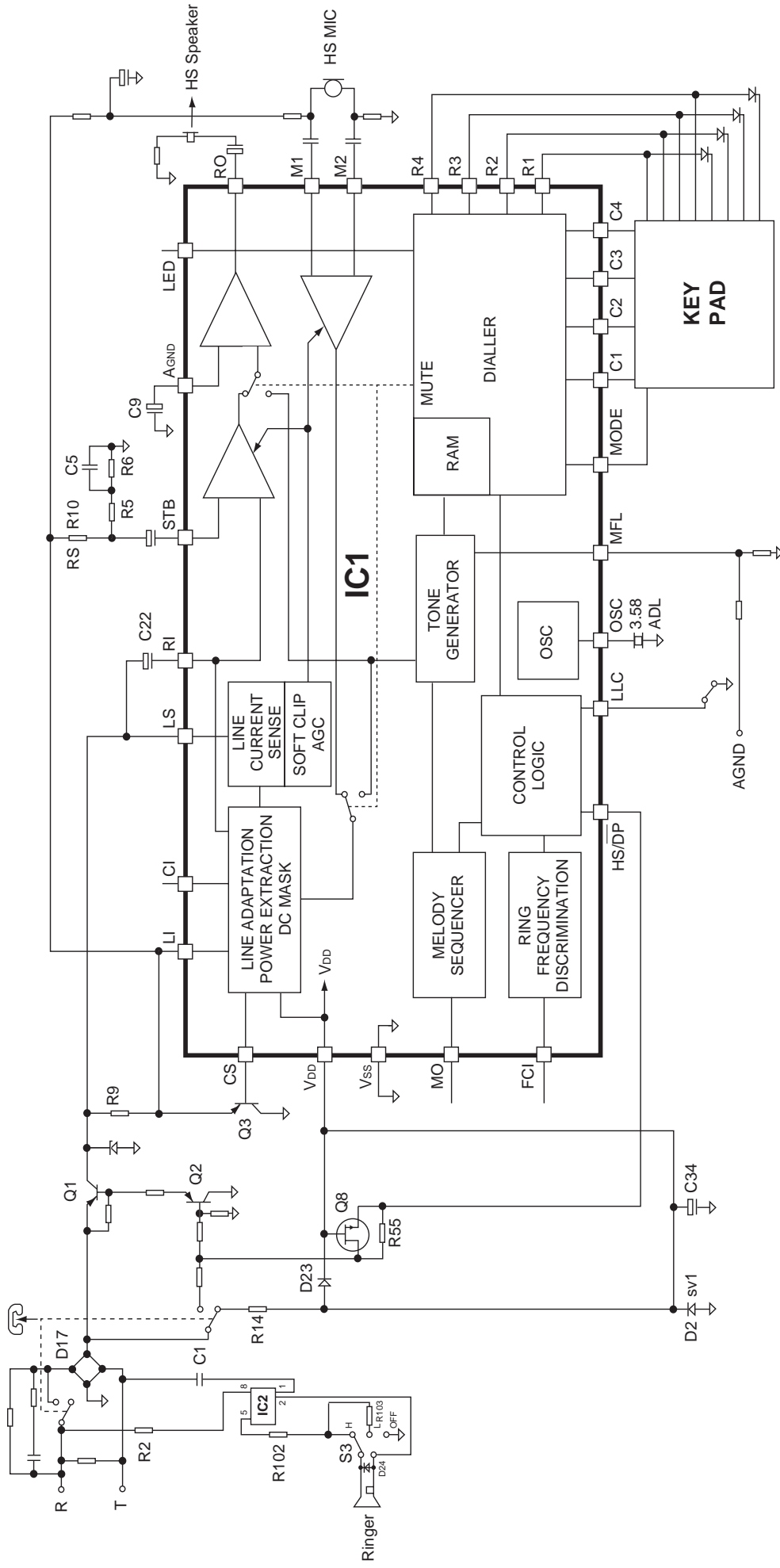
## 5.5. Problems With Ringer



## 5.6. How to Check IC1 (Scanning to the key)



# 6 BLOCK DIAGRAM



KX-TS2350 BLOCK DIAGRAM

# 7 CIRCUIT OPERATIONS

## 7.1. Telephone Line Interface and Pulse Dial Circuit

When the hook switch SW1 is ON (off-hook), the circuit is closed, and current is supplied to the base of Q2 via the diode bridge D17 and Q2 is On → Q1 is ON (OFF-HOOK condition).

Q1 and Q2 are the dial pulse generating circuits, and are driven by the DIALER (IC1), when the DIALER Pin 10 of IC1 is LOW → Q2 is OFF and Q1 is OFF (break). If port Pin 10 is HIGH → Q2 is ON → Q1 is ON (make).

## 7.2. Tone Dial Circuit

### Function:

The tone dialing circuit consists of a DTMF (Dual Tone Multi Frequency) signal generator (outputted from Pin 25 of the IC1) for tone dialing, and also a circuit for outputting the signal to line.

The DTMF circuit identifies inputs from the 12 keys (1, 2, 3, 4, 5, 6, 7, 8, 9, 0, \* and #) by means of a total of seven frequencies, that is four low frequencies (Low group) and three high frequencies (High group).

### Circuit Description:

When a dial key is pressed, a DTMF signal is output from Pin 25 of IC1 as an analog synthetic wave.

The signal flow to the line is as follows.

Pin 25 of IC1 → Q3 → R9 → Q1 → Tel Line.

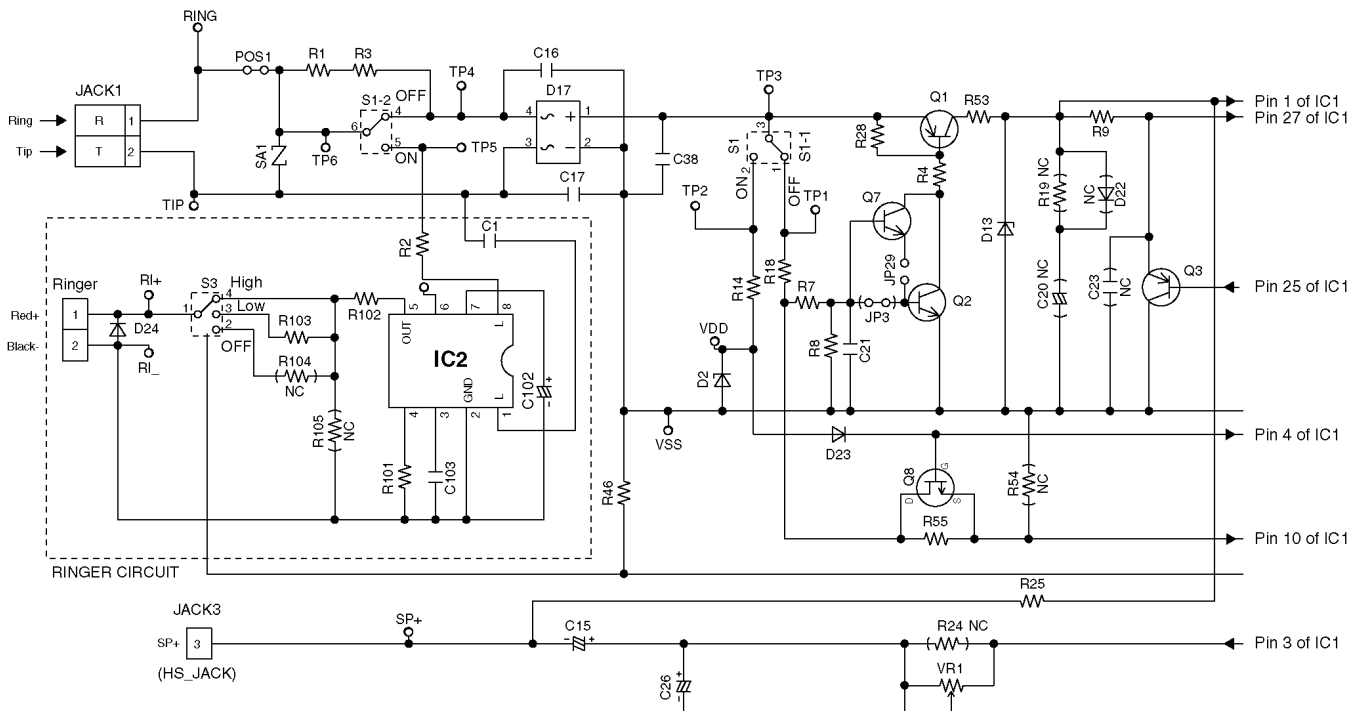
The DTMF signal is sent to the line via the following path. Q3 is an amplifier which is used to output the signal to line.

Shown below is the signal flow used to output the DTMF signal from the handset as a monitor tone when a dial key is pressed.

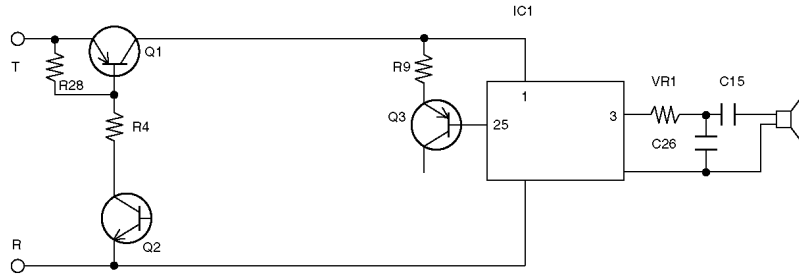
Pin 3 of IC1 → VR1 → C15 → Handset Speaker.

The signal combination and frequency corresponding to each dial key is shown on the next page.

Circuit Diagram



**Circuit Diagram**



**Tone Frequencies**

Low Group \ High Group	High Group		
	H1	H2	H3
L1	1	2	3
L2	4	5	6
L3	7	8	9
L4	*	0	#

Low Group	Frequencies	High Group	Frequencies
L1	697 Hz } 1.5%	H1	1209 Hz } 1.5%
L2	770 Hz } 1.5%	H2	1336 Hz } 1.5%
L3	852 Hz } 1.5%	H3	1477 Hz } 1.5%
L4	941 Hz } 1.5%		

**7.3. Power Circuit and Redial Back-up Circuit**

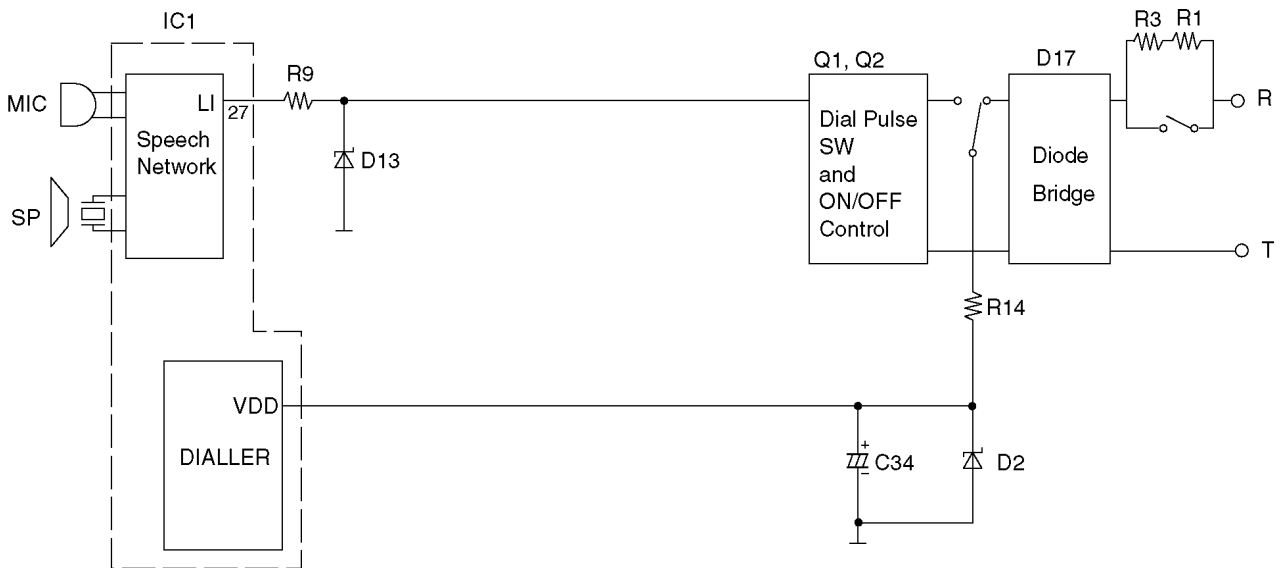
**Function:**

This set is powered from the line. When it is an OFF-HOOK status, Tel Line → D17 → Q1 → R9 → Pin 27 of IC1 (to become the power supply for IC1 speech network).

The voltage from the line is turned into a constant voltage by D2 and then supplied to the IC1, reset circuit.

Through Tel Line → R1 → R3 → D17 → R14 to become the power supply for IC1, and the redial Back-up will be done.

**Block Diagram**



## 8 OPTION JUMPER TABLE

### Dialing Mode SW

	Function	Option	Remarks
PULSE	10pps 33/66ms	JP14	
	10pps 40/60ms	JP23	default
	20pps 33/66ms	JP15	
	20pps 40/60ms	JP16	
TONE	MF 82/82ms	JP18	default
	MF 82/160ms	JP19	

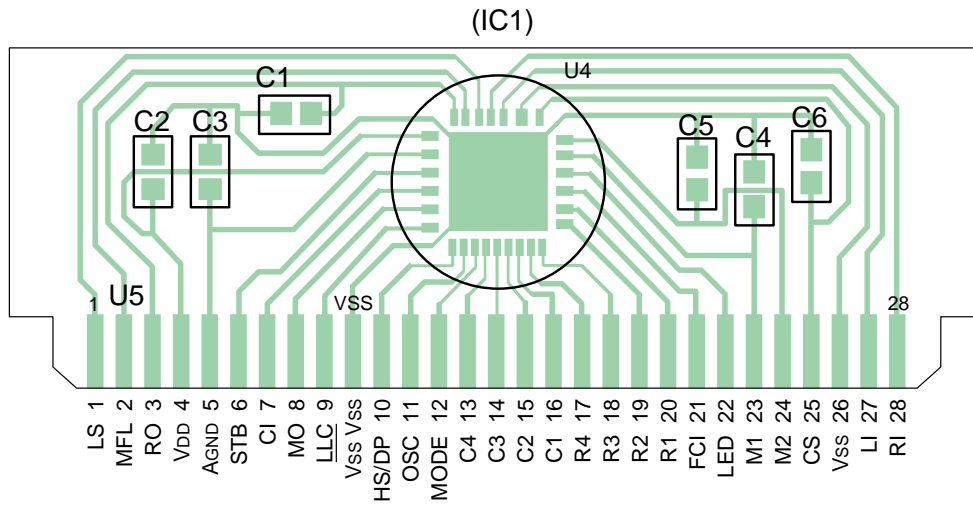
### Flash Key

Flash time	Option	Remarks
100 ms	JP20	
270 ms	JP21	
600 ms	JP22	default

**Note:**

Refer to **Main (Flow Solder Side View)** (P.28)

# 9 CPU DATA

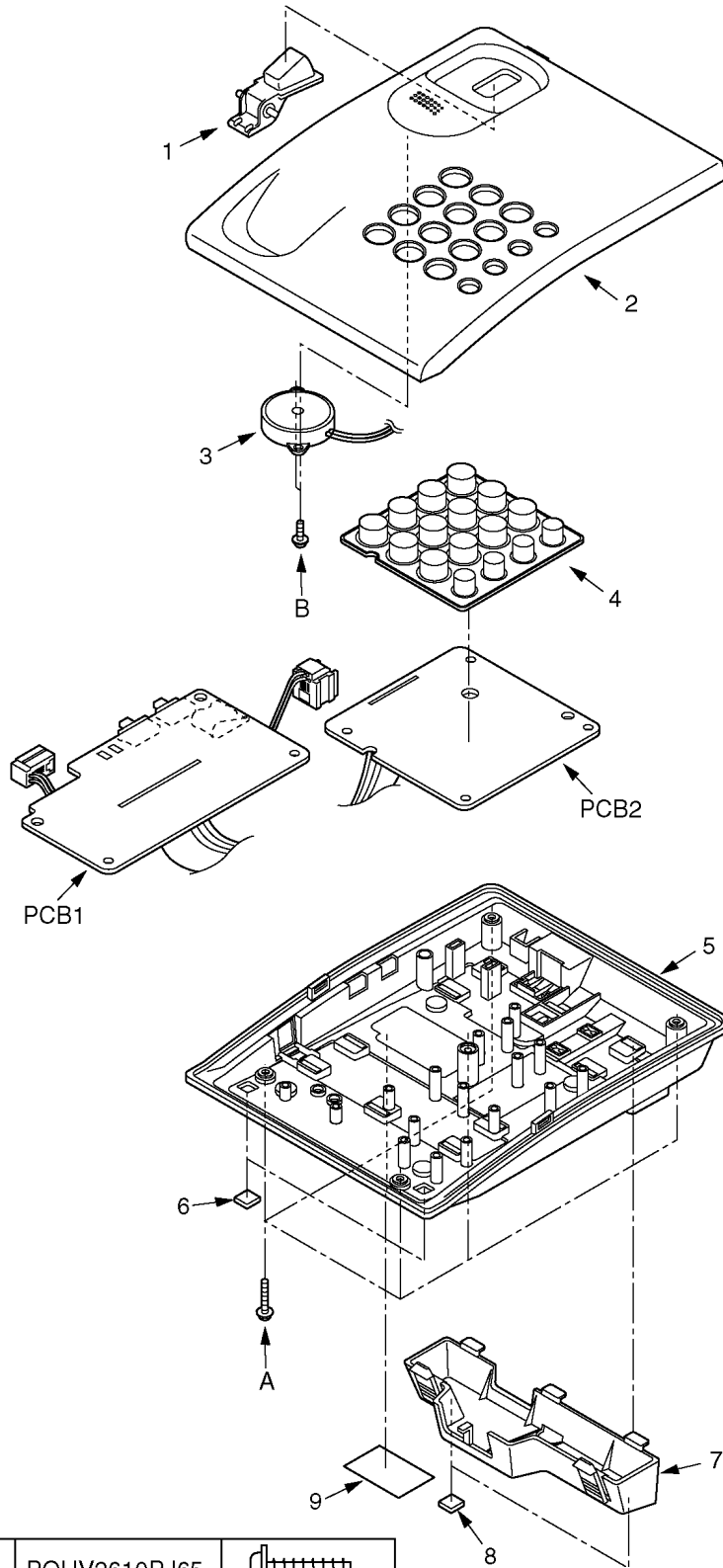


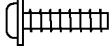
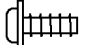
Clock frequency: 3.58MHz  
Operating range: 13~100mA

Pin No.	Symbol	Function	Description						
1	LS	Line Current Sense Input	This is the input for sending the line current.						
2	MFL	MF Level Setting	A voltage divider connected from this pin to A GND and VSS can be used to set the DTMF level.						
3	RO	Receive Output	This is the output for driving a dynamic earpiece with an impedance of 140 to 300 Ω						
4	VDD	Positive Voltage Supply	This is the supply pin for the circuit.						
5	AGND	Analogue Ground	This is the analog(ue) ground for the amplifiers.						
6	STB	Side Tone Balance Input	This is the input for side tone cancellation.						
7	CI	Complex Impedance Pin	For complex impedance a capacitor should be connected to this pin.						
8	MO	Melody Output	PDM output of the melody generator for tone ringing. Hi-Z when not active.						
9	LLC	Line Loss Compensation	Select pin for line loss compensation. LLC = AGND: 20-50 mA LLC = VDD: 45-75 mA LLC = VSS: none.						
10	HS/DP	Hook Switch Input and Dial Pulse Output	This is an I/O that is pulled high by the hook switch when off-hook and an open drain pulls it low during break periods of pulse dialing and flash.						
11	OSC	Oscillator Input	Pin for ceramic resonator (3.58 MHz).						
12	MODE	Signalling Mode Select Input	<table border="1"> <thead> <tr> <th>Mode pin</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>Row 2</td> <td>mode, 10 pps, 40/60 ms</td> </tr> <tr> <td>Row 6</td> <td>MF only, 82/82 ms</td> </tr> </tbody> </table> <p>During temporary MF : 82/160 ms</p>	Mode pin	Function	Row 2	mode, 10 pps, 40/60 ms	Row 6	MF only, 82/82 ms
Mode pin	Function								
Row 2	mode, 10 pps, 40/60 ms								
Row 6	MF only, 82/82 ms								
13	C4	Keyboard Column	(see key arrangement in Schematic Diagram) the scanning to the key.						
14	C3	Keyboard Column							
15	C2	Keyboard Column							
16	C1	Keyboard Column							
17	R4	Keyboard Row	(see key arrangement in Schematic Diagram) the scanning to the key.						
18	R3	Keyboard Row							
19	R2	Keyboard Row							
20	R1	Keyboard Row							
21	FCI	Frequency Comparator Input	This is a Schmitt trigger input for ring frequency discrimination. Disabled during off-hook.						
22	LED	LED Output Driver	Output for driving an LED that will be flashing when in Programme.						
23	M1	Microphone Input	Differential inputs for the microphone (electric).						
24	M2	Microphone Input							
25	CS	Current Shunt Control Output	This N-channel open drain output controls the external high power shunt transistor for the modulation of the line voltage and for shorting the line during make period of pulse dialing.						
26	VSS	Negative Power Supply							
27	LI	Line Input	This input is used for power extraction and line current sending.						
28	RI	Receive Input	This is the input for the receive signal.						
VSS	VSS	EMC ground connection							

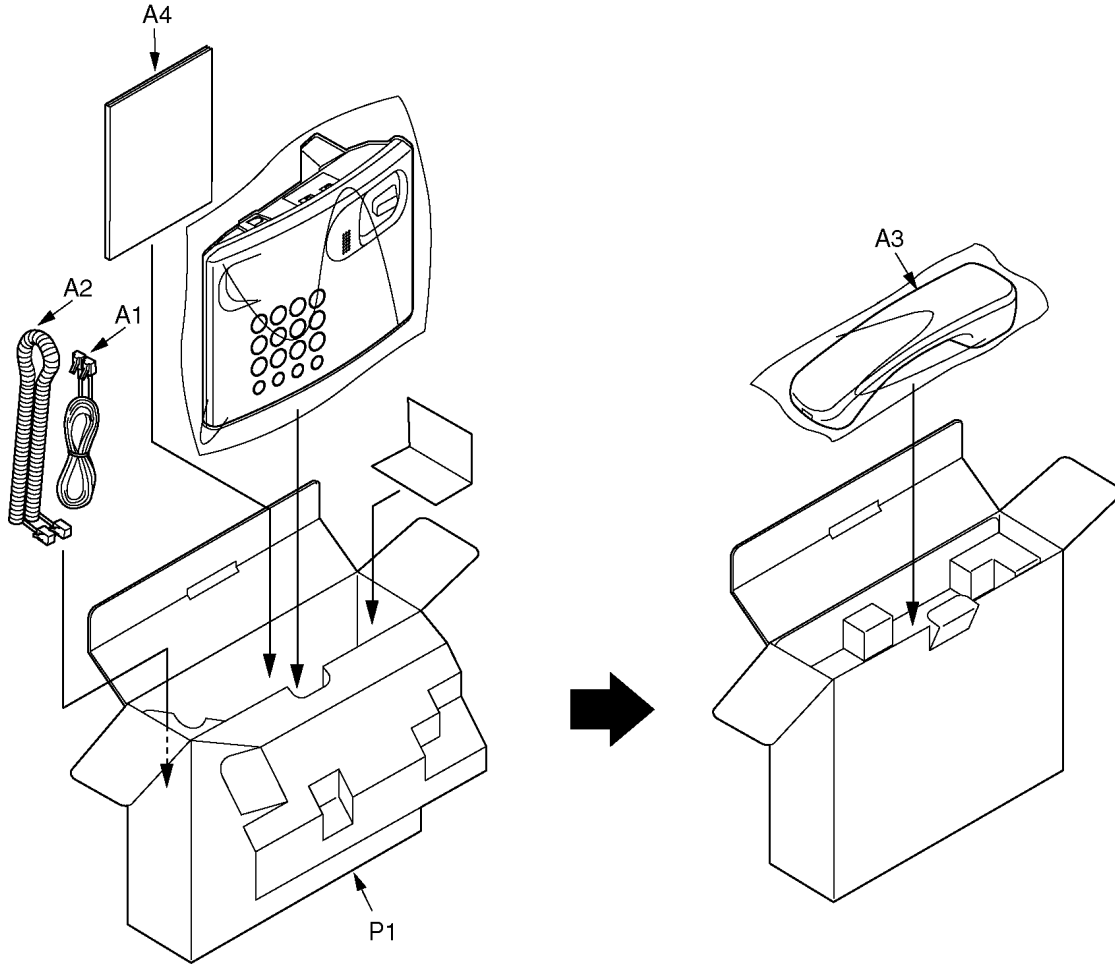


# 10 CABINET AND ELECTRICAL PARTS LOCATION

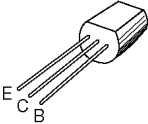
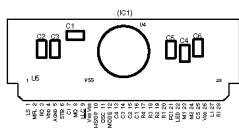
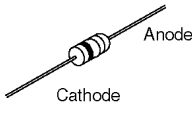
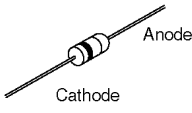
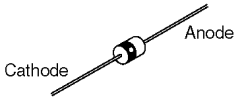
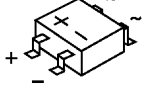
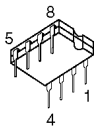
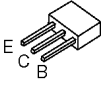


A	PQHV2610PJ65	 φ2.6 × 10mm
B	XTW26+8PFJ7	 φ2.6 × 8mm

# 11 ACCESSORY AND PACKING MATERIALS



# 12 TERMINAL GUIDE OF ICs TRANSISTORS AND DIODES

 <p>B1ACGP000007 PQVT2N6517CA PQVTKSB564AC</p>	 <p>N5BCBZ000001</p>	 <p>MA4051</p>	 <p>MA4100</p>
 <p>B0EAAD000001</p>	 <p>B0EDER000009</p>	 <p>C1CA00000290</p>	 <p>B1CEGF000004</p>

# 13 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  $\Delta$  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 ( $\Omega$ ) K=1000 $\Omega$ , M=1000k $\Omega$

All capacitors are in MICRO FARADS ( $\mu$ F)P= $\mu$  $\mu$ F

\*Type & Wattage of Resistor

Type

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

## 13.1. Base Unit

### 13.1.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQBH10033Z2	BUTTON, HOOK (for KX-TS2350CAB)	ABS-HB
1	PQBH10033Z8	BUTTON, HOOK (for KX-TS2350CAC)	ABS-HB
1	PQBH10033Z9	BUTTON, HOOK (for KX-TS2350CAH)	ABS-HB
1	PQBH10033Z3	BUTTON, HOOK (for KX-TS2350CAR)	ABS-HB
1	PQBH10033Z1	BUTTON, HOOK (for KX-TS2350CAW)	ABS-HB
2	PQKM10610Z2	CABINET BODY (for KX-TS2350CAB)	PS-HB

Ref. No.	Part No.	Part Name & Description	Remarks
2	PQKM10610Z4	CABINET BODY (for KX-TS2350CAC)	PS-HB
2	PQKM10610Z5	CABINET BODY (for KX-TS2350CAH)	PS-HB
2	PQKM10610Z3	CABINET BODY (for KX-TS2350CAR)	PS-HB
2	PQKM10610Z1	CABINET BODY (for KX-TS2350CAW)	PS-HB
3	L0DDFD000002	BUZZER	
4	PQXS10248Y	KEYBOARD SWITCH, 16 KEY (for KX-TS2350CAB/CAC/CAR)	
4	PQXS10248X	KEYBOARD SWITCH, 16 KEY (for KX-TS2350CAH)	
4	PQXS10248Z	KEYBOARD SWITCH, 16 KEY (for KX-TS2350CAW)	
5	PQKF10600X2	CABINET COVER (for KX-TS2350CAB)	PS-HB
5	PQKF10600X4	CABINET COVER (for KX-TS2350CAC)	PS-HB
5	PQKF10600X3	CABINET COVER (for KX-TS2350CAH)	PS-HB
5	PQKF10600X5	CABINET COVER (for KX-TS2350CAR)	PS-HB
5	PQKF10600X1	CABINET COVER (for KX-TS2350CAW)	PS-HB
6	PQHA10018Y	RUBBER PARTS, FOOT CUSHION	
7	PQKL10058Z2	STAND, WALL MOUNT (for KX-TS2350CAB)	PS-HB
7	PQKL10058Z4	STAND, WALL MOUNT (for KX-TS2350CAC)	PS-HB
7	PQKL10058Z5	STAND, WALL MOUNT (for KX-TS2350CAH)	PS-HB
7	PQKL10058Z3	STAND, WALL MOUNT (for KX-TS2350CAR)	PS-HB
7	PQKL10058Z1	STAND, WALL MOUNT (for KX-TS2350CAW)	PS-HB
8	PQHA10025Z	RUBBER PARTS, FOOT CUSHION	
9	PQGT19126Z	NAME PLATE (for KX-TS2350CAB)	
9	PQGT19309Z	NAME PLATE (for KX-TS2350CAC)	
9	PQGT19311Z	NAME PLATE (for KX-TS2350CAH)	
9	PQGT19310Z	NAME PLATE (for KX-TS2350CAR)	
9	PQGT19125Z	NAME PLATE (for KX-TS2350CAW)	

### 13.1.2. Main P.C.Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PQWP1S2350CA	MAIN P.C.BOARD ASS`Y (RTL) (ICs)	
IC1	N5BCBZ000001	IC	
IC2	C1CA00000290	IC	
		(TRANSISTORS)	
Q1	B1ACGP000007	TRANSISTOR (SI)	
Q2	PQVT2N6517CA	TRANSISTOR (SI)	S
Q3	PQVTKSB564AC	TRANSISTOR (SI)	S
Q7	PQVT2N6517CA	TRANSISTOR (SI)	S
Q8	B1CEGF000004	TRANSISTOR (SI)	
		(DIODES)	
D2	MA4051	DIODE (SI)	S
D8	B0EAD000001	DIODE (SI)	
D9	B0EAD000001	DIODE (SI)	
D13	MA4100	DIODE (SI)	S
D17	B0EDER000009	DIODE (SI)	
D23	B0EAD000001	DIODE (SI)	
D24	B0EAD000001	DIODE (SI)	
		(JACKS AND CONNECTOR)	
JACK1	PQJJ1T029Z	JACK, MODULAR	
JACK3	PQJJ1T030Z	JACK, HANDSET	
CN1	WBX10SS4AALM	CONNECTOR (SWITCHES)	S
S1	PQSH2B105Z	PUSH SWITCH, HOOK	S
S2	K0D112B00131	SLIDE SWITCH	S
S3	K0D113B00082	SLIDE SWITCH (RESISTORS)	

Ref. No.	Part No.	Part Name & Description	Remarks
R1	ERJ3GEYJ335	3.3M	
R2	ERDS1TJ222	2.2K	S
R3	ERJ3GEYJ185	1.8M	
R4	ERJ3GEYJ182	1.8K	
R5	ERJ3GEYJ472	4.7K	
R6	ERJ3GEYJ123	12K	
R7	ERDS2TJ124	120K	
R8	ERJ3GEYJ105	1M	
R9	ERDS1TJ220	22	S
R10	ERJ3GEYJ221	220	
R14	ERJ3GEYJ334	330K	
R16	ERJ3GEYJ224	220K	
R18	ERJ3GEYJ274	270K	
R20	ERJ3GEYJ222	2.2K	
R21	ERJ3GEYJ182	1.8K	
R22	ERJ3GEYJ182	1.8K	
R25	ERJ3GEYJ104	100K	
R26	ERJ3GEYJ183	18K	
R28	ERJ3GEYJ473	47K	
R29	ERJ3GEYJ221	220	
R31	ERJ3GEYJ103	10K	
R32	ERJ3GEYJ562	5.6K	
R46	ERDS2TJ470	47	
R47	ERJ3GEYOR00	0	
R51	ERJ3GEYJ221	220	
R52	ERJ3GEYJ221	220	
R55	ERJ3GEYJ105	1M	
R101	ERJ3GEYJ223	22K	
R102	ERJ3GEYJ331	330	
R103	ERJ3GEYJ473	47K	
JP18	ERJ3GEYOR00	0	
JP22	ERJ3GEYOR00	0	
JP23	ERJ3GEYOR00	0	
		(CAPACITORS)	
C1	F0C2E1050005	1	
C5	ECUV1C273KBV	0.027	
C6	ECEA1HKA010	1	
C9	ECEA0JKS220	22	S
C11	ECEA0JKA101	100	
C12	ECUV1C473KBV	0.047	
C13	ECUV1C473KBV	0.047	
C15	ECEA1CKA100	10	
C16	F1B2H681A034	680P	
C17	F1B2H681A034	680P	
C21	ECUV1H153KBV	0.015	
C22	ECEA1CKA100	10	
C26	ECEA1HKA010	1	
C27	ECUV1C683KBV	0.068	
C29	ECEA1CKA100	10	
C30	ECUV1H120JCV	12P	
C31	ECUV1C563KBV	0.056	
C34	ECEA0JU471	470	
C38	F1B1H1030003	0.01	
C102	ECEA1HKA100	10	
C103	ECUV1C563KBV	0.056	
		(OTHERS)	
SA1	PQVDDSS301L	VARIATOR (SURGE ABSORBER)	△
VR1	PQNVZ6TLTB13	VARIABLE RESISTOR	S
VR2	EVNDXAA03B24	VARIABLE RESISTOR	
X1	PQVBZTA3.58M	CRYSTAL OSCILLATOR	

## 13.2. Accessories and Packing Materials

### Note:

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

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQJA10075Z	CORD, TELEPHONE	
A2	PQJA212N	CORD, HANDSET (for KX-TS2350CAB/CAC/CAH/CAR)	
A2	PQJA212M	CORD, HANDSET (for KX-TS2350CAW)	
A3	PQJXE0501Z	HANDSET (for KX-TS2350CAB)	
A3	PQJXE0527Z	HANDSET (for KX-TS2350CAC)	
A3	PQJXE0529Z	HANDSET (for KX-TS2350CAH)	
A3	PQJXE0518Z	HANDSET (for KX-TS2350CAR)	
A3	PQJXE0511Z	HANDSET (for KX-TS2350CAW)	
A4	PQOX15542Z	INSTRUCTION BOOK (*1)	
P1	PQPK15476Z	GIFT BOX	

### 13.1.3. Operational P.C.Board Part

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PQWP2TS500MX	OPERATIONAL P. C. BOARD ASS'Y (RTL)	

**Memo**

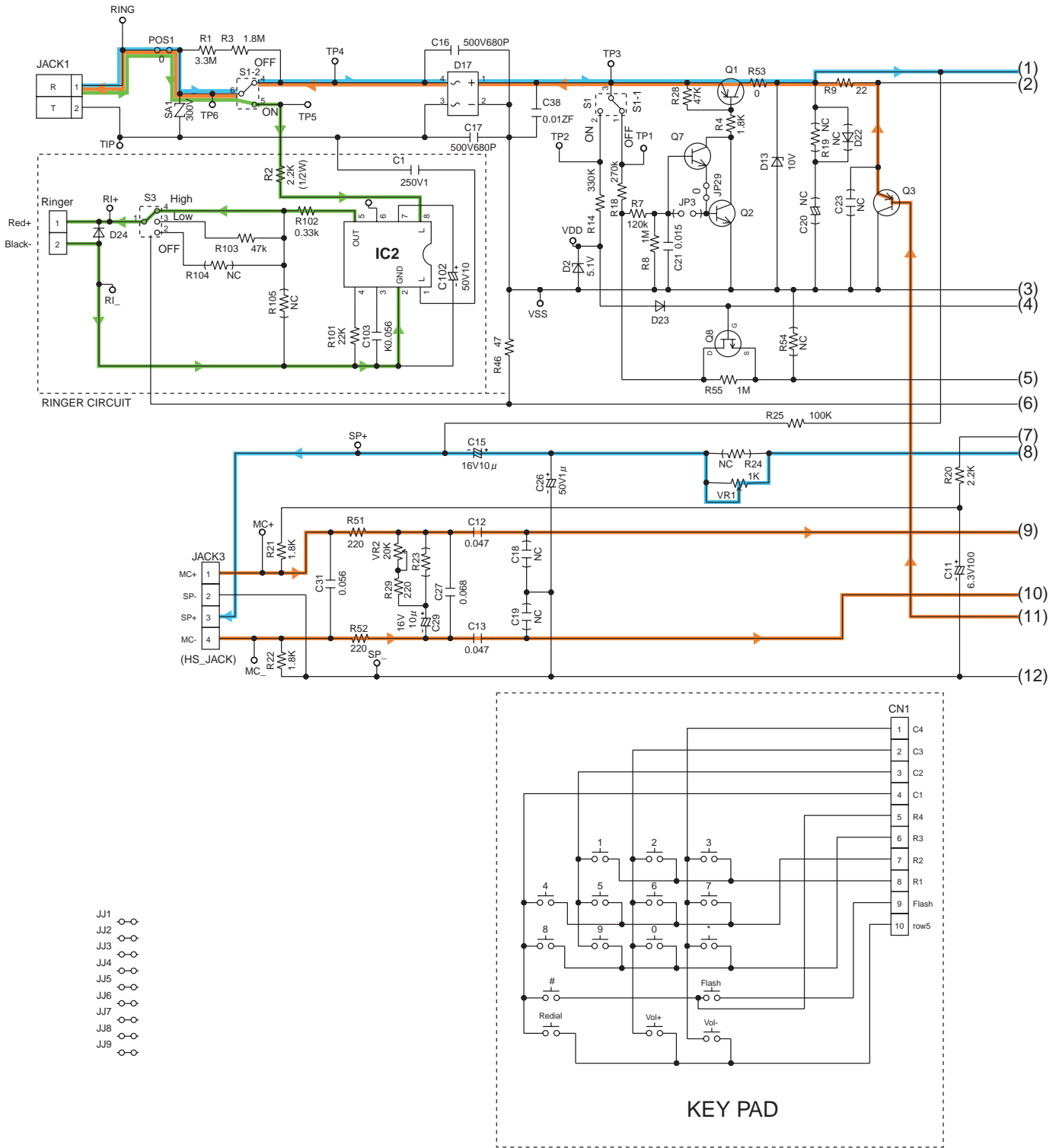
## 14 FOR SCHEMATIC DIAGRAM (SCHEMATIC DIAGRAM)

1. DC voltage measurements are taken with electronic voltmeter from negative terminal.
2. This schematic diagram may be modified at any time with the development of new technology.

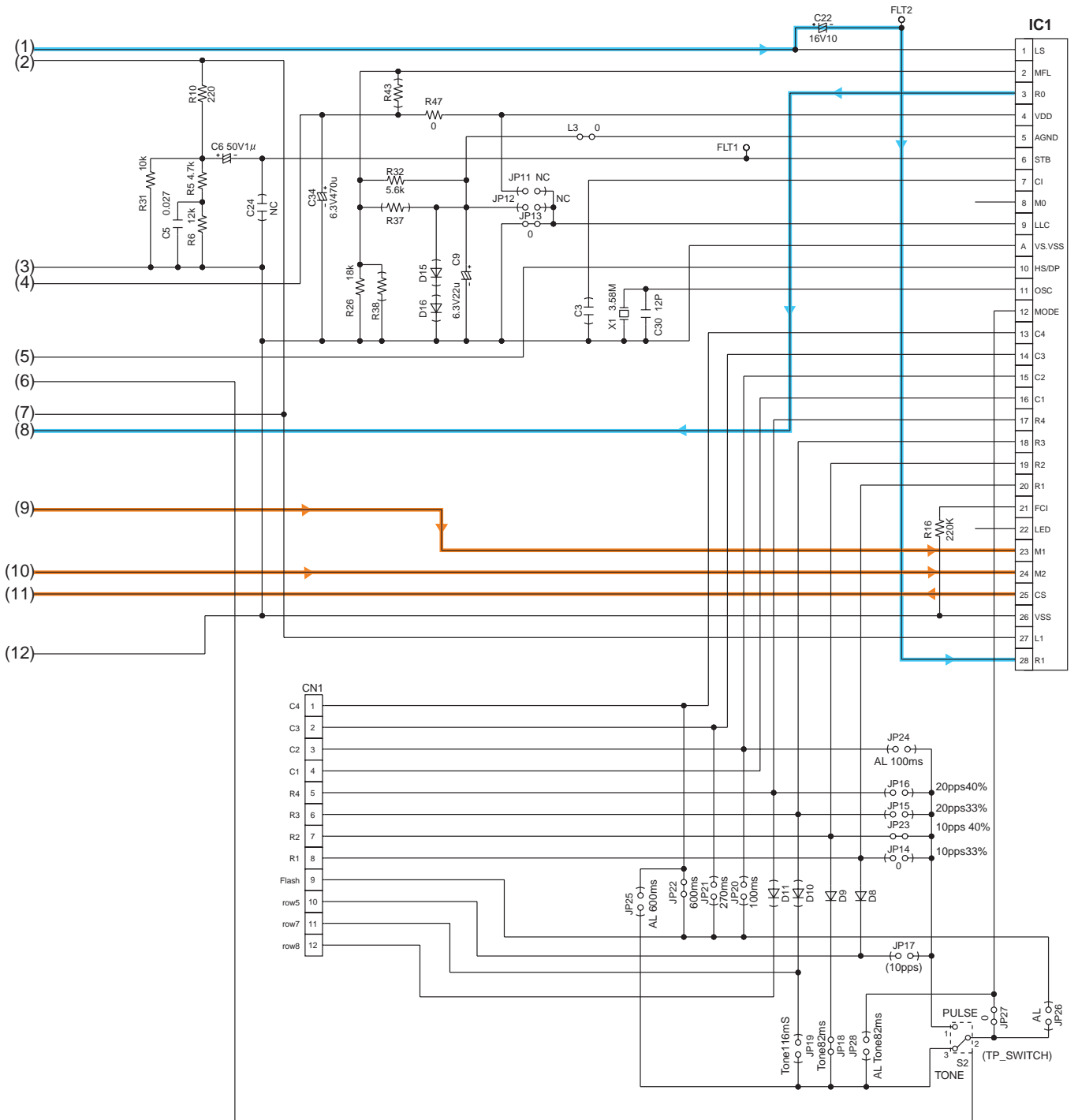
**Important Safety Notice:**

Components identified by  $\triangle$  mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

# 15 SCHEMATIC DIAGRAM





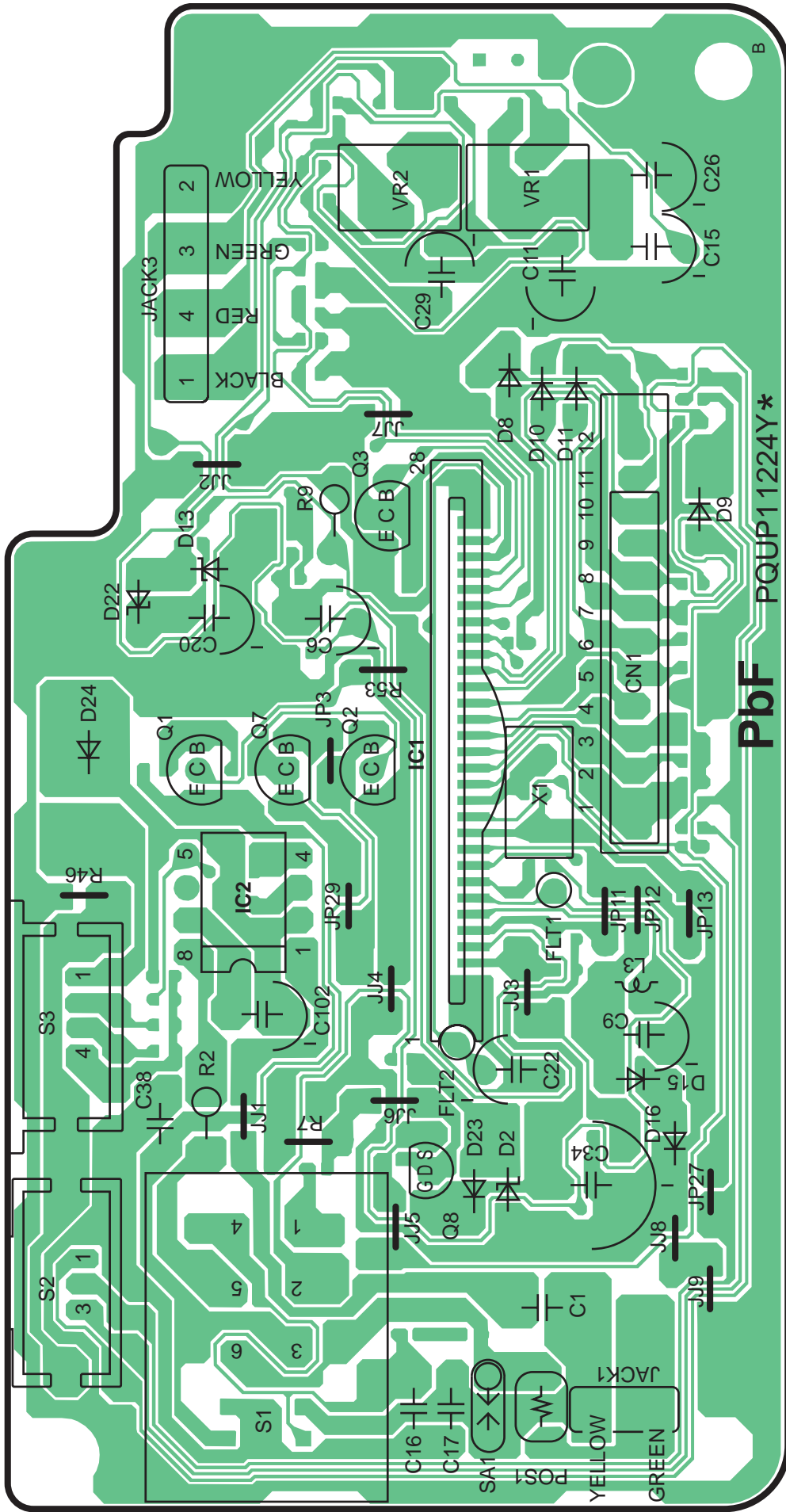


KX-TS2350 SCHEMATIC DIAGRAM

**Memo**

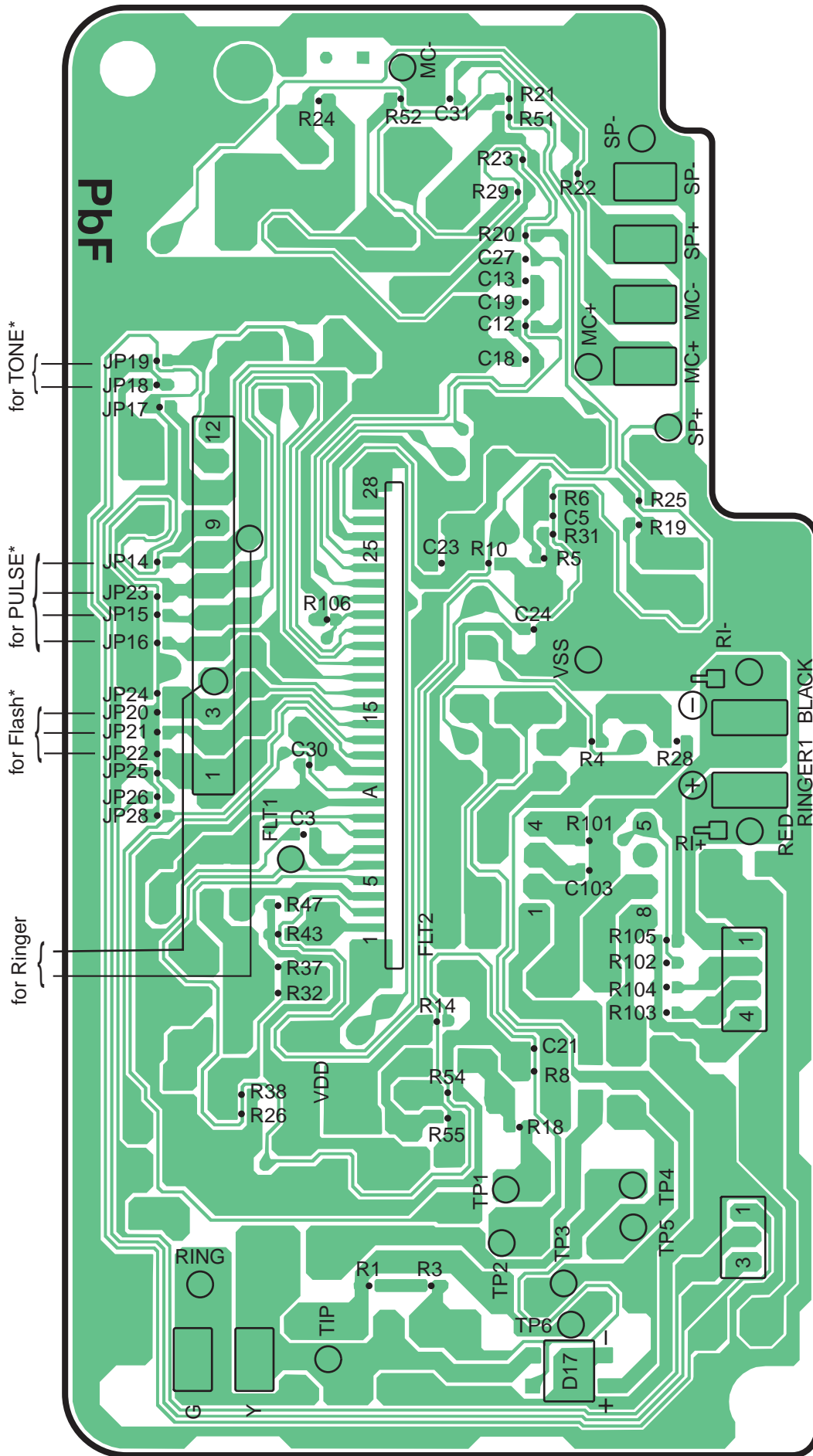
# 16 CIRCUIT BOARD

## 16.1. Main (Component View)



KX-TS2350 CIRCUIT BOARD (Main) Component View

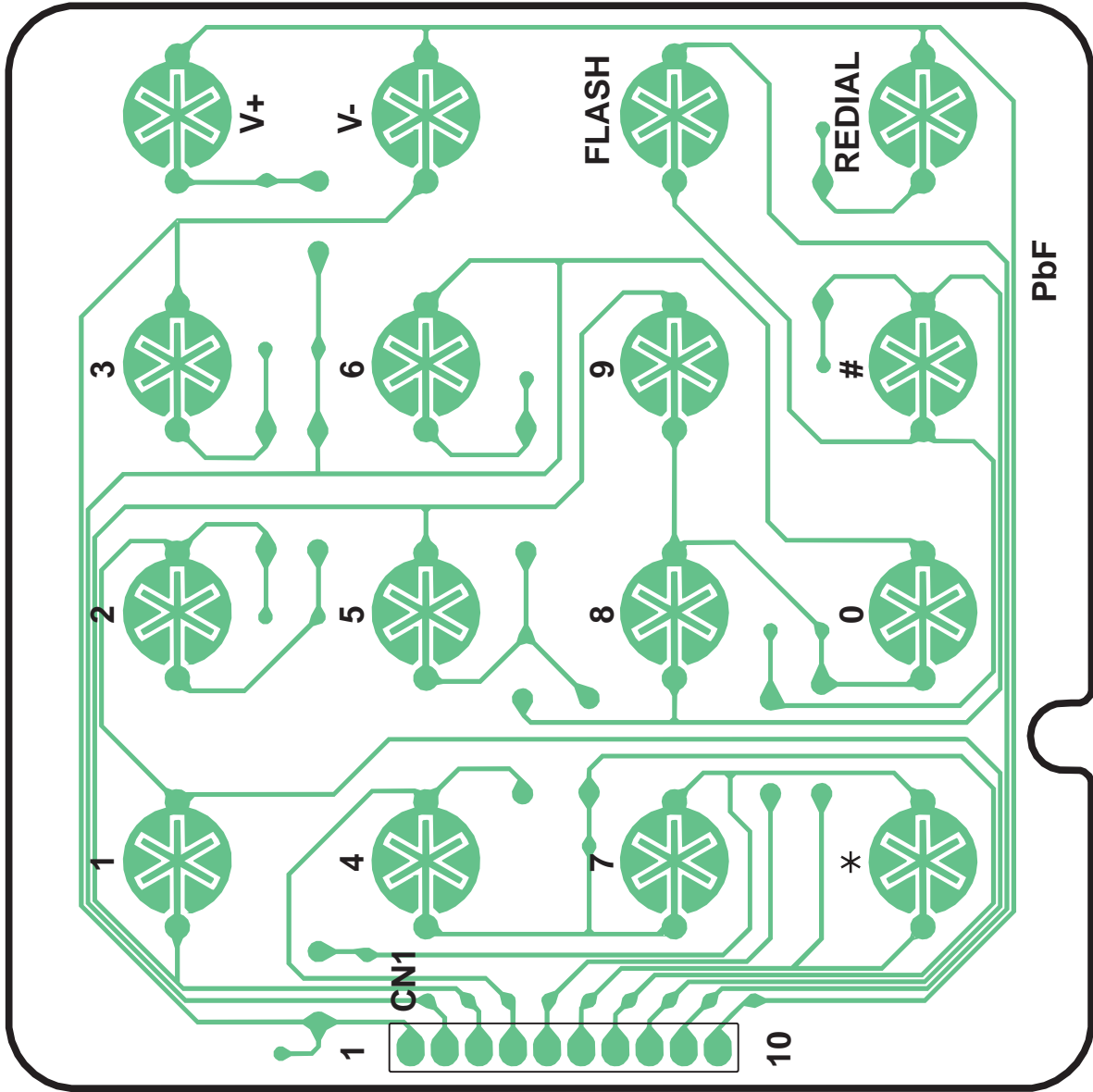
### 16.2. Main (Flow Solder Side View)



KX-TS2350 CIRCUIT BOARD (Main) Flow Solder Side View

\*: Refer to **OPTION JUMPER TABLE** (P.15)

### 16.3. Operation (Flow Solder Side View)



KX-TS2350 CIRCUIT BOARD (Operation) Flow Solder Side View

