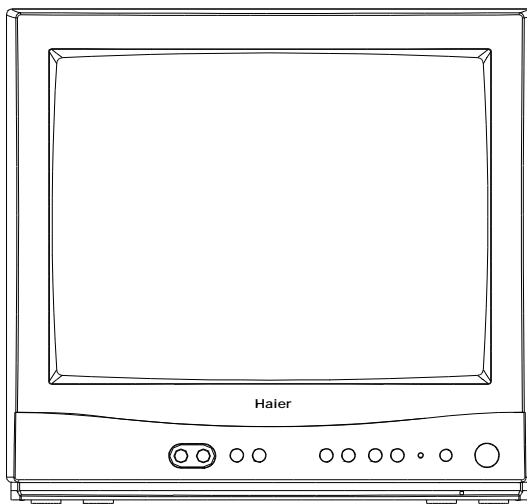


# HTN13R12

## COLOR TELEVISION

# Service Manual



**MODEL: HTN13R12**

## n Features

- I 181 CHANNEL
- I Front Audio/Video input
- I V-CHIP, CCD

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# Haier Group

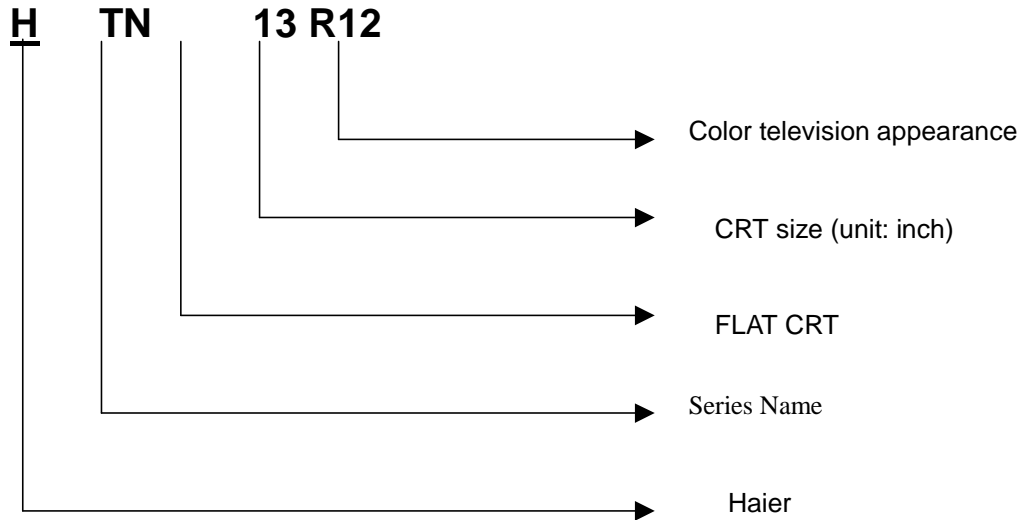
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## CONTENTS

|    |  |    |
|----|--|----|
| 1  | Contents-----  | 1  |
| 2  | Product Code illumination and Series Introduction----- | 2  |
| 3  | Features-----  | 3  |
| 4  | Safety Precautions-----                                | 4  |
| 5  | Warning and Cautions-----                              | 5  |
| 6  | Net dimension-----                                     | 11 |
| 7  | Parts and Functions-----                               | 12 |
| 8  | Remote Controller Functions-----                       | 13 |
| 9  | Program Diagram-----                                   | 14 |
| 10 | Maintenance Service and Trouble shooting-----          | 15 |
| 11 | Circuit Diagram-----                                   | 18 |
| 12 | Circuit Explanation-----                               | 22 |
| 13 | Adjustment-----  | 24 |
| 14 | Exploded View-----                                     | 26 |
| 15 | List of Parts-----                                     | 27 |
| 16 | Damageable Parts List-----                             | 39 |
| 17 | Information of Resistors and Capacitors-----           | 39 |

## 2.Product Code illumination and Series Introduction



## 3.Features

| NO. | ITEM                 | FUNCTION            | MODEL   | NO.                             | ITEM                        | FUNCTION                      | MODEL   |
|-----|----------------------|---------------------|---------|---------------------------------|-----------------------------|-------------------------------|---------|
|     |                      |                     | HS-2190 |                                 |                             |                               | TV-9708 |
| 1   | PICTURE              | Main IC             | 76814   | 24                              | SOFTWARE                    | Digital curtain               | ×       |
| 2   |                      | CRT                 | FS      | 25                              |                             | Slow fading on & off          | ×       |
| 3   |                      | Color system        | NTSC    | 26                              |                             | Semitransparent menu          | ×       |
| 4   |                      | Audio system        | M       | 27                              |                             | Non-flashing channel changing | ×       |
| 5   |                      | Number of channels  | 181     | 28                              |                             | ZOOM                          | ×       |
| 6   |                      | OSD language        | E、F、S   | 29                              |                             | 16:9 mode                     | ×       |
| 7   |                      | Multi-picture modes | √       | 30                              |                             | Games                         | ×       |
| 8   | AUDIO                | AV stereo           | ×       | 31                              |                             | Calendar                      | ×       |
| 9   |                      | Super woofer        | ×       | 32                              |                             | Child-lock                    | ×       |
| 10  |                      | Surrounding sound   | ×       | 33                              |                             | Multi-functional lock         | ×       |
| 11  |                      | Treble/bass boost   | ×       | 34                              |                             | No-picture listening          | ×       |
| 12  |                      | Left/right balancer | √       | 35                              |                             | Background light              | ×       |
| 13  |                      | NICAM               | ×       | 36                              |                             | Auto-timer on                 | √       |
| 14  |                      | Multi-audio modes   | ×       | 37                              |                             | CCD                           | √       |
| 15  | Tone adjuster        | ×                   | 38      | V-CHIP                          | √                           |                               |         |
| 16  | MTS/SAP              | ×                   | 39      | PARAMETER                       | Number of built-in speakers | 1                             |         |
| 17  | Auto-volume leveling | ×                   | 40      |                                 | Audio output power (W)      | 2W                            |         |
| 18  | JACK                 | AV input            | Front 1 |                                 | 41                          | Total power input (W)         | 58      |
| 19  |                      | AV output           | ×       |                                 | 42                          | Voltage range (V)             | ~120    |
| 20  |                      | DVD terminal        | ×       |                                 | 43                          | Power frequency (Hz)          | 60      |
| 21  |                      | S-video jack        | ×       |                                 | 44                          | Time of sleep timer (MINS)    | 120     |
| 22  |                      | Headphone socket    | ×       |                                 | 45                          | Net weight (KG)               | 9.2     |
| 23  |                      | SCART socket        | ×       |                                 | 46                          | Gross weight (KG)             | 11.5    |
|     |                      |                     | 47      |                                 | Net dimension (MM)          | 354×380×330                   |         |
|     |                      |                     | 48      |                                 | Packaged dimension (MM)     | 435×435×400                   |         |
|     |                      |                     | 49      |                                 | Quantity for 20' container  | ×                             |         |
|     |                      |                     | 50      | Quantity for 40' container      | ×                           |                               |         |
|     |                      |                     | 51      | Quantity for 40' high container | ×                           |                               |         |

### 4. Safety Precautions

## SAFETY PRECAUTIONS

### IMPORTANT SAFETY NOTICE

Many electrical identify these parts and mechanical parts in this chassis have special safety-related characteristics! In the Schematic Diagram and Replacement Parts List.

It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.

Do not modify the original design without permission of the manufacturer.

### General Guidance

An Isolation Transformer should always be used during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents that might result in personal injury caused by electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that might be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with a specified one.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Due to the high vacuum and large surface area of the picture tube, extreme care should be taken in handling the Picture Tube. Do not lift the Picture Tube by its Neck.

X-RAY Radiation

### Warning:

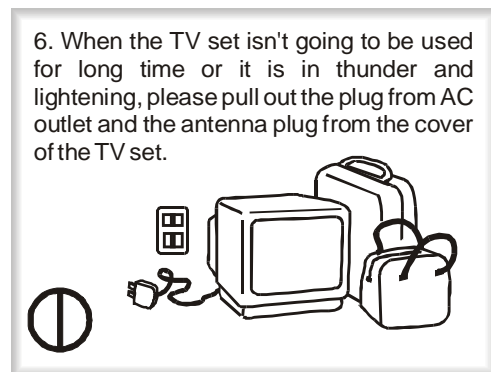
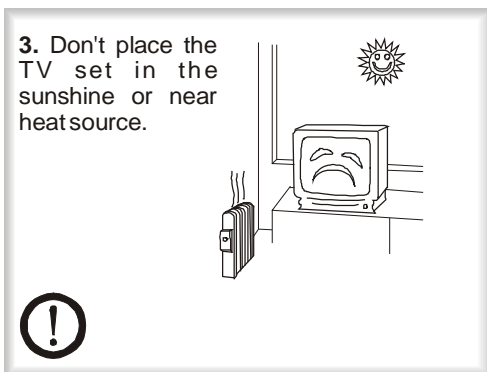
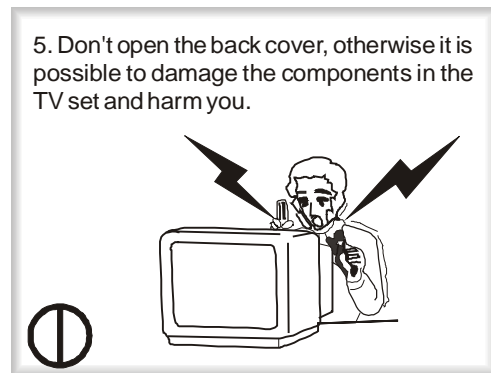
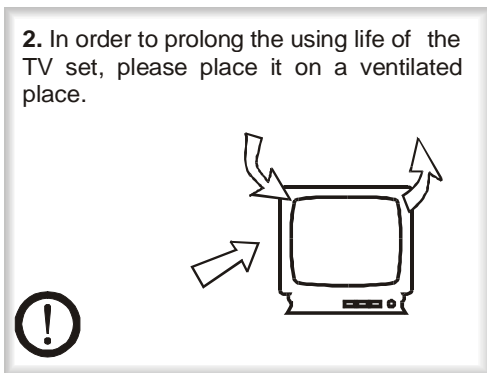
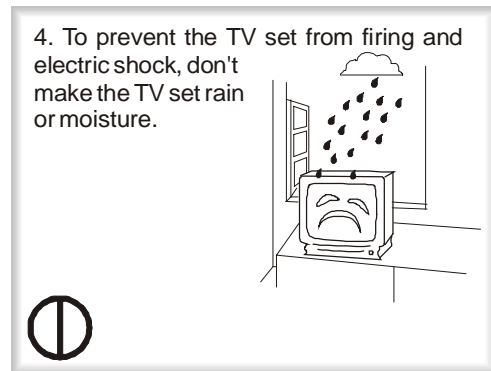
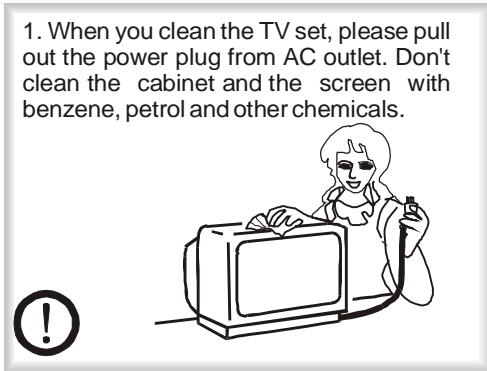
The source of X-RAY RADIATION in this TV receiver is the High Voltage Section and the Picture Tube.

For continued X-RAY RADIATION protection, the replacement tube must be of the same type as specified in the Replacement Parts List.

Before returning the receiver to the customer,

Always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to make sure that the set is safe to operate without any danger of electrical shock.

## 5.Warning and Cautions



### Explanation on the display tube

Generally, it is not needed to clean the tube surface. However, if necessary, its surface can be cleaned with a dry cotton cloth after cutting off the power. Don't use any cleanser. If using hard cloth, the tube surface will be damaged.

**CAUTION:** Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the **SAFETY PRECAUTIONS**.

## Warning and Cautions

**NOTE:** If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. **Remember: Safety First.**

### General Servicing Precautions

- 1). Always unplug the receiver AC power cord from the AC power source before:
  - a. Removing or reinstalling any component, circuit board module or any other assembly of the receiver.
  - b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
  - c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.  
**CAUTION:** A wrong substitution part or incorrect installation polarity of electrolytic capacitors may result in an explosion hazard.
  - d. Discharging the picture tube anode.
- 2). Test high voltage only by measuring it with an appropriate high voltage meter or other voltage-measuring device (DVM, FETVOM, etc.) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
- 3). Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
- 4). Do not sprays chemicals on or near this receiver or any of its assemblies.
- 5). Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)  
**CAUTION:** This is a flammable mixture.  
Unless specified otherwise in this service manual, lubrication of contacts is not required.
- 6). Do not defeat any plug / socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
- 7). Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
- 8). Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.  
Always remove the test receiver ground lead last.
- 9). Use with this receiver only the test fixtures specified in this service manual.

**CAUTION:** Do not connect the test fixture ground strap to any heat sink in this receiver.

### Electrostatic ally Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such



## Warning and Cautions

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components are usually called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

- 1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock prior to applying power to the unit under test.
- 2) After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
- 3) Use only a grounded-tip soldering iron to solder or unsolder ES devices.
- 4) Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
- 5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
- 6) Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
- 7) Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

- 8) Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise even some normally harmless motions such as mutual brushing of your clothes' fabric or lifting of your foot from a carpeted floor might generate static electricity sufficient to damage an ES device.)

### General Soldering Guidelines

- 1) Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range of 500°F to 600°F.
- 2) Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
- 3) Keep the soldering iron tip clean and well tinned.
- 4) Thoroughly clean the surfaces to be soldered. Use a mall wire bristle (0.5 inch, or 1.25cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
- 5) Use the following unsoldering technique
  - a. Allow the soldering iron tip to reach normal temperature. (500° F to 600° F)
  - b. Heating the component lead until the solder melts.
  - c. Quickly draw the melted solder with an anti-static, suction-type solder removal device with solder braid.

## Warning and Cautions

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**CAUTION:** Work quickly to avoid overheating the circuit board printed foil.

1) Use the following unsoldering technique

- a. Allow the soldering iron tip to reach normal temperature. (500° F to 600° F)
- b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
- c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

**CAUTION:** Work quickly to avoid overheating the circuit board printed foil.

- d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

### **Remove /Replacement**

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are of slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined.

#### **Removal**

Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.

Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

#### **Replacement**

Carefully insert the replacement IC in the circuit board.

Carefully bend each IC lead against the circuit foil pad and solder it.

Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

### **“Small-Signal” Discrete Transistor**

#### **Removal/Replacement**

Remove the defective transistor by clipping its leads as close as possible to the component body.

Bend into a “U” shape the end of each of three leads remaining on the circuit board.

Bend into a “U” shape the replacement transistor leads.

Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the “U” with long nose pliers to insure metal to metal contact then solder each connection.

### **Power Output, Transistor Device**

#### **Removal/Replacement**

Heat and remove all solder from around the transistor leads.

Remove the heat sink mounting screw (if so equipped).

Carefully remove the transistor from the heat sink of the circuit board.

Insert new transistor in the circuit board.

Solder each transistor lead, and clip off excess lead.

Replace heat sink.

### **Diode Removal/Replacement**

Remove defective diode by clipping its leads as close as possible to diode body.

Bend the two remaining leads perpendicularly to the circuit board.

Observing diode polarity, wrap each lead of the new diode round the corresponding lead on the circuit board.

Securely crimp each connection and solder it.

Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

### **Fuse and Conventional Resistor Removal/Replacement**

1) Clip each fuse or resistor lead at top of the circuit board hollow stake.

2) Securely crimp the leads of replacement component around notch at stake top.

3) Solder the connections

**CAUTION:** Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

### **Circuit Board Foil Repair**

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

#### ***At IC Connections***

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1) Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).

2) Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.

3) Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.

4) Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

### ***At other connections***

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1) Remove the defective copper pattern with a sharp knife.

Remove at least 1/4 inch of copper, to insure that a hazardous condition will not exist if the jumper wire opens.

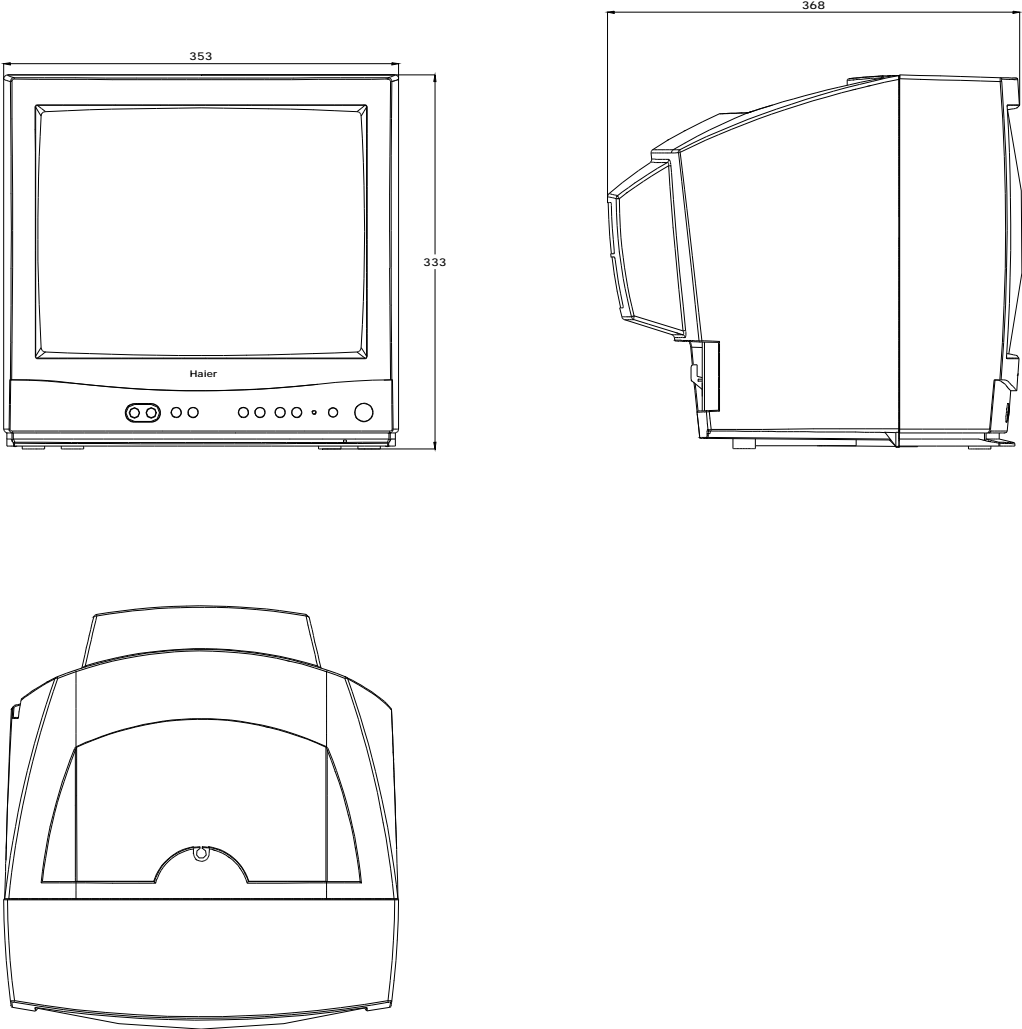
2) Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.

3) Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.

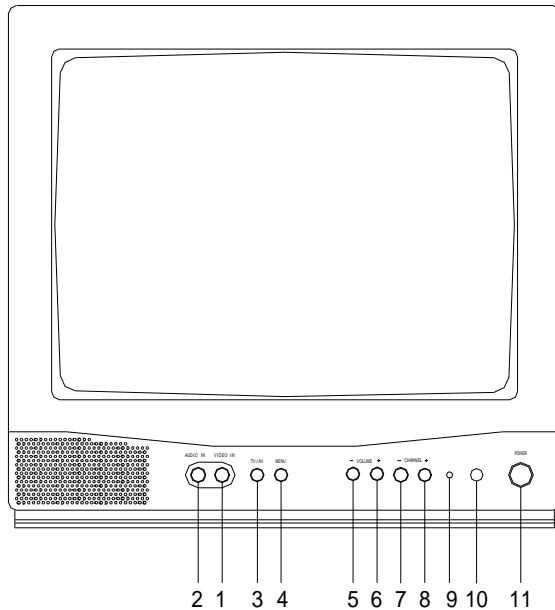
Carefully crimp and solder the connections.

**CAUTION:** Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

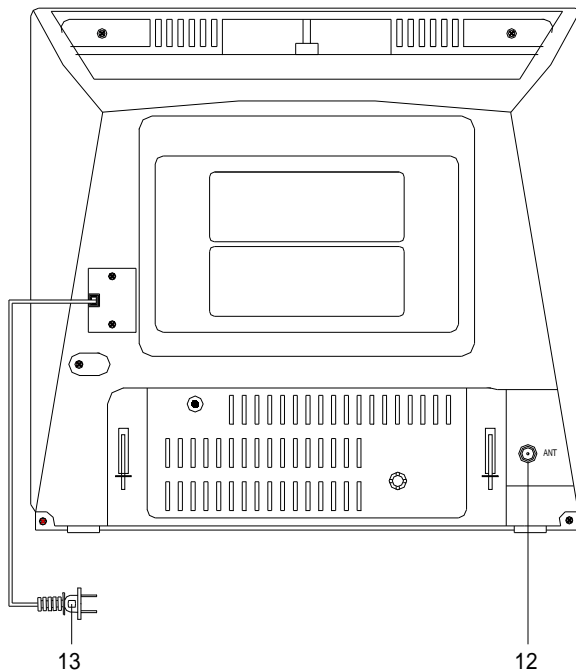
6.Net dimension



7.Parts and Functions

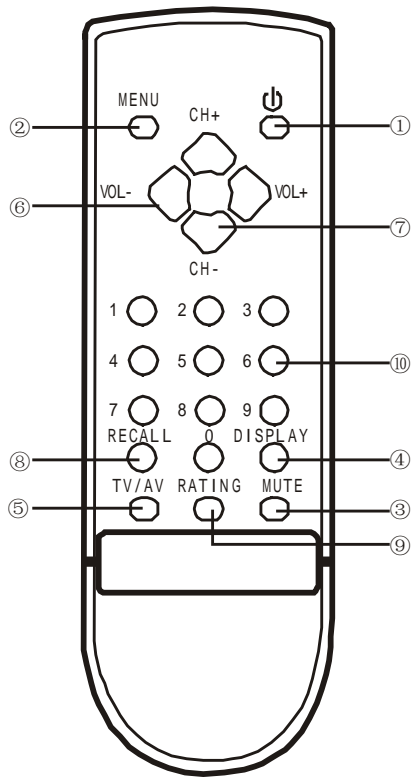


HTN13R12



- 1.V-IN:Video input
- 2.A-IN: Audio input
- 3.TV/AV:TV/AV Select
- 4.M:Access/ExitMain M(menu)
- 5.VOL-: decrease sound
- 6.VOL+: increase sound
7. CH-: select next lower channel
8. CH+: select next higher channel
9. POWER indicator
10. Sensor Windows
11. POWER: power on/off
12. ANT: Antenna
13. AC CORD

### 8.Remote Controller Functions






1. POWER: Power on/off
2. Access/Exit Main M (MENU)
3. MUTE: Press key to Activate/deactivate Mute Function
4. DISPLAY: Display receiving channel
5. TV/AV: TV/AV select
6. VOL+/-: Increase or decrease sound
7. CH+/-: elect next higher or lower channel
8. Recall: Return to previous channel
9. Rating: V-chip set
10. CHANNEL NUMBER BUTTON: Direct channel tuning (TV channel 02-69,CATV01-125)

### 9. Program Diagram



Insert the power plug into the power line socket and insert the antenna plug into the antenna socket on the rear panel. Press down the power switch of the TV set. The red indicator light goes on.

#### Program preset

##### A. 1). *Auto searching and storing program*

Press MENU button on the remote controller then use the “” key to select the bar “Auto program” then press the “” to make sure. If you want to stop, press the key “”.

##### 2). *Deleting channel number*

Press MENU to call Menu. Then use the “” key to select the bar “ADD/DELETE”. then press the “” to select ADD or DELETE.

##### B. **Volume tuning**

Press VOLUME buttons VOL - to decrease and VOL+ to increase the volume.



## 10. Maintenance Service and Trouble shooting

### I Vertical and horizontal scan adjustment:

1. Input digital figure signal (5-circle figure);
2. Press 'GEO' key of the alignment remote controller to call out the scan parameter menu as follows:

| OSD             | DESCRIPTION             | RANGE  | REFERENCE |
|-----------------|-------------------------|--------|-----------|
| H.PHASE         | Horizontal phase        | 0-30   | 16-17     |
| V.POSI          | Frame center            | 0-63   | 48        |
| V.SIZE          | Frame range             | 0-127  | 80        |
| NO SO POWER OFF | Blank signal auto-off   | Yes/No | Yes       |
| V SC            | Frame s adjustment      | 0-31   | 8         |
| VLIN            | Frame linear adjustment | 0-31   | 10        |

Note: Use the 'p+' and 'P-' to move the cursor to select a certain item; the selected item is highlighted with red while other unselected remain green. Use 'V+' and 'V-' to change the parameter of the selected item.

1. Press the 'PICTURE' key of the alignment remote controller again to save the changed parameter.

### II. Factory configuration settings:

Press 'PROD' key to enter the first page of the main menu of the factory Configuration. There are 14 items under this menu. By pressing the 'PROD' key again to enter the second page of this menu; there are 6 more items are listed below:

| OSD   | Description  | Range | Reference |
|-------|--|-------|-----------|
| CTTST | Test control   | 0-1   | 0         |
| HFREQ | Horizontal frequency 0   | 0-63  | 29        |
| VSPUP | Field simultaneous sensitivity 0=High,1=Low                                | 0-1   | 0         |
| GMODE | Gray mode,0=100%,1=50%   | 0-1   | 0         |
| V-LIN | Frame linear(set in GEO)   | 0-31  | 10        |
| RGDEF | R.G output compensation  | 0-1   | 0         |
| BGSLC | B output compensation  | 0-3   | 0         |
| AFG&G | AFC gain 0=high 1=low  | 0-1   | 0         |
| OSCNT | OSD signal gain  | 0-3   | 2         |
| CBYPS | Set the intermediate frequency parameter of Internal tint band-pass filter | 0-1   | 0         |
| CRB/W | Test mode: 0=normal,1=dark field,2=bright field 3=cross figure signal      | 0-3   | 0         |
| HBLKL | Left blanking  | 0-7   | 0         |
| HBLKR | Right blanking   | 0-7   | 0         |
| BSHLD | ABL door limit   | 0-7   | 3-4       |
| EMABL | Emergency ABL remove switch:0=on,1=off                                     | 0-1   | 0         |
| MDSTP | Use brightness to release ABL,0=off,1=on                                   | 0-1   | 0         |

## Maintenance Service and Trouble shooting

|       |   |     |    |
|-------|---|-----|----|
| FMLBL | FM output accuracy                              | 031 | 16 |
| BRABL | Brightness ABL switch 0=off,1=on                | 0-1 | 1  |
| VDLBL | Video demodulation output range 0=small,1=large | 0-7 | 7  |
| PASSW | V-CHIP function 0=OFF,1=ON                      | 0-1 | 1  |

### 1. Simulation preset

- 1) Input color bar signal;
- 2) Press 'MENU' key, set color, contrast, color saturation, tint at medium Position;
- 3) Press 'DP' key of the alignment remote controller to call out the menu which contains the following items:

| OSD            | Description             | Range | Reference |
|----------------|-------------------------|-------|-----------|
| Sub brightness | Preset brightness       | 0-127 | 60        |
| Contrast       | Preset contrast         | 0-27  | 27        |
| Tint           | Preset tint             | 0-77  | 35        |
| Color          | Preset color saturation | 0-27  | 14        |

- 4) When done, press 'PICTURE' to save the result.

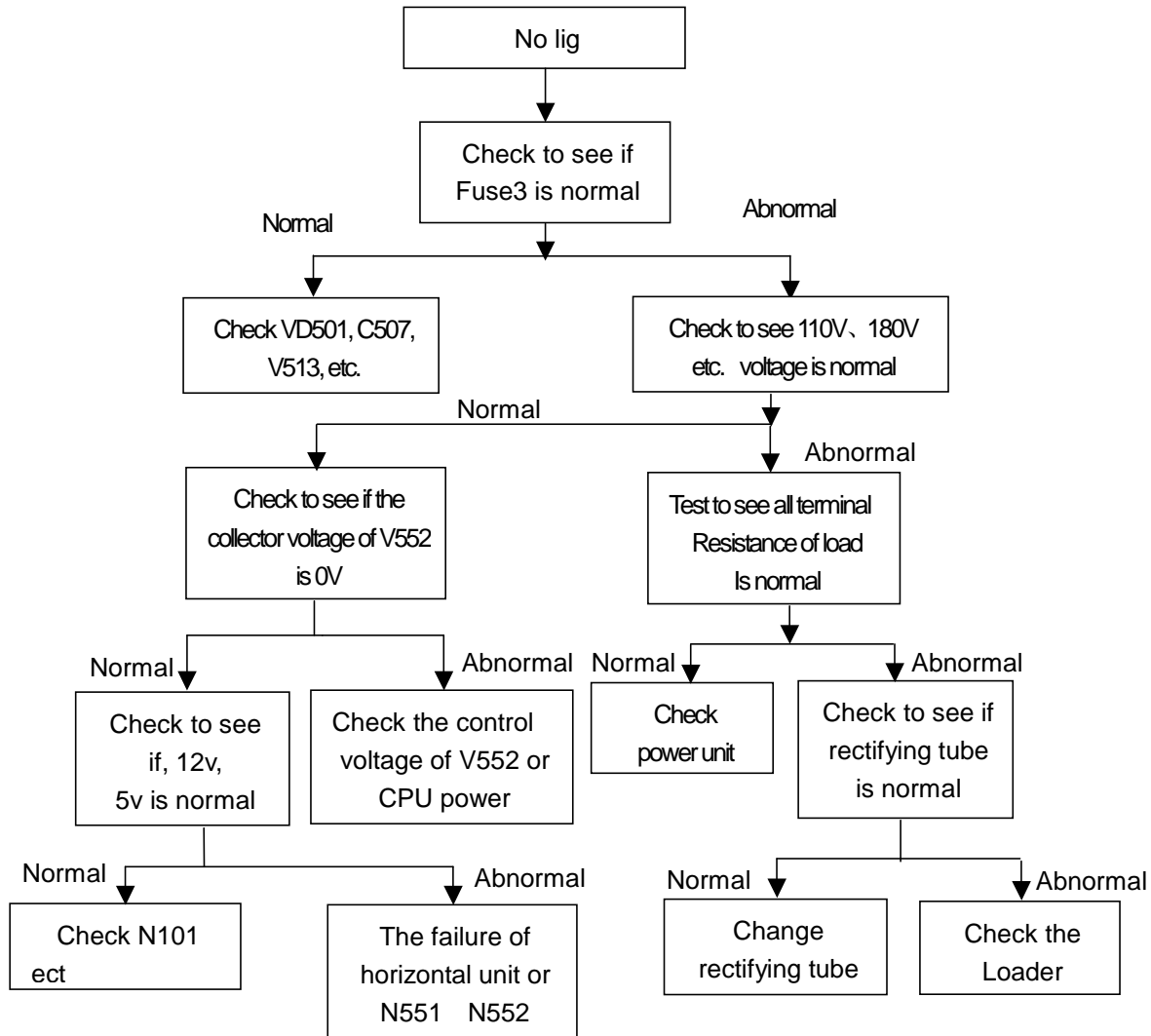
### III. Adjust the white level:

- 1) Press 'GEO' of the alignment remote controller, set the item 'NO SD POWER OFF YES' to 'NO', keep the TV power on for over 30 minutes;
- 2) Degauss the CRT;
- 3) Input bright field signal through AV channel;
- 4) Connect white level test equipment to the set;
- 5) Press 'W/B' key of the alignment remote controller to call out the Following menu:

| OSD | Description               | Range | Reference             |
|-----|---------------------------|-------|-----------------------|
| RD  | Red stimulate potential   | 0-127 | 64                    |
| GD  | Green stimulate potential | 0-15  | 7                     |
| BD  | Blue stimulate potential  | 0-127 | 64                    |
| RB  | Red stop potential        | 0-255 | Preset 127,adjust 127 |
| GB  | Green stop potential      | 0-255 | Preset 127,adjust 250 |
| BB  | Blue stop potential       | 0-255 | Preset 127,adjust 220 |

Set the above items to medium position and then press 'SCAN', adjust The raster potential regulator until the bright line on the screen Turn down to a dark line, which is just visible. Adjust using the following keys until the line turns white {1 (RB+)/2 (RB-) 3 (GB+)/4 (GB-) 5 (BB+)/6 (BB-)}, and then press 'SCAN' again, use the alignment remote controller 'V+', 'V-', 'P+', 'P-' key to adjust 'RD', 'GD' and 'BD' until the whole screen turns white.

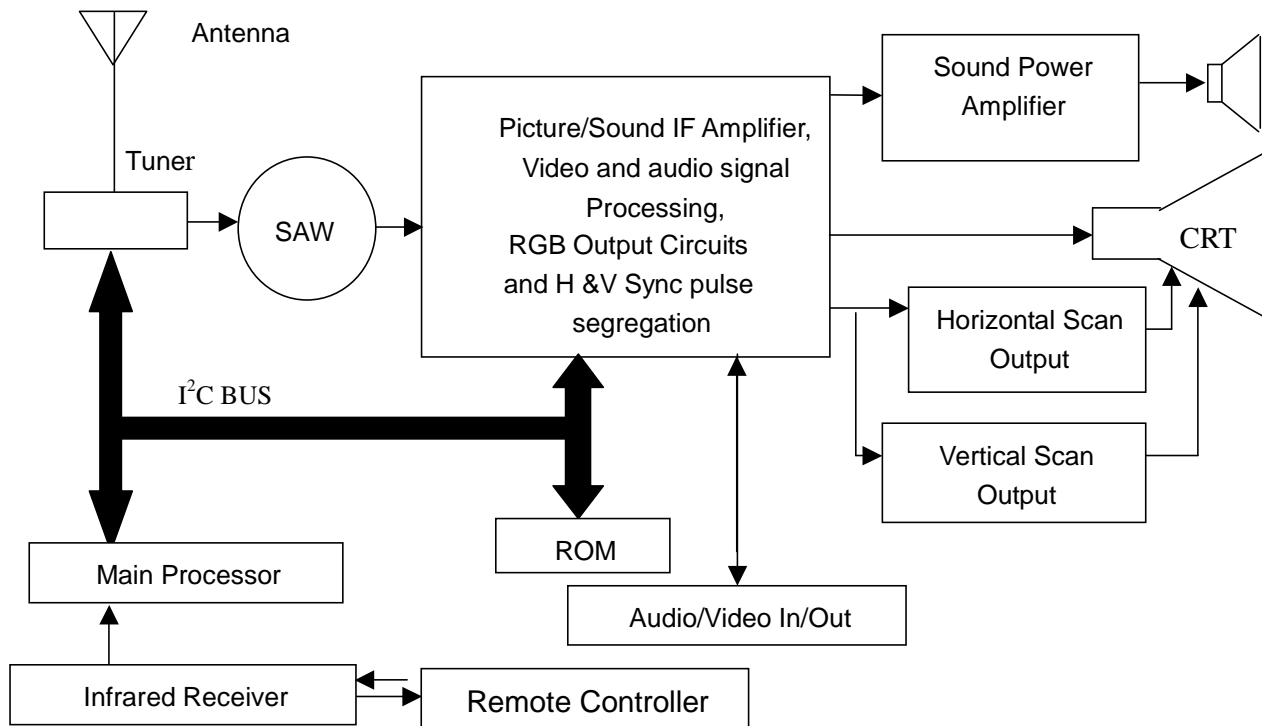
- 6) If a white level test equipment is available, adjust the above until a proper effect is gained.
- 7) Press 'PICTURE' to save the results;
- 8) Press 'GEO' key, set back the 'NO SD POWER OFF' item to yes.



## 11. Circuit Diagram

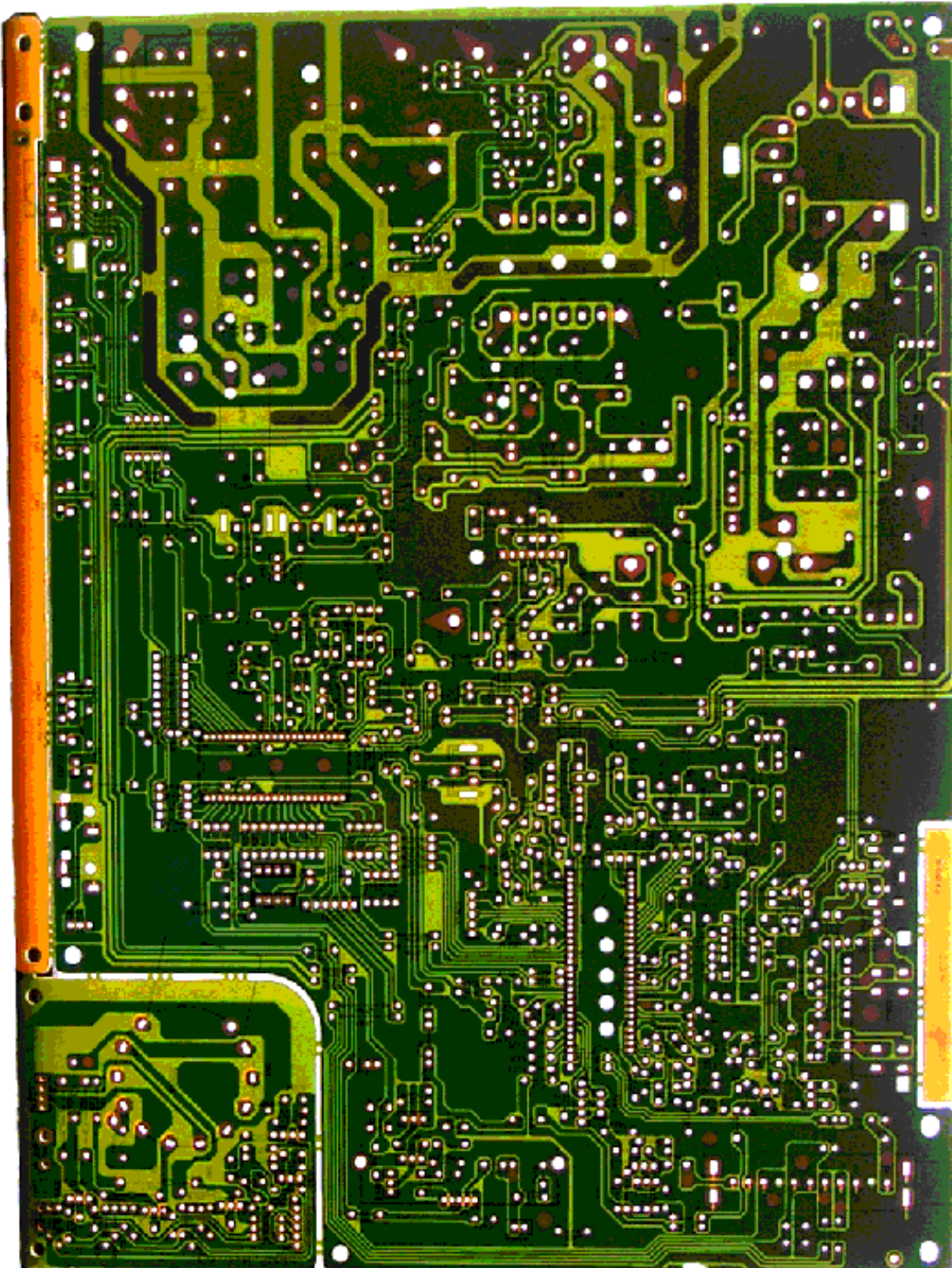


## Circuit Block Diagram





PCB



## 12. Circuit Explanation

### IC reference data:

#### 1). N701 (LC86F3248A)

| Pin No. | function                     | voltage (V) | Pin No. | function   | voltage (V) |
|---------|------------------------------|-------------|---------|--|-------------|
| 1       | n.c                          |             | 22      | R-input  | 0.06        |
| 2       | Connect to 5V via a resistor | 5.03        | 23      | G-input  | 0.06        |
| 3       | Connect to 5V via a resistor | 5.03        | 24      | B-input  | 0.07        |
| 4       | Connect to 5V via a resistor | 5.04        | 25      | Blank  | 0.15        |
| 5       | Connect to 5V via a resistor | 5.03        | 26      | n.c.   | 0.01        |
| 6       | Connect to 5V via a resistor | 5.03        | 27      | I2C bus control 0  | 4.85        |
| 7       | standby                      | 0.03        | 28      | I2C bus control 0  | 4.79        |
| 8       | n.c.                         | 0           | 29      | I2C bus control 1  | 5           |
| 9       | Ground                       | 0           | 30      | I2C bus control 1  | 4.99        |
| 10      | Scl                          | 1.47        | 31      | Connect to 5V via a resistor                                 | 5.03        |
| 11      | sdl                          | 2.2         | 32      | Connect to 5V via a resistor<br>Connect to 5V via a resistor | 5.04        |
| 12      | Power supply                 | 4.99        | 33      | Connect to 5V via a resistor                                 | 5.03        |
| 13      | Key input                    | 0.24        | 34      | Infrared receive   | 0.03        |
| 14      | AFT in                       | 2.77        | 35      | Connect to 5V via a resistor                                 | 5.02        |
| 15      | AGC in                       | 1.7         | 36      | Connect to 5V via a resistor                                 | 5.01        |
| 16      | n.c.                         | 1.7         | 37      | mute   | 0.11        |
| 17      | Reset                        | 4.99        | 38      | AV select  | 0.02        |
| 18      | Filter                       | 3.13        | 39      | Connect to 5V via a resistor                                 | 5.02        |
| 19      | CVBS in                      | 3.25        | 40      | Connect to 5V via a resistor                                 | 5.01        |
| 20      | V syn input                  | 4.8         | 41      | C resistor   | 5.01        |
| 21      | H syn input                  | 4.12        | 42      | Connect to 5V via a resistor                                 | 5.02        |



## 2). N101 LA76814K

| Pin No. | function                 | voltage (V) | Pin No. | function                | voltage (V) |
|---------|--------------------------|-------------|---------|-------------------------|-------------|
| 1       | Audio output             | 2.23        | 28      | FBT input               | 1.06        |
| 2       | FM output                | 2.23        | 29      | Ireference              | 1.69        |
| 3       | IF AGC filter            | 2.22        | 30      | Clock output            | 0.002       |
| 4       | RF AGC                   | 2.59        | 31      | n.c.                    | 0.002       |
| 5       | PIF AMP input            | 1.30        | 32      | OSD gain control        | 3.05        |
| 6       | PIF AMP input            | 2.83        | 33      | Gnd                     | 0           |
| 7       | IF ground                | 2.83        | 34      | X-ray prectect          | 0.06        |
| 8       | IF VVcc                  | 0           | 35      | ACC killer filter       | 0.39        |
| 9       | FM filter                | 4.94        | 36      | Chroma AFC-F            | 3.49        |
| 10      | AFT output               | 1.90        | 37      | CW:3.58MHz out          | 0.54        |
| 11      | Bus data                 | 2.77        | 38      | XTAL                    | 2.87        |
| 12      | Bus clock                | 4.85        | 39      | Chrome ACC filter       | 3.2         |
| 13      | ABL                      | 4.76        | 40      | Selected video output   | 2.43        |
| 14      | R-input                  | 3.92        | 41      | Video chroma deflection | 0           |
| 15      | G-input                  | 0.14        | 42      | Ext video input         | 2.55        |
| 16      | B-input                  | 0.15        | 43      | Power                   | 5           |
| 17      | Fast blanking input      | 0.08        | 44      | Int . video input       | 2.77        |
| 18      | RGB Vcc                  | 7.94        | 45      | Black stretch filter    | 2.6         |
| 19      | R-output                 | 2.21        | 46      | Video input             | 2.12        |
| 20      | G-output                 | 2.36        | 47      | APC filter              | 3.5         |
| 21      | B-output                 | 2.28        | 48      | VCO coil                | 4.3         |
| 22      | H-synchronize output     | 0           | 49      | VCO coil                | 4.3         |
| 23      | Vertical output          | 2.47        | 50      | FLL filter              | 2.24        |
| 24      | Vertical ramp ALC filter | 2.65        | 51      | Ext audio input         | 2.12        |
| 25      | Power                    | 5.10        | 52      | SIF output              | 1.95        |
| 26      | AFC filter               | 2.49        | 53      | APC filter              | 2.38        |
| 27      | Horizontal output        | 0.63        | 54      | SIF input               | 3.14        |

### 13. Adjustment

#### I IF alignment:

- 1). Test equipment:
  - a. 45.75MHz sweep generator
  - b. 15V/3A DC power supply (with short and over current proof)
  - c. Digital multi-meter
  - d. If alignment tool
  - f. User Remote controller
  - g. Service remote controller
  - h. Video signal generator
  - i. Multi-system adjustment tool
  - j. 60MHz double trace oscillograph(2 units)
  - k. White balance adjustment instrument
- 2). Signal, power supply connection:
  - a. Connect +15V DC power supply to the +15V testing top in the main PCB.
  - b. Input sweep signal into IF testing top
  - c. Connect multi-meter to PIF-TP testing top in PCB.
- 3). Alignment
  - a. Connect 45.75MHz sweep generator to IF test top in PCB
  - b. Adjust T101 and make digital multi-meter display  $3.6V \pm 0.05V$ .  
(PIF-TP top can only connect to multi-meter).

#### Alignment and check:

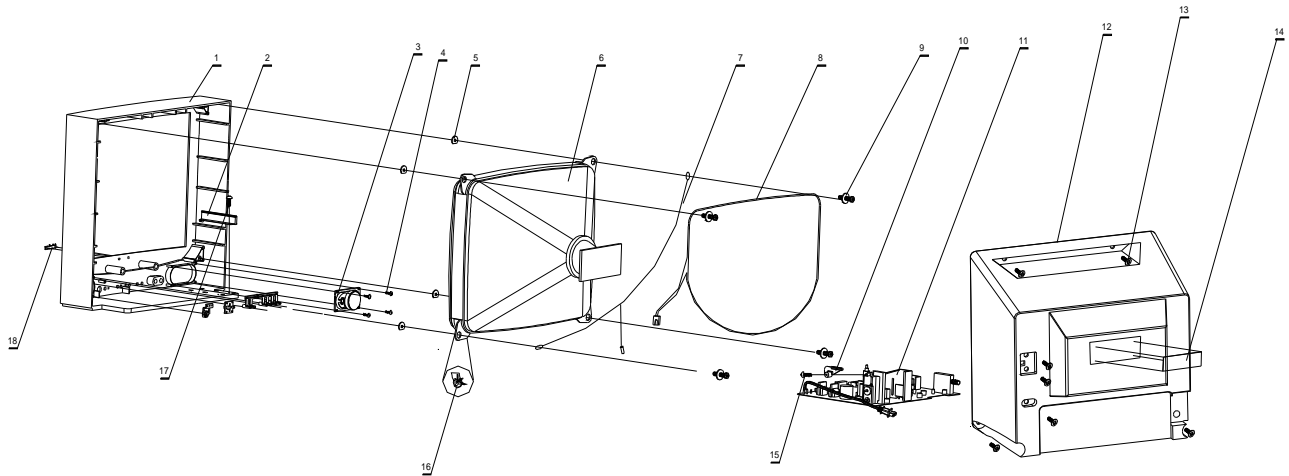
- a. Connect main PCB with alignment tool, input factory adjustment signal, and turn TV on. Adjust screen control on FBT and make screen brightness relevant, receive 525-line monoscope, adjust focus control on FBT and make focus relevant.
  
- b. Pre-adjust power voltage: adjust RP551 and make +B voltage be  $109V \pm 0.5V$ .
- c. Check brightness, contrast, color, and sharpness: receive color bar signal and adjust contrast, brightness, color, sharpness control, picture will change accordingly.  
optimal. (see figure

### Main power adjustment:

Adjustment: Connect voltage meter to +B on main PCB, make +B voltage be  $109V \pm 0.3V$ .

14. Exploded View

TN131AUV EXPLODED VIEW



TN131AUV EXPLOSION BOM

| Serial Number | Name                   | Part Code  | Specification     | Quantity |
|---------------|------------------------|------------|-------------------|----------|
| 1             | FRONT MASK             | 0090200309 | MTAA5013AA---     | 1        |
| 2             | TRACK                  | 0090200310 | MTAC5005AA---     | 1        |
| 3             | SPEAKER                | 0094001021 | YDT0407-803       | 1        |
| 4             | SCREW                  | 0090600011 | SJ2824-87 ST3*10F | 1        |
| 5             | RUBBER WASHER          | 0090200076 | 1mm               | 4        |
| 6             | CRT                    | 0094004661 | A34JQQ90X94Y4     | 1        |
| 7             | CRT GROUND AS.         | 0090400232 | JT1371-4008Q      | 1        |
| 8             | DEGAUSSING COIL        | 0094500875 | HXC-35A           | 1        |
| 9             | SCREW                  | 0090600064 | SJ2840-87 ST5*25F | 4        |
| 10            | TRESTLE                | 0090200254 | MTAC5003AA---     | 1        |
| 11            | MAIN -BOARD            | 0094003547 | BXA5146—S--       | 1        |
| 12            | BACK COVER             | 0090201384 | MTAA5048AC---     | 1        |
| 13            | SCREW                  | 0090600023 | SJ2824-87 ST4*16F | 4        |
| 14            | LABEL                  | 0090202439 | MTFB5252CA---     | 1        |
| 15            | SCREW                  | 0090600023 | SJ2824-87 ST4*16F | 1        |
| 16            | TIE                    | 0090200452 | 040               | 2        |
| 17            | SCREW                  | 0090600011 | SJ2824-87 ST3*10F | 1        |
| 18            | BRAND                  | 0090200312 | MTFA5003BC---     | 1        |
| 19            | Operating instructions | 0090502051 | MTDB5372CA--Q     | 1        |
| 20            | Remote controller      | 0094003373 | HYF-21            | 1        |

## 15. List of Parts

| Location | Material Code | Parts Name             | Type              | Qt.(unit) |
|----------|---------------|------------------------|-------------------|-----------|
|          | 0090300091    | Rubber washer          | 1mm φ6.5          | 4         |
|          | 0094003552    | CRT                    | 37SX110Y22-DC11   | 1         |
|          | 0094500875    | Degaussing coil        | HXC-35C           | 1         |
| W1007    | 0090400232    | Wire                   | JT1371-40084Q     | 1         |
|          | 0090401101    | Mains cord             | JPRVVZ172XDFQ     | 1         |
|          | 0090200452    | Clamp                  | 40                | 4         |
|          | 0090600064    | Screw                  | SJ2840-87 ST5*25F | 4         |
|          | 0090200453    | Clamp                  | TMMOA101          | 1         |
|          | 0090202439    | Back label             | MTFB5252CA--Q     | 1         |
|          | 0090202438    | Label                  | MTFE5063CA--Q     | 1         |
|          | 0090201387    | Holder                 | MTAC5015AC--Q     | 1         |
|          | 0090600023    | Screw                  | SJ2824-87 ST4*16F | 5         |
|          | 0090600060    | Screw                  | SJ2824-87 ST4*14F | 2         |
|          | 0090501291    | Plastic bag            | 240*160           | 1         |
|          | 0090801070    | Front mask assembly    | BJK5019-----Q     | 1         |
|          | 0090201385    | Front mask             | MTAA5047AC--Q     | 1         |
|          | 0090200312    | Brand                  | 30mm              | 1         |
|          | 0090200909    | Label                  | MTFE5021CA--Q     | 1         |
|          | 0094001021    | Speaker                | YDT0407-803       | 1         |
| W1005    | 0090400184    | Wire                   | JT2261-C0083Q     | 1         |
|          | 0090801071    | Back cover assembly    | BJH5019-----Q     | 1         |
|          | 0090201384    | Back cover             | MTAA5048AC--Q     | 1         |
|          | 0090500090    | Plastic cover          | 14"               | 1         |
|          | 0090502068    | Carton                 | MTEDE5209CA--Q    | 1         |
|          | 0090500131    | Left pad               | MTEE5001AK--Q     | 1         |
|          | 0090500132    | Right pad              | MTEE5002AK--Q     | 1         |
|          | 0090100165    | Staple                 | 65*2              | 4         |
|          | 0090500018    | Accessory poke         | 370*240           | 1         |
|          | 0090502051    | Operating instructions | MTDB5372CA--Q     | 1         |
|          | 0090502695    | Warranty card          | MTDC5012CA--Q     | 1         |
|          | 0094000299    | Battery                | 5#                | 2         |
|          | 0094003373    | Remote controller      | HYF-21            | 1         |
|          | 0090200452    | Clamp                  | 040+D54           | 1         |
|          | 0090201386    | Holder                 | MTAC5014AC--Q     | 1         |
|          | 0090600033    | Screw                  | SJ2824-87 ST4*14F | 1         |
|          | 0090802617    | Heat sink assembly     | BJB5070-----Q     | 1         |
|          | 0090800173    | Heat sink              | BJB5010-----Q     | 1         |
|          | 0094401470    | Transistor             | 2SC4460----B-A    | 1         |
|          | 0090600067    | Screw                  | GB9074.4-88 M3*10 | 1         |
|          | 0090600066    | Nut                    | GB6170-86 M3      | 1         |
|          | 0090200454    | Wire holder            | -71               | 1         |
|          | 0090802618    | Heat sink assembly     | BJB5071-----Q     | 1         |
|          | 0090800175    | Heat sink              | BJB5011-----Q     | 1         |
|          | 0094401401    | Transistor             | 2SD2499----B-A    | 1         |
|          | 0094400470    | IC                     | LA7840            | 1         |
|          | 0090600067    | Screw                  | GB9074.4-88 M3*10 | 2         |
|          | 0090600066    | Nut                    | GB6170-86 M3      | 2         |
|          | 0090200454    | Wire holder            | -71               | 1         |

## List of Parts

| Location | Material Code | Parts Name         | Type                             | Qt.(unit) |
|----------|---------------|--------------------|----------------------------------|-----------|
|          | 0090800176    | Heat sink assembly | BJB5007-----Q                    | 1         |
|          | 0090100119    | Heat sink          | MTBT5002BA--Q                    | 1         |
|          | 0090600066    | Nut                | GB6170-86 M3                     | 1         |
|          | 0090600067    | Screw              | GB9074.4-88 M3*10                | 1         |
|          | 0094400719    | IC                 | LA4225A                          | 1         |
|          | 0090800177    | Heat sink assembly | BJB5008-----Q                    | 1         |
|          | 0090100120    | Heat sink          | MTBT5003BC--Q                    | 1         |
|          | 0094400357    | IC                 | L7812CV+D77                      | 1         |
|          | 0090600012    | Screw              | SJ2824-87 ST3*8F                 | 1         |
|          | 0090800178    | Heat sink assembly | BJB5009-----Q                    | 2         |
|          | 0090100120    | Heat sink          | MTBT5003BC--Q                    | 1         |
|          | 0094400450    | IC                 | L7805CV                          | 1         |
|          | 0090600012    | Screw              | SJ2824-87 ST3*8F                 | 1         |
| FU501    | 0090100118    | Fuser holder       | FC503                            | 1         |
| FU501    | 0090100118    | Fuser holder       | FC503                            | 1         |
| A701     | 0094000216    | Infrared sensor    | HS0038                           | 1         |
| A101     | 0094003734    | Tuner              | ENV56DB4G3                       | 1         |
| C126     | 0094201597    | Capacitor          | CC1-06-CH-63V-39pF-J-05-C-A      | 1         |
| C933     | 0094200972    | Capacitor          | CD110-16V-1000μF-M-05-E-A        | 1         |
| C564     | 0094201011    | Capacitor          | CD110-25V-1000μF-M-05-E-A        | 1         |
| C565     | 0094201011    | Capacitor          | CD110-25V-1000μF-M-05-E-A        | 1         |
| C613     | 0094201011    | Capacitor          | CD110-25V-1000μF-M-05-E-A        | 1         |
| C616     | 0094201011    | Capacitor          | CD110-25V-1000μF-M-05-E-A        | 1         |
| C452     | 0094201016    | Capacitor          | CD110-35V-1000μF-M-05-E-A        | 1         |
| C457     | 0094201016    | Capacitor          | CD110-35V-1000μF-M-05-E-A        | 1         |
| C434     | 0094201643    | Capacitor          | CD110-160V-10μF-M-05-E-A         | 1         |
| C561     | 0094202152    | Capacitor          | CD287-160V-220μF-M-07-E-A        | 1         |
| C474     | 0094201590    | Capacitor          | CD11H-250V-22μF-M-05-E-A         | 1         |
| C507     | 0094201769    | Capacitor          | CD293-200V-150μF-M-10-E-A        | 1         |
| C121     | 0094201525    | Capacitor          | CL11-100V-0.022μF-K-05-C-A       | 1         |
| C458     | 0094201526    | Capacitor          | CL11-100V-0.033μF-K-07-C-A       | 1         |
| C406     | 0094201169    | Capacitor          | CL11-100V-0.033μF-K-05-C-A       | 1         |
| C501     | 0094201234    | Capacitor          | CL23B-AC250V-0.1μF-K-15-B-A      | 1         |
| C502     | 0094201234    | Capacitor          | CL23B-AC250V-0.1μF-K-15-B-A      | 1         |
| C402     | 0094201299    | Capacitor          | CL21X-63V-0.22μF-K-05-C-A        | 1         |
| C533     | 0094201331    | Capacitor          | 2200pF-M-AC400V-10-C-A           | 1         |
| C532     | 0094200841    | Capacitor          | DE0910B471K-KX-10-C-A+D106       | 1         |
| C503     | 0094201071    | Capacitor          | CT81-10B-2B4-1KV-1000PF-K-07-C-A | 1         |
| C504     | 0094201071    | Capacitor          | CT81-10B-2B4-1KV-1000PF-K-07-C-A | 1         |
| C505     | 0094201071    | Capacitor          | CT81-10B-2B4-1KV-1000PF-K-07-C-A | 1         |
| C506     | 0094201071    | Capacitor          | CT81-10B-2B4-1KV-1000PF-K-07-C-A | 1         |
| C518     | 0094201071    | Capacitor          | CT81-10B-2B4-1KV-1000PF-K-07-C-A | 1         |
| C554     | 0094201142    | Capacitor          | CT81-10-2B4-1KV-470pF-K-10-C-A   | 1         |
| C516     | 0094201239    | Capacitor          | CT81-10-2B4-1KV-4700pF-K-10-C-A  | 1         |
| C939     | 0094201356    | Capacitor          | CT81-10-2B4-2KV-1000PF-K-07-B-A  | 1         |
| C551     | 0094201057    | Capacitor          | CT81-10B-2B4-2KV-470PF-K-10-C-A  | 1         |
| C436     | 0094201218    | Capacitor          | CT81-10-2B4-2KV-1000PF-K-10-C-A  | 1         |
| C441     | 0094201240    | Capacitor          | CBB13-200V-0.33μF-J-25-B-A       | 1         |
| C435     | 0094201785    | Capacitor          | CBB81-1600V-10000PF-J-25-B-A     | 1         |
| C231     | 0094201529    | Capacitor          | CD71-50V-1μF-M-05-F-A            | 1         |
| RT501    | 0094400452    | Resister           | PTH451A7R0Q21+D98                | 1         |
| VD701    | 0094400282    | Diode              | BT205-L                          | 1         |

## List of Parts

| Location | Material Code | Parts Name      | Type                      | Qt.(unit) |
|----------|---------------|-----------------|---------------------------|-----------|
| FU501    | 0094000150    | Fuse            | T2.5A/250V                | 1         |
| XS501    | 0094300063    | Connect housing | TJC2-2A                   | 1         |
| XS402    | 0094300307    | Connect housing | TJC1-4A                   | 1         |
| K9N      | 0094300090    | Connect housing | TJC1-1A                   | 1         |
| XS502    | 0094300193    | Connect housing | TJC1-3A                   | 1         |
| XS601    | 0094300092    | Connect housing | TJC3-2A                   | 1         |
| XS901    | 0094300089    | Connect housing | GZS12-4-2                 | 1         |
| XS804    | 0094300309    | Connect housing | EK1050-2                  | 1         |
| XS803    | 0094300310    | Connect housing | EK1050-2                  | 1         |
| XS702    | 0090400186    | Wire            | JT2211-C0081Q             | 1         |
| XS805    | 0090400187    | Wire            | JT3231-F0082Q             | 1         |
| XS401    | 0090400447    | Wire            | JT4351-C0079Q             | 1         |
| XS403    | 0090400448    | Wire            | JT5331-C0080Q             | 1         |
| RL551    | 0094000801    | Relay           | OMIT-SS-112LM             | 1         |
| RL552    | 0094101104    | Relay           | φ0.6mm/10mm-----B         | 1         |
| SW701    | 0094000209    | Push switch     | KFC-A06-1H-3.85           | 1         |
| SW702    | 0094000209    | Push switch     | KFC-A06-1H-3.85           | 1         |
| SW703    | 0094000209    | Push switch     | KFC-A06-1H-3.85           | 1         |
| SW704    | 0094000209    | Push switch     | KFC-A06-1H-3.85           | 1         |
| SW705    | 0094000209    | Push switch     | KFC-A06-1H-3.85           | 1         |
| SW706    | 0094000209    | Push switch     | KFC-A06-1H-3.85           | 1         |
| SW707    | 0094000209    | Push switch     | KFC-A06-1H-3.85           | 1         |
| L504     | 0094500335    | Inductance      | ZZ0003-----N              | 1         |
| L433     | 0094500335    | Inductance      | ZZ0003-----N              | 1         |
| L431     | 0094500336    | Inductance      | YC0008-15-A-A             | 1         |
| L432     | 0094500336    | Inductance      | YC0008-15-A-A             | 1         |
| L441     | 0094500328    | Inductance      | LX470                     | 1         |
| L501     | 0094500338    | Filter          | JLB1606                   | 1         |
| L502     | 0094500338    | Filter          | JLB1606                   | 1         |
| T101     | 0094500340    | Inductance      | HA6019                    | 1         |
| N702     | 0094400636    | IC              | CAT24C08P                 | 1         |
| N501     | 0094400036    | Photo coupler   | PC817B                    | 1         |
| N101     | 0094400457    | IC              | LA76814K                  | 1         |
| N701     | 0094401510    | IC              | LC863240A-5V11            | 1         |
| V902     | 0094400482    | Transistor      | 2SC2482----D-A            | 1         |
| V912     | 0094400482    | Transistor      | 2SC2482----D-A            | 1         |
| V922     | 0094400482    | Transistor      | 2SC2482----D-A            | 1         |
| V512     | 0094400539    | Transistor      | 2SC3807(R)---B-A          | 1         |
| V554     | 0094400442    | Transistor      | 2SB892(S)----D-A+D161     | 1         |
| R770     | 0094101317    | Resister        | RT13-1/6W-10KΩ±5%-05-A-A  | 1         |
| R232     | 0094101424    | Resister        | RT13-1/6W-10KΩ±5%-07-A-A  | 1         |
| R569     | 0094102449    | Resister        | RF10-1/2W-1Ω±5%-20-C-A    | 1         |
| R474     | 0094101006    | Resister        | RF10-1W-1Ω±5%-15-C-A      | 1         |
| R472     | 0094101006    | Resister        | RF10-1W-1Ω±5%-15-C-A      | 1         |
| R491     | 0094102450    | Resister        | RF10-1W-0.33Ω±5%-15-C-A   | 1         |
| R433     | 0094101618    | Resister        | RY15-1/2W-1KΩ±5%-15-C-A   | 1         |
| R441     | 0094101618    | Resister        | RY15-1/2W-1KΩ±5%-15-C-A   | 1         |
| R520     | 0094102451    | Resister        | RY15-1/2W-100KΩ±5%-15-C-A | 1         |
| R908     | 0094102452    | Resister        | RY15-1/2W-2.7KΩ±5%-15-C-A | 1         |
| R918     | 0094102452    | Resister        | RY15-1/2W-2.7KΩ±5%-15-C-A | 1         |
| R928     | 0094102452    | Resister        | RY15-1/2W-2.7KΩ±5%-15-C-A | 1         |
| R459     | 0094100968    | Resister        | RY16-1W-1Ω±5%-15-C-A      | 1         |

## List of Parts

| Location | Material Code | Parts Name    | Type                        | Qt.(unit) |
|----------|---------------|---------------|-----------------------------|-----------|
| R907     | 0094100975    | Resister      | RY17-2W-10KΩ±5%-20-C-A      | 1         |
| R917     | 0094100975    | Resister      | RY17-2W-10KΩ±5%-20-C-A      | 1         |
| R927     | 0094100975    | Resister      | RY17-2W-10KΩ±5%-20-C-A      | 1         |
| R718     | 0094100975    | Resister      | RY17-2W-10KΩ±5%-20-C-A      | 1         |
| R524     | 0094100974    | Resister      | RY17-2W-27Ω±5%-20-C-A       | 1         |
| R551     | 0094102447    | Resister      | RY17-2W-47KΩ±5%-20-C-A      | 1         |
| R525     | 0094100755    | Resister      | RY17-2W-6.8Ω±5%-20-C-A      | 1         |
| R434     | 0094101135    | Resister      | RY20-5W-3.3KΩ±5%-20-D-A     | 1         |
| R502     | 0094101136    | Resister      | RXG6-6W-1Ω±5%               | 1         |
| R471A    | 0094101137    | Resister      | RX27-5-6W-3.9Ω±5%           | 1         |
| T431     | 0094500341    | Transformer   | JDT1904                     | 1         |
| T471     | 0094500911    | Transformer   | JF0501-19827                | 1         |
| T511     | 0094500855    | Transformer   | BCK-90-011                  | 1         |
| RP551    | 0094100979    | Varistor      | W206-2AL-2kΩ                | 1         |
| Z101     | 0094600070    | Filter        | LBN45U                      | 1         |
| G701     | 0094600068    | Oscillator    | 32.768KHz                   | 1         |
| G201     | 0094600071    | Oscillator    | JA25A(3.579545MHZ)          | 1         |
|          | 0090300203    | Rubber washer | φ6,3,两+D281                 | 1         |
| C455     | 0094201224    | Capacitor     | CC1-06-CH-63V-10pF-J-----F  | 1         |
| C209     | 0094201079    | Capacitor     | CC1-06-CH-63V-15pF-J-----F  | 1         |
| C704     | 0094201079    | Capacitor     | CC1-06-CH-63V-15pF-J-----F  | 1         |
| C125     | 0094201083    | Capacitor     | CC1-06-CH-63V-18pF-J-----F  | 1         |
| C705     | 0094201083    | Capacitor     | CC1-06-CH-63V-18pF-J-----F  | 1         |
| C901     | 0094201226    | Capacitor     | CC1-08-SL-63V-390pF-J-----F | 1         |
| C911     | 0094201226    | Capacitor     | CC1-08-SL-63V-390pF-J-----F | 1         |
| C921     | 0094201226    | Capacitor     | CC1-08-SL-63V-390pF-J-----F | 1         |
| C140     | 0094201227    | Capacitor     | CC1-08-SL-63V-470pF-J-----F | 1         |
| C903     | 0094201228    | Capacitor     | CC1-06-CH-63V-56pF-J-----F  | 1         |
| C913     | 0094201228    | Capacitor     | CC1-06-CH-63V-56pF-J-----F  | 1         |
| C923     | 0094201228    | Capacitor     | CC1-06-CH-63V-56pF-J-----F  | 1         |
| C570     | 0094200985    | Capacitor     | CD110-10V-470μF-M-----F     | 1         |
| C572     | 0094200985    | Capacitor     | CD110-10V-470μF-M-----F     | 1         |
| C276     | 0094200008    | Capacitor     | CD110-16V-10μF-M-----F      | 1         |
| C601     | 0094200008    | Capacitor     | CD110-16V-10μF-M-----F      | 1         |
| C612     | 0094200008    | Capacitor     | CD110-16V-10μF-M-----F      | 1         |
| C801     | 0094200008    | Capacitor     | CD110-16V-10μF-M-----F      | 1         |
| C802     | 0094200008    | Capacitor     | CD110-16V-10μF-M-----F      | 1         |
| C931     | 0094200008    | Capacitor     | CD110-16V-10μF-M-----F      | 1         |
| C932     | 0094200008    | Capacitor     | CD110-16V-10μF-M-----F      | 1         |
| C101     | 0094200433    | Capacitor     | CD110X-16V-100μF-M-----F    | 1         |
| C115     | 0094200433    | Capacitor     | CD110X-16V-100μF-M-----F    | 1         |
| C450     | 0094200433    | Capacitor     | CD110X-16V-100μF-M-----F    | 1         |
| C603     | 0094200433    | Capacitor     | CD110X-16V-100μF-M-----F    | 1         |
| C604     | 0094200433    | Capacitor     | CD110X-16V-100μF-M-----F    | 1         |
| C404     | 0094200989    | Capacitor     | CD110-16V-220μF-M-----F     | 1         |
| C103     | 0094200044    | Capacitor     | CD110-50V-2.2μF-M-----F     | 1         |
| C714     | 0094200044    | Capacitor     | CD110-50V-2.2μF-M-----F     | 1         |
| C206     | 0094200469    | Capacitor     | CD110X-16V-47μF-M-----F     | 1         |
| C244     | 0094200469    | Capacitor     | CD110X-16V-47μF-M-----F     | 1         |
| C701     | 0094200469    | Capacitor     | CD110X-16V-47μF-M-----F     | 1         |
| C719     | 0094200469    | Capacitor     | CD110X-16V-47μF-M-----F     | 1         |
| C203     | 0094200992    | Capacitor     | CD110-50V-4.7μF-M-----F     | 1         |



## List of Parts

| Location | Material Code | Parts Name | Type                           | Qt.(unit) |
|----------|---------------|------------|--------------------------------|-----------|
| C411     | 0094201113    | Capacitor  | CD110-25V-47μF-M-----F         | 1         |
| C451     | 0094200991    | Capacitor  | CD110-35V-100μF-M-----F        | 1         |
| C472     | 0094200991    | Capacitor  | CD110-35V-100μF-M-----F        | 1         |
| C412     | 0094200043    | Capacitor  | CD110-50V-1μF-M-----F          | 1         |
| C117     | 0094200043    | Capacitor  | CD110-50V-1μF-M-----F          | 1         |
| C204     | 0094200043    | Capacitor  | CD110-50V-1μF-M-----F          | 1         |
| C407     | 0094200043    | Capacitor  | CD110-50V-1μF-M-----F          | 1         |
| C408     | 0094200043    | Capacitor  | CD110-50V-1μF-M-----F          | 1         |
| C454     | 0094200043    | Capacitor  | CD110-50V-1μF-M-----F          | 1         |
| C713     | 0094200043    | Capacitor  | CD110-50V-1μF-M-----F          | 1         |
| C821     | 0094200043    | Capacitor  | CD110-50V-1μF-M-----F          | 1         |
| C456     | 0094200992    | Capacitor  | CD110-50V-4.7μF-M-----F        | 1         |
| C708     | 0094200992    | Capacitor  | CD110-50V-4.7μF-M-----F        | 1         |
| C137     | 0094200016    | Capacitor  | CD110-50V-0.47μF-M-----F       | 1         |
| C139     | 0094200016    | Capacitor  | CD110-50V-0.47μF-M-----F       | 1         |
| C208     | 0094200016    | Capacitor  | CD110-50V-0.47μF-M-----F       | 1         |
| C401     | 0094200016    | Capacitor  | CD110-50V-0.47μF-M-----F       | 1         |
| C934     | 0094200016    | Capacitor  | CD110-50V-0.47μF-M-----F       | 1         |
| C210     | 0094200016    | Capacitor  | CD110-50V-0.47μF-M-----F       | 1         |
| C444     | 0094201045    | Capacitor  | CD110-160V-4.7μF-----F         | 1         |
| C515     | 0094201114    | Capacitor  | CL11-100V-0.01μF-K-----F       | 1         |
| C207     | 0094201114    | Capacitor  | CL11-100V-0.01μF-K-----F       | 1         |
| C124     | 0094201114    | Capacitor  | CL11-100V-0.01μF-K-----F       | 1         |
| C514     | 0094201231    | Capacitor  | CL11-100V-0.1μF-J-----F        | 1         |
| C459     | 0094201231    | Capacitor  | CL11-100V-0.1μF-J-----F        | 1         |
| C120     | 0094201232    | Capacitor  | CL11-100V-0.022μF-K-----F      | 1         |
| C611     | 0094201232    | Capacitor  | CL11-100V-0.022μF-K-----F      | 1         |
| C403     | 0094201247    | Capacitor  | CL21X-63V-0.47μF-K-----F       | 1         |
| C432     | 0094201237    | Capacitor  | CT1-10-2B4-500V-1000pF-K-----F | 1         |
| C433     | 0094201238    | Capacitor  | CT1-14-2B4-500V-3900pF-K-----F | 1         |
| C123     | 0094200981    | Capacitor  | CT1-06-2B4-63V-1000pF-K-----F  | 1         |
| C453     | 0094200981    | Capacitor  | CT1-06-2B4-63V-1000pF-K-----F  | 1         |
| C102     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C110     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C111     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C112     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C116     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C118     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C119     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C122     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C205     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C245     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C274     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C279     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C405     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C617     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C702     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C703     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C720     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| C729     | 0094201040    | Capacitor  | CT1-08-2F4-63V-0.01μF-Z-----F  | 1         |
| VD401    | 0094400049    | Diode      | 1N4148-----T                   | 1         |
| VD402    | 0094400049    | Diode      | 1N4148-----T                   | 1         |

## List of Parts

| Location | Material Code | Parts Name | Type                    | Qt.(unit) |
|----------|---------------|------------|-------------------------|-----------|
| VD514    | 0094400049    | Diode      | 1N4148-----T            | 1         |
| VD516    | 0094400049    | Diode      | 1N4148-----T            | 1         |
| VD553    | 0094400049    | Diode      | 1N4148-----T            | 1         |
| VD601    | 0094400049    | Diode      | 1N4148-----T            | 1         |
| VD901    | 0094400049    | Diode      | 1N4148-----T            | 1         |
| VD911    | 0094400049    | Diode      | 1N4148-----T            | 1         |
| VD921    | 0094400049    | Diode      | 1N4148-----T            | 1         |
| VD933    | 0094400049    | Diode      | 1N4148-----T            | 1         |
| VD451    | 0094400388    | Diode      | EM01Z-----T             | 1         |
| VD517    | 0094400328    | Diode      | ES1-----T               | 1         |
| VD555    | 0094400328    | Diode      | ES1-----T               | 1         |
| VD411    | 0094400390    | Diode      | EU1-----T               | 1         |
| VD472    | 0094400390    | Diode      | EU1-----T               | 1         |
| VD474    | 0094400390    | Diode      | EU1-----T               | 1         |
| VD554    | 0094400329    | Diode      | EU2Z-----T              | 1         |
| W405     | 0094400329    | Diode      | EU2Z-----T              | 1         |
| VD503    | 0094400453    | Diode      | RM11C-----T             | 1         |
| VD504    | 0094400453    | Diode      | RM11C-----T             | 1         |
| VD505    | 0094400453    | Diode      | RM11C-----T             | 1         |
| VD506    | 0094400453    | Diode      | RM11C-----T             | 1         |
| VD551    | 0094401113    | Diode      | RU3A-----T              | 1         |
| VD703    | 0094400290    | Diode      | HZ4A2-----T             | 1         |
| VD561    | 0094400291    | Diode      | HZ6C3-----T             | 1         |
| VD412    | 0094400292    | Diode      | HZ7C1-----T             | 1         |
| R562     | 0094000685    | Resister   | 275/750MA               | 1         |
| L121     | 0094500268    | Inductance | LGA0307-15μH±10%-----T  | 1         |
| L102     | 0094500268    | Inductance | LGA0307-15μH±10%-----T  | 1         |
| L701     | 0094500269    | Inductance | LGA0307-39μH±10%-----T  | 1         |
| L451     | 0094500270    | Inductance | LGA0410-18μH±10%-----T  | 1         |
| N705     | 0094400437    | IC         | UPC574J                 | 1         |
|          | 0090100079    | Rivet      | φ1.6mm*3.0mm            | 3         |
|          | 0090100078    | Rivet      | φ2.3mm*3.0mm            | 24        |
| V511     | 0094400460    | Transistor | 2SA1015(Y)-----F        | 1         |
| V601     | 0094400460    | Transistor | 2SA1015(Y)-----F        | 1         |
| V702     | 0094400460    | Transistor | 2SA1015(Y)-----F        | 1         |
| V931     | 0094400460    | Transistor | 2SA1015(Y)-----F        | 1         |
| V552     | 0094400461    | Transistor | 2SC1815(Y)-----F        | 1         |
| V553     | 0094400461    | Transistor | 2SC1815(Y)-----F        | 1         |
| V821     | 0094400461    | Transistor | 2SC1815(Y)-----F        | 1         |
| V602     | 0094400461    | Transistor | 2SC1815(Y)-----F        | 1         |
| V603     | 0094400461    | Transistor | 2SC1815(Y)-----F        | 1         |
| V703     | 0094400461    | Transistor | 2SC1815(Y)-----F        | 1         |
| V704     | 0094400461    | Transistor | 2SC1815(Y)-----F        | 1         |
| V705     | 0094400461    | Transistor | 2SC1815(Y)-----F        | 1         |
| V932     | 0094400461    | Transistor | 2SC1815(Y)-----F        | 1         |
| V102     | 0094400443    | Transistor | 2SC2216(O)---D-A        | 1         |
| V431     | 0094400307    | Transistor | 2SC2383O---D-A D451     | 1         |
| R104     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T | 1         |
| R105     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T | 1         |
| R107     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T | 1         |
| R241     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T | 1         |
| R242     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T | 1         |

## List of Parts

| Location | Material Code | Parts Name | Type                     | Qt.(unit) |
|----------|---------------|------------|--------------------------|-----------|
| R802     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T  | 1         |
| R902     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T  | 1         |
| R912     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T  | 1         |
| R922     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T  | 1         |
| R517     | 0094100017    | Resister   | RT13-1/6W-100Ω±5%-----T  | 1         |
| R109     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R119     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R103     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R201     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R121     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R268     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R402     | 0094100028    | Resister   | RT13-1/6W-3.3KΩ±5%-----T | 1         |
| R766     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R458     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R822     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R931     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R832     | 0094100023    | Resister   | RT13-1/6W-1KΩ±5%-----T   | 1         |
| R413     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R414     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R721     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R561     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R566     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R730     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R731     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R601     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R602     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R734     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R735     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R708     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R720     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R754     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R900     | 0094100033    | Resister   | RT13-1/6W-10KΩ±5%-----T  | 1         |
| R113     | 0094100077    | Resister   | RT13-1/6W-100KΩ±5%-----T | 1         |
| R114     | 0094100077    | Resister   | RT13-1/6W-100KΩ±5%-----T | 1         |
| R102     | 0094100077    | Resister   | RT13-1/6W-100KΩ±5%-----T | 1         |
| R202     | 0094100753    | Resister   | RT13-1/6W-1.2KΩ±5%-----T | 1         |
| R567     | 0094100753    | Resister   | RT13-1/6W-1.2KΩ±5%-----T | 1         |
| R404     | 0094100753    | Resister   | RT13-1/6W-1.2KΩ±5%-----T | 1         |
| R453     | 0094100073    | Resister   | RT13-1/6W-12KΩ±5%-----T  | 1         |
| R455     | 0094100073    | Resister   | RT13-1/6W-12KΩ±5%-----T  | 1         |
| R456     | 0094100073    | Resister   | RT13-1/6W-12KΩ±5%-----T  | 1         |
| R519     | 0094100788    | Resister   | RT13-1/6W-15Ω±5%-----T   | 1         |
| R706     | 0094100025    | Resister   | RT13-1/6W-1.5kΩ±5%-----T | 1         |
| R722     | 0094100025    | Resister   | RT13-1/6W-1.5kΩ±5%-----T | 1         |
| R933     | 0094100025    | Resister   | RT13-1/6W-1.5kΩ±5%-----T | 1         |
| R522     | 0094100034    | Resister   | RT13-1/6W-15KΩ±5%-----T  | 1         |
| R932     | 0094100034    | Resister   | RT13-1/6W-15KΩ±5%-----T  | 1         |
| R554     | 0094100734    | Resister   | RT13-1/6W-150KΩ±5%-----T | 1         |
| R700     | 0094100734    | Resister   | RT13-1/6W-150KΩ±5%-----T | 1         |
| R729     | 0094100734    | Resister   | RT13-1/6W-150KΩ±5%-----T | 1         |
| R452     | 0094100064    | Resister   | RT13-1/6W-1Ω±5%-----T    | 1         |
| R207     | 0094100945    | Resister   | RT13-1/6W-2MΩ±5%-----T   | 1         |

## List of Parts

| Location | Material Code | Parts Name | Type                     | Qt.(unit) |
|----------|---------------|------------|--------------------------|-----------|
| R110     | 0094100019    | Resister   | RT13-1/6W-220Ω±5%-----T  | 1         |
| R744     | 0094100019    | Resister   | RT13-1/6W-220Ω±5%-----T  | 1         |
| R745     | 0094100019    | Resister   | RT13-1/6W-220Ω±5%-----T  | 1         |
| R526     | 0094100026    | Resister   | RT13-1/6W-2.2KΩ±5%-----T | 1         |
| R401     | 0094100026    | Resister   | RT13-1/6W-2.2KΩ±5%-----T | 1         |
| R408     | 0094100026    | Resister   | RT13-1/6W-2.2KΩ±5%-----T | 1         |
| R759     | 0094100026    | Resister   | RT13-1/6W-2.2KΩ±5%-----T | 1         |
| R205     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R556     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R515     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R746     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R747     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R749     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R750     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R748     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R751     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R753     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R755     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R756     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R757     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R758     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R760     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R761     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R762     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R763     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R764     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R801     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R752     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R765     | 0094100779    | Resister   | RT13-1/6W-22kΩ±5%-----T  | 1         |
| R243     | 0094100795    | Resister   | RT13-1/6W-270Ω±5%-----T  | 1         |
| R244     | 0094100027    | Resister   | RT13-1/6W-2.7KΩ±5%-----T | 1         |
| R705     | 0094100027    | Resister   | RT13-1/6W-2.7KΩ±5%-----T | 1         |
| R701     | 0094100780    | Resister   | RT13-1/6W-27kΩ±5%-----T  | 1         |
| R726     | 0094100943    | Resister   | RT13-1/6W-270KΩ±5%-----T | 1         |
| R272     | 0094100799    | Resister   | RT13-1/6W-3KΩ±5%-----T   | 1         |
| R275     | 0094100799    | Resister   | RT13-1/6W-3KΩ±5%-----T   | 1         |
| R454     | 0094100799    | Resister   | RT13-1/6W-3KΩ±5%-----T   | 1         |
| R127     | 0094100068    | Resister   | RT13-1/6W-330Ω±5%-----T  | 1         |
| R122     | 0094100068    | Resister   | RT13-1/6W-330Ω±5%-----T  | 1         |
| R725     | 0094100068    | Resister   | RT13-1/6W-330Ω±5%-----T  | 1         |
| R904     | 0094100068    | Resister   | RT13-1/6W-330Ω±5%-----T  | 1         |
| R914     | 0094100068    | Resister   | RT13-1/6W-330Ω±5%-----T  | 1         |
| R924     | 0094100068    | Resister   | RT13-1/6W-330Ω±5%-----T  | 1         |
| R611     | 0094100028    | Resister   | RT13-1/6W-3.3KΩ±5%-----T | 1         |
| R742     | 0094100028    | Resister   | RT13-1/6W-3.3KΩ±5%-----T | 1         |
| R743     | 0094100028    | Resister   | RT13-1/6W-3.3KΩ±5%-----T | 1         |
| R101     | 0094100036    | Resister   | RT13-1/6W-33kΩ±5%-----T  | 1         |
| R403     | 0094100881    | Resister   | RT13-1/6W-330KΩ±5%-----T | 1         |
| R415     | 0094100071    | Resister   | RT13-1/6W-3.9KΩ±5%-----T | 1         |
| R704     | 0094100071    | Resister   | RT13-1/6W-3.9KΩ±5%-----T | 1         |
| R457     | 0094100710    | Resister   | RT13-1/6W-39KΩ±5%-----T  | 1         |
| R709     | 0094100944    | Resister   | RT13-1/6W-390KΩ±5%-----T | 1         |

## List of Parts

| Location | Material Code | Parts Name | Type                           | Qt.(unit) |
|----------|---------------|------------|--------------------------------|-----------|
| R612     | 0094100020    | Resister   | RT13-1/6W-470Ω±5%-----T        | 1         |
| R727     | 0094100020    | Resister   | RT13-1/6W-470Ω±5%-----T        | 1         |
| R728     | 0094100020    | Resister   | RT13-1/6W-470Ω±5%-----T        | 1         |
| R604     | 0094100029    | Resister   | RT13-1/6W-4.7KΩ±5%-----T       | 1         |
| R274     | 0094100029    | Resister   | RT13-1/6W-4.7KΩ±5%-----T       | 1         |
| R703     | 0094100029    | Resister   | RT13-1/6W-4.7KΩ±5%-----T       | 1         |
| R724     | 0094100029    | Resister   | RT13-1/6W-4.7KΩ±5%-----T       | 1         |
| R736     | 0094100029    | Resister   | RT13-1/6W-4.7KΩ±5%-----T       | 1         |
| R738     | 0094100029    | Resister   | RT13-1/6W-4.7KΩ±5%-----T       | 1         |
| R740     | 0094100029    | Resister   | RT13-1/6W-4.7KΩ±5%-----T       | 1         |
| R821     | 0094100029    | Resister   | RT13-1/6W-4.7KΩ±5%-----T       | 1         |
| R206     | 0094100800    | Resister   | RT13-1/6W-47kΩ±5%-----T        | 1         |
| R732     | 0094100800    | Resister   | RT13-1/6W-47kΩ±5%-----T        | 1         |
| R906     | 0094100021    | Resister   | RT13-1/6W-560Ω±5%-----T        | 1         |
| R553     | 0094100721    | Resister   | RT13-1/6W-5.6KΩ±5%-----T       | 1         |
| R108     | 0094100721    | Resister   | RT13-1/6W-5.6KΩ±5%-----T       | 1         |
| R451     | 0094100721    | Resister   | RT13-1/6W-5.6KΩ±5%-----T       | 1         |
| R511     | 0094100721    | Resister   | RT13-1/6W-5.6KΩ±5%-----T       | 1         |
| R803     | 0094100038    | Resister   | RT13-1/6W-56KΩ±5%-----T        | 1         |
| R204     | 0094100726    | Resister   | RT13-1/6W-560KΩ±5%-----T       | 1         |
| R409     | 0094100792    | Resister   | RT13-1/6W-680Ω±5%-----T        | 1         |
| R707     | 0094100792    | Resister   | RT13-1/6W-680Ω±5%-----T        | 1         |
| R916     | 0094100792    | Resister   | RT13-1/6W-680Ω±5%-----T        | 1         |
| R926     | 0094100792    | Resister   | RT13-1/6W-680Ω±5%-----T        | 1         |
| R111     | 0094100783    | Resister   | RT13-1/6W-82Ω±5%-----T         | 1         |
| R804     | 0094100783    | Resister   | RT13-1/6W-82Ω±5%-----T         | 1         |
| R702     | 0094100032    | Resister   | RT13-1/6W-8.2KΩ±5%-----T       | 1         |
| R723     | 0094100032    | Resister   | RT13-1/6W-8.2KΩ±5%-----T       | 1         |
| R412     | 0094100032    | Resister   | RT13-1/6W-8.2KΩ±5%-----T       | 1         |
| R446     | 0094100949    | Resister   | RT14-1/4W-220KΩ±5%-----T       | 1         |
| R400     | 0094100947    | Resister   | RT14-1/4W-270Ω±5%-----T        | 1         |
| R940     | 0094100946    | Resister   | RT14-1/4W-33Ω±5%-----T         | 1         |
| R733     | 0094101122    | Resister   | RT14-1/4W-8.2KΩ±5%-----T       | 1         |
| R552     | 0094101283    | Resister   | RT15-1/2W-91KΩ±5%-----T        | 1         |
| R461A    | 0094100952    | Resister   | RT15-1/2W-120Ω±5%-----T        | 1         |
| R233     | 0094101378    | Resister   | RT15X-1/2W-1.5KΩ±5%-----T      | 1         |
| R460     | 0094101284    | Resister   | RT15-1/2W-390Ω±5%-----T        | 1         |
| R501     | 0094100956    | Resister   | RT15-1/2W-220KΩ±5%-----T       | 1         |
| R555     | 0094100954    | Resister   | RT15-1/2W-47KΩ±5%-----T        | 1         |
| R273     | 0094101126    | Resister   | RJ14-1/4W-4.7KΩ±1%-----T       | 1         |
| R532     | 0094101138    | Resister   | VR37-1/2W-5.6MΩ±10%-----T+D511 | 1         |
| W736     | 0094101102    | Jumper     | φ0.6mm/5mm-----B               | 1         |
| L511     | 0094101102    | Jumper     | φ0.6mm/5mm-----B               | 1         |
| W110     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B             | 1         |
| W111     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B             | 1         |
| W112     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B             | 1         |
| W116     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B             | 1         |
| W117     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B             | 1         |
| W118     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B             | 1         |
| W201     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B             | 1         |
| W202     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B             | 1         |
| W203     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B             | 1         |

## List of Parts

| Location | Material Code | Parts Name | Type               | Qt.(unit) |
|----------|---------------|------------|--------------------|-----------|
| W204     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W205     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W210     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W218     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W220     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W221     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W224     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W403     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W226     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W409     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W410     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W411     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W416     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W417     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W423     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W424     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W451     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W471     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W510     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W512     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W555     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W562     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W602     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W703     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W704     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W711     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W713     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W715     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W716     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W721     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W722     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W730     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W731     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W734     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W735     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W740     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W749     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W801     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W802     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W803     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W805     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W807     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W823     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W845     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| R270     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| R432     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| R120     | 0094101103    | Jumper     | φ0.6mm/7.5mm-----B | 1         |
| W113     | 0094101104    | Jumper     | φ0.6mm/10mm-----B  | 1         |
| W212     | 0094101104    | Jumper     | φ0.6mm/10mm-----B  | 1         |
| W215     | 0094101104    | Jumper     | φ0.6mm/10mm-----B  | 1         |
| W222     | 0094101104    | Jumper     | φ0.6mm/10mm-----B  | 1         |
| W402     | 0094101104    | Jumper     | φ0.6mm/10mm-----B  | 1         |



## List of Parts

| Location | Material Code | Parts Name | Type                | Qt.(unit) |
|----------|---------------|------------|---------------------|-----------|
| W404     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W407     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W408     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W412     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W413     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W414     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W415     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W418     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W420     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W421     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W422     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W431     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W442     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W443     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W507     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W551     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W557     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W558     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W702     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W705     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W706     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W707     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W708     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W709     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W710     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W714     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W718     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W720     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W723     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W724     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W725     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W473     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W726     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W727     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W732     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W733     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W737     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W739     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W750     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W846     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W901     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| L901     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W515     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| R935     | 0094101104    | Jumper     | φ0.6mm/10mm-----B   | 1         |
| W474     | 0094101105    | Jumper     | φ0.6mm/12.5mm-----B | 1         |
| W728     | 0094101105    | Jumper     | φ0.6mm/12.5mm-----B | 1         |
| W729     | 0094101105    | Jumper     | φ0.6mm/12.5mm-----B | 1         |
| W553     | 0094101106    | Jumper     | φ0.6mm/15mm-----B   | 1         |
| W554     | 0094101106    | Jumper     | φ0.6mm/15mm-----B   | 1         |
| W738     | 0094101106    | Jumper     | φ0.6mm/15mm-----B   | 1         |
| R531     | 0094101106    | Jumper     | φ0.6mm/15mm-----B   | 1         |
| W472     | 0094101106    | Jumper     | φ0.6mm/15mm-----B   | 1         |

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| Location | Material Code | Parts Name | Type                | Qt.(unit) |
|----------|---------------|------------|---------------------|-----------|
| W747     | 0094101107    | Jumper     | φ0.6mm/17.5mm-----B | 1         |
| W748     | 0094101107    | Jumper     | φ0.6mm/17.5mm-----B | 1         |
| L442     | 0094101107    | Jumper     | φ0.6mm/17.5mm-----B | 1         |
|          | 0091800201    | PCB        | PX15016-----Q       | 1         |



**16. Damageable Parts List**

| Location | Material Code | Parts Name      | Type                 | Qt. (unit) | Remark |
|----------|---------------|-----------------|----------------------|------------|--------|
| N101     | 0094400457    | IC              | LA76814K             | 1          |        |
| N701     | 0094401510    | IC              | LC863240A-5V11       | 1          |        |
| SW701    | 0094000209    | Push switch     | KFC-A06-1H-3.85      | 7          |        |
| N601     | 0094400719    | IC              | LA4225               | 2          |        |
| N451     | 0094400470    | IC              | LA7840               | 1          |        |
| A701     | 0094000216    | Infrared sensor | HS0038               | 1          |        |
| Z101     | 0094600070    | Filter          | D45U                 | 1          |        |
| N513     | 0094401470    | Transistor      | 2SC4460              | 2          |        |
| V553     | 0094400461    | Transistor      | 2SC1815(Y)           | 1          |        |
| G701     | 0094600068    | Oscillator      | 32.768KHz            | 1          |        |
| T101     | 0094500340    | Inductance      | HA6019               | 1          |        |
| C561     | 0094202152    | Capacitor       | CD287-160V-220 μ F-M | 1          |        |
| C507     | 0094201769    | Capacitor       | CD293-200V-150 μ F-M | 1          |        |
| V554     | 0094400442    | Transistor      | 2SB892(S)            | 1          |        |
| N702     | 0094400636    | IC              | CAT24C08P            | 1          |        |

**17. Information of Resistors and Capacitors**

**CAPACITORS**

**RESISTORS & CAPACITORS-PARTS NO.CODE**

**Notes:** 1. part numbers are indicated on most mechanical parts.

Please use this part number for parts orders.

2. The unit of resistance is Ω (ohm). K=1000 Ω , M=1000K Ω

3. The unit of capacitance is μ F (microfarad). 1pF=10<sup>-6</sup> μ F.

Numbering system of Capacitor

Example

CL42 ---- 17 ---- 50V ---- 2F4 ---- 104 \* ---- Z ----  
 Type Voltage Value (pF) Tolerance  
CL21X ---- 100V ---- 223 \* ---- J ----  
 Type Voltage Value (pF) Tolerance  
CL110X ---- 25V ---- 100 μ F ---- ± 20% ----  
 Type Voltage Value Tolerance  
 \* 104 =10×10<sup>4</sup> 223=22×10<sup>3</sup>

Numbering system of resistor

Example

RY17S ---- 2W ---- 390 ---- J ---- 05-E-A ----  
 Type Wattage Value(Ω) Tolerance  
RS11 ---- 1/2W ---- 1.8K ---- K ----  
 Type Wattage Value Tolerance

ABBREVIATION OF PART NAME AND DESCRIPTION

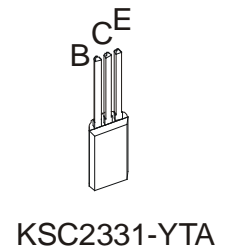
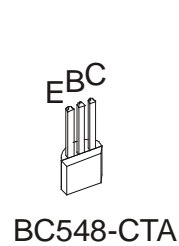
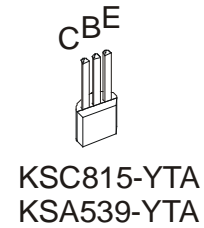
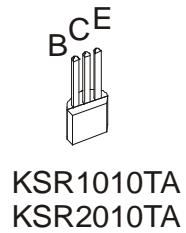
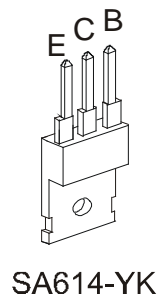
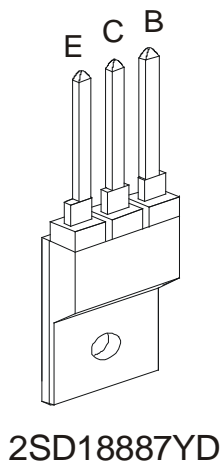
| PART NAME & DESCRIPTION |        |           |      |
|-------------------------|--------|-----------|------|
| TYPE                    |        | ALLOWANCE |      |
| T                       | Carbon | F         | ±1%  |
| S                       | Solid  | J         | ±5%  |
| J                       | Metal  | K         | ±10% |
| Y                       | Oxide  | M         | ±20% |
| F                       | Fuse   | G         | ±2%  |

RESISTOR

| PART NAME & DESCRIPTION |              |           |          |
|-------------------------|--------------|-----------|----------|
| TYPE                    |              | ALLOWANCE |          |
| C                       | Ceramic      | J         | ±5%      |
| T                       | Ceramic      | K         | ±10%     |
| L                       | Film         | L         | ±15%     |
| D                       | Electrolytic | M         | ±20%     |
| A                       | Tantalum     | P         | +100%-0% |
|                         |              | Z         | +80%-0%  |

CAPACITOR

Terminal view of transistors



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