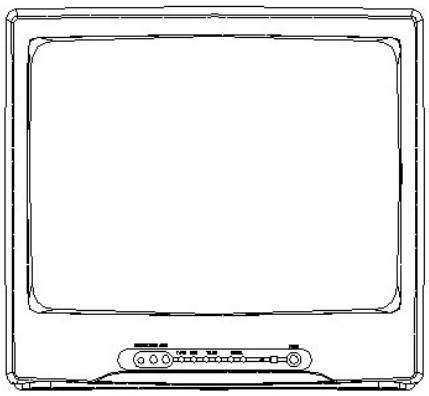
HTX20S32

COLOR TELEVISION

Service Manual



MODEL: HTX20S32

■ Features

- MTS Stereo
- Front Audio/Video input
- V-CHIP, CCD

Haier Group

NO:M-AM-US-20R21-76814 **Edition: 2002.12.30**

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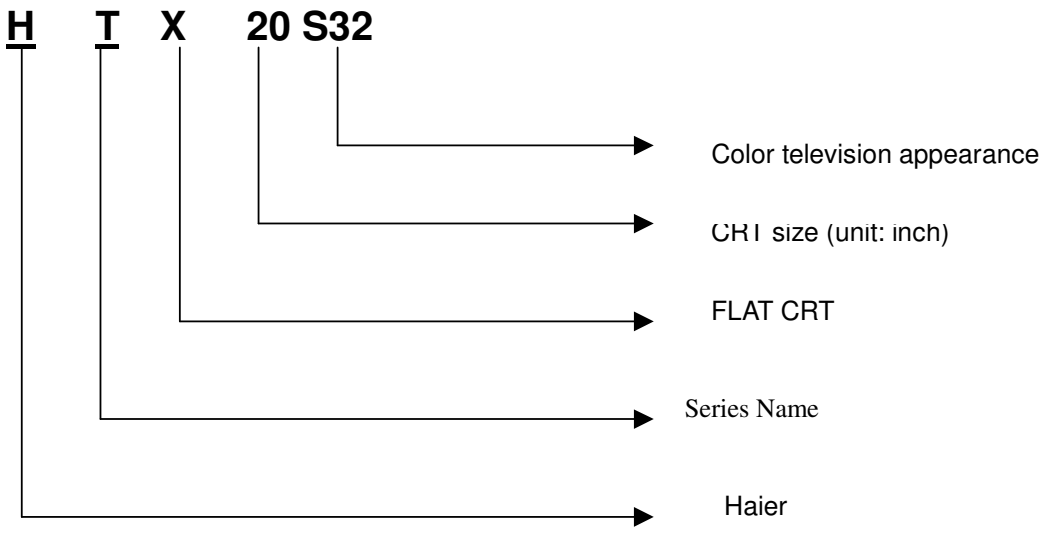
2.Product Code illumination and Series Introduction



3.Features

NO.	ITEM	FUNCTION	MODEL HS-2190
1	PICTURE	Main IC	76814
2		CRT	Flat square
3		Color system	NTSC
4		Audio system	M
5		Number of channels	181
6		OSD language	E、F、S、
7		Multi-picture modes	√
8	AUDIO	AV stereo	√
9		Super woofer	×
10		Surrounding sound	×
11		Treble/bass boost	×
12		Left/right balancer	√
13		NICAM	×
14		Multi-audio modes	×
15		Tone adjuster	×
16		MTS/SAP	√
17		Auto-volume leveling	×
18	JACK	AV input	Rear 1fornt 1
19		AV output	Rear 1
20		DVD terminal	×
21		S-video jack	Rear 1
22		Headphone socket	×
23		SCART socket	×

NO.	ITEM	FUNCTION	MODEL TV-9708
24	SOFTWARE	Digital curtain	×
25		Slow fading on & off	×
26		Semitransparent menu	×
27		Non-flashing channel changing	×
28		ZOOM	×
29		16:9 mode	×
30		Games	√
31		Calendar	√
32		Child-lock	√
33		Multi-functional lock	×
34		No-picture listening	×
35		Background light	×
36		Auto-timer on	√
37		CCD	√
38		V-CHIP	√
39	PARAMETER	Number of built-in speakers	2
40		Audio output power (W)	3+3
41		Total power input（W）	70
42		Voltage range（V）	110~220
43		Power frequency（Hz）	60
44		Time of sleep timer (MINS)	120
45		Net weight (KG)	23.5
46		Gross weight (KG)	25
47		Net dimension (MM)	475×450×435
48		Packaged dimension (MM)	550X505X505
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.

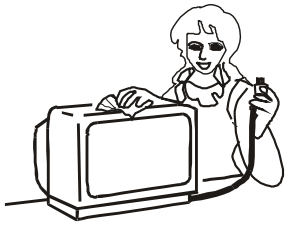
For continued X-RAY RADIATION protection, the replacement tube must be of the same type as specified in the Replacement Parts List.

Before returning the receiver to the customer,

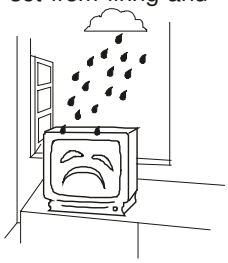
Always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to make sure that the set is safe to operate without any danger of electrical shock.

5.Warning and Cautions

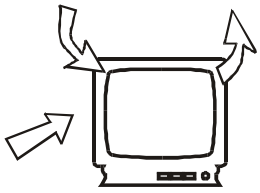
1. When you clean the TV set, please pull out the power plug from AC outlet. Don't clean the cabinet and the screen with benzene, petrol and other chemicals.



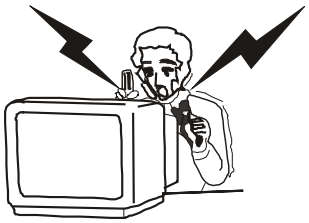
4. To prevent the TV set from firing and electric shock, don't make the TV set rain or moisture.



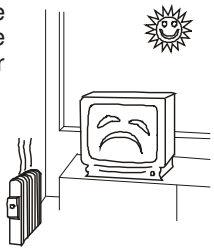
2. In order to prolong the using life of the TV set, please place it on a ventilated place.



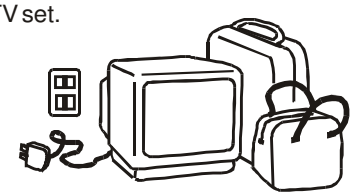
5. Don't open the back cover, otherwise it is possible to damage the components in the TV set and harm you.



3. Don't place the TV set in the sunshine or near heat source.



6. When the TV set isn't going to be used for long time or it is in thunder and lightening, please pull out the plug from AC outlet and the antenna plug from the cover of the TV set.



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**.

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

components are usually called Electrostatic ally 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 folder 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 ^{o}F to 600 ^{o}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 spay-on cleaners.

5) Use the following unsoldering technique

a. Allow the soldering iron tip to reach normal temperature. (500 ^{o} F to 600^{o} 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.

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 ^{o} F to 600^{o} 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.

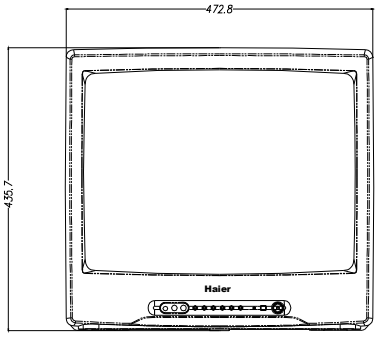
2) Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.

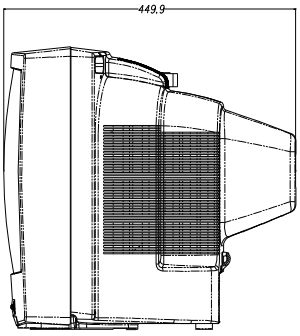
3) Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.

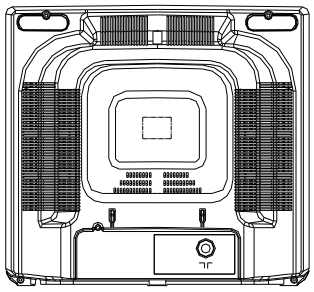
Carefully crimp and solder the connections.

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

6.Net dimension



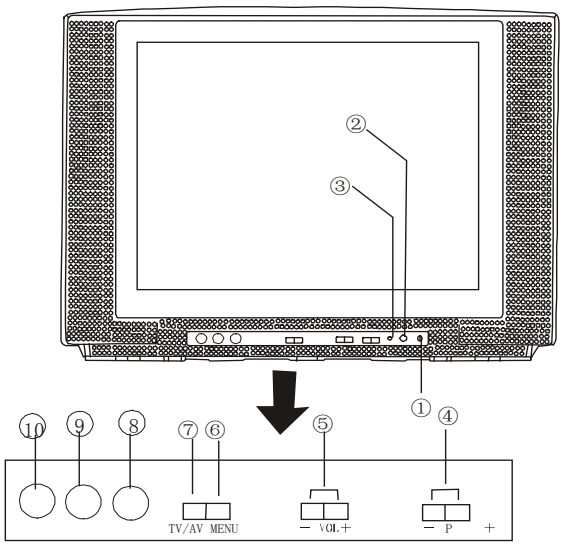




7.Parts and Functions

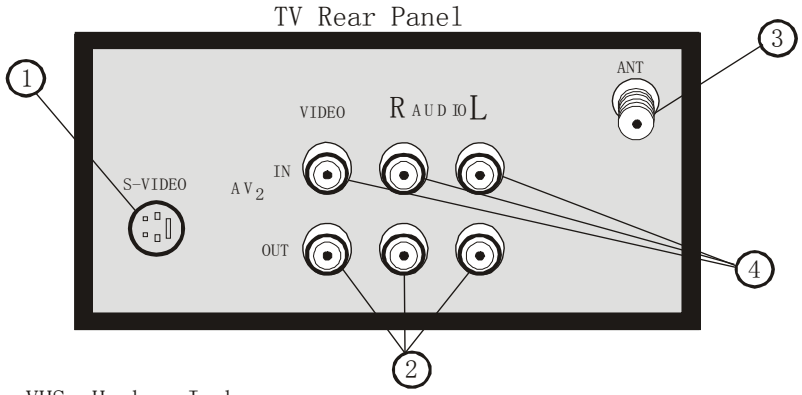
Features and Operation

1. Front Panel HTF20R21



①Power switch
②Remote sensor
③Power indicator
④Channel up/down button
⑤Volume up/down button
⑥Menu button
⑦TV/AV alteration button
⑧Front Audio (R) input
⑨Front Audio (L) input
⑩Front Video input

TV Rear Panel

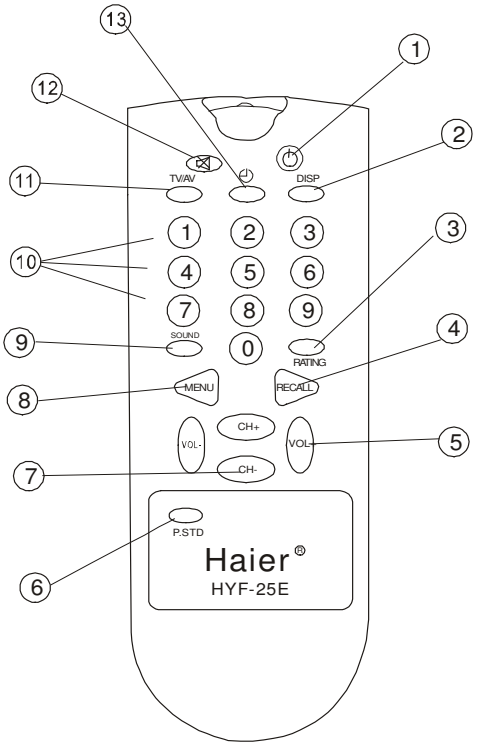


1. super VHS Hookup Jock
2. Rear Audio/video Hookup jocks
V-video output
L-left channel output
R-right channel output

3. Cable TV Antenna Hookup
4. Rear Audio/Video Hookup Jacks
V-video input
L-left channel input
R-right channel input

8.Remote Controller Functions

Remote Features



1. Power Button
2. Time & Channel Display Button
3. Rating Button
   TV Program (V-Chip Setup)
4. Last Channel Recall Button
5. Volume(+/-) Select Button
6. Personal Preference Select
7. Channel(+/-) Select Button
8. Menu Select Button
9. Audio Select Button
9. Audio Select Button
10. Direct Access Channel Select
11. TV/AV Input Button
12. Mute Button
13. Sleep Timer

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 to call up the “PREST” menu on the screen. Use the “ ⬇ ” key to select the bar “auto search” then press the “ ➡ ” to make sure. If you want to stop, press the key “ ➡ ”.

2). Deleting channel number

Press channel up/down buttons to select a channel to skip. Press MENU to call up the “PREST” menu on the screen. Then Press the” ⬇ “item to select the bar “Add/Delete” then use the “➡ ” key to select Add or Delete.

B. Volume tuning

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

C Personal preference settings

Picture modes

Press P.STD repeatedly to change among Personal, Standard, Vivid, Soft to change the Picture Mode.

10.Maintenance service and trouble shooting

1). Adjustment item Explanation:

	OSD	Explanation	Range	Remark
0	H.PHASE	H.PHASE	0~31	
1	NT.H.PHASE	H.PHASE	0~31	No used
2	H.BLK.LEFT		0~7	
3	H.BLK.RIGHT		0~7	
4	V.SIZE	Vertical Size	0~127	
5	V.LINE	Vertical Linearity	0~31	
6	V.POSI	Vertical DC	0~63	
7	V.SC	Vertical S-Correction	0~31	
8	NT.V.SIZE	Vertical Size	-32~+31	No used
9	NT.V.LINE	Vertical Linearity	-16~+15	No used
10	NT.V.POSI	Vertical DC	-32~+31	No used
11	NT.V.SC	Vertical S-Correction	-16~+15	No used
12	RF.AGC	RF AGC Delay	0~63	
13	VOL.OUT	Volume Control	0~127	
14	OSD H.POSI		0~127	
15	OSD V.POSI		0~31	
16	INPUT LEVEL		0~15	
17	SPECTRAL		0~63	(0~31)PHILIP IC
18	WIDEBAND		0~63	(0~31)PHILIP IC
19	STEREO VCO		0~63	No used
20	FILTER SET		0~63	No used
21	SAP VCO		0~63	No used

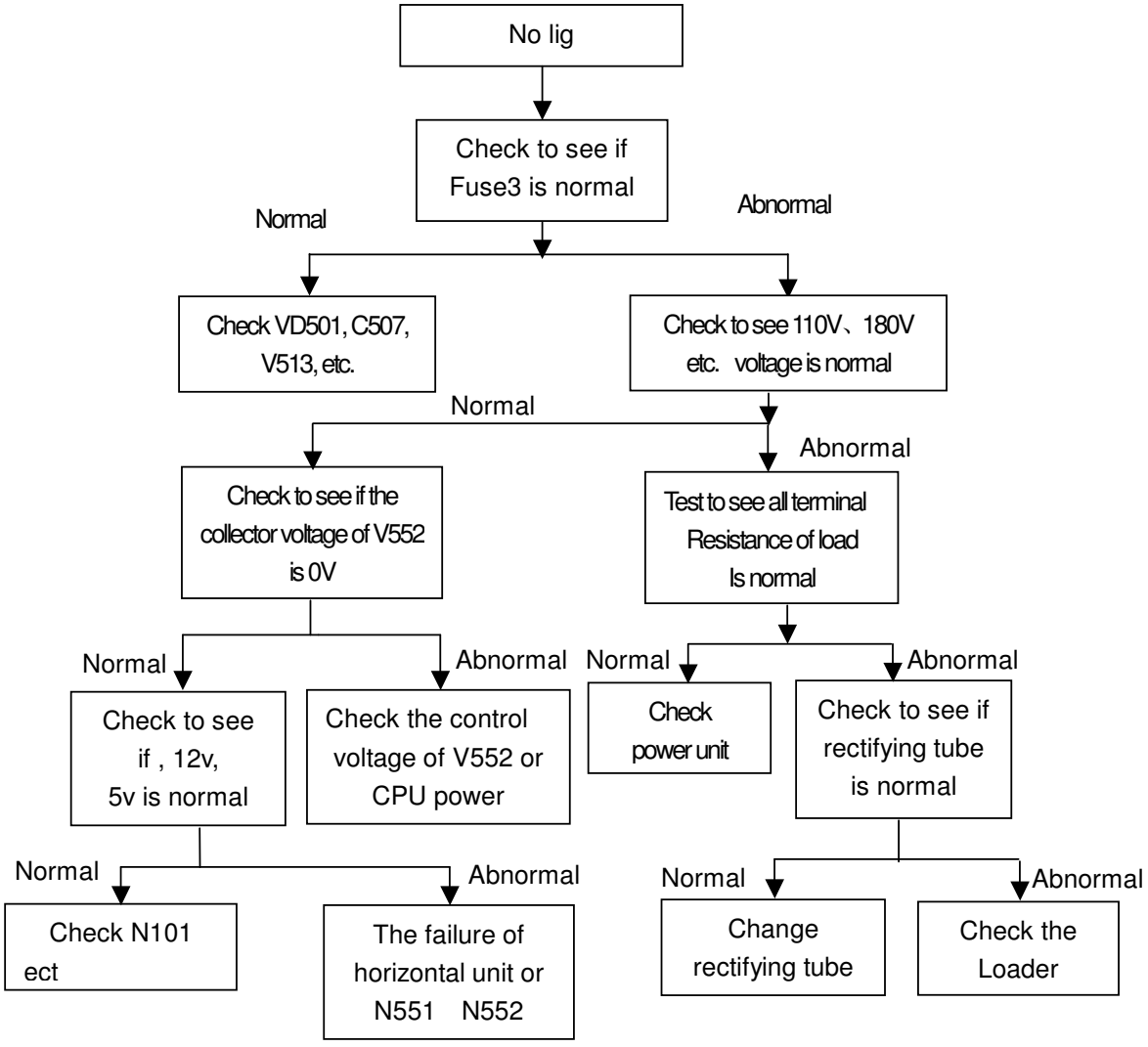
2). Setting item explanation:

	OSD	Function	
0	LA76814/LA76812	0: select LA76814	1:select LA76812
1	SAP IC SELECT	0:TDA9850;1:CXA2104;2:TDA9855;3:UPC1815B	
2	SUB.CONT	Sub-contrast(0-31)	
3	SUB.COLOR	Sub-color(0-63)	
4	SUB.SHARP	Sub-sharpness(0-31)	
5	SUB.TINT	Sub-tint(0-63)	
6	BLK.STR.DEF	Black level stretch (0:on; 1:off)	
7	AFC GAIN	AFC gain (0:low; 1:high)	
8	V.SEPUP	Vertical synchronize sensitive (0: low;1:high)	
9	CD.MODE	“Count down mode”(LA76814:0/1;LA76812:0-7)	
10	DIGITAL OSD	Digital OSD setting (0:anlyos 1:digital)	
11	OSD CONT.	OSD contrast (0-127)/LA76814 (0-3)	
12	GRAY MOD	Gray mode (0/1)	
13	B.GAM.SEL	Blue γ select (0-3)	
14	RG.GAM.DEF	Red green γ define (0/1)	
15	FBPBLK.SW	FBPBLK.SW (0/1)	
16	BRIGHT ABL.TH	“Bright.abl.threshold”(0-7)	
17	EMG.ABL.DEF	“Emg.abl.def”	

18	BRT.ABL.DEF	“Brt.Abl.Def” (0/1)	
19	MID.STP.DEF	“Mid.Stp.Def” (0/1)	
20	R—Y/B-Y G.BL	“R-Y/B-Y Gain Balance” (0~15) No use (LA76814)	
21	R-Y/B-Y ANG	“R-Y/B-Y Angle” (0~15)	
22	C.KILL.OFF	“C_Kill OFF” (0/1)	
23	SND.TRAP	“Sound Trap” (0~7)	
24	VOL.FIL	“Volume Filter Defeat”	
25	VIF.SYS.SW	Video IF setting (0：45.75M； 1：58.75M) For LA76814	
26	VIDEO.LELEVL	“Video Level” (0~7)	
27	FM.LEVEL	“FM Level” (0~31)	
28	POWER OPT	0：turn TV on twice；1：memory；2或3：Turn TV on first	
29	POWER FLAG	0：Without OSD power on function	1：With OSD power off function
30	SEARCH CHECK	1：With auto-programmed function turning TV on.	

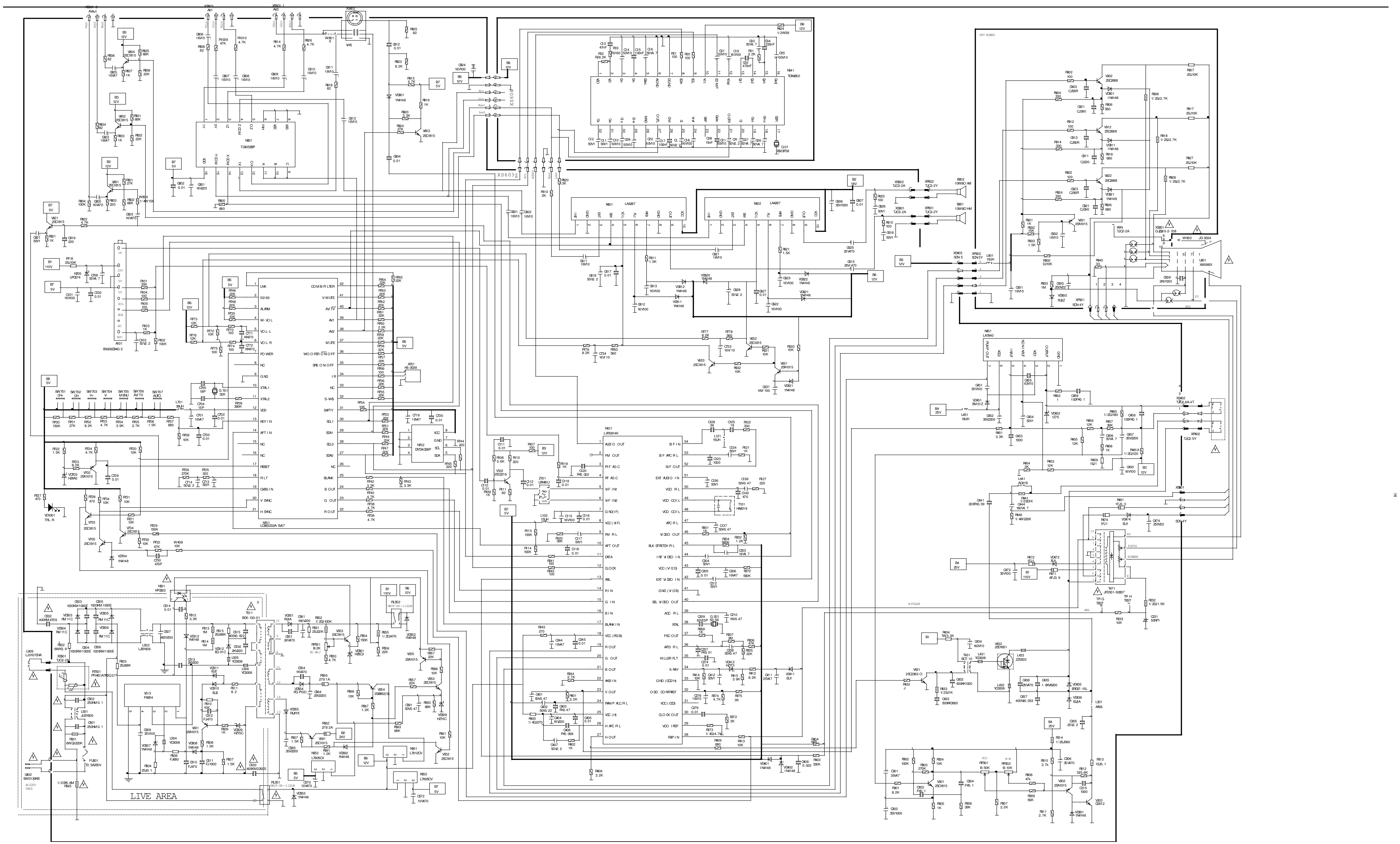
31	SEARCH SPEED	0：Slow search speed	1：Fast search speed
32	AV OPTION	0：without AV；1：one AV input；2：two AV input；3：Three AV input	
33	POSITION L/R	0：Logo display on left top of screen	1：Logo display on right top o screen
34	BLUE BACK	0：No blue background without signal	1：Blue background without signal
35	BLACK BACK	0：No background changing channel	1：Background changing channel

36	STEREO OPTION	0：No stereo	1：Stereo
37	WOOF/H.PHONE	No used	No used
38	WOOF VOL.OPT	No used	No used
39	SENSITIVITY	No used	No used
40	V.MUTE P.OFF	0：Before POWER OFF, don’t cut off video input	1：Before POWER OFF, cut off video input
41	CCD OPTION	0：No CCD	1： CCD
42	V-CHIP OPTION	0：No V-CHIP	1：V-CHIP
43	PASSWORD OPT.	0：No V-CHIP password	1：V-CHIP password
44	COMB.OPTION	0：NOTHING	1：NOTHING
45	TUNER OPTION	0： TDF-3M3 tuner	1： PHILIP UV1336B tuner
46	GAME OPTION	0：No game	1：Game
47	SCREEN OPTION	0:no curtain effect 1: curtain for on effect 2:curtain for effect 3:curtain for on/off effect	


No lig
Check to see if Fuse3 is normal
Normal
Abnormal
Check VD501, C507, V513, etc.
Check to see 110V、180V etc. voltage is normal
Normal
Abnormal
Check to see if the collector voltage of V552 is 0V
Test to see all terminal Resistance of load Is normal
Normal
Abnormal
Normal
Abnormal
Check to see if , 12v, 5v is normal
Check the control voltage of V552 or CPU power
Check power unit
Check to see if rectifying tube is normal
Normal
Abnormal
Normal
Abnormal
Check N101 ect
The failure of horizontal unit or N551 N552
Change rectifying tube
Check the Loader

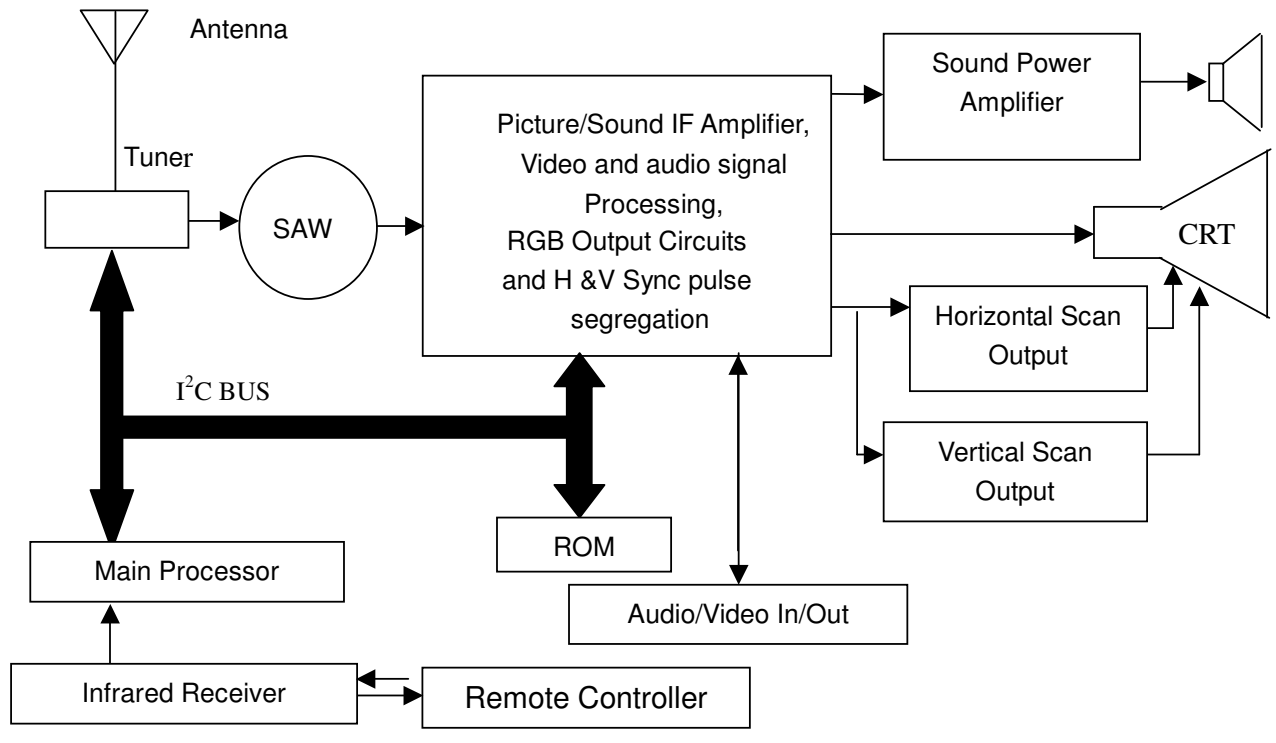
11. Circuit Diagram

Circuit Diagram

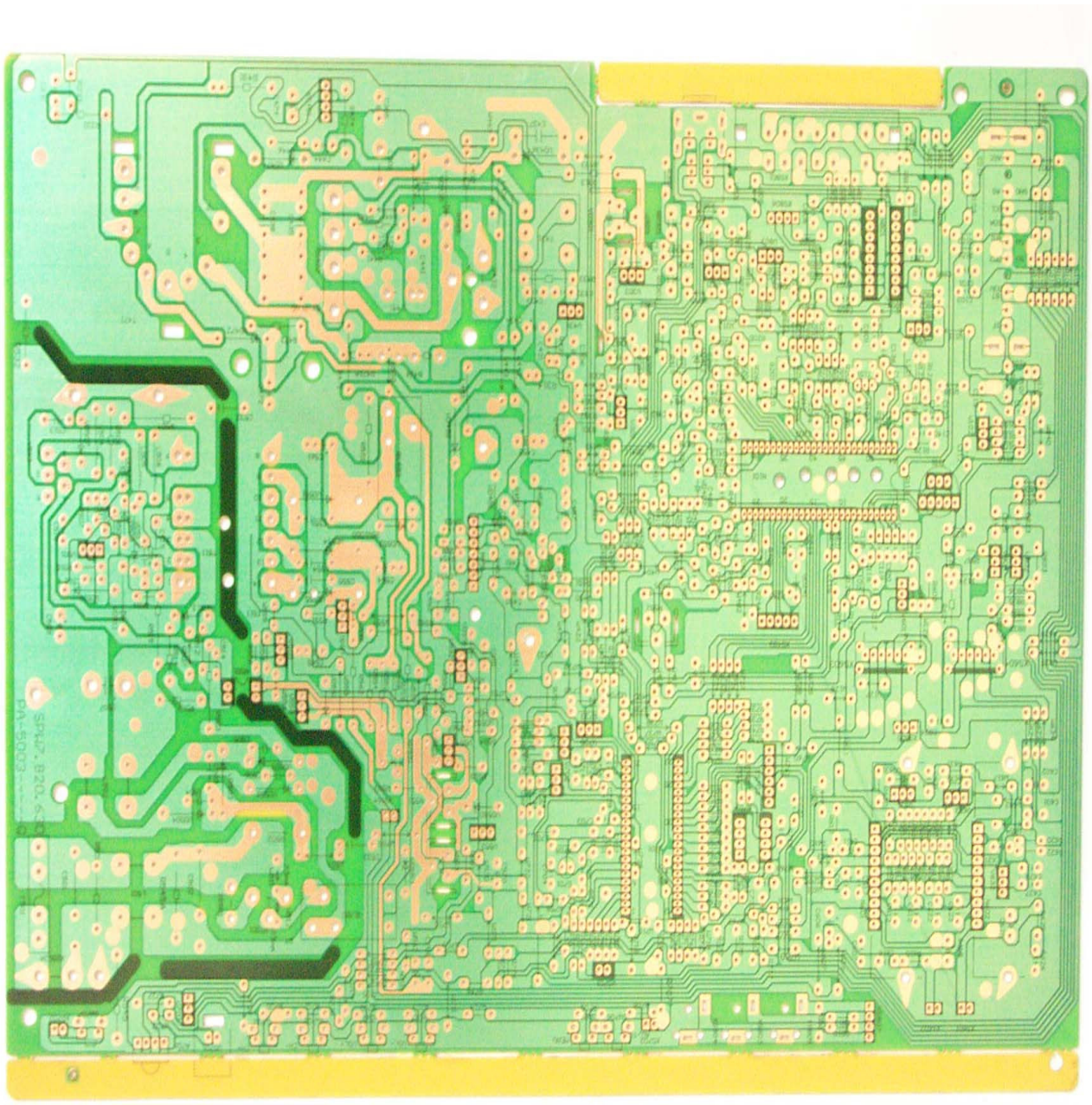


Edition: 2002.12.30

Circuit Block Diagram



Circuit Block Diagram



12. Circuit Explanation

IC reference data:

1). N701 (LC86F3232A)

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	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 onnect to 5V via a resisto	5.04
12	Power supply	4.99	33	Connect to 5V via a resistor	5.03
13	Key input	0.24	34	遥控接收	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 resist	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	**I**reference	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 pretect	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		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

- 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±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 136V±0.5V.
c. Check brightness, contrast, color, and sharpness: receive color bar signal and adjust contrast, brightness, color, sharpness control, picture will change accordingly.
d. AV input check: press AV/TV button, screen will display AV mode or TV mode and audio input signal can be observed, picture and sound must be normal.

Stereo adjustment:

Adjustment: Receive stereo signal (recommended audio: L 300Hz, R: 3KHz). Connect two inputs of double trace oscillograph into XS601, XS602 (note: don't make XS601, XS602 outputs short.) Press FACTORY button on the service remote controller, enter "ADJUST" service mode. Press "CH+" or "CH-" select "WIDEBAND" item and adjust low frequency separation. (see figure 1) and make it

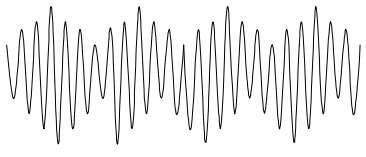


Figure 1

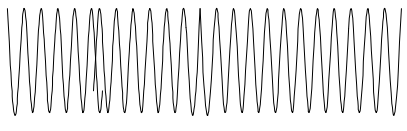


figure 2

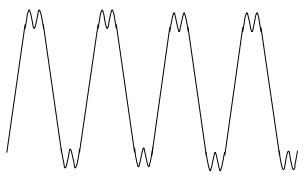


Figure 3

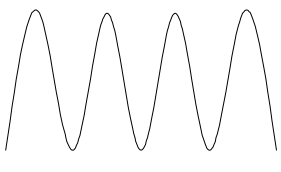


Figure 4

optimal。 (see figure

2）.At last press “CH+” or “CH-” and select “SPECTRAL” item, adjust high frequency separation. (see figure 3) and make it optimal。 (see figure 4）.If effect isn’t good, you can repeat above steps till it is optimal.

Main power adjustment:

Adjustment: Connect voltage meter to +B on main PCB, make +B voltage be 115V±0.3V.

Screen voltage adjustment:

Adjustment: Tune TV on, receive a digital test pattern, set brightness and contrast standard mode. Press “FACTORY” button on the service remote controller twice,”B/W balance display on the screen, then press“MUTE” button, and make a horizontal bright line display on the screen. Adjust Screen voltage of FBT, make the line just seen. Then press“MUTE” button and exit service mode. Press “P.STD” button and make picture enter standard mode.

AGC ALIGNMENT:

Receive a color bar signal, 60dB,NTSC M color bar pattern, and check if there is noise in the picture, if there is noise, press FACTORY button and enter service mode, adjust RF.AGC value and make the noise just disappear, press FACTORY button and exit service mode.

White balance adjustment:

Turn TV on, receive white field signal, and make the probe of white balance adjustment instrument touch with top and bottom of screen fully. Check if values of R, G, B are standard, if not, press “FACTORY” button, make “B/W BALANCE” menu display on screen, adjust values of R-BIA, G-BIA, B-IA, R-DRV, G-DRV, B-DRV, make them standard. Press FACTORY button, exit service mode.

OSD	I2C bus control (LA76810)	Varied range
S-BRI	Sub brightness	0-127
R-BIA	Red bias	0-255
G-BIA	Green bias	0-255
B-BIA	Blue bias	0-255
R-DRV	Red drive	0-127
G-DRV	Green drive	0-15
B-DRV	Blue drive	0-127
C.B/W	Cross B/W	0-3

FOCUS ALIGNMENT

Receive crosshatch (N system) pattern; Adjust focus-variable resistor on the FBT, make picture is the sharpest.

GEOMETRIC ALIGNMENT:

Receive the monochrome circle pattern (NTSC system);
Check vertical center and horizontal center and H-linearity .if they are not standard, press FACTORY button to enter service mode, and adjust vertical size, vertical linearity, vertical center, horizontal center, make them standard.

Alignment parameter table:

Press FACTORY button on service remote controller and enter service mode: 1.Adjustment mode and2. Setting mode;

Use CH+ or CH- button up/down pages to select items that you need adjust; use VOL+ or VOL- button

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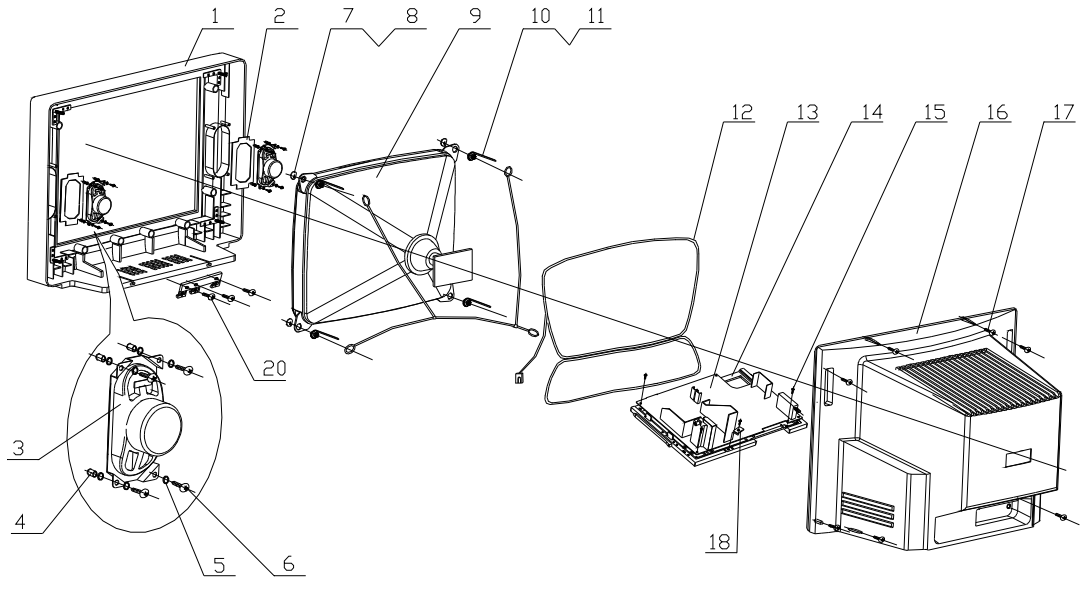
14. Exploded View

HTF20R21 EXPLOSION



HTF20R21 EXPLOSION BOM

No.	Parts Name	Material Code	Type	Q'ty	Remark
1	Front Frame	0090201437	MTAA5049AC--Q	1	
2	Speaker crash pad	0090300099	613 Speaker	2	
3	Speaker	0094000018	YDT613-4W-16Ω	2	
4	Rivet	0090100132	MTBS0004BB--Q	8	
5	Washer Rubber	0090300095	Inner Diameter 4.8	16	
6	Screw	0090600023	SJ2824-87 ST4*16F	8	
7	Washer	0090100128	MTBH2004BA--Q	4	
8	Rubber Washer	0090300076	1 mm	4	
9	CRT	0094000273	A51LSK195X91	1	
10	Degaussing coil clip	0090800171	BJZ0001-----Q	4	
11	Combined Nut	0090600069	M6(98025)	4	
12	Degaussing coil	0094500443	HXC-54	1	
13	Main Board	0094001805	BXA5070-----Q	1	
14	Bracket	0090201439	MTAC5017AC--Q	1	
15	Screw	0090600028	SJ2825-87 ST3*10F	5	
16	Back Cover	0090201438	MTAA5050AC--Q	1	
17	Screw	0090600023	SJ2824-87 ST4*16F	8	
18	Screw	0090600028	SJ2825-87 ST3*10F	5	
19	Operating instructions	0090501726	MTDB5319CA--Q	1	
20	Remote controller	0094000778	HYF-25E	1	

15. List of Parts

Location	Material code	Parts name	Type	Qt. (Unit)	Remark
	0090100128	Washer	1MM φ6.5	4	
	0090300211	Rubber washer	1MM φ8.5	4	
	0090202438	Label	MTFE5063CA--Q	1	
	0090201866	Label	MTFE5043CF--Q	1	
	0090800171	Degaussing coil tie	BJZ0001-----Q	4	
	0090300078	Crash pad	30X30X25	2	
	0090200453	Clamp	TMMOA101	1	
	0090501291	Plastic bag	240*160	1	
	0090600069	Combined nut	M6 (98025)	4	
	0094001399	CRT	A51LSK195X91 (UL)	1	
	0094500334	Degaussing coil	UDC-21-029	1	
	0090400194	CRT grounding assembly	JE221-02-4--Q	1	
	0090400824	Mains cord	JPRVVZ202YDFQ	1	
	0090200767	Clamp	300	1	
	0090201596	Mains-cord hoke	MTAJ5019AG--Q	1	
	0090600023	Screw	SJ2824-87 ST4*16F	8	
	0090600020	Screw	SJ2825-87 ST3*12F	1	
	0090201867	Back label	MTFB5185CA--Q	1	
	0090801081	Front mask assembly	BJK5022-----Q	1	
	0090201437	Front mask	MTAA5049AC--Q	1	
	0090200909	Label	MTFE5021CA--Q	1	
	0090200067	Brand	40mm D3	1	
	0094000018	Speaker	YDT613-64AV, 10W, 8Ω	2	
	0090300095	Rubber washer	Φ4.8	16	
	0090100132	Rivet	MTBS0004BB--Q	8	
	0090300099	Speaker crash pad	613	2	
	0090400789	Wire	JT2431-10083Q	1	
	0090400790	Wire	JT2551-10083Q	1	
	0090600023	Screw	SJ2824-87 ST4*16F	8	
	0090600011	Screw	SJ2824-87 ST3*10F	2	
	0090801082	Back cover assembly	BJH5022-----Q	1	
	0090201438	Back cover	MTAA5050AC--Q	1	
	0090300079	Cloth	15*200	2	
	0090300080	Cloth	15*320	2	
	0090802604	Package assembly	BBJ5368-----Q	1	
	0090501358	Carton	MTED5142CA--Q	1	
	0090500102	Plastic cover	21"	1	
	0090501024	Top pad	MTEE5013AK--Q	1	
	0090501025	Bottom pad	MTEE5014AK--Q	1	
	0094000213	Battery	7#	2	
	0094000778	Remote controller	HYF-25E	1	
	0090100165	Staple	65*2	8	
	0090500018	Accessory poke	370*240	1	
	0090501726	Operating instructions	MTDB5319CA--Q	1	
	0090502695	Warranty card	MTDC5012CA--Q	1	
V902	0094400463	Transistor	2SC2688(L)----E-A+D27	1	
R927	0094100791	Resister	RY17-2W-15kΩ±5%-20-C-A	1	
K9N	0094300063	Connect housing	TJC2-2A	1	
C939	0094201356	Capacitor	CT81-10-2B4-2KV-1000PF-K-07-B-A	1	
C935	0094201295	Capacitor	CD110X-250V-22μF-M-05-E-A	1	

List of Parts

Location	Material code	Parts name	Type	Qt. (Unit)	Remark
W1001	0090400787	Wire	JT4361-C0145Q	1	
W1002	0090400788	Wire	JT5391-C0146Q	1	
XS901	0094300290	Connect housing	GZS10-2-AC2-DG	1	
	0094001381	Main PCB assembly	BXC5005-----Q	1	
XP1001	0090400812	Wire	JT4351-70153Q	1	
SW1008	0094300202	Audio/video terminal	AV3-8.4-6AK	1	
R1009	0094100793	Resister	RT13-1/6W-2.4KΩ±5%------T	1	
R1010	0094100793	Resister	RT13-1/6W-2.4KΩ±5%------T	1	
	0091800260	PCB	PX65023A----Q	1	
C04	0094201681	Capacitor	CL21X-63V-0.22μF-J-05-C-A	1	
C02	0094201247	Capacitor	CL21X-63V-0.47μF-K------F	1	
C15	0094200096	Capacitor	CL21X-100V-0.1μF-J------F	1	
C06	0094201111	Capacitor	CD110-25V-4.7μF-M------F	1	
C07	0094201111	Capacitor	CD110-25V-4.7μF-M------F	1	
C10	0094201577	Capacitor	CD110-25V-10μF-M-05-F-A	1	
C14	0094200640	Capacitor	CD110-25V-10μF-M------F	1	
C18	0094200581	Capacitor	CD110X-25V-100μF-M------F	1	
G01	0094600119	Oscillator	CSB503F58+D53	1	
XS611	0094300135	Connect housing	TJC8-6A	1	
XS612	0094300135	Connect housing	TJC8-6A	1	
N641	0094400796	IC	TDA9850	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	
C705	0094201083	Capacitor	CC1-06-CH-63V-18pF-J------F	1	
C819	0094201088	Capacitor	CC1-08-CH-63V-100pF-J------F	1	
C140	0094201227	Capacitor	CC1-08-SL-63V-470pF-J------F	1	
C730	0094200980	Capacitor	CT1-05-2B4-63V-470PF-K------F	1	
C510	0094200980	Capacitor	CT1-05-2B4-63V-470PF-K------F	1	
C771	0094200980	Capacitor	CT1-05-2B4-63V-470PF-K------F	1	
C772	0094200980	Capacitor	CT1-05-2B4-63V-470PF-K------F	1	
C123	0094200981	Capacitor	CT1-06-2B4-63V-1000pF-K------F	1	
C315	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	
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	
C514	0094201040	Capacitor	CT1-08-2F4-63V-0.01μF-Z------F	1	
C607	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	
C627	0094201040	Capacitor	CT1-08-2F4-63V-0.01μF-Z------F	1	

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Location	Material code	Parts name	Type	Qt. (Unit)	Remark
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	
C802	0094201040	Capacitor	CT1-08-2F4-63V-0.01μF-Z------F	1	
C804	0094201040	Capacitor	CT1-08-2F4-63V-0.01μF-Z------F	1	
C812	0094201040	Capacitor	CT1-08-2F4-63V-0.01μF-Z------F	1	
C432	0094201237	Capacitor	CT1-10-2B4-500V-1000PF-K------F	1	
C433	0094201238	Capacitor	CT1-14-2B4-500V-3900pF-K------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	
C602	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C611	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C621	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C733	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C734	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C806	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C807	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C808	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C809	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C810	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C811	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	
C612	0094200433	Capacitor	CD110X-16V-100μF-M------F	1	
C613	0094200433	Capacitor	CD110X-16V-100μF-M------F	1	
C622	0094200433	Capacitor	CD110X-16V-100μF-M------F	1	
C623	0094200433	Capacitor	CD110X-16V-100μF-M------F	1	
C631	0094200433	Capacitor	CD110X-16V-100μF-M------F	1	
C824	0094200433	Capacitor	CD110X-16V-100μF-M------F	1	
C404	0094200989	Capacitor	CD110-16V-220μF-M------F	1	
C801	0094200989	Capacitor	CD110-16V-220μF-M------F	1	
C402	0094200042	Capacitor	CD110-50V-0.22μF-M------F	1	
C103	0094200044	Capacitor	CD110-50V-2.2μF-M------F	1	
C618	0094200044	Capacitor	CD110-50V-2.2μF-M------F	1	
C628	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	
C823	0094200469	Capacitor	CD110X-16V-47μF-M------F	1	
C825	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	
C805	0094200469	Capacitor	CD110X-16V-47μF-M------F	1	
C203	0094201111	Capacitor	CD110-25V-4.7μF-M------F	1	
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	

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Location	Material code	Parts name	Type	Qt. (Unit)	Remark
C509	0094200991	Capacitor	CD110-35V-100μF-M------F	1	
C301	0094200990	Capacitor	CD110-35V-47μF-M------F	1	
C117	0094200043	Capacitor	CD110-50V-1μF-M------F	1	
C124	0094200043	Capacitor	CD110-50V-1μF-M------F	1	
C204	0094200043	Capacitor	CD110-50V-1μF-M------F	1	
C212	0094200043	Capacitor	CD110-50V-1μF-M------F	1	
C412	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	
C407	0094200043	Capacitor	CD110-50V-1μF-M------F	1	
C456	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	
C210	0094200016	Capacitor	CD110-50V-0.47μF-M------F	1	
C401	0094200016	Capacitor	CD110-50V-0.47μF-M------F	1	
C444	0094201045	Capacitor	CD110-160V-4.7μF------F	1	
C616	0094200096	Capacitor	CL21X-100V-0.1μF-J------F	1	
C626	0094200096	Capacitor	CL21X-100V-0.1μF-J------F	1	
C403	0094201465	Capacitor	CL21X-63V-0.47μF-J------F	1	
C207	0094201114	Capacitor	CL11-100V-0.01μF-K------F	1	
C303	0094200096	Capacitor	CL21X-100V-0.1μF-J------F	1	
C304	0094200096	Capacitor	CL21X-100V-0.1μF-J------F	1	
C120	0094201232	Capacitor	CL11-100V-0.022μF-K------F	1	
C408	0094200096	Capacitor	CL21X-100V-0.1μF-J------F	1	
C511	0094201459	Capacitor	CL11-63V-1000pF-J------F	1	
C459	0094201231	Capacitor	CL11-100V-0.1μF-J------F	1	
VD401	0094400049	Diode	1N4148------T	1	
VD402	0094400049	Diode	1N4148------T	1	
VD513	0094400049	Diode	1N4148------T	1	
VD507	0094400049	Diode	1N4148------T	1	
VD508	0094400049	Diode	1N4148------T	1	
VD301	0094400049	Diode	1N4148------T	1	
VD553	0094400049	Diode	1N4148------T	1	
VD611	0094400049	Diode	1N4148------T	1	
VD612	0094400049	Diode	1N4148------T	1	
VD620	0094400049	Diode	1N4148------T	1	
VD621	0094400049	Diode	1N4148------T	1	
VD622	0094400049	Diode	1N4148------T	1	
VD631	0094400049	Diode	1N4148------T	1	
VD641	0094400049	Diode	1N4148------T	1	
VD704	0094400049	Diode	1N4148------T	1	
VD801	0094400049	Diode	1N4148------T	1	
VD451	0094400388	Diode	EM01Z------T	1	
VD512	0094400767	Diode	EG01C------T	1	
VD411	0094400390	Diode	EU1------T	1	
VD472	0094400390	Diode	EU1------T	1	
VD474	0094400390	Diode	EU1------T	1	
VD436	0094400101	Diode	EU2A------T	1	

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Location	Material code	Parts name	Type	Qt. (Unit)	Remark
VD503	0094400453	Diode	RM11C------T	1	
VD504	0094400453	Diode	RM11C------T	1	
VD505	0094400453	Diode	RM11C------T	1	
VD506	0094400453	Diode	RM11C------T	1	
VD510	0094400769	Diode	EU2------T	1	
VD511	0094400769	Diode	EU2------T	1	
VD703	0094400290	Diode	HZ4A2------T	1	
VD561	0094400291	Diode	HZ6C3------T	1	
VD412	0094400292	Diode	HZ7C1------T	1	
VD509	0094400770	Diode	HZ15C------T	1	
L102	0094500268	inductance	LGA0307-15μH±10%------T	1	
L121	0094500268	Inductance	LGA0307-15μH±10%------T	1	
L701	0094500269	Inductance	LGA0307-39μH±10%------T	1	
L451	0094500270	Inductance	LGA0410-18μH±10%------T	1	
	0090100079	Rivet	φ1.6mm*3.0mm	15	
	0090100078	Rivet	φ2.3mm*3.0mm	13	
	0091800258	PCB	PA-5004-----Q	1	
V302	0094400460	Transistor	2SA1015(Y)------F	1	
V501	0094400460	Transistor	2SA1015(Y)------F	1	
V631	0094400460	Transistor	2SA1015(Y)------F	1	
V702	0094400460	Transistor	2SA1015(Y)------F	1	
V301	0094400461	Transistor	2SC1815(Y)------F	1	
V552	0094400461	Transistor	2SC1815(Y)------F	1	
V553	0094400461	Transistor	2SC1815(Y)------F	1	
V632	0094400461	Transistor	2SC1815(Y)------F	1	
V633	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	
V801	0094400461	Transistor	2SC1815(Y)------F	1	
V802	0094400461	Transistor	2SC1815(Y)------F	1	
V803	0094400461	Transistor	2SC1815(Y)------F	1	
V804	0094400461	Transistor	2SC1815(Y)------F	1	
V821	0094400461	Transistor	2SC1815(Y)------F	1	
V102	0094400660	Transistor	2SC2216(O)------F	1	
V554	0094400442	Transistor	2SB892(S)----D-A+D62	1	
V431	0094400857	Transistor	2SC2383(O)------F+D222	1	
R452	0094100064	Resister	RT13-1/6W-1Ω±5%------T	1	
R511	0094100065	Resister	RT13-1/6W-10Ω±5%------T	1	
R624	0094101066	Resister	RT15-1/2W-39Ω±5%------T	1	
R111	0094100783	Resister	RT13-1/6W-82Ω±5%------T	1	
R808	0094100783	Resister	RT13-1/6W-82Ω±5%------T	1	
R818	0094100783	Resister	RT13-1/6W-82Ω±5%------T	1	
R825	0094100783	Resister	RT13-1/6W-82Ω±5%------T	1	
R838	0094100783	Resister	RT13-1/6W-82Ω±5%------T	1	
R834	0094100783	Resister	RT13-1/6W-82Ω±5%------T	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	

Location	Material code	Parts name	Type	Qt. (Unit)	Remark
R242	0094100017	Resister	RT13-1/6W-100Ω±5%------T	1	
R615	0094100804	Resister	RT13-1/6W-2.2Ω-J------T	1	
R625	0094100804	Resister	RT13-1/6W-2.2Ω-J------T	1	
R766	0094100017	Resister	RT13-1/6W-100Ω±5%------T	1	
R770	0094100017	Resister	RT13-1/6W-100Ω±5%------T	1	
R774	0094100017	Resister	RT13-1/6W-100Ω±5%------T	1	
R110	0094100019	Resister	RT13-1/6W-220Ω±5%------T	1	
R127	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	
R803	0094100019	Resister	RT13-1/6W-220Ω±5%------T	1	
R243	0094100795	Resister	RT13-1/6W-270Ω±5%------T	1	
R122	0094100068	Resister	RT13-1/6W-330Ω±5%------T	1	
R725	0094100068	Resister	RT13-1/6W-330Ω±5%------T	1	
R727	0094100020	Resister	RT13-1/6W-470Ω±5%------T	1	
R728	0094100020	Resister	RT13-1/6W-470Ω±5%------T	1	
R778	0094100021	Resister	RT13-1/6W-560Ω±5%------T	1	
R780	0094100021	Resister	RT13-1/6W-560Ω±5%------T	1	
R409	0094100792	Resister	RT13-1/6W-680Ω±5%------T	1	
R707	0094100792	Resister	RT13-1/6W-680Ω±5%------T	1	
R800	0094100792	Resister	RT13-1/6W-680Ω±5%------T	1	
R404	0094100023	Resister	RT13-1/6W-1kΩ±5%------T	1	
R103	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R109	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R119	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R121	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R201	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R268	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R305	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R402	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R458	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R509	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R611	0094100792	Resister	RT13-1/6W-680Ω±5%------T	1	
R621	0094100792	Resister	RT13-1/6W-680Ω±5%------T	1	
R819	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R821	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R833	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R837	0094100023	Resister	RT13-1/6W-1KΩ±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	
R507	0094100025	Resister	RT13-1/6W-1.5kΩ±5%------T	1	
R508	0094100025	Resister	RT13-1/6W-1.5kΩ±5%------T	1	
R722	0094100025	Resister	RT13-1/6W-1.5kΩ±5%------T	1	
R706	0094100025	Resister	RT13-1/6W-1.5kΩ±5%------T	1	
R307	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	
R760	0094100026	Resister	RT13-1/6W-2.2KΩ±5%------T	1	
R244	0094100027	Resister	RT13-1/6W-2.7KΩ±5%------T	1	
R310	0094100027	Resister	RT13-1/6W-2.7KΩ±5%------T	1	

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Location	Material code	Parts name	Type	Qt. (Unit)	Remark
R311	0094100027	Resister	RT13-1/6W-2.7KΩ±5%------T	1	
R705	0094100027	Resister	RT13-1/6W-2.7KΩ±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	
R742	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R743	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R512	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R820	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R850	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R813	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R809	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R811	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R811	0094100028	Resister	RT13-1/6W-3.3KΩ±5%------T	1	
R809	0094100028	Resister	RT13-1/6W-3.3KΩ±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	
R451	0094100071	Resister	RT13-1/6W-3.9KΩ±5%------T	1	
R274	0094100029	Resister	RT13-1/6W-4.7KΩ±5%------T	1	
R553	0094100029	Resister	RT13-1/6W-4.7KΩ±5%------T	1	
R703	0094100029	Resister	RT13-1/6W-4.7KΩ±5%------T	1	
R814	0094100793	Resister	RT13-1/6W-2.4KΩ±5%------T	1	
R815	0094100029	Resister	RT13-1/6W-4.7KΩ±5%------T	1	
R826	0094100793	Resister	RT13-1/6W-2.4KΩ±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	
R822	0094100029	Resister	RT13-1/6W-4.7KΩ±5%------T	1	
R108	0094100721	Resister	RT13-1/6W-5.6KΩ±5%------T	1	
R312	0094100721	Resister	RT13-1/6W-5.6KΩ±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	
R301	0094100032	Resister	RT13-1/6W-8.2KΩ±5%------T	1	
R702	0094100032	Resister	RT13-1/6W-8.2KΩ±5%------T	1	
R777	0094100032	Resister	RT13-1/6W-8.2KΩ±5%------T	1	
R779	0094100032	Resister	RT13-1/6W-8.2KΩ±5%------T	1	
R816	0094100032	Resister	RT13-1/6W-8.2KΩ±5%------T	1	
R233	0094100033	Resister	RT13-1/6W-10KΩ±5%------T	1	
R413	0094100033	Resister	RT13-1/6W-10KΩ±5%------T	1	
R414	0094100033	Resister	RT13-1/6W-10KΩ±5%------T	1	
R304	0094100033	Resister	RT13-1/6W-10KΩ±5%------T	1	
R510	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	
R630	0094100033	Resister	RT13-1/6W-10KΩ±5%------T	1	
R631	0094100033	Resister	RT13-1/6W-10KΩ±5%------T	1	
R632	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	

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Location	Material code	Parts name	Type	Qt. (Unit)	Remark
R721	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	
W408	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	
R754	0094100033	Resister	RT13-1/6W-10KΩ±5%------T	1	
R772	0094100033	Resister	RT13-1/6W-10KΩ±5%------T	1	
R775	0094100033	Resister	RT13-1/6W-10KΩ±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	
R773	0094100073	Resister	RT13-1/6W-12KΩ±5%------T	1	
R776	0094100073	Resister	RT13-1/6W-12KΩ±5%------T	1	
W804	0094100034	Resister	RT13-1/6W-15KΩ±5%------T	1	
R205	0094100779	Resister	RT13-1/6W-22kΩ±5%------T	1	
R556	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	
R748	0094100779	Resister	RT13-1/6W-22kΩ±5%------T	1	
R749	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	
R759	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	
R765	0094100779	Resister	RT13-1/6W-22kΩ±5%------T	1	
R836	0094100779	Resister	RT13-1/6W-22kΩ±5%------T	1	
R832	0094100779	Resister	RT13-1/6W-22kΩ±5%------T	1	
R701	0094100780	Resister	RT13-1/6W-27kΩ±5%------T	1	
R801	0094100780	Resister	RT13-1/6W-27kΩ±5%------T	1	
R824	0094100780	Resister	RT13-1/6W-27kΩ±5%------T	1	
R101	0094100036	Resister	RT13-1/6W-33kΩ±5%------T	1	
R306	0094100710	Resister	RT13-1/6W-39KΩ±5%------T	1	
R457	0094100710	Resister	RT13-1/6W-39KΩ±5%------T	1	
R120	0094100710	Resister	RT13-1/6W-39KΩ±5%------T	1	
R206	0094100800	Resister	RT13-1/6W-47kΩ±5%------T	1	
R732	0094100800	Resister	RT13-1/6W-47kΩ±5%------T	1	
R308	0094100800	Resister	RT13-1/6W-47kΩ±5%------T	1	
R309	0094100032	Resister	RT13-1/6W-8.2KΩ±5%------T	1	
R593	0094100038	Resister	RT13-1/6W-56KΩ±5%------T	1	
R802	0094100039	Resister	RT13-1/6W-68KΩ±5%------T	1	
R835	0094100039	Resister	RT13-1/6W-68KΩ±5%------T	1	
R831	0094100039	Resister	RT13-1/6W-68KΩ±5%------T	1	

List of Parts

Location	Material code	Parts name	Type	Qt. (Unit)	Remark
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	
R302	0094100077	Resister	RT13-1/6W-100KΩ±5%------T	1	
R804	0094100077	Resister	RT13-1/6W-100KΩ±5%------T	1	
R554	0094100734	Resister	RT13-1/6W-150KΩ±5%------T	1	
R729	0094100734	Resister	RT13-1/6W-150KΩ±5%------T	1	
R700	0094100734	Resister	RT13-1/6W-150KΩ±5%------T	1	
R303	0094100943	Resister	RT13-1/6W-270KΩ±5%------T	1	
R726	0094100943	Resister	RT13-1/6W-270KΩ±5%------T	1	
R403	0094100881	Resister	RT13-1/6W-330KΩ±5%------T	1	
R709	0094100944	Resister	RT13-1/6W-390KΩ±5%------T	1	
R204	0094100726	Resister	RT13-1/6W-560KΩ±5%------T	1	
R513	0094100733	Resister	RT13-1/6W-1MΩ±5%------T	1	
R514	0094100733	Resister	RT13-1/6W-1MΩ±5%------T	1	
R207	0094100945	Resister	RT13-1/6W-2MΩ±5%------T	1	
R446	0094100949	Resister	RT14-1/4W-220KΩ±5%------T	1	
R400	0094100947	Resister	RT14-1/4W-270Ω±5%------T	1	
R552	0094101283	Resister	RT15-1/2W-91KΩ±5%------T	1	
R461A	0094100952	Resister	RT15-1/2W-120Ω±5%------T	1	
R232	0094100953	Resister	RT15-1/2W-1.5KΩ±5%------T	1	
R460	0094100951	Resister	RT15-1/2W-180Ω±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	
R545	0094101138	Resister	VR37-1/2W-5.6MΩ±10%------T+D242	1	
R562	0094000862	Fuse	275/2A	1	
R569	0094000686	Fuse	275/1A	1	
N705	0094400855	IC	UPC574J------F	1	
W758	0094101102	Jumper	φ0.6mm/5mm------B	1	
W702	0094101102	Jumper	φ0.6mm/5mm------B	1	
W688	0094101102	Jumper	φ0.6mm/5mm------B	1	
C822	0094101102	Jumper	φ0.6mm/5mm------B	1	
W213	0094101102	Jumper	φ0.6mm/5mm------B	1	
W591	0094101102	Jumper	φ0.6mm/5mm------B	1	
W555	0094101102	Jumper	φ0.6mm/5mm------B	1	
W763	0094101102	Jumper	φ0.6mm/5mm------B	1	
W110	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
R116	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	
W203	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
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	
W221	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W403	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W409	0094101103	Jumper	φ0.6mm/7.5mm------B	1	

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Location	Material code	Parts name	Type	Qt. (Unit)	Remark
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	
W500	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W512	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W562	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
VD592	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W638	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W607	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W610	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W609	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W616	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W620	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W608	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W606	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W405	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W415	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W736	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W759	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W617	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
R620	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W605	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W703	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W713	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	
W734	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W735	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W803	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	
W755	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W756	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W426	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W808	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W631	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W124	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W127	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W108	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W107	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W760	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W301	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W401	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W425	0094101103	Jumper	φ0.6mm/7.5mm------B	1	

Location	Material code	Parts name	Type	Qt. (Unit)	Remark
W302	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W810	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W838	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W834	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W419	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W109	0094101104	Jumper	φ0.6mm/10mm------B	1	
W571	0094101104	Jumper	φ0.6mm/10mm------B	1	
R610	0094101104	Jumper	φ0.6mm/10mm------B	1	
W111	0094101104	Jumper	φ0.6mm/10mm------B	1	
W441	0094101104	Jumper	φ0.6mm/10mm------B	1	
W122	0094101104	Jumper	φ0.6mm/10mm------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	
W404	0094101104	Jumper	φ0.6mm/10mm------B	1	
W407	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	
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	
W624	0094101104	Jumper	φ0.6mm/10mm------B	1	
W704	0094101104	Jumper	φ0.6mm/10mm------B	1	
W723	0094101104	Jumper	φ0.6mm/10mm------B	1	
W802	0094101104	Jumper	φ0.6mm/10mm------B	1	
W507	0094101104	Jumper	φ0.6mm/10mm------B	1	
W557	0094101104	Jumper	φ0.6mm/10mm------B	1	
W558	0094101104	Jumper	φ0.6mm/10mm------B	1	
W601	0094101104	Jumper	φ0.6mm/10mm------B	1	
W570	0094101104	Jumper	φ0.6mm/10mm------B	1	
W604	0094101104	Jumper	φ0.6mm/10mm------B	1	
W602	0094101104	Jumper	φ0.6mm/10mm------B	1	
W102	0094101104	Jumper	φ0.6mm/10mm------B	1	
W433	0094101104	Jumper	φ0.6mm/10mm------B	1	
W628	0094101104	Jumper	φ0.6mm/10mm------B	1	
W629	0094101104	Jumper	φ0.6mm/10mm------B	1	
W632	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	
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	
W724	0094101104	Jumper	φ0.6mm/10mm------B	1	

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Location	Material code	Parts name	Type	Qt. (Unit)	Remark
W725	0094101104	Jumper	φ0.6mm/10mm------B	1	
W726	0094101104	Jumper	φ0.6mm/10mm------B	1	
W727	0094101104	Jumper	φ0.6mm/10mm------B	1	
W739	0094101104	Jumper	φ0.6mm/10mm------B	1	
W503	0094101104	Jumper	φ0.6mm/10mm------B	1	
W711	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W805	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W806	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W807	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W762	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W627	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W432	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W434	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W626	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W761	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W611	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W729	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W737	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W125	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W709	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W728	0094101105	Jumper	φ0.6mm/12.5mm------B	1	
W553	0094101106	Jumper	φ0.6mm/15mm------B	1	
W554	0094101106	Jumper	φ0.6mm/15mm------B	1	
W442	0094101106	Jumper	φ0.6mm/15mm------B	1	
W443	0094101106	Jumper	φ0.6mm/15mm------B	1	
W738	0094101106	Jumper	φ0.6mm/15mm------B	1	
W472	0094101106	Jumper	φ0.6mm/15mm------B	1	
W751	0094101106	Jumper	φ0.6mm/15mm------B	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	
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	
C931	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
C932	0094200008	Capacitor	CD110-16V-10μF-M------F	1	
V931	0094400460	Transistor	2SA1015(Y)------F+D422	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	
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	
R906	0094100021	Resister	RT13-1/6W-560Ω±5%------T	1	
R916	0094100792	Resister	RT13-1/6W-680Ω±5%------T	1	
R926	0094100792	Resister	RT13-1/6W-680Ω±5%------T	1	
R931	0094100023	Resister	RT13-1/6W-1KΩ±5%------T	1	
R933	0094100027	Resister	RT13-1/6W-2.7KΩ±5%------T	1	
R900	0094100033	Resister	RT13-1/6W-10KΩ±5%------T	1	
R932	0094100034	Resister	RT13-1/6W-15KΩ±5%------T	1	

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Location	Material code	Parts name	Type	Qt. (Unit)	Remark
R940	0094100946	Resister	RT14-1/4W-33Ω±5%------T	1	
R935	0094101306	Resister	RT15-1/2W-1MΩ±5%------T	1	
R908	0094101118	Resister	RS11-1/2W-2.7KΩ±5%------T	1	
R918	0094101118	Resister	RS11-1/2W-2.7KΩ±5%------T	1	
R928	0094101118	Resister	RS11-1/2W-2.7KΩ±5%------T	1	
W903	0094101103	Jumper	φ0.6mm/7.5mm------B	1	
W901	0094101104	Jumper	φ0.6mm/10mm------B	1	
W902	0094101104	Jumper	φ0.6mm/10mm------B	1	
L901	0094101104	Jumper	φ0.6mm/10mm------B	1	
VD901	0094400049	Diode	1N4148------T	1	
VD911	0094400049	Diode	1N4148------T	1	
VD921	0094400049	Diode	1N4148------T	1	
VD900	0094400329	Diode	EU2Z------T	1	
	0091800129	PCB	PX45009-----Q	1	
C08	0094202341	Capacitor	CL21X/CL23B-50V-0.015μF-J-----F	1	
C13	0094201093	Capacitor	CL21X-50V-0.047μF-K------F	1	
C17	0094200096	Capacitor	CL21X-100V-0.1μF-J------F	1	
C11	0094200043	Capacitor	CD110-50V-1μF-M------F	1	
C12	0094200043	Capacitor	CD110-50V-1μF-M------F	1	
CL	0094200044	Capacitor	CD110-50V-2.2μF-M------F	1	
CR	0094200044	Capacitor	CD110-50V-2.2μF-M------F	1	
C03	0094201111	Capacitor	CD110-25V-4.7μF-M------F	1	
C16	0094201111	Capacitor	CD110-25V-4.7μF-M------F	1	
C01	0094200640	Capacitor	CD110-25V-10μF-M------F	1	
C05	0094200640	Capacitor	CD110-25V-10μF-M------F	1	
C09	0094200640	Capacitor	CD110-25V-10μF-M------F	1	
C10	0094200640	Capacitor	CD110-25V-10μF-M------F	1	
C20	0094200640	Capacitor	CD110-25V-10μF-M------F	1	
C21	0094200640	Capacitor	CD110-25V-10μF-M------F	1	
C19	0094200581	Capacitor	CD110X-25V-100μF-M------F	1	
R20	0094100017	Resister	RT13-1/6W-100Ω±5%------T	1	
R21	0094100017	Resister	RT13-1/6W-100Ω±5%------T	1	
R01	0094100026	Resister	RT13-1/6W-2.2KΩ±5%------T	1	
R03	0094101610	Resister	RJ13-1/6W-160Ω±1%------T	1	
R02	0094101611	Resister	RJ13-1/6W-8.2KΩ±1%------T	1	
W01	0094101102	Jumper	φ0.6mm/5mm------B	1	
W02	0094101102	Jumper	φ0.6mm/5mm------B	1	
W03	0094101102	Jumper	φ0.6mm/5mm------B	1	
W04	0094101102	Jumper	φ0.6mm/5mm------B	1	
	0091800261	PCB	PX65024A----Q	1	
	0094001804	Brack assembly	BJA5008-----Q	1	
	0090201439	Bracket	MTAC5017AC--Q	1	
	0090200452	Clamp	040+D584	1	
	0090600028	Screw	SJ2825-87 ST3*10F	5	
	0090201452	Plastic board	MTAH5010AA--Q	1	
	0090802602	Heat sink assembly	BJB5069-----Q	1	
	0090800175	Heat sink assembly	BJB5011-----Q	1	
	0090100114	Pad	MTBH2002BA--Q	1	
	0094400465	Transistor	2SD1651----B-A	1	
	0094400470	IC	LA7840	1	

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Location	Material code	Parts name	Type	Qt. (Unit)	Remark
	0094102101	Resister	RYG2-10W-3.3KΩ±5%-07-L-A	1	
	0090400826	Wire	JB11419C----Q (UL)	2	
	0094500335	Inductance	ZZ0003------N	1	
	0090600067	Screw	GB9074.4-88 M3*10	1	
	0090600067	Screw	GB9074.4-88 M3*10	1	
	0090600074	Screw	GB9074.4-88 M3*8	1	
	0090600066	Nut	GB6170-86 M3	3	
	0090200454	Clamp	-71	1	
	0090200771	Clamp	TMM0A404	1	
	0090802600	Heat sink assembly	BJB5063-----Q	1	
	0090100175	Heat sink	MTBT5004BC--Q	1	
	0094400665	Transistor	D2012----C-A	1	
	0090600124	Screw	SJ2832-87 ST3*8F	1	
	0090802597	Heat sink assembly	BJB5066-----Q	2	
	0090100274	Heat sink	MTBT5005BB--Q	1	
	0094400450	IC	L7805CV	1	
	0090600074	Screw	GB9074.4-88 M3*8	1	
	0090600066	Nut	GB6170-86 M3	1	
	0090802596	Heat sink assembly	BJB5065-----Q	1	
	0090100274	Heat sink	MTBT5005BB--Q	1	
	0094400357	IC	L7812CV D656	1	
	0090600074	Screw	GB9074.4-88 M3*8	1	
	0090600066	Nut	GB6170-86 M3	1	
	0090802595	Heat sink assembly	BJB5064-----Q	1	
	0090800173	Heat sink assembly	BJB5010-----Q	1	
	0094401093	IC	STR-F6654	1	
	0090600070	Screw	GB9074.4-88 M3*14	1	
	0090600066	Nut	GB6170-86 M3	1	
	0090802598	Heat sink assembly	BJB5067-----Q	2	
	0090100119	Heat sink assembly	MTBT5002BA--Q	1	
	0094400527	IC	LA4287	1	
	0090600074	Screw	GB9074.4-88 M3*8	1	
	0090600066	Nut	GB6170-86 M3	1	
FU501	0090100118	Fuser holder	FC503	1	
FU501	0090100118	Fuser holder	FC503	1	
A701	0094000109	Infrared sensor	RPM6938	1	
A101	0094003734	Tuner	ENV56DB4G3	1	
C512	0094200980	Capacitor	CT1-05-2B4-63V-470PF-K------F	1	
C125	0094201783	Capacitor	CC1-06-CH-63V-18PF-J-05-C-A	1	
C126	0094201597	Capacitor	CC1-06-CH-63V-39pF-J-05-C-A	1	
C729	0094201259	Capacitor	CT1-08-2F4-63V-0.01μF-K-05-C-A	1	
C533	0094201331	Capacitor	2200pF-M-AC400V-10-C-A+D677	1	
C532	0094200841	Capacitor	DE0910B471K-KX-10-C-A	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	
C554	0094201142	Capacitor	CT81-10-2B4-1KV-470pF-K-10-C-A	1	
C516	0094201216	Capacitor	CT81-10-2B4-2KV-220PF-K-10-C-A	1	
C513	0094201692	Capacitor	CT81-10-2B4-2KV-330PF-K-07-C-A	1	

Location	Material code	Parts name	Type	Qt. (Unit)	Remark
C551	0094201057	Capacitor	CT81-10B-2B4-2KV-470PF-K-10-C-A	1	
C708	0094201251	Capacitor	CD110-50V-4.7μF-M-05-F-A	1	
C803	0094201281	Capacitor	CD110-16V-470μF-M-05-F-A	1	
C615	0094201009	Capacitor	CD110-25V-470μF-M-05-E-A	1	
C625	0094201009	Capacitor	CD110-25V-470μF-M-05-E-A	1	
C564	0094201403	Capacitor	CD110-25V-2200μF-M-07-G-A	1	
C306	0094201015	Capacitor	CD110-35V-470μF-M-05-E-A	1	
C302	0094201016	Capacitor	CD110-35V-1000μF-M-05-E-A	1	
C606	0094201016	Capacitor	CD110-35V-1000μF-M-05-E-A	1	
C452	0094201308	Capacitor	CD110-35V-2200μF-M-07-E-A	1	
C457	0094201308	Capacitor	CD110-35V-2200μF-M-07-E-A	1	
C565	0094201308	Capacitor	CD110-35V-2200μF-M-07-E-A	1	
C136	0094201279	Capacitor	CD110-50V-1μF-M-05-F-A	1	
C305	0094201777	Capacitor	CD72-50V-6.8μF-M-05-E-A	1	
C434	0094200793	Capacitor	CD110X-160V-10μF-M-05-G-A	1	
C561	0094202152	Capacitor	CD287-160V-220μF-M-07-E-A	1	
C474	0094201295	Capacitor	CD110X-250V-22μF-M-05-E-A	1	
C507	0094201595	Capacitor	CD293-250V-330μF-M------N	1	
C231	0094201529	Capacitor	CD71-50V-1μF-M-05-F-A	1	
C406	0094201169	Capacitor	CL11-100V-0.033μF-K-05-C-A	1	
C458	0094201254	Capacitor	CL21X-63V-0.1μF-J-05-C-A	1	
C501	0094202178	Capacitor	MKT61-275VAC-0.22μF-K-22-G-A	1	
C502	0094202178	Capacitor	MKT61-275VAC-0.22μF-K-22-G-A	1	
C441	0094201593	Capacitor	CBB13-200V-0.33μF-J-20-B-A	1	
C437	0094201496	Capacitor	CBB13-400V-0.033μF-J-15-G-A	1	
C515	0094201698	Capacitor	CBB13-400V-0.022μF-J-10-B-A	1	
C435	0094201324	Capacitor	CBB81-1600V-9100PF-J-22-B-A	1	
C438	0094201057	Capacitor	CT81-10B-2B4-2KV-470PF-K-10-C-A	1	
RT501	0094400452	Resister	PTH451A7R0Q21	1	
VD555	0094400849	Diode	RU4YX------N	1	
	0094500533	Inductance	TY6×2×6------N	1	
VD554	0094400768	Diode	RGP15D------T	1	
	0094500533	Inductance	TY6×2×6------N	1	
VD551	0094401113	Diode	RU3A------T	1	
	0094500533	Inductance	TY6×2×6------N	1	
VD435	0094401123	Diode	ERD07-15L-20-S--	1	
VD701	0094400282	Diode	BT205-L	1	
	0090200119	LED holder	MTAJ0003AG--Q	1	
FU501	0094000150	Fuse	T2.5A/250V	1	
XS604	0094300132	Connect housing	TJC8-6Y	1	
XS603	0094300132	Connect housing	TJC8-6Y	1	
XS402	0094300307	Connect housing	TJC1-4A	1	
XS502A	0094300193	Connect housing	TJC1-3A	2	
XS401	0094300112	Connect housing	TJC3-4A	1	
XS403	0094300104	Connect housing	TJC3-5A	1	
XS501	0094300063	Connect housing	TJC2-2A	1	
XS601	0094300092	Connect housing	TJC3-2A	1	
XS602	0094300092	Connect housing	TJC3-2A	1	
XS801	0094300172	Connect housing	AV6-8.4-14A	1	
XS802	0094300173	S-Video terminal	SZ4-9-2K	1	

List of Parts

Location	Material code	Parts name	Type	Qt. (Unit)	Remark
W1003	0090400186	Wire	JT2211-C0081Q	1	
XS806	0094300112	Connect housing	TJC3-4A	1	
RL551	0094000801	Relay	OMIT-SS-112LM	1	
RL552	0094101104	Relay	φ0.6mm/10mm------B	1	
L431	0094500336	Inductance	YC0008-15-A-A	1	
L432	0094500336	Inductance	YC0008-15-A-A	1	
L504	0094500336	Inductance	YC0008-15-A-A	1	
L505	0094500336	Inductance	YC0008-15-A-A	1	
L506	0094500336	Inductance	YC0008-15-A-A	1	
L441	0094500382	Inductance	AC41B	1	
L501	0094500338	Filter	JLB1606	1	
L502	0094500338	Filter	JLB1606	1	
L301	0094500274	Inductance	AA36	1	
T101	0094500340	Inductance	HA6019	1	
N702	0094400636	IC	CAT24C08P	1	
N501	0094400036	Photo coupler	PC817B	1	
N801	0094400417	IC	TC4053BP	1	
N101	0094400457	IC	LA76814K	1	
N701	0094401090	IC	LC863232A-5V57+D696	1	
R472	0094101006	Resister	RF10-1W-1Ω±5%-15-C-A	1	
R474	0094101006	Resister	RF10-1W-1Ω±5%-15-C-A	1	
R491	0094101008	Resister	RF10-2W-3.3Ω±5%-20-C-A	1	
R504	0094101617	Resister	RF10-2W-0.1Ω±5%-20-C-A	1	
R314	0094102448	Resister	RY15-1/2W-560Ω±5%-10-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	
R506	0094102115	Resister	RY16-1W-680Ω±5%-15-C-A	1	
R459	0094100968	Resister	RY16-1W-1Ω±5%-15-C-A	1	
R313	0094100969	Resister	RY16-1W-5.1-J-15-C-A	1	
R503	0094101577	Resister	RY17-2W-68KΩ±5%-20-C-A	1	
R515	0094101577	Resister	RY17-2W-68KΩ±5%-20-C-A	1	
R718	0094100975	Resister	RY17-2W-10KΩ±5%-20-C-A	1	
R551	0094101525	Resister	RY17-2W-100KΩ±5%-20-C-A	1	
R502	0094101136	Resister	RXG6-6W-1Ω±5%	1	
R471A	0094101137	Resister	RX27-5-6W-3.9Ω±5%	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	
T431	0094500341	Transformer	JDT1904	1	
T471	0094500685	Transformer	JF0501-90827	1	
T511	0094500679	Transformer	BCK-90-01	1	
RP551	0094100979	Arrestor	W206-2AL-2kΩ	1	
RP302	0094100980	Arrestor	W206-2AL-10kΩ	1	
RP301	0094100981	Arrestor	W206-2AL-50kΩ	1	
Z101	0094600070	Filter	LBN45U	1	
G701	0094600068	Oscillator	32.768KHz	1	
G201	0094600071	Oscillator	JA25A (3.579545MHZ)	1	

16. Damageable Parts List

Location	Material Code	Parts Name	Type	Qt. (unit)	Remark
XS901	0094300290	Connect housing	GZS10-2-AC2-DGV	1	
G01	0094600119	Oscillator	CSB503F58	1	
N641	0094400796	IC	TDA9850	1	
V301	0094101006	Transistor	2SC1815(Y)------F	15	
V432	0094400465	Transistor	2SD1651----B-A	1	
V513	0094401093	IC	STR-F6654	1	
N801	0094400417	IC	TC4053BP	1	V
V601	0094400527	IC	LA4287	2	
RT501	0094400452	Resister	PTH451A7R0Q21	1	
N101	0094400457	IC	LA76814K	1	V
XS801	0094300172	Connect housing	AV6-8.4-14A	1	
N451	0094400470	IC	LA7840	1	V
N702	0094400636	IC	CAT24C08P	1	V
XS802	0094300173	S-Video terminal	SZ4-9-2K	1	
N701	0094401090	IC	LC863232A-5V57	1	V

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=1000Ω,M=1000KΩ
3.The unit of capacitance is μF(microfarad). 1pF=10^{-6}μF.

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 ---- 100μF ± 20%
Type Voltage Value Tolerance

* 104 =10×10^4 223=22×10^3

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

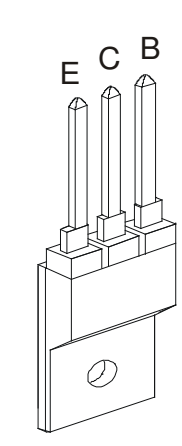
PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
T	Carbon	F	±1%
S	Solid	J	±5%
J	Metal	K	±10%
Y	Oxide	M	±20%
F	Fuse	G	±2%

CAPACITOR

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%

Terminal view of transistors



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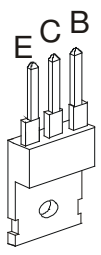
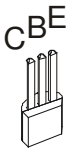


SA614-YK

KSR1010TA
KSR2010TA



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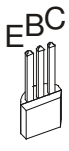
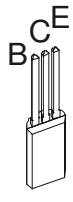


BC548-CTA



KSC2331-YTA