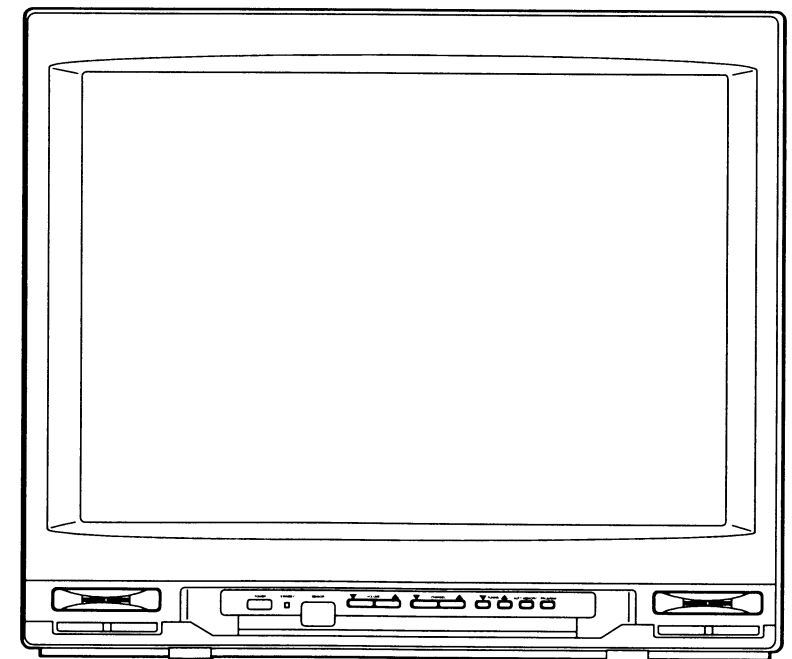




SERVICE MANUAL

20" COLOR TELEVISION

TV-2000A MK8



IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Funai Equipment. The service procedures recommended by Funai and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Funai could not possibly know, evaluate and advice the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Funai has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Funai must first use all precautions thoroughly so that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

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GENERAL SPECIFICATIONS *

Feature and Specifications

Color System:	PAL - B/G, SECAM - B/G, D/K NTSC 3.58/4.43MHz (Video Playback)
Tuning System:	Voltage Synthesized
Receiveable Channels: (OIRT + CCIR ch)	VHF-L; R1~R5 / E2~E4 ch (+CATV) VHF-H; R6~R12 E5~E12 ch (+CATV) UHF; 21~69 CATV~MID
Number of Preset:	Up to 57
Antenna Impedance:	UHF/VHF 75Ω, Unbalanced
Picture Tube:	14", Tinted
Picture Control:	Color, Brightness, Contrast Game(ON/OFF), Sharp/Soft
Picture Control Memory:	Standard Select
Speaker:	77mm Round Type, 8Ω
Output Power:	3W
Other Features:	Automatic Channel Preset Automatic Degaussing
Power Source:	220V~240V, 50Hz AC
Power Consumption:	68W
Cabinet Size:	362(W) x 327(H) x 354(D)mm
Weight:	8.5kg
Regurations:	IEC-65 / GOST Passable

Control and Switches

Power:	Push (Front)
Channel Up/Down:	Push (Front)
Volume Up/Down:	Push (Front)
Tuning Up/Down:	Push (Front)
Program:	Push (Front)
Auto Memo / Band:	Push (Front)
Remote Control: (20 keys)	Standby, 0/AV, 1~9, Cannel Up, Channel Down, Mute, Display Previous Picture Select (Bright / Contrast / Color / Video Mode) Control / Volume Up/Down Sleep

Display

LED Indicator:	Standby (Power ON, LED OFF) * When turning on the power button stand-by LED is put off.
On Screen Display:	Channel Volume GAME ON-OFF Brightness Color Contrast Sharp-Soft Sleep Timer (10~90 Minute) Tuning Indicator Band Position

Jack and Terminals

UHF/VHF Antenna:	IEC (75Ω)
Video In:	RCA
Audio In:	RCA - 2P
Earphone:	3.5m/m CES

Accessories

Remote Control Unit	
Battery:	(R6, UM3 x 2)
Owner's Manual	
Rod Antenna	

* Specifications are subject to change without notice.

PERFORMANCE SPECIFICATIONS

<Tuner>

VHF/UHF Input: 75Ω Unbalanced, IEC connector
Reference Level: 20Vp-p (CRT Green Cathode)
Input Signal: 400Hz, 30%AM

Description	Condition	Unit	Nominal	Limit
1. Intermediate Frequency	Picture	MHz	38.0	—
	Sound	MHz	31.5(D/K)	—
	Sound	MHz	32.5(B/G)	—
2. Peak Picture Sens.	VHF	dBμV	20	30
	UHF	dBμV	20	40
3. AFT Pull In Range (10mV Input)		MHz	+1.5	+1.0
		MHz	-0.7	-0.5

<Deflection>

Description	Condition	Unit	Nominal	Limit
1. Deflection Frequency	Horizontal (PAL/SECAM)	KHz	15.625	—
	(NTSC)	KHz	15.750	—
	Vertical (PAL/SECAM)	Hz	50	—
	(NTSC)	Hz	60	—
2. Linearity	Horizontal	%	—	15
	Vertical	%	—	10
3. High Voltage		KV	23	—
4. Over Scan	Horizontal	%	10	—
	Vertical	%	10	—

<Video & Chroma>

Description	Condition	Unit	Nominal	Limit
1. Misconvergence	Center	mm	—	0.4
	Side	mm	—	2.0
	Corner	mm	—	1.5
2. Brightness	APL100%	Ft-L	45	35
3. Color Temperature		°K	8000-10MPCD	—
4. Resolution	Horizontal	Line	300	—
	Vertical	Line	300	—

<Audio>

All items are measured across 8Ω load at speaker output terminal.

Description	Condition	Unit	Nominal	Limit
1. Audio Output Power	10%THD	W	3.0	2.5
2. Audio Distortion	50mW	%	2	5
3. Audio Frequency Response	-6dB	Hz	55-8.0K	—

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, our products are strictly inspected for recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Safety Precautions for TV Circuit

1. Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

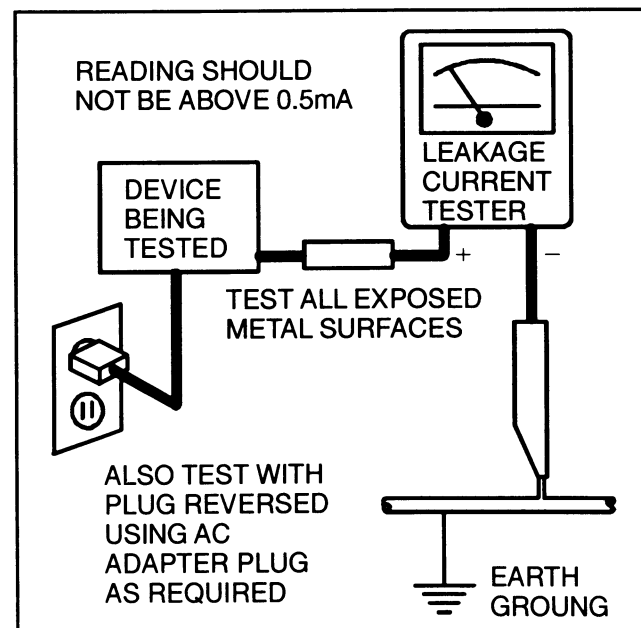
a. Be sure that no built-in protective devices are defective and have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**

b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) spacing between the picture tube and the cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.

c. **Antenna Cold Check** - With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohm or greater than 5.2 megohm, an abnormality exists that must be corrected before the instrument is returned to the customer.

Repeat this test with the instrument AC switch in the off position.

d. **Leakage Current Hot Check** - With the instrument completely reassembled, plug the AC line cord directly into a AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester. With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milli-ampere. Reverse the instrument power cord plug in the outlet and repeat the test.



ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

e. **X-Radiation and High Voltage Limits** - Because the picture tube is the primary potential source of X-radiation in solid-state TV receivers, it is specially constructed to prohibit X-radiation emissions. For continued X-radiation protection, the replacement picture tube must be the same type as the original. Also, because the picture tube shields and mounting hardware perform an X-radiation protection function, they must be correctly in place. High voltage must be measured each time servicing is performed that involves B+, horizontal deflection or high voltage. Correct operation of the X-radiation protection circuits also must be reconfirmed each time they are serviced. (X-radiation protection circuits also may be called "horizontal disable" or "hold down.") Read and apply the high voltage limits and, if the chassis is so equipped, the X-radiation protection circuit specifications given on instrument labels and in the Product Safety & X-Radiation Warning note on the service data chassis schematic. High voltage is maintained within specified limits by close tolerance safety-related components/adjustments in the high-voltage circuit. If high voltage exceeds specified limits, check each component specified on the chassis schematic and take corrective action.

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the picture tube.

3. **Design Alteration Warning** - Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions, including, but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions will void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4. **Picture Tube Implosion Protection Warning** - The picture tube in this receiver employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle

the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; because of potential hazard, do not try to remove such "permanently attached" yokes from the picture tube.

5. Hot Chassis Warning -

a. Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and may be safety-serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. To confirm that the AC power plug is inserted correctly, with an AC voltmeter, measure between the chassis and a known earth ground. If a voltage reading in excess of 1.0V is obtained, ***remove and reinsert the AC power plug in the opposite polarity** and again measure the voltage potential between the chassis and a known earth ground.

b. Some TV receiver chassis have a circuit which obtain voltage about 70% of AC voltage between chassis and earth ground regardless of the AC plug polarity. This chassis can be safety-serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection.

c. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulation material that must not be defeated or altered.

Note: * In case unit has no polarity AC plug only.

6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts-be sure that leads and components do not touch thermally hot parts, c. the AC supply, d. high voltage, and e. antenna wiring. Always inspect in all areas for pinched, out of place, or frayed wiring. Check AC power cord for damage.

7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

8. **Product Safety Notice** - Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual

inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc.. Parts that have special safety characteristics are identified by a ($\triangle$) on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continu-

Precautions during Servicing

- A. Parts identified by the ($\triangle$) symbol are critical for safety.
Replace only with part number specified.
- B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.
- C. Use specified internal wiring. Note especially:
 - 1) Wires covered with PVC tubing
 - 2) Double insulated wires
 - 3) High voltage leads
- D. Use specified insulating materials for hazardous live parts. Note especially:
 - 1) Insulation Tape
 - 2) PVC tubing
 - 3) Spacers
 - 4) Insulators for transistors.
- E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.
- F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)
- G. Check that replaced wires do not contact sharp edged or pointed parts.

ously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are strictly inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

- H. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.
- I. Also check areas surrounding repaired locations.
- J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.
- K. Crimp type wire connector
When replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, in order to prevent shock hazards, perform carefully and precisely the following steps.
Replacement procedure
 - 1) Remove the old connector by cutting the wires at a point close to the connector.Important: Do not re-use a connector (discard it).
 - 2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
 - 3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.
 - 4) Use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.
- L. When connecting or disconnecting the VCR connectors, first, disconnect the AC plug from AC supply socket.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1 : Ratings for selected area

AC Line Voltage	Region	Clearance Distance (d) (d')
200 to 240 V	Europe	$\geq 4\text{mm (d)}$
	Australia	$\geq 6\text{mm (d')}$

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

2. Leakage Current Test

Confirm specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method : (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See Fig. 2 and following table.

Table 2 : Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
200 to 240 V	Europe Australia	2k Ω RES. in connected	$i \leq 0.7\text{mA rms}$ $i \leq 2\text{mA dc}$	Antenna terminals
		50k Ω RES. in connected	$i \leq 0.7\text{mA rms}$ $i \leq 2\text{mA dc}$	Other terminals

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

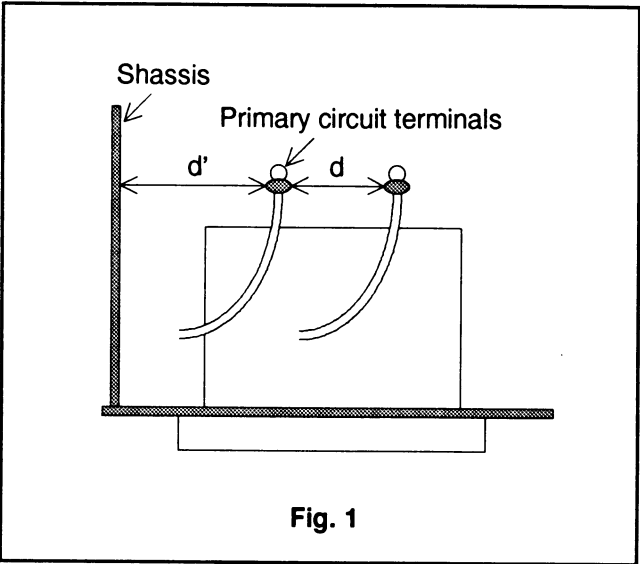


Fig. 1

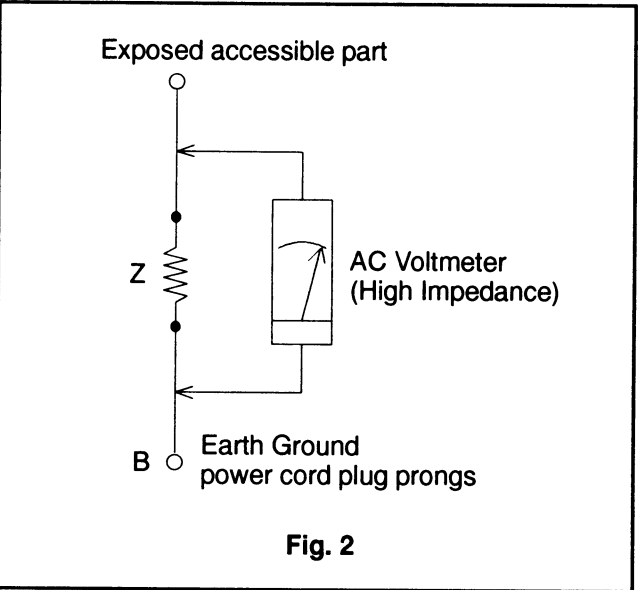


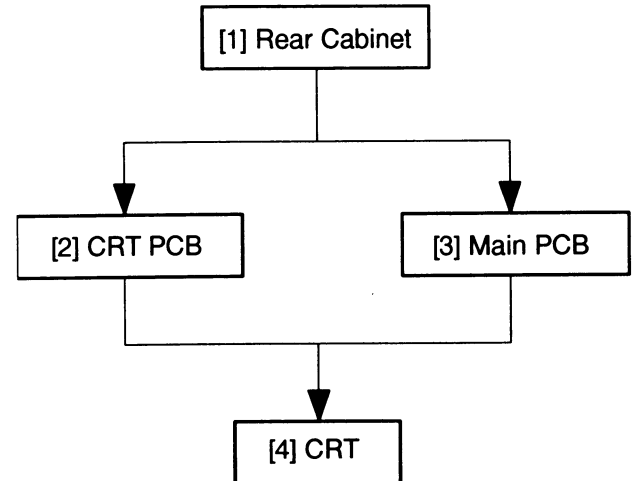
Fig. 2

DISASSEMBLY INSTRUCTIONS

1. Disassembly Flow Chart

This flow chart indicates the disassembly steps of the cabinet parts and PCB in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in the reverse order. Bend, route and dress the cables as they were originally.

CAUTION ! :
When removing the CRT, make sure to discharge Anode Lead of the CRT.
Use the CRT Ground Wire to discharge the CRT before removing the Anode Cap.



2. Disassembly Method

STEP/ LOC. NO.	PART	REMOVAL		
		FIG. NO.	REMOVE/*UNLOCK/ RELEASE/UNPLUG/ UNCLAMP/ DESOLDER	NOTE
[1]	Rear Cabinet	1, 2	L-5 (4pcs), L-6, L-7	1
[2]	CRT PCB	4, 5	CN451B, CN452B, CN453, FOCUS WIRE, SCREEN WIRE	2
[3]	Main PCB	3, 5	CN451A, CN452A, CN501, CN601, CN801, CN802, ANODE CAP, FOCUS WIRE, SCREEN WIRE	3
[4]	CRT	4, 5	B-2 (4pcs)	4

Reference <Notes> in Table

- (1) Remove 6 screws (L-5, L-6, L-7) and slide the Rear Cabinet backward.
- (1) If not already removed, first remove the Rear Cabinet.
(2) Remove all relative wires, then pull the CRT PCB backward.
- (1) If not already removed, first remove the Rear Cabinet.
(2) Remove all relative wires on the Main PCB and remove the Anode Cap, then slide the Main PCB backward.

Caution !
Discharge Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.

- (1) If not already removed, first remove the Rear Cabinet and Main PCB.
(2) Remove 4 screws (B-2), then the CRT can be removed.

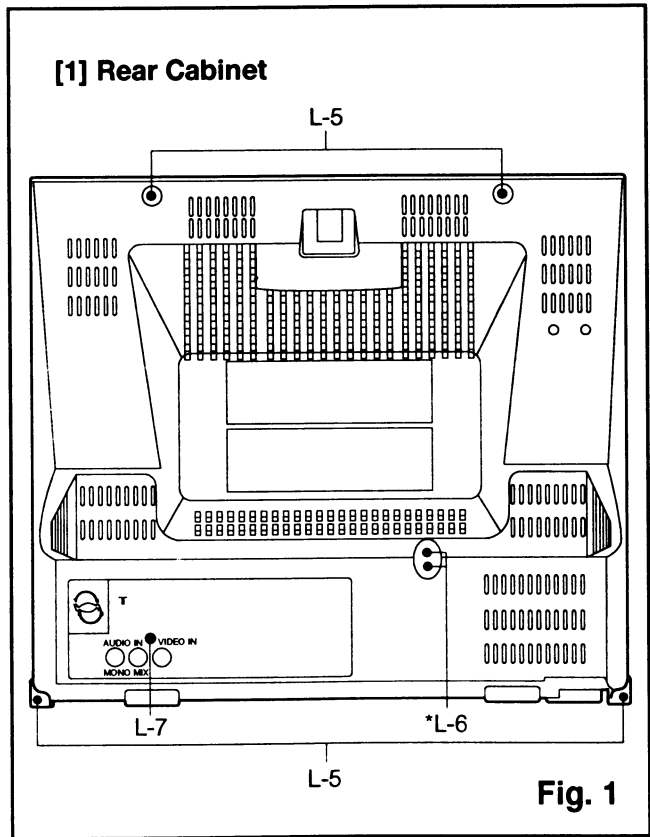


Fig. 1

*L-6
Upper: used FBT; LTF00EPGS005 (154-064U)
Lower: used FBT; LTF00EPSM006 (FCK-14B040)

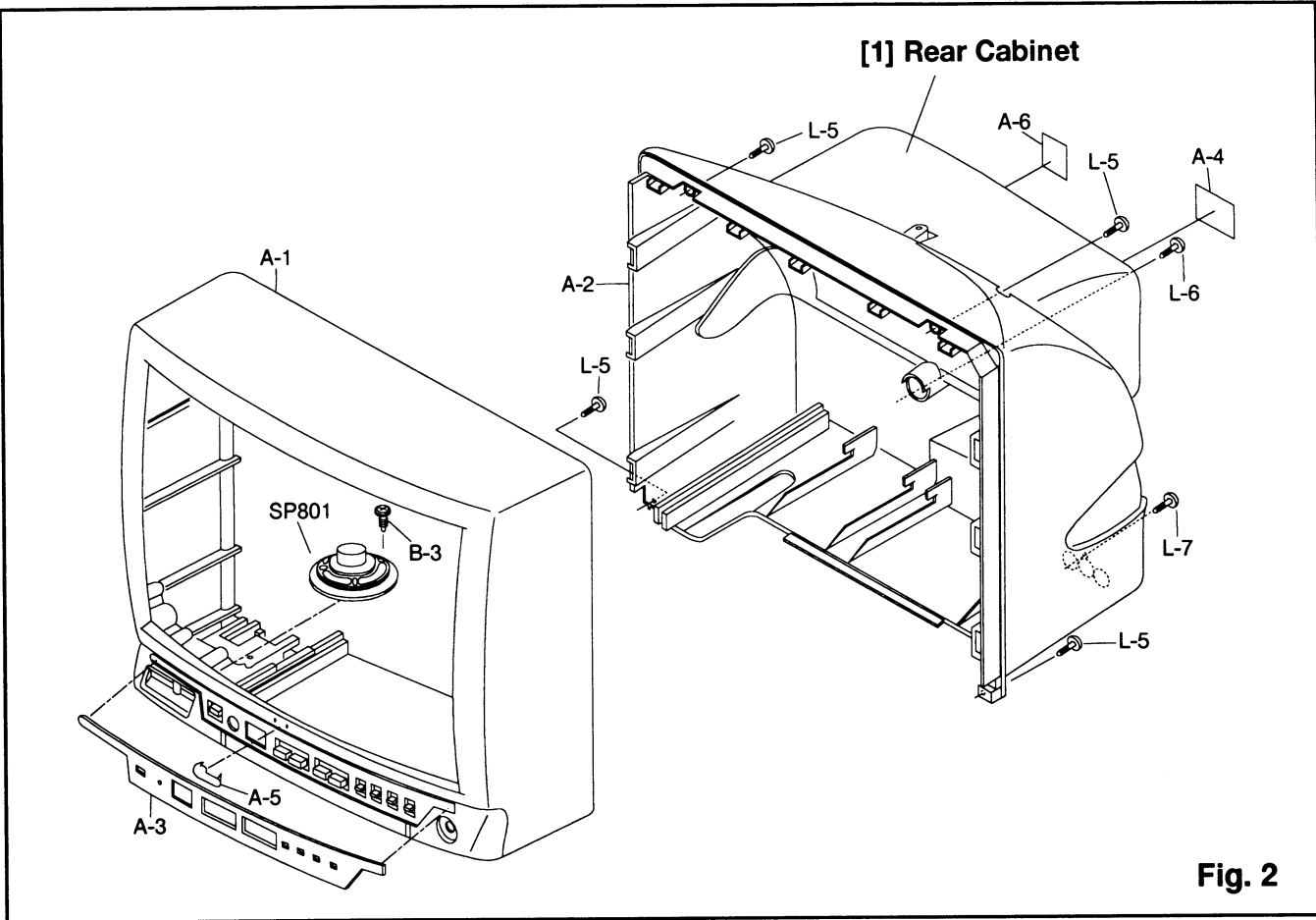


Fig. 2

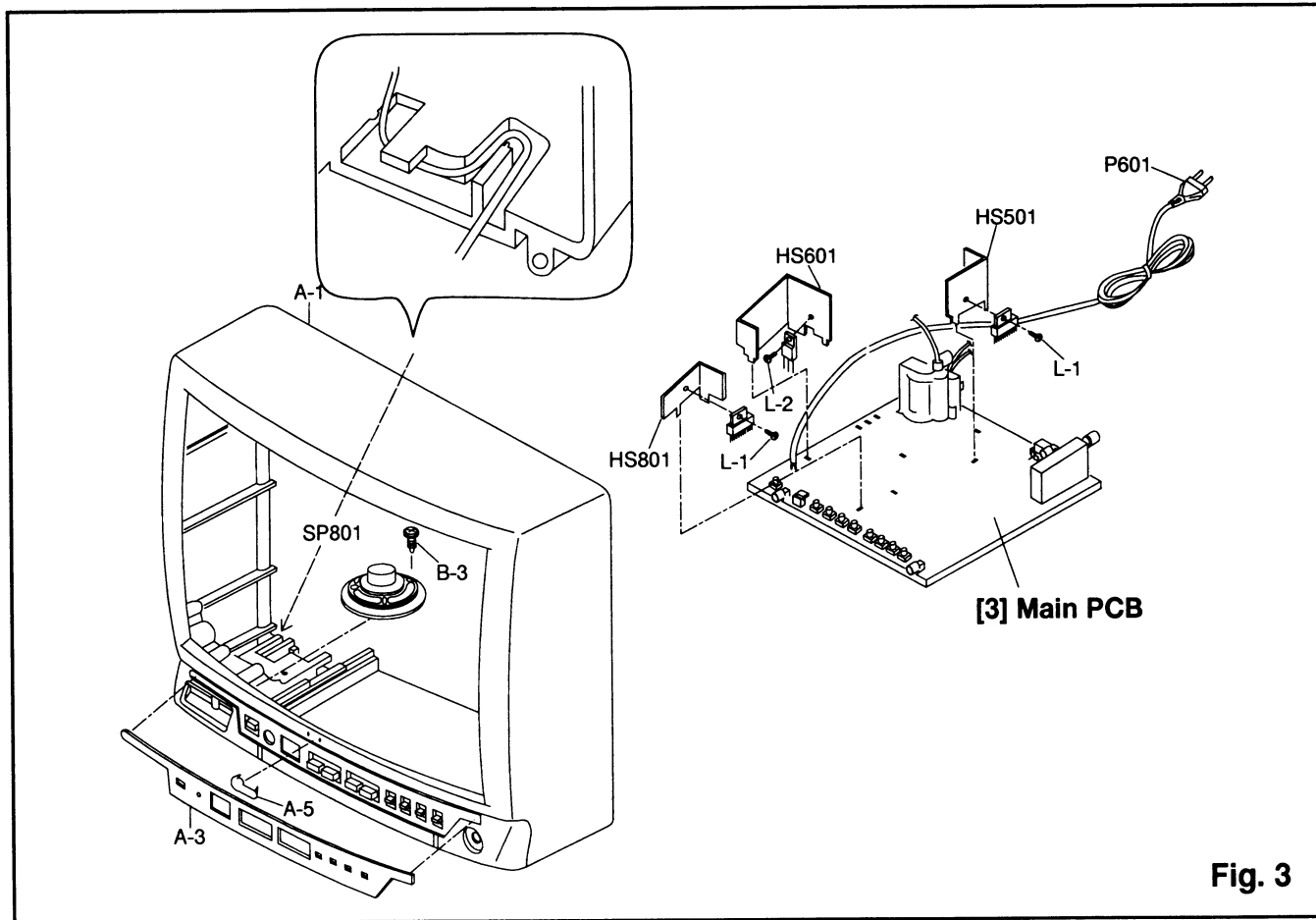


Fig. 3

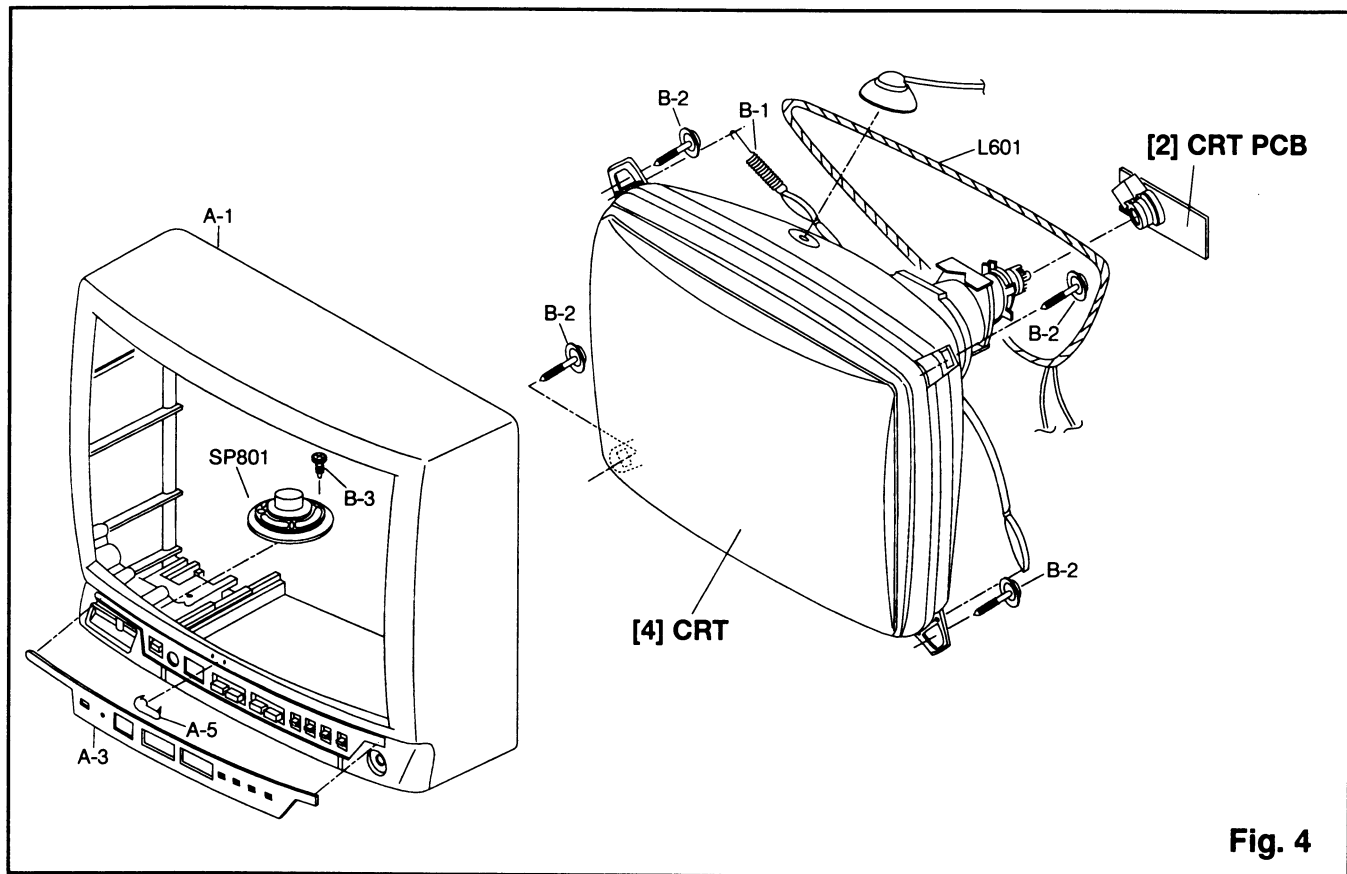


Fig. 4

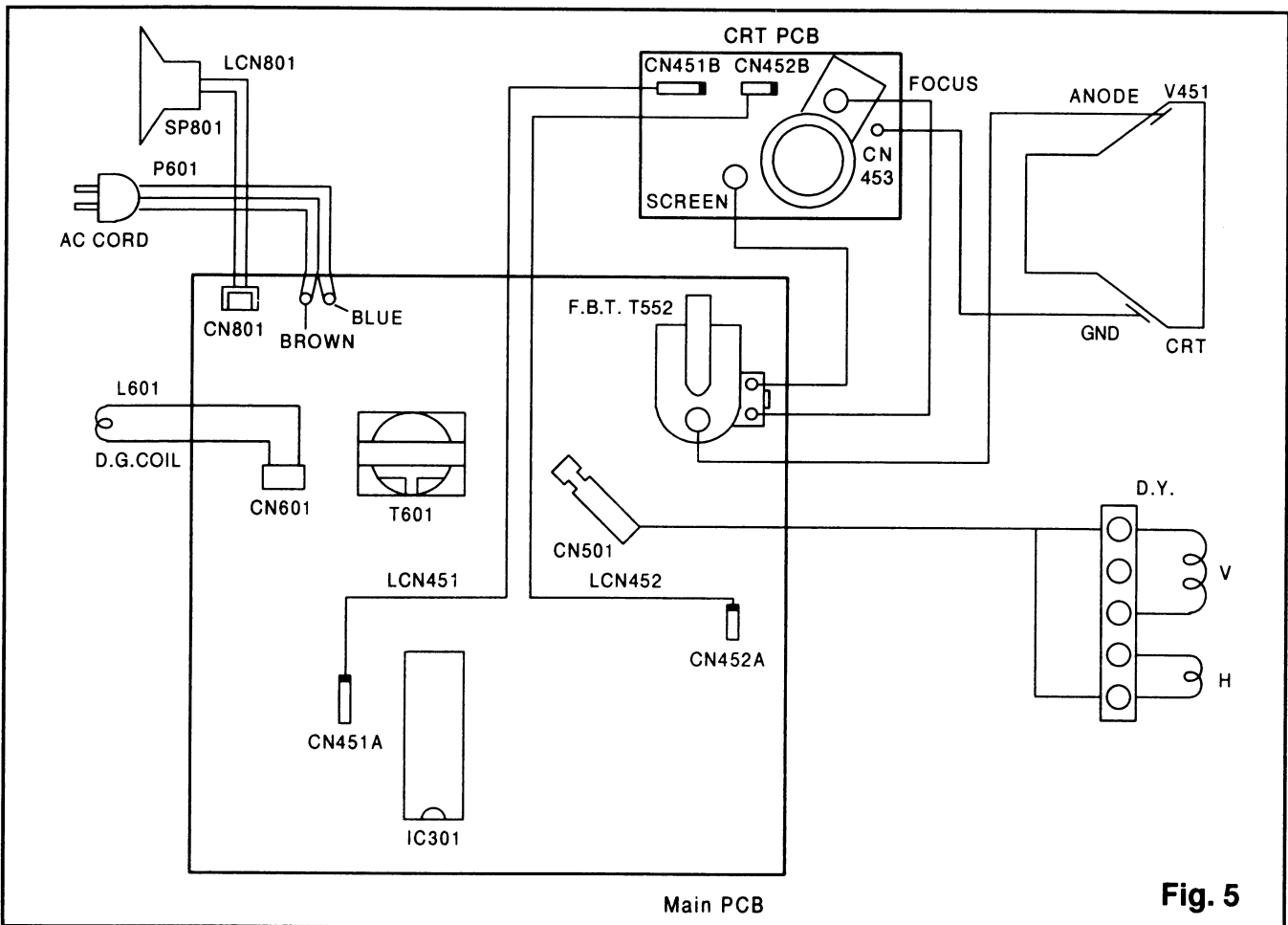


Fig. 5

ELECTRICAL ADJUSTMENT INSTRUCTIONS

Note:

Electrical adjustments are required after replacing circuit components. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required:

1. Monoscope
2. PAL and SECAM Pattern Generator
3. IF Sweeper and Scope
4. Spectrum Analyzer
5. DC Volt Meter
6. Oscilloscope: Dual Trace with 10:1 probe
7. Color Analyzer
8. AM S.S.G. (Standard Signal Generator)

How to Set Up the Service Mode:

Preset Mode: Press Picture Select button on the remote control unit, then press the number "1" button.

Brightness ——— Center
Color ——— Center
Contrast ——— Approx 70%

All adjustment procedures must be performed in order of numbering.

Operate the unit more than 20 minutes.

1. Power Supply DC Voltage Adjustment

Purpose: To get correct voltage.

Symptom of Misadjustment: The picture is dark and unit does not operate correctly.

Test Point	Adjustment Point	Input
R621 TP1 (GND)	VR621	Monoscope Pattern
Equipment		Spec.
Monoscope DC Volt Meter		DC +112±0.5V

Reference Notes: R621, TP1, VR621 — Main PCB

- Adjust VR621 so that the + of C623 becomes DC +112±0.5V.

2. VCO Adjustment

Purpose: To set the IF (Intermediate Frequency).

Symptom of Misadjustment: Proper picture cannot be obtained.

Test Point	Adjustment Point	Input
T214	T214	—
Equipment		Spec.
Spectrum Analyzer		38.0±0.05MHz
Connections of M. EQ.		

Reference Notes: T214 — Main PCB

1. Short C214.
2. Set the Spectrum Analyzer as shown in the above table. (Make a loop by connecting both probes of the Spectrum Analyzer and bring the loop near T214 to pick up the leakage wave.)
3. Adjust T214 for reading 38.0±0.05MHz on the Spectrum Analyzer.

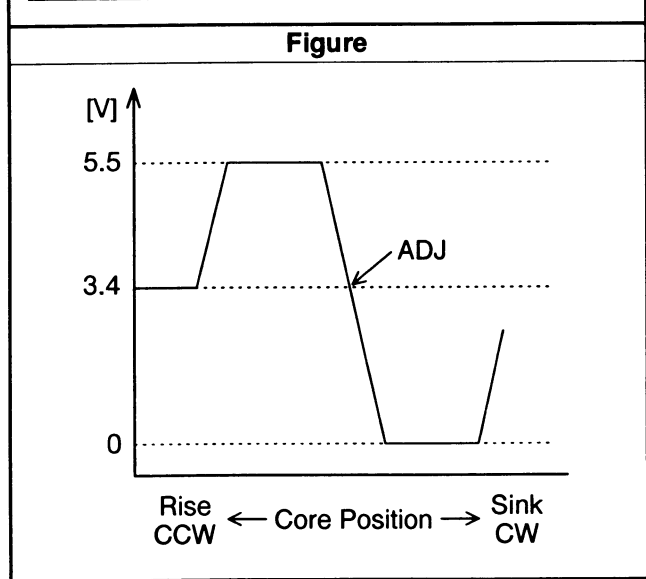
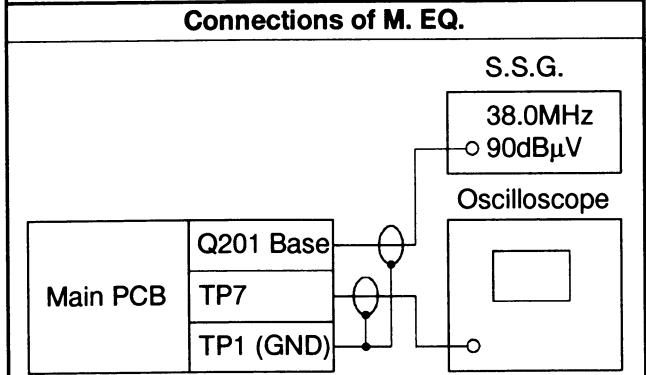
<without Spectrum Analyzer>

1. Turn T214 in both directions, right and left, far enough to find the point where Noise Bands or Beats appear on the TV Screen.
2. After finding those points in both directions, adjust T214 so that it is exactly half-way between those two points.
3. After the above adjustment, tune in another Local Broadcast. Then confirm that no Noise Bands or Beats appear on the TV Screen.

3. AFT Adjustment

Purpose: To operate AFT correctly.
Symptom of Misadjustment: AFT does not work correctly and/or synchronization is faulty.

Test Point	Adjustment Point	Input
TP7 TP1 (GND)	T211	—
Equipment		Spec.
AM S.S.G. Oscilloscope		DC +3.4±0.2V



- Reference Notes:** Q201, T211, TP1, TP7 — Main PCB
- Input the 38.0MHz (90dBµV) no modulating signal from Q201 base.
 - Turn the core inside of T211 counterclockwise until the top of core is the same height as metal case.
 - Turn the core of T211 clockwise and find the point where the voltage drops from approximately 5.5V to 0V immediately on the oscilloscope.
 - Turn the core of T211 little by little and find the point where DC +3.4±0.2V is obtained between the area mentioned in step 3.

Note: Before the adjustment, confirm that the tuner output does not have any noise except white noise.

4. AGC Adjustment

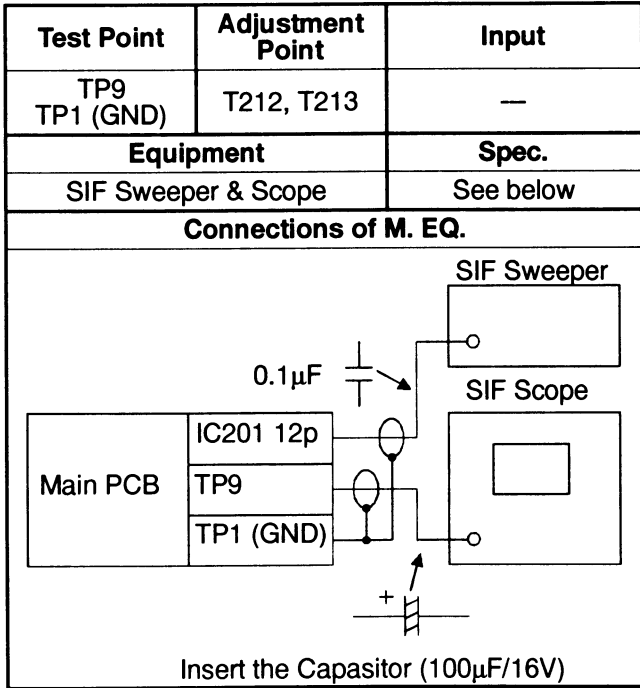
Purpose: Set AGC (Auto Gain Control) Level.
Symptom of Misadjustment: AGC does not synchronize correctly when RF Input Level is too weak and picture distortion may occur if it is too strong.

Test Point	Adjustment Point	Input
TP8 TP1 (GND)	VR211	PAL Color Bar
Equipment		Spec.
PAL Pattern Generator DC Volt Meter		DC +4.5±0.1V

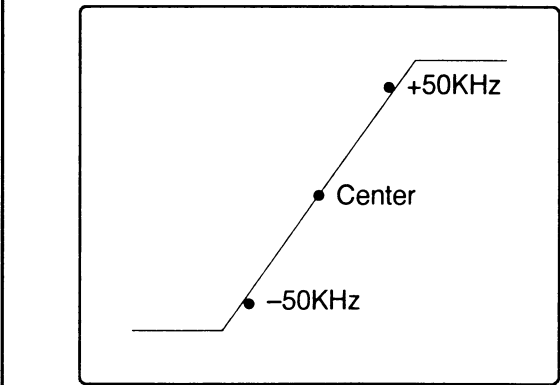
- Reference Notes:** TP1, TP8, VR211 — Main PCB
- Receive the PAL Color Bar signal for channel 2 (48.25MHz). (RF Input Level: 80dBµV)
 - Adjust VR211 so that the voltage of TP8 becomes DC +4.5±0.1V.

5. SIF Adjustment

Purpose: To set the SIF (Sound Intermediate Frequency).
Symptom of Misadjustment: Not sound.



Figure



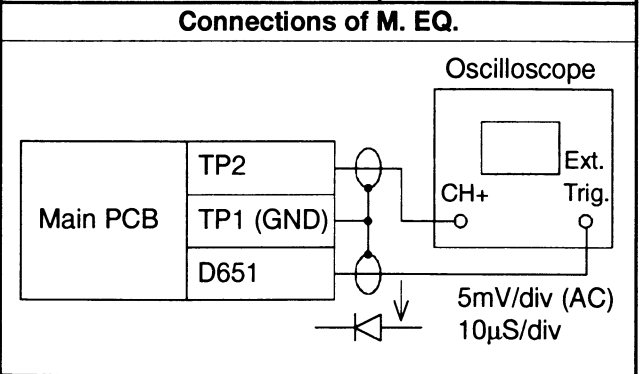
Note:
SIF waveform (−50~+50KHz) must be straight.

- Reference Notes:** TP1, TP9, T212, T213 — Main PCB
- Connect SIF Sweeper & Scope shown in the above table.
 - Adjust T212 (SIF=6.5MHz) so that the center mark will be center of SIF waveform and its waveform is straight.
 - Adjust T213 (SIF=5.5MHz) so that the center mark will be center of SIF waveform and its waveform is straight.
 - Repeat 2 & 3.

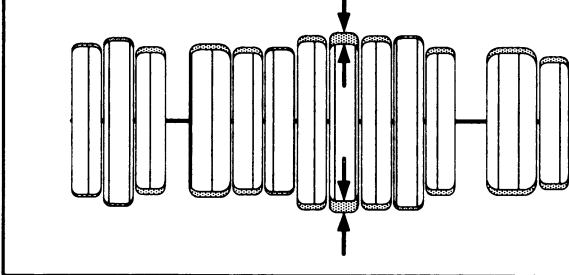
6. Bell Filter Adjustment

Purpose: To adjust the center frequency of SECAM bell filter.
Symptom of Misadjustment: The color will be reversed when the SECAM signal is entered.

Test Point	Adjustment Point	Input
TP2 TP1 (GND)	T404	SECAM Color Bar
Equipment		Spec.
SECAM Pattern Generator Oscilloscope		See below



Figure



- Reference Notes:** D651, TP1, TP2, T404 — Main PCB
- Adjust T404 so that the waveform will be flat shown in the above figure.

7. SECAM Ident Coil Adjustment

Purpose: To adjust the peak value of SECAM Ident signal.
Symptom of Misadjustment: The display is not colored when the SECAM signal is entered.

Test Point	Adjustment Point	Input
TP5 TP1 (GND)	T403	SECAM Color Bar
Equipment		Spec.
SECAM Pattern Generator Oscilloscope		See below

- Reference Notes:** TP1, TP5, T403 — Main PCB
- Set oscilloscope to 10:1 probe, 0.2V/div (DC) and Range 5µS/div.
 - Adjust T403 so that the TP5 will be peak DC Voltage.

8. SECAM Demodulate Coil Adjustment

Purpose: To adjust the level of R-Y and (B-Y) color difference signal.

Symptom of Misadjustment: The Red, Green and Blue will be unbalanced.

Test Point	Adjustment Point	Input
TP3 (R-Y) TP4 (B-Y) TP1 (GND)	T402 (R-Y) T401 (B-Y)	SECAM Black Raster
Equipment		Spec.
SECAM Pattern Generator Oscilloscope		See below
Connections of M. EQ.		
Figure		

Reference Notes:
D651, TP1, TP3, TP4, T401, T402 — Main PCB

1. Adjust T402 with core driver so that (A) becomes center of (B) as shown in the above table. (TP3)
2. Adjust T401 with core driver so that (A) becomes center of (B) as shown in the above table. (TP4)

9. 1H Delay Line Adjustment

Purpose: To get correct 1H delay line when the PAL signal is entered.

Symptom of Misadjustment: The Anti-PAL signal part is colored when the Philips Pattern is entered. Each scanning line is colored on the color bar.

Test Point	Adjustment Point	Input
TP6 TP1 (GND)	T301, VR301	Philips Pattern
Equipment		Spec.
PAL Pattern Generator Oscilloscope		See below
Connections of M. EQ.		
Figure		

Reference Notes:
D651, TP1, TP6, T301, VR301 — Main PCB

- Adjust VR301 and T301 so that the amplitude at Anti-PAL signal part becomes minimum (no color) and the waveform at the color bar part is not seen in double ("Venetian Blind" does not appear at the color bar signal part).

10. Black Level Adjustment

Purpose: To obtain optimum picture quality.

Symptom of Misadjustment: Black color may not be properly displayed (lighter or darker).

Test Point	Adjustment Point	Input
TP6 TP1 (GND)	VR351	Black Raster
Equipment		Spec.
Pattern Generator Oscilloscope		DC +3.2±0.05V
Figure		

Reference Notes: TP1, TP6, VR351 — Main PCB

1. Preset the picture control to initial position.
2. Receive the Black Raster pattern.
3. Adjust VR351 so that the TP6 becomes DC +3.2±0.05V as shown in the above table. (TP6 waveform)

11. Cut Off Adjustment

Purpose: To adjust the beam current of Red, Green, Blue and screen voltage.

Symptom of Misadjustment: White color may be red-dish, greenish or bluish. When the screen voltage is too high, the scanning line is appeared on the screen.

Test Point	Adjustment Point	Input
Screen	VR451 VR452 VR453 Screen-VR	Black Raster
Equipment		Spec.
Pattern Generator		See below
Figure		

Reference Notes:
VR451, VR452, VR453, VR454, VR455 — CRT PCB
Screen-VR — Main PCB (FBT)

1. Degauss the CRT using Degaussing Coil..
2. Set the Screen-VR to minimum. (Counterclockwise)
3. Set the drive VRs (VR454, VR455) to mechanical center, and cut off VRs (VR451, VR452, VR453) to 10 o'clock position.
4. Short the Emitter and Collector of Q125. (Horizontal One Line)
5. Slowly turn the Screen-VR (FBT) to the point where horizontal line is just visible.
6. Adjust VR451 (R. Cut Off), VR452 (G. Cut Off) and VR453 (B. Cut Off) so that horizontal line becomes pure white.
7. Re-adjust the Screen-VR (FBT) to the point where horizontal line is just visible.
8. Open the Emitter and Collector of Q125.

Note: Confirm that White Balance Adj. is correct after this adjustment, and attempt White Balance Adj. if needed.

12. White Balance Adjustment

Purpose: To mix red, green and blue beams correctly for pure white.

Symptom of Misadjustment: White becomes bluish or reddish.

Test Point	Adjustment Point	Input
Screen	VR454 VR455	White Raster (APL 100%)
Equipment		Spec.
Pattern Generator Color Analyzer		See below

Reference Notes: VR454, VR455 — CRT PCB

1. Degauss the CRT using Degaussing Coil..
2. Set the color analyzer to the CHROMA mode and after zero point calibration, bring the optical sensor into close contact with center on the CRT surface.
3. Adjust VR454 (R. DRIVE) and VR455 (B. DRIVE) so that the respective chroma temperatures becomes 8000K-10MPCD ($x : 0.300 / y : 0.290$) $\pm 3\%$.

Note: Confirm that Cut Off Adj. is correct after this adjustment, and attempt Cut Off Adj. if needed.

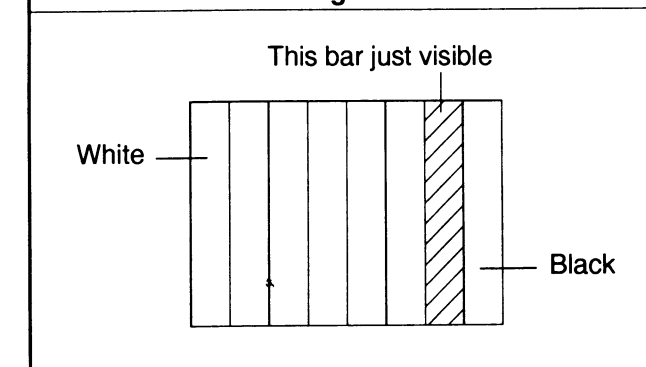
13. Sub Bright Adjustment

Purpose: To get proper brightness.

Symptom of Misadjustment: Proper brightness cannot be obtained by adjusting the Brightness Control.

Test Point	Adjustment Point	Input
Screen	Screen-VR	Gray Scale (8 step)
Equipment		Spec.
Pattern Generator		See Below

Figure



Reference Notes: Screen-VR — Main PCB (FBT)

- Adjust Screen-VR so that the level of dark gray bar (as shown above) is just visible.

Note: Use the Gray Scale Signal without set up.

14. Focus Adjustment

Purpose: Set the optimum Focus.

Symptom of Misadjustment: Blurred images are shown on the display.

Test Point	Adjustment Point	Input
Screen	Focus VR	Monoscope Pattern
Equipment		Spec.
Monoscope		See below

Reference Note: Focus VR — Main PCB (FBT)

- Adjust Focus-VR (FBT) to be obtained clear picture.

15. V. Position & Size Adjustment

Purpose: To get correct vertical position and size of screen image.

Symptom of Misadjustment: Vertical position and size of screen image may not be properly displayed.

Test Point	Adjustment Point	Input
Screen	VR501, VR521	Monoscope Pattern
Equipment		Spec.
Monoscope		See below

Reference Note: VR501, VR521 — Main PCB

1. Adjust VR521 so that the top & bottom of Monoscope pattern will be equal.
2. Adjust VR501 so that the vertical size will be $90 \pm 5\%$ of Monoscope Pattern and the circle is round.

16. H. Position & Size* Adjustment

Purpose: To get correct horizontal position and size of screen image.

Symptom of Misadjustment: Horizontal position and size of screen image may not be properly displayed.

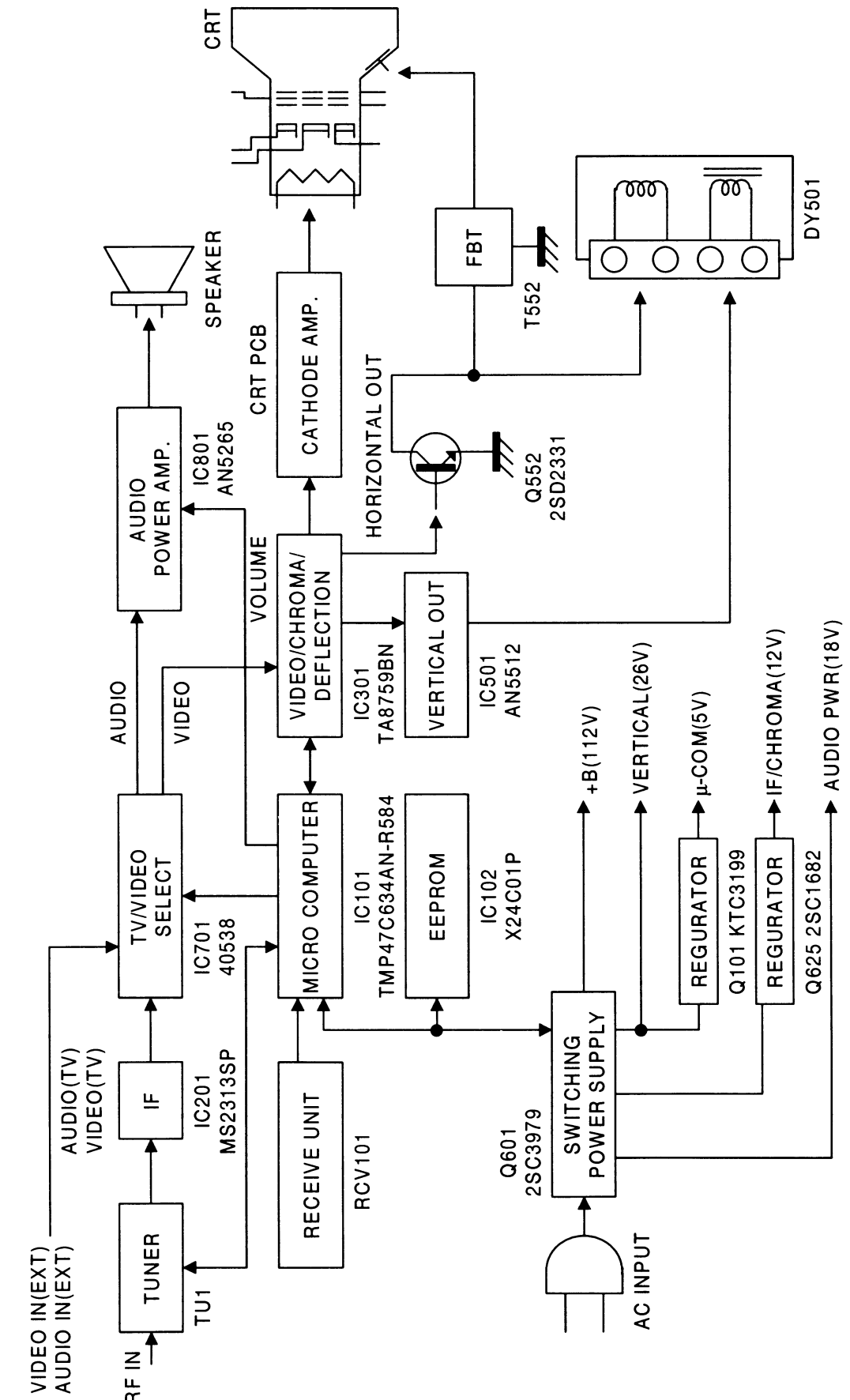
Test Point	Adjustment Point	Input
Screen	VR331 , L551	Monoscope Pattern
Equipment		Spec.
Monoscope		See below

Reference Note: VR331, L551 — Main PCB

1. Adjust VR331 so that the right & left of monoscope pattern will be equal.
2. Adjust L551 so that the horizontal size will be $90 \pm 5\%$ of Monoscope Pattern and the circle is round.

* Only model with L551.

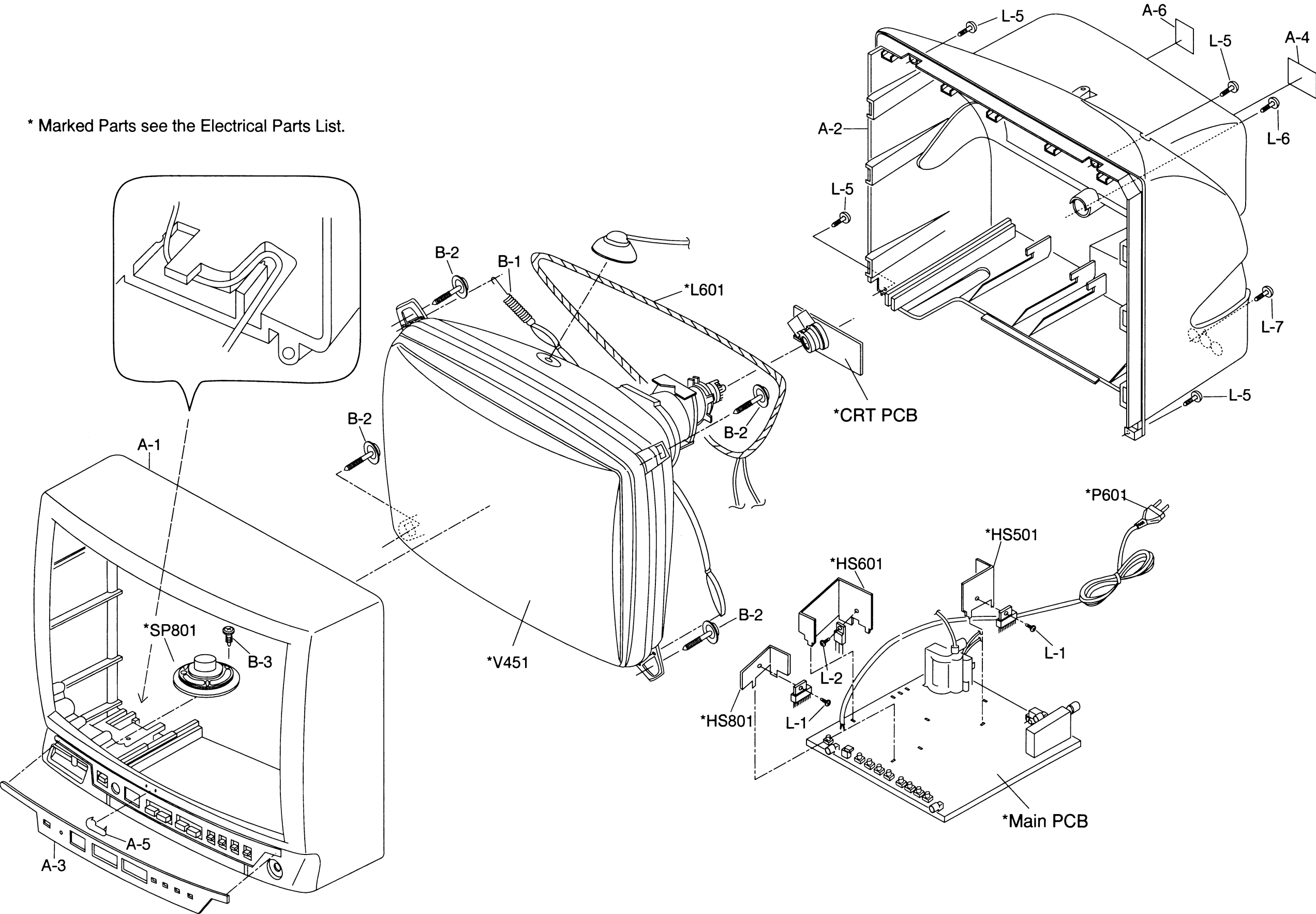
BLOCK DIAGRAM



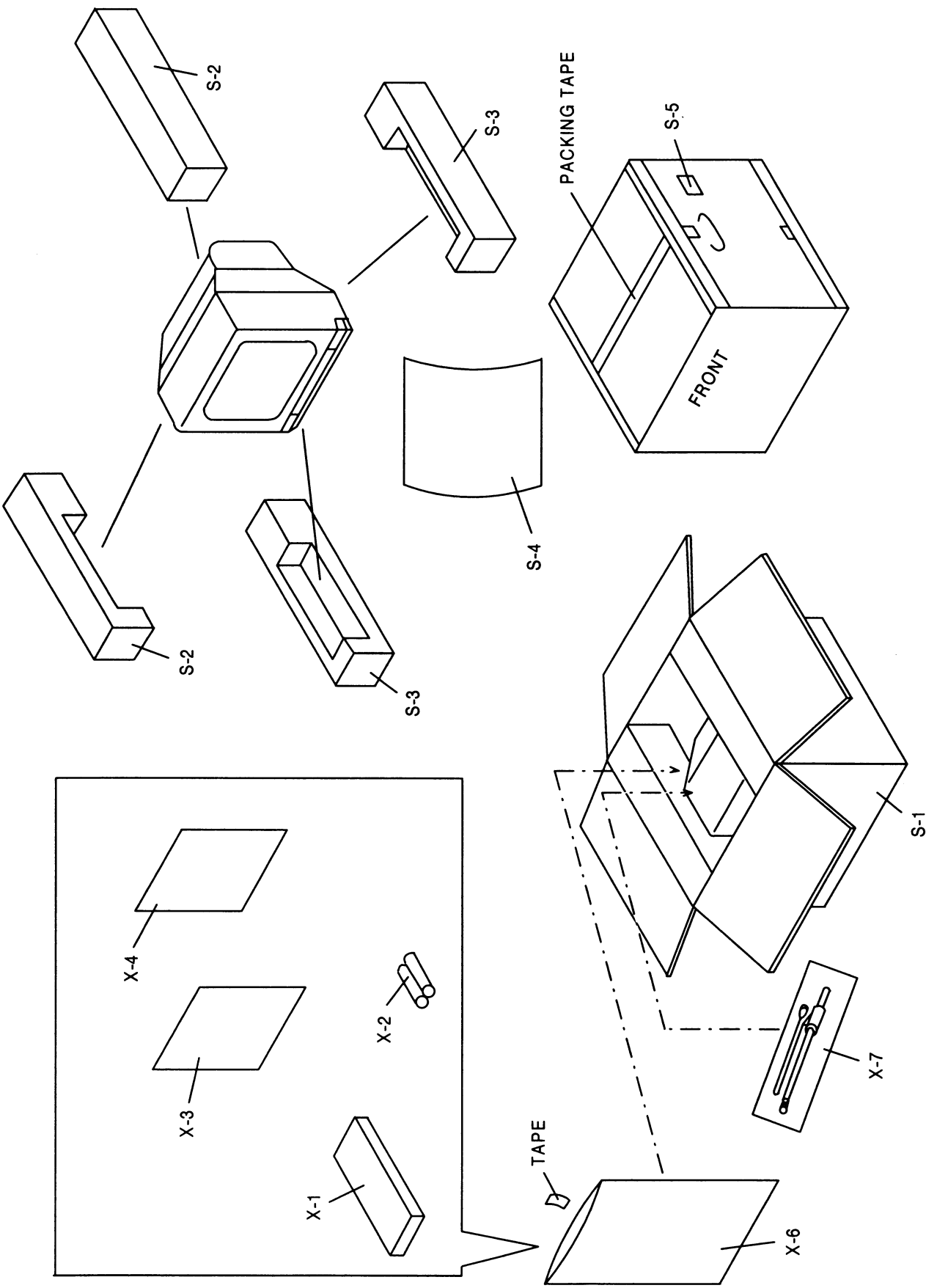
Pin No.	E	C	B
Q1	0.0	1.3	0.6
Q2	11.9	0.0	11.6
Q3	11.9	0.0	11.9
Q4	11.9	11.8	11.9
Q101	4.9	8.8	5.6
Q102	5.6	5.6	4.9
Q103	0.0	3.6	0.0
Q104	25.2	8.9	27.7
Q105	0.0	26.2	0.0
Q121	0.0	4.7	0.0
Q122	0.0	3.9	0.0
Q123	0.0	4.6	0.0
Q125	0.0	0.0	0.0
Q201	0.8	9.4	1.5
Q281	0.0	4.3	0.0
Q301	0.0	12.0	0.1
Q381	0.0	0.5	0.0
Q391	0.0	0.1	0.7
Q392	0.0	6.0	0.0
Q393	5.1	0.0	4.5
Q394	5.1	0.0	6.0
Q395	0.0	6.5	0.0
Q396	0.0	5.3	0.0
Q397	0.0	0.0	0.0
Q451	3.0	117	3.5
Q452	3.0	116	3.4
Q453	3.0	114	3.4
Q551	0.0	27.3	0.5
Q552	—	—	—
Q601	—	—	—
Q603	—	—	—
Q604	—	—	—
Q605	—	—	—
Q621	6.8	48.4	0.0
Q622	2.5	112	0.0
Q623	0.0	0.4	0.6
Q625	12.0	13.1	12.6
Q702	2.4	11.9	2.8
Q703	—	—	—
Q704	0.0	0.0	0.6
Q705	0.0	12.0	0.0
Q801	0.0	1.2	0.6

EXPLODED VIEW

* Marked Parts see the Electrical Parts List.



PACKING EXPLODED VIEW



MECHANICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

Ref. No.	Description	Part No.
A- 1	FRONT CABINET	0EM000162
A- 2	REAR CABINET	0EM000163
A- 3	CONTROL PLATE	0EM300765
A- 4 	RATING LABEL	0EM402364
A- 5	BRAND BADGE	0EM400975
A- 6 	MARK OF CONFIRMITY LABEL	0EM402171
B- 1	TENTION SPRING	26WH006
B- 2	CRT MOUNTING SCREW	8A00083
B- 3	ASSEMBLED SCREW	0EM401739
L- 1	B-TIGHT SCREW 3X8 BIND HEAD+	GBMB3080
L- 2	B-TIGHT SCREW 3X10 BIND HEAD+	GBMB3100
L- 5	P-TIGHT SCREW 4X16 BIND HEAD+	GBMP4160
L- 6	P-TIGHT SCREW 4X12 BIND HEAD+	GBKP4120
L- 7	P-TIGHT SCREW 3X10 BIND HEAD+	GBKP3100
S- 1	CARTON	0EM402366
S- 2	STYROFORM TOP	0EM000165
S- 3	STYROFORM BOTTOM	0EM000166
S- 4	SET SHEET	0EM401153
S- 5	SERIAL NO. LABEL	24LH033
X- 1	REMOCON UNIT	UREMT20MM007
X- 2	BATTERY UM-3X2 or	1790849
	BATTERY UM-3X2 or	1813020
	BATTERY UM-3X2	579W099
X- 3 	OWNER'S MANUAL (R)	0EMN00885
X- 4 	OWNER'S MANUAL (E)	0EMN00886
X- 6	POLYETHYLENE BAG	Z220300
X- 7	ROD ANTENNA	0EMN00542

ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

PCB Assembly

Ref. No.	Description	Part No.
	PCB Assembly	MMA-132
	Consists of the following:	
	Main PCB Assembly	
	CRT PCB Assembly	

Main PCB Assembly

Ref. No.	Description	Part No.
	Main PCB Assembly	
	Consists of the following:	
CAPACITORS		
C 1	ELECTROLYTIC CAP. 10μF/50V	126F106S
C 2	CHIP CERAMIC CAP. CH 100pF/50V or CHIP CERAMIC CAP. CH 100pF/50V	12CH101C CHE1JJ8CH101
C 3	TF CAP. 0.1μF/50V or TF CAP. 0.1μF/50V	125U104S 122Z309S
C 4	TF CAP. 0.1μF/50V or TF CAP. 0.1μF/50V	125U104S 122Z309S
C 5	TF CAP. 0.1μF/50V or TF CAP. 0.1μF/50V	125U104S 122Z309S
C 6	ELECTROLYTIC CAP. 10μF/50V	126F106S
C 7	ELECTROLYTIC CAP. 10μF/50V	126F106S
C 8	ELECTROLYTIC CAP. 10μF/50V	126F106S
C 9	ELECTROLYTIC CAP. 1μF/50V	126F105S
C 10	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 11	ELECTROLYTIC CAP. 10μF/50V	126F106S
C 101	ELECTROLYTIC CAP. 47μF/16V	126C476S
C 102	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 103	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 105	ELECTROLYTIC CAP. 220μF/6.3V	126A227S
C 110	ELECTROLYTIC CAP. 47μF/16V	126C476S
C 111	CHIP CERAMIC CAP. F 0.022μF/50V or CHIP CERAMIC CAP. F 0.022μF/50V	12F3223C CHE1JZ80F223
C 155	ELECTROLYTIC CAP. 1μF/50V	126F105S
C 156	ELECTROLYTIC CAP. 1μF/50V	126F105S
C 171	CHIP CERAMIC CAP. SL 100pF/50V or CHIP CERAMIC CAP. SL 100pF/50V	1270101C CHE1JJ8SL101
C 172	CHIP CERAMIC CAP. SL 100pF/50V or CHIP CERAMIC CAP. SL 100pF/50V	1270101C CHE1JJ8SL101
C 173	CHIP CERAMIC CAP. SL 100pF/50V or CHIP CERAMIC CAP. SL 100pF/50V	1270101C CHE1JJ8SL101
C 174	CHIP CERAMIC CAP. SL 100pF/50V or CHIP CERAMIC CAP. SL 100pF/50V	1270101C CHE1JJ8SL101
C 175	CHIP CERAMIC CAP. CH 24pF/50V or CHIP CERAMIC CAP. CH 24pF/50V	12CH240C CHE1JJ8CH240
C 176	CHIP CERAMIC CAP. CH 24pF/50V or CHIP CERAMIC CAP. CH 24pF/50V	12CH240C CHE1JJ8CH240
C 185	CHIP CERAMIC CAP. SL 100pF/50V or	1270101C

NOTE: Parts that not assigned part numbers (————) are not available.

Tolerance of Capacitors and Resistors are noted with the following symbols.

C.....±0.25%	D.....±0.5%	F.....±1%
G.....±2%	J.....±5%	K.....±10%
M.....±20%	N.....±30%	Z.....+80/-20%

Ref. No.	Description	Part No.
C 186	CHIP CERAMIC CAP. SL 100pF/50V CHIP CERAMIC CAP. SL 100pF/50V or CHIP CERAMIC CAP. SL 100pF/50V	CHE1JJ8SL101 1270101C CHE1JJ8SL101
C 187	CHIP CERAMIC CAP. SL 100pF/50V or CHIP CERAMIC CAP. SL 100pF/50V	1270101C CHE1JJ8SL101
C 188	CHIP CERAMIC CAP. SL 100pF/50V or CHIP CERAMIC CAP. SL 100pF/50V	1270101C CHE1JJ8SL101
C 204	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 205	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 206	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 207	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 210	CERAMIC CAP. CH 27pF	32CH270
C 211	CHIP CERAMIC CAP. CH 10pF/50V or CHIP CERAMIC CAP. CH 10pF/50V	12CH100C CHE1JD8CH100
C 212	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 213	TF CAP. 0.1μF/50V or TF CAP. 0.1μF/50V	125U104S 122Z309S
C 214	TF CAP. 0.47μF/50V or TF CAP. 0.47μF/50V	125U474S 122Z317S
C 215	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 216	ELECTROLYTIC CAP. 100μF/10V	126B107S
C 217	ELECTROLYTIC CAP. 0.47μF/50V	126F474S
C 219	CHIP CERAMIC CAP. SL 39pF/50V or CHIP CERAMIC CAP. SL 39pF/50V	1270390C CHE1JJ8SL390
C 220	CHIP CERAMIC CAP. SL 47pF/50V or CHIP CERAMIC CAP. SL 47pF/50V	1270470C CHE1JJ8SL470
C 221	CHIP CERAMIC CAP. SL 33pF/50V or CHIP CERAMIC CAP. SL 33pF/50V	1270330C CHE1JJ8SL330
C 223	ELECTROLYTIC CAP. 100μF/16V	126C107S
C 224	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 226	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 227	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 230	CHIP CERAMIC CAP. UJ 39pF	CHE1JJ8UJ390
C 281	ELECTROLYTIC CAP. 1μF/50V	126F105S
C 301	CERAMIC CAP. Z 0.022μF/50V	3F40223S
C 302	CHIP CERAMIC CAP. F 0.022μF/50V or CHIP CERAMIC CAP. F 0.022μF/50V	12F3223C CHE1JZ80F223
C 303	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 304	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 305	ELECTROLYTIC CAP. 0.47μF/50V	126F474S
C 306	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103

Ref. No.	Description	Part No.
C 307	*MYLAR CAP. 0.056μF K or MYLAR CAP. 0.056μF K	1250563S 2250563S
C 308	CHIP CERAMIC CAP. B 0.01μF/50V or CHIP CERAMIC CAP. B 0.01μF/50V	12B3103C CHE1JJ80B103
C 309	ELECTROLYTIC CAP. 2.2μF/50V	126X225S
C 310	CHIP CERAMIC CAP. SL 13pF/50V or CHIP CERAMIC CAP. SL 13pF/50V	1270130C CHE1JJ8SL130
C 311	CHIP CERAMIC CAP. CH 39pF/50V or CHIP CERAMIC CAP. CH 39pF/50V	12CH390C CHE1JJ8CH390
C 312	CHIP CERAMIC CAP. CH 27pF/50V or CHIP CERAMIC CAP. CH 27pF/50V	12CH270C CHE1JJ8CH270
C 313	SEMICONDUCTOR CAP. 0.027μF/25V K	CDA1EKS0X273
C 314	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 317	CHIP CERAMIC CAP. SL 33pF/50V or CHIP CERAMIC CAP. SL 33pF/50V	1270330C CHE1JJ8SL330
C 318	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 319	ELECTROLYTIC CAP. 100μF/16V	126C107S
C 331	SEMICONDUCTOR CAP. 0.015μF/25V K	CDA1EKS0X153
C 333	ELECTROLYTIC CAP. 0.47μF/50V (LL) or ELECTROLYTIC CAP. 0.47μF/50V (LL)	CE1JMAULLR47 CE1JMASLLR47
C 334	ELECTROLYTIC CAP. 100μF/16V	126C107S
C 335	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 336	SEMICONDUCTOR CAP. 0.022μF/25V K	CDA1EKS0X223
C 337	ELECTROLYTIC CAP. 3.3μF/50V	126F335S
C 338	CHIP CERAMIC CAP. B 0.01μF/50V or CHIP CERAMIC CAP. B 0.01μF/50V	12B3103C CHE1JJ80B103
C 339	CHIP CERAMIC CAP. B 330pF/50V or CHIP CERAMIC CAP. B 330pF/50V	12B3331C CHE1JJ80B331
C 340	CHIP CERAMIC CAP. B 0.001μF/50V or CHIP CERAMIC CAP. B 0.001μF/50V	12B3102C CHE1JJ80B102
C 351	CHIP CERAMIC CAP. CH 180pF/50V or CHIP CERAMIC CAP. CH 180pF/50V	12CH181C CHE12JJ8CH181
C 352	CHIP CERAMIC CAP. CH 180pF/50V or CHIP CERAMIC CAP. CH 180pF/50V	12CH181C CHE12JJ8CH181
C 353	SEMICONDUCTOR CAP. 0.1μF/25V K	CDA1EKS0X104
C 354	ELECTROLYTIC CAP. 4.7μF/50V	126F475S
C 355	SEMICONDUCTOR CAP. 0.1μF/25V K	CDA1EKS0X104
C 356	ELECTROLYTIC CAP. 10μF/50V	126F106S
C 357	CHIP CERAMIC CAP. CH 22pF/50V or CHIP CERAMIC CAP. CH 22pF/50V	12CH220C CHE1JJ8CH220
C 358	ELECTROLYTIC CAP. 1μF/50V	126F105S
C 359	CHIP CERAMIC CAP. SL 120pF/50V or CHIP CERAMIC CAP. SL 120pF/50V	1270121C CHE1JJ8SL121
C 360	CHIP CERAMIC CAP. SL 56pF/50V or CHIP CERAMIC CAP. SL 56pF/50V	1270560C CHE1JJ8SL560
C 361	ELECTROLYTIC CAP. 0.1μF/50V	126F104S
C 362	ELECTROLYTIC CAP. 0.1μF/50V	126F104S
C 363	ELECTROLYTIC CAP. 1μF/50V	126F105S
C 364	ELECTROLYTIC CAP. 0.1μF/50V	126F104S
C 365	ELECTROLYTIC CAP. 0.47μF/50V	126F474S
C 366	ELECTROLYTIC CAP. 0.47μF/50V	126F474S
C 367	ELECTROLYTIC CAP. 0.47μF/50V	126F474S
C 381	CHIP CERAMIC CAP. SL 68pF/50V or CHIP CERAMIC CAP. SL 68pF/50V	1270680C CHE1JJ8SL680
C 382	CHIP CERAMIC CAP. SL 33pF/50V or CHIP CERAMIC CAP. SL 33pF/50V	1270330C CHE1JJ8SL330
C 383	CHIP CERAMIC CAP. SL 47pF/50V or CHIP CERAMIC CAP. SL 47pF/50V	1270470C CHE1JJ8SL470
C 401	CHIP CERAMIC CAP. CH 180pF/50V or CHIP CERAMIC CAP. CH 180pF/50V	12CH181C CHE12JJ8CH181
C 402	CHIP CERAMIC CAP. CH 180pF/50V or	12CH181C

* Mylar is a registered trademark of E. I. DuPont de Nemours and Company.

Ref. No.	Description	Part No.
C 403	CHIP CERAMIC CAP. CH 180pF/50V	CHE12JJ8CH181
C 404	CHIP CERAMIC CAP. CH 7pF/50V	12CH709C
	CHIP CERAMIC CAP. CH 20pF/50V or CHIP CERAMIC CAP. CH 20pF/50V	12CH200C CHE1JJ8CH200
C 405	CHIP CERAMIC CAP. CH 6pF/50V	12CH609C
C 406	CHIP CERAMIC CAP. CH 20pF/50V or CHIP CERAMIC CAP. CH 20pF/50V	12CH200C CHE1JJ8CH200
C 407	MYLAR CAP. 0.056μF K or MYLAR CAP. 0.056μF K	1250563S 2250563S
C 408	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 409	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 410	CHIP CERAMIC CAP. SL 27pF/50V or CHIP CERAMIC CAP. SL 27pF/50V	1270270C CHE1JJ8SL270
C 412	CHIP CERAMIC CAP. F 0.01μF/50V or CHIP CERAMIC CAP. F 0.01μF/50V	12F3103C CHE1JZ80F103
C 501	CHIP CERAMIC CAP. B 0.001μF/50V or CHIP CERAMIC CAP. B 0.001μF/50V	12B3102C CHE1JJ80B102
C 502	ELECTROLYTIC CAP. 2.2μF/50V (LL) or ELECTROLYTIC CAP. 2.2μF/50V (LL)	CE1JMAULL2R2 CE1JMASLL2R2
C 503	TF CAP. 0.1μF/50V or TF CAP. 0.1μF/50V	125U104S 122Z309S
C 504	CHIP CERAMIC CAP. B 470pF/50V or CHIP CERAMIC CAP. B 470pF/50V	12B3471C CHE1JJ80B471
C 505	MYLAR CAP. 0.033μF K or MYLAR CAP. 0.033μF K	1250333S 2250333S
C 506	ELECTROLYTIC CAP. 100μF/35V	126E107S
C 507	ELECTROLYTIC CAP. 100μF/35V	126E107S
C 508	ELECTROLYTIC CAP. 3.3μF/50V (LL) or ELECTROLYTIC CAP. 3.3μF/50V (LL)	CE1JMAULL3R3 CE1JMASLL3R3
C 509	ELECTROLYTIC CAP. 1000μF/25V	626D108
C 510	TF CAP. 0.1μF/50V or TF CAP. 0.1μF/50V	125U104S 122Z309S
C 511	ELECTROLYTIC CAP. 3.3μF/50V (LL) or ELECTROLYTIC CAP. 3.3μF/50V (LL)	CE1JMAULL3R3 CE1JMASLL3R3
C 551	CHIP CERAMIC CAP. B 330pF/50V or CHIP CERAMIC CAP. B 330pF/50V	12B3331C CHE1JJ80B331
C 552	CERAMIC CAP. 330pF/500V	CCD2JKS0B331
C 553	CERAMIC CAP. 0.0022μF/500V	CCD2JKS0B222
C 554	P.P. CAP. 0.0068μF/1.6KV or P.P. CAP. 0.0068μF/1.6KV or P.P. CAP. 0.0068μF/1.6KV	CA3C682DT007 122Z283 1220498
C 555	CERAMIC CAP. 0.001μF/2KV BN TYPE [used CRT: A34KPU02XX48/ 37GDA85X-TC01]	CCD3DKA0B102
	CERAMIC CAP. 680pF [used CRT: 370KRB22-TC09(SPYB)]	CCD3DKA0B681
C 556	P.P. CAP. 0.47μF/200V or P.P. CAP. 0.47μF/200V	CT2E474DT003 122Z256
C 557	ELECTROLYTIC CAP. 1μF/250V or ELECTROLYTIC CAP. 1μF/250V or ELECTROLYTIC CAP. 1μF/250V or ELECTROLYTIC CAP. 1μF/250V	CE2EMZNTL010 122Z340 6220690 CE2EMZDDL010
C 601 	LINE ACROSS CAP. 0.1μF/250V or LINE ACROSS CAP. 0.1μF/250V or LINE ACROSS CAP. 0.1μF/250V	CT2E104DT001 122Z181 CA2E104MS005
C 603	CERAMIC CAP. 2200pF AC250V or CERAMIC CAP. 2200pF AC250V	CCH3EZP0E222 CCD2EZA0E222
C 604	CERAMIC CAP. 2200pF AC250V or CERAMIC CAP. 2200pF AC250V	CCH3EZP0E222 CCD2EZA0E222
C 605	CERAMIC CAP. 2200pF AC250V or CERAMIC CAP. 2200pF AC250V	CCH3EZP0E222 CCD2EZA0E222
C 606	CERAMIC CAP. 2200pF AC250V or	CCH3EZP0E222

Ref. No.	Description	Part No.
C 607	CERAMIC CAP. 2200pF AC250V	CCD2EZA0E222
C 608	ELECTROLYTIC CAP. 100μF/400V	CA2H101NC008
C 611	ELECTROLYTIC CAP. 33μF/25V	126D336S
C 612	MYLAR CAP. 0.039μF K or MYLAR CAP. 0.039μF K	1250393S
C 612	MYLAR CAP. 0.022μF K or MYLAR CAP. 0.022μF K	2250393S
C 617	CERAMIC CAP. 4700pF AC400V or CERAMIC CAP. 4700pF AC400V	1250223S
C 618	CERAMIC CAP. 4700pF AC400V or CERAMIC CAP. 4700pF AC400V	2250223S
C 619	CERAMIC CAP. 4700pF AC400V or CERAMIC CAP. 4700pF AC400V	CCG2HZP0Z472
C 620	MYLAR CAP. 0.027μF K or MYLAR CAP. 0.027μF K	1220353
C 621	CERAMIC CAP. 0.0015μF/2KV or CERAMIC CAP. 0.0015μF/2KV	CCG2HZP0Z472
C 622	ELECTROLYTIC CAP. 100μF/16V	1220353
C 623	ELECTROLYTIC CAP. 100μF/160V (105°C) or ELECTROLYTIC CAP. 100μF/160V (105°C)	CCG2HZP0Z472
C 624	CERAMIC CAP. 470pF/500V	1220353
C 625	ELECTROLYTIC CAP. 2200μF/16V or ELECTROLYTIC CAP. 2200μF/16V	CCD2JKS0B471
C 626	MYLAR CAP. 0.001μF or MYLAR CAP. 0.001μF	CE1CMRDDL222
C 627	ELECTROLYTIC CAP. 470μF/35V or ELECTROLYTIC CAP. 470μF/35V	626C228
C 628	CERAMIC CAP. 0.001μF/500V	1250102S
C 629	ELECTROLYTIC CAP. 470μF/25V or ELECTROLYTIC CAP. 470μF/25V	2250102S
C 631	ELECTROLYTIC CAP. 220μF/16V	CE1GMRDDL471
C 634	CERAMIC CAP. SL 15pF	626E477
C 635	ELECTROLYTIC CAP. 47μF/160V (105°C) or ELECTROLYTIC CAP. 47μF/160V (105°C)	CCD2JKS0B102
C 651	CERAMIC CAP. 0.001μF/500V	CE1EMRDDL471
C 652	ELECTROLYTIC CAP. 4.7μF/100V	626D477
C 653	CERAMIC CAP. 0.0047μF/500V or CERAMIC CAP. 0.0047μF/500V	126C227S
C 701	ELECTROLYTIC CAP. 47μF/16V	3S41150S
C 702	ELECTROLYTIC CAP. 4.7μF/50V	CA2C470NC009
C 703	SEMICONDUCTOR CAP. 0.056μF/25V K	CE2CMZDEH470
C 704	ELECTROLYTIC CAP. 1μF/50V	CCD2JKS0B102
C 801	ELECTROLYTIC CAP. 10μF/50V	CE2AMASDL4R7
C 802	ELECTROLYTIC CAP. 2.2μF/50V	CCD2JKD0B472
C 803	CHIP CERAMIC CAP. B 0.018μF/50V or CHIP CERAMIC CAP. B 0.018μF/50V	CCD2JKD0B472
C 804	ELECTROLYTIC CAP. 10μF/50V	126C476S
C 805	ELECTROLYTIC CAP. 10μF/50V	126F475S
C 806	ELECTROLYTIC CAP. 470μF/25V or ELECTROLYTIC CAP. 470μF/25V	CDA1EKS0X563
C 807	ELECTROLYTIC CAP. 470μF/10V	126F105S
C 808	ELECTROLYTIC CAP. 470μF/10V	126F106S
C 809	SEMICONDUCTOR CAP. 0.1μF/25V K	126F225S
CONNECTORS		
CN501	CONNECTOR BASE 5P or (for D.Y.)	J3RTC05JG001
CN601	CONNECTOR BASE 5P or (for D.Y.)	1780168
	CONNECTOR BASE 5P or (for D.Y.)	1730812
	CONNECTOR BASE 5P (for D.Y.)	J3RTC05MY002
	CONNECTOR BASE 2P or (for D.G.COIL)	J3RTC02JG001
	CONNECTOR BASE 2P or (for D.G.COIL)	1780165
CN801	CONNECTOR BASE 2P or (for D.G.COIL)	1780276
	CONNECTOR BASE 2P (for D.G.COIL)	J3RTC02MY002
	CONNECTOR BASE 2P or (for SPEAKER)	J383C02UG002
DIODES		
D 1	ZENER DIODE UZT33M or	QCSZ00UZT33M

Ref. No.	Description	Part No.
D 2	ZENER DIODE L5631	L5631
D 3	DIODE 1N4148M or	QDSZ01N4148M
	DIODE 1SS176 or	1SS176S
D 4	DIODE 1SS133	1SS133S
	DIODE 1N4148M or	QDSZ01N4148M
D 5	DIODE 1SS176 or	1SS176S
	DIODE 1SS133	1SS133S
D 101	ZENER DIODE UZ-7.5BS (B) or	QDSB0UZ7R5BS
D 102	ZENER DIODE MTZJ7.5 (B)	QDSB0MTZJ7R5
D 111	ZENER DIODE UZ-5.6BS (B) or	QDSB0UZ7R5BS
D 171	ZENER DIODE MTZJ5.6 (B)	QDSB0MTZJ5R6
D 173	ZENER DIODE UZ-4.3BS (B) or	QDSB0UZ4R3BS
D 174	ZENER DIODE MTZJ4.3 (B)	QDSB0MTZJ4R3
D 201	LED 5132T or	NP4Z0005132T
D 283	LED SLR-55VC 3F	1401273
D 284	DIODE 1N4148M or	QDSZ01N4148M
D 285	DIODE 1SS176 or	1SS176S
D 286	DIODE 1SS133	1SS133S
D 287	DIODE 1N4148M or	QDSZ01N4148M
D 331	DIODE 1SS176 or	1SS176S
D 501	DIODE 1SS133	1SS133S
D 502	DIODE 1N4148M or	QDSZ01N4148M
D 503	DIODE 1SS176 or	1SS176S
D 555	DIODE 1SS133	1SS133S
D 603	DIODE 1N4148M or	QDSZ01N4148M
D 604	DIODE 1SS176 or	1SS176S
D 605	DIODE 1SS133	1SS133S
D 606	DIODE 1N4148M or	QDSZ01N4148M
D 611	DIODE 1SS176 or	1SS176S
D 612	DIODE 1SS133	1SS133S
D 615	DIODE 1N4148M or	QDSZ01N4148M
D 616	DIODE 1SS176 or	1SS176S
D 617	DIODE 1SS133	1SS133S
D 618	DIODE 1N4148M or	QDSZ01N4148M

Ref. No.	Description	Part No.
D 619	ZENER DIODE UZ-7.5BS (B) or	QDSB0UZ7R5BS
D 621	ZENER DIODE MTZJ7.5 (B)	QDSB0MTZJ7R5
D 622	DIODE ERD38-06L or	AERD3806L000
D 623	DIODE ERD38-06L3	QD4Z0ERC2506
D 624	DIODE ERB44-04L3	QDQZ0ERB4404
D 625	DIODE ERB44-04L3	QDQZ0ERB4404
D 626	DIODE ERB44-04L3	QDQZ0ERB4404
D 627	DIODE 1N4148M or	QDSZ01N4148M
D 628	DIODE 1SS176 or	1SS176S
D 629	DIODE 1SS133	1SS133S
D 631	DIODE 1N4148M or	QDSZ01N4148M
D 632	DIODE 1SS176 or	1SS176S
D 633	DIODE 1SS133	1SS133S
D 634	DIODE 1N4148M or	QDSZ01N4148M
D 635	DIODE 1SS176 or	1SS176S
D 651	DIODE 1SS133	1SS133S
D 652	DIODE 1N4148M or	QDSZ01N4148M
D 701	DIODE 1SS176 or	1SS176S
D 702	DIODE 1SS133	1SS133S
D 801	DIODE 1N4148M or	QDSZ01N4148M
ICS		
IC101	IC TMP47C634N-R584	QSMQA0ZTS045
IC102	IC 24LC01B/P or	NSMMA0SMH002
IC201	IC X24C01AP or	NSMMA0ZXC003
	IC ST24C01CB1 or	NSMMA0ZSS002
	IC AT24C01A-10PC	NSMMA0ZAZ003
IC301	IC M52313SP	QSBLA0SMB011
IC501	IC TA8759BN	QSBLB0ZTS042
IC601	IC AN5512	QSBLA0SMS006
IC701	PHOTO COUPLER PC120	QPEZ00PC120F
IC801	IC TC4053BP or	14DW168
	IC BU4053B or	14LF166
	IC MC14053BCP or	14D0168
	IC NJU4053BD	14D0436
	IC AN5265	14LN160
COILS		
L 171	MICRO INDUCTOR 39μH J	2164390S
L 201	MICRO INDUCTOR 1μH K	2165109S
L 202	MICRO INDUCTOR 2.2μH K	2165229S
L 212	MICRO INDUCTOR 10μH K	2165100S
L 213	MICRO INDUCTOR 8.2μH K	2165829S

Ref. No.	Description	Part No.
L 301	MICRO INDUCTOR 8.2μH K	2165829S
L 351	MICRO INDUCTOR 68μH K	2165680S
L 352	MICRO INDUCTOR 33μH K	2165330S
L 353	MICRO INDUCTOR 68μH K	2165680S
L 381	MICRO INDUCTOR 18μH K	2165180S
T 211	CASING COIL	LFA07VOMM041
T 212	CASING COIL	LFA07VOMM040
T 213	CASING COIL	LFA07VOMM039
T 214	CASING COIL	LFA07VOMM042
L 621	POT TYPE COIL 47μH or	LLARZGZSF470
	POT TYPE COIL 47μH	LLBD**DMM001
T 301	CASING COIL	LFA07VOMM029
T 401	CASING COIL	LFA07VOMM031
T 402	CASING COIL	LFA07VOMM031
T 403	CASING COIL	LFA07VOMM030
T 404	CASING COIL	LFA07VOMM032
TRANSISTORS		
Q 1	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
Q 2	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QCS102SC1815
	TRANSISTOR KTA1266 (GR) or	NQS40KTA1266
Q 3	TRANSISTOR KTA1267 (GR) or	NQS10KTA1267
	TRANSISTOR 2SA1318 (T) or	2SA1318TZ
	TRANSISTOR 2SA1318 (U) or	2SA1318UZ
	TRANSISTOR 2SA1015 (GR)	QCS102SA1015
	TRANSISTOR KTA1266 (GR) or	NQS40KTA1266
Q 4	TRANSISTOR KTA1267 (GR) or	NQS10KTA1267
	TRANSISTOR 2SA1318 (T) or	2SA1318TZ
	TRANSISTOR 2SA1318 (U) or	2SA1318UZ
	TRANSISTOR 2SA1015 (GR)	QCS102SA1015
	TRANSISTOR KTA1266 (GR) or	NQS40KTA1266
Q 101	TRANSISTOR KTA1267 (GR) or	NQS10KTA1267
	TRANSISTOR 2SA1318 (T) or	2SA1318TZ
	TRANSISTOR 2SA1318 (U) or	2SA1318UZ
	TRANSISTOR 2SA1015 (GR)	QCS102SA1015
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
Q 102	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QCS102SC1815
	TRANSISTOR KTA1266 (GR) or	NQS40KTA1266
Q 103	TRANSISTOR KTA1267 (GR) or	NQS10KTA1267
	TRANSISTOR 2SA1318 (T) or	2SA1318TZ
	TRANSISTOR 2SA1318 (U) or	2SA1318UZ
	TRANSISTOR 2SA1015 (GR)	QCS102SA1015
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
Q 104	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QCS102SC1815
	TRANSISTOR KTA1266 (GR) or	NQS40KTA1266
Q 105	TRANSISTOR KTA1267 (GR) or	NQS10KTA1267
	TRANSISTOR 2SA1318 (T) or	2SA1318TZ
	TRANSISTOR 2SA1318 (U) or	2SA1318UZ
	TRANSISTOR 2SA1015 (GR)	QCS102SA1015
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
Q 121	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QCS102SC1815
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198

Ref. No.	Description	Part No.
Q 122	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
Q 123	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
Q 125	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
Q 201	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
Q 281	TRANSISTOR 2SC3000 (D) or	2SC3000DZ
	TRANSISTOR 2SC3000 (E)	2SC3000EZ
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
Q 301	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
Q 381	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
Q 391	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
Q 393	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR KTA1266 (GR) or	NQS40KTA1266
	TRANSISTOR KTA1267 (GR) or	NQS10KTA1267
	TRANSISTOR 2SA1318 (T) or	2SA1318TZ
Q 394	TRANSISTOR 2SA1318 (U) or	2SA1318UZ
	TRANSISTOR 2SA1015 (GR)	QQS102SA1015
	TRANSISTOR KTA1266 (GR) or	NQS40KTA1266
	TRANSISTOR KTA1267 (GR) or	NQS10KTA1267
Q 395	TRANSISTOR 2SA1318 (T) or	2SA1318TZ
	TRANSISTOR 2SA1318 (U) or	2SA1318UZ
	TRANSISTOR 2SA1015 (GR)	QQS102SA1015
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
Q 396	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
Q 397	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
Q 551	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR 2SC2271 (D) or	2SC2271DZ
Q 552	TRANSISTOR 2SC2271 (E)	2SC2271EZ
	TRANSISTOR 2SD2331LS	QQPZ02SD2331

Ref. No.	Description	Part No.
Q 601	TRANSISTOR 2SC3979	QQPZ02SC3979
Q 603	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
Q 604	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR 2SB698 (F) or	QQS002SB698
	TRANSISTOR 2SB698 (G) or	QQS002SB698
	TRANSISTOR 2SA950 (Y)	Q2SA950YTPE2
Q 605	TRANSISTOR 2SD734G or	QQS002SD734
	TRANSISTOR 2SD734F	QQS002SD734
Q 621	TRANSISTOR 2SC2271 (D) or	2SC2271DZ
	TRANSISTOR 2SC2271 (E)	2SC2271EZ
Q 622	TRANSISTOR 2SC2271 (D) or	2SC2271DZ
	TRANSISTOR 2SC2271 (E)	2SC2271EZ
Q 623	TRANSISTOR 2SC2271 (D) or	2SC2271DZ
	TRANSISTOR 2SC2271 (E)	2SC2271EZ
Q 625	TRANSISTOR 2SD1682(S) or	QQ3S02SD1682
	TRANSISTOR 2SD1682(T)	QQ3T02SD1682
Q 702	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
Q 703	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
Q 704	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
Q 705	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
	TRANSISTOR KTC3198 (GR) or	NQS40KTC3198
Q 801	TRANSISTOR KTC3199 (GR) or	NQS10KTC3199
	TRANSISTOR 2SC3331 (T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331 (U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815 (GR)	QQS102SC1815
RESISTORS		
R 1	CHIP RES. 1/10W 10KΩ or	134F103C
R 2	CHIP RES. 1/10W 10KΩ or	RRXAJR8Z0103
	CHIP RES. 1/10W 22KΩ or	134F223C
R 3	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
	CHIP RES. 1/10W 22KΩ or	134F223C
R 4	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
	CHIP RES. 1/10W 15KΩ or	134F153C
R 5	CHIP RES. 1/10W 15KΩ or	RRXAJR8Z0153
	CHIP RES. 1/10W 15KΩ or	134F153C
R 6	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0153
	CHIP RES. 1/10W 22KΩ or	134F223C
R 7	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
	CHIP RES. 1/10W 22KΩ or	134F223C
R 8	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
	CHIP RES. 1/10W 22KΩ or	134F223C
R 9	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
	CHIP RES. 1/10W 22KΩ or	134F223C
R 10	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
	CHIP RES. 1/10W 22KΩ or	134F223C
R 11	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
	CHIP RES. 1/10W 3.3KΩ or	134F332C

Ref. No.	Description	Part No.
R 12	CHIP RES. 1/10W 3.3KΩ	RRXAJR8Z0332
	CHIP RES. 1/10W 3.3KΩ or	134F332C
R 13	CHIP RES. 1/10W 3.3KΩ or	RRXAJR8Z0332
	CHIP RES. 1/10W 5.6KΩ or	134F562C
R 14	CHIP RES. 1/10W 5.6KΩ or	RRXAJR8Z0562
	CHIP RES. 1/10W 5.6KΩ or	134F562C
R 15	CHIP RES. 1/10W 5.6KΩ or	RRXAJR8Z0562
	CHIP RES. 1/10W 22KΩ or	134F223C
R 16	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
	CHIP RES. 1/10W 10KΩ or	134F103C
R 17	CHIP RES. 1/10W 10KΩ or	RRXAJR8Z0103
	CHIP RES. 1/10W 4.7KΩ	134F479C
R 101	CARBON RES. 1/4W 10Ω	RCX4JASZ0100
R 102	CARBON RES. 1/4W 330Ω	RCX4JASZ0331
R 103	CHIP RES. 1/10W 1KΩ or	134F102C
	CHIP RES. 1/10W 1KΩ or	RRXAJR8Z0102
R 104	CHIP RES. 1/10W 1KΩ or	134F102C
	CHIP RES. 1/10W 1KΩ or	RRXAJR8Z0102
R 105	CHIP RES. 1/10W 1KΩ or	134F102C
	CHIP RES. 1/10W 1KΩ or	RRXAJR8Z0102
R 106	CHIP RES. 1/10W 8.2KΩ or	134F822C
	CHIP RES. 1/10W 8.2KΩ or	RRXAJR8Z0822
R 107	CHIP RES. 1/10W 10KΩ or	134F103C
	CHIP RES. 1/10W 10KΩ or	RRXAJR8Z0103
R 108	CHIP RES. 1/10W 10KΩ or	134F103C
	CHIP RES. 1/10W 10KΩ or	RRXAJR8Z0103
R 109	CHIP RES. 1/10W 4.7KΩ or	134F472C
	CHIP RES. 1/10W 4.7KΩ or	RRXAJR8Z0472
R 110	CARBON RES. 1/4W 1KΩ	RCX4JASZ0102
R 111	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 112	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 113	CHIP RES. 1/10W 220Ω or	134F221C
	CHIP RES. 1/10W 220Ω or	RRXAJR8Z0221
R 118	CHIP RES. 1/10W 4.7KΩ or	134F472C
	CHIP RES. 1/10W 4.7KΩ or	RRXAJR8Z0472
R 119	CARBON RES. 1/4W 10KΩ	RCX4JASZ0103
R 121	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 122	CHIP RES. 1/10W 10KΩ or	134F103C
	CHIP RES. 1/10W 10KΩ or	RRXAJR8Z0103
R 123	CHIP RES. 1/10W 1KΩ or	134F102C
	CHIP RES. 1/10W 1KΩ or	RRXAJR8Z0102
R 124	CHIP RES. 1/10W 390Ω or	134F391C
	CHIP RES. 1/10W 390Ω or	RRXAJR8Z0391
R 125	CHIP RES. 1/10W 47KΩ or	134F473C
	CHIP RES. 1/10W 47KΩ or	RRXAJR8Z0473
R 127	CHIP RES. 1/10W 10KΩ or	134F103C
	CHIP RES. 1/10W 10KΩ or	RRXAJR8Z0103
R 128	CHIP RES. 1/10W 100Ω or	134F101C
	CHIP RES. 1/10W 100Ω or	RRXAJR8Z0101
R 130	CHIP RES. 1/10W 100KΩ or	134F104C
	CHIP RES. 1/10W 100KΩ or	RRXAJR8Z0104
R 133	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 135	CHIP RES. 1/10W 2.2KΩ or	134F222C
	CHIP RES. 1/10W 2.2KΩ or	RRXAJR8Z0222
R 136	CHIP RES. 1/10W 10KΩ or	134F103C
	CHIP RES. 1/10W 10KΩ or	RRXAJR8Z0103
R 139	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 145	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 146	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223

Ref. No.	Description	Part No.
R 152	CARBON RES. 1/4W 4.7KΩ	RCX4JASZ0472
R 153	CHIP RES. 1/10W 4.7KΩ or	134F472C
	CHIP RES. 1/10W 4.7KΩ or	RRXAJR8Z0472
R 154	CHIP RES. 1/10W 15KΩ or	134F153C
	CHIP RES. 1/10W 15KΩ or	RRXAJR8Z0153
R 155	CHIP RES. 1/10W 6.8KΩ or	134F682C
	CHIP RES. 1/10W 6.8KΩ or	RRXAJR8Z0682
R 156	CHIP RES. 1/10W 6.8KΩ or	134F682C
	CHIP RES. 1/10W 6.8KΩ or	RRXAJR8Z0682
R 158	CHIP RES. 1/10W 10KΩ or	134F103C
	CHIP RES. 1/10W 10KΩ or	RRXAJR8Z0103
R 159	CARBON RES. 1/4W 10KΩ	RCX4JASZ0103
R 161	CHIP RES. 1/10W 6.8KΩ or	134F682C
	CHIP RES. 1/10W 6.8KΩ or	RRXAJR8Z0682
R 162	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 164	CHIP RES. 1/10W 68KΩ or	134F683C
	CHIP RES. 1/10W 68KΩ or	RRXAJR8Z0683
R 165	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 166	CHIP RES. 1/10W 15KΩ or	134F153C
	CHIP RES. 1/10W 15KΩ or	RRXAJR8Z0153
R 167	CHIP RES. 1/10W 1.8KΩ or	134F182C
	CHIP RES. 1/10W 1.8KΩ or	RRXAJR8Z0182
R 169	CHIP RES. 1/10W 47KΩ or	134F473C
	CHIP RES. 1/10W 47KΩ or	RRXAJR8Z0473
R 171	CARBON RES. 1/4W 1.5KΩ	RCX4JASZ0152
R 172	CARBON RES. 1/4W 1.5KΩ	RCX4JASZ0152
R 173	CARBON RES. 1/4W 1.5KΩ	RCX4JASZ0152
R 174	CARBON RES. 1/4W 680Ω	RCX4JASZ0681
R 175	CHIP RES. 1/10W 68KΩ or	134F683C
	CHIP RES. 1/10W 68KΩ or	RRXAJR8Z0683
R 178	CHIP RES. 1/10W 1KΩ or	134F102C
	CHIP RES. 1/10W 1KΩ or	RRXAJR8Z0102
R 179	CHIP RES. 1/10W 220Ω or	134F221C
	CHIP RES. 1/10W 220Ω or	RRXAJR8Z0221
R 180	CHIP RES. 1/10W 220Ω or	134F221C
	CHIP RES. 1/10W 220Ω or	RRXAJR8Z0221
R 181	CHIP RES. 1/10W 220Ω or	134F221C
	CHIP RES. 1/10W 220Ω or	RRXAJR8Z0221
R 185	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 186	CHIP RES. 1/10W 22KΩ or	134F223C
	CHIP RES. 1/10W 22KΩ or	RRXAJR8Z0223
R 187	CHIP RES. 1/10W 4.7KΩ or	134F472C
	CHIP RES. 1/10W 4.7KΩ or	RRXAJR8Z0472

Ref. No.	Description	Part No.
R 211	CARBON RES. 1/4W 3.3KΩ	RCX4JASZ0332
R 213	CHIP RES. 1/10W 15KΩ or CHIP RES. 1/10W 15KΩ	134F153C RRXAJR8Z0153
R 214	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 215	CHIP RES. 1/10W 47Ω or CHIP RES. 1/10W 47Ω	134F470C RRXAJR8Z0470
R 216	CHIP RES. 1/10W 560Ω or CHIP RES. 1/10W 560Ω	134F561C RRXAJR8Z0561
R 217	CHIP RES. 1/10W 1KΩ or CHIP RES. 1/10W 1KΩ	134F102C RRXAJR8Z0102
R 218	CHIP RES. 1/10W 180Ω or CHIP RES. 1/10W 180Ω	134F181C RRXAJR8Z0181
R 219	CHIP RES. 1/10W 4.7KΩ or CHIP RES. 1/10W 4.7KΩ	134F472C RRXAJR8Z0472
R 220	CHIP RES. 1/10W 270KΩ or CHIP RES. 1/10W 270KΩ	134F274C RRXAJR8Z0274
R 221	METAL RES. 1W 120Ω or METAL RES. 1W 120Ω	RN01JZDZ0121 RN01121KE004
R 222	CHIP RES. 1/10W 1.5KΩ or CHIP RES. 1/10W 1.5KΩ	134F152C RRXAJR8Z0152
R 283	CARBON RES. 1/4W 10KΩ	RCX4JASZ0103
R 284	CARBON RES. 1/4W 1KΩ	RCX4JASZ0102
R 285	CARBON RES. 1/4W 220KΩ	RCX4JASZ0224
R 286	CARBON RES. 1/4W 27KΩ	RCX4JASZ0273
R 301	CHIP RES. 1/10W 560Ω or CHIP RES. 1/10W 560Ω	134F561C RRXAJR8Z0561
R 302	CHIP RES. 1/10W 8.2KΩ or CHIP RES. 1/10W 8.2KΩ	134F822C RRXAJR8Z0822
R 303	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 304	CHIP RES. 1/10W 6.8KΩ or CHIP RES. 1/10W 6.8KΩ	134F682C RRXAJR8Z0682
R 305	CHIP RES. 1/10W 390Ω or CHIP RES. 1/10W 390Ω	134F391C RRXAJR8Z0391
R 306	CHIP RES. 1/10W 2.2KΩ or CHIP RES. 1/10W 2.2KΩ	134F222C RRXAJR8Z0222
R 307	CHIP RES. 1/10W 330KΩ or CHIP RES. 1/10W 330KΩ	134F334C RRXAJR8Z0334
R 308	CHIP RES. 1/10W 3.3KΩ or CHIP RES. 1/10W 3.3KΩ	134F332C RRXAJR8Z0332
R 309	CHIP RES. 1/10W 1.8MΩ or CHIP RES. 1/10W 1.8MΩ	134F185C RRXAJR8Z0185
R 310	CHIP RES. 1/10W 1.2KΩ or CHIP RES. 1/10W 1.2KΩ	134F122C RRXAJR8Z0122
R 311	CHIP RES. 1/10W 1.8KΩ or CHIP RES. 1/10W 1.8KΩ	134F182C RRXAJR8Z0182
R 312	CHIP RES. 1/10W 5.6KΩ or CHIP RES. 1/10W 5.6KΩ	134F562C RRXAJR8Z0562
R 313	CHIP RES. 1/10W 15KΩ or CHIP RES. 1/10W 15KΩ	134F153C RRXAJR8Z0153
R 314	CHIP RES. 1/10W 5.6KΩ or CHIP RES. 1/10W 5.6KΩ	134F562C RRXAJR8Z0562
R 315	CHIP RES. 1/10W 1KΩ or CHIP RES. 1/10W 1KΩ	134F102C RRXAJR8Z0102
R 316	CHIP RES. 1/10W 33KΩ or CHIP RES. 1/10W 33KΩ	134F333C RRXAJR8Z0333
R 321	CHIP RES. 1/10W 4.7MΩ or CHIP RES. 1/10W 4.7MΩ	134F475C RRXAJR8Z0475
R 322	CHIP RES. 1/10W 15KΩ or CHIP RES. 1/10W 15KΩ	134F153C RRXAJR8Z0153
R 331	CHIP RES. 1/10W 2.7KΩ or CHIP RES. 1/10W 2.7KΩ	134F272C RRXAJR8Z0272
R 332	CHIP RES. 1/10W 4.7KΩ or CHIP RES. 1/10W 4.7KΩ	134F472C RRXAJR8Z0472
R 333	CHIP RES. 1/10W 150Ω or	134F151C

Ref. No.	Description	Part No.
R 334	CHIP RES. 1/10W 150Ω CHIP RES. 1/10W 22KΩ or CHIP RES. 1/10W 22KΩ	RRXAJR8Z0151 134F223C RRXAJR8Z0223
R 335	CHIP RES. 1/10W 270Ω or CHIP RES. 1/10W 270Ω	134F271C RRXAJR8Z0271
R 336	CHIP RES. 1/10W 1KΩ or CHIP RES. 1/10W 1KΩ	134F102C RRXAJR8Z0102
R 337	CHIP RES. 1/10W 470Ω or CHIP RES. 1/10W 470Ω	134F471C RRXAJR8Z0471
R 338	CHIP RES. 1/10W 3.3KΩ or CHIP RES. 1/10W 3.3KΩ	134F332C RRXAJR8Z0332
R 339	CHIP RES. 1/10W 22KΩ or CHIP RES. 1/10W 22KΩ	134F223C RRXAJR8Z0223
R 340	CHIP RES. 1/10W 150Ω or CHIP RES. 1/10W 150Ω	134F151C RRXAJR8Z0151
R 341	CHIP RES. 1/10W 120Ω or CHIP RES. 1/10W 120Ω	134F121C RRXAJR8Z0121
R 342	CHIP RES. 1/10W 330KΩ or CHIP RES. 1/10W 330KΩ	134F334C RRXAJR8Z0334
R 343	CHIP RES. 1/10W 120KΩ or CHIP RES. 1/10W 120KΩ	134F124C RRXAJR8Z0124
R 351	CHIP RES. 1/10W 560Ω or CHIP RES. 1/10W 560Ω	134F561C RRXAJR8Z0561
R 352	CHIP RES. 1/10W 8.2KΩ or CHIP RES. 1/10W 8.2KΩ	134F822C RRXAJR8Z0822
R 353	CHIP RES. 1/10W 4.7KΩ or CHIP RES. 1/10W 4.7KΩ	134F472C RRXAJR8Z0472
R 354	CHIP RES. 1/10W 33KΩ or CHIP RES. 1/10W 33KΩ	134F333C RRXAJR8Z0333
R 355	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 357	CHIP RES. 1/10W 1KΩ or CHIP RES. 1/10W 1KΩ	134F102C RRXAJR8Z0102
R 360	CARBON RES. 1/4W 680Ω	RCX4JASZ0681
R 361	CHIP RES. 1/10W 220Ω or CHIP RES. 1/10W 220Ω	134F221C RRXAJR8Z0221
R 362	CHIP RES. 1/10W 220Ω or CHIP RES. 1/10W 220Ω	134F221C RRXAJR8Z0221
R 363	CHIP RES. 1/10W 220Ω or CHIP RES. 1/10W 220Ω	134F221C RRXAJR8Z0221
R 365	CHIP RES. 1/10W 1.2KΩ or CHIP RES. 1/10W 1.2KΩ	134F122C RRXAJR8Z0122
R 366	CHIP RES. 1/10W 1.5KΩ or CHIP RES. 1/10W 1.5KΩ	134F152C RRXAJR8Z0152
R 367	CHIP RES. 1/10W 12KΩ or CHIP RES. 1/10W 12KΩ	134F123C RRXAJR8Z0123
R 368	CHIP RES. 1/10W 15KΩ or CHIP RES. 1/10W 15KΩ	134F153C RRXAJR8Z0153
R 369	CHIP RES. 1/10W 15KΩ or CHIP RES. 1/10W 15KΩ	134F153C RRXAJR8Z0153
R 370	CHIP RES. 1/10W 470Ω or CHIP RES. 1/10W 470Ω	134F471C RRXAJR8Z0471
R 383	CHIP RES. 1/10W 470Ω or CHIP RES. 1/10W 470Ω	134F471C RRXAJR8Z0471
R 385	CHIP RES. 1/10W 22KΩ or CHIP RES. 1/10W 22KΩ	134F223C RRXAJR8Z0223
R 386	CHIP RES. 1/10W 4.7KΩ or CHIP RES. 1/10W 4.7KΩ	134F472C RRXAJR8Z0472
R 391	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 392	CHIP RES. 1/10W 8.2KΩ or CHIP RES. 1/10W 8.2KΩ	134F822C RRXAJR8Z0822
R 393	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 394	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103

Ref. No.	Description	Part No.
R 395	CHIP RES. 1/10W 22KΩ or CHIP RES. 1/10W 22KΩ	134F223C RRXAJR8Z0223
R 396	CHIP RES. 1/10W 22KΩ or CHIP RES. 1/10W 22KΩ	134F223C RRXAJR8Z0223
R 397	CHIP RES. 1/10W 220KΩ or CHIP RES. 1/10W 220KΩ	134F224C RRXAJR8Z0224
R 401	CHIP RES. 1/10W 3.3KΩ or CHIP RES. 1/10W 3.3KΩ	134F332C RRXAJR8Z0332
R 402	CHIP RES. 1/10W 6.8KΩ or CHIP RES. 1/10W 6.8KΩ	134F682C RRXAJR8Z0682
R 403	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 404	CHIP RES. 1/10W 150Ω or CHIP RES. 1/10W 150Ω	134F151C RRXAJR8Z0151
R 405	CHIP RES. 1/10W 4.7MΩ or CHIP RES. 1/10W 4.7MΩ	134F475C RRXAJR8Z0475
R 501	CHIP RES. 1/10W 82KΩ or CHIP RES. 1/10W 82KΩ	134F823C RRXAJR8Z0823
R 502	CHIP RES. 1/10W 1KΩ or CHIP RES. 1/10W 1KΩ	134F102C RRXAJR8Z0102
R 503	CARBON RES. 1/4W 15KΩ	RCX4JASZ0153
R 504	CHIP RES. 1/10W 1KΩ or CHIP RES. 1/10W 1KΩ	134F102C RRXAJR8Z0102
R 505	CARBON RES. 1/4W 68KΩ	RCX4JASZ0683
R 506	CARBON RES. 1/4W 6.8KΩ	RCX4JASZ0682
R 507	CARBON RES. 1/4W 1KΩ	RCX4JASZ0102
R 508	CARBON RES. 1/4W 56KΩ	RCX4JASZ0563
R 509	CARBON RES. 1/4W 3.3Ω	1345339S
R 510	CARBON RES. 1/4W 3.3Ω	1345339S
R 511	CARBON RES. 1/4W 1KΩ	RCX4JASZ0102
R 512	CARBON RES. 1/4W 1KΩ	RCX4JASZ0102
R 513	FUSE RES. 1/4W 4.7Ω or FUSE RES. 1/4W 4.7Ω or FUSE RES. 1/4W 4.7Ω	RFX44R7MS002 5366479 RFX44R7QJ001
R 514	CARBON RES. 1/4W 68KΩ	RCX4JASZ0683
R 521	CARBON RES. 1/4W 1KΩ	RCX4JASZ0102
R 522	CARBON RES. 1/4W 560Ω	RCX4JASZ0561
R 551	METAL RES. 3W 220Ω or METAL RES. 3W 220Ω	RN03JZDZ0221 RN03221KE003
R 552	CARBON RES. 1/4W 10KΩ	RCX4JASZ0103
R 553	CEMENT RES. 5W 1.8KΩ or CEMENT RES. 5W 1.8KΩ or CEMENT RES. 5W 1.8KΩ	RW05182PG004 RW05182UB004 RW05182KA004
R 554	METAL RES. 1W 15KΩ or METAL RES. 1W 15KΩ	RN01JZDZ0153 RN01153KE004
R 555	CARBON RES. 1/4W 0.47Ω	1345478S
R 556	CARBON RES. 1/4W 10KΩ	RCX4JASZ0103
R 557	CHIP RES. 1/10W 330Ω or CHIP RES. 1/10W 330Ω	134F331C RRXAJR8Z0331
R 558	CARBON RES. 1/4W 100KΩ	RCX4JASZ0104
R 559	CARBON RES. 1/4W 56KΩ	RCX4JASZ0563
R 560	CARBON RES. 1/4W 1KΩ	RCX4JASZ0102
R 561	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
R 601	CEMENT RES. 5W 1.2Ω or CEMENT RES. 5W 1.2Ω or CEMENT RES. 5W 1.2Ω	RW051R2PG001 RW051R2UB001 RW051R2KA006
R 603	CEMENT RES. 5W 47Ω or CEMENT RES. 5W 47Ω or CEMENT RES. 5W 47Ω	RW05470PG001 RW05470UB001 RW05470KA006
R 604	CARBON RES. 1/4W 15KΩ	RCX4JASZ0153
R 606	CARBON RES. 1/4W 6.8KΩ	RCX4JASZ0682
R 607	CARBON RES. 1/4W 560KΩ	RCX4JASZ0564
R 608	CARBON RES. 1/4W 3.9KΩ	RCX4JASZ0392
R 609	CARBON RES. 1/4W 390Ω	RCX4JASZ0391
R 610	CARBON RES. 1/4W 270Ω	RCX4JASZ0271

Ref. No.	Description	Part No.
R 611	CARBON RES. 1/4W 1.5MΩ	1345155S
R 612	CARBON RES. 1/4W 47KΩ	RCX4JASZ0473
R 614	CEMENT RES. 5W 3.3Ω or CEMENT RES. 5W 3.3Ω	RW053R3PG001 RW053R3UB001
R 615	CARBON RES. 1/4W 1.2KΩ	RCX4JASZ0122
R 618	CARBON RES. 1/4W 680Ω	RCX4JASZ0681
R 619	CARBON RES. 1/4W 100Ω	RCX4JASZ0101
R 620	CARBON RES. 1/4W 56KΩ	RCX4JASZ0563
R 621	METAL RES. 2W 0.68Ω	RN02JZDZ0R68
R 622	CARBON RES. 1/4W 5.6KΩ	RCX4JASZ0562
R 626	CARBON RES. 1/4W 56KΩ	RCX4JASZ0563
R 627	CARBON RES. 1/4W 56KΩ	RCX4JASZ0563
R 628	CARBON RES. 1/4W 56KΩ	RCX4JASZ0563
R 631	CARBON RES. 1/4W 820Ω	RCX4JASZ0821
R 632	METAL RES. 2W 4.7Ω	RN02JZDZ04R7
R 633	CARBON RES. 1/4W 100Ω	RCX4JASZ0101
R 634	CARBON RES. 1/4W 560Ω	RCX4JASZ0561
R 635	CARBON RES. 1/4W 6.8KΩ	RCX4JASZ0682
R 636	CARBON RES. 1/4W 15KΩ	RCX4JASZ0153
R 637	CARBON RES. 1/4W 33KΩ	RCX4JASZ0333
R 638	CARBON RES. 1/4W 33KΩ	RCX4JASZ0333
R 639	CARBON RES. 1/4W 18KΩ	RCX4JASZ0183
R 640	CARBON RES. 1/4W 6.8KΩ	RCX4JASZ0682
R 641	CARBON RES. 1/4W 220KΩ	RCX4JASZ0224
R 642	CHIP RES. 1/10W 22KΩ or CHIP RES. 1/10W 22KΩ	134F223C RRXAJR8Z0223
R 643	CHIP RES. 1/10W 47KΩ or CHIP RES. 1/10W 47KΩ	134F473C RRXAJR8Z0473
R 644	CARBON RES. 1/4W 3.3KΩ	RCX4JASZ0332
R 645	CARBON RES. 1/4W 12KΩ	RCX4JASZ0123
R 650	CARBON RES. 1/4W 1KΩ	RCX4JASZ0102
R 651	FUSE RES. 1/4W 2.2Ω or FUSE RES. 1/4W 2.2Ω or FUSE RES. 1/4W 2.2Ω	RFX42R2MS002 5366229 RFX42R2QJ001
R 652	CHIP RES. 1/10W 1MΩ or CHIP RES. 1/10W 1MΩ	134F105C RRXAJR8Z0105
R 653	CARBON RES. 1/4W 4.7KΩ	RCX4JASZ0472
R 655	FUSE RES. 1W 3.3Ω or FUSE RES. 1W 3.3Ω or FUSE RES. 1W 3.3Ω	RF013R3UB001 RF01339KA004 5363339
R 701	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 702	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 703	CHIP RES. 1/10W 3.3KΩ or CHIP RES. 1/10W 3.3KΩ	134F332C RRXAJR8Z0332
R 704	CHIP RES. 1/10W 2.2KΩ or CHIP RES. 1/10W 2.2KΩ	134F222C RRXAJR8Z0222
R 705	CHIP RES. 1/10W 330Ω or CHIP RES. 1/10W 330Ω	134F331C RRXAJR8Z0331
R 706	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 707	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 708	CHIP RES. 1/10W 27KΩ or CHIP RES. 1/10W 27KΩ	134F273C RRXAJR8Z0273
R 709	CHIP RES. 1/10W 2.2KΩ or CHIP RES. 1/10W 2.2KΩ	134F222C RRXAJR8Z0222
R 710	CHIP RES. 1/10W 150KΩ or CHIP RES. 1/10W 150KΩ	134F154C RRXAJR8Z0154
R 711	CHIP RES. 1/10W 120KΩ or CHIP RES. 1/10W 120KΩ	134F124C RRXAJR8Z0124
R 712	CHIP RES. 1/10W 47KΩ or CHIP RES. 1/10W 47KΩ	134F473C RRXAJR8Z0473

Ref. No.	Description	Part No.
R 713	CHIP RES. 1/10W 47KΩ or CHIP RES. 1/10W 47KΩ	134F473C RRXAJR8Z0473
R 714	CHIP RES. 1/10W 22KΩ or CHIP RES. 1/10W 22KΩ	134F223C RRXAJR8Z0223
R 715	CHIP RES. 1/10W 22KΩ or CHIP RES. 1/10W 22KΩ	134F223C RRXAJR8Z0223
R 716	CHIP RES. 1/10W 1.5KΩ or CHIP RES. 1/10W 1.5KΩ	134F152C RRXAJR8Z0152
R 718	CHIP RES. 1/10W 2.2KΩ or CHIP RES. 1/10W 2.2KΩ	134F222C RRXAJR8Z0222
R 719	CHIP RES. 1/10W 47KΩ or CHIP RES. 1/10W 47KΩ	134F473C RRXAJR8Z0473
R 720	CHIP RES. 1/10W 1.5KΩ or CHIP RES. 1/10W 1.5KΩ	134F152C RRXAJR8Z0152
R 724	CHIP RES. 1/10W 1.5KΩ or CHIP RES. 1/10W 1.5KΩ	134F152C RRXAJR8Z0152
R 732	CHIP RES. 1/10W 10KΩ or CHIP RES. 1/10W 10KΩ	134F103C RRXAJR8Z0103
R 801	CARBON RES. 1/4W 100Ω	RCX4JASZ0101
R 802	CHIP RES. 1/10W 5.6KΩ or CHIP RES. 1/10W 5.6KΩ	134F562C RRXAJR8Z0562
R 804	CHIP RES. 1/10W 12KΩ or CHIP RES. 1/10W 12KΩ	134F123C RRXAJR8Z0123
R 805	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
R 806	CHIP RES. 1/10W 560Ω or CHIP RES. 1/10W 560Ω	134F561C RRXAJR8Z0561
R 807	CARBON RES. 1/4W 10KΩ	RCX4JASZ0103
R 808	CARBON RES. 1/4W 4.7Ω	1345479S
R 809	METAL RES. 2W 5.6Ω	RN02JZDZ05R6
R 810	CARBON RES. 1/4W 100Ω	RCX4JASZ0101
R 813	CARBON RES. 1/10W 47KΩ or CARBON RES. 1/10W 47KΩ	134F473C RRXAJR8Z0473
C 315	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
C 316	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
C 413	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 11	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 12	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 13	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 14	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 15	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 16	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 17	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 18	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 19	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 20	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 21	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 22	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 23	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 24	CHIP RES. 1/10W 0Ω or	134F000C

Ref. No.	Description	Part No.
JC 25	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 26	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 27	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 29	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 30	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 31	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 33	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 34	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 35	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 36	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 38	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 39	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 40	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 41	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 42	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 43	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 47	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 48	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 49	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
JC 51	CHIP RES. 1/10W 0Ω or CHIP RES. 1/10W 0Ω	134F000C RRXAJR8Z0000
SWITCHES		
SW101	TACT SWITCH or TACT SWITCH or	SST0101AL013 SST0101MS013
SW102	TACT SWITCH or TACT SWITCH or	SST0101HH016 SST0101AL013
SW103	TACT SWITCH or TACT SWITCH or	SST0101MS013 SST0101HH016
SW104	TACT SWITCH or TACT SWITCH or	SST0101AL013 SST0101MS013
SW105	TACT SWITCH or TACT SWITCH or	SST0101HH016 SST0101AL013
SW107	TACT SWITCH or TACT SWITCH or	SST0101MS013 SST0101HH016
SW108	TACT SWITCH or TACT SWITCH or	SST0101AL013 SST0101MS013
SW109	TACT SWITCH or TACT SWITCH or	SST0101HH016 SST0101AL013

Ref. No.	Description	Part No.
SW110	TACT SWITCH or TACT SWITCH or TACT SWITCH	SST0101AL013 SST0101MS013 SST0101HH016
TRANSFORMERS		
T 551	H. DRIVE TRANS	1150325
T 552 ▲	F.B.T. 154-064U or F.B.T. FCK-14B040	LTF00EPGS005 LTF00EPSM006
T 601 ▲	POWER TRANS or POWER TRANS	LTT00EPSA007 LTT00EPMS016
T 602 ▲	LINE FILTER or LINE FILTER	LLBG00ZT001 LLBG00ZMS008
VARIABLE RESISTORS		
VR211	SEMIFIXED RES. 10KΩ B or SEMIFIXED RES. 10KΩ B	138J781 638A103
VR301	SEMIFIXED RES. 1KΩ B or SEMIFIXED RES. 1KΩ B	138J777 638A102
VR331	SEMIFIXED RES. 200 Ω B or SEMIFIXED RES. 200 Ω B	238J113 638A221
VR351	SEMIFIXED RES. 5KΩ B or SEMIFIXED RES. 5KΩ B	138J780 638A472
VR501	SEMIFIXED RES. 50KΩ B or SEMIFIXED RES. 50KΩ B	138J784 638A473
VR521	SEMIFIXED RES. 10KΩ B or SEMIFIXED RES. 10KΩ B	138J781 638A103
VR621	SEMIFIXED RES. 20KΩ B or SEMIFIXED RES. 20KΩ B	138J782 638A223
CRYSTAL OSCILLATOR		
X 101	CERAMIC RESONATOR 4.19MHz or CERAMIC RESONATOR 4.19MHz or CERAMIC RESONATOR 4.19MHz	FY0415LMS002 1813682 1812885
X 301	CRYSTAL OSCILLATOR 4.43MHz	1811387
X 302	CRYSTAL OSCILLATOR 3.58MHz	1811291
X 331	CERAMIC RESONATOR CSB503F30	1813527
MISCELLANEOUS		
	CABLE TIE or CABLE TIE LABEL 15mmX5mm SUMI TUBE ø12X25mm F2 TYPE (for C618 used)	1790256 1790356
BC551	LED HOLDER (for D111)	0EM300761
BC601	SENSOR HOLDER (for RCV101)	0EM402360
CF211	BEADS CORE	1190024
CF212	BEADS CORE	1190038
CF213	BEADS CORE	1190038
CN451A	CERAMIC TRAP 5.5MHZ+6.5MHZ	FBE655PMR002
CN452A	CERAMIC FILTER 5.5MHz or CERAMIC FILTER 5.5MHz or CERAMIC FILTER 6.5MHz	1812018 FBB555PMS001 1813595
DL301	CABLE HOLDER 5P or CABLE HOLDER 5P	FBB655PMS001 XW01D05NF001
DL311	CABLE HOLDER 4P or CABLE HOLDER 4P	XW01D04NF001 XW01B04NF001
F 601 ▲	DELAY LINE	113N852
FH601	GLASS DELAY or GLASS DELAY	FD0445PXX001 1812056
FH602	FUSE T4.0A 250V FUSE HOLDER or FUSE HOLDER or FUSE HOLDER	1790998 XH01Z00DK001 1790424 1790848
HS501	FUSE HOLDER or FUSE HOLDER or FUSE HOLDER	XH01Z00DK001 1790424 1790848
HS601	HEAT SINK PH (for V OUT IC)	0EM400958
HS801	HEAT SINK SP (for POWER TR.) HEAT SINK MP (for POWER AMP)	0EM300787 0EM402332

Ref. No.	Description	Part No.
J 701	RCA JACK (2 PIN)	JXRL020JC013
J 702	RCA JACK (1 PIN)	JXRL010JC018
J 801	EARPHONE JACK or EARPHONE JACK	JYSL030HD002 JYSL030SR001
LCN451	RIBBON WIRE 5P (for CRT PCB)	WX1L8400-002
LCN452	RIBBON WIRE 4P (for CRT PCB)	WX1L8400-001
P 601 ▲	AC CORD	5750112
PT601 ▲	THERMISTOR or THERMISTOR	QN42PA2A5200 5790117
RCV101	REMOCON RECEIVING UNIT or REMOCON RECEIVING UNIT	USESJRSKK010 USESJRSKK011
SF201	SAW FILTER	FBB386PKC001
TP 1	TEST PIN or TEST PIN	1700093 1740354
TP 2	TEST PIN or TEST PIN	1700093 1740354
TP 3	TEST PIN or TEST PIN	1700093 1740354
TP 4	TEST PIN or TEST PIN	1700093 1740354
TP 5	TEST PIN or TEST PIN	1700093 1740354
TP 6	TEST PIN or TEST PIN	1700093 1740354
TP 7	TEST PIN or TEST PIN	1700093 1740354
TP 8	TEST PIN or TEST PIN	1700093 1740354
TP 9	TEST PIN or TEST PIN	1700093 1740354
TU 1	TUNER TEKE1-005A, 014A, 015A	UTUNPSDAL008

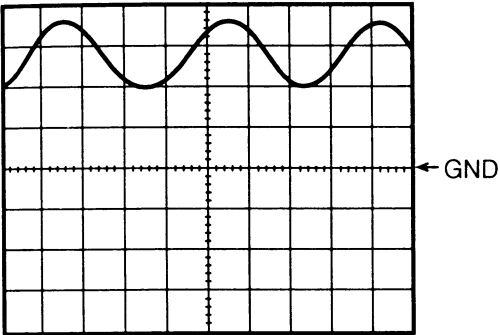
CRT PCB Assembly

Ref. No.	Description	Part No.
	CRT PCB Assembly Consists of the following:	
CAPACITORS		
C 451	CERAMIC CAP. 220pF B	3B42221
C 452	CERAMIC CAP. 220pF B	3B42221
C 453	CERAMIC CAP. 330pF B [used CRT: 370KRB22-TC09(SPYB)]	3B42331
	CERAMIC CAP. 220pF B [used CRT: 37GDA85X-TC01/ A34KPU02XX48]	3B42221
C 454	CERAMIC CAP. 0.001μF 2KV or CERAMIC CAP. 0.001μF 2KV	CCD3DKP0B102 6220585
C 455	ELECTROLYTIC CAP. 10μF/50V	126F106S
CONNECTOR		
CN453	CONNECTOR PIN 1P or (for CRT GND) CONNECTOR PIN 1P or (for CRT GND) CONNECTOR PIN 1P (for CRT GND)	1700576 1730688 JTEA000LC001
COIL		
L 451	MICRO INDUCTOR 180μH K	2162181S
TRANSISTORS		
Q 451	TRANSISTOR 2SC2271 (D) or TRANSISTOR 2SC2271 (E) or TRANSISTOR 2SC2482	2SC2271DZ 2SC2271EZ QQSZ02SC2482
Q 452	TRANSISTOR 2SC2271 (D) or TRANSISTOR 2SC2271 (E) or TRANSISTOR 2SC2482	2SC2271DZ 2SC2271EZ QQSZ02SC2482
Q 453	TRANSISTOR 2SC2271 (D) or TRANSISTOR 2SC2271 (E) or TRANSISTOR 2SC2482	2SC2271DZ 2SC2271EZ QQSZ02SC2482
RESISTORS		
R 451	METAL RES. 1W 15KΩ or METAL RES. 1W 15KΩ	RN01JZDZ0153 RN01153KE004

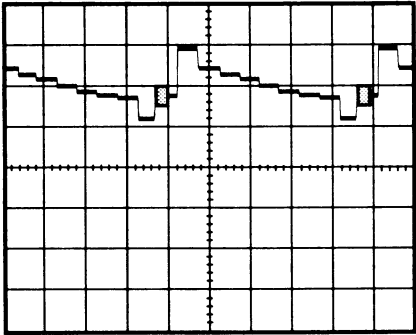
WAVEFORMS

WFa ~ W Ft = Waveforms to be observed at
Waveform check points.
(Shown in Schematic Diagram.)

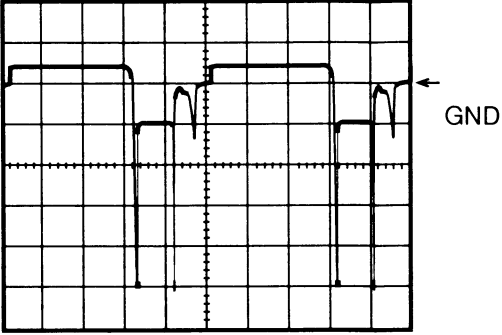
Input: PAL Color Bar Signal (with 1KHz Audio Signal)
Receiving Ch.: E2 ch (48.25MHz)
Preset Mode: Press Picture Select button on the remote control unit,
then press the number "1" button.
(Brightness---Center Color---Center Contrast---Approx 70%)



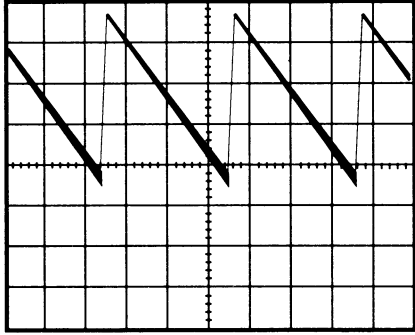
WFa 1DIV: 1V 0.2msec



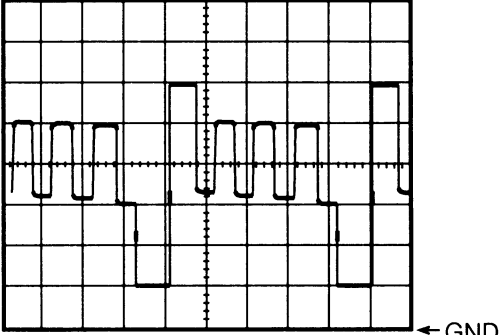
WFe 1DIV: 0.5V 10μsec



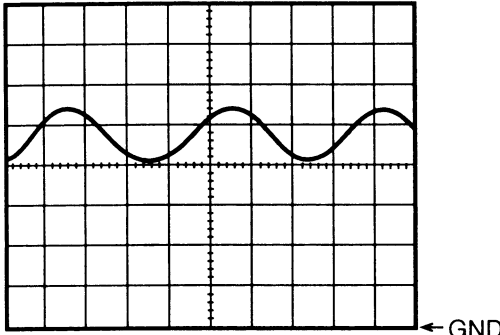
WFi 1DIV: 2V 10μsec



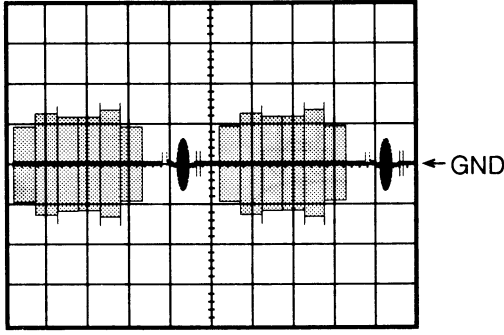
WFm 1DIV: 0.5V 5msec



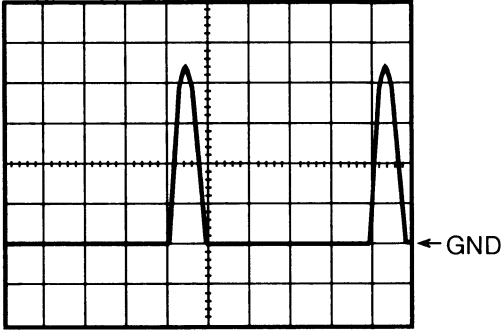
WFq 1DIV: 1V 10μsec



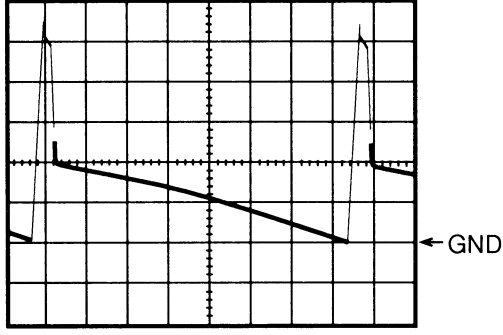
Wfb 1DIV: 1V 0.2msec



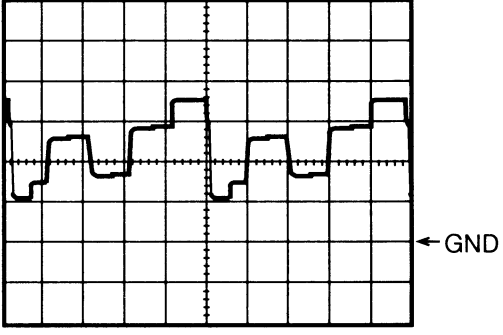
Wff 1DIV: 0.2V 10μsec



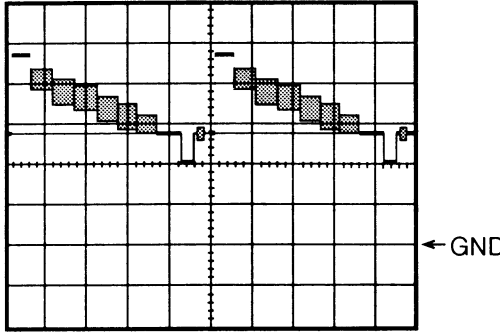
WFj 1DIV: 250V 10μsec



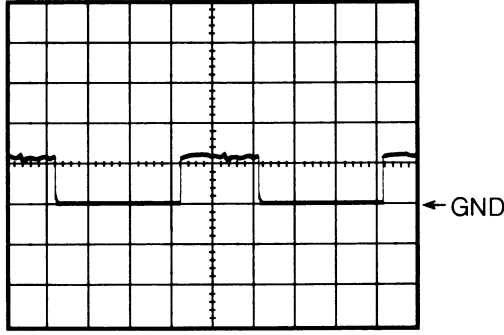
WFn 1DIV: 10V 2msec



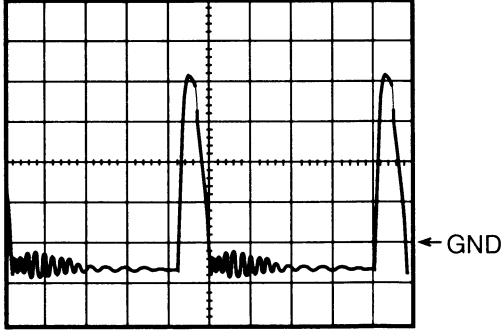
Wfr 1DIV: 50V 10μsec



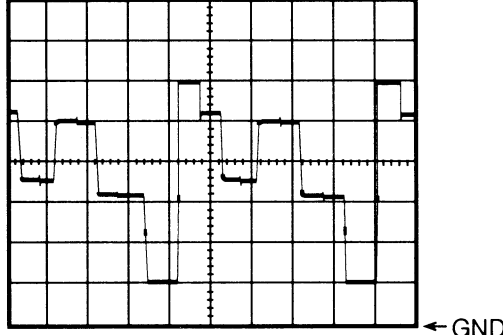
Wfc 1DIV: 1V 10μsec



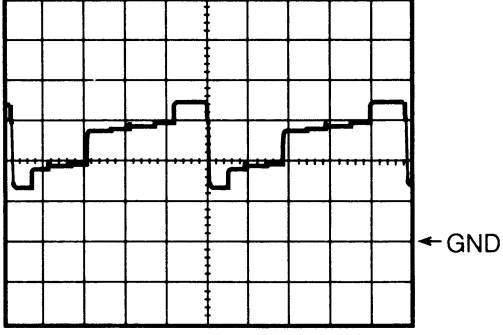
Wfg 1DIV: 0.5V 10μsec



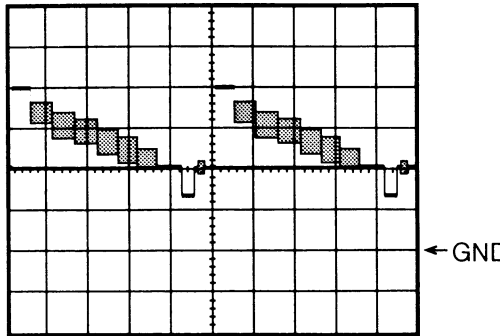
Wfk 1DIV: 5V 10μsec



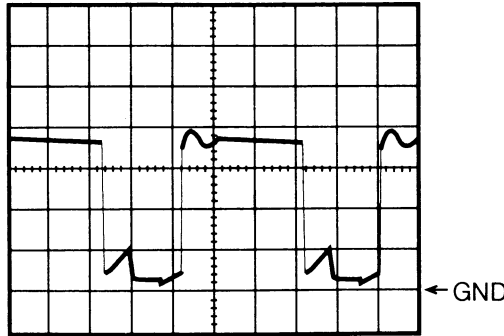
Wfo 1DIV: 1V 10μsec



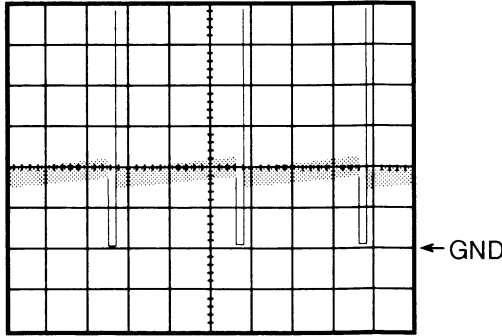
Wfs 1DIV: 50V 10μsec



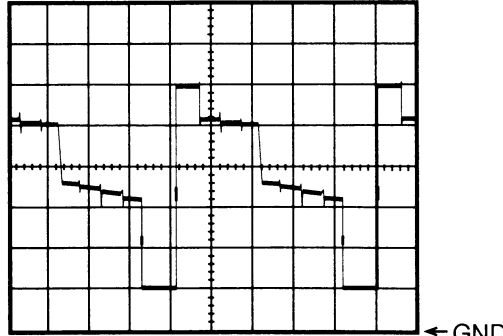
Wfd 1DIV: 1V 10μsec



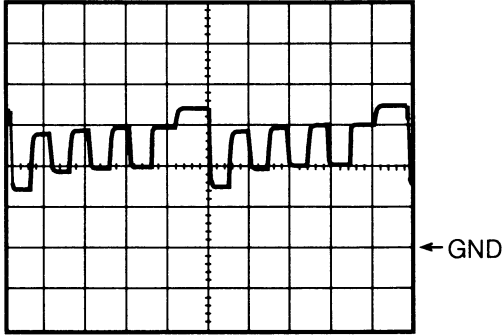
WFh 1DIV: 50V 10μsec



Wfi 1DIV: 0.5V 5msec

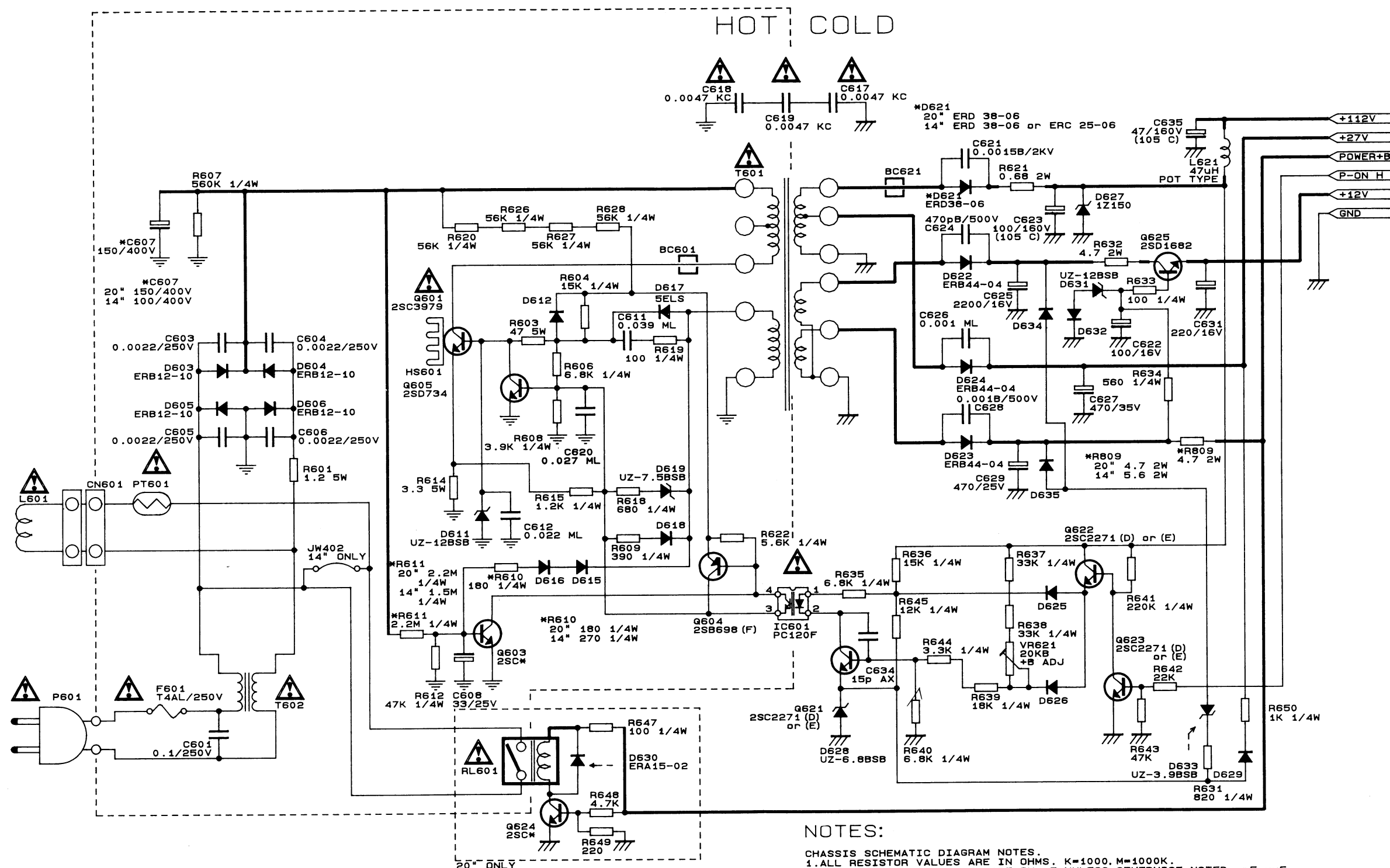


Wfp 1DIV: 1V 10μsec



Wft 1DIV: 50V 10μsec

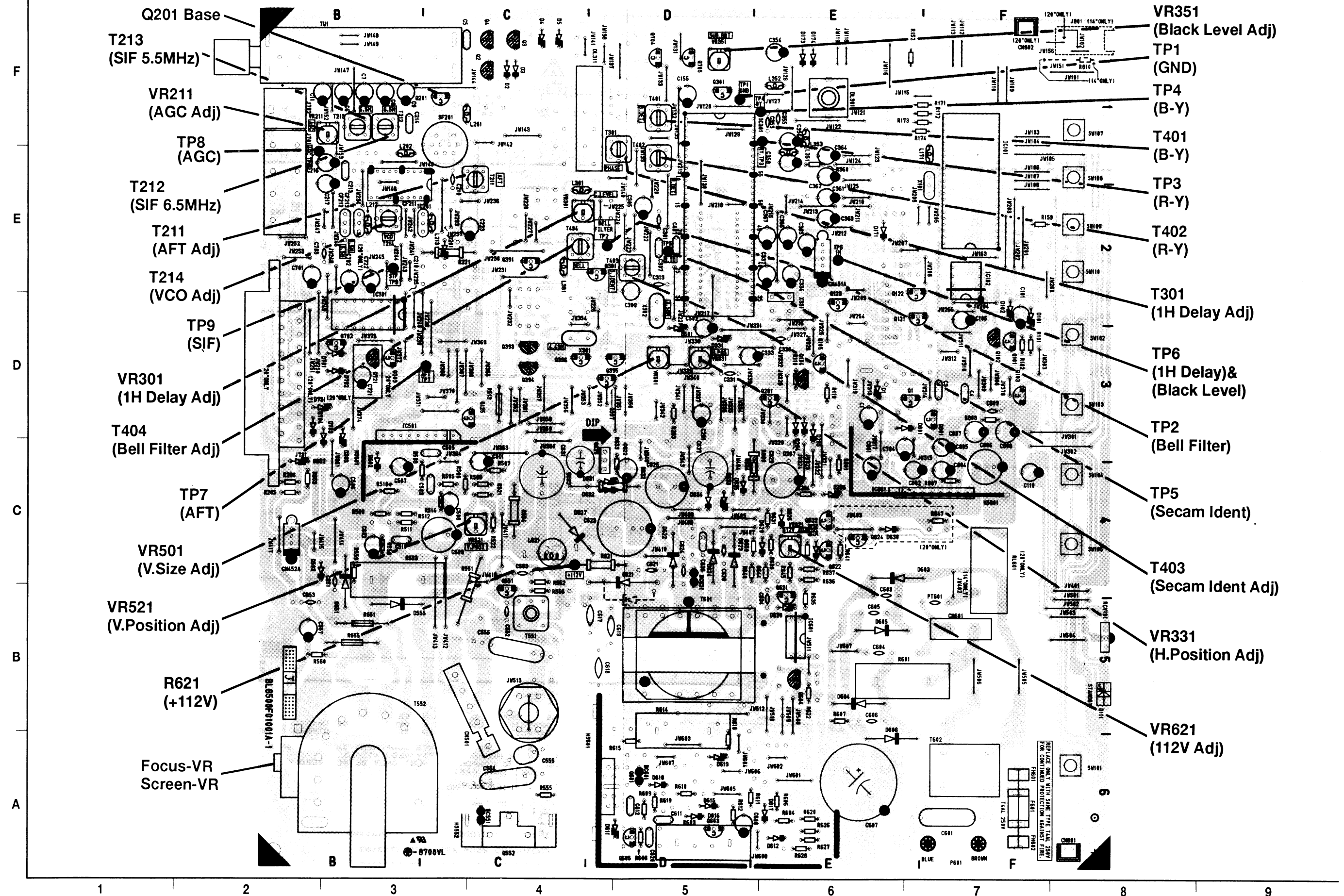
Power Supply Schematic Diagram



NOTES:

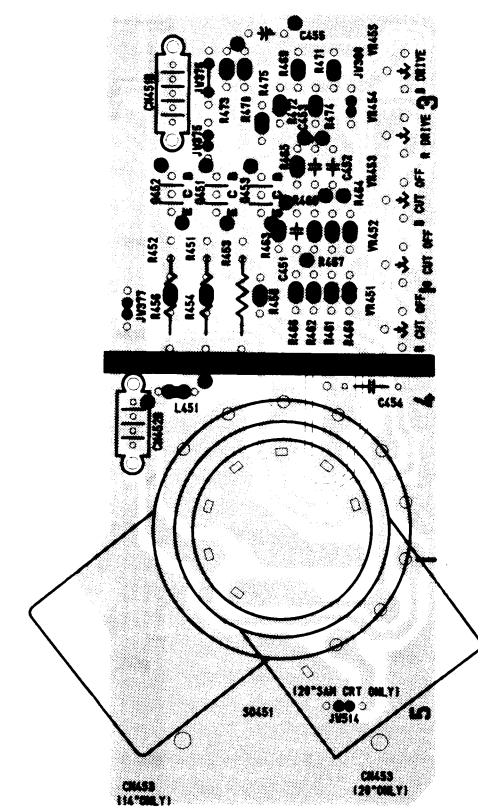
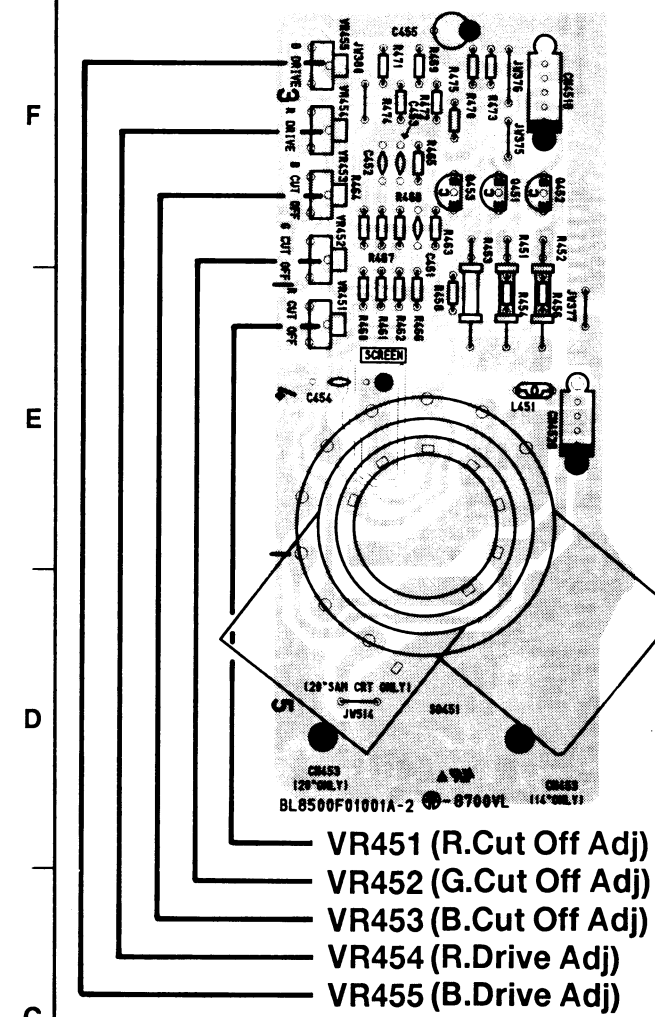
- CHASSIS SCHEMATIC DIAGRAM NOTES.
1. ALL RESISTOR VALUES ARE IN OHMS. K=1000, M=1000K.
2. ALL CAPACITANCE VALUES ARE IN uF UNLESS OTHERWISE NOTED. pF=uuF.
3. SAFETY REQUIREMENTS COMPONENT IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.
4. IS COLD GROUND.
5. IS HOT GROUND.
6. WAVEFORM READINGS.
7. NO INDICATED DIODES ARE USED 1N4148M.
8. NO INDICATED 2SC* ARE USED KTC3199.
9. NO INDICATED 2SA* ARE USED KTA1267.

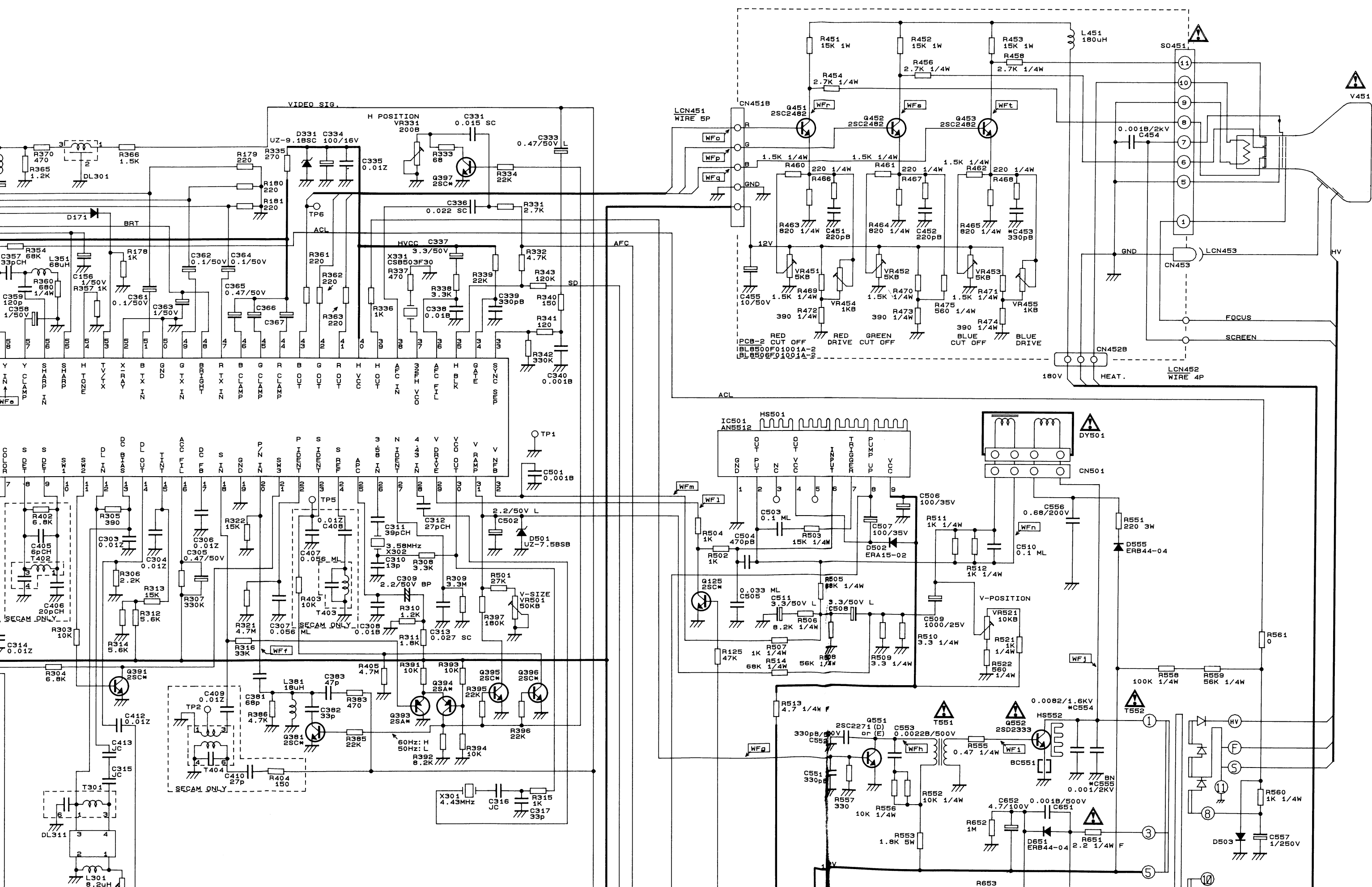
Main PCB (Top View)



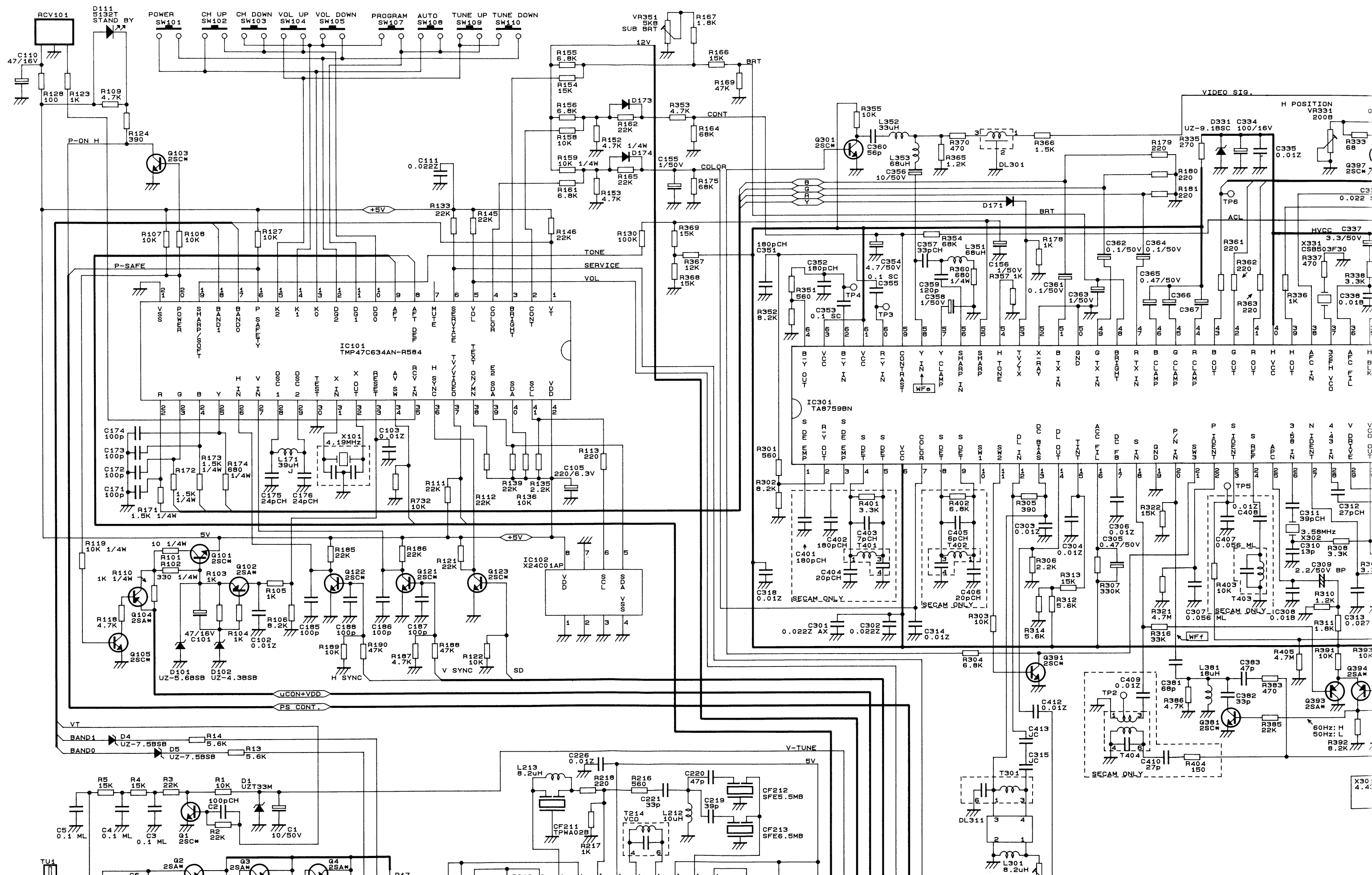
CRT PCB (Top View)

CRT PCB (Bottom View)





Main Schematic Diagram





B

A

