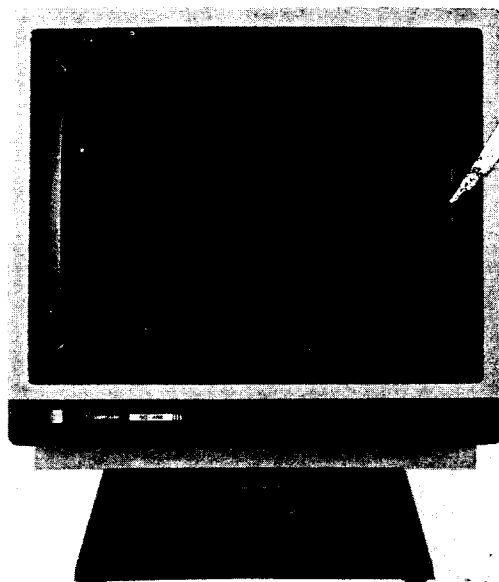


# SERVICE MANUAL

SC-452



## SPECIFICATION

Picture tube.....	37JGG68X, B22
	14 Inches diagonal
	90 degree deflection, 0.52mm dot pitch
	Strife type, black matrix
Input signal.....	Video.....RGBI TTL level positive
	Sync.....TTL level positive
Display	
-Colors.....	16 colors
Synchro	
-Nization.....	Horizontal.....15.2~16.3KHz
	Vertical.....47~63Hz
Resolution.....	Horizontal.....480 dots
	Vertical.....200 lines
Video band	
-Width.....	15MHz (-3 dB)
Display area.....	Horizontal.....252 ±4mm
	Vertical.....147 ±4mm
AC input	
-Voltage.....	AC 120V/60Hz, AC 230V/50Hz (Optional)
Power	
-Consumption.....	70W max
Dimension.....	350(W)×393(H)×382(D) mm
Weight.....	13.8kg max

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## SECTION I GENERAL INFORMATION

### (I) SAFETY PRECAUTION

**WARNING:** Service should not be attempted anyone unfamiliar with the necessary precautions on this unit.  
The following precautions are necessary during servicing.

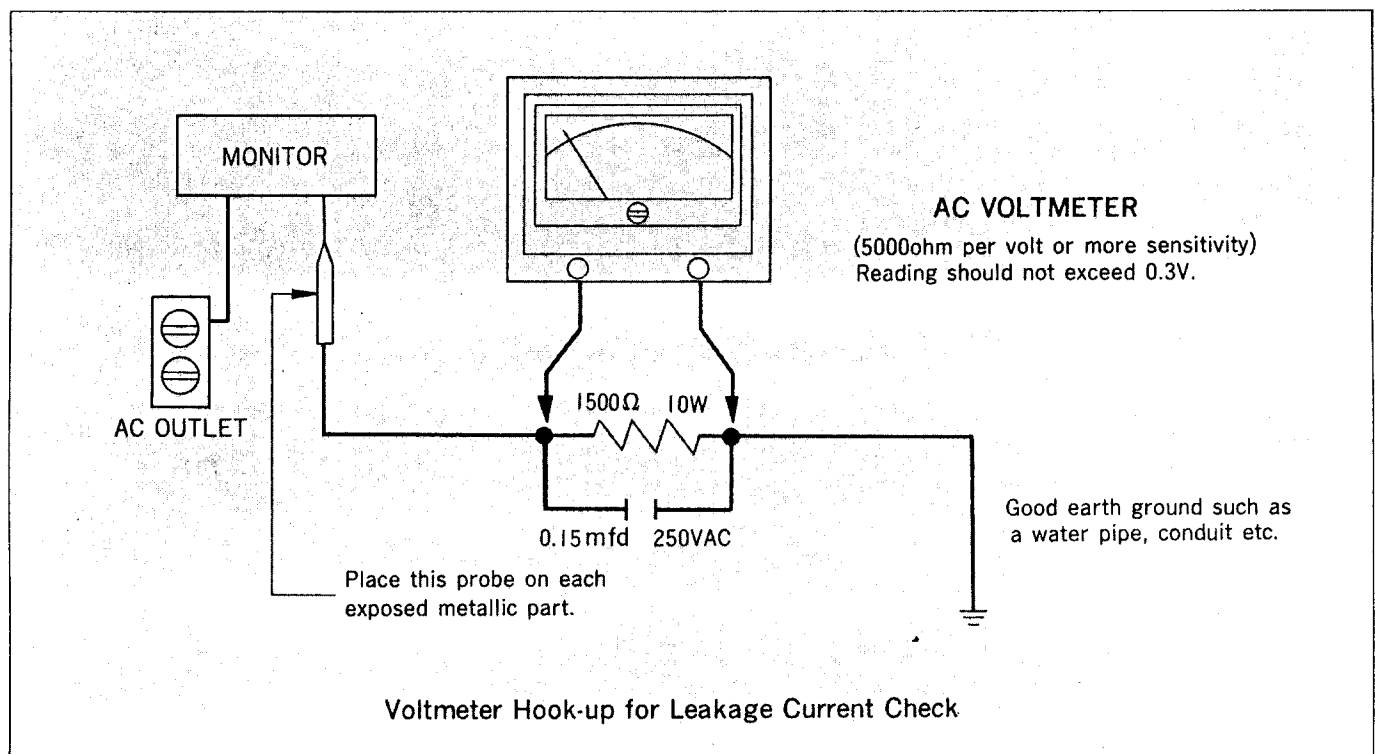
1. Some parts such as a picture tube in this unit have special safety-related characteristics for X-RAY RADIATION protection.  
For continued safety, the parts replacement should be undertaken referring to item 2 below.
2. Many electrical mechanical parts in this unit have special safety-related characteristics for protection against shock hazard and others.  
These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage wattage, etc.  
Replacement parts which have these special characteristics are identified in the manual and supplements by shading on the schematic diagram and the parts list.  
Before replacing of these components read the parts list in this manual, carefully.
3. When replacing chassis in the cabinet, always be certain that all the protective devices are installed properly, such as insulating covers, strain relief, etc.
4. Before replacing the back cover of the set, thoroughly inspect inside the cabinet to see that no stray parts or

tools have been left inside.

5. Before returning the set to the customer always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as terminal, screwheads, metal overlays, control shafts, etc. To be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a 120V AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohms per volt or more sensitivity in the following manner.

Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15mfd( $\mu$ F), 250V AC capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time.

Measure the AC voltage across the combination of 1500 ohm resistor and 0.15 mfd( $\mu$ F) capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.3V RMS. This corresponds to 0.2mA AC any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



## [2] DOCUMENT DESCRIPTION

This is technical specification for a SC-452 Color display monitor.

This document contains information on all technical details of the monitor.

## [3] PRODUCTION DESCRIPTION

This SC-452 Color display monitor to be operated in

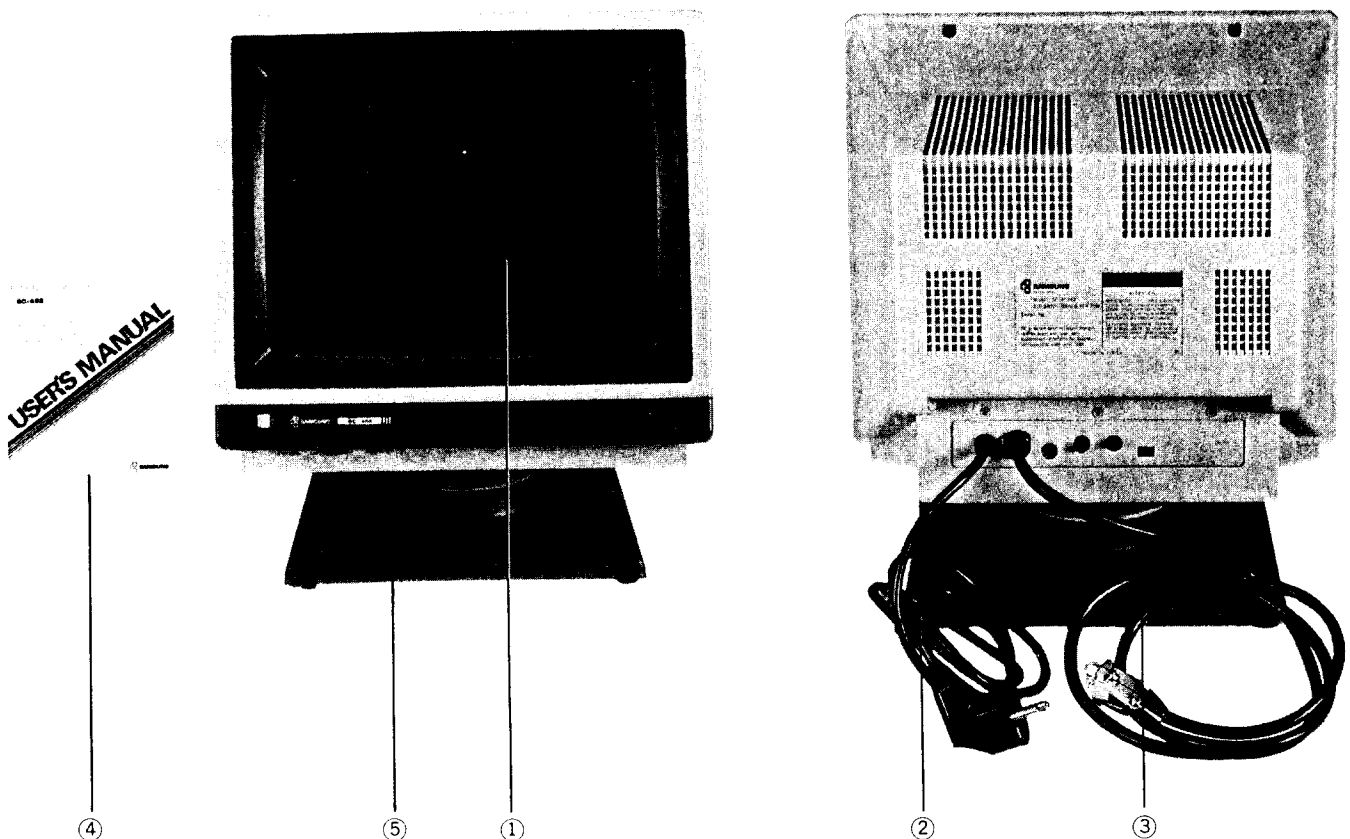
TTL Drive mode in put a highlight of these is provided below.

- Resolution : 480 dots (H) × 200 line (V)
- Display capability : 2000 Characters (80 × 25)
- Active display area : Horizontal ~ 252mm ± 4mm Vertical 174mm ± 4mm
- Horizontal frequency : 15.75KHz
- Vertical frequency : 60Hz/50Hz

## USING SC-452 COLOR DISPLAY MONITOR

Meeting SC-452, Color display monitor.

Refer to the diagram below to be sure that your SC-452, package includes all the items in this picture. Save the original box and packing materials in case you have to ship or transport SC-452.



- ① Color display monitor (SC-452)
- ② Power cord
- ③ Signal cable: Connects IBM PC or Compatibles
- ④ User's manual
- ⑤ Swivel/Tilt stand: Enables you to position SC-452 at the best angle and tilt for easy viewing.

#### [4] OPERATING INSTRUCTION

1. External instruction
  - \* Front  
Power switch contrast, brightness, green switch (option)
  - \* Rear  
Horizontal hold, vertical hold, vertical size
2. Service instruction (internal controls)  
Supply voltage, sub brightness, Horizontal center, vertical center, brown color controls.

#### [5] ELECTRICAL CHARACTERISTICS

1. AC Power input  
AC  $115V \pm 15\%$ , 60Hz  
AC 220~240V, 50Hz (Optional)  
Power consumption is 70W under normal viewing condition and be used internal fuse protection.
2. Video input
  - Video : RGB1 TTL Level, Positive
  - Sync : TTL Level, Positive
  - Band width : 15MHz (-3dB)
3. Horizontal electronics
  - Frequency : 15.2KHz~16.3KHz
  - Retrace time : 11.16uS
4. Vertical electronics
  - Frequency : 47Hz~63Hz
  - Retrace time : 9.55uS

#### [6] MECHANICAL SPECIFICATION

Figure-Shows the mechanical specification for the CPT display monitor.

#### [7] DISPLAY CHARACTERISTICS

1. Display size : H;  $252 \pm 4$ mm  
V;  $147 \pm 4$ mm

2. Display capability :  $5 \times 7$  dot matrix character pattern 2000 characters,  $80 \times 24$  lines.

#### [8] CPT CHARACTERISTICS

1. Type : 14" in-line GUN (37JGG68X)  
90 degree deflection angle
  2. Phosphor : P22 C.I.E Coordinates
  3. Neck diameter :  $29.1 \phi$
  4. Phosphor dot pitch : 0.52mm Maximum
  5. Implosion protection to be approved by U.L and C.S.A
  6. Degaussing : Automatic degaussing shall be provided
- \* Deflection yoke and neck components are preset in CPT factory, So there is no need for purity adjustment.

#### [9] ENVIRONMENTAL SPECIFICATION

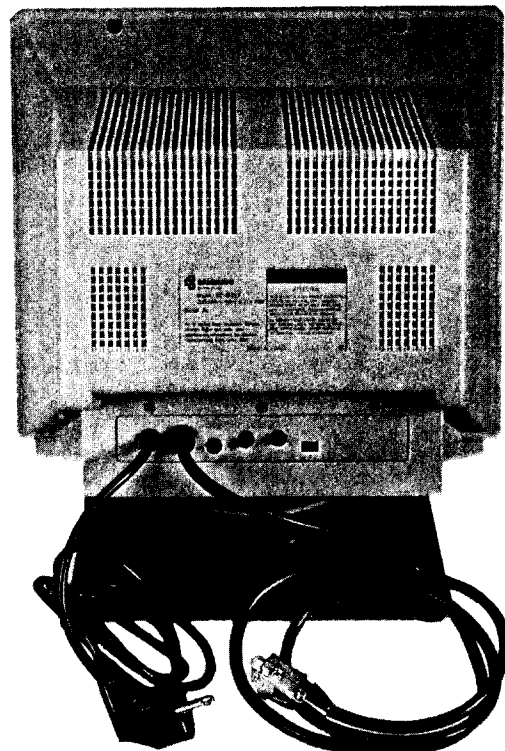
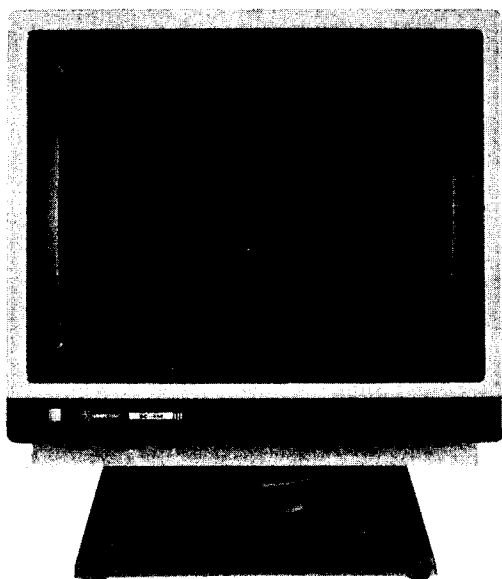
1. Operating temperature :  $5^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  Centigrade in side enclosure
2. Relative humidity : 20% to 80% Enclosure convection cooled (non condensing)
3. Temperature storage :  $-20^{\circ}\text{C}$  to  $60^{\circ}\text{C}$  out side enclosure

#### [10] WEIGHT

Weight : 13.5kg

## SECTION II SERVICE INFORMATION

\* Control and terminal identification



[Important notice for service personel before servicing]

### PLEASE READ BEFORE ATTEMPTING SERVICE

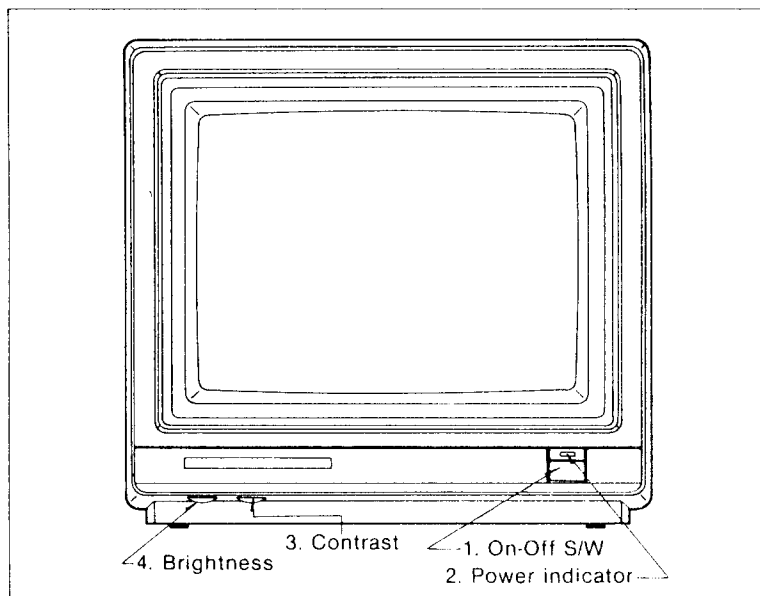
- ① Line voltage must be kept with in  $\pm 15\%$  of the rated voltage.
- ② Do not discharge ARC or measure high voltage when high voltage lead is connected to CPT.  
Discharge 2ND anode of CPT only after high voltage lead has been disconnected.  
Do not discharge high voltage lead at any time, damage to transistors may result.
- ③ While the monitor is in operation, do not attempt to connect or disconnect any wires.
- ④ Disconnect all power before attmepting any repairs.
- ⑤ When the power is on do not attempt to short any portion of the circuit.  
This shorting may cause damage to the transistor in receiver.

## (I) ADJUSTMENT

Apply power and TTL video signal to the data display

### I. ADJUSTING THE FRONT CONTROLS

FRONT VIEW



#### ① Power switch

Used to push the power on or off.

When the power is on the power indicator (LED) is lit.

#### ② Bright control

1) The brightness control knob shall provide the customer with means for adjusting the display intensity off set level as viewing conditions vary.

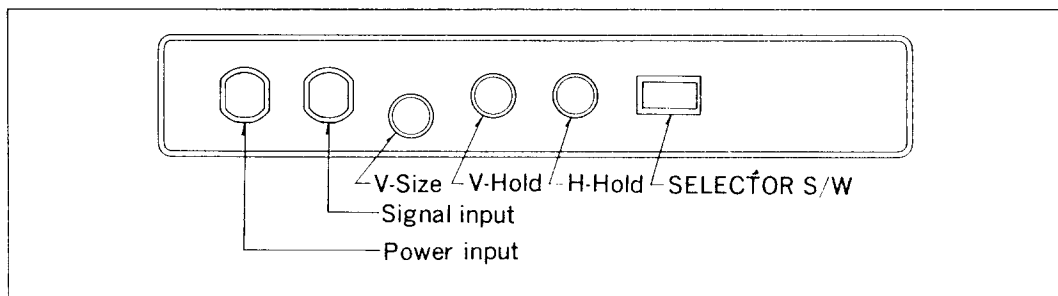
2) The maximum brightness (fully clock wise) level shall be limited with the internal sub brightness factory adjustment.

3) Control shall adjust the ground raster to the point of extinction.

#### ③ Contrast control

Adjusts the display to the contrast preferred by the user.

### 2. ADJUSTING THE REAR CONTROLS



- ① H-Hold control  
Adjusts the horizontal stability of the display.
- ② V-Hold control  
Adjusts the vertical stability of the display.
- ③ V-Size control  
Turn this knob for the proper vertical size of the display. Turn the knob clock wise for a larger display, turn it counter clock wise for a smaller display.
- ④ Selector switch (H-center switch)  
If you are using the monitor with the APPLE compatible, the S/W 501, should be to the right side.  
If you are using the monitor with the IBM compatible, the S/W 501, should be to the left side.

### 3. ADJUSTING THE INTERNAL CONTROLS

#### HORIZONTAL ADJUSTMENT

- ① Received the cross hatch pattern.
- ② Turn VR 502 and adjust it until synchronization is secured.
- ③ Signal and turn the power switch ON/OFF and this confirm the stability of sync.
- ④ If picture positions is left or right at center of CPT face, adjust the H-shift of VR501 properly.

#### VERTICAL ADJUSTMENT

- ① Received the cross hatch pattern.
- ② Turn VR401, and adjust it until sync secured.
- ③ The pattern position is up or down at the center of CPT face by adjust the V-shift of VR452 properly.

#### FOCUS ADJUSTMENT

- ① Received the bull's eye (@) pattern.
- ② Adjust the brightness V/R control for generally bright.
- ③ Adjust the focus V/R control for best condition.

#### COLOR PURITY ADJUSTMENT

- ① Operate the receiver for 15Min. With brightness control at maximum to warm up the CPT.
- ② Degauss the receiver fully by using an external degaussing coil.
- ③ Roughly adjust convergency.
- ④ Receive a black and white signal.
- ⑤ Turn red and blue low light controls fully counter clock wise, if green field.  
Adjust drive controls, if green field is not obtained.
- ⑥ Loosen the deflection yoke clamp screw, and move the DY to the purity magnet as close as possible.
- ⑦ Loosen purity magnet clamping and adjust the purity magnet to set the vertical green raster precisely as the center of screen, then tighten the clamping.
- ⑧ Slowly move the deflection yoke forward and adjust for the best overall green screen.
- ⑨ Tighten the deflection yoke clamp screw.

- ⑩ Produce the blue and raster by low.  
Light controls and observe that good purity is obtained on the respective field.
- ⑪ Observe that uniform white raster is obtained by adjusting R.G.B low light controls.  
If screen is not uniformly white, repeat above procedure.

#### WHITE BALANCE ADJUSTMENT

- ① Turn in a black and white program.
- ② Turn the brightness controller fully counter clock wise and adjust VR351.352.353.354.355 in the mechanical center.
- ③ Slowly turn the screen control clock wise from the full counter clock wise position, until two colors out of three R.G.B appear horizontal on the picture tube.
- ④ Extinguish the two horizontal all colors on the picture tube by turning the two respective low light controls fully, counter clock wise.
- ⑤ Turn the screen control further clock wise until the three color appears as a faint horizontal line on the picture tube.
- ⑥ Make the horizontal line white by turning the two low light controls white were previously set fully counter clock wise as step 3.
- ⑦ Alternately adjust the red blue drive controls to produce a normal black and white picture, check the black and white picture detail proper black and white condition (no coloration) from low lights to highlights at all brightness level for proper tracking.

Proper tracking at all brightness levels can be obtained when the controls, low light controls, and drive controls are properly adjust, if the results are unset is factory, repeat all the above steps.

#### CONVERGENCE ADJUSTMENT

\* Note; Before adjusting convergence, vertical size, linearity and focus adjustment must be completed.

- ① Received the cross pattern.
- ② The brightness level should be on higher than necessary to obtain a clear pattern.
- ③ Loosen the convergence magnet clamp and converge the red and blue at the center of the screen, by rotating the R-B static convergence magnet.
- ④ Align the converged red/blue dots with the green static convergence magnet.
- ⑤ Tighten the convergence magnet clamp.
- ⑥ Remove the DY wedges, and slightly tilt the DY for horizontal and vertical to obtain good overall convergence.
- ⑦ Secure the deflection by inserting the wedge.
- ⑧ If purity error is found, repeat the purity adjustment.



## [2] TROUBLE SHOOTING

### I. TROUBLE SHOOTING INFORMATION CHART

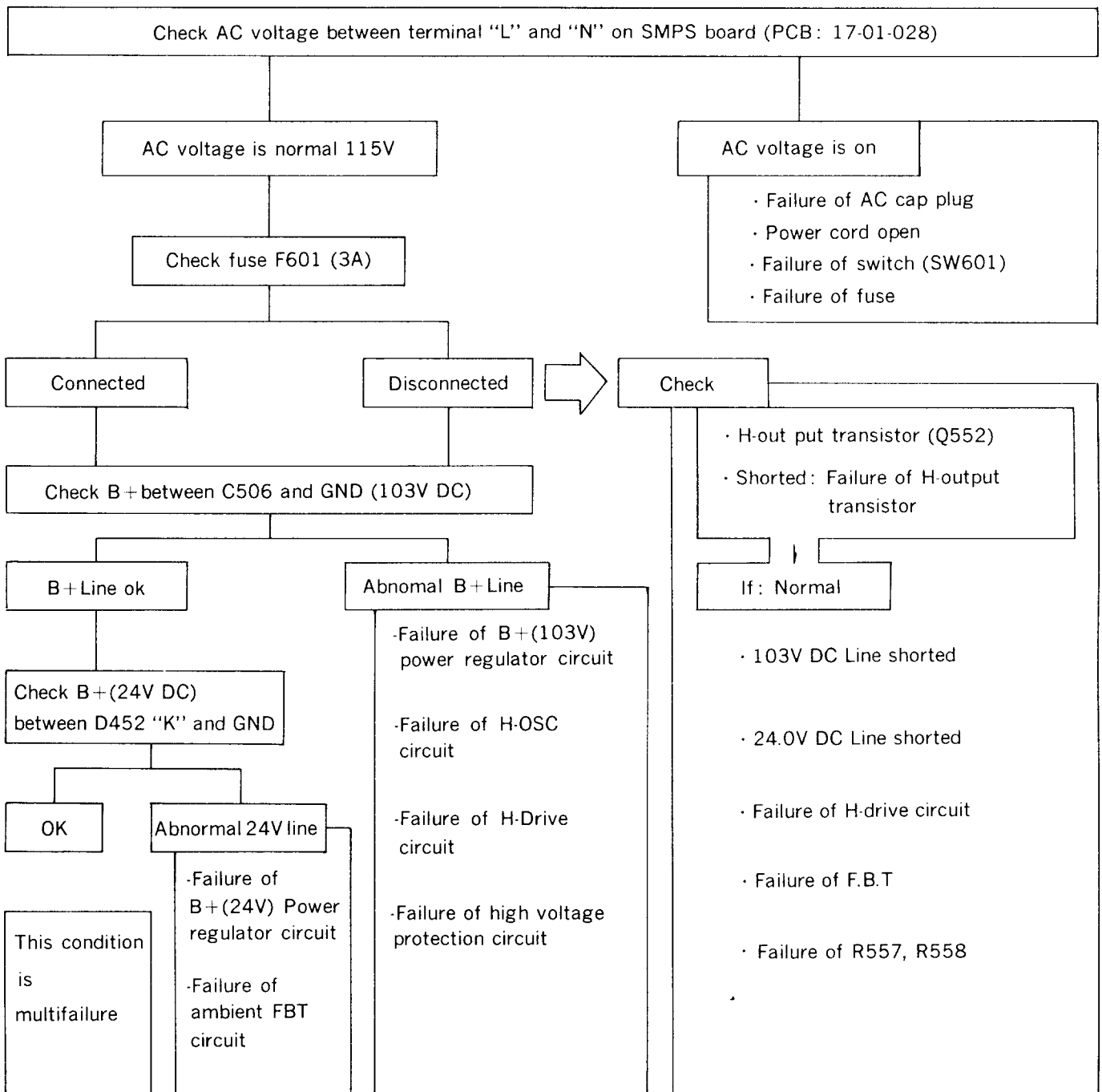
#### \* INTRODUCTION

This is the trouble shooting section. It consists of a symptom chart, showing the symptom and an action to be taken to rectify the problem.

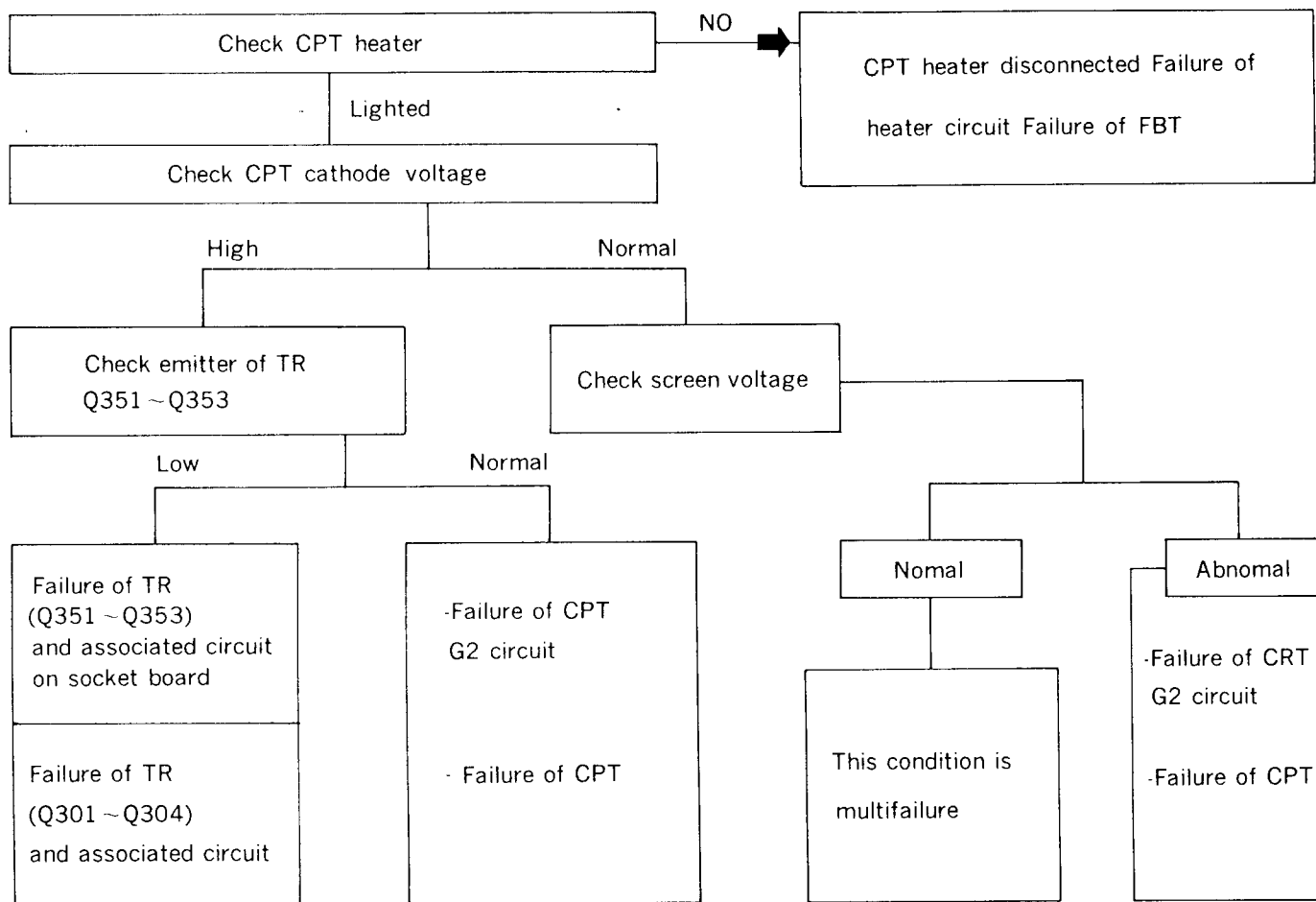
The best way to use this section is;

- ① Look on the chart to find the symptom that matches what the defective monitor is doing
- ② Try the recommended action.

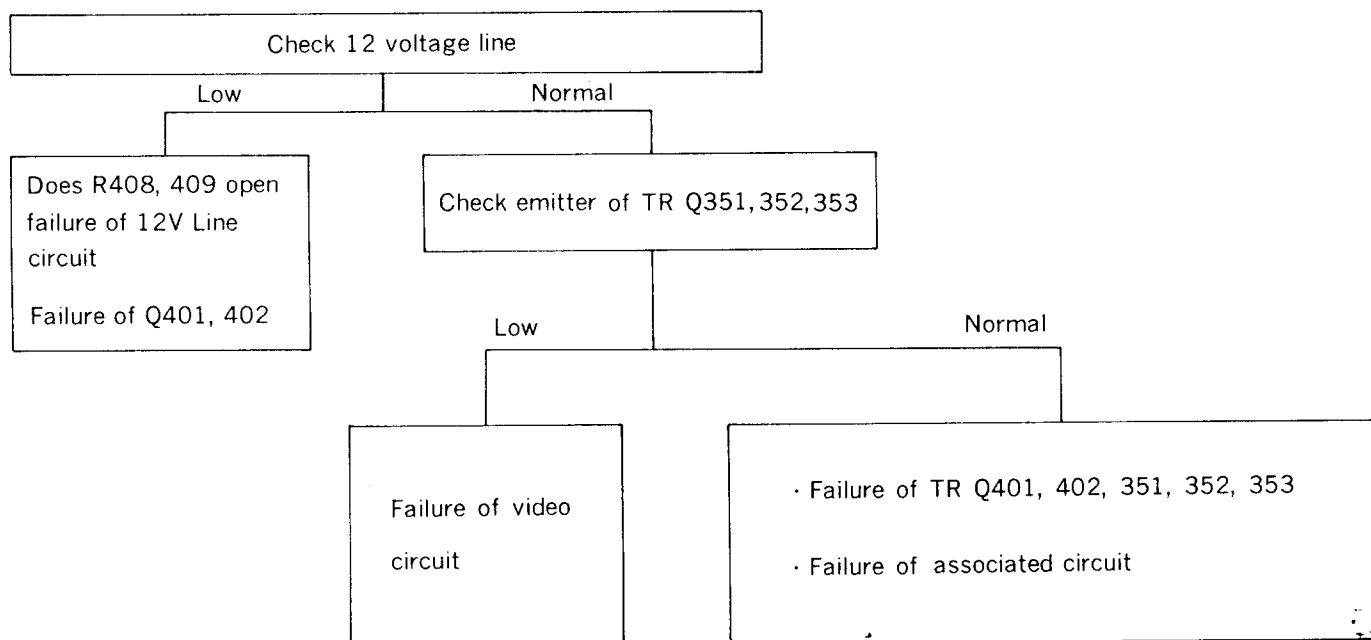
#### ① NO RASTER



(2) B I (115V) NORMAL, NO RASTER

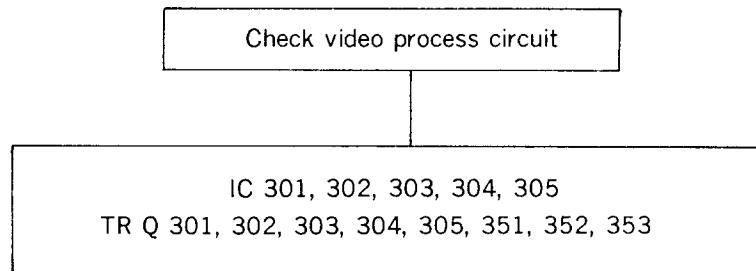


③ ABNORMAL BRIGHTNESS OF SCREEN

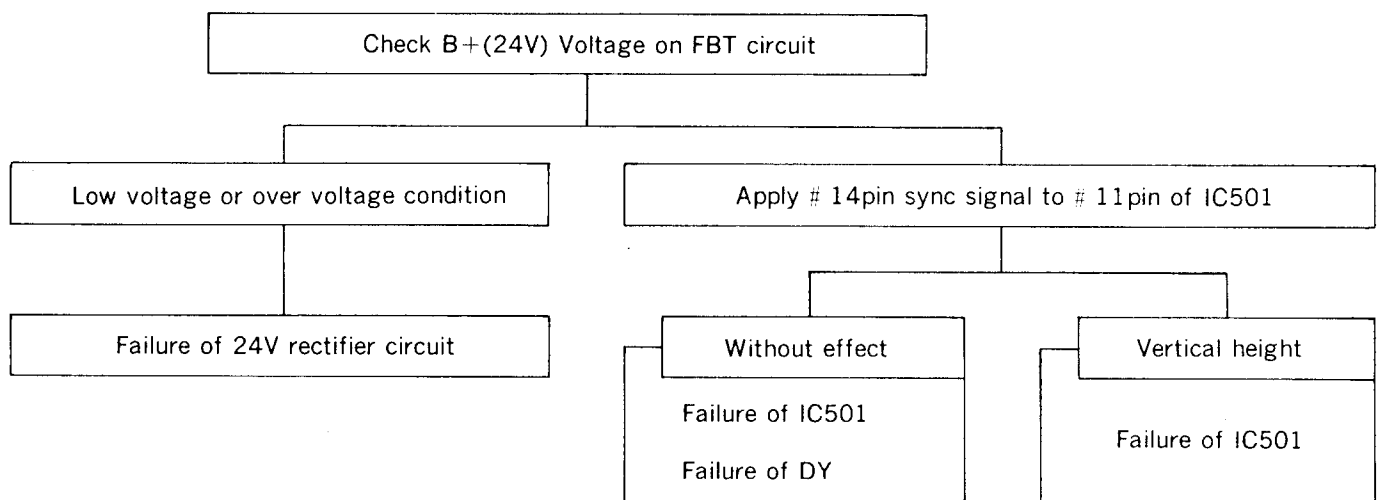


④ NOMAL RASTER, PICTURE ABNOMAL

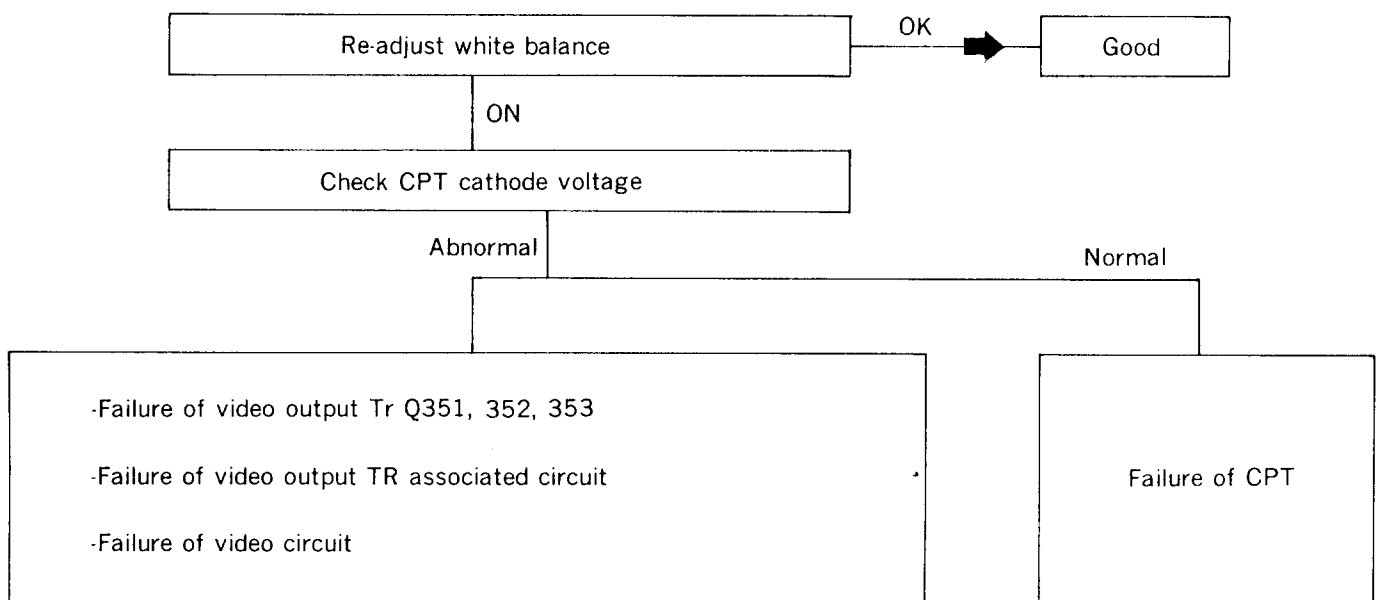
\* NOTE: Apply positive signal as input for RGB1 TTL



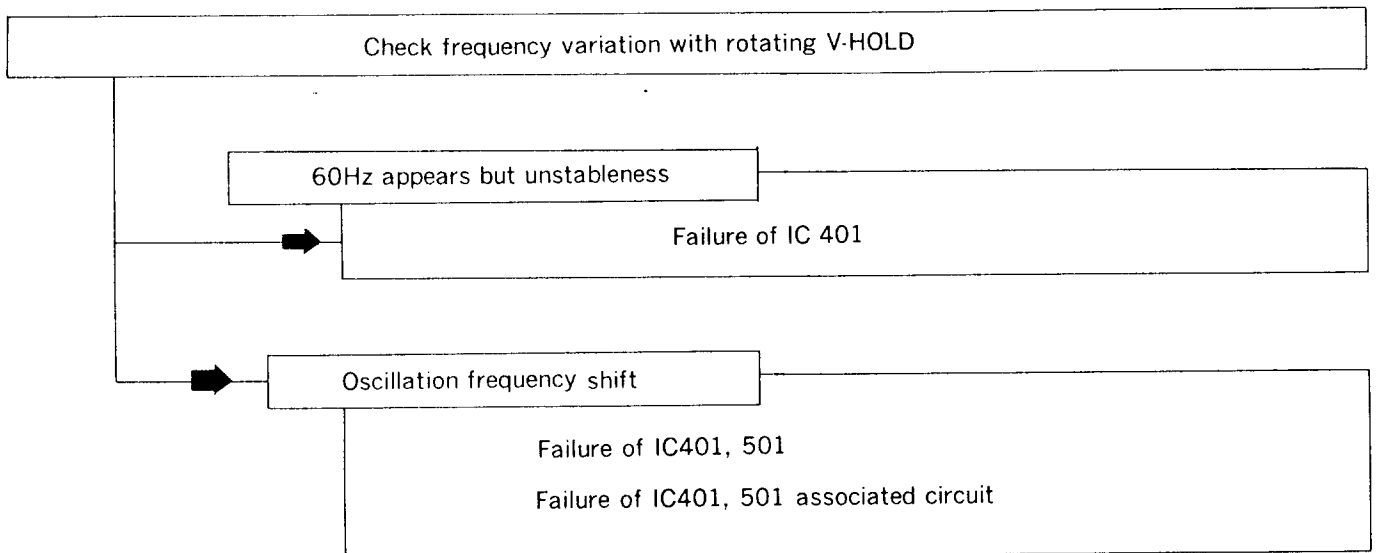
⑤ NO VERTICAL SWEEP



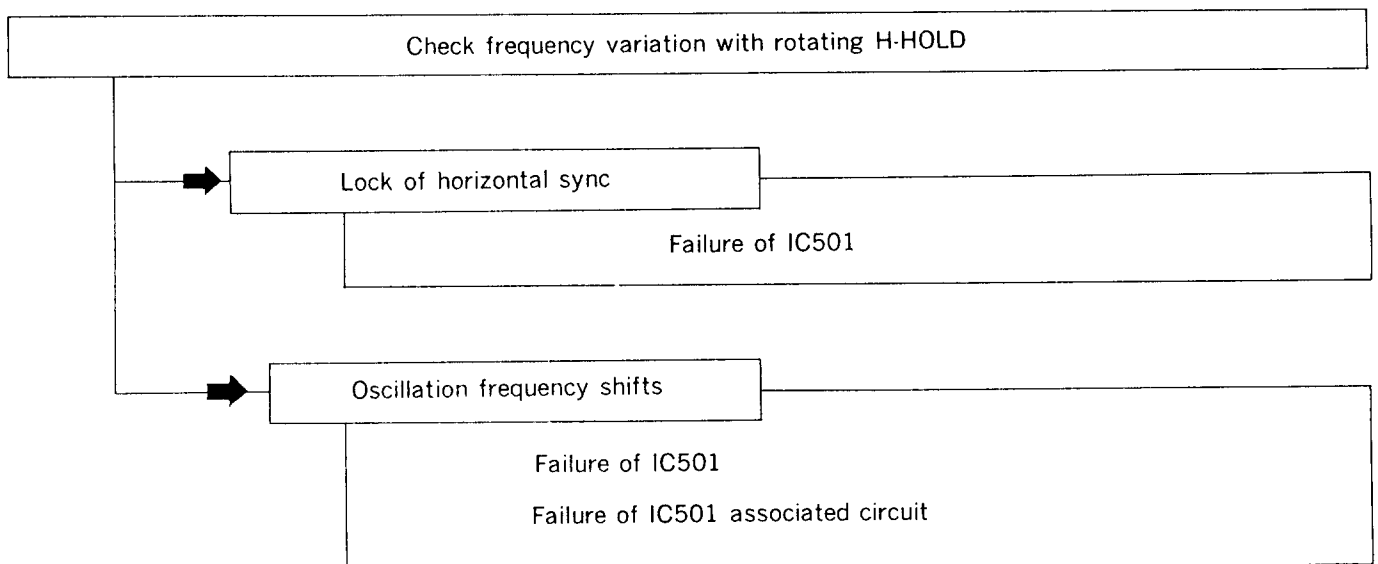
⑥ FAILURE OF WHITE BALANCE



⑦ UNSTABLE VERTICAL



⑧ UNSTABLE HORIZONTAL



## 2. TROUBLE SHOOTING FOR RESPECTIVE SYMPTOMS

### 2.1 NO RASTER

- ① Turn the brightness control clockwise fully. If raster does not appear, check up next item.
- ② Check CPT heater  
It is not on; CPT heater disconnect & failure heater of FBT  
OK; Proceed to next check item
- ③ Check high voltage by HV voltage meter  
High voltage is not obtained  
; Check of FBT (T501)  
Check of Q552 Collector  
Check of Q552 Base  
Check of HDT  
Check of pin4 IC501  
Check of pin3 of IC501  
OK ; Proceed to next check item
- ④ Check CPT electrode voltage as follow.  
G2 ;  $300 \pm 50V$   
G4 ;  $6K \pm 500V$   
G1 ;  $0V$   
K ;  $180 \pm 10V$   
Voltage of G2 and G4 are not obtained; check of T501.  
Voltage of K is not obtained; Check of video amp. and ambient circuit.  
Voltage of G2, G4, G1 and K are normal; CPT is faulty.  
OK ; Proceed to next check item.
- ⑤ Check AC voltage at AC input point on SMPS  
AC voltage abnormal; Failure of AC line  
OK ; Proceed to next check item
- ⑥ Check fuse F601  
Disconnected; Failure of switching power transformer.  
Failure of bridge diode  
Failure of degaussing circuit  
OK ; Proceed to next check item
- ⑦ Check DC output voltage  
Abnormal; Failure of IC601 and ambient circuit.  
OK ; Proceed to next check item.

### 2.2 ONLY ONE RASTER LINE APPEARS IN HORIZONTAL DIRECTION.

- ① Check of deflection yoke vertical coil; Vertical coil open and shorted.
- ② Check of pin 7 of IC501 when voltage is not obtained; Check of C451
- ③ Check of pin 2 of IC 401

### 2.3 UNSTABLE VERTICAL

- ① Check frequency variation with rotating V-Hold.
- ② Check of pin 7, 8, 9 of IC501.

### 2.4 UNSTABLE HORIZONTAL

- ① Check of frequency variation with rotating H-Hold.
- ② Check of pin 3 of IC501.

### 2.5 NO PICTURE

The nearly square pulses output of the oscillator applies it the base of Q551 to switch on and off this transistor, thereby passing pulse current through the primary side transformer (HDT).

With each turning on and off of the transistor spiking occur because of inductance.

The horizontal output transistor Q552 is simply a switch which is turned on and off at the horizontal scan rate by the driving signal applied to its base, a sawtooth current through the deflection coil is required to sweep the beam linearly across the CPT screen.

This happens when Q552 is turned on and its collector voltage droops to near zero, and the C556 begins discharging through the deflection coil which deflects the beam to the right edge of the CPT.

At that time, Q552 cuts off and C556 ceases to supply current to the deflection coil. However, an induced voltage appears across the deflection yoke coil as the magnetic field collapses and an oscillation then occurs the deflection coils and C556.

During the first half cycle of this oscillation, the induced voltage is felt across the collector of Q552 with cut off C556 and the primary T501.

This voltage is stepped up T501 rectified to produce high voltage that is applied to anode of the CPT.

## (3) SERVICE NOTE

### Servicing precautions

The following precautions should be observed when service is required.

1. Replacement parts which have special safety characteristics are identified by shading on the schematics.  
Replace these critical components with recommended replacement parts.  
Don't degrade the safety of the set through improper servicing.
2. Comply with all cautions and safety-related notes on or inside the monitor cabinet, on the monitor chassis or on the picture tube.
3. Maintain correct lead dress and part placement.  
Extra caution should be taken to assure proper dress in the high voltage circuit area.  
Where a malfunction has occurred, those components or circuits that indicate evidence of abnormality should be replaced or corrected.  
Always use the manufacturer's safety specified replacement components.

4. When replace a chassis in the cabinet, always make certain that all the protective devices are back in thier proper place, such as: non metallic control knobs, insulating fishpapers, component cover/shields, isolation resister capacitor networks etc.

5. Before returning the monitor to the owner, be sure that no protective device built into the set by the manufacturer has become defective, or inadvertently defeated during servicing. Therefore, the following checks are recommended for the continued protection of the cutomer and service engineer.

\* LEAKAGE CURRENT HOT CHECK

Plug the AC line cord directly into a 115V AC outlet (do not use an isolation transformer in this check).

Use a leakage current tester which complies with American National Standars Institute (ANSI C101.1-1971, LEAKAGE FOR APPLIANCE), and UNDERWRITERS LABORATORIES (UL, 1410).

Meaure current form all the exposed metal parts of the cabinet, (screwheads, metal overlays, etc.) to earth ground, particularly any exposed metal part having a return path to the chassis.

The test should be conducted with AC switch "ON" and then repeated with "OFF".

Any current measured must not exceed 0.5mA with to AC line cord inserted in the AC supply circuit receptacle.

Any measurement not within the limits outlined above are indicative of a potential shock hazard and corrective action must be taken before returning the set to the customer.

6. X-RADIATION PRECAUTION

This product contains critical electrical and mechanical parts essential for X-RAY protection, see CRITICAL COMPONENT LIST and other service adjustment.

Anode voltage normal is 22.8KV at 115V line and must not exceed 28KV under any operating condition. To measure anode voltage, set brightness for a very dim picture.

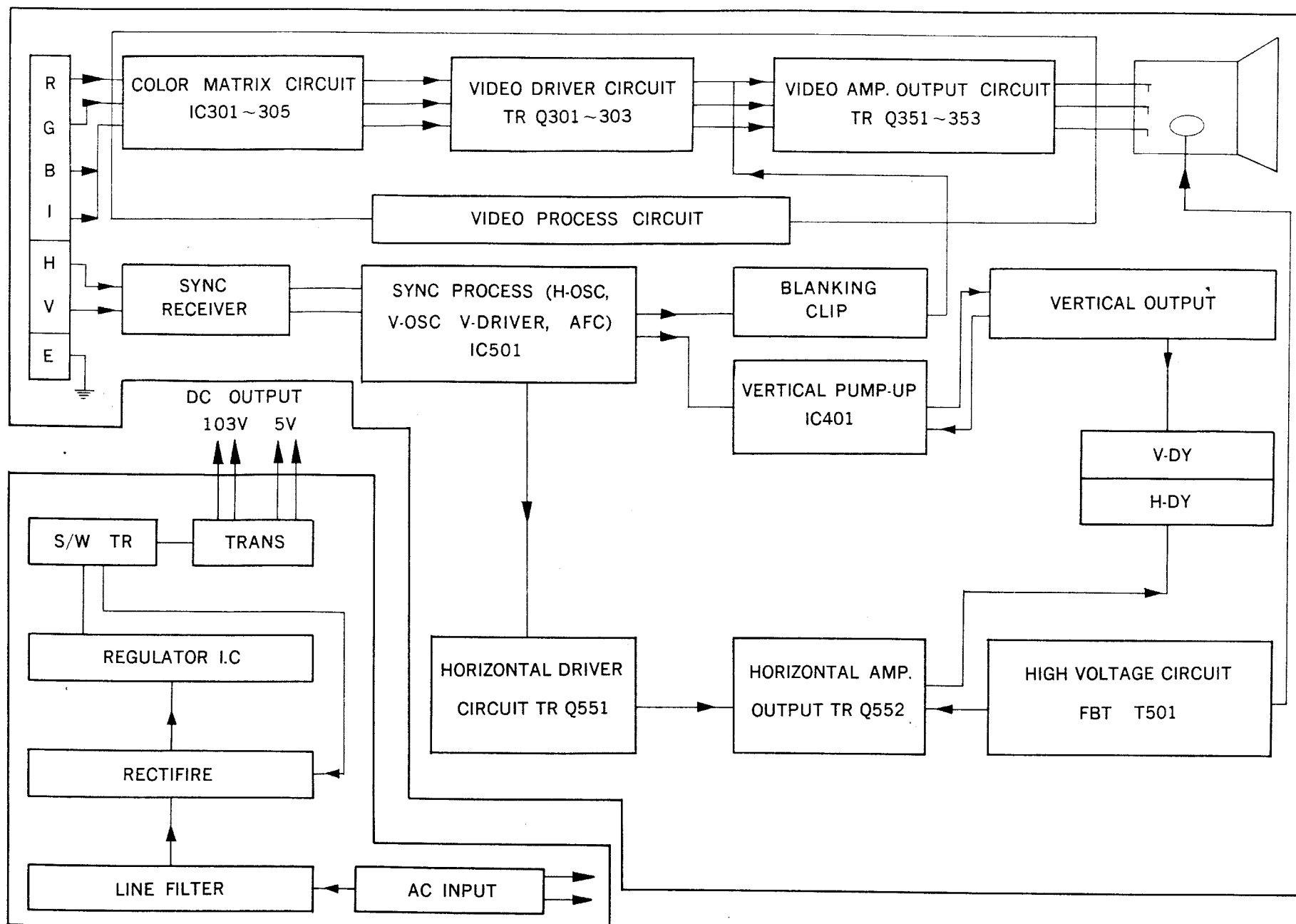
Use a high-voltage meter between the chassis and the anode lead to measure HV.

If high voltage exceeds the specified limits, check each components on the chassis and take necessary corrective action.

7. Do not remove, install or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away while a picture tube is handled.

Keep the picture tube away from body while handling.

[4] BLOCK DIAGRAM



# COMPONENT POWER DISSIPATION

## 1. IC

No.	Circuit No	Description	Function	Test Data					Remark
				$V_i$	$V_o$	$I_o$	$P_{tot}$		
1	IC306	L7805CV	5V REG.	9.3V	4.99V	67.8mA	0.29W		
2	IC502	L78S12CV	12V REG.	14.9V	12.02V	0.14A	0.4W		
3	IC301	74LS04	TTL	4.99V	-	31.2mA	-		
4	IC302	74LS06	TTL	4.99V	-	31.7mA	-		
5	IC303	74LS26	TTL	4.99V	-	4.4mA	-		
6	IC305	74LS11	TTL	4.99V	-	6.6mA	-		

## 1. IC

No	Circuit No	Description	function	Test Data					Remark
				$V_{13}$	$V_{16}$	$I_{cc16}$	$I_{o4}$	$P_d$	
1	IC501	LA7823	Ver./Hor Process Circuit	12.02V	12.65V	12.8mA	7.8mA	2.13W	
2	IC401	LA7830	Vertical Pump-up Process	24.3V	26.6V	0.66A	2.13W		

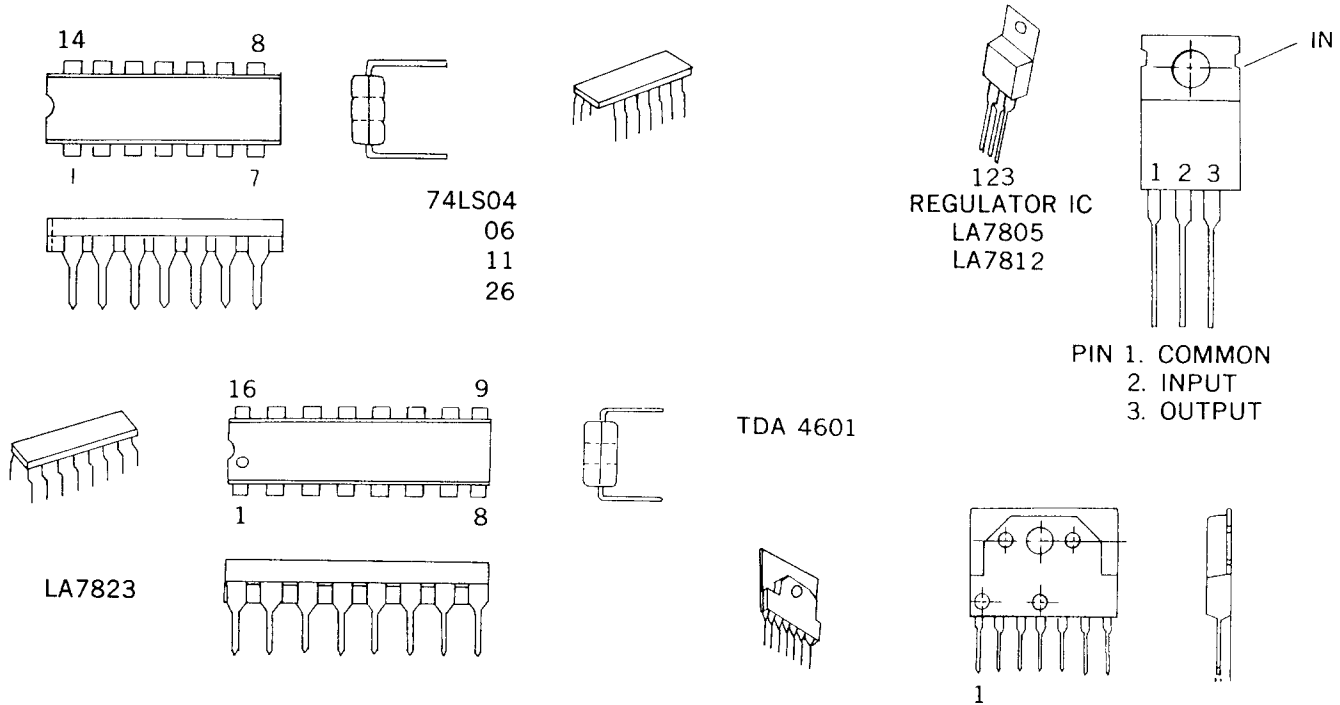
## 2. TRANSISTOR

No.	Circuit No	Description	Function	Test Data			Remark
				$V_{CE0}(V)$	$I_c(mA)$	$P_c(mW)$	
1	Q301 ~Q303	2SC1815	Video Driver	17.36	16.34	154.9	
2	Q304	"	Contrast	15.54	32.70	159.6	
3	Q305	"	Circuit	16.60	8.60	86.89	
4	Q401,402	"	Blanking Clip Circuit	8.42	1.82	15.35	
5	Q403	2SA1015		8.57	52.76	201.54	
6	Q351	2SC1507	Video Amp	171.9	189	756	
7	Q352	"	"	171.8	187	748	
8	Q353	"	"	171.2	186	744	
9	Q551	"	H-Driver	167.0	99.40	346	
10	Q552	2SC1397	H-Output	880	2.72	21.76W	

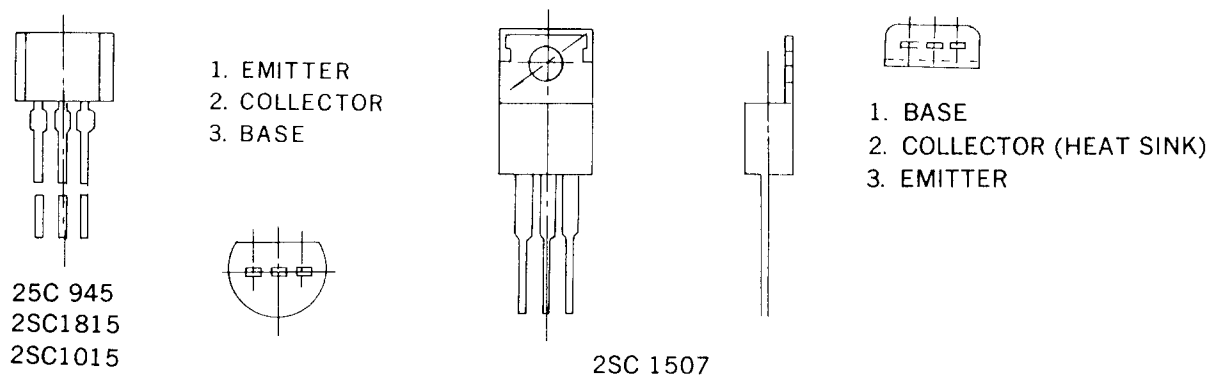


# SEMICONDUCTORS BASING

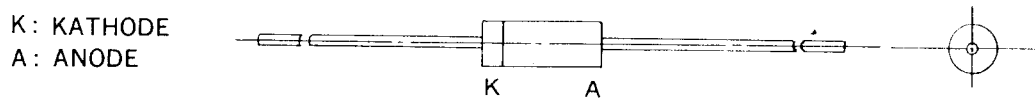
## IC



## TRANSISTOR



## DIODE



## **(5) THEORY OF OPERATION (CIRCUIT DESCRIPTION)**

### **1. General**

This monitor contains two independent circuits.

This first is the power supply section, and the second is the sweep or CPT drive section.

### **2. Power supply circuits**

LF601 and ambient capacitors from a line filter whose function is to protect the power supply from power line surges and noise, and to prevent the power supply from radiating noise back out to series with the degaussing coil which is across the AC line, initially, when the receiver is turned "on" and the resistance of the posistor is low.

Causing the current to flow through the degaussing coil and the demagnetizing action occurs at CPT.

As the posistor heats, its resistance increases to the point that the current flow through the degaussing coil becomes negligibility.

The TAD4601 has been controlled DC output voltage and has been designed for driving, controlling, and protecting the switching transistor in blocking converter power supplies.

At the input of pin 2 the zero crossings of the frequency provided by feedback coil (T602) are registered and forwarded to the control logic.

Pin 3 receives the rectified amplitude fluctuations of the feedback coil.

The regulating amplifier operates with an input voltage of approx. 2V and a current of approx. 1.4mA depending on the internal voltage reference, the overload recognition simulator pin 4 the operating range of the control amplifier.

The collector current is simulated by an external RC combination present at pin 4 and internally set threshold voltages.

The output levels of the control amplifier as well as those of the overload recognition and the collector current simulator are compared in the trigger and forwarded to the control logic.

Via pin 5 it is possible to externally inhibit the operation of the TDA4601.

### **3. Video section**

The section amplifies the output signal of the generator to a level high enough to drive the video output circuit.

Input signal contains R,G,B video signal and H.V sync. intensity.

These TTL level signals are positive polarity.

Video signal which applied to IC 301.302.303. 304.305 and driven via contrast volume, and connected Q301.302.303.

Finally, driven signals are applied to CPT cathode through output amplifier Q351.352.353.

The intensity signal which applied to IC301.303. 304 and driven signal is applied Q305.

When the level digital signal is 0, Q305 is cut off and emitter of Q304 is high level.

The intensity signal from Q304 applied to Q301. 302.303 and mixed R.G.B signal.

The socket board is a collection point for the voltage and signals required to operate the CPT.

The board contains bias and drive controls.

The R.G.B signal are directly coupled from amplifier of R.G.B main PCB.

### **4. Horizontal and vertical processor circuit**

The IC501 contains all the circuits for sync. separation, vertical oscillation, horizontal oscillation AFC and X-RAY protection.

The input signal applies first to the sync. separation circuit. and the sync. signals separated and taken out apply to the horizontal AFC and vertical sync. separation circuits.

VR401, R405, C403 connected to pin 10, provide the time constant in the vertical oscillation circuit, the frequency of oscillator can be varied by adjusting VR401.

The 60Hz signal, originating in the IC401, and amplified, comes to pin 6 and is then amplified further by the vertical output circuit.

The amplified 60Hz signal goes out through pin 2 of IC401 to vertical deflection yoke causing a sawtooth current to flow in the yoke coil.

The frequency of horizontal oscillation can be changed by means of VR502.

The pulses occurring in the secondary winding of FBT are admitted as the pulses for sawtooth wave generation through C502 of IC501.

These pulses under integration connected to pin 1 of IC501, and apply as comparison signal to the horizontal AFC circuit.

The voltage resulting from comparison and detection is taken out through pin (2), smoothed by C508, R508 and forwarded as the horizontal AFC voltage to the oscillation circuit.

The X-Ray protection circuit operates by shutting down the horizontal oscillator in reference to a voltage produced by rectifying the flyback pulses. This scheme, based on the proportionality between flyback pulses and high voltage, is put to work in the following manner.

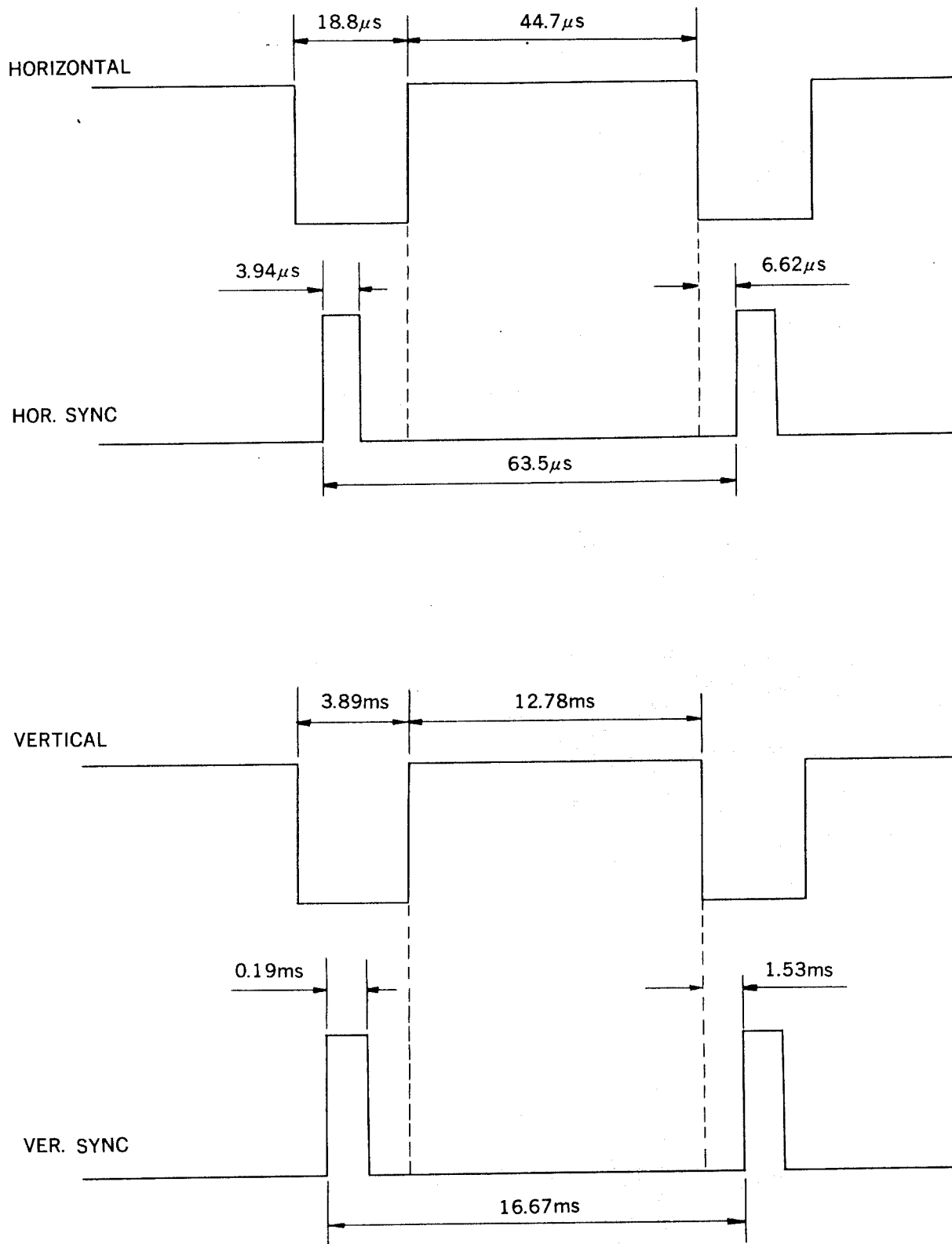
Flyback pulses of positive polarity are rectified D551 and C551, and resulting DC voltage is applied to pin 5 of IC501.

When the high voltage exceeds the limit, the DC voltage will be high, so to shut down the horizontal oscillator.

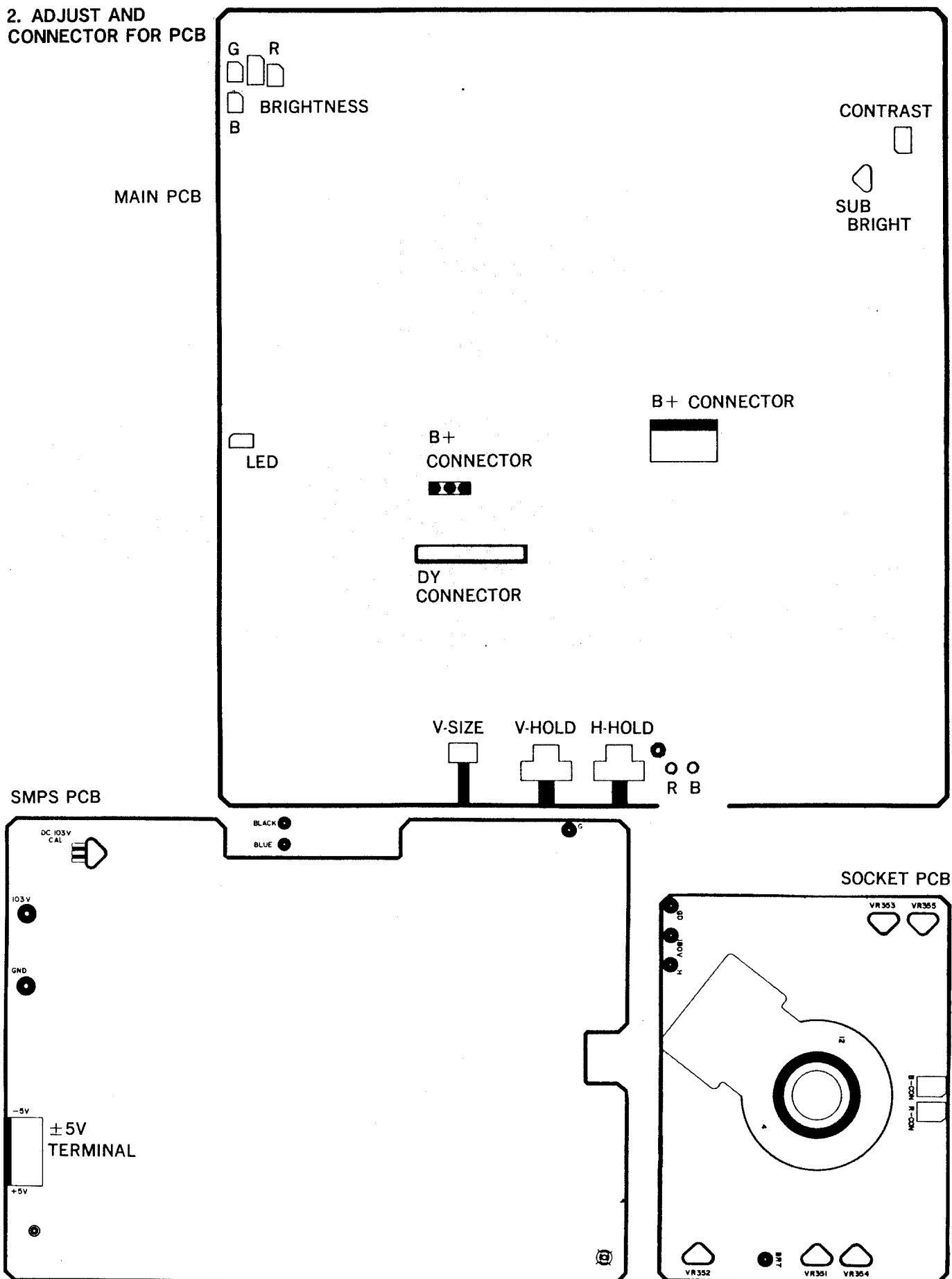
The loss of this oscillation in loss of raster, but the DC power supply remains unaffected. The Q550 and T551 is horizontal drive circuit.

This circuit is located oscillator circuit and horizontal output circuit and serves to amplify the output of the oscillator and to drive the output transistor.

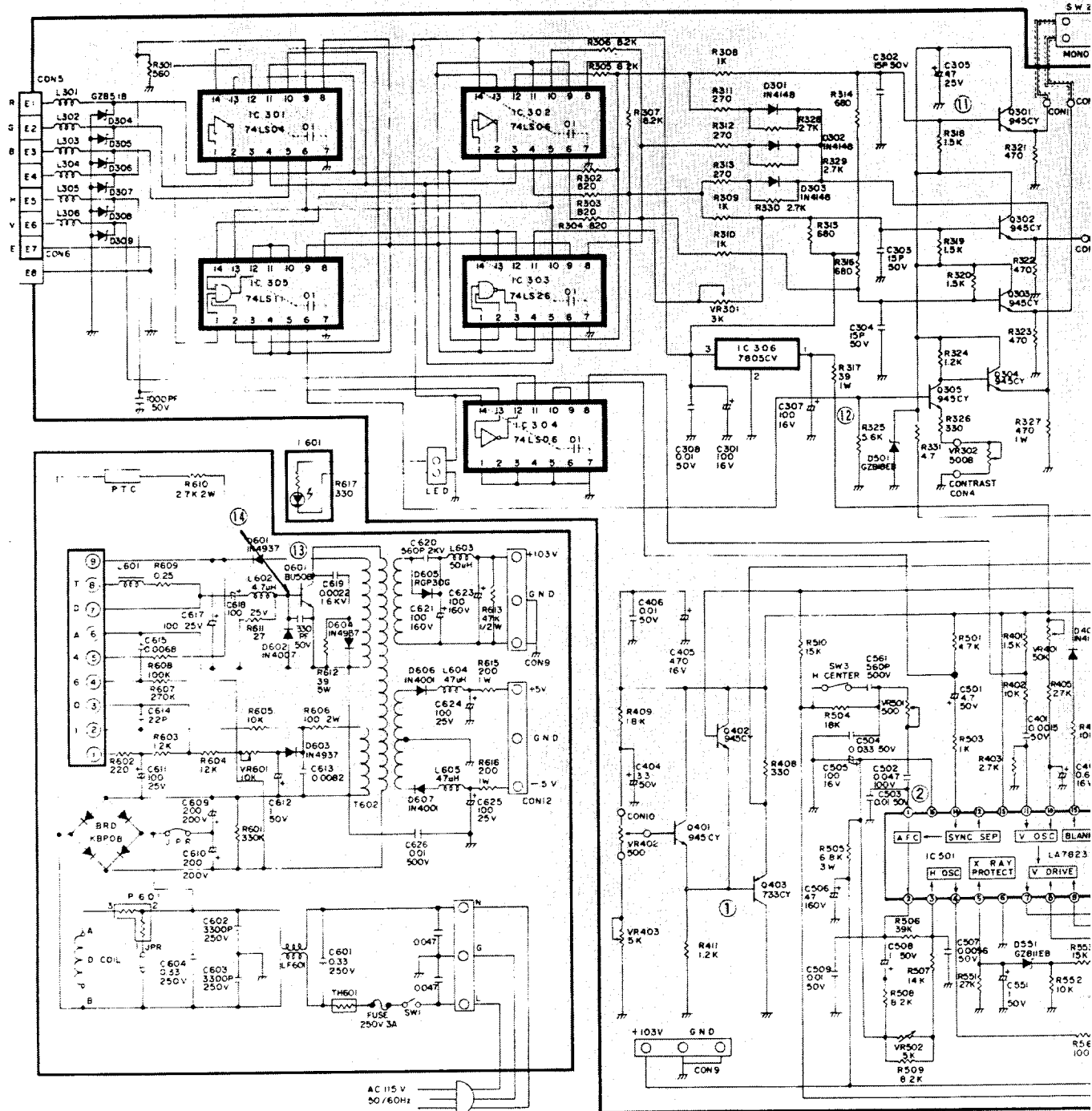
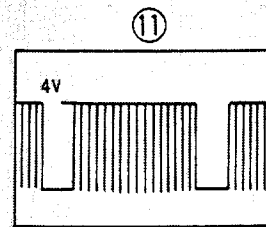
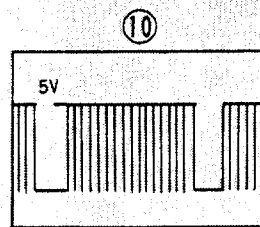
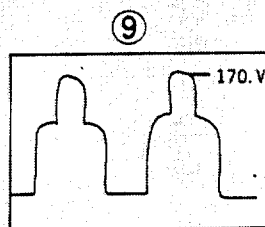
# I. TIMING CHART



## 2. ADJUST AND CONNECTOR FOR PCB



## 5. SCHEMATIC AND VOLTAGE V

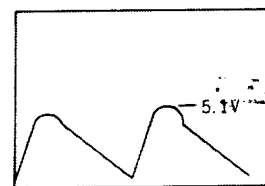
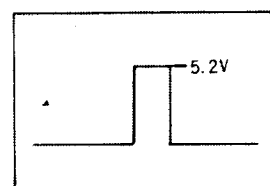


NOTE UNLESS OTHERWISE SPECIFIED

ALL RESISTORS ARE IN OHM 0.25W

2 O DENOTES HOUSING CONNECTOR

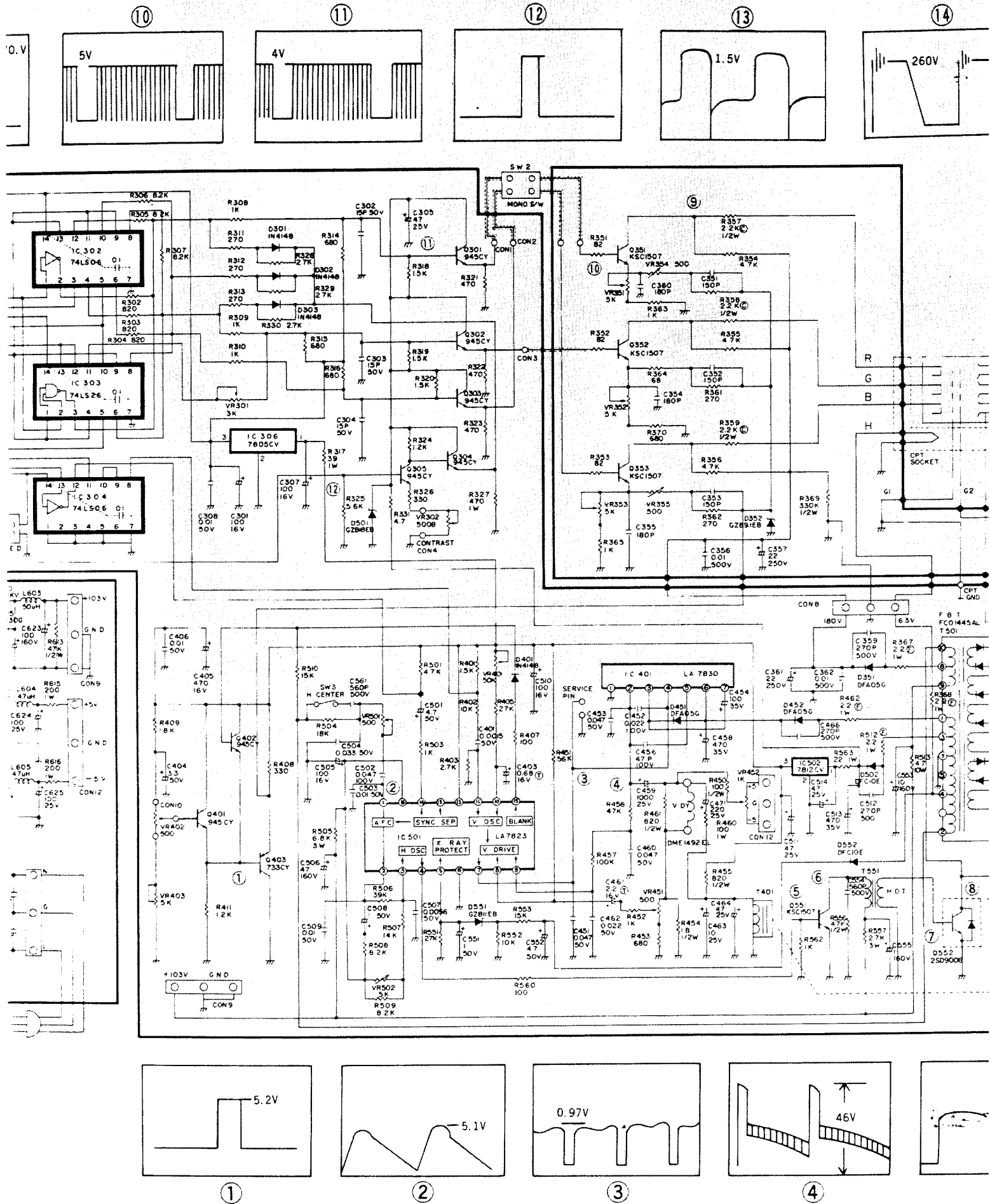
3 • DIRECT

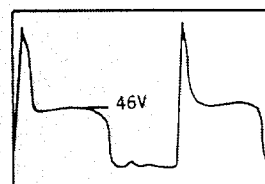
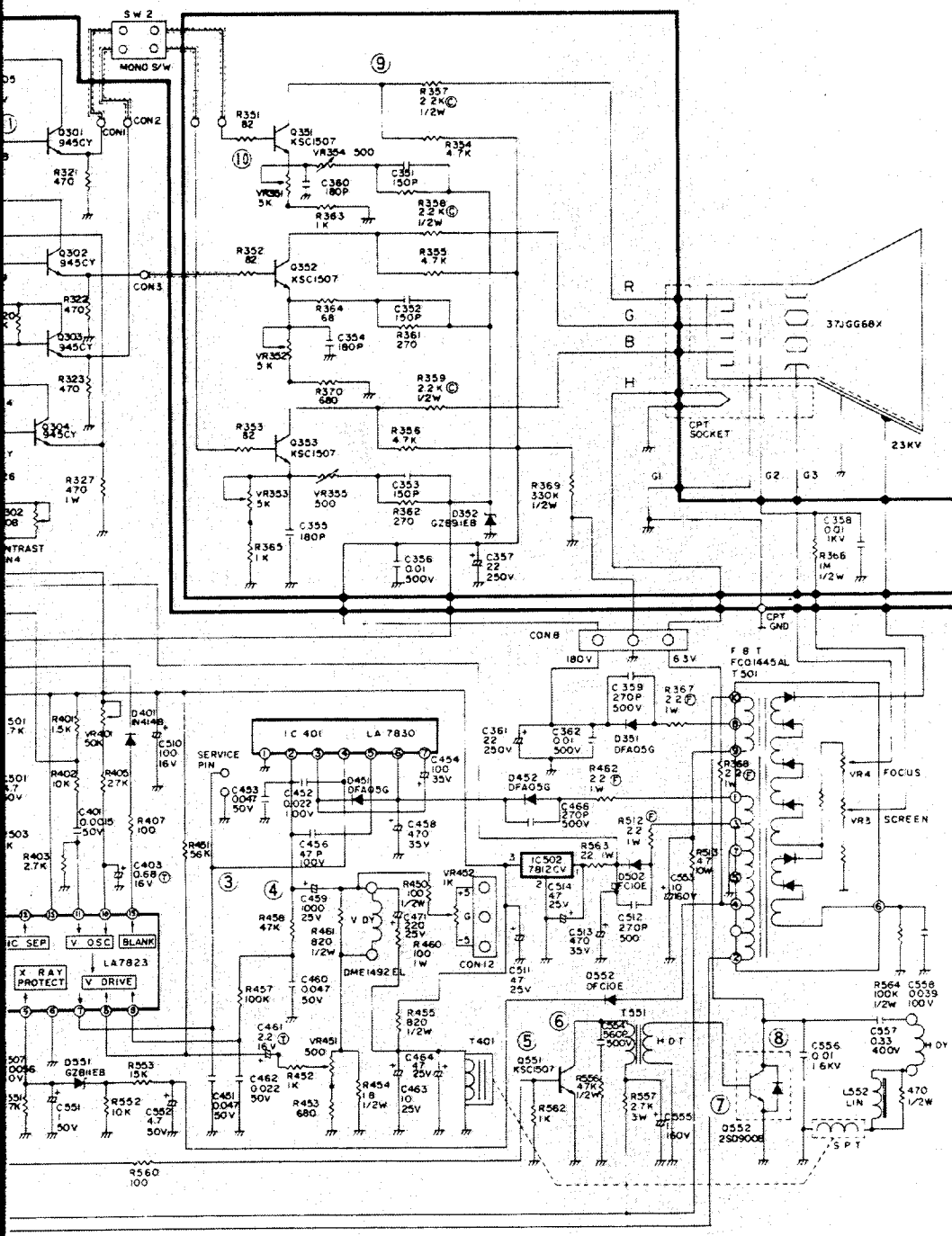
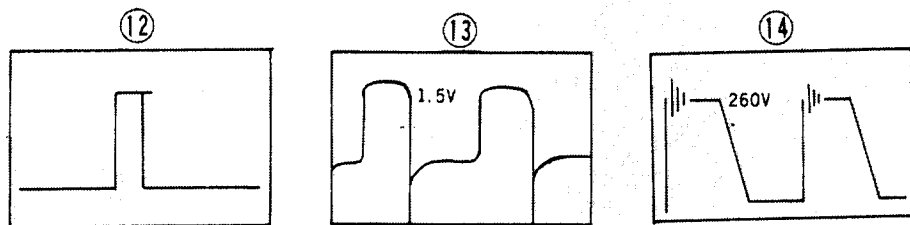


①

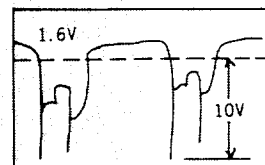
②

# 5. SCHEMATIC AND VOLTAGE WAVEFORM

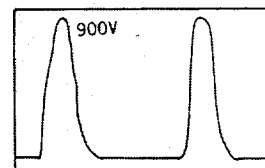




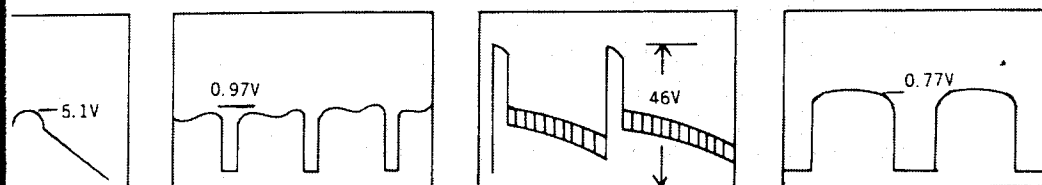
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⑧

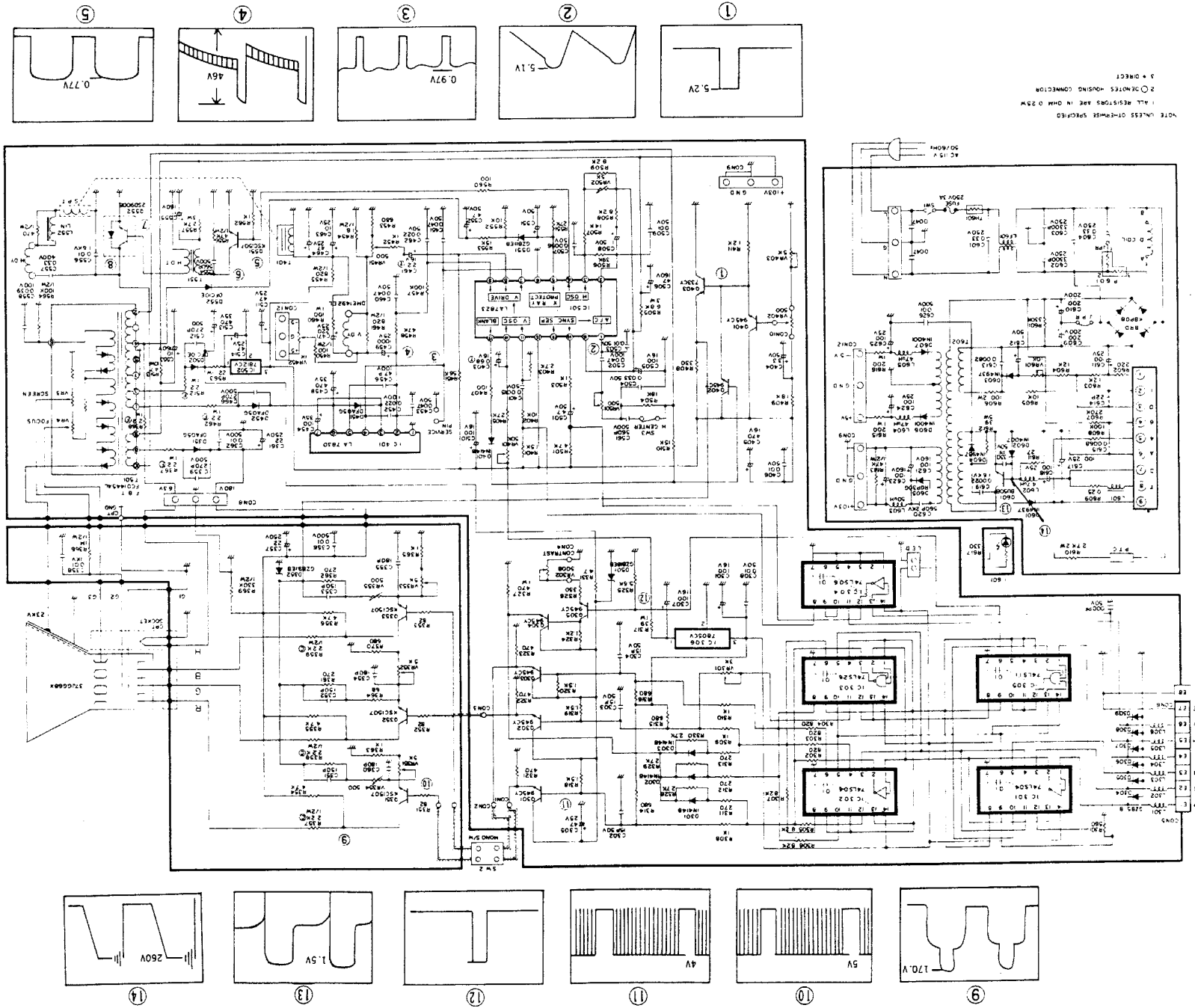


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# 5. SCHEMATIC AND VOLTAGE WAVEFORM

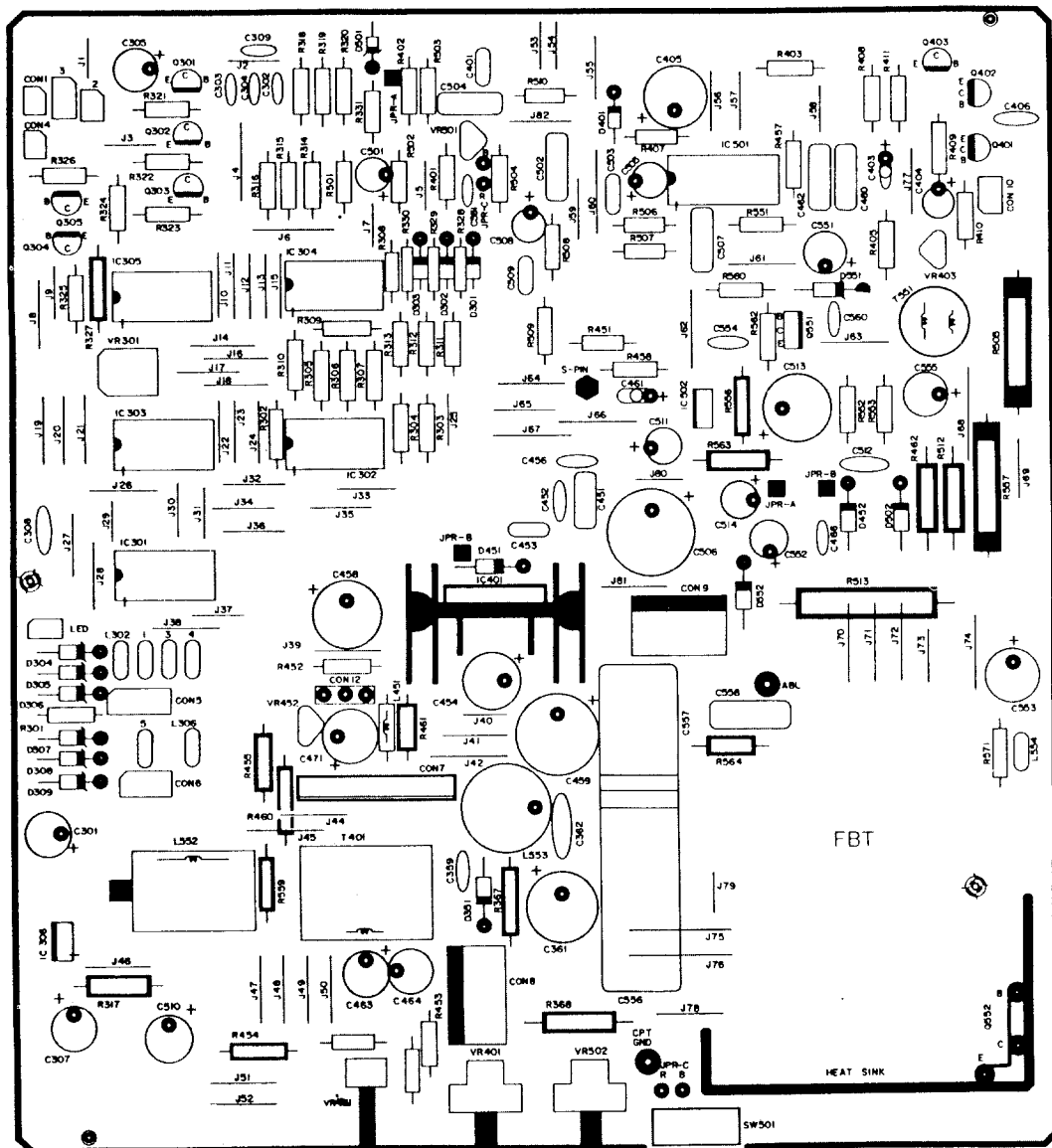


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. ALL RESISTORS ARE IN OHMS 0.2W  
 2. 0.3M RESISTORS - 0.5W CONNECTION  
 3. 0.5 DIRECT

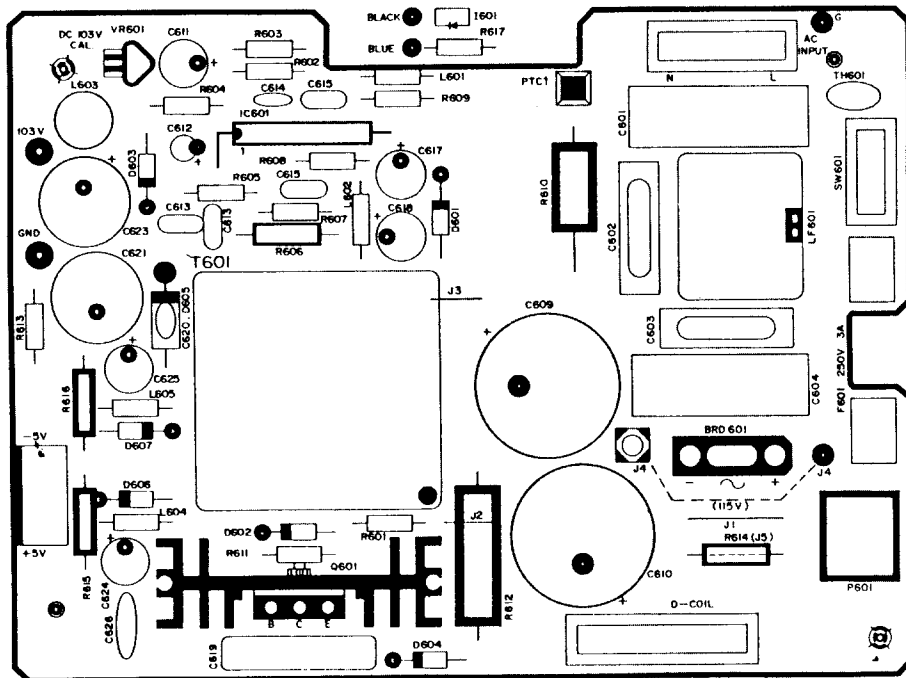


## 6. PCB COMPONENT LOCATION (TOP)

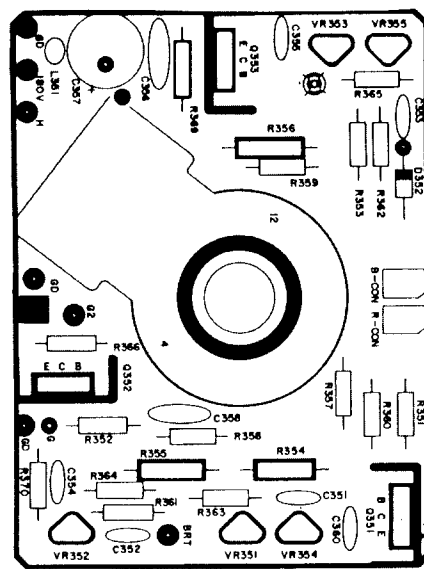
## MAIN PCB



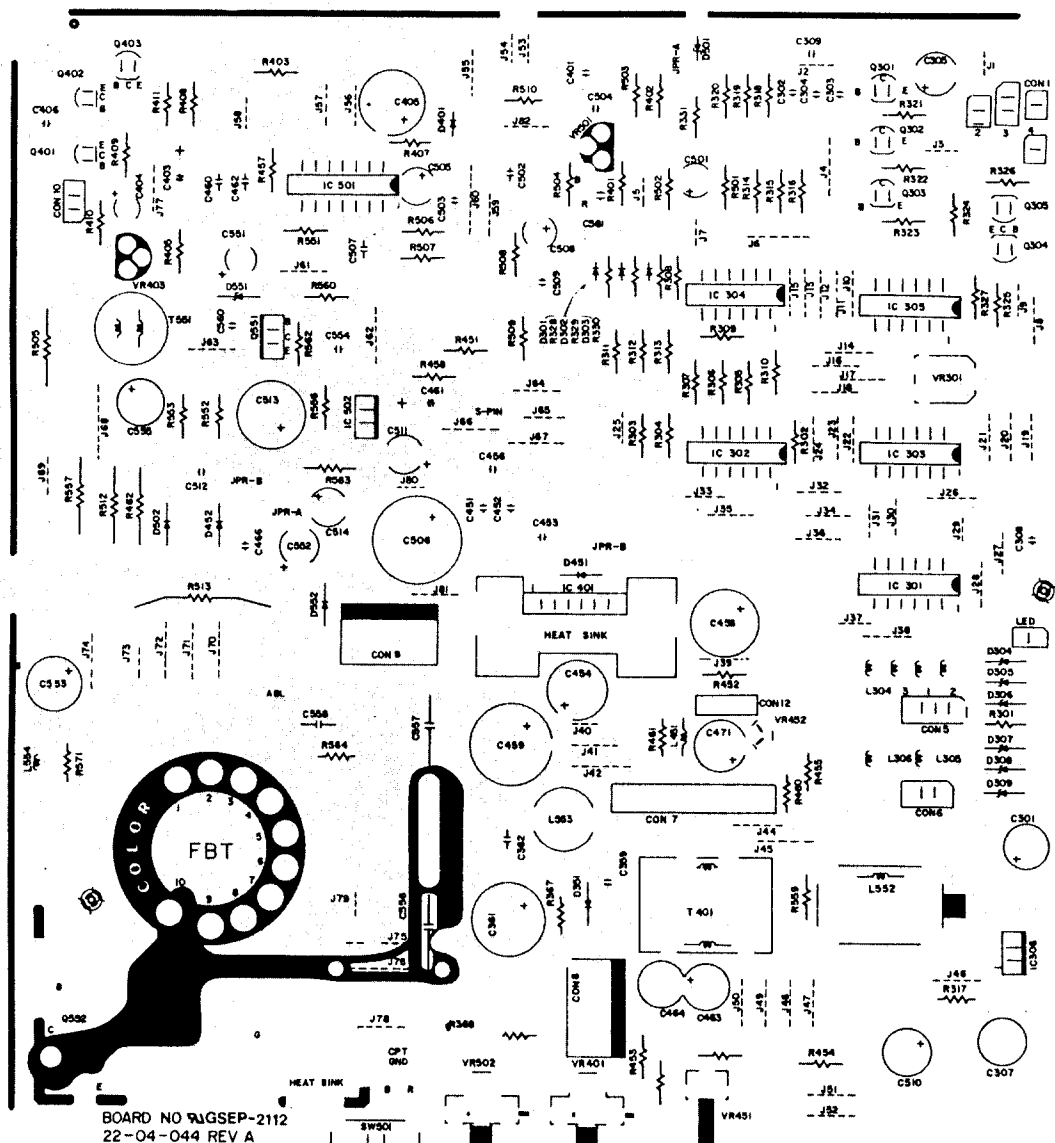
## SMPS PCB



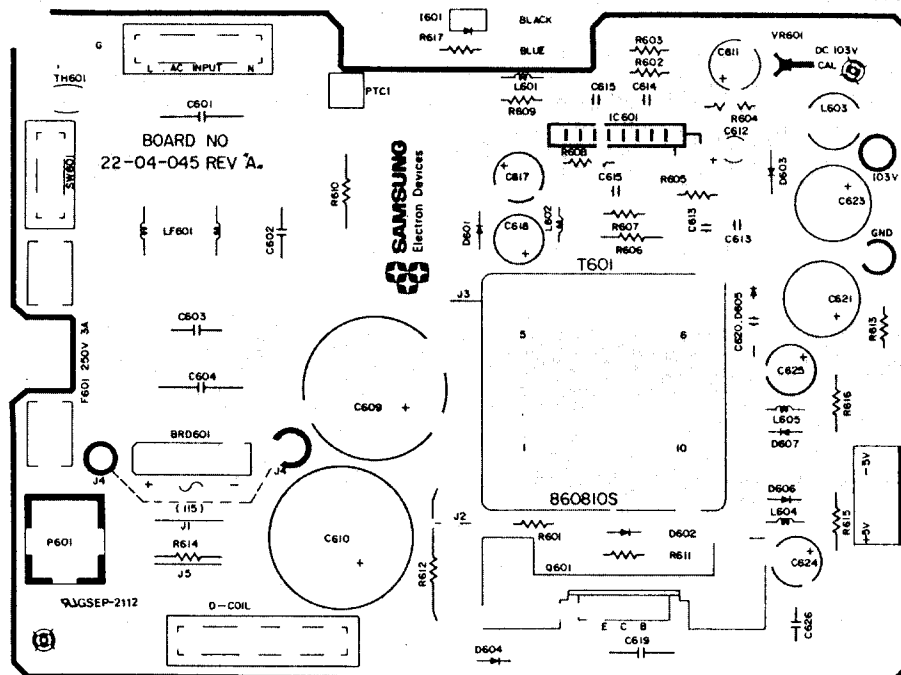
## CPT SOCKET PCB



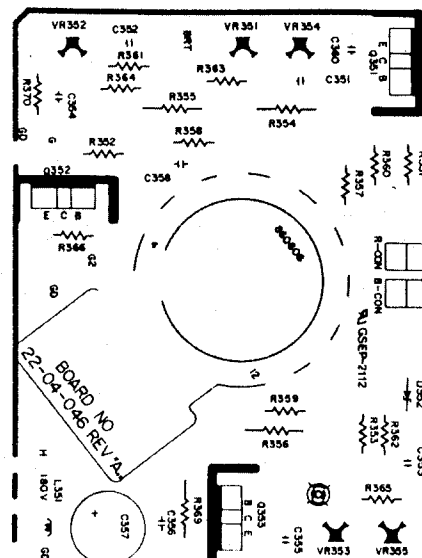
MAIN PCB



## SMPS PCB

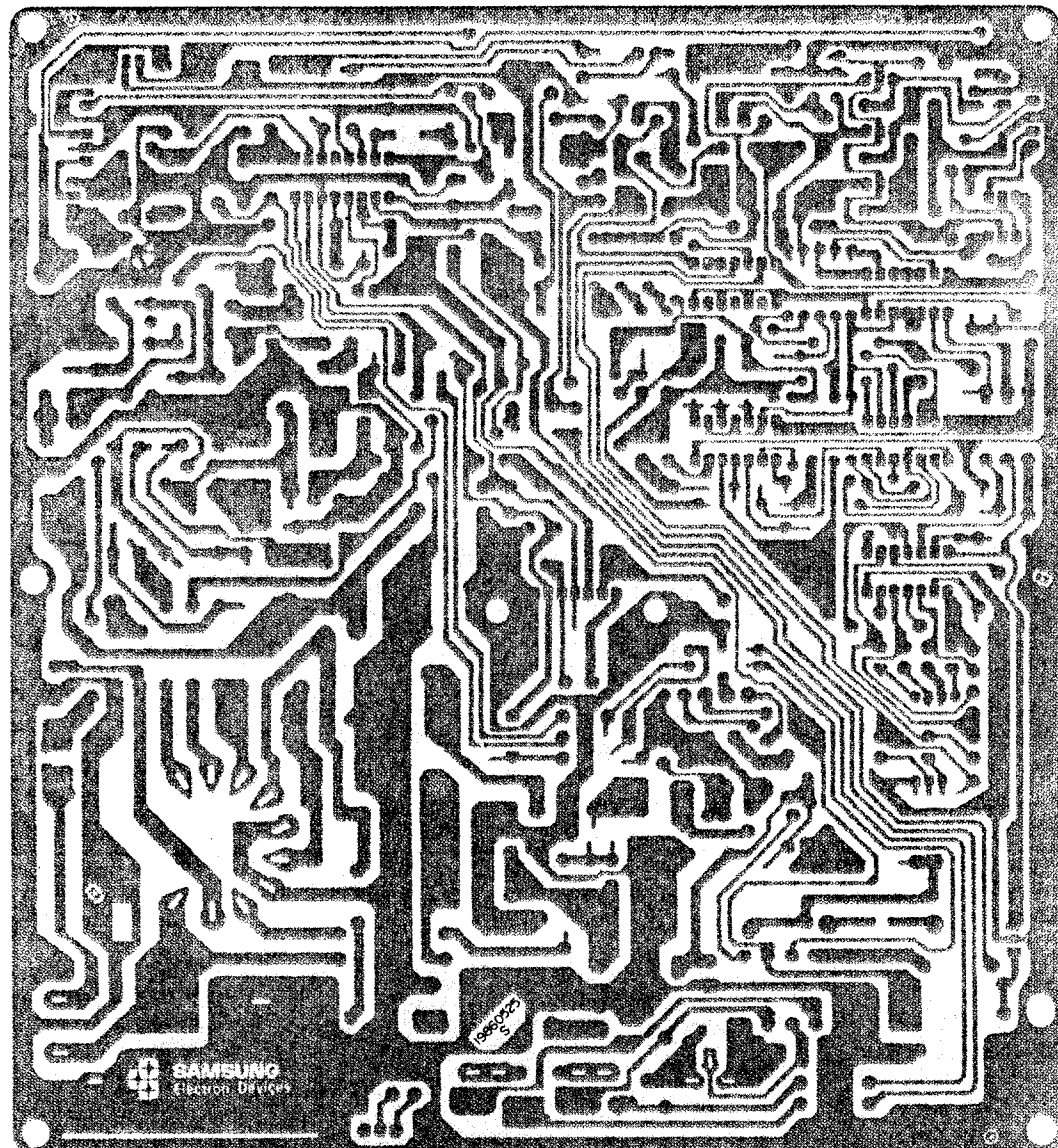


CPT SOCKET PCB

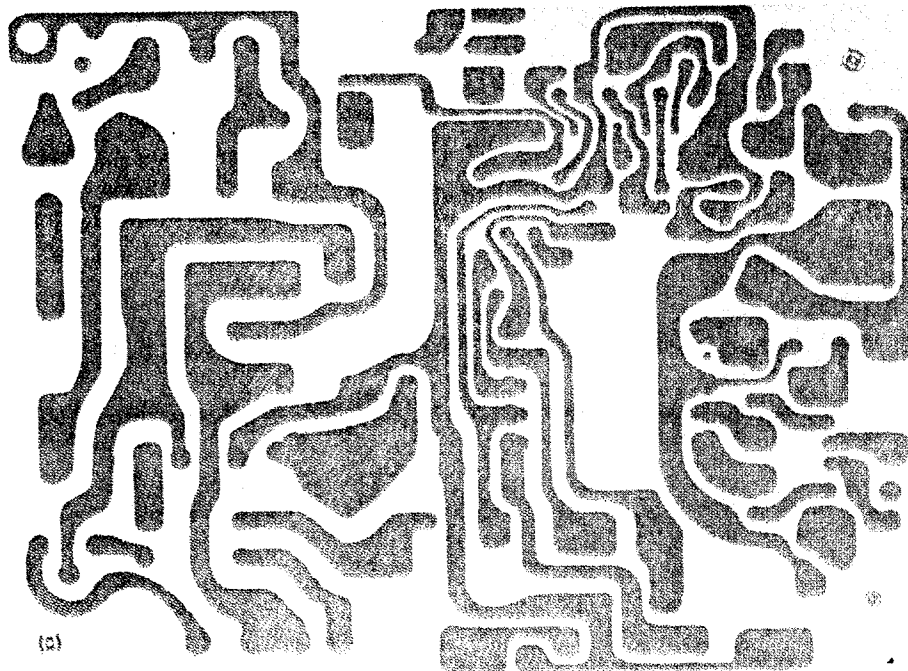


PCB LAND PATTERN  
DRAWING (BOTTOM)

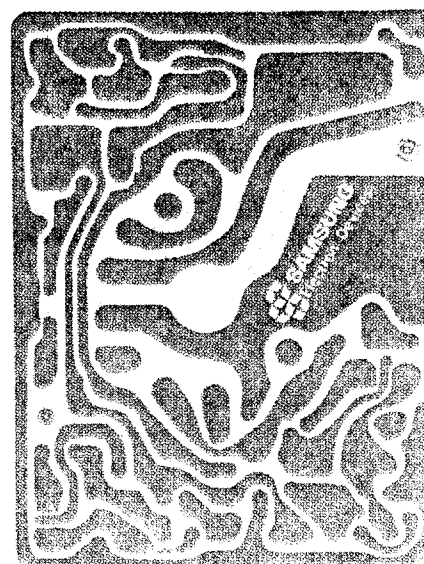
MAIN PCB



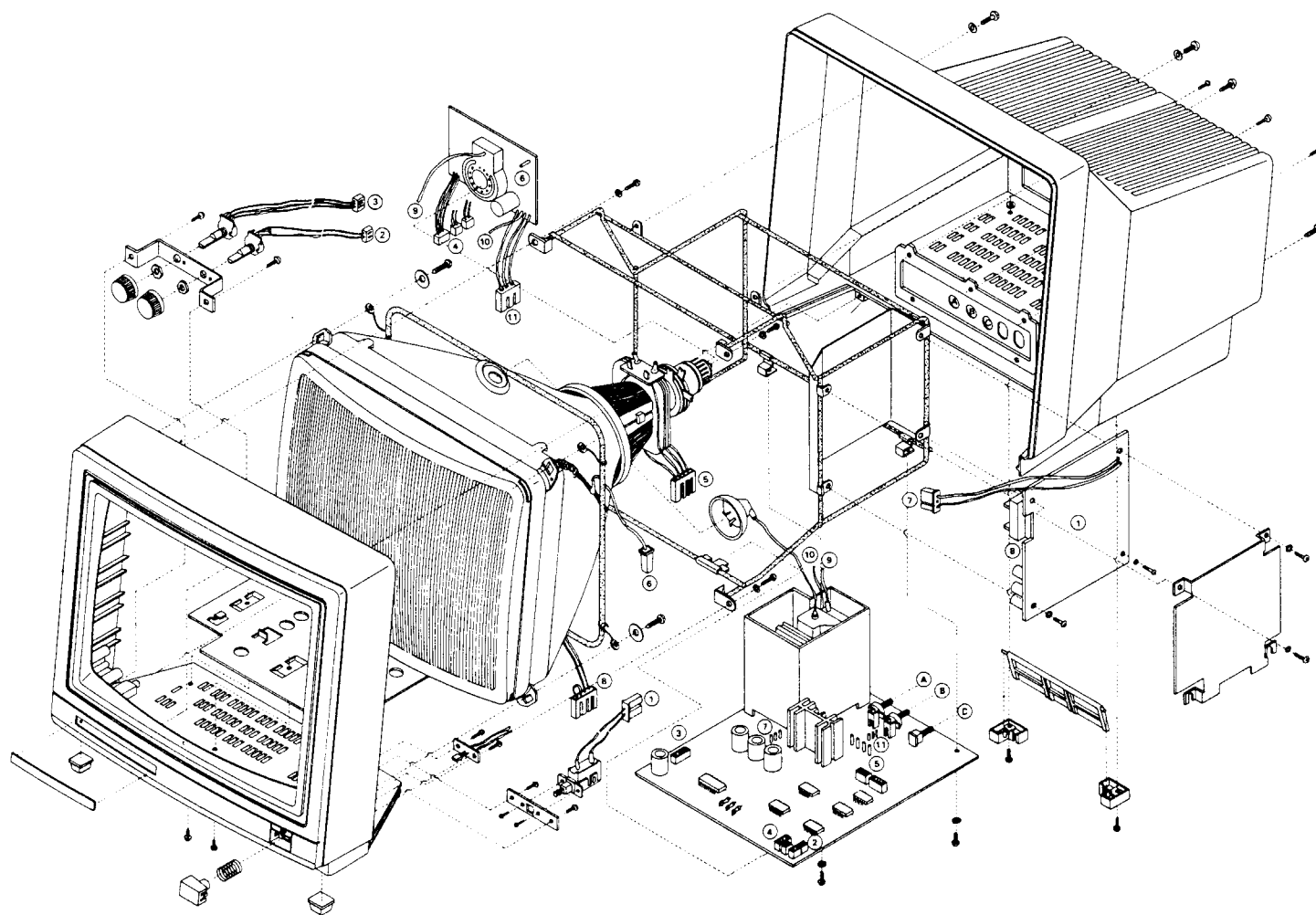
SMPS PCB



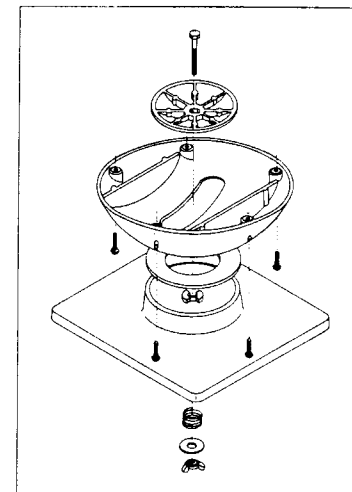
CPT SOCKET PCB



# ASSEMBLY DRAWING



OPTION



## PARTS LIST

CKT NO.	SED.PART NO.	DESCRIPTION
	22-04-044	Main P.C Board Blank FR-I (1.6t)
	22-04-046	Socket P.C Board Blank FR-I (1.6t)
	22-04-045	SMPS P.C Board Blank FR-I (1.6t)
	G1-03-039	Main P.C Board Ass'y FR-I (1.6t)
	00-02-027	Socket P.C Board Ass'y FR-I (1.6t)
	G2-01-004	SMPS P.C Board Ass'y FR-I (1.6t)

### MAIN PCB ASS'Y

#### RESISTIORS

R301	14-04-561	Resistor, carbon 560ohm 1/4W
R302	14-04-821	Resistor, carbon 820ohm 1/4W
R303	14-04-821	Resistor, carbon 820ohm 1/4W
R304	14-04-821	Resistor, carbon 820ohm 1/4W
R305	14-04-822	Resistor, carbon 8.2Kohm 1/4W
R306	14-04-822	Resistor, carbon 8.2Kohm 1/4W
R307	14-04-822	Resistor, carbon 8.2Kohm 1/4W
R308	14-04-821	Resistor, carbon 820ohm 1/4W
R309	14-04-821	Resistor, carbon 820ohm 1/4W
R310	14-04-821	Resistor, carbon 820ohm 1/4W
R311	14-04-271	Resistor, carbon 270ohm 1/4W
R312	14-04-271	Resistor, carbon 270ohm 1/4W
R313	14-04-271	Resistor, carbon 270ohm 1/4W
R314	14-04-821	Resistor, carbon 820ohm 1/4W
R315	14-04-821	Resistor, carbon 820ohm 1/4W
R316	14-04-821	Resistor, carbon 820ohm 1/4W
R562	14-04-162	Resistor, carbon 1Kohm 1/4W
R563	14-09-220	Resistor, metal oxide 22ohm 1W
R564	14-05-104	Resistor, carbon 100Kohm 1/2W
VR301	15-02-021	Variable, V-trimmer 3Kohm 0.2W
VR401	15-03-013	Variable, H-trimmer (W/Shaft) 50Kohm 0.2W
VR403	14-01-015	Variable, H-trimmer (W/Shaft) 5Kohm 0.2W
VR451	15-03-016	Variable, H-trimmer (Handle) 500ohm 0.2W
VR452	15-01-021	Variable, H-trimmer (Handle) 1Kohm 0.2W
VR501	15-01-026	Variable, H-trimmer (Handle) 500ohm 0.2W
VR502	15-033012	Variable, H-trimmer (W/Shaft) 5Kohm 0.2W

#### CAPACITOR

C301	16-04-014	Electrolytic capacitor 100 $\mu$ F 16V
C302	16-11-009	Ceramic capacitor 15pF 50V
C303	16-11-009	Ceramic capacitor 15pF 50V
C304	16-11-009	Ceramic capacitor 15pF 50V
C305	16-04-006	Electrolytic capacitor 47 $\mu$ F 25V
C307	16-04-014	Electrolytic capacitor 100 $\mu$ F 16V
C308	16-10-013	Ceramic capacitor 0.01 $\mu$ F 50V
C359	16-11-012	Ceramic capacitor 270pF 500V
C361	16-01-074	Electrolytic capacitor 22 $\mu$ F 250V
C362	16-10-046	Ceramic capacitor 0.01 $\mu$ F 500V
C401	16-21-001	Polyester capacitor 0.0015 $\mu$ F 50V
C403	16-12-014	Tantal capacitor 0.68 $\mu$ F 16V
C404	16-04-002	Electrolytic capacitor 3.3 $\mu$ F 50V
C405	16-01-070	Electrolytic capacitor 470 $\mu$ F 16V
C406	16-19-013	Ceramic capacitor 0.01 $\mu$ F 50V
C451	16-21-011	Polyester capacitor 0.0039 $\mu$ F 50V
C452	16-11-003	Ceramic capacitor 330 $\mu$ F 100V
R453	14-04-471	Resistor, carbon 1Kohm 1/4W
R454	14-06-018	Resistor, carbon 1.8ohm 1/4W
R455	14-06-821	Resistor, carbon 820ohm 1/2W
R457	14-04-104	Resistor, carbon 100Kohm 1/4W
R458	14-04-473	Resistor, carbon 47Kohm 1/4W
R460	14-09-101	Resistor, metal oxide 100ohm 1W
R461	14-05-821	Resistor, metal oxide 820ohm 1/2W
R462	14-30-018	Resistor, metal oxide 2.2ohm 1W
R501	14-04-72	Resistor, carbon 4.7Kohm 1/4W
R502	14-04-154	Resistor, carbon 150Kohm 1/4W
R503	14-04-102	Resistor, carbon 1Kohm 1/4W
R504	14-04-183	Resistor, carbon 18Kohm 1/4W
R505	14-11-682	Resistor, metal oxide 6.8Kohm 3W
R506	14-04-393	Resistor, carbon 39Kohm 1/4W
R507	14-04-143	Resistor, carbon 14Kohm 1/4W
R508	14-04-822	Resistor, carbon 8.2Kohm 1/4W
R509	14-04-822	Resistor, carbon 8.2Kohm 1/4W
R510	14-04-153	Resistor, carbon 15Kohm 1/4W
R512	14-30-018	Resistor, fusible 2.2ohm 1W
R513	14-27-005	Resistor, cement 4.7ohm 10W

R551	14-04-273	Resistor, carbon 27Kohm 1/4W
R552	14-04-103	Resistor, carbon 10Kohm 1/4W
R553	14-04-153	Resistor, carbon 15Kohm 1/4W
R556	14-06-472	Resistor, carbon 4.7Kohm 1/2W
R557	14-11-272	Resistor, metal oxide 2.7Kohm 3W
R559	14-06-222	Resistor, carbon 2.2Kohm 1/2W
R560	14-04-101	Resistor, carbon 100ohm 1/2W
R561	14-04-101	Resistor, carbon 100ohm 1/4W
R317	14-09-390	Resistor, carbon 39ohm 1W
R318	14-04-151	Resistor, carbon 1.5Kohm 1/4W
R319	14-04-152	Resistor, carbon 1.5Kohm 1/4W
R320	14-04-152	Resistor, carbon 1.5Kohm 1/4W
R321	14-04-471	Resistor, carbon 470ohm 1/4W
R322	14-04-471	Resistor, carbon 470ohm 1/4W
R323	14-04-471	Resistor, carbon 470ohm 1/4W
R324	14-04-122	Resistor, carbon 1.2Kohm 1/4W
R325	14-04-562	Resistor, carbon 5.6Kohm 1/4W
R326	14-04-331	Resistor, carbon 330ohm 1/4W
R327	14-09-471	Resistor, metal oxide 470ohm 1W
R328	14-04-272	Resistor, carbon 2.7Kohm 1/4W
R329	14-04-272	Resistor, carbon 2.7Kohm 1/4W
R330	14-04-272	Resistor, carbon 2.7Kohm 1/4W
R331	14-04-047	Resistor, carbon 4.7ohm 1/4W
R367	14-30-016	Resistor, fusible 2.2ohm 1W
R368	14-30-017	Resistor, fusible 2.2ohm 1W
R401	14-04-152	Resistor, carbon 1.5Kohm 1/4W
R402	14-04-103	Resistor, carbon 10Kohm 1/4W
R403	14-04-272	Resistor, carbon 2.7Kohm 1/4W
R405	14-04-273	Resistor, carbon 27Kohm 1/4W
R407	14-04-101	Resistor, carbon 100ohm 1/4W
R408	14-04-331	Resistor, carbon 33ohm 1/4W
R409	14-04-182	Resistor, carbon 1.8Kohm 1/4W
R410	14-04-561	Resistor, carbon 560ohm 1/4W
R411	14-04-122	Resistor, carbon 1.24ohm 1/4W
R451	14-04-563	Resistor, carbon 56Kohm 1/4W
R452	14-04-102	Resistor, carbon 1Kohm 1/4W
C453	16-21-003	Polyester capacitor 0.01 $\mu$ F 50V
C454	16-01-077	Electrolytic capacitor 100 $\mu$ F 35V
C456	16-11-029	Ceramic capacitor 47pF 100V
C458	16-01-078	Electrolytic capacitor 470 $\mu$ F 35V
C459	16-01-072	Electrolytic capacitor 1000 $\mu$ F 25V
C461	16-12-008	Tantal capacitor 2.2 $\mu$ F 16V
C460	16-21-006	Polyester capacitor 0.047 $\mu$ F 50V
C462	16-21-012	Polyester capacitor 0.022 $\mu$ F 50V
C463	16-04-004	Electrolytic capacitor 10 $\mu$ F 25V
C464	16-04-006	Electrolytic capacitor 47 $\mu$ F 25V
C466	16-11-012	Ceramic capacitor 270pF 500V
C471	16-01-021	Electrolytic capacitor 220 $\mu$ F 25V
C501	16-04-013	Electrolytic capacitor 4.7 $\mu$ F 50V
C502	16-15-036	Polyester capacitor 0.047 $\mu$ F 100V
C503	16-15-033	Mylar capacitor 0.01 $\mu$ F 50V
C504	16-15-002	Polypropylene capacitor 0.033 $\mu$ F 50V
C505	16-04-014	Electrolytic capacitor 100 $\mu$ F 16V
C506	16-01-076	Electrolytic capacitor 47 $\mu$ F 160V
C507	16-154-032	Polupropylene capacitor 0.0056 $\mu$ F 50V
C508	16-04-001	Electrolytic capacitor 1 $\mu$ F 50V
C509	16-04-003	Polyster capacitor 0.01 $\mu$ F 50V
C510	16-04-014	Electrolytic capacitor 100 $\mu$ F 16V
C511	16-11-006	Electrolytic capacitor 47 $\mu$ F 25V
C512	16-01-012	Ceramic capacitor 270 $\mu$ F 500V
C513	16-04-078	Electrolytic capacitor 470 $\mu$ F 35V
C514	16-04-006	Electrolytic capacitor 47 $\mu$ F 25V
C551	16-04-001	Electrolytic capacitor 1 $\mu$ F 50V
C552	16-04-013	Electrolytic capacitor 4.7 $\mu$ F 50V
C553		
C554	16-11-014	Ceramic capacitor 560pF 500V
C555	16-01-051	Electrolytic capacitor 1 $\mu$ F 160V
C556	16-15-035	Polypropylene capacitor 0.01 $\mu$ F 1.6KV
C557	16-25-020	Metalizd paper capacitor 0.33 $\mu$ F 200V
C558	16-13-039	Mylar capacitor 0.039 $\mu$ F 100V
C561	16-10-043	Ceramic capacitor 330pF 1KV

#### I.C

IC301	20-01-007	TTL IC(DIP-14) 74LS04
IC302	20-01-035	TTL IC(DIP-14) 74LS06
IC303	20-01-036	TTL IC(DIP-14) 74LS26
IC304	20-01-035	TTL IC(DIP-14) 74LS06
IC305	20-10-037	TTL IC(DIP-14) 74LS11
IC306	20-03-016	Regulator IC L7805CV
IC501	20-06-011	Linear IC LA7823
IC502	20-03-033	Regulator IC L78S12CV

## TRANSISTOR

Q301	18-04-003	NPN, Transistor KSC945CY
Q302	18-04-003	NPN, Transistor KSC945CY
Q303	18-04-003	NPN, Transistor KSC945CY
Q304	18-04-003	NPN, Transistor KSC945CY
Q305	18-04-003	NPN, Transistor KSC945CY
Q402	18-04-003	NPN, Transistor KSC945CY
Q403	18-05-001	PNP, Transistor KSA733CY
Q551	18-07-016	NPN, Transistor KSC1507Y

## DIODE

D301	19-03-004	Switching diode IN4148
D302	19-03-004	Switching diode IN4148
D303	19-03-004	Switching diode IN4148
D304	18-05-018	Zener diode GZB 5,18
D305	18-05-018	Zener diode GZB 5,18
D306	18-05-018	Zener diode GZB 5,18
D307	18-05-018	Zener diode GZB 5,18
D308	18-05-018	Zener diode GZB 5,18
D309	18-05-018	Zener diode GZB 5,18
D351	19-03-021	Fast recovery diode(FRD) DFA05G
D401	19-03-004	Switching diode IN4148
D451	19-03-021	FRD DFA05G
D452	19-03-021	FRD DFA05G
D501	19-05-020	Zener diode DZB18EB
D502	19-03-022	FRD DFC10E
D551	19-05-019	Zener diode GZB11EB
D552	19-02-022	FRD DFC10E

## COILS

L553	17-05-021	Coil, horizontal linearity 14" Color
L451	17-11-021	Coil chock 4.7μH

## CONNECTOR

CON1	10-11-041	Header, shrouded 2.5,2PN
CON2	10-11-041	Header, shrouded 2.5, 29, N
CON4	10-11-028	Header, shrouded 2.5,3P, Y
CON5	10-11-041	Header, shrouded 2.5, Y,
CON6	10-11-028	Header, shrouded 2.5,3P,
CON7	10-11-029	Header, bead pin 2.36φ
CON8	10-11-037	Header, shrouded 5/7.5, 3P, N
CON9	10-11-037	Header, shrouded 7.5,3P,N
CON10	10-11-028	Header, shrouded 2.5,3P,Y
CON12	21-05-048	Wire, shrouded hosing 3P, 50, N, 250mm
S-PIN	10-11-040	Header, bead pin JST

## TRANSFORMERS

T501	17-02-027	Trans, flyback FCO-1445AL
T401	17-02-002	Trans, pincushion 0905004-A
T551	17-07-011	Trans, Drive 0505005-A

## CORES

L301	17-22-006	Core, beads 2865002402
L302	17-22-006	Core, beads 2865002402
L303	17-22-006	Core, beads 2865002402
L304	17-22-006	Core, beads 2865002402
L305	17-22-006	Core, beads 2865002402
L306	17-22-006	Core, beads 2865002402

## JUMP WIRE

JPR-B	21-02-050	Stranded wire, AWM1007/#22(Red) R, 110mm
JPR-A	21-02-047	Stranded wire, AWM1007/#22(Yellow) , Y, 135mm
JRR-C	21-02-038	Stranded wire, AWM1007/#22(Red) 240mm(2pcs)
JL-77	21-02-005	WIRE, BUS, SPA 0.6 52mm

## HEAT SINK ASS'Y FOR IC 401

IC401	20-06-009	IC, Linear, LA7830
	06-25-025	Heat Sink AL, Black V-Drive
	21-26-018	T-Scr Rnd Head W/Washer
	24-02-002	M-Scr Pan Head W/Washer

# HEAT SINK ASS'Y FOR Q 552

Q552	18-01-007	TR NPN 2SD 900B
	06-25-033	Heat Sink AL.W. Power Drive
	23-03-002	Mica To-3Type
	23-03-005	Bushing 900B Type
	21-01-015	Wire. Stranded AWM 1015/#22.BW.55
	21-01-004	Wire. Stranded AWM 1007/#2. or 55
	21-06-029	Wire. Ringter, Insulation 5φ RED 6φ
	12-21-002	Tube. Shrinkable 4φ 20mm
	24-02-002	M-Scr Pan Head W/Washer M3×8W
	24-02-007	M-Scr Pan Head W/Washer M3×12W
	24-31-001	Nut Hex M3×0.5PW
	24-41-001	Uasher. Flat 3.2×7×0.5W

# CONTRAST VOLUME ASS'Y(00-05-012)

VR302	15-04-007	Variable resistor, V-trimmer 500ohm, B, 0.1W
	21-05-039	Wire, connector, housing (Black, blue): 2pcs, 2p. 2.5 290mm.N

# BRIGHTNESS VOLUME ASS'Y(00-056-013)

VR402	15-04-007	Variable resistor, V-trimmer 500ohm, B, 0.1W
	21-05-040	Wire, connector, housing (Black, blue): 1pcs, 3p.2.5 130mm.N

# LED ASS'Y(00-08-013)

1601	19-06-003	LED(Green) SE-6221
R601	14-04-331	Resistor, carbon 330KΩ 1/4W
	21-05-038	Wire, connector housing 2p,2.5 N.R.BL 270mm 14" Color

# POWER. SIGNAL CABLE ASS'Y(00-14-007)

	10-05-061	Back Plate Hips 40AF
	10-05-017	Strain Relief 5P-4
	10-05-058	Strain Relief 6P-4
	00-17-009	Ass'y Signal Cable 9p. GND
	21-07-001	P/S Cord.Sut. None. Deusing. 7ft BL 3/18AWG
	10-12-014	Conn. Housing. AMP. 171158-1 3P. GR
SW601	23-02-013	Switch Push Bottom
	21-05-037	Wire. Conn. Hosing 2p. 2.36. GR.R. 270mm
	24-45-008	Spring Compression 11×17×0.6
	12-21-002	Tube. Shrinkable 4φ 10mm

# SOCKET P.C BOARD ASS'Y(00-02-027)

22-04-046	Socket P.C.B board blank FR-1, 1.6t
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# RESISTOR

R351	14-03-820	Resistor, carbon 47Ω, 1/4W
R352	14-03-820	Resistor, carbon 47Ω, 1/4W
R353	14-03-820	Resistor, carbon 47Ω, 1/4W
R354	14-10-472	Resistor, metal oxide 4.7KΩ, 2W
R355	14-10-472	Resistor, metal oxide 4.7KΩ, 2W
R356	14-10-472	Resistor, metal oxide 4.7KΩ, 2W
R357	14-28-001	Resistor, compisition, 2.2KΩ, 1/2W
R358	14-28-001	Resistor, compisition, 2.2KΩ, 1/2W
R359	14-28-001	Resistor, compisition, 2.2KΩ, 1/2W
R360	14-04-271	Resistor, carbon 270Ω, 1/4W
R361	14-04-271	Resistor, carbon 270Ω, 1/4W
R362	14-04-271	Resistor, carbon 270Ω, 1/4W
R363	14-04-102	Resistor, carbon 1KΩ, 1/4W
R364	14-04-101	Resistor, carbon 100Ω, 1/4W
R365	14-04-102	Resistor, carbon 1KΩ, 1/4W
R366	14-06-105	Resistor, carbon 1MΩ, 1/4W
R369	14-06-334	Resistor, carbon 330KΩ, 1/2W
R370	14-05-102	Resistor, carbon 1KΩ, 1/4W
VR351	15-01-015	Variable, H-Trimmer(Red) 5KΩ, B, 1/2W
VR352	15-01-019	Variable, H-Trimmer(Green) 5KΩ, B, 1/2W
VR353	15-01-019	Variable, H-Trimmer(Blue) 5KΩ, B, 1/2W
VR354	15-10-017	Variable, H-Trimmer(Red) 500Ω, 0.2W
VR355	15-10-018	Variable, H-Trimmer(Blue) 500Ω, 0.2W

# CAPACITOR

C351	16-10-007	Creamic capacitor 150pF, 50V
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C352	16-10-007	Creamic capacitor 150pF, 50V
C353	16-10-007	Creamic capacitor 150pF, 50V
C354	16-10-48	Creamic capacitor 180pF, 50V
C355	16-10-48	Creamic capacitor 180pF, 50V
C356	16-10-046	Creamic capacitor 0.01 $\mu$ F, 500V
C357	16-10-074	Electrolytic capacitor 22 $\mu$ F, 250V
C358	16-10-016	Creamic capacitor 0.01 $\mu$ F, 500V
C360	16-10-048	Creamic capacitor 180pF, 50V

#### DIODE

D352	19-05-017	Zener diode GZB9.1EB
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#### HEAT SINK ASS'Y FOR C1507(00-06-032)

Q351-353	18-07-016	NPN, Transistor C1507
	06-25-026	Heat sink(Block)
	24-31-001	Hexagon net(M3 $\times$ 0.59W)
	24-02-002	Machine screw head W/Washer(3 $\times$ 8W)
CON301	10-11-029	Header. Bead pin. 2.36 $\phi$
	10-11-041	Header. shrouded 2.5.2p.N 5267-2A
	21-06-050	Wire. ring terminal AWM 1015
	21-05-047	Wire. ring terminal 3p. 5.0. 190mm
	00-14-008	Ass'y G Lead connector
	21-06-051	Bridged wire ring terminal 85mm
	10-08-023	CPT socket+CAP

#### SMPS ASS'Y(G2-01-00)

22-04-045	P.C.Board blank FR-1. 1.6t
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#### RESISTOR

R601	14-04-334	Resistor, carbon 330K $\Omega$ 1/4W
R602	14-04-221	Resistor, carbon 220 $\Omega$ 1/4W
R603	14-04-122	Resistor, carbon 1.2K $\Omega$ 1/4W
R604	14-04-123	Resistor, carbon 12K $\Omega$ 1/4W
R605	14-04-103	Resistor, carbon 10K $\Omega$ 1/4W
R606	14-04-101	Resistor, metal oxide 100 $\Omega$ 2W
R607	14-04-104	Resistor, carbon 270K $\Omega$ 1/4W
R608	14-04-104	Resistor, carbon 100K $\Omega$ 1/4W
R609	14-25-013	Resistor, metal film 0.25 $\Omega$ 1/4W
R610	14-10-272	Resistor, metal oxide 2.7K $\Omega$ 2W
R611	14-04-270	Resistor, carbon 27 $\Omega$ 1/4W
R612	14-26-063	Resistor, wire wound 39 $\Omega$ 5W
R613	14-06-473	Resistor, carbon 47K $\Omega$ 1/2W
R615	14-09-201	Resistor, metal oxide 200 $\Omega$ 1W
R616	14-09-201	Resistor, metal oxide 200 $\Omega$ 1W
VR601	15-01-016	Variable, H-Trimmer 10K $\Omega$ 1/4W
TH601	15-06-001	Thermistor 2SS20
P601	15-08-001	PTC, Posistor, SC-452C, 06BG080N140

#### CAPACITOR

C601	16-25-004	Metalized polyester capacitor 0.33 $\mu$ F 250V
C602	16-15-028	Polypropylene capacitor 0.0033 $\mu$ F 250V
C603	16-15-028	Polypropylene capacitor 0.0033 $\mu$ F 250V
C604	16-25-004	Metalized polyester capacitor 0.33 $\mu$ F 250V
C609	16-01-075	Electrolytic capacitor 220 $\mu$ F 220WV
C610	16-01-075	Electrolytic capacitor 220 $\mu$ F 220WV
C611	16-04-007	Electrolytic capacitor 100 $\mu$ F 25V
C612	16-01-001	Electrolytic capacitor 1 $\mu$ F 50V
C613	16-14-015	Mlyar capacitor 0.0082 $\mu$ F 50V
C614	16-11-008	Ceramic capacitor 22pF 50V
C615	19-14-014	Mlyar capacitor 0.0068 $\mu$ F 50V
C617	16-04-007	Electrolytic capacitor 100 $\mu$ F 25V
C618	16-04-007	Electrolytic capacitor 100 $\mu$ F 25V
C619	16-25-014	Metalized polyester 0.0022 $\mu$ F 1.6KV
C520	16-10-049	Ceramic capacitor 560pF 2KV
C621	16-01-043	Electrolytic capacitor 100 $\mu$ F 160V
C623	16-01-043	Electrolytic capacitor 100 $\mu$ F 160V
C624	16-04-007	Electrolytic capacitor 100 $\mu$ F 25V
C625	16-04-007	Electrolytic capacitor 100 $\mu$ F 25V

#### COIL

L601	07-22-008	Core bead 2743002112
L602	17-09-014	Chock coil 4.7UH
L603	17-09-016	Chock coil 50UH
FUSE	23-01-023	250V, 3A(MF61NM), CLIP TYPE.

L604	17-09-018	Chock coil 47UH
L605	17-09-018	Chock coil 47UH

#### DIODE

D601	19-03-009	Switching diode IN4937
D602	19-01-007	Rectifier diode IN4007
D603	19-03-009	Switching diode IN4937
D604	19-03-009	Switching diode IN4937
D605	19-013-023	Rectifier diode RGP30G
D606	19-01-001	Rectifier diode IN4001
D607	19-01-001	Rectifier diode IN4001
BRD1	19-02-008	Bridge diode KBP08

#### TRANS

T601	17-01-028	Switching trans
LF601	17-08-011	Coil Linefilter
T601	17-01-028	Trans Power

#### IC

IC601	20-06-010	Linear IC TDA4601
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#### TRANSISTOR

Q601	18-005	NPN Transistor BU508
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#### ASS'Y 024 HEAT SINK(00-06-031)

Q601	18-04-005	TR NPN BU508
	24-01-005	M-Scr Pan Head M3×12
	24-31-004	Nut Hex M3×2.59
	24-41-001	Washer Flat
	24-26-018	Fscr Rnd Head Washer
	06-24-024	Hest Sink(18×40×50)

#### MISCELLANEOUS

J601-605	21-02-005	Jump Wire
	10-11-029	Pin 2.36φ
GND1	21-06-023	Wire, Ring Terminal 5φ G/Y60
CON601	21-05-042	HDR, Rock, 5/7.5 3P, N, Molex 5289-03A
	10-11-037	Header 5/7.5 3Pin

#### THE OTHERS

CPT	26-17-002	37JGG 68X CPT
	10-05-060	Front Bezel Hips
	24-04-016	P-Scr Pan Head
	24-41-013	Washer Flat
	21-01-047	Wire. Holder N1.Y
	24-45-008	Comperssing Spring.
	10-05-062	S/W Cap. Hips
	24-01-002	M-Scr Pan head M3×5, W
	24-04-014	P-Scr. Pan Head #8×15, W
	06-21-018	Plate S/W Sbhgl.
	24-04-004	P-Scr Pan Head
	10-07-007	Fastener
	06-22-020	Brightness Knob
	10-05-063	Knob for Contrast
	24-04-004	P-Scr Pan Head
	06-20-023	P-Scr Chassis wire
	24-04-014	P-Scr Pan Head
	24-02-002	M-Scr Pan Head M3×8W
	06-24-010	Shield Bottom Cover
	06-20-022	Chassis Bottom
	24-02-004	M-Scr Pan Head
	21-06-044	Wire, Braid Shield Cead
D-Coil	17-11-002	Degsussing Coil
	10-05-059	Rear Hosing Hips 40AF
	24-26-042	M-Scr Pan Head M4×13.5
	24-02-004	M-Scr Pan Head Washer
	24-26-041	M-Scr C/S Head M3×12
	10-05-064	Stand Hips 40AF
	10-05-065	Neck Hips 40AF
	10-05-049	Stand/Part Acetal
	10-15-048	Neck/Part Acetal
	24-45-009	Compression Spring