

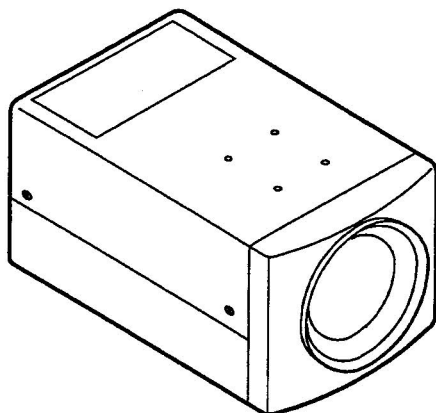
VIDEO CAMERA

**MODEL
CCD-400E**
SPECIFICATIONS

Image pick-up	: 1/4" CCD (total 470,000 pixels)	Power Supply	: DC 12.0 ± 1.0 V
Number of Pixels (Effective)	: 752 × 582 (440,000 pixels)		: Ripple voltage less than 500 mVp-p (not supplied with camera)
Signal System	: PAL Colour Standard	Power Consumption	: 380 mA
Scanning System	: 625 lines 2 : 1 Interlace	Dimensions	: 66 (W) × 55 (H) × 103.5 (D) mm
Scanning Frequency	: 15.625 kHz / 50 Hz		: 2.60"(W) × 2.17"(H) × 4.09"(D) (excluding external connector)
Video Output	: VBS 1.0 Vp-p / 75 Ω (BNC output)	Weight	: Approx. 440 g (0.97 lbs.)
Horizontal Resolution	: 430 TV Lines (S-Video output)	Operational Temperature	: 0 to 40 °C (32 to 104 °F)
S/N Ratio (Luminance)	: More than 46 dB	Safekeeping Temperature	: -20 to +60 °C (-4 to +140 °F)
Minimum Illumination	: Min. 1 lux / F1.4 (at GAIN-MAX)		
Backlight Compensation	: Available (-30 ~ 30)		
White Balance	: AUTO / INDOOR / FL LIGHT / OUTDOOR / LOCK / MANUAL		
Electronic Shutter	: 1/50 ~ 1/10,000 (8 sets)		
Lens	: Electrically powered 14-power zoom lens F1.4, f = 3.9 ~ 54.9 mm		
Synchronising System	: Internal / External		
Y/C output	: S-VIDEO OUT terminal Y : Luminance and Synchronising signals C : Chrominance and Burst signals		
Control terminal	: RS-232C interface (DIN 8 pin)		

- Weight and dimensions shown are approximate.
- Design and specifications are subject to change without notice.

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SAFETY PRECAUTIONS

INTRODUCTION

This manual provides service information for the adjustments of mechanical and electrical operations. Due design modifications, the servicing procedures and data given in this manual are subject to possible change without prior notice.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
THIS EQUIPMENT SHOULD BE USED WITH 12V DC ONLY.

SAFETY NOTICE

Before returning VIDEO CAMERA to the customer, a safety check of the entire VIDEO CAMERA should be made. The service technician must be sure that no protective device built into the instrument by the manufacturer has become defective or inadvertently damaged during servicing. Observe all caution and safety related notes located on or inside the VIDEO CAMERA cabinet.

WARNING: Alterations of the design or circuitry of this VIDEO CAMERA should not be made. Any design alterations or additions, such as circuit modifications, auxiliary speaker jacks, switches, grounding, active or passive circuitry, etc. use of unauthorised AC power adaptor, battery, cables, accessories, etc. may alter the safety characteristics of this VIDEO CAMERA and potentially create a hazardous situation for the user. Any design alterations or unauthorised additions will invalidate the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting from them.

When reassembling the VIDEO CAMERA, always be certain that all the protective devices are put back in place, such as non-metallic control knobs, shield plates, etc. When service is required, observe the original lead dress. Components that indicate evidence of overheating or other electrical or mechanical damage should be replaced.

DISASSEMBLY

- Remove the FPC cable only when necessary.
Do not touch the exposed terminals of the Connector directly with your hand. The unnecessary removal or the direct touch may result in contact failure.
Handle the FPC cable with extreme care.
 - To remove the FPC cable, hold the Connector for the FPC cable on the area A shown in Fig.1. Pull it in the direction shown by arrow in Fig.1.
 - To insert the Connector, place the Connector with the exposed terminals to the outside of the PCB-MAIN. Push the Connector in the opposite direction of arrow in Fig.1.

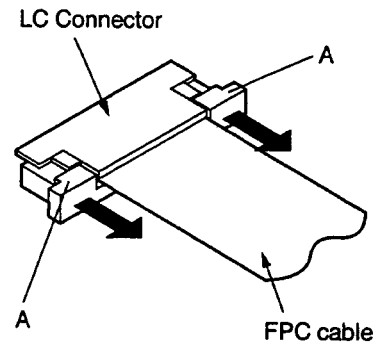


Fig. 1

DISASSEMBLY PROCEDURES

LENS ASSY

Step No.	1	2	3	4	5	6	7
Parts name	UPPER COVER	TRIPOD BASE	LOWER COVER	LENS CAP	FRONT PANEL	REAR ASSY	PCB-MAIN
Number of parts to be removed	1	2	3	---	4	5	6
Screw to be removed	4 pcs.	4 pcs.	4 pcs.	---	4 pcs.	2 pcs.	2 pcs.
Terminal to be removed	---	---	---	---	---	RB, RD	LC, MA, ME

Step No.	8	9	10
Parts name	PCB-PS ASSY and PCB-POWER	LENS COVER	LENS ASSY
Number of parts to be removed	7	8	9
Screw to be removed	3 pcs.	4 pcs.	3 pcs.
Terminal to be removed	---	---	---

- Refer to "LENS ASSY DETAILS" on page 4 for the details of the LENS ASSY.
- Note :** Removal of FRONT PANEL
 - Remove the four screws (4) shown in Fig. 2.
 - Remove the one Catch shown in Fig. 2.

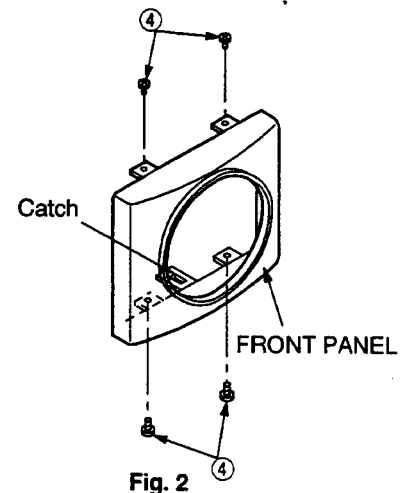


Fig. 2

REAR ASSY

Step No.	1	2	3	6
Parts name	UPPER COVER	TRIPOD BASE	LOWER COVER	REAR ASSY
Number of parts to be removed	1	2	3	5
Screw to be removed	4 pcs.	4 pcs.	4 pcs.	2 pcs.
Terminal to be removed	---	---	---	RB, RD

- Refer to "REAR ASSY DETAILS" on page 5 for the details of the REAR ASSY.

PCB-MAIN

Step No.	1	2	3	4	5	6	7
Parts name	UPPER COVER	TRIPOD BASE	LOWER COVER	LENS CAP	FRONT PANEL	REAR ASSY	PCB-MAIN
Number of parts to be removed	1	2	3	---	4	5	6
Screw to be removed	4 pcs.	4 pcs.	4 pcs.	---	4 pcs.	2 pcs.	2 pcs.
Terminal to be removed	---	---	---	---	---	RB, RD	LC, MA, ME

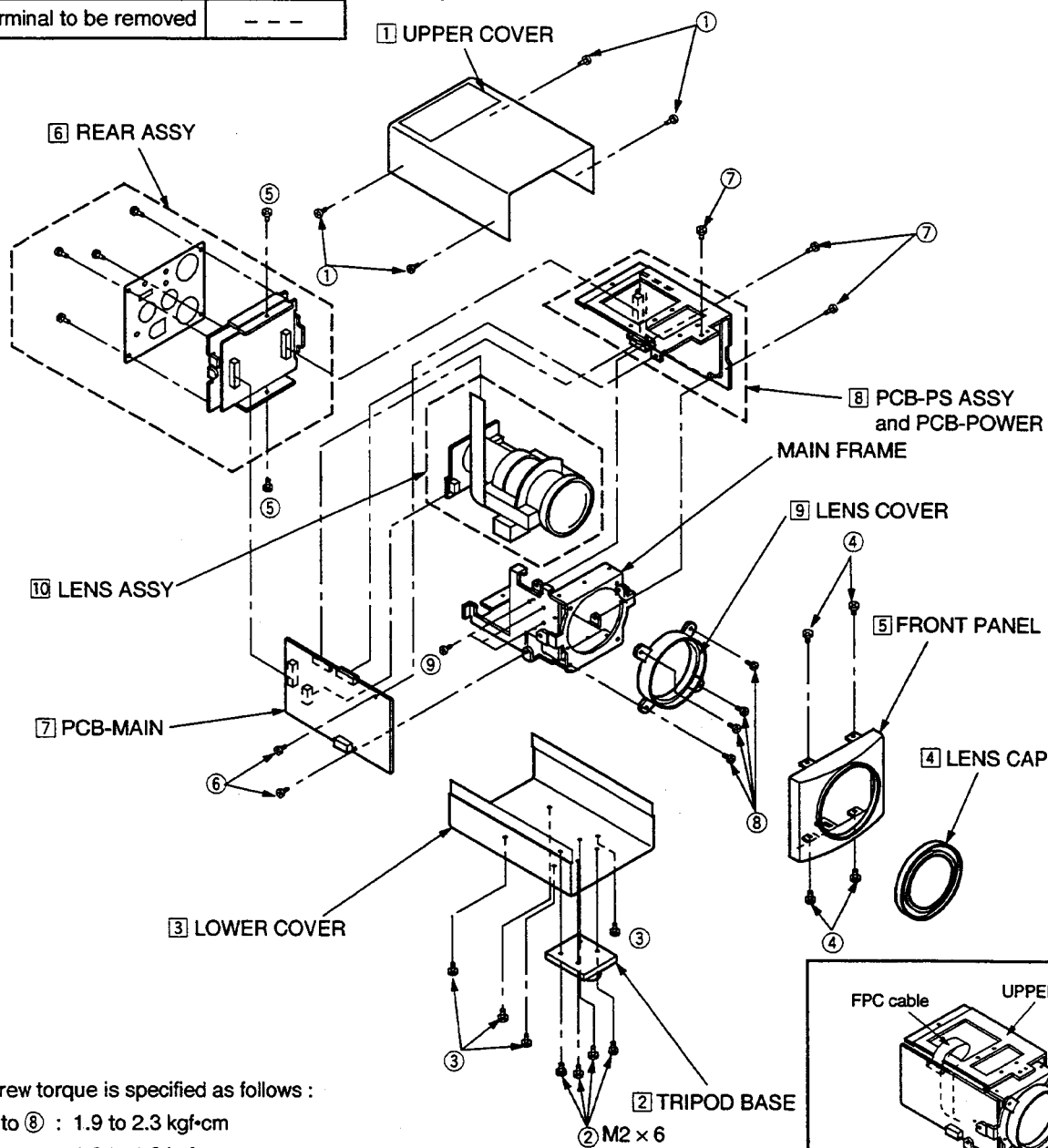
Note : Provide a LENS CAP to protect the lens during the adjustments when not shooting image.

PCB-PS ASSY and PCB-POWER

Step No.	1	2	3	4	5	6	7
Parts name	UPPER COVER	TRIPOD BASE	LOWER COVER	LENS CAP	FRONT PANEL	REAR ASSY	PCB-MAIN
Number of parts to be removed	1	2	3	---	4	5	6
Screw to be removed	4 pcs.	4 pcs.	4 pcs.	---	4 pcs.	2 pcs.	2 pcs.
Terminal to be removed	---	---	---	---	---	RB, RD	LC, MA, ME

Step No.	8
Parts name	PCB-PS ASSY and PCB-POWER
Number of parts to be removed	7
Screw to be removed	3 pcs.
Terminal to be removed	---

- Refer to "PCB-PS ASSY and PCB-POWER DETAILS" on page 5 for the details of the PCB-PS ASSY and PCB-POWER.
- Note :** Provide a LENS CAP to protect the lens during the adjustments when not shooting image.
- Note :** Pull FPC of the gap between UPPER FRAME and PCB-POWER shown in Fig. 3-1.



Screw torque is specified as follows :

- ① to ⑧ : 1.9 to 2.3 kgf·cm
- ⑨ : 1.2 to 1.8 kgf·cm

Fig. 3

Fig. 3-1

LENS ASSY DETAILS

Step No.	①	②	③	④
Parts name	PCB-CCD	CCD SENSOR IC	OPTICAL FILTER PROTECTION RUBBER	OPTICAL FILTER
Number of parts to be removed	①	---	---	---
Screw to be removed	2 pcs.	---	---	---
Terminal to be removed	---	---	---	---

Screw torque is specified as follows :

① : 0.7 to 1.7 kgf·cm

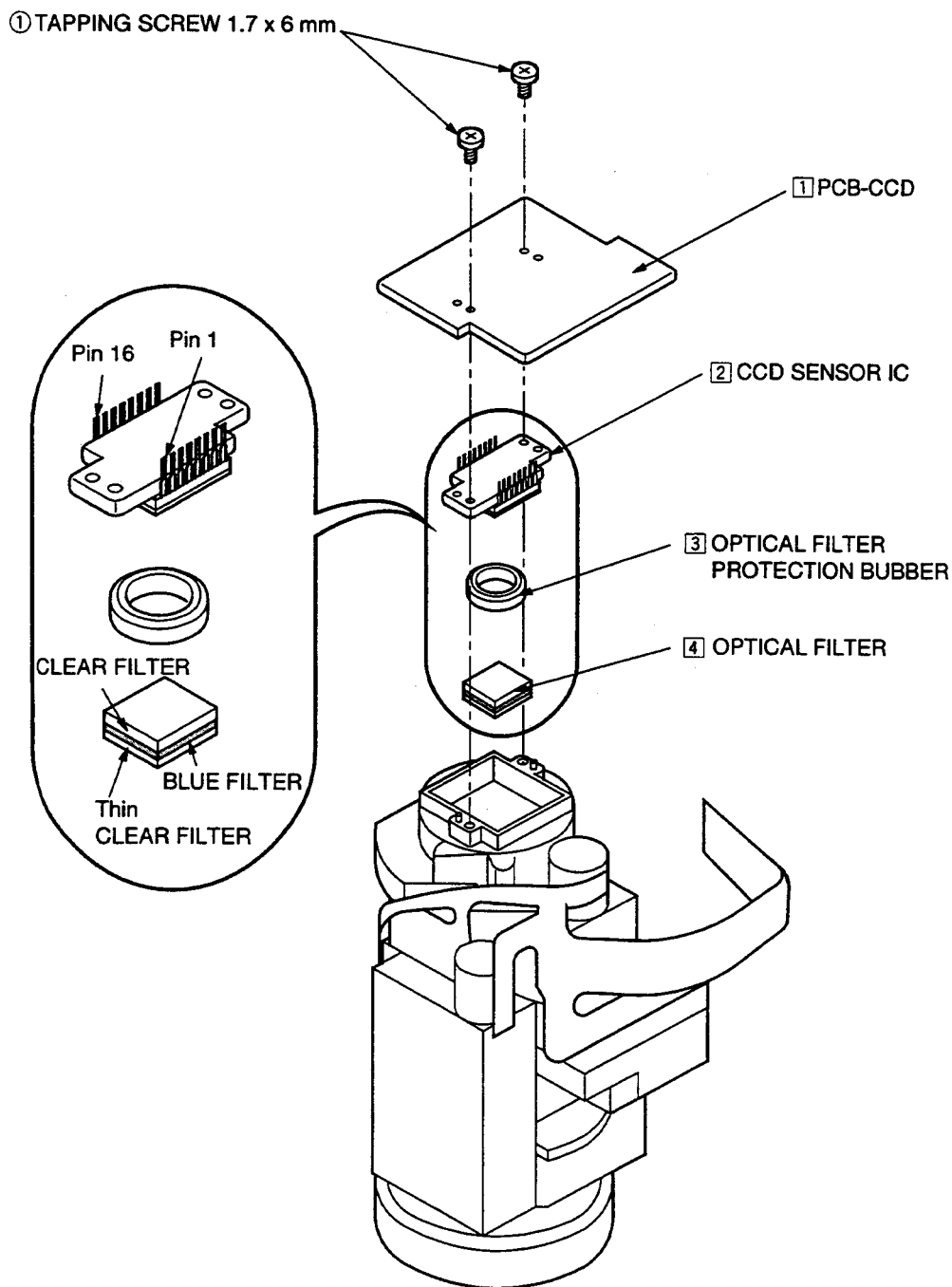


Fig. 4

REAR ASSY DETAILS

Step No.	①
Parts name	REAR COVER
Number of parts to be removed	①
Screw to be removed	4 pcs.
Terminal to be removed	---

Screw torque is specified as follows :

① : 1.9 to 2.3 kgf·cm

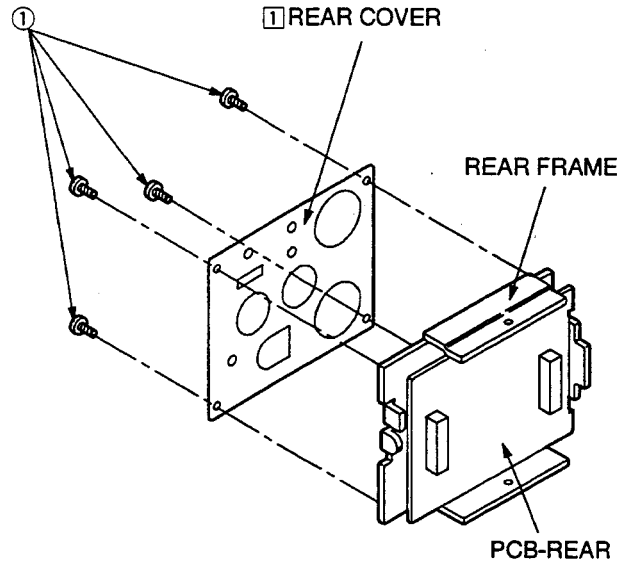


Fig. 5

PCB-PS ASSY and PCB-POWER DETAILS

PCB-PS ASSY

Step No.	①
Parts name	PCB-PS
Number of parts to be removed	① / ②
Screw to be removed	2 pcs./2 pcs.
Terminal to be removed	---

Screw torque is specified as follows :

① : 1.9 to 2.3 kgf·cm

② : 4.1 to 4.9 kgf·cm

PCB-POWER

Step No.	①
Parts name	PCB-POWER
Number of parts to be removed	---
Screw to be removed	---
Terminal to be removed	---

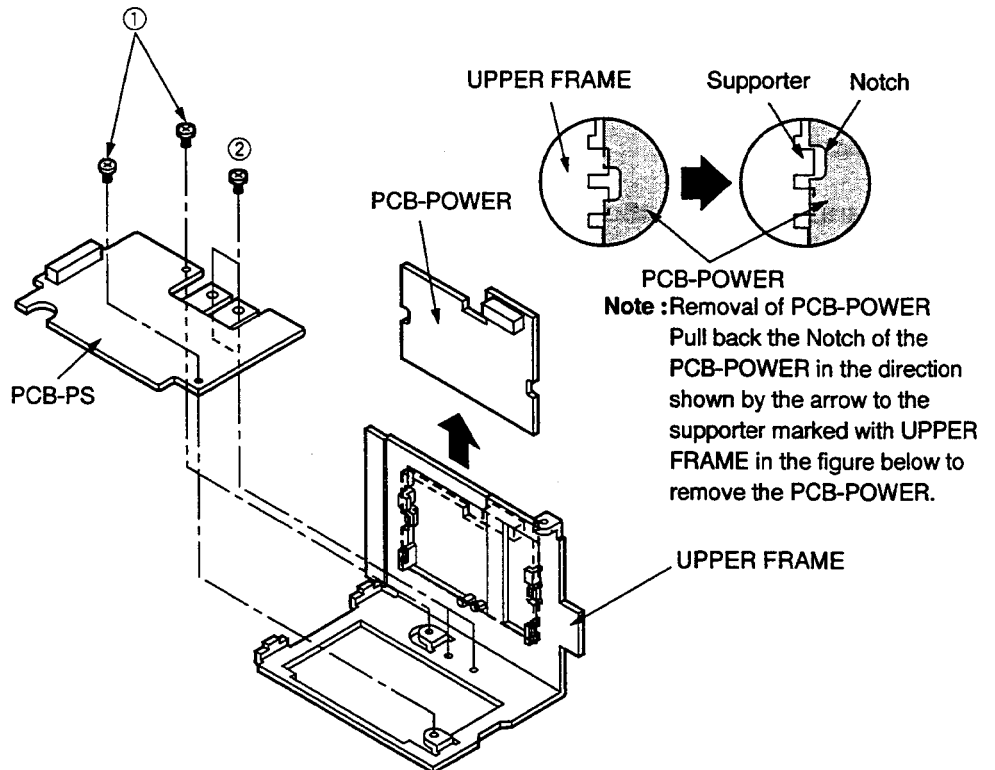
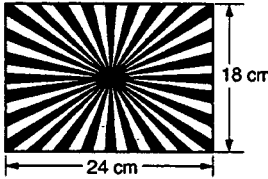

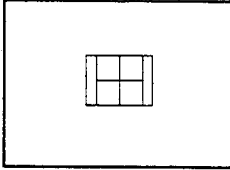
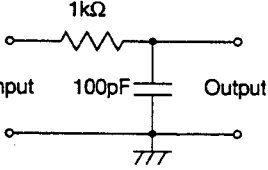
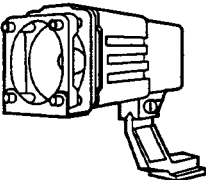
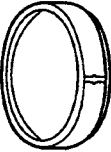
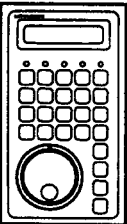
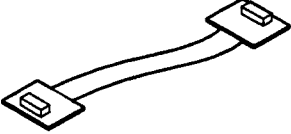


Fig. 6

CIRCUIT ADJUSTMENT

1. Jigs and Measuring Instruments

1-1 Adjusting Jigs

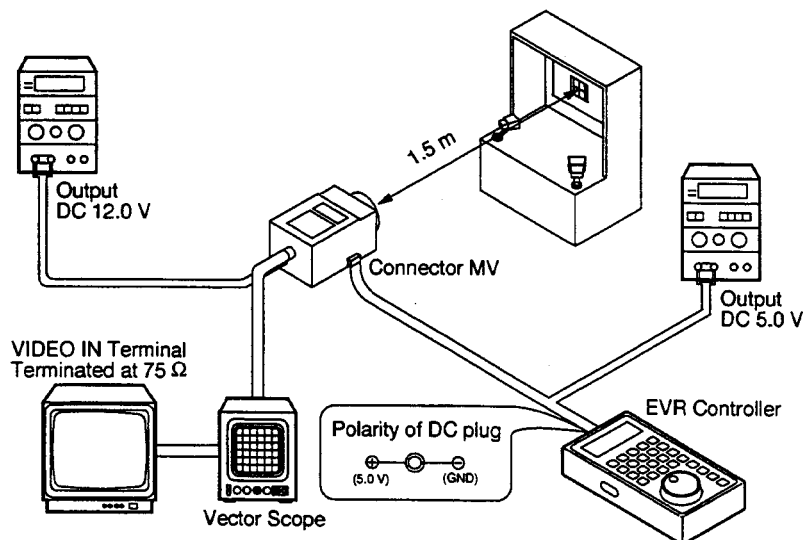
<p>Radial Chart (self-prepared)</p>  <p>The narrower width between lines the better.</p>	<p>White Chart (self-prepared)</p>  <p>Stick white paper on a square corrugated board (at the same size as the Colour Chart).</p>	<p>Colour Chart 859C397O40 (Reflection type)</p> 	<p>Filter (self-prepared)</p> 
<p>Halogen Light VLT-100 [recommended item]</p> 	<p>Conversion Filter for Colour Temperature</p>  <p>C2 : 859C361O80</p>	<p>EVR Controller 859C546O40</p>  <p>Use the EVR controller same as that used for CCD-300E.</p>	<p>Extension Jigs</p>  <p>MB-RB (26 pin) : 859C545O30 RD-RD (30 pin) : 859C545O80 CA-MA (12 pin) : 859C545O60 DE-ME (18 pin) : 859C545O20</p>

1-2 Other Measuring Instruments

- Oscilloscope (Unless otherwise specified, use 10 : 1 probe.)
- Vector scope
- Illuminometer
- Frequency counter
- Colour monitor (Colour TV)
- Digital voltmeter

1-3 Standard Connection

Note : Perform the adjustments with the camera unit assembled using a minimum quantity of the extension cables.

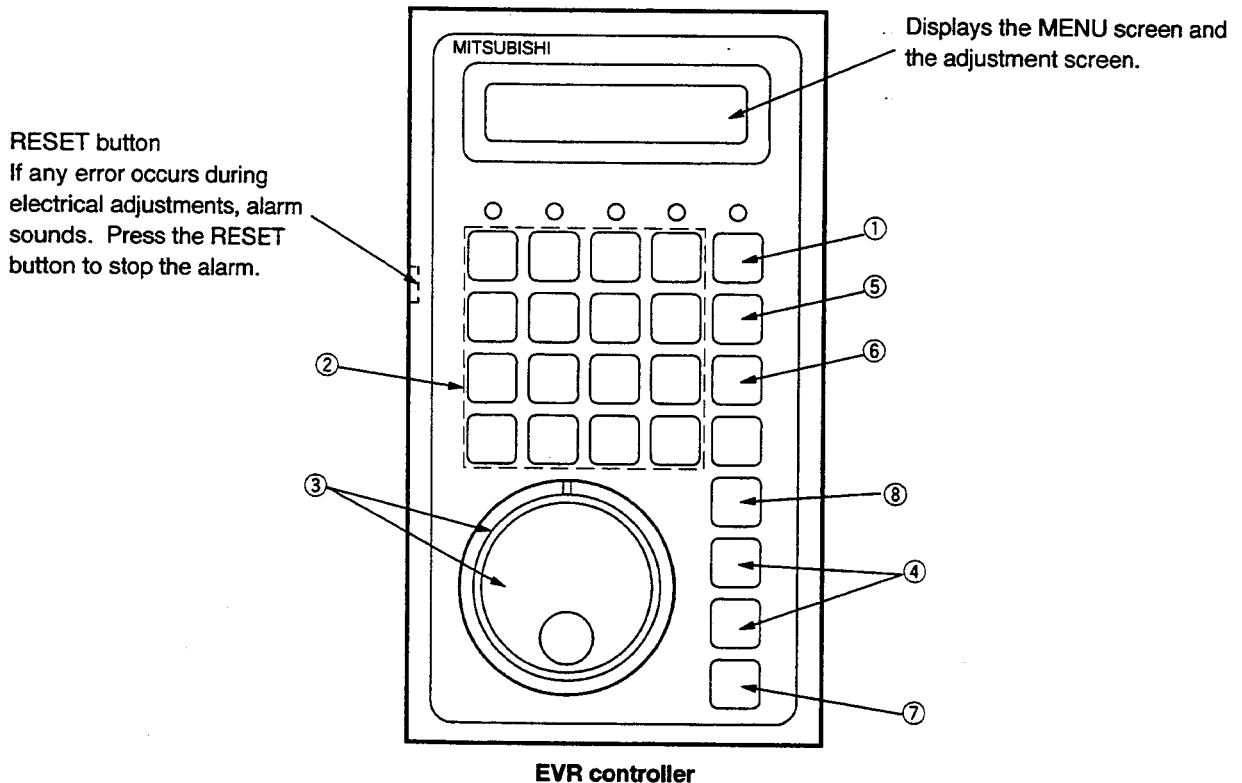


2. Adjustment Mode and Initial Setting of the EVR Controller

Connect the EVR controller for the circuit adjustment (the electron volume adjustment) to set the standard adjustment conditions.

Refer to the previous page for details of the connection.

- Before using the EVR controller, short-circuit between the TPSEL on the PCB-MAIN and the TPGND.
(Without the short-circuit, the address or the data cannot be set.)



1. MODE button

While holding down the MODE button, press the RESET button. This activates the MENU mode.

2. Numeric button

Used to enter the hexadecimal address and data numbers directly.

Also used to select a specific mode.

3. Jog dial (inner dial) and shuttle ring (outer ring)

Rotate to change the address or the data.

4. UP and DOWN buttons

5. ADDR button

Press the ADDR button and perform either of items 2, 3 or 4 to enter an address.

6. DATA button

Press the DATA button and perform either of items 2, 3 or 4 to enter the data.

7. ENTER button

Press the ENTER button to write the data into the memory.

8. BACK button

Press the BACK button to change the data back to the original one. This function is inoperative once the ENTER button is pressed.

- Perform the adjustments according to the steps below:

1. Mode Selection

- (1) While holding down the MODE button, press the RESET button.

MENU 0 : EVR	1 : DAC
2 : COPY	3 : ED 4 : SM

- (2) Press "0" of the numeric button. (0 : Selects EVR.)

MENU
0 : NTSC 1 : PAL

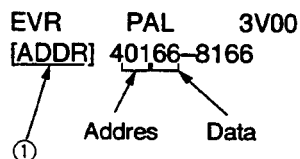
- (3) Press "1" of the numeric button. (1 : Selects PAL.)

MENU 0 : NORMAL
1 : PROGRAM

- (4) Press "0" of the numeric button. (0 : Selects NORMAL.)

EVR	PAL	3V00
[ADDR]	40166-8166	

2. Setting Value Change



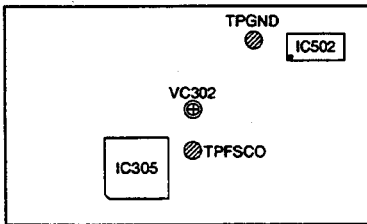
- (1) Before changing the address, make sure that 1 reads ADDR.
 - (If 1 reads DATA, press the ADDR button.)
- (2) Set the address using the UP and DOWN buttons, the numeric buttons, or the jog dial.
- (3) Press the DATA button. (1 reads DATA.)
- (4) Set the Data using the UP and DOWN buttons, the numerical buttons or the jog dial.
- (5) Press the ENTER button (to write the data into the memory).

ADJUSTMENT PROCEDURES

1. Sub Carrier	Adjustment purpose	To set the frequency of the 4.43MHz oscillation circuit.
	Symptom when incorrectly adjusted	No colour due to no colour signal output or wrong colours due to colour phase shift on the screen.

Measuring instrument	Frequency counter	1. Observe the frequency at TPFSCO. 2. Adjust VC302 to set the frequency to 4.433619 ± 0.000002 MHz.
Test point	TPFSCO	
EXT trigger	---	
Measurement range	---	
Chart used	---	

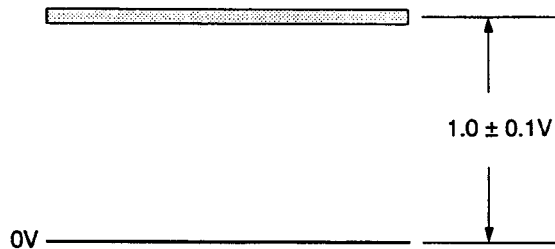
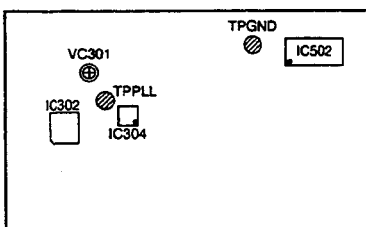
PCB-MAIN (Component side)



2. Reference Oscillator Frequency	Adjustment purpose	To set the voltage to lock the PLL circuit in the main signal process circuit.
	Symptom when incorrectly adjusted	Disturbance or no colour on the screen.

Measuring instrument	Oscilloscope	1. Observe the waveform at TPPLL on an oscilloscope. 2. Adjust VC301 so that the central value of the waveform is $1.0 \pm 0.1V$.
Test point	TPPLL	
EXT trigger	---	
Measurement range	DC mode DIV 50mV	
Chart used	---	

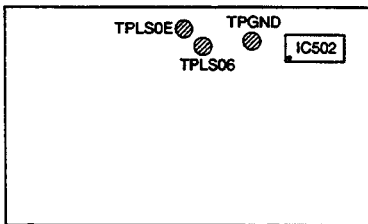
PCB-MAIN (Component side)



3. Focus adjustment	Adjustment purpose	To set optimum back focus of lens.
	Symptom when incorrectly adjusted	Out of focus when zooming.

Measuring instrument	Oscilloscope	<ol style="list-style-type: none"> 1. Position the Radial Chart at least 10 meters apart from the Camera. (Attach the Chart to a wall. Do not illuminate the Chart.) 2. Shoot the Chart in WIDE mode. Make sure that the Camera does not shoot any object set ahead of the Chart. (If shot, provide a barrel or the equivalent on the lens unit.) 3. Short-circuit between TPLS0E and TPGND for about 2 seconds. 4. Turn the power OFF for 5 seconds or more and then turn the power ON again. 5. Short-circuit between TPLS06 and TPGND for about 2 seconds. (The steps will activate the focus automatic adjustment mode. The automatic adjustment is completed in about 45 seconds.) 6. Adjust and lock the focus to optimum in TELE mode. 7. Set the zooming speed to the items other than VERY FAST. 8. Make sure the zoom tracking is optimum when the Camera zooms out.
Test point	-- -- --	
EXT trigger	-- -- --	
Measurement range	-- -- --	
Chart used	Radial Chart	

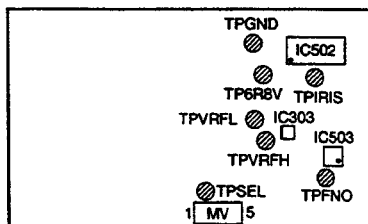
PCB-MAIN (Component side)



4. Amplifier Output of Hall Element	Adjustment purpose	To set the sensor voltage of both sides of iris to write the data in the EEPROM.
	Symptom when incorrectly adjusted	Poor response of auto focus.

Measuring instrument	Oscilloscope	<ol style="list-style-type: none"> 1. Short-circuit between TPSEL and TPGND (EVR adjustment mode). 2. Short-circuit between TPIRIS and TPGND (with the lens closed). 3. Set the address of the EVR controller to 0F. 4. Adjust the data of the EVR controller so that the DC voltage at TPFNO and TPVRFL are equal. 5. Open-circuit between TPIRIS and TPGND. 6. Connect TPIRIS to TL6R8V (with the lens open). 7. Set the address of the EVR controller to 0E. 8. Adjust the data of the EVR controller so that the DC voltage at TPFNO and TPVRFH are equal. 9. Open-circuit between TPIRIS and TL6R8V. 10. Repeat the above procedure from step 1 through 9 until TPFNO value is TPVRFL \pm 50mV and TPVRFH \pm 50mV respectively. 11. Press the ENTER button on the EVR controller (to write the data in the EEPROM.) 12. Set the address of the EVR controller to 0F. 13. Press the ENTER button on the EVR controller (to write the data in the EEPROM.) 14. Open-circuit between TPIRIS and TL6R8V. 15. Open-circuit between TPSEL and TPGND.
Test point	TPFNO, TPVRFL TPVRFH	
EXT trigger	-- -- --	
Measurement range	DC mode DIV 50mV	
Chart used	-- -- --	

PCB-MAIN (Component side)

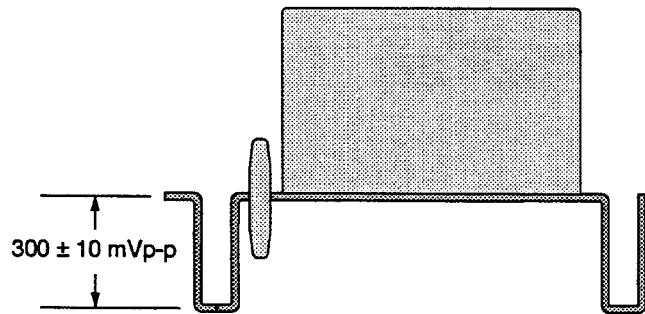
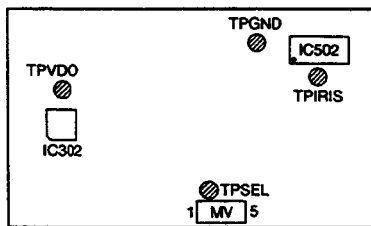


5. SYNC Level	Adjustment purpose	To set the level of synchronisation signals.
	Symptom when incorrectly adjusted	Out of synchronisation or wrong colour density.

Measuring instrument	Oscilloscope
Test point	TPVDO
EXT trigger	- - -
Measurement range	DIV 10mV TIM 5µs
Chart used	- - -

1. Short-circuit between TPSEL and TPGND (EVR adjustment mode).
2. Short-circuit between TPIRIS and TPGND (with the lens closed).
3. Observe the waveform at TPVDO.
4. Set the address of the EVR controller to 0C.
5. Adjust the data of the EVR controller so that the SYNC on the waveform is $300 \pm 10\text{mVp-p}$.
6. Press the ENTER button on the EVR controller (to write the data in the EEPROM.)
7. Open-circuit between TPIRIS and TPGND.
8. Open-circuit between TPSEL and TPGND.

PCB-MAIN (Component side)

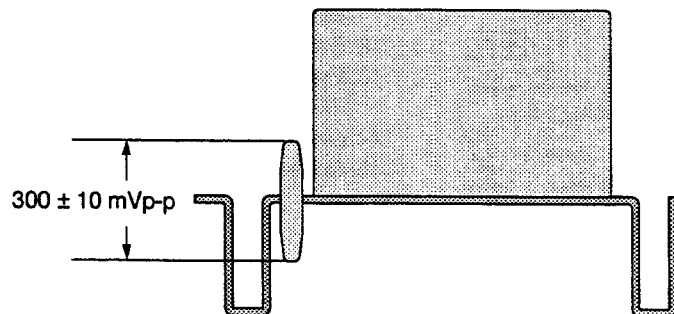
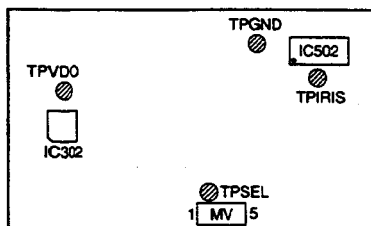


6. Burst Level	Adjustment purpose	To set the correct chroma level of video output signals.
	Symptom when incorrectly adjusted	Wrong colours.

Measuring instrument	Oscilloscope
Test point	TPVDO
EXT trigger	- - -
Measurement range	DIV 10mV TIM 5µs
Chart used	- - -

1. Short-circuit between TPSEL and TPGND (EVR adjustment mode).
2. Short-circuit between TPIRIS and TPGND (with the lens closed).
3. Observe the waveform at TPVDO.
4. Set the address of the EVR controller to 0D.
5. Adjust the data of the EVR controller so that the burst level is $300 \pm 10\text{mVp-p}$.
6. Press the ENTER button on the EVR controller (to write the data in the EEPROM).
7. Open-circuit between TPIRIS and TPGND.
8. Open-circuit between TPSEL and TPGND.

PCB-MAIN (Component side)



7. ALC		Adjustment purpose To set the standard iris level.
		Symptom when incorrectly adjusted Poor gradation or picture whitening.
Measuring instrument	Oscilloscope	<ol style="list-style-type: none"> 1. Short-circuit between TPSEL and TPGND (EVR adjustment mode). 2. Display the Colour Chart (4-colour) at the standard viewing angle. 3. Observe the waveform at TPALC using the low pass filter shown in below figure. 4. Set the address of the EVR controller to 2C. 5. Adjust the data of the EVR controller to set the white level to $200 \pm 30mV_{p-p}$. 6. Press the ENTER button on the EVR controller (to write the data in the EEPROM). 7. Open-circuit between TPSEL and TPGND.
Test point	TPALC	
EXT trigger	TL-LL	
Measurement range	DIV 20mV TIM 5 μ s	
Chart used	Colour Chart (4-colour)	
PCB-MAIN (Component side)		

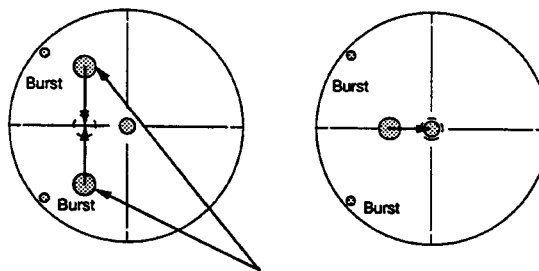
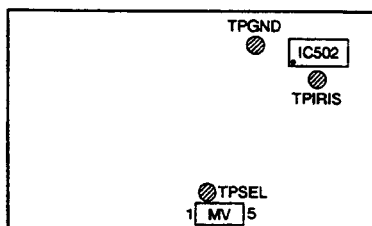
8. Camera Output Level		Adjustment purpose To set the AGC of the video process circuit.
		Symptom when incorrectly adjusted Too bright or too dark picture.
Measuring instrument	Oscilloscope	<ol style="list-style-type: none"> 1. Short-circuit between TPSEL and TPGND (EVR adjustment mode). 2. Display the Colour Chart (4-colour) at the standard viewing angle. 3. Observe the waveform at TPVDO. 4. Set the address of the EVR controller to 02. 5. Adjust the data to set the grey level to $464 \pm 10mV_{p-p}$. 6. Press the ENTER button on the EVR controller (to write the data in the EEPROM). 7. Open-circuit between TPSEL and TPGND.
Test point	TPVDO	
EXT trigger	---	
Measurement range	DIV 20mV TIM 5 μ s	
Chart used	Colour chart (4-colour)	
PCB-MAIN (Component side)		

9. White Balance	Adjustment purpose	To set the reference value when displaying white on the screen.
	Symptom when incorrectly adjusted	A reddish or bluish picture.

Measuring instrument	Vector scope
Test point	Video output terminal
EXT trigger	---
Measurement range	GAIN MAXIMUM
Chart used	White chart

- Note :** If the illuminance on the object is less than the specified one provide a Conversion Filter (C2 : 859C361O80) for the adjustment.
1. Turn the power off and turn the power on again. (Indoor white balance mode)
 2. Short-circuit between TPSEL and TPGND. (EVR adjustment mode)
 3. Display the white chart on the overall monitor screen.
 4. Observe the waveform at the video output terminal on a vector scope.
 5. Maximise the sensitivity of the vector scope.
 6. Set the address of the EVR controller to 27.
 7. Adjust the EVR controller data so that the bright spot of the burst falls on the centre line of the vector scope (adjustment in the vertical direction) as shown in the figure below.
 8. Press the ENTER button on the EVR controller (to write data in the EEPROM).
 9. Set the address of the EVR controller to 28.
 10. Adjust the EVR controller data so that the bright spot of the burst falls on the centre of the vector scope (adjustment in the horizontal direction) as shown in the figure below.
 11. Press the ENTER button on the EVR controller (to write data in the EEPROM).
 12. Open-circuit between TPSEL and TPGND.

PCB-MAIN (Component side)

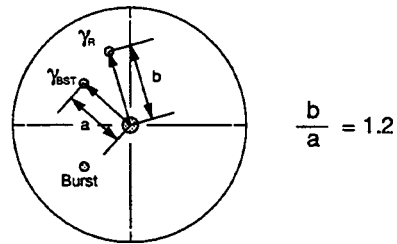


2 luminescence points falls the centre line

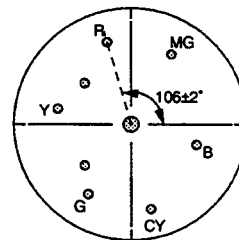
10. Gain of R-Y and B-Y, and Chroma Phase	Adjustment purpose	To set the phase of colour signals.
	Symptom when incorrectly adjusted	Wrong colours due to colour phase shift.

Measuring instrument	Vector scope
Test point	Video output terminal
EXT trigger	---
Measurement range	GAIN
Chart used	Colour chart (4-colour)

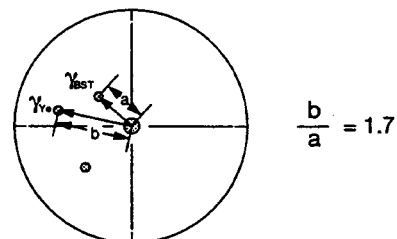
1. Turn the power off and turn the power on again (Indoor white balance mode).
2. Short-circuit between TPSEL and TPGND (EVR adjustment mode).
3. Display the Colour Chart (4-colour) at the standard viewing angle.
4. Observe the waveform at the video output terminal on a vector scope.
5. Set the address of the EVR controller to 07.
6. Adjust the data of the EVR controller so that the distance from the centre of the bright spot of the red signal to the centre of the vector scope " γ_R " is 1.2 times the distance from the centre of the burst signal to the centre of the vector scope " γ_{BST} ".



7. Set the address of the EVR controller to 09.
8. Adjust the data of the EVR controller so that the phase of the bright spot of the red signal is $106 \pm 2^\circ$.

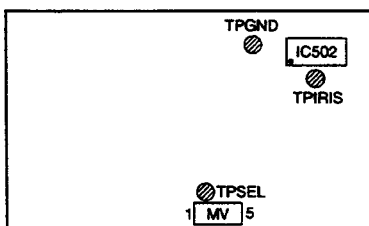


9. Set the address of the EVR controller to 08.
10. Adjust the data of the EVR controller so that the distance from the centre of the bright spot of the yellow signal " γ_{Ye} " is 1.7 times the distance from the centre of the burst signal " γ_{BST} ".

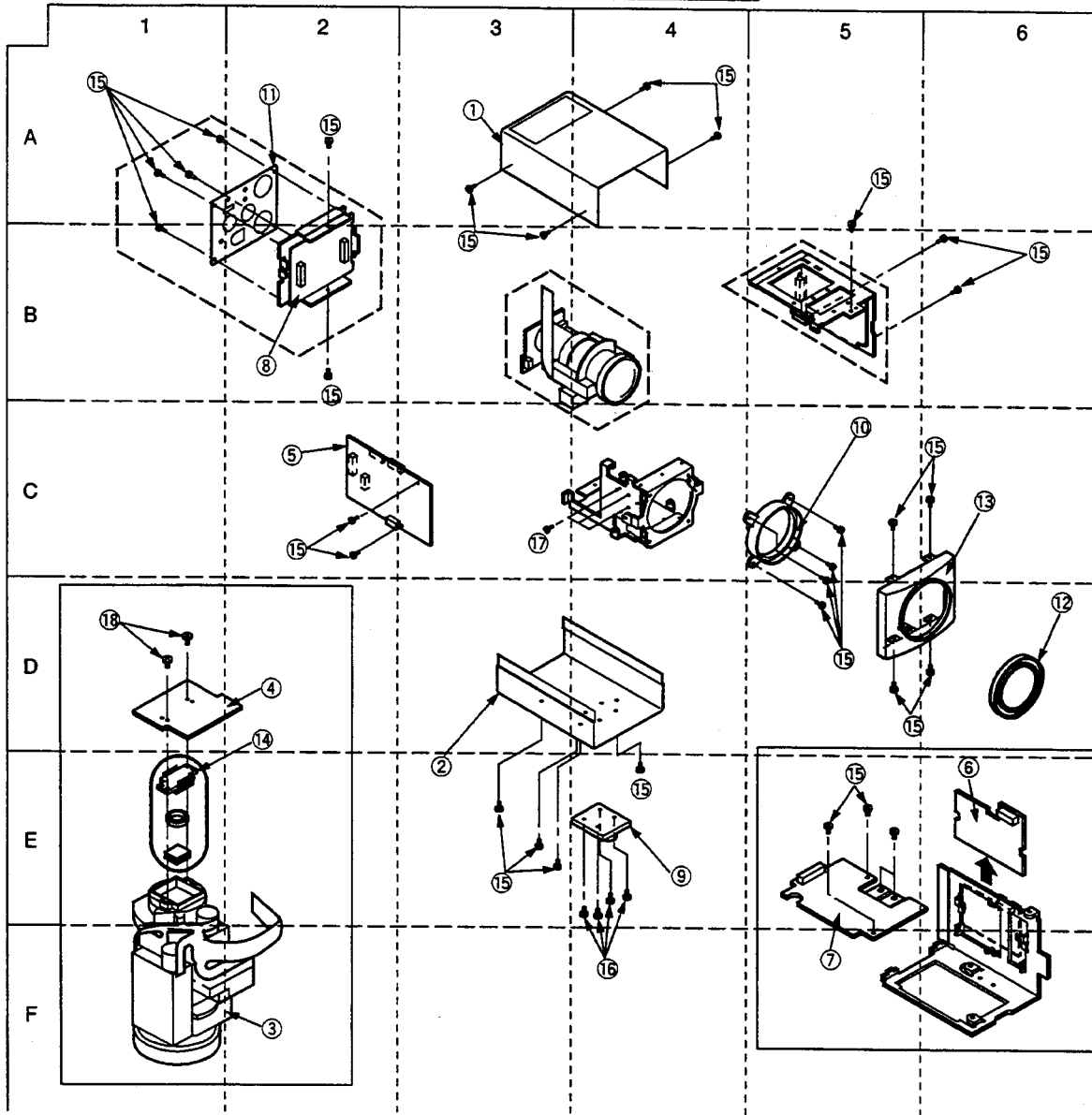


11. Perform the above procedure from steps 3 through 5 again. Make sure that the values are correctly adjusted. (If not, repeat the steps 3 to 5 until the values are set as specified.)
12. Press the ENTER button on the EVR controller respectively in the addresses specified in the steps 3 through 5 above (to write the data in the EEPROM).
13. Open-circuit between TPSEL and TPGND.

PCB-MAIN (Component side)



COSMETIC PARTS REFERENCE



ITEM NO.	PARTS NAME	ADDRESS	PARTS NO.	ITEM NO.	PARTS NAME	ADDRESS	PARTS NO.
1	UPPER COVER	A-3	589D070060	13	FRONT PANEL	C-6	701B376010
2	LOWER COVER	E-3	710B036020	14	CCD SENSOR IC	D-2	274D041050
3	UNIT LENS	F-2	490P177010	15	SCREW	A-1, A-2, A-4, B-2, B-3, B-6, C-2, C-6, D-5, E-3, E-4, E-5	669D372010
4	CCD PCB ASSY	D-2	925B043002	16	SCREW	F-4	669D372020
5	MAIN PCB ASSY	C-2	928D421002	17	SCREW	C-3	669D435020
6	POWER PCB ASSY	E-6	928D422001	18	SCREW	D-1	669D435050
7	PS PCB ASSY	F-5	928D419002				
8	REAR PCB ASSY	B-2	928D420002				
9	TRIPOD BASE	E-4	769C006010				
10	LENS COVER	C-5	701B377010				
11	REAR COVER	A-2	710C035010				
12	LENS CAP	D-6	701C074010				

[MEMO]

PARTS LIST

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION	SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
INTEGRATED CIRCUITS							
IC2AA	274D041050	CCD SENSOR IC		Q 903	261P058010	TRANSISTOR	FP101
IC301	263P220010	IC	SC7SU04F<E6>	Q 904	260P859050	CHIP TRANSISTOR	2SA1576-R
IC302	274P938010	IC	CXD2480R	Q 905	260P855090	CHIP TRANSISTOR	2SD1819A-S
IC303	274P924010	IC	TA75W01FU	Q 906	261P058010	TRANSISTOR	FP101
IC304	274P932010	IC	MB88347PFV-G-BNDEF	DIODES			
IC305	274P937010	IC	CXD2163R	D 2AA	264P837010	CHIP DIODE	MA141K
IC306	274P926010	IC	TC7W04FU	D 2AB	264P837010	CHIP DIODE	MA141K
IC307	274P936010	IC	CXA2006Q	D 301	264P834010	CHIP DIODE	MA341
IC308	274P923010	IC	MM1024AFF	D 601	264P816090	CHIP DIODE	RD11MB2
IC401	274P930010	IC	M38067M8-XXXGP	D 602	264P831010	CHIP DIODE	SFPB-54V
IC402	274P933030	IC	S29391AFJ	D 603	264P831010	CHIP DIODE	SFPB-54V
IC403	274P928010	IC	TC74LVX04FS	D 901	264P738010	CHIP DIODE	MA796
IC404	274P991010	IC	TC74VHCT04FS	FILTERS			
IC405	263P440010	IC	S8054HNM-T1<CO>	CF401	299P219010	CERAMIC OSCILLATOR	PBRC-8.00BR
IC406	274P927010	IC	TC7W74FU	CF501	299P219010	CERAMIC OSCILLATOR	PBRC-8.00BR
IC407	274P929010	IC	M35040-001FP	LF301	409P785010	CHIP LOW PASS FILTER	MXF3535DR180
IC408	270P560010	IC	μPD4721GS-GJG	COILS			
IC410	274P990010	IC	TC7W241FU	L 301	325C220040	CHIP COIL	1.8μH-J
IC501	274P925010	IC	TB6512AF	L 302	325C221010	CHIP COIL	6.8μH-J
IC502	274P925010	IC	TB6512AF	L 303	325C221010	CHIP COIL	6.8μH-J
IC503	272P485020	IC	NJM2902V	L 304	325C221030	CHIP COIL	10μH-J
IC504	274P934010	IC	MN1882010MHA	L 305	325C221030	CHIP COIL	10μH-J
IC505	274P933010	IC	S29191AFJ	L 306	325C221030	CHIP COIL	10μH-J
IC506	274P935010	IC	MN7A004VSW	L 307	325C221030	CHIP COIL	10μH-J
IC508	274P760020	IC	TC4W53FU	L 308	325C221030	CHIP COIL	10μH-J
IC601	272P674010	IC	M5237ML<37>	L 309	325C221030	CHIP COIL	10μH-J
IC602	263P220010	IC	SC7SU04F<E6>	L 310	325C221030	CHIP COIL	10μH-J
IC603	263P220010	IC	SC7SU04F<E6>	L 311	325C222030	CHIP COIL	68μH-J
IC604	274P076010	IC	SC7S32F	L 312	325C221030	CHIP COIL	10μH-J
IC605	272P366010	IC	LM311PS	L 313	325C221070	CHIP COIL	22μH-J
IC606	275P090010	IC	SN74HC161DB	L 401	325C221030	CHIP COIL	10μH-J
IC901	274P931010	IC	MB3785APFV-G-BNDEF	L 402	325C221070	CHIP COIL	22μH-J
TRANSISTORS				L 403	325C222050	CHIP COIL	100μH-J
Q 2AA	260P854030	CHIP TRANSISTOR	2SC4098-Q	L 404	325C221030	CHIP COIL	10μH-J
Q 301	260P859050	CHIP TRANSISTOR	2SA1576-R	L 501	325C221010	CHIP COIL	6.8μH-J
Q 302	260P854030	CHIP TRANSISTOR	2SC4098-Q	L 502	325C221010	CHIP COIL	6.8μH-J
Q 303	260P859050	CHIP TRANSISTOR	2SA1576-R	L 503	325C221010	CHIP COIL	6.8μH-J
Q 304	260P854030	CHIP TRANSISTOR	2SC4098-Q	L 504	325C221010	CHIP COIL	6.8μH-J
Q 401	260P857030	CHIP TRANSISTOR	UN5213	L 505	325C221010	CHIP COIL	6.8μH-J
Q 402	260P857030	CHIP TRANSISTOR	UN5213	L 506	325C221010	CHIP COIL	6.8μH-J
Q 501	260P857030	CHIP TRANSISTOR	UN5213	L 601	325C241030	CHIP COIL	10μH-K
Q 502	260P855090	CHIP TRANSISTOR	2SD1819A-S	L 901	351P160010	CHIP COIL	CDRH62 10μH
Q 503	260P855090	CHIP TRANSISTOR	2SD1819A-S	L 902	351P160010	CHIP COIL	CDRH62 10μH
Q 504	260P845010	CHIP TRANSISTOR	IMX1	L 903	351P160010	CHIP COIL	CDRH62 10μH
Q 601	260P854030	CHIP TRANSISTOR	2SC4098-Q	L 904	351P160030	CHIP COIL	CDRH62 33μH
Q 602	260P710010	TRANSISTOR	2SC1568-S	L 908	351P160020	CHIP COIL	CDRH62 22μH
Q 603	260P701010	CHIP TRANSISTOR	2SA1213-Y	L 910	351P160030	CHIP COIL	CDRH62 33μH
Q 604	260P710010	TRANSISTOR	2SC1568-S	TRANSFORMERS			
Q 605	260P849010	CHIP TRANSISTOR	IMZ1	T 901	409P886010	CHIP TRANSFORMER	CLQ72-MZ002
Q 606	260P859050	CHIP TRANSISTOR	2SA1576-R	RESISTORS			
Q 607	260P857030	CHIP TRANSISTOR	UN5213	R 2AA	103P501030	CHIP RESISTOR	1/16W 100Ω-J
Q 901	260P914010	TRANSISTOR	2SB1122	R 2AB	103P501030	CHIP RESISTOR	1/16W 100Ω-J
Q 902	261P059010	TRANSISTOR	FP102				

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION	SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R 2AC	103P502090	CHIP RESISTOR	1/16W 2.2kΩ-J	R 407	103P503030	CHIP RESISTOR	1/16W 4.7kΩ-J
R 2AD	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 408	103P502050	CHIP RESISTOR	1/16W 1kΩ-J
R 2AE	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 409	103P502050	CHIP RESISTOR	1/16W 1kΩ-J
R 2AF	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 410	103P502050	CHIP RESISTOR	1/16W 1kΩ-J
R 2AG	103P504090	CHIP RESISTOR	1/16W 100kΩ-J	R 411	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 2AH	103P506010	CHIP RESISTOR	1/16W 1MΩ-J	R 412	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 2AJ	103P504090	CHIP RESISTOR	1/16W 100kΩ-J	R 413	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 301	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 414	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 302	103P503070	CHIP RESISTOR	1/16W 10kΩ-J	R 415	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 303	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 416	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 304	103P504030	CHIP RESISTOR	1/16W 33kΩ-J	R 417	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 305	103P504090	CHIP RESISTOR	1/16W 100kΩ-J	R 418	103P501070	CHIP RESISTOR	1/16W 220Ω-J
R 306	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 419	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 307	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 421	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 308	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 422	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 309	103P495080	CHIP METAL RESISTOR	1/16W 24kΩ-F	R 423	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 310	103P495040	CHIP METAL RESISTOR	1/16W 16kΩ-F	R 424	103P502030	CHIP RESISTOR	1/16W 680Ω-J
R 311	103P495030	CHIP METAL RESISTOR	1/16W 15kΩ-F	R 425	103P502030	CHIP RESISTOR	1/16W 680Ω-J
R 312	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 426	103P502030	CHIP RESISTOR	1/16W 680Ω-J
R 313	103P501010	CHIP RESISTOR	1/16W 68Ω-J	R 427	103P502030	CHIP RESISTOR	1/16W 680Ω-J
R 314	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 428	103P502030	CHIP RESISTOR	1/16W 680Ω-J
R 315	103P504040	CHIP RESISTOR	1/16W 39kΩ-J	R 429	103P502030	CHIP RESISTOR	1/16W 680Ω-J
R 316	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 430	103P509050	CHIP RESISTOR	0Ω(RM1608)
R 317	103P501030	CHIP RESISTOR	1/16W 100Ω-J	R 432	103P509050	CHIP RESISTOR	0Ω(RM1608)
R 318	103P506010	CHIP RESISTOR	1/16W 1MΩ-J	R 433	103P500050	CHIP RESISTOR	1/16W 22Ω-J
R 319	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 434	103P500050	CHIP RESISTOR	1/16W 22Ω-J
R 320	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 435	103P503070	CHIP RESISTOR	1/16W 10kΩ-J
R 322	103P500010	CHIP RESISTOR	1/16W 10Ω-J	R 436	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 323	103P493070	CHIP METAL RESISTOR	1/16W 3.3kΩ-F	R 438	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 324	103P493070	CHIP METAL RESISTOR	1/16W 3.3kΩ-F	R 439	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 325	103P500010	CHIP RESISTOR	1/16W 10Ω-J	R 501	103P501030	CHIP RESISTOR	1/16W 100Ω-J
R 326	103P502050	CHIP RESISTOR	1/16W 1kΩ-J	R 502	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 327	103P502050	CHIP RESISTOR	1/16W 1kΩ-J	R 503	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 328	103P490080	CHIP METAL RESISTOR	1/16W 200Ω-F	R 504	103P508060	CHIP METAL RESISTOR	1/16W 3.3Ω-J
R 329	103P502090	CHIP RESISTOR	1/16W 2.2kΩ-J	R 505	103P508060	CHIP METAL RESISTOR	1/16W 3.3Ω-J
R 330	103P506010	CHIP RESISTOR	1/16W 1MΩ-J	R 506	103P508060	CHIP METAL RESISTOR	1/16W 3.3Ω-J
R 331	103P503010	CHIP RESISTOR	1/16W 3.3kΩ-J	R 507	103P508060	CHIP METAL RESISTOR	1/16W 3.3Ω-J
R 332	103P490080	CHIP METAL RESISTOR	1/16W 200Ω-F	R 508	103P501070	CHIP RESISTOR	1/16W 220Ω-J
R 333	103P503030	CHIP RESISTOR	1/16W 4.7kΩ-J	R 509	103P504010	CHIP RESISTOR	1/16W 22kΩ-J
R 334	103P502060	CHIP RESISTOR	1/16W 1.2kΩ-J	R 510	103P503030	CHIP RESISTOR	1/16W 4.7kΩ-J
R 335	103P503030	CHIP RESISTOR	1/16W 4.7kΩ-J	R 511	103P502050	CHIP RESISTOR	1/16W 1kΩ-J
R 336	103P502050	CHIP RESISTOR	1/16W 1kΩ-J	R 512	103P501030	CHIP RESISTOR	1/16W 100Ω-J
R 337	103P501010	CHIP RESISTOR	1/16W 68Ω-J	R 513	103P493020	CHIP METAL RESISTOR	1/16W 2kΩ-F
R 338	103P501010	CHIP RESISTOR	1/16W 68Ω-J	R 514	103P503070	CHIP RESISTOR	1/16W 10kΩ-J
R 339	103P504010	CHIP RESISTOR	1/16W 22kΩ-J	R 515	103P503070	CHIP RESISTOR	1/16W 10kΩ-J
R 340	103P504010	CHIP RESISTOR	1/16W 22kΩ-J	R 516	103P504090	CHIP RESISTOR	1/16W 100kΩ-J
R 341	103P501010	CHIP RESISTOR	1/16W 68Ω-J	R 517	103P503070	CHIP RESISTOR	1/16W 10kΩ-J
R 342	103P504010	CHIP RESISTOR	1/16W 22kΩ-J	R 518	103P503000	CHIP RESISTOR	1/16W 2.7kΩ-J
R 344	103P502090	CHIP RESISTOR	1/16W 2.2kΩ-J	R 519	103P506000	CHIP RESISTOR	1/16W 820kΩ-J
R 345	103P503000	CHIP RESISTOR	1/16W 2.7kΩ-J	R 520	103P505070	CHIP RESISTOR	1/16W 470kΩ-J
R 346	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 521	103P504030	CHIP RESISTOR	1/16W 33kΩ-J
R 347	103P502050	CHIP RESISTOR	1/16W 1kΩ-J	R 522	103P503080	CHIP RESISTOR	1/16W 12kΩ-J
R 401	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 523	103P503080	CHIP RESISTOR	1/16W 12kΩ-J
R 402	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 524	103P504090	CHIP RESISTOR	1/16W 100kΩ-J
R 404	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 525	103P503090	CHIP RESISTOR	1/16W 15kΩ-J
R 405	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 526	103P505030	CHIP RESISTOR	1/16W 220kΩ-J
R 406	103P504050	CHIP RESISTOR	1/16W 47kΩ-J				

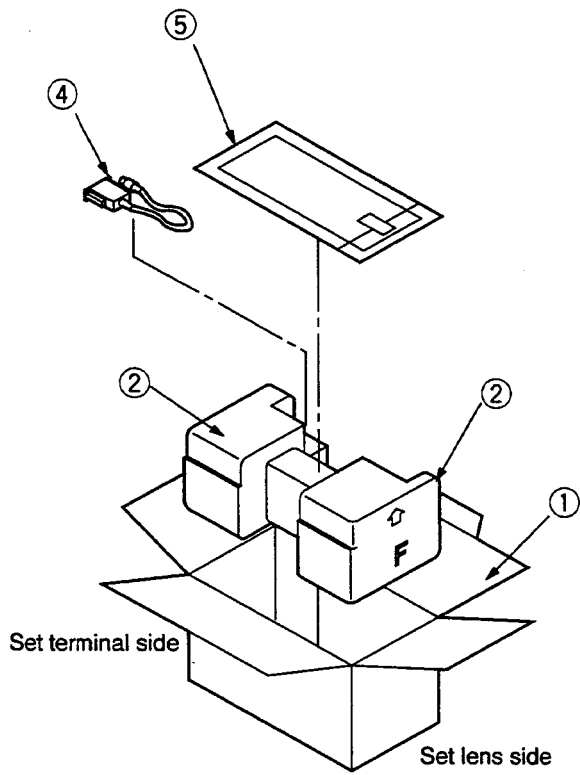
SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION	SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R 527	103P504000	CHIP RESISTOR	1/16W 18kΩ-J	R 810	103P503070	CHIP RESISTOR	1/16W 10kΩ-J
R 528	103P504010	CHIP RESISTOR	1/16W 22kΩ-J	R 811	103P503070	CHIP RESISTOR	1/16W 10kΩ-J
R 529	103P504020	CHIP RESISTOR	1/16W 27kΩ-J	R 812	103P503070	CHIP RESISTOR	1/16W 10kΩ-J
R 530	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 813	103P504090	CHIP RESISTOR	1/16W 100kΩ-J
R 531	103P503070	CHIP RESISTOR	1/16W 10kΩ-J	R 901	103P495030	CHIP METAL RESISTOR	1/16W 15kΩ-F
R 532	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 902	103P496090	CHIP METAL RESISTOR	1/16W 68kΩ-F
R 533	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 903	103P494070	CHIP METAL RESISTOR	1/16W 8.2kΩ-F
R 534	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 904	103P495030	CHIP METAL RESISTOR	1/16W 15kΩ-F
R 535	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 905	103P495030	CHIP METAL RESISTOR	1/16W 15kΩ-F
R 536	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 906	103P495010	CHIP METAL RESISTOR	1/16W 12kΩ-F
R 537	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 907	103P504090	CHIP RESISTOR	1/16W 100kΩ-J
R 539	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 908	103P503080	CHIP RESISTOR	1/16W 12kΩ-J
R 541	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 909	103P503040	CHIP RESISTOR	1/16W 5.6kΩ-J
R 542	103P504050	CHIP RESISTOR	1/16W 47kΩ-J	R 910	103P505010	CHIP RESISTOR	1/16W 150kΩ-J
R 543	103P503030	CHIP RESISTOR	1/16W 4.7kΩ-J	R 911	103P503060	CHIP RESISTOR	1/16W 8.2kΩ-J
R 545	103P509050	CHIP RESISTOR	0Ω(RM1608)	R 912	103P509050	CHIP RESISTOR	0Ω(RM1608)
R 546	103P503030	CHIP RESISTOR	1/16W 4.7kΩ-J	R 913	103P504060	CHIP RESISTOR	1/16W 56kΩ-J
R 547	103P501030	CHIP RESISTOR	1/16W 100Ω-J	R 914	103P504010	CHIP RESISTOR	1/16W 22kΩ-J
R 548	103P503030	CHIP RESISTOR	1/16W 4.7kΩ-J	R 915	103P504010	CHIP RESISTOR	1/16W 22kΩ-J
R 549	103P502060	CHIP RESISTOR	1/16W 1.2kΩ-J	R 916	103P494000	CHIP METAL RESISTOR	1/16W 4.3kΩ-F
R 550	103P504060	CHIP RESISTOR	1/16W 56kΩ-J	R 917	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 551	103P502050	CHIP RESISTOR	1/16W 1kΩ-J	R 918	103P495040	CHIP METAL RESISTOR	1/16W 16kΩ-F
R 552	103P504010	CHIP RESISTOR	1/16W 22kΩ-J	R 919	103P503060	CHIP RESISTOR	1/16W 8.2kΩ-J
R 553	103P504010	CHIP RESISTOR	1/16W 22kΩ-J	R 920	103P496030	CHIP RESISTOR	1/16W 39kΩ-F
R 554	103P505050	CHIP RESISTOR	1/16W 330kΩ-J	R 921	103P494030	CHIP METAL RESISTOR	1/16W 5.6kΩ-F
R 555	103P506050	CHIP RESISTOR	1/16W 2.2MΩ-K	R 922	103P502030	CHIP RESISTOR	1/16W 680Ω-J
R 601	103P503050	CHIP RESISTOR	1/16W 6.8kΩ-J	R 923	103P495030	CHIP METAL RESISTOR	1/16W 15kΩ-F
R 602	103P505030	CHIP RESISTOR	1/16W 220kΩ-J	R 924	103P491040	CHIP METAL RESISTOR	1/16W 360Ω-F
R 604	103P501010	CHIP RESISTOR	1/16W 68Ω-J	R 925	103P502010	CHIP RESISTOR	1/16W 470Ω-J
R 605	103P503020	CHIP RESISTOR	1/16W 3.9kΩ-J	R 926	103P502010	CHIP RESISTOR	1/16W 470Ω-J
R 608	103P501070	CHIP RESISTOR	1/16W 220Ω-J	R 927	103P502010	CHIP RESISTOR	1/16W 470Ω-J
R 609	103P502030	CHIP RESISTOR	1/16W 680Ω-J	R 928	103P503020	CHIP RESISTOR	1/16W 3.9kΩ-J
R 610	103P501070	CHIP RESISTOR	1/16W 220Ω-J	R 929	103P503090	CHIP RESISTOR	1/16W 15kΩ-J
R 611	103P502010	CHIP RESISTOR	1/16W 470Ω-J	R 930	103P401060	CHIP RESISTOR	1/10W 180Ω-J
R 612	103P503090	CHIP RESISTOR	1/16W 15kΩ-J	R 931	103P502050	CHIP RESISTOR	1/16W 1kΩ-J
R 613	103P496000	CHIP METAL RESISTOR	1/16W 30kΩ-F	R 932	103P504050	CHIP RESISTOR	1/16W 47kΩ-J
R 614	103P493080	CHIP METAL RESISTOR	1/16W 3.6kΩ-F	R 933	103P493080	CHIP METAL RESISTOR	1/16W 3.6kΩ-F
R 615	103P502050	CHIP RESISTOR	1/16W 1kΩ-J	R 934	103P502010	CHIP RESISTOR	1/16W 470Ω-J
R 616	103P504030	CHIP RESISTOR	1/16W 33kΩ-J	R 935	103P504010	CHIP RESISTOR	1/16W 22kΩ-J
R 617	103P504030	CHIP RESISTOR	1/16W 33kΩ-J	CAPACITORS AND TRIMMERS			
R 618	103P502080	CHIP RESISTOR	1/16W 2.7kΩ-J	C 2AA	141P144020	CHIP CAPACITOR	F16V 0.1μF-Z
R 619	103P504090	CHIP RESISTOR	1/16W 100kΩ-J	C 2AB	141P143080	CHIP CAPACITOR	F50V 0.01μF-Z
R 620	103P503020	CHIP RESISTOR	1/16W 3.9kΩ-J	C 2AC	141P141030	CHIP CAPACITOR	B50V 2200pF-K
R 621	103P494070	CHIP METAL RESISTOR	1/16W 8.2kΩ-F	C 2AD	141P144020	CHIP CAPACITOR	F16V 0.1μF-Z
R 622	103P491070	CHIP METAL RESISTOR	1/16W 470Ω-F	C 2AE	141P135070	CHIP CAPACITOR	F16V 1μF-Z
R 623	103P494070	CHIP METAL RESISTOR	1/16W 8.2kΩ-F	C 301	141P143080	CHIP CAPACITOR	F50V 0.01μF-Z
R 624	103P502050	CHIP RESISTOR	1/16W 1kΩ-J	C 302	141P135070	CHIP CAPACITOR	F16V 1μF-Z
R 625	103P502050	CHIP RESISTOR	1/16W 1kΩ-J	C 303	154P341090	CHIP CAPACITOR	CH50V 22pF-J
R 801	103P509090	CHIP RESISTOR	1/16W 75Ω-J	C 304	141P140090	CHIP CAPACITOR	B50V 1000pF-K
R 802	103P503070	CHIP RESISTOR	1/16W 10kΩ-J	C 305	141P140090	CHIP CAPACITOR	B50V 1000pF-K
R 803	103P503070	CHIP RESISTOR	1/16W 10kΩ-J	C 306	189P125040	CHIP CAPACITOR	25V 1.5μF-M
R 804	103P503070	CHIP RESISTOR	1/16W 10kΩ-J	C 307	141P143080	CHIP CAPACITOR	F50V 0.01μF-Z
R 805	103P503070	CHIP RESISTOR	1/16W 10kΩ-J	C 308	141P143080	CHIP CAPACITOR	F50V 0.01μF-Z
R 806	103P503070	CHIP RESISTOR	1/16W 10kΩ-J	C 309	189P123040	CHIP TANTAL-C	16V 3.3μF-M
R 807	103P503070	CHIP RESISTOR	1/16W 10kΩ-J	C 310	189P122030	CHIP TANTAL-C	10V 4.7μF-M
R 808	103P503070	CHIP RESISTOR	1/16W 10kΩ-J				
R 809	103P503070	CHIP RESISTOR	1/16W 10kΩ-J				

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION	SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
C 311	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 411	189P122O30	CHIP TANTAL-C	10V 4.7μF-M
C 312	189P122O30	CHIP TANTAL-C	10V 4.7μF-M	C 412	141P136O60	CHIP CAPACITOR	F16V 4.7μF-Z
C 313	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 413	141P136O60	CHIP CAPACITOR	F16V 4.7μF-Z
C 315	154P341O90	CHIP CAPACITOR	CH50V 22pF-J	C 414	141P136O60	CHIP CAPACITOR	F16V 4.7μF-Z
C 316	189P123O10	CHIP TANTAL-C	16V 1μF-M	C 415	189P122O30	CHIP TANTAL-C	10V 4.7μF-M
C 317	189P123O10	CHIP TANTAL-C	16V 1μF-M	C 416	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 318	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 417	141P136O60	CHIP CAPACITOR	F16V 4.7μF-Z
C 319	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 501	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 320	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 502	189P123O40	CHIP TANTAL-C	16V 3.3μF-M
C 321	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 503	141P141O50	CHIP CAPACITOR	B50V 3300pF-K
C 322	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 504	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 323	189P122O30	CHIP TANTAL-C	10V 4.7μF-M	C 505	189P122O30	CHIP TANTAL-C	10V 4.7μF-M
C 324	141P143O80	CHIP CAPACITOR	F50V 0.01μF-Z	C 506	141P141O50	CHIP CAPACITOR	B50V 3300pF-K
C 325	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 507	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 326	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 508	189P122O30	CHIP TANTAL-C	10V 4.7μF-M
C 327	189P122O30	CHIP TANTAL-C	10V 4.7μF-M	C 509	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 328	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 510	141P139O30	CHIP CAPACITOR	B25V 0.1μF-K
C 329	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 511	141P135O70	CHIP CAPACITOR	F16V 1μF-Z
C 330	189P122O10	CHIP TANTAL-C	10V 2.2μF-M	C 512	141P140O90	CHIP CAPACITOR	B50V 1000pF-K
C 331	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 513	141P140O90	CHIP CAPACITOR	B50V 1000pF-K
C 332	189P122O10	CHIP TANTAL-C	10V 2.2μF-M	C 514	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 333	189P122O30	CHIP TANTAL-C	10V 4.7μF-M	C 515	189P122O30	CHIP TANTAL-C	10V 4.7μF-M
C 334	141P143O80	CHIP CAPACITOR	F50V 0.01μF-Z	C 516	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 335	189P122O30	CHIP TANTAL-C	10V 4.7μF-M	C 517	189P122O30	CHIP TANTAL-C	10V 4.7μF-M
C 336	141P143O80	CHIP CAPACITOR	F50V 0.01μF-Z	C 518	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 337	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 519	189P122O30	CHIP TANTAL-C	10V 4.7μF-M
C 338	141P140O90	CHIP CAPACITOR	B50V 1000pF-K	C 520	141P135O70	CHIP CAPACITOR	F16V 1μF-Z
C 339	154P340O50	CHIP CAPACITOR	CH50V 4pF-C	C 521	141P135O70	CHIP CAPACITOR	F16V 1μF-Z
C 340	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 522	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 341	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 523	189P122O10	CHIP TANTAL-C	10V 2.2μF-M
C 342	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 524	189P122O10	CHIP TANTAL-C	10V 2.2μF-M
C 343	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 525	141P135O70	CHIP CAPACITOR	F16V 1μF-Z
C 344	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 526	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 345	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 601	181P510O30	CHIP ELECTROLYTIC-C	NP6.3V 47μF-M
C 346	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 602	181P510O30	CHIP ELECTROLYTIC-C	NP6.3V 47μF-M
C 347	154P341O70	CHIP CAPACITOR	CH50V 18pF-J	C 603	181P510O30	CHIP ELECTROLYTIC-C	NP6.3V 47μF-M
C 348	141P143O80	CHIP CAPACITOR	F50V 0.01μF-Z	C 604	141P135O80	CHIP CAPACITOR	F25V 0.1μF-Z
C 349	141P143O80	CHIP CAPACITOR	F50V 0.01μF-Z	C 605	141P135O70	CHIP CAPACITOR	F16V 1μF-Z
C 350	141P135O70	CHIP CAPACITOR	F16V 1μF-Z	C 606	141P135O70	CHIP CAPACITOR	F16V 1μF-Z
C 351	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 607	154P326O00	CHIP CAPACITOR	SL50V 1000pF-J
C 352	189P122O30	CHIP TANTAL-C	10V 4.7μF-M	C 608	181P522O60	CHIP ELECTROLYTIC-C	16V 47μF-M
C 353	189P123O70	CHIP TANTAL-C	16V 10μF-M	C 609	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 354	181P520O40	CHIP ELECTROLYTIC-C	6.3V 100μF-M	C 610	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 359	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 611	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 360	141P135O70	CHIP CAPACITOR	F16V 1μF-Z	C 612	181P515O00	CHIP ELECTROLYTIC-C	NP35V 10μF-M
C 363	181P515O00	CHIP ELECTROLYTIC-C	NP35V 10μF-M	C 613	154P343O30	CHIP CAPACITOR	CH50V 82pF-J
C 364	189P122O10	CHIP TANTAL-C	10V 2.2μF-M	C 614	141P135O70	CHIP CAPACITOR	F16V 1μF-Z
C 365	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 615	141P135O70	CHIP CAPACITOR	F16V 1μF-Z
C 401	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 616	141P144O00	CHIP CAPACITOR	F25V 0.033μF-Z
C 402	189P122O30	CHIP TANTAL-C	10V 4.7μF-M	C 617	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 403	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 618	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 404	189P122O30	CHIP TANTAL-C	10V 4.7μF-M	C 619	189P123O40	CHIP TANTAL-C	16V 3.3μF-M
C 405	141P143O80	CHIP CAPACITOR	F50V 0.01μF-Z	C 620	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 406	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 801	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 407	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 802	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 408	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z	C 803	141P142O50	CHIP CAPACITOR	B25V/16V 0.022μF-K
C 409	141P144O00	CHIP CAPACITOR	F25V 0.033μF-Z	C 901	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C 410	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z				

△ : Critical Components

SYMBOL PARTS				SYMBOL PARTS			
No.	No.	PARTS NAME	DESCRIPTION	No.	No.	PARTS NAME	DESCRIPTION
C 902	141P131050	CHIP CAPACITOR	B50V 3300pF-K	△ Z 801	299P137080	SURGE ABSORBER	0.8A
C 903	154P345010	CHIP CAPACITOR	CH25V 470pF-J	PRINTED CIRCUIT BOARD ASSY'S			
C 904	141P144020	CHIP CAPACITOR	F16V 0.1μF-Z	△	925B043002	CCD PCB ASSY	
C 905	141P131000	CHIP CAPACITOR	B50V 1200pF-K	△	928D421002	MAIN PCB ASSY	
C 906	154P345010	CHIP CAPACITOR	CH25V 470pF-J	△	928D422001	POWER PCB ASSY	
C 907	141P140090	CHIP CAPACITOR	B50V 1000pF-K	△	928D419002	PS PCB ASSY	
C 908	141P144020	CHIP CAPACITOR	F16V 0.1μF-Z	△	928D420002	REAR PCB ASSY	
C 909	141P131010	CHIP CAPACITOR	B50V 1500pF-K	MECHANICAL PARTS			
C 910	141P137040	CHIP CAPACITOR	B25V 0.022μF-K	669D372010	SCREW	M2X4 D=3.5 BLK	
C 911	154P345010	CHIP CAPACITOR	CH25V 470pF-J	669D372020	SCREW	M2X6 D=3.5 BLK	
C 912	154P345010	CHIP CAPACITOR	CH25V 470pF-J	669D435020	SCREW	1.7X5 NI	
C 914	154P345050	CHIP CAPACITOR	CH25V 680pF-J	669D435050	SCREW	1.7X6 BLK	
C 915	154P345010	CHIP CAPACITOR	CH25V 470pF-J	COSMETIC PARTS			
C 916	154P345050	CHIP CAPACITOR	CH25V 680pF-J	769C006010	TRIPOD BASE		
C 917	154P345050	CHIP CAPACITOR	CH25V 680pF-J	701B377010	LENS COVER		
C 918	181P502060	CHIP ELECTROLYTIC-C	16V 47μF-M	710B036020	LOWER COVER		
C 919	189P125040	CHIP CAPACITOR	25V 1.5μF-M	710C035010	REAR COVER		
C 922	141P136040	CHIP CAPACITOR	F16V 2.2μF-Z	589D070060	UPPER COVER		
C 923	141P135070	CHIP CAPACITOR	F16V 1μF-Z	734D583010	SLIDE KNOB	(FOR MODE SW)	
C 924	141P136040	CHIP CAPACITOR	F16V 2.2μF-Z	701C074010	LENS CAP		
C 926	141P137080	CHIP CAPACITOR	B25V 0.047μF-K	701B376010	FRONT PANEL		
C 927	141P136040	CHIP CAPACITOR	F16V 2.2μF-Z	PACKING PARTS AND ACCESSORY			
C 928	141P136060	CHIP CAPACITOR	F16V 4.7μF-Z	246C304010	CABLE	DSUB9P(M)-MINIDIN8P	
C 929	141P136060	CHIP CAPACITOR	F16V 4.7μF-Z	540D217010	CLAMPER		
C 932	141P136040	CHIP CAPACITOR	F16V 2.2μF-Z	803B787010	CUSHION		
VC301	202P220030	CHIP C-TRIMMER	7pF-30pF	872C062030	INSTRUCTION BOOK	ENGLISH	
VC302	202P220030	CHIP C-TRIMMER	7pF-30pF	872C062040	INSTRUCTION BOOK	GERMAN	
SWITCHES				872C062050	INSTRUCTION BOOK	FRENCH	
S 801	432P100040	KEY BOARD SWITCH	SET	801C341020	PACKING CASE		
S 802	432P100040	KEY BOARD SWITCH	UP	831D252020	PACKING BAG	110X70X0.06	
S 803	432P100040	KEY BOARD SWITCH	DOWN	831D264010	PACKING BAG	190X120X0.06	
S 804	431C112010	SLIDE SWITCH	MODE SWITCH	831D190040	PACKING SHEET	300X300	
MISCELLANEOUS				669D171090	SCREW	M3X6 P=0.5	
	490P177010	LENS UNIT	Z47	859C545020	JIG	EXTENTION-BB(18P)	
J 801	449C112010	DIN SOCKET	4PIN	859C545030	JIG	EXTENTION-BB(26P)	
J 802	449C140010	DIN SOCKET	8PIN	859C545060	JIG	EXTENTION-BB(12P)	
J 803	452D240010	BNC CONNECTOR		859C545080	JIG	EXTENTION-BB(30P)	
J 804	452D240010	BNC CONNECTOR					
J 805	451C158010	POWER JACK					
TP6R8V	299P136090	CHIP CHECKER	1608				
TPALC	299P136090	CHIP CHECKER	1608				
TPADCK	299P136090	CHIP CHECKER	1608				
TPFNO	299P136090	CHIP CHECKER	1608				
TPFSCO	299P136090	CHIP CHECKER	1608				
TPGND	299P136090	CHIP CHECKER	1608				
TPIRIS	299P136090	CHIP CHECKER	1608				
TPLS06	299P136090	CHIP CHECKER	1608				
TPLS0E	299P136090	CHIP CHECKER	1608				
TPPLL	299P136090	CHIP CHECKER	1608				
TPSEL	299P136090	CHIP CHECKER	1608				
TPVDO	299P136090	CHIP CHECKER	1608				
TPVRFH	299P136090	CHIP CHECKER	1608				
TPVRFL	299P136090	CHIP CHECKER	1608				
X 301	285P322010	CRYSTAL RESONATOR	17.7345MHz				

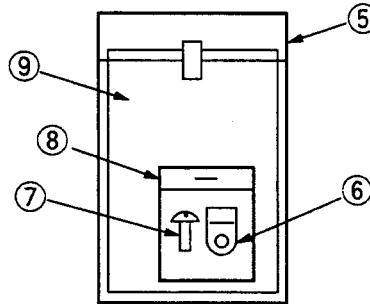
PACKING PARTS



Set the top of the product to the arrow on the PACKING CUSHION.

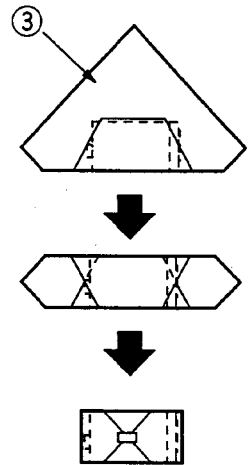


A model number on the instruction book should be visible from above.



How to Set of Packing sheet

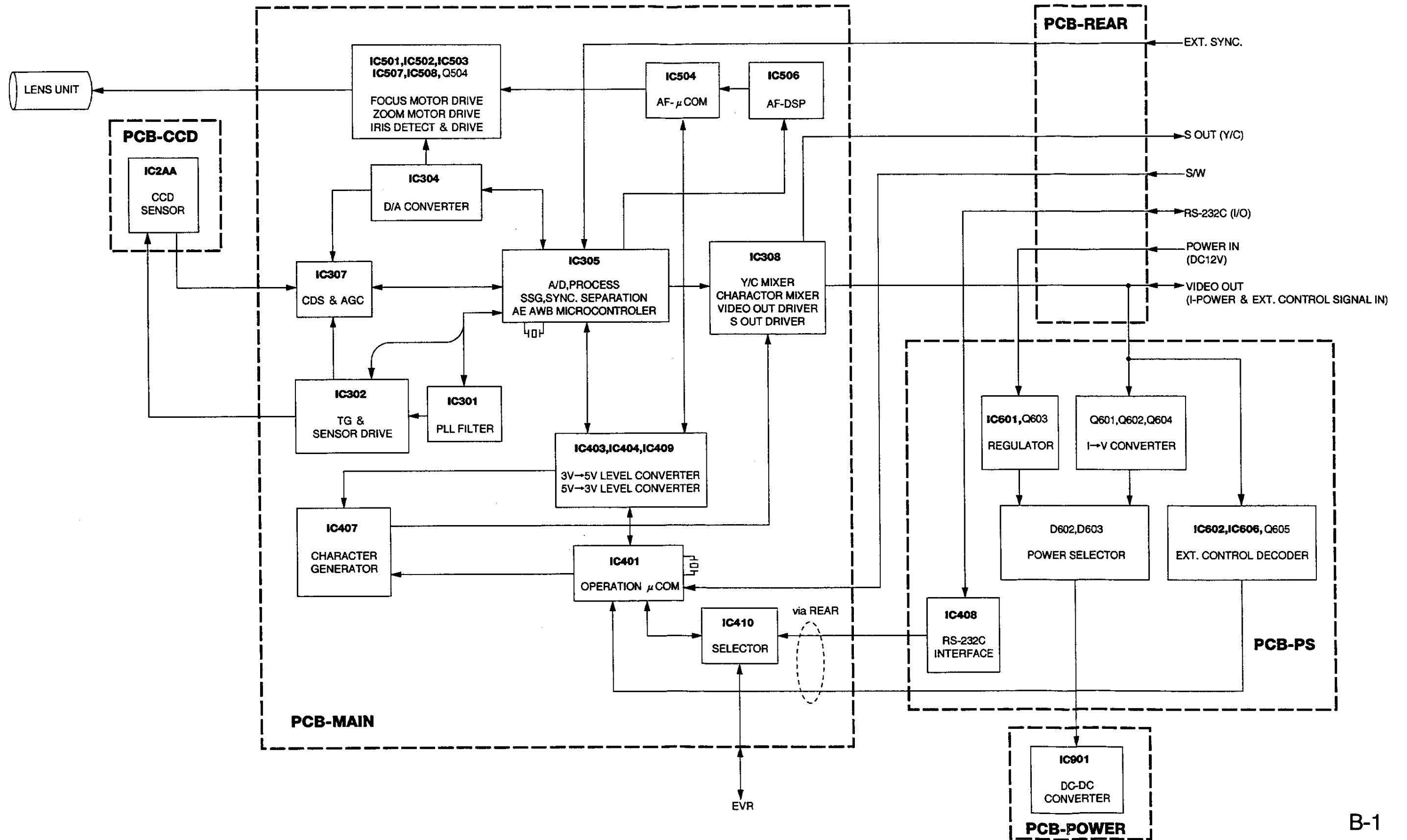
Packing Sheet
Package a product with the glazed side outside.



ITEM NO.	PARTS NO.	PARTS NAME	DESCRIPTION
1	801C341O20	PACKING CASE	
2	803B787O10	CUSHION	
3	831D190O10	PACKING SHEET	300 X 300
4	242C988O10	CABLE	DSUB9P(M)-MINIDIN8P
5	264C304O10	PACKING BAG	190 X 120 X 0.06
6	540D217O10	CLAMPER	
7	669D171O90	SCREW	M3X 6 P=0.5
8	831D252O20	PACKING BAG	110 X 70 X 0.06
9	872C062O60	INSTRUCTION BOOK	ENGLISH
		INSTRUCTION BOOK	GERMAN
		INSTRUCTION BOOK	FRENCH

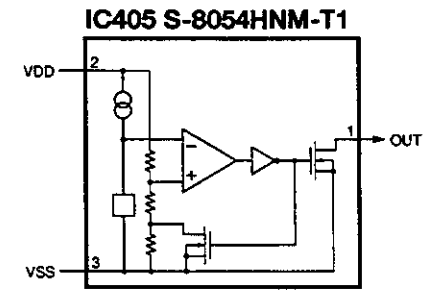
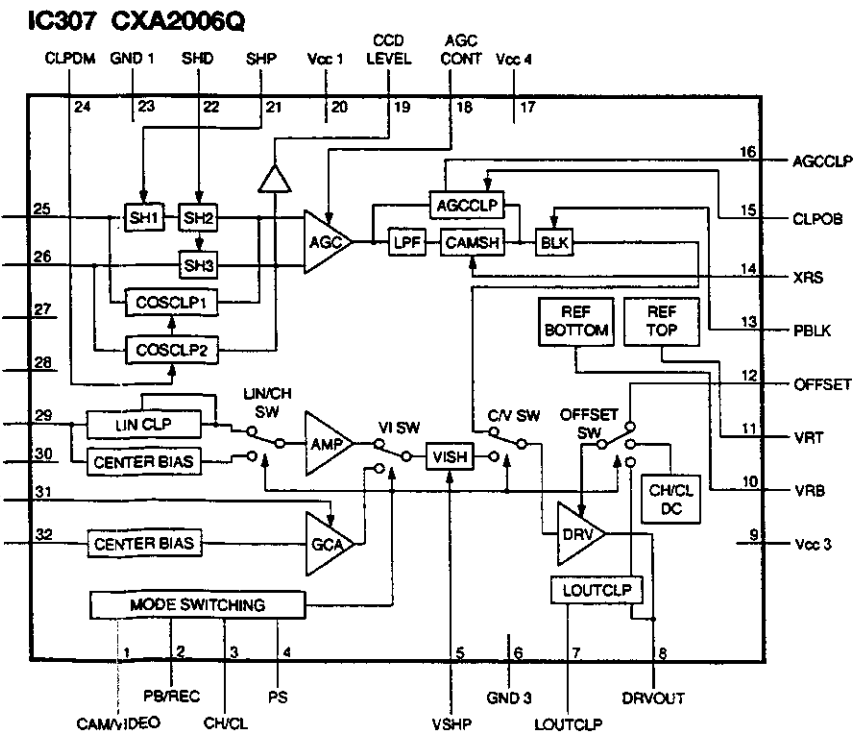
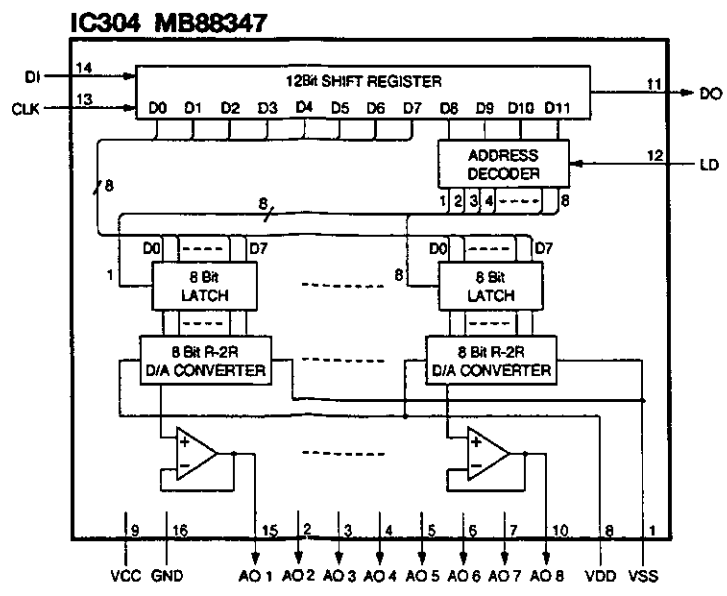
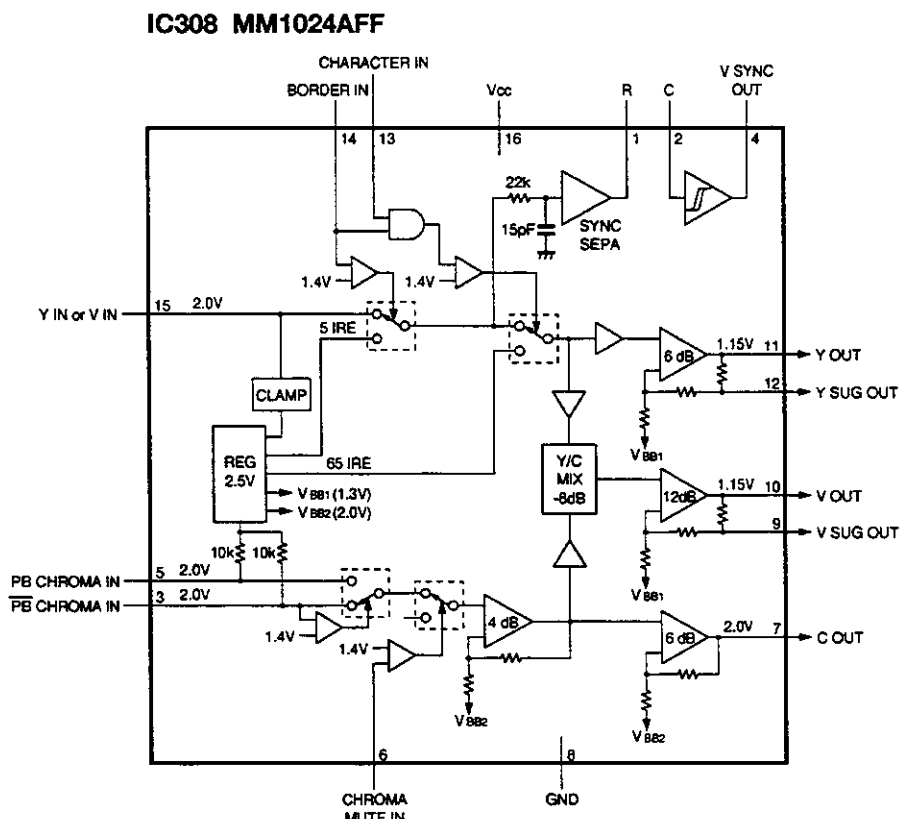
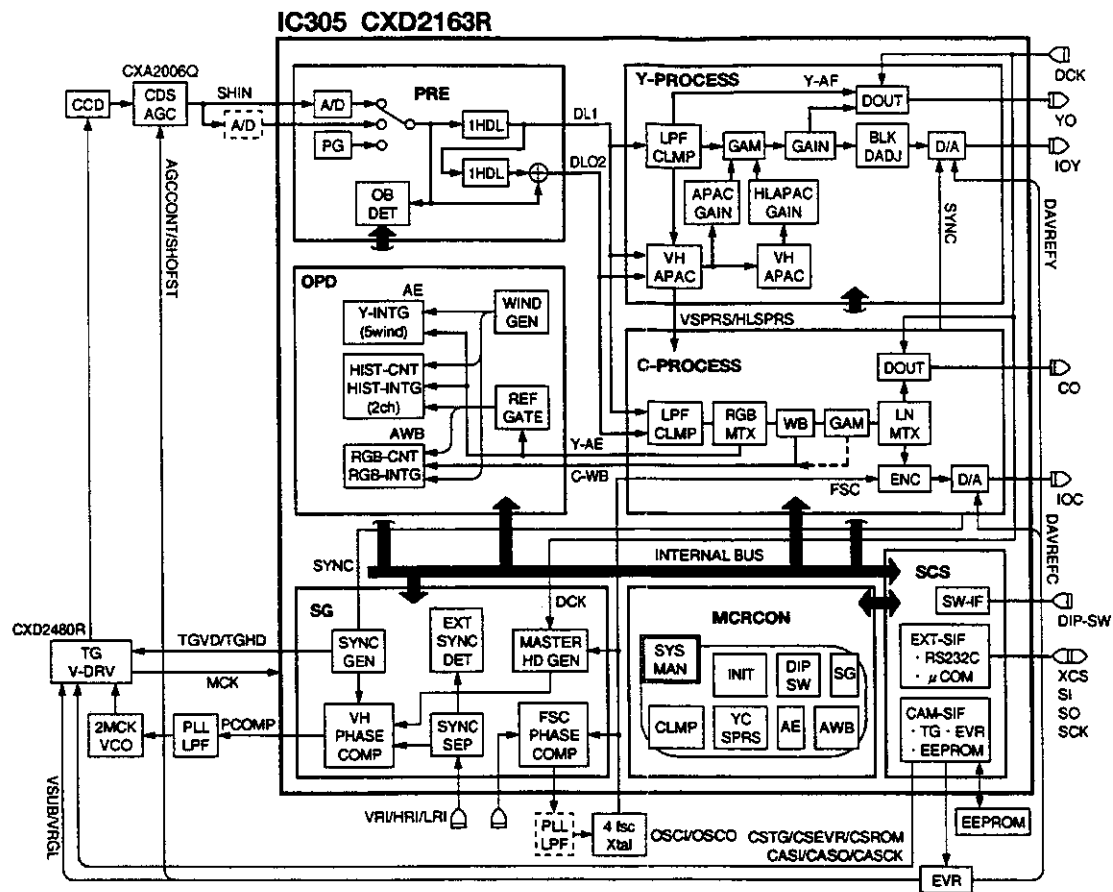
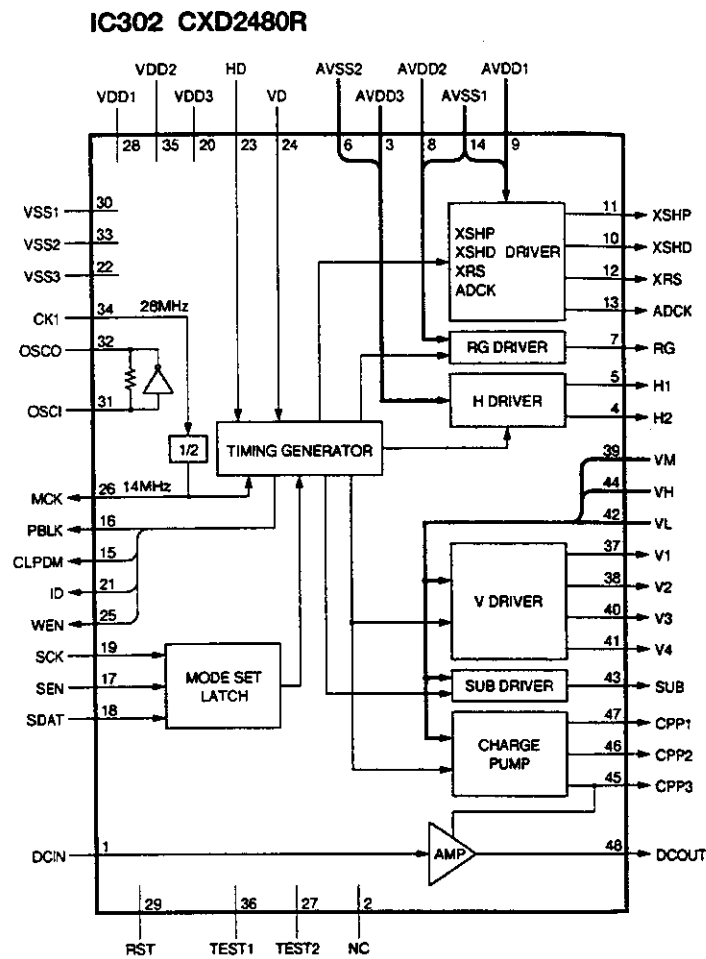
[MEMO]

CCD-400/CCD-400E BLOCK DIAGRAM

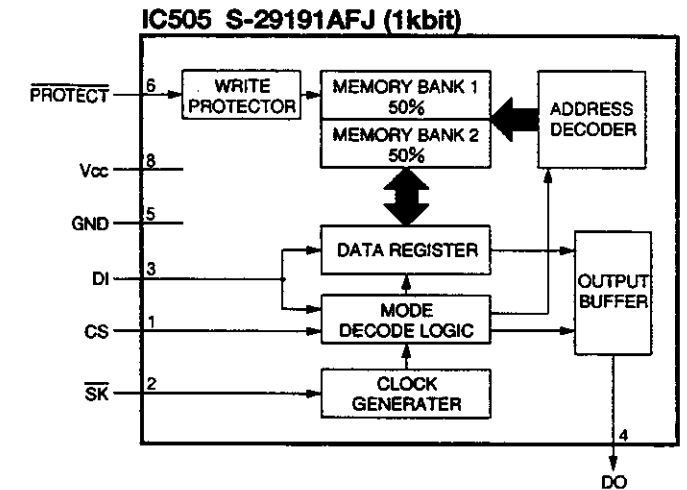
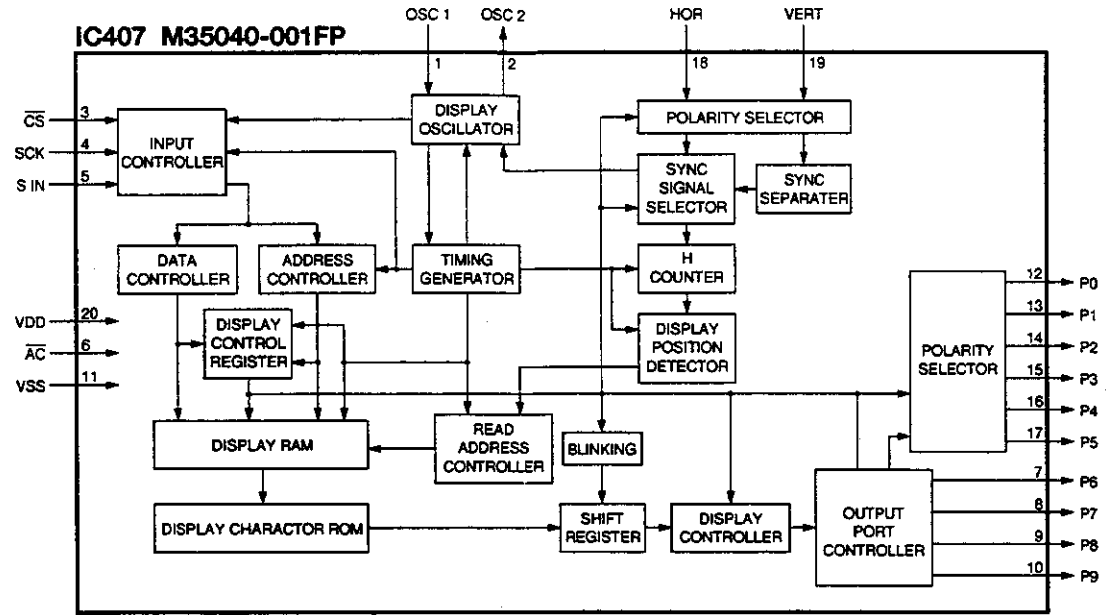
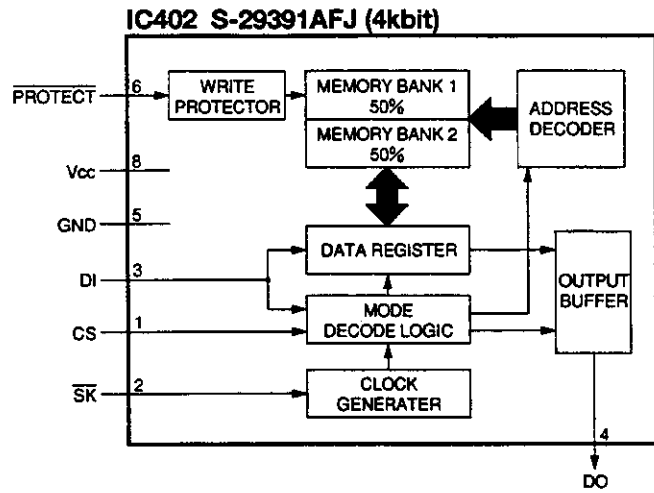


IC BLOCK DIAGRAMS

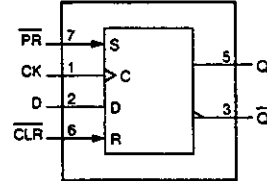
PCB-MAIN



PCB-MAIN



IC406 TC7W74FU

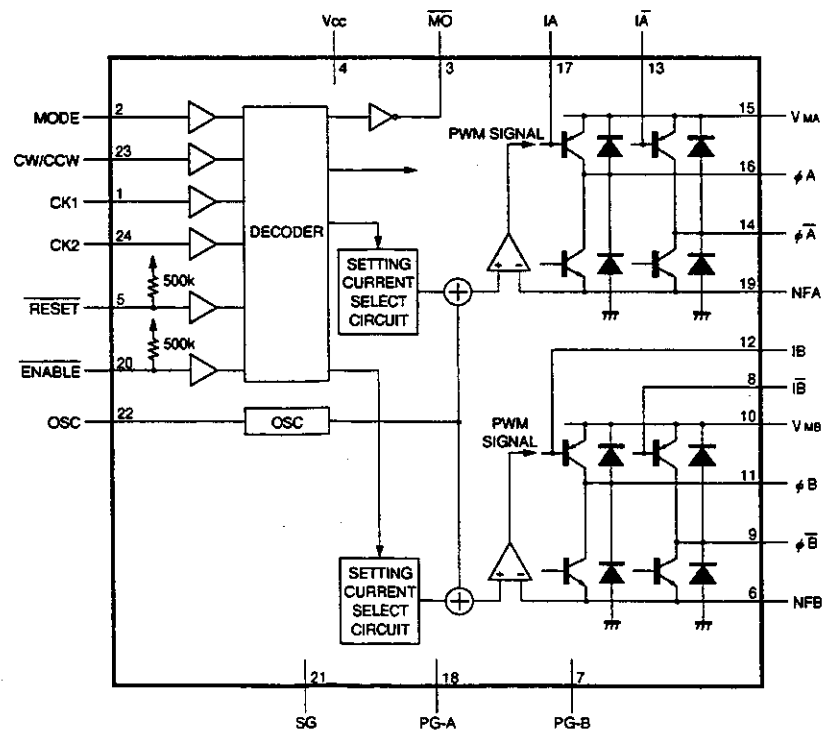


TRUE TABLE

INPUTS				OUTPUTS		FUNCTION
CLR	PR	D	CK	Q	Q̄	
L	H	X	X	L	H	CLEAR
H	L	X	X	H	L	PRESET
L	L	X	X	H	H	—
H	H	L	\downarrow	L	H	—
H	H	H	\downarrow	H	L	—
H	H	X	\downarrow	Qn	Q̄n	NO CHANGE

X : Don't Care

IC501,IC502 TB6512AF



TRUE TABLE A

INPUT					MODE
CK1	CK2	CW/CCW	RESET	ENABLE	
\downarrow	H	L	H	L	CW
\downarrow	L	L	H	L	INHIBIT
H	\downarrow	L	H	L	CCW
L	\downarrow	L	H	L	INHIBIT
\downarrow	H	H	H	L	CCW
\downarrow	L	H	H	L	INHIBIT
H	\downarrow	H	H	L	CW
L	\downarrow	H	H	L	INHIBIT
X	X	X	L	L	INITIAL MODE
X	X	X	X	H	Z

NOTE : Don't use in INHIBIT mode.
Z : HIGH IMPEDANCE
X : Don't Care

TRUE TABLE B

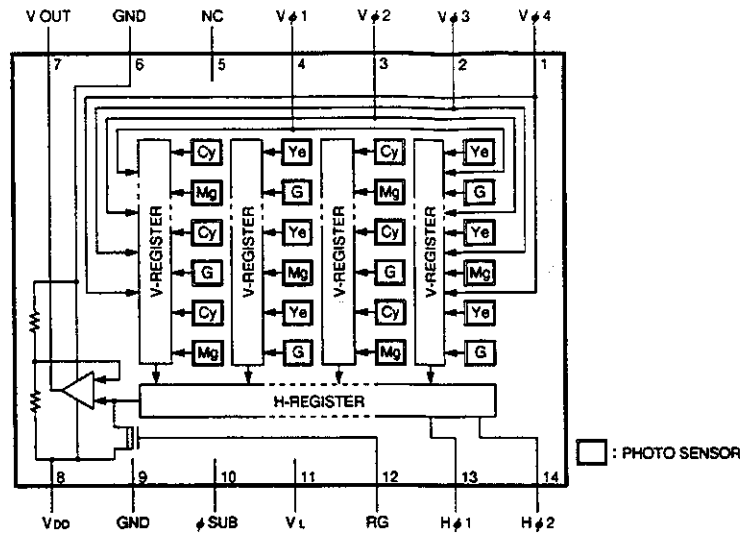
INPUT MODE	MODE (EXCITATION)
L	1-2 PHASE
H	2W1-2 PHASE

INITIAL MODE

EXCITATION MODE	PHASE "A" CURRENT	PHASE "B" CURRENT
1-2 PHASE	100%	0%
2W1-2 PHASE	100%	0%

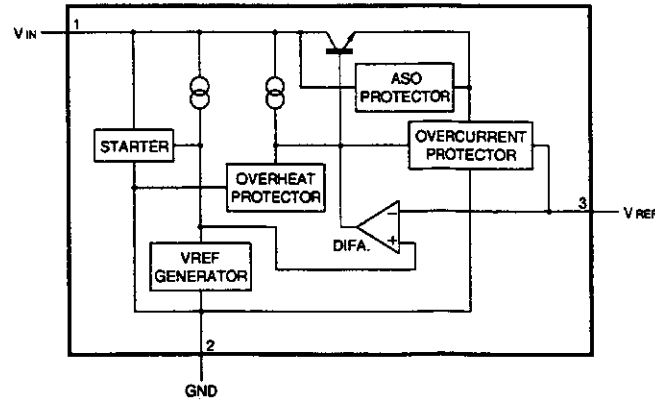
PCB-CCD

IC2AA ICX069AK

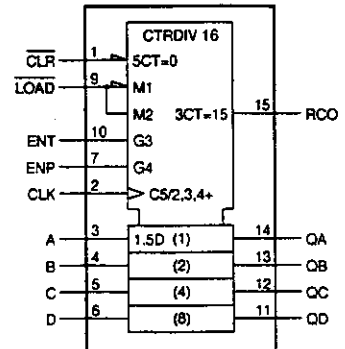


PCB-PS

IC601 M5237ML



IC606 SN74HC161DB



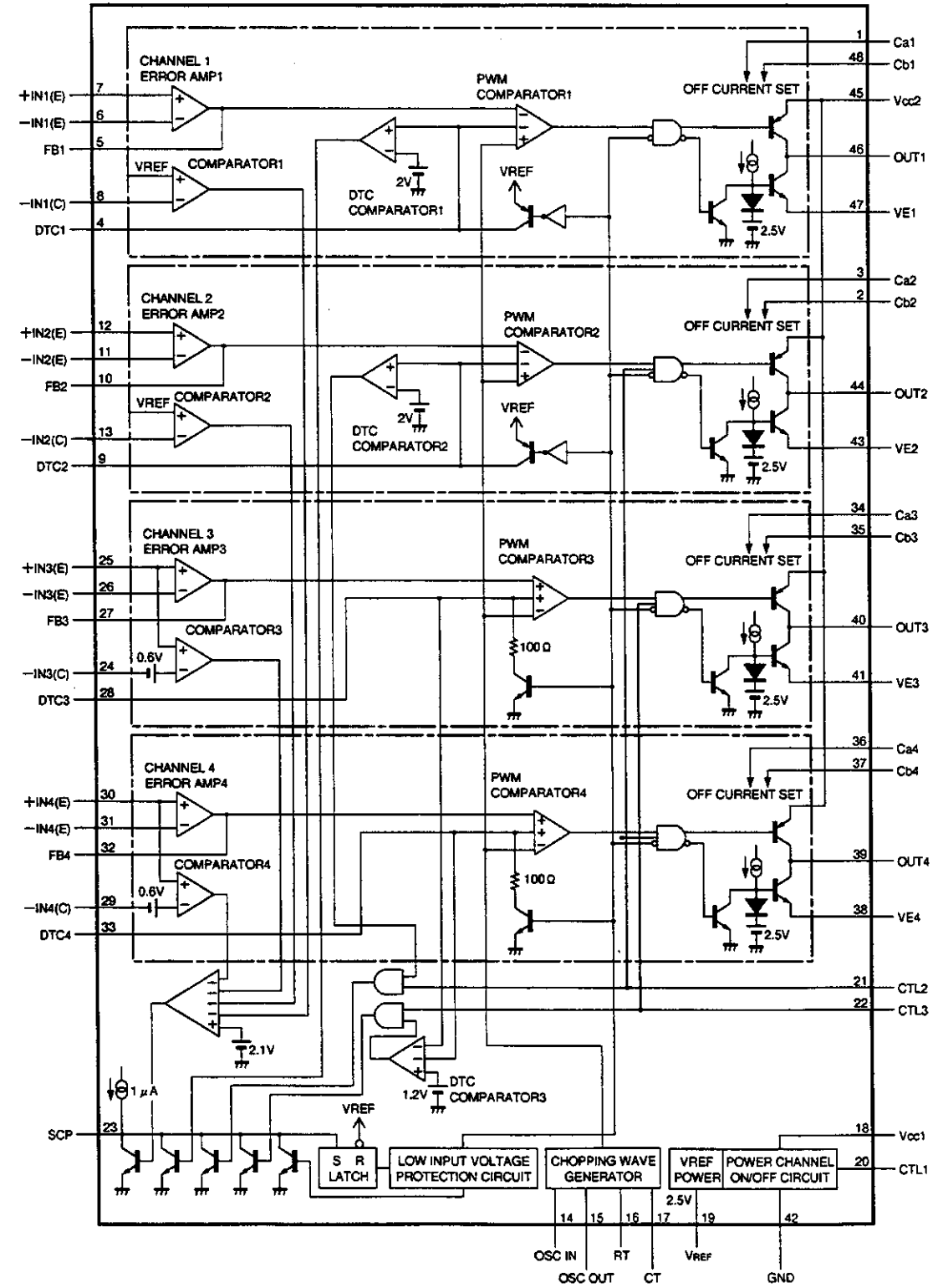
TRUE TABLE

INPUTS					OUTPUTS	
CLK	ENP	ENT	LOAD	CLR	RCO	QA,QB,QC,QD
X	X	X	X	L	L	ALL "L"
L	X	X	L	H	Effective with ENT="H"	A,B,C,D
L	H	H	H	H	Effective	Count Up
X	X	L	H	H	L	No Change
X	L	X	H	H	Effective with ENT="H"	

H : High Level
L : Low Level
X : Don't Care

PCB-POWER

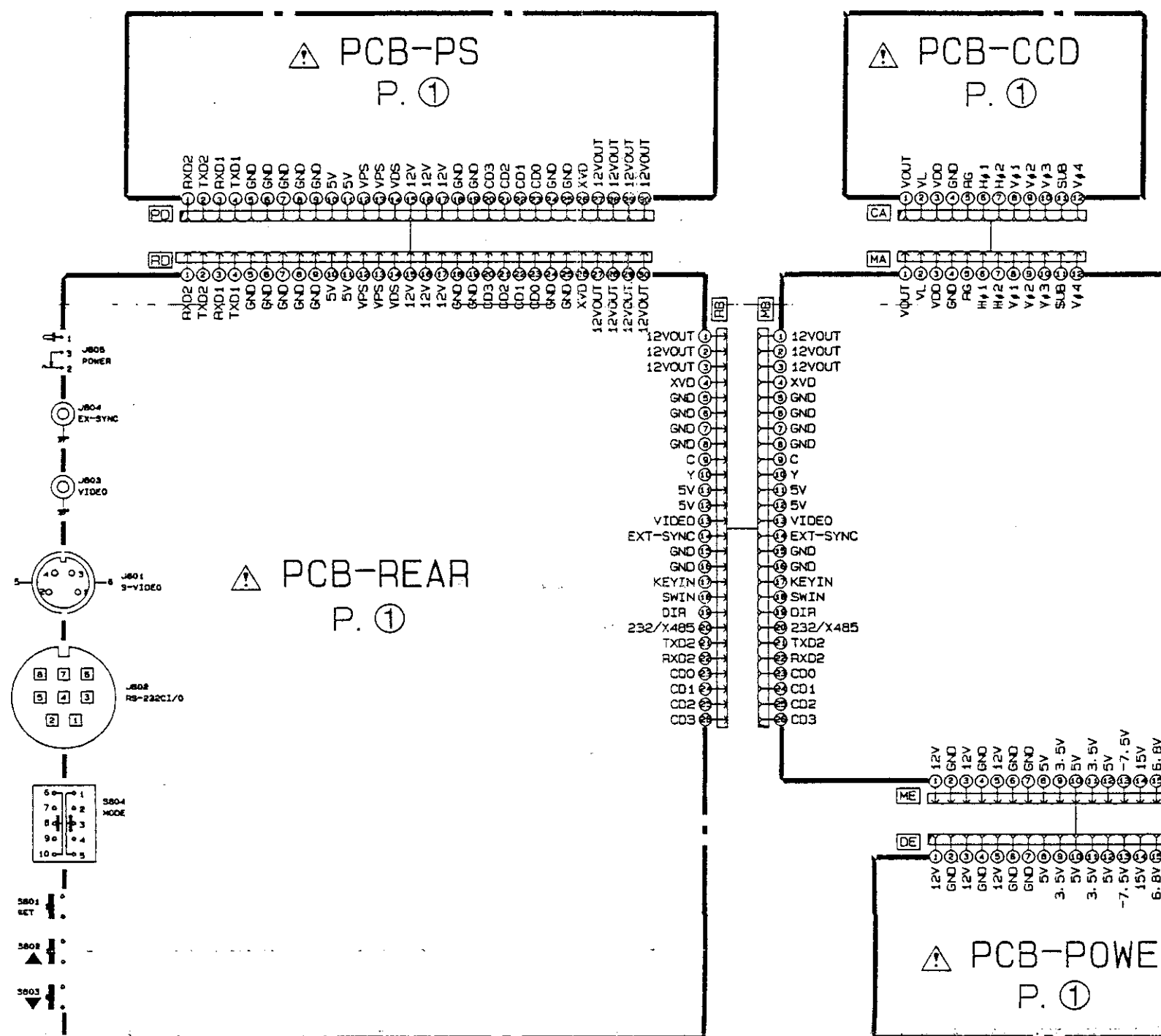
IC901 MB3785A



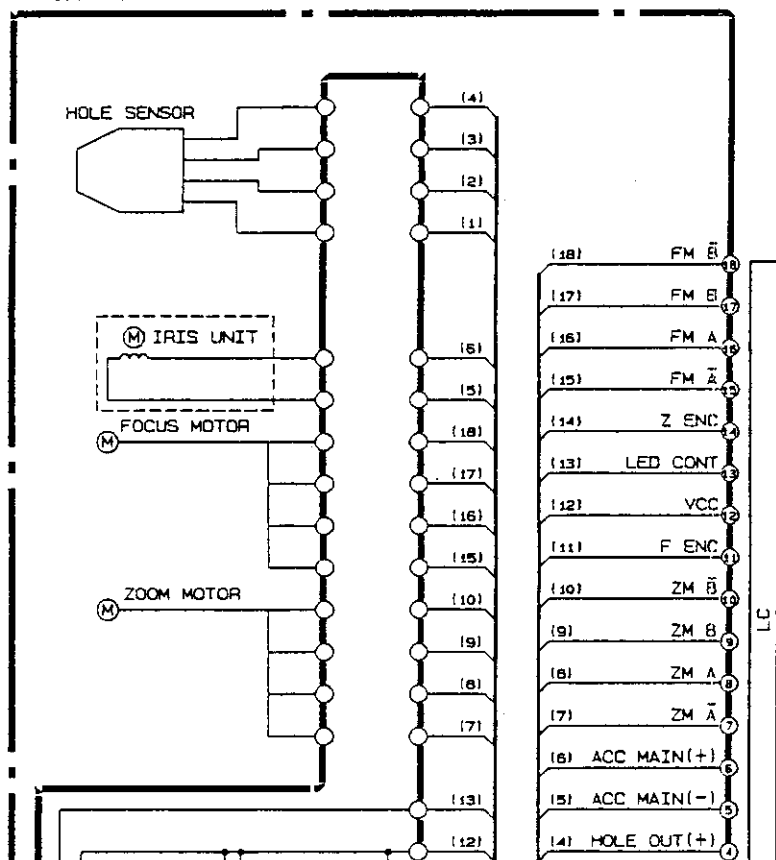
PCB-BLOCK DIAGRAM

A
B
C
D
E
F
G
H

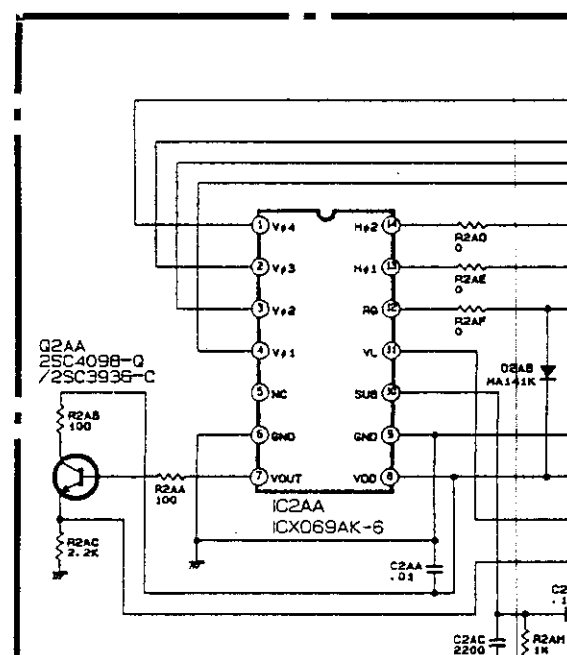
1 2 3 4 5



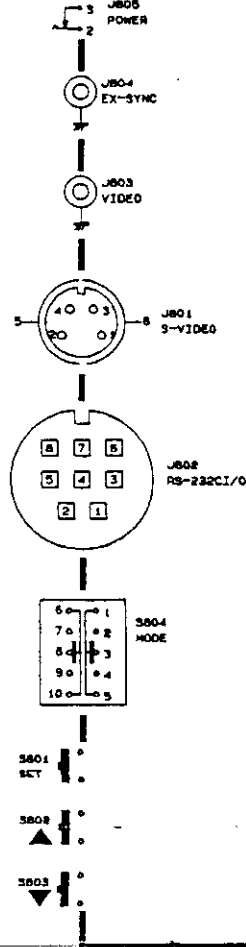
LENS-UNIT



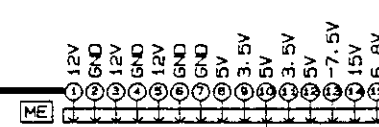
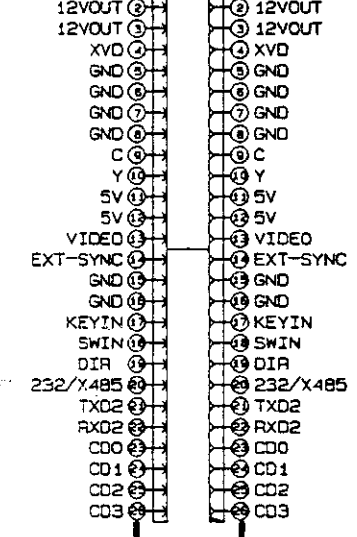
PCB-CCD



C
D
E
F
G
H
I
J

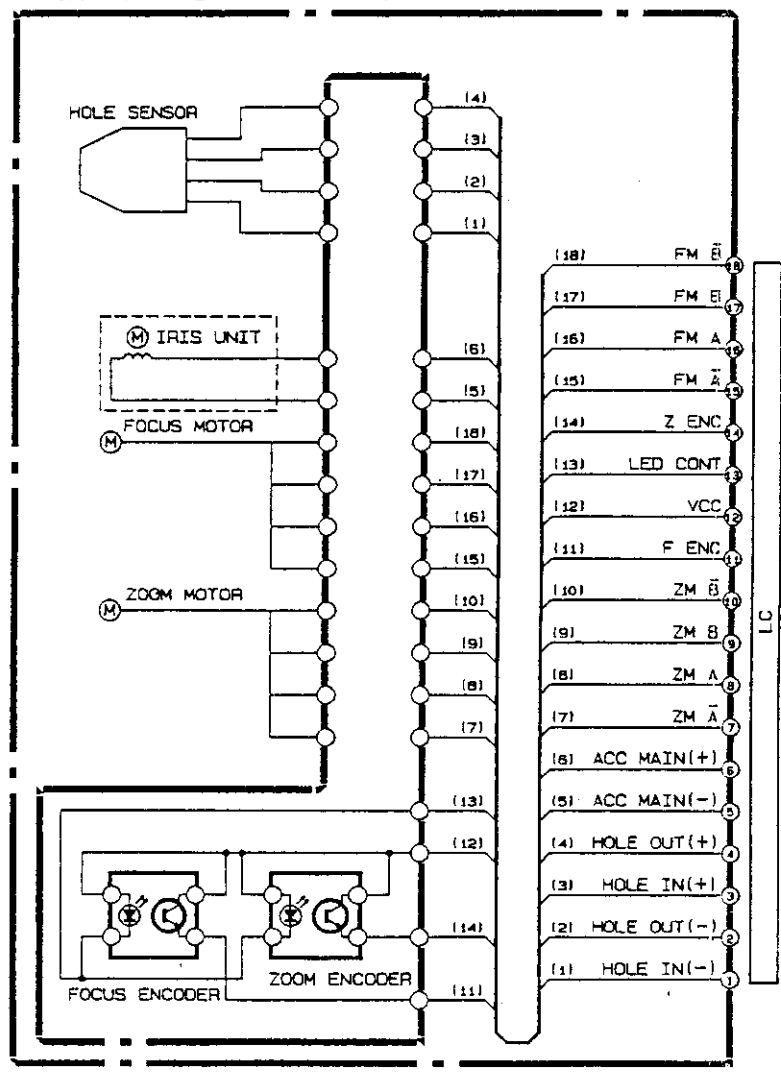


⚠ PCB-REAR
P. ①

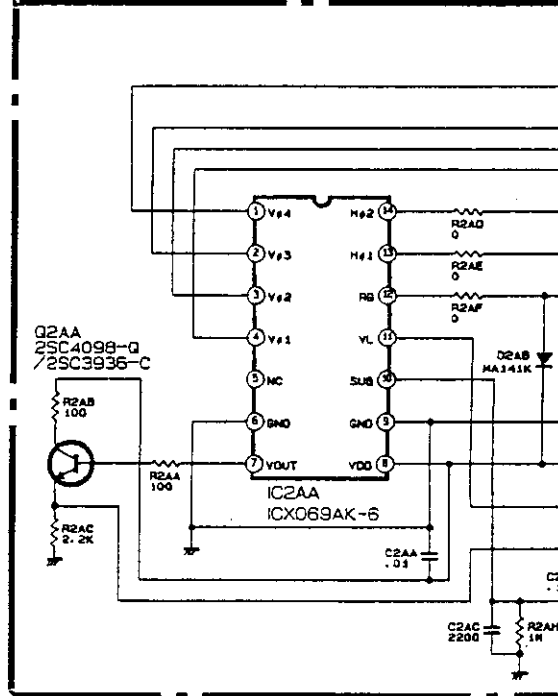


⚠ PCB-POWER
P. ①

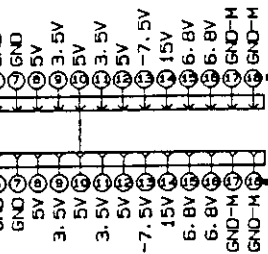
LENS-UNIT



⚠ PCB-CCD

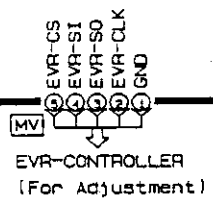


⚠ PCB-MAIN
P. ②



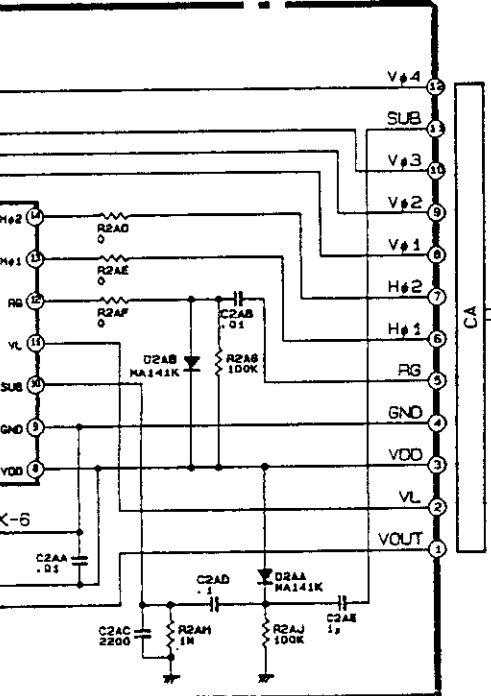
B-POWER
P. ①

HOL
HOL
HOL
ACC
ACC



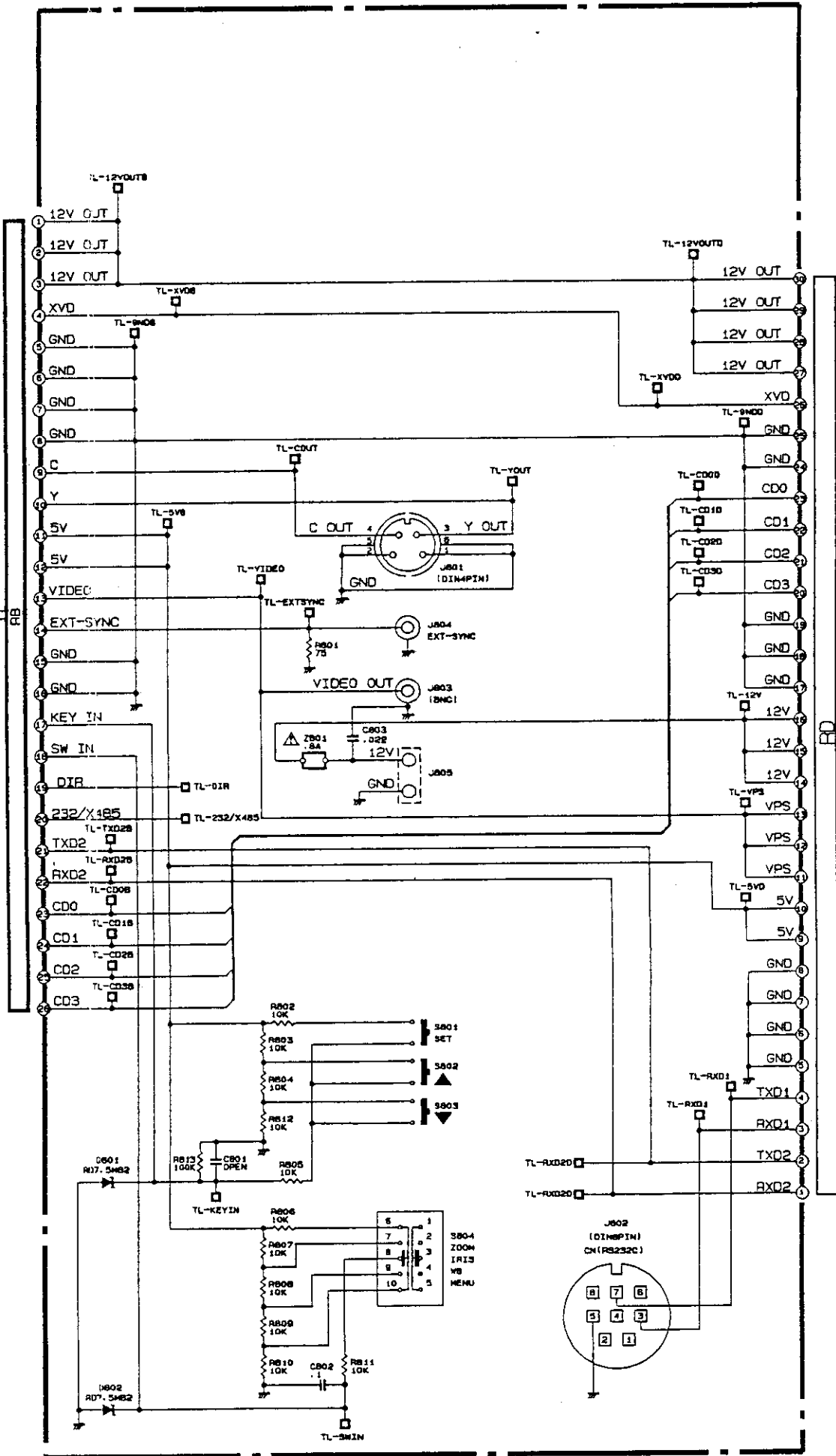
⚠ PCB-REAR

CD



PCB-MAIN MA

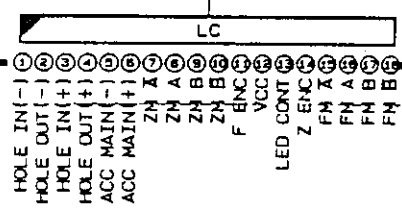
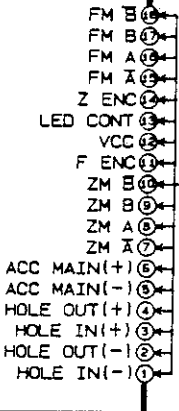
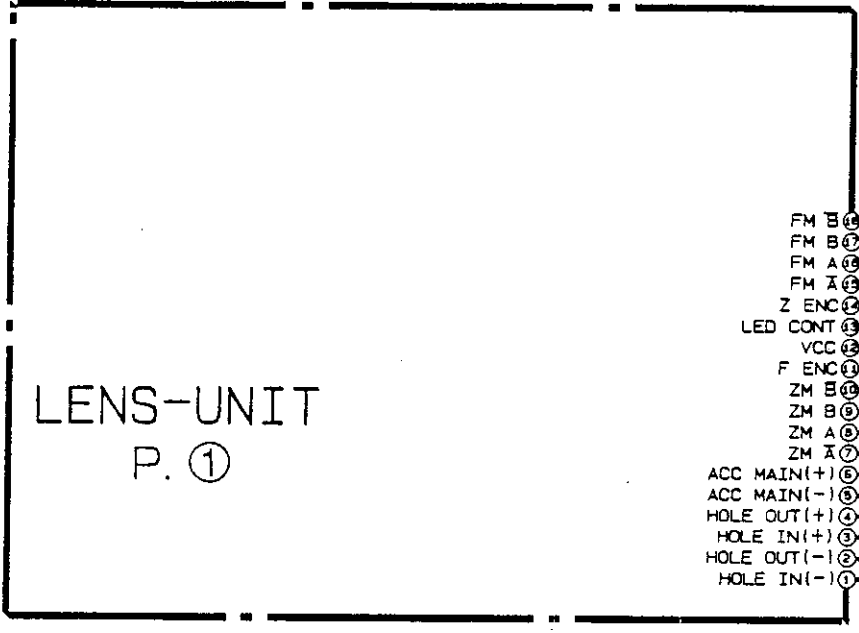
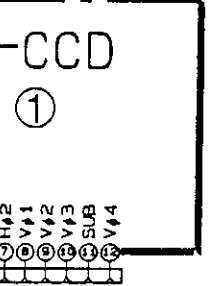
PCB-MAIN MB



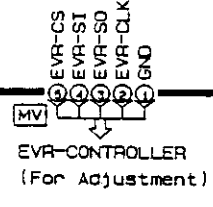
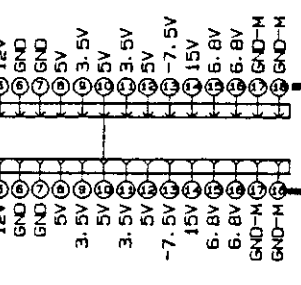
NOTE TL-XXX MEANS TEST
TP-XXX MEANS CHECK

AM

! PCB



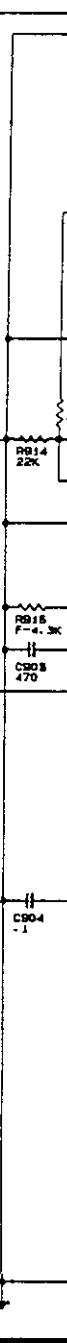
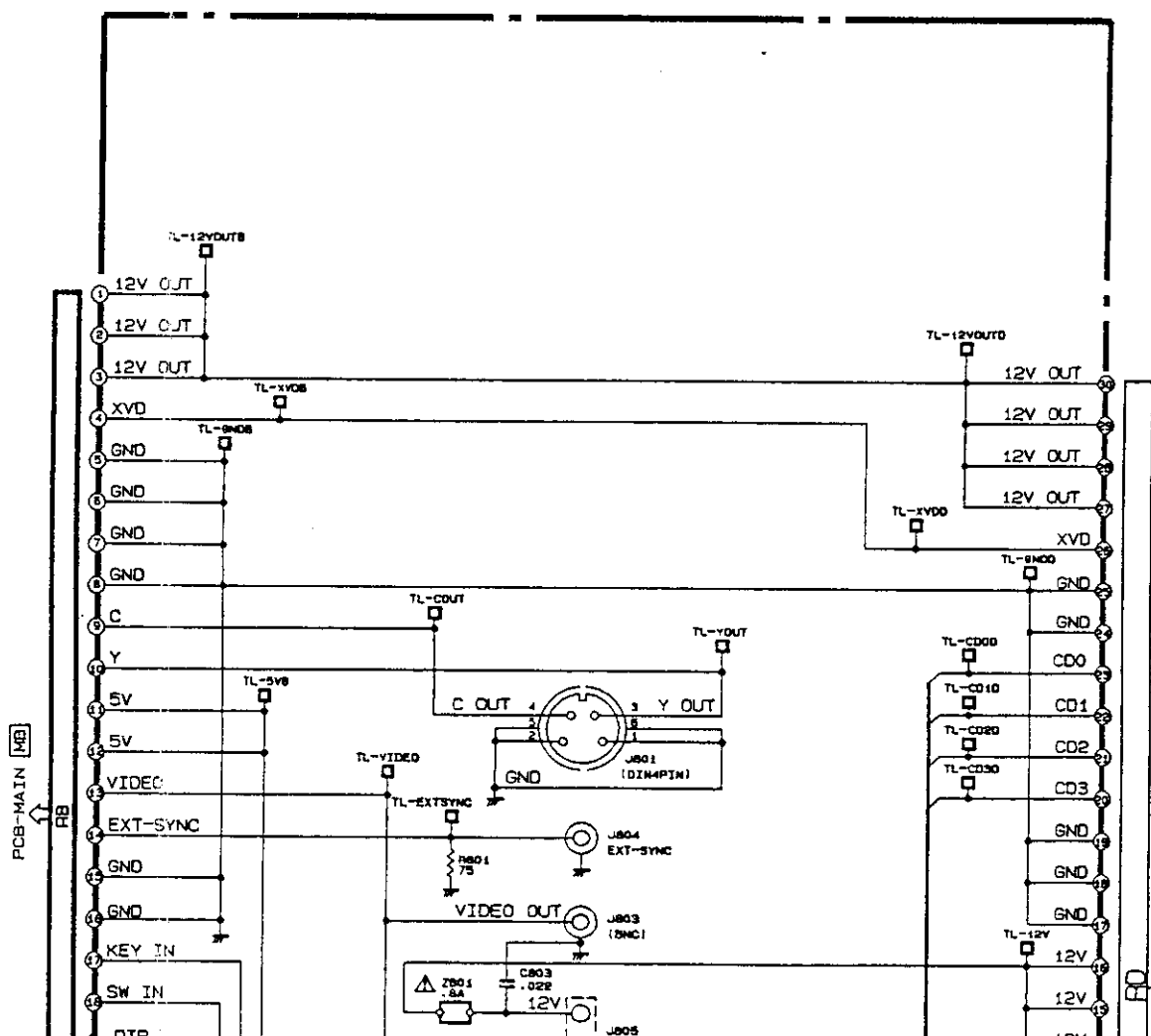
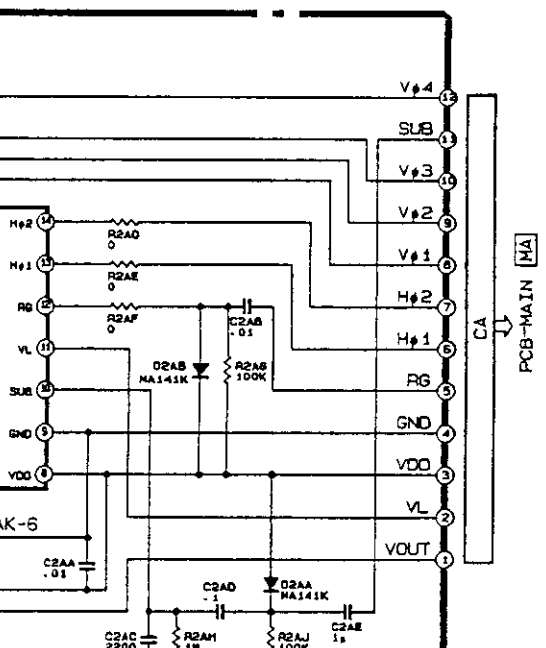
! PCB-MAIN
P. ②



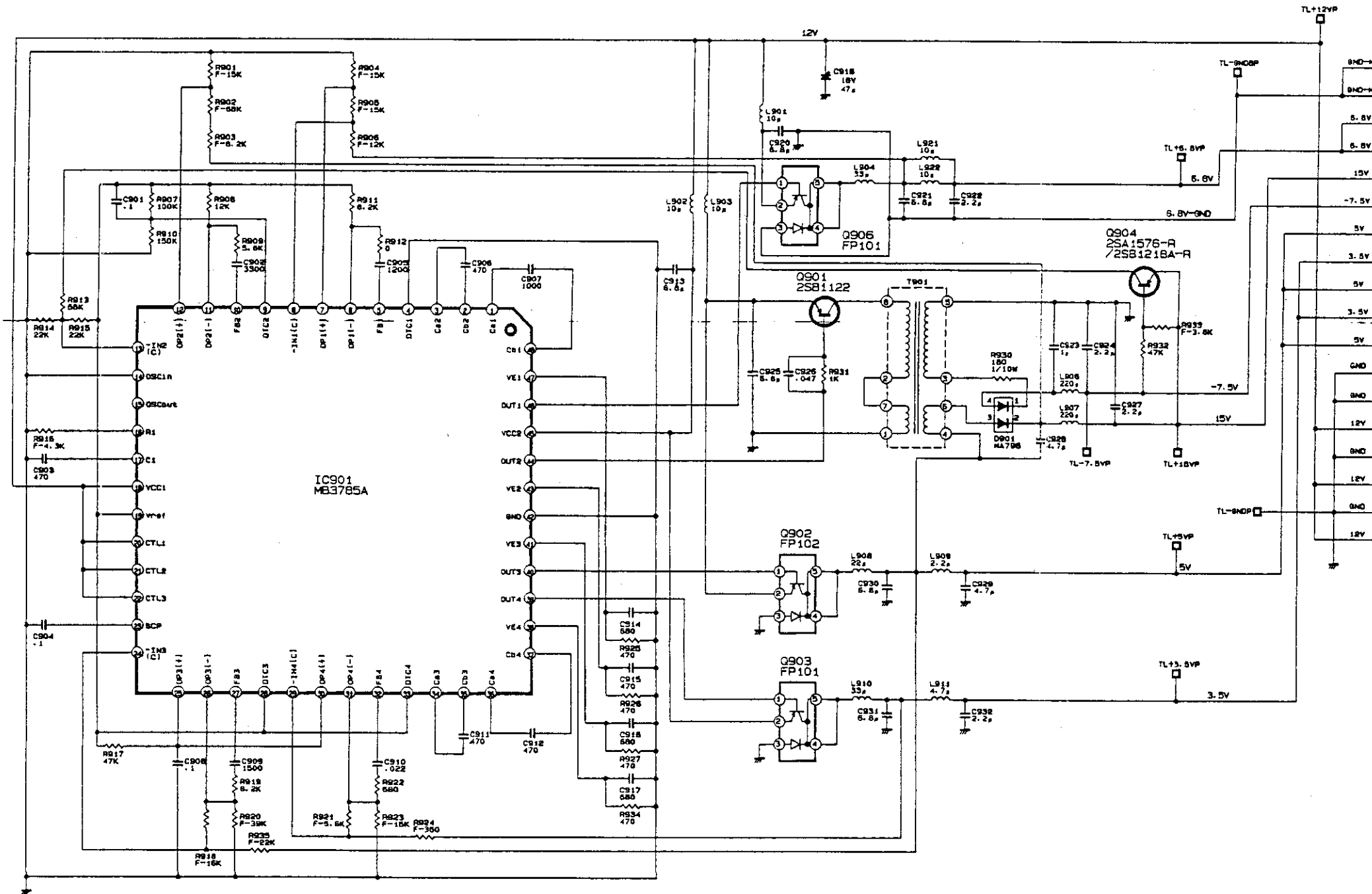
PCB-POWER
P. ①

! PCB-REAR

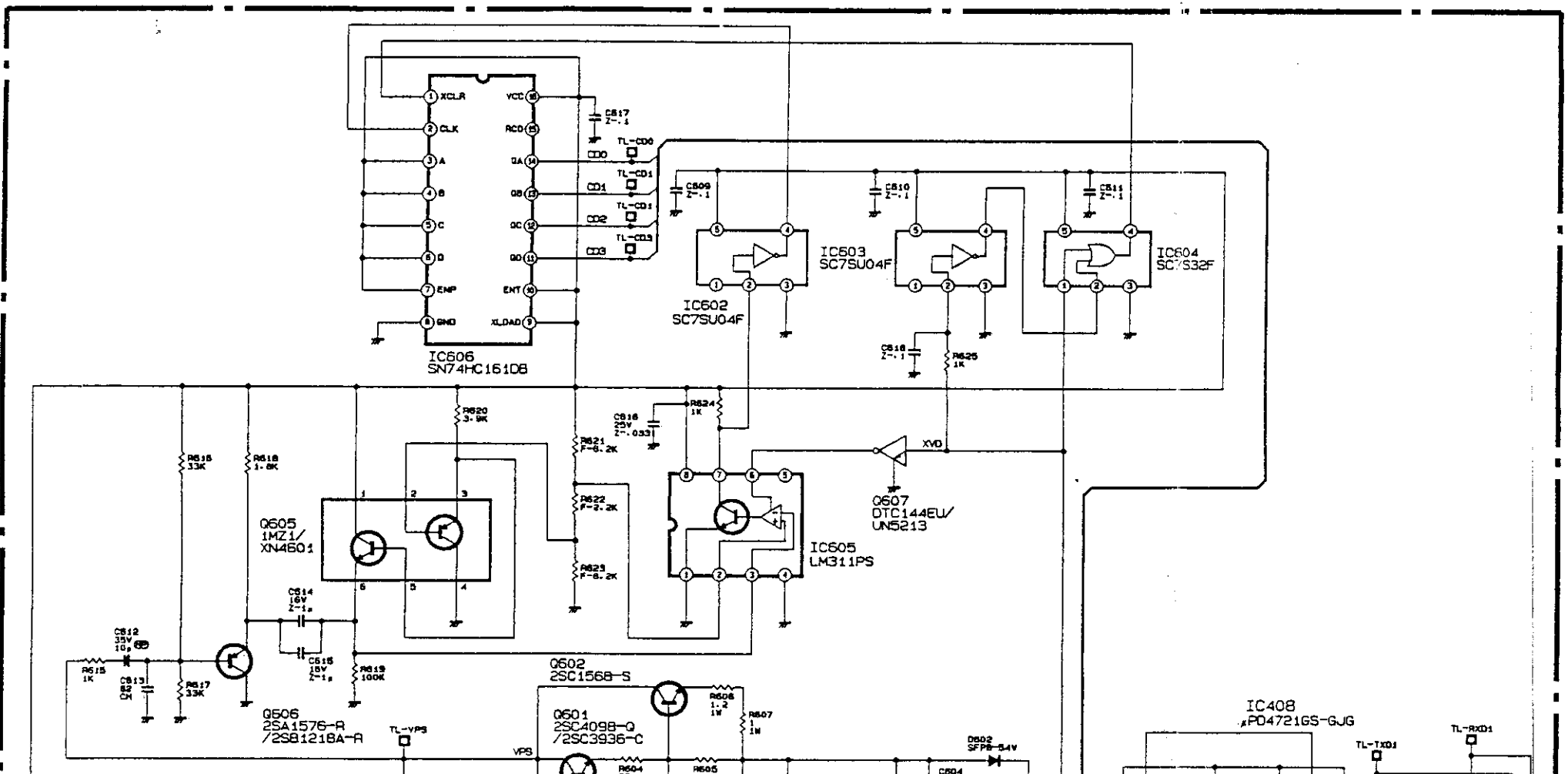
CD

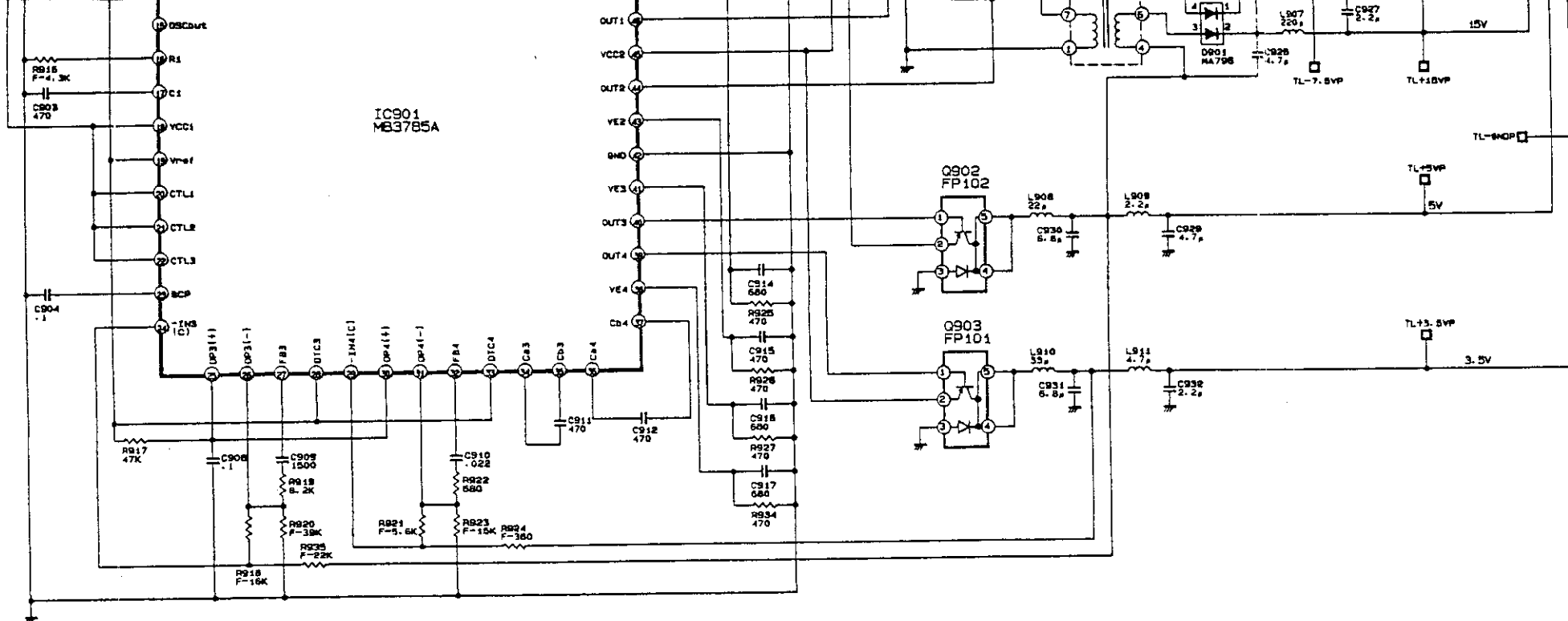


⚠ PCB-POWER

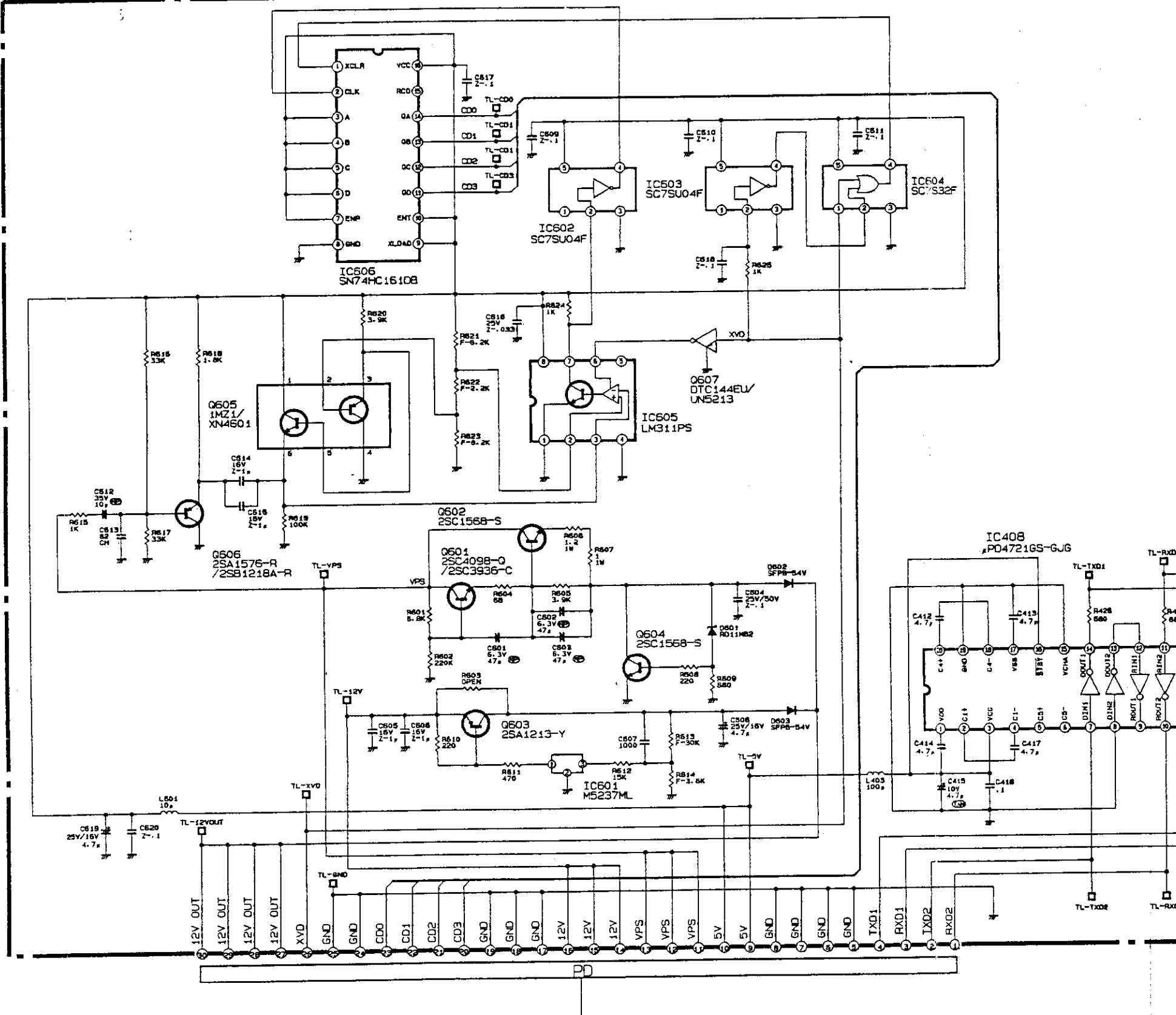


⚠ PCB-PS

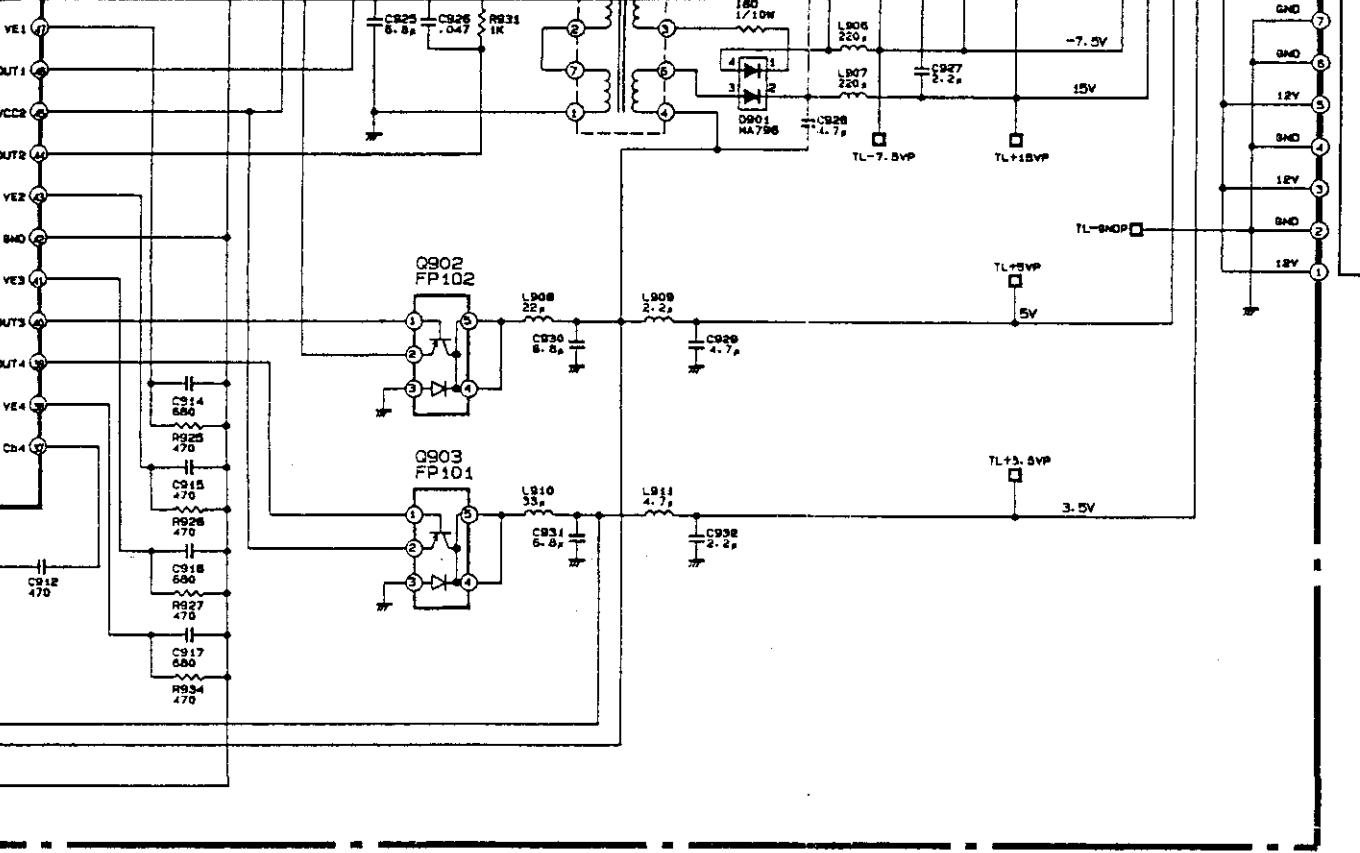




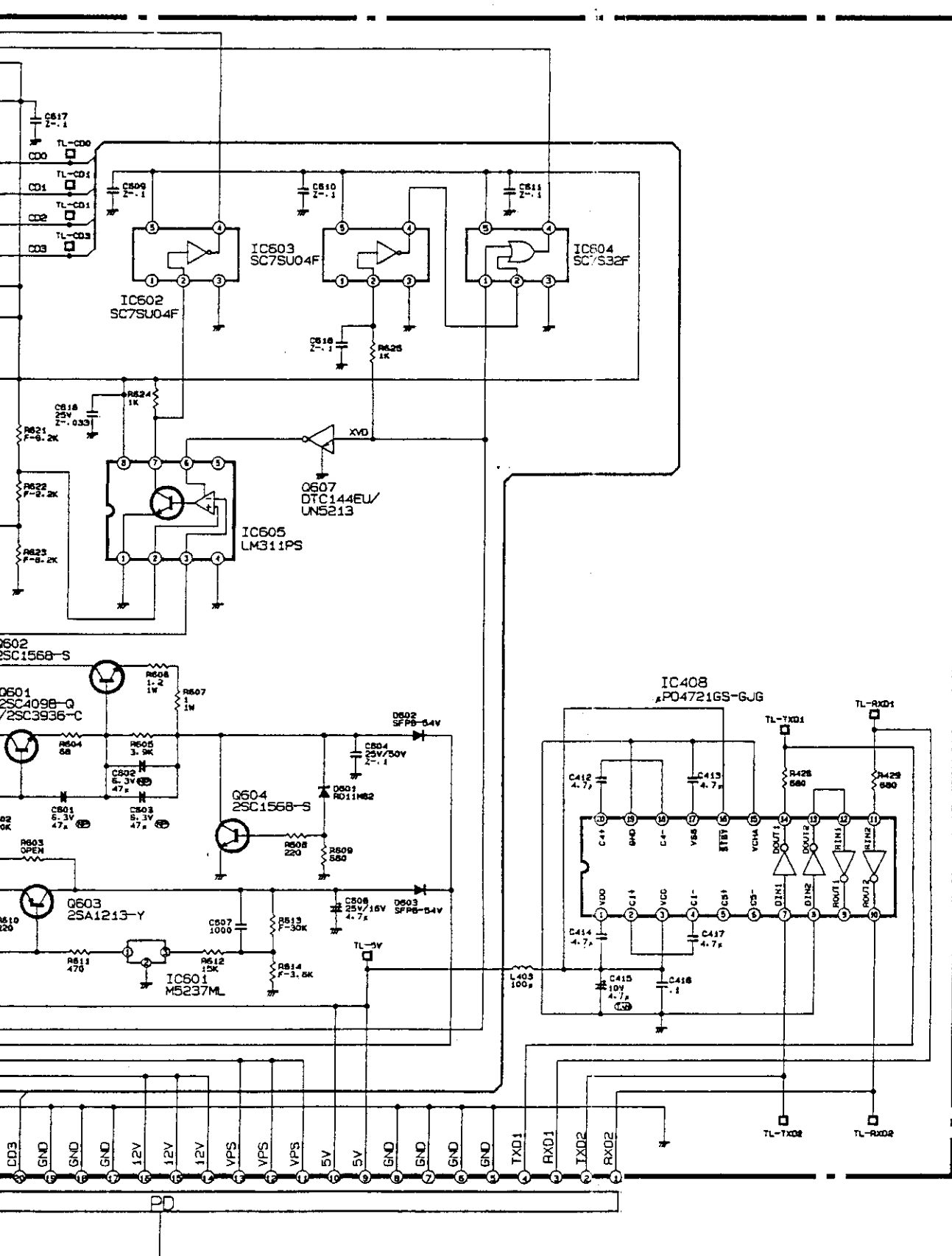
PCB-PS



NOTE TL-XXX MEANS TEST LAND
TP-XXX MEANS CHECKER CHIP



Tolerance	G = ±2%	P = +100%	Q = +30%	C = ±0.25PF
	J = ±5%	-0%	-10%	D = ±0.5PF
	K = ±10%	Z = +80%	T = +200%	F = ±1PF
	M = ±20%	-20%	-0%	G = ±2PF
Sort	Not indicated : Ceramic capacitor			
	<ul style="list-style-type: none"> ⓂP : Polyester capacitor ⓂP : Polypropylene film capacitor ⓂLM : Aluminum electrolytic capacitor ⓂTF : Twin film capacitor ⓂSC : Semiconductor ceramic capacitor ⓂP : Metalized paper ⓂMP : Metalized plastic film capacitor ⓂMPP : Metalized polyester capacitor ⓂMPP : Polyester polypropylene film capacitor ⓂPS : Styrol capacitor ⓂTAN or ⓂTANT : Tantalum capacitor ⓂE : Electrolytic capacitor ⓂBP or ⓂNP : Non polarized electrolytic capacitor 			
II Chips	Not indicated : Ceramic capacitor chip — : Electrolytic capacitor ⓂBP or ⓂNP : Non polarized electrolytic capacitor chip			
Characteristic (only ceramic capacitor)	Not indicated : F or B (high dielectric percentage) CH, SL, etc. : Temperature compensating types			

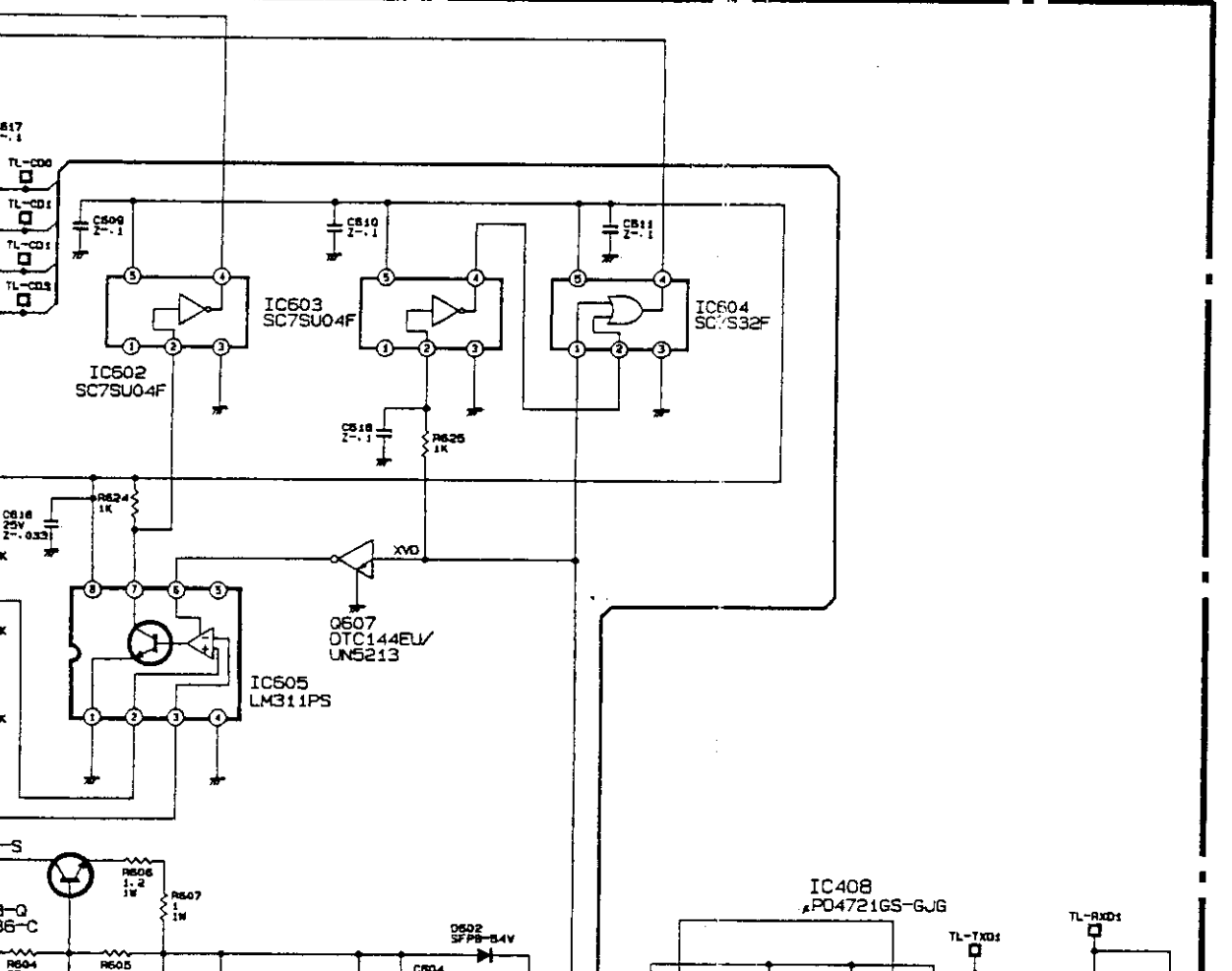
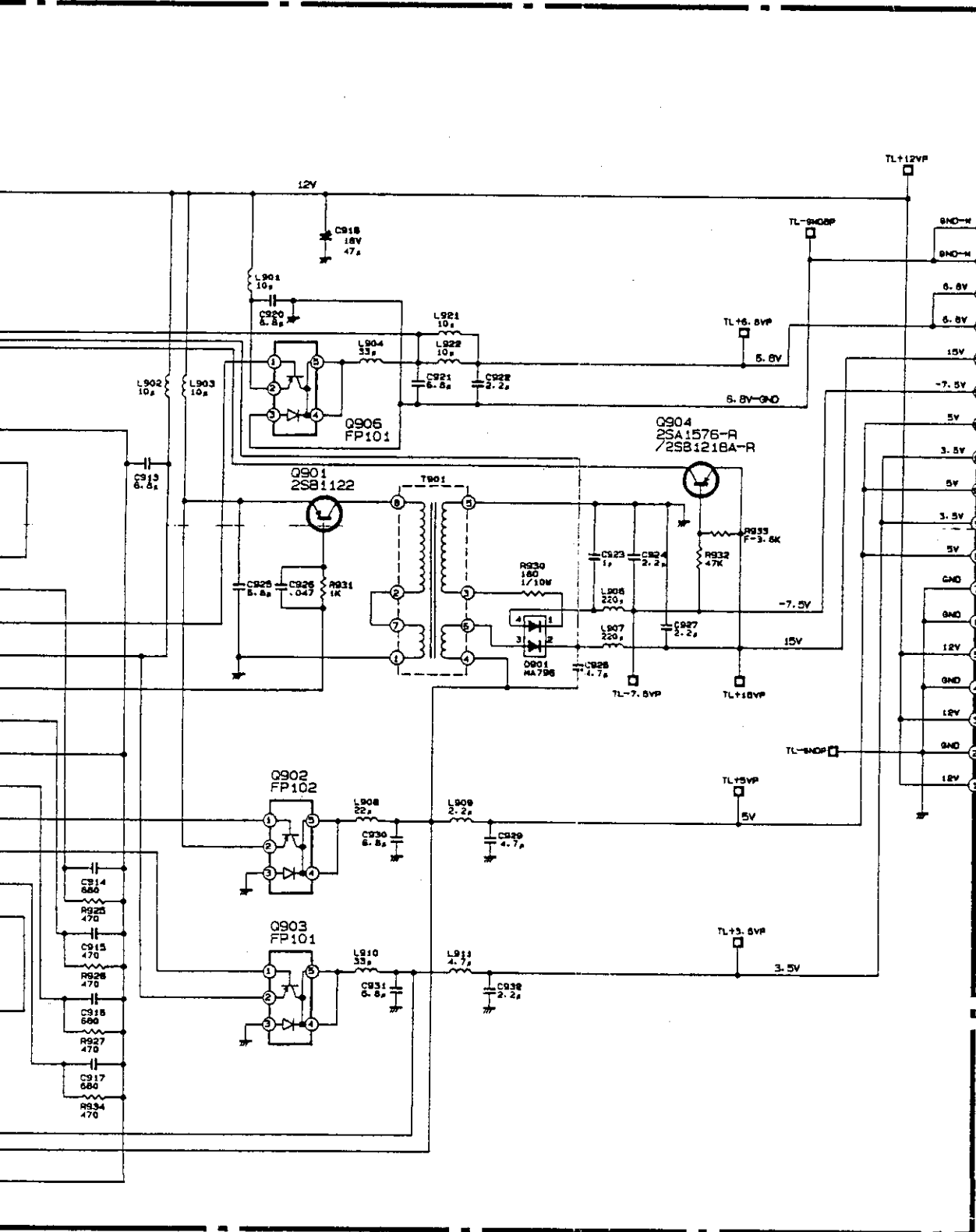


3. Resistors

Value	Not indicated = Ω K = kΩ(1000Ω) M = MΩ(1000kΩ)	
Wattage	Parts except for chips	Not indicated = 1/4W or 1/6W
	Chips	Not indicated = 1/10W
Tolerance	Not indicated : ±5% D = ±0.5% J = ±5% F = ±1% K = ±10%	
Short	Parts except for chips	Not indicated : Carbon resistor Ⓢ : Fixed composition resistor ⓂB : Metal oxide film resistor (type B) ⓂC : Cemented resistor ⓂW : Wire wound resistor ⓂM : Metal film resistor ⓂMPC : Metal plate cement resistor ⓂML : Metal liner resistor
	II Chip	Not indicated : Chip resistor

4. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

SPECIFIC SYMBOL	
	Zener Diode
	Varicap
	Posistor
	Thermistor
	Fusible Resistor
	Crystal unit
	Air Gap
	Part(resistor) attached on the copper-foil side of PCB
	Ceramic filter



SERVICING PRECAUTION

SYMBOLS INDICATE COMPONENTS HAVING SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY AND PERFORMANCE. THEREFORE REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS. FOR ACCURACY OF THE REPLACEMENT REFER TO THE PARTS LIST OF SERVICE MANUAL.
DON'T DEGRADE THE SAFETY OF THE VIDEO CAMERA THROUGH IMPROPER SERVICING.

SCHEMATIC DIAGRAM
MODEL : CCD-400E

NOTE

- TP6A, etc. show Test Points.
- CAPACITORS

Value	Not indicated	PF, for numbers more than 1 μF, for numbers less than 1																												
Dielectric Strength	Not indicated : 50V																													
Tolerance	Not indicated	±10%																												
	No Tolerance is indicated for electrolytic capacitors and ±20%																													
Sort	<table border="0"> <tr> <td>G=±2%</td> <td>P=+100%</td> <td>Q=+30%</td> <td>C=±0.25PF</td> </tr> <tr> <td>J=±5%</td> <td>-0%</td> <td>-10%</td> <td>D=±0.5PF</td> </tr> <tr> <td>K=±10%</td> <td>Z=+80%</td> <td>T=+200%</td> <td>F=±1PF</td> </tr> <tr> <td>M=±20%</td> <td>-20%</td> <td>-0%</td> <td>G=±2PF</td> </tr> </table>		G=±2%	P=+100%	Q=+30%	C=±0.25PF	J=±5%	-0%	-10%	D=±0.5PF	K=±10%	Z=+80%	T=+200%	F=±1PF	M=±20%	-20%	-0%	G=±2PF												
	G=±2%	P=+100%	Q=+30%	C=±0.25PF																										
J=±5%	-0%	-10%	D=±0.5PF																											
K=±10%	Z=+80%	T=+200%	F=±1PF																											
M=±20%	-20%	-0%	G=±2PF																											
I except for chips	<table border="0"> <tr> <td>Not indicated</td> <td>: Ceramic capacitor</td> </tr> <tr> <td>(MP)</td> <td>: Polyester capacitor</td> </tr> <tr> <td>(PP)</td> <td>: Polypropylene film capacitor</td> </tr> <tr> <td>(ALM)</td> <td>: Aluminum electrolytic capacitor</td> </tr> <tr> <td>(TF)</td> <td>: Twin film capacitor</td> </tr> <tr> <td>(SC)</td> <td>: Semiconductor ceramic capacitor</td> </tr> <tr> <td>(MP)</td> <td>: Metalized paper</td> </tr> <tr> <td>(MPP)</td> <td>: Metalized plastic film capacitor</td> </tr> <tr> <td>(MMP)</td> <td>: Metalized polyester capacitor</td> </tr> <tr> <td>(MF, PP)</td> <td>: Polyester polypropylene film capacitor</td> </tr> <tr> <td>(PS)</td> <td>: Styrol capacitor</td> </tr> <tr> <td>(TAN) or (TANT)</td> <td>: Tantalum capacitor</td> </tr> <tr> <td>(E)</td> <td>: Electrolytic capacitor</td> </tr> <tr> <td>(BP) or (NP)</td> <td>: Non polarized electrolytic capacitor</td> </tr> </table>		Not indicated	: Ceramic capacitor	(MP)	: Polyester capacitor	(PP)	: Polypropylene film capacitor	(ALM)	: Aluminum electrolytic capacitor	(TF)	: Twin film capacitor	(SC)	: Semiconductor ceramic capacitor	(MP)	: Metalized paper	(MPP)	: Metalized plastic film capacitor	(MMP)	: Metalized polyester capacitor	(MF, PP)	: Polyester polypropylene film capacitor	(PS)	: Styrol capacitor	(TAN) or (TANT)	: Tantalum capacitor	(E)	: Electrolytic capacitor	(BP) or (NP)	: Non polarized electrolytic capacitor
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(SC)	: Semiconductor ceramic capacitor																													
(MP)	: Metalized paper																													
(MPP)	: Metalized plastic film capacitor																													
(MMP)	: Metalized polyester capacitor																													
(MF, PP)	: Polyester polypropylene film capacitor																													
(PS)	: Styrol capacitor																													
(TAN) or (TANT)	: Tantalum capacitor																													
(E)	: Electrolytic capacitor																													
(BP) or (NP)	: Non polarized electrolytic capacitor																													
II Chips	<table border="0"> <tr> <td>Not indicated</td> <td>: Ceramic capacitor chip</td> </tr> <tr> <td>(E)</td> <td>: Electrolytic capacitor</td> </tr> <tr> <td>(BP) or (NP)</td> <td>: Non polarized electrolytic capacitor chip</td> </tr> </table>		Not indicated	: Ceramic capacitor chip	(E)	: Electrolytic capacitor	(BP) or (NP)	: Non polarized electrolytic capacitor chip																						
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(E)	: Electrolytic capacitor																													
(BP) or (NP)	: Non polarized electrolytic capacitor chip																													
Characteristic (only ceramic capacitor)	<table border="0"> <tr> <td>Not indicated</td> <td>: F or B (high dielectric percentage)</td> </tr> <tr> <td>CH, SL, etc.</td> <td>: Temperature compensating types</td> </tr> </table>		Not indicated	: F or B (high dielectric percentage)	CH, SL, etc.	: Temperature compensating types																								
Not indicated	: F or B (high dielectric percentage)																													
CH, SL, etc.	: Temperature compensating types																													

3. Resistors

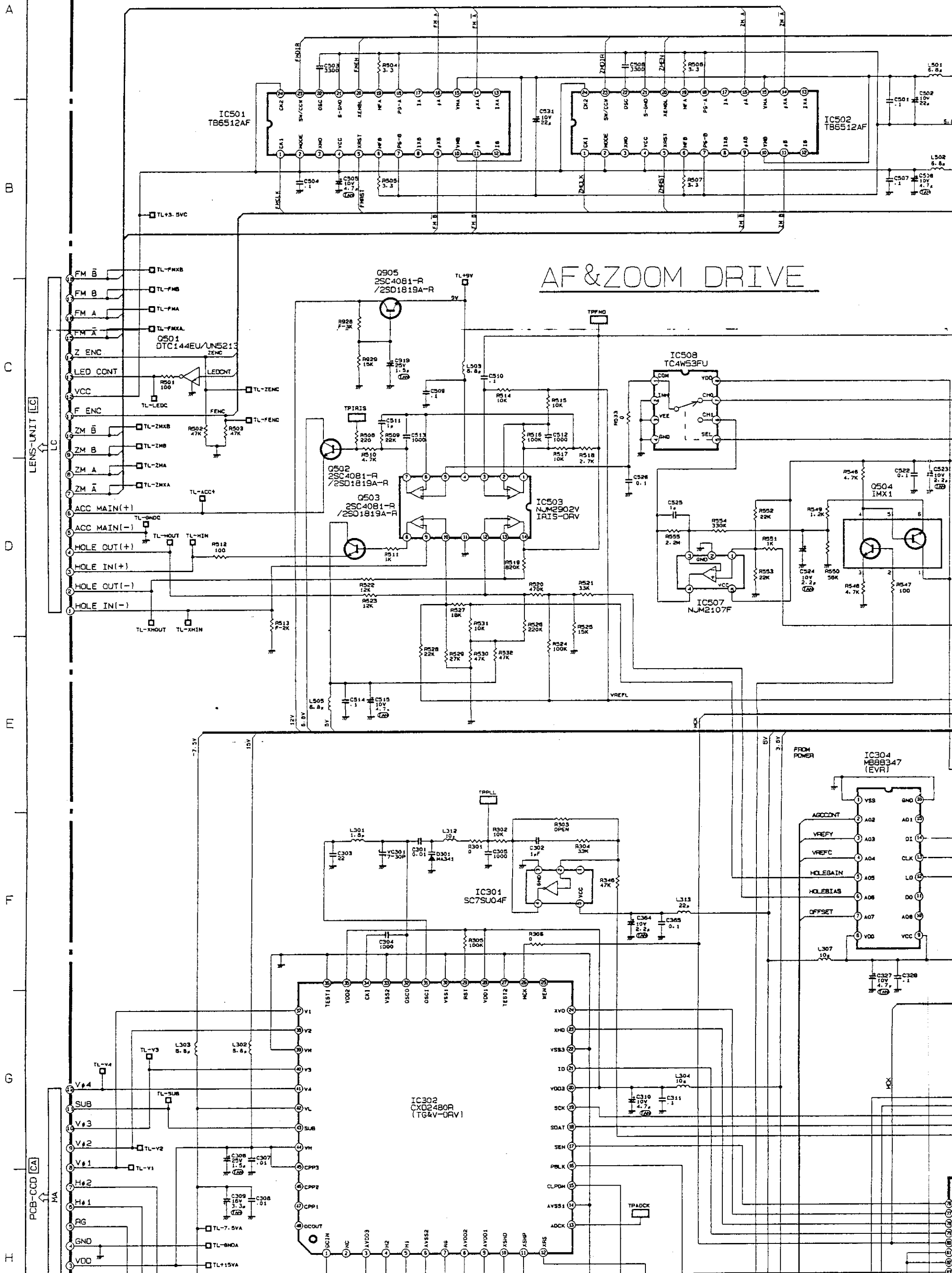
Value	Not indicated = Ω K = kΩ(1000Ω) M = MΩ(1000kΩ)																	
Wattage	Parts except for chips	Not indicated = 1/4W or 1/8W																
	Chips	Not indicated = 1/10W																
Tolerance	<table border="0"> <tr> <td>Not indicated</td> <td>±5%</td> </tr> <tr> <td>D=±0.5%</td> <td>J=±5%</td> </tr> <tr> <td>F=±1%</td> <td>K=±10%</td> </tr> </table>	Not indicated	±5%	D=±0.5%	J=±5%	F=±1%	K=±10%											
Not indicated	±5%																	
D=±0.5%	J=±5%																	
F=±1%	K=±10%																	
Short	I Parts except for chips	<table border="0"> <tr> <td>Not indicated</td> <td>: Carbon resistor</td> </tr> <tr> <td>(S)</td> <td>: Fixed composition resistor</td> </tr> <tr> <td>(MF)</td> <td>: Metal oxide film resistor (type B)</td> </tr> <tr> <td>(CE)</td> <td>: Cemented resistor</td> </tr> <tr> <td>(W)</td> <td>: Wire wound resistor</td> </tr> <tr> <td>(M)</td> <td>: Metal film resistor</td> </tr> <tr> <td>(MPC)</td> <td>: Metal plate cement resistor</td> </tr> <tr> <td>(ML)</td> <td>: Metal liner resistor</td> </tr> </table>	Not indicated	: Carbon resistor	(S)	: Fixed composition resistor	(MF)	: Metal oxide film resistor (type B)	(CE)	: Cemented resistor	(W)	: Wire wound resistor	(M)	: Metal film resistor	(MPC)	: Metal plate cement resistor	(ML)	: Metal liner resistor
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II Chip	Not indicated : Chip resistor																	

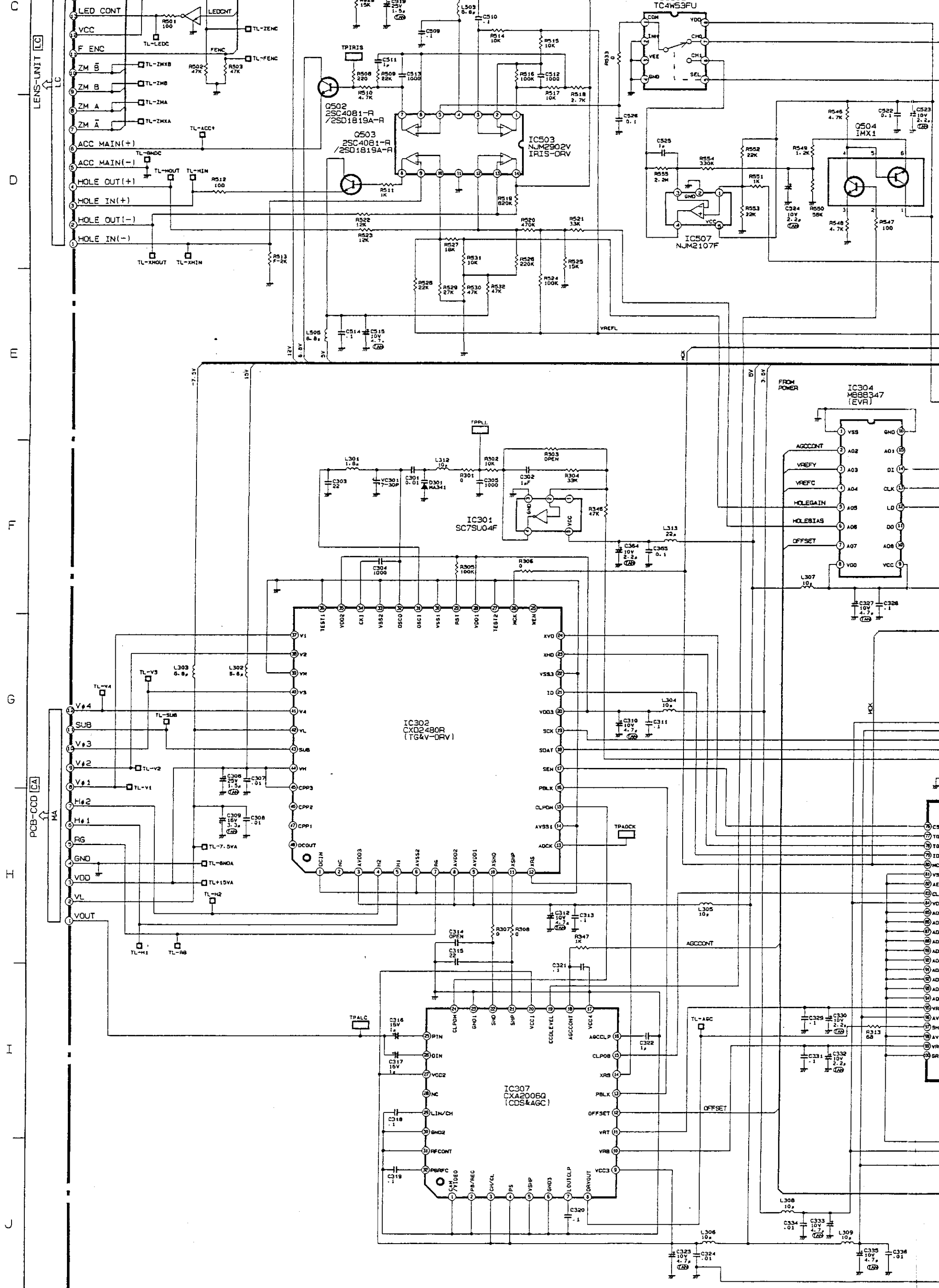
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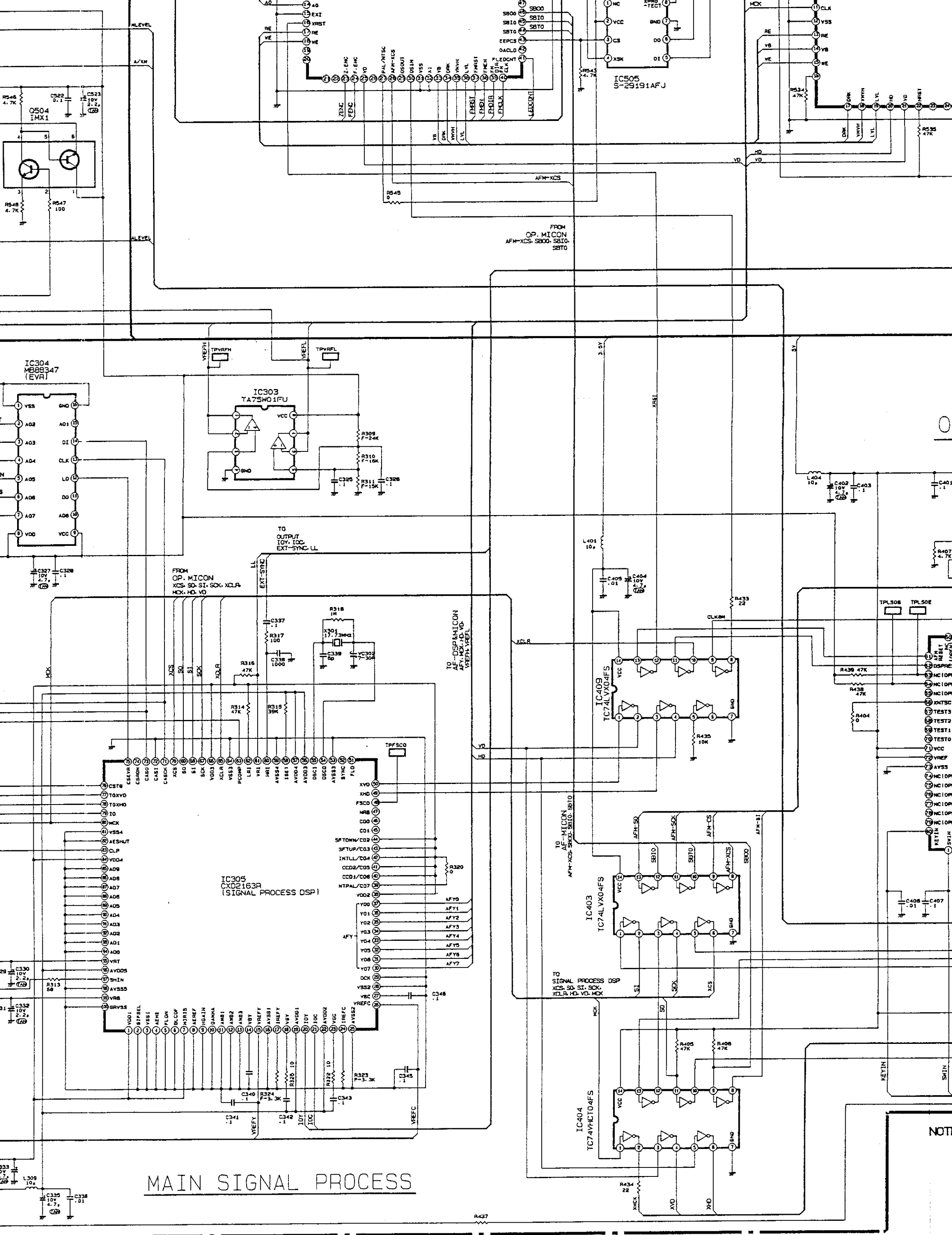
SPECIFIC SYMBOL

	Zener Diode		Crystal unit
	Varicap		Air Gap
	Posistor		Part(resistor) attached on the copper-foil side of PCB
	Thermistor		Ceramic filter
	Fusible Resistor		

PCB-MAIN



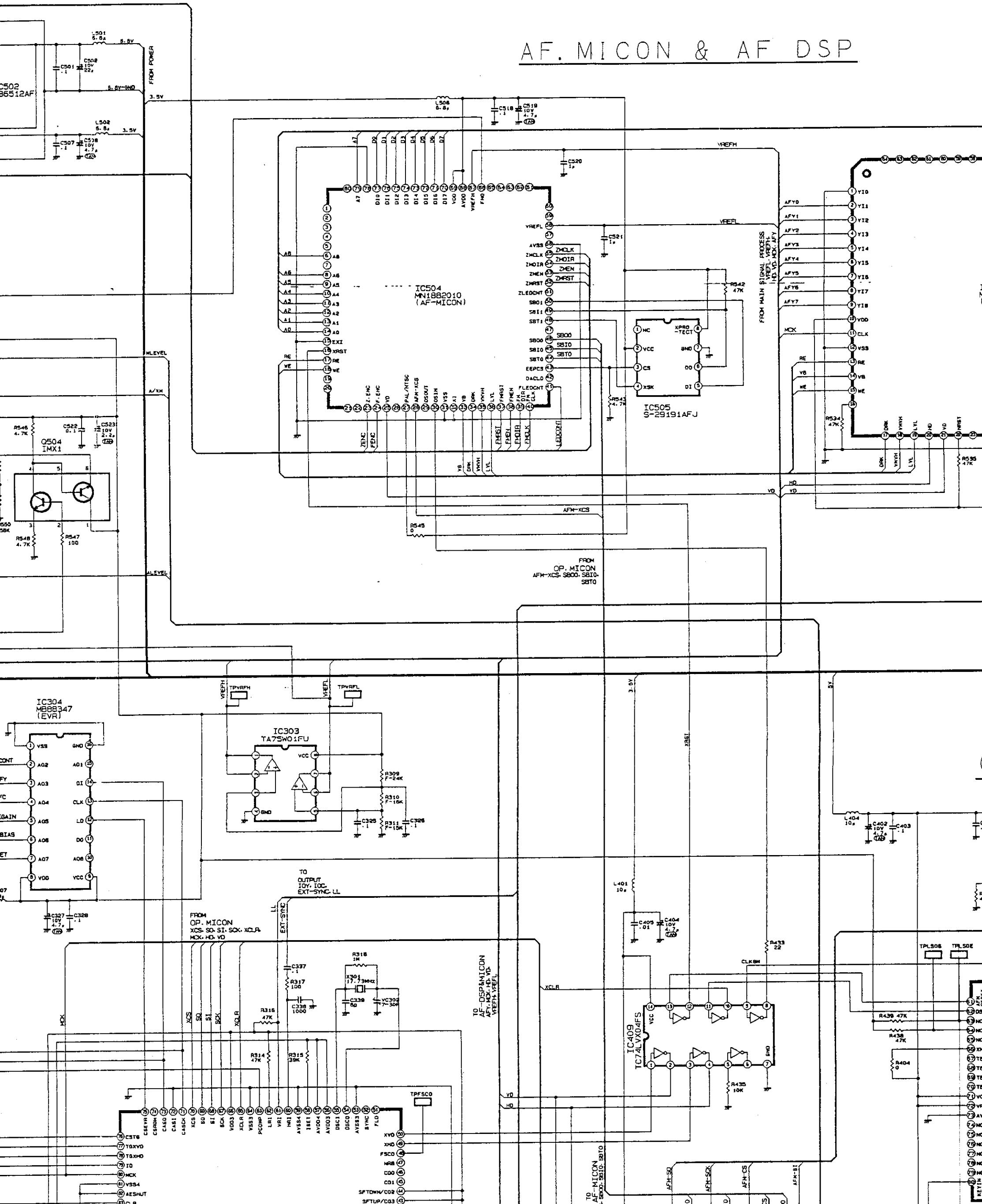


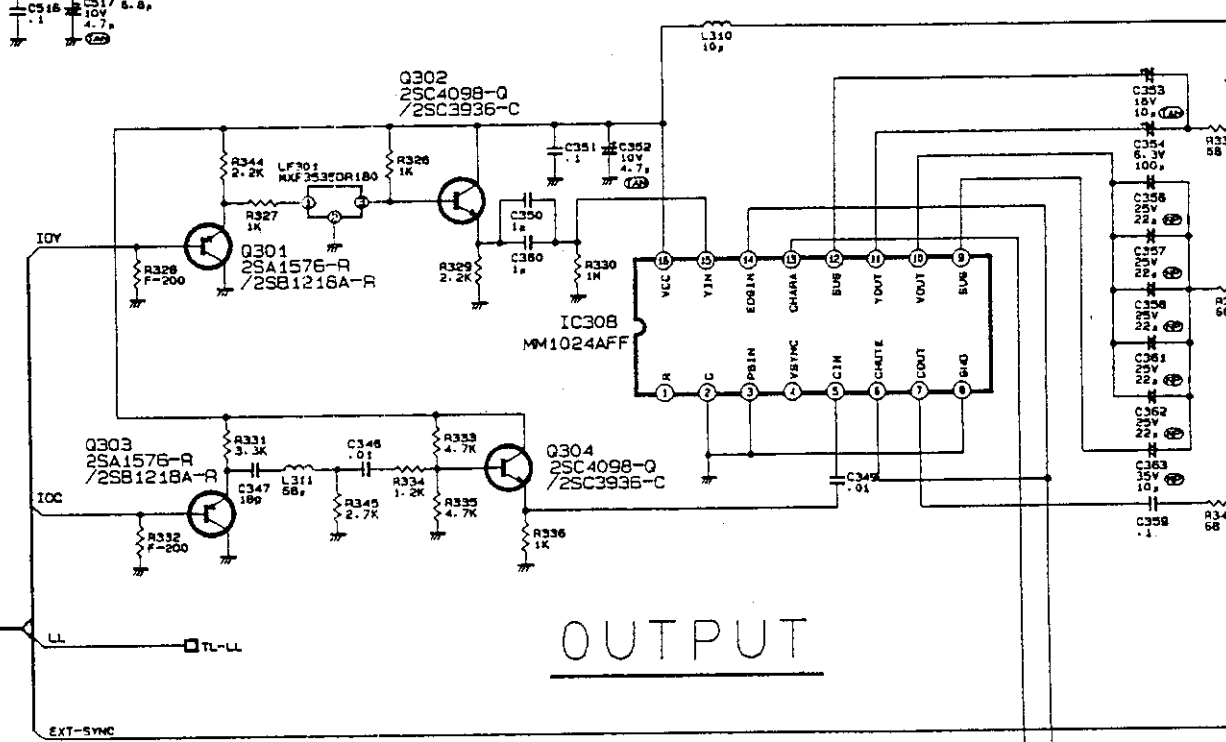
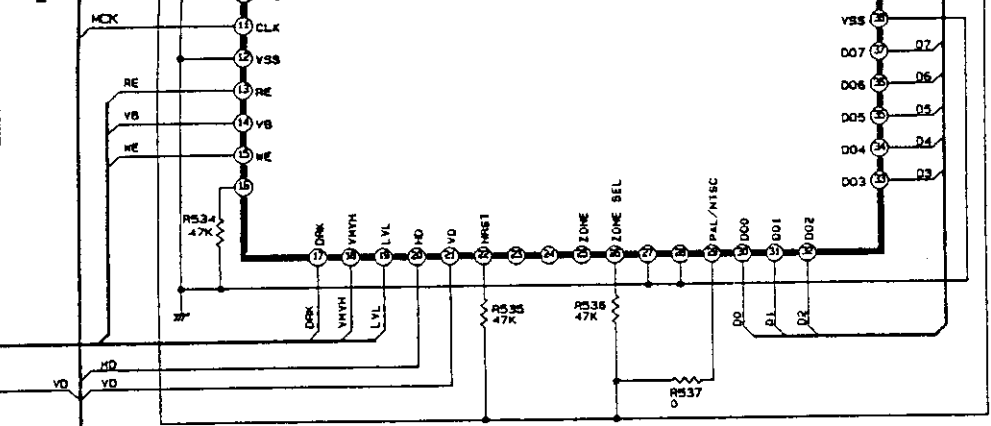


MAIN SIGNAL PROCESS

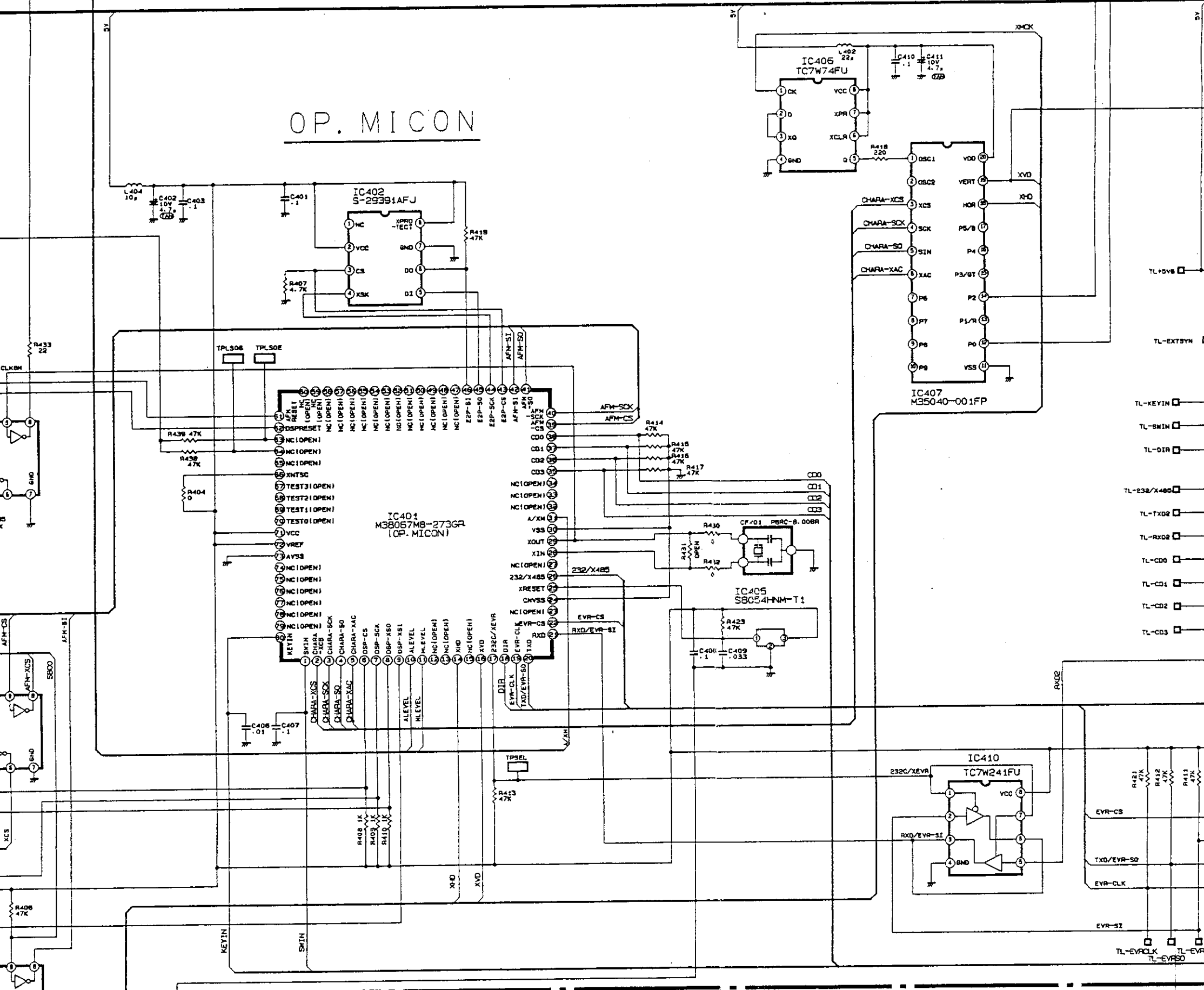
NOT

AF. MICON & AF DSP

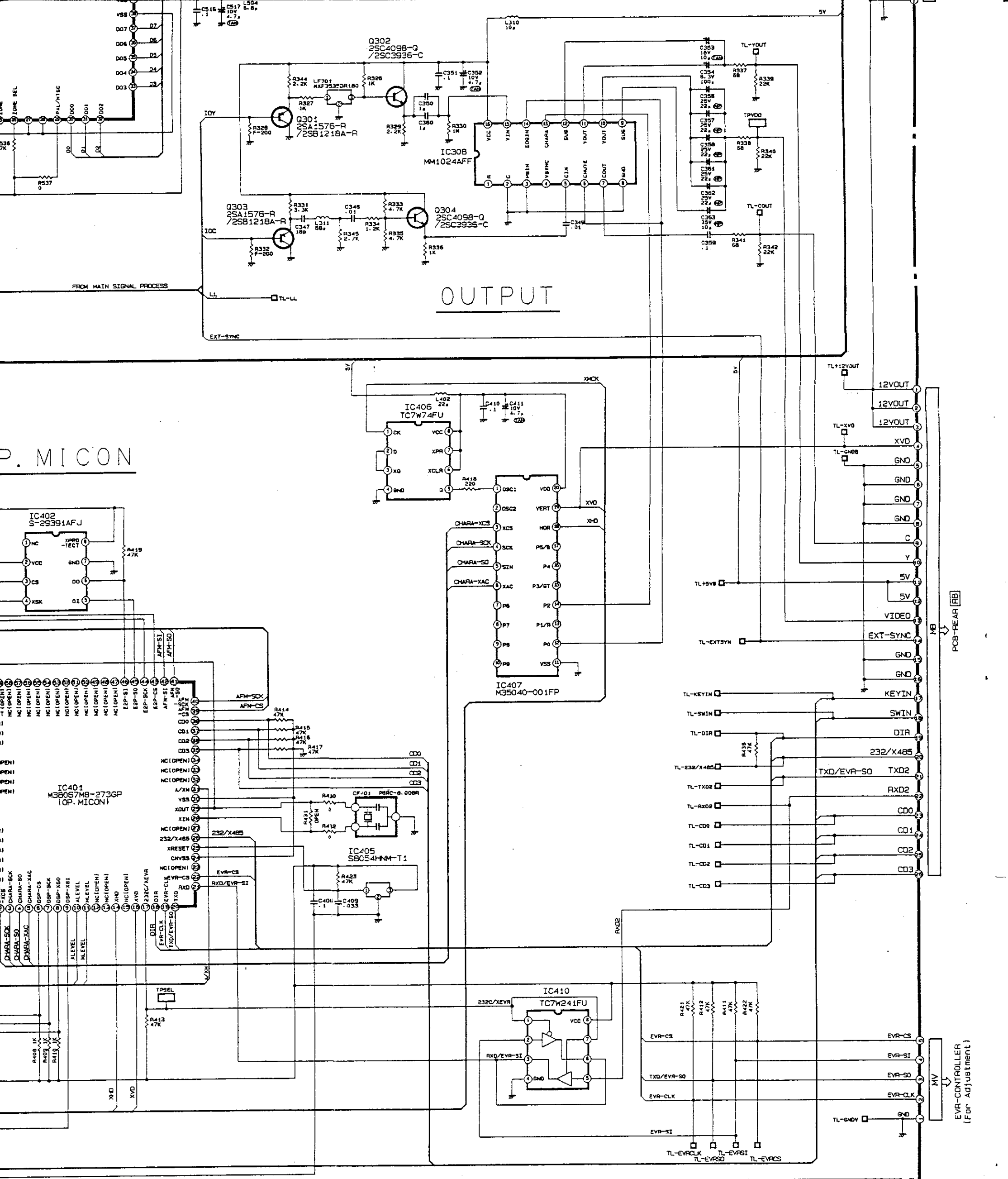




OP. MICON



NOTE TL-XXX MEANS TEST LAND
TP-XXX MEANS CHECKER CHIP



P. MICON

OUTPUT

PCB-PEAR [RE]

MV
EVR-CONTROLLER
(For Adjustment)

TL-XXX MEANS TEST LAND
TP-XXX MEANS CHECKER CHIP

