

作成承認印

配布許可印



COOLPIX800

VAA11001(JP)

VAA11002(U.EN)

VAA11011(PAL)

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

Copyright © 1999 by Nikon Corporation.
All Rights Reserved.
無断転載を禁ず!!

Contents

1. OUTLINE OF CIRCUIT DESCRIPTION	
1-1. CA1 CIRCUIT DESCRIPTION	P2
1-2. CA2 CIRCUIT DESCRIPTION	P4
1-3. PW1 POWER CIRCUIT DESCRIPTION	P5
1-4. PW1 STROBE CIRCUIT DESCRIPTION	P6
1-5. SY1 CIRCUIT DESCRIPTION	P7
2. DISASSEMBLY / RE-ASSEMBLY	
DISASSEMBLY	
2-1. BATTERY COVER	P10
2-2. FRONT COVER	P11
2-3. DISCHARGING THE MAIN CAPACITOR ...	P11
2-4. BACK COVER	P12
2-5. BATTERY HOLDER B / SY-1 BOARD	P12
2-6. BATTERY HOLDER A / CF HOLDER	P13
2-7. SHOOTING LENS UNIT / PW1 BOARD ..	P13
2-8. MONITOR HOLDER / LCD / CA-2 BOARD .	P14
RE-ASSEMBLY	
2-9. MONITOR HOLDER / LCD / CA-2 BOARD .	P15
2-10. SHOOTING LENS UNIT / PW1 BOARD	P15
2-11. BATTERY HOLDER A / CF HOLDER	P16
2-12. BATTERY HOLDER B / SY-1 BOARD ...	P17
2-13. BACK COVER	P17
2-14. FRONT COVER / BATTERY COVER	P18
2-15. BOARD LOCATION	P19
3. ELECTRICAL ADJUSTMENT	
3-1. EQUIPMENT	P20
3-2. SERVICING TOOLS	P20
3-3. SETUP	P20
3-4. CALIBRATION SOFTWARE	P21
3-5. ADJUSTMENT ITEMS AND ORDER	P22
3-6. CONNECTING THE CAMERA TO THE COMPUTER	P23
3-7. COMMUNICATIONS BETWEEN PC AND THE CAMERA	P23
3-8. FLANGE-BACK(Lens) ADJUSTMENT	P24
3-9. AWB ADJUSTMENT	P25
3-10. COLOR MATRIX ADJUSTMENT	P26
3-11. CCD DEFECT DETECT ADJUSTMENT ...	P26
3-12. LCD PANEL ADJUSTMENT	P27-P31
4. TROUBLESHOOTING GUIDE	P32
5. ELECTRIC PLAN	
OVERALL WIRING	E1
OVERALL	E2
CIRCUIT DIAGRAM CA-1	E3
BLOCK DIAGRAM CA-1 1/2	E4
BLOCK DIAGRAM CA-1 2/2	E5
CIRCUIT DIAGRAM (NTSC) CA-2	E6
CIRCUIT DIAGRAM (PAL) CA-2	E7
BROCK DIAGRAM CA-2	E8
CIRCUIT DIAGRAM SY-1	E9
BROCK DIAGRAM SY-1	E10
CIRCUIT DIAGRAM PW-1	E11
BROCK DIAGRAM PW-1	E12
6. TOOL LIST	T1
SIEMENS CHART	

1. OUTLINE OF CIRCUIT DESCRIPTION

1-1. CA1 CIRCUIT DESCRIPTION

1. IC Configuration

IC903 (ICX224AK) CCD imager
 IC902 (74ACT04MTC) H driver
 IC904 (CXD3400N) V driver

2. IC903 (CCD)

[Structure]

Interline type CCD image sensor

Optical size 1/2 inch format
 Effective pixels 1636 (H) x 1236 (V)
 Pixels in total 1688 (H) x 1248 (V)
 Optical black
 Horizontal (H) direction: Front 4 pixels, Rear 48 pixels
 Vertical (V) direction: Front 10 pixels, Rear 2 pixels
 Dummy bit number Horizontal : 28 Vertical : 1

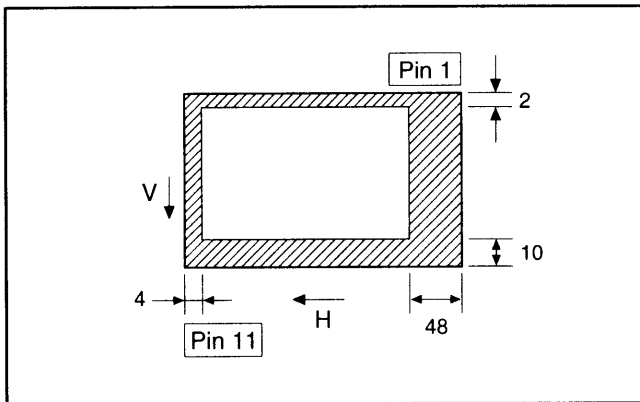


Fig. 1-1. Optical Black Location (Top View)

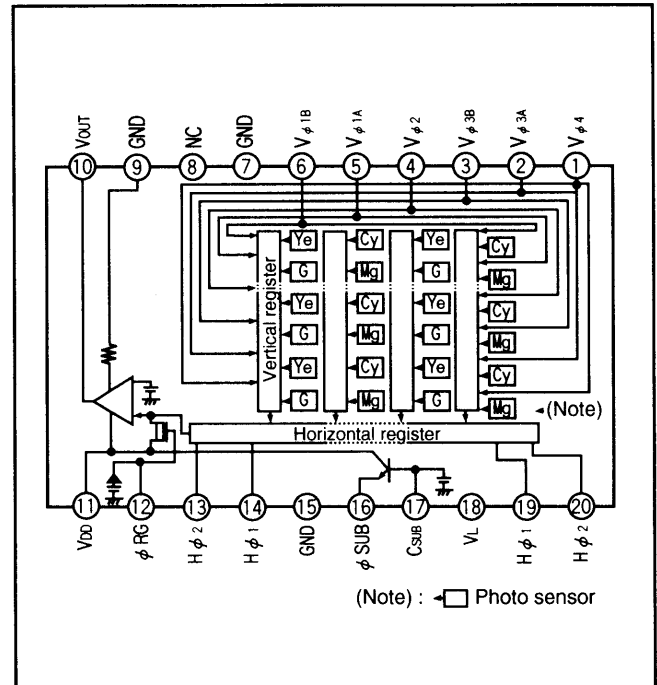


Fig. 1-2. CCD Block Diagram

Pin No.	Symbol	Pin Description	Waveform	Voltage
1	$V\phi_4$	Vertical register transfer clock		-7.5 V, 0 V
2, 3	$V\phi_{3A}, V\phi_{3B}$	Vertical register transfer clock		-7.5 V, 0 V, 15 V
4	$V\phi_2$	Vertical register transfer clock		-7.5 V, 0 V
5, 6	$V\phi_{1A}, V\phi_{1B}$	Vertical register transfer clock		-7.5 V, 0 V, 15 V
7, 9, 15	GND	GND	GND	0 V
10	V_{OUT}	Signal output		Aprox. 10 V
11	V_{DD}	Circuit power	DC	15 V
12	ϕ_{RG}	Reset gate clock		12.5 V, 17.5 V
13, 20	$H\phi_2$	Horizontal register transfer clock		0 V, 5 V
14, 19	$H\phi_1$	Horizontal register transfer clock		0 V, 5 V
16	ϕ_{SUB}	Substrate clock	DC	Aprox. 8 V
17	C_{SUB}	Substrate bias	DC	Aprox. 8V (Different from every CCD)
18	V_L	Protection transistor bias	DC	

Table 1-1. CCD Pin Description

---- When sensor read-out

3. IC902 (H Driver) and IC904 (V Driver)

An H driver (IC902) and V driver (IC904) are necessary in order to generate the clocks (vertical transfer clock, horizontal transfer clock and electronic shutter clock) which driver the CCD.

IC902 is an inverter IC which drives the horizontal CCDs (H1 and H2). In addition the XV1-XV4 signals which are output from IC102 are the vertical transfer clocks, and the XSG1 and XSG signal which is output from IC102 is superimposed onto XV1 and XV3 at IC904 in order to generate a ternary pulse. In addition, the XSUB signal which is output from IC102 is used as the sweep pulse for the electronic shutter, and the RG signal which is output from IC102 is the reset gate clock.

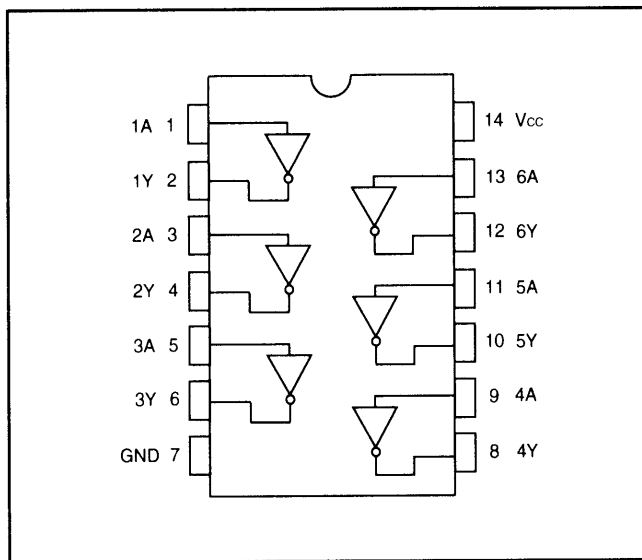


Fig. 1-3. IC902 Block Diagram

4. Lens drive block

4-1. Focus drive

The four control signals (FIN1, FIN2, FIN3 and FIN4) with different phases which are output from the ASIC are converted into drive pulses (FOUT1, FOUT2, FOUT3 and FOUT4) by the motor driver (IC951), and are then used to drive the stepping motor for focusing operation. Detection of the standard focusing positions is carried out by means of the photo-interrupter (FOCUS PI) inside the lens block.

4-2. Shutter and iris drive

The two control signals (IIN1 and IIN2) which are output from the ASIC expansion port (IC106) are converted into drive pulses (IOUT1 and IOUT2) by the motor driver (IC952), and are then iris opened/middle/little and moved.

The two control signals (SIN1 and SIN2) which is output from the ASIC expansion port (IC106) is converted into a drive pulse (SOUT1 and SOUT2) by the motor driver (IC952), and are then shutter opened and closed.

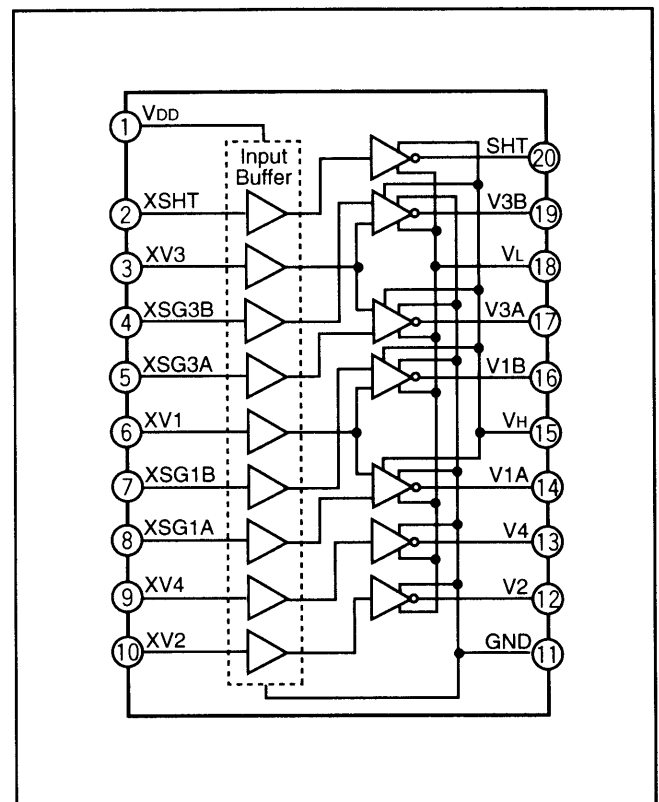


Fig. 1-4. IC904 Block Diagram

4-3. Zoom drive

The four control signals (ZIN1, ZIN2, ZIN3 and ZIN4) with different phases which are output from the ASIC are converted into drive pulses (ZOUT1, ZOUT2, ZOUT3 and ZOUT4) by the motor drive (IC953), and are then used to drive the stepping motor for zoom operation. Detection of the standard zoom positions is carried out by means of the photo-interrupter (ZOOM PI) inside the lens block.

4-4. Temperature sensor

When it is low temperature, the zoom motor drive is getting low speed, and it works torque. The sensor output is read by 8-bit micro-processor.

1-2. CA2 CIRCUIT DESCRIPTION

1. Circuit Description

1-1. Digital clamp

The optical black section of the CCD extracts averaged values from the subsequent data to make the black level of the CCD output data uniform for each line. The optical black section of the CCD averaged value for each line is taken as the sum of the value for the previous line multiplied by the coefficient k and the value for the current line multiplied by the coefficient $1-k$.

1-2. Signal processor

1. γ correction circuit

This circuit performs (gamma) correction in order to maintain a linear relationship between the light input to the camera and the light output from the picture screen.

2. Color generation circuit

This circuit converts the CCD data into RGB signals.

3. Matrix circuit

This circuit generates the Y signals, R-Y signals and B-Y signals from the RGB signals.

4. Horizontal and vertical aperture circuit

This circuit is used generate the aperture signal.

1-3. AE/AWB and AF computing circuit

The AE/AWB carries out computation based on a 64-segment screen, and the AF carries out computations based on a 6-segment screen.

1-4. SDRAM controller

This circuit outputs address, RAS, CAS and AS data for controlling the SDRAM. It also refreshes the SDRAM.

1-5. Communication control

1. UART

The RS-232C can be used for both synchronous and asynchronous transmission.

2. SIO

This is the interface for the 8-bit microprocessor.

3. PIO/PWM/SIO for LCD

8-bit parallel input and output makes it possible to switch between individual input/output and PWM input/output.

1-6. TG/SG

Timing generated for 2 million pixel CCD control.

1-7. Digital encoder

It generates chroma signal from color difference signal.

1-8. JPEG control

Controls the interface for the externally-connected JPEG IC.

2. Outline of Operation

When the shutter opens, the reset signals (ASIC (IC102) and CPU (IC101)) and the serial signals ("take a picture" commands) from the 8-bit microprocessor are input and operation starts. When the TG/SG drives the CCD, picture data passes through the A/D and CDS, and is then input to the ASIC as 10-bit data. The AF, AE, AWB, shutter, and AGC value are computed from this data, and three exposures are made to obtain the optimum picture. The data which has already been stored in the SDRAM is read by the CPU and color generation is carried out. Each pixel is interpolated from the surrounding data as being either Ye, Cy, Mg and Gr primary color data to produce R, G and B data. At this time, correction of the lens distortion which is a characteristic of wide-angle lenses is carried out. After AWB and γ processing are carried out, a matrix is generated and aperture correction is carried out for the Y signal, and the data is then compressed by the JPEG method by (JPEG) and is then written to card memory (compact flash).

When the data is to be output to an external device, it is taken data from the memory and output via the UART. When played back on the LCD and monitor, data is transferred from memory to the SDRAM, and is displayed over the SDRAM display area.

3. LCD Block

During monitoring, YUV conversion is carried out for the 10-bit CCD data which is input from the A/D conversion block to the ASIC and is then transferred to the DRAM so that the CCD data can be displayed on the LCD.

The data which has accumulated in the DRAM is passed through the NTSC encoder, and after D/A conversion is carried out to change the data into a Y/C signal, the data is sent to the LCD panel and displayed.

If the shutter button is pressed in this condition, the 10-bit data which is output from the A/D conversion block of the CCD is sent to the DRAM (DMA transfer), and after processor, it is displayed on the LCD as a freeze-frame image.

During playback, the JPEG image data which has accumulated in the flash memory is converted to YUV signals, and then in the same way as during monitoring, it is passed through the NTSC encoder, and after D/A conversion is carried out to change the data into a Y/C signal, the data is sent to the LCD panel and displayed.

The two analog signal (Y/C signals) from the ASIC are converted into RGB signals by the LCD driver, and these RGB signals and built-in panel by the LCD driver are used to drive the LCD panel. The RGB signals are 1H transposed so that no DC component is present in the LCD element, and the two horizontal shift register clocks drive the horizontal shift registers inside the LCD panel so that the 1H transposed RGB signals are applied to the LCD panel. Because the LCD closes more as the difference in potential between the COM (common polar voltage: fixed at DC) and the R, G and B signals becomes greater, the display becomes darker; if the difference in potential is smaller, the element opens and the LCD become brighter.

1-3. PW1 POWER CIRCUIT DESCRIPTION

1. Outline

This is the main power circuit, and is comprised of the following blocks.

Switching controller (IC501, IC503)

Digital 5 V and analog system power output (T5001, Q5001)

Digital 2.5 V system power supply (Q5023)

Digital 3.4 V system power supply (Q5007)

LCD system power supply (Q5008, T5002)

Backlight power supply output (IC503, Q5011)

2. Switching Controller (IC501)

This is the basic circuit which is necessary for controlling the power supply for a PWM-type switching regulator, and is provided with four built-in channels, only CH1 (digital 5 V, analog system), CH3 (digital 2.5 V), CH2 (digital 3.4 V) and CH4 (LCD system) are used. Feedback from 5.1 V (D) (CH1), 3.4 V (D) (CH2), 2.5 V (D) (CH3) and 5.3 V (L) (CH4) power supply outputs are received, and the PWM duty is varied so that each one is maintained at the correct voltage setting level.

2-1. Short-circuit protection circuit

If output is short-circuited for the length of time (approx. 260 ms) determined by the condenser which is connected to Pin (17) of IC501, all output is turned off. The control signal (P ON, P(A) ON and LCD ON) are recontrolled to restore output.

3. Switching Controller (IC503)

It is controlled backlight 7 V (L) by IC for switching regulator 1ch PWM. The control signal uses 5.3 V (L).

4. Digital 5 V and Analog System Power Output

5.1 V (D), 15.2 V (A), -7.7 V (A) and 5.1 V (A) are output. Feedback for the 5.1 V (D) is provided to the switching controller (Pins (29) of IC501) so that PWM control can be carried out.

5. Digital 3.4 V System Power Output

3.4 V (D) is output. Feedback is provided to the switching controller (Pin (26) of IC501) so that PWM control can be carried out.

6. LCD System Power Output

15 V (L), 12.4 V (L) and 5.3 V (L) are output. Feedback for the 5.3 V (L) is provided to the switching controller (Pin (7) of IC501) so that PWM control can be carried out.

7. Backlight Power Supply output

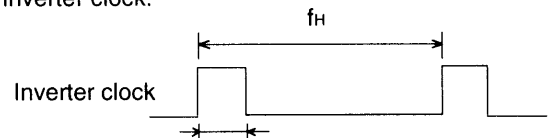
The power which is input to the inverter transformer (T5003) is controlled by means of Q5011, and 7 V is output.

8. Digital 2.5 V Power Output

2.5 V (D) is output. Feedback is sent to pin (11) of the switching controller (IC501) for PWM control to be carried out.

9. Inverter Control

The backlight uses a 1.8-inch flat picture tube, and is illuminated by controlling T5003 with pulses which are driven by the inverter clock.



3 seconds for illumination 5.6 μ s

3 seconds after illumination 4.7 μ s

1-4. PW1 STROBE CIRCUIT DESCRIPTION

1. Charging Circuit

When UNREG power is supplied to the charge circuit and the CHG signal becomes High (3.3 V), the charging circuit starts operating and the main electrolytic capacitor is charged with high-voltage direct current.

However, when the CHG signal is Low (0 V), the charging circuit does not operate.

1-1. Power switch

When the CHG signal switches to Hi, Q5406 turns ON and the charging circuit starts operating.

1-2. Power supply filter

L5401 and C5401 constitute the power supply filter. They smooth out ripples in the current which accompany the switching of the oscillation transformer.

1-3. Oscillation circuit

This circuit generates an AC voltage (pulse) in order to increase the UNREG power supply voltage when drops in current occur. This circuit generates a drive pulse with a frequency of approximately 50-100 kHz. Because self-excited light emission is used, the oscillation frequency changes according to the drive conditions.

1-4. Oscillation transformer

The low-voltage alternating current which is generated by the oscillation control circuit is converted to a high-voltage alternating current by the oscillation transformer.

1-5. Rectifier circuit

The high-voltage alternating current which is generated at the secondary side of T5401 is rectified to produce a high-voltage direct current and is accumulated at electrolytic capacitor C5412 on the main circuit board.

1-6. Voltage monitoring circuit

This circuit is used to maintain the voltage accumulated at C5412 at a constant level.

After the charging voltage is divided and converted to a lower voltage by R5417 and R5419, it is output to the SY1 circuit board as the monitoring voltage VMONIT. When this VMONIT voltage reaches a specified level at the SY1 circuit board, the CHG signal is switched to Low and charging is interrupted.

2. Light Emission Circuit

When RDY and TRIG signals are input from the ASIC expansion port, the stroboscope emits light.

2-1. Emission control circuit

When the RDY signal is input to the emission control circuit, Q5409 switches on and preparation is made to let current flow to the light emitting element. Moreover, when a STOP signal is input, the stroboscope stops emitting light.

2-2. Trigger circuit

When a TRIG signal is input to the trigger circuit, D5405 switches on, a high-voltage pulse of several kilovolts is generated inside the trigger circuit, and this pulse is then applied to the light emitting part.

2-3. Light emitting element

When the high-voltage pulse from the trigger circuit is applied to the light emitting part, current flows to the light emitting element and light is emitted.

Beware of electric shocks.

1-5. SY1 CIRCUIT DESCRIPTION

1. Configuration and Functions

For the overall configuration of the SY1 circuit board, refer to the block diagram. The configuration of the SY1 circuit board centers around a 8-bit microprocessor (IC301).

The 8-bit microprocessor handles the following functions.

1. Operation key input, 2. Mode LCD display, 3. Clock control and back-up 4. Power ON/OFF, 5. Strobe charge control and so on.

Pin	Signal	I/O	Outline
1	ZOOM PI	I	Zoom position detection signal
2	TEMP	I	Temperature sensor signal (analog input)
3	CHG VOL	I	Strobe charge voltage input (analog input)
4	NOT USED	-	Connect to GND
5~7	SCAN IN 1~3	I	Key matrix input
8	AVDD	-	Analog power input terminal
9	AVREF	I	Analog standard voltage input terminal
10	FINDER LED1	O	Finder LED 1 (red) drive L : LED light
11	FINDER LED2	O	Finder LED 2 (green) drive L : LED light
12	VSS	-	GND
13~19	NOT USED	-	Connect to GND
20	SELF	O	Red-eye reduction, self-timer lump light emission drive H : Lump light
21	NOT USED	-	Connect to GND
22	CHG ON	O	Strobe charge ON/OFF signal H : ON
23~25	COM 0~2	O	Mode LCD common output
26	NOT USED	-	-
27	BIAS	-	Mode LCD drive power supply (connect to VLCO terminal)
28~30	VLC 0~2	-	Mode LCD power input terminal (outside resister connection)
31	VSS	-	GND
32~50	S1~S21	O	LCD segment output 1~19
51~55	NOT USED	-	-
56	DCINCHK	I	Outside DC power detection L : AC adaptor
57	SELF BPS	O	Red-eye lamp electric current limit signal
58~63	NOT USED	-	Connect to GND
64	WAKE UP	O	SPARC wake up terminal
65	ADVREF ON	O	AD VREF ON/OFF signal L : ON
66~68	NOT USED	-	Connect to GND
69	SCAN IN0	I	Key matrix input 0
70	PA ON	O	DC/DC converter (analog) ON/OFF signal H : ON
71	P ON	O	DC/DC converter (digital) ON/OFF signal H : ON
72	DIN CONNECT	I	PC cable connection detection L : Connection
73	CARD	I	Memory card detection L : Attachment
74	V JACK	I	Video cable connection detection L : Connection
75	SI	I	Serial data input (←ASIC)
76	SO	O	Serial data output (→ASIC)
77	SCK	O	Serial clock output (→ASIC)
78	IC	-	Internal connection (connect to VSS terminal directly)
79	XOUT	O	Main clock oscillation terminal
80	XIN	I	Main clock oscillation terminal (4 MHz)
81	VDD	-	VDD
82	XCIN	I	Clock oscillation terminal (32.768 kHz)
83	XCOUT	O	Clock oscillation terminal
84	RESET	I	Reset input

See next page →

Pin	Signal	I/O	Outline
85	BAT OFF	I	Battery OFF detection signal
86	RXD	I	Host wake-up input terminal L : OFF
87	SREQ	I	Serial communication request signal L : Serial request
88	SCAN IN4	I	Key matrix input (SLD ON detection)
89~90	NOT USED	-	Connect to GND
91~94	SCAN OUT0~3	O	Key matrix output
95	LCD ON	O	D/D converter (LCD system) ON/OFF signal H : ON
96	ASIC TEST	O	ASIC control signal
97	ASIC RESET	O	ASIC reset signal L : Reset output
98	MAIN RESET	O	SPARC reset signal L : Reset output
99	AVSS	-	Analog GND input terminal
100	BATTERY	I	Battery voltage input (analog input)

Table 4-1. 8-bit Microprocessor Port Specification

2. Internal Communication Bus

The SY1 circuit board carries out overall control of camera operation by detecting the input from the keyboard and the condition of the camera circuits. The 8-bit microprocessor reads the signals from each sensor element as input data and outputs this data to the camera circuits (ASIC) or to the LCD display device as operation mode setting data. Fig. 4-1 shows the internal communication between the 8-bit microprocessor, ASIC and SPARC lite circuits.

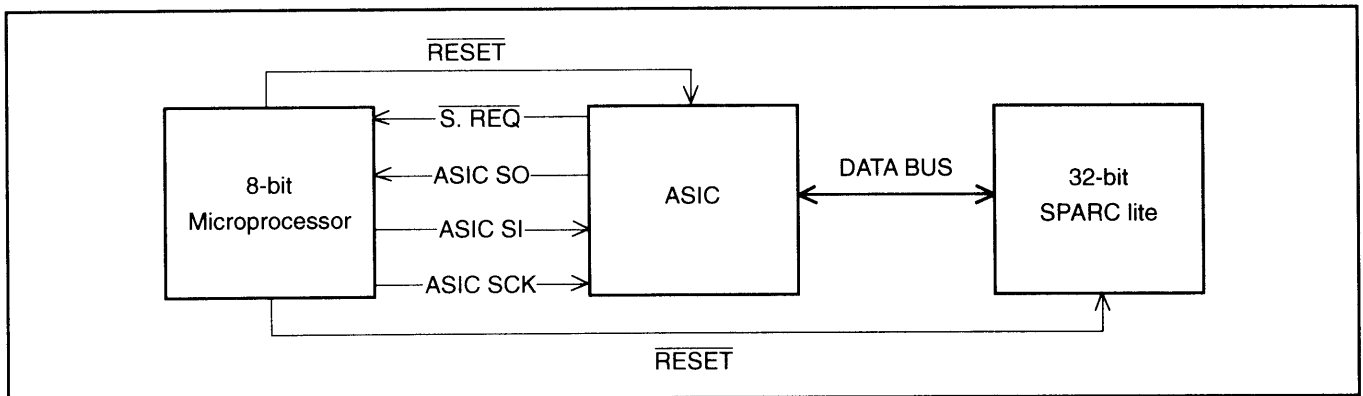


Fig. 4-1 Internal Bus Communication System

3. Key Operaiton

For details of the key operation, refer to the instruction manual.

SCAN IN \ SCAN OUT	0	1	2	3	4
0	AFM		SBS	TEST	SLD 1
1			SHUTTER 2nd	SHUTTER 1st	SLD 2
2	MENU	MTR	UP/TELE	DOWN/WIDE	
3		QSW	+/-		

Table 4-2. Key Operation

4. Power Supply Control

The 8-bit microprocessor controls the power supply for the overall system.

The following is a description of how the power supply is turned on and off. When the battery is attached, a regulated 3.2 V voltage is normally input to the 8-bit microprocessor (IC301) by IC304, so that clock counting and check power switch is carried out even when the power switch is turned off, so that the camera can start up again. When the battery is removed, the 8-bit microprocessor operates in sleep mode using the backup super capacitor. At this time, the 8-bit microprocessor only carries out clock counting, and waits in standby for the battery to be attached again. When a switch is operated, the 8-bit microprocessor supplies power to the system as required.

The 8-bit microprocessor first sets both the $\overline{P(A)ON}$ signal at pin (70) and the \overline{PON} signal at pin (71) to High, and then turns on the DC/DC converter. After this, High signals are output from pins (97) and (98) so that the ASIC and the SPARC lite are set to the active condition. If the LCD monitor is on, the \overline{LCDON} signal at pin (95) and the $\overline{LCDON2}$ signal at pin (68) set to High, and the DC/DC converter for the LCD monitor is turned on. Once SPARC lite processing is completed, the ASIC and the SPARC lite return to the reset condition, all DC/DC converters are turned off and the power supply to the whole system is halted.

		SPARC Lite	ASIC, memory	RS232C driver	CCD	8 bit CPU	MODE LCD	LCD MONITOR	
Power voltage		3.3 V	3.3 V	5 V	5 V (A) +15 V -7.5 V	3.3 V (ALWAYS)	3.3 V (ALWAYS)	5V (L) +12V etc.	
SLD	OFF	OFF	OFF	OFF	OFF	32 KHz	OFF	OFF	
	PLAY	ON	ON	ON	OFF	4 MHz	ON	ON	
	M-REC A-REC	Power switch ON- Auto power OFF	OFF	OFF	OFF	OFF	4 MHz	ON	OFF
		Shutter switch ON	ON	ON	ON	ON → OFF	4 MHz	ON	OFF
		MOS, QSW, SBM etc. ON	OFF	OFF	OFF	OFF	4 MHz	ON	OFF
		LCD finder	ON	ON	ON	ON	4 MHz	ON	ON

Table 4-3. Camera Mode


		SPARC Lite	ASIC, memory	RS232C Driver	CCD	8 bit CPU	MODE LCD	LCD MONITOR	
Power voltage		3.3 V	3.3 V	5 V	5 V (A) +15 V -7.5 V	3.3 V (ALWAYS)	3.3 V (ALWAYS)	5 V (L) +12V etc.	
SLD	OFF	OFF	OFF	OFF	OFF	32 KHz	OFF	OFF	
	M-REC A-REC PLAY	Power switch ON- Auto power OFF	OFF	OFF	OFF	OFF	4 MHz	ON	OFF
		Take a picture	ON	ON	ON	ON → OFF	4 MHz	ON	OFF
		Erase image	ON	ON	ON	OFF	4 MHz	ON	OFF
		Download image	ON	ON	ON	OFF	4 MHz	ON	OFF
		Continuous image	ON	ON	ON	ON	4 MHz	ON	OFF
		Message from host	ON	ON	ON	ON	4 MHz	ON	OFF

Note) 4 MHz = Main clock operation, 32 kHz = Sub clock operation

Table 4-4. Host Mode

2. Disassembly/Reassembly

Disassembly Procedure

⚠ WARNING	
	<ul style="list-style-type: none"> ● There are high voltage parts inside. Be careful of this electric shock, when you remove the cover. ● You must discharge the main condenser according to the instruction of this repair manual after you remove the front cover.

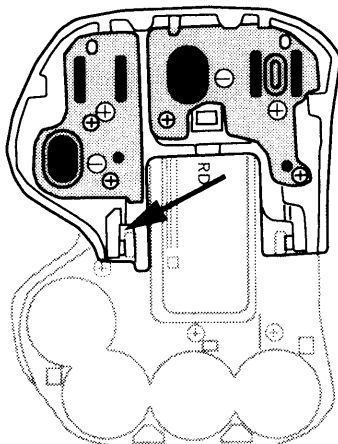
- Notes:
- (1) Remove the battery prior to disassembly.
 - (2) During disassembly, make a note of the routing of the cords, which screws are mounted in which parts, etc.
 - (3) Electrical parts must be grounded since they are easily damaged by static.

Types of screws used

The screws are indicated in the illustrations and text of the disassembly and reassembly sections of the Repair Guidelines by the numbers given in the table below.

Designation	Size (mm)	Type	Head size	Color	Parts number
①	1.7 × 5.0	Tap	Small	Black	411-177-7301
②	1.7 × 4.0	Tap	Small	Black	411-175-6504
③	1.7 × 8.0	Tap	Small	Black	411-177-8209
④	1.7 × 6.0	Tap	Large	White	411-169-9603
⑤	2.0 × 4.0	Fine thread	Large	White	411-002-4901

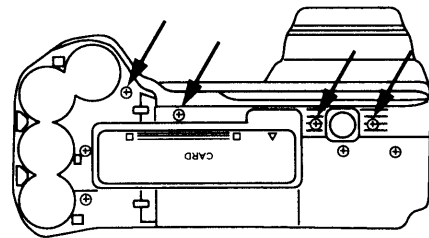
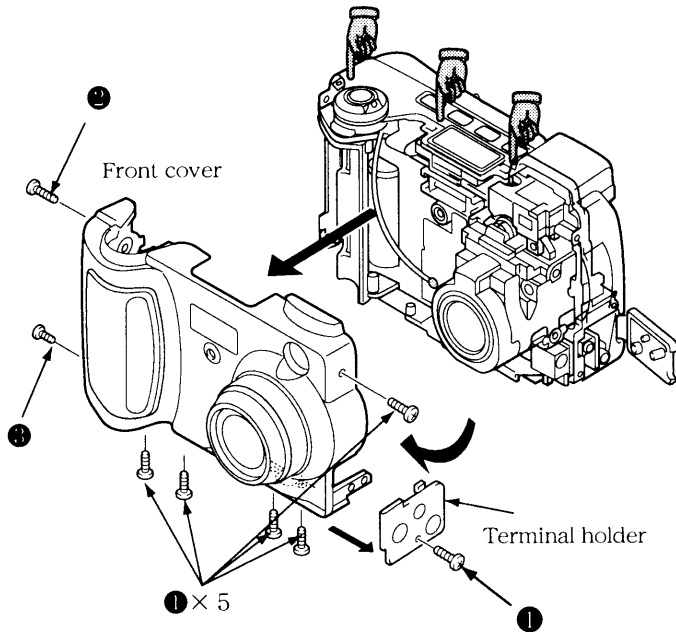
1. Battery Cover



Battery Cover

- Open the battery cover.
- Insert a flat-head screwdriver into the arrow mark section in the diagram and remove the hinge by opening.
- The battery cover can now be removed.

2. Front Cover

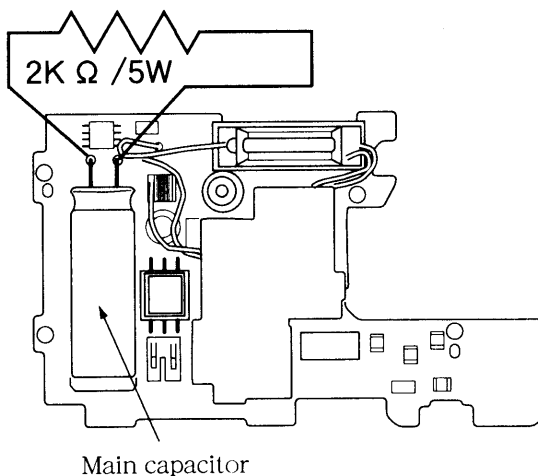


Screw position at the bottom

- Remove screw ① × 5.
- Remove screw ② × 1.
- Remove screw ③ × 1.
- Remove screw ④ × 1.
- Lift up the front cover by setting up from the bottom side.
- Remove the hook as pushing the section shown in the diagram with your finger, and then remove the front cover.
- Remove the terminal holder.

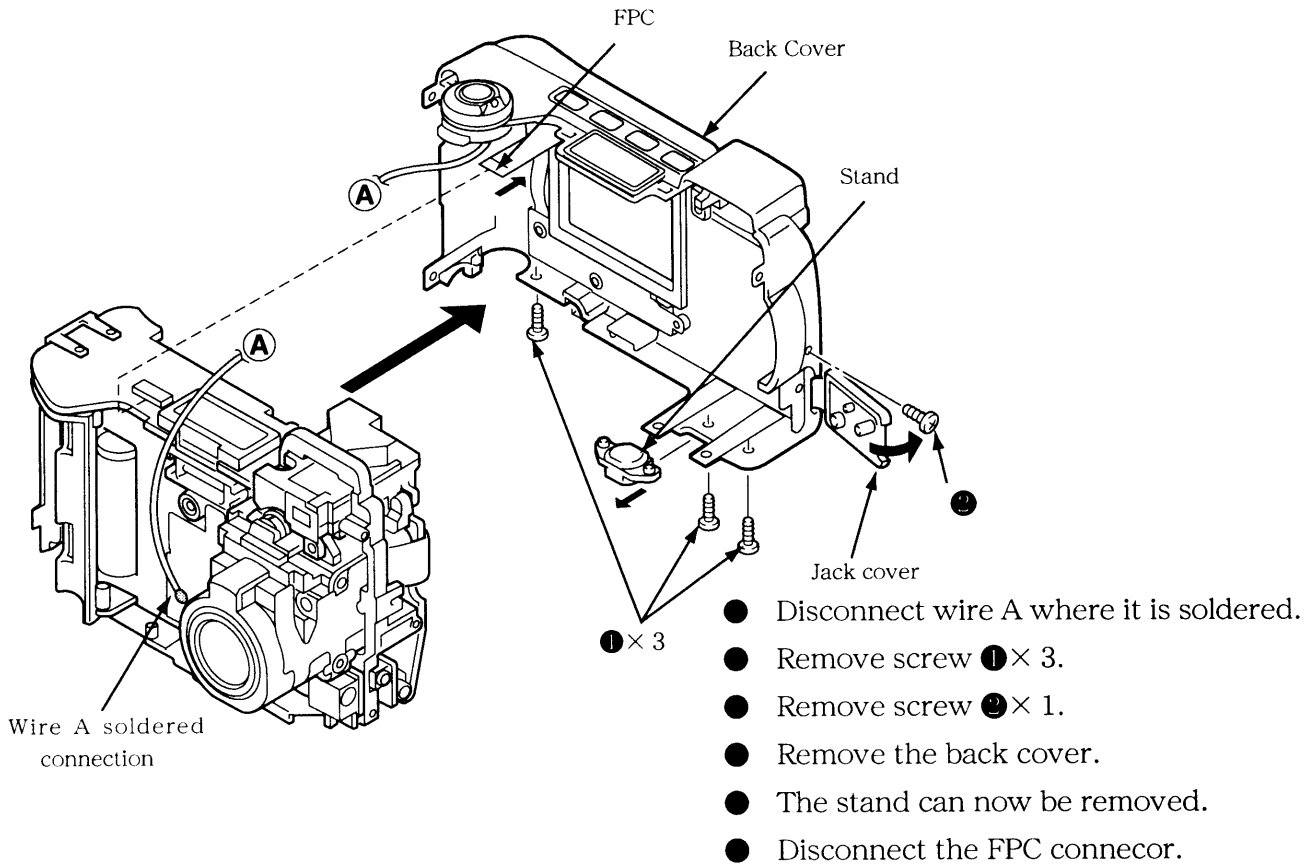
3. Discharging the Main Capacitor

⚠ WARNING	
	<ul style="list-style-type: none"> ● There are high voltage parts inside. Be careful of this electric shock, when you remove the cover. ● You must discharge the main condenser according to the instruction of this repair manual after you remove the front cover.

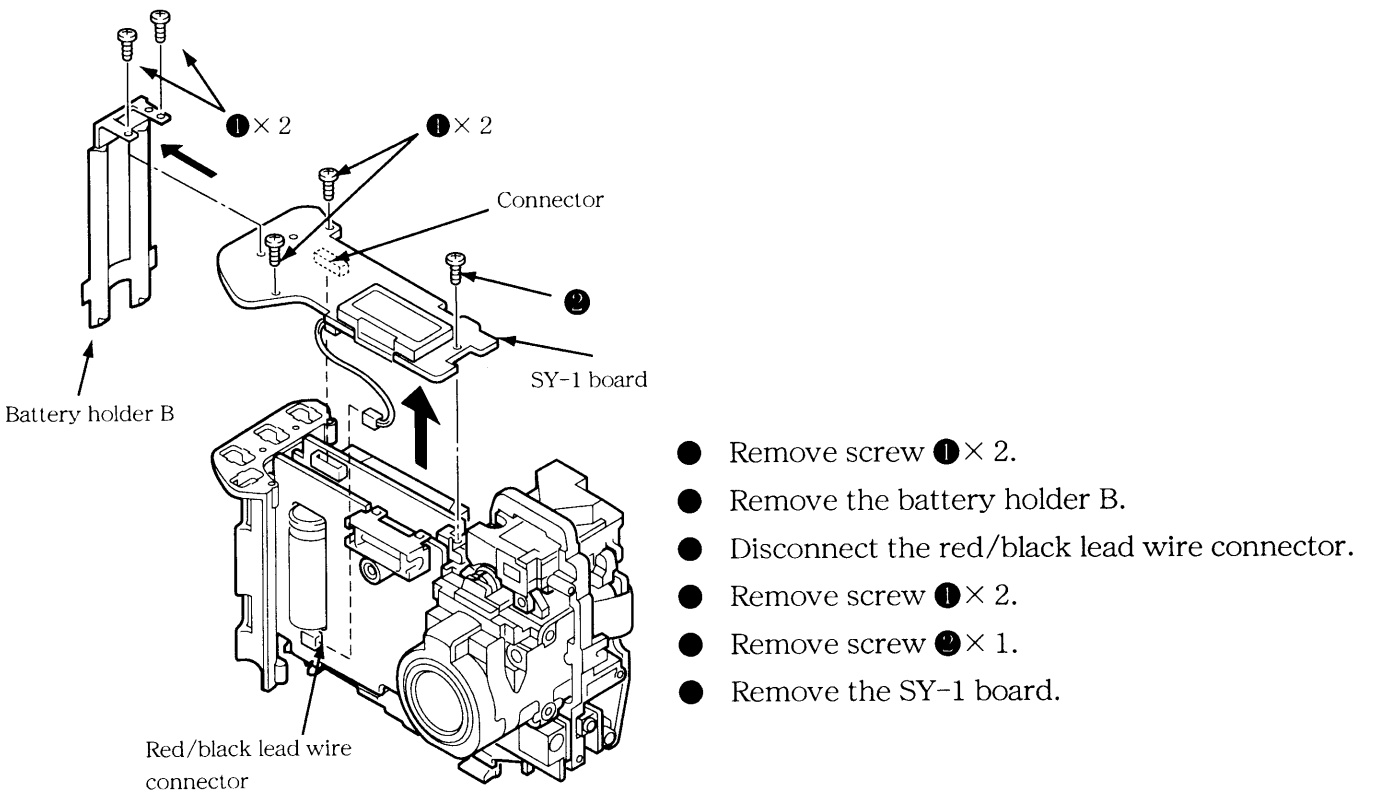


- Be certain to discharge the main capacitor located as shown in the diagram.

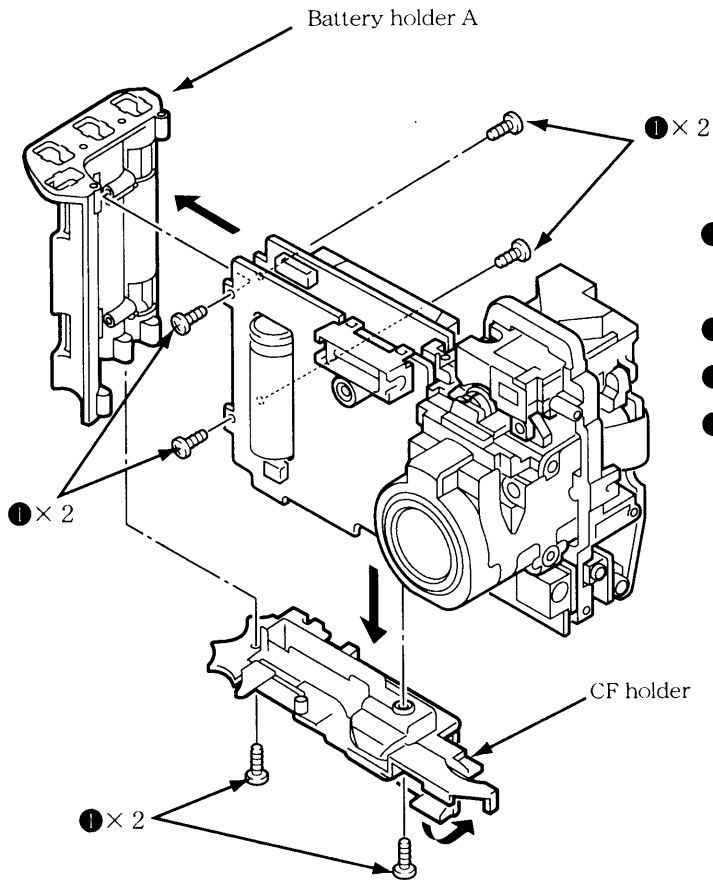
4. Back Cover



5. Battery Holder B / SY-1 Board

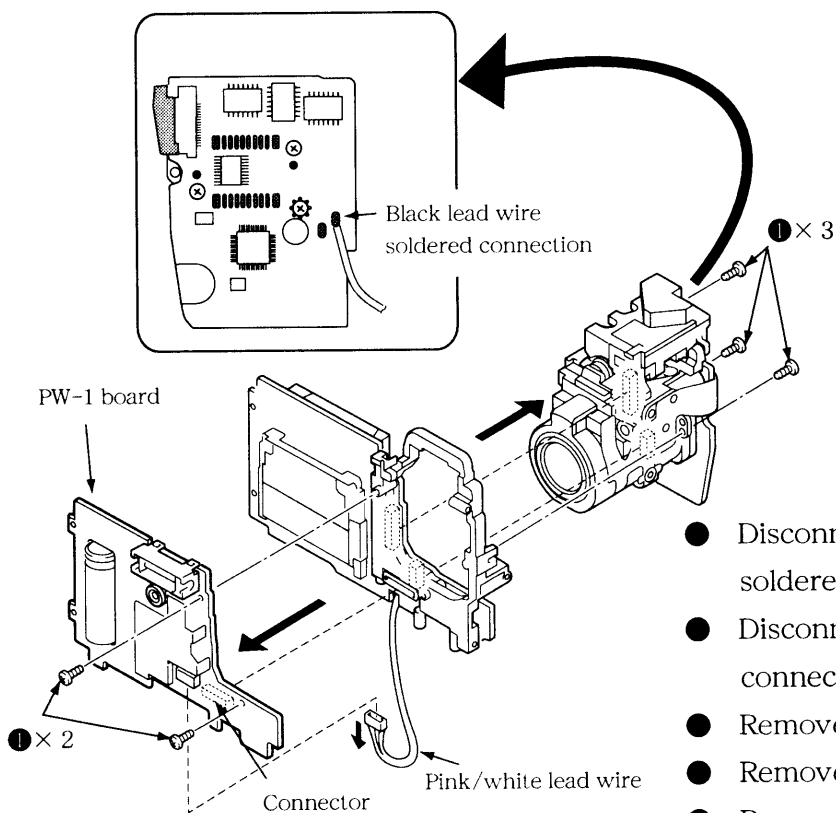


6. Battery Holder A / CF Holder

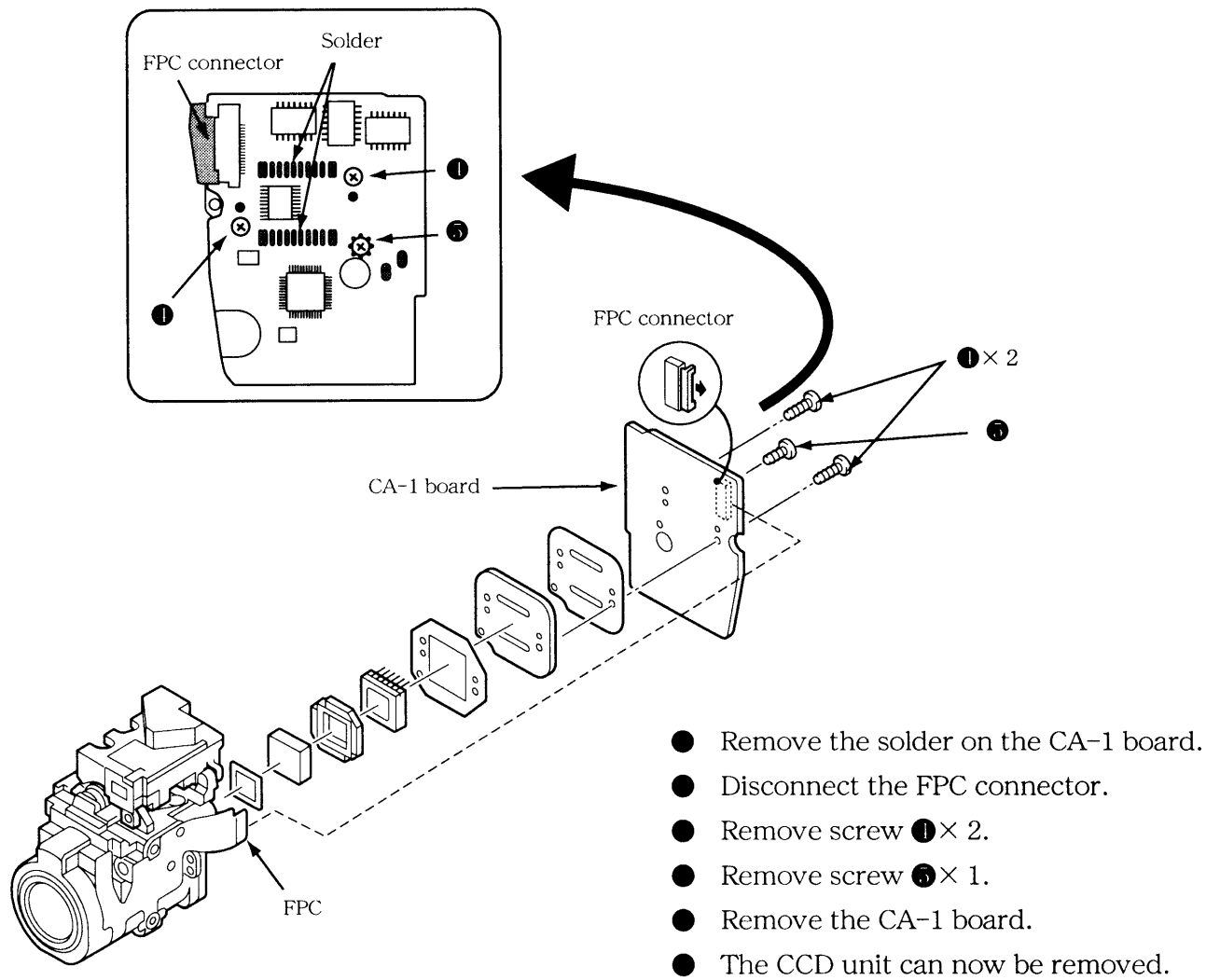


- Open the CF holder and remove screw ①× 2.
- Remove the CF holder.
- Remove screw ①× 4.
- Spread the two boards apart, and remove the battery holder A.

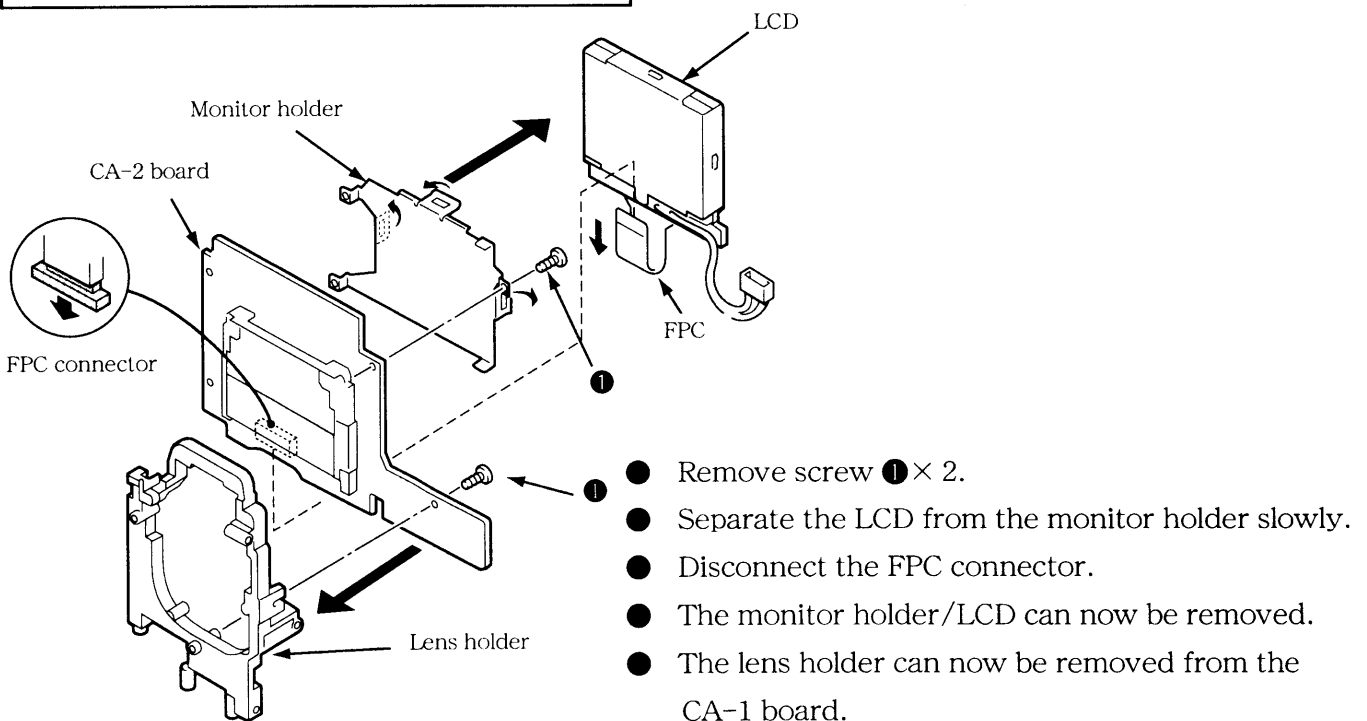
7. Shooting Lens Unit / PW1 Board



- Disconnect the black lead wire where it is soldered.
- Disconnect the pink/white lead wire connector.
- Remove screw ①× 5.
- Remove the shooting lens assembly.
- Remove the PW-1 board.

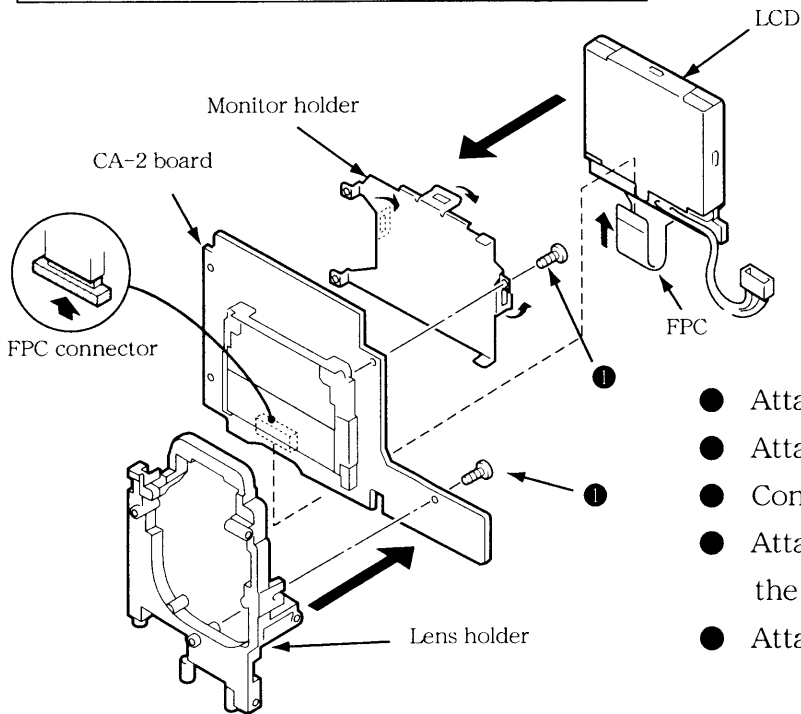


8. Monitor Holder / LCD / CA-2 Board



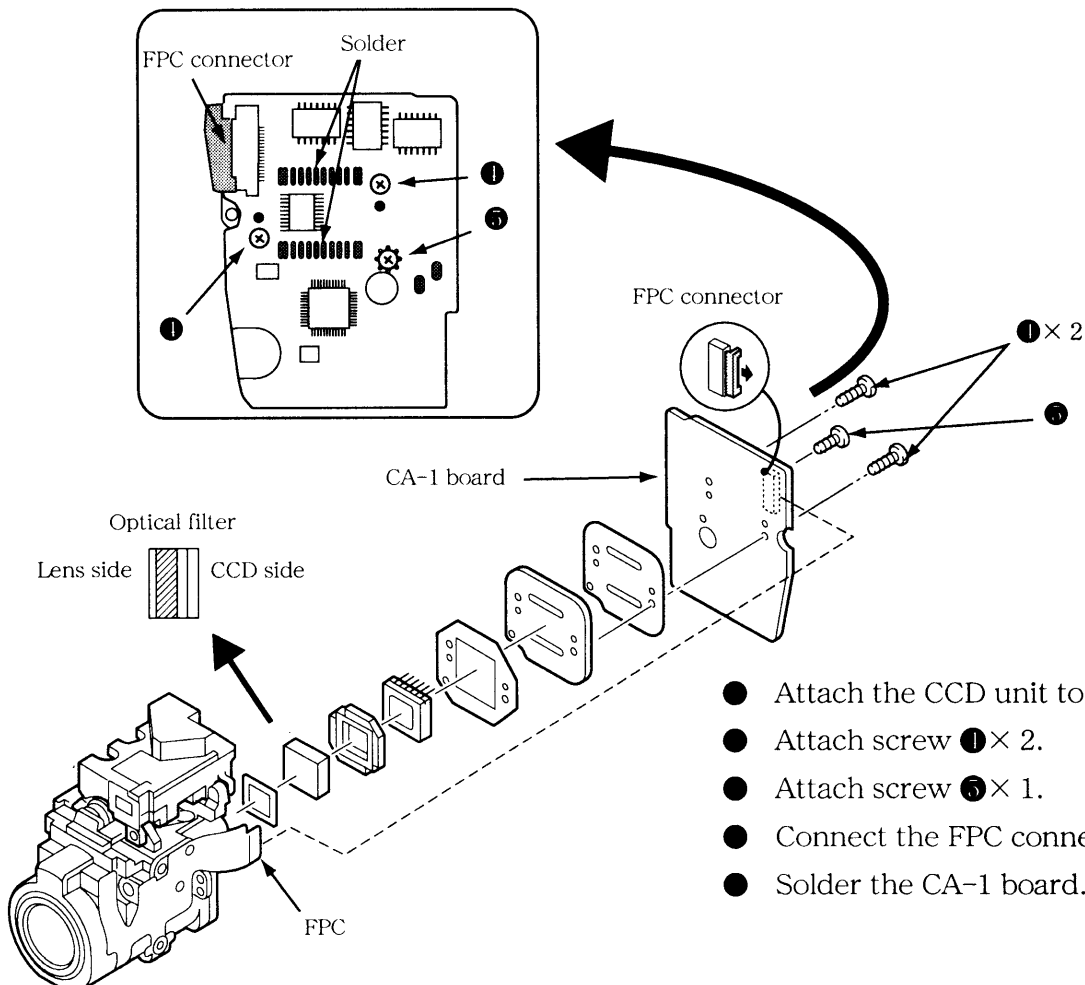
Reassembly Procedure

9. Monitor Holder / LCD / CA-2 Board

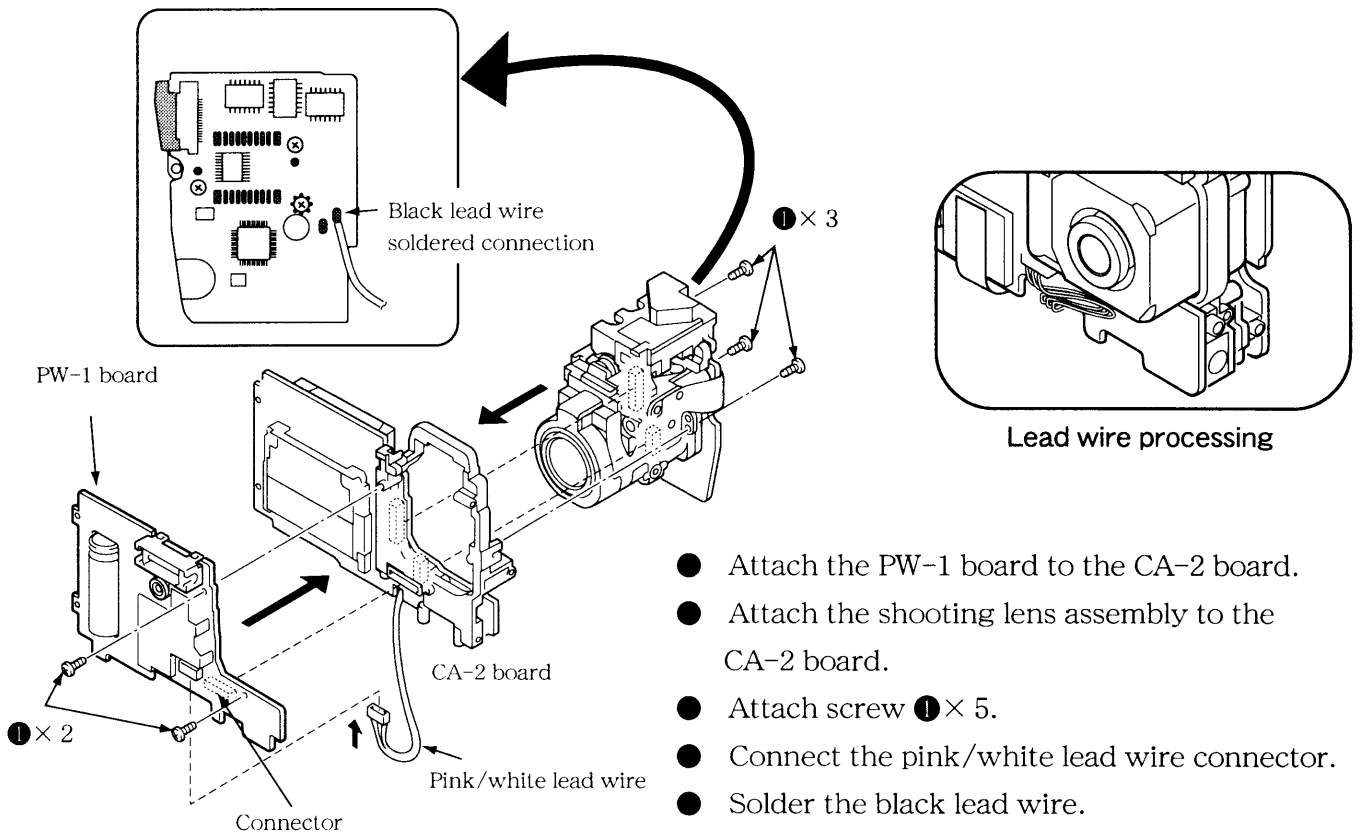


- Attach the lens holder to the CA-1 board.
- Attach screw ① × 1.
- Connect the FPC connector.
- Attach the monitor holder/LCD assembly to the CA-1 board.
- Attach screw ① × 1.

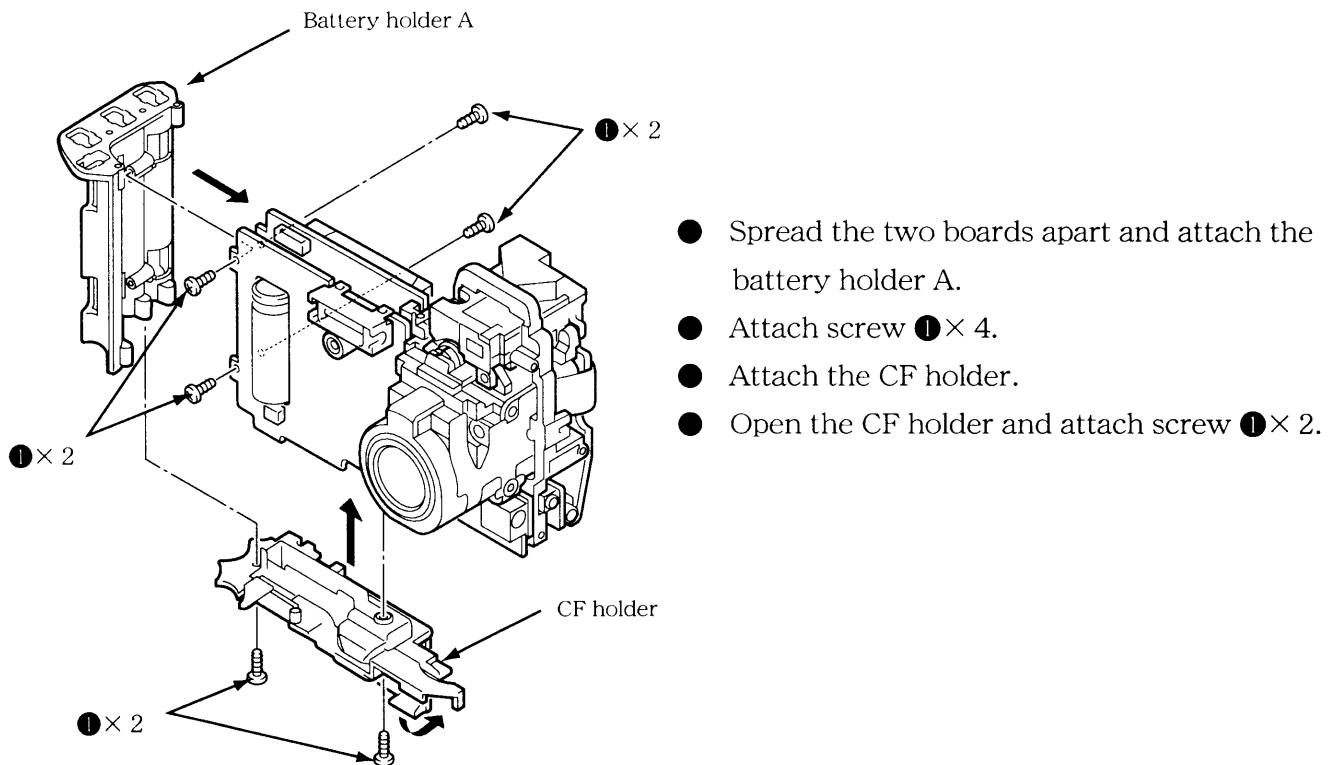
10. Shooting Lens Unit / PW1 Board



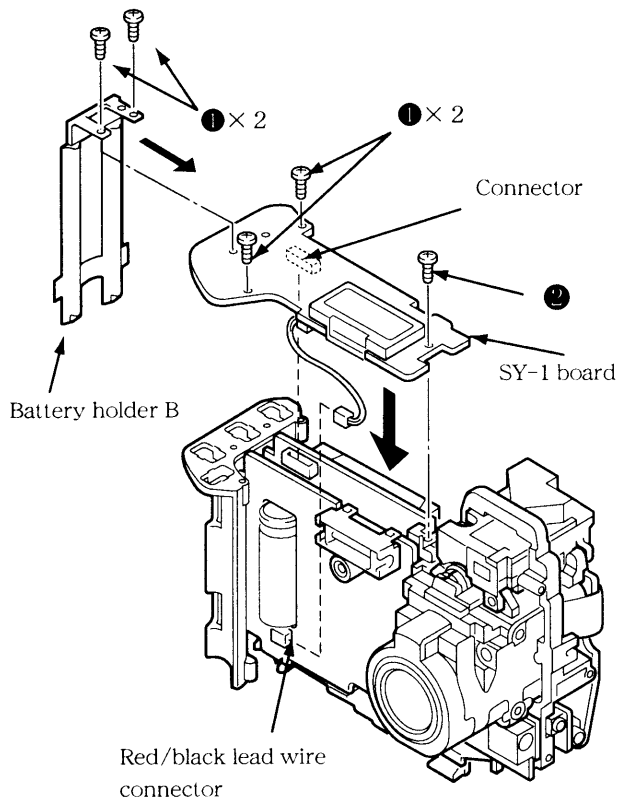
- Attach the CCD unit to the CA-1 board.
- Attach screw ① × 2.
- Attach screw ⑤ × 1.
- Connect the FPC connector.
- Solder the CA-1 board.



11. Battery Holder A / CF Holder

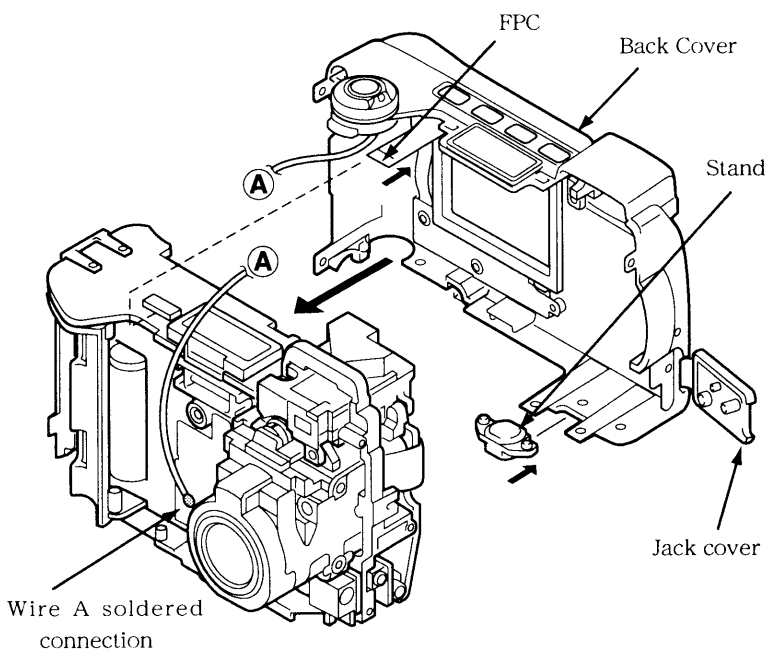


12. Battery Holder B / SY-1 Board



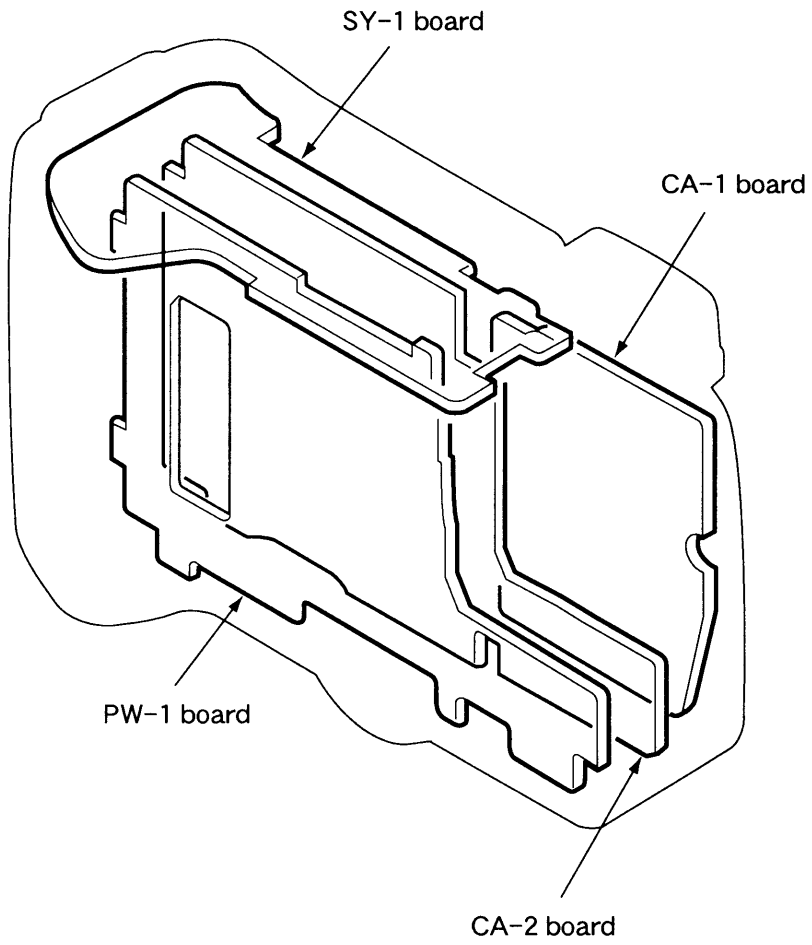
- Attach the SY-1 board.
- Attach screw ①× 2.
- Attach screw ②× 1.
- Connect the red/black lead wire connector.
- Attach the battery holder B.
- Attach screw ①× 2.

13. Back Cover



- Connect the FPC connector.
- Attach the back cover.
- Solder the lead wire A.
- Insert the stand.

15. Board location



ELECTRICAL ADJUSTMENT

1. Equipment

- Oscilloscope
- AC adaptor (EH-30)
- IBM compatible PC

2. Servicing Tools

- Color viewer 5,100 K

Note : Due to 100 to 110 V specified for the color viewer, in case of using it in somewhere overseas, be sure to convert its voltage through the transformer in accordance with that country's voltage.

- Siemens star chart
- Calibration software
- Chart for color adjustment

3. Setup

3-1. System requirements

- Windows 95 or 98
- IBM compatible PC with 486 or higher processor
- CD-ROM drive
- 3.5-inch high-density diskette drive
- Serial port with standard RS-232C interface
- 8 MB RAM
- Hard disk drive with at least 15 MB available
- VGA or SVGA monitor with at least 256-color display

3-2. Installing calibration software

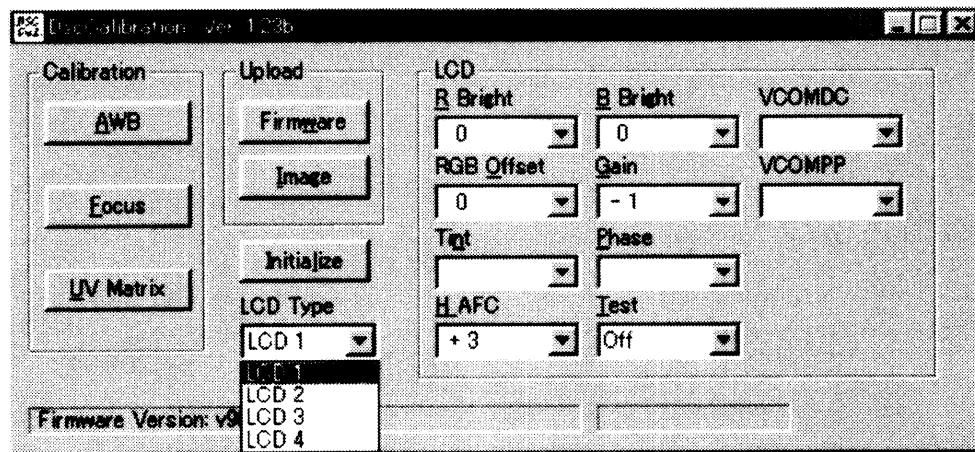
- Insert the calibration software installation diskette into your diskette drive.
- Open the explorer.
- Copy the DSC Cal folder on the floppy disk in the FD drive to a folder on the hard disk.
- Color Viewer

Turn on the switch and wait for 30 minutes for aging to take place before using Color Pure.

4. Calibration software

After starting the applicable calibration software, the following is displayed on the PC monitor.

- For adjusting [10. LCD Panel Adjustment], select the camera's LCD type.



< FIG - 1 >

5. Adjustment Items and Order

- ① Flange-back (Lens) Adjustment
- ② AWB Adjustment
CCD Defect Detect Adjustment
- ③ Color matrix Adjustment
- ④ CCD Defect Detect Adjustment
- ⑤ LCD Panel Adjustment

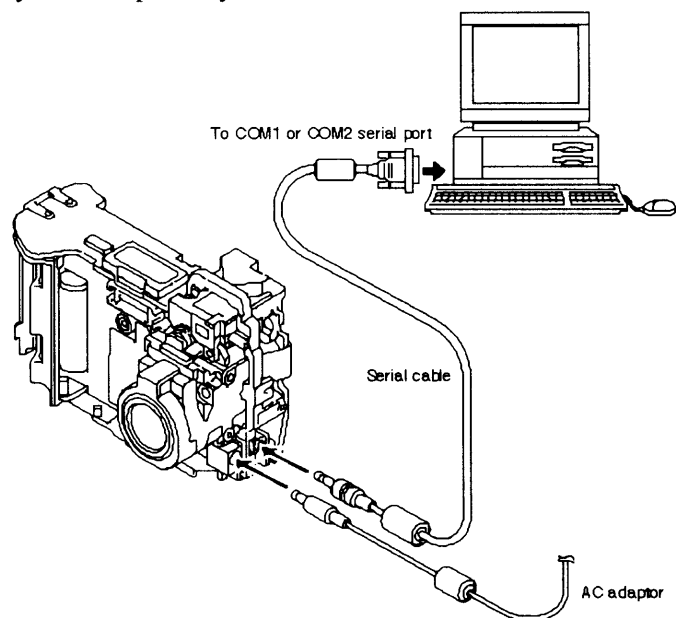
⑥ Adjustment items required at replacement of parts

	Flange-back (Lens) Adjustment ①	CCD Defect Detect Adjustment ②	AWB Adjustment ③	Color matrix Adjustment ④	LCD Panel Adjustment ⑤
CA1	○	○	○	○	×
CA2	○	○	○	○	○
SY-1	○	×	×	×	×
PW1	×	×	×	×	×
Lens Unit	○	○	○	○	×
CCD	○	○	○	○	×
Optical filter	○	○	○	○	×

○ : Adjustment required × : Adjustment not required

6. Connecting the camera to the computer

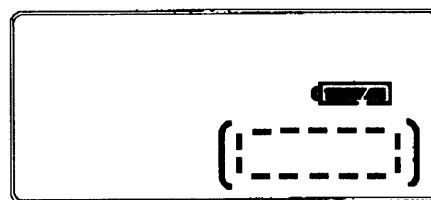
- Turn off both camera and computer.
- Locate the port cover on the side of the camera. Press on the arrows and slide the cover down to open it.
- Line up the arrow on the cable connector with the notch on the camera's serial port. Insert the connector.
- Line up the serial connector on the cable with one of the serial ports on your computer, and insert the connector.
- Turn on the camera and your computer system.



7. Communications between PC and the camera

After starting communications between PC and the camera, what is displayed on the top LCD on the camera is switched to the following figure.

The dotted line starts to go round clockwise, and after a fixed period of time, the move of line stops and the camera automatically goes to be switched to the communications mode. In addition, this move of line automatically appears every time each adjustment item in the applicable calibration software is operated on your demand.



Top LCD Panel

8. Flange-back (Lens) Adjustment

[Preparation]

- Siemens star chart
- POWER switch: ON (set to A-REC, M-REC or PLAY MODE)

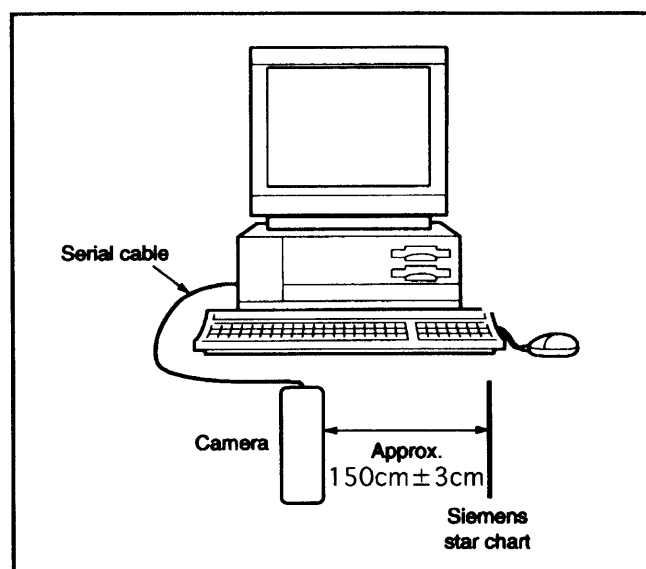
[Adjustment condition]

- Make a copy of A4 size siemens chart in enlarged A3 size or larger.
- Illumination above the subject should be 400 lux \pm 10 %.
- Set the siemens star chart 150 cm \pm 3 cm (between Siemens star chart and the surface of camera's protection lens)

[Adjustment method]

- Double-click on the DscCalV123.
- Select the monitor from TEST menu of Calibration Soft (refer to the FIG-2) so that LCD monitor will be turned on.
- Set the camera's LCD center to meet the Siemens star chart's center.
- Click the Focus, and click the Yes.
- Flange-back adjustment value will appear on the screen.
- Click 'OK'.

Note : In any adjustment error cases, the adjustment operation can not completely finish through the software. Or, slightly out-of-focus mode appears on the LCD on camera.



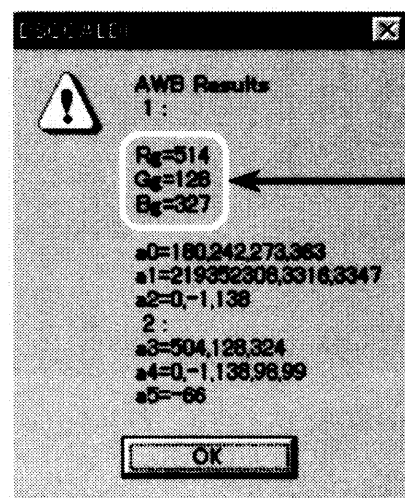
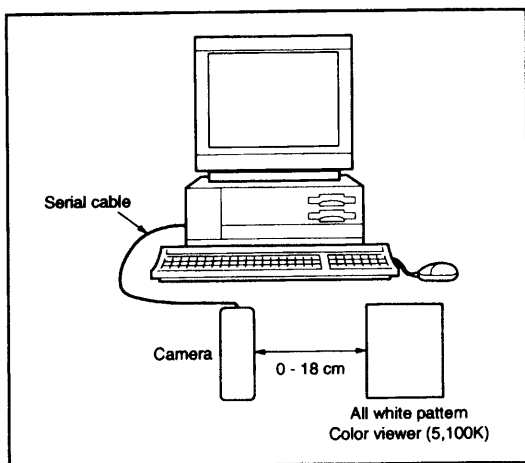
9. AWB Adjustment

[Preparation]

- POWER switch: ON
- Color viewer

[Adjustment method]

- When setting the camera in place, set it to an angle so that nothing appears in any part of the color viewer except the white section. (Do not enter any light.)
- Double-click on the DscCalV123.
- Click the AWB, and click the Yes.
- AWB adjustment value will appear on the screen.
(AGC3 adjustment value is 1019-1024 indicates an error.)
- Click 'OK'.



10. Color Matrix Adjustment

[Note] AWB adjustment should always be carried out first.

[Preparation]

- POWER switch: ON

[Adjustment condition]

- Set the color adjustment chart to the color viewer.

(Do not enter any light.)

- Set the siemens star chart so that it becomes center of the screen.

[Adjustment method]

- Double-click on the DscCalV123.

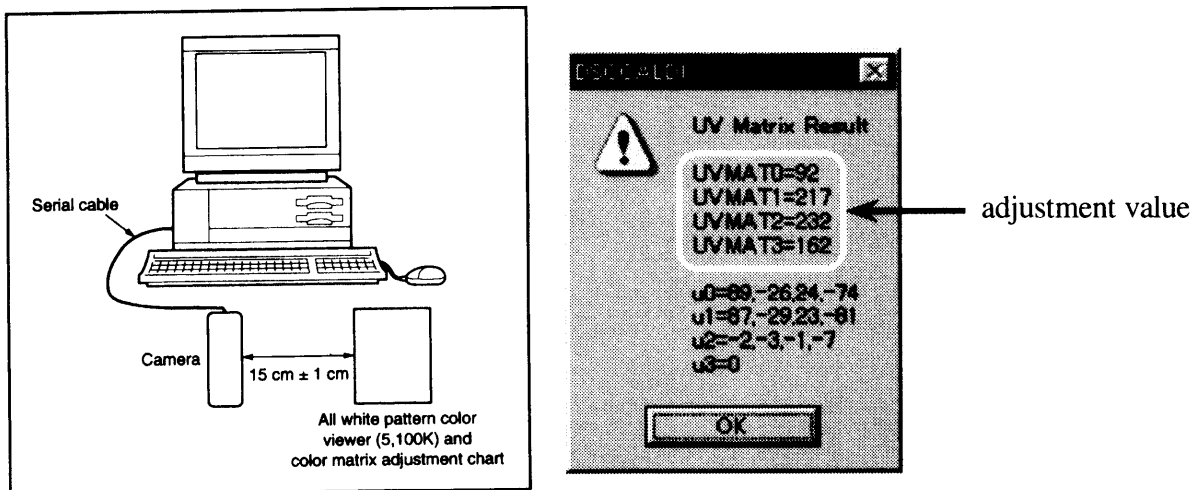
- Click the UV Matrix, and Click 'Yes'.

- Four color matrix (UVMAT0, UVMAT1, UVMAT2 and UVMAT3) adjustment value will appear on the screen.

- Click 'OK'.

Note : The criteria for the adjustment value is from 0 to 255.

In any adjustment error cases, each value from UVMAT0 to UVMAT3 after adjustment turns to 1.



11. CCD Defect Detect Adjustment

[Adjustment method]

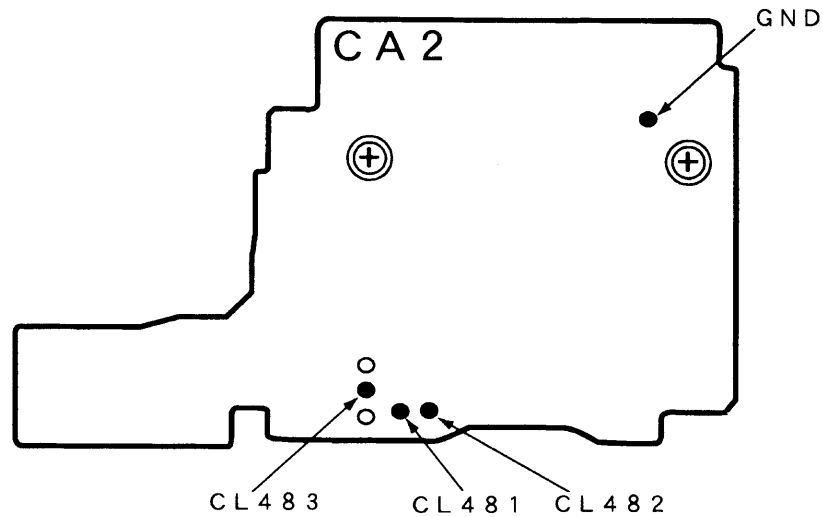
- Double-click on the DscCalV123.

- Select the CCD Defect from Test menu of Calibration Soft and click the OK.

- After adjustment, An adjustment value will appear on the screen.

12. LCD Panel Adjustment

[CA2 board (Side A)]



12-1. LCD H AFC Adjustment

[Preparation]

- POWER switch: ON

[Adjustment method]

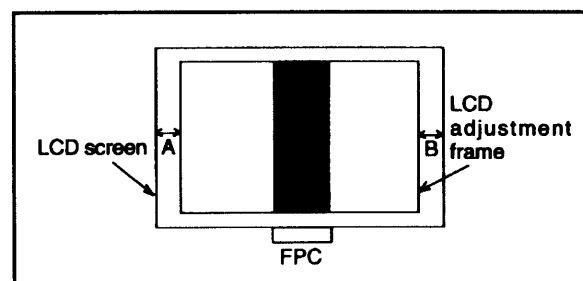
- Double-click on the DscCalV123.

- Check that the “LCD Type” is set to “LCD1”. (refer to the FIG-1)

- Select 0 on the LCD “H AFC”.

- While watching the LCD monitor, first of all, check whether the LCD adjustment frame is centered or not.

Then, if the frame is out of center, adjust to equally maintain the both-sided edge widths, which is $A = B$.



12-2. LCD RGB Offset Adjustment

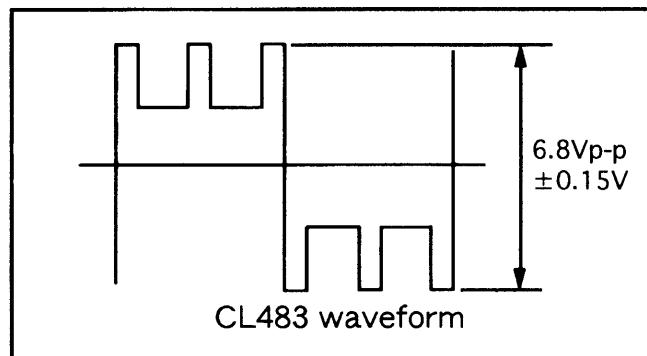
[Preparation]

- Draw out Three lead wires from each point, and then connect them with the oscilloscope.

Setting of oscilloscope : 1V/DIV, 20 μ sec/DIV

[Adjustment method]

- Adjust LCD "RGB offset" so that the amplitude of the CL483 waveform is 6.8 Vp-p \pm 0.15 V.

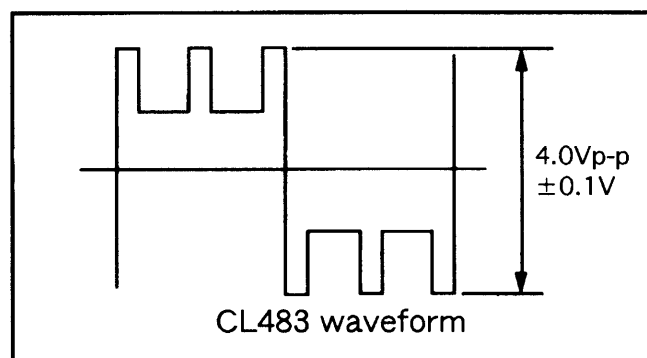


12-3. LCD Gain Adjustment

[Adjustment method]

- Adjust LCD "Gain" so that the amplitude of the CL483 wave form is 4.0 Vp-p \pm 0.1 V.

Note : LCD RGB Offset adjustment should always be carried out first.

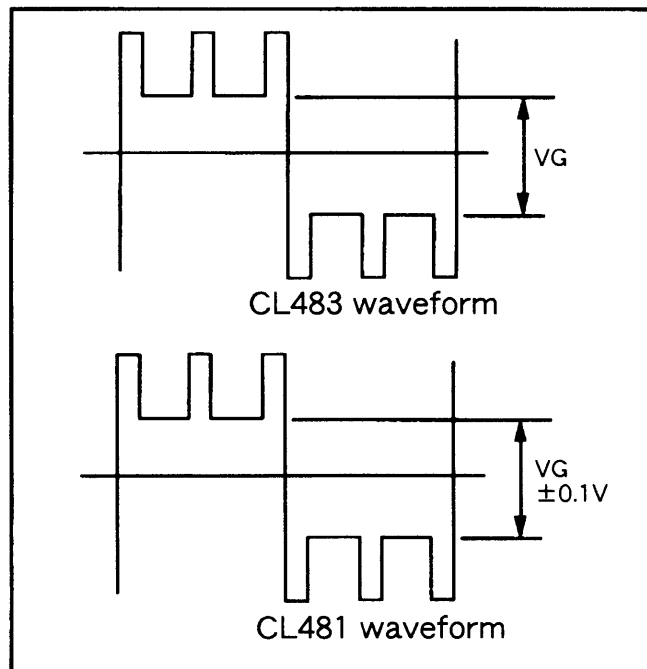


12-4. LCD Blue Brightness Adjustment

[Adjustment method]

- Adjust LCD "B Bright" so that the amplitude of the CL481 waveform is ± 0.1 V with respect to the CL483 (VG) wave-form.

Note : LCD RGB Offset adjustment and LCD Gain adjustment should always be carried out first.

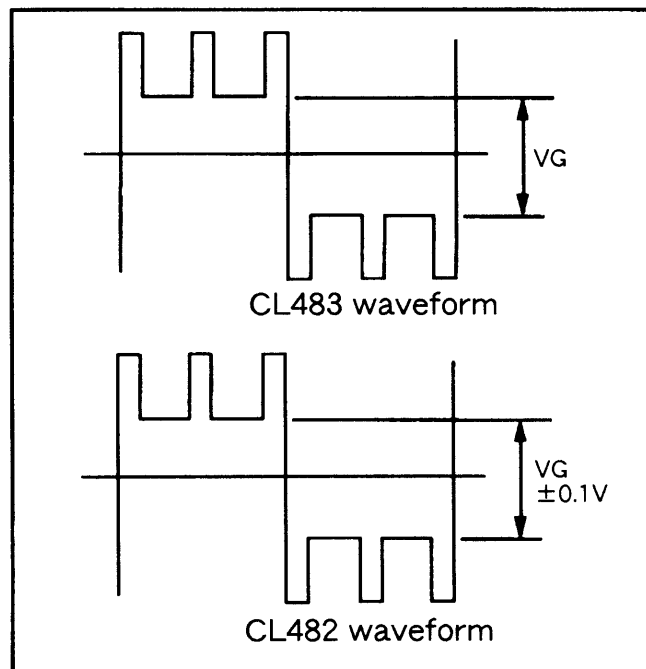


12-5. LCD Red Brightness Adjustment

[Adjustment method]

- Adjust LCD "R Bright" so that the amplitude of the CL482 waveform is ± 0.1 V with respect to the CL483 (VG) waveform.

Note : LCD RGB Offset adjustment and LCD Gain adjustment should always be carried out first.

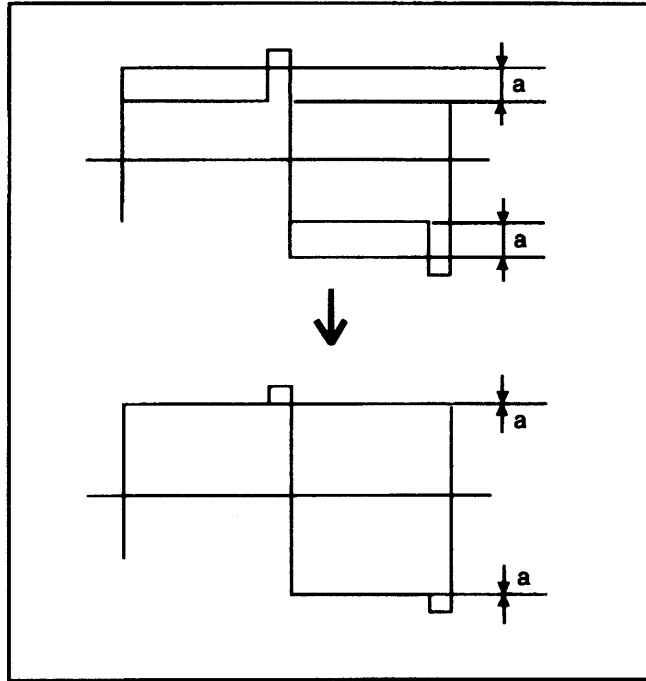


12-6. LCD TINT Adjustment (for PAL)

[Adjustment method]

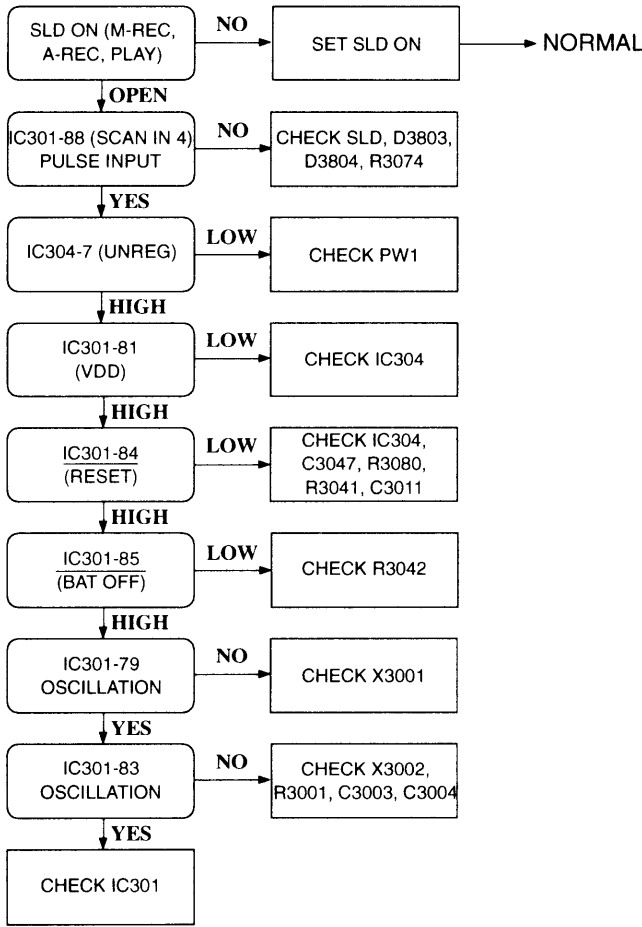
Adjust LCD "Tint" so that the amplitude of CL483 waveform is minimum.

Note : LCD TINT adjustment should always be carried out last.

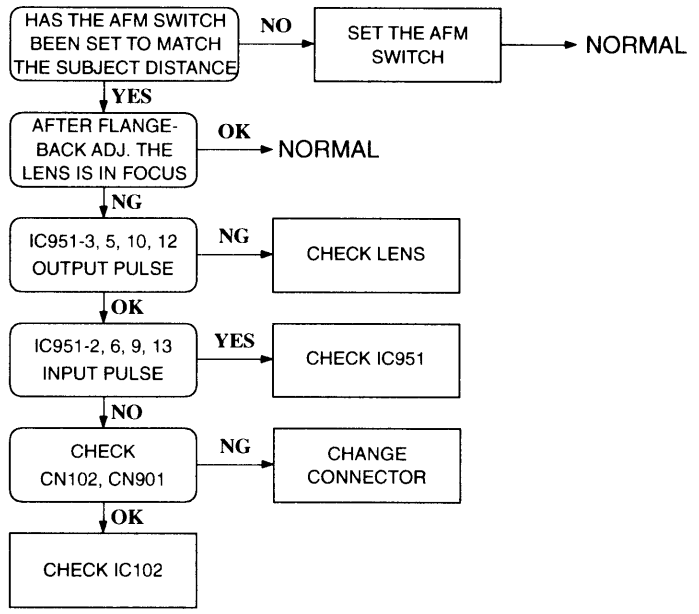


4. TROUBLESHOOTING GUIDE

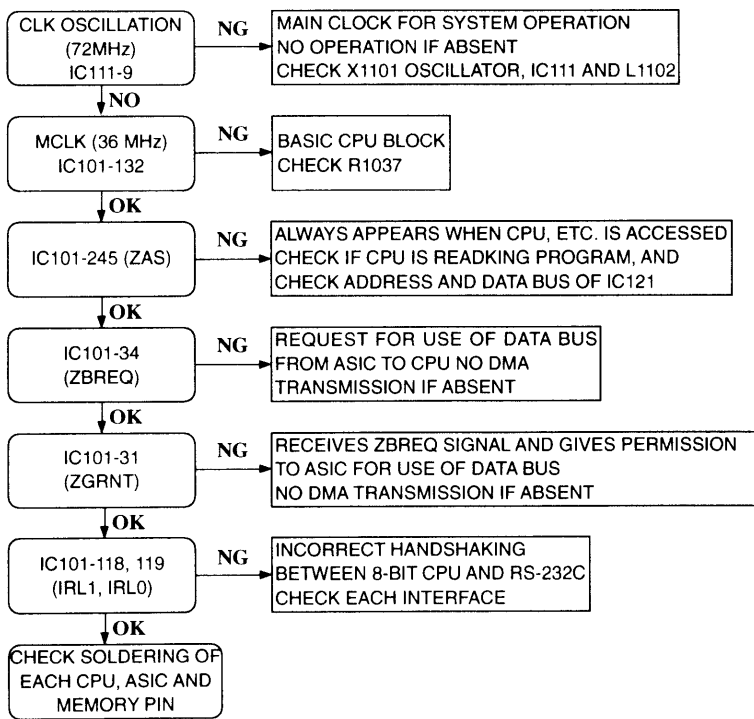
POWER LOSS INOPERATIVE



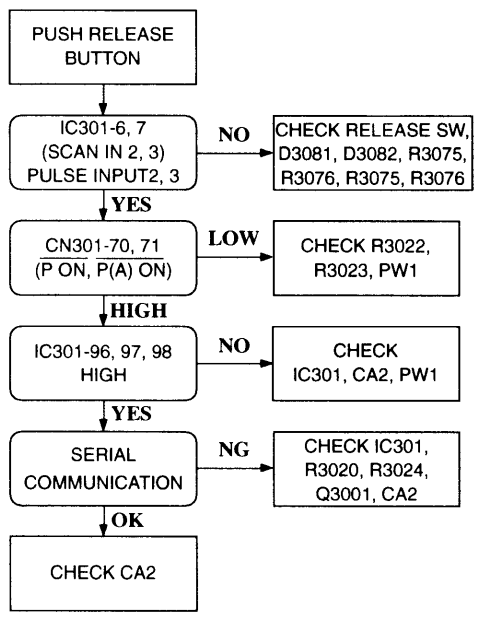
FOCUS INOPERATIVE

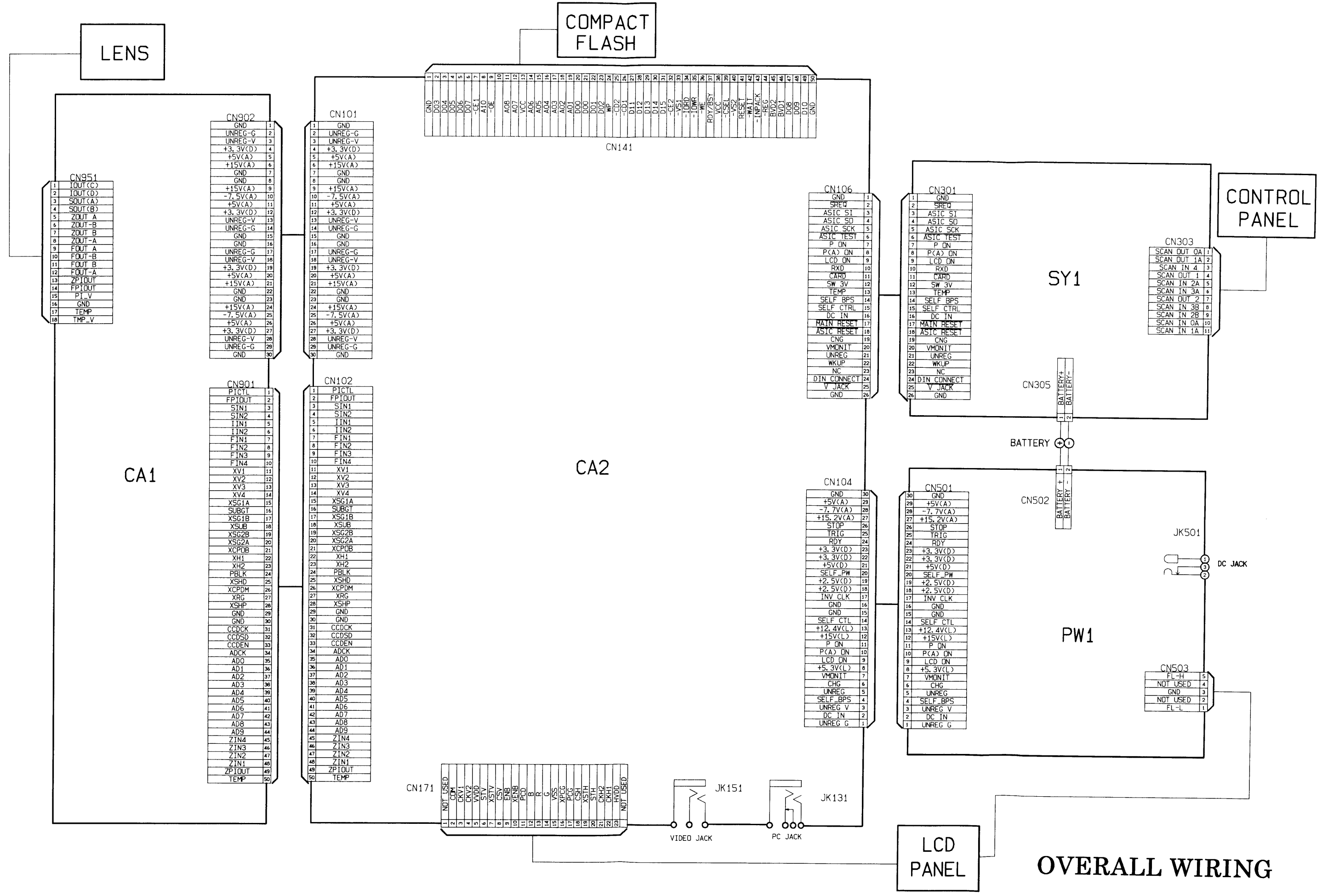


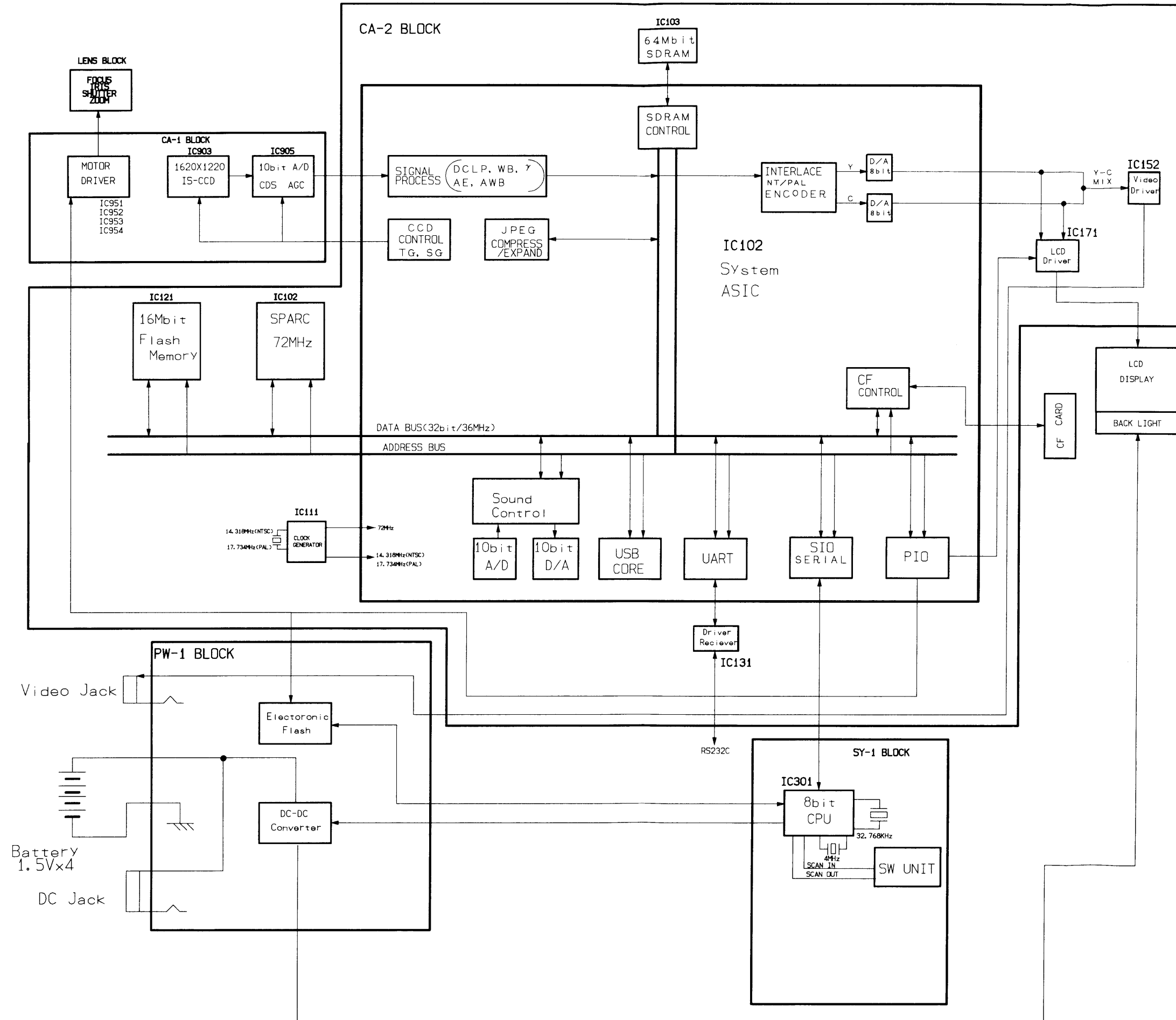
NO PICTURE



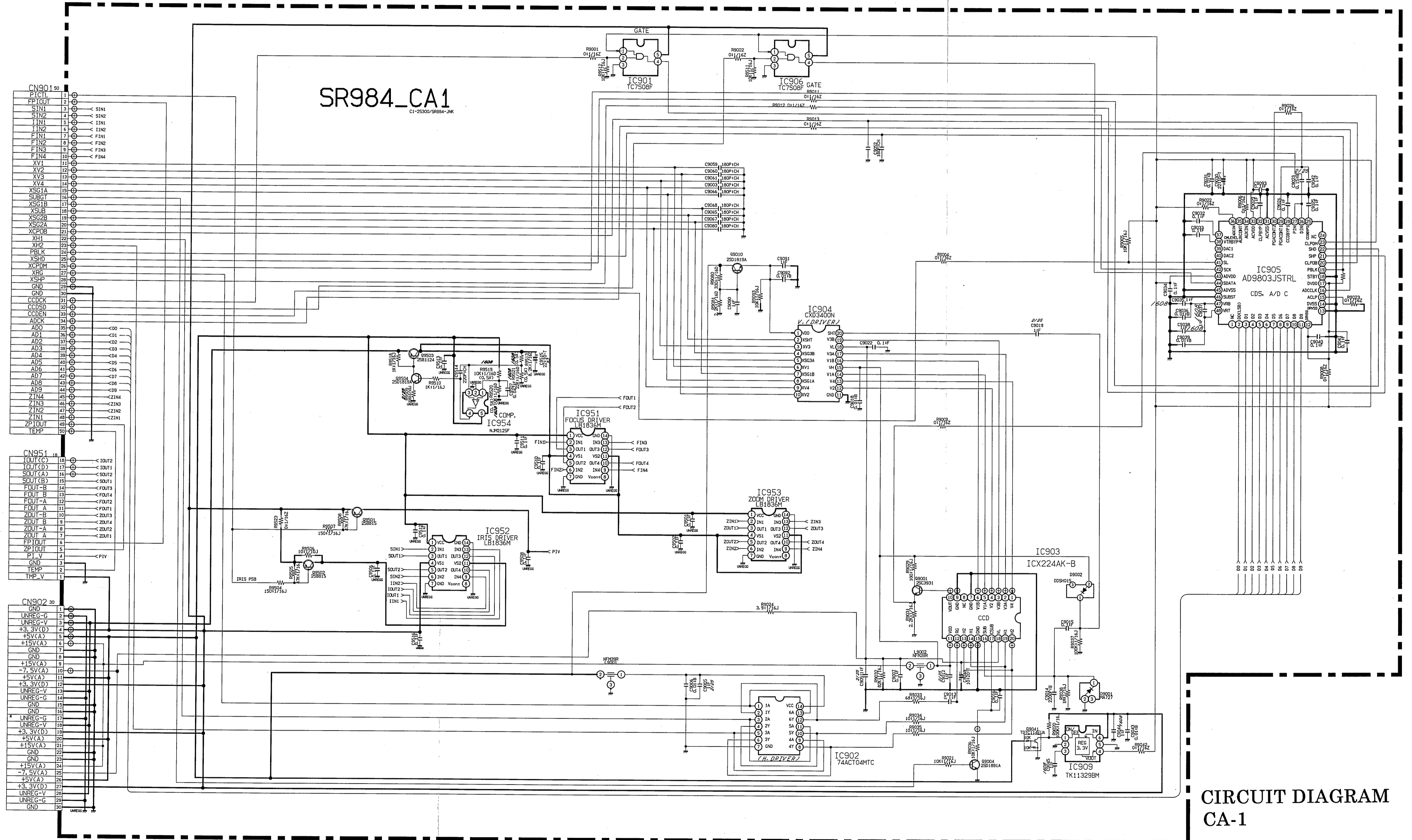
TAKING INOPERATIVE







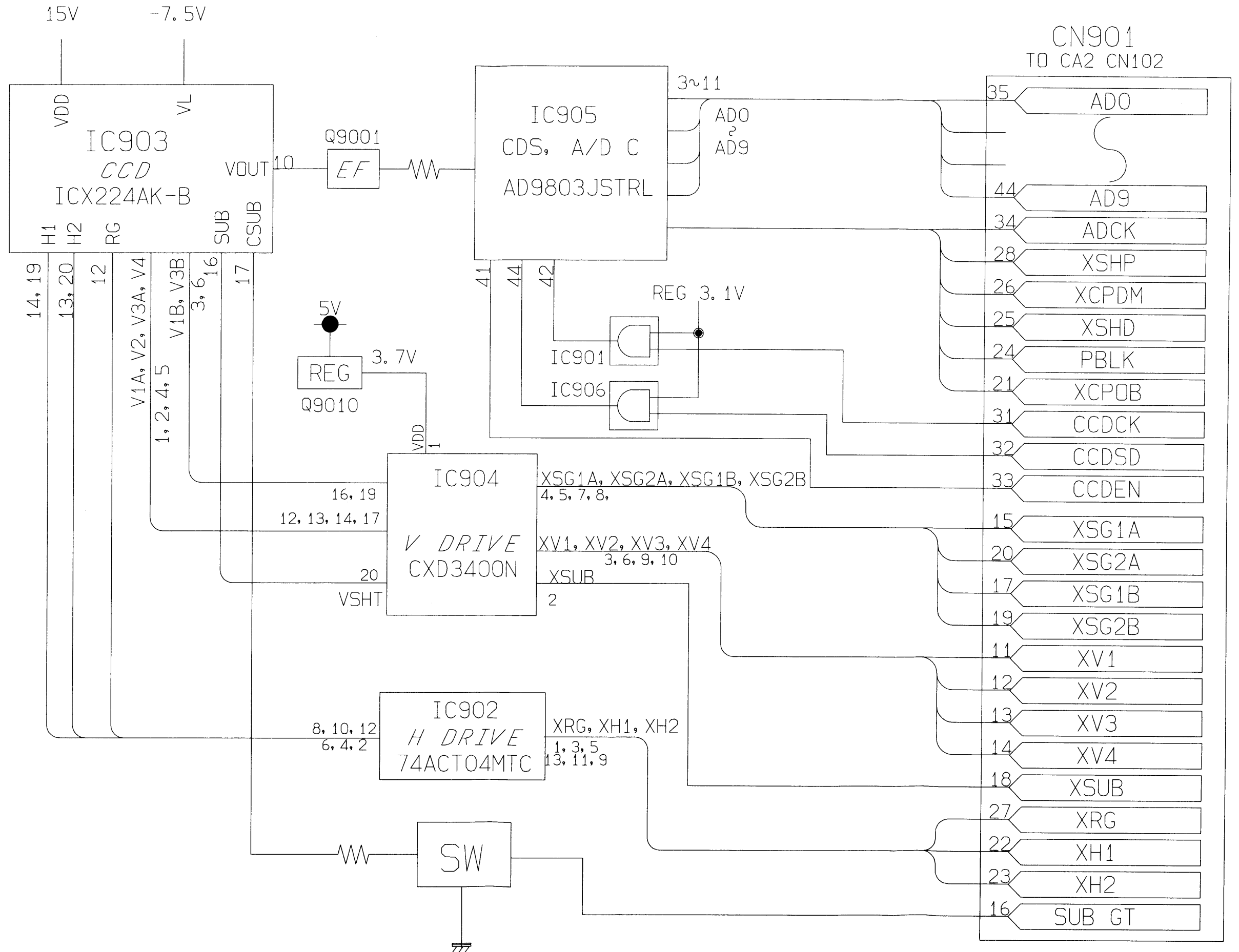
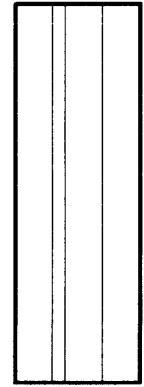
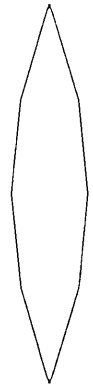
OVERALL



CIRCUIT DIAGRAM
CA-1

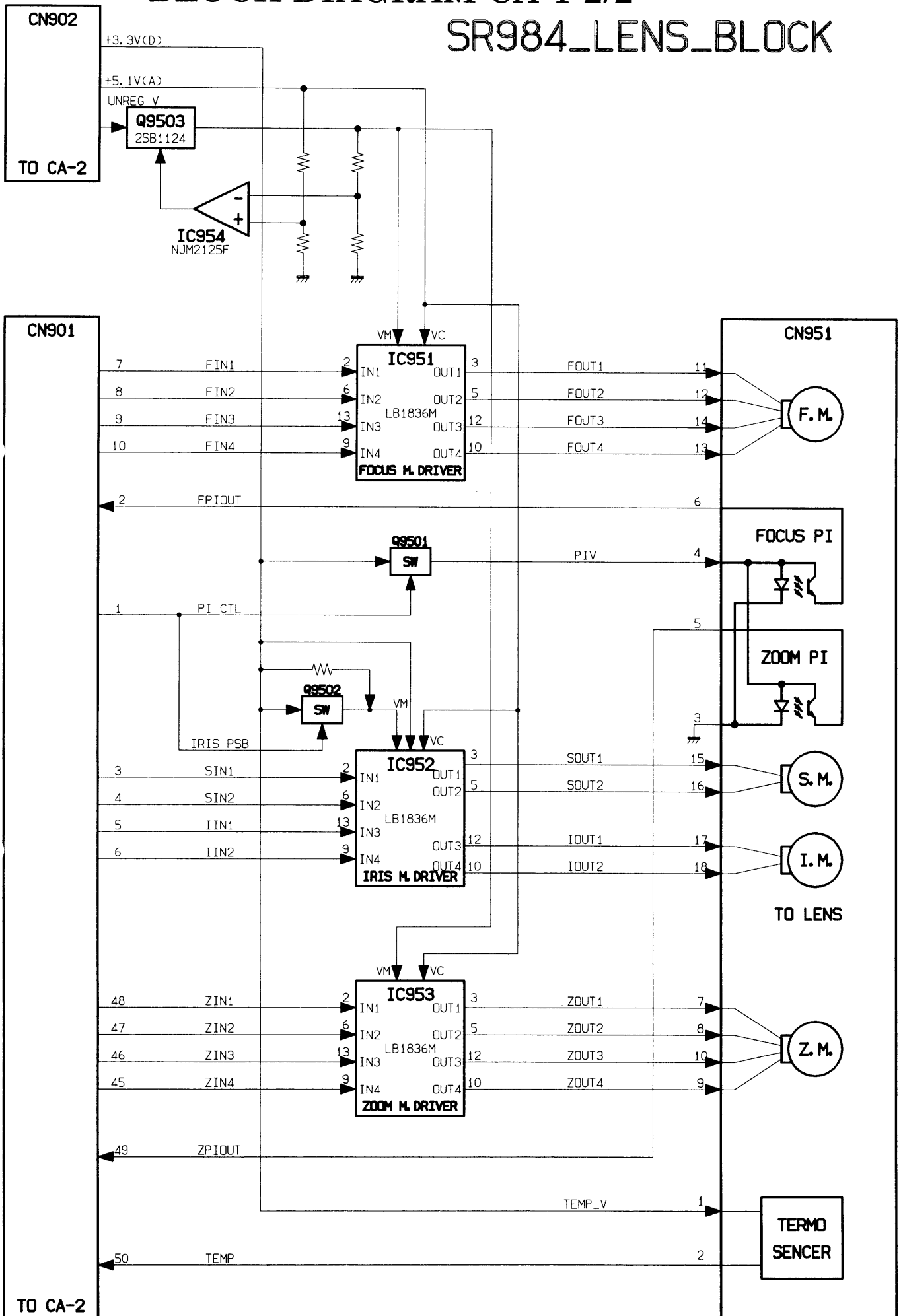
BLOCK DIAGRAM CA-1 1/2

LENS O-LPF



BLOCK DIAGRAM CA-1 2/2

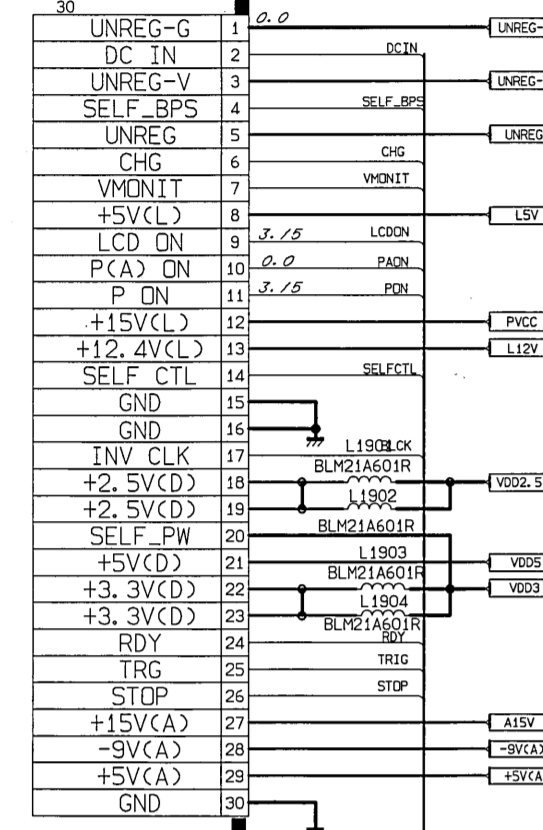
SR984_LENS_BLOCK



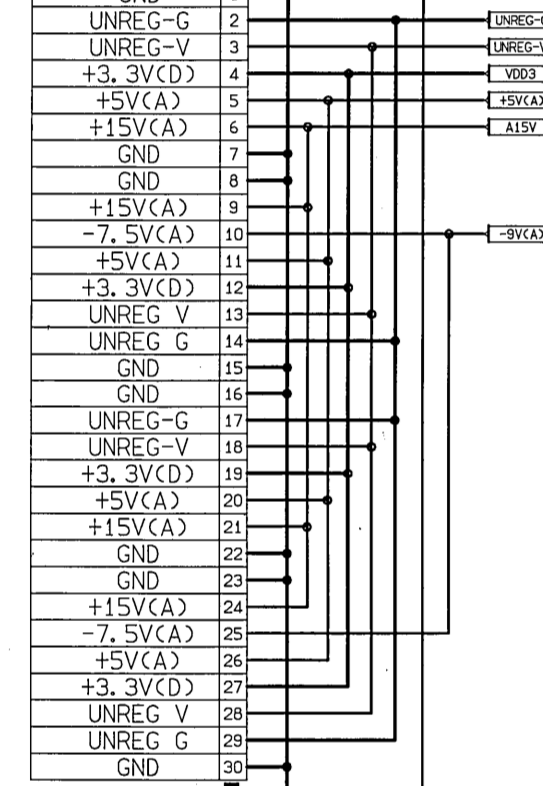
CA2_MAIN

C2-25300/SP884-JNK

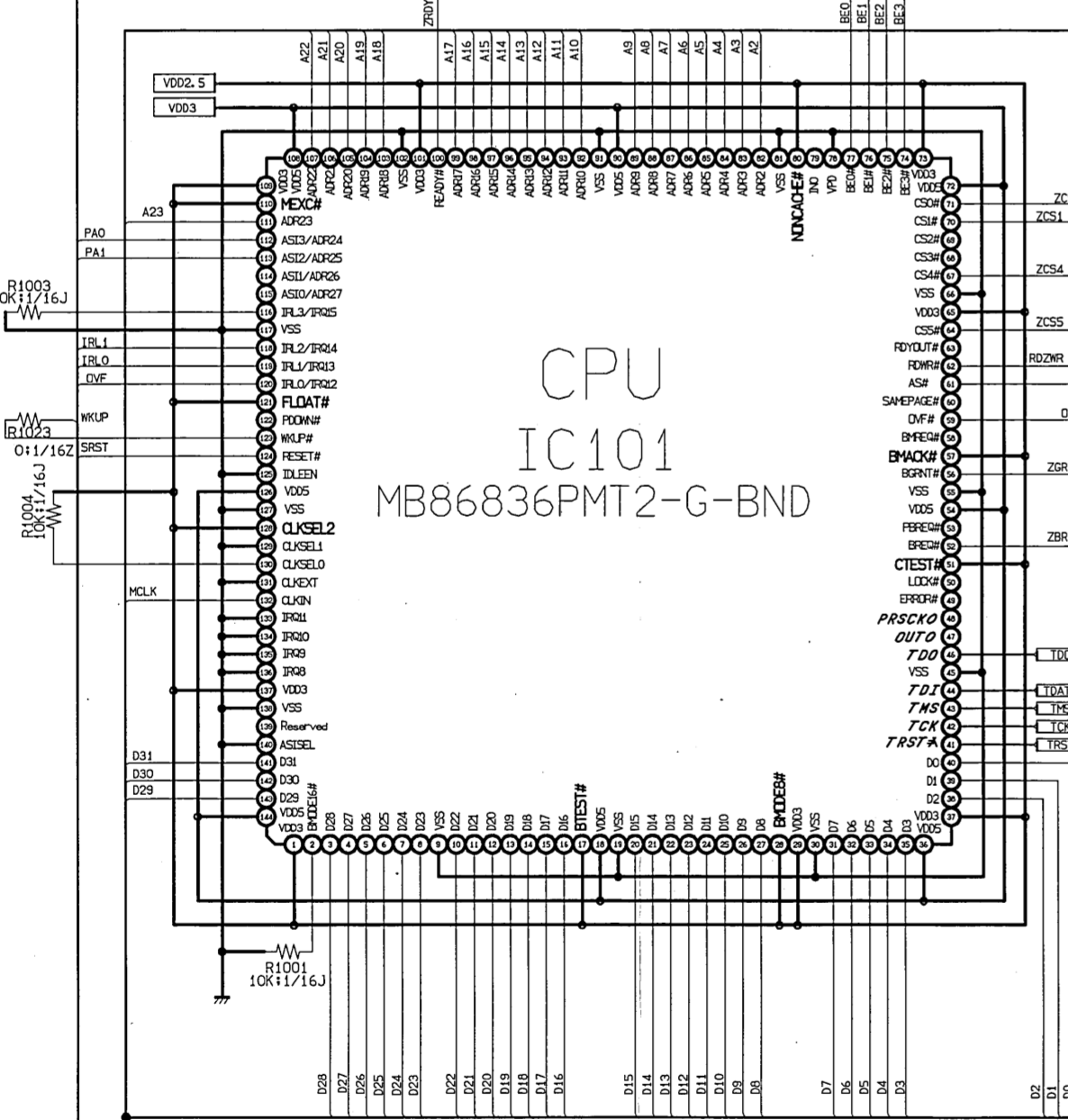
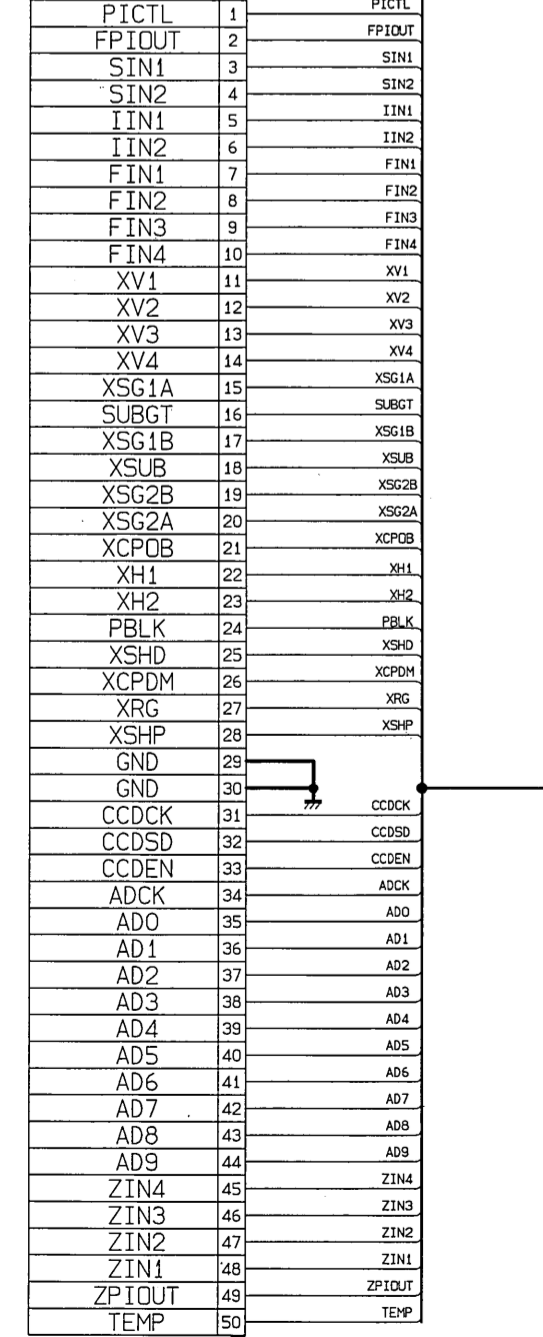
TO PW1 CNS01
CN104



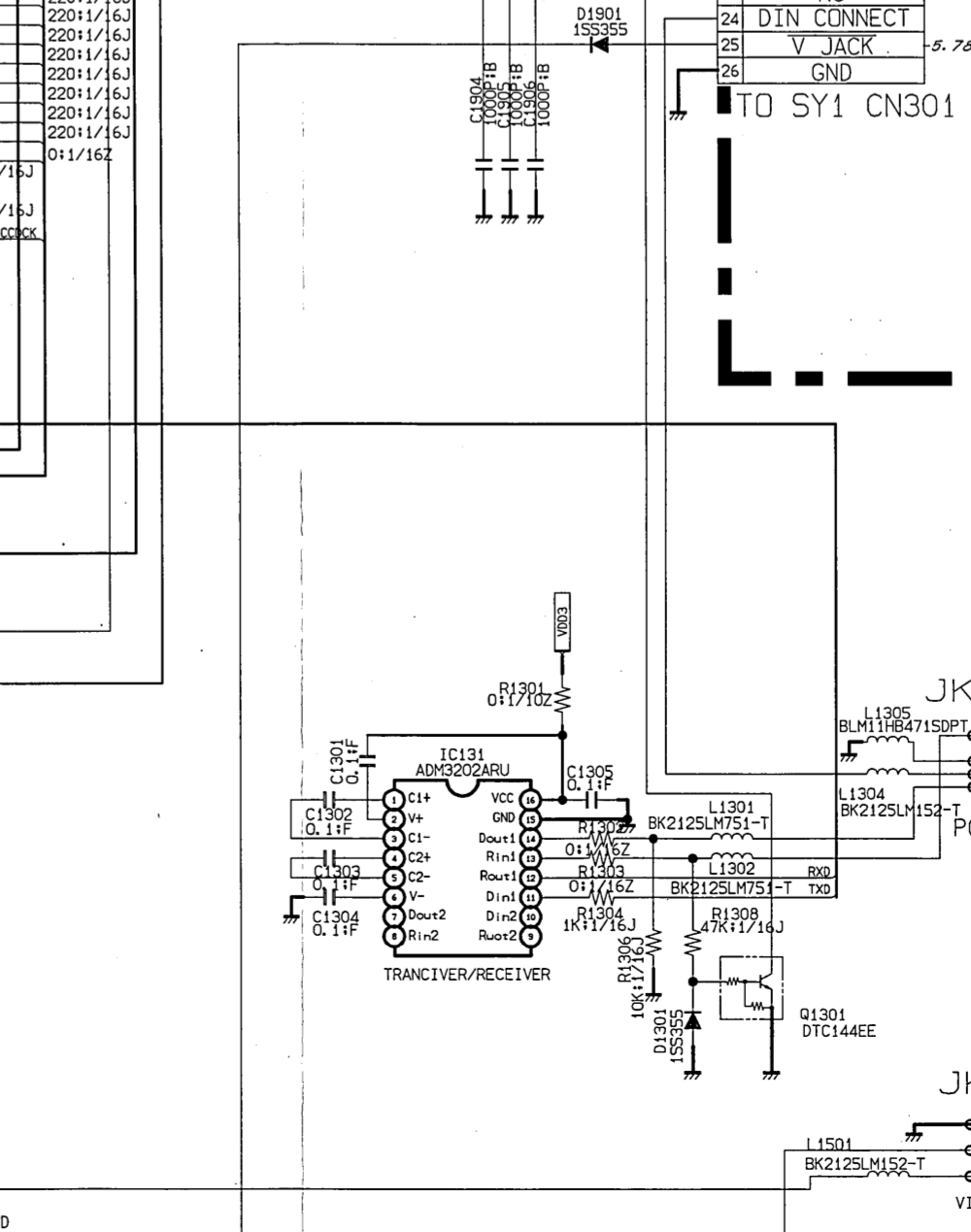
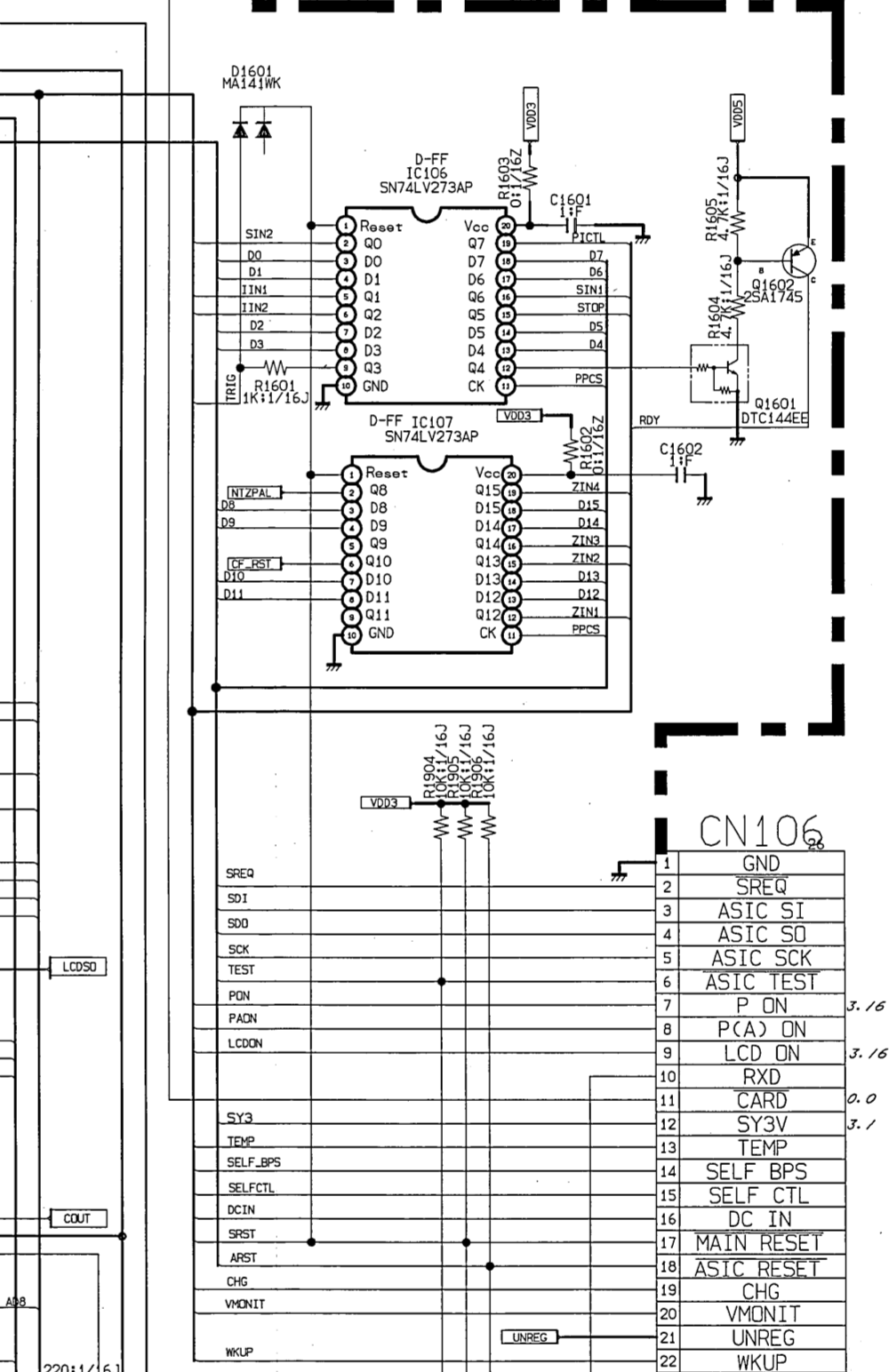
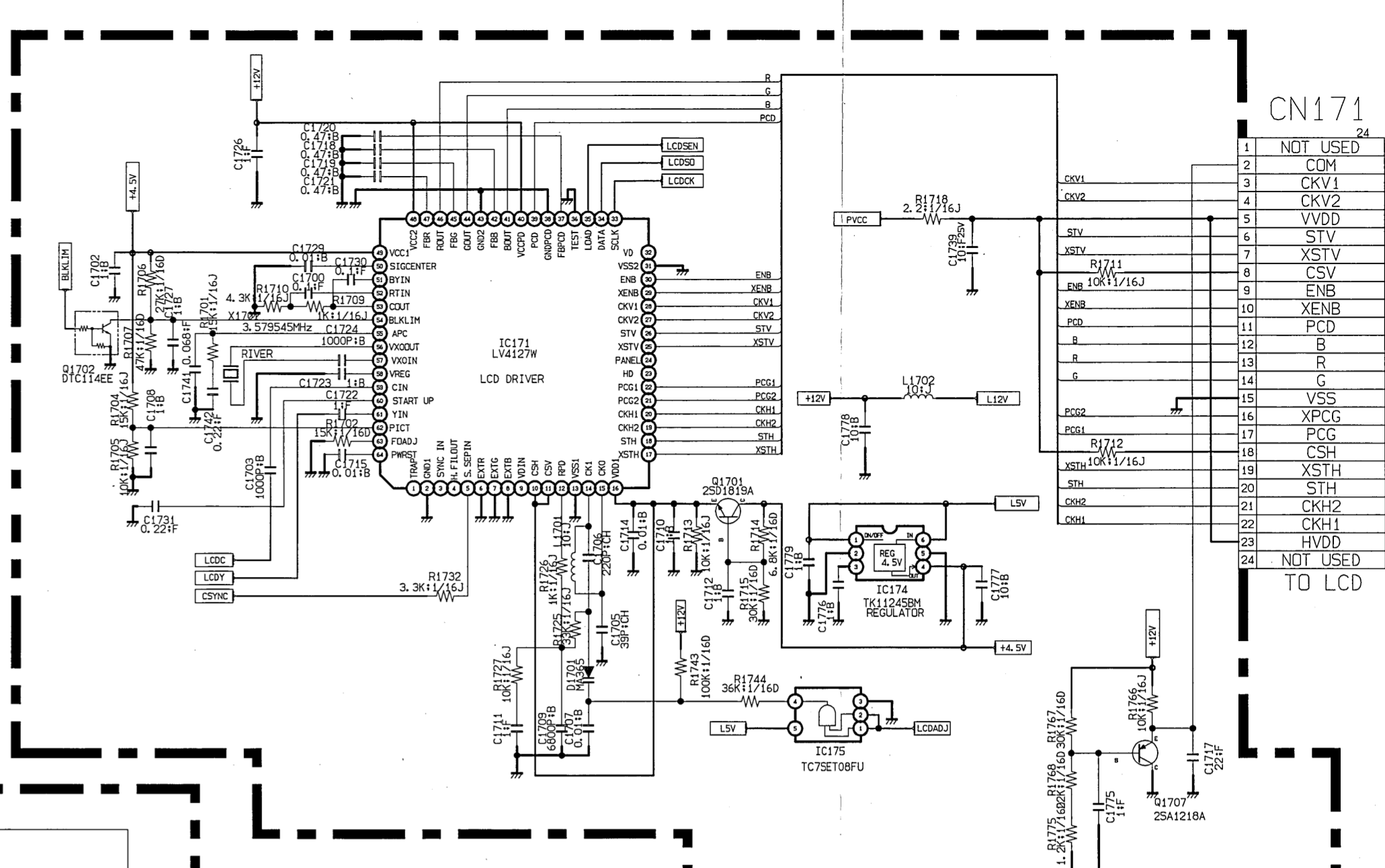
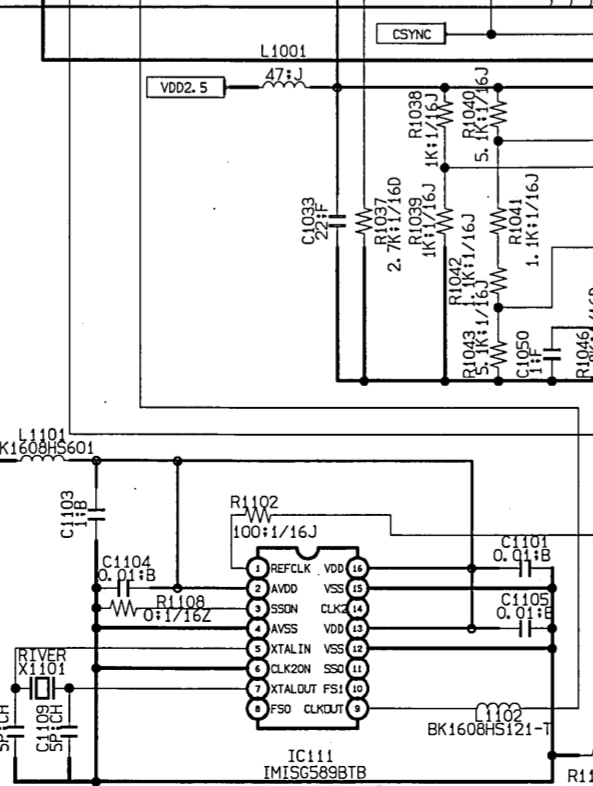
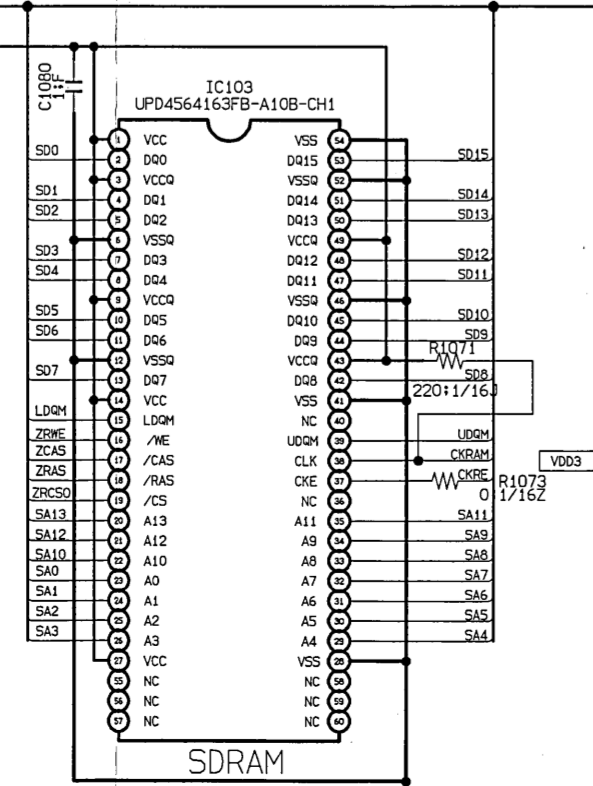
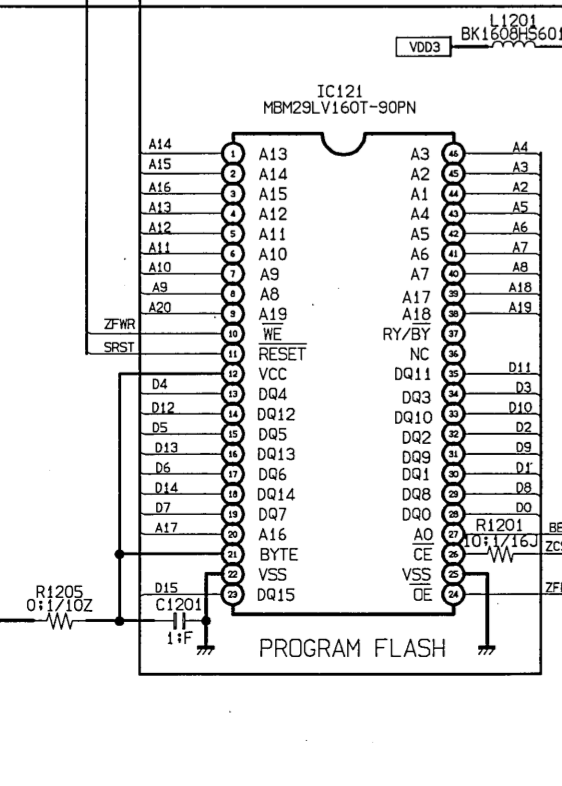
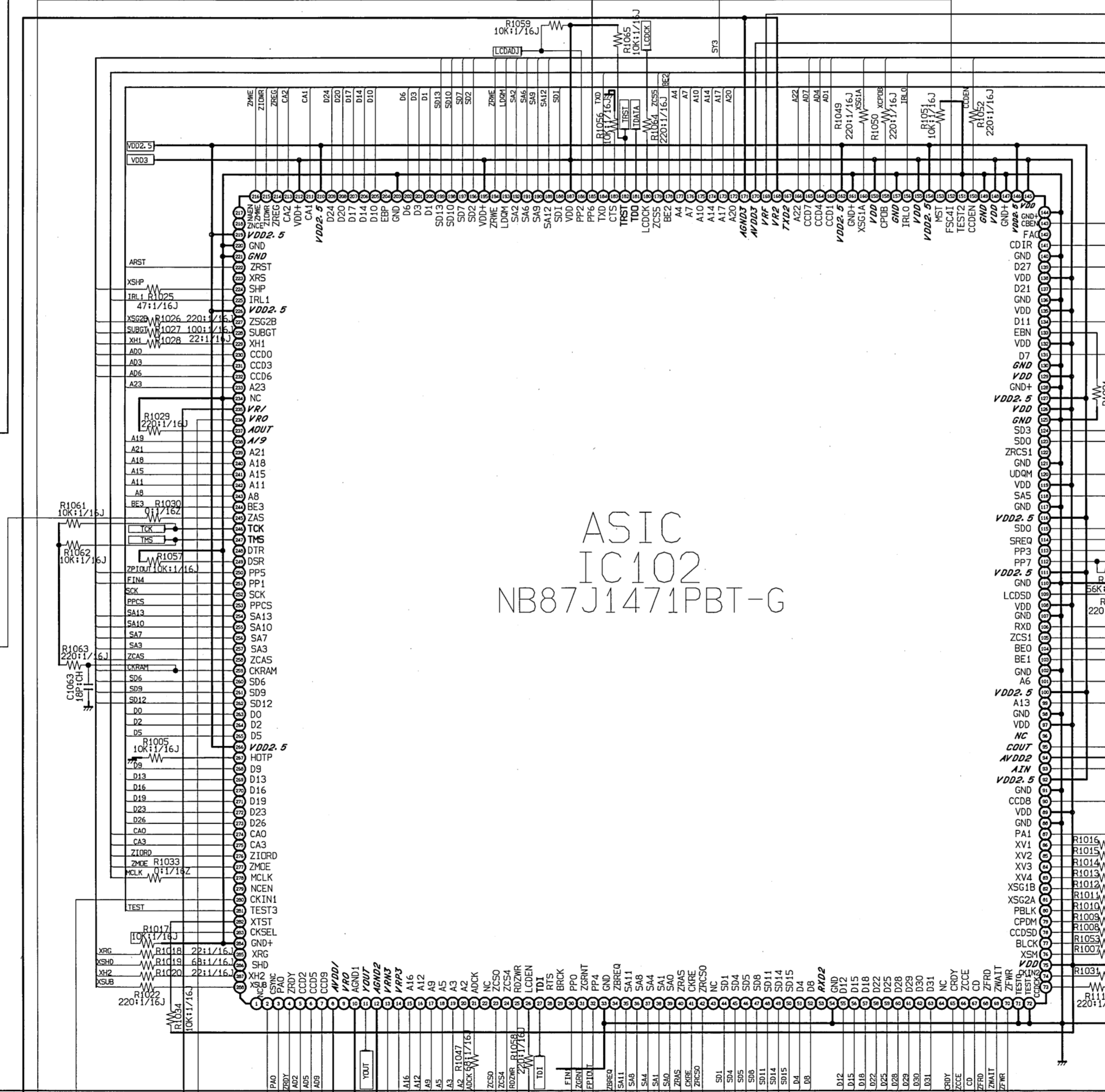
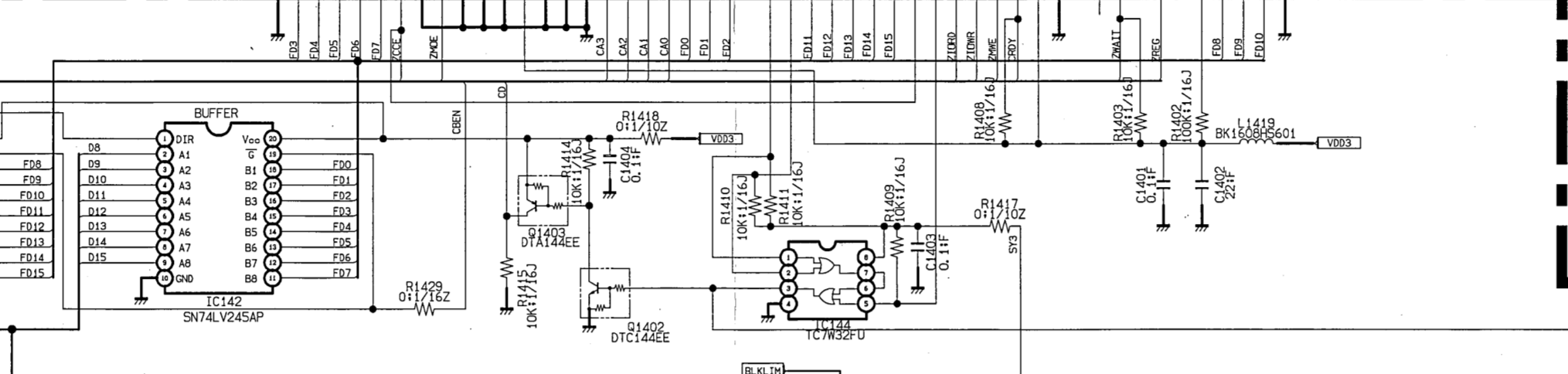
TO CA1 CN902
CN101



CN102
TO CA1 CNS01



CN141
TO COMPACT FLASH



CN171

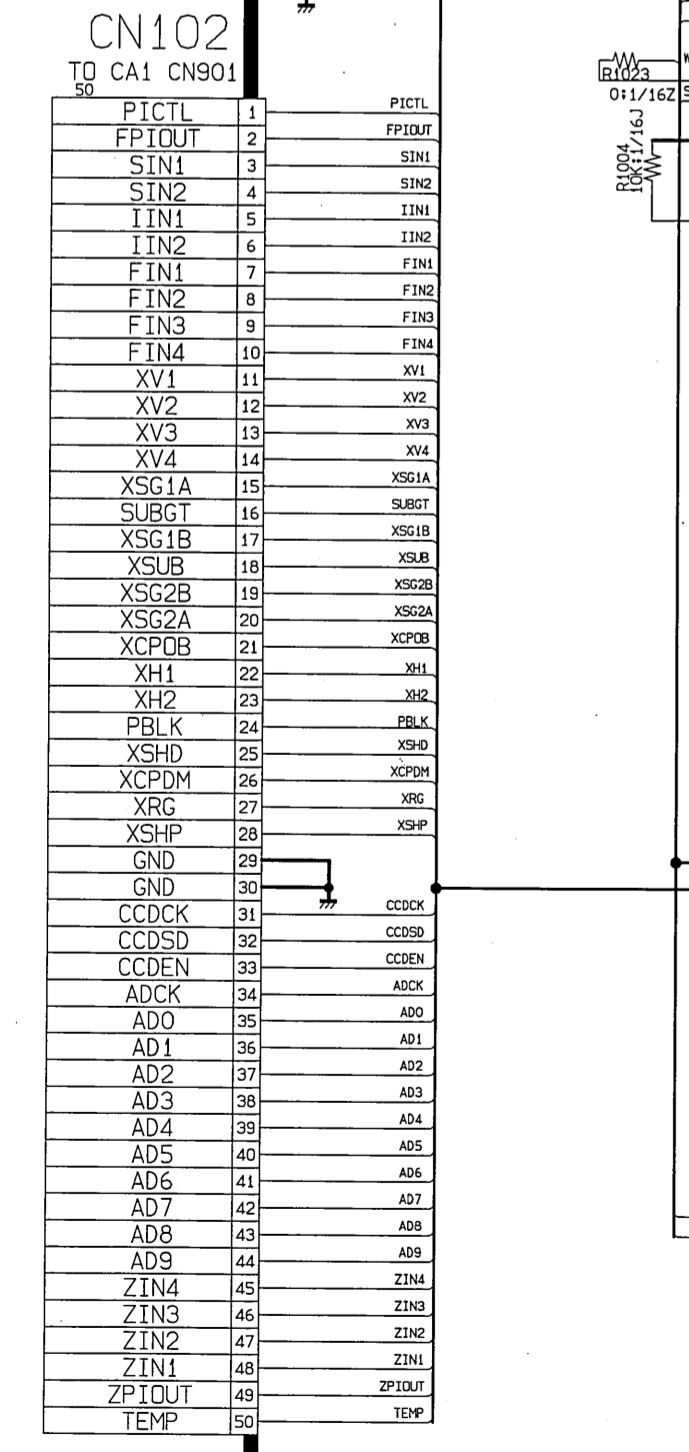
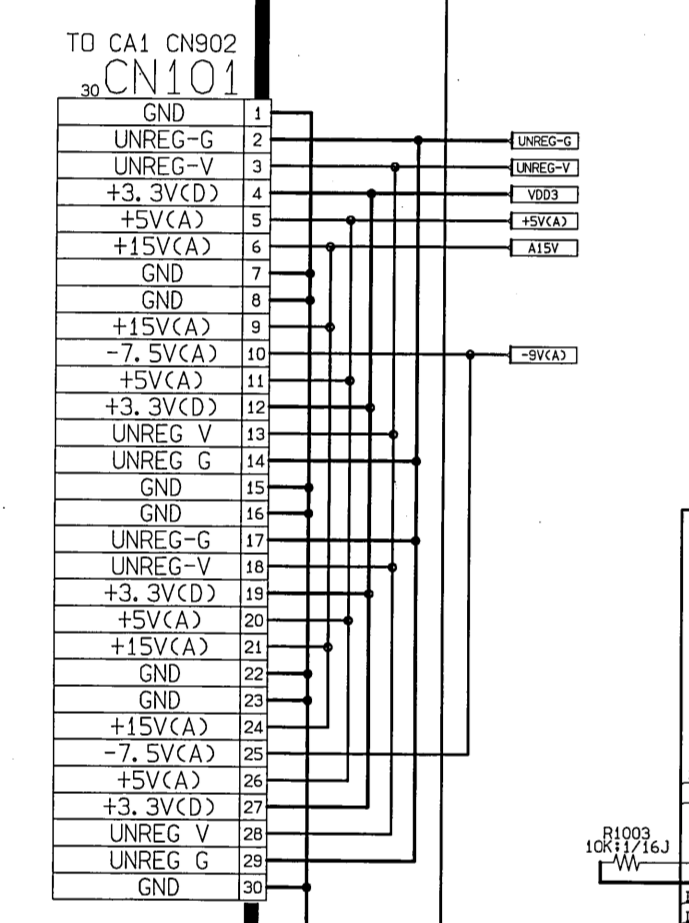
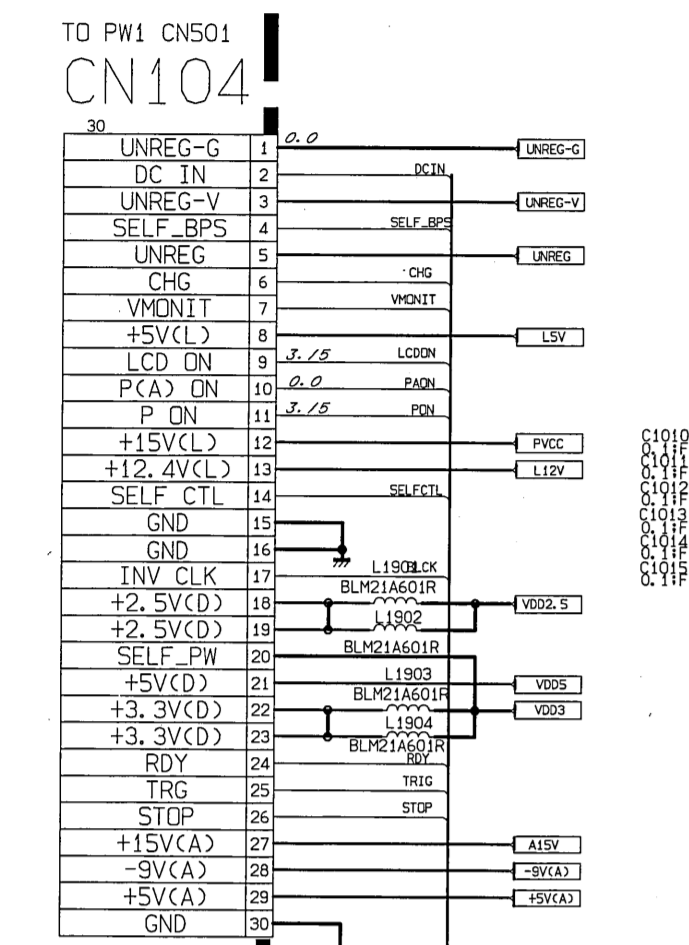
1	NOT USED
2	COM
3	CKV1
4	CKV2
5	VDD
6	STV
7	XSTV
8	CSV
9	ENB
10	XENB
11	PCD
12	B
13	R
14	YSS
15	XPCG
16	XSH
17	CSH
18	XSTH
19	STH
20	CKH1
21	CKH2
22	HUDD
23	NOT USED
24	NOT USED

CIRCUIT DIAGRAM (NTSC) CA-2

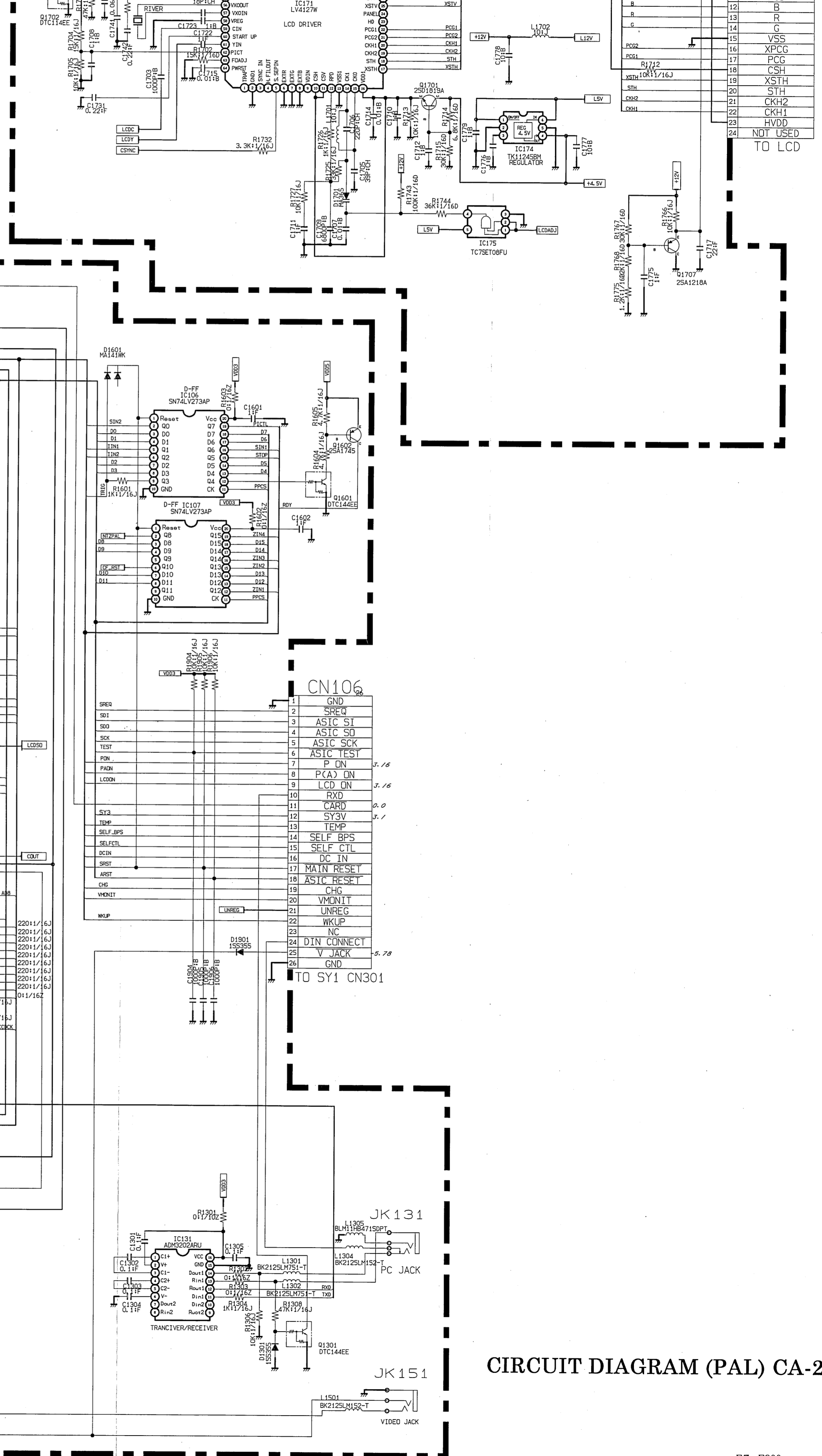
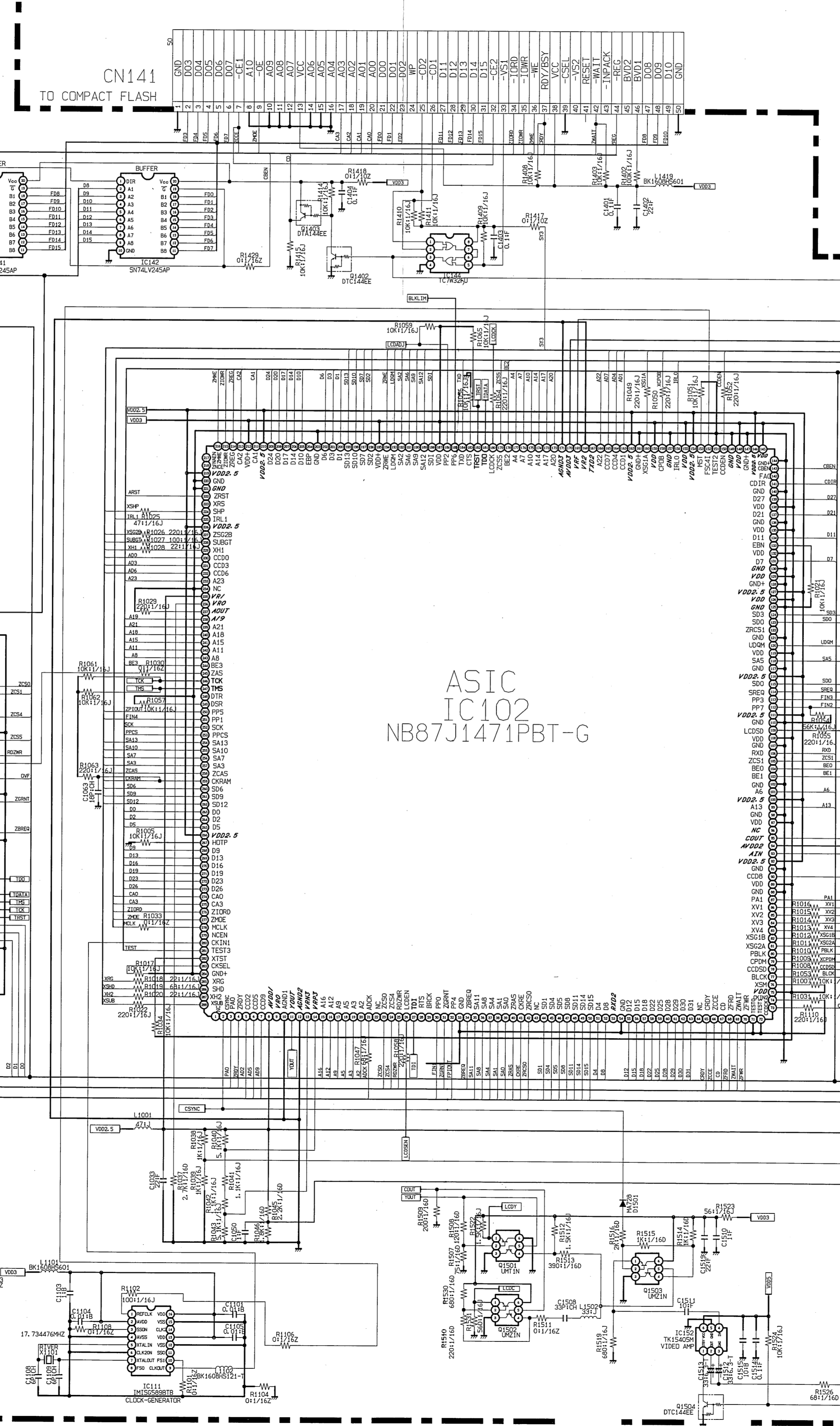
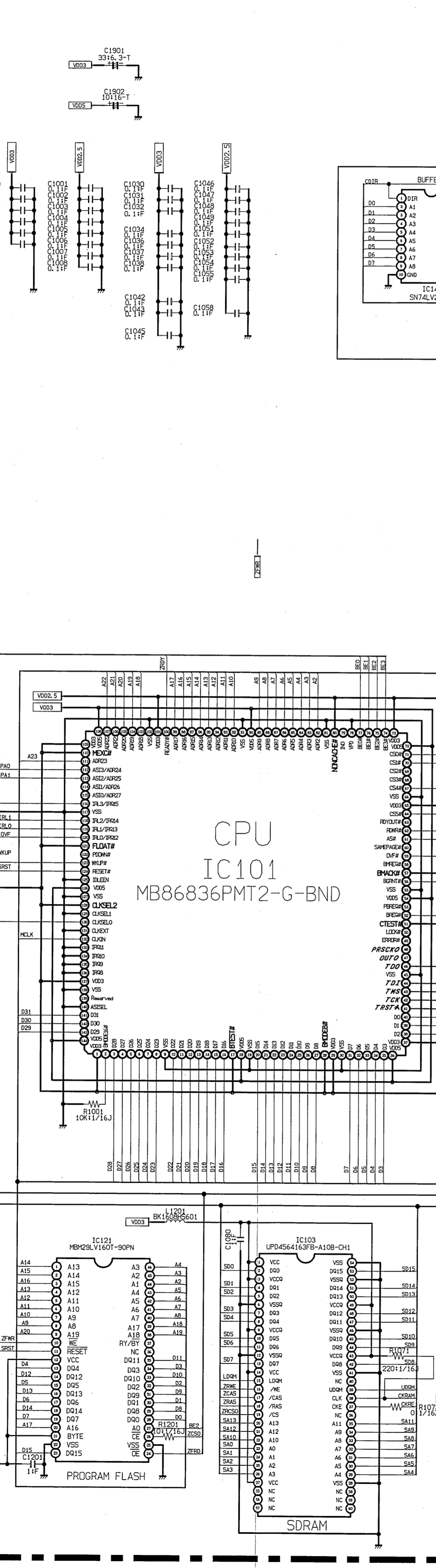
89/ 5/12
J. TABUCHI
89/ 5/12
Y. SHIRAKAWA
89/ 5/12
K. OGAWA
89/ 5/12
C. KANAI
89/ 5/12
K. INOUE

CA2_MAIN

C2-25302/SR984-ENK

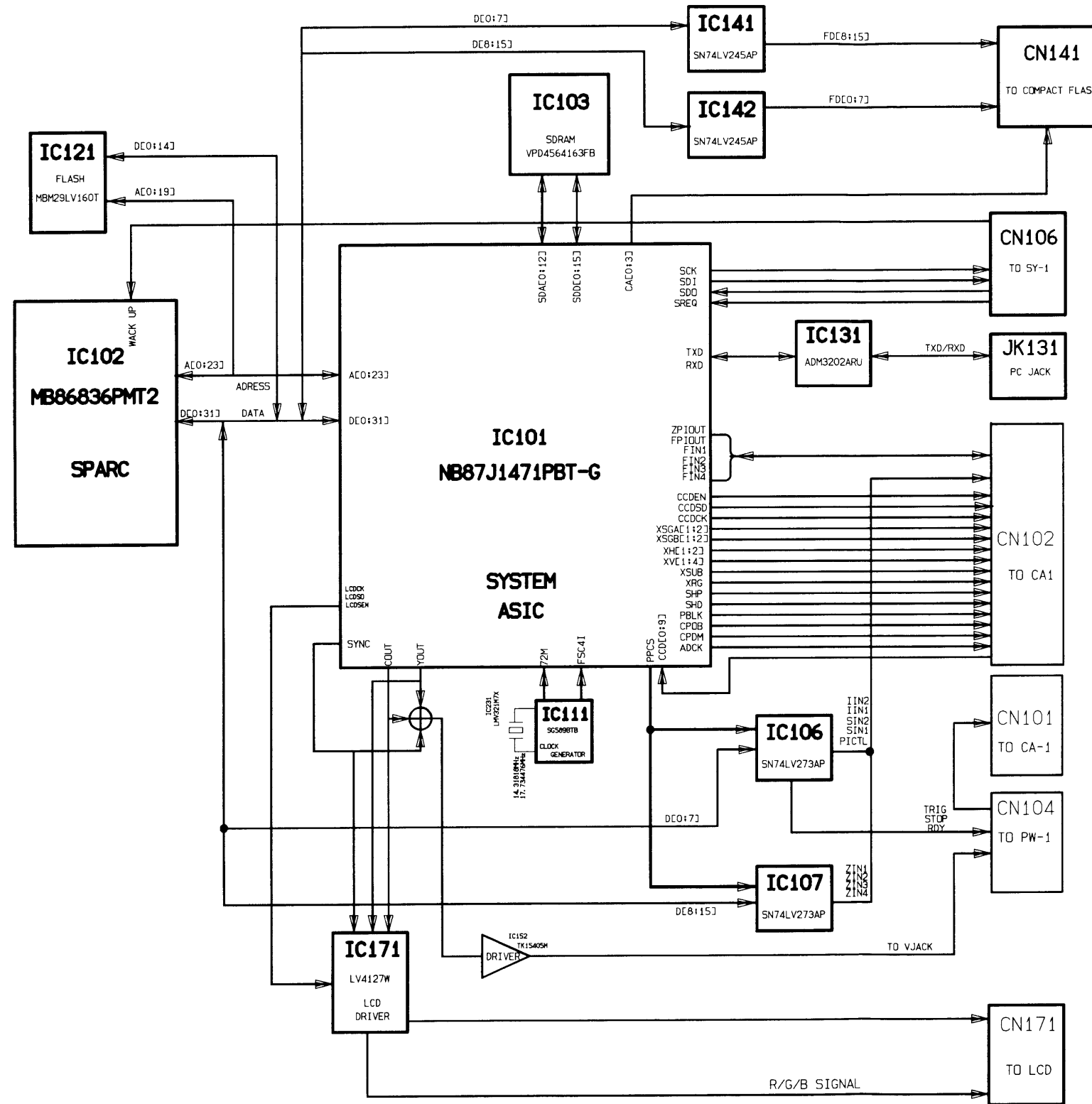


99/ 5/26
J. TABUCHI
99/ 5/26
Y. SHIRAKAWA
99/ 5/26
K. OGAMA
99/ 5/26
G. KANAI
99/ 5/26
99/ 5/26
K. INOUE

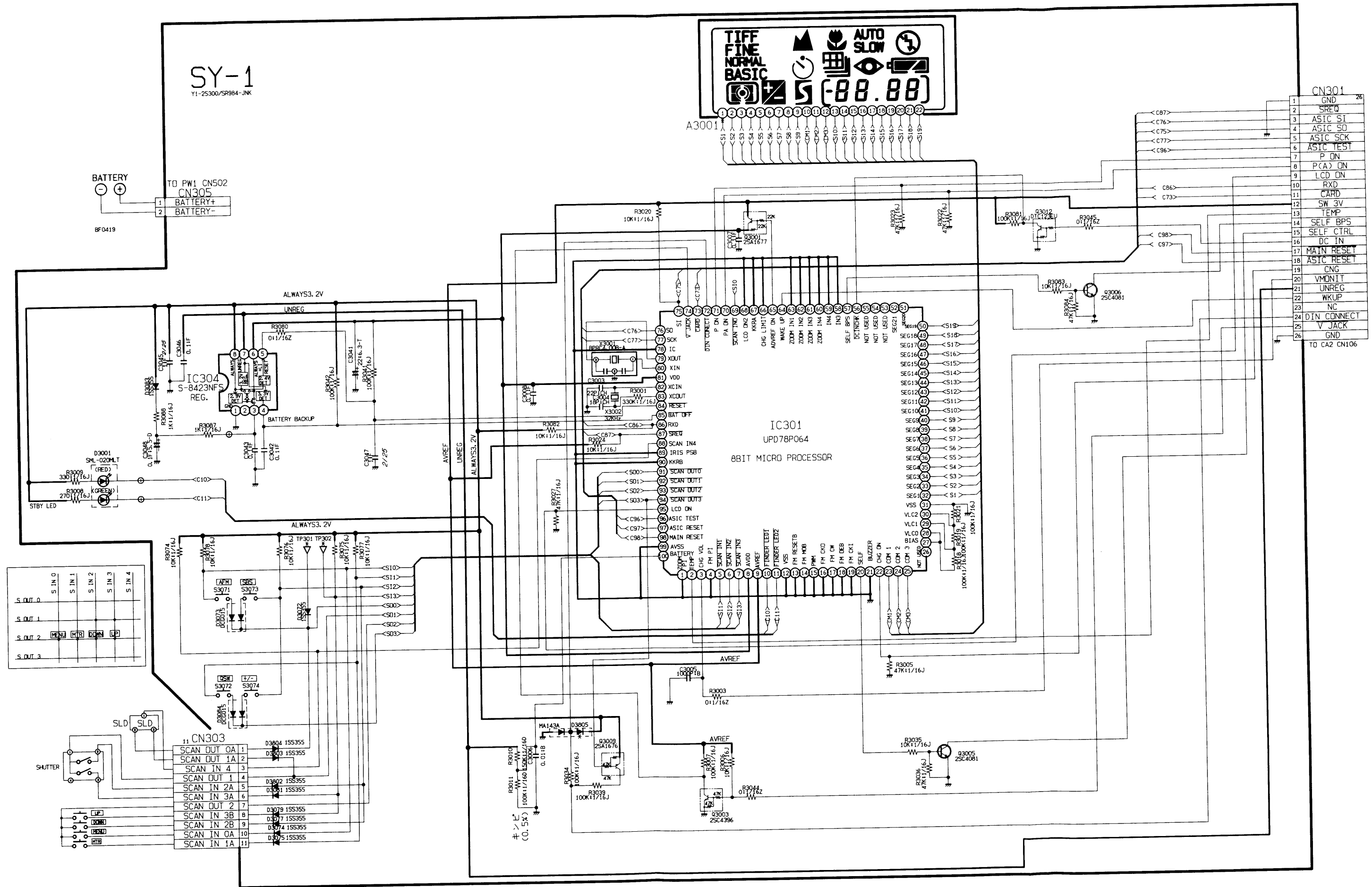


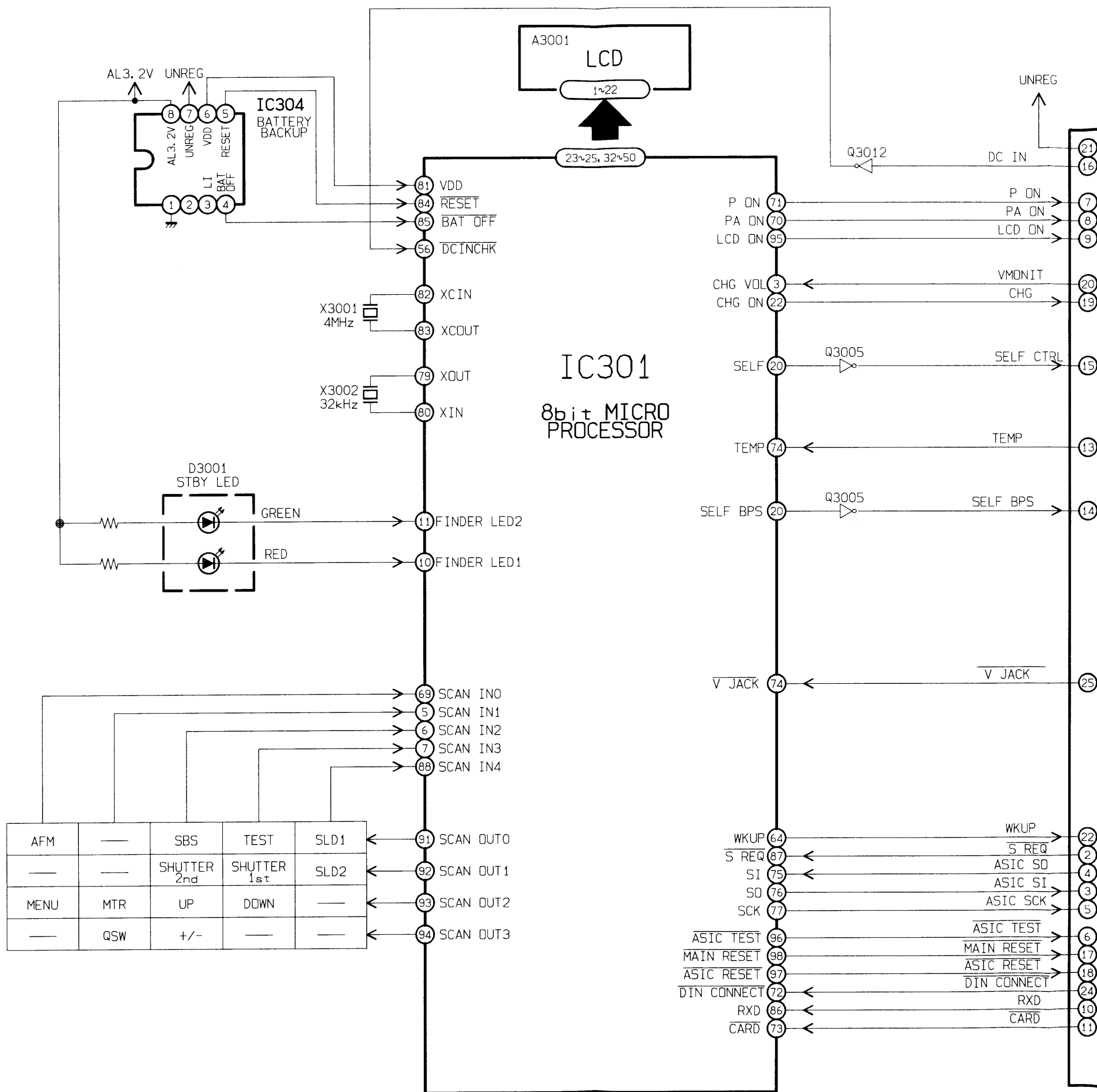
CIRCUIT DIAGRAM (PAL) CA-2

MAIN PROCESS

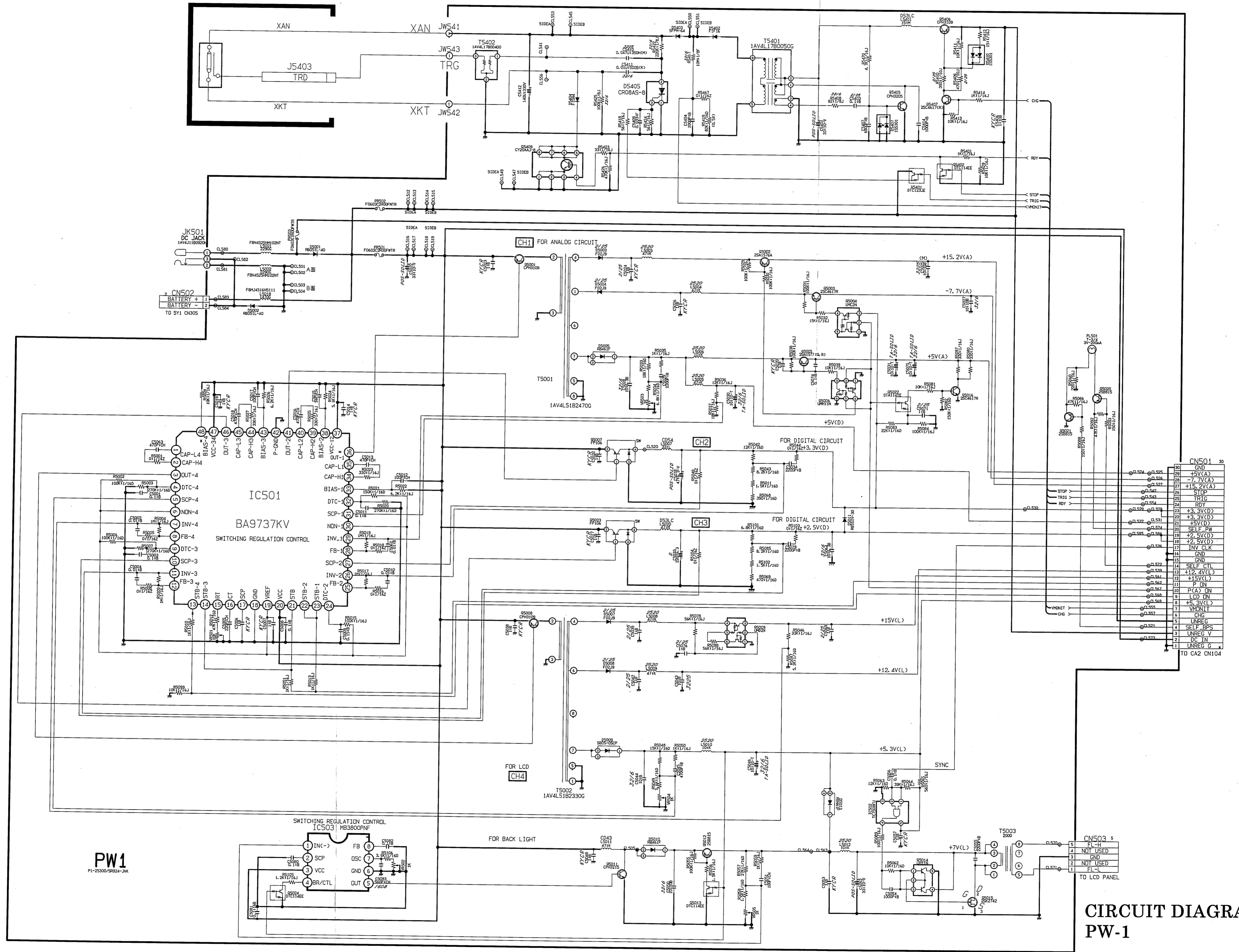


BLOCK DIAGRAM CA-2

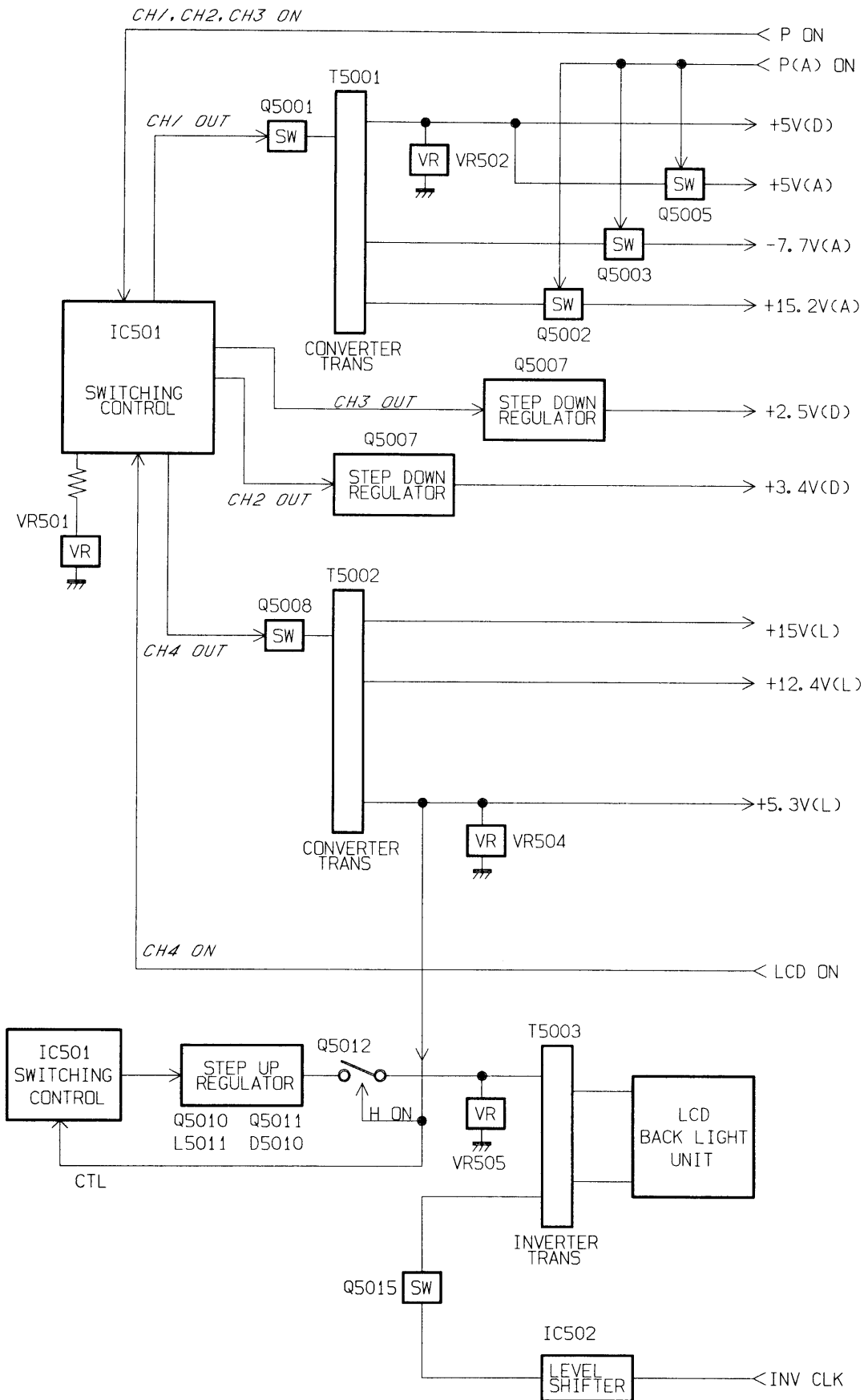




BLOCK DIAGRAM SY-1



CIRCUIT DIAGRAM PW-1

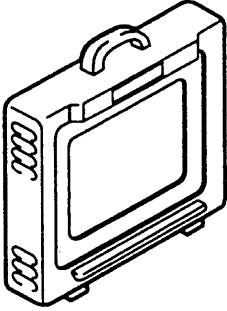
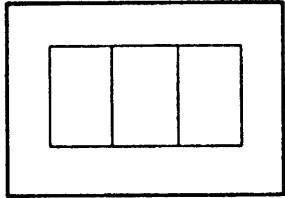
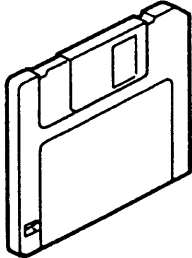
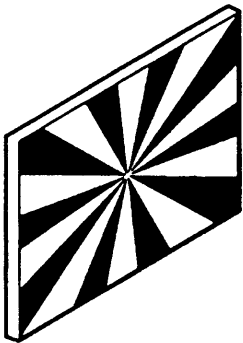


BLOCK DIAGRAM PW-1

6. 工具一覧表 Tool List

※：新規工具

※：New tool

工具番号 Tool No.	名 称 Name	略 図 Illustration	備 考 Remarks
J63049 (100Volts) J63050 (110Volts) J63051 (230Volts) J63052 (240Volts)	カラービューアー 5100K Colour Viwer 5100K		E900 E910 E900s E950 E700 共通 Common
J63056	色調整用チャート Chart for Colour Adjustment		E900 E910 E900s E950 E700 共通 Common
※ J65034	キャリブレーションソフト Calibration Software		E800 専用 Exclusive
サービスマニュアル添付 Attached in Service Manual	ジーメンスチャート Siemens chart		E900 E910 E900s E950 E700 共通 Common

