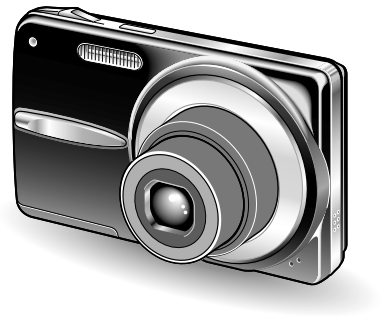
FILE NO.

SANYO

SERVICE MANUAL

Digital Camera



Contents

❗RoHS

- This product does not contain any hazardous substances prohibited by the RoHS Directive.

⚠WARNING

- You are requested to use RoHS compliant parts for maintenance or repair.
- You are requested to use lead-free solder.

(This product has been manufactured using lead-free solder. Be sure to follow the warning given on page 2 when carrying out repair work.)

CAUTION : Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Discard used batteries according to the manufacturer's instructions.

NOTE : 1. Parts order must contain model number, part number, and description.
2. Substitute parts may be supplied as the service parts.
3. N. S. P. : Not available as service parts.

Design and specification are subject to change without notice.

VPC-X1220EX
(Product Code : 168 259 02)
(Europe) (U.K.) (South America) (China) (Australia) (Hong Kong) (Russia) (Middle East) (Africa) (General) (Korea) (Taiwan)

VPC-X1220GX
(Product Code : 168 259 03)
(South America) (China) (Australia) (Hong Kong) (General) (Korea) (Taiwan)

VPC-X1220EXGD
(Product Code : 168 259 05)
(Europe) (U.K.) (South America) (China) (Australia) (Hong Kong) (Russia) (Middle East) (Africa) (General) (Korea) (Taiwan)

VPC-X1220GXGD
(Product Code : 168 259 06)
(South America) (China) (Australia) (Hong Kong) (General) (Korea) (Taiwan)

VPC-X1250P
(Product Code : 168 259 07)
(U.S.A.) (Canada) (Taiwan) (General)

VPC-X1220PX
(Product Code : 168 259 10)
(Taiwan) (South America) (General)

VPC-X1220PXGD
(Product Code : 168 259 11)
(Taiwan) (South America) (General)

REFERENCE No. SM5310804

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List. Do not deviate from the resistance, wattage, and voltage ratings shown.

WARNING

Do not use solder containing lead.

This product has been manufactured using lead-free solder in order to help preserve the environment.
Because of this, be sure to use lead-free solder when carrying out repair work, and never use solder containing lead.

Lead-free solder has a melting point that is 30 - 40°C (86 - 104°F) higher than solder containing lead, and moreover it does not contain lead which attaches easily to other metals. As a result, it does not melt as easily as solder containing lead, and soldering will be more difficult even if the temperature of the soldering iron is increased.
The extra difficulty in soldering means that soldering time will increase and damage to the components or the circuit board may easily occur.
Because of this, you should use a soldering iron and solder that satisfy the following conditions when carrying out repair work.

Soldering iron

Use a soldering iron which is 70 W or equivalent, and which lets you adjust the tip temperature up to 450°C (842°F). It should also have as good temperature recovery characteristics as possible.
Set the temperature to 350°C (662°F) or less for chip components, to 380°C (716°F) for lead wires and similar, and to 420°C (788°F) when installing and removing shield plates.
The tip of the soldering iron should have a C-cut shape or a driver shape so that it can contact the circuit board as flat or in a line as much as possible.

Solder

Use solder with the metal content and composition ratio by weight given in the table below. Do not use solders which do not meet these conditions.

Metal content	Tin (Sn)	Silver (Ag)	Copper (Cu)
Composition ratio by weight	96.5 %	3.0 %	0.5 %

Lead-free solder is available for purchase as a service tool.
Use the following part number when ordering:
Part name: Lead-free solder with resin (0.5 mm dia., 500 g)
Part number: VJ8-0270

Note:
If replacing existing solder containing lead with lead-free solder in the soldered parts of products that have been manufactured up until now, remove all of the existing solder at those parts before applying the lead-free solder.

1. OUTLINE OF CIRCUIT DESCRIPTION

1-1. CCD CIRCUIT DESCRIPTION

1. IC Configuration

The CCD peripheral circuit block basically consists of the following ICs.

IC911 (RJ23Y3BA1LG)	CCD imager
IC901 (MAX8918ITM+T)	V driver
IC902 (AD9971BCPZRL)	CDS, AGC, A/D converter, H driver, vertical TG

2. IC911 (CCD)

[Structure]

1/2.33 inch 12.53 million picture element

Effective pixels	4040 (H) X 3032 (V)
Pixels in total	4102 (H) X 3057 (V)
Optical black	
Horizontal (H) direction: Front 2 pixels, Rear 60 pixels	
Vertical (V) direction: Below 19 pixels, Above 6 pixels	
Dummy bit number	Horizontal : 26 Vertical :6

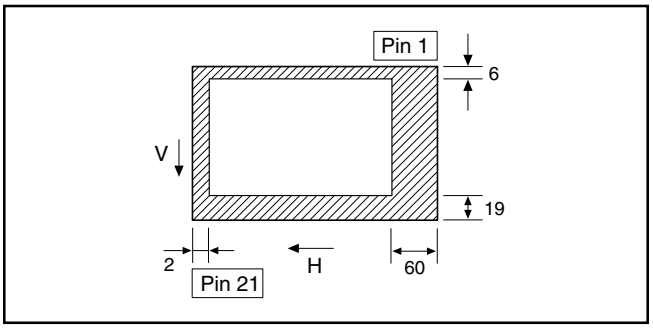


Fig. 1-1.Optical Black Location (Top View)

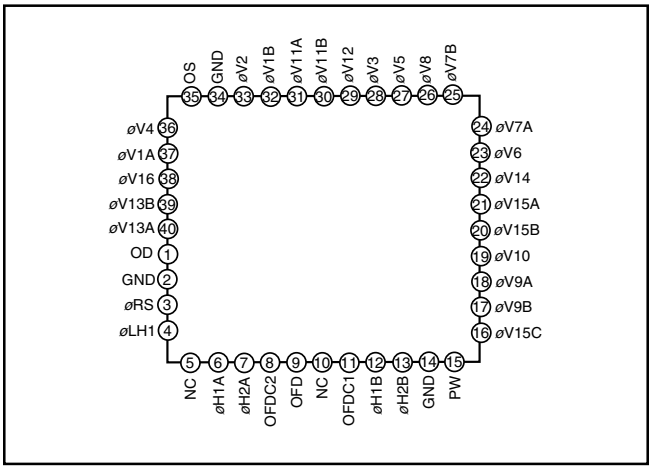


Fig. 1-2. CCD Block Diagram

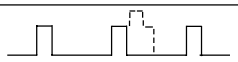
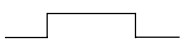
Pin No.	Symbol	Pin Description	Waveform	Voltage
33, 36, 21, 20, 16, 38	V2, V4, V15A, V15B, V15C, V16	Vertical shift register clock pulse		-7.0 V, 0 V
28, 27	V3, V5	Vertical shift register clock pulse		-7.0 V, 0 V, 14.5 V
23, 26, 19, 29, 40, 39, 22	V6, V8, V10, V12,V13A, V13B, V14	Vertical shift register clock pulse		-7.0 V, 0 V
37, 32, 24, 25, 18, 17, 31, 30	V1A, V1B, V7A, V7B, V9A, V9B, V11A, V11B	Vertical shift register clock pulse		-7.0 V, 0 V, 14.5 V
2, 14, 34	GND	GND	GND	0 V
9	OFD	Substrate clock	DC	21.0 Vp-p
1	OD	Power	DC	14.5 V
35	OS	CCD output	DC	Aprox. 7.3 V
11, 8	OFDC1, 2	Substrate control		0, 3.3 V (When importing all picture element: 3.3 V)
6, 7, 12, 13	H1A, H2A, H1B, H2B	Horizontal shift register clock pulse		0 V, 3.3 V
4	LH1	Horizontal shift register clock pulse		0 V, 3.3 V
3	RS	Reset pulse		3.3 Vp-p
15	PW	Protection P well	DC	-7 V

Table 1-1. CCD Pin Description

---- When sensor read-out

3. IC901 (V Driver)

A V driver (IC901) is necessary in order to generate the clocks (vertical transfer clock and electronic shutter clock) which driver the CCD.

The signals (SCLK, SAV 0-2 and SDV 0-5) which are output from IC101 are source of the vertical transfer clock, and are decorded and superimposed at V driver.

The SUBCLK signal which is output from IC101 is used as the sweep pulse for the electronic shutter.

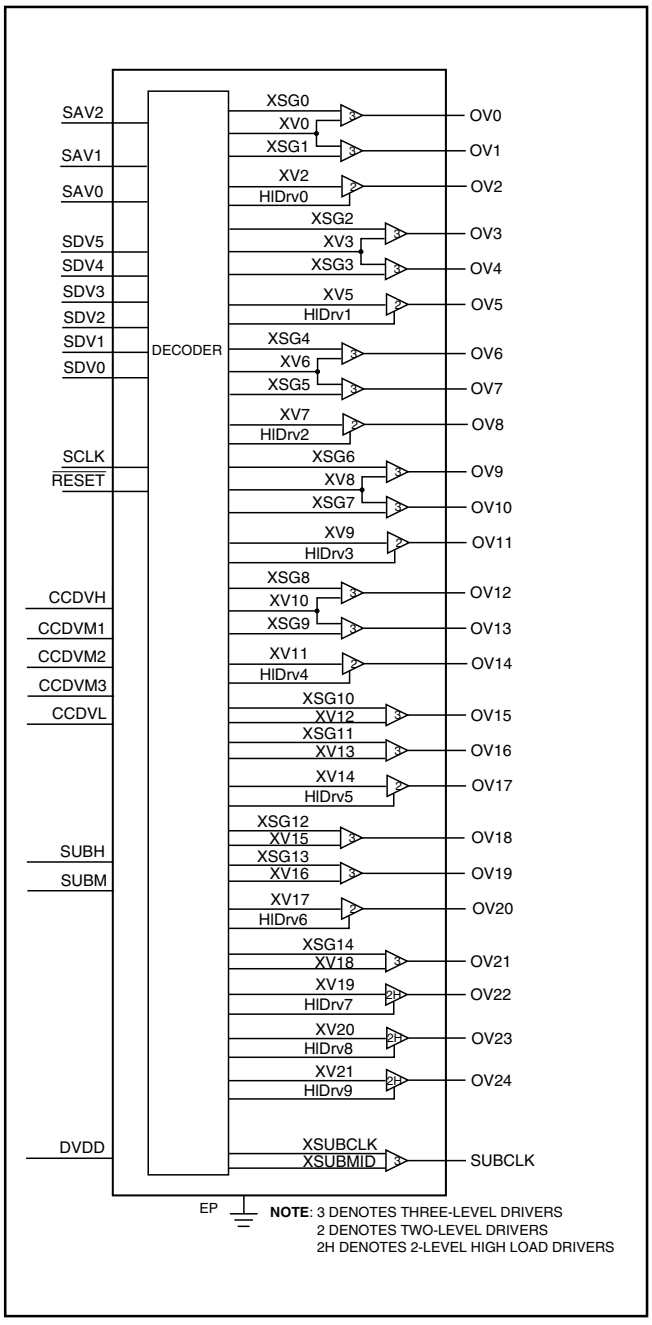


Fig. 1-3. IC901 Block Diagram

4. IC902 (H Driver, CDS, AGC and A/D converter)

IC902 contains the functions of H driver, CDS, AGC and A/D converter. As horizontal clock driver and reset pulse for CCD image sensor are generated inside H1, H2, H3 and H4, and output to CCD.

The video signal which is output from the CCD is input to pin (25) of IC902. There are sampling hold blocks generated from the SHP and SHD pulses, and it is here that CDS (correlated double sampling) is carried out.

After passing through the CDS circuit, the signal passes through the VGA (VGA: Variable Gain Amplifier). It is converted internally into a small-amplitude actuating signal (LVDS), and is then input to IC101. The gain of the VGA amplifier is controlled by pins (32), (33) and (34) using serial signals which is output from IC101.

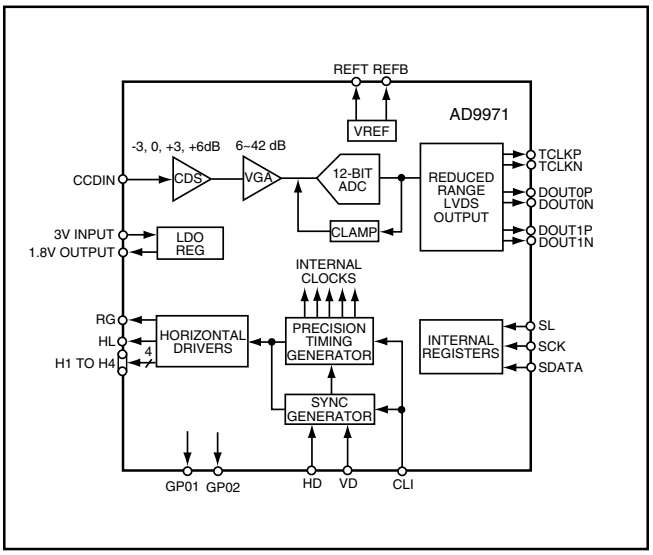


Fig. 1-4. IC902 Block Diagram

1-2. CP1 CIRCUIT DESCRIPTION

1. Circuit Description

1-1. Signal processor

1. Gamma 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 gemerate the aperture signal.

1-2. 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.

1-3. SDRAM controller

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

1-4. PIO/PWM/SIO for LCD

It possible to switch be-tween individual input/output and PWM input/output.

1-5. TG/SG

Timing generated for 12 million pixel CCD control.

1-6. Digital encorder

It generates chroma signal from color difference signal.

2. Outline of Operation

When the shutter opens, the ASIC starts shooting operation. When the TG/SG drives the CCD, picture data passes through the A/D and CDS, and is then input to the ASIC as the LVDS1. 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. At this time, correction of the lens distortion which is a characteristic of wide-angle lenses is carried out.

After AWB and g 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 JPEG and is then written to card memory (SD card).

When the data is to be output to an external device, it is taken data from the memory and output via the USB. When played back on the LCD and monitor, data is transferred from memery to the SDRAM, and the image is then elongated so that it is displayed over the SDRAM display area.

3. LCD Block

The LCD display circuit is located on the CP1 board, and consists of components such as a power circuit.

The signals from the ASIC are 8-bit digital signals, that is input to the LCD directly. The 8-bit digital signals are converted to RGB signals inside the LCD driver circuit.

The LCD is input signals from ASIC directly to the LCD, and function such as image quality are controlled.

In addition, the timing pulses for signals other than the video signals are also input from the ASIC directory to the LCD.

4. Lens drive block

4-1. Zoom drive

Drive settings are made by means of the serial data signals (L_STR, L_SCLK and L_SDATA) and data signal (ZIN) which are output by the ASIC (IC101). The motor drive signals (ZOUT+, and ZOUT-) are output in accordance with the settings from the motor driver IC (IC951) to drive the zoom DC motor.

Detection of the standard zooming positions is carried out by means of signal (ZPROUT) from the photoreflector by ASIC (IC101) is detecting inside the lens block. Also, getting of the zooming positions is carried out by the ASIC (IC101) counting the photointerruptor (ZPIOUT).

4-2. Focus drive

Drive settings are made by means of the serial data signals (L_STR, L_SCLK and L_SDATA) and data signal (F_CLK) which are output by the ASIC (IC101). The motor drive signals (FOUT_A+, FOUT_ A-, FOUT_B+ and FOUT_B-) are output in accordance with the settings from the motor driver IC (IC951) to drive the focus stepping motor.

Detection of the standard focusing positions is carried out by the ASIC (IC101) detecting the signal (FPIOUT) from the photointerruptor inside the lens block.

4-3. Iris drive

Drive settings are made by means of the serial data signals (L_STR, L_SCLK and L_SDATA) and data signal (IIN) which are output by the ASIC (IC101). The motor drive signals (IOUT+ and IOUT-) are output in accordance with the settings from the motor driver IC (IC951) to drive constant the moving coil motor for iris.

4-4. Shutter drive

Drive settings are made by means of the serial data signals (L_STR, L_SCLK and L_SDATA) and data signal (IIN) which are output by the ASIC (IC101). The shutter drive signals (SOUT+ and SOUT-) are output in accordance with the settings from the motor driver IC (IC951) to drive constant the moving coil motor for shutter, and then mecha shutter is opened and closed.

5. Key Operaiton

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

SCAN OUT \ SCAN IN	0	1	2	3
0	OK	MENU	PLAY	SCENE
1	DOWN	LEFT	RIGHT	UP
2	WIDE	TELE	-	-
3	-	-	PW_TEST	TEST

Table 2-1. Key Operation

6. Power Supply Control

The ASIC 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, IC501 is operating and a regulated 3.2 V is input to ASIC (IC101). Clock counting and key scanning is carried out even when the power switch is turned off, so that the camera can start up again.

When the power switch is off, the ASIC operates 32.768 kHz of subclock.

When the battery is removed, the ASIC power switches the secondary lithium battery for memory backup by IC501, and operates at low consumption. At this condition, 32.768 kHz of subclock operates clock counting.

Also, the battery for lithium backup is charged 10 hours from it to be attached.

When the power switch is on, the ASIC starts processing. The ASIC first sets the PON signal and PON2 signal to High, and then turn on the power circuit. After PON signal is to High, carry out setting of the operating frequency and oscillation control inside the ASIC.

During through screen operation, the serial communication and PAON3 signal are set to High and the CCD power supply starts up.

During playback, CCD power supply is turned off.

When LCD panel turns on, the serial communication turns on the backlight power.

When the power switch is off, the lens will be stowed, and the power supply to the whole system is halted. The ASIC set operation mode of clock ocillation (32.768 kHz).

	ASIC, memory	CCD	LCD MONITOR
Power supply voltage	1.1 V, 1.8 V, 3.25 V	14.5 V, -7 V, 3.4 V	3.25 V
Power OFF	OFF	OFF	OFF
Playback mode	ON	OFF	ON
Shooting mode	ON	ON	ON
USB connection	ON	OFF	ON

Table 2-2. Power supply control

7. Auto-refresh function

If the power is turned off while the battery is still inserted, this model keeps running at 1.8 V and controls auto-refreshing of the DDR with the aim of reducing the time required for startup.

While DDR auto-refresh control is being carried out, only PON2 is set to High and only VDD1.8V is started up, even if the power supply which controls PON and serial communication is at Low.

1-3. PWA POWER CIRCUIT DESCRIPTION

1. Outline

This is the main power circuit, and is comprised of the following blocks.
Switching power controller (IC501)
Digital VDD3 output system (L5021)
Digital VDD1.1 output system (L5031)
Digital VDD1.8 output system (L5061)
Analog +14.5 V (A) output system (L5041, D5041)
Analog -7.0 V (A) output system (L5051, D5051)
Analog +3.4 V (A) output system (IC501 built-in LDO)
LCD backlight output system (L5071, D5071)
Motor system BOOST 3.8 V output system (L5301, D5301)

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 seven channels and two channels (LDO).
Only CH1 (motor system), CH2, CH3 and CH6 (digital system), CH4, CH5 and CH8 (analog system) and CH7 (LCD back-light system) are used.
Feedback from motor system (CH1), digital system (CH2, CH3 and CH6), analog system (CH4, CH5 and CH8) are received, and the PWM duty is varied so that each one is maintained at the correct voltage setting level. (CH8 is output by LDO.)
Feedback for the LCD backlight power output (CH7) is so that regular current can be controlled to be current that was setting.

2-1. Short-circuit protection circuit

If output is short-circuited for the length of time determined by the IC501 register setting, all output is turned off. To reset output, it is necessary to reset the contrller IC to reset the power.

3. (CH1) Motor System 3.8 V Output

+3.8 V is output. BOOST 3.8 V output is so that PWM control can be carried out at the internal circuit of the switching controller (IC501).

4. (CH2) Digital 3.25 V Output

+3.25 V is output. VDD3 is so that PWM control can be carried out at the internal circuit of the switching controller (IC501).

5. (CH3) Digital 1.1 V Output

+1.1 V is output. VDD 1.1 output is so that PWM control can be carried out at the internal circuit of the switching controller (IC501).

6. (CH4) Analog +14.5 V Output

+14.5 V is output. Feedback for the +14.5 V (A) output is provided to (Pin (B7) of IC501) so that PWM control can be carried out.

7. (CH5) Analog -7.0 V Output

-7.0 V is output. Feedback for the -7.0 V (A) output is provided to (Pin (B4) of IC501) so that PWM control can be carried out.

8. (CH6) Digital 1.8 V Output

+1.8 V is output. VDD 1.8 output is so that PWM control can be carried out at the internal circuit of the switching controller (IC501).

9. (CH7) LCD Backlight Output

Regular current is being transmitted to LED for LCD backlight. Detecting for the switching controller (Pin (C3) of IC501) current flowing along connecting registance so that PWM can be controlled.

10. (CH8) Analog 3.4 V Output

+3.4 V is output. +3.4 V (A) output is output at the built-in linear regulator (IC501).

1-4. ST1 STROBE CIRCUIT DESCRIPTION

1. Charging Circuit

When UNREG power is supplied to the charge circuit and the CHG signal from microprocessor becomes High (3.3 V), the charging circuit starts operating and the main electorolytic 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. Charge switch

When the CHG signal switches to Hi, IC541 starts charging operation.

1-2. Power supply filter

C5401 constitutes 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 200-300 kHz, and drive the oscillation transformer.

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.

1-6. Charge monitoring circuit

The functions programmed in the IC541 monitor oscillations and estimate the charging voltage. If the voltage exceeds the rated value, charging automatically stops. Then, the ZCHG_DONE signal is changed to Lo output and a "charging stopped" signal is sent to the microcomputer.

2. Light Emission Circuit

When FLCTL signal is input from the ASIC, the stroboscope emits light.

2-1. Emission control circuit

When the FLCTL signal is input to the emission control circuit, Q5402 switches on and preparation is made to the light emitting. Moreover, when a FLCTL signal becomes Lo, the stroboscope stops emitting light.

2-2. Trigger circuit

The Q5402 is turned ON by the FLCTL signal and light emission preparation is preformed. Simultaneously, high voltage pulses of several kV are emitted from the trigger coil and applied to the light emitter.

2-3. Light emitting element

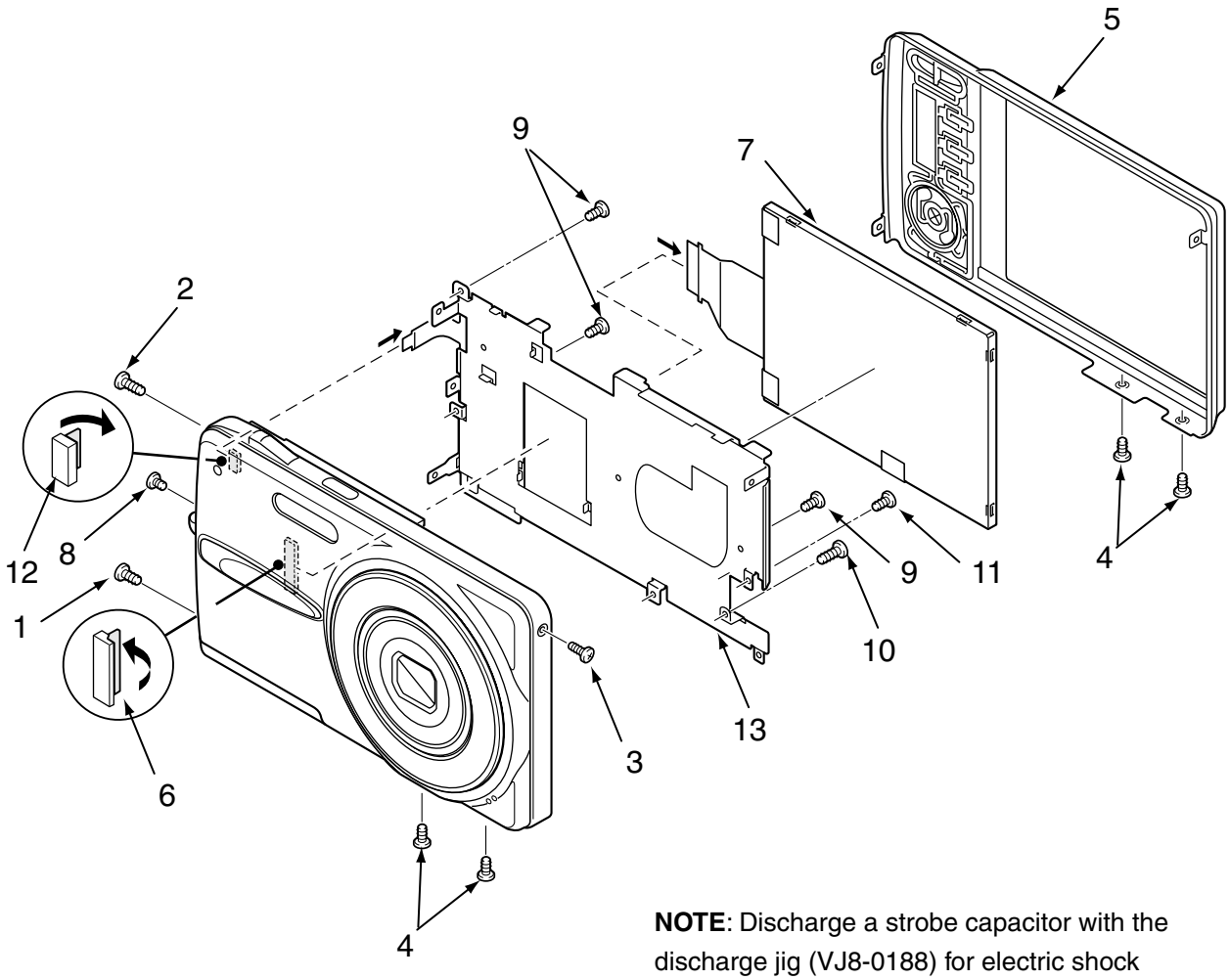
When the high-voltage pulse form the trigger circuit is applied to the light emitting part, currnet flows to the light emitting element and light is emitted.

Beware of electric shocks.

2. DISASSEMBLY

2-1. REMOVAL OF CABI BACK AND LCD

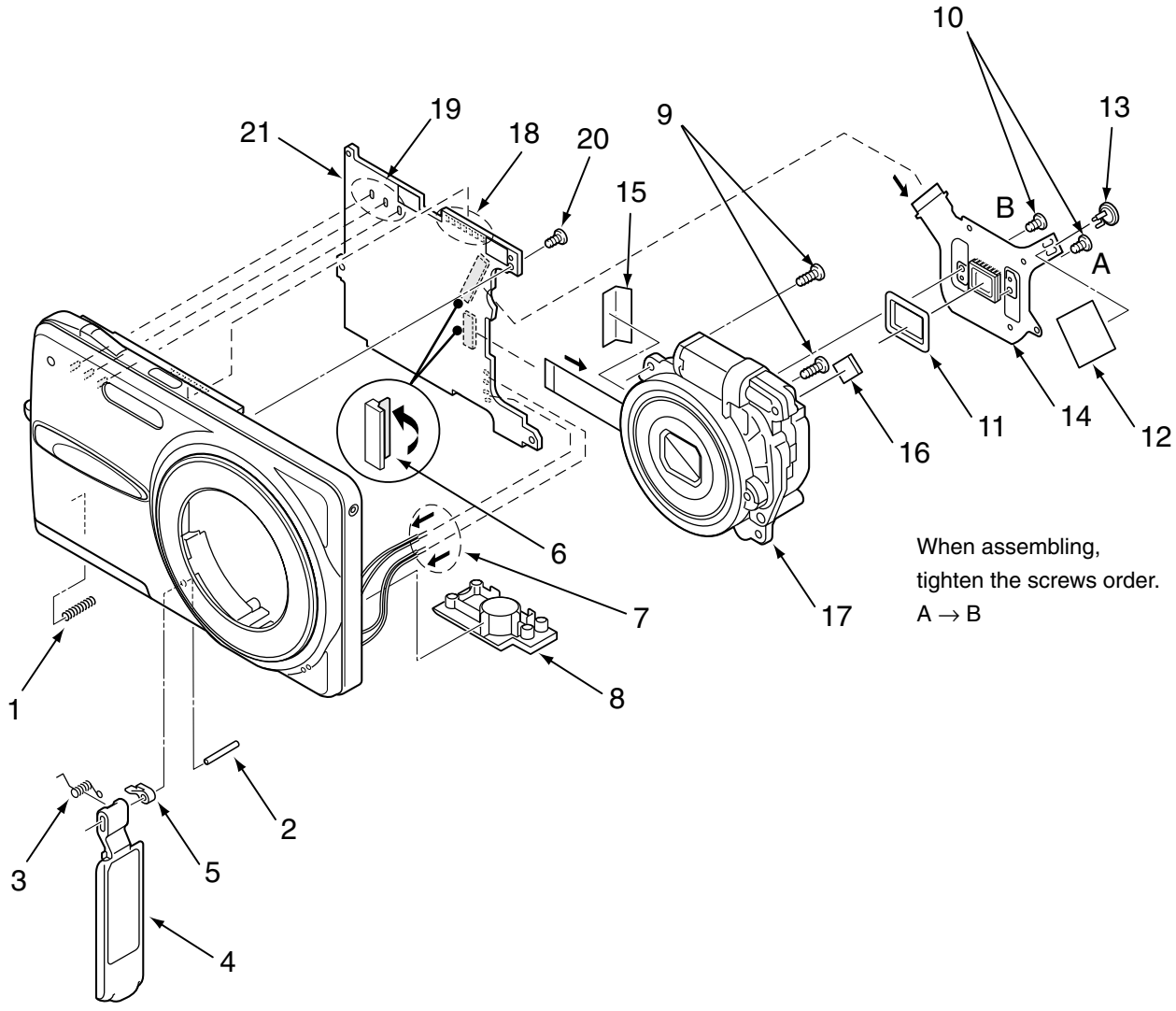
1. Screw 1.4 x 3
2. Screw 1.4 x 5
3. Screw 1.4 x 5
4. Four screws 1.4 x 3.5
5. Cabi back
6. Connector
7. LCD
8. Screw 1.4 x 2
9. Three screws 1.4 x 4
10. Screw 1.6 x 5
11. Screw 1.6 x 3.5
12. Connector
13. Holder LCD



NOTE: Discharge a strobe capacitor with the discharge jig (VJ8-0188) for electric shock prevention.

2-2. REMOVAL OF CA1 BOARD, CP1 BOARD AND LENS

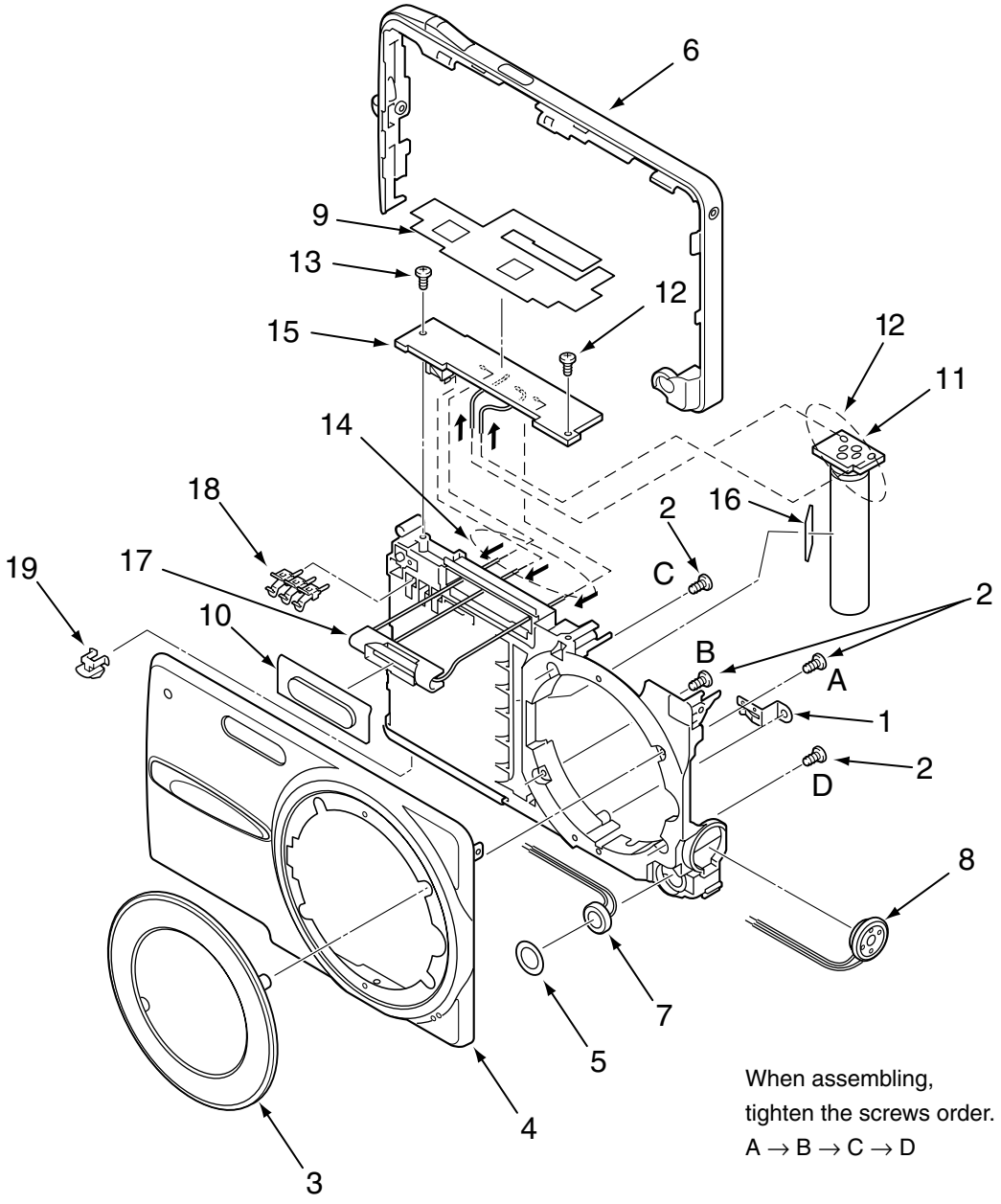
1. Spring BATT look
2. Shaft CV BATT
3. Spring open cover
4. Cover battery
5. Cover DC
6. Connector
7. Remove the solder. (speaker and microphone)
8. Stand
9. Two screws 1.6 x 5
10. Two screws 1.6 x 3
11. Spacer, lens
12. Spacer backup
13. Battery recharge
14. CA1 board
15. Spacer lens
16. Adhesive backup
17. Lens
18. Remove the solder.
19. Remove the solder.
20. Screw 1.4 x 3.5
21. CP1 board



When assembling,
tighten the screws order.
A → B

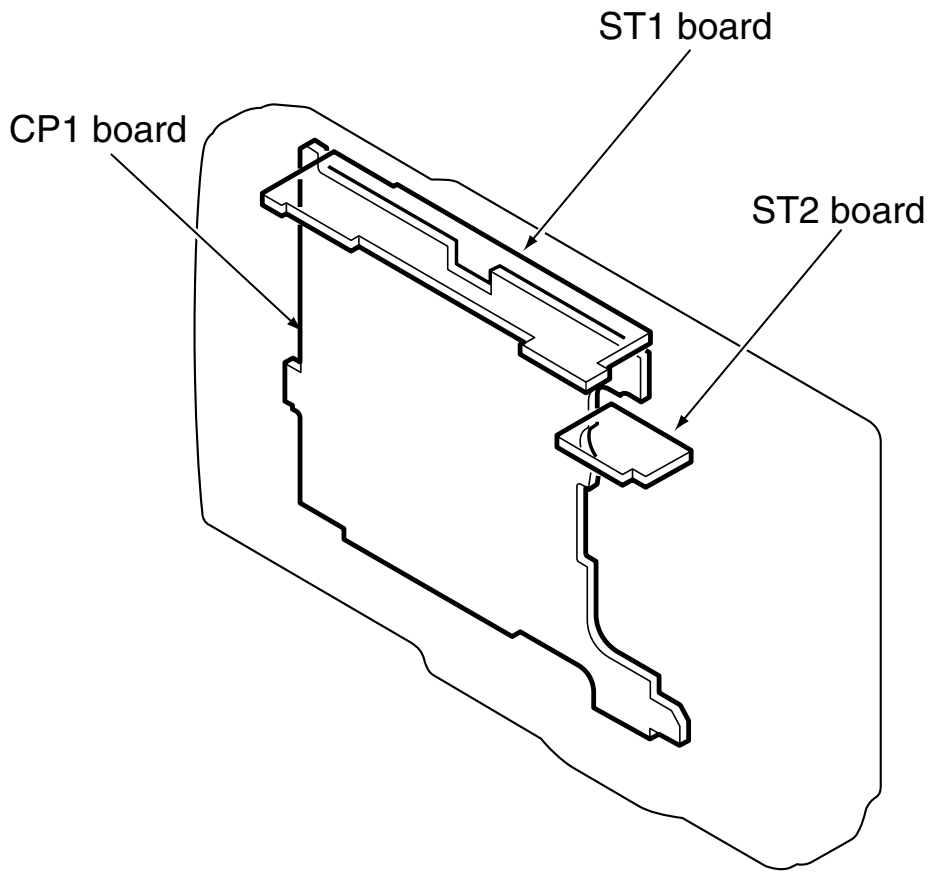
2-3. REMOVAL OF ST1 BOARD AND ST2 BOARD

1. Earth USB
2. Four screws 1.4 x 3
3. Dec lens
4. Cabi front
5. Spacer mic
6. Dec top
7. Microphone
8. Speaker, 8
9. Spacer ST1
10. Dec window flash
11. ST2 board
12. Remove the solder.
13. Two screws 1.4 x 3.5
14. Remove the solder.
15. ST1 board
16. Adhesive main CON
17. Assy, lamp
18. Terminal battery
19. Lever batt lock



When assembling,
tighten the screws order.
A → B → C → D

2-4. BOARD LOCATION

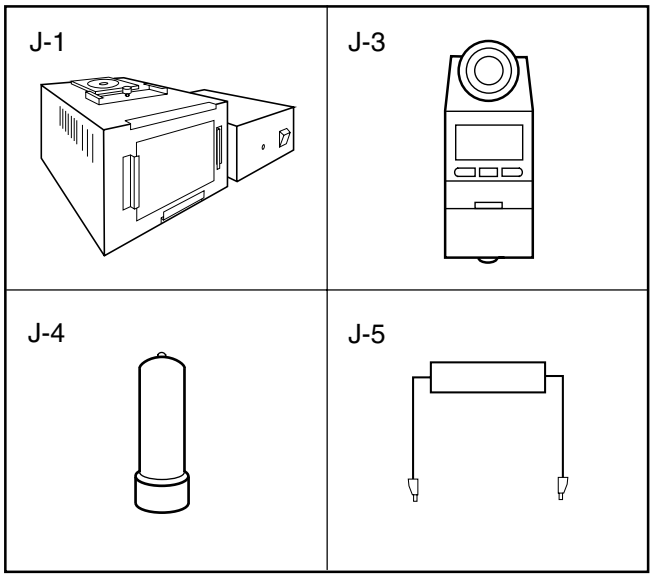


3. ELECTRICAL ADJUSTMENT

3-1. Table for Servicing Tools

Ref. No.	Name	Number	Part code
J-1	Pattern box	1	VJ8-0190
J-2	Calibration software	1	
J-3	Chroma meter	1	VJ8-0192
J-4	Spare lump (pattern box)	1	VJ8-0191
J-5	Discharge jig	1	VJ8-0188
J-6	Collimator	1	VJ8-0260
J-7	Spare lump (collimator)	1	VJ8-0282

Download the calibration software and the firmware from the following URL.
http://www.overseas.sanyo.com/dcamera service/
Place the DscCalDi.exe file, camapi32.dll file and QrCodeInfo.dll file together into a folder of your choice.



3-2. Equipment

1. PC (IBMⓇ-compatible PC, Windows 2000 or XP or Vista)

3-3. Adjustment Items and Order

1. Lens Adjustment (Infinity)
2. AWB Adjustment
3. CCD White Point Defect Detect Adjustment
4. CCD Black Point And White Point Defect Detect Adjustment In Lighted

Note: If the lens, board and changing the part, it is necessary to adjust again. Item 1-4 adjustments should be carried out in sequence.

3-4. Setup

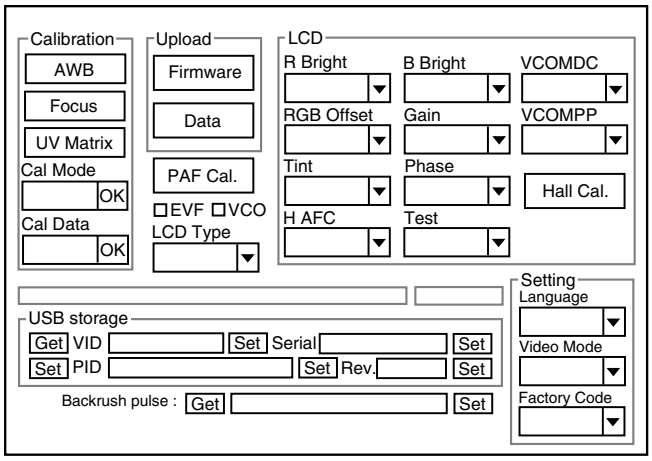
1. System requirements

Windows 2000 or XP or Vista
IBMⓇ-compatible PC with pentium processor
USB port
40 MB RAM
Hard disk drive with at least 15 MB available
VGA or SVGA monitor with at least 256-color display

2. Pattern box

Turn on the switch and wait for 30 minutes for aging to take place before using Color Pure. It is used after adjusting the chroma meter (VJ8-0192) adjust color temperature to 3100 ± 20 K and luminosity to 900 ± 20 cd/m^2. Be careful of handling the lump and its circumference are high temperature during use and after power off for a while.

3. Computer screen during adjustment



3-5. Connecting the camera to the computer

This camera requires a DC adaptor (sold separately) in order to use an AC adaptor.

1. Insert the DC adaptor to the camera.
2. Insert the AC adaptor's cable to DC terminal of the DC adaptor.
3. Line up the arrow on the cable connector with the notch on the camera's USB port. Insert the connector.
4. Locate a USB port on your computer.
5. If "USB CONNECTION" is displayed, choose the "COM PUTER", and press the SET button.
   Next, choose the "CARD READER", and press the SET button.

3-6. The adjustment item which in necessary in part exchange

	Lens Adjust-ment (Infinity)	AWB Adjust-ment	CCD White Point Defect Detect Adjustment	CCD Black Point And White Point Defect Detect Adjustment In Lighted	Factory Cord Setting	Language Setting	USB storage information registration	Reset Setting
COMPL PWB CP1	○	○	○	○	○	△	○	○
COMPL PWB ST1								
COMPL PWB ST2								
ASSY FPC, CA1	○	○	○	○				
LENS	○	○	○	○				

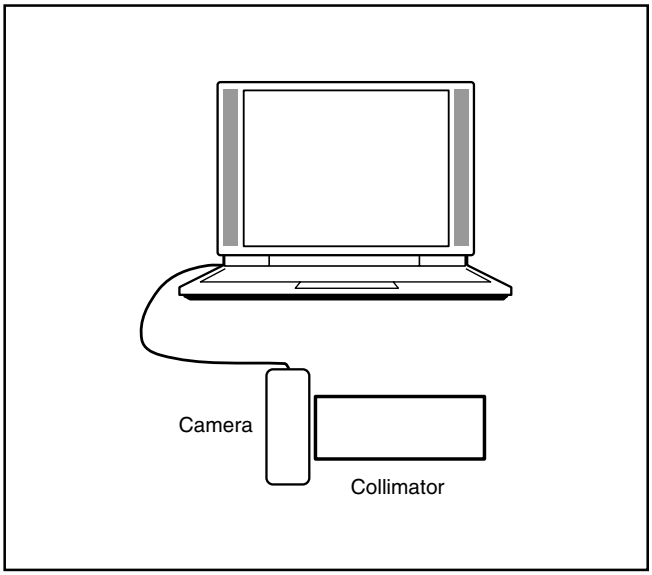
○ : Be sure to carry out the necessary adjustments after replacing the unit.
△ : Adjustment is possible from the menu setting screen of the camera and by using the calibration software.

3-7. Updating the firmware

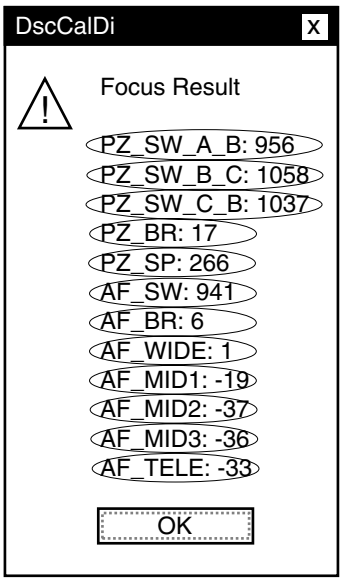
Check the firmware version immediately after the CP1 board has been replaced. If an old version is being used, interference and errors in operation may also occur. If an old version is being used, update it with a newer version.
Refer to 3-13. Firmware uploading procedure. (Page 18)

3-8. Adjust Specifications

1. Lens Adjustment (Infinity)



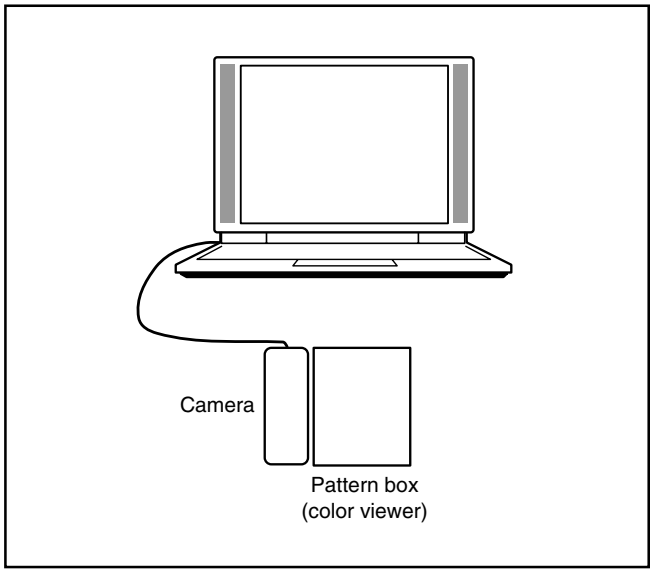
Preparation:
POWER switch: ON
If using a ready-made collimator, set to infinity.
Note:
Do not vibrate during the adjustment.
Adjustment method:
1. Set a distance of 0.5-1.0 cm between camera lens and collimator lens when zoom wide edge. Do not touch the each lens.
2. Set the camera so that it becomes center of the siemens star chart in the collimator (zoom wide and tele).
3. Double-click on the DscCalDi.exe.
4. Click the “Focus”, and click the “Yes”.
5. Lens infinity adjustment value will appear on the screen.
6. Click the OK.



Adjustment value determination is effectuated using below values.
The adjustment values fulfill the conditions below, they are determined as within specifications.
Adjustment value determination
PZ_SW_A_B: PZ1
PZ1: adjustment value of zoom PR switch position 1
(945<=PZ1+PBR<=1010)

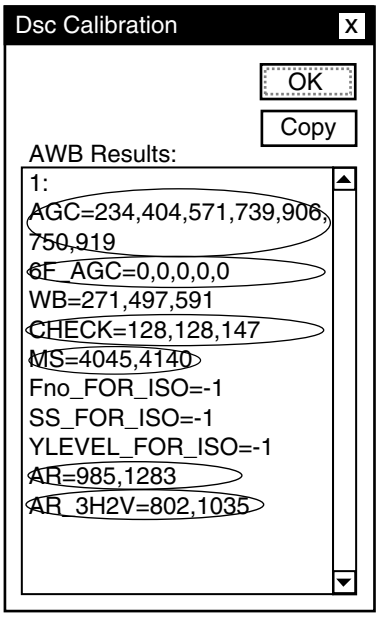
PZ_SW_B_C: PZ2
PZ2: adjustment value of zoom PR switch position 2
(1051<=PZ2+PBR<=1116)
PZ_SW_C_B: PZ3
PZ3: adjustment value of zoom PR switch position 3
(1006<=PZ3+PBR<=1116)
PZ_BR: PBR
PBR: adjustment value of zoom backrush pulse
(0<=PBR<=45)
PZ_SP: PSP
PSP: adjustment value of zoom stowing pulse
(210<=PSP<=320)
AF_SW: ASW
ASW: adjustment value of focus PI switch position
(893<=ASW<=985)
AF_BR: ABR
ABR: adjustment value of focus backrush pulse
(0<=ABR<=12)
AF_WIDE: ZW
ZW: adjustment value of focus at zoom position wide
(–54<=ZW<=47)
AF_MID1: ZM1
ZM1: adjustment value of focus at zoom position middle1
(–86<=ZM1<=48)
AF_MID2: ZM2
ZM2: adjustment value of focus at zoom position middle2
(–114<=ZM2<=57)
AF_MID3: ZM3
ZM3: adjustment value of focus at zoom position middle3
(–107<=ZM3<=76)
AF_TELE: ZT
ZT: adjustment value of focus at zoom position tele
(–108<=ZT<=94)

2. AWB Adjustment



Preparation:
POWER switch: ON
Setting of pattern box:
Color temperature: 3100 ± 20 (K)
Luminance: 900 ± 20 (cd/m²)

Adjusting method:
1. Set a distance of 0.5-1.0 cm between the pattern box and the camera when zoom wide edge. (Do not enter any light.)
2. Double-click on the DscCalDi.exe.
3. Click the AWB, and click the Yes.
4. AWB adjustment value will appear on the screen.
5. Click the OK.

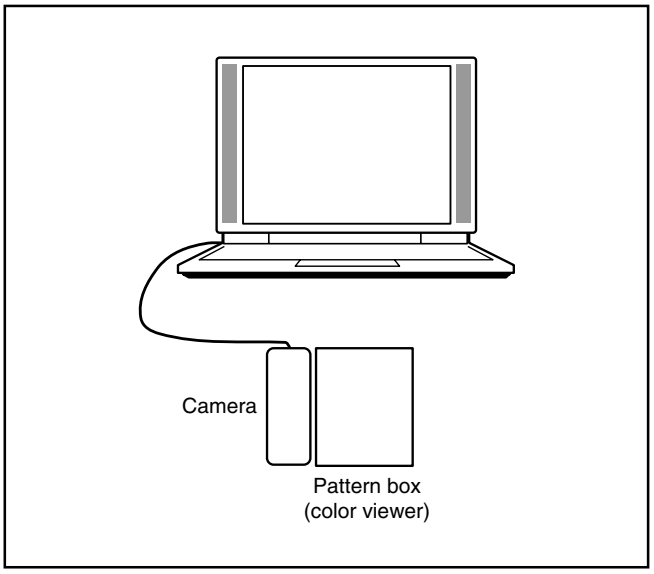


Adjustment value determination is effectuated using "AGC", “6F_AGC”, "CHECK", “MS”, “AR” and “AR_3H2V” values.
If AGC=a1, a2, a3, a4, a5, a6, a7, 6F_AGC=fd1, fd2, fd3, fd4, fd5, CHECK=wc0, wc1, wc2, MS=m1, m2, AR=ar, arm, AR_3H2V=ar2, arm2 and the adjustment values fulfill the conditions below, they are determined as within specifications.
Adjustment value determination
0<a1<350, a2<1023, a3<1023, a4<1023,
a5<1023, a6<1023, a7<1023
fd1<=10, fd2<=10, fd3<=10, fd4<=10, fd5<=10
wc0=128 ± 2, wc1=128 ± 2, wc2=130 ± 40
3400<=ms1<=5300, 3450<=ms2<=5350
500<=ar<=1500, 500<=arm<=1500,
500<=ar2<=1500, 500<=arm2<=1500,
Adjustment values other than the above are irrelevant.

3. CCD White Point Defect Detect Adjustment

Preparation:
POWER switch: ON
Adjustment method:
1. Double-click on the DscCalDi.exe.
2. Select “CCD Defect” on the LCD “Test”, and click the “Yes”.
3. After the adjustment is completed, OK will display.
4. Click the OK.

4. CCD Black Point And White Point Defect Detect Adjustment In Lighted



Preparation:

POWER switch: ON

Setting of pattern box:

Color temperature: 3100 ± 20 (K)

Luminance: 900 ± 20 (cd/m^2)

Adjusting method:

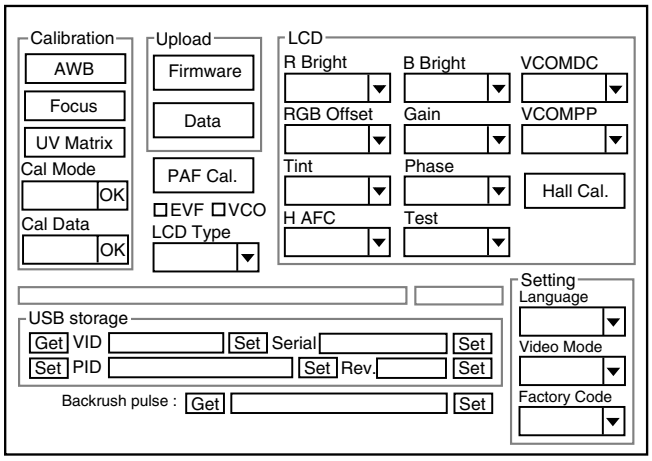
1. Set a distance of 0.5-1.0 cm between the pattern box and the camera when zoom wide edge.
2. Double-click on the DscCalDi.exe.
3. Select “CCD Black” on the LCD “Test”, and click the “Yes”.
4. After the adjustment is completed, the number of defect will appear.
5. Click the OK.

3-9. Factory Code Setting

1. Check the "Factory Code" display within the Setting group.
2. **For U.S.A., Canada and NTSC general area**
   If "FC_SANYO_U" does not appear, click on the "▼" mark located on the right of the "Factory Code" display BOX and select "FC_SANYO_U".
3. **For Europe and PAL general area**
   If "FC_SANYO_EX" does not appear, click on the "▼" mark located on the right of the "Factory Code" display BOX and select "FC_SANYO_EX".

3-10. Language Setting

1. Click on the "▼" mark located on the right of the "Language" display BOX.
2. Select language. (Default is English.)
3. End "DscCal" and remove the camera before turning the camera power OFF.



3-11. Reset Setting

Carry out reset settings after replacing CP1 board.

1. Turn on the camera.
2. Press the MENU button.
3. Choose the OPTION MENU.
4. Choose the RESET SETTINGS, and press the SET button.
5. Select RESET, and press the SET button.

3-12. The Compulsive boot starting method

1. Keep SET button and SHUTTER button depressed while switching on the power.
2. Connect the camera and the computer with USB cable.

3-13. Firmware uploading procedure

1. Uploading the firmware should be carried out if the version number (COMPL PWB XX-X) on the replacement circuit board is lower than the version of the distributed firmware. For XX-X, enter the name of the circuit board containing the firmware.
2. The firmware is distributed by e-mail in self-extracting archive format. Change the extension of the distributed file to .EXE and save it in your preferred folder.
3. When you double-click the saved file, the firmware (binary file) will be saved in the same folder.
4. The firmware must not be distributed without permission.

1. Overwriting firmware from the SD card

Preparation:

SD card: SD card with firmware rewritten into the root directory

Data: S41DNxxx.BIN (xxx: version)

Overwriting method:

1. Insert the above SD card.
2. Turn on the camera.
3. The play button is pushed for 2 seconds and PLAY mode is desplayed.
4. Press the MENU button.
5. Choose the OPTION MENU.
6. Choose the FORMAT.
7. Cross left button is pushed for 2 seconds. FIRMWARE UPDATE will display.
8. Choose YES.
9. Press the SET button. Update is starting.

Note:

Do not turn off the camera's power or remove the SD card while the firmware is being updated.

The power will turn off after the update is complete.

2. Overwriting firmware from the calibration software

Preparation:

PC with overwriting firmware copied to the preferred folder in the HD.

Data: S41DNxxx.BIN (xxx: version)

Overwriting method:

1. Connect the camera's USB/AV terminal to the computer' USB connector.
2. The USB Connection screen appears on the camera's LCD monitor. Choose the "COMPUTER", and press the SET button. Next, choose the "CARD READER", and press the SET button.
3. Double-click on the DscCalDi.exe.
4. Click the Firmware.
5. Choose the fimware file to use for overwriting, and click the Yes.
6. Update is starting. The message will appear, and choose OK.
7. After the update is complete, disconnect the USB cable and turn the camera's power off.

Note:

Do not turn off the camera's power while the firmware is being updated.

4. USB STORAGE INFORMATION REGISTRATION

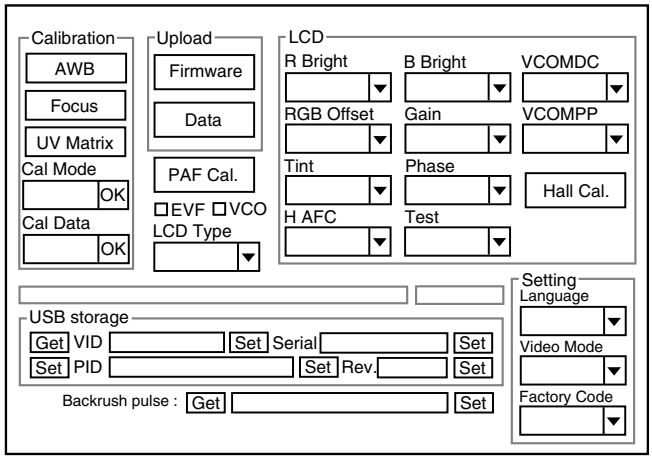
USB storage data is important for when the camera is connected to a computer via a USB connection.
If there are any errors in the USB storage data, or if it has not been saved, the USB specification conditions will not be satisfied, so always check and save the USB storage data.

Preparation:

POWER switch: ON

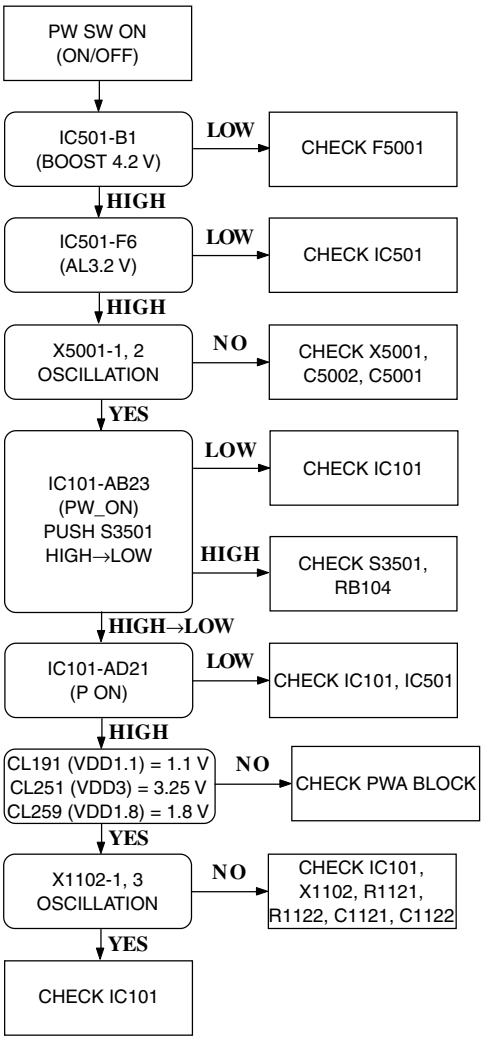
Adjustment method:

1. Connect the camera to a computer. (Refer to 3-5. Connecting the camera to the computer on the page 14.)
2. Double-click on the DscCalDi.exe.
3. Click on the Get button in the USB storage window and check the USB storage data.
   VID: SANYO
   PID: X1250
   (for VPC-X1250P)
   X1220
   (for VPC-X1220EX, VPC-X1220GX, VPC-X1220EXGD, VPC-X1220GXGD, VPC-X1220PX and VPC-X1220PXGD)
   Serial:
   Rev. : 1.00
4. Check the “Serial” in the above USB storage data. If the displayed value is different from the serial number printed on the base of the camera, enter the number on the base of the camera. Then click the Set button.
5. Next, check VID, PID and Rev. entries in the USB storage data. If any of them are different from the values in 3. above, make the changes and then click the corresponding Set button.

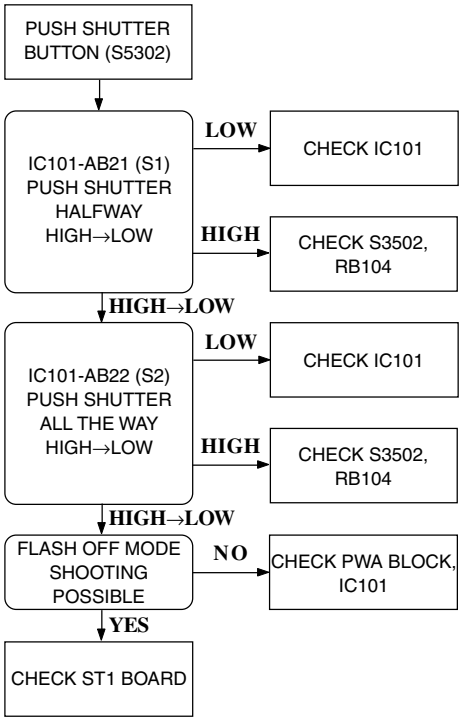


5. TROUBLESHOOTING GUIDE

POWER LOSS INOPERTIVE



TAKING INOPERATIVE



MEMO

6. PARTS LIST

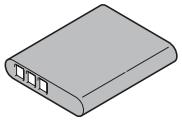
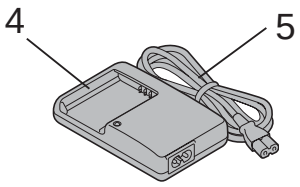
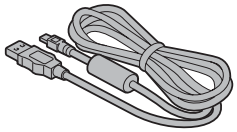
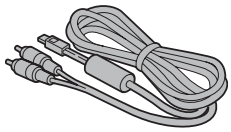
PACKING MATERIALS

LOCATION	PARTS NO.	DESCRIPTION
9101	636 132 8746	CARTON INNER-SG41D/EX VPC-X1220EX, VPC-X1220EXGD, VPC-X1220GX, VPC-X1220GXGD, VPC-X1220PX, VPC-X1220PXGD
9101	636 138 4605	CARTON INNER-SG41D/U VPC-X1250, VPC-X1250GD, VPC-X1250P
9102	636 131 9386	CUSHION BAG-SG455/BXO
9103	636 125 6032	REINFORCE PAD,A-SG21F/U VPC-X1220EX, VPC-X1220EXGD, VPC-X1220GX, VPC-X1220GXGD, VPC-X1220PX, VPC-X1220PXGD
9103	636 138 2700	REINFORCE PAD,A-SG41B/U VPC-X1250, VPC-X1250GD, VPC-X1250P
9104	636 119 2361	LABEL GOLD TEXT-SG218/GX2 VPC-X1250GD, VPC-X1220EXGD, VPC-X1220GXGD, VPC-X1220PXGD
9105	636 074 6589	LABEL CARTON PINK 712EX3 VPC-X1250P ONLY

ACCESSORIES

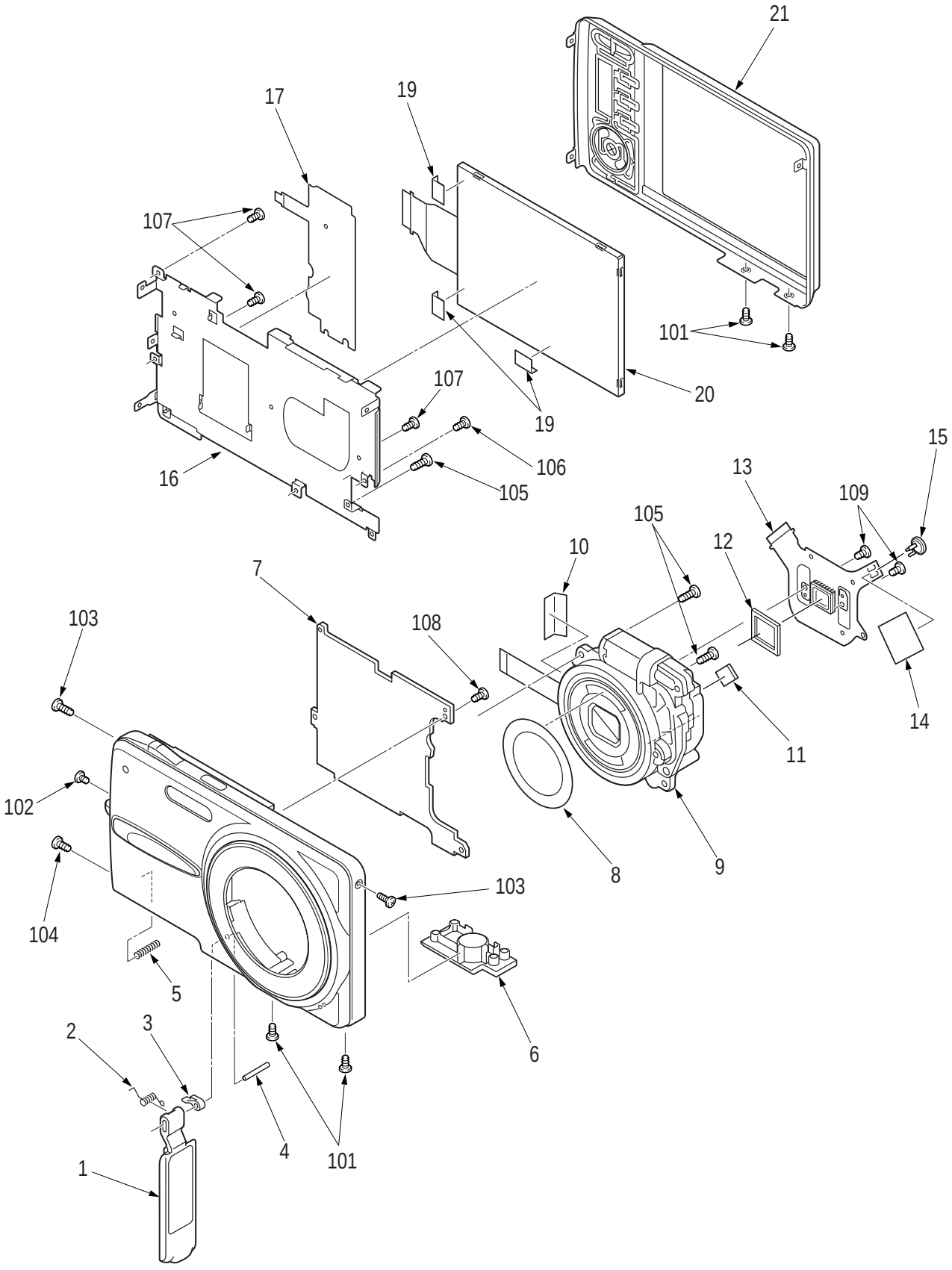
LOCATION		PARTS NO.	DESCRIPTION
Note: Refer to the table of accessories.			
1		636 131 6033	STRAP -SG21F-M
2		636 133 2255	DISC,CD-ROM SSP G41D EX Sanyo Software Pack(N.S.P.) Instruction manual(PDF): Dutch, English, French, German, Italian, Russian, Spanish, Portuguse, Chinese(Simplified), Chinese(Traditional), Korean
3	⚠	645 102 5180	BATTERY,RECHARGE,LI-ION
4	⚠	645 102 1823	BATTERY CHARGER
5	⚠	645 098 8721	CORD,POWER-1.2MK VPC-X1220EX, VPC-X1220EXGD
OR	⚠	645 076 0235	CORD,POWER-1.5MK VPC-X1220EX, VPC-X1220EXGD
OR	⚠	645 100 9708	CORD,POWER-1.5MK VPC-X1220EX, VPC-X1220EXGD
5	⚠	645 084 0104	CORD,POWER-1.8MK VPC-X1250, VPC-1250GD, VPC-1250P, VPC-1220PX, VPC-X1220PXGD
OR	⚠	645 100 9692	CORD,POWER-1.8MK VPC-X1250, VPC-1250GD, VPC-1250P, VPC-1220PX, VPC-X1220PXGD
OR	⚠	645 098 8714	CORD, POWER-1.9MK VPC-X1250, VPC-1250GD, VPC-1250P, VPC-1220PX, VPC-X1220PXGD
6		645 102 3230	CABLE,DSC USB
7		645 102 3339	CABLE,DSC A/V
9051		636 133 0237	INSTRUCTION MANUAL QUICK GUIDE 8: Dutch, English, French, German, Itlian, Russian, Spanish, Portuguse
9052		636 133 0244	INSTRUCTION MANUAL QUICK GUIDE 4: Turkish, Chinese(Simplified), Chinese(Traditional), Korean
9053		636 133 0251	INSTRUCTION MANUAL CAMERA SOFT:English EXCEPT VPC-X1250, VPC-X1250GD, VPC-X1250P
9056		636 136 6021	INSTRUCTION MANUAL SAFETY:English

Table of accessories

1 	2 	3 
	6 	7 

CABINET AND CHASSIS PARTS 1

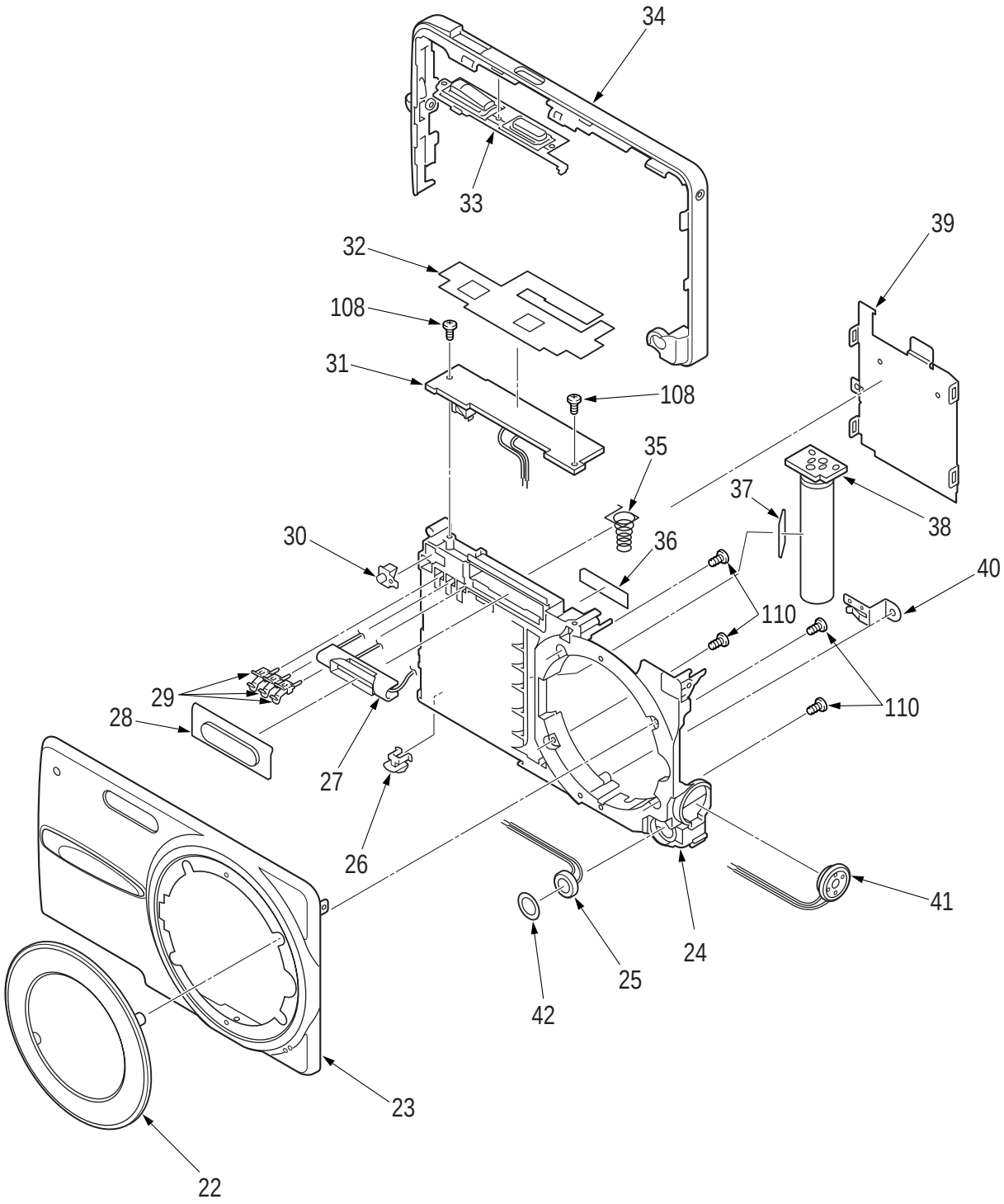
LOCATION		PARTS NO.	DESCRIPTION
1		636 132 5264	COVER_BATTERY-SG41D/U VPC-X1250, VPC-X1220EX, VPC-X1220GX, VPC-X1220PX
1		636 132 5271	COVER_BATTERY-SG41D/U2 VPC-X1250GD, VPC-X1220EXGD, VPC-X1220GXGD, VPC-X1220PXGD
1		636 133 4952	COVER_BATTERY-SG41D/U3 VPC-X1250P ONLY
2		636 121 9860	SPRING_OPEN_COVER-SG21F
3		636 121 9853	COVER_DC-SG21F/U VPC-X1250, VPC-X1250P, VPC-X1220EX, VPC-X1220GX, VPC-X1220PX
3		636 132 5295	COVER_DC-SG41D/U2 VPC-X1250GD, VPC-X1220EXGD, VPC-X1220GXGD, VPC-X1220PXGD
4		636 121 9877	SHAFT CV BATT-SG21F/U
5		636 121 9907	SPRING_BATT_LOCK-SG21F/U
6		636 121 9914	STAND-SG21F/U VPC-X1250, VPC-X1250P, VPC-X1220EX, VPC-X1220GX, VPC-X1220PX
6		636 132 5301	STAND-SG41D/U2 VPC-X1250GD, VPC-X1220EXGD, VPC-X1220GXGD, VPC-X1220PXGD
7		636 133 2347	COMPL PWB,CP-1 F/W
8		636 133 1524	DEC LENS RING -SG41D
9		645 102 2462	LENS(ASSY)
10		636 101 5608	SPACER LENS-SG16V/JP
11		636 104 3830	ADHESIVE BACKUP-SG187
12		636 133 4815	SPACER,LENS,SG41D
13		636 135 2307	ASSY,FPC CA1 SV-SG41D
14		636 114 2809	SPACER BUCK UP-SG287
15	⚠	645 098 9551	BATTERY,RECHARGE
16		636 136 1156	ASSY,HL LCD SV-SG41D
17		645 099 3527	UNIT,CONTROL-SG21F
18		----------	
19		636 126 3948	SPACER_LCD-SG21F/U
20		645 102 2325	LCD(A027DN03V2)
21		636 132 6049	COMPL,CABI BACK-SG41D/U VPC-X1250, VPC-X1220EX, VPC-X1220GX, VPC-X1220PX
21		636 132 6100	COMPL,CABI BACK-SG41D/U2 VPC-X1250GD, VPC-X1220EXGD, VPC-X1220GXGD, VPC-X1220PXGD
21		636 133 4945	COMPL,CABI BACK-SG41D/U3 VPC-X1250P ONLY
101		312 063 8702	SPECIAL SCREW-1.4X3.5 VPC-X1250GD, VPC-X1250P, VPC-X1220EXGD, VPC-X1220GXGD, VPC-X1220PXGD
101		412 076 2305	SPECIAL SCREW-1.4X3.5 VPC-X1250, VPC-X1220EX, VPC-X1220GX, VPC-X1220PX
102		411 181 2705	SCR PAN PCS-1.4X2
103		411 213 4202	SCR S-TPG PAN PCS 1.4X5
104		411 186 8207	SCR PAN PCS-1.4X3
105		411 182 2704	SCR S-TPG PAN PCS 1.6X5
106		411 182 2605	SCR S-TPG PAN PCS 1.6X3.5
107		411 188 8304	SCR S-TPG PAN PCS 1.4X4
108		411 186 0409	SCR S-TPG PAN PCS 1.4X3.5
109		411 207 8308	SCR S-TPG TIN 1.6X3.0



SG41D/J Parts List 1

CABINET AND CHASSIS PARTS 2

LOCATION	PARTS NO.	DESCRIPTION
22	636 121 9396	DEC_LENS-SG21F/U
23	636 139 4024	ASSY,CABI F-SV-SG41D/EX2 VPC-X1220EXGD, VPC-X1220GXGD, VPC-X1220PXGD
23	636 139 4000	ASSY,CABI F-SV-SG41D/EX VPC-X1220EX, VPC-X1220GX, VPC-X1220PX
23	636 136 1071	ASSY,CABI FRONT SV-SG41D VPC-X1250 ONLY
23	636 136 1019	ASSY,CABI FRONT SV-SG41D2 VPC-X1250GD ONLY
23	636 136 1125	ASSY,CABI FRONT SV-SG41D3 VPC-X1250P ONLY
24	636 121 9747	CABI FRONT INNER-SG21F/U VPC-X1250, VPC-X1250P, VPC-X1220EX, VPC-X1220GX, VPC-X1220PX
24	636 132 5288	CABI FRONT INNER-SG41D/U2 VPC-X1250GD, VPC-X1220EXGD, VPC-X1220GXGD, VPC-X1220PXGD
25	645 102 2196	MICROPHONE
26	636 121 9891	LEVER_BATT_LOCK-SG21F/U
27	645 102 2004	ASSY,LAMP-SG41D
28	636 121 9754	DEC_WINDOW_FLASH-SG21F/U
29	636 121 9839	TERMINAL BATTERY-SG21F/U
30	636 121 9761	DEC_SELF-SG21F/U
31	636 132 8951	COMPL PWB,ST-1
32	636 126 5683	SPACER_ST1-SG21F/U
33	636 121 9532	BUTTON_TOP-SG21F/U
34	636 121 9518	DEC_TOP-SG21F/U
35	636 100 3094	SPRING EJECT-SG16V/JP
36	636 126 3931	LABEL BATTERY-SG21F/U
37	636 124 7481	ADHESIVE_MAIN_CON-SG21F/U
38	636 132 8937	COMPL PWB,ST-2
39	636 126 9421	ASSY,HLD BATTERY SV-SG21F
40	636 123 3781	EARTH USB-SG21F/U
41	645 102 2226	SPEAKER,8
42	636 138 0829	SPACER MIC-SG41D
108	411 186 0409	SCR S-TPG PAN PCS 1.4X3.5
110	411 190 2208	SCR S-TPG PAN PCS 1.4X3



SG41D/J Parts List 2

ELECTRICAL PARTS

Note:

1. Materials of Capacitors and Resistors are abbreviated as follows ;

Resistors		Capacitors	
MT-FILM	Metallized Film Resistor	MT-POLYEST	Metallized Polyester Capacitor
MT-GLAZE	Metallized Glaze Resistor	MT-COMPO	Metallized Composite Capacitor
OXIDE-MT	Oxide Metallized Film Resistor	TA-SOLID	Tantalum Solid Capacitor
		AL-SOLID	Aluminum Solid Capacitor
		NP-ELECT	Non-Polarized Electrolytic Capacitor
		OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
		DL-ELECT	Double Layered Electrolytic Capacitor
		POS-SOLID	Polymerized Organic Semiconductor Capacitor

2. Tolerance of Capacitor (10pF over) and Resistor are noted with follow symboles.

F .....1% G .....2% J .....5% K 10%
M .....20% N .....30% Z .....+80% ~ -20%

3. Capacitors

U : µF P : pF

4. Inductors

UH : µH MH : mH

5. N.S.P. : Not available as service parts.

COMPL PWB,CP-1 F/W

636 133 2347

LOCATION	PARTS NO.	DESCRIPTION	
	(SEMICONDUCTORS)		
Q1006	305 168 9507	TR DTC115EM	
OR	305 172 5007	TR UNR32AA	
Q1008	305 208 9702	TR SSM3J16TE	
Q1009	305 169 4501	TR DTC114EM	
OR	305 216 1101	TR RN1102MFV	
OR	305 172 4604	TR UNR32A1	
Q1301	405 218 3902	TR UP0431300	
OR	305 167 0406	TR EMD12	
OR	305 216 2108	TR RN4984FE	
Q1302	305 168 3703	TR DTC144EM	
OR	305 172 4703	TR UNR32A3	
Q1401	405 218 3902	TR UP0431300	
OR	305 167 0406	TR EMD12	
OR	305 216 2108	TR RN4984FE	
Q5071	305 200 6006	TR UP03397	
	(INTEGRATEDCIRCUITS)		
IC101	409 702 4505	IC EV4S1	BGA (N.S.P.)
IC121	410 674 1706	IC TY90009801DPGG	BGA (N.S.P.)
OR	410 703 9208	IC TY990A111219KC	BGA (N.S.P.)
IC181	409 701 7705	IC WM8941ECS-V	BGA (N.S.P.)
IC182	409 677 2803	IC NJM2877F3-03	
IC302	409 693 5604	IC XC61GN2902HR	
IC501	410 699 0005	IC ADP50260005ACBZ	BGA (N.S.P.)
IC506	409 702 7100	IC XC6221C17BGR-G	
IC901	409 698 8709	IC MAX8918ITM+	
IC902	309 669 6904	IC AD9971BCPZ	
IC903	409 677 2803	IC NJM2877F3-03	
IC951	409 694 7607	IC BD6545GW	BGA (N.S.P.)
	(DIODES)		
D5041	307 223 5509	DIODE MA2Z720	
D5051	307 238 1206	DIODE CUS01,Q	
D5071	307 223 5509	DIODE MA2Z720	
D5301	307 238 1206	DIODE CUS01,Q	
D9001	307 223 5509	DIODE MA2Z720	
D9002	307 223 5509	DIODE MA2Z720	
	(CRYSTAL DEVICES)		
X1102	645 091 5208	OSC,CRYSTAL 48.00000MHZ	
X5001	645 090 3298	OSC,CRYSTAL 32.768KHZ	
	(INDUCTORS)		
L1004	645 094 0521	IMPEDANCE,33 OHM P	
L1006	945 053 5476	IMPEDANCE,240 OHM P	
L1301	645 095 6522	FILTER,EMI 90 OHM	
L1302	945 053 5414	IMPEDANCE,1000 OHM P	
L1304	945 053 5414	IMPEDANCE,1000 OHM P	
L1801	645 053 5451	IMPEDANCE,600 OHM P	
L5021	645 098 1968	INDUCTOR,4.7U M	
L5031	645 098 1968	INDUCTOR,4.7U M	
L5041	645 093 8153	INDUCTOR,2.2U	
L5051	645 098 2002	INDUCTOR,2.2U M	
L5061	645 093 8153	INDUCTOR,2.2U	
L5071	645 093 8153	INDUCTOR,2.2U	
L5301	645 098 2095	INDUCTOR,2.2U M	
L9001	945 066 4725	IMPEDANCE,600 OHM P	
	(CAPACITORS)		
CB921	303 391 4306	CERAMIC	0.1U K 16V
CB922	303 391 4306	CERAMIC	0.1U K 16V
C1001	303 384 6409	CERAMIC	4.7U K 6.3V
C1002	303 338 0309	CERAMIC	0.1U K 10V
C1003	303 338 0309	CERAMIC	0.1U K 10V
C1004	303 276 1307	CERAMIC	1000P K 50V
C1005	403 473 7604	CERAMIC	10U M 6.3V
C1006	303 338 0309	CERAMIC	0.1U K 10V
C1007	303 338 0309	CERAMIC	0.1U K 10V
C1010	303 384 6409	CERAMIC	4.7U K 6.3V
C1011	303 338 0309	CERAMIC	0.1U K 10V
C1013	303 338 0309	CERAMIC	0.1U K 10V
C1014	303 338 0309	CERAMIC	0.1U K 10V
C1029	303 338 0309	CERAMIC	0.1U K 10V
C1034	303 338 0309	CERAMIC	0.1U K 10V
C1035	303 276 1000	CERAMIC	0.01U K 16V
C1121	303 314 6400	CERAMIC	7P D 50V
C1122	303 314 6400	CERAMIC	7P D 50V
C1203	303 381 8109	CERAMIC	1U K 6.3V
C1204	303 381 8109	CERAMIC	1U K 6.3V
C1205	303 338 0309	CERAMIC	0.1U K 10V
C1206	303 338 0309	CERAMIC	0.1U K 10V
C1209	303 338 0309	CERAMIC	0.1U K 10V
C1308	303 338 0309	CERAMIC	0.1U K 10V
C1309	303 381 8109	CERAMIC	1U K 6.3V
C1710	303 384 6409	CERAMIC	4.7U K 6.3V
C1715	303 384 6409	CERAMIC	4.7U K 6.3V
C1720	403 461 5407	CERAMIC	4.7U K 10V
C1721	403 461 5407	CERAMIC	4.7U K 10V
C1722	403 470 9403	CERAMIC	4.7U K 16V
C1723	403 470 9403	CERAMIC	4.7U K 16V
C1724	403 470 9304	CERAMIC	4.7U K 25V
C1725	403 470 9304	CERAMIC	4.7U K 25V
C1726	303 382 7804	CERAMIC	2.2U K 10V
C1727	303 382 7804	CERAMIC	2.2U K 10V
C1728	303 408 5500	CERAMIC	2.2U K 16V
C1729	303 408 5500	CERAMIC	2.2U K 16V
C1730	403 461 5407	CERAMIC	4.7U K 10V
C1801	303 384 6409	CERAMIC	4.7U K 6.3V
C1802	303 338 0309	CERAMIC	0.1U K 10V
C1803	303 381 8109	CERAMIC	1U K 6.3V
C1804	303 338 0309	CERAMIC	0.1U K 10V
C1805	303 338 0309	CERAMIC	0.1U K 10V
C1806	303 384 6409	CERAMIC	4.7U K 6.3V
C1807	303 279 5005	CERAMIC	4700P K 25V
C1808	303 381 8109	CERAMIC	1U K 6.3V

LOCATION	PARTS NO.	DESCRIPTION
C1809	303 381 8109	CERAMIC 1U K 6.3V
C1810	303 381 8109	CERAMIC 1U K 6.3V
C1811	303 381 8109	CERAMIC 1U K 6.3V
C1812	303 381 8109	CERAMIC 1U K 6.3V
C3009	303 338 0309	CERAMIC 0.1U K 10V
C5001	303 305 8505	CERAMIC 15P J 50V
C5002	303 305 8505	CERAMIC 15P J 50V
C5003	303 384 6300	CERAMIC 2.2U K 6.3V
C5004	303 384 6508	CERAMIC 10U K 6.3V
C5005	303 384 6300	CERAMIC 2.2U K 6.3V
C5009	303 381 8109	CERAMIC 1U K 6.3V
C5021	303 384 6508	CERAMIC 10U K 6.3V
C5031	303 384 6508	CERAMIC 10U K 6.3V
C5041	303 384 6508	CERAMIC 10U K 6.3V
C5042	303 408 5500	CERAMIC 2.2U K 16V
C5043	303 274 4102	CERAMIC 1500P K 50V
C5044	403 455 1606	CERAMIC 10U K 16V
C5051	403 461 5407	CERAMIC 4.7U K 10V
C5052	303 276 1000	CERAMIC 0.01U K 16V
C5053	303 381 8109	CERAMIC 1U K 6.3V
C5054	303 387 3009	CERAMIC 4.7U K 10V
C5061	303 384 6409	CERAMIC 4.7U K 6.3V
C5063	303 376 9401	CERAMIC 1U K 6.3V
C5072	303 408 5500	CERAMIC 2.2U K 16V
C5073	303 380 6601	CERAMIC 0.22U K 6.3V
C5081	303 384 6300	CERAMIC 2.2U K 6.3V
C5301	303 384 6508	CERAMIC 10U K 6.3V
C5302	303 393 2607	CERAMIC 22U M 6.3V
C9001	303 381 8109	CERAMIC 1U K 6.3V
C9003	303 381 8109	CERAMIC 1U K 6.3V
C9004	303 381 8109	CERAMIC 1U K 6.3V
C9005	303 383 5007	CERAMIC 1U K 16V
C9006	303 338 0309	CERAMIC 0.1U K 10V
C9007	303 320 0508	CERAMIC 120P J 50V
C9008	303 320 0508	CERAMIC 120P J 50V
C9009	303 381 8109	CERAMIC 1U K 6.3V
C9010	303 381 8109	CERAMIC 1U K 6.3V
C9012	303 383 5007	CERAMIC 1U K 16V
C9013	303 338 0309	CERAMIC 0.1U K 10V
C9014	303 276 1307	CERAMIC 1000P K 50V
C9015	303 276 1307	CERAMIC 1000P K 50V
C9016	303 338 0309	CERAMIC 0.1U K 10V
C9017	404 120 4205	TA-SOLID 47U M 10V
C9018	303 311 7806	CERAMIC 8P D 50V
C9019	303 338 0309	CERAMIC 0.1U K 10V
C9023	303 338 0309	CERAMIC 0.1U K 10V
C9024	303 342 3303	CERAMIC 0.1U K 25V
C9030	303 279 3001	CERAMIC 2P C 50V
C9032	303 276 1000	CERAMIC 0.01U K 16V
C9036	303 397 8209	CERAMIC 2.2U K 25V
C9041	303 338 0309	CERAMIC 0.1U K 10V
C9044	303 411 7409	CERAMIC 0.22U K 25V
C9051	303 381 8109	CERAMIC 1U K 6.3V
C9052	303 381 8109	CERAMIC 1U K 6.3V
C9061	303 320 0607	CERAMIC 220P J 25V
C9062	303 320 0607	CERAMIC 220P J 25V
C9502	303 338 0309	CERAMIC 0.1U K 10V
C9503	303 338 0309	CERAMIC 0.1U K 10V
C9504	303 338 0309	CERAMIC 0.1U K 10V
C9506	303 276 1307	CERAMIC 1000P K 50V
	(RESISTOR PACKS)	
RB101	645 078 5719	R-NETWORK 10KX2 0.063W
RB102	945 028 0710	R-NETWORK 10KX4 1/16W
RB103	945 028 0710	R-NETWORK 10KX4 1/16W
RB104	945 028 0703	R-NETWORK 1KX4 1/16W
RB105	645 078 4224	R-NETWORK 0X2 0.063W
RB106	645 078 5702	R-NETWORK 1KX2 0.063W
RB107	945 028 0697	R-NETWORK 100X4 1/16W
RB108	645 068 6405	R-NETWORK 150KX2 1/16W
RB109	945 028 0710	R-NETWORK 10KX4 1/16W
RB110	945 028 0697	R-NETWORK 100X4 1/16W
RB111	945 037 0817	R-NETWORK 0X4 1/16W
RB112	645 078 4224	R-NETWORK 0X2 0.063W
RB113	945 028 0703	R-NETWORK 1KX4 1/16W
RB114	945 028 0703	R-NETWORK 1KX4 1/16W
RB117	945 037 0817	R-NETWORK 0X4 1/16W
RB141	945 028 0697	R-NETWORK 100X4 1/16W

LOCATION	PARTS NO.	DESCRIPTION
RB501	645 078 4613	R-NETWORK 2.2KX2 0.063W
RB951	645 078 4835	R-NETWORK 33KX2 0.063W
RB952	645 078 4880	R-NETWORK 390X2 0.063W
	(RESISTORS)	
R1001	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1002	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1003	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1004	301 225 1408	MT-GLAZE 47K JA 1/16W
R1005	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1006	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1007	301 225 1804	MT-GLAZE 47 JA 1/16W
R1008	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1009	301 224 9009	MT-GLAZE 10K JA 1/16W
R1010	301 224 9306	MT-GLAZE 1K JA 1/16W
R1011	301 224 9108	MT-GLAZE 150 JA 1/16W
R1012	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1013	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1014	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1015	301 224 9306	MT-GLAZE 1K JA 1/16W
R1016	301 302 4407	MT-GLAZE 1.6K DD 1/16W
R1017	301 224 8903	MT-GLAZE 100K JA 1/16W
R1018	301 224 9009	MT-GLAZE 10K JA 1/16W
R1019	301 225 7905	MT-GLAZE 220 JA 1/16W
R1020	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1021	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1022	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1023	301 224 9306	MT-GLAZE 1K JA 1/16W
R1024	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1025	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1026	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1027	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1028	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1029	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1031	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1032	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1035	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1037	301 225 1408	MT-GLAZE 47K JA 1/16W
R1121	301 263 1705	MT-GLAZE 1.2K DC 1/16W
R1122	301 224 9405	MT-GLAZE 1.0M JA 1/16W
R1201	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1202	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1203	301 224 9009	MT-GLAZE 10K JA 1/16W
R1301	301 224 8903	MT-GLAZE 100K JA 1/16W
R1306	301 224 9009	MT-GLAZE 10K JA 1/16W
R1401	301 224 8804	MT-GLAZE 100 JA 1/16W
R1404	301 224 9009	MT-GLAZE 10K JA 1/16W
R1701	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1801	301 225 8100	MT-GLAZE 10 JA 1/16W
R1802	301 224 8804	MT-GLAZE 100 JA 1/16W
R1803	301 224 9504	MT-GLAZE 2.2K JA 1/16W
R1804	301 229 3903	MT-GLAZE 180 JA 1/16W
R1806	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1811	301 263 7400	MT-GLAZE 75 JA 1/16W
R3008	301 262 8903	MT-GLAZE 62K DC 1/16W
R5001	301 224 9306	MT-GLAZE 1K JA 1/16W
R5004	301 259 2105	MT-GLAZE 1 JA 1/16W
R5041	301 262 5605	MT-GLAZE 56K DC 1/16W
R5042	301 275 1908	MT-GLAZE 2K DC 1/16W
R5043	301 148 6009	MT-GLAZE 2.2 JA 1/16W
R5045	301 227 5602	MT-GLAZE 8.2K JA 1/16W
R5051	301 262 5605	MT-GLAZE 56K DC 1/16W
R5052	301 258 6708	MT-GLAZE 12K DC 1/16W
R5061	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R5071	301 258 6609	MT-GLAZE 10K DC 1/16W
R5072	301 258 6708	MT-GLAZE 12K DC 1/16W
R5073	301 257 4002	MT-GLAZE 68K DC 1/16W
R5081	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R5091	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R5094	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R5095	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R5096	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R5097	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R9015	301 224 8903	MT-GLAZE 100K JA 1/16W
R9028	301 228 4406	MT-GLAZE 2.7 JA 1/16W
R9029	301 228 4406	MT-GLAZE 2.7 JA 1/16W
R9035	301 240 9106	MT-GLAZE 5.6 JA 1/16W
R9043	301 225 1101	MT-GLAZE 27 JA 1/16W

LOCATION	PARTSNO.	DESCRIPTION
R9045	301 225 0500	MT-GLAZE 33K JA 1/16W
R9047	301 225 1804	MT-GLAZE 47 JA 1/16W
R9049	301 224 8804	MT-GLAZE 100 JA 1/16W
R9053	301 225 0906	MT-GLAZE 82K JA 1/16W
R9057	301 224 8903	MT-GLAZE 100K JA 1/16W
R9501	301 340 6708	MT-GLAZE 0.68 FE 1/10W
R9502	301 225 0708	MT-GLAZE 56K JA 1/16W
R9503	301 225 8001	MT-GLAZE 330 JA 1/16W
	(THERMISTORS)	
TH301	308 054 7700	TH NCP15WF104F03-RC
	(FUSES)	
F5001 ⚠	323 031 1700	FUSE 32V 2A
F5002 ⚠	323 031 1700	FUSE 32V 2A
	(CONNECTORS)	
CN110	645 097 2287	SOCKET,8P (N.S.P)
CN141	645 092 8185	SOCKET,CARD(SD)12(N.S.P)
CN171	645 101 0858	SOCKET,FPC 39P (N.S.P)
CN302	645 095 5983	SOCKET,FPC 11P (N.S.P)
CN903	645 098 5850	SOCKET,FPC 45P (N.S.P)
CN951	645 087 1535	SOCKET,FPC 23P (N.S.P)
	(MISCELLANEOUS)	
	636 124 7498	SPACER_ST_WIRE-SG21F/U

COMPL PWB,ST-1

636 132 8951

	(SEMICONDUCTOR)	
Q5402	406 021 5107	TR TIG032TS-S-TL-E
	(INTEGRATEDCIRCUIT)	
IC541	409 701 3301	IC BD4221NUX
	(DIODES)	
D3501	407 259 7802	LED SML-E12U8W,
D5402	407 265 1900	DIODE RE0208DA-TR-E
D5403	407 267 2004	DIODE MA27D290G
	(TRANSFORMERS)	
T5401	645 097 3864	TRANS,STEP UP
T5402	645 084 1835	TRANS,STEP UP
	(CAPACITORS)	
C5401	303 393 2607	CERAMIC 22U M 6.3V
C5410	303 428 3302	CERAMIC 0.022U K 350V
C5411	303 381 8109	CERAMIC 1U K 6.3V
C5413	303 286 1403	CERAMIC 10P D 50V
C5414	303 276 1307	CERAMIC 1000P K 50V
	(RESISTORPACKS)	
RB541	945 028 0703	R-NETWORK 1KX4 1/16W
RB542	645 078 5719	R-NETWORK 10KX2 0.063W
	(RESISTORS)	
R3506	301 225 0005	MT-GLAZE 270 JA 1/16W
R5412	301 225 1804	MT-GLAZE 47 JA 1/16W
R5413	301 262 0907	MT-GLAZE 27K DC 1/16W
R5414	301 262 8705	MT-GLAZE 910 DC 1/16W
R5416	301 224 8804	MT-GLAZE 100 JA 1/16W
R5417	301 262 1102	MT-GLAZE 47K DC 1/16W
R5422	402 110 5102	MT-GLAZE 220K JE 1/8W
R5424	301 224 9009	MT-GLAZE 10K JA 1/16W
	(SWITCHES)	
S3501	645 022 0210	SWITCH,PUSH 1P-1T
S3502	645 090 3885	SWITCH,PUSH 1P-2TX1
	(MISCELLANEOUS)	
	636 122 0132	ASSY,WIRE CE HOT-SG21F (N.S.P.)
	636 122 0156	ASSY,WIRE CE GND-SG21F (N.S.P.)

COMPL PWB,ST-2

636 132 8937

	(CAPACITOR)	
C5412	404 120 7107	ELECT 80U A 300V

CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS

TABLE OF CONTENTS

NOTES:

1. **All resistance values in "OHMS" unless otherwise noted.**
   (K=1,000 ; M=1,000,000)
2. **All capacitance values in "μF" unless otherwise noted.**
   p=pico farad ; n=nano farad ; μ ,u or U=micro farad
3. **All inductance values in "μH" unless otherwise noted.**
   μ ,u or U=micro henry ; m=milli henry

Figure of printed wiring boards

Multilayer board:

"Side A" means the view from A side of the board.
"Side B" means the view from B side of the board.

Singlelayer board:

View from the copper-foil side of the board, otherwise noted.

PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY.
SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST.
DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

EXPLANATORY NOTES (EXAMPLES)

Resistor	**10K:1/16J means 10kilo ohm ±5%, 1/16watt max.**
	1M:1/10D means 1mega ohm ±0.5%, 1/10watt max.
	(Tolerance K:±10%, J:±5%, G:±2%, F:±1%, D:±0.5%)
Capacitor	**0.047:F means 0.047micro farad, Ftype.**
Electrolytic capacitor	
	10:16 means 10micro farad, 16volt max.
Inductor	**330:J means 330micro henry ±5%**
	470:K means 470micro henry ±10%
	No description J or K means ±5%

The number of "H=##" written in slant character, shows the voltage.
The number of "H=##" written in upright character, shows the height of the parts.

PAL-H-EX

OVERALL WIRING & BLOCK DIAGRAMS

OVERALL WIRING

SD

LENS

USB & AV

BATTERY

CA1
FPC

CP1
(DMA)
(CAA)
(PWA)

ST2

ST1

CN911

BACKUP_BAT	1
NC	2
+14.5V(A)	3
+14.5V(A)	4
GND	5
CCDOUT	6
GND	7
LH1	8
GND	9
H1	10
H2	11
GND	12
SUBGT2	13
SUB	14
SUBGT	15
GND	16
RG	17
GND	18
-7.0V(A)	19
-7.0V(A)	20
V15B	21
V15C	22
V9B	23
V9A	24
V10	25
V15A	26
V14	27
V6	28
V7A	29
V7B	30
V8	31
V5	32
V3	33
V12	34
V11B	35
V11A	36
V1B	37
V2	38
V4	39
V1A	40
V16	41
V13B	42
V13A	43
GND	44
GND	45

CN903

1	BACKUP_BAT
2	NC
3	+14.5V(A)
4	+14.5V(A)
5	GND
6	CCDOUT
7	GND
8	LH1
9	GND
10	H1
11	H2
12	GND
13	SUBGT2
14	SUB
15	SUBGT
16	GND
17	RG
18	GND
19	-7.0V(A)
20	-7.0V(A)
21	V15B
22	V15C
23	V9B
24	V9A
25	V10
26	V15A
27	V14
28	V6
29	V7A
30	V7B
31	V8
32	V5
33	V3
34	V12
35	V11B
36	V11A
37	V1B
38	V2
39	V4
40	V1A
41	V16
42	V13B
43	V13A
44	GND
45	GND

CAA

SD: WP, COMMON, CARD, DATA2, DATA1, DATA0, VSS, CLOCK, VDD, VSS, COMMAND, DATA3 — CN141 — DMA

CN951: LD_motor_A-, LD_motor_B+, LD_motor_B-, LD_motor_A+, LD_PI_C, LD_PI_EK, LD_PI_A, Zoom_PI_A, Zoom_PI_EK, Zoom_PI_C, Zoom_motor_-, Zoom_motor_-, Zoom_motor_+, Zoom_motor_+, Zoom_PR_C, Zoom_PR_EK, Zoom_PR_A, Aperture_1, Aperture_2, Shutter_3, Shutter_3, Shutter_4, Shutter_4 — DMA

CN110: GND, VIDEO_OUT, AUDIO-OUT, ZAV_JACK, USB D(+), GND, USB D(-), USB_VDD — DMA

CL504 BATT, CL502 BAT+, CL503 BAT- — PWA

SPEAKER

JW183 SP-/WT — SP-

JW184 SP+/RD — SP+

DMA

JW181 MIC/GY

JW182 GND/BK

MIC

JW551 CE+ RED — JW552 CE- GRAY

JW543 CE+ RED — JW544 CE- GRAY

CN102

SELF_LED	1
AL3.2V	2
GND	3
CHG	4
CHGDONE	5
FLCTL	6
1ST	7
2ND	8
PW_ON	9
+14.5V(A)	10
GND	11
UNREGST	12

DMA

CN541

1	SELF_LED
2	AL3.2V
3	GND
4	CHG
5	CHGDONE
6	FLCTL
7	1ST
8	2ND
9	PW_ON
10	+14.5V(A)
11	GND
12	UNREGST

JW541 BROWN XAN — TRANS TRIGGER 1 2 3 — JW542 BLACK XKT

XAN BROWN — TRG PINK — XKT BLACK

STROBE UNIT

CN171: VCOM, CS, SDA, SCL, HSYNC, VSYNC, DCLK, D7, D6, D5, D4, D3, D2, D1, D0, GND, VDD, DVDD, V1, V2, V3, V4, VDD2, V5, V6, VDD3, VDD5, V7, V8, VGH, VGL, AGND, FRP, COMDC, VCAC, DRV, VLED, FB, VCOM — DMA

CN302: SCAN OUT2, SCAN IN1, SCAN IN0, SCAN OUT0, SCAN IN1, SCAN OUT0, SCAN IN2, SCAN IN3, SCAN IN2, SCAN OUT1, NC — DMA

LCD

BACK UNIT FPC

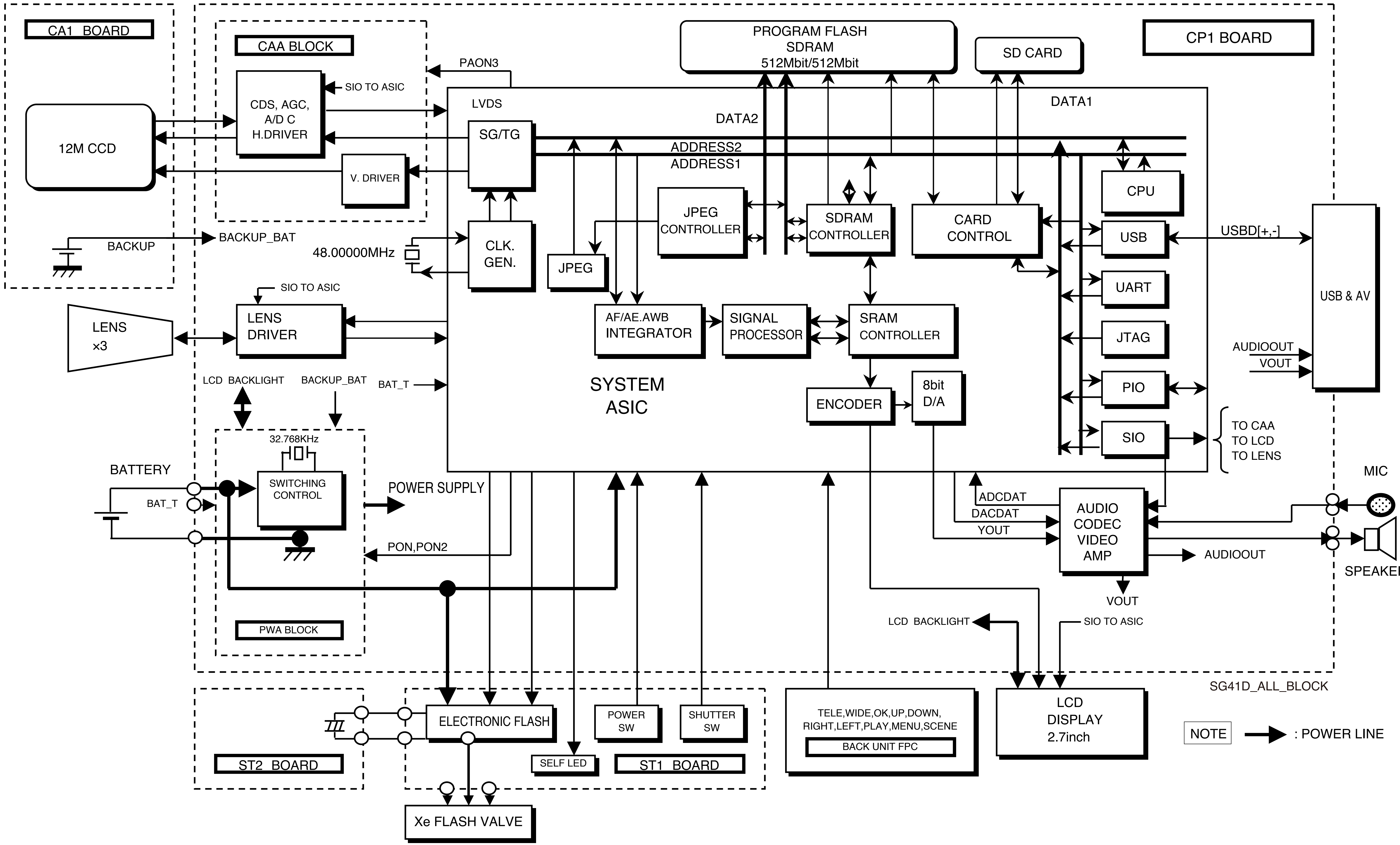
W1-25900/SG41D-U

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

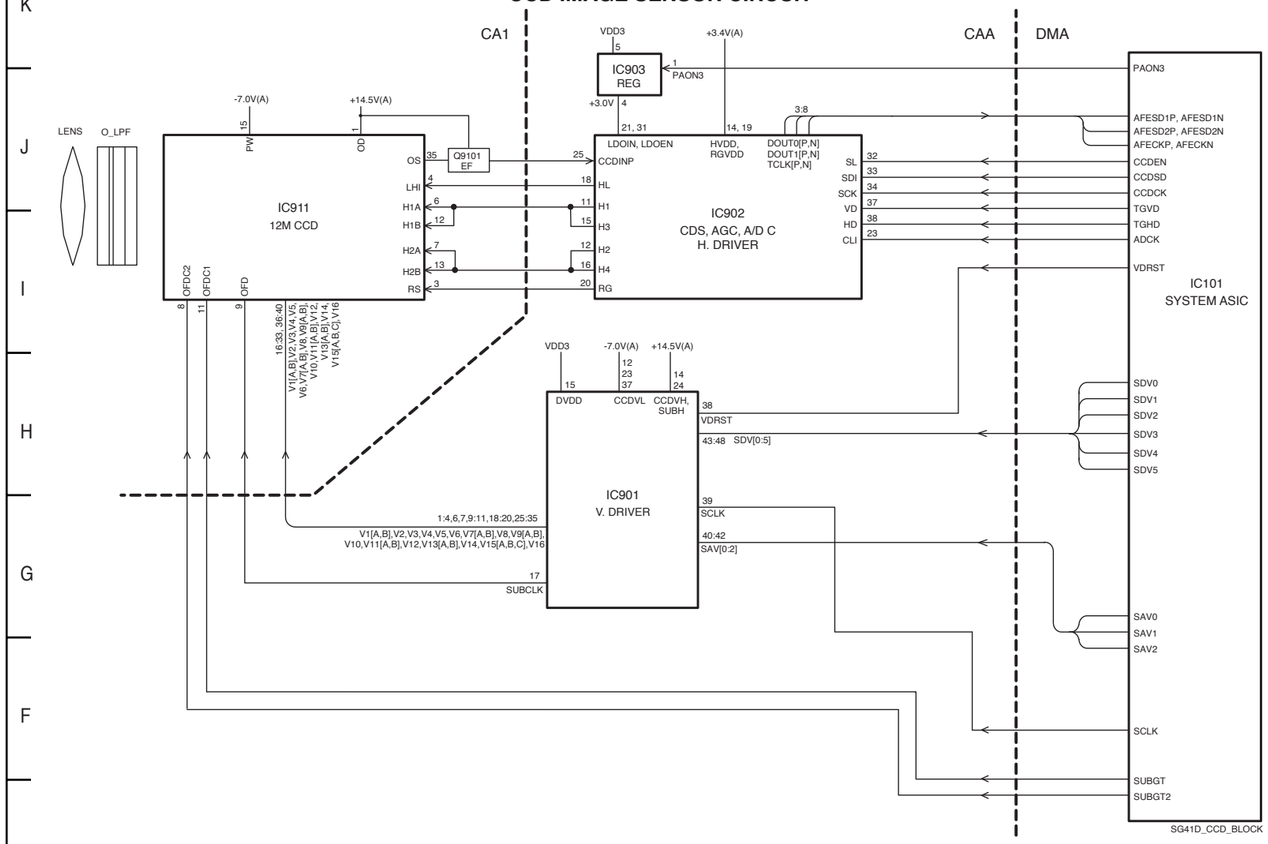
A B C D E F G H I J K

C3

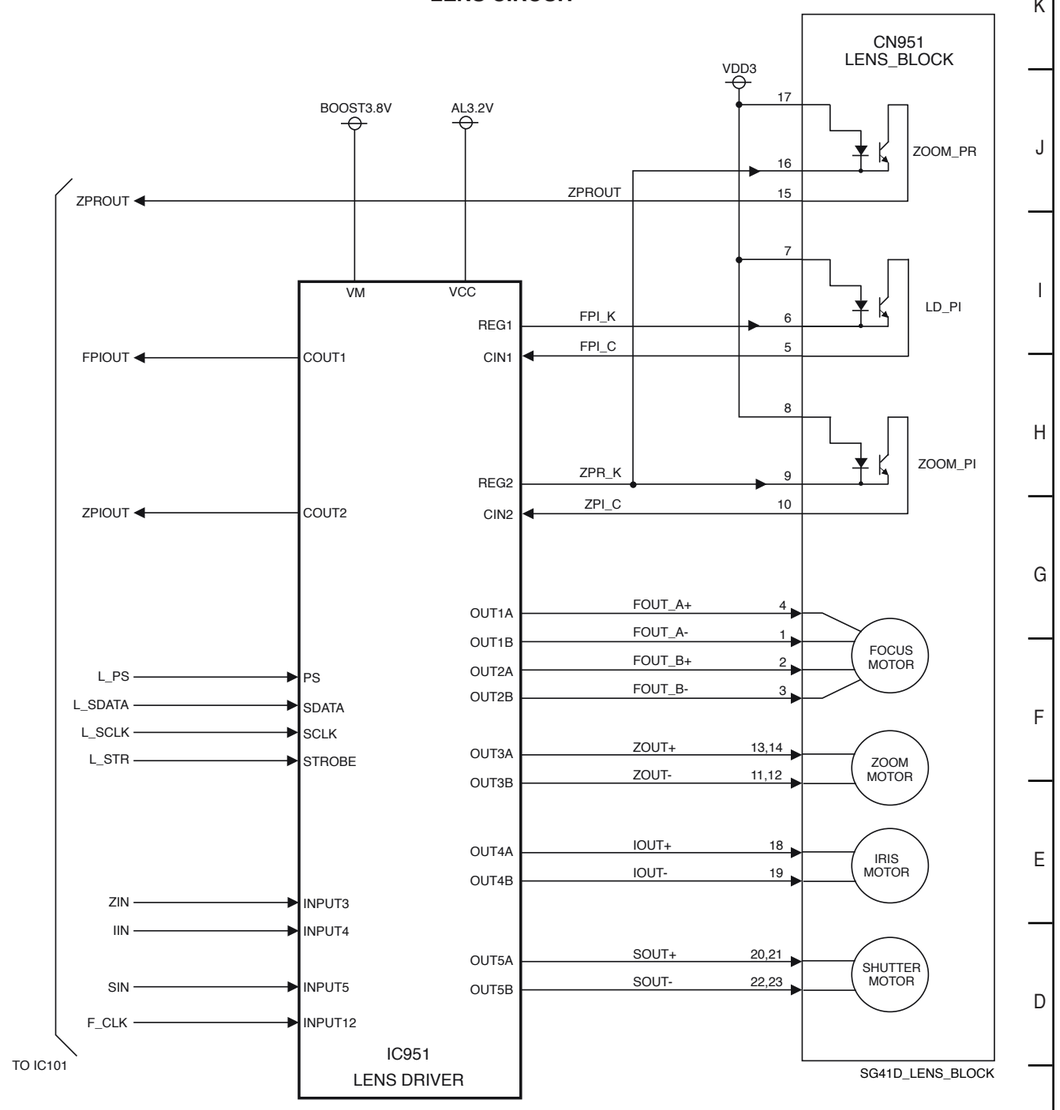
OVERALL CIRCUIT



CCD IMAGE SENSOR CIRCUIT

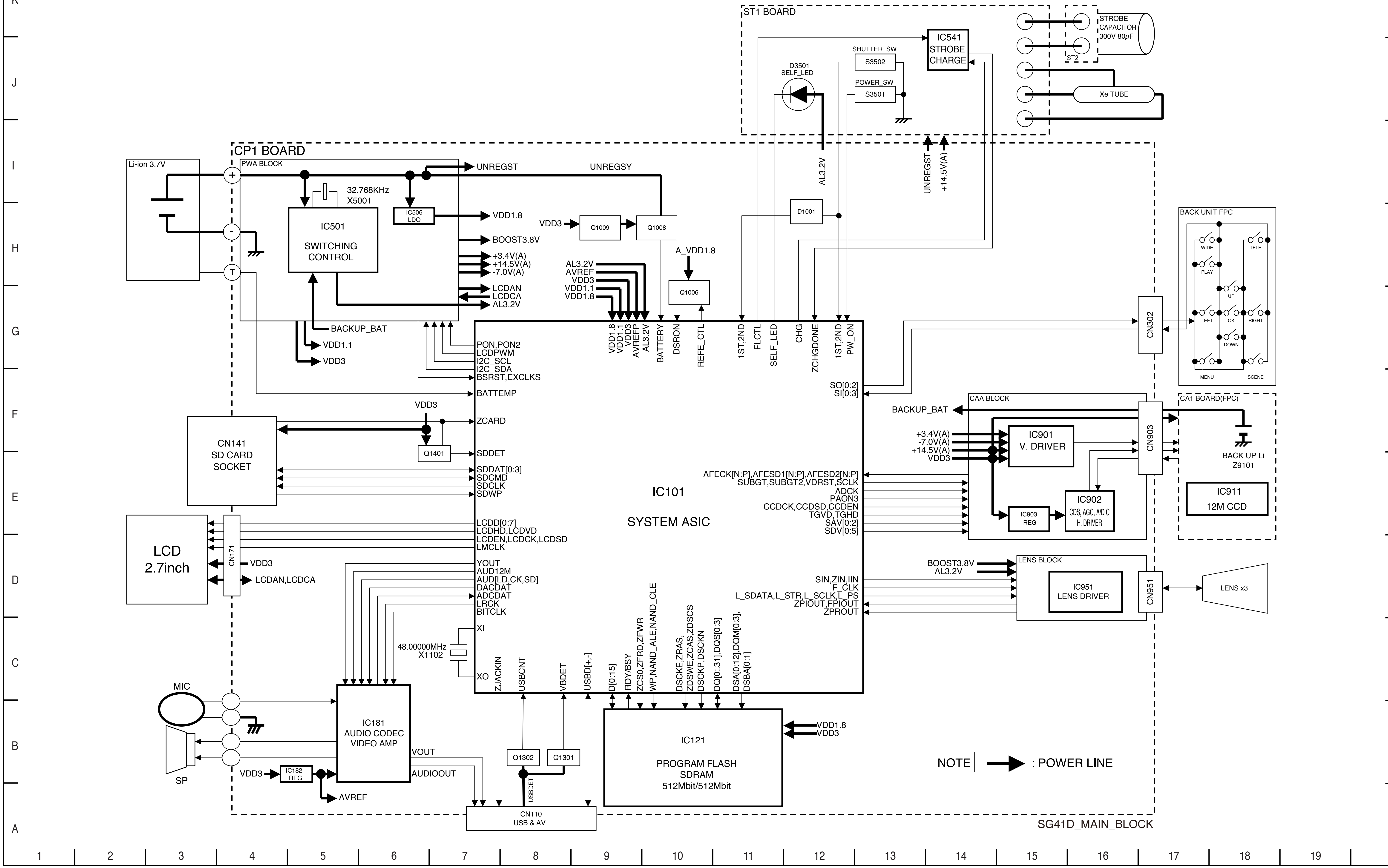


LENS CIRCUIT

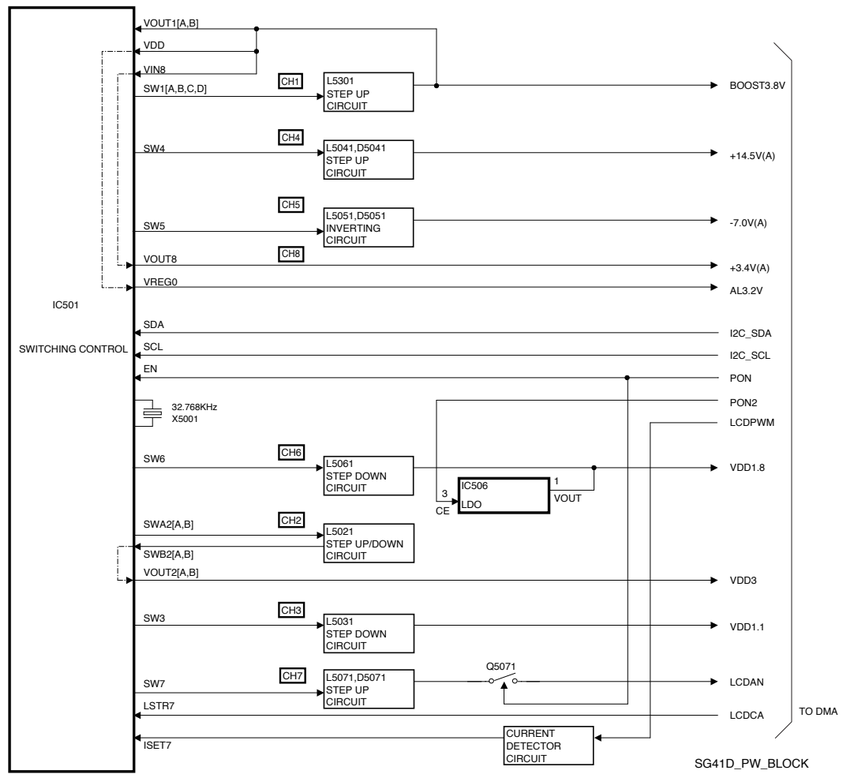


C5

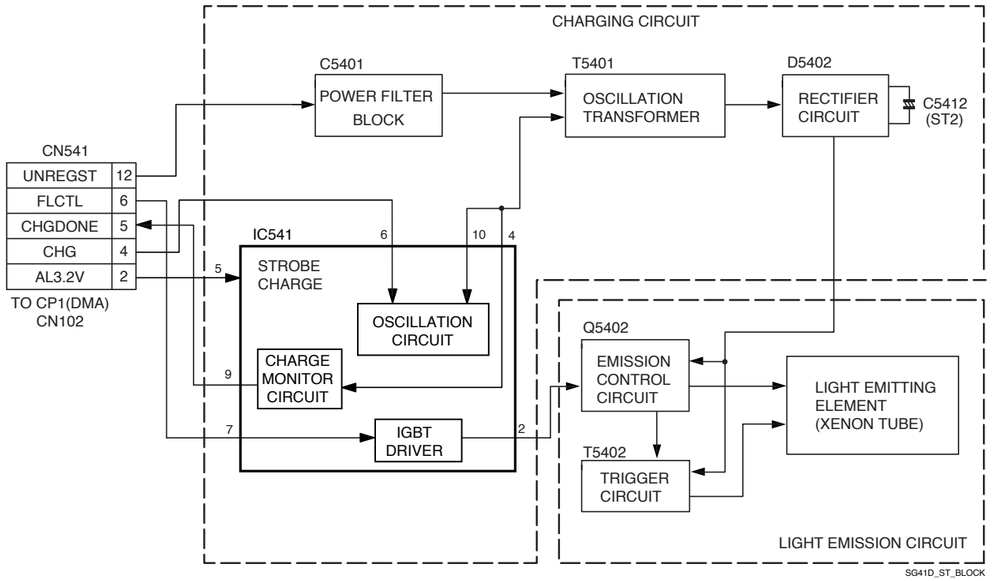
MAIN CIRCUIT



POWER CIRCUIT

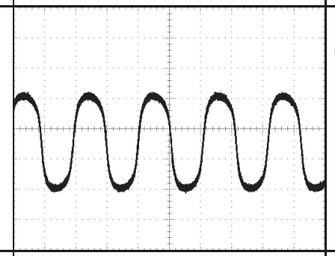
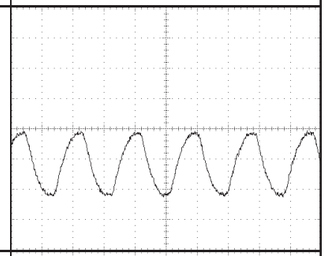
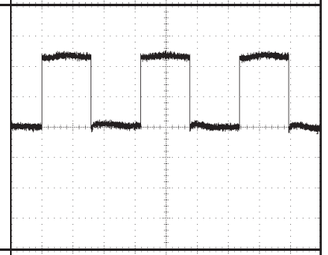
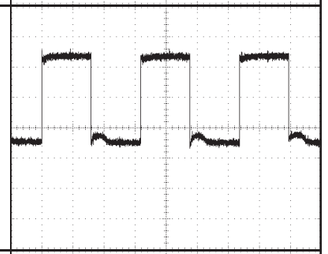
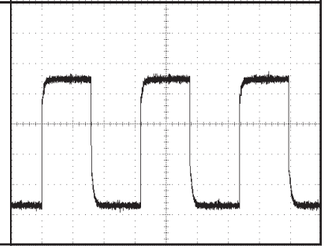


STROBE CIRCUIT



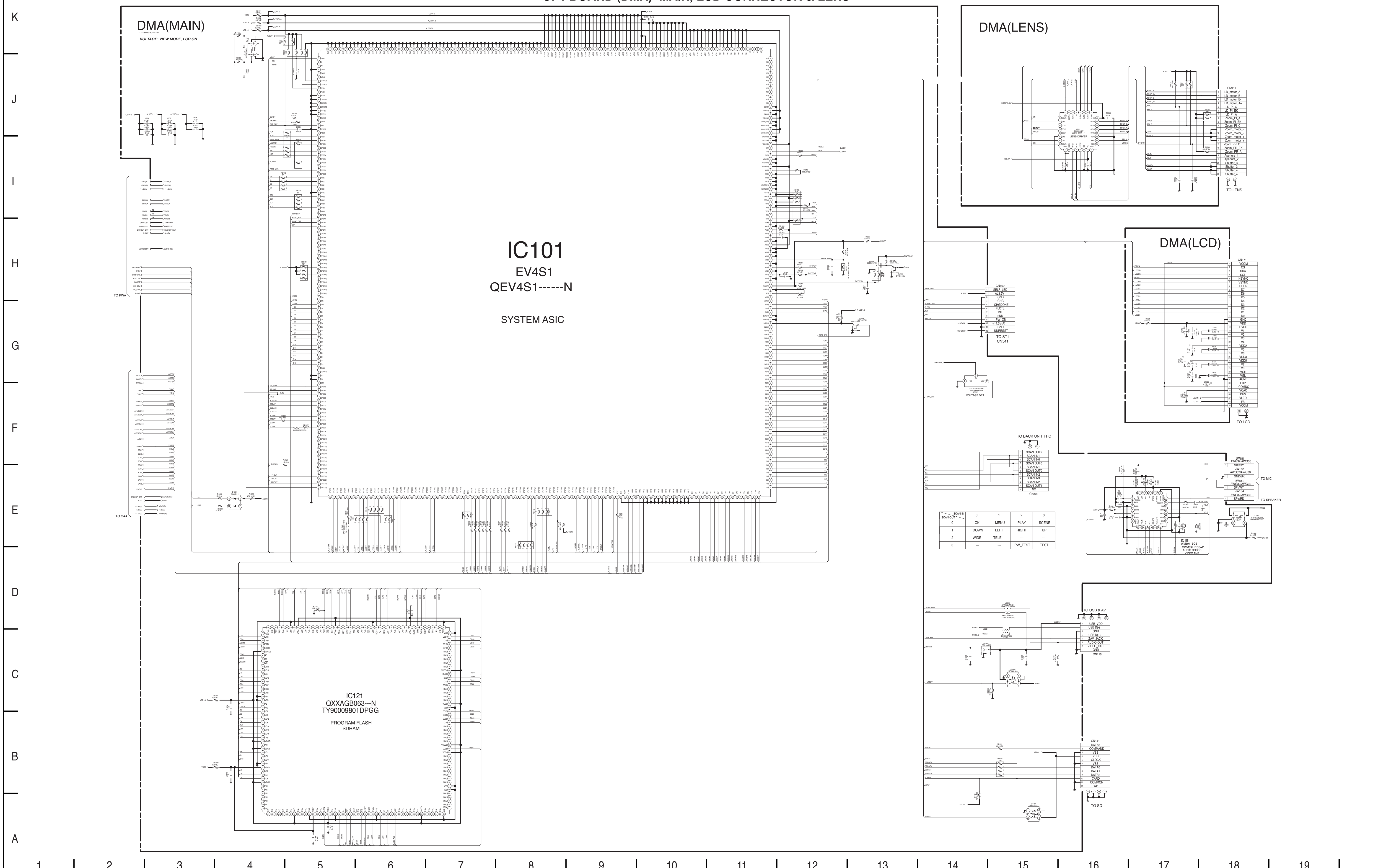
CIRCUIT DIAGRAMS

CIRCUIT WAVEFORMS

TEST POINT LOCATION	WAVEFORM	TEST POINT LOCATION	WAVEFORM
IC101 PIN A3 XO 1V/div 10ns/div		CN171 PIN 7 DCLK 1V/div 20ns/div	
		CN171 PIN 19 V1 1V/div 40μs/div	
		CN171 PIN 21 V3 1V/div 40μs/div	
		CN171 PIN 33 FRP 1V/div 40μs/div	

WF-SG41D

CP1 BOARD (DMA) MAIN, LCD CONNECTOR & LENS



SCAN OUT \ SCAN IN	0	1	2	3
0	OK	MENU	PLAY	SCENE
1	DOWN	LEFT	RIGHT	UP
2	WIDE	TELE	---	---
3	---	---	PW_TEST	TEST

DMA(MAIN)

D1-25900/SG41D-U

VOLTAGE: VIEW MODE, LCD ON

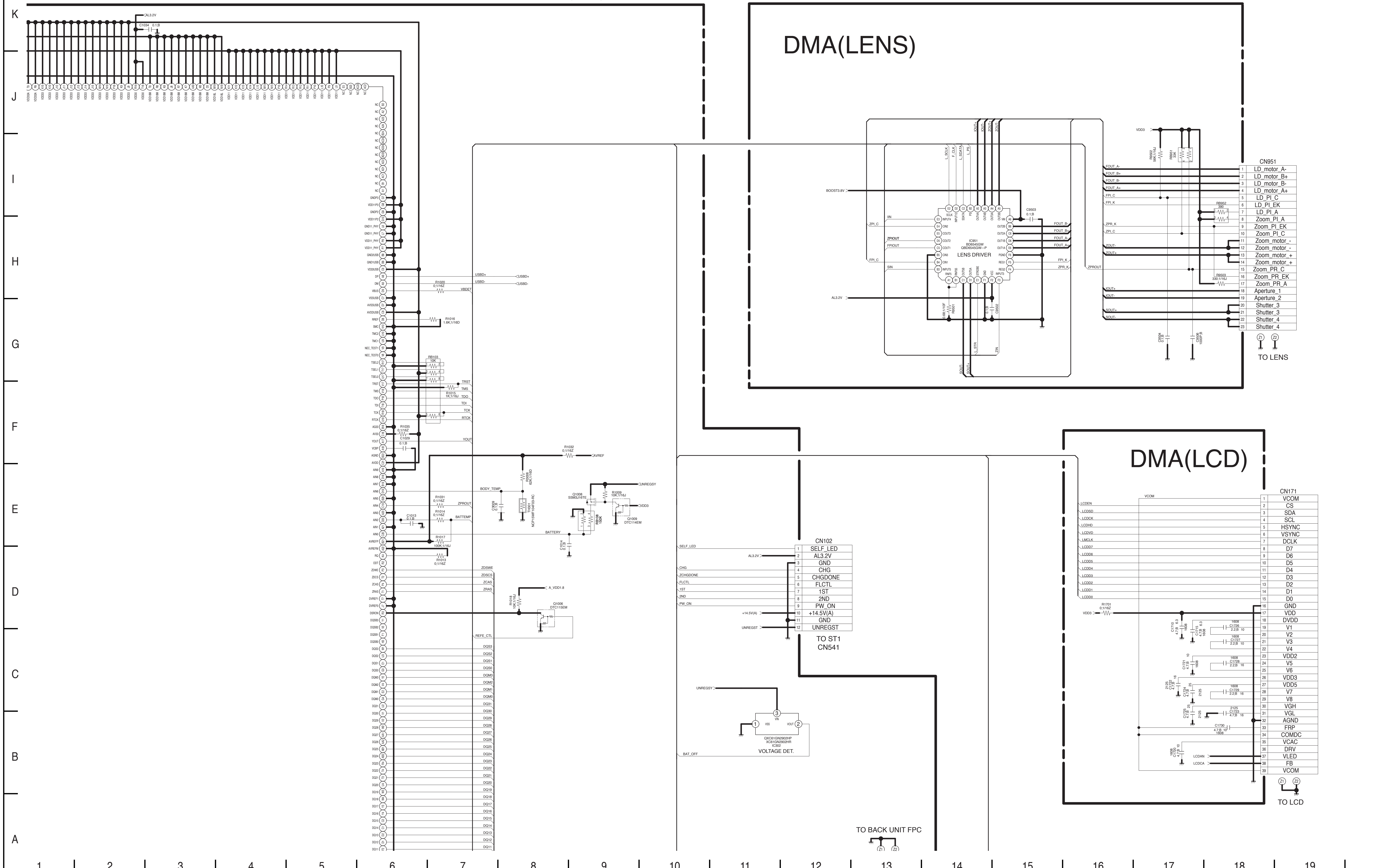
IC101

EV4S1

QEV4S1------N

SYSTEM ASIC

TO PWA


DMA(LENS)
DMA(LCD)
CN951
TO LENS
CN171
TO LCD
CN102
TO ST1
CN541
TO BACK UNIT FPC
LENS DRIVER
VOLTAGE DET.

CP1 BOARD (DMA) MAIN, LCD CONNECTOR & LENS [LOWER-LEFT]

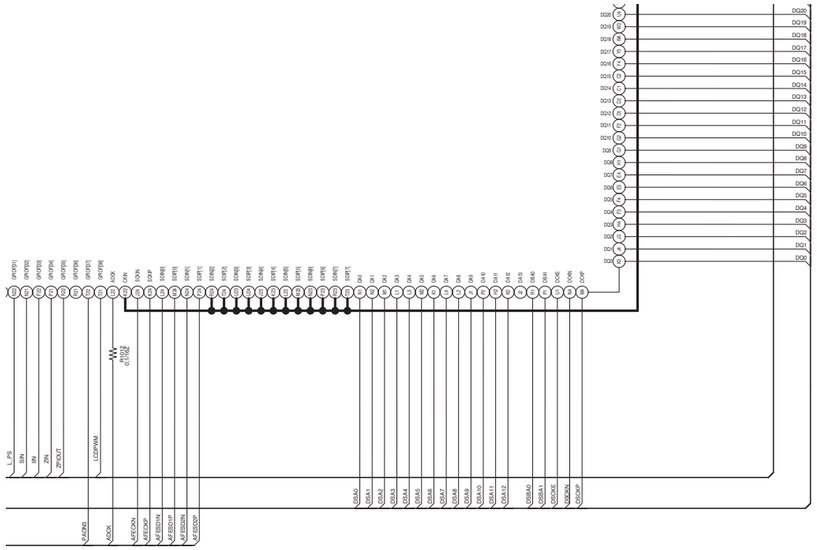
IC121
QXXAGB063---N
TY90009801DPGG

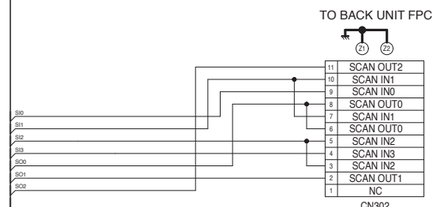
PROGRAM FLASH
SDRAM

TO CAA

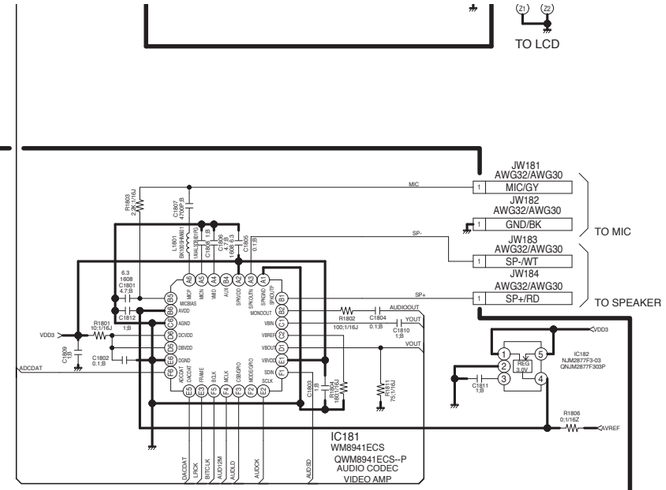
C11

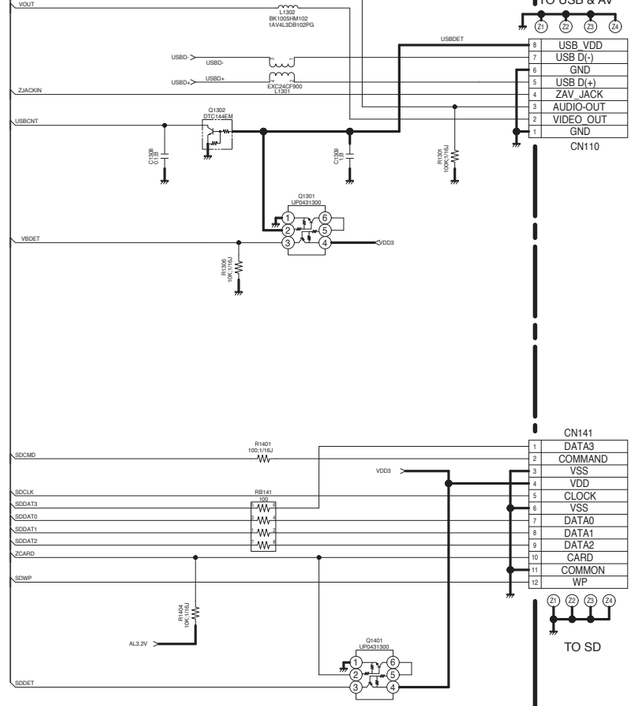
CP1 BOARD (DMA) MAIN, LCD CONNECTOR & LENS [LOWER-RIGHT]



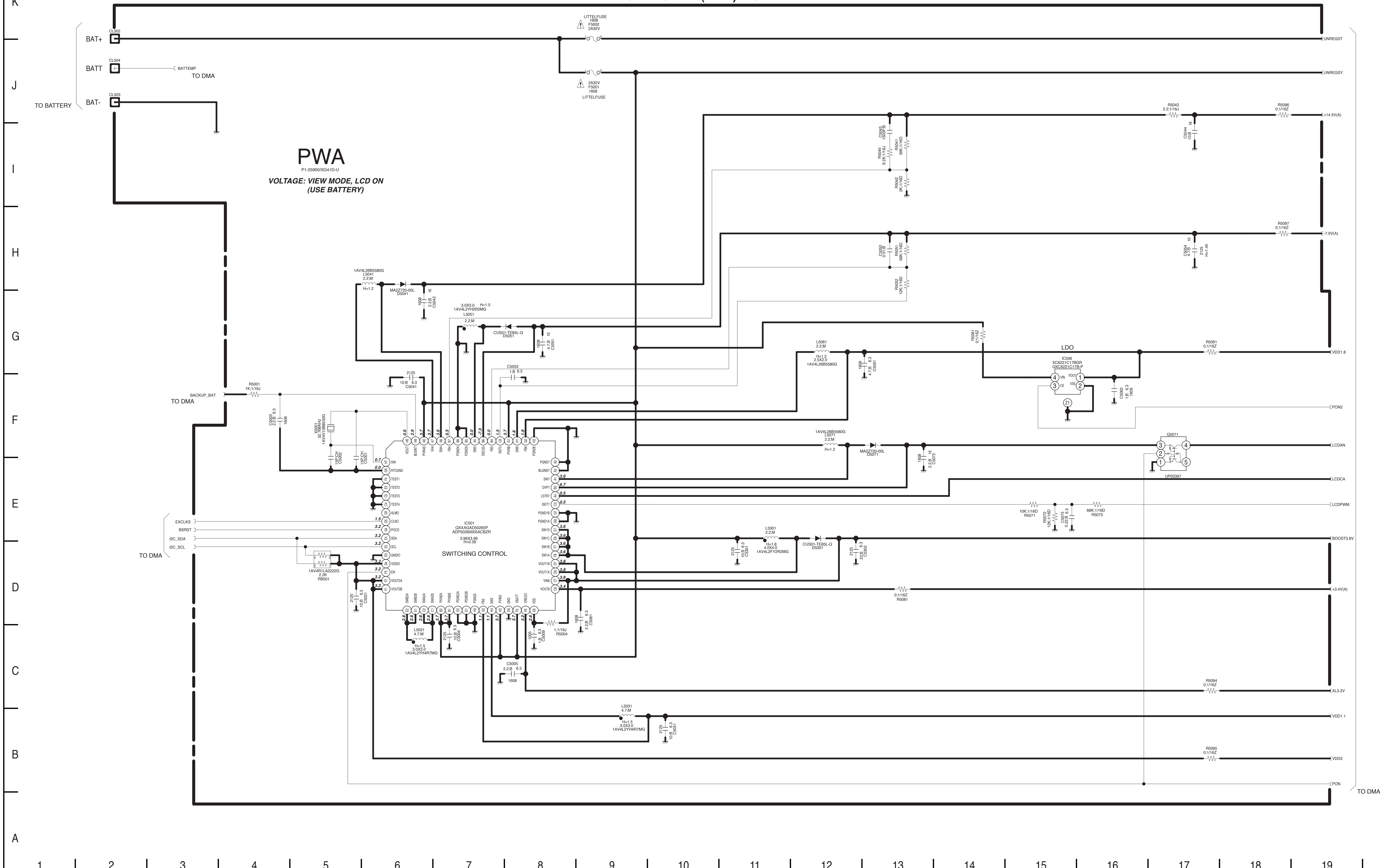


SCAN OUT \ SCAN IN	0	1	2	3
0	OK	MENU	PLAY	SCENE
1	DOWN	LEFT	RIGHT	UP
2	WIDE	TELE	---	---
3	---	---	PW_TEST	TEST





CP1 BOARD (PWA) POWER



CP1 BOARD (CAA) CCD AFE & DRIVER

IC901
MAX8918ITM+T
QMAX8918ITM+P

Z1
V. DRIVER

IC902
AD9971BCPZRL
QAD9971BCPZ-J

Z1
CDS, AGC, A/D C
H. DRIVER

IC903
QNJM2877F303P
NJM2877F3-03

REG 3.0V

CN903

1	BACKUP_BAT
2	NC
3	+14.5V(A)
4	+14.5V(A)
5	GND
6	CCDOUT
7	GND
8	LH1
9	GND
10	H1
11	H2
12	GND
13	SUBGT2
14	SUB
15	SUBGT
16	GND
17	RG
18	GND
19	-7.0V(A)
20	-7.0V(A)
21	V15B
22	V15C
23	V9B
24	V9A
25	V10
26	V15A
27	V14
28	V6
29	V7A
30	V7B
31	V8
32	V5
33	V3
34	V12
35	V11B
36	V11A
37	V1B
38	V2
39	V4
40	V1A
41	V16
42	V13B
43	V13A
44	GND
45	GND

TO CA1
CN911

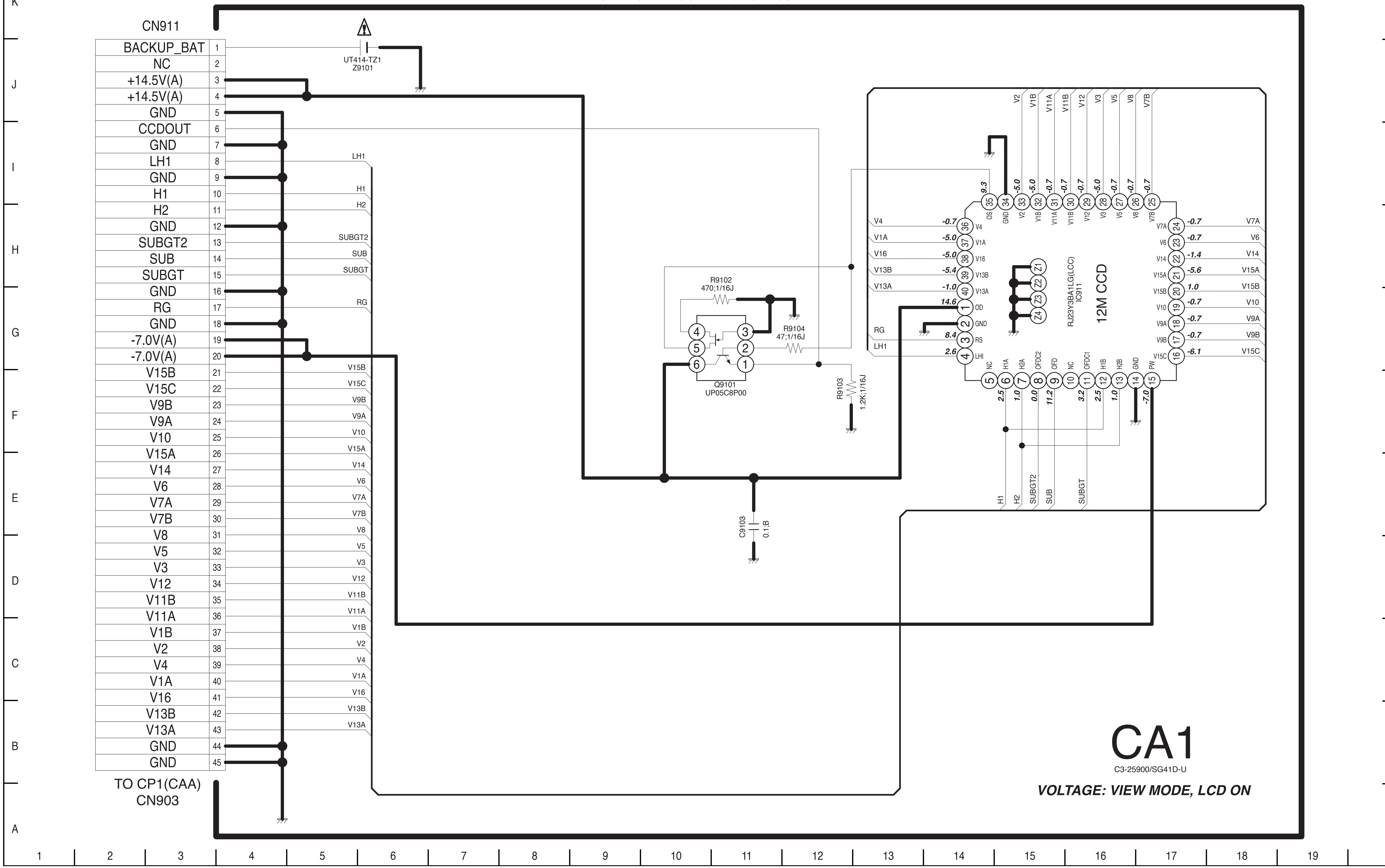
TO DMA

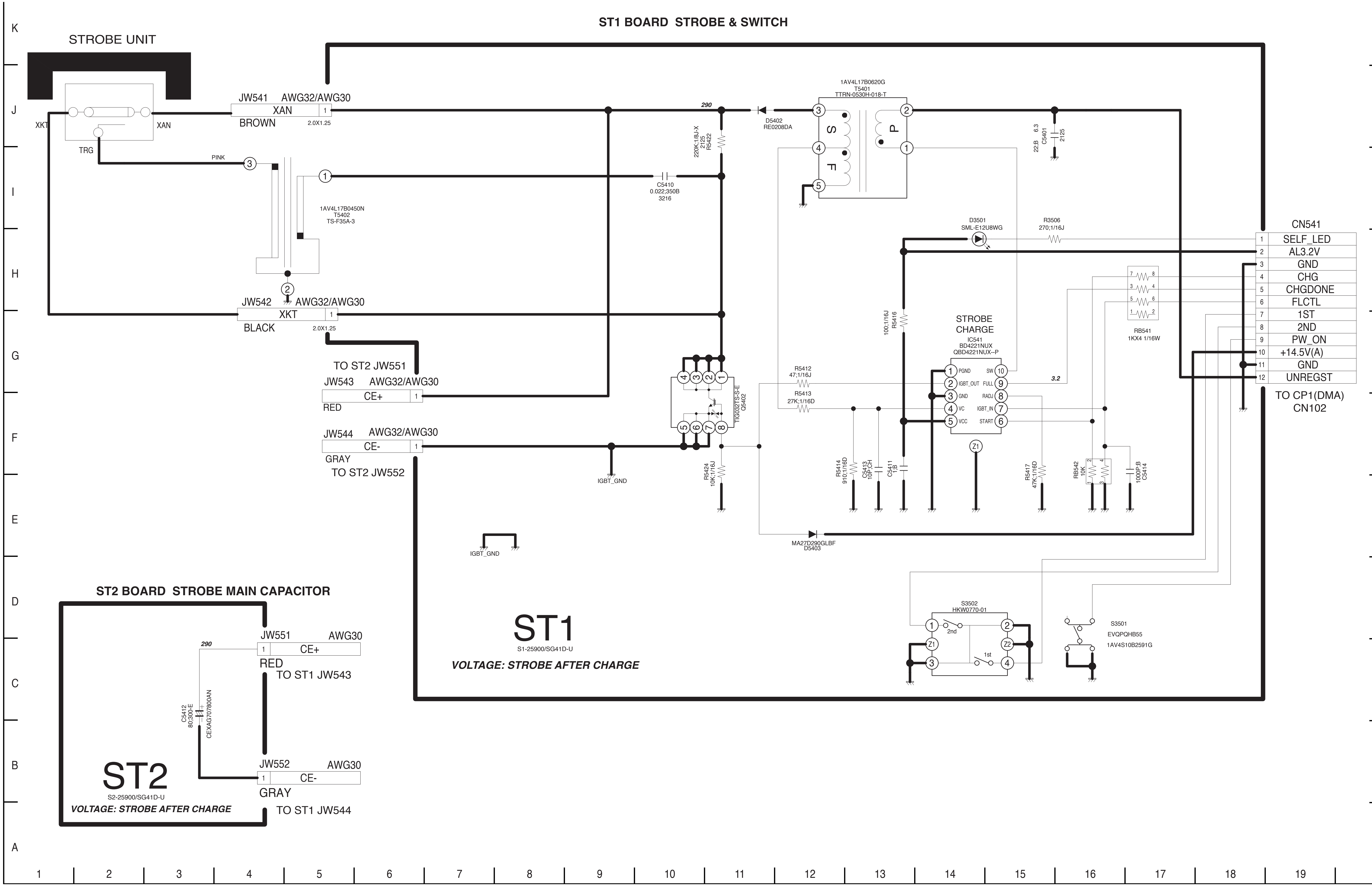
CAA
C1-25900/SG41D-U

VOLTAGE: VIEW MODE, LCD ON

C14

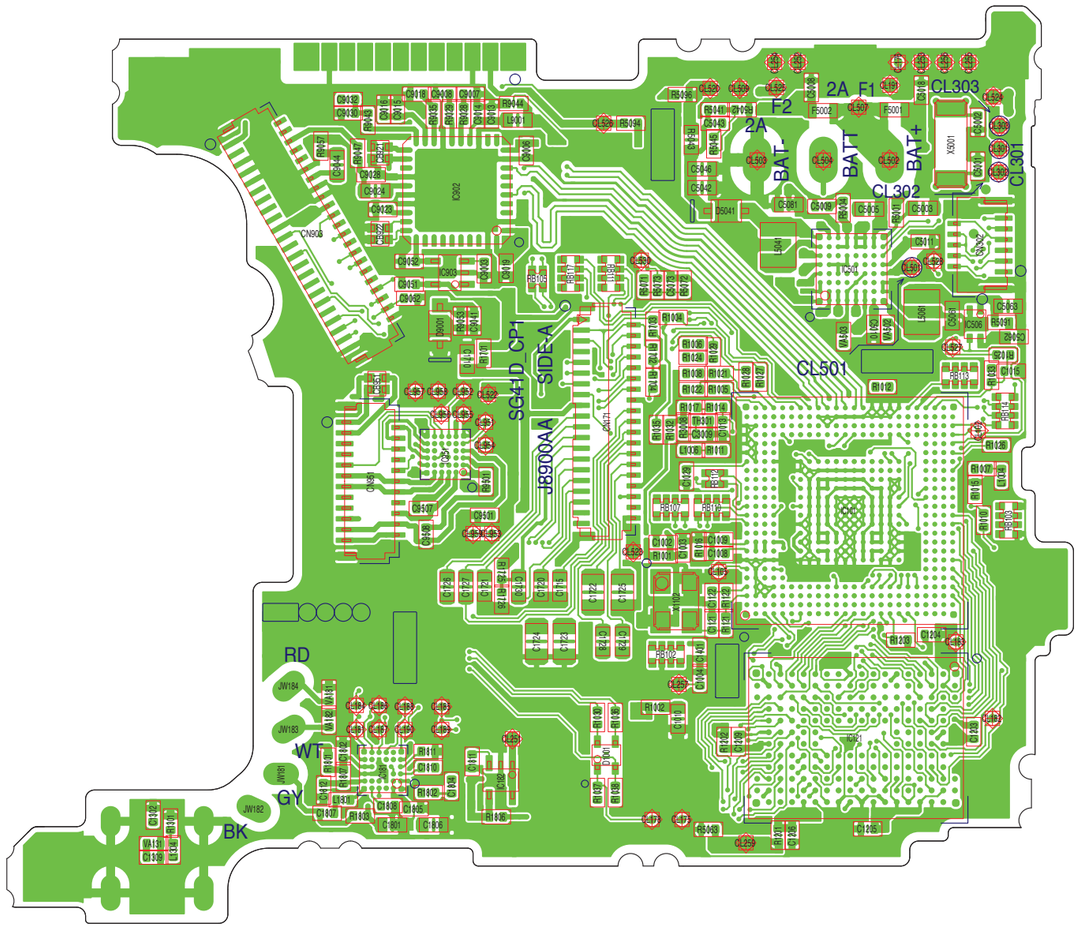
CA1 BOARD CCD IMAGE SENSOR



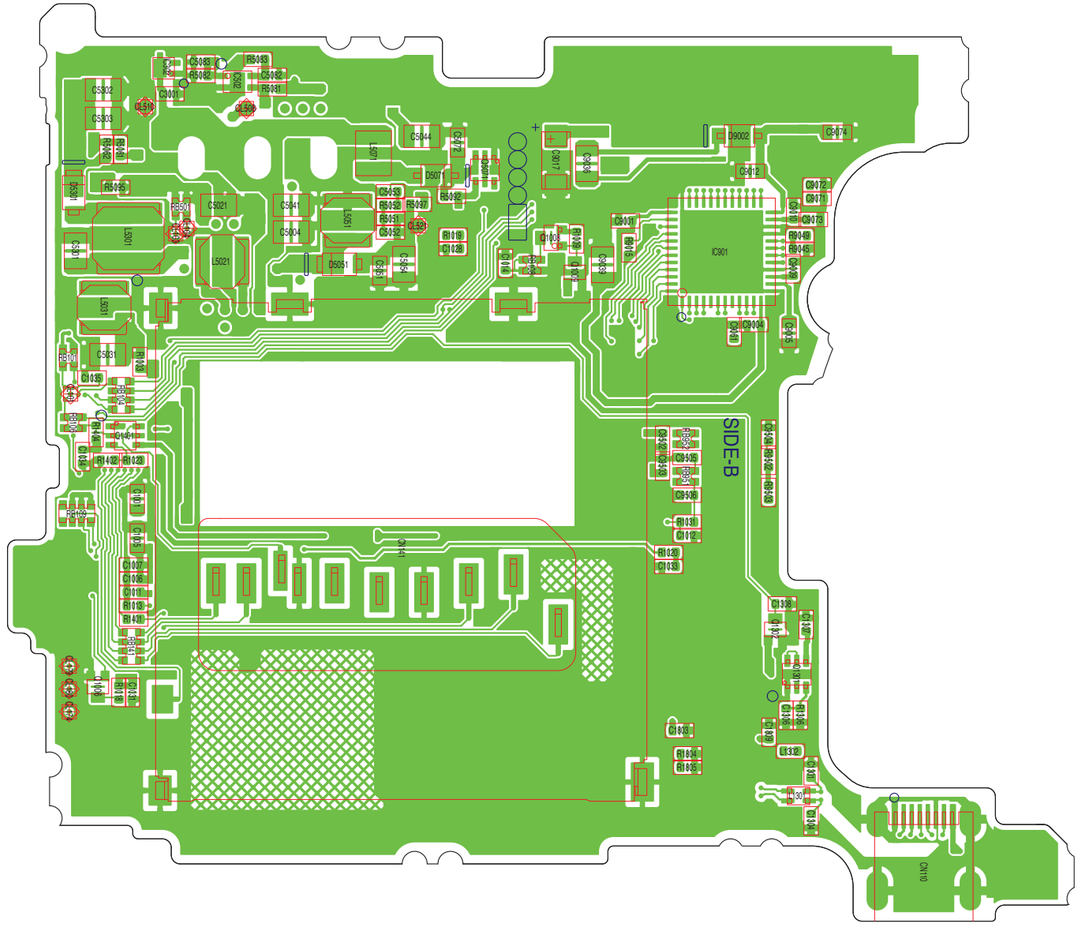

ST1 BOARD STROBE & SWITCH
STROBE UNIT
XKT
XAN
TRG
PINK
JW541 AWG32/AWG30
XAN
BROWN
2.0X1.25
JW542 AWG32/AWG30
XKT
BLACK
2.0X1.25
1AV4L17B0450N
T5402
TS-F35A-3
TO ST2 JW551
JW543 AWG32/AWG30
CE+
RED
JW544 AWG32/AWG30
CE-
GRAY
TO ST2 JW552
290
220K;1/8J-X
2125
R5422
C5410
0.022;350B
3216
D5402
RE0208DA
1AV4L17B0620G
T5401
TTRN-0530H-018-T
S
F
P
22;B 6.3
C5401
2125
D3501
SML-E12U8WG
R3506
270;1/16J
CN541
1 SELF_LED
2 AL3.2V
3 GND
4 CHG
5 CHGDONE
6 FLCTL
7 1ST
8 2ND
9 PW_ON
10 +14.5V(A)
11 GND
12 UNREGST
TO CP1(DMA)
CN102
RB541
1KX4 1/16W
STROBE
CHARGE
IC541
BD4221NUX
QBD4221NUX--P
PGND
IGBT_OUT
GND
VC
VCC
SW
FULL
RADJ
IGBT_IN
START
3.2
100;1/16J
R5416
R5412
47;1/16J
R5413
27K;1/16D
TIG032TS-S-E
Q5402
IGBT_GND
R5424
10K;1/16J
R5414
910;1/16D
C5413
10P;CH
C5411
1;B
R5417
47K;1/16D
RB542
10K
1000P;B
C5414
MA27D290GLBF
D5403
IGBT_GND
S3502
HKW0770-01
2nd
1st
S3501
EVQPQHB55
1AV4S10B2591G
ST1
S1-25900/SG41D-U
VOLTAGE: STROBE AFTER CHARGE
ST2 BOARD STROBE MAIN CAPACITOR
JW551 AWG30
CE+
RED
TO ST1 JW543
290
C5412
80;300-E
CEXAG707800AN
JW552 AWG30
CE-
GRAY
TO ST1 JW544
ST2
S2-25900/SG41D-U
VOLTAGE: STROBE AFTER CHARGE

PRINTED WIRING BOARDS (P.W.B.)

CP1 P.W.B. (SIDE A)

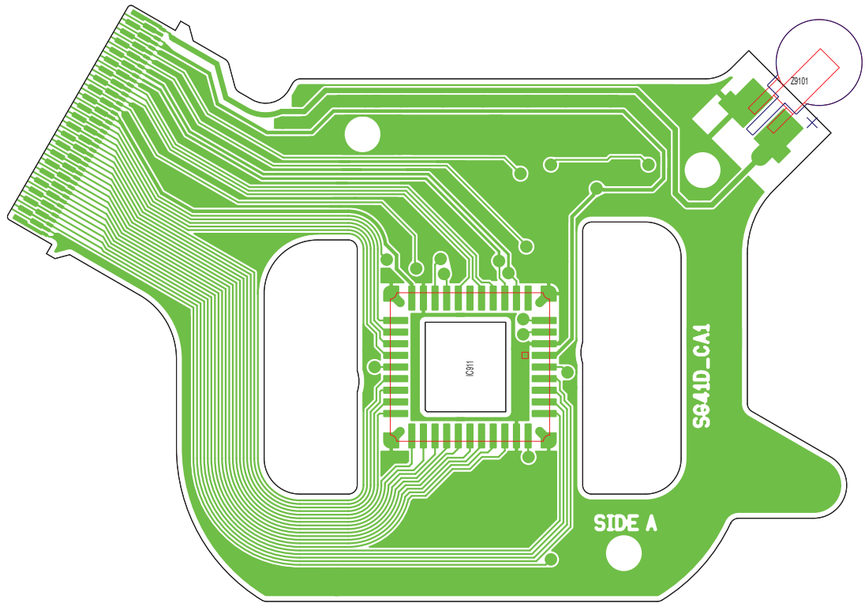


CP1 P.W.B. (SIDE B)

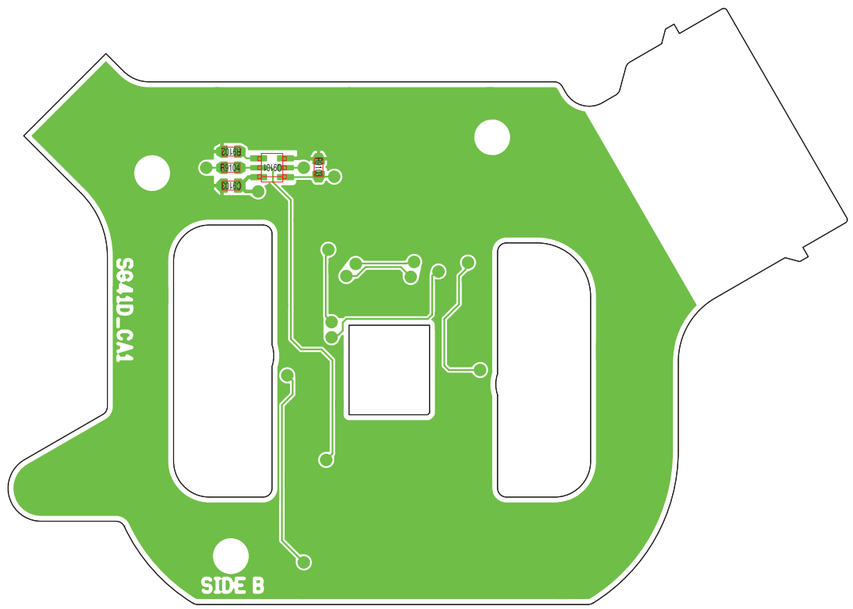


C17

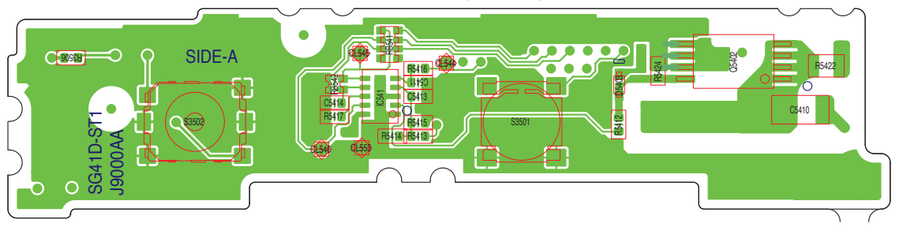
CA1 P.W.B. (SIDE A)



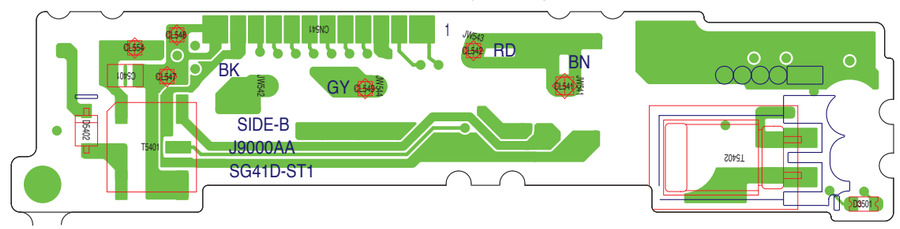
CA1 P.W.B. (SIDE B)



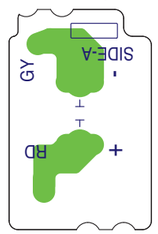
ST1 P.W.B. (SIDE A)



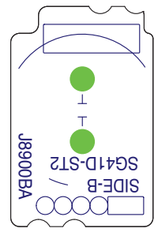
ST1 P.W.B. (SIDE A)



ST2 P.W.B. (SIDE A)



ST2 P.W.B. (SIDE B)



SANYO Electric Co., Ltd.
Osaka, Japan

Nov./'09