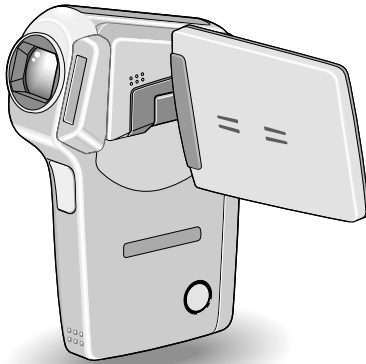




SERVICE MANUAL

Digital Movie Camera



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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-CG65

(Product Code : 168 081 01)
(U.S.A.) (Canada) (Korea) (Taiwan)

VPC-CG65EX

(Product Code : 168 081 02)
(Europe) (U.K.) (South America)
(China) (Australia) (Hong Kong)
(Russia) (Middle East) (Africa)
(General) (Korea) (Taiwan)

VPC-CG65EXBK

(Product Code : 168 081 05)
(Europe) (U.K.) (South America)
(China) (Australia) (Hong Kong)
(Russia) (Middle East) (Africa)
(General) (Korea) (Taiwan)

VPC-CG65EXG

(Product Code : 168 081 06)
(Europe) (U.K.) (South America)
(China) (Australia) (Hong Kong)
(Russia) (Middle East) (Africa)
(General) (Korea) (Taiwan)

VPC-CG65GX

(Product Code : 168 081 07)
(South America) (China)
(Australia) (Hong Kong)
(General) (Korea) (Taiwan)

VPC-CG65PXBL

(Product Code : 168 081 11)
(General)

PRODUCT SAFETY NOTICE

The components designated by a symbol (\triangle) 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.

IC931 (MN39830PMJ-A)	CCD imager
IC901 (AN20112A)	V driver
IC905 (AD9971BCPZRL)	CDS, AGC, A/D converter, H driver vertical TG

2. IC931 (CCD)

[Structure]

1/2.5 inch positive pixel-type color frame-reading fixed picture elements

Optical size	1/2.5 type format
Effective pixels	2864 (H) X 2160 (V)
Pixels in total	2934 (H) X 2171 (V)
Optical black	
Horizontal (H) direction:	Front 12 pixels, Rear 58 pixels
Vertical (V) direction:	Front 6 pixels, Rear 5 pixels
Dummy bit number	Horizontal : 28 Vertical : 7

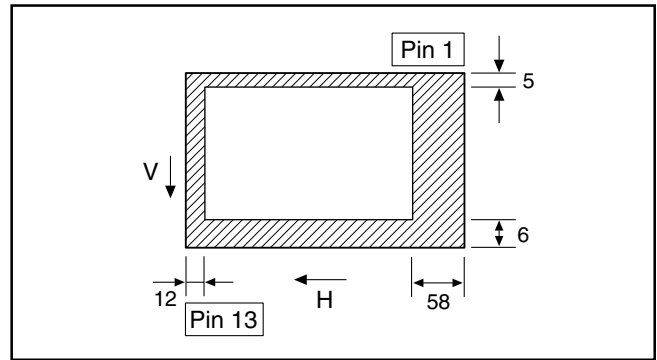


Fig. 1-1. Optical Black Location (Top View)

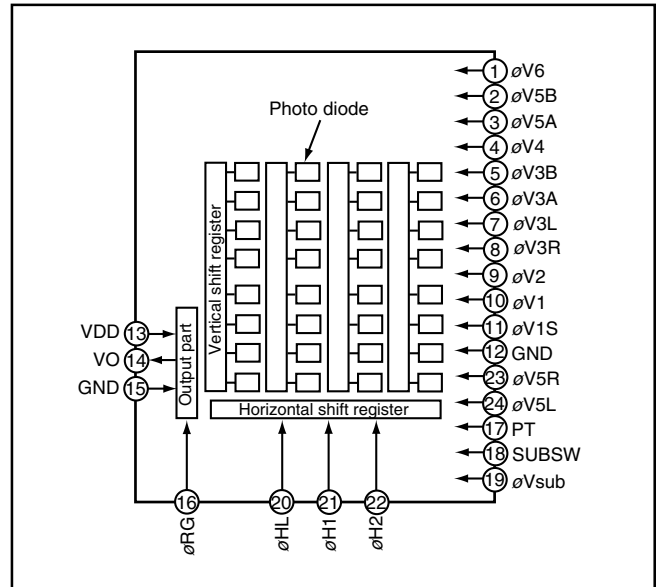


Fig. 1-2. CCD Block Diagram

Pin No.	Symbol	Pin Description	Waveform	Voltage
1, 23, 24	V _{5R} , V _{5L} , V ₆	Vertical shift register clock pulse		-6.0 V, 0 V
2, 3	V _{5A} , V _{5B}	Vertical shift register clock pulse		-6.0 V, 0 V, 12 V
4, 7, 8, 9, 11	V _{1S} , V ₂ , V _{3R} , V _{3L} , V ₄	Vertical shift register clock pulse		-6.0 V, 0 V
5, 6, 10	V ₁ , V _{3A} , V _{3B}	Vertical shift register clock pulse		-6.0 V, 0 V, 12 V
14	VO	CCD output	DC	Aprox. 10 V
13	VDD	Power	DC	12 V
16	øRG	Reset pulse		12.5 V, 16 V
12, 15	GND	GND	GND	0 V
17	PT	Protection P well	DC	-6.0 V
18	SUB SW	Substrate control		0, 3.3 V (When importing all picture element: 3.5 V)
19	øVsub	Substrate clock	DC	Aprox. 8 V (Different from every CCD)
21, 22	øH ₁ , øH ₂	Horizontal shift register clock pulse		0 V, 3.0 V
20	øHL	Horizontal shift register clock pulse		0 V, 3.3 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.

In addition the XV1-XV13 signals which are output from IC101 are vertical transfer clocks, and the XSG signal is superimposed onto XV1, XV3 and XV5 at IC901 in order to generate a ternary pulse. In addition, the XSUB signal which is output from IC101 is used as the sweep pulse for the electronic shutter.

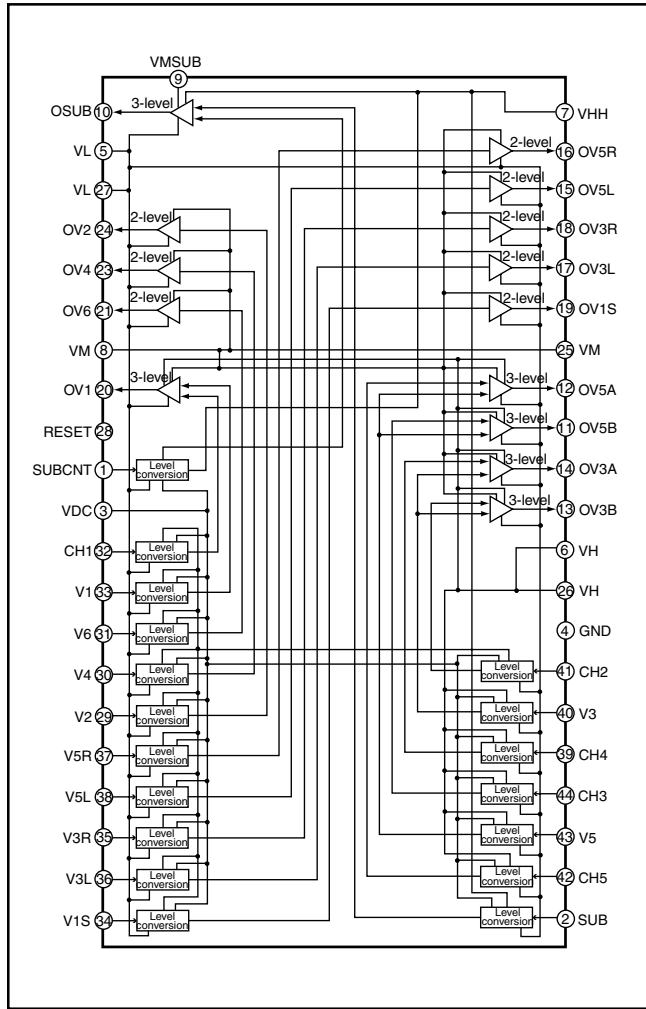


Fig. 1-3. IC901 Block Diagram

4. IC905 (H Driver, CDS, AGC and A/D converter)

IC905 contains the functions of H driver, CDS, AGC and A/D converter. As horizontal clock driver for CCD image sensor, H1, H2, H3, H4, HL and RG are generated inside, and output to CCD.

The video signal which is input to pin (25) of IC905. 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.

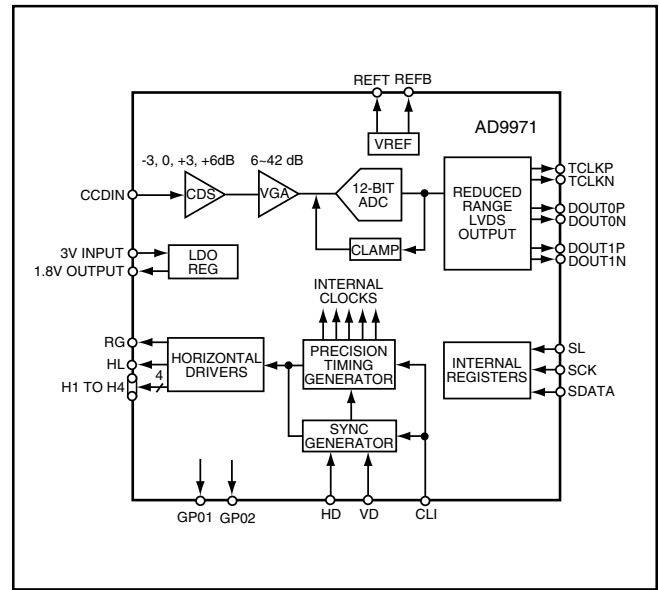


Fig. 1-4. IC905 Block Diagram

1-2. CP1 and VF1 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. SIO

This is the interface for the 8-bit microprocessor.

2. 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 6 million pixel horizontal addition CCD control.

1-7. Digital encorder

It generates chroma signal from color difference signal.

2. Outline of Operation

When the shutter opens, the reset signals (ASIC and CPU) 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 LVDS 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 R, G, and B 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 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 I/F. When played back on the LCD and monitor, data is transferred from memory to the SDRAM, and the image is then elongated so that it is displayed over the SDRAM display area.

3. LCD Block

During EE, the YUV of 640 x 480 conversion is carried out for the 12-bit RGB data which is input from the A/D conversion block of the CCD to the ASIC in order to be displayed on the video, and then transferred to the SDRAM.

The data which has accumulated in the SDRAM is converted to digital YUV signal in conformity to ITUR-601 inside the ASIC by SDRAM control circuit inside the ASIC, the data is sent to the LCD driver IC and displayed the image to LCD panel after gamma conversion is carried out.

If the shutter button is pressed in this condition, the 12-bit data which is output from the A/D conversion block of the CCD is sent to the SDRAM (DMA transfer), and is displayed on the LCD as a freeze-frame image.

During playback, the JPEG image data which has accumulated in the SD card is converted to YUV signals. In the same way as for EE, the data is then sent to the SDRAM, converted to digital YUV signal in conformity to ITUR-601 inside the ASIC, the data is sent to the LCD driver IC built-in LCD and displayed the image to LCD panel.

The LCD driver is converted digital YUV signals to RGB signals from ASIC, and these RGB signals and the control signal which is output 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/1V transposed RGB signals are applied to the LCD panel.

Because the LCD closes more as the difference in potential between the VCOM (common polar voltage: AC drive) 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. In addition, the brightness and contrast settings for the LCD can be varied by means of the serial data from the ASIC.

4. Lens drive block

4-1. Focus drive

The three control signals (LENS_SD, LENS_CK and LENS_EN) which are output from the ASIC (IC101) are converted into drive pulses (FOCUS A+, FOCUS A-, FOCUS B+ and FOCUS B-) by the motor driver (IC951), and are then used to drive micro step the stepping motor for focusing operation.

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

4-2. Zoom drive

The three control signals (LENS_SD, LENS_CK and LENS_EN) which are output from ASIC (IC101) are converted into drive pulses (ZOOM A+, ZOOM A-, ZOOM B+ and ZOOM B-) by the motor driver (IC951), and are then used to drive micro step the stepping motor for zoom operation.

Detection of the standard zooming positions is carried out by the ASIC detecting the signal (ZPIOUT) from the photointerruptor (Z_SENSE) inside the lens block.

4-3. ND filter drive

The ND filter drive signals (NDON and NDOFF) which are output from the ASIC (IC101) are used to drive (ND + and ND -) by the motor driver (IC951), and then the ND filter is inserted into and removed from the beam path.

4-4. Aperture/shutter drive

The signal (SHUTTER+) that is output from the ASIC (IC101) and the the signal (input to IC951 INB) that is output from pin (8) of IC971 (PWM OUT) are converted into drive pulses (DRIVE+ and DRIVE -) by the motor driver (IC951), and are then used to drive galvano-type aperture motor to control the aperture diameter to the desired setting, and opened and closed. Detection of the aperture diameter is carried out by amplifying at IC971 the output (HALL OUT+ and HALL OUT-) from the hall element inside the lens block, and by the ASIC detecting the output level (HALL_OUT).

5. Video clip recording and playback

5-1. Recording

The signals from the camera block are input to the ASIC where they are processed, and the image data that is stored in the IC102 SDRAM is input to the IC102 MPEG4 CODEC LSI. The CODEC LSI converts this data to encoded MPEG4 data, after which it is returned to the ASIC as streaming data, and the data is then written in sequence onto the SD card. At this time, the audio signals that are input to the built-in microphone are converted into digital data by the audio CODEC IC of IC181, and they are then input via the ASIC to IC102 (MPEG4 CODEC). The audio data is then encoded (AAC) by IC102, and then it is returned to the ASIC as streaming data and is then written in sequence onto the SD card together with the image signals described above.

5-2. Playback

The data is read from the SD card and input to IC102 as streaming data. The encoded data is decoded into image data by IC102 and then returned to the ASIC where it is displayed by the LCD or on a TV monitor. At this time, the audio data is also decoded by IC102, and it passes through the ASIC and is input to IC181 as digital data. D/A conversion is carried out at IC181, and the sound is then output to the speaker or to the LINE OUT terminal.

6. Audio CODEC circuit (IC181)

The audio signals from the microphone are converted into 16-bit digital data. AD conversion is carried out at a maximum sampling frequency of 48 kHz.

During audio playback, the 16-bit digital data is converted into analog signals and these drive the speaker or line out system. DA conversion is carried out at a maximum sampling frequency of 48 kHz.

1-3. PWA POWER CIRCUIT DESCRIPTION

1. Outline

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

Switching controller (IC501)
Motor system power output (L5301)
Digital 3.25 V power output (L5002)
Digital 1.2 V power output (L5003)
Analog -6 V power output (Q5004, L5004)
Analog 12 V power output (Q5005, L5005)
Backlight power output (Q5007, L5007)
Analog 3.4 V power output (IC503)
Digital 1.8 V power output (IC506, L5010)
USB charge circuit (IC521)

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 built-in channels, only CH1 (motor system), CH2 (digital 3.25 V), CH3 (digital 1.2 V), CH4 (analog -6 V), CH5 (analog 12 V) and CH7 (backlight) are used.

Feedback for the each power supply output is received, and the PWM duty is varied so that each one is maintained at the correct voltage setting level. Feedback for the backlight power (CH7) is provided to the both ends voltage of resistance 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 condenser which is connected to Pin (1) of IC501, all output is turned off. The control signal (P ON) are recontrolled to restore output.

3. Motor System Power Output

5.3 V is output. Feedback for the 5.3 V is provided to the switching controller (Pin (36) of IC501) so that PWM control can be carried out.

4. Digital 3.25 V Power Output

VDD3 is output. Feedback for the VDD3 is provided to the switching controller (Pin (45) of IC501) so that PWM control can be carried out.

5. Digital 1.2 V Power Output

VDD 1.2 is output. Feedback for the VDD 1.2 is provided to the switching controller (Pin (44) of IC501) so that PWM control can be carried out.

6. Analog -6 V Power Output

-6 V (A) is output. Feedback for the -6 V (A) is provided to the switching controller (Pin (38) of IC501) so that PWM control can be carried out.

7. Analog 12 V Power Output

+12 V (A) is output. Feedback for the +12 V (A) is provided to the switching controller (Pin (39) of IC501) so that PWM control can be carried out.

8. Backlight Power Output

Regular current is being transmitted to LED for LCD backlight. Feedback for the both ends voltage of resistance that is being positioned to in series LED are provided to the switching controller (Pin (42) of IC501) so that PWM control to be carried out.

9. Analog 3.4 V Power Output

+3.4 V (A) is output. +3.4 V (A) is output to drop 3.4 V by regulator IC503 from motor system power output.

10. Digital 1.8 V Power Output

VDD 1.8 is output. Feedback for the VDD 1.8 is provided to the switching controller (Pin (3) of IC506) so that PWM control to be carried out.

11. USB charge circuit

If the camera's power is turned off, USB cable connection mode setting while it is connected to the USB cable, the battery will be charged from USB 5V.

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 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. 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. When the SW 3.2 V signal is input, the peak current during oscillation changes.

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 FLCLT signal is input from the ASIC, the stroboscope emits light.

2-1. Emission control circuit

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

2-2. Trigger circuit

The Q5402 is turned ON by the FLCLT 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 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. SYA CIRCUIT DESCRIPTION

1. Configuration and Functions

For the overall configuration of the SYA block, refer to the block diagram. The SYA block centers around a 8-bit microprocessor (IC301), and controls camera system condition (mode).

The 8-bit microprocessor handles the following functions.

1. Operation key input, 2. Clock control and backup, 3. Power ON/OFF, 4. Strobe charge control, 5. Battery charge control (USB charge).

Pin	Signal	I/O	Outline
1	SCK	O	Serial data clock output
2	CARD	I	SD card detection (L= SD card)
3	KEY MENU	I	Key input/MENU
4	CHG_DONE	I	Strobe condensor charge done detection (H → L= charge done)
5	HOT LINE	I	Hot line request from ASIC
6	BAT_CHGERR	I	Battery charge status (H= charge error or full charge/L= charging)
7	NOT USED	O	-
8	BAT_CHGOFF	O	Battery charge ON/OFF control (H= CHG OFF or BAT OFF (USB insertion))
9	VDD2	-	VDD
10	VSS2	-	GND
11	VF_LED (R)	O	Red LED (H= lighting)
12	VF_LED (G)	O	Green LED (H= lighting)
13	USB_SUSPWR	O	Power supply ON/OFF from USB (H= USB bus power ON/L= OFF)
14	USB_HPWR	O	USB high power/low power switching (H= high power/L= low power)
15	NOT USED	O	-
16	LENS_4M	O	Lens driver IC standard clock output
17	NAND RESET	O	OneNAND flash reset (L= reset)
18	MAIN RESET	O	System reset (MRST)
19	HSC ON	O	Gyro sensor quick charge (rising) property control (H= quick/L= normal)
20	UTX	I	UART sending
21	BACKUP CTL	O	Backup battery charge control (H= charge)
22	USB_DET1	I	USB connection detection (L= connection)
23	PLLEN	O	ASIC PLL oscillation ON/OFF (H= ON)
24	TRST	O	JTAG reset (L= reset)
25	KEY_1st	I	Key input/1st SHUTTER (L= input)
26	MROUT	I	LCD panel open/close detection (MR sensor detection) (H= panel open)
27	BOOT_COMREQ	I	Command request input (combine with BOOT output)
28	NOT USED	O	-
29	SW3.2 ON	O	SW3.2 power ON/OFF signal (L= ON)
30	ST_CHG	O	Strobe charge control (H= charge)
31	NOT USED	O	-
32	SCAN IN3	I	Keyscan input 3 (L= input)
33	SCAN IN2	I	Keyscan input 2 (L= input)
34	KEY_PLAY	I	Key input PLAY (L= input)
35	SCAN IN1	I	Keyscan input 1 (L= input)
36	SCAN IN0	I	Keyscan input 0 (L= input)
37	VSS3	-	GND
38	VDD3	-	VDD
39	RDSEL	I/O	Debugger terminal
40	CLK (SFW)	I/O	Debugger terminal
41	DATA0 (SFW)	I/O	Debugger terminal
42	P ON	O	D/D converter ON/OFF signal

See next page →

43	SCAN OUT3	O	Keyscan output 3
44	SCAN OUT2	O	Keyscan output 2
45	SCAN OUT1	O	Keyscan output 1
46	SCAN OUT0	O	Keyscan output 0
47	H_PHONEJACK	I	Headphone cable detection
48	BAT_I	I	Battery current value detection (analog input)
49	BAT +	I	Battery voltage detection (analog input)
50	BAT_T	I	Battery temperature detection (analog input)
51	BL ON	O	LCD backlight ON/OFF signal (H=ON)
52	BAT_OFF/INT0	I	Battery OFF detection (L= battery OFF)
53	SREQ	I/O	Serial communication request signal
54	SCAN IN4	I	Keyscan input 4
55	KEY_2nd	I	Key input 2nd SHUTTER (L= input)
56	RESET	I	Microprocessor reset input (L= reset)
57	XCIN	I	Sub clock (32.768 kHz)
58	XCOUT	O	Sub clock (32.768 kHz)
59	VSS1	-	GND
60	XIN	I	Main clock (4 MHz)
61	XOUT	O	Main clock (4 MHz)
62	VDD1	-	VDD
63	UNREG SY	I	Camera power voltage input
64	AV JACK	I	AV JACK connection terminal (L= connection)
65	TH_TEMP	I	Camera temperature detection
66	SO	O	Serial data output
67	SI	I	Serial data input
68	NOT USED	O	-

Table 5-1. 8-bit Microprocessor Port Specification

2. Internal Communication Bus

The SYA block 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. 5-1 shows the internal communication between the 8-bit microprocessor, ASIC and SPARC lite circuits.

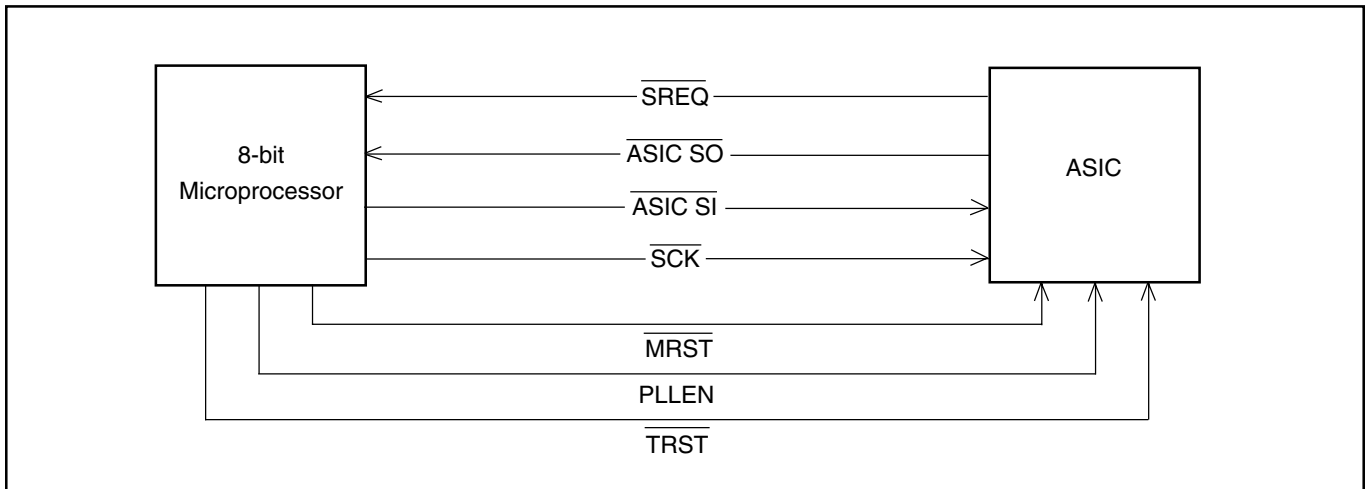


Fig. 5-1 Internal Bus Communication System

3. Key Operaiton

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

SCAN OUT \ SCAN IN	0	1	2	3	4
0	UP	RIGHT	DOWN	LEFT	SET
1	-	V. REC	TELE	WIDE	-
2	PW_TEST	-	TEST	-	PW_ON
3	-	-	LCD TURN	-	-

Table 5-2. 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 (power off: 2.4 V) voltage is normally input to the 8-bit microprocessor (IC301) by IC302, so that 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 battery is removed, the 8-bit microprocessor operates in sleep mode using the backup battery. 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 the P ON2 signal at pin (15) and P ON signal at pin (42) to high, and then turns on the DC/DC converter. After this, low signal is output from pin (18) so that the ASIC is set to the reset condition. After this these pins set to high, and set to active condition. Once it is completed, the ASIC returns to the reset condition, all DC/DC converters are turned off and the power supply to the whole system is halted.

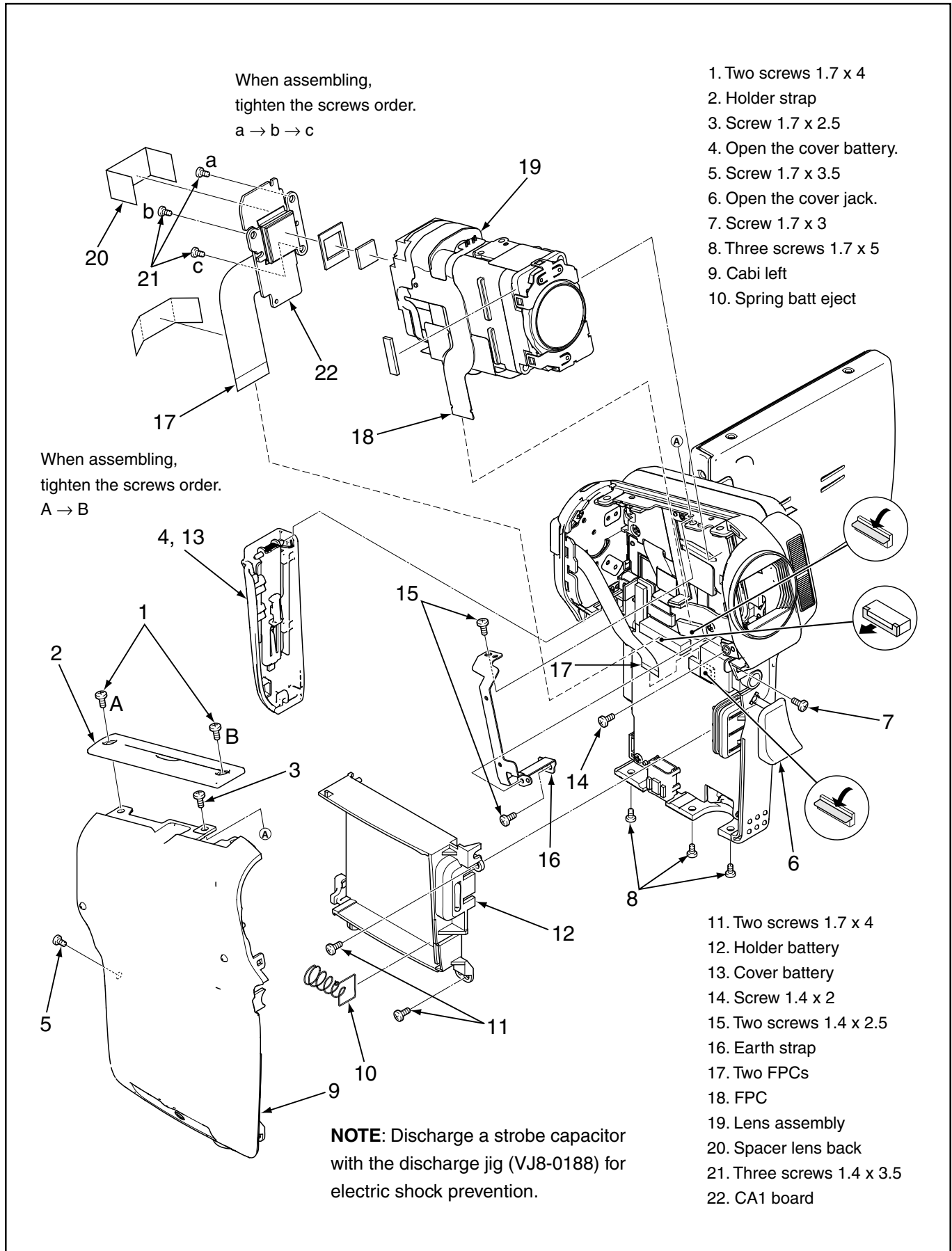
		ASIC, memory	CCD	8 bit CPU
Power voltage		3.3 V 1.2 V	+3.4 V (A) +12 V (A), -6 V(A)	3.2 V (P ON) 2.4 V (P OFF)
Power OFF		OFF	OFF	32KHz
CAMERA	Power switch ON - Auto power OFF	OFF	OFF	32KHz
	LCD finder	ON	ON	4 MHz
Play back		ON	OFF	4 MHz

Table 5-3. Camera Mode

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

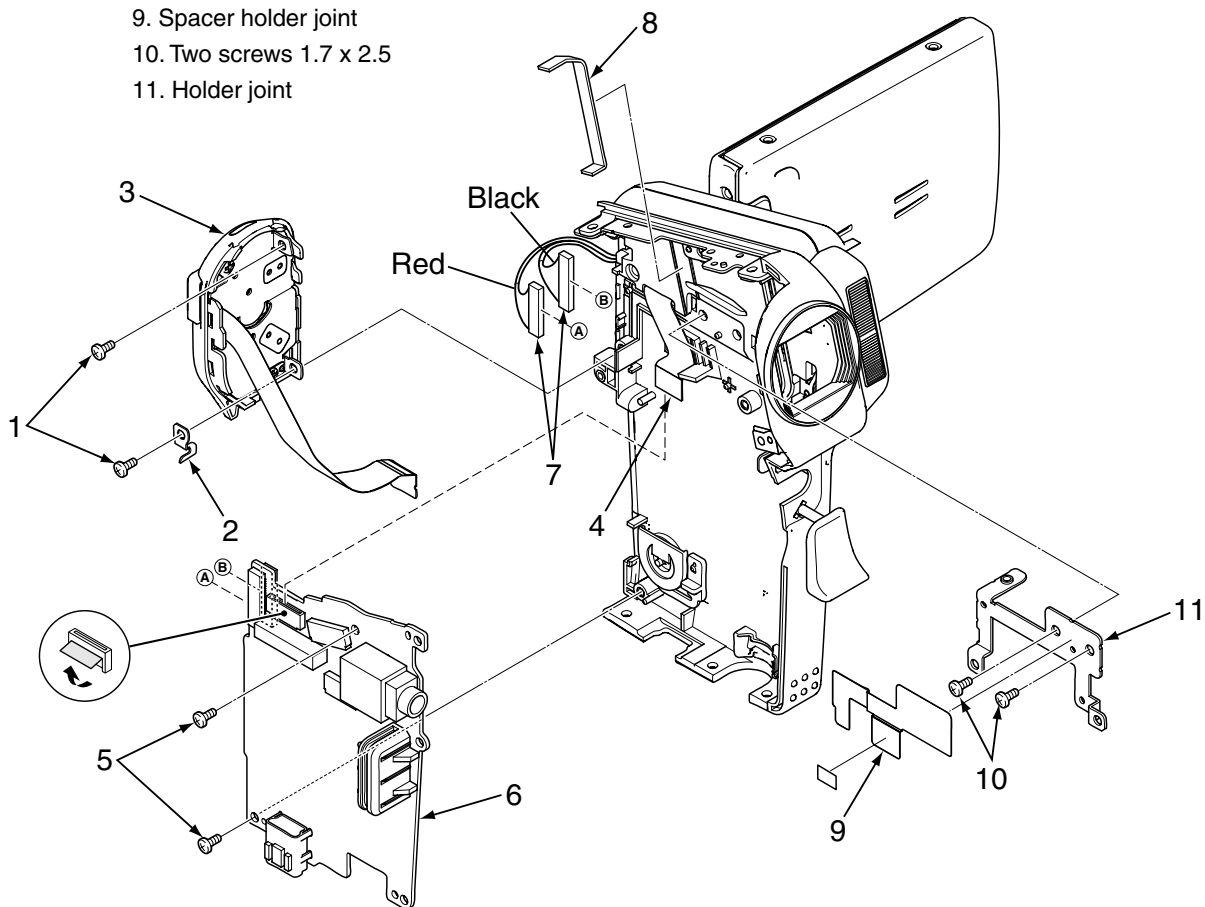
2. DISASSEMBLY

2-1. REMOVAL OF CABI LEFT, LENS ASSEMBLY AND CA1 BOARD



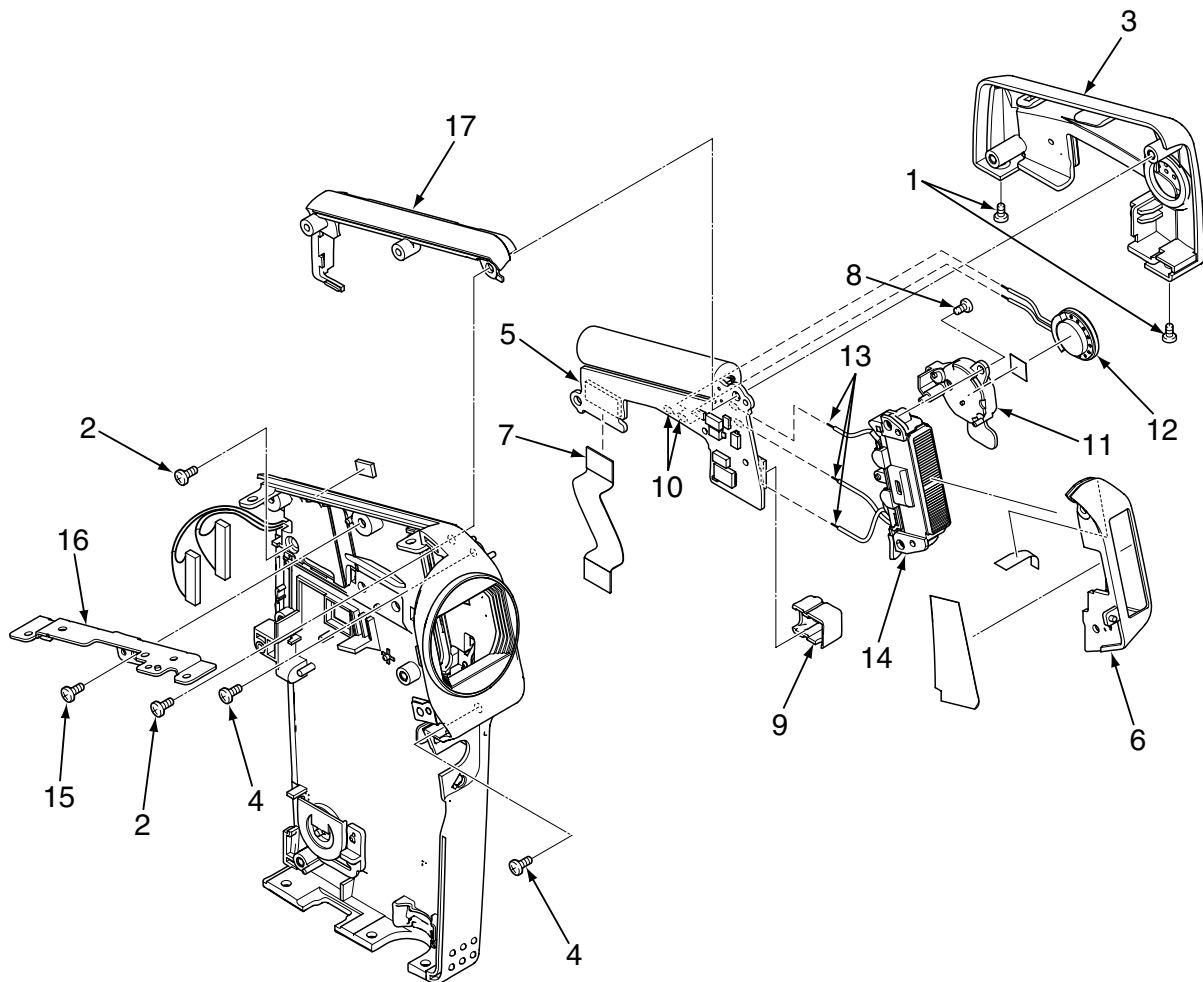
2-2. REMOVAL OF CP1 BOARD

1. Two screws 1.7 x 4
2. Earth batt
3. Button back
4. FPC
5. Two screws 1.7 x 4
6. CP1 board
7. Two connectors
8. Spacer lens right
9. Spacer holder joint
10. Two screws 1.7 x 2.5
11. Holder joint



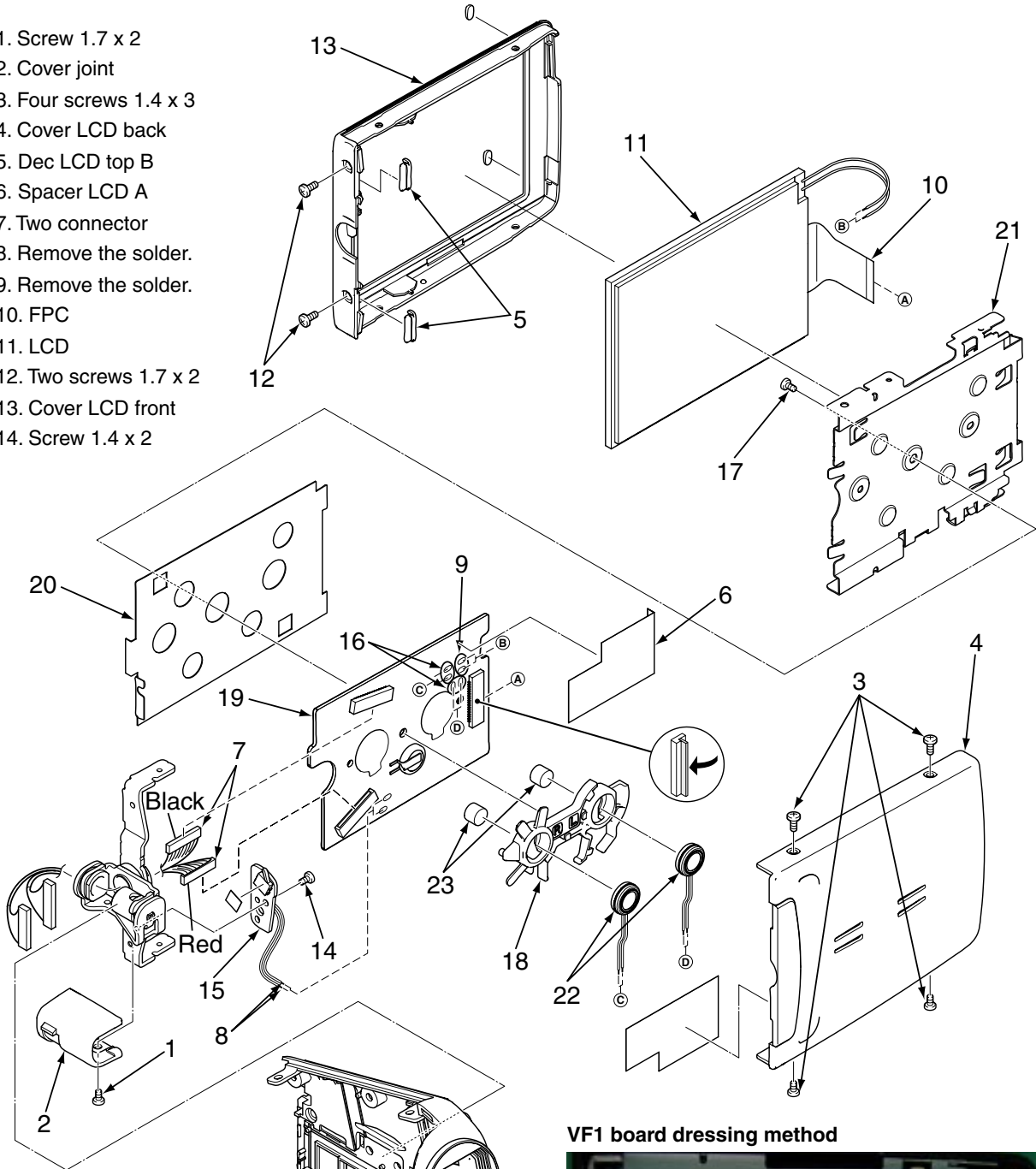
2-3. REMOVAL OF ST1 BOARD

1. Two screws 1.7 x 2
2. Two screws 1.7 x 5
3. Assy cover joint
4. Two screws 1.4 x 5
5. ST1 board
6. Cover flash
7. Flexible pwb SG111 ST1-CP1
8. Screw 1.4 x 3
9. Cover trigger
10. Remove the solder.
11. Holder speaker
12. Speaker, 8
13. Remove the solder.
14. Assy, lamp
15. Screw 1.7 x 4
16. Hol strap inner
17. Cover joint top



2-4. REMOVAL OF LCD, TB1 BOARD AND VF1 BOARD

1. Screw 1.7 x 2
2. Cover joint
3. Four screws 1.4 x 3
4. Cover LCD back
5. Dec LCD top B
6. Spacer LCD A
7. Two connector
8. Remove the solder.
9. Remove the solder.
10. FPC
11. LCD
12. Two screws 1.7 x 2
13. Cover LCD front
14. Screw 1.4 x 2

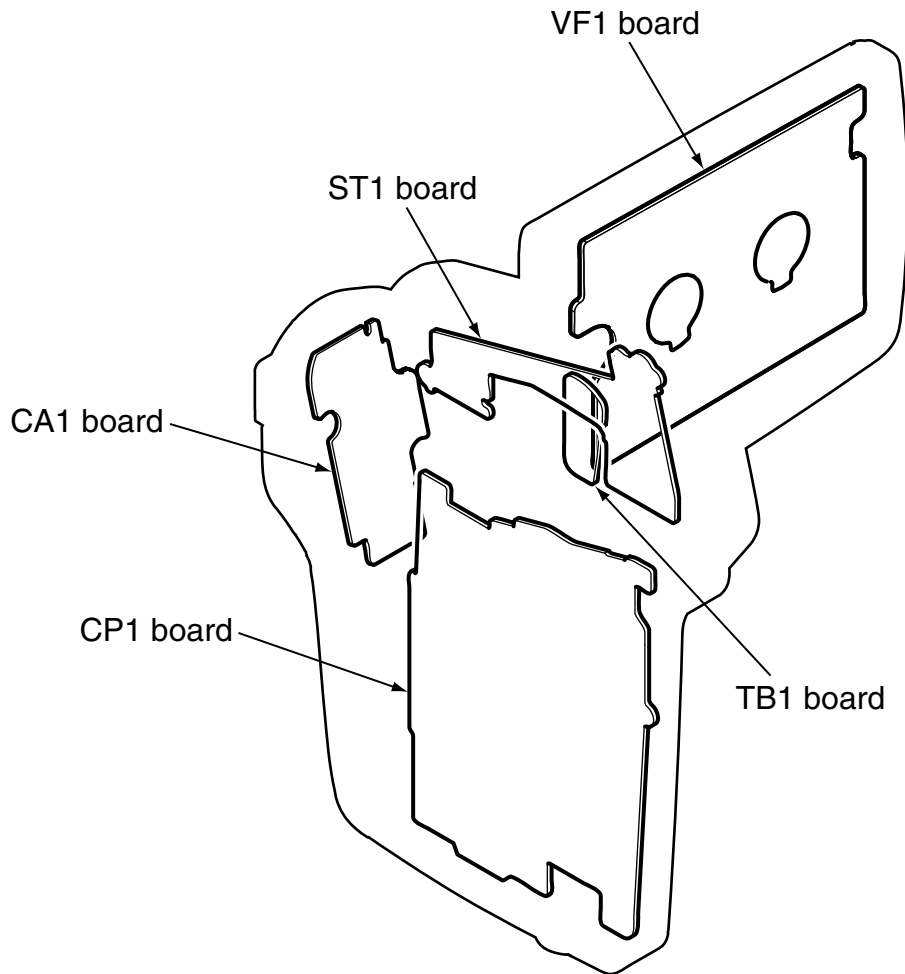


15. TB1 board
16. Remove the solder.
17. Screw 1.7 x 2.5
18. Holder mic
19. VF1 board
20. Spacer VF1
21. Holder monitor
22. Microphone
23. Spacer mic

VF1 board dressing method



2-5. BOARD LOCATION



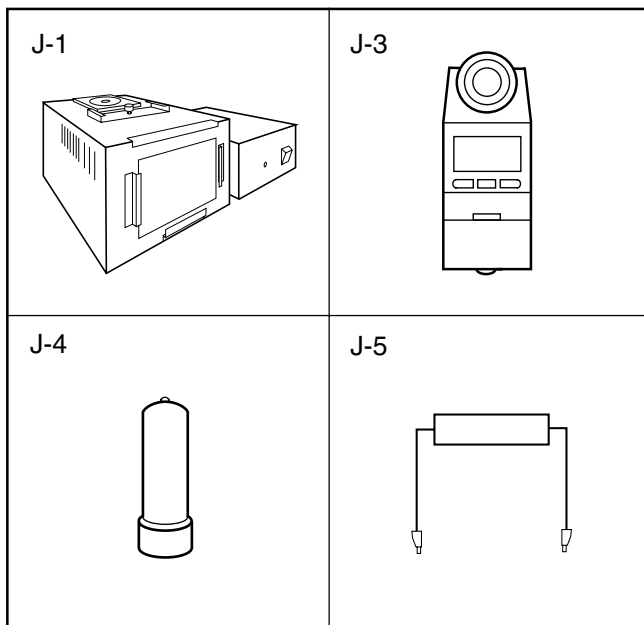
3. ELECTRICAL ADJUSTMENT

3-1. Table for Servicing Tools

Ref. No.	Name	Number	Part code
J-1	Pattern box (color viewer)	1	VJ8-0190
J-2	Calibration software	1	
J-3	Chroma meter	1	VJ8-0192
J-4	Spare lump	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.digital-sanyo.com/overseas/service/>



3-2. Equipment

1. PC (IBM®-compatible PC, Pentium processor, Window 98 or Me or 2000 or XP)

3-3. Adjustment Items and Order

1. Lens Adjustment
2. AWB Adjustment
3. CCD White Point Defect Detect Adjustment
4. CCD Black Point And White Point Defect Detect Adjustment In Lighted
5. Gyro Sensor Zero Offset Adjustment

Note: Item 1-5 adjustments should be carried out in sequence.

3-4. Setup

1. System requirements

- Windows 98 or Me or 2000 or XP
- IBM®-compatible PC with pentium processor
- CD-ROM drive
- USB port
- 40 MB RAM
- Hard disk drive with at least 15 MB available
- VGA or SVGA monitor with at least 256-color display

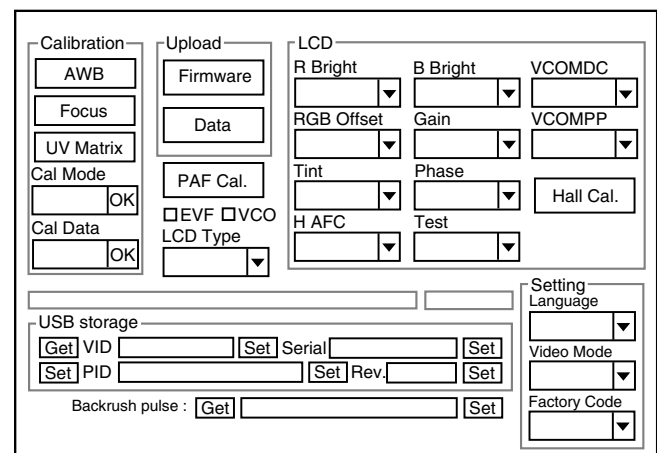
2. Installing USB driver

Install the USB driver with camera or connection kit for PC.

3. Pattern box (color viewer)

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/m². Be careful of handling the lump and its circumference are high temperature during use and after power off for a while.

4. Computer screen during adjustment



3-5. Connecting the camera to the computer

1. Insert the full charge batteries.
2. Line up the arrow on the cable connector with the notch on the camera's USB port. Insert the connector.
3. Locate a USB port on your computer.
4. If "USB CONNECTION" is displayed, choose the "COMPUTER", and press the SET button. Next, choose the "CARD READER", and press the SET button.

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

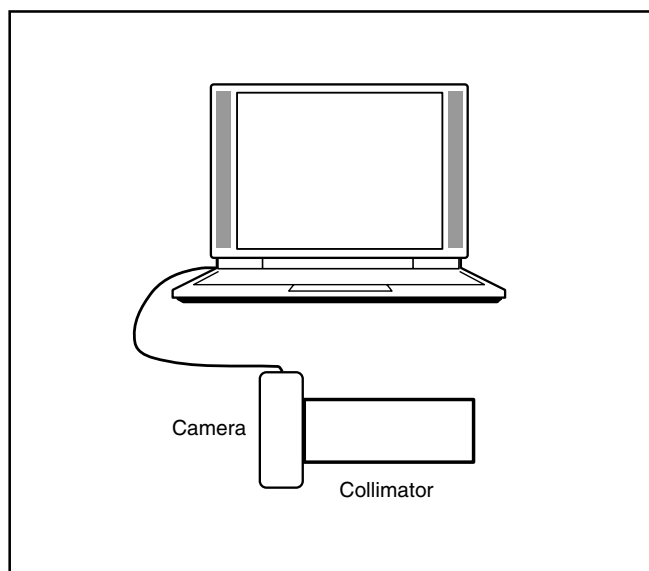
	Lens Adjustment	AWB Adjustment	CCD White Point Defect Detect Adjustment	CCD Black Point And White Point Defect Detect Adjustment In Lighted	Gyro sensor zero offset adjustment	Factory Cord Setting	Language Setting	USB storage information registration	Reset Setting
COMPL PWB CP-1	○	○	○	○	○	○	△	○	○
COMPL PWB ST-1									
COMPL PWB VF-1	○	○							
COMPL PWB TB-1									
ASSY FLEXIBLE PWB CA1	○	○	○	○	○				
LENS ASSY	○	○							

○ : 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. Adjust Specifications

1. Lens Adjustment



Preparation:

POWER switch: ON

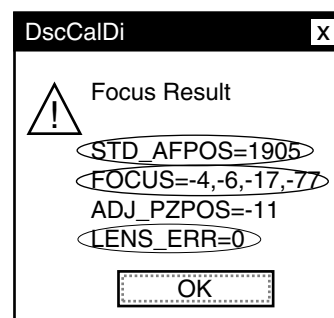
If using a ready-made collimator, set to infinity.

Note:

Do not vibrate during the adjustment.

Adjustment method:

1. Set the camera 0 cm from the collimator. (Do not enter any light.)
2. Set the camera so that it becomes center of the screen in the collimator.
3. Double-click on the DscCalDi.exe.
4. Click the Focus, and click the Yes.
5. Lens adjustment value will appear on the screen.
6. Click the OK.



Adjustment value determination is effectuated using the "STD AFPOS", "FOCUS" and "LENS_ERR" values.

If FOCUS=focus1, focus2, focus3, focus4 and the adjustment values fulfill the conditions below, they are determined as within specifications.

Adjustment value determination

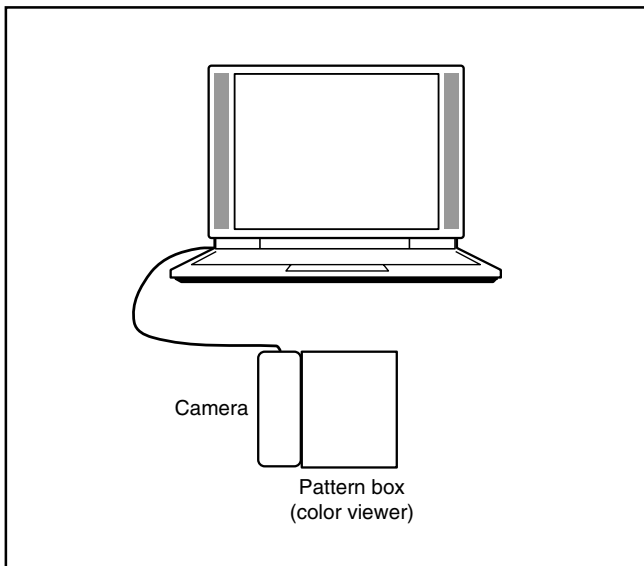
$1800 \leq \text{STD_AFPOS} < 2000$

$-40 \leq \text{focus1} \leq +40, -50 < \text{focus2} < +50,$

$-60 \leq \text{focus3} \leq +60, -200 \leq \text{focus4} \leq +200$

lens_error=0

2. AWB Adjustment

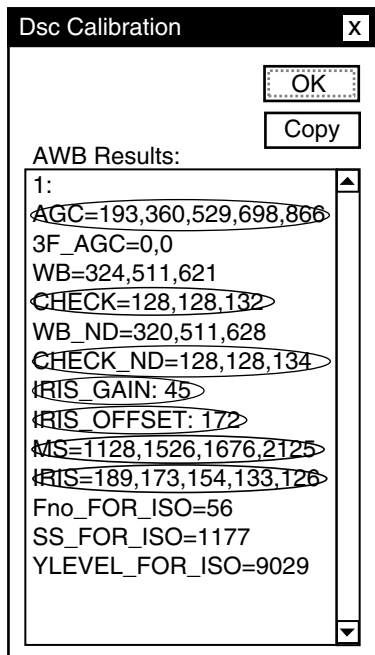


Preparation:

POWER switch: ON

Adjusting method:

1. 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.)
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 the "AGC", "CHECK", "CHECK_ND", "IRIS_GAIN", "IRIS_OFFSET", "MS" and "IRIS" values.

If AGC= a1, a2, a3, a4, a5, CHECK= wc0, wc1, wc2, CHECK_ND= wnc0, wnc1, wnc2, MS= ms1, ms2, ms3, ms4, IRIS= s1, s2, s3, s4, s5, IRIS_GAIN= g and IRIS_OFFSET=o the adjustment values fulfill the conditions below, they are determined as within specifications.

Adjustment value determination

$150 < a1 < 450$, $300 < a2 < 600$, $450 < a3 < 750$,
 $600 < a4 < 900$, $750 < a5 < 1024$
 $wc0 = 128 \pm 2$, $wc1 = 128 \pm 2$, $wc2 = 130 \pm 40$
 $wnc0 = 128 \pm 2$, $wnc1 = 128 \pm 2$, $wnc2 = 130 \pm 40$
 $801 < ms1 \leq 2500$, $1201 < ms2 \leq 2900$, $1251 < ms3 \leq 3100$,
 $1401 < ms4 \leq 3600$
 $100 \leq s1 \leq 220$, $100 \leq s2 \leq 220$, $100 \leq s3 \leq 220$,
 $100 \leq s4 \leq 220$, $100 \leq s5 \leq 220$
 $ms4 > ms3 > ms2 > ms1$
 $s1 > s2 > s3 > s4 > s5$
 $0 \leq g \leq 255$
 $0 \leq o \leq 255$

Adjustment values other than the above are irrelevant.

3. CCD White Point Defect Detect Adjustment

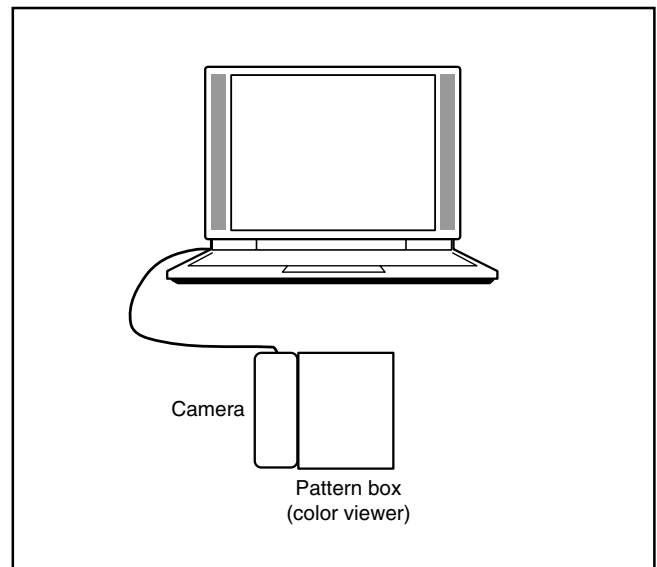
Preparation:

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/m²)

Adjusting method:

1. Set the camera 0 cm from the pattern box. (Do not enter any light.)
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. Gyro Sensor Zero Offset Adjustment

Preparation:

POWER switch: ON

Note:

Do not vibrate after turning on the camera.

Adjustment method:

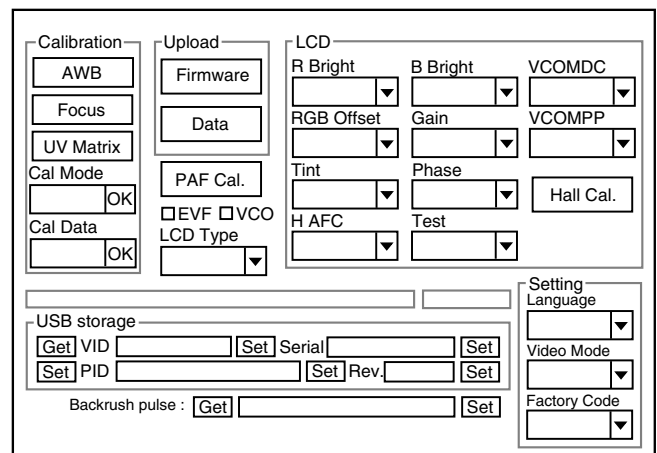
1. Double-click on the DscCalDi.exe.
2. Select "EIS Adj" on the LCD "Test".
3. After the adjustment is completed, the adjustment value will appear.
Carry out the adjustment again if NG will display.

3-8. 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".

3-9. 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.



3-10. Format the internal memory

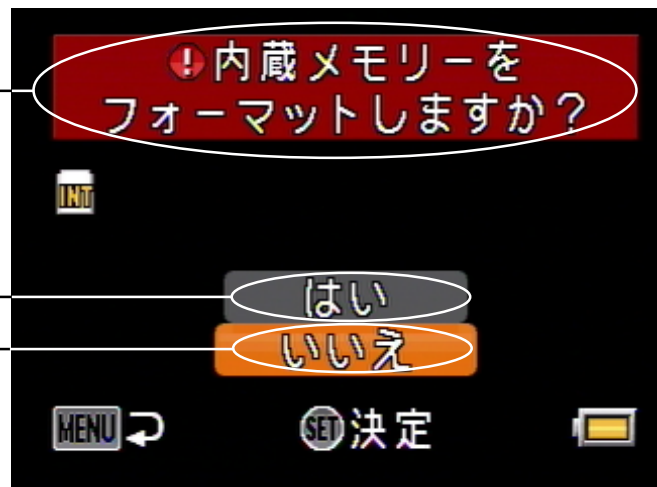
Carry out format the internal memory after replacing CP1 board.

1. Turn on the camera without inserting the SD card.
2. If the right image will appear, select "YES", and press the SET button.

FORMAT THE INTERNAL MEMORY?

YES

NO



3-11. Program data writing to NAND-Memory

Carry out program data writing to NAND-memory after replacing CP1 board.

Preparation:

SD card: SD card with data written into the root directory

Data: S112Nxxx.bin (xxx: version)

Overwriting method:

1. Insert the above SD card.
2. Turn on the camera.
3. Set the REC/PLAY button to the PLAY.
4. Press the MENU button. The PLAY MENU appears.
5. Toggle the SET button to the left two times to display the OPTION MENU.
6. Choose the FORMAT.
7. Toggle the SET button to the left 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.

3-12. Reset Setting

Carry out reset settings after replacing CP1 board.

1. Turn on the camera.
2. Press the MENU button.
3. Toggle the SET button to the left two times to display the OPTION MENU.
4. Choose the RESET SETTINGS, and press the SET button.
5. Select RESET, and press the SET button.

3-13. The Compulsive boot starting method

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

3-14. 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: S112Nxxx.BIN (xxx: version)

Overwriting method:

1. Insert the above SD card.
2. Turn on the camera.
3. Set the REC/PLAY button to the PLAY.
4. Press the MENU button. The PLAY MENU appears.
5. Toggle the SET button to the left two times to display the OPTION MENU.
6. Choose the FORMAT.
7. Toggle the SET button to the left 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 on automatically 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: S112Nxxx.BIN (xxx: version)

Overwriting method:

1. Connect the camera's USB/AV terminal to the computer's USB connector.
2. The USB Connection screen appears on the camera's LCD monitor. Choose the "CARD READER", and press the SET button.
3. Double-click on the DscCalDi.exe.
4. Click the Firmware.
5. Choose the firmware 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:

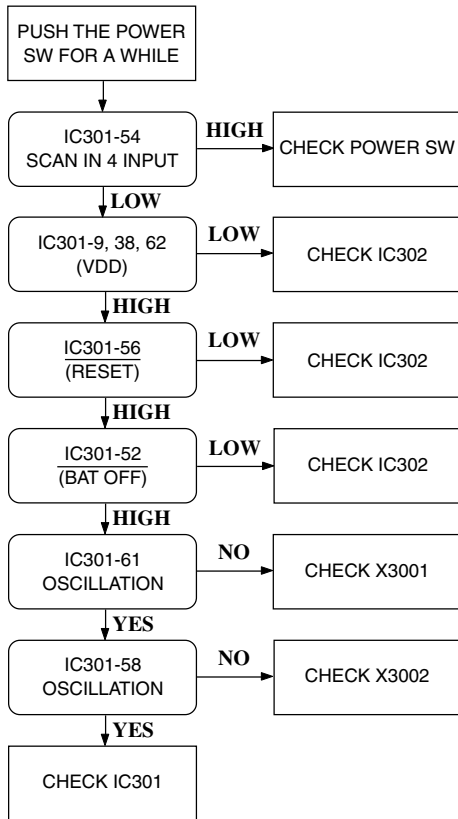
1. Connect the camera to a computer. (Refer to 3-5. Connecting the camera to the computer on the page 17.)
2. Double-click on the DscCalDi.exe.
3. Click on the Get button in the USB storage window and check the USB storage data.
 VID: SANYO
 PID: CG65
 Serial:
 Rev. : 1.00
4. Check the "Serial" in the 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.

The screenshot shows a camera's settings menu with several sections:

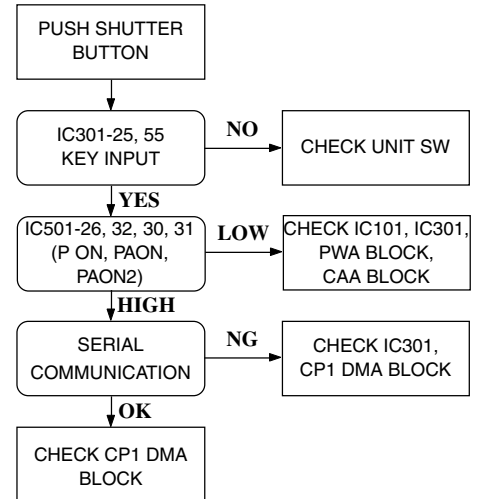
- Calibration:** Includes buttons for AWB, Focus, UV Matrix, Cal Mode (with OK button), and Cal Data (with OK button).
- Upload:** Includes buttons for Firmware and Data.
- LCD:** Includes a PAF Cal. button, checkboxes for EVF and VCO, and a dropdown for LCD Type.
- Adjustment Parameters:**
 - R Bright, B Bright, VCOMDC:** Each has a dropdown menu.
 - RGB Offset, Gain, VCOMPP:** Each has a dropdown menu.
 - Tint, Phase:** Each has a dropdown menu.
 - H AFC, Test:** Each has a dropdown menu.
 - Hall Cal.:** A button.
- USB storage:** A section with a "Get" button and four input fields: VID, Serial, PID, and Rev. Each field has a "Set" button next to it.
- Backrush pulse:** A section with a "Get" button and an input field, followed by a "Set" button.
- Setting Language:** A dropdown menu.
- Video Mode:** A dropdown menu.
- Factory Code:** A dropdown menu.

5. TROUBLESHOOTING GUIDE

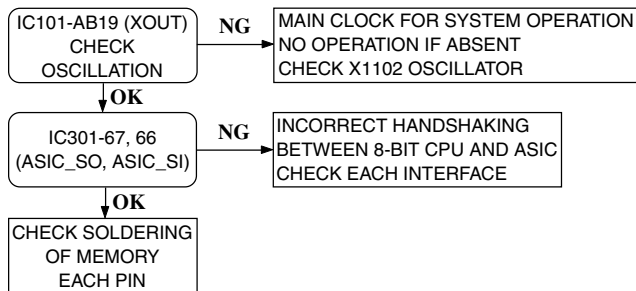
POWER LOSS INOPERATIVE



TAKING INOPERATIVE



NO PICTURE



6. PARTS LIST

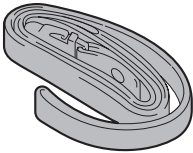
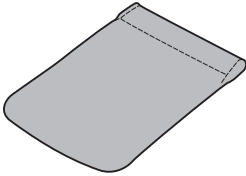
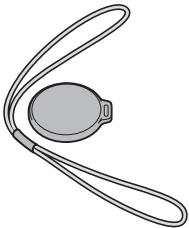
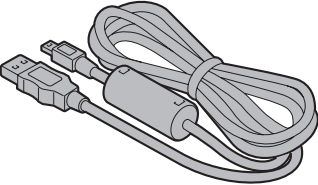
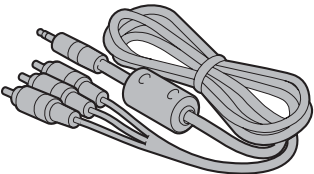
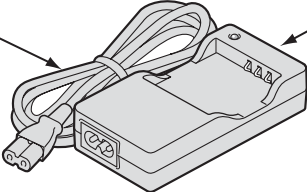
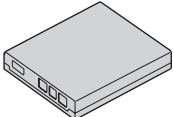
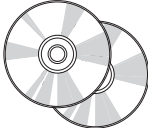
PACKING MATERIALS

LOCATION	PARTS NO.	DESCRIPTION
7001	636 102 2859	CARTON INNER-SG112/EX,EXCEPT VPC-CG65
7001	636 102 2842	CARTON INNER-SG112/U,VPC-CG65 ONLY
7002	636 078 4659	CUSHION SHEET-SX792/KRNK
7003	636 096 9261	REINFORCE PAD,A-SX817/J (BOTTOM)

ACCESSORIES

LOCATION	PARTS NO.	DESCRIPTION
Note: Refer to the table of accessories		
1	636 087 0017	STRAP -SX719/U
2	636 099 5475	CASE SOFT-SG111/J
3	636 103 1899	ASSY,CAP LENS-SG112/J
4	645 089 8297	CABLE,DSC USB
OR	645 089 8303	CABLE,DSC USB
5	645 090 2192	CABLE,DSC A/V
OR	645 090 2208	CABLE,DSC A/V
6	△ 645 083 6787	CORD,POWER-1.2MK,VPC-CG65EX, VPC-CG65EXBK,VPC-CG65EXG, VPC-CG65PXBL
6	△ 645 083 6794	CORD,POWER-1.9MK,VPC-CG65 ONLY
7	△ 645 089 5081	BATTERY CHARGER
8	△ 645 089 8990	BATTERY,RECHARGE,LI-ION
9	636 102 2545	DISC,CD-ROM SSP G112 U1 (N.S.P.) (Sanyo software pack Disk 1) (PDF instruction manual: English, French, Spanish, German, Dutch, Italian, Simplified Chinese, Traditional Chinese, Korean, Russian)
9	636 102 2552	DISC,CD-ROM SSP G112 U2 (N.S.P.) (Sanyo software pack Disk 2) EXCEPT VPC-CG65PXBL
9053	636 102 2682	INSTRUCTION MANUAL (CAMERA, SOFTWARE) (English)

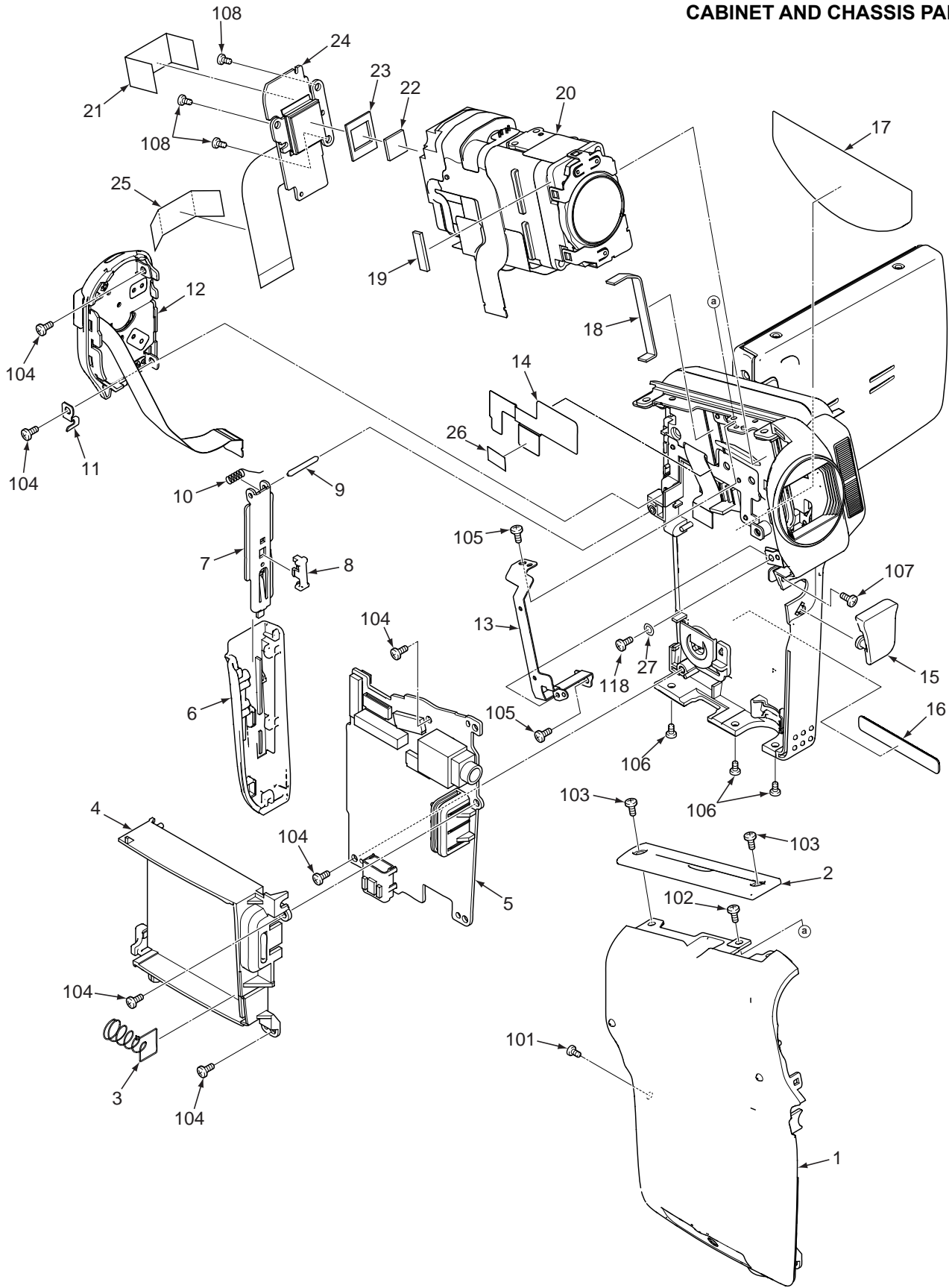
Table of accessories

<p>1</p> 	<p>2</p> 
<p>3</p> 	<p>4</p> 
<p>5</p> 	<p>6</p>  <p>7</p>
<p>8</p> 	<p>9</p> 

CABINET AND CHASSIS PARTS 1

LOCATION	PARTS NO.	DESCRIPTION	LOCATION	PARTS NO.	DESCRIPTION
1	636 102 2941	COMPL,CABI LEFT-SG112/J, EXCEPT VPC-CG65EXG	16	636 102 7038	DEC LCD-SG112/J3, VPC-CG65EXG ONLY
1	636 102 2958	COMPL,CABI LEFT-SG112/J3, VPC-CG65EXG ONLY	17	636 099 5352	DEC RIGHT-SG111/J2
2	636 098 8385	HOLDER STRAP-SG111/J	18	636 099 1583	SPACER LENS RIGHT-SG111/J
3	636 099 1590	SPRING BATT EJECT-SG111/J	19	636 100 2134	SPACER LENS LEFT-SG111/J
4	636 099 7585	HOLDER BATTERY -SG111/J2	20	645 089 3117	LENS(ASSY)
5	636 102 3153	COMPL PWB,CP-1 F/W	21	636 101 6971	SPACER LENS BACK-SG111/J
6	636 099 5291	COVER BATTERY-SG111/J2	22	645 091 5925	OPTICAL FILTER
7	636 098 8347	HOLDER COVER BATT -SG111	23	636 082 8131	SPACER SX719
8	636 099 7592	HOLDER PUSH BATT-SG111/J2	24	636 102 3283	COMPL,FPC SV-SG112
9	636 101 5523	SHAFT COVER BATT-SG111/J	25	636 101 1815	SHIELD TAPE CA FPC SG111
10	636 099 1606	SPRING COVER BAT-SG111/J	26	636 102 4792	ADHESIVE DEC JOINT-SG111J
11	636 104 8088	EARTH BATT-SG111/J	27	636 102 5812	SPACER SW B-SG111/J
12	636 099 7561	COMPL,BUTT BACK-SG111/J2	101	411 193 2007	SCR S-TPG PAN PCS 1.7X3.5
13	636 098 8354	EARTH STRAP-SG111/J	102	411 176 1003	SCR PAN PCS 1.7X2.5
14	636 101 4564	SPACER HOLDER JOINT-SG111	103	411 178 6204	SCR PAN PCS 1.7X4
15	636 099 5338	COVER JACK-SG111/J2	104	411 177 6502	SCR S-TPG PAN PCS 1.7X4
16	636 102 3269	DEC LCD-SG112/J, EXCEPT VPC-CG65EXBK, VPC-CG65EXG	105	312 065 5006	SPECIAL SCREW-1.4X2.5
16	636 102 3276	DEC LCD-SG112/J2, VPC-CG65EXBK ONLY	106	312 070 1505	SP SCR HMPN1.7X5WP NEW-R
			107	411 194 8206	SCR PAN PCS 1.7X3
			108	411 181 8707	SCR S-TPG PAN PCS 1.4X3.5
			118	411 181 2705	SCR PAN PCS-1.4X2

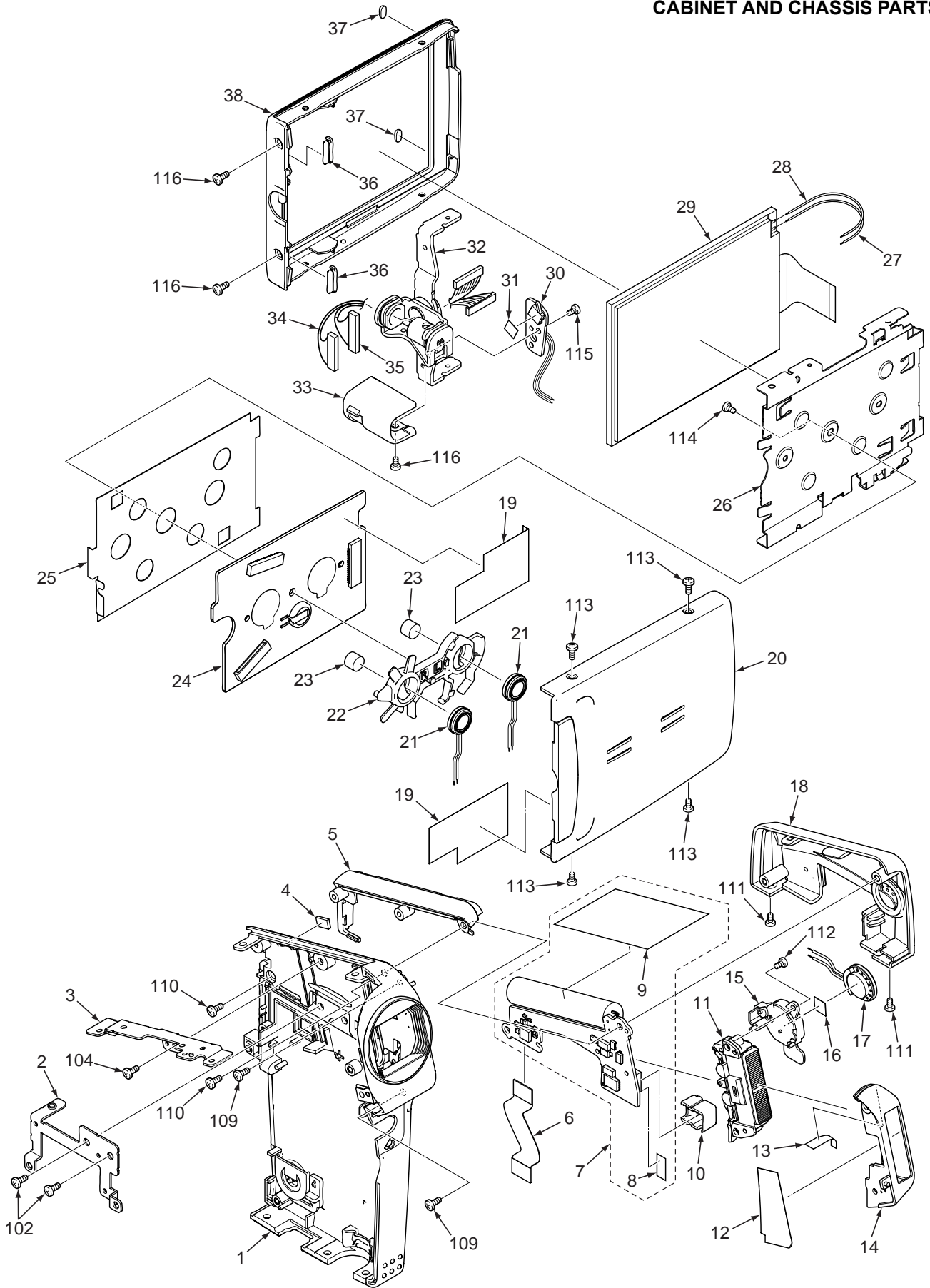
CABINET AND CHASSIS PARTS 1



CABINET AND CHASSIS PARTS 2

LOCATION	PARTS NO.	DESCRIPTION	LOCATION	PARTS NO.	DESCRIPTION
			20	636 102 3122	ASSY COV LCD BACK-SG112J3, VPC-CG65EXG ONLY
1	636 099 5147	COMPL,CABI RIGHT-SG111/J2			
2	636 098 8316	HOLDER JOINT-SG111/J	20	636 105 4621	ASS COV LCD BACK-SG112PX, VPC-CG65PXBL ONLY
3	636 098 8330	HOL STRAP INNER-SG111/J			
4	636 099 8797	SPACER CON-SG111/J	21	645 089 9737	MICROPHONE
5	636 098 8118	COVER JOINT TOP-SG111/J, VPC-CG65, VPC-CG65EX, VPC-CG65GX	22	636 098 8156	HOLDER MIC-SG111/J
5	636 102 3214	COVER JOINT TOP-SG112/J2, VPC-CG65EXBK ONLY	23	636 102 7908	SPACER MIC-SG112/J
5	636 102 3221	COVER JOINT TOP-SG112/J3, VPC-CG65EXG ONLY	24	636 101 8258	COMPL PWB,VF-1
5	636 105 3990	COVER JOINT TOP-SG112/PX, VPC-CG65PXBL ONLY	25	636 101 4571	SPACER VF1 -SG111/J
6	636 099 4676	FLEXIBLE PWB SG111ST1-CP1	26	636 098 8323	HOLDER MONITOR-SG111/J
7	636 101 8241	COMPL PWB,ST-1	27	636 099 7332	ASSY,WIRE LCD&VF1-SG111
8	636 099 8858	SPACER ST-SG111	28	636 099 7349	ASSY,WIRE LCD&VF1-SG111
9	636 099 3587	SPACER CON B- SG111/J	29	645 089 8822	LCD(COM25T2962GLB)
10	636 068 0265	COVER TRIGGER-SX612/J	30	636 101 8265	COMPL PWB,TB-1
11	645 090 0198	ASSY,LAMP-SG111/J2	31	636 081 4554	SPACER JOINT-SX718/J
12	636 100 8860	SPACER FLASH -SG111/J	32	636 099 4195	ASSY,JOINT-SG111/J
13	636 101 3802	SPACER FLASH A-SG111/J	33	636 098 8187	COVER JOINT-SG111/J
14	636 099 5321	COVER FLASH-SG111/J2	34	636 100 3995	ASSY,WIRE VF1&CP1-SG111
15	636 098 8170	HOLDER SPEAKER-SG111/J	35	636 099 4706	ASSY,WIRE VF1&CP1-SG111
16	636 099 1460	ADHESIVE SPEAKER-SG111/J	36	636 098 8231	DEC LCD TOP B-SG111/J
17	645 091 3778	SPEAKER,8	37	636 099 6991	COVER STAND-SG111/J
18	636 102 3023	ASSY,COVER JOINT-SG112/J, VPC-CG65, VPC-CG65EX, VPC-CG65GX	38	636 106 0639	ASSY,COVER LCD F-SV-SG112
18	636 102 3030	ASSY,COVER JOINT-SG112/J2, VPC-CG65EXBK ONLY	102	411 176 1003	SCR PAN PCS 1.7X2.5
18	636 102 3047	ASSY,COVER JOINT-SG112/J3, VPC-CG65EXG ONLY	104	411 177 6502	SCR S-TPG PAN PCS 1.7X4
18	636 105 4614	ASSY,COVER JOINT-SG112/PX, VPC-CG65PXBL ONLY	109	411 213 4202	SCR S-TPG PAN PCS 1.4X5
19	636 101 4588	SPACER LCD A-SG111/J	110	312 067 5400	SP SCR HMPN1.7X5A NEW-R
20	636 102 3108	ASSY COV LCD BACK-SG112/J, VPC-CG65, VPC-CG65EX, VPC-CG65GX	111	411 199 0601	SCR TIN 1.7X2, VPC-CG65EXG, VPC-CG65EXBK
20	636 102 3115	ASSY COV LCD BACK-SG112/J2, VPC-CG65EXBK ONLY	111	411 199 0700	SCR TIN 1.7X2, EXCEPT VPC-CG65EXBK, VPC-CG65EXG
			112	411 190 2208	SCR S-TPG PAN PCS 1.4X3
			113	411 186 8207	SCR PAN PCS-1.4X3, EXCEPT VPC-CG65EXBK, VPC-CG65EXG
			113	312 070 1208	SPSCR E2PN1.4X3WP, VPC-CG65EXBK, VPC-CG65EXG
			114	312 060 9504	SPECIAL SCREW-1.7X2.5
			115	411 181 2705	SCR PAN PCS-1.4X2
			116	411 194 8404	SCR PAN PCS 1.7X2.0

CABINET AND CHASSIS PARTS 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.

LOCATION	PARTS NO.	DESCRIPTION	LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,CP-1 F/W			D5301	307 248 0701	DIODE MA21D3800
	636 102 3153				(OSCILLATORS)
			X1102	645 090 4400	OSC,CRYSTAL 48.00000MHZ
			X3001	945 046 1416	OSC,CERAMIC 4.00MHZ
			X3002	645 080 8708	OSC,CRYSTAL 32.768KHZ
					(VARISTORS)
			VA131	308 050 1207	VARISTOR AVR-M1608C120MT
			VA132	308 050 0606	VARISTOR AVR-M1005C120MT
			VA301	308 050 0507	VARISTOR AVR-M1005C080MT
			VA302	308 050 0507	VARISTOR AVR-M1005C080MT
					(INDUCTORS)
			L1001	945 059 8112	IMPEDANCE,1000 OHM P
			L1002	945 059 8112	IMPEDANCE,1000 OHM P
			L1003	945 059 8112	IMPEDANCE,1000 OHM P
			L1004	945 059 8112	IMPEDANCE,1000 OHM P
			L1005	945 059 8112	IMPEDANCE,1000 OHM P
			L1301	945 072 7413	IMPEDANCE,90 OHM -
			L1302	945 066 4688	IMPEDANCE,30 OHM P
			L1351	945 053 5414	IMPEDANCE,1000 OHM P
			L1352	945 053 5414	IMPEDANCE,1000 OHM P
			L1353	945 020 1869	INDUCTOR,750 OHM
			L1354	645 053 5451	IMPEDANCE,600 OHM P
			L5002	645 084 1231	INDUCTOR,4.7U N
			L5003	645 084 1231	INDUCTOR,4.7U N
			L5004	645 089 2523	INDUCTOR,6.8U M
			L5005	645 084 1231	INDUCTOR,4.7U N
			L5007	645 084 1262	INDUCTOR,6.8U N
			L5008	945 066 4688	IMPEDANCE,30 OHM P
			L5009	945 066 4688	IMPEDANCE,30 OHM P
			L5010	645 084 1231	INDUCTOR,4.7U N
			L5301	645 071 9707	INDUCTOR,4.7U M
			L9001	945 059 8211	IMPEDANCE,600 OHM P
					(CAPACITORS)
			CB101	303 391 4306	CERAMIC 0.1U K 16V
			CB102	303 409 1402	CERAMIC 1000P K 50V
			CB901	303 392 5500	CERAMIC 1U K 6.3V
			CB904	303 391 4306	CERAMIC 0.1U K 16V
			CB905	303 391 4306	CERAMIC 0.1U K 16V
			CB906	303 391 4306	CERAMIC 0.1U K 16V
			CB971	303 392 5500	CERAMIC 1U K 6.3V
			C1007	303 419 4004	CERAMIC 0.1U K 10V
			C1008	303 384 6409	CERAMIC 4.7U K 6.3V
			C1009	303 419 4004	CERAMIC 0.1U K 10V
			C1010	303 419 4004	CERAMIC 0.1U K 10V
			C1011	303 419 4004	CERAMIC 0.1U K 10V
			C1018	303 384 6409	CERAMIC 4.7U K 6.3V
			C1019	303 419 4004	CERAMIC 0.1U K 10V
			C1020	303 419 4004	CERAMIC 0.1U K 10V
			C1021	303 419 4004	CERAMIC 0.1U K 10V
			C1026	303 375 0300	CERAMIC 4.7U K 4V
			C1031	303 384 9202	CERAMIC 1U M 4V
D5021	307 250 1802	DIODE RB496EA			
D5031	307 248 0701	DIODE MA21D3800			
D5032	307 205 2809	DIODE RB520S-30			
OR	307 221 0100	DIODE MA2SD24			
D5201	307 248 0701	DIODE MA21D3800			

LOCATION	PARTS NO.	DESCRIPTION
R1042	301 302 1307	MT-GLAZE 100 JA 1/20W
R1063	301 224 8804	MT-GLAZE 100 JA 1/16W
R1064	301 225 1903	MT-GLAZE 68 JA 1/16W
R1065	301 302 2007	MT-GLAZE 10K JA 1/20W
R1066	301 302 2007	MT-GLAZE 10K JA 1/20W
R1067	301 302 2007	MT-GLAZE 10K JA 1/20W
R1068	301 302 2007	MT-GLAZE 10K JA 1/20W
R1069	301 302 2007	MT-GLAZE 10K JA 1/20W
R1070	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1071	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1072	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1073	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1074	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1075	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1076	301 225 1200	MT-GLAZE 4.7K JA 1/16W
R1077	301 225 1200	MT-GLAZE 4.7K JA 1/16W
R1078	301 225 1200	MT-GLAZE 4.7K JA 1/16W
R1079	301 225 1200	MT-GLAZE 4.7K JA 1/16W
R1081	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1082	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1083	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1084	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1085	301 307 1302	MT-GLAZE 4.7K JA 1/20W
R1121	301 330 9207	MT-GLAZE 1K DA 1/20W
R1122	301 224 9405	MT-GLAZE 1.0M JA 1/16W
R1301	301 302 2007	MT-GLAZE 10K JA 1/20W
R1351	301 331 0906	MT-GLAZE 6.8K DA 1/20W
R1354	301 317 8407	MT-GLAZE 47K DC 1/20W
R1355	301 317 7004	MT-GLAZE 39K DC 1/20W
R1358	301 302 2106	MT-GLAZE 1K JA 1/20W
R1359	301 105 7902	MT-GLAZE 0.000 ZA 1/16W
R1360	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R1403	301 302 1208	MT-GLAZE 0.000 ZA 1/20W
R1434	301 302 1208	MT-GLAZE 0.000 ZA 1/20W
R1501	301 224 9108	MT-GLAZE 150 JA 1/16W
R1502	301 267 0902	MT-GLAZE 150 DC 1/16W
R1504	301 224 9108	MT-GLAZE 150 JA 1/16W
R3001	301 302 2106	MT-GLAZE 1K JA 1/20W
R3002	301 225 8001	MT-GLAZE 330 JA 1/16W
R3003	301 224 9306	MT-GLAZE 1K JA 1/16W
R3004	301 302 1703	MT-GLAZE 1.5K JA 1/20W
R3007	301 310 6400	MT-GLAZE 330K JA 1/20W
R3008	301 225 2009	MT-GLAZE 680 JA 1/16W
R3009	301 225 7905	MT-GLAZE 220 JA 1/16W
R3010	301 302 2106	MT-GLAZE 1K JA 1/20W
R3011	301 331 2207	MT-GLAZE 22K DA 1/20W
R3012	301 307 1104	MT-GLAZE 47K JA 1/20W
R3014	301 331 1408	MT-GLAZE 10K DA 1/20W
R5001	301 326 5909	MT-GLAZE 1.2K DC 1/20W
R5002	301 302 1208	MT-GLAZE 0.000 ZA 1/20W
R5021	401 344 4905	MT-GLAZE 180K DC 1/20W
R5022	301 321 2002	MT-GLAZE 68K DC 1/20W
R5031	301 321 1500	MT-GLAZE 8.2K DC 1/20W
R5032	401 344 0600	MT-GLAZE 36K DC 1/20W
R5041	301 317 7905	MT-GLAZE 220K DC 1/20W
R5042	401 344 6404	MT-GLAZE 11K DC 1/20W
R5051	301 327 0408	MT-GLAZE 510K DC 1/20W
R5052	401 344 0709	MT-GLAZE 43K DC 1/20W
R5061	301 308 7709	MT-GLAZE 2.2K JA 1/20W
R5071	301 327 0408	MT-GLAZE 510K DC 1/20W
R5072	401 344 0600	MT-GLAZE 36K DC 1/20W
R5073	301 321 1609	MT-GLAZE 15K DC 1/20W
R5074	301 333 3004	MT-GLAZE 22 DD 1/20W
R5081	301 302 1208	MT-GLAZE 0.000 ZA 1/20W
R5082	301 321 2200	MT-GLAZE 12K DC 1/20W
R5085	301 224 9306	MT-GLAZE 1K JA 1/16W
R5086	301 225 1408	MT-GLAZE 47K JA 1/16W
R5201	301 312 3704	MT-FILM 1 FD 1/6W
R5202	301 317 8100	MT-GLAZE 100 DD 1/20W
R5203	301 317 8902	MT-GLAZE 2K DC 1/20W
R5204	301 317 7806	MT-GLAZE 100K DC 1/20W
R5205	301 326 6203	MT-GLAZE 1.3K DC 1/20W
R5207	301 302 1208	MT-GLAZE 0.000 ZA 1/20W
R5301	301 262 5605	MT-GLAZE 56K DC 1/16W
R5302	301 333 2403	MT-GLAZE 102K DC 1/20W
R5303	401 344 0808	MT-GLAZE 430K DC 1/20W
R9001	301 226 1506	MT-GLAZE 0.000 ZA 1/16W

LOCATION	PARTS NO.	DESCRIPTION
R9002	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R9015	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R9039	301 225 0609	MT-GLAZE 5.6K JA 1/16W
R9051	301 240 9007	MT-GLAZE 3.9 JA 1/16W
R9055	301 225 1101	MT-GLAZE 27 JA 1/16W
R9058	301 240 9007	MT-GLAZE 3.9 JA 1/16W
R9059	301 240 9007	MT-GLAZE 3.9 JA 1/16W
R9505	301 314 0503	MT-FILM 22 FD 1/6W
R9506	301 314 0503	MT-FILM 22 FD 1/6W
R9507	301 105 7902	MT-GLAZE 0.000 ZA 1/16W
R9510	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R9718	301 317 7806	MT-GLAZE 100K DC 1/20W
R9719	301 317 7806	MT-GLAZE 100K DC 1/20W
R9720	301 226 1506	MT-GLAZE 0.000 ZA 1/16W
R9721	301 262 1904	MT-GLAZE 6.8K DC 1/16W
R9722	301 317 9107	MT-GLAZE 2.2K DC 1/20W
R9723	301 317 9503	MT-GLAZE 1K DC 1/20W
R9724	301 308 7709	MT-GLAZE 2.2K JA 1/20W
R9726	301 308 8102	MT-GLAZE 33K JA 1/20W
R9728	301 317 7806	MT-GLAZE 100K DC 1/20W
(THERMISTOR)		
TH301	308 054 7700	TH NCP15WF104F03-RC
(SWITCH)		
S3001	645 045 2857	SWITCH,PUSH,
(FUSES)		
F5001	△ 323 031 5609	FUSE 32V 2A
F5002	△ 323 031 8501	FUSE 24V 2.5A
F5003	△ 323 031 5500	FUSE 32V 1A
(JACK)		
JK151	645 088 6898	JACK,PHONE D3.6 (N.S.P), AVJACK
(CONNECTORS)		
CN103	645 068 9673	PLUG,PWB-WIRE 20P(N.S.P)
CN104	645 068 9673	PLUG,PWB-WIRE 20P(N.S.P)
CN105	645 083 6671	SOCKET,FPC 12P (N.S.P)
CN110	645 072 3674	SOCKET,USB 5P (N.S.P)
CN141	645 069 7548	SOCKET,CARD(SD) 1(N.S.P)
CN301	645 084 2580	SOCKET,FPC 19P (N.S.P)
CN501	645 089 3421	TERMINAL,3P-SG111 (N.S.P.)
CN901	645 089 4534	SOCKET,FPC 39P (N.S.P)
CN951	645 082 0250	SOCKET,FPC 23P (N.S.P)

COMPL,FPC SV-SG112

636 102 3283

(SEMICONDUCTORS)		
Q9301	305 212 7800	TR UP05C8G (N.S.P.)
(INTEGRATED CIRCUITS)		
IC701	645 088 3149	GYRO SENSOR (N.S.P.)
IC702	309 650 3509	IC TK70630HC-G (N.S.P.)
IC901	309 645 9905	IC AN20112A (N.S.P.)
(DIODES)		
D9001	307 223 5509	DIODE MA2Z720 (N.S.P.)
D9002	307 208 0307	DIODE MA2S111 (N.S.P.)
D9003	307 223 5509	DIODE MA2Z720 (N.S.P.)
D9005	307 223 5509	DIODE MA2Z720 (N.S.P.)
(CAPACITORS)		
CB701	303 392 5500	CERAMIC 1U K 6.3V (N.S.P.)
C7001	303 341 7005	CERAMIC 0.068U K 10V (N.S.P.)
C7002	303 279 5104	CERAMIC 3300P K 50V (N.S.P.)
C7003	303 279 5104	CERAMIC 3300P K 50V
C7004	303 383 5205	CERAMIC 4.7U K 6.3V (N.S.P.)
C7005	304 107 6300	CERAMIC 4.7U K 16V (N.S.P.)
C7006	303 341 7005	CERAMIC 0.068U K 10V (N.S.P.)
C7009	304 107 6300	CERAMIC 4.7U K 16V (N.S.P.)
C9031	303 381 8109	CERAMIC 1U K 6.3V (N.S.P.)
C9032	303 397 7608	CERAMIC 1U K 25V (N.S.P.)
C9033	303 397 7608	CERAMIC 1U K 25V (N.S.P.)
C9034	303 397 7608	CERAMIC 1U K 25V (N.S.P.)
C9035	303 281 5000	CERAMIC 0.033U K 25V (N.S.P.)
C9036	303 323 6309	CERAMIC 0.1U K 16V (N.S.P.)
C9303	303 397 1606	CERAMIC 10U M 10V (N.S.P.)
C9304	303 342 3303	CERAMIC 0.1U K 25V (N.S.P.)
C9305	303 420 7902	CERAMIC 10U K 16V (N.S.P.)
(RESISTORS)		
R7001	301 262 0709	MT-GLAZE 39K DC 1/16W (N.S.P.)
R7002	301 262 0709	MT-GLAZE 39K DC 1/16W (N.S.P.)

LOCATION	PARTS NO.	DESCRIPTION
R7003	301 309 2604	MT-GLAZE 470K DC 1/16W (N.S.P.)
R7005	301 309 2604	MT-GLAZE 470K DC 1/16W (N.S.P.)
R9008	301 225 0906	MT-GLAZE 82K JA 1/16W (N.S.P.)
R9014	301 226 1506	MT-GLAZE 0.000 ZA 1/16W (N.S.P.)
R9031	301 224 9801	MT-GLAZE 220K JA 1/16W (N.S.P.)
R9032	301 224 9009	MT-GLAZE 10K JA 1/16W (N.S.P.)
R9035	301 224 8903	MT-GLAZE 100K JA 1/16W (N.S.P.)
R9036	301 224 9405	MT-GLAZE 1.0M JA 1/16W (N.S.P.)
R9301	301 225 1804	MT-GLAZE 47 JA 1/16W (N.S.P.)
R9302	301 225 8001	MT-GLAZE 330 JA 1/16W (N.S.P.)
R9303	301 235 1405	MT-GALZE 1.2K JA 1/16W (N.S.P.)
(MISCELLANEOUS)		
	636 097 0731	MOUNTING,LENS SX817 (N.S.P.)
	309 645 1305	IC MN39830PMJ-A (N.S.P.)

COMPL PWB,TB-1

636 101 8265

(WIRES)

636 101 0450 ASSY,WIRE TB1&VF1-SG111 (N.S.P.)

636 101 0467 ASSY,WIRE TB1&VF1-SG111 (N.S.P.)

(SWITCH)

S6601 645 078 7294 SWITCH,DETECTOR 1P-1T,

COMPL PWB,VF-1

636 101 8258

(INTEGRATED CIRCUITS)

IC181 309 641 9404 IC WM8978GEFL

IC182 309 624 7809 IC NJM2860F3-03

IC651 309 671 9504 IC MRSS32W(B)

(CAPACITORS)

C1701 303 433 1102 CERAMIC 1U K 10V
C1702 303 384 6409 CERAMIC 4.7U K 6.3V
C1703 303 383 5007 CERAMIC 1U K 16V
C1704 303 433 1102 CERAMIC 1U K 10V
C1705 303 433 1102 CERAMIC 1U K 10V
C1706 303 382 7804 CERAMIC 2.2U K 10V
C1707 303 383 5007 CERAMIC 1U K 16V
C1708 303 433 1102 CERAMIC 1U K 10V
C1709 303 433 1102 CERAMIC 1U K 10V
C1710 303 383 5007 CERAMIC 1U K 16V
C1711 303 433 1102 CERAMIC 1U K 10V
C1712 303 433 1102 CERAMIC 1U K 10V
C1713 303 383 5007 CERAMIC 1U K 16V
C1716 303 338 0309 CERAMIC 0.1U K 10V
C1801 303 433 1102 CERAMIC 1U K 10V
C1804 303 433 1102 CERAMIC 1U K 10V
C1805 303 433 1102 CERAMIC 1U K 10V
C1806 303 279 5104 CERAMIC 3300P K 50V
C1807 303 381 8109 CERAMIC 1U K 6.3V
C1808 403 454 3403 CERAMIC 100U M 6.3V
C1809 403 454 3403 CERAMIC 100U M 6.3V
C1810 303 279 5104 CERAMIC 3300P K 50V
C1811 303 381 8109 CERAMIC 1U K 6.3V
C1812 303 294 6100 CERAMIC 100P J 50V
C1813 303 338 0309 CERAMIC 0.1U K 10V
C1814 303 338 0309 CERAMIC 0.1U K 10V
C1825 303 384 6409 CERAMIC 4.7U K 6.3V
C1827 303 381 8109 CERAMIC 1U K 6.3V
C6501 303 338 0309 CERAMIC 0.1U K 10V

(RESISTOR PACKS)

RB181 645 078 4958 R-NETWORK 47KX2 0.063W

RB182 645 078 4644 R-NETWORK 2KX2 0.063W

RB192 645 078 4606 R-NETWORK 220X2 0.063W

(RESISTORS)

R1701 301 228 4505 MT-GLAZE 2.2 JA 1/16W
R1702 301 224 9009 MT-GLAZE 10K JA 1/16W
R1801 301 301 3500 MT-GLAZE 200 JA 1/16W
R1802 301 301 3500 MT-GLAZE 200 JA 1/16W
R1804 301 237 2509 MT-GLAZE 4.7 JA 1/16W
R1805 301 237 2509 MT-GLAZE 4.7 JA 1/16W
R1806 301 226 1506 MT-GLAZE 0.000 ZA 1/16W
R1807 301 225 7905 MT-GLAZE 220 JA 1/16W

LOCATION	PARTS NO.	DESCRIPTION
(RECHARGEABLE BATTERY)		
Z6001	945 051 6000	BATTERY,RECHARGE
(CONNECTORS)		
CN171	645 086 5183	SOCKET,FPC 37P (N.S.P)
CN172	645 068 9673	PLUG,PWB-WIRE 20P(N.S.P)
CN173	645 068 9673	PLUG,PWB-WIRE 20P(N.S.P)

COMPL PWB,ST-1

636 101 8241

(SEMICONDUCTOR)

Q5402 306 020 3701 TR CY25CAH-8F-T13 F10V

(INTEGRATED CIRCUITS)

IC541 309 671 6602 IC TPS65560RGT

(DIODES)

D5401 307 245 6805 DIODE FPSN4

D5402 307 250 8009 DIODE MA2YF8000L

D5404 307 205 5206 DIODE RB521S-30

(TRANSFORMERS)

T5401 645 086 4537 TRANS,STEP UP

T5402 645 069 2420 TRANS,STEP UP

(CAPACITORS)

C5401 303 393 2607 CERAMIC 22U M 6.3V

C5402 303 276 1307 CERAMIC 1000P K 50V

C5403 303 381 8109 CERAMIC 1U K 6.3V

C5404 303 276 1307 CERAMIC 1000P K 50V

C5410 303 428 3401 CERAMIC 0.018U K 350V

C5411 303 428 3609 CERAMIC 0.01U K 350V

C5412 404 110 8800 ELECT 40U A 300V

(RESISTOR PACKS)

RB541 645 078 5702 R-NETWORK 1KX2 0.063W

RB542 645 078 5719 R-NETWORK 10KX2 0.063W

(RESISTORS)

R5402 302 106 1609 MT-GLAZE 100K JD 1/8W

R5403 301 224 8804 MT-GLAZE 100 JA 1/16W

R5404 301 263 2108 MT-GLAZE 5.1K DC 1/16W

R5405 301 267 1008 MT-GLAZE 6.2K DC 1/16W

R5411 301 224 9306 MT-GLAZE 1K JA 1/16W

R5422 302 106 1708 MT-GLAZE 220K JD 1/8W

R5424 301 224 9009 MT-GLAZE 10K JA 1/16W

(CONNECTOR)

CN541 645 071 1060 SOCKET,FPC 12P (N.S.P)

(MISCELLANEOUS)

636 099 3587 SPACER CON B- SG111/J

636 099 8858 SPACER ST-SG111

CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS

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ST1 P.W.B. (SIDE A & B)	C22
CA1 P.W.B. (SIDE A & B)	C22
TB1 P.W.B. (SIDE A & B)	C22
VF1 P.W.B. (SIDE A & B)	C23

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 ; 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:1/10K means 1mega ohm ±10%, 1/10watt max.

Capacitor 0.047:F means 0.047micro farad, Ftype.

Electrolytic capacitor
10:16 means 10micro farad, 16volt max.

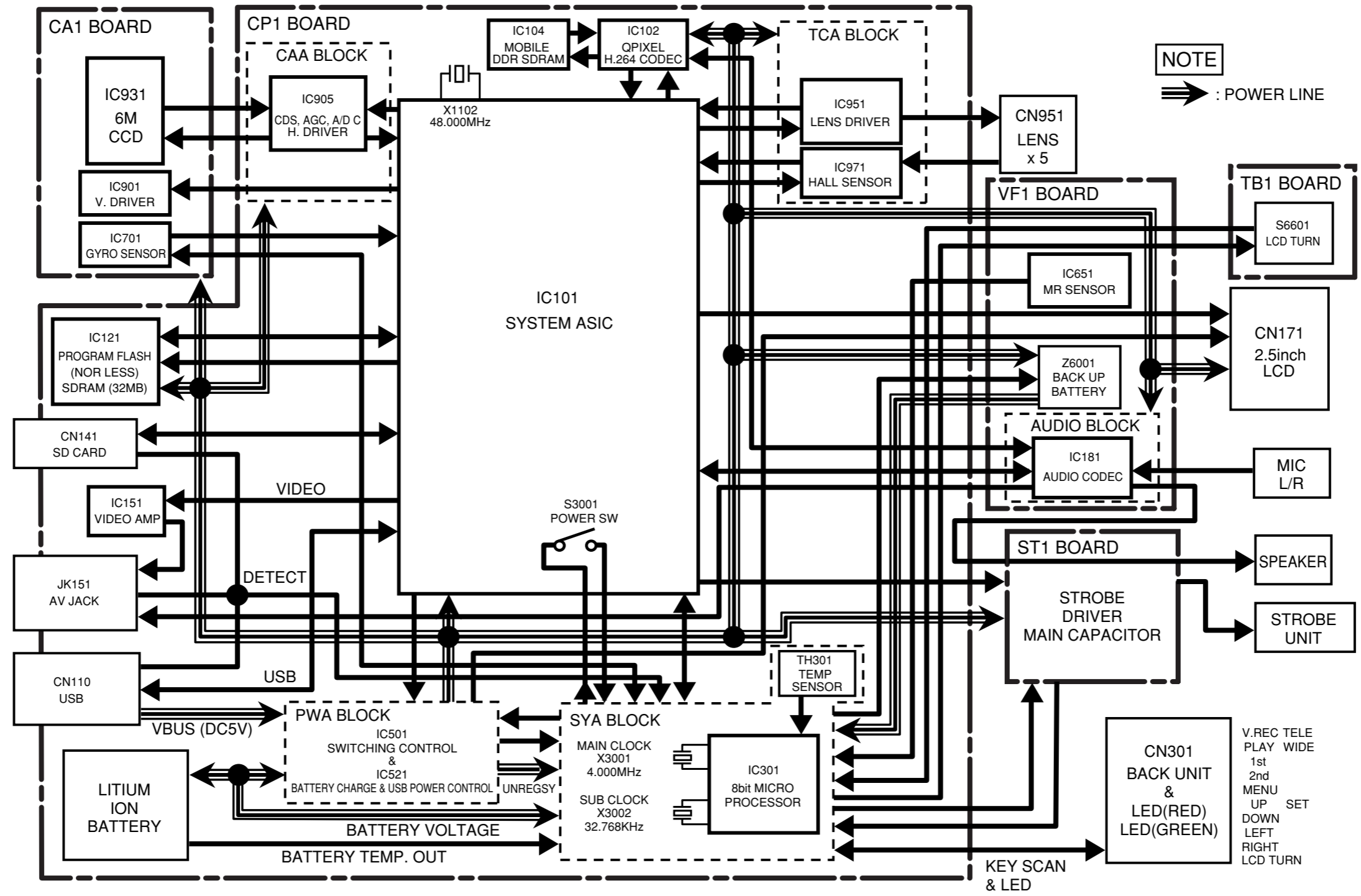
Inductor 330:J means 330micro henry ±5%
470:K means 470micro henry ±10%
No description J or K means ±5%

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.

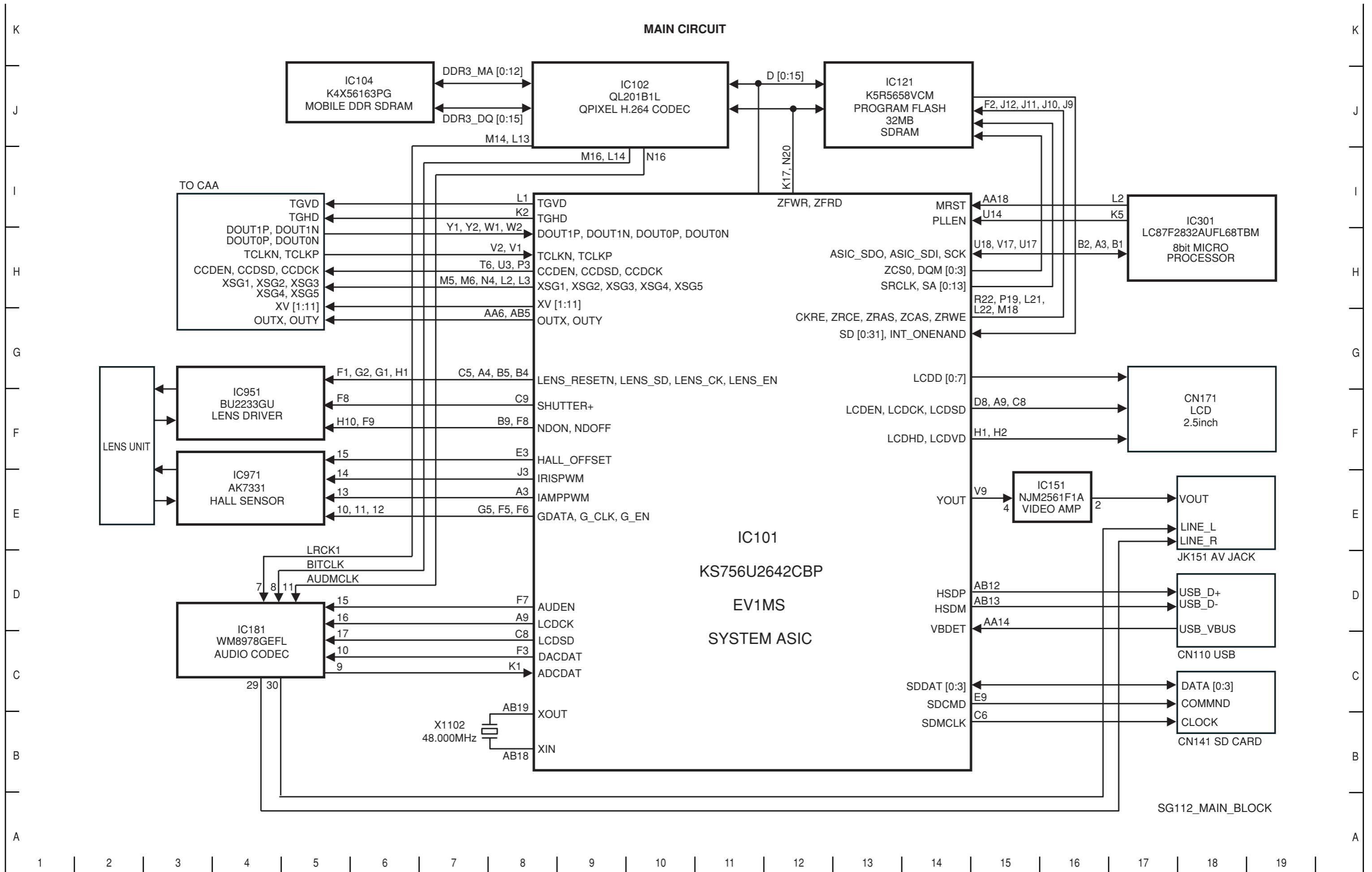
PAL-F-EX

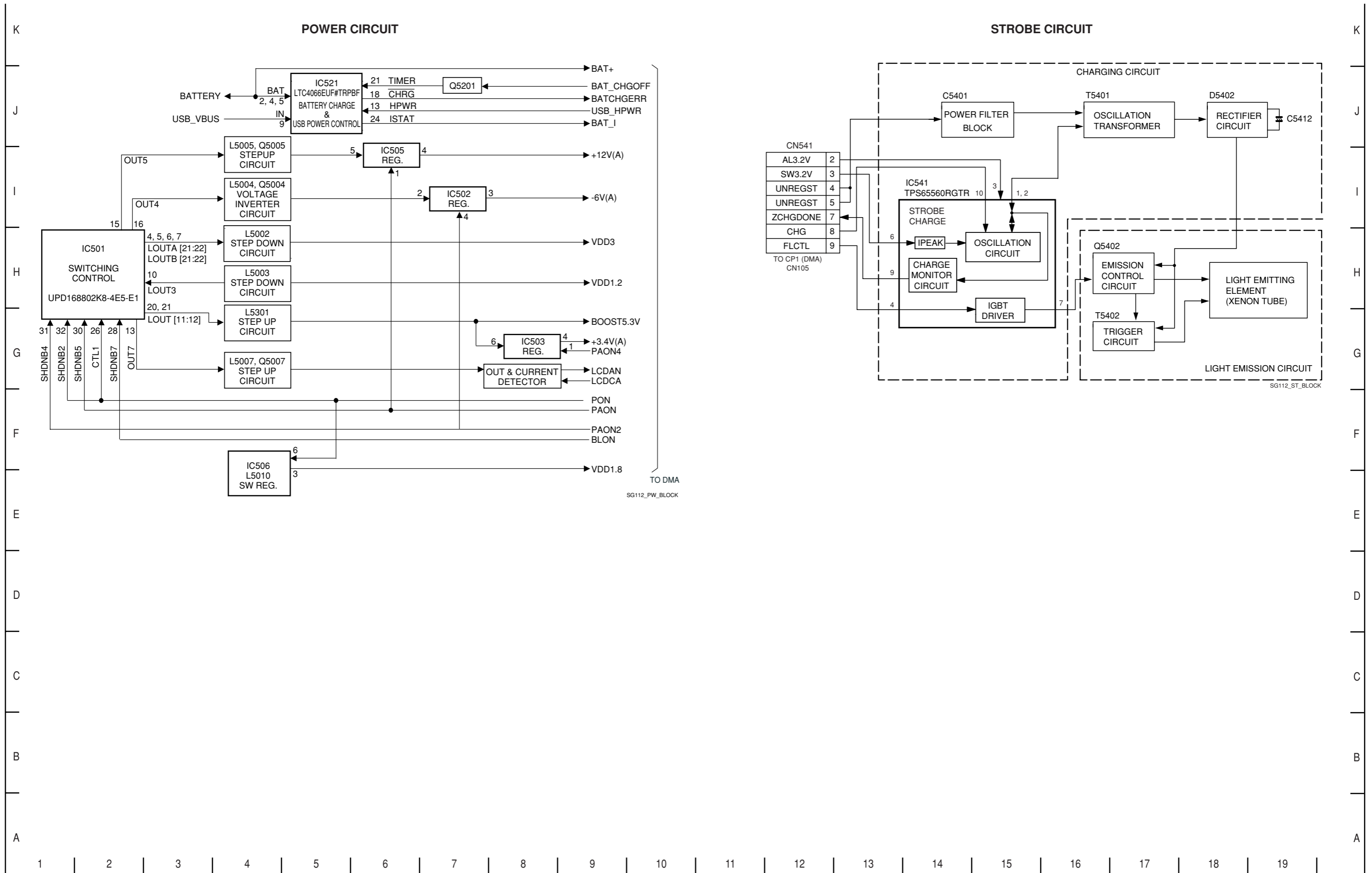
OVERALL CIRCUIT



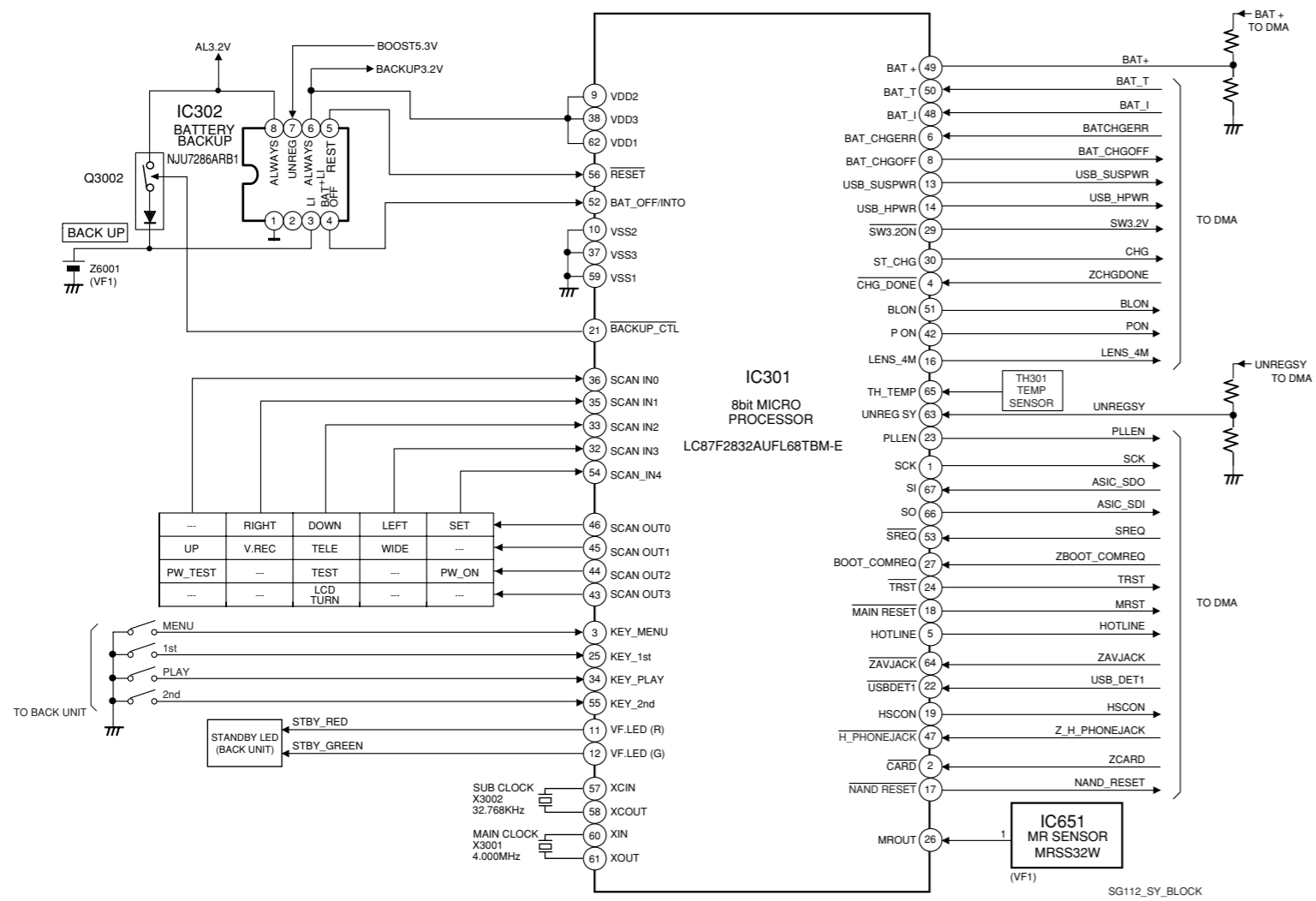
V.REC TELE
PLAY WIDE
1st
2nd
MENU
UP SET
DOWN
LEFT
RIGHT
LCD TURN

SG112_ALL_BLOCK



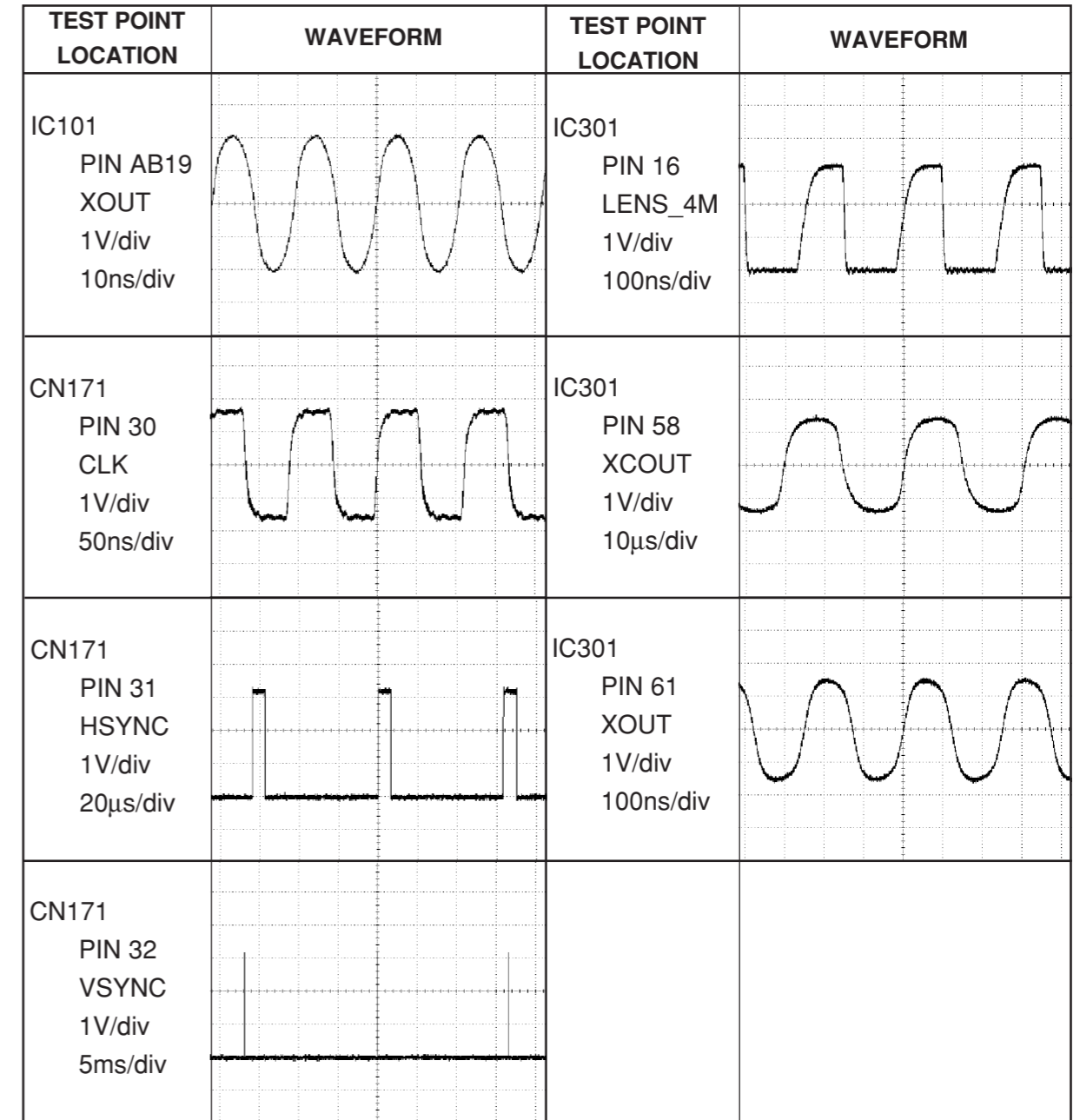


SYSTEM CONTROL CIRCUIT



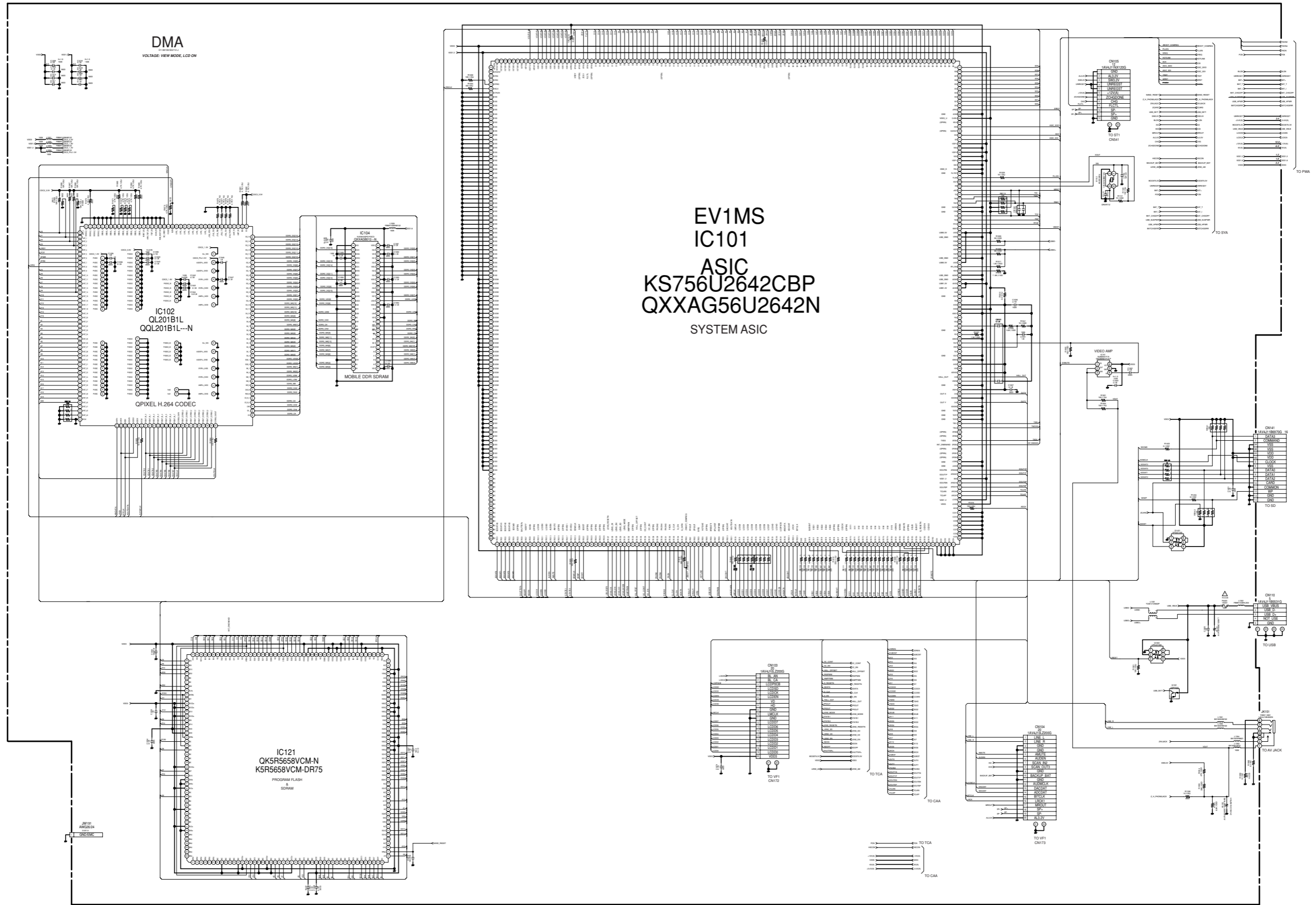
CIRCUIT DIAGRAMS

CIRCUIT WAVEFORMS



WF-SG111

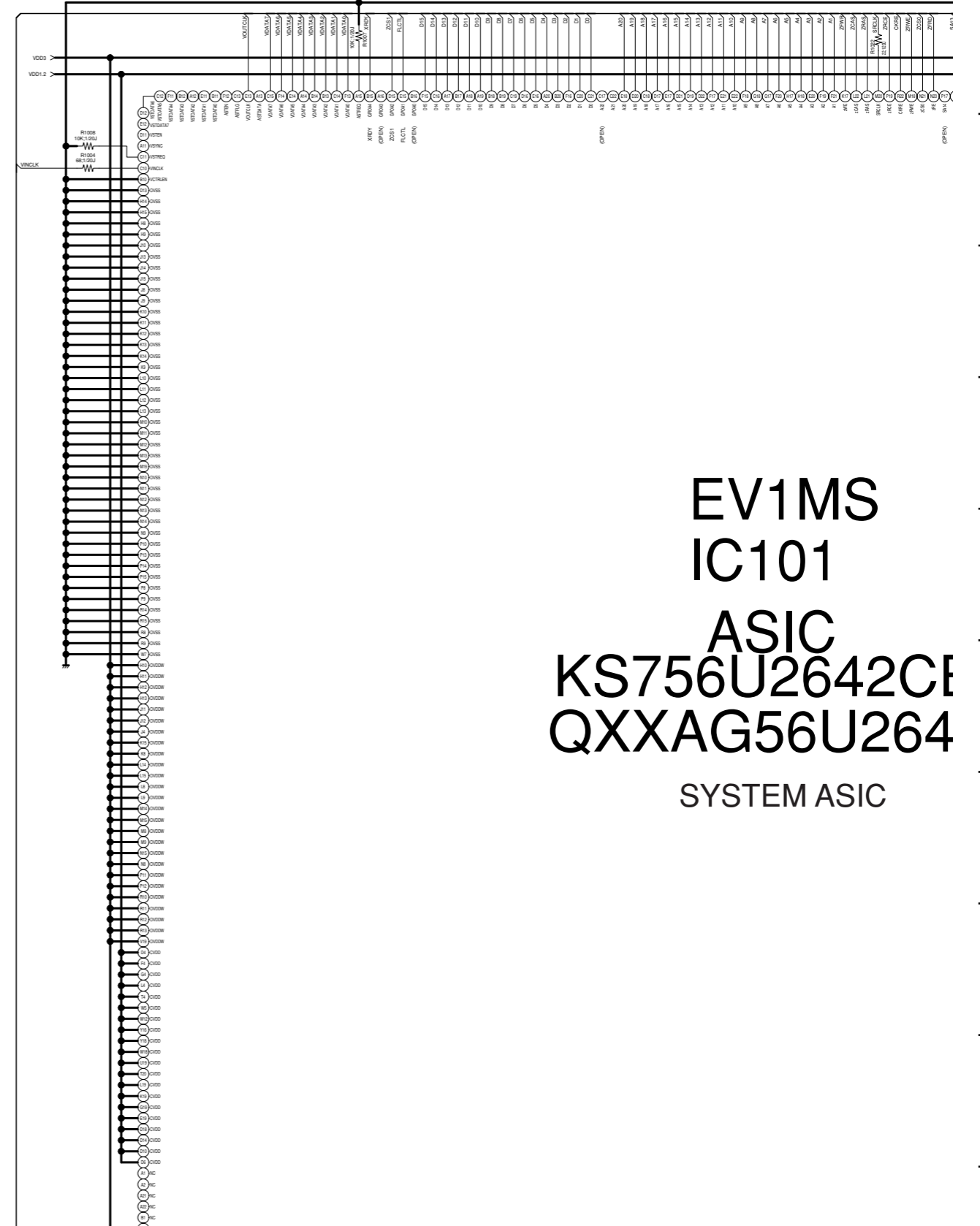
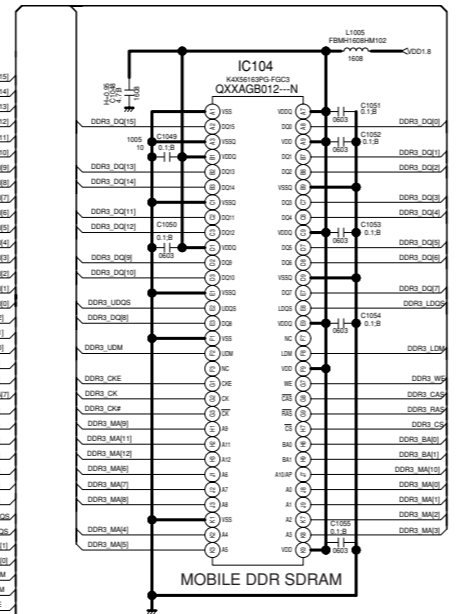
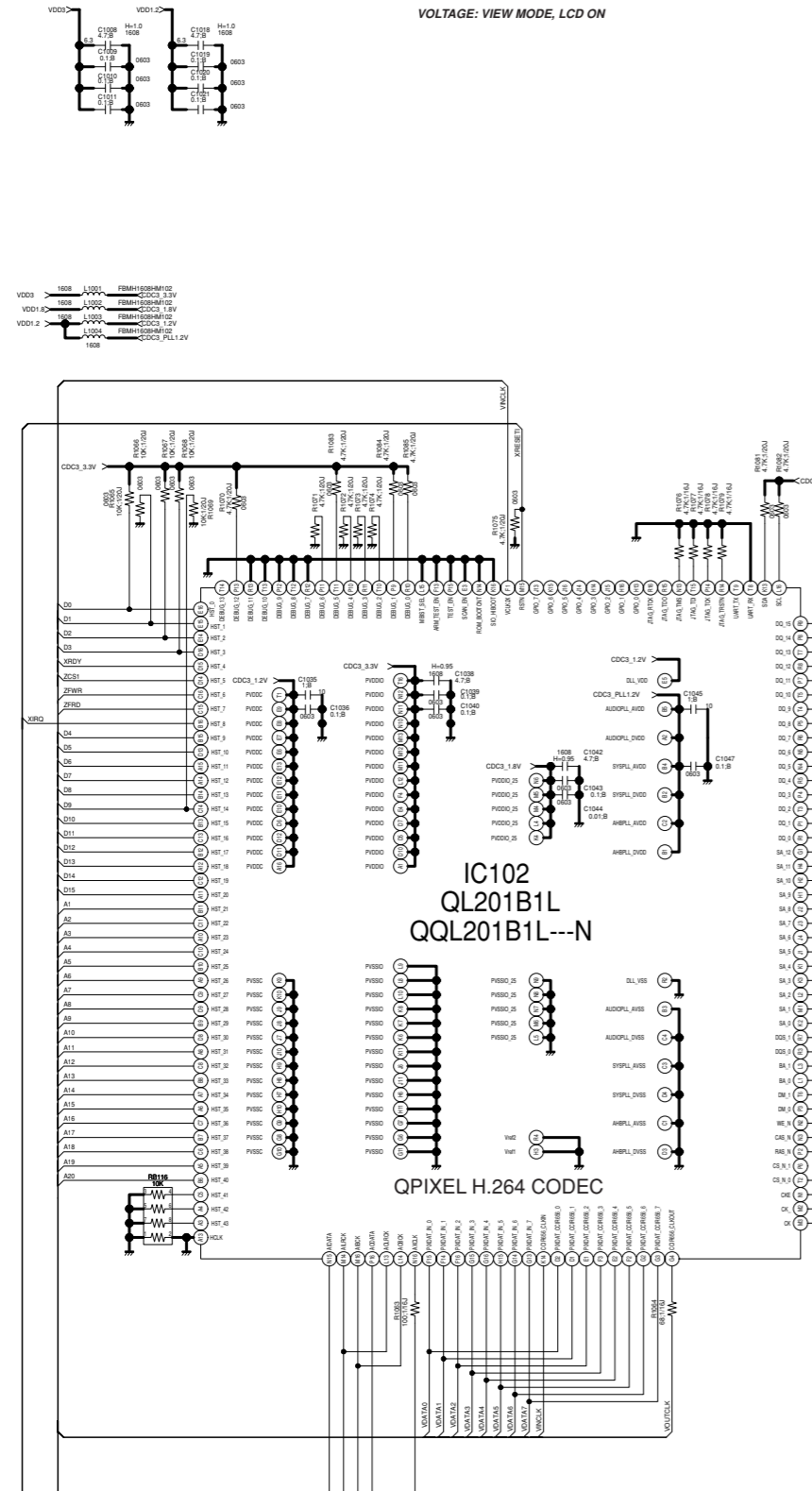
CP1 BOARD (DMA) MAIN



CP1 BOARD (DMA) MAIN [UPPER-LEFT]

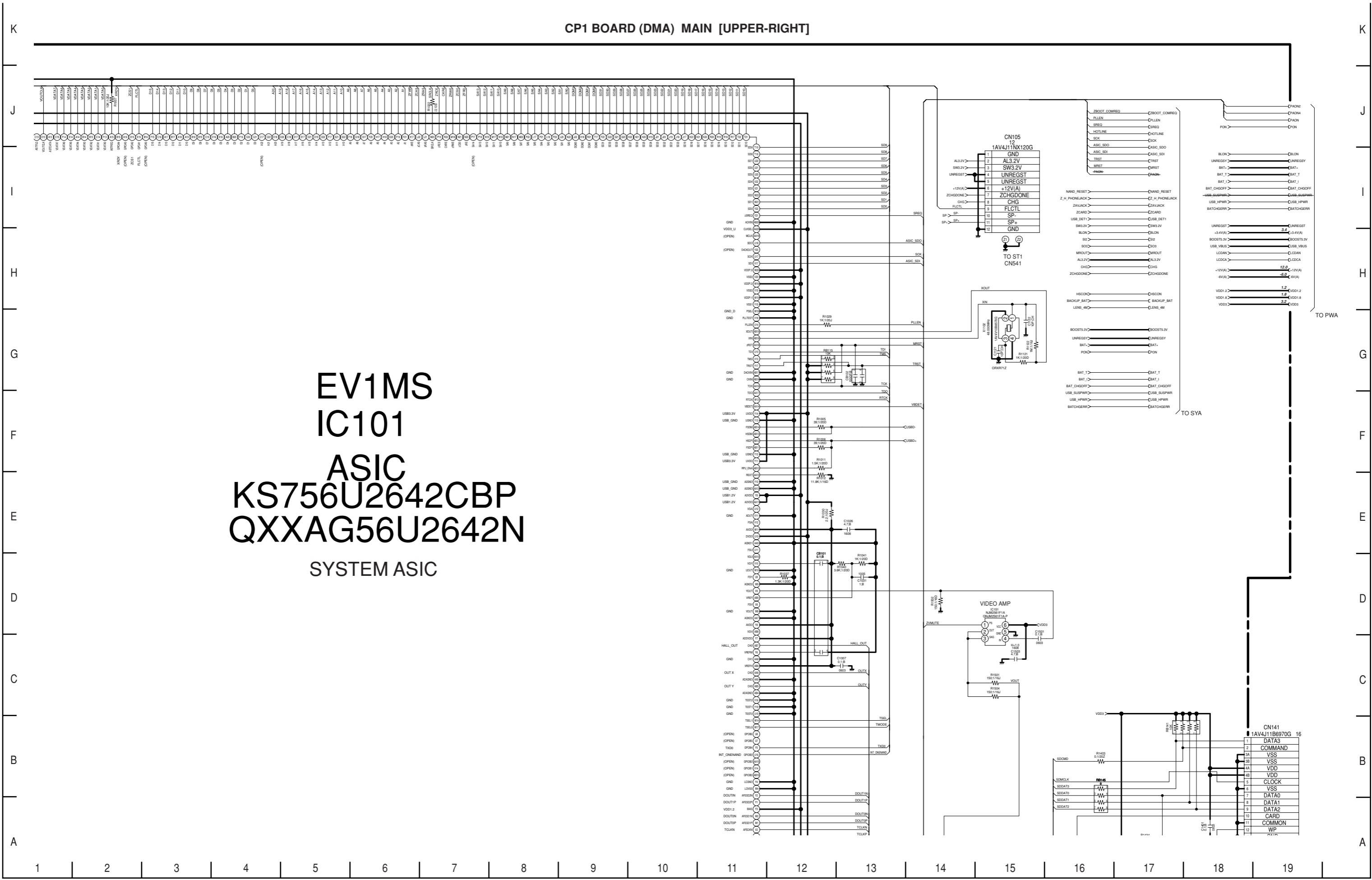
DMA

VOLTAGE: VIEW MODE, LCD ON

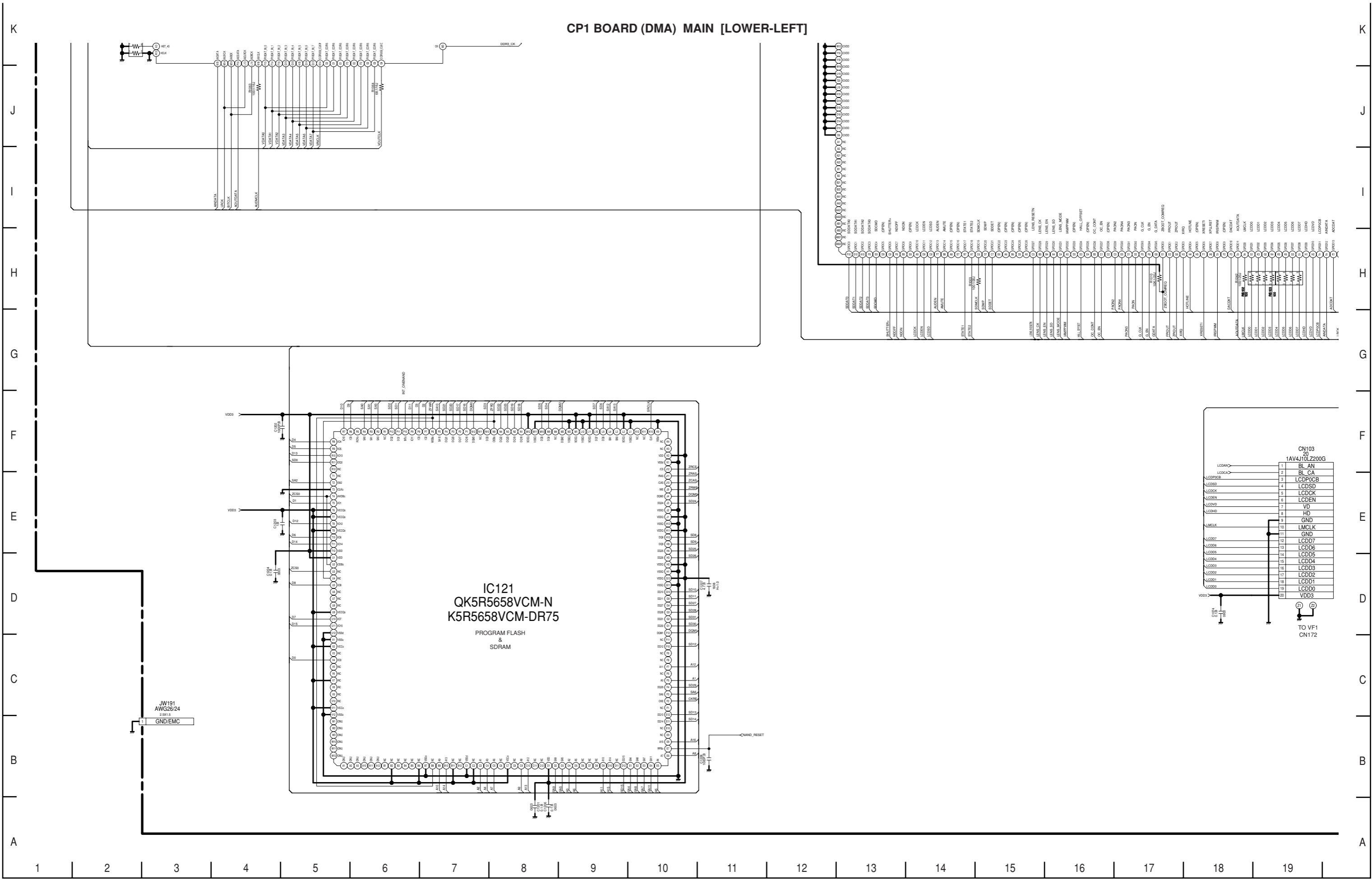


EV1MS
 IC101
 ASIC
 KS756U2642C
 QXXAG56U264
 SYSTEM ASIC

CP1 BOARD (DMA) MAIN [UPPER-RIGHT]



EV1MS
IC101
ASIC
KS756U2642CBP
QXXAG56U2642N
SYSTEM ASIC



CP1 BOARD (DMA) MAIN [LOWER-LEFT]

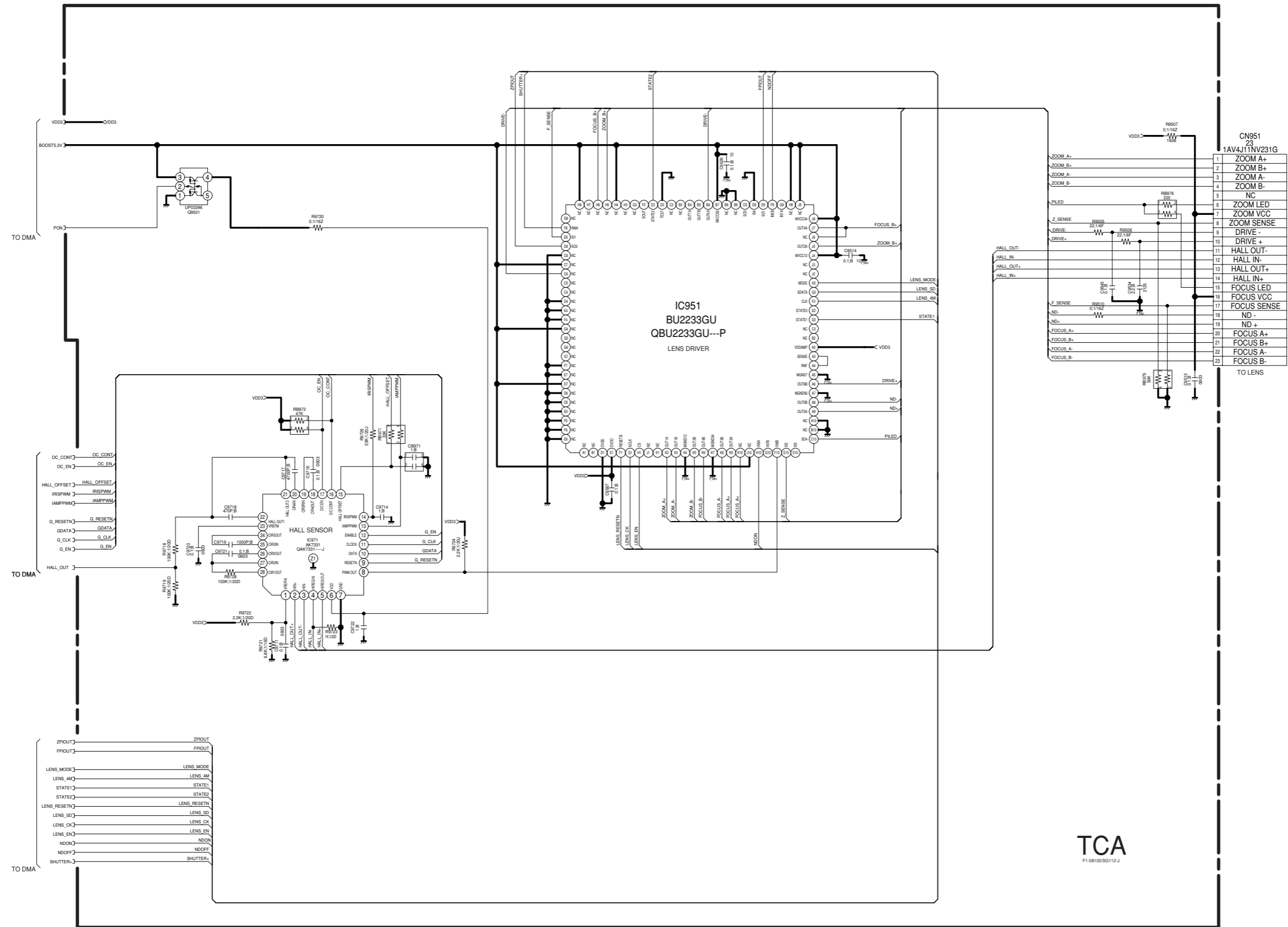
IC121
QK5R5658VCM-N
K5R5658VCM-DR75
 PROGRAM FLASH
 &
 SDRAM

CN103
20
1AV4J10LZ200G

1	BL AN
2	BL CA
3	LCDP0CB
4	LCDS0
5	LCDS1
6	LCDS2
7	VD
8	HO
9	GND
10	LMCLK
11	GND
12	LCDD7
13	LCDD6
14	LCDD5
15	LCDD4
16	LCDD3
17	LCDD2
18	LCDD1
19	LCDD0
20	VDD3

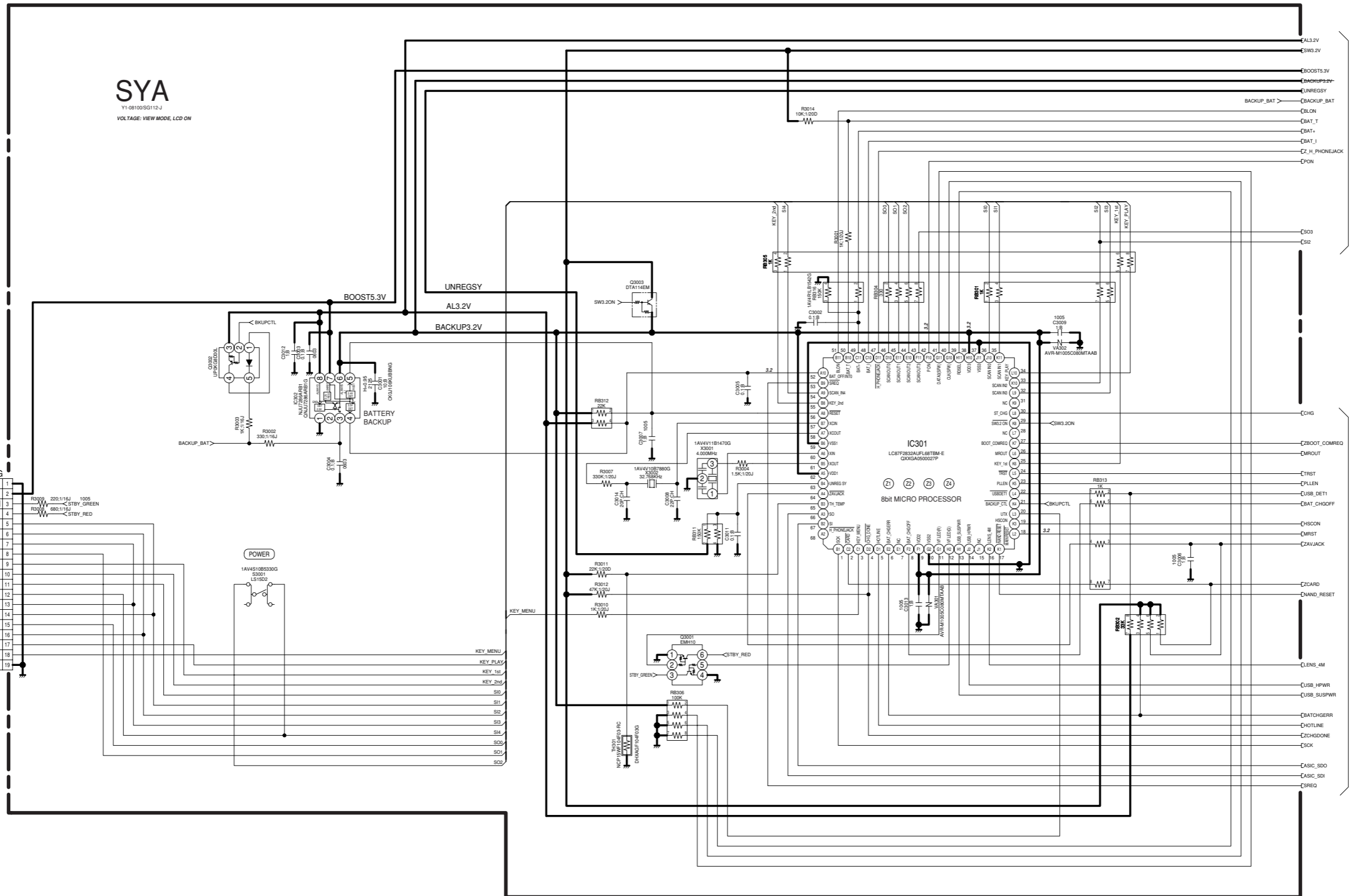
TO VF1
 CN172

CP1 BOARD (TCA) LENS



TCA
F1-08190/SQ112-J

CP1 BOARD (SYA) SYSTEM CONTROL



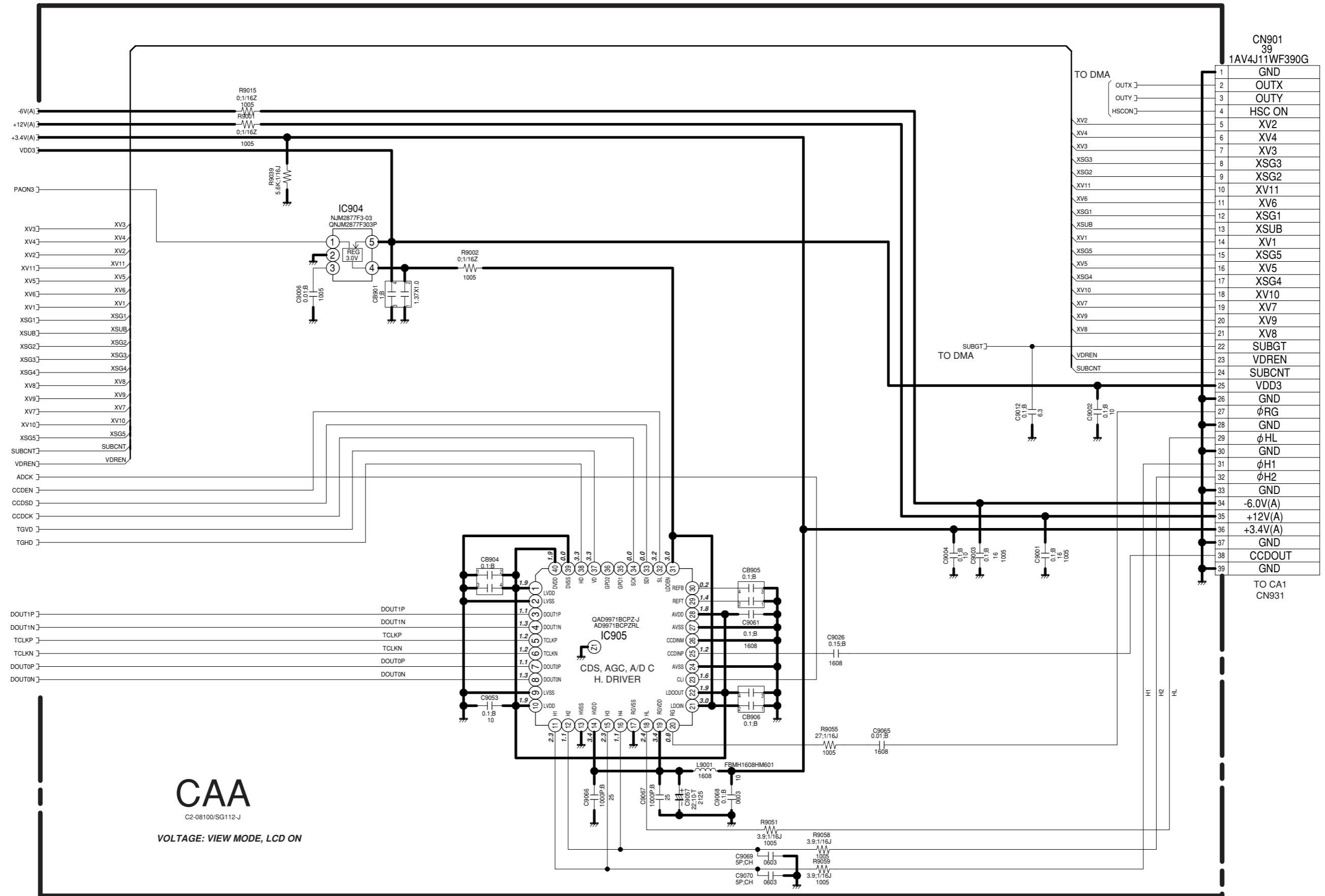
CN301
19
1AV4J11NV191G

1	GND
2	BOOST5.3V
3	STBY_GREEN
4	STBY_RED
5	SHB_VREC
6	SI2B_TELE
7	SI2B_WIDE
8	SCAN_OUT1
9	1st
10	2nd
11	SI0A_UP
12	SI4A_SET
13	SI3A_LEFT
14	SI1A_RIGHT
15	SCAN_OUT0
16	SI2A_DOWN
17	KEY_PLAY
18	KEY_MENU
19	GND

TO BACK UNIT

SCAN IN \ SCAN OUT	0	1	2	3	4
0	---	RIGHT	DOWN	LEFT	SET
1	UP	V.REC	TELE	WIDE	---
2	PW_TEST	---	TEST	---	PW_ON
3	---	---	LCD TURN	---	---

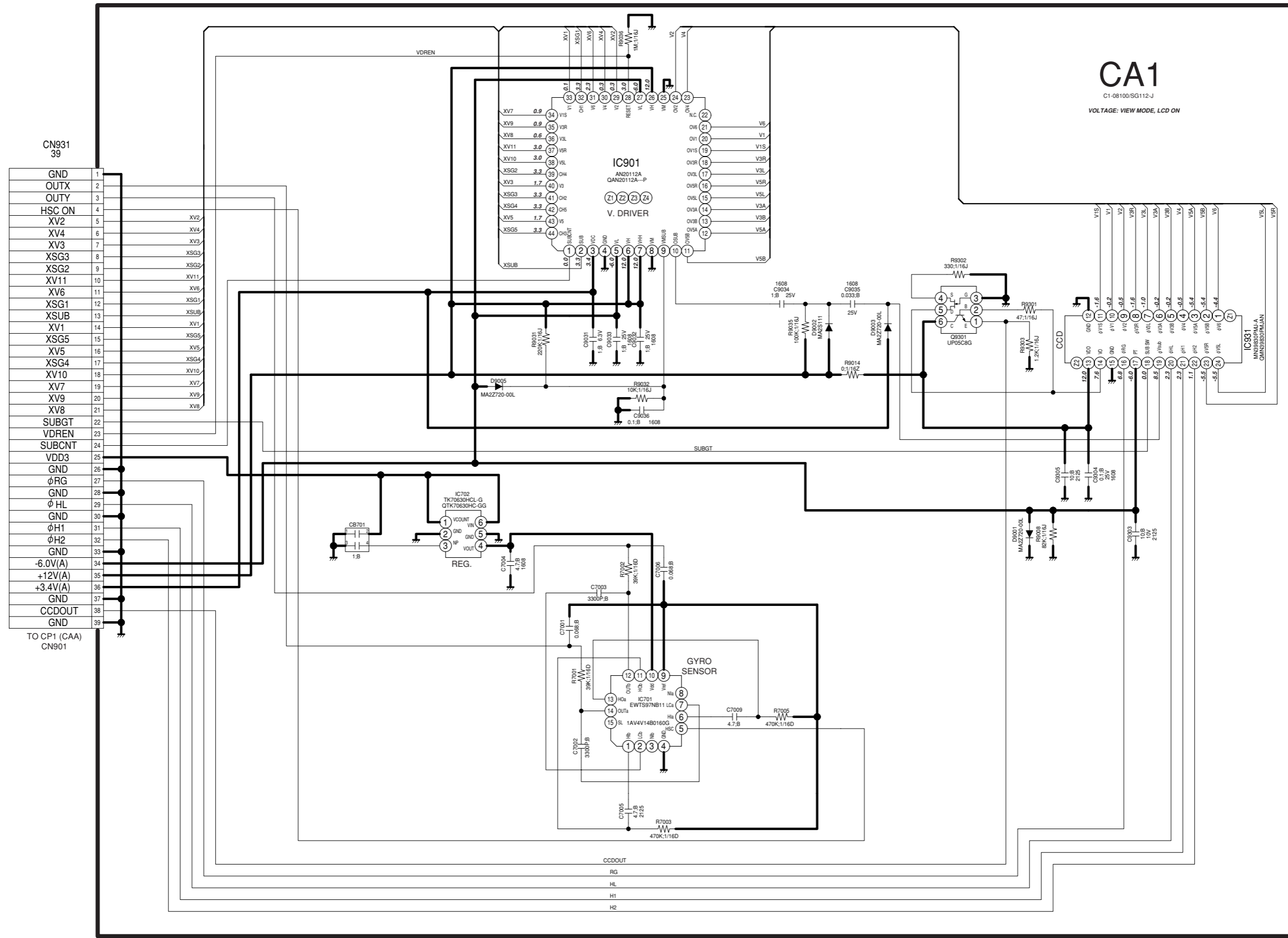
CP1 BOARD (CAA) CCD AFE & DRIVER



CN901 39 1AV4J11WF390G	
1	GND
2	OUTX
3	OUTY
4	HSC ON
5	XV2
6	XV4
7	XV3
8	XSG3
9	XSG2
10	XV11
11	XV6
12	XSG1
13	XSUB
14	XV1
15	XSG5
16	XV5
17	XSG4
18	XV10
19	XV7
20	XV9
21	XV8
22	SUBGT
23	VDREN
24	SUBCNT
25	VDD3
26	GND
27	φRG
28	GND
29	φHL
30	GND
31	φH1
32	φH2
33	GND
34	-6.0V(A)
35	+12V(A)
36	+3.4V(A)
37	GND
38	CCDOUT
39	GND

CAA
C2-08100/SG112-J
VOLTAGE: VIEW MODE, LCD ON

CA1 BOARD CCD & GYRO SENSOR



CA1 Pin	CA1 Label	CA1 Value	CA1 Unit
1	GND		
2	OUTX		
3	OUTY		
4	HSC ON		
5	XV2		
6	XV4		
7	XV3		
8	XSG3		
9	XSG2		
10	XV11		
11	XV5		
12	XSG1		
13	XSUB		
14	XV1		
15	XSG5		
16	XV5		
17	XSG4		
18	XV10		
19	XV7		
20	XV9		
21	XV8		
22	SUBGT		
23	VDREN		
24	SUBCNT		
25	VDD3		
26	GND		
27	φRG		
28	GND		
29	φHL		
30	GND		
31	φH1		
32	φH2		
33	GND		
34	-6.0V(A)		
35	+12V(A)		
36	+3.4V(A)		
37	GND		
38	CCDOUT		
39	GND		

TO CP1 (CAA)
CN901

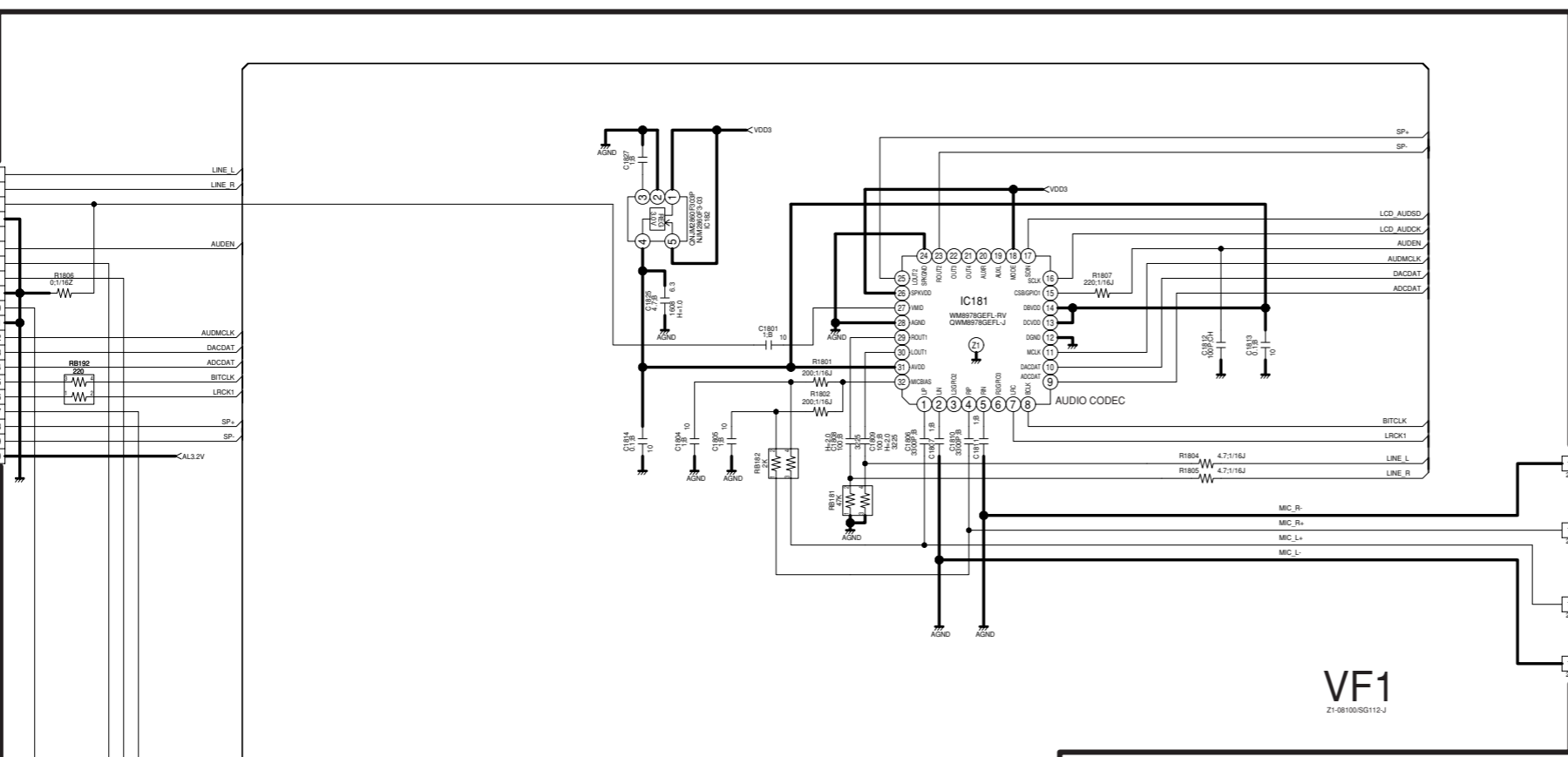
CA1
C1-08100/SG112-J
VOLTAGE: VIEW MODE, LCD ON

VF1 BOARD LCD CONNECTOR & AUDIO

TB1 BOARD SWITCH

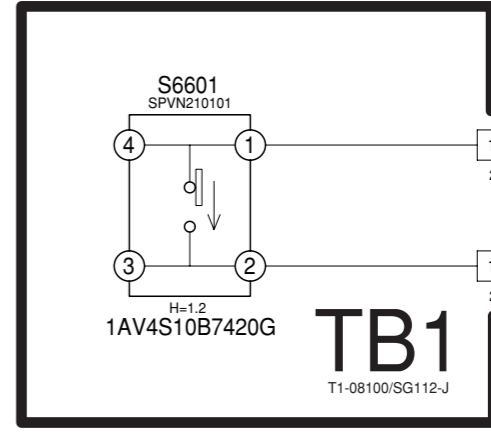
CN173
20
1AV4J10LZ200G

1	LINE L	LINE L
2	LINE R	LINE R
3	GND	
4	GND	
5	AMUTE	AUDEN
6	AUDEN	AUDEN
7	SCAN_IN2	
8	SCAN_OUT3	
9	GND	
10	BACKUP_BAT	
11	GND	
12	AUDMCLK	AUDMCLK
13	DACDAT	DACDAT
14	DACDAT	DACDAT
15	BITCLK	BITCLK
16	LRCK1	LRCK1
17	MRCLK	
18	SP+	SP+
19	SP-	SP-
20	AL3.2V	AL3.2V



VF1
Z1-08100/SG112-J

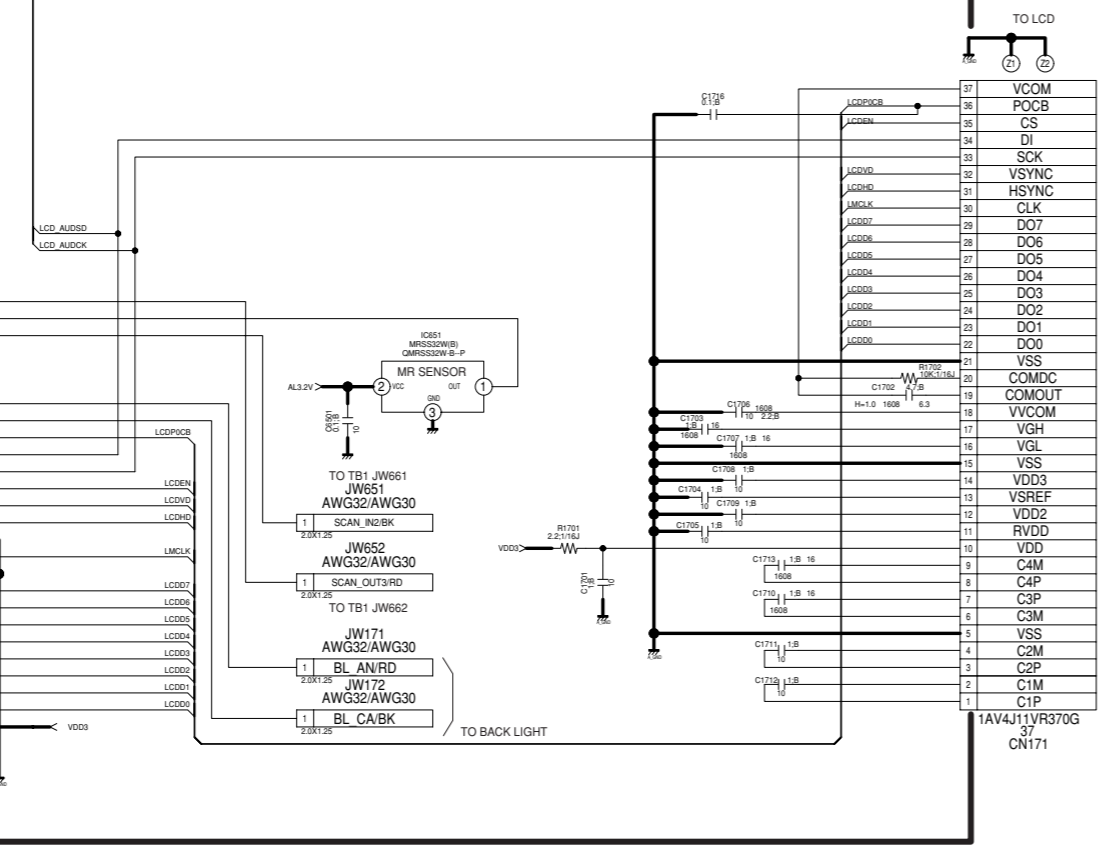
- JW186
AWG32/AWG30
1 MIC R-/BK
- JW185
AWG32/AWG30
1 MIC R+/RD
- JW187
AWG32/AWG30
1 MIC L+/RD
- JW188
AWG32/AWG30
1 MIC L-/BK



- TO VF1 JW651
JW661
AWG32/AWG30
1 SCAN_IN2/BK
- JW662
AWG32/AWG30
1 SCAN_OUT3/RD
- TO VF1 JW652

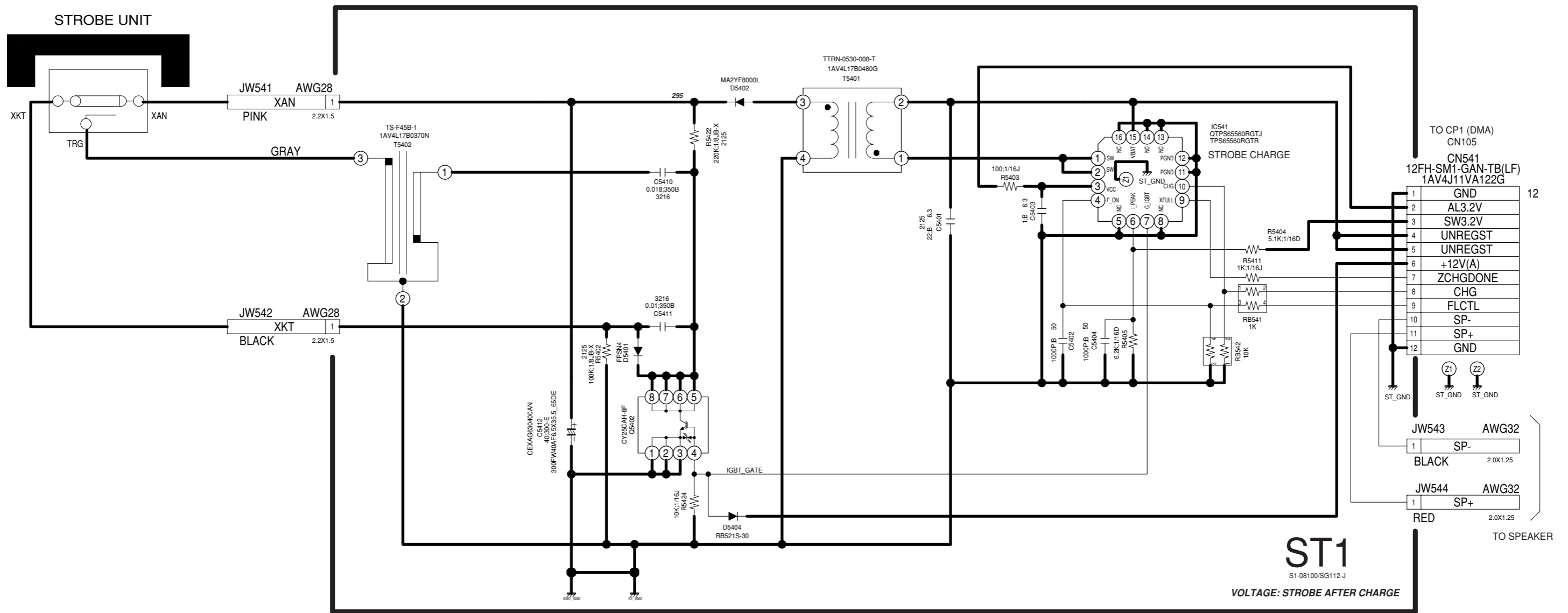
CN172
20
1AV4J10LZ200G

1	BL_AN	LCDPCB
2	BL_CA	LCDEN
3	LCDPCB	LCDVD
4	LCDS	LCDH
5	LCDC	
6	LCDEN	
7	VD	
8	HD	
9	GND	
10	LMCLK	
11	GND	
12	LCDD7	
13	LCDD6	
14	LCDD5	
15	LCDD4	
16	LCDD3	
17	LCDD2	
18	LCDD1	
19	LCDD0	
20	VDD3	



- TO TB1 JW651
JW651
AWG32/AWG30
1 SCAN_IN2/BK
- JW652
AWG32/AWG30
1 SCAN_OUT3/RD
- TO TB1 JW662
- JW171
AWG32/AWG30
1 BL_AN/RD
- JW172
AWG32/AWG30
1 BL_CA/BK

ST1 BOARD STROBE



ST1

S1-08100/SG112-J
VOLTAGE: STROBE AFTER CHARGE

TO CP1 (DMA)
CN105

1	GND
2	AL3.2V
3	SW3.2V
4	UNREGST
5	UNREGST
6	+12V(A)
7	ZCHGDONE
8	CHG
9	FLCTL
10	SP-
11	SP+
12	GND

JW543 AWG32

1	SP-
	BLACK 2.0X1.25

JW544 AWG32

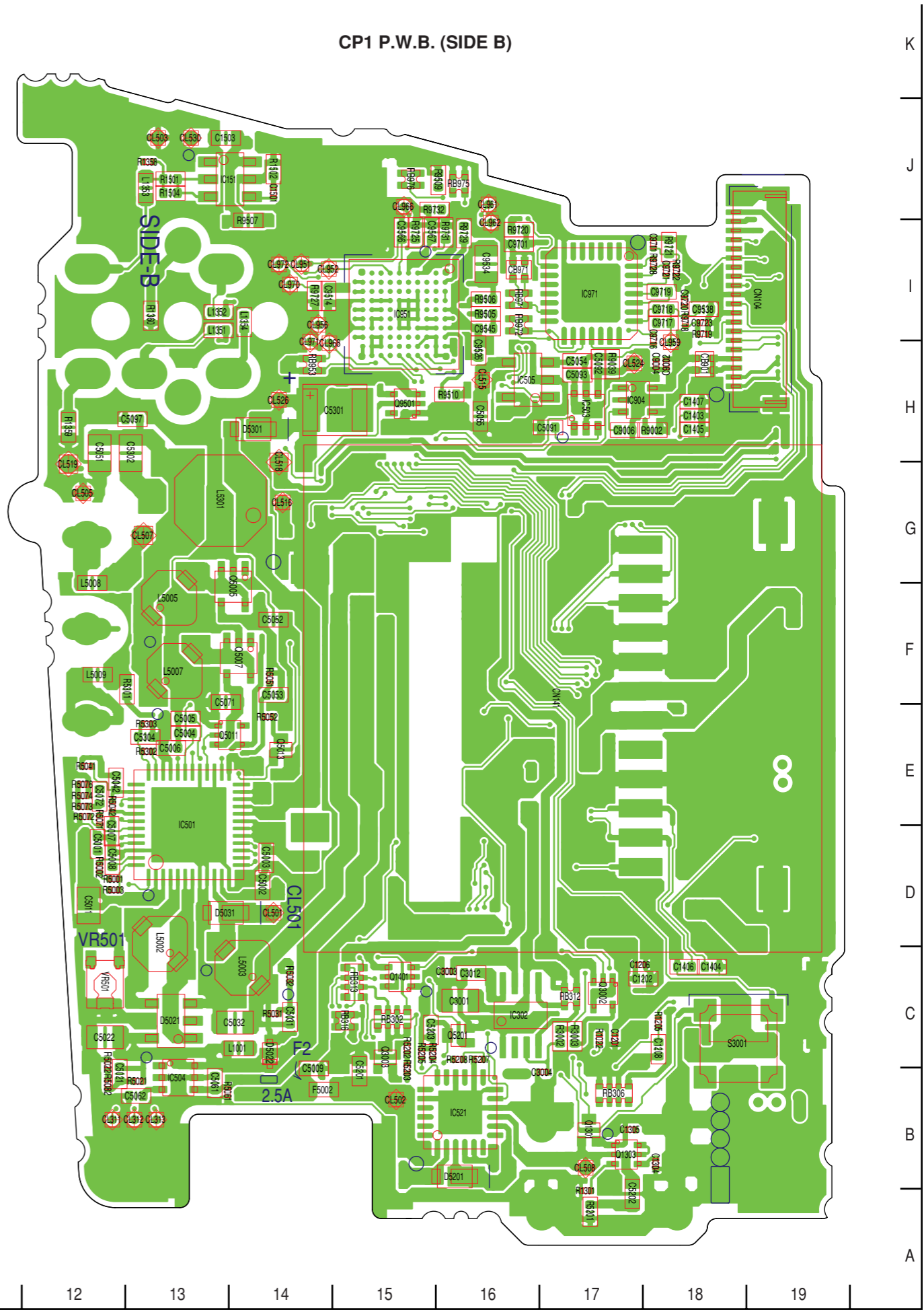
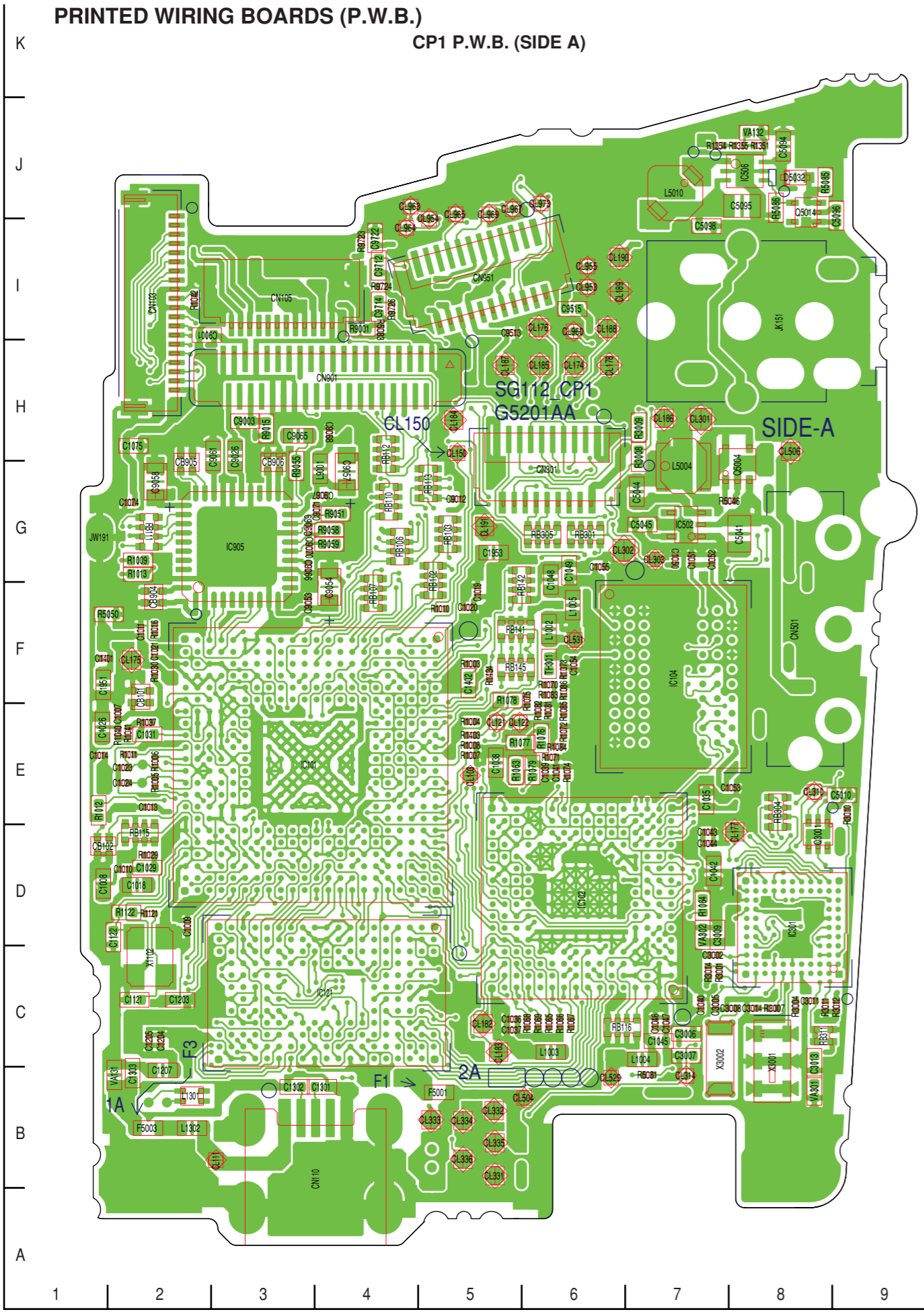
1	SP+
	RED 2.0X1.25

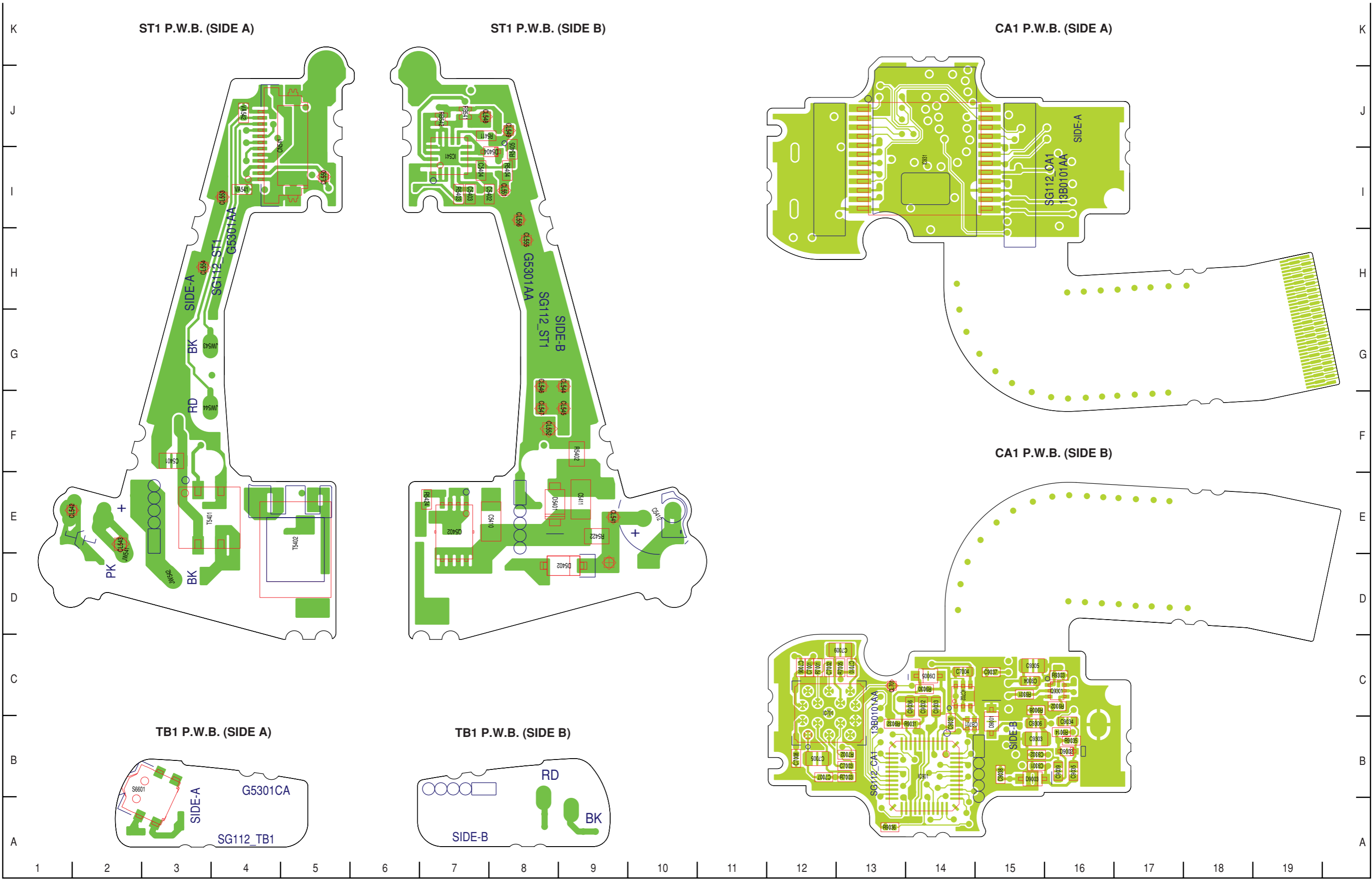
TO SPEAKER

PRINTED WIRING BOARDS (P.W.B.)

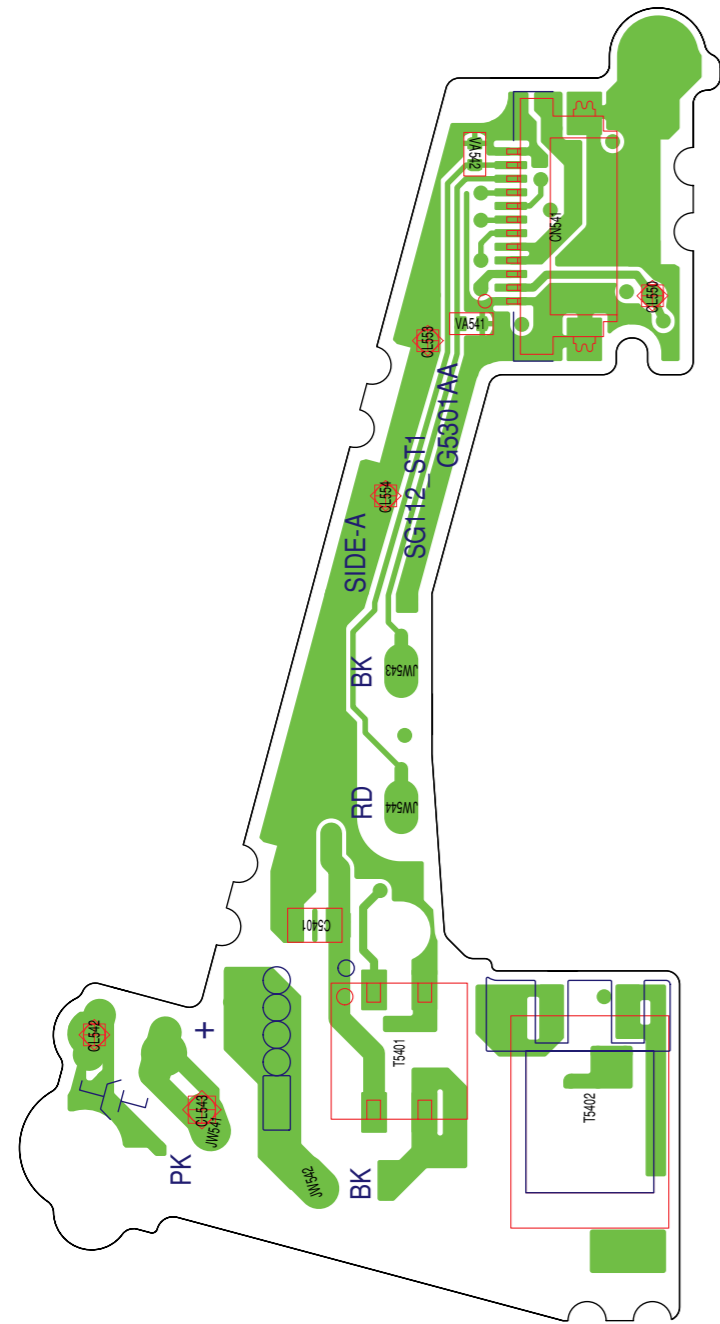
CP1 P.W.B. (SIDE A)

CP1 P.W.B. (SIDE B)

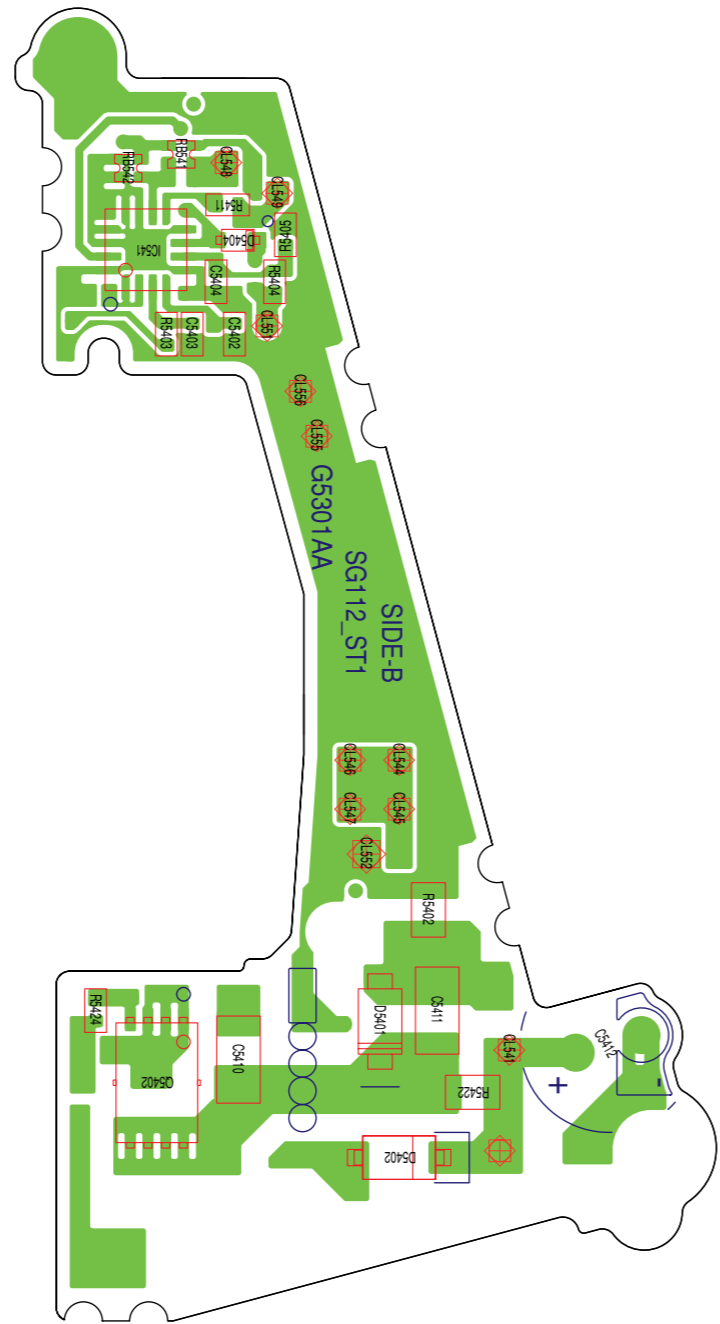




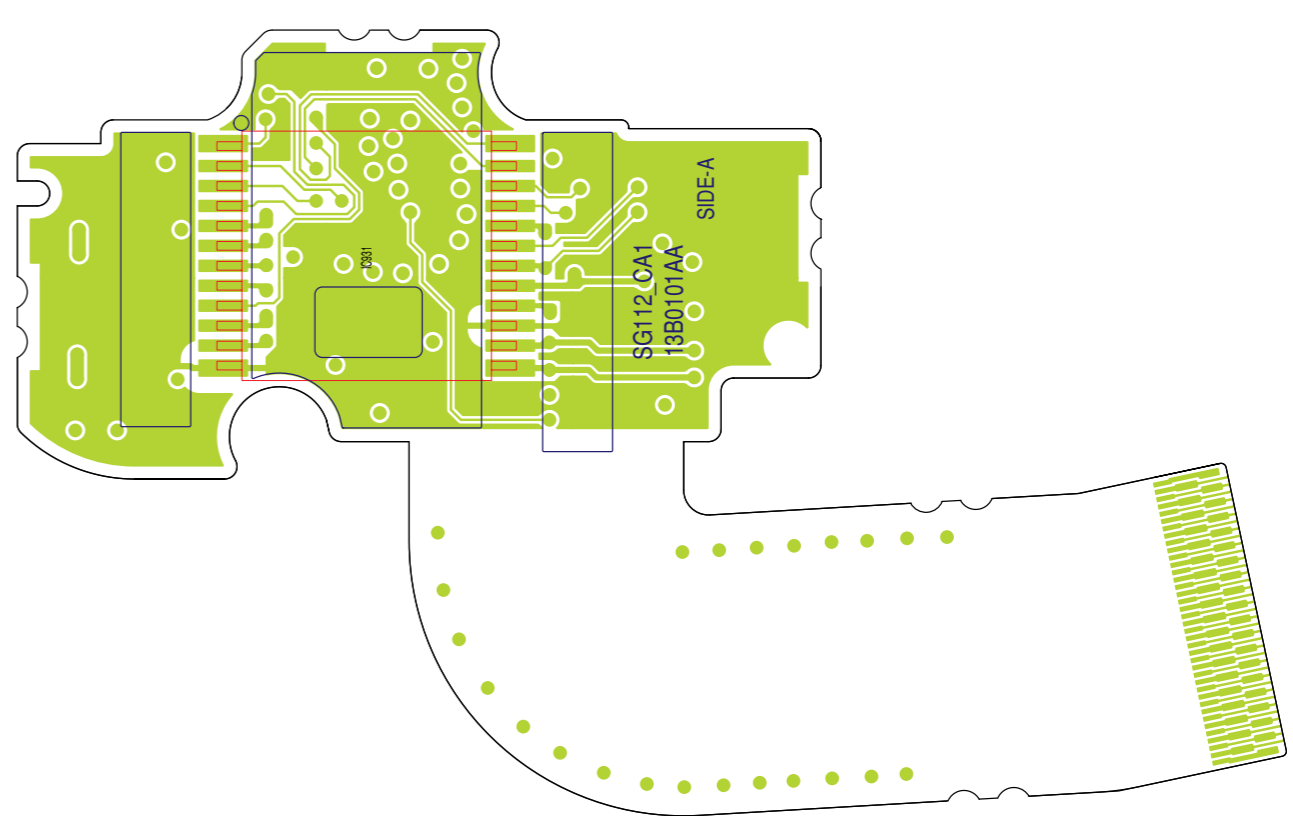
ST1 P.W.B. (SIDE A)



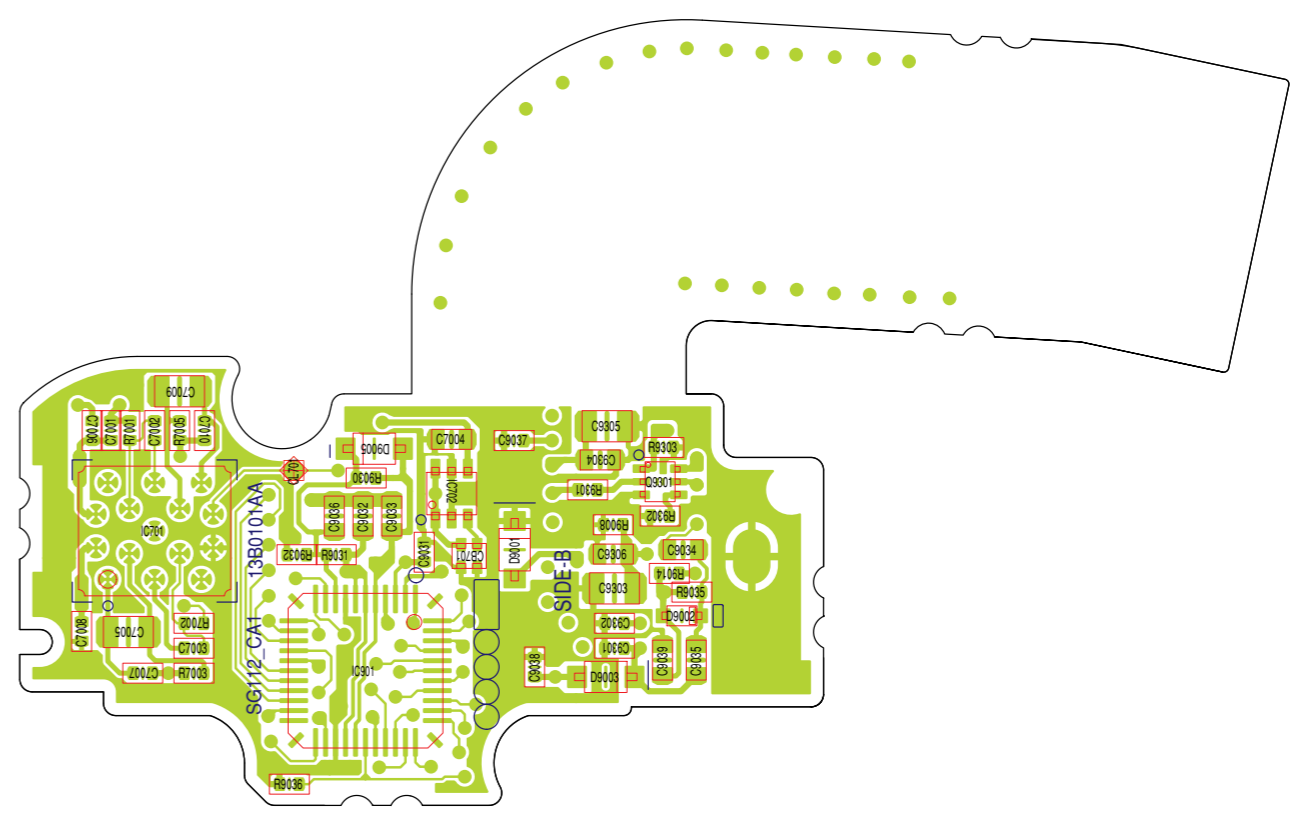
ST1 P.W.B. (SIDE B)



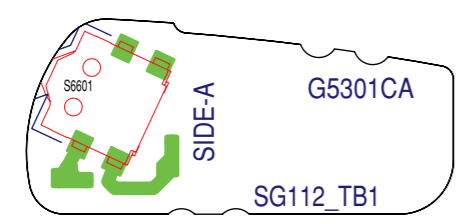
CA1 P.W.B. (SIDE A)



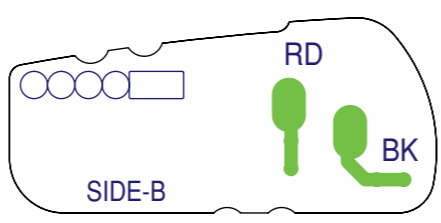
CA1 P.W.B. (SIDE B)

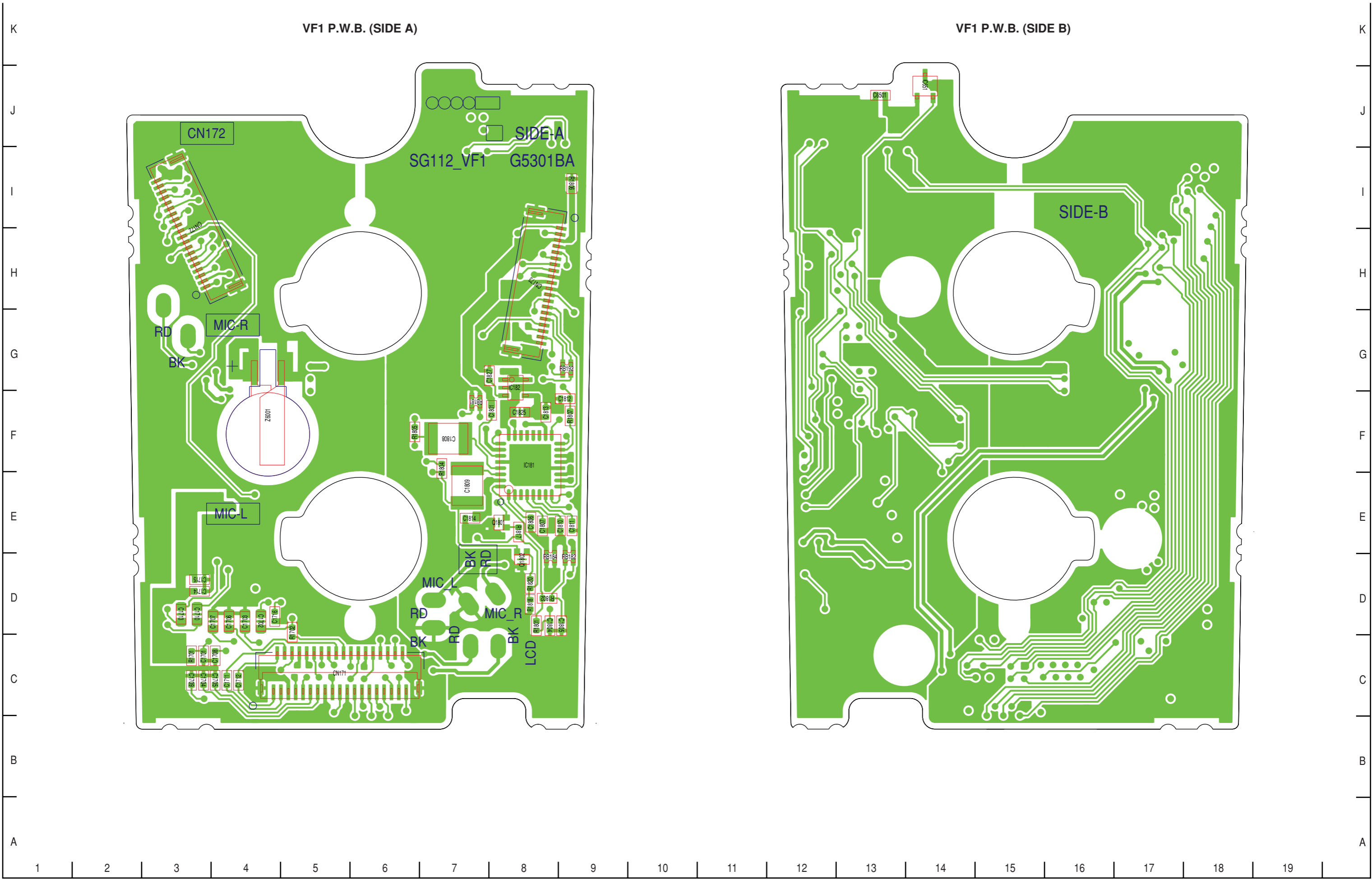


TB1 P.W.B. (SIDE A)

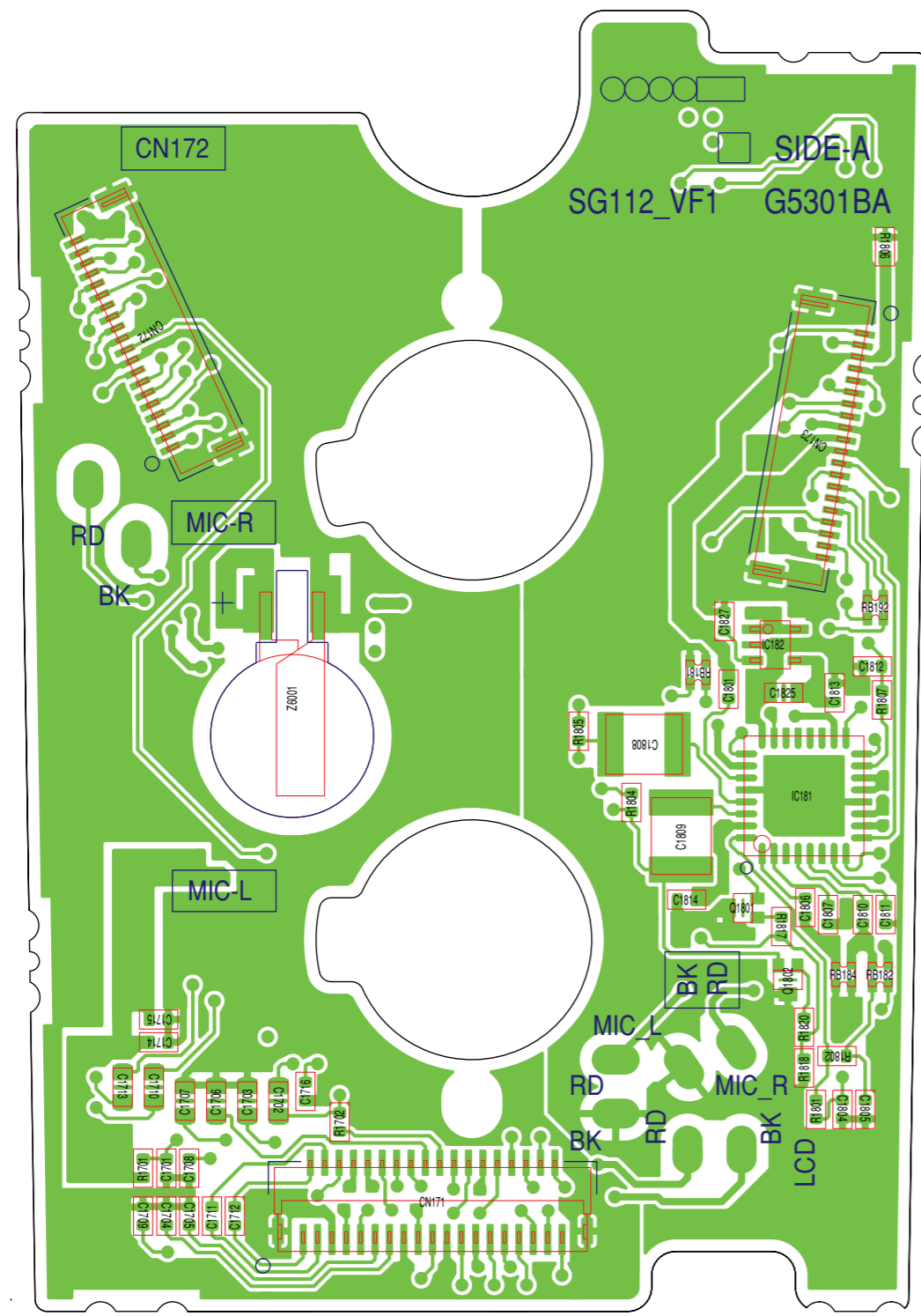


TB1 P.W.B. (SIDE B)

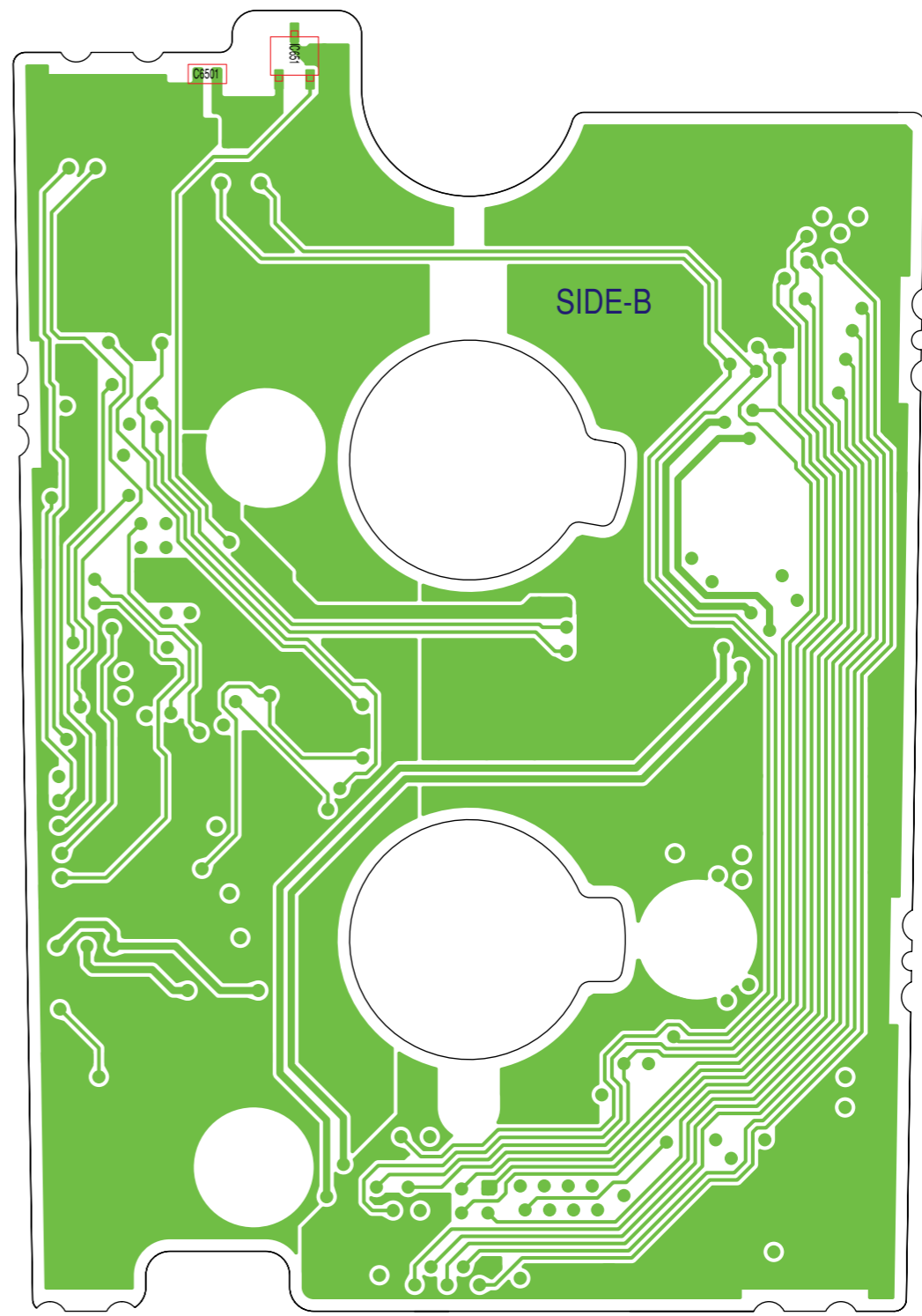




VF1 P.W.B. (SIDE A)



VF1 P.W.B. (SIDE B)





SANYO Electric Co., Ltd.
Osaka, Japan