SONY

REMOTE CONTROL UNIT

RM-B150

MAINTENANCE MANUAL
1st Edition (Revised 2)
Serial No. 15001 and Higher

⚠警告

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お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

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Manual Structure

Purpose of this manual

This manual is the maintenance manual for Remote Control Unit RM-B150.
This manual describes the information items necessary when the unit is supplied and installed, items that premise the service based on the components parts such as alignment, schematic diagrams, board layouts and spare parts lists, assuming use of system and service engineers.

Contents

The following are summaries of all the sections for understanding the contents of this manual.

Section 1. Installation

Describes information about ROM version check, connectors and cables, function of internal switches and instance of system configuration.

Section 2. Service Overview

Describes circuit description, information about replacement of board and notes on service.

Section 3. Electrical Alignment

Explains the general information for electrical adjustment and the adjustment procedure of this unit.

Section 4. Spare Parts

Describes exploded views, parts list, supplied accessories and optional fixtures used in the unit.

Section 5. Semiconductor Pin Assignments

Describes function diagrams and pin names of semiconductor used in the unit.

Section 6. Block Diagram

Describes overall block diagram and block diagrams for every circuit board.

Section 7. Schematic Diagrams

Describes schematic diagrams for every circuit board and frame wiring.

Section 8. Board Layouts

Describes board layouts for every circuit board.

Related manual

Besides this maintenance manual the following manual is available for this unit.

- **Operation Manual (Supplied with this unit)**
  This manual is necessary for application and operation of this unit.

Section 1
Installation

The RM-B150 is equipped with various kinds of new functions. Depending on the camera that is connected to the unit, some functions require settings by using the menu of the RM-B150 and some functions cannot be activated. See the following table for details.
Some functions become activated if the camera is equipped with the updated ROM. If the ROM version is not applicable, make the settings by the menu or replace the ROM as necessary.
If the menu setting is required, refer to the operation manual supplied with the RM-B150. If ROM replacement is required, consult your Sony service organization.

Function		BVP-900/950	BVP-700/750	BVP-570	BVP-500/550	HDC-700A/750A	HDC-700/750	HDW-700/700A
Filter number auto recognition		Yes	∗1	Yes	∗2	Yes	∗2	∗2
GAIN L/M/H select interlocking		Yes	∗1	Yes	∗2	Yes	∗2	∗2
Iris Open/Close value auto recognition		Yes	∗1	Yes	∗2	Yes	∗2	∗2
White Preset		Yes	No	Yes	∗3	Yes	∗3	∗3
VTR Control	Start/Stop	Yes	No	Yes	∗3	Yes	∗3	∗3
	Except above	No	No	No	No	No	No	∗3
Camera setup menu operation		Yes	No	Yes	∗3	Yes	No	∗3
Video monitor output		Yes	No	∗4	∗4	No	No	∗5

∗1: These are not functioned automatically. Perform manual settings by the menu of the RM-B150.
∗2: If using these functions, check whether the ROM version for the camera/camcorder is applicable to the version shown below, or not. If not, replace the ROM. Or perform manual settings by the menu of the RM-B150.
∗3: If using these functions, check whether the ROM version for the camera/camcorder is applicable to the version shown below, or not. If not, replace the ROM.
∗4: Monitoring the video signals is enabled only for the BVP-550 series that is used together with the CA-570/530 series. For the BVP-550 series that is used together with the CA-550/550P, or BVP-500/500P, monitoring is disabled.
∗5: If using these functions, check whether the ROM version for the camcorder is applicable to the version shown below, or not. If not, replace the ROM. The output signal is the only Y signal.

Applicable ROM Version

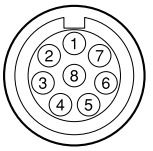
BVP-500/550 (IC36/AT-95 board): Ver. 4.00 or higher
HDC-700/750 (IC26/IF-569 board, IC24/SG-226 board): Ver. 3.00 or higher (for both ICs)
HDW-700/700A (IC15, 16/IF-667 board): Ver. 1.24 or higher (for both ICs)

1-1. Connectors and Cables

1-1-1. Connector Input/Output Signals

MONITOR
BNC 75 Ω, 1.0 Vp-p

REMOTE (8P FEMALE)



(External View)

No.	Signal	Specifications
1	TX (+)	RM SERIAL DATA
2	TX (–)	
3	RX (+)	BVP/CCU/CNU SERIAL DATA
4	RX (–)	
5	VIDEO (G)	GND for VIDEO
6	POWER (+) IN	+10.5 to 30 V
7	POWER (–) IN	GND for POWER
8	VIDEO (X)OUT	VBS 1.0 Vp-p, Zo = 75 Ω
	CHASSIS GND	CHASSIS GND

1-1-2. Connection Connector

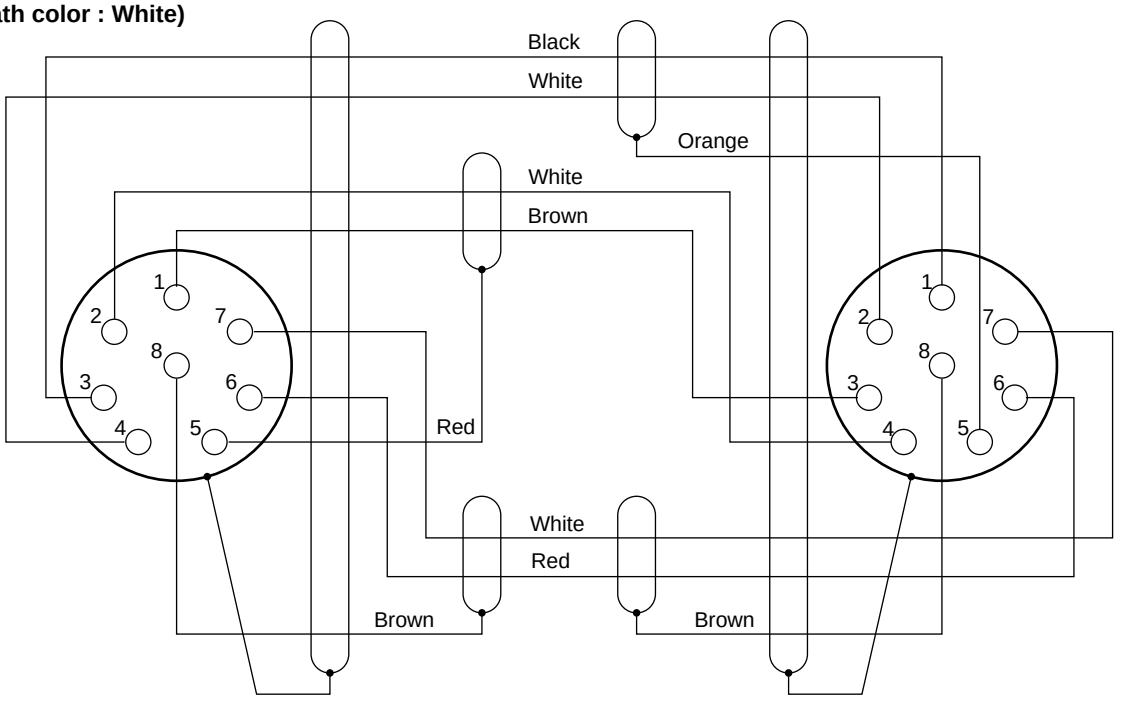
Connection made with the connector panel during installation or service, should be made with the connectors/complete cable assemblies specified in the following list, or equivalent parts.

Connector Name	Connection Connectors	Connection Cables
MONITOR (BNC)	1-569-370-12 Plug, BNC	
REMOTE (8P FEMALE)	1-766-848-11 Plug, 8P Male	REMOTE cable 1-783-372-11 (supplied with RM-B150, 10 m)*1, or CCA-5 cable assembly (Option) CCA-5-10 (10 m)/CCA-5-3 (3 m)*1*2

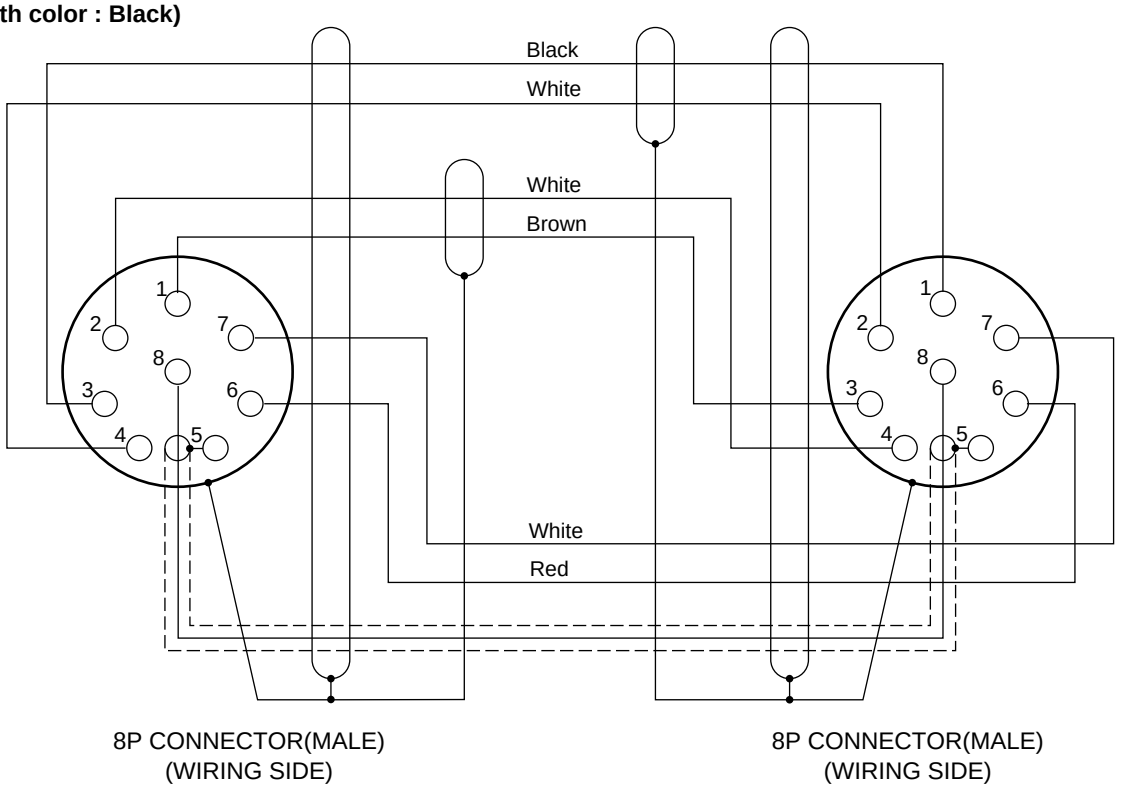
*1: If using a cable of length different from a standard product, consult your Sony organization.
*2: Use of the CCA-5 cable disables to monitor the video signals.

1-1-3. Wiring Diagrams for Cables

CCA-5 Cable
(Outer sheath color : White)



REMOTE Cable (supplied with RM-B150)
(Outer sheath color : Black)



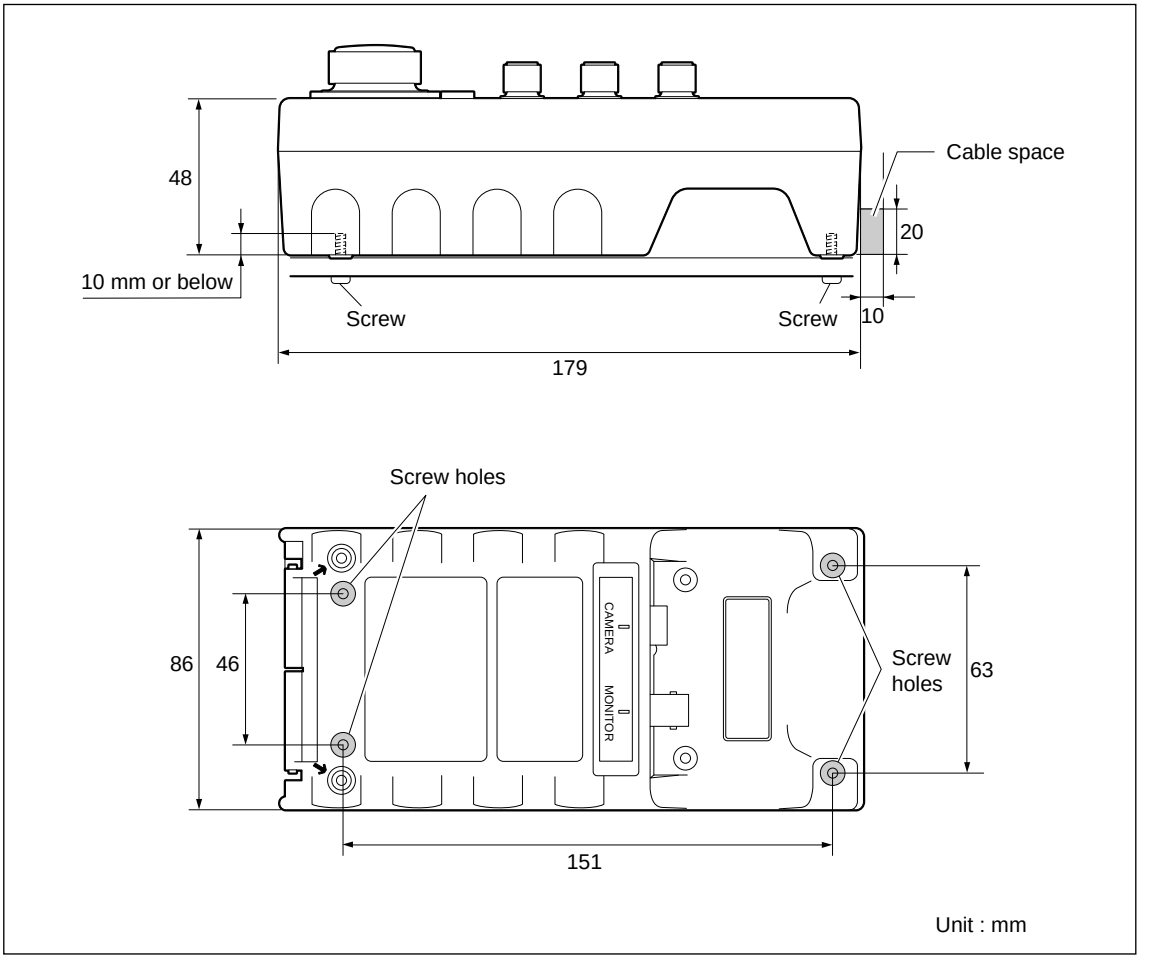
1-2. Notes on Installation

Screw length limitations

When installing the unit in a console, use the specified screws (M2.6) in length as shown in the figure.

Installation space

To avoid damage to a cable, leave the cable space shown in the figure to the rear of the unit.



1-3. Function of Internal Switch

CPU-266 board

S1: Not used

Always set to OFF.

Factory-set position: OFF

Section 2
Service Overview

2-1. Removing the Cabinet

Opening the Remote Control Unit

Loosen the two screws (BTP2.6×10) in the bottom of the unit.

Note

Before closing, fit the ROM holder onto the CN-1651 board without fail. Use of the ROM holder prevents the ROM on the CPU-266 board from coming off.

Removing the CPU-266/SW-962 boards from the control panel assembly

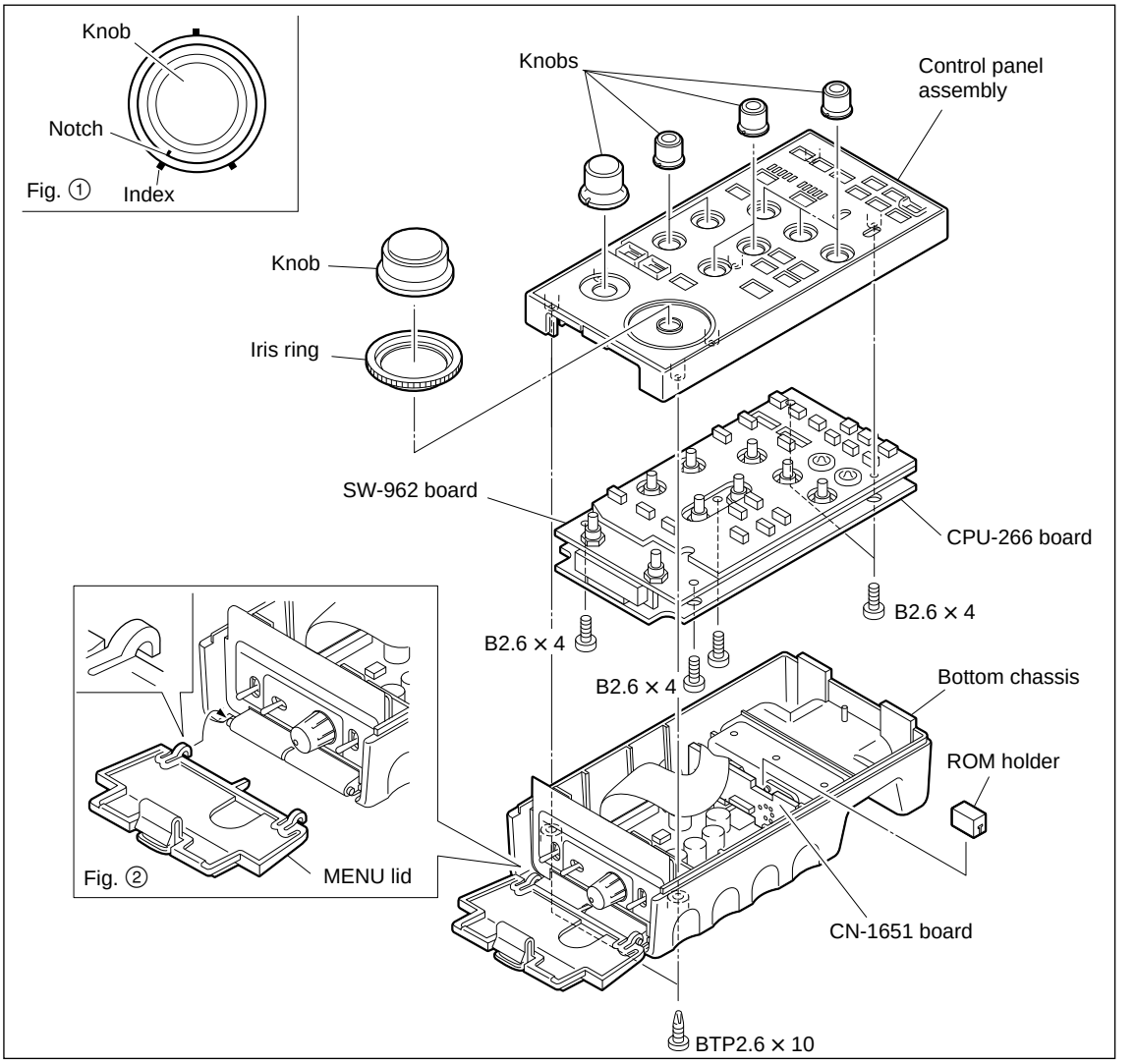
Remove the nine knobs and iris ring. Remove the five screws (B2.6×4) securing the boards to the control panel assembly.

Note

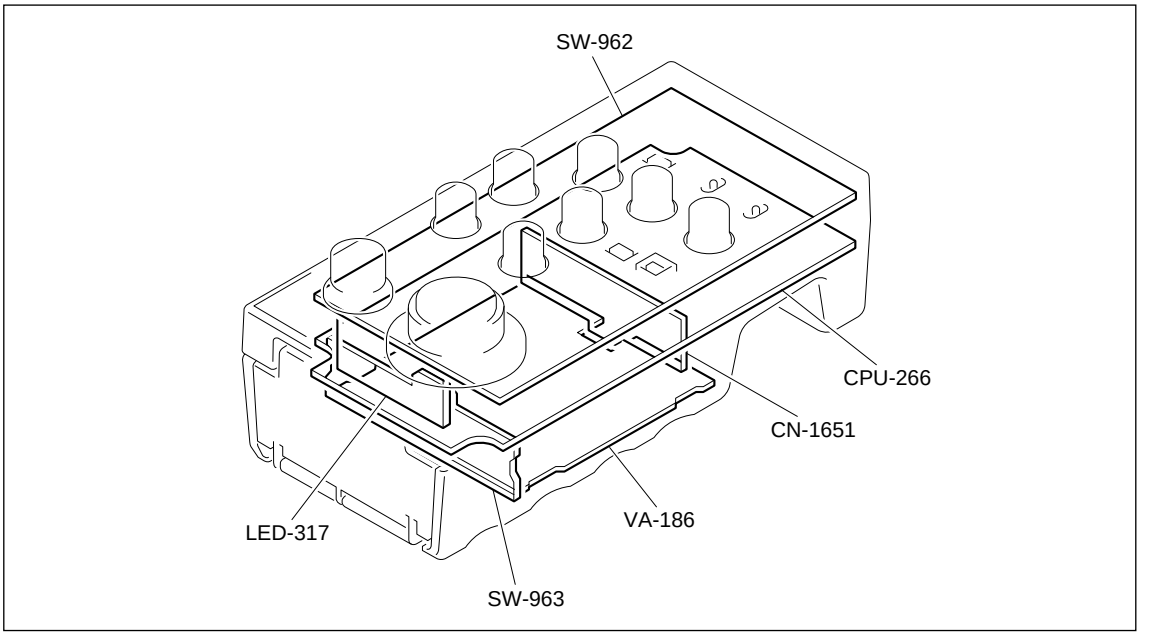
When fitting the knob, first turn the shaft of the adjustment control fully counterclockwise and fit the knob so that the notch on the knob is in proper alignment with indexes on the control panel as shown in the figure ①.

Reinstalling the MENU lid

The MENU lid may come off due to impact. It can be reinstalled easily as shown in the figure ②.



2-2. Location of Printed Wiring Boards



2-3. Circuit Description

CPU-266 board

The CPU-266 board is a main control board, and consists of the following circuits.

- IC2 (Main CPU): Main control
  LED character display interface
  Buzzer control
- IC18 (Sub CPU): Panel interface control
- X2: Clock
- IC4: Program ROM
- IC5: SRAM
- IC12: EEPROM (storing the setting values)
- IC13: NVRAM (storing the special setting values)
- IC15: Rotary encoder controller
- IC11: Command interface

The sub CPU controls input signals from the switches and adjustment controls on the control panel and menu panel. It also controls output signals to the LEDs on the control panel. The I/O port that is needed to control the LED character display and buzzer circuit is controlled by the PIO port in the main CPU.

SW-962 board

The SW-962 board is equipped with the switches and LEDs on the control panel, and consists of the switch scanning decoders and LED drivers. They are controlled by the sub CPU (IC18) on the CPU-266 board.

VA-186 board

The VA-186 board consists of the cable compensation circuit for the video signals and power circuits. The cable compensation circuit can compensate for the three different kinds of cables in length 10 m, 50 m and 100 m. Cable compensation length can be selected using the menu.
The power circuits consists of the switching regulator and series regulators. They generates the following voltages from the DC input of 10.5-30 volts externally supplied.

- +5 V for logic circuit
- +5 V for analog-to-digital conversion circuit (for adjustment controls on the control panel)
- +5 V for video (cable compensation) circuit
- +5.5 V for LED drivers

First, +5.5 V is generated by the switching regulator and then is supplied to the LED drivers. On the other hand, three kinds of +5 V is generated from this +5.5 V by the series regulators and are supplied to the logic, analog-to-digital conversion and video circuits respectively.

SW-963 board

The SW-963 board is equipped with the switches and rotary encoder (MENU SELECT knob) on the menu panel. They are controlled by the sub CPU (IC18) on the CPU-266 board via the VA-186 board.

LED-317 board

The LED-317 board is equipped with the LED character display, that is controlled by the main CPU (IC2) on the CPU-266 board.

CN-1651 board

The CN-1651 board is equipped with the REMOTE connector and BNC connector for monitoring.

2-4. Self-Diagnosis

Operation checks for the switches, LED indicators and control knobs on the control panel and the MENU SELECT knob on the menu panel are enabled by using the self-diagnosis mode of the unit.

Equipment required

Color Video Camera BVP-950/550 series
Camera Adaptor CA-530/550/570 series

Supply power to the RM-B150 from an AC adaptor AC-550/550CE.

Operational procedures

1. Activating the self-diagnosis mode

(1) Push the Configuration switch downward (▼) while throwing the CANCEL/ENTER switch to ENTER. Menu items will be displayed on the menu display.
(2) Turn the MENU SELECT knob until the menu item “RM Diag” is displayed on the menu display and throw the CANCEL/ENTER switch to ENTER. The unit will be put into the self-diagnosis mode.

2. Operation checks for indicators

(1) Make sure that the position indicators for the ND/CC filters are lighting from the left to the right sequentially. (When the lighting reaches the rightmost position, it restarts from the left.)
(2) Make sure that the EXT indicator is blinking in a long period.
(3) Make sure that the IRIS/MB ACTIVE indicator is blinking in a short period.

3. Operation checks for switches and controls

(1) Press the lighted switch that needs to be checked once to light up and press it again to go out. Make sure that the switch’s name is displayed on the menu display.

Note

Ensure that the switch clicks during operation.

(2) Toggle the toggle switch that needs to be checked. Make sure that its switch position is displayed on the menu display while toggling.

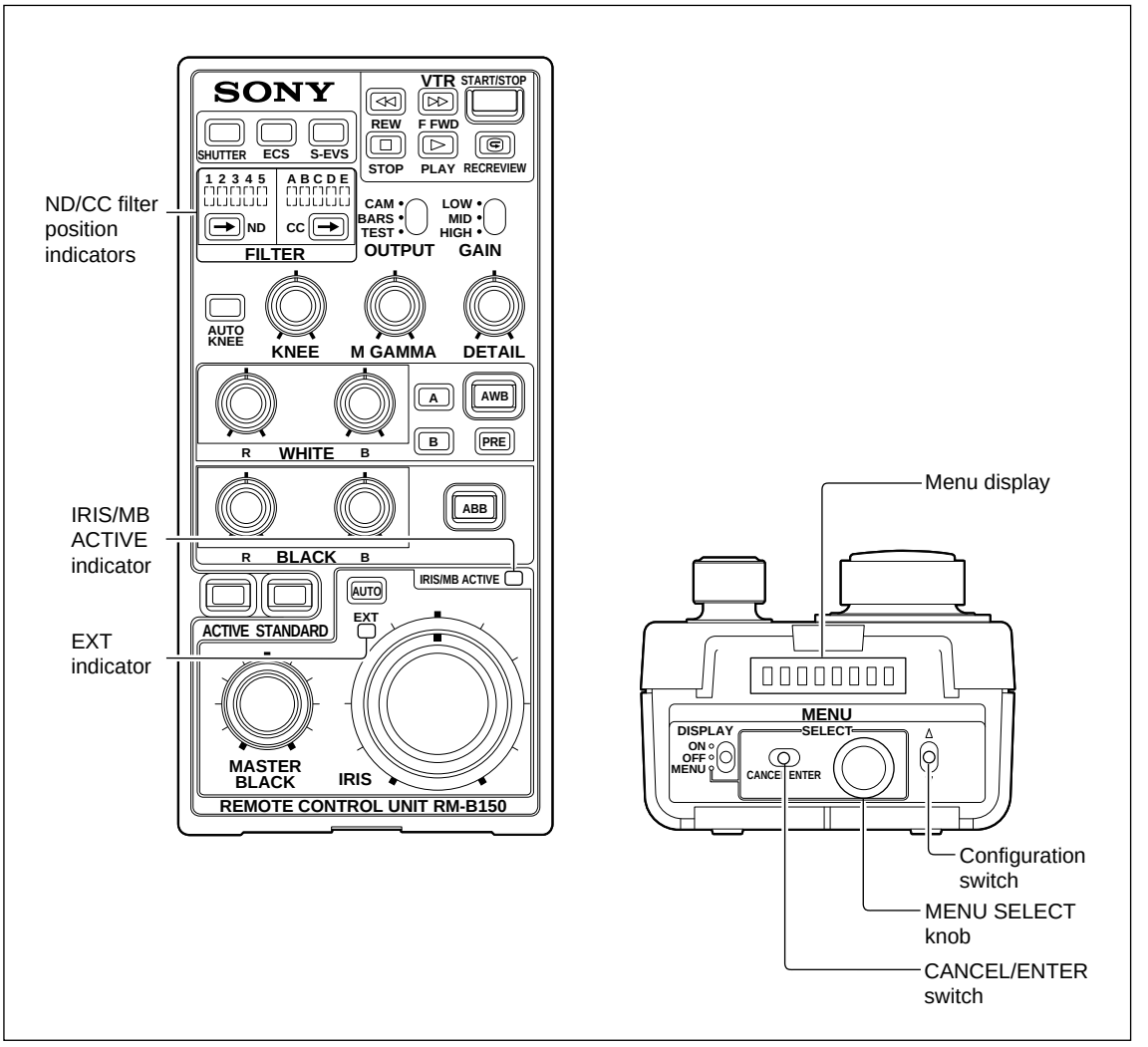
Note

Ensure that the switch clicks during operation.

(3) Turn the control knob that needs to be checked. Make sure that the control knob’s name and its control value (−99 to 99) are displayed on the menu display.
(4) Turn the MENU SELECT knob. Make sure that the MENU SELECT knob’s name and its control value (−99 to 99) are displayed on the menu display.

4. Exiting from the self-diagnosis mode

Push the Configuration switch upward (▲) while throwing the CANCEL/ENTER switch to ENTER.


ND/CC filter position indicators
IRIS/MB ACTIVE indicator
EXT indicator
SONY
VTR START/STOP
REW
F FWD
STOP
PLAY
RECREVIEW
SHUTTER
ECS
S-EVS
1 2 3 4 5
A B C D E
ND
CC
FILTER
CAM
BARS
TEST
OUTPUT
LOW
MID
HIGH
GAIN
AUTO KNEE
KNEE
M GAMMA
DETAIL
A
B
AWB
PRE
R
WHITE
B
ABB
R
BLACK
B
IRIS/MB ACTIVE
AUTO
EXT
ACTIVE STANDARD
MASTER BLACK
IRIS
REMOTE CONTROL UNIT RM-B150
Menu display
MENU SELECT
DISPLAY
ON
OFF
MENU
CANCE
ENTER
Configuration switch
MENU SELECT knob
CANCEL/ENTER switch

2-5. Description on Flexible Card Wire

2-5-1. Disconnecting/Connecting the Flexible Card Wire

The flexible card wire is used between the CPU-266 and VA-186 boards. Take care not to break the flexible card wire. This shorten the wire life.

Disconnecting

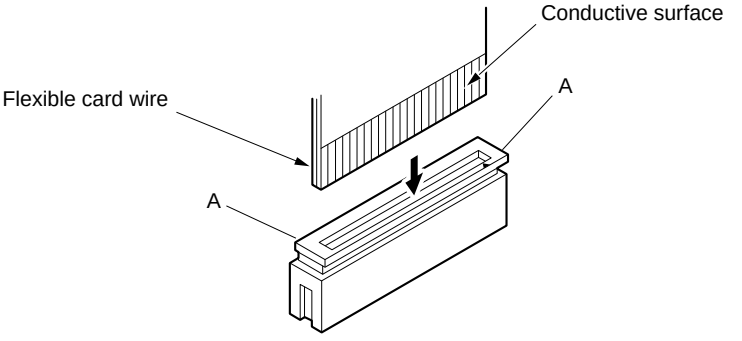
1. Turn off the power.
2. Slide portions A in the direction of the arrow to unlock and pull out the flexible card wire.

Connecting

Notes

- Be careful not to insert the flexible card wire obliquely.
- Check that the conductive surface of the flexible card wire is not soiled with dust.

Insert the flexible card wire as far as it will go, and push down the portions A.

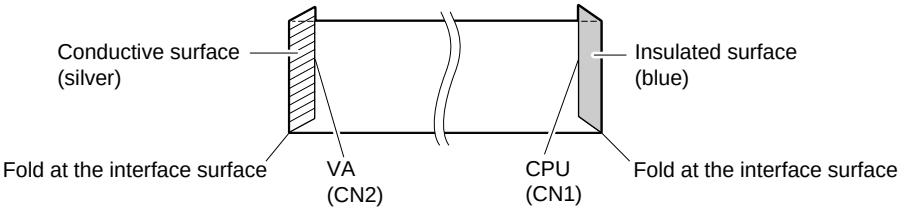


2-5-2. Forming Before Installation

If using a new flexible card wire, be sure to hand-form it as shown in the figure before installation.

Note

Never fold it back after being formed once.



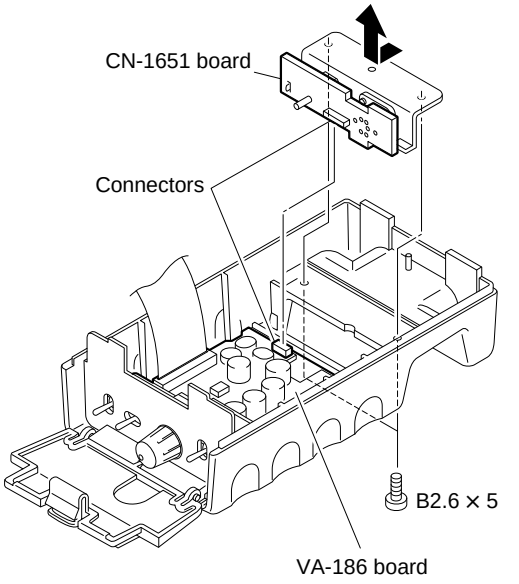
2-6. Replacing the Printed Wiring Board

2-6-1. Replacing the CN-1651 board

1. Open the cabinet referring to Section 2-1.
2. Remove the two screws securing the CN-1651 board.
3. While holding the VA-186 board, remove the CN-1651 board in the direction of the arrow.
4. Install a new board in the reverse order of removal.

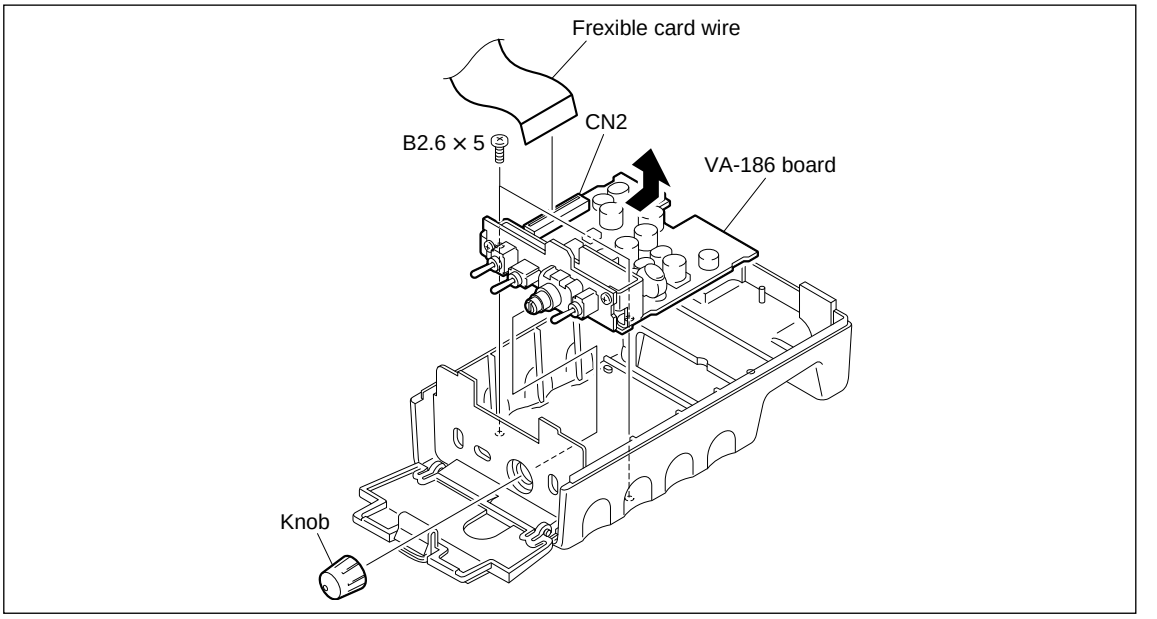
Note at installation

Make sure that the connectors on the VA-186 and CN-1651 boards are securely connected.

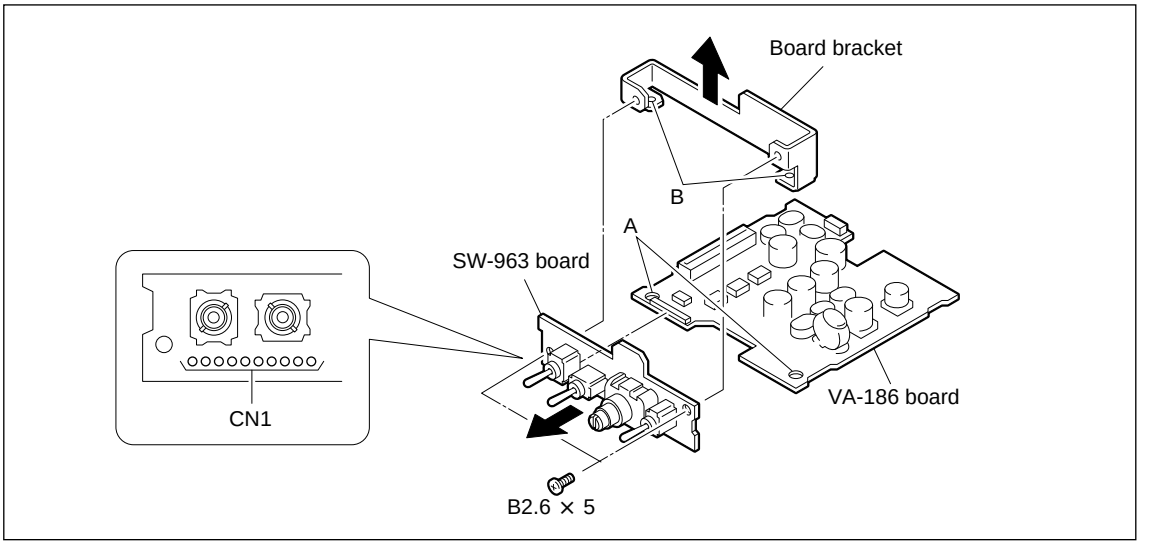


2-6-2. Replacing the SW-963 board

1. Pull out the knob.
2. Disconnect the flexible card wire from CN2 on the VA-186 board referring to Section 2-5-1.
3. Remove the CN-1651 board referring to Section 2-6-1.
4. Remove the two screws securing the VA-186 board and remove the board in the direction of the arrow.



5. Remove the two screws to remove the board bracket from the SW-963 board.
6. Desolder CN1 on the SW-963 board and remove the SW-963 board from the VA-186 board.

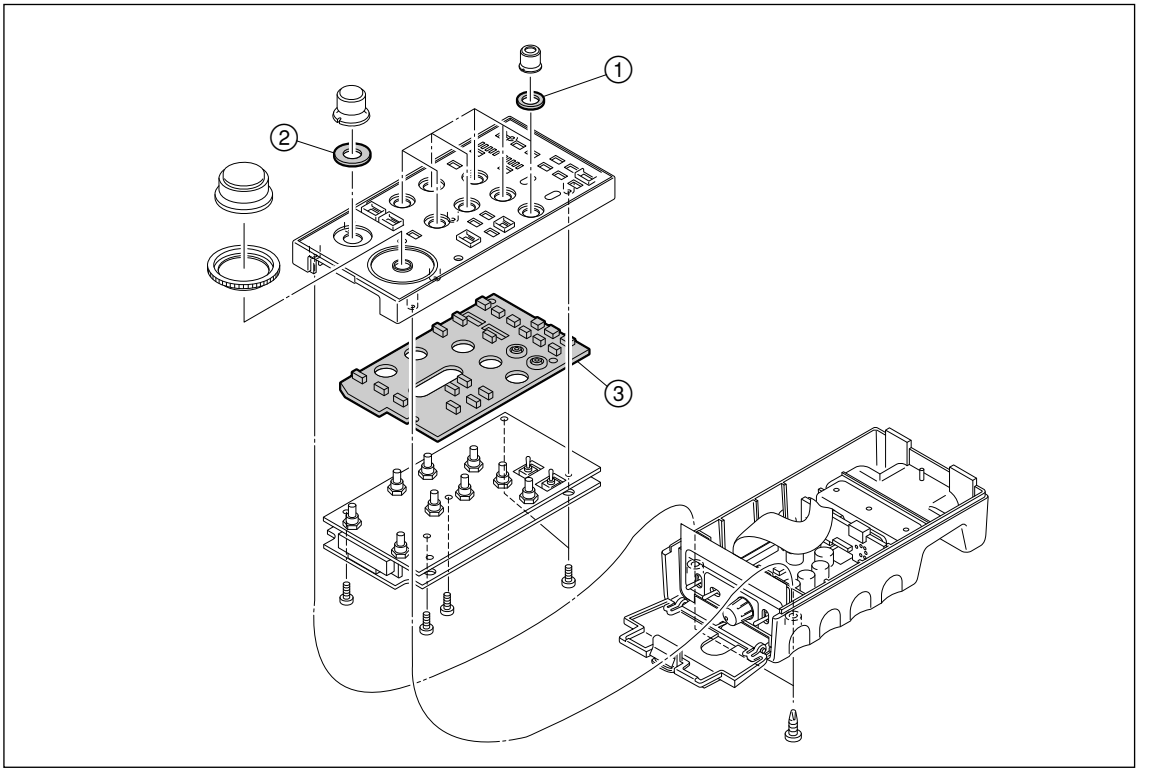


7. Attach the board bracket that were removed in step 5 to a new SW-963 board with the two screws.
8. Solder CN1 on SW-963 board.
   The following precautions should be taken before soldering:
   • Make sure that the SW-963 board is normal to theVA-168 board.
   • Make sure that the screw holes A and B for the VA-186 board and board bracket are aligned.
9. Install the VA-186 and CN-1651 boards in the reverse order of steps 1 to 4.

2-7. Recommended Replacement Parts

Parts listed below are recommended replacement parts. They are subject to cracks with the lapse of time. Check sometimes by visual, and replace as necessary.

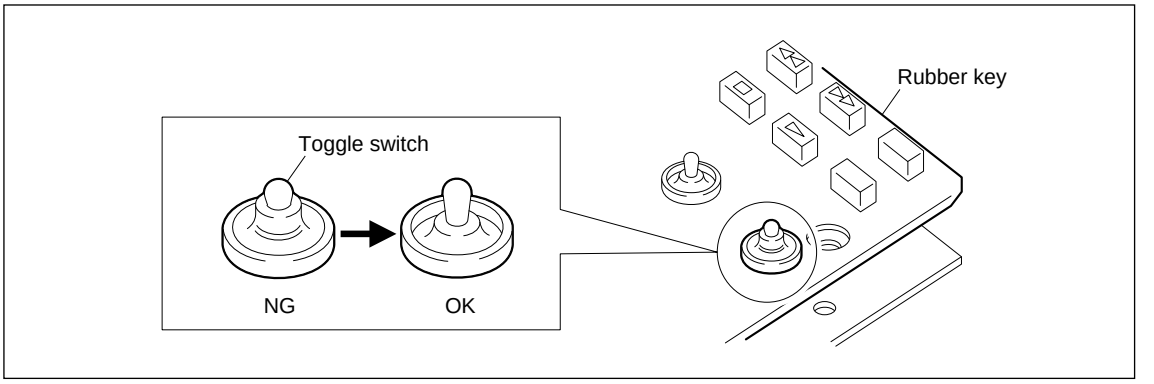
No.	Description	P/N
①	SHEET, RUBBER (1)	3-612-758-XX
②	SHEET, RUBBER (2)	3-612-757-XX
③	KEY, RUBBER	3-613-308-XX



2-8. Notes on Service

2-8-1. Note on Rubber Key

When installing a new rubber key onto the SW-962 board, ensure that every toggle switch protrudes its tip through the hole of the rubber key. Improper installation may impair dripproof capability of the unit..



2-8-2. Note on Flash Memory

IC4 on the CPU-266 board is a flash memory with a built-in ROM. The designation of the program is suffixed to the IC name of IC4. As the ROM version is changed, the designation of the suffix is also changed.
Require attention not to use the flash memory which is not programmed.

2-8-3. Notes on Repair Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with "o" at SP(Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Units Representation

The following represented units are changed or omitted in writing.

Units		Representation
Capacitance	μF	uF
Inductance	μH	uH
Resistance	Ω	Abbreviation

2-8-4. Optional Fixture

Description	P/N	Remarks
IC removing tool	J-6035-070-A	To remove IC4/CPU-266 board (PLCC type)

Section 3
Electrical Alignment

3-1. Preparation

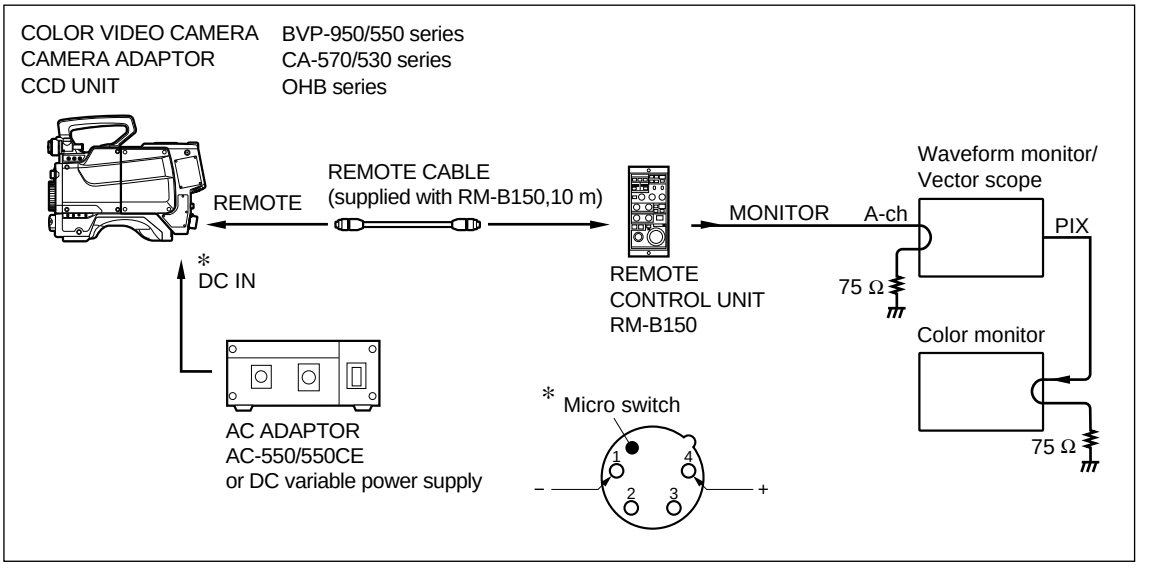
Measuring Equipment

- Waveform monitor/Vectorscope Tektronix 1780R (for NTSC)/1781R (for PAL) or equivalent
- Color monitor

Peripheral Equipment

- BVP-550/550P + CA-530/570 series + OHB-450/550 series, or
  BVP-950/950P + CA-530/550/570 series + OHB-730/750A series
- AC adaptor AC-550/550CE, or DC variable power supply

Connection



If using a DC variable power supply to drive power, connect the positive (+) side of the power supply to pin 4 of the DC IN connector on the camera adaptor, and negative (−) side to pin 1.

Note

When the power is supplied via the DC IN connector, be sure to press the micro switch on the DC IN connector, that turns on the power. It is recommended to use an XLR plug when driving power via the DC IN connector.

Initial settings

- ACTIVE button/Control panel: ON (lit)
- OUTPUT switch/Control panel: BARS
- DISPLAY switch/Menu panel: OFF
- CABLE COMP SELECT *1: 10 m

*1: To select the cable length, use the menu of this unit. For details, refer to the operation manual supplied with the unit.

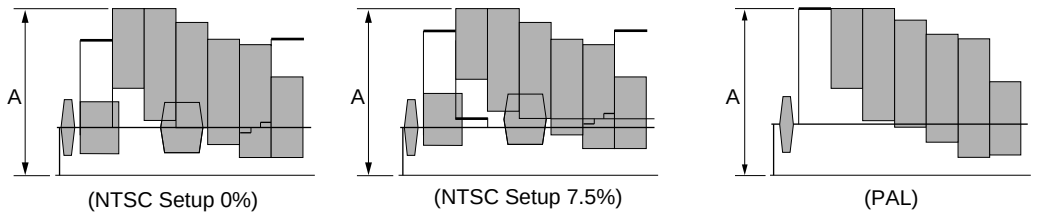
3-2. Adjusting the Video Level

Notes

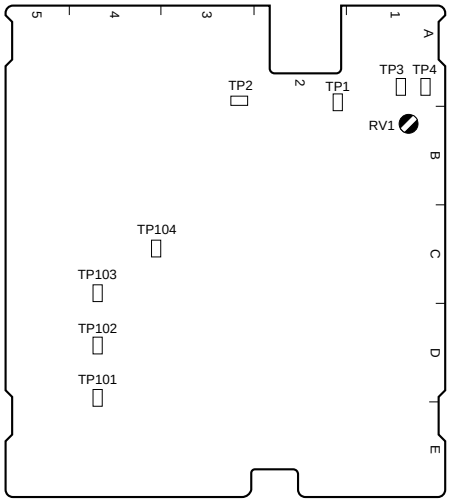
- All measuring equipment shall be calibrated.
- Also the alignment for the camera, camera adaptor and OHB shall be completed.
- About ten-minute warm-up time is allowed before beginning adjustment.
- The waveforms differ according to the specifications (TV standard and encoded level) of a camera connected to the unit during adjustment.
  In this manual, every waveform corresponding to the specifications is given.

Adjustment Procedure

Test Point: MONITOR connector
Adjustment Point: ◓RV1/VA-186 board
Specification: A = 1.00 ±0.05 Vp-p (terminated with 75 Ω)
(140 ± 7 IRE)



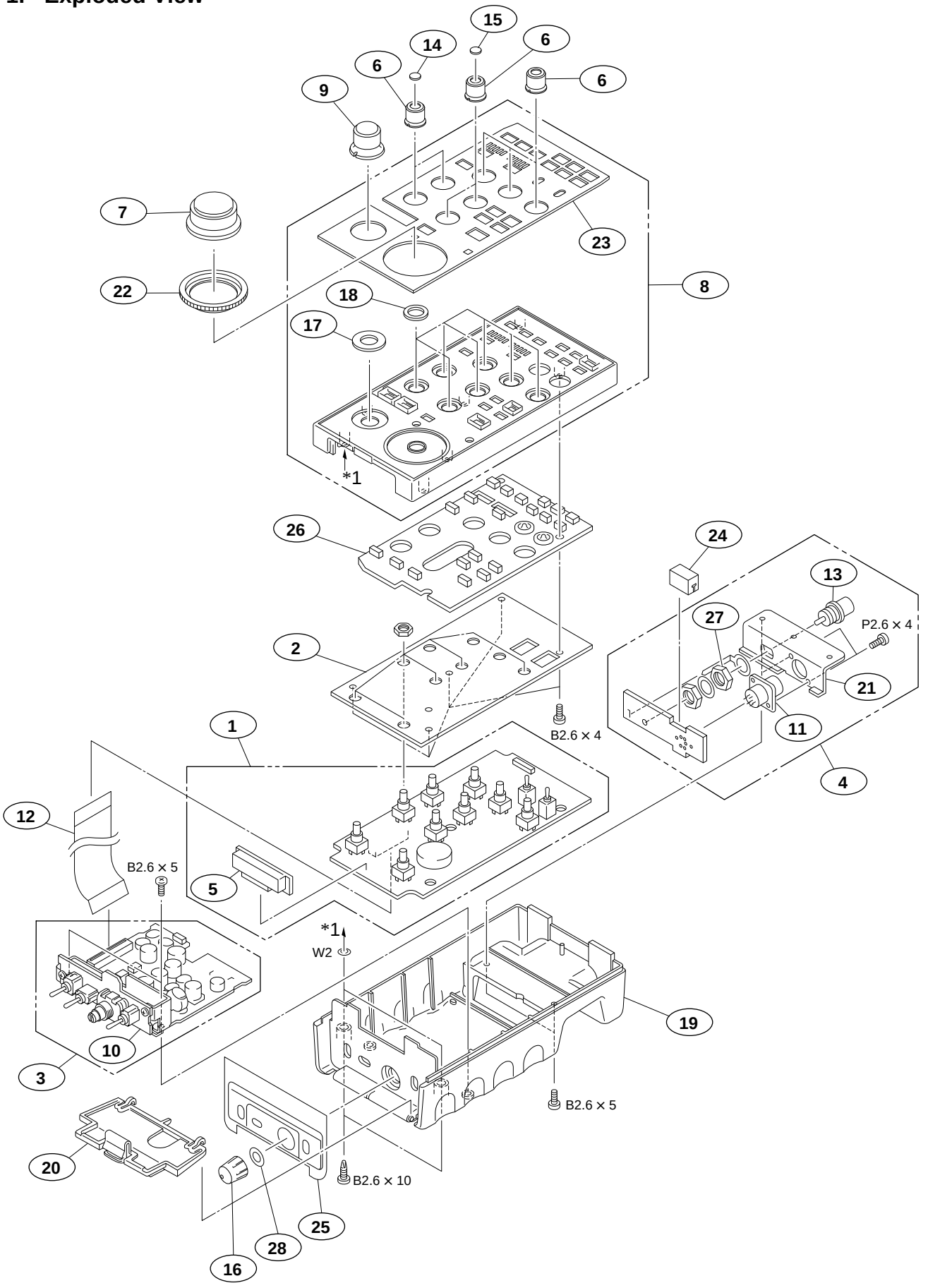
(NTSC Setup 0%) (NTSC Setup 7.5%) (PAL)



VA-186 BOARD (A SIDE)

Section 4
Spare Parts

4-1. Exploded View



No.	Part No.	SP	Description
1	A-8318-268-A	o	MOUNTED CIRCUIT BOARD, CPU-266
2	A-8318-269-A	o	MOUNTED CIRCUIT BOARD, SW-962
3	A-8318-270-A	o	MOUNTED CIRCUIT BOARD, VA-186
4	A-8318-273-A	o	MOUNTED CIRCUIT BOARD, CN-1651
5	A-8318-275-A	o	MOUNTED CIRCUIT BOARD, LED-317
6	X-2355-502-1	s	KNOB ASSY, CONTROL
7	X-2387-004-1	s	KNOB ASSY
8	X-3604-563-1	o	CONTROL PANEL ASSY
9	X-3651-342-0	s	KNOB ASSY, CONTROL
10	1-688-644-11	o	PRINTED CIRCUIT BOARD, SW-963
11	1-766-696-11	o	CONNECTOR, 8P FEMALE “REMOTE”
12	1-782-204-11	s	WIRE, FLAT TYPE (25 CORE)
13	1-784-201-11	s	CONNECTOR, COAXIAL(BNC) “MONITOR”
14	2-141-015-01	o	PLATE, COLOR
15	2-141-015-21	o	PLATE, COLOR
16	3-185-872-01	s	KNOB VOLUME DIA. 6
17	3-612-757-01	s	SHEET, RUBBER(2)
18	3-612-758-02	s	SHEET, RUBBER(1)
19	3-612-760-02	o	CHASSIS, BOTTOM
20	3-612-761-01	o	LID, MENU
21	3-612-762-02	o	PLATE, CN
22	3-612-764-02	s	RING, IRIS
23	3-612-794-01	o	SHEET, PANEL(1)
24	3-612-881-01	o	HOLDER, ROM
25	3-612-882-01	o	SHEET, PANEL(2)
26	3-613-308-01	s	KEY, RUBBER
27	3-682-691-00	s	NUT, HEXAGON
28	3-701-444-01	s	WASHER, 6
	7-621-770-87	s	SCREW +B 2.6X5(silver)
	7-621-773-86	s	SCREW +B 2.6X4
	7-621-775-10	s	SCREW +P 2.6X4
	7-621-775-20	s	SCREW +B 2.6X5(black)
	7-623-922-01	s	WASHER 2.0, NYLON
	7-685-535-19	s	SCREW +BTP 2.6X10 TYPE2 N-S

4-2. Electrical Parts List

CN-1651 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8318-273-A	o	MOUNTED CIRCUIT BOARD, CN-1651
1pc	3-612-762-01	o	PLATE,CN
CN1	1-766-696-11	o	CONNECTOR, 8P
CN2	1-784-201-11	s	CONNECTOR, COAXIAL (BNC TYPE)
JC1	1-216-295-11	s	CHIP, CONDUCTOR 0
JC2	1-216-295-11	s	CHIP, CONDUCTOR 0

CPU-266 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8318-268-A	o	MOUNTED CIRCUIT BOARD, CPU-266 (including LED-317 board)
BZ1	1-529-025-00	s	BUZZER
C1	1-104-823-11	s	TANTALUM, CHIP 47uF 20% 16V
C2	1-104-823-11	s	TANTALUM, CHIP 47uF 20% 16V
C3	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C4	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C5	1-164-156-11	s	CERAMIC 0.1uF 25V
C6	1-164-156-11	s	CERAMIC 0.1uF 25V
C7	1-164-156-11	s	CERAMIC 0.1uF 25V
C8	1-104-913-11	s	TANTALUM, CHIP 10uF 20% 16V
C9	1-107-686-11	s	CHIP, TANTALUM 4.7uF 20% 16V
C11	1-164-156-11	s	CERAMIC 0.1uF 25V
C12	1-164-156-11	s	CERAMIC 0.1uF 25V
C13	1-164-156-11	s	CERAMIC 0.1uF 25V
C14	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C15	1-164-156-11	s	CERAMIC 0.1uF 25V
C16	1-104-823-11	s	TANTALUM, CHIP 47uF 20% 16V
C17	1-164-156-11	s	CERAMIC 0.1uF 25V
C18	1-164-156-11	s	CERAMIC 0.1uF 25V
C19	1-164-156-11	s	CERAMIC 0.1uF 25V
C20	1-164-156-11	s	CERAMIC 0.1uF 25V
C21	1-164-156-11	s	CERAMIC 0.1uF 25V
C22	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C23	1-164-156-11	s	CERAMIC 0.1uF 25V
C24	1-164-156-11	s	CERAMIC 0.1uF 25V
C25	1-164-156-11	s	CERAMIC 0.1uF 25V
C26	1-164-156-11	s	CERAMIC 0.1uF 25V
C27	1-115-156-11	s	CERAMIC 1uF 25V
C28	1-115-156-11	s	CERAMIC 1uF 25V
C31	1-115-581-11	s	TANTALUM,CHIP 100uF 20% 16
C32	1-164-156-11	s	CERAMIC 0.1uF 25V
C33	1-164-156-11	s	CERAMIC 0.1uF 25V
C34	1-164-156-11	s	CERAMIC 0.1uF 25V
C35	1-164-156-11	s	CERAMIC 0.1uF 25V
C36	1-164-156-11	s	CERAMIC 0.1uF 25V
C37	1-104-823-11	s	TANTALUM, CHIP 47uF 20% 16V
C38	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C39	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C40	1-164-156-11	s	CERAMIC 0.1uF 25V
C41	1-164-156-11	s	CERAMIC 0.1uF 25V
C42	1-115-156-11	s	CERAMIC 1uF 25V
C43	1-115-156-11	s	CERAMIC 1uF 25V
C44	1-115-156-11	s	CERAMIC 1uF 25V
C45	1-115-156-11	s	CERAMIC 1uF 25V
C46	1-115-156-11	s	CERAMIC 1uF 25V
C47	1-115-156-11	s	CERAMIC 1uF 25V
C48	1-115-156-11	s	CERAMIC 1uF 25V
C49	1-113-991-11	s	TANTALUM,CHIP 33uF 20% 16V
C50	1-113-991-11	s	TANTALUM,CHIP 33uF 20% 16V
C51	1-115-156-11	s	CERAMIC 1uF 25V
C52	1-115-156-11	s	CERAMIC 1uF 25V
C53	1-115-156-11	s	CERAMIC 1uF 25V
C54	1-115-156-11	s	CERAMIC 1uF 25V
C55	1-164-156-11	s	CERAMIC 0.1uF 25V
C56	1-164-156-11	s	CERAMIC 0.1uF 25V
C57	1-164-156-11	s	CERAMIC 0.1uF 25V
C58	1-164-156-11	s	CERAMIC 0.1uF 25V
C59	1-164-156-11	s	CERAMIC 0.1uF 25V
C60	1-164-156-11	s	CERAMIC 0.1uF 25V

(CPU-266 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C61	1-164-156-11	s	CERAMIC 0.1uF 25V
C62	1-164-156-11	s	CERAMIC 0.1uF 25V
C64	1-164-156-11	s	CERAMIC 0.1uF 25V
C65	1-164-156-11	s	CERAMIC 0.1uF 25V
C66	1-164-156-11	s	CERAMIC 0.1uF 25V
C68	1-164-156-11	s	CERAMIC 0.1uF 25V
C69	1-164-156-11	s	CERAMIC 0.1uF 25V
C70	1-164-156-11	s	CERAMIC 0.1uF 25V
CN1	1-766-705-31	o	CONNECTOR, FPC/FFC 25P
CN2	1-695-953-21	s	CONNECTOR, BOARD TO BOARD 30P
D1	8-719-820-41	s	DIODE 1SS302
D2	8-719-820-41	s	DIODE 1SS302
D3	8-719-820-41	s	DIODE 1SS302
D4	8-719-024-81	s	DIODE 1SS300-TE85L
D5	8-719-024-81	s	DIODE 1SS300-TE85L
D6	8-719-024-81	s	DIODE 1SS300-TE85L
D7	8-719-024-81	s	DIODE 1SS300-TE85L
D8	8-719-404-35	s	DIODE MA141WK
D9	8-719-404-35	s	DIODE MA141WK
D10	8-719-404-35	s	DIODE MA141WK
D11	8-719-404-35	s	DIODE MA141WK
D12	8-719-404-35	s	DIODE MA141WK
D13	8-719-404-35	s	DIODE MA141WK
IC1	8-759-973-71	s	IC TL7705CPS-B
IC2	8-759-388-16	o	IC HD6435328RE49F
IC3	8-759-285-08	s	IC CXD8344AQ
IC4	8-759-638-35	o	29F040-RMB150-V1.01
IC5	8-759-434-10	s	IC KM681000BLT-7L
IC6	8-759-092-81	s	IC SN75158PS
IC7	8-759-082-55	s	IC TC7W00FU
IC8	8-759-049-70	s	IC SN74HC138APW
IC10	8-759-277-63	s	IC TC7W14FU(TE12R)
IC11	8-759-277-99	s	IC CXD8889R
IC12	8-759-055-21	s	IC HN58C66FP-25
IC13	8-759-285-07	s	IC S-24S45IF10
IC14	8-759-049-58	s	IC SN74HC04APW-E05
IC15	8-759-149-10	s	IC UPD4702G
IC16	8-759-049-70	s	IC SN74HC138APW
IC17	8-759-050-10	s	IC SN74HC163APW-E05
IC18	8-759-388-15	o	IC HD6435328RE48F
IC19	8-759-523-02	s	IC TC74HC4053AFT(EL)
IC20	8-759-076-06	s	IC TL064CPW
IC21	8-759-076-06	s	IC TL064CPW
IC22	8-759-096-87	s	IC TC7WU04FU(TE12R)
IC24	8-759-524-23	s	IC TC74VHC238FT(EL)
IC25	8-759-049-60	s	IC SN74HC08APW-E05
IC26	8-759-082-58	s	IC TC7W08FU
IC28	8-759-173-16	s	IC TL062CPW
IS4	1-251-350-11	o	SOCKET, IC (PLCC) 32P
L1	1-412-030-11	s	INDUCTOR CHIP 22uH
L2	1-410-393-11	s	INDUCTOR CHIP 100uH
L3	1-412-032-11	s	INDUCTOR CHIP 100uH
L4	1-411-227-21	s	COIL, CHOKE 100UH
L5	1-410-385-11	s	INDUCTOR, CHIP 22uH
PH1	8-749-014-35	s	IC HCPL-0630-500
Q1	8-729-117-32	s	TRANSISTOR 2SC4177
Q2	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6

(CPU-266 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R1	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R2	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R3	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R4	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R5	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R6	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R7	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R8	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R9	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R10	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R11	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R12	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R13	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R14	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R15	1-218-671-11	s	METAL, CHIP 130 0.50% 1/16W
R16	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R17	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R18	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R19	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R20	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R21	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R22	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R23	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R24	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R25	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R26	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R27	1-218-723-11	s	METAL 20K 0.50% 1/16W
R28	1-218-723-11	s	METAL 20K 0.50% 1/16W
R29	1-218-723-11	s	METAL 20K 0.50% 1/16W
R30	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R31	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R32	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R34	1-218-716-11	s	METAL 10K 0.50% 1/16W
R35	1-218-716-11	s	METAL 10K 0.50% 1/16W
R36	1-218-723-11	s	METAL 20K 0.50% 1/16W
R41	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R42	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R43	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R44	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R45	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
RB1	1-239-308-11	s	RESISTOR BLOCK, CHIP 47KX8
RB2	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB3	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB4	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB5	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB6	1-239-308-11	s	RESISTOR BLOCK, CHIP 47KX8
RB7	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB10	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB11	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB12	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB13	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB14	1-236-908-11	s	RESISTOR, NETWORK, CHIP 10k
RB15	1-236-908-11	s	RESISTOR, NETWORK, CHIP 10k
RB16	1-236-908-11	s	RESISTOR, NETWORK, CHIP 10k
RB17	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB18	1-239-309-11	s	RESISTOR BLOCK, CHIP 100KX8
RB19	1-239-308-11	s	RESISTOR BLOCK, CHIP 47KX8
RV1	1-241-874-11	s	RES, VAR, CARBON 10K

(CPU-266 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
RV2	1-241-874-11	s	RES, VAR, CARBON 10K
RV3	1-223-547-11	s	RES, VAR, CARBON 10K
RV4	1-223-547-11	s	RES, VAR, CARBON 10K
RV5	1-223-547-11	s	RES, VAR, CARBON 10K
RV6	1-223-547-11	s	RES, VAR, CARBON 10K
RV7	1-223-547-11	s	RES, VAR, CARBON 10K
RV8	1-223-547-11	s	RES, VAR, CARBON 10K
RV9	1-223-547-11	s	RES, VAR, CARBON 10K
S1	1-692-271-31	s	SWITCH, SLIDE
S2	1-771-316-11	s	SWITCH, TOGGLE
S3	1-771-316-11	s	SWITCH, TOGGLE
X2	1-760-435-11	s	CRYSTAL 18.00MHz

LED-317 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8318-275-A	o	MOUNTED CIRCUIT BOARD, LED-317
CN1	1-566-095-11	s	PIN, BOARD TO BOARD 10P
D1	8-719-061-17	s	DIODE HCMS-291

SW-962 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8318-269-A	o	MOUNTED CIRCUIT BOARD, SW-962
C1	1-164-156-11	s	CERAMIC 0.1uF 25V
C2	1-164-156-11	s	CERAMIC 0.1uF 25V
C3	1-164-156-11	s	CERAMIC 0.1uF 25V
C4	1-164-156-11	s	CERAMIC 0.1uF 25V
C5	1-164-156-11	s	CERAMIC 0.1uF 25V
C6	1-164-156-11	s	CERAMIC 0.1uF 25V
C7	1-164-156-11	s	CERAMIC 0.1uF 25V
C8	1-164-156-11	s	CERAMIC 0.1uF 25V
C9	1-104-823-11	s	TANTALUM, CHIP 47uF 20% 16V
C10	1-115-581-11	s	TANTALUM,CHIP 100uF 20% 16
C11	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C12	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C13	1-104-913-11	s	TANTALUM, CHIP 10uF 20% 16V
C14	1-104-913-11	s	TANTALUM, CHIP 10uF 20% 16V
C15	1-104-913-11	s	TANTALUM, CHIP 10uF 20% 16V
C16	1-104-913-11	s	TANTALUM, CHIP 10uF 20% 16V
C17	1-104-913-11	s	TANTALUM, CHIP 10uF 20% 16V
CN1	1-695-936-51	s	CONNECTOR, BOARD TO BOARD 30P
D1	8-719-060-92	s	DIODE SML-311YTT86
D2	8-719-060-92	s	DIODE SML-311YTT86
D3	8-719-053-07	s	DIODE SML-310MTT86
D4	8-719-053-07	s	DIODE SML-310MTT86
D5	8-719-061-53	s	DIODE SML-010YT-T86
D6	8-719-061-53	s	DIODE SML-010YT-T86
D7	8-719-061-53	s	DIODE SML-010YT-T86
D8	8-719-061-53	s	DIODE SML-010YT-T86
D9	8-719-061-53	s	DIODE SML-010YT-T86
D10	8-719-061-53	s	DIODE SML-010YT-T86
D11	8-719-061-53	s	DIODE SML-010YT-T86
D12	8-719-061-53	s	DIODE SML-010YT-T86
D13	8-719-061-53	s	DIODE SML-010YT-T86
D14	8-719-061-53	s	DIODE SML-010YT-T86
D15	8-719-060-94	s	DIODE SML-311UTT86
D16	8-719-060-94	s	DIODE SML-311UTT86
D17	8-719-060-94	s	DIODE SML-311UTT86
D18	8-719-060-94	s	DIODE SML-311UTT86
D19	8-719-060-94	s	DIODE SML-311UTT86
D20	8-719-060-94	s	DIODE SML-311UTT86
D21	8-719-024-81	s	DIODE 1SS300-TE85L
D22	8-719-024-81	s	DIODE 1SS300-TE85L
D23	8-719-024-81	s	DIODE 1SS300-TE85L
D24	8-719-024-81	s	DIODE 1SS300-TE85L
D25	8-719-024-81	s	DIODE 1SS300-TE85L
D26	8-719-024-81	s	DIODE 1SS300-TE85L
D27	8-719-024-81	s	DIODE 1SS300-TE85L
D28	8-719-024-81	s	DIODE 1SS300-TE85L
D29	8-719-024-81	s	DIODE 1SS300-TE85L
D30	8-719-024-81	s	DIODE 1SS300-TE85L
IC1	8-759-049-83	s	IC SN74HC573BPW-E20
IC2	8-759-049-83	s	IC SN74HC573BPW-E20
IC3	8-759-049-83	s	IC SN74HC573BPW-E20
IC4	8-759-049-83	s	IC SN74HC573BPW-E20
IC5	8-759-049-83	s	IC SN74HC573BPW-E20
IC6	8-759-524-23	s	IC TC74VHC238FT(EL)
IC7	8-759-082-57	s	IC TC7W04FU
IC8	8-759-524-23	s	IC TC74VHC238FT(EL)
L1	1-410-393-11	s	INDUCTOR CHIP 100uH

(SW-962 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
L2	1-411-227-21	s	COIL, CHOKE 100UH
Q1	8-729-924-39	s	TRANSISTOR DTC143XU
Q2	8-729-924-39	s	TRANSISTOR DTC143XU
Q3	8-729-924-39	s	TRANSISTOR DTC143XU
Q4	8-729-924-39	s	TRANSISTOR DTC143XU
Q5	8-729-924-39	s	TRANSISTOR DTC143XU
Q6	8-729-924-39	s	TRANSISTOR DTC143XU
Q7	8-729-924-39	s	TRANSISTOR DTC143XU
Q8	8-729-924-39	s	TRANSISTOR DTC143XU
Q9	8-729-924-39	s	TRANSISTOR DTC143XU
Q10	8-729-924-39	s	TRANSISTOR DTC143XU
Q11	8-729-924-39	s	TRANSISTOR DTC143XU
Q12	8-729-924-39	s	TRANSISTOR DTC143XU
Q13	8-729-924-39	s	TRANSISTOR DTC143XU
Q14	8-729-924-39	s	TRANSISTOR DTC143XU
Q15	8-729-924-39	s	TRANSISTOR DTC143XU
Q16	8-729-924-39	s	TRANSISTOR DTC143XU
Q17	8-729-924-39	s	TRANSISTOR DTC143XU
Q18	8-729-924-39	s	TRANSISTOR DTC143XU
Q19	8-729-924-39	s	TRANSISTOR DTC143XU
Q20	8-729-924-39	s	TRANSISTOR DTC143XU
Q21	8-729-924-39	s	TRANSISTOR DTC143XU
Q22	8-729-924-39	s	TRANSISTOR DTC143XU
Q23	8-729-924-39	s	TRANSISTOR DTC143XU
Q24	8-729-924-39	s	TRANSISTOR DTC143XU
Q25	8-729-924-39	s	TRANSISTOR DTC143XU
Q26	8-729-924-39	s	TRANSISTOR DTC143XU
Q27	8-729-924-39	s	TRANSISTOR DTC143XU
Q28	8-729-924-39	s	TRANSISTOR DTC143XU
Q29	8-729-924-39	s	TRANSISTOR DTC143XU
Q30	8-729-924-39	s	TRANSISTOR DTC143XU
Q31	8-729-924-39	s	TRANSISTOR DTC143XU
Q32	8-729-924-39	s	TRANSISTOR DTC143XU
Q33	8-729-924-39	s	TRANSISTOR DTC143XU
Q34	8-729-924-39	s	TRANSISTOR DTC143XU
Q35	8-729-924-39	s	TRANSISTOR DTC143XU
R1	1-218-672-11	s	METAL 150 0.50% 1/16W
R2	1-218-672-11	s	METAL 150 0.50% 1/16W
R3	1-218-672-11	s	METAL 150 0.50% 1/16W
R4	1-218-672-11	s	METAL 150 0.50% 1/16W
R5	1-218-672-11	s	METAL 150 0.50% 1/16W
R6	1-218-672-11	s	METAL 150 0.50% 1/16W
R7	1-218-672-11	s	METAL 150 0.50% 1/16W
R8	1-218-672-11	s	METAL 150 0.50% 1/16W
R9	1-218-672-11	s	METAL 150 0.50% 1/16W
R10	1-218-672-11	s	METAL 150 0.50% 1/16W
R11	1-218-672-11	s	METAL 150 0.50% 1/16W
R12	1-218-672-11	s	METAL 150 0.50% 1/16W
R13	1-218-672-11	s	METAL 150 0.50% 1/16W
R14	1-218-672-11	s	METAL 150 0.50% 1/16W
R15	1-218-672-11	s	METAL 150 0.50% 1/16W
R16	1-218-672-11	s	METAL 150 0.50% 1/16W
R17	1-218-672-11	s	METAL 150 0.50% 1/16W
R18	1-218-672-11	s	METAL 150 0.50% 1/16W
R19	1-218-672-11	s	METAL 150 0.50% 1/16W
R20	1-218-672-11	s	METAL 150 0.50% 1/16W
R21	1-218-676-11	s	METAL 220 0.50% 1/16W
R22	1-218-668-11	s	METAL 100 0.50% 1/16W

(SW-962 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R23	1-218-676-11	s	METAL 220 0.50% 1/16W
R24	1-218-676-11	s	METAL 220 0.50% 1/16W
R25	1-218-676-11	s	METAL 220 0.50% 1/16W
R26	1-218-676-11	s	METAL 220 0.50% 1/16W
R27	1-218-676-11	s	METAL 220 0.50% 1/16W
R28	1-218-676-11	s	METAL 220 0.50% 1/16W
R29	1-218-676-11	s	METAL 220 0.50% 1/16W
R30	1-218-676-11	s	METAL 220 0.50% 1/16W
R31	1-218-676-11	s	METAL 220 0.50% 1/16W
R32	1-218-676-11	s	METAL 220 0.50% 1/16W
R33	1-218-676-11	s	METAL 220 0.50% 1/16W
R34	1-218-676-11	s	METAL 220 0.50% 1/16W
R35	1-218-676-11	s	METAL 220 0.50% 1/16W
S1	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S2	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S3	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S4	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S5	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S6	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S7	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S8	1-771-330-21	s	SWITCH, TACTILE (ILLUMINATED)
S9	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S10	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S11	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S12	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S13	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S14	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S15	1-771-330-21	s	SWITCH, TACTILE (ILLUMINATED)
S16	1-771-330-21	s	SWITCH, TACTILE (ILLUMINATED)
S17	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)
S18	1-771-329-21	s	SWITCH, TACTILE (ILLUMINATED)
S19	1-771-329-21	s	SWITCH, TACTILE (ILLUMINATED)
S20	1-771-113-11	s	SWITCH, TACTILE (ILLUMINATED)

SW-963 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	1-668-644-11	o	PRINTED CIRCUIT BOARD, SW-963
RV1	1-467-914-11	s	ENCODER, ROTARY
S1	1-762-123-11	s	SWITCH, TOGGLE
S2	1-762-531-11	s	SWITCH, TOGGLE
S3	1-771-317-11	s	SWITCH, TOGGLE

VA-186 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8318-270-A	o	MOUNTED CIRCUIT BOARD, VA-186 (including SW-963 board)
2pcs	7-621-770-87	s	SCREW +B 2.6X5
C1	1-107-420-11	s	ELECT 47uF 20% 35V
C2	1-115-670-11	s	CAP, CHIP ELECT 220uF 20% 35V
C3	1-107-689-21	s	TANTAL 1uF 20% 35V
C4	1-163-275-11	s	CERAMIC 0.001uF 5% 50V
C5	1-163-275-11	s	CERAMIC 0.001uF 5% 50V
C6	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C8	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C9	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C11	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C12	1-164-695-11	s	CERAMIC 0.0022uF 5% 50V
C13	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C14	1-107-778-11	s	CAP, ELECT 470uF 20% 16V
C15	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C16	1-107-778-11	s	CAP, ELECT 470uF 20% 16V
C17	1-107-778-11	s	CAP, ELECT 470uF 20% 16V
C18	1-107-778-11	s	CAP, ELECT 470uF 20% 16V
C19	1-135-179-21	s	TANTAL 2.2uF 10% 16V
C20	1-135-179-21	s	TANTAL 2.2uF 10% 16V
C21	1-135-179-21	s	TANTAL 2.2uF 10% 16V
C22	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C23	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C24	1-135-179-21	s	TANTAL 2.2uF 10% 16V
C25	1-135-179-21	s	TANTAL 2.2uF 10% 16V
C26	1-135-179-21	s	TANTAL 2.2uF 10% 16V
C27	1-135-179-21	s	TANTAL 2.2uF 10% 16V
C28	1-135-179-21	s	TANTAL 2.2uF 10% 16V
C29	1-135-179-21	s	TANTAL 2.2uF 10% 16V
C30	1-104-823-11	s	TANTALUM, CHIP 47uF 20% 16V
C31	1-104-823-11	s	TANTALUM, CHIP 47uF 20% 16V
C32	1-104-823-11	s	TANTALUM, CHIP 47uF 20% 16V
C33	1-128-394-11	s	ELECT 220uF 20% 10V
C34	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C35	1-163-017-00	s	CERAMIC 0.0047uF 10% 50V
C36	1-104-752-11	s	TANTALUM, CHIP 33uF 20% 6.3V
C37	1-163-085-00	s	CERAMIC, CHIP 2PF 50V
C38	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C39	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C40	1-163-087-00	s	CERAMIC 4PF 0.25PF 50V
C42	1-163-087-00	s	CERAMIC 4PF 0.25PF 50V
C43	1-163-092-00	s	CERAMIC 9PF 0.25PF 50V
C45	1-163-096-00	s	CERAMIC, CHIP 13PF 5% 50V
C46	1-163-220-11	s	CERAMIC 3PF 0.25PF 50V
C47	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C48	1-163-085-00	s	CERAMIC, CHIP 2PF 50V
C49	1-107-689-21	s	TANTAL 1uF 20% 35V
C50	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C51	1-163-085-00	s	CERAMIC, CHIP 2PF 50V
C52	1-110-530-11	s	CAP, ELECT 1000uF 20% 6.3
C54	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C55	1-104-914-11	s	TANTAL 22uF 20% 16V
CN1	1-573-308-31	o	CONNECTOR, BOARD TO BOARD 16P
CN2	1-766-705-31	o	CONNECTOR, FPC/FFC 25P
CN3	1-566-095-11	s	PIN, BOARD TO BOARD 10P
D1	8-719-023-53	s	DIODE EA30QS04-F
D2	8-719-159-85	s	DIODE RD2.0MB
D3	8-719-159-85	s	DIODE RD2.0MB
D4	8-719-159-85	s	DIODE RD2.0MB

(VA-186 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
D5	8-719-820-41	s	DIODE 1SS302
D6	8-719-820-41	s	DIODE 1SS302
D7	8-719-820-41	s	DIODE 1SS302
D8	8-719-948-48	s	DIODE HSM88AS-TL
D9	8-719-105-91	s	DIODE RD5.6M-B2
IC1	8-759-937-36	s	IC TL1451ACNS
IC2	8-759-173-16	s	IC TL062CPW
IC3	8-759-173-16	s	IC TL062CPW
IC4	8-759-184-64	s	IC TC4W66FU
L1	1-411-227-21	s	COIL, CHOKE 100UH
L2	1-411-227-21	s	COIL, CHOKE 100UH
L3	1-411-227-21	s	COIL, CHOKE 100UH
L5	1-410-948-11	s	INDUCTOR 100uH
L6	1-411-227-21	s	COIL, CHOKE 100UH
L7	1-411-227-21	s	COIL, CHOKE 100UH
L8	1-411-227-21	s	COIL, CHOKE 100UH
L9	1-410-385-11	s	INDUCTOR, CHIP 22uH
Q1	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q2	8-729-101-07	s	TRANSISTOR 2SB798
Q3	8-729-101-07	s	TRANSISTOR 2SB798
Q4	8-729-101-07	s	TRANSISTOR 2SB798
Q5	8-729-101-07	s	TRANSISTOR 2SB798
Q6	8-729-102-07	s	TRANSISTOR 2SC2223-F13
Q7	8-729-102-07	s	TRANSISTOR 2SC2223-F13
Q8	8-729-122-63	s	TRANSISTOR 2SA1226
Q9	8-729-102-07	s	TRANSISTOR 2SC2223-F13
Q10	8-729-102-07	s	TRANSISTOR 2SC2223-F13
Q11	8-729-102-07	s	TRANSISTOR 2SC2223-F13
Q12	8-729-122-63	s	TRANSISTOR 2SA1226
Q13	8-729-122-63	s	TRANSISTOR 2SA1226
Q14	8-729-102-07	s	TRANSISTOR 2SC2223-F13
Q15	8-729-102-07	s	TRANSISTOR 2SC2223-F13
Q16	8-729-122-63	s	TRANSISTOR 2SA1226
Q17	8-729-200-87	s	TRANSISTOR 2SC2714-Y
Q18	8-729-200-87	s	TRANSISTOR 2SC2714-Y
R1	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R2	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R3	1-216-073-00	s	METAL, CHIP 10K 5% 1/10W
R4	1-216-073-00	s	METAL, CHIP 10K 5% 1/10W
R5	1-216-089-91	s	METAL 47K 5% 1/10W
R6	1-216-089-91	s	METAL 47K 5% 1/10W
R7	1-216-097-00	s	METAL, CHIP 100K 5% 1/10W
R8	1-216-065-00	s	METAL, CHIP 4.7K 5% 1/10W
R9	1-216-097-00	s	METAL, CHIP 100K 5% 1/10W
R10	1-216-097-00	s	METAL, CHIP 100K 5% 1/10W
R11	1-216-097-00	s	METAL, CHIP 100K 5% 1/10W
R12	1-216-085-00	s	METAL, CHIP 33K 5% 1/10W
R13	1-216-033-00	s	METAL, CHIP 220 5% 1/10W
R14	1-218-632-11	s	METAL, CHIP 330 5% 1W
R15	1-216-695-11	s	METAL, CHIP 68K 0.50% 1/10W
R16	1-216-682-11	s	METAL, CHIP 20K 0.5% 1/10W
R17	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W
R18	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W
R19	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W
R20	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W
R21	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W
R22	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W
R23	1-216-049-91	s	METAL 1K 5% 1/10W
R24	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W

(VA-186 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R25	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W
R26	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W
R27	1-216-683-11	s	METAL, CHIP 22K 0.50% 1/10W
R28	1-216-624-11	s	METAL, CHIP 75 0.50% 1/10W
R29	1-216-651-11	s	METAL, CHIP 1K 0.50% 1/10W
R30	1-216-049-91	s	METAL, CHIP 1K 5% 1/10W
R31	1-216-661-11	s	METAL, CHIP 5.1K 0.5% 1/10W
R32	1-216-073-00	s	METAL, CHIP 10K 5% 1/10W
R33	1-216-648-11	s	METAL, CHIP 750 0.50% 1/10W
R34	1-216-691-11	s	METAL, CHIP 47K 0.50% 1/10W
R35	1-216-691-11	s	METAL, CHIP 47K 0.50% 1/10W
R36	1-216-648-11	s	METAL, CHIP 750 0.50% 1/10W
R37	1-216-295-11	s	CHIP, CONDUCTOR 0
R38	1-208-784-11	s	METAL, CHIP 1.2K 0.50% 1/10W
R39	1-216-055-00	s	METAL, CHIP 1.8K 5% 1/10W
R40	1-216-047-91	s	RES, CHIP 820 5% 1/10W
R41	1-216-097-00	s	METAL, CHIP 100K 5% 1/10W
R42	1-216-097-00	s	METAL, CHIP 100K 5% 1/10W
R43	1-216-682-11	s	METAL, CHIP 20K 0.5% 1/10W
R44	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R46	1-216-674-11	s	METAL, CHIP 9.1K 0.5% 1/10W
R47	1-216-671-11	s	METAL, CHIP 6.8K 0.50% 1/10W
R49	1-216-679-11	s	METAL, CHIP 15K 0.5% 1/10W
R50	1-216-659-11	s	METAL, CHIP 2.2K 0.5% 1/10W
R51	1-216-295-11	s	CHIP, CONDUCTOR 0
R52	1-216-295-11	s	CHIP, CONDUCTOR 0
R53	1-216-061-00	s	METAL, CHIP 3.3K 5% 1/10W
R54	1-216-057-00	s	METAL, CHIP 2.2K 5% 1/10W
R55	1-216-653-11	s	METAL, CHIP 1.2K 0.50% 1/10W
R56	1-216-635-11	s	METAL, CHIP 220 0.50% 1/10W
R57	1-216-049-91	s	METAL 1K 5% 1/10W
R58	1-216-308-00	s	METAL, CHIP 4.7 5% 1/10W
R59	1-216-308-00	s	METAL, CHIP 4.7 5% 1/10W
R60	1-216-667-11	s	METAL, CHIP 4.7K 0.50% 1/10W
R62	1-216-097-00	s	METAL, CHIP 100K 5% 1/10W
R63	1-216-624-11	s	METAL, CHIP 75 0.50% 1/10W
R64	1-218-632-11	s	METAL, CHIP 330 5% 1W
R65	1-216-061-00	s	METAL, CHIP 3.3K 5% 1/10W
R66	1-216-049-91	s	METAL 1K 5% 1/10W
R67	1-216-085-00	s	METAL, CHIP 33K 5% 1/10W
RV1	1-237-032-11	s	RES, ADJ METAL 500

FRAME

Ref. No. or Q'ty	Part No.	SP	Description
1pc	1-782-204-11	s	FLEXIBLE CARD WIRE, 25P

4-3. Supplied Accessory

Ref. No. or Q'ty	Part No.	SP	Description
1pc	1-783-372-11	s	CORD, CONNECTION

4-4. Optional Fixture

Part No.	SP	Description
J-6035-070-A	o	EXTRACTION TOOL, IC (CT-2101)

4-5. Changed Part

NOTE: The numbers identified by marking with) are matching with each serial numbers.
See the table matched with each serial numbers.

805N) Serial No. 15211-(SY)
902) Serial No. 15291-(SY)

VA-186 BOARD

805N)	D8	8-719-991-33 s DIODE 1SS133T-77	--->	8-719-948-48 s DIODE HSM88AS-TL
902)	D9	NOT IN USE.	--->	8-719-105-91 s DIODE RD5.6M-B2
902)	Q17	NOT IN USE.	--->	8-729-200-87 s TRANSISTOR 2SC2714-Y
902)	Q18	NOT IN USE.	--->	8-729-200-87 s TRANSISTOR 2SC2714-Y
902)	R65	NOT IN USE.	--->	1-216-061-00 s METAL, CHIP 3.3K 5% 1/10W
902)	R66	NOT IN USE.	--->	1-216-049-91 s METAL 1K 5% 1/10W
902)	R67	NOT IN USE.	--->	1-216-085-00 s METAL, CHIP 33K 5% 1/10W

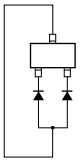
Section 5
Semiconductor Pin Assignments

ここに記載されている半導体は，それぞれの機能を等価的に表したものです。　なお，互換性のない型名を併記していることがありますので，部品を交換するときは，Spare Partsの章を参照してください。
等価回路はICメーカーのデータブックに従いました。

Semiconductors of which functions are equivalent are described here. For parts replacement, refer to the section of Spare Parts in this manual. The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

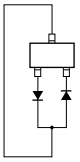
DIODE

—TOP VIEW—



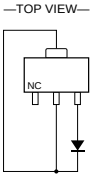
1SS300-TE85L

—TOP VIEW—



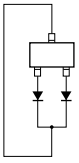
1SS302
1SS302-TE85L

—TOP VIEW—



EA30QS04-F

—TOP VIEW—

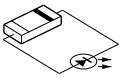


1SS301-TE85L
MA141WK

—TOP VIEW—

RD2.0M-T1B
RD2.0MB

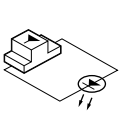
LED



SML-010YT-T86
; YELLOW

—TOP VIEW—

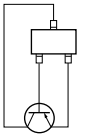
SML-310MTT86



SML-311UTT86
; RED
SML-311YTT86
; YELLOW

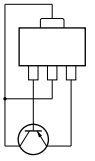
TRANSISTOR

—TOP VIEW—



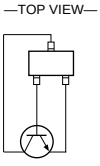
2SA1226-E4
2SA1226-T1E3E4
2SA1611-M5M6
2SA1611T1-M5M6

—TOP VIEW—



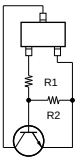
2SB798-DL
2SA1213Y-TE12L

—TOP VIEW—



2SC2223-F13
2SC2223-T1F13F14
2SC4177-L6
2SC4177-T1L5L6

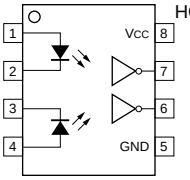
—TOP VIEW—



DTC143XUA-T106
(R1=4.7 K, R2=10 K)

OTHERS

—TOP VIEW—

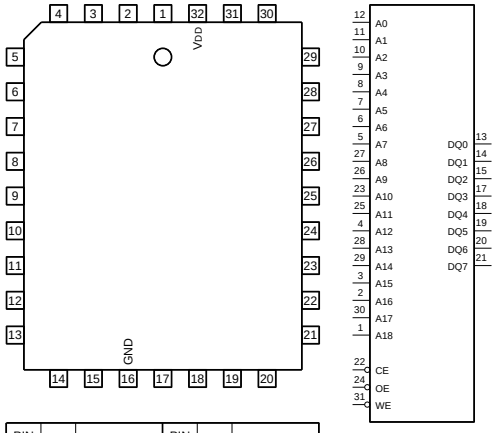


HCPL-0630-500

IC

AM29F040B-90JC (AMD)

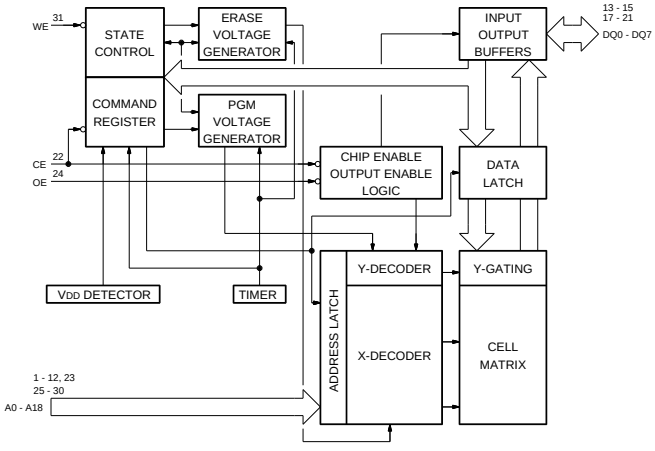
C-MOS 4 M (524,288 × 8)-BIT SECTOR ERASE FLASH MEMORY
—TOP VIEW—



PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	A18	17	I/O	DQ3
2	I	A16	18	I/O	DQ4
3	I	A15	19	I/O	DQ5
4	I	A12	20	I/O	DQ6
5	I	A7	21	I/O	DQ7
6	I	A6	22	I	$\overline{CE}$
7	I	A5	23	I	A10
8	I	A4	24	I	$\overline{OE}$
9	I	A3	25	I	A11
10	I	A2	26	I	A9
11	I	A1	27	I	A8
12	I	A0	28	I	A13
13	I/O	DQ0	29	I	A14
14	I/O	DQ1	30	I	A17
15	I/O	DQ2	31	I	$\overline{WE}$
16	—	GND	32	—	VDD

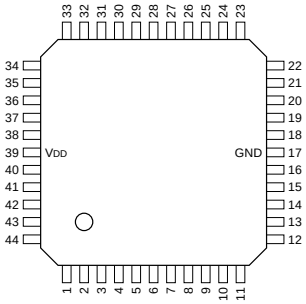
INPUT
A0 - A18 : ADDRESS INPUTS
$\overline{CE}$: CHIP ENABLE
$\overline{OE}$: OUTPUT ENABLE
$\overline{WE}$: WRITE ENABLE

INPUT/OUTPUT
DQ0 - DQ7 : DATA INPUT/OUTPUT



CXD8344AQ (SONY)

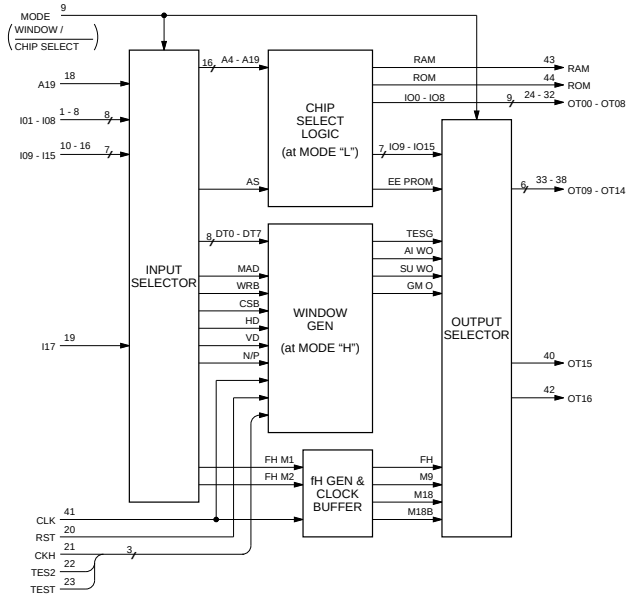
C-MOS PULSE GENERATOR
—TOP VIEW—



PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	I01	12	I	I11	23	I	TEST	34	O	OT10
2	I	I02	13	I	I12	24	O	OT00	35	O	OT11
3	I	I03	14	I	I13	25	O	OT01	36	O	OT12
4	I	I04	15	I	I14	26	O	OT02	37	O	OT13
5	I	I05	16	I	I15	27	O	OT03	38	O	OT14
6	I	I06	17	—	GND	28	O	OT04	39	—	VDD
7	I	I07	18	I	A19	29	O	OT05	40	O	OT15
8	I	I08	19	I	I17	30	O	OT06	41	I	CLK
9	I	MODE	20	I	RST	31	O	OT07	42	O	OT16
10	I	I09	21	I	CKH	32	O	OT08	43	O	RAM
11	I	I10	22	I	TES2	33	O	OT09	44	O	ROM

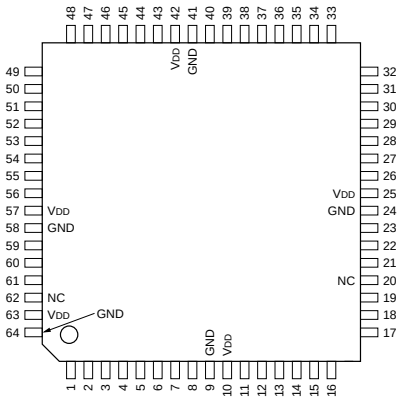
INPUT
A19 : ADDRESS INPUT
CKH : FOR TEST
CLK : CLOCK
I01 - I17 : I NPUT
MODE : MODE SELECT
(H : WINDOW GEN/L : CHIP SELECT LOGIC)
RST : RESET
TES2 : FOR TEST
TEST : FOR TEST

OUTPUT
OT00 - OT16 : OUTPUT
RAM : RAM OUT
ROM : ROM OUT



CXD8889R (SONY)

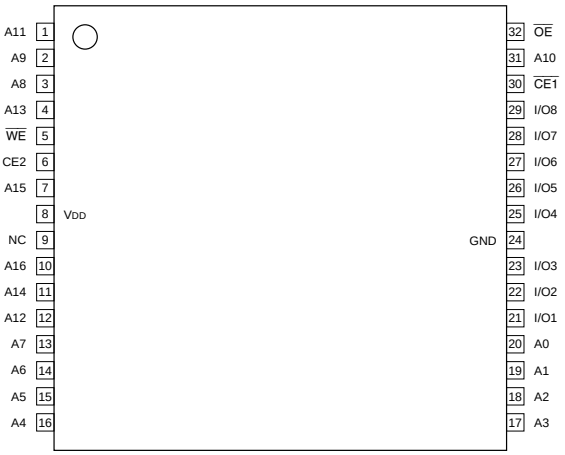
C-MOS SERIAL I/O
—TOP VIEW—



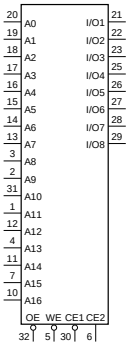
PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I/O	D0	17	—	NC	33	—	NC	49	—	NC
2	I/O	D1	18	—	NC	34	—	NC	50	—	NC
3	I/O	D2	19	—	NC	35	—	NC	51	—	NC
4	I/O	D3	20	—	NC	36	—	NC	52	—	NC
5	I/O	D4	21	O	BCKO	37	I	SEL	53	—	NC
6	I/O	D5	22	O	IVH	38	I	RVD	54	—	NC
7	I/O	D6	23	O	TVD	39	I	RESE	55	—	NC
8	I/O	D7	24	—	GND	40	I	WRN	56	—	NC
9	—	GND	25	—	VDD	41	—	GND	57	—	VDD
10	—	VDD	26	—	NC	42	—	VDD	58	—	GND
11	—	NC	27	—	NC	43	I	RDN	59	I	BRDI
12	—	NC	28	—	NC	44	I	CSN	60	O	BRD0
13	—	NC	29	—	NC	45	I	CLK	61	O	BCKO
14	—	NC	30	—	NC	46	I	A2	62	—	NC
15	—	NC	31	—	NC	47	I	A1	63	—	VDD
16	—	NC	32	—	NC	48	I	A0	64	—	GND

KM681000BLT-7L (SAMSUNG)FLAT PACKAGE
KM681000BLT-7LT

C-MOS 1 M (131,072 × 8)-BIT SRAM
—TOP VIEW—



A0 - A16 : ADDRESS INPUTS
I/O1 - I/O8 : DATA INPUTS/OUTPUTS
CE1, CE2 : CHIP ENABLE1, 2 INPUTS
WE : WRITE ENABLE INPUT
OE : OUTPUT ENABLE INPUT

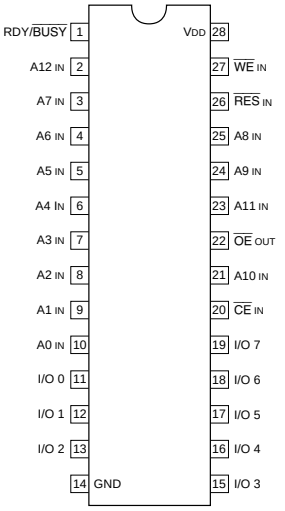


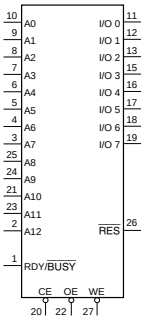
CE1	CE2	OE	WE	MODE	I/O TERMINAL
1	×	×	×	NOT SELECT	HIGH IMPEDANCE
×	0	×	×	NOT SELECT	HIGH IMPEDANCE
0	1	1	1	OUTPUT DISABLE	HIGH IMPEDANCE
0	1	0	1	READ	OUTPUT DATA
0	1	×	0	WRITE	INPUT DATA

0 : LOW LEVEL
1 : HIGH LEVEL
× : DON'T CARE

HN58C66FP-25 (HITACHI)
HN58C66SFP25TZ

C-MOS 64 K (8192 × 8)-BIT EEPROM
—TOP VIEW—





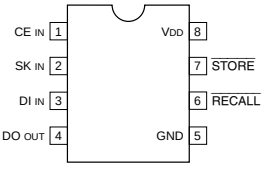
A0 - A12 : ADDRESS INPUTS
CE : CHIP ENABLE INPUT
I/O 0 - I/O 7 : DATA INPUTS/OUTPUTS
OE : OUTPUT ENABLE
RDY/BUSY : RDY/BUSY OUTPUT
WE : WRITE ENABLE INPUT
RES : PROGRAM RESET INPUT

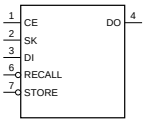
CE	OE	WE	RDY/BUSY	RES	I/O TERMINAL	FUNCTION
0	0	1	HI-Z	1	DOUT	READ
1	×	×	HI-Z	×	HI-Z	STANDBY
0	1	0	HI-Z → LOW	1	DIN	WRITE
0	1	1	HI-Z	1	HI-ZL	DESELECT
×	×	1	HI-Z	×	—	WRITE INH
×	0	×	HI-Z	×	—	WRITE INH
0	0	1	LOW	1	DATA OUT (1/07)	DATA POLLING
×	×	×	HI-Z	0	HI-Z	PROGRAM RESET

0 : LOW LEVEL
1 : HIGH LEVEL
× : DON'T CARE
HI-Z : HIGH IMPEDANCE

S-24S45IF10 (SEIKO I&E)FLAT PACKAGE

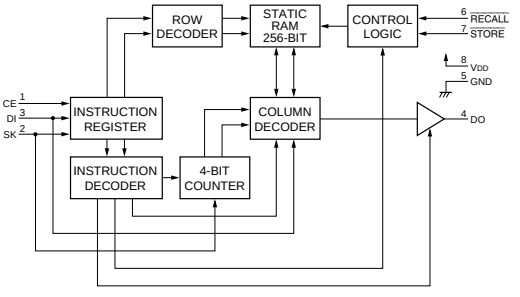
C-MOS 256-BIT SERIAL NVRAM
—TOP VIEW—





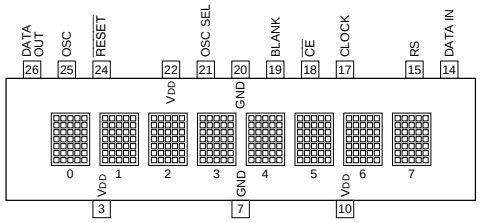
INPUT
CE : CHIP ENABLE
SK : SERIAL CLOCK
DI : SERIAL DATA
RECALL : RECALL
STORE : STORE

OUTPUT
DO : SERIAL DATA



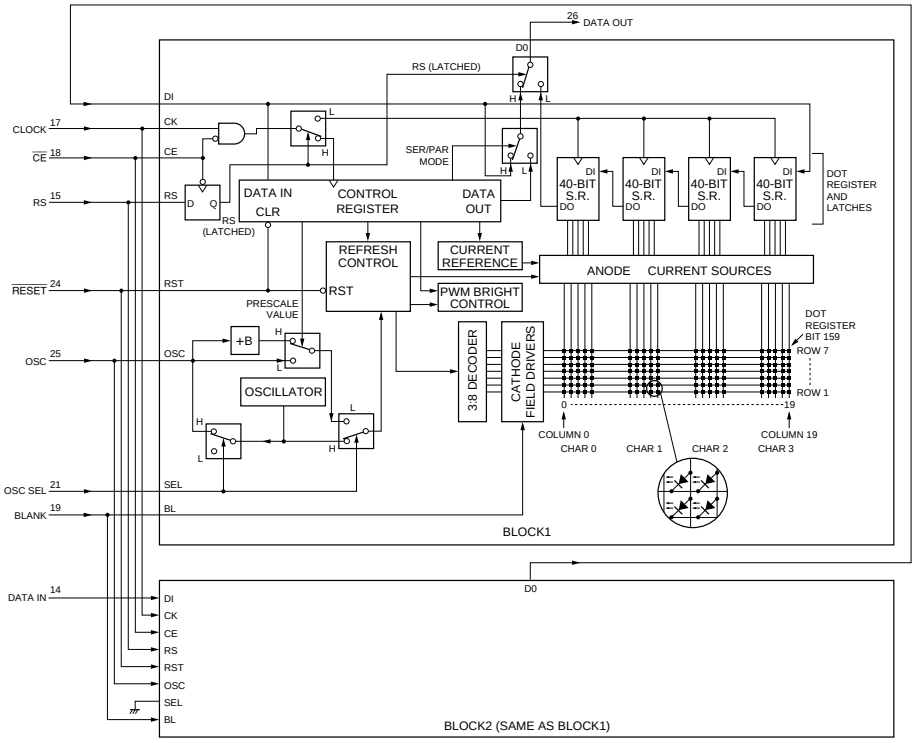
HCMS-2913 (HP)

C-MOS DOT MATRIX DISPLAY
—TOP VIEW—



INPUT
BLANK : BRIGHT CONTROL
CE : CHIP ENABLE
CLOCK : CLOCK
DATA IN : SERIAL DATA
OSC : OSCILLATOR
OSC SEL : OSC SELECT
RESET : CONTROL REGISTER RESET
RS : REGISTER SELECT

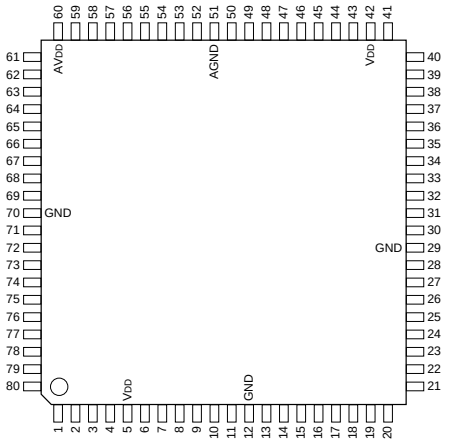
OUTPUT
DATA OUT : SERIAL DATA

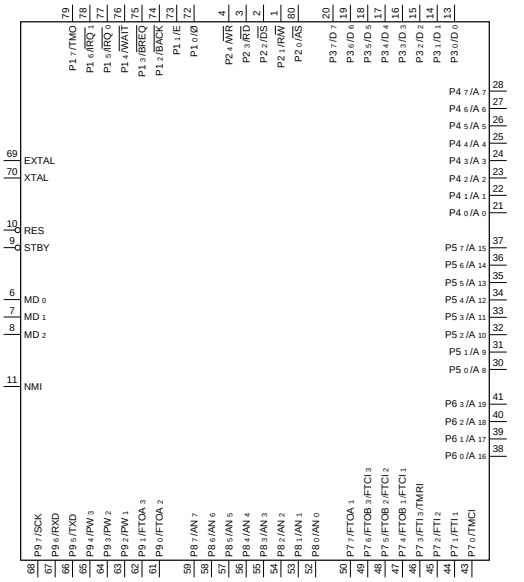


HD6435328RE48F (HITACHI)FLAT PACKAGE

C-MOS 8-BIT 1-CHIP MICRO COMPUTER

—TOP VIEW—





PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I/O	P2 1 /R/$\overline{W}$	41	I/O	P6 3 /A 19
2	I/O	P2 2 /$\overline{DS}$	42	—	VDD
3	I/O	P2 3 /$\overline{RD}$	43	I/O	P7 0 /TMCI
4	I/O	P2 4 /$\overline{WR}$	44	I/O	P7 1 /FTI 1
5	—	VDD	45	I/O	P7 2 /FTI 2
6	I	MD 0	46	I/O	P7 3 /FTI 3 /TMRI
7	I	MD 1	47	I/O	P7 4 /FTOB 1 /FTCI 1
8	I	MD 2	48	I/O	P7 5 /FTOB 2 /FTCI 2
9	I	$\overline{STBY}$	49	I/O	P7 6 /FTOB 3 /FTCI 3
10	I	$\overline{RES}$	50	I/O	P7 7 /FTOA 1
11	I	NMI	51	—	AGND
12	—	GND	52	I	P8 0 /AN 0
13	I/O	P3 0 /D 0	53	I	P8 1 /AN 1
14	I/O	P3 1 /D 1	54	I	P8 2 /AN 2
15	I/O	P3 2 /D 2	55	I	P8 3 /AN 3
16	I/O	P3 3 /D 3	56	I	P8 4 /AN 4
17	I/O	P3 4 /D 4	57	I	P8 5 /AN 5
18	I/O	P3 5 /D 5	58	I	P8 6 /AN 6
19	I/O	P3 6 /D 6	59	I	P8 7 /AN 7
20	I/O	P3 7 /D 7	60	—	AVDD
21	I/O	P4 0 /A 0	61	I/O	P9 0 /FTOA 2
22	I/O	P4 1 /A 1	62	I/O	P9 1 /FTOA 3
23	I/O	P4 2 /A 2	63	I/O	P9 2 /PW 1
24	I/O	P4 3 /A 3	64	I/O	P9 3 /PW 2
25	I/O	P4 4 /A 4	65	I/O	P9 4 /PW 3
26	I/O	P4 5 /A 5	66	I/O	P9 5 /TXD
27	I/O	P4 6 /A 6	67	I/O	P9 6 /RXD
28	I/O	P4 7 /A 7	68	I/O	P9 7 /SCK
29	—	GND	69	I	EXTAL
30	I/O	P5 0 /A 8	70	I	XTAL
31	I/O	P5 1 /A 9	71	—	GND
32	I/O	P5 2 /A 10	72	I/O	P1 0 /Ø
33	I/O	P5 3 /A 11	73	I/O	P1 1 /E
34	I/O	P5 4 /A 12	74	I/O	P1 2 /$\overline{BACK}$
35	I/O	P5 5 /A 13	75	I/O	P1 3 /$\overline{BREQ}$
36	I/O	P5 6 /A 14	76	I/O	P1 4 /$\overline{WAIT}$
37	I/O	P5 7 /A 15	77	I/O	P1 5 /$\overline{IRQ}$ 0
38	I/O	P6 0 /A 16	78	I/O	P1 6 /$\overline{IRQ}$ 1
39	I/O	P6 1 /A 17	79	I/O	P1 7 /TMO
40	I/O	P6 2 /A 18	80	I/O	P2 0 /$\overline{AS}$

INPUT

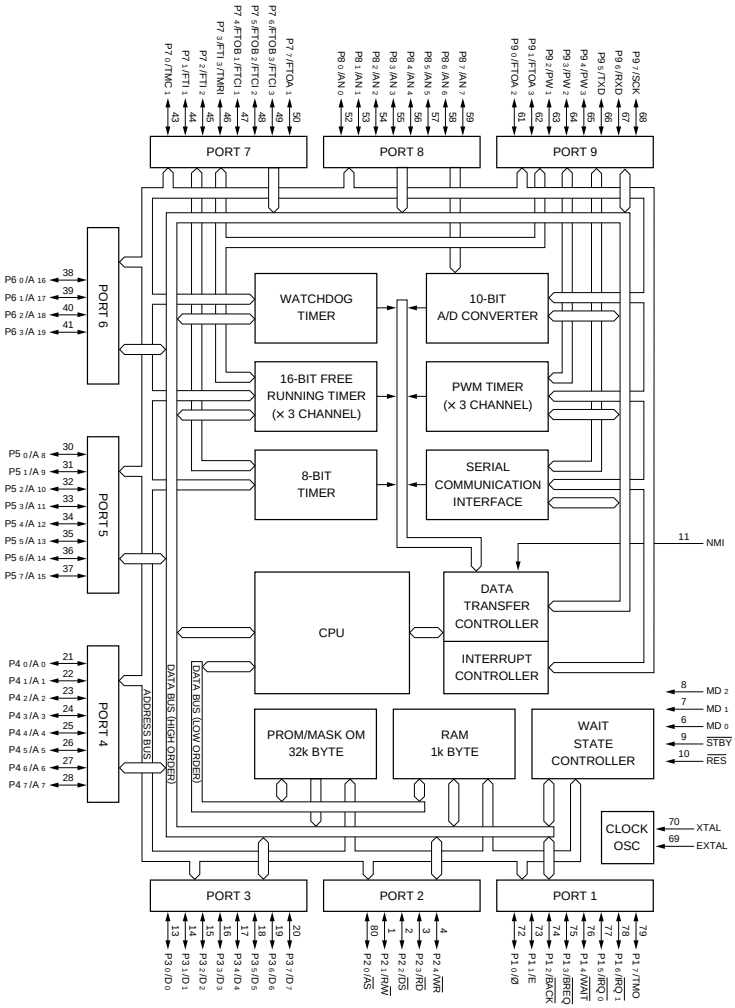
AN 0 – AN 7 ; ANALOG DATA
BREQ ; BUS REQUEST
EXTAL ; CONNECTED TO CRYSTAL OSCILLATOR
FTCI 1 – FTCI 3 ; FRT COUNTER CLOCK (CHANNEL 1 TO 3)
FTI 1 – FTI 3 ; FRT INPUT CAPTURE (CHANNEL 1 TO 3)
IRQ 0 – IRQ 2 ; INTERRUPTION REQUEST 0 AND 2
MD 0 – MD 2 ; MODE SETTING
NMI ; NON MASKABLE INTERRUPTION
P8 0 – P8 7 ; PORT 8
$\overline{RES}$; RESET
RXD ; RECEIVE DATA
$\overline{STBY}$; STANDBY
TMCI ; 8-BIT TIMER CLOCK
TMRI ; 8-BIT TIMER COUNTER RESET
WAIT ; WAIT
XTAL ; CONNECTED TO CRYSTAL OSCILLATOR

OUTPUT

A 0 – A 19 ; ADDRESS BUS
$\overline{AS}$; ADDRESS STROBE
BACK ; BUS REQUEST ACKNOWLEDGE
$\overline{DS}$; DATA STROBE
E ; ENABLE CLOCK
FTOA 1 – FTOA 3 ; FTR OUTPUT COMPARE A (CHANNEL 1 TO 3)
FTOB 1 – FTOB 3 ; FTR OUTPUT COMPARE B (CHANNEL 1 TO 3)
PW 1 – PW 3 ; PWM TIMER (CHANNEL 1 TO 3)
R/$\overline{W}$; READ/WRITE
$\overline{RD}$; READ
TMO ; 8-BIT TIMER
TXD ; SEND DATA
$\overline{WR}$; WRITE
Ø ; SYSTEM CLOCK

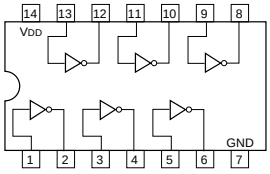
INPUT/OUTPUT

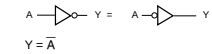
D 0 – D 7 ; DATA BUS
P1 0 – P1 7 ; PORT 1
P2 0 – P2 4 ; PORT 2
P3 0 – P3 7 ; PORT 3
P4 0 – P4 7 ; PORT 4
P5 0 – P5 7 ; PORT 5
P6 0 – P6 3 ; PORT 6
P7 0 – P7 7 ; PORT 7
P9 0 – P9 7 ; PORT 9
SCK ; SERIAL CLOCK



SN74HC04APW-E05
SN74HC04APW-E20 (TI)FLAT PACKAGE

C-MOS HEX INVERTERS
—TOP VIEW—





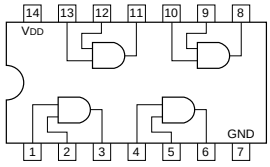
Y = $\overline{A}$

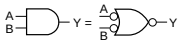
A	Y
0	1
1	0

0 : LOW LEVEL
1 : HIGH LEVEL

SN74HC08APW-E05 (TI)FLAT PACKAGE

C-MOS QUAD 2-INPUT AND GATES
—TOP VIEW—





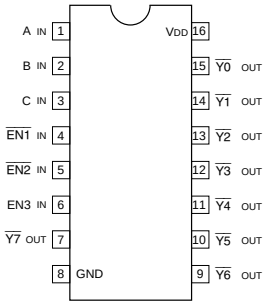
Y = A • B = $\overline{\overline{A} + \overline{B}}$

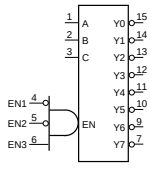
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

0 : LOW LEVEL
1 : HIGH LEVEL

SN74HC138APW-E05 (TI)FLAT PACKAGE

C-MOS 3-TO-8 LINE DECODER/DEMULTIPLEXER
—TOP VIEW—





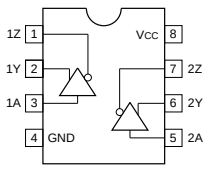
INPUTS				OUTPUTS							
EN	C	B	A	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
0	×	×	×	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	0	1
1	0	1	0	1	1	1	1	1	0	1	1
1	0	1	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

EN = $\overline{EN1}$ • $\overline{EN2}$ • EN3

0 : LOW LEVEL
1 : HIGH LEVEL
× : DON'T CARE

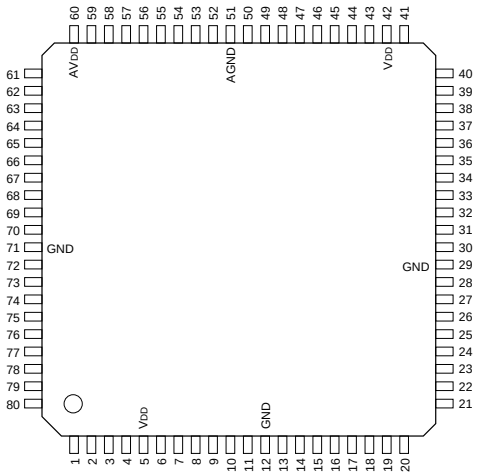
SN75158PS (TI)
SN75158PS-E05

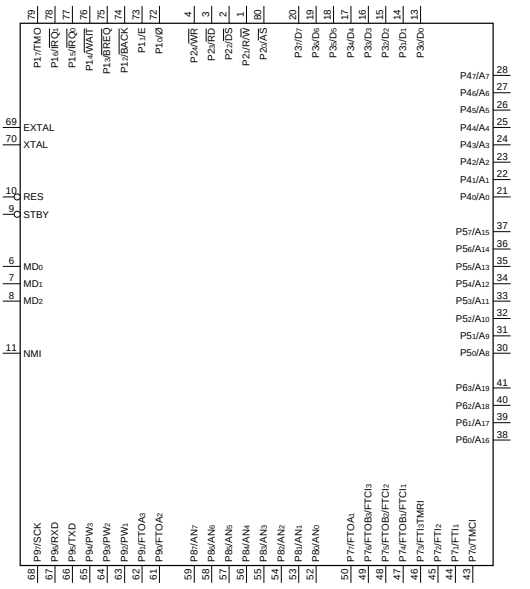
DUAL DIFFERENTIAL LINE DRIVE
—TOP VIEW—



HD6435328RE49F
HD6475328F10 (HITACHI)

C-MOS 16-BIT MICROPROCESSOR
—TOP VIEW—





PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I/O	P21/R/$\overline{W}$	28	I/O	P47/A7	55	I/O	P83/AN3
2	I/O	P22/$\overline{DS}$	29	—	GND	56	I/O	P84/AN4
3	I/O	P23/$\overline{RD}$	30	I/O	P50/A8	57	I/O	P85/AN5
4	I/O	P24/$\overline{WR}$	31	I/O	P51/A9	58	I/O	P86/AN6
5	—	VDD	32	I/O	P52/A10	59	I/O	P87/AN7
6	I	MD0	33	I/O	P53/A11	60	—	AVDD
7	I	MD1	34	I/O	P54/A12	61	I/O	P90/FTOA2
8	I	MD2	35	I/O	P55/A13	62	I/O	P91/FTOA3
9	I	$\overline{STBY}$	36	I/O	P56/A14	63	I/O	P92/PW1
10	I	$\overline{RES}$	37	I/O	P57/A15	64	I/O	P93/PW2
11	I	NMI	38	I/O	P60/A16	65	I/O	P94/PW3
12	—	GND	39	I/O	P61/A17	66	I/O	P95/TXD
13	I/O	P30/D0	40	I/O	P62/A18	67	I/O	P96/RXD
14	I/O	P31/D1	41	I/O	P63/A19	68	I/O	P97/SCK
15	I/O	P32/D2	42	—	VDD	69	I	EXTAL
16	I/O	P33/D3	43	I/O	P70/TMCI	70	I	XTAL
17	I/O	P34/D4	44	I/O	P71/FTI1	71	—	VSS
18	I/O	P35/D5	45	I/O	P72/FTI2	72	I/O	P10/ø
19	I/O	P36/D6	46	I/O	P73/FTI3/TMRI	73	I/O	P11/E
20	I/O	P37/D7	47	I/O	P74/FTOB1/FTCI1	74	I/O	P12/$\overline{BACK}$
21	I/O	P40/A0	48	I/O	P75/FTOB2/FTCI2	75	I/O	P12/$\overline{BREQ}$
22	I/O	P41/A1	49	I/O	P76/FTOB3/FTCI3	76	I/O	P12/$\overline{WAIT}$
23	I/O	P42/A2	50	O	P77/FTOA1	77	I/O	P12/$\overline{IRQ0}$
24	I/O	P43/A3	51	—	AGND	78	I/O	P12/$\overline{IRQ1}$
25	I/O	P44/A4	52	I/O	P80/AN0	79	I/O	P12/TMO
26	I/O	P45/A5	53	I/O	P81/AN1	80	I/O	P12/$\overline{AS}$
27	I/O	P46/A6	54	I/O	P82/AN2			

INPUT

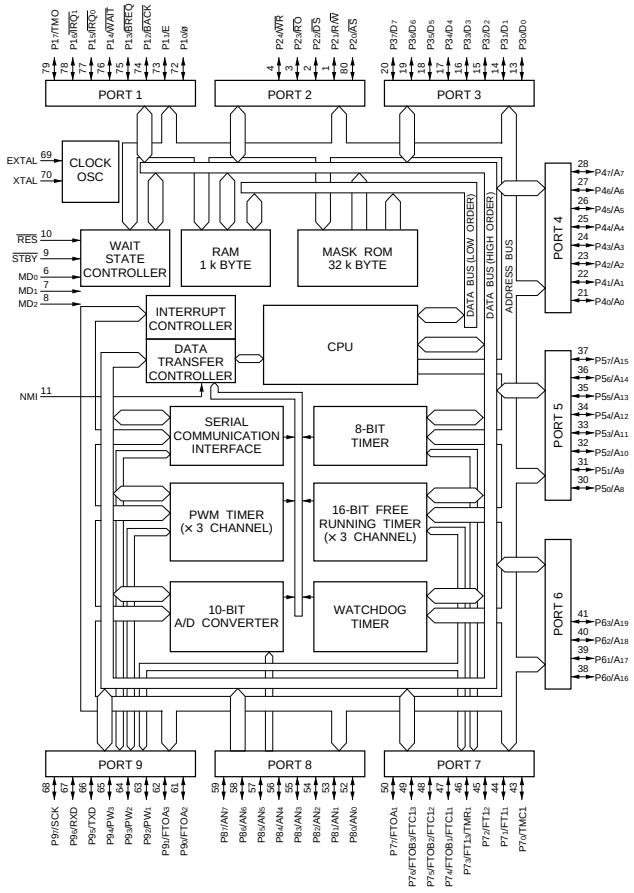
AN0 - AN7	; ANALOG INPUT
BREQ	; BUS REQUEST
EXTAL	; CONNECTED TO CRYSTAL OSCILLATOR.
ETCI1 - FTCI3	; FRT COUNTER CLOCK INPUT (CHANNEL 1 TO 3)
FTI1 - FTI3	; FRT INPUT CAPTURE INPUT (CHANNEL 1 TO 3)
IRQ0, 1	; INTERRUPTION REQUEST 0 AND 1
MD0 - MD2	; MODE SETTING
NMI	; NON MASKABLE INTERRUPTION
P80 - P87	; PORT 8
RES	; RESET
RXD	; RECEIVE DATA
STBY	; STANDBY
TMCI	; 8-BIT TIMER CLOCK INPUT
TMRI	; 8-BIT TIMER COUNTER RESET INPUT
WAIT	; WAIT
XTAL	; CONNECTED TO CRYSTAL OSCILLATOR.

OUTPUT

A0 - A19	; ADDRESS BUS
AS	; ADDRESS STROBE
BACK	; BUS REQUEST ACKNOWLEDGE
DS	; DATA STROBE
E	; ENABLE CLOCK
FTOA1 - FTOA3	; FRT OUTPUT COMPARE A OUTPUT (CHANNEL 1 TO 3)
FTOB1 - FTOB3	; FRT OUTPUT COMPARE B OUTPUT (CHANNEL 1 TO 3)
PW1 - PW3	; PWM TIMER OUTPUT (CHANNEL 1 TO 3)
R/W	; READ/WRITE
RD	; READ
TMO	; 8-BIT TIMER OUTPUT
TXD	; SEND DATA
WR	; WRITE
ø	; SYSTEM CLOCK

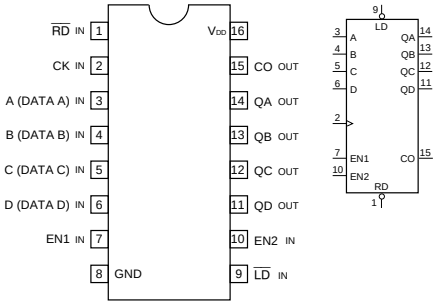
INPUT/OUTPUT

D0 - D7	; DATA BUS
P10 - P17	; PORT 1
P20 - P24	; PORT 2
P30 - P37	; PORT 3
P40 - P47	; PORT 4
P50 - P57	; PORT 5
P60 - P63	; PORT 6
P70 - P77	; PORT 7
P90 - P97	; PORT 9
SCK	; SERIAL CLOCK INPUT/OUTPUT



SN74HC163APW-E05 (TI)FLAT PACKAGE

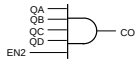
C-MOS PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER
—TOP VIEW—



MODE SELECTION

CONTROL INPUTS				MODE
RD	LD	EN1	EN2	
0	×	×	×	RESET (SYNCHRONOUS)
1	0	×	×	PRESET (SYNCHRONOUS)
1	1	0	×	NO COUNT
1	1	×	0	NO COUNT
1	1	1	1	COUNT

CARRY OUTPUT "CO"



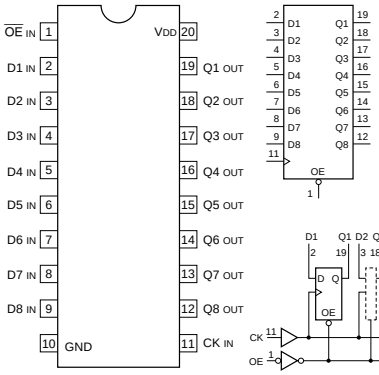
CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

COUNT SEQUENCE

COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

SN74HC573BPW-E05
SN74HC573BPW-E20 (TI)FLAT PACKAGE

C-MOS 3-STATE OUTPUTS OCTAL LATCHES
—TOP VIEW—

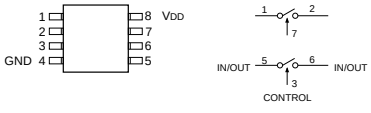


INPUT			OUT
OE	CK	D	Q
0	1	1	1
0	1	0	0
0	0	×	Q0
1	×	×	HI-Z

0 : LOW LEVEL
1 : HIGH LEVEL
× : DON'T CARE
HI-Z : HIGH IMPEDANCE
Q0 : NO CHANGE

TC4W66FU(TE12R) (TOSHIBA)FLAT PACKAGE

C-MOS DUAL BILATERAL SWITCH
—TOP VIEW—



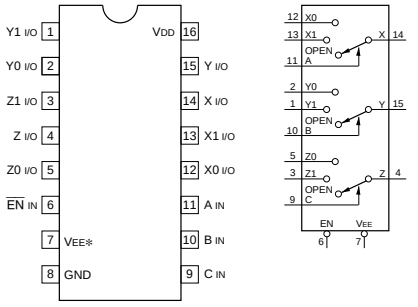
CONTROL	SWITCH
0	OFF
1	ON

0 : LOW LEVEL
1 : HIGH LEVEL

TC74HC4053AFS (TOSHIBA)FLAT PACKAGE
TC74HC4053AFS-EL

C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER

—TOP VIEW—



VEE* : VDD – VEE = +3 V to +12 V
VEE ≦ GND

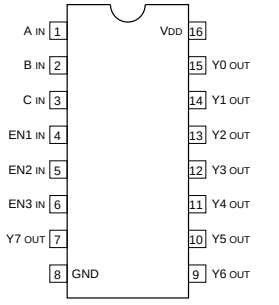
CONTROL INPUTS				ON CHANNEL		
EN	SELECT					
	C	B	A			
0	0	0	0	Z0	Y0	X0
0	0	0	1	Z0	Y0	X1
0	0	1	0	Z0	Y1	X0
0	0	1	1	Z0	Y1	X1
0	1	0	0	Z1	Y0	X0
0	1	0	1	Z1	Y0	X1
0	1	1	0	Z1	Y1	X0
0	1	1	1	Z1	Y1	X1
1	×	×	×	OPEN		

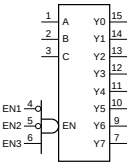
0 : LOW LEVEL
1 : HIGH LEVEL
× : DON'T CARE

TC74VHC238FS(EL) (TOSHIBA)FLAT PACKAGE

C-MOS 3-TO-8 LINE DECODER/DEMULTIPLEXER

—TOP VIEW—





INPUT				OUTPUT							
EN	C	B	A	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
0	×	×	×	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	1
1	0	0	1	0	0	0	0	0	0	1	0
1	0	1	0	0	0	0	0	0	1	0	0
1	0	1	1	0	0	0	0	1	0	0	0
1	1	0	0	0	0	0	1	0	0	0	0
1	1	0	1	0	0	1	0	0	0	0	0
1	1	1	0	0	1	0	0	0	0	0	0
1	1	1	1	1	0	0	0	0	0	0	0

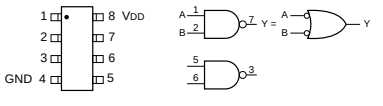
$EN = \overline{EN1} \cdot \overline{EN2} \cdot EN3$

0 : LOW LEVEL
1 : HIGH LEVEL
× : DON'T CARE

TC7W00FU (TOSHIBA)CHIP PACKAGE
TC7W00FU(TE12R)

C-MOS DUAL 2-INPUT NAND GATE

—TOP VIEW—



$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

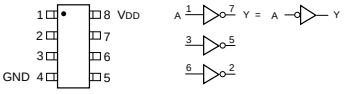
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0 : LOW LEVEL
1 : HIGH LEVEL

TC7W04FU(TE12R) (TOSHIBA)FLAT PACKAGE

C-MOS HEX INVERTERS

—TOP VIEW—



$Y = \overline{A}$

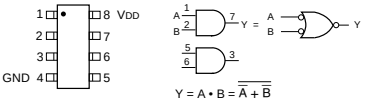
A	Y
0	1
1	0

0 : LOW LEVEL
1 : HIGH LEVEL

TC7W08FU (TOSHIBA)CHIP PACKAGE
TC7W08FU(TE12R)

C-MOS 2-INPUT AND GATE

—TOP VIEW—



$Y = A \cdot B = \overline{\overline{A} + \overline{B}}$

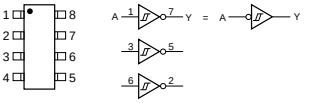
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

0 : LOW LEVEL
1 : HIGH LEVEL

TC7W14FU(TE12R) (TOSHIBA)CHIP PACKAGE

C-MOS HEX INVERTERS

—TOP VIEW—



$Y = \overline{A}$

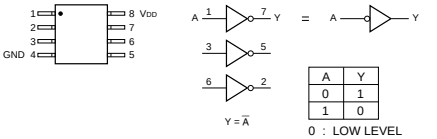
A	Y
0	1
1	0

0 : LOW LEVEL
1 : HIGH LEVEL

TC7WU04FU(TE12R) (TOSHIBA)CHIP PACKAGE

C-MOS HEX INVERTERS

—TOP VIEW—

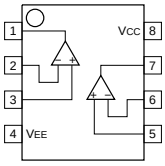


A	Y
0	1
1	0

0 : LOW LEVEL
1 : HIGH LEVEL

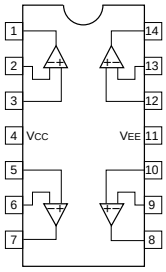
TL062CPW (TI)FLAT PACKAGE
TL062CPW-E05

DUAL OPERATIONAL AMPLIFIERS
(DUAL-SUPPLY TYPE)
—TOP VIEW—



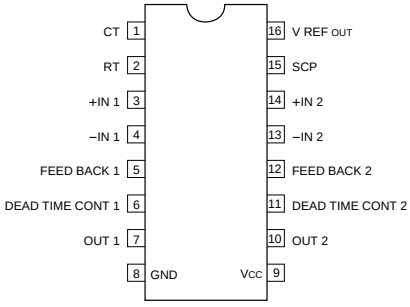
TL064CPW (TI)FLAT PACKAGE
TL064CPW-E05

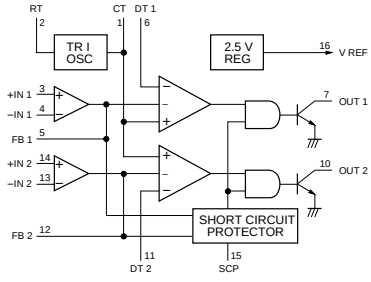
OPERATIONAL AMPLIFIER
(J FET INPUT)
—TOP VIEW—



TL1451ACNS (TI)FLAT PACKAGE
TL1451ACNS-E05

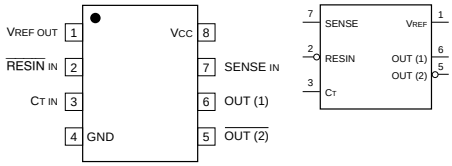
DUAL PWM POWER CONTROLLER
—TOP VIEW—

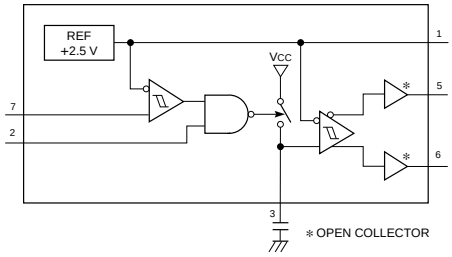




TL7705CPS-B (TI)FLAT PACKAGE
TL7705CPS-B-E05

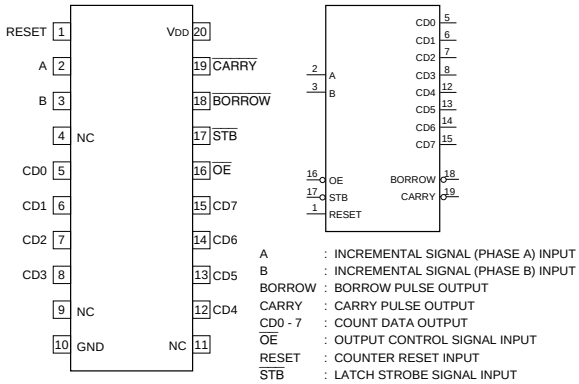
POWER VOLTAGE SUPERVISOR
—TOP VIEW—



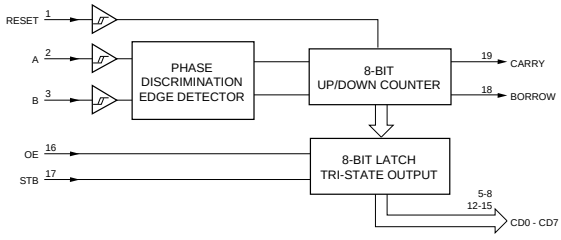


UPD4702G (NEC)

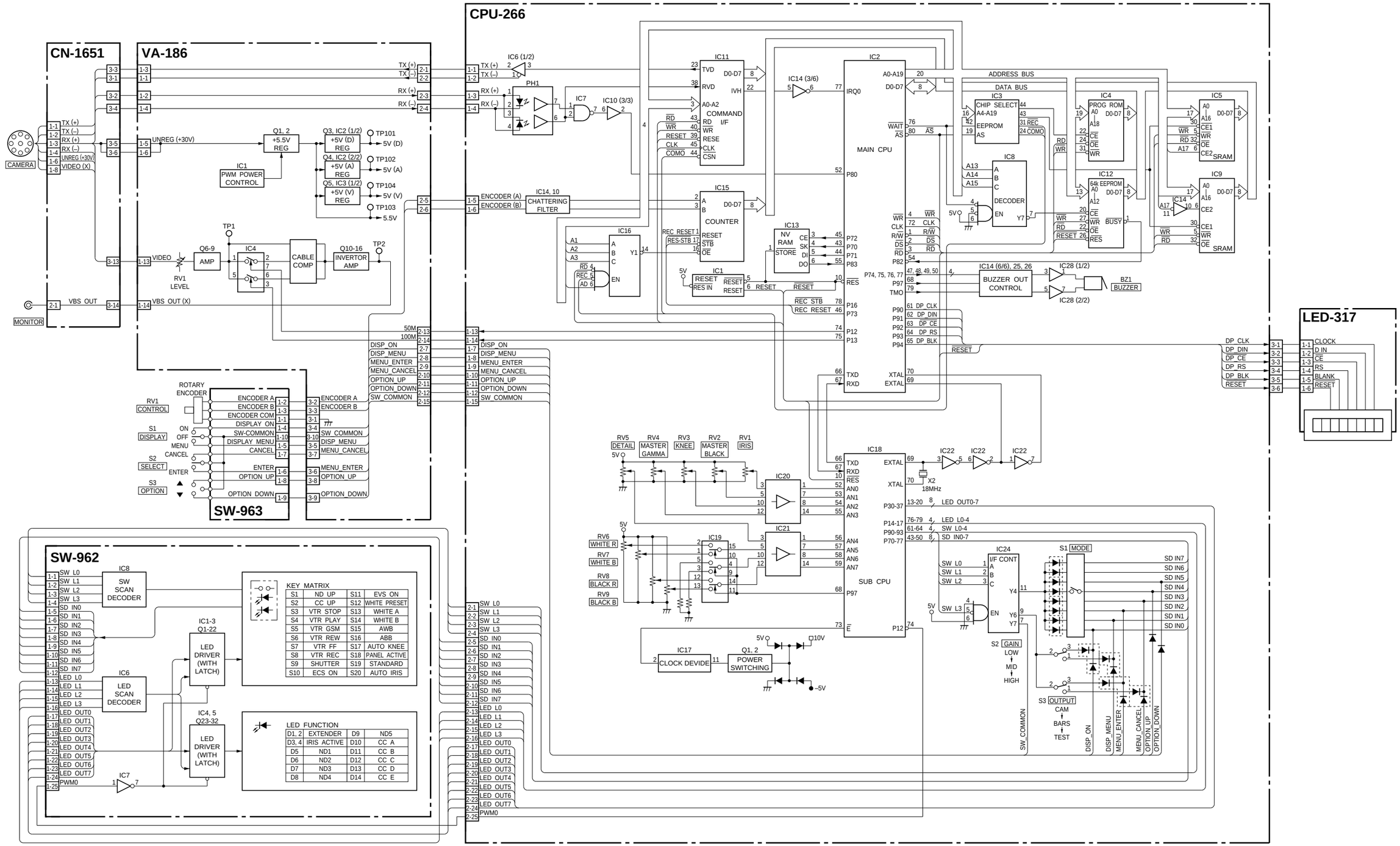
C-MOS INCREMENTAL ENCODER 8-BIT UPDOWN COUNTER
—TOP VIEW—



A	:	INCREMENTAL SIGNAL (PHASE A) INPUT
B	:	INCREMENTAL SIGNAL (PHASE B) INPUT
BORROW	:	BORROW PULSE OUTPUT
CARRY	:	CARRY PULSE OUTPUT
CD0 - 7	:	COUNT DATA OUTPUT
$\overline{OE}$	:	OUTPUT CONTROL SIGNAL INPUT
RESET	:	COUNTER RESET INPUT
$\overline{STB}$	:	LATCH STROBE SIGNAL INPUT



Section 6
Block Diagram



Overall Block
RM-B150

Section 7
Schematic Diagrams

RM-B150 (SY) : S/N 15001 and Higher

CN1/VA-186 Destinations

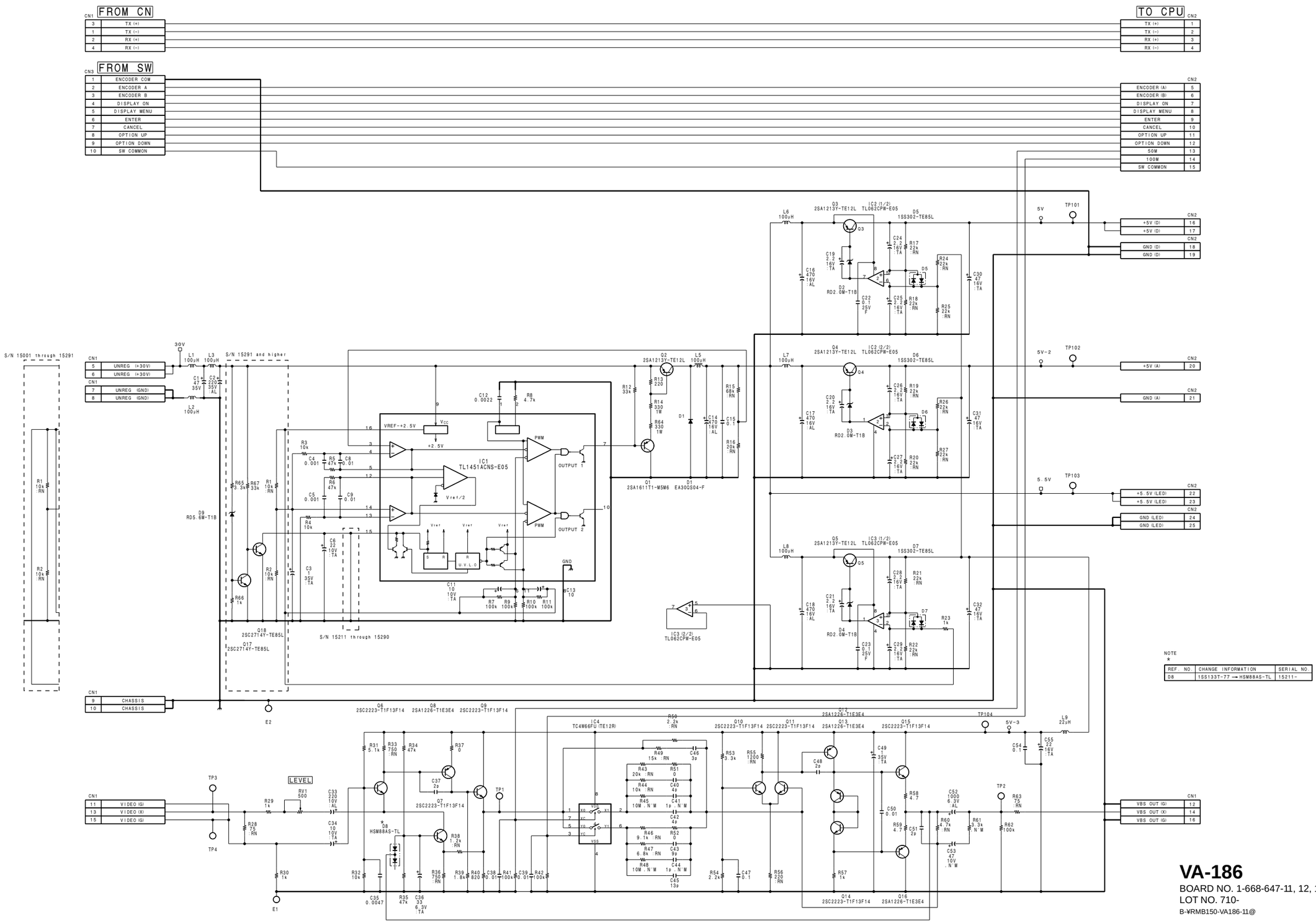
Pin	I/O	Destinations
1	O	CN3-1/CN-1651
2	I	CN3-2/CN-1651
3	O	CN3-3/CN-1651
4	I	CN3-4/CN-1651
5	I	CN3-5/CN-1651
6	I	CN3-6/CN-1651
13	I	CN3-13/CN-1651
14	O	CN3-14/CN-1651

CN2/VA-186 Destinations

Pin	I/O	Destinations
1	I	CN1-1/CPU-266
2	I	CN1-2/CPU-266
3	O	CN1-3/CPU-266
4	O	CN1-4/CPU-266
5	O	CN1-5/CPU-266
6	O	CN1-6/CPU-266
7	O	CN1-7/CPU-266
8	O	CN1-8/CPU-266
9	O	CN1-9/CPU-266
10	O	CN1-10/CPU-266
11	O	CN1-11/CPU-266
12	O	CN1-12/CPU-266
13	I	CN1-13/CPU-266
14	I	CN1-14/CPU-266
15	O	CN1-15/CPU-266

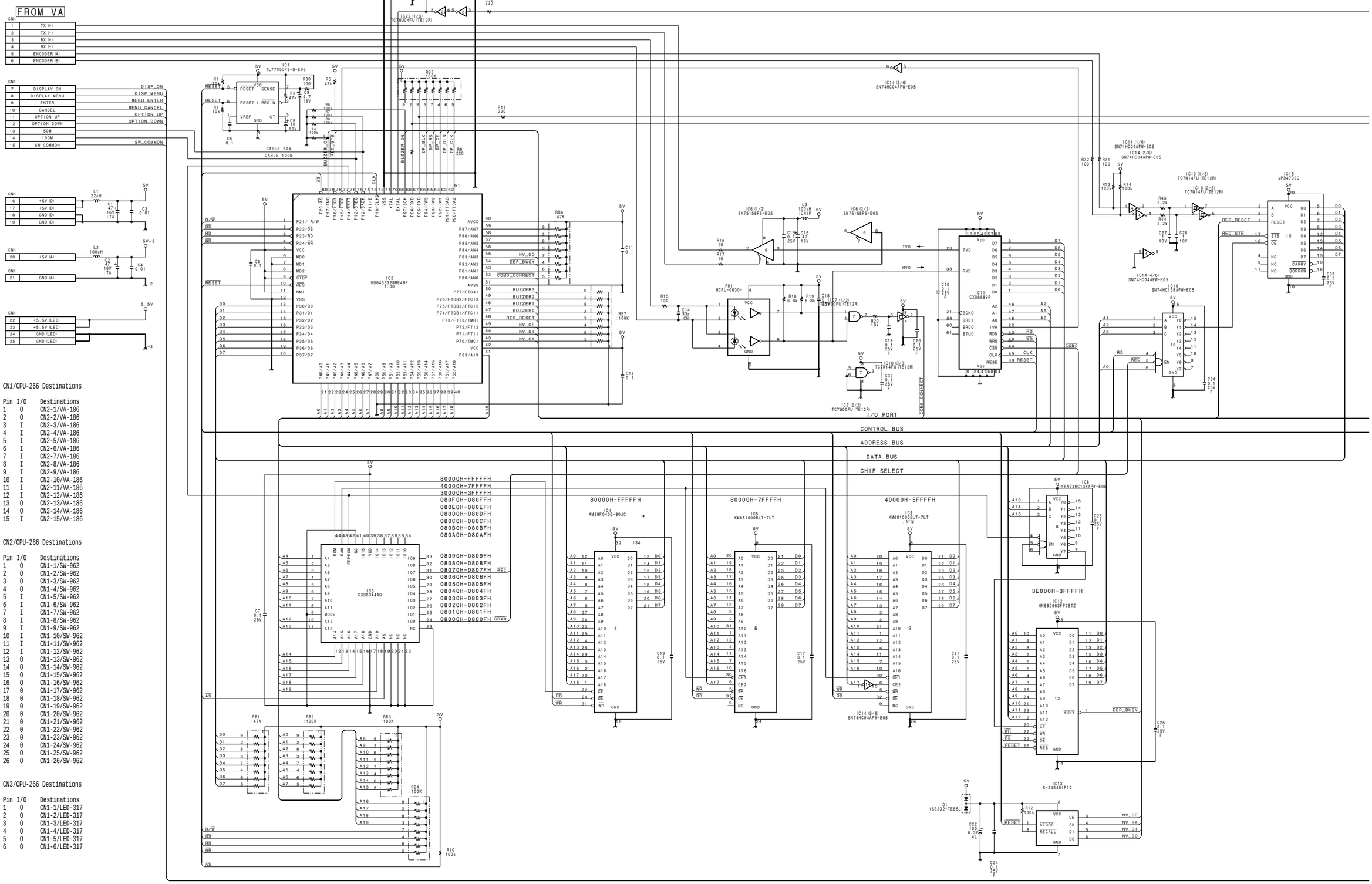
CN3/VA-186 Destinations

Pin	I/O	Destinations
2	I	CN1-2/SW-963
3	I	CN1-3/SW-963
4	I	CN1-4/SW-963
5	I	CN1-5/SW-963
6	I	CN1-6/SW-963
7	I	CN1-7/SW-963
8	I	CN1-8/SW-963
9	I	CN1-9/SW-963
10	I	CN1-10/SW-963



VA-186
BOARD NO. 1-668-647-11, 12, 13
LOT NO. 710-
B-¥RMB150-VA186-11@

RM-B150 (SY) : S/N 15001 and Higher



CN1/CPU-266 Destinations

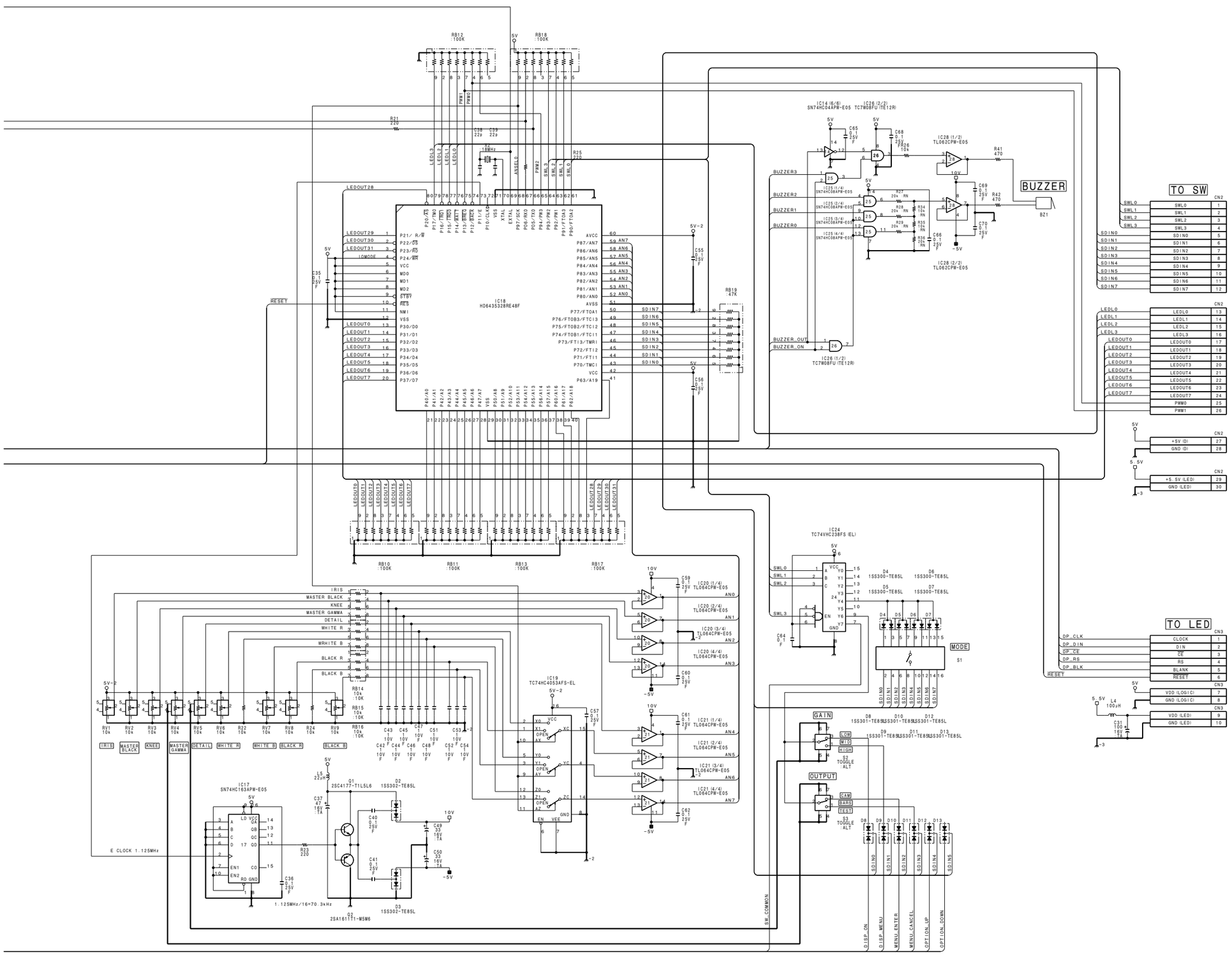
Pin	I/O	Destinations
1	O	CN2-1/VA-186
2	O	CN2-2/VA-186
3	I	CN2-3/VA-186
4	I	CN2-4/VA-186
5	I	CN2-5/VA-186
6	I	CN2-6/VA-186
7	I	CN2-7/VA-186
8	I	CN2-8/VA-186
9	I	CN2-9/VA-186
10	I	CN2-10/VA-186
11	I	CN2-11/VA-186
12	I	CN2-12/VA-186
13	O	CN2-13/VA-186
14	O	CN2-14/VA-186
15	I	CN2-15/VA-186

CN2/CPU-266 Destinations

Pin	I/O	Destinations
1	O	CN1-1/SW-962
2	O	CN1-2/SW-962
3	O	CN1-3/SW-962
4	O	CN1-4/SW-962
5	I	CN1-5/SW-962
6	I	CN1-6/SW-962
7	I	CN1-7/SW-962
8	I	CN1-8/SW-962
9	I	CN1-9/SW-962
10	I	CN1-10/SW-962
11	I	CN1-11/SW-962
12	I	CN1-12/SW-962
13	O	CN1-13/SW-962
14	O	CN1-14/SW-962
15	O	CN1-15/SW-962
16	O	CN1-16/SW-962
17	O	CN1-17/SW-962
18	O	CN1-18/SW-962
19	O	CN1-19/SW-962
20	O	CN1-20/SW-962
21	O	CN1-21/SW-962
22	O	CN1-22/SW-962
23	O	CN1-23/SW-962
24	O	CN1-24/SW-962
25	O	CN1-25/SW-962
26	O	CN1-26/SW-962

CN3/CPU-266 Destinations

Pin	I/O	Destinations
1	O	CN1-1/LED-317
2	O	CN1-2/LED-317
3	O	CN1-3/LED-317
4	O	CN1-4/LED-317
5	O	CN1-5/LED-317
6	O	CN1-6/LED-317



RM-B150

7-3 7-3

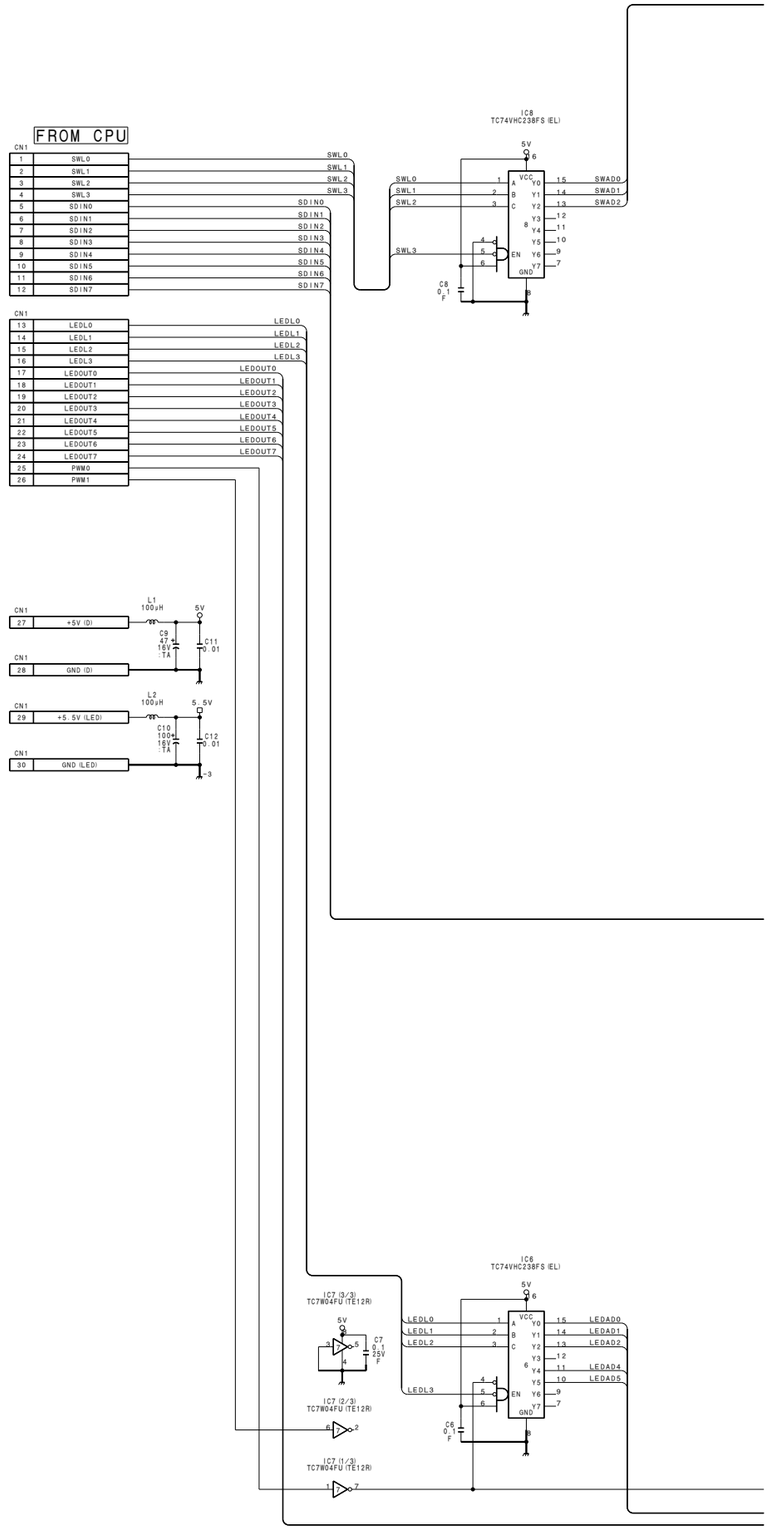
CPU-266

BOARD NO. 1-668-642-11
LOT NO. 710-
B-¥RMB150-CPU266-11@

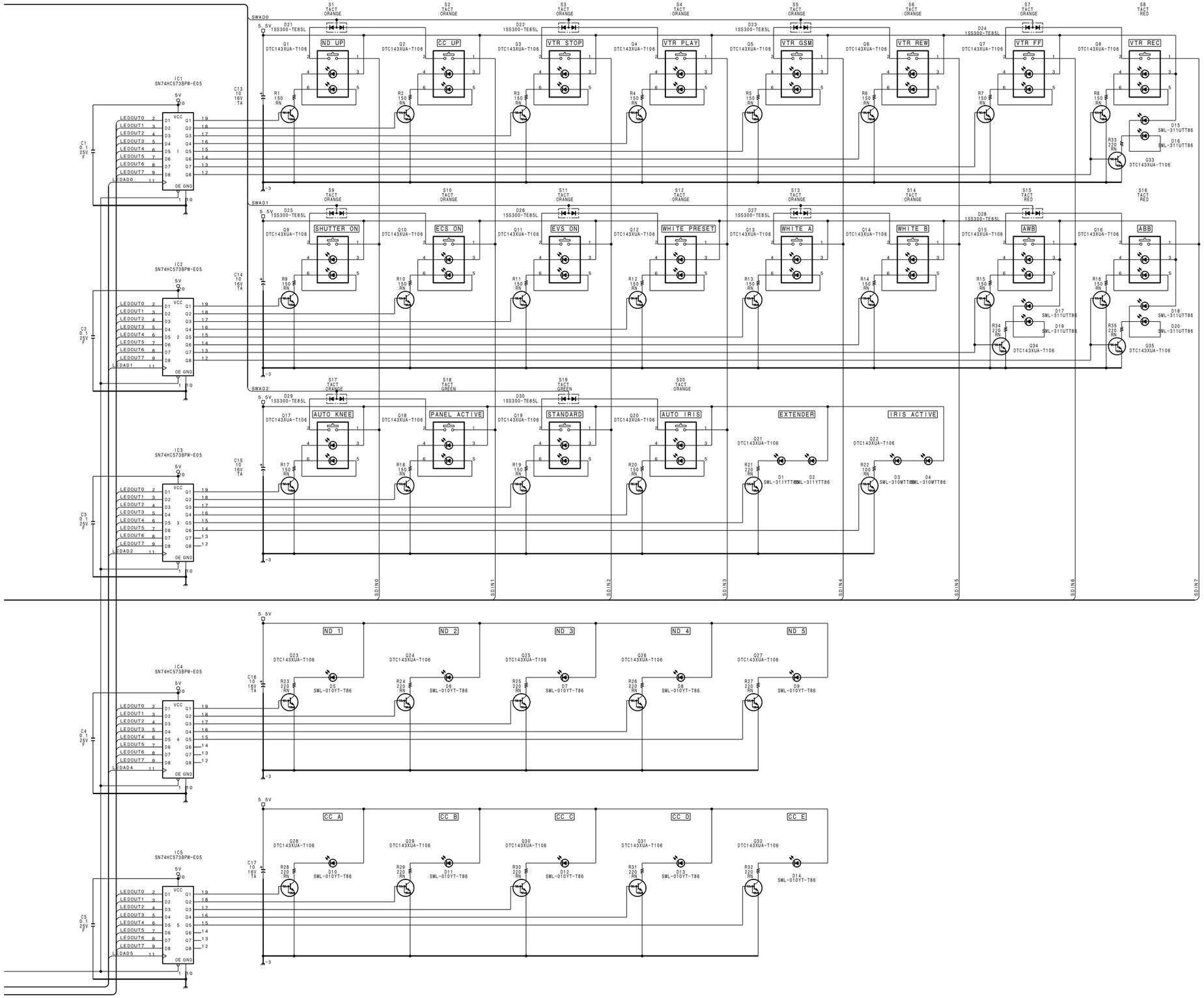
RM-B150 (SY) : S/N 15001 and Higher

CN1/SW-962 Destinations

Pin	I/O	Destinations
1	I	CN2-1/CPU-266
2	I	CN2-2/CPU-266
3	I	CN2-3/CPU-266
4	I	CN2-4/CPU-266
5	O	CN2-5/CPU-266
6	O	CN2-6/CPU-266
7	O	CN2-7/CPU-266
8	O	CN2-8/CPU-266
9	O	CN2-9/CPU-266
10	O	CN2-10/CPU-266
11	O	CN2-11/CPU-266
12	O	CN2-12/CPU-266
13	I	CN2-13/CPU-266
14	I	CN2-14/CPU-266
15	I	CN2-15/CPU-266
16	I	CN2-16/CPU-266
17	I	CN2-17/CPU-266
18	I	CN2-18/CPU-266
19	I	CN2-19/CPU-266
20	I	CN2-20/CPU-266
21	I	CN2-21/CPU-266
22	I	CN2-22/CPU-266
23	I	CN2-23/CPU-266
24	I	CN2-24/CPU-266
25	I	CN2-25/CPU-266
26	I	CN2-26/CPU-266



RM-B150



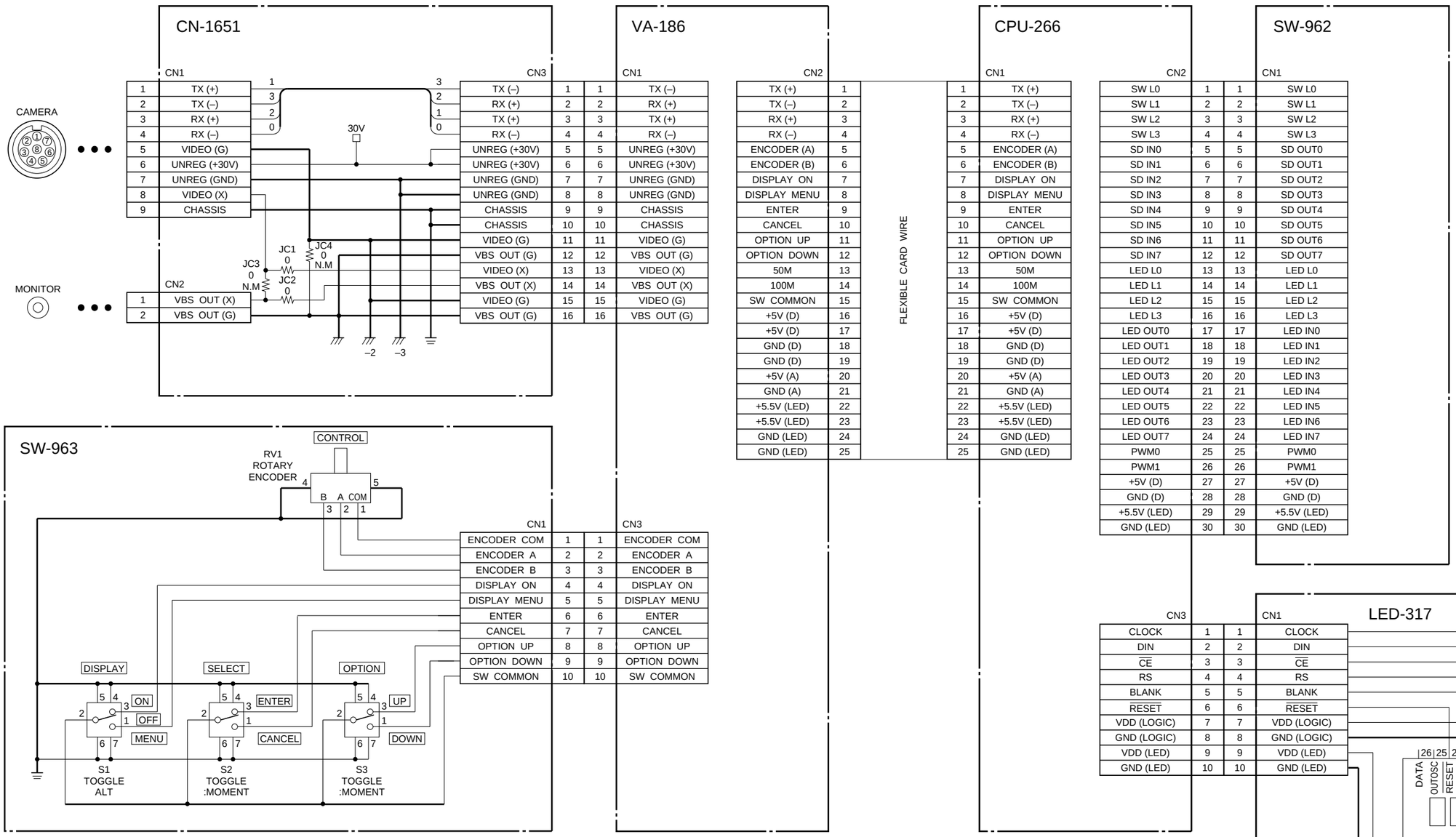
RM-B150

7-5 7-5

SW-962
BOARD NO. 1-668-643-11
LOT NO. 710-
B-¥RMB150-SW962-11@

Frame Wiring

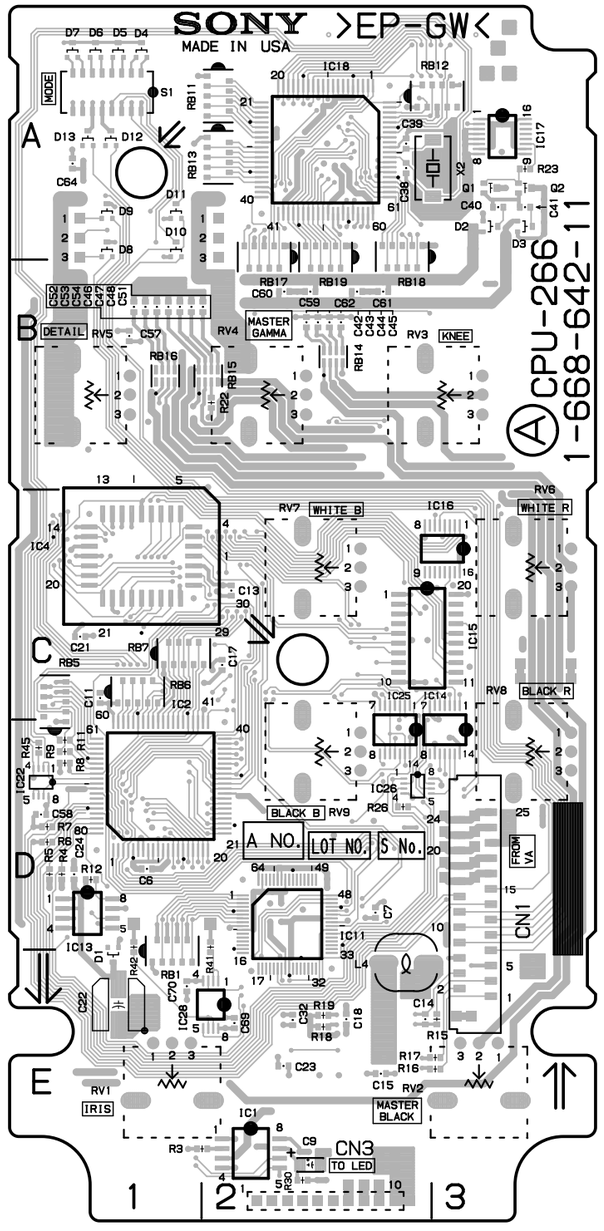
RM-B150 (SY) : S/N 15001 and Higher



Frame Wiring

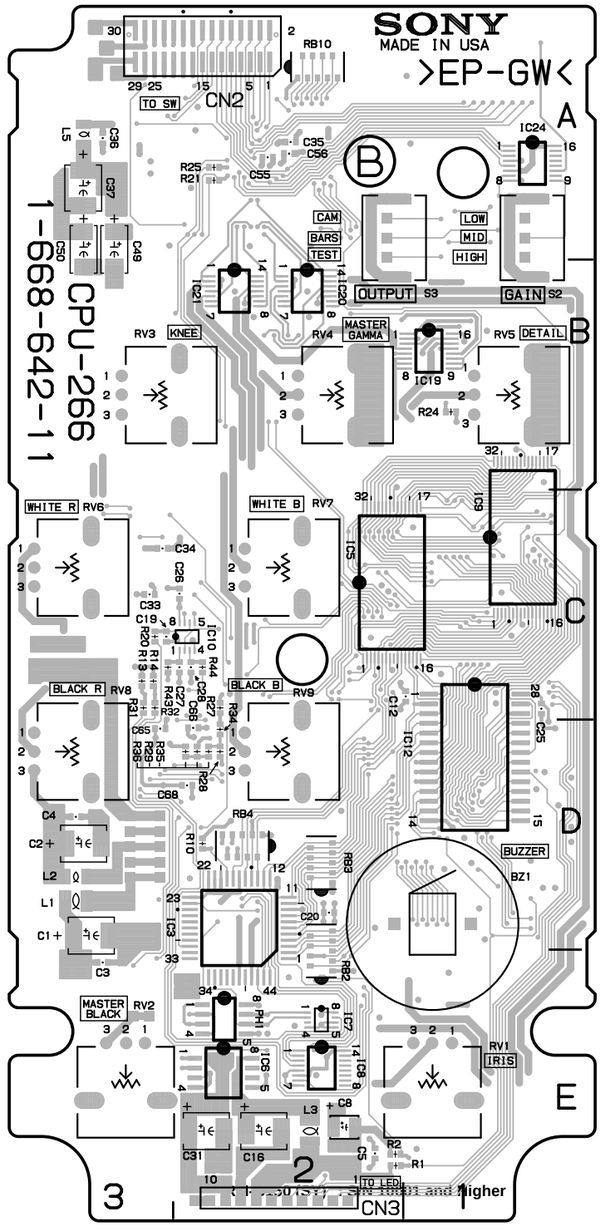
LOT NO. 710-

Section 8
Board Layouts



RM-B150 (SY)

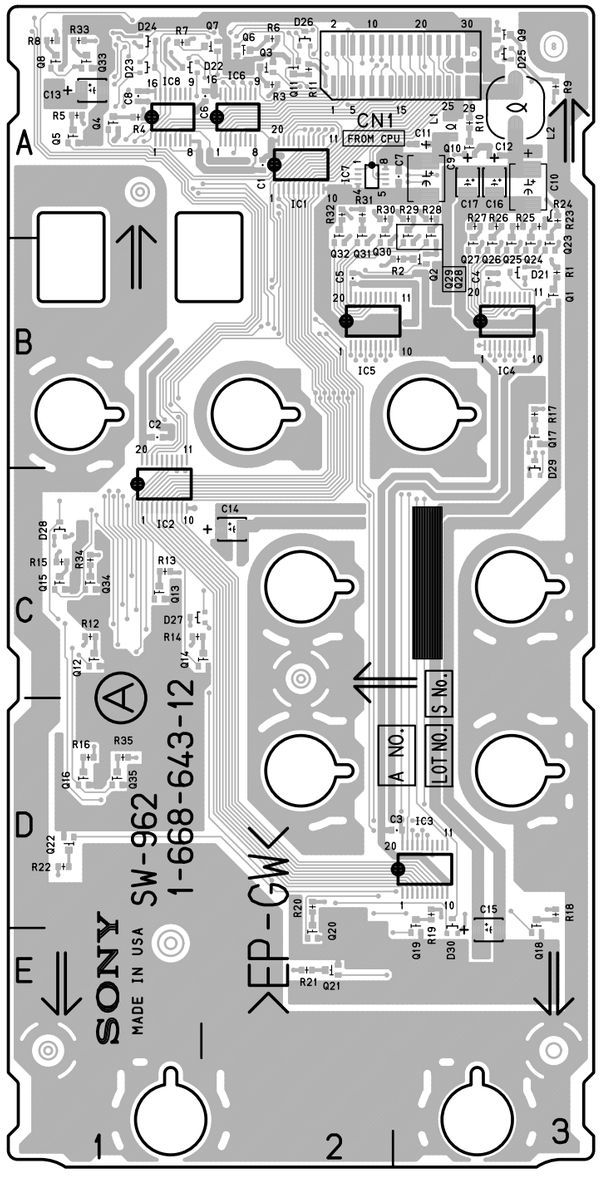
CPU-266 -A SIDE-
SUFFIX : -11



CPU-266 -B SIDE-
SUFFIX : -11

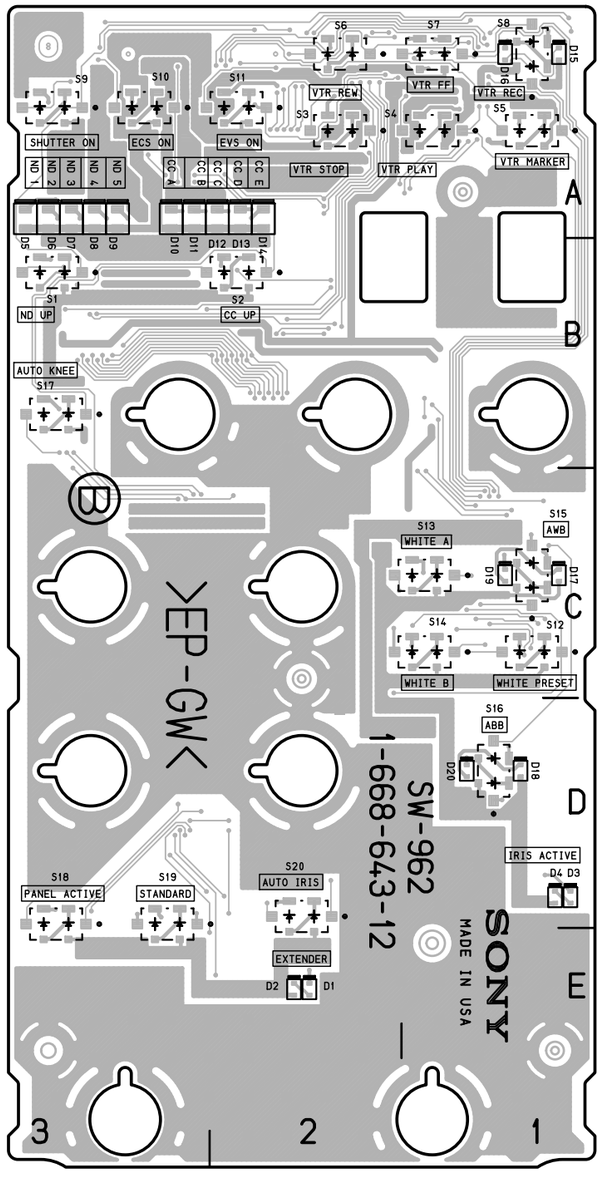
CPU-266 (1-668-642-11)

BZ1	* D1	D7	A1	R32	* C3		
		D8	A1	R34	* D2		
C1	* D3	D9	A1	R35	* D2		
C2	* D3	D10	A1	R36	* D2		
C3	* E3	D11	A1	R41	D2		
C4	* D3	D12	A1	R42	D1		
C5	* E2	D13	A1	R43	* C3		
C6	D1			R44	* C2		
C7	D2	IC1	E2	R45	D1		
C8	* E2	IC2	D1				
C9	E2	IC3	* D2	RB1	D1		
C11	C1	IC5	* C2	RB2	* D2		
C12	* C1	IC6	* E2	RB3	* D2		
C13	C2	IC7	* E2	RB4	* D2		
C14	E2	IC8	* E2	RB5	C1		
C15	E2	IC9	* C1	RB6	C1		
C16	* E2	IC10	* C2	RB7	C1		
C17	C2	IC11	D2	RB10	* A2		
C18	E2	IC12	* C1	RB11	A2		
C19	* C3	IC13	D1	RB12	A3		
C20	* D2	IC14	C3	RB13	A2		
C21	C1	IC15	C2	RB14	B2		
C22	E1	IC16	C3	RB15	B2		
C23	E2	IC17	A3	RB16	B1		
C24	D1	IC18	A2	RB17	A2		
C25	* C1	IC19	* B1	RB18	A2		
C26	* C2	IC20	* B2	RB19	A2		
C27	* C2	IC21	* B2				
C28	* C2	IC22	D1	RV1	* E1		
C31	* E2	IC24	* A1	RV2	* E3		
C32	E2	IC25	C2	RV3	* B2		
C33	* C3	IC26	D2	RV4	* B2		
C34	* C3	IC28	E2	RV5	* B1		
C35	* A2			RV6	* C3		
C36	* A3	IS4	C1	RV7	* C2		
C37	* A3			RV8	* D3		
C38	A2	L1	* D3	RV9	* D2		
C39	A2	L2	* D3				
C40	A3	L3	* E2	S1	A1		
C41	A3	L4	E2	S2	* A1		
C42	B2	L5	* A3	S3	* A2		
C43	B2						
C44	B2	PH1	* E2	X2	A3		
C45	B2						
C46	B1	Q1	A3	*:B SIDE			
C47	B1	Q2	A3				
C48	B1						
C49	* A3	R1	* E2				
C50	* A3	R2	* E2				
C51	B2	R3	E1				
C52	B1	R4	D1				
C53	B1	R5	D1				
C54	B1	R6	D1				
C55	* A2	R7	D1				
C56	* A2	R8	D1				
C57	B1	R9	D1				
C58	D1	R10	* D2				
C59	B2	R11	D1				
C60	B2	R12	D1				
C61	B2	R13	* C3				
C62	B2	R14	* C3				
C64	A1	R15	E3				
C65	* D3	R16	E3				
C66	* D2	R17	E3				
C68	* D2	R18	E2				
C69	E2	R19	E2				
C70	E1	R20	* C3				
		R21	* A2				
CN1	D3	R22	B2				
CN2	* A2	R23	A3				
CN3	* E2	R24	* B1				
		R25	* A2				
D1	E1	R26	D2				
D2	A3	R27	* C2				
D3	A3	R28	* D2				
D4	A1	R29	* D2				
D5	A1	R30	E2				
D6	A1	R31	* C3				



RM-B150 (SY) : S/N 15171 and Higher

SW-962 -A SIDE-
SUFFIX : -12

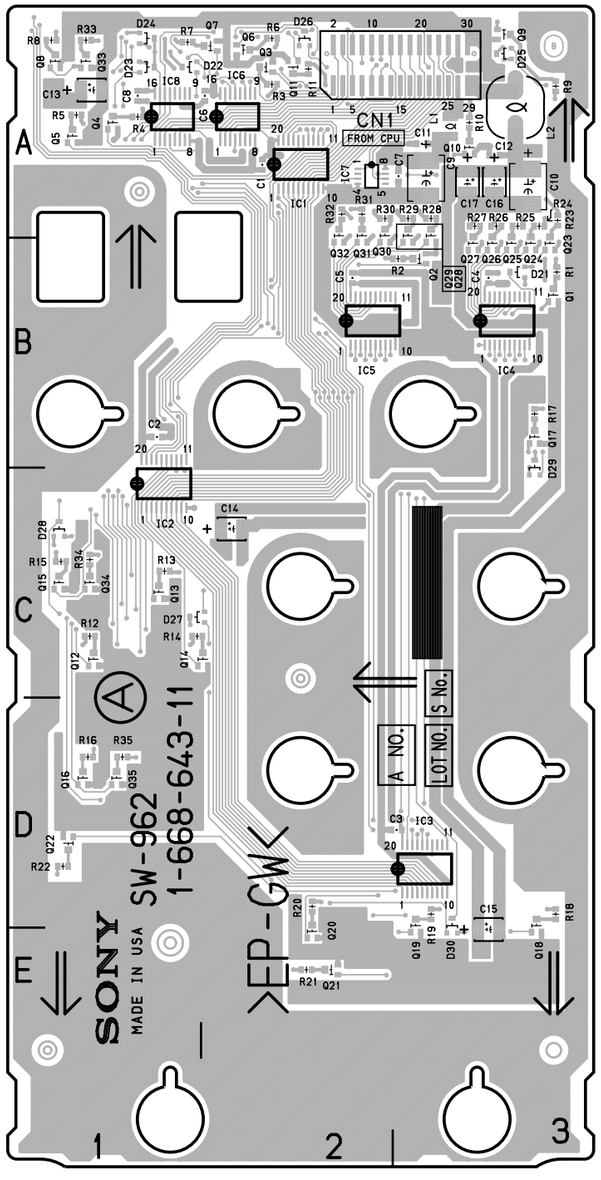


SW-962 -B SIDE-
SUFFIX : -12

SW-962 (1-668-643-12)

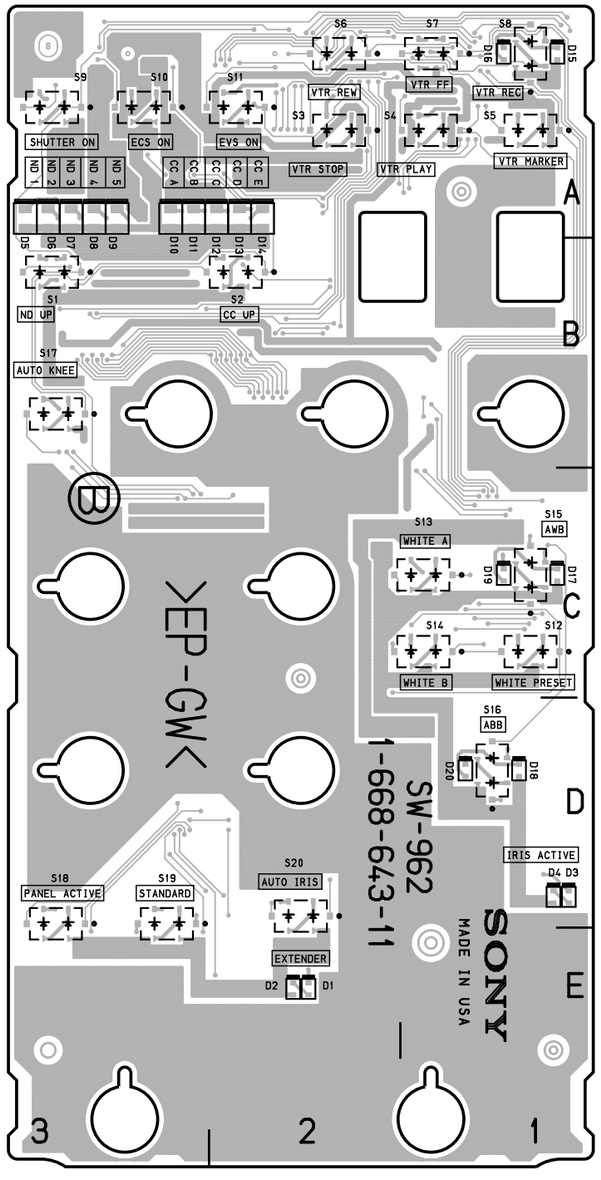
C1	A2	Q16	D1
C2	B1	Q17	B3
C3	D3	Q18	D3
C4	B3	Q19	D3
C5	B2	Q20	E2
C6	A2	Q21	E2
C7	A3	Q22	D1
C8	A1	Q23	B3
C9	A3	Q24	B3
C10	A3	Q25	B3
C11	A3	Q26	B3
C12	A3	Q27	B3
C13	A1	Q28	A3
C14	C2	Q29	A3
C15	E3	Q30	A2
C16	A3	Q31	A2
C17	A3	Q32	A2
		Q33	A1
CN1	A3	Q34	C1
		Q35	D1
D1	* E2		
D2	* E2	R1	B3
D3	* D1	R2	B3
D4	* D1	R3	A2
D5	* A3	R4	A1
D6	* A3	R5	A1
D7	* A3	R6	A2
D8	* A3	R7	A1
D9	* A3	R8	A1
D10	* A3	R9	A3
D11	* A3	R10	A3
D12	* A2	R11	A2
D13	* A2	R12	C1
D14	* A2	R13	C1
D15	* A1	R14	C1
D16	* A1	R15	C1
D17	* C1	R16	D1
D18	* D1	R17	B3
D19	* C1	R18	D3
D20	* D1	R19	D3
D21	B3	R20	D2
D22	A1	R21	E2
D23	A1	R22	D1
D24	A1	R23	A3
D25	A3	R24	A3
D26	A2	R25	A3
D27	C1	R26	A3
D28	C1	R27	A3
D29	B3	R28	A3
D30	D3	R29	A3
		R30	A2
IC1	A2	R31	A2
IC2	C1	R32	A2
IC3	D3	R33	A1
IC4	B3	R34	C1
IC5	B2	R35	D1
IC6	A2		
IC7	A2	S1	* B3
IC8	A1	S2	* B2
		S3	* A2
L1	A3	S4	* A1
L2	A3	S5	* A1
		S6	* A2
Q1	B3	S7	* A1
Q2	B3	S8	* A1
Q3	A2	S9	* A3
Q4	A1	S10	* A3
Q5	A1	S11	* A2
Q6	A2	S12	* C1
Q7	A2	S13	* C1
Q8	A1	S14	* C1
Q9	A3	S15	* C1
Q10	A3	S16	* D1
Q11	A2	S17	* B3
Q12	C1	S18	* D3
Q13	C1	S19	* D3
Q14	C2	S20	* D2
Q15	C1		

*:B SIDE



RM-B150 (SY) : S/N 15001 through 15170

SW-962 -A SIDE-
SUFFIX : -11

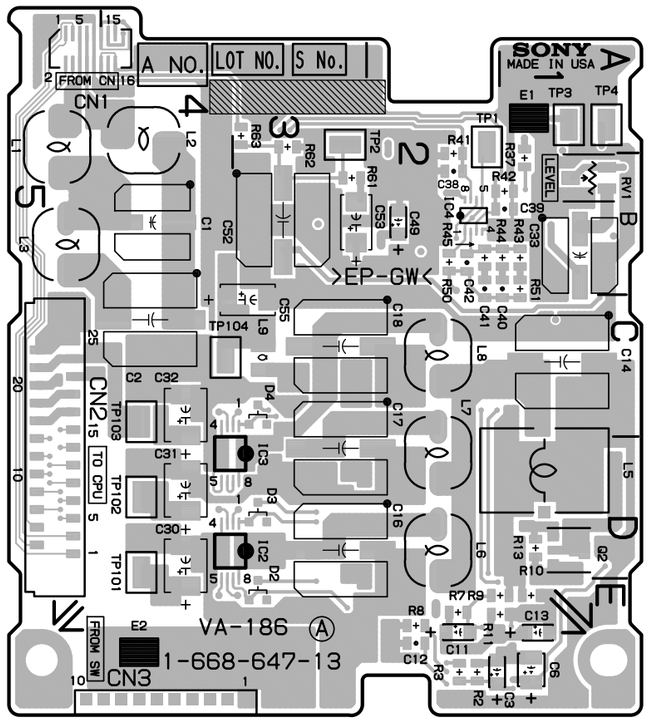


SW-962 -B SIDE-
SUFFIX : -11

SW-962 (1-668-643-11)

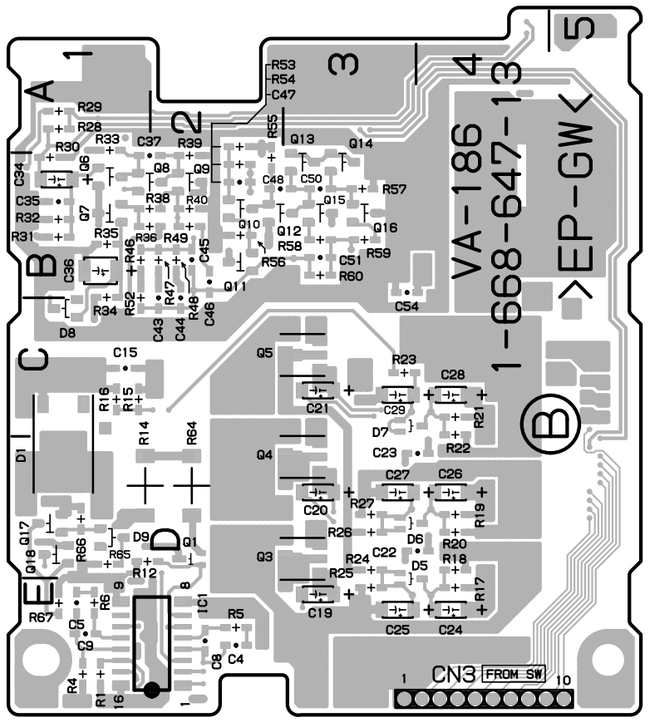
C1	A2	Q15	C1
C2	B1	Q16	D1
C3	D3	Q17	B3
C4	B3	Q18	D3
C5	B2	Q19	D3
C6	A2	Q20	E2
C7	A3	Q21	E2
C8	A1	Q22	D1
C9	A3	Q23	B3
C10	A3	Q24	B3
C11	A3	Q25	B3
C12	A3	Q26	B3
C13	A1	Q27	B3
C14	C2	Q28	A3
C15	E3	Q29	A3
C16	A3	Q30	A2
C17	A3	Q31	A2
		Q32	A2
CN1	A3	Q33	A1
		Q34	C1
		Q35	D1
D1	* E2		
D2	* E2	R1	B3
D3	* D1	R2	B3
D4	* D1	R3	A2
D5	* A3	R4	A1
D6	* A3	R5	A1
D7	* A3	R6	A2
D8	* A3	R7	A1
D9	* A3	R8	A1
D10	* A3	R9	A3
D11	* A3	R10	A3
D12	* A2	R11	A2
D13	* A2	R12	C1
D14	* A2	R13	C1
D15	* A1	R14	C1
D16	* A1	R15	C1
D17	* C1	R16	D1
D18	* D1	R17	B3
D19	* C1	R18	D3
D20	* D1	R19	D3
D21	B3	R20	D2
D22	A1	R21	E2
D23	A1	R22	D1
D24	A1	R23	A3
D25	A3	R24	A3
D26	A2	R25	A3
D27	C1	R26	A3
D28	C1	R27	A3
D29	B3	R28	A3
D30	D3	R29	A3
		R30	A2
IC1	A2	R31	A2
IC2	C1	R32	A2
IC3	D3	R33	A1
IC4	B3	R34	C1
IC5	B2	R35	D1
IC6	A2		
IC7	A2	S1	* B3
IC8	A1	S2	* B2
		S3	* A2
L1	A3	S4	* A1
L2	A3	S5	* A1
		S6	* A2
Q1	B3	S7	* A1
Q2	B3	S8	* A1
Q3	A2	S9	* A3
Q4	A1	S10	* A3
Q5	A1	S11	* A2
Q6	A2	S12	* C1
Q7	A2	S13	* C1
Q8	A1	S14	* C1
Q9	A3	S15	* C1
Q10	A3	S16	* D1
Q11	A2	S17	* B3
Q12	C1	S18	* D3
Q13	C1	S19	* D3
Q14	C2	S20	* D2

*:B SIDE



RM-B150 (SY) : S/N 15291 and Higher

VA-186 -A SIDE-
SUFFIX : -13



VA-186 -B SIDE-
SUFFIX : -13

VA-186 (1-668-647-13)

C1	B4	E1	A1	R31	*B1
C2	C4	E2	E4	R32	*B1
C3	E2			R33	*A1
C4	*E2	IC1	*E2	R34	*C1
C5	*E1	IC2	D3	R35	*B1
C6	E1	IC3	C3	R36	*B1
C8	*E2	IC4	B2	R37	B1
C9	*E1			R38	*B1
C11	E2	L1	A5	R39	*B2
C12	E2	L2	A4	R40	*B2
C13	E1	L3	B5	R41	B2
C14	C1	L5	D1	R42	B1
C15	*C1	L6	D2	R43	B1
C16	D3	L7	D2	R44	B1
C17	D3	L8	C2	R45	B2
C18	C3	L9	C3	R46	*B1
C19	*E3			R47	*B2
C20	*D3	Q1	*D2	R48	*B2
C21	*C3	Q2	D1	R49	*B2
C22	*D3	Q3	*D3	R50	B2
C23	*D3	Q4	*D3	R51	B1
C24	*E4	Q5	*C3	R52	*C1
C25	*E3	Q6	*B1	R53	*A2
C26	*D4	Q7	*B1	R54	*B2
C27	*D3	Q8	*B1	R55	*B2
C28	*C4	Q9	*B2	R56	*B2
C29	*C3	Q10	*B2	R57	*B3
C30	D4	Q11	*B2	R58	*B3
C31	D4	Q12	*B2	R59	*B3
C32	C4	Q13	*B3	R60	*B3
C33	B1	Q14	*B3	R61	B3
C34	*B1	Q15	*B3	R62	A3
C35	*B1	Q16	*B3	R63	A3
C36	*B1	Q17	*D1	R64	*D2
C37	*B1	Q18	*D1	R65	*D1
C38	B2			R66	*D1
C39	B1	R1	*E1	R67	*E1
C40	B1	R2	E2		
C41	B2	R3	E2	RV1	B1
C42	B2	R4	*E1		
C43	*C2	R5	*E2	TP1	A2
C44	*C2	R6	*E1	TP2	A3
C45	*B2	R7	E2	TP3	A1
C46	*B2	R8	E2	TP4	A1
C47	*B2	R9	E1	TP101	D4
C48	*B2	R10	E1	TP102	D4
C49	B2	R11	E1	TP103	C4
C50	*B3	R12	*D1	TP104	C4
C51	*B3	R13	D1		
C52	B3	R14	*D1	*:B SIDE	
C53	B3	R15	*C1		
C54	*B3	R16	*C1		
C55	C3	R17	*E4		
CN1	A5	R18	*D4		
CN2	D5	R19	*D4		
CN3	E4	R20	*D4		
		R21	*C4		
D1	*D1	R22	*D4		
D2	E3	R23	*C3		
D3	D3	R24	*D3		
D4	C3	R25	*E3		
D5	*E3	R26	*D3		
D6	*D3	R27	*D3		
D7	*C3	R28	*A1		
D8	*C1	R29	*A1		
D9	*D1	R30	*B1		

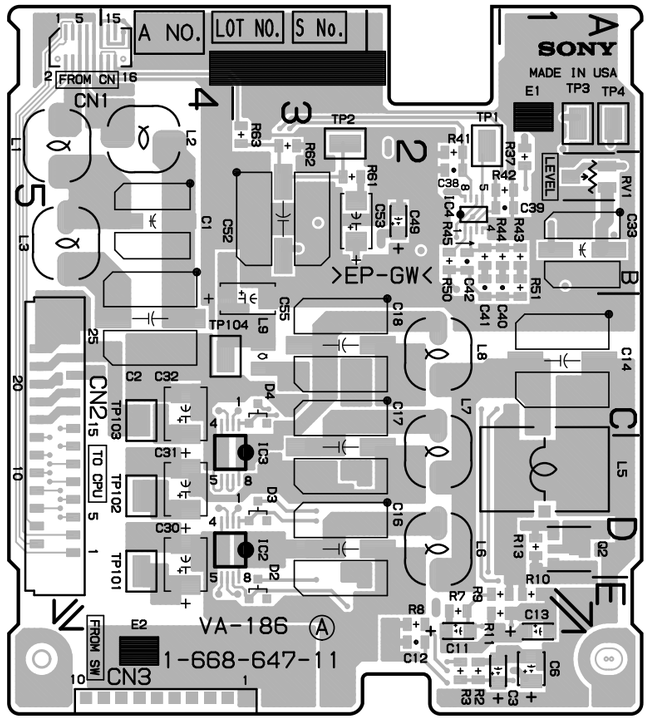
RM-B150 (SY) : S/N 15211 through 15290

VA-186 -A SIDE-
SUFFIX : -12

VA-186 -B SIDE-
SUFFIX : -12

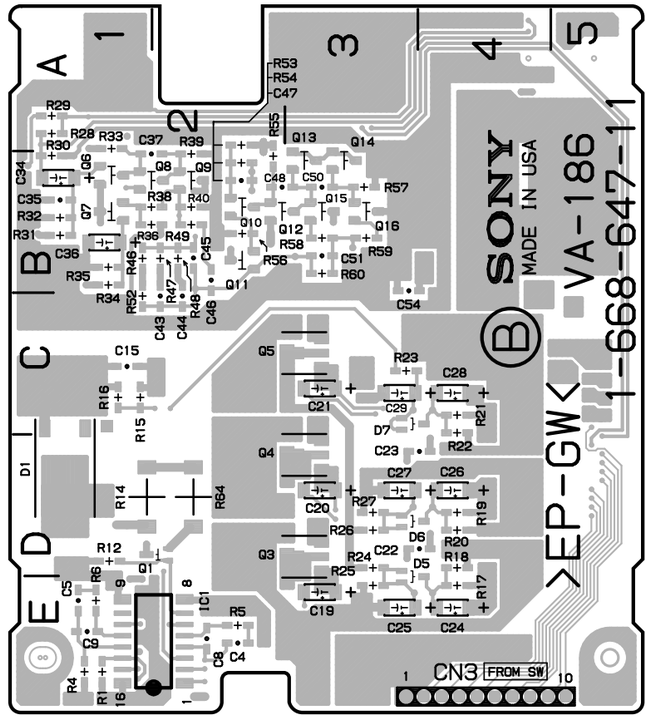
VA-186 (1-668-647-12)

C1	B4	E1	A1	R33	* A1
C2	C4	E2	E4	R34	* C1
C3	E1			R35	* B1
C4	* E2	IC1	* E2	R36	* B1
C5	* E1	IC2	D3	R37	B1
C6	E1	IC3	C3	R38	* B1
C8	* E2	IC4	B2	R39	* B2
C9	* E1			R40	* B2
C11	E2	L1	A5	R41	B2
C12	E2	L2	A4	R42	B1
C13	E1	L3	B5	R43	B1
C14	C1	L5	D1	R44	B1
C15	* C1	L6	D2	R45	B2
C16	D3	L7	D2	R46	* B1
C17	D3	L8	C2	R47	* B2
C18	C3	L9	C3	R48	* B2
C19	* E3			R49	* B2
C20	* D3	Q1	* D2	R50	B2
C21	* C3	Q2	D1	R51	B1
C22	* D3	Q3	* D3	R52	* C1
C23	* D3	Q4	* D3	R53	* A2
C24	* E4	Q5	* C3	R54	* B2
C25	* E3	Q6	* B1	R55	* B2
C26	* D4	Q7	* B1	R56	* B2
C27	* D3	Q8	* B1	R57	* B3
C28	* C4	Q9	* B2	R58	* B3
C29	* C3	Q10	* B2	R59	* B3
C30	D4	Q11	* B2	R60	* B3
C31	D4	Q12	* B2	R61	B3
C32	C4	Q13	* B3	R62	A3
C33	B1	Q14	* B3	R63	A3
C34	* B1	Q15	* B3	R64	* D2
C35	* B1	Q16	* B3		
C36	* B1			RV1	B1
C37	* B1	R1	* E1		
C38	B2	R2	E2	TP1	A2
C39	B1	R3	E2	TP2	A3
C40	B1	R4	* E1	TP3	A1
C41	B2	R5	* E2	TP4	A1
C42	B2	R6	* E1	TP101	D4
C43	* C2	R7	E2	TP102	D4
C44	* C2	R8	E2	TP103	C4
C45	* B2	R9	E1	TP104	C4
C46	* B2	R10	E1		
C47	* B2	R11	E1	*:B SIDE	
C48	* B2	R12	* D1		
C49	B2	R13	D1		
C50	* B3	R14	* D1		
C51	* B3	R15	* C1		
C52	B3	R16	* C1		
C53	B3	R17	* E4		
C54	* B3	R18	* D4		
C55	C3	R19	* D4		
		R20	* D4		
CN1	A5	R21	* C4		
CN2	D5	R22	* D4		
CN3	E4	R23	* C3		
		R24	* D3		
D1	* D1	R25	* E3		
D2	E3	R26	* D3		
D3	D3	R27	* D3		
D4	C3	R28	* A1		
D5	* E3	R29	* A1		
D6	* D3	R30	* B1		
D7	* C3	R31	* B1		
D8	* C1	R32	* B1		



RM-B150 (SY) : S/N 15001 through 15210

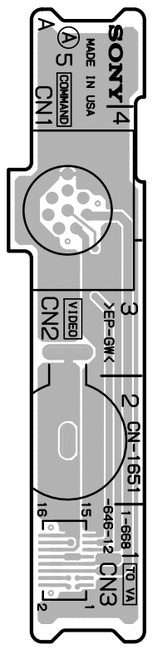
VA-186 -A SIDE-
SUFFIX : -11



VA-186 -B SIDE-
SUFFIX : -11

VA-186 (1-668-647-11)

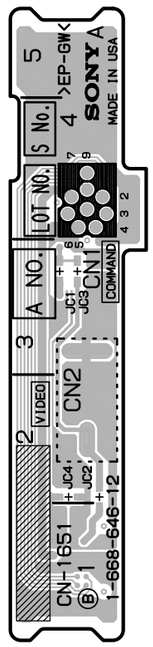
C1	B4	E1	A1	R32	* B1
C2	C4	E2	E4	R33	* A1
C3	E1			R34	* B1
C4	* E2	IC1	* E2	R35	* B1
C5	* E1	IC2	D3	R36	* B1
C6	E1	IC3	C3	R37	B1
C8	* E2	IC4	B2	R38	* B1
C9	* E1			R39	* B2
C11	E2	L1	A5	R40	* B2
C12	E2	L2	A4	R41	B2
C13	E1	L3	B5	R42	B1
C14	C1	L5	D1	R43	B1
C15	* C1	L6	D2	R44	B1
C16	D3	L7	D2	R45	B2
C17	D3	L8	C2	R46	* B1
C18	C3	L9	C3	R47	* B2
C19	* E3			R48	* B2
C20	* D3	Q1	* D2	R49	* B2
C21	* C3	Q2	D1	R50	B2
C22	* D3	Q3	* D3	R51	B1
C23	* D3	Q4	* D3	R52	* C1
C24	* E4	Q5	* C3	R53	* A2
C25	* E3	Q6	* B1	R54	* B2
C26	* D4	Q7	* B1	R55	* B2
C27	* D3	Q8	* B1	R56	* B2
C28	* C4	Q9	* B2	R57	* B3
C29	* C3	Q10	* B2	R58	* B3
C30	D4	Q11	* B2	R59	* B3
C31	D4	Q12	* B2	R60	* B3
C32	C4	Q13	* B3	R61	B3
C33	B1	Q14	* B3	R62	A3
C34	* B1	Q15	* B3	R63	A3
C35	* B1	Q16	* B3	R64	* D2
C36	* B1				
C37	* B1	R1	* E1	RV1	B1
C38	B2	R2	E2		
C39	B1	R3	E2	TP1	A2
C40	B1	R4	* E1	TP2	A3
C41	B2	R5	* E2	TP3	A1
C42	B2	R6	* E1	TP4	A1
C43	* C2	R7	E2	TP101	D4
C44	* C2	R8	E2	TP102	D4
C45	* B2	R9	E1	TP103	C4
C46	* B2	R10	E1	TP104	C4
C47	* B2	R11	E1		
C48	* B2	R12	* D1	*:B SIDE	
C49	B2	R13	D1		
C50	* B3	R14	* D1		
C51	* B3	R15	* C1		
C52	B3	R16	* C1		
C53	B3	R17	* E4		
C54	* B3	R18	* D4		
C55	C3	R19	* D4		
		R20	* D4		
CN1	A5	R21	* C4		
CN2	D5	R22	* D4		
CN3	E4	R23	* C3		
		R24	* D3		
D1	* D1	R25	* E3		
D2	E3	R26	* D3		
D3	D3	R27	* D3		
D4	C3	R28	* A1		
D5	* E3	R29	* A1		
D6	* D3	R30	* B1		
D7	* C3	R31	* B1		



RM-B150 (SY)

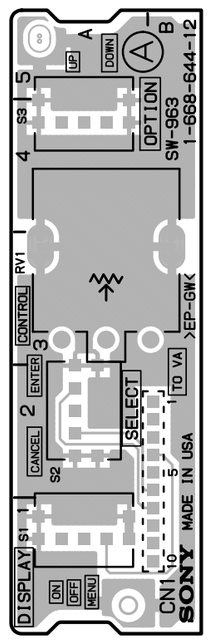
CN-1651 -A SIDE-

SUFFIX : -11, 12



CN-1651 -B SIDE-

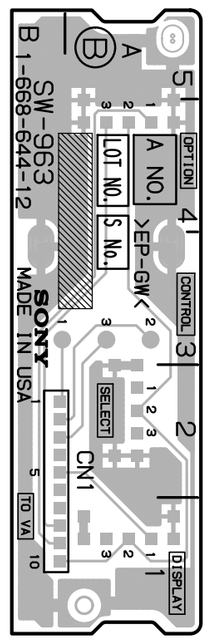
SUFFIX : -11, 12



RM-B150 (SY)

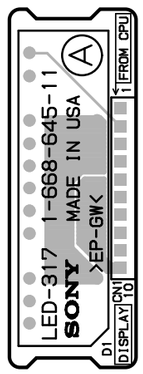
SW-963 -A SIDE-

SUFFIX : -11, 12



SW-963 -B SIDE-

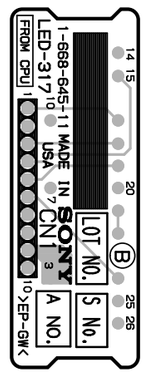
SUFFIX : -11, 12



RM-B150 (SY)

LED-317 -A SIDE-

SUFFIX : -11



LED-317 -B SIDE-

SUFFIX : -11

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